START

TITLE: OFFICIAL GAZETTE OF THE UNITED STATES PATENT AND TRADEMARK OFFICE. PATENTS.

REEL NO: 2 Patent No: 5,182,812-5,189,734

VOLUME: 1147 Issues: 1-4

DATE: February 2-23, 1993

PUBLICATION NO: 10426.00

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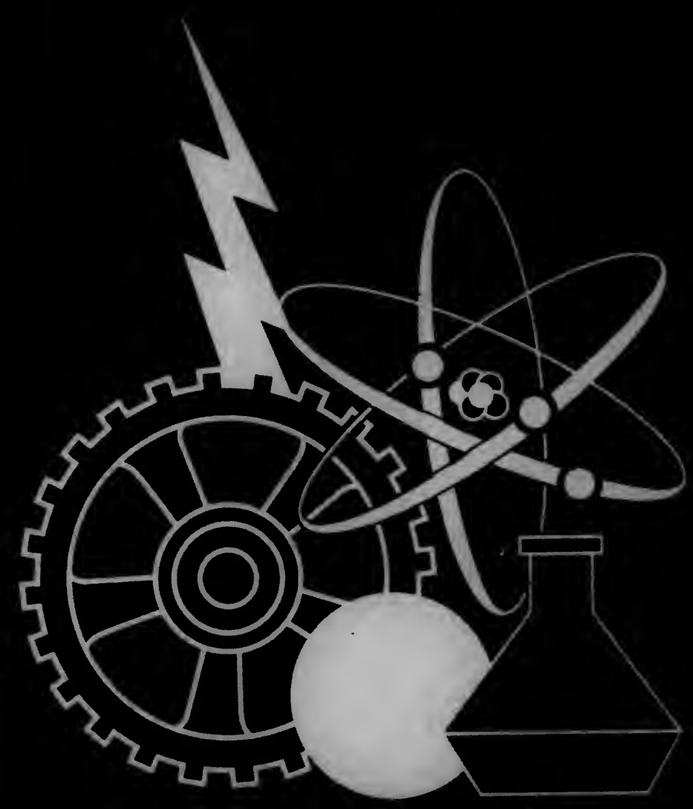
Patent
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Vol. 1147 Number 1

OFFICIAL GAZETTE

of the
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS
February 2, 1993



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VOL
1147
ISS
1
FE
2
1993
UMI

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
February 2, 1993 Volume 1147 Number 1

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1147 OG 2
Notice of Maintenance Fees Payable	1147 OG 2
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees	1147 OG 3
Erratum	1147 OG 8
Notification of Acceptance of Delayed Payment of Maintenance Fee	1147 OG 9
Reissue Applications Filed	1147 OG 9
Requests for Reexaminations Filed	1147 OG 9
Notice of Expiration of Trademark Registrations Due to Failure to Renew	1147 OG 9
Errata	1147 OG 11
Requests for Suggestions	1147 OG 11
Patent Interference Practice Burden of Proof	1147 OG 11
Certificates of Correction	1147 OG 14
Special Boxes for Mail	1147 OG 15
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1147 OG 16
Patent Examining Corps	1147 OG 18
Statutory Invention Registrations	1
Reexaminations	5
Reissue Patents Granted (34,170)	9
Plant Patents Granted (8,120)	11
Patents Granted	
General and Mechanical (5,182,812)	13
Chemical (5,183,473)	239
Electrical (5,183,951)	373
Design Patents Granted (332,858)	511
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design, Statutory Invention Registrations and Plant Patents	PI 66
Classification of	
Patents (Including Reissues and Reexaminations)	PI 68
Designs, and Plants Applications	PI 72
Geographical Index of Residence of Inventors	
Patents (Including Reissues and Reexaminations)	PI 73
Designs and Plant Applications	PI 75
Change of Address Form	PI 77
Subscription Order Form	PI 79

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VOL
1147
ISS
1
FE
2
1993
UMI

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1142 O.G. 66, on Sept. 29, 1992.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1992, due to changes both in the amount of the international search fee charged by the European Patent Office and in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1142 O.G. 20, on Sept. 8, 1992.

International fees, effective on Dec. 1, 1992, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, were announced in the *Official Gazette* at 1143 O.G. 62, on Oct. 27, 1992.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Oct. 1, 1992 and were announced in the *Official Gazette* at 1141 O.G. 68 on Aug. 25, 1992.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1635.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	450.00
—Additional examination fee, per additional invention	140.00
—ISA not the USPTO	670.00
—Additional examination fee, per additional invention	230.00
International fees	
Basic fee	593.00
Basic Supplemental fee (for each page over 30)	12.00
Designation fee per country or region for the first 10 national or regional offices	144.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	181.00

U.S. National Stage fees	Small Entity	Regular
USPTO was IPEA	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA	475.00	950.00
Filing with an EPO or JPO search report	415.00	830.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Nov. 8, 1992

DOUGLAS B. COMER,
Acting Assistant Secretary and Acting Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on January 30, 1990 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,896,375 through 4,897,884
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on January 28, 1986 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,566,136 through 4,567,610
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months and eleven years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9f) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9f) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9f) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED NOVEMBER 22, 1992 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,483,020	06/442,304	11/20/84
4,483,022	06/388,189	11/20/84
4,483,026	06/401,546	11/20/84
4,483,027	06/387,972	11/20/84
4,483,028	06/477,507	11/20/84
4,483,031	06/488,366	11/20/84
4,483,033	06/451,982	11/20/84
4,483,036	06/560,750	11/20/84
4,483,037	06/443,334	11/20/84
4,483,038	06/530,781	11/20/84
4,483,039	06/537,427	11/20/84
4,483,041	06/431,051	11/20/84
4,483,042	06/420,809	11/20/84
4,483,045	06/622,389	11/20/84
4,483,047	06/443,210	11/20/84
4,483,050	06/412,212	11/20/84
4,483,052	06/305,303	11/20/84
4,483,056	06/397,836	11/20/84
4,483,057	06/335,826	11/20/84
4,483,058	06/471,868	11/20/84
4,483,059	06/486,565	11/20/84
4,483,063	06/383,617	11/20/84
4,483,067	06/416,791	11/20/84
4,483,068	06/324,896	11/20/84
4,483,071	06/363,762	11/20/84
4,483,073	06/402,925	11/20/84
4,483,074	06/414,336	11/20/84
4,483,076	06/445,405	11/20/84
4,483,077	06/504,868	11/20/84
4,483,078	06/418,445	11/20/84
4,483,079	06/448,337	11/20/84
4,483,080	06/361,835	11/20/84
4,483,082	06/367,426	11/20/84
4,483,084	06/386,694	11/20/84
4,483,085	06/559,103	11/20/84
4,483,086	06/397,107	11/20/84
4,483,087	06/337,445	11/20/84
4,483,088	06/462,231	11/20/84
4,483,089	06/399,205	11/20/84
4,483,090	06/437,498	11/20/84
4,483,091	06/460,904	11/20/84
4,483,093	06/453,144	11/20/84
4,483,095	06/597,649	11/20/84
4,483,096	06/476,006	11/20/84
4,483,097	06/379,621	11/20/84
4,483,099	06/597,691	11/20/84
4,483,102	06/422,459	11/20/84
4,483,104	06/363,520	11/20/84
4,483,105	06/474,472	11/20/84
4,483,108	06/417,127	11/20/84
4,483,112	06/329,710	11/20/84
4,483,114	06/373,391	11/20/84
4,483,115	06/367,446	11/20/84
4,483,118	06/224,677	11/20/84
4,483,119	06/507,700	11/20/84
4,483,121	06/509,375	11/20/84
4,483,122	06/311,822	11/20/84
4,483,126	06/349,517	11/20/84
4,483,127	06/388,178	11/20/84
4,483,129	06/426,151	11/20/84
4,483,131	06/453,435	11/20/84
4,483,132	06/465,982	11/20/84
4,483,135	06/547,770	11/20/84
4,483,136	06/583,231	11/20/84
4,483,139	06/441,100	11/20/84
4,483,140	06/290,015	11/20/84
4,483,143	06/423,528	11/20/84
4,483,145	06/335,248	11/20/84
4,483,146	06/500,512	11/20/84
4,483,152	06/515,216	11/20/84
4,483,153	06/484,394	11/20/84
4,483,154	06/483,855	11/20/84
4,483,155	06/392,617	11/20/84
4,483,157	06/564,840	11/20/84
4,483,158	06/575,753	11/20/84
4,483,159	06/377,013	11/20/84
4,483,161	06/336,041	11/20/84
4,483,162	06/376,258	11/20/84
4,483,163	06/395,490	11/20/84
4,483,164	06/570,992	11/20/84
4,483,166	06/413,336	11/20/84
4,483,171	06/451,158	11/20/84
4,483,173	06/360,842	11/20/84
4,483,174	06/566,060	11/20/84
4,483,175	06/450,698	11/20/84
4,483,178	06/458,913	11/20/84

VOL
1147
ISS
1
FE
2
1993
UMI

Patent Number	Serial Number	Issue Date
4,483,179	06/326,524	11/20/84
4,483,182	06/348,116	11/20/84
4,483,183	06/384,815	11/20/84
4,483,188	06/470,020	11/20/84
4,483,189	06/518,336	11/20/84
4,483,192	06/361,513	11/20/84
4,483,197	06/430,535	11/20/84
4,483,198	06/455,673	11/20/84
4,483,199	06/421,115	11/20/84
4,483,200	06/422,975	11/20/84
4,483,201	06/404,550	11/20/84
4,483,203	06/500,495	11/20/84
4,483,206	06/443,408	11/20/84
4,483,208	06/394,505	11/20/84
4,483,209	06/438,801	11/20/84
4,483,214	06/477,121	11/20/84
4,483,222	06/297,495	11/20/84
4,483,223	06/482,721	11/20/84
4,483,224	06/502,152	11/20/84
4,483,225	06/450,360	11/20/84
4,483,227	06/393,042	11/20/84
4,483,232	06/535,028	11/20/84
4,483,233	06/431,395	11/20/84
4,483,237	06/493,289	11/20/84
4,483,238	06/432,202	11/20/84
4,483,243	06/273,088	11/20/84
4,483,245	06/439,856	11/20/84
4,483,246	06/360,792	11/20/84
4,483,248	06/481,749	11/20/84
4,483,251	06/318,478	11/20/84
4,483,256	06/508,289	11/20/84
4,483,257	06/491,366	11/20/84
4,483,258	06/515,570	11/20/84
4,483,260	06/297,077	11/20/84
4,483,261	06/464,410	11/20/84
4,483,263	06/614,580	11/20/84
4,483,264	06/364,545	11/20/84
4,483,266	06/265,081	11/20/84
4,483,268	06/379,350	11/20/84
4,483,269	06/268,357	11/20/84
4,483,274	06/453,791	11/20/84
4,483,275	06/467,316	11/20/84
4,483,278	06/493,210	11/20/84
4,483,283	06/494,532	11/20/84
4,483,287	06/376,688	11/20/84
4,483,288	06/475,484	11/20/84
4,483,289	06/336,374	11/20/84
4,483,290	06/363,270	11/20/84
4,483,291	06/460,710	11/20/84
4,483,294	06/351,900	11/20/84
4,483,296	06/417,969	11/20/84
4,483,298	06/592,738	11/20/84
4,483,301	06/413,900	11/20/84
4,483,302	06/460,437	11/20/84
4,483,303	06/471,249	11/20/84
4,483,304	06/341,145	11/20/84
4,483,308	06/599,300	11/20/84
4,483,309	06/495,737	11/20/84
4,483,310	06/395,374	11/20/84
4,483,311	06/521,291	11/20/84
4,483,312	06/403,484	11/20/84
4,483,313	06/464,697	11/20/84
4,483,314	06/502,607	11/20/84
4,483,315	06/337,703	11/20/84
4,483,317	06/352,935	11/20/84
4,483,318	06/493,549	11/20/84
4,483,320	06/464,717	11/20/84
4,483,321	06/408,461	11/20/84
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4,483,324	06/494,702	11/20/84
4,483,325	06/493,067	11/20/84
4,483,327	06/389,030	11/20/84
4,483,330	06/400,914	11/20/84
4,483,332	06/455,361	11/20/84
4,483,334	06/483,622	11/20/84
4,483,337	06/431,335	11/20/84
4,483,339	06/584,765	11/20/84
4,483,343	06/349,453	11/20/84
4,483,344	06/473,262	11/20/84
4,483,346	06/526,260	11/20/84
4,483,347	06/356,326	11/20/84
4,483,353	06/399,227	11/20/84
4,483,354	06/536,199	11/20/84
4,483,356	06/407,266	11/20/84
4,483,357	06/468,325	11/20/84
4,483,360	06/473,988	11/20/84
4,483,363	06/534,247	11/20/84
4,483,364	06/362,354	11/20/84
4,483,365	06/402,457	11/20/84
4,483,366	06/370,476	11/20/84
4,483,370	06/462,389	11/20/84
4,483,372	06/489,390	11/20/84
4,483,373	06/470,275	11/20/84
4,483,374	06/438,171	11/20/84
4,483,375	06/380,106	11/20/84
4,483,376	06/415,420	11/20/84
4,483,378	06/484,318	11/20/84
4,483,382	06/531,980	11/20/84
4,483,386	06/423,010	11/20/84
4,483,387	06/421,451	11/20/84
4,483,392	06/364,391	11/20/84
4,483,393	06/423,003	11/20/84
4,483,397	06/453,050	11/20/84
4,483,398	06/457,833	11/20/84
4,483,400	06/527,969	11/20/84
4,483,402	06/326,239	11/20/84
4,483,403	06/375,038	11/20/84
4,483,405	06/400,695	11/20/84
4,483,406	06/445,319	11/20/84
4,483,410	06/461,950	11/20/84
4,483,411	06/235,202	11/20/84
4,483,412	06/439,087	11/20/84
4,483,413	06/448,762	11/20/84
4,483,414	06/508,069	11/20/84
4,483,415	06/515,559	11/20/84
4,483,420	06/394,164	11/20/84
4,483,421	06/346,294	11/20/84
4,483,424	06/470,117	11/20/84
4,483,426	06/604,402	11/20/84
4,483,427	06/460,275	11/20/84
4,483,428	06/319,050	11/20/84
4,483,434	06/374,773	11/20/84
4,483,438	06/442,523	11/20/84
4,483,439	06/425,100	11/20/84
4,483,440	06/316,129	11/20/84
4,483,442	06/553,231	11/20/84
4,483,443	06/433,990	11/20/84
4,483,445	06/431,219	11/20/84
4,483,446	06/439,860	11/20/84
4,483,447	06/382,203	11/20/84
4,483,450	06/551,070	11/20/84
4,483,451	06/450,798	11/20/84
4,483,452	06/328,138	11/20/84
4,483,453	06/530,236	11/20/84
4,483,455	06/409,874	11/20/84
4,483,456	06/340,050	11/20/84
4,483,461	06/280,282	11/20/84
4,483,462	06/396,066	11/20/84
4,483,463	06/403,609	11/20/84
4,483,465	06/290,343	11/20/84
4,483,466	06/351,362	11/20/84
4,483,469	06/596,080	11/20/84
4,483,479	06/485,714	11/20/84
4,483,482	06/344,941	11/20/84
4,483,488	06/485,493	11/20/84
4,483,489	06/382,585	11/20/84
4,483,491	06/487,973	11/20/84
4,483,495	06/444,090	11/20/84
4,483,500	06/378,447	11/20/84
4,483,501	06/494,432	11/20/84
4,483,503	06/364,095	11/20/84
4,483,504	06/333,258	11/20/84
4,483,509	06/390,324	11/20/84
4,483,512	06/392,104	11/20/84
4,483,514	06/366,633	11/20/84
4,483,515	06/411,710	11/20/84

Patent Number	Serial Number	Issue Date
4,483,516	06/376,577	11/20/84
4,483,522	06/406,540	11/20/84
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4,483,525	06/535,424	11/20/84
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4,483,980	06/532,248	11/20/84
4,483,986	06/373,945	11/20/84

VOL
1147
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Patent Number	Serial Number	Issue Date
4,483,990	06/363,333	11/20/84
4,483,992	06/406,791	11/20/84
4,483,993	06/529,603	11/20/84
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4,785,576	06/817,918	11/22/88

Patent Number	Serial Number	Issue Date
4,785,578	07/006,356	11/22/88
4,785,581	07/056,730	11/22/88
4,785,587	06/386,677	11/22/88
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4,786,008	06/855,238	11/22/88
4,786,009	07/000,453	11/22/88
4,786,018	07/068,968	11/22/88
4,786,019	06/927,290	11/22/88
4,786,020	07/149,814	11/22/88
4,786,021	07/016,040	11/22/88
4,786,022	07/053,322	11/22/88
4,786,023	07/087,027	11/22/88
4,786,026	07/180,001	11/22/88
4,786,028	07/017,861	11/22/88
4,786,031	07/120,293	11/22/88
4,786,035	06/933,423	11/22/88
4,786,040	07/031,644	11/22/88
4,786,043	06/918,170	11/22/88
4,786,044	07/022,844	11/22/88
4,786,048	06/856,194	11/22/88
4,786,053	07/015,696	11/22/88
4,786,054	07/038,946	11/22/88
4,786,056	07/114,723	11/22/88
4,786,057	07/099,820	11/22/88
4,786,058	07/064,662	11/22/88
4,786,059	06/942,501	11/22/88
4,786,060	07/097,135	11/22/88
4,786,064	07/073,594	11/22/88
4,786,067	06/941,829	11/22/88
4,786,068	06/879,985	11/22/88
4,786,069	07/012,722	11/22/88
4,786,070	07/148,043	11/22/88
4,786,073	06/947,852	11/22/88
4,786,084	06/799,097	11/22/88
4,786,087	07/126,050	11/22/88
4,786,095	07/159,596	11/22/88
4,786,096	07/090,548	11/22/88
4,786,101	07/049,134	11/22/88
4,786,104	07/172,567	11/22/88
4,786,112	07/074,060	11/22/88
4,786,120	07/108,378	11/22/88
4,786,125	06/639,661	11/22/88
4,786,127	07/132,806	11/22/88
4,786,130	06/864,802	11/22/88
4,786,144	07/013,332	11/22/88
4,786,149	07/052,548	11/22/88
4,786,158	06/828,135	11/22/88
4,786,159	06/918,988	11/22/88
4,786,167	06/783,578	11/22/88
4,786,181	07/121,285	11/22/88
4,786,184	07/010,743	11/22/88

VOL
1147
ISS
1
FE
2
1993
UMI

Patent Number	Serial Number	Issue Date
4,786,185	07/161,829	11/22/88
4,786,195	06/858,943	11/22/88
4,786,199	06/741,225	11/22/88
4,786,202	06/700,857	11/22/88
4,786,203	07/097,504	11/22/88
4,786,204	06/832,333	11/22/88
4,786,210	07/096,868	11/22/88
4,786,212	07/035,454	11/22/88
4,786,214	07/025,077	11/22/88
4,786,217	07/045,057	11/22/88
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4,786,224	07/161,309	11/22/88
4,786,229	06/857,723	11/22/88
4,786,234	06/390,193	11/22/88
4,786,238	07/014,947	11/22/88
4,786,244	07/114,417	11/22/88
4,786,249	07/084,992	11/22/88
4,786,266	06/886,220	11/22/88
4,786,273	07/082,864	11/22/88
4,786,275	07/044,545	11/22/88
4,786,278	06/940,046	11/22/88
4,786,279	06/891,099	11/22/88
4,786,280	07/048,693	11/22/88
4,786,283	07/083,739	11/22/88
4,786,284	06/835,782	11/22/88
4,786,286	06/868,202	11/22/88
4,786,290	07/107,054	11/22/88
4,786,296	07/065,871	11/22/88
4,786,301	07/085,321	11/22/88
4,786,303	07/037,413	11/22/88
4,786,312	07/042,265	11/22/88
4,786,313	07/111,670	11/22/88
4,786,330	07/003,790	11/22/88
4,786,335	06/700,923	11/22/88
4,786,342	06/929,386	11/22/88
4,786,368	07/005,459	11/22/88
4,786,373	07/050,056	11/22/88
4,786,375	07/075,896	11/22/88
4,786,376	07/142,472	11/22/88
4,786,377	07/044,089	11/22/88
4,786,386	06/755,606	11/22/88
4,786,387	06/911,503	11/22/88
4,786,393	07/054,541	11/22/88
4,786,398	07/037,362	11/22/88
4,786,399	07/102,056	11/22/88
4,786,407	07/153,268	11/22/88
4,786,410	07/011,996	11/22/88
4,786,411	06/770,901	11/22/88
4,786,412	07/124,263	11/22/88
4,786,418	07/167,185	11/22/88
4,786,422	06/916,068	11/22/88
4,786,424	06/804,714	11/22/88
4,786,449	06/852,226	11/22/88
4,786,460	07/055,702	11/22/88
4,786,461	06/538,040	11/22/88
4,786,471	06/544,177	11/22/88
4,786,472	06/899,186	11/22/88
4,786,480	06/899,633	11/22/88
4,786,482	07/064,814	11/22/88
4,786,488	06/710,673	11/22/88
4,786,502	06/916,062	11/22/88
4,786,508	06/869,504	11/22/88
4,786,509	07/051,095	11/22/88
4,786,511	07/045,102	11/22/88
4,786,515	06/942,050	11/22/88
4,786,517	07/047,876	11/22/88
4,786,524	07/071,102	11/22/88
4,786,535	07/121,162	11/22/88
4,786,543	07/104,962	11/22/88
4,786,547	07/036,501	11/22/88
4,786,548	07/095,062	11/22/88
4,786,594	06/863,268	11/22/88
4,786,601	07/058,046	11/22/88
4,786,604	07/065,356	11/22/88
4,786,622	06/568,998	11/22/88
4,786,632	06/529,671	11/22/88
4,786,633	07/056,958	11/22/88
4,786,649	06/929,847	11/22/88
4,786,650	06/825,304	11/22/88
4,786,653	07/088,830	11/22/88
4,786,654	07/053,911	11/22/88
4,786,682	07/066,388	11/22/88
4,786,683	07/054,465	11/22/88
4,786,684	06/899,209	11/22/88
4,786,710	07/054,336	11/22/88
4,786,711	07/006,409	11/22/88
4,786,717	06/928,766	11/22/88
4,786,725	06/835,584	11/22/88
4,786,731	07/081,519	11/22/88
4,786,732	07/081,515	11/22/88
4,786,740	06/934,076	11/22/88
4,786,741	06/441,191	11/22/88
4,786,744	06/745,579	11/22/88
4,786,747	07/048,505	11/22/88
4,786,755	06/845,704	11/22/88
4,786,756	06/668,045	11/22/88
4,786,763	07/175,025	11/22/88
4,786,768	07/087,715	11/22/88
4,786,779	06/945,980	11/22/88
4,786,787	07/141,734	11/22/88
4,786,806	07/064,491	11/22/88
4,786,825	06/945,310	11/22/88
4,786,829	07/017,751	11/22/88
4,786,833	07/039,102	11/22/88
4,786,837	07/046,076	11/22/88
4,786,852	07/169,141	11/22/88
4,786,871	07/065,358	11/22/88
4,786,872	07/065,359	11/22/88
4,786,873	06/871,730	11/22/88
4,786,887	07/080,183	11/22/88
4,786,905	06/844,046	11/22/88
4,786,909	06/822,214	11/22/88
4,786,916	06/936,795	11/22/88
4,786,925	07/067,930	11/22/88
4,786,958	06/931,345	11/22/88
4,786,964	07/009,934	11/22/88
4,786,975	07/147,665	11/22/88
4,786,983	06/379,577	11/22/88
4,786,994	06/803,508	11/22/88
4,786,995	06/927,916	11/22/88
4,787,008	07/023,210	11/22/88
4,787,014	07/078,710	11/22/88
4,787,019	07/024,132	11/22/88
4,787,023	07/059,589	11/22/88
4,787,024	06/890,207	11/22/88
4,787,034	07/091,361	11/22/88
4,787,092	07/161,412	11/22/88

Erratum

In the list of patents which expired on Oct. 25, 1991, due to failure to pay maintenance fees, in O.G. of Jan. 7, 1992, the following patent should not have appeared:

Patent Number	Serial Number	Issue Date	Filing Date
4,411,963	06/280,8474	10/25/83	7/06/81

NOTIFICATION OF ACCEPTANCE OF DELAYED PAYMENT OF MAINTENANCE FEE (35 U.S.C. 41(c); 37 CFR 1.378)

The patent(s) listed below are considered as not having expired but are subject to the conditions set forth in 35 U.S.C. 41(c)(2), in view of the Petition to Accept Late Payment of the maintenance fees which has been GRANTED BY THE COMMISSIONER OF PATENTS AND TRADEMARKS, as provided for under 35 U.S.C. 41(c)(1) and 37 CFR 1.378.

Patent No.	Serial No.	Patent Date	Application Filing Date	Delayed Payment Acceptance Date
4,454,662	06/347,419	6/19/84	2/10/82	12/11/92
4,466,325	06/372,051	8/21/84	4/26/82	12/09/92
4,475,556	06/454,984	10/09/84	1/03/83	12/18/92
4,578,648	06/600,723	3/25/86	4/16/84	12/15/92
4,605,501	06/754,240	8/12/86	7/12/85	12/23/92
4,712,096	06/732,875	12/08/87	5/10/85	12/24/92

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,672,550, Re. S.N. 07/980,437, Filed Nov. 23, 1992, Cl. 364, COMPUTER CONTROLLED MACHINE TOOL, Robert J. H. Winterbottom, et. al., Owner of Record: *AE PLC, Cawston Rugby Warwickshire, England*, Attorney or Agent: Michael J. Keenan, Ex. Gp.: 2306

4,959,615, Re. S.N. 07/950,316, Filed Sept. 24, 1992, Cl. 324/690, ELECTRODE STRUCTURE FOR CAPACITANCE-TYPE MEASUREMENT TRANSDUCERS, Nils I. Andermo, Owner of Record: *Micro Encoder, Inc., Kirkland, Wa.*, Attorney or Agent: Edward P. Walker, Ex. Gp.: 2607

4,961,204, Re. S.N. 07/956,032, Filed Oct. 2, 1992, Cl. 375/25, PCM SIGNAL GENERATING/REPRODUCING APPARATUS, Hiromichi Tanaka, et. al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan*, Attorney or Agent: Carl I. Brundidge, Ex. Gp.: 2614

4,976,854, Re. S.N. 07/989,094, Filed Dec. 11, 1992, Cl. 210/168, OIL FILTER II, Hisashi Yanu, et. al., Owner of Record: *Mitsubishi Oil Co., Ltd., Tokyo, Japan*, Attorney or Agent: Richard D. Conard, Ex. Gp.: 1306

5,027,801, Re. S.N. 07/987,622, Filed Dec. 9, 1992, Cl. 128/80, ORTHOPAEDIC GEL PAD ASSEMBLY, Tracy E. Grim, Owner of Record: *Royce Medical Co., Westlake Village, Calif.*, Attorney or Agent: Alan C. Rose, Ex. Gp.: 3302

5,033,904, Re. S.N. 07/990,278, Filed Dec. 4, 1992, Cl. 403/292, TUBULAR DOWEL SYSTEM, Brian Challis, Owner of Record: *Challis Stairways, Inc., Sandy, Ut.*, Attorney or Agent: Calvin E. Thorpe, Ex. Gp.: 3501

5,103,337, Re. S.N. 07/989,303, Filed Dec. 11, 1993, Cl. 359/359, INFRARED REFLECTIVE OPTICAL INTERFERENCE FILM, Walter J. Schrenk, et. al., Owner of Record: *The Dow Chemical Co., Midland, Mich.*, Attorney or Agent: Lloyd E. Hessenaur, Jr., Ex. Gp.: 2507

5,107,922, Re. S.N. 07/988,405, Filed Nov. 30, 1992, Cl. 165/109, OPTIMIZED OFFSET STRIP FOR USE IN COMPACT HEAT EXCHANGERS, Allan K. So., Owner of Record: *Long Manufacturing Ltd., Ontario, Canada*, Attorney or Agent: Judith M. Riley, Ex. Gp.: 3407

Reqnests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,617,479, Reexam. No. 90/002,916, Requested Dec. 31, 1992, Cl. 307/465, PROGRAMMABLE LOGIC ARRAY DEVICE USING EPROM TECHNOLOGY, Robert F. Hartmann, et. al., Owner of Record: *Altera Corp., San Jose, Calif.*, Attorney or Agent: Vern Norviel, Townsend and Townsend, San Francisco, Calif., Ex. Gp.: 2509, Requester: Owner

5,007,128, Reexam. No. 90/002,887, Requested Nov. 10, 1992, Cl. 015/230.16, COMPOUNDING, GLAZING OR POLISHING PAD, Richard L. Englund, et. al., Owner of Record: *Minnesota Mining and Manufacturing Co., Inc., St. Paul, Minn.*, Attorney or Agent: William L. Huebsch, St. Paul, Minn., Ex. Gp.: 2402, Requester: Owner

5,030,259, Reexam. No. 90/002,915, Requested Dec. 16, 1992, Cl. 055/302, PORTABLE VACUUM CLEANING SYSTEM, Earl R. Bryant, et. al., Owner of Record: *Guzzler Manufacturing, Inc., Birmingham, Al.*, Attorney or Agent: George M. Thomas, Atlanta, Ga., Ex. Gp.: 1305, Requester: Owner

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JAN. 4, 1993 DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
86,000	71/060,021	04/02/1912
86,009	71/054,000	04/02/1912
292,740	71/321,852	03/29/1932
292,743	71/321,855	03/29/1932
292,771	71/321,848	03/29/1932
292,823	71/320,555	03/29/1932
292,831	71/319,569	03/29/1932
292,835	71/320,240	03/29/1932
292,839	71/321,837	03/29/1932
292,849	71/316,292	03/29/1932

VOL
1147
ISS
1
FE
2
1993
UMI

Reg. No.	Serial Number	Reg. Date
292,857	71/315,704	03/29/1932
292,859	71/315,597	03/29/1932
292,875	71/321,403	03/29/1932
292,876	71/321,419	03/29/1932
292,892	71/320,645	03/29/1932
292,903	71/321,443	03/29/9132
292,919	71/317,052	03/29/1932
556,820	71/536,884	04/01/1952
556,827	71/546,874	04/01/1952
556,829	71/550,023	04/01/1952
556,831	71/552,277	04/01/1952
556,833	71/553,344	04/01/1952
556,835	71/557,046	04/01/1952
556,837	71/558,432	04/01/1952
556,839	71/561,020	04/01/1952
556,841	71/562,812	04/01/1952
556,848	71/575,828	04/01/1952
556,850	71/576,646	04/01/1952
556,861	71/581,803	04/01/1952
556,865	71/584,028	04/01/1952
556,869	71/585,919	04/01/1952
556,871	71/589,692	04/01/1952
556,873	71/590,486	04/01/1952
556,875	71/590,597	04/01/1952
556,888	71/594,211	04/01/1952
556,890	71/594,919	04/01/1952
556,892	71/595,761	04/01/1952
556,896	71/597,695	04/01/1952
556,900	71/598,718	01/04/1952
556,902	71/599,959	04/01/1952
556,906	71/601,095	04/01/1952
556,908	71/601,275	04/01/1952
556,909	71/601,999	04/01/1952
556,912	71/603,816	04/01/1952
556,913	71/603,852	04/01/1952
556,925	71/606,232	04/01/1952
556,929	71/606,703	04/01/1952
556,930	71/606,798	04/01/1952
556,939	71/609,690	04/01/1952
556,945	71/610,002	04/01/1952
556,954	71/610,964	04/01/1952
556,957	71/611,130	04/01/1952
556,958	71/611,158	04/01/1952
556,961	71/611,646	04/01/1952
556,962	71/611,782	04/01/1952
556,963	71/611,792	04/01/1952
556,966	71/611,891	04/01/1952
556,977	71/612,359	04/01/1952
556,984	71/612,841	04/01/1952
556,989	71/613,055	04/01/1952
556,995	71/613,914	04/01/1952
557,006	71/616,178	04/01/1952
557,009	71/616,807	04/01/1952
557,012	71/507,921	04/01/1952
557,015	71/533,017	04/01/1952
557,016	71/533,050	04/01/1952
557,021	71/578,181	04/01/1952
557,035	71/615,420	04/01/1952
557,038	71/598,320	04/01/1952
557,039	71/603,564	04/01/1952
557,049	71/603,928	04/01/1952
557,052	71/605,870	04/01/1952
557,054	71/607,691	04/01/1952
557,057	71/609,031	04/01/1952
557,062	71/614,170	04/01/1952
557,063	71/614,287	04/01/1952
557,072	71/598,501	04/01/1952
557,085	71/579,318	04/01/1952
557,086	71/579,446	04/01/1952
557,087	71/581,896	04/01/1952
931,191	72/186,068	03/28/1972
931,192	72/207,709	03/28/1972
931,198	72/378,793	03/28/1972
931,200	72/360,192	03/28/1972
931,204	72/344,252	03/28/1972
931,205	72/346,383	03/28/1972
931,207	72/366,977	03/28/1972
931,215	72/375,508	03/28/1972
931,220	72/397,289	03/28/1972
931,221	72/397,636	03/28/1972
931,231	72/395,175	03/28/1972
931,239	72/386,960	03/28/1972
931,244	72/294,669	03/28/1972
931,246	72/367,191	03/28/1972
931,248	72/371,288	03/28/1972
931,251	72/388,247	03/28/1972
931,257	72/356,442	03/28/1972
931,261	72/367,941	03/28/1972
931,263	72/375,113	03/28/1972
931,276	72/318,569	03/28/1972
931,279	72/353,489	03/28/1972
931,281	72/357,380	03/28/1972
931,287	72/380,576	03/28/1972
931,292	72/383,958	03/28/1972
931,294	72/386,782	03/28/1972
931,298	72/387,127	03/28/1972
931,299	72/387,128	03/28/1972
931,302	72/397,990	03/28/1972
931,311	72/354,913	03/28/1972
931,315	72/359,021	03/28/1972
931,323	72/366,355	03/28/1972
931,324	72/366,356	03/28/1972
931,325	72/367,836	03/28/1972
931,330	72/373,539	03/28/1972
931,331	72/373,699	03/28/1972
931,336	72/375,806	03/28/1972
931,341	72/376,617	03/28/1972
931,342	72/376,681	03/28/1972
931,344	72/380,708	03/28/1972
931,345	72/381,461	03/28/1972
931,347	72/388,281	03/28/1972
931,350	72/398,665	03/28/1972
931,356	72/340,157	03/28/1972
931,357	72/340,158	03/28/1972
931,359	72/346,809	03/28/1972
931,360	72/355,242	03/28/1972
931,368	72/375,510	03/28/1972
931,375	72/379,917	03/28/1972
931,376	72/380,625	03/28/1972
931,381	72/366,955	03/28/1972
931,384	72/355,917	03/28/1972
931,390	72/364,557	03/28/1972
931,393	72/345,091	03/28/1972
931,398	72/314,122	03/28/1972
931,399	72/314,377	03/28/1972
931,400	72/323,022	03/28/1972
931,405	72/376,606	03/28/1972
931,407	72/378,246	03/28/1972
931,411	72/383,643	03/28/1972
931,413	72/383,951	03/28/1972
931,415	72/359,777	03/28/1972
931,430	72/366,936	03/28/1972
931,433	72/369,512	03/28/1972
931,435	72/372,452	03/28/1972
931,437	72/373,843	03/28/1972
931,438	72/374,082	03/28/1972
931,442	72/375,188	03/28/1972
931,448	72/381,285	03/28/1972
931,450	72/382,257	03/28/1972
931,454	72/387,849	03/28/1972
931,460	72/395,675	03/28/1972
931,461	72/398,528	03/28/1972
931,463	72/365,471	03/28/1972
931,467	72/394,967	03/28/1972
931,468	72/327,432	03/28/1972
931,472	72/381,823	03/28/1972
931,473	72/381,824	03/28/1972
931,476	72/339,308	03/28/1972
931,485	72/398,002	03/28/1972
931,488	72/339,676	03/28/1972
931,489	72/346,965	03/28/1972
931,494	72/356,730	03/28/1972
931,496	72/363,266	03/28/1972
931,497	72/364,777	03/28/1972
931,498	72/364,778	03/28/1972
931,500	72/377,128	03/28/1972

Reg. No.	Serial Number	Reg. Date
931,501	72/377,755	03/28/1972
931,503	72/386,102	03/28/1972
931,508	72/333,207	03/28/1972
931,512	72/338,519	03/28/1972
931,515	72/345,815	03/28/1972
931,516	72/347,637	03/28/1972
931,521	72/361,280	03/28/1972
931,524	72/370,891	03/28/1972
931,529	72/388,493	03/28/1972
931,530	72/388,829	03/28/1972
931,532	72/312,276	03/28/1972
931,533	72/341,470	03/28/1972
931,534	72/356,175	03/28/1972
931,538	72/387,692	03/28/1972
931,541	72/318,977	03/28/1972
931,544	72/345,012	03/28/1972
931,545	72/361,148	03/28/1972
931,547	72/365,581	03/28/1972
931,548	72/385,916	03/28/1972
931,552	72/358,283	03/28/1972
931,553	72/358,284	03/28/1972
931,557	72/372,212	03/28/1972
931,558	72/386,531	03/28/1972
931,560	72/364,771	03/28/1972
931,561	72/351,886	03/28/1972
931,564	72/367,092	03/28/1972

Errata

"All reference to 5,173,480 to Vivien Wong, et. al., Ardsley, N.Y., for METHODS OF TREATING DEGENERATIVE DISEASES OR DISORDERS OF THE CENTRAL NERVOUS SYSTEM appearing in the *Official Gazette* of Dec. 22, 1992 should be deleted since no patent was granted."

"All reference to Patent No. 5,178,741 to Youhei Kuwabara of Japan, for ELECTROLYTIC FINISHING METHOD appearing in the *Official Gazette* of Jan. 12, 1993 should be deleted since no patent was granted."

"All reference to Patent No. 5,179,226 to Kaoru Inoue, et. al. of Japan for RE-KEYABLE PIN TUMBLER DRAWER LOCK AND PIN TUMBLER CABINET DOOR LOCK, appearing in the *Official Gazette* of Jan. 12, 1993 should be deleted since no patent was granted."

Request for Suggestions for Additions to the "Acceptable Identification of Goods and Services Manual"

The purpose of this notice is to solicit suggestions from trademark practitioners and trademark owners to add listings to the "Acceptable Identification of Goods and Services Manual" used by examining attorneys.

The manual, which was last revised in 1991, serves as a guide in the examination of identifications of goods and services in trademark applications. The manual lists numerous descriptions of goods and services which should be accepted in an application. The list is not exhaustive of all description which are acceptable and is subject to change without notice. The manual provides useful documentation to expedite approval of applications and to minimize inconsistency in office actions. Earlier versions of the manual have been included as an appendix to Jerome Gilson's *Trademark Protection and Practice*. The manual is also available for purchase from the U.S. Trademark Association.

The Office intends to issue another revision to the manual in 1993. To produce the best manual possible, we are soliciting input from interested parties to produce a manual which is more useful not only to PTO personnel, but also to trademark applicants and practitioners. Although we welcome any comments or suggestions related to general policies governing acceptable identifications of goods and services, we are most interested in suggestions for new listings of specific, acceptable identifications for inclusion in the revision.

Many practitioners have suggested that Examining Attorneys are overly restrictive in handling broadly worded identifications. Presently, it is Office policy to require brief identifications which use the common names of the goods or services or succinctly worded descriptions when no common names exist. Furthermore, when the mark is used on a number of items which make up a homogenous group, it is acceptable to use a term which identifies the group as a whole and which would be understood as encompassing products or services of the same general type which are commercially related. TMEP § 804.02 (January 1986).

In the spirit of allowing the maximum flexibility under current identification policy, and in response to the recent comments of practitioners, the Office encourages those concerned to submit specific examples of broadly worded identifications which they consider acceptable. Any suggestions, however, must satisfy three basic criteria: (1) the identification must be sufficiently specific to permit classification of the goods or services and must not include any term which includes particular items which are classified in more than one International Class; (2) the identification must be sufficiently specific to determine likelihood of confusion; and (3) the identification must be sufficiently specific to provide notice to third parties as to the scope of the applicant's rights in the mark.

Although the Office will accept comments or suggestions at any time, the office requests that suggestions for additions to the manual should be submitted by April 1, 1993. All suggestions and comments should be sent to the attention of Alan Datri, Administrator for Trademark Classification and Practice, Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Jan. 7, 1993

JEFFREY M. SAMUELS
Assistant Commissioner for Trademarks

Patent and Trademark Office
37 CFR Part 1
[Docket No. 921118-2318]
RIN : 0651-AA63

Patent Interference Practice Burden of Proof

Agency: Patent and Trademark Office, Commerce
Action: Notice of Proposed Rulemaking
Summary: The Patent and Trademark Office (PTO) proposes to amend its rules of practice in patent interference cases. As a result of issues arising in some recent cases, it is apparent that parties in interference cases would be helped if the interference rules explicitly stated which party has the burden of proof when a motion is filed. There is also some confusion with respect to the nature of the evidence that should be submitted with a preliminary motion, particularly when testimony is needed to support or oppose the preliminary motion. PTO proposes to specify that a party filing a motion has the burden of proof. PTO also proposes to more clearly specify the nature of expert witness and factual witness evidence that must accompany a preliminary motion. Finally, PTO proposes to add a definition of an interlocutory order, as contrasted with a final decision, in order to clarify the meaning of an interlocutory order.
Dates: Comments must be submitted on or before Mar. 8, 1993. A public hearing will not be held.
Addresses: Address written comments to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231, marked to the attention of Fred E. McKelvey, Solicitor. Written comments will be available for public inspection in Suite 918, on the 9th floor of Crystal Park II, located at 2121 Crystal Drive, Arlington, Virginia.
For Further Information Contact: Fred E. McKelvey by telephone at (703) 305-9035 or by mail marked to his attention and addressed to Box 8, Commissioner of Patents and Trademarks, Washington, D.C. 20231.
Supplementary Information: The PTO conducts interference proceedings to determine who, as between two or more appli-

VOL
1147
ISS
1
FE
2
1993
UMI

cants for patent or one or more applicants and one or more patentees, is the first inventor of a patentable invention. In the course of interference proceedings, the Board of Patent Appeals and Interferences enters two kinds of decisions, interlocutory orders and final decisions. There has been some confusion as to what orders are interlocutory orders. The PTO is proposing to add subsection (q) to 37 CFR § 1.601 to define an interlocutory order and to contrast interlocutory orders with the final decision. The presumption of correctness of an interlocutory order, which is presently in 37 CFR § 1.655(a), is proposed to be moved to proposed new subsection 1.601(q), and to be deleted from § 1.655(a). The definition of intrelocutory order would include the decision represented by the notice declaring the interference.

Under the interfernece rules, a party in an interference is authorized to file motions, including preliminary motions (37 CFR § 1.633), motions to correct inventorship (37 CFR § 1.634) and miscellaneous motions (37 CFR § 1.635). When necessary, a preliminary motion should be accompanied by evidence (37 CFR § 1.639). Recently there has been confusion as to who has the burden of proof when a motion is filed. For example, when transmitting papers to the Board for declaration of an interference, the Primary Examiner determines in the first instance the extent, if any, to which a party is entitled to the filing date of an earlier domestic or foreign application. 37 CFR § 1.609(b)(4). The interference is then declared by an examiner-in-chief and an indication is given that a party has been accorded the benefit of the filing date of an earlier application. 37 CFR § 1.611(c)(5). An opponent, however, is authorized to challenge the initial decision of the Primary Examiner and the examiner-in-chief to accord benefit. The challenge is made through a preliminary motion. 37 CFR § 1.633(g). It is the PTO's position that the party filing the motion bears the burden of proof to show that its opponent should not have been accorded the benefit of the filing date of an earlier application. If adopted, the proposed rules would make explicit in 37 CFR § 1.637(a) that a party filing a motion has the burden of proving why it is entitled to the relief sought in the motion.

Another difficulty in interference cases has been compliance with 37 CFR § 1.639 with respect to evidence that must accompany a preliminary motion. In 1990, a decision was entered in *Hanagan v. Kimura*, 16 USPQ2d 1791, 1794 (Comm'r Pat. 1990), that provided the following guidance:

To the extent it may prove useful, the following guidance is provided. When expert testimony is needed in support of, or in opposition to, a preliminary motion, a party should:

(1) identify the person whom it expects to call as an expert;
(2) state the field in which the person is alleged to be an expert; and
(3) state in a declaration signed by the person
(a) the subject matter on which the person is expected to testify,
(b) the facts and opinions to which the person is expected to testify, and
(c) a summary of the grounds and basis for each opinion.

If a person is to be called as a fact witness, a declaration by that person stating the facts should be filed.

If the other party is to be called, or if evidence in the possession of the other party is necessary, an explanation of the evidence sought, what it will show, and why it is needed must be supplied.

When inter partes tests are to be preformed, a description of the tests stating what they will show must be presented.

The nature of the showing under § 1.639(c) will vary from case to case.

Nothing in the rule change being proposed would alter the need to supply evidence in support of, or in opposition to, a preliminary motion. The rules being proposed would codify the *Hanagan* guidelines. Subsection (c) of § 1.639 is proposed to be amended to refer to "additional evidence in the form of testimony" so as to distinguish the evidence needed under subsection (c) from that which may be submitted under subsection (a) and (b).

Proposed subsection (d) to 37 CFR § 1.639 would specify the nature of evidence that must be submitted when an opinion of an expert is needed. The statement which would be required under proposed subsection (d) would be essentially the same as discovery required under Rule 26(b)(4)(A)(i) of the Federal Rules of Civil Procedure.

Proposed subsection (e) would specify the nature of evidence that must be submitted when a statement of a fact witness is to relied upon.

Proposed subsection (f) would specify the nature of a showing which should be made when a statement of an opponent is needed or evidence in possession of an opponent is needed.

Proposed subsection (g) would specify the nature of evidence that must be supplied if inter partes tests are to be conducted.

The party filing the preliminary motion would be expected to supply all necessary evidence with the preliminary motion. Likewise, a party opposing a preliminary motion should supply with the opposition all needed evidence in support of the opposition. Normally, if a party cannot obtain all necessary evidence to support or oppose a preliminary motion, and can show good cause, the party should seek an extension of time to file or oppose the preliminary motion. In an unuasual situation, the guidance may not apply in the case of a party opposing a preliminary motion. In a recent interference, an examiner-in-chief deferred to final hearing consideration of a preliminary motion which had been accompanied by considerable evidence. The opponent had requested leave to take testimony. Based on the amount of evidence submitted with the preliminary motion, it was the examiner-in-chief's view that it would have been manifestly unfair to require the opponent to have prepared a full case in opposition to the preliminary motion in the 20-day period set for filing oppositions. As noted by the examiner-in-chief in the instance mentioned above, more leeway as to the evidence, and when it is supplied, can properly be granted to a party opposing a preliminary motion than a party filing a preliminary motion. The party filing the preliminary motion knows what must be proved. A party opposing the preliminary motion may or may not have time to fully respond with evidence accompanying an opposition. If an examiner-in-chief finds in a particular case that a party, during the time allowed for filing an opposition to a preliminary motion, could not reasonably have fully marshalled its evidence for presentation along with the opposition to a preliminary motion, a testimony period may be set. Alternatively, the examiner-in-chief, *sua sponte* or on motion of the opponent, may grant an extension of time to gather and supply the evidence. The action to be taken is a matter within the discretion of the examiner-in-chief.

Present 37 CFR 1.655(a) is proposed to be amended by deleting the last sentence, which would be moved to and be included in the proposed definition of interlocutory order in proposed subsection 1.601(q). The burden of showing error in entry of an interlocutory order is on the party challenging the order. If the order involved a procedural matter, the challenger must show that an examiner-in-chief or a panel abused discretion in entering the order. If the order involved a non-procedural matter (i.e., granting a motion for judgement based on unpatentability), the challenger must show legal error.

In some instances, two or more interlocutory orders may involve the same issue. For example, a notice declaring an interference may accord a party benefit of an earlier application. A preliminary motion may result in the party being denied benefit. When there are two or more interlocutory orders involving the same issue, the latest interlocutory order is presumed to be correct in further proceedings in the interference.

OTHER CONSIDERATIONS

The proposed rule changes are in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), Executive Orders 12291 and 12612 and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that these proposed rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibilty Act, 5 U.S.C. 605(b)). The principal impact of these proposed changes would be to clarify procedure in patent interference and thereby eliminate any ambiguity which might exist in current rules.

The Office has determined that this proposed rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers; individuals; industries; Federal, state or local government agencies; or geographic regions. There will be no significant effects on competition, employment, investment, productivity, innovation or on the ability of United States-based enterprises to compete with foriegn-based enterprises in domestic or export markets.

The Office has also determined that this notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

The rule change will not impose a burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.*, since no recordkeeping or reporting requirements within the coverage of the Act are placed upon the public.

LIST OF SUBJECTS
37 CFR Part 1

Administrative practice and procedure, Courts, Inventions and patents.

PART 1 - RULES OF PRACTICE IN PATENT CASES

For the reasons set out in the preamble, it is proposed to amend 37 CFR part 1 wherein removals are indicated by brackets ([ ]) and additions by arrows (◀▶):

1. The authority citation for 37 CFR part 1 would continue to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.601 is proposed to be amended by adding paragraph (q) to read as follows:

§ 1.601 Scope of rules, definitions.

* * * * *

▶(q) A *final decision* is a decision awarding judgment as to all counts. An *interlocutory order* is any other action taken by an examiner-in-chief or a panel of the Board in an interference, including the notice declaring an interference. All interlocutory orders shall be presumed to have been correct and the burden of showing error or an abuse of discretion shall be on the party attacking the order. When two or more interlocutory orders involve the same issue, the last entered order shall be presumed to have been correct.◀

3. Section 1.637 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.637 Content of motions.

(a) ▶A party filing a motion has the burden of proof to show that it is entitled to the relief sought in the motion.◀ Every motion shall include (1) a statement of the precise relief requested, (2) a statement of the material facts in support of the motion, and (3) a full statement of the reasons why the relief requested should be granted.

* * * * *

4. Section 1.639 is proposed to be amended by revising paragraph (c) and by adding subsections (d) through (g) as follows:

§ 1.639 Evidence in supporet of motion, opposition, or reply.

* * * * *

(c) When a party believes that ▶additional evidence in the form of◀ testimony is necessary to support or oppose a preliminary motion under § 1.633 or a motion to correct inventorship under § 1.634, the party shall describe the nature of any proposed testimony ▶in the manner specified in paragraph (d) through (g) of this section◀. If the examiner-in-chief finds that testimony is needed to decide the motion, the examiner-in-chief may grant appropriate interlocutory relief and enter an order authorizing the taking of testimony and deferring a decision on the motion to final hearing.

▶(d) When the testimony is needed in support of or opposition to a preliminary motion is expert testimony, the moving party or opponent should:

(1) identify the person whom it expects to call as an expert;

(2) state the field in which the person is alleged to be an expert; and

(3) state:

(i) the subject matter on which the person is expected to testify;

(ii) the facts and opinions to which the person is expected to testify; and

(iii) a summary of the grounds and basis for each opinion.

(e) If a fact witness is to be relied upon, state the facts to which the witness will testify.

(f) If the opponent is to be called, or if evidence in the possession of the opponent is necessary, explain the evidence sought, what it will show, and why it is needed.

(g) When inter partes tests are to be performed, describe the tests stating what they will be expected to show.◀

5. Section 1.655 is proposed to be amended by removing the last sentence of paragraph (a) as follows:

§ 1.655 Matters considered in rendering a final decision.

(a) In rendering a final decision, the Board may consider any properly raised issue including (1) priority of invention, (2) derivation by an opponent from a party who filed a preliminary statement under § 1.625, (3) patentability of the invention, (4) admissibility of evidence, (5) any interlocutory matter deferred to final hearing, and (6) any other matter necessary to resolve the interference. The Board may also consider whether any interlocutory order was erroneous or an abuse of discretion. [All interlocutory orders shall be presumed to have been correct and the burden of showing manifest error or an abuse of discretion shall be on the party attacking the order.]

* * * * *

Dec. 30, 1992 EDWARD E. KUBASIEWICZ
Assistant Commissioner for Patents

VOL
1147
ISS
1
FE
2
1993
UMI

PATENT NOTICES

Certificates of Correction For Week of February 2, 1993

D. 313,301	4,994,462	5,028,372	5,045,759
D. 320,105	4,996,177	5,028,432	5,045,937
4,513,251	4,996,224	5,028,504	5,046,025
4,632,888	4,999,641	5,028,732	5,046,508
4,811,216	5,000,837	5,029,077	5,046,734
4,824,645	5,002,123	5,029,468	5,047,199
4,831,274	5,003,050	5,029,959	5,047,500
4,837,549	5,003,070	5,029,991	5,047,530
4,854,836	5,003,626	5,030,451	5,048,533
4,856,642	5,004,505	5,030,929	5,048,615
4,858,534	5,005,423	5,031,865	5,049,123
4,864,019	5,005,620	5,031,961	5,050,176
4,872,088	5,006,111	5,032,000	5,050,511
4,884,445	5,006,471	5,032,191	5,050,891
4,888,139	5,006,890	5,032,568	5,051,197
4,903,619	5,007,003	5,033,020	5,051,512
4,904,330	5,009,785	5,034,156	5,051,933
4,910,131	5,011,451	5,035,240	5,051,981
4,913,898	5,012,117	5,035,301	5,052,365
4,918,108	5,013,526	5,035,484	5,053,156
4,921,133	5,014,438	5,036,026	5,053,226
4,933,711	5,016,914	5,036,474	5,054,350
4,939,278	5,017,084	5,036,628	5,054,928
4,943,228	5,017,721	5,036,900	5,055,313
4,944,232	5,017,755	5,037,828	5,056,471
4,945,920	5,018,884	5,038,311	5,057,295
4,950,809	5,019,311	5,038,752	5,058,689
4,955,799	5,019,353	5,039,064	5,058,875
4,959,743	5,020,856	5,039,379	5,058,991
4,968,135	5,021,551	5,039,644	5,059,471
4,969,040	5,021,649	5,039,693	5,059,531
4,972,764	5,022,072	5,041,123	5,059,893
4,979,339	5,022,991	5,041,502	5,060,177
4,981,706	5,023,693	5,042,518	5,060,629
4,983,179	5,025,017	5,042,731	5,060,763
4,985,202	5,025,262	5,043,774	5,061,787
4,987,569	5,026,723	5,044,028	5,083,402
4,988,514	5,026,748	5,044,553	
4,992,274	5,027,360	5,045,167	
4,994,323	5,028,137	5,045,259	

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Box EEO	Mail for the Office of Equal Employment Programs.
Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
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Box ITU	All intent to use documents, excluding the initial application and amendments to allege use.
Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK	New trademark application and associated papers and APPLICATION fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.

VOL
1147
ISS
1
FE
2
1993
UMI

Reference Collections of U.S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries

The following libraries, designated as Patent and Trademark Depository Libraries (PTDLs), receive patent and trademark information in various formats from the U.S. Patent and Trademark Office. Many PTDLs have on file all full-text patents issued since 1790, trademarks published since 1872, and select collections of foreign patents. All PDTLs have both the patent and trademark sections of the *Official Gazette of the U. S. Patent and Trademark Office*. The full-text utility and design patents are distributed numerically on 16 mm microfilm, and plant patents on color microfiche. Patent and trademark search systems on CD-ROM (Compact Disc-Read Only) format are available at all PTDLs to increase utilization of and enhance access to the information found in patents and trademarks. It is through the CD-ROM systems that prelminary patent and trademark searches can be conducted through the numerically arranged collections.

All information is available for use by the public free of charge.

In addition, each PTDL offers reference publications which outline and provide access to the patent and trademark classification systems, as well as other documents and publications which supplement the basic search tools. PTDLs provide technical staff assistance in using all materials. Facilities for making paper copies of patent and trademark information are generally provided for a fee.

Since there are variations in the scope of patent and trademark collections among the PTDLs, and their hours of service to the public vary, anyone contemplating use of these collections at a particular library is urged to contact that library in advance about its collections, services, and hours in order to avert possible inconvenience.

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Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
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	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	Sunnyvale Patent Clearinghouse	(408) 730-7290
Colorado	Denver Public Library	(303) 640-8847
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Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
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	Springfield: Illinois State Library	(217) 782-5659
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	West Lafayette: Siegesmund Engineering Library, Purdue University	(317) 494-2873
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Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	Not Yet Operational
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
Nevada	Reno: University of Nevada, Reno Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7782
	Piscataway: Library of Science and Medicine, Rutgers University	(908) 932-2895
New Mexico	Albuquerque: University of New Mexico General Library	(505) 277-4412
New York	Albany: New York State Library	(518) 473-4636
	Buffalo and Erie County Public Library	(716) 858-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280

Reference Collections of U. S. Patents and Trademarks Available for Public Use in Patent and Trademark Depository Libraries—(continued)

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Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	Not Yet Operational
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext.2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 367-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-4510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

VOL 1147 ISS 1 FE 2 1993 UMI

PATENT EXAMINING CORPS

EDWARD E. KUBASIEWICZ, Assistant Commissioner
STEPHEN G. KUNIN, Deputy Assistant Commissioner

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — D. E. TALBERT, Director	308-0661	2/06/92
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	4/30/92
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 — DONALD CZAJA, Acting Director	308-0651	4/10/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	4/10/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Acting Director	308-0196	6/27/91
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100 — D. G. KELLY, Director	308-1782	7/09/91
SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	6/22/91
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 2300 — GERALD GOLDBERG, Director	308-0754	9/26/90
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	1/10/92
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	8/20/91
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	6/15/91
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	9/09/90
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100 — F. R. SCHMIDT, Director	308-1113	12/07/91
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	3/31/92
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	3/24/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	4/03/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	1/07/92

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during January 1993 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 3,930,271 to 3,935,595 inclusive
Plant Patents ..... 3,824 to 3,827

STATUTORY INVENTION REGISTRATIONS

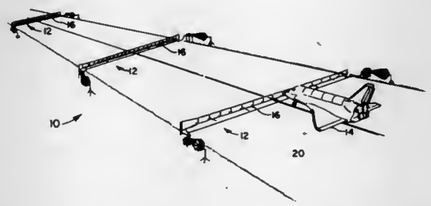
PUBLISHED FEBRUARY 2, 1993

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

H1133
AIRCRAFT ARRESTING SYSTEM AND METHOD

William P. Bridges, Andrews AFB, Md.; James Y. Adkins, Niceville, Fla., and Steven W. Leas, Lancaster, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 15, 1990, Ser. No. 540,718
Int. Cl.[5] B64C *25/68*; B64F *1/02*
U.S. Cl. 244—110 C **11 Claims**



11. A method of arresting an aircraft having ground engaging landing gear including a forward nose gear and a main landing gear upon a runway having an elongated longitudinal axis comprising the steps of:

(a) positioning a triggering net having a height less than the height of the aircraft, a landing gear engaging cable and fluid braking means attached thereto transversely to the longitudinal axis of the runway;

(b) engaging the main landing gear with said cable in response to contact of said net by the aircraft nose gear;

(c) deploying said fluid braking means by said cable to arrest the aircraft;

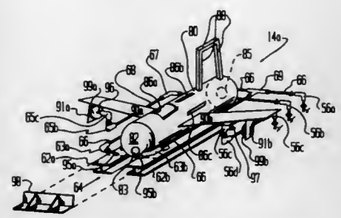
(d) determining the rate of arrest of the aircraft; and,

(e) repeating steps (a) through (c) to effect a greater rate of arrest from said determining step, when desired.

H1134
AIRCRAFT FIRE-FIGHTING TRAINING APPARATUS

Donald H. Meadows, Kintnersville, and Vincent J. Crusco, Hatboro, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 11, 1991, Ser. No. 760,778
Int. Cl.[5] G09B *9/00*
U.S. Cl. 434—226 **13 Claims**



1. A fire-fighting training apparatus, comprising:

a. a vehicle mock-up having a front and a back end with a plurality of vents therein;

b. fuel storage means spaced apart from said mock-up;

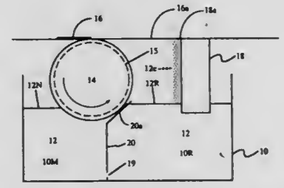
c. fire production means located at said vehicle mockup; and

d. fuel supply means leading from said fuel storage means to said fire production means.

H1135
TONER APPLICATION AND CIRCULATION APPARATUS

Vernon R. Schwartz, S. 4120 Linke Rd., Greenacres, Wash. 99016

Filed May 3, 1990, Ser. No. 518,694
Int. Cl.[5] B05C *11/00*
U.S. Cl. 118—689 **8 Claims**



1. A toner supply circulation apparatus for an electrostatic imaging system in which a latent image is developed on a medium comprising:

means for supplying toner concentrate;

means for supplying a carrier;

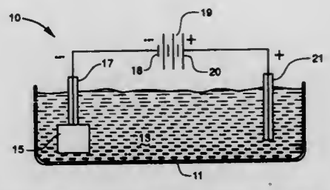
a mixer manifold for receiving and mixing said toner concentrate and said carrier to produce a toner solution; and

vacuum means coupled to said mixer manifold for establishing a vacuum in said manifold and transferring said toner solution to a destination.

H1136
ELECTROLYTIC DEPOSITION AND RECOVERY OF SILVER

Stuart K. Janikowski, Idaho Falls, Id., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 29, 1991, Ser. No. 800,291
Int. Cl.[5] C25D *3/46*
U.S. Cl. 205—263 **13 Claims**



1. A method for electroplating silver, comprising:

(a) providing an electrolyte solution comprising an alkali hydroxide and an amine;

(b) providing a pair of electrodes immersed in said solution;

(c) attaching a source of silver to the anode of said electrodes; and

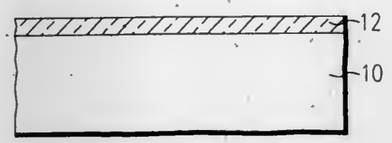
(d) applying a DC potential across said electrodes.

VOL
1147
ISS
1
FE
2
1993
UMI

H1137
WAFER BONDING TECHNIQUE FOR DIELECTRIC ISOLATION PROCESSING

William G. Easter, Reading, and Richard H. Shanaman, III, Myerstown, both of Pa., assignors to American Telephone and Telegraph Company, New York, N.Y.

Filed Nov. 5, 1990, Ser. No. 608,955
Int. Cl.[5] G01N *33/18*
U.S. Cl. 437—62 15 Claims



1. In a method of forming a dielectrically isolated wafer, replacing the step of growing a polysilicon handle layer with the following steps:

a) forming a layer of conformal material of a thickness sufficient to fill any voids on the wafer surface;

b) planarizing the conformal layer of step a);

c) bonding a silicon substrate to the planarized layer of step b).

H1138
PROCESSING METHOD FOR SUPERCONDUCTING CERAMICS

Ira D. Bloom, Bolingbrook; Roger B. Poeppel, Glen Ellyn, both of Ill., and Brian K. Flandermeyer, Cincinnati, Ohio, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 7, 1990, Ser. No. 519,981
Int. Cl.[5] H01B *12/00*
U.S. Cl. 505—1 4 Claims

1. A method of preparing a sintered, metal-oxide superconducting ceramic of the formula $YBa_2Cu_3O_{7-\delta}$ where δ is in the range of about 0.1–0.4, the method comprising the steps of

calcining a mixture of reactants at a temperature sufficient to produce the unsintered ceramic,

distributing a polymeric binder of polyisobutylene or polyisoprene and solvent throughout the unsintered ceramic, the binder being decomposable without forming a residue at temperatures below its ignition point, the solvent being a nonhydroxylic or organic solvent with a volatilization temperature below about 100° C., grinding the unsintered composition including binder to reduce the particle size to about 5–10 microns, and

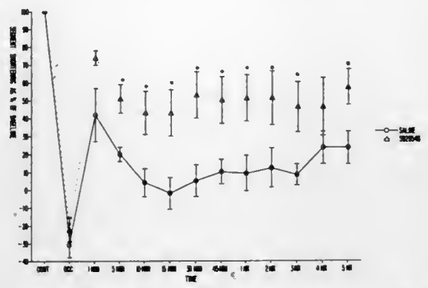
heating the binder and unsintered ceramic to a sintering temperature above the ignition temperature, the heating being carried out under conditions to allow decomposition of the binder and removal of the decomposition products by volatilization prior to the sintering.

H1139
COMBINATION OF A CALCIUM CHANNEL BLOCKER AND THROMBOXANE A_2 RECEPTOR ANTAGONIST OR SYNTHETASE INHIBITOR AND METHOD FOR TREATING ISCHEMIA EMPLOYING SUCH COMBINATION

Gary J. Grover, Stockton, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jnl. 21, 1988, Ser. No. 222,671
Int. Cl.[5] A01N *43/00*; A61K *31/55*
U.S. Cl. 514—211 11 Claims

1. A method for treating ischemia and/or reducing myocardial infarct size in a mammalian specie, which comprises administering to a mammalian specie in need of such treatment an effective amount of a combination of a calcium channel blocker and a thromboxane A_2 receptor antagonist employed



in a weight ratio to each other of from about 0.1:1 to about 10:1.

H1140
ASBESTOS FREE ADHESIVE INSULATION

Stewart H. Greenwood, 135 W. 4300 North, Pleasant View, Utah 84414, and Gordon A. Caldwell, 2435 S. 550 West, Perry, Utah 84302

Filed Feb. 22, 1991, Ser. No. 660,316
Int. Cl.[5] C08J *3/00*
U.S. Cl. 523—180 1 Claim

1. An adhesive for bonding a solid fuel propellant to a case in a rocket motor essentially consisting of, by weight:

Bisphenol A/Epichlorohydrin type liquid epoxy resin:	27.8
poly liquid resin curing agent:	51.6
chopped aramid fiber pulp:	up to 2.0
microfine silicon dioxide:	up to 1.0.

H1141
ASPHALT-BLOCK COPOLYMER ROOFING COMPOSITION

Richard Gelles, and Mark A. Berggren, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 705,448, May 24, 1991, which is a continuation-in-part of Ser. No. 553,042, Jul. 16, 1990, Pat. No. 5,051,457. This application Jan. 29, 1992, Ser. No. 827,528
Int. Cl.[5] C08L *95/00*
U.S. Cl. 524—68 4 Claims

1. A composition for use in roll roofing membrane applications which comprises:

(a) from about 1 part to about 50 parts per hundred of filler, and

(b) from about 50 parts to about 99 parts per hundred of a bituminous composition which is comprised of

(1) from about 87 to about 92 parts per hundred of a bituminous component having a penetration of greater than about 125 dmm at 25° C., and

(2) from about 7 to about 13 parts per hundred of a hydrogenated block copolymer of a monoalkenyl aromatic hydrocarbon and a conjugated diolefin having a contour arm molecular weight before hydrogenation of from about 80,000 to about 150,000 and a polystyrene content of from about 25% to about 37%, the molecular weight being peak molecular weight determined by gel permeation chromatography.

H1142
OPTICALLY ACTIVE CYCLOBUTYL PYRIMIDINE

William A. Slusarchyk, 19 Richmond Dr., Skillman, N.J. 08558, and Robert Zahler, 16 Park Pl., Princeton, N.J. 08542

Filed Nov. 5, 1990, Ser. No. 608,780
Int. Cl.[5] C07D *239/02*
U.S. Cl. 544—314 1 Claim

1. [1R-(1α(E),2β,3α)]-1-[2,3-bis(hydroxymethyl)cyclobutyl]-5-(2-bromoethenyl)-2,4(1H,3H)pyrimidinedione.

H1143
REDUCTION OF RESIDUAL ORGANIC CHLORINE IN HYDROCARBYL AMINES

Thomas H. Johnson, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 15, 1991, Ser. No. 775,383
Int. Cl.[5] C07C *209/08*
U.S. Cl. 564—498 24 Claims

1. A process for reducing residual organic chloride in a hydrocarbyl amine wherein said hydrocarbyl amine is prepared by any process for chlorinating a hydrocarbyl group followed by reaction with an amine wherein the improvement comprises contacting said hydrocarbyl amine with a chlorine-displacing nucleophile selected from the group consisting of NaSCN, NaCN, NaSPh, and mixtures thereof wherein a portion of the residual organic chloride is converted to an inorganic chloride, and removing said inorganic chloride.

VOL
1147
ISS
1
FE
2
1993
UMI

REEXAMINATIONS

FEBRUARY 2, 1993

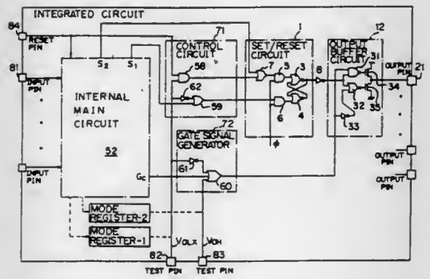
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,904,883 (1918th)

SEMICONDUCTOR INTEGRATED CIRCUIT HAVING A DC TEST FUNCTION

Hideyuki Iino, and Hidenori Hida, both of Yokohama, Japan, assignors to Fujitsu Limited and Fujitsu Microcomputer Systems Limited, both of Kawasaki, Japan

Reexamination Request No. 90/002,554, Feb. 14, 1992.
Reexamination Certificate for Patent No. 4,904,883, issued Feb. 27, 1990, Ser. No. 278,503, Dec. 1, 1988.
Claims priority, application Japan, Dec. 4, 1987, 62-307930
Int. Cl.[5] H03K *17/22, 3/013, 3/027, 31/28*
U.S. Cl. 307—272.3



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–3** is confirmed.

1. An integrated circuit receiving an input signal and producing output signal comprising:

an internal main circuit for carrying out various logic operations in accordance with the input signal and producing a first signal and second signal;

a set/reset circuit, operatively connected to said internal main circuit, being set in response to the first signal and reset in response to the second signal in a normal mode;

an output buffer circuit, connected to said set/reset circuit, for producing the output signal in response to an output of said set/reset circuit; and

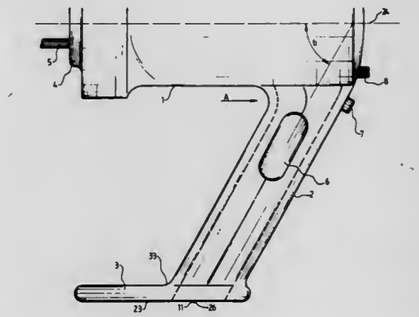
a control circuit, connected between said internal main circuit and said set/reset circuit, receiving the first signal, a reset signal for initializing said internal main circuit, the first signal, the second signal, and a first test signal, during a DC test mode, said control circuit resetting said set/reset circuit in response to a receipt of the reset signal regardless of the second signal and setting said set/reset circuit in response to a receipt of the first test signal regardless of the reset signal and the first signal.

B1 4,922,464 (1919th)

PORTABLE MIXER FOR PROCESSING FOOD

Karl-Heinz Kamprath, Wiesbaden, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Reexamination Request No. 90/002,680, Mar. 4, 1992.
Reexamination Certificate for Patent No. 4,922,464, issued May 1, 1990, Ser. No. 334,682, Apr. 6, 1989.
Claims priority, application Fed. Rep. of Germany, May 4, 1988, 3815177
Int. Cl.[5] B01F *15/06*
U.S. Cl. 366—349



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **20–28** and **29** are confirmed.

Claims **2, 3, 8, 9, 12, 13** and **14** are cancelled.

Claims **1, 4–7, 10, 11, 15–18** and **19** are determined to be patentable as amended.

1. An electrically powered portable mixer for processing food[, including a] *comprising* housing [(1)] *structure* accommodating a motor [(19)], a gear box [(20)] and [a] receptacle means [(21)] connected to [the] *said* gear box [(20)] for the fastening of processing tools [(5)], said [housing having a] *motor, said gear box and said working tool receptacle means being successively arranged in the* longitudinal [axis] *direction* (24) [a handle (2) for holding the portable mixer formed on said housing and extending transversely to said longitudinal axis (24)] of said housing [(1)] *structure,*

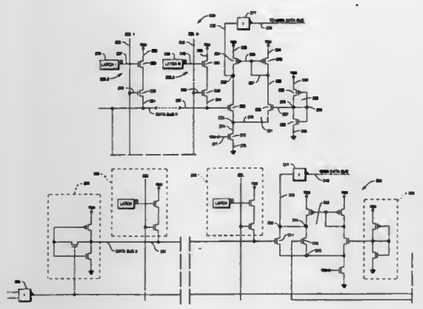
[at least one air duct (22) in said] handle [(2) to direct said cooling air towards] *structure extending transversely to the longitudinal direction (24) of* said housing [(1) from the outside and/or away from said housing (1), and air vent structure (11) on] *structure* said handle [(2) in communication with said air duct (22) for the passage of] *structure being formed on the upper area of said housing structure opposite said working tool receptacle means and including air duct structure and air vent structure through which* cooling air [through the] *is guided to said housing structure from outside or away from said* housing [(1)] *structure* for cooling [the] *said* motor [(19)] *, and*

arm structure extending in the same direction as said handle structure and transversely to said longitudinal direction (24) of said housing structure and in the lower area of said housing structure more proximate to said working tool receptacle

VOL
1147
ISS
1
FE
2
1993
UMI

means than said handle structure, said arm structure including further air duct structure and further air vent structure at its end remote from said housing structure for discharge of cooling air away from said housing structure or for supply of cooling air to said housing structure.

B1 5,030,857 (1920th)
HIGH SPEED DIGITAL COMPUTER DATA TRANSFER SYSTEM HAVING REDUCED BUS STATE TRANSITION TIME
Ikuo J. Sanwo, San Marcos; Gregory H. Milby, San Diego, and Quynh-Giao X. Le, Escondido, all of Calif., assignors to NCR Corporation, Dayton, Ohio
Reexamination Request No. 90/002,560, Feb. 18, 1992.
Reexamination Certificate for Patent No. 5,030,857, issued Jul. 9, 1991, Ser. No. 398,563, Aug. 25, 1989.
Int. Cl.[5] **H03K** *19/017, 19/092, 19/096;* **G11C** *15/49*
U.S. Cl. 307—475



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–20** are cancelled.

[1. A high speed digital computer data transfer system having reduced bus state transition time comprising:
a data transfer bus;
a clamping pre-charger coupled to said bus for pre-charging and maintaining said bus at a first logic level;
at least one bus interface logic circuit coupled to said bus capable of selectively placing a second logic level voltage on said bus representing a logic high data state of said computer data transfer system; and
converter/output means coupled to said bus for converting bus voltages at the first logic level to a third logic level representing a logic low data state of said computer data transfer system, and for outputting data at either said second or third logic levels;
said first logic level being higher than said third logic level.**]**

B1 5,036,804 (1921st)
COOLING SYSTEM FOR FOUR STROKE OUTBOARD MOTOR
Yasuhiko Shibata, Shizuoka, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan
Reexamination Request No. 90/002,662, Mar. 9, 1992.
Reexamination Certificate for Patent No. 5,036,804, issued Aug. 6, 1991, Ser. No. 516,079, Apr. 27, 1990.
Claims priority, application Japan, Apr. 28, 1989, 1-111850
Int. Cl.[5] **F02B** *75/18*
U.S. Cl. 123—41.74

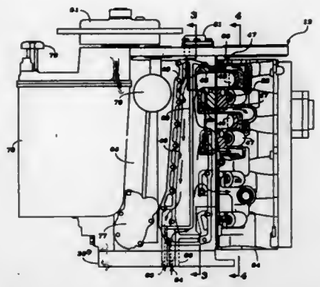
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 3–5, 7** and **8** are determined to be patentable as amended.

Claims **2** and **6**, dependent on an amended claim, are determined to be patentable.

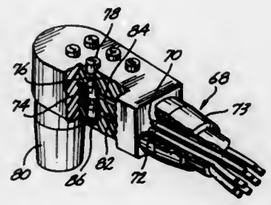
New claims **9–24** are added and determined to be patentable.

1. A cooling system for a four-cycle internal combustion engine having a cylinder block in which at least one cylinder



bore is formed, a cylinder head closing said cylinder block and formed with an exhaust passage for discharge of exhaust gases from said cylinder bore, said exhaust **[**passages**]** *passage passing* through a lower face of said cylinder head and communicating with an exhaust manifold formed *integrally* in said cylinder block, a cooling jacket in said cylinder block for cooling said cylinder bore, a cooling jacket in said cylinder head for cooling said exhaust passage, and means for introducing coolant first to said cylinder head cooling jacket and from said cylinder head cooling jacket to said cylinder block cooling jacket.

B1 5,056,686 (1922nd)
BEVERAGE DISPENSING SYSTEM
Charles C. Jarrett, Bellevue, Wash., assignor to Nutri-Fruit, Inc., Bellevue, Wash.
Reexamination Request No. 90/002,694, Apr. 3, 1992.
Reexamination Certificate for Patent No. 5,056,686, issued Oct. 15, 1991, Ser. No. 530,116, May 29, 1990.
Continuation-in-part of Ser. No. 372,837, Jun. 27, 1989, abandoned
Int. Cl.[5] **B67D** *5/56*
U.S. Cl. 222—129.2



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1, 2, 7, 13, 18** and **23** are determined to be patentable as amended.

Claims **3, 4** to **6, 8** to **12, 14** to **17,** and **19** to **22,** dependent on an amended claim, are determined to be patentable.

1. A beverage dispensing system comprising:
a plurality of containers for storing beverage concentrate;
a plurality of proportion pumps, each said proportion pump having a fluid drive side and a fluid pumping side, said fluid drive side having a fluid inlet and a fluid outlet, and said pumping side having a concentrate inlet and a concentrate outlet;
means for coupling said fluid inlet of each of said pumps to a source of pressurized fluid;
means for coupling each said pump concentrate inlet to a separate one of said concentrate containers;
a plurality of pairs of *flexible* fluid supply and *flexible* concentrate supply lines, said fluid supply line and said concentrate supply line of each said pair of supply lines respectively coupled to a fluid outlet and a concentrate outlet of one of said proportion pumps, each said pair of supply lines coupled to a separate one of said proportion pumps;
a dispensing head to which said pairs of fluid and concentrate supply lines are attached, said dispensing head having an outlet through which fluid and beverage concentrate from said supply lines **[**is**]** *are* discharged, said dispensing head including a plurality of valve means, each said valve means associated with a separate pair of said fluid and concentrate supply lines for selectively controlling the discharge of fluid from said associated fluid supply line so that, when a selected valve means is opened, fluid flows from said associated fluid supply line, allowing fluid to flow through said respective proportion pump and causing concentrate to flow from said concentrate supply line and be discharged concurrently with fluid from said dispensing head outlet.

VOL
1147
ISS
1
FE
2
1993
UMI

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,170

SPINNING UNIT PIECING PROCESS FOR PRODUCING FEED SPOOLS

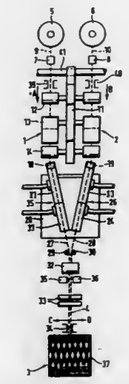
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, and Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, both of Fed. Rep. of Germany

Original No. 4,790,130, dated Dec. 13, 1988, Ser. No. 105,813, Oct. 8, 1987. Application for reissue Dec. 12, 1990, Ser. No. 626,548

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1986, 3634464

Int. Cl.[5] D01H *15/00*

U.S. Cl. 57—261 **47 Claims**



15. A piecing process for piecing yarn components formed in a unit of the type having drafting means for supplying a plurality of drafted slivers, false twisting means for forming a plurality of yarn components from the plurality of drafted slivers, and joint feed spool forming means for forming feed spools with the plurality of yarn components jointly wound adjacent one another, which feed spools can be used in subsequent twisting operations or the like, said piecing process comprising the sequential steps of:

starting the supply of the plurality of drafted slivers by the drafting means,

inserting the plurality of drafted slivers into the false twisting means;

gripping the plurality of yarn components at the outlet end of the false twisting means, and

transferring the plurality of yarn components to the joint feed spool forming means.

Re. 34,171

MEDICATION CARTS AND CASSETTES

Jerome M. Romick, 170 N. Drexel Ave., Columbus, Ohio 43209, and Duane Beardsley, 2552 Ridgewood Trail, Berrien Springs, Mich. 49103

Original No. 4,616,890, dated Oct. 14, 1986, Ser. No. 691,272, Jan. 14, 1985. Continuation of Ser. No. 256,919, Oct. 12, 1988. Application for reissue Jun. 21, 1991, Ser. No. 719,077

Int. Cl.[5] A47B *47/00*

U.S. Cl. 312—257.1 **10 Claims**

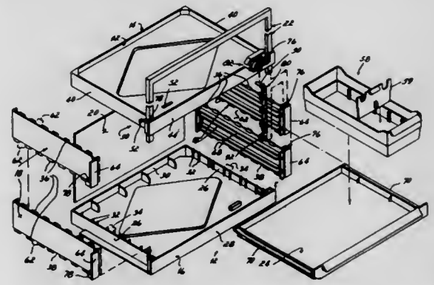
1. A medication cassette for use in a medication cart comprising

top, bottom, a plurality of side, and back panels,

connecting means on said side panels and said top and bottom panel which cooperate to position the side panels with respect to said top and bottom panels,

said connecting means including a plurality of interlock tabs on said side panels adapted to cooperate with interlock tabs on other side panels whereby said side panels may be stacked on top of each other to provide a single planar wall surface, said interlock tabs extending above and below each side panel and spaced apart a distance slightly greater than the width of a interlock tab,

said connecting means on said top and bottom panels including ribs that define channels which receive interlock tabs on said side panels,



[a U-shaped frame] *a pair of vertical posts* adapted to engage said side, top and bottom panels to hold said side, top and bottom panels rigidly together,

engagement means on said top, bottom and side panels for receiving said [channel frame means] *vertical posts,*

means for securing said back panel with respect to said bottom, top and side panels, and

a medication receptacle adapted to be inserted in said cassette.

Re. 34,172

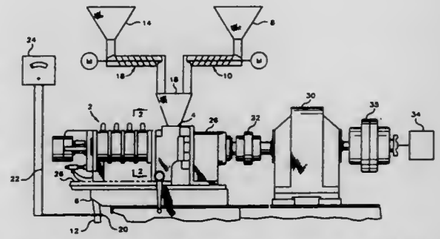
CONTINUOUS MIXER

J. S. Gwinn, and Michael J. Miller, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Original No. 4,767,216, dated Aug. 30, 1988, Ser. No. 489,991, Apr. 29, 1983. Application for reissue Nov. 15, 1991, Ser. No. 793,935

Int. Cl.[5] B01F *7/08*

U.S. Cl. 366—85 **18 Claims**



11. A process for melting a particulate material, said particulate material [being characterized as a thermoplastic resin]

VOL 1147 ISS 1 FE 2 1993 UMI

comprising a polyolefin having a flux point of between about 100° C. and 400° C.; said process comprising the steps of

(a) introducing the particulate material into at least one screw feeder, and

(b) forcing the particulate material by the action of the at least one screw feeder into a mixing chamber having the following characteristics

(i) the mixing chamber is formed by a first generally cylindrical chamber and a second generally cylindrical chamber which are interconnecting and parallel to each other in a housing;

(ii) the at least one screw feeder is positioned at a first end of the mixing chamber;

(iii) a discharge orifice is positioned near the second end of the mixing chamber;

(iv) a first rotor is positioned in the first generally cylindrical chamber, said first rotor being characterized by a first tip beginning at the first end of the mixing chamber and following a helical path spiraling in a first rotational direction at a pitch greater than about half of a mixing chamber length and a second tip beginning at the end of the first tip and following a helical path spiraling in a second rotational direction at a pitch greater than about half of a mixing chamber length, said first tip meeting with said second tip at an apex which is positioned at a distance from the first end of the mixing chamber of between about 30% and about 70% of the distance to the second end of the mixing chamber;

(v) a second rotor is positioned in the second generally cylindrical chamber, said second rotor being characterized by a first tip beginning at the first end of the mixing chamber and following a helical path spiraling in the second rotational direction at a pitch greater than about half of a mixing chamber length and a second tip beginning at the end of the first tip and following a halical path spiraling in the first rotational direction at a pitch greater than about half of a mixing chamber length, said first tip meeting with said second tip at an apex which is positioned at a distance from the first end of the mixing chamber of between about 30% and about 70% of the distance to the second end of the mixing chamber, the difference in the positioning of the apex of the first rotor and the apex of the second rotor being at least 20% of the distance between the first end of the mixing chamber and the second end of the mixing chamber; and

(c) counterrotating the first rotor and the second rotor to melt the particulate material, said first rotor and said second rotor being rotated in the direction away from the first rotor apex and the second rotor apex so that the first rotor second tip and the second rotor second tip are rotating in the direction of the discharge orifice as they sweep by each other.

Re. 34,173

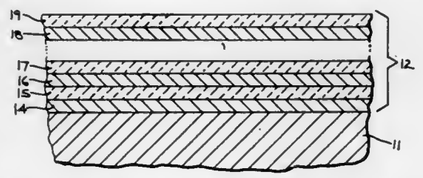
MULTI-LAYER WEAR RESISTANT COATINGS

Susan M. Kerber, Sussex, Wis., assignor to Midwest Research Technologies, Inc., Milwaukee, Wis.

Original No. 4,904,542, dated Feb. 27, 1990, Ser. No. 255,454, Oct. 11, 1988. Application for reissue Oct. 31, 1990, Ser. No. 606,243

Int. Cl.[5] B32B *15/04*

U.S. Cl. 428—610 **20 Claims**



5. A wear resistant coating on a *major* surface of a substrate for protecting against particle induced erosion and water induced erosion and corrosion, said coating having a first set of layers of a ceramic material interleaved with a second set of layers of a metallic material to form a coating with at least four layers, *in which the layers of metallic material are as thick or thicker than the layers of ceramic material, and*

wherein the interface between adjacent layers is a graded transition of the concentration of the two materials.

PLANT PATENTS

GRANTED FEBRUARY 2, 1993

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,120

AFRICAN VIOLET PLANT NAMED VIENNA

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 736,505

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—69.2 **1 Claim**

1. A new and distinct cultivar of African violet named Vienna, as described and illustrated, and particularly characterized by its extra large growth habit (35–45 cm in diameter); purplish blue, single violet-shaped flowers; strong stems which curve toward the center to form a bouquet above the leaves; profuse flowering; large, medium green, spear-shaped leaves; flowering 12–13 weeks after planting of unrooted shoot, and by its long lasting and non-dropping flowers.

8,121

AFRICAN VIOLET PLANT NAMED LITTLE AZURITE

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 736,506

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—69.2 **1 Claim**

1. A new and distinct cultivar of African violet named Little Azurite, as described and illustrated, and particularly characterized by its miniature growth habit; single violet-shaped, purplish blue flowers with white edges; strong stems which curve toward the center to form a compact bouquet above the leaves; profuse and continuous flowering; medium green, spear-shaped leaves; flowering 10–11 weeks after planting of unrooted shoot, and by its long lasting and non-dropping flowers.

8,122

CARNATION PLANT NAMED CFPC AMETHYST

Walter H. Jessel, Jr., Salinas, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Mar. 28, 1991, Ser. No. 678,550

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—70.5 **1 Claim**

1. A new and distinct variety of carnation plant, substantially as shown and described, characterized particularly by flowers of attractive mauve coloration.

8,123

CARNATION PLANT NAMED CFPC CHERIÉ5

Walter H. Jessel, Jr., Salinas, Calif., assignor to California Florida Plant Co., L.P., Salinas, Calif.

Filed Mar. 28, 1991, Ser. No. 678,853

Int. Cl.[0] A01H *5/00*

U.S. Cl. Plt.—72.1 **1 Claim**

1. A new and distinct variety of carnation plant, substantially as shown and described, characterized particularly by flowers of attractive pink coloration.

8,124

CHRYSANTHEMUM PLANT — BAYFRANK CULTIVAR

Jacques C. M. van der Knapp, De Lier, Netherlands, assignor to Fides Beheer B.V., De Lier, Netherlands

Filed Jun. 25, 1991, Ser. No. 720,663

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—82.4 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Bayfrank, substantially as herein shown and described, which:

(a) exhibits attractive relatively large anemone pink-purple flowers having a darker center,

(b) bears flowers in a generally flat capitulum configuration when mature,

(c) exhibits a flower response period of approximately eight weeks,

(d) forms attractive dark green foliage, and

(e) has the ability to produce flowers of commercially acceptable quality throughout the year in a cut mum production program.

8,125

POINSETTIA PLANT NAMED 268 WHITE

Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Jul. 15, 1991, Ser. No. 730,350

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—86.2 **1 Claim**

1. A new and distinct Poinsettia cultivar, substantially as herein shown and described, characterized by its large white, erect flower bracts, and self-branching traits.

8,126

POINSETTIA PLANT NAMED C-27 WHITE

Franz Fruehwirth, Encinitas, Calif., assignor to Paul Ecke Ranch, Inc., Encinitas, Calif.

Filed Jul. 15, 1991, Ser. No. 730,351

Int. Cl.[5] A01H *51/00*

U.S. Cl. Plt.—86.2 **1 Claim**

1. A new and distinct Poinsettia cultivar, substantially as herein shown and described, characterized by its large white, erect flower bracts, and stiff stems.

8,127

POINSETTIA PLANT 'GOLDFINGER'

Jan Man, Meerlandenweg 46, 1187 ZR Amstelveen, Netherlands

Filed Aug. 14, 1991, Ser. No. 745,217

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—86.4 **1 Claim**

1. A new and distinct Poinsettia cultivar, substantially as herein shown and described, distinguished by its vigorous and self-branching growth habits, medium to tall height and bright red flower bracts.

8,128

VARIETY OF GERANIUM NAMED HOT PINK SATISFACTION

Scott C. Trees, Nipomo, Calif., assignor to Geo. I. Ball, Inc., West Chicago, Ill.

Filed Aug. 12, 1991, Ser. No. 743,747

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct variety of Geranium plant, substantially as shown and described.

VOL
1147
ISS
1
FE
2
1993
UMI

8,129

ANTHURIUM PLANT 'GEORGUSIS WHITE NUMBER 1'

James J. Georgusis, Hilo, Hi., assignor to Oglesby Plant Laboratories, Inc., Altha, Fla.

Filed Aug. 5, 1991, Ser. No. 740,499
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Anthurium, substantially as described and illustrated herein, characterized particularly as to novelty by its compact form as well as its freely branching and flowering, the sharp contrast between the dark green foliage and numerous white flowers providing a cultivar well suited as a flowering pot plant having good resistance to the traditional Anthurium diseases and no unusual susceptibility to insects.

8,130

SPATHIPHYLLUM 'LEPRECHAUN'

David Fell, Hawaiian Sunshine Nursery, Hilo, Hi. 96720

Filed Feb. 25, 1991, Ser. No. 659,884
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Spathiphyllum as herein shown and described, characterized particularly as to novelty by the larger size than the seed parent, with darker color leaves and similar finish, greater hardiness than the seed parent, free flowering production, with clumping habit and shape of leaf of the pollen parent, together with growth speed of the latter, hybrid vigor being better than both parents.

8,131

ANTHURIUM 'GEORGUSIS PINK NUMBER 1'

James J. Georgusis, Hilo, Hi., assignor to Oglesby Plant Laboratories Inc., Altha, Fla.

Filed Aug. 5, 1991, Ser. No. 740,498
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct Anthurium cultivar substantially as herein shown and described characterized particularly as to novelty by the red-purple flower color pigment irregularly dispersed over the white background becoming more evenly distributed as the flower matures, the freely branching and flowering form of the plant, dark green leaves contrasting with light pink flower color, and the substantially for commercial distribution as a flowering pot plant.

PATENTS

GRANTED February 2, 1993

ERRATA

For CLASS	See PATENT NO.
492-024	5,182,840
602-010	5,183,036
271-003	5,183,239
271-003	5,183,240
271-012	5,183,241
271-014	5,183,242
279-156	5,183,272
239-394	5,183,322
400-605	5,183,333
411-029	5,183,357
411-059	5,183,358
411-188	5,183,359
411-400	5,183,360
412-016	5,183,361
441-079	5,183,367
409-179	5,183,373
409-286	5,183,374
410-035	5,183,375
433-019	5,183,388
433-215	5,183,397
434-227	5,183,398
434-322	5,183,399
433-076	5,183,414
433-080	5,183,415
433-166	5,183,416
128-003	5,183,464
504-243	5,183,492
252-524	5,183,601
252-587	5,183,602
424-078	5,183,687
437-230	5,183,795
501-152	5,183,801
514-049	5,183,882
324-158	5,184,162
355-297	5,184,194
257-471	5,184,198
257-077	5,184,199

VOL
1147
ISS
1
FE
2
1993
UMI

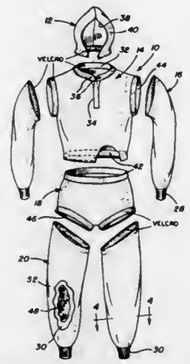
257-053 5,184,200
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257-390 5,184,202
257-370 5,184,203
257-629 5,184,204
257-765 5,184,205
257-762 5,184,206
257-668 5,184,207
257-666 5,184,208
257-679 5,184,209
257-664 5,184,210
257-706 5,184,211

PATENTS

GRANTED FEBRUARY 2, 1993

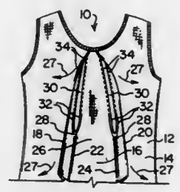
GENERAL AND MECHANICAL

5,182,812
LAYERED REDUCING GARMENT
Irma J. Goldsby, 1710 N. 42nd St., E. St. Louis, Ill. 62204
Filed Mar. 28, 1991, Ser. No. 676,378
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—79 **1 Claim**



1. A weight reducing garment comprising a hollow flexible member adapted to enclose a portion of the human anatomy, said member including an inner layer of absorbent cotton fabric, a middle layer of air and moisture impervious flexible vinyl plastic and an outer layer of fabric to enable the garment to be worn without observation of the inner and middle layers with the inner layer absorbing body perspiration and the middle layer retaining body heat to subject the portion of the body enclosed by the flexible member to body heat, said hollow flexible member including an upper torso enclosing area and a lower pants portion with the lower end of the upper torso enclosing area being disposed externally of an upper end of the lower pants portion and the upper torso enclosing area including a hood, and sleeves and the lower pants portion including legs, flexible hook and loop pile fastener material detachable connecting the hood, sleeves and legs and detachably connecting a lower end of the upper torso area with an upper end of the lower pants portion while maintaining the imperviousness of the middle layer, the ends of the sleeves and the ends of the legs having knit cuffs thereon for snugly embracing the wrist and ankle areas of the wearer.

5,182,813
NURSING GARMENT
Janice E. Booze, 1919 Wynkoop Dr., Colorada Springs, Colo. 80909
Filed Jan. 27, 1992, Ser. No. 826,438
Int. Cl.[5] A41D *1/20, 1/22*
U.S. Cl. 2—104 **18 Claims**

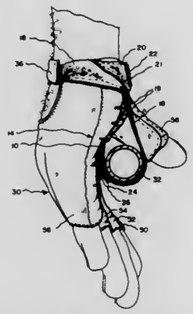


1. A nursing garment in the form of upper body clothing to be worn by a women for breast feeding an infant, said garment including a front, a back, openings for arms, and shoulder portions, said nursing garment including, in combination:

centered on said front of said garment, a substantially vertical, always open, inwardly facing pleat requiring no closure means and formed by, and including, a pair of normally visible, substantially vertical, exterior fold lines, a pair of normally hidden substantially vertical interior fold lines; and

normally hidden, always open, opening means through said front of said garment at at least one of said hidden interior fold lines of said always open, inwardly facing pleat, said normally hidden, always open, opening means being located and adapted to become visible and to provide easy access to the breast of a wearer for breast feeding an infant by folding said exterior fold line portion of said inwardly facing pleat away from the center of said garment.

5,182,814
WEIGHT SUPPORTING GLOVE
Kenneth Christensen, 777 S. 400 East, No. 25, St. George, Utah 84770
Filed Aug. 27, 1990, Ser. No. 572,257
Int. Cl.[5] A41D *19/00*
U.S. Cl. 2—161 A **20 Claims**



1. A weight supporting glove comprising:

a glove including a palm portion having a heel end, a wrist portion adjacent the heel end of the palm portion and adapted to extend around a wearer's wrist, and first fastening means for adjustably securing the wrist portion of the glove around a wearer's wrist;

a flap having an attached portion secured to the wrist portion of the glove at least substantially continuously along the heel end of the palm portion from side to side of the glove and having an unattached distal portion; and

second fastening means for releasibly securing the unattached distal portion of the flap to the palm portion of the glove to form a loop for supporting a weight.

5,182,815
ATHLETIC PANTS
Margaret B. Young, 75 Deerpath, Oldsmar, Fla. 34677-0000
Filed Jun. 3, 1991, Ser. No. 709,500
Int. Cl.[5] A41B *9/02*
U.S. Cl. 2—406 **10 Claims**

1. Athletic pants comprising in combination:

basic panel means having an upper front edge, an upper rear edge and sides, the basic panel means extending from the

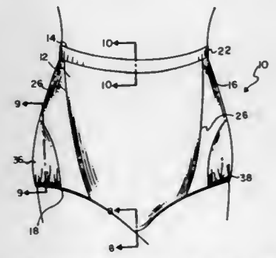
338-959 O.G.-93-2

VOL 1147 ISS 1 FEB 2 1993 UMI

upper front edge at the front of the wearer's waistline, downwardly around the wearer's crotch, then upwardly to the upper rear edge at the back of the wearer's waistline with generally vertical stitching to couple the panel means together, the basic panel means being fabricated of a knit fabric from extensible yarn;

an elastic waistband coupled to the upper front and rear edges of the basic panel means;

a pair of support panels with lateral edges, the support panels having upper edges extending downwardly from the upper front edge and upper rear edge and stitched at their lateral edges to the basic panel means, the basic panel



means being constructed of a knit fabric from extensible yarn and with the support panels also being constructed of a knit fabric from an extensible yarn, the fabric of the basic panel means being of a first mesh and the fabric of the support panels being of a second mesh with the second mesh of the support panels being of a greater elasticity than that of the basic panels means; and

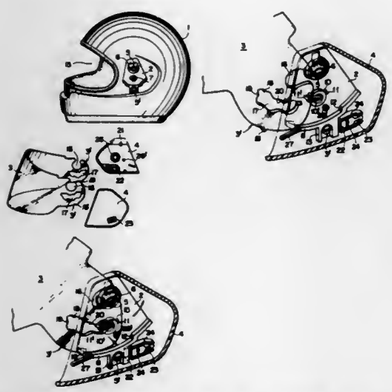
a pair of pocket panels stitched over the sides of the basic panel means, the pocket panels being shaped in an inverted U-shape configuration and with an extensible lower edge having an elastomeric hem at its lower edge thereof to cooperate with the basic panel means to form a pocket opening.

5,182,816

SHIELD MOUNTING STRUCTURE FOR HELMET

Michio Arai, 1-164, Horinouchi, Ohmiya-shi, Saitama-ken, Japan

Filed May 30, 1991, Ser. No. 707,379
Claims priority, application Japan, Jun. 14, 1990, 2-156061
Int. Cl.[5] A42B *3/02*
U.S. Cl. 2—424 **5 Claims**



5. A shield mounting structure for a helmet of the type having opposite right and left outer side faces and a front opening, said shield mounting structure comprising:

a) a shield pivotally mounted to said helmet for movement between an open and a closed position, said shield having a right side and a left side, each side having a mounting portion, and each said mounting portion having a mounting hole and a stopper part,

b) a base plate mounted to each of said right and left side faces of said helmet, each said base plate including:

i) pivot shaft means projecting therefrom for pivotally mounting said shield thereon, said pivot shaft means having an axis and said pivot shaft means being engageable with one said mounting hole, and

ii) stopper means projecting therefrom for restricting the range of pivoting motion of said shield, said stopper means being engageable with one said stopper part,

c) resilient shield keep cover means associated with each said base plate for preventing dislodgement of said shield from said base plates, each said shield keep cover means including:

i) upper and lower portions thereof fixed to one of a respective said base plate and said helmet such that a central part of the shield is pushed and expanded outwardly to form a gap between the shield and the free surface of the pivot shaft when a force is applied to said shield in a removal direction, to permit the shield to pass through said gap, only when said shield in the upper limit open position, and

ii) a front edge, and

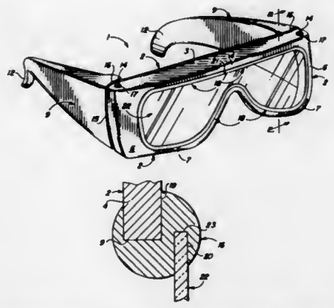
d) an opening formed between each outer side face of the helmet and said shield keep cover means, which permits the insertion and removal therethrough of one said mounting portion.

5,182,817

GOGGLES HAVING AN EXTRUSION-MOUNTED LENS

Brian Branum, 1301 Willow Way, Garland, Tex. 75043

Filed Jul. 12, 1991, Ser. No. 729,483
Int. Cl.[5] A61F *9/02*
U.S. Cl. 2—439 **6 Claims**



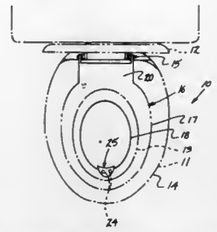
1. Goggles having an extrusion-mounted lens, comprising a frame having a viewing opening bordered by an inside edge, temple pieces carried by said frame in hinged relationship, a flexible, resilient extruded lens mount having a frame slot for removably receiving the inside edge of said viewing opening of said frame and a lens slot for removably receiving said lens and removably mounting said lens in said viewing opening of said frame, said frame slot and said lens slot provided in offset, substantially parallel planes in said lens mount and extending at leas to a plane bisecting said lens mount perpendicular to said parallel planes.

5,182,818

CHILD COMMODE SEAT APPARATUS

John P. Nawoj, 153 Main St., Sayreville, N.J. 08872

Filed Aug. 6, 1991, Ser. No. 740,710
Int. Cl.[5] A47K *13/00*
U.S. Cl. 4—235 **2 Claims**



1. A child commode seat apparatus, comprising,

a commode, the commode including a commode top surface, including an inner continuous edge spaced interiorly of an outer continuous edge, and

a commode seat mounted upon the top surface, the commode seat pivotally mounted about an axle, the axle mounted upon a rear end portion of the top surface, and

a child insert seat pivotally mounted to the axle interiorly of the commode seat, the insert seat including a seat inner edge positioned interiorly of the inner continuous edge, and

a seat outer edge positioned between the inner continuous edge and the outer continuous edge, and

the inner seat including a central tubular conduit projecting downwardly from the inner edge, and

the inner edge defining an elliptical central opening, and

a forward end of the insert seat diametrically spaced from the axle and includes a plurality of seat apertures, and

a urine deflector shield selectively mounted to the forward end, wherein the shield includes a planar bottom wall, the planar bottom wall including a plurality of mounting legs, the plurality of mounting legs selectively received within the seat apertures, and

the shield includes a vertical wall extending above the planar bottom wall, wherein the vertical wall includes a convex deflector cavity in confrontation with the central opening, the deflector cavity including an "S" shaped interior cavity wall extending below the planar bottom wall of the shield, the vertical wall including a vertical wall upper end spaced above the planar bottom wall, and

a splash plate, the splash plate including an apertured splash wall complementarily received forwardly of the vertical wall and within the convex deflector cavity, the splash plate wall including a matrix of apertures directed therethrough, and the splash plate further including a splash plate cavity formed at an upper terminal end of the splash plate to receive the vertical wall upper end therewithin.

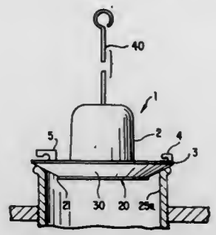
5,182,819

UNIVERSAL COMMODE STOPPER

William S. Shaw, 7606 Silvercrest Cir., Austin, Tex. 78757

Filed Apr. 26, 1991, Ser. No. 691,863
Int. Cl.[5] E03D *1/35*
U.S. Cl. 4—393 **14 Claims**

1. A valve stop for connecting between the valve actuator assembly and the fluid outlet of a sanitary flush tank comprising a cylindrical hollow body of rigid material, said cylindrical hollow body supporting a gasket at its lower end to effect a seal against said fluid outlet, said cylindrical hollow body further comprising at least one support means for said gasket, and at least two alternative connecting devices disposed on



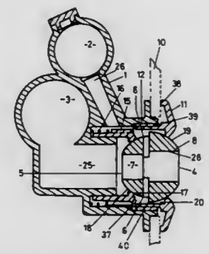
said cylindrical hollow body for connecting said cylindrical hollow body to said valve actuator assembly.

5,182,820

NOZZLE MOUNTINGS

Kipley R. Marks, 61 St Heliers Bay Rd., Auckland, New Zealand

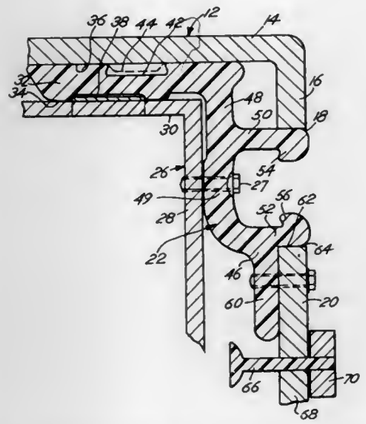
Filed Apr. 29, 1991, Ser. No. 692,896
Claims priority, application New Zealand, Mar. 5, 1989, 228974; Australia, Mar. 5, 1990, 54744/90
Int. Cl.[5] A61H *33/02, 9/00*
U.S. Cl. 4—541.4 **7 Claims**



1. A nozzle mounting comprising a body, a main air passageway and a main water passageway in said body, a nozzle member having outer walls of spherical form and a nozzle passageway passing therethrough, a receptacle in said body to receive said nozzle member, retaining means to retain said nozzle member in said body sealing the contact with parts of said outer walls, while permitting manipulative rocking movement of said nozzle member over a range of movement, the nozzle member having at least one water entry for water, at least one air entry for air, and at least one exit for combined water and air, said air entry being open to said main air passageway and said water entry being open to said main water passageway, and fixing means for fixing said body to an opening in a vessel, the construction and arrangement being such that on water entering said nozzle passageway through said water entry air from said main air passageway is entrained in the water from said main water passageway and the combined air and water mixture discharged from said nozzle passageway in a manner such that the disposition of said nozzle passageway is not altered by the discharge of said mixture but said nozzle member may be manually rocked to direct the flow of mixed air and water in a desired direction within said range of movement, while said parts of said outer walls are maintained in contact with said retaining means wherein said retaining means comprise a spring loaded seal and a retaining member mounted to retain said nozzle member in said receptacle with said nozzle member held in contact with said retaining member by said spring loaded seal.

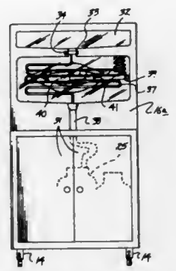
VOL 1147 ISS 1 FE 2 1993 UMI

5,182,821
PANEL CONSTRUCTION FOR BATHING TUB
Charles D. Bufford, Blue Hill, and James M. Gruidel, Hastings, both of Nebr., assignors to Dutton-Lainson Company, Hastings, Nebr.
Filed Sep. 24, 1991, Ser. No. 765,364
Int. Cl.[5] A47K *3/16*
U.S. Cl. 4—592 2 Claims



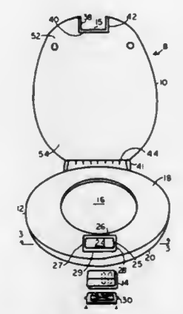
1. An improved bathing tub construction comprising, in combination:
a support frame;
a rigid molded tub enclosure defined by a shaped wall and having a periphery with a horizontal run, a partially depending vertical run smoothly connected to the periphery and an edge surface defining the lower external rim of the periphery;
at least one rigid vertical panel for enclosing a side of the frame;
a rigid tub assembly member supported on the frame and configured to receive and support the tub enclosure at the periphery of said enclosure to define a first seam, said assembly member further including a vertical panel support section for support of the vertical panel and thereby defining a second seam, and an elongated outside channel intermediate the seams; and
a flexible trim member insertable in the outside channel to cover, seal and provide a generally flush surface for the channel over the seams between the assembly member, vertical panel and tub enclosure;
said rigid tub assembly member including a first horizontal section having an upper surface and a lower surface, the lower surface positioned on the frame, said upper surface for engaging the horizontal run of the tub enclosure;
said rigid tub assembly member further including a generally vertical panel support section with the elongated outside channel defined between the sections, said outside channel being generally U-shaped in cross section and defined by an upper leg and a spaced lower leg, the outside surface of the upper leg cooperative with the edge surface of the tub enclosure to define the first seam, the outside surface of the lower leg cooperative with the vertical panel to define the second seam, said seams and legs defining a generally vertical, planar outside surface and the trim member being cooperatively engaged between the legs and fitting over both the first and second seams to further define a generally planar, vertical outside surface.

5,182,822
CHILD'S SINK APPARATUS
Dwayne L. Cyr, 17-733 Oak La., Lady Lake, Fla. 32159, and Dale A. McCollom, 35918 Union Lake Rd. Apt. 106, Mt. Clemens, Mich. 48043
Filed Apr. 9, 1991, Ser. No. 682,337
Int. Cl.[5] A47K *1/00*
U.S. Cl. 4—625 1 Claim



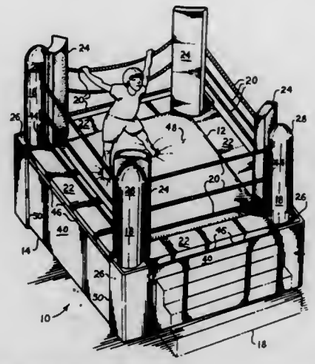
1. A child's sink apparatus, comprising,
a cabinet including a top wall, spaced side walls, a floor underlying and coextensive with a top wall,
and
a rear wall extending from the floor to the top wall in orthogonal communication with rear edges of each of the side walls, with the top wall including a rear wall extension flange coextensive with the rear wall and orthogonally directed upwardly of the top wall,
and
a concave sink directed downwardly from the top wall, the concave sink including a drainage conduit, the drainage conduit in fluid communication with an underlying first removable reservoir conduit mounted within the cabinet upon the floor,
and
a second reservoir container, the second reservoir container including an output conduit directed from within the second reservoir container to the top wall,
and
a "J" shaped upper section conduit in fluid communication with the output conduit overlying the sink to direct fluid flow from the second reservoir container to the sink,
and
a cylindrical cup cavity directed orthogonally downwardly from the top wall, with the cup cavity including a cup cavity floor, the cup cavity floor including a spring mounted thereon, and a series of nested stacked inverted cup members mounted on the spring to bias the cup members to the top wall for access of the cup members by an individual,
and
a closure door hingedly mounted adjacent each side wall defining a forward wall of the cabinet coextensively between the top wall and the floor,
and
the rear wall extension flange includes a third reservoir container, the third reservoir container is transparent and includes a transparent output conduit, the output conduit including a valve member to effect selective flow from the reservoir container through the output conduit, and a transparent cover member, the transparent cover member receiving the output conduit, and defining a cover cavity therewithin defined between the transparent cover and a forward surface of the rear wall extension flange, and a serpentine transparent lower conduit in fluid communication with the third reservoir output conduit directing fluid flow from the third reservoir output conduit through the serpentine transparent lower conduit, and the transparent lower conduit including an uppermost horizontal extent, and the uppermost horizontal extent including a series of apertures directed therethrough to effect metered fluid flow through the apertures within the transparent cover cavity, and a toothbrush member pivotally mounted within the transparent cover cavity, the toothbrush member including a toothbrush handle, the toothbrush handle including a pivot axle directed through the toothbrush handle orthogonally mounted to the forward surface of the rear wall extension flange, and a biasing spring mounted between the pivot axle and a rear terminal end of the toothbrush handle, with the biasing spring mounted between the toothbrush handle and a bottom surface of an overlying horizontal extent of the transparent cover cavity, and the toothbrush member including a toothbrush head mounted on the toothbrush handle, the toothbrush head positioned in alignment and below the apertures to effect oscillation of the toothbrush member upon fluid flow directed through the output conduit and the apertures, and a bristle matrix mounted on a forward face of the toothbrush head, wherein the bristle matrix is in sliding communication with the forward surface of the rear wall extension flange.

5,182,823
TOILET SEAT CLOCK APPARATUS
Ron Alsip, P.O. Box 584, Raynham, Mass. 02767
Filed Oct. 29, 1991, Ser. No. 783,987
Int. Cl.[5] E03D *11/00*
U.S. Cl. 4—661 9 Claims



6. A clock apparatus and toilet seat comprising;
a) a clock means for displaying the time of day and being sealably mounted in a mounting chamber formed in the toilet seat, comprising;
i) a display panel for displaying time;
ii) a time-keeping apparatus for operating the display panel;
iii) a lens means for enclosing a top of the mounting chamber and comprising a transparent cover, the lens means including sealing means for sealably enclosing the chamber wherein the housing means ad display panel are mounted in the chamber to be observed by a user;
iv) a base plate for enclosing a base of the mounting chamber;
b) a housing means for containing the time-keeping apparatus comprising a housing section including an upper portion comprising a lens and a lower portion for enclosing the time-keeping apparatus.

5,182,824
WRESTLING BED
Nickolas A. Cipriano, 1021 Marlyn Rd., Philadelphia, Pa. 19151
Filed Aug. 11, 1992, Ser. No. 928,065
Int. Cl.[5] A47D *11/00*
U.S. Cl. 5—2.1 19 Claims



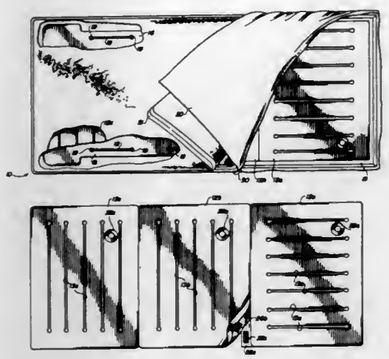
1. A wrestling bed comprising:
a rectangular platform supporting a mattress of standard configuration;
four corner posts defining corners of said rectangular platform and extending upward therefrom;
four peripheral tread pads extending between said corner posts and surrounding said mattress, said mattress having a periphery immediately adjacent said tread pads;
a plurality of peripheral ropes extending between said corner posts and secured thereto, said peripheral ropes overlying said periphery of said mattress and defining a play area thereupon; whereby,
said wrestling bed provides a defined area for vigorous activities by means of said platform, said corner posts, and said retaining ropes and further provides a bed by means of said platform and said mattress.

5,182,825
WATERBED
D. Ray Stinson; Linda D. Stinson, both of 3000 N. Atlantic Ave., #4, Daytona Beach, Fla. 32118; Brian F. Roberts, Deland, Fla.; Steven J. Dahms, Ormond Beach, Fla.; Brian P. Estes, Ponce Inlet, Fla., and Tommy H. Robertson, Port Orange, Fla., assignors to D. Ray Stinson and Linda D. Stinson, both of Daytona Beach, Fla.
Filed Feb. 20, 1991, Ser. No. 658,199
Int. Cl.[5] A47C *27/10*
U.S. Cl. 5—451 5 Claims

1. A bed for use in a health-care facility comprising:
a bladder adapted for holding fluid and for supporting a person;
a foam inlay disposed about the periphery of the bladder;
a cover enclosing the foam inlay and the bladder;
a transfer board supporting the cover, the foam inlay and the bladder;
means coupled to the cover for removably securing said bladder to said transfer board;

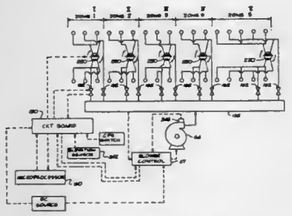
VOL 1147 ISS 1 FE 2 1993 UMI

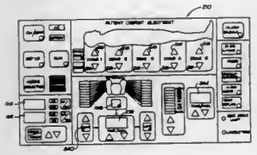
a plurality of handles on said transfer board for use in transporting the bed; and



a zipper for opening the cover to remove the foam inlay and the bladder.

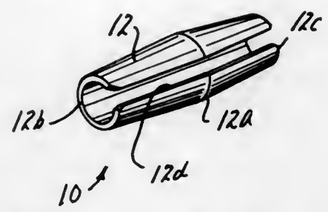
5,182,826
METHOD OF BLOWER CONTROL
James M. C. Thomas, Mt. Pleasant; James R. Stolpmann, Charleston; William T. Sutton, Charleston, and James J. Romano, Charleston, all of S.C., assignors to SSI Medical Services, Inc., Charleston, S.C.
Division of Ser. No. 555,319, Jul. 19, 1990, Pat. No. 5,121,513, which is a continuation-in-part of Ser. No. 321,255, Mar. 9, 1989, abandoned. This application Apr. 29, 1991, Ser. No. 693,918
Int. Cl.[5] A61G 7/057
U.S. Cl. 5—453 6 Claims





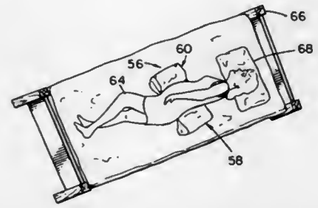
1. A method for controlling the blower for supplying gas to at least one gas sack of a patient support, the method comprising:
(a) regulating the power supplied to operate the blower;
(b) at the expiration of a predetermined time interval, measuring the pressure of the gas exiting the blower;
(c) calculating an ideal blower reference pressure;
(d) determining the size of any discrepancy between the ideal blower reference pressure and the measured pressure; and
(e) when the discrepancy exceeds a predetermined magnitude, varying the power supplied to operate the blower so as to reduce the magnitude of the discrepancy.

5,182,827
SHEET-MATTRESS RETAINER
Odie R. Carrier, 425 Eissler Rd., Evansville, Ind. 47711, and Steven C. Pike, 317 E. Mill Rd., Evansville, Ind. 47714
Filed Oct. 31, 1991, Ser. No. 785,536
Int. Cl.[5] A47C 21/02
U.S. Cl. 5—498 3 Claims



1. An arrangement for retaining a sheet onto a mattress including binding tape along edges thereof comprising retainers each having a body including a mid-region, ends, a longitudinal opening therethrough and a longitudinal slot disposed along a wall of said opening, where said body tapers inwardly from said mid-region thereof towards each of said ends, and where said longitudinal opening receives said binding tape edge of said mattresses and said sheet and the configuration of said body serves to maintain said retainers in a fixed position.

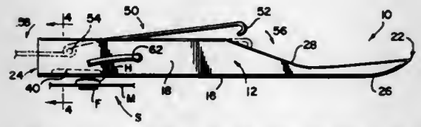
5,182,828
ROLL PREVENTING STRUCTURES
Margaret A. Alivizatos, Dallas, Tex., assignor to Maurice Adam, Dallas, Tex.
Filed Mar. 6, 1991, Ser. No. 665,341
Int. Cl.[5] A47G 9/00
U.S. Cl. 5—631 20 Claims



1. A freestanding machine washable wedge shaped support structure for use as a roll-preventing, patient support, comprising:
an open mesh fabric base panel defined by spaced apart substantially parallel longitudinal edge portions and transverse edge portions between the ends of said longitudinal edge portions;
a pair of open mesh non-skid fabric support panels having longitudinal edge portions coextensive with the longitudinal edges of the base panel, said panels converging toward each other to meet at a longitudinal front edge spaced away from said longitudinal edge portions, each of said support panels having transverse edge portions extending between ends of one of said longitudinal edge portions and said front edge;
opposite triangular shaped open mesh fabric side panels, each side panel having a base edge coextensive with one transverse edge of the base panel and converging side edges coextensive with the transverse edge portions of the pair of support panels extending between said base panel and said front longitudinal edge portion to form an envelope; and
a multiplicity of discrete lightweight nonabsorbent plastic floatable foam beads contained within the envelope by said open mesh fabric to form a wedge, substantially filling said envelope to a degree that allows free movement of said beads within the envelope so that the wedge can be molded to fit the contour of the patient's body, yet having the characteristic that when the envelope and plastic beads are compressed by a patient's weight, they interact to lock together in the previously molded shape to provide a firm support which restricts movement of the patient and allows circulation of air and moisture to help keep the patient dry

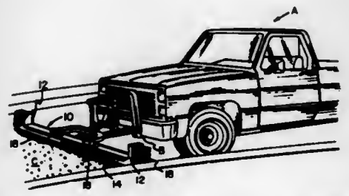
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5,182,829
FASTENER HAND TOOL
Carroll Sears, P.O. Box 318, Wrightsville, N.C. 28480
Filed Sep. 4, 1991, Ser. No. 754,756
Int. Cl.[5] B25F 1/00
U.S. Cl. 7—166 22 Claims



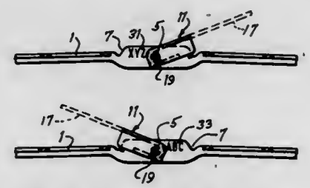
1. A hand tool for the connection and disconnection of a multipiece fastener, the tool comprising a lever body having at least one disconnecting end and at least one connecting end opposite said disconnecting end, said connecting end including a capture means for releasably receiving and releasably capturing a fastener piece while force is applied toward the disconnecting end said capture means defined as a recess comprising an open receiving portion, an open capturing portion, and a continuous open passageway placing each portion in fluid communication with one another; the open portion being adapted to releasably receive one mateable piece of a snap fastener, the passageway being configured to permit free movement of the received piece to or from the capturing portion, and the capturing portion having an undercut shaped and oriented in relation to the open portion to releasably capture and hold the fastener piece while force is applied for operably connecting the captured piece with a corresponding mateable piece.

5,182,830
TRUCK MOUNTED PAVEMENT SWEEPING BRUSH
John Viola, 77A Brookwood Dr., Rocky Hill, Conn. 06067
Filed Nov. 26, 1991, Ser. No. 799,422
Int. Cl.[5] E01H 1/02
U.S. Cl. 15—78 6 Claims



1. A brush assembly apparatus for cooperation with a snow plow mounting apparatus which comprises:
means for attachment to the associated snow plow mounting apparatus;
an elongated main body having at least a first generally L-shaped axial extremity;
a first plurality of bristles mounted in said main body and extending generally downwardly during normal operation and a second plurality of bristles mounted on said first axial extremity and extending outwardly in a generally axially aligned relationship to said main body; and
said elongated main body including means biasing said main body downwardly to insure thorough sweeping.

5,182,831
WINDSCREEN WIPER BLADE ARRANGEMENT WITH ORIENTATION INDICATING MEANS
Stephen D. Knight, Hillingdon, United Kingdom, assignor to Trico Products Corporation, Buffalo, N.Y.
Filed Jan. 13, 1992, Ser. No. 819,745
Claims priority, application United Kingdom, Jan. 17, 1991, 9101039
Int. Cl.[5] B60S 1/04, 1/40
U.S. Cl. 15—250.42 2 Claims



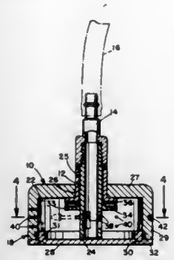
1. In a windscreen wiper blade arrangement,
an elongated windscreen wiper blade having front an back sides an including at least a main yoke having a pair of opposed walls extending lengthwise of said main yoke, said walls including interior surfaces defining an aperture between said walls,
sail wiper blade having a vane structure along said front side adapted to face forward of a vehicle to which said wiper blade is fitted,
a pivot pin extending between said walls across said aperture,
a connector body positioned at said walls and cooperating with said pivot pin to provide a pivotable connection between a drive arm and said wiper blade, said connector body being attachable to said pivot pin in either of two orientations whereby said connector body extends away from said aperture in either of two opposite directions along said wiper blade,
indicia on at least one of said walls and located on opposite sides of said pivot pin,
said connector body being constructed and arranged to obscure only a first part of said indicia to one side of said pivot pin when in a first orientation on said pivot pin and to obscure only a second part of said indicia when mounted in a second orientation on said pivot pin.

5,182,832
AIR FILTER CLEANING APPARATUS
Michael R. McMahon, 3819 Smoketree Way - 232, Phelan, Calif. 92371
Filed Apr. 27, 1992, Ser. No. 874,408
Int. Cl.[5] A47L 5/14
U.S. Cl. 15—304 8 Claims

1. Air filter cleaning apparatus, comprising:
an inlet tube having connector means at one end for connection to an air hose;
an enlarged head rotatably mounted at the opposite end of the inlet tube, the head having an outer peripheral wall enclosing an internal air disiribution chamber, the chamber being connected to said inlet tube, and the outer peripheral wall having a plurality of outlets spaced around

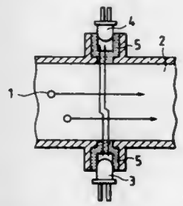
VOL 1147 ISS 1 FE 2 1993 UMI

its periphery for directing air out of the chamber towards an air filter unit; and



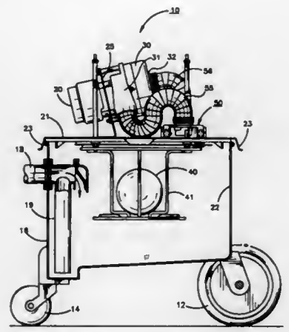
said head including rotor means for re-directing air in a direction to cause rotation of said head relative to said inlet tube.

5,182,833
VACUUM CLEANER
Seiji Yamaguchi, Shiga; Masaru Moro; Saburou Kajikawa, both of Youkaichi; Masahiro Kimura, Shiga; Hideo Okubo, Youkaichi; Tadashi Matsuyo, Youkaichi, and Hiroshi Kawakami, Youkaichi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed May 3, 1990, Ser. No. 518,402
Claims priority, application Japan, May 11, 1989, 1-118260; May 23, 1989, 1-130409; May 23, 1989, 1-130412; Aug. 18, 1989, 1-213376
Int. Cl.[5] A47L *9/28*
U.S. Cl. 15—319 **21 Claims**



1. A vacuum cleaner comprising:
(a) a blower motor;
(b) dust detection means having a light emitting portion for emitting a light and a light sensitive portion for receiving the light from said light emitting portion, said light sensitive portion and light emitting portion being arranged to effect a light path therebetween across a portion of a suction passage, said dust detection means detecting interceptions of said light path by at least one dust particle crossing said light path to produce a dust detection signal;
(c) dust amount detection means responsive to said dust detection signal from said dust detection means for detecting a relative dust amount by counting the number of said interceptions for a given interval; and
(d) input power controlling means responsive to an output signal of said dust amount detection means for controlling input power provided to said blower motor in accordance with said number.

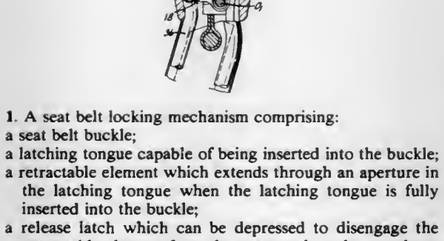
5,182,834
VACUUM PUMP-OUT CONTROL VALVE FOR WET/DRY VACUUM CLEANER
William R. Wright, and Dexter Lehman, both of Elkhart, Ind., assignors to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Apr. 16, 1992, Ser. No. 869,387
Int. Cl.[5] A47L *5/14, 7/00*
U.S. Cl. 15—330 **6 Claims**



1. In a wet/dry vacuum system including a collection tank, a cover closing the top of the tank and a blower having an air inlet and an air outlet:
a flow control valve which comprises:
means defining a pair of openings through said cover on opposite sides of a central axis perpendicular to said cover;
a manifold plate located over said pair of openings and spaced from said cover, said plate having an air inlet fitting communicating with said blower motor air inlet and an air outlet fitting, communicating with said blower air outlet, said inlet and outlet fittings being in alignment with said openings in said cover;
a valve rotor located between said manifold plate and said cover and adapted for rotation about said axis between a pressure position and a vacuum position;
passage means formed in said rotor for connecting said manifold plate inlet and one of said openings in said cover and closing the other of said openings when said rotor is in its vacuum position to cause a vacuum in said tank and for connecting said manifold plate outlet with the other opening in said cover and closing said one of said openings when said rotor is in its pressure position to cause a pressurizing of said tank.

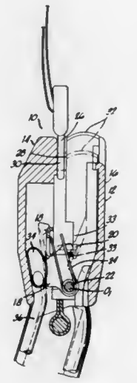
5,182,835
METHOD AND PLANT FOR MAKING LAPS FOR FELTS
Angelo de' Giudici, Mestre-Venezia, Italy, assignor to Feltrifico Veneto S.p.A., Mestre-Venezia, Italy
Filed Mar. 26, 1991, Ser. No. 675,159
Claims priority, application Italy, Jul. 18, 1990, 12488 A/90
Int. Cl.[5] D01G *25/00*
U.S. Cl. 19—296 **22 Claims**

1. A method for making final laps for needled felts comprising the steps of:
delivering a card web from a card with lap fibers substantially parallel to a delivery direction;
intermediately folding the card web intermittently in the delivery direction onto an intermediate ribbon lap-carrying conveyor which extends and is caused to intermittently run transversely to the delivery direction such that an intermediate ribbon lap is provided on the conveyor having a longitudinal extent and the lap fibers substantially arranged parallel to the delivery direction;
cutting of the card web into ribbon lengths so that on the intermediate ribbon lap-carrying conveyor the intermediate ribbon lap is discontinuous and formed successively from at least one layer of the ribbon lengths arranged longitudinally and endwise; and



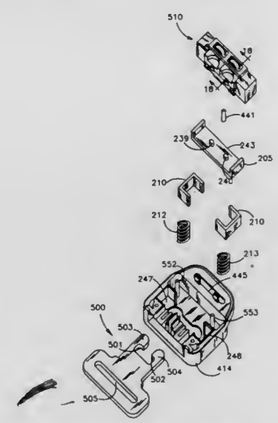
finally folding the intermediate ribbon lap in the direction of the longitudinal extent to form a final lap having a width dimension greater than that of the card web and the lap fibers substantially arranged in a longitudinal direction of the final lap.

5,182,836
PRESSURE ACTIVATED SEAT BELT LOCKING MECHANISM
Alexander Burkat, Placentia, Calif., assignor to The Walt Disney Company, Burbank, Calif.
Filed Aug. 30, 1991, Ser. No. 753,410
Int. Cl.[5] A44B *11/25*
U.S. Cl. 24—633 **6 Claims**



1. A seat belt locking mechanism comprising:
a seat belt buckle;
a latching tongue capable of being inserted into the buckle;
a retractable element which extends through an aperture in the latching tongue when the latching tongue is fully inserted into the buckle;
a release latch which can be depressed to disengage the retractable element from the aperture in order to release the latching tongue from the buckle;
a lever lock contained within the buckle and which is pivotable about a shaft;
a spring which bears against the lever lock to normally urge it in a downward position;
an air bladder positioned underneath the lever lock, said air bladder connected to a pressure source such that it can be inflated upon pressurization from the pressure source; and
whereby upon inflation, the air bladder urges the lever lock upwardly, overcoming the downward force of the spring, such that the lever lock either bears against or is positioned a slight distance from the release latch thereby preventing it from being depressed in order to disengage the retractable element from the aperture so that the latching tongue could be removed from the buckle to unlock the seat belt.

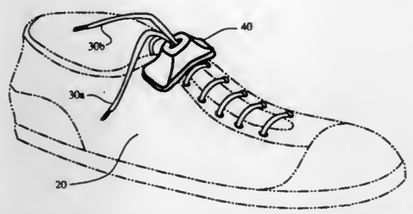
5,182,837
BELT BUCKLE WITH EJECTOR MODULE AND TONGUE STOP
James R. Anthony, Carmel, and Michael A. Wiseman, Indianapolis, both of Ind., assignors to Indiana Mills & Manufacturing, Inc., Westfield, Ind.
Continuation-in-part of Ser. No. 714,710, Jun. 13, 1991, Pat. No. 5,142,748, which is a continuation-in-part of Ser. No. 536,170, Jun. 11, 1990, Pat. No. 5,038,446, and a continuation-in-part of Ser. No. 370,240, Jun. 22, 1989, Pat. No. 5,023,981. This application Jun. 10, 1992, Ser. No. 896,208
Int. Cl.[5] A44B *11/00*
U.S. Cl. 24—642 **15 Claims**



1. A belt buckle-tongue combination comprising:
a buckle main body;
tongue means insertable along a plane into said buckle main body with said tongue means releasable lockable with said buckle main body;
a latch positioned in said main body and held captive therein, said latch movable between a latched position with said tongue means and an unlatched position;
first means operably associated with said latch to move said latch back and forth between said latched position and said unlatched position; and,
an ejector module assembly mounted in said buckle to eject said tongue means when not latched with said latch, said assembly including a ejector housing, at least one ejector member slidably mounted in said housing and engagable with said tongue means and spring means mounted in said ejector housing normally urging said ejector member outwardly to engage said tongue means but yieldable to allow withdrawal of said ejector member under force from said tongue means, said ejector housing with said ejector member and spring means forming said assembly and inserted into said buckle main body as a unit.

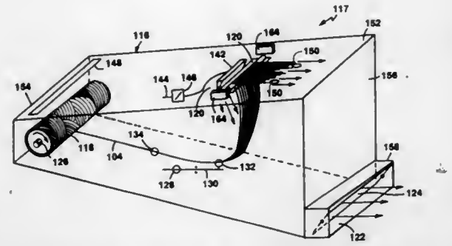
VOL 1147 ISS 1 FEB 2 1993 UMI

5,182,838
FILAMENT, CORDAGE LOCKING DEVICE
John R. Stenner, 375 Bates Ave., Boulder, Colo. 80303
Filed Aug. 13, 1991, Ser. No. 744,445
Int. Cl.[5] A43C *7/00*
U.S. Cl. 24—712.7 **20 Claims**



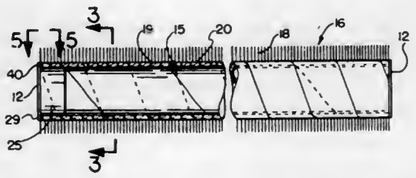
1. A cord lock device for securely engaging a cord, said device comprising:
(a) an elastic, resilient body having an exterior and a substantially solid interior, said body also having a pair of generally opposite top and bottom exterior surface portions, a pair of generally opposite front and rear side exterior surface portions, and a pair of generally opposite right and left end exterior surface portions;
(b) said body further having a slit extending through said substantially solid interior of said body between said opposite top and bottom exterior surface portions thereof to form a passageway for receiving a cord through said body, said slit being defined by a pair of opposing interior right and left end walls spaced inwardly from said opposite right and left end exterior surface portions of said body and a pair of opposing interior front and rear side walls spaced inwardly from said opposite front and rear side exterior surface portions of said body;
(c) said opposing interior front and rear side walls and said opposing interior right and left end walls extending between said opposite top and bottom exterior surface portions of said body and said opposing interior right and left end walls extending between and interconnecting respective opposite ends of said opposing interior front and rear side walls such that said substantially solid interior of said body completely surrounds said passageway defined by said slit with the cord received therethrough extending from said opposite top and bottom exterior surface portions of said body;
(d) said opposing interior front and rear side walls of said slit including gripping surfaces thereon being capable of engaging and gripping and thereby securely holding the cord extending through said passageway;
(e) said opposing interior front and rear side walls of said slit having respective widths extending between said opposing interior right and left end walls of said slit that are substantially longer than respective widths of said opposing interior right and left end walls of said slit extending between said opposing interior front and rear side walls of said slit such that application of inwardly directed pressure at said opposite right and left end exterior surface portions of said body will cause said opposing interior right and left end walls of said slit to move toward one another and said opposing interior front and rear side walls of said slit to move away from one another to thereby cause said slit to deform from a substantially closed unpuckered configuration in which said gripping surfaces of said opposing interior front and rear side walls securely hold the cord, to a substantially opened puckered configuration in which the cord, being held securely by said gripping surfaces, is released for permitting moving of said body relative to the cord.

5,182,839
APPARATUS AND METHOD FOR COMMINGLING CONTINUOUS MULTIFILAMENT YARNS
Lambert M. Stuart, North Kingstown, R.I., assignor to Concordia Mfg. Co., Inc., Coventry, R.I.
Continuation-in-part of Ser. No. 377,175, Jul. 10, 1989, Pat. No. 5,060,807, which is a continuation of Ser. No. 21,248, Mar. 3, 1987. This application Mar. 15, 1991, Ser. No. 670,288
Int. Cl.[5] D01D *11/02;* **B23Q** *15/00*
U.S. Cl. 28—283 **34 Claims**



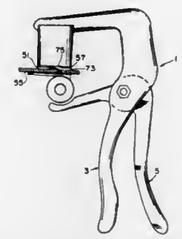
1. Apparatus for spreading filaments of a multiple filament yarn comprising
an enclosure having a yarn exit opening for passage of a multiple filament yarn with filaments that are spaced from each other, said enclosure also having an air removal opening,
a source of said multiple filament yarn completely contained within said enclosure, said multiple filament yarn extending from said source to and through said yarn exit opening, said yarn having a portion between said source and said yarn exit opening that is transverse to the direction of travel of air from said yarn exit opening to said air removal opening, and
means for providing a lower pressure at said air removal opening than at said yarn exit opening so as to cause air flow from said yarn exit opening through and around said portion of said yarn to said air removal opening.

5,182,840
EPOXY FLOOR ROLLER TOOL AND METHOD OF MAKING SAME
William A. Jacobs, Wooster, and William P. Camp, Jr., Millersburg, both of Ohio, assignors to The Wooster Brush Company, Wooster, Ohio
Filed Dec. 19, 1991, Ser. No. 810,105
Int. Cl.[5] B30B *3/00*
U.S. Cl. 492—24 **11 Claims**



1. An epoxy floor roller tool comprising a roller core tube, a continuous strip of carding cloth spirally wound around said tune with each succeeding winding of said carding cloth in butting engagement with a preceding winding, and end caps closing the ends of said tube, said carding cloth covering the entire length of said tube, said carding cloth having a fabric backing member, and rigid, densely packed, thin metal wires extending radially outwardly from said backing member over the entire length of said tube for use in breaking air bubbles in epoxy and polyurethane floor materials after the floor materials have been spread over a floor and before the floor materials have hardened, said wires comprising leg members of generally U-shape wire members extending through said backing member, said wire members having cross members pressed up against a back side of said backing member, said backing member and said cross members being adhesively bonded to said tube.

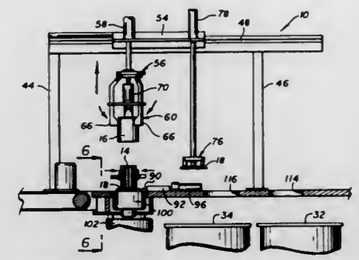
5,182,841
HYDRAULIC WHEEL CYLINDER TOOL
James M. Park, 1399 W. Berry Dr., Littleton, Colo. 80120, and Ralph L. Stichter, 11741 Jackson St., Thornton, Colo. 80233
Filed Jan. 7, 1992, Ser. No. 817,632
Int. Cl.[5] B25B *27/02*
U.S. Cl. 29—229 **20 Claims**



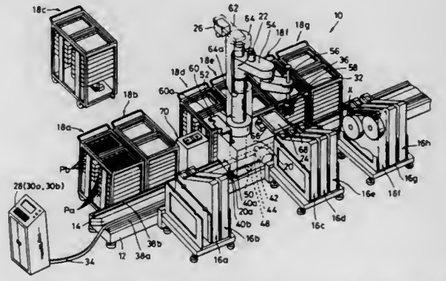
1. A hydraulic wheel cylinder retainer clip applying tool comprising a hinge, a first lever connected to the hinge, and a second lever connected to the hinge, the first and second levers having respectively first and second handle portions and first and second jaw portions, the hinge being positioned in the levers between the respective jaw and handle portions, whereby moving the handle portions toward each other moves the jaw portions toward each other, the first and second jaw portions extending generally perpendicular to the first and second handle portions, the first and second jaw portions having proximal ends near the hinge and having distal ends remote from the hinge, a cylinder having one axial end connected to the distal end of the first jaw portion, the cylinder having an axis perpendicular to the hinge and generally parallel to the first handle portion, a concave depression in the distal end of the second jaw portion, the concave depression being formed about an axis generally perpendicular to the cylinder axis and generally parallel to the hinge.

5,182,842
OIL FILTER DISASSEMBLY AND RECYCLING APPARATUS
Gilbert B. Ross, 17640 Vincennes, Northridge, Calif. 91325, and Charles Brittain, 10177 Elkwood, Sun Valley, Calif. 91352
Filed Mar. 13, 1992, Ser. No. 851,011
Int. Cl.[5] B23P *19/04;* **B67B** *7/46;* **B23B** *5/14*
U.S. Cl. 29—240 **45 Claims**

1. Disassembly and recycling apparatus for oil filters comprising a vertically extended filter element, a downwardly open canister comprising a wall enclosing said filter element, and a perforated metal base fixed across the canister opening in filter element securing relation, said apparatus comprising at a severing locus a filter retaining means including pin means extendible through said metal base perforations, cutting means disposed radially of said pin means and arranged to cut said metal base free from said canister, and individual means for shifting said base, said canister and said filter element to respective receptacles for recycling said metal base, said canister and said filter element.



5,182,843
METHOD FOR ASSEMBLING OBJECTS BY REVERSING UP AND DOWN AN ATTITUDE OF THE ASSEMBLY
Sachio Umetsu, and Toshihiko Miura, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 524,083, May 16, 1990, abandoned. This application Feb. 27, 1992, Ser. No. 841,202
Claims priority, application Japan, May 16, 1989, 1-120422; Mar. 26, 1990, 2-073506; Apr. 13, 1990, 2-098916
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—445 **2 Claims**

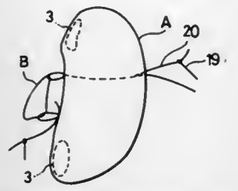


1. An assembly-attitude reversing method for assembling a plurality of objects and for reversing up and down an attitude of the assembly comprising the steps of:
positioning a first mounting member having a first mounting surface and a second mounting member having a second mounting surface in a waiting state;
setting a first object and a second object on said first and second mounting surfaces of said first and second mounting members in said waiting state respectively, said first and second mounting surfaces respectively hold said first and second objects;
superposing said first mounting surface having said first object set thereon on said second mounting surface having said second object set thereon while maintaining said first object set to said first mounting surface in a holding state thereby obtaining an assembly by combining said first object and said second object;
reversing said superposed first and second mounting members in synchronized rotation thereby positioning said second object set in said second mounting surface over said first object set in said first mounting surface;
opening said second mounting member while maintaining said assembly of said first and second objects on said first mounting member in the holding state; and

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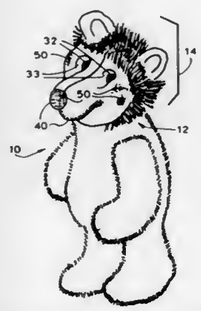
picking up said assembly from said first mounting member.

5,182,844
METHOD OF PRODUCING A STUFFED DOLL
Akito Honda, 21-15; Okusawa 5-chome, Setagaya-Ku, Tokyo, Japan
Filed Mar. 30, 1992, Ser. No. 860,024
Int. Cl.[5] A63H *3/02, 3/36*
U.S. Cl. 29—469 **6 Claims**



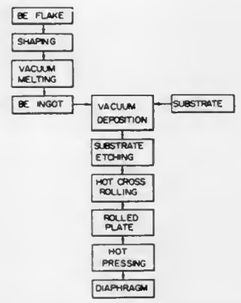
1. A method of producing a stuffed doll comprising the steps of:
forming elastic cloth such as rib stitch cloth, interlock stitch cloth or the like into a bag-like member;
inserting shaping members formed in shapes of a forehead and a chin into said bag-like member to its inside upper and lower portions respectively;
filling said bag-like member with stuffing to thereby form a head base having a predetermined shape;
fixing long-haired hair members, eyebrow members, eye members, a nose member, and a mouth member on said head base to thereby form a head portion; and
fixing said head portion on a body portion.

5,182,845
METHOD OF MAKING STUFFED FIGURE WITH SCULPTURED SOFT FACE
David W. Dean, Bath, N.H., assignor to DCN Industries, Inc., Boynton Beach, Fla.
Filed Sep. 26, 1991, Ser. No. 766,003
Int. Cl.[5] A63H *3/02;* **B23P** *21/00*
U.S. Cl. 29—469 **14 Claims**



1. A method of manufacturing a three dimensional stuffed figure with a face combining the sculptured appearance of a hard face and the softness of a plush face, comprising the steps of:
(A) providing an inverted plush body and a plush blank configured and dimensioned to form a head and define a facial aperture;
the facial aperture of the blank a face having a front surface of stretch material and a rear surface of non-stretch material defining a stuffing aperture;
(C) stuffing a quantity of stuffing forwardly into the secured face through the stuffing aperture in the non-stretch material sufficient to stretch the stretch material relative to the non-stretch material;
(D) contouring facial details of the front surface of the stuffed face by tensioning threads extending from the non-stretch material through the stretch material and back to the non-stretch material;
(E) inverting the contoured head, securing the inverted head to the inverted body to define an inversion aperture, and re-inverting the inverted head and body through the inversion aperture; and
(F) stuffing the re-inverted head and body with stuffing through the inversion aperture and then operatively closing the inversion aperture.

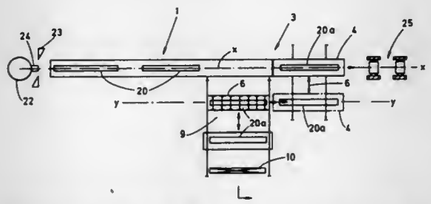
5,182,846
PROCESS FOR PRODUCING A DIAPHRAGM FOR ACOUSTIC APPLIANCES
Nobuaki Tomita, and Kunio Suzuki, both of Shizuoka, Japan, assignors to Yamaha Corporation, Japan
Filed Oct. 2, 1991, Ser. No. 770,224
Claims priority, application Japan, Oct. 4, 1990, 2-267341
Int. Cl.[5] B23P *17/00*
U.S. Cl. 29—527.2 **11 Claims**



1. Process for producing a diaphragm for acoustic appliances comprising the steps of
forming a beryllium layer on a substrate by means of vacuum deposition,
separating said beryllium layer from said substrate to obtain a crude beryllium plate,
subjecting said beryllium plate to hot cross rolling to obtain a rolled beryllium plate, and
subjecting said rolled beryllium plate to hot pressing.

5,182,847
METHOD AND APPARATUS FOR MANUFACTURING HOT-ROLLED STRIPS OR SECTIONS FROM CONTINUOUSLY CAST PRIMARY MATERIAL
Rudolf Guse, Ratingen; Dieter Nobis, Neuss, and Hans Malinowski, Düsseldorf, all of Fed. Rep. of Germany, assignors to SMS Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany
Filed Jun. 5, 1991, Ser. No. 710,662
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1990, 4017928
Int. Cl.[5] B21B *1/46*
U.S. Cl. 29—527.7 **17 Claims**

1. In a method for manufacturing hot-rolled strips or sections form continuously cast primary material in successive work steps in a production line of a closed process chain, the method including dividing an endless primary material obtained by an uninterrupted casting process after solidification into individual slab pieces of predetermined length, heating the slab pieces in an equalizing furnace to rolling temperature and subsequently rolling the slab pieces into predetermined final dimensions, wherein, for bridging a comparatively short interruption of the rolling process, a slab piece obtained from the uninterrupted casting process is moved into a buffer zone of the equalizing furnace, the improvement comprising, for bridging a relatively long interruption of the rolling process, dividing primary material obtained during the uninterrupted casting process in slab pieces having a predetermined length, moving the slab pieces out of the process chain by means of a furnace part in the form of a transverse conveyor, conveying the slab pieces into a side line laterally and parallel offset next to the production line, storing the slab pieces as necessary in a holding furnace, heating the slab pieces in the holding furnace to rolling temperature of maintaining the slab pieces in the holding furnace at rolling temperature, and stacking the slab pieces in the holding furnace, and, after the interruption has been

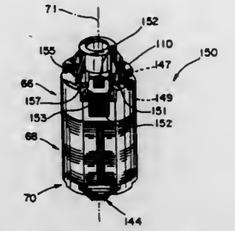


eliminated, returning the slab pieces in reverse direction into the process chain.

7. In an arrangement for manufacturing hot-rolled strips or sections from continuously cast primary material in successive work steps of a closed process and arrangement chain, the arrangement including a compact strip production continuous casting plant, an equalizing furnace and a rolling mill, the continuous casting plant, the equalizing furnace and the rolling mill being arranged in a production line, the improvement comprising the equalizing furnace having a first furnace part at an exit side of the equalizing furnace, the first furnace part comprising means for transversely conveying the first furnace part between the production line and a side line, and wherein the first furnace part comprises means for heating slab pieces received by the first furnace part, wherein the heating means are configured to be effective when the first furnace part is in the production line and when the first furnace part is in the side line.

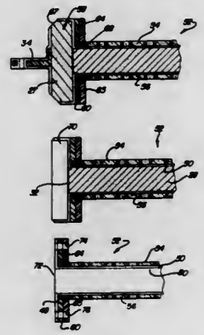
5,182,848
METHOD FOR ASSEMBLING A STATOR SUBASSEMBLY
Dale K. Wheeler, Fallston, Md., assignor to Black & Decker Inc., Newark, Del.
Division of Ser. No. 443,671, Nov. 28, 1989, Pat. No. 5,099,164, which is a division of Ser. No. 77,263, Jul. 24, 1987, Pat. No. 4,885,496. This application Nov. 19, 1991, Ser. No. 794,557
Int. Cl.[5] H02K *15/06*
U.S. Cl. 29—596 **9 Claims**

1. A method of assembling a stator subassembly, which comprises the steps of:
(a) forming a stator end member having a first end and a second end and having a bridging section across the first end thereof;
(b) assembling a bearing with the bridging section;
(c) subsequent to steps (a) and (b), assembling the stator end member and a stator field core with the second end of the stator end member in an interfacing position with an end of the stator field core, and
(d) subsequent to step (c), winding a wire about at least portions of the stator end member and the stator field core



to form a coil winding and to hold the stator end member and the field core in the interfacing position.

5,182,849
PROCESS OF MANUFACTURING LIGHTWEIGHT, LOW COST MICROWAVE COMPONENTS
Alex A. Marco, Torrance, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Dec. 21, 1990, Ser. No. 631,826
Int. Cl.[5] H01P *11/00*
U.S. Cl. 29—600 **25 Claims**



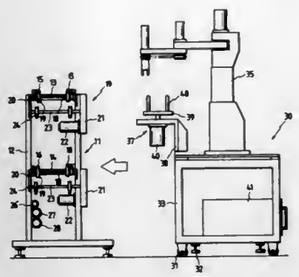
1. A process of fabricating a microwave component comprising the steps of:
forming a dissolvable mandril from salt into a desired shape;
forming a conductive layer on the outer surfaces of the mandril;
dissolving the mandril in an aqueous solution; and
applying an anodized coating to the conductive layer.

5,182,850
PARTS ASSEMBLING DEVICE
Isao Kondo, and Yoslo Taki, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Dec. 12, 1991, Ser. No. 805,961
Claims priority, application Japan, Jan. 25, 1991, 3-25681
Int. Cl.[5] B23D *49/00*
U.S. Cl. 29—784 **5 Claims**

1. An assembling device for parts comprising:
at least one parts carrying unit comprising pallet carrying belts and means for supplying electrical power to a parts assembling unit, said parts carrying unit having one side formed to be connected to said parts assembling unit; and
a parts assembling unit, said parts assembling unit being movably formed so as to be connectable to said one side of said parts carrying unit, said parts assembling unit comprising pallet positioning means capable of being placed at

VOL 1147 ISS 1 FEB 2 1993 UMI

an immediately lower portion of said pallet carrying belts while said parts assembling unit is connected to said parts



carrying unit, and assembling means for assembling parts on a workpiece mounted on a pallet carried on said pallet carrying belts.

5,182,851

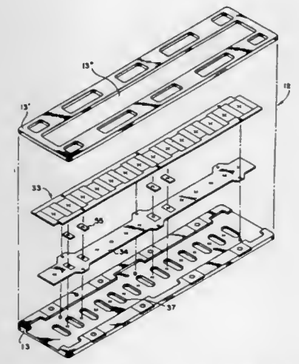
METHOD FOR HOLDING A STRIP OF CONDUCTIVE LEAD FRAMES

Robert H. Bond; Michael A. Olla, both of Denton; Barry Morrison, Bedford, and Linn C. Garrison, Dallas, all of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 265,231, Oct. 31, 1988, Pat. No. 5,111,935, which is a division of Ser. No. 170,069, Mar. 14, 1988, Pat. No. 4,815,595, which is a continuation of Ser. No. 937,558, Dec. 3, 1986, abandoned. This application Nov. 22, 1991, Ser. No. 796,419

Int. Cl.[5] H01R *43/00*

U.S. Cl. 29—827 **9 Claims**



1. A method for holding a strip of conductive leadframes together with a plurality of semiconductor chips which comprises:

a) providing a leadframe carrier of the type having a pair of planar, substantially rectangular upper and lower mating members which are attachable to one another along their outer perimeters, at least one of said upper and lower members being intersected by a longitudinal groove and a plurality of keyways;

b) providing a leadframe carrier insert sheet having a shape which corresponds to the groove and keyways of said members, said insert sheet having a plurality of recesses in a surface thereof which are adapted to retain a semiconductor chip therein;

c) disposing the insert sheet in said groove and keyways;

d) disposing a semiconductor chip having contact pads in each of said recesses;

e) providing a flat strip leadframe ribbon including a plurality of leadframes having electrically shorted contact leads, and disposing the leadframe ribbon on said chips and said insert such that the leadframe contact leads meet the corresponding contact pads of the semiconductor chips; and,

f) attaching the upper and lower carrier members together with the insert, chips and leadframes therebetween.

5,182,852

REVERSIBLE PRODUCTION PROCESS FOR ASSEMBLY OF CIRCUIT BOARD AND SUBSTRATE

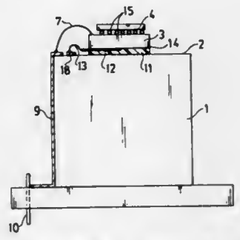
Jean-Louis Montanari, Herbeys, France, assignor to Societe Francaise de Detecteurs Infrarouges (SOFRADIR), France

Filed Nov. 8, 1991, Ser. No. 789,359

Claims priority, application France, Nov. 9, 1990, 90 14182

Int. Cl.[5] H05K *3/34*

U.S. Cl. 29—840 **6 Claims**



1. A method of attaching a circuit board to a substrate wherein the front face of the circuit board has conductive tracks thereon and the back face of said circuit board is metalized, the method including the steps of

placing a silicone adhesive layer between the back face of the circuit board and a substrate,

interposing a conductive foil between the back face of the circuit board and the adhesive layer, and

connecting the foil to a terminal mounted upon the substrate.

5,182,853

METHOD FOR ENCAPSULTING IC CHIP

Yasushi Kobayashi, Kamikodanaka, and Seiji Kogure, Nakahara, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 31, 1991, Ser. No. 786,088

Claims priority, application Japan, Nov. 6, 1990, 2-300148

Int. Cl.[5] H05K *3/30*

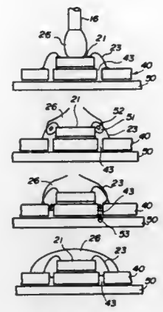
U.S. Cl. 29—841 **11 Claims**

1. A resin encapsulating method for encapsulating an integrated circuit chip which is mounted on a substrate using a resin, said resin encapsulating method comprising the steps of:

(a) forming a substrate structure which is made up of a substrate, first pads formed on the substrate, an integrated circuit chip mounted on the substrate, second pads formed on the integrated circuit chip, and interconnections formed across the first and second pads, said substrate having one or a plurality of holes which penetrate the substrate and are located below the interconnections;

(b) supplying a predetermined quantity of a resin on the substrate structure so that the resin covers the integrated circuit chip and the interconnections and the resin flows between the interconnections to reach the holes below the interconnections; and

(c) drawing the resin under vacuum suction via the holes, so as to provide an escape path for air cells which are generated within the resin as the resin flows between the interconnections in said step (b).



5,182,854

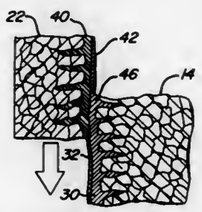
METHOD FOR METALLURGICALLY BONDING PRESSED-IN CYLINDER LINERS TO A CYLINDER BLOCK

Karl D. Voss, Farmington Hills, Mich., assignor to CMI International, Inc., Southfield, Mich.

Filed Jan. 15, 1992, Ser. No. 822,537

Int. Cl.[5] F02F *1/00*

U.S. Cl. 29—888.061 **13 Claims**



1. A method for metallurgically bonding a cylinder liner to a cylinder block of an internal combustion engine, said method comprising the steps of;

casting a metal cylinder block (**14**) having at least one cylindrical wall defining a piston cylinder (**16**) of fixed inner diameter D_1;

forming a cylindrical-shaped tubular liner **22** from high wear-resistant metal material having an outer surface diameter D_2 slightly larger than the inner diameter D_1 of the piston cylinder (**16**);

applying low melting point molten coating material (**24**) to one of the outer surface of the liner (**22**) and the cylinder wall (**16**);

heating the cylinder block (**14**) and the liner (**22**) to an elevated temperature;

and then forcing the liner (**22**) into the piston cylinder (**16**) with an interference fit causing the coating material (**24**) to alloy with the liner and cylinder block metals forming a metallurgically bonded region (**46**) between the liner (**22**) and cylinder wall (**16**), joining the same together.

5,182,855

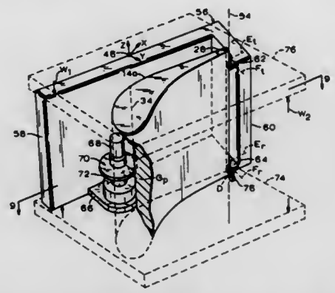
TURBINE NOZZLE MANUFACTURING METHOD

Jack R. Martin, Bedford, Mass., assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 13, 1990, Ser. No. 627,161

Int. Cl.[5] B23P *15/02*

U.S. Cl. 29—889.22 **15 Claims**



1. A method of manufacturing a turbine nozzle having a plurality of circumferentially spaced vanes fixedly joined to radially outer and inner bands, each vane including a root fixedly joined to said inner band, a tip fixedly joined to said outer band, a leading edge, a trailing edge, suction and pressure sides extending from said leading edge to said trailing edge and between said root and said tip, and a throat line extending from said root to said tip on said suction side for defining a throat area with a trailing edge of an adjacent one of said vanes, said method comprising:

providing a first one of said vanes;

providing a datum for locating said first vane relative to said adjacent vane; and

fixturing said first vane relative to said datum for providing a trailing edge nest having six supports for predeterminedly locating said first vane relative to said adjacent vane, said trailing edge next including four trailing edge supports for locating said first vane trailing edge to define a hinge axis extending along said trailing edge about which said first vane is rotatable, a radial support for radially locating said first vane, and a throat support for predeterminedly locating said first vane about said hinge axis for obtaining a predetermined value of said throat area.

5,182,856

HEAT EXCHANGER

Horst Armbruster, Illingen, Fed. Rep. of Germany, assignor to Behr GmbH & Co., Fed. Rep. of Germany

Filed Dec. 18, 1991, Ser. No. 809,142

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1990, 4042019

Int. Cl.[5] B23P *15/26;* **F01P** *11/08;* **F28F** *3/08*

U.S. Cl. 29—890.039 **5 Claims**

1. A method of manufacturing a heat exchanger of the type including a stack of disk bodies stacked on top of one another and connected with one another by flow through openings and a housing enclosing the stack of disk bodies, the housing and disk bodies defining flow openings for respective heat exchange fluids, said method comprising:

forming a plastic housing bottom part,

forming a plastic housing lid part,

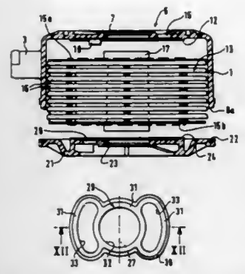
forming a fitted sealing device,

forming a stack of disk bodies,

placing the fitted sealing device between an end of the stack

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of disk bodies and one of the housing bottom part and housing lid part,

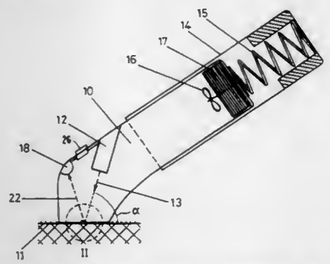


and welding the housing bottom part to the housing lid part with the stack of disk bodies and sealing device enclosed therebetween and compressing the sealing device.

5,182,857
SHAVING APPARATUS

Pal Simon, Warstein, Fed. Rep. of Germany, assignor to U.S. Philips Corp., New York, N.Y.

PCT No. PCT/EP90/01929, § 371 Date Sep. 3, 1991, § 102(e) Date Sep. 3, 1991, PCT Pub. No. WO91/06406, PCT Pub. Date May 16, 1991
PCT Filed Oct. 29, 1990, Ser. No. 679,077
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1989, 3936367
Int. Cl.[5] A61B *17/00*
U.S. Cl. 30—34.05 **10 Claims**



1. A shaving apparatus comprising a housing (**10**) and a shear plate (**11**) with a hair entry slot (**24**) wherein inside the housing (**10**) there is provided a device (**12**) for generating a laser beam (**13**) which acts as a cutting means and which impinges on the inner side of the shear plate (**11**) in the proximity of the entry slot (**24**) where it acts upon and severs the hair, said laser beam (**13**) impinging on said shear plate (**11**) and being reflected along the entry slot (**24**) in a reflecting zone of incidence (**23**) on the shear plate (**11**).

5,182,858
RAZOR MECHANISM

Evan N. Chen, Fairfield, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

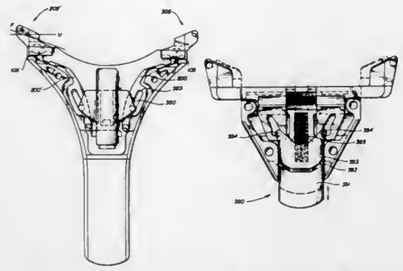
Continuation of Ser. No. 361,454, Jun. 5, 1989, abandoned. This application Oct. 15, 1990, Ser. No. 600,290
The portion of the term of this patent subsequent to Sep. 3, 2008, has been disclaimed.
Int. Cl.[5] B26B *21/14*
U.S. Cl. 30—85 **19 Claims**

1. A razor mechanism for use with a flexible cartridge comprising:

a housing having a substantially enclosed interior portion, a distal end, a proximal end and a central longitudinal axis extending from said distal end to said proximal end;

an actuator slidably connected to said housing for movement in a direction substantially parallel to said longitudinal axis, said actuator comprising at least one prong member;

an attachment member having a pivoting end and an attachment end, wherein said pivoting end is pivotally connected to said housing within said interior portion, and at least a portion of said attachment member is disposed



within said interior portion, said attachment end is moveable in response to flexing of said flexible cartridge during shaving;

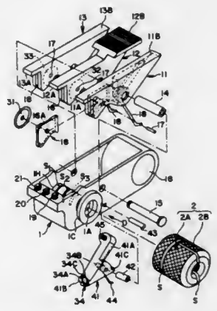
said attachment member further comprising at least one flexure point disposed between said attachment end and said pivoting end; and

wherein said actuator engages said attachment member such that said attachment end moves in a direction substantially perpendicular to said longitudinal axis in response to the movement of said actuator.

5,182,859
CABLE STRIPPER

Naoki Yoshimori, Tokyo, Japan, assignor to Canare Electric Co., Ltd., Aichi, Japan

Filed Dec. 9, 1991, Ser. No. 804,794
Claims priority, application Japan, Aug. 8, 1991, 3-199223
Int. Cl.[5] B21F *13/00*
U.S. Cl. 30—90.6 **3 Claims**



1. A cable stripper comprising:

a main stripper body;

a cable holder rotatably mounted on said main stripper body and capable of guiding an end portion of a cable thereinto, said main stripper body being free to rotate about the axis of said cable;

operating levers pivotally installed in said main stripper body such that all of said operating levers pivot together when one of said operating levers is depressed, said operating levers being installed on said main stripper body adjacent each other along said axis of said cable and including first circular blades for cutting said cable circumferentially which are mounted to said tip portions of said operating levers with edges of said first circular blades being oriented perpendicular to the axis of said cable which is inserted in a cable guide formed in said stripper body so that said edges are moved by a prescribed amount into said cable guide when said operating levers are pivoted in one direction;

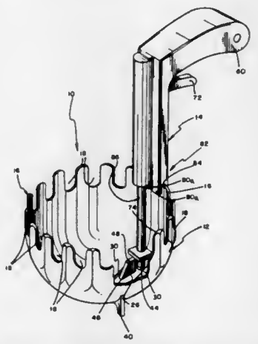
a second blade for cutting said cable longitudinally which is installed in said main stripper body so as to move toward the interior of said cable guide, an edge of said second blade being oriented parallel with the axis of said cable inside said cable guide; and

a second blade moving assembly which moves the edge of said second blade a prescribed amount into said cable guide when said operating levers are rotated in said one direction.

5,182,860
SKIMMER

Delmar A. Kuhlman, P.O. Box 3158, Wichita, Kans. 67201-3158

Filed Sep. 3, 1991, Ser. No. 754,060
Int. Cl.[5] A47J *43/28*
U.S. Cl. 30—325 **20 Claims**



18. A skimmer for removing fat from a liquid comprising a bowl having a bottom, said bowl having a structure defining an opening in the bottom of the bowl; a handle member releasably engaging said bowl an decomposing a hollow handle neck having a structure defining a handle bore; a plunger slidably disposed in said handle bore such as to normally cover said opening; and a means, engaged to said plunger, for elevating the plunger such as to uncover said opening.

5,182,861
SHEET-DRIVEN TYPE AUTOMATIC DRAFTING MACHINE

Masaaki Suzuki, and Tooru Eshita, both of Tokyo, Japan, assignors to Mutoh Industries Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 545,896, Jun. 29, 1990, abandoned. This application Mar. 19, 1992, Ser. No. 853,994
Claims priority, application Japan, Aug. 29, 1989, 1-222623; Sep. 27, 1989, 1-251563; Sep. 27, 1989, 1-251564
Int. Cl.[5] B43L *13/00;* **B65H** *5/20*
U.S. Cl. 33—18.1 **10 Claims**

1. A sheet-driven type automatic drafting machine, comprising:

a sheet mounting member having opening means therein along a line in a Y axis direction of said machine;

drive roller means positioned in said opening means in said sheet mounting member, and a rotary drive mechanism connected to said drive roller means;

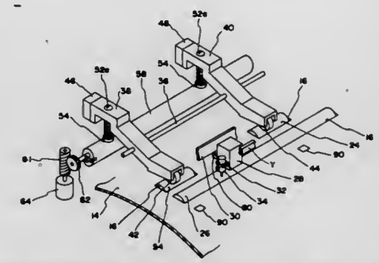
a Y axis rail extending in the Y axis direction above said sheet mounting member;

a line drafting head movably mounted on said rail for movement along said rail and means connected to said bead for driving said head along said rail;

a shaft positioned above said sheet mounting member adjacent and parallel to said rail;

a first press roller arm pivotally mounted on said shaft for pivoting movement around said shaft at a predetermined position thereon;

a second press roller arm pivotally mounted on said shaft for pivoting movement around said shaft and for movement along said shaft;



said press roller arms each having a press roller at one end thereof engagable with a corresponding part of said drive roller means when said press roller arms are pivoted to move said one end toward said sheet mounting member for pressing a drafting sheet therebetween and enabling the drafting sheet to be driven in an X axis direction by said drive roller means;

arm elevating means engaged with said arms for pivotally driving said arms for separating said press rollers from said drive roller means;

a cursor movable along said Y axis rail and driven by said head driving means with said drafting head; and

an arm drive engagement body on said cursor engagable with said second press roller arm for driving said second press roller arm along said shaft in the Y axis direction.

5,182,862
INDICATING THREAD GAGE

Jimmy L. Frank, Houstoo; John R. Wolfe, Jr., Pasadena, and James R. Douglas, Cypress, all of Tex., assignors to Gagemaker, Inc., Pasadena, Tex.

Filed Apr. 12, 1991, Ser. No. 684,651
Int. Cl.[5] G01B *5/08, 5/12*
U.S. Cl. 33—199 R **18 Claims**

1. An indicating thread gage for tapered threads comprising:

an active block slidably engaged to a guide rail passing therethrough;

a biasing means for biasing the active block to a neutral position;

a fixed block engaged to the guide rail passing therethrough;

an indicator for transducing movement of the active block along the guide rail;

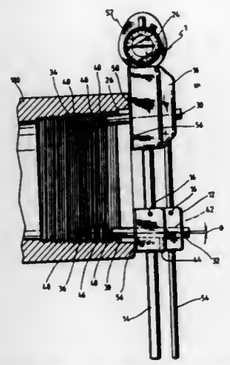
an active arm with one end secured to the active block;

a fixed arm with one end secured to the fixed block; and

a thread form element engaged with a section of the active arm not fixed in the active block;

VOL 1147 ISS 1 FE 2 1993 UMI

a second thread form element engaged with a section of the fixed arm not fixed in the fixed block;



each thread form element biased to a neutral position, but capable of sliding movement along the active arm and fixed arm, respectively.

5,182,863

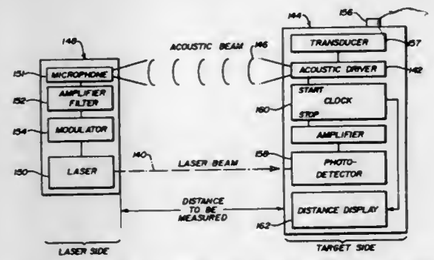
AUTOMATIC PLUMB AND LEVEL TOOL WITH ACOUSTIC MEASURING CAPABILITY

Joseph F. Rando, Los Altos Hills, Calif., assignor to Spectra-Physics Laserplane, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 602,353, Oct. 22, 1990, Pat. No. 5,075,977. This application Jun. 12, 1991, Ser. No. 714,240

Int. Cl.[5] G01C *1/02*

U.S. Cl. 33—227 **12 Claims**



1. A laser beam projecting device for plumbing, leveling, alignment and distance measuring, comprising,

a hand-carryable housing having at least two sides capable of resting stably on a flat surface, the two sides being substantially perpendicular to each other, and including two broad sides,

laser source means mounted within the housing, for producing at least one collimated beam of visible laser light,

a laser beam exit window in the housing, positioned in neither of two sides nor on said broad sides,

beam directing means in the housing for directing a beam from the laser source means vertically out of the housing through the exit window when a first side of said two sides is held generally horizontal, and for directing a beam from the laser source means horizontally out of the housing through the exit window when a second side of said two sides is held generally horizontal,

tilt compensation means in the housing and associated with the beam directing means for correcting for relatively small tilt angles of the housing as it rests with one of said two sides against surfaces not truly horizontal or not truly vertical, and for projecting the beam through the exit window in substantially true vertical orientation or substantially true horizontal orientation despite such relatively small tilt angles,

means associated with the laser beam projecting device for distance measuring, including:

means for characterizing at least one collimated beam of visible laser light produced at said laser source means, so that a modulated or pulsed beam is projected from said hand-carryable housing, and

a separate, unconnected component as a target means with photodetector means for receiving and detecting a modulated or pulsed laser beam projected from the hand-carryable housing, and with means for projecting an acoustic signal from the target means toward the hand-carryable housing,

acoustic signal receiver means in the hand-carryable housing for receiving an acoustic signal transmitted directly from the target means, without reflection, and

means coating between the hand-carryable housing and the separate target means, for measuring the time interval between transmission of the acoustic signal at the target means and receipt of the acoustic signal by the receiver means in the hand-carryable housing, with the means for characterizing, which causes a modulated or pulsed laser beam to be projected from the hand-carryable housing toward the photodetector means of the target means, being part of a response loop for measuring said time interval, and with associated means for calculating and displaying the distance between appropriate points on the hand-carryable housing and the target means in response to said measurement of the time interval.

5,182,864

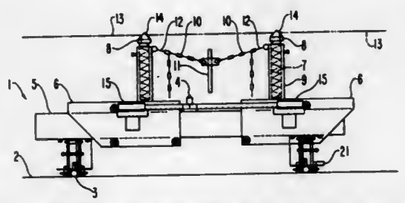
APPARATUS FOR MEASURING CAR FRAME

Ryuzo Yamashita, No. 53-9, Matsugaoka 3-chome, Funabashi-shi, Chiba-ken, Japan

Filed Sep. 12, 1991, Ser. No. 757,936

Int. Cl.[5] G01B *5/00*; **G01D** *21/00*

U.S. Cl. 33—288 **2 Claims**



1. An apparatus for measuring a car frame, comprising:

a pair of x-axis units extending in an x-axis direction of a car frame;

a y-axis unit mounted on said x-axis units for movement in an x-axis direction of a car frame and having a y-axis center piece provided at the center thereof between said x-axis units;

a pair of z-axis unit bases mounted on said y-axis unit for movement in a y-axis direction of a car frame;

a z-axis unit means mounted on each of said z-axis unit bases capable of being extended in a z-axis direction of a vehicle frame;

a z-axis center piece; and

a chain extending from said z-axis center piece to each z-axis unit means, said chains being equal in length.

5,182,865

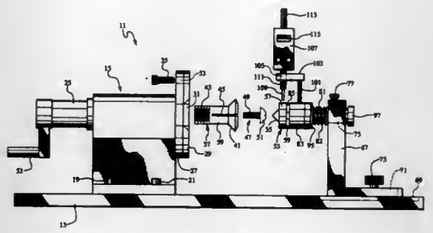
APPARATUS FOR MEASURING WORKPIECE CONCENTRICITY

Joe E. Greenslade, P.O. Box 330865, Fort Worth, Tex. 76163

Filed Jul. 14, 1992, Ser. No. 913,446

Int. Cl.[5] G01B *5/20*

U.S. Cl. 33—550 **24 Claims**



1. An apparatus for measuring the concentricity of a workpiece, the workpiece having a shank and a drive profile, comprising in combination:

a base;

a holder means mounted on the base and having an axis of rotation for releasably receiving the workpiece shank and for rotating the workpiece about the axis of rotation;

a follower member having an engaging profile for engaging the workpiece drive profile for rotation therewith, the follower member also having a symmetrical outer periphery and a contacting surface on an end opposite the engaging profile;

an engaging means carried by the base and opposing the holder means for biasing the engaging profile of the follower member against the workpiece drive profile, the engaging means having a contacting surface that slidingly contacts the contacting surface of the follower member, so that when the workpiece is rotated by the holder means the follower member is capable of planar motion relative to the contacting surface of the engaging means proportional to any non-concentricity of the workpiece; and

an indicator means carried by the base for measuring any workpiece non-concentricity, the indicator means having a spring-biased probe capable of linear extension and retraction which slidingly contacts the outer periphery of the follower member.

5,182,866

APPARATUS AND METHOD FOR IDENTIFYING THE LATERAL POSITION OF A WORKPIECE

Norbert Heymann, Dormagen, Fed. Rep. of Germany, assignor to GKN Automotive, Siegburg, Fed. Rep. of Germany

Filed May 14, 1991, Ser. No. 700,527

Claims priority, application Fed. Rep. of Germany, May 18, 1990, 4015957

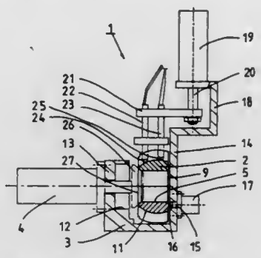
Int. Cl.[5] G01B *5/20, 7/28*

U.S. Cl. 33—645 **16 Claims**

1. A method of identifying the lateral position of a workpiece with a circularly enveloped outer contour in cross section and at least one asymmetric contour in longitudinal direction, especially a ball hub, comprising:

locating a workpiece in its position within a channel in a feeding assembly having a U-shape in cross section, defining a pair of parallel side walls and a bottom web with said channel therebetween, the axis of said outer contour of said workpiece lying transverse in said channel, said feeding assembly having a stationary sensor in one of the side walls;

scanning the contour of the workpiece with at least two movable spaced sensors positioned above the channel beside each other in transverse direction;



determining the difference in travel between the two movable sensors; and

identifying the lateral position of said workpiece.

5,182,867

POSITION MEASURING APPARATUS

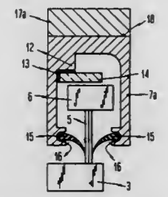
Günther Nelle, Bergen, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed May 4, 1992, Ser. No. 878,231

Claims priority, application 05111991, May 11, 1991, 91107677.6

Int. Cl.[5] G01B *11/04*

U.S. Cl. 33—702 **15 Claims**



1. A position measuring apparatus, for measuring the relative position of two objects, in an encapsulated position measuring arrangement, which comprises:

a probing means which is connected to a first object;

a support member which is connected to a second object wherein said support member and said second object have different coefficients of thermal expansion;

a measurement means arranged on said support member wherein said probing means probes said measurement means;

an auxiliary support member rigidly connected to said support member wherein said auxiliary support member is characterized by a coefficient of thermal expansion which is different from the coefficient of thermal expansion of said support member and further, wherein the cross-sectional dimensions of said auxiliary support member and said support members are determined so that a resulting structural combination of said auxiliary support member and said support member has a coefficient of thermal expansion which is substantially equal to the coefficient of thermal expansion of said second object.

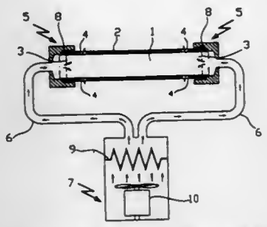
VOL
1147
ISS
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1993
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5,182,868

METHOD AND APPARATUS FOR DRYING THE ENDS OF A BUNDLE OF HOLLOW FIBERS FOR A MEMBRANE DEVICE MADE UP OF HOLLOW FIBERS

Julien Porta, Chavanoz, and Christian Clermont, Morance, both of France, assignors to Hospal Industrie, Cedex, France

Filed Jul. 12, 1991, Ser. No. 729,387
Claims priority, application France, Jul. 13, 1990, 90 09199
Int. Cl.[5] F26B *7/00*
U.S. Cl. 34—18 **12 Claims**



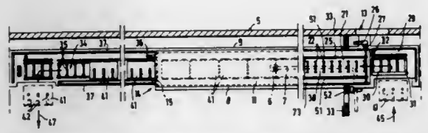
1. A drying method for drying the ends of a bundle of hollow fibers, the method comprising the steps of:
placing the bundle in a sheath having at least one axial opening and at least one lateral opening at each of its ends; and
forcing in air simultaneously via the axial openings, with the inlet air flow rates to the sheath and the sizes of the openings being selected so that all of the air penetrating at each end of the sheath leaves via the corresponding lateral opening.

5,182,869

APPARATUS FOR COOLING SPENT ANODES OF ELECTROLYTIC MELTING BATHS

Erwin Collet, Lunen; Roland Rathgeber, Neub, and Udo Jerxsen, Toging, all of Fed. Rep. of Germany, assignors to Westfalia Becorit Industrietechnik GmbH, Lunen, Fed. Rep. of Germany

Filed Oct. 22, 1991, Ser. No. 780,196
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1990, 4033713
Int. Cl.[5] F26B *7/00*
U.S. Cl. 34—20 **25 Claims**



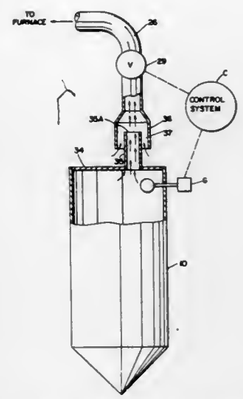
1. Apparatus for cooling anode rod assemblies, composed of spent anodes mounted on anode rods, removed from electrolytic furnaces; said apparatus comprising building structure defining an elongate cooling chamber, conveyor means for transporting the anode rod assemblies along the chamber and means for feeding cooling air into the chamber at least from a bottom region of the chamber and, means at the top region of the chamber for extracting heated together with any waste gases given off.

5,182,870

SYSTEM AND METHOD FOR RECOVERING VOLATILE ORGANIC GASES EMITTED FROM A POLYETHYLENE RESIN PRODUCT

Gaylon L. Dighton, and David G. Alvarez, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 30, 1990, Ser. No. 575,453
Int. Cl.[5] A26B *3/00*
U.S. Cl. 34—26 **9 Claims**



1. An apparatus for handling substances which emit flammable materials which is designed to reduce emissions to the atmosphere of the flammable materials which comprises:
a vessel;
the vessel having means for venting its gas mixture to the atmosphere, said means for venting having an essentially perpetually open conduit between the flammable materials and the atmosphere;
means for air purging of the vessel;
a conduit means having an opening which communicates with the venting means of the vessel to draw the gas mixture from the venting means of the vessel to a gas mixture treatment means, said conduit means having valve means to permit said gas mixture from the venting means of the vessel to be alternatively released to the atmosphere;
means for detecting the composition of the gas mixture in the apparatus prior to the gas mixture treatment means;
a control means operably connected to the valve means in the conduit means and to the means for detecting the composition of the gas mixture;
wherein, the valve means is operated by the control means to assist in maintaining the composition of the gas mixture in the conduit means outside of the explosive range.

5,182,871

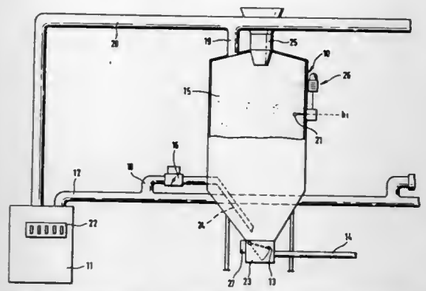
APPARATUS FOR DRYING BULK MATERIALS

Dieter Karls, Vaihingen, Fed. Rep. of Germany, assignor to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Nov. 18, 1991, Ser. No. 793,563
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1990, 4037443
Int. Cl.[5] F26B *21/00*
U.S. Cl. 34—54 **9 Claims**

1. An apparatus for drying bulk materials comprising a substantially cylindrical bulk material hopper having a funnel-shaped bottom end, a bulk material inlet in an upper portion of said hopper, a bulk material discharge device at the bottom of said hopper, an air inlet for introducing heated dry air adjacent

the bottom of said hopper, an air outlet for exhausting moisture-containing air adjacent the top of said hopper, means for feeding bulk material through said bulk material inlet, a temperature sensor disposed in said hopper at a location where a temperature gradient is established in said bulk material during normal operation of said apparatus for measuring the temperature of bulk material at said location, means connected to said



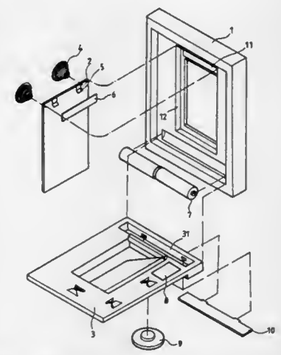
temperature sensor for preventing discharge of inadequately dried bulk material in response to adecrease in the measured temperature of said bulk material below a predetermined limit, a valve for regulating the introcution of heated dry air to said hopper and means connected to said temperature sensor for controlling said valve to decrease the flow of heated dry air to said hopper in response to an increase in the measured temperature of said bulk material above a predetermined upper limit.

5,182,872

SOUND PRODUCING CONTROL SWITCH FOR A PICTURE-FRAME

Larry Lee, Taipei Hsien, and Jack Kao, Nan Tou City, both of Taiwan

Filed Oct. 10, 1991, Ser. No. 774,324
Int. Cl.[5] G09F *1/12, 27/00;* **A63H** *33/38, 5/00*
U.S. Cl. 40—152 **1 Claim**



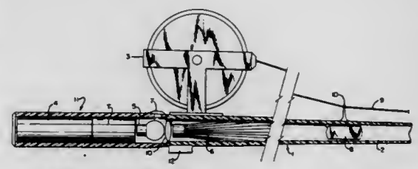
1. A sound producing control switch for a picture-frame having a back and a front, comprising:
a picture-frame body having defined therein a show window, said show window having a back and a front;
a conductive strip made from a thin, flat copper strip adhered to the back of said show window at an upper position;
a sheet of glass covering said show window;
two leaf springs clamped on said sheet of glass and disposed in contact with said conductive strip;
a back cover covering the back of said picture-frame body;
two springs means respectively secured to said two leaf springs and positioned against said back cover;
a control circuit fastened in said back cover, the control circuit including two opposite terminals electrically connected to said two leaf springs, a battery power supply, a music IC and a speaker;
wherein said conductive strip, show window, and leaf springs are arranged such that movement of said picture-frame body causes said two leaf springs to temporarily disconnect from said conductive strip, triggering said control circuit to produce a sound through said speaker, and wherein said spring means is arranged to automatically force said two leaf springs to contact said conductive strip immediately after said two leaf springs have been caused to disconnect from said conductive strip to prevent said sound from repeating.

5,182,873

MOTION SENSITIVE, FIBER OPTIC, STRIKE INDICATING FISHING ROD ASSEMBLY

William G. Aragon, Jr., 3181 W. 36th Ave., Denver, Colo. 80211

Continuation-in-part of Ser. No. 137,872, Dec. 24, 1987, abandoned. This application Jan. 19, 1990, Ser. No. 467,675
Int. Cl.[5] A01K *97/12*
U.S. Cl. 43—17 **14 Claims**



1. In a fishing rod assembly wherein a fishing rod includes a handle at one end and a fishing line is guided for extension along said rod, the improvement comprising:
motion-sensing means in said rod responsive to motion in said fishing line imparted to said rod to generate an electrical signal;
a light source and a portable power supply in said fishing rod;
circuit means in said fishing rod between said portable power supply and said light source responsive to an electrical signal from said motion-sensing means to activate said light source; and
a plurality of light-transmitting fiber optic elements extending through said rod having ends of said elements optically aligned with said light source for the transmission of light through said fiber optic elements when an electrical signal is generated by said motion-sensing means.

5,182,874

FISHING LINE CUTTER, AND ROD AND REEL THEREWITH

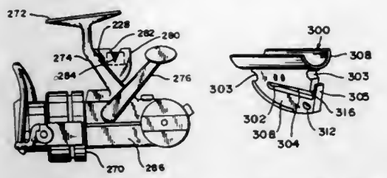
Timothy R. Powell, 2626 40th Ave. North, Texas City, Tex. 77590

Continuation-in-part of Ser. No. 453,823, Dec. 21, 1989, Pat. No. 5,025,585. This application Apr. 15, 1991, Ser. No. 685,538
Int. Cl.[5] A01K *87/00*
U.S. Cl. 43—25 **5 Claims**

1. A fishing reel comprising
a reel body,
a reeling mechanism on the reel body for reeling fishing line,
an exterior handle engaging the reeling mechanism for operating said mechanism, and
a fishing line cutter on the reel body, the fishing line cutter comprising
a body member,

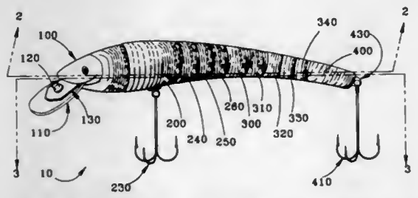
VOL
1147
ISS
1
FE
2
1993
UMI

a cutting member attached to the body member for cutting the fishing line, a portion of the cutting member exposed in an opening in the body member, the opening suitable



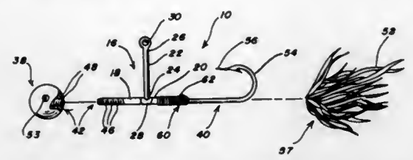
for the entry therein of the fishing line so that the fishing line is movable to contact the cutting member,
at least one lip extending from the body member, the at least one lip partially blocking the opening.

5,182,875
FLEXIBLE TYPE FISHING LURE
Randall D. Righetti, Upland, Calif., assignor to John Alexander Righetti, Pomona, Calif., a part interest
Filed Feb. 28, 1992, Ser. No. 843,178
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.24 **30 Claims**



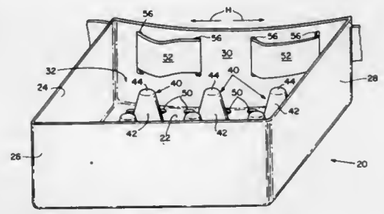
1. A flexible fishing lure comprising:
a. a multisegmented body including a head segment, a tail segment, a neck segment, a tapered segment between the tail and the neck segment, and a plurality of segments in between;
b. each segment of said multisegmented body consist of a left half diametric section and a right half diametric section which are symmetrical by reflection across the plane which divides the two halves;
c. a thin flexible membrane which connects the left half diametric section and right half diametric section to form a generally series arrangement of segments;
d. an arrangement of said right and left half sections affixed to said flexible membrane, sandwiching the flexible membrane by the sections, and which provides a gap spacing between the segments which permits respective adjacent segments to move side to side in a generally serpentine manner as the lure moves through the water;
e. a generally air-foil type exterior surface for providing lift to said lure;
f. a flat spoon like diving bill structure positioned at the head segment of the lure which causes downward movement as the lure moves through the water;
g. a leader line attachment proximal to the diving bill structure;
h. a means for attaching the diving bill to the head segment of the lure, where the diving bill is attached by means of a bill plate which is secured by extending the bill plate into the head segment of the lure and thereby clamping the diving bill;
i. a center of gravity weight located at the neck of the lure;
j. at least one hook attachment at the tail segment of the lure; and
k. means for hingably attaching said at least one hook attachment to said tail segment.

5,182,876
BALANCED JIGGING LURE
Earl L. Lewis, 3840 Keokuk, St. Louis, Mo. 63116
Filed Jun. 10, 1991, Ser. No. 712,478
Int. Cl.[5] A01K *85/00*
U.S. Cl. 43—42.39 **3 Claims**



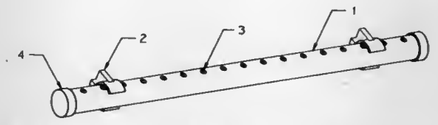
1. A balanced jigging lure for attachment to a fishing line used by a fisherman to catch a fish comprising:
a T-shaped shank with first and second arms and an elongated stem, said stem having first and second ends, said first end attached to the arms with a means for fixedly connecting the stem to the arms and said second end terminating in an eye, said eye spaced a substantial distance from said first and second arms, said means for connecting the stem to the arms forming a pivot point about which the jigging lure can be suspended b the eye in the stem in substantially horizontal position imitative of a baitfish; and,
a weighted head detachably connected to said first arm with means for detachably attaching and a barbed end section connected to the second arm by means for attaching, said weighted head and said barbed end section balanced about the pivot point by selecting the length of the arms, by selecting the weighted head and by selecting the barbed end section including and dressings and baits attached to the barbed end section whereby a large assortment of imitative jigging lures can be formed by interchanging various parts, wherein the means for detachably attaching the weighted head to the first arm comprise external threads on the first arm and mating internal threads in the weighted head.

5,182,877
FISH LINE STRIPPING BASKET
Gary W. Burchill, 13 Sunnyfield Rd., Bedford, Mass. 01730; Frank E. Gillett, 24 Magazine St. #4; Rajan Ramaswamy, 57 Bishop Allen Dr. #1R, both of Cambridge, Mass. 02139, and Peter S. Winslow, 23 Rolfe's La., Newbury, Mass. 01951
Filed Jun. 30, 1992, Ser. No. 906,792
Int. Cl.[5] A01K *97/00*
U.S. Cl. 43—54.1 **30 Claims**



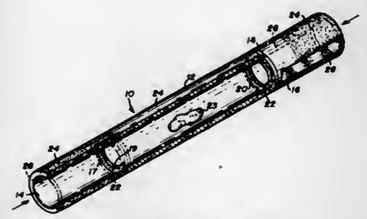
1. A fish line stripping basket comprising
a base wall,
one or more side walls,
a rear wall,
said walls together defining a volume open at the top, and said walls further defining a plurality of apertures for water to drain from within said volume,
means for releasable attachment of said basket upon the body of a fisherman in a position to receive line stripped from a fishing reel, and
a multiplicity of slope-surfaced protuberances disposed in a spaced apart pattern upon said base wall and projecting upwardly within said volume.

5,182,878
FISH LURE HOLDER
Brant V. Clark, 1103 York Rd., Cherry Hill, N.J. 08003
Filed Feb. 28, 1991, Ser. No. 662,450
Int. Cl.[5] A01K *97/06*
U.S. Cl. 43—57.1 **1 Claim**



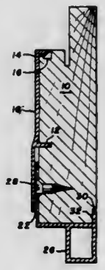
1. A holder for barbed fish hooks or lures and suitable for mounting on a boat comprising:
a generally circular, hollow and tubular body having a plurality of openings, a length of from 1 foot to 25 feet, a diameter of from 0.25 inches to 5.5 inches and a wall thickness of from 1/32 of an inch to 1/74 of an inch;
each of said opening having a minimum opening of 0.06 inches and a maximum opening of less than 0.60 inches, and a distance between the center of adjacent openings of from 0.5 inches to 1.5 inches; and
means for mounting the bracket onto a boat with the openings in said body facing in a generally upward position, said mounting means comprising at least two brackets with the first and of each bracket having a mating surface for the circular cross section of said body and an opening to said mating surface that is less than the diameter of said body with said first end being made of a material sufficiently flexible to allow insertion of the body through said opening to said mating surface, and a second end of said bracket having means for affixing said bracket to the boat.

5,182,879
CRAWLING INSECT TRAP
George I. Hopkins, 1590 Spring Grove Rd., Hollister, Calif. 95023
Filed Oct. 3, 1991, Ser. No. 770,588
Int. Cl.[5] A01M *1/20*
U.S. Cl. 43—131 **20 Claims**



1. An insect trap comprising, in combination:
an elongated structure forming a passage-way for an insect;
a support member within the elongated structure and having a central opening for passage by an insect, the support member positioned to form surfaces substantially normal to the axis of the structure such that a path of travel of insects within the structure is through said central opening;
a bioactive compound impregnated on a surface of the support member, whereby as an insect penetrates about said central opening, it contacts the compound;
and a non-toxic, unpalatable compound coated about an exterior surface of the elongated structure whereby a child or animal is discouraged from the trap.

5,182,880
DOOR FRAME CLADDING APPARATUS
Richard H. Berge, Jr., Faribault, and Mark A. Larsen, Excelsior, both of Minn., assignors to New Morning Windows, Inc., Burnsville, Minn.
Filed Nov. 18, 1991, Ser. No. 793,201
Int. Cl.[5] E06B *1/04, 3/30*
U.S. Cl. 49—504 **2 Claims**



1. Cladding apparatus for covering a generally U-shaped opening in the outer wall of a structure, the door frame having inner surfaces about and perpendicular to the opening which is sized to receive a door, the door frame also having adjoining inner and outer surfaces which are perpendicular to the inner surface, the outer surface having a door nose which cover the entire surface, the door frame being prepared by having slits in the inner surfaces which are parallel to the adjoining inner and outer surfaces and extend inward perpendicular to the doorway inner surface, having keyways in the adjoining inner surfaces which are parallel to the inner surfaces and extend inward perpendicular to the adjoining inner surface, and having grooves in the adjoining inner surfaces which extend parallel to the inner surface from the inner surface to the keyway, the cladding apparatus comprising a rectangular sheet of rigid material having an inset of a predetermined length and width which extends from an edge of said sheet perpendicular to said sheet in a first direction, said inset terminating in a key means for engaging a keyway, the sheet also having a fin of a predetermined length and width extending in the first direction perpendicular to the surface of said sheet, the dimensions and spacing of said inset said fin and the arrangement of said key means being such that said sheet will cover the inner surface of the door frame and a predetermined portion of the door nose with the insert fitting within the groove in the adjoining inner surface, with the key means engaging the keyway in the adjoining inner surface, and with the fin engaging the slit in the inner surface.

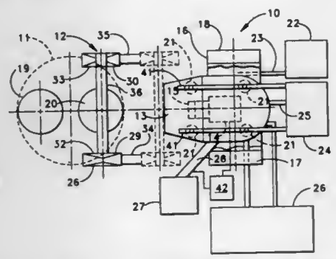
5,182,881
AUTOMATED SPINDLE SLURRY SYSTEM
Jerry D. Cox, Cincinnati, Ohio; Raymond E. Linz, Wilmington; Jeanne M. Thome, Wrightsville Beach, both of N.C.; Winfield B. Perry, Lexington, Mass.; Franklin O. Hadley, Jr., Stoneham, Mass., and Vladimir A. Knobel, Brookline, Mass., assignors to General Electric Company, Cincinnati, Ohio
Filed Aug. 21, 1991, Ser. No. 748,130
Int. Cl.[5] B24B *31/06, 31/00, 1/04*
U.S. Cl. 51—7 **20 Claims**

15. A finishing machine for a gas turbine engine component, comprising:
a frame including a pair of spaced support members;

VOL
1147
ISS
1
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1993
UMI

a spindle assembly pivotably mounted to said frame between said spaced support members for controllable driven motion in an arcuate path transverse to an axis of rotation of a spindle of said spindle assembly;

an open receptacle member disposed between said spaced support members and below said spindle assembly when said spindle assembly is in an elevated position relative to said receptacle member for receiving a component for



finishing, said open receptacle being capable of containing a volume of an abrasive slurry;

means for attaching the component to said spindle of said spindle assembly; and drive means for selectively moving said spindle and the attached component in rotary or oscillatory cycles about said spindle axis of rotation and simultaneously moving said spindle and the attached component in an arcuate path.

5,182,882

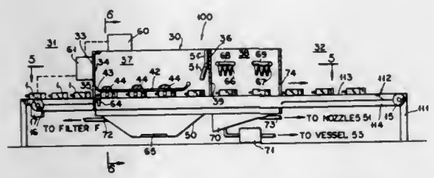
HEATER CORES HAVING EXPOSED SURFACES BURNISHED BY WET BLASTING

Timothy Brodene, East Amherst; Michael Plotner, Tonawanda, and Bruce Cramer, Buffalo, all of N.Y., assignors to FEDCO Automotive Components Co., Inc., Buffalo, N.Y.

Filed Dec. 30, 1991, Ser. No. 816,037

Int. Cl.[5] B24B *1/00*

U.S. Cl. 51—317 **19 Claims**



1. Apparatus for burnishing workpieces, comprising:

a conveyor for conveying workpieces in succession in a conveying direction along a path from a workpiece-loading station to a workpiece-unloading station;

an enclosed housing through which the conveyor travels along said path from the workpiece-loading station to the workpiece-unloading station, said housing having an input end at the workpiece-loading station and an output end at the workpiece-unloading station;

means at the ends of the housing respectively for admitting the conveyor and the successive workpieces on the conveyor into the housing from the workpiece-loading station and for exit of the conveyor and workpieces from the housing to the workpiece-unloading station;

said housing having blast and rinse chambers successively arranged along the path in the workpiece conveying direction;

nozzle means at the blast station for directing, under pressure, a stream of a slurry of abrasive particles in a liquid against at least portions of the successive workpieces conveyed along the path on the conveyor at the blast station to burnish said portions;

rinsing means at the rinse station for rinsing the successive workpieces on the conveyor as the workpieces are conveyed along said path through the rinse station;

a sump connected to the housing for collecting the slurry from the blast station after the workpieces have been burnished thereby;

means for recycling the slurry to said nozzles; and

means for chemically treating the slurry collected from the sump prior to recycling the slurry to said nozzles.

5,182,883

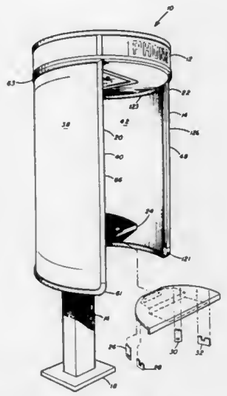
TELEPHONE ENCLOSURE

James R. Amberson, Richfield; William C. Ehlert, and George E. Olson, both of Minneapolis, all of Minn., assignors to Armco Inc., Middletown, Ohio

Filed Feb. 22, 1991, Ser. No. 660,341

Int. Cl.[5] E04H *1/14*

U.S. Cl. 52—73 **20 Claims**



1. A phone enclosure comprising:

an acoustic housing having an outer panel;

an inner panel;

an acoustic insulation panel; and

a body rail assembly, said body rail assembly comprising a first rail having a first rail base with an integral first leg, an integral second leg, an integral third leg and an integral fourth leg depending therefrom, said first leg positioned in spaced relation to said second leg and defining a first rail inner panel receiving slot therebetween, said third leg positioned in spaced relation to said fourth leg and defining a first rail outer panel receiving slot, said inner panel slideably received by said first rail inner panel receiving slot and said outer panel slideably received by said outer panel receiving slot, said first rail also having a first rail insulation receiving step integral to and depending from said first rail base, said step positioned between said second leg and said third leg wherein a first recess is defined between said second leg and said first rail step and a second recess is defined between said first rail step and said third leg wherein a first edge of said insulation panel abuts against said step and a first air gap is defined between said inner panel and said insulation panel and a second air gap is defined between said insulation panel and said outer panel.

5,182,884

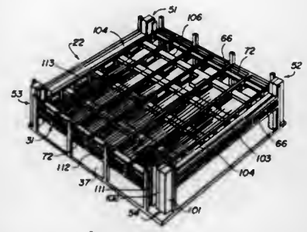
INTEGRATED BUILDING SYSTEM AND METHOD

Alexander G. Tarics, 29 Windward Rd., Belvedere, Calif. 94920

Filed Apr. 12, 1991, Ser. No. 684,298

Int. Cl.[5] E04B *1/34*

U.S. Cl. 52—79.14 **15 Claims**



1. In a building system, a plurality of interconnected building blocks, each of the building blocks having framing providing a horizontally disposed vertically spaced-apart floor, ceiling and ceiling plenum and having at least three vertically extending corners with at least certain of the corners having vertical shafts formed therein extending from the floor to the ceiling plenum, said vertical shafts having air handling ducts and piping and wiring disposed therein, the ceiling plenum having spaced-apart parallel framing members extending in one direction of the ceiling plenum, air handling ducts connected to the air handling ducts in the vertical shafts and disposed in the ceiling plenum running in directions parallel to the framing members in the ceiling plenum, and piping and wiring connected to piping and wiring in the vertical shafts and disposed in the ceiling plenum and running in directions different from the directions of the framing members in the ceiling plenum.

5,182,885

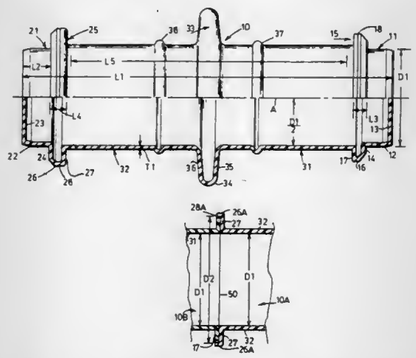
EXTENDABLE WALL SLEEVES

Bruce G. Barton, Jr., Whitmore Lake, Mich., assignor to Thunderline Corporation, Belleville, Mich.

Filed Jan. 25, 1991, Ser. No. 645,805

Int. Cl.[5] E04G *15/00*

U.S. Cl. 52—98 **10 Claims**



1. An improved construction for a unitary, one-piece molded resin wall sleeve precursor convertible into a wall sleeve assembly that forms a continuous unimpeded passageway of consistent internal diameter D1 through a concrete wall by cutting off end sections and transition sections from outer ends of sleeve sections of central sleeve members of each of two or more precursors and joining the sleeve members to each other, the precursor comprising:

first and second end sections, each end section including a cylindrical body portion having an external diameter D1 and a substantially flat mounting flange projecting radially outwardly of the axially inner end of the body portion of the end section;

and first and second transition sections joining the first and second end sections, respectively, to opposite ends of a central sleeve member, each transition section including an transition wall extending axially inwardly from an outer rim of the mounting flange of its end section and a substantially flat transition boundary wall extending radially inwardly from the outer transition wall to the central sleeve member;

in the improved construction, the transition wall of the first transition section has an outer diameter D2 and the transition wall of the second transition section has an inner diameter at least equal to D2, with D2>D1.

5,182,886

BUILDING ELEMENTS AND JOINTS THEREFOR

Colin N. Bateman, Stamford; Peter L. Clark, and William G. Carter, both of Nottingham, all of Great Britain, assignors to National Research Development Corporation, London, United Kingdom

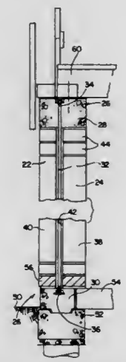
PCT No. PCT/GB89/00851, § 371 Date Jan. 22, 1991, § 102(e) Date Jan. 22, 1991, PCT Pub. No. WO90/01591, PCT Pub. Date Feb. 22, 1990

PCT Filed Jul. 27, 1989, Ser. No. 635,601

Claims priority, application United Kingdom, Aug. 2, 1988, 8818307; Aug. 2, 1988, 8818308

Int. Cl.[5] E04B *9/10*

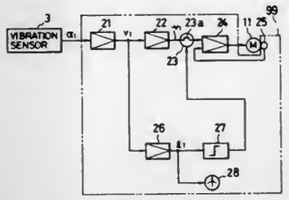
U.S. Cl. 52—125.6 **7 Claims**



1. A transportable wall panel comprising horizontally extending top and bottom support beams, front and rear wall portions including masonry blocks provided between said beams, motor provided between said blocks, said front and rear wall portions defining a cavity therebetween, tensioning means provided between said top and bottom beams in the cavity defined between said front end wall portions, and a joint assembly for placement between adjacent wall panels at a building site, said joint assembly including joint elements associated with the marginal edges of the adjacent wall panels, each joint element defining a portion projecting into a space defined by a portion of an adjacent joint element to form a labyrinth therebetween, said joint elements extending generally parallel the marginal edges of the wall portions adjacent said joint elements.

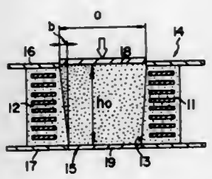
VOL 1147 ISS 1 FE 2 1993 UMI

5,182,887
VIBRATION DAMPING SYSTEM
Nayomon Uno, Hasuda, and Masao Mutaguchi, Yotsukaidou, both of Japan, assignors to Ishikawajima-Harima Heavy Industries Co., Ltd., Tokyo, Japan
Filed Aug. 15, 1989, Ser. No. 394,043
Claims priority, application Japan, Oct. 6, 1988, 63-250955
Int. Cl.[5] G21C *17/00*
U.S. Cl. 52—167 R **10 Claims**



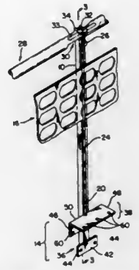
1. A structure vibration damping system, comprising:
a weight disposed at the top of the structure;
means for allowing the weight to perform simple harmonic oscillation;
a vibration sensor attached to the structure for detecting vibration of the structure;
a weight driving mechanism for actuating the weight; and
means for controlling movement of the weight such that the weight performs a single harmonic oscillation at a 90-degree phase delay relative to the vibration of the structure when the vibration amplitude of the structure exceeds a predetermined limit value whereby oscillation of the weight serves as an attenuation force against the structure vibration.

5,182,888
EARTHQUAKE-PROOFING DEVICE OF PERIPHERALLY RESTRAINED TYPE
Yoshiaki Miyamoto, Takarazuka, Japan; Teruo Sasaki; Kazuhiro Fujisawa, both of Kobe, and Seinosuke Kato, Nishinomiya, all of Japan, assignors to Sumitomo Gomu Kogyo Kabushiki Kaisha, Kobe, Japan
Filed Jul. 31, 1990, Ser. No. 560,629
Claims priority, application Japan, Aug. 1, 1989, 1-91283[U]; Jul. 13, 1990, 2-185581[U]
Int. Cl.[5] E04B *1/98*
U.S. Cl. 52—167 DF **13 Claims**



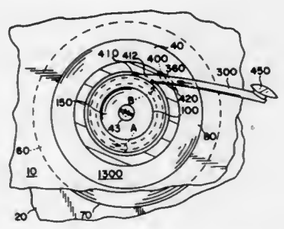
1. An earthquake-proofing device of peripherally restrained type comprising:
a laminate constructed by alternately laminating rigid plates and rubber-like elastic plates, said laminate being formed with a cylindrical hollow portion open at opposite vertical ends;
flanges formed on opposite ends of said laminate;
a visco-elastic body inserted into said cylindrical hollow portion and filling said hollow portion, wherein a volume of said visco-elastic body is greater than a volume of said cylindrical hollow portion by an amount equal to a product of that portion of an inner surface area of said cylindrical hollow portion opposed to said rubber-like elastic plates and 5-60% of a thickness of a single rubber-like elastic plate of said rubber-like plates; and
pressure receiving plates located on opposite ends of said visco-elastic body wherein when assembled for use, said pressure receiving plates being adjacent to said flanges when said visco-elastic body, having said greater volume, is compressed into said cylindrical hollow portion.

5,182,889
BARRIER SYSTEM
Dennis Johnson, 21202 139th Ave. SE., Snohomish, Wash. 98290
Filed Jan. 14, 1991, Ser. No. 641,753
Int. Cl.[5] E02D *27/42*
U.S. Cl. 52—298 **10 Claims**



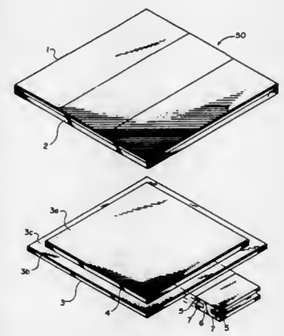
1. A barrier system, said barrier system comprising:
a plurality of elongated bodies, each said body having a length, sides, a top, and a bottom;
a bracket system, said bracket system being used to affix each said elongated body to a structure where a barrier is desired, so that each said elongated body length is substantially normal to the ground; and
an attachment mechanism, said attachment mechanism being used to fixedly, but removably, attach webbing to said elongated bodies to create a barrier, said attachment mechanism also having a plurality of locking pins, said attachment mechanism attaching said webbing to each said elongated body with one said locking pin for each said elongated body.

5,182,890
ATTACHMENT PLATE FOR ROOFING SHEETS
William H. Peters, P.O. Box 184, W. Unity, Ohio 43570
Filed Jul. 24, 1990, Ser. No. 557,549
Int. Cl.[5] E04D *5/14*
U.S. Cl. 52—410 **4 Claims**



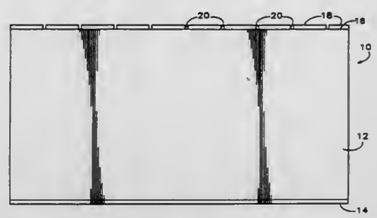
1. A fastening plate apparatus for fastening a rubber roof sheet to the upper surface of a roof deck comprising:
(a) a fastening plate member having an upper surface and a lower surface, said fastening plate having on its upper surface a cup-like member with an opening on the upper part leading to an internal cavity in such cup-like member, having an outer circumferential surface, with such fastening plate member having an opening extending from such cavity to the lower surface of said plate member, and wherein said cup-like member has a circumferentially extending groove on its outer circumferential surface, and wherein said cup-like member is adapted to receive thereover a portion of a rubber roof sheet;
(b) outer cap-like means comprising a solid, pliable material having an outer circumferential surface into which outer circumferential surface is formed an opening, said outer cap-like means being adapted to fit over said cup-like member on said plate member;
(c) circumferentially extending fastening means with a frontal end and a posterior end adapted to be inserted into opening in said cap means to lock a portion of a rubber roof sheet against the fastening plate, such circumferentially extending fastening means having enlarged diameter means with a notched surface on its posterior end;
(d) inner cap-like means formed of a flexible material adapted to fir conformingly over said cup-like member and over said rubber roof sheet.

5,182,891
RAISED INSULATED AND WATER RESISTANT COMPOSITE FLOORING MATERIAL
Donald Slocum, 61 Chimney Ridge Dr., Convent Station, N.J. 07961
Filed Jul. 20, 1990, Ser. No. 556,652
Int. Cl.[5] E04B *9/28*
U.S. Cl. 52—480 **7 Claims**



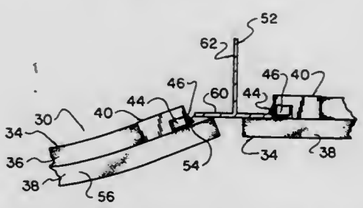
1. A flooring comprising:
at least one flooring panel including a rigid layer forming a top of said flooring panel an insulating layer attached to said rigid layer forming a bottom of said flooring panel and an additional pre-finished layer above said rigid layer, said additional layer having a surface of enhanced appearance, said flooring panel defining a horizontal channel formed in opposite vertical ides of said flooring panel;
support means including at least two interlock support beams, each interlock support beam having a vertical web and at least one horizontal flange, said vertical web resting on a surface to be floored and rising up from the surface to be floored, said horizontal flange being positioned on top of aid vertical web forming an overhang on at least one side, said horizontal flange of a first beam and a horizontal flange of another beam engaging said horizontal channel of said two opposite vertical sides respectively and defining a pair of interlock support beams said horizontal flanges provide support for said flooring panels on both of said opposite vertical sides, for supporting said flooring panel above said surface to be floored providing a raised flooring, said interlock support beams have said horizontal flanges on both sides of the vertical web and said horizontal flanges on each side of said vertical web are used in attaching said interlock support beam to an adjacent floor panel via engagement into said horizontal channel.

5,182,892
TONGUE AND GROOVE BOARD PRODUCT
Peter D. Chase, Houlton, Me., assignor to Louisiana-Pacific Corporation, Hayden Lake, Id.
Filed Aug. 15, 1991, Ser. No. 746,228
Int. Cl.[5] E04F *15/02*
U.S. Cl. 52—539 **29 Claims**



1. A tongue and groove board, comprising:
first and second major surfaces;
first and second longitudinal edges;
said first longitudinal edge including means defining a longitudinally-extending groove extending inwardly of said longitudinal edge between said first and second major surfaces;
a tongue protruding from said second longitudinal edge, said tongue having an outer portion including longitudinally-extending upper and lower surfaces;
said outer portion of said tongue for being received within and interconnectingly engaging a complimentary longitudinal groove formed in a first longitudinal edge of an adjacent tongue and groove board for interconnecting said adjacent tongue and groove boards;
said protruding tongue having at least one substantially vertically-extending opening extending through said protruding tongue from said longitudinally-extending upper surface to said longitudinally-extending lower surface for providing at least one drain path for water to drain by gravity in a generally downwardly direction from said first major surfaces of said interconnected adjacent tongue and groove boards to a space below, thereby preventing an accumulation of water on said first major surfaces of said interconnected adjacent tongue and groove boards.

5,182,893
PANEL, CLIP AND METHOD OF MOUNTING PANEL
John P. Goodworth, 7617 Stone Rd., Medina, Ohio 44256
Division of Ser. No. 564,195, Aug. 8, 1990, Pat. No. 5,123,225. This application Mar. 13, 1992, Ser. No. 850,580
Int. Cl.[5] E04B *1/00*
U.S. Cl. 52—745.05 **10 Claims**



1. A method comprising the steps of providing a panel hav-

VOL
1147
ISS
1
FE
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1993
UMI

ing a plurality of retaining elements, aligning the panel with an opening in a support structure, and engaging the support structure with the retaining elements to hold the panel against movement relative to the support structure, said step of engaging the support structure with the retaining elements including resiliently flexing the panel.

5,182,894

PACKAGING METHOD AND APPARATUS

Frederick D. Bate, Colne, United Kingdom, assignor to Elmwood Packaging Machinery Ltd., England

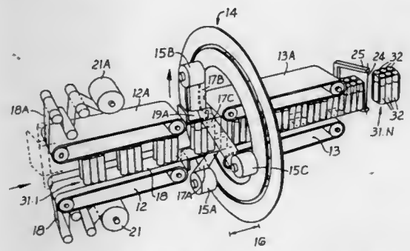
PCT No. PCT/GB90/00266, § 371 Date Aug. 9, 1991, § 102(e) Date Aug. 9, 1991, PCT Pub. No. WO90/09316, PCT Pub. Date Aug. 23, 1990

PCT Filed Feb. 16, 1990, Ser. No. 741,479

Claims priority, application United Kingdom, Feb. 18, 1989, 8903753; Aug. 2, 1989, 8917667

Int. Cl.[5] B65B *13/04*

U.S. Cl. 53—399 **17 Claims**



1. A method of packaging articles comprising the steps of:

feeding articles in groups of lesser length than a gap between in-feed and out-feed conveyors for the articles, said articles being stood upright in said groups to be packaged together, said groups being spaced in the direction of feeding, said gap being conveyor-free;

engaging said groups of articles with a band of highly flexible packaging sheet material that is continuous from group to group and moves across said gap in the direction of feeding with said spaced groups of upright articles;

causing said band of material to exert a tractive force on said engaged groups of articles and to draw said groups of articles across said gap; and

helically wrapping a highly flexible and stretchable sheet material about said groups of articles and said band in said gap, so that the band and the groups of articles are incorporated into overall packaging of the groups of articles.

5,182,895

SHOPPING BAG SYSTEM AND METHOD

Nicolas R. Lugo, 1521 Bellevue Ave. #105, Seattle, Wash. 98122

Filed Apr. 2, 1992, Ser. No. 863,593

Int. Cl.[5] B65D *25/14, 30/00;* **B60R** *11/00;* **B65B** *61/14*

U.S. Cl. 53—469 **20 Claims**

19. A method of carrying shopping items, comprising the following steps:

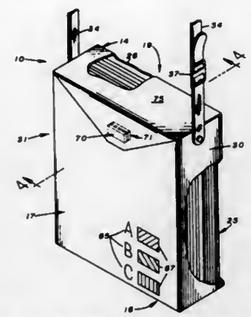
a. selecting a carrier containing set of shopping bags, said set of shopping bags comprising a plurality of folded bag structures stacked on edge horizontally therein, each said bag structure having size identification means printed thereon which is visible when said bag structures are stacked inside said carrier, said carrier having an attached cart attachment means which enables said carrier to be selectively attached to a shopping cart when shopping;

b. selecting one said bag structure from said set of shopping bags carried inside said carrier using said size identification code printed on each said bag structure for carrying shopping items;

c. filling the selected said bag structure with said shopping items;

d. repeating steps (b) and (c) as needed until all of said shopping items are placed into said bag structures;

e. transporting said shopping items to a desired destination;



f. removing said shopping items from each said bag structure, and;

g. folding each said bag structure into a compact shape and stacking each said bag structure on edge inside said carrier so that said size identification means is visual to a user of said system.

5,182,896

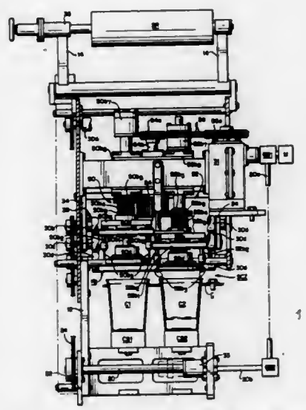
APPARATUS AND METHOD FOR HEAT-SEALING A FILM COVER TO OPEN ENDED CONTAINERS

Larry Maccherone, Severna Park, Md., assignor to Sweetheart Cup Company Inc., Owings Mills, Md.

Filed Sep. 9, 1991, Ser. No. 756,189

Int. Cl.[5] B65B *51/10*

U.S. Cl. 53—478 **15 Claims**



14. Method for heat-sealing a film cover to an open-ended container comprising the steps of:

supplying fresh film stock to a sealing and cutting zone, and retrieving from the sealing and cutting zone waste web which remains after the film cover has been cut from the fresh film stock;

moving at least one open-ended container into registry with a portion of the fresh film stock in the sealing and cutting zone;

heat-sealing a circumferential region of the fresh film stock portion to the open end of the container in registry therewith; and

orbitally cutting the heat-sealed circumferential region from the fresh film stock portion to thereby form the film cover which is heat sealed to the open-ended container; wherein

said step of cutting the film stock includes orbitally moving at least one knife blade circumferentially adjacent the open end of the container, whereby said fresh film stock is cut; and wherein

said step of orbitally moving said at least one knife blade is practiced by orbitally moving the at least one knife blade along a substantially circular path; and wherein

said step or orbitally moving said at least one knife blade is practiced by orbitally moving the at least one knife blade along an arcuate non-circular path which is coextensive with the circular path, thereby forming a protruding tab on the film cover.

5,182,897

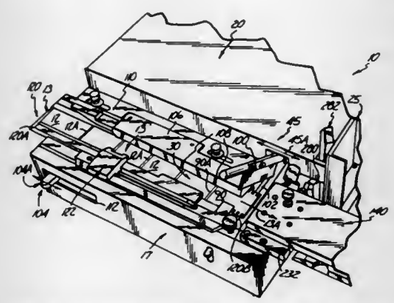
SLIDE MOUNTER WITH MOVABLE KNIFE ASSEMBLY

Wilbur Gerrans, Marysville, Wash., assignor to Pakon, Inc., Minnetonka, Minn.

Filed Jan. 15, 1992, Ser. No. 821,025

Int. Cl.[5] B65B *5/04, 63/00, 61/06*

U.S. Cl. 53—520 **11 Claims**



1. An apparatus for severing individual film transparencies from a longitudinally supported photographic film web to prepare a photographic slide, the apparatus comprising:

a movable knife assembly aligned with and operably supported for longitudinal movement toward and away from the longitudinally supported film web, the movable knife assembly having upper and lower knife blades connected to operate between an opened position and a closed position, in the opened position the upper and lower blades being separated to define a receiving opening for advancing film and in the closed position, the blades being in close relation to sever the film;

means for moving the knife assembly to longitudinally adjust the position of the movable knife assembly relative to the supported photographic film web;

means for longitudinally moving the photographic film web along an advancement stroke to advance a leading film transparency toward the movable knife assembly for operation; and

means for gauging an adjusted position for the movable knife assembly relative to the supported film web and the film advancement stroke so that the trailing edge of the leading film transparency is aligned with the upper and lower knife blades when advanced for operation.

5,182,898

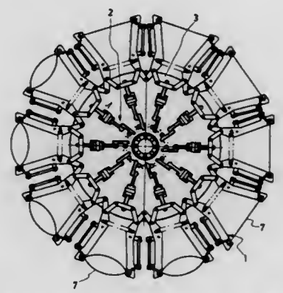
BAGGING SPECIFICATION ADJUSTMENT AND AUTOMATIC INWARD-CONTRACTION AND OUTWARD-EXPANSION MECHANISM FOR BAGGING MACHINE

Fu-Ching Tung; Chi-Tsun Chen, and Sheng-Feng Lieu, all of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchum, Taiwan

Filed Nov. 12, 1991, Ser. No. 791,032

Int. Cl.[5] B65B *43/16*

U.S. Cl. 53—570 **2 Claims**



1. An apparatus for packaging materials into bags, wherein each bag is picked up at one station, opened at a successive station, filled with a material at another successive station, thermally sealed and then released at successive stations which comprises in combination a frame (**504**), a main support base (**6**), a worm and gear mechanism (**5**), a groove cam mechanism (**4**), a claw support mechanism (**3**), a steering mechanism (**2**), a claw mechanism (**1**), a feeding means and a thermal sealing means, said main support base (**6**) comprising a first strut (**601**), a bearing (**602**) and shaft (**9**), said worm and gear mechanism comprising a worm (**501**) and a worm gear (**502**), said groove cam mechanism (**4**) comprising a cylindrical groove cam (**401**) with groove (**404**), a guide rod (**402**) and thread rod (**403**), said guide rod (**402**) being secured to said frame (**504**), the claw support mechanism (**3**) comprising a second strut (**302**), guide (**303**), support plate (**301**), rocking shaft seat (**304**) and clamping ring (**305**), the steering mechanism (**2**) comprising steering block of L-shape (**201**), spring (**202**), a plunger rod (**203**) and support roller (**204**), the claw mechanism (**1**) comprising claw arms (**101**), spring (**102**), coupling rods (**103**), driving rod (**104**), push and pull rod (**105**), bar linkage (**107, 108, 109, 112**), said plunger rod (**203**) being connected to said push and pull rod (**105**), a hollow shaft (**8**), said frame (**504**) supporting the groove cam mechanism (**4**), said first strut (**601**) supporting the worm and the gear mechanism (**5**) and said support plate (**301**) of said claw support mechanism (**3**), said bearing (**602**) supporting said first hollow shaft (**8**), said hollow shaft (**8**) being connected to said support plate (**301**), said hollow shaft (**8**) being retained by said clamping ring (**305**) for rotation around said shaft (**9**), said second strut (**302**) supporting the claw mechanism (**1**), said guide (**303**) maintaining said push and pull rod (**105**) in motion, said seat (**304**) supporting said L-shape steering block (**201**), said worm (**501**) being connected to said thread shaft (**403**) whereby when the worm (**501**) is rotated, it drives said worm gears and said thread shaft (**403**), it drives said worm gear (**502**) and said thread shaft (**403**) whereby said cylindrical groove cam (**401**) moves up or down, whereby said plunge rod (**203**) moves up or down, and said push and pull rod (**105**) moves forward or in reverse, and when the push and pull rod (**105**) moves forward, it pushes said driving rods (**104**) of said bar linkage and said coupling rods (**103**), and said claw arms (**101**) are expanded outwardly, and when the push and pull rod (**105**) reverses its motion, said driving rods (**104**) and said coupling rods (**103**) force said claw arms (**101**) to contract inwardly, whereby the distance between the claw arms (**101**) is

VOL
1147
ISS
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1993
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adjusted to fit the specification of each bag, and when said driving roller (**112**) of said feeding means gears said bar linkage, said claws (**106**) of said bar linkage open and release each bag and close at a successive station.

5,182,899

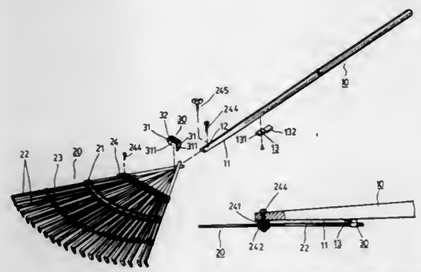
RAKE CONNECTION ASSEMBLY

Han-Ching Sun, No. 43, Ta-An Rd., Tien-Chung Chen, Changhwa Hsien, Taiwan

Filed Jan. 6, 1992, Ser. No. 817,358

Int. Cl.[5] A01D *7/06*

U.S. Cl. 56—400.17 **3 Claims**



1. A rake having a long handle and a projecting prong section generally shaped in the form of a sector, said projecting prong section being attached to a lower end portion of said handle at an upper end portion thereof and including a plurality of prongs, an upper clamping sheet and a lower clamping sheet, said upper and lower clamping sheets holding said prongs therebetween, characterized by:

said upper clamping sheet having several holes formed therethrough and several recesses formed in a bottom surface thereof;

each of said prongs having a hole formed therethrough;

said lower clamping sheet including several threaded holes formed therein in alignment with said holes of said upper clamping sheet, and several tongues projecting from said lower clamping sheet to pass through said holes of said prongs, each of said tongues having an upper end portion which is engaged in one of said recesses so as to position said prongs between said upper and lower clamping sheets;

said handle having a fastener hole formed through a lower end thereof;

several bolts extending through said holes of said upper clamping sheet to engage in said threaded holes of said lower clamping sheet so as to clamp said prongs between said upper and lower clamping sheets, one of said bolts extending through said fastener hole of said handle in such a manner that said lower end portion of said handle is located above said upper and lower clamping sheets;

a generally U-shaped retaining member having two parallel legs, an upper plate portion interconnecting upper ends of said legs and pressed to form a retaining hole in an upper end of said retaining member, and two ends bent inwardly so as to form a rectangular loop, thereby clamping upper ends of said prongs in said retaining member; and

a generally Z-shaped connecting sheet having an upper plate portion fastened to a lower portion of said handle, a lower plate portion inserted into and confined within said retaining hole of said retaining member, and a connecting portion interconnecting said upper and lower plate portions of said connecting sheet.

5,182,900

METHOD AND APPARATUS FOR CHECKING THE OPERATION OF A PNEUMATIC SPLICER

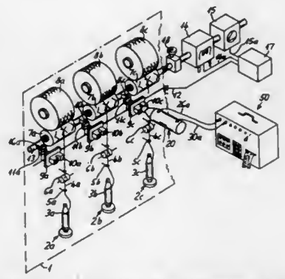
Dieter Horak, Mönchengladbach, and Hans-Heinz Schäfer, Schwalmtal, both of Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Mönchengladbach, Fed. Rep. of Germany

Continuation of Ser. No. 632,547, Dec. 24, 1990, abandoned. This application Mar. 31, 1992, Ser. No. 863,506

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1989, 3942864

Int. Cl.[5] D01H *13/26;* **G01F** *15/18*

U.S. Cl. 57—22 **21 Claims**



1. A method for checking the operation of a pneumatic splicer at a textile machine, the pneumatic splicer having a splicer head with a splicing conduit for joining two yarn ends and a splicing gas injection opening for injecting splicing gas into the splicer head, the splicing conduit being means for receiving the injected splicing gas injected through the injection opening, the method which comprises:

feeding splicing gas for a predetermined period of time to a splicer to be checked for splicing a particular yarn batch without having yarn ends laid in place in the splicing conduit of the splicer head of the splicer to be checked;

measuring at least one status variable of the injected splicing gas at a location downstream of the injection opening during the predetermined period of time;

measuring a reference value at another splicer identical to the splicer to be checked, the other splicer producing replicable spliced joints meeting a previously defined quality, by feeding splicing gas to the other splicer without yarn ends being laid in place in the splicing conduit and measuring the reference value of injected splicing gas at a location downstream of the injection opening;

comparing the at least one status variable with the measured reference value and ascertaining deviations;

using the magnitude of the deviations as a basic criterion for evaluating the operation of the splicer to be checked; and, if the splicer does not meet a predetermined condition for satisfactory operation, brining the checked splicer into the condition for satisfactory operation.

5,182,901

SPINNING OR TWISTING SPINDLE ARRANGEMENT

Fritz Stahlecker, Bad Übergkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker, Fed. Rep. of Germany, a part interest

Filed Jun. 13, 1990, Ser. No. 537,240

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1989, 3920019

Int. Cl.[5] D01H *7/04, 7/08;* **F16C** *17/10*

U.S. Cl. 57—135 **15 Claims**

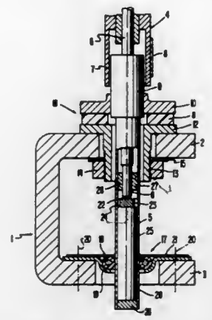
1. A spinning or twisting spindle arrangement comprising:

a spindle shaft,

a spindle bearing housing accommodating a bearing for the spindle shaft, said spindle shaft being radially fixed in the spindle bearing housing,

a spindle rail including upper and lower axially spaced flanges,

and holding devices at each of said flanges for holding the spindle bearing housing, each of the holding devices including rubber-elastic elements disposed between the flanges and the spindle bearing housing so as to prevent a



metallic connection between the spindle bearing housing and the flanges while permitting radially swinging movements of the spindle bearing housing,

wherein the holding devices at at least one of the upper and lower flanges includes radial aligning devices for accommodating selective adjustment of radial alignment of the spindle housing relative to the respective flange.

5,182,902

PROCESSING ROBOT FOR A TWO-FOR-ONE-ONE TWISTER

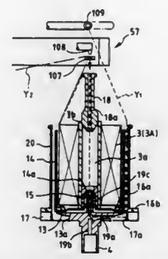
Hiroshi Mima, Joyo; Tadashi Suzuki, Uji, and Yasuhiko Kubota, Kyoto, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Division of Ser. No. 494,145, Mar. 14, 1990. This application May 1, 1991, Ser. No. 694,403

Claims priority, application Japan, Mar. 17, 1989, 1-63857; Mar. 20, 1989, 1-66379; Mar. 28, 1989, 1-73863; Mar. 28, 1989, 1-73865

Int. Cl.[5] D01H *15/00*

U.S. Cl. 57—279 **3 Claims**



1. A method of threading a yarn feed package, the yarn feed package defining an axial bore and an outer portion, the axial bore defining a longitudinal axis, the method comprising:

inserting a tenser cap into the axial bore, the tenser cap defining a passage including an opening;

drawing a yarn end from the yarn feed package;

applying a first suction force through the axial bore and the passage;

moving the yarn end to a position in spaced relation to the opening;

positioning an air nozzle in spaced relation to the opening; and

directing a stream of air from the air nozzle towards the opening and substantially along the longitudinal axis of the axial bore such that the yarn end is directed towards the axial bore and engaged by the first suction force.

5,182,903

OPEN-END SPINNING MACHINE

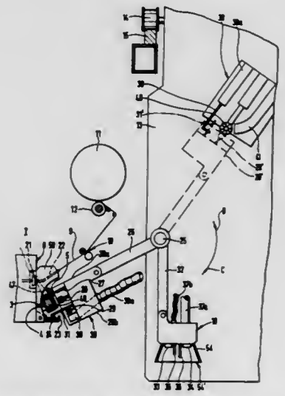
Fritz Stahlecker, Bad Überkingen, Fed. Rep. of Germany, assignor to Fritz Stahlecker and Hans Stahlecker, both of, Fed. Rep. of Germany, a part interest

Filed Feb. 19, 1992, Ser. No. 836,761

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1991, 4107403

Int. Cl.[5] D01H *11/00*

U.S. Cl. 57—301 **23 Claims**



1. An open-end spinning machine comprising:

a plurality of spinning units arranged in a row which each comprise an opening roller,

and movable servicing apparatus carrying cleaning elements which can be applied to respective ones of the opening rollers for carrying out preventative cleaning without interrupting spinning operations at the associated spinning unit.

wherein a control device is assigned to the cleaning elements which controls a first preventative cleaning operation without interrupting spinning operations at the associated spinning unit when the servicing apparatus is moving and a second preventative cleaning operation without interrupting spinning operations at the associated spinning unit when the servicing apparatus is stopped, said first cleaning operation being different than the second cleaning operation.

5,182,904

GAS TURBINE ENGINE POWER UNIT

John F. Coplin, Derby, England, assignor to Rolls-Royce Business Ventures Limited, Derby, England

Filed Nov. 14, 1991, Ser. No. 791,404

Claims priority, application United Kingdom, Dec. 14, 1990, 9027161

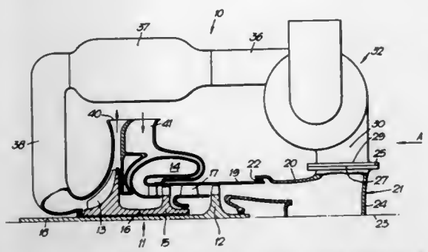
Int. Cl.[5] F02C *3/04, 7/10*

U.S. Cl. 60—39.161 **5 Claims**

1. A gas turbine engine power unit comprising a gas generator, a plurality of heat exchangers to facilitate recuperative operation of said gas generator, a plurality of turbo-chargers adapted to boost the air supply to said gas generator, and a valve to receive the exhaust efflux of said gas generator and to direct said efflux to one of said heat exchangers and said turbochargers to drive said turbochargers, said valve comprising

VOL 1147 ISS 1 FE 2 1993 UMI

two circular cross-section ducts arranged coaxially with radially abutting faces, each of said radially abutting faces having apertures therein, said ducts being relatively movable between a first position in which said apertures are so aligned as to permit the passage of said exhaust efflux only to said heat



exchangers, and a second position in which said apertures are so aligned as to permit the passage of said exhaust efflux only to said turbochargers to drive said turbochargers, said heat exchangers and turbochargers being located around the periphery of said power unit in circumferentially alternating relationship.

5,182,905

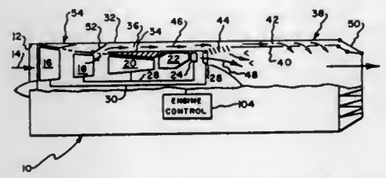
METHOD FOR AUTOMATIC BYPASS OPERATION

Larry W. Stransky, West Chester; Valentine R. Boehm, Jr., and Michael A. Phillips, both of Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 522,024, May 11, 1990. This application Nov. 18, 1991, Ser. No. 793,984

Int. Cl.[5] F02K *3/04*

U.S. Cl. 60—204 **4 Claims**



1. In a variable bypass turbofan engine having a bypass duct surrounding a core engine, a fan disposed in flow communication with said bypass duct and said core engine, and a hinged valve door positionable between open and closed positions in said bypass duct, a method of controlling airflow through said bypass duct comprising generating differential pressure between said fan and said bypass duct and automatically positioning said valve door in response to said differential pressure across said valve door.

5,182,906

HYBRID SPINNER NOSE CONFIGURATION IN A GAS TURBINE ENGINE HAVING A BYPASS DUCT

Alan R. Gilchrist; Thomas J. Sullivan, both of Fairfield, and Roger C. Walker, Middletown, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 600,788, Oct. 22, 1990, abandoned. This application Apr. 3, 1992, Ser. No. 864,189

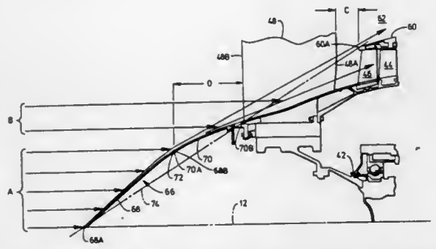
Int. Cl.[5] F02K *3/00*

U.S. Cl. 60—226.1 **12 Claims**

1. In a gas turbine engine having a forward rotor, a row of circumferentially spaced fan blades attached to and extending radially outward from said rotor, a core turbine engine located rearwardly of said fan blades and rotor and being coupled to said rotor for rotatably driving said rotor, an outer annular nacelle surrounding said rotor, fan blades, and core engine, and an inner annular splitter fairing disposed rearwardly from said fan blades, surrounding said core engine and spaced radially inwardly from said nacelle so as to define therebetween a bypass air flow duct located outwardly from said core engine and rearwardly of said fan blades for producing thrust upon rotation of said rotor and fan blades therewith, a hybrid spinner nose having a central axis and being attached about said rotor and projecting forwardly therefrom and forwardly of said fan blades, said hybrid spinner nose comprising:

(a) a forward nose portion spaced forwardly of said row of fan blades and terminating in a forward end;

(b) a rearward nose portion projecting forwardly of and merging rearwardly with said row of fan blades; and



(c) a transition located between and interconnecting said forward and rearward nose portions in a tandem arrangement with said transition as viewed along the central axis of the spinner nose being spaced approximately midway between said forward end of said forward nose portion and said row of fan blades such that the portion of said spinner nose forwardly of said row of fan blades has a compound conical configuration in which overall slope of said forward nose portion is greater than overall slope of said rearward nose portion relative to said central axis of said spinner nose.

5,182,907

SYSTEM FOR MONITORING PERFORMANCE OF HC SENSORS FOR INTERNAL COMBUSTION ENGINES

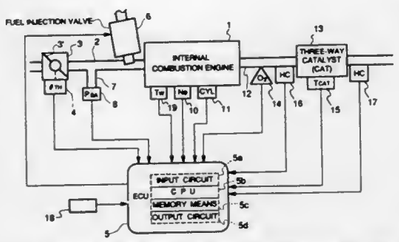
Shigetaka Kuroda, and Yoichi Iwata, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 5, 1991, Ser. No. 755,088

Claims priority, application Japan, Sep. 5, 1990, 2-236851

Int. Cl.[5] F02D *41/14*

U.S. Cl. 60—276 **7 Claims**



1. A system for monitoring the performance of at least one HC sensor provided in an internal combustion engine having an exhaust passage, the at least one HC sensor being arranged in said exhaust passage for detecting concentration of hydrocarbons present in exhaust gases from said engine, said system comprising:

memory means for storing a value of output from said at least one HC sensor assumed when fuel supply to said engine is cut off; and

correcting means for correcting a value of output from said at least one HC sensor by said value of output from said at least one HC sensor stored by said memory means to obtain a corrected value of said value of output from said at least one HC sensor.

5,182,908

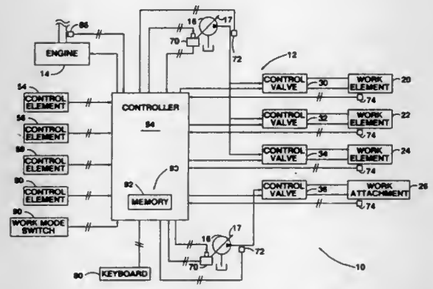
CONTROL SYSTEM FOR INTEGRATING A WORK ATTACHMENT TO A WORK VEHICLE

Lonnie J. Devier; John J. Krone, both of Dunlap; Stephen V. Lunzman, Chillicothe, and Howard A. Marsden, Pekin, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Jan. 13, 1992, Ser. No. 819,705

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—420 **12 Claims**



1. An apparatus for controlling a fluid system of a work vehicle having an engine, at least one fluid circuit having a pump driven by the engine, a plurality of control valves for controllably passing fluid from the pump to a plurality of respective work elements, said control valves having movable valve stems, and a plurality of operator control elements, the apparatus comprising:

a work attachment having a respective control valve, said work attachment control valve being connected to said fluid system, said work attachment being removably attached to said work vehicle and adapted to perform a specific work function;

means for providing demand signals in response to selected settings of each respective operator control elements, each demand signal being indicative of a requested fluid flow to one of a respective work element and a respective work attachment;

memory means for storing select parameters of said fluid system, one of the select parameters being a predetermined priority value representing the order in which fluid is delivered from the pump to the control valve of said work attachment;

means for providing a plurality of work mode signals, each work mode signal representing a predetermined electrohydraulic circuit arrangement associated with the control valves of the work elements;

means for receiving the work mode signal, determining the sequence in which fluid is distributed from the pump to the control valves associated with the predetermined electrohydraulic circuit arrangement in response to receiving the work mode signal, and responsively assigning a priority value to each control valve associated with the predetermined electrohydraulic circuit arrangement;

means for receiving the predetermined priority value of said work attachment, responsively redetermining the sequence in which fluid is distributed from the pump to the control valves associated with the predetermined electrohydraulic circuit arrangement, and reassigning the priority values of the control valves associated with the predetermined electrohydraulic circuit arrangement in response to the redetermined sequence; and

means for receiving the demand signals, determining the total requested flow rates of the respective control valves in response to the demand signals, comparing the total requested flow rates of the respective control valves to the maximum flow capacity of the fluid system, calculating the valve stem displacements of the respective control valves in response to the demand signals, modifying the calculated valve stem displacements to limit the requested fluid flow to the lower priority control valves when the calculated valve stem displacement of the highest priority control valve yields less than the required fluid flow, delivering control signals to the respective control valves in response to the modified calculated valve stem displacements, and selectively positioning the stems of the respective control valves.

5,182,909

VALVE SYSTEM FOR LOAD-INDEPENDENT HYDRAULIC CONTROL OF A PLURALITY OF HYDRAULIC CONSUMERS

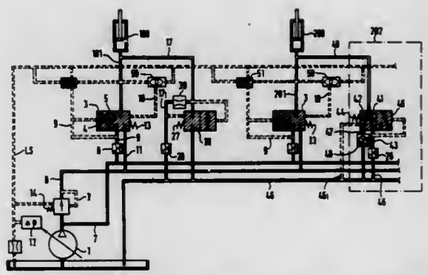
Armin Stellwagen, Lohr, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Lohr/Main, Fed. Rep. of Germany

Filed Aug. 9, 1991, Ser. No. 743,130

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1990, 4027047

Int. Cl.[5] F15B *13/06, 11/16, 11/02*

U.S. Cl. 60—426 **17 Claims**



1. A valve system for controlling a plurality of simultaneously actuated hydraulic consumers or actuators, in which each consumer feed line is connected across a compensating flow control valve or compensator to be opened by displacing the spool under the action of fluid pressure downstream of a flowmeter against the opposing resistance offered by a spring and the actual maximum or highest load pressure of the consumers, said highest load pressure simultaneously being transmitted to a regulating device of a variable displacement pump which supplies the consumers wherein the compensator and the flowmeter are inserted in a secondary feed line which carries a fraction of the fluid flow feed to the consumer, said fluid flow feed being regulated by a metering edge of larger cross section and adapted to participate in the control movements of the compensator, said metering edge being supplied by valve means capable of reducing the fluid pressure in the main feed line to the pressure level downstream of the flowmeter.

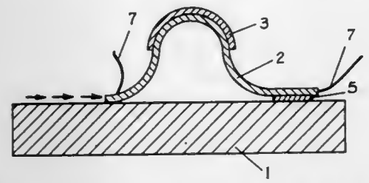
VOL 1147 ISS 1 FE 2 1993 UMI

5,182,910

MICROMECHANICAL MANIPULATOR

Wolfgang Benecke, Berlin, Fed. Rep. of Germany, assignor to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V., Fed. Rep. of Germany

Filed Jun. 7, 1991, Ser. No. 714,389
Int. Cl.[5] F03G 7/06
U.S. Cl. 60—529 19 Claims



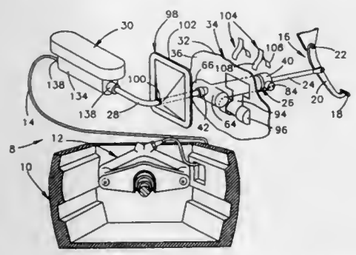
1. A micromechanical manipulator having a substrate, at least one manipulator arm composed of a plate of a first material with a first thermal expansion coefficient and a layer of a second material with a second thermal expansion coefficient which is fixedly connected to and partially covers said plate, and heating means for varying the temperature of said manipulator arm; wherein said layer has a higher expansion coefficient than said plate; wherein said manipulator arm is disposed at a small distance in parallel to said substrate and has a first end, which is fixedly connected to the surface of the substrate, and a second, free end; and wherein said layer is disposed on said plate in such a manner that the movement of said free end resulting from temperature variations is counteracted by mechanical resistance posed by said substrate surface, so that said arm bulges perpendicularly to the substrate surface when the temperature rises, whereby said free end is urged towards and executes a movement parallel to the substrate surface in the direction of said fixed end, and so that the movement runs in reverse when the temperature drops.

5,182,911

HYDRAULIC PRESSURE ACTUATING SYSTEMS WITH PIVOTABLE MOUNTING

Ronald L. Shellhause, Vandalia, Ohio, assignor to RMS Engineering, Inc., Vandalia, Ohio

Continuation-in-part of Ser. No. 649,032, Feb. 1, 1991, Pat. No. 5,133,439. This application Oct. 31, 1991, Ser. No. 785,493
Int. Cl.[5] F15B 7/00, 7/10; B60T 17/22
U.S. Cl. 60—533 12 Claims



1. In a hydraulic pressure actuating system having hydraulic pressure actuated means, a hydraulic fluid reservoir, a master cylinder for controllably generating and releasing hydraulic pressure for actuation and release of said hydraulic pressure actuated means, said master cylinder having a body with a bore formed therein and movable hydraulic pressure generating means received in said bore and defining with said bore hydraulic pressure generating chamber means, hydraulic fluid passage means connecting said master cylinder hydraulic pressure generating chamber means and said reservoir and said hydraulic pressure actuated means, means for actuating said master cylinder, and means mounting said reservoir and said master cylinder, the improvements comprising:

said reservoir being mounted at the highest point in said hydraulic pressure actuating system and having a housing provided with a fluid inlet and a fluid outlet to which said hydraulic fluid passage means are connected, said housing having fluid reservoir chamber means to which said fluid inlet and said fluid outlet are connected and valve control means selectively connecting said fluid reservoir chamber means to said fluid inlet and said fluid outlet and also selectively connecting said fluid inlet and said fluid outlet while closing the connection of said fluid reservoir chamber means to said fluid inlet and said fluid outlet;

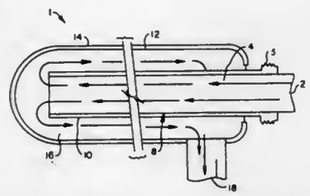
said master cylinder mounting means comprising a panel on one side of which is located said reservoir and said hydraulic pressure actuated means and on the other side of which is located said master cylinder actuating means, said master cylinder body having a curvilinear outer surface formed thereon defining one part of a pivotable force-transmitting connection, said panel having an opening therethrough and a curvilinear surface formed adjacent to said opening, said panel curvilinear surface mating with said master cylinder body curvilinear outer surface in pivotal relation so that said master cylinder body is pivotally movable in relation to said panel in at least one plane at said pivotable force-transmitting connection, said hydraulic fluid passage means connecting said master cylinder pressure generating chamber means and said reservoir extending through said opening adjacent said panel curvilinear surface, said means for actuating said master cylinder being movable in said at least one plane for actuation and release of said master cylinder with said master cylinder being pivotally moved at said mating curvilinear surfaces in said at least one plane to accommodate movements of said means for actuating said master cylinder.

5,182,912

FLUID ABSORPTION RECEIVER FOR SOLAR RADIATION

Robin Z. Parker, Miami, Fla., and Peter W. Langhoff, Bloomington, Ind., assignors to Solar Reactor Technologies, Inc., Miami, Fla.

Filed Mar. 12, 1991, Ser. No. 668,202
Int. Cl.[5] F24V 3/02
U.S. Cl. 60—641.8 7 Claims



1. A fluid absorption receiver for solar radiation, comprising:

a working fluid comprising a radiant energy absorber consisting essentially of halogens, interhalogens, and a buffer gas;

a hollow, cylindrical containment for containing said working fluid having a first end, and a second end;

a hollow, cylindrical vacuum containment for insulating said cylindrical containment and admitting solar radiation having a first end, a second end, a transparent inner wall, and a transparent outer wall;

a hollow, cylindrical member, disposed within said cylindrical containment having an inner wall and an outer wall, and defining an annular working fluid flow space comprising heat exchange means within said containment;

a hollow, cylindrical vacuum containment for insulating said cylindrical member having a first end, a second end, and a transparent outer wall; and

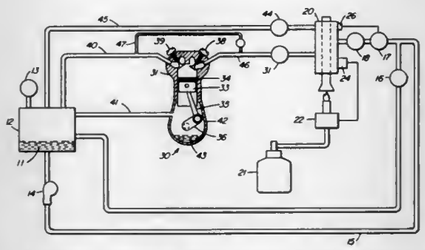
means for coupling said working fluid with a heat engine.

5,182,913

ENGINE SYSTEM USING REFRIGERANT FLUID

Sheldon C. Robar, R.R. #1, Greenfield, Queens County, Nova Scotia, Canada B0T 1E0 ; David W. Fraser, R.R. #3, Bridgewater, Nova Scotia, Canada B4V 2W2 , and Bernard A. Wiley, 22 Farley Place, St. Thomas, Ontario, Canada N5R 3E5

Filed Jan. 28, 1991, Ser. No. 646,183
Claims priority, application Canada, Dec. 31, 1990, 2033462
Int. Cl.[5] F01K 25/10
U.S. Cl. 60—671 3 Claims



1. An engine system adapted to employ a refrigerant working fluid and comprising:

(a) a condenser for removing heat from the working fluid, the working fluid being thereby transformed from a gaseous state to a liquid state;

(b) a heating chamber;

(c) a pump for pumping the working fluid in the liquid state from the condenser to the heating chamber;

(d) a heat source for supplying heat to the heating chamber, the working fluid being thereby transformed from the liquid state to the gaseous state;

(e) a high-compression-ratio piston engine having reciprocating pistons connected to a rotatable crankshaft, the crankshaft having a series of journais each connected by a respective connecting rod to a respective one of the pistons, each piston being housed in a cylinder having a working fluid inlet valve means and a working fluid outlet valve means, the total of all of he inlet valve means controlling flow of the working fluid to the engine from the heating chamber, the total of all the outlet valve means controlling flow of the working fluid to the condenser from the engine, the rotation of the crankshaft determining the opening and closing of each of the inlet and outlet valve means, each inlet valve means being open between approximately one-quarter and approximately one-half of the downward motion of the associated piston, and each outlet valve means being open for substantially all of the upward motion of the associated piston; and

(f) a centrifugal advancement mechanism for advancing the opening and closing of each of the inlet and outlet valve means relative to the rotation of the crankshaft, the advancement mechanism comprising, firstly, a shaft connected to rotate with the crankshaft. secondly, a concentric cylinder mounted to surrond the shaft, the concentric cylinder being connected to a camshaft that determines the opening and closing of each of the inlet and outlet valves means, and thirdly, a pair of arms mounted on the concentric cylinder such that each arm extends diametrically opposite the other on the cylinder, each arm being pivotally mounted on the cylinder such that a larger end of the arm moves outwardly on the cylinder against bias with increasing rotational speed of the cylinder, a second smaller end of each arm having a portion extending generally radially inwardly into the shaft;

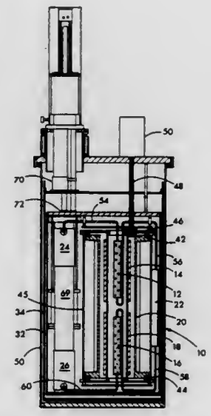
whereby, an increase in the rotational speed of the shaft results in a rotation of the arms which in turn result in the concentric cylinder rotating slightly relative to the shaft to advance the opening and closing of the inlet and outlet valve means relative to the rotation of the crankshaft.

5,182,914

ROTARY DIPOLE ACTIVE MAGNETIC REGENERATIVE REFRIGERATOR

John A. Barclay; Joseph A. Waynert; Anthony J. DeGregoria; Joseph W. Johnson, and Peter J. Claybaker, all of Madison, Wis., assignors to Astronautics Corporation of America, Milwaukee, Wis.

Filed Mar. 14, 1990, Ser. No. 493,339
Int. Cl.[5] F25B 21/00, 9/00; H01F 5/08, 7/22
U.S. Cl. 62—3.1 38 Claims



1. A regenerative magnetic refrigerator comprising:

(a) a magnetic material bed that is composed of a material subject to the magnetocaloric effect;

(b) an inner dipole magnet directed along a longitudinal axis and producing a magnetic field transverse to the longitudinal axis, the magnetic material bed being positioned within the inner dipole magnet;

(c) an outer dipole magnet directed along the longitudinal axis of the inner dipole magnet and the outer dipole magnet producing a second magnetic field transverse to the longitudinal axis, the inner dipole magnet being positioned within the outer dipole magnet and the inner and outer dipole magnets being rotatable with respect to one another to produce a net magnetic field upon the magnetic material bed that represents the sum of the magnetic field of the inner dipole magnet and the magnetic field of the outer dipole magnet, the net magnetic field peaking and ebbing as the position of the inner and outer dipole magnets rotate with respect to one another;

(d) means for rotating the inner and outer dipole magnets with respect to one another on the longitudinal axis;

(e) a hot heat exchanger that is connected to the magnetic material bed to transfer heat from the magnetic material bed when the net magnetic field is peaking; and

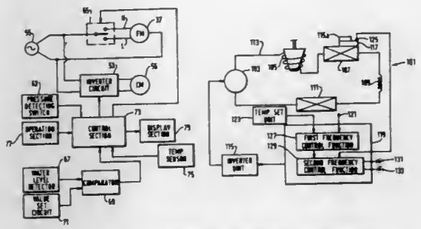
(f) a cold heat exchanger that is connected to the magnetic material bed to transfer heat from the magnetic material bed when the net magnetic field is ebbing.

VOL 1147 ISS 1 FE 2 1993 UMI

5,182,915
PORTABLE TYPE AIR CONDITIONING APPARATUS

Tadasato Iida; Fusakichi Takahashi; Kouji Wada, and Toshiro Nigo, all of Shizuoka, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Continuation of Ser. No. 628,589, Dec. 17, 1990, Pat. No. 5,099,625. This application Dec. 5, 1991, Ser. No. 803,092
Claims priority, application Japan, Dec. 20, 1989, 1-328250; Dec. 21, 1989, 1-329604; Jan. 17, 1990, 2-007541
Int. Cl.[5] F25B *1/00*
U.S. Cl. 62—89 **13 Claims**



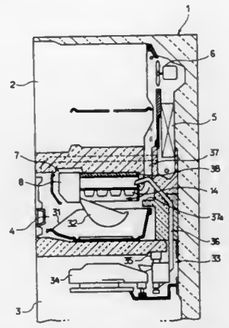
1. A portable air conditioning apparatus comprising:
means for determining an air conditioning load in a defined space to be air-conditioned;
a refrigerating circuit having high and low pressure sides of refrigerant, including,
variable capacity compressing means for compressing refrigerant, and
condenser means associated with the variable capacity compressing means for condensing the refrigerant, the condenser means being cooled by water and air, a part of the water being evaporated by the heat of the condenser means;
water supply means for supplying water to the condenser means;
refrigerant temperature detecting means for detecting the temperature of refrigerant at the high pressure side of the refrigerating circuit, the temperature of the refrigerant increasing when the water in the water supply means is exhausted; and
control means for forcibly decreasing the capacity of the variable capacity compressing means and maintaining the operation of the variable capacity compressing means irrespective of the air conditioning load when the temperature of the refrigerant at the high pressure side of the refrigerating circuit is greater than a prescribed value.

5,182,916
AUTOMATIC ICE MAKER AND HOUSEHOLD REFRIGERATOR EQUIPPED THEREWITH

Hiroshi Oike, Osaka, and Akira Kawamoto, Ibaraki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 15, 1990, Ser. No. 612,980
Claims priority, application Japan, Nov. 16, 1989, 1-299217
Int. Cl.[5] F25C *5/06*
U.S. Cl. 62—135 **6 Claims**

1. An ice maker comprising:
a) an ice making compartment;
b) an ice tray having an underside and an upper side, the ice tray being provided in the ice making compartment so as to be capable of being inverted;
c) a drive mechanism for inverting the ice tray, thereby removing the ice from the ice tray;
d) a cover provided on the upper side of the ice tray;
e) a heater embedded in the cover for heating the upper side of the ice tray during an ice making stage;
f) water supply means for supplying the ice tray with water from a bottom surface of the ice tray to a water surface;
g) chilled air supply means, having an outlet directed to the underside of the ice tray in the ice making compartment, for supplying chilled air into the ice making compartment through the outlet so that the chilled air flows along the underside of the ice tray, the water in the ice tray being frozen first from the bottom side surface of the ice tray such that air bubbles contained in the water are caused to escape therefrom through the water surface, thereby making a transparent ice;

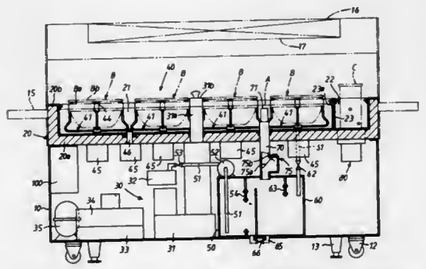


h) a temperature sensor including a thermistor molded in an insulating resin so that the thermistor is embedded in an upper portion of the insulating resin, the temperature sensor being disposed at an intermediate position of the height of the ice tray; and
i) control means for controlling the drive mechanism to invert the ice tray when the temperature sensed by the temperature sensor reaches an ice making completion temperature, the ice being removed from the inverted ice tray.

5,182,917
FOOD SERVICE COUNTER OF THE ICE STORAGE TYPE

Syuji Kado, Toyoake; Susumu Tatematsu, Nagoya, and Hideyuki Ikari, Kariya, both of Japan, assignors to Hoshizaki Denki Kabushiki Kaisha, Toyoake, Japan

Filed Feb. 21, 1992, Ser. No. 838,610
Int. Cl.[5] F25C *1/14, 5/018*
U.S. Cl. 62—137 **6 Claims**

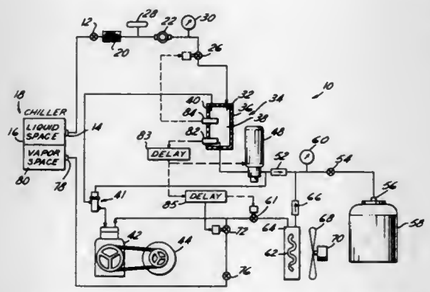


1. An ice storage type food service counter comprising:
an ice storage tank arranged to store an amount of ice and having a drain hole at a bottom;
an ice supply device for automatically producing chips of ice and supplying the same into the ice storage tank;
an agitating device arranged within the ice storage tank for agitating and leveling the chips of ice stored in the ice storage tank;
a water supply tank arranged below the ice storage tank to store an amount of ice making water for use in the ice supply device;
a discharge tank arranged below the ice storage tank to store the water of melted ice discharged from the ice storage tank through the drain hole; and
an overflow pipe having an upper end opening into the interior of the ice storage tank at a position lower than an upper edge of the ice storage tank and extending downward to discharge the chips of ice located above its upper end into either one of the water supply tank or the discharge tank.

5,182,918
REFRIGERANT RECOVERY SYSTEM

Kenneth W. Manz, Paulding, and Christopher M. Powers, Bryan; both of Ohio, assignors to SPX Corporation, Muskegon, Mich.

Continuation-in-part of Ser. No. 799,433, Nov. 26, 1991. This application May 26, 1992, Ser. No. 887,887
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—149 **11 Claims**

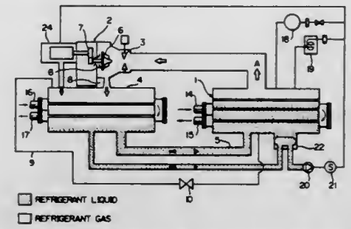


1. A system for recovering refrigerant from refrigeration equipment comprising:
a refrigerant compressor having an inlet and an outlet,
refrigerant accumulator means having an inlet port, a vapor outlet port and a liquid outlet port,
input means for connecting said inlet port of said accumulator means to the refrigeration equipment from which refrigerant is to be recovered,
a liquid refrigerant pump having an inlet and an outlet,
means for connecting said liquid refrigerant pump outlet to a refrigerant storage container,
means for connecting said liquid outlet port of said accumulator means to said liquid refrigerant pump inlet such that said liquid refrigerant pump pumps liquid refrigerant from said liquid outlet port to the storage container, and
means responsive to a pressure differential between said liquid refrigerant pump and said accumulator means for operatively connecting said vapor outlet port to said compressor inlet such that operation of said compressor functions to draw refrigerant from said input means into said accumulator means while limiting pressure differential across said liquid refrigerant pump.

5,182,919
OIL RECOVERY SYSTEM FOR CLOSED TYPE CENTRIFUGAL REFRIGERATING MACHINE

Satoru Fujiwara, Tokyo, Japan, assignor to Ebara Corporation, Tokyo, Japan

Filed Jan. 15, 1991, Ser. No. 641,210
Claims priority, application Japan, Jan. 18, 1990, 2-10160; Jan. 18, 1990, 2-10161
Int. Cl.[5] F25B *31/00*
U.S. Cl. 62—193 **6 Claims**

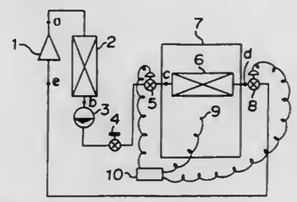


1. In a closed type centrifugal refrigerating machine including a compressor that has an oil sump below the suction side thereof, a condenser that liquefies compressed refrigerant gas by cooling, an evaporator that evaporates the liquiefied refrigerant, a suction volume control valve that controls the volumetric flow of refrigerant gas sucked into said compressor from said evaporator, recovery means for recovering oil from said oil sump to an oil tank in a lubricating system, and control means for starting or stopping said compressor in accordance with the magnitude of refrigeration load, an oil recovery system for said closed type centrifugal refrigerating machine comprising:
valve opening control means for controlling the opening of said suction volume control valve to open said control valve to a predetermined degree when the number of times of operation of said compressor per unit of time exceeds a set number, the predetermined degree being greater than a normal degree of control valve opening during operations of said compressor, such that an increase in the amount of oil recovered to said oil tank is attained.

5,182,920
REFRIGERATION CYCLE SYSTEM

Fumio Matsuoka, Kamakura; Kouichi Negoro, Wakayama; Takeshi Sugimoto, Wakayama; Toshiaki Yamaguchi, Wakayama, and Tetsuya Yamashita, Wakayama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1992, Ser. No. 903,275
Claims priority, application Japan, Jul. 15, 1991, 3-173918
Int. Cl.[5] F25B *41/04*
U.S. Cl. 62—206 **1 Claim**



1. A refrigeration cycle system comprising:
a refrigeration cycle having a compressor (**1**), a condenser (**2**), a solenoid valve (**4**), an electronic expansion valve (**5**),

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an evaporator (6), and a motorized suction throttle valve (8) connected in series therein; and

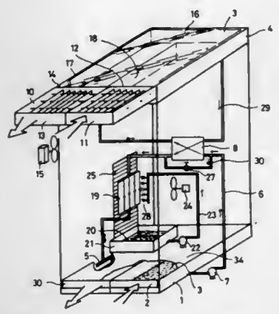
a control unit (10) which when an evaporation load is great, a variable (ΔS_{LEV}) of the setting (S_{LEV}) of the electronic expansion valve (5) is set to be in a throttling direction and a variable (ΔS_{Suc}) of the setting (ΔS_{Suc}) of the motorized suction throttle valve (8) is set to be an unthrottling direction in association with the operation of the electronic expansion valve (5), and which the evaporation load is small, the variable (ΔS_{LEV}) of the setting of the electronic expansion valve (5) is set to be in an unthrottling direction and the variable (ΔS_{Suc}) of the setting of the motorized suction throttle valve (8) is set to be in a throttling direction in association with the operation of the electronic expansion valve (5).

5,182,921

SOLAR DEHUMIDIFIER

Wen-Jyh Yan, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Taiwan

Filed Apr. 10, 1992, Ser. No. 866,348
Int. Cl.[5] F25B *15/00*; F25D *23/00*
U.S. Cl. 62—235.1 **5 Claims**



1. A solar dehumidifier which comprises:

(a) a regenerator which contains liquid desiccant, wherein said regenerator further comprises a first air inlet, a first air outlet, therein moisture in said liquid desiccant being evaporated by solar radiation will be removed by the air flow entering said first air inlet and exiting from said first air outlet, and a heat-pipe heat exchanger disposed between said first air inlet and first air outlet for achieving higher rate of evaporation of said liquid desiccant;

(b) a dehumidifying bed unit which further comprises a second air inlet and a second air outlet, wherein said solar dehumidifier utilizes said regenerated liquid desiccant to absorb moisture in the humid air entering said second air inlet and exiting from said second air outlet and then circulate said liquid desiccant between said regenerator and said dehumidifying bed unit; and

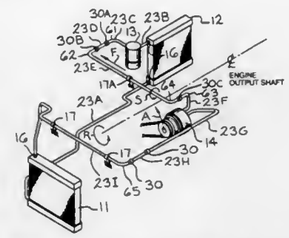
(c) a heat exchanger connected between said regenerator and said dehumidifying bed unit in order to perform heat exchange between the liquid desiccant flowing from said dehumidifying bed unit and the liquid desiccant returning from said regenerator.

5,182,922

AUTOMOTIVE AIR-CONDITIONING SYSTEM

Alan R. Allread; Dennis B. Chichester, both of Jackson; Russell L. Rogers, Munith, all of Mich., and Steven M. Knowles, Woodburn, Ind., assignors to Aeroquip Corporation, Maumee, Ohio

Division of Ser. No. 795,444, Nov. 21, 1991. This application Mar. 24, 1992, Ser. No. 856,598
Int. Cl.[5] B60H *1/32*
U.S. Cl. 62—239 **16 Claims**



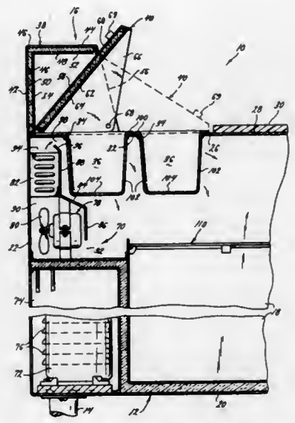
1. In an automotive vehicle refrigeration system having a condenser and an evaporator affixed to the vehicle chassis and a compressor affixed to the prime mover wherein said prime mover is affixed to said chassis by resilient support means for damping vibrations therebetween the improvement comprising fluidic connecting means between said compressor and said condenser and between said compressor and said evaporator consisting solely of lengths of rigid conduit means in at least three different planes and including at least one flexible connector means therebetween positioned in an area of high bending moment resulting from movement of said lengths relative to one another.

5,182,923

REFRIGERATOR UNIT FOR FOOD PRODUCTS

Robert J. Trulaske, Sr., Frontenac, Mo., assignor to True Food Service Equipment, Inc., O'Fallon, Mo.

Division of Ser. No. 713,635, Jun. 10, 1991, which is a continuation of Ser. No. 416,549, Oct. 3, 1989, abandoned. This application Sep. 4, 1991, Ser. No. 754,962
Int. Cl.[5] F25D *23/12*
U.S. Cl. 62—249 **5 Claims**



5. A refrigerator unit for food products, comprising:

(a) a cabinet including opposed sidewalls, a bottom wall, a rear wall, at least one front door and a top wall, the top wall having a front portion providing a work area and a rear portion providing a pan area and having a plurality of rows of pan-receiving openings,

(b) a cover assembly for the rear portion of the top wall including:

1. a fixed ell-shaped hood having a generally vertical back wall and a generally horizontal top wall each wall including an outer portion, a flat preformed sheet insulating foam core and an inner liner, and opposed sidewalls, and

2. a movable cover having an insulated top wall including an outer portion, a flat preformed sheet, insulating foam core and an inner liner and opposed side walls, said sidewalls being operatively connected in pivotal relation to the opposed sidewalls of the hood to move said cover from a closed position cooperating with the hood to provide an insulated enclosure for the pan area extending a substantial height above the pan area, to an open position affording access to the pan area,

(c) a plurality of removable pans insertable within the pan-receiving openings, each having an upper portion, operatively carried by the rear portion of the cabinet top wall, and a depending pan portion including sidewalls and a bottom wall, said pan portion extending into the interior of the cabinet, and

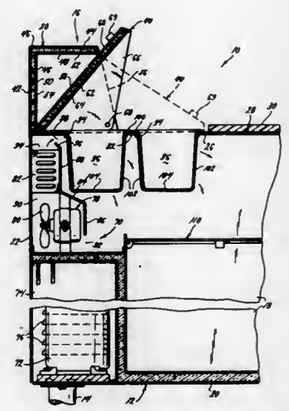
(d) a forced air refrigeration system within the cabinet for cooling the interior of the cabinet and the pans, said system including a fan with the fan blade facing the rear wall of the cabinet and passage means formed from wall means spaced from the rear wall of the cabinet, said wall means including a lower portion disposed above the upper portion of the fan and an upper portion disposed above the upper portion of the fan and spaced from the cabinet top wall to define an elongate outlet opening directing cooling air onto and between the pans, the refrigerator system including an evaporator coil disposed between the cabinet rear wall and the passage means upper wall portion.

5,182,924

REFRIGERATOR UNIT FOR FOOD PRODUCTS

Robert J. Trulaske, Sr., Frontenac, Mo., assignor to True Food Service Equipment, Inc., O'Fallon, Mo.

Continuation of Ser. No. 713,635, Jun. 10, 1991, abandoned, which is a continuation of Ser. No. 416,549, Oct. 3, 1989, abandoned. This application Jul. 9, 1992, Ser. No. 912,025
Int. Cl.[5] F25B *49/00*; A47F *3/04*
U.S. Cl. 62—255 **6 Claims**



1. A refrigerator unit for food products comprising:

(a) a cabinet including opposed sidewalls, a bottom wall, a rear wall, at least one front door and a top wall, the top wall having a front portion providing a work area and a rear portion providing a pan area and having a plurality of pan-receiving openings,

(b) a cover assembly for the rear portion of the top wall including a fixed portion and a movable cover, said cover being operatively pivotally attached to said fixed portion to move from a closed position, providing at least part of an enclosure for the pan area, to an open position affording access to the pan area,

(c) a plurality of removable pans insertable within the pan-receiving openings, each having an upper portion operatively carried by the rear portion of the cabinet top wall and a depending lower portion including sidewalls and a bottom wall, said lower portion extending into the interior of the cabinet, and

(d) a forced air refrigeration system within the cabinet for cooling the interior of the cabinet and the pans, said system including a fan and an evaporator adjacent the cabinet rear wall, the fan being adapted to force air through the evaporator for said cooling, and passage means between the fan and the pans, the passage means adapted to confine to the evaporator air drawn in by the fan, and to direct cooled air blown from the evaporator onto and between the pans,

(e) the refrigeration system including means carrying the fan with the fan blade facing the rear wall of the cabinet and the passage means includes interior wall means spaced from the rear wall of the cabinet and including a lower portion disposed below the upper portion of the fan and an upper portion disposed above the upper portion of the fan and spaced from the cabinet top wall to define an elongate opening directing cooling air onto and between the pans, the refrigeration system including an evaporator coil disposed between the cabinet rear wall and the passage means upper wall portion,

(f) the passage means upper wall portion including an elongate lip turned inwardly of the passage means and cooperating with the cabinet top wall rear portion to direct the cooling air.

5,182,925

INTEGRALLY FORMED, MODULAR ICE CUBER HAVING A STAINLESS STEEL EVAPORATOR AND MICROCONTROLLER

Robert J. Alvarez, Denver; Scott E. Bredesen, Englewood; James J. Wilson, Westminster; Duane D. Flim, Aurora, all of Colo.; Todd E. Kniffen, Williamsburg, Iowa, and Clinton O. Schahrer, Longmont, Colo., assignors to Mile High Equipment Company, Denver, Colo.

Filed May 13, 1991, Ser. No. 701,440
Int. Cl.[5] F25C *1/12*
U.S. Cl. 62—347 **15 Claims**

13. An evaporator for freezing water into ice cubes, the evaporator being chilled by cold refrigerant from a refrigeration system, the evaporator comprising:

a first plate;

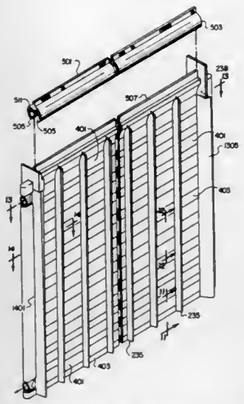
a second plate mated with the first plate, the second plate having a serpentine depression, displaced oppositely from the first plate, with traversing spaced-apart parallel sections connected by bend sections so as to form a continuous channel for carrying chilled refringent defined between the first plate and the depression of the second plate;

an array of icing sites on which water is frozen, each icing site disposed on an outside surface portion of the parallel sections of the depression of the second plate, over the refrigerant channel to allow for efficient transfer of heat from water flowing across the icing sites to chilled refrigerant in the channel; and

means for impeding formation of ice bridges between adjacent freezing sites, the means for impeding formation of ice bridges including laterally extending slots defined in

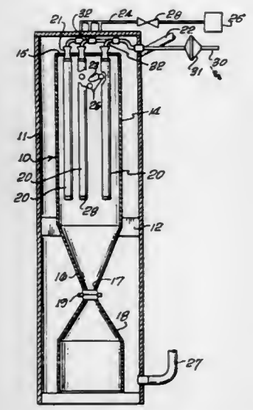
VOL
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the second plate between adjacent parallel sections of the depression and matching slots defined in the first plate so



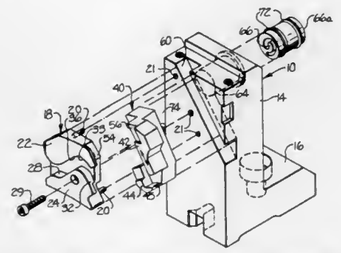
as to form a plurality of laterally extending openings through the evaporator inhibiting formation of ice bridges.

5,182,926
RECOVERY OF AROMA GASES
Lawrence G. Carns, Plain City, and James Tuot, Dublin, both of Ohio, assignors to Nestec S.A., Vevey, Switzerland
Filed Sep. 16, 1991, Ser. No. 760,662
Int. Cl.[5] A23F *1/08*
U.S. Cl. 62—352 **12 Claims**



1. A method of recovering aroma gas evolved during processing of a beverage which comprises
conducting the aroma gas to a cryogenic collector,
injecting liquid nitrogen into the aroma gas in said collector under conditions sufficient to condense aroma frost particles from the aroma gas and volatilize the liquid nitrogen thereby forming a suspension of aroma frost particles in nitrogen gas,
contacting the gaseous suspension with a porous filter medium having a pore size distribution which removes substantially all of the aroma frost particles from the gaseous suspension, with the particles being deposited on the filter medium and the nitrogen gas component of the suspension passing through said porous filter medium,
dislodging the aroma frost particles from the filter medium, and
recovering the condensed aroma frost particles.

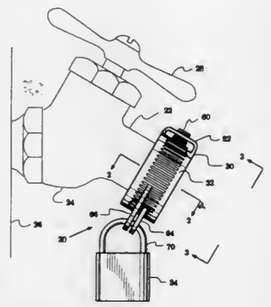
5,182,927
CAM SYSTEM FOR CIRCULAR KNITTING MACHINE
David Pernick, Glendale, N.Y., assignor to Monarch Knitting Machinery Corporation, Glendale, N.Y.
Continuation-in-part of Ser. No. 674,212, Mar. 25, 1991. This application Jul. 29, 1991, Ser. No. 737,383
Int. Cl.[5] D04B *9/06*
U.S. Cl. 66—54 **14 Claims**



1. A stitch cam unit for engaging the operating butts of knitting needles in circular knitting machines to raise and lower the needles, comprising:
a support body having a groove formed therein at an oblique angle;
needle raising cam means fixed to said support body such that said needle raising cam means covers a portion of said groove, said needle raising cam means including:
an upper needle raising cam member having an upwardly inclined lower butt engaging surface extending between a bottom and a top portion;
a lower needle raising cam member having an upwardly inclined upper butt engaging surface extending between a bottom and a top portion;
said upwardly inclined lower butt engaging surface of said upper needle raising cam member and said upwardly inclined upper butt engaging surface of said lower needle raising cam member being spaced apart from each other to define an upwardly inclined first portion of closed track for receiving operating butts of knitting needles;
said upper needle raising cam member also including a downwardly inclined lower butt engaging surface extending from said top portion of said upwardly inclined lower butt engaging surface;
said lower needle raising cam member also including a downwardly inclined upper butt engaging surface extending from said top portion of said upwardly inclined upper butt engaging surface;
said downwardly inclined lower butt engaging surface of said upper needle raising cam member and said downwardly inclined upper butt engaging surface of said lower needle raising cam member being spaced apart from each other to define a downwardly inclined second portion of closed track for
receiving operating butts of knitting needles; movable stitch cam means, including:
an upper stitch cam member having a lower butt engaging surface;
a lower landing stitch cam member having an upper butt engaging surface being spaced apart from said lower butt engaging surface of said upper stitch cam member to define a third portion of closed track for receiving operating butts of knitting needles; and

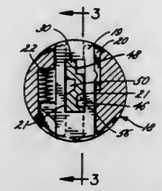
a tongue being slidably received within said groove in said support block, a portion of said tongue extending behind said needle raising means to slidably retain said movable stitch cam means against said support body; and
means for moving said stitch cam means obliquely relative to said fixed needle raising cam means;
said downwardly inclined lower butt engaging surface of said upper needle raising cam member including a front extension, and said downwardly inclined lower butt engaging surface of said upper stitch cam member including a notch, said front extension of said downwardly inclined lower butt engaging surface of said upper needle raising cam member and said notch of said downwardly inclined lower butt engaging surface of said upper stitch cam member cooperating with each other to provide a continual lower butt engaging surface when said stitch cam means is moved; and
said upper butt engaging surface of said lower landing stitch cam member including a front notch, and said downwardly inclined upper butt engaging surface of said lower needle raising cam member including a rear notch, said notches of said landing stitch cam member and said downwardly inclined upper butt engaging surface of said lower needle raising cam member cooperating with each other to provide a continual upper butt engaging surface when said stitch cam means is moved;
whereby said track defined by said needle raising means and said movable stitch cam means remains closed when said movable stitch cam means is moved between different positions, and further whereby the stitch forming level of the needles as defined by said closed track may be adjusted without substantially narrowing or widening said closed cam track.

5,182,928
HOSE BIBB CLOSURE
Patrick J. O'Fearna, 1453 S. Westgate, Apt. 4, Los Angeles, Calif. 90025
Filed Aug. 23, 1991, Ser. No. 749,124
Int. Cl.[5] F16B *41/00*
U.S. Cl. 70—232 **6 Claims**



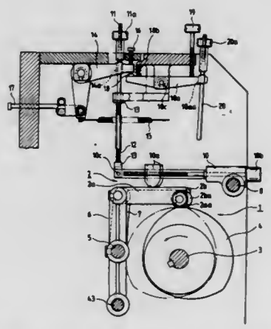
1. Hose bibb closure, comprising:
a cap defining a bottom and a skirt therearound, said skirt defining internal threads to rotatably engage the hose bibb spout threads with said bottom abutting the hose bibb spout end, said skirt further defining a slot therein;
a collar having a lip to protrude inward through said slot and abut the narrowed hose bibb spout above the hose bibb spout threads;
means for coupling said collar to said cap; and
lock means for locking said coupling means;
the hose bibb thereby secured against unauthorized use thereof.

5,182,929
METHOD OF PROVIDING A UNIVERSAL KEYWAY LOCK AND PLUG THEREFOR
Gary L. Myers, River Grove, Ill., assignor to Fort Lock Corporation, River Grove, Ill.
Filed Jun. 5, 1989, Ser. No. 361,333
Int. Cl.[5] G05B *35/08*
U.S. Cl. 70—337 **5 Claims**



1. A method of adapting a cylindrical lock employing a rotatable plug with a longitudinally extending rectangular key slot for universally receiving keys having a control area and a multiplicity of different warding including the steps of
a) providing a tumbler carrying plug with a substantially unrestricted keyway slot adapted to receive properly bitted keys of each of said different ward configurations,
b) incorporating in said keyway only one longitudinal rib predeterminedly located to receive the control area of the key and to be at a common denominator location for each of the multiplicity of warded key blanks and to provide guidance and support for all of the multiplicity of keys in the plug keyway slot, and
c) adapting said substantially unrestricted slot plug for replacing a lock plug having a specific keyway slot for a specially warded key configuration.

5,182,930
METHOD FOR MAKING COILED SPRINGS
Takeji Matsuoka, Tokyo, Japan, assignor to MEC Machinery Co., Ltd., Tokyo, Japan
Filed Mar. 22, 1991, Ser. No. 673,385
Claims priority, application Japan, Mar. 30, 1990, 2-83245
Int. Cl.[5] B21F *3/10*
U.S. Cl. 72—138 **4 Claims**



1. A process for making coiled springs comprising the steps of:
intermittently rotating feed rollers with a wire held therebetween to feed the wire through a wire guide into engagement with a bending die located at an outlet of the wire guide to thereby coil the wire;
extending a pitch tool in an extending direction for pitching,

VOL
1147
ISS
1
FE
2
1993
UMI

as a follower of a cam unit is moved toward a base circle of a pitch cam by the force of a spring; and

retracting the pitch tool in a retracting direction to complete the pitching, as said follower of the cam unit is moved away from the base circle of the pitch cam against the force of the spring.

5,182,931

METHOD FOR CONTINUOUS TENSION STRETCHING OF THIN STRIPS, PARTICULARLY METAL STRIPS

Oskar Noé; Rolf Noé, and Andreas Noé, all of Mülheim, Fed. Rep. of Germany, assignors to BWG Bergwerk-und Walzwerk Maschinenbau GmbH, Duisberg, Fed. Rep. of Germany

Filed Feb. 16, 1990, Ser. No. 481,983

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1989, 3912676

Int. Cl.[5] B21D *3/12*

U.S. Cl. 72—183 **2 Claims**



1. In a method for continuous tension stretching of thin metal strips of steel, aluminum and like metals having a thickness of between 0.05 mm and 0.5 mm, the method including passing the strip through a set of brake rollers and a set of pull rollers and subjecting the strip to a stretch pull operation between the two sets of rollers for stretching the strip in the plastic range, wherein the stretch pull force corresponds to or slightly exceeds the yield point of the strip material, the improvement comprising subjecting the strip to a stretch pull operation required for stretching the strip in the plastic range in a pair of tension stretching rollers arranged between the set of brake rollers and the set of pull rollers and subjecting the strip to a stretch pull operation required for stretching the strip in the elastic range in the set of brake rollers and the set of pull rollers.

5,182,932

APPARATUS FOR BENDING STEEL BARS TO FORM CONCRETE REINFORCEMENT ELEMENTS

Gerhard Ritter; Klaus Ritter, and Gerhard Schmidt, all of Graz, Austria, assignors to EVG Entwicklungs-u. Verwertungs-Gesellschaft m.b.HH, Graz, Austria

PCT No. PCT/AT90/00076, § 371 Date May 15, 1991, § 102(e) Date May 15, 1991, PCT Pub. No. WO91/04113, PCT Pub. Date Apr. 4, 1991

PCT Filed Jul. 30, 1990, Ser. No. 659,308

Claims priority, application Austria, Sep. 20, 1989, 2206/89; Feb. 8, 1990, 279/90

Int. Cl.[5] B21D *7/022, 43/20*

U.S. Cl. 72—217 **17 Claims**

1. Apparatus for bending a plurality of steel bars to form concrete reinforcement elements or stirrups,

said apparatus defining a longitudinal direction parallel to a longitudinal direction of the bars,

said apparatus having

a bar feed device;

two bending frame means (**2, 2'**), each bending frame means including bending members (**11, 12**) spaced from each other and defining a bar gap;

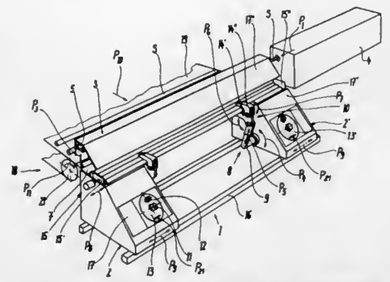
means for adjustably mounting said bending frame means for adjustment relative to each other in a longitudinal direction of the apparatus,

and comprising

a bar gripping and transfer device (**8, 8'**) coupled to each of the bending frame means (**2, 2'**),

the bar gripping and transfer devices each having gripper tongs (**10, 28**) and conjointly movable gripping jaws (**14', 14''**),

said gripper tongs being movable between a receiving position for receiving and clamping a plurality of bars between the gripping jaws (**14', 14''**), and a discharge position for placing said plurality of bars clamped in the gripping jaws in the bar gap of the bending members (**11, 12**);



a buffer and guide surface (**7**) positioned transversely with respect to the longitudinal direction of the apparatus and located in the vicinity of the receiving position of the gripper tongs (**10, 28**), said buffer and guide surface (**7**) receiving the bars from the bar feed device (**3, 4; 28**); and

a common bar alignment device (**15**) operatively associated with the buffer and guide surface (**7**) for aligning at least one of the ends of the bars with respect to a reference so that said bars can be placed within the gripper jaws (**14', 14''**) at the receiving position when in alignment.

5,182,933

METHOD OF PRODUCING DEVICES FOR INTERCONNECTING CONVEYOR OR SIMILAR BELTS

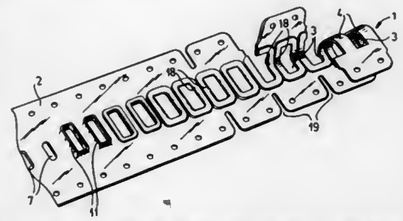
Jean-Francois Schick, Paris, France, assignor to Goro S. A., Chelles Cedex, France

Filed Sep. 10, 1991, Ser. No. 758,877

Claims priority, application France, Sep. 10, 1990, 90 11171

Int. Cl.[5] B21D *28/06*

U.S. Cl. 72—335 **7 Claims**



1. A method of making a belt end fastener, comprising the steps of:

(a) forming a row of spaced-apart apertures in a central portion of a metal strip;

(b) widening each of said apertures by pressing an edge portion of the metal strip completely surrounding each aperture transversely to said strip, thereby forming a collar all around each aperture;

(c) bending sides of each collar outwardly from the respective aperture to lie against a surface of said strip adjacent the respective aperture, thereby forming an outwardly bent frame all around each aperture; and

(d) thereafter bending said strip into a U-shape about a longitudinal axis parallel to the strip to render said surface concave and bend opposite longitudinal edges of each of said frames inwardly, thereby forming U-shaped hinge elements separated by said apertures, interdigitatable with corresponding hinge elements of a second such strip to be joined to the first-mentioned strip by a hinge pin and reinforcing each of said elements along an interior of a respective bend by bringing two of said longitudinal edges adjacent one another of frames of succesive apertures along the strip, said longitudinal edges of said frames of each element extending over substantially a full length thereof.

5,182,934

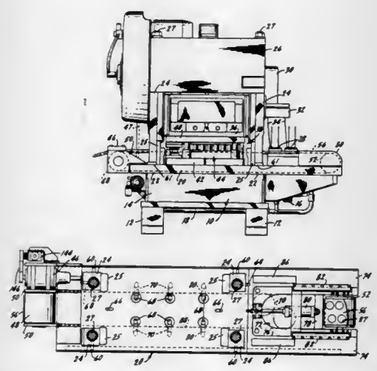
DUAL LANE CONVERSION SYSTEM

Frank J. Herdzina, Schaumburg, and Rollie M. Goodrich, Palatine, both of Ill., assignors to Service Tool Die & Mfg. Co., Elk Grove Village, Ill.

Continuation of Ser. No. 143,585, Jan. 13, 1988, abandoned. This application Jun. 12, 1990, Ser. No. 537,159

Int. Cl.[5] B21J *11/00*

U.S. Cl. 72—405 **9 Claims**



1. A press for converting work pieces into parts, comprising a bed, a bolster mounted on the bed, a plurality of columns mounted on the bolster and having a way attached to each column, main drive means mounted on the columns, a ram slidable upon the ways and driven by the main drive means to reciprocate toward and away from the bolster, upper and lower tooling means attached to the arm and bolster, respectively, having a plurality of stations for converting said work pieces into parts, conveyor drive means mounted on the bolster, and conveyor means mounted on the conveyor drive means for carrying work pieces into and through the tooling means stations, the bolster comprising a one-piece member which includes locating means engageable with the conveyor drive means, columns and lower tooling means for establishing the correct positions of the conveyor drive means, the columns and the lower tooling means with respect to one another, such that they are aligned for cooperation.

5,182,935

SINGLE RECIPROCATING DYNAMIC BALANCER FOR A DOUBLE ACTION STAMPING PRESS

Robert L. Schockman, St. Henry, Ohio, assignor to The Minster Machine Company, Minster, Ohio

Division of Ser. No. 666,255, Mar. 8, 1991, Pat. No. 5,136,875. This application May 8, 1992, Ser. No. 880,542

Int. Cl.[5] B21J *9/18*

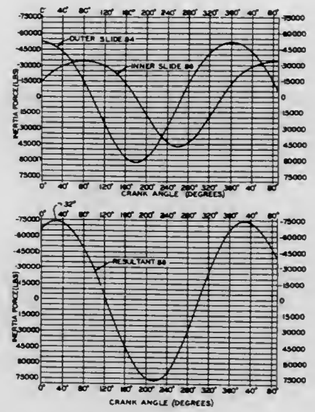
U.S. Cl. 72—417 **4 Claims**

1. A method of balancing the inertia forces of a double action press having an inner slide and an outer slide connected to a crankshaft comprising the following steps

generating a sinusoidal inertia force curve of the inner slide;

generating a sinusoidal inertia force curve of the outer slide;

adding the sinusoidal inertia force curve of the inner slide and the sinusoidal inertia force curve of the outer slide to obtain a resultant inertia force curve; and



providing in the press a dynamic balancer having a single mass driven by the crankshaft in a sinusoidal motion, said single mass having an inertia force curve substantially opposite and substantially equal to the resultant inertia force curve.

5,182,936

PLATE BENDING MACHINE EQUIPPED WITH A PLATE CLAMPING MANIPULATOR AND A PLATE POSITION DETECTING DEVICE

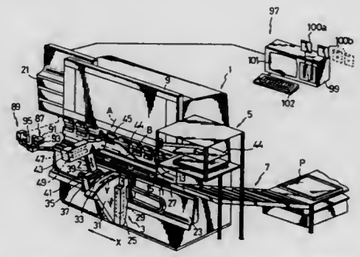
Franco Sartorio, Turin, Italy, assignors to Amada Company, Limited, Japan

Continuation of Ser. No. 489,875, Mar. 6, 1990, Pat. No. 5,058,406, which is a continuation of Ser. No. 302,668, Jan. 27, 1989, abandoned. This application Jul. 16, 1991, Ser. No. 731,005

Claims priority, application Italy, Jan. 29, 1988, 67058 A/88; Jan. 29, 1988, 67059 A/88

Int. Cl.[5] B21D *43/11;* **B21J** *13/12*

U.S. Cl. 72—420 **3 Claims**



1. A method of bending a sheet workpiece having a long edge and a short edge by means of a press brake which includes:

a pair of dies having a longitudinal axis and being capable of acting in mutual cooperation to bend a workpiece having edges;

a manipulator for handling the workpiece;

VOL 1147 ISS 1 FEB 2 1993 UMI

detector means, mounted on a frame of the press brake, for detecting the workpiece position along the longitudinal axis of the dies; the method comprising the steps of:

(a) bending the short edge of the workpiece between the pair of dies;

(b) rotating the workpiece by means of the manipulator so that the long edge of the workpiece faces the dies;

(c) moving the workpiece by means of the manipulator toward the detector means;

(d) detecting the workpiece position along the longitudinal axis of the dies by means of the detector means;

(e) moving the workpiece by means of the manipulator along the longitudinal axis of the dies;

(f) detecting a distance moved by the manipulator;

(g) positioning the workpiece at a suitable position with respect to the dies along the longitudinal axis of the dies, based on the workpiece position detected at the step (d) and the distance moved by the manipulator detected at the step (f); and

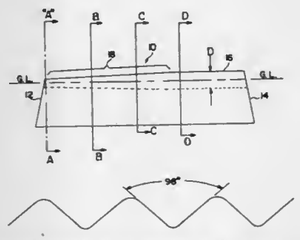
(h) bending the long edge of the workpiece between the pair of dies.

5,182,937

SEAM-FREE THREAD ROLLING DIES

Joseph F. Dickson, Jefferson, Mass., assignor to Quamco, Inc., Holden, Mass.

Filed Sep. 17, 1991, Ser. No. 761,413
Int. Cl.[5] B21H *3/06*
U.S. Cl. 72—469 **8 Claims**



1. In a die for use in the formation of a helical thread in a metal blank, the die being provided with at least a first thread forming groove in a face thereof which contacts the blank, the groove having a base region and a pair of oppositely facing side walls, the side walls extending from the groove base region to the said face of the die, an improved thread profile defining groove geometry comprising:

a dwell portion wherein the depth of the groove is substantially constant, said dwell portion terminating at the discharge end of the groove, the side walls of the groove diverging from the base region within said dwell portion at a constant average acute angle which is commensurate with the finish configuration of the thread to be formed; and

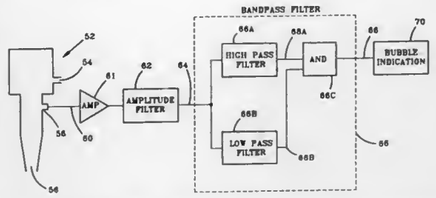
a second portion which extends from the starting end of the groove to said dwell portion, the depth of the groove increasing progressively and smoothly between said starting end and said dwell portion, said side walls having an angle of divergence at said starting end which is greater than said acute angle of divergence in said dwell portion, the shape of said side walls undergoing a smooth transition from said starting end to said dwell portion as the depth of the groove increases, said transition beginning at the base region of the groove and progressing outwardly toward the face of the die whereby said side walls have a double form in that portion of the length thereof disposed between said groove starting end and said dwell portion.

5,182,938

METHOD AND APPARATUS FOR DETECTING BUBBLES IN PRESSURIZED LIQUID DISPENSING SYSTEMS

Stephen L. Merkel, Bay Village, Ohio, assignor to Nordson Corporation, Westlake, Ohio

Filed Feb. 22, 1991, Ser. No. 659,842
Int. Cl.[5] G01N *7/00*
U.S. Cl. 73—19.05 **19 Claims**



1. An apparatus for detecting bubbles in pressurized liquid dispensing systems comprising:

a means for detecting pressure transients of the pressurized liquid;

a means for filtering out pressure transients having amplitudes less than predetermined reference levels

a bandpass filter means for filtering out pressure transients having a period of less than a first predetermined value and also those having a period greater than a second predetermined value, wherein non-bubble related pressure transients are filtered out, and generating a signal in response thereto; and

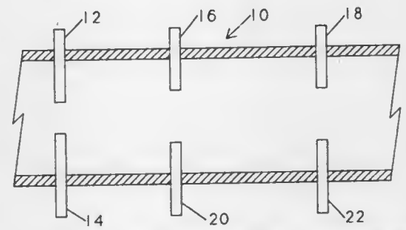
a bubble indication means, responsive to the signals received from the bandpass filter means, for indicating the occurrence of a bubble.

5,182,939

METHOD FOR DETERMINATION OF AVERAGE DOWNHOLE STEAM QUALITY BY MEASURING THE SLIP RATIO BETWEEN THE VAPOR AND LIQUID PHASES OF STEAM

Sze-Foo Chien, Houston, Tex., and Eugene F. Traverse, Denver, Colo., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 1, 1991, Ser. No. 678,092
Int. Cl.[5] G01N *31/22*
U.S. Cl. 73—29.01 **4 Claims**



1. A method for determining the quality of two phase steam in flowing steam, said method comprising the steps of:

providing means for injecting at least two tracer materials into a steam pipe;

providing at least two pairs of spaced detecting stations in said pipe, each said pair of spaced stations being adapted to detect a specific one of said tracer materials, and said stations of each pair being spaced apart a known distance;

injecting first and second tracer materials into said steam, each said tracer material having an affinity for a respective one of said steam phases;

detecting the presence of each said tracer material as the tracer laden steam passes the respective pairs of detecting stations to determine the transit time of said tracers between the stations and the velocity of each of the two phases of the steam; and

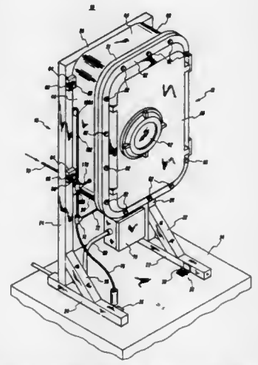
determining steam quality from the relationship of the differences between the transit time for each phase.

5,182,940

FLASH POINT TESTING APPARATUS AND METHOD

Kenneth M. Bailey, Heath; Rex L. Mitchener, Dallas; Timothy J. Wehking, Garland, and Craig P. Reith, Seabrook, all of Tex., assignors to Automated Pipeline Instruments Incorporated, Heath, Tex.

Filed Oct. 17, 1991, Ser. No. 778,006
Int. Cl.[5] G01N *25/52*
U.S. Cl. 73—36 **18 Claims**



1. Apparatus for determining flash point temperature of a liquid petroleum product being transported in a pipeline, said apparatus comprising, in combination:

first chamber means for storing a sample of the product;

product supply means communicating between the pipeline and said first chamber means for supplying the sample;

air supply means for introducing air into the sample such that a mixture of the air and vapor from the sample is present in said first chamber means;

second chamber means in fluid communication with said first chamber means;

suction means for drawing said mixture from said first chamber means into said second chamber means, said second chamber means including measuring means for measuring Lower Explosive Limit of said mixture;

temperature sensing means for measuring temperature of the sample;

density measuring means for measuring density of the sample relative to a predetermined reference; and

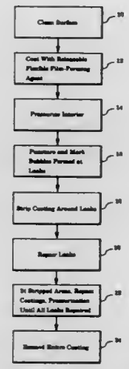
processing means responsive to the measured Lower Explosive Limit of said mixture and to the measured temperature and density of the sample for determining the flash point temperature of the sample.

5,182,941

METHOD OF LEAK DETECTION USING A RELEASABLE SURFACE FILM

Jeffry T. Frenkel, San Diego, and Brent C. Anderson, Carlsbad, both of Calif., assignors to Hughes Missile Systems Company, Los Angeles, Calif.

Filed Jan. 30, 1992, Ser. No. 828,047
Int. Cl.[5] G01M *3/12*
U.S. Cl. 73—40 **13 Claims**



1. The method of detecting leaks through a surface which comprises the steps of:

coating a clean first surface of a structure capable of being pressurized to be tested with a thin coating of a releasable flexible film forming material;

curing said coating to a flexible film;

applying a fluid under pressure to the opposite, second, surface of said structure;

observing the formation of bubbles in said film indicative of fluid leaking through said structure to said first surface;

puncturing said bubbles; and

marking said film at the location of said bubbles after puncturing said bubbles.

5,182,942

PROCESS AND APPARATUS FOR UTILIZATION OF FUELS WITH ALCOHOL ADDITIVES FOR AN INTERNAL COMBUSTION ENGINE

Gunter Hartel, Neuss; Armin Schurfeld, Meerbush; Karl-Heinrich Losing, Alpen; Dieter Thonnesen, Viersen, and Ulrich Remde, Meerbush, all of Fed. Rep. of Germany, assignors to Pierburg GmbH, Neuss, Fed. Rep. of Germany

Filed Oct. 1, 1991, Ser. No. 770,997
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1990, 4031008
Int. Cl.[5] G01N *25/02;* **F02D** *41/00*
U.S. Cl. 73—61.46 **25 Claims**

1. A process for detecting the concentration and type of alcohol in a fuel-alcohol fuel mixture, said process comprising

heating a sample of a fuel mixture of fuel and alcohol to a temperature above the boiling point of the alcohol in said sample,

measuring the temperature of said sample of fuel mixture during the heating of said fuel mixture,

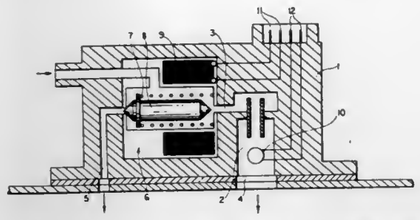
continuously correlating the measured temperature with respect to time to provide a measurement of temperature gradient with respect to time of the heated fuel mixture,

detecting from said temperature gradient of said sample any interruption of increase of temperature during said heating,

measuring the time interval during which temperature increase is interrupted, and

VOL 1147 ISS 1 FEB 2 1993 UMI

determining the type of alcohol present in said fuel mixture and its concentration, from the value of the temperature at



which the interruption of temperature increase takes place and the magnitude of the interval of time during which the temperature increase is interrupted.

5,182,943

CYLINDER IDENTIFICATION APPARATUS

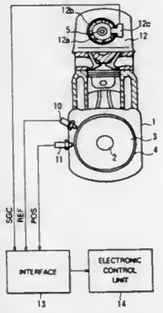
Wataru Fukui; Toshio Iwata; Yutaka Ohashi, and Masayuki Ikeucbi, all of Himeji, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Nov. 21, 1990, Ser. No. 616,493

Claims priority, application Japan, Nov. 24, 1989, 1-305906; Nov. 29, 1989, 1-311265; Nov. 29, 1989, 1-311266; Nov. 29, 1989, 1-311267; Nov. 29, 1989, 1-311268

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—116 **26 Claims**



1. A cylinder identification apparatus for a multi-cylinder internal combustion engine, comprising:

reference signal generating means for sensing the rotation of a crankshaft of the engine and generating a reference signal including at least one pulse indicating each time the crankshaft is at a prescribed rotational angle, wherein the number of the pulses of the reference signal per revolution of the crankshaft is proportional to the number of cylinders in the engine;

an identification signal generator for sensing the rotation of a member coupled to and rotating at ½ the speed of the crankshaft and generating a cylinder identification signal having a different form for different cylinders of the engine; and

control means for identifying each cylinder of the engine based on the cylinder identification signal and for generating engine control signals for the cylinders identified in accordance with the reference signal.

5,182,944

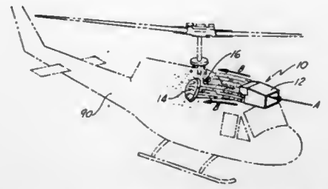
HELICOPTER ICING SPRAY SYSTEM

Siegfried W. Brunnenkant, 20408 Lucrino, New Orleans, La. 70129

Filed Jan. 18, 1991, Ser. No. 642,878

Int. Cl.[5] G01M *15/00*

U.S. Cl. 73—117.1 **15 Claims**



1. A system for testing the icing condition of aircraft engines during flight, said system being self-contained on said aircraft and comprising:

(a) a source of air under pressure bled off from said engine;

(b) a source of liquid under pressure; and,

(c) means mounted externally to said aircraft and forward of its said engine and engine air inlet and connected to said sources of air and liquid for spraying a mixture of said air and liquid toward said engine air inlet, said means for spraying comprising:

(i) an adjustable outer housing having a passageway therethrough for directing ambient air flow therethrough and toward said engine air inlet;

(ii) a distribution means positioned in said housing, said distribution means being in fluid communication with said sources of air and liquid; and,

(iii) a plurality of spray nozzles provided in said distribution means.

5,182,945

METHOD AND ARRANGEMENT FOR CHECKING THE CONTROLLABILITY OF A TANK VENTING VALVE

Siegfried Setter, Leonberg-Ezach, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

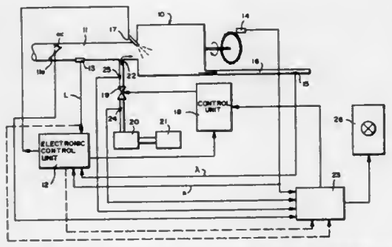
PCT No. PCT/DE90/00134, § 371 Date Sep. 25, 1991, § 102(e) Date Sep. 25, 1991, PCT Pub. No. WO90/11443, PCT Pub. Date Oct. 4, 1990

PCT Filed Feb. 27, 1990, Ser. No. 762,000

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1989, 3909887

Int. Cl.[5] G01M *19/00*

U.S. Cl. 73—118.1 **10 Claims**



1. A diagnostic method for checking the controllability of a tank venting valve through which an additional quantity of air charged with fuel vapor is passed to the intake of an internal combustion engine, the tank venting valve having a control chain and an input line and an output line, the method comprising the steps of:

using as measuring signals the output signals of at least one sensor which detects quantities measurable in the inlet and/or outlet line of the tank venting valve with said quantities changing when the additional quantity of air passes through the valve;

when a pregiven activating signal AS is applied to the control chain of the tank venting valve, concluding in dependence upon at least one of said measuring signals that the tank venting valve is controllable and/or that the inlet line and/or outlet line is seal-tight; and,

checking to determine if the pressure pA present in the intake of the engine is below a maximum permissible value and if yes, then conducting an evaluation of the measuring signal and if said pressure pA is above said maximum permissible value, then omitting the evaluation of said measuring signal.

5,182,946

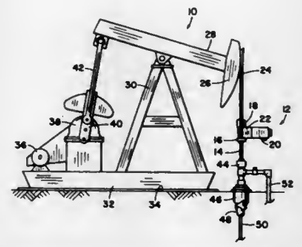
PORTABLE WELL ANALYZER

Murphy D. Boughner, Nowata; Paul J. Padilla, Tulsa, and Floyd A. Bowling, Broken Arrow, all of Okla., assignors to Amerada Hess Corporation, Tulsa, Okla.

Filed Nov. 8, 1991, Ser. No. 789,288

Int. Cl.[5] E21B *47/00;* **G06F** *15/00*

U.S. Cl. 73—151 **26 Claims**



1. For use with a well pumping unit having a polished rod with a string of sucker rods extending downwardly therefrom to a downhole pump that is reciprocated by the vertical reciprocal action of the polished rod to lift pumped fluid to the earth's surface, a self contained integrated system for collecting data indicative of the well pumping conditions, comprising:

a load sensing member mounted on and reciprocated with the polished rod for detecting the instantaneous weight supported by the polished rod;

a first circuit supported by and reciprocated with the polished rod and connected to said load sensing member for providing a first signal indicative of the instantaneous weight supported by the polished rod;

an accelerometer supported by and reciprocated with the polished rod;

a second circuit supported by and reciprocated with the polished rod and connected to said accelerometer providing a second signal indicative of the instantaneous displacement of the polished rod;

a data writer supported by and reciprocated with the polished rod and being connected to receive said first and second signals;

a housing mounted on and reciprocated with the polished rod and containing said load sensing member, said accelerometer, said first circuit, said second circuit and said data writer, the housing being adapted to removably receive a recorder;

a recorder removably insertable in said housing irrespective of whether said polished rod is stationary or is being reciprocated as the well is pumped to connect with said data writer to thereby receive thereon said first and second signals whereby the recorder may, after being removed from said housing, be employed to determine the well pumping conditions; and

a battery within said housing providing power for said load sensing member, said accelerometer, said first and second circuits and said data writer.

5,182,947

ELECTRIC MEASURING ARRANGEMENT FOR DETERMINING THE LEVEL OF AN ELECTRICALLY CONDUCTIVE LIQUID

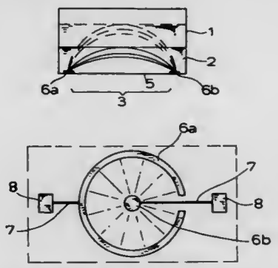
Michael Fidelak, Bönen, and Marlies Bartsch, Iserlohn, both of Fed. Rep. of Germany, assignors to HL Planartechnik GmbH, Dortmund, Fed. Rep. of Germany

Filed Mar. 6, 1991, Ser. No. 664,982

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1990, 4007232; Sep. 10, 1990, 4028730; Oct. 8, 1990, 4031845; Nov. 14, 1990, 4036262

Int. Cl.[5] G01F *23/26*

U.S. Cl. 73—304 C **30 Claims**



1. Electric measuring arrangement for determining liquid level and other physical data relating to an electrically conductive liquid located in a container, comprising at least one measuring sensor and an evaluation circuit; wherein the at least one measuring sensor is a stray field conductivity sensor with two measuring electrodes spaced at a specific lateral distance from one another, said electrodes producing an electromagnetic stray field within the electrically conductive liquid, the electrodes being disposed within the container in direct electrical contact with the electrically conductive liquid in the container wherein the container together with the electrically conductive liquid in it form a part of the measuring arrangement; and wherein the evaluation circuit comprises means for determining physical characteristics pertaining to the electrically conductive liquid from the volume of liquid measured over the measuring sensor, a known value of the conductivity of the electrically conductive liquid and said specific lateral distance.

5,182,948

ADJUSTABLE MEASURING CONTAINER

E. Stanley Robbins, Killen; Rodney W. Robbins, Florence, both of Ala.; Darrel J. Watt, Marietta, and Wendell G. Wilson, Atlanta, both of Ga., assignors to Robbins Industries, Inc., Florence, Ala.

Filed Aug. 5, 1991, Ser. No. 740,153

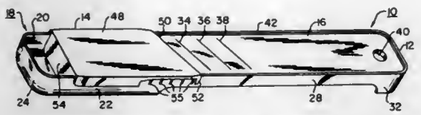
Int. Cl.[5] G01F *19/00*

U.S. Cl. 73—429 **12 Claims**

1. A measuring container device, said device comprising, in combination, a body member having side walls, a bowl adjacent one end, said bowl having a forward end wall and a rear end wall, a sliding dam structure slidably mounted on said body member, said dam structure comprising a dam element extending into said bowl and being shaped to fit the contours of said bowl and form a dam to limit the effective volume of said bowl at each of a plurality of different locations in said bowl, and a cover member extending from said dam member by a

VOL
1147
ISS
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1993
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distance sufficient to cover the rear portion of said bowl when said dam member is moved away from said rear end wall, said cover member having edges shaped to engage said side walls of



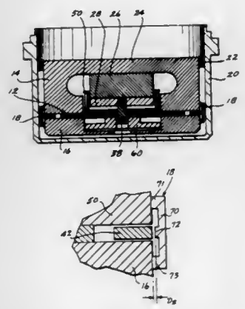
said body member to hold said cover on and allow it to slide thereon, said cover member being flexible to enable it to be easily snapped off of said body member.

5,182,949

ACCELEROMETER WITH SUPPORT CAGING

Charles J. Rupnick; Damon R. Stoddard, both of Seattle, and David B. Grindeland, Bellevue, all of Wash., assignors to Sundstrand Corporation, Rockford, Ill.

Filed May 17, 1991, Ser. No. 702,271
Int. Cl.[5] G01P *15/08*
U.S. Cl. 73—517 B **12 Claims**



1. An accelerometer for measuring acceleration along a sensing axis, the accelerometer comprising:

means for mounting a proof mass assembly;

a proof mass assembly comprising a paddle, a support, and suspension means for suspending the paddle from the support such that the paddle can move along the sensing axis in response to acceleration along the sensing axis, the support comprising an unclamped portion to which the suspension means is attached and a clamped portion mounted to said mounting means; and

restraining means separate from the clamped portion and spaced from said unclamped portion by a predetermined distance for limiting the travel of the unclamped portion in a direction normal to the sensing axis to a range selected to prevent damage to the proof mass assembly in the event of a shock being applied to the accelerometer.

5,182,950

TENSION TYPE DYNAMIC VISCOELASTICITY MEASURING APPARATUS

Haruo Takeda, Tokyo, Japan, assignor to Seiko Instruments, Inc., Tokyo, Japan

Filed Oct. 28, 1991, Ser. No. 783,047
Claims priority, application Japan, Oct. 29, 1990, 2-291052
Int. Cl.[5] G01N *3/38*
U.S. Cl. 73—811 **2 Claims**

1. A tension type dynamic viscoelasticity measuring apparatus for measuring viscoelasticity of a specimen which has two opposed ends, said apparatus comprising:

a specimen holder for securely holding one end of the specimen;

a specimen chuck for securely holding the other end of the specimen;

a detection rod having two opposed ends, one of which ends is connected to said specimen chuck;

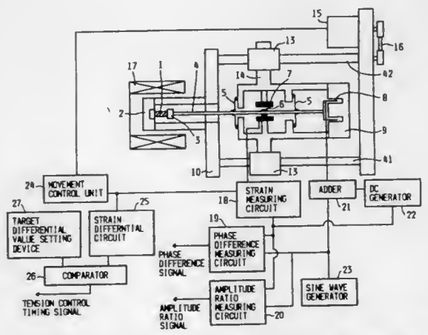
a strain detector operatively associated with said detection rod for detecting changes in position of said detection rod and producing an output signal representing the position of said detection rod relative to a reference position;

an electromagnetic force generator connected at one end of said detection rod to transmit a force to the specimen via said detection rod and said specimen chuck in response to a force signal;

a drive mechanism connected for moving said electromagnetic force generator in response to a movement signal;

electrical means for generating a force signal and for applying the force signal to said electromagnetic force generator;

movement control means for producing a movement signal and applying the movement signal to said drive mechanism for controlling the amount of movement of said drive mechanism;



signal differentiation means connected for receiving said output signal from said strain detector and producing a differential signal having a value corresponding to the time differential of said output signal from said strain detector;

a target differential value setter for providing a signal having a value corresponding to a selected value of the differential signal; and

a comparator connected to receive the differential signal and the signal provided by said target differential value setter when the effective tension in the specimen continues to change for the duration of a relaxation phenomenon that has occurred as a result of the drive mechanism being moved or the electromagnetic force of the electromagnetic force generator being changed in order to control the tension at the specimen to maintain that tension substantially at a control target value;

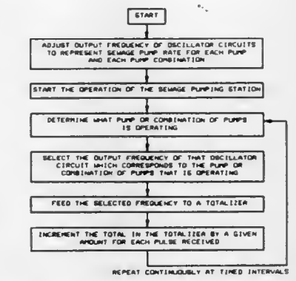
whereby when the value of the differential signal from said strain differentiation circuit falls below the selected value, said comparator outputs a tension control timing signal indicating that the relaxation phenomenon has ceased.

5,182,951

METHOD AND APARATUS FOR CALCULATING FLOW RATES THROUGH A PUMPING STATION

Johannes N. Jorritsma, 37 Yonge St. N.,, Aurora, Ontario, Canada L4G 1N6

Continuation-in-part of Ser. No. 313,458, Feb. 22, 1989, abandoned, which is a division of Ser. No. 148,875, Jan. 27, 1988, Pat. No. 4,821,580. This application Oct. 4, 1990, Ser. No. 593,644
Int. Cl.[5] G01F *1/00*
U.S. Cl. 73—861 **6 Claims**



1. A method of calculating the flow rate through a sewage handling system pumping station having at least one sewage pump, comprising the steps:

a) for each sewage pump and for each combination of sewage pumps, providing a stand-alone oscillator circuit of which the output frequency may be manually adjusted, each circuit frequency being adjustable independent of its corresponding sewage pump or combination of sewage pumps,

b) prior to operating said pumping station, adjusting the output frequency of each oscillator circuit to represent the pump rate for the sewage pump or combination of sewage pumps to which that oscillator circuit corresponds,

c) while operating the said pumping station, feeding to a totalizing device the output frequency of that oscillator circuit which corresponds to the sewage pump or combination of sewage pumps which is operating at any given time, and

d) incrementing the total in said totalizing device by a given amount for each pulse encountered, whereby the totalizing device is continuously updated.

5,182,952

PADDLEWHEEL FLOWMETER ASSEMBLY

Thomas E. Pyzik, Naugatuck, Conn., assignor to Omega Engineering, Inc., Stamford, Conn.

Filed Jan. 17, 1991, Ser. No. 642,529
Int. Cl.[5] G01F *15/18*
U.S. Cl. 73—861.79 **8 Claims**

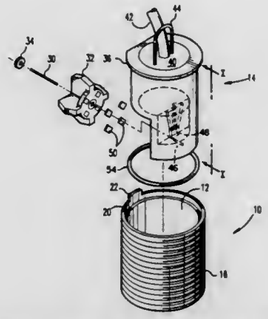
1. A linearly positionable and axially alignable sensor assembly, for separable attachment to a threaded cylindrical fitting which opens into a fluid conduit at an angle to the longitudinal axis thereof, said sensor assembly comprising:

a cylindrical housing having a cylindrical axial opening therethrough, and a threaded cylindrical surface thereon for threaded coupling with said threaded cylindrical fitting, such that said housing may be rotated so as to be advanced axially along a substantially linear path, into a desired linear position relative to the axis of the fluid conduit within said cylindrical fitting;

visible marker means on said housing alignable relative to the axis of the fluid conduit by rotation of said housing when said housing is threadedly engaged with said fitting;

said housing having an annular seating shoulder thereon for engaging and supporting a mating shoulder of a sensing unit, such that said seating shoulder may be positioned at a desired linear distance from the axis of the fluid conduit in said fitting, by threaded rotation of said housing within said fitting;

a sensing unit insertable into said cylindrical housing, and having an annular mating shoulder for engaging and seating against the seating shoulder of said cylindrical housing in any desired radial alignment position relative to said housing, when said sensing unit is inserted therein;



visible alignment means on said sensing unit alignable with said visible marker means on said housing to assure proper alignment of said sensing unit with the fluid conduit as indicated by the marker means;

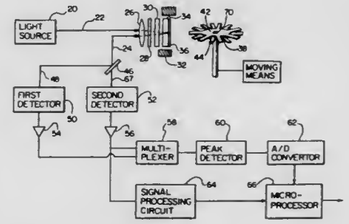
fastening means engageable with said housing and said sensing unit for urging the mating shoulder of said sensing unit into engagement with the seating shoulder of said housing, to retain said unit within said housing in a desired radial alignment therewith and at a desired radial distance from the axis of the fluid conduit within said cylindrical fitting.

5,182,953

METHOD AND APPARATUS FOR SHAFT TORQUE MEASUREMENT WITH TEMPERATURE COMPENSATION

Sylvester M. Ellinger; William B. Spillman, Jr., both of Charlotte, and Douglas R. Patriquin, Middlebury, all of Vt., assignors to Simmonds Precision Products, Inc., Akron, Ohio

Filed Jul. 13, 1990, Ser. No. 552,107
Int. Cl.[5] G01L *3/02*
U.S. Cl. 73—862.335 **37 Claims**



1. A system for measuring torque applied to a rotating shaft, said system comprising:

means, responsive to rotation of the shaft, for providing an output signal, said signal having a first component related to temperature and a second component related to twisting of the shaft; and

means for processing said first and second components of said output signal for providing a signal representing the torque applied to the shaft that is compensated for temperature related change in Young's Modulus of the shaft.

VOL
1147
ISS
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1993
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5,182,954

INNER TUBE ELEMENT FOR USE IN A DEVICE FOR TAKING SOIL SAMPLES, AND METHOD FOR MANUFACTURING SUCH AN INNER TUBE ELEMENT

Johannes C. J. Menheere, Dalfsen, Netherlands, assignor to Wavin B.V., Netherlands

Filed Apr. 12, 1991, Ser. No. 699,313
Claims priority, application Netherlands, Apr. 27, 1990, 9001025
Int. Cl.[5] E21B *49/02*
U.S. Cl. 73—864.45 5 Claims



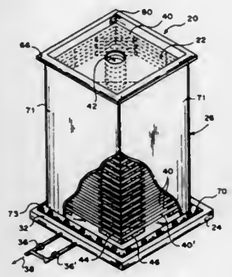
1. Inner tube element for use in a double tube device for taking soil samples during drilling operations, comprising differing end parts for coupling with several identical inner tube elements connected by a tube member made of plastic which is reinforced with fibers, in which the tube member has an orientation marking extending over its entire length and at least covered by a thin layer of plastic, said marking formed as a part of said tube member.

5,182,955

BOREHOLE FORMATION MODEL FOR TESTING NUCLEAR LOGGING INSTRUMENTS

Daniel C. Minette, Madison, Conn., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Jun. 26, 1990, Ser. No. 545,305
Int. Cl.[5] G12B *13/00*
U.S. Cl. 73—865.6 9 Claims



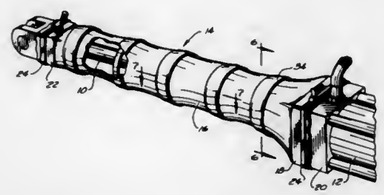
1. A flushable simulated laboratory formation having constant known matrix properties and a preselected porosity for testing nuclear well logging instruments, comprising:
a base,
a plurality of spacer members each having a preselected thickness directly related to a preselected porosity value,
a plurality of glass sheets each having a preselected thickness and known matrix properties and having a central circular hole disposed therein for cooperating with said plurality of spacer members to form a vertical laminated stacked glass assembly comprising alternate glass sheets and uniform alternate spaces therebetween with the central circular holes of said glass sheets vertically aligned, wherein said preselected width of said spaces between said glass sheets when compared to the thickness of said glass sheets yields a simulated rock formation having known matrix properties and a known selected porosity value,
a container member open at both ends and adapted for vertical placement over said stacked glass assembly and mounting one open end to said base, the other open end of said container member extending vertically above the top of said stacked glass assembly,
means for mounting said one open end of said container member in a fluid-tight seal with said base,
a cylindrical sleeve section radially sized for vertical insertion into the openings of said vertically aligned circular holes in said plurality of glass sheets for simulating the borehole in an earth formation and sized to accept a nuclear logging instrument axially therein,
sealing means mounted on said base and cooperating with the lower end of said cylindrical sleeve for effecting a seal between said sleeve and said base for isolating the volume of said sleeve interior from the volume of the interior of said container member including said stacked glass assembly,
a first selected fluid for introduction into said sleeve cylinder for simulating the fluid present in a borehole, and
a second selected fluid for introduction into said container member exterior of said cylindrical sleeve for filling the container member and the spaces between each of said glass sheets in said stacked glass assembly for simulating the fluid present in a simulated rock matrix formation surrounding a borehole.

5,182,956

PROTECTIVE BOOT

Bobbie L. Woodall, 2513 S. Mollera, Mesa, Ariz. 85202; Charles R. Nichols, and Thelma E. Nichols, both of P.O. Box 1121, St. Johns, Ariz. 85936

Continuation of Ser. No. 414,774, Sep. 25, 1989. This application Jul. 31, 1991, Ser. No. 738,795
Int. Cl.[5] F16J *15/50*
U.S. Cl. 74—18.2 14 Claims



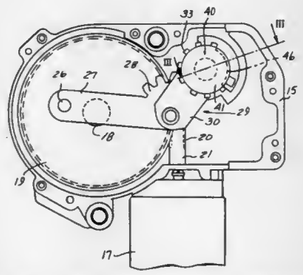
1. A protective boot for use with equipment including:
a guiding member having a distal end, and
a guided member arranged for reciprocation within said guiding member, said guided member including a distal end and being movable from a retracted position in which the distal end of said guided member is proximate the distal end of said guiding member to an extended position is spaced a maximum distance away from said distal end for said guiding member,
said protective boot comprising:
a flexible sleeve formed of contaminant-impervious material, said sleeve being substantially cylindrical and generally smooth when undistorted and including a first end and a second end;
first attachment means for securing the first end of said sleeve to the distal end of said guiding member;
second attachment means for securing the second end of said sleeve to the distal end of said guided member; and
at least one flexible stay secured to said sleeve intermediate said first and second ends of said sleeve for preventing intermediate portions of said sleeve from contacting said guided member.

5,182,957

DRIVE UNIT, IN PARTICULAR FOR A WINDSHIELD WIPER SYSTEM ON A MOTOR VEHICLE

Rainer Bohmer, Brackenheim-Meimsheim; Rainer Bruhn, Karlsruhe; Hans-Peter Rienhardt, Neckarsulm, and Bernd Walther, Bietigheim-Bissingen, all of Fed. Rep. of Germany, assignors to SWF Auto-Electric GmbH, Fed. Rep. of Germany

Filed Mar. 18, 1991, Ser. No. 659,319
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1989, 3920731
Int. Cl.[5] F16H *21/40;* G05G *5/04;* B60S *1/08*
U.S. Cl. 74—42 19 Claims



1. A drive unit for a windshield wiper system on a motor vehicle comprising:
a drive motor;
a gear housing;
gearing disposed within said housing including an output shaft driven in pendulum fashion, a pinion disposed on said output shaft for rotation therewith; and
a stop member separate from said pinion, said stop member including a ring-shaped portion disposed concentrically with said shaft supportively abutting a portion of said housing and operative to establish rotational limits of travel of the output shaft, wherein the ring-shaped portion of the stop member serves as a buffer disc for axially supporting the pinion on the gear housing.

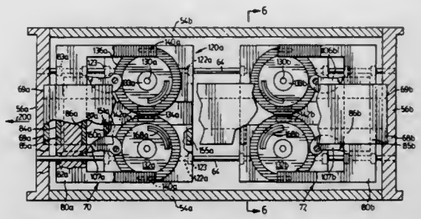
5,182,958

NON-LINEAR PROPULSION AND ENERGY CONVERSION SYSTEM

James W. Black, 312 St. George Street, Toronto, Ontario, Canada M5R 2P5

Continuation-in-part of Ser. No. 611,483, Nov. 8, 1990, which is a continuation of Ser. No. 417,048, Nov. 4, 1989, abandoned. This application Apr. 30, 1991, Ser. No. 693,615
Int. Cl.[5] F16H *33/20;* B62D *57/00;* B63H *19/00*
U.S. Cl. 74—84 R 51 Claims

1. An impulse drive having a frame and an impulse generating means mounted thereon, said impulse generating means comprising:
drive means to cause relative motion between the frame and at least a portion of the impulse generating means;
means associated with the portion of said impulse generating means to impart rotation of at least one rotatable member carried by said impulse generating means and thereby convert a portion of the kinetic energy and momentum thereof to rotational kinetic energy and angular momentum of said at least one rotatable member; and
means to transfer at least some of the kinetic energy and momentum of said portion to the frame whereby the difference in kinetic energy and momentum attributable to the rotation of the at least one rotatable member provides a net impulse to the frame in a predetermined direction.

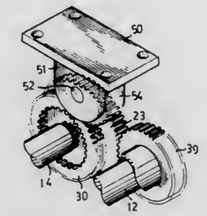


5,182,959

ANTI-ROLL DEVICE FOR MOTOR VEHICLES

Shyh Y. Chern, No. 111, Lane 41, Sec. 1, Hsin Jen Rd., Ta Li Hsiang, Taichung Hsien, and Wei C. F. Chiang, No. 58, Alley 122, Liuh Shan Lane, Feng Yuan City, Taichung Hsien, both of Taiwan

Filed Dec. 13, 1991, Ser. No. 806,341
Int. Cl.[5] B60K *41/26*
U.S. Cl. 74—411.5 1 Claim

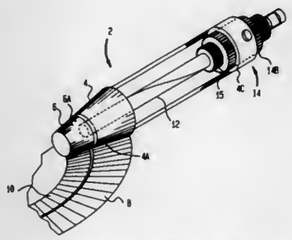


1. An anti-roll device comprising a gear box, an input shaft and a driven shaft disposed in parallel in said gear box, a first gear fixed on said input shaft and rotated in concert with said input shaft, a second gear and a third gear fixed on said driven shaft and rotated in concert with said driven shaft, said second gear being engaged with said first gear so that said second gear and said third gear can be rotated by said first gear, an output shaft rotatably disposed in said gear box and coaxially disposed on said input shaft, said output shaft including a plurality of teeth formed on an outer peripheral surface thereof, a gear/pinion rotatably disposed on said output shaft and having a pinion portion, a disc engaged on said output shaft and having a plurality of first internal gears formed therein for sliding engagement with said teeth of said output shaft so that said disc is slidable longitudinally along said output shaft and rotated in concert with said output shaft, said disc further including a plurality of second internal gears formed therein for engagement with said pinion portion of said gear/pinion, said disc including an annular groove formed in an outer peripheral surface thereof, a shifting lever engaged in said annular groove of said disc for shifting said second internal gears of said disc to engage with said pinion portion of said gear/pinion, a plate fixed to said gear box and having a pair of lugs extended therefrom, a rod fixed between said lugs, a ring fixed on said rod, a fourth gear having an opening formed in a center thereof for engagement on said ring and having a plurality of notches formed therein, each of said notches having a gradually narrowing passage formed therein and having a roller and a spring disposed therein, each of said notches having a narrower end, said rollers being biased to move toward said narrower ends of

VOL
1147
ISS
1
FE
2
1993
UMI

said notches, said forth gear being engaged with said teeth of said disc when said disc moves toward said gear/pinion, said rollers being caused to be wedged between said narrower ends of said notches and said ring when said fourth gear rotates in a first direction, thereby locking said gear and said ring together, rotation of said fourth gear in an opposite direction tending to roll said rollers against said springs so that said fourth gear may rotate freely in said opposite direction.

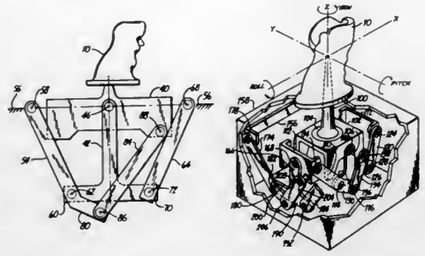
5,182,960
BEVEL GEAR DRIVE ARRANGEMENT
Henry H. Chary, Rancho Palos Verdes, Calif., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Dec. 10, 1991, Ser. No. 804,561
Int. Cl.[5] F16H *1/14*
U.S. Cl. 74—417 **10 Claims**



1. A bevel gear drive arrangement, comprising:
a first bevel pinion;
a second bevel pinion;
said first and second pinions being coaxially disposed and arranged so that the diametral pitch at the heel of the second pinion is equal to the diametral pitch at the toe of the first pinion;
a first bevel output gear in meshing engagement with the first pinion;
a second bevel output gear in meshing engagement with a second pinion;
said first and second output gears being coaxially disposed and rigidly coupled each to the other;
means for flexibly coupling the first and second pinions each to the other, said means includes
a quill shaft integral at one end thereof with the second pinion; and
the quill shaft is responsive to the applied torquing force for preloading the second pinion against the first pinion; and
means for applying a torquing force to the coupling means for preloading one of the first and second pinions against the other of the first and second pinions so that the load capacity of the gear drive arrangement is substantially equal to the sum of the load capacities of a first gear pair including the first pinion and the first output gear and a second gear pair including the second pinion and the second output gear.

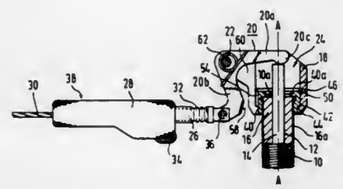
5,182,961
THREE DEGREE OF FREEDOM TRANSLATIONAL AXIS HAND CONTROLLER MECHANISM
Israel Menahem, Clearwater, and James Bacon, Largo, both of Fla., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Jul. 30, 1991, Ser. No. 738,255
Int. Cl.[5] G05G *9/04*; B64C *13/04*
U.S. Cl. 74—471 XY **18 Claims**

1. Apparatus for moving a first member having first and second points thereon, in a first direction with respect to a base member so that the first and second points move, with respect to the base member, only parallel to the first direction comprising:
first linkage means connected to the base member and to the first member and operable to permit the first point to move, with respect to the base member, only parallel to the first direction, and;
second linkage means connected to the first linkage means and to the first member and operable to rotate the first



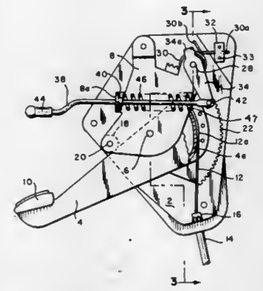
member, when the first member moves with respect to the base member, by an amount sufficient to cause the second point to also move, with respect to the base member, only parallel to the first direction.

5,182,962
ACTUATING FORCE TRANSMISSION UNIT FOR A GEAR CHANGE MECHANISM OF A BICYCLE
Berndt Leiter, Waigolshausen, Fed. Rep. of Germany, assignor to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany
Filed Sep. 30, 1991, Ser. No. 768,997
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1990, 4031763
Int. Cl.[5] F16H *59/02*
U.S. Cl. 74—473 R **19 Claims**



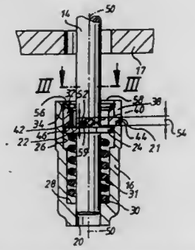
1. An actuating force transmission unit for connecting an actuator device and a gear change mechanism of a bicycle hub,
said bicycle hub having an axle (**10**) and an axial bore (**12**) within said axle (**10**) along an axis of said axle (**10**), said axle (**10**) having an externally threaded axial end portion (**16**) adapted to be connected with a housing (**18**) of said actuating force transmission unit (**24**), said axial bore (**12**) accommodating a push member (**14**) acting onto said gear change mechanism,
said actuating force transmission unit comprising a housing (**18**) adapted to be mounted onto said axial end portion (**16**) of said axle (**10**) by internal thread means (**52**) engageable with said externally threaded end portion (**16**), a transmission lever (**20**) being pivotally mounted on said housing (**18**) about a pivot axis (**22**) substantially orthogonal with respect to said axis (A—A) of said axle (**10**), said transmission lever (**20**) having a first lever arm (**20***a*) engageable with said push member (**14**) and a second lever arm (**20***b*) adapted for being connected with actuating force transmitting means (**30**) extending between said second lever arm (**20***b*) and said actuator device,
said internal thread means (**52**) being provided within a sleeve member (**40**) having a sleeve axis (B-B), said sleeve member (**40**) being mounted with respect to said housing (**18**) such as to be rotatable with respect to said housing (**18**) about said sleeve axis (B-B) and to be fixed with respect to said housing (**18**) along said sleeve axis (B—B).

5,182,963
SOFT RELEASE CONTROL MECHANISM WITH SPRING CLUTCH AND VISCOUS DAMPING
Randal J. Perisho; Robert L. Heimann, both of Moberly, and Wayne L. Soucie, Columbia, all of Mo., assignors to Orscheln Co., Moberly, Mo.
Filed Aug. 27, 1991, Ser. No. 750,298
Int. Cl.[5] G05G *1/14*
U.S. Cl. 74—512 **7 Claims**



1. A soft-release parking brake control mechanism for applying tension to a parking brake cable, comprising:
(a) a mounting bracket (**2**);
(b) means including a parking brake lever (**4**) pivotally connected with said bracket and with one end of the parking brake cable, said lever being pivotable in one direction toward a brake-applied position in which said cable is tensioned;
(c) resilient bumper means (**18**) connected with said bracket for limiting pivotal movement of said lever in the opposite direction toward a brake-released position relative to said bracket;
(d) means for retaining said lever in said brake-applied position, said retaining means including:
(1) a cylindrical clutch drum (**26**) rotatably connected with said mounting bracket, said drum being formed of an iron-nickel powdered metal admixture impregnated with a polyalphaolefin damping oil, said clutch drum having inner pores and an outer surface with a layer of said damping oil thereon;
(2) gear means (**22,24**) connecting said drum with said lever for rotation in opposite directions as said lever is pivoted between its brake-applied and brake-released positions, respectively; and
(3) a helical clutch spring mounted on centrically on said drum, said spring including at opposite ends a pair of end portions one of which is connected with said bracket, said spring having coil turns the diameter of which is such relative to the diameter of said drum that said spring is normally resiliently contracted radially inwardly into functional engagement with the outer periphery of the drum, thereby to permit rotation of the drum in a first direction relative to said bracket, when said lever is pivoted toward the brake-applied position, in accordance with the direction of turn of said spring coil turns, said clutch spring normally preventing rotation of said drum in the opposite directions;
(e) release means for displacing the other end of said spring to progressively expand said spring relative to said drum; and
whereby the layer of said damping oil between said drum and the inner periphery of said spring causes a resistance to motion between said drum and said spring and whereby the frictional heat caused by said resistance to motion perpetuates the soft release properties of said mechanism by forcing said polyalphaolefin damping oil from the inner pores of the drum to the outer surface of the drum.

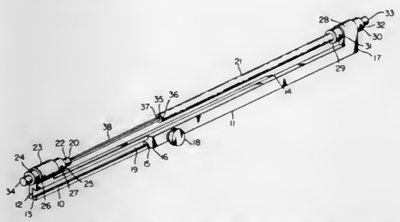
5,182,964
CHANGE-SPEED GEARBOX HAND LEVER CONNECTING DEVICE
Harald Gellner, Marbach, Fed. Rep. of Germany, assignor to Mercedes-Benz AG, Fed. Rep. of Germany
Filed Jan. 29, 1991, Ser. No. 647,506
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1990, 4003899
Int. Cl.[5] G05G *9/47, 1/04*
U.S. Cl. 74—523 **19 Claims**



1. A device for releasably connecting a hand lever via a joint to a setting linkage for selecting gears of a change-speed gearbox, comprising a rod-shaped lever part fixed relative to the hand lever; a sleeve-shaped acceptance part for the lever part; a sliding guide, fixed relative to one half of the joint for the lever part; a support part fixed relative to the lever part; a first supporting ring configured to support the support part fixed relative to the hand lever; a guide for the axial displacement of the supporting ring relative to the acceptance part; an abutment fixed relative to the acceptance part; a spring between the supporting ring and the abutment, a second supporting ring operating as a holding-down device for the support part fixed relative to the hand lever; a releasable stop operatively held on the acceptance part for one of the first and second supporting rings for accepting a force of the spring; means for fixing the lever part in a defined angular position relative to the acceptance part, including a first positioning element fixed relative to one of the supporting rings, a first catch fixed relative to the acceptance part for fixing one of the supporting rings with the first positioning element in the defined angular position, a second positioning element and a corresponding second catch arranged that the lever pat can be fixed relative to the one supporting ring fixed with the first positioning element whenever the lever part is brought into the defined angular position, wherein the supporting rings are moveable relative both to one another and to the lever part, the second supporting ring operating as the holding-down device is provided with both the first positioning element and an assembly slot for feeding through the second positioning element and configured to be fixed relative to the acceptance part in one direction of a support axis via the releasable stop and in an opposite direction of the support axis pointing towards the abutment via a further stop, the second positioning element is fixed relative to the lever part but is movable relative to the supporting rings, the second catch is provided on an end face of the second supporting ring which faces towards the first supporting ring, the second catch is offset relative to the assembly slot by a rotational difference angle, the sliding guide is fixed relative to the acceptance part, the acceptance part is fixed relative to the one half of the joint for the lever part.

VOL
1147
ISS
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1993
UMI

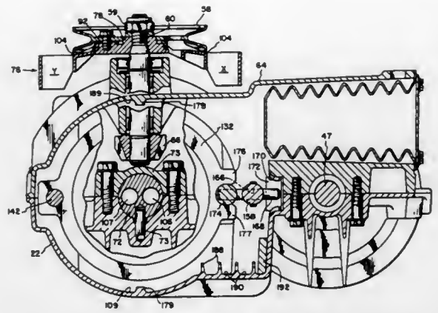
5,182,965
ADJUSTABLE LENGTH HANDLE COMPRISING AUTOMATICALLY ADJUSTABLE LENGTH MECHANICAL POWER TRANSMISSION
Donald M. MacMillan, Chilliwack, Canada, assignor to Concorde Tool Corp., Surrey, Canada
Continuation-in-part of Ser. No. 588,055, Sep. 24, 1990, Pat. No. 5,088,147. This application Nov. 4, 1991, Ser. No. 787,036
Int. Cl.[5] G05G *1/10*
U.S. Cl. 74—543 **2 Claims**



1. An adjustable length handle incorporating adjustable length mechanical power transmission apparatus, said handle comprising:
first and second structural components, having first and second longitudinal axes, said components being slidably interconnected such that relative motion between said components is parallel to said longitudinal axes,
means for unlockably locking to each other,
said mechanical power transmission apparatus comprising first and second transmission components, said first and second transmission components having third and fourth longitudinal axes,
said first, second, third and fourth longitudinal axes being parallel,
said first transmission component being mounted on said first structural component,
said first and second transmission components being slidably interconnected by interconnecting means for transmitting power, said interconnecting means allowing relative motion between said transmission components parallel to said longitudinal axes,
whereby said length of said adjustable length mechanical power transmission apparatus is adjusted automatically when the length of said adjustable length structure is adjusted.

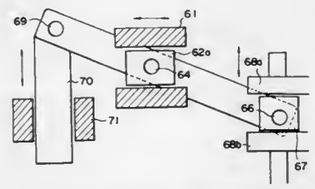
5,182,966
CONTROL MECHANISM FOR A HYDROSTATIC TRANSAXLE
Roland L. von Kaler, Tecumseh, and Dale I. Havens, Addison, both of Mich., assignors to Tecumseh Products Company, Tecumseh, Mich.
Filed Jul. 22, 1991, Ser. No. 733,455
Int. Cl.[5] F16D *39/00*
U.S. Cl. 74—606 R **16 Claims**

1. A hydrostatic transaxle comprising:
a housing having an upper part and a lower part;
a hydrostatic transmission disposed within said housing, said transmission including a conduit, a radial piston type pump disposed on said conduit, and a radial piston type motor disposed on said conduit coaxial to said pump and in fluid communication therewith through said conduit, said pump having a plurality of radially disposed displaceable pistons, said motor having a plurality of radially disposed displaceable pistons;
gearing operably connected to said motor;
an axle assembly including differential means for operably connecting said gearing to said axle assembly, said axle assembly disposed parallel to said conduit;
said hydrostatic transmission having an inboard side adjacent said axle assembly and an opposite outboard side;
adjustment means for varying the displacement of said pistons, said adjustment means having a pivot axis on said outboard side of said transmission, said pivot axis disposed parallel to said axle assembly; and



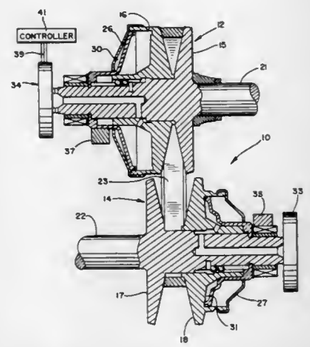
a control mechanism disposed at said inboard side between said axle assembly and said conduit for controlling said adjustment means.

5,182,967
LEVER APPARATUS HAVING A FREELY MOVABLE FULCRUM AND MECHANICAL APPARATUS USING THE SAME
Yasuo Yoshizawa, and Mitsuo Kato, both of Yonezawa, Japan, assignors to Yoshiki Industrial Co., Ltd., Yamagata, Japan
PCT No. PCT/JP90/00737, § 371 Date Feb. 4, 1991, § 102(e) Date Feb. 4, 1991, PCT Pub. No. WO90/15268, PCT Pub. Date Dec. 13, 1990
PCT Filed Jun. 6, 1990, Ser. No. 635,517
Claims priority, application Japan, Jun. 8, 1989, 1-146304
Int. Cl.[5] F16H *21/44*; G05G *1/04*
U.S. Cl. 74—834 **7 Claims**



1. A movable fulcrum type lever apparatus comprising:
a lever member having a force point, a fulcrum point and an action point;
fulcrum means for pivotally supporting said lever member at said fulcrum point such that said lever member is swingable about said fulcrum point;
fulcrum guide groove means including a guide groove extending linearly in a longitudinal direction of said lever member for guiding said fulcrum means movably in the longitudinal direction crossing a swinging direction of said lever member along said guide groove;
a force point regulator connected to said force point of said lever member for applying a swinging force to said lever member crossing the longitudinal direction of said lever member; and
an action point regulator connected to said action point of said lever member for applying an action force to an action receiving member;
wherein said force point regulator includes a regulator slider pivotally mounted at said force point of said lever member and a pair of regulator guide plates between which said regulator slider is in sliding contact, whereby said force point moves along said guide plates to draw a curved locus, said fulcrum point moves linearly in the longitudinal direction of said fulcrum guide groove, and said action point has a linear locus, when said lever member swings about said fulcrum point thereof.

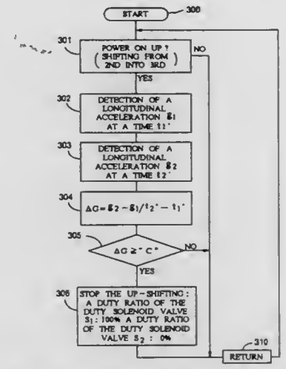
5,182,968
FORCE RATIO CONTROL OF CONTINUOUSLY VARIABLE TRANSMISSIONS
Philip J. Mott, Dryden, N.Y., assignor to Borg-Warner Automotive Transmission & Engine Components Corporation, Sterling Heights
Filed Oct. 16, 1991, Ser. No. 777,000
Int. Cl.[5] F16H *55/56*
U.S. Cl. 74—856 **10 Claims**



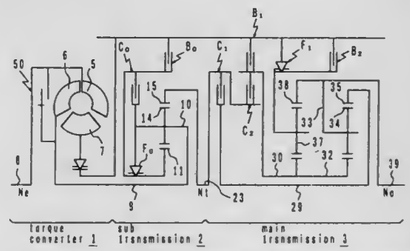
1. In a continuously variable transmission having a primary pulley, a secondary pulley, and an endless belt interconnecting the primary and secondary pulleys, a method for controlling the pressure on the secondary pulley, comprising the steps of:
sensing the speed of the primary pulley;
sensing the speed of the secondary pulley;
sensing the force applied to the belt by the primary pulley;
sensing the force applied to the belt by the secondary pulley;
determining the measured speed ratio from said sensed speeds;
determining a measured force ratio from said sensed forces;
determining a desired force ratio from a look-up table in the controller, said desired force ratio being determined on the basis of a predetermined factor of safety and the determined speed ratio;
comparing said measured force ratio with said desired force ratio;
modifying the secondary force applied to the belt by the secondary pulley.

5,182,969
HYDRAULIC CONTROL DEVICE FOR AUTOMATIC TRANSMISSION
Shigeki Goto, Kariya, Japan, and , assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed May 21, 1990, Ser. No. 525,682
Claims priority, application Japan, May 19, 1989, 1-24177
Int. Cl.[5] F16H *5/64*; B60K *41/16*
U.S. Cl. 74—866 **5 Claims**

1. An hydraulic control device for an automatic transmission comprising:
plurality of control valves hydraulically connected to related friction engaging elements;
a plurality of solenoid duty valves connected to said plurality of control valves for supplying hydraulic pressure thereto;
checking means for checking whether an upshift of the transmission is performed;
detecting means for detecting at least one value of engine RPM and longitudinal acceleration of said vehicle during the upshift, said detecting means includes detecting the RPM of the engine and calculating a change of RPM of the engine with respect to time; and
abnormal condition detecting means for detecting abnormal conditions based on a comparison of one of said detected values with a predetermined value.



5,182,970
HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION
Shigeki Goto, Kariya; Masato Shimei; Tetsuhiro Miyazawa, both of Nagoya; Yoshitami Saitou, Aichi, and Nobuyuki Isono, Nagoya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Apr. 3, 1991, Ser. No. 679,926
Claims priority, application Japan, Apr. 4, 1990, 2-89598; Apr. 4, 1990, 2-89599
Int. Cl.[5] B60K *41/06*
U.S. Cl. 74—866 **2 Claims**



2. A hydraulic control system for automatic transmission comprising:
a hydraulic circuit for selectively supplying an oil pressure to or selectively removing an oil pressure from brakes and clutches used in an automatic transmission which is disposed between an output shaft of an engine and a load driving shaft;
accumulators in the hydraulic circuit and connected to the brakes and clutches;

VOL
1147
ISS
1
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1993
UMI

an electrically energized pressure control valve for regulating back pressure on each of the accumulators;

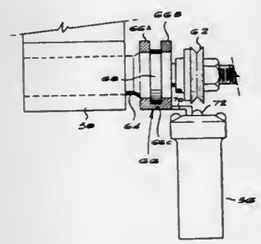
accumulator pressure control means for controlling an energization level of the pressure control valve to control the back pressure on the accumulators during a shift operation of the automatic transmission;

shift time detecting means for determining a time interval from a commencement to an end of a switching in a mechanical coupling of the automatic transmission during the shift operation;

oil temperature detecting means for detecting the oil temperature of the automatic transmission; and

accumulator pressure control means responsive to the time interval determined by the shift time detecting means and the oil temperature to update the energization level of the pressure control valve in a direction such that the back pressure on the accumulator is increased if the determined time interval is greater than a predetermined time interval and decreased if the detected oil temperature is greater than a predetermined oil temperature.

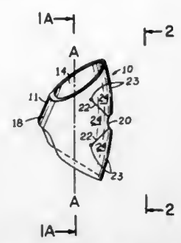
5,182,971
BUTTON SHARPENING
David S. Williams, Krugersdorp, South Africa, assignor to Boart International, Limited, Sandton, South Africa
Division of Ser. No. 654,209, Feb. 12, 1991. This application Mar. 12, 1992, Ser. No. 849,879
Claims priority, application South Africa, Feb. 14, 1990, 90/1118; Aug. 21, 1990, 90/6616
Int. Cl.[5] B24B *7/10*
U.S. Cl. 76—5.1 **8 Claims**



1. A machine for restoring the buttons of a button bit, the machine comprising a grinding wheel with a V-groove at its periphery, means for locating and non-rotatably holding a button bit relative to the grinding wheel with a button which is to be restored in alignment with the periphery of the wheel, and means for causing relative movement to take place in one plane only between the button bit and the wheel such that the button is fed into the V-groove with the result that the head of the button is formed to a chisel shape.

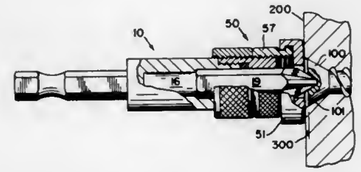
5,182,972
IMPROVED FINGER TIP MOUNTED HOLDING DEVICE
Robert A. Skaleski, 18 Lakeview Dr., Ridgefield, Conn. 06877
Filed Mar. 28, 1991, Ser. No. 618,990
Int. Cl.[5] B25C *3/00*
U.S. Cl. 81—44 **5 Claims**

1. An improved finger mountable device for temporarily holding an object while an operation is performed utilizing said object, said improved device comprising a tubular elastomeric body, said tubular elastomeric body having a wall, a first open end for receiving said finger and a second open end for passing a finger tip therethrough, a hole through said elastomeric wall, a plurality of slits radiating outwardly from said hole to form slaps circumferentially around said hole, said flaps elastically dilating to accept said object being placed therethrough, so that at least a portion of said object to be temporarily held is



placed between said finger and said hole and flaps whereby said object will be elastically held in position by said flaps.

5,182,973
DEPTH LOCATOR APPARATUS FOR INSERT BIT HOLDERS
J. Richard Martindell, 10534 Wheatridge Dr., Sun City, Ariz. 85373
Continuation-in-part of Ser. No. 526,686, May 21, 1990, Pat. No. 5,012,708, which is a continuation of Ser. No. 391,648, Aug. 7, 1989, abandoned, which is a continuation of Ser. No. 257,272, Oct. 13, 1988, abandoned. This application Feb. 28, 1991, Ser. No. 662,119
Int. Cl.[5] B25B *23/00*
U.S. Cl. 81—429 **6 Claims**



1. A depth locating apparatus to control the depth of a driven screw type fastener head relative to the surface of the work being fastened, comprising, in combination:

a bit holder having a cylindrical body and a socket in the body for receiving a bit;

an external threaded portion disposed on the cylindrical body about the socket;

an insert type screwdriving bit disposed in the socket;

sleeve means secured to the bit holder, including

a bore having a threaded portion for engagement with the external threaded portion of the cylindrical body of the bit holder,

and outer end on the threaded portion of the bore in the sleeve means through which the screwdriving bit extends, and

a threaded cylindrical external surface; and

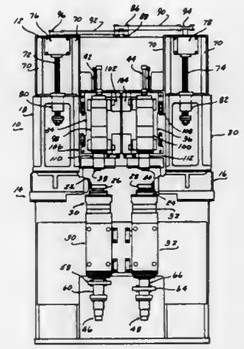
ring means secured to the sleeve means and adjustable on the sleeve means for determining the depth of a screw type fastener head relative to the surface of the work, including

a first ring having a first circular bore threaded to engage the threaded cylindrical external surface of the sleeve means,

cap means secured to the first ring for engaging the work surface and rotatable relative to the first ring, and

a second ring having a second circular bore threaded to engage the threaded cylindrical external surface of the sleeve means and disposed against the first ring to comprise a locking ring for locking the first ring in place on the sleeve means.

5,182,974
DUAL SPINDLE VERTICAL AXIS CNC PISTON TURNING AND GROOVING MACHINE
A. Mario Cudini, Grosse Point Farms; Horst Roman, Sterling Heights, and Kenneth A. Drew, Harper Woods, all of Mich., assignors to The Cross Company, Fraser, Mich.
Filed Jun. 17, 1991, Ser. No. 716,186
Int. Cl.[5] B23B *3/34*
U.S. Cl. 82—124 **10 Claims**



1. A dual spindle piston turning and grooving machine (**10**) for simultaneous turning of non round, complex profiles of diameters of two pistons and also grooving of the diameters of said pistons, comprising:

a pair of spaced apart linear motor turning modules (**14, 16**) each carrying a turning tool electrically controlled to move in and out along an axis, each turning module arranged with its axis horizontal and facing the other turning module;

a machine frame having a front and back;

a pair of main slides (**18, 20**) each mounting a turning module (**14, 16**), each main slide mounted at the front of said machine frame to be vertically movable on said machine frame;

means (**72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96**) for raising and lowering each of said main slides (**18, 20**) to and between lowered and raised positions;

a pair of vertical axis spindles (**30, 32**) mounted on said machine frame between said turning modules, each vertical axis spindle extending alongside a respective turning module (**14, 16**) and located inside and between said pair of turning modules (**14, 16**);

means (**50, 52, 54, 56, 58, 60, 62, 64, 66**) for rotating each spindle (**18, 20**) about its vertical axis;

a piston clamping chuck (**26, 28**) mounted in each spindle (**30, 32**) adapted to receive and hold a respective piston (W) to be rotated by a respective spindle (**30, 32**);

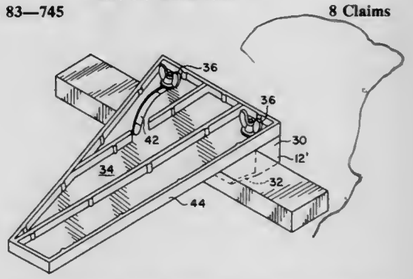
each turning module in the lowered position of an associated main slide aligned with a piston in a respective adjacent chuck and in a raised position of said associated main slide clearing the area to the outside of the associated chuck;

a pair of vertical axis tailstock assemblies (**34, 36**) each aligned with and vertically spaced from a respective spindle (**18, 20**), each tailstock assembly (**34, 36**) having a tailstock portion (**38, 40**) and means (**42, 44**) for moving each tailstock portion (**38, 40**) axially to engage and disengage said tailstock portion (**38, 4**) with a piston (W) in a respective chuck (**26, 28**);

a pair of grooving mechanisms (**106, 108**) each mounted on said machine frame behind a respective tailstock assembly (**34, 36**) and spindle (**30, 32**), each grooving mechanism (**106, 108**) including a vertically extending support shaft (**110, 112**) rotatable about the longitudinal axis thereof, and means (**118, 120, 122, 124**) for rocking each of said support shafts (**110, 112**) about said vertical longitudinal axis in either direction;

grooving tooling (**114, 116**) mounted to each support shaft (**110, 112**) brought into engagement by said rocking of said support shaft (**110, 112**) in either direction.

5,182,975
GUIDE FOR PORTABLE POWER SAW
John L. Warner, 2 Vining Dr., Simsbury, Conn. 06070
Filed Apr. 26, 1991, Ser. No. 692,227
Int. Cl.[5] B27B *9/04*
U.S. Cl. 83—745 **8 Claims**



1. Saw guide apparatus comprising a sole plate for disposition on top of a work-piece, said sole plate having opposite ends and a straight saw guiding edge on the sole plate between said opposite ends, an elongated, rigid, rectangularly cross sectioned, parallel sided gauge bar, a resilient bar clamp on the sole plate at an angle to the saw guiding edge,

the sole plate having a substantially flat bottom surface for contact with the work-piece and an upper surface, the saw guiding edge extending between said bottom and upper surfaces at a right angle to said bottom surface and the clamp extending downwardly from the bottom surface away from said upper surface and located at one end of said sole plate,

said clamp being generally U-shaped having an upper leg formed at least in part by said bottom surface of said sole plate, a lower leg having a free edge extending along its length, and a straight base portion between said upper and lower legs, said said straight base portion extending downwardly from said sole plate and having a straight flat surface located between said upper and lower legs which is normal to said bottom surface of said sole plate, said lower leg being resilient and angled with respect to said base portion to underlie the sole plate, said upper and lower legs together with said base portion forming between them an elongated open ended slot having an opening opposite said base portion,

said elongated, rigid, rectangularly cross sectioned gauge bar being frictionally held within said elongated open ended slot with one side of said bar contiguous with said straight flat surface of said base portion and another side of said bar forcing said second leg to resiliently deflect downwardly,

said bar being of a length substantially longer than said slot and having one end extending outwardly from one end of said slot across said saw guiding edge, so that the end of said bar extending across said saw guiding edge is a precise distance from said saw guiding edge,

the width of said bar being greater than the distance between said free edge of said lower leg and said base portion of said clamp so that the side of said bar opposite to the side held contiguous to said straight flat surface of said base portion is located beyond the free edge of the lower leg of said clamp whereby it may directly contact a side edge of the work-piece on which the sole plate is adapted to be disposed,

said lower leg being slanted toward said sole plate and being resiliently yieldable away from said sole plate when said

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gauge bar is positioned within said slot to firmly secure the gauge bar in said slot.

5,182,976

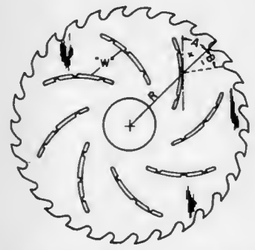
SPRING BEAMED SHOCK ABSORBING CIRCULAR SAW BLADE BODY

Connell A. Wittkopp, Columbus, Ohio, assignor to The Peerless Saw Company, Groveport, Ohio

Continuation-in-part of Ser. No. 676,540, Nov. 30, 1984, abandoned, and a continuation-in-part of Ser. No. 531,222, Sep. 9, 1983, abandoned. This application Nov. 12, 1986, Ser. No. 929,991

Int. Cl.[5] B27B *33/08;* **B23D** *61/02*

U.S. Cl. 83—835 **5 Claims**



1. In a circular saw blade body having integral sections comprising a central drive collar and a peripheral circumferential cutting edge for cutting a material, connected by a middle annular section, and a plurality of narrow curved extended slots cut through the saw blade body between the collar and the cutting edge, the improvement comprising:

a nib protruding from one internal side of a curved slot a predetermined distance across the width of the slot towards the facing internal side of the curved slot to provide a stop means, upon the sudden absorption of a load by the blade, for limiting the blade's physicial deformation to a predetermined degree such that the yield strength of the metal material forming the blade body is not exceed when the blade encounters the sudden load, said nib comprising an element intrinsicially formed from the metal material of the saw blade body and having a small width in comparison to the overall length of the side of the slot from which it protrudes.

5,182,977

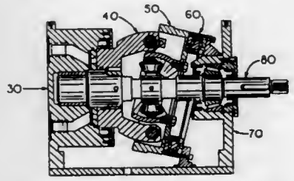
HYDRAULIC CENTRIFUGAL PISTON MOTOR

William Gulbrantson, 3153 Kilkenny Dr., Riverside, Calif. 92503-5315

Filed Sep. 12, 1991, Ser. No. 761,174

Int. Cl.[5] F01B *13/04*

U.S. Cl. 91—197 **5 Claims**



4. An hydraulic piston motor according to claim 1 wherein a universal coupling means is provided for synchronizing said rotating assemblages to produce unidirectional torque axially to the output drive shaft.

5,182,978

BENT AXIS TYPE VARIABLE DISPLACEMENT HYDRAULIC MACHINE

Yoshimichi Akasaka, Tsuchiura; Ichiro Nakamura, Katsuta, and Yasnbaru Gotoh, Tsuchiura, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

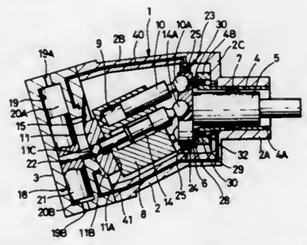
PCT No. PCT/JP89/01007, § 371 Date Jan. 30, 1990, § 102(e) Date Jan. 30, 1990, PCT Pub. No. WO90/04101, PCT Pub. Date Apr. 19, 1990

PCT Filed Oct. 3, 1989, Ser. No. 460,066

Claims priority, application Japan, Oct. 3, 1988, 63-249559

Int. Cl.[5] F01B *13/04*

U.S. Cl. 91—499 **10 Claims**



1. In a bent axis type variable displacement hydraulic machine including:

a cylindrical casing having a head casing with suction and discharge passages;

a rotational shaft rotatably inserted into said casing and having a drive disc at the distal end thereof disposed in said casing; a cylinder block located in said casing and having a plurality of axial cylinder bores;

a plurality of pistons reciprocably received in said cylinder bores in said cylinder block and each pivotally supported at one end by said drive disc; a valve plate having a suction port and a discharge port and formed with a switching surface on one end face in sliding contact with said cylinder block and a sliding surface on another end face in tilting sliding contact with a tilting slide surface on said cylinder block; a tilting mechanism for tilting said valve plate together with said cylinder block; and hydrostatic bearing means provided between said drive disc and casing and forming a radial hydrostatic bearing and thrust hydrostatic bearing to support a radial load and a thrust load, respectively, exerted on said drive disc by hydraulic reaction forces;

a variable throttle means provided between said head casing and valve plate and adapted to produce a first pressurized fluid and a second pressurized fluid modulated in correspondence with a tilt angle of said cylinder block for supply of said first pressurized fluid at a first pressure and in a first manner to said radial hydrostatic bearing and to supply said second pressurized fluid at a second pressure and in a second manner to said thrust hydrostatic bearing.

5,182,979

LINEAR POSITION SENSOR WITH EQUALIZING MEANS

Denny E. Morgan, San Diego, Calif., assignor to Caterpillar Inc., Peoria, Ill.

Filed Mar. 2, 1992, Ser. No. 844,024

Int. Cl.[5] F01B *25/26;* **G01N** *22/00*

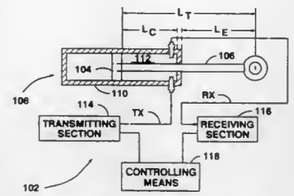
U.S. Cl. 92—5 R **13 Claims**

1. An apparatus for detecting a linear position of a piston and a piston rod being movable within a housing of a hydraulic cylinder, comprising:

means for producing an electromagnetic signal and delivering said electromagnetic signal into said hydraulic cylinder, said electromagnetic signal having a frequency varying between predetermined minimum and maximum values;

means for determining a resonant frequency of the hydraulic cylinder, said resonant frequency detecting means including means for sensing an electromagnetic wave signal within said hydraulic cylinder and equalizing said received electromagnetic signal, said equalization accounting for the losses of said hydraulic cylinder, comparing said equalized electromagnetic wave signal with a predetermined constant and responsively producing a frequency signal, said frequency signal being indicative of said resonant frequency; and

means for receiving said frequency signal and responsively determining the position of said piston and piston rod.



5,182,980

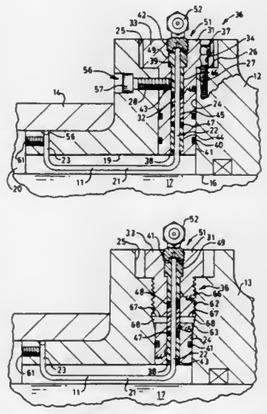
HYDRAULIC CYLINDER POSITION SENSOR MOUNTING APPARATUS

Robert D. Greer, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Feb. 5, 1992, Ser. No. 831,709

Int. Cl.[5] F01B *25/26*

U.S. Cl. 92—5.00 R **15 Claims**



1. A position sensor mounting apparatus for positioning a sensor element within an actuating chamber of a hydraulic cylinder comprising:

means defining a bore in the hydraulic cylinder opening into the actuating chamber;

a cylindrical housing positioned in the bore and having an axially extending bore opening into the actuating chamber;

means for fastening the cylindrical housing to the hydraulic cylinder;

a resilient tubular insulator disposed in the housing bore with the sensor element extending therethrough;

means for retaining the insulator within the cylindrical housing; and

means for squeezing the insulator radially inwardly so that a clamping force is exerted on the sensor element.

5,182,981

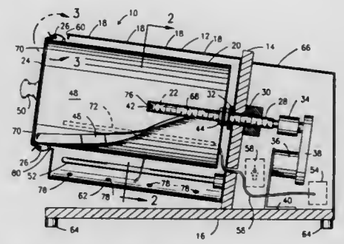
REVOLVING PEANUT ROASTING APPARATUS

Robert Wilcox, 1271 Driftwood Ave., Clearwater, Fla. 34624

Filed Jul. 1, 1992, Ser. No. 907,371

Int. Cl.[5] A47J *27/62, 37/04, 37/06;* **F26B** *19/00*

U.S. Cl. 99—333 **15 Claims**



1. A revolving nut roasting apparatus comprising

a cylindrical housing mounted at a first closed end on a support frame anchored to a flat base member, the cylindrical housing being at an acute angle with respect to the base member and having a plurality of air passage openings,

a shaft driven by an electric motor at less than eight revolutions per minute, the shaft rotating within a bearing, mounted within a bearing support, attached to the support frame,

the shaft having a drive slot through an end distal from the motor, the drive slot engaging a drive pin in a drive hub affixed to a base end of a removable rotating drum mounted on the shaft within, but spaced apart from, an inner wall of the cylindrical housing,

multiple blending vanes attached to an inner wall of the removable rotating drum and a cover enclosing a front open end of the rotating drum,

an electric heating apparatus element mounted on the support frame within a bottom portion of the cylindrical housing below the rotating drum so that nuts placed within the rotating drum can be slowly tumbled while being roasted.

5,182,982

CONTINUOUS VACUUM FRIER

Ryuichi Hattori, Kyoto, and Nobuhide Nakagawa, Kashihara, both of Japan, assignors to House Food Industrial Co., Ltd., Osaka, Japan

Filed Jul. 19, 1990, Ser. No. 554,378

Claims priority, application Japan, Jul. 20, 1989, 1-188015

Int. Cl.[5] A47J *37/12;* **B04B** *5/10*

U.S. Cl. 99—404 **26 Claims**

14. Apparatus for frying material in frying oil, comprising:

a vacuum frying chamber for receiving frying oil, said vacuum frying chamber having a bottom wall and an upper portion above said bottom wall;

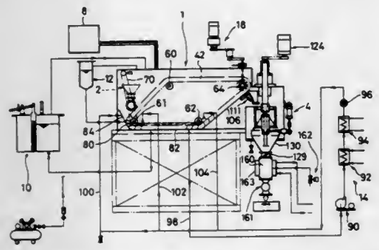
vacuum means for evacuating said frying chamber;

material conveying means for conveying material in a generally horizontal plane in a direction of conveyance through frying oil in said frying chamber, said material conveying means including an endless belt having a plurality of openings formed therein and a plurality of partitioning members fixedly extending outwardly from said endless belt, said endless belt including a generally horizontal portion positioned in said frying chamber and said horizontal portion having an upstream end proximate a position at which frying of the material begins and a downstream end

VOL
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proximate a position at which frying of the material terminates, said endless belt further including an upstream portion upstream of said upstream end of said horizontal portion and a downstream portion downstream of said downstream end of said horizontal portion, said endless belt following a curved path at said upstream end where said upstream portion joins said horizontal portion, said partitioning members extending downwardly at said horizontal portion, said partitioning members defining a plurality of compartments which receive the material and in which the material is fried and conveyed, and said partitioning members having tip portions, said tip portions moving in a path parallel to said endless belt;

guide means for guiding the material into said compartments, said guide means extending at an acute angle to the

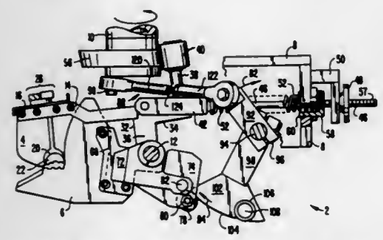


path of said tip portions at said upstream portion of said endless belt;

a curved surface partially surrounding said endless belt at said upstream end, said curved surface following the path of said tip portions of said partitioning members, and said curved surface having a lower end joined to said bottom wall of said frying chamber and an upper end joined to said guide means, whereby said curved surface retains the material in said compartments adjacent said upstream end of said endless belt; and

a first oil inlet positioned upstream of said horizontal portion of said endless belt, a second oil inlet positioned downstream of said horizontal portion of said endless belt, and oil supply means for supplying oil to said endless belt through said first and second oil inlets.

5,182,983
PEACH PITTER BLADE ASSEMBLY
Konrad E. Meissner, Lafayette, Calif., assignor to Atlas Pacific Engineering Company, Pueblo, Colo.
Filed Jul. 13, 1992, Ser. No. 912,537
Int. Cl.[5] A23N *4/04, 4/22*
U.S. Cl. 99—486 **12 Claims**



1. A blade assembly for a drupe pitter, the drupe pitter having a main shaft and a frame, the blade assembly comprising:

a support shaft coupled to the frame;

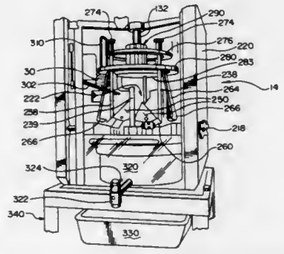
an upper blade and a lower blade positioned in a common plane, the upper blade pivotally coupled to the support shaft and movable between a first position and a second position in said plane, the lower blade coupled to the support shaft and movable between a third position and a fourth position in the suture plane, wherein when the upper blade and the lower blade are in the first position and the third position respectively, the blade assembly is in an open position and when the upper blade and the lower blade are in the second position and the fourth position respectively, the blade assembly is in a pit gripping position;

means for pivoting the upper blade about the support shaft in a reciprocating manner, the upper blade pivoting means coupled to and driven by said main shaft;

means for pivoting the lower blade about the support shaft in a cyclic manner, the lower blade pivoting means including a carriage coupled to the lower blade, a lower blade drive arm, and crank arm coupled to the main shaft and coupled to said lower blade drive arm,

means on said drive arm for maintaining said lower blade in said fourth position during a predetermined portion of a cycle of operation.

5,182,984
AUTOMATED CITRUS FRUIT JUICE PRESS
Richard C. Wagner, Frankfort, Ill., assignor to Hollymatic Corporation, Countryside, Ill.
Filed Sep. 16, 1991, Ser. No. 760,169
Int. Cl.[5] A23N *1/02*; B30B *9/02*
U.S. Cl. 99—509 **36 Claims**



1. A pressing apparatus for extracting juice from citrus fruit, comprising:

upright blades extending radially outwardly from a generally vertical upright axis to define V-shaped segments therebetween, the upper edges of said blades being generally sloped downwardly toward said upright axis to generally support a piece of fruit centrally to said upright axis;

peel ejectors within each of said V-shaped segments, each of said peel ejectors comprising a generally triangular plate pivotally supported for movement between a generally horizontal ready position and an ejecting position generally sloped downwardly away from the upright axis;

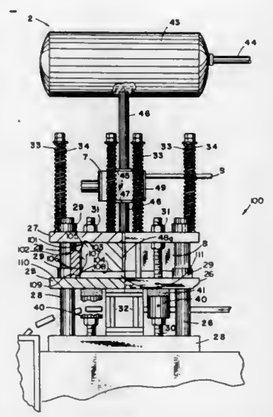
a press supported for vertical reciprocation, said press including slots therein allowing said press to pass over said blades;

means for reciprocably driving the press between an upper feed position allowing a piece of fruit to be located on said upright blades and a lower pressing position a selected spacing above the peel ejectors;

means for disposing said peel ejectors in their ready position when said press is moved toward the pressing position; and

means for pivoting said peel ejectors toward their ejecting position when said press is moved toward the feed position.

5,182,985
PNEUMATIC PRESS WITH REVERSED PISTON AND CYLINDER
Timothy A. Gutowski, Spring Lake, Mich., assignor to Contour Roll Company, Grand Haven, Mich.
Filed Mar. 21, 1991, Ser. No. 672,955
Int. Cl.[5] B30B *1/38*
U.S. Cl. 100—35 **8 Claims**



8. A method for reducing the tendency of a pneumatic press to vibrate:

providing a press with mating platens including a fixed platen, a reciprocating platen, and a fluid actuated ram for selectively moving said reciprocating platen at high speed, said ram including a piston and a mating cylinder adapted to be operably connected to said fixed and reciprocating platens, respectively, the mass of said cylinder being less than the mass of said piston said cylinder and said reciprocating platen being securely interconnected to define a combined mass that minimizes the moving mass and resulting inertia generated during operation of said press;

operably connecting said piston to said fixed platen, such that said piston is generally stationary during press operation;

connecting said cylinder to said reciprocating platen such that said cylinder reciprocates therewith during press operation; and

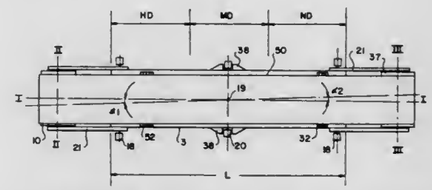
moving the reciprocating platen and the cylinder at high speed while holding the piston stationary, thereby reducing press vibration.

5,182,986
METHOD FOR REALIGNING STEEL BANDS WITH RESPECT TO A LONGITUDINAL AXIS OF A CONTINUOUSLY WORKING PRESS
Friedrich B. Bielfeldt, Eppingen, Fed. Rep. of Germany, assignor to Maschinenfabrik J. Dieffenbacher GmbH & Co., Eppingen, Fed. Rep. of Germany
Filed Mar. 21, 1991, Ser. No. 672,668
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1990, 4017812
Int. Cl.[5] B30B *5/06*
U.S. Cl. 100—41 **6 Claims**

1. A method of guiding first and second endless steel bands about a longitudinal axis of a continuously working press for the manufacture of pressed boards, said press having multiple pressure regions which are of different pressure levels and short-stroke pressure cylinders, said bands transmitting pressing pressure to the material to be pressed and drawing said material through said press, said method comprising the steps of:

(A) guiding said first and second bands, via driving drums and return drums, around a pressing ram and a pressing table, respectively;

(B) supporting said steel bands, with an adjustable pressing gap formed therebetween, on a plurality of co-rotating steel rods which are guided with their axes of rotation extending transversely to the direction of travel of said bands; and

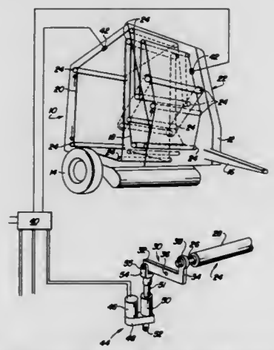


(C) realigning said first steel band with respect to a longitudinal center-line of said press and said pressing table, said realigning step comprising the steps of

(i) relieving pressure in short-stroke pressure cylinders located in a high-pressure region of said press, and then

(ii) horizontally rotating said pressing ram and those pressure rollers and pressure drums which are connected to said pressing ram through an angle α about a vertical axis of rotation which is located in the longitudinal center-line of said press.

5,182,987
ROUND BALER WITH TRACKING CONTROL FOR TRACTION MEANS USED TO MOVE CROP FOR BALING
Jean Viaud, Sarreguemines, France, assignor to Deere & Company, Moline, Ill.
Filed Oct. 22, 1991, Ser. No. 781,539
Claims priority, application Fed. Rep. of Germany, Dec. 31, 1990, 4042246
Int. Cl.[5] B30B *5/06*; A01D *39/00*
U.S. Cl. 100—87 **3 Claims**



1. In a round baler having a baling chamber formed in part by a traction means located between opposite side walls of the baler and being supported on a plurality of rolls arranged for dividing the traction means into various spans for conveying crop and rolling the crop upon itself to form a bale, said plurality of rolls including at least one roll having one end supported from one of the opposite side walls for radial adjustment rela-

VOL 1147 ISS 1 FEB 2 1993 UMI

tive to a longitudinal axis of the support roll, the improvement comprising: a lever having opposite first and second ends and being pivotally connected, at a location between said first and second ends, with said one of the opposite side walls; said first end of the lever being coupled to said one end of said at least one roll; tracking control means including tracking sensing means for sensing a condition of the traction means indicative of sideways or impending sideways movement of the traction means relative to a normal straight running position of the traction means and for generating a signal indicative of such condition; and an actuator means including a powered actuator pivotally mounted to said one of the opposite side walls, having a linearly adjustable rod coupled to said second end of the lever and being coupled to said sensing means for receiving said signal and being responsive to said signal for effecting linear movement of said rod and thereby adjusting said one end of said at least one roll radially in a direction and by an amount for causing the traction means to return to or remain in its straight running position.

5,182,988

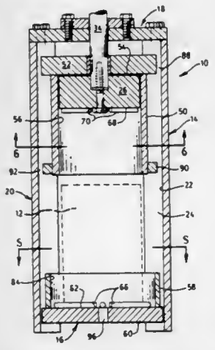
OIL FILTER CRUSHER

John Styfhoorn, Dunlap, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 658,495, Feb. 21, 1991, abandoned. This application Mar. 31, 1992, Ser. No. 860,256

Int. Cl.[5] B30B *9/02, 9/32*

U.S. Cl. 100—98 R **8 Claims**



1. Apparatus for crushing a fluid-type filter comprising:

a housing assembly having a base portion, a head portion, and side wall portions joining said base portion to said head portion, said side wall portions, said head portion, and said base portion defining a first chamber, and said side wall portions further defining an opening into said first chamber;

a piston positioned within said first chamber;

a power means for moving said piston longitudinally within said first chamber, including a rod member connecting said power means to said piston;

control means for selectively operating said power means;

means for supporting said housing assembly, said power means and said control means; and

a first cylindrical sleeve positioned within said first chamber, said first sleeve enclosing said piston and being adapted to move with said piston, said first sleeve and said piston defining a second chamber; and

means for controlling lateral movement of said piston as said power means moves said piston longitudinally within said first chamber, including a circular plate secured to a first end portion of said cylindrical sleeve and a ring member secured to a second end portion of said cylindrical sleeve, said circular plate and said ring member extending radially outwardly from said first cylindrical sleeve, said circular plate and said ring member cooperating with said side wall portions for controlling said lateral movement.

5,182,989

SEALING DEVICE

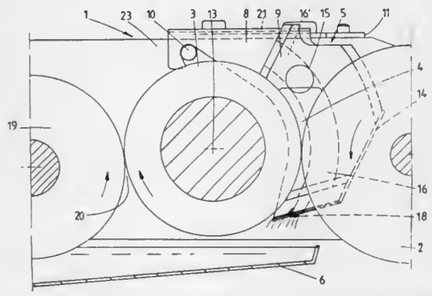
Walter D'Heureuse, Ladenburg; Martin Greive, Leimen; Gerhard Heppenstiel, Bammental, and Hans-Jürgen Kusch, Neckargemünd, all of Fed. Rep. of Germany, assignors to Heidelberg Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 518,548, May 3, 1990, abandoned. This application Jan. 22, 1992, Ser. No. 826,646

Claims priority, application Fed. Rep. of Germany, May 3, 1989, 3914648

Int. Cl.[5] B41L *23/00*

U.S. Cl. 101—148 **6 Claims**



1. In a dampening unit on an offset printing press having a dampening-solution supply, and a dampening-solution applicator roller and a metering roller rolling on one another and defining therebetween a channel for receiving therein dampening solution from the dampening-solution supply, the dampening unit having a side part located at one end of the applicator roller and the metering roller a sealing device comprising a seal holder mounted on the side part, and a sealing element formed with one side in contact engagement with said seal holder and with another side opposite from said one side closing off an end of the channel, said sealing element being formed with an overflow opening for excess dampening solution, said sealing element being formed on said one side thereof with an elongated cutout covered by said seal holder so as to form a drain passage communicating with said overflow opening, said drain passage being open at an end thereof overlying the dampening-solution supply so as to provide means for delivering the excess dampening solution to the dampening solution supply.

5,182,990

METHOD OF REDUCING PRINTING ARTIFACTS

John F. Kline, Londonderry; Frank G. Pensavecchia, Hudson; Stephen M. LaPonsey, Merrimack, and Richard A. Williams, Hampstead, all of N.H., assignors to Presstek, Inc., Hudson, N.H.

Division of Ser. No. 639,199, Jan. 9, 1991. This application Feb. 14, 1992, Ser. No. 836,987

Int. Cl.[5] B41M *1/14;* **B41C** *1/12, 1/05*

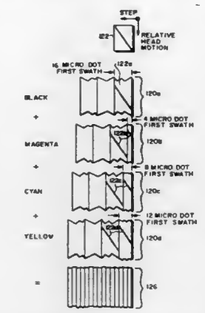
U.S. Cl. 101—211 **2 Claims**

1. A method of reducing printing artifacts in a printing apparatus including a plurality of printing plates, each of which is produced by successive scans of an array of imaging devices, the printing artifacts caused by defective operation of one or more of the imaging devices, the method comprising the steps of:

for each array, selecting a different number of imaging devices of the array to image an initial swath longitudinally along the associated printing plate;

positioning each array opposite the associated printing plate at differing lateral positions so that each swath begins at an identical longitudinal plate location;

imaging an initial swath on each plate by moving each printing plate relative to the associated array and selectively activating the selected imaging devices;



imaging subsequent swaths by advancing each array laterally along the associated printing plate and selectively activating all of the imaging devices of each array, thereby maintaining the differential position of each array relative to the other arrays and the respective associated plates that was established by the selection of different numbers of imaging devices for the initial swath; and

successively printing with each of the plates in registration with one another to produce a composite image.

5,182,991

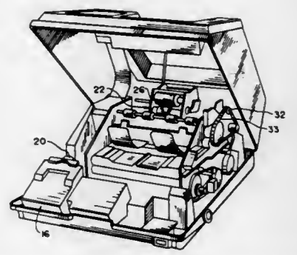
MULTI-POSITION INCREMENTAL DOCUMENT ENDORSER

Duane R. Patuszynski, Lincolnwood; John S. O'Callaghan, Wilmette, and Andrew Bartoli, Arlington Heights, all of Ill., assignors to Bell & Howell Document Management Products Company, Chicago, Ill.

Filed Aug. 27, 1991, Ser. No. 750,653

Int. Cl.[5] B41F *5/00*

U.S. Cl. 101—216 **16 Claims**



1. A multi-position document endorser having a plurality of endorsement positions for printing a single endorsement in a plurality of discrete locations on a moving sheet during separate passes through the endorser, comprising:

print means for placing a printed endorsement mark on a moving sheet, said print means providing a single imprint on said moving sheet;

document transport means for transporting said moving sheet;

housing means for holding said print means in a first endorsement position, said housing means having a configuration for physical translation of said housing means to permit movement of said print means to a second endorsement position; and

endorser drive means for incremental actuation of said print means in said first endorsement position to permit endorsement in a first location, said endorser drive means having a configuration for physical translation of said endorser drive means to permit actuation of said print means in said second position to permit endorsement in a second location;

wherein said endorser drive means includes a clutch means for actuation of said endorser drive means in said first and second endorsement positions, said clutch means having a configuration for physical translation of said clutch means between said first and second endorsement positions.

5,182,992

DOCTOR DEVICE FOR THE SELF-WASHING INKING UNIT OF A ROTARY PRINTING PRESS

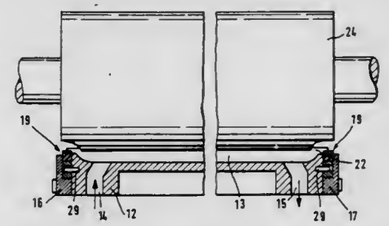
Dieter Rogge, Lengerich, Fed. Rep. of Germany, assignor to Windmöller & Hölscher, Lengerich, Fed. Rep. of Germany

Filed Jan. 22, 1991, Ser. No. 643,991

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1990, 4001733

Int. Cl.[5] B41F *31/04, 31/06;* **B41L** *27/08*

U.S. Cl. 101—363 **8 Claims**



1. A doctor device for a self-washing inking unit of a rotary printing press, comprising:

an inking roller,

a sealing means,

a doctor carrier,

two doctor blades, parallel to each other and able to be brought into engagement with said inking roller, attached to the doctor carrier, said doctor blades, together with the inking roller, the doctor carrier and said sealing means provided terminally on each end of the doctor carrier, defining a closed ink chamber,

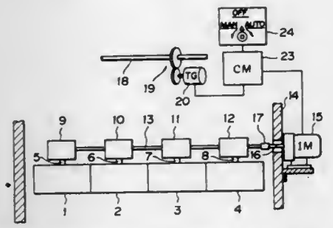
ducts for the supply of ink to and removal of ink from the ink chamber, and

loading means for pressing the doctor carrier against the inking roller,

wherein the sealing means are formed of moldings of elastic material provided with an aperture filled with a member of soft elastic material and, at a side facing the inking roller, each molding having downwardly sloping, dihedral sealing surfaces for receiving terminal parts of the doctor blades and between which there is a respective curve for a roller sealing surface, which is able to engage the inking roller, each said roller sealing surface having the form of a cylindrical shell with a radius of curvature corresponding to the radius of the inking roller.

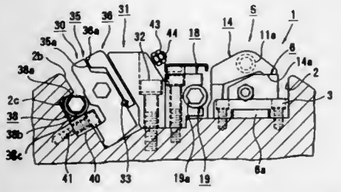
VOL 1147 ISS 1 FE 2 1993 UMI

5,182,993
INK SUPPLY SOURCE DRIVING APPARATUS FOR ROTARY PRESSES
Noriyuki Shiba, Tokyo, and Mamoru Hayashi, Kawasaki, both of Japan, assignors to Tokyo Kikai Seisakusho, Ltd., Tokyo, Japan
Continuation of Ser. No. 484,790, Feb. 23, 1990, abandoned. This application Oct. 24, 1991, Ser. No. 782,785
Claims priority, application Japan, Mar. 2, 1989, 1-48619
Int. Cl.[5] B41F *31/08*
U.S. Cl. 101—365 **1 Claim**



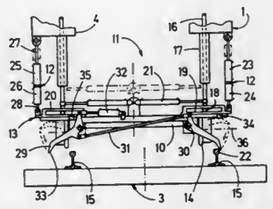
1. An ink supply source driving apparatus for driving a plurality of ink pumps in a rotary press, comprising: a synchronizing signal generator having means for generating a signal synchronous with the rotation of a driving system of said rotary press, an ink pump driving motor which comprises an inverter control motor having an output shaft, a common drive shaft coupled directly to said output shaft, a plurality of clutches coupled to be driven by said common drive shaft, each of said clutches having means for being engaged and disengaged separately and each of said clutches being operatively coupled for driving one of said ink pumps, a control unit having means for operating said ink pump driving motor selectively in a first control mode wherein said ink pump driving motor is driven by an output from said synchronizing signal generator synchronously with and at a predetermined rotational ratio with respect to the rotation of said rotary press driving system and a second control mode wherein said ink pump driving motor is driven independently of the rotation of said rotary press driving system, and a change-over means for selectively switching control modes of said control unit between said first control mode and said second control mode.

5,182,994
PLATE LOCKUP APPARATUS FOR SHEEET-FED PRESS
Hiroyuki Sugiyama, Ibaraki; Toshio Miyamoto, and Kazuhiro Maejima, both of Chiba, all of Japan, assignors to Komori Corporation, France
Division of Ser. No. 561,687, Aug. 1, 1990, Pat. No. 5,094,165. This application Nov. 1, 1991, Ser. No. 786,533
Claims priority, application Japan, Aug. 4, 1989, 1-201276; Aug. 21, 1989, 1-213096; Dec. 6, 1989, 1-315381
The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.
Int. Cl.[5] B41F *27/06*
U.S. Cl. 101—415.1 **5 Claims**



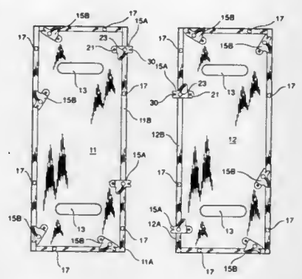
1. In combination with a printing press of the type having a plate cylinder with a peripheral surface having a gap therein and a plate mounted to said peripheral surface of said plate cylinder, said plate having a leading edge and a trailing edge received in said gap, the improvement comprising:
a leading-side lockup device located in said gap of said peripheral surface of said plate cylinder for gripping said leading edge of said plate;
a trailing-side lockup device located in said gap of said plate cylinder for gripping said trailing edge of said plate, said trailing-side lockup device having a lockup table and a gripper plate juxtaposed thereto, said lockup table and said gripper plate having opposing plate gripper surfaces extending in a substantially radial direction of said plate cylinder, said lockup table and said gripper plate being pivotable relative to each other; and
camming means having a cam surface adapted to contact said lockup table of said trailing-side lockup device, said camming means having a first predetermined position wherby both said plate gripper surfaces of said lockup table and said gripper plate are pivoted to contact one another to grip said plate, said camming means further having a second predetermined position whereby said lockup table and said gripper plate are moved concurrently in a substantially circumferential direction of said plate cylinder to tighten said plate on said peripheral surface of said plate cylinder.

5,182,995
RERAILING DEVICE
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria
Filed Mar. 10, 1992, Ser. No. 848,850
Claims priority, application Austria, Apr. 29, 1991, 889/91
Int. Cl.[5] E01B *35/00*
U.S. Cl. 104—2 **11 Claims**



1. A device for rerailing a tool frame having first and second flange wheels onto the rails of a track, said tool frame being movably connected to a machine frame of a track-laying machine, said rerailing device comprising
first and second lever means mounted directly on said tool frame for abutting against said rails,
swivel drive means for swivelling said first and second lever means in a plane extending perpendicular to the longitudinal direction of the track thereby causing said tool frame to be centered between said rails with said flange wheels directly above said rails, and
first and second two-stage height drive means for lowering said tool frame froms aid machine frame in a first stage wherein said first and second lever means and said swivel drive means cause said tool frame to be centered between said rails, and in a second stage wherein, after said tool frame has been centered between said rails, said flange wheels are lowered onto said rails.

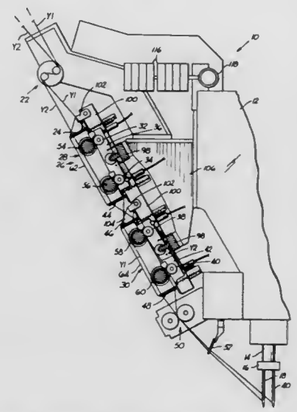
5,182,996
PIVOTING BRACKET ASSEMBLY FOR CONNECTING TABLE TOPS
David R. Gutgsell, Jasper, Ind., assignor to Ditto Sales, Inc, Jasper, Ind.
Filed Oct. 30, 1991, Ser. No. 784,760
Int. Cl.[5] A47B *57/00*
U.S. Cl. 108—64 **19 Claims**



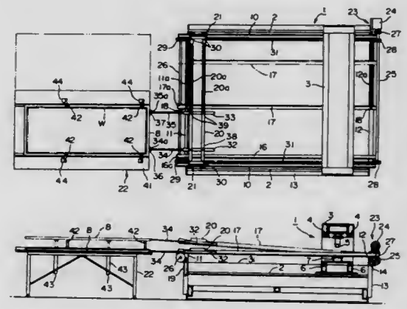
1. An apparatus for the interconnection of two or more table tops, a first such table top having an underside bounded by a plurality of edges, and a second such table also having an underside bounded by a plurality of edges, said apparatus comprising:
a brakcet having a pivot end and a connection end, and defining a first slot between said pivot end and said connection end, said first slot having a first end and a second end, said bracket further defining a second slot at said connection end of said bracket;
mounting means for mounting said bracket to the underside of a first table top, said mounting means including;
first fastener means for pivotably fastening said pivot end of said bracket to the underside of the first table top for pivoting said bracket in a plane parallel to the underside of the table top; and
second fastener means engagable to the underside of the first table top and extending through said first slot for fastening said bracket to the table top at said first slot,
whereby when said bracket is mounted to the first table top said bracket is pivotable about said first fastener means between a first position in which said second fastener means is located at said first end of said first slot and said bracket is oriented with said second slot extending beyond an edge of the first table, and a second position in which said second fastener means is located at said second end of said first slot and said bracket is positioned substantially completely under the first table top; and
third fastening means for clamping said bracket at said second slot to the underside of a second table top when said bracket is in said first position and one edge of each of the table tops is abutting.

5,182,997
TUFTING MACHINE YARN FEED ROLLER ASSEMBLY
Harold B. Bardsley, Nr. Chorley, England, assignor to Spencer Wright Industries, Inc., Dalton, Ga.
Filed Nov. 4, 1991, Ser. No. 787,063
Int. Cl.[5] D05C *15/18*
U.S. Cl. 112—80.73 **20 Claims**

1. A yarn feed roller assembly for a tufting machine comprising a plurality of drive rollers rotatably mounted transversely on said tufting machine and driven thereby at different respective speeds, a multiplicity of transversely spaced control arms, a plurality of yarn feed rollers each corresponding to a drive roller rotatably journalled on each control arm, support means for pivotably mounting each control arm adjacent said drive rollers for engagement of said feed rollers with a respective drive roller selectively, and means for selectively pivoting said control arms to frictionally engage a selected feed roller of each control arm with a respective drive roller for rotatably driving said selected feed roller of each control arm by the respective drive roller, whereby a yarn guided between the feed rollers of each control arm and the drive rollers will be frictionally engaged by and fed by the selected feed roller and its respective drive roller at a corresponding speed.



5,182,998
APPARATUS FOR MOUNTING AND REMOVING THE SUPPORTING FRAME OF A QUILT OR THE LIKE IN SEWING MACHINES
Yukio Iwase, Utsunomiya, Japan, assignor to Prince Corporation, Tokyo, Japan
Filed Oct. 17, 1991, Ser. No. 779,407
Claims priority, application Japan, Oct. 23, 1990, 2-284691
Int. Cl.[5] D05B *11/00*
U.S. Cl. 112—117 **2 Claims**

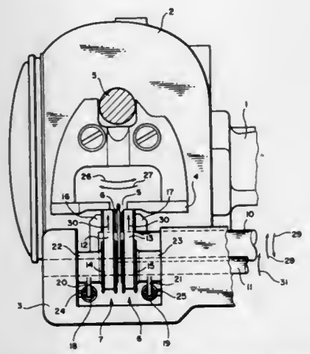


1. An apparatus for mounting and removing a supporting frame of a quilt in sewing machines, comprising:
a pair of left and right guide rails wherein one end pivots on one side of a sewing machine, the guide rails provided as a fulcrum, allowing the guide rails to be moved in a circular fashion, and are arranged in parallel with each other;
a pair of left and right supporting rails wherein one end pivots with the pair of left and right guide rails, the left and right supporting rails pivoting as a fulcrum to permit circular movement, and are arranged in parallel with the

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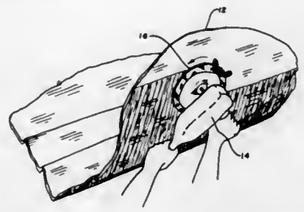
guide rails, that slide and support the supporting frame of the quilt;
an apparatus for moving up and down to produce circular motion of the guide rails which pivot as a fulcrum, and which urges these guide rails and a second end of the supporting rail to move up and down;
a moving member, articulated to the guide rails;
a moving apparatus, which moves the moving member along the pair of guide rails; and
anchoring members, which are interconnected with the moving member, to anchor the moving member to the supporting frame.

5,182,999
SEWING MACHINE FEEDER DRIVE AND STITCH-LENGTH ADJUSTMENT MECHANISM
Rudolf Dietl, Munich, Fed. Rep. of Germany, assignor to J. Strobel & Sohne GmbH & Co., Munich, Fed. Rep. of Germany
Filed Oct. 15, 1991, Ser. No. 775,904
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1990, 4032813
Int. Cl.[5] D05B *1/24*
U.S. Cl. 112—178 **14 Claims**



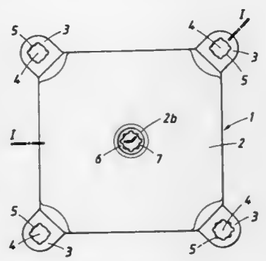
1. A sewing machine having a sewing area and feeder means for advancing material being sewn through said sewing area in a stepwise manner, said sewing machine comprising:
A. means for moving said feeder means intermittently in the direction in which said material being sewn is advanced, said moving means including:
a drive shaft pivotable to-and-fro and provided with a radially projecting drive crank;
an output shaft extending parallel to said drive shaft and drivingly connected to said feeder means;
an output crank pivotable about an axis parallel to said output shaft;
a linkbar interconnecting said drive crank and said output crank at two pivot axes parallel to said output crank pivot axis, said linkbar having an effective length equal to the effective length of the drive crank; and
means for transmitting motion of said output crank to said output shaft; and
B. means for adjusting the stitch-length of said sewing machine, said stitch-length adjusting means including:
means for supporting said output crank pivotably, said supporting means being rotatably supported on said output shaft and being provided with said motion transmitting means; and
means for rotating said supporting means on said output shaft, whereby said output crank pivot axis is displaced with respect to said drive shaft to set the length of each motion of said feeder means and hence the stitch-length of said sewing machine.

5,183,000
METHOD FOR CLEANING BOAT HULLS
Lonnie R. Burks, P.O. Box 112, New Blaine, Ark. 72851
Filed Feb. 18, 1992, Ser. No. 846,244
Int. Cl.[5] B63B *59/08*
U.S. Cl. 114—222 **2 Claims**



1. A method for cleaning while out of the water a boat hull having surface areas above and below a water line, comprising the steps of:
affixing an industrial grade synthetic fiber scouring pad to a flexible backup pad having a driving shaft;
attaching a scouring assembly comprising said scouring pad and said backup pad to a portable, hand-operated power tool having means for engaging a driving shaft by engaging said driving shaft with said means for engaging a driving shaft;
removing the boat hull from the water;
allowing sufficient time for the boat hull to dry;
applying a pumice hand cleaner to the surface area of the boat hull below the water line;
applying a cream hand cleaner to the surface area of the boat hull above the water line;
driving said scouring assembly in a rotary motion with said power tool at low speed while applying said scouring pad to the surface areas of the boat hull until the boat hull is clean; and
rinsing the boat hull.

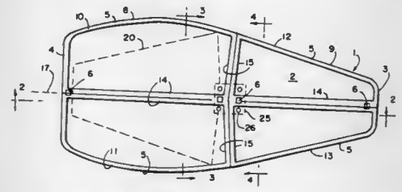
5,183,001
FLOAT
Margarete Stranzinger, Gitzen 16, A-5322 Hof bei Salzburg, Austria
Filed Aug. 22, 1991, Ser. No. 748,640
Claims priority, application Austria, Aug. 23, 1990, 1734/90
Int. Cl.[5] B63B *3/08*
U.S. Cl. 114—266 **9 Claims**



1. A float comprising
a generally prismatic-shaped body with a plurality of corners,
a connecting element attached to each of said plurality of corners and extending generally horizontally outwardly

from said body and having an eye passing vertically through said connecting element and a bottom surface with a recess adjoining said eye, said connecting elements being vertically offset from each other, and
a bearing ring located in a central retaining opening in the middle of said body, said opening passing vertically through said body, said bearing ring having a bottom surface with a recess adjoining the open interior of said ring, wherein said eye of said connecting element has a cross sectional shape which is the same as the cross sectional shape of the opening of said bearing ring.

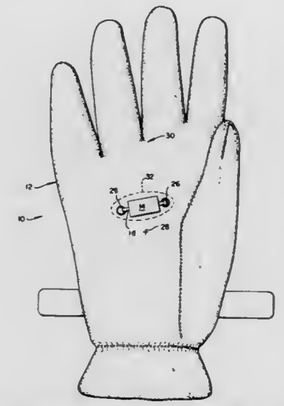
5,183,002
FOLDING AND NESTING BOAT
Corvin L. Parker, 5824 Urdea Rd., Jupiter, Fla. 33458
Filed Feb. 14, 1992, Ser. No. 835,353
Int. Cl.[5] B63B *3/00*
U.S. Cl. 114—353 **15 Claims**



1. A boat having an open condition for operation and a folded and nested closed condition for transport and storage, said boat comprising:
A) a boat hull having rigid sides, a substantial length along a centerline, and a width less than said length when said boat is in an open condition;
B) said hull being divided into a plurality of separate transverse sections by at least one separation plane, said at least one separate plane being disposed transverse to said centerline;
C) each said transverse section being divided into a separate, rigid, port portion and a separate, rigid, starboard portion, each said portion having at least one rigid side and a bottom;
D) hinge means pivotally joining each said port portion to a corresponding said starboard portion for pivoting about a pivot axis that extends along said centerline, wherein said port portion is foldable against said starboard portion to yield a width substantially less than the width thereof when in open, unfolded condition;
E) said transverse sections being constructed so that said transverse sections, when folded, are nestable together within one another to provide a total closed package of said hull when in said closed condition that has an overall length and width that are both substantially less than the length and width of said hull when in said open condition; and
F) fastening means for securing said port and starboard portions together in unfolded condition and for securing said sections together in open condition to thereby provide a rigid hull.

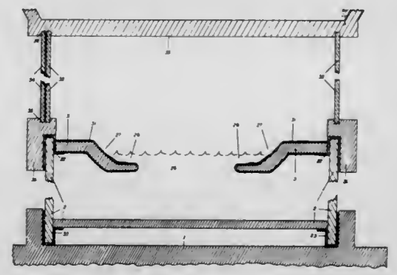
5,183,003
HANDWORN MECHANISM FOR SIGNALLING BY SCUBA DIVERS
Bruce W. Powell, and Judith F. Powell, both of 1442 G St., Woodbridge, Va. 22191
Filed Dec. 11, 1991, Ser. No. 804,724
Int. Cl.[5] B63B *45/08;* **H04B** *11/00*
U.S. Cl. 116—26 **20 Claims**

1. A hand worn mechanism used in scuba diving by an underwater user wearing an air tank for producing a sound using the air tank as a percussive instrument comprising:
a flexible article worn on a hand of the user which extends at least across a portion of a palm of the hand;
a hard striker; and



a mounting means for mounting said strike to said flexible article adjacent the palm of the user and with at least a top portion of said striker exposed whereby the user easily produces a percussive sound by direct striking of the air tank worn by the user with said striker worn on the hand of the user.

5,183,004
SELF CONTAINED VIVARIUM
Lane Trent, 460 17 Street, and Gua-Ming Shau, 151 18 Street, both of Brooklyn, N.Y. 11215
Continuation of Ser. No. 545,206, Jun. 28, 1990, abandoned. This application Sep. 20, 1991, Ser. No. 762,257
Int. Cl.[5] A01K *63/00*
U.S. Cl. 119—5 **8 Claims**



1. A self contained ecosystem comprising, a lower cabinet with a top surface and bottom surface, said cabinet including at least one door between the top and bottom surfaces,
a lower section vivarium/aquarium with first upper and lower frame members supporting a plurality of transparent walls therebetween, a bottom floor section positioned on a ledge of said lower frame member, said lower frame member positioned above the top surface of said cabinet,
said upper frame member having an inner rim extending inwardly towards the middle of the lower section vivarium/aquarium, a rigid landplate is supported on top of said inner rim, said landplate has a dry area and a wet area, said

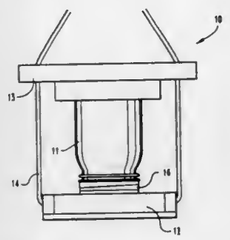
VOL
1147
ISS
1
FE
2
1993
UMI

wet area extends downwardly below said inner rim forming a shallow section of water and providing a means of which amphibians can climb out onto the dry landplate area,

said vivarium/aquarium also includes an upper section with second upper and lower frame members support a plurality of transparent walls therebetween said second lower frame member is supported on top of the first upper frame member, at least one opening in the upper section's transparent walls to facilitate a door closure means that provides access into said upper section,

a roof supported on the second upper frame to enclose the vivarium/aquarium, said roof having apertures for ventilation and lighting.

5,183,005
FLIP-FLOP BIRD FEEDER
Thomas L. Tyler, 2896 E. 276th St., Atlanta, Ind. 46031
Filed Mar. 12, 1992, Ser. No. 849,941
Int. Cl.[5] A01K *39/00*
U.S. Cl. 119—52.2 **4 Claims**



1. A bird feeder, comprising:

(a) a jar for holding bird seed, said jar having a mouth;

(b) a trough;

(c) means for positioning the mouth of said jar directly over said trough so that seed may flow from the jar into the trough;

(d) means for directly suspending said trough from a support;

(e) means for holding said jar in a generally mouth-downward orientation when the jar is positioned over said trough suspended by said suspending means, wherein said holding means is slideably received on said suspending means.

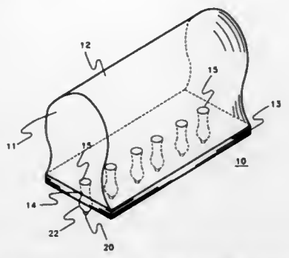
5,183,006
DISPENSING LIQUID ANIMAL PICK APPLICATOR
Maureen G. Robinson, 428 Beacon St., Chestnut Hill, Mass. 02167
Filed Jan. 27, 1992, Ser. No. 826,489
Int. Cl.[5] A01K *13/00;* **A45D** *24/22;* **B43K** *5/14*
U.S. Cl. 119—85 **4 Claims**

1. A disposable applicator for dispensing liquid formulations to the undercoat and skin of animals comprising;

a flexible, compressible handle section that can be easily compressed by the user's hand to control the amount and flow rate of the liquid formulation to be applied, such that the entire handle section can be compressed;

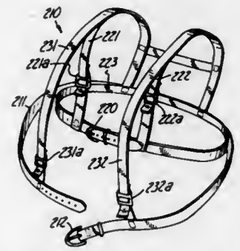
a rigid, substantially rectangular manifold section, attached to said handle section to form a substantially hermetically sealed reservoir of sufficient volume to hold an efficacious amount of liquid formulation within said reservoir until time of dispensing, such that once reservoir dispenses with liquid formulation it cannot be refilled;

a plurality of applicator prongs, attached to said manifold section, arranged in a single row, with each of said prongs having a bulbous tip, adapted in shape to easily and comfortably penetrate said animal's coat, with each said bulbous tip having at least one fluid delivery port, and with each of said prongs having a closure protuberance integral with said prong, such that said liquid formulation is prevented from flowing from said applicator prongs, and



when said closure protuberance is removed by cutting off from said prong, said liquid formulation flows from said delivery port corresponding to the pressure exerted on said handle section by said user.

5,183,007
MOTORCYCLE SAFETY HARNESS
John Vincent, 106 15th Ave. NE., Minot, N. Dak. 58701
Filed May 15, 1990, Ser. No. 524,171
Int. Cl.[5] A62B *35/00;* **B62J** *23/00*
U.S. Cl. 119—96 **5 Claims**



1. A motorcycle safety harness for use by a child riding with an adult, said harness comprising:

a first harness portion which comprises a first unitary belt having a length sufficient to extend around the combined waists of the child and the adult and having a single fastener positioned at a forward side of the adult, opposite from the child; and

a second harness portion which encloses the upper body portion of the child and comprises a second belt which is secured around only the waist of the child and a pair of straps that extend from the second belt on the rear side of the child, over the shoulders of the child to the second belt on the forward side of the child, said second harness portion being secured to said first belt.

5,183,008
LIVESTOCK SORTING SYSTEM HAVING IDENTIFICATION SENSOR AND GATE MOUNTED EXIT SWITCH
James A. Carrano, Stoughton, Wis., assignor to DEC International, Inc., Madison, Wis.
Filed Feb. 11, 1991, Ser. No. 653,762
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—155 **13 Claims**

1. A livestock sorting system comprising:

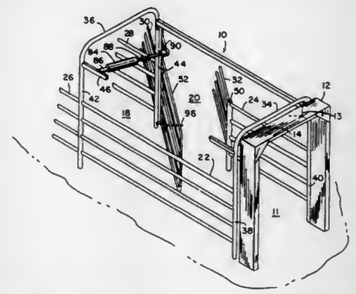
an entrance having an identification sensor for identifying designated livestock passing therethrough;

a first aisle extending from said entrance;

a second aisle extending from said entrance, said first and second aisles converging at a junction having an upstream end and a downstream end;

a gate having a first position providing communication of said entrance with said first aisle and blocking communication of said entrance with said second aisle, and having a second position providing communication of said entrance with said second aisle and blocking communication of said entrance with said first aisle, said gate being a pivoted member having a hinged downstream end pivoting on a vertical axis at said downstream end of said junction, said gate having an upstream end swingable in an arc across said upstream end of said junction;

an actuator actuating said gate between said first and second positions;



an automatic control for automatically controlling actuation of said gate by said actuator between said first and second positions in response to said identification sensor, said actuator actuating said gate to said second position in response to identified designated livestock passing through said entrance;

an exit switch in said second aisle and responsive to livestock passing through said second aisle to trigger said actuator to actuate said gate from said second position to said first position, said exit switch being spaced downstream from said swingagble upstream end of said gate by a given distance such that the rear of the livestock animal is about even with said swingable upstream end of said gate as said gate swings from said second position to said first position,

wherein said exit switch is mounted to said gate at a location spaced downstream from said swingable upstream end of said gate by a distance substantially the same as the length of the livestock animal's body, excluding head and neck.

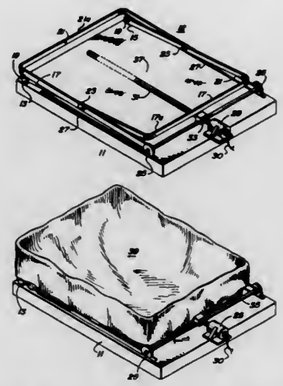
5,183,009
MECHANIZED ANIMAL LITTER APPARATUS AND METHOD OF OPERATING
Emanuel T. Vito, 685 Avenue "C" , Stroudsburg, Pa. 18360
Filed Feb. 5, 1991, Ser. No. 650,900
Int. Cl.[5] A01K *1/01*
U.S. Cl. 119—165 **27 Claims**

1. A sanitary collection and disposal apparatus for animal litter comprising:

(a) a horizontally extended base, arranged and constructed to be supported by and substantially parallel to a general supporting surface and to serve as a stabilizing support for an animal litter bag handling mechanism,

(b) at least two cooperating litter bag support arms having upper and lower ends one of which arms is pivotally attached to one end of the base at the lower end of said arm and which arms are pivoted at least indirectly to each other for movement of their upper and lower ends toward and away from each other,

(c) a friction-reducing means positioned at the lower end of said other litter bag support arm, which is not pivotally attached to the base, said friction reducing means being arranged and constructed to move in supporting contact with a surface of the base, over the mechanical range of movement of the pivoted together arms, and



(d) litter bag support surface means at the upper end of said cooperating litter bag support arms with which the upper portions of litter bags may be engaged.

5,183,010
ADDITIVE FOR BINDING LIQUID WASTE
Marvin L. Raymond; Dana G. Barrett, both of Cape Girardeau, and Phillip B. Greene, Sikeston, all of Mo., assignors to Golden Cat Corporation, South Bend, Ind.
Filed Jan. 28, 1992, Ser. No. 826,800
Int. Cl.[5] A01K *1/015*
U.S. Cl. 119—172 **28 Claims**

1. A litter composition capable of agglomerating upon contact with a liquid that is deposited in the composition to facilitate removal of the liquid from a container containing the litter composition, comprising:

a particulate liquid absorbent material;

a particulate polymer having a hydroxyl group content sufficient to enable the composition to agglomerate into a mass upon contact with a liquid; and

an accelerator in an amount sufficient to accelerate hardening of the mass;

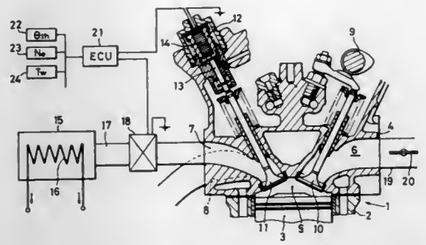
said mass being of sufficient cohesive strength to permit removal of said mass from the container.

5,183,011
METHOD OF CONTROLLING THE SUPPLY OF FUEL IN HYDROGEN-FUELED ENGINE
Isao Fujii; Yoshio Ajiki; Yoichi Ishida, and Hiromi Matsuura, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 17, 1992, Ser. No. 870,543
Claims priority, application Japan, Apr. 17, 1991, 3-85489
Int. Cl.[5] F02B *75/12*
U.S. Cl. 123—1 A **7 Claims**

1. A method of controlling the supply of fuel in a hydrogen-fueled engine having an intake valve, a hydrogen supply valve and an exhaust valve with each of said valves being operated to open and close relative to a combustion chamber, and a control valve provided in a hydrogen supply pipe to control an output of said engine through control of a flow amount of hydrogen, said control valve being a pressure control valve for adjusting the pressure of hydrogen to be supplied, said hydrogen supply valve being operated by means capable of adjusting lift and valve timing of the hydrogen supply valve, wherein said

VOL
1147
ISS
1
FE
2
1993
UMI

method is characterized in that the amount of hydrogen being supplied to said combustion chamber is controlled based on control signals corresponding to load conditions by both said



pressure control valve and said hydrogen supply valve under at least one of a low-load condition and a high-load condition, and substantially only by said pressure control valve under an intermediate-load condition.

5,183,012

THERMOSTATIC VALVE

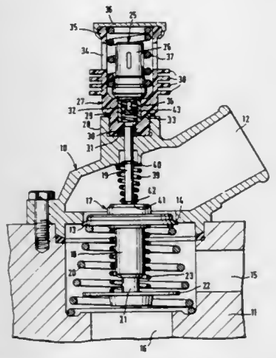
Roland Saur, Stuttgart; Friedrich Bauer, Kornwestheim, and Joachim Rothenpieler, Wolfsburg, all of Fed. Rep. of Germany, assignors to Behr-Thomson-Dehnstoffregler GmbH & Co., Fed. Rep. of Germany

Filed Feb. 19, 1992, Ser. No. 836,879

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1991, 9102294[U]

Int. Cl.[5] F01P *7/14*

U.S. Cl. 123—41.08 **20 Claims**



1. A thermostatic valve for a coolant control of an internal-combustion engine, comprising:

a valve housing made of a metal,

a first thermostatic working element assigned to engine coolant flow and having a first working piston movable in response to temperature changes in the coolant flow to control a coolant flow control valve in the valve housing,

and a second thermostatic working element arranged outside the coolant flow in fluid communication with an ambient air space and having a second working piston movable in response to temperature changes in the ambient air space temperature, said second working piston supporting an abutment member operatively engageable by the first working piston to thereby control the operating position of the first working piston as a function of the ambient air space temperature,

wherein the second thermostatic working element is thermally separated from the coolant and from elements coming in contact with the coolant,

and wherein a connecting element having a lower thermal conductivity in comparison to said metal of said valve housing is arranged between the valve housing and the second thermostatic working element to assist in thermally separating the same from the coolant.

5,183,013

TWO-CYCLE DIESEL ENGINE

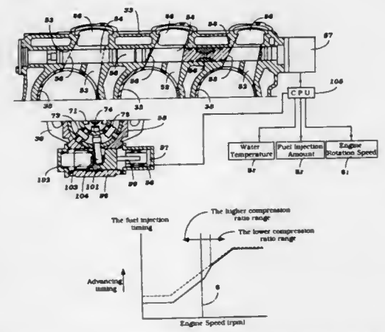
Hideaki Ito, and Masanori Miyamoto, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 28, 1990, Ser. No. 590,003

Claims priority, application Japan, Sep. 29, 1989, 1-253929

Int. Cl.[5] F02B *75/04*

U.S. Cl. 123—48 R **20 Claims**



1. A fuel injection system for a diesel engine including means for increasing the compression ratio under low and mid-range speed and load conditions, means responsive to engine speed for retarding the beginning the fuel injection in response to an engine speed reduction, and means for further changing the running condition in response to a change of compression ratio for lowering combustion chamber temperatures and precluding the formation of nitrous oxide.

5,183,014

SLEEVE VALVE SYSTEM FOR INTERNAL COMBUSTION ENGINE HAVING ELLIPTICAL PATH

Gregory S. Stevenson, 1830 N. Sierra Madre Villa, Pasadena, Calif. 91107

Division of Ser. No. 361,450, Jun. 5, 1989, Pat. No. 5,088,285. This application Oct. 18, 1991, Ser. No. 779,382

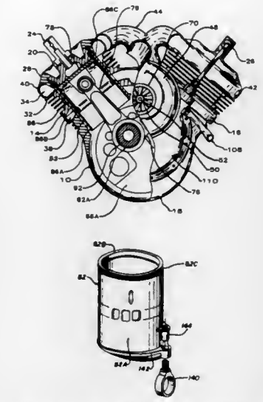
Int. Cl.[5] F02B *75/20*

U.S. Cl. 123—59 AC **3 Claims**

1. In an internal combustion engine including a plurality of cylinders, a crankcase, a crankshaft, a piston in each cylinder and a connecting rod connecting each piston to said crankshaft, an intake manifold and an exhaust manifold and sleeve valves within each cylinder for opening and closing communication between each cylinder and the intake and exhaust manifolds wherein each of said sleeve valves includes an enlarged head wall thickness region in the compression end of its cylinder, said enlarged head wall thickness region defining a sealing ring retaining recess and presenting a surface to expanding gases to provide a valve opening force during the power stroke of the cylinder;

a sealing ring in said sealing ring retaining recess; and

including means for driving said sleeve valves in an elliptical path during movement;



said sleeve valve driving means comprising planetary gear and eccentric drive system for each cylinder coupled to said crankshaft.

5,183,015

VALVE OPERATING APPARATUS

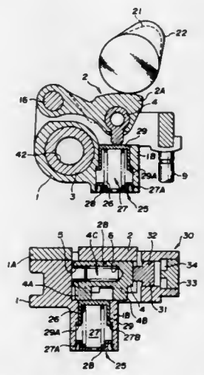
Shoji Morita; Yoshihiko Yamada, and Seinosuke Hara, all of Kanagawa, Japan, assignors to Atsugi Unisia Corporation, Kanagawa, Japan

Filed Apr. 24, 1992, Ser. No. 873,362

Claims priority, application Japan, Apr. 26, 1991, 3-097238

Int. Cl.[5] F01L *1/34*

U.S. Cl. 123—90.16 **6 Claims**



1. An apparatus for operating a valve, comprising:

a first cam;

a second cam;

a rocker arm for the valve and operated by said first cam, said rocker arm having a predetermined part having a lost motion mechanism;

a free cam follower pivoted to said rocker arm and operated by said second cam;

a prop slidably received by said free cam follower for movement between a first position in which said prop supports said free cam follower on said lost motion mechanism and a second position in which said prop supports said free cam follower on said predetermined part; and

means adapted for shifting said prop between said first and second position.

5,183,016

HYDRAULIC VALVE CLEARANCE COMPENSATOR

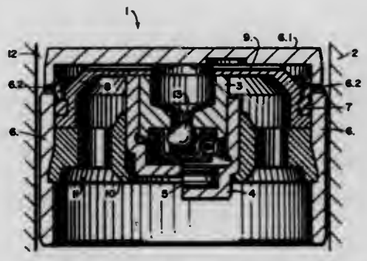
Volker Budde, Kandelgasse, Fed. Rep. of Germany, assignor to Firma Carl Freudenberg, Weinheim/Bergstrasse, Fed. Rep. of Germany

Filed Apr. 1, 1992, Ser. No. 861,745

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1991, 4124484

Int. Cl.[5] F01L *1/24, 1/14*

U.S. Cl. 123—90.55 **12 Claims**



1. In a hydraulic valve clearance compensator for an internal combustion engine, with a housing shaped essentially like an upside down cup with a flat base, sliding up and down inside a central bore, accommodating two concentric hollow cylinders sealed off from each other and separated by an axially resilient compression spring, and with at least one inlet in its wall that supplies lubricant to one cylinder, and with a check valve arranged between the inlet and the cylinders that allows lubricant to flow through the inlet into the cylinders but prevents it from flowing out, the improvement wherein at least the section of the housing between the inlet and the base is narrower than the rest of the housing.

5,183,017

AIR FILTER DEVICE FOR AN INTERNAL-COMBUSTION ENGINE

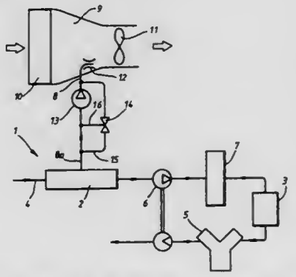
Stefan Bopp, Esslingen, Fed. Rep. of Germany, assignor to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Feb. 19, 1992, Ser. No. 836,760

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1991, 4109406

Int. Cl.[5] F02B *77/00*

U.S. Cl. 123—198 D **9 Claims**



1. Air filter device for an internal-combustion engine of the type including a charge-air compressor, a charge-air cooler, a

VOL 1147 ISS 1 FE 2 1993 UMI

water-air heat exchanger and a motor-driven blower with a blower hood which directs air from the heat exchanger to the blower, the air filter device comprising:

a dust precipitator and a dry air filter in an internal-combustion engine intake line,

a dust extraction blower in a dust exhaust-air line connected to the dust precipitator,

an additional exhaust-air line in addition to the dust exhaust-air line which is connected to an intake side of the motor-driven blower,

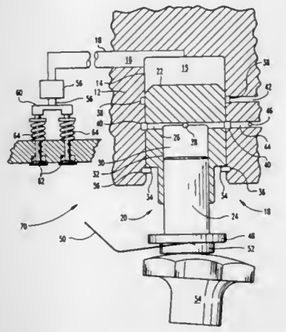
a shut-off element in the additional exhaust-air line, and a shut-off element opening system for opening the shut-off element in the event of failure of the dust extraction blower.

5,183,018

MASTER CYLINDER WITH TWO-PIECE MASTER PISTON

David A. Vittorio, Columbus, and Steven W. Reedy, Nashville, both of Ind., assignors to Cummins Engine Co., Inc., Columbus, Ind.

Filed Mar. 24, 1992, Ser. No. 856,579
Int. Cl.[5] F02D *13/04*
U.S. Cl. 123—321 **19 Claims**



1. A master cylinder for use in conjunction with an engine compression braking system having an hydraulically activated slave cylinder, said master cylinder comprising:

cylinder means having a bore therein and wherein said bore is in fluid communication with said slave cylinder;

telescoping piston means inserted into said bore for providing a force to a fluid within said bore, said telescoping piston means including a piston fluid port in fluid communication with an internal chamber of said piston means, wherein pressurized fluid supplied to said internal chamber extends said telescoping piston to a predetermined elongated length;

means for supplying pressurized fluid to said piston fluid port when said telescoping piston is in a first position thereby expanding said telescoping piston to said predetermined elongated length;

means for releasing fluid from said internal chamber when said telescoping piston means is moved into said bore a predetermined distance; and

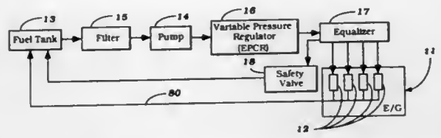
actuator means contacting said telescoping piston means for displacing said telescoping piston means into said bore in response to the occurrence of a predetermined cyclical event in the operation of the engine.

5,183,019

IDLING CONTROL DEVICE FOR HIGH PRESSURE FUEL INJECTION ENGINE

Hidenori Suhara, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jul. 3, 1991, Ser. No. 725,552
Claims priority, application Japan, Jul. 5, 1990, 2-178896
Int. Cl.[5] F02D *41/16*
U.S. Cl. 123—339 **14 Claims**



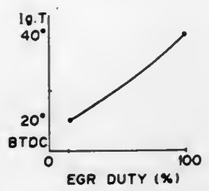
1. A high pressure fuel injection system for a diesel type internal combustion engine comprising an accumulator type fuel injector for spraying a quantity of fuel stored in the accumulator into said engine, pressure control means for controlling the pressure of the fuel supplied to said fuel injector, duration control means for controlling the timing of the discharge of said injector, means for sensing engine speed, means for sensing when an idle condition of the engine is called for by the engine, and means for maintaining a predetermined idle speed by holding one of the pressure control means and duration control means constant and varying the other of the control means.

5,183,020

IGNITION TIMING CONTROL APPARATUS FOR ENGINE

Keiji Hosoi, Shizuoka, Japan, assignor to Suzuki Motor Corporation, Shizuoka, Japan

Filed Oct. 11, 1991, Ser. No. 775,819
Claims priority, application Japan, Oct. 31, 1990, 2-294463
Int. Cl.[5] F02P *5/145*; F02M *25/07*
U.S. Cl. 123—406 **2 Claims**



1. In an engine including an intake passage, an exhaust passage, and an exhaust gas recirculation means for recirculating a selected amount of exhaust gas from said exhaust passage back to said intake passage, the improvement comprising:

means responsive to said exhaust gas recirculation means for setting an ignition timing of the engine to first and second ignition timing settings in response to recirculation of respective minimum and maximum amounts of exhaust gas; and

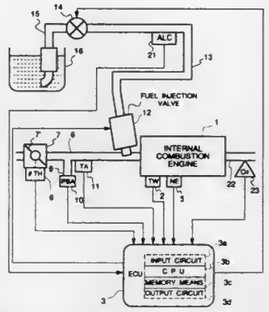
means responsive to said exhaust gas recirculation means for setting the ignition timing to a third ignition timing setting in response to recirculation of a third amount of exhaust gas which is greater than said minimum amount but less than said maximum amount, including interpolation means for obtaining said third ignition timing setting by interpolating between said first and second ignition timing settings based on the relationship which said third amount of exhaust gas bears to said minimum and maximum amounts of exhaust gas.

5,183,021

AIR-FUEL RATIO CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Toshiyuki Suga; Shinichi Kitajima, both of Wako, and Yoshihiko Kobayashi, Tochigi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,738
Claims priority, application Japan, Mar. 28, 1991, 3-64724
Int. Cl.[5] F02D *41/14*
U.S. Cl. 123—478 **3 Claims**



1. In an air-fuel ratio control system for an internal combustion engine using fuel containing alcohol, said system having correcting means for correcting an amount of fuel supplied to said engine by a correction amount when said engine is in a predetermined high load region, said correction amount being dependent on load on said engine,

the improvement comprising:

alcohol concentration-detecting means for detecting concentration of alcohol in said fuel; and

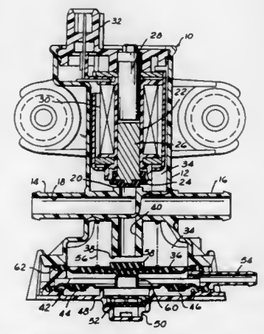
correction amount-changing means for decreasing said correction amount to a smaller value as the detected concentration of alcohol in said fuel is higher.

5,183,022

MULTI-SLOPE CANISTER PURGE SOLENOID VALVE

John E. Cook, Chatham, Canada, assignor to Siemens Automotive Limited, Chatham, Canada

Filed Jul. 16, 1991, Ser. No. 730,728
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—520 **12 Claims**



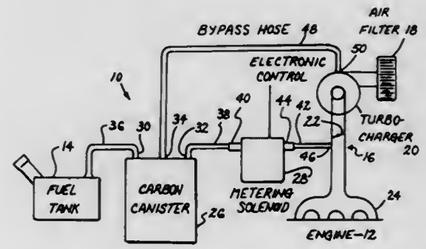
1. In an automotive internal combustion engine canister purge system wherein a canister purge solenoid (CPS) valve has an inlet connected to a canister that is to be purged of collected fuel vapors, an outlet connected to intake manifold vacuum, a flow path between said inlet and said outlet which includes a solenoid-controlled valve and a diaphragm-controlled valve, in that order, between said inlet and said outlet, said diaphragm-controlled valve comprising diaphragm means having one face disposed for valved communication with said outlet and another face disposed for communication with atmosphere characterized in that said diaphragm means comprises two diaphragms that are separated by a chamber space, one of said diaphragms containing said one face and the other of said diaphragms containing said another face, and said chamber space is communicated to intake manifold vacuum.

5,183,023

EVAPORATIVE EMISSION CONTROL SYSTEM FOR SUPERCHARGED INTERNAL COMBUSTION ENGINE

John D. Hanson, Bloomfield Hills, Mich., assignor to Siemens Automotive Limited, Ontario, Canada

Filed Nov. 1, 1991, Ser. No. 786,487
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—520 **2 Claims**



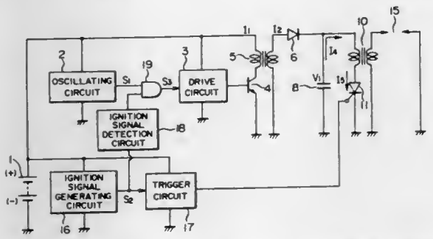
1. An on-board evaporative emission control system of an automotive vehicle having a tank for storing volatile fuel which is used to power the vehicle, an internal combustion engine having combustion chamber space within which fuel supplied from said tank is combusted with air that has passed from atmosphere into the combustion chamber space through an air intake system which comprises a supercharger and a throttle arranged such that said supercharger is disposed upstream of said throttle, said supercharger being selectively operable to at some times create superatmospheric pressure in that portion of the intake system downstream of the supercharger while at other times allowing the operation of the engine to create subatmospheric pressure in that portion of the intake system downstream of the supercharger, said evaporative emission control system comprising a vapor collection canister having an inlet port, an outlet port, and a vent port and being constructed and arranged to allow flow in either direction between said vent port and said outlet port, means communicating said inlet port to headspace of said tank so that fuel vapors can enter and be collected in the canister, and means including purge control valve means communicating said outlet port with said intake system at a location which is downstream of said throttle, characterized by means communicating said vent port to said intake system at a location which is upstream of said supercharger such that when the pressure in the intake system downstream of the supercharger is subatmospheric, the canister purge flow is from the canister outlet port to the intake system and is controlled by said purge control valve, and when the pressure in the intake system downstream of the supercharger is superatmospheric, the canister purge flow is from the canister vent port to the intake system and is controlled by said purge control valve.

VOL
1147
ISS
1
FE
2
1993
UMI

5,183,024
IGNITION DEVICE FOR INTERNAL COMBUSTION ENGINE

Shingo Morita, and Mitsuru Koiwa, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1991, Ser. No. 769,318
Claims priority, application Japan, Oct. 4, 1990, 2-265121; Oct. 4, 1990, 2-265122; Oct. 5, 1990, 2-266357
Int. Cl.[5] F02P *3/08*
U.S. Cl. 123—598 **14 Claims**



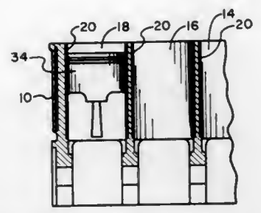
1. An ignition device for an internal combustion engine comprising:
a DC power source;
conversion means for raising the voltage of said DC power source to a predetermined voltage;
charge storing means arranged to be charged with the output from said conversion means;
an ignition coil;
ignition signal generating means for generating an ignition signal in synchronization with the rotation of said internal combustion engine;
switching means which is switched on in response to said ignition signal generated by said ignition signal generating means to discharge a charge stored in said charge storing means through said ignition coil; and
control means for stopping the operation of said conversion means during a period in which said ignition signal is being transmitted from said ignition signal generating means,
wherein said conversion means includes an oscillating circuit, and a drive circuit for amplifying an output signal transmitted from said oscillating circuit, and
wherein said control means includes a detection circuit for detecting an output of said ignition signal from said ignition signal generating means, and a coincidence circuit responsive to an output from said oscillating circuit and an output from said detection circuit for controlling said drive circuit.

5,183,025
ENGINE BLOCK AND CYLINDER LINER ASSEMBLY AND METHOD

John L. Jorstad; Richard A. Morely, both of Richmond, and William H. Overbagh, Chesterfield, all of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Oct. 7, 1991, Ser. No. 772,727
Int. Cl.[5] F02B *75/08*
U.S. Cl. 123—669 **34 Claims**

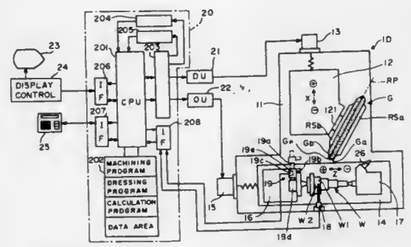
1. An engine block for an internal combustion engine, said engine block comprising:
a) an aluminum alloy engine block body having at least one cylinder bore;
b) a metallic liner received within the at least one cylinder bore and in intimate contact with the bore;
c) a bonding layer of a metallic material having as a major constituent thereof on a weight basis a bonding metal having a melting temperature substantially lower than the melting temperatures of the engine block body and of the liner, wherein the bonding metal is capable of forming alloys with each of the engine block body material and the liner material, the bonding layer positioned between and metallurgically bonded to each of the liner and the cylinder bore to provide a substantially continuous metallurgical bond between the cylinder bore and the liner, wherein the bonding layer provides a substantially uninterrupted heat transfer path of metallic material between the liner and the block body.



5,183,026
METHOD AND APPARATUS FOR DRESSING AN ANGULAR GRINDING WHEEL

Norio Ohta, Okazaki; Yukio Oda, Kariya; Toshiaki Naya, Chiryu, and Tomoyuki Kasuga, Kariya, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 17, 1992, Ser. No. 852,566
Claims priority, application Japan, Mar. 28, 1991, 3-64353
Int. Cl.[5] B24B *53/06, 53/08*
U.S. Cl. 125—11.16 **6 Claims**

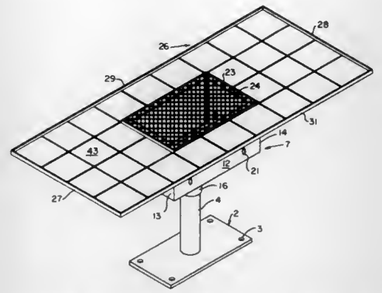


1. A method of dressing an angular grinding wheel having a first grinding surface usable for grinding a cylindrical surface of a workpiece and a second grinding surface perpendicularly intersecting said first grinding surface and usable for grinding a shoulder end surface of said workpiece, said method comprising the steps of:
providing on said grinding wheel first and second reference surfaces parallel to said first and second grinding surfaces, respectively;
detecting a first distance between said first grinding surface and first reference surface, and a second distance between said second grinding surface and second reference surface, before dressing operation;
determining, based upon said detected first and second distances, a first dressing amount for dressing said first grinding surface and a second dressing amount for dressing said second grinding surface so that said first distance and said second distance would have a predetermined constant relationship after dressing operation; and
effecting relative movement between a dressing tool and said grinding wheel to dress said first grinding surface by said first dressing amount, and to dress the second grinding surface by said second dressing amount.

5,183,027
MODULAR BARBEQUE GRILL

Marshall Saldana, 3176 Golf Dr., San Jose, Calif. 95127

Filed Nov. 27, 1991, Ser. No. 800,608
Int. Cl.[5] A47J *37/00*
U.S. Cl. 126—25 R **8 Claims**

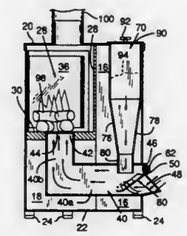


1. A modular barbeque grill adapted to be shipped in disassembled modules for assembly by the purchaser, comprising:
a) a base unit including a flat plate and a pedestal perpendicular thereto; and
b) a firebox unit adapted to be detachably mounted on said pedestal and including an open upper end, and a grill on which food may be supported while being cooked operatively detachably mounted within said firebox adjacent said open upper end;
c) said firebox unit including a rectangular bottom wall, opposed end walls integral with said bottom wall and projecting perpendicularly therefrom, opposed side walls integral with said bottom and end walls an perpendicular thereto, a centrally disposed aperture formed in said bottom wall symmetrical about an axis perpendicular to said bottom wall, a mounting sleeve having inner and outer peripheries centrally mounted perpendicularly on said bottom wall, the inner periphery of said mounting sleeve corresponding to the periphery of said centrally disposed aperture, and means on said mounting sleeve manipulable to support said firebox on the end of said pedestal remote from said base plate when in assembled condition, and manipulable to lock said firebox to said pedestal when in disassembled condition for shipping.

5,183,028
BURNING APPARATUS WITH PELLET FUEL BURNER

Joseph P. Traeger, 250 S. Oak St.; Mark A. Traeuger, 530 Alder St., and Randolph J. Traeger, 540 Leo St., all of Mt. Angel, Oreg. 97362

Filed Dec. 9, 1991, Ser. No. 804,243
Int. Cl.[5] F24B *13/04*
U.S. Cl. 126—73 **9 Claims**

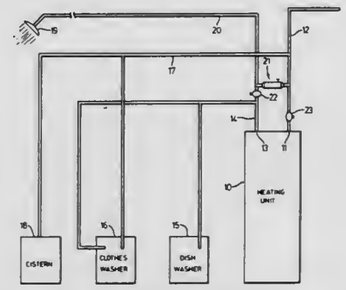


1. A stove comprising:
a housing,
a display chamber defined within the housing and said chamber being bounded on one side by an external window structure permitting user viewing of an interior region of the chamber from outside the housing, said chamber having a base and an opening in said base at said interior region,
a nonflammable fuel simulator disposed above said opening,
a burning zone in said housing spaced below said chamber for burning pellet fuel,
a tunnel leading from said burning zone to said opening channeling combustion gases produced in said zone into said opening and across said fuel simulator and,
a passage connecting with the burning zone for introducing combustion supporting air to said zone.

5,183,029
HOT WATER SUPPLY SYSTEM

Gary C. Ranger, 44 Cotton Avenue, Scarborough, Ontario, Canada M1K 1Z4

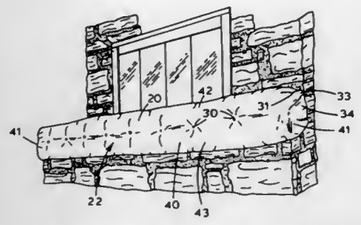
Filed Apr. 14, 1992, Ser. No. 868,197
Int. Cl.[5] F24H *1/00*
U.S. Cl. 126—362 **5 Claims**



1. A hot water supply system comprising
a heating unit having a cold water intake and a delivery outlet,
a cold water supply pipe connected to said intake,
a hot water delivery pipe connected to said outlet for delivering hot water to one or more user terminals,
a first branch pipe connected to the cold water supply pipe for delivering cold water directly to the user terminals,
a second branch pipe connected to the hot water delivery pipe for delivering hot water to a further user terminal,
characterized by means for maintaining the temperature of water supplied to said further user terminal substantially at a selected temperature independently of water demand at the other user terminals, said means comprising
a bypass unit connected between the cold water supply pipe and said second branch pipe in shunt with the heating unit, said bypass unit including a first check valve positioned to prevent reverse flow of hot water into the cold water supply pipe, and
a second check valve connected in said second branch pipe upstream of the connection to said bypass unit, the second check valve being positioned to prevent cold water flow from the bypass unit to said hot water delivery pipe,
said first check valve being responsive to changes of hydrodynamic pressure differential across the valve so as to adjust the volumetric flow of cold water through the valve thereby to compensate for said changes.

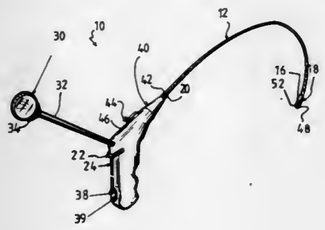
VOL
1147
ISS
1
FE
2
1993
UMI

5,183,030
HEARTH COMFORTER
Keile J. Woodward, 867 Joann Ct., Carmel, Ind. 46032
Filed Dec. 9, 1991, Ser. No. 803,512
Int. Cl.[5] F24B *1/18*
U.S. Cl. 126—500 **4 Claims**



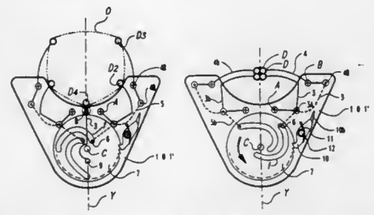
1. A hearth comforter for placement upon an upward facing surface of a fireplace hearth, said comforter comprising:
(a) a substantially rectangularly shaped body including front and rear sheets having side, top and bottom edges fastened together to form an enclosure;
(b) a batting material enclosed within said body;
(c) said body has opposite ends, each having adjacent corners that are brought proximately together and attached to one another to form end portions of an increased thickness to provide additional cushioning at the ends of the comforter which overlap the corners of the fireplace hearth;
(d) said body is primarily supported upon said hearth by at least a portion of said upward facing surface;
(e) said body has a length greater than that of said hearth such that said body overhangs at least a portion of the upward facing surface at its ends; and
(f) said body has a width sized so that a substantial amount of said upward facing surface of the hearth is covered by said comforter and also so that said body overhangs at least a portion of the front side of said hearth.

5,183,031
FIBEROPTIC INTUBATING LARYNGOSCOPE
Leonard J. Rossoff, 270-05 76th Ave.; Suite C-20, New Hyde Park, N.Y. 11042
Filed May 13, 1991, Ser. No. 699,488
Int. Cl.[5] A61B *1/06*
U.S. Cl. 128—6 **8 Claims**



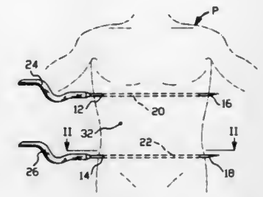
1. A fiberoptic intubating laryngoscope comprising:
a) a pistol grip having a stylet attached there to;
b) a suction channel passing through said stylet;
c) an optical head with a lens and being connected to said pistol grip for direct visualization by the user;
d) a universal adaptor having a beveled junction said universal adaptor having vents, the location of said vents being more proximally on said universal adaptor providing for less resistance and therefore greater flow of oxygen without comprising the size of said suction channel;
e) an oxygen port disposed on said pistol grip to allow for continuous flushing of oxygen via said vents in said universal adaptor, said oxygen is flushed continuously through said vents at a distal tip of said bevelled universal adaptor, said continuous flushing of oxygen keeps said lens clear of secretions encountered in endoscopy and intubation;
f) a fiberoptic bundle passing through the stylet;
g) a light source disposed within said pistol grip; and
h) a syringe port disposed on a suction inlet disposed on said pistol grip and allowing a syringe to inject a topical anesthetic via said suction channel.

5,183,032
MEDICAL RETRACTOR DEVICE
Josue J. Villalta, 6443 W. 10th Street, #202, Indianapolis, Ind. 46214, and Jean R. Passemard, 8 Rue Dela Tour aux Saints, Crecy la Chapelle, 77580, France
Division of Ser. No. 481,282, Feb. 20, 1990, Pat. No. 5,081,183.
This application Nov. 29, 1991, Ser. No. 800,440
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 **1 Claim**



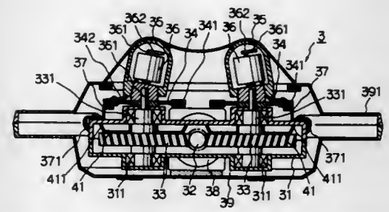
1. A retractor for wounds, incisions or cavities comprising:
a main frame;
a plurality of levers movably mounted to said main frame;
a plurality of at least three narrow blades;
driving means movably mounted to said main frame and operably associated with said levers having a closed position to move said levers locating said blades together and an open position to move said levers locating said blades apart in a polygonal formation, said levers are pivotally mounted to said main frame about parallel pivot axis and have distal ends with said blades mounted thereto, said levers further have proximal ends connected to said driving means which are operable to pivot said levers about said axis and move said blades together when in said closed position and apart when in said open position;
links having outer ends connected to said proximal ends of said levers and inner ends connected to said driving means;
said driving means includes a cam movably mounted to said main frame and connected to said links for movement of said blades; and,
locking means mounted to said main frame and operably associated with said cam operable to releasably lock said cam in an intermediate position between said closed position and said open position, said cam including a circumferential edge with a plurality of ratchet teeth formed thereof, said locking means including a ratchet pivotally mounted to said main frame and releasably biased against said ratchet teeth to limit rotational movement of said cam.

5,183,033
SURGICAL INSTRUMENT ASSEMBLY AND APPARATUS AND SURGICAL METHOD
Peter J. Wilk, 185 West End Ave., New York, N.Y. 10023
Filed Jul. 15, 1991, Ser. No. 729,553
Int. Cl.[5] A61B *17/02*
U.S. Cl. 128—20 **17 Claims**



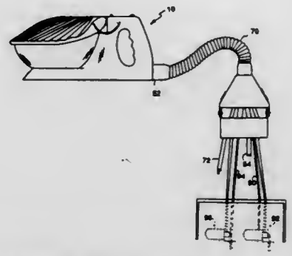
1. A method for use in laparascopic surgery, comprising the steps of:
piercing an abdominal skin surface of a patient to form a hole in said skin surface;
inserting through said hole a tensile member;
lifting the abdominal wall of said patient away from a backside of said patient by exerting tension on said tensile member; and
drawing air into the abdominal cavity of said patient during said step of lifting.

5,183,034
PORTABLE VIBRATION FINGER PRESSURE MASSAGER
Yoshikiyo Yamasaki, Sakai, and Shinichiro Fujimoto, Osaka, both of Japan, assignors to Kabushiki Kaisha Japan Health, Sakai and Kabushiki Kaisha Fuji Iryoki, Osaka, both of, Japan
Filed Dec. 23, 1991, Ser. No. 813,133
Int. Cl.[5] A61H *1/00*
U.S. Cl. 128—36 **3 Claims**



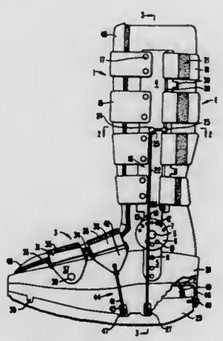
1. A portable massager comprising a drive worm disposed in a box and a pair of worm gears engaged on opposite sides of the worm and disposed rotatably in the box, rotating disks which have electrical elements provided at an outer edge surface thereof are disposed above frames located above the worm gears, massaging balls are connected with the rotating disks at angles inclined relative to axes of rotation of said rotating disks, a small motor which has wiring connected to the electrical element of the respective rotating disk is disposed in each massaging ball, a weight is rotatably and eccentrically connected at a shaft end of the motor, and outgoing panels connected with an external power source by electrical connection means are disposed on an upper face of the box in contact with the electrical elements, whereby relative swing motion and microvibration of each massaging ball can be performed optionally or simultaneously.

5,183,035
ORAL HYGIENE DEVICE
Roy A. Weir, 940 Lauder Ave., Apt. 914, Toronto, Ontario, Canada
Filed Nov. 22, 1991, Ser. No. 796,552
Int. Cl.[5] A61H *7/00*
U.S. Cl. 128—66 **17 Claims**



1. An oral hygiene device comprising:
a bowl portion having a rim therearound and
a handle portion disposed at one radial side of the bowl portion for manually supporting the device;
a lid hingedly secured to one of said portions so as to be movable between a raised position to provide access to the interior of said bowl portion and a lowered position to generally enclose said interior;
a first conduit for supplying a stream of water directed generally below the level of said rim for flushing the interior of said bowl portion;
a second conduit for supplying a stream of upwardly directed water;
first and second valve means for respectively controlling the flow of water through said first and second conduits, and
a drainage opening disposed in the bottom of said bowl portion.

5,183,036
WALKER BRACE
Richard G. Spademan, 2600 Capitol Ave. #405, Sacramento, Calif. 95816
Filed Sep. 18, 1989, Ser. No. 408,653
Int. Cl.[5] A61F *5/04*
U.S. Cl. 602—10 **24 Claims**



1. A walker brace comprising:
a foot support assembly for receiving a patient's foot including a sole;
a leg support assembly for receiving the patient's corresponding leg including at least one strap member for tightening against the leg;

VOL 1147 ISS 1 FEB 2 1993 UMI

an actuating system coupled with the sole and movable relative to the sole in response to the application of the patient's weight to the sole; and

a tightening mechanism operatively coupled with the actuating system and the strap member for increasing the tightness of the strap member on the leg in response to movement of the actuating system relative to the sole as a result of the application of the patient's weight to the sole.

5,183,037

RESUSCITATOR VALVE

Peter T. Dearman, Bishop'Stortford, United Kingdom, assignor to Neotronics Medical Limited, Hertfordshire, England

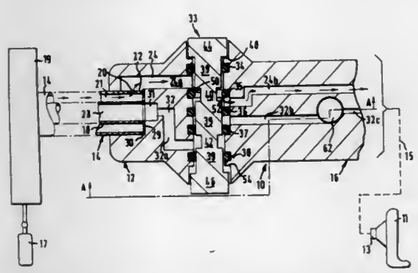
PCT No. PCT/GB89/00957, § 371 Date Feb. 12, 1991, § 102(e) Date Feb. 12, 1991, PCT Pub. No. WO90/01965, PCT Pub. Date Mar. 8, 1990

PCT Filed Aug. 17, 1989, Ser. No. 655,387

Claims priority, application United Kingdom, Aug. 17, 1988, 8819514

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—204.18 **9 Claims**



9. A resuscitation system comprising a first gas line, a control module capable of supplying a pulsed stream of pressurised gas to the first line, a second gas line, means capable of supplying a continuous stream of pressurised gas to the second line, a face mask, a main valve connected to both the first and the second lines and being capable of passing gas from either one of the lines to the mask and of closing the other gas line, and a second valve for manual control of the flow of gas along the second gas line when this is connected to the mask, said resuscitation system further comprising a housing containing both the main valve and the second valve, a first gas channel within the housing having an inlet connected to the first gas line and an outlet connected to the face mask, a second gas channel also contained within the housing and having an inlet connected to the second gas line and an outlet connected to the face mask, and wherein the main valve comprises a manually controllable valve member that is moveable between a first position in which it closes the second channel and opens the first channel and a second position in which it closes the first channel and opens the second channel and wherein the second valve comprises a second manually controllable valve member that controls flow of gas through the second channel.

5,183,038

GATED PROGRAMMABLE VENTILATOR

Eric A. Hoffman, Narberth; C. William Hanson, III, Philadelphia, and Charles F. Ward, III, Ardmore, all of Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Nov. 4, 1991, Ser. No. 787,510

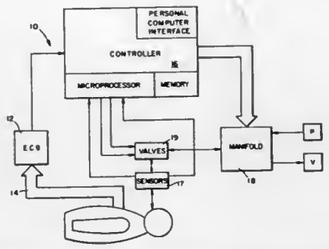
Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—204.21 **11 Claims**

1. A ventilator for ventilating the lungs of a patient with a fluid from a source of pressurized fluid, comprising:

valve means, adaptable for connection to said source and to said patient, for controlling the flow of said fluid therethrough in response to a control signal; and

a programmable controller, connected to said valve means, for generating said control signal, said programmable controller comprising a memory in which fluid flow rate



information has been stored and a microprocessor connected to said memory, said controller being operative for determining a desired flow rate of said fluid in relation to said flow rate information and for generating said control signal in relation to said flow rate.

5,183,039

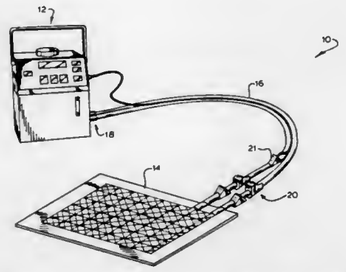
TEMPERATURE CONTROL DEVICE FOR FLUID FILLED PAD

Grigor Sarian, Los Angeles; Barry R. Crandall, Saugus, and Jeff R. Duncan, Sepulveda, all of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Filed Aug. 23, 1991, Ser. No. 749,092

Int. Cl.[5] A61F *7/00;* **H05B** *1/02*

U.S. Cl. 128—400 **4 Claims**



2. A device for heating fluid to be delivered to a patient comprising:

a temperature regulator module having a tank containing fluid, a pump, and temperature control circuitry;

a fluid-filled heating pad;

tubing for transporting fluid, said tubing having first and second ends, said first ends connected to said temperature regulator module, said second ends connected to said fluid-filled heating pad, so that fluid may flow between said pad and said regulator module;

a remote thermistor adjacent the heating pad and oriented relative to the tubing for measuring the temperature of said fluid at said pad;

a tank thermistor for sensing the temperature of fluid in said tank, said tank thermistor and said remote thermistor being coupled to said temperature control circuitry so that the temperature control circuitry can use the remote thermistor to control the temperature of the heating pad.

5,183,040

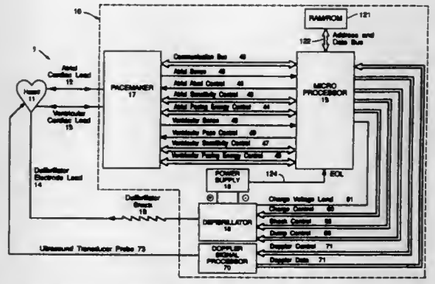
APPARATUS AND METHOD FOR DETECTING ABNORMAL CARDIAC RHYTHMS USING AN ULTRASOUND SENSOR IN AN ARRHYTHMIA CONTROL SYSTEM

Tibor A. Nappholz; Ken Koestner, both of Englewood, and Harry L. Valenta, Jr., Aurora, all of Colo., assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Mar. 8, 1991, Ser. No. 665,842

Int. Cl.[5] A61N *1/00*

U.S. Cl. 128—419 PG **34 Claims**



1. An antiarrhythmia pacing device for the reversion of cardiac arrhythmias comprising:

means for generating stimulation pulses and adapted to deliver said pulses to a patient's heart,

ultrasonic means adapted to be implanted within the patient's cardiovascular system for monitoring a cardiac output parameter corresponding to the volume of blood flow per unit of time within the cardiovascular system,

means for deriving a cardiac output standard based on a time history of said cardiac output parameter,

means for comparing said cardiac output parameter to said cardiac output standard,

means responsive to said comparing means for detecting and classifying a pathological cardiac arrhythmia when said cardiac output parameter is less than at least one predetermined percentage of said cardiac output standard, and

means responsive to said detecting means for controlling said generating means to operate in an antiarrhythmia pacing mode corresponding to said classification.

5,183,041

TRANSCUTANEOUS ELECTRIC NERVE STIMULATOR

Mamoru Toriu, Sayama, and Mitsuru Kitamura, Yokohama, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto and ITO Co., Ltd., Tokyo, both of, Japan

Filed Aug. 4, 1989, Ser. No. 389,583

Claims priority, application Japan, Aug. 11, 1988, 63-106499[U]

Int. Cl.[5] A61N *1/08*

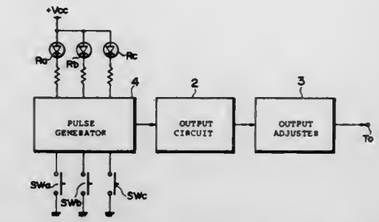
U.S. Cl. 128—421 **3 Claims**

1. A transcutaneous electric nerve stimulator comprising:

means for selecting a treatment mode;

a plurality of indicators respectively disposed in association with treatment modes which can be set in the stimulator;

pulse generator means for producing a low-frequency pulse having a frequency associated with a selected treatment mode; and



output pulse monitor control means for causing said indicator corresponding to the selected treatment mode to blink in sychronism with the produced low-frequency pulse.

5,183,042

ELECTROMAGNETIC METHOD AND APPARATUS TO MEASURE CONSTITUENTS OF HUMAN OR ANIMAL TISSUE

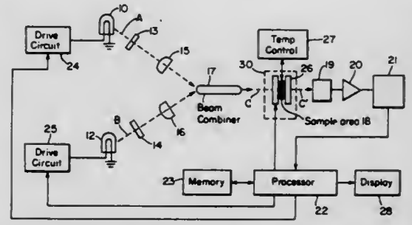
Hannu Harjunmaa, Holden; Yitzhak Mendelson, and Yi Wang, both of Worcester, all of Mass., assignors to Vivascan Corporation, Southboro, Mass.

Continuation-in-part of Ser. No. 527,514, May 23, 1990, Pat. No. 5,099,123, which is a continuation-in-part of Ser. No. 511,229, Apr. 19, 1990, Pat. No. 5,137,023, which is a continuation-in-part of Ser. No. 511,341, Apr. 19, 1990, Pat. No. 5,112,124. This application Jul. 3, 1991, Ser. No. 725,502

Claims priority, application European Pat. Off., May 23, 1989, 89810382.5

Int. Cl.[5] A61B *5/00;* **G01N** *21/59*

U.S. Cl. 128—633 **28 Claims**



21. A non-invasive apparatus for measuring the concentration of analytes in a living tissue, comprising:

a) a source of electromagnetic radiation for illuminating the tissue with an electromagnetic beam comprised of alternate periods of different wavelengths, one of the alternate periods having a first wavelength that is absorbed by the analyte, and the other alternate period having a wavelength selected so as to have an extinction coefficient in the tissue identical with that of said first wavelength;

b) a detector means for detecting the electromagnetic beam after reaction with the tissue to produce a first electrical signal proportional to the intensity of said electromagnetic beam; and

c) analyte level changing means for changing the level of analyte in the tissue;

d) intensity control means for adjusting the intensity relation between wavelength periods of the illuminating beam so as to produce, a reference level component in the first electrical signal when a minimum level of analyte is present in the tissue whereby the first electrical signal when analyte is present is proportional to the concentration of analyte in the tissue;

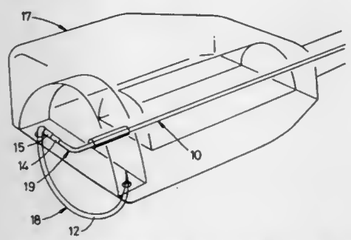
VOL 1147 ISS 1 FE 2 1993 UMI

e) temperature control means for maintaining the temperature of the tissue substantially constant during measurement.

5,183,043
LOW RESISTANCE ELECTRICAL PICK-UP AND MANUFACTURE THEREOF

David M. Band, Surrey, and David G. Penman, London, both of England, assignors to Surgicraft Limited, Redditch, United Kingdom

PCT No. PCT/GB89/00631, § 371 Date Jan. 28, 1991, § 102(e) Date Jan. 28, 1991, PCT Pub. No. WO89/11819, PCT Pub. Date Dec. 14, 1989
PCT Filed Jun. 7, 1989, Ser. No. 613,904
Claims priority, application United Kingdom, Jun. 8, 1988, 8813570
Int. Cl.[5] A61B *5/402*
U.S. Cl. 128—642 **14 Claims**

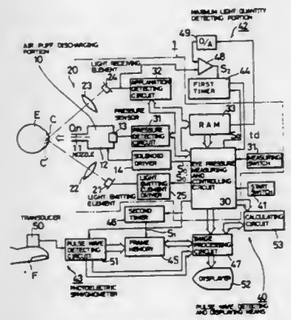


9. A method of manufacture of a fetal scalp electrode or other biosensing electrode of the type having an arcuate needle of stainless steel, characterised in that the arcuate needle is plated with nickel and then silver and an area of the silver layer, at least on the outside of the curve of the needle, is then chloridized and coated with bio-compatible plastics, and the remainder of the silver layer is coated with a non-conducting varnish.

5,183,044
NONCONTACT TYPE TONOMETER

Kouji Nishio, and Yoshihiko Hanamura, both of Tokyo, Japan, assignors to Kabushiki Kaisha Topcon, Tokyo, Japan

Continuation of Ser. No. 325,944, Jun. 29, 1988, Pat. No. 5,092,334. This application Oct. 10, 1991, Ser. No. 774,313
Claims priority, application Japan, Jun. 30, 1987, 62-163678; Jun. 30, 1987, 62-163679
Int. Cl.[5] A61B *3/16*
U.S. Cl. 128—648 **6 Claims**



1. A noncontact type tonometer comprising:

fluid projecting means for projecting a fluid toward an eye-to-be-tested;

eye pressure measuring means for obtaining a measured value of pressure of the eye-to-be-tested from a relation between a pressure of the fluid and a transfiguring quantity of the eye-to-be-tested due to the projection of the fluid;

pulse wave detecting means for detecting a pulse wave from of a person-to-be-tested at a position remote from the eye-to-be-tested due to the projection of the fluid; and

calculating means, communicating with the pulse wave detecting means and the eye pressure measuring means, for determining at least one of the maximum eye pressure value, minimum eye pressure value and average eye pressure value of the eye-to-be-tested through calculation with reference to;

a maximum fluctuation width of the pulse wave form detected by the pulse wave detecting means;

a pulse wave fluctuating quantity at the time point when the eye pressure was measured by the eye pressure measuring means;

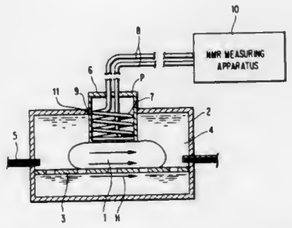
a difference between a phase of the pulse wave form at the eye-to-be-tested and at the position remote from the eye-to-be-tested; and

the measured value of the eye pressure.

5,183,045
NMR MEASURING METHOD AND MEASURING APPARATUS FOR TISSUE OF A LIVING BODY

Susumu Takamura, Kusatsu; Takashi Nakamura; Makoto Okawauchi, both of Shiga; Harumi Toda, Kyoto; Ichiro Kanki, Hirakata; Minoru Yoshida, Shiga; Toshiyuki Imoto, Kyoto; Naomi Negayama, Amagasaki, and Koichi Oka, Kusatsu, all of Japan, assignors to Otsuka Electronic Co., Ltd., Osaka, Japan

PCT No. PCT/JP89/00589, § 371 Date Apr. 16, 1990, § 102(e) Date Apr. 16, 1990, PCT Pub. No. WO89/12422, PCT Pub. Date Dec. 28, 1989
PCT Filed Jun. 12, 1989, Ser. No. 460,336
Claims priority, application Japan, Jun. 17, 1988, 63-150899
Int. Cl.[5] A61B *5/055*
U.S. Cl. 128—653.2 **12 Claims**



1. An NMR measuring method for tissue of a living body immersed in a perfusion solution comprising

(1) immersing the tissue of the living body in the perfusion solution,

(2) placing a receiver coil for receiving an NMR free induction signal in contact with or in close vicinity to only one side of the tissue,

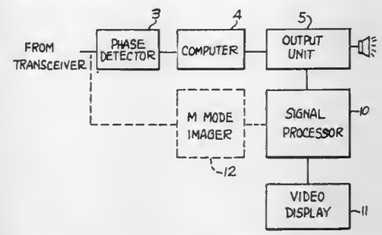
(3) holding the receiver coil to prevent contact with the perfusion solution, and

(4) obtaining an NMR measurement.

5,183,046
ULTRASONIC PLETHYSMOGRAPH

Kirk W. Beach; David J. Phillips, both of Seattle, Wash., and John Kansky, Indianapolis, Ind., assignors to Board of Regents of the University of Washington, Seattle, Wash.

Continuation of Ser. No. 644,477, Jan. 18, 1991, Pat. No. 5,088,498, which is a continuation of Ser. No. 258,534, Oct. 17, 1988, abandoned. This application Nov. 15, 1991, Ser. No. 792,584
Int. Cl.[5] A61B *8/08*
U.S. Cl. 128—661.07 **14 Claims**



1. The method of quantifying relative displacement of internal body matter at different depths below the skin which method comprises transmitting a first burst of ultrasound into the body from the skin, measuring the phase of ultrasound of the first burst reflected from internal body matter a first predetermined period after transmission of the first burst, measuring the phase of ultrasound reflected by internal body matter a second predetermined period after transmission of said first burst, subsequently transmitting a second burst of ultrasound into the body, measuring the phase of ultrasound of the second burst reflected from internal body matter a predetermined period of the same duration as the first predetermined period after transmission of the second burst, measuring the phase of the ultrasound of the second burst reflected from an internal body matter a predetermined period of the same duration as the second predetermined period after transmission of the second burst, and comparing the change in measured phases of the reflected ultrasound to determine the relative displacements of body matter at the different depths corresponding to the length of time required for ultrasound to travel to and return from body matter during the first and second predetermined periods.

5,183,047
DOPPLER FLOW VELOCITY METER

Christoph B. Burckhardt, Muttenz, Switzerland, assignor to Kontron Instruments Holdings NV, Curacao, Netherlands Antilles

Filed May 9, 1991, Ser. No. 697,892
Claims priority, application Switzerland, May 21, 1990, 1720/90
Int. Cl.[5] A61B *8/06*
U.S. Cl. 128—661.09 **9 Claims**

1. A Doppler flow velocity meter for measuring the flow velocity of a fluid carrying particles which reflect ultrasonic waves, comprising:

(a) an ultrasonic transducer for irradiating the fluid with ultrasonic wave pulses according to corresponding transmit pulses at a predetermined pulse repetition frequency, to receive echo waves reflected by the particles in the fluid and to emit corresponding echo signals;

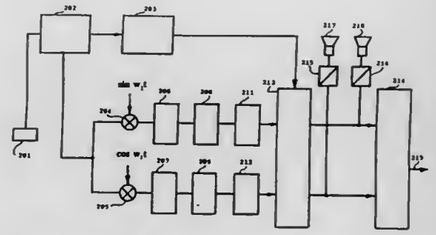
(b) a transmitter connected to said ultrasonic transducer for generating transmit pulses having a spectrum of two adjacent but separate frequency bands with which the ultrasonic transducer is excited to transmit the ultrasonic wave pulses;

(c) a receiver connected to said ultrasonic transducer for receiving and processing echo signals which correspond to at least two different echo waves reflected by the particles at a set point of the flow path in response to first and second transmitted pulses, in which the adjacent but separate frequency bands are each processed in a separated signal processing channel;

(d) an evaluator connected to the output of the receiver, with which the output signal corresponding to the flow velocity is derived from the Doppler information obtained with the receiver;

(e) the receiver further includes:

(e.1) means in each of the signal processing channels for carrying out a quadrature demodulation of the echo signals received from the ultrasonic transducer in each of the frequency bands and for outputting quadrature signals,



each defining a complex measured value (P(0), P(Δt), P(2Δt), . . .);

(e.2) Means for processing the quadrature signals from the two signal channels and means for producing a first output signal which corresponds to an average value of flow velocity at said set point of the flow path;

(e.3) Means for correlating said first output signal with said quadrature signals at the output of one of the signal processing channels for producing complex correlated values (P(Δt/2), P(3Δt/2), . . .); and

(e.4) Means for evaluating a signal sequence corresponding to said complex measured values and said correlated values (P(0), P(Δt/2), P(Δt), P(3Δt/2), P(2Δt), . . .) and obtaining the instantaneous value of the flow velocity.

5,183,048
METHOD AND APPARATUS FOR REMOVING ARTIFACTS FROM AN ULTRASONICALLY GENERATED IMAGE OF A SMALL CAVITY

Michael J. Eberle, Lobata, Calif., assignor to Endosonics Corporation, Rancho Cordova, Calif.

Filed Jun. 24, 1991, Ser. No. 719,804
Int. Cl.[5] A61B *8/12*
U.S. Cl. 128—662.06 **12 Claims**

1. A method of imaging a cross section of a small cavity such as a coronary vessel using an imaging apparatus having a transducer, wherein the transducer flexes in response to a received electrical pulse so as to emit an ultrasonic wave into an ambient environment of the array within the small cavity, the method comprising the steps of:

a. inserting the transducer into a first area of the cavity;

b. delivering an electrical pulse to the transducer in order to generate an ultrasonic wave in the ambient environment of the array;

c. detecting a ringdown signal generated by a damped oscillation of the transducer in response to its excitation by the electrical pulse;

d. storing the ringdown signal as a reference waveform;

e. inserting the transducer into a second area of the cavity having a diameter smaller than that of the first section;

f. emitting ultrasonic waves into the second area by mechanically exciting the transducer in response to electrical pulses;

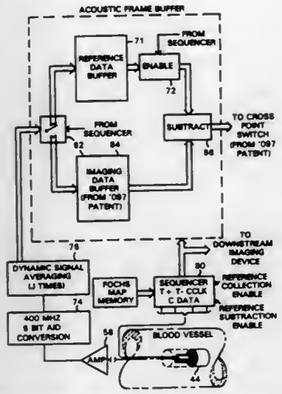
g. generating an echo waveform in response to echoes of the

VOL
1147
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emitted waves that are reflected off inner walls of the second section and impinge upon the transducer;

h. subtracting the reference waveform from the echo waveform for the purpose of creating an imaging waveform stripped of the ringdown signal; and

i. generating a visual image using a plurality of the imaging waveforms.



5,183,049

METHOD FOR FORMING AND ULTRASONIC IMAGE

Toshihiko Abe, Tagajou, Japan, assignor to Japan as represented by Director General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Oct. 15, 1991, Ser. No. 775,558
Int. Cl.[5] A61B *8/00*
U.S. Cl. 128—663.01 **4 Claims**

1. A method for the ultrasonic image-formation of a body under inspection by scanning the body with an ultrasonic beam emitted from an ultrasonic probe having an ultrasonic objective lens facing the body which comprises:

attaching a central ultrasonic absorber in the form of a disc to the center of the surface of the ultrasonic objective lens of the ultrasonic probe facing the body under inspection; and

inserting an auxiliary concave lens between the ultrasonic objective lens of the ultrasonic probe and the body under inspection.

5,183,050

PULSE WAVE SENSOR

Norio Kawamura, Nagoya, Japan, assignor to Colin Electronics Co., Ltd., Aichi, Japan

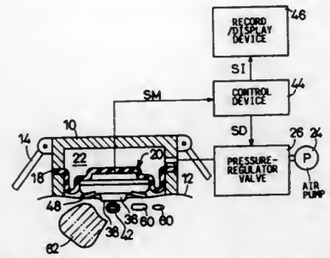
Filed Nov. 12, 1991, Ser. No. 790,354
Claims priority, application Japan, Apr. 16, 1991, 3-34295[U]
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—687 **8 Claims**

1. A pulse wave sensor for detecting a pressure pulse wave produced from an arterial vessel of a living subject in synchronism with heartbeat of the subject, the sensor having a press surface adapted to be pressed on a body surface of the subject over the arterial vessel, the sensor comprising:

means for providing a protruding portion protruding from said press surface, said protruding portion having a top surface adapted to be pressed on said body surface of said subject;

sensing means provided in said top surface of said protruding portion, for detecting said pressure pulse wave from said arterial vessel via said body surface; and

a sheet spring provided around said protruding portion and having a height generally equal to, or greater than, a height of said protruding portion as measured from said press surface, said sheet spring being deflectable in a direction in which said top surface of said protruding portion is pressed on said body surface.

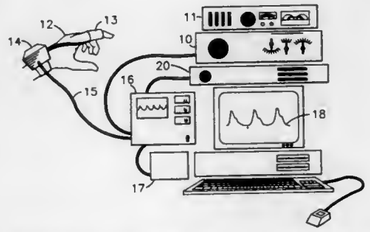


5,183,051

MEANS AND APPARATUS FOR CONTINUOUSLY DETERMINING CARDIAC OUTPUT IN A SUBJECT

Jonathan Kraidin, 3301 Indian Queen La., Philadelphia, Pa. 19129, and Irwin Gratz, 411 Woodbine Ave., Penn Valley, Pa. 19072

Filed Jan. 14, 1991, Ser. No. 640,968
Int. Cl.[5] A61B *5/02*
U.S. Cl. 128—687 **21 Claims**



14. Apparatus for continuously determining cardiac output (CO) in a subject comprising:

non-invasive sensor means for continuously measuring arterial blood pressure data at a site on said subject;

means for continuously converting said arterial blood pressure data to a digital signal representative of a pulse contour curve waveform;

means for continuously calculating heart rate (HR), grade of slope, systolic peak pressure, the presence of reflected waves, and pressure at the dicrotic notch from said digital signal;

means for determining the area, A, under said pulse contour curve from the start of a pulse to the dicrotic notch of said pulse contour curve;

means for subtracting from said area A any portion, B, of said area A, representing an approximate area due to wave reflection to obtain a stroke area, SA; and

means for calculating CO as a product of SA and HR.

5,183,052

AUTOMATIC BIOPSY INSTRUMENT WITH CUTTING CANNULA

Richard A. Terwilliger, 1489 Cas Vallecita, Alamo, Calif. 94507

Filed Nov. 7, 1990, Ser. No. 610,006
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—753 **18 Claims**

1. An automatic biopsy instrument including:

a body;

a cavity defined in said body;

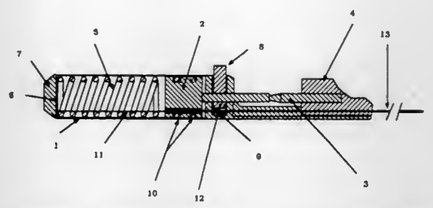
a piston mounted in said cavity;

means for biasing said piston relative to said cavity;

means for urging said piston against the biasing means;

an elongate cannula with an elongate inner bore;

means for securing said cannula to said piston;



means for communicating said inner bore of said cannula with the cavity of said body;

a stylet positioned in said inner bore of said cannula; and

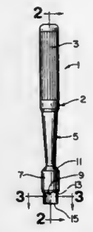
said cannula being extended out beyond a tip of said stylet in response to said biasing means in order to create a tissue collection space.

5,183,053

ELLIPTICAL BIOPSY PUNCH

Charles R. Yeh, Plantation, Fla., and Donald H. Huldin, Okemos, Mich., assignors to Acuderm, Inc., Ft. Lauderdale, Fla.

Filed Apr. 12, 1991, Ser. No. 685,466
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—754 **7 Claims**



1. A disposable surgical instrument in the form of a biopsy punch for making an elliptical incision in the skin to remove skin abnormalities, comprising:

(a) an elongated handle member formed of a hard plastic material including a means for retaining a cutting member formed integrally on one end of said handle member; and

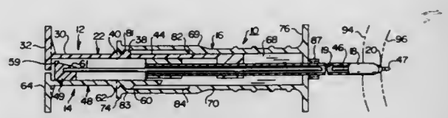
(b) a cutting member retained by said retaining means and projecting therefrom to expose a cutting surface for making the incision, said cutting member having a first and second portion, said first portion being disposed within said retaining means and being substantially annular in cross-section and said second portion being generally elliptical in cross-section.

5,183,054

ACTUATED BIOPSY CUTTING NEEDLE WITH REMOVABLE STYLET

Richard A. Burkholder, St. Peters, Mo., and Gregory G. Acker, Springboro, Pa., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed Sep. 9, 1991, Ser. No. 756,650
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—754 **17 Claims**



1. A biopsy device for sampling tissue comprising:

a) an elongated cannula having a sharpened distal end;

b) an elongated stylet having a sharpened distal end and a recess located at the distal end of said stylet, said recess located proximal to the ultimate distal end of said stylet, said recess extending transverse to the elongated axis of said stylet and extending into the body of said stylet, said stylet insertable into said cannula along a common linear axis of said stylet and said cannula, said stylet having an outer diameter slightly less than the inner diameter of said cannula, said stylet being removable from within said cannula, said stylet removable from said cannula essentially along said common linear axis whereby said stylet is also removable from said biopsy device;

c) a cannula actuator for moving said cannula along the linear axis of said cannula;

d) means for connecting said cannula to said cannula actuator;

e) a stylet actuator for moving said stylet along the linear axis of said cannula for advancing said stylet into the tissue to be sampled;

f) means for connecting said stylet to said stylet actuator;

g) a housing having a relatively open first end for receiving both said cannula actuator and said stylet actuator therethrough and a closed second end through which said cannula slidably extends, said cannula actuator and said stylet actuator constrained within said housing to relative parallel motion along an axis parallel to the elongated axis of said cannula; and,

h) means for selectively allowing removal of said stylet and said stylet actuator for said biopsy device,

whereby a sample collected in said recess can be removed from said biopsy device by removing said stylet from said biopsy device while leaving said cannula in position in the tissue from which the biopsy sample is collected.

5,183,055

DEVICE FOR OBTAINING TESTICULAR OR PENILE SIZE AND VOLUME MEASUREMENTS

Stephen W. J. Seager, 10301 Norton Rd., Potomac, Md. 20854

Filed Dec. 27, 1991, Ser. No. 813,655
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—774 **2 Claims**

1. A hand manipulable device which is useful in determining urological and andrological clinical measurement of one or more organs of the anatomy and for calculation of related volumetric capacity thereof, comprising:

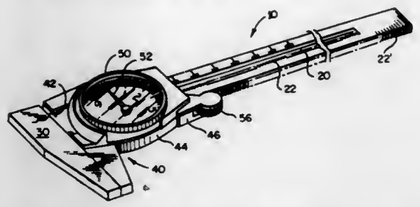
a) a graduated rule having fixed gradations embossed in an upper surface thereof, the rule terminating at one end in an anatomy contacting fixed jaw, said rule having an elongated cavity therein with a first rack defined on at least one side of the cavity; a second rack being defined on an outside edge of the rule, both said racks being coplanar and parallel to each other;

b) a movable jaw assembly in opposed measurement relation

VOL
1147
ISS
1
FE
2
1993
UMI

to the fixed jaw, the movable jaw bearing markers for the fixed gradations of the rule, on an anatomy contacting end thereof;

c) a refined marker meter superposed on the movable jaw assembly, in driven engagement with the first rack of the rule, said meter including a first pinion, engaging said first rack for activating a marker of the refined meter, relative to the fixed gradations of the rule;



d) a second pinion on the movable jaw assembly in constant engageable contact with the second rack, the second pinion being rotateable by a user to apply incremental movements to the movable jaw assembly and the refined marker meter, relative to the gradations of the rule; both said pinions being coplanar, relative to each other.

e) a comparator chart on the measurement device whereby capacitive testicular volume may be computed by width-length measurements obtained from the device.

5,183,056

INDUCTIVE MOTION SENSOR

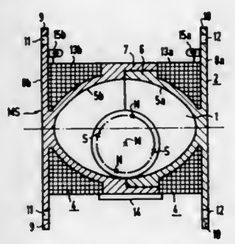
Bjoern Dalen, Stockholm; Kenth-Ake-Sune Nilsson, Akersberga; Kurt Hoegnelid, and Liliane Wecke, both of Sundbyberg, all of Sweden, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 18, 1990, Ser. No. 599,412

Claims priority, application European Pat. Off., Oct. 20, 1989, 89119524

Int. Cl.[5] A61B *5/103*

U.S. Cl. 128—782 **13 Claims**



1. Inductive motion sensor connected to a subject, the inductive motion sensor having a coil and a magnet member movable relative to said coil, comprising: said magnet member being in a region free of magnetic materials having at least four magnetic poles, the number, of south poles being identical to the number of north poles; and the pole strength of the magnetic poles being dimensioned and the magnetic poles being located on the magnet member such that the magnet member is situated in a neutral equilibrium position with respect to external forces exerted on the magnetic poles by a uniform magnetic field, whereby said motion sensor senses movement of the subject by means of a dislocation of said magnetic member relative to said coil.

5,183,057

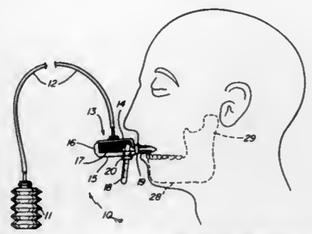
FLUID MOTION DEVICE (FMD) FOR EXERCISING THE TEMPOROMANDIBULAR JOINT

Steven B. Syrop, 36 Aldridge Rd., Chappaqua, N.Y. 10514, and Howard Israel, 47 Park Cir., Great Neck, L.I., N.Y. 11024

Filed Jul. 30, 1991, Ser. No. 738,105

Int. Cl.[5] A61G *15/00;* **A61C** *5/14, 19/04*

U.S. Cl. 128—845 **42 Claims**



18. A fluid motion device for exercising the temporomandibular joint which connects the upper and lower jaws, comprising:

a fluid source;

first and second members;

hinge means for holding said first and second members together while permitting at least said first member to move relative to said second member;

an expandable and contractible fluid reservoir positioned between said first and second members;

a fluid channel connecting said fluid source and said expandable and contractible fluid reservoir, said fluid channel providing fluid communication between said fluid source and said fluid reservoir;

said first and second members with said expandable and contractible fluid reservoir therebetween being insertable between said jaws for moving at least one of said jaws when said fluid reservoir expands and contracts; and

means for forcing fluid from said fluid source into said fluid reservoir to expand said fluid reservoir, thereby moving apart said first and second members and moving said at least one of said jaws to exercise said temporomandibular joint.

5,183,058

CEPHALIC EXPANSION APPARATUS AND THE METHOD OF USING TO TREAT HEAD INJURY

Woodrow W. Janese, Janus Medical Instruments, 2806 N. Navaro, Suite M, Room B, Victoria, Tex. 77901

Continuation-in-part of Ser. No. 560,014, Jul. 27, 1990, abandoned, which is a continuation of Ser. No. 205,250, Jun. 10, 1988, abandoned. This application Aug. 19, 1991, Ser. No. 747,723

Int. Cl.[5] A61F *13/00*

U.S. Cl. 128—847 **18 Claims**

1. An apparatus for the treatment of a swollen brain comprising:

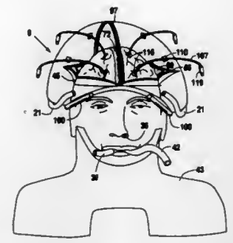
a flexible container for holding a volume of sterile fluid and an expanding brain of a craniotomized patient, the walls of said container forming an external, inferior surface for application to the scalp of the patient and an upper side having a flap formed therein for opening to expose the internal, inferior surface of said container when applied to the scalp;

a plurality of access ports formed in the walls of said container for circulating the sterile fluid into and out of said container;

means on the external, inferior surface of said container for water tight attachment of said container to the scalp of the patient;

a circumferential expansion flap for increasing the volume of said container when filled with the sterile fluid;

means on the flap formed in the upper side of said container for sealing said container to prevent the loss of the sterile fluid from said container; and



a semicircular support rod for attachment to a stationary support for encircling a portion of the head of the patient and engaging the external, inferior surface of said container to support said container when filled with the sterile fluid.

5,183,059

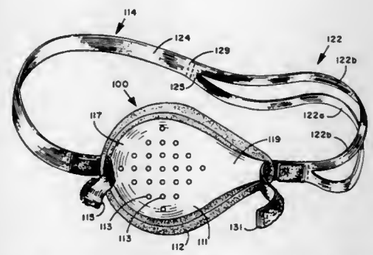
EYE SHIELD RETENTION SYSTEM

David Leonardi, 2927 S. Industrial Rd., Las Vegas, Nev. 89109

Continuation-in-part of Ser. No. 467,684, Jan. 19, 1990, abandoned. This application Jan. 16, 1992, Ser. No. 821,799

Int. Cl.[5] A61F *9/00*

U.S. Cl. 128—858 **25 Claims**



1. A strap retention system for holding an eye shield on a user's head across the bony orbital rim of the user's eye, the eye shield positioned to have an upper end extending above the eye to be protected and a lower end extending below the eye to be protected, comprising:

a) a first strap having a first end and a second end,

b) a second strap having a first end and a second end,

c) means for attaching the first end of the first strap to a lower portion of the eye shield,

d) means for attaching the first end of the second strap to an upper portion of the eye shield,

e) means for connecting the second end of the first strap to the second end of the second strap at a location at the approximate rear of the user's head, and

f) the second strap being bifurcated intermediate its first end and second end into an upper strap segment and a lower strap segment so that the second strap member can encircle the user's head from the upper portion of the eye shield to the connection location at the approximate rear of the user's head,

whereby the separation of the upper strap segment from the lower strap segment on the second strap member prevents the upper strap segment and the lower strap segment from slipping from the user's head such that the strap retention system would become loosened enough to allow the eye shield to become dislodged from the user's eye.

5,183,060

DEVICE FOR PROTECTING PORTION BETWEEN TOES

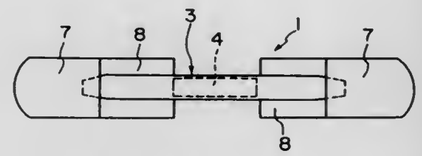
Souichi Shito, 1-38-7, Kamakura, Katsushika-ku, Tokyo, Japan

Filed Feb. 25, 1991, Ser. No. 659,651

Claims priority, application Japan, May 11, 1990, 2-49429[U]; Jul. 23, 1990, 2-77944[U]; Oct. 12, 1990, 2-107084[U]

Int. Cl.[5] A61F *5/00*

U.S. Cl. 128—882 **7 Claims**



1. A toe-base protecting device comprising:

a toe-base protecting member comprising a cylindrical bag that is formed of a hygroscopic and flexible material, said bag being filled with hygroscopic particles and rolled in another hygroscopic and flexible material into a substantially rod-like shape; and

an adhesive tape that is provided on each end of said protecting member, said adhesive tape for sticking on a surface of a boot with said protecting member being put between toes.

5,183,061

SILICON COMPOUNDS IN BONE TREATMENT

Karl E. Wiegand, and Patrick C. Hu, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation of Ser. No. 222,899, Jul. 22, 1988, abandoned. This application Apr. 26, 1991, Ser. No. 692,778

The portion of the term of this patent subsequent to Sep. 26, 2006, has been disclaimed.

Int. Cl.[5] A61B *19/00*

U.S. Cl. 128—897 **21 Claims**

1. A process for stimulating the growth of calcium-containing bone tissue in a warm-blooded vertebrate, said process comprising adminsitering to said vertebrate an effective amount of a physiologically acceptable organic silicon compound wherein silicon therein is solely bonded to one of a group consisting of oxygen, fluorine, chlorine and bromine, such that not less than one-fourth of the valences of silicon are satisfied by bonding to oxygen.

5,183,062

CIGARETTE

Jack F. Clearman, Blakely, Ga., and Billy T. Conner, Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Continuation of Ser. No. 642,233, Jan. 12, 1991, which is a continuation-in-part of Ser. No. 488,516, Feb. 27, 1990, Pat. No. 5,027,837. This application Apr. 21, 1992, Ser. No. 873,529

Int. Cl.[5] A24F *1/22*

U.S. Cl. 131—194 **80 Claims**

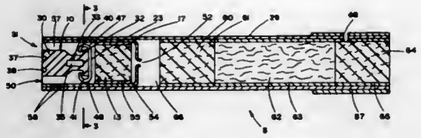
1. A cigarette comprising:

(a) a combustible fuel element having a portion which burns during use and a portion which does not burn during use;

(b) aerosol generating means (i) physically separate from, longitudinally adjacent, and in a heat exchange relation-

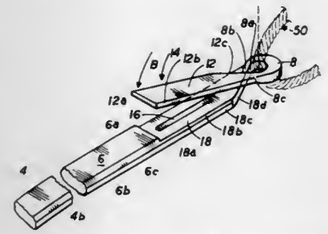
VOL
1147
ISS
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ship with, the fuel element, and (ii) including a paper substrate;



(c) a mouthend piece; and
(d) tobacco.

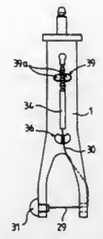
5,183,063
DENTAL FLOSS AND PRE-THREADED LEADER
Larry L. Ringle, 645-2 Woodside Sierra, Sacramento, Calif. 95825, and Ronald G. Lax, Grass Valley, Calif., assignors to Larry Lee Ringle, Sacramento, Calif.
Filed Jun. 10, 1991, Ser. No. 712,405
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—321 **23 Claims**



1. An integrally formed dental floss and leader for use with bridges, implants or other structures such as teeth and prosthodontic devices, comprising in combination:
said leader having a free end for threading into interproximal dental spaces and a tethered end which supports said floss,
said tethered end including means for fixedly prefusing said floss to said leader thereto in a manner preventing substantial sliding of said floss relative to said tethered end of said leader.

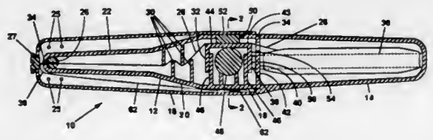
5,183,064
DENTAL CLEANSING DEVICE AND INTERDENTAL FLOSS FOR SUCH A DEVICE
Frederic Barth, 11, Place du Marché, Chevry II, F-91190 Gif-sur-Yvette, France
Division of Ser. No. 452,354, Dec. 19, 1989, Pat. No. 5,094,256. This application Dec. 31, 1991, Ser. No. 815,035
Claims priority, application France, Dec. 19, 1988, 88 16729; Apr. 27, 1989, 89 05618; Jun. 27, 1989, 89 08509
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—323 **17 Claims**

1. An interdental cleansing device, comprising:
a fork-shaped instrument having a body and two separated arm extending from an end of said body, each said arm having a free end and a needle eye of predetermined cross section near its free end, the two arm being separated by a predetermined distance at a point of said needle eyes;
a dental floss adapted for being fitted onto said instrument so as to pass through and extended between the needle eyes of the two arms, wherein said dental floss comprises a floss portion having two opposite ends, a length of said floss portion between said two opposite ends greater than said predetermined distance, the floss portion being provided at one of its ends with a guide rod having a cross section smaller than the needle eyes and being provided at another of its ends with a stop button having a cross-section greater than the needle eyes, and said fork-shaped instrument further comprises a guide stop attached to said body and adapted for stopping the guide rod, whereby the location of the guide stop on the instrument body with



respect to the needle eyes and the length of the floss portion are related to one another such that with the floss portion being fitted onto the instrument, with the stop button stopped at one needle eye and the guide rod locked behind the guide stop, the floss portion is pulled taut.

5,183,065
DENTAL FLOSSING TOOL
Robert F. Mason, 10763 Hedda Pl., Cerritos, Calif. 90701
Continuation-in-part of Ser. No. 353,592, May 18, 1989, abandoned, and Ser. No. 478,527, Feb. 12, 1990, abandoned. This application Mar. 27, 1991, Ser. No. 675,869
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—323 **14 Claims**

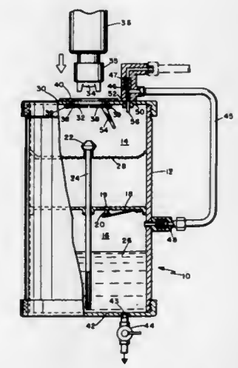


1. A dental flossing tool comprising:
an elongated hollow handle portion having a single hollow tip projecting from one end of said handle portion,
a supply of dental floss mounted in said handle portion,
means for feeding said dental floss through said tool without exposure of said floss to air outside of said tool and for preventing exposure of said floss prior to said floss exiting said tip,
resilient means substantially enclosed within said tip so that said tip extends beyond said resilient means and serving to prevent moisture from entering said tool while allowing said floss to exit from said too, and
locking means located within said tool for selectably permitting removal of said floss from said supply in infinitely variable locked lengths.

5,183,066
SPRAY NOZZLE CLEANING APPARATUS AND METHOD
Gary L. Hethcoat, Ontario, assignor to General Dynamics Corp., Air Defense Systems Division, Pomona, Calif.
Filed Apr. 2, 1991, Ser. No. 679,493
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—54 **15 Claims**

4. A cleaning apparatus for cleaning spray gun nozzles, comprising:
a first, cleaning chamber having an entrance for receiving the nozzle of a spray gun into a cleaning position in said chamber;

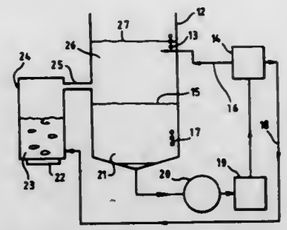
at least one cleaning spray head in said cleaning chamber directed at the cleaning position;
a second, reservoir chamber for holding a supply of cleaning fluid;
a first connecting passageway between the reservoir chamber and the cleaning head for delivery of cleaning fluid to the cleaning head;
a gas supply line connected to the reservoir chamber for supplying gas under pressure to the reservoir chamber to force cleaning fluid from the reservoir chamber to the cleaning head;
a valve in the supply line moveable between closed and open positions for controlling the connection of the gas supply to the reservoir chamber;



an actuating arm associated with the valve and moveable between inoperative and operative positions to move the valve between the closed and open positions;
the actuating arm being positioned in the cleaning chamber adjacent the entrance and being moveable between the inoperative and operative positions in response to movement of a spray nozzle into the cleaning chamber; and
a second connecting passageway between said first and second chambers for returning spent cleaning fluid to the reservoir chamber at the end of a cleaning cycle, and valve means in said second connecting passageway for closing said passageway during a cleaning cycle.

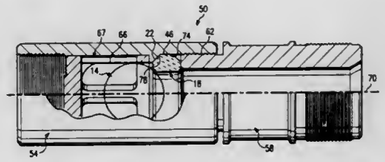
5,183,067
CLEANING AND DRYING OF ELECTRONIC ASSEMBLIES
David S. L. Slinn, Bristol, Great Britain, assignor to ISC Chemicals Limited, London, United Kingdom
Division of Ser. No. 376,651, Jul. 7, 1989, Pat. No. 5,055,138. This application Sep. 5, 1991, Ser. No. 755,137
Claims priority, application United Kingdom, Jul. 8, 1988, 8816343; Feb. 2, 1989, 8902280
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—61 **14 Claims**

1. Apparatus for cleaning and drying components comprising:
a reservoir for a highly fluorinated compound;
heating means for heating and evaporating said highly fluorinated compound;
a cleaning chamber;
an organic liquid solvent in said cleaning chamber;
a space above said organic solvent in said cleaning chamber;
means for conducting highly fluorinated compound vapor produced by said heating and evaporating means to said cleaning chamber for covering and directly heating said organic solvent in said cleaning chamber;
said components to be cleaned being immersed into and removed from said organic solvent in said cleaning chamber;
means for condensing said highly fluorinated compound vapor in said cleaning chamber; and



means for recycling said highly fluorinated compound and organic solvent to said reservoir and cleaning chamber, respectively.

5,183,068
BALL AND SEAT VALVE
Albert C. Prosser, Norman, Okla., assignor to Coors Technical Ceramics Company, Norman, Okla.
Filed Jun. 4, 1991, Ser. No. 710,137
Int. Cl.[5] F16K *15/04*
U.S. Cl. 137—1 **17 Claims**



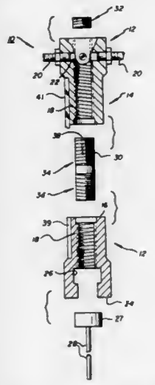
16. A method for extending the useful life of a ball and ceramic seat valve by exerting a compressive force toward the inner bore of said seat, wherein the compressive force component in the direction of said inner bore is created by a beveled surface on said seat that forms an angle with the central axis of said seat of between about 40° and 50°, and is adjustable by altering the axial force exerted on said seat to change the compressive force exerted by said beveled surface.

5,183,069
ADJUSTABLE VALVE STEM APPARATUS FOR VALVE GATED INJECTION MOLDING DEVICES
Ralph O. Berg; Fred J. Lang, Jr., both of Rochester, and Dennis B. Kupka, Albion, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Division of Ser. No. 702,665, May 17, 1991, Pat. No. 5,080,575. This application Jan. 13, 1992, Ser. No. 820,103
Int. Cl.[5] F16K *31/50*
U.S. Cl. 137—15 **4 Claims**

1. A method of adjusting a valve stem which communicates with a workpiece in an machine assemblage, comprising the steps of:
a) releasing an adjustable valve apparatus from the machine assemblage, said apparatus comprising:
i) a cylindrical body, said body comprising a fixed and a moveable threaded portion, said portions being relatively oppositely threaded, wherein said moveable portion has at one end means for removably mounting said stem;
ii) means structurally cooperating with said fixed portion for rigidly securing said fixed portion to said equipment;

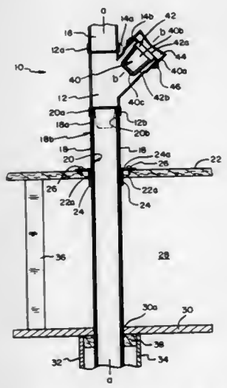
VOL
1147
ISS
1
FE
2
1993
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iii) an elongated valve stem slideably engaged to said moveable portion; and,
iv) a double-ended threaded element correspondingly threadably engaged to said fixed and moveable threaded portions, said double-ended threaded element having a socket formed in its top portion for rotatably adjusting the moveable portion relative to the fixed portion thereby correspondingly axially displacing the valve stem from a first to a second position.



b) disengaging said valve stem from said adjustable valve apparatus;
c) inserting a new or replacement valve stem in said adjustable valve apparatus
d) reinserting said adjustable valve apparatus and stem in said machine assemblage; and,
e) rotating said threaded element to adjust the length of said valve stem so that said stem will properly engage the workpiece.

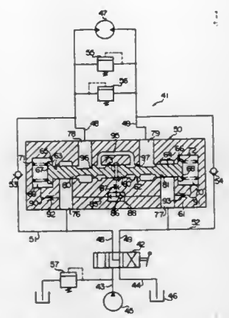
5,183,070
FIRESTOP DEVICE FOR FLAMMABLE FLOOR CONSTRUCTION
Kenneth R. Cornwall, 4963 Springfield Dr., Dunwoody, Ga. 30338
Filed Apr. 29, 1991, Ser. No. 692,669
Int. Cl.[5] F16K *17/14*
U.S. Cl. 137—75 **22 Claims**



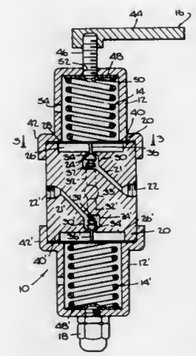
1. An improved firestop stack fitting assembly which prevents the spread of smoke and fire through a building and through an opening in a floor of the building consisting of sheet material mounted on an upper end of floor joists and through a flame resistant ceiling mounted on a lower end of the floor joists below the floor, the stack fitting comprising:
(a) a fluid carrying main conduit means having a first longitudinal axis between two opposed openings;
(b) an extension conduit means extending from the main conduit means and positioned with a second axis at an acute angle from the longitudinal axis of the main conduit means with an opening;
(c) a non-flammable plug means mounted in the extension conduit means on a flammable support means provided in the extension conduit means which plug means is releasable by melting the flammable support means upon exposure of the support means to heat less than necessary for heat destruction of the main and extension conduit means from a fire in the building to thereby move the plug means into the main conduit means;
(d) a closure means for the opening of the extension conduit means;
(e) a flammable pipe means connected to a lower one of the openings of the main conduit means below the plug means and the extension conduit means, the pipe means having spaced apart openings defining an inner surface and an outer surface of a wall along the first axis of the main conduit means, the pipe means adapted to be mounted through the opening in the floor of the building and through the ceiling below the floor;
(f) a non-flammable insert means mounted inside the pipe means and held in place by a retention means, the insert extending from the lower one of the openings in the main conduit through the floor and having spaced apart openings defining an inside diameter along the first axis and having an outside surface of a wall mounted adjacent to the inner surface of the pipe means, wherein a fire in the building is prevented from spreading above the floor through the pipe means mounted through the floor by the insert means which seals off the inner surface of the pipe means from oxygen and by the plug means which releases from the extension conduit means to move into and plug an upper one of the openings of the insert means.

5,183,071
COUNTERBALANCE VALVE
Kazunori Ogawa, Gifu, Japan, assignor to Teijin Seiki Co., Ltd., Osaka, Japan
Filed Dec. 13, 1991, Ser. No. 806,363
Claims priority, application Japan, Dec. 18, 1990, 2-411497
The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.
Int. Cl.[5] F15B *13/04*
U.S. Cl. 137—106 **1 Claim**

1. A counterbalance valve comprising a spool which is divided into two spool pieces at the center in an axial direction thereof, return springs for urging the spool pieces inwardly along the axial direction toward innermost positions, a first passage for introducing an inside pressure in a supply and exhaust passage to an outermost end in the axial direction of one of the spool pieces, a second passage for introducing an inside pressure in another supply and exhaust passage to an outermost end in the axial direction of the other spool piece, a pressure selecting means for selecting higher inside pressure among the inside pressures in the supply and exhaust passages and for introducing the selected pressure to a pressure chamber formed between the spool pieces, and a communication passage means for communicating the supply and exhaust passages with each other when both the spool pieces are moved outwardly in the axial direction from the innermost positions due to fluid in the pressure chamber.

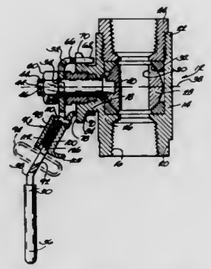


5,183,072
AUTOMATIC SWITCHOVER VALVE
Rudolf Pengler, Weehawken, N.J., assignor to Matheson Gas Products, Inc., Secaucus, N.J.
Filed Oct. 21, 1991, Ser. No. 779,825
Int. Cl.[5] F16K *11/20;* **G05D** *16/06*
U.S. Cl. 137—113 **2 Claims**



1. An automatic switchover valve, comprising:
a main body including first and second regulator valves formed therein, each regulator valve including an inlet port, a diaphragm and poppet valve assembly, and an outlet port, wherein the main body includes internal ducting which couples the regulator valve inlet ports to respective switchover valve inputs for connection to separate sources of gas, and couples the regulator valve outlet ports in common to a single switchover valve output, and wherein said ducting coupled to said switchover valve output comprises a channel formed in said main body between a diaphragm chamber of said second regulator valve, and provides fluid communication therebetween;
means for selectively adjusting the poppet valve of said first regulator valve between a first setting providing a first regulator pressure P_1 and a second setting providing a second regulator pressure P_2 less than P_1;
means for setting said second regulator valve to a reference regulator pressure P_R, wherein $P_1 > P_R > P_2$; and $P_1 - \Delta p = P_R = P_2 + \Delta p$.

5,183,073
HANDLE LOCKING MECHANISM FOR QUARTER TURN VALVES
John L. Roberts, West Milwaukee, Wis., assignor to Milwaukee Valve Company, Inc, Milwaukee, Wis.
Filed Apr. 2, 1992, Ser. No. 862,330
Int. Cl.[5] F16K *35/06*
U.S. Cl. 137—385 **16 Claims**



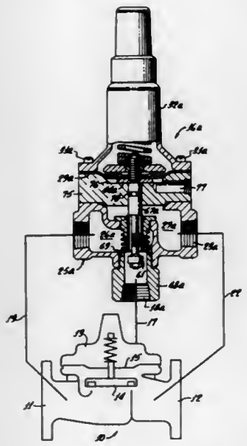
1. A rotatable control device including
a body housing a control means and having an external boss;
a control shaft journalled in said boss for rotation about an axis and having an internal portion connected to said control means and an external portion extending outwardly from said boss;
an operating handle having an inner end portion connected to the external portion of said control shaft, a gripping end portion for rotating said control means between first and second positions and an intermediate portion including an elongated slot;
first and second locking means circumferentially spaced on said body at locations corresponding to the positions of the intermediate portion of said handle when said control means is in the first and second positions, respectively;
a slider member slidably mounted on the intermediate portion of said handle for reciprocative movement between locked and unlocked positions, said slider member having opposed walls which overlay said slot;
interlocking means for cooperating with said first and second locking means, when said handle is in the first and second position, respectively, and said slider member is in the locking position, to restrain rotational movement of said handle; and
a spring disposed in said slot for biasing said slider member toward the locked position irrespective of the orientation of said handle, said spring being covered by and retained in said slot by the opposed walls of said slider member, having a first end bearing against the slider member and having a second end bearing against the intermediate portion of said handle.

5,183,074
PRESSURE-REDUCING VALVE, AND AIRCRAFT FUELING SYSTEM INCORPORATING THE SAME
James R. Reese, Vancouver, Wash., assignor to Cla-Val Co., Costa Mesa, Calif.
Filed Sep. 30, 1991, Ser. No. 769,125
Int. Cl.[5] G05D *16/00;* **F16K** *11/10*
U.S. Cl. 137—488 **22 Claims**

1. A pilot-operated pressure-reducing valve system, which comprises:
(a) a main valve having an inlet side, an outlet side, and means comprising a main-valve diaphragm and cover chamber to create a controlled reduced pressure of the fluid flowing out of said outlet side,
(b) a pilot valve body, said body having an inlet chamber and an outlet chamber separated from each other by wall means having an opening therein,

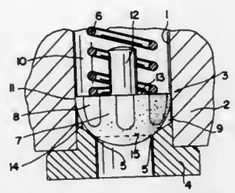
VOL
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(c) a pilot diaphragm mounted on said pilot valve body,
(d) pressure regulating spring means to bias said pilot diaphragm toward said opening,
(e) means to adjust the force of said spring means to vary said reduced pressure,
(f) means to connect said inlet chamber to said inlet side of said main valve,
(g) means to connect said outlet chamber to said outlet side of said main valve,
(h) conduit means to connect said inlet chamber to said cover chamber in said main valve, said conduit means having a relatively large flow area so as to be able to conduct fluid at relatively high flow rates from said inlet chamber to said main-valve cover chamber,
(i) a first valve mounted in said pilot valve body to control the flow of fluid from said inlet chamber through said conduit means to said main-valve cover chamber, said first valve having a relatively large flow area so as to cooperate with said conduit means in effecting a relatively high flow of fluid from said inlet chamber to said main-valve cover chamber,
(j) a second valve mounted in said pilot valve body to control the flow of fluid from said main-valve cover chamber through said conduit means, and through said opening in said wall means, to said outlet chamber, said second valve being capable of moving independently of said first valve, and



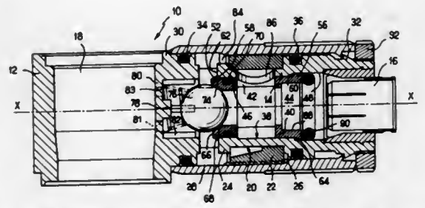
(k) means to effect operation of said first valve and said second valve by said pilot diaphragm, in such manner that when said pilot diaphragm is in a position relatively adjacent said opening said first valve is closed and said second valve is open whereby fluid flows out of said main-valve cover chamber to permit the upstream pressure at said inlet side to effect partial or complete opening of said main valve, and also in such manner that when said pilot diaphragm is in a position relatively remote from said opening said first valve is open and said second valve is closed whereby fluid from said inlet chamber passes through said conduit means to said main valve cover chamber at a rate that can be high so as to effect fast closing of said main valve,
said pilot diaphragm on the side thereof relatively adjacent said opening in said wall means being exposed to a control pressure related to that of fluid that has passed through said main valve.

5,183,075
CHECK VALVE
Günter Stein, Waihengeyerstr. 1, 8882 Lauingen, Fed. Rep. of Germany
Continuation of Ser. No. 314,870, Dec. 12, 1988, abandoned. This application Mar. 28, 1990, Ser. No. 501,395
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1986, 3612393; Aug. 16, 1986, 3627865; Aug. 16, 1986, 3627865
Int. Cl.[5] F16K *15/04*
U.S. Cl. 137—493.6 **15 Claims**



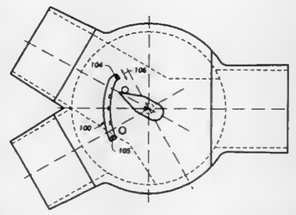
1. A check valve including a valve body with a bore that serves as a flow passage, an inset ring (4) secured to said valve body, said inset ring having a flow passage coaxial with said flow passage in said valve body, said inset including a conical face which forms a conical valve seat along said conical face, a movable valve element which has a spherical surface portion that cooperates with said conical valve seat in a manner such that sealing is achieved, said movable valve element being installed in said valve body in a manner such that said movable valve element is radially guided at its upper end by a radial guidance zone inside said bore which bore extends in a direction of opening of said valve, said movable valve element contains axially aligned recesses in an outer surface portion therein for a medium to flow downstream through said axially aligned recesses away from said valve seat, said axially aligned recesses interconnecting medium flow regions upstream and downstream of the radial guidance zone, and said movable valve element being subjected to a force that acts in a closing direction, said movable valve element (3) being manufactured from a spherical ball, said movable valve element including a spherical surface portion (7) so that there is a radial line-contact of said movable valve element with the bore (1), and said recesses (8, 18) in said movable valve element for the medium flow extend along the spherical surface portion (7) between a zone which seats upon said valve seat (5) and the radial guidance zone (11) whereby fluid flows from said axially aligned recesses into said bore.

5,183,076
UNIDIRECTIONAL FLOW LIMITER
Daniel Guillin, Montsoult, and Michel Nicolas, Neauple Le Chateau, both of France, assignors to Telemecanique, Rueil-Maimaison, France
Filed Sep. 10, 1991, Ser. No. 757,172
Claims priority, application France, Sep. 14, 1990, 90 11412
Int. Cl.[5] F16K *21/02*
U.S. Cl. 137—513.7 **9 Claims**



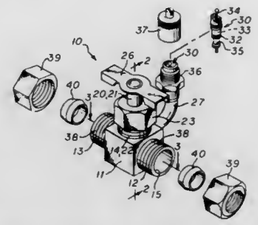
1. In a unidirectional flow limiter, in particular for pneumatic fluid, of the type having a tubular body, the ends of which have connecting means for connection to an installation and an item of equipment of the installation, said tubular body having passing therethrough an axial duct connecting said connecting means and passing through a valve seat which faces in the direction of the axial duct in which a closure ball is accommodated between the seat and an abutment element which is axially spaced from the seat, a by-pass duct connected to the axial duct on respective sides of the valve seat, a throttle ring being mounted rotatably on an external portion of the tubular body to modify the section of the by-pass duct, the improvement wherein the connecting means for connection to the item of equipment has a bore which is perpendicular to the axial duct for the passage of a screw member for fixing the tubular body to the item of equipment, and the seat for the ball is carried by an internal sleeve member secured to a portion of an internal bore in the tubular body, which bore constitutes a part of the axial duct and is larger than the diameter of the ball, said sleeve member being axially introduced into said bore after introduction of said ball.

5,183,077
FLOW CONTROL VALVE
Raymond Keiper, 1317 3rd St., North Catasauqua, Pa. 18032
Filed Dec. 9, 1991, Ser. No. 803,987
Int. Cl.[5] F16K *11/087, 5/10*
U.S. Cl. 137—625.47 **14 Claims**



1. A flow control valve comprising:
A) a body having a hollow, spherical central section, a first fluid conduit fluidically connected to said central section, a second fluid conduit fluidically connected to said central section, a third fluid conduit fluidically connected to said central section adjacent to said second fluid conduit, two stop elements mounted on top of said central section at locations spaced apart from each other;
B) a central body positioned within said central section, said central body being spherical and including a first fluid port located adjacent to said first fluid conduit said first fluid port being prolate and having two arcuate ends connected together by linear sections, a second fluid port spaced from said first fluid port, and fluid passage means fluidically connecting said first and second fluid ports; and
C) central body moving means which includes a post fixedly attached to said central body and extending out of said central section between said two stop elements, a control knob fixed to said post and having a portion that contacts one stop element when said central body is in a first orientation with said first fluid port in fluid communication with said first fluid conduit and said second fluid port in fluid communication with said second fluid port and contacts said second stop element when said central body is in a second orientation with said first fluid port in fluid communication with said first fluid conduit and said second fluid port in fluid communication with said third fluid port, said fluid ports and said fluid conduits being equal in cross section and being congruent when said central body is in either said first or said second orientation.

5,183,078
COMBINATION SHUT-OFF AND TEST-INJECTION VALVE
Harold E. Sorrell, 11311 Scottsdale, Stafford, Tex. 77477
Filed Jun. 24, 1991, Ser. No. 719,992
Int. Cl.[5] F16K *31/50*
U.S. Cl. 137—883 **11 Claims**



10. A combination shut-off and test-injection valve comprising;
a generally rectangular valve body having an externally threaded inlet end and outlet end configured to receive a compression nut and compression pinch sleeve for sealable connection to tubular fluid lines or conduit, a main fluid flow passageway extending from end to end, a valve chamber in fluid communication with said main fluid flow passageway and perpendicular thereto, and an outwardly extending tubular extension adapted at its outer end for connection to diagnostic and injection devices and having an interior fluid passageway in fluid communication with said body main fluid flow passageway at a location laterally spaced from said valve chamber to provide a test-injection passageway,
shut-off valve means in said valve chamber movable between an open position allowing fluid flow through said main fluid flow passageway from either end and a closed position closing off fluid flow through said main fluid flow passageway,
test-injection valve means in said tubular extension in fluid communication with said body main fluid flow passageway adjacent said shut-off valve means and having a spring biased plunger mechanism movable between a normally closed position preventing communication between said main fluid flow passageway and the exterior of said valve body and an open position allowing fluid communication between said main fluid flow passageway and the exterior of said body,
said shut-off valve means and said test-injection valve means being independently operable whereby said shut-off valve means may be operated to open or close fluid flow through said main fluid flow passageway and said test-injection valve means may be connected to test equipment and injection devices for diagnosing and cleaning the fluid system and components in the fluid line or conduit in which said valve body is connected.

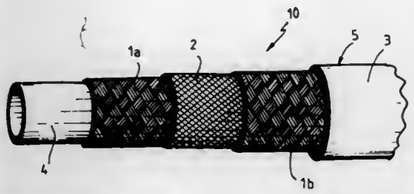
5,183,079
HEAT AND FIRE RESISTANT PROTECTIVE COVERING FOR HOSES, CABLES AND THE LIKE
Philippe Blin, Monts, France, assignor to Hutchinson S.A., Paris, France
Filed Jul. 3, 1990, Ser. No. 548,142
Claims priority, application France, Jul. 5, 1989, 89 09034
Int. Cl.[5] F16L *11/12, 59/14*
U.S. Cl. 138—110 **4 Claims**

1. In combination with a hose of a covering thereon serving as a protective element capable of maintaining operation of the hose when exposed to high temperature of at least 850° C. for at least several minutes and while providing little change to the dynamic stiffness thereof, said covering comprising:

VOL
1147
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1993
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a first inner layer applied around and against said hose, said first inner layer being of braided construction and made of ceramic material and being so structured as to imprison air in its interior;

a first intermediate layer surrounding said inner layer and formed of a film of an air impermeable fire-resistant silicone elastomer material forming a barrier for the air imprisoned within said first inner braided layer of ceramic material;



a second intermediate layer applied against said first intermediate layer, on the outer surface thereof, said second intermediate layer also being of braided construction and also made of ceramic material and being so structured as to imprison air in its interior; and

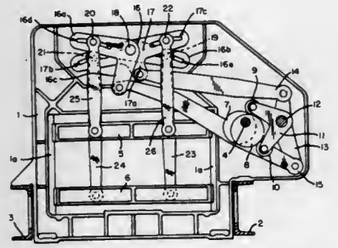
an outer layer which covers said second intermediate layer, said outer layer being of a film of an air impermeable fire-resistant silicone elastomer material so as to form a barrier for the air imprisoned within said second intermediate braided layer of ceramic material.

5,183,080

SHED FORMING DEVICE FOR GRIFFE FRAMES

Dario Bassi, Chaponnay, and Joseph Palau, Duingt, both of France, assignors to Etablissements Staubli-Verdol, Chassieu, France

Filed Nov. 25, 1991, Ser. No. 797,078
Claims priority, application France, Nov. 27, 1990, 90 15140
Int. Cl.[5] D03C *3/36*
U.S. Cl. 139—55.1 **4 Claims**



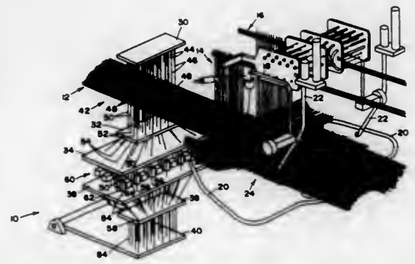
1. In a shed-forming device for a weaving loom which includes a chassis having opposite sides and upper and lower griffe frames having opposite sides, and a control assembly for controlling the reciprocal movement of the upper and lower griffe frames relative to the chassis, the control assembly comprising, a first rotatable shaft, a pair of cams mounted to said first shaft, a second shaft spaced from said first shaft, an offset lever mounted on said second shaft, said offset lever having first and second arms operably engaged with said cams, a balance beam mounted to said second shaft and having opposite ends, first and second connecting rods having opposite ends, one of said ends of said first and second connecting rods being connected to opposite ends of said balance beam, a first rocking lever means having a pair of spaced and generally oppositely oriented arm portions, a second rocking lever means disposed between said arm portions of said first rocking lever means and having generally oppositely oriented arm portions, said first and second rocking levers being pivotally mounted about a first pin means, the other of said ends of said first connecting rod being connected to said first rocking lever means and the other of said ends of said second connecting rod being connected to said second rocking lever means, and articulating lever means for connecting said first and second rocking levers to one side of the upper and lower griffe frames.

5,183,081

WEAVE SHED FORMATION APPARATUS FOR END REWEAVING TYPE JOINING APPARATUS

Heinz Kuster, and Stephan Kuster, both of Sandpoint, Id., assignors to Asten Group, Inc., Charleston, S.C.

Filed Feb. 7, 1992, Ser. No. 832,350
Int. Cl.[5] D03C *3/20, 13/00*
U.S. Cl. 139—59 **6 Claims**



1. A shed formation apparatus comprised of:

a plurality of movable heddles;

a plurality of heddle selectors which are equal in number to the heddles, each selector is connected to a respective heddle;

a plurality of controllers which are equal in number to the heddles, each controller having a guide, which receives a respective heddle selector, and stopper mechanism that retards the movement of the respective selector within the guide;

a plurality of control leads which are equal in number to the selectors, each lead is attached to a respective selector and all of the control leads are terminated on a common plane; and,

repeat pattern output means for controlling movement of the common plane and for selectively activating the stopper mechanisms in accordance with the repeat pattern.

5,183,082

FRAME STAVE FOR A HEDDLE FRAME

Hans Baumann, Horgen, Switzerland, assignor to Grob & Co. Aktiengesellschaft, Horgen, Switzerland

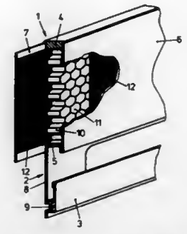
Filed Nov. 26, 1991, Ser. No. 798,109
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1991, 4101512
Int. Cl.[5] D03C *9/06*
U.S. Cl. 139—92 **7 Claims**

1. A frame stave for a heddle frame assembly, including a rectangular hollow body having two broad sides and two narrow sides, and including a heddle carrying rod extending at a distance from and parallel to one of said narrow sides, which heddle carrying rod is rigidly mounted to said hollow body via a supporting member;

comprising two thin walled sheet metal members which form said broad sides of the hollow body;

a massive longitudinal bar of a substantially square cross section forming one of said narrow sides and welded inbetween said two thin walled sheet metal members;

a multiply angled profile bar forming the supporting member for said heddle carrying rod of which a leg forming the other of said narrow sides is also welded inbetween said two thin walled sheet metal members, which profile bar is of a sheet metal which is several times thicker than the sheet metal of said thin walled sheet metal members;



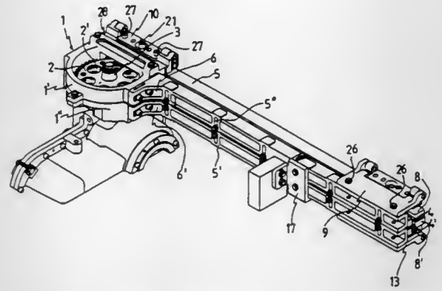
and said heddle carrying rod being integrally structured and welded to a further leg of said profile bar.

5,183,083

GRIPPER GUIDE FOR DOUBLE-GRIPPER WEAVING MACHINES

John Debaes, Wendnine, Belgium, assignor to N.V. Michel Van de Wiele, Kortrijk-Marke, Belgium

Filed Oct. 25, 1991, Ser. No. 782,648
Claims priority, application Belgium, Oct. 26, 1990, 09001026
Int. Cl.[5] D03D *47/18*
U.S. Cl. 139—449 **18 Claims**



1. Gripper guide for gripper weaving machines, comprising upper and lower drive wheels disposed at one side of first and second gripper bars, first and second guide strips extending along one side of each of the gripper bars, in a direction of motion of said gripper bars, and wherein at an opposite side of each of the gripper bars across from the drive wheels, first and second rollers are disposed such that the gripper bars are held between the rollers and the drive wheels, and parallel to the guide strips first and second slide strips are disposed such that the gripper bars can move to and fro between the guide strips and the slide strips while moving slidingly against the slide strips.

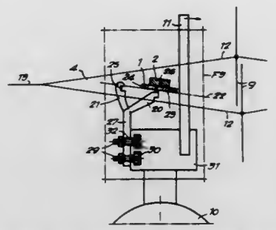
5,183,084

RAPIER GUIDE WITH TWO SERIES OF GUIDE ELEMENTS

Moeneclaey, Denis, Oostnieuwkerke-Staden, Belgium, assignor to Picanol N.V., naamloze vennootschap, Belgium

Filed Jul. 6, 1990, Ser. No. 549,083
Claims priority, application Belgium, Jul. 6, 1989, 08900738
Int. Cl.[5] D03D *47/00*
U.S. Cl. 139—449 **16 Claims**

1. A gripper weaving machine including rapiers, a shed having ends, a sley, and a reed, and comprising means including a rapier guide for guiding the rapiers in the shed, the rapier guide including means comprising two series of guide elements disposed along the shed for guiding the rapiers, means for situating a first of said series of guide elements closest to the reed to guide a side of the rapier situated closest to the reed, means for situating a second of said series of guide elements furthest from the reed to guide a side of the rapier situated



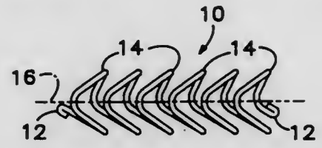
furthest from the reed, means for presenting each of said two series in the shed as the sley is moved backward, and means for situating at least every portion of the guide elements of the first series which are situated closest to ends of the shed underneath a plane formed by the undersides of the rapiers, in all positions of the sley.

5,183,085

METHOD AND APPARATUS FOR COMPRESSING A STENT PRIOR TO INSERTION

Hans Timmermans, 1100 SW. Curry, Apt. H, Portland, Oreg. 97201

Filed Sep. 27, 1991, Ser. No. 767,014
Int. Cl.[5] B21F *45/00*
U.S. Cl. 140—89 **10 Claims**



1. A method for compressing a helically coiled stent having an elongate axis that extends centrally through the coil, said method comprising:

(a) folding the coils of the stent about a first plane that contains the elongate axis of the stent;

(b) folding the coils of the stent about a second plane that contains the elongate axis and is normal to said first plane; and

(c) maintaining separation between the individual coils in the stent while performing said folding.

5,183,086

ENCAPSULATION METHOD FOR THE CONTAINMENT OF WASTE AND SALVAGEABLE PRODUCTS

David E. Fanta, Westlake, La.; Johnnie L. Hamby, Manvel, and Hart E. Schleicher, Houston, both of Tex., assignors to Allwaste Services, Inc., Houston, Tex.

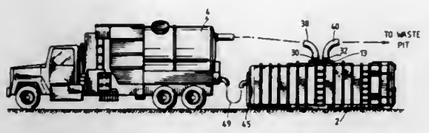
Continuation of Ser. No. 573,453, Aug. 27, 1990, abandoned.
This application Mar. 30, 1992, Ser. No. 863,499
Int. Cl.[5] B65B *1/12*
U.S. Cl. 141—10 **4 Claims**

1. A method for encapsulating waste materials, comprising the steps of:

(a) positioning a substantially collapsed polyethylene liner having an open neck portion, into the interior of an en-

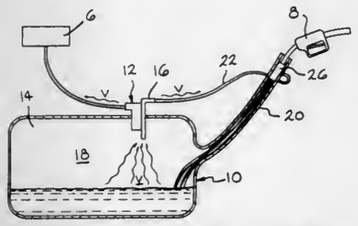
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closed rigid container having an open neck portion and at least one openable side wall;
(b) extending the liner neck portion through the container neck portion and securing it thereto;
(c) positioning a first conduit and a second conduit through the container neck portion and into the liner;
(d) creating a negative pressure air flow between the container and the liner whereby the liner is inflated to fill the container and fit snugly in the interior of the container;



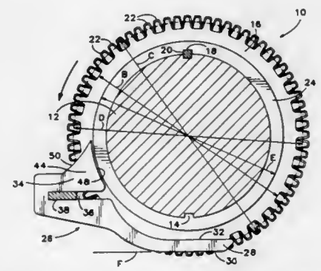
(e) creating a negative pressure air flow in the first conduit such that waste materials are drawn into the liner through the second conduit;
(f) removing the liner neck portion from the container neck portion;
(g) closing and sealing the liner neck portion; and
(h) at least one wall opening the openable side of the container and slidably removing the liner therefrom.

5,183,087
REFUELING VAPOR RECOVERY SYSTEM
John A. Aubel, Chandler, Ariz.; Jeffrey E. Devall, South Bend, Ind.; David R. Gimby, Livonia, and Philip A. Shipp, Rochester, both of Mich., assignors to Borg-Warner Automotive Electronic & Mechanical Systems Corporation, Sterling Heights, Mich.
Filed Jun. 10, 1991, Ser. No. 713,402
Int. Cl.[5] F16K *24/04*
U.S. Cl. 141—59 **9 Claims**



1. An apparatus for facilitating the control of vapor flow within the fuel system of a motor vehicle, such fuel system including a tank member defining a fuel storage chamber and a fill neck member engaged with said tank member and in communication with said fuel storage chamber, said apparatus comprising, in combination:
a vapor pressure relief valve engaged with the tank member and in communication with the fuel storage chamber, said relief valve including an outlet valve for venting fuel vapor from the fuel storage chamber, said outlet valve being normally biased to the closed position and a pilot valve for actuating said outlet valve in communication with said outlet valve, said pilot valve being normally biased in the open position;
a vent tube engaged with the tank member such that one end of said vent tube extends into the fuel storage chamber to a position equivalent to the maximum desired fill level of the fuel storage chamber, the opposed end of said vent tube being engaged with the fill neck member, whereby said vent tube provides a fuel vapor flow path between the fuel storage chamber and the fill neck;
and a cartridge member positioned in the fill neck, at a point proximate the engagement of said vent line with the fill neck, wherein said cartridge member engages a fuel nozzle upon insertion of the fuel nozzle into the fill neck to prevent fuel vapor from releasing to the atmosphere during the act of refueling;
whereby said cartridge member, said vent tube, and said vapor pressure relief valve operate in coordination during the act of refueling the tank to prevent the release of fuel vapor to the atmosphere and relieve the buildup of fuel vapor within the fuel system.

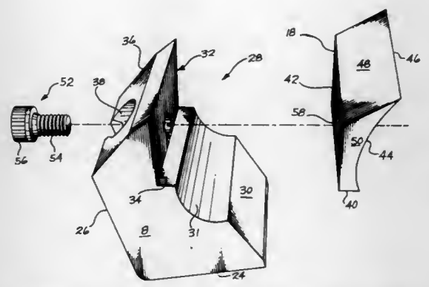
5,183,088
STRIPPER FOR WOOD INCISOR
Lloyd H. Toberg, 4339 SE. 87th, Portland, Oreg. 97266
Filed May 4, 1992, Ser. No. 877,771
Int. Cl.[5] B27M *1/02*
U.S. Cl. 144—2 J **5 Claims**



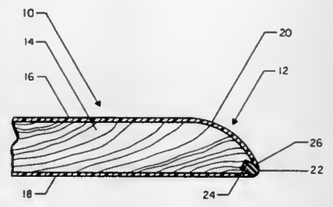
1. A wood incisor for forming a plurality of spaced-apart perforations in the surface of a piece of lumber preparatory to treatment of the lumber with a preservative, comprising:
(a) a drum that is rotatable about a central longitudinal axis;
(b) a plurality of annular incisor rings mounted on said drum for rotation therewith;
(c) a plurality of annual spacer rings, having an outside diameter, mounted on said drum for rotation therewith, said incisor rings being interposed between said incisor rings;
(d) said incisor rings including a series of spaced-apart teeth that project radially outward from the periphery thereof, said teeth having a predetermined depth extending between a base diameter, which is larger than the outside diameter of said spacer ring, and a tip diameter; and
(e) a plurality of hold-down bars, that do not rotate with said drum, one of said hold-down bars being located radially outward from each of said spacer rings, each hold-down bar having a planar outer surface that is substantially parallel with the tangent of a circular cylinder that is coaxial with said central longitudinal axis and has a diameter that is intermediate said base diameter and said tip diameter.

5,183,089
CHIPPER KNIFE ASSEMBLY
Norman E. Norlander, Puyallup, and Ralph A. Thompson, Auburn, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.
Filed Jan. 28, 1992, Ser. No. 827,127
Int. Cl.[5] B26D *1/12*
U.S. Cl. 144—231 **1 Claim**

1. A knife assembly for a chipping canter or similar device which comprises a removable knife holder means, a replaceable chipper knife means seated on said holder, a chipper head segment having at least one knife holder seat located on its periphery;
the knife holder having basal and rear surfaces angularly disposed with respect to each other for engaging the holder seat, a front surface having three portions including a hold down surface, a concave arcuately shaped portion, and a portion for receiving and holding in place the replaceable knife means, said last portion having an opening therein to accommodate a portion of the holding means;
the replaceable chipper knife having basal and rear surfaces angularly disposed with respect to each other for engaging the receiving and holding portion in the knife holder, a front surface with a concave arcuate orientation terminating at a top knife edge and terminating along the bottom edge substantially in line with the arcuately shaped portion on the front surface of the knife holder, and a top surface extending rearwardly from the knife edge to meet the top edge of the rear surface;
the replaceable chipper knife holding means further including a bolting means extending through the top portion of the knife holder to engage a threaded portion within the rear surface of the knife, said bolting means being seated, when tightened, within the upper portion of the rear surface.

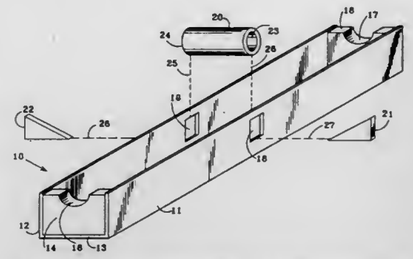


5,183,090
PANEL EDGE CONSTRUCTION
Duane G. McClung, Kalamazoo, and Thomas C. Mueller, Grandville, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.
Division of Ser. No. 584,130, Sep. 18, 1990, Pat. No. 5,085,027. This application Nov. 12, 1991, Ser. No. 791,082
Int. Cl.[5] B27D *1/00*
U.S. Cl. 144—350 **9 Claims**



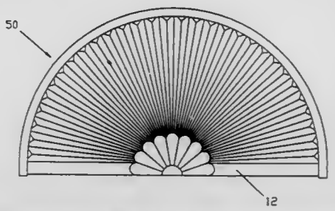
1. A method of forming a laminated panel having a generally rounded edge terminating in a very small radius, said method comprising the steps of forming a core with a surface and an adjacent edge, forming a channel in said core edge in alignment with the intended position of said very small radius of the generally rounded edge, placing a plug in said channel, bonding a thin veneer layer to said surface of said core with said layer having an edge terminating at said plug, and then machining said very small radius on said plug to form a smooth outer surface between said veneer layer and said plug.

5,183,091
WOODEN POLE BENDER
Paul J. Nobbe, 11177 U.S. Hwy. 52, Brookville, Ind. 47012
Filed May 1, 1992, Ser. No. 877,643
Int. Cl.[5] B27H *1/00*
U.S. Cl. 144—360 **17 Claims**



1. A method of permanently bending a green wooden pole to a final configuration comprising the steps of:
positioning a green wooden pole in a holding fixture;
locating the opposite ends of said pole at predetermined elevations;
forcing the center of said pole to an elevation past said elevations to bend said pole to the desired bent configuration;
heating said pole while bent to simultaneously kill living things foreign to but located in said pole while permanently setting said bent configuration in said pole; and,
removing said pole from said holding fixture.

5,183,092
CORDING DESIGNS FOR OPERABLE ARCH WINDOW BLIND
Ralph Jelic, Valencia, Pa., assignor to Verosol USA Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 683,866, Apr. 11, 1991. This application Sep. 18, 1991, Ser. No. 761,697
Int. Cl.[5] E06B *9/06*
U.S. Cl. 160—84.1 **6 Claims**



1. In a window blind that has an elongated traveling bar and an elongated fixed bar, an arcuately collapsible pleated blind panel, one side of said panel being attached to said traveling bar and another side of said panel being attached to said fixed bar, a pivot means connected to the bottom end of each said bar so that said traveling bar may move angularly relative to said fixed bar, and a track for carrying said traveling bar, said track having a channel running therethrough, a system for effectuating the arcuate movement of said traveling bar through said track comprising:
a flat, elongated position slide having a cord tie off hole at one end and an elongated slot at the other;
a means for moveably attaching said position slide to a mounting face of said traveling bar so that the cooperation of said elongated slot and said fixing means allows said position slide to move back and forth in a predetermined

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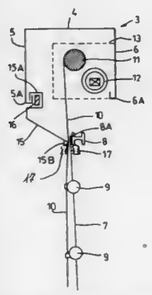
amount across said mounting face, said position slide being placed at an end of said traveling bar opposite from said pivot means and being oriented with said cord tie off hole facing away from said pivot means; and

an elongated cord connected to said position slide at said cord tie off hole and having a knot at some distance from said position slide, said cord and said knot traveling within said track channel.

5,183,093
REMOVABLE SEALING DEVICE FOR A RAISABLE-CURTAIN INDUSTRIAL DOOR

Bernard Kraeutler, Dunieres, France, assignor to Nergeco (société anonyme), Dunieres, France

Filed Mar. 4, 1992, Ser. No. 845,613
Claims priority, application France, Mar. 5, 1991, 91 02587
Int. Cl.[5] E06B *9/06*
U.S. Cl. 160—84.1 **9 Claims**



1. A sealing device for a raisable-curtain industrial door, the door comprising a curtain and a rigid frame, the curtain being raised and gathered at a top of the door when in an open condition, and hanging down from the top of the door, when in a closed condition, said frame comprising two vertical lateral uprights (**1,2**) interconnected at their top ends by a downwardly-open channel-section cross-member (**3**) having a web (**4**) and two flanges (**5,6**) extending downwards to respective bottom edges, and said cross-member housing mechanical members for operating the curtain, and said curtain having a top portion and being capable of being lowered or raised between the uprights, wherein the top portion of the curtain is situated at a certain distance below the web of the cross-member, and a horizontal cover member (**15;35**) having parallel longitudinal top and bottom edges removably fastened at said top edge to a bottom edge of one of the flanges of the cross-member, and oriented such that the bottom edge (**15B;22;36**) of the cover member bears against the top portion of the curtain when in the closed condition to provide a continuous horizontal closure between the cross-member and the curtain when said curtain is in the closed condition to prevent air flow through the cross-member, and to enable ready access to the mechanical members upon removal of the cover member.

5,183,094
SUN SHIELD ASSEMBLY

Mani Montasham, and Hamid Gharagozloo, both of 7896 SW. 106 Cir., Miami, Fla. 33173

Filed Dec. 13, 1991, Ser. No. 808,172
Int. Cl.[5] B60J *3/00*
U.S. Cl. 160—370.2 **5 Claims**

1. To be sued to protect the interior of a vehicle from direct sunlight, a sun shield assembly comprising:

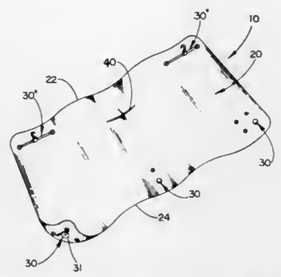
a flexible, opaque material panel,

said panel including an upper portion and a lower portion, and being structured and disposed to substantially cover an interior window surface of the vehicle,

upper attachment means disposed at opposite upper corners of said panel,

said upper attachment means including a pair of hook and bar assemblies secured to said panel in substantially spaced apart relation from one another, each of said hook and bar assemblies being structured and disposed to hook onto a sun visor assembly of the vehicle,

each of said hook and bar assemblies including a rigid bar secured at opposite distal ends thereof to said panel, each of said hook and bar assemblies further including a swivelable hook adapted to supportably hook onto the sun visor assembly of the vehicle,



each of said swivelable hooks being hingedly secured to a sliding cylinder, said sliding cylinder being movably positioned over said rigid bar for movement between said opposite distal ends of said bar such that said and hook and bar assembly is adjustably securable in vehicles of varying sizes and configurations,

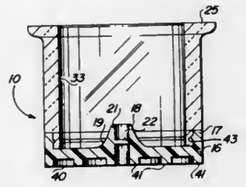
lower attachment means disposed along said lower portion of said panel, said lower attachment means being structured and disposed to be affixed to the inner window surface of the vehicle, and

said lower attachment means including a plurality of adjustment positions such that said panel may be adjusted to fit over windows of a variety of sizes.

5,183,095
MEANS FOR PRODUCING HIGH PRECISION CASTINGS

Michael R. Sullivan, 1620 East La Donna La., Tempe, Ariz. 85283

Filed Nov. 30, 1990, Ser. No. 621,280
Int. Cl.[5] B29C *33/52, 39/26*
U.S. Cl. 164—34 **10 Claims**



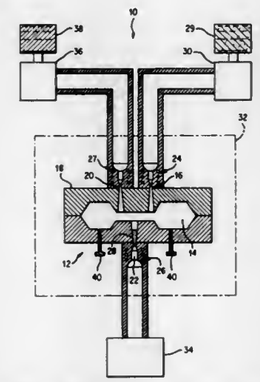
1. An assembly for producing high-precision molds for use in the preparation of lost wax castings, said assembly comprising: a casting ring; a preselected wax form, and a base member, said casting ring and said base member each being formed of a transparent resilient plastic material, said base member having form support means disposed therein for receiving and holding said preselected wax form thereupon, said casting ring having a body portion, a depending flange portion integrally formed with said body portion and inset therefrom to define a planar

surface therebetween, and a peripheral groove defined in said flange portion in spaced generally parallel relationship to said planar surface, said body portion having an upper edge and an upper flange portion integrally formed with said upper edge and extending outwardly therefrom, said upper flange having a plurality of pin receiving means defined therein for securing another assembly thereto, said base member receiving and securing a portion of said casting ring therein in sealed engagement therewith to form a vessel therewith, said vessel being responsive to absorb the exothermic expansion of an investment solution disposed in said vessel while said investment solution is curing about said preselected form.

5,183,096
METHOD AND APPARATUS FOR SINGLE DIE COMPOSITE PRODUCTION

Arnold J. Cook, 372 N. Craig St., Pittsburgh, Pa. 15213

Filed Mar. 15, 1990, Ser. No. 493,933
Int. Cl.[5] B22D *19/14*
U.S. Cl. 164—97 **18 Claims**



1. A method for producing a metal matrix composite within a single die cavity comprising the steps of:

forcing a reinforcement material mixed with a liquid binder into the die cavity from a first port extending into the die cavity;

removing the binder such that the reinforcement material having interstices disposed about remains in the die cavity;

forcing liquid metal into the die cavity from a second port extending into the die cavity such that the metal infiltrates the interstices about the reinforcement material;

solidifying the liquid metal; and

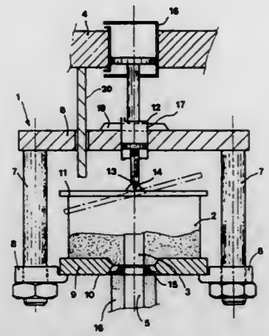
removing the infiltrated composite material from the die cavity.

5,183,097
EQUIPMENT INSTALLATION FOR POSITIONING AND CLAMPING FOUNDRY MOLDS

Daniel Boudot, Saint-Remy, France, assignor to Pont-A-Mousson S.A., Nancy, France

Filed Aug. 27, 1991, Ser. No. 750,350
Claims priority, application France, Aug. 27, 1990, 90 10799
Int. Cl.[5] B22D *18/04*
U.S. Cl. 164—306 **7 Claims**

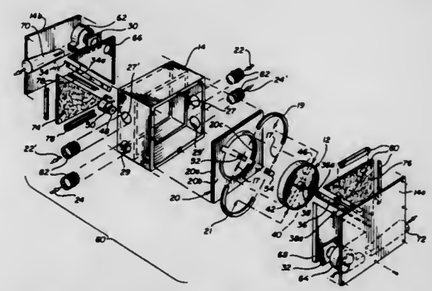
1. A dismountable positioning and clamping equipment installation for foundry molds (**2**) designed to implement the bottom casting of metal alloy at a casting station proximate to a metal alloy supply ladle, said installation comprising: at least one mold-support frame (**1**), a sand mold having a melt passage (**3**) opening facing downwardly, a mechanism (**4**) for side-travel transfer of the frame, at least one substantially vertical suspension jack (**18**) mounted to the transfer mechanism, and at least one substantially vertical clamping jack (**12**) mounted to the frame, the mold being adapted to be positioned over a casting spout (**16**) of a fusion apparatus, and the frame comprising rotatably displaceable tappets (**8**) and at least one mold support plate (**9**), support surfaces of the tappets and a lower surface of the mold support plate lying in a single horizontal plane.



5,183,098
AIR TO AIR HEAT RECOVERY VENTILATOR

Catherine J. Chagnot, Athens, Ohio, assignor to Stirling Technology, Inc., Athens, Ohio

Continuation-in-part of Ser. No. 395,044, Aug. 17, 1989, Pat. No. 5,069,272. This application Mar. 7, 1991, Ser. No. 665,976
The portion of the term of this patent subsequent to Dec. 3, 2008, has been disclaimed.
Int. Cl.[5] F28D *19/04*
U.S. Cl. 165—8 **34 Claims**



1. A heat recovery ventilator for ventilating rooms and buildings with minimum loss of heating or cooling, said heat recovery ventilator comprising:

a housing having first and second sections adapted to convey separate first and second streams of air, said housing further comprising a peripheral baffle secured to the inside of said housing, said peripheral baffle defining an aperture;

a heat exchanger disposed in said aperture, mounted for rotation within said aperture;

means for rotating said heat exchanger;

one or more seals communicating between said peripheral baffle and said heat exchanger, at least one of said one or more seals comprising a flexible seal, wherein said flexible seal is disposed in a groove in said peripheral baffle and extends from said groove into said aperture such that said flexible seal is disposed at least in part in said aperture around said heat exchanger; and

VOL
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means for retaining said flexible seal in tension around said heat exchanger such that said flexible seal is retained in tension around the periphery of said heat exchanger;

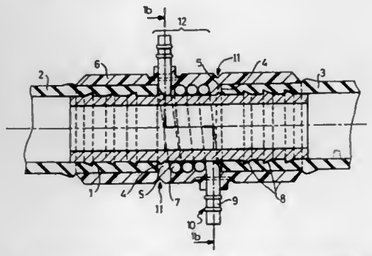
whereby said flexible seal is place in tension and maintains a substantially air-tight seal between said heat exchanger and said peripheral baffle.

5,183,099

MOTOR VEHICLE WINDSHIELD WASHER SYSTEM

Jean-Pierre Bechu, Courbevoie, France, assignor to Caoutchouc Manufacture et Plastiques S.A., Versailles, France

Filed Feb. 28, 1991, Ser. No. 662,288
Claims priority, application France, Feb. 28, 1990, 90 02613
Int. Cl.[5] F28F *1/12*; B05B *1/10*
U.S. Cl. 165—41 **18 Claims**



1. A windshield washer system for a motor vehicle having an internal combustion engine with an engine coolant system for cooling the engine and for directing heated fluid to a heat exchanger, said coolant system having a plurality of coolant hoses and at least one connection device for connecting at least two of said coolant hoses, said windshield washer system comprising a hose arrangement for conducting windshield washer fluid to a windshield, said windshield washer system comprising:

said washer fluid hose arrangement being configured to interface with said coolant system at least at one of said at least one connection device;

said washer fluid hose arrangement comprising at least one heat exchanger coil for transferring heat from said coolant system to said washer fluid hose arrangement;

said coolant system comprising at least a first coolant hose end and a second coolant hose end;

at least one of said at least one connection device comprising an internal tube connecting at least said first coolant hose end and said second coolant hose end;

at least one of said at least one connection device comprising an external envelope disposed about said first coolant hose end, said second coolant hose end and said internal tube and over at least a substantial portion of each of said first coolant hose end and said second coolant hose end;

said at least one heat exchanger coil being disposed around said internal tube and being disposed adjacent said internal tube along a substantial length of said at least one heat exchanger coil;

a substantial portion of said at least one heat exchanger coil being substantially embedded within said external envelope;

said first coolant hose end and said second coolant hose end being held substantially within said external envelope;

said at least one heat exchanger coil comprising at least one coil body, each said at least one coil body being in the form of a spiral;

said external envelope having a central section between said first coolant hose end and said second coolant hose end;

said central section of said external envelope contacting said internal tube over a large surface area of said internal tube; and

said at least one coil body being completely embedded within said external envelope such that said external envelope is disposed substantially completely around said at least one coil body.

13. A method of making a windshield washer system hose connector for connecting sections of hose in an engine cooling system for a motor vehicle having a windshield washer system, which windshield washer system comprises an arrangement of windshield washer fluid hoses for providing windshield washer fluid to a windshield, the washer fluid hose arrangement being configured to interface with the coolant system at least at the hose connector, the washer fluid hose arrangement comprising at least one heat exchanger coil for transferring heat from the coolant system to the washer fluid hose arrangement, the coolant system comprising at least a first coolant hose end and a second coolant hose end, the hose connector comprising:

an internal tube having a first end and a second end, the internal tube connecting at least the first coolant hose end and the second coolant hose end;

an external envelope disposed about the first coolant hose end, the second coolant hose end and the internal tube;

the at least one heat exchanger coil being disposed around the internal tube and being disposed adjacent the internal tube along a substantial length of the at least one heat exchanger coil; and

a substantial portion of the at least one heat exchanger coil being substantially embedded within the external envelope;

said method of making the hose connector comprising the steps of:

disposing the at least one heat exchanger coil around the internal tube and adjacent the internal tube along a substantial length of the at least one heat exchanger coil;

mounting the first coolant hose end on the first end of the internal tube;

mounting the second coolant hose end on the second end of the internal tube;

the at least one heat exchanger coil being disposed between the first coolant hose end and the second coolant hose end;

placing the first coolant hose end, the second coolant hose end, the internal tube and at least a substantial portion of the at least one heat exchanger coil in a mold;

injecting a plastic material into the mold such that the plastic material flows:

between the turns of the at least one heat exchanger coil;

over a substantial portion of the at least one heat exchanger coil;

over at least a substantial portion of the first coolant hose end;

over at least a substantial portion of the second coolant hose end; and

about the internal tube; and

hardening the plastic material in the mold to hold the at least one heat exchanger coil, the first coolant hose end, the second coolant hose end and the internal tube substantially within the external envelope.

5,183,100

SYSTEM FOR EFFICIENTLY EXCHANGING HEAT OR COOLING GROUND WATER IN A DEEP WELL

James E. Harrell, Jr., P.O. Box 235, Wayne, Pa. 19087

Filed Feb. 14, 1991, Ser. No. 655,133
Int. Cl.[5] F24J *3/08*
U.S. Cl. 165—45 **17 Claims**

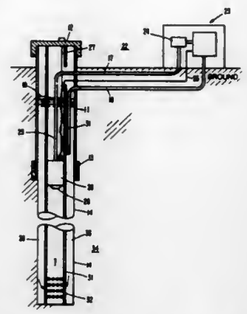
1. A ground water heat transfer system for a low cost high efficiency heat pump, comprising:

a deep well substantially filled with water having a wet open ground wall extending over the major portion of the well depth,

a concentric insulating sleeve extending from the bottom of said deep well to a distance above the water level positioned in the center of said water filled deep well for dividing the water in the well into two areas,

said insulating sleeve defining an open annular water path in the space between the outside of said insulating sleeve and said ground wall,

a water pump suspended in the top of said well having inlet means extending below said water level in said insulating sleeve, and



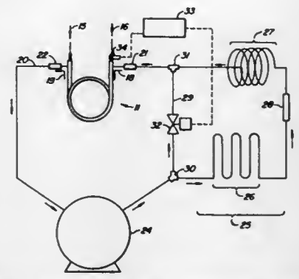
a return pipe connected to said water pump and having an open return outlet for discharging the water near the pump level in the top of the well in the space between said insulating sleeve and the ground wall surface of said deep well, whereby water returned to said space flows to the bottom of said deep well and into the bottom of said insulating sleeve so that the dynamic lift head of said water pump is negligible.

5,183,101

CIRCULATING CHILLER FOR ELECTRIFIED SOLUTIONS

William A. Penaluna, Pinole, and Charles W. Ragsdale, Concord, both of Calif., assignors to Bio-Rad Laboratories, Inc., Hercules, Calif.

Filed May 21, 1991, Ser. No. 703,445
Int. Cl.[5] F28F *21/00*; F25D *17/02*
U.S. Cl. 165—47 **9 Claims**



1. Apparatus for cooling an electrified buffer solution, comprising:

a shell-and-tube heat exchanger having tube-side and shell-side flow passages separated by corrosion-resistant heat-transfer tube material;

buffer circulating means for circulating said electrified buffer solution through said tube-side flow passage;

coolant circulating means for circulating coolant through said shell-side flow passage;

chilling means for chilling coolant thus being circulated, after its exit from said heat exchanger and prior to its reentry;

transfer tubing connecting said shell-side flow passage with said coolant circulating means and said chilling means; and

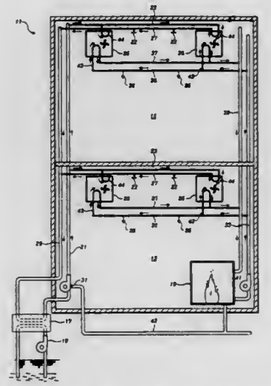
non-electrically-conductive couplings in said transfer tubing electrically isolating said heat exchanger from said coolant circulating means and said chilling means.

5,183,102

HEATING AND COOLING SYSTEM

Steven J. Clark, Belgrade, Mont., assignor to The Montana Power Company, Butte, Mont., a part interest

Filed Nov. 15, 1991, Ser. No. 792,863
Int. Cl.[5] F25B *29/00*; F24F *3/08*; A62C *35/58*
U.S. Cl. 165—48.1 **22 Claims**



1. A system for heating and cooling a building, said building having a first piping system that forms a fire sprinkler piping system and a second piping system forming a domestic hot-water piping system, said system for heating and cooling comprising:

water-cooling means for supplying and maintaining water in said first piping system at a first temperature;

domestic water-heating means for supplying water to said second piping system and for exclusively maintaining water in said second piping system at a second temperature; and

a plurality of fan-coil assemblies located throughout said building, said fan-coil assemblies able to access said water at said first temperature from said first piping system and also able to access said water at said second temperature from said second piping system, wherein each of said fan-coil assemblies includes air-circulating means and a first coil, said fan-coil assembly circulating air about said first coil, thereby transferring heat from the water in said first coil to the air if said first coil is accessing said water at said second temperature, and transferring heat from the air to the water in said first coil if said first coil is accessing said water at said first temperature.

5,183,103

HEAT EXCHANGER

Toshinori Tokutake, Oyamashi, Japan, assignor to Showa Aluminum Kabushiki Kaisha, Japan

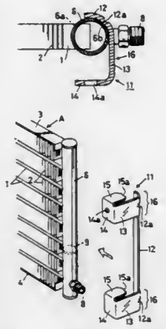
Filed Oct. 28, 1991, Ser. No. 782,984
Claims priority, application Japan, Oct. 31, 1990, 2-295709
Int. Cl.[5] F28F *9/00*
U.S. Cl. 165—167 **11 Claims**

1. A heat exchanger comprising: a plurality of flat tubes; a pair of hollow headers connected to opposite ends of each flat tube in fluid communication with each tube; at least one fastener secured to a header; said fastener comprising a pair of

VOL 1147 ISS 1 FEB 2 1993 UMI

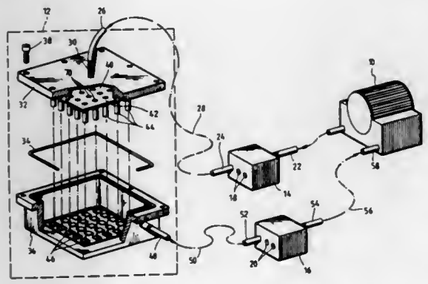
embracing portions capable of resiliently engaging the exterior of the header to keep the fastener in place prior to brazing the components of the heat exchanger together and a tie rod connecting the embracing portions together.

5. A heat exchanger comprising: a plurality of flat tubes; a pair of hollow headers connected to opposite ends of each flat tube in fluid communication with each tube; at least one fastener secured to a header; said fastener comprising at least one embracing portion capable of resiliently engaging the exterior



of the header to keep the fastener in place prior to brazing the components of the heat exchanger together, said embracing portion including a concave contacting member which extends along the header and contacts the exterior of the header; an extension protruding from a side edge of the concave contacting member; a tab integrally and perpendicularly extending from an extremity of the extension; and an ear protruding perpendicularly towards the header from an upper or lower edge of the tab, whereby a gap between the concave contacting member and a tip end of the ear receives the header.

5,183,104
CLOSED-CYCLE EXPANSION-VALVE IMPINGEMENT COOLING SYSTEM
Shlomo D. Novotny, Wayland, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Continuation of Ser. No. 367,355, Jun. 16, 1989, abandoned. This application Nov. 1, 1991, Ser. No. 798,821
Int. Cl.[5] H01L *23.467*; F25B *9/08*
U.S. Cl. 165—104.33 **14 Claims**



1. A closed-cycle expansion-valve gaseous-coolant-impingement element-cooling apparatus comprising:

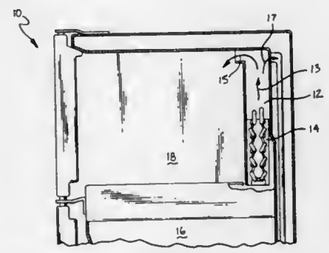
a. a compressor for substantially compressing a gaseous-coolant, the compressor having an inlet and an outlet, the compressor arranged to substantially raise the temperature and pressure of the gaseous-coolant;

b. a first cooler coupled to the outlet of the compressor for cooling gaseous-coolant received from the compressor;

c. a cooling chamber that receives substantially compressed gaseous-coolant from the first heat exchanger and supplies expanded, substantially cooled gaseous-coolant by means of one or more expansion valves within the cooling chamber toward the elements to be cooled, the expansion valves serving to substantially lower the pressure of the gaseous-coolant and to lower the temperature of the gaseous-coolant to below ambient; and

d. a second cooler coupled between the cooling chamber and the inlet to the compressor for cooling expanded gaseous-coolant received from the cooling chamber and returning the gaseous-coolant to the compressor.

5,183,105
OPPOSED CANTED EVAPORATOR
Michael B. Adams, Sylvania, Ohio, assignor to Brazeway, Incorporated, Adrian, Mich.
Filed Jul. 8, 1991, Ser. No. 726,992
Int. Cl.[5] F28D *1/47*; F25B *39/02*
U.S. Cl. 165—140 **6 Claims**



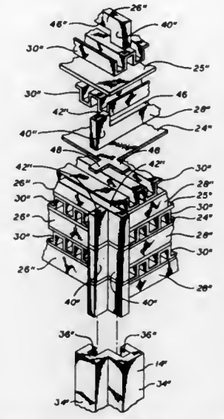
1. A heat exchanger comprised of a continuous tube for conveying a first fluid wherein the tube to exchange heat with a second fluid surrounding the tube, said tube having a plurality of reverse bends forming a plurality of parallel tube runs arranged in sets of two as determined by the respective reverse bends, each of the sets of two defining an entrance and an exit to the set, said tube folded into a tube bundle comprising two adjacent parallel spaced rows with each row comprising a plurality of successive sets of two runs with the exit of each set connected by a reverse bend to the entrance to the next successive set in the row, the tube runs in said bundle being arranged such that, when viewed in cross section, lines drawn between the centers of the tubes in each of the sets of two of one of said rows coact with lines drawn between the centers of the tubes in each of the sets of two in the other of said rows to form a herringbone pattern.

5,183,106
HEAT EXCHANGE
A. Colin Stancliffe; Paul Vidano, both of Redondo Beach, and Bill P. Pogue, San Pedro, all of Calif., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Apr. 24, 1992, Ser. No. 873,912
Int. Cl.[5] F28F *3/08*
U.S. Cl. 165—166 **9 Claims**

1. A heat exchanger of the bar-and-plate type; said heat exchanger including a plurality of stacked, spaced apart plate members separating interleaved in laterally spaced apart pairs with said plate members to space apart said plate members and to bound said heat exchange fluid streams at respective lateral margins of said heat exchanger, said pairs of bar members alternating to angular intersect in plan view at vertices of said plate members and including transecting end-extension portions; and an elongate corner bar member of double-U shape in cross section extending in the direction of stacking of said plate

members to defined a pair of channels opening in intersecting directions, said corner bar member captively receiving respective end-extension portions of said bar members into said channels to interlock therewith,

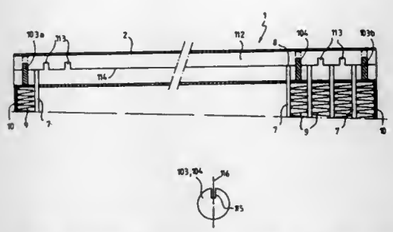
said end-extension portions of said bar members being generally L-shaped to also extend in said stacking direction and



defining confronting coplanar abutment surfaces within said channels of said corner bar members,

alternate plate members of said plurality of plate members also including cruciform extension portions at the vertices thereof, said cruciform extensions extending between said confronting coplanar abutment surfaces.

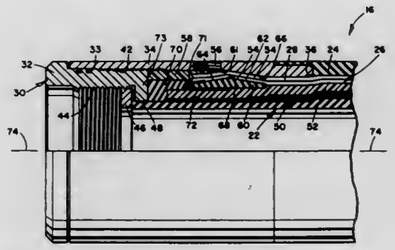
5,183,107
TUBULAR MANIFOLD FOR A HEAT EXCHANGER AND A METHOD OF MAKING IT
Philippe Le Ganyer, Paris, France, assignor to Valeo Thermique Moteur, Le Mesnil-Saint Denis, France
Filed May 6, 1992, Ser. No. 879,027
Int. Cl.[5] F28F *9/02*
U.S. Cl. 165—176 **9 Claims**



1. A heat exchanger comprising at least one fluid manifold having an elongated tubular wall, at least two transverse baffles carried by the said tubular wall, and a connecting member joining the said baffles together, the connecting member being of elongate shape extending in the axial direction of the tubular wall, the heat exchanger further comprising a multiplicity of heat exchange tubes, the tubular wall being formed with a multiplicity of apertures, each heat exchange tube being received in a respective said aperture so as to penetrate into the manifold, wherein the connecting member is a bar formed with a multiplicity of slots spaced apart along the said bar for receiving the said baffles, with each baffle comprising a further slot for receiving the said bar, the latter being substantially in contact with the tubular wall in a region of the latter diametrically opposed to the said apertures in which the heat exchange tubes are received.

8. A method of making a heat exchanger according to claim 1, including the steps of: fitting the transverse baffles on to the connecting member to form a sub-assembly; introducing the said sub-assembly into the tubular wall through an open end of the latter; causing the sub-assembly to slide longitudinally in the tubular wall until the baffles reach their final position; and subsequently introducing the ends of the heat exchange tubes into the fluid manifold through the said apertures in the tubular wall.

5,183,108
INFLATABLE PACKER
Albert H. Lee, Jr., and Carl H. Sabo, both of Wichita Falls, Tex., assignors to The Gates Rubber Company, Denver, Colo.
Filed Aug. 19, 1991, Ser. No. 747,042
Int. Cl.[5] E21B *33/127*; F16J *15/46*
U.S. Cl. 166—187 **34 Claims**



1. An inflatable packer comprising:

an elastomeric tubular body;

an outer cover surrounding said body;

an end member having a cap portion threadably engageable with an annular ring member, said ring member being secured to the end portion of a said outer cover;

a plurality of reinforcing elements sandwiched between said cover and said body and having end portions terminating beneath said ring member; and

means for wedging the end portions of said reinforcing elements against the inner surface of said ring member in response to increased threaded engagement between said cap portion and said ring member to retain said elements in position beneath said ring member.

5,183,109
METHOD FOR OPTIMIZING HYDRAULIC FRACTURE TREATMENT OF SUBSURFACE FORMATIONS
Don K. Poulsen, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.
Filed Oct. 18, 1991, Ser. No. 781,523
Int. Cl.[5] E21B *43/267*, *47/06*
U.S. Cl. 166—250 **20 Claims**

1. A method of optimizing a fracturing treatment of a subsurface formation comprising the steps of:

(a) injecting a volume of fluid into a wellbore penetrating said subsurface formation to generate a fracture in said formation;

(b) measuring the pressure of the injected fluid in the wellbore over time;

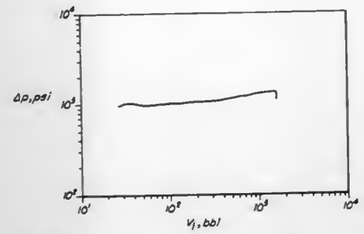
(c) calculating the net pressure of the fluid in the wellbore over time;

(d) determining the volume of fluid injected into the wellbore over time;

(e) determining the slope of the logarithmic relationship

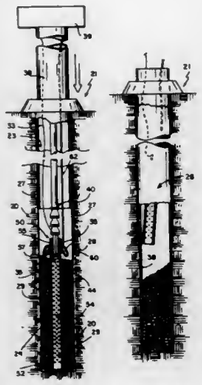
VOL
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ISS
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between the net pressure of step (c) and the injected volume of step (d);



(f) modifying the fracture treatment based upon predetermined interpretive guidelines of the slope determined in step (e).

5,183,110
GRAVEL WELL ASSEMBLY
James D. Logan, Bargersville, and Jeffrey R. Bastin, Fountain Town, both of Ind., assignors to Bastin-Logan Water Services, Inc., Franklin, Ind.
Filed Oct. 8, 1991, Ser. No. 773,124
Int. Cl.[5] E21B *43/04, 43/08, 43/10*
U.S. Cl. 166—278 **10 Claims**



10. A method for regenerating a well having a ground pack encrusted with chemical deposits, the method comprising the steps of

inserting a slide tube into a well casing of the well to prevent infall of debris from native formations surrounding the bore of the well,

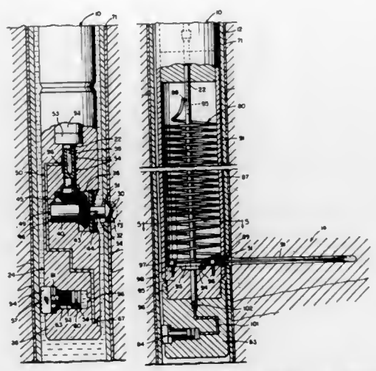
withdrawing a pump assembly for pumping groundwater from a bore of a well,

removing the gravel pack,

replacing the gravel pack, and

withdrawing the slide tube from the well casing of the well and replacing the pump assembly.

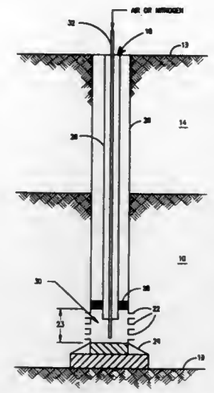
5,183,111
EXTENDED REACH PENETRATING TOOL AND METHOD OF FORMING A RADIAL HOLE IN A WELL CASING
Herman J. Schellstede, P.O. Box 208, New Iberia, La. 70560
Filed Aug. 20, 1991, Ser. No. 747,348
Int. Cl.[5] E21B *43/112, 7/18*
U.S. Cl. 166—298 **20 Claims**



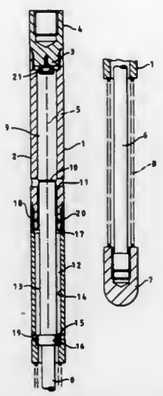
17. The method of forming a radial hole in the casing of a well which extends into an underground formation consisting of the steps of lowering a tubing string into a well casing, anchoring the tubing string at a predetermined position in the well casing, extending a cutting element from the tubing string into engagement with the well casing while actuating the cutting element to form a hole in the casing and subsequently extending a formation penetrating tool from the tubing string through the hole in the casing into the formation to form a bore in the formation in a generally horizontal direction form the hole in the casing and retracting the penetrating tool and removing the tubular string from the casing to enhance production of fluid from the formation into the casing.

5,183,112
METHOD FOR SCALE REMOVAL IN A WELLBORE
James M. Paul, Dallas, and Richard L. Morris, Duncanville, both of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Aug. 16, 1991, Ser. No. 745,779
The portion of the term of this patent subsequent to Dec. 25, 2007, has been disclaimed.
Int. Cl.[5] E21B *33/02*
U.S. Cl. 166—312 **10 Claims**

1. A method for removing alkaline earth scale within a well including the adjacent formation comprising contacting the scale within the well with a scale-removing solvent comprising an aqueous solution having a pH of about 10 to about 14 and comprising a chelating agent comprising a polycarboxylic acid or salt of such an acid and a synergist anion to dissolve the scale, the improvement comprising sparging the solvent with air or an inert gas to more effectively dissolve the scale.

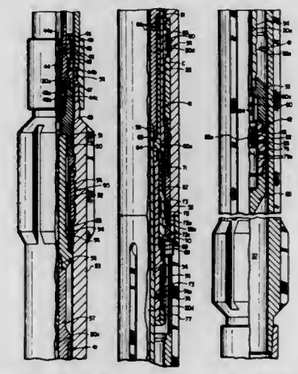


5,183,113
DOWN-HOLE DECELERATORS
Peter A. Leaney, and Robert J. Smith, both of Cheltenham, England, assignors to Baroid Technology, Inc., Houston, Tex.
Filed Apr. 25, 1990, Ser. No. 514,424
Claims priority, application United Kingdom, Apr. 29, 1989, 8909938
Int. Cl.[5] E21B *17/07, 47/00*; F16F *5/00*; G01D *11/24*
U.S. Cl. 166—316 **17 Claims**



1. A down-hole decelerator for decelerating a device passed through a borehole, the decelerator comprising an elongate telescopic assembly having a longitudinal axis aligned with the axis of the borehole, the assembly comprising an elongate casing and a plunger slidable axially within the casing, the casing having one or more fluid passage openings through a wall of the casing, the casing and plunger defining a fluid storage chamber between an end of the plunger and an interior wall surface of the casing axially spaced from the plunger such that the axial length of the fluid storage chamber is decreased by the plunger moving inwardly of the casing, the plunger and casing further defining a fluid flow passage therebetween and extending from the fluid storage chamber to the one or more fluid passage openings for fluid flow out of the fluid storage chamber as the plunger moves inwardly of the casing, the fluid flow passage forming a substantially annular gap between the plunger and the interior wall surface of the casing, whereby the axial length of the substantially annular gap increases as the plunger moves inwardly of the casing to decelerate the device as a function of increased resistance to fluid flow through the axially increasing annular gap and then out the one or more fluid passage openings.

5,183,114
SLEEVE VALVE DEVICE AND SHIFTING TOOL THEREFOR
Howard R. Mashaw, Jr., Carrollton, and Robert C. Hammett, Garland, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.
Filed Apr. 1, 1991, Ser. No. 678,812
Int. Cl.[5] E21B *34/10*
U.S. Cl. 166—319 **33 Claims**



1. A sliding sleeve valve for use in horizontal and highly deviated well conduits comprising:

(a) tubular housing means having a longitudinal through flow passage; said housing means including means thereon for centralizing said sliding sleeve valve within a well conduit, said centralizing means including

radial projections on the exterior of the tubular housing intermediate the ends thereof, and flow passages separating said radial projections;

(b) means for attaching said tubular housing means in a well conduit;

(c) longitudinal flow slots on the exterior of said tubular housing means intermediate the ends thereof;

(d) ports extending between said longitudinal flow slots and said longitudinal through flow passage for flow therebetween, each said port aligned with a flow slot; and

(e) means for controlling flow through said ports.

5,183,115
SAFETY VALVE
John C. Gano, Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed Jul. 19, 1991, Ser. No. 733,134
Int. Cl.[5] E21B *34/08*
U.S. Cl. 166—319 **18 Claims**

1. A system for controlling flow in a well conduit comprising:

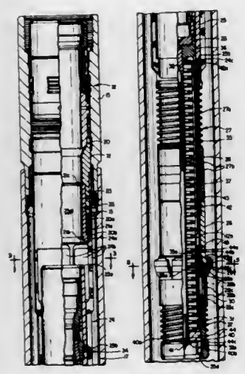
(a) a landing nipple in said conduit;

(b) a lock mandrel sealably engageable and releasably lockable in said landing nipple;

(c) a safety valve controlling production flow in said conduit

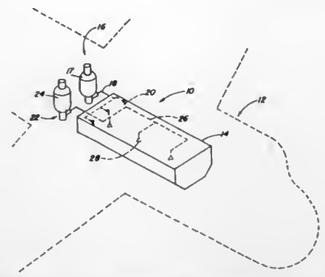
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ISS
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connected to said lock mandrel, said safety valve programmable for closure at various predetermined ratios of mass flow rate and ambient pressure and includes:
a housing having openings for flow between the outside and inside thereof,
a connector for connecting said housing to said lock mandrel,
an annular seat slidably and sealably mounted and releasably positioned in said connector,
valve member means slidably mounted in said housing, said valve member means moveable from open position permitting production flow through said housing openings to closed position where said valve member means sealingly engages said annular seat and prevents production flow through said openings, adjustable biasing means on said valve member means for biasing said valve member means toward open position,
variable flow restriction means on said valve member means forming an annular flow passage with said well conduit, said flow restriction means for varying the annular restricted flow passage area,
variable sensing means for automatically sensing ambient pressure and engaging said variable flow restriction means to vary said flow passage area for safety valve closure at the predetermined flow rate-ambient pressure ratio, said sensing means sealably engageable and releasably lockable in said valve member means; and
(d) means for connecting and disconnecting said safety valve to and from said lock mandrel.

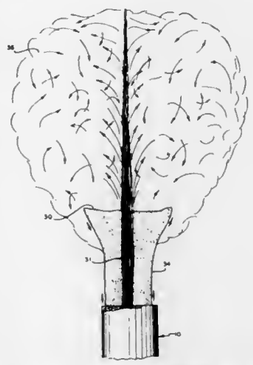


5,183,116
VARIABLE PRESSURE REGULATOR FOR EXTENDED FIRE-EXTINGUISHING SYSTEM
William T. Fleming, Raleigh, N.C., assignor to Walter Kidde Aerospace, Inc., Wilson, N.C.
Filed Jul. 11, 1991, Ser. No. 728,358
Int. Cl.[5] A62C *3/08*
U.S. Cl. 169—43 **17 Claims**

1. An extended discharge system for discharging a fire-extinguishing material at a generally constant predetermined mass flow rate comprising:
(a) a container filled with the fire-extinguishing material;
(b) a discharge nozzle connected with the container for discharging the fire-extinguishing material into a protected space; and
(c) pressure regulating means for varying a pressure of the fire-extinguishing material passing from the container to the discharge nozzle as a function of an inlet pressure to the regulating means so as to produce a variable regulated pressure and the generally constant, predetermined mass flow rate of the fire-extinguishing material from the discharge nozzle irrespective of a temperature of the fire-extinguishing material.

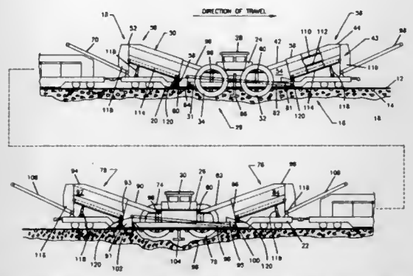


5,183,117
FIRE EXTINGUISHER
Edward Strickland, 4600 Nana Pl., Kaneohe, Hi. 96744
Filed Jun. 28, 1991, Ser. No. 723,374
Int. Cl.[5] A62C *3/06*
U.S. Cl. 169—46 **31 Claims**



1. A method of extinguishing a flaming fire in an elongated stream of oil and gas blowing from an oil well outlet that is positioned at a top of an oil well drilled into ground, said oil and gas stream flowing from said oil well outlet at a velocity consistent with an underground pressure in the well, said stream blowing into surrounding atmospheric air, said flaming fire being a ball having a base adjacent said outlet, said method comprising instantaneously freezing the flaming fire at the base of said ball, and then immediately and progressively enclosing a length of said elongated stream in a sheath that is impervious to said atmospheric air, said sheath progressing along the length of said stream at a velocity greater than the velocity of said stream as it issues from said outlet.

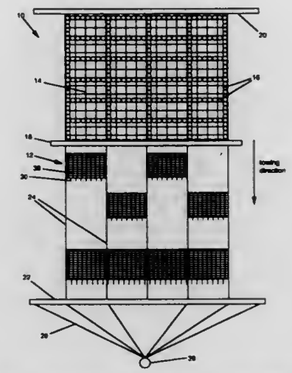
5,183,118
HIGH-CAPACITY BALLAST RECONDITIONING APPARATUS
John K. Kershaw, and Philip C. McCray, both of Montgomery, Ala., assignors to Knox Kershaw, Inc., Montgomery, Ala.
Continuation-in-part of Ser. No. 590,030, Sep. 28, 1990, Pat. No. 5,109,775. This application Oct. 31, 1991, Ser. No. 786,176
Int. Cl.[5] E01B *27/00*
U.S. Cl. 171—16 **17 Claims**



1. Apparatus for reconditioning ballast along a railroad bed having track supporting cross ties carried thereon comprising:
vehicular support means including a frame disposed for movement along said railroad bed, said vehicular support means having first and second sides;
first excavating means for excavating ballast from adjacent the ends and beneath said cross ties, said first excavating means comprising first and second excavating wheels mounted in spaced relation on said first side of said vehicular support means and disposed for driven rotation for excavating ballast from adjacent the ends of said cross ties, and first undercutter means mounted between said first and second excavating wheels for excavating ballast from beneath said cross ties to be picked up by said second excavating wheel of said first excavating means;
cleaning station means including at least first and second discrete cleaning stations mounted on said frame of said vehicular support means, said first cleaning station disposed for receiving and cleaning ballast excavated by said first excavating wheel, and said second cleaning station disposed for receiving and cleaning ballast excavated by said second excavating wheel and said first undercutter means; and
a first clean ballast conveyor means communicating with said first and second cleaning stations to receive said cleaned ballast from said first and second cleaning stations and for conveying said clean ballast back onto said railroad bed.

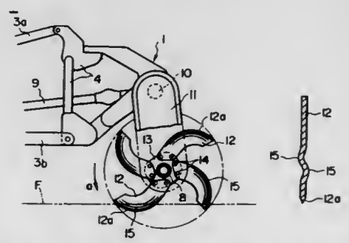
5,183,119
ANTI-SNAG PLOWING SYSTEM
Willard H. Wattenburg, Chico, Calif., assignor to Regents of the University of California, Oakland, Calif.
Filed Jun. 14, 1991, Ser. No. 714,907
Int. Cl.[5] A01D *15/00*; A01B *49/02, 43/00*
U.S. Cl. 171—105 **26 Claims**

1. An anti-snag plowing system, comprising:
(1) a rigid digging knife unit, comprising:
(a) a plurality of digging knives,
(b) a top bracket connected to the knives,
(c) at least two side brackets connected to the ends of the top bracket,
(d) a back bracket connected to the side brackets, whereby the top, side, and back brackets form a frame, and
(e) a basket connected to the frame for catching material turned up by the digging knives;
wherein the digging unit is situated between a towing means and a dragging means;
(2) said towing means connected to the digging unit, comprising:
(a) a draw bar,
(b) a plurality of side chains, extending longitudinally from the draw bar to the dragging means, each end of the top bracket being connected to a side chain, wherein the draw bar and top bracket are substantially parallel; and
(c) one or more cables connected to the draw bar for attachment to a moving vehicle;



wherein a towing force is applied to the towing means to tow the digging knife unit through a resistive medium that exerts a variable resistive force on the digging unit, whereby the digging unit rotates forward with respect to the direction of towing when the digging unit encounters an obstruction with a resistive force, and the digging unit tilts and passes over the obstruction, and wherein the top bracket has a streamlined surface for the resistive medium to flow over; and
(3) said dragging means connected to the side chains, comprising:
(a) a flexible harrow, and
(b) a blanket of reinforcing chains covering the top of the harrow.

5,183,120
LAWN CUTTING APPARATUS
Hayataro Watanabe, Hachioji, Japan, assignor to Y.M. Golf Course Equipment Co., Ltd., Tokyo, Japan
Filed Sep. 20, 1991, Ser. No. 762,995
Claims priority, application Japan, Jan. 21, 1991, 3-005822[U]
Int. Cl.[5] A01B *45/02*
U.S. Cl. 172—21 **1 Claim**



1. A lawn-ground cutting apparatus, wherein a plurality of cutting blades, each being in a substantial form of a promi-

VOL
1147
ISS
1
FE
2
1993
UMI

nently curved broadax, each blade having an outer radius defining a cutting edge of each cutting blade, are mounted on a blade mounting shaft which is rotatably provided substantially parallel with a wheel axle of a self-propelling vehicle, the edge of each cutting blade facing in a rotational direction of the blade mounting shaft, and outwardly protruded ribs are provided on both lateral faces of each of the cutting blades in a substantially arcuate shape running substantially parallel to the edge of the cutting blade.

5,183,121

SUBMERSIBLE PNEUMATIC DRILLING UNIT

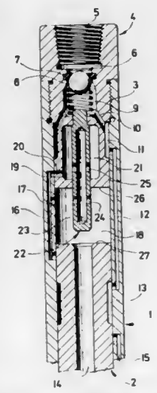
Vladimír Koudelka, Krivoklát, Czechoslovakia, assignor to Permon, státní podnik pan, Krivoklát, Czechoslovakia

Filed Oct. 16, 1991, Ser. No. 778,381

Claims priority, application Czechoslovakia, Nov. 9, 1990, 5525-90

Int. Cl.[5] E21B *1/00*

U.S. Cl. 173—206 **3 Claims**



1. A submersible pneumatic drilling unit, comprising:
a working cylinder having an inner wall, an upper end and a lower end;
a striking piston moveably mounted in said cylinder;
an upper lid closing the upper end of said cylinder and defining with said striking piston and upper working space in said cylinder, the upper lid having a storage space therein;
a drill bit holder connected to the lower end of said cylinder for holding a drill bit to be struck by said striking piston;
an upper filling duct extending in said working cylinder;
an anterior side duct in said working cylinder communicating said upper working space with said upper filling duct;
a posterior side duct in said working cylinder communicating said storage space in the upper lid with said upper filling duct;
an axial pin containing an axial duct therein, said axial pin extending in said storage space of said upper lid, and into said upper working space;
an anterior by-pass duct in said axial pin for communicating said axial duct in said axial pin with said upper working space;
a posterior by-pass duct in said axial pin for communicating said axial duct of said axial pin with the storage space of said upper lid; and
said upper working space forming a compression space between the inner wall of said working cylinder, an anterior face of said upper lid, an external surface of said axial pin, and a posterior face of said striking piston so that when said striking piston moves upwardly in said cylinder, pneumatic fluid in the upper working space moves through said anterior by-pass duct and through said interior side duct, into said storage space.

5,183,122

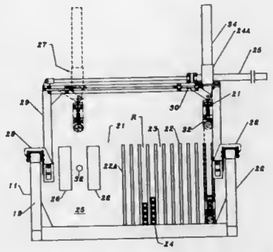
DERRICK ASSEMBLY CAPABLE OF CONVEYING PIPE SECTIONS BETWEEN A DRILL STRING AND A RACK FOR SAID PIPE SECTIONS

Ronald H. Rowbotham, Red Deer, and Gregory T. Cassady, Edmonton, both of Canada, assignors to Roll'n Well Servicing Inc., Red Deer, Canada

Filed Jul. 22, 1991, Ser. No. 733,876

Int. Cl.[5] E21B *7/02, 15/04, 19/14*

U.S. Cl. 175—52 **12 Claims**



1. A derrick assembly for raising or lowering a drill string made of interconnected pipe sections, comprising:
a derrick frame having lateral sidewalls and a base together defining an elongated channel having an open outer side opposite to said base;
a rack positioned within said channel adjacent to one lateral sidewall thereof leaving part of said channel clear for manipulating said drill string, said rack comprising at least one element extending between said base and said open outer side for housing pipe sections therebetween substantially longitudinally aligned within said channel;
a gantry extending across said open outer side of said channel, said gantry being movable longitudinally of said channel; and
a pipe gripping unit supported by said gantry for selectively holding or releasing pipe sections, said gripping unit being movable on said gantry towards or away from said base and laterally between said sidewalls;
whereby said pipe gripping unit may be manipulated on said gantry to transfer pipe sections between said rack and said clear part of said channel for attachment to or detachment from said drill string.

5,183,123

INDICATING MEANS FOR A ROCK BIT LUBRICATING SYSTEM

Kenneth M. White, Calgary, Canada, assignor to Western Rock Bit Company Limited, Alberta, Canada

Filed Dec. 26, 1991, Ser. No. 813,979

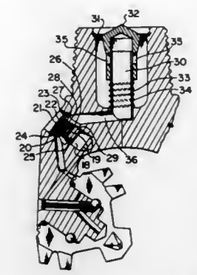
Claims priority, application Canada, Nov. 13, 1991, 2055399

Int. Cl.[5] E21B *10/24*

U.S. Cl. 175—228 **10 Claims**

1. A sealed lubricated rotary cutter rock drill bit having a lubricant reservoir connected via first passage means to bearing surfaces, the lubricant reservoir containing a valve controlling flow of a fluid along second passage means intersecting the lubricant reservoir, means for causing the valve to move as the lubricant in the lubricant reservoir depletes to cause a variation

in the pressure of the fluid in the second passage means whereby the amount of lubricant in the lubricant reservoir can



be gauged by monitoring the pressure of the fluid in the second passage means.

5,183,124

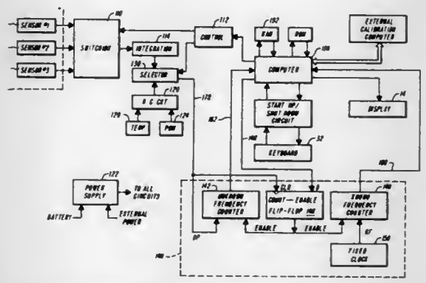
COMPACT SELF-ADJUSTING WEIGHING SYSTEM HAVING STABLE MEASUREMENT RESOLUTION

John Borchard, 97A Lowell Ave., Newton, Mass. 02160

Filed Sep. 7, 1990, Ser. No. 578,461

Int. Cl.[5] G01G *3/14*

U.S. Cl. 177—210 FP **26 Claims**



1. A self-adjusting weighing system, comprising:
at least one sensor means for sensing weight;
first circuit means for converting an output of the at least one sensor means to a signal having an unknown frequency;
second circuit means for providing a signal having a known frequency; and
similar period frequency measurement means including means responsive to the first and second circuit means for determining the frequency of the unknown frequency signal by counting a number of full cycles of the unknown frequency during a time frame over which a predetermined number of full cycles of the known frequency is counted.

5,183,125

LOAD-SENSING ELEMENT FOR A BALANCE

Michael Schurr, Murrhardt, Fed. Rep. of Germany, assignor to Soehnle-Waagen GmbH & Co., Murrhardt, Fed. Rep. of Germany

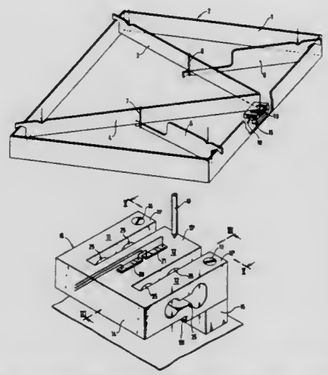
PCT No. PCT/EP89/00057, § 371 Date Jul. 11, 1990, § 102(e) Date Jul. 11, 1990, PCT Pub. No. WO89/07245, PCT Pub. Date Aug. 10, 1989

PCT Filed Jan. 19, 1989, Ser. No. 499,517

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1989, 3802153

Int. Cl.[5] G01G *3/14, 3/08;* **G01L** *1/22*

U.S. Cl. 177—211 **7 Claims**



1. A load-sensing element for a balance, comprising: at least one beam that receives a load at one end; and at least two strain gauges,
said beam including a horizontal opening defining reduced cross sectional areas of the beam on the top and bottom of the opening forming bending points connected by material forming a guide bar at the top of the opening and a guide bar at the bottom of the opening, the guide bar at the top of the opening being parallel to the guide bar at the bottom of the opening, wherein:
a strain gauge is disposed at each bending point associated with one of the guide bars, the strain gauges generating a measurement signal as a function of the load;
the other guide bar having a shoulder situated between its associated bending points, at which shoulder the cross section of the beam increases; and
the bending points associated with said other guide bar each defining a center line which are offset from one another by a predetermined amount.

5,183,126

WEIGHING SYSTEM AND FORCE TRANSMISSION

Arthur Kellenbach, 15 Awatea St., St. Ives, Sydney, Australia 2075

PCT No. PCT/AU89/00107, § 371 Date Nov. 20, 1989, § 102(e) Date Nov. 20, 1989, PCT Pub. No. WO89/08822, PCT Pub. Date Sep. 21, 1989

Continuation of Ser. No. 445,708, Nov. 20, 1989, abandoned. This PCT application Mar. 17, 1989, Ser. No. 762,641

Claims priority, application Australia, Mar. 18, 1988, P17312; Aug. 18, 1988, P19967

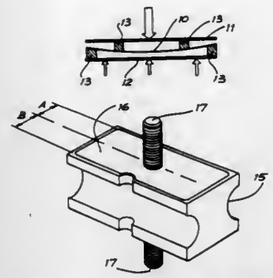
Int. Cl.[5] G01G *3/14;* **B32B** *7/00*

U.S. Cl. 177—211 **15 Claims**

1. Bending beam weighing apparatus of the kind in which load and reaction forces are applied to a beam in equilibrium, said forces being applied to respective force transmission means spaced from one another in the longitudinal direction of

VOL
1147
ISS
1
FE
2
1993
UMI

the beam, and in which is measured at a selected region of the beam the strain therein which arises from the bending of the beam by said forces and which is proportional to the distances between the location of said region and said force transmission means and between said force transmission means, wherein said load forces are applied to said beam by means of force



transmission means comprising a body of elastomer, said body being shaped as a rectangular prism, said elastomer being chosen such that in creep, hysteresis and linearity the characteristics of the body closely approximate those of an ideal spring, said body having upper and lower faces, and a pair of opposite side faces which are inwardly waisted between said upper and lower faces.

5,183,127

SUSPENSION-TRACTION TOTAL CONTROL SYSTEM

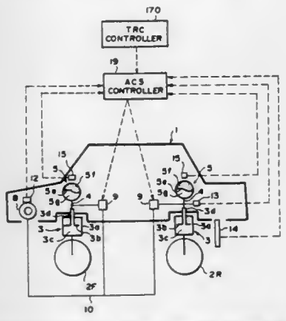
Fumio Kageyama; Hirotaka Kanazawa; Shin Takahara, and Toshiki Morita, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Continuation of Ser. No. 581,572, Sep. 12, 1990, abandoned. This application Dec. 2, 1991, Ser. No. 799,895

Claims priority, application Japan, Sep. 13, 1989, 1-238181; Mar. 23, 1990, 2-74516

Int. Cl.[5] B60K *28/16;* **B60G** *21/00*

U.S. Cl. 180—197 **8 Claims**



1. A suspension-traction total control system for a vehicle comprising a traction control system which reduces driving torque for driving wheels of the vehicle when the driving wheels slip, with said traction control system controlling at least one of the engine and brakes for the wheels of the vehicle in order to reduce the driving torque, an active suspension system which has a cylinder disposed between the vehicle body and each of the wheels of the vehicle and in which suspension properties can be changed, a control means for controlling feed and discharge of the hydraulic fluid to and from the cylinders, and a control gain changing means which increases a control gain of the active suspension system when the traction control system is operating so that a flow rate of the hydraulic fluid is altered, wherein said control means includes a control system which suppresses the vehicle level displacement speed on the basis of vehicle level displacement speed signals which are obtained by differentiating outputs of vehicle level sensors provided for the respective wheels, the control gain of the control system being increased when the traction control system is controlling both the engine and the brakes and the value of a brake control variable is not smaller than a predetermined value.

5,183,128

APPARATUS FOR CONTROLLING THE OUTPUT OF A VEHICLE EQUIPPED WITH AN INTERNAL COMBUSTION ENGINE

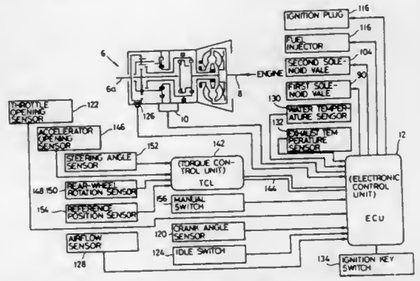
Masayoshi Ito, Okazaki; Kiichi Yamada; Katsunori Otake, both of Nagoya; Yasunobu Miyata, Komaki; Tomohiro Narita, and Susumu Nishikawa, both of Okazaki, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1991, Ser. No. 661,295

Claims priority, application Japan, Feb. 27, 1990, 2-44466; May 18, 1990, 2-127008; May 18, 1990, 2-127015

Int. Cl.[5] B60K *28/16*

U.S. Cl. 180—197 **12 Claims**



1. An apparatus for controlling an output of a vehicle equipped with an internal combustion engine, comprising:

means for calculating a reference driving torque of the engine based upon a vehicle speed;

means for detecting a slippage of driving wheels of the vehicle;

setting means for obtaining correction torques for the reference driving torque, said setting means including a first means for setting an integral correction torque as one of said correction torques based upon an integral value of said detected slippage;

limiter means for restricting said integral correction torque to a value of at least a negative lower limit when said integral correction torque has a negative value, said limiter means including means for reducing an absolute value of said negative lower limit in accordance with an increase of said vehicle speed;

determination means for determining a target driving torque of the engine, said determination means including correction means for obtaining a corrected reference driving torque by subtracting said restricted integral conrrection torque from said reference driving torque, and means for calculating said target driving torque based upon the corrected reference driving torque; and

controlling means for controlling an actual driving torque of the engine based upon said target driving torque.

5,183,129

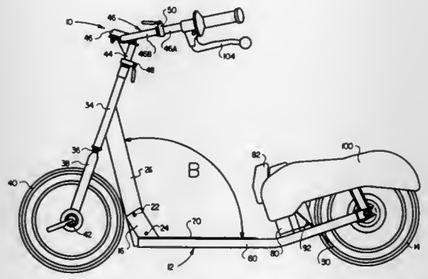
COLLAPSIBLE SCOOTER

Robert M. Powell, Rte. 1, Box 1025, Quinlan, Tex. 75474

Filed Jun. 17, 1991, Ser. No. 716,085

Int. Cl.[5] B62D *61/00*

U.S. Cl. 180—208 **21 Claims**



1. A collapsible scooter comprising:

a lower frame having front and rear portions,

a front frame having upper and lower portions, said lower portion of said front frame being secured to said front portion of said lower frame in a manner to permit pivotal movement between said front and lower frames between an operative position in which said front frame extends at a first angle with respect to said lower frame, and a collapsed position in which said front frame extends at a second angle with respect to said lower frame, said lower portion of said front frame being pivotally secured to said front portion of said lower frame by an assembly comprising a pair of opposing braces extending upwardly from said front portion of said lower frame, said lower portion of said front frame extending between said braces, and a pivot pin secured between said braces, said lower portion of said front frame having a hole through which said pivot pin passes so that said front frame may pivot about said pivot pin between said operative position and said collapsed position,

steering means secured to said upper portion of said front frame,

a front wheel secured to said steering means in a manner to permit angular rotation of said wheel relative to said front frame,

a rear wheel secured to said rear portion of said lower frame, and

a locking pin for releasably locking said front frame relative to said lower frame in said operative position or in said collapsed position, said braces having corresponding, aligned holes formed therethrough through which said locking pin may be secured, and said lower portion of said front frame having first and second holes formed therethrough for receiving said locking pin so that said locking pin may be inserted through said holes in said braces and through said first hole in said lower portion of said front frame to lock said front frame in said operative position or so that said locking pin may be inserted through said second hole in said lower portion of said front frame when said front frame is in said collapsed position to lock said front frame in said collapsed position.

5,183,130

MUFFLER DEVICE FOR MOTORCYCLE

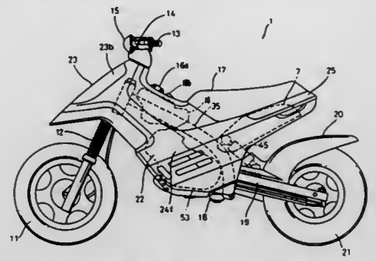
Michio Nakamura; Toshihiko Okunosoo, and Tsuneo Kajikawa, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 25, 1990, Ser. No. 557,078

Claims priority, application Japan, Jul. 25, 1989, 1-192263

Int. Cl.[5] B60K *11/06;* **B62D** *61/02;* **F01N** *7/14*

U.S. Cl. 180—219 **14 Claims**



1. A motorcycle having a vehicle body frame mounting an engine, a muffler device and a cowl covering the front and side portions of said vehicle body frame, said muffler device comprising a muffler body and an air guide cover fully enclosing said muffler body in spaced relation thereto to define a cooling chamber between said muffler body and said air guide cover, said cooling chamber defining an air flow passage about said muffler body, and means for supplying cooling air under pressure to said air flow passage for forcibly cooling said muffler body, said muffler body and said air guide cover being located within and covered on the top and sides by said cowl.

5,183,131

SYSTEM FOR CONTROLLING DRIVE TORQUE DISTRIBUTING CLUTCH OF VEHICLE

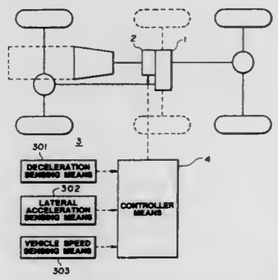
Genpei Naito, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Apr. 19, 1991, Ser. No. 687,482

Claims priority, application Japan, Apr. 20, 1990, 2-104639

Int. Cl.[5] B60K *17/34*

U.S. Cl. 180—233 **16 Claims**



1. A driving torque distribution control system for a vehicle, comprising:

a torque distributing mechanism for dividing a driving torque between first and second drive wheels of the vehicle;

a torque distributing clutch means for varying a torque distribution between said first and second drive wheels by varying a clutch engagement force in response to a control signal, said torque distributing clutch means being provided between a driving torque input side and a driving torque output side of said distributing mechanism;

VOL
1147
ISS
1
FE
2
1993
UMI

a sensor means for sensing a decelerating condition of the vehicle, a lateral acceleration of the vehicle and a vehicle speed of the vehicle and for producing sensor signals indicative of said decelerating condition, said lateral acceleration and said vehicle speed; and

a controller means for controlling said clutch engagement force of said torque distributing clutch means by producing said control signal in response to said sensor signals supplied from said sensor means, said controller means increasing said clutch engagement force in accordance with said lateral acceleration when the vehicle is decelerated, and increasing a rate of increase of said clutch engagement force with respect to said lateral acceleration when said vehicle speed increases.

5,183,132

POWER TRANSFER DEVICE HAVING CENTER DIFFERENTIAL GEAR FOR FOUR-WHEEL DRIVE VEHICLE

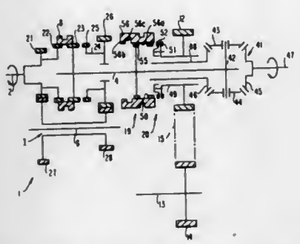
Mutsumi Fujisawa, Okazaki, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 6, 1990, Ser. No. 609,914

Claims priority, application Japan, Nov. 10, 1989, 1-130554[U]

Int. Cl.[5] B60K *17/352*

U.S. Cl. 180—247 **5 Claims**



1. A power transfer device having a center differential gear unit for use in a four-wheel drive vehicle comprising a rotary shaft to transmit the driving power of an engine;

said center differential gear unit is connected with said rotary shaft and distributes the driving power from said engine to front and rear road wheels of the vehicle;

an intermediate shaft which is connected with one of the output elements of said center differential gear unit, and which is rotatably provided around said rotary shaft, said intermediate shaft being connected with said rotary shaft through a first clutch mechanism in such a manner that said intermediate shaft can be connected with and disconnected from said rotary shaft, and

an output shaft which is rotatably provided around said intermediate shaft, and which is detachable connected with said intermediate shaft through a second clutch mechanism having a synchronizing mechanism in such a manner that the output shaft can be connected with and disconnected from said intermediate shaft;

wherein said first clutch mechanism is composed of a first hub having external teeth mounted on said intermediate shaft, a sleeve having internal teeth slidably spline connected to the teeth of said first hub, a second hub having external teeth mounted on said rotary shaft and which can be selectively engaged with and disengaged from said teeth of said sleeve;

said second clutch mechanism being composed of said first hub, said sleeve, and a clutch gear mounted on said output shaft, which can be selectively connected with and disconnected from said sleeve through external teeth of said synchronizing mechanism of said clutch gear;

wherein said first hub, said second hub, and said clutch gear are arranged with respect to the axis of said rotary shaft in the order of said second hub, said first hub, and said clutch gear;

said sleeve being movable between a first position in which said internal teeth of said sleeve engage with said external teeth of said first hub and said external teeth of said second hub;

a second position in which said internal teeth of said sleeve engage with said external teeth of said first hub and said external teeth of said synchronizing mechanism of said clutch gear; and

a third position in which said internal teeth of said sleeve engage with said external teeth of said first hub, said external teeth of said second hub, and said external teeth of said synchronizing mechanism of said clutch gear;

said sleeve having an internal annular groove, the width of which is greater than the width of said external teeth of said second hub, and within which said engagement teeth of said second hub are positioned when said sleeve is in said second position, and wherein said internal teeth of said sleeve extend by a distance greater than the distance between said external teeth of said second hub and said external teeth of said synchronizing mechanism of said clutch gear.

5,183,133

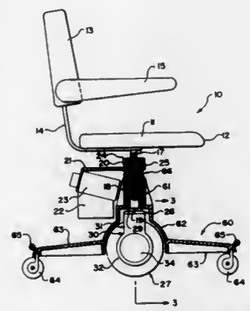
MOTOR-DRIVEN CHAIR

Orest Z. Roy; Raymond E. Fulford, and Jules O. Legal, all of Winnipeg, Canada, assignors to Canadian Aging & Rehabilitation Product Development Corporation, Winnipeg, Canada

Filed Mar. 13, 1991, Ser. No. 668,866

Int. Cl.[5] B60K *17/30*

U.S. Cl. 180—252 **12 Claims**



1. A motor-driven chair comprising a seat element having support surfaces for receiving and supporting an occupant of the chair, first wheel for running on the ground, means mounting the seat element above the first wheel so that the weight from the occupant is applied downwardly onto the wheel for support thereby, the first wheel having a horizontal axis of rotation defining a direction of forward motion lying at right angles to the axis with the orientation of the direction of forward motion being fixed relative to the seat element such that rotation of the seat element about a vertical axis rotates in the direction of forward motion about the vertical axis, an outrigger frame having a plurality of freely rotatable second wheels thereon at spaced positions around the first wheel, means mounting the outrigger frame on the seal element for rotation relative thereto about a vertical axis and for support of the seat element by the second wheels to prevent toppling of the seat element away from a position above the first wheel, a motor for driving the first wheel for rotation thereof about the horizontal axis, a battery for supplying power to the motor, means selectively actuable by the occupant to activate said motor, the seat element and the first wheel being mounted on a common support, means for rotating the seat element and the first wheel on the common support about a vertical axis relative to the outrigger frame so as to change the orientation of the seat element and the direction of forward motion relative to the outrigger frame and the ground, and means mounting the seal element, the first wheel and the common support relative to said outrigger means so as to allow vertical movement between the outrigger frame and the first wheel and spring biasing means arranged to bias the first wheel upwardly relative to the outrigger frame such that when the weight of the occupant is removed from the seat element, the spring means retracts the first wheel to a height above the second wheels to allow free rolling rotation of the chair on the second wheels.

5,183,134

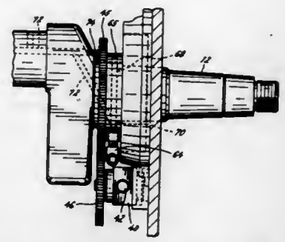
LUBRICATION SYSTEM FOR AIR COMPRESSOR

Victor D. Kuc, Des Plaines, Ill., assignor to Triangle Engineered Products Co., Bensenville, Ill.

Filed Jan. 13, 1992, Ser. No. 820,086

Int. Cl.[5] F01M *1/00*

U.S. Cl. 184—6.16 **7 Claims**



1. A lubricant delivery system for use in an air compressor having an internal crankcase chamber accessible by removal of an inspection plate having inner and outer surfaces, the compressor having a rotatable crankshaft journaled in the crankcase and a sump in the crankcase for lubricating fluid, the delivery system comprising in combination,

a positive displacement fluid pump having inlet and outlet ports mounted in said internal crankcase chamber, said pump being driven through power transfer means operatively coupled to said crankshaft,

first delivery means for conveying fluid between the sump and said pump inlet port,

removable filter means for filtering the lubricating fluid and having an inlet and an outlet, said filter means being disposed exteriorly of the crankcase chamber and carried on the inspection plate, and second delivery means for conveying lubricant between said pump outlet port and said filter means inlet;

pressure relief means for relieving pressure above a set point, said pressure relief means having fluid entrance, exit and bypass openings adapted for fluid flow therethrough, said pressure relief means being interposed between the removable filter means and the outer surface of the inspection plate,

a distribution ring adapted to circumscribe said crankshaft and having an internal annular groove for introducing lubricating fluid to said crankshaft, and third delivery means for conveying lubricant from the exit of said pressure relief means to said annular groove, said pressure relief means fluidically interconnecting the outlet of said filter means and said third delivery means,

fourth delivery means associated with said crankshaft for conveying lubricating fluid from said annular groove to wear areas where lubrication is required, and

fifth delivery means for conveying lubricant from said pressure relief means bypass opening through said inspection plate and back to said sump.

5,183,135

APPARATUS FOR INPUTTING COMMODITY DATA

Yukuo Kurimoto; Nobuhiko Fujii; Mitunori Kohno, and Takao Umebara, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

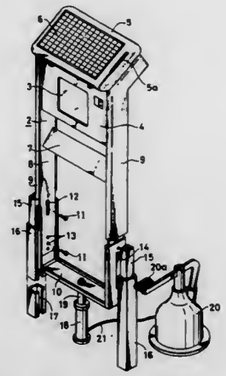
Division of Ser. No. 378,773, Jul. 12, 1989, Pat. No. 5,083,637.

This application Nov. 15, 1991, Ser. No. 792,625

Claims priority, application Japan, Jul. 12, 1988, 63-172895; Jul. 12, 1988, 63-172897; Jul. 12, 1988, 63-172898; Jul. 12, 1988, 63-172899; Jul. 12, 1988, 63-172900

Int. Cl.[5] G06K *7/10*

U.S. Cl. 186—61 **3 Claims**



1. An apparatus for reading commodity data, comprising:

a bar code scanner;

a keyboard rotatably mounted on an upper portion of said bar code scanner;

a frame for rotatably supporting at least said bar code scanner, said frame comprising first and second oppositely disposed supporting posts such that said bar code scanner is rotatably supported between said first and second supporting posts;

a connecting member for connecting lower portions of said supporting posts, said supporting posts being telescopically movably mounted to said connecting member so as to permit the relative movement of the supporting posts with respect to the connecting member, said supporting posts and said connecting member comprising means for selectively adjusting the height of said supporting posts with respect to said connecting member;

a lifting mechanism connected to said connecting member for vertically lifting said connecting member and said frame; and

a driving source for driving said lifting mechanism.

5,183,136

PIN BOOT FOR A DISC BRAKE

Kazuo Maeda, and Koichi Kinoshita, both of Saitama, Japan, assignors to Akebono Brake Industry Co., Ltd., Tokyo, Japan

Filed Jan. 21, 1992, Ser. No. 822,898

Claims priority, application Japan, Jan. 24, 1991, 3-022596

Int. Cl.[5] F16D *65/00*

U.S. Cl. 188—73.44 **5 Claims**

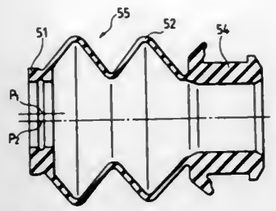
1. A pin boot for a disc brake having a caliper supporting member for supporting a disc brake body member, the supporting member having a slide hole provided on one of said members and a pin fittable into the other of said members, comprising:

a flange mounted to a boss portion in an opening formed in the slide hole;

a flexible bellows portion extending from said flange; and

VOL
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a seal portion adjoining the bellows portion and engageable with said pin,



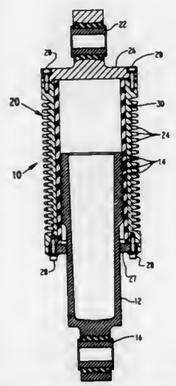
wherein the rigidity of at least one of said bellows portion, said seal portion and a connecting portion for connecting said bellows and seal portion with each other is non-uniform in the circumferential direction thereof.

5,183,137

DUAL-RATE SURFACE EFFECT DAMPERS

C. Kenneth Siwek, Erie; Wallace C. Flower, McKean, and Gene D. Garn, Erie, all of Pa., assignors to Lord Corporation, Erie, Pa.

Filed Dec. 20, 1991, Ser. No. 811,758
Int. Cl.[5] F16F *7/08*
U.S. Cl. 188—381 **17 Claims**



1. A dual-rate surface effect damper producing a damping force having a hysteretic component and a friction component, said damper comprising:

a) a housing;

b) a rubbing member mounted for relative movement with respect to said housing;

c) a first elastomeric liner section having a first length with a first substantially uniform inner diameter for engagement by said rubbing member to produce a first surface effect damping force;

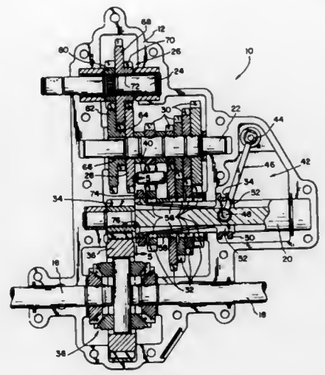
d) a second elastomeric liner section having a second length with a second smaller substantially uniform inner diameter for engagement by said rubbing member to produce a second larger surface effect damping force.

5,183,138

TRANSMISSION PARKING BRAKE

Norman E. Jolliff, Onsted, Mich., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Jan. 23, 1992, Ser. No. 824,379
Int. Cl.[5] B60K *41/26*
U.S. Cl. 192—4 C **20 Claims**



1. A transmission comprising:

a housing consisting essentially of a first material;

a plurality of shafts rotatably disposed within said housing, one of said shafts being a shift shaft with a plurality of gears thereon, said shift shaft including an axial channel and each of said gears having a keyway;

a key disposed within said axial channel of said shift shaft, said key including means for engaging one of said gear keyways;

shifting means for moving said key within said shift shaft and selectively engaging said key with one of said keyways; and

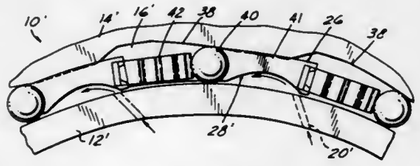
a parking block consisting essentially of a second material having greater strength than said first material, said parking block including means for engaging said key whereby said key is locked to said parking block to thereby prevent rotation of said shift shaft.

5,183,139

OVERRUNNING CLUTCH HAVING A CAGE DESIGN FOR DIRECTING LUBE FLOW

Gregory J. Malecha, Naperville, Ill., assignor to Borg-Warner Automotive Transmission & Engine Components Corporations, Sterling Heights

Filed Jan. 9, 1992, Ser. No. 819,153
Int. Cl.[5] F16D *41/06*
U.S. Cl. 192—45 **9 Claims**



9. An overrunning clutch (**10**) comprising:

an inner race (**12**) having a central axis of rotation;

an outer race (**14**) disposed around the inner race (**12**), the inner and outer races defining an annular space (**16**) therebetween;

unidirectional drive mans for fixing the outer race against rotation relative to the inner race, the unidirectional drive means including clutch elements engaging the inner race along a contact surface;

means for supplying lubrication from the inner race (**12**) to the annular space (**16**) between the inner and outer races; and

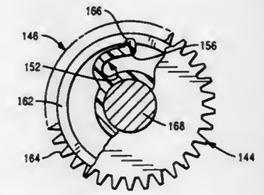
a cage (**22**) disposed in the annular space (**16**) between the inner and outer races and retaining the unidirectional drive means, the cage (**22**) including a plurality of interconnecting elements (**24,41**) each having an inner side (**28**) facing the inner race (**12**) and an outer side (**26**) facing the outer race (**14**), at least one of the interconnecting elements (**24,41**) also having an arcuate lubrication flow surface located between adjacent clutch elements, the lubrication flow surface being adapted to redirect at least a portion of the lubrication supplied from the inner race toward the contact surface.

5,183,140

TORQUE LIMITING MECHANISM FOR USE IN A DRIVE SYSTEM

Kenneth A. Nicoll, Dundee, Scotland, assignor to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 697,352, May 6, 1991. This application Feb. 24, 1992, Ser. No. 841,245
Claims priority, application United Kingdom, Nov. 16, 1990, 9024988
Int. Cl.[5] F16D *43/20*
U.S. Cl. 192—56 R **8 Claims**



1. A torque limiting mechanism for use in a drive system, comprising:

first and second rotatable members, one of which serves as a driving member and rotates in a given direction of rotation and the other of which serves as a driven member, said first and second rotatable members having a common axis of rotation, said first rotatable member being positioned within said second rotatable member;

said first rotatable member including an annular cylindrical hub portion having an internal circular bore, and a single integral resilient finger, having substantially the same width as said cylindrical hub portion, projecting from an outer surface of said cylindrical hub portion, said integral resilient finger including a first radially projecting portion adjacent to the cylindrical hub portion, an integral central portion arcuately concentric with and spaced from said cylindrical hub portion and connected at one end to said first radially projecting portion and an engaging end portion connected to the other end of said integral central portion;

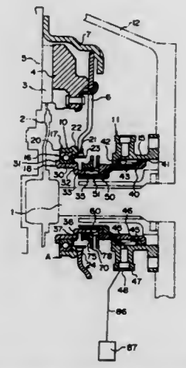
said second rotatable member including a hollow cylindrical portion of approximately the same width as said cylindrical hub portion for receiving said cylindrical hub portion of said first rotatable member, said hollow cylindrical portion including a single recess for receiving the engaging end portion of the integral resilient finger of said first rotatable member; said engaging end portion engaging resiliently in said recess to cause a driving torque to be applied to said driven member, said integral resilient finger disengaging from said recess when said driving torque exceeds a certain limit so as to enable said driving member to rotate relative to said driven member, said recess and said engaging end portion of said integral resilient finger each extending substantially for the width of the hollow cylindrical portion of the second rotatable member in a direction parallel to said axis of rotation.

5,183,141

RELEASE MECHANISM FOR PULL-TYPE CLUTCH

Minoru Abe, and Tetsuji Takano, both of Neyagawa, Japan, assignors to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

PCT No. PCT/JP91/00619, § 371 Date Jan. 22, 1992, § 102(e) Date Jan. 22, 1992, PCT Pub. No. WO91/18222, PCT Pub. Date Nov. 28, 1991
PCT Filed May 9, 1991, Ser. No. 807,830
Claims priority, application Japan, May 24, 1990, 2-134756
Int. Cl.[5] F16D *23/14, 25/08*
U.S. Cl. 192—91 A **4 Claims**

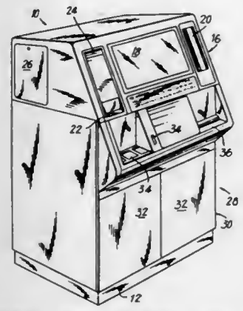


1. In a pull-type clutch disengaged by pulling an inner peripheral part of a diaphragm spring to an axial backside of the clutch; a release mechanism for said pull-type clutch having a release bearing assembly connected to an inner peripheral part of said diaphragm spring, a cylinder assembly mounted to a housing of said clutch at an axial backside of said release bearing assembly, plural first claws, extending backward in an axial direction of said clutch and formed on said release bearing assembly, plural second claws extending forward in an axial direction of said clutch and integrally formed on a piston of said cylinder assembly, said first and second claws being disposed with clearance left between said first claws and said second claws, respectively, in a circumferential direction, said piston being axially movable relative to said release bearing assembly from a first position where said first claws are axially spaced apart from said second claws to a second position where said second claws are positioned circumferentially between said first claws, a connecting ring extending in said circumferential direction and expandable in radial directions positioned on outer peripheries of said second claws and immovable in said axial direction of said clutch relative to said second claws, connecting grooves on an outer periphery of said first claws into which said connecting ring fits when said piston is in said second position, guide portions formed on rear outer peripheries of said first claws, said guide portions being engageable with an inner periphery of said connecting ring to expand said ring when said piston moves from said first position to said second position, a ring stopper movable between a front releasing position and a rear engaging position, together wtih a stopper spring on said release bearing assembly for urging said stopper backward, said ring stopper, fitting onto an outer periphery of said connecting ring, when said piston is in

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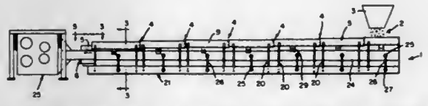
said second position and said ring stopper is at said engaging position, and tool supports facing each other, with an axial tool insertion clearance therebetween on said ring stopper and said cylinder assembly.

5,183,142
AUTOMATED CASHIER SYSTEM
Gerard Latchinian; Ramy Latchinian, both of Rockville, Md., and Franklin Camper, Hueytown, Ala., assignors to Ramy Systems, Inc., West Palm Beach, Fla.
Filed Oct. 18, 1990, Ser. No. 599,667
Int. Cl.[5] G07F *7/04, 7/08*
U.S. Cl. 194—206 **9 Claims**



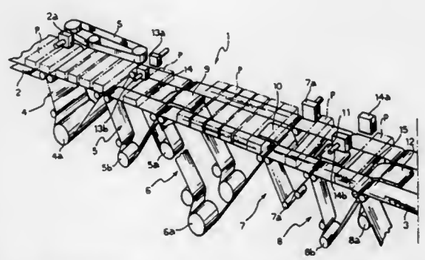
1. An automated cashier apparatus, comprising a console having first and second compartments therein, said first and second compartments being separately and independently accessible; data entry means for accepting purchase information rom a customer and data display means for displaying sale-related data to the customer; communication means for transmitting said purchase information to a remote order fulfillment means, said data entry and display means and communication means being mounted in said first compartment; means for accepting credit card purchase information; coin and currency acceptance, storage and dispensation means located in said second compartment, said second compartment comprising a tamper-resistant safe structure; said data entry and display means, credit card acceptance means and coin and currency acceptance and dispensation means being logically interconnected and controlled by microprocessor means comprising a primary microprocessor located in said second compartment and a secondary microprocessor located in said first compartment, said primary microprocessor adapted to control coin and currency acceptance and dispensation and said secondary microprocessor adapted to perform order acceptance and display functions.

5,183,143
APPARATUS AND METHODS FOR CONVEYING MATERIALS
James F. Sullivan, Jr., Garland, Tex., assignor to Triple/S Dynamics, Inc., Dallas, Tex.
Filed May 31, 1991, Ser. No. 708,288
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—370 **21 Claims**



1. A vibrating conveyor for selectively delivering material from a source of material to a material discharge location comprising means for receiving said material, continuously vibrating member, and means for selectively coupling and uncoupling said material receiving means to said continuously vibrating member so that said means for receiving said material vibrates and said conveyor delivers said material to said material discharge location when said material receiving means is coupled to said continuously vibrating member, and said means for receiving said material is motionless when uncoupled from said continuously vibrating member and said conveyor stops delivery of said material to said discharge location when said means for receiving said material is uncoupled.

5,183,144
APPARATUS FOR ORIENTING PRODUCTS ON A CONVEYOR LINE PARTICULARLY FOR AUTOMATIC PACKAGING MACHINES AND METHOD RELATING THERETO
Renzo Francioni, Prato Sesia, Italy, assignor to Cavanna S.p.A., Italy
Continuation of Ser. No. 567,891, Aug. 15, 1990, abandoned. This application Feb. 10, 1992, Ser. No. 832,885
Claims priority, application Italy, Aug. 16, 1989, 67706 A/89
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—382 **23 Claims**



1. An apparatus for transporting products in a direction of transportation and for orienting them with a principal axis arranged perpendicular to the direction of transportation, comprising:

at least two conveyor formations for products operative in the direction of transportation,

separate drive means for said two conveyor formations which can impart different speeds of movement to said two conveyor formations;

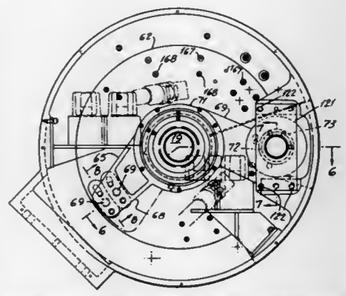
sensor means for detecting the orientation of each said product and for generating at least one signal indicative of a displacement of the principal axis of each said product a displacement of the principal axis of each said product from the orientation in which the principal axis of the product is perpendicular to the direction of transportation,

wherein said sensor means comprise a pair of sensors aligned traverse to the direction of transportation, whereby the time interval between the instants at which the products pass in correspondence with the pair of sensors is indicative of the displacement, and

control means operatively sensitive to the at least one signal generated by said sensor means for controlling the drive means to vary the speed of movement of the conveyor formations in order to annul the displacement, wherein said control means include apparatus configured to be activated when the products pass in correspondence with that one of the sensors which is encountered first by the products, and the signal of the apparatus is used as a signal indicative of the displacement at least until the products pass in correspondence with the other of the sensors, which is the second to be encountered by the products

such that corrective action to reduce the displacement is taken immediately upon detection of a direction of the displacement and is completed upon a determination of the amount of the displacement.

5,183,145
APPARATUS AND METHOD FOR AUTOMATICALLY POSITIONING VALVE MEANS CONTROLLING THE APPLICATION OF PRESSURIZED AIR TO MANDRELS ON A ROTATING CARRIER
Robert Williams, Randolph; Enn Sirvet, Washington Township, Bergen County, and Richard A. Gabel, Livingston, all of N.J., assignors to Sequa Corporation, New York, N.Y.
Filed Oct. 11, 1991, Ser. No. 775,206
Int. Cl.[5] B65G *47/26*; B41F *17/22*
U.S. Cl. 198—441 **9 Claims**



1. A method for loading cylindrical containers onto pins from mandrels on a continuously rotating mandrel carrier that moves said containers in a single file at a substantially faster linear speed than said pins are moving, with each of said containers having a closed end and an open end, said pins being carried by a continuously moving chain and being arranged in first and second rows of pins; said method including the steps of:

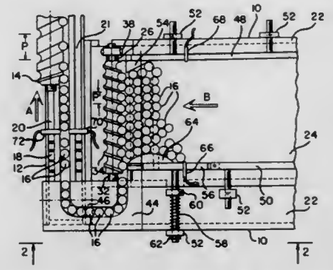
delivering said containers from said mandrels to holding elements on a continuously rotating transfer carrier with said closed ends operatively engaging said holding elements by moving said mandrels in single file through a pickup region, moving said holding elements in single file through said pickup region at a linear speed substantially slower than the linear speed of said mandrels, and in said pickup region arranging spacing between adjacent ones of said elements to be substantially less than spacing between adjacent ones of said mandrels;

driving containers from the mandrels to said holding elements by timed application of pressurized air through the mandrels to the interior sides of said closed ends of said containers, with pressurized air being introduced to each of said mandrels at its end remote from the closed end of the container mounted thereon; and

as a function of mandrel speed, automatically controlling operation of valve means through which pressurized air is introduced to each of said mandrels, with the position where pressurized air is introduced to each of said mandrels by said valve means being at a more upstream position as mandrel carrier speed increases;

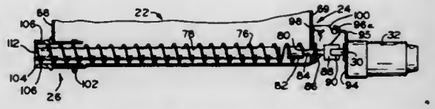
then delivering said containers form said holding elements to said pins by moving said containers through a transfer region located downstream of said pickup region, said containers being entered through their said open ends by said pins and thereby being received by said pins as the latter move through said transfer region.

5,183,146
VIAL OR AMPOULE INFEED CONVEYOR MECHANISM
Urs Reuteler, Lebanon, N.H., assignor to New Jersey Machine Inc., Lebanon, N.H.
Filed Feb. 18, 1992, Ser. No. 838,135
Int. Cl.[5] B65G *47/12*
U.S. Cl. 198—444 **12 Claims**



1. For delivering vials to be labeled to an infeed conveyor of a labeling machine and thence to a timing screw of the labeling machine, an infeed mechanism comprising a vial separating screw having a vial exit end, a vial infeed belt for supporting and moving vials along a relatively wide path toward said vial separating screw and placing vials in engagement with said vial separating screw, a pair of spaced vial guides defining a relatively narrow vial path therebetween, and means for rotating said vial separating screw to deliver vials single file into said relatively narrow path between said vial guides and thence onto the infeed conveyor of the labeling machine and on into engagement with the timing screw of the labeling machine.

5,183,147
CHEMICAL HANDLING SYSTEM
David D. Callahan, Rochester; Craig Reese, Roanoke; Douglas P. Baxter, Rochester, and Stephen M. Murray, Fort Wayne, all of Ind., assignors to Murray Equipment, Inc., Fort Wayne, Ind.
Continuation-in-part of Ser. No. 654,785, Feb. 11, 1991, abandoned. This application Nov. 12, 1991, Ser. No. 790,371
Int. Cl.[5] B65G *33/26*
U.S. Cl. 198—524 **29 Claims**



1. A chemical conveying system for conveying dry chemical to a chemical distribution apparatus comprising:

a tank;

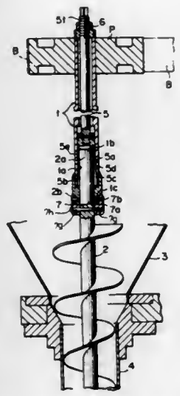
an integral, internal auger mechanism disposed within said tank, said auger including a drive end and a separate, opposite outlet end;

a motor detachably mounted to said tank, said motor including a drive shaft adapted to detachably drivingly engage said drive end of said internal auger mechanism; and

a flexible auger delivery tube having a flexible auger therein, said flexible auger including on one end thereof engaging means for detachable rotational engagement with the said outlet end of said internal auger mechanism.

VOL 1147 ISS 1 FE 2 1993 UMI

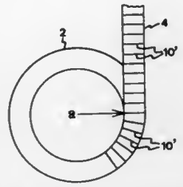
5,183,148
SCREW FEEDER
Fumio Kondo, Chiba, Japan, assignor to Tokyo Automatic Machinery Works, Ltd., Tokyo, Japan
Filed Jan. 29, 1991, Ser. No. 647,227
Claims priority, application Japan, Sep. 17, 1990, 2-248001
Int. Cl.[5] B65G *33/34*
U.S. Cl. 198—674 **16 Claims**



1. A screw feeder having an outer pipe and a hopper, the outer pipe being positioned vertically below a lower end of said hopper, said outer pipe including a screw shaft adapted to transport a substance in said hopper in response to rotation of a driving shaft which is connected to said screw shaft, said driving shaft comprising a tube, with a connecting rod being positioned on the inside of said tube, said connecting rod being adapted to reciprocate along the axial direction of said driving shaft, said driving shaft further comprising a recessed portion into which a base end of said screw shaft is positioned, and slit portions which comprise means for dividing a circumferential wall of said recessed portion in a generally circumferential direction, said slit portions being formed in a generally axial direction at one end of said connecting rod, a frustoconical face portion being provided along an outer circumferential surface of said circumferential wall of said recessed portion, wherein the diameter of said frustoconical portion gradually increases in a direction towards said screw shaft, a tapered portion being formed, in opposed relationship to said frustoconical portion, along an inner circumferential face of said tube, said tapered portion being adapted to engage said frustoconical portion of said connecting rod in an axial direction.

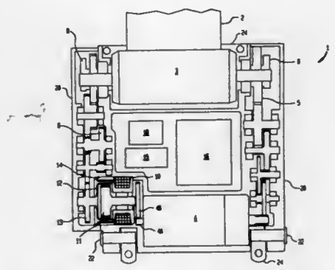
5,183,149
BELT CONVEYOR SYSTEM
Michael J. Wierman, Helsingborg, and Lennart F. Olsson, Nyhamnsläge, both of Sweden, assignors to Frigoscandia Food Process Systems AB, Helsingborg, Sweden
Filed Sep. 11, 1991, Ser. No. 757,793
Int. Cl.[5] B65G *13/02*
U.S. Cl. 198—778 **9 Claims**

1. In a plant for treatment of food products, a belt conveyor system comprising
an endless conveyor belt following, through part of its length, a helical path section preceded by a first straight path section, and followed by a second straight path section,
said belt comprising transverse elements interconnected by links disposed along opposite lateral edges of the belt,
the successive links at each lateral edge of the belt being mutually slideable in the longitudinal direction of the belt and mutually pivotable about a transverse axis substantially in the plane of the belt, such that the belt is permitted to follow lateral curves in both directions and to pass around a roller having an axis parallel to said transverse axis;
and further comprising means for collapsing the belt along a predetermined part of said first straight path section closest to said helical path section, the links at a point of a transition from said first straight path section to said helical path section being expanded along the outer lateral



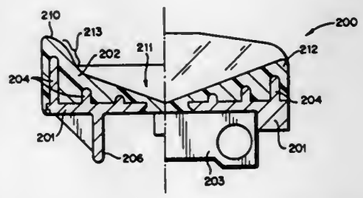
edge of the belt and being held collapsed along the inner lateral edge of the belt, and
traction means for applying a tractive force on the links at both lateral edges of the belt in said second straight path section, the links at the point of transition from said helical path section to said second straight path section being expanded along the inner lateral edge of the belt and being held expanded along the outer lateral edge of the belt.

5,183,150
CARGO DRIVE UNIT WITH A HYSTERESIS COUPLING
Henry H. Chary, Rancho Palos Verdes; Thomas F. Fitgibbon, Long Beach, and Christopher M. Gibson, Fountain Valley, all of Calif., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Dec. 13, 1991, Ser. No. 806,686
Int. Cl.[5] B65G *13/02*
U.S. Cl. 198—782 **21 Claims**



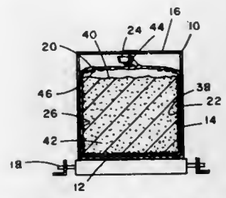
1. A cargo drive unit of the type which is part of an array of several such units for driving a load from one transportable location to another, said cargo drive unit comprising:
an electric motor having an output shaft;
load driving means for first contacting and then driving a load;
coupling means disposed between the motor and the load driving means and including input means coupled to the motor shaft, output means coupled to the load driving means and current responsive means arranged with the input and output means;
means for applying current to the current responsive means, whereupon a force is developed between the input and the output means which is proportional to said current applied to said current responsive means, said force affecting the driving of the load driving means by the motor; and
means for adjusting the current applied to the current responsive means for adjusting the force of the load driving means against a load.

5,183,151
HANDLING OF FRUIT USING DUAL PLASTIC CUP CONSTRUCTION
Harry C. Powell, Jr., Faber, Va., assignor to Powell Machinery, Inc., Faber, Va.
Division of Ser. No. 374,827, Jul. 3, 1989, Pat. No. 5,086,909, which is a continuation-in-part of Ser. No. 248,199, Sep. 23, 1988, Pat. No. 4,957,619. This application Feb. 21, 1991, Ser. No. 658,672
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—803.01 **14 Claims**



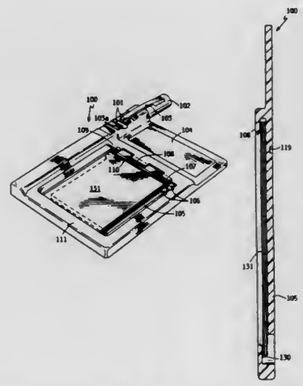
1. A cup connectable to a transporting chain for holding a discrete bruisable element, comprising:
a first body of a first plastic material which has dimensional stability, including means for connecting said body to a transporting chain; and
a second body of a second plastic material which is of less expensive material and of less dimensional stability than said first material, said second body irremovably connected to said first body and extending therefrom in a dimension opposite said connecting means, and having an exterior contour for holding a discrete bruisable element therein so that it will not inadvertently move out of said body;
said second body having a generally conical depression contour between front and rear, and two side, edges, said front and rear edges being longer than said side edges; and
wherein said depression has a greater effective angle of inclination at at least a portion thereof from the bottom thereof to said front and rear edges than from the bottom thereof to said side edges.

5,183,152
HUMECTANTS IN JOINT COMPOUND CONTAINERS
James L. Zak, Cheektowaga, and Richard E. Smith, Williamsville, both of N.Y., assignors to National Gypsum Company, Dallas, Tex.
Filed Sep. 4, 1990, Ser. No. 576,912
Int. Cl.[5] B65D *85/84*
U.S. Cl. 206—524.4 **7 Claims**



1. A container comprising watertight walls forming a complete enclosed watertight container and a thin layer of a humectant disposed on substantially all of the inner surfaces of said container as are likely to contact any aqueous slurry contents placed in said container, wherein said watertight walls are a plastic film.

5,183,153
PAD HOLDER
Richard A. Linn, 4237 Thomas Ave. N., Minneapolis, Minn. 55142
Continuation-in-part of Ser. No. 571,993, Aug. 24, 1990, Pat. No. 5,060,794. This application Aug. 19, 1991, Ser. No. 747,724
Int. Cl.[5] A45C *11/32*
U.S. Cl. 206—232 **5 Claims**



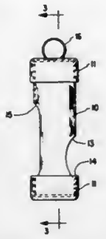
1. A device to be carried about in a users pocket or purse with the device operable for holding a stack of individual sheets of paper without bending the papers comprising:
a one piece frame;
a panel, said panel integrally and cantileverly connected to said frame, said panel having a region for fastening a stack of individual sheets of paper to said panel, said panel and said frame co-acting to form a protective recess for protectively receiving and storing the stack of individual sheets of paper; and
a first lip mounted on said frame and extending at least partially over said region for fastening the stack of individual sheets of paper, said first lip extend over a first end of the stack of individual sheets of paper;
a second lip mounted on said frame, said second lip spaced from said panel, said second lip projecting inward into said protective recess said second lip extending over a second end of the stack of individual sheets of paper to sandwichingly hold said second end of the stack of individual sheets of paper between said resilient panel and said second lip, said second lip coacting with said panel to form means for holding a free end of the stack of individual sheets of paper between said second lip and said panel, said second lip and said panel spaced sufficiently far from each other to permit a user to flex said panel to thereby remove an individual sheet of paper from the stack of individual sheets of paper by forcing the free end of an individual sheet of paper out of said protective recess so that a user can remove the individual sheet of paper to thereby expose an unused sheet paper.

5,183,154
GOLF BALL HOLDER DISPENSER
Mark C. Slemp, R.R. 1, Box 125, Alton, Iowa 51003
Filed Jan. 24, 1992, Ser. No. 825,595
Int. Cl.[5] B65D *85/58*
U.S. Cl. 206—315.9 **3 Claims**

1. A ball holder comprising tubular holding means including

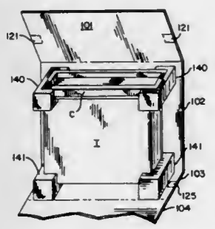
VOL
1147
ISS
1
FE
2
1993
UMI

a wall forming a tube having an approximately circular cross section; closure means at both ends of said holding means to confine balls within said tubular means; said tubular means being formed with an elliptical opening having a minor axis when said wall is flat substantially equal to the diameter of the ball being held; said minor axis, when said wall is curved to form said tube, being slightly smaller than the diameter of said balls; said wall being deformable enough to allow said opening to expand in the direction of said minor axis to allow said ball to be pushed through said opening.



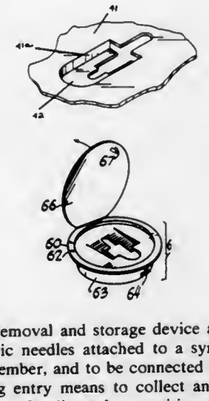
2. A ball holder comprising tubular holding means, caps at both ends of said holding means to confine balls within the holding means, said caps being fixed to said tubular means to hold and support said tubular means in tubular configuration, said tubular means being formed with a substantially elliptical opening near one end of said tubular means, the cap at said one end having a rim extending so as to cover a minor portion of said opening, said opening having a minor axis slightly smaller than the diameter of the balls being held, said tubular means having walls deformable enough to allow said opening to expand in the direction of said minor axis to allow said ball to be pushed through said opening.

5,183,155
PACKAGING SYSTEM FOR A TOILET WATER TANK AND COVER
Paul P. Vavra, 519 Pine Tree Rd., Kohler, Wis. 53044
Filed Dec. 20, 1990, Ser. No. 630,526
Int. Cl.[5] B65D *85/00*
U.S. Cl. 206—320 **3 Claims**



1. An open-ended shipping container for an article and a cover for the article, comprising:
separating means placed between the article and the cover and extending across and beyond the outer edges of the article and the cover for spacing and supporting the article cover above the top of the article;
a top panel placed on top of the article cover and extending across and beyond the outer edges of the article cover;
a bottom panel placed below the article and extending across and beyond the outer edges of the article;
wherein the top and bottom panels and the separating means cooperate to define an open-ended container structure in which the ends of the article are exposed;
a pair of spaced lower supporting pads disposed between the article and the bottom panel which engage the bottom of the article at spaced locations to define a space between the bottom of the article and the bottom panel;
securing means for securing the article, article cover, the panels, the separating means and the supporting pads together to form an open-ended container for the article and article cover, comprising a strap wrapped about the article, article cover and panels; and
flaps formed from portions of the top panel and the bottom panel, the flaps defining cut-out areas within which the strap is received, and wherein the flaps engage the separating means and the lower supporting pads.

5,183,156
NEEDLE REMOVAL/CONTAINMENT AND TRANSPORT APPARATUS FOR SAFE STORAGE AND DISPOSAL OF HYPODERMIC NEEDLES/SYRINGE ASSEMBLIES
John Bruno, 77-83 Second Ave., Paterson, N.J. 07514
Continuation of Ser. No. 627,314, Dec. 14, 1990, abandoned, which is a division of Ser. No. 423,977, Oct. 19, 1989, Pat. No. 5,031,767. This application Jun. 15, 1992, Ser. No. 899,103
Int. Cl.[5] B65D *85/10*
U.S. Cl. 206—366 **11 Claims**

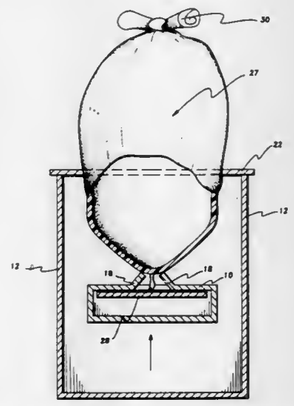


1. A needle removal and storage device adapted to disengage hypodermic needles attached to a syringe body via a needle a hub member, and to be connected to a storage container providing entry means to collect and store the used needle implements for disposal, comprising:
a base plate member connectable to said container and providing a receiving slot formed thereinto;
a needle engaging member formed along a second plate attached to said base plate member, said second plate angled towards the interior of said container, wherein said needle engaging member comprises a pair of opposed finger members integrated with said second plate to define a engaging slot disposed generally opposite said receiving slot in lateral alignment therewith, the entrance into said engaging slot being at a generally lower elevation than that of said receiver slot;
said needle hub member slidably translatable into engagement with said finger members such that said syringe body may be attached from said hub member, wherein said detached needle and syringe is translatable out of said engaging slot back towards said receiving slot such that said hub member is disposed below said base plate member, permitting said needle to drop into said container through said entry means, said hub member engagable with the underside of said base plate member in response to upward pulling forces applied to said syringe body to ensure complete detachment of said need and syringe body.

8. A needle removal and storage device formed from an injection-molded thermoplastic material adapted to disengage hypodermic needles attached to a syringe body via a needle

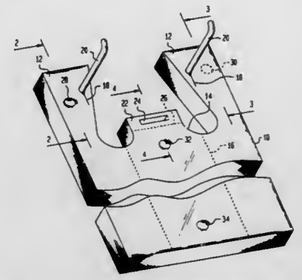
hub member, and to be connected to a storage container providing entry means to collect and store the used needle implements for disposal, comprising:
a base plate member connectable to said container and providing generally U-shaped first receiving slot means;
a needle engaging member formed in a second plate integral with said base plate member and recessed towards the interior of said container, said needle engaging member comprising a pair of opposed finger members integrated with said second plate to define second slot means disposed generally opposite said first receiving slot means in lateral alignment therewith, the entrance than that of said first slot means, said second slot means providing a generally rectangular receiving slot portion adjacent said first slot means and a contiguous generally U-shaped engaging slot portion;
said needle hub member slidably translatable through and receiving slot portion into engagement with said finger members such that said syringe body may be detached from said hub member, said detached needle and syringe translatable out of said engaging slot portion, through said receiving slot portion, thence into said first receiving slot means such that said hub member is disposed below said base plate member permitting said needle to drop into said container through said first entry means, said hub member engagable with the underside of said base plate member in response to upward pulling forces applied to said syringe body to ensure complete detachment of said needle and syringe body.

5,183,157
PLASTIC BAG DISPENSING SYSTEM
Louis R. Darden, 8410 Gaylord Rd., Richmond, Va. 23229
Filed Oct. 1, 1991, Ser. No. 769,381
Int. Cl.[5] B65D *25/16*
U.S. Cl. 206—390 **4 Claims**



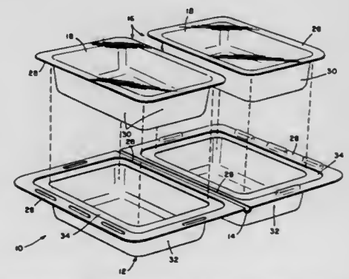
1. Bag dispensing apparatus comprising a container having a restricted opening, a series of bags positioned in the container and sequentially removable through said opening, said bags being connected in sequence and folded into a stack, a line of weakness between each pair of adjacent bags to permit separating them by tearing across the line of weakness, and means to prevent the last bag of the sequence from being detached from said container.

5,183,158
BAG DISPENSING SYSTEM AND BAG PACK
Dana M. Boyd, Rushville; William J. Randolph Jr., Marion, both of N.Y.
Continuation of Ser. No. 713,223, Jun. 11, 1991, abandoned. This application Jul. 17, 1992, Ser. No. 914,657
Int. Cl.[5] B65D *27/10*
U.S. Cl. 206—554 **12 Claims**



1. A pack of thermoplastic film bags, said bags being in at least approximately registration, each bag comprising a bottom, front and rear walls connected by way of gusseted side walls, a bag mouth, double film loop handles at opposite ends of the bag mouth, said handles being integral extensions of said walls;
said pack having pack suspension means in association with said handles about intermediate between the top and the base of said handles; and
first releasable means between the upper rear portion of a lead bag and the upper front portion of the next bag, said upper portion including the portion from just below the bag mouth to the extent of the handles, which, upon removal of said lead bag from the pack, causes an initial opening of the top portion of said next bag and second releasable means located between each rear and front wall at the lower portion of each bag near the bottom of each bag to cause a more complete opening of said next bag on removal of said lead bag by the handles thereof.

5,183,159
SUSPENSION CUSHIONING PACKAGE
Robert J. Hojnacki, Guilford, Conn.; Daniel C. Pearson, Warminster, Pa.; Gerard K. Brucker, Horsham, Pa.; Michael J. Gober, Warrington, Pa., and Daniel J. Shaw, Jr., Haverhill, Mass., assignors to United Foam Plastics, Georgetown, Mass.
Filed Jul. 26, 1991, Ser. No. 736,226
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—583 **13 Claims**



1. A suspension cushioning package comprising:
a. a pair of package frame members, each of which defines a planar face and a well extending therebelow, each said

VOL
1147
ISS
1
FE
2
1993
UMI

planar face further defining a depressed area around the perimeter of its respective well;

b. a hinge connecting the frame members to permit articulation between an open position and a closed position wherein said members are disposed face-to-face;

c. means for locking the frame members in said closed position; and

d. an insert tray disposed in the well of each frame member, each said insert tray comprising;

(i) side walls dimensioned to interfit with its respective well, said side walls including flanged portions for interfitting with the respective depressed area; and

(ii) a stretchable resilient film sealed to the flanged portions and spanning the distance between the flanged portions, and disposed substantially in parallel with the planar face of its respective frame member.

5,183,160

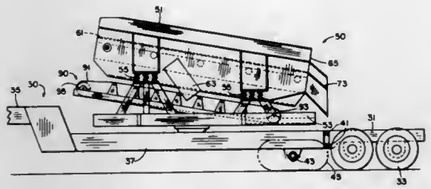
HIGH VOLUME PADDING MACHINE

Ray McClain, 20152 E. 2nd, Tulsa, Okla. 74108

Filed Oct. 24, 1990, Ser. No. 605,225

Int. Cl.[5] B07B *9/00*

U.S. Cl. 209—234 **4 Claims**



1. A padding machine to be towed behind a motorized carrier comprising:

transport means adapted to be hitched to said carrier;

seat means disposed on said transport means;

bearing means nestled in said seat means;

support means mounted on said bearing means above said transport means;

hopper means mounted on said support means having a bottom with a first discharge port therein;

separator means for catching relatively large stones and debris in earth fed into said hopper means and for passing separated materials therethrough;

sift means mounted in said hopper means beneath said separator means for catching relatively medium size stones and debris passing through said separator means and for passing sifted materials through said sift means and said first discharge port;

discharge means for distributing stones and debris caught by said sift means outwardly of said hopper means;

collection means mounted beneath said hopper means for receiving said sifted materials passing through said sift means and said first discharge port and for conveying said sifted materials outwardly in relation to said hopper means to a discharge end of said collection means; and

delivery means for conveying said sifted materials from said discharge end of said collection means to a discharge end of said delivery means.

5,183,161

PROCESS AND APPARATUS FOR SEPARATING GRAIN MIXTURE

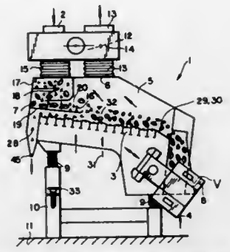
Roman Mueller, Niederuzwil, Switzerland, assignor to Buebler AG, Uzwil, Switzerland

Continuation of Ser. No. 391,554, filed as PCT/EP88/01078, Jul. 21, 1989, published as WO 89/04721, Jun. 1, 1989, abandoned.

Claims priority, application Switzerland, Nov. 27, 1987, 04626/87; Mar. 24, 1988, 01110/88

Int. Cl.[5] B03B *4/00*

U.S. Cl. 209—467 **8 Claims**



1. Apparatus for separating heavier materials from a product stream of lighter grain materials, the apparatus comprising:

an inclined table permeable to air having a higher and lower end;

oscillating means for oscillating said inclined table so that the heavier material moves in a direction toward the higher end of said table;

distributing means being positioned above the higher end of said table and having a cascade of trays and a guide plate for guiding the product stream to the higher end of said table; and

air flow means for supplying air flow through said table in an upward direction to move the lighter material in the direction of the lower end of said table, the higher end of the table defining a separation zone with said distributing means for taking out the heavier materials from the product stream;

said air flow means supplying air flow through the totality of the table in an upward direction to create said separation zone; said guide plate being arranged over the full width of said table and being arranged to oscillate with said cascade of trays and said inclined table;

the upwardly directed air flow being guided between said distributing means and the table, toward the lower end of the table, to create a flow return zone for the lighter material.

5,183,162

MOBILE MOUNT SYSTEM

Robert Ritzenthaler, 1181 Kempton Park, McKinney, Tex. 75069

Filed May 10, 1991, Ser. No. 698,712

Int. Cl.[5] A47F *5/00*

U.S. Cl. 211—1.57 **10 Claims**

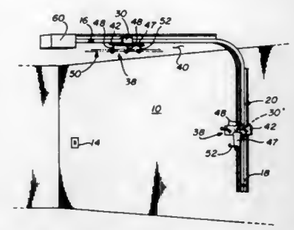
1. A. mobile mount system comprising:

an elongated track attached to a wall;

an endless weight carrying band associated with the track;

a mount detachably coupled to the band for receiving an object, the mount being movably coupled to the track; and

power means engaging the band for enabling selective movement of an object placed on the mount to a position where the mount can be detached from the band and the



object left in the position where it will not interfere with other objects when not in use.

5,183,163

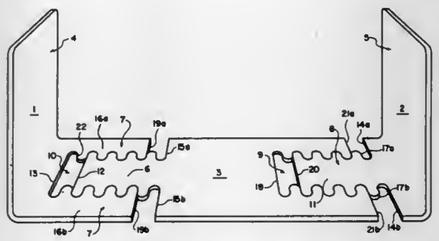
INTERLOCKING-CONTINUOUS BASE BOOKENDS

Stephen J. Slaiken, 9906 Woodlake Cove, Austin, Tex. 78733

Filed Jan. 30, 1992, Ser. No. 828,354

Int. Cl.[5] A47F *5/00*

U.S. Cl. 211—43 **2 Claims**



1. An interlocking continuous base bookend device comprising:

a) a first and second upright end unit each having a longitudinal base leg of uniform thickness so that when joined they form a level base;

b) said first upright end unit longitudinal base leg having a female cut-out opening surrounded on three sides by oppositely positioned base fingers and a base opening stop between said fingers at said first upright end unit;

c) said second upright end unit longitudinal base leg having a male base-tongue;

d) said first upright female longitudinal base leg cut-out opening fashioned to receive said longitudinal leg male base-tongue so that a continuous base is formed; and

e) interlocking means for releasably coupling and readjusting the width of said continuous base comprising shapes formed along the outside edges of said longitudinal leg male base-tongue conformed to releasably correspond with shapes formed along the adjacent inside edges of said female longitudinal base leg cut-out opening so that said upright end units are adjustably joined by meshing said shapes and the width of said device fixed.

5,183,164

CLAMPING HOLDER FOR SUSPENDING SKIS

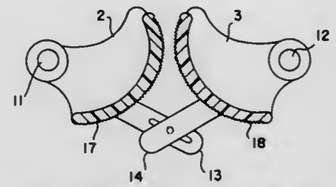
Egon Heinzle, Laterns, Austria, assignor to Snowboardklinik Und Handelsges M.B.H., Innsbruck, Austria

Continuation-in-part of Ser. No. 537,370, Jun. 13, 1990, abandoned. This application Sep. 30, 1991, Ser. No. 769,192

Claims priority, application Austria, Feb. 3, 1989, 226/89

Int. Cl.[5] A47F *7/00*

U.S. Cl. 211—70.5 **6 Claims**



1. A holder for suspending skis, comprising support means, two clamping jaws rotatably supported on said support means, said clamping jaws being rotatable about a respective axis of rotation and being supported symmetrically opposite one another relative to a vertical plane, freely cantilevering arms rigidly connected to said clamping jaws in the vicinity of said support means, said cantilevering arms having ends being in mutual rotational engagement for effecting interdependent rotation of said clamping jaws, said clamping jaws having effective surfaces facing toward one another, said effective surfaces being convex with an axis of curvature being oriented substantially perpendicular to said support means and being located at a given distance from said axis of rotation, and a friction layer formed of thermoplastic material covering said effective surfaces.

5,183,165

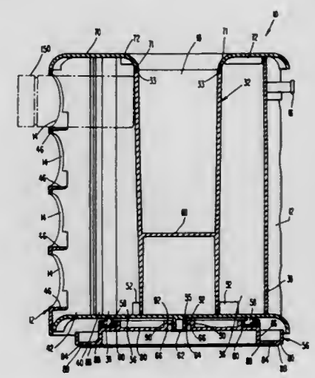
KITCHEN STORAGE UNIT

Bruce Acona, and Jane Ancona, both of New York, N.Y., assignors to M. Kamenstein, Inc., White Plains, N.Y.

Continuation of Ser. No. 605,059, Nov. 2, 1990, abandoned. This application Apr. 6, 1992, Ser. No. 864,138

Int. Cl.[5] A47B *73/00*

U.S. Cl. 211—77 **20 Claims**



1. A kitchen storage unit, comprising:

(a) a body having an interior volume;

(b) a plurality of vertical members disposed about a perimeter of said body, each one of said vertical members including one or a plurality of apertures for receiving containers;

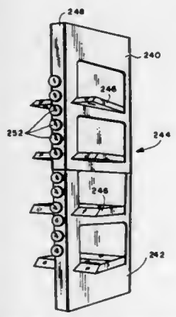
(c) a plurality of pegs extending from an upper portion of

VOL 1147 ISS 1 FE 2 1993 UMI

said body, wherein no portion of any one of said apertures in said vertical members is directly beneath any one of said pegs; and

(d) a receptacle formed centrally in said body and having an opening defined by a hole in a top surface of said body, whereby items may be received in said receptacle and protrude above said top surface of said body and having a wall defining an interior space within said interior volume, and said wall having an exterior surface, said exterior surface of said receptacle being inward of said apertures, an unobstructed passage extending between each of said apertures and said exterior surface of said receptacle being selected so that said exterior surface of said receptacle and each of said apertures form a support for a container, said passage having a distance between the aperture and the exterior surface of said receptacle.

5,183,166
FOLDABLE SHELF DISPLAY
Paul Belokin, Jr.; Martin P. Belokin, and Norman P. Belokin, all of 7801 I-35N and Milam Rd., Denton, Tex. 76201
Filed Jan. 7, 1991, Ser. No. 638,082
Int. Cl.[5] A47F *5/08*
U.S. Cl. 211—149 **15 Claims**



1. A collapsible display device comprising:

a wall blank having at least a flat rear wall panel and two converging flat side wall panels foldably connected to the rear wall panel to define a continuous wall structure,

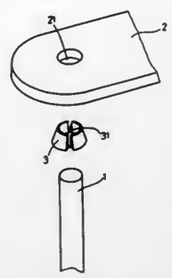
the wall blank being collapsible to a flattened state for storage and transportation and convertible to an expanded display state in which the wall panels cooperatively bound a polygonally shaped inner display space,

first and second substantially flat flaps respectively associated one each with the two converging side wall panels;

means attaching each of the first and second flaps foldably relative to its respective side wall panel so that each of the flaps can be swung inwardly of the display space into a juxtaposed position to afford openings in each of the side wall panels; and

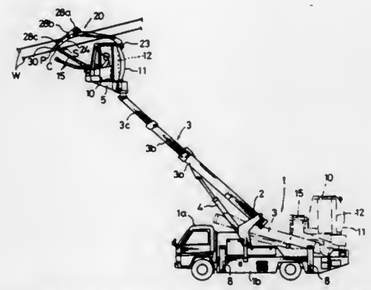
means interconnecting the first and second flaps with the rear panel whereby each of the first and the second flaps has a tab and the rear wall panel has a slot positioned to receive each of said tabs to interconnect the first and second flaps with the rear panels when the flaps are in juxtaposed position so that the juxtaposed flaps define a shelf within the polygonal display space for articles to be displayed.

5,183,167
ADJUSTABLE MULTI-DESK RACK
W. H. Cheng, No. 323, Sec. 2, An Kang Rd., Hsin, Tien, Taipei, Taiwan
Filed Sep. 6, 1991, Ser. No. 755,845
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—187 **2 Claims**



1. A multi-deck rack comprising two supporting posts vertically disposed at two opposite locations and a plurality of boards transversely mounted on said supporting posts, said supporting posts having a substantially continuous outer surface contour devoid of recess openings, each of said boards each having two tapered holes formed at two opposite ends thereof with a split tapered ring fastened in each of said tapered holes for receiving insert of a respective one of said supporting posts, said tapered ring being positionable at a selected infinitely variable vertical position point on said supporting posts, wherein downward pressure applied to each of said boards applies a radial displacement pressure on said tapered rings to firmly secure said tapered rings between said supporting posts and a corresponding board, whereby each of said boards are firmly retained on said supporting posts at said selected location and upward pressure applied to said boards causes said boards to be moved upwards on said supporting posts.

5,183,168
MOBILE VEHICULAR APPARATUS WITH AERIAL CABIN
Mineyuki Fujimoto, Okegawa, Japan, assignor to Aichi Sharyo Co. Ltd., Nagoya, Japan
Filed Sep. 5, 1990, Ser. No. 577,524
Int. Cl.[5] B66C *23/06*
U.S. Cl. 212—232 **8 Claims**



1. An apparatus for moving an operator around a three-dimensional aerial work location, comprising:

a mobile vehicle having a vehicle body, said vehicle body having at least front and rear sides;

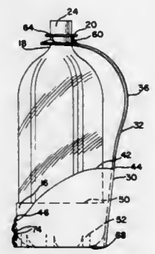
a boom upwardly extensibly and downwardly collapsibly mounted on said vehicle body, said boom being mounted at one end and having a distal end which is opposite said one end;

an operator's cabin mounted on said distal end of said boom, said cabin having a vertical recess defined in a rear side thereof;

at least one manipulator operatively connected to a front side of said cabin; and

a lifter operatively connected to the rear side of said cabin, said lifter being collapsibly storable in said recess and extensible from said recess with a distal end portion of the lifter being positioned in overhanging relation to said cabin.

5,183,169
REUSABLE BOTTLE HANDLE
Stephen D. Grzych, S&R Enterprises, P.O. Box 366, Cedar Lake, Ind. 46303
Filed Jun. 14, 1991, Ser. No. 715,497
Int. Cl.[5] B65D *23/10*
U.S. Cl. 215—100 A **19 Claims**



1. A reusable handle in combination with a bottle, the combination including:

a) a bottle having a generally cylindrical body of the type having a neck more narrow than the body of the bottle, and an annular neck flange, the generally cylindrical body having a cylindrical bottom portion;

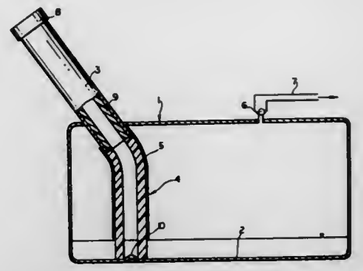
b) a reusable handle including

1) an upwardly-diverging jacket encircling the bottom portion of the bottle body, a portion of the jacket being in contact with a portion of the bottom portion of the body;

2) a flexible arm extending upwardly from the jacket to a free end, the arm having a gripping portion between the free end and the jacket, the free end having a bottle neck ring defining an opening through which the neck of the bottle extends, the bottle neck ring including a neck locking tab bearing against the bottle neck below the bottle neck flange, the neck locking tab being on the same side of the bottle as the gripping portion of the arm, the bottle neck ring including a surface bearing against the bottle neck opposite the neck locking tab.

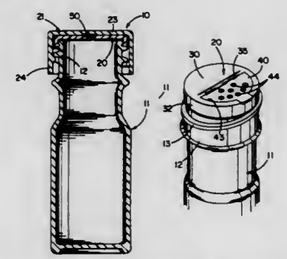
5,183,170
FUEL TANK FOR MOTOR VEHICLES
Jürgen Stege, Rohrbach, Fed. Rep. of Germany, assignor to Audi A.G., Ingolstadt, Fed. Rep. of Germany
PCT No. PCT/EP89/00077, § 371 Date Aug. 3, 1990, § 102(e) Date Aug. 3, 1990, PCT Pub. No. WO89/07536, PCT Pub. Date Aug. 24, 1989
PCT Filed Jan. 31, 1989, Ser. No. 573,023
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1988, 3804407
Int. Cl.[5] B65D *3/18*
U.S. Cl. 220—86.2 **1 Claim**

1. Fuel tank for motor vehicles, with a filling spout (3) which is adjoined by a component (4) which extends all the way to the tank bottom (2) or terminates near same, characterized in



that the component (4) consists of an open-pore plastic foam material in whose pores the fuel flows to the tank bottom (2).

5,183,171
CLOSURE WITH DISPENSING FITMENT AND SCREW-ON CAP
Douglas E. Pherigo, Loves Park, Ill., assignor to J. L. Clark, Inc., Rockford, Ill.
Filed Aug. 23, 1991, Ser. No. 749,122
Int. Cl.[5] B65D *51/18, 47/06*
U.S. Cl. 220—256 **4 Claims**



1. A container closure comprising a cap made of thermoplastic material and having a top wall and an internally threaded skirt integral with and depending from said top wall, a fitment made of thermoplastic material and having a top wall with at least one dispensing opening extending vertically therethrough, said fitment being disposed in said cap with the top wall of the fitment being located in face-to-face relation with the top wall of the cap, and means bonding the top wall of the fitment to the top wall of the cap, said bonding means comprising an ultrasonic weld between the plastic of the top wall of the fitment and the plastic of the top wall of the cap, said weld being sufficiently weak to break and release the cap from the fitment when the cap is twisted relative to the fitment.

5,183,172
DRINK THROUGH CONTAINER LID
Peter K. Boller, Willowdale, Canada, assignor to Lily Cups, Inc., Scarborough, Canada
Filed Mar. 23, 1992, Ser. No. 855,823
Int. Cl.[5] B65D *17/34*
U.S. Cl. 220—270 **8 Claims**

1. A lid of thin thermo-formed plastic material for use as a removable closure cap on an open mouthed beverage cup which has a circular cup rim thereabout, said lid comprising:

(a) a generally circular main body portion;

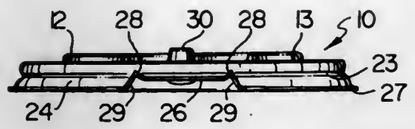
(b) at least one predetermined line of weakness formed in a

VOL
1147
ISS
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selected area of said main body portion providing a break-away segment therein;

(c) a circular groove disposed about the periphery of said main body portion, said groove being defined in part by an outer wall that is capable of frictionally engaging an exterior wall of said cup adjacent said rim when said lid is used as a closure cap thereon;

(d) a circular skirt having a skirt bottom and which extends



downwardly from said outer wall and in a direction outwardly from said groove;

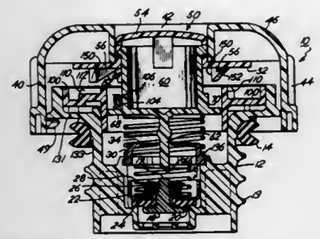
(e) said skirt, along one portion of said skirt bottom adjacent said break-away segment, being provided with a lift tab which extends radially outwardly therefrom and which is further characterized by said lift tab being located at a distance closer to said groove than the distance between said lift tab and the bottom of the remaining portion of said skirt bottom.

5,183,173

AUTO VENTING FUEL CAP

Greg A. Heckman, Dixon, Ill., assignor to Epicor Industries, Inc., Deefield, Ill.

Filed Jul. 29, 1991, Ser. No. 737,220
Int. Cl.[5] B65D *51/00*
U.S. Cl. 220—367 **18 Claims**



1. A fuel cap comprising:

a threaded housing;

a crown covering said threaded housing and having an aperture;

a pressure relief valve carried by said threaded housing; and

interconnecting means for selectively establishing a driving relationship between said threaded housing and said crown and for opening said pressure relief valve,

whereby said interconnecting means is manually operable through said aperture to open said pressure relief valve and simultaneously establish a driving relationship between said threaded housing and said crown in a cap-removal direction, enhancing the safety of said cap.

5,183,174

SPECIALIZED EAR-HANDLED HOLDER-CONTAINER

Dennis E. Quintero, 25 Bon Air Rd., Baltimore, Md. 21225

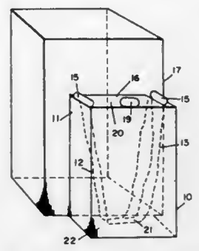
Filed Jun. 29, 1992, Ser. No. 905,813
Int. Cl.[5] B65D *90/04*
U.S. Cl. 220—404 **4 Claims**

1. An eared integral holder-container means for receiving handled plastic bags, comprising;

a first larger container and a second smaller holder-container bracket means attached to each other at their sides

said second holder-container being provided with two ear-handled extensions, projecting upwardly from opposing sides of the upper holder-container wall.

the second holder-container of a size to hold within the holder-container substantially all of the plastic bag, except



the bag handles which are spread over the holder-container ear-handles.

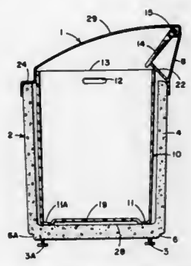
a friction fitting lid for the second holder-container, to enclose the holder-container around substantially all of the plastic bag, with the bag handles remaining outside and over the holder-container ear handles to seal against smells.

5,183,175

TRASH RECEPTACLE ASSEMBLY

Robert L. Brown, P.O. Box 1657, Umatilla, Fla. 43784-1657

Filed Mar. 12, 1992, Ser. No. 850,131
Int. Cl.[5] B65F *1/08*
U.S. Cl. 220—408 **8 Claims**



1. A trash receptacle assembly comprising:

an outer container having a top, a bottom and enclosed sides extending from a periphery of the bottom, said container being open on the top;

a rigid liner for placement inside the outer container, said liner having an open top, a bottom, enclosed sides and being o generally the same shape as the outer container, wherein the sides of the liner extend slightly above the top of the outer container when the liner is placed within said container;

a lid for placement over the outer container and liner, wherein the lid has a trash receiving end;

wherein the outer container contains cut-outs on the top of at least two sides thereof for insertion of the hands to reach the liner which may be placed therein; and

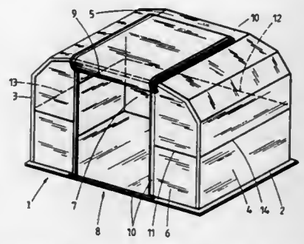
wherein the liner has cut-out hand holes near its open top and on at least two sides thereof, said hand holes align with the cut-outs in the outer container.

5,183,176

LINING FOR RECEPTACLES

Josef Meier, Borken, and Gottfried Niehaus, Rhede-Vardingholt, both of Fed. Rep. of Germany, assignors to Meier & Niehaus GmbH, Rhebe, Fed. Rep. of Germany

Filed Nov. 9, 1990, Ser. No. 612,582
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1989, 8913412[U]
Int. Cl.[5] B65D *33/14*
U.S. Cl. 220—470 **4 Claims**



1. A lining for a receptacle having a specific inner contour, wherein said lining comprises:

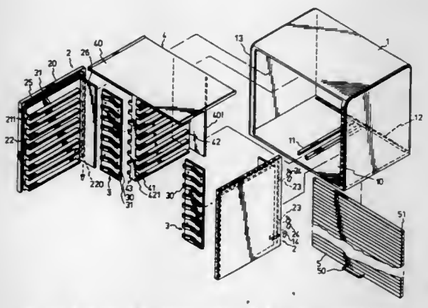
a prefabricated body conforming to said receptacle's inner contour, said body defining a hollow interior for being loaded with goods, said body having a sealable opening to provide access to said hollow interior for loading and unloading of said hollow interior, said body comprised of sheets of insulating material, with a bending fold provided in at least one of said insulating material sheets whereby said body may be folded to be flat, to provide for storage and transportation of said body in a compact manner, in which a flap which seals the opening and surface fasteners to hold the flap in the sealed position are provided in the region of the opening on the hollow body.

5,183,177

STORAGE BOX FOR ASSORTMENT OF ARTICLES

Jackson Yu, 2F, No. 2, Chung-Hua St., Peitou Dist., Taipei City, Taiwan

Filed May 28, 1992, Ser. No. 890,624
Int. Cl.[5] B65D *85/57, 85/575*
U.S. Cl. 220—523 **10 Claims**



1. A storage box for assortment of articles comprising:

a housing having a top wall, a bottom wall, a right side wall and a left side wall;

a pair of left and right separate plates respectively positioned against said left and right side walls, each of said left and right plates having a top side, a rear side, a front side and a guide rail extending along said rear side, said top side and said front side;

a top plate disposed between and spacing said left and right plates adjacent to said top sides thereof;

a flexible sliding door placed between said left and right plates and having two opposite ends slidably extending into said guide rails of said left and right plates, said sliding door being drawable over said top plate when sliding in said guide rails; and

said left and right plates further having inwardly projecting racks spaced vertically, each rack of said left plate aligned horizontally with the corresponding one of said right plate.

2. A storage box for assortment of articles comprising:

a housing having a top wall, a bottom wall, a right side wall, a left side wall and a rear wall;

a pair of left and right separate plates respectively positioned against said left and right side walls, each of said left and right plates having a top side, a rear side, a front side and a guide rail extending along said rear side, said top side and said front side, said guide rail having a rear end adjacent to said bottom wall of said housing, said left and right plates further having inwardly projecting racks spaced vertically, each rack of said left plate aligned horizontally with the corresponding one of said right plate;

said bottom wall of said housing having an elongated access slot aligned with said rear end of said guide rail of each of said left and right plates;

a flexible sliding door placed between said left and right plates via the passage through said elongated access slot and having two opposite ends slidably extending into said guide rails of said left and right plates;

a resilient stop means provided in said rear end of said guide rail to prevent said sliding door from being released from said guide rail;

each of said left and right plates further having a horizontal groove above said racks and below said guide rail; and

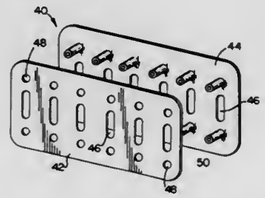
a top plate disposed between said left and right plates and engaging said horizontal grooves.

5,183,178

BULK CONTAINERS

Elvin-Jensen Flemming, 4655 Woodgreen Dr., West Vancouver, Canada

Continuation of Ser. No. 639,055, Jan. 9, 1991, abandoned. This application Jul. 1, 1992, Ser. No. 908,776
Claims priority, application Australia, Sep. 24, 1990, PK2442
Int. Cl.[5] B65D *69/00*
U.S. Cl. 220—650 **14 Claims**



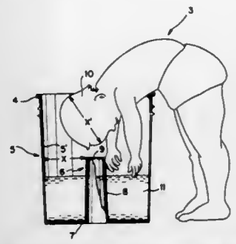
1. A repair device for a container used in the storage of materials, which container is normally transported from location to location by a fork lift truck, the container including sidewalls having elongated ventilation slots therein, a base and an opening in the lower portion of the container below the base with the opening being capable of receiving the tines of a fork lift truck, said device comprising

a pair of separate plates one of which has projecting connector pieces thereon spaced so as to be able to fit through the ventilation slots and the other of which has receiving openings into which said connector pieces can be received and secured to form a robust reinforcing plate; and

each of said plates comprising slots adapted and arranged for registration with said ventilation slots of said sidewalls.

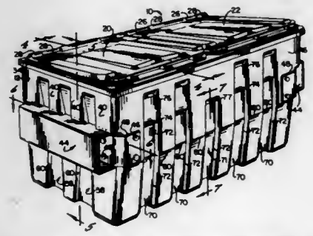
VOL 1147 ISS 1 FEB 2 1993 UMI

5,183,179
CHILD DROWNING PROTECTING GUARD FOR AN OPEN HEAD NESTABLE CONTAINER
Glenn H. Morris, Sr., 1192 Cumberland Rd., Chattanooga, Tenn. 37419
Filed Aug. 31, 1992, Ser. No. 937,555
Int. Cl.[5] A65D *3/00*
U.S. Cl. 220—694 **12 Claims**



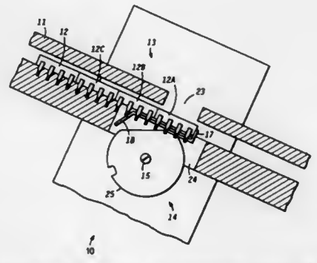
1. A child drowning protection guard for an open head nestable container comprising, an open head, closed bottom, straight sided plastic container, containing a volume of liquid, and a member secured to the bottom of the container and extending upwardly from the container bottom and through the liquid surface a distance at least one-half the height of the container, said member being positioned at the center of the container bottom and being spaced radially inwardly from the side wall of the container, the radial space between the member and the side wall of the container being dimensioned to be less than the diameter of the head of a typical eight month to twelve month old child, whereby when a child leans into the open container the child's head abuts the member to prevent the child from reaching any further into the container, thereby preventing the child from toppling head first into the liquid in the container.

5,183,180
PLASTIC REFUSE CONTAINER
Larry S. Hawkins, Charlotte, N.C., and Ulrich Beese, Wenden-Hünsborn, Fed. Rep. of Germany, assignors to Otto Industries, Inc., Charlotte, N.C.
Filed Dec. 3, 1990, Ser. No. 621,528
Int. Cl.[5] B65D *90/04*
U.S. Cl. 220—908 **24 Claims**



1. A container for receiving waste comprising a polymeric body of generally rectangular shape defined by first and second opposed side walls, a front wall, a rear wall and a bottom wall;
two metal lifting sleeves, each metal lifting sleeve comprising an interior face fastened horizontally on the exterior of each side wall to receive lift forks for lifting the container;
at least a portion of each side wall above and adjacent the lifting sleeve extending outwardly beyond at least a portion of the lifting sleeve for receiving compressive load from at least a portion of the top of the lifting sleeve during lifting of the container; and
a plurality of vertical reinforcing ribs in each side wall, the vertical reinforcing ribs being defined by side portions of at least one vertical channel integrally formed in the side wall, wherein the vertical channel extends vertically into the horizontal portion of the side wall fastened to the interior face of the lifting sleeve so that at least a portion of the reinforcing ribs are positioned in the side wall behind the lifting sleeve.

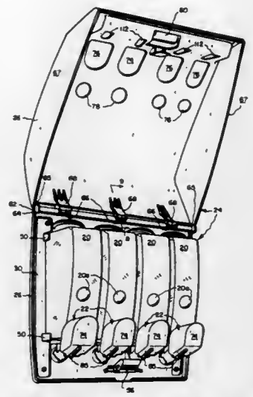
5,183,181
SINGULATING ASSEMBLY FOR PRESENTING WORK PIECES
Maureen Sugai, Mesa, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Sep. 27, 1991, Ser. No. 766,376
Int. Cl.[5] A47F *1/04*
U.S. Cl. 221—155 **9 Claims**



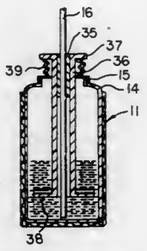
1. A singulating assembly for presenting work pieces to an inspection site, comprising:
a track for transporting a plurality of work pieces; and
a means for rotating in both a clockwise and a counterclockwise direction, the means for rotating having a first protrusion to block the track thereby preventing passage of work pieces so that a first work piece in line can be inspected, and having a second protrusion to pin at least one additional work piece against a portion of the track and to resiliently hold said at least one additional work piece in line while simultaneously allowing the first work piece to pass after the first work piece has been inspected.

5,183,182
LIQUID DISPENSER FOR VERTICAL WALL MOUNTING
Roger D. Comstock; Ryan K. Tischner, both of Orem, and Wayne E. Pearce, Provo, all of Utah, assignors to Better Living Products, Provo, Utah
Filed Feb. 11, 1991, Ser. No. 653,142
Int. Cl.[5] B67D *5/56*
U.S. Cl. 222—129 **21 Claims**

20. A liquid dispensing device, comprising a shell for enclosing one or more liquid-containing bottles, said shell having a part for receiving and holding said one or more bottles and a cover part for the bottle holding part; one or more elongate bottles adapted to be received and held by said bottle-holding part, each of said one or more bottles having a liquid-dispensing opening at its bottom; valve means removably attached to each of said one or more bottles over said liquid-dispensing opening, each of said valve means including mechanism that is operable back and forth along an axis substantially normal to the longitudinal axis of its associated bottle by means of a push button that is adapted to extend through said cover for manual operation by the user of the device for operating said valve means, and having a downwardly extending, discharge spout through which liquid from its associated bottle will be discharged when the valve means is operated, and resilient means for returning the push button and valve mechanism to closed position; means whereby said shell can be attached to a wall, with said bottle or bottles positioned substantially vertically; and means on said receiving and holding part of said shell for individually removably receiving and holding each of said one or more bottles with valve means attached whereby each of said bottles with valve means attached may be individually and easily removed as desired for cleaning, filling, or replacement.

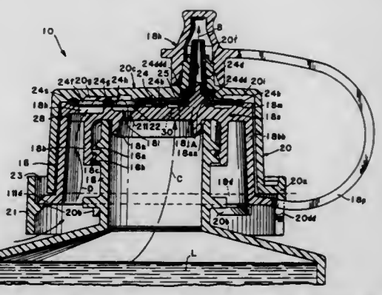


5,183,183
BOTTLE SLING APPARATUS
Trinidad Hernandez, 8467 Oleander Ave., Fontana, Calif. 92335
Filed Dec. 23, 1991, Ser. No. 811,848
Int. Cl.[5] B67D *5/64*
U.S. Cl. 222—175 **3 Claims**



1. A bottle sling apparatus, comprising,
a flexible pouch assembly, the pouch assembly including a first end edge spaced from a second end edge, with the second end edge selectively securable overlying the first end edge, and
a first side edge spaced from a second side edge, the second side edge including a first flap securable to the pouch assembly medially of the first end edge and the second end edge, and
a fluid container received within the pouch assembly, and a mounting ring secured about an upper distal end of the pouch assembly, with the mounting ring including a flexible strap member mounted to diametrically opposed sides of the mounting ring, and the fluid container including a fluid container cap, and a drinking tube directed through the cap extending into the fluid container, and
including a first pocket mounted to an exterior surface of the patch assembly below the mounting ring, where the first pocket includes a second pocket securable in a surmounted relationship relative to the first pocket, and a mounting ring positioned below the first pocket and the second pocket, and
the drinking tube is coaxially directed through the container cap, and a drinking tube support bushing fixedly receives the drinking tube therethrough, and a bushing tube slidably receiving the drinking tube support bushing, the bushing tube slidably received through the container cap in surrounding relationship relative to the drinking tube support bushing, and the bushing tube including a top flange spaced above the container cap, and a bottom flange positioned within the container, and at least one spring member captured between the top flange and the container cap.

5,183,184
LIQUID DISPENSER NOZZLE ASSEMBLY
Joseph V. Ranalletta, Guntersville; Fred E. Williams, Jr., Arab, and Rowland W. Kanner, Guntersville, all of Ala., assignors to Ryder International Corporation, Arab, Ala. and pK Scientific, Inc., Frederick, Md.
Continuation-in-part of Ser. No. 406,053, Sep. 11, 1989, Pat. No. 5,025,957, which is a continuation-in-part of Ser. No. 255,365, Oct. 7, 1988, abandoned. This application Mar. 4, 1991, Ser. No. 664,347
The portion of the term of this patent subsequent to Jun. 25, 2008, has been disclaimed.
Int. Cl.[5] B67D *5/58, 37/00*
U.S. Cl. 222—189 **10 Claims**



1. A liquid dispensing nozzle assembly for mounting on a liquid container and dispenser having a flexible wall and liquid storage cavity for manually squeezed dispensing of liquid from the cavity through the nozzle assembly and for maintaining the liquid in sterile condition during storage and repeated dispensing of the liquid from the container cavity, said nozzle assembly comprising a liquid discharge port; liquid conduit means for communication from the container cavity to said liquid discharge port to enable dispensing of said liquid through said port during said manually squeezed liquid dispensing; diaphragm means integrally including a deflectable valve element for biased sealing against a valve seat in said nozzle assembly to form a one-way valve therewith allowing only one-way flow of liquid therebetween when said valve element is resiliently unseated from said valve seat to open said valve, and a tubular portion integrally formed with said valve element such that said resilient unseating of said valve element to open said valve permits said liquid flow past said valve element into said tubular portion for discharge therefrom, and said tubular portion includes an annular column portion, wherein said column portion includes first and second generally axially opposing annular surfaces for compressed sealing against respective surfaces of said nozzle assembly, and wherein one of said first and second annular column surfaces defines said deflectable valve element.

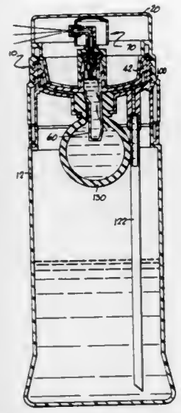
VOL 1147 ISS 1 FE 2 1993 UMI

5,183,185

MECHANICALLY PRESSURIZED DISPENSER SYSTEM

Jerry D. Hutcheson, Littleton, Colo., and William S. Blake, Linwood, N.J., assignors to Ecopac, L. P., Engelwood, Colo.

Filed Feb. 14, 1991, Ser. No. 656,195
Int. Cl.[5] B65D *37/00, 88/54*
U.S. Cl. 222—209 **35 Claims**



1. A mechanically pressurized system for dispensing a product, comprising:

(a) a cap having an interior cavity,

(b) a cylindrically shaped piston closed at one end and having a face at said end, said piston being seated in said cap and disposed so that the face of the piston is within the interior cavity of said cap, said face having a circular cross section,

(c) a cylindrically shaped actuator having a side wall and a floor, said actuator moveably attached to said cap for movement of the cap relative to the actuator in a first direction along the axis of said piston and for movement of the cap relative to the actuator in a second direction along the axis of said piston, the actuator and cap being referred to herein, when so attached to one another, as a dispensing head assembly,

(d) a charging chamber contained within the dispensing head assembly, said charging chamber having a floor, a side wall, and a top, which are defined by the floor of the actuator, the side wall of the actuator, and the face of the piston, respectively, wherein movement of the cap relative to the actuator in said first direction raises the piston and opens the charging chamber, and movement of the cap relative to the actuator in said second direction lowers the piston and closes the charging chamber,

(e) inlet means, including a dip tube having a first end and a second end, said first end being in fluid communication with a product source containing said product, and said second end being in fluid communication with the charging chamber for moving the product into the charging chamber from the product source as the charging chamber is opened,

(f) expanding resistant reservoir means in fluid communication with the charging chamber for receiving product from the charging chamber as the charging chamber is closed, said reservoir means expanding to hold the product against a force of resistance, and

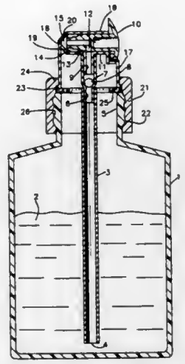
(g) outlet means in fluid communication with the expanding resistant reservoir means for moving product out of the expanding resistant reservoir means whereby said force of resistance is used to move said product.

5,183,186

SPRAY DISPENSING DEVICE HAVING A TAPERED MIXING CHAMBER

Henry W. Delaney, Jr., North Branford, Conn., assignor to Emson Research Inc., Bridgeport, Conn.

Filed Aug. 15, 1991, Ser. No. 745,538
Int. Cl.[5] B65D *37/00*
U.S. Cl. 222—211 **13 Claims**



1. A spray dispensing device, for use with a non-pressurized container holding a volume of a liquid and air above the liquid wherein said container is actuated to increase air pressure within said container and to force liquid through a dip tube of the spray dispensing device, the spray dispensing device comprising:

a dispenser housing defining a cavity therein, with an air orifice and a liquid orifice being defined through an underside wall of said housing and a spray orifice being defined through a peripheral wall of said housing;

a dip tube extending from the underside wall and communicating with said liquid orifice; and

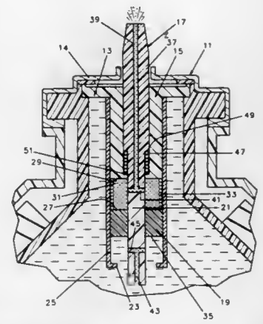
a valve received in said cavity defining a mixing chamber in said cavity between the spray orifice and the valve, a liquid passageway defined in said valve and communicating with said mixing chamber, and an air passageway defined between said valve and said underside wall and communicating with said mixing chamber, said valve being selectively movable within said cavity between, at least: a first position wherein the air passageway communicates with the air orifice and wherein the liquid passageway communicates with the liquid orifice and the dip tube to define a first extent of communication between the dip tube and the mixing chamber, whereby a first stream of air can pass through said air orifice, through said air passageway and into said mixing chamber at a first air flow rate, and a first stream of liquid can pass through into dip tube, through said liquid orifice, through said liquid passageway and into said mixing chamber at a first liquid flow rate to engage the first stream of air such that a liquid-air mixture, characterized by a first ratio of liquid to air, can emanate from the spray orifice as a spray; and a second position wherein the air passageway communicates with the air orifice and wherein the liquid passageway communicates with the liquid orifice and the dip tube to define a second extent of communication between the dip tube and the mixing chamber which is greater than said first content, whereby a second stream of air can pass through said air orifice, through said air passageway and into said mixing chamber at a second air flow rate which is equal to said first air flow rate, and a second stream of liquid can pass through said dip tube, through said liquid orifice, through said liquid passageway and into said mixing chamber at a second liquid flow rate, greater than said first liquid flow rate, to engage the second stream of air such that a liquid-air mixture, characterized by a second ratio of liquid to air which is greater than said first ratio, can emanate from the spray orifice as a spray.

5,183,187

PISTON OPERATED FLUID DISPENSING DEVICE

James H. Martin, and Samuel J. Garro, both of c/o The Mahagawa Corporation, P.O. Box 478, Wadsworth, Ohio 44281

Filed Jun. 10, 1991, Ser. No. 712,677
Int. Cl.[5] B65D *37/00, 83/14*
U.S. Cl. 222—287 **6 Claims**



1. Dispensing apparatus for dispensing a predetermined quantity of a pressurized fluid comprising:

a container for pressurized fluid;

a valve assembly extending into said container from an end thereof;

a body portion of said valve assembly;

a manually actuatable elongated stem member mounted for reciprocation in said valve assembly and having a first end thereof extending out of said container;

a first passageway formed in said stem member and extending from the first end thereof to a point intermediate the ends thereof, said first passageway having an outlet to the side of said stem member at its end away from the first end of said stem member;

a second passageway formed in said stem member and extending from a second end thereof to a point intermediate the second end of said stem member and said outlet of said first passageway, said second passageway having an outlet to the side of said stem member at its end away from the second end of said stem member;

a piston mounted for reciprocable motion over a portion of said stem member adjacent the second end thereof, said piston extending along said stem member a distance less than the length of said second passageway;

first bias spring means to maintain said piston in proximity to the second end of said stem member when said stem member is not actuated, said first bias spring means producing a force under compression that is less than the force produced by the action of the pressurized liquid on the surface of said piston facing toward said second end of said stem member;

a chamber formed between the surface of said piston facing toward the first end of said stem member and an opposing surface formed on said body portion of said valve assembly, said chamber having a size, when said piston is positioned in proximity to the second end of said stem member, to contain at least the predetermined quantity of the pressurized liquid; and

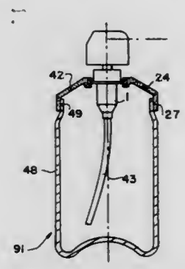
second bias spring means located between opposing shoulders on said body portion and said stem member to maintain said stem member in the unactuated position when no manual force is applied, in this unactuated position said outlet of said second passageway is in conjunction with said chamber while said outlet of said first passageway is not, but upon manual actuation of said stem member said outlet of said first passageway is moved into conjunction with said chamber while said outlet of said second passageway is moved out of conjunction with said chamber.

5,183,188

METHOD OF MAKING A DISPENSING HEAD, AND THE CORRESPONDING HEAD AND DISPENSER

Michel Rebeyrolle, and Bernard Schneider, both of St. Menehould, France, assignors to Cebal, Clichy, France

Filed Oct. 31, 1990, Ser. No. 606,903
Claims priority, application France, Nov. 2, 1989, 89 14731
Int. Cl.[5] B67D *5/40*
U.S. Cl. 222—383 **12 Claims**



1. A dispensing head (**40**; **42**) to be fixed on a rigid tubular can body (**46**; **48**; **60**; **70**; **80**), and comprising an annular dome (**24**; **85**) made of generally rigid plastic, and a valve (**100**) or pump (**1**), means non-removably fixing said valve (**100**) or pump (**1**) to the dome (**24**; **85**), said means comprising an annular shoulder (**2**) of said valve (**100**) or pump (**1**) molded into said dome in a central portion of the dome, said dispensing head (**40**, **42**) further comprising only the following portions in an outward direction from the central portion:

an upper annular portion (**35**, **36**) comprising an inner enlarged portion (**35**) which encloses the annular shoulder (**2**), gripping the shoulder over a width of at least 0.8 mm;

a dome portion in the form of a frusticonical shell (**34**) with an outwardly increasing diameter and a generally thickness of 1.2 to **4** mm; and

a bottom portion (**27**; **41**; **83** and **84**) for fixing onto the rigid tubular can body (**46**; **48**; **60**; **70**; **80**), the bottom portion extending from the frusticonical shell (**34**) and comprising an annular means (**27**; **37**; **83** and **84**) for fixing onto the generally upper end (**44**; **49**; **61**; **71**; **81**) of the rigid tubular body of the can.

5,183,189

CONTROL VALUE FOR A CONTAINER CONTAINING A FLUID UNDER GASEOUS PRESSURE AND CONTAINER PROVIDED WITH A VALUE OF THIS KIND

Gilles Baudin, Clichy, France, assignor to L'Oreal, Paris, France

Filed Oct. 3, 1991, Ser. No. 770,406
Claims priority, application France, Nov. 9, 1990, 90 13916
Int. Cl.[5] B65D *83/70*
U.S. Cl. 222—397 **11 Claims**

1. A control valve for a container containing a fluid under gaseous pressure comprising:

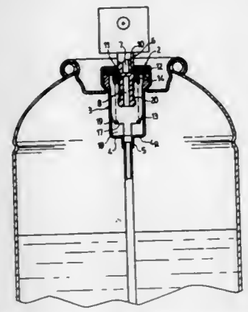
a valve stem moveable in a valve body, said stem having an axis and being provided along said axis with two opposing recessed channels each leading to an opposite end of said valve stem, said channels being separated by a base and said stem having a lateral wall with transverse orifices being located in said lateral wall on opposite sides of said

VOL 1147 ISS 1 FE 2 1993 UMI

base, each of said orifices communicating respectively with one of said channels, one of said channels being remote from said valve body and forming with said transverse orifice associated therewith a dispensing passageway, the other said channels being associated with the other said transverse orifice which together form an evacuation passageway;

said control valve further including a sealing member having an opening for receiving said valve stem;

a first spring being provided to force said valve stem relative to said valve body in a direction corresponding to an outward movement of said stem relative to said valve body and a second spring disposed so as to prevent outward movement of said stem so long as the pressure in the interior of the container does not exceed a predetermined value, wherein a user by pressing on the stem brings said dispensing passageway into communication with an interior of said valve body to effect the dispensing of the product and that, in the event of abnormal excess pressure, said second spring is compressed to raise said valve stem to bring said evacuation passageway into communication with the atmosphere external to said valve body to prevent the container from exploding and wherein said first and second springs are disposed in parallel with said first spring and second spring having one end each respectively engaging an abutment means, said valve stem having a stop member for engaging said abutment means when said valve stem is moved into said valve body by a user, said abutment means being slidable relative to said valve stem upon outward movement of said valve stem relative to said valve body, said first spring having a second end resting against another stop member disposed in said valve body while said second spring has a second end engaging a stop integral with said valve stem.



5,183,190

FOLDABLE GARMENT DISPLAY HANGER

Andrew M. Zuckerman, Forest Hills, N.Y., assignor to Different Dimensions, Inc., Rego Park, N.Y.

Filed Nov. 26, 1991, Ser. No. 798,499
Int. Cl.[5] A47G *25/48, 25/28*
U.S. Cl. 223—96 **15 Claims**

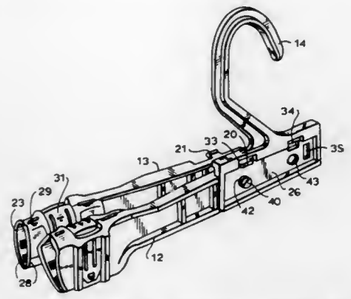
1. A foldable garment hanger, comprising:

(a) a body and a hanging means, said body having a length along a generally horizontal axis when said hanger is suspended by said hanging means;

(b) said body comprising two substantially rigid extended body arms, each arm having a free end and a base, each arm having retaining means adjacent its free end for securing garments during both shipping and display, and each arm constituting a portion of said length of said body, said body arms being connected one to another at their respective bases by a living hinge, so that said body arms may be folded together and positioned in side-by-side relation to decrease said length of said body;

(c) said hanging means comprising a suspension member and a widened collar, said collar being attached to the lower edge of one of said body arms adjacent to said hanger body living hinge, along the edge of said collar opposite said suspension member, this attachment being via another living hinge so that said suspension member and collar may be folded, inverted and positioned in side-by-side relation to said attached body arm or body arms; and

(d) latching means for securing said suspension member and collar to said hanger body when said suspension member and collar are folded about said suspension member living hinge, for use in display hanging.

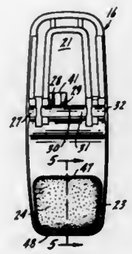


5,183,191

HANGERS WITH LONG LASTING NON-SLIP SURFACES

Judd F. Garrison, Grand Rapids, and Russell O. Blanchard, Zeeland, both of Mich., assignors to Batts, Inc., Zeeland, Mich.

Filed Feb. 6, 1992, Ser. No. 832,060
Int. Cl.[5] A47G *25/48, 25/14*
U.S. Cl. 223—96 **28 Claims**



15. An improved clamp-type garment hanger, the hanger including

hang means,

a cross-bar having two ends,

the hang means extending upwardly from a central area of the cross-bar for suspending the garment hanger from a support location,

garment suspending means including two clamp assemblies, one clamp assembly located at each end of the cross-bar for securing a pant or skirt to the garment hanger,

each clamp assembly including a front clamping member and a rear clamping member,

each of the front and rear clamping members including an outer surface and an inner clamping surface,

each of the outer surfaces of the front and rear clamping members including a recessed channel for accommodating a U-shaped clamp,

the U-shaped clamp resiliently urging the front and rear clamping members into a garment clamping position,

the rear clamping member including two downwardly extending fingers and being an integral extension of the cross-bar and being stationary with respect to the cross-bar, the two downwardly extending fingers being laterally spaced from one another,

the front clamping member including one downwardly extending finger, the one downwardly extending finger of the front clamping member being aligned to fall in between the two downwardly extending fingers of the rear clamping member in the garment clamping position,

each downwardly extending finger including an inner clamping surface,

at least one inner clamping surface including at least one resilient pad,

a first side of the resilient pad being secured to and carried by the inner clamping surface of one of the downwardly extending fingers, a second side of the resilient pad being presented for contact with a garment to be hung from the hanger,

the resilient pad being fabricated from resilient friction material,

the resilient friction material comprising a block copolymer having discreet block segments of styrene monomer units and rubber monomer units,

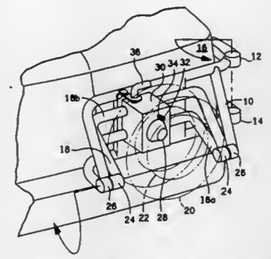
the co-efficient of friction of the second side of the resilient pad being sufficiently high to preclude movement under the weight of the garment when a normal clamping force is applied to the two clamping members to move them into clamping position.

5,183,192

SPARE TIRE LOWERING SYSTEM

Joseph E. Mrozowski, Del Mar; Jeffery K. Fusco, La Jolla, and Alfonso Albaisa, San Diego, all of Calif., assignors to Nissan Design International, Inc., San Diego, Calif.

Filed Jul. 25, 1991, Ser. No. 735,880
Int. Cl.[5] B62D *43/00*
U.S. Cl. 224—42.21 **9 Claims**



1. A spare tire lowering system for a vehicle, comprising:

a primary rack including a first pair of generally U-shaped members each having an intermediate portion and first and second leg portions extending from opposite ends of the intermediate portion, the intermediate portions being spaced apart and generally parallel; said first leg portions converging together to form a first terminal end and said second leg portions covering together to form a second terminal end;

means for mounting an end of the primary rack to a rear corner of a body of the vehicle so that the primary rack can pivot about a substantially vertical axis;

a secondary rack including a second pair of generally U-shaped members each having an intermediate portion and third and fourth leg portions extending from opposite ends of the intermediate portion, the intermediate portions being spaced apart and generally parallel; said third leg portions converging together to form a third terminal end and said fourth leg portions converging together to form a fourth terminal end;

hub means connected between the intermediate portions of the U-shaped members of the secondary rack for having a wheel of a spare tire mounted over the same;

means for releasably holding the wheel of the spare time over the hub means; and

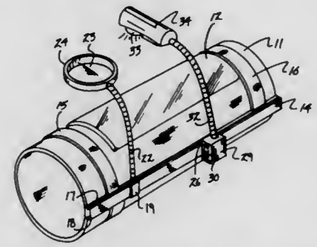
means for hingedly connecting at least one of said third and fourth terminal ends of the U-shaped members of the secondary rack to at least one of said first and second terminal ends of the U-shaped members of the primary rack for enabling rotation of the secondary rack about a substantially horizontal axis between a raised configuration in which the spare tire is elevated off of a road surface on which the vehicle rests and a lowered configuration in which the spare tire also rests on the road surface.

5,183,193

WRIST MOUNTED MAP HOLDER APPARATUS

Bernie Brandell, 1179 51st St., Brooklyn, N.Y. 11219

Filed Aug. 6, 1991, Ser. No. 740,713
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—219 **4 Claims**



1. A wrist mounted map holder apparatus, comprising,

an elongate, elastomeric flexible cylindrical sleeve, the sleeve including a transparent pocket mounted to an exterior surface of the sleeve, wherein the transparent pocket includes a lower terminal end and an upper terminal end adjacent opposed upper and lower terminal ends of the sleeve, wherein the transparent pocket upper terminal end includes an entrance slot for reception of a map therewithin permitting viewing of the map within the pocket, and

a rigid support bar, the rigid support bar including a first strap and a second strap, the first strap including a first terminal end and a second terminal end, including respective first and second hook and loop fastener patches for securement together for securement about the sleeve, and wherein the second strap includes a third and fourth terminal end, wherein the third and fourth terminal end include respective third and fourth hook and loop fastener patches securable together for securement of the second strap about the sleeve, and magnification means mounted to the rigid support bar and positioned for viewing the map mounted within the transparent pocket.

5,183,194

GARMENT WEIGHT TRANSFER APPARATUS

Hossain A. Shirdavani, 14425 NE. 37th Pl., Bellevue, Wash. 98007

Filed Dec. 31, 1991, Ser. No. 816,617
Int. Cl.[5] A45F *3/00*
U.S. Cl. 224—224 **1 Claim**

1. Garment weight transfer apparatus, said apparatus comprising:

a saddle, comprising first and second pads, each of said pads having first and second ends, and first and second adjust-

VOL 1147 ISS 1 FEB 2 1993 UMI

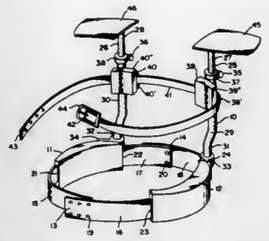
able belts, said first belt interconnecting said first ends of said pads, said second belt interconnecting said second ends of said pads,

first and second adjustable length uprights, each of said uprights having a top end and a bottom end,

first and second shoulder guards,

said bottom ends of said uprights being attached to said saddle

said top end of said first upright being attached to said first



shoulder guard and said top end of said second upright being attached to said second shoulder guard wherein said shoulder guards are sized and adapted to be spaced above and extend laterally across the tops of the shoulders of a nearer,

third and fourth pads and

a strap,

said third and fourth pads being slidably attached to said strap, said third pad being attached to said first upright and said fourth pad being attached to said second upright.

5,183,195

DEVICE FOR STAPLING SHEETS INDIVIDUALLY SUPPLIED AND DEPOSITED ON A STACK

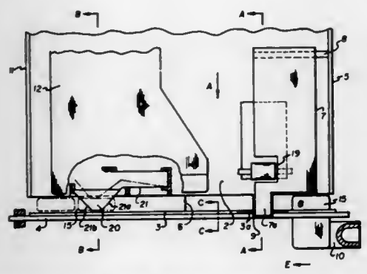
Franz Allmendinger, Eichwald; Arno Ebner, Ammerbuch; Helmut Ettischer, Ostfildern, and Timo Straub, Geislingen-Aufhausen, all of Fed. Rep. of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 19, 1992, Ser. No. 837,122

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1991, 4107755

Int. Cl.[5] B27F *7/17*

U.S. Cl. 227—29 **11 Claims**



1. A device for stapling sheets comprising a collecting tray having a support surface including abutments for aligning said sheets in an accurate position, and a free space defined between said support surface and a front abutment, said device further comprising a stapling unit which is movable parallel with said front abutment to a number of different stapling positions along said free space, characterized by a pivotal hold-down element (**7**) which is mounted in an area of a sheet stack (**14**) where a staple is to be applied and pivotable in a direction of the height of the sheet stack, said hold-down element (**7**) having a tongue (*7a*) at a free end, said tongue (*7a*) being arranged in an area of the sheet stack (**14**) where no staple is to be applied, and overlapping said free space (**6**), said tongue (*7a*) extending into an area of free passage of said stapling unit (**15**), and a flexible cover element (**20**) extending into the path of movement of said stapling unit.

5,183,196

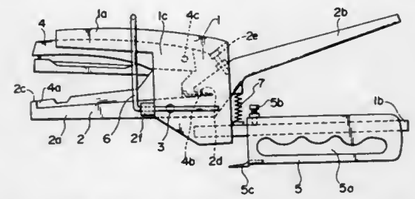
STAPLER ASSISTOR

Mitsuo Miyasbita, 67-72, Matsugo, Tokorozawa-shi, Saitama-ken, Japan

Filed Dec. 26, 1991, Ser. No. 813,605

Int. Cl.[5] B25C *5/02*

U.S. Cl. 227—63 **10 Claims**



1. A stapler assistor for assisting the driving and holding of a stapler apparatus, said stapler apparatus having a V-shaped opening with a maximum opening angle and a staple remover at the rear end thereof, comprising:

a first lever having an upper jaw at one end thereof and a lower handle at the opposite end thereof;

a second lever having a lower jaw at one end thereof and an upper handle at the opposite end thereof, said lower jaw having a slit therein for receiving the staple remover of said stapler apparatus, said upper and lower jaws defining therebetween a V-shaped opening for receiving said stapler apparatus with the V-shaped opening of said stapler apparatus oriented in the same direction as the V-shaped opening defined by said upper and lower jaws, said first and second levers crossing each other at intermediate portions thereof, the V-shaped opening between said upper and lower jaws having a maximum opening angle;

a shaft pivotally connecting said first and second levers at said intermediate portions;

a stopper projection, said stopper projection being located on a front end of said lower jaw, said stopper projection retaining said stapler apparatus between said upper and lower jaws;

a plurality of protrusions formed on at least one of said upper and lower jaws, said protrusions preventing said stapler apparatus from moving laterally within said upper and lower jaws; and

a stopper formed from a bar slidably received in longitudinal through-bores formed in bosses provided on both sides of said lower jaw and bent at intermediate portions so as to bridge over said upper jaw, said stopper limiting the depth of insertion of an object into said stapler.

5,183,197

BUNDLE AND PLACE METHOD FOR THE MANUFACTURE OF BRUSH SEALS

Harold Howe, Orlando, Fla., assignor to Technetics Corp., Deland, Fla.

Filed Aug. 7, 1991, Ser. No. 741,768

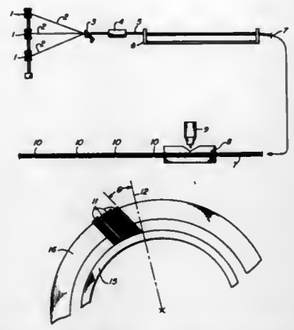
Int. Cl.[5] B21D *39/00*

U.S. Cl. 228—160 **10 Claims**

1. In the formation of a flexible linear array of parallelly aligned, contiguous bristles, for use in the production of a brush seal, the improvement which comprises;

providing a multitude of bundles of tightly packed bristles, the bristles of each such bundle being joined at one end thereof,

placing the bundles on a member to form a linear brush array, such that the long axes of the bristles in the array are parallel to each other, said member maintaining the bundles in such an array,



applying a material capable of forming a resilient backing at the joined-end portion of each of the bundles, whereby the backing acts as a flexible connector to maintain the bundles in the form of the linear brush array.

5,183,198

METHOD OF PRODUCING CLAD STEEL PLATE HAVING GOOD LOW-TEMPERATURE TOUGHNESS

Hiroshi Tamehiro; Yoshinori Ogata, and Yoshio Terada, all of Kimitsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Nov. 15, 1991, Ser. No. 793,959

Claims priority, application Japan, Nov. 28, 1990, 2-328310

Int. Cl.[5] B23K *31/02*

U.S. Cl. 228—186 **4 Claims**

1. A method of producing clad steel plate comprising the steps of obtaining an assembly slab by superposing a stainless steel cladding material and a base metal consisting essentially of, by weight,

Carbon	0.020 to 0.06%
Silicon	0.5% or less
Manganese	1.0 to 1.8%
Phosphorus	0.03% or less
Sulfur	0.005% or less
Niobium	0.08 to 0.15%
Titanium	0.005 to 0.03%
Aluminum	0.05% or less
Nitrogen	0.002 to 0.006%

with the balance being iron and unavoidable impurities;

seal-welding the periphery of the assembly slab;

heating the slab to a temperature in the range of 1100° to 1250° C.;

rolling the slab at a reduction ratio of 5 or more;

rolling the slab at a finish temperature of 900° to 1050° C.;

air cooling the slab for 60 to 200 seconds to promote recrystallization of γ structure;

cooling the slab from a temperature of at least 750° to an arbitrary temperature of 550° or below at a cooling rate of 5° to 40° C./sec; and

air cooling the slab.

5,183,199

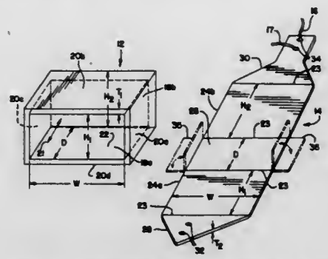
CONTAINER DEVICE AND METHOD FOR MAKING SAME

Maria L. Bills, 3368 S. Parnell, Chicago, Ill. 60616

Filed Jan. 22, 1992, Ser. No. 823,754

Int. Cl.[5] B65D *3/00*

U.S. Cl. 229—23 A **17 Claims**



1. A container comprising, in combination, a sleeve-like member having a plurality of interconnected wall panels defining an interior storage cavity having two open ends, a foldable insert member adapted to be inserted through the storage cavity from at least one of the open ends and foldably divided into a support panel and a plurality of foldable end flaps, the support panel being interposed between the foldable end flaps and adapted to lie against an inside surface of a selected wall panel, the end flaps being foldable to substantially cover the open ends, and means coupled to the foldable insert member for securing the end flaps over the two open ends to form a substantially closed enclosure about the storage cavity.

5,183,200

FOLDER TYPE PAPER BOX

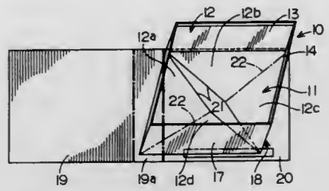
Haruo Okamoto, 1291-133, Oaza Yokose, Oita-shi, Oita 870-11, Japan

Filed Sep. 9, 1991, Ser. No. 756,960

Claims priority, application Japan, Oct. 18, 1990, 2-109540[U]

Int. Cl.[5] B65D *5/36*

U.S. Cl. 229—23 R **12 Claims**



1. A folder type box, comprising:

a box container and a lid body for fitting on said box container, said box container and lid body each comprising:

a quadrangular bottom plate having a rift running through a first pair of opposite angles formed thereon so as to form first and second bottom plate portions adjacent said rift, and a linear fold running through a center of a second pair of opposite angles of said first and second bottom plate portions; and

a side plate connected to said quadrangular bottom plate; said folder type box further comprising:

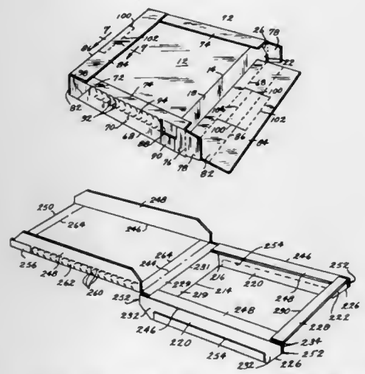
a back plate fixed to said second portion of said bottom plate, said second portion separable from said first portion along said rift such that said box container and said lid body can each lay flat in a flat state; and

means for bonding said second portion of said bottom plate separated along said rift to said back plate when said first

VOL 1147 ISS 1 FEB 2 1993 UMI

and second portions of said bottom plate are brought together to close said rift such that said folder type box can be transformed from said flat state to a box state by a bond of said means for bonding.

5,183,201
CARTON TRAY WITH IMPROVED CORNER CONSTRUCTION AND METHOD OF MAKING
Richard F. Gulliver, Tuscaloosa, Ala., assignor to Gulf States Paper Corporation, Tuscaloosa, Ala.
Filed Nov. 22, 1991, Ser. No. 796,599
Int. Cl.[5] B65D *5/24, 5/46*
U.S. Cl. 229—117.12 **26 Claims**



1. A carton tray suitable to retain consumable contents therein containing liquid so that the contents can be (1) heated in an oven while retained therein and (2) thereafter consumed while retained therein, said carton tray being formed from a flat carton blank including

a bottom wall panel having a periphery defined along four sides by four side fold lines interrelated so that there are four different pairs of adjacent side fold lines wherein each pair of adjacent side fold lines extends at an angle with respect to each other from a corner point defining one of four corners of said bottom wall panel,

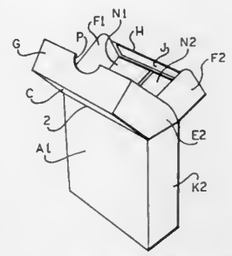
four side wall panels integral with said bottom wall panel along said four side fold lines interrelated so that there are four different pairs of adjacent side wall panels,

a gusset wall panel integral with each pair of adjacent side wall panels along two end fold lines extending in angularly related relation with respect to one another from the corner point associated with the pair of adjacent fold lines with which said pair of adjacent side wall panels is integral,

said side wall panels being folded along said side fold lines in a direction which is the same relative to said bottom wall panel into an erected position while each of said gusset wall panels is folded along the associated angularly related end fold lines in opposite directions with respect to the associated pair of adjacent side wall panels so as to bring each gusset wall panel into surface-to-surface abutting relation with an end portion of one of the associated pair of adjacent side wall panels defined by one of the associated two end fold lines, and

an adhesive adhering each of said gusset wall panels in surface-to-surface abutting relation with the associated one side wall end portion to thereby form a sealed integral corner construction between each pair of adjacent side wall panels which is defined (1) exteriorly by the associated gusset wall panel adhesively adhered in abutting relation to the associated one side wall end portion with the associated one end fold line extending generally in a plane coincident with an interior surface of the associated one side wall panel from the associated corner point and (2) interiorly by another of the associated two end fold lines extending from the associated corner point generally along the interior surface of the associated one side wall panel.

5,183,202
RECLOSABLE DISPENSER CARTON
Marc C. Love, Gosben, Ind., assignor to Atlas Die, Inc., Elkhart, Ind.
Filed Nov. 8, 1991, Ser. No. 789,327
Int. Cl.[5] B65D *5/66*
U.S. Cl. 229—123 **5 Claims**



1. A carton formed from a unitary carton blank, comprising:

rectangular shaped lower front, lower back, bottom and lower side panels connected along a plurality of crease lines; and

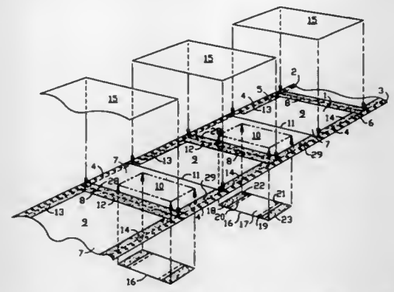
an overlapping double closure means for providing reclosable access to the contents of said carton, said overlapping double closure means including

(a) a front outer closure including an upper front panel, a top panel and a pair of upper side panels, said upper front panel hingedly connected to said front panel along a first of said crease lines, and

(b) a rear inner closure including an upper front panel, a top panel and a pair of upper side panels, said rear inner closure upper front panel hingedly connected to said lower back panel along a second of said crease lines, said rear inner closure received within said front outer closure when said carton is closed, each of said closures further having a pair of guide flaps extending from said upper side panels, said guide flaps retracting within said lower side panels when said closures are closed and extending therefrom when said closures are opened, said guide flaps on said front outer closure overlapping said guide flaps on said rear inner closure.

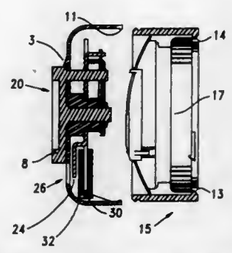
5,183,203
MULTIPLE PURPOSE CERTIFIED MAIL ENVELOPE ASSEMBLY
Raymond W. Sanders, 6368 Sharlene Dr., Cincinnati, Ohio 45248
Filed Oct. 3, 1991, Ser. No. 770,797
Int. Cl.[5] B65D *27/00*
U.S. Cl. 229—300 **13 Claims**

1. A continuous strip of Certified Mail envelope assemblies for feeding through a computer printer, said continuous strip comprising a continuous first paper ply having a front surface and a rear surface and continuous longitudinal edges, said first ply being divided longitudinally into equal length segments by transversely extending lines of perforations, each such segment being divided into first and second portions by a transversely extending fold line, each first portion comprising an envelope assembly front panel, each second portion comprising an envelope assembly closure flap, a second ply comprising discrete paper sheets equal in number to the number of said envelope assembly front panels, each second ply sheet having a front surface and a rear surface, each second ply sheet having its rear surface glued to said rear surface of its respective front panel longitudinally of said strip along the sides thereof and transversely of said strip near the adjacent one of said transverse lines of perforations, each second ply sheet comprising the rear panel of its envelope assembly, each envelope assembly having an envelope opening between its front and rear panels extending transversely of said strip adjacent said fold line between its respective front panel and closure flap, a return receipt card having front and rear surfaces being removably affixed to said front surface of each envelope assembly flap, said rear surface



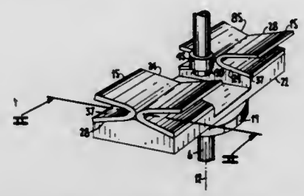
of said return receipt card facing said front surface of its respective flap and having the sender's address pre-printed thereon, bands of remoistenable glue on said rear surface of each envelope assembly closure flap for adhering said rear surface of said flap to said front surface of its respective rear panel to close said envelope opening, a Certified Mail endorsement being pre-printed on each front panel centrally thereof and adjacent its respective fold line, a return receipt request pre-printed on each front panel adjacent and beneath its Certified Mail endorsement, each envelope assembly being severable from said strip along that transverse line of perforations between its closure flap and the front panel of the next adjacent envelope assembly.

5,183,204
MIMETIC THERMOSTAT
Wayne T. Kelly, 1516 E. Main St., Unit 7, Meriden, Conn. 06450, and Steven L. Levy, Main St., Woodbury, Conn. 06798
Filed Mar. 9, 1992, Ser. No. 848,315
Int. Cl.[5] G01K *1/00*
U.S. Cl. 236—94 **5 Claims**



1. A mimetic thermostat which is not interconnected to a building's heating/cooling system comprising a housing, temperature setting means and temperature reading means, two temperature gradients; the first of said two temperature gradients is made part of said temperature setting means, the second of said two temperature gradients is made part of a temperature reading indicator, a viscous fluid dampening means to dampen temperature reading indicator in response to movement of temperature setting means, and a wall mounting means collectively forming an interacting mechanical system acting to provide an illusion of actual vs. set temperature.

5,183,205
CENTRIFUGAL NOZZLE
Paul Hoffman, 4125 Ricklyn Dr., Chambersburg, Pa. 17201
Filed Nov. 14, 1991, Ser. No. 791,558
Int. Cl.[5] B05B *3/10*
U.S. Cl. 239—222.13 **19 Claims**



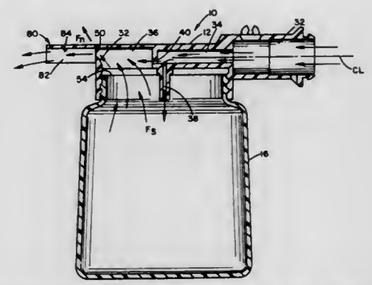
1. A centrifugal spray apparatus, comprising:

a rotatable shaft defining a rotation axis and means for rotating the shaft in a rotation direction around the axis;

a vane coupled to the shaft and oriented perpendicular to the rotation axis, the vane being elongated substantially radially from the rotation axis, the vane defining a heel end at a first radial distance from the rotation axis, a toe end at a second and radially greater distance from the rotation axis, and a front face in a direction of rotation, the vane moving in a plane upon rotation of the shaft; and,

an injector having an outlet port and being operable for emitting a substance stream from the outlet port along a path substantially in the plane of the vane and in a direction causing the vane to intersect the substance stream progressively from the heel end to the toe end as the vane rotates and from a trailing end to a leading end of a stream segment intersected by the vane, the stream segment being guided along the front face of the vane and ejected along an arc which is substantially in the plane.

5,183,206
SPRAY NOZZLE
Daniel J. Gavin, 7873 Kellogg Creek, Mentor, Ohio 44060
Filed Jun. 5, 1991, Ser. No. 710,560
Int. Cl.[5] B05B *7/28, 1/26*
U.S. Cl. 239—317 **34 Claims**



1. A spray nozzle apparatus adapted for use with a fluid supply source and a reservoir having an opening, the apparatus comprising:

a housing defining a mixing chamber therein;

means for coupling the reservoir to the housing at the opening;

input communicating means for communicating a supply of

VOL 1147 ISS 1 FE 2 1993 UMI

a first fluid from the fluid supply source into the housing through an elongate passageway having a substantially columnar first surface;

first passage means for communicating a first portion of the first fluid from the input communicating means into the reservoir as a mixing fluid flow;

second passage means for communicating the remaining portion of the first fluid from the input communicating means into the mixing chamber as a drawing fluid flow having a substantially columnar path, said second passage means being defined at least in part by said first surface;

fluid reflecting means for reflecting the drawing fluid flow and the mixing fluid flow as a first reflected fluid flow, the reflecting means being positioned substantially within the columnar path; and,

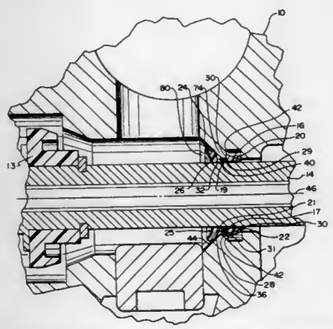
outlet reflecting means for guiding the first reflected fluid flow into a spray pattern, said outlet reflecting means being offset from said columnar path.

5,183,207

AIR SEAL FOR PAINT GUNS

Timothy D. Steinberg, Coon Rapids, and Richard W. Gunderson, Elk River, both of Minn., assignors to Wagner Spray Tech Corporation, Minneapolis, Minn.

Filed Nov. 14, 1991, Ser. No. 792,175
Int. Cl.[5] B05B *7/02, 1/28*
U.S. Cl. 239—526 **15 Claims**



1. In a portable paint gun of the type having a housing with a passage containing a control valve mounted on an axially movable shaft for controlling pressurized air to atomize a stream of paint, an improved sealing ring in combination therewith comprising:

the paint gun housing having a chamber carrying a control shaft and a radially inwardly extending wall at one end of the chamber; and

b) a sealing ring interposed between the control shaft and the radially inwardly extending housing wall, the sealing ring having:

i. a generally cylindrical body having a front end, a back end, and an internal surface forming a central bore,

ii. a retaining surface extending radially outwardly from the body and located intermediate the front and rear ends, the retaining surface retained by a first radially inwardly extending surface of the paint gun housing wall, and

iii. a generally radially outwardly extending resilient flange located at the back end of the body a predetermined distance from the retaining surface,

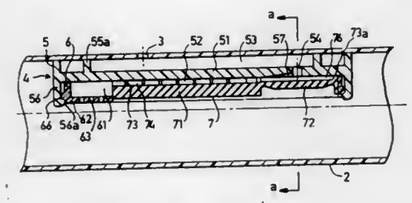
such that the flange and the retaining surface define a peripheral groove therebetween on an outer surface of the body, and wherein the flange is resiliently deflected by and seals against a second radially inwardly extending surface of the paint gun housing wall when the sealing ring is retained in the paint gun housing.

5,183,208

DRIP IRRIGATION EMITTER

Amir Cohen, Yuvalim, Israel, assignor to Agroteam Consultants Ltd., Haemek, Israel

Filed Jul. 15, 1991, Ser. No. 729,953
Claims priority, application Israel, Jul. 20, 1990, 95138; Oct. 29, 1990, 96164
Int. Cl.[5] B05B *15/00*
U.S. Cl. 239—542 **16 Claims**



1. A drip irrigation emitter comprising:

a housing including an inlet connectible to a source of pressurized water, an outlet for discharging the water from the housing, and a flow-reducer passageway between said inlet and outlet for reducing the flow of water discharged through the outlet;

said flow-reducer passageway including a labyrinth flow path communicating with said inlet, and an outlet control chamber between said labyrinth flow path and said outlet;

and an elastomeric member fixed within the housing and defining, with an internal surface thereof, a deformable wall of at least said outlet control chamber, which outlet control chamber is automatically enlarged or restricted by deformation of the elastomeric member in response to flow through said outlet control chamber;

said elastomeric member being embossed with an integrally formed relief formation on a surface thereof facing said internal surface of the housing to space same from said internal surface and to permit the enlargement or reduction of said outlet control chamber upon the deformation of the elastomeric member in response to said flow.

5,183,209

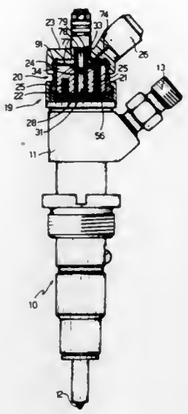
ASSEMBLY OF AN ELECTROMAGNET CORE OF AN ELECTROMAGNETIC INTERNAL COMBUSTION ENGINE FUEL INJECTOR

Mario Ricco, Bari; Sisto L. De Matthaeis, Modugno, and Domenico Maldera, Corato, all of Italy, assignors to Elasis Sistema Ricerca Fiat Nel Mezzogiorno Societa Consortile per Azioni, Pomigliano d'Arci, Italy

Filed Oct. 28, 1991, Ser. No. 783,563
Claims priority, application Italy, Oct. 31, 1990, 53355/90[U]
Int. Cl.[5] B05B *1/30*
U.S. Cl. 239—585.1 **6 Claims**

1. An electromagnetic injector for internal combustion engine fuel injection systems, comprising a hollow body (**11**) with an injection nozzle (**12**); a control valve (**19**) for connecting a control chamber to a drain conduit (**33**) and so opening said nozzle (**12**); an electromagnet (**20**) comprising a magnetic core (**24**); and a skirt (**21**) for securing said core (**24**) to said hollow body (**11**), said skirt (**21**) comprising a first support (**87**) for said core (**24**), and a ring (**91**) pressed on to a cap (**77**);

characterized by the fact that said skirt (**21**) comprises a second support (**90**) for said cap (**77**); elastic means (**94**) being provided



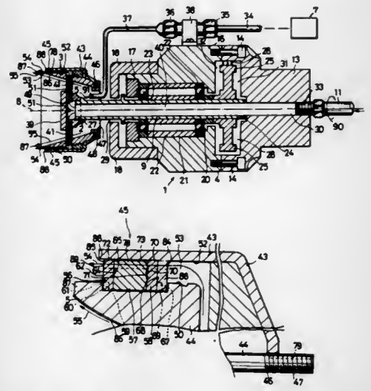
between said cap (**77**) and said core (**24**) for pushing said core (**24**) on to said first support (**87**).

5,183,210

ELECTROSTATIC SPRAY COATING APPARATUS

Hideo Takeishi, Minoo; Sigeki Houseki, Izumi, and Isao Matsubara, Suita, all of Japan, assignors to Ohgi Paint Trading Co., Ltd., Osaka, Japan

Filed Sep. 24, 1990, Ser. No. 587,950
Claims priority, application Japan, Oct. 12, 1989, 1-265978
Int. Cl.[5] B05B *5/04*
U.S. Cl. 239—703 **7 Claims**



1. A rotary head for an electrostatic spray coating apparatus for ejecting an atomized liquid paint toward an object to be coated with paint, the rotary head comprising:

a rotary member, adapted to rotate about a center axis thereof, for discharging the liquid paint therefrom in the form of an annular thin-film and toward the object during rotation thereof; and

means for ejecting a gas flow for atomizing the liquid paint discharged from said rotary member, said ejecting means including an adjusting means for adjusting the ejected gas flow with respect to the center axis of the rotary member;

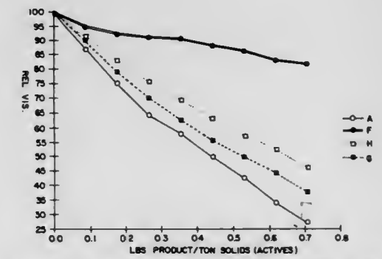
said adjusting means of said ejecting means defining a plurality of elongated gas passages about an outer peripheral surface of said rotary member, each of said gas passages having a first opening for receiving therein a gas supply and a second opening, opposite to the first opening, for discharging the gas flow from the corresponding as passage, the relative positions of the first and second openings of each of the gas passages being changeable in a circumferential direction about said center axis so as to deflect the corresponding gas passage with respect to the longitudinal direction of the center axis of the rotary member.

5,183,211

CHEMICAL AIDS FOR WET-GRINDING PHOSPHATE ROCK

John T. Malito, Oswego, Ill., and Curtis M. Layman, Baton Rouge, La., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Sep. 25, 1991, Ser. No. 765,357
Int. Cl.[5] B02C *23/20*
U.S. Cl. 241—16 **4 Claims**



1. A method for reducing the relative viscosity of a phosphate rock slurry during a grinding process in a phosphoric acid production facility, the method comprising the step of adding during the grinding process an effective amount of a sulfonated polymer having a molecular weight of from 500 to 100,000 and being selected from the group consisting of sulfonated polymers of acrylic acid/acrylamide copolymers and the copolymerization products of acrylic acid, acrylamide and 2-acrylamido-2-methylpropyl sulfonic acid.

5,183,212

METHOD FOR SEPARATING MULTILAYER PLASTICS INTO ITS COMPONENTS

H. Khim Boo, Strongsville; Donald H. Mittendorf, Lorain, and Walter A. Sell, Wakeman, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Apr. 21, 1992, Ser. No. 871,781
Int. Cl.[5] B02C *1/00;* **C08J** *11/00*
U.S. Cl. 241—17 **12 Claims**

1. A method for separating and recovering at least two components of multilayer plastics comprising: dividing the multilayer plastic into small particles, agitating and agglomerating the particles in mixing means whereby like particles agglomerate and adhere to each other, quenching the particles to stop the agglomeration, and separating one type of agglomerated particle from the other type of agglomerated plastic particles.

5,183,213

METHOD FOR RECYCLING WALLBOARD

John S. Knez, Jr., West Linn, Oreg., assignor to Knez Building Materials Company, Tigard, Oreg.

Filed Jul. 30, 1991, Ser. No. 737,997
Int. Cl.[5] B02C *17/04*
U.S. Cl. 241—24 **13 Claims**

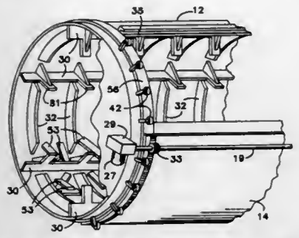
1. A method for recycling wallboard wherein the wallboard

VOL
1147
ISS
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1993
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comprises gypsum and paper, the method comprising the steps of:

placing the wallboard in a tumbling apparatus having an inner wall;

placing in the tumbling apparatus with the wallboard a plurality of loose removable weights sized so as to be



capable of impacting against said inner wall when said tumbling apparatus is rotated; and

moving said tumbling apparatus for causing the weights to impact against the wallboard as the wallboard contacts said inner wall, thereby to separate the gypsum from the paper.

5,183,214

PROCESS OF MAGNETIC MEDIA MILLING

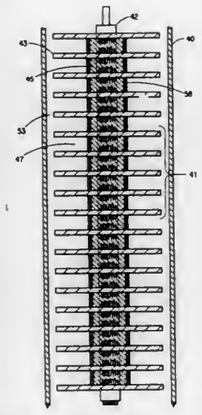
Howard Zakheim, Bala Cynwyd; Peter M. Clinton, Media, both of Pa.; James D. Goldschneider, Newark, Del.; Christopher A. Kasmer, Lawrenceville, N.J.; Markus Zahn, Lexington, Mass., and Charles L. Hoffmeyer, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 549,822, Jul. 9, 1990, Pat. No. 5,022,592, which is a continuation-in-part of Ser. No. 346,877, May 3, 1989, abandoned. This application Apr. 29, 1991, Ser. No. 692,652

The portion of the term of this patent subsequent to Jun. 11, 2008, has been disclaimed.

Int. Cl.[5] B02C *17/16*

U.S. Cl. 241—30 **17 Claims**



1. A process of milling a material, comprising passing said material through a media mill within a magnetizable container; agitating the material with a rotatable multi-polar magnetic agitator within the magnetizable container, said agitating comprising subjecting the material to the rotation of a plurality of impellers on a central shaft of the agitator; and grinding said material with a magnetizable media within the container, wherein the media particles are present in such quantity as to provide a media volume of at least about 25% and wherein the media particles are magnetized by at least one of the impellers being a permanent magnet.

5,183,215

GRINDING APPLIANCE

Hermann Getzmann, Biebersteiner Str. 17, 5226 Reichshof-Heienbach, Fed. Rep. of Germany

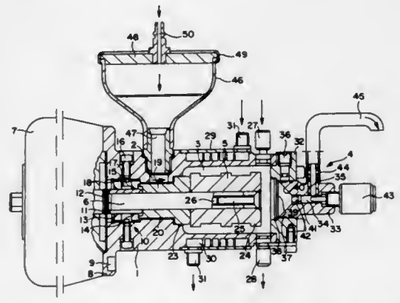
PCT No. PCT/DE88/00695, § 371 Date Jun. 1, 1990, § 102(e) Date Jun. 1, 1990, PCT Pub. No. WO89/05191, PCT Pub. Date Jun. 15, 1989

PCT Filed Nov. 9, 1988, Ser. No. 477,949

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1987, 3740898

Int. Cl.[5] B02C *17/16*

U.S. Cl. 241—62 **22 Claims**



1. A grinding apparatus adapted for grinding material in the form of flowable or a pasty nonflowable conglomerate material comprising a housing (**1**), said housing including an inlet through which material which is to be ground is introduced into an inlet chamber (**2**), a grinding chamber (**3**) in fluid communication with said inlet chamber (**2**), a plurality of grinding balls in said grinding chamber (**3**), an outlet (**4**) through which ground material exits said outlet (**4**), an agitator body (**5**) in said grinding chamber (**3**) for effecting agitation of said grinding balls, pressure vessel means (**46, 51, 56**) for housing the material which is to be ground incident to its flow through said housing (**1**), removable closure means (**48, 52, 59**) for introducing the material to be ground into said pressure vessel means (**46, 56**) and closing said pressure vessel means (**46, 56**), and means (**50, 52–55, 57**) for pressurizing the material which is to be ground while in said pressure vessel means (**46, 51, 56**) and while closed by said removable closure means (**48, 52, 59**) sufficient to press the material to be ground through the inlet and grinding chambers (**2, 3,** respectively) and into said outlet (**4**).

5,183,216

DEMOLISHING APPARATUS

Helmut Wack, Am Langen Zaun 7, D-6653, Blieskastel, Fed. Rep. of Germany

Filed Apr. 4, 1991, Ser. No. 680,526

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1990, 4013126

Int. Cl.[5] B02C *1/10*

U.S. Cl. 241—101.7 **21 Claims**

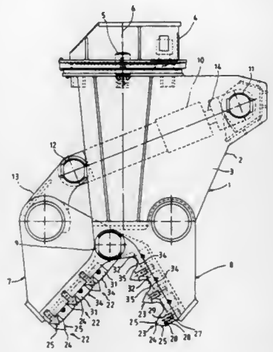
1. Demolition apparatus for the demolition and breaking up of concrete, the apparatus comprising:

two shear-like cooperating hydraulically driven jaws, one of said jaws including at least two working ledges and the other of said jaws includes at least three working ledges, said working ledges are all parallel juxtaposed and engage

in one another in an alternating manner in a closed position of the jaws; and

breaking teeth provided on the respective working ledges,

wherein the jaw provided with the at least three working ledges includes two outer working ledges with the third working ledge being disposed substantially centrally of the outer working ledges, the two outer working ledges are in a common plane substantially at a right angle to a closing movement of the jaws, with the third working



ledge being set back with respect to the closing movement of the jaws, and

wherein cutting tools are arranged on opposed facing sides of at least two juxtaposed working ledges of the jaws between the breaking teeth, said cutting tools being set back in the direction of the closing movement of the jaws relative to the breaking teeth and being adapted to pass one another in a shearing manner towards the end of the closing movement of the jaws.

5,183,217

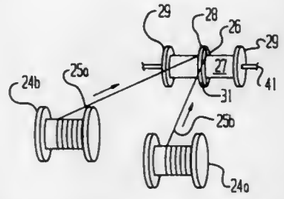
CABLE PACK WINDING AND PAYOUT SYSTEM

Roger A. Holler, Warminster, and Peter R. Ulrich, Perkasie, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 31, 1992, Ser. No. 860,839

Int. Cl.[5] B65H *54/00, 55/00, 55/04*

U.S. Cl. 242—47 **3 Claims**



1. A method for forming a cable pack to insure a twist-free payed-out cable comprising the steps of:

a) winding all of the desired length of cable onto a first feed spool;

b) rewinding substantially one half of said length onto a second feed spool thereby creating, at the approximate midpoint thereof, a loop of cable;

c) placing said loop at the longitudinal center of a collapsible take-up mandrel;

d) placing a divider flange around said mandrel atop said loop to divide the mandrel into axially spaced sections and clamp the loop to the mandrel;

e) rotating said mandrel to re-wind cable off of said feed spools onto respective said axially spaced sections of said mandrel to form a two part cable pack; and

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5,183,218

DEVICE FOR THE OPERATION OF HOSES CONTAINING A LIQUID UNDER VERY HIGH PRESSURE

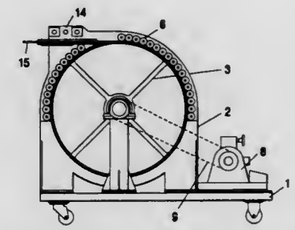
Libero Gavagna, Poggio Renatico, Italy, assignor to MIGEN S.r.l.

Filed Feb. 13, 1991, Ser. No. 654,543

Claims priority, application Italy, Mar. 8, 1990, 19608 A/90

Int. Cl.[5] B65H *23/00, 20/00, 18/00*

U.S. Cl. 242—54.00 R **8 Claims**



1. A device for the operation of at least one hose containing a liquid under very high pressure, in particular for cleaning internal surfaces of tubes of a tube nest, comprising:

a) at least one hose;

b) a rotating drum around which the at least one hose is wound, forming one coil;

c) a belt inserted on each of at least one outer edge of said drum;

d) a container of said drum equipped with a series of contiguous rollers which are in contact with said belt, said belt causing said rollers to rotate, said belt being an elastomeric substance having a thickness assuring contact with said rollers wherein said rollers hold said at least one hose in adherence with an outer surface of said drum, said container having a transverse aperture which permits passage of said at least one hose between an inside and an outside of said container;

e) a moving guide for said at least one hose positioned transversely to said drum, said moving guide moving with transversely reciprocating motion and aiding in winding and unwinding said hose onto and off of said drum; and

f) a motor for driving the drum and for moving the moving guide in a mutually coordinated manner.

5,183,219

COUPLING FOR AXIALLY LOCKING A REEL OF A TAPE CASSETTE AND FOR DRIVING IT WITHOUT BACKLASH

Pierre Abellle, Antony, and Didier Bredif, Kremlin-Bicetre, both of France, assignors to Schlumberger Industries, Mon Trouge, France

Continuation of Ser. No. 434,961, Nov. 6, 1989, abandoned. This application May 22, 1991, Ser. No. 703,716

Claims priority, application France, Nov. 15, 1988, 88 14786

Int. Cl.[5] B65H *16/10, 18/14, 20/38*

U.S. Cl. 242—68.1 **17 Claims**

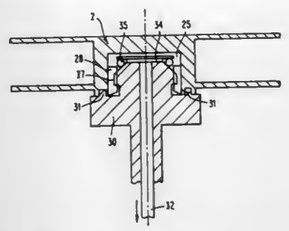
1. A coupling for axially locking a reel of a cassette relative to the drive wheel of a magnetic recorder, said drive wheel having an axial abutment against which said reel may bear, said reel being provided with a central recess having at least one rest projecting radially inward, said coupling including:

resilient locking means including a toroidal spring carried by a sloping surface of said drive wheel; and

control means separate from said resilient locking means and

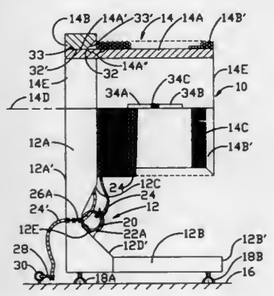
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slidably mounted within said drive wheel for tensioning said resilient locking means from a rest position in which



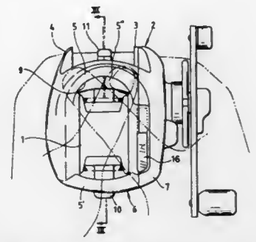
said reel can freely slide onto said drive wheel to a working position in which said reel is locked against said abutment.

5,183,220
TOW ROPE BOBBIN ASSEMBLY
Arthur A. Cencula, 20772 W. Verona, Lake Villa, Ill. 60046
Continuation of Ser. No. 391,494, Aug. 9, 1989, abandoned. This application Jan. 9, 1991, Ser. No. 639,578
Int. Cl.[5] B65H *75/34*
U.S. Cl. 242—85.1 **3 Claims**



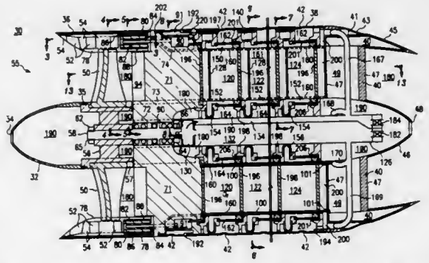
1. A tow rope bobbin assembly, comprising:
a bobbin having a stationary shaft for supportive contact with a coil of rope wrapped therearound; and
a mounting bracket assembly including a bracket body,
means for attached the bracket body to an underlying surface, and
means for cantilever stationary mounting of said bobbin to said bracket body with the stationary shaft of the bobbin substantially parallel to said underlying surface and in spaced relationship therewith; and
means carried by an end of the shaft for releasibly holding the shaft against rotation relative to the bracket body including a hinged part pivotally connected to said bracket body that is moveable between a position in which the shaft is released from said bracket body and another position in which the shaft is not released from the bracket body.

5,183,221
FISHING REEL
Michiki Kawai, Aichi, and Takeo Miyazaki, Tokyo, both of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Filed Apr. 10, 1991, Ser. No. 683,065
Claims priority, application Japan, Apr. 18, 1990, 2-40662[U]
Int. Cl.[5] A01K *89/00*
U.S. Cl. 242—310 **5 Claims**



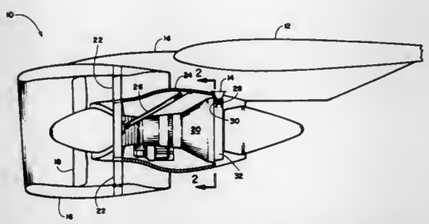
1. A fishing reel comprising:
a spool rotatably supported on a reel body;
said reel body comprising leg means for mounting said fishing reel on an elongated fishing rod, said leg means interposed between right and left side frames of said reel body, and a thumb support frame connecting said right and left side frames, wherein said right and left side frames extend substantially parallel to said fishing rod and said thumb support frame extends generally transverse to said fishing rod; and
wherein said thumb support frame is bowed outward from said reel body in a first direction generally extending along said fishing rod for ergonomically receiving a thumb, whereby said fishing reel may be comfortably gripped and operated.

5,183,222
ELECTRIC POWERED TIP-DRIVEN FAN WITH METAL/AIR BATTERY ASSEMBLY THEREFOR
John W. Ramsey, Jr., Wichita Falls, Tex., assignor to Tacticon Corp., Wichita Falls, Tex.
Filed Aug. 12, 1991, Ser. No. 743,783
Int. Cl.[5] F04B *35/04*
U.S. Cl. 244—53 R **16 Claims**



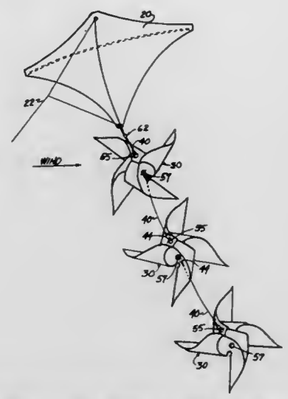
1. An electrically powered fan engine for generating thrust by driving a stream of air which is produced by rotation of a fan, the engine comprising:
an elongate housing having an air inlet at a forward end thereof and an air exhaust at a rearward end thereof, wherein said stream of air passes through said elongate housing,
said fan mounted on a shaft which is located axially within said housing, said fan having a plurality of blades extending outward from said shaft and said fan positioned proximate a forward portion of said housing,
a cylindrical rotor mounted to said blades of said fan wherein at least a portion of each of said blades is located between said rotor and said shaft,
a cylindrical stator mounted to said housing proximate said air inlet and adjacent to said rotor wherein said rotor and said stator function together as an electric motor to drive said fan rotationally relative to said housing to cause said fan to produce said stream of air and thereby generate said thrust by said engine,
a battery assembly mounted within said housing and having openings therein for receiving and passing through said battery assembly a majority of the air in said stream of air, wherein said stream of air produced by said fan passes sequentially through said battery assembly and through said air exhaust, and
electrical conductors which connect said battery assembly to said electric motor for providing electrical power from said battery assembly to said electric motor.

5,183,223
INTERLOCKING RING FAN JET ENGINE SUPPORT SYSTEM
Dennis Cornax, Chula Vista, Calif., assignor to Rohr, Inc., Chula Vista, Calif.
Filed Jun. 27, 1991, Ser. No. 722,254
Int. Cl.[5] B64D *27/00*
U.S. Cl. 244—54 **2 Claims**



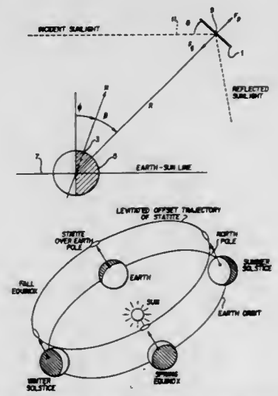
1. A load sharing support system for supporting the engine core of a fan jet gas turbine engine in which the forward end of the core is fixed to the forward part of the engine, which comprises:
a first ring surrounding the aft portion of a fan jet engine and fastened to an engine cowl;
means for securing said first ring to a pylon mounted on an aircraft;
a second ring surrounding and fastened to the aft portion of said engine;
said first ring having a plurality of inwardly extending longitudinal grooves opening inwardly of said first ring; and
said second ring having a plurality of outwardly extending tabs corresponding to said grooves and adapted to mesh with said grooves,
said tabs do not extend entirely into said grooves at ambient temperature, whereby radical thermal expansion as the engine heats up to operating temperature is accomplished by expansion of said tabs further into said grooves,
said grooves have sufficient length to permit longitudinal movement of said tabs therealong to accommodate longitudinal thermal expansion of said engine between ambient and operating temperatures.

5,183,224
SELF REGULATING PINWHEEL KITE TAIL
Rudy W. Harburg, 1020 Mapleton Ave., Boulder, Colo. 80304
Filed May 14, 1990, Ser. No. 522,810
Int. Cl.[5] B64C *31/06;* **A63H** *27/08*
U.S. Cl. 244—155 R **8 Claims**



1. A stabilizing means capable of being attached to a kite said stabilizing means comprising:
a) a swivel means having oppositely disposed windward and leeward ends;
b) a pinwheel having spaced apart windward and leeward faces; wherein the first end of the swivel mechanism is attached by attachment means to said kite, and wherein the second end of the swivel means is attached by attachment means to the windward face of the pinwheel, said swivel means is attached in a manner which allows each stabilizer to trail off in the wind leeward said kite.

5,183,225
STATITE: SPACECRAFT THAT UTILIZES SIGHT PRESSURE AND METHOD OF USE
Robert L. Forward, P.O. Box 2783, Malibu, Calif. 90265
Filed Jan. 9, 1989, Ser. No. 294,788
Int. Cl.[5] B64G *1/36*
U.S. Cl. 244—168 **4 Claims**



1. A method of using a statite wherein said statite comprises an artificial spacecraft maintained adjacent to the earth by

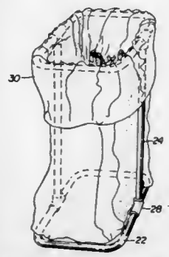
VOL
1147
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solar light pressure force, and said statite is not in the geostationary orbital arc around the earth, yet remains geosynchronous with respect to the earth, thereby allowing said statite to operate at higher latitudes with respect to the earth, said method comprising the steps of:

launching the Statite from the Earth, without imparting to the Statite a significant centrifugal acceleration, to an altitude where the light pressure on the Statite's solar sail is equal to the force of the Earth's gravity whereby there is no significant effects from centrifugal acceleration with respect to the earth; and

positioning the Statite over the night side of the Earth so the force of the Earth's gravity on the Statite is substantially cancelled by the force resulting from the light pressure acting on the statite.

5,183,226
UNIVERSAL COLLAPSIBLE BAG SUPPORT STAND
Russell G. Brooks, 2321 Country Club Dr., Titusville, Fla. 32780
Filed Sep. 23, 1991, Ser. No. 764,243
Int. Cl.[5] A63B *55/04*
U.S. Cl. 248—97 **18 Claims**



1. A foldable, easily stored stand for supporting a thin-walled bag or the like, said stand comprising upper and lower planar members made up of tubular components, said planar members being of substantially equal size and interconnected by a pair of column members, the opposite ends of one of said column members being hingedly connected to a first location on each of said planar members, and the opposite ends of the other of said column members being hingedly connected to a second location on both of said planar members, with said second location on said planar members being at a substantially opposite position on said planar members to said first location, with said planar members thus being held in a substantially parallel, spaced apart relationship by said column members, the substantially equal size of said planar members enabling a user to install a thin-walled bag on either of said planar members that has been placed in an upright position, said hinge connection of said column members to said planar members permitting said planar members to be moved from a spaced apart, parallel relationship, to a compacted condition in which said planar members move toward and approach a coplanar relationship.

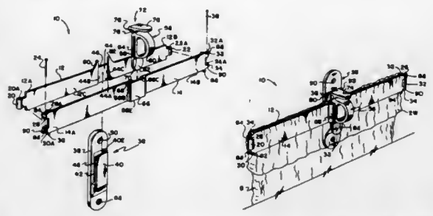
5,183,227
SELF-CLOSING BAG HOLDER
Gerald D. Wilhite, Duncanville, Tex., assignor to Jokari/US., Inc., Dallas, Tex.
Filed Jan. 10, 1992, Ser. No. 819,466
Int. Cl.[5] B65B *67/04*
U.S. Cl. 248—99 **15 Claims**

1. Bag holding apparatus comprising, in combination:

a first resilient clamp plate having first and second end portions;

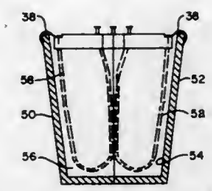
a second resilient clamp plate having first and second end portions;

the first clamp plate being assembled on the second clamp plate with the first end portion of the first clamp plate being coupled to the first end portion of the second clamp plate, and the second end portion of the first clamp plate being coupled to the second end portion of the second clamp plate; the assembly of the first and second clamp plates defining an expandable collar for engaging the tubular sidewall of a flexible bag; and



a mounting bracket assembled on said first clamp plate, said mounting bracket including a base plate adapted for attachment to an external support structure and having a retainer arm attached to said base plate in offset relation therewith, thereby defining an open slot in which said first clamp plate is received.

5,183,228
DEVICE FOR COMPARTMENTALIZING A CONTAINER
Shawn Curry, 709 Webster St., New Orleans, La. 70118
Filed Jun. 6, 1991, Ser. No. 711,680
Int. Cl.[5] B65B *67/04*
U.S. Cl. 248—100 **17 Claims**



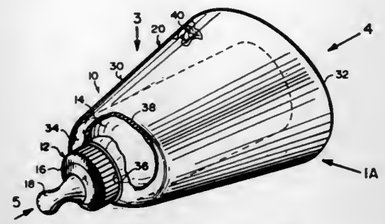
1. A device for compartmentalizing a container comprising:

an elongated bar having a hollow interior; and

a pair of transverse arms, each secured to opposite sides of a middle portion of the elongated bar at a right angle to a longitudinal axis of the elongated bar, each arm being adapted for a pivotal movement in relation to the elongated bar, said elongated bar and each of said transverse arms being provided with an extension means for extending longitudinal dimensions of said bar and said transverse arms, said extension means comprising an extension member telescopically slidingly engaged within outer open ends of said elongated bar and said transverse arms.

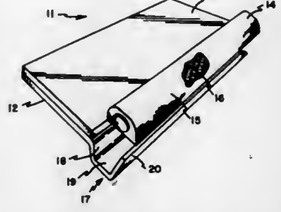
5,183,229
BABY BOTTLE HOLDER
Michael D. Duggan, 92-523 Kokole St., Makakilo, Hi. 96707
Filed Dec. 12, 1991, Ser. No. 805,633
Int. Cl.[5] A47D *15/00*
U.S. Cl. 248—102 **5 Claims**

1. A holder for a baby bottle of the type having a body, a cap and a nipple, said holder comprising means for retaining the body of the baby bottle, so that the baby bottle will remain stationary, when said retaining means with the baby bottle is placed onto a mattress in a crib or the like near a mouth of a baby, allowing the baby to always have access to the nipple for feeding, said retaining means includes an oval shaped sleeve, not just irregular but specifically oval shaped, with a wide opened rear end for insertion of the body of the baby bottle therein and a narrow front end having a circular aperture thereabout, so that the cap and nipple of the baby bottle can



extend through said circular aperture, with said oval shaped sleeve preventing the baby bottle from rolling away from the mouth of the baby.

5,183,230
COMPUTER KEYBOARD SUPPORT WITH PADDED WRIST SUPPORT
Wayne E. Walker, Kent, and Grant A. Walker, Federal Way, both of Wash., assignors to Fox Bay Industries, Inc., Kent, Wash.
Continuation of Ser. No. 626,217, Dec. 12, 1990, abandoned.
This application Jan. 21, 1992, Ser. No. 824,912
Int. Cl.[5] B43L *15/00*
U.S. Cl. 248—118 **13 Claims**



1. A support for supporting a keyboard on an external surface, said external surface including an edge, said support further supporting a keyboard operator's hands over the keyboard so that a keyboard operator's wrists are supported in a generally nonflexed horizontal position, said support comprising:

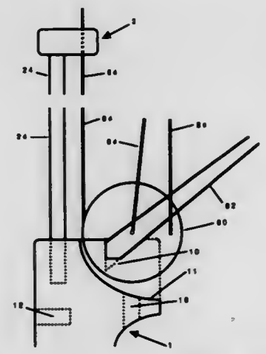
a keyboard support portion including a top supporting surface for holding the keyboard in a stationary position relative to said support, said keyboard support portion including a bottom surface for resting on the external surface;

an overhang portion extending from said keyboard support portion along a front edge of said keyboard support portion, said overhang portion having a vertically descending member having an outer surface facing toward the keyboard operator, said outer surface defining a vertical depth extending vertically below said top supporting surface and said bottom surface of said keyboard support portion, said vertically descending member having an inner surface for abutting the edge of the external surface;

a wrist support portion connected to said overhang portion, said wrist support portion having a top surface, said top surface positionable at a height to support the keyboard operator's hands over the keyboard so that the keyboard operator's wrists are supported in a generally nonflexed horizontal position during typing; and

means for adjusting said wrist support portion vertically along said vertical depth defined by said outer surface of said vertically descending member of said overhang portion wherein said wrist support portion is adjustable for keyboards of different vertical heights to permit support of the wrists in the generally nonflexed horizontal position during typing.

5,183,231
BOW POD OR HOLDER
James A. Pellerin, 2086 Anoka, Flint, Mich. 48532
Continuation of Ser. No. 659,519, Feb. 21, 1991, abandoned.
This application Mar. 24, 1992, Ser. No. 857,109
Int. Cl.[5] A47F *7/00*
U.S. Cl. 248—156 **15 Claims**



1. A holder of an archery bow, utilizing a compound bow having a bow-end, an end-pulley, and a bowstring, comprising:

a block having a top, bottom, front side, back side, left side, and right side;

a socket of uniform cross section, upwardly open, adapted to confine the bow-end, placed in said top of said block, and extending from said front side to said back side;

a cavity shaped to receive loosely the end-pulley, placed in said top and said right side of said block between said front side and said back side;

a hook having a gap wider than the bowstring, capable of retaining the bowstring, and facing away from the right side; and

positioning means, communicating with said block and said hook, for positioning said hook above said socket.

5,183,232
INTERLOCKING STRAIN RELIEF SHELF BRACKET
John A. Gale, 3959 Colorado Ave. S., St. Louis Park, Minn. 55416
Filed Jan. 31, 1992, Ser. No. 828,422
Int. Cl.[5] A47K *1/00*
U.S. Cl. 248—220.2 **5 Claims**

1. Interlocking shelf bracket means for joining individual structural members together in right angular relationship, one to another to form an array of individual members arranged in preselected isotonic and comprising:

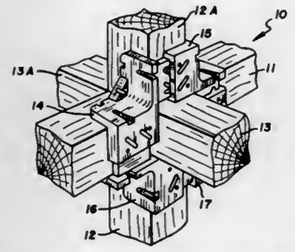
(a) a generally "L"-shaped connection member consisting of an angle body and arranged for interlocking mating relationship with a like connection member and including first and second legs, each leg comprising a planar face having an inner edge surface and an outer edge surface, and with a substantially continuous flanged surface extending from the inner edge surface of said planar face of said first leg to form said angle body member and including a common apex formed at the juncture of said first and second legs,

VOL 1147 ISS 1 FE 2 1993 UMI

and with said first and second legs extending at right angles from said common apex;

(b) a generally rectangularly configured "U"-shaped channel opening formed on the planar face of said first leg and extending inwardly from the outer edge surface of the flange of said first leg and having an interior surface defining said rectangularly shaped opening and with opposed interior end surfaces further defining said rectangularly shaped opening;

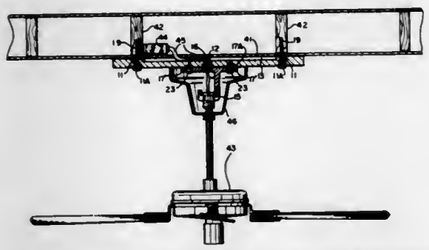
(c) a generally rectangularly shaped interlocking tabular projection for mating engagement within said rectangularly shaped opening and extending outwardly from the outer edge of the said planar face of said second leg and having an exterior surface with opposed edges defining said rectangular shaped tabular projection to mate with and engage the interior surfaces of said rectangularly shaped opening;



(d) means disposed along the surfaces of said fist and second legs for receiving and accommodating fasteners for securing said "L"-shaped connection member to individual structural members for interconnection thereof, with at least one of said fastener-accommodating means in each of said legs being in the form of an elongated slot, and with the slot axis being arranged obliquely to the axis of said first and second legs; and

(e) the arrangement being such that said "U"-shaped channel and said tabular projection mesh and interlock to form a stable interconnection between the interior surfaces of said rectangularly shaped opening and the profile of said rectangularly shaped tabular projection respectively are in mutually abutting relationship with the structural members to which they are secured.

5,183,233
UNIVERSAL FIXTURE SUPPORT
Joseph LaPalomento, 1221 Dennis St., Angleton, Tex.
Filed May 10, 1991, Ser. No. 698,136
Int. Cl.[5] B42F *13/00*
U.S. Cl. 248—343 **11 Claims**



1. A universal electrical fixture hanging system for suspending an electrical fixture from a flat surface having a grid comprising in combination:

a flat panel having a series of apertures to receive fasteners therein and shaped to be attached to said grid;

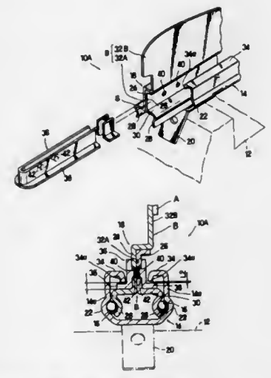
said panel having a central opening through which wires from an electrical source pass and a slot on its rear said passing through said central opening;

said slot being adapted to receive a wire to allow placement of said panel flush with said flat surface;

a support means for said fixture detachably mounted to said panel over said central opening for supporting said fixture,

said support means having an opening aligned with said central opening on said panel and a hook element for supporting said fixture to permit attachment of wires from said fixture to the wires from said electrical source.

5,183,234
SEAT SLIDE DEVICE
Seishiro Saito, Akishima, Japan, assignor to Tachi-S Co., Ltd., Akishima, Japan
Filed Nov. 19, 1991, Ser. No. 794,385
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—430 **6 Claims**



1. A seat slide device comprising:

a lower rail having a generally U-shaped configuration in section, which is opened at its upper part, forming thus an upper opened part and also forming two spaced-apart upper flange portions;

an upper rail including a slide portion which is fitted in said lower rail in a slidable manner, and a bracket portion which is integrally formed with said slide portion, such that said bracket portion is disposed at the center of said slide portion and extends upwardly through the upper opened part of said lower rail, said slide portion having a horizontal part formed integrally with said bracket portion and having a pair of lateral parts formed downwardly from both ends of said horizontal part;

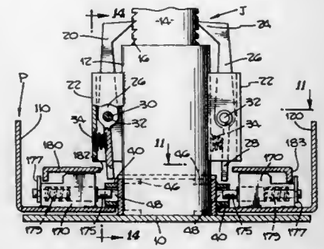
a ball retaining portion which is defined between a lateral wall of said lower rail and one of said lateral parts of said upper rail slide portion, said ball retaining portion being adapted for retaining at least one steel ball therein; and

a spacer member made of a soft, elastic material, said spacer member being interposed between said upper flange portions of said lower rail and said horizontal part of said upper rail slide portion,

wherein said upper rail is prevented by said spacer member against vertical wobbling within said lower rail;

wherein said spacer member is of such a formation as to be affixed over both of said horizontal part of said slide portion and bracket portion associated with said upper rail, and wherein said spacer member is formed generally in U-shaped configuration having a peripheral horizontal part and a vertical part standing therefrom, and wherein said spacer member is secured to said upper rail such that said peripheral horizontal part lies on said horizontal part of said upper rail slide portion while said vertical part sandwiches therein said bracket portion of said upper rail.

5,183,235
APPARATUS FOR ALIGNING AND RELEASING A TWO-PART JACK SYSTEM
Harry H. Arzouman, Corona Del Mar, and Clyde E. Slay, Santa Ana, both of Calif., assignors to Safe-T-Jack, Inc., Huntington Beach, Calif.
Division of Ser. No. 350,111, May 9, 1989, Pat. No. 4,960,264.
This application Sep. 28, 1990, Ser. No. 590,080
Int. Cl.[5] B66F *5/04*
U.S. Cl. 254—8 B **1 Claim**



1. In a two-part jack system, a jack stand comprising:

a hollow elongated lower frame member having a supporting base attached to its lowermost end;

an elongated upper frame member extending in telescoping relation within said lower frame member;

releasable ratchet means for supporting said upper frame member in a selected position of upward extension, including a pair of downwardly extending pawl arms disposed on opposite sides of said upper frame member and each having its lowermost portion forming a ratchet release arm;

means for easily aligning a separate power unit to the jack stand in precise relation thereto, when approached from either direction, including

a pair of generally parallel, horizontally extending side rails attached to opposite sides of said lower frame member, each of said side rails having a vertical outer surface;

said side rails having both ends of their vertical outer surfaces tapered towards each other to provide alignment ramps;

each of said side rails also having an outwardly opening horizontal alignment hole at the longitudinal center of its vertical outer surface; and

said ratchet release arms being in a common vertical plane with said alignment holes.

5,183,236
LOCKING DEVICE FOR RECTILINEAR OR CIRCULAR DISPLACEMENT MECHANICAL JACKS
Georges Droulon, Flers, France, assignor to ETS. Cousin Freres, Flers, France
Filed Sep. 21, 1990, Ser. No. 586,433
Claims priority, application France, Sep. 21, 1989, 89 12406
Int. Cl.[5] B66F *3/02*
U.S. Cl. 254—95 **11 Claims**

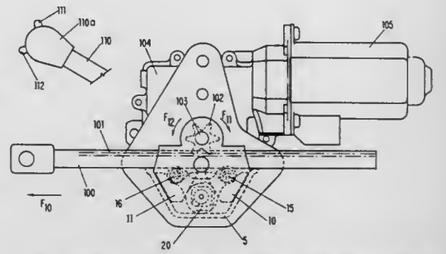
1. A locking device for rectilinear or circular displacement mechanical jacks, comprising:

at least one rod;

notched roller means for locking said rod in a locked position thereof;

at least one V-shaped bearing plate having toothed ramps for cooperating with said notched roller means;

a rotatable cam for selectively bearing against said at least one bearing plate to effect said locked position of said rod,

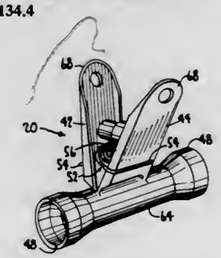


and releasing said at least one bearing plate and hence said notched roller means to free said rod;

means to rotate said cam; and

control means to drive said means for rotating said cam.

5,183,237
METHOD FOR FISHING LINES IN SERIAL CONDUITS
Ronald P. Drago, Easton, Pa., assignor to Spectrum Innovations, Inc., Flemington, N.J.
Filed Dec. 23, 1991, Ser. No. 813,894
Int. Cl.[5] B65H *59/00*
U.S. Cl. 254—134.4 **7 Claims**



1. A method for fishing at least one line through serial hollow conduits having ends terminating in at least one wall of a housing having internal dimensions larger than that of the conduits, such that the housing defines a discontinuity in said internal dimensions at the housing, comprising the steps of:

attaching to an end of a first conduit and an end of a second conduit a substantially airtight bridging section having an internal contour leading smoothly from the end of said first conduit to the end of said second conduit end, thereby to define a route passing serially through the conduits and through the bridging section therebetween, the bridging section including means which are openable along a full length of the bridging section;

attaching a plug to an end of said line;

forcing said plug pneumatically through the route including the bridging section by application of differential pressure to the first and second conduits, whereby said line extends along the route, the bridging section guiding the plug and pneumatically closing the route through the conduits;

opening the bridging section by operating the means openable along said full length; and,

removing the bridging section to access said line.

VOL
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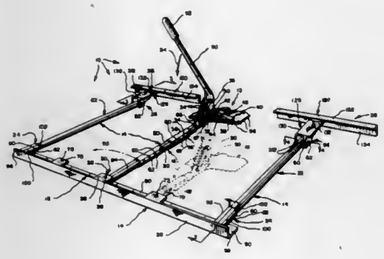
5,183,238

CARPET STRETCHING APPARATUS PARTICULARLY FOR LONG LENGTHS OF CARPET

Brad Sorensen, 255 W. 200 North, Vernal, Utah 84078

Filed Jan. 4, 1991, Ser. No. 638,461
Int. Cl.[5] B65H *77/00*
U.S. Cl. 254—209 **2 Claims**

1. An apparatus for stretching carpet taut across a floor of an entire room from a single general location independent of the dimensions of the floor comprising a spikeless frame comprising a base which only rests upon, but does not otherwise engage the carpet, the frame further comprising two broad hooks for engaging a back edge of a tack strip secured to the floor near a wall of the room, two side members, one broad hook being attached to each side member, each side member comprising an underside comprising part of said base, a cross member connected to the two side members at respective locations remote from the broad hooks, the cross member comprising at least one carpet stretcher connection site, the spikeless frame defining a large unobstructed area between the side members and the cross members and the tack strip;



a carpet stretcher comprising a spiked stretching head for spike engagement and applying stretching force to a plurality of specific carpet locations within the unobstructed area without relocation of the frame and a support member spanning between the stretching head and the connection site in a plane generally parallel to the carpet by which each stretching force is transferred to the frame and thence through the hooks to the tack strip;

the attachment between each side member and one of the associated hooks comprising selectable connection sites to allow adjustment for variations in carpet pile height.

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Patent Not Issued For This Number

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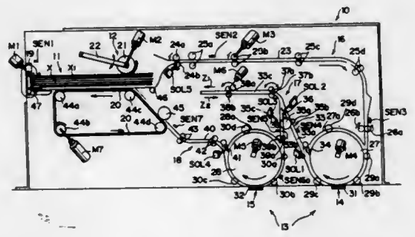
AUTOMATIC DOCUMENT FEEDER

Toru Morooka, Yamato-Koriyama, and Yuji Okamoto, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 23, 1991, Ser. No. 764,199
Claims priority, application Japan, Sep. 28, 1990, 2-262644; Feb. 22, 1991, 3-28693; Sep. 4, 1991, 3-224109
Int. Cl.[5] B65H *5/22*
U.S. Cl. 271—3.1 **9 Claims**

1. An automatic recycling document feeder for automatically feeding a plurality of document sheets to an exposure position from a tray and returning said document sheets to said tray after exposure, comprising;

a sensor, provided near a transit path of supplied document sheets, for detecting a presence of a document sheet at a position where said sensor is located;



means for obtaining one continuous time of presence of the document sheet according to detection output from said sensor;

detecting means for detecting an occurrence of a multiple feed when said continuous time of presence of a document sheet obtained this time is longer than a continuous time of presence of a document sheet obtained last time;

and means for idly transferring the document sheets from the tray instead of normal feeding for exposure until the document sheet just before the document sheets involved in the multiple feed is transferred from the tray, when said detecting means detects the occurrence of the multiple feed.

5,183,241

SHEET FEEDING DEVICE FOR INVERTING A SHEET

Nobuyuki Torisawa, Minamiashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 29, 1991, Ser. No. 800,107
Claims priority, application Japan, Nov. 29, 1990, 2-331954
Int. Cl.[5] B65H *5/00, 29/00*
U.S. Cl. 271—12 **8 Claims**

1. A device for feeding sheets one by one, comprising:

a suction pad movable towards stacked sheets so as to attract an uppermost sheet thereto;

a drum rotatable in both forward and reverse directions;

a means for rotating said drum in said forward and reverse directions;

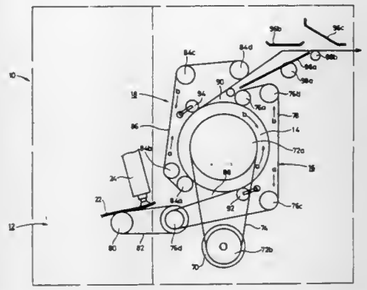
means for changing the rotation of said drum from said forward direction to said reverse direction when said uppermost sheet has reached a predetermined position in said device;

a first belt-type conveying system disposed on one part of the surface of said drum;

a second belt-type conveying system disposed on another part of the surface of said drum;

a sheet insertion port defined by said drum and said first belt-type conveying system; and

a sheet withdrawal port defined by said drum and said second belt-type conveying system;



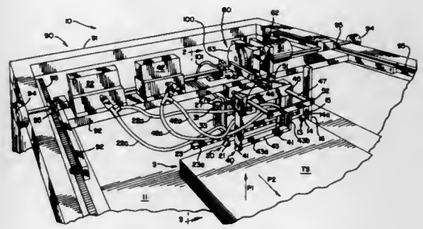
the arrangement being such that said suction pad is displaced to face said sheet insertion port so as to interpose said uppermost sheet between said drum and said first belt-type conveying system, followed by a transfer toward said second belt-type conveying system and a subsequent discharge of said uppermost sheet in a reversed position from said sheet withdrawal port upon reverse rotation of said drum by said rotating means in response to said means for changing the rotation.

5,183,242

METHOD AND APPARATUS FOR FEEDING SHEETS

Robert A. Crimmins, Algonquin, and Michael D. Flasza, Schaumburg, both of Ill., assignors to D&K Custom Machine Design, Inc., Elk Grove Village, Ill.

Filed Aug. 30, 1991, Ser. No. 752,395
Int. Cl.[5] B65H *5/08*
U.S. Cl. 271—14 **24 Claims**



1. A sheet feeding mechanism comprising:

A) a platform for supporting a stack of sheets with an exposed top sheet;

B) a first suction cup having first vacuum means for holding said top sheet and being movable along a generally vertical path between a first position and a second position in a first direction holding said top sheet and in a second direction without holding said top sheet;

C) first switch means for turning said first vacuum means ON and OFF, said top sheet being held when said first vacuum means is ON;

D) first guide means for supporting and moving said first suction cup along said generally vertical path,

said first guide means includes

means for driving a fluid cylinder and

a generally vertical piston rod connected adjacent one end to said first suction cup and cooperating at said opposite end with said fluid cylinder,

said first suction cup being in said first position when said piston rod is extended from said fluid cylinder and

said first suction cup being in said second position when said piston rod is retracted into said fluid cylinder;

E) a second suction cup having second vacuum means and being movable along a generally horizontal path between a third position and a fourth position in a first direction holding said top sheet and in a second direction without holding said top sheet;

F) second switch means for turning said second vacuum means ON and OFF, said top sheet being held when said second vacuum means is ON; and,

G) second guide means for supporting and moving said second suction cup along said generally horizontal path,

said second guide means includes

means for driving a rotating member,

a link pivotally interconnected adjacent one end to said rotating member defining a rotating member-link interconnection,

a generally horizontal stationary guide rod and

a reciprocating block slidable on said guide rod pivotally interconnected to said link adjacent the other end of said link,

said second suction cup being in said third position when the distance between said rotating member-link interconnection and said guide rod is the greatest and

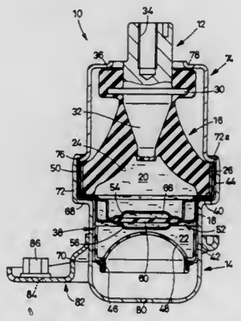
said second suction cup being in said fourth position when said distance between said rotating member-link interconnection and said guide rod is the smallest.

5,183,243

FLUID-FILLED ELASTIC MOUNT HAVING CAULKED PORTION FOR SEALING OFF FLUID CHAMBER

Nobuo Matsumoto, Nagoya, Japan, assignor to Tokai Rubber Industries, Ltd., Japan

Filed Jun. 6, 1991, Ser. No. 711,996
Claims priority, application Japan, Jun. 12, 1990, 2-153375
Int. Cl.[5] F16M *1/00*
U.S. Cl. 267—140.13 **9 Claims**



1. A fluid-filled elastic mount for flexibly connecting two members, comprising:

a first support member fixed to one of the two members to be flexibly connected;

an elastic body having a generally truncated conical shape and including a small-diameter end portion and a large-diameter end portion, said first support member being secured to said small-diameter end portion of said elastic body;

a cylindrical connecting member secured to an outer cir-

VOL
1147
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cumferential surface of said large-diameter end portion of said elastic body;

a closure member having a generally cylindrical shape, and including a first and a second cylindrical wall portion, said first cylindrical wall portion being fitted on said connecting member such that an opening of said second cylindrical wall portion is fluid-tightly closed by said elastic body, said second cylindrical wall portion cooperating with at least said elastic body to define a fluid chamber filled with a non-compressible fluid;

a flexible diaphragm secured to said second cylindrical wall portion of said closure member so as to partially define said fluid chamber;

a sealing rubber layer which is formed on at least one of an outer circumferential surface of said connecting member, and an inner circumferential surface of said first cylindrical wall portion of said closure member, such that said sealing rubber layer is sandwiched between said connecting member and said closure member in a direction perpendicular to a load-receiving direction in which vibrations are applied to the elastic mount;

a second support member which is spaced apart from said first support member in said load-receiving direction, and fixed to the other of said two members to be flexibly connected, said second support member being fitted on said closure member and including a caulked portion which retains said connecting member and said first cylindrical wall portion of said closure member in said load-receiving direction;

a partition structure supported by said closure member so as to extend in a direction substantially perpendicular to said load-receiving direction, said partition structure dividing said fluid chamber into a pressure-receiving chamber partially defined by said elastic body so that a pressure of the fluid in said pressure-receiving chamber changes due to elastic deformation of said elastic body upon application of the vibrations in said load-receiving direction, and an equilibrium chamber partially defined by said second cylindrical wall portion and said flexible diaphragm so that a volumetric change in said equilibrium chamber is allowed by elastic deformation of said flexible diaphragm; and

means for defining an orifice passage for fluid communication between said pressure-receiving and equilibrium chambers.

5,183,244

BLADE ASSEMBLING

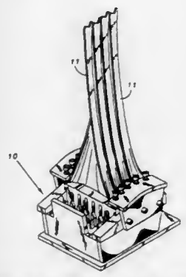
Ralph J. Ortolano, Rancho Palos Verdes; Kenneth A. Ball, Huntington Beach, and Gary Bowman, Riverside, all of Calif., assignors to Southern California Edison, Rosemead, Calif.

Continuation-in-part of Ser. No. 483,129, Feb. 2, 1990, Pat. No. 5,026,032. This application Feb. 13, 1991, Ser. No. 654,495

The portion of the term of this patent subsequent to Jun. 25, 2008, has been disclaimed.

Int. Cl.[5] B23P *19/04*

U.S. Cl. 269—43 **12 Claims**



1. A pre-assembly verification tool for temporarily locating a predetermined number of blades of a rotor in relative operative adjacent relationship with each other comprising a support, spaced sidewalls affixed to the support, the support and sidewalls forming a space for locating roots of respective blades in adjacent abutting relationship, the spaced sidewalls being separated to accommodate the thickness of the roots so that the roots may be located snugly between the sidewalls, a portion of the sidewalls having an arc of curvature representative of an arc of curvature for a rotor for temporarily accommodating the blades such that when the blades are temporarily located with the roots in the space, the blades adopt a temporary location relative to each other representative of a permanent blade position in the rotor, wherein the arc of curvature forms a regular smooth uninterrupted curved surface, and means for holding the roots temporarily in the space, and wherein the holding means is operative outside a plane of the arc of curvature of the surface of the sidewall.

5,183,245

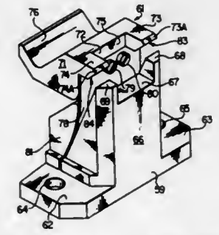
SEMI-CONDUCTOR WAFER RETENTION CLIP

Antonio DiNapoli; Gerald L. Goff, and Roger A. Sikes, all of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Nov. 21, 1990, Ser. No. 617,008

Int. Cl.[5] B25B *1/00*

U.S. Cl. 269—254 R **3 Claims**



1. An improved semi-conductor wafer retention clip of the type having a resiliently supported, forwardly projecting clip head with a bottom side, the bottom side having a forwardly and upwardly sloping first front surface portion having a first front-to-rear width and being adapted to overlie and releasably engage a peripheral edge portion of a semi-conductor wafer to facilitate the retention of the wafer on an underlying treatment surface of a processing pedestal, said clip head further having a top side with a forwardly and downwardly sloping second front surface portion having a second front-to-rear width and forming with the sloping first front surface portion a leading edge portion of the clip head, wherein the improvement comprises:

a relatively wide notch centrally disposed in the clip head and extending rearwardly through the leading edge thereof, said notch forming on the clip head a pair of relatively narrow, forwardly projecting tines disposed on opposite sides of the notch and adapted to overlie and releasably engage spaced apart peripheral edge portions of the supported wafer,

the presence of the notch, the relative narrowness of the tines, and the resultant substantially reduced contact area between the clip head and the supported wafer combining to reduce both the available contaminant receiving area of the clip and the amount of contaminant matter transferred from the clip to the supported wafer; and

a relative configuring and angular orientation of said first and second sloping front surface portions of the clip resulting in the first front-to-rear sloping surface widths on the tines being at least several times greater than their second front-to-rear sloping surface widths, and the leading edge portions of the tines being, elevationally, at least several times closer to the uppermost top side surfaces of the tines than to the lowermost bottom side surfaces thereof.

5,183,246

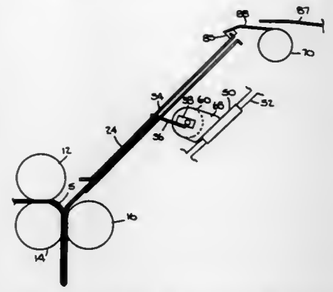
DIVERTING APPARATUS AND METHOD FOR IN-LINE INSERTING EQUIPMENT

Robert J. Edwards, Ridgefield, and Harry E. Luperti, Bethel, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 21, 1991, Ser. No. 781,050

Int. Cl.[5] B42C *1/00;* **B31F** *1/00*

U.S. Cl. 270—45 **12 Claims**



1. A method of diverting one of more sheets from a first paper path, comprising the steps of:

a) providing a buckle chute folder having a pair of fold rollers and at least one buckle chute having an inlet and an outlet;

b) pivotally mounting stop fingers to said buckle chute and coupling said stop fingers to a solenoid;

c) pivoting said stop fingers to extend through slots in said buckle chute to initiate a fold in the sheets conveyed into said inlet along a first paper path causing the sheets to buckle into a nip of said fold rollers which convey the sheets along the first paper path for further processing;

d) providing a second paper path that is an alternate to the first paper path for conveying only unfolded sheets that are diverted from said first paper path;

e) pivoting said stop fingers out of said slots in said buckle chute to divert the sheets through said outlet which begins said second paper path; and

f) feeding said sheets to said inlet of said buckle chute by a pair of feed rollers.

4. Apparatus for diverting individual sheets from a first paper path, comprising:

a buckle chute folder comprising:

at least one buckle chute, having an inlet which is part of a first paper path and an outlet which begins a second paper path that is an alternate path to said first paper path;

a pair of folding rollers adjacent to said buckle chute, said folding rollers being part of said first paper path;

means for conveying one or more sheets along said first paper path into said inlet of said buckle chute; and

a stop member assembly operatively coupled to said buckle chute, said stop member assembly including at least one stop finger coupled to a solenoid for moving said stop finger between a fold position and a divert position in said buckle chute;

said stop finger being in said fold position to deflect the leading edge of the sheets causing the sheets to buckle into the nip of said folding rollers, said folding rollers conveying said sheets downstream for further processing along said first paper path; and

said stop finger being in said divert position to divert said sheets from said first paper path to said second paper path, said second paper path being used only to convey unfolded sheets diverted from said first paper path.

5,183,247

METHOD OF, AND APPARATUS FOR, DETECTING THE POSITION OF A MARKING OR SEPARATING ELEMENT IN A STACK OF SUBSTANTIALLY FLAT PRODUCTS

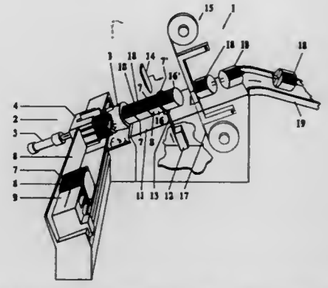
Hans Blumer, Boppelserstrasse, CH-8112 Otelfingen, Switzerland

Filed Oct. 18, 1991, Ser. No. 779,375

Claims priority, application Switzerland, Oct. 25, 1990, 3414/90

Int. Cl.[5] B65H *33/10, 33/06*

U.S. Cl. 270—95 **18 Claims**



1. A method of detecting the position of a marking or separating element in a stack of substantially flat product by employing a detector arrangement comprising the steps of:

moving the detector arrangement along the stack from an original starting position; and

detecting the presence of a marking or separating element in the stack during said step of moving the detector arrangement.

11. An apparatus for detecting the position of a marking or separating element in a stack of substantially flat products comprising:

a detector arrangement;

means for moving said detector arrangement from a starting position and along the stack of substantially flat products; and

said detector arrangement detecting during travel motion thereof along the stack the presence of a marking or separating element in the stack.

5,183,248

SHEET FEEDING DEVICE

Hiromi Okada, Nara, and Masao Otsuka, Ashiya, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 570,600, Aug. 21, 1990, abandoned. This application May 21, 1992, Ser. No. 886,606

Claims priority, application Japan, Aug. 28, 1989, 1-222674

Int. Cl.[5] B65H *1/08*

U.S. Cl. 271—127 **11 Claims**

1. A sheet feeding device in which a plurality of sheets can be contained and from which the sheets can be fed one by one by at least two feed rollers when the sheet feeding device is mounted on an apparatus, comprising:

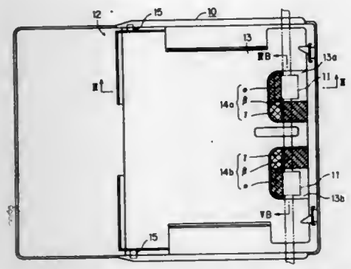
a sheet containing section for containing the sheets;

a mounting means for mounting the sheets arranged in said sheet containing section, wherein at least a forward portion of said mounting means in the direction in which sheets are fed is movable up and down, and wherein a facing position of the forward portion of said mounting means comes into direct contact with the each feed rollers when no sheets are contained in said containing section;

VOL
1147
ISS
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1993
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an urging means for urging said mounting means upward at least when the sheets are fed, such that the sheets are brought into contact with the each feed rollers; and

a non-slip means arranged on an upper surface of the forward portion of said mounting means, wherein said non-slip means is in contact with a last sheet mounted on said

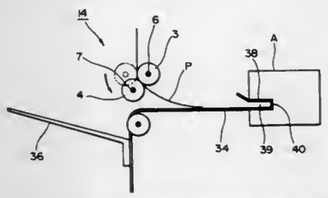


mounting means, had said non-slip means including a base portion which locates forward or backward of the two feed rollers in the sheets feeding direction and a facing portion facing to the roller axis aside the two rollers and being arranged in such a position that it does not come into direct contact with said two feed rollers even when no sheets are contained in said sheet containing section.

5,183,249
PAPER CONVEYOR

Kiyomichi Ichikawa, Tokyo, Japan, assignor to Auto-Stamp Institute Inc., Tokyo, Japan

Filed Aug. 30, 1990, Ser. No. 575,072
Claims priority, application Japan, Dec. 12, 1989, 1-322062
Int. Cl.[5] B65H *29/58*
U.S. Cl. 271—186 **7 Claims**

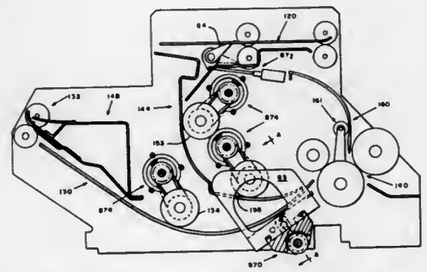


1. A paper conveyor comprising conveyor rolls for conveying paper, drive means for driving and rotating the conveyor rolls, follower rolls which are pressed onto the conveyor rolls and hold paper to be conveyed between themselves and the conveyor rolls to thereby convey the paper in a predetermined direction, and a switch mechanism for switching the direction in which the paper is conveyed from one direction to another, the conveyor rolls, the follower rolls, the drive means and the switch mechanism being operatively connected to each other, wherein the switch mechanism is adapted to control the follower rolls so that the follower rolls can be rocked from one direction to another with their axis of rocking coinciding with an axis of the conveyor rolls, whereby enabling change of the direction in which paper is conveyed by means of the conveyor rolls and the follower rolls, further comprising a base frame comprising first and second side frame plates, a rocking frame comprising first and second side plates, a driving shaft, a follower shaft, at least four bearing portions, first and second pulleys, a driving force transmission belt and a driving motor having a shaft, wherein the first side frame plate of the base frame and the first side plate of the rocking frame are arranged adjacent and parallel to each other, and the second side frame plate and the second side plate are arranged adjacent and parallel to each other, and wherein the conveyor rolls and the follower rolls are mounted on the driving shaft and the follower shaft, respectively, the driving shaft and the follower shaft each have a bearing portion on each end thereof and are supported by the first and second side plates of the rocking frame through the respective bearing portions so that the driving shaft and the follower shaft are parallel to and at a predetermined distance from each other, the follower rolls are capable of contacting the corresponding conveyor rolls during conveyance operation, the driving shaft is also supported by the first and second side frame plates of the base frame through the respective bearing portions, the driving motor is attached to the first side frame plate, with the shaft of the driving motor extending through the first side plate, the first pulley is fixed to one end of the driving shaft which is supported by the first side frame plate and by the first side plate of the rocking frame and the second pulley is fixed to one end of the shaft of the driving motor, and the two pulleys are operatively connected through the driving force transmission belt.

5,183,250
MECHANISM AND METHOD FOR LATERALLY ALIGNING AN ACCUMULATION OF SHEETS

Carl A. Miller, Fairfield; Morton Silverberg, Westport, and Steven A. Supron, Norwalk, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 12, 1990, Ser. No. 491,887
Int. Cl.[5] B65H *31/34*
U.S. Cl. 271—222 **5 Claims**



1. An alignment mechanism for simultaneously aligning a plurality of sheets in an accumulation of sheets, comprising:
   a) a pair of lateral guides;
   b) a guide for supporting said accumulation between said lateral guides;
   c) a cam and cam follower mechanism connected to said lateral guides for moving said lateral guides inwards to laterally align said accumulation in a single operation; wherein,
   d) said cam follower mechanism includes a resilient coupling and said alignment mechanism includes an adjustable stop for limiting the travel of said lateral guides, whereby the movement of said lateral guides may be adjusted to accommodate a plurality of widths of said sheets.

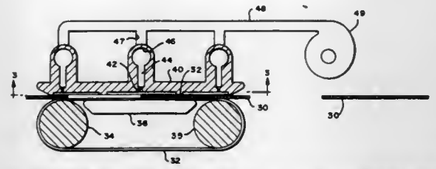
5,183,251
CONVEYOR SYSTEM AND FEEDING SHEETS

Louis M. Sardella, 19 Pickburn Ct., Hunt Valley, Md. 21030

Continuation-in-part of Ser. No. 257,063, Oct. 13, 1988. This application Jul. 5, 1990, Ser. No. 548,252
Int. Cl.[5] B65H *5/02, 5/06*
U.S. Cl. 271—276 **3 Claims**

1. A conveyor system for feeding corrugated blanks in a corrugated box-making machine, the system comprising in combination: conveyor means for transporting the blank along

a predetermined path and including a member for holding and moving a blank, means for directing fluid at positive pressure on a side of the blank opposite said member to urge the blank on the member during transport and means for distributing the fluid over substantial surface portions of the blank on said one side thereof to maintain continuous fluid pressure urging the blank on the member and wherein said means for directing

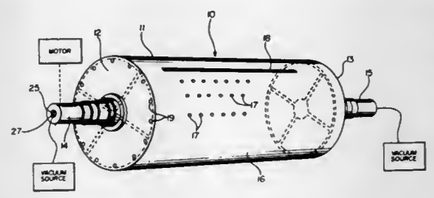


fluid pressure includes a head having orifices for discharging fluid and said means for distributing said fluid pressure includes a plurality of chambers in the head respectively communicating with said orifices while being in close but spaced relationship with the blank such that a fluid film is established between the head and the blank to maintain spacing between said head and the blank.

5,183,252
VACCUM DRUM FOR DIFFERENT SIZED MEDIA

Jack Wolber, Merrimack, N.H.; Steve Lord, Tewksbury, and Dieter Froehling, Burlington, both of Mass., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 332,121, Mar. 31, 1989, abandoned. This application Apr. 25, 1991, Ser. No. 692,817
Int. Cl.[5] B65H *5/02*
U.S. Cl. 271—276 **20 Claims**

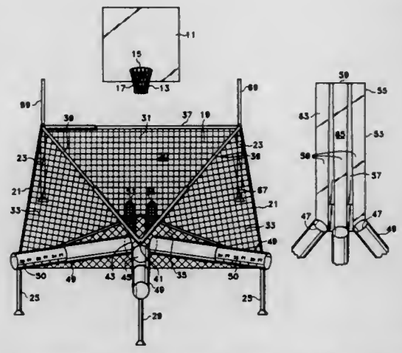


1. A vacuum drum for securing and retaining different sized sheets of flexible media thereon, comprising:
   an elongated tubular sleeve member having a hollow interior, a cylindrical wall with an outer surface, a first set of elongated evacuation bores extending longitudinally partway in said wall internally adjacent to said surface, a second set of elongated evacuation bores extending longitudinally partway in said wall internally adjacent to said surface in respective unconnected coaxial relationships to said first set bores, and a multiplicity of holes respectively arranged to place said first and second sets of bores in evacuation communication with first and second zones on said surface;
   shaft means, having first and second evacuation ports, for mounting said elongated member for axial rotation; and
   channel means for separately communicating said first and second sets of bores, externally of said member, respectively with said first and second ports; so that connection of said first port to a vacuum source will evacuate said holes of said first zone on said surface, with no evacuation within said sleeve member interior; and connection of said second port to a vacuum source will evacuate said holes of said second zone, with no evacuation within said sleeve member interior; the selective evacuation of said holes of said first and second zones serving to accommodate said different sized sheets.

5,183,253
BASKETBALL RETRIEVAL AND RETURN DEVICE

Anthony J. Grimaldi, 25 Mountain View Ave., Kingston, N.Y. 12401, and Anthony J. Grimaldi, Jr., 6 Holly Blvd., Scotia, N.Y. 12302

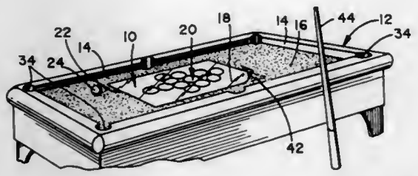
Filed Dec. 27, 1990, Ser. No. 634,597
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—1.5 A **2 Claims**



1. A basketball retrieval and return device for use with a conventional basketball goal including a backboard with a base and a basket, the backboard having a side behind the basket, and conventional basketballs, the device comprising:
   a retriever in the shape of a funnel having a front, rear and side walls defining an enlarged upward opening, the rear and side walls being inclined downwardly and inwardly to a plurality of downward openings at the front wall, each downward opening being circular and having a diameter which is greater than the diameter of the conventional basketballs, the retriever being located beneath the basket and backboard;
   a frame connected to the retriever to support the retriever, such frame including a pair of rear vertical supports, such frame extending vertically above the rear walls of the retriever and
   a back net affixed to the rear vertical supports, the back net being extended vertically above the rear wall of the retriever and above the base of the backboard and behind the backboard;
   a plurality of ball return conveyers, each ball return conveyer being connected to one of the downward openings, the plurality of ball return conveyers being located at an angle to one another; and
   means to direct randomly the basketballs to each of the plurality of downward openings, said means including a flat base plate having an upper and a lower end, the upper end being raised above the lower end and a plurality of partitions vertically located at right angles to the base plate and equally spaced from one another to form channels, each partition being tapered so as to be thickest and highest from the flat base plate adjacent to the lower end of the flat baseplate, each channel opening into a separate downward opening.

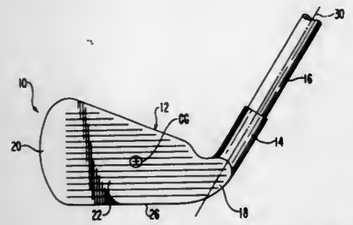
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5,183,254
GAME TARGET OVERLAY FOR BILLIARD TABLE
Robert Jones, 5740 Longview Dr., LaGrange, Ill. 60525
Filed Feb. 27, 1991, Ser. No. 661,686
Int. Cl.[5] A63D *15/00*
U.S. Cl. 273—14 **19 Claims**



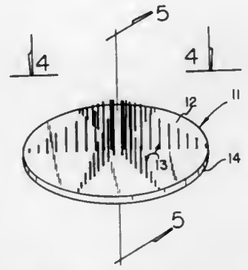
1. A portable game accessory to a standard billiard table with enclosing rails and a playing surface for playing a special game, comprising:
a planar overlay having upper and lower planar surface and an area less than that of the playing surface carrying special game target indicia of geometric shape defining an area on at least one of said planar surface of the planar overlay in which a billiard ball is intended to land in the area for purposes of scoring in the game and in which the area is visible from the upper surface of the overlay said overlay having beveled edges which enable a billiard ball to roll up onto the upper surface of the overlay from the playing surface without significant deflection of a billiard ball; and
means for holding the overlay in a preselected one of a plurality of different positions relative to the enclosing rails on the playing surface against movement in response to a billiard ball rolling onto the upper surface.

5,183,255
GOLF CLUB WITH IMPROVED HOSEL CONSTRUCTION
Anthony J. Antonious, 7738 Calle Facil, Sarasota, Fla. 34238
Continuation of Ser. No. 732,088, Jul. 18, 1991, abandoned. This application Aug. 1, 1991, Ser. No. 739,089
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 G **17 Claims**



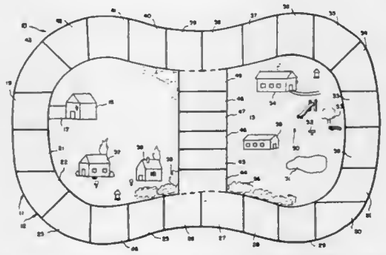
1. An iron type golf club head for hitting a golf ball comprising:
a golf club head body having a heel portion, a toe portion, a bottom sole, a top ridge, and a planar, lofted ball striking face extending therebetween, said ball striking face intersecting with a forwardmost progression of said bottom sole to define a leading edge of said club head body, said bottom sole also having a rearwardmost progression defining a trailing edge;
a hosel formed adjacent said heel portion and having a front surface and a rear surface, said trailing edge adjacent the heel portion of said club head body smoothly transitioning into said rear surface of said hosel;
an increased mass formed between the hosel and said bottom sole and defined by the trailing edge at the heel portion to provide additional structural integrity and strength at the heel portion of the club head;
said front surface of said hosel being positioned behind said leading edge of said club head body; and
said hose has a centerline extending longitudinally therethrough, said centerline intersecting with an extended loft plane of said ball striking face at a point above a lower quadrant of said ball striking face.

5,183,256
GAME APPARATUS
Calvin L. Hale, Rte. 1, Box 273C, Macomb, Okla. 74852
Filed Apr. 27, 1992, Ser. No. 874,506
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—241 **4 Claims**



1. A game apparatus, comprising,
a support plate, the support plate having a plate top surface, with the top surface including plural rows of rigid rods, each row of said plural rows of rigid rods includes ascending rigid rods directed from a periphery of the support plate towards an axial center thereof, and
plural sets of beads, with the beads being adapted for selective mounting upon the rigid rods, and
a dice set for directing a predetermined quantity of beads to be directed upon each of the rigid rods during play.

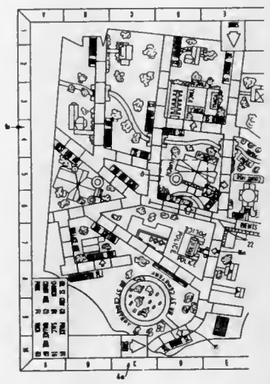
5,183,257
FIRE SAFETY AND HAZARDS GAME
Kirstina D. Shore, 1117 N. Ridge Dr., Yuba City, Calif. 95991
Filed Dec. 12, 1991, Ser. No. 805,893
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—243 **7 Claims**



1. An improved board game for promoting safety, comprising:
a) a board having a closed path including a first circumferential path including two opposed outwardly curved sections interconnected with two opposed inwardly curved sections and a second short-cut path interconnected between said inwardly curved sections;

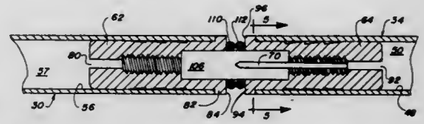
b) said first path having a multiplicity of spaces having printing thereon related t fire safety issues, at least one further space having printing thereon related to cardiopulmonary resuscitation and a single space which, when landed upon, allows optional access to said second path;
c) said second path, when travelled, causing a player token to travel a shortened distance in travelling one lap about said closed path, said second path having a multiplicity of spaces including a plurality of spaces which, when landed upon, result in negative consequences and a single space which, when landed upon, results in no negative consequences;
d) a plurality of simulated awards, including awards for good citizenship and child of the year and a plurality of prizes including money, ice cream and a fire bucket, and spaces on said first path which, when landed upon, result in winning a prize or award;
e) further spaces on said first path which, when landed upon, result in losing a prize or award;
f) a space resembling a firehouse and connected to but separate from said first path;
g) a chance device which is used on each turn to control play;
h) whereby players take turns operating said change device and traversing said board, said players starting play on said space resembling a firehouse and being required to have a particular number displayed on said change device before being permitted to enter and transverse said first path, winning and losing prizes and awards and learning about fire safety, with the winner being that player who has retained the largest combined total of prizes and awards after transversing said closed path a particular chosen number of times.

5,183,258
MAP READING GAME APPARATUS
Charles J. Lerke, P.O. Box 234, Whitehouse, N.J. 08888
Filed Nov. 19, 1991, Ser. No. 794,522
Int. Cl.[5] A63F *3/04*
U.S. Cl. 273—252 **9 Claims**



1. A board game apparatus for educating a player about the culture of a geographic entity comprising:
(a) a playing board having thereon a representation of a select geographic entity including points of interest and streets, the streets being divided into a plurality of spaces for receiving a game piece, wherein a minor portion of said spaces are event spaces;
(b) at least one game piece for moving along said spaces;
(c) at least one point of interest card having thereon points of interest shown on the playing board;
(d) a travel itinerary card having described thereon at least one point of interest that must be reached by the player;
(e) means for selecting a number of spaces for moving the game piece along a street in the direction of a point of interest described on said players point of interest card and travel itinerary card; and
(f) a plurality of event cards identifying a cultural event located on the playing board such that when a player lands on an event space, the player selects an event card and moves one of his game pieces to any space identified by the event shown on the event card;
wherein the playing board comprises a listing of the points of interest and a corresponding grid in which each point of interest is located.

5,183,259
FLUID RESERVOIR CONTAINING ARROW
Robert K. Lyon, 4257 Wedgewood Ct., Indianapolis, Ind. 46254
Filed Jan. 30, 1992, Ser. No. 828,039
Int. Cl.[5] F42B *6/04*
U.S. Cl. 273—418 **17 Claims**



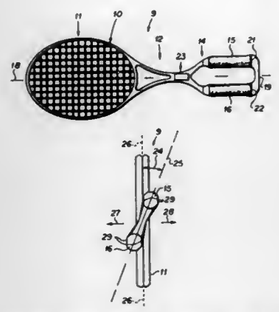
14. An arrow comprising;
a first shaft member;
a second shaft member having an exterior surface, and an interior surface defining a reservoir portion capable of containing a fluid;
a first cap member having an outer surface attachable to the first shaft member, and a threaded inner surface;
a second cap member having an outer surface attachable to the interior surface of the second shaft member, a threaded inner surface, and an aperture in fluid communication with the reservoir portion; and
a stud member having a first threaded end portion for threadedly engaging the first cap member, a second threaded end portion for threadedly engaging the second cap member, a middle portion extending between the first and second end portions, a first fluid conduit extending in at least a portion of each of the second end portion and middle portion, and a sealing means for selectively sealingly engaging the first and second shaft members to controllably regulate the flow of fluid therebetween.

5,183,260
TENNIS RACKET
Elie B. Kheir, 2825 Downing Cir., Birmingham, Ala. 35242
Filed Jan. 31, 1992, Ser. No. 828,511
Int. Cl.[5] A63B *49/08*
U.S. Cl. 273—73 J **5 Claims**

1. An improved tennis racket comprising a racket head (**11**) for supporting a network of strings lying in a first common plane (**26**), an elongated throat (**12**) extending from the racket head, and two separate elongated handles (**15,16**) each having an elongated central axis and adapted to be separately grasped and spaced side-by-side with respect to each other and mounted to the distal end of the throat for gripping the tennis racket, wherein the improvement comprises:
the central axis of each of the two handles being oriented to lie in a second common plane (**25**), and the first common

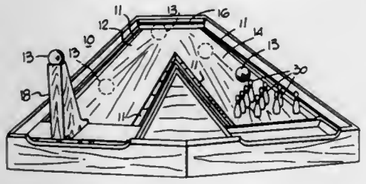
VOL
1147
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1993
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plane being set angularly apart from the second common plane by an angle of 10 to 40 degrees,



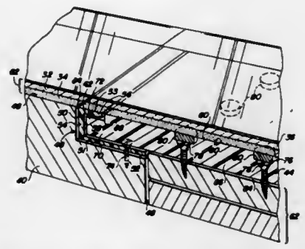
the two handles being rigidly mounted to the throat so that movement of either handle is directly imparted to the racket head.

5,183,261
BUMPER BOWLING GAME WITH GRAVITY RELEASED BALL PROJECTOR
Josef Nobi, 7808 Lela La., Loveland, Colo. 80538
Filed Dec. 16, 1991, Ser. No. 808,096
Int. Cl.[5] A63D *3/02*
U.S. Cl. 273—38 **1 Claim**



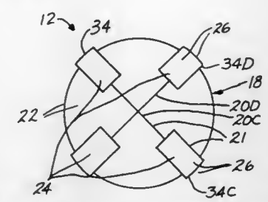
1. A bumper bowling game comprising:
table means having an outgoing alleyway and a return alleyway, each of the outgoing and return alleyways being elongated and having proximal and distal ends, the outgoing and return alleyways being joined at distal ends thereof such that longitudinal axes of said outgoing and return alleyways form an acute angle, each of the outgoing and return alleyways comprising a central flat surface and a concave gutter along each of left and right sides of said central flat surface;
ball starter means positioned at said proximal end of said outgoing alleyway for retaining a ball in a starting position atop said ball starter means, said ball starter means comprising a body member having a proximal end and a distal end, an upper surface of said body member defining a cup-shaped ball retainer at said proximal end of said body member and a concave starting ramp sloping downwardly from said cup-shaped ball retainer to said distal end of said body member, said body member including a vertical aperture aligned with said cup-shaped ball retainer, said ball starter means further comprising a vertical rod positioned within said vertical aperture for permitting vertical and pivotal motion of said body member with respect to said vertical rod to effect aiming and release of said ball, said ball starter means further comprising a foot member fixedly attached to a bottom end of said vertical rod, said foot member being arranged for sliding engagement within a transverse groove at the proximal end of said outgoing alleyway to thereby facilitate lateral movement of said ball ball starter means across said central flat surface of said outgoing alleyway, said ball starter means further comprising compression spring means positioned on said vertical rod for maintaining said body member in a pre-starting position in which said proximal end of said body member is slightly raised above said central flat surface of said outgoing alleyway and in which said ball is retained within said cup-shaped ball retainer, said compression means permitting said proximal end of said body member to be moved downward to a starting position in which said ball is moved upward out of said cup-shaped ball retainer by contact with the top end of said vertical rod to permit said ball to roll by gravity down said starting ramp to gain sufficient speed to enable it to roll in an outbound direction on said central flat surface of said outgoing alleyway toward the distal end thereof;
a linear bumper positioned at the joined distal ends of said outgoing and return alleyways for deflecting a ball previously released from said ball starter means to thereby cause the ball to reverse direction and to roll in a return direction on said central flat surface of said return alleyway toward the proximal end thereof; and
a plurality of pins arranged in a predetermined standing configuration at a proximal end of said return alleyway so as to be contacted and knocked down by said ball rolling in said return direction on said central flat surface of said return alleyway.

5,183,262
BOWLING LANE AND REFINISHING METHOD
Will Heddon, 1422 Chamberlain Loop, Lake Wales, Fla. 33853
Filed Apr. 5, 1991, Ser. No. 681,052
Int. Cl.[5] A63D *1/00*
U.S. Cl. 273—51 **13 Claims**



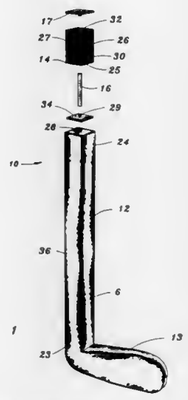
1. A method of constructing a bowling lane comprising the steps of:
providing an approach panel having a flat top surface and a step formed along one of said approach panel's sides;
providing a generally J-shaped foul line coupling having a flat top surface and an open portion;
providing a lane panel having a flat top surface and a step formed along one side of said lane panel's sides;
abutting said J-shaped coupling against said side of said approach panel within said step so that said foul line coupling's flat top surface and said approach panel's top surface are coplanar; and
inserting the step of said lane panel into the open portion of the J-shaped coupling.

5,183,263
PASS-FOOTBALL
Christopher D. Kuebler, 1370 Sloane Ave., Suite 612, Lakewood, Ohio 44107
Filed Nov. 29, 1991, Ser. No. 800,848
Int. Cl.[5] A63B *43/02*
U.S. Cl. 273—65 EG **7 Claims**



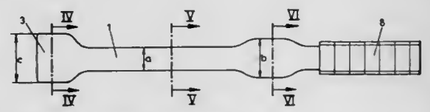
1. A pass-catch football toy comprising in combination:
a football having two ends and shaped as an oblate spheroid, said football having a core portion, a fleece covering the core, and a plurality of longitudinal seams extending between said ends;
said fleece comprising contact material having a plurality of loop-shaped snags over the outer surface of said fleece;
a plurality of grip-tabs comprising contact material and being adhered to said fleece longitudinally on each of said plurality of longitudinal seams, each of said plurality of grip-tabs having a plurality of loop-shaped snags;
a flexible catching glove dimensioned to receive and tightly fit a player's hand, the catching glove having front and back surfaces with strips of hook material adhered on said front surface of the fingers and thumb of the glove, said hook material having a plurality of hooks adapted for securing to the loop-shaped snags of the fleece and grip-tabs upon contact with said football.

5,183,264
HOCKEY STICK
Paul A. Lanctot, 520 Sand Hill Rd., Scotts Valley, Calif. 95066
Filed Apr. 9, 1992, Ser. No. 865,177
Int. Cl.[5] A63B *59/12*
U.S. Cl. 273—67 A **18 Claims**



1. A hockey stick comprising:
a blade and a stick portion,
a tubular member inserted into said stick portion of said hockey stick, having a first end and a second end, said first end having an opening therein,
a spine member secured within said tubular member,
a plurality of particles interiorly disposed within said tubular member,
a fluid interiorly situated within said tubular member, and
means for sealing said opening in said first end of said tubular member.

5,183,265
RACQUETS, IN PARTICULAR TENNIS RACQUETS
Helmut Umlauft, Hard, and Karl-Heinz Wäger, Götzis, both of Austria, assignors to Head Sportgerate Gesellscbaft m.b.H. & Co. OHG, Kennelbach, Austria
PCT No. PCT/AT90/00091, § 371 Date May 16, 1991, § 102(e) Date May 16, 1991, PCT Pub. No. WO91/03283, PCT Pub. Date Mar. 21, 1991
PCT Filed Sep. 11, 1990, Ser. No. 659,307
Claims priority, application Austria, Sep. 11, 1989, 2123/89
Int. Cl.[5] A63B *49/02*
U.S. Cl. 273—73 C **17 Claims**



1. A tennis racquet, comprising:
a handle;
a stretcher frame secured via a throat region to the handle for stringing a racquet head in which the cross-sectional area of the stretcher frame measured transversely to the stringing plane as at least one section of largest dimension, such that the cross-sectional area of the stretcher frame in the throat region and in the region of the racquet head remote from the throat region is greater than in the region of the stretcher frame lying therebetween; and
wherein the cross-sectional area in the region of the racquet head remote from the throat region is greater than the cross-sectional area in the throat region; and
wherein the cross-sectional area of the frame in the throat region is essentially constant.

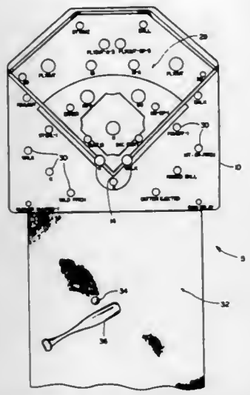
5,183,266
BASEBALL BOARD GAME
Michael Kobler, 137 Young Cir., Coopersburg, Pa. 18036
Continuation of Ser. No. 547,478, Jul. 2, 1990, abandoned. This application Dec. 23, 1991, Ser. No. 814,264
Int. Cl.[5] A63F *7/20*
U.S. Cl. 273—88 **5 Claims**

3. A baseball board game, comprising,
a game board defining a substantially flat, horizontally arranged playing surface, means for defining a representation of an infield, an outfield and foul territory upon said playing surface of said game board,
a vertically disposed wall secured to said playing surface proximate to a first edge of said playing surface,
a plurality of holes of different sizes arranged about and in said playing surface and said wall and being selectively designated to define fly-outs, strikes, balks, balls, walks, steals, foul-outs, errors, bunts, strike-outs, wild pitches, ejected batters, rain delays, injured runners, ground-outs, hits by pitch, pick-offs, passed balls and single, double and triple base hits; said holes defining said single base hit being located in said means representing said outfield and said holes defining said double and said triple hits being located adjacent a boundary between said means representing said outfield and said means representing said foul territory;
a textured batting surface positioned adjacent to a second edge of said playing surface opposite said first edge and substantially in the same plane as said playing surface;
a bat unattached to said playing surface and said batting

VOL
1147
ISS
1
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1993
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surface and which is adapted to be swung by a first game player; and

a ball unattached to said playing surface and said batting surface and which is adapted to be propelled across said batting surface by a second game player;



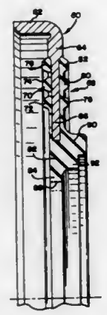
whereby when said second game player propels said ball along said batting surface and said first game player swings said bat to strike said ball, said ball is caused to be propelled onto said playing surface and toward and into one of said holes to simulate the probability of occurrence of respective baseball plays and events during an actual baseball game.

5,183,267

SEAL FOR SENDING UNIT

Yuri Ackerman, Chicago, Ill., and Joseph A. Gutierrez, Farmington Hills, Mich., assignors to Chicago Rawhide Manufacturing Co., Elgin, Ill.

Filed Dec. 10, 1987, Ser. No. 131,107
Int. Cl.[5] F16J *15/12*
U.S. Cl. 277—12 **10 Claims**



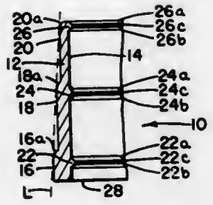
1. An oil seal unit for disposition between portions of mating parts having opposed end face sealing surfaces and means for urging said mating parts together in fluid-tight relation, with one of said mating parts also having a shank portion adapted to extend axially through an associated seal unit, said oil seal unit comprising, in combination, a casing unit having an axially extending centering flange portion and a radially extending bonding flange portion with opposed end face surfaces and an inner margin portion, and an elastomeric seal body bonded to said casing unit, said body having radially inner, outer and intermediate seal body portions, said radially outer elastomeric seal body portion including at least one substantially continuous circumferential sealing rib overlying one of said casing end face surfaces and at least one substantially continuous circumferential sealing rib overlying the other of said casing end face surfaces, said radially inner portion of said elastomeric seal body including a radially extending web terminating in a radially inner, axially extending web surface portion defining an opening through which said shank portion of said one mating part may extend, said web also including means forming a part thereof for engaging said shank portion of said one mating part so as to support said seal relative to said one mating part, said intermediate seal body portion including an element adapted to be deformed into snug fluid-tight sealing engagement within a recess defined in part by said seal unit and in part by said opposed end face sealing surfaces forming said portions of said mating parts.

5,183,268

METAL-TO-METAL WELLHEAD SEAL FOR ROUGH CASING

Henry Wong; Ronald D. Quates, both of Houston, and Lien-Yan Chen, Spring, all of Tex., assignors to FMC Corporation, Chicago, Ill.

Filed Apr. 30, 1991, Ser. No. 693,206
Int. Cl.[5] F16J *15/46, 15/08;* E21B *33/02*
U.S. Cl. 277—27 **13 Claims**



1. A metal seal device for providing a fluid pressure metal-to-metal seal between a non-machined rough surface of a well casing and a surrounding wellhead component, the seal device constructed entirely of metal and comprising

a) an annular all metal seal body having an upper end, a lower end, a cylindrical inner surface extending between said upper and lower ends, and an outer surface formed by a plurality of cylindrical surface portions having mutually different diameters;

b) a plurality of axially-spaced annular internal ridges on the body inner surface, said ridges having sealing surfaces for establishing a metal-to-metal seal with a non-machined rough surface of a well casing; and

c) a plurality of annular external sealing surfaces on the body outer surface, said external sealing surfaces axially positioned to reside on a straight line that slopes inwardly from the lower end of the body towards the body axis.

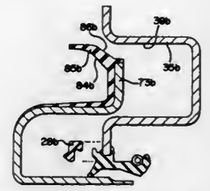
5,183,269

UNITIZED GRIT SEAL WITH REMOVABLE THRUST BUMPER

David D. Black, Elgin, and Anthony W. Vering, Arlington, both of Ill., assignors to Chicago Rawhide Manufacturing Co., Elgin, Ill.

Filed Feb. 6, 1991, Ser. No. 651,562
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—37 **18 Claims**

1. A unitized, fluid retaining and grit exclusion seal assembly for heavy duty applications, said seal assembly comprising, in combination, an annular primary seal unit, an annular wear sleeve assembly having an annular wear sleeve casing, an excluder lip portion, and a thrust bumper element, said primary seal unit comprising a casing having a mounting portion and a radially extending flange portion for positioning an elastomeric primary seal body, said elastomeric primary seal body having one portion thereof bonded to a radially inner margin of said radial positioning flange, said elastomeric seal body being defined in part by air and oil side frustoconical surfaces meeting along a generally circular locus to form a primary seal band area of intended contact with a portion of said wear sleeve casing, said wear sleeve comprising a generally cylindrical, axially extending flange positionable in fluid tight relation with an associated rotary shaft to be sealed and at least one radial flange extending outwardly from the axially outer portion of said cylindrical flange, with the radially outwardly directed surface of said cylindrical flange being constructed, arranged



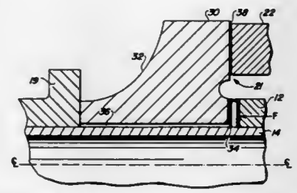
and sized for fluid sealing contact between a portion of its surface and said seal band area on said seal lip body, with said excluder lip portion of said wear sleeve assembly having a lip end portion contacting a cooperating portion of said primary elastomeric primary seal casing, said thrust bumper element being made from a stiff but resilient high temperature resistant, lubricous plastic material, and including a thrust bumper body portion having opposed tapered surfaces meeting to define a narrow band of intended contact with an end face of a radial flange on one of said wear sleeve casing and said primary seal casing, said bumper body being positioned in use relative to said one casing so that said narrow contact band in use is, at most, slightly spaced from said end face surface of said one of said wear sleeve casing and said primary seal casing.

5,183,270

COMPOSITE SEAL ROTOR

Charles J. Alten, Scottsdale; John S. Cuccio, Jr., Chandler; Harry L. Kington, Scottsdale, and James D. Fontana, Phoenix, all of Ariz., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Sep. 16, 1991, Ser. No. 760,419
Int. Cl.[5] F16J *15/34*
U.S. Cl. 277—81 R **7 Claims**



1. A seal rotor for sealing between rotating components of a gas turbine engine mounted on a rotating shaft and a housing circumscribing said rotating components and shaft, wherein said rotating components are held together by the compressive force generated by a lockup assembly and said housing has a stationary carbon face seal mounted thereto, said seal rotor comprising:

a metal ring mounted for rotation to said rotating shaft and disposed intermediate two of said rotating components for transmitting said compressive force therebetween;

a ceramic ring radially spaced apart and circumscribing said metal ring and having an axial face for sealingly engaging an axial face of said carbon face seal; and

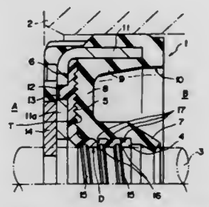
a metal cylindrical member radially disposed between said metal ring and said ceramic ring, said cylindrical member attached along a portion of its inner surface to said metal ring and attached along a portion of its outer surface to said ceramic ring.

5,183,271

SEALING DEVICE AND MANUFACTURING METHOD OF THE SAME

Noriyuki Wada, and Takayuki Nishigaki, both of Fukushima, Japan, assignors to NOK Corporation, Tokyo, Japan

Filed Jan. 24, 1991, Ser. No. 645,442
Claims priority, application Japan, Jan. 25, 1990, 2-15912; Feb. 7, 1990, 2-27386
Int. Cl.[5] F16J *15/32*
U.S. Cl. 277—152 **4 Claims**



1. A sealing device disposed between a first member and a rotatable shaft which is rotatable relative to the first member comprising:

a first seal ring having a resin seal lip, said first seal ring having a radially extending flange portion annularly disposed about the rotatable shaft and said resin seal lip extending coaxially about the rotatable shaft along an axial direction of the rotatable shaft, said resin seal lip having a first sealing surface in contact with the rotatable shaft and a second sealing surface on an opposite side of said resin seal lip;

a second seal ring having an elastic rubber seal lip, said second seal ring having a radially extending flange portion annularly disposed about the rotatable shaft, said rubber seal lip extending coaxially about said resin seal lip of said first seal ring along an axial direction of the rotatable shaft, said rubber seal lip having a first sealing portion extending axially beyond said resin seal lip which is in sealing contact with the rotatable shaft; said radially extending flange portion of said second seal ring having a first surface in facing contact with said radial portion of said first seal ring, and said rubber seal lip having a second portion having a second surface which is in facing contact with said second sealing surface of said resin seal lip so as to be relatively movable with respect to said second sealing surface of said resin seal lip;

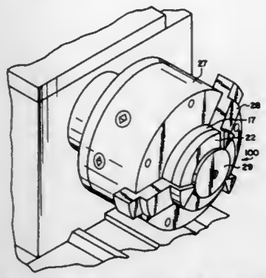
said second sealing surface of said resin seal lip having an annular cutout groove therein, said annular cutout groove having first and second sidewalls which extend at different angles to a plane which is perpendicular to the rotational axis of the rotatable shaft, as viewed in longitudinal section;

said elastic rubber seal lip of said second seal ring having an annular projection mating with said annular cutout groove; and

means for firmly securing said first and second seal rings.

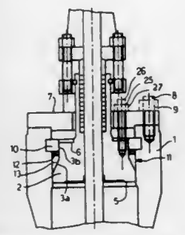
VOL 1147 ISS 1 FEB 2 1993 UMI

5,183,272
UNIVERSAL CHUCK STOP
Einar J. Tyvela, 24636 Luns Ford Ct., Damascus, Md. 20872
Filed Nov. 6, 1991, Ser. No. 788,599
Int. Cl.[5] B23B *3/02*
U.S. Cl. 279—156 20 Claims



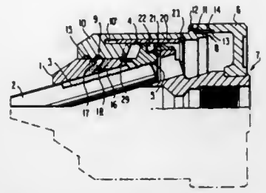
1. An apparatus for use with a multi-jaw chuck, comprising:
a tubular hub section securing means which is inserted in a central bore of said chuck, thereby, securing said apparatus in place relative to said chuck;
a plurality of webs extending radially outwardly from said tubular hub section, said webs having a first face which is freely disposed squarely on a face of said chuck, and a second work support opposite face which is parallel to said first face, said webs having gaps thereinbetween through which the adjustable jaws of said chuck are radially displacable.

5,183,273
SEALING GASKET FOR A CONTROL VALVE
Jean-Pierre Dennys, Maillot, France, assignor to Societe Industrielle D'Equipment Mecanique, France
Filed Feb. 21, 1991, Ser. No. 658,990
Claims priority, application France, Feb. 23, 1990, 9002245
Int. Cl.[5] F16J *15/24*
U.S. Cl. 277—170 7 Claims



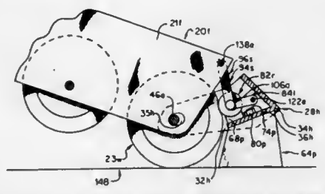
1. A sealing gasket for a control valve, said control valve having a body with an internal wall, a plug being disposed within the body of said control valve, said plug being movable in an axial direction within said control valve body on an operating stem passing therethrough, said plug having a bottom surface which is subjected to high pressure produced by fluid which flows within said control valve and urges said plug to move upwards;
said plug having an external lateral wall comprising a first upper portion which contacts said internal wall of said control valve body and a second lower inclined portion which is inclined away from said internal wall of said control valve body to define a space between said internal wall and said plug;
said gasket being disposed in said space, said gasket comprising two parts, a rigid upper part and a deformable lower part nested together, said deformable part being disposed below said rigid part and having an inner inclined surface which contacts said lower include portion of said plug, so that, during said upward movement of said plug, all of said inner inclined surface of said deformable part is subjected to force from said plug causing said deformable part to compress and to seal said space in said control valve.

5,183,274
CHUCK FOR TOOLS
Kazuo Sakamaki, Ojiya, Japan, assignor to Yukiwa Seiko Kabushikikaisya, Ojiya, Japan
Filed Feb. 25, 1992, Ser. No. 841,066
Claims priority, application Japan, Jun. 13, 1991, 3-142041
Int. Cl.[5] B23B *31/12*
U.S. Cl. 279—62 15 Claims



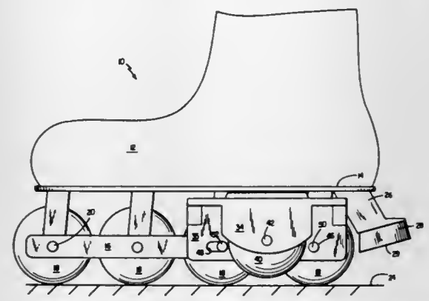
7. A chuck for a tool, comprising:
a chuck body (1, 7) having a grip sleeve (6) which is gripped by a user's hand;
a chucking means (2) for clamping a tool;
a rotational sleeve means (10) for transmitting a rotational force, applied by the user, to the nut sleeve (4) to advance/retract the chucking means (2), said rotational sleeve means being slidingly movable in the axial direction relative to said chuck body;
a rotation preventing means (12, 14) for preventing said rotation of said rotational sleeve means;
a slide restricting means (15, 17) for restricting the axial sliding movement of said rotational sleeve means.

5,183,275
BRAKE FOR IN-LINE ROLLER SKATE
Robert F. Hoskin, 3851 Angora Pl., Duluth, Ga. 30136
Filed Jan. 30, 1992, Ser. No. 828,352
Int. Cl.[5] A63C *17/14*
U.S. Cl. 280—11.2 10 Claims



1. A brake for applying braking forces to an in-line roller skate used on a skating surface through the periphery of one of the skate wheels thereof comprising:
mounting means mounted on the roller skate;
roller means rotatably mounted on said mounting means and adapted to selectively engage the periphery of the skate wheel;
braking means for applying a resistive force to said roller means to retard rotation of said roller means and also the skate wheel when said roller means is in engagement with the skate wheel; and,
actuating means for selectively moving said roller means into contact with the periphery of the skate wheel and said braking means into contact with said roller means, said actuating means including ground-engaging means for selectively engaging the skating surface upon tilting of the roller skate to move said roller means into contact with the skate wheel and said braking means into contact with said roller means, thereby causing said braking means to apply said resistive force to said roller means and the rotation of said roller means to be retarded and thus applying a braking force to the skate wheel in opposition to the rotation thereof.

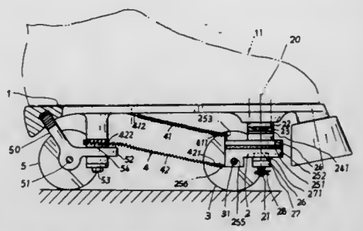
5,183,276
TRAINING WHEEL FOR IN-LINE SKATES
Kenneth W. Pratt, Ware, Mass., assignor to Seneca Sports, Inc., Milford, Mass.
Filed Jan. 28, 1992, Ser. No. 827,421
Int. Cl.[5] A63C *17/06*
U.S. Cl. 280—11.22 18 Claims



1. A training wheel device for use with a tandem or in-line roller skate having a series of travel rollers disposed for travel along a travel surface in a single travel line, the tandem roller skate further comprising a travel roller bracket, the travel rollers being mounted for rotation on parallel travel roller axles mounted on the travel roller bracket, said training wheel device comprising:
a training wheel bracket,
a training wheel mounted upon said bracket, and
means for mounting said device upon the tandem roller skate, said means for mounting said device upon the tandem roller skate comprising at least two elongated travel roller axles and said training wheel bracket defining at least a pair of apertures for receiving said elongated travel roller axles therethrough, at least one said aperture of said at least a pair of apertures comprising an elongated slot to accommodate a range of distances between said at least two elongated travel roller axles,
said training wheel adapted to engage upon the travel surface for travel in a balance line to enhance the balance of a user, the balance line being spaced from and generally parallel to the travel line of the travel rollers.

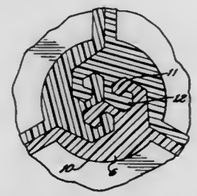
5,183,277
STEERABLE ROLLER SKATE
Kuo-Tai Tang, c/o Hung Hsing Patent Service Center P. O. Box 55-1670, Taipei (10477), Taiwan
Filed May 13, 1991, Ser. No. 699,133
Int. Cl.[5] A63C *1/24*
U.S. Cl. 280—11.28 4 Claims

1. A steerable roller skate comprising:
a sole member having a skate boot formed on said sole member;
a pair of rear wheels rotatably transversely secured to a rear bottom portion of said sole member;
a steering means steerably secured on a front bottom portion of said sole member;
a pair of front wheels rotatably transversely secured on said steering mean; and
a tensioning spring set securing and tensioning said steering means to said sole member normally restoring said sole member and said wheels for a safety straight-forward running of a roller skate,
said steering means including: a front bolt generally vertically secured in said front bottom portion of the sole member about a front vertical axis generally perpendicular to a longitudinal axis longitudinally formed in a central portion of the sole member, a hollow stem secured under the sole member for passing the front bolt through the hollow stem, a front cushioning packing disposed around



the front bolt and retained on the hollow stem, an upper radial bearing provided with an upper central hole therein for passing the front bolt for rotatably retaining an upper surface of a steering base on the front bolt and positioned under the front cushioning packing by an upper washer, the steering base having a central bolt hole rotatably engageable with the front bolt protruding downwardly through the steering base and through an axial bearing fixed in a socket formed in a central bottom portion in the steering base, a lower radial bearing having a lower central hole for passing the front bolt for rotatably securing a lower surface of the steering base on the front bolt; and a nut secured on a lowest end of the front bolt for limiting the lower radial bearing on the front bolt.

5,183,278
RECYCLING TRASH CAN
Merle W. Wade, Jr., 8 Circle Rd., Millersville, Pa. 17551
Filed Nov. 2, 1990, Ser. No. 608,274
Int. Cl.[5] B62B *3/04*
U.S. Cl. 280—47.35 1 Claim

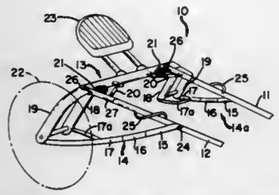


1. A trash collection means comprising, bottom tray having wheels and of circular shape, three refuse containers each having a circular outer wall, two side walls and an inner wall so each of said containers resemble a pie shape when viewed from above, said three containers capable of fitting alongside each other within said bottom tray, said containers having two locking members on said inner wall, each locking member having an extended portion, said extended portion bent inward from said interior wall along three approximately 120 degree bent portions, and an end portion attached to said extended portion, said end portion having a hexagonal shape when viewed from above, said hexagonal portion forming a hexagonal shaped inner space along with said bent portions, said inner

VOL 1147 ISS 1 FE 2 1993 UMI

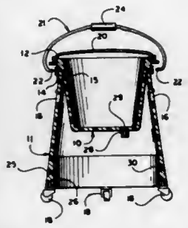
space capable of enclosing an end portion so that said locking portions may fit into one another.

5,183,279
SULKY
Michael J. Acerno, 262 Highway 33, Freehold, N.J. 07728, and Mark A. Guarino, 30 Runyon Dr., Trenton, N.J. 08610
Filed Apr. 9, 1991, Ser. No. 682,628
Int. Cl.[5] B62C *1/08*
U.S. Cl. 280—63 **10 Claims**



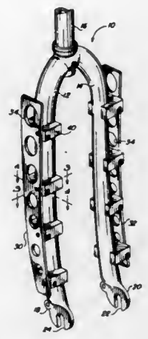
1. A sulky for carrying a rider behind a horse consisting essentially of an arch, a pair of wheels connected to said arch, a pair of rails extending from said arch forward in the direction of said horse, one on each side thus establishing a plane, and said direction of said rails establishing a longitudinal axis of said sulky, coupling means for coupling said rails at their rearmost ends to said arch, said coupling means including means for permitting lateral movement of said rails about vertical pivot axes relative to said arch, fork means connected between said rails and said arch and movement-stabilizing means for connecting each of said rails to said arch and lying substantially in said plane between said rails and between said arch and said horse, each movement stabilizing means including a shock absorber connected between each rail and said arch and flexible coupling means connected between the rearmost end of each rail and said arch for permitting limited lateral movement of said rails about said vertical pivot axes while preventing rotational movement of said rails relative to said arch.

5,183,280
MULTI-PURPOSE ELEVATED BUCKET
Jeffrey Gresch, 4541 Patrick Dr., R.R. 5, Kennesaw, Ga. 30144-1601
Filed Oct. 10, 1991, Ser. No. 774,626
Int. Cl.[5] B62B *3/00*
U.S. Cl. 280—79.5 **7 Claims**



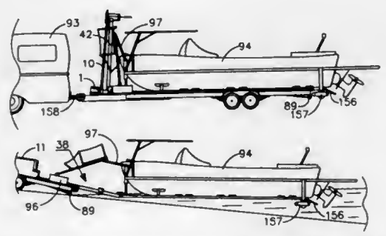
1. A multipurpose container comprising a bucket, a skirt fixed to said bucket and extending below said bucket, and handle means for selectively lifting said container, said bucket being frustoconical in shape and including an upper edge and a bottom said bottom having a diameter less than the diameter of said upper edge, said skirt being fixed to said bucket adjacent to said upper edge of said bucket so that said skirt surrounds said bucket, said skirt having an upper edge generally the same size as said upper edge of said bucket and fixed thereto, said skirt having a lower edge below said bottom of said bucket and larger than said upper edge so that said skirt is frustoconical for providing stability for said container, said handle means including a plurality of holes defined in said skirt adjacent to said upper edge of said skirt, said plurality of holes constituting handholds.

5,183,281
BICYCLE FRAME ELEMENT PROTECTOR
David M. Stephens, 16026 N. 8th St., Phoenix, Ariz. 85022
Filed Mar. 15, 1991, Ser. No. 669,928
Int. Cl.[5] B62K *21/02*
U.S. Cl. 280—279 **23 Claims**



1. Apparatus for protecting a frame element of a vehicular frame, said apparatus comprising in combination:
a) a protective member for shielding the frame element against denting and gouging;
b) at least one standoff for attaching said protective member to the frame element;
c) means for clamping said standoff to the frame element; and
d) means for securing the protective member to said standoff.

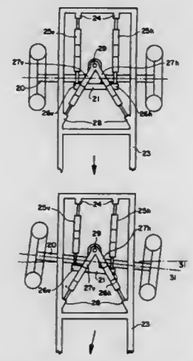
5,183,282
TRAILERED CRADLE AND BOAT/YACHT MANAGING METHOD
George M. Smyly, Sr., 1903 B Carlton St., North Charleston, S.C. 29405
Continuation-in-part of Ser. No. 458,519, Dec. 28, 1989, Pat. No. 5,004,260. This application Mar. 25, 1991, Ser. No. 674,466
Int. Cl.[5] B60P *3/10*
U.S. Cl. 280—414.1 **30 Claims**



1. An improved launcher/retriever boat cradle and trailered boat cradle of the type having a boat keel support platform; a buoyant wheeled cross tee member being secured to the aft end of said boat keel support platform; a winch means for launching and recovering said cradle; a folding stabilizer pivotally

secured to two vertical members of a second cross tee, said second cross tee being secured to a forward vertically secured member of said boat keel support platform, said folding stabilizer being also pivotally secured to a stabilizer platform, said stabilizer platform including side support members, said side support means having a slippery entrapment upon two rails; wherein the improvement comprises:
(a) a wheeled chassis including a tow bar, said tow bar being pivotally attached to said chassis and having hitcher components thereof releasably connected to a towing vehicle;
(b) a pair of laterally spaced-apart primal rollers sandwiching a smaller diameter pilot roller, said primal rollers and pilot roller being rotatably mounted upon an initial axle;
(c) a pair of laterally spaced-apart primal guide brackets supporting said initial axle, said primal guide brackets being fixedly attached at a rear distal position upon siad chassis, said initial axle being laterally arranged with respect to said wheeled chassis, said primal guide brackets having inward facing surface areas extending above said primal rollers, said boat keel support platform resting upon said primal rollers and being aligned between said inward facing surface areas of said primal guide brackets;
(d) a plurality of pairs of laterally spaced-apart secondary rollers, each pair of said secondary rollers being rotatingly mounted upon a secondary axle;
(e) a pair of laterally spaced-apart alignment brackets supporting each of said secondary axles, said alignment brackets being fixedly attached upon said wheeled chassis, each of said secondary axles being laterally arranged with respect to said wheeled chassis, said alignment brackets having inward facing surface areas extending above said secondary rollers, said boat keel support platform resting upon said secondary rollers being aligned between said inward facing surface areas of said alignment brackets;
(f) an elongate skid platform, said skid platforms being longitudinally arranged and fixedly attached upon said chassis, said skid platform being medially arranged between said laterally spaced-apart secondary rollers;
(g) a track including longitudinally arranged parallel members fixedly attached upon said chassis;
(h) a break-back, fold up/out, cradle governor, said cradle governor including first elongate and second less elongate sections of rigid material, said governor first and second sections of rigid material being hinged together, said governor second section of rigid material having a rear distal end thereof pivotally connected to a forward end of said keel support platform, said governor being supported upon said pilot roller and captured between said primal rollers, said keel support platform moving rearward and relinquishing support upon said primal rollers, a pair of sliders fixedly attached at end points of a cross member of said governor first section of rigid material, a launcher cable, said launcher cable being attached to a launcher cable tie point at a forward end of said governor first section of rigid material, said launcher cable extending from said governor, training about launcher pulley members of said chassis and returning to said winch means, a retriever cable, said retriever cable being attached to a retriever cable tie point on said governor first section of rigid material, said retriever cable tie point being disposed below apertured hinge members of said governor first section of rigid material, said retriever cable extending to said winch means, said governor first and second sections of rigid material being formed to provide trench like spaces along the bottom surfaces thereof for receiving and housing lengths of said launcher and retriever cables; and
(i) an elogated cradle governor lift, said lift including a rigid elongate tubular housing having a rigid elongate tubular insert slidingly inserted within a first open end thereof, said insert having a cantilevered boost member forming a distal end thereof and serving as a stop, said boost member of insert coming into contact with a surface area adjacent said first open end of said tubular housing, said boost member of insert member of lift being pivotally joined to a cantilevered lift bar, said lift bar forming an upper forward member of said governor first section of rigid material, said tubular housing having a second end thereof pivotally attached to brackets, said brackets being fixedly attached at a forward location upon said chassis, said lift maintaining said governor is a break-back and folded attitude, said keel support platform being retrieved to a forward position upon said wheeled chassis and resting upon said primal and secondary rollers, beginning rearward movement of said keel support platform causing said lift to begin unfolding said governor, continued rearward movement of said keel support platform allowing said governor to reach a prone folded out position upon said skid platform, continued rearward movement of said keel support platform resulting in said sliders being slidingly received/captured by said track, said prone governor and keel support platform continuing to move rearward, said governor insert member extending from within said housing member of said governor lift.

5,183,283
APPARATUS FOR LIMITING LATERAL MOVEMENT IN TRAILERS
Assai Jarlsson, Kinnarps AB, Box 3060, S521 03 Falkoping, Sweden
Filed Nov. 1, 1989, Ser. No. 429,931
Int. Cl.[5] B62D *13/02*
U.S. Cl. 280—426 **9 Claims**



1. A device for connecting a wheel axle of a towed vehicle to the vehicle body to compensate for inertial forces while turning, the vehicle body having a longitudinal axis, the device comprising:
mounting means for resiliently connecting the axle to the vehicle body, said mounting means including pivot means located intermediate the ends of the axle for pivotably mounting said axle for relative movement about a substantially vertical axis, and
first and second bracket means each having first and second ends, each of said first ends being connected by connection means to the body in spaced apart relation on opposite sides of said pivot means, said connection means including a resiliently deformable member carried by one of said first ends and said body and a pin engaged by said resiliently deformable member, said pin being carries by the other of said first ends and said body, each of said second ends being connected to said mounting means on opposite sides of said pivot means,
said vertical axis of said pivot means being offset a selected distance along the longitudinal axis of the vehicle from said axle relative to the direction of movement of the vehicle to establish a moment arm responsive to inertial

VOL 1147 ISS 1 FEB 2 1993 UMI

forces while turning to rotate said axle about said vertical axis.

5,183,284

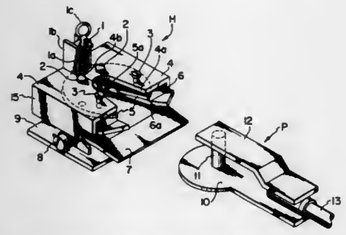
COUPLING MECHANISM

Walter Paplinski, Edmonton, Canada, assignor to George Glenn Neis, Red Deer, Canada, a part interest

Continuation-in-part of Ser. No. 585,647, Sep. 20, 1990, abandoned. This application Jul. 12, 1991, Ser. No. 729,835

Int. Cl.[5] B60D *1/01*

U.S. Cl. 280—508 **11 Claims**



1. A coupling mechanism comprising

(a) first and second parallel plates interconnected in a spaced relationship and together defining an opening for receiving a pin oriented perpendicular to said plates, said mechanism being adapted for mounting with said plates lying in substantially horizontal parallel planes;

(b) a pair of jaws pivotally mounted between said plates to be movable between a closed position coupling with said pin and an open position releasing said pin;

(c) said jaws having respective faces that in the closed position define a space;

(d) a locking member slidably mounted for movement through one of said plates between a locking position extending through said space between the jaw faces and into engagement with the other plate to retain the jaws in the closed position, and a withdrawn position permitting movement of the jaws to the open position to allow withdrawal movement of the pin from the mechanism; and

(e) a third plate secured parallel to and spaced below the lower one of said first and second plates, said lower and third plates defining a space for receiving a horizontally oriented load transmitting plate attached to the pin for transferring a vertical force to the coupling mechanism.

5,183,285

SUSPENSION PROCESS AND APPARATUS OF THE TYPE HAVING DIFFERENT STIFFNESSES WITH PROVISION TO SMOOTH THE CHANGE FROM ONE STIFFNESS TO ANOTHER

Mauro Bianchi, La Garde Freinet, France, assignor to Mauro Bianchi S.A., Puteau, France

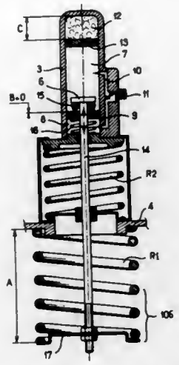
Filed Jul. 8, 1991, Ser. No. 726,987

Claims priority, application France, Jul. 6, 1990, 90 08859

Int. Cl.[5] B60G *11/00*

U.S. Cl. 280—670 **18 Claims**

1. A suspension process for the wheels of a motor vehicle having a wheel suspension having an operating load position in which the suspension is deformed by a force equal to the weight of the vehicle, a suspended wheel position in which the suspension is deformed by a force less than the weight of the vehicle and a collapsed position in which the suspension is deformed by a force greater than the weight of the vehicle, the process comprising providing the suspension with a stiffness that is greater between said operating load position and said suspended wheels position than between said operating load position and said collapsed position, said providing a gradual transition between said stiffnesses.



5,183,286

MOUNTING STRUCTURE FOR LOWER ARM BRACKET

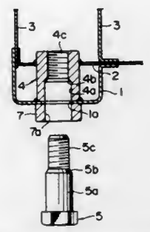
Kazuhiko Ayabe, Shizuoka, Japan, assignor to Suzuki Motor Corp., Japan

Continuation of Ser. No. 615,027, Nov. 16, 1990, abandoned. This application May 21, 1992, Ser. No. 888,466

Claims priority, application Japan, Mar. 2, 1990, 2-21304[U]

Int. Cl.[5] B62D *7/02*

U.S. Cl. 280—688 **2 Claims**



1. A structure for fixing a lower suspension arm bracket, comprising: a sleeve with upper and lower ends, said sleeve upper and lower ends being joined with a gusset plate and a lower side member by welds, said sleeve defining a fixing hole including a female threaded portion, a tapered intermediate portion and a non-threaded hole portion; a bolt engaging said fixing hole and engaging said lower arm suspension bracket to fix said lower arm suspension bracket to said lower side member, said bolt including a male threaded portion, an intermediate tapered portion and a stem portion, said male threaded portion being dimensioned to engage said female threaded portion of said fixing hole, said tapered portion being dimensioned to engage said fixing hole intermediate tapered portion and said stem portion having a diameter which is substantially the same as a diameter of said fixing hole such that said stem portion engages said fixing hole.

5,183,287

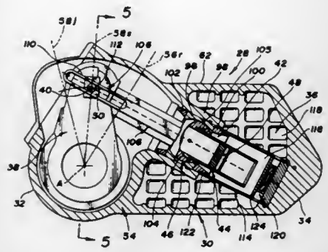
SUSPENSION SYSTEM FOR ROAD WHEEL OF A TRACK LAYING VEHICLE

Harry VanSweden, Utica, Mich., assignor to General Dynamics Land Systems, Inc., Sterling Heights, Mich.

Filed Jul. 30, 1991, Ser. No. 737,762

Int. Cl.[5] B60G *11/26*

U.S. Cl. 280—705 **13 Claims**



1. A suspension system for a road wheel of a track laying vehicle, comprising: a support arm having a first end that is mounted on the vehicle for pivotal jounce and rebound movement about a support axis; the support arm having a second end for supporting a road wheel spindle and also including a cavity for receiving a suspension liquid; a stationary crank arm having a connection location spaced from the pivotal axis of the support arm; a cylinder including a cylinder housing having a swivel bearing that mounts the cylinder housing for swiveling movement on the support arm in communication with the cavity; and the cylinder also including a piston slidably received within the cylinder housing in a sealed relationship and having a connection to the connection location of the crank arm such that the cylinder housing swivels with respect to support arm as the piston slides within the cylinder housing to compress the suspension liquid upon jounce pivoting of the support arm in order to thereby restrict the jounce pivoting, and the suspension liquid also operating on the piston to restrict rebound pivoting of the support arm.

5,183,288

AIR BAG DEVICE FOR AUTOMOBILE

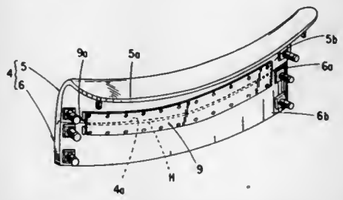
Haruhiro Inada, Hiroshima, and Hisao Muramoto, Yamaguchi, both of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 27, 1991, Ser. No. 675,622

Claims priority, application Japan, Mar. 28, 1990, 2-81732

Int. Cl.[5] B60R *21/16*

U.S. Cl. 280—732 **9 Claims**



1. An air bag device for an automotive vehicle, having at least an air bag disposed inside an instrument panel structure with an opening through which the air bag, while inflating, projects upon a collision of the automotive vehicle, said air bag device comprising:

lid means for covering the opening, said lid means including an upper lid and a lower lid, separate at all times from the upper lid, said upper lid capable of opening upwards and said lower lid capable of opening downwards to uncover the opening; and

a band-shaped connecting member attached to both a back of said upper lid and a back of said lower lid for joining said upper and lower lids together to form a single two-part lid, said connecting member being formed with a breakable line along which said connecting member is broken and separated, by inflation of the air bag, into two parts so as to allow said upper and lower lids to open.

5,183,289

HOUSING FOR PROTECTIVE AIR BAR RETAINING SYSTEMS OF AUTOMOTIVE VEHICLES

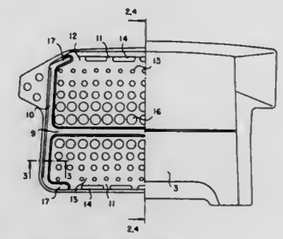
Gregor Zeller, and Konrad Randelzhofer, both of Aschaffenburg, Fed. Rep. of Germany, assignors to Petri, A.G., Aschaffenburg, Fed. Rep. of Germany

Filed Jun. 10, 1991, Ser. No. 711,527

Claims priority, application European Pat. Off., Jun. 9, 1990, 90110963.7

Int. Cl.[5] B60R *21/20*

U.S. Cl. 280—743 **32 Claims**



1. An air bag housing comprising:

an air bag receiving generator carrier;

a cover cap surrounding said generator carrier and exhibiting a predetermined breaking line, said cover cap including a reinforcing insert exhibiting a contour roughly corresponding to an area of said predetermined breaking line, said reinforcing insert configured with a plurality of flaps, said reinforcing insert further exhibiting a circumferential wall located proximal to said flaps, each of said flaps is connected along a substantially linear connecting line to said reinforcing insert along said circumferential wall; and

a safety plate connected to said cover cap.

5,183,290

AUTOMATIC SEAT BELT ASSEMBLY FOR A VEHICLE

Tae K. Chung, 473-9 Youngo-Ri, Jichun-Myun, Chilgok-Kun, Gyungbuck, Rep. of Korea

Filed Aug. 9, 1991, Ser. No. 743,030

Claims priority, application Rep. of Korea, Mar. 12, 1991, 91-4035

Int. Cl.[5] B60R *22/04, 22/08*

U.S. Cl. 280—802 **1 Claim**

1. An automatic seat belt assembly for a motor vehicle having at least one vehicle door, one vehicle seat, and one emergency release buckle, said automatic seat belt assembly comprising:

upper and lower webbings defining lower ends combined by a seat belt latch for locking in said emergency release buckle, and upper ends fixed to tongues of upper and lower moving latches,

a vertically elongated guide member having a hollow portion and upper and lower channeled stoppers communicated with said hollow portion, and

a retracting member installed on said vehicle door, said retracting member including:

a housing having upper and lower slits disposed on a top and bottom thereof,

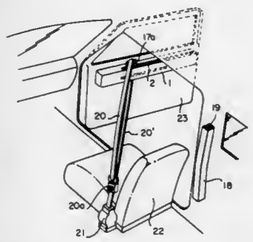
VOL 1147 ISS 1 FEB 2 1993 UMI

a two-way motor supported on an internal front wall of said housing, said two-way motor having a worm,

a driving pulley having a coaxial worm gear disposed in a geared relationship with said worm, said driving pulley operatively connected to a connecting pulley by a first wire, said connecting pulley supported on an internal back wall of said housing,

a moving box fixed to said first wire, said moving box having a pair of coaxial pinion gears disposed in a geared relationship with a pair of elongated rack gears supported on a ceiling and a base of said housing and a pair of coaxial spur gears disposed in a geared relationship with at least one short rack gear supported on the internal ceiling and base of said housing, and

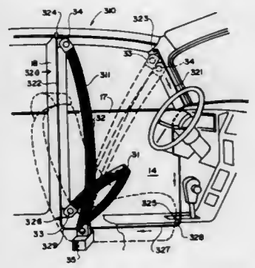
a moving rod attached to each of said spur gears, each



moving rod having a roller and a second wire rotatably connected to said spur gear and said roller, said second wires secured to said moving latches, respectively,

whereby, when the vehicle door is closed, the two-way motor rotates in a counter-clockwise direction, the moving box moves towards said back wall, and simultaneously, the moving latches move towards said back wall to ends of the moving rods and thereafter, both moving latches move up to the channeled stoppers so that the upper and lower webbings are fitted to the occupant seated on the vehicle seat, and in turn, when the vehicle door is opened, the two-way motor rotates in a clockwise direction, the moving box moves towards said front wall, and simultaneously, the moving latches release from the channeled stoppers and move towards said front wall so that the upper and lower webbings are released from the occupant seated on the vehicle seat.

5,183,291
AUTOMATIC SEAT AND SHOULDER BELT APPARATUS
Mrugesh K. Shah, 3912 Brookhaven, Pasadena, Tex. 77504
Filed Mar. 13, 1991, Ser. No. 668,762
Int. Cl.[5] B60R *22/06*
U.S. Cl. 280—804 **16 Claims**



1. Automatic seat belt and shoulder belt apparatus for helping to restrict movement of a user in a vehicle having a door, comprising:

(a) track means;

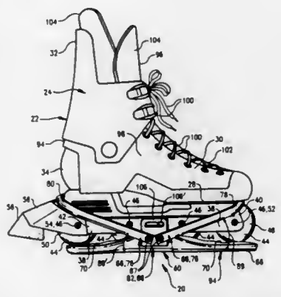
(b) seat belt means having a first end slidably disposed in the track means and a second end attached to a belt retractor means;

(c) shoulder belt means having a first end slidably disposed in the track means and a second end attached to a belt retractor means; and

(d) movement means for automatically moving the seat belt means and shoulder belt means from an inoperative position in which the seat belt means and shoulder belt means do not interfere with movement of the user to an operative position in which the seat belt means and shoulder belt means restrict movement of the user and for moving the seat belt means and shoulder belt means from the operative position to the inoperative position, including means for causing the first ends of the seat belt means and of the shoulder belt means to move within the track means, wherein

the track means comprises a substantially vertical side portion and a substantially horizontal floor portion adjacent the door of the vehicle.

5,183,292
DETACHABLE BRAKE FOR SKATE
John C. Ragin, III, P.O. Box 1316, Tempe, Ariz. 85280
Filed Jan. 17, 1992, Ser. No. 822,347
Int. Cl.[5] A63C *3/00*
U.S. Cl. 280—825 **17 Claims**

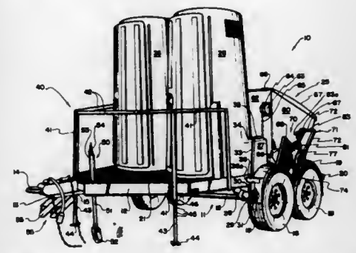


1. An apparatus for selectively securing a plurality of wheels of a skate against rotation upon an underlying support surface, the skate having a boot within which a foot of a skater may be inserted, the boot having a boot sole and a boot upper secured to the boot sole, the boot upper having a tendon guard or backstay and a heel, the skate having an elongated frame carried by the boot, the frame having a front end and a rear end, the wheels having at least a front wheel and a rear wheel, the front wheel and the rear wheel being rotatably mounted to the frame to enable each wheel to rotate about an axis, the axis of the front wheel being substantially parallel to the axis of the rear wheel, said apparatus comprising:

(a) a protective foot covering having a flexible sole and a flexible upper attached to said flexible sole, said flexible sole and said flexible upper defining an enclosure wherein the foot of the skater can be placed; and

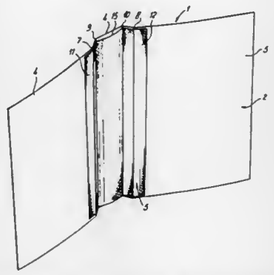
(b) means for removably attaching said protective foot covering to the skate such that said flexible upper can be juxtaposed and urged against the wheels to restrict rotational movement of the wheels with respect to the frame, said flexible sole defining a flexible pad positioned between the wheels and the underlying support surface when said apparatus is juxtaposed against the wheels of the skate, said protective foot covering defining a separate shoe or slipper when removed from the skate.

5,183,293
WASTE MANAGEMENT SYSTEM
Vincent D. Julian, 220 Crusader, Murray, Utah 84107
Filed May 23, 1991, Ser. No. 704,375
Int. Cl.[5] B60P *3/00*
U.S. Cl. 280—430 **8 Claims**



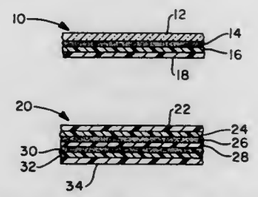
1. A waste management system comprising, a trailer having a frame with a bed covering a forward end thereof, which frame is supported on a trailer axle system whereto are journaled trailer wheels, and includes a neck as a forward trailer end with a landing gear means extending therefrom for ground engagement; means for coupling the forward end of said neck to a towing vehicle; a trash bin; means for pivotally mounting said trash bin to said trailer frame across a rear frame end to provide for trash bin rotation to a ground engaging attitude; means for maintaining the trash bin in an upright attitude relative to the trailer frame; a self contained chemical toilet; means for releasably mounting said chemical toilet onto said trailer frame; gravity drain means connected to a holding tank of said chemical toilet for draining said chemical toilet by gravity; and step means pivotally mounted to said trailer frame to pivot from a ground engaging attitude to a stowed attitude on the trailer bed.

5,183,294
PRE-ASSEMBLED SOFT COVER FOR A BOOK, AND METHOD OF MAKING THE SAME
Bero Jukola, Keuruu, Finland, and Werner Rebsamen, Rush, N.Y., assignors to Kustannusosakeyhtio Otava, Helsinki, Finland
Filed Jul. 9, 1991, Ser. No. 727,241
Claims priority, application European Pat. Off., Oct. 1, 1990, 90202614.5
Int. Cl.[5] B12D *1/00, 3/00*
U.S. Cl. 281—23 **1 Claim**



1. A pre-assembled soft cover for a book, comprising a soft sheet of book cover of a size and shape suitable to provide a front and rear cover with a spine therebetween, and adhesively secured to a central portion of said sheet a flexible firm support layer in the form of a strip bisecting said sheet and secured to said sheet only by stripes of adhesive along opposite longitudinal edges of said strip, said strip being free from securement to said sheet between said adhesively secured edges of said strip thereby to provide a spine area on said strip between said adhesively secured edges of said strip, said strip being free from securement to any pages of a book, whereby upon subsequent securement, to said spine area, of a book block with a plurality of leaves joined at their spine edges, a soft-cover book can be produced.

5,183,295
DUST COVER LAMINATE FOR BOOKS
Charles J. Barnette, Akron, Ohio, assignor to Kent Adhesive Products, Inc., Kent, Ohio
Filed Aug. 26, 1991, Ser. No. 749,861
Int. Cl.[5] B42D *3/00, 3/02*
U.S. Cl. 281—29 **4 Claims**



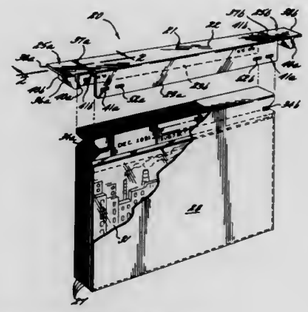
1. A method of protecting and affixing a dust cover to a book, comprising;

adhering a transparent protective film to a front surface of the dust cover with a pressure sensitive adhesive;

covering a back surface of the dust cover with a double backed adhesive laminate, thereby providing an adhesive coating on said back surface; and

bonding said back surface of the dust cover to a hard cover of the book with said adhesive coating.

5,183,296
PHOTOGRAPH ALBUM AND METHOD FOR MAKING SAME
Stanislaw A. Policht, Closter, N.J., assignor to Qualex, Fairlawn, N.J.
Filed Sep. 17, 1991, Ser. No. 761,406
The portion of the term of this patent subsequent to Aug. 13, 2008, has been disclaimed.
Int. Cl.[5] B42F *3/00*
U.S. Cl. 281—46 **21 Claims**



1. A photograph album comprising:

an elongate generally U-shaped binder;

VOL 1147 ISS 1 FE 2 1993 UMI

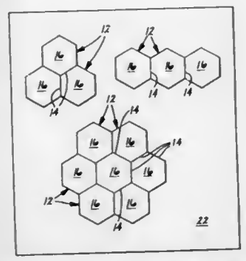
a plurality of leaves for holding photographs disposed in laterally adjacent relationship to each other, each leaf having a first edge portion received within said binder, each leaf having first and second slots within and opening outwardly from respective opposite edge portions of said leaf; and

first and second retainers movably secured to said binder adjacent opposite first and second ends thereof, each of said retainers being movable between an opened position and a closed position, said retainers in the opened position permitting insertion and removal of said leaves, and said retainers in the closed position retaining said leaves within said binder by engagement within adjacent slots of said leaves.

5,183,297
HEXAGONAL PAD

Douglas P. Bodziak, Lake Elmo; Steven L. Grovender, Woodbury; Ray A. Hunder, White Bear Lake; Robert P. Molenda, and Steven P. Roth, both of Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing, St. Paul, Minn.

Division of Ser. No. 631,628, Dec. 20, 1990, which is a continuation of Ser. No. 479,841, Feb. 14, 1990, Pat. No. 5,011,186. This application Dec. 13, 1991, Ser. No. 806,492
Int. Cl.[5] B42D *15/00*
U.S. Cl. 283—67 **4 Claims**



1. A method for managing information comprising the steps of

providing a pad comprising a plurality of flexible sheets each having a peripheral edge defined by straight edge portions, a front surface adapted to be written on, a rear surface, and a coating of repositionable pressure sensitive adhesive over a portion of said rear surface releasably adhering said sheet to an underlying sheet in said pad with the straight edge portions of the peripheral edges of said sheets in alignment, said rear surface of each sheet having a portion free of adhesive to afford removal of said sheets from said pad by peeling the uppermost sheet from underlying sheets in the pad;

writing information on the front surfaces of the sheets;

removing the sheets from the pad; and

adhering the removed written on sheets to a planar surface in side by side relationship with straight edge portions of adjacent sheets in contact to represent relationships between the information on the sheets,

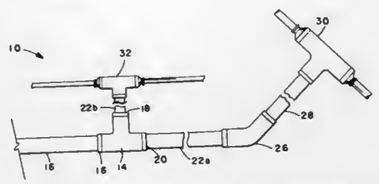
said providing step provides flexible sheets each having a regular hexagonal peripheral edge defined by six straight edge portions; and

said adhering step adheres the removed and written on sheets to a planar surface in side by side relationship with straight edge portions of at least one and up to six adjacent sheets in contact to represent relationships between the information on the sheets.

5,183,298
PIPE FITTING REDUCERS

Michael B. Harrington, 112 Oakwood Pl., Lynchburg, Va. 24503

Filed Apr. 24, 1991, Ser. No. 690,268
Int. Cl.[5] F16L *25/00*
U.S. Cl. 285—12 **9 Claims**



1. A pipe coupling system for a fluid handling network comprising:

a cast iron pipe fitting having a central body with first and second ends having openings therein:

said fitting having radially outwardly projecting, circumferentially-space, tabs about each of said open ends;

said tabs defining restraint lugs and being cast integrally with said fitting;

a cast iron reducer fitting having a central body with first and second ends having openings therein with said first end being larger in diameter than said second end, said body having a central tapered section between said first and second ends and a cylindrical section extending from said tapered section to said first end thereof;

said reducer fitting having radially outwardly projecting circumferentially-spaced, tabs thereabout and located adjacent the juncture of said tapered and cylindrical sections;

the tabs on said reducer fitting defining restraint lugs cast integrally therewith;

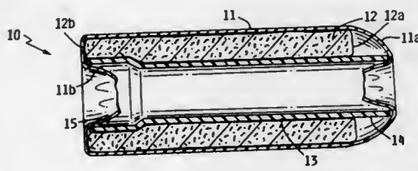
said cylindrical section of said reducer fitting being inserted into one of said open ends of said cast pipe fitting with the tabs on said cast pipe fitting and said reducer fitting being axially aligned with one another, said one end of said cast pipe fitting having a seal for sealing said cylindrical section of said reducer fitting thereto; and

means for securing the aligned lugs of said cast pipe and reducer fittings one to the other to secure said fittings to one another.

5,183,299
INSULATED PIPE WITH END PROTECTION

Robert Hallerstrom, Rte. 1, Box 139, Osage, Minn. 56570; Kirby Durgin, Rte. 3, Box 444, Nevis, Minn. 56467, and Wesley Benjamin, Rte. 4, Park Rapids, Minn. 56470

Filed Oct. 24, 1991, Ser. No. 781,877
Int. Cl.[5] F16L *59/00*
U.S. Cl. 285—47 **9 Claims**



1. A conduit for securing to another conduit to enable a user to construct a continuous insulated pipe using a plurality of conduits comprising:

a rigid pipe having an interior region and an exterior surface, said rigid pipe having a male end and a female end so that said male end of said rigid pipe can be mated with a female end of another rigid pipe;

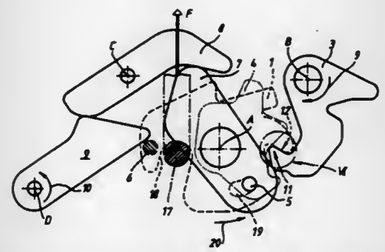
an annular insulating layer located around the exterior surface of said rigid pipe, said annular insulating layer having a first end and a second end, said first end having a shape to conform to another annular insulating layer so that when two annular insulating layers are abutted together they can be adhesively secured to each other, said annular insulating layer having sufficient crush strength so as to retain its annular shape when buried underground; and

a flexible cylindrical sleeve extending around said annular insulating layer, said flexible cylindrical sleeve frictionally held around said insulating layer, said flexible cylindrical sleeve having a first end and a second end, said first end of said flexible cylindrical sleeve projecting beyond the first end of said annular insulating layer so that said first end of said flexible cylindrical sleeve can be tucked around the first end of said annular insulating layer and into the female end of said rigid pipe to thereby keep the female end of said rigid pipe free of debris and contaminants until said rigid pipe is ready to assemble to another rigid pipe, said second end of said flexible cylindrical sleeve projecting beyond the second end of said annular insulating layer so that said second end of said flexible cylindrical sleeve can be tucked around the second end of said annular insulating layer and into the male end of said rigid pipe to thereby keep the male end of said rigid pipe free of debris and contaminants until said rigid pipe conduit is ready to assemble to another rigid pipe.

5,183,300
FASTENING FOR A MOVABLE PART OF A MOTOR VEHICLE

Andreas Bonné, Wimberg; Klaus Claar, Gechingen, and Jürgen Schrader, Stuttgart, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jan. 27, 1992, Ser. No. 826,465
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1991, 4102279
Int. Cl.[5] E05C *3/26*
U.S. Cl. 292—216 **4 Claims**



1. Fastening arrangement for a movable part such as a folding top or a roof of a motor vehicle, comprising:

a rotary latch which serves for securing a fastening pin of the movable part,

an actuating device for rotating the rotary latch for a selective blocking and release of the fastening pin by the rotary latch,

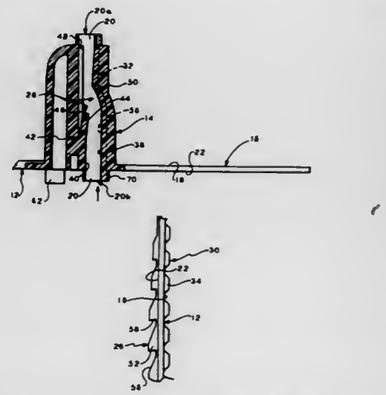
a detent pawl engageable with the rotary latch, said detent pawl being rotatable oppositely to the blocking direction of the detent pawl, and,

a lever mechanism which can be activated by the actuating device and which positively guides the rotational movement, including a rotation opposite to the locking direction of the detent pawl, of the rotary latch during the operating of opening and locking the movable part.

5,183,301
LOCKING OR SECURITY SEAL

George A. Lundberg, Jr., Bloomingdale, N.J., assignor to E. J. Brooks Co., Newark, N.J.

Filed Oct. 30, 1991, Ser. No. 785,037
Int. Cl.[5] B65D *33/34*
U.S. Cl. 292—318 **9 Claims**



1. An improved one-piece locking or security seal of the type having an elongated, flat, flexible strap integral with a housing on one end, the other end of the strap being conformally receivable in, and movable through, a passageway in the housing to form the strap into a closed loop; means, located in the passageway and on one surface of the strap, responsive to insertion of the strap without a half-twist therein into a selected end of the passageway for permitting movement of the strap out of the other end of the passageway and for preventing reverse movement of the strap; the permitting and preventing means being ineffective to prevent such reverse movement if the strap is inserted into the selected passageway end with a half-twist therein or is inserted into the other passageway end without twisting; the improvement comprising:

an elongated groove formed in and longitudinally of the passageway,

a surface feature on the other surface of the strap which is conformally received in the groove when the strap is inserted into the selected end of the passageway without twisting, the passageway interfering with and applying force to the surface feature if the strap is inserted into the selected passageway end with a half-twist or is inserted into the other passageway end without twisting, force applied to the surface feature discoloring or deforming it to provide a visual indication of improper insertion.

5,183,302
DOOR HANDLE HOUSING ATTACHMENT FOR VEHICLE DOOR

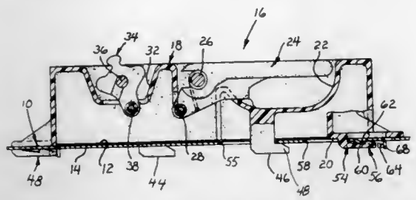
Richard Pelachyk, Utica; Lowell W. Satterlee, Clarkston; Dante C. Zaccaro, Allenton, and Timothy M. Farris, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 6, 1991, Ser. No. 740,737
Int. Cl.[5] E05B *3/00*
U.S. Cl. 292—336.3 **3 Claims**

1. In combination: a vehicle door panel having a surface and an underside, and a handle housing adapted for attachment on the panel, said housing being of molded plastic construction and having a base adapted to engage against the surface of the door panel and having at least one anchor leg projecting from the base, said panel having an aperture therein registering with each of the at least one anchor leg to permit the anchor leg to

VOL 1147 ISS 1 FE 2 1993 UMI

pass through the panel, and the each of the at least one anchor legs having a foot adapted to engage and underlie the underside of the panel when the housing is slid longitudinally along the surface so that the foot prevents the housing from being pulled away from the panel, and said housing having at least one locking legs projecting from the base, said panel having an opening therein registering with each of the at least one locking legs to permit the locking legs to pass through the panel,



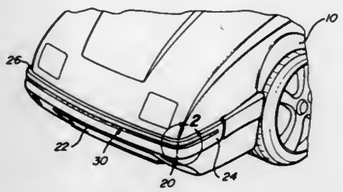
and said panel having a locking tab struck downwardly from the panel adjacent at least one of the panel openings, and at least one of the locking legs having a locking foot carried thereon and adapted to lockingly engage with the locking tab when the housing is slid longitudinally along the surface to prevent retrograde longitudinal sliding of the housing along the surface and thereby prevent the removal of the housing from the panel.

5,183,303

DECORATIVE TRIM ATTACHING METHOD

Robert A. Zoller, Bay Village, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Filed Sep. 26, 1991, Ser. No. 766,447
Int. Cl.[5] B60R *19/08*
U.S. Cl. 293—120 **11 Claims**



7. A bumper fascia comprising:

a bumper fascia molding having an elongated receiving channel integrally molded therein;

a trim strip having an outer decorative facing and an integral stem, said stem includes a damping portion, and said trim strip having an overall T shape in cross section;

said trim strip positioned in said receiving channel with said outer decorative face providing an aesthetic appearance; and

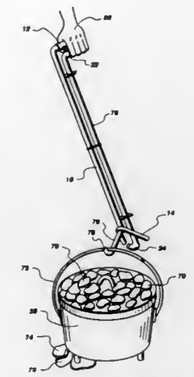
securing means for retaining said trim strip in said bumper fascia molding, said securing means being passed through the receiving channel and stem and spaced positioned on said bumper fascia molding and said stem in said channel to provide an aesthetic appearance on the outer decorative surface at attachment points.

5,183,304

APPARATUS AND METHOD FOR GRASPING AND STABLY LIFTING LIDS HAVING A HANDLE

Billie J. Mair, P.O. Box 160, Midway, Utah 84049

Continuation-in-part of Ser. No. 567,296, Aug. 14, 1990, Pat. No. 5,071,182. This application Dec. 6, 1991, Ser. No. 804,082
The portion of the term of this patent subsequent to Dec. 10, 2009, has been disclaimed.
Int. Cl.[5] A47J *45/10*
U.S. Cl. 294—10 **12 Claims**



1. An apparatus for grasping and lifting a cooking vessel having a cover with a handle and a bail comprising:

a first rod member having a first end and a second end, said first rod member having a handle for grasping formed at said first end;

a second rod member having a first end and a second end, said second rod member having a handle for grasping formed at said first end and an arcuately shaped hook formed at said second end;

means for conjoining said first rod member to said second rod member such that said second rod member is slidably adjustable in orientation to said first rod member;

means for stabilizing said cover, said means having contact means for contacting said cover at at least three points on said cover, said means for stabilizing being positioned proximate said second end of said first rod member and said contact means being extendable beyond said hook; and

grasping structure associated with said second end of one of said rod members for engaging the bail of a cooking vessel.

5,183,305

METHOD AND APPARATUS FOR HANDLING CARGO CONTAINERS

Immo R. Nordstrom, 153 Kemp Ave., Fair Haven, N.J. 07704, and Johannes A. Bak, 6706AK, Wageningen, Netherlands

Continuation of Ser. No. 451,333, Dec. 18, 1989, abandoned. This application Dec. 5, 1991, Ser. No. 809,817
Int. Cl.[5] B66C *1/10*
U.S. Cl. 294—81.2 **18 Claims**

1. An apparatus for grasping and lifting cargo containers, comprising:

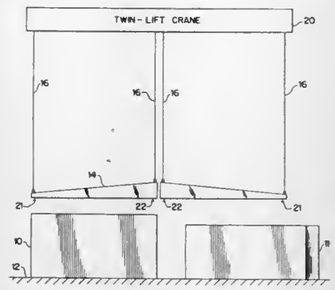
first and second rigid spreaders having generally rectangular bottom surfaces and substantially equal and fixed widths and lengths, the length of each of said bottom surfaces being substantially equal to a length of a cargo container of a first shorter standard size, and the sum of the lengths thereof being no greater than a length of a cargo container of a second, longer standard size;

connecting means vertically extendable from said bottom surfaces for engaging the top of at least one cargo container, said connecting means located at adjacent ends of said spreaders being retractable to positions above said bottom surfaces;

coupling means on said spreaders for selectively latching said spreaders together end-to-end and for restraining relative movement of said spreaders in horizontal and vertical directions to form a substantially rigid unit independently of said cargo containers when the bottom surfaces of said spreaders lie substantially in a single plane, said coupling means on each of said spreaders including, at one end thereof, a plurality of housings, each of said housings having a planar end surfaced, said end surfaces on each spreader lying in substantially a single plane; and

locking means, on at least one of said spreaders, extendable from at least two of said housings thereon, at least two of the housings of the other of said spreaders including means defining openings for receiving said locking means;

whereby said first and second spreaders are rigidly coupled by said coupling means for handling one cargo container of the longer standard size and for simultaneously handling two cargo containers of the shorter standard size, but can be released by said coupling means for handling two cargo containers of the shorter standard size having different heights independently or in tandem.

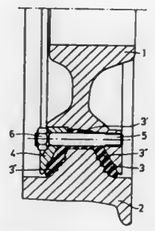


5,183,306

RAIL VEHICLE WHEEL

Fred S. Emilsson, Trelleborg, Sweden, assignor to SAB Wabco Holdings B.V., Sweden

Continuation of Ser. No. 802,294, Dec. 4, 1991, abandoned. This application Aug. 27, 1992, Ser. No. 933,913
Claims priority, application Sweden, Dec. 5, 1990, 9003863
Int. Cl.[5] B60B *19/00*
U.S. Cl. 295—11 **4 Claims**



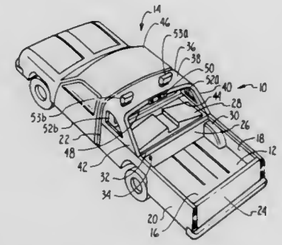
1. A rail vehicle wheel with an axis, comprising in combination a wheel center (1) with a lateral inner surface coaxially arranged about the wheel axis, a flanged tire (2) also with a lateral inner surface coaxially arranged about the wheel axis, a pressure ring (4) and an integral single rubber ring (3), which is disposed between the wheel center and tire as the sole medium for diminishing circumferential creep and which is held in position by said pressure ring (4), wherein the rubber ring (3) consists of an annular, axial body (3') of substantially rectangular cross section in contact with said lateral surfaces of the wheel center and tire and disposed between the wheel center (1) and the tire (2), and said rubber ring (3) further has flanges (3") extending outside the tire lateral surface from the rectangular cross section toward the tire to form an obtuse angle with the wheel axis.

5,183,307

PARTITION SYSTEM FORMING A VEHICLE STORAGE COMPARTMENT

Herbert Chiu, Jr., 8830 Via Andar #16, San Diego, Calif. 92122

Filed Dec. 6, 1991, Ser. No. 804,096
Int. Cl.[5] B60R *11/00*
U.S. Cl. 296—24.1 **9 Claims**



1. A partition system providing an enclosable storage compartment in a vehicle bed, wherein said bed has first and second substantially parallel side walls, an end wall, and a floor, partition system comprising:

a partition wall substantially fixed in said bed abutting said floor and said first and second side walls and spaced a predetermined distance from said end wall to form a storage compartment defined by said side walls, end wall, floor and partition wall;

a lid spaced above said floor slidably engaging said first and second side walls, said lid slidable along said first and second side walls between an open position and a closed position, wherein said lid substantially fully encloses said storage compartment when said lid is in said closed position and further provides access to said storage compartment via an opening when said lid is in said open position;

means for guiding said lid between said open and closed positions including a first track affixed to said first side wall and a first rail fixably connected to said lid, such that said first rail is received by said first track, further wherein said guiding means is a second track affixed to said second side wall and a second rail fixably connected to said lid, such that said second rail is received by said second track; and

a fairing extending from said bed and fixably connected to said lid.

5,183,308

FOOTREST APPARATUS

Yoshitaka Koga, Kariya, and Sadao Sugiura, Anjyo, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

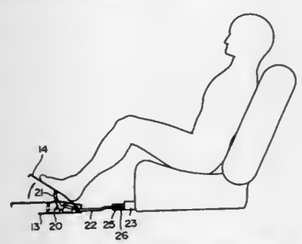
Filed Dec. 23, 1991, Ser. No. 811,956
Claims priority, application Japan, Dec. 27, 1990, 2-415171
Int. Cl.[5] B60N *3/06*
U.S. Cl. 296—75 **4 Claims**

1. A footrest apparatus for an automotive vehicle and comprising footrest means and driving means;

said footrest means including:

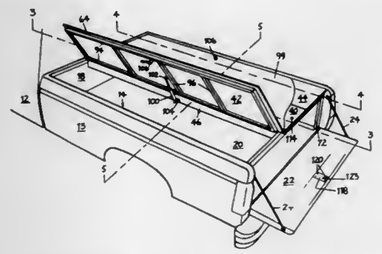
VOL
1147
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a stationary plate secured to a floor of the automotive vehicle;
a link mechanism pivotably supported on said stationary plate; and
a footrest member pivotably connected to said stationary plate and to said link mechanism;
said driving means including:
a drive source including a reduction device;



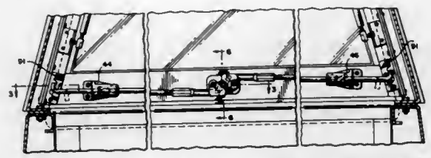
a screw turned by said drive source through the reduction device;
a nut threadedly engaged with said screw; and
an elongated rod connecting said nut and said link mechanism;
wherein said link mechanism is operated by relative movement of said nut to move said footrest member up and down, and said driving means is located to be spaced from said footrest means.

5,183,309
RIGID LOW PROFILE PICKUP TONNEAU
Gregory E. Jordan, 915 N. Main, Belton, Tex. 76513
Filed Sep. 24, 1991, Ser. No. 764,809
Int. Cl.[5] B60P *7/02*
U.S. Cl. 296—100 **8 Claims**



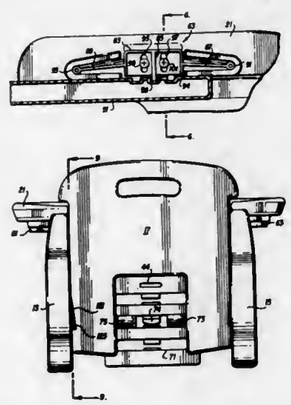
1. A cover apparatus for a rear compartment of a pickup truck or the like, said rear compartment comprising an upstanding front wall, two upstanding sidewalls, a pivotally mounted rear wall, each having a top surface, and a horizontal floor; said cover including; a rectangular center panel and two rectangular side panels longitudinally arranged along the top of said rear compartment, said center panel being substantially fixed and said side panels being pivotally attached by their inside edges to the outside edges of said center panel and being movable from a closed position to an open position to provide access to said rear compartment, a laterally extending horizontal support member, a support means at each end of said member for supporting said center panel on said bed, and a flange extending from the edges of said cover along its perimeter, said flange overlapping said top surfaces of said front wall, side walls, and rear wall.

5,183,310
LATCHING MECHANISM FOR CAP TAILGATE DOOR
Ernie Shaughnessy, Salem, Oreg., assignor to Hunter Manufacturing Inc., Pocatello, Id.
Filed Sep. 4, 1991, Ser. No. 754,955
Int. Cl.[5] B62D *25/08*
U.S. Cl. 296—106 **15 Claims**



1. A latch assembly for a cap tailgate door, said latch assembly comprising:
rotor means mounted on the tailgate door for securing the tailgate door in a closed position after movement from an open position, and
latch plate means mounted on a frame of the cap for engagement by the rotor means in the closed position,
said rotor means including
(a) two elongated locking rods each having two ends, one end of said two rods including a bent end shaped complementary to a channel defined by the latch plate means for engagement by the bent ends in a locked position,
(b) rotator means fixedly mounted on the tailgate door for rotating said locking rods during movement from an unlocked position to the locked position, and
(c) a rotor assembly fixedly mounted on the tailgate door for moving said locking rods to the unlocked position and the locked position, the other end of said two rods being rotatably mounted on said rotor assembly.

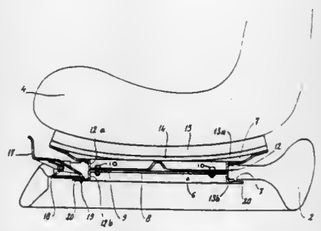
5,183,311
PORTABLE HIGH CHAIR/BOOSTER SEAT
Paul K. Meeker, Aurora, and William R. Gibson, Canton, both of Ohio, assignors to Lisco, Inc., Tampa, Fla.
Continuation of Ser. No. 564,249, Aug. 8, 1990, abandoned. This application Jul. 6, 1992, Ser. No. 908,960
Int. Cl.[5] A47B *83/02*
U.S. Cl. 297—151 **6 Claims**



1. Apparatus for removably attaching a tray to a chair, said apparatus comprising
a chair having a seat, back, and arms;
a plurality of slots in the outer upper portions of said arms;

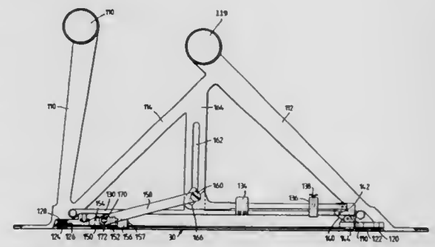
a tray having a length greater than the distance between said arms of said chair;
first and second latches connected to the underside of said tray at opposite ends thereof, the distance between said latches being substantially the same as the distance between the outer upper portions of said arms of said chair, each of said latches comprising
a housing;
a substantially rigid wall secured substantially centrally within said housing and extending outwardly of said housing toward the center of said tray, said wall being of a dimension to fit within a selected one of said slots;
means for securing said housing to said tray so that said housing is slidable towards and away from the center of said tray;
a flexible arm connected to either side of said housing and extending outwardly therefrom, said flexible arms being restrained at their distal ends by said tray so as to bias said housing in the direction of the center of said tray;
whereby manual movement of each of said housings against the bias of said flexible arms allows the tray to be placed on the arms of said chair and aligned with a selected one of said slots and release of said housing to said biased position causes said wall to enter said selected slot.

5,183,312
CHILD AUTOMOBILE SEAT WITH FLANGE REVOLVING UPON ARCHED RIBS
Yves Nania, Tignieu, France, assignor to Renolux
Filed Oct. 31, 1990, Ser. No. 607,105
Claims priority, application France, Oct. 31, 1989, 89 14727
Int. Cl.[5] A47C *1/08*
U.S. Cl. 297—250 **19 Claims**



1. A portable child automobile seat, for mounting on a passenger vehicle seat, comprising:
a base for removable connection to said passenger vehicle seat, said base having a wall with an opening and upper and lower faces with arced ribs adjacent said opening;
means for removably connecting said base to said passenger vehicle seat;
a swivel assembly including a hub and upper and lower flanges extending from said hub, said hub being rotatably disposed within said opening and said wall being positioned between and in direct contact with said upper and lower flanges to permit said swivel assembly to rotate relative to said base, said hub being in direct contact with an edge of said wall delimiting said opening and said upper and lower flanges being in direct contact respectively with said ribs on said upper and lower faces of said wall;
a seat body connected to said swivel assembly; and
means for removably fastening a child in said seat body.

5,183,313
TWO POSITION ADJUSTABLE PASSENGER ARRANGEMENT HAVING CAM, PLUNGER, AND PIVOTING LEVER
Douglas J. Cunningham, Portsmouth, England, assignor to L.A. Rumbold Limited, England
Filed Jun. 10, 1991, Ser. No. 713,112
Claims priority, application United Kingdom, Jun. 20, 1990, 9013717
Int. Cl.[5] A47C *1/02*
U.S. Cl. 297—344 **6 Claims**



1. An adjustable seating system, for use in a passenger vehicle, comprising a floor-mounted seat rail adapted to extend longitudinally through at least a portion of a passenger carrying compartment and at least three seating units mounted on said seat rail; the seat rail including a series of equally spaced interconnected openings along the length of said rail for fixedly engaging and retaining the seating units at any selected lengthwise location; at least one of the seating units including seat adjustment means comprising:
a first plunger for engaging in said rail mounted on a leg of said seating unit for vertical movement between a rail-engaging position in which said plunger engages with the rail to restrain fore and aft movement and a release position in which said first plunger permits fore and aft movement of the seating unit,
a second plunger for engaging in said rail so as to resist both fore and aft movement and vertical movement,
a lever pivotally mounted on the second plunger,
vertically extending guide means secured to the at least one seating unit,
a cam follower secured to said lever and engaging in said vertically extending guide means so as to be positionable at the bottom of the guide means either when the seating unit is in a first position in which the lever projects forwardly from the second plunger or when the seating unit is in a second position in which the lever projects rearwardly from the second plunger, the distance between these two positions being a multiple of the spacing between the opening in the rail so that the plunger can move into an engaged position when the seating unit is in either of these two positions, and
coupling means responsive to displacement of the cam follower from the bottom of the guide means to move the first plunger to the release position and adapted to return the first plunger to the rail-engaging position when the cam follower returns to the bottom of the guide means.

5,183,314
CONCEALED MECHANISM FOR DETACHABLY MOUNTING A VEHICLE SEAT
James R. Lorbiecki, Milwaukee, Wis., assignor to Milsco Manufacturing Company, Milwaukee, Wis.
Filed Nov. 18, 1991, Ser. No. 793,580
Int. Cl.[5] A47C *7/00*
U.S. Cl. 297—440 **8 Claims**

1. A concealed quick attach and detach mechanism for releasably installing and automatically locking a seat against

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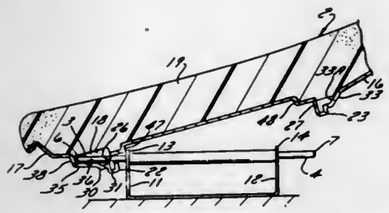
lateral movement on a vehicle of the type having spaced apart first and second cantilever supports which terminate in first and second laterally spaced free ends comprising

a seat pan having:

a housing that includes a concealed interior and a lateral support axis;

first and second spaced apart apertures in said pan housing aligned on said lateral support axis and opening into said interior for axially slidably receiving said first and second supports therethrough, respectively, when said seat is installed on the vehicle;

a deflectable first lock means in said seat pan interior in register with said support axis and laterally spaced from said first aperture;



a biasing means in said housing for normally maintaining said first lock means in said register and for permitting said first lock means to be deflected out of register with said support axis during attaching and detaching of said seat on the vehicle;

a second lock means in said seat pan interior in register with said support axis and laterally spaced from said second aperture; and

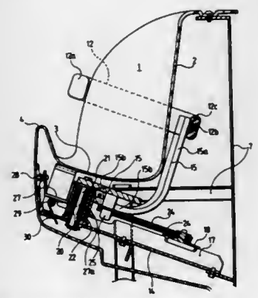
said first and second lock means being spaced apart laterally from each other a distance that is substantially equal to said lateral spacing of said free ends of the cantilever supports on the vehicle on which said seat pan is to be mounted for automatic abutment against said free ends when the seat is installed to restrain the seat against lateral movement.

5,183,315

INFANT RESTRAINING CHAIR

Takehiko Takahashi, Tokyo; Ryuji Iwata, and Yuji Shimizu, both of Aichi, all of Japan, assignors to Combi Corporation, Tokyo, Japan

Continuation of Ser. No. 568,108, Aug. 16, 1990, abandoned.
This application May 14, 1992, Ser. No. 884,046
Claims priority, application Japan, Oct. 12, 1989, 1-119520[U]
Int. Cl.[5] A47C *31/00*
U.S. Cl. 297—488 **10 Claims**



1. An infant restraining chair adapted for use with an infant having a waist and abdominal region and adapted to be positioned on a substantially level support, comprising:

a chair member having a front and a rear for seating said infant therein;

a restraining frame member which can be selectively extended and retracted from within said chair member, said frame member in a fully extended position restraining said waist and abdominal region of said infant seated in said chair member, said restraining frame member including an arcuate seat belt member having a substantially rigid construction, said arcuate seat belt member being selectively rotatable to a retracted position in which said arcuate seat belt member is substantially accommodated within said chair member, and being selectively rotatable out of said chair member to encircle and restrain said infant within said chair member; and

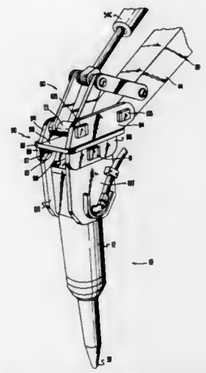
securing means for selectively securing said restraining frame member in a fully extended position, said securing means including a retraction member coupled to said arcuate seat belt member, said retraction member including means for constantly applying force to said arcuate seat belt member to bias said arcuate seat belt member toward said retracted position, said retraction member being inclined said means for constantly applying force being the mounting of said retraction member at an incline with respect to the horizontal said substantially level support to generate said force by gravity said retraction member being retractable rearwardly and downwardly.

5,183,316

MOUNTING BRACKET FOR A WORKING DEVICE

Jack B. Ottestad, La Jolla, Calif., assignor to ESCO Corporation, Portland, Oreg.

Filed Sep. 23, 1991, Ser. No. 763,551
Int. Cl.[5] E21C *3/00*
U.S. Cl. 299—69 **20 Claims**



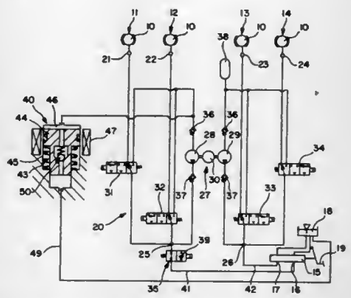
8. A mounting bracket for mounting a working device to a carrier, said mounting bracket comprising means for attaching said bracket to a portion of said carrier for pivotal movement about a first axis and means for attaching said working device to said mounting bracket such that said working device is freely movable relative to said mounting bracket about a second pivot axis substantially parallel to said first axis throughout at least a certain range of movement.

5,183,317

TRACTION CONTROL BRAKING SYSTEM WITH A PISTON STORAGE UNIT CONNECTED TO A RESERVOIR AND PUMP

Reinhard Gutzeit, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 20, 1991, Ser. No. 702,535
Claims priority, application Fed. Rep. of Germany, Jun. 27, 1990, 4020450
Int. Cl.[5] B60T *13/14*
U.S. Cl. 303—113.2 **9 Claims**



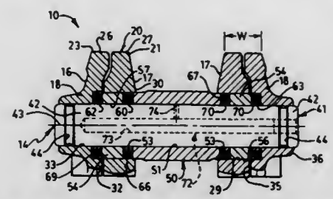
1. A hydraulic dual-circuit brake system for motor vehicles having vehicle wheels with wheel brake cylinders comprising an antilock system and anti-spin control system, comprising a brake pedal and a main master brake cylinder for regulating brake pressure through brake pedal activation; said main master brake cylinder comprising two separate brake circuit outputs and being connected to a brake fluid supply container; a four-duct hydro unit (**20**) including two brake circuits connected to the two brake circuit outputs; said four-duct hydro-unit comprising four outlet ducts (**21–24**) distributed in the two brake circuits and connected with the wheel brake cylinders of the vehicle wheels, at least one control valve provided for each outlet duct to regulate a wheel-spin-dependent brake pressure to the wheel brake cylinders which are connected both to an individual outlet duct and also in pars via individual connection liens to a brake circuit output of the main brake cylinder, a return pump with two separate pump elements, each of said two separate pump elements operating in one particular brake circuit to return brake fluid from the wheel brake cylinders during brake pressure reduction; an input side of each of said two pump elements being connected with said wheel brake cylinders and the outlet ducts belonging to one particular brake circuit via the control valves and connected to an output side of each of said two separate pump elements with said output side connected via one of the connection lines with the main master brake cylinder brake circuit output associated with that brake circuit, at least one device for providing a brake supply pressure during a spin control; said at least one device comprising a stop valve (**35**) in at least one connection line between one brake circuit output and the output of one of said two separate pump elements associated with a brake circuit with at least one drive wheel; said stop valve separating the at least one brake circuit from the main master brake cylinder during anti-spin control operation; at lest one piston storage unit (**40**) for supply brake fluid to said one of said two separate pump elements, said at least one piston storage unit comprising a storage piston displaceable in a storage cylinder, a drive for driving the storage piston (**44**) in axial displacement contrary to a force of a spring (**43**) and a storage chamber (**46**) defined by the storage piston; said storage chamber being directly connected to a brake fluid supply container (**18**) via a one-way relief valve (**50**), and the storage chamber (**46**) of the at least one piston storage unit (**40**) is permanently connected to the input of said one of said two separate pump elements (**28**) and that at the beginning of the anti-spin control operation, the storage piston drive (**47**) is activated to produce a storage piston stroke to fill the storage chamber (**46**) with fluid form said brake fluid supply container (**18**) whereby the force of the spring (**43**) of the piston (**44**) is moved to charge said one of said two storage pump elements (**28**) so that said one of said two pump elements generates a necessary brake pressure required for compensating for spinning of the wheel.

5,183,318

ENDLESS TRACK CHAIN FOR TRACK-TYPE VEHICLES

Morris E. Taft, Metamora; Peter W. Anderton, Peoria, and Roy L. Maguire, Edelstein, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Nov. 26, 1991, Ser. No. 797,833
Int. Cl.[5] B62D *55/092*
U.S. Cl. 305—39 **20 Claims**



1. In an endless track chain for track-type vehicles, said chain having a plurality of link sets articulately coupled in transverse relation to a longitudinal centerline of said cain by a like plurality of joints, each link set including a pair of laterally spaced, longitudinally extending links, each link having a laterally inwardly offset inboard end collar, an opposite laterally outwardly offset outboard end collar and a longitudinally disposed rail surface, said rail surface having a predetermined overall width ("W") between an inner edge and an outer edge and a full width central portion, a generally half-width outboard portion extending along said outer edge over said outboard end collar and a generally half-width inboard portion extending along said inner edge over the inboard end collar, the improvement comprising:

said inboard end collar having a first bore therethrough and extending from an inner surface of said inboard end collar to an outer surface thereof, said inner surface being offset inwardly from said inner edge of said rail surface and said outer surface being offset outwardly relative to said inboard portion of said rail surface so as to be disposed in a position substantially closer to said outer edge of said rail surface than to said inner edge thereof, said offset positioning of said inner and outer surfaces providing said first bore with a predetermined bore length ("L_1") that is greater than one-half the width ("W") of said rail surface; and

said outboard end collar having a boss extending outwardly therefrom and a second bore therethrough and extending from an inner surface of said outboard end collar to an outer surface on said boss, said inner surface being likewise offset outwardly from said inboard portion of said rail surface so as to lie outboard of the offset outer surface of the inboard end collar of a mating link in an adjoining link set of said track chain, and said outer surface on said boss being offset laterally a substantial distance from said outer edge of said rail surface to provide said second bore with a predetermined bore length ("L_2") that is at least as great as the overall width ("W") of said rail surface.

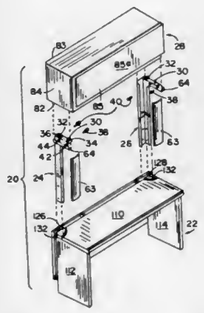
VOL
1147
ISS
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5,183,319

ADJUSTABLE SUPPORT FOR OVERHEAD FURNITURE UNITS

Alan L. Pearson, Ionia, and Richard H. Baker, Grand Rapids, both of Mich., assignors to Steelcase, Inc., Grand Rapids, Mich.

Filed Feb. 20, 1992, Ser. No. 839,126
Int. Cl.[5] A47B *17/00*
U.S. Cl. 312—196 **15 Claims**



1. A modular furniture unit, comprising:

a base unit;

at least one elongate upstanding post including a lower end engaging said base unit so that said post extends generally vertically, and further including an upper end having a laterally extending bracket, said laterally extending bracket having a forward portion and a rearward portion;

an overhead modular unit including a lower portion engaging said laterally extending bracket;

means spaced from said at least one upstanding post for supporting said overhead modular unit along with said at least one upstanding post;

leveling means located on said laterally extending bracket for adjusting the spacial orientation of said overhead modular unit relative to said base unit, said leveling means including separately adjustable first and second lift devices, said first device located on said forward portion and said second device located on said rearward portion for adjustably supporting said overhead modular unit, whereby said modular unit can be adjusted without manually lifting the overhead modular unit; and

attaching means for securely attaching said overhead modular unit to said at least one elongate upstanding post, whereby said overhead modular unit can be placed on said upstanding post, leveled, and secured to same without manipulating said upstanding post on the modular furniture unit, and whereby said overhead modular unit can be readily leveled by an installer without manually lifting and bearing the weight of the overhead unit.

5,183,320

ANTI-DESTRUCTION STRUCTURE FOR AN AUTOMATIC VENDING MACHINE

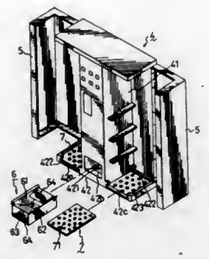
Ming-Ho Chen, No. 166, Fu-Hsing Rd., Hsin-Ying City, Tainan Hsien, Taiwan

Filed Oct. 21, 1991, Ser. No. 779,934
Int. Cl.[5] A47B *96/00*
U.S. Cl. 312—229 **6 Claims**

1. An anti-destruction structure for an automatic vending machine, the automatic vending machine including a housing having a lower end portion, the anti-destruction structure comprising:

a bottom plate disposed at said lower end portion, said bottom plate having a plurality of holes formed therethrough; and

a porous auxiliary plate fixed in said housing just above said bottom plate, said auxiliary plate having a plurality of holes formed therethrough, said holes of said auxiliary plate being communicated with and staggered relative to said holes of a corresponding portion of said bottom plate.

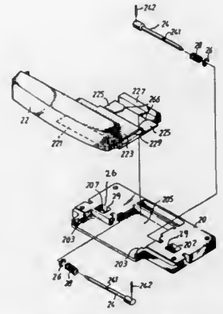


5,183,321

HAND BRAKE MECHANISM FOR A CENTRAL PROCESSING UNIT CABINET

Christian C. Landry, 224 Old Littleton Rd., Harvard, Mass. 01451; Jause Kuo, 255, Jen-Ho Road, Sec. 2, Tachi, Taoyuan, Taiwan; Ching-Shi Chen, 255, Jen-Ho Road Sec. 2, Tachi, Taoyuan, Taiwan, and William Wu, 255, Jen-Ho Road, Sec. 2, Tachi, Taoyuan, Taiwan

Filed Jun. 20, 1991, Ser. No. 718,497
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—250 **8 Claims**



1. A hand brake mechanism for a cabinet mounted on wheels for movement, comprising:

a base having a groove (**205**) substantially formed in the central part thereof, said base being fixed to the bottom of said cabinet and located generally between two of said wheels provided on the bottom of said cabinet each side of said base having lateral holes extending therethrough for receiving

an engaging rod having one end protruded outside said base capable of engaging said wheels in a fixed position and the other end having a guide pin thereon protruded over said groove (**205**);

a slidable handle having an extension part mounted on said groove (**205**), said handle slidable in a direction perpendicular to a central axis of said engaging rods;

a pair of guide plates mounted in said groove (**205**) and formed separately on the outer edges of said extension part, respectively, each of said guide plates having obliquely angled inner edges with respect to said central axis of said engaging rods, and each of said guide plates having ends being connected by a connecting bar, and said guide pins of said engaging rods capable of sliding along said inner edges of said guide plates,

said guide plates when moved by pulling on said handle causing said guide pins to slide along said inner edges of said guide plates enabling the disengagement of said engaging rods from said wheels;

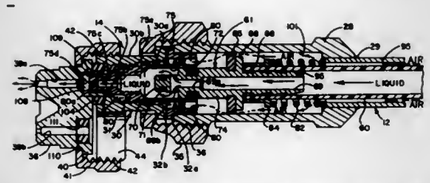
said guide plates when moved by pushing said handle causing said guide pins to slide along said inner edges of said guide plates enabling the engagement of said engaging rods with said wheels.

5,183,322

SPRAY GUN WITH SELECTIVE HYDRAULIC AND AIR ASSISTED OPERATING MODES

James Haruch, Naperville, Ill., assignor to Spraying Systems Co., Wheaton, Ill.

Filed Apr. 19, 1991, Ser. No. 688,907
Int. Cl.[5] B05B *7/12, 9/01, 1/16*
U.S. Cl. 239—394 **45 Claims**



1. A hand-held spray gun comprising a handle section having a liquid inlet, a nozzle section mounted forwardly of said handle section and having a discharge orifice, said nozzle section including a nozzle housing and a valve follower, liquid conduit means connected to said valve follower and extending to said handle section for communicating liquid from said inlet to said nozzle section, a trigger mounted on said handle section for movement between actuating and deactuating positions, said trigger being operatively coupled to said liquid conduit means such that upon movement of said trigger from said deactuating to said actuating positions said liquid conduit means and the valve follower connected thereto are moved from a first position in which said valve follower prevents the flow of liquid through said nozzle section discharge orifice to a second position which permits the flow of liquid from said liquid inlet and through said liquid conduit means and nozzle section discharge orifice.

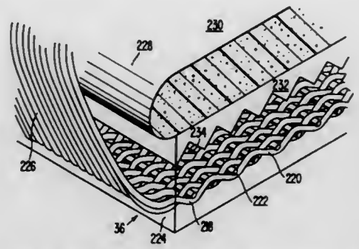
5,183,323

FLAT PANEL ILLUMINATION SYSTEM

Maurice Daniel, 3115 King St., Alexandria, Va. 22302

Division of Ser. No. 105,829, Oct. 8, 1987, Pat. No. 5,021,928, which is a continuation-in-part of Ser. No. 731,511, May 5, 1985, Pat. No. 4,715,700, which is a division of Ser. No. 427,155, Sep. 29, 1982, Pat. No. 4,519,017. This application Mar. 27, 1991, Ser. No. 675,944
The portion of the term of this patent subsequent to Jun. 4, 2008, has been disclaimed.
Int. Cl.[5] F21V *8/00*
U.S. Cl. 362—32 **50 Claims**

1. A flat panel illumination system comprising light source means, light conducting cable means to conduct light from said light source means; and light emitting panel means connected to receive light conducted by said light conducting cable means, said light emitting panel means including a light emitting fabric means woven from light conducting fiber means, said light conducting fiber means being formed of multi-mode optical light conducting fibers which emit light conducted thereby due to the bending of said light conducting fibers woven in said light emitting fabric means, said light conducting fiber means extending in unwoven form outwardly from at least a first side of said light emitting fabric means, said light conducting fiber means being woven with spaced fill threads to form said light emitting fabric means, the spacing between said fill threads in said light emitting fabric means being progressively decreased as the distance from said first side increases.

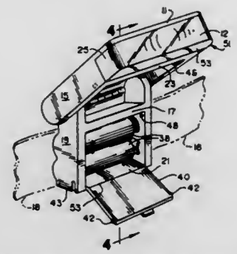


5,183,324

LIGHTING ACCESSORY

Roy Thomas, 6808 S. May, Chicago, Ill. 60621

Filed Sep. 5, 1991, Ser. No. 755,548
Int. Cl.[5] F21L *15/08*
U.S. Cl. 362—103 **7 Claims**



1. A lighting accessory, which may be worn by an individual, comprising:

a. a stationary housing member having a horizontal hinge means at one end thereof;

b. a rotating housing member having a corresponding horizontal hinge means at one end thereof,

said stationary housing member and said rotating housing member, forming a housing unit, being arranged and adapted to being hingedly connected together and said hinge connection having a resistance means with sufficient frictional resistance to support the weight of the rotating housing member in a plurality of rotational positions relative to the stationary housing member, the rotating housing member may be positioned in front of and in alignment with said stationary housing member to form a closed housing unit,

said closed housing unit being suitably sized and adapted to contain an electrical circuit comprising a power source and power source retaining means, a light source and light source retaining means, and a switch means;

c. an electrical power source operably connected to a power source retaining means;

d. an electrically power light source and light source retaining means mounted on the rotating housing member at the end opposite its hinge means and having the light emissions of said light source directed away from and perpendicular to a horizontal hinge means axis; and

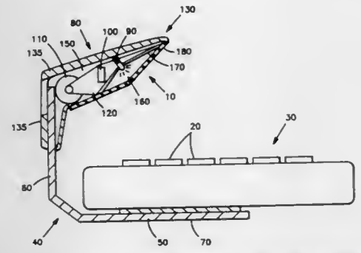
e. a switch means to engage and disengage the light source and the power source,

whereby, the rotating housing member may be pivotally rotated about the horizontal hinge means axis relative to

VOL
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said stationary housing member to variably direct the light emissions along an arc of approximately 180 degrees.

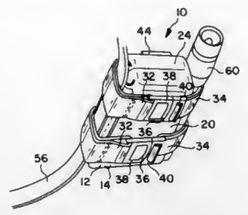
5,183,325
ILLUMINATION APPARATUS FOR REMOTE CONTROL DEVICE
Terry D. Hurdle, Newport Beach, Calif., assignor to D. T. Hurdle, Newport Beach, Calif.
Filed Oct. 9, 1990, Ser. No. 594,834
Int. Cl.[5] F21V *33/00*
U.S. Cl. 362—109 **3 Claims**



1. An apparatus for illuminating the operating elements of a remote control device, the remote control device being of the type having operating elements, and having a window for transmission of a signal, and having a generally flat bottom surface, the apparatus comprising:
an "L" shaped bracket made of a material transparent to the signal, the bracket having a first and a second legs, the legs being of different lengths and joined at an approximate right angle;
a means of illumination contained in;
an enclosure, the enclosure having means for mounting the enclosure onto the end of either the first or the second leg;
a means of attachment for connecting either the first or the second leg to the flat bottom surface of the remote control device, the alternate leg extending upwardly parallel to the window for transmission, the enclosure being supported by the alternate leg at a position above the operating elements in order to provide illumination to the elements, whereby
either leg may be used to hold the enclosure thereby providing two alternate elevations of the enclosure above the remote control.

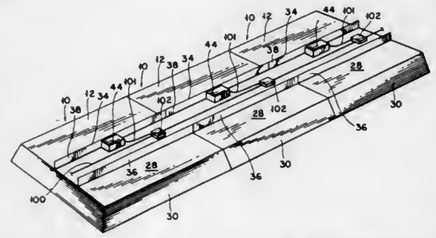
5,183,326
UNDERWATER FLASHLIGHT HOLDER
Richard N. Case, Boulder, Colo., assignor to RCP Enterprises, Inc., Boulder, Colo.
Filed Feb. 25, 1992, Ser. No. 842,016
Int. Cl.[5] F21L *7/00*
U.S. Cl. 362—191 **20 Claims**

1. An apparatus for holding a flashlight adjacent to the side of the head gear of a diver, said apparatus comprising:
means for providing support and floatation to a flashlight, said flashlight support and floatation means having a proximal side adapted to be held adjacent to the head gear of a diver, and a distal side which is spaced from and opposed to said proximal side;
means for releasably engaging and securing a flashlight to said flashlight support and floatation means; and



means for releasably engaging and securing said flashlight support and floatation means to the head gear of a diver.

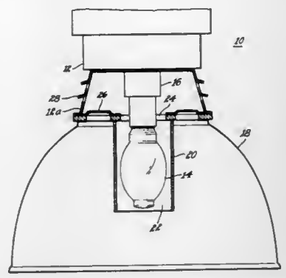
5,183,327
FLUORESCENT LIGHT FIXTURE WITH OPEN BALLAST HOUSING
William Fabbri, Billerica, Mass., assignor to Keene Corporation, Union, N.J.
Filed Sep. 10, 1991, Ser. No. 757,217
Int. Cl.[5] F21S *3/00*
U.S. Cl. 362—219 **9 Claims**



1. In a fluorescent light fixture of the type comprising a body, a ballast assembly engaging said body and bulb-engaging sockets in electrical communication with said ballast assembly, the improvement comprising an assembly housing including sidewalls extending substantially along a longitudinal length of said body whereby when a plurality of fluorescent light fixtures are sequentially placed end-on-end a common channel extending along a length of the plurality of fluorescent light fixtures is formed by said sidewalls for receiving a common electrical power line longitudinally therein, and a removable cover engaging upper portions of said sidewalls thereby providing access to said common channel.

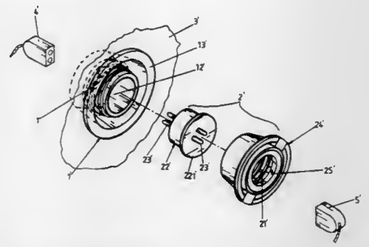
5,183,328
LUMINAIRE HAVING AN IMPROVED THERMAL MANAGEMENT ARRANGEMENT
Mitchell M. Osteen, Zirconia, N.C., assignor to General Electric Company, Schenectady, N.Y.
Filed Dec. 9, 1991, Ser. No. 805,249
Int. Cl.[5] F21V *29/00*
U.S. Cl. 362—294 **14 Claims**

1. A lighting fixture comprising:
a fixture support member;
a high intensity light source connected to said support member;
means for energizing said light source, said energizing means being connected to said support member;
reflector member connected to said support member and being disposed at least partially around said light source so as to direct the light output of said light source in a predetermined pattern, said reflector member having at least one opening formed therein;
a sleeve member connected to said support member and being disposed in at least a partially surrounding manner to said light source and at a position between said reflector member and said light source;
wherein said sleeve member is constructed of a light transmissive material and has an opening formed at the upper end thereof, said sleeve member being effective such that a portion of the heat generated by said light source can be



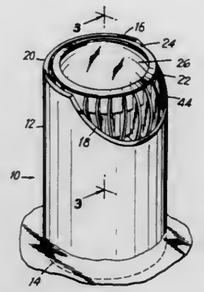
channeled through said sleeve member opening and away from said reflector member thereby; and,
wherein said opening of said sleeve member is smaller in size relative to said at least one reflector opening, said sleeve member opening and said reflector member opening being disposed relative to one another such that a space exists therebetween, said space being effective such that an air flow can occur between said reflector member and said sleeve member, such air flow travelling through said space.

5,183,329
ELECTRIC COUPLER FOR A LIGHTED INFLATABLE DEVICE
Henry Chen, 5F, No. 25, Lane 15, Hsingyun Street, Neihu, Taipei, Taiwan
Filed Aug. 15, 1991, Ser. No. 745,559
Int. Cl.[5] F21V *1/06, 33/00*
U.S. Cl. 362—352 **2 Claims**



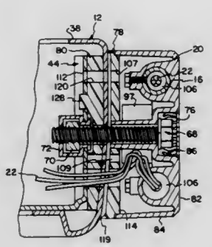
1. For a lighted inflatable device, an electric coupler comprising a base heat sealed to the inside of a lighted inflatable device, said base having a passage way defined therein for inserting a light string inside said lighted inflatable device, and a sealing device fastened in said base, wherein said sealing device being comprised of an insert releasably inserted in said base to air-tightly block up said passage way, said insert having terminals for connecting an external power supply to the light string inserted inside said lighted inflatable device by connectors, and a lock nut fastened in said base through a screw joint to tightly secure said insert in place.

5,183,330
LIGHTING FIXTURE WITH LAMP HOLDER INCLUDING INTEGRAL RESILIENT FINS
Michael Risbel; Larry Powers, both of Hanover, Pa., and Claude Barozzini, Annandale, N.J., assignors to The Genlyte Group Incorporated, Secaucus, N.J.
Filed Jul. 11, 1991, Ser. No. 728,591
Int. Cl.[5] F21V *21/14*
U.S. Cl. 362—372 **25 Claims**



1. A lighting fixture including;
a lamp holder;
a cylindrical body into which said lamp holder is inserted;
said lamp holder including bulb engaging means; electrical power receiving means; and axial and rotational positioning means on an exterior of said lamp holder frictionally engaging said cylindrical body, whereby said frictional engagement is such that when said cylindrical body is in a final position said lamp holder is adjustably retained by said cylindrical body so as to allow for axial and rotational movement thereof.

5,183,331
CANTILEVERED SPOKE MOUNTING FOR LIGHTING FIXTURE
James E. Edgell, Roanoke, and David L. Jordan, Boones Mill, both of Va., assignors to Hubbell Incorporated, Orange, Conn.
Filed Jul. 3, 1991, Ser. No. 725,485
Int. Cl.[5] F21M *3/18*
U.S. Cl. 362—426 **29 Claims**



1. An adjustable mounting assembly for a lighting fixture, comprising:
at least one support member;
wiring means extending through said support member for electrically coupling the fixture to a power source;
at least one casing having a fastening sleeve and having at least one conduit receiving said support member and said wiring means, said casing being rotatable with respect to the fixture;
spacer means for spacing said casing from the fixture, said

VOL 1147 ISS 1 FEB 2 1993 UMI

spacer means having a bore and having an aperture receiving said wiring means; and

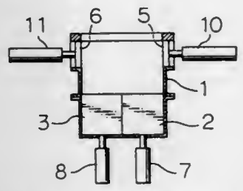
fastener means, extending through said fastening sleeve and said bore, for adjustably and rotatably coupling said casing and said spacer means to the fixture and releasably retaining the fixture in selected rotational positions relative to said casing and support member, said fastener means being independent from said casing.

5,183,332

KNEADING METHOD OF CONCRETE

Kenji Maeda, 4-7, Matsunoki 3-chome, Suginami-ku, Tokyo, Japan

Filed Jul. 18, 1991, Ser. No. 732,075
Claims priority, application Japan, Mar. 26, 1991, 3-86128
Int. Cl.[5] B28C *5/00, 5/48*
U.S. Cl. 366—2 **4 Claims**



1. A kneading method, comprising the steps of:

a. providing a layer of concrete material in a kneading tank;

b. dividing said layer of concrete material in said kneading tank into a plurality of layer sections arrayed side by side in a right-and-left direction;

c. laying one of said layer sections on another of said layer sections;

d. compressing said laid layer sections of said concrete material in an up-and-down direction until said concrete material spreads out substantially wider than said laid layer sections; and

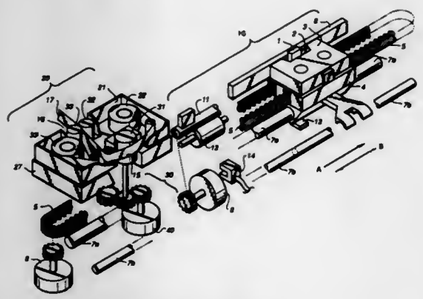
e. performing said steps (b) through (d) repeatedly.

5,183,333

PRINTER SYSTEM FOR SELECTIVE PRINTING ON FIRST AND SECOND PRINT MEDIA LOCATED IN SEPARATE PRINT ZONES

Masahiro Minowa, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Apr. 10, 1991, Ser. No. 683,468
Claims priority, application Japan, Apr. 11, 1990, 2-96023; Apr. 24, 1990, 2-108041; May 7, 1990, 2-117178
Int. Cl.[5] B41J *11/52*
U.S. Cl. 400—605 **17 Claims**



1. A system for printing, comprising:

means to print indicia selectively on a first or a second printing media respectively comprising a linear strip form and a sheet form, said print means including a single carriage having a print head and inking means, transport means to move said carriage along a path of travel between a first zone for printing on said first printing media and a second zone for printing on said second printing media,

said print means having a first printing mode for holding said carriage in a stationary position for printing on said first printing media at said first zone as said first printing media is moved relative to said print head and a second printing mode for providing reciprocal motion to said carriage for printing on said second printing media at said second zone as said print head is moved relative to said second printing media;

means in said path of travel to determine if said carriage is in said first print zone or is in said second print zone,

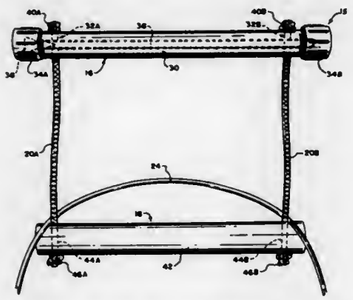
control means responsive to said carriage determining means to transport said carriage to either said first print zone or said second print zone depending upon whether said first or second printing mode has been selected.

5,183,334

PAINT CAN SHAKER

Dewey F. Geistlinger, Box 154, Rte. 1, DeWitt, Nebr. 68341

Filed Apr. 8, 1991, Ser. No. 681,976
Int. Cl.[5] B01F *15/00*
U.S. Cl. 366—129 **8 Claims**



1. A method of mixing paint comprising the steps of:

inserting a container holder of a paint mixer into a handle of a can of paint wherein the handle is connected to the can of paint at pivot points located along an axis extending through the can of paint;

gripping a handle of the paint mixer;

lifting the paint mixer whereby an elongated flexible member is extended;

holding the paint mixer wherein a user's arm holding the paint mixer is extended downwardly; and

moving the paint mixer in a manner to cause the can of paint to mix rapidly wherein the can of paint follows a partial orbital path about the user's shoulder causing the can of paint to rotate about the axis extending through the can of paint.

5,183,335

HYDRAULIC JET FLASH MIXER WITH FLOW DEFLECTOR

John S. Lang, Arcadia; R. Rhodes Trussell, Pasadena, and Susumu Kawamura, San Gabriel, all of Calif., assignors to James M. Montgomery Engineers, Inc., Pasadena, Calif.

Filed Feb. 4, 1991, Ser. No. 650,770
Int. Cl.[5] B01F *5/18, 5/04*
U.S. Cl. 366—174 **31 Claims**

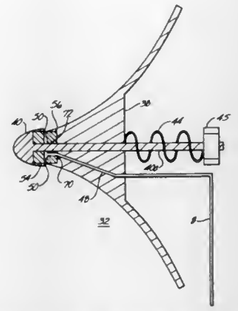
1. Apparatus for injecting and mixing coagulant into a liquid stream by flash mixing comprising:

a) a conduit for carrying the liquid stream without coagulant in a first direction;

b) injection means having an outlet for injecting a fluid jet stream into the liquid stream;

c) means for drawing off a portion of the liquid stream from a predetermined position along the conduit and for supplying the drawn-off portion to the injection means to form the fluid jet stream;

d) a deflector disposed proximate to and downstream of the outlet for deflecting the fluid jet stream in a second direction transverse to the first direction of the liquid stream; and



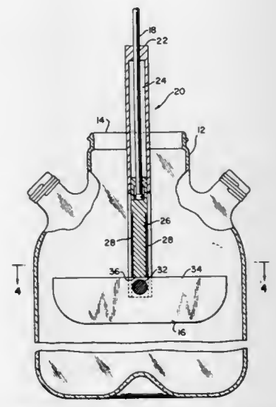
e) means for introducing coagulant directly into the fluid jet stream downstream of the outlet of the injection means for injecting such that the coagulant is carried by the fluid jet stream which is deflected in the second direction for mixing into the liquid stream, wherein the predetermined position is upstream of the means for introducing, such that conduit is adapted for carrying the liquid stream with the coagulant mixed therein away from the means for introducing and the deflector, thereby avoiding backmixing.

5,183,336

STIRRING ASSEMBLY

Jeffrey P. Poltorak, and Omar A. Swift, both of Vineland, N.J., assignors to Kontes Glass Company, Vineland, N.J.

Filed Jan. 21, 1992, Ser. No. 822,869
Int. Cl.[5] B01F *13/08*
U.S. Cl. 366—273 **9 Claims**



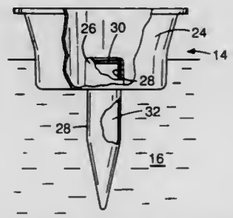
1. A stirrer assembly for use in a container or the like having an entrance opening, said assembly comprising a rod, plunger means operably connected to one end of said rod, support means comprising a tubular portion defining a recess into which said plunger means is received for movement between first and second positions as said rod is moved relative to said support means between an extended position and a retracted position, first and second spaced elements extending from said tubular portion, a unitary blade, means for mounting said blade between said elements for pivotal movement relative to said support means, said blade having an edge, said plunger means cooperating with said blade edge and being effective to move said blade from a position in which said blade can pass through the container entrance toward a position suitable for stirring, as said plunger means is moved toward said second position.

5,183,337

THERMOMETER CALIBRATION

Francesco Pompei, Boston, Mass., assignor to Exergen Corporation, Newton, Mass.

Filed Jul. 8, 1991, Ser. No. 726,817
Int. Cl.[5] G01K *15/00*
U.S. Cl. 374—2 **8 Claims**



1. A black body for calibrating an infrared thermometer, comprising:

a cavity, and

a support connected to the cavity and providing an opening into the cavity,

wherein said support and said cavity are structured to define means for causing the black body to float freely and stably on a surface of a volume of liquid with the cavity in close thermal contact with the liquid and the opening accessible from above the surface.

8. A method of calibrating an infrared thermometer comprising

floating a black body cavity freely on a surface of a volume of liquid at a known temperature with an opening to the cavity accessible from above the sufrace of the liquid, and using the thermometer to measure the temperature inside the black body cavity via the opening, said temperature being used to calibrate said thermometer.

5,183,338

TEMPERATURE MEASUREMENT WITH COMBINED PHOTO-LUMINESCENT AND BLACK BODY SENSING TECHNIQUES

Kenneth A. Wickersheim, Menlo Park, Calif., and Bruce E. Adams, Portland, Oreg., assignors to Luxtron Corporation, Campbell, Calif.

Division of Ser. No. 683,258, Apr. 10, 1991, Pat. No. 5,112,137. This application Dec. 13, 1991, Ser. No. 808,012
Int. Cl.[5] G01K *11/20;* **G01J** *5/08*
U.S. Cl. 374—131 **6 Claims**

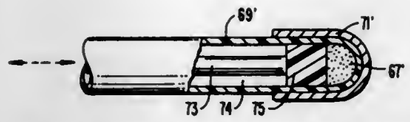
1. An optical temperature measuring sensor, comprising:

an elongated substantially optically transparent light pipe,

a black body cavity held adjacent one end of the light pipe and adapted to send temperature dependent optical emissions thereof along said light pipe, and

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a quantity of photoluminescent material held adjacent said one light pipe end and adapted to send, when excitation



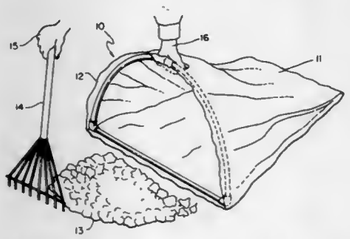
radiation is directed thereagainst along said light pipe, temperature dependent optical emissions thereof along said light pipe.

5,183,339

BAG AND ADJUSTABLE BAG OPENER FRAME

Willard J. Williams, P.O. Box 1809, Wilmington, Calif. 90744

Filed Feb. 24, 1992, Ser. No. 840,018
Int. Cl.[5] B65D *33/02*
U.S. Cl. 383—33 **1 Claim**



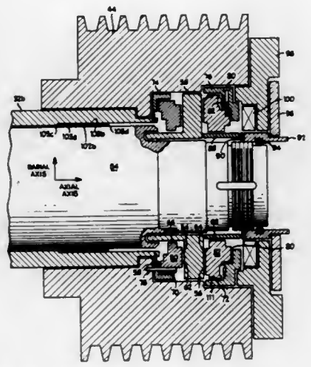
1. A trash bag and adjustable bas opener frame comprising:
an elongated rigid linear base having opposite ends;
a curvilinear member having opposite ends with at least one of said member ends secured with a selected one of said base ends;
said member having an outwardly projecting bias normally urging said member away from said base;
said member includes a pair of member portions wherein each portion is secured to an end of said base opposite ends and further provided with opposing terminating ends;
coupling means cooperatively carried on said member portion terminating ends releasably joining said terminating ends together;
elbow joints securing said member opposite ends with said base opposite ends;
said trash bag having an open entrance leading to an internal storage area;
said base and said member portions constituting a frame insertable into said bag entrance and engageable with said bag entrance to maintain said entrance open;
said bag includes an edge marginal region defining said entrance against which said frame bears in response to said normal bias;
adjustment means including telescoping sliding relationship of said member opposite ends operable in combination with said coupling means to selectively establish the length of said member; and
said coupling means includes spaced segments and a manual clamp moveable over said segments between a closed and an open position to alternately tighten and release said member portion terminating ends with respect to each other.

5,183,340

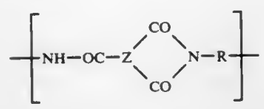
BEARING AND BEARING ASSEMBLY

Jeff A. Higginbotham, Highlands; George Garcia, Texas City, and Robert L. Richards, Dickenson, all of Tex., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 833,336, Feb. 10, 1992, abandoned, which is a continuation of Ser. No. 548,718, Sep. 19, 1990, abandoned. This application Jun. 12, 1992, Ser. No. 898,931
Int. Cl.[5] F16C *17/04, 33/20*
U.S. Cl. 384—420 **16 Claims**



1. A bearing comprising:
a first side in alignment with a radial axis and a second side opposite said first side;
said first side including bumper means for withstanding thrust, extending outwardly therefrom comprising a substantially flat surface; and
an inner-axial surface in alignment with an axial axis and an outer-axial surface opposite said inner-axial surface
wherein said bearing comprises a thermoplastic, amide-imide resinous material comprising at least one recurring unit of the following moieties:



wherein one carbonyl group is meta to and one carbonyl group is para to each amide group and wherein Z is a trivalent benzene ring or lower alkyl-substituted trivalent benzene ring, R comprises one or more wholly- or largely-aromatic hydrocarbon radicals of from 6 to about 10 carbon atoms or two divalent aromatic hydrocarbon radicals of from 6 to about 10 atoms joined directly or by stable linkages selected from the group consisting of —O—, methylene, —CO—, SO_2—, and —S—.

5,183,341

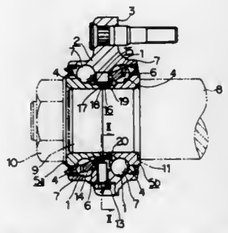
SPEED SENSING BEARING UNIT

Hideo Ouchi, Sagamihara, and Hiroya Miyazaki, Fujisawa, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1992, Ser. No. 862,644
Claims priority, application Japan, Apr. 3, 1991, 3-029364[U]
Int. Cl.[5] F16C *41/00*
U.S. Cl. 384—446 **1 Claim**

1. A speed sensing bearing unit comprising:
a fixed ring having an inner peripheral surface and a pair of outer ring raceways formed on said inner peripheral surface,

a pair of rotatable inner rings each having an outer peripheral surface and an inner ring raceway formed on said outer peripheral surface corresponding to said outer ring raceways, respectively,
a plurality of rolling bodies provided between said outer ring raceways of said fixed ring and said inner ring raceways of said inner rings, respectively,
a pulse rotor supported on one of said pair of inner rings and having an outer peripheral surface,
a sensor supported by said outer ring between said outer ring raceways to oppose the outer peripheral surface of said pulse rotor,
said pulse rotor comprising a cylindrical main body of magnetic material having a plurality of through-apertures at evenly spaced intervals in a circumferential direction, and an engaging element of a non-magnetic resilient material formed to be fitted into said through-apertures, and



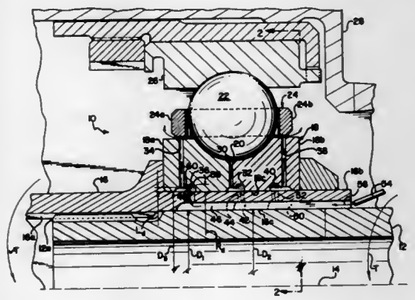
said inner rings having axial end portions facing to each other with said pulse rotor fitted over said axial end portion of one of said inner rings,
the other of said inner rings having grooves formed in said axial end portion thereof on the outer peripheral surface thereof,
said engaging element having an inner peripheral surface and hook portions protruding from said inner peripheral surface to engage with said grooves formed on said outer peripheral surface of the outer of said inner rings.

5,183,342

LUBRICATED BEARING ASSEMBLY

Paul C. Daiber, Cincinnati; Anthony P. Greenwood, Mason, both of Ohio, and Ted E. Bailey, Ann Arbor, Mich., assignors to General Electric Company, Cincinnati, Ohio

Filed Dec. 16, 1991, Ser. No. 807,339
Int. Cl.[5] F16C *33/06, 33/60*
U.S. Cl. 384—475 **6 Claims**



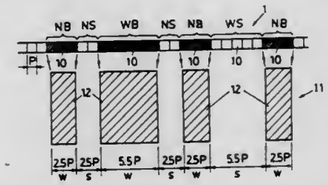
1. A bearing assembly comprising:
an input shaft for transmitting torque, and having an axial centerline axis;
an output shaft operatively joined coaxially to said input shaft for receiving said torque, said output shaft having a distal end disposed circumferentially on said output shaft;
an annular bearing split inner race fixedly joined on said output shaft distal end for rotation therewith, said inner race including first and second halves joined together at a radial splitline;
a plurality of bearing elements disposed circumferentially around said inner race;
an annular cage joined to said bearing elements to maintain a predetermined circumferential spacing therebetween and including first and second axially spaced apart ends spaced radially above said inner race first and second halves, respectively;
a stationary outer race surrounding said bearing elements;
said inner race including a plural number A_1 of circumferentially spaced splitline channels extending radially therethrough at said splitline in flow communication with a circumferentially extending splitline manifold defined between said inner race and said output shaft distal end;
said inner race first half including a plural number B_1 of circumferentially spaced first channels extending radially therethrough below said cage first end in flow communication with a circumferentially extending first manifold defined between said inner race first half and said output shaft distal end;
said output shaft distal end including:
a number A_2 of circumferentially spaced, axially extending splitline feed grooves disposed in an inner surface thereof and joined in flow communication with a respective number of splitline feed holes extending radially through said output shaft distal end for channeling oil to said splitline manifold;
a number B_2 of circumferentially spaced, axially extending first-manifold feed grooves disposed in said inner surface between said splitline feed grooves and in flow communication with a respective number of first-manifold feed holes extending radially through said output shaft distal end for channeling oil axially over said splitline to said first manifold; and said number A_2 being less than A_1, and said number B_2 being less than B_1.

5,183,343

METHOD OF PRINTING BAR CODES BY A BAR CODE PRINTER

Shigeru Tazawa, and Yutaka Shibata, both of Miyagi, Japan, assignors to Tohoku Ricoh Co., Ltd., Miyagi, Japan

Filed Jun. 11, 1992, Ser. No. 897,052
Claims priority, application Japan, Jun. 12, 1991, 3-167719
Int. Cl.[5] B41J *5/00*
U.S. Cl. 400—103 **1 Claim**



1. A method of printing bar codes by a bar code printer having a line thermal head with a number of heating elements arrayed at a specified pitch P; by allocating n+1 pieces of heating element to sections corresponding to bars in a bar code, and n pieces of heating elements to sections corresponding to spaces in the bar code (n: a positive integer in both cases), and selectively heating the heating elements allocated to sections corresponding to the aforesaid bars by means of controlling a quantity of energy to be loaded to the aforesaid thermal line head to print bar codes, each consisting of bars

VOL 1147 ISS 1 FE 2 1993 UMI

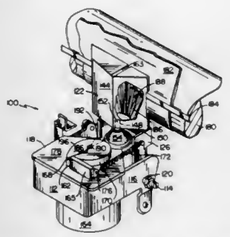
and spaces having the width of (n+0.5) P, by transferring ink on a plastics-based thermal transfer ink ribbon to paper.

5,183,344

QUIET IMPACT PRINTER MECHANISM

Stephen M. Pawlak, Cortland; Roger J. Rimbey, Spencer, and Mark D. Rodee, Groton, all of N.Y., assignors to Smith Corona Corporation

Filed May 31, 1991, Ser. No. 708,554
Int. Cl.[5] B41J *7/34, 7/30*
U.S. Cl. 400—160 **18 Claims**



1. An impact printer mechanism for driving a selected character pad of a print element to print a character on a sheet medium supported by a platen, the mechanism comprising:

a print hammer including a mass weight which supports a mounted anvil thereon, said mass weight includes a plate having a surface projecting a plurality of letter spaces in a plane parallel to said platen and includes having a maximum dimension in a direction perpendicular to said platen substantially behind said anvil; and

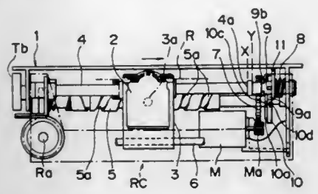
a drive means comprising a rotary cam operatively connected to said print hammer for actuating said print hammer to cause printing, said drive means including cam controlled means for imparting impact velocity to said print hammer.

5,183,345

TWO-COLOR SHIFTING DEVICE FOR PRINTING RIBBON

Masato Suzuki, Yokohama, Japan, assignor to Amano Corporation, Japan

Filed Jun. 26, 1992, Ser. No. 904,695
Claims priority, application Japan, Jun. 27, 1991, 3-057683
Int. Cl.[5] B41J *33/54*
U.S. Cl. 400—211 **1 Claim**



1. A two-color shifting device for a printing ribbon, in which when a notched pinion provided with feed gear and intermittent feed gear formed alternately thereon in a circumferential direction thereof is pushed by a printer in order to be moved to a two-color shifting position against a compression spring, a two-piece gear formed on a feed wheel to be rotated by a motor is brought into mesh with said feed gear and intermittent feed gear in turn, respectively, to cause said notched pinion to make a feed-rotation, so that a switch cam formed on said notched pinion switches a ribbon cassette between an upper position and a lower position to effect a two-color shifting, wherein said two-color shifting device for printing ribbon is characterized by:

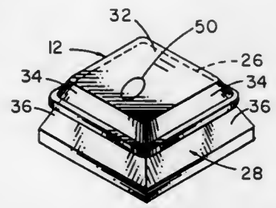
said feed gear and intermittent gear axially spacedly arranged alternately on the peripheral surface of said notched pinion, a two-piece gear formed of a notched gear meshable with said feed gear and an intermittent gear meshable with said intermittent notched gear being arranged on both front and rear sides of the peripheral surface of said feed wheel, with a mesh-prevention side thinner than a distance between said feed gear and said intermittent feed gear being left at a center thereof, when a normal printing is effected, said feed gear being in contact with said mesh-prevention side to prevent the feed gear from meshing with said notched gear, however, when said notched pinion is moved to said two-color shifting position, said feed gear and intermittent feed gear being brought into mesh with said notched gear and intermittent gear, respectively, so that said notched pinion makes a feed-rotation.

5,183,346

KEYCAP OVERLAY SNAP-ON SYSTEM

Herbert Tesar, 3382 Capital Circle NE., Tallahassee, Fla. 32308

Filed May 15, 1992, Ser. No. 883,530
Int. Cl.[5] B41J *5/08, 5/10*
U.S. Cl. 400—490 **8 Claims**



1. A system for converting the graphic symbols on a computer data entry keyboard to another set of graphic symbols such as another language of scientific symbols, the data entry keyboard having a plurality of data entry keys, said data entry keys having an upper exterior rectangular surface and downwardly extending sides, comprising in combination:

a plurality of keycaps, each keycap being adapted for positioning over the upper exterior surface of a data entry key on the computer data entry keyboard and adjacent to the downwardly extending sides of the data entry key, and having a top rectangular surface corresponding in size and shape to the upper exterior surface of the data entry key over which it is to be positioned, and further having a plurality of sidewalls extending downwardly and flared outwardly from the top rectangular surface for mateable receiving the adjacent sides of the data entry key to be covered, and a rim outwardly depending peripherally at a lower edge of the sidewalls, the rim having a plurality of lugs positioned midway on an inner edge thereof, for contacting the data entry key and further for separating an inner surface of the sidewall from the data entry key, each keycap having formed on the top rectangular surface thereof a first indicia corresponding to the graphic symbol to be displayed upon the striking of the data entry key, and still further having a second indicia on an interior surface thereof, the second indicia corresponding to the graphic symbol on the upper surface of the data entry key;

a cabinet having a size and shape adapted to receive the plurality of keycaps that are in a stacked relationship and an open top end for receiving the stacked keycaps; and

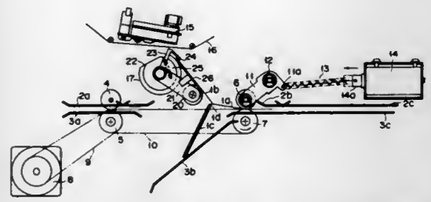
a lid for protecting the plurality of stacked keycaps when stored in the cabinet, the lid being sized to overlap a plurality of sidewalls of the cabinet and having an interior surface adapted to engage an upper edge of the cabinet.

5,183,347

APPARATUS FOR PRINTING IMAGES ON BOOKLETS

Kazuhiko Higuchi, Kawasaki; Shuzo Hirahara; Tutomu Saito, both of Yokohama; Hitoshi Nagato, Kawasaki, and Akito Iwamoto, Kamakura, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 627,592, Dec. 14, 1990, abandoned.
This application Jul. 28, 1992, Ser. No. 920,528
Claims priority, application Japan, Dec. 15, 1989, 1-323929
Int. Cl.[5] B41J *11/42*
U.S. Cl. 400—583.3 **9 Claims**



6. A process for printing images on booklets including a transparent page having one viewing face and another recording face comprising the steps of:

providing means for printing images on the recording face of the transparent page of the booklet;

transporting the recording face of the transparent page of the booklet to the printing means;

detecting on the booklet to be transported to the printing means whether the top or bottom of the booklet is transported first; and

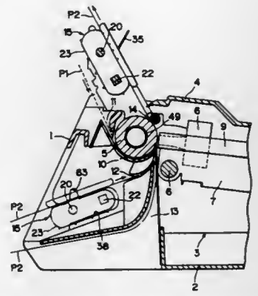
changing the layout of the images by means of one of an inverted image process and an image-by inversion process, based on whether the booklet on which the images are to be recorded is inserted into the apparatus with its top or bottom fed first and controlling printing of the images on the recording face of the transparent page of the booklet transported through the printing means.

5,183,348

PRINTER HAVING TRACTOR UNIT ATTACHABLE TO ONE OF UPSTREAM AND DOWNSTREAM SIDES OF PLATEN

Hiroyuki Kato, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jun. 8, 1992, Ser. No. 895,107
Claims priority, application Japan, Jun. 14, 1991, 3-044904[U]
Int. Cl.[5] B41J *11/26*
U.S. Cl. 400—616.2 **11 Claims**



1. A printer for printing an image on a printing sheet comprising;

a chassis;

a platen rotatably supported by the chassis for supporting and feeding the printing sheet in a sheet feeding direction, the platen defining a printing section;

a tractor unit for feeding the printing sheet to the printing section, the chassis providing a first tractor unit attaching portion positioned downstream of the platen with respect to the sheet feeding direction and a second tractor unit attaching portion positioned upstream of the platen, the tractor unit being selectively mounted on one of the first and second tractor unit attaching portions; and

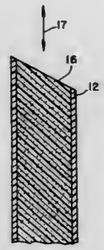
means for preventing another identical tractor unit of another printer from being attached onto one of the first and second tractor unit attaching portions if remaining one of the second and first tractor unit attaching portion has already accommodated therein the tractor unit.

5,183,349

LIPSTICK DISPENSER FORMED WITH LIPSTICK FORMULATION

Melvin E. Kamen, Highlands, N.J., assignor to Revlon Consumer Products Corporation, New York, N.Y.

Filed Nov. 15, 1990, Ser. No. 613,036
Int. Cl.[5] A45D *40/00, 40/18, 40/20*
U.S. Cl. 401—88 **5 Claims**



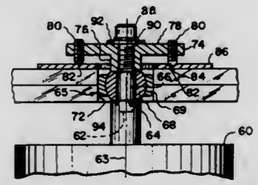
1. In combination, a lipstick bullet comprising a lipstick formulation suitable for application to the lips; and a dispenser sized and shaped so as to circumferentially encase said lipstick bullet; said dispenser comprising 5–50% lipstick formulation and 50–95% thermoplastic copolymer hardening agent wherein the color of said dispenser replicates the color of said lipstick bullet which is moveable relative to the dispenser such that the lipstick bullet can be ejected and retracted from the dispenser.

5,183,350

ADJUSTABLE FIXED MOUNT FOR A HOLOGON DEFLECTOR

Charles J. Kramer, Rochester, N.Y., assignor to Holotek Ltd., Rochester, N.Y.

Filed Dec. 12, 1991, Ser. No. 806,619
Int. Cl.[5] F16D *1/12*
U.S. Cl. 403—4 **10 Claims**



3. A mount for retaining a hologon disc unit having a central opening on a drive shaft having a rotational axis which comprises means connecting said unit to said shaft in fixed rota-

VOL 1147 ISS 1 FE 2 1993 UMI

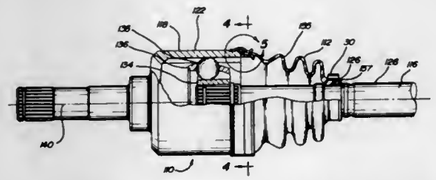
tional angular position therewith, which comprises a hub having a rotational axis coincident with the rotational axis of said shaft, said hub being disposed in said opening of said unit, means in said hub permitting angular movement of said unit about a plane perpendicular to said rotational axis, means included in said connecting means for retaining said unit on said shaft, said retaining means including alignment means spaced from said rotational axis and extending to said disc unit for changing said perpendicular angular orientation thereof, and said retaining means further comprising a cap attached in fixed nonrotating relationship to said shaft and extending radially from said rotational axis, said alignment means further comprising a plurality of members extending in the direction of said rotational axis into contact with said unit and angularly spaced from each other about said rotational axis and attached to said cap in independently movable relationship for tilting said unit to any angular position with respect to said plane perpendicular to said rotational axis to set said unit in fixed position substantially, exactly perpendicular to said rotational axis thereby substantially eliminating wobble of said unit about said perpendicular plane as said unit rotates.

5,183,351

BOOT RETAINER FOR A MECHANICAL JOINT

Dean J. Schneider, Highland, Mich., assignor to GKN Automotive, Inc., Auburn Hills, Mich.

Filed Jul. 23, 1991, Ser. No. 734,599
Int. Cl.[5] F16J *15/52*; F16L *51/02*
U.S. Cl. 403—50 **5 Claims**



1. A two piece boot retainer for a mechanical joint comprising:

an annular inner band rotatable with said mechanical joint, said annular inner band having a first end and a second end and defining a central axis, said annular inner band having its entire outer diameter smaller than the outer diameter of said mechanical joint;

first flange means located at said second end of said annular inner band and extending away from said central axis, said first flange means abutting a face of an outer member of said mechanical joint;

an annular outer band rotatable with said mechanical joint, said annular outer band having a first end and a second end, said second end fixably attached to and surrounding said mechanical joint, said first end of said annular outer band surrounding said second end of said annular inner band;

second flange means located at said first end of said annular outer band and extending towards said central axis;

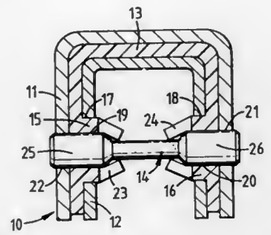
a portion of a boot sandwiched between said annular inner band and said annular outer band for sealing said mechanical joint and for retaining said boot on said mechanical joint by said first and second flange means.

5,183,352

PIVOT JOINT

Peter J. Carpenter, Labertouche, Australia, assignor to Trico Products Corporation, Buffalo, N.Y.

Filed Feb. 19, 1992, Ser. No. 838,484
Claims priority, application Australia, Feb. 20, 1991, PK4687
Int. Cl.[5] F16C *11/00*
U.S. Cl. 403—79 **6 Claims**



1. A pivot joint for pivoting together first and second members, at least said first member being of channel section at said joint and said second member being adapted to seat within said first member, said pivot joint comprising:

a joint body of channel section adapted to seat within said first member and to receive said second member therewithin, said joint body having a pair of inwardly extending trunnions, each said trunnion having a bore therethrough, and being adapted to cooperate with corresponding apertures in said second member therewithin, each said bore being coaxial with apertures in said first member;

a pivot pin adapted to extend through said apertures of said first and second members and through each said bore in said trunnions of said joint body;

said pivot pin being retained in each said bore of said joint body by engagement with an inwardly directed resilient collar on each of said trunnions of said joint body; and

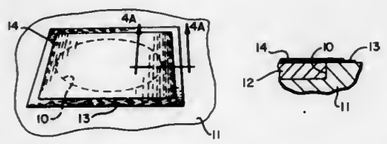
wherein said trunnions are annular and each said resilient collar is frusto-conical in shape such that an innermost edge of each said collar has an internal diameter less than a diameter of said bore in said trunnions to which it is attached.

5,183,353

PAVEMENT HOLE SEAL COVERED REPAIR FILL

Jack E. Buckelew, P.O. Box 64840, Dallas, Tex. 75206

Filed Oct. 21, 1991, Ser. No. 780,070
Int. Cl.[5] E01C *11/02*
U.S. Cl. 404—69 **12 Claims**



1. A water tight seal over covered paving repair material filled pavement hole comprising: a cleaned out pavement opening filled with a paving repair material fill tightly compacted therein; a coating layer of tar applied over the top of the paving repair material fill and extended outwardly beyond the peripheral edge of the hole and fill therein in every direction; and a sheet, laid down on said layer of tar, of material from the class of materials including, tar paper, an asphalt impregnated fiberglass coating material, a tar impregnated fiberglass coating material, linoleum and vinyl flooring material cut to slightly less area than and while smaller in area to substantially the same shape of the tar layer previously laid down.

5,183,354

PROCESS FOR IN SITU RECYCLING OF ELECTRICAL POWER DISTRIBUTION SWITCHYARD AGGREGATE SURFACING

Roger G. Wright, Pasco; Leon J. Lindbloom, Richland, and Lewis C. Midlam, Kennewick, all of Wash., assignors to SCM Consultants, Inc., Kennewick, Wash.

Filed Jul. 3, 1991, Ser. No. 725,437
Int. Cl.[5] E01C *19/00, 3/00*
U.S. Cl. 404—81 **25 Claims**



1. A process for recycling aggregate surfacing of an electrical power distribution switchyard, comprising the steps of:

removing a surface having a mixture of course aggregate and fine aggregate to expose an area;

separating the fine aggregate from the coarse aggregate;

replacing the fine aggregate on the exposed area to form a layer of fine aggregate; and

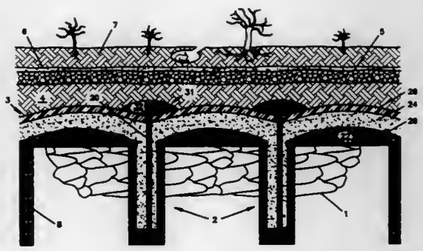
replacing the coarse aggregate on the layer of fine aggregate.

5,183,355

METHOD OF DRAINING WATER THROUGH A SOLID WASTE SITE WITHOUT LEACHING

Russell L. Treat; Glendon W. Gee, and Greg A. Whyatt, all of Richland, Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Nov. 12, 1991, Ser. No. 791,746
Int. Cl.[5] B09B *5/00*
U.S. Cl. 405—128 **19 Claims**



1. A method of preventing leaching of solid waste sites having a top and a bottom, comprising:

(a) placing at least one drain hole extending from a first portion near the top of the solid waste site, through the solid waste site, to a second position substantially below the solid waste site,

(b) sealing the perimeter of each drain hole, and

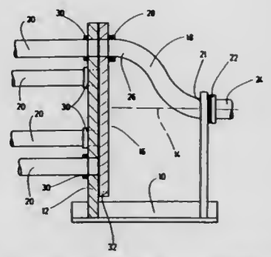
(c) directing percolating water toward each drain hole and beneath the solid waste site.

5,183,356

METHOD AND DEVICE FOR DISTRIBUTING PUMPABLE THICK MATTER INTO SEVERAL DELIVERY PIPES

Manfred Kempf, Aich, and Karl Schlecht, Stuttgart, both of Fed. Rep. of Germany, assignors to Putzmeister-Werk Maschinenfabrik GmbH, Aichtal, Fed. Rep. of Germany

Division of Ser. No. 640,410, Mar. 20, 1991, Pat. No. 5,127,429.
This application May 28, 1992, Ser. No. 889,857
Int. Cl.[5] E21D *11/10*
U.S. Cl. 405—146 **5 Claims**



1. A method of distributing sludge-type matter from a supply line into several distributor conduits, comprising the following steps:

directing the flow of matter from the supply line through a manifold conduit rotatably coupled about an axis of rotation on one end to the supply line and coupled on the other end to a rotating plate, the rotating plate being rotatable about the axis of rotation relative to a distributor plate, the distributor plate including one end of each of the distributor conduits coupled thereto and, thus, adapted to be coupled in fluid communication with the manifold conduit;

rotating the rotating plate relative to the distributor plate to align the manifold conduit with a respective distributor conduit and, in turn, directing the flow of matter therethrough; and

measuring the fluid pressure on the output side of the delivery conduit receiving the flow of matter therethrough and rotating the rotating plate to align the manifold conduit to another distributor conduit upon the fluid pressure exceeding a predetermined value.

5,183,357

RIVET FASTENER WITH DRILLING BIT

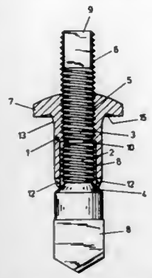
Erich Palm, Heerbrugg, Switzerland, assignor to SFS Stadler Holding AG, Heerbrugg, Switzerland

PCT No. PCT/EP90/02291, § 371 Date Sep. 13, 1991, § 102(e) Date Sep. 13, 1991, PCT Pub. No. WO91/11628, PCT Pub. Date Aug. 8, 1991
PCT Filed Dec. 21, 1990, Ser. No. 761,880
Claims priority, application Fed. Rep. of Germany, Feb. 5, 1990, 4003373
Int. Cl.[5] F16B *13/04, 13/06*
U.S. Cl. 411—29 **20 Claims**

1. A self-drilling rivet fastener, comprising a rivet casing and a rivet spindle inserted into said rivet casing, said rivet casing having an internal thread extending over at least a part of a length thereof and including a sleeve portion and a stop flange of a larger diameter, said rivet spindle including a bolt-shaped shaft having an external thread over at least a part of a length thereof and corresponding to said internal thread and adapted for threading thereinto and a head unit terminating with a drill bit for producing a hole in a workpiece for receiving the fastener, said internal and external threads being formed such that rotation of said rivet spindle to produce a hole in the workpiece will cause said rivet spindle to thread into said sleeve portion to set the rivet, said flange having shaped surface

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means on a face thereof facing the workpiece to provide a fitting mount of said rivet casing against the workpiece, said



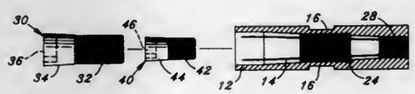
rivet casing being formed with predetermined breaking grooves extending parallel to an axis of the casing over a part of the length thereof starting at said stop flange.

5,183,358

EXPANDABLE FIXTURE PIN FOR MACHINE TOOLS

Albert E. Foulkes, Jr., Bountiful Dr., Hackettstown, N.J. 07840, and John M. McHugh, 431 Beacon Hill Dr., Cheshire, Conn. 06410

Filed Jun. 29, 1992, Ser. No. 905,421
Int. Cl.[5] F16B *13/06*
U.S. Cl. 411—59 **7 Claims**



1. An expandable fixture pin for machine tools comprising:
a. a cylindrical body having an axial cavity defined from one end by progressively smaller sections including a first tapered section, a first cylindrical threaded section, a second tapered section and a second cylindrical threaded section, the body having peripherally spaced longitudinal slits outward from the tapered sections,
b. a first screw having a tapered head tapered comparably to the first tapered section and having threads engaging in the first threaded section and a hand-tool-engageable recess in the end of the head, and
c. a second screw having a tapered head tapered comparably to the second tapered section and having threads engaging in the first threaded section and a hand-tool-engageable recess in the end of the head,
whereby the body can be selectively expanded adjacent the tapered sections by rotating the respective screws by a hand tool inserted into said one end of the body.

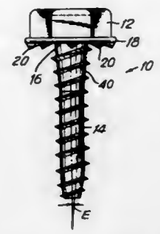
5,183,359

ROTARY FASTENER WITH ANTI-STRIP-OUT NIBS

Gerald D. Barth, South Elgin, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed May 12, 1992, Ser. No. 881,523
Int. Cl.[5] F16B *39/282, 39/26*
U.S. Cl. 411—188 **9 Claims**

1. A torque-absorbing rotary threaded fastener member adapted to be tightened by rotation in one direction, and comprising a substantially radially extending clamping face, said clamping face having a periphery, a threaded shank extending axially therefrom, and a plurality of relatively small integral nibs on said clamping face spaced from one another by substantially planar uninterrupted portions of said clamping face and projecting axially therefrom for engaging a workpiece, each said nib being a polyhedron having an end wall on said periphery of said clamping face, a leading wall facing in the direction of tightening of said fastening member and being angularly disposed with respect to the plane of the clamping face by a leading wall angle, and a trailing wall facing opposite to the direction of tightening of said fastener member and being angularly disposed with respect to the plane of the clamping face by a trailing wall angle, said leading wall and said trailing



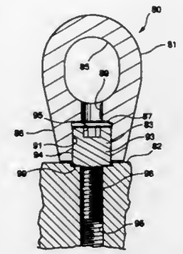
wall meeting each other and defining an apex having an outer end and an inner end, said outer end being where said apex meets said end wall, said apex being inclined by a taper angle with respect to the plane of said clamping face so that nibs increase in axial height from said inner end of said apex to said outer end of said apex, wherein said trailing wall angel is greater than said leading wall angle.

5,183,360

LIFTING EYEBOLT ASSEMBLY

Lewis G. Freeman, 1509 Pontiac Dr., Kokomo, Ind. 46901

Continuation-in-part of Ser. No. 569,922, Aug. 20, 1990, Pat. No. 5,054,982. This application Aug. 13, 1991, Ser. No. 744,255
The portion of the term of this patent subsequent to Oct. 8, 2008, has been disclaimed.
Int. Cl.[5] F16B *23/00, 45/00;* **B66C** *1/34*
U.S. Cl. 411—400 **17 Claims**



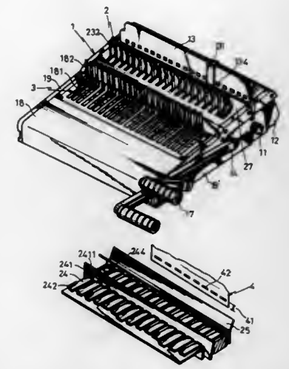
1. A lifting eyebolt assembly for connection between a workpiece to be lifted and a lifting device, the assembly comprising:
a fastener having a head portion, a shaft portion and means for fastening said shaft portion to the workpiece;
a load-bearing ring having an eye portion and a base portion, said eye portion having an opening for connection to the lifting devices, said base portion defining a cavity for receiving and containing said head portion of said fastener therein;
means, within said cavity, for engaging said head portion of said fastener to said base portion of said load-bearing ring with said shaft portion of said fastener extending outwardly therefrom; and
means for accessing said head portion of said fastener when said fastener is contained within said cavity of said base portion.

5,183,361

PUNCHING AND BINDING MACHINE

Jackson Ho, 1st Fl., 17, Lane 10, Chung Shan Rd., Panchiao City, Taiwan

Filed Nov. 4, 1991, Ser. No. 786,939
Int. Cl.[5] B42B *5/10*
U.S. Cl. 412—16 **5 Claims**



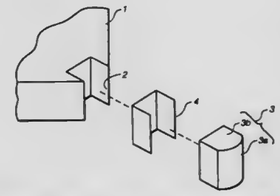
1. A punching and binding machine to punch papers by transverse feeding of punchers and then bind such papers with a binding ring, comprising
a body composed of a left body element and a right body element, having a knob, a pull lever and a control lever at their appropriate positions on a side of the right body element, a stop plate extended upwards from the back of the body, a movable adjusting board mounting on the stop plate, a seat portion formed on the back of the adjusting board and movably fixed on the stop plate by means of a fixing bolt, and a plurality of punching marks located beneath the stop plate for aligning of papers;
a punching mechanism located in the rear part of the body, incorporated with a linking gear on the body and engaging with a lower gear below a control cam in connection with an upper gear for engaging with a rack beneath a feeder block with a plurality of vertical puncher control levers to push a plurality of punchers arranged in parallel, each positioned in a slot below a fixing plate, having a bent portion at a side of its rear end and an arched cutter at its front end, and having a paper holder in front of the punchers incorporated with a support element having an eccentric rod in it so that by rotation of the knob, the distance between the position to be punched and the edge of papers can be controlled, and a upper cover to cover the punching mechanism;
a binding mechanism having a sliding slot and two fixing holes on the left body element, and a sliding slot and two fixing holes on the right body element for installation of a sliding board, a support rod and a transmission shaft, in which the sliding board has a positioning element at one end and another positioning element at another end, each of the positioning elements has an oblique slot at the front end for holding of a tab extended from an end of the shifter holder, and to position the positioning elements in the sliding slots on the left and right body elements, a rack is located at the lower end of each positioning element to engage with a sector gear at each end of the transmission shaft which is extended to outside of the right body element to connect a control lever, the shifter holder has a plurality of L-like shifters, a passing slot and positioning slot are designed below the sliding slot of the left body element for fixing of a stopper element by means of a round head bolt in order to permit the stopper element to slide forwards or backwards in the passing slot and the sliding slot, and an upper casing is used to cover the binding mechanism with a plurality of long slots at appropriate positions for passing of the shifters, and a fixing plate extended vertically upwards from the back end of each long slot for holding of a binding ring.

5,183,362

CUTTING TOOL ASSEMBLY

Yutaka Kuroyama; Masami Maeno, and Ikuo Sakakibara, all of Aichi, Japan, assignors to Nippon Oil and Fats Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 639,244, Jan. 8, 1991, abandoned. This application Mar. 30, 1992, Ser. No. 861,336
Claims priority, application Japan, Jan. 10, 1990, 2-1369[U]; Feb. 21, 1990, 2-17216[U]; Apr. 13, 1990, 2-40184[U]
Int. Cl.[5] B23P *15/28*
U.S. Cl. 407—118 **7 Claims**



1. A cutting tool for cutting a workpiece, the cutting tool comprising:
a base having a thickness and a corner, a recess being formed at the corner in the base so as to extend the entire thickness of the base, the recess having a first inner surface and a second inner surface which are substantially perpendicular to each other; and
a cutter assembly including a cutting tip and a support extending the entire thickness of the base such that the cutting tip has a pair of cutting edges on opposite sides thereof; and wherein
the tip is substantially triangular in shape, having a first contact surface and a second contact surface which are substantially perpendicular to each other,
the support is substantially rectangular in shape with first and second mutually opposite side surfaces and first and second mutually opposite end surfaces which are substantially perpendicular to and smaller in area than the first and second side surfaces,
each of the side surfaces of the support is smaller in area than the second inner surface of the recess,
the first contact surface of the tip is attached to the first end surface of the support,
the second end surface of the support is attached to the first inner surface of the recess, and
the second contact surface of the tip and the second side surface of the support are attached to the second inner surface of the recess such that a distal portion of the first inner surface of the base is exposed.

5,183,363

NON-CONTACT COOLANT SUPPLY APPARATUS

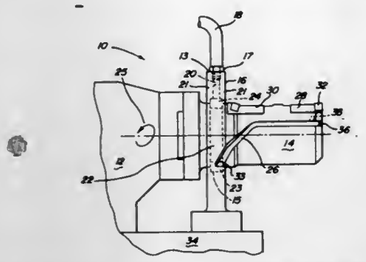
Lee Reiterman, Royal Oak; Dale D. Martin, Sterling Heights, and Joseph Krysik, Ortonville, all of Mich., assignors to GTE Valenite Corporation, Troy, Mich.

Filed Jul. 17, 1992, Ser. No. 916,297
Int. Cl.[5] B23B *47/34*
U.S. Cl. 408—59 **7 Claims**

1. A non-contact coolant supply apparatus for a cutting tool for cutting a workpiece wherein there is relative cutting motion about an axis of rotation between a cutting member mounted upon a tool shank, said shank having at least one helical coolant passage opening in the outside diameter of the

VOL 1147 ISS 1 FEB 2 1993 UMI

tool shank, and an annular groove formed therein and a workpiece; wherein coolant is supplied from a coolant supply means through a ring bore defined by ring bore walls which extend from an outer peripheral surface to an inner peripheral surface of a coolant supply ring which is fixedly mounted; said tool shank passing through said coolant supply ring with a close clearance therebetween such that the inner peripheral surface



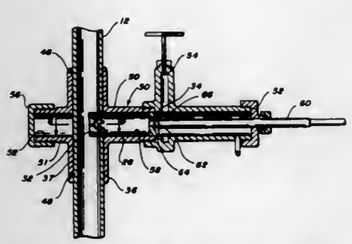
is positioned directly over, and circumferentially surrounds said annular groove in the tool shank so that coolant is introduced through the ring bore to the annular groove on the tool shank, and the rotation of the tool shank causes the helical coolant passage to act as an impeller to force the coolant through the helical coolant passages and into close proximity to the cutting members.

5,183,364

DEVICE FOR INSTALLING AN IN-LINE VALVE

Ronald B. Hardwig, Rte. 2, Box 109, Makanda, Ill. 62958

Filed Nov. 26, 1991, Ser. No. 798,628
Int. Cl.[5] B23B *41/08*
U.S. Cl. 408—67 **10 Claims**



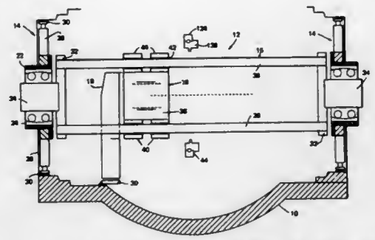
1. A device for installing an in-line valve in a pipe having sidewalls, said device comprising a hollow coring bit with a cutting end and a driven end and a boring and support housing sealed to the pipe, said housing having first and second closed chambers communicating with the pipe where it is sealed to the housing, said first chamber having a passage for containing and supporting the hollow coring bit and directing the cutting end of the hollow coring bit against and through the sidewalls of the pipe cutting away sections thereof, said second chamber having a passage in alignment with the passage in the first chamber for receiving the cutting end of the hollow coring bit, said housing having means for reciprocating the hollow coring bit in the passages of the first and second chambers, said hollow coring bit having a pressure relief hole in the driven end, said pressure relief hole connecting the interior of the hollow coring bit with the interior of the first chamber to substantially equalize axial pressure on the driven end, said hollow coring bit forming means for plugging flow in the pipe when the cutting end of the hollow coring bit is in the second chamber whereby said hollow coring bit forms an in-line valve when the hollow coring bit is axially reciprocated between an open and a closed position.

5,183,365

BORING AND SURFACING MACHINE

George Silk, Nottinghamshire, England, assignor to Silk Engineering (Derby) Limited, Derby, England

PCT No. PCT/GB89/01412, § 371 Date May 24, 1991, § 102(e) Date May 24, 1991, PCT Pub. No. WO90/06201, PCT Pub. Date Jun. 14, 1990
PCT Filed Nov. 24, 1989, Ser. No. 689,794
Claims priority, application United Kingdom, Nov. 25, 1988, 8827538
Int. Cl.[5] B23B *41/00*
U.S. Cl. 408—80 **22 Claims**



1. A machine tool comprising a rotatable carriage rotatably located on mounting means, the mounting means enabling the machine tool to be positioned and secured relative to a work piece, the rotatable carriage supporting a tool carriage mounted for axial movement on the rotatable carriage relative to the axis of rotation of the rotatable carriage and a tool post mounted on the tool carriage for radial movement relative to the tool carriage, drive means for rotatably driving the rotatable carriage and for driving the tool carriage axially relative to the rotatable carriage, and for driving the tool post radially relative to the tool carriage, wherein the drive means for driving the tool post comprises a power source located remotely from the tool post and a tool post drive transmission coupling the power source to the tool post and including a drive lead screw coupled to the power source and engaging a worm gear having an internal thread engaging a tool post lead screw attached to the tool post.

5,183,366

ROD HANDLER APPARATUS

Ivor N. Paech, Christies Beach, Australia, assignor to Longyear Company, Salt Lake City, Utah

Filed Dec. 4, 1990, Ser. No. 621,755
Int. Cl.[5] E21B *19/14*
U.S. Cl. 414—22.52 **15 Claims**

8. A rod handler apparatus for selectively transferring a drill rod from a first position in a stack in a rod rack to a second position substantially aligned with a bore hole which has a central axis comprising:

a base having a longitudinal axis, the base including a rear end portion adjacent to the bore hole and a front end portion that is longitudinally spaced from the rear end portion and is adjacent to the rod rack;

an elongated boom assembly having a central axis of elongation, the boom assembly including a first end portion and a second end portion;

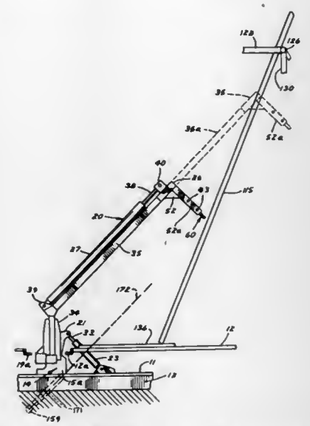
means for mounting the boom assembly to the base, said boom assembly mounting means mounting the boom assembly for movement relative to the base between a boom assembly rod release first position and a boom assembly rod pick up position;

a rod gripping assembly including first jaw means movable between a jaw mens rod gripping position and rod release position and the first power operated means for moving the first jaw means between the rod gripping and rod release positions;

an elongated arm member including a first end portion and a second end portion, the arm member second end portion being closer to the rod rack than the arm member first end portion when the gripping assembly is positioned adjacent to a rod in the rod rack;

first means for mounting the arm member first end portion to the boom assembly second end portion;

gripping assembly mounting means mounted to the arm member second end portion, the gripping assembly mounting means mounting the gripping assembly for limited free pivotal movement relative to the arm member



about a gripping assembly axis which extends in a transverse direction relative to the base; and

second power operated means for operatively moving the boom assembly and thereby moving the arm member to move the gripping assembly upwardly and longitudinally rearwardly relative to the base after the gripping assembly has been positioned adjacent to a rod in the rod rack and thence moving the gripping assembly into alignment with the bore hole central axis, said second power operated means being connected to at least one of the boom assembly and the boom assembly mounting means

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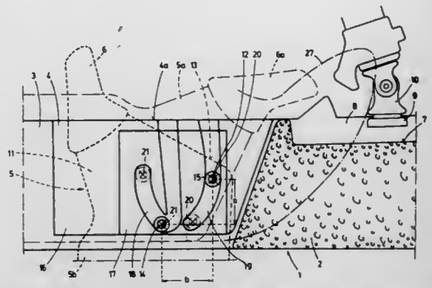
5,183,367

DAGGER BOARD STORAGE HOUSING FOR SAILBOARDS

Marc Namur, IM Harras, 10, D-6100 Darmstadt, Fed. Rep. of Germany

Filed Sep. 3, 1991, Ser. No. 753,662
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1990, 4028033; Sep. 17, 1990, 4029422
Int. Cl.[5] B63B *35/79*
U.S. Cl. 441—79 **2 Claims**

1. Dagger board bearing for sailboards, with a dagger board casing (**4**) inserted in a sailboard (**1**), wherein a dagger board (**5**) introductible from above and having a first handle (**6**) projecting past a topside (**4***a*) of the sailboard (**1**) is pivotally supported, characterized by an external pivot pin (**12**) in the zone of a top edge (**13**) of the dagger board (**5**), arranged at a top section (**11**) of the dagger board (**5**), and by an internal pivot pin (**14**) offset with respect to the external pivot pin (**12**), these pivot pins (**12, 14**) being molded onto one side of the top section (**11**) of the dagger board (**5**) with a mutual first spacing (**a**) in the longitudinal direction of the dagger board (**5**) and with a mutual second spacing (b) in the transverse direction of the dagger board (**5**), as well as by two guide and bearing grooves (**18, 19**) to accommodate the pivot pins (**12, 14**) arranged in a sidewall (**16**) of the dagger board casing (**4**) and designed to be of a curved shape, these bearing grooves (**18, 19**) extending in the vertical direction of the dagger board casing (**4**) up to the topside (**4***a*) of the sailboard (**1**) in such a manner that, during the outward and inward pivoting of the dagger board (**5**), the two pivot pins (**12, 14**) form two variable fulcrums (**20, 21**), and the dagger board (**5**) pivots about a variable, imaginary fulcrum (**22**) resulting from the point of



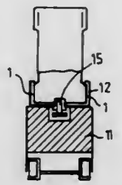
intersection of two normals (**23, 24**) with two tangents (**25, 26**) in the guide and bearing grooves (**18, 19**) at the variable fulcrums (**20, 21**) for respective positions of the dagger board (**5**) during the outward and inward pivoting thereof.

5,183,368

APPARATUS FOR TRANSPORTING LIGHT LOADS BY MEANS OF SELF-PROPELLED CARRIAGES ON RAILS

Pierre René Douard, Voisins le Bretonneux, France, assignor to Fluidelec, France

Filed May 23, 1991, Ser. No. 704,487
Int. Cl.[5] B65H *5/00*
U.S. Cl. 414—222 **13 Claims**



1. Apparatus for transporting light loads in the range of 10 to 15 kg comprising:

at least one self-propelled carriage having a longitudinal axis and movable on rails along said axis, said rails having horizontal and vertical portions, said carriage being provided with a first assembly profile oriented parallel to said axis and with first locking means;

at least one removable container having a hollow body and a cover which is hinged on a lateral face of said body about a pivoting axis, said container having a second assembly profile formed both on said body and on said cover and oriented at right angles with said pivoting axis, and shaped so as to be slidingly assembled with said first assembly profile once placed in an assembly position by effecting a relative translational displacement of said carriage with respect to said container along said longitudinal axis on a loading portion of said rail, said removable container further having first and second bearing surfaces respectively formed on said body and on said cover and oriented at right angles with said pivoting axis, and second locking means which cooperate with said first locking means so as to provide a rigid attachment between said carriage and said container once assembled;

at least one loading station comprising means for placing and

VOL 1147 ISS 1 FE 2 1993 UMI

retaining said container in front of said loading portion in said assembly position;

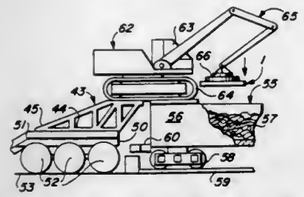
at least one unloading station comprising an unloading portion of rail, holding means for retaining said container while being transported by said carriage on said unloading portion, two parallel conveyors disposed in front of said unloading portion and under said bearing surfaces when said carriage provided with said container is in said unloading portion so as to allow disassembling of said container from said carriage according to an unloading sequence comprising an unlocking step of said locking means, a translational displacement of said carriage while said container is retained by said holding means and a conveying step of said container of said conveyor once said container is disengaged from said carriage.

5,183,369

ACCESS AND SUPPORT APPARATUS FOR LOADING AND UNLOADING GONDOLA CARS

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Filed Apr. 1, 1991, Ser. No. 678,229
Int. Cl.[5] B65G *67/02*
U.S. Cl. 414—339 **6 Claims**



1. In an open top gondola railroad car and a crane-type crawler having parallel tracks and an electromagnet for unloading the open top gondola railroad car, the improvement comprising an adjustable pallet for positioning on the top edges of upwardly-extending sides defining the open top of the gondola railroad car and supporting the crane-type crawler, said adjustable pallet comprising a frame characterized by a pair of spaced spanning members; at least two-cross members connecting said spanning members in spaced relationship; a flat top plate spanning said frame substantially equidistant form the ends of said spanning members for supporting the crane-type crawler; a pair of guides upward-standing from said top plate in spaced relationship for guiding the tracks of the crane-type crawler over said adjustable pallet and a web radius provided in said guides for accommodating said electromagnet; and adjusting means carried by said frame for adjustably contacting the sides of the gondola railroad car and compensation for irregularities due to bulging of the sides of the gondola railroad car.

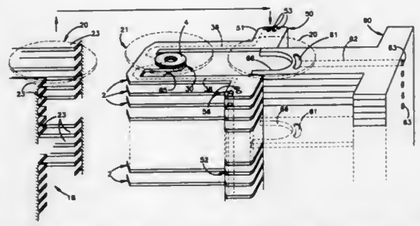
5,183,370

APPARATUS FOR PLACING OR STORING FLAT ARTICLES IN A CASSETTE WITH INTERMEDIATE RACKS

Didier Cruz, Grenoble, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 17, 1990, Ser. No. 628,487
Claims priority, application France, Dec. 29, 1989, 89 17450
Int. Cl.[5] B65G *65/23*
U.S. Cl. 414—416 **10 Claims**

1. An apparatus for placing or storing flat articles (**20**) in a storage cassette (**18**) and which are stored parallel to one another, placed on lateral supports (**23**) with a predetermined number (N) of racks and separated from one another by a predetermined clearance (E) comprising a gripping means (**50,70**) having the same number (N) of horizontal tracks (**2**) separated from one another by the same predetermined clearance (E) and each terminated by a gripping end (**6**), wherein are positioned means for the gripping and releasing of a flat article (**20**) with respect to a corresponding rack of the storage cassette (**18**); an intermediate cassette (**60,80**) for temporarily holding one or several articles (**20**) which must be stored again in the storage cassettes having a second number (M) of horizontal racks, equal to or greater than the first number (N) of racks of the storage cassette (**18**) and which are spaced from one another by said clearance (E) in order to receive the flat



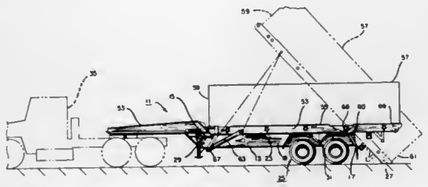
articles (**20,21,22,25**); and a relative horizontal translation between the gripping means (**50,70**) and the intermediate cassette (**60,80**) in order to obtain an interpenetration of the gripping means (**50**) in the intermediate cassette (**60**) taking place by means of recesses (**65**) to the rear of each of the tracks (**2**) of the gripping means (**50**), in order to enable the intermediate cassette (**60**) to penetrate the gripping means (**50**) from the rear and up to a mobile part (**4**) of the track, permitting the transfer in both directions of at least one flat article (**20**) between the gripping means (**50,70**) and the intermediate cassette (**60,80**).

5,183,371

EXTENDABLE ROLLOFF TRAILER

Harold W. O'Daniel, 1018 N. Commercial Blvd., Arlington, Tex. 76017

Filed Apr. 5, 1991, Ser. No. 680,986
Int. Cl.[5] B60P *1/32*
U.S. Cl. 414—477 **6 Claims**



1. An extendable rolloff trailer, comprising:

a main trailer frame having a front end, a rear end and opposing sides which together define a top support surface, the main trailer frame also including a rear wheel assembly for rotatably supporting the main trailer frame for movement over a surrounding terrain;

an extendable inside frame having opposite sides, a rear portion which is telescopingly received within the opposing sides of the main trailer frame and having a front, tongue portion for coupling with a pulling source;

a tilt frame pivotally mounted on the top support surface of the main trailer frame, the tilt frame having an upper, container support surface of a defined length for supporting a load bearing container of the type having a front end, a rear end, a width and a length which generally approximates the length of the container support surface of the tilt frame and

wherein the tilt frame is provided with a plurality of rollers located generally coplanar with the upper, container

support surface for supporting the load bearing container and for facilitating a discharge of the container from the trailer when the tilt frame is tilted from a horizontal position to an angular position with respect to the main trailer frame;

pivot means operably connected between the main trailer frame and the tilt frame for pivoting the tilt frame and its associated container about a pivot point located on the main trailer frame;

indexing means for securing the extendable frame in a plurality of longitudinally spaced positions with respect to the main trailer frame; and

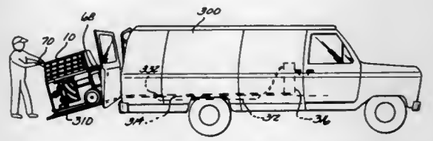
locking means for locking the front end of the container to the tongue portion of the extendable frame, whereby telescopic extension of the extendable frame with respect to the main trailer frame moves the trailer to an extended position which defines a center location between opposing ends of the extended trailer and wherein such telescopic extension redistributes the container load toward the center location of the extended trailer.

5,183,372

VAN-MOUNTED SERVICE CARTS FOR SKILLED TRADESMEN

Daniel Dinverno, 7511 Intervale, Detroit, Mich. 48238-2401

Filed Feb. 12, 1991, Ser. No. 654,213
Int. Cl.[5] B60P *1/00*
U.S. Cl. 414—538 **9 Claims**



1. In a motor vehicle having an enclose cargo storage area with a floor, the improvement comprising:

a removable service cart for transporting tools, the service cart including tool storage means for storing tools and equipment within the service cart and wheel means connected to the service cart for moving the service cart across generally planar surfaces, the wheel means having at least one fixed axis of rotation common with respect to two wheels, the tool storage means including a rectangular box-like lower portion of the service cart having an elongated longitudinal axis normal to the one common fixed axis of rotation, the elongated longitudinal axis defining a length of the lower portion greater than a width and a height of the lower portion, and an upper portion of the service cart having at least two sidewalls inclined and upwardly extending toward one another along at least a part of a length of the upper portion of the service cart, such that a top extending between the sidewalls has a width less than the width of the lower portion, the upper portion having a height substantially the same as the height of the lower portion;

retractable ramp means normally stored on the floor of the motor vehicle and extendible beyond the floor for bridging space between the floor and the adjacent ground to allow removal of the service cart by wheeling the service cart across the floor and across the ramp means to the ground; and

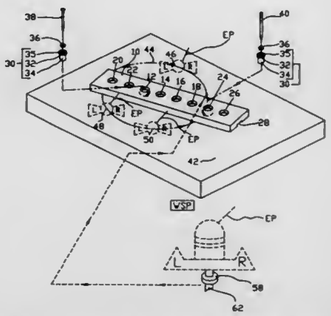
winch means connected to the motor vehicle within the enclosed storage area and connectible to the service cart for winching the service cart across the ramp means between the ground and the floor of the storage area.

5,183,373

CIRCLE MARKING AND CUTTING GUIDE TEMPLATE

Burton R. Floyd, Jr., Williamsburg, Ky., assignor to The Floyd and Gilbert Company, Williamsburg, Ky.

Filed Oct. 18, 1991, Ser. No. 778,525
Int. Cl.[5] B23C *1/20;* **B27C** *5/10;* **B43L** *9/04*
U.S. Cl. 409—179 **12 Claims**



1. A template device for guiding a marking implement in marking circular lines upon a workpiece and, interchangeably, for guiding a cutting bit as in a hand held electric powered router in following the circular lines in a cutting engagement with the workpiece surface comprising;

a) a guide plate comprising a planar member having paralleled opposed major faces;

b) a plurality of guide holes of equal diameter extending thru said major faces;

c) said guide holes comprising a plurality of at least three evenly spaced holes in alignment;

d) said guide holes further comprising a plurality of unevenly spaced holes;

e) the spacing of said unevenly spaced holes being different from the spacing between said evenly spaced holes;

f) said unevenly spaced holes located at the end of said alignment of evenly spaced holes;

g) a first bearing containing pivoting means for said guide plate;

h) said first bearing comprising a bearing shaft, having a center hole, said shaft insertable, rotatable and removable within each of said guide holes;

i) a second bearing containing means for marking;

j) said second bearing comprising a bearing shaft, having a center hole, said shaft insertable, rotatable and removable within each of said guide holes;

k) said second bearing interchanging within one of said guide holes with a like diametered means encircling and centering a cutting bit.

5,183,374

HORIZONTAL BROACH WITH A MOBILE STANDARD

Henri Line, Peymeinade, France, assignor to Helis, Peymeinade, France

Filed Sep. 27, 1990, Ser. No. 589,444
Claims priority, application France, Sep. 27, 1989, 89 12663
Int. Cl.[5] B23D *41/00*
U.S. Cl. 409—286 **7 Claims**

1. A machine-tool, comprising:

a lower base having a substantially horizontal lower means for guiding;

an upper base having an upper means for guiding substantially parallel to said lower means for guiding;

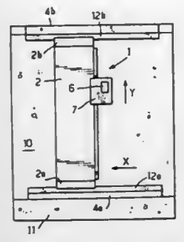
a rigid static support for interconnecting said lower base to said upper base;

a vertical mobile standard having a lower end cooperating with said lower means for guiding and an upper end coop-

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erating with said upper means for guiding, said mobile standard being positioned between said lower base and said upper base;

a broach support mounted on said mobile standard;



a horizontal broach borne by said broach support; and

synchronized drive means cooperating with said mobile standard for driving said mobile standard at each of its ends with respect to said lower and upper bases.

5,183,375

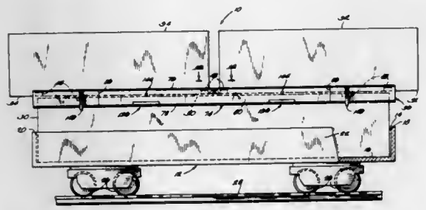
CONTAINER STACKING APPARATUS

Gary L. Fenton, Stoughton; Gerald A. Sill, Edgerton, both of Wis.; Robert S. Ingram, Forth Worth, Tex., and James G. Jimenez, San Francisco, Calif., assignors to Stoughton Trailers, Inc., Stoughton, Wis.

Filed Jan. 18, 1991, Ser. No. 643,998

Int. Cl.[5] B65D *90/12*; B65G *1/14*

U.S. Cl. 410—35 **17 Claims**



6. A container stacking apparatus for use in supporting an upper tier including two cargo containers in stacked relation on a lower tier including a first cargo container, the first cargo container having a length which is greater than the length of each of the two cargo containers, the containers stacking apparatus comprising:

a frame including means for supporting the frame on the lower tier, the frame being adapted to be supported solely by the first cargo container, and means for supporting the upper tier on the frame and in stacked cantilevered relation to the lower tier, the means for supporting the upper tier being adapted to support the pair of cargo containers lengthwise in end-to-end relation, and the frame being adapted to solely support the second tier,

means for releaseably locking the frame down against the lower tier, and

means for releaseably locking the upper tier down on the frame.

5,183,376

ARRANGEMENT FOR LOADING AND UNLOADING OF HEAVY PACKAGES

Per T. Aralt, Hopsnesvn. 75, N-5043 Hop, Norway

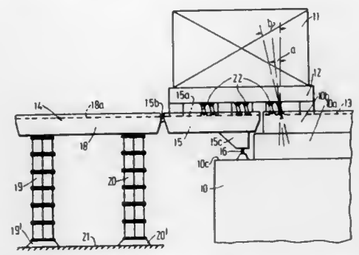
PCT No. PCT/NO89/00060, § 371 Date Dec. 5, 1990, § 102(e) Date Dec. 5, 1990, PCT Pub. No. WO89/12598, PCT Pub. Date Dec. 28, 1989

PCT Filed Jun. 15, 1989, Ser. No. 623,451

Claims priority, application Norway, Jun. 16, 1988, 882664

Int. Cl.[5] B66F *9/00*

U.S. Cl. 414—592 **6 Claims**



1. An arrangement for lifting and lowering a heavy load comprising

a support member for receiving a heavy load thereon, said member having a main frame and a plurality of support means depending from said frame to support said frame on a foundation;

a support element for receiving said support means therein;

a plurality of lifting means between said support member and said support element, each lifting means being secured to said support member and being movable between a retracted position and an extended position to move said member and said element vertically relative to each other;

a plurality of pairs of hollow support columns for selectively receiving a flowable medium therein; and

a plurality of pairs of support legs, one of said support legs of each pair being secured to said support member and slidably received in a respective one of said support columns and the other of said support legs of each pair being secured to said support element and slidably received in a respective another of said support columns.

5,183,377

GUIDING A ROBOT IN AN ARRAY

Eberhard Becker, Hagen; Franz Schulte, Sudern; Hartwig Sprung; Ronald Staggl, both of Wetter, and Manfred Stoeber, Witten, all of Fed. Rep. of Germany, assignors to Mannesmann AG, Düsseldorf, Fed. Rep. of Germany

Filed May 30, 1989, Ser. No. 359,083

Claims priority, application Fed. Rep. of Germany, May 31, 1988, 3818757

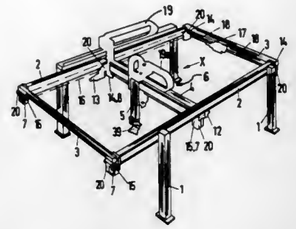
Int. Cl.[5] B25J *17/00*

U.S. Cl. 414—751 **9 Claims**

1. A two dimensional mounting structure for an industrial robot, the robot being comprised of a carriage with a lifting post and a manipulator connected to the post, the mounting structure including longitudinal rail carriers, transverse connectors and a movable rail, there being carriage elements by means of which the movable rail runs on rails of the longitudinal rail carriers, the carriage for the robot running on the movable rail, the improvement comprising:

a plurality of essentially similarly constructed end elements, first ones of the end elements connecting the ends of the longitudinal rail carriers to the ends of the transverse connectors, others of the end elements connecting respective opposite ends of the movable rail to the carriage elements by means of which the movable rail runs on the longitudinal rail carriers; and

wherein said end elements as connected to the ends of the movable rail are mounted underneath said carriage ele-



ments by means of which the movable rail runs on the longitudinal rail carriers.

5,183,378

WAFER COUNTER HAVING DEVICE FOR ALIGNING WAFERS

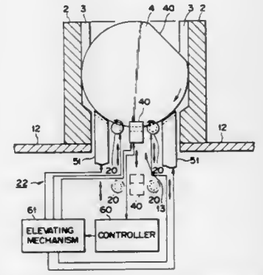
Takanobu Asano, Yokohama, and Katsumi Ishii, Kanagawa, both of Japan, assignors to Tokyo Electron Sagami Limited, Kanagawa, Japan

Filed Mar. 20, 1991, Ser. No. 672,852

Claims priority, application Japan, Mar. 20, 1990, 2-71560; May 28, 1990, 2-138020

Int. Cl.[5] B65G *47/24*

U.S. Cl. 414—757 **9 Claims**



1. A wafer counter device for counting wafers having orientation flats denoting an orientation of said wafer, comprising:

wafer aligning means for aligning orientation flats of a plurality of aligned wafers with one another; and

counting means having a non-contact type sensor for detecting the aligned wafers, said counting means counting the number of wafers based on a result of a non-contact detection of the aligned wafers performed by said non-contact type sensor;

wherein said wafer aligning means comprises a pair of aligning rollers disposed in parallel to abut against a periphery of a wafer to rotate said wafer, and rotating means for rotating said aligning rollers, wherein an annular groove is formed in a portion of each of said aligning rollers which abuts against the periphery of the wafer.

5,183,379

Patent Not Issued For This Number

5,183,380

APPARATUS INCLUDING AN ENDLESS POCKET CONVEYOR FOR AUTOMATICALLY TRANSFERRING STACKS OF PACKAGING BLANKS TO A BLANK MAGAZINE OF A PACKAGING MACHINE

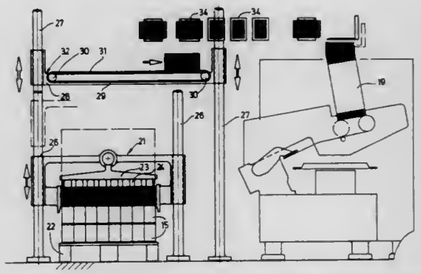
Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Filed Dec. 28, 1990, Ser. No. 635,097

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1990, 4001051

Int. Cl.[5] B65G *65/02*

U.S. Cl. 414—795.8 **18 Claims**



7. An apparatus for conveying stacks of blanks to a packaging machine, said apparatus comprising:

a) a blank magazine (**19**) associated with the packaging machine;

b) an endless pocket conveyor, movable in a horizontal plane, for intermittently feeding the blanks to the blank magazine (**19**),

c) said endless pocket conveyor (**18**) having a plurality of individual pockets (**34**) for holding individual stacks (**15**) of the blanks, said pockets being movable only in said horizontal plane;

d) conveyor means (**17, 36**) for conveying individual blank stacks (**15**) to the individual pockets (**34**),

e) wherein each of said pockets (**34**) has a generally rectangular configuration, each pocket being closed at a top, a bottom and two sides thereof and having two oppositely arranged open ends; and

f) first pushing means (**35, 48**), located near said blank magazine (**19**), for horizontally entering one of said open ends of said pocket and horizontally pushing the blank stacks (**15**) out of the other of said open ends and into the blank magazine (**19**).

5,183,381

VARIABLE GEOMETRY TURBINE INLET WALL MOUNTING ASSEMBLY

Peter S. McKean, Huddersfield, England, assignor to Holset Engineering Company Limited, Huddersfield, England

Continuation-in-part of Ser. No. 352,094, May 15, 1989, Pat. No. 4,984,965. This application Jan. 15, 1991, Ser. No. 641,208

Claims priority, application United Kingdom, May 17, 1988, 8811621

The portion of the term of this patent subsequent to Jan. 15, 2008, has been disclaimed.

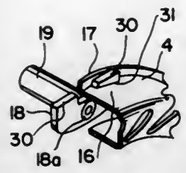
Int. Cl.[5] F01D *17/12*

U.S. Cl. 415—150 **5 Claims**

1. A mounting assembly for a movable annular wall member of an inlet passageway of a variable geometry turbine, wherein the inlet passageway is defined between the movable wall member and a facing wall, the movable wall member being formed from a sheet material, and the movable wall member being supported on a plurality of guide elements which are

VOL 1147 ISS 1 FEB 2 1993 UMI

movable parallel to its direction of movement, the improvement comprising means for interconnecting said movable wall member and said guide elements with a relatively close fit in



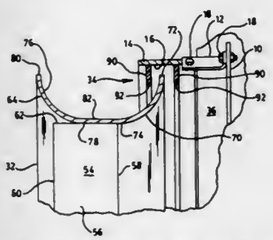
the direction of movement of said movable wall member and a relatively loose fit in a plane at right angles to the direction of movement of said movable wall member.

5,183,382

LOW NOISE ROTATING FAN AND SHROUD ASSEMBLY

Jim K. Carroll, Peoria, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Sep. 3, 1991, Ser. No. 754,101
Int. Cl.[5] F04D *29/08*
U.S. Cl. 415—173.6 **17 Claims**



1. A cooling system adapted for use with an engine and an enclosure surrounding a rotating fan and shroud assembly; said cooling system comprising:

a rotating fan and shroud assembly having a center core being in driven relationship to the engine;

a plurality of radially extending blades being attached to the core, each of said plurality of blades including a body having a preestablished width, a leading edge, a trailing edge and a tip;

a shroud being positioned around the plurality of blades and being attached to the core, said shroud having a generally "C" shaped circular configuration, and inlet bell-mouth portion having a first end and a second end, an outlet bell-mouth portion having a first end and a second end, and an intermediate portion fixedly interposed between the second end of the inlet bell-mouth portion and the first end of the outlet bell-mouth portion, the juncture of the second end of the inlet bell-mouth portion and the intermediate portion is generally radially aligned with the leading edges of the plurality of blades, the juncture of the first end of the outlet bell-mouth portion and the intermediate portion is substantially centered on the width of each of the plurality of blades, the first end of the inlet bell-mouth portion extending radially outward from the tips of the plurality of blades and extending axially beyond the leading edges of the plurality of blades, and said second end of the outlet bell-mouth portion extending radially outward from the tips of the plurality of blades and extending axially beyond the trailing edges of the plurality of blades; and

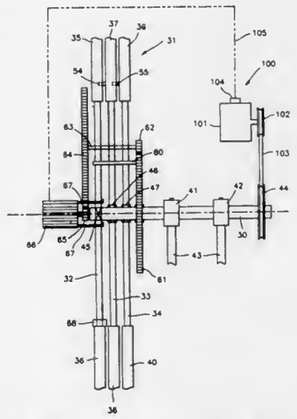
a labyrinth-type seal including a pair of flexible members being attached to the enclosure, said pare of flexible members bring positioned axially on opposite sides of one of the first end of the inlet bell-mouth portion and the second end of the outlet bell-mouth portion a preestablished distance and each of the pair of flexible members having an inner peripheral surface radially inward of one of the first end of the inlet bell-mouth portion and the second end of the outlet bell-mouth portion of preestablished distance.

5,183,383

WIND TURBINE

Hendrik A. Baas, Groningerweg 34, 9738 AB Groningen, Netherlands

Filed Jan. 8, 1991, Ser. No. 638,737
Claims priority, application Netherlands, Jan. 8, 1990, 9000042
Int. Cl.[5] F03B *7/00*
U.S. Cl. 416—9 **24 Claims**



1. A wind turbine having a rotor including a plurality of vanes mounted on a shaft and comprising:

a rotatably mounted central shaft having an axis of rotation;

a plurality of vanes arranged in sets mounted in axially space relationship on said central shaft;

at least one of said sets of vanes being freely rotatably mounted on said central shaft for rotation relative thereto;

at least one of said sets of vanes being non-rotatably mounted on said central shaft for rotation therewith;

a catch means operatively coupling adjacent sets of vanes together so that rotation of one of said sets rotates at least one adjacent set;

detecting means for detecting impending overload of said rotor and emitting a signal indicating said overload; and

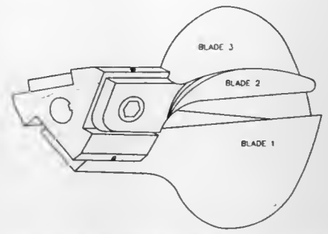
vane set adjusting means operatively engageable with said at least one set of freely rotatable vanes and operatively connected with said detecting means for rotating said at least one rotatably mounted set of vanes relative to said shaft and said at least one non-rotatably mounted set of vanes to positions between and including a fully extended position of, where said vanes have a maximum angular displacement relative to each other in the direction transverse to the axis of rotation of said shaft, and an axially aligned position said vanes in response to said overload signal of said detecting means.

5,183,384

FOLDABLE PROPELLER ASSEMBLY

Joe H. Trumbly, 197 Raft Island, Gig Harbor, Wash. 98335

Filed May 16, 1988, Ser. No. 194,510
Int. Cl.[5] B63H *1/06, 1/22*
U.S. Cl. 416—87 **2 Claims**



1. A folding propeller assembly suitable for attachment to a shaft for use in marine propulsion, comprising:

a propeller hub, said hub having a central axis of rotation and three slots each having opposing sides, said slots positioned such that the planes defined by the said slots intersect at equal angles;

three propeller blades, said blades comprising a propeller stem connected to a working face

a means of attaching said blades to said slots, wherein said last mentioned means further comprises a bolt positioned through said opposing sides of each of said slots,

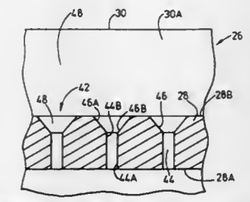
wherein said blades lie, when said hub is not rotating, in a plane substantially parallel to the said central axis of rotation, and such that when said hub is rotated about said axis, the centrifugal force caused by said rotation causes said propeller blades to extend to an angle that is effective so as to cause said blades to provide propulsion.

5,183,385

TURBINE BLADE SQUEALER TIP HAVING AIR COOLING HOLES CONTIGUOUS WITH TIP INTERIOR WALL SURFACE

Ching-Pang Lee, Cincinnati; Harold P. Rieck, Jr., West Chester; Nicholas C. Palmer, Loveland, and David G. W. Fargher, Fairfield, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 615,520, Nov. 19, 1990, abandoned. This application Feb. 10, 1992, Ser. No. 830,975
Int. Cl.[5] F01D *5/18*
U.S. Cl. 416—97 R **12 Claims**



1. In a turbine blade having an interior source of cooling air flow, opposite pressure and suction sides, and an end portion with a continuous peripheral edge, a squealer tip comprising:

(a) a peripheral wall connected to, extending around, and projecting from said peripheral edge of said end portion of said blade, said peripheral wall having an interior wall surface; and

(b) means defining a plurality of tip holes through said end portion of said blade in communication with said interior source of cooling air flow, said tip holes being spaced apart from each other and located contiguous with said interior wall surface of said peripheral wall along at least one of said pressure and suction sides of said turbine blade for providing effective diffusion cooling air flow from said tip holes on a portion of said interior wall surface along said at least one of said pressure and suction sides of said blade;

(c) said each tip hole including

(i) an inner portion having an inner end and an outer end and communicating with said interior source of cooling air flow of blade at said outer end, said inner hole portion along its axial extent from said outer end to inner end thereof having a cross-section with first and second orthogonal dimensions that are uniform, and

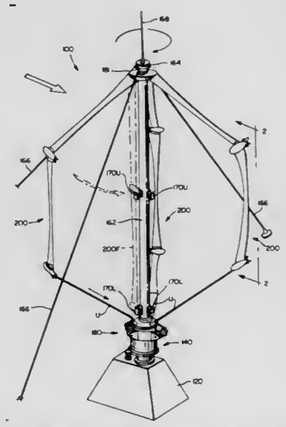
(ii) an outer portion having an inner end and an outer end and communicating between said inner end of said inner portion of said hole and a cavity defined by said blade end portion and said peripheral wall of said squealer tip, said outer portion having opposite sides defined by spaced interior surface portions, one of said interior surface portions being formed on said at least one side of said blade and extending in coplanar relation with said interior wall surface of said peripheral wall, the other of said interior surface portions being formed in said end portion of aid blade and spaced from said one interior wall portion and extending in generally parallel relation thereto and to said one interior wall portion such that said outer hole portion along its axial extent from said outer end to inner end thereof has a rectangular cross-section with a first dimension that is uniform and a second dimension orthogonal to the first dimension that decreases so as to define said outer hole portion overall as a rectangular trapezoid.

5,183,386

VERTICAL AXIS SAIL BLADED WIND TURBINE

Lewis Feldman, 2000 Valley Forge, Apt. 1233, King of Prussia, Pa. 19406, and Michael Concannon, R.R. #1, Port Dufferin, Nova Scotia, Canada B0J2RO

Continuation-in-part of Ser. No. 289,247, Dec. 23, 1988. This application May 30, 1989, Ser. No. 358,423
Int. Cl.[5] F03D *3/00*
U.S. Cl. 416—119 **13 Claims**



1. In a vertical axis turbine comprising a vertically extending, rotatable shaft; upper and lower blade attachment means for attaching at least one blade to said shaft, and a power absorbing load device coupled to said shaft; the improvement wherein said at least one blade comprises a flexible sail blade, made of fabric or film so as to have no substantial resistance to bending and thus to be limp under no load, and so that in

VOL 1147 ISS 1 FE 2 1993 UMI

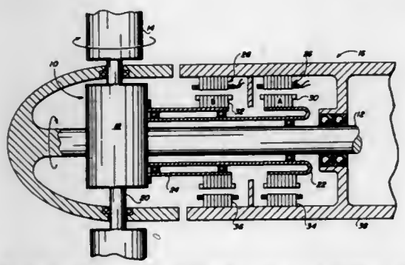
operation, said blade cambers inwardly towards the axis of rotation of the shaft when the blade is in an upwind position and cambers outwardly away from said axis of rotation when the blade is in a downwind position, and attached at the ends thereof to said shaft by said upper and lower blade attachment means and deployed and stabilized in operation by the centrifugal forces produced in response to rotation of said blades about the vertical axis of said shaft, whereby, in operation, aerodynamic forces acting on said sail blades can be transmitted to shaft without generating bending moments, said blade having at least one flyweight secured thereto.

5,183,387

FAULT-TOLERANT APPARATUS FOR CONTROLLING BLADE PITCH

Colin E. Huggett, and Kenneth L. Wuertz, both of Torrance, Calif., assignors to Allied-Signal, Inc., Morris Township, Morris County, N.J.

Filed Jan. 3, 1992, Ser. No. 817,027
Int. Cl.[5] B63H *3/00, 3/06*
U.S. Cl. 416—147 **40 Claims**



39. Apparatus for controlling blade pitch of a variable-pitch turbofan engine having a turbine shaft and a plurality of output shafts, and mechanical actuator means for mechanically coupling said turbine shaft to said plurality of output shafts, said mechanical actuator means having first and second input shafts, said input shafts being rotated at the same speed by said mechanical actuator means when said turbine shaft is rotating, said mechanical actuator means rotating said output shafts in one direction when said turbine shaft is rotating and when said first input shaft is slowed relative to said second input shaft, said mechanical actuator means rotating said output shafts in an opposite direction when said turbine shaft is rotating and when said second input shaft is slowed relative to said first input shaft, each output shaft being coupled to at least one fan blade, said blade pitch being adjusted by rotating said output shafts about their longitudinal axes, said apparatus comprising:

a first induction machine having a first rotor secured for rotation to said first input shaft and a first stator held stationary with respect to said first rotor, said first stator having a first plurality of isolated windings;

a second induction machine having a second rotor secured for rotation to said second input shaft and a second stator held stationary with respect to said second rotor, said second stator having a second plurality of isolated windings; and

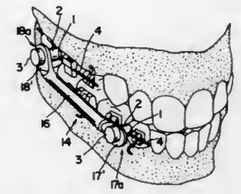
at least two controller means cooperating to provide excitation currents to selected windings of said first and second induction machines when said blade pitch is to be adjusted, each controller means being coupled to a corresponding phase winding in said first plurality and to a corresponding phase winding in said second plurality, wherein any one of said at least two controller means can excite said induction machines to adjust said blade pitch.

5,183,388

MOBILE HINGE MEMBER AND ORTHODONTIC APPLIANCE USING IT

Swadesh Kumar, Kongsvinger, Norway, assignor to Ortho-Dent, London, United Kingdom

PCT No. PCT/EP90/00523, § 371 Date Nov. 23, 1990, § 102(e) Date Nov. 23, 1990, PCT Pub. No. WO90/11731, PCT Pub. Date Oct. 18, 1990
PCT Filed Apr. 3, 1990, Ser. No. 623,396
Claims priority, application Norway, Apr. 6, 1989, 891420
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—19 **3 Claims**



1. An orthodontic appliance comprising

a rod unit having two ends;

a pair of bearing aperture forming means each connected to one of said ends, said bearing aperture forming means having a buccal surface and a tooth facing surface;

at least one hinge member to be received in one of said bearing aperture forming means, said hinge member including a substantially cylindrical shaft portion having a predetermined diameter, and a first end and a second end along a longitudinal axis;

head means on said first end, being larger in width than said predetermined diameter of said shaft portion when measured in normal direction to said longitudinal axis, said head means being integrally formed with said shaft portion; and

at least one opening within the range of said second end, said at least one opening extending across said longitudinal axis of said shaft portion;

said shaft portion and said head means being free of both inner and outer threads so as to enable connection with said rod unit by inserting said shaft portion into said bearing aperture forming means and retaining said shaft portion by inserting a wire into said at least one opening.

5,183,389

ANTI-ROCK BLADE TANG

Alan R. Gilchrist, Fairfield; Edward M. Duran; Dennis P. Dry, both of Cincinnati, all of Ohio, and Robert R. Berry, Portville, N.Y., assignors to General Electric Company, Cincinnati, Ohio

Filed Jan. 30, 1992, Ser. No. 828,278
Int. Cl.[5] F01D *5/30*
U.S. Cl. 416—193 A **6 Claims**

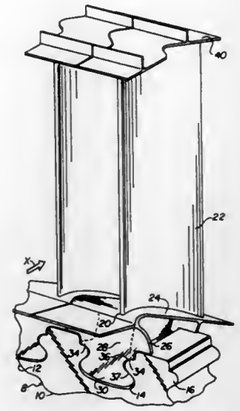
1. A rotor blade capable of being axially loaded in generally axially extending slots circumferentially disposed between adjacent posts in the rotor of a gas turbine engine, said blade comprising:

an airfoil radially extending outward from a blade platform,

a shank supporting said platform at a radially outward end of said shank,

said shank connected, at its radially inward end to an axially extending and axially linear single tang dovetail root that is effective for loading the rotor blade in the axial direction into the slots between the posts,

anti-rock tangs tangentially extending from said shank disposed between said platform and said root, and



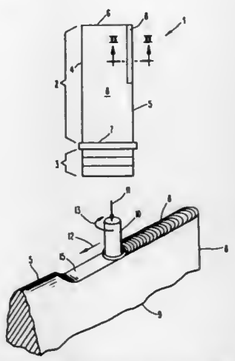
said anti-rock tangs being linear in the axial direction, effective to engage the radially outwardmost facing surfaces of the corresponding post.

5,183,390

METHOD OF FORMING A TRAILING EDGE ON A STEAM TURBINE BLADE AND THE BLADE MADE THEREBY

Dennis R. Amos, Rock Hill, S.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 10, 1991, Ser. No. 727,748
Int. Cl.[5] B63H *1/26*
U.S. Cl. 416—224 **17 Claims**



12. A steam turbine blade having a root portion and an airfoil portion extending from said root portion, said airfoil portion having an edge portion and a center portion disposed adjacent said edge portion, said center portion formed from a first material, at least a first portion of said edge portion formed from a second material and bonded to said center portion, said blade made by a process comprising the steps of:

(a) placing a rotating rod formed from said first material in contact with said center portion;

(b) pressing said rotating rod against said center portion with an axial force, thereby plasticizing a portion of said rod adjacent said center portion, said rotating rod initially pressed against said center portion while simultaneously moving said rod approximately linearly relative to said center portion so that contact between said rod and said center portion is made with a running start; and

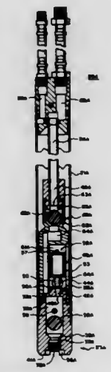
(c) moving said rotating rod approximately linearly along said center portion while maintaining said axial force, thereby consuming said rod and bonding said plasticized portion of said rod to said center portion, whereby said first portion of said edge portion is formed on said center portion.

5,183,391

VALVE PUMP

Robert R. Fiedler, Lincoln, Nebr., assignor to Isco, Inc., Lincoln, Nebr.

Continuation of Ser. No. 621,075, Nov. 30, 1990, abandoned, which is a continuation-in-part of Ser. No. 522,679, May 11, 1990. This application May 6, 1992, Ser. No. 881,301
Int. Cl.[5] F04F *1/06*
U.S. Cl. 417—118 **3 Claims**



1. A purge pump comprising:

an enclosure;

means for applying gas under pressure to the enclosure;

pump inlet means for permitting the flow of liquid under ground from a well into said enclosure;

said pump inlet means including first check valve means whereby liquid is permitted to flow into said enclosure but not permitted to flow out of said enclosure;

conduit means for permitting liquid to flow out of said enclosure as gas is applied to said enclosure;

said conduit means including a conduit-means inlet portion;

said conduit-means inlet portion including liquid level sensing means for permitting liquid to flow from the enclosure into said conduit means when a substantial amount of liquid is within said enclosure;

said liquid level sensing means including second check valve means having a valve element, a valve seat and a valve housing;

said valve element having a density less than said liquid but more than said gas, whereby said valve element floats free of said valve seat in the presence of said liquid but not in the presence of said gas;

said conduit-means inlet portion including a conduit-means inlet opening and a third check valve means for permitting liquid to flow into said conduit means;

said conduit means extending between said enclosure and the surface of the ground;

said valve element including a nose part fitting within said valve seat;

a valve opening communicating with said conduit means and said valve housing;

a valve housing inlet opening communicating with said

VOL
1147
ISS
1
FE
2
1993
UMI

enclosure and said valve housing wherein water and gas may flow from said enclosure into said valve housing;

the distance between the walls of the valve housing and valve element being between 8 thousandths inch and ¼ inch;

said valve housing inlet opening, valve opening and valve element being arranged with respect to each other so that the valve element is lifted sufficiently by the liquid before said valve element nose leaves said valve opening to avoid venturi effects from liquid flowing past the valve element between said valve housing inlet means and said valve opening;

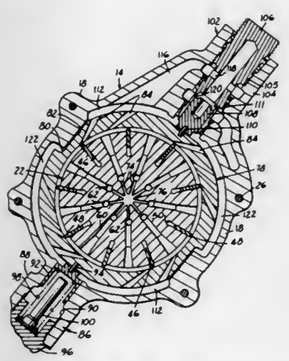
said conduit-means inlet opening connecting said first check val valve means and third check valve means wherein negative pressure between said second check valve means and third check valve means may pull said first check valve means from its valve seat whereby pressure is released that otherwise would tend to hold said first check valve means and third check valve means closed.

5,183,392

COMBINED CENTRIFUGAL AND UNDERVANE-TYPE ROTARY HYDRAULIC MACHINE

Lowell D. Hansen, Jackson, Miss., assignor to Vickers, Incorporated, Troy, Mich.

Filed May 19, 1989, Ser. No. 354,372
Int. Cl.[5] F04B *1/08, 23/10, 23/14*
U.S. Cl. 417—203 **15 Claims**



1. A combined centrifugal and vane-type rotary hydraulic pump that comprises:

a housing having a fluid inlet and a fluid outlet,

a rotor mounted for rotation within said housing, said rotor having a plurality of radially extending peripheral slots, an undervane chamber at a radially inner end of each said slot, and a plurality of internal passages extending radially through said rotor from an open outer end at a periphery of said rotor to an open inner end,

a plurality of vanes individually slidably mounted in said slots,

an annular track ring movably mounted within said housing, said track ring having a radially inner surface surrounding said rotor and forming a fluid cavity between said surface and said rotor,

a drive shaft coupled to said rotor and extending out of said housing,

fluid inlet passage means in said housing connecting said inlet to said open inner ends of said rotor passages such that fluid is centrifugally pumped through said rotor passages to said fluid cavity by rotation of said rotor and shaft,

fluid passage means to undervane inlet port means in said housing for connecting said fluid cavity to said undervane chambers in sequence as said rotor rotates within said housing,

fluid outlet passage means including first outlet port means in said housing spaced from said undervane inlet port means and connecting said fluid outlet to said undervane chambers in sequence as said rotor rotates within said housing, and second outlet port means connecting said outlet to said fluid cavity, and

means within said housing coupled to said ring and responsive to pressure of fluid fed to said outlet for adjustably positioning said track ring within said housing, and thereby controlling displacement of said vanes within said slots, as a function of outlet pressure,

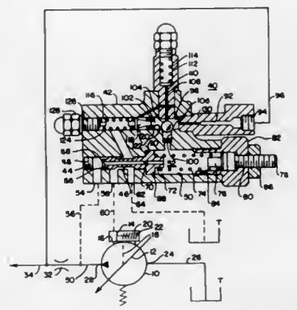
such that fluid pressure at said outlet varies as a combined function of piston pumping of said vanes through radial displacement in said slots and centrifugal pumping of fluid through said rotor passages.

5,183,393

POWER LIMITER CONTROL FOR A VARIABLE DISPLACEMENT AXIAL PISTON PUMP

Larey D. Schaffner, 7770 Witherspoon Dr., Baltimore, Ohio 43105

Filed Feb. 10, 1992, Ser. No. 832,965
Int. Cl.[5] F04B *1/26*
U.S. Cl. 417—218 **2 Claims**



1. A power limiter control for a variable displacement pressure compensated axial piston pump having an inlet and an outlet, a fixed orifice in said outlet for establishing a pressure differential proportional to outlet flow for the pump, a movable swash plate and a movable control piston attached to said swash plate for setting the displacement of the pump movable between a first control position of maximum pump displacement and a second control position of minimum pump displacement and spring means for spring biasing said control piston toward said first position which comprises:

a housing having a first bore for receiving a compensator metering piston, a tank port adapted to be connected to tank which opens into said first bore, an outlet pressure port adapted to be placed in fluid communication with the outlet of said pump which opens into said first bore, and a control port adapted to be connected to said control piston which opens into said first bore;

a compensator metering spool slideably received within said first bore having a metering land and movable between a first spool position in which said outlet pressure port is in fluid communication with said control port such that outlet pressure fluid is directed to said control piston to move said control piston toward said second control position, a second spool position in which said tank port is in fluid communication with said control port such that pressure fluid is drained from said control piston to enable said spring means to bias said control piston toward said first control position and an intermediate position in which said control port is blocked by said land;

compensator spring means for biasing said compensator metering spool toward said second spool position mounted in said housing;

a flow port formed in said housing in fluid communication with the downstream side of said fixed orifice and with said metering spool;

a first fixed orifice in fluid communication with said outlet pressure port and said flow port which creates a first pressure differential across said metering spool which opposes the force of said compensator spring means to establish a minimum flow setting when said pump is operating;

a pressure responsive valve in fluid communication with said first fixed orifice and said flow port movable between a closed valve position in which fluid flow between said outlet pressure port and said flow port is prevented, a fully open valve position in which maximum fluid flow between said outlet pressure port and said flow port occurs such that said metering spool is exposed to the entire pressure differential across said fixed orifice in said outlet port and intermediate positions between said closed position and said fully open valve position;

second spring means for biasing said pressure responsive valve toward said closed valve position said spring means being set to maintain said pressure responsive valve in said closed position until said outlet pressure reaches a set maximum for said outlet pressure fluid at maximum set flow;

wherein said pressure responsive valve means moves to said intermediate positions when said outlet pressure reaches said maximum set pressure to modulate fluid flow between said outlet pressure port and said flow port to modulate the pressure differential across said metering spool to cause said metering spool to move between said first and second spool positions to move said control piston between said first and second control positions to thereby cause pump displacement to vary proportionally to outlet pressure to maintain a constant power output from said pump; and

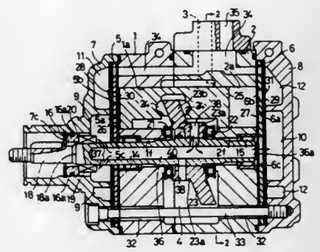
pressure compensator means in fluid communication with said first fixed orifice to limit the maximum pressure of the fluid in said outlet.

5,183,394

SWASH PLATE TYPE COMPRESSOR WITH A CENTRAL INLET PASSAGE

Toshiro Fujii; Hayato Ikeda; Ryo Katoh, and Hitoshi Inukai, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation-in-part of Ser. No. 863,814, Apr. 6, 1992. This application May 8, 1992, Ser. No. 880,574
Claims priority, application Japan, Oct. 5, 1991, 3-106020
Int. Cl.[5] F04B *27/08*
U.S. Cl. 417—269 **8 Claims**



1. A swash plate type compressor comprising:

a pair of cylinder blocks including a crank case and a plurality of cylinders connected to a suction port;

housing sections for covering said cylinder blocks, said housing sections including a suction chamber leading to each of said cylinders, and a discharge chamber also leading to each of said cylinders;

a drive shaft rotatably supported by said cylinder blocks, said drive shaft having a central axis, and a forward section for engagement to an external driving mechanism;

shaft sealing means disposed substantially within said suction chamber, for sealing said forward section of said drive shaft;

a swash plate mounted on said drive shaft and rotatably housed within said crank case;

a plurality of pistons housed within said cylinders, for engaging said swash plate;

a fluid passage provided along said central axis of said drive shaft, whereby fluid in said crank case is sucked into said cylinders via said suction chamber, and whereby the fluid is compressed in said cylinders and is discharged therefrom into said discharge chamber; and

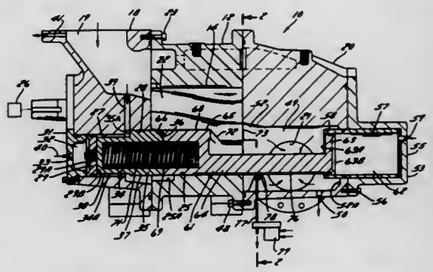
a plurality of outlet and inlet ports leading to said fluid passage, said inlet ports being fluidly opened to said crank case and said outlet ports being opened to said suction chamber, said fluid passage, outlet ports and inlet ports forming a fluid suction passage.

5,183,395

COMPRESSOR SLIDE VALVE CONTROL

Luc Langouet, Muskego, Wis., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.

Filed Mar. 13, 1992, Ser. No. 850,583
Int. Cl.[5] F04B *49/00*
U.S. Cl. 417—310 **10 Claims**



1. A variable capacity rotary screw compressor comprising:

a rotor housing including a bore means having an inlet at a suction pressure, an outlet at a discharge pressure and a slide valve recess in fluid communication between said bore and said inlet;

a rotor means mounted for rotation in said bore means to compress a fluid received from said inlet and discharge said fluid at a higher pressure into said outlet;

a passive slide valve means and an active slide valve means mounted for movement in said recess either to a sealing position to prevent fluid communication through said recess or to positions defining a variable volume opening placing said bore means and inlet in fluid communication;

a passive slide valve balancing means connected to said passive slide valve means and including a first pressure activated means having inner and outer pressure responsive portions, said inner portion permanently connected in open communication with said suction pressure;

an active slide valve balancing means connected to said active slide valve means including a second pressure actuated means having inner and outer pressure responsive portions, said inner portion permanently connected in open communication with said discharge pressure;

VOL
1147
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a prime mover connected to selectively regulate the position of said active slide valve means; and

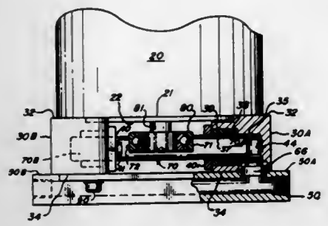
a control means operative to connect both of said outer portions of said first and second pressure activated means in fluid communication with either said suction pressure or said discharge pressure to counterbalance axial thrust on said active slide means with the use of either suction or discharge pressure and to activate said prime mover to regulate the position of said active slide valve means.

5,183,396

DOUBLE ACTING SIMPLEX PLUNGER PUMP

James E. Cook, 418 Rice St., Anoka, Minn. 55303, and O. Harald S. Eriksen, 6219 Zealand Ave., North Brooklyn Park, Minn. 55428

Filed Sep. 27, 1991, Ser. No. 766,323
Int. Cl.[5] F04B *21/02*
U.S. Cl. 417—534 **3 Claims**



1. A double acting simplex plunger pump comprising:

a) first and second unitary combined stuffing box and head members each member comprising (i) a unitary block having two spaced apart and parallel surfaces respectively designated a motor end face engaging surface and a pump manifold engaging surface, (ii) a recess in said block for receiving a cylindrically shaped plunger, said recess having a circular cross section and a longitudinal axis lying parallel to and in between said spaced apart parallel surfaces, (iii) a set of first and second pump port recesses in said block and each extending from said pump manifold engaging surface into said block and into connective relationship with said plunger receiving recess, and (iv) first and second check valve means respectively and reversely positioned in said first and second pump port recesses so that said first check valve means will admit fluid flow from said plunger recess and so that said second check valve means will admit fluid flow toward said plunger recess,

b) a manifold having a longitudinal axis, a bottom flat surface adapted to be abutted by said pump manifold engaging surfaces, first and second transversely spaced apart manifold inlet/outlet ports extending longitudinally therethrough from a first end to a second end and being mutually parallel to said longitudinal axis, and first and second longitudinally spaced apart sets of ports connecting said manifold inlet/outlet ports to said bottom flat surface,

c) plunger means comprising a shaft having a longitudinal axis and a preselected longitudinal length, first and second pumping means on the ends thereof, and a centrally located crank engaging means,

d) motor means having a planar axial end face, an output shaft rotatable about a shaft axis and extending axially from and perpendicular to said end face, and crank means on an end of said shaft, and

e) means connecting said members, said manifold, said plunger and said motor means, whereby: (i) said members are preassembled with said plunger means with said first and second pumping means of said plunger means being disposed in said plunger receiving recesses, (ii) said members are spaced apart along said plunger longitudinal axis a preselected longitudinal length, (iii) said motor end face engaging surfaces of said members are abutting said planar axial end face of said motor means, (iv) said pump manifold engaging surfaces of said members are abutting said bottom flat surface of said manifold, (v) said two sets of first and second pump port recesses of said members are respectively in register with said first and second longitudinally spaced apart sets of ports in said manifold, (vi) said check valve means are positioned partially in said sets of first and second pump port recesses of said members and partially in said longitudinally spaced apart sets of ports in said manifold and (vii) said crank means is operatively connected to said crank engaging means of said plunger means, whereby said check valves, positioned as aforesaid, provide structural linkages between said manifold and said members to thereby

(a) restrain said member against movement thereby along said plunger longitudinal axis, and

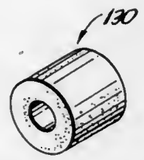
(b) provide a precision alignment and positioning of said members with respect to said planar axial end face of said motor means to assure that said longitudinal axes of said members are in mutual alignment to thereby accommodate and hold said plunger means so that the plunger longitudinal axis is perpendicular to said motor output axis.

5,183,397

DENTAL BONDING ARRANGEMENT AND METHOD

Bernard Weissman, 225 E. 48th St., New York, N.Y. 10017

Filed Sep. 20, 1989, Ser. No. 409,726
Int. Cl.[5] A61C *5/08*
U.S. Cl. 433—215 **14 Claims**



1. A dental bonding arrangement, comprising a film of viscous, self-supporting adhesive material, and a removable backing sheet on which the adhesive material is mounted, wherein said film is in the shape of a torroidal plug.

5,183,398

APPARATUS AND METHOD FOR INTERACTIVE INSTRUCTION OF A STUDENT

Charles Monte, Sepulveda; Norman A. Worthington, III, Woodland Hills; Jonathan Mandel, Chatsworth, and Gary F. Davenport, Claremont, all of Calif., assignors to The Software Toolworks, Novato, Calif.

Filed Jun. 1, 1990, Ser. No. 532,272
Int. Cl.[5] G09B *13/00, 15/00*
U.S. Cl. 434—227 **29 Claims**

1. An apparatus for instruction of a student which includes interactive guidance of the student through a series of lesson frames, each containing an instructional task for the student to complete, by comparing the student's performance to the task in the lesson frame with both a set of absolute performance responses and with acceptable performance responses for the task, comprising:

(a) keyboard means having a plurality of manually operable keys for generating at least one key relation signal in response to the actuation of each key, said key relation signal corresponding to and representative of a reference key number;

(b) storage means having a predetermined program contained therein, said program including a sequence of code signals representing a series of instructional frames, each frame including 1) a first signal group of signals representing an instructional activity to which the student responds, with a first portion of said group corresponding to an audio display and a second portion corresponding to a video display, 2) a second signal group of signals associated therewith representing desired values for the student response to the activity corresponding to represent an acceptable achievement level, 3) a sequence of substantially perfect performance responses for said instructional activities presented in all of said frames;

(c) evaluator means connected to said keyboard means, and to said storage means, for generating for each said frame a performance signal representing the results of a comparison between said series of key relation signals and said performance responses, said evaluator means also generating for each frame a next frame selection signal representing a next frame that is discriminately selected as a result of a comparison between said performance signal and said second group of signals representing an acceptable achievement level for said associated instructional activity in each said frame;

(d) control means connected to said storage means and to said evaluator means for generating audio control signals and video control signals to present to the student both aurally and visually, the next instructional frame in accordance with said next frame selection signal generated by the last comparison;

(e) sound generator means connected to said control means for producing audible sounds in response to said audio control signals; and,

(f) video display means connected to said control means for producing a visually displayed image to the student response to said video control signals.

11. A method for instruction of a student which includes interactive guidance of the student through a series of lesson frames, each containing an instructional task for the student to complete, by comparing the student's performance to the task in the lesson frame with both a set of absolute performance responses and with acceptable performance responses for the task, comprising:

(a) providing keyboard means having a plurality of manually operable keys for generating at least one key relation signal in response to the actuation of each key, said key relation signal corresponding to and representative of a reference key number;

(b) providing storage means having a predetermined program contained therein, said program including a sequence of code signals representing a series of instructional frames, each frame including 1) a first signal group of signals representing an instructional activity to which the student responds, with a first portion of said group corresponding to an audio display and a second portion corresponding to a video display, 2) a second signal group of signals associated therewith representing desired values for the student response to the activity corresponding to represent an acceptable achievement level, 3) a sequence of substantially perfect performance responses for said instructional activities presented in all of said frames;

(c) providing evaluator means connected to said keyboard means, and to said storage means, for generating for each said frame a performance signal representing a next frame that is discriminately selected as a result of a comparison between said series of key relation signals and said performance responses, said evaluator means also generating for each frame a next frame selection signal representing the results of a comparison between said performance signal and said second group of signals representing an acceptable achievement level for said associated instructional activity in each said frame;

(d) providing control means connected to said storage means and to said evaluator means for generating audio control signals and video control signals to present to the student both aurally and visually, the next instructional frame in accordance with said next frame selection signal generated by the last comparison;

(e) providing sound generator means connected to said control means for producing audible sounds in response to said audio control signals; and,

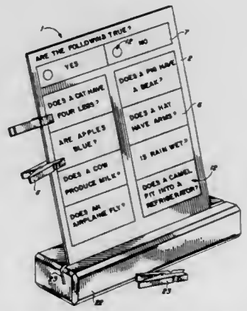
(f) providing video display means connected to said control means for producing a visually displayed image to the student response to said video control signals.

5,183,399

DEVICE FOR TRAINING OF DIFFERENTIATION

Heiner Muller, Dorfstrabe 14, D-2152 Horneburg, Fed. Rep. of Germany

Filed Dec. 18, 1990, Ser. No. 629,253
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1989, 8914825
Int. Cl.[5] G09B *3/00, 7/00*
U.S. Cl. 434—322 **8 Claims**



1. A device for training of differentiation, comprising in combination:

a card having a front surface, a back surface, and a border edge, said front surface including a plurality of question symbols arranged in a first section and a plurality of proposed answer symbols arranged in a second section, each of said question symbols presenting a question to be answered, each said proposed answer symbols being colored differently and representative of different proposed answers to said questions, said back surface including correct answer symbols is alignment with said question symbols and being colored the same as one of the proposed answer symbols; and

a plurality of clamps having two portions for removable

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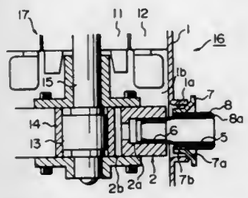
clamping on opposing sides of said card about said border edge and being colored the same as the colors of said proposed answer symbols, whereby the colors of said clamps represents proposed answers to said question symbols and, when one of said clamps is removably fastened over said border edge of said card in alignment with one of said question symbols on said front surface and with the corresponding said correct answer symbol on said back surface, whether such proposed answer is a correct or incorrect answer to said question symbol on said front surface can be readily visualized by comparing the color of said clamp to the color of the answer symbol of said back surface of said card.

5,183,400

PIPE CONNECTION STRUCTURE OF A COMPRESSOR

Takemi Tada; Hirosi Tanaka, and Osami Usui, all of Tochigi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 19, 1991, Ser. No. 746,629
Claims priority, application Japan, Sep. 7, 1990, 2-235628
Int. Cl.[5] F04B *21/00*
U.S. Cl. 417—572 **12 Claims**



1. A pipe connection structure of a closed type compressor of the type that has a casing, a compression mechanism section housed in the casing, an intake pipe member extending through a burring hole in the casing and being connected to an intake port of the compression mechanism section, the connection structure comprising:

an annular pipe insertion member airtightly connected to a peripheral edge of the burring hole; and

a tubular member fitted into an inner peripheral surface of the pipe insertion member and airtightly bonded thereto by brazing,

wherein the intake pipe member extends through the tubular member to the intake port and is airtightly bonded to the tubular member by welding,

a plurality of grooves are formed in one of the outer peripheral surface of the tubular member and the inner peripheral surface of the pipe insertion member over an entire circumference of both of the surfaces and the brazing material is received in the grooves,

each of the grooves has a length at least equal to an axial dimension of an area over which the pipe insertion member and the tubular member are engaged with each other, and

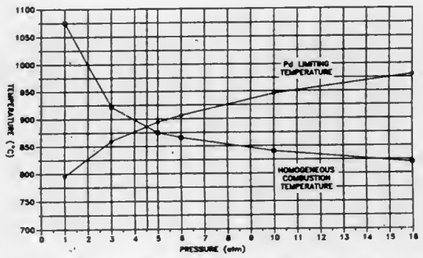
wherein each of the grooves has a depth ranging from 0.05 to 0.5 mm.

5,183,401

TWO STAGE PROCESS FOR COMBUSTING FUEL MIXTURES

Ralph A. Dalla Betta, Mountain View, Calif.; Nobuyasu Ezawa, Koto, Japan; Kazunori Tsurumi, Fujisawa, Japan; James C. Schlatter, Sunnyvale, and Sarento G. Nickolas, Livermore, both of Calif., assignors to Catalytica, Inc., Mt. View, Calif. and Tanaka Kikinzoku Kogyo KK, Japan

Filed Nov. 26, 1990, Ser. No. 618,301
Int. Cl.[5] F23D *3/40*
U.S. Cl. 431—7 **27 Claims**



1. A process for combusting combustible mixtures comprising the steps of:

a. mixing an oxygen-containing gas with a fuel at a relatively high pressure to form a high pressure combustible mixture,

b. contacting the high pressure combustible mixture in a first zone with a first zone combustion catalyst comprising palladium completely covering a catalyst support at reaction conditions sufficient to combust at least a portion but not all of the fuel,

c. contacting the partially combusted gas from the first zone in a second catalytic zone with a second zone combustion catalyst having heat exchange surfaces comprising a metallic support with walls having palladium catalyst applied to at least a portion of only one side and not the other side of the surface forming the walls of the catalyst support so as to limit the catalyst substrate temperature and bulk outlet gas temperature at reaction conditions sufficient to combust at least a further portion of the fuel and produce a mixture capable of supporting homogeneous combustion.

5,183,402

WORKPIECE SUPPORT

Michael J. Cooke, Thornbury, and Arthur J. McGeown, Bristol, both of England, assignors to ELECTROTECH Limited, Bristol, England

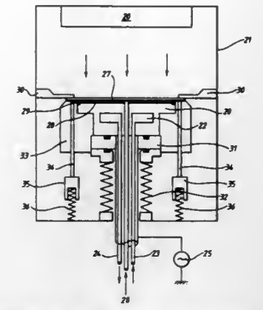
Filed May 14, 1991, Ser. No. 699,577
Claims priority, application United Kingdom, May 15, 1990, 9010833
Int. Cl.[5] F27D *5/00*
U.S. Cl. 432—5 **15 Claims**

1. An apparatus for supporting a workpiece comprising:

an enclosure;

means for reducing the pressure within the enclosure;

a platen in the enclose for supporting a workpiece on a surface thereof, said surface of the platen having a coating for assisting heat transfer between the workpiece supported on the platen and the platen, said coating having an emissivity not less than the emissivity of the workpiece; and



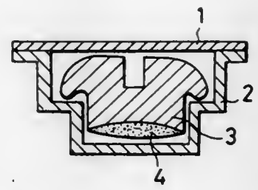
means for heating the workpiece supported on the platen to a temperature of at least 200° C., said workpiece having an emissivity not greater than that of said coating.

5,183,403

PROCESS FOR ADHESION OF ORTHODONTIC BRACKET

Elichi Masuhara, Tokyo, and Shigeo Komiya, Urawa, both of Japan, assignors to Japan Institute of Advanced Dentistry, Tokyo, Japan

Filed Jun. 20, 1991, Ser. No. 718,397
Int. Cl.[5] A61C *3/00*
U.S. Cl. 433—9 **1 Claim**



1. A process for adhering an orthodontic bracket made of a light-transmitting material and having a photopolymerizable adhesive layered and fixed on a back surface portion thereof, said process comprising applying a liner which is a liquid mixture of polymerizable monomer containing as a catalyst one of an organic peroxide, a combination of an organic peroxide with a photochemical sensitizer and a combination of a reducing agent with a photochemical sensitizer to a tooth surface pretreated with an acid, pressing the orthodontic bracket against the tooth surface and irradiating the bracket with light.

5,183,404

SYSTEMS FOR CONNECTION OF PHYSICAL/ELECTRICAL MEDIA CONNECTORS TO COMPUTER COMMUNICATIONS CARDS

Stephen C. Aldous, Salt Lake City, and Guy M. Dake, Sandy, both of Utah, assignors to Megahertz Corporation, Salt Lake City, Utah

Filed Apr. 8, 1992, Ser. No. 866,670
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—55 **39 Claims**

1. A direct connection system for removably engaging a physical/electrical data transfer media connector in communication with a telephone data transfer line with a communications card, the system comprising:

(a) a communications card for use in a downsized computer, the communications card having a first outer surface and a second outer surface;

(b) an aperture formed in the communications card, the aperture having sides extending from the first outer surface to the second outer surface, the aperture being configured to receive at least a portion of the physical/electrical media connector;

(c) a contact wire located within the communications card extending through a side of the aperture, the contact wire being capable of making electrical contact with a the exterior of the physical/electrical media connector when positioned within the aperture; and

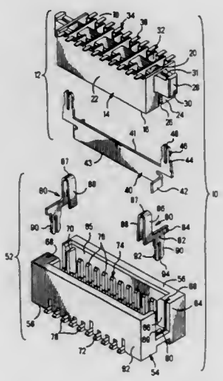
(d) means for selectively securing the physical/electrical media connector directly to the communications card.

5,183,405

GROUNDED ELECTRICAL CONNECTOR ASSEMBLY

Robert W. Elicker, Dillsburg, and Daniel L. Gorenc, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 20, 1991, Ser. No. 811,497
Int. Cl.[5] H01R *13/652*
U.S. Cl. 439—108 **10 Claims**



1. An electrical connector assembly comprising:

VOL 1147 ISS 1 FEB 2 1993 UMI

first and second matable connectors, each adapted to be mounted to respective first and second circuit boards and to interconnect respective circuits between said boards upon said connectors being mated to one another;

each of said first and second connectors includes an insulated housing having a base, opposed sidewalls opposed endwalls, a mating face, a board mounting face, and a plurality of terminal-receiving passageways extending between said mating and mounting faces, said passageways being arranged in at least two rows essentially parallel to said housing sidewalls; and

a plurality of electrical terminal members, each mounted within a respective terminal-receiving passageway in said at least two rows and defining parallel rows of terminal members, each terminal having a first connecting portion adapted to mate with a corresponding terminal member of said mating connector and a second connecting portion adapted to mate with circuits on the respective circuit board;

one of said first and second connectors further including an elongate electrically conductive ground bus means extending essentially parallel to said respective housing sidewalls, between said at least two rows of terminal members and securable to said housing proximate said endwalls thereof, said ground bus means including at least one first ground engagement means at an end thereof, said bus means end being proximate one of said endwalls, said ground bus means further including means for securing said respective housing to the associated one of said circuit boards and concomitantly therewith electrically interconnect said bus means to respective circuits of said one board;

said other of said first and second connectors includes at least one ground contact secured to only one of said respective endwalls of said other connector housing, said at least one ground contact including second ground engagement means adapted to electrically engage said first ground engagement means, said at least one ground contact further including means for insertion into an aperture of the other circuit board for securing said respective other housing to the associated other circuit boar and concomitantly therewith electrically interconnect said ground contact to ground means of the other of said circuit boards;

said first and second ground engagement means being exposed along respective mating faces to become engaged upon mating of said first and second connectors, said first and second ground engagement means being adapted to bear against each other under spring bias when said connectors are mated, whereby

upon mounting and securing said first and second connectors to said respective circuit boards and upon mating said mounted first and second connectors, said second connecting portions of said terminal members are electrically engaged with corresponding circuits of the associated circuit boards, corresponding ones of said first connecting terminal portions of said first and second connectors are electrically engaged and said ground bus means is electrically connected to said ground contact and ground means of said assembly.

5,183,406

BASEBOARD WITH MOVABLE ELECTRICAL OUTLET

Bryan D. Glen, 1846 West 14th Avenue, Vancouver, British Columbia, Canada V6J 2J9

Continuation-in-part of Ser. No. 499,703, Mar. 27, 1990, Pat. No. 5,052,937. This application Aug. 30, 1991, Ser. No. 752,877

The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.

Int. Cl.[5] H01R *25/14*

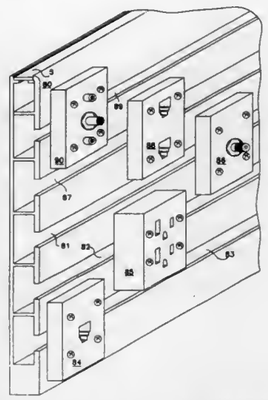
U.S. Cl. 439—120 **11 Claims**

1. An electrical distribution system comprising:

a) an elongated housing having a front panel defining a hollow interior, and a plurality of parallel elongated slots formed in said front panel, said front panel having an inner and outer surface;

b) a plurality of pairs of electrical conduction means fixed to the inner surface of said front panel, each pair of said conduction means being parallel to and spaced from one of said slots;

c) means for providing an electrical differential between each said pair of conduction means; and



d) a plurality of movable receptacle means for releasably engaging said housing, each receptacle means comprising a face having electrical receptacle means, means for releasably securing said movable receptacle to said housing and means for electrically engaging said conduction means, said conduction engaging means being adapted to engage said conduction means when one of said receptacle means is installed in one of said slots.

5,183,407

REUSABLE SAFETY CAP FOR BOOSTER CABLE

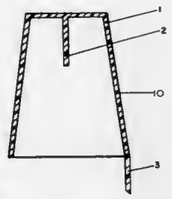
Karl Srol, R.R. 1, Gunn, Alberta, Canada T0E 1A0

Filed Nov. 5, 1991, Ser. No. 788,023

Claims priority, application Canada, May 6, 1991, 2041844

Int. Cl.[5] H01R *13/44*

U.S. Cl. 439—135 **2 Claims**



1. A reusable safety cap for exposed unprotected booster cable clamps having spring actuated clamping jaws, comprising:

a cap shell with an internal gripping tab such that when the clamp is inserted into the cap shell the internal gripping tab is gripped by the spring actuated clamping jaws to maintain the clamp within the cap shell.

5,183,408

CONNECTOR WITH FITTING OPERATION CAM MEMBERS

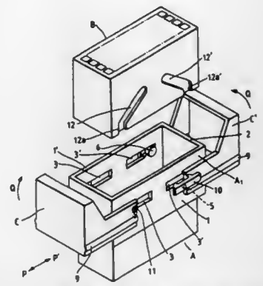
Yuji Hatagishi, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Nov. 29, 1991, Ser. No. 800,103

Claims priority, application Japan, Nov. 30, 1990, 2-329502

Int. Cl.[5] H01R *13/44*

U.S. Cl. 439—147 **9 Claims**



1. A connector with fitting operation cam members, comprising:

a female housing having sliding guide slots formed in a hood portion thereof;

fitting operation cam means having drive projections, slidably mounted onto said female housing through said sliding guide slots; and

a male housing having slanting driven grooves which are formed in an outer surface thereof so as to respectively receive said driven projections, wherein fitting connection and disconnection of said female and male housings relative to each other are carried out by moving said fitting operation cam means;

said cam means comprising:

a pair of cam members each reciprocally movable between an end wall and an intermediate portion of said hood portion; each of said pair of cam members being of a bifurcated configuration having a pair of opposed arms and a rear plate interconnecting said pair of arms, each of said arms having said drive projection; and said cam members being angularly movably attached to said hood portion, whereby when said female housing is not in use, an opening of said hood portion is closed by said rear plates of said pair of cam members by turning said pair of cam members generally upright.

5,183,409

HERMAPHRODITIC MULTIPLE CONTACT CONNECTOR

Eric Clever, 29 Estaugh Ave., Haddonfield, N.J. 08033, and Ray Lyons, 989 Highland Ave., Parkland, Pa. 19047

Filed Apr. 15, 1991, Ser. No. 685,422

Int. Cl.[5] H01R *13/28*

U.S. Cl. 439—291 **17 Claims**



1. An electrical connection comprising a pair of identical hermaphroditic connectors, each said connector comprising a shell, a wiring face, at least two fingers, a space between said fingers, a said finger on one connector fitting into a space between said fingers on said other connector, at least one insulated conductor passing axially through said connector, equal portions of each insulated conductor extending longitudinally along each of said fingers, and each conductor being exposed the axial length of said finger, and each said conductor being exposed from the insulation along the axial length of each of said fingers to form an area for mating with the other connector of said pair and each said conductor being only partially circumferentially exposed from said insulation along the axial length of each of said fingers.

5,183,410

CONNECTOR ASSEMBLY

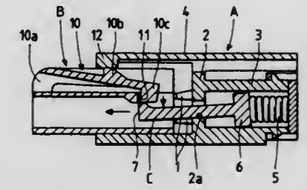
Shigemitsu Inaba, and Mitsuhiro Matsumoto, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,846

Claims priority, application Japan, Apr. 1, 1991, 3-068212

Int. Cl.[5] H01R *3/00*

U.S. Cl. 439—489 **12 Claims**



1. A connector assembly, comprising:

a first connector housing including a striking member slidably disposed therein and having one end extending in a first direction, and a spring interposed between said movable striking member and a portion of said first connector housing for urging said striking member in said first direction; and

a second connector housing including a receiver for receiving said one end of said striking member such that said striking member is forced in a second direction, opposite said first direction, upon insertion of one of said connector housings into the other of said connector housings to compress said spring, wherein during engagement of said first and second connector housings, said striking member is disengaged from said receiver to cause said striking member to strike against said first connector housing forcing said first connector housing in said first direction.

5,183,411

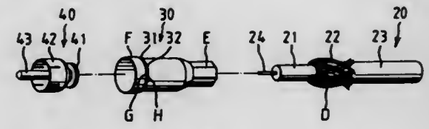
COAXIAL CABLE

Jason Yu, Taipei, Taiwan, assignor to J. A. L. Taiwan Ltd., Taipei, Taiwan

Filed Aug. 6, 1992, Ser. No. 925,195

Int. Cl.[5] H01R *17/04*

U.S. Cl. 439—578 **4 Claims**



1. A coaxial cable comprising:

a coaxial wire having a central conductor, an outer conductor, an inner insulating layer between said central and outer conductors and an outer insulating layer covering said outer conductor, a section on a first end of said outer insulating layer being cut so as to expose said outer conductor and which is pulled toward a second end of said

VOL 1147 ISS 1 FE 2 1993 UMI

insulating layer such that said outer conductor covers said first end of said outer insulating layer;

a hollow metal tube having an inner wall, a first end and a second end opposite to said first end, said second end being restricted to possess a polygonal wall surface so as to receive one end of said coaxial wire when said coaxial wire is inserted into said second end of said hollow metal tube wherein said outer conductor is in tight electrical contact with an inner portion of the polygonal wall surface, said hollow metal tube further having a stop member provided therein adjacent to said first end thereof;

a plug member having a central electric conducting blade, an annular electric conducting wall and an insulating material disposed between said central electric blade and said annular electric conducting wall, a first end and a second end opposite to said first end, said second end is inserted into said first end of said hollow metal tube such that said first and of said hollow metal tube being in electrical contact with said annular electric conducting wall of said plug member and said central electric conducting blade axially extends into said hollow metal tube and is in electrical contact with said central conductor of said coaxial wire while said stop member prevents said plug member from further moving into said metal tube, said first end of said plug member protruding out from said first end of said hollow metal tube, said plug member and said hollow metal tube being welded together; and

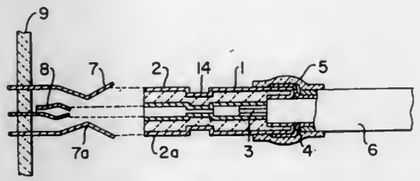
a plastic sleeve provided around said hollow metal tube.

5,183,412

CONNECTOR FOR COAXIAL CABLE

Toshiaki Nagafuji, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 16, 1992, Ser. No. 851,612
Claims priority, application Japan, Mar. 18, 1991, 3-52022
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—578 **5 Claims**



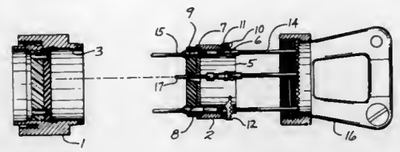
1. A connector for a coaxial cable comprising a cylindrical insulator having therein a through-hole in the core direction of a coaxial cable and metal-plated layers formed on the inner and outer surfaces of said insulator, wherein the inner conductor and outer conductor of said coaxial cable are electrically connected to the inner metal-plated layer and outer metal-plated layer of said insulator respectively.

5,183,413

MODULAR, CIRCULAR, ENVIRONMENT RESISTANT ELECTRICAL CONNECTOR ASSEMBLY HAVING RETENTION CLIPS FOR MANUALLY OR AUTOMATICALLY LOADING OF ELECTRICAL CONTACTS

Luis J. Lazaro, Jr., Seattle, and Franklin D. Harsch, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 588,117, Sep. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 454,213, Dec. 21, 1989, abandoned. This application Dec. 13, 1991, Ser. No. 807,620
The portion of the term of this patent subsequent to Jan. 1, 2008, has been disclaimed.
Int. Cl.[5] H01B *13/40*
U.S. Cl. 439—589 **6 Claims**



1. An electrical connector assembly comprising a shell adapted for connection to a grommet assembly in alignment therewith;

means associated with said shell and adapted for cooperation with said grommet assembly whereby to allow for their axial engagement and disengagement while preventing their rotation relative to each other;

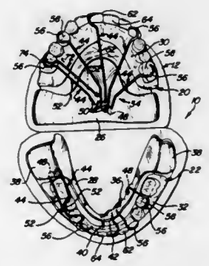
an environment resisting grommet elastomer having sealing webs with a minimum wire seal of 0.035 in. for No. 20 size electrical contacts and an insulating disc with a plurality of retention clips for assembly of electrical contacts mounted in said grommet assembly.

5,183,414

CANTILEVER DENTAL IMPLANT GUIDESTENT AND METHOD

Benjamin J. Czerniawski, 33204 Hampsbire, Livonia, Micb. 48154

Filed Apr. 26, 1991, Ser. No. 691,713
Int. Cl.[5] A61C *3/02*
U.S. Cl. 433—76 **15 Claims**



1. A cantilevered surgical stent which is placed in a patient's mouth for permitting a surgeon to implant one of more endosseous dental implant fixtures in a desired orientation with respect to an edentulous ridge section of the patient's jawbone, said surgical stent comprising:

a base member positioned within the patient's mouth; and

guide means cantilevered from said base member for spatially orienting said dental implant fixture with respect to a predetermined reference point displaced from said edentulous ridge including a guide wire having a first portion fixedly coupled to said base member, and a second portion adjacent said first portion which is cantilevered from said base member, said second portion including centering means for spatially locating said predetermined reference point with respect to said edentulous ridge section such that said predetermined referenced point defines the apex of a conical area having its base located at said edentulous ridge section, wherein the surgeon is able to apically select a desired drill trajectory with respect to said predetermined reference point for implantation of said dental implant fixture into said edentulous ridge section, said predetermined reference point being spatially positioned for approximating a desired incisal edge or occlusal table height from which a prosthesis can be fabricated that is in proper registry with opposing dentition.

5,183,415

Patent Not Issued For This Number

5,183,416

Patent Not Issued For This Number

5,183,417

CABLE BACKSHELL

William G. Bools, Montgomery, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 11, 1991, Ser. No. 805,135
Int. Cl.[5] H01R *9/03*
U.S. Cl. 439—610 **2 Claims**

1. An electrical cable assembly comprising:

a first cable termination piece including a threaded portion;

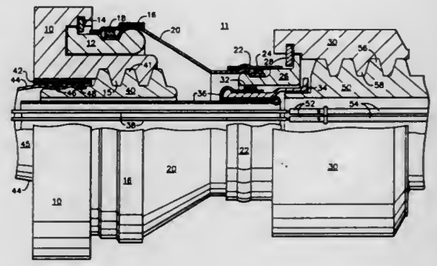
a first backshell nut including a threaded portion adapted to mate with said threaded portion of said first cable termination piece;

a second backshell nut including a threaded portion adapted to mate with a threaded portion of a connector; and

a backshell cable shield;

a first backshell cable termination attached to said first backshell nut and freely rotatable with respect thereto, a first end of said backshell cable shield being affixed to said cable termination; and

a second backshell cable termination attached to said second backshell nut and freely rotatable with respect thereto, a



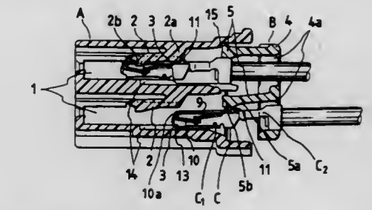
second end of said backshell cable shield being affixed to said cable termination.

5,183,418

CONNECTOR

Makoto Yamanashi; Keishi Jinno; Tamio Watanabe; Takayoshi Endo, and Sakai Yagi, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Sep. 30, 1991, Ser. No. 767,947
Claims priority, application Japan, Oct. 1, 1990, 2-260629; May 27, 1991, 3-37485
Int. Cl.[5] H01R *13/436*
U.S. Cl. 439—752 **7 Claims**



1. A connector comprising:

a metal terminal having an inverted insertion preventing protrusion between the front and rear ends thereof;

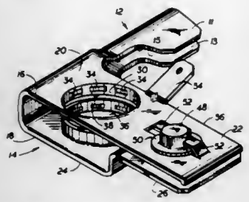
a connector housing including a plurality of terminal accommodating chambers each of which has a first flexible locking piece for locking said metal terminal; and

a terminal locking member engaged with said connector housing and movable between a temporary position and a final position, said terminal locking member having second flexible locking pieces provided for locking said metal terminals in said terminal accommodating chambers, respectively,

wherein each of said second flexible locking pieces has a locking protrusion at the free end, and wherein when said locking member is in said temporary position said locking protrusion engages with said inverted insertion preventing protrusion when said metal terminal is inserted upside down to prevent said metal terminal from being fully inserted within said connector housing.

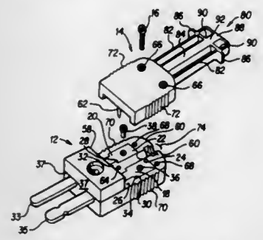
VOL
1147
ISS
1
FE
2
1993
UMI

5,183,419
BATTERY TERMINAL CONNECTOR
John H. Dewar, Grosse Ile, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.
Filed Dec. 21, 1990, Ser. No. 632,296
Int. Cl.[5] H10R *11/26*
U.S. Cl. 439—765 **19 Claims**



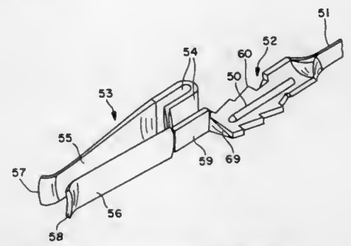
1. A battery post connector comprising
a base portion for attachment to an electrical conductor,
a contact portion for engaging a battery post, said contact portion comprising
a first wall member having a first aperture for receiving a battery post, said first aperture being in a first plane, and,
a second wall member having a second aperture for receiving a battery post, said second aperture being in a second plane, said second wall member being spaced from said first wall member with said first and second apertures being aligned for receiving a battery post therethrough, and
means for drawing said first wall member said second wall member to clamp the battery post connector to a battery post, said first and second planes being in nonparallel disposition when said first wall member is drawn toward said second wall member to clamp the battery post connector to a battery post.

5,183,420
MOLDED CONNECTOR WITH SPOOL
Milton B. Hollander, Stamford; David R. Jacobs, Norwalk, and William E. McKinley, Stamford, all of Conn., assignors to Omega Engineering, Inc., Stamford, Conn.
Continuation-in-part of Ser. No. 527,933, May 24, 1990, abandoned. This application Jun. 28, 1991, Ser. No. 723,448
Int. Cl.[5] H01R *13/58*
U.S. Cl. 439—457 **4 Claims**



1. An electrical connector, for coupling to the end of a flexible electrical cable having at least one electrical conductor for engagement with a mating connector, comprising:
an elongate housing, having a contact-supporting body portion of insulating material at one end thereof, and a cable-supporting body portion at the other end thereof separably attached to said contact-supporting body portion;
said contact-supporting body portion having a mating face for engaging a mating face on said cable-supporting body portion;
said cable-supporting body portion having a mating face lying in overlapping relationship with the mating face on said contact-supporting body portion;
each of said mating faces being generally parallel to the length of said housing, and at least one of said mating faces having a recess therein forming an exit passage for extending a conductor between said mating faces to the exterior of said housing;
said contact-supporting body portion having contact-exposing face with an opening therethrough for exposing a contact;
an electrical contact element supported on said contact-supporting body portion, and having a mating portion exposed through the opening in said contact exposing face;
coupling means on said contact-supporting body portion accessible at said mating face for coupling an electrical conductor to said electrical contact;
said cable-supporting body portion having a spool portion extending along the length thereof for winding an electrical cable thereon, and having an opening therein substantially transverse to the length of said housing through which the end of an electrical cable may be inserted to provide strain relief for resisting separation of said cable from said housing;
said spool portion having a longitudinal groove therein providing a path for a conductor along at least a portion of the length of said spool portion; and
capstan means on said cable-supporting body portion adjacent to said opening and extending in overlying, spaced relationship thereto for limiting withdrawal of a cable from said opening.

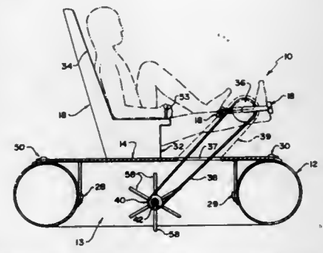
5,183,421
CONNECTOR CONTACT AND METHOD OF MANUFACTURE
Mercury Yin, Hsin Tien, Taiwan, assignor to Foxconn International, Inc., Sunnyvale, Calif.
Filed Jul. 24, 1991, Ser. No. 734,886
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—857 **15 Claims**



4. A connector contact structure comprising:
a terminating section **(51)** formed at one end of the contact structure **(31)**, said terminating section **(51)** being adapted to connect to a PC board or conductor;
a mating section **(36)(53)** formed at the other end of the contact structure, said mating section **(36)(53)** including a U-shaped bending section **(54)** having spaced leg oprtions and a pair of cantilever arms **(55,56)** extending integrally from and constituting longitudinal extensions of said spaced leg portions facing each other and a pair of divergent receiving ends **(57,58)** extending outwardly therefrom to define a receiving opening, said U-shaped bending section opening in the same direction as said receiving opening;
a retention section **(52)** formed integrally between the terminating section **(51)** and said mating section **(36)(53)**, said retention section **(52)** being adapted to retain the contact inside an insulator body **(32)**; and
a stop **(59)** adapted to act against one of said leg portions of

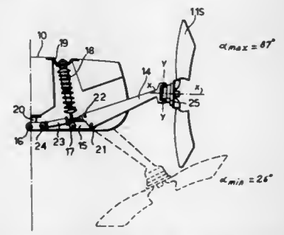
said U-shaped bending section to restrict the displacement of the associated cantilever arm to ensure adequate contact pressure with a mating connector.

5,183,422
PEDAL BOAT
Thomas Guiboche, 4-301 Marion Street, Winnipeg, Manitoba, Canada R2H 0V1
Filed Mar. 12, 1992, Ser. No. 851,028
Int. Cl.[5] B63B *35/72*
U.S. Cl. 440—26 **6 Claims**



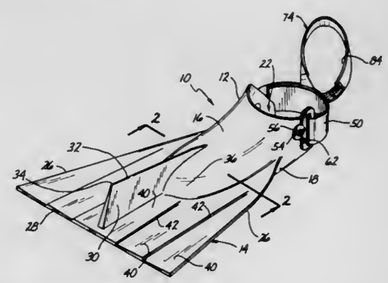
1. A boat comprising an inflatable annular tube, with a central opening therethrough, a rigid platform mounted on the tube so as to bridge the central opening, seating means mounted on the platform for receiving an occupant seated thereon, a set of pedals mounted on the platform, hand actuatable lever means mounted on the platform for steering the boat, said seating means positioned to allow the occupant to operate said set of pedals with the feet of the occupant and said means for steering with at least one hand, a transverse axle means located below the platform and within the said opening, means mounting the axle means for rotation about an axis transverse to the opening, means for communicating driving rotation from the set of pedals to the axle means, a first and a second paddle member mounted for rotation about said axis each mounted adjacent a respective one of two opposed ends of the axle means, first and second clutch means each actuatable to communicate drive from said axle means to a respective one of said paddle members, and means connecting said means for steering to each of said clutch means to provide a steering action by selectively driving said respective paddle member.

5,183,423
PROPULSION SYSTEM FOR SPEEDBOATS
Carlo Alinari, Via Monte Penna 6, 55043 Lido Di Camaiore, Italy
Filed Oct. 9, 1991, Ser. No. 773,274
Claims priority, application Italy, Oct. 10, 1990, 17711 A/90
Int. Cl.[5] B63H *5/06*
U.S. Cl. 440—53 **7 Claims**



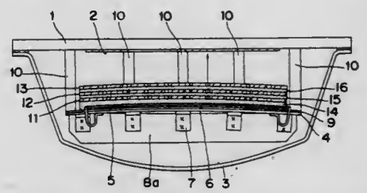
1. A propulsion system for speedboats, comprising a series of large screw propellers each having a plurality of blades under the hull, the planes of rotation of the propellers being substantially parallel to the direction of travel of the boat and inclined to the horizontal surface of the water at an angle of between 0° and 90°, wherein the propellers are connected to the hull by means of damped resilient suspensions.

5,183,424
SWIMMING FLIPPER
John D. Field, 8 Hodgson St., Crescent Head, New South Wales, Australia 2440
Division of Ser. No. 755,105, Sep. 5, 1991, abandoned. This application Mar. 13, 1992, Ser. No. 851,277
Int. Cl.[5] A63B *31/12*
U.S. Cl. 441—64 **11 Claims**



1. A swimming flipper comprising:
a foot receiving shoe portion defining a foot pocket, a rear entry opening into said foot pocket, and a flipper blade attached to said shoe portion, foot retaining strap means attached to said shoe portion for retaining a swimmer's foot against withdrawal from said entry opening when the flipper is worn on a swimmer's foot, said strap means comprising a heel strap adapted to loop behind the heel of the swimmer's foot and an ankle strap adapted to loop around the ankle of the swimmer's foot above said heel strap for securing the flipper against separation from the foot in the event said heel strap slips from the foot, said ankle strap having an end attached to said heel strap, and an opposite free end provided with fastener means for releasable attachment to said heel strap.

5,183,425
FLAT PICTURE DISPLAY DEVICE
Tetsuya Shiratori, Neyagawa; Fumio Yamazaki, Hirakata, and Seiichi Taniguchi, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Division of Ser. No. 615,010, Nov. 19, 1990. This application Feb. 11, 1992, Ser. No. 833,723
Claims priority, application Japan, Nov. 17, 1989, 1-3000512; May 31, 1990, 2-143119
Int. Cl.[5] H01J *9/18*
U.S. Cl. 445—29 **1 Claim**



1. A method of manufacturing shape retention structure for retaining filament electrodes of a flat picture display device in

VOL
1147
ISS
1
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1993
UMI

a predetermined curved shape, said method comprising the steps of:

placing a shape retention plate on a concave outer surface of a mold, the concave surface having a predetermined curvature;

forcing said shape retention plate under pressure into contact with the concave outer surface of the mold so as to conform to the predetermined curvature thereof;

securing a plurality of rows of equal numbers of fixtures to a surface of the shape retention plate, opposite the surface thereof which contacts the concave outer surface of the mold in said step of forcing, in such a manner that the fixtures of each said row are spaced from one another in a first direction corresponding to the direction in which the outer concave surface of the mold is curved and in such a manner that the rows of fixtures are spaced from another in a second direction perpendicular to said first direction;

while the shape retention plate is conformed to the predetermined curvature of the outer surface of the mold, connecting first elongate reinforcement plates, equal in number to the number of said rows of fixtures, to the shape retention plate via said fixtures in such a manner that said first elongate reinforcement plates extend in said first direction;

while the shape retention plate is conformed to the predetermined curvature of the outer surface of the mold, connecting second elongate reinforcement plates, equal in number to said number of fixtures in each row thereof, to said shape retention plate in such a manner that said second elongate reinforcement plates extend across said first elongate reinforcing plates in said second direction without being rigidly connected to said first elongate reinforcement plates at those locations where the reinforcing plates cross, whereby the reinforcing plates constitute a grid-like structure secured to the shape retention plate; and

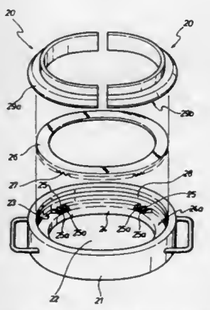
subsequently removing the shape retention plate and the grid-like structure secured thereto from the mold.

5,183,426

SHADOW MASK STRETCHING APPARATUS FOR FLAT CATHODE RAY TUBE

Cho Ho-jin, Seoul, and Sang-sin Choi, Anyang, both of Rep. of Korea, assignors to Samsung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea

Filed Feb. 27, 1991, Ser. No. 660,607
Int. Cl.[5] H01J *9/236;* **B23P** *11/02*
U.S. Cl. 445—68 **2 Claims**



1. A shadow mask stretching apparatus for a flat cathode ray tube comprising:

an annular frame having a clamping lane projecting radially inward, said clamping lane having a plurality of projections respectively formed on a surface thereof; and

clamping means for clamping a shadow mask to said frame to stretch the shadow mask within said frame, said clamping means comprising an annular clamping pad having a surface with a contour abuttingly compatible to the contour of the surface of said clamping lane, and fixing means for fixing said clamping pad to said frame, said shadow mask being clamped between said surfaces of said clamping lane and said clamping pad, wherein:

said frame comprises an annular groove formed along an inner surface above said clamping lane; and

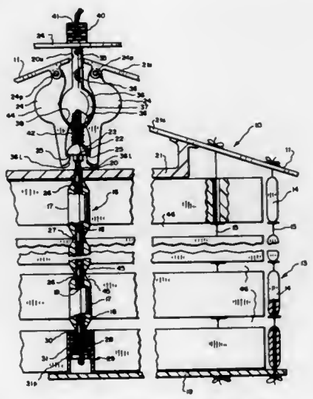
said fixing means comprises a plurality of C-shaped clamping rings having a plurality of flanges elastically insertable into said groove.

5,183,427

COLLAPSIBLE TOY BUILDING

A. Allen Draper, 3860 S. Midland, Roy, Utah 84067

Filed May 20, 1992, Ser. No. 885,832
Int. Cl.[5] A63H *33/00;* **F41J** *5/00*
U.S. Cl. 446—4 **6 Claims**



1. A toy simulated collapsible building actuated by impact of a toy projectile, comprising:

a base;

a vertical column member upstanding from the base;

a simulated roof structure having outside edges and supported by the column member upwardly from the base; wherein

the column member comprises at least two elongate segments stacked vertically end upon end from the base to the roof structure, each column segment having a central vertical bore therethrough;

a generally flexible cord installed passing sequentially through the segment bores, secured to the base through spring means urging the cord downwardly, and to the roof structure through releasable, reattachable, cord securing means opposing downward movement thereof;

means permitting lifting force to be exerted from above the roof upon the upper end of the column cord;

stiffening means carried by the cord at least at each segment-to-segment interface, substantially preventing relative rotation of the abutting segments out of vertical alignment;

impact actuated means releasing the cord securing means at the roof structure so that the cord is urged downwardly within the segment bores by the spring means at the base of the cord, simultaneously shifting the cord stiffening means downwardly away from all column segment interfaces, so that the column segments may rotate relatively out of vertical alignment at each interface, leading to instability of the column and building collapse; wherein

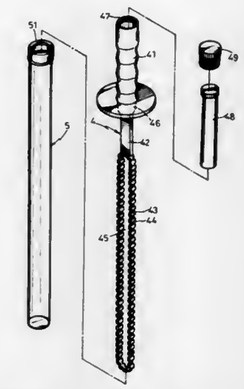
the cord remains threaded through the segment bores and connected to the roof structure during and after building collapse, so that the building may be re-erected by applying lifting force upon the cord from above the roof structure, and reattaching the cord to the cord securing means at the roof structure.

5,183,428

BUBBLE BLOWING TOY

Mon S. Lin, No. 195, Chieng-Kou Road, Hsintien City, Taipei Hsien, Taiwan

Filed Dec. 11, 1991, Ser. No. 804,750
Int. Cl.[5] A63H *33/28*
U.S. Cl. 446—15 **4 Claims**



1. A bubble blowing toy comprising:

a) a body in substantially the configuration of a sword defined by a grip portion and a blade portion;

b) a first container in substantially the configuration of a scabbard for containing a soap solution and slideably receiving the blade portion therein;

c) the blade portion being partially define by an oblong shaped ring element provided with a plurality of recesses spaced therealong for absorbing the soap solution;

d) plug means carried by the body for insertion within the first container and sealing the soap solution therein when the blade portion is fully received within the first container; and

e) wherein the body may be used for either blowing larger bubbles by swinging the body through the air or blowing smaller bubbles by blowing through the ring element with the mouth.

5,183,429

CHILDREN'S TOY AND BOTH SOAP ASSEMBLY

Mary K. Bitton, 18433 Hatheras St. #508, Tarzana, Calif. 91356

Filed Jul. 31, 1991, Ser. No. 738,338
Int. Cl.[5] A63H *33/00, 3/00;* **C11D** *17/00*
U.S. Cl. 446—73 **14 Claims**

1. A child's toy and soap assembly comprising:

a waterproof toy having a predetermined irregular three dimensional configuration and predetermined minimum and maximum dimensions;

a body of transparent soap directing engaging and entirely encompassing and encapsulating said waterproof toy, said body of soap having a thickness from its exterior surface to the toy which is less than said maximum dimension in at least one area;

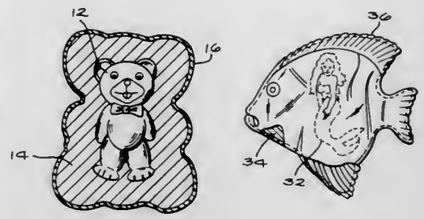
a transparent soap container having a configuration which is matched to the configuration of said body of soap;

said body of soap substantially filling said container;

said soap container being either clear or colored;

said body of soap having an exterior configuration substantially conforming to or complementing the configuration of the encapsulated toy;

said body of transparent soap and said transparent soap container structured such that the entire waterproof toy is



directly visible within said body of soap and transparent soap container; and

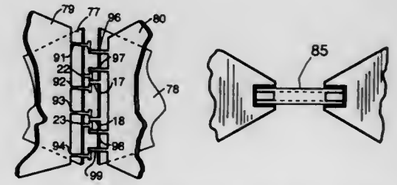
the shape of said soap container conforming to the shape of said toy.

5,183,430

GEOMETRIC TOY CONSTRUCTION SYSTEM

James Swann, 7347 S. Paxton, Chicago, Ill. 60649

Continuation-in-part of Ser. No. 856,366, Apr. 28, 1986, abandoned. This application Mar. 27, 1989, Ser. No. 328,932
Int. Cl.[5] A63H *33/08*
U.S. Cl. 446—104 **26 Claims**



1. A geometric toy construction system, said system comprising:

first and second groups of substantially flat, substantially planar construction pieces, each of said first-group and second-group construction pieces terminating at three or more straight edges;

means formed on said edges for selectively connecting and disconnecting said first-group pieces one to another, said second-group pieces one to another, and said first-group pieces to said second-group pieces,

said connecting means including one or more pairs of arms integral with and extending outwardly from any one of said construction pieces,

each of said arms having a body generally perpendicular to one of said construction pieces, said body terminating in a pair of protuberances extending perpendicularly from said body to define each of said arms as generally T-shaped,

said connecting means further including one or more pairs of posts integral with and extending outwardly from and generally perpendicular to any one of said construction pieces,

each of said posts having at least one socket formed thereon sized to fit one said protuberance in a rotatable fit,

a pair of said arms positioned symmetrically about the center point of any said edge identified as a "plus connector set", and a pair of said posts positioned symmetrically about the center point of any of said edges identified as a "minus connector set",

each of said edges of said first-group pieces having either a

VOL 1147 ISS 1 FE 2 1993 UMI

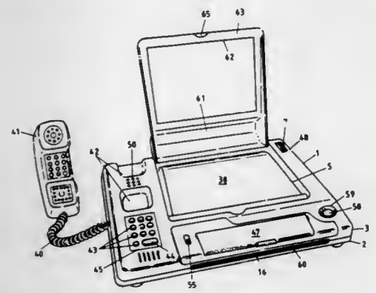
first plus connector set or a first minus connector set formed thereon,
each of said edges of said second-group pieces having either second and third plus connector sets, or second and third minus connector sets formed thereon,
the arms in said first plus connector set are a third standard distance apart,
the posts in said first minus connector set are a second standard distance apart,
the arms in said second plus connector set are a first standard distance apart,
the posts in said second minus connector set are a fourth standard distance apart,
the arms in said third plus connector set are a fifth standard distance apart,
the minus posts in said third minus connector set are a sixth standard distance apart,
said first, second, third, fourth, fifth and sixth standard distances increase progressively in length from said first to said sixth,
said first, second, third, fourth, fifth and sixth standard distances being selected to enable the interconnection of a first plus connector set with a first minus connector set, a second plus connector set with a first minus connector set, a first plus connector set with a second minus connector set, and a third plus connector set with a third minus connector set, thereby allowing the interconnection of said first-group and second-group construction pieces about a common axis.

5,183,431

TOY FACSIMILE MACHINE

Masatoshi Todokoro, Matsudo, Japan, assignor to Staff Co., Ltd., Tokyo, Japan

Filed May 8, 1991, Ser. No. 697,636
Claims priority, application Japan, Jun. 5, 1990, 2-5885
Int. Cl.[5] A63H *33/30, 29/22;* **H04M** *11/00*
U.S. Cl. 446—142 **15 Claims**



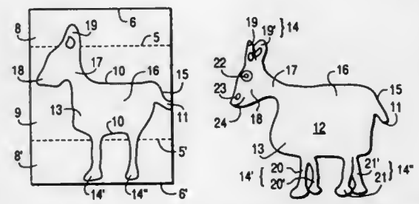
1. A toy facsimile machine, comprising:
a hollow case having the external appearance of an operable facsimile machine;
a take-up shaft rotatably mounted within said hollow case;
said take-up shaft adapted to support an elongate sheet of recording paper disposed in rolled relation thereabout;
a pair of rotatably-mounted transfer roll members, also positioned within said hollow case, for frictionally engaging a leading end of said recording paper so that rotation of said transfer roll members causes said recording paper to unroll from said take-up shaft, a first transfer roll member contacting a lower side of said recording paper and a second transfer roll member contacting an upper side thereof;
said take-up shaft being positioned in a rearward part of said hollow case and said transfer roll members being positioned in a forward part thereof;
a delivery port formed in said hollow case in said forward part thereof, said delivery port having a size sufficient for said recording paper to pass through when said transfer roll members are rotated so that said recording paper is delivered to the environment external to said hollow case when said transfer roll members are rotated;
a cutting means disposed adjacent said delivery port for cutting said recording paper;
a window frame means formed in said case to expose a predetermined area of said recording paper to an individual playing with said toy;
a handset seat formed in said case;
a model handset selectively positionable in said handset seat;
a group of push buttons positioned on an upper surface of said hollow case so that said individual playing with said toy may manipulate said push buttons;
a motor means for effecting rotation of said transfer rolls;
a speaker means positioned in close proximity to said handset seat;
an integrated circuit connotatively coupled to said speaker means;
said integrated circuit adapted to generate a plurality of distinct tones in response to manipulation of said push buttons, there being a different tone associated with each of said push buttons;
a battery means for supplying power to said motor means, said integrated circuit, and said speaker means; and
a plurality of switch means for activating said motor means, said integrated circuit, and said speaker means.

5,183,432

FLOATING BODY OF SOPHISTICATED SHAPE PRODUCED FROM A SINGLE SHEET OF FILM WITH A SINGLE SEALING

Tatsuo Noguchi, Osaka, Japan, assignor to Nihonmatai Co., Ltd., Tokyo, Japan

Division of Ser. No. 268,477, Nov. 7, 1988, Pat. No. 5,017,254.
This application Nov. 14, 1990, Ser. No. 612,498
Claims priority, application Japan, Mar. 19, 1988, 66-66368; May 2, 1988, 63-109784
Int. Cl.[5] A63H *3/06;* **B32B** *31/00*
U.S. Cl. 446—220 **7 Claims**



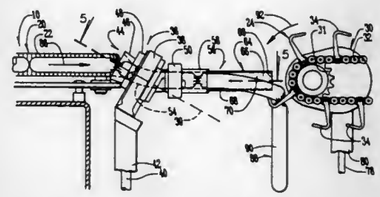
1. A floating body comprising a first swelling portion having a gas inlet port through which gas is introduced and a plurality of second swelling portions each being held in fluid communication with said first swelling portion,
said first and second swelling portions being formed by folding a single multi-layer film to form a nonpleat portion corresponding to said first swelling portion and pleat portions corresponding to said second swelling portions and by sealing the folded multi-layer film along a continuous seal line which extends over both said pleat and nonpleat portions and forms said gas inlet port in said nonpleat portion.

5,183,433

SAUSAGE ENCASING MACHINE HAVING AN IMPROVED LOOPER HORN

Ray T. Townsend, Des Moines, and Vincent L. Basile, II, West Des Moines, both of Iowa, assignors to Townsend Engineering Company, Des Moines, Iowa

Filed Feb. 12, 1992, Ser. No. 836,072
Int. Cl.[5] A22C *11/00*
U.S. Cl. 452—51 **7 Claims**



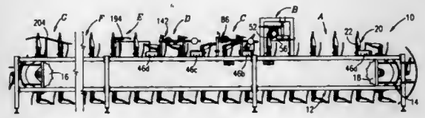
1. An improvement in a sausage encasing machine comprising means for creating an elongated strand of encased linked sausages along a substantially longitudinal and horizontal flow path, the improvement comprising,
a looper horn on said machine mounted to be in communication with said horizontal flow path to receive said strand,
connecting means rotatably securing said looper horn for rotation with respect to said machine about a rotational axis that extends downwardly from said connecting means, whereby said looper horn will be rotated from a substantially horizontal position of maximum elevation through a circular continuous arc which is located below said position of maximum elevation whereby said strand will never have to be moved in an upwardly inclined direction as it passes through said looper horn.

5,183,434

METHOD AND APPARATUS FOR REMOVING THE SKIN FROM POULTRY CARCASSES

Donald J. Scheier, Kansas City, Mo., and Jack L. Hathorn, Springdale, Ark., assignors to Johnson Food Equipment, Inc., Kansas City, Kans.

Filed Jul. 3, 1991, Ser. No. 725,181
Int. Cl.[5] A22B *5/16*
U.S. Cl. 452—131 **43 Claims**



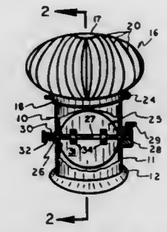
1. In a method of removing the skin from a poultry carcass, the improvement comprising:
removing the tail and wings from the carcass;
directing an air stream under the back skin of the carcass and slitting the back skin along the backbone;
directing an airstream under the breast skin of the carcass and slitting the breast skin in a longitudinal direction along the breast to present two opposite half sheets of skin on the carcass bounded by the slits along the backbone and breast of the carcass; and
peeling the two half sheets of skin away from the carcass generally toward the thighs of the carcass to expose the meat therebeneath.

5,183,435

SEASONAL ATTIC TURBINE VENTILATOR

Bennie R. Galvez, 4604 Lindale Dr., Wichita Falls, Tex. 76310

Filed Jan. 13, 1992, Ser. No. 820,195
Int. Cl.[5] F24F *7/02*
U.S. Cl. 454—18 **3 Claims**



1. In a rooftop-mounted turbine fan attic ventilator comprised of:
a) a duct having a circular cylindrical sidewall centered upon a vertical axis, a flanged lower extremity adapted to lie flush against an underlying roof, an interior region bounded in part by said sidewall, and an upper extremity having a horizontally oriented bearing collar, and
b) a turbine fan having an annular lower rim and a multiplicity of vertically oriented fins, said turbine fan being mounted upon said duct in overlying juxtaposition wherein said annular rim is concentrically disposed with respect to said bearing collar in close juxtaposition therewith,
the improvement comprising:
a) diametrically opposed locking apertures in said annular rim and diametrically opposed locking bores in said bearing collar, said apertures and bores adapted to be linearly aligned by means of rotative orientation of said fan relative to said duct,
b) an elongated locking pin adapted to be inserted through said aligned locking apertures and bores, thereby securing said fan from rotation relative to said duct, and
c) butterfly valve damper means comprised of:
1) diametrically opposed holes in said cylindrical wall,
2) a elongated shaft having a proximal extremity that penetrates one of said holes and having lever rotating means, and a distal extremity that penetrates said opposed hole,
3) a circular damper panel attached to said shaft along the diameter of said damper panel, thereby enabling said damper panel to rotate within said interior region in close conformity with said cylindrical wall, and
4) spring means acting between said distal extremity and said sidewall, thereby maintaining said damper panel in either vertical or horizontal orientation responsive to adjustment force applied to said lever rotating means, said vertical and horizontal orientations corresponding to open and closed conditions, respectively, of said duct.

5,183,436

FAN FOLDABLE MEMBERSHIP CARD MAILERS

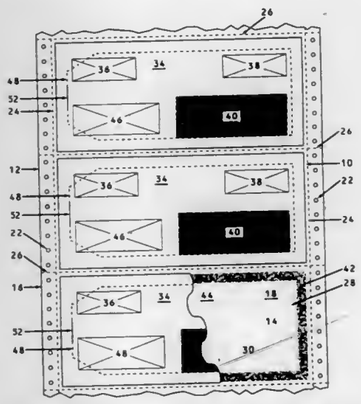
Thomas M. Shanley, 19908 NE. 129th St., Woodinville, Wash. 98072

Filed Apr. 3, 1992, Ser. No. 863,210
Int. Cl.[5] B42D *15/00*
U.S. Cl. 462—6 **8 Claims**

1. Fan foldable membership card mailers as supplied by a manufacturer to an organization, thereafter to be completed, separated, and delivered to respective members of the organization, comprising:
a. a roll of polyvinyl chloride stock of a designated width and designated length, having in turn:

VOL 1147 ISS 1 FE 2 1993 UMI

i. pin feed spaced holes along both edges of this roli;
ii. perforations adjacent and parallel to the pin feed spaced holes along both edges of the initial roll;
iii. Perforations spaced transversely on this roll and extending between the perforations, which are adjacent and parallel to the pin feed spaced holes, and extending beyond them across the polyvinyl chloride stock, thereby determining the size of each membership card mailer;
iv. microperforations arranged in the direction of the length of this roll and in the transverse direction across this roll, within the perforated size of each membership card mailer, thereby determining the size of each membership card being created;
v. an N.C.R. type clear copy matte coating in a rectangular shape area at a selected location on each membership card being created; and
vi. printing on each membership card mailer of this polyvinyl chloride stock roll which: sets forth membership card usage instructions which are spaced about the area of the membership card being created; and sets forth membership card text, design, and logo on the area of the membership card being created;

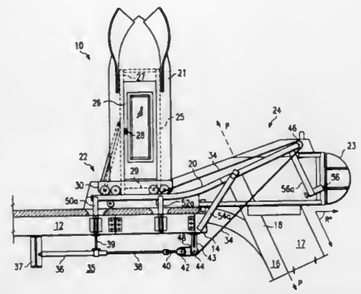


b. multiple overlay of paper stock, each one of the overlays serving as a cover for each membership card mailer and adhered to the polyvinyl chloride stock about their complementary borders by an adhesive, having in turn:
i. a printed blackout area located over the N.C.R. type clear copy matte coating on each membership card being created;
ii. a printed return address of the organization;
iii. a space for necessary postage such as a printed first class bulk mailer postal permit number of the organization, which may be printed in this space;
iv. a space for the subsequent use by the organization to enter the name and address of the member of the organization; and
at this subsequent entry time, the member's name, member's membership number, and expiration date of the respective membership, will be imprinted by impact printing in the blackout area, resulting in printing on the polyvinyl material of the membership card being created, where the N.C.R. type clear copy matte coating has been previously distributed to receive this membership data, and this private data will therefore not be viewed by any persons during the sending functions, which are often making services, of this membership card mailer from the organization to a member thereof.

5,183,437
METHOD AND APPARATUS FOR INITIATING A WATER RIDE

George D. Millay, San Diego, and John D. Powell, Del Mar, both of Calif., assignors to Wet 'N Wild, Inc., Grand Prairie, Tex.

Filed May 31, 1991, Ser. No. 708,895
Int. Cl.[5] A63G *21/18*
U.S. Cl. 472—117 **19 Claims**

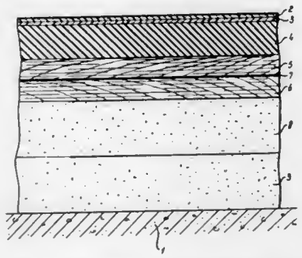


9. Apparatus for initiating a thrill-seeking ride from a raised access platform, the ride having a slide descending at a predetermined angle with respect to the platform and wherein the slide has a support surface located along a predetermined plane, comprising:
a track supported on the platform and extending from a first position along the raised platform to a second position located above an upper end of the slide;
a housing having at least a back and a bottom for supporting a rider in an erect position;
a carriage supporting the housing and adapted for rolling movement on the track;
means for reciprocating the carriage along the track to extend the housing with the rider therein from the first position to the second position: and
means for releasing the bottom of the housing after the housing reaches the second position to drop the rider from the housing onto the slide.

5,183,438
SPORTS FLOOR

Jan Blom, Ede, Netherlands, assignor to Hollandsche Beton Groep Nov., Netherlands

Filed Apr. 17, 1991, Ser. No. 686,559
Claims priority, application Netherlands, Apr. 19, 1990, 9000933
Int. Cl.[5] E04F *15/16*
U.S. Cl. 472—92 **22 Claims**

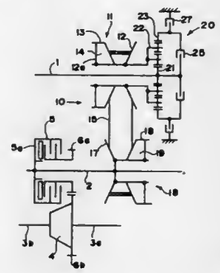


1. Sports floor to be installed on a cohesive substructure or one composed of a sandy structure, wherein said sports floor, viewed from top to bottom, is composed at least of the combination of the following layers or composite layers:
a) at least one relatively thin polyurethane top layer having a covering which has specific frictional properties;
b) at least one hard elastic layer formed from granules of rubber particles and air cavities present between said particles;
c) at least one relatively thin force-distributing hard layer made, for example, of plywood or hard plastic; and
d) at least one relatively thick layer made of plastic foam.

5,183,439
CONTROL SYSTEM FOR CONTINUOUSLY VARIABLE TRANSMISSION

Toshiyuki Yumoto; Kouhei Ohsono, both of Fujimi; Masahiro Kanda, Higashimatsuyama, and Takahiro Matsuda, Hiki, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 10, 1991, Ser. No. 805,402
Claims priority, application Japan, Jan. 22, 1991, 3-021692
Int. Cl.[5] F16H *59/00*
U.S. Cl. 474—28 **15 Claims**



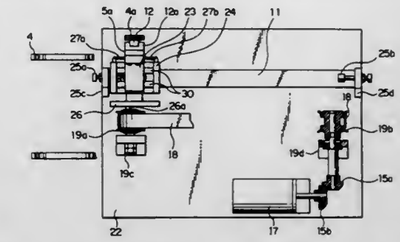
1. A control system for a continuously variable transmission having a hydraulic actuator for effecting at least one of speed ratio control and clutch control, comprising:
a solenoid-operated control valve for generating a controlling hydraulic pressure to be supplied to the hydraulic actuator;
hydraulic pressure generating means for generating a hydraulic pressure corresponding to the rotational speed of an engine which is associated with the continuously variable transmission;
a directional control valve for selectively connecting said solenoid-operated control valve and said hydraulic pressure generating means to said hydraulic actuator; and
a solenoid-operated on-off valve for controlling said directional control valve such that when a solenoid of said solenoid-operated on-off valve is energized, said directional control valve connects said solenoid-operated control valve means to said hydraulic actuator, and when the solenoid of said solenoid-operated on-off valve is de-energized, said directional control valve connects said hydraulic pressure generating means to said hydraulic actuator.

5,183,440
METHOD FOR CONVERTING ELLIPTICAL TO RECTANGULAR MOTION

Masahiro Ishizuka, and Kazuyuki Hayashi, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 760,390, Sep. 16, 1991. This application Jun. 10, 1992, Ser. No. 896,446
Claims priority, application Japan, Sep. 19, 1990, 2-247232
Int. Cl.[5] F16H *7/00*
U.S. Cl. 474—101 **1 Claim**

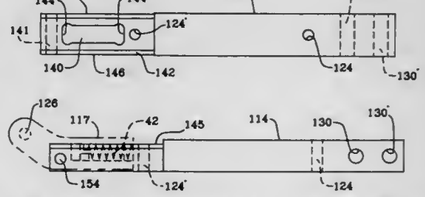
1. A method of converting an elliptic motion of a timing belt placed over two timing pulleys into a rectangular motion, wherein a horizontal reciprocating linear motion between centers of said timing pulleys are transmitted to a portion to be driven as it was, and semi-circular motions at both ends of said reciprocating linear motions outside the distance between said centers of said timing pulleys are converted into vertical reciprocating linear motions by employing rolling contact for absorbing the horizontal component and then transmitted to said portion to be driven so that said driven portion performs a rectangular motion.



5,183,441
BELT SANDER TENSIONER

Urda, Paul, South Waverly, Pa., assignor to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Feb. 3, 1992, Ser. No. 829,827
Int. Cl.[5] F16H *7/08*
U.S. Cl. 474—138 **9 Claims**



1. A belt tensioning device for belt sander or the like comprising:
an elongate cantilever bar having a recessed pocket formed on its surface towards its one end;
a substantially "U" shaped saddle in axial sliding cooperation with said cantilever bar and substantially enclosing said recessed pocket;
said "U" shaped saddle being further provided with a tab projecting into said recessed pocket; and
a spring means interspersed between said tab and said recessed pocket for resiliently biasing said "U" shaped saddle in one axial direction along said cantilever bar.

5,183,442
DOUBLE HELIX, METHOD OF MAKING SAME AND SPIRAL LINK BELT MADE THEREFROM

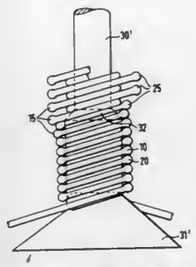
Johannes Lefferts, Enschede, Netherlands, assignor to Siteg Siebtechnik GmbH, Ahaus-Alstatte, Fed. Rep. of Germany

Filed Dec. 9, 1991, Ser. No. 803,964
Claims priority, application Fed. Rep. of Germany, Dec. 10, 1990, 4039399
Int. Cl.[5] F16G *1/00*
U.S. Cl. 474—239 **5 Claims**

1. A double helix comprises two partial helices having the same winding direction, said partial helices each having an oval cross-section with substantially straight upper and lower

VOL 1147 ISS 1 FE 2 1993 UMI

winding legs and facing winding arcs encircling each other, wherein said upper winding legs of the partial helices extend at a different angle with respect to longitudinal axes of the partial



helices than the lower winding legs of the respective partial helices, said upper winding legs of one partial helix extend at the same angle with respect to the longitudinal axes as the lower winding legs of the other partial helix and vice versa.

5,183,443

SPEED REDUCER

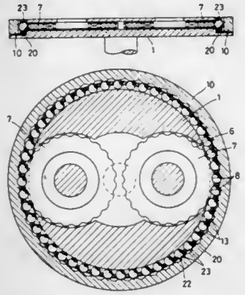
Hiroshi Murakami, 7-7-303, Hiranohigashi 4-chome, Hirano-ku, Osaka, and Tetsu Sakaida, Asahi Plaza, 65-68, Numa 1-chome, Yao-shi, Osaka, both of Japan

Filed Jan. 23, 1992, Ser. No. 824,518

Claims priority, application Japan, Sep. 20, 1991, 3-241293; Nov. 28, 1991, 3-314683

Int. Cl.[5] A01D *34/30;* **F16H** *13/08*

U.S. Cl. 475—168 **1 Claim**



1. A speed reducer comprising a disk-shaped input member having an outer peripheral surface, a cylindrical output member extending along the circumference of said input member and having an inner peripheral surface opposite the outer peripheral surface of said input member, a cage disposed between said input member and said output member, said cage being formed with a plurality of pockets arranged circumferentially at equal intervals between said peripheral surfaces of said input and output members, a plurality of rolling elements received in said respective pockets, said output member having a plurality of recesses in said inner peripheral surface thereof and said recesses being spaced circumferentially at equal intervals, the number of said recesses being different from the number of said rolling elements, and disks rotatably mounted in said input member and partially protruding radially from said outer peripheral surface of the input member, each said disk being provided along the outer periphery thereof with recesses arranged at intervals corresponding to the pitch of said rolling elements and engageable with said rolling elements.

5,183,444

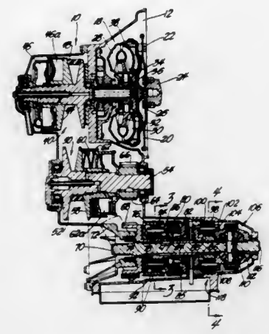
CONTINUOUSLY VARIABLE TRANSMISSION

Francis B. Robbins, Dryden, N.Y., assignor to Borg-Warner Automotive Inc., Sterling Heights, Mich.

Continuation of Ser. No. 723,249, Jun. 28, 1991, abandoned. This application Jul. 17, 1992, Ser. No. 917,513

Int. Cl.[5] F16H *37/08*

U.S. Cl. 475—210 **11 Claims**



1. A continuously variable transmission having, in combination, a first variable drive pulley, a second variable drive pulley, a v-belt trained around the first and second variable drive pulleys, a speed reduction drive, driven by the second variable drive pulley, a reversible gear drive driven by the speed reduction drive, a fixed ratio planetary reduction drive driven by the reversible gear drive in one direction or another, a differential driven by the fixed ratio planetary reduction drive and axle shafts driven by the differential.

5,183,445

ARRANGEMENT OF A DIFFERENTIAL FOR DRIVING TWO VEHICLE WHEELS

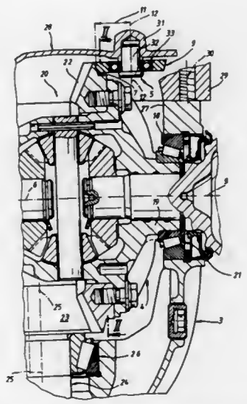
Claus-Christian Alt, Ebersbach-Weiler, Fed. Rep. of Germany, assignor to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jan. 15, 1992, Ser. No. 820,981

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1991, 4101327

Int. Cl.[5] F16H *57/00*

U.S. Cl. 475—230 **6 Claims**



1. Arrangement of a differential for driving two vehicle

wheels, in which a gearbox casing having a bearing axis of the differential is rotably mounted in a non-rotating outer casing and a follower made of a non-metallic material and fixed in its position relative to the outer casing by a holding device can be brought into contact under a small contact pressure with an annular face of a ring gear which is fixed relative to the gearbox casing in terms of movement and is concentric to the bearing axis, wherein the follower is a solid of revolution made of a noise-deadening material rotating concomitantly with said ring gear and freely positioned to be in continuous contact with said ring gear.

5,183,446

DIFFERENTIAL MECHANISM

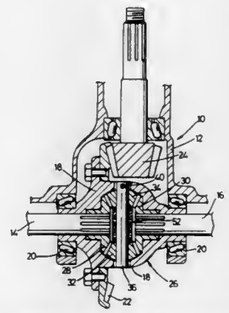
Richard E. Hughes, 49 Burstow Rd., Wimbledon, London SW20 8ST, England

Filed Feb. 26, 1992, Ser. No. 841,826

Claims priority, application United Kingdom, Mar. 6, 1991, 9104816

Int. Cl.[5] F16H *1/45*

U.S. Cl. 475—236 **15 Claims**



1. A limited slip differential mechanism including a supporting formation, a carrier journalled on or in said formation for operatively driven rotation about a first axis, a pair of driven output elements each journalled for independent rotation about said first axis, and at least one planet gear journalled in the carrier for rotation therewith and itself rotatable about a second axis normal to the first axis, said planet gear being meshed with both output elements to transmit drive thereto in common from the carrier while permitting differential motion of the output elements relative to each other; characterized in that said planet gear can shift relative to the carrier by angular displacement of the second axis relative to the carrier in a plane normal to the first axis between a neutral position at which the planet gear can rotate freely in providing said differential motion and an inhibiting position at which rotation of said gear is resisted or prevented by direct or indirect coaction between the planet gear and a braking or stop formation of or on the carrier whereby the differential motion is inhibited automatically as a function of the transmitted driving force transmitted through the carrier.

5,183,447

SEAT RECLINING MECHANISM

Tadashi Kawakita, Kanagawa, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Aug. 26, 1991, Ser. No. 749,588

Claims priority, application Japan, Aug. 29, 1990, 2-90150[U]

Int. Cl.[5] A47C *1/025*

U.S. Cl. 475—341 **11 Claims**

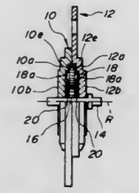
1. A seat reclining mechanism comprising:

a rotatable shaft;

a base plate which has a first through hole for receiving said rotatable shaft therein, said base plate having at a major surface thereof a first cylindrical recess which is coaxial with said rotatable shaft, said base plate having a first ring gear at a cylindrical surface defined by said first cylindrical recess;

a pivotable arm which is rotatably connected to said base plate through said rotatable shaft, said pivotable arm having a second through hole for receiving said rotatable shaft therein, said second through hole being in alignment with said first through hole, said pivotable arm having at a major surface thereof a second cylindrical recess which is merged with said first cylindrical recess so as to define a cylindrical space between said base plate and said pivotable arm, said second cylindrical recess being coaxial with said rotatable shaft, said pivotable arm having at a cylindrical surface defined by said second cylindrical recess a second ring gear which is disposed side by side with said first ring gear, said first and second ring gears having the same addendum circle but a different number of teeth;

a third cylindrical recess which is formed on one of said base plate and said pivotable arm, said third cylindrical recess



being disposed within one of said first and second cylindrical recesses and being coaxial with said rotatable shaft;

a control gear securely and coaxially mounted on said rotatable shaft, said control gear being received in said cylindrical space;

a plurality of planetary gears each of which has a toothed portion received in said cylindrical space and a first cylindrical projection formed on a rotation center thereof, said toothed portion being positioned between and meshed with said first and second ring gears and said control gear, said first cylindrical projection being received in said third cylindrical recess; and

a first supporting member for supporting said first cylindrical projections of said planetary gears, said first supporting member being coaxially and rotatably mounted on said rotatable shaft and being received in said third cylindrical recess, each of said first cylindrical projections being rotatably held by and between said first supporting member and a cylindrical smooth outer surface of said third cylindrical recess so as to suppress play of said first cylindrical projection therebetween.

5,183,448

FOOT TRAINING MACHINE

Leao Wang, Taichung Hsien, Taiwan, assignor to Greenmaster Industrial Corp., Hsien, Taiwan

Filed Jul. 26, 1991, Ser. No. 736,584

Int. Cl.[5] A63B *22/04*

U.S. Cl. 482—52 **7 Claims**

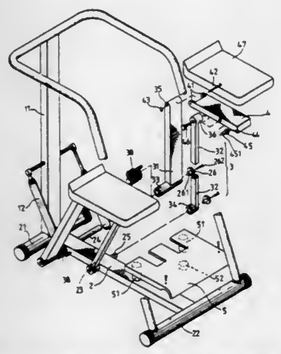
1. A foot training machine comprising:

a base including a laterally extending front bar, a laterally extending rear bar, and a longitudinally extending connecting bar, said front and rear bars being arranged in a substantially parallel, longitudinally spaced relationship, said connecting bar being fixedly secured to and extending between said front and rear bars; and

first and second pedal assemblies arranged on opposite sides of said connecting bar for movement between upper and lower operating limit positions during use of said machine, each of said pedal assemblies including: a pedal, a front rocker arm having a first end pivotally connected to said

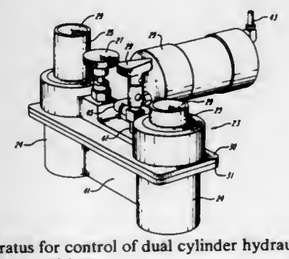
VOL 1147 ISS 1 FE 2 1993 UMI

connecting bar and a second end pivotally connected to said pedal, and a rear rocker arm having a first end pivotally connected to said connecting bar and a second end pivotally connected to said pedal, said front and rear rocker arms being substantially equal in length, the distance between the pivotal connections of the front and rear rocker arms to the connecting bar being equal to the distance between the pivotal connections of the front and rear rocker arms to said pedal, the first ends of said front and rear rocker arms being pivotally connected to said connecting bar in a common substantially horizontal plane



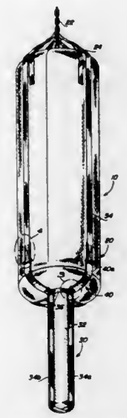
and the second ends of said front and rear rocker arms being pivotally connected to said pedal in a common substantially horizontal plane such that said pedal is maintained in a substantially horizontal plane throughout its range of movement, the lateral distance between the front rocker arm and said connecting bar being at least greater than the combined lateral distance between the rear rocker arm and said connecting bar and the width of the rear rocker arm such that said pedal can unobstructively move between said upper and lower operating limit positions.

5,183,449
DIE CAST SYSTEM FOR CONTROL OF STAIRCLIMBING EXERCISE DEVICE
Richard J. DeCloux, 1485 Belmont St., Manchester, N.H. 03104
Filed Oct. 3, 1990, Ser. No. 592,205
Int. Cl.[5] A63B *23/06*
U.S. Cl. 482—53 **16 Claims**



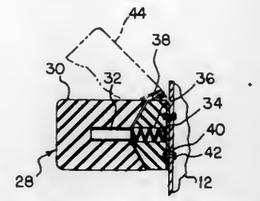
1. Apparatus for control of dual cylinder hydraulic exercise equipment, comprising:
a pair of rigidly connected cylinders each having a reciprocating member therein, with each reciprocating member having a longitudinal axis, and with the top portion of each reciprocating member being exposed outside of its respective cylinder, each of said reciprocating members having means at the top thereof adapted to be contacted by a moveable member for permitting slipping or rolling motion therebetween in a direction transverse to said longitudinal axis while said moveable member is depressing the reciprocating member into its respective cylinder;
a pair of moveable members each having a contact portion adapted to be moved responsive to exercise in a direction to depress an associated reciprocating member into its cylinder;
said pair of moveable members each adapted to coact with the top portion of a respective reciprocating member at said contact portion, and each member including means for permitting a slipping or rolling motion of said contact portion relative to the exposed top portion of a respective reciprocating member in a direction transverse to the longitudinal axis thereof, whereby no substantial side forces are applied to said top portions when said moveable members act on respective reciprocating members to depress them into respective cylinders; and,
means for fluidically interconnecting said cylinders.

5,183,450
MARTIAL ARTS TRAINING APPARATUS
John J. Stelmach, 1607½ Idylwild, Prescott, Ariz. 86301
Filed Dec. 5, 1991, Ser. No. 802,507
Int. Cl.[5] A63B *69/00*
U.S. Cl. 482—83 **3 Claims**



1. Apparatus for use as a training dummy in the execution of martial arts techniques comprising a generally cylindrical shaped heavy bag having opposed ends and provided with means at a first end thereof for suspending said bag from overhead, a simulated human leg one end of which is positioned immediately adjacent the second end of said heavy bag and suspended therefrom, said simulated leg being generally cylindrical in shape and of a size which substantially replicates a human leg, the exterior surface of said simulated leg being deformable and said leg being filled with a material to substantially replicate the feel of a human leg, said leg being secured to a rigid frame means for properly positioning and suspending said simulated leg from said heavy bag, said frame means being positioned at said second end of said heavy bag and external to said bag and shaped so as to conform to the shape of said second end of said heavy bag, and means for suspending and securing said frame means and said simulated leg to said heavy bag.

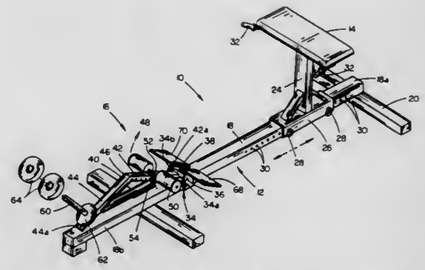
5,183,451
MARTIAL ARTS PRACTICE DEVICE
Jeffrey L. Hautamaki, R.R. Box 162-A, Markesan, Wis. 53946
Filed Oct. 7, 1991, Ser. No. 772,577
Int. Cl.[5] A63B *64/20*
U.S. Cl. 482—86 **1 Claim**



1. A new and improved practice striking device comprising:
upstanding support means, said upstanding support means including at least one I-beam;
base plate means for holding said upstanding support means;
striking pad means resiliently attached to said upstanding support means,
spring means to effect a resilient attachment of said striking pad means to said upstanding support means, said spring means being connected between said striking pad means and said upstanding support means, said spring means being an exclusive and only means of attachment of said striking pad means to said upstanding support means,
a truncated conically-shaped plate, said striking pad means, further comprising a concave surface to be positioned over said truncated conically-shaped plate, said truncated conically-shaped plate, in cooperation with said striking pad means, is configured to aide in facilitating a return of said striking pad means to a correct position once said striking pad means has been resiliently moved due to a user striking said striking pad means;
an abrasive cover positioned over said striking pad means, said abrasive cover serving to frictionally engage a user's appendages so as to roughen and thicken a skin surface of said
force indicating means for indicating to a user how hard of a strike was delivered by said user against said striking pad means;
removable pad means positioned over said upstanding support means, said removable pad means protecting a user against injury in the event of said user inadvertently striking said upstanding support means; and
said support means for providing greater support to said upstanding support means.

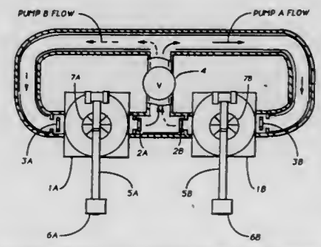
5,183,452
EXERCISE MACHINE
John L. Bacon, and Jonathan M. Bacon, both of 6141 NW Gary St., Lincoln, Nebr. 68521
Filed Oct. 18, 1991, Ser. No. 778,710
Int. Cl.[5] A63B *21/06*
U.S. Cl. 482—97 **2 Claims**

1. An exercise machine, comprising:
a base frame having forward and rearward ends;
seat means connected to the rearward end of said frame for supporting a person;
foot support means connected to said frame forwardly of the seat means for supporting the heel of a foot;
said foot support means including first and second plates mounted generally coplanar and transversely with respect to the longitudinal axis of said frame, for supporting two feet;
cushion means operable connected to said frame and extending forwardly from said foot support means and operable between a first position at rest, and a second position above and rearward of the first position, whereby toes of a foot on the foot support are located beneath the cushion means to operate the cushion means between the first and second position;
said cushion means including first and second cushions rotatably connected to said arm for pivotal movement therewith and free rotation thereon, said first cushion located to be operated by a foot on the first plate and the second cushion located to be operated by a foot on the second plate;
said cushion means including an arm having forward and rearward ends, pivotally connected at the rearward end to



said frame for pivotal movement of said cushion means independently of said foot support means between the first and second positions;
said seat being adjustably connected to said frame for selective adjustment along the longitudinal axis of said frame, forwardly and rearwardly with respect to said foot support means; and means for connecting a plurality of weights to said arm, located such that weights connected to said arm bias said cushion means from the second position to the first position.

5,183,453
UNIDIRECTIONAL FLUID FLOW RESISTED EXERCISE DEVICE WITH INERTIAL AND ELASTIC MECHANICAL LOADING
Patsy K. Yamashiro, 9918 NE. 116th St., Kirkland, Wash. 98034
Filed Nov. 5, 1991, Ser. No. 788,129
Int. Cl.[5] A63B *21/008*
U.S. Cl. 482—112 **3 Claims**



1. Exercise apparatus comprising a pair of actuated hydraulic diaphragm pumps with flexible interconnecting members linking said diaphragm pumps to foot pedals with provision for providing resistive, inertial, and elastic exercise mechanical loads simultaneously;
each of said pumps fitted with inlet and outlet unidirectional flow valves connected to a closed hydraulic circuit with both pump outlets joined together prior to connection to a common adjustable resistance orifice comprising the resistive exercise load;
wherein fluid passage through said resistance orifice is di-

VOL 1147 ISS 1 FE 2 1993 UMI

rected to the inlets of both said pumps which are connected together;

said hydraulic circuit incorporates an inertial exercise load formed by the mass of fluid moved per pump stroke as well as physical shape and dimension of the circuit conduits to provide load stability;

whereby said closed hydraulic circuit provides unidirectional flow through said adjustable resistance as both pumps are alternately activated by the exercising subject;

whereby equal activation of both said pumps leads to cessation of flow and the establishment of a means for exercise through flexion of said flexible interconnecting members which constitutes the elastic exercise load;

whereby said elastic load provides a means of simulating limb muscle contraction to maintain a standing posture while exercising in a non-standing posture.

5,183,454

PAPER CURL CORRECTION APPARATUS

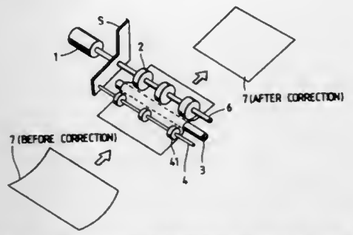
Makoto Kurosawa; Masaaki Koseki; Tetsuroh Takahashi, and Takeshi Terakado, all of Ibaraki, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 609,542, Nov. 6, 1990, abandoned. This application Apr. 2, 1992, Ser. No. 863,144

Claims priority, application Japan, Nov. 10, 1989, 1-293086

Int. Cl.[5] B41F *13/54*; B65H *23/34*

U.S. Cl. 493—459 **2 Claims**



1. A paper curl correction apparatus provided along a paper conveying path in an electrostatic recording printing machine for correcting the curl in discrete paper sheets, said apparatus comprising:

a plurality of paper conveying rollers arranged on a shaft for conveying a discrete paper sheet along a path in a paper advancing direction;

a lower paper curl correction shaft;

means for biasing said paper curl correction shaft against said paper conveying rollers in a direction having a substantial component in the paper advancing direction;

a plurality of paper guide rollers arranged on a shaft and provided upstream of and spaced from said plurality of paper conveying rollers and said paper curl correction shaft with reference to the paper advancing direction, said plurality of paper guide rollers causing the paper sheet path to extend about an angular portion of the circumference of said paper curl correction shaft; and

a position varying mechanism for varying a position at which said paper guide rollers are fixed so as to vary the angular range over which said paper sheet extends about the circumference of said paper curl correction shaft and to adjust a degree of correction of paper curl.

5,183,455

APPARATUS FOR IN SITU RADIOTHERAPY

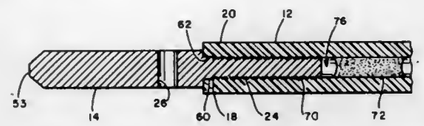
Michael H. Hayman; Lee R. Morgan, both of New Orleans, and Samuel F. Liprie, Lake Charles, all of La., assignors to Omnitron International, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 255,045, Oct. 7, 1988, Pat. No. 4,976,680. This application Nov. 5, 1990, Ser. No. 609,437

The portion of the term of this patent subsequent to Dec. 11, 2007, has been disclaimed.

Int. Cl.[5] A61M *36/04*

U.S. Cl. 600—7 **14 Claims**



1. Apparatus for in situ radiotherapy of a patient, comprising:

a flexible guide tube having a proximal end for receiving a radioisotope and a distal end for positioning the guide tube within a patient to be treated;

sealing means comprising a plug filling a portion of said guide tube for sealing the distal end of the guide tube; and

an anchor including anchor connector means for

to the flexible guide releasably connecting the anchor tube, and patient connection means for connecting the anchor permanently to the patient.

5,183,456

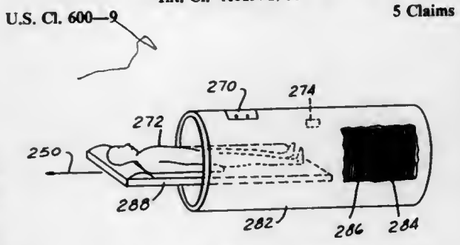
METHOD AND APPARATUS FOR THE TREATMENT OF CANCER

Abraham R. Liboff, Birmingham, Mich.; Bruce R. McLeod, Bozeman, Mont., and Stephen D. Smith, Lexington, Ky., assignors to Life Resonances, Inc., Bozeman, Mont.

Continuation of Ser. No. 703,383, May 21, 1991, which is a continuation of Ser. No. 437,485, Nov. 15, 1989, Pat. No. 5,040,050. This application Jun. 23, 1992, Ser. No. 902,929

Int. Cl.[5] A61N *2/00*

U.S. Cl. 600—9 **5 Claims**



1. A method for treating cancer comprising the steps of:

positioning a magnetic field generating means adjacent a biological subject afflicted with cancer in an existing ambient magnetic field;

generating an applied magnetic field with said magnetic field generating means, said applied magnetic field extending along an axis through said subject and combining with said ambient magnetic field along said axis to form a composite magnetic field;

measuring the magnitude of said ambient magnetic field and said applied magnetic field along said axis;

fluctuating said applied magnetic field and controlling the magnitude of said applied magnetic field along said axis to create a ratio between the frequency of said fluctuations of said applied magnetic field and the magnitude of said composite magnetic field which regulates the growth characteristics of cancer cells in said subject; and

regulating said frequency of said fluctuations based on said measured ambient magnetic field and the magnitude of said applied magnetic field to maintain said ratio as the magnitude of said applied magnetic field changes along said axis.

5,183,457

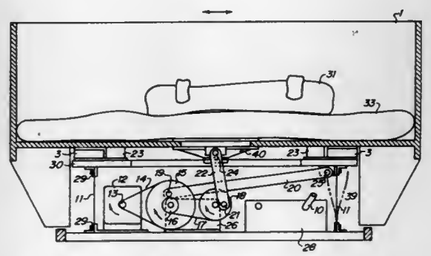
INFANT ENVIRONMENTAL TRANSITION SYSTEM AND METHOD

James D. Gatts; Edward M. Buckley, both of San Jose, and John W. Jamieson, Alamo, all of Calif., assignors to Infant Advantage, Inc., Milpitas, Calif.

Division of Ser. No. 415,064, Sep. 29, 1989, Pat. No. 5,037,375. This application Apr. 16, 1990, Ser. No. 509,474

Int. Cl.[5] A61G *10/00*

U.S. Cl. 600—21 **12 Claims**



1. An environmental control system comprising:

a housing, having a longitudinal axis, mounted for translational motion along said axis and for rotational motion substantially about said axis; and

motive means coupled to said housing for imparting said translational and rotational motions thereto relative to said axis to approximate the motion experienced by a fetus while its mother is walking.

5,183,458

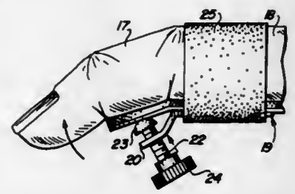
FINGER SUPPORT

Ralph H. Marx, 7714 N. 17th Pl., Phoenix, Ariz. 85020

Filed Jan. 29, 1992, Ser. No. 827,420

Int. Cl.[5] A61F *5/04*

U.S. Cl. 602—22 **3 Claims**



1. A finger support of the type used to overcome deformities comprising:

an elongated rectangular pliable base for supporting a finger having a contracture,

one end of said base being bent laterally of its longitudinal axis for receiving the joint of the finger having a contracture,

a rigid support mounted to the underside of said base to extend parallel therewith and having one end thereof angularly displaced from said one end of said base,

a threaded aperture extending through said one end of said rigid support,

an adjustable screw threadedly received in said aperture for extending therethrough and engaging with said one end of said base for applying a vernierly adjustable force through said base to said joint of said finger, and

an adjustable non-stretching band mounted around said joint of the finger to be straightened and said support for applying a fixed perpendicular force to said finger at the area effected by the contracture,

said adjustable screw engaging said one end of said base at a point spaced from the application of said fixed force of said non-stretching band to said contracture.

5,183,459

EMULSION PRESSURE-SENSITIVE ADHESIVE POLYMERS IN BANDAGE AND MEDICAL TAPE CONSTRUCTIONS

Margaret M. Bernard, La Verne, Calif., assignor to Avery Dennison Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 567,141, Aug. 14, 1990, which is a continuation-in-part of Ser. No. 393,970, Aug. 14, 1989, abandoned. This application Mar. 5, 1992, Ser. No. 847,957

Int. Cl.[5] A61F *13/00*

U.S. Cl. 602—52 **20 Claims**

1. A combination for use as a medical tape or bandage construction, said combination comprising:

(a) a sterilizable backing;

(b) a sterilizable inherently tacky, pressure-sensitive adhesive polymer applied to one side of said backing, said adhesive formed by emulsion polymerization and comprising on a polymerized basis and based on the total weight of the monomers:

(i) at least one alkyl acrylate containing from about 4 to about 8 carbon atoms in the alkyl group, the total amount of alkyl acrylate present being from about 35 to about 60 percent by weight;

(ii) at least one vinyl ester containing from 2 to about 16 carbon atoms in the alkyl group of the acid, the total amount of the vinyl ester present being from 15 to about 35 percent by weight;

(iii) at least one diester of a dicarboxylic acid in which each alkyl group of the diester independently contains from about 6 to about 12 carbon atoms, the total of the diesters present being in amount from about 20 to about 40 percent by weight; and

(iv) at least one unsaturated carboxylic acid containing from about 3 to about 5 carbon atoms, present in the total of the unsaturated carboxylic acid in an amount up to about 5 percent by weight, said polymer being formed in the presence of a reactive surfactant which is a vinyl functional monomer, and having a gel content of from about 50 to 70 percent by weight of the polymer prior to sterilization.

5,183,460

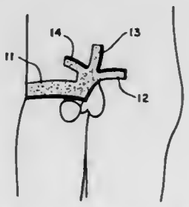
WOUND DRESSING RETENTION APPARATUS

Hal C. Scherz, 4026 Caminito Terviso, San Diego, Calif. 92122

Filed May 1, 1992, Ser. No. 877,237

Int. Cl.[5] A61F *13/00*

U.S. Cl. 602—79 **10 Claims**



1. A bandage for retaining a dressing on a human penis which comprises:

VOL 1147 ISS 1 FEB 2 1993 UMI

a substantially "L"-shaped flexible cover member having an adhesive undersurface, said cover member comprising one elongated leg member defining the longer dimension of the "L" and three adjacent short leg members extending perpendicularly from a first end of said elongated leg member such that said three short leg members together define the shorter dimension of the "L".

10. A method of securing a dressing on the penis of a human patient, wherein the dressing comprises a substantially "L"-shaped flexible cover member having an adhesive undersurface, and wherein the cover member comprises one elongated leg member defining the longer dimension of the "L" and three adjacent short leg members extending perpendicularly from a first end of the elongated leg member such that the three short leg members together define the shorter dimension of the "L", which comprises;

(a) positioning the dressing on the shaft of the human penis;

(b) positioning said cover member adjacent the base of the penis (i) such that said elongated leg member extends in a first direction which is substantially perpendicular to the shaft of the penis, (ii) such that the ends of said short leg members which extend away from said first end of said elongated leg member point away from the head of the penis, and (iii) such that said adhesive undersurface faces the penis;

(c) flexing a first short leg member, which is closest to said first end of said elongated leg member, in a second direction generally opposite to said first direction, and pressing said first short leg into adhesive contact with a first side of the base of the penis and with the patient's skin adjacent the base of the penis in said second direction;

(d) flexing a second short leg member, which is adjacent said first short leg member, and pressing said second short leg member into adhesive contact with the base of the penis and with the skin of the patient between the base of the penis and the area between the penis and navel;

(e) flexing the remaining short leg member generally in said first direction and pressing said remaining short leg member into adhesive contact with the side of the base of the penis facing said first direction and with the patient's skin adjacent the base of the penis in said first direction; and

(f) wrapping said elongated leg member circumferentially around the penis and the dressing positioned on the penis to adhesively secure the dressing in place.

5,183,461

METHOD FOR CLEANING PIERCED EARLOBES

Donna M. Hobbs, 14933 Golden Sunset Ct., Poway, Calif. 92064

Filed May 17, 1991, Ser. No. 701,830
Int. Cl.[5] A61F *11/00*
U.S. Cl. 604—49 **5 Claims**



1. A method for cleaning a pierced ear hole which comprises:

selecting a single length of flexible strand having two ends;

folding said flexible strand back on itself to form a loop portion;

bonding said two ends together to form an integral stem having a rounded tip and a stiffness greater than that of said flexible strand;

inserting said stem into and through said pierced ear hole;

grasping said stem at its tip as it exits said pierced ear hole; and

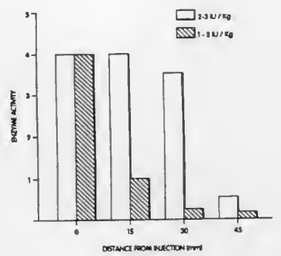
pulling said stem so that said loop compresses and passes through said pierced ear hole to clean said pierced ear hole.

5,183,462

CONTROLLED ADMINISTRATION OF CHEMODENERVATING PHARMACEUTICALS

Gary E. Borodic, Canton, Mass., assignor to Associated Synapse Biologics, Boston, Mass.

Filed Aug. 21, 1990, Ser. No. 570,395
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—51 **15 Claims**



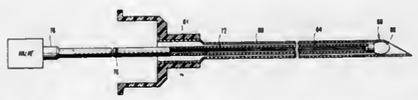
1. A method of standardizing dosages of a chemodenervating preparation by relating extent of denervation in a muscle or muscle group of an experimental animal to a unit quantity of said preparation comprising the steps of injecting a unit quantity of said preparation into said muscle or muscle group of an experimental animal, permitting said preparation to diffuse within said muscle or muscle group about the site of said injection and to physiologically inhibit acetylcholine release, and determining the spatial extent of inhibition of acetylcholine release about the site of injection within said muscle or group per said unit quantity of said preparation, thereby providing a reliable indicator to a clinician of a volume of said muscle or muscle group which is denervated by a quantity of said preparation.

5,183,463

APPARATUS FOR LOCATING A BREAST MASS

Elie Debbas, 800 Southern Ave., SE., Suite 407, Washington, D.C. 20032

Continuation-in-part of Ser. No. 305,965, Feb. 3, 1989, Pat. No. 4,966,583. This application Oct. 29, 1990, Ser. No. 604,092
The portion of the term of this patent subsequent to Oct. 30, 2007, has been disclaimed.
Int. Cl.[5] A61M *29/02*
U.S. Cl. 604—98 **19 Claims**



16. An apparatus for localizing and palpating a mass in body tissue, said apparatus comprising:

a hollow needle having proximal and distal ends, said distal end forming a sharp tip;

a flexible catheter having a proximal end and a distal end, said proximal end being open and said distal end being closed by an expandable balloon portion positioned at a distalmost portion of said distal end of said catheter to identify the location of a mass by positioning said catheter adjacent to the mass in the body tissue, said balloon portion being inflatable to have a diameter of about 2 to 5 cm at a mass located deeply in the body tissue so as to be palpable through the body tissue upon expansion so that a direct incision may be made from the skin to the inflatable balloon for surgically locating the mass with a minimal length incision, said catheter being insertable through said needle so that said balloon portion is provided just within the tip of said needle, said catheter having means for indicating that said balloon portion is positioned just within the tip of said needle;

valve means for selectively maintaining a pressurized fluid within said catheter, said valve means being releasably connectable to said proximal end of said catheter.

5,183,464

RADIALLY EXPANDABLE DILATOR

William R. Dubrul, Redwood City, and Cecily M. Hillsman, San Jose, both of Calif., assignors to Interventional Thermodynamics, Inc., Mountain View, Calif.

Filed May 17, 1991, Ser. No. 702,642
Int. Cl.[5] A61M *29/00*; A61B *1/32*
U.S. Cl. 128—3 **58 Claims**



1. An apparatus for forming and enlarging a penetration, said apparatus comprising:

an elongate dilation tube having a proximal end, a distal end, and an axial lumen, said tube being radially expandable from a small diameter to a larger diameter; and

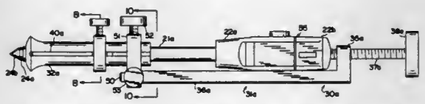
an elongate expansion member which is insertable through the axial lumen of the dilation tube from its proximal end to effect radial expansion of the dilation tube, said expansion member comprising an outer tube and an inner rod member, whereby the rod can be removed from the tube after expansion of the dilation tube to leave an access lumen through the inner tube.

5,183,465

APPARATUS FOR SUPPORTING AND MOVING NEEDLES AND TROCARS FOR PENETRATING THE ABDOMEN

Dimitrios Xanthakos, 6811 Hickory Hill Ct., Maumee, Ohio 43537, and Gus Sevastakis, 5645 Angola Road, Toledo, Ohio 43615

Filed Dec. 28, 1990, Ser. No. 636,063
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—108 **6 Claims**



1. Apparatus for manipulating a Verres needle or trocar for use in laparoscopy comprising:

a body having an open portion for receiving and supporting a Verres needle or trocar, an enlarged portion at a distal end of said open portion, and an axial passage through said enlarged portion for axial movement of the Verres needle or trocar supported on said open portion,

means at a proximal end of said body remote from said distal end for engaging the Verres needle or trocar supported on said open portion of said body and progressively advancing such Verres needle or trocar through said passage, and

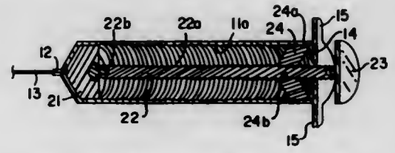
a plurality of resilient spring fingers disposed in a circumferential array on said enlarged portion of said body surrounding and parallel to said passage, flared means on said enlarged portion surrounding said passage at said distal end for engagement with said spring fingers, and means for moving said spring fingers axially along said enlarged portion simultaneously with each other against said flared means and independently of said engaging and advancing means so as to cam free ends of said spring fingers radially outwardly of said enlarged portion against resilient spring force of said spring fingers.

5,183,466

RESTRICTED USE HYPODERMIC SYRINGE

John B. Movern, 3622 Norton Place, NW., Washington, D.C.

Division of Ser. No. 400,060, Aug. 29, 1989, Pat. No. 5,021,047.
This application Jun. 3, 1991, Ser. No. 708,978
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **16 Claims**



1. A restricted use hypodermic syringe comprising:

a tubular barrel having a forward end, a rearward end and an inner wall surface defining an interior space for accommodating a liquid to be administered and a movable plunger assembly, said barrel having means at said forward end thereof for coupling to a hypodermic needle;

a movable plunger assembly received within said barrel, said plunger assembly having (1) a piston with an exterior surface sealingly engaging said inner wall surface of said barrel, (2) a plunger rod having a forward end joined to said piston and a rearward end extending through said rearward end of said barrel and (3) a plunger lock disposed between and engaging said plunger rod and said inner wall surface;

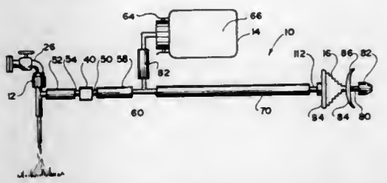
said plunger rod and said plunger lock having interengaging surfaces forming a one-way clutch which permits movement of said piston and plunger rod relative to said plunger lock in a rearward direction and couples said piston and plunger rod and said plunger lock for movement together in a forward direction;

said plunger lock having surfaces engaging the inner wall of said barrel to form a one-way brake which permits movement of said plunger lock in said barrel in a forward direction and prevents movement of the plunger lock in a rearward direction;

whereby (1) the piston and plunger rod can be moved rearwardly in said barrel from a first position to a second position for drawing liquid into said barrel, (2) subsequently said piston and plunger rod and said plunger lock can be moved together in said barrel forwardly from said second position to a third position to expel liquid from said interior space and establish a blocking position of said plunger lock and (3) thereafter the extent of rearward movement of said piston and plunger rod in said barrel is limited by the blocking position of said plunger lock.

VOL 1147 ISS 1 FEB 2 1993 UMI

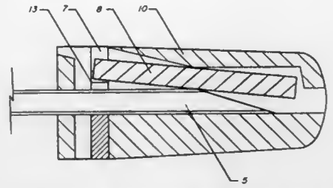
5,183,467
NASAL ASPIRATOR
Daniel F. Mouney, 1616 Lakeshore Dr., New Orleans, La. 70122
Filed May 1, 1990, Ser. No. 517,577
Int. Cl.[5] A61M *37/00, 1/00;* **A62B** *00/00*
U.S. Cl. 604—149 **8 Claims**



1. A method for removing secretions from a nasal passageway, the method comprising the following steps:
providing a vacuum creation means having an inlet side and an outlet side, said vacuum creation means comprising an elongated housing having an upper internally threaded collar for engagement with a liquid flow source, and elongated housing with a central internal opening, a flow control means mounted in said central opening and a side arm integrally connected to said housing and extending outwardly therefrom, said side arm being formed with an internal passageway in fluid communication with the central opening;
providing a nasal valve means connected in fluid communication to said vacuum creation means, said nasal valve means comprising an elongated tube having a first end and a second end, a nasal seal means carried by the first end of the tube, a handle means attached to the tube a distance from said nasal seal means and a normally closed nasal valve means mounted within said housing and movable between a first, closed position substantially sealing communication between said second end of the tube and exterior of the nasal valve means and a second, opened position allowing fluid communication between the exterior of the nasal valve means and the second end of the tube;
providing a vacuum container means mounted between said vacuum creation means and said nasal valve means;
connecting an inlet side of said vacuum creation means to a liquid flow source;
positioning the nasal seal means within the nasal passageway of the user, such that the nasal seal means seals the nasal passageway;
initiating a flow of liquid through said vacuum creation means, withdrawing air from said vacuum container means to create at least a partial vacuum within said vacuum creation means;
opening said nasal valve means and creating an impulse shock for withdrawing secretions from the nasal passageway and directing them from the nasal valve means to the outlet side of the vacuum creation means; and
continuing a flow of liquid through said vacuum creation means until such time as the nasal passageway is substantially secretion-free.

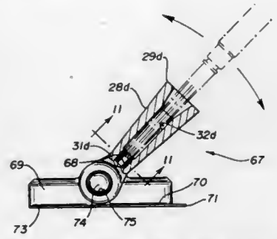
5,183,468
SNAP RING NEEDLE GUARD
Donald J. McLees, 2623 Virginia Ave., Everett, Wash. 98201
Filed Apr. 2, 1991, Ser. No. 679,561
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—164 **7 Claims**

4. An intravenous catheter insertion kit and a needle tip guard comprising:
a flexible catheter and its attached standard sized catheter hub;
an insertion needle assembly, the insertion needle being initially located inside said catheter hub and said catheter, said needle also being attached proximally to a standard sized needle hub and having a distal pointed tip and a cylindrical surface;
a hollow needle tip guard enclosed entirely within said catheter hub and through which said needle passes;
an expandable retaining ring captured within said hollow housing and through which said needle passes, said retaining ring having a gap which increases in width with distance from the axis of said ring and said ring having gripping means capable of gripping said needle when said ring is in its contracted state; and
a lever captured within said hollow housing and residing outside of said needle on the same side of said needle as said retaining ring gap, the proximal end of said lever



spreading apart said retaining ring gap and said gap exerting a force on said lever proximal end directed away from the needle axis, said lever being in pivotal contact with a point of said housing, and the distal end of said lever being in contact with said cylindrical surface of said needle whereby passage of said needle tip beyond the contact point between said needle surface and said distal lever end in the proximal direction allows said retaining ring gap force to pivot said lever about its contact point with said housing and eject said lever proximal end out of said retaining ring gap, said retaining ring thereby becoming contracted and closing said retaining ring gripping means upon said needle surface.

5,183,469
DEVICE FOR THE REMOVAL AND REPLACEMENT OF A NEEDLE SHIELD
Paul R. Capaccio, Clifton, N.J., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed May 10, 1991, Ser. No. 698,512
Int. Cl.[5] A61M *5/32;* **B65D** *83/10*
U.S. Cl. 604—192 **17 Claims**



1. A device for the removal and replacement of a needle shield having a distal end, an open proximal end and a side wall therebetween having an outside surface comprising:
a housing having a proximal end and a distal end, said housing having a bore therein beginning at said proximal end;
thread means in said housing along said bore and accessible through said bore, said thread means for engaging and holding the outside surface of the needle shield which is placed into said bore through said proximal end of said housing and rotated in a direction to advance the needle shield distally along said thread means, wherein at least the portion of said thread means for engaging the needle shield is made of metal; and
stabilizing means at said distal end of said housing for positioning and holding said housing for allowing a person to remove and replace a needle shield without touching said device.

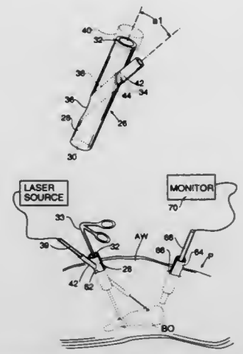
5,183,470
LAPAROSCOPIC CHOLANGIOGRAM CATHETER AND METHOD OF USING SAME
Peter H. Wettermann, Pomfret, Conn., assignor to International Medical, Inc., Danielson, Conn.
Filed Mar. 4, 1991, Ser. No. 664,373
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—281 **7 Claims**



1. A cholangiogram catheter comprising:
(a) a rigid tubular outer sheath having a distal end and a proximal end;
(b) a first luer connector attached to the proximal end of said sheath;
(c) an outer tubular catheter slidably seated within said outer sheath and having a proximal end and a distal portion;
(d) a second luer connector attached to the proximal end of said outer catheter, said second connector having means engageable with the first connector to releasably fix said outer tubular catheter in relation to said sheath, said distal end portion protruding form the distal end of said outer sheath as a permanently preformed arcuate resilient curve when said second connector engaged with said first connector;
(e) a flexible inner tubular catheter readily slidable within said outer catheter and longitudinally dimensioned to extend outwardly of both ends of said outer catheter, the distal end of said inner catheter having a closed tip and a discharge aperture; and
(f) a third luer connector attached to the proximal end of said inner catheter for connecting said inner catheter to an injection device.

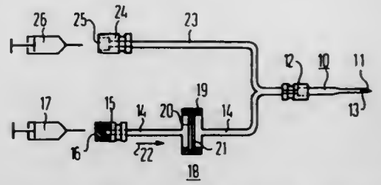
5,183,471
LAPAROSCOPIC CANNULA
Peter J. Wilk, 185 W. End Ave., New York, N.Y. 10023
Filed Jan. 24, 1992, Ser. No. 825,158
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—284 **4 Claims**

1. A cannula for use in laparoscopy, comprising a tubular member having a first opening at a distal end and second opening at a proximal end for enabling the longitudinal insertion through said tubular member of a first laparoscopic instrument, a first aperture being disposed on a side of said tubular member distally of said second opening, a second aperture being disposed on a substantially opposite side of said tubular



member proximally of said first opening and distally of said first aperture, said first aperture and said second aperture defining a linear path for a second laparoscopic instrument, said linear path being oriented at an acute angle with respect to said tubular member.

5,183,472
ARRANGEMENT FOR TRANSCUTANEOUS FILLING OR REPLENISHMENT OF LIQUID MEDICATIONS IN AN IMPLANTABLE MEDICATION DOSING DEVICE
Peter Jaehrling, Puschendorf, and Eugen Schweikert, Bubenreuth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Dec. 18, 1990, Ser. No. 629,620
Claims priority, application European Pat. Off., Dec. 21, 1989, 89123701.8
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—284 **5 Claims**



1. An apparatus for filling a reservoir for use with a source of negative pressure, said apparatus comprising:
a cannula having a paracentesis end shaped for hermetic introduction into a reservoir to be filled with fluid, and having an opposite end;
first and second flexible conduits in fluid communication with said opposite end of said cannula, each flexible conduit terminating in a free end;
first and second pierceable septa respectively attached to said free ends of said first and second flexible conduits; and
said second septum forming means for communicating said second flexible conduit and said cannula with said source of negative pressure for creating a negative pressure at said cannula for drawing fluid supplied through said first septa and said first flexible conduit into said cannula.

VOL
1147
ISS
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1993
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5,183,473

ENZYME ACTIVATED PEROXYDISULFATE BLEACH COMPOSITION

Marvin M. Crutchfield, and Bertie J. Reuben, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 26, 1991, Ser. No. 692,098
Int. Cl.[5] C11D *3/395, 7/54;* **D06L** *3/00, 3/02*
U.S. Cl. 8—110 **27 Claims**

1. A bleach composition comprising a sulfatase enzyme and a stable, water soluble peroxydisulfate ion forming compound which, in the presence of the enzyme, hydrolyses in aqueous solution to provide peroxymonosulfate ions.

15. A process of bleaching articles which comprises contacting the article with a bleach effective amount of an aqueous composition comprising a sulfatase enzyme and a stable, water soluble peroxydisulfate ion producing compound which, in the presence of the enzyme, hydrolyses in aqueous solution to form peroxy-monosulfate ions.

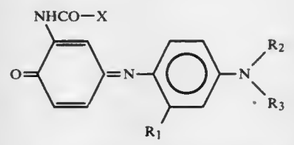
5,183,474

HEAT-SENSITIVE SUBLIMATION TRANSFER CYAN DYE AND TRANSFER SHEET

Tsukasa Ohyama, Omuta; Yasushi Shimokawa, Miike; Isamu Gboda, Kobe; Keisuke Takuma, Omuta, and Hitoshi Koshida, Nishinomiya, all of Japan, assignors to Mitsui Toatsu Chemicals Inc., Tokyo, Japan

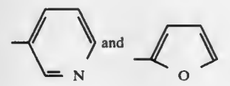
PCT No. PCT/JP90/01166, § 371 Date May 13, 1991, § 102(e) Date May 13, 1991, PCT Pub. No. WO91/04301, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 12, 1990, Ser. No. 700,153
Claims priority, application Japan, Sep. 13, 1989, 1-235559; Dec. 12, 1989, 1-320608
Int. Cl.[5] B41M *5/38;* **C09B** *53/02*
U.S. Cl. 8—471 **16 Claims**

1. A heat-sensitive sublimation transfer cyan dye represented by the following formula (I):



(I)

wherein R_1 represents a hydrogen atom, an alkyl group, an alkoxyl group, an alkylcarbonylamino group, a formylamino group or a halogen atom, R_2 and R_3 represent an alkyl group, an alkenyl group, an alkoxyalkyl group, an aralkyl group, an aryl group, a halogenoalkyl group or a cyanoalkyl group or are coupled together to form a ring, and X represents any one of the following groups:



5,183,475

FUEL COMPOSITIONS CONTAINING REACTION PRODUCTS OF AROMATIC TRIAZOLES AND FATTY ACIDS SALT AS ANTIWEAR ADDITIVES

Angeline B. Cardis, Florence, N.J., and Carl E. Shanholtz, Lawrenceville, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 9, 1989, Ser. No. 434,944
Int. Cl.[5] C10L *1/22*
U.S. Cl. 44—343 **15 Claims**

1. A liquid fuel composition comprising a major proportion of a fuel selected from the group comprising alcohol and ether oxygenate fuels, diesel fuel and liquid hydrocarbon fuel and a fatty acid salt reaction product made by reacting an aromatic triazole and a fatty acid selected from the group comprising oleic acid, stearic acid, tall oil acid, and dimer acid having 10 to 40 carbon atoms, in an antiwear additive amount ranging from 0.01 to 5.0 wt. % by weight of the composition.

5,183,476

ETHANOL FUEL AND ITS USE AS A DIESEL FUEL

Göran Carlsson, Nykvarn, and Martin Hellsten, Ödsmål, both of Sweden, assignors to Berol Nobel Stenungsund AB, Stenungsund, Sweden

PCT No. PCT/SE89/00055, § 371 Date Aug. 22, 1990, § 102(e) Date Aug. 22, 1990, PCT Pub. No. WO89/07637, PCT Pub. Date Aug. 24, 1989
PCT Filed Feb. 10, 1989, Ser. No. 571,591
Claims priority, application Sweden, Feb. 22, 1988, 8800597
Int. Cl.[5] C10L *1/02*
U.S. Cl. 44—445 **17 Claims**

1. A fuel which is ethanol-based and which has the form of a solution, the fuel comprising:

from 62–94% by weight of ethanol;

from 2–8% by weight of water; and

from 2–30% by weight of an ignition improving agent consisting essentially of a water-soluble polyalkylene glycol compound containing 6–50 alkyleneoxy units with 2–4 carbon atoms and having a molecular weight of less than 2500, wherein the water-soluble polyalkylene glycol compound has a general formula

$$R\,O(A)_nH,$$

in which R is a hydrogen or a hydrocarbon group having 1–30 atoms, A is an alkyleneoxy group having 2–3 carbon atoms and at least 20% of all alkyleneoxy groups being ethyleneoxy groups, and n is an integer selected so that the polyalkylene glycol compound has a molecular weight ranging from 400 to 1000.

5,183,477

FOLIAR SPRAY AGENT FOR PROTECTING AGRICULTURAL AND HORTICULTURAL PLANTS AGAINST DISEASE INJURY

Toshio Masuda, 37-12, Bessho-machi, Obmiya-shi, Saitama-ken, Japan

Filed Oct. 24, 1990, Ser. No. 102,011
Claims priority, application Japan, Oct. 26, 1989, 1-277124
Int. Cl.[5] A01C *1/00*
U.S. Cl. 47—58 **3 Claims**

1. A method for protecting a plant against disease injury induced by a plant pathogen which comprises spraying the foliar surface of the plant with an aqueous solution consisting essentially of from about 0.006 mg/ml to about 0.025 mg/ml of an alkali metal silicate as the effective ingredient.

5,183,478

PROCESS FOR DEWATERING QUENCHED SLAG

Douglas K. Holland, Rialto, Calif., and Edward W. Dillingham, McFarland, Kans., assignors to Texaco Inc., White Plains, N.Y.

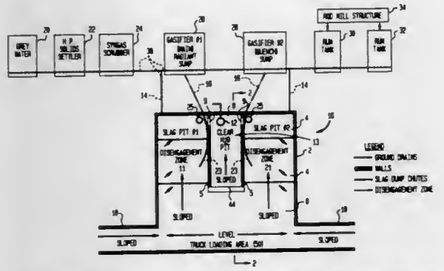
Filed Dec. 15, 1991, Ser. No. 655,612
Int. Cl.[5] C10J *3/08*
U.S. Cl. 48—197 R **9 Claims**

1. A process for continuous removal of quenched slag from a fuel gasification process employing at least one gasifier with discharge means for dumping said slag and two slag pits, comprising steps of:

(a) periodically discharging said slag and water from said discharge means onto the upper portion of a disengagement zone of a first slag pit having a sufficient downward slope to allow free and absorbed water to separate from said slag and flow through said disengagement zone into a

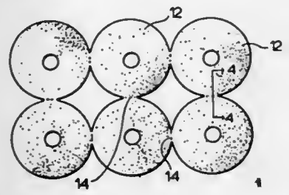
VOL 1147 ISS 1 FE 2 1993 UMI

lower enclosed portion of said slag pit having a plurality of vertically-spaced water-draining means;
(b) allowing said slag to accumulate and drain for a first period of time;
(c) shifting the discharge of said slag and water from said first disengagement zone and slag pit to a second disengagement zone and slag pit for a second period of time;
(d) removing the drained slag from said first disengagement zone by loading and transport means, beginning with the driest portions thereof;



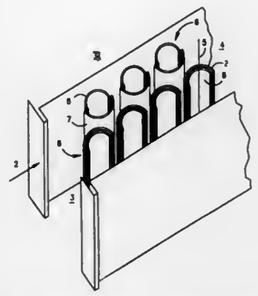
(e) draining accumulated water from said first and said second slag pits into a clear water pit via said drainage means; and
(f) allowing solids to settle in the water accumulated in said clear water pit, periodically removing the clear water and settled solids;
wherein said first and second slag pits are alternately used as active pits for dumping and drainage of slag, with the non-active pit being cleared as in step (d) in less time than the active pit is permitted to accumulate slag.

5,183,479
ABRASIVE DISKS AND METHOD OF MAKING
John R. Grimes, Etobicoke, Canada, assignor to Gemtex Company Limited, Etobicoke, Canada
Filed Nov. 1, 1991, Ser. No. 785,330
Int. Cl.[5] D24D *3/00*
U.S. Cl. 51—293 **11 Claims**



1. Method of making abrasive coated product comprising the step of:
providing a first plurality of interconnected shapes, with mounting apertures, where the proportion of the periphery of each such shape having connecting material to each connected shape is less than 10%,
providing a second plurality of said connected shapes with an adhesive coat,
wherein said second plurality may be less or equal said first plurality,
then applying abrasive grit to said adhesive coat,
then providing a second adhesive coat over said grit carrying first adhesive coat.

5,183,480
APPARATUS AND METHOD FOR COLLECTING PARTICULATES BY ELECTROSTATIC PRECIPITATION
Michael F. Raterman, Doylestown, Pa., and Michael D. Thiel, Fairfax, Va., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Oct. 28, 1991, Ser. No. 783,472
Int. Cl.[5] B03C *3/49, 3/76*
U.S. Cl. 55—12 **20 Claims**

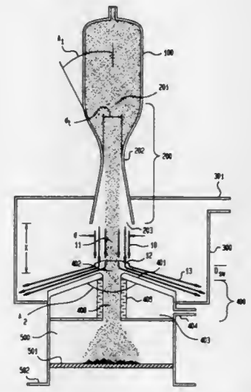


1. An apparatus for collecting particulates from a flowing gaseous stream containing particulates by electrostatic precipitation which comprises:
i) a gas inlet;
ii) a gas outlet;
iii) a discharge electrode for electrically charging said particulates;
iv) a particulate collecting means which comprises outer and inner concentric, nestable, semi-tubes, each of which is rotatable relative to the other from an open, nested configuration, to a substantially enclosed tube configuration having a lower end which communicates with a particulate collection receptacle, said inner semi-tube having a concave surface acting as a collecting electrode which is oppositely charged from said discharge electrode, to attract and hold said charged particulates;
v) a means for removing said particulates from said collecting electrode by subjecting said concave surface to conditions which detach said particulates therefrom;
vi) a means for forcing said gaseous stream from said gas inlet past said discharge electrode and said collecting means to said gas outlet; and
vii) a voltage source means to apply a voltage to said discharge and collecting electrodes.

13. A method for reducing catalyst particulate contamination in a flowing gas stream containing particulates wherein said gas is passed through an electrostatic precipitator which method comprises:
i) passing said gas by a discharge electrode thereby electrically charging said particulates;
ii) capturing said charged particulates on a particulate collecting means, proximal to said discharge electrode, which comprises outer and inner concentric, nestable, relatively rotatable, semi-tubes, arrayed in an open, nested configuration, said inner semi-tube having a concave surface exposed to the flow of said gas, acting as a collecting electrode which is oppositely charged from said discharge electrode until a desired amount of particulates have been collected;
iii) rotating said semi-tubes to a substantially enclosed tube configuration having an interior which is not substantially exposed to the flow of said gas, said configuration having a lower end which communicates with a particulate collection receptacle;
iv) subjecting said collecting electrode to forces which detach said particulates from said collecting electrode, said particulates dropping into a particulate collection receptacle from which they can be removed; and

v) rotating said semi-tubes from said enclosed tube configuration to said open, nested configuration; and
vi) withdrawing a gas stream of reduced particulate contamination.

5,183,481
SUPERSONIC VIRTUAL IMPACTOR
William Felder, Lawrenceville, N.J., assignor to Aerochem Research Laboratories, Inc., Monmouth Junction, N.J.
Filed Jun. 7, 1991, Ser. No. 712,360
Int. Cl.[5] B01D *45/00*
U.S. Cl. 55—15 **15 Claims**

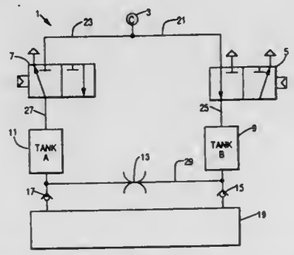


1. A method for separating particles from a gas containing said particles, comprising the steps of:
accelerating said gas containing said particles to a supersonic flow velocity in a supersonic nozzle;
forming a shock wave in front of a virtual impactor by impacting said supersonic flow against said virtual impactor wherein said virtual impactor comprises a plate having an aperture therein and an interior chamber;
separating said particles from said gas behind said shock wave with said virtual impactor wherein said particles substantially follow the original direction of flow of the accelerated gas said particles passing through said aperture of said impactor and the gas separated from said particles is caused to change direction from its original direction of flow and wherein the pressure in said interior is at least as great as the pressure between said shock wave and said plate so that there is a small positive outward flow of gas from said interior chamber through said aperture;
collecting said particles in an interior chamber cavity downstream of said aperture; and
recovering the gas separated from said particles.

5,183,482
SEPARATION BY MEMBRANE TECHNIQUES
Mitri S. Najjar, Wappingers Falls, and Martin D. Hilmar, Beacon, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.
Filed Jun. 19, 1991, Ser. No. 717,790
Int. Cl.[5] B01D *53/22, 71/02*
U.S. Cl. 55—16 **15 Claims**

1. The method of separating a charge gas mixture containing a more permeable gas and a less permeable gas which comprises
passing a charge gas mixture containing a more permeable gas and a less permeable gas into contact with a membrane of a high purity alumina containing aluminum-oxygen repeating units and bearing alkoxide groups;
maintaining a pressure on the charge side of said membrane greater than the pressure on the permeate side of said membrane thereby yielding a permeate containing increased quantity of said more permeable gas and decreased quantity of said less permeable gas and a retentate containing decreased quantity of said more permeable gas and an increased quantity of said less permeable gas;
recovering said permeate containing increased quantity of said more permeable gas and decreased quantity of said less permeable gas; and
recovering said retentate containing decreased quantity of said more permeable gas and an increased quantity of said less permeable gas.

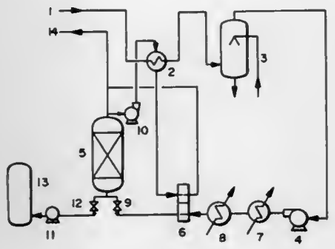
5,183,483
PNEUMATIC CIRCUIT CONTROL FOR PRESSURE SWING ADSORPTION SYSTEMS
John L. Servido; Robert E. Tucker, and James Murphy, all of Marietta, Ga., assignors to Healthdyne, Inc., Marietta, Ga.
Filed Aug. 21, 1991, Ser. No. 743,776
Int. Cl.[5] B01D *53/04*
U.S. Cl. 55—26 **6 Claims**



1. A method for controlling pneumatic flow in a pressure swing adsorption system including first and second molecular sieves, each having input and output sides, which selectively adsorb gas components of a feed gas, the method comprising the steps of:
a) supplying a feed gas from a compressor to said input side of one of said first and second molecular sieves via a first three-way valve connected to said input side of said one of said first and second sieves, said first sieve adsorbing selected gas molecules from said feed gas to produce a product gas;
b) supplying said product gas to said second sieve;
c) purging previously adsorbed gas molecules in said second sieve using said product gas, and exhausting said product gas and said previously adsorbed gas molecules via a second three-way valve which is connected to the inlet side of the other of said first and second molecular sieves;
d) when said first sieve reaches its molecular adsorption capacity, only supplying the input side of said second sieve with feed gas from said compressor and said first sieve to balance the pressure in said first and second molecular sieves; then
e) repeating steps a-d except that said second sieve initially receives feed gas via said second three-way valve and produces said product gas while said first sieve is purged of said adsorbed gas molecules via said first three-way valve.

VOL
1147
ISS
1
FE
2
1993
UMI

5,183,484
PROCESS FOR REMOVAL OF WATER IN RAW MATERIAL MIXED GAS
Akira Yamaguchi; Masaru Uno, both of Hyogo; Norio Sekikawa, Tokyo; Fumio Arai, Tokyo, and Kenji Matsuzaki, Tokyo, all of Japan, assignors to Sumitomo Seika Chemicals Co., Ltd., Hyoga, Japan
Filed Oct. 28, 1991, Ser. No. 783,221
Claims priority, application Japan, Nov. 2, 1990, 2-298655
Int. Cl.[5] B01D *53/02*
U.S. Cl. 55—34 **2 Claims**

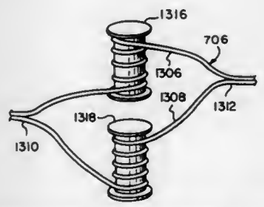


1. In a process for the recovery of CO_2 gas in a raw material mixed gas by a PSA method using a PSA apparatus, in which CO_2 gas is adsorbed with zeolite molecular sieves and then desorbed therefrom, the improvement comprising the steps of: cooling the raw material mixed gas with a cooler; passing the raw material gas through a rotary dehumidification apparatus to remove water in the raw material mixed gas at 0° to 15 C.; and regenerating the rotary dehumidification apparatus by using as a gas for regeneration unadsorbed gas discharged from an adsorption step in the PSA apparatus while heating the evaporate and deadsorb water from the rotary dehumidification apparatus.

5,183,485

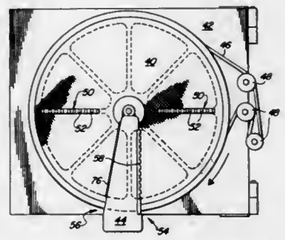
Patent Not Issued For This Number

5,183,486
APPARATUS FOR DEGASSING A LIQUID
Ronald A. Gatten, Pleasanton; Leslie A. Miller, San Jose; Thomas J. McCall, Jr., Fremont, and Vance J. Nau, Cupertino, all of Calif., assignors to Spectra-Physics, Inc., San Jose, Calif.
Filed Dec. 4, 1990, Ser. No. 622,999
Int. Cl.[5] B01D *19/00*
U.S. Cl. 55—159 **4 Claims**



1. A vacuum degassing unit for degassing a liquid, comprising:
a vacuum chamber including a vacuum pump for creating a vacuum in said vacuum chamber;
a source of liquid;
a bobbin in said chamber; and
a first tube for conducting said liquid through said chamber, said first tube being wound in coils around said bobbin, the adjacent coils of said first tube being spaced from each other and said tube being permeable to gases in said liquid.

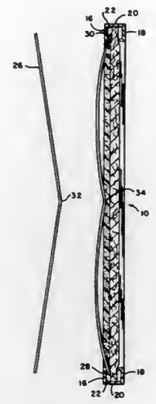
5,183,487
TRASH HANDLING APPARATUS FOR A SELF-CLEANING ROTARY SCREEN
James I. Lodico, Hampton; David R. Coder, East Moline; Lawrence J. Adams, Geneseo; Rebecca A. F. Guthrie, Coal Valley, all of Ill.; Raymond M. Andes, Jr., Bettendorf, Iowa, and Philip G. Alexander, Geneseo, Ill., assignors to Deere & Company, Moline, Ill.
Filed Apr. 24, 1992, Ser. No. 874,287
Int. Cl.[5] B01D *46/04*
U.S. Cl. 55—289 **14 Claims**



1. A self-cleaning filter screen for filtering out large particulate matter from an air stream, said screen comprising:
a planar screen arranged to intercept an air stream so that air to be filtered flows through the screen, the screen having an upstream side and a downstream side;
a cutter bar is mounted to the upstream side of the screen, the cutter bar is provided with a series of outwardly extending ribs;
a chamber is located on the upstream side of the screen for removing material attached to the screen, the chamber is provided with a leading edge and a trailing edge;
a comb is mounted to the leading edge of the chamber, the comb having a castellated edge with a series of notches that correspond to the outwardly extending ribs of the cutter bar; and
means for rotating the screen relative to the chamber, whereby large particulate matter located on the screen is scissored by the ribs acting in concert with the notches as the screen is rotated relative to the chamber.

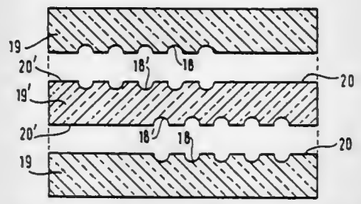
5,183,488
MULTI-STAGE FILTER FRAME ASSEMBLY
Richard A. Deering, Madison, Wis., assignor to Research Products Corporation, Madison, Wis.
Filed Apr. 30, 1992, Ser. No. 876,177
Int. Cl.[5] B01D *46/02*
U.S. Cl. 55—320 **7 Claims**

1. A multi-stage air filter assembly comprising:
a first filter layer having its outer edges disposed within a channel defined by the top, bottom and side walls of a metal frame,
at least one additional filter layer disposed in a freely overlying relationship to said first filter layer, and
a plurality of elongated retaining means extending across said additional filter layer and having a first end removably disposed within a first frame channel and a second end removably disposed within a second channel opposite said first channel, said retaining means having at least one bend disposed along its length whereby said first and second ends are urged upwardly away from said additional filter layer and into engagement with a frame wall



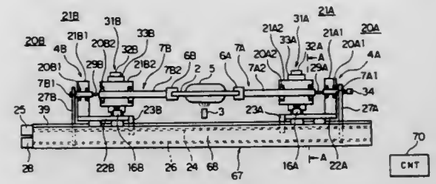
and a portion of said retaining means is urged into contact with said additional filter layer.

5,183,489
METHOD OF MAKING MULTI-FERRULES HAVING A SERIES OF CHANNELS WITH PARALLEL AXES
Claude Brehm, Montrouge; Philippe Dupont, Melun, and André Tardy, Egly, all of France, assignors to Alcatel Fibres Optiques, France
Filed Nov. 5, 1991, Ser. No. 787,832
Claims priority, application France, Nov. 8, 1990, 90 13857; Aug. 30, 1991, 91 10786
Int. Cl.[5] C03B *37/027, 23/20*
U.S. Cl. 65—4.2 **18 Claims**



1. A method of making multi-ferrules from a vitreous material, the multi-ferrules having a series of cylindrical channels with parallel axes, said method comprising the following steps:
forming a multi-ferrule blank of well-defined section from a solid block of vitreous material and creating within said block a plurality of spaced cylindrical passages having parallel axes and an inside diameter Di,
positioning said blank vertically in an apparatus similar to a fiber drawing apparatus for optical fibers,
exerting traction on a piece formed at the bottom end of said blank,
heating and simultaneously drawing said blank to a determined outside dimension, and
forming a multi-ferrule of selected length by cutting a given length from the piece thus obtained.

5,183,490
OPTICAL FIBER SOOT SYNTHESIS APPARATUS
Toshihiro Mikami, Ichihara; Yukio Kohmura, Chiba; Yoshinori Ishida, and Akira Nogami, both of Ichihara, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan
Filed Sep. 17, 1991, Ser. No. 761,004
Claims priority, application Japan, Oct. 25, 1990, 2-287731; May 8, 1991, 3-102645; May 15, 1991, 3-110142
Int. Cl.[5] C03B *37/025, 37/07*
U.S. Cl. 65—144 **33 Claims**



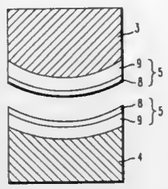
1. Apparatus for synthesizing an optical fiber preform comprising an elongated optical fiber core member having a pair of spaced end portions and an elongated central portion, and a cladding layer of soot formed on said central portion of the core member, said apparatus comprising:
a core member support and rotational drive mechanism for supporting a said core member for rotation about a horizontal axis, said rotational drive mechanism including a pair of spaced core member support and rotational drive units, said units being horizontally spaced apart and arranged so that the optical fiber core member extends horizontally between the units with one end portion of the core member supported by one of the units and with the other end portion of the core member supported by the other of the units;
a burner for synthesizing and discharging optical fiber soot material to be deposited on the central portion of the core member and an oxyhydrogen flame, said burner being disposed between said units beneath the central portion of the core member supported for rotation by said mechanism;
a housing presenting a chamber for accommodating the burner, the central portion of the core member, and the soot material generated by said burner;
a reciprocation drive assemblage for reciprocating the core member and the burner relative to one another in a horizontal direction; and
a weight measuring mechanism for measuring the weight of the core member and the soot material deposited thereon, said weight measuring mechanism including a pair of spaced weight measuring components, said components being disposed between said core member support and rotational drive units and being horizontally spaced apart so that said central portion of the core member is positioned therebetween.

5,183,491
MATERIAL FOR THE TEMPERING OF GLASS
Benoit D'Iribarne, Aachen, Fed. Rep. of Germany; Henri Mairlot, Acoz, Belgium, and Paul Honang, Sao Paulo, Brazil, assignors to Saint-Gobain Recherche, Aubervilliers, France
Continuation of Ser. No. 477,126, Feb. 7, 1990, abandoned, which is a continuation of Ser. No. 257,684, Oct. 14, 1988, abandoned. This application May 28, 1991, Ser. No. 707,947
Claims priority, application France, Oct. 14, 1987, 87 14185
Int. Cl.[5] C03B *27/00*
U.S. Cl. 65—351 **15 Claims**

1. In an installation for contact-tempering glass plates, said glass plates having a thickness of 1 to 10 mm, said installation including cooling plates mounted so as to be movable toward one another for holding the glass plates positioned therebe-

VOL
1147
ISS
1
FE
2
1993
UMI

tween, a layer of material supported by each of the cooling plates for direct contact with the glass plates such that the glass plates are contacted only by the material when the glass plates are held by the cooling plates, each said material comprising a



heat resistant material having a heat resistance of between about $0.25 \cdot 10^{-3}$ and $1 \cdot 10^{-2}$ $m^2 \cdot K \cdot W^{-1}$,

wherein said material comprises threads having a diameter of less than 50 microns, at least some of said threads being metallic.

5,183,492

HERBICIDAL 3-ARYLURACILS

Milos Suchy, Pfaffhausen; Paul Winternitz, Greifensee, and Martin Zeller, Baden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

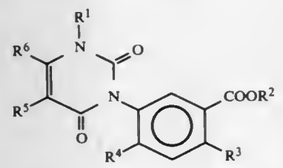
Filed Feb. 27, 1991, Ser. No. 656,133

Claims priority, application Switzerland, Jun. 29, 1989, 2450/89

Int. Cl.[5] A01N *43/54*; **C07D** *239/54, 239/70, 239/96*

U.S. Cl. 504—243 **15 Claims**

1. A compound of the formula



I

wherein

R^1 signifies hydrogen, C_{1-4}-alkyl, C_3 *or* 4-alkenyl, C_3 *or* 4-alkynyl or C_{1-4}-haloalkyl,

R^2 signifies C_{1-6}-alkylsulphonyl-C_{1-4}-alkyl, di(C_{1-6}-alkyl)-phosphono-C_{1-4}-alkyl, tri(C_{1-6}-alkyl)silyl-C_{1-4}-alkyl, C_{2-7}-alkanoyl-C_{1-4}-alkyl, carboxy-C_{1-4}-alkyl, {[C_{3-9}-(α-alkylalkylidene)]iminooxy-(C_{1-6}-alkoxy)carbonyl}-C_{1-4}-alkyl, (C_{3-6}-alkenyloxy)carbonyl-C_{1-4}-alkyl, (C_{3-6}-alkenyloxy-C_{1-4}-alkyl, C_{3-8}-cycloalkenyloxy-C_{1-4}-alkyl, C_{5-8}-cycloalkenyl, C_{6-8}-bicycloalkyl, C_{6-8}-bicycloalkenyl, C_{2-7}-cyanoalkyl or C_{3-6}-alkynyloxy-C_{1-4}-alkyl,

R^3 signifies halogen or cyano,

R^4 signifies hydrogen or halogen,

R^5 signifies hydrogen, fluorine or C_{1-4}-alkyl and

R^6 signifies C_{1-4}-alkyl or C_{1-4}-haloalkyl or

R^5 and R^6 together form trimethylene or tetramethylene, or the corresponding enol ether of a compound of formula I in which R^1 is other than hydrogen or C_{1-4}-haloalkyl or a salt of a of formula I in which R^1 signifies hydrogen.

5,183,493

METHOD FOR MANUFACTURING SPHERICAL PARTICLES OUT OF LIQUID PHASE

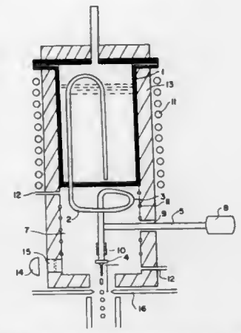
Egbert Brandau, Alzenau; Hans Huschka, Hanau; Martin Kadner, Maintal, and Waldemar Schröder, Hasselroth, all of Fed. Rep. of Germany, assignors to Nukem GmbH, Alzenau, Fed. Rep. of Germany

Filed Jul. 8, 1991, Ser. No. 726,803

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1990, 4022648

Int. Cl.[5] B22F *9/00*

U.S. Cl. 75—335 **7 Claims**



1. A method for the manufacture of spherical particles having a grain size in the range 5μ to 5 mm by melting the material from which the particles are formed and solidifying it, said method comprising the steps of

a) melting said material,

b) feeding the melted material into a vibrating nozzle,

c) forming the melted into droplets by allowing them to fall through a first drop zone, the distance through which the droplets fall in said first drop zone being sufficiently high for the droplets of melted material to form into spherical droplets,

d) maintaining the temperature of said material as it falls through said first drop zone in the range 1° to 10° C. above the melting point of said material,

e) allowing the droplets to fall through a second drop zone,

f) solidifying the spherical droplets as they fall through said second drop zone by suddenly chilling them, by maintaining the temperature in said second drop zone at least 100° C. below the melting point of the material,

g) thermally separating said first drop zone and said second drop zone, and

h) collecting the solidified droplets.

5,183,494

PROCESS FOR MANUFACTURING RARE EARTH-IRON-BORON PERMANENT MAGNET ALLOY POWDERS

Ti Y. Liu, Hsinchu; Chi J. Chen, Kaohsiung, and Shou H. Chen, Hsin Chu, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Apr. 23, 1991, Ser. No. 690,056

Int. Cl.[5] H01F *1/02*

U.S. Cl. 75—349 **6 Claims**

1. A process for producing rare earth-iron-boron permanent magnetic alloy powders comprising the steps of:

a) heating pellets comprising a mixture of rare earth metal oxides, iron powder, ferroboron powder and calcium granules to a temperature of from about 800 to about 1300° C. for reaction/diffusion under an inert atmosphere to obtain a rare earth-iron-boron alloy of uniform composition,

b) powdering the resulting alloy to powders of from about 10 to about 60 mesh;

c) contacting said powders with an agitated aqueous solution of acetic acid containing a non-ionic surfactant and an alkali metal acetate.

5,183,495

METHOD FOR CONTROLLING A FLOW RATE OF GAS FOR PREREDUCING ORE AND APPARATUS THEREFOR

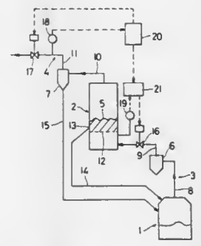
Tatsuro Ariyama; Shinichi Isozaki; Kenzo Yamada; Masahiro Matsuo, and Genji Kanatani, all of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Nov. 29, 1990, Ser. No. 619,759

Claims priority, application Japan, Dec. 4, 1989, 1-313259; Feb. 2, 1990, 2-23749

Int. Cl.[5] C21B *7/24, 13/14*

U.S. Cl. 75—379 **10 Claims**



1. A method for controlling a flow rate of a gas for prereducing ore, in a system comprising a smelting reduction furnace coupled to a prereduction furnace having ore in the form of a fluidized ore bed, the method comprising the steps of:

feeding substantially all of gas generated in said smelting reduction furnace to said prereduction furnace through a first gas flow passage, said first gas flow passage coupling said smelting reduction furnace to said prereduction furnace;

prereducing ore in said prereduction furnace having said fluidized bed with said gas fed to said prereduction furnace through said first gas flow passage;

exhausting said gas used for prereducing ore from said prereduction furnace through a second gas flow passage;

smelting and reducing the prereduced ore in said smelting reduction furnace;

controlling an actual flow rate of said gas generated in said smelting reduction furnace and fed into said prereduction furnace through said first gas flow passage by controlling a pressure of said gas fed to said prereduction furnace through said first gas flow passage with a gas pressure control valve positioned in said first gas flow passage, the pressure controlled gas being fed to said prereduction furnace and the pressure of said pressure controlled gas being controlled on the basis of a pressure valve detected by a pressure detector positioned at a gas inlet port positioned inside said prereduction furnace; and

the actual flow rate of said gas being fed into said prereduction furnace being controlled so that the actual flow rate is larger than a minimum reference value of the actual flow rate required to cause the ore in the fluidized bed to be fluidized, and is smaller than a maximum reference value of the actual flow rate of said gas.

5,183,496

COPPER SPEISS AS A CO-ADDITIVE IN REFINING CRUDE LEAD BULLION

Michael H. Blenk, Youngstown, N.Y.; Russell B. Diemer, Jr., Hockessin, Del., and John P. Hager, Golden, Colo., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 13, 1992, Ser. No. 835,649

Int. Cl.[5] C22B *13/06*

U.S. Cl. 75—702 **4 Claims**

1. In a process for concentrating elemental lead in crude lead bullion which has a sulfur content of less than about 1.3% by weight and comprises introducing sodium into the molten crude lead bullion and cooling the bullion to solidify and isolate a matte phase and a copper speiss phase from a lead bullion phase, the improvement comprising adding previously isolated copper speiss to the molten bullion prior to or substantially simultaneously with the sodium whereby formation of the three distinct phases is enhanced.

5,183,497

IRON AND A COPPER SPEISS AS CO-ADDITIVES IN REFINING CRUDE LEAD BULLION

Michael H. Blenk, Youngstown, N.Y.; Russell B. Diemer, Jr., Hockessin, Del., and John P. Hager, Golden, Colo., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 13, 1992, Ser. No. 835,646

Int. Cl.[5] C22B *13/06*

U.S. Cl. 75—702 **6 Claims**

1. A process for concentrating elemental lead in molten crude lead bullion, in which the crude lead bullion contains less than about 1.3% by weight sulfur, which comprises:

(a) casting the molten bullion at a temperature in the range of from about 1100° C. to about 1200° C.;

(b) cooling the cast bullion to a temperature in the range of from about 750° C. up to a value which is less than the boiling point of sodium whereby to form a partial matte crust over the surface thereof;

(c) introducing sodium or a sodium-containing reagent into the bullion;

(d) prior to or substantially simultaneously with the sodium, introducing an amount of iron metal or an iron-containing sulfide reagent into the crude lead bullion which is in the range of from about 50% up to about 100% of the stoichiometric iron requirement based on the concentration of arsenic in the bullion;

(e) prior to or substantially simultaneously with the sodium, introducing an amount of previously isolated copper speiss into the crude lead bullion which is at least about 5% by weight of the bullion; and

(f) cooling the cast bullion to separate a matte phase and a speiss phase from the lead bullion phase.

5,183,498

GAS BARRIER FOR THE REFINING SUPERALLOY

Robert E. Haun, Ukiah; Neil C. Elmer, Potter Valley, and Robin A. Lampson, Ukiah, all of Calif., assignors to Retech, Inc., Ukiah, Calif.

Filed Nov. 21, 1991, Ser. No. 796,102

Int. Cl.[5] C21B *3/04*

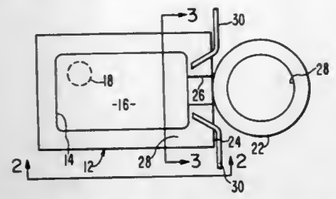
U.S. Cl. 75—709 **20 Claims**

1. Metallurgical apparatus comprising:

an open top hearth having means for heating a mass of metal in the hearth to a molten condition, said hearth having a wall provided with a fluid outlet therein for allowing molten metal to flow out of the hearth; and

VOL 1147 ISS 1 FE 2 1993 UMI

means adjacent to the hearth near said wall thereof for directing a gas under pressure in a direction away from



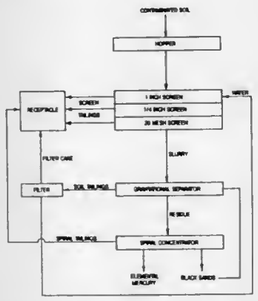
the outlet and back into the hearth to remove impruities from the surface of a molten metal in the hearth.

5,183,499

METHOD OF RECOVERING ELEMENTAL MERCURY FROM SOILS

Michael Chintis, Tempe, Ariz., assignor to Hunter Mining Company, Silver City, N. Mex.

Filed Dec. 26, 1991, Ser. No. 813,851
Int. Cl.[5] C22B *43/00*
U.S. Cl. 75—742 **30 Claims**



1. A method of removing elemental mercury from soil, comprising the steps of:

uniformly sizing the soil containing elemental mercury;

feeding the elemental mercury containing soil into at least one gravitational separator;

separating the soil and elemental mercury by gravity into soil tailings and a residue, said residue comprising elemental mercury and heavy materials;

discharging said soil tailings from said gravitational separator;

removing said residue from said gravitational separator; and with a gravitational concentrator, recovering elemental mercury from said residue by gravitation.

5,183,500

ELECTROLESS PLATING BATH COMPOSITION AND METHOD FOR PRODUCTION THEREOF

Kazuhiro Fukuoka, Matsudo; Keiki Kiyohara, Gokamura; Tadayuki Konishi; Isao Miyatake, both of Tokyo, and Masaji Hamamoto, Osaka, all of Japan, assignors to Kosaku & Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1991, Ser. No. 754,753
Claims priority, application Japan, Apr. 18, 1991, 3-112183
Int. Cl.[5] C23C *18/54*
U.S. Cl. 106—1.22 **2 Claims**

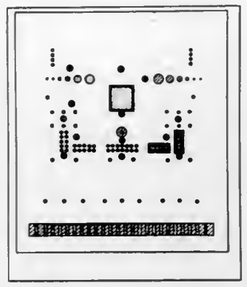
1. An electroless plating bath composition for plating a substrate provided with a resist film, said bath produced by mixing sufficient amounts of:

(a) stannous oxide,

(b) at least one member selected from the group consisting of lead oxide and lead perchlorate,

(c) perchloric acid and

(d) thiorea



such that the bath concentration of tin is from 6 to 22 g/l, the bath concentration of lead is from 8 to 30 g/l, the bath concentration of perchloric acid is from 19 to 58 g/l and the bath concentration of thiourea is from 20 to 70 g/l.

5,183,501

INK COMPOSITIONS FOR INK JET RECORDING

Hideo Kawashita; Mituhiro Ohta, and Kazuya Ogino, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited and Taoka Chemical Co. Ltd., both of Osaka, Japan

Filed Oct. 11, 1991, Ser. No. 775,029
Claims priority, application Japan, Oct. 17, 1990, 2-279586; Mar. 13, 1991, 3-74584
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 D **7 Claims**

1. An ink composition for ink jet recording comprising a water-soluble dye, an organic solvent and water, wherein said dye is a compound represented by the formula (1):

$$D—(SO_2CH_2CH_2SO_3H)_m \quad (1)$$

wherein D represents a dye residue selected from the group consisting of monoazo and polyazo dyes, their complexes with Cr, Fe, Co and Cu, copper and nickel phthalocyanine dyes, anthraquinone dyes, dioxazine dyes, and formazane complex dyes, and m represents an integer of 1, 2, 3 or 4, or a salt thereof.

5,183,502

WATER BASED INK FOR INK-JET PRINTING

Roland Meichsnër, Buttenbeim, and Werner Schmickl, Neumarkt, both of Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 195,579, May 18, 1988, abandoned. This application Nov. 8, 1989, Ser. No. 433,294
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 K **6 Claims**

1. Water based ink for ink-jet printing, consisting essentially of:

0.5–8 wt % water soluble dye,

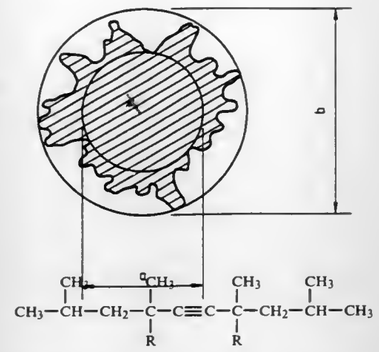
1–64 wt % glycol comprising a mixture of ethylene glycol and triethylene glycol in a ratio of 0.1 to 6.0,

0.01–5 wt % wetting agent,

0.01–2.0 wt % preservative, pH-regulator, complexing agents, other additives, or mixtures thereof,

as well as distilled water,

where the wetting agent is a formulation of the following structure



where R=OH or R=(O—CH_2—CH_2)$_n$—OH with n=1 to 30.

5,183,503

METHOD OF SHAKER MOLDING AND COMPOSITION THEREFOR

Allen A. Greenberg, 3531 N. 47th St., Hollywood, Fla. 33021

Filed May 13, 1992, Ser. No. 882,009
Int. Cl.[5] C08L *5/00*
U.S. Cl. 106—38.51 **6 Claims**

1. In a method of forming a molded object which comprises mixing together approximately 5–10 parts by weight of water and one part by weight of a molding powder mixture consisting essentially of from 7 to 15 percent by weight alkali metal alginate, a calcium salt in amount equal to about 1.2 times by wt. the amount of alkali metal alginate, and ¾ to 3 percent tetrasodium pyrophosphate, the remainder being a filler selected from the group consisting of diatomaceous earth, silica, magnesium carbonate, and kaolin, allowing the mixture to set and gel in a mold, and drying the resulting gelled object outside the mold to form a smaller rigid object, the improvement which comprises employing the alginate from *Laminaria hyperborea*.

5,183,504

AQUEOUS COATING COMPOSITION

Teruaki Kuwajima, Higashiosaka; Shinichiro Umeda, Kyoto, and Sakuichi Konishi, Ikoma, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed May 21, 1991, Ser. No. 703,805
Claims priority, application Japan, May 21, 1990, 2-130861
Int. Cl.[5] C09C *1/62*; C08J *00/00*
U.S. Cl. 106—404 **8 Claims**

1. An aqueous coating composition comprising:

(a) an aqueous varnish of a film-forming polymer having a number average molecular weight of 6,000 to 50,000, prepared by copolymerizing 5 to 40% by weight of a (meth)acrylamide, 3 to 15% by weight of acidic group-containing ethylenic monomers, 10 to 40% by weight of hydroxyl group-containing ethylenic monomers and the balance of ethylenic monomers other than acidic group-containing ethylenic monomers and hydroxy group-containing ethylenic monomers, and a portion of the acid groups is neutralized,

(b) an aqueous dispersion of a urethane oligomer in an aqueous medium containing either a primary or secondary polyamine or both, prepared by reacting polycarbonate diols having a molecular weight of 100 to 5,000, diisocyanate compounds and active-hydrogen containing hydrophilic compounds under isocyanate-rich conditions, followed by dispersing the reaction product in the aqueous medium;

said polymer varnish (a) being present in an amount of 95 to 10 wt % (solid) and the oligomer dispersion being present in an amount of 5 to 90 wt % (solid) in said composition.

5,183,505

CELLULAR CONCRETE

Stewart C. Spinney, Effort, Pa., assignor to Concrete Technology, Inc., Stockertown, Pa.

Filed May 27, 1992, Ser. No. 889,481
Int. Cl.[5] C04B *24/08, 28/26*
U.S. Cl. 106—672 **36 Claims**

1. A cellular concrete mix for the preparation of cellular concrete aggregate comprising:

(a) cement;

(b) water;

(c) an additive comprising a colloidal solution or sol-gel composition selected from the group consisting of suspensions of water-sodium bentonite, water-peptized calcium bentonite, water-attapulgite and a gelled silica based sol-gel;

(d) fines; and

(e) a stable small-celled foam composition comprising a foam-making agent,

the water being present in an amount to hydrate the cement and sustain the foam, the fines being present in an amount between about 10% and 70% of the combined weight of fines and cement, and the additive being present in an amount sufficient to substantially eliminate setting-shrinkage of the cellular concrete and prevent cell coalescing.

5,183,506

MODIFIED FLUX COMPOSITION FOR CEMENT

Zhong M. Zhang, Sbuang Gang, Nan Chang, Jiang Xi, China

Continuation-in-part of Ser. No. 578,902, Sep. 7, 1990, abandoned, which is a continuation-in-part of Ser. No. 234,125, Aug. 19, 1988, abandoned. This application Mar. 5, 1992, Ser. No. 846,096
Claims priority, application China, Aug. 19, 1987, 87/105757
Int. Cl.[5] C04B *7/02*
U.S. Cl. 106—739 **6 Claims**

1. A composition for producing cement, comprising cement raw materials and 1–10% by weight of a flux composition, consisting essentially of by weight:

low grade wollastonite	50–99%, and
tremolite	1–50%.

5,183,507

PARTICULATE MATERIAL DISPENSING DEVICE

Welby J. Scherer, P.O. Box 3875, Champaign, Ill. 61826

Filed Oct. 25, 1990, Ser. No. 602,965
Int. Cl.[5] B05C *19/06*
U.S. Cl. 118—18 **14 Claims**

1. A dispensing device for automatically dispensing measured amounts of particulate material comprising:

supply means for supplying a quantity of particulate material;

a chute for receiving said particulate material from said supply means;

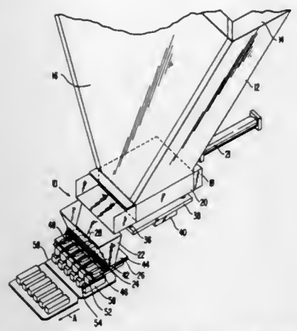
automatic reciprocating pusher means in said chute for controlling the amount of said particulate material dispensed from said supply means and for discharging said dispensed particulate material from said chute;

a distribution hopper for receiving said particulate material from said chute;

a reciprocating measuring plate having a plurality of open-

VOL
1147
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ings therein for receiving said particulate material in said openings from said distribution hopper; and



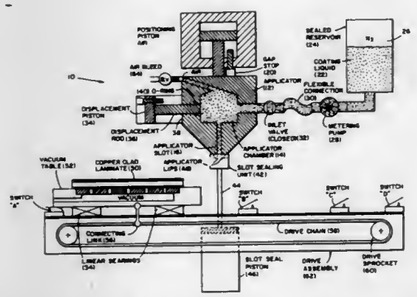
a plurality of mask hoppers for receiving said particulate material from said measuring plate openings and subsequently dispensing said particulate material.

5,183,508

APPARATUS FOR PATCH COATING PRINTED CIRCUIT BOARDS

Edward J. Cholinski, Wayland, Mass., assignor to Epicor Technology, Inc., Wayland, Mass.

Division of Ser. No. 123,790, Nov. 23, 1987, Pat. No. 4,938,994. This application Feb. 23, 1990, Ser. No. 484,518
Int. Cl.[5] B05C *5/00, 5/02*
U.S. Cl. 118—683 **22 Claims**



1. A bead coating apparatus for applying a layer of liquid with a controlled volume per unit area of the liquid to a substrate, said apparatus comprising:

A. a source of a liquid;

B. a liquid containing chamber;

C. an applicator slot in liquid communication with said liquid containing chamber, said applicator slot having a set of applicator lips that define an applicator slot exit aperture;

D. means for fluidly coupling said source of a liquid to said liquid containing chamber;

E. means for moving a substrate and the applicator slot exit aperture into proximity with each other;

F. means for sending a controlled volumetric flowrate of liquid from the source of the liquid to the liquid containing chamber and through the applicator slot and then out of the applicator slot exit aperture to create a uniform volumetric flowrate of liquid exiting from each point along the applicator slot exit aperture;

G. means for generating a pulse to control the formation of a connecting bead of liquid coating on the substrate; and,

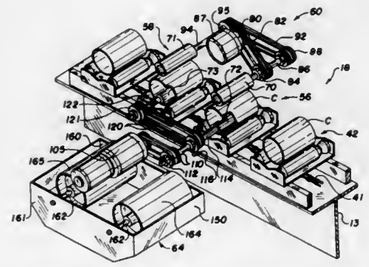
H. means for relatively moving the substrate and the applicator slot exit aperture with respect to each other to apply a controlled volume per unit area of the liquid to the substrate.

5,183,509

APPARATUS FOR APPLICATION OF A MATERIAL TO AN INTERNAL SURFACE OF ITEMS OF MANUFACTURE

Robert L. Brown, Hartville; David E. Baxter, Ravenna, and Todd A. England, North Canton, all of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Filed Apr. 26, 1991, Ser. No. 692,100
Int. Cl.[5] B05C *1/02, 17/06*
U.S. Cl. 118—696 **6 Claims**



1. An apparatus for application of a material to the internal surface of cylindrical items of manufacture,

said apparatus comprising a frame, a transport system, an application system, and a curing system for curing material applied to said cylindrical items of manufacture,

said frame supports said transport system

said transport system comprises a continuous conveyor system with a plurality of work stations movably supporting said cylindrical items and transporting said items supported within said work stations to said application system and said curing system,

each of said work stations including first and second horizontally, axially spaced support rolls secured to said conveyor system,

said application system comprising a drive roll vertically movable into driving engagement with said cylindrical item supported within said work station, a vertically and horizontally movable coating roll engagable with said internal surface of said cylindrical item to apply the desired material and with a reservoir system having a rotatable supply roll supplying said coating roll with material,

said coating roll of said application system being movable between a first position engaged with said cylindrical item for applying material to said internal surface thereof during movement of said drive roll, and a second position engaged with said supply roll of said reservoir system.

5,183,510

APPARATUS AND PROCESS FOR CHEMICAL VAPOR DEPOSITION

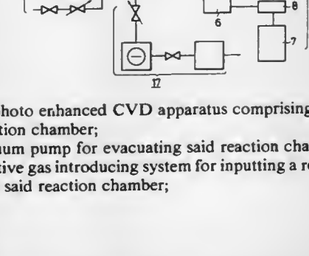
Takafumi Kimura, Hiratsuka, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 30, 1989, Ser. No. 443,317
Claims priority, application Japan, Nov. 30, 1988, 63-305264
Int. Cl.[5] C23C *16/46*
U.S. Cl. 118—719 **17 Claims**

1. An apparatus for a chemical vapor deposition of a compound film on a substrate, comprising:

a plurality of gas-generating chambers each containing an evaporating boat for a solid source containing a component element of a compound film to be formed on a substrate, each of said gas-generating chambers provided with a heating element for heating and evaporating said solid source, and each of said gas-generating chambers having an inlet for a carrier gas for carrying a gas evaporated from said solid source and a gas outlet, and said gas-generating chambers being arranged such that effective gas-generating portions thereof are thermally isolated from each other;

a gas-mixing chamber for mixing gases from said gas-



generating chambers, provided with a heater element for heating a mixed gas passing therethrough and having inlets for gases flowing from said gas-generating chambers and an outlet for a gas mixture, the heating elements of said gas-generating chambers and said gas-mixing chamber being located continuously over a region from said gas-generating chambers to said gas-mixing chamber; and

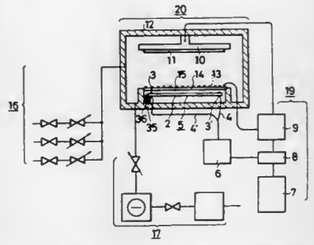
a film-growing chamber containing a substrate on which a compound film is formed by a vapor phase reaction, provided with a heating element for heating the substrate, and having an inlet for a gas mixture flowing from said gas-mixing chamber and an exhaust gas outlet.

5,183,511

PHOTO CVD APPARATUS WITH A GLOW DISCHARGE SYSTEM

Shunpei Yamazaki, Tokyo; Shigenori Hayashi, Atsugi; Takashi Inujima, Atsugi, and Naoki Hirose, Atsugi, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 76,399, Jul. 22, 1987, abandoned. This application May 12, 1989, Ser. No. 352,644
Claims priority, application Japan, Jul. 23, 1986, 61-174275; Sep. 24, 1986, 61-226447
Int. Cl.[5] C23C *16/48*
U.S. Cl. 118—723 **12 Claims**



1. A photo enhanced CVD apparatus comprising:

a reaction chamber;

a vacuum pump for evacuating said reaction chamber;

a reactive gas introducing system for inputting a reactive gas into said reaction chamber;

a holder for holding a substrate in said reaction chamber;

a light source provided for radiating light to the inside of said reaction chamber through a light window;

a pair of electrodes disposed in said reaction chamber wherein one of said electrodes is a conductive mesh disposed on said light window; and

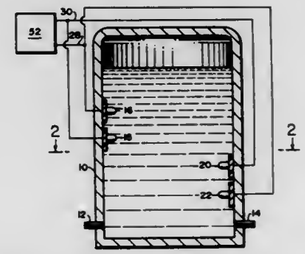
a power supply for supplying electric power both to said light source and to said electrodes.

5,183,512

METHOD OF CLEANING SEMICONDUCTOR WAFER AND COMPUTER DISKS BY PURIFIED WATER TREATED WITH ELECTRIC AC SIGNAL

Barry L. Bragger, Colchester, Conn., assignor to Aqootech, Inc., Colchester, Conn.

Filed Aug. 29, 1991, Ser. No. 751,909
Int. Cl.[5] B08B *3/04;* **C02F** *1/48*
U.S. Cl. 134—1 **12 Claims**



1. A method of cleaning semiconductor wafers, comprising the steps of:

(a) treating purified water with an electrical AC signal to alter its cleansing characteristics; said AC signal being at a frequency in the range of 0.1 KHz to 1 GHz,

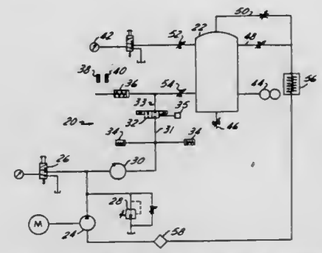
(b) rinsing a semiconductor wafer with the treated, purified water to remove contaminants.

5,183,513

METHOD OF CLEANING INTERNAL SURFACES UTILIZING CAVITATING FLUID

Ronald Sajewski, Rochester, Mich., assignor to Applied Hydro Dynamics, Inc., Rochester, Mich.

Filed May 10, 1991, Ser. No. 698,157
Int. Cl.[5] B08B *9/093*
U.S. Cl. 134—22.12 **19 Claims**



1. A method of cleaning internal surfaces within a vessel comprising the steps of:

(1) cyclically directing pulses of a pressurized fluid into the vessel, such that the pulses impact upon internal surfaces to be cleaned the pulsing of the fluid being created by cyclically operating a valve, and disposing a wave sensor on a fluid line between the valve and the vessel, the wave

VOL 1147 ISS 1 FE 2 1993 UMI

sensor delivering a feedback signal to a controller for the valve, and controlling the valve in response to the feedback to maintain a desired frequency; and

(2) directing the fluid out of the vessel.

5,183,514

PROCESS FOR DISSOLVING OR REMOVING RIGID POLYURETHANE FOAM BY CONTACTING WITH 1,2-DIMETHYL IMIDAZOLE

Edward T. Marquis; George P. Speranza, and Wei-Yang Su, all of Austin, Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Apr. 1, 1991, Ser. No. 677,927

Int. Cl.[5] C11D *1/50, 7/32, 7/50*; C23G *5/02*

U.S. Cl. 134—38 **10 Claims**

1. A process for dissolve rigid polyurethane foam, comprising the step of contacting rigid polyurethane foam with 1,2-dimethyl imidazole for a period of time sufficient to dissolve substantially all of the rigid polyurethane foam.

5,183,515

FIBROUS ANISOTROPIC PERMANENT MAGNET AND PRODUCTION PROCESS THEREOF

Shuji Ueno; Michiaki Hagiwara, both of Kyoto; Ryoji Mishima, and Kiyoshi Isoishi, both of Kanagawa, all of Japan, assignors to Unitika Ltd., Hyogo and Mitsubishi Kasei Corporation, Tokyo, both of, Japan

Division of Ser. No. 609,843, Nov. 7, 1990, Pat. No. 5,135,585. This application Mar. 31, 1992, Ser. No. 860,992

Claims priority, application Japan, Nov. 7, 1989, 1-289446

Int. Cl.[5] H01F *1/02*

U.S. Cl. 148—101 **2 Claims**

1. A process of preparing anisotropic permanent magnet fibers having a mean diameter of from 50 to 1,000 μm and exhibiting magnetic anisotropy, comprising extruding a molten alloy comprising at least one rare earth metal selected from the group consisting of Nd, Pr, Dy, Ho, Tb, La, and Ce in an amount of from 8 to 30 atom %; Fe in an amount of from 12 to 90 atom %; B in an amount of from 2 to 28 atom %; and not more than 30 atom % of Co, into an oil having a viscosity of from 1 to 1,000 c.p. to quench-solidify the molten alloy into a fibrous form.

5,183,516

MAGNETIC MATERIALS AND PERMANENT MAGNETS

Masato Sagawa, Ibaraki; Setsuo Fujimura, Kyoto, and Yutaka Matsuura, Hyogo, all of Japan, assignors to Sumitomo Special Metals Co., Ltd., Osaka, Japan

Continuation of Ser. No. 725,614, Jul. 3, 1991, abandoned, which is a division of Ser. No. 224,411, Jul. 26, 1988, Pat. No. 5,096,512, Division of Ser. No. 13,615, Feb. 10, 1987, Pat. No. 4,770,723, which is a continuation of Ser. No. 510,234, Jul. 1, 1983, abandoned. This application Apr. 30, 1992, Ser. No. 877,400

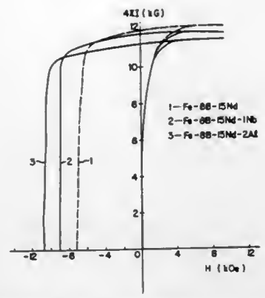
Claims priority, application Japan, Aug. 21, 1982, 57-145072; Nov. 15, 1982, 57-200204; Jan. 19, 1983, 58-5814; Mar. 8, 1983, 58-37896; Mar. 8, 1983, 58-37898; May 14, 1983, 58-84859; May 31, 1983, 58-94876

Int. Cl.[5] C22C *38/00*

U.S. Cl. 148—302 **5 Claims**

1. A permanent magnet alloy consisting essentially of, in atomic percent, 12–20% R, 4–24% B and the balance Fe, wherein R is selected from the group of at least one of mischmetal and didymium,

wherein the alloy has a major phase of an Fe-B-R compound of a substantially tetragonal crystal structure, said compound being stable at room temperature and above, having a Curie temperature higher than room temperature and having magnetic anisotropy, and in which crystal



grains of said Fe-B-R compound are isolated by a non-magnetic boundary phase.

5,183,517

PERMANENT MAGNET COMPOSITION

Takaaki Yasumura; Teruo Kiyomiya, both of Kosai; Yasutoshi Mizuno, and Kazuo Matsui, both of Toyohashi, all of Japan, assignors to Fuji Electrochemical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 446,622, Dec. 6, 1989, abandoned. This application Sep. 11, 1991, Ser. No. 759,130

Claims priority, application Japan, Dec. 8, 1988, 63-308720

Int. Cl.[5] H01F *1/04*

U.S. Cl. 148—303 **2 Claims**

1. A permanent magnet composition comprising: 22 to 28 wt % R, R being at least one of rare earth elements including yttrium; 5 to 16 wt % iron; 0.2 to 6.5 wt % copper; 0.1 to 6 wt % manganese; 0.5 to 6 wt % A, A being at least one element selected from the group of zinc and zirconium; 0.1 to 2.5 wt % thallium; and the balance being cobalt.

5,183,518

CRYOGENICALLY SUPER-HARDENED HIGH-CHROMIUM WHITE CAST IRON AND METHOD THEREOF

Roman Radon, Belleview, Fla., assignor to Townley Foundry & Machine Co., Inc., Candler, Fla.

Continuation of Ser. No. 658,351, Feb. 22, 1991, abandoned, which is a continuation-in-part of Ser. No. 345,696, May 1, 1989, abandoned. This application Feb. 6, 1992, Ser. No. 830,464

Int. Cl.[5] C21D *5/04*; C22C *38/36*

U.S. Cl. 148—324 **22 Claims**

1. A process for making a high-chromium white cast iron alloy, said process comprising the steps of:

(1) preparing a molten metal composition having an elemental analysis in percent by weight of the total consisting essentially of 2.4 to 3.8% carbon, 0.4 to 2.0% manganese, 0.2 to 1.9% silicon, 0.0 to 3.0% copper, 1.5 to 4.5% nickel, 12.0 to 29.0% chromium, and the remainder being iron;

(2) pouring the molten metal composition into a mold to form a casting and cooling the casting to room temperature without precipitation of substantial amounts of secondary carbides in the matrix of the casting; and,

(3) placing the room temperature casting in a cooling medium at a cryogenic temperature of about −55° C. or less for a time sufficient to cause the casting to have a hardness of at least about 700 HB, said cryogenic cooling being carried out without prior heating of the room temperature casting sufficient to cause precipitation of substantial amounts of secondary carbides in the matrix of the casting, and said hardened casting having a martensitic matrix which is substantially free of precipitated secondary carbides.

5,183,519

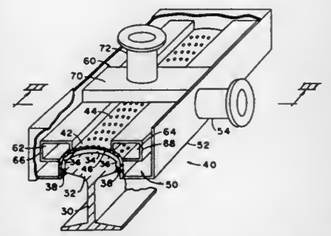
METHOD FOR QUENCHING RAILWAY RAIL HEADS

Emmerich E. Wechselberger, Glen Ellyn, and Ralph S. Frost, Olympic Fields, both of Ill., assignors to Chemetron-Railway Products, Inc., Wheeling, Ill.

Continuation of Ser. No. 447,234, Dec. 7, 1989, abandoned, which is a division of Ser. No. 27,766, Mar. 19, 1987, Pat. No. 4,938,460. This application Jun. 6, 1991, Ser. No. 711,632

Int. Cl.[5] C21D *1/20, 1/62*

U.S. Cl. 148—582 **11 Claims**



1. A method of air quenching the heated head of an axially moving railway rail from austenizing temperatures to develop a pearlite microstructure in the head, and wherein the rail head has a top running surface, laterally opposite side surfaces, and a shoulder surface between each side surface and the top running surface, said method comprising the steps of:

passing the rail head longitudinally through a plurality of quenching units which are longitudinally aligned and each of which includes first housing means defining primary quenching fluid chambers having fluid discharge means operative to confront only the top and side surfaces of the rail head when passed through the quenching units, and second housing means defining a pair of secondary quenching fluid chambers having fluid discharge means operative to confront only the shoulder surfaces of the rail head when passed longitudinally through the quenching units;

introducing quenching air into the primary and secondary chambers of the first of the aligned quench units so as to cool only the top and side surfaces of the rail head at a first cooling rate and simultaneously cool only the shoulder surfaces of the rail head at a lower cooling rate; and

introducing quenching air into the primary and secondary chambers of each successive quench unit so as to cool only the top and side surfaces of he rail head at a progressively faster cooling rate in each successive quenching unit, and simultaneously cool only the shoulder surfaces of the rail head in each successive quench unit at a lower rate than the cooling rate for the top and side surfaces.

5,183,520

EXPLOSIVE CHARGE

Paul Wanninger, Schrobenhausen; Richard Wild, Karlshuld; Ernst Kleinschmidt, and Helmut Späth, both of Schrobenhausen, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bölkow-Blohm GmbH, Munich, Fed. Rep. of Germany

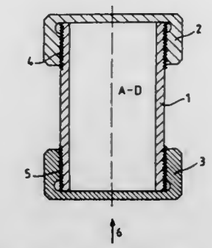
Filed Mar. 5, 1991, Ser. No. 665,404

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1990, 4006961

Int. Cl.[5] C06B *45/10*

U.S. Cl. 149—19.91 **1 Claim**

1. An explosive charge, comprising a pressed plastic bonded explosive charge pressed to provide a density greater than 92% of a theoretical maximum density, said pressed plastic bonded explosive charge including a plastic binder forming 5–2 wt. % of said pressed plastic bonded explosive charge, said binder having a 1:1 mixture of di-2-ethylhexyl adipate (DOA)



and ethylene-vinyl-acetate polymer (EVA) and including an explosive charge component of 95–98 wt. %.

5,183,521

PROCESS AND APPARATUS FOR PRODUCING SPLINED DRIVING BELTS

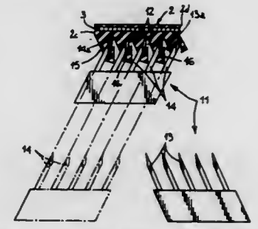
Alberto Ruffini, and Nicolino Mammarella, both of Chieti, Italy, assignors to Pirelli Trasmissioni Industriali S.p.A., Chieti, Italy

Filed Apr. 22, 1991, Ser. No. 688,281

Claims priority, application Italy, Apr. 24, 1990, 20115 A/90

Int. Cl.[5] F16G *5/00*

U.S. Cl. 156—142 **13 Claims**



1. A process for producing splined driving belts, comprising the following steps:

a) making a flexible annular element of an elastomeric vulcanized material having a flattened rectangular section with two major sides and incorporating at least one reinforcing layer extending parallel to the major sides of said section to a predetermined distance from an operating surface defined by at least one of said major sides along the length of the flexible annular element;

b) mounting the flexible annular element to at least one support roller;

c) moving the flexible annular element with a uniform movement in the direction of its length by rotation of said at least one support roller;

d) pushing a first set of parallel knives, which are positioned to be equally spaced apart from each other, into said operating surface according to a first direction inclined relative to the operating surface and to a depth less than the distance between the textile reinforcing layer and the operating surface itself to define a first series of longitudinal cuts;

e) moving the first set of parallel knives away from said annular element to a first rest position displaced from the operating surface;

f) and subsequently pushing a second set of parallel knives which are positioned to be equally spaced apart from each other into said operating surface according to a second direction inclined relative to the first direction, said knives

VOL 1147 ISS 1 FE 2 1993 UMI

meeting each one of the first longitudinal cuts and defining a second series of longitudinal cuts whereby a series of grooves is formed on the operating surface;

g) moving the second set of parallel knives away from said annular element to a second rest position displaced from the operating surface.

5,183,522

APPARATUS AND PROCESS FOR A MANUFACTURING A WEATHER STRIP

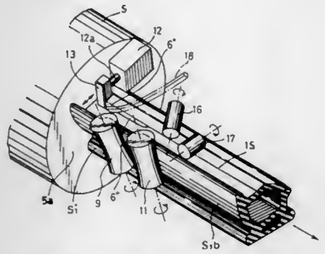
Hidetoshi Arima, Obu, Japan, assignor to Tokai Kogyo Kabushiki Kaisha, Obu, Japan

Division of Ser. No. 611,940, Nov. 13, 1990, Pat. No. 5,067,280. This application Sep. 19, 1991, Ser. No. 762,482

Claims priority, application Japan, Nov. 14, 1989, 1-295616; Nov. 22, 1989, 1-303756

Int. Cl.[5] B29C *47/00;* **B22B** *31/18*

U.S. Cl. 156—244.13 **12 Claims**



1. A process for manufacturing a weather strip having a plurality of weather strip portions, wherein one of the weather strip portions has larger circumferential length than that of the other weather strip portions and wherein all of the weather strip portions are integrally formed as a unit, comprising the steps of:

extruding a molding material from an extruding opening formed on a molding die;

partly cutting off said extruded molding material to form a longitudinal slit thereon after said molding material is extruded from said opening for a length equal to that of said one of the weather strip portions having larger circumferential length;

pressing said extruded and slitted molding material to close said slit so that the other weather strip portions having smaller circumferential length are integrally formed with said one of the weather strip portions.

5,183,523

APPARATUS FOR ULTRASONICALLY BONDING ENDCAPS TO A CONTAINER OF DISSIMILAR MATERIAL

Steven R. Rinehart, Midlothian, and Jonah Adams, Jr., Chesterfield, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Aug. 15, 1990, Ser. No. 567,806

Int. Cl.[5] B31B *1/64*

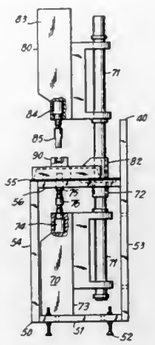
U.S. Cl. 156—367 **13 Claims**

1. Apparatus for ultrasonically sealing a food or tobacco container comprised of a tube and an endcap, said endcap engaged with said tube, said apparatus comprising:

a. a frame;

b. a work block having a hole therethrough, said work block mounted on said frame;

c. a pair of ultrasonic devices having acoustical horns, the acoustical horns being opposingly mounted on said frame so that when said acoustical horns of said ultrasonic devices are in contact with said container, one of said acoustical horns extends through said hole in said work block;



d. means for synchronizing and monitoring the operation of said ultrasonic devices.

5,183,524

DEVICE FOR INSERTION BY WELDING OF A PLASTIC PIPE SECTION INTO A SHAPED PLASTIC PIECE

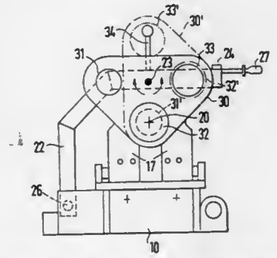
Armin Dommer, Eichweg 13, and Dieter Dommer, Bahnhofstr. 5, both of 7257 Ditzingen, Fed. Rep. of Germany

Filed Apr. 2, 1991, Ser. No. 678,845

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1990, 4010541

Int. Cl.[5] B29C *65/18*

U.S. Cl. 156—423 **8 Claims**



1. In an apparatus for inserting a plastic pipe section into a shaped plastic piece for welding according to a heating element method, wherein two carriages, each having a clamping element, are mounted on a base frame and can be displaced with respect to each other with a setting device, and a heating device is pivotal into and out of position between the two clamping elements with the clamped plastic pipe section and the clamped shaped plastic piece with levers pivotally mounted to the base frame, and the heating device has a heating element with a cupped section for placing over the plastic pipe section and a cylindrical section for insertion into the shaped plastic piece, the improvement comprising:

the heating device (**30**) having a plurality of different heating elements (**31, 32, 33**), each with a cupped section and a cylindrical section;

the heating device (**30**) rotatably mounted with respect to the pivot levers (**21, 22**) such that with the heating device (**30**) in a set position the heating elements (**31, 32, 33**) are rotatable between the two clamping elements (**14, 17**) which hold the clamped plastic pipe section and the clamped shaped plastic piece;

with the pivot levers (**21, 22**) pivoted into the set position a rotating shaft (**23**) of the heating device (**30**) positioned vertically above a central axis (**20**) of the clamping elements (**14, 17**) and vertically above the clamped plastic pipe section and the clamped shaped plastic piece;

the heating elements (**31, 32, 33**) are positioned within the heating device (**30**) with each center axis of each of the heating elements (**31, 32, 33**) arranged on a circumferential path around the rotating shaft (**23**) of the heating device (**30**), and a radius of the circumferential path is equal to a distance from a shaft center of the rotating shaft (**23**), when pivoted into the set position, to the central axis (**20**) of each of the respective clamping elements (**14, 17**); and

the two pivot levers (**21, 22**) are pivotally mounted on a back portion of the base frame (**10**), each of the pivot levers (**21, 22**) having a horizontal section extending between a corresponding clamping element of the two clamping elements (**14, 17**) when the heating device (**30**) is pivoted into the set position, and the heating device (**30**) positioned between each of the horizontal sections of the pivot levers (**21, 22**).

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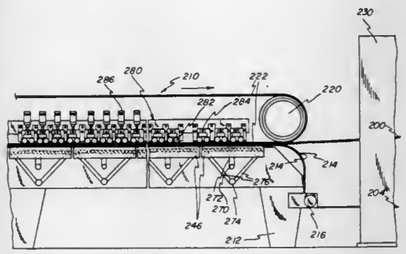
HEATER FOR A DOUBLE FACING CORRUGATING MACHINE

Charles E. Thomas, Baltimore, Md., assignor to United Container Machinery Group, Inc., Glen Arm, Md.

Filed May 24, 1990, Ser. No. 528,294

Int. Cl.[5] B31F *1/28*

U.S. Cl. 156—470 **18 Claims**



1. A heating apparatus for imparting heat to paper board passing over an upper surface of the heating apparatus, the heating apparatus comprising:

at least one discrete plate having end faces, and an upper surface and a lower surface;

side-by-side channels extending between one end of the plate and an opposite end, the channels being proximate to the upper surface of the plate, thereby forming a thin web of material between the channels and the upper surface, and a thick web of material between the channels and the lower surface to thereby rigidify the plate, said channels being integrally formed in said at least one discrete plate;

means to interconnect adjacent pairs of channels at alternate ends thereby forming a continuous serpentine passageway between said ends in said discrete plate and parallel to the plane of the upper surface;

at least one heat inlet port in said lower surface, said inlet port communicating with the serpentine passageway;

at least one heat outlet port in said lower surface, said inlet port communicating with the serpentine passageway; and

means for imparting a force on said cardboard as it passes said upper surface, said imparting means being capable of supporting the cardboard above said upper surface and also being capable of securing said cardboard against said upper surface; said upper surface of said plate being in direct operative relationship with said cardboard as it passes over said upper surface;

said heating apparatus further comprising strengthening ribs fixed to the lower surface of the plate to further rigidify the plate, said strengthening ribs each lying in a second plane which is generally perpendicular to the plane of said upper surface, said pair of strengthening ribs each having at least one steam passage therethrough and interconnected to the serpentine path in order to heat the strengthening ribs to facilitate minimizing distortion of said plate, said pair of strengthening ribs forming side walls of a chamber which cooperate with said air passages to support said corrugated cardboard either above said upper surface or against said upper surface.

8. In an apparatus for the manufacture of double face corrugated board, where the apparatus includes means to first produce a single face corrugated board from a medium paper and a first liner paper, receive and precondition the single face corrugated board and a second liner paper, and merge the single face corrugated board and second liner paper together with adhesive applied therebetween, a heating means for gelatinizing the single face corrugated board and second liner paper together, comprises:

a plurality of heating plates aligned side-by-side in a longitudinal array, each plate having an upper and lower surface extending between end faces of the plate, a plurality of channels extending through the plates between the end faces, the channels being parallel to and proximate the upper surfaces of the plates, thereby forming a thin web of material between the channels and the upper surfaces, and a thick web of material between the channels and the lower surfaces to rigidify the plates, the channels being integrally formed in each plate and each plate being interconnected to form a serpentine path circulating through each of the plates, each of the plates further comprising a steam inlet port and a steam outlet port in their lower surface and communicating with the serpentine path to provide a supply of circulating steam to the serpentine path; and

at least some of said discrete plates comprising means for imparting a force on said cardboard as it passes said upper surface, said imparting means being capable of supporting the cardboard above said upper surface and also being capable of securing said cardboard against said upper surface; said upper surface of said plate being in direct operative relationship with said cardboard as it passes over said upper surface;

said imparting means comprising air passages in said discrete plate communicating between the upper and lower surfaces, intermediate some of the channels;

each of said discrete plates lies in a first plane and comprises a pair of strengthening ribs secured to said lower surface, said strengthening ribs each lying in a second plane which is generally perpendicular to the first plane, said pair of strengthening ribs each having at least one steam passage therethrough and interconnected to the serpentine path in order to heat the strengthening ribs to facilitate minimizing distortion of said plate, said pair of strengthening ribs forming side walls of a chamber which cooperate with said air passages to support said corrugated cardboard either above said upper surface or against said upper surface.

5,183,526

REPAIR SEALER ACCESSORY

George E. Walter, Tonawanda, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Sep. 26, 1991, Ser. No. 765,814

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—556 **16 Claims**

1. Apparatus for handling business forms, comprising:

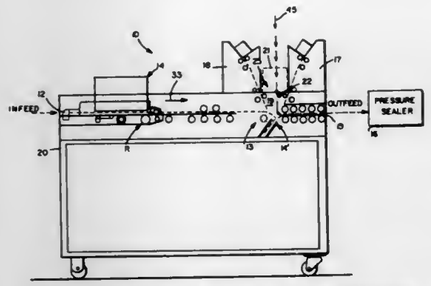
conveyor means for conveying business forms to a folder, said conveyor means including a first, infeed, end, and a second end adjacent said folder, said conveyor means conveying forms in a direction of conveyance from said first to said second ends thereof;

a housing for containing said conveyor means, said housing

VOL
1147
ISS
1
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1993
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means defining an opening portion adjacent the area between said conveyor means and folder; and

form introduction means disposed at said opening portion, for covering said opening portion, and allowing bypass of said conveyor first end to allow introduction of individual forms directly into the area between said conveyor means and folder, said form introduction means comprising: a



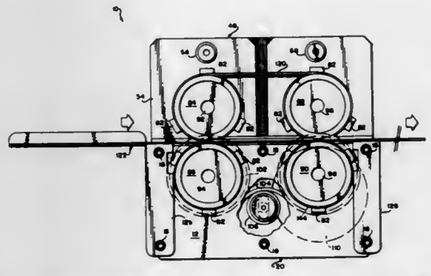
plate; means defining a slot in said plate perpendicular to the direction of conveyance of said conveyor means; adjustable form guide means associated with said slot to provide an adjustable guided width of said slot for introduction of forms; and surface means formed on said plate allowing movement of said plate from a first position covering said opening to a second position not covering said opening.

5,183,527

PERIMETER PRESSURE SEAL MODULE

Rebecca L. Parker, Grand Island, N.Y., assignor to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Apr. 12, 1991, Ser. No. 684,273
Int. Cl.[5] B32B *31/04*
U.S. Cl. 156—555 **39 Claims**



1. A pressure sealer for activating a pressure sensitive adhesive strip between at least a pair of form parts comprising:

a first frame;

at least a first pair of cooperating sealer wheels having first and second peripheral sealing surfaces, respectively, said sealer wheels rotatably mounted in said first frame;

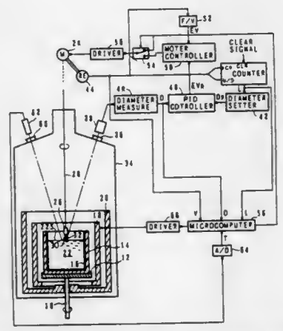
means for causing one of the first and second peripheral sealing surfaces to assume a non-parallel orientation with respect to the other of the first and second peripheral sealing surfaces when no form parts are present between the sealer wheels, and for causing the first and second peripheral sealing surfaces to assume a substantially parallel orientation when the form parts are introduced between the sealer wheels, said means exerting compressive force between said first and second peripheral sealing surfaces sufficient to activate the pressure sensitive adhesive strip when the form parts are introduced between the sealer wheels.

5,183,528

METHOD OF AUTOMATIC CONTROL OF GROWING NECK PORTION OF A SINGLE CRYSTAL BY THE CZ METHOD

Masahiko Baba, Annaka, and Hiroshi Ohtsuna, Sabae, both of Japan, assignors to Shin-Etsu Handotai Company, Limited, Tokyo, Japan

Filed Feb. 28, 1991, Ser. No. 661,348
Claims priority, application Japan, Feb. 28, 1990, 2-48934
Int. Cl.[5] C30B *15/26*
U.S. Cl. 156—601 **5 Claims**



1. A method of automatic control of growing a single crystal neck portion between a seed crystal and a corn portion of the single crystal by the CZ method, comprising the steps of:

(110, 112) pulling up the seed crystal **(30)** from the lowest initial point with a constant speed for a first set period of time, less than the total time, before measuring crystal diameter to grow the single crystal **(32)**, said crystal contacting with the surface **(22S)** of a melt **(22)** contained in a crucible **(16)**;

(113) measuring the diameter of the lower end of said single crystal after said period has elapsed;

(114) modifying an electric power supplied to a heater **(18)** for heating said melt based on the difference between the measured diameter and a reference value;

waiting a period of time without pulling up said crystal **(116)** and alternately repeated steps of:

maintaining constant, for a second set period of time, an electric power supplied to a heater for heating a melt contained in a crucible;

controlling a pulling up speed of the single crystal growing from said melt such that a diameter of the lower end of the single crystal will approach a reference value during said period;

measuring said speed repeatedly during said period **(118–124)**; and

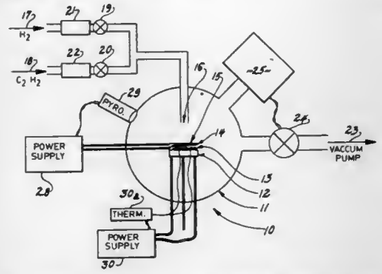
modifying said power supply based on the difference between the mean value of said speed and a reference value after said period **(126–130)**.

5,183,529

FABRICATION OF POLYCRYSTALLINE FREE-STANDING DIAMOND FILMS

Timothy J. Potter, Dearborn, Mich.; Michael A. Tamor, Toledo, Ohio, and Ching-Hsong Wu, Farmington Hills, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 29, 1990, Ser. No. 604,692
Int. Cl.[5] C30B *25/00*
U.S. Cl. 156—613 **11 Claims**



1. A method of fabricating free-standing diamond films, comprising

(a) depositing and adhering polycrystalline diamond film by hot filament chemical vapor deposition onto a substrate meltable at a temperature slightly in excess of the deposition temperature; and

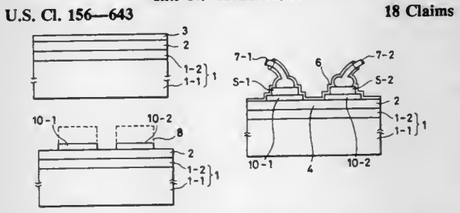
(b) prior to cooling said polycrystalline diamond films, increasing the substrate temperature by conductance heating to melt at least a portion thereof while permitting such melt to emigrate from the diamond films.

5,183,530

METHOD OF MANUFACTURING DIAMOND THERMISTORS

Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Filed Sep. 10, 1990, Ser. No. 579,536
Claims priority, application Japan, Sep. 11, 1989, 1-235139
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—643 **18 Claims**



1. A method of manufacturing thermistors comprising:

forming an impurity diamond film on a temperature sensing diamond substrate;

selectively removing said impurity diamond film in order to leave a pair of contact regions; and

forming a pair of electrodes respectively on the pair of said contact regions.

5,183,531

DRY ETCHING METHOD

Shingo Terakado, Tsukuba, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

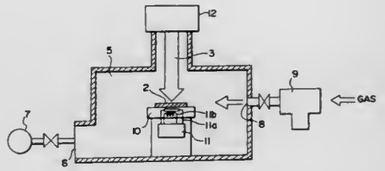
Filed Aug. 9, 1990, Ser. No. 565,264
Claims priority, application Japan, Aug. 11, 1989, 1-208095; Mar. 27, 1990, 2-77944; Apr. 25, 1990, 2-109110
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—643 **2 Claims**

1. A dry etching method comprising the steps of:

(a) activating an etching gas consisting of SF_6 and Ar by using a microwave;

(b) disposing an etch-proof photomask having an opening above a surface of a processing material composed of Si to be etched so that the mask is spaced from the surface; and

(c) irradiating a photon beam of vacuum ultraviolet radiation, for exciting a reaction, onto the surface of the processing material to be etched in a condition that there exists an activated etching gas, thereby achieving an etching of said processing material to be etched in an area selected by the opening in the photomask to be irradiated by said photon beam, and cooling said processing material simultaneously with irradiating by said photon beam.



5,183,532

Patent Not Issued For This Number

5,183,533

METHOD FOR ETCHING CHROMIUM FILM FORMED ON SUBSTRATE

Michinari Tsutsumi; Atsushi Endo, and Toshio Yada, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 249,905, Sep. 27, 1988, Pat. No. 5,007,984. This application Oct. 17, 1990, Ser. No. 599,782
Claims priority, application Japan, Sep. 28, 1987, 62-245035; Oct. 7, 1987, 62-253423
The portion of the term of this patent subsequent to Apr. 16, 2008, has been disclaimed.
Int. Cl.[5] C23F *1/00*
U.S. Cl. 156—656 **3 Claims**



1. A method for etching a chromium film formed on a substrate, comprising the steps of:

(a) providing a chromium film formed on a substrate,

(b) forming a coating film having a predetermined pattern on the chromium film, to selectively expose the chromium film, and

(c) etching the exposed chromium film with an etchant comprising at least 2 mol/l of nitric acid, the concentration of nitric acid in the etchant and the temperature of the etchant being sufficient to cause a decrease in the contact area of the chromium film with the coating film, whereby sidewall surfaces of a remaining pattern of the etched chromium film are tapered.

VOL 1147 ISS 1 FEB 2 1993 UMI

5,183,534

WET-ETCH PROCESS AND COMPOSITION

Douglas E. Fjare, Naperville; Allyson J. Beuhler, Indian Head Park, and Cynthia A. Navar, Aurora, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 491,438, Mar. 9, 1990, abandoned. This application Oct. 30, 1990, Ser. No. 605,555

Int. Cl.[5] B05D *5/00*

U.S. Cl. 156—668 **15 Claims**

10. A process for selectively etching a polyamic acid layer or a partially cured polyamic acid layer comprising

a) applying a layer of polyamic acid to a substrate;

b) applying a layer of positive photoresist material to the polyamic acid layer;

c) shielding the layer of photoresist material with a mask having a pattern of openings that are positioned where the photoresist material is to be removed;

d) exposing the photoresist material to actinic radiation through the pattern of openings in the mask to produce areas of exposed photoresist material and unexposed photoresist material;

e) removing the mask;

f) developing and removing the exposed photoresist material to reveal areas of the polyamic acid;

g) etching the revealed polyamic acid with a wet-etch composition of an aqueous solution comprising at least 50 weight percent of the total composition of water, a substituted hydrocarbon solvent and an alkylamine wherein the weight ratio of the substituted hydrocarbon solvent to the alkylamine is about 0.1–49:49–0.1, with the proviso that the composition contains less than 1.0 percent ionic base;

h) developing and removing the photoresist material; and

i) imidizing the polyamic acid to a polyimide.

5,183,535

PROCESS FOR PREPARING KRAFT PULP USING BLACK LIQUOR PRETREATMENT REACTION

Panu Tikka, Kantvik, Finland, assignor to Sunds Defibrator Rauma Oy, Finland

Continuation of Ser. No. 563,438, Aug. 7, 1990, abandoned. This application Nov. 19, 1991, Ser. No. 794,795

Claims priority, application Finland, Feb. 9, 1990, 900663

Int. Cl.[5] D21C *1/06, 11/00*

U.S. Cl. 162—19 **21 Claims**

1. A process for the preparation of kraft pulp from lignin-containing cellulosic material comprising the steps of:

filling a vessel containing cellulosic material with an alkaline cooking liquor having a pH of between about 11.5 and about 13.5 and consisting essentially of spent kraft cooking liquor;

impregnating said cellulosic material with said alkaline cooking liquor under positive pressure for a period of time sufficient to provide an equalization of impregnation of said cellulosic material with said alkaline cooking liquor and to essentially fill said cellulosic material with said alkaline cooking liquor, said alkaline cooking liquor being maintained at an impregnation temperature which will avoid reaction between said cooking liquor and said cellulosic material;

subjecting said essentially filled, impregnated cellulosic material to a pretreatment reaction wherein the impregnated alkaline cooking liquor reacts with said cellulosic material under conditions sufficient to lower the pH of said alkaline cooking liquor to between about 9 and about 11 whereby the pretreated cellulosic material is now capable of being delignified under relatively mild delignifying conditions; and

delignifying said pretreated cellulosic material with fresh alkaline cooking liquor.

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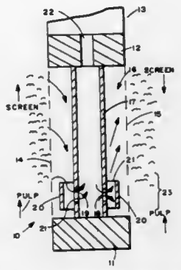
ATMOSPHERIC DIFFUSER IMPROVED LOWER SCREENS BACKFLUSHING

Joseph Phillips; J. Robert Prough; Victor L. Bilodeau; Brian Greenwood; Ronald Bain, and John Weston, all of Glens Falls, N.Y., assignors to Kamyr, Inc., Glens Falls, N.Y.

Division of Ser. No. 628,090, Dec. 17, 1990, Pat. No. 5,116,476. This application Mar. 13, 1992, Ser. No. 850,522

Int. Cl.[5] D21C *3/22*

U.S. Cl. 162—57 **10 Claims**



1. A method of treating cellulosic fibrous material pulp in an upright vessel having at least one annular screen having a first end and a second end, the axis of the annular screen being vertical, comprising the steps of:

(a) causing the pulp to flow in a first vertical direction in the vessel, the pulp when flowing in the first direction initially encountering the second end of the screen, and the flowing to and past the first end thereof, some liquid in the pulp passing through the screen;

(b) withdrawing liquid flowing through the screen from the vessel;

(c) periodically causing a flow of backflushing liquid back through the screen into the pulp; and

(d) controlling the backflushing liquid so that the liquid backflushing the screen at the first end thereof is liquid that has passed through the screen substantially at the first end of the screen, the liquid backflushing the screen at the first end thereof having substantially the same properties as liquid withdrawn at the screen first end.

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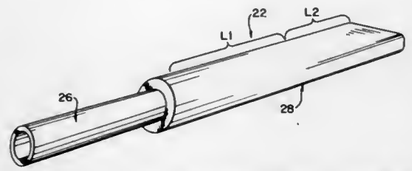
HEADBOX TUBE BANK APPARATUS AND METHOD OF DIRECTING FLOW THERETHROUGH

Richard E. Hergert; Richard R. Hergert, both of Rockton; Eugene B. Neill, South Beloit, all of Ill.; Scott B. Pantaleo; Arnold J. Roerig, both of Beloit, Wis.; Thomas D. Rogers, Roscoe, Ill.; Jay A. Shands, Beloit, Wis., and Noriaki Takeguchi, Rockton, Ill., assignors to Beloit Technologies, Inc., Wilmington, Del.

Filed Oct. 7, 1991, Ser. No. 772,521

Int. Cl.[5] D21F *1/02*

U.S. Cl. 162—216 **14 Claims**



1. A headbox tube bank apparatus for the flow therethrough of stock in a papermaking machine, said apparatus comprising:

a tube bank frame for rigidly supporting the tube bank, said frame defining a plurality of openings;

a plurality of tubes cooperating with said frame such that each tube of said plurality of tubes extends through and is supported by an opening of said plurality of openings;

each tube of said plurality of tubes having an upstream and a downstream portion, the arrangement being such that the stock flows through said tube from said upstream to said downstream portion;

said upstream portion defining an internal crossmachine direction section of substantially circular configuration for maximizing the velocity of the stock through said tube;

said downstream portion having a first and a second end, said downstream portion converging towards said second end thereof;

said first end of said downstream portion defining an internal cross-machine direction section of substantially circular configuration greater than the cross-machine direction circular section of the upstream portion and being connected to said upstream portion; and

said second end of said downstream portion defining a downstream orifice having a flow area in a cross-machine direction which is of substantially flattened rectangular configuration for progressively increasing the uniformity, stability, cleanliness, and for lowering the turbulence of the stock during flow thereof through said downstream portion, said downstream portion being an integral continuous element.

14. A method for directing the flow of stock through a tube bank apparatus of a headbox, said method comprising the steps of:

conducting the flow of stock through an upstream portion of a tube of the tube bank apparatus, the upstream portion having a substantially circular cross-sectional flow area along the length thereof for increasing the velocity of the flow of stock therethrough;

reducing the velocity of the stock during movement through an upstream length of a downstream portion of the tube, the upstream length having a substantially circular cross-sectional flow area along the length thereof, the circular flow area of the upstream length being greater than the circular flow area of the upstream portion; and

changing the cross-sectional flow area from the circular flow area defined by the upstream length of the downstream portion to a substantially converging flattened rectangular cross-sectional flow area along the length of a downstream length of the downstream portion such that the stock flows uniformly through the tube while inhibiting any tendency for the flow of stock adhering to a side wall of the downstream length, the downstream length converging along the length thereof in the flow direction for inhibiting such adherence, said downstream portion being an integral continuous element.

5,183,538

EXTRACTION PLUS ION EXCHANGE PROCESSING OF A BRINE STREAM

Lacey E. Scoggins; Fu M. Lee; Allen T. Chang, all of Bartlesville, Okla., and Wiley D. Perkins, College Station, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 24, 1990, Ser. No. 632,721

Int. Cl.[5] B01D *3/14;* **C07D** *207/267*

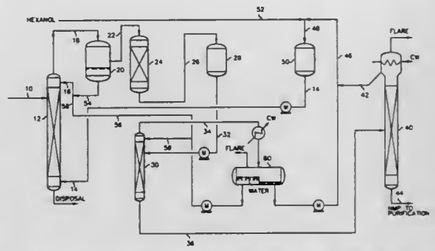
U.S. Cl. 203—28 **9 Claims**

1. A process for recovering a liquid polymerization reaction diluent having a low salt content from a mixture containing said diluent along with an alkali-metal salt and water, said process comprising the following steps performed in the sequence set forth below:

(a) extracting essentially all of said diluent from said mixture in an extraction column employing an extractant material so as to produce an extract mixture predominantly containing said diluent and said extractant material and further containing said alkali-metal salt and water;

(b) converting a substantial portion of said alkali-metal salt in said extract mixture to an alkali-metal hydroxide in the presence of an ion exchange resin so as to produce an exchange mixture predominantly containing said diluent and said extractant material and also containing said alkali-metal hydroxide and water;

(c) removing essentially all of the water and converting at least a first portion of said alkali-metal hydroxide contained in said exchange mixture to an alkali-metal salt of



aminocarboxylic acid in a first fractional distillation column;

(d) removing essentially all of the extractant material and converting essentially all of the remaining alkali-metal hydroxide in said exchange mixture to an alkali-metal salt of aminocarboxylic acid in a second fractional distillation column; and

(e) recovering said diluent having a low salt content from said second fractional distillation column.

5,183,539

METHOD OF PURIFYING CRUDE GLYCIDYL (METH)ACRYLATE

Akihiro Honma, and Masahiro Kurokawa, both of Hiratsuka, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Nov. 15, 1991, Ser. No. 793,958

Claims priority, application Japan, Nov. 21, 1990, 2-314305

Int. Cl.[5] B01D *3/34;* **C07D** *301/36*

U.S. Cl. 203—38 **5 Claims**

1. A method of purifying a crude glycidyl acrylate or a crude glycidyl methacrylate, which comprises:

(1) subjecting a crude glycidyl acrylate or a crude glycidyl methacrylate containing, as impurities, epichlorohydrin and other chlorine compounds selected from the group consisting of 1,3-dichloro-2-propanol, 2,3-dichloro-1-propanol, glycerin monochlorohydrin, 2-hydroxy-3-chloropropyl acrylate, 2-hydroxy-3-chloropropyl methacrylate, 3-hydroxy-2-chloropropyl acrylate and 3-hydroxy-2-chloropropyl methacrylate to a stripping treatment with a mixed gas containing oxygen gas in the presence of a quaternary ammonium salt, and then

(2) distilling the treated product to obtain a purified glycidyl acrylate or a purified glycidyl methacrylate,

wherein the mixed gas is used at a flow rate of 0.1 to 500 ml/minute, as a flow rate at 20° C. under atmospheric pressure, per kilogram of the crude glycidyl acrylate or methacrylate.

5,183,540

METHOD FOR RECOVERING SOLVENTS THROUGH THE USE OF AN EXTENDER

Isadore E. Rubin, 247 Tillou Rd., South Orange, N.J. 07079

Filed Sep. 18, 1990, Ser. No. 584,280

Int. Cl.[5] B01D *3/10, 15/00*

U.S. Cl. 203—41 **16 Claims**

1. A method for recovery of solvent from a solvent-based

VOL
1147
ISS
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wash liquid containing paint residue removed from paint making equipment by use of a solvent and for reducing the residue to a non-hazardous waste material, comprising the steps of:

placing the solvent-based wash liquid in a vessel;

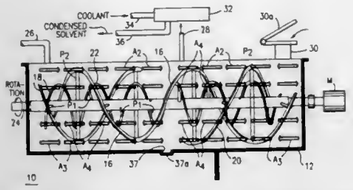
heating said vessel to a temperature sufficient to cause the solvent to boil and evaporate;

drawing off the evaporated solvent from said vessel, and condensing the evaporated solvent;

introducing an extender into the vessel in an amount sufficient to adsorb the residue, said extender being a substantially inert material ground into a granulated consistency, said extender being introduced as a percent of the weight of the residue remaining in said vessel; said percent lying in the range of from 7–20% of the weight of said residue;

continuously tumbling the contents of the vessel by rotating the contents of the vessel in the range of from 5–30 rpm to prevent solid matter from agglomerating; and

drying the contents of the vessel to provide a particulate, free-flowing solid residue having a solvent content of the order of less than ten parts per million.



5,183,541

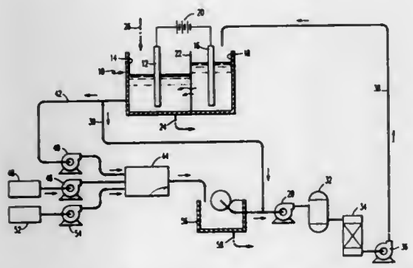
DECONTAMINATION OF RADIOACTIVE METALS

Thomas S. Snyder, Oakmont; William R. Gass, Plum Boro, both of Pa.; Samuel A. Worcester, Butte, Mont.; Laura J. Ayers, and Gregory F. Boris, both of Knoxville, Tenn., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 506,044, Apr. 9, 1990. This application Oct. 2, 1991, Ser. No. 769,998

Int. Cl.[5] C25C *1/06*

U.S. Cl. 204—105 R **20 Claims**



1. A method of extracting technetium from radiocontaminated metal, comprising the steps of:

dissolving metal contaminated with radioactive technetium in an aqueous solution to produce a solution containing pertechnetate ions and metal ions;

reducing the pertechnetate ions to a technetium oxide precipitate; and

cathodically depositing metal from the solution.

5,183,542

APPARATUS AND METHOD FOR SEPARATING ZIRCONIUM ISOTOPES USING BALANCED ION ELECTROMIGRATION

John F. Jackovitz, Monroeville Boro; Richard P. Kunkle, Irwin, and Steven H. Peterson, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

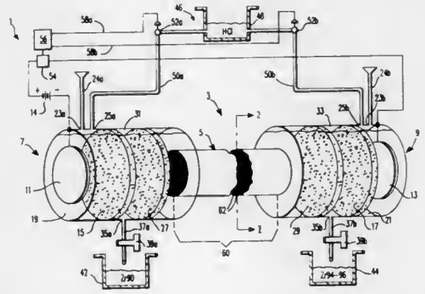
Filed Jan. 5, 1990, Ser. No. 461,578

Int. Cl.[5] B01D *57/02, 61/42*

U.S. Cl. 204—180.1 **18 Claims**

1. A method for separating zirconium isotopes by balanced ion migration in a counterflowing electrolyte solution, comprising the steps of:

introducing ions of different isotopes of zirconium into an electrolyte solution that includes non-zirconium ions, and



applying a voltage across said electrolyte solution with an anode and a cathode of between about 2 and 50 volts to create a flow of zirconium ions toward said cathode, and to create a counterflow of said non-zirconium ions toward said anode that reduces the net transport of zirconium ions across said anode and cathode to zero,

thereby causing the lighter weight isotopes of zirconium to migrate through said electrolyte solution toward the cathode while the heavier weight zirconium isotopes migrate through said electrolyte solution toward the anode.

5,183,543

POLYANILINES, PROCESS FOR THE PREPARATION THEREOF AND CELLS USING THEM

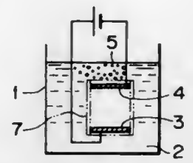
Shinichi Toyosawa, Tokorozawa; Tadashi Nakajima, Tokyo; Kinya Suzuki, Kodaira; Takahiro Kawagoe, Tokorozawa; Tadaaki Miyazaki, Higashiyamato; Takashi Kitamura, Hachioji; Tadashi Fuse, Kodaira; Masao Ogawa, Kawagoe; Yoshitomo Masuda; Hideharu Daifuku, both of Kodaira, and Ryota Fujio, Akigawa, all of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed May 15, 1986, Ser. No. 863,527

Claims priority, application Japan, May 15, 1985, 60-103391; May 15, 1985, 60-103392; May 15, 1985, 60-103393; Sep. 12, 1985, 60-202223; Oct. 1, 1985, 60-218883; Dec. 24, 1985, 60-296443; Jan. 29, 1986, 61-17162; Feb. 27, 1986, 61-43337

Int. Cl.[5] C25B *11/04, 9/00*

U.S. Cl. 204—242 **22 Claims**



1. A polyaniline film having a thickness of 0.3 to 5 mm and a density of 0.4 to 1.1 g/cm^3.

5,183,544

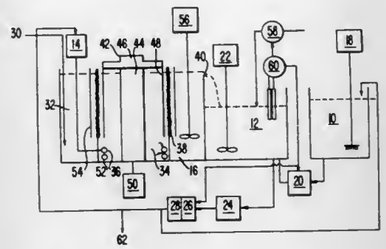
APPARATUS FOR ELECTROWINNING OF METAL FROM A WASTE METAL MATERIAL

Joseph R. Weber, and Ronald E. Bilak, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1991, Ser. No. 635,313

Int. Cl.[5] C25C *7/00*

U.S. Cl. 204—252 **9 Claims**



1. An apparatus for electrowinning a metal from a waste metal material, comprising:

(a) a vessel including means for mixing said waste metal material with an electrolyte to form a suspension;

(b) an electrolytic cell in fluid connection with said vessel, said electrolytic cell comprising:

(i) a cathodic compartment having a rotating cathode;

(ii) an anodic compartment adjacent to said cathodic compartment; and

(iii) a means for separating disposed between said cathodic and anodic compartment;

(c) means for moving a flow of said suspension from said vessel to said electrolytic cell; and

(d) a filter means located between said vessel and said electrolytic cell.

5,183,545

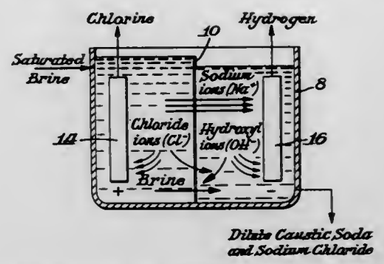
ELECTROLYTIC CELL WITH COMPOSITE, POROUS DIAPHRAGM

Phillip A. Branca, 132 Country Flower Rd., Newark, Del. 19711; Daniel E. Hubis, 227 Fair Hill Dr., Elkton, Md. 21921; Robert S. Mallouk, Box 332, R.D. #1, Chadds Ford, Pa. 19317, and Randal L. Perry, 1006 Timberwyck Rd., Wilmington, Del. 19810

Division of Ser. No. 511,110, Apr. 19, 1990, Pat. No. 5,094,895, which is a continuation-in-part of Ser. No. 344,707, Apr. 28, 1989, abandoned. This application Nov. 15, 1991, Ser. No. 792,665

Int. Cl.[5] C25C *13/02, 13/08, 9/00*

U.S. Cl. 204—252 **14 Claims**



1. In an electrolytic cell containing anode and cathode compartments separated by a diaphragm, an improved diaphragm is provided comprising a multilayer, porous composite diaphragm of multiple layers of porous, expanded polytetrafluoroethylene bonded together, said composite diaphragm having at least a portion of its exterior surfaces and at least a portion of its interior pore surfaces coated with a perfluoro ion exchange resin.

5,183,546

OPTIMIZED MULTIPOROUS CARBON BED FOR ELECTROCHEMICAL FILTERS

Yoram Oren; Haim Cohen, both of Beer-Sheva, and Abraham Soffer, Arad, all of Israel, assignors to State of Israel, Israel Atomic Energy Commission, Beer-Sheva, Israel

Continuation of Ser. No. 464,723, Jan. 16, 1990, abandoned, which is a continuation of Ser. No. 199,176, May 26, 1988, abandoned. This application Oct. 2, 1990, Ser. No. 593,387

Claims priority, application Israel, May 29, 1987, 82706

Int. Cl.[5] B01D *39/00*

U.S. Cl. 204—290 R **4 Claims**



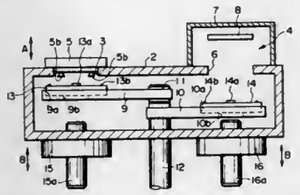
1. A hydrophilic electrochemical filter matrix, consisting of: carbon fibers in the 2 μ to 30 μ fiber diameter range; and, carbon or graphite particles in the 100 Å to 5,000 Å particle size range attached to the surface of said carbon fibers, such attachment of said particles resulting in an increase of the surface area of the filter from the range of abut 1 m^2/g to about 10 m^2/g, wherein the filter is characterized by a high electrical conductivity due to the carbon-particles to carbon fiber bond, and by a substantially free pathway of liquids flowing through the filter matrix.

VOL
1147
ISS
1
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1993
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5,183,547
SPUTTERING APPARATUS AND SYSTEM FOR SPUTTERING EMPLOYING SAME

Jiro Ikeda, Shizuoka, Japan, assignor to Sony Corporation, Japan

PCT No. PCT/JP90/01170, § 371 Date Apr. 19, 1991, § 102(e) Date Apr. 19, 1991, PCT Pub. No. WO91/04352, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 12, 1990, Ser. No. 684,919
Claims priority, application Japan, Sep. 13, 1989, 1-237493; Mar. 30, 1990, 2-83794
Int. Cl.[5] C23C *14/56*
U.S. Cl. 204—298.25 **8 Claims**



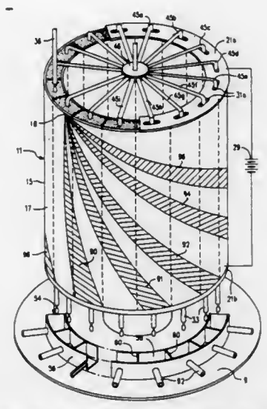
1. A sputtering apparatus comprising:
a vacuum chamber having an opening for entrance and exit of a workpiece to be processed by sputtering and a processing section including a sputtering station,
a first rotary arm provided in said vacuum chamber and including a first rest on the free end of the first rotary arm, said first rest being adapted for supporting the workpiece, and an additional rotary arm provided at a predetermined distance apart from the first rotary arm in the rotational direction in the vacuum chamber, said additional rotary arm having a second rest on the free end of the additional rotary arm;
transfer means for transferring said workpiece between said opening and said processing section by the rotational movement of said first and said additional rotary arms while the opening is closed by either said first or said second rest;
first lift means for raising or lowering either said first or said second rest in said opening and second lift means for raising or lowering said first or second rest in said sputtering station; and
means for rotating said first rotary arm and said additional rotary arm so that, when one of the first rotary arm and the additional rotary arm is at said opening in said vacuum chamber, the other of the first rotary arm and the additional rotary arm is transferring said workpiece to the processing station.

5,183,548
SYSTEM AND METHOD FOR CONTINUOUS SEPARATION OF ISOTOPES

Thomas S. Snyder, Oakmont; John F. Jackovitz, Monroeville Boro, and Harry M. Ferrari, Fox Chapel, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 512,238, Apr. 20, 1990, Pat. No. 5,024,749. This application Apr. 9, 1991, Ser. No. 682,839
The portion of the term of this patent subsequent to Jun. 18, 2008, has been disclaimed.
Int. Cl.[5] B01D *61/42*
U.S. Cl. 204—299 R **14 Claims**

1. An isotopic separation system for continuously separating the isotopes present in a sample containing a mixture of isotopes of a chemical element in ionic form, said system comprising:
(a) rotatable annulus means having a feed end spaced axially from a discharge end for holding a plurality of circumferentially spaced separation cell means packed with a separation medium for separating said isotopes, wherein each of said separation cell means extends axially from said feed end to said discharge end;
(b) an isotope-containing sample feed source having an outlet means for introducing said sample into each of said separation cell means;
(c) an eluant source having a plurality of outlet means, wherein each said outlet means corresponds to a separation cell means, for introducing eluant into each said separation cell means;
(d) a pair of electrode means for applying an electric potential axially along said annulus means and each of said separation cell means while said annulus means is rotating, thereby causing the separation of lighter isotopes from heavier isotopes in said sample and the enrichment of said eluant with said isotopes; and

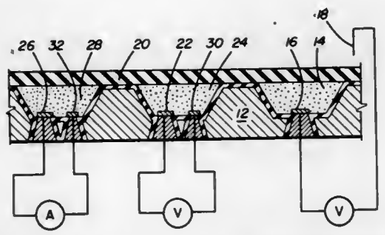


(e) drain assembly means at the discharge end of said annulus means for continuously collecting eluant enriched with one of said isotopes, including discharge outlet means associated with each said separation cell means for withdrawing isotopically enriched eluant from each said separation cell means.

5,183,549
MULTI-ANALYTE SENSING ELECTROLYTIC CELL

Jose P. Joseph, Menlo Park, and Marc J. Madou, Palo Alto, both of Calif., assignors to Commtech International Management Corporation, Menlo Park, Calif.

Filed Jan. 26, 1990, Ser. No. 470,954
Int. Cl.[5] G01N *27/404, 27/414*
U.S. Cl. 204—415 **20 Claims**



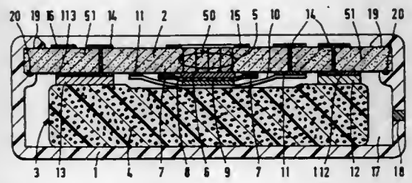
1. A multi-analyte electrolytic sensor for determining the concentrations of an ionic species and of at least one vaporous species, both dissolved in a liquid, comprising:
a substrate having an ionic species sensing area and a vaporous species sensing area;

a first electrolyte on said ionic species sensing area;
a second electrolyte on said vaporous species sensing area;
a first sensing electrode in contact with the first electrolyte;
a second electrode in contact with the second electrolyte, said second electrode and said second electrolyte being isolated from said first sensing electrode and first electrolyte; and
a unitary membrane covering both of said sensing areas and both of said electrolytes, said membrane being permeable to said vaporous species, impermeable to said liquid and having dispersed therein an ionophore which senses said ionic species via selective transfer into said membrane of a quantity of said ionic species determined by the concentration of said ionic species in said liquid.

5,183,550
MEASURING CELL FOR ELECTROCHEMICALLY DETECTING A GAS

Hans Mattiessen, Bad Schwartau, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

Filed Jun. 22, 1990, Ser. No. 541,942
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1989, 3921528
The portion of the term of this patent subsequent to Jan. 29, 2008, has been disclaimed.
Int. Cl.[5] G01N *27/404*
U.S. Cl. 204—415 **3 Claims**

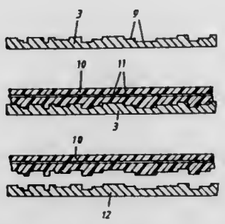


1. A measuring cell for electrochemically detecting a gas sample, the measuring cell comprising:
a housing having an opening directed toward the gas sample to be detected and defining an electrolyte chamber;
an electrolyte contained in said chamber;
a measuring electrode and an counter electrode disposed in said chamber so as to be in spaced relationship to each other;
a diffusion membrane interposed between aid opening and said electrolyte and being permeable to the gas sample;
said diffusion membrane being impermeable to said electrolyte and having a lower surface facing said electrolyte;
said measuring electrode being configured as a measuring electrode layer applied to said lower surface of said diffusion membrane;
said diffusion membrane having an upper surface facing toward the gas sample;
a protective disc interposed between said opening and said upper surface of said diffusion membrane;
said protective disc having a first component region permeable to the gas sample and a second component region impermeable to the gas sample and to said electrolyte;
said first component region having an upper surface area directed toward the gas sample and a lower surface area facing toward said electrolyte;
said first component region including a plurality of capillary passages formed in said protective disc and extending between said upper and lower surface areas of said first component region;
said second component region having a lower surface area facing toward said electrolyte and said counter electrode being configured as a counter electrode layer applied to said lower surface area of said second component region;
said counter electrode layer being electrically isolated from said measuring electrode and being in permanent electrical contact with said electrolyte;
said measuring electrode layer and said diffusion membrane being applied to said lower surface area of said first component region of said protective disc so as to communicate with said capillary passages;
said protective disc being made of thermally-conductive electrically-insulating material;
said capillary passages being dimensioned to determined the diffusion of the gas sample;
said second component region having an upper surface area facing the gas sample; and,
the measuring cell further comprising working contact pads formed on said upper surface area of said second component region and being connected through said protective disc to respective ones of said electrodes.

5,183,551
METHOD FOR MAKING A CONTINOUS METAL BAND HAVING SURFACE IMPRESSIONS

Wilfried Werthmann, Krefeld-Fischeln, Netherlands, assignor to Standex International GmbH, Krefeld, Fed. Rep. of Germany

PCT No. PCT/EP89/00176, § 371 Date May 16, 1990, § 102(e) Date May 16, 1990, PCT Pub. No. WO90/09865, PCT Pub. Date Sep. 7, 1990
PCT Filed Feb. 22, 1989, Ser. No. 466,442
Int. Cl.[5] C25D *1/10;* **B23P** *15/24*
U.S. Cl. 205—70 **7 Claims**



1. A method for making an endless metallic band having a pattern for the continuous production of laminated boards, comprising the steps of providing a first endless band having the pattern on the surface thereof casting an endless, plastic band over the surface of the first endless band having the pattern so that the plastic band has a corresponding pattern on a surface thereof, rendering the surface of the plastic band which carries the pattern electrically conductive, electrolytically depositing a metal layer over the pattern on the surface of the plastic band to thereby form a working copy of the plastic band, and removing the plastic band from the working copy so that the working copy constitutes a duplicate of the first endless band.

VOL 1147 ISS 1 FE 2 1993 UMI

5,183,552

PROCESS FOR METALLIZATION OF A NONCONDUCTOR SURFACE, ESPECIALLY ON A CIRCUIT BOARD HAVING PREEXISTING COPPER SURFACES

Burkhard Bressel; Heinrich Meyer; Walter Meyer, and Klaus Gedrat, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 583,961, Sep. 14, 1990. This application Feb. 14, 1991, Ser. No. 655,789

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1989, 3931003; Dec. 5, 1989, 3940565

Int. Cl.[5] C25D *5/54, 11/34*

U.S. Cl. 205—158 **23 Claims**

1. A process for directly metallizing a nonconductor surface on a circuit board also having copper surfaces, comprising the steps of reacting the nonconductor surface on the circuit board with permanganate to form manganese dioxide adsorbed on the nonconductor surface; depositing an adherent, insoluble polymer product the manganese dioxide adsorbed on the nonconductor surface from an aqueous solution of a weak acid having an acid dissociation constant, for loss of a proton in aqueous solution, between 0.1 and 0.01, a monomer selected from the group consisting of pyrrole and pyrrole derivatives, and at least one oligomer selected from the group consisting of oligomers of said pyrrole derivatives and said pyrrole; by contacting the aqueous solution with the manganese dioxide adsorbed on the nonconductor surface, the polymer product having an electrical conductance which is sufficient so that a metal can be directly electroplated on the polymer product, and then directly electroplating the metal on the polymer product, wherein any oxide film formed on said copper surfaces during said reacting with said permanganate is removed by said weak acid in said aqueous solution during said contacting to prevent formation of another polymer layer on said copper surfaces.

5,183,553

METHOD OF FORMING A HIGH TEMPERATURE RESISTANT COPPER COATING ON AN INORGANIC DIELECTRIC

Detlef Tenbrink, Paderborn; Martin Bock, Berlin; Kurt Heymann, Berlin, and Martin Rimkus, Berlin, all of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Jul. 13, 1989, Ser. No. 379,809

Claims priority, application Fed. Rep. of Germany, Jul. 13, 1988, 3824249

Int. Cl.[5] C25D *5/54, 5/00*

U.S. Cl. 205—162 **6 Claims**

1. A method of forming a high temperature resistant copper coating on an inorganic dielectric selected from the group consisting of ceramic and enamel substrates, comprising the steps of:

a. chemically depositing a copper layer having a thickness of at least 3 μm on said inorganic dielectric;

b. heating the copper layer at a temperature of from 200° to 450° C.;

c. mechanically treating the copper layer with brush and polishing means to consolidate an upper surface thereof;

d. galvanically depositing an additional copper layer having a thickness of at least 3 μm.

5,183,554

METHOD FOR CONTROLLING FOULING DEPOSIT FORMATION IN A LIQUID HYDROCARBONACEOUS MEDIUM

David R. Forester, Conroe, Tex., assignor to Betz Laboratories, Inc., Trevose, Pa.

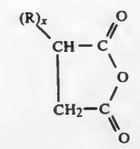
Filed Sep. 9, 1991, Ser. No. 756,813

Int. Cl.[5] C10G *9/12, 9/16*

U.S. Cl. 208—48 AA **5 Claims**

1. A method of inhibiting fouling deposit formation in a liquid hydrocarbonaceous medium during heat treatment processing thereof, at a temperature of from about 200° C.–550° C., wherein, in the absence of such antifouling treatment, fouling deposits are normally formed as a separate phase within said liquid hydrocarbonaceous medium impeding process throughput and thermal transfer, said method comprising adding to said heat treated liquid hydrocarbonaceous medium, an antifouling amount of from about 0.5–10,000 parts by weight based upon one million parts of said hydrocarbonaceous medium of a reaction product of

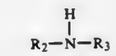
(a) polyalkenylsuccinic acid, C_1–C_6 alkyl mono- or diester of said acid or polyalkenylsuccinic anhydride having the formula



(I)

wherein R is an aliphatic alkenyl or alkyl moiety having between 50 and 200 carbon atoms,

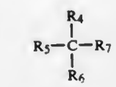
(b) a secondary aromatic amine having the formula



(II)

wherein R_2 and R_3 are independently chosen from aryl and C_1–C_{18} alkaryl; and

(c) a hindered alcohol having the formula



(III)

wherein R_4, R_5 and R_6 are independently chosen from H, CH_2OH, and OH; and wherein R_7 is CH_2OH, CH_2OH substituted lower alkyl (C_1–C_6), OH substituted lower alkyl (C_1–C_6), CH_2OH and OH substituted lower alkyl (C_1–C_6), CH_2—O—R_8 or —O—R_8 wherein R_8 is lower alkyl (C_1–C_6), OH substituted lower alkyl (C_1–C_6) or CH_2OH substituted lower alkyl (C_1–C_6).

5,183,555

METHOD FOR CONTROLLING FOULING DEPOSIT FORMATION IN A LIQUID HYDROCARBONACEOUS MEDIUM

David R. Forester, Conroe, and Paul V. Roling, Spring, both of Tex., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Aug. 29, 1991, Ser. No. 751,947

Int. Cl.[5] C10G *9/12, 9/16*

U.S. Cl. 208—48 AA **8 Claims**

1. A method for inhibiting fouling deposit formation in a liquid hydrocarbonaceous medium during heat treatment processing thereof at temperatures from 200° C. to 550° C., wherein in the absence of such antifouling treatment, fouling deposits are normally formed as a separate phase within said liquid hydrocarbonaceous medium thereby impeding process throughput and thermal transfer, said method comprising adding to said liquid hydrocarbonaceous medium about 0.5 parts to about 1,000 parts per million parts hydrocarbonaceous medium of a glyoxylic acid/alkylphenol derivative of a polyalkenylsuccinimide containing an aliphatic alkyl group or alkenyl group with from about 50 to about 200 carbon atoms.

5,183,556

PRODUCTION OF DIESEL FUEL BY HYDROGENATION OF A DIESEL FEED

James W. Reilly, Westfield, and Gary Hamilton, Shrewsbury, both of N.J., assignors to ABB Lummus Crest Inc., Bloomfield, N.J.

Filed Mar. 13, 1991, Ser. No. 668,869

Int. Cl.[5] C10G *45/00*

U.S. Cl. 208—57 **14 Claims**

1. A process for producing diesel fuel by hydrogenation of a hydrocarbon feed, comprising:

passing a hydrocarbon feed in cocurrent contact with a hydrogen gas through a first hydrogenation zone in the presence of a hydrogenation catalyst, thereby at least partially hydrogenating said feed, said feed having an about 10% by volume boiling point of from about 300° F. to about 500° F. and an about 90% by volume boiling point of at least about 500° F. and no greater than 750° F.

removing from said first hydrogenation zone a gas phase effluent comprising hydrogen and vaporized liquid materials, and a partially hydrogenated liquid hydrocarbon effluent;

further hydrogenating the liquid hydrocarbon effluent in a second hydrogenation zone by passing a hydrogen-rich gas into the second hydrogenation zone countercurrently to the liquid hydrocarbon effluent in the presence of a hydrogenation catalyst; and

recovering from said second hydrogenation zone a gas phase effluent comprising hydrogen and vaporized liquid material and a liquid phase effluent comprising diesel fuel.

5,183,557

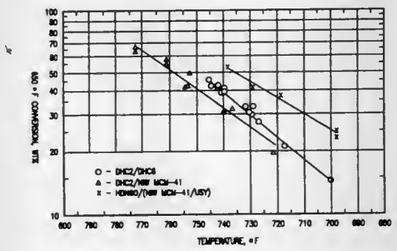
HYDROCRACKING PROCESS USING ULTRA-LARGE PORE SIZE CATALYSTS

Thomas F. Degnan, Jr., Moorestown; Kathleen M. Keville, West Deptford; Michael E. Landis, Woodbury; David O. Marler, Deptford, and Dominick N. Mazzone, Wenonah, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 24, 1991, Ser. No. 734,983

Int. Cl.[5] C10G *47/02, 47/04, 47/20*

U.S. Cl. 208—111 **22 Claims**



1. A hydrocracking process which comprises contacting a hydrocarbon feed in the presence of hydrogen with a bifunctional hydrocracking catalyst having acidic functionality and hydrogenation-dehydrogenation functionality, and comprising a metal hydrogenation component, a zeolite component and an inorganic, porous crystalline phase material having pores with diameters of at least about 13 Angstrom Units and exhibiting, after calcination, an X-ray diffraction pattern with at least one peak at a d-spacing greater than about 18Å.

5,183,558

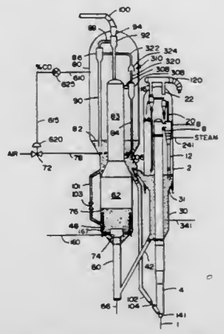
HEAVY OIL CATALYTIC CRACKING PROCESS AND APPARATUS

Hartley Owen, Belle Mead, N.J., and Paul H. Schipper, Wilmington, Del., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 31, 1990, Ser. No. 636,463

Int. Cl.[5] C10G *11/00*

U.S. Cl. 208—113 **11 Claims**



1. A fluidized catalytic cracking process wherein a heavy hydrocarbon feed comprising hydrocarbons having a boiling point above about 650° F. is catalytically cracked to lighter products comprising the steps of:

a. catalytically cracking said feed in a catalytic cracking zone operating at catalytic cracking conditions by contacting said feed with a source of hot regenerated catalyst to produce a cracking zone effluent mixture comprising cracked products and spent cracking catalyst containing strippable hydrocarbons and coke comprising carbon and hydrogen, and;

b. separating said cracking zone effluent mixture into a cracked product rich vapor phase and a solids rich phase comprising said spend catalyst and strippable hydrocarbons;

c. stripping said catalyst mixture with a stripping gas to remove strippable compounds from spent catalyst and produce a stripped catalyst;

d. regenerating said stripped catalyst by contacting said catalyst with recycled regenerated catalyst and oxygen or an oxygen containing gas in a dense phase fluidized bed coke combustor comprising a fluidized bed with inlets for oxygen containing gas, for recycled regenerated catalyst and for stripped catalyst, and an overhead outlet for at least partially regenerated catalyst and flue gas comprising CO2 and water vapor formed by combustion of carbon and hydrocarbon in said coke, wherein said coke combustor is essentially free of catalyst/gas separation means and said coke combustor is below, and in open fluid communication with, a superimposed, dilute phase transport riser having an opening at the base connective with said coke combustor which transports at least partially regenerated catalyst and flue gas from the base of the riser to an outlet at an upper portion thereof;

e. discharging and immediately separating in a cyclone separation means catalyst and flue gas comprising water vapor discharged as a dilute phase from said dilute phase transport riser outlet into a catalyst rich phase and a water vapor rich flue gas phase having a steam partial pressure of 3.5 to 7 psia and comprising over 90% of the water formed by combustion of hydrogen in said coke and dis-

VOL 1147 ISS 1 FE 2 1993 UMI

charging said separated catalyst down from said cyclones to form a second fluidized bed of catalyst maintained as a fluidized bed about said transport riser, and having a dilute phase region above said second fluidized bed having a steam partial pressure less than 20% of the steam partial pressure of the water vapor rich flue gas exiting the dilute phase transport riser, and discharging said separated water vapor rich flue gas phase into a flue gas removal means which is isolated from and closed to said second fluidized bed and the dilute phase vapor region above said second fluidized bed and adapted to remove flue gas from said regeneration means; and

f. recycling to the catalytic cracking process and to the coke combustor hot regenerated catalyst from said second fluidized bed.

5,183,559

RARE EARTH EXCHANGED LAYERED SILICATE CATALYSTS

Garry W. Kirker, Washington Township, Bergen County, N.J.; Thomas F. Degnan, Jr., Yardley, Pa.; Albin Huss, Jr., Chadds Ford, Pa., and Michael E. Landis, Woodbury, N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Division of Ser. No. 396,711, Aug. 22, 1989, abandoned. This application Sep. 13, 1991, Ser. No. 759,795

Int. Cl.[5] C10G *11/00, 11/02*

U.S. Cl. 208—119 **10 Claims**

1. A process for cracking hydrocarbons over a catalyst, wherein said catalyst is regenerated, said process comprising the steps of:

(i) contacting said hydrocarbons with said catalyst under conditions sufficient to crack said hydrocarbons and to form a deposit of coke on said catalyst;

(ii) stripping residual hydrocarbons from the coked catalyst of step (i) with steam;

(iii) removing deposited coke from the stripped catalyst of step (ii) by subjecting said catalyst to sufficient oxidizing condition, whereby coke is oxidized; and

(iv) contacting the regenerated catalyst of step (iii) with more hydrocarbons under conditions sufficient to crack these hydrocarbons;

wherein said catalyst comprises a layered silicate comprising interspathic polymeric silica, said layered silicate lacking the octahedral sheets of clays, said layered silicate further comprising rare earth metal cations.

5,183,560

TREATMENT OF OILS USING CHOLINE BASE

Glenn L. Roof, Sugar Land, and Lawrence N. Kremer, The Woodlands, both of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed Sep. 9, 1991, Ser. No. 756,446

Int. Cl.[5] C10G *29/20*

U.S. Cl. 208—236 **6 Claims**

1. A method of decreasing hydrogen sulfide atmosphere over sour heavy fuel oils comprising treating such fuel oil with an amount of choline base effective to decrease said atmospheric hydrogen sulfide over said fuel oil at a temperature above the decomposition temperature of choline base.

5,183,561

DEMETALLATION OF HYDROCARBON FEEDSTOCKS WITH A SYNTHETIC MESOPOROUS CRYSTALLINE MATERIAL

Charles T. Kresge, West Chester, Pa.; Michael E. Leonowicz, Medford Lakes; Wieslaw J. Roth, Sewell, both of N.J.; James C. Vartuli, West Chester, Pa.; Kathleen M. Keville, Woodbury, N.J.; Stuart S. Shih, Cherry Hill, N.J.; Thomas F. Degnan, Moorestown, N.J.; Francis G. Dwyer, West Chester, Pa., and Michael E. Landis, Woodbury, N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Continuation-in-part of Ser. No. 625,245, Dec. 10, 1990, Pat. No. 5,098,684, which is a continuation-in-part of Ser. No. 470,008, Jan. 25, 1990, Pat. No. 5,102,643. This application Jul. 24, 1991, Ser. No. 734,992

Int. Cl.[5] C10G *45/04, 45/02*

U.S. Cl. 208—251 R **20 Claims**

1. A process for demetallizing a hydrocarbon feedstock, said process comprising contacting said hydrocarbon feedstock with a catalyst under sufficient demetallation conditions, said catalyst comprising at least one hydrogenation metal and an inorganic, porous crystalline phase material having, after calcination, a hexagonal arrangement of uniformly-sized pores having diameters of at least about 13 Angstrom Units and exhibiting a hexagonal electron diffraction pattern that can be indexed with a d_{100} value greater than about 18 Angstrom units.

5,183,562

APPARATUS FOR COAGULATING TREATMENT

Toshio Totoki; Hirotake Shigemi, and Yoshio Yasukawa, all of Shinjuku, Japan, assignors to Kurita Water Industries Ltd., Tokyo, Japan

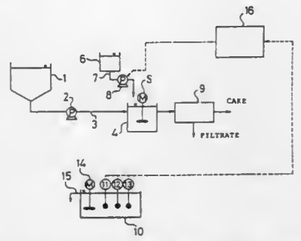
PCT No. PCT/JP90/00197, § 371 Date Aug. 6, 1991, § 102(e) Date Aug. 6, 1991, PCT Pub. No. WO90/09835, PCT Pub. Date Sep. 7, 1990

PCT Filed Feb. 20, 1990, Ser. No. 743,347

Claims priority, application Japan, Feb. 23, 1989, 1-44290; Nov. 10, 1989, 1-293358

Int. Cl.[5] B01D *21/30; G01N 25/18*

U.S. Cl. 210—85 **16 Claims**



2. A coagulating apparatus for effecting coagulation in a liquid by addition of a coagulant, comprising first guiding means for receiving a liquid to be subjected to a coagulating treatment and guiding the received liquid to at least one part at which the coagulant is added, adding means for adding the coagulant to the liquid in a variable amount at the part for addition of the coagulant, solid-liquid separating means for separating the liquid with the coagulant into a liquid content and a solid content, second guiding means situated between the adding means and the separating means to guide the liquid to the separating means, a heat transfer detecting meter disposed so as to contact the liquid content separated by the solid-liquid separating means, and control means for controlling an amount of addition of the coagulant through the adding means so that a value of detection of the heat transfer detecting meter is minimized to be within a target range.

5,183,563

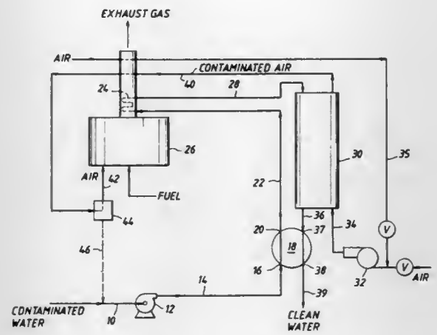
SYSTEM FOR REMOVAL AND DISPOSAL OF MINOR AMOUNTS OF ORGANICS FROM CONTAMINATED WATER

John B. Rodden, Sugar Land, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Apr. 18, 1991, Ser. No. 686,955

Int. Cl.[5] C02F *1/20*

U.S. Cl. 210—180 **4 Claims**



1. A system for reducing the level of minor amounts of volatile organic contaminants from water containing such contaminants, which includes:

A) water supply means for supplying water to said system and capable of being connected to a supply of water contaminated with minor amounts of volatile organic compounds;

B) first heat exchange means having a first inlet connected to said water supply means, having a first internal volume for heating said contaminated water by indirect heat exchange with hot product water, said first internal volume communicating with a first outlet, and also having a second inlet, said second inlet communicating with a second internal volume in heat exchange relation with said first internal volume, and a second outlet communicating with said second internal volume;

C) second heat exchange means disposed in heat exchange relation with a furnace, said second heat exchange means having an inlet connected to the first outlet of said first heat exchange means, and having an outlet;

D) a upright vessel containing packing or trays for contacting contaminated water with a stripping gas, said upright having a water inlet and a gas outlet each disposed in the upper part of said upright vessel and having a water outlet and a gas inlet disposed in the lower part of said upright vessel;

E) a conduit for vessel feed water connecting the outlet of said second heat exchange means to the water inlet of said upright vessel;

F) a conduit for vessel product water connecting the outlet from said upright vessel with the second inlet of said first heat exchange means;

G) a conduit connected to the second outlet of said first heat exchange means for passing water having reduced level of volatile organic contaminants from the system;

H) means for supplying gas connected to the gas inlet of said upright vessel for stripping volatile organic contaminants from water in said upright vessel; and

I) a conduit for vessel product gas connecting the gas outlet of the vessel to the inlet of said furnace.

5,183,564

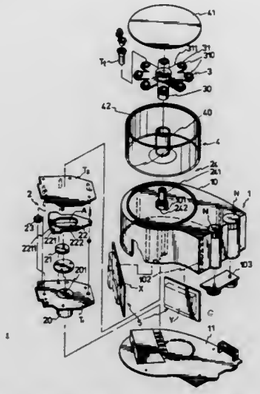
STIRRING DEVICE FOR FACILITATING DIALYSIS

Chin-Chen Hong, 8th Fl., No. 62-5, Hsi-Ning N. Rd., Taipei, Taiwan

Filed Dec. 5, 1991, Ser. No. 802,533

Int. Cl.[5] B01D *61/28*

U.S. Cl. 210—232 **8 Claims**



1. A stirring device for facilitating dialysis, comprising:

a housing;

a mechanical driving assembly including: an axle having a first end portion extending out of said housing and a second end portion extending into said housing; a sprocket connected to said second end portion of said axle; a motor unit provided inside said housing and having a driving shaft; a circular cam plate mounted eccentrically on and being rotatably driven by said driving shaft; and a cam follower having a curved edge provided with gear teeth which mesh with said sprocket, said cam follower being formed with a cam groove to receive said cam plate, and rotation of said cam plate inside said cam groove causing reciprocating left and right movement of said cam follower to bring about reciprocating clockwise and counterclockwise rotation of said sprocket and said axle;

a dialysate chamber formed as a hollow cylinder that confines a receiving space to receive a volume of solvent, said dialysate chamber being provided on top of said housing and being formed with an axially extending tubular sleeve; and

a sample tube holder provided inside said dialysate chamber and having a shaft portion that extends into said tubular sleeve of said dialysate chamber, said shaft portion being connected to said first end portion of said axle and having an upper end provided with a tube support portion that is formed with a plurality of angularly spaced tube receiving holes for holding analytical test tubes.

5,183,565

APPARATUS AND PROCESS FOR TREATING WATER

Heinz Zimmermann, Am Park 22, D-4156 Willich, and Hans J. M. Manteuffel, Am alten Broich 213a, D-4018 Langenfeld, both of Fed. Rep. of Germany

Filed Jun. 18, 1991, Ser. No. 717,017

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1990, 4019580

Int. Cl.[5] B01D *24/46*

U.S. Cl. 210—269 **6 Claims**

6. An apparatus for purifying a liquid, said apparatus comprising:

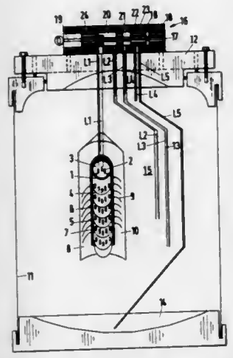
a container extending along an axis and formed with an inner peripheral wall;

VOL 1147 ISS 1 FEB 2 1993 UMI

an anode mounted in said container and spaced radially inwardly from said inner wall, said anode being a spiral;

a helical cathode mounted in said container and spaced radially outwardly from said anode, said cathode and said inner wall forming an outer chamber therebetween;

a layer of ion exchange material mounted between said anode and cathode in said container and radially spaced from said anode and cathode, said cathode and said layer forming an inner chamber therebetween;



means for filling said container with a liquid, said outer chamber being provided with a liquid-fill space and said inner chamber being provided with a treatment free liquid-filled space, each of said outer and inner chambers being axially open at respective opposite ends, so that said treatment space and said liquid-fill space being in a flow communication for providing a liquid circulation; and

means connected with said cathode and anode for generating a magnetic field across said spiral anode and said helical cathode, said field being magnetic direct or alternating field.

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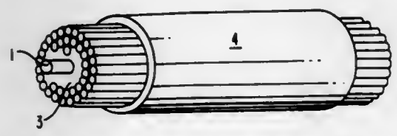
HOLLOW FIBER MODULE BUILT UP FROM CONCENTRIC CYLINDERS OF HOLLOW FIBERS

Charles F. Darnell, Baton Rouge, La., and Mahmoud M. Hafez, Bright's Grove, Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 430,225, Nov. 1, 1989, abandoned. This application Jul. 18, 1991, Ser. No. 732,256

Int. Cl.[5] B01D *69/08*

U.S. Cl. 210—321.8 **9 Claims**



1. A hollow fiber module made by the method comprising fabricating a first, generally cylindrical central sub-assembly of hollow fibers, the ends of which sub-assembly are potted said potting forming circular collars at the ends of the first central sub-assembly, and a series of additional cylindrical sub-assemblies generally equal in length to the first central sub-assembly and to each other, each such sub-assembly being of increasing diameter and fitting around a next smaller cylindrical sub-assembly in the series and inside a next larger cylindrical sub-assembly in the series, each such sub-assembly comprising hollow fibers potted at the ends, said potting forming circular collars of potting, wherein the cylindrical sub-assemblies are fitted concentrically into each other according to size and around the first central sub-assembly, the entire array of concentrically assembled sub-assemblies being glued in the spaces between the circular collars of potting at the ends of each concentrically fitted cylindrical sub-assembly and the central sub-assembly to produce a complete hollow fiber module.

5,183,567

APPARATUS FOR FILTERING AND SEPARATING FLOWING MEDIUM

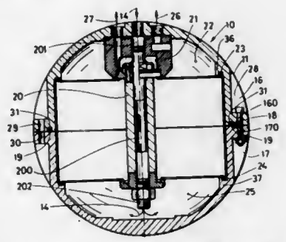
Jürgen Mohn, Reinbek, and Wilhelm Heine, Hamburg, botb of Fed. Rep. of Germany, assignors to DT Membranfilter Vertriebs GmbH, Hamburg, Fed. Rep. of Germany

Filed Jan. 6, 1992, Ser. No. 817,887

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1991, 4130481

Int. Cl.[5] B01D *63/08, 69/06*

U.S. Cl. 210—321.75 **13 Claims**



1. An apparatus comprising: means for filtering and separating flowing medium by reverse osmosis, ultrafiltration, and microfiltration, including,

a closed spherical housing in which is disposed an element stack comprised of disk-shaped spacers and respective filter elements between each two spacers, about which said flowing medium flows.

5,183,568

SELF-CLEANING STRAINER

Joseph E. Lescovich, Pittsburgh, Pa., assignor to G A Industries, Inc., Mars, Pa.

Filed Aug. 22, 1991, Ser. No. 748,659

Int. Cl.[5] B01D *33/067, 33/11*

U.S. Cl. 210—360.1 **17 Claims**

1. A self-cleaning strainer comprising:

a vertically disposed housing having an upstanding side wall, an open top and a bottom wall;

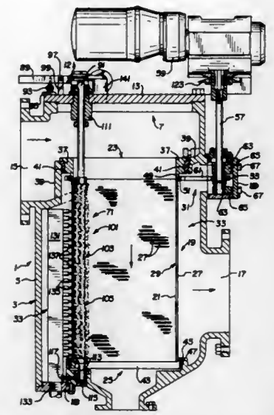
said housing having an inlet in the side wall for a liquid containing particulates, adjacent said open top, an outlet in the side wall adjacent said bottom wall for clean liquid, and a flush discharge opening in said bottom wall;

a cover plate sealingly closing the open top of said housing;

a rotatable strainer basket, having a cylindrical foraminous side wall with an inner surface and an open top and bottom, with openings through said cylindrical side wall for flow of liquid therethrough, disposed in said housing, spaced from said side wall of said housing and disposed below said inlet, such that liquid containing particulates entering said inlet passes into said strainer basket and outwardly through said openings to remove said particulates, and clean liquid is directed through said outlet;

means for rotating said strainer basket in said housing, said means for rotating being positioned out of the flow of liquid containing particulates, and disposed within said

housing between said cylindrical side wall of said strainer basket and said upstanding side wall of said housing; and



means for cleaning the inner surface of the cylindrical side wall of said strainer basket to remove particulates which are collected thereon.

5,183,569

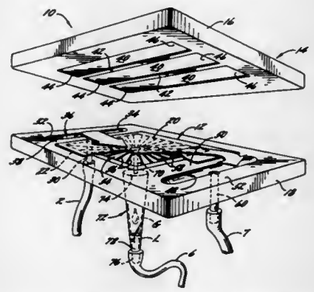
FILTRATION APPARATUS AND PROCESS

Andreas Kyriacou, Toronto, Canada, assignor to Paradigm Biotechnologies Partnership, Toronto, Canada

Filed Dec. 16, 1991, Ser. No. 808,442

Int. Cl.[5] B01D *61/20*

U.S. Cl. 210—636 **11 Claims**



2. A filtration process for collection of a filtrate from a bulk fluid, said process comprising passing a bulk fluid to be filtered, into a filtration apparatus containing a filtration medium, wherein said fluid enters said filtration apparatus from a direction countercurrent to filtrate flow through said filtration medium; thereafter, without said fluid having contacted a downstream surface of said filtration medium, passing said fluid over an upstream surface of said filtration medium and effecting filtration of said fluid in a cross-flow direction to provide a filtrate, and collecting unfiltered fluid from an upstream side of said filtration medium; directing said filtrate toward a drip-forming channel disposed downstream of said filtration medium, passing said filtrate through said drip-forming channel and thereafter collecting said filtrate, and preventing contamination of fluid on said upstream surface by any contaminants downstream of said filtration medium, by forming an air gap between said filtrate and said filtration medium.

5,183,570

PROCESS FOR PREPARING OSTEOGENESIS PROMOTING SUBSTANCE

Kohei Notoya, Settsu; Keiji Yoshida, Kawanishi, and Iwao Yamazaki, Takarazuka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Sep. 5, 1991, Ser. No. 755,007

Claims priority, application Japan, Sep. 6, 1990, 2-238424

Int. Cl.[5] B01D *61/14, 61/22*

U.S. Cl. 210—641 **8 Claims**

1. A process for preparing an osteogenesis promoting substance, by steps other than affinity chromatography, said steps comprising extracting a demineralized bone powder with a solution of chaotropic reagent, subjecting the extracted solution to ultrafiltration to collect a fraction containing substances ranging from 10,000 to 100,000 daltons as molecular weight, dialyzing the collected fraction and collecting the water-soluble fraction from the dialyzing liquid.

5,183,571

MULTILAYER MEMBRANE AND PROCESS OF MANUFACTURING THE SAME

Peter Hanel, Bad Vilbel; Harald Helmrich, Frankfurt, and Ulrich Sander, Friedrichsdorf, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 11, 1991, Ser. No. 653,653

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1990, 4004153

Int. Cl.[5] B01D *39/16, 61/36, 71/38*

U.S. Cl. 210—649 **13 Claims**

1. A multilayer membrane, comprising a carrier layer composed of fibers of a material selected from the group consisting of polyamide, polyvinylidene difluoride, polyester and glass; a porous supporting layer composed of a material selected from the group consisting of polysulfone, polyvinylidene difluoride, polyethersulfone, polyimide, polyvinyl alcohol, polyurethane, polyacrylonitrile and polyether imide; and a separating layer composed of polyvinyl alcohol, said separating layer being nonporous and having a structure having a high microcrystalline content with crystallites which exhibit in the X-ray diffraction pattern a reflection in a range of 1.2 to 1.5 degrees at diffraction angles H 2 O of 19.6 to 20°.

13. A method of separating liquid, vaporous and gaseous mixtures, comprising the steps of providing a multilayer membrane including a carrier layer composed of fibers of a material selected from the group consisting of polyamide, polyvinylidene difluoride, polyester and glass; a porous supporting layer composed of a material selected from the group consisting of polysulfone, polyvinylidene difluoride, polyethersulfone, polyimide, polyvinyl alcohol, polyurethane, polyacrylonitrile and polyether imide; a separating layer composed of polyvinyl alcohol, said separating layer being nonporous and having a structure having a high microcrystalline content with crystallites which exhibit in the X-ray diffraction pattern a reflection in a range of 1.2 to 1.5 degrees at diffraction angles H 2 θ of 19.6° to 20°; and using said membrane for separation of liquid, vaporous and gaseous mixtures.

5,183,572

CROSS-FLOW FILTRATION SYSTEM AND METHOD FOR FILTERING A SOLVENT-PARTICULATE WASTE STREAM

James A. Benn, Arlington, Mass., assignor to Curtis Manufacturing Company, Inc., Jaffrey, N.H.

Filed Aug. 23, 1991, Ser. No. 749,302

Int. Cl.[5] B01D *61/00*

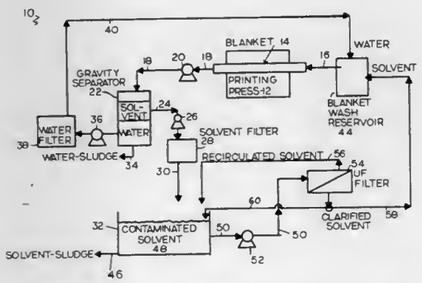
U.S. Cl. 210—650 **18 Claims**

1. A method for the filtering of a solvent-particulate waste stream into a clarified solvent stream and a solvent-particulate stream, which method comprises:

VOL 1147 ISS 1 FE 2 1993 UMI

a) directing a solvent-particulate waste stream into a processing container for treatment;
b) pumping under pressure the waste stream from the processing container through a filter for the removal of a filtrate portion of the waste stream as a clarified solvent stream and recirculating at least a portion of a concentrated waste stream back to the processing container;
c) maintaining the recirculating flow rate of the waste stream at less than about 0.05 gallons per minute per square foot (GPM/sqft) of filter surface area;
d) removing the clarified solvent stream from the filter;
e) adding continuously solvent-particulate waste stream to the processing container;
f) removing continuously a clarified solvent stream from the filter for reuse in the cleaning operation; and
g) disposing periodically of accumulated particulate-solvent sludge material in the processing container when a high level of particulate and a lower level of solvent remains in the processing container.

18. A method for the filtering and reuse of a water-solvent-particulate waste stream derived from the cleaning of a printing press ink blanket by a water-solvent stream, which method comprises:
a) washing a printing press blanket with a water-solvent stream to provide a water-solvent-particulate waste stream;
b) pumping the waste stream into a gravity separator means to provide for the gravity separator of the water and



solvent into a lower, water-particulate portion and an upper, solvent-particulate portion;
c) pumping the water-particulate portion from the gravity separator through a water filter and the filtered water recycled to a blanket wash reservoir for reuse in washing the printing press blanket;
d) pumping the solvent-particulate portion from the gravity separator through a solvent filter to provide a contaminated solvent stream;
e) introducing the contaminated solvent stream into a processing container;
f) pumping at a pressure of greater than about 25 psi the contaminated solvent stream from the processing container through a filter having a pore size of about 0.2 microns or less to provide a filtrate of a clarified solvent stream, while maintaining the flow rate of the contaminated solvent stream at less than about 0.05 gallons per minute per square foot of filter surface area;
g) recycling after each startup of the filter the filtrate portion of the filter to the processing container for a period of time until the filtrate portion is relatively clear in color and suitable for reuse;
h) removing the clarified solvent stream from the filter at a rate of less than about 3 gallons of flux per square foot of filter surface area per day;
i) adding contaminated solvent stream to the processing container;
j) recycling the clarified solvent stream from the filter to the blanket wash reservoir for reuse in the washing of the printing press blanket; and
k) disposing periodically accumulated particulate-solvent sludge material from the processing container
thereby providing for a closed loop recycling filtration method for a waste stream from a printing press blanket.

5,183,573

MULTIPURPOSE SCALE PREVENTER/REMOVER

Robert P. Kreh, Jessup, and Wayne L. Henry, Gaithersburg, both of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jul. 22, 1991, Ser. No. 733,527
Int. Cl.[5] C02F *5/12*
U.S. Cl. 210—697 **7 Claims**

1. A process for preventing or removing calcium and rust scale deposits from surfaces which are in contact with an aqueous system having a pH in the range 8 to 9 comprising adding to the aqueous system 3,5-bis(di-N,N-(carboxymethyl-)aminomethyl)-4-hydroxybenzenesulfonic acid in an amount effective to remove the scale and rust deposits.

5,183,574

METHOD OF DISPERSING IRON

Chih Ming Hwa, Palatine; John A. Kelly, Crystal Lake; Wun Ten Tai, Palos Hills; Lai-Duien G. Fan, Lake Zurich, all of Ill.; Robert P. Kreh, Jessup, Md., and Brian Greaves, Runcorn, England, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Nov. 18, 1991, Ser. No. 793,760
Int. Cl.[5] C02F *5/10*
U.S. Cl. 210—701 **6 Claims**

1. A method of dispersing iron in an aqueous system comprising adding to the system a copolymer of styrene sulfonic acid and methacrylic acid or its water soluble salt in an amount effective to disperse the iron contained therein wherein said copolymer has a molar ratio of styrene sulfonic acid: methacrylic acid from 5:95 to 95:5.

5,183,575

METHODS FOR THE FLOCCULATION OF COAL FINES AND INSOLUBLE METALS IN COAL MINE WATERS

Stephen R. Vasconcellos, Doylestown, Pa.; P. Douglas Boyce, Hurricane, W. Va., and Larry P. Smith, Yardley, Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Aug. 29, 1991, Ser. No. 751,946
Int. Cl.[5] C02F *1/56*
U.S. Cl. 210—724 **10 Claims**

1. A method for flocculating coal fines and suspended insoluble metals in coal mine drainage waters having a pH of about 6 to 9 comprising adding to said coal mine drainage waters 1 part to 100 parts per million parts coal mine drainage waters a polymeric tannin-amine compound having a molecular weight of about 5 to about 10,000 daltons.

5,183,576

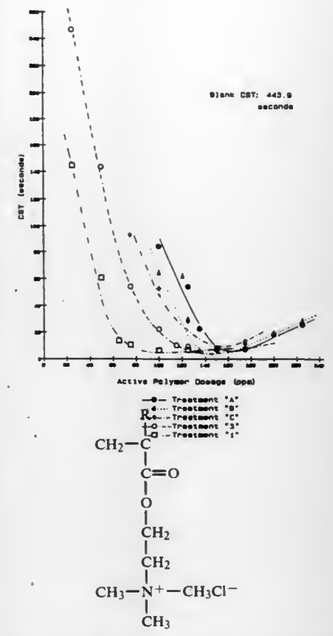
CATIONIC POLYMERS FOR SLUDGE DEWATERING

Michael R. Wood, Philadelphia; Keith A. Bair, Horsham; Fu Chen, Newtown, and Stephen R. Vasconcellos, Doylestown, all of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 533,962, Jun. 6, 1990, Pat. No. 5,100,561. This application Aug. 9, 1991, Ser. No. 742,829
The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.
Int. Cl.[5] C02F *11/14*
U.S. Cl. 210—734 **10 Claims**

1. A method of dewatering aqueous sludge, wherein said sludge consists essentially of a mixture of primary and secondary sludge from a pharmaceutical plant and secondary sludge from a chemical plant comprising adding to said sludge an

effective amount for the purpose of a homopolymer comprising repeat unit moieties having the structure:



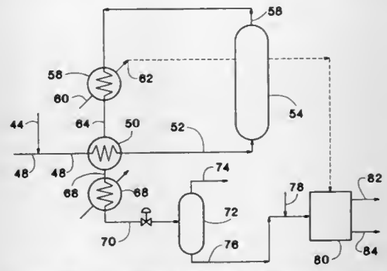
wherein R is hydrogen or methyl and having an intrinsic viscosity from about 1.0 dl/g to about 2.9 dl/g as measured in 1M sodium chloride at 30° C.

5,183,577

PROCESS FOR TREATMENT OF WASTEWATER CONTAINING INORGANIC AMMONIUM SALTS

Richard W. Lehmann, Wausau, Wis., assignor to Zimpro Passavant Environmental Systems, Inc., Rothschild, Wis.

Filed Jan. 6, 1992, Ser. No. 817,157
Int. Cl.[5] C02F *1/74, 11/08*
U.S. Cl. 210—761 **21 Claims**



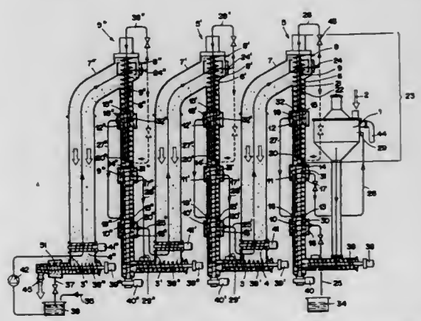
1. A process for treating an aqueous wastewater containing ammonium compounds, said process comprising the steps of:
(a) preheating a liquid influent;
(b) introducing said preheated influent, an oxygen-containing gas and said wastewater into a reaction vessel for undergoing wet oxidation;
(c) withdrawing from said reaction vessel an oxidized effluent including a gas phase containing ammonia and carbon dioxide and a liquid phase containing said ammonium compounds;
(d) reducing the temperature of said effluent to a temperature sufficient to condense a substantial portion of said ammonia into said liquid phase;
(e) separating the remaining gas phase containing a substantial portion of said carbon dioxide from the resulting liquid phase;
(f) adjusting the pH of said liquid phase either prior to or subsequent to step (e) to a level whereby a substantial portion of said ammonia remains in said liquid phase when said liquid phase is subsequently subjected to an elevated temperature above the boiling point of water; and
(g) reducing the water content of said pH-adjusted liquid phase by evaporation.

5,183,578

PROCESS FOR THE EXTRACTION OR FLUSHING OUT OF A SUBSTANCE FROM A HETEROGENOUS SYSTEM, AND INSTALLATION FOR CARRYING OUT THE PROCESS

Zoran Dragicevic, Cacak, Yugoslavia, assignor to Laycock SA, Switzerland

PCT No. PCT/CH90/00009, § 371 Date Nov. 9, 1990, § 102(e) Date Nov. 9, 1990, PCT Pub. No. WO90/10484, PCT Pub. Date Sep. 20, 1990
PCT Filed Jan. 16, 1990, Ser. No. 598,696
Claims priority, application Yugoslavia, Mar. 10, 1989, 502/89
Int. Cl.[5] B01D *11/02*
U.S. Cl. 210—773 **20 Claims**



1. A process for extracting or flushing out a substance from a heterogenous system with a solid phase of fibrous or granular material, comprising the following steps:
feeding the solid phase into an extraction or flushing system with at least one conveyor pipe in which conveyor means are disposed at one end of the conveyor pipe;
feeding into the other end of the conveyor pipe a liquid which, during the course of the process, forms a liquid phase which becomes increasingly charged with the substance to be extracted or flushed out;
advancing the solid phase in one direction by the conveyor means in the conveyor pipe while traversing the liquid phase through the conveyor pipe in a direction opposite to the solid phase;
compacting the solid phase in at least one compression zone as the solid phase passes through the conveyor pipe;
drawing off at least part of the liquid phase near the compaction zone;
decompacting the solid phase again in a zone past the compaction zone; and,
introducing liquid phase again which is less charged with the

VOL 1147 ISS 1 FE 2 1993 UMI

substance to be extracted or flushed out than the liquid phase drawn off near the compaction zone.

5,183,579

METHOD, SYSTEM AND APPARATUS FOR HANDLING SUBSTANCES ON OR IN WATER

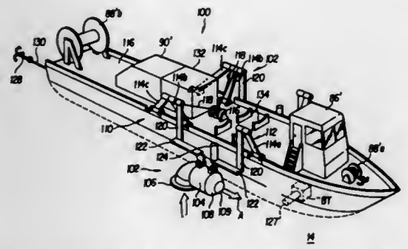
J. David Eller, P.O. Drawer "E", 33 NW. 2nd St., Deerfield Beach, Fla. 33441

Continuation-in-part of Ser. No. 485,625, Feb. 27, 1990, Pat. No. 5,045,216. This application Feb. 26, 1991, Ser. No. 660,938

The portion of the term of this patent subsequent to Sep. 3, 2008, has been disclaimed.

Int. Cl.[5] E02B *15/04*

U.S. Cl. 210—776 **17 Claims**



1. A method of displacing substances and objects on and in water comprising the steps of:

providing at least one propellable surface vessel having at least one pumping means connected thereto, the pumping mean shaving an inlet and an outlet means, the inlet means is submersible and the outlet means is positionable to an orientation adjacent the water level and orientations below the water;

operating the pumping means to generate at least a substance and object displacing current flow with sufficient force so as to displace substances and objects on the water away from the vessel for contaminant control thereof, and in the water in at least a desired direction away from the vessel depending on the position of the outlet means.

5,183,580

LIQUID FABRIC CONDITIONER CONTAINING FABRIC SOFTENER AND GREEN COLORANT

Jeanie Lew, Bayside, N.Y., and Barbara H. Bory, Fort Lee, N.J., assignors to Lever Brothers Company, Division of Conopco Inc., New York, N.Y.

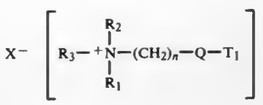
Filed Nov. 27, 1990, Ser. No. 618,443

Int. Cl.[5] D06M *13/00*

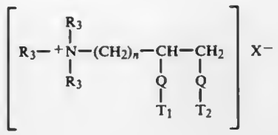
U.S. Cl. 252—8.6 **11 Claims**

1. A green-colored opaque fabric conditioning composition comprising:

a) about 1% to about 40% by weight of said composition of a fabric softening compound selected from the group consisting of di(hydrogenatedtallow)dimethyl ammonium chloride, cyclic quarternary ammonium salts, diamido quaternary ammonium salts, cationic nitrogenous salts having one long chain acyclic aliphatic C_{8-30} group, substituted imidazolinium salts, alkyl pyridinium salts, alkanamide alkylene pyridinium salts, tertiary fatty amines having at least one C_{8-30} alkyl chain, reaction products of stearic acid and aminoethylethanolamine, carboxylic acids having 8 to 30 carbon atoms and one carboxylic group per molecule, esters of polyhydric alcohols, fatty alcohols, ethyoxylated fatty alcohols, alkyl phenols, ethoxylated alkyl phenols, ethoxylated fatty amines, ethoxylated monoglycerides, ethoxylated diglycerides, ethoxylated fatty amides, mineral oils, polyols, and quaternary amonium compound of the formula:

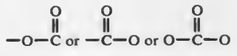


or



wherein,

Q is



R_1 is $(CH_2)_n$—Q—T_2 or T_3;

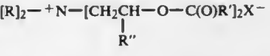
R_2 is $(CH_2)_n$—Q—T_4 or T_5 or R_3;

R_3 is C_1–C_4 alkyl;

n is an integer from 1 to 4; and

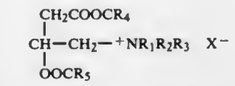
X^- is a softener-compatible anion;

a quaternary ammonium softening compound of the formula:



wherein each R substituent is a short-chain alkyl or hydroxyalkyl group or mixtures thereof; each R′ is a long-chain hydrocarbyl substituent, and R″ is a short-chain (C_1–C_4) hydrocarbyl substituent, and X^- is as defined above;

a cationic diester of the formula:



wherein R_1, R_2 and R_3 are each an alkyl or hydroxyalkyl group containing from 1 to 4 carbon atoms, or a benzyl group, R_4 and R_5 are ach alkyl chains containing from 11 to 23 carbon atoms, and X^- is a water soluble anion, and mixtures thereof; and

b) about 1 ppm to about 1,000 ppm of a colorant system comprising a colorant selected from the group consisting of C.I. Pigment Green #7, C.I. Reactive Green #12, C.I. Pigment Green #13, C.I. Pigment Green #36, C.I. Reactive Green #5, C.I. Reactive Green #18 and mixtures thereof; and

c) a liquid carrier including water, the pH of the composition being less than about 7.

5,183,581

PROCESS FOR THE DEWAXING OF PRODUCING FORMATIONS

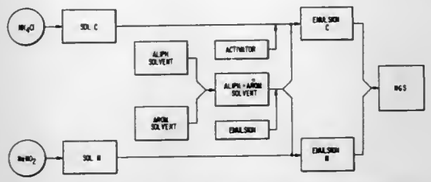
Carlos N. Khalil; Régis K. Romeu, both of Rio de Janeiro, and André Rabinovitz, Bahia, all of Brazil, assignors to Petroleo Brasileiro S.A., Rio de Janeiro, Brazil

Filed Apr. 13, 1992, Ser. No. 693,472

Claims priority, application Brazil, Aug. 24, 1990, PI BR 9004200

Int. Cl.[5] E21B *43/25, 43/28*

U.S. Cl. 252—8.552 **8 Claims**



1. A process for the dewaxing of producing formations by means of a water-in-oil nitrogen generating emulsion system, which comprises the steps of:

a) preparing an aqueous solution of NH_4Cl having a concentration of from 4.0 to 6.0M;

b) preparing an aqueous solution of $NaNO_2$ having a concentration of from 5.0 to 9.0M;

c) preparing an organic solvent mixture to achieve the hot dissolution of the paraffinic damage;

d) adding an emulsifier to the organic solvents mixture so that the concentration of emulsifier in the mixture comprises between 0.5 to 2.0%;

e) adding acetic acid 96% to the NH_4Cl solution;

f) adding 50% of the emulsified organic solvents mixture of step d) to the NH_4Cl and 50% of the mixture to the $NaNO_2$ solution obtaining thus a NH_4Cl emulsion and a $NaNO_2$ emulsion respectively, both emulsions being kept under agitation;

g) pumping simultaneously into the well the NH_4Cl and $NaNO_2$ emulsions, forming a mixture of equimolar NH_4Cl and $NaNO_2$ amounts thus initiating an equimolar reaction between the components mixture, this mixture producing nitrogen and heat, while pH is kept between 4.5 and 5.8; and

h) after the pumping of the treating fluid, displacing it from the well by means of an overflush with an aqueous saline fluid.

5,183,582

BLOWING AGENT-CONTAINING POLYMERIC MDI COMPOSITIONS

Jimmy L. Patterson, Huron Township, and Robert E. Riley, Flat Rock, both of Mich., assignors to BASF Corporation, Parsippany, N.J.

Division of Ser. No. 858,787, Mar. 27, 1992. This application Jun. 1, 1992, Ser. No. 891,063

Int. Cl.[5] C09K *3/00;* **C08J** *9/14*

U.S. Cl. 252—182.2 **5 Claims**

1. A composition comprising medium viscosity polymeric MDI methylenediphenylenediisocyanate having a viscosity of from 400 to 1200 centipoise when measured at 25° C., and monochlorodifluoromethane.

5,183,583

CATALYSTS FOR EXTENDING THE SHELF LIFE OF FORMULATIONS FOR PRODUCING RIGID POLYURETHANE FOAMS

Todd W. Wishneski, Cheshire, and Donald E. Margitich, Wallingford, both of Conn., assignors to BASF Corporation, Parsippany, N.J.

Division of Ser. No. 764,037, Sep. 23, 1991, Pat. No. 5,112,878. This applicatioo Feb. 10, 1992, Ser. No. 833,478

Int. Cl.[5] C08K *3/00*

U.S. Cl. 252—182.24 **1 Claim**

1. A composition, useful as a B-side polyurethane formulation in a portable foaming apparatus having a static mixer, wherein the composition comprises: a polyol, monochlorodifluoromethane, and an acid-blocked amine catalyst.

5,183,584

PEROXYGEN BLEACH ACTIVATORS AND BLEACHING COMPOSITIONS

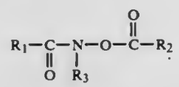
James P. Coleman, Maryland Heights, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 418,595, Oct. 10, 1989, Pat. No. 5,124,480. This application Feb. 10, 1992, Ser. No. 832,873

Int. Cl.[5] C09K *3/00*

U.S. Cl. 252—186.38 **18 Claims**

1. A composition comprising an inorganic persalt and an oxygen-releasing compound represented by the formula:



Wherein R_1 is selected from the group consisting of hydrogen and straight or branched chained alkyl groups having from the group consisting of 1 to 6 carbon atoms, R_2 is selected from straight or branched chain alkyl groups having from about 1 to about 12carbon atoms and R_3 is selected from the group consisting of straight or branched chain alkyl groups having from about 1 to about 3 carbon atoms.

5,183,585

LIQUID CRYSTAL EMULSION COMPOSITION

Toshiya Koyama; Yukio Matsumoto, both of Ichihara; Hataaki Yoshimoto, Chiba, and Katsuhiro Ito, Ichihara, all of Japan, assignors to Ube Industries, Ltd., Japan

Filed May 24, 1991, Ser. No. 705,567

Claims priority, application Japan, May 25, 1990, 2-134114

Int. Cl.[5] C09K *19/52, 19/00*

U.S. Cl. 252—299.01 **5 Claims**

1. A liquid crystal emulsion composition for forming a polymer dispersed type liquid crystal composite membrane, comprising

100 parts by weight of a liquid crystal material;

10 to 100 parts by weight of a saponification product of a polyvinyl acetate resin;

1 to 30 parts by weight of at least one aliphatic alcohol having 3 to 8 carbon atoms; and

50 to 1,000 parts by weight of water.

VOL 1147 ISS 1 FEB 2 1993 UMI

5,183,586

FERROELECTRIC CHIRAL SMECTIC LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DEVICE USING SAME

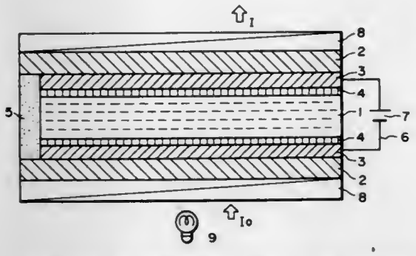
Masahiro Terada, Atsugi; Takeshi Togano, Yokohama; Masataka Yamashita, Hiratsuka; Takashi Iwaki, Isehara; Shosei Mori, and Kenji Shinjo, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 12, 1989, Ser. No. 378,923

Claims priority, application Japan, Jul. 14, 1988, 63-176588; Jun. 9, 1989, 1-147994

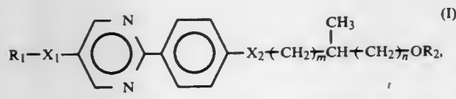
Int. Cl.[5] C09K *19/34, 19/52*

U.S. Cl. 252—299.61 **7 Claims**



1. A ferroelectric chiral smectic liquid crystal composition, comprising:

at least one compound represented by the following formula (I):

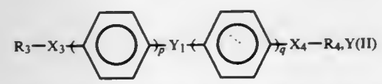


wherein R_1 denotes a linear or branched alkyl group having 1–18 carbon atoms; R_2 denotes a linear or branched alkyl group having 1–14 carbon atoms; X_1 and X_2 respectively denote a single bond, —O—,



m is 0–7; and n is 0 or 1; and

at least one compound represented by the following formula (II):



wherein R_3 and R_4 denote a linear alkyl group having 1–18 carbon atoms X_3 and X_4 respectively denote a single bond, —O—,



Y_1 denotes $—CH_2O—$ or $—OCH_2—$; and p and q are 1 or 2.

5,183,587

LIQUID CRYSTALLINE COMPOUND

Kisei Kitano; Makoto Ushioda, both of Chibashi; Manabu Uchida, and Toshiharu Suzuki, both of Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

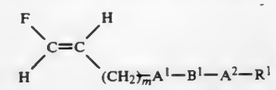
Filed Dec. 22, 1989, Ser. No. 454,988

Claims priority, application Japan, Jan. 6, 1989, 64-1004

Int. Cl.[5] C09K *19/30, 19/52;* **C07C** *43/225, 28/00, 25/00*

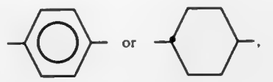
U.S. Cl. 252—299.63 **9 Claims**

1. A compound expressed by the formula

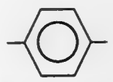


(I)

wherein R^1 represents a hydrogen atom, a fluorine atom, a chlorine atom, a cyano group, or an alkyl group or an alkenyl group each of 1 to 20 carbon atoms in which one $—CH_2—$ group or two non-adjacent $—CH_2—$ groups may be replaced by —O—, and in which alkenyl group the position and number of double bonds may be optionally chosen; A^1 and A^2 each independently represents



the hydrogen atoms(s) of which



may be replaced by fluorine atom(s), chlorine atom(s) or methyl group(s); B^1 represents $—CH_2CH_2—$, $—CH_2O—$, $—OCH_2—$ or a single bond; and m represents an integer of 0 to 20.

5,183,588

TERNARY SYSTEM BASED ON PERFLUORINATED ETHERS

Martine S. Salerno; Rémy Mounier, and Bernard Breda, all of Neuilly sur Seine, France, assignors to Yves Saint Laurent Parfums, France

Filed Apr. 4, 1990, Ser. No. 503,980

Claims priority, application France, Oct. 13, 1989, 89 13426

Int. Cl.[5] B01J *13/00*

U.S. Cl. 252—312 **4 Claims**

1. Emulsion comprising three phases non-miscible with one another, said phases consisting essentially of:

a first phase of about 0.1 to 5% by weight of perfluorinated ether,

a second phase comprising about 0.1 to 5% by weight of a straight-chain silicone containing a glycol group, as surfactant for forming said emulsion, and about 0.1 to 50% by weight of a cyclic-chain silicone containing a methyl group, as fluid base, and

a third phase comprising about 3 to 5% by weight of hydrating agent, and water, qs 100.

5,183,589

STABLE EMULSIONS OF PERFLUOROPOLYETHERS

Fabio Brunetta, Cornuda, and Giovanni Pantini, Milan, both of Italy, assignors to Ausimont S.r.l., Milan, Italy

Filed Mar. 30, 1990, Ser. No. 501,481

Claims priority, application Italy, Mar. 31, 1989, 19974 A/89

Int. Cl.[5] A61K *7/025, 7/40;* **B01J** *13/00*

U.S. Cl. 252—308 **12 Claims**

1. Stable emulsions of perfluoropolyethers having perfluoroalkyl end groups, consisting of:

a) from 0.1 to 75% by weight of a perfluoropolyether;

b) from 0.01% to 5% of a surfactant; and

c) from 20% to 99.89% of glycerol.

5,183,590

CORROSION INHIBITORS

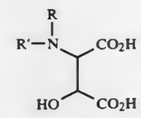
Charles G. Carter, Silver Spring; Vladimir Jovancicevic; Judith A. Hartman, both of Columbia, and Robert P. Kreh, Jessup, all of Md., assignors to W. R. Grace & Co.-Conn, New York, N.Y.

Filed Oct. 24, 1991, Ser. No. 782,359

Int. Cl.[5] C23F *11/14, 11/16*

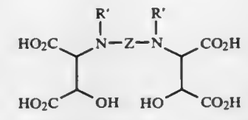
U.S. Cl. 252—392 **11 Claims**

1. A method for inhibiting corrosion of ferrous metals in contact with an aqueous solution comprising adding to the system from 0.1 to 500 ppm of an aminohydroxysuccinic acid compound selected from group consisting of compounds of the generalized formulas:



A)

wherein R is H or C_1 to C_6 alkyl, optionally substituted with —OH, $—CO_2H$, $—SO_3H$ or phenyl, C_4 to C_7 cycloalkyl, or phenyl which is optionally substituted with —OH, or $—CO_2H$, and R′ is H, C_1 to C_6 alkyl, optionally substituted with OH OH or CO_2H; and



B)

wherein R′ is as above, and Z is selected from the group consisting of i) $—(CH_2)_n—$wherein n is an integer from 2 to 10, ii) $—(CH_2)_2—X—(CH_2)_2—$wherein X is —O—, water soluble salts thereof.

5,183,591

ELECTROCONDUCTIVE RESIN COMPOSITION

Sumihisa Akahoshi; Hitoshi Akimura; Isao Nakabayashi, all of Yamaguchi; Masami Ishii, Aichi; Tamio Ohi, Aichi, and Makoto Yoshida, Aichi, all of Japan, assignors to Ube Cycon, Ltd., Tokyo and Aisin Seiki Kabushiki Kaisha, Kariya, both of, Japan

Filed Nov. 29, 1989, Ser. No. 442,590

Claims priority, application Japan, Dec. 5, 1988, 63-307478

Int. Cl.[5] H01B *1/06*

U.S. Cl. 252—503 **3 Claims**

1. An electroconductive resin composition comprising 100 parts by weight of a rubber-reinforced styrene resin prepared by emulsion polymerization to have a controlled pH value of 5.0 through 9.0, 5 to 30 parts by weight of a carbon material filler and 10 to 150 parts by weight of a metal material filler incorporated into said resin, said rubber-reinforced styrene resin being at least one member selected from the group consisting of butadiene-styrene copolymer, polystyrene, acrylonitrile-butadiene-styrene copolymer, methyl methacrylate-acrylonitrile-butadiene-styrene copolymer, methyl methacrylate-butadiene-styrene copolymer, acrylonitrile-ethylene-propylene-styrene resin and acrylate styrene acrylonitrile resin, and said metal material filler being fibers or flakes of at least one member selected from the group consisting of copper, brass, aluminum and stainless steel, said electroconductive resin composition having volume-intrinsic resistance value under 4.9 ohm cm, ratio from initial value to value after one year of said volume-intrinsic resistance value being between 1.000 and 1.066.

5,183,592

ELECTROCONDUCTIVE ADHESIVE COMPRISING AN EPOXY NOVOLAK RESIN AND PHENOL-ARALKYL RESIN

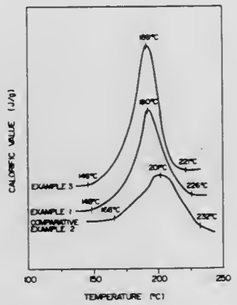
Nobuo Ichimura, Takahagi; Yauso Miyamoto, and Mitsuo Yamazaki, both of Hitachi, all of Japan, assignors to Hitachi Chemical Company Ltd., Tokyo, Japan

Filed Jan. 9, 1991, Ser. No. 639,020

Claims priority, application Japan, Jan. 19, 1990, 2-011635

Int. Cl.[5] H01B *1/22*

U.S. Cl. 252—512 **5 Claims**



1. An electroconductive adhesive comprising:

(a) an epoxy-novolak resin,

(b) a phenol-aralkyl resin,

(c) a glycidyl group-containing silane-based coupling agent,

(d) at least one organic tetraphenyl borate, and

(e) an electroductive metal powder; the component (b) being contained in an amount to make the number of phenolic OH groups per one epoxy group of the component (a) in the range of 0.6 to 1.5, the component (c) being contained in an amount of 30 to 500% by weight based upon the weight of component (a), the component (d) being contained in an amount of 1 to 20% by weight based on the weight of component (b), and the component (e) being contained in an amount of 65 to 85% by weight based on the total weight of the components (a), (b), (d) and (e).

5,183,593

ELECTRICALLY CONDUCTIVE CEMENT

David Durand, Providence; David P. Vieau, East Greenwich; Tai S. Wei, Warwick, and Ang-Ling Chu, Cranston, all of R.I., assignors to Poly-Flex Circuits, Inc., Cranston, R.I.

Continuation-in-part of Ser. No. 436,199, Nov. 14, 1989. This application Jun. 4, 1990, Ser. No. 533,682

Int. Cl.[5] H01B *1/02*

U.S. Cl. 252—514 **21 Claims**

1. An electrically conductive cement for adhering and establishing electrical contact between adhered surfaces, comprising:

a mixture comprised of filler particles dispersed in a shrink-

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able adhesive polymeric carrier, said filler being comprised of electrically conductive particles comprising, in combination, conductive flake particles having a thickness which is an order of magnitude smaller than their length and width and at least one member selected from the group consisting of:

(a) conductive agglomerates having a rough surface characteristic;

(b) silver-coated nickel particles;



(c) silver-coated glass spheres; and

(d) fine silver particles;

wherein said filler is provided in an amount effective to provide a moisture resistant electrical contact upon curing of said carrier, and

said carrier shrinks at least about 6.8% volumetrically upon curing; and wherein said filler is present in about 60–90 weight percent based on the combined weight of the carrier and the filler.

5,183,594

CONDUCTIVE RESIN COMPOSITION CONTAINING ZINC OXIDE WHISKERS HAVING A TETRAPOD STRUCTURE

Minoru Yoshinaka; Eizo Asakura; Mitsumasa Oku, all of Osaka; Motoi Kitano, Kawanishi; Yoshio Nakatani, Chigasaki; Hideyuki Yoshida, Amagasaki; Toshiya Hatta, Kamakura, and Seiichi Nakatani, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 28, 1989, Ser. No. 399,116

Claims priority, application Japan, Aug. 29, 1988, 63-214007; Sep. 8, 1988, 63-225017

The portion of the term of this patent subsequent to Nov. 19, 2008, has been disclaimed.

Int. Cl.[5] H01B *1/20*

U.S. Cl. 252—518 **21 Claims**



1. A conductive resin composition comprising conductive zinc oxide whiskers each having a tetrapod structure in an amount greater than or equal to 0.1 weight percent and a resin, said zinc oxide whiskers each being dispersed in the resin to form an electrical conducting path and said tetrapod structure comprises a central part and a needle crystal part, wherein a length from the base to the top of the needle crystal part is from 3 to 200 μm and an aspect ratio of the needle crystal part is not less than 3.

5,183,595

DEVICE FOR GASSING LIQUIDS

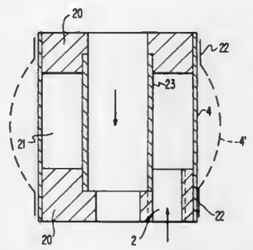
Karl H. Schüssler, Philipp-Reis-Str. 18, 6460 Gelnhausen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 522,124, May 11, 1990, abandoned. This application Dec. 9, 1991, Ser. No. 807,012

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1990, 4012631

Int. Cl.[5] B01F *3/04, 5/04*

U.S. Cl. 261—64.3 **47 Claims**



1. A gas distribution device for gassing a liquid by being positioned beneath the level of the liquid and connected to a gas supply source, said device comprising:

a bubble assembly including a body member having a gas chamber, and a membrane-like wall formed of a flexible material and defining a bubble member mounted on said body member such that said bubble member defines an outer periphery of said gas chamber;

gas supply fitting means connected to said gas chamber of said body member of said bubble assembly for mounting said bubble assembly to the gas supply source such that gas from the gas supply source may be fed through said gas supply fitting means into said gas chamber;

said wall defining said bubble member having therethrough a plurality of gas discharge openings, such that when gas is supplied into said gas chamber at a pressure sufficient to overcome the pressure of the liquid, then the gas is discharged through said gas discharge openings and gasses the liquid; and

said bubble assembly being shaped annularly and defining at least one liquid channel extending through said body member, whereby as gas is discharged through said gas discharge openings into the liquid, the gas rises through the liquid as bubbles and there is created a downward flow of liquid through said liquid channel.

5,183,596

REPLACEABLE SEAL MODULE FOR LIQUID AERATORS

Richard Rajendren, Belle Plaine; Peter S. Gross, Plymouth, and Eric G. Bollensen, Columbia Heights, all of Minn., assignors to Aeromix Systems, Incorporated, Minneapolis, Minn.

Filed Dec. 13, 1991, Ser. No. 806,646

Int. Cl.[5] B01F *5/10*

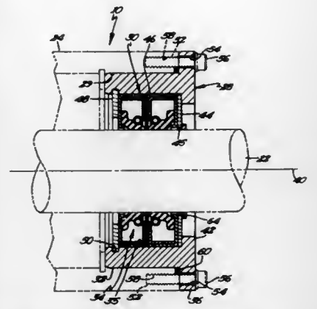
U.S. Cl. 261—93 **6 Claims**

1. In an apparatus for the treatment of liquids by aeration of the type having a motor, a propeller carried by a motor driven shaft, means defining an airflow passage to the propeller, bearing support means for supporting at least one bearing, each bearing supporting the shaft at a location spaced from the motor, and at least one bearing seal positioned about the shaft between a bearing and the propeller, the improvement comprising:

a housing surrounding at least a portion of the shaft;

a module having a flange portion, the module carrying at least the bearing seal and being detachably secured about the shaft to facilitate removal of the bearing seal wherein at least a portion of the module is positioned within the housing;

a plurality of bolts attaching the module to the housing at the flange portion; and



sealing means positioned between the flange portion and the housing to prevent liquid from entering an interior of the housing between the flange portion and the housing.

5,183,597

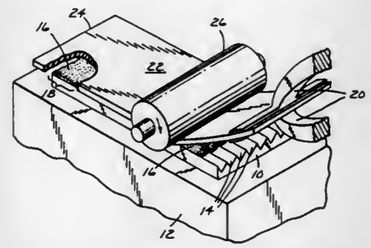
METHOD OF MOLDING MICROSTRUCTURE BEARING COMPOSITE PLASTIC ARTICLES

Shih-Lai Lu, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 444,361, Dec. 8, 1989, which is a continuation-in-part of Ser. No. 309,415, Feb. 10, 1989, abandoned. This application Feb. 25, 1991, Ser. No. 660,643

Int. Cl.[5] B29D *11/00*

U.S. Cl. 264—1.4 **18 Claims**



1. A method of producing a composite plastic article that has a utilitarian microstructure, which microstructure is at least 0.025 mm in depth, said method comprising the steps of:

a) preparing a UV-curable oligomeric resin composition of a one-part, solvent-free, radiation addition-polymerizable, crosslinkable, organic oligomeric composition having hard segments and soft segments;

b) depositing a bead of that oligomeric resin composition along one edge of a master negative microstructure molding surface;

c) covering the master with a preformed substrate, at least one of the master and substrate being flexible;

d) applying force progressively to the substrate to advance the bead of resin while applying sufficient pressure to fill the cavities of the master such that the deposited resin does not protrude beyond the cavities to more than 20% of the depth of the cavities;

e) curing the deposited oligomeric resin by ultraviolet radiation to provide a composite of said substrate and cured oligomeric resin; and

f) removing the resulting microstructure-bearing composite of the substrate and cured resin.

5,183,598

PROCESS OF AND APPARATUS FOR MAKING THREE-DIMENSIONAL OBJECTS

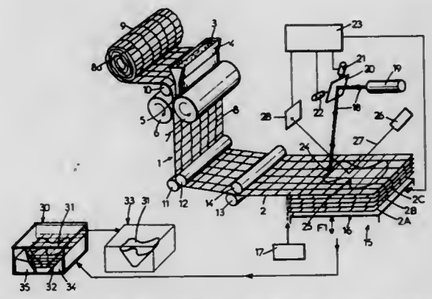
Jean-Louis Hellé, Gouvieux; Jean-Claude André, and Philippe Schaeffer, both of Nancy, all of France, assignors to Dassault Aviation, Paris, France

Filed Mar. 4, 1991, Ser. No. 664,626

Claims priority, application France, Mar. 20, 1990, 90 03521

Int. Cl.[5] B29C *35/08, 67/12*

U.S. Cl. 264—22 **14 Claims**



1. A process for the production of objects of defined shape, comprising the following steps:

a) providing at least one thin layer which, when it is subjected to a defined radiation, undergoes a change of solubility in at least one specified solvent, accompanied by a change of volume less than a predetermined limit,

b) reinforcing at least one of said thin layers with fibers or with a screen,

c) scanning said first thin layer with a beam of said radiation, according to a trace specified in advance and under conditions of intensity and of duration which are capable of causing said change of solubility,

d) providing a second thin layer of the same material and superposing it on the first,

e) scanning said second thin layer with a beam of the same radiation, according to a trace such that and under conditions such that said change of solubility occurs in the second layer and that the volume of the second layer which is affected by said change of solubility is capable of forming at least one volume continuous with that volume of the first layer which has been previously affected by said change of solubility,

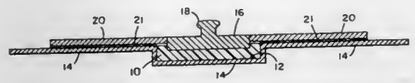
f) causing the adhesion of said second layer on the first layer, at least in the region of these two layers which, after their respective irradiation, have the lowest solubility, in such a manner as to constitute a continuous volume of material having lower solubility,

g) repeating the operations d) to f) until the volumes of material having lower solubility of the successive layers constitute together an integral unitary volume having the shape of the desired object,

h) placing the stack formed by the superposed successive layers in contact with said solvent in such a manner as to separate the parts of material having lower solubility from the parts of material having higher solubility, wherein step f) occurs before the step e) of after the step g).

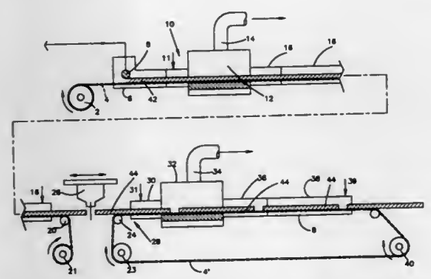
VOL 1147 ISS 1 FE 2 1993 UMI

5,183,599
RAPID CURING, ELECTRICALLY CONDUCTIVE ADHESIVE
Jack H. Smuckler, 9 Country La., Marblehead, Mass. 01945
Division of Ser. No. 467,743, Jan. 19, 1990, Pat. No. 5,124,076.
This application Jun. 18, 1991, Ser. No. 700,270
Int. Cl.[5] B29C *71/04*
U.S. Cl. 264—22 **9 Claims**



1. An improved method of in situ polymerization of an adhesive, conformable, electrically conductive hydrogen for use in a biomedical electrode, comprising a disc having a first surface and a second, skin-directed surface, the first surface of said disc being associated with means for electrically connecting said disc to a lead wire and said second, skin-directed surface being associated with a conformable, adhesive, ionic, polymeric conductive hydrogel, said hydrogen enhancing the electrical connection with the skin, said method comprising:
forming said conductive material on said electrode by the steps of:
assembling a precursor of said conductive material comprising:
an aqueous mixture of an N-vinyl lactam monomer, an acrylic monomer, a water-soluble cross-linking agent, a photoinitiator and an ionizable salt, wherein the ratio of N-vinyl lactam to acrylic monomer is between about 1:10 to 10:1 and wherein the amount of water comprises at least about 50 percent by weight of said mixture,
placing said precursor in a well defined by a UV translucent abhesive material,
placing the skin-directed surface of said disc in contact with the precursor, and
polymerizing said precursor by exposing said precursor to UV light for less than 30 seconds, thereby forming an electrically conductive, pressure-sensitive adhesive hydrogel in contact with said disc to produce said electrode.

5,183,600
METHOD AND APPARATUS FOR CONTINUOUS CASTING OF POLYMERIZABLE MATERIAL
Herbert I. Scher, Pikesville; Israel S. Ungar, Randallstown, and Richard R. Baehr, Jr., Annapolis, all of Md., assignors to Nevamar Corporation, Odenton, Md.
Filed Jul. 19, 1991, Ser. No. 732,662
Int. Cl.[5] B29C *35/10*
U.S. Cl. 264—26 **7 Claims**

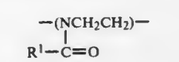


1. A method of continuously casting a polymerizable liquid material which contains a particulate filler and which shrinks during polymerization to produce a sheet substantially free of warp, consisting essentially of:
(a) depositing a controlled amount of a liquid mixture containing said material on a web having an upstream direction and a downstream direction and moving at a predetermined speed to provide a moving mixture of controlled thickness;
(b) heating said mixture substantially uniformly throughout its cross section by radio frequency energy downstream of said depositing step at least to a temperature sufficient to initiate polymerization;
(c) providing conditions which isolate shrinkage forces that occur in said mixture further downstream from said heating from transmission upstream;
(d) maintaining said isolated mixture for a time thereafter in substantial thermal isolation and free of substantial constraining forces such that polymerization and further shrinkage occurs in a substantially adiabatic manner;
whereby a sheet is provided free of substantial warp.

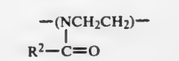
4. An apparatus for continuous casting of a polymerizable material which contains a particulate filler and which shrinks upon curing, comprising:
(a) means for depositing a controlled amount of a mixture containing said material on a web having an upstream direction and a downstream direction and moving at a predetermined speed to provide a moving mixture of controlled thickness;
(b) means for heating said mixture substantially uniformly throughout its cross section by radio frequency energy downstream of said depositing step at least to a temperature sufficient to initiate polymerization;
(c) means for isolating shrinkage forces that occur in said mixture further downstream from said heating point from transmission upstream; and
(d) means for maintaining said mixture thereafter in substantial thermal isolation such that substantially adiabatic polymerization and further shrinkage occurs.

5,183,601
DETERGENT COMPOSITION CONTAINING POLYETHYLENIMINE CO-POLYMER
Yasuhiro Jisai; Yukiomi Tanaka, both of Chiba, and Akira Shigeta, Tokyo, Japan, assignors to Kao Corporation, Tokyo, Japan
Filed May 28, 1991, Ser. No. 706,210
Claims priority, application Japan, Jun. 7, 1990, 2-149192; Jun. 7, 1990, 2-149193; Jun. 7, 1990, 2-149195; Jun. 7, 1990, 2-149196; Jun. 7, 1990, 2-149198
Int. Cl.[5] C11D *3/28, 1/02, 1/66, 1/90*
U.S. Cl. 252—524 **16 Claims**

1. A detergent composition comprising:
(A) a polymeric compound comprising recurring units (I-1) and I-2) at a ratio by weight of 9:1–1:9,



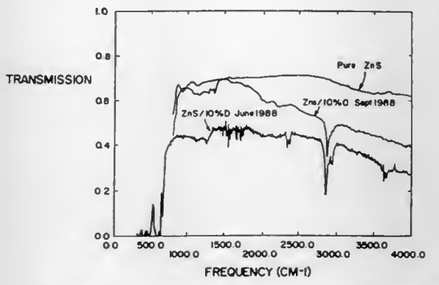
(I-1)



(I-2)

wherein R^1 is a hydrogen or a methyl or ethyl group, R^2 represents an alkyl, aryl or aralkyl group having 4–15 carbon atoms, and
(B) at least one different compound selected from the group consisting of monomeric anionic surface active agents, monomeric nonionic surface active agents, monomeric amphoteric surface active agents, monomeric cationic surface active agents,
wherein the weight ratio of component (A) to component (B) is form 5/1 to 1/5.

5,183,602
INFRA RED DIAMOND COMPOSITES
Rishi Raj; Albert J. Sievers, both of Ithaca, N.Y.; Liang Yue, Ann Arbor, Mich., Tae Won Noh, Seoul, Rep. of Korea, assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.
Filed Sep. 18, 1989, Ser. No. 408,634
Int. Cl.[5] F21V *9/04;* **C03C** *27/02;* **B05D** *3/06*
U.S. Cl. 252—587 **10 Claims**

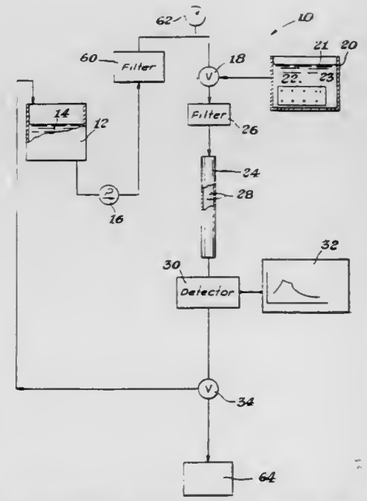


1. An infrared transmitting composite which comprises finely divided diamond particles having a particle size of from about 0.01 to 5 micrometer diameter uniformly dispersed in a matrix that transmits infrared light wherein said diamond particles are present in the composite at a volume concentration of from about 0.1 to about 75 volume percent; wherein said matrix is selected from the group consisting of one or more of the following:
zinc sulfide, zinc selenide, barium monosulfide, calcium sulfide, carbon fluoride, magnesium sulfide, cadmium telluride, gallium arsenide, thorium chloride, thorium iodide, thorium tetrafluoride, arsenic trisulfide and tin iodide and wherein said composite exhibits improved mechanical properties and toughness over that of the matrix alone.

5,183,603
PROCESS FOR PRODUCING A COIL-SHAPED CARBON FIBER BUNDLE
Eiji Kitajima, Izumi; Takashi Oyama; Eiji Maruden, both of Izumi-Otsu; Hirokazu Teraoka, Sakai; Haruki Yamasaki, Isehara, and Susumu Shimizu, Chuo, all of Japan, assignors to Koa Oil Company Limited and Tanaka Kikinzoku Kogyo Kabushiki Kaisha, both of Tokyo, Japan
Filed Oct. 22, 1991, Ser. No. 780,301
Claims priority, application Japan, Oct. 24, 1990, 2-286323; Feb. 7, 1991, 3-60886
Int. Cl.[5] D01F *9/12*
U.S. Cl. 264—29.2 **9 Claims**

1. A process for producing a coil-shaped carbon fiber bundle comprising the steps of:
compositing at least two pitches wherein the maximum difference in coefficient of linear contraction in the direction of a fiber axis during carbonization of spun pitches is at least 5% and the difference in the softening points of the pitches to be composited is within 10° C. so as to spin the thus composited pitches as single fibers; bundling the thus spun single fibers to form a fiber bundle; then infusibilizing the resulting fiber bundle under tension; and carbonizing the fiber bundle, wherein the stretch characteristics of the resulting coil-shaped carbon fiber bundle is controlled by adjusting one or more of the discharge proportion of the spinning pitches to be composited, the size of the diameter of fibers to be spun or the number of fibers to be bundled.

5,183,604
SIZE SEPARATION OF PARTICLES CONTAINED WITHIN A MATERIAL BY THE USE OF NONAQUEOUS HYDRODYNAMIC CHROMATOGRAPHY
Martin A. Langhorst, Midland, Mich., and Joseph B. Henry, Pickerington, Ohio, assignors to The Dow Chemical Company, Midland, Mich.
Filed Jan. 24, 1992, Ser. No. 825,353
Int. Cl.[5] B29C *45/00;* **B01D** *15/08*
U.S. Cl. 264—40.1 **14 Claims**



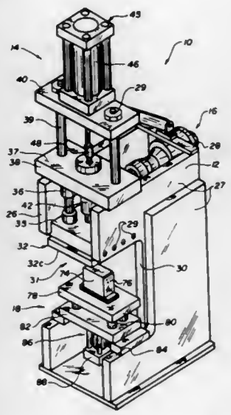
1. In a method for producing a water insoluble matrix containing a desired size distribution of a non continuous phase material of the type where a quantity of a monomer material and a quantity of a non continuous phase material are added through control means to a polymerization system, then mixed, polymerized, and finally extruded, the improvement consisting of:
removing a sample from the system after initial mixing but before the polymerization is complete;
determining the distribution according to size of the sample by nonaqueous hydrodynamic chromatography, which includes the steps of:
a. placing the sample in a solvent effective for dissolving the matrix thereby forming a mixture of the particles dispersed in a solution comprising the solvent and the matrix;
b. adding a controlled amount of the mixture to an essentially nonaqueous carrier liquid;
c. eluting the carrier liquid containing the mixture through a separating medium effective for sorting the particles according to size wherein the largest particles are eluted first and the smallest particles are eluted last;
d. monitoring the effluent from the separating medium by measuring and recording a signal representing a physical property of the effluent that is responsive to the concentration of particles in the effluent;
comparing the results from the nonaqueous hydrodynamic chromatography analysis to the desired size distribution;
making adjustments in the control means and/or the supply of the non continuous phase material in order to make the polymerized product more closely resemble the desired product.

VOL 1147 ISS 1 FE 2 1993 UMI

5,183,605
METHOD FOR INJECTION INTO A SELF-CLAMPING MOLD

Robert L. Brown, Hartville, and David E. Baxter, Ravenna, both of Ohio, assignors to GenCorp Inc., Fairlawn, Ohio

Continuation-in-part of Ser. No. 621,675, Nov. 30, 1990, abandoned. This application Aug. 28, 1991, Ser. No. 751,353
Int. Cl.[5] B29C 45/76
U.S. Cl. 264—40.5 3 Claims



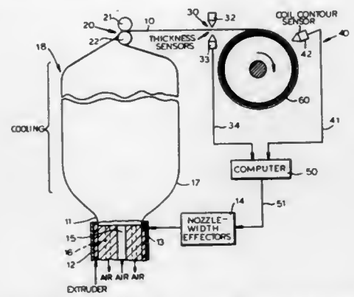
1. A method of injecting molding material into a self-clamping mold comprising the steps of:
supporting said mold in a support frame clamped in engagement with an injector using a lift mechanism,
pre-determining the pressure required to inject material into said self-clamping mold and to be applied by said lifting mechanism to maintain the condition and position of said self-clamping mold during injection of molding material as a function of the area of exposed sprue openings in said self-clamping mold,
transferring molding material into said injector,
controlling the temperature of molding material transferred to said self-clamping mold, and
injecting molding material into said self-clamping mold under said predetermined pressure using said injector while clamping said mold within said frame with a force of less than 25 tons using a lifting mechanism to maintain said mold condition and position.

5,183,606
METHOD OF MAKING A PLASTIC FOIL AND FOR WINDING THE PLASTIC FOIL INTO A COIL OR ROLL

Willi Predöbl, Hennef 1- Brol, Fed. Rep. of Germany, assignor to Reifenhauser GmbH & Co. Maschinenfabrik, Troisdorf, Fed. Rep. of Germany

Filed Apr. 19, 1991, Ser. No. 688,927
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1990, 4013611
The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.
Int. Cl.[5] B29C 47/92, 55/28
U.S. Cl. 264—40.1 8 Claims

1. A method of making a coil of a plastic foil, the method comprising the steps of:
a) continuously forming a flat web of a plastic foil having over a width thereof a thickness-error profile including system-produced plus thickness errors and minus thickness errors;
b) winding said web into a coil;
c) monitoring at the coil deviations of the coil from a substantially cylindrical contour, and feeding a signal representing the deviations to a computer;
d) automatically deriving from the signal with said computer a thickness correction by which the thickness of a zone between two regions with plus thickness errors must be increased to eliminate a bulge in the coil at said zone with plus thickness errors and controlling the forming of the web to increase the thickness of the web at said zone by said thickness correction;



e) maintaining said increase in the thickness of said web at said zone for a length of said web would on said coil to maintain a substantially cylindrical contour thereof; and
f) iteratively repeating steps c) to e) until said coil is completely wound with said web, thereby forming a complete coil with a substantially constant cross section cylindrical contour.

5,183,607
POLYMER MEMBRANES FOR SEPARATION PROCESS

George H. Beall, 106 Woodland Dr.; Kishor P. Gadkaree, 273 Orchard Dr., both of Big Flats, N.Y. 14814; Thomas P. Grandi, 303 Home St., Elmira, N.Y. 14904, and Candace J. Quinn, 419 Hornby Rd., Corning, N.Y. 14830

Filed Dec. 17, 1991, Ser. No. 808,814
Int. Cl.[5] B29C 65/00
U.S. Cl. 264—41 6 Claims



1. A method comprising: making a semi-permeable microporous polymer body having an intercommunicating pore structure, said body having a pore volume of at least about 50 percent and a mean pore diameter in the range of about 0.1–10 microns, by the steps of:
(i) melt-mixing a batch mixture of a thermoplastic polymer and a finely divided leachable glass to form a two-phase glass-polymer blend comprising a continuous polymer network and an intercommunicating glass phase;
(ii) forming the blend into a glass-polymer body of a selected shape; and
(iii) leaching the intercommunicating glass phase from the glass-polymer body without disruption of the continuous polymer network;
thus to provide a microporous polymer body comprising an intercommunicating pore structure.

5,183,608
METHOD OF MAKING DIESEL PARTICULATE FILTERS

Donald L. Guile, Horseheads, N.Y., assignor to Corning Incorporated, Corning, N.Y.

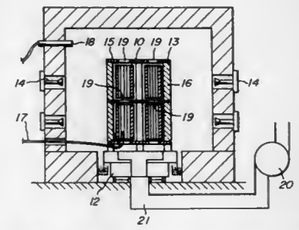
Filed Jan. 3, 1992, Ser. No. 816,226
Int. Cl.[5] B29C 47/00; C04B 33/32, 35/64, 41/81
U.S. Cl. 264—44 18 Claims

1. A method of making a ceramic article having pores, suitable for use as a diesel particulate filter comprising the steps of:
blending graphite, water insoluble cellulose, and ceramic-forming precursors with an effective amount of vehicle and forming aids to form a plastic mixture;
forming said plastic mixture into a green body;
drying dielectrically said green body; and
firing said dried green body under conditions effective to form said ceramic article having pores, wherein said graphite and said water insoluble cellulose are blended with said ceramic-forming precursors, said vehicle, and said forming aids in an amount effective to achieve an overall porosity of 45 to 55% in said ceramic article and to permit drying of said green body to occur with substantially no arcing or shorting.

5,183,609
METHOD OF MANUFACTURING CERAMIC HONEYCOMB-STRUCTURAL BODY

Kazuhiro Miyahara, Nagoya, Japan, assignor to NGK Insulators, Ltd., Japan

PCT No. PCT/JP89/00139, § 371 Date Aug. 18, 1989, § 102(e) Date Aug. 18, 1989, PCT Pub. No. WO89/07584, PCT Pub. Date Aug. 24, 1989
PCT Filed Feb. 10, 1989, Ser. No. 397,499
Claims priority, application Japan, Feb. 10, 1988, 63-27616
Int. Cl.[5] B29C 65/00; F27D 21/00
U.S. Cl. 264—44 1 Claim



1. A process for producing a honeycomb-structural body, comprising the steps of:
preparing a mixture of ceramic material and at least one component selected from the group consisting of molding aids and pore-forming agents;
preparing an extrudable green ceramic material from said mixture;
extruding said prepared extrudable green ceramic material to form a honeycomb-structural body;
providing a first thermocouple in a through-hole of said honeycomb-structural body and a second thermocouple outside said honeycomb-structural body; and
firing said honeycomb-structural body in a firing atmosphere while minimizing a differential temperature condition measured between interior and exterior portions of said honeycomb-structural body by increasing the oxygen concentration in the firing atmosphere in a range of firing temperatures which is outside a temperature range within which thermal decomposition of said at least one component occurs, and decreasing the oxygen concentration in the firing atmosphere in a range of firing temperatures which corresponds to said temperature range within which thermal decomposition of said at least one component occurs;
wherein said at least one component is substantially completely removed from said honeycomb-structural body during said firing as a result of said increasing and said decreasing oxygen concentration in the firing atmosphere.

5,183,610
ALUMINA-ZIRCONIA CERAMIC

Terrence K. Brog, Littleton, Colo., and William R. Manning, Richmond, Mich., assignors to Cooper Indusries, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 287,693, Dec. 20, 1988, abandoned, which is a continuation-in-part of Ser. No. 76,439, Jul. 22, 1987, abandoned. This application Dec. 20, 1990, Ser. No. 647,197
Int. Cl.[5] C04B 35/10
U.S. Cl. 264—56 4 Claims

1. A method for producing a ceramic which consists essentially of formulating a batch composed of from 6 to 95 percent of particulate ZrO_2 and from 5 to 94 percent of particulate Al_2O_3 from particulate Al_2O_3, particulate ZrO_2 is in a tetragonal crystal structure as a consequence of an oxide dissolved therein to promote retention of the metastable tetragonal crystal structure and particulate ZrO_2 which has a monoclinic crystal structure, comminuting the batch, compacting the comminuted batch into a shape, firing the shape, and controlling the degree of comminution of the batch, the firing conditions and the proportions of oxide and of tetragonal and monoclinic ZrO_2 in the batch to produce a dense, gas impervious ceramic which contains both metastable tetragonal and monoclinic ZrO_2, and in such proportions that the ceramic has a strength, as indicated by the modulus of rupture, at least 5 percent greater than that of the stronger of two otherwise identical ceramics, one wherein all of the ZrO_2 in the batch is in a metastable tetragonal and one wherein all of the ZrO_2 in the batch is in a monoclinic crystal structure.

5,183,611
METHOD OF PRODUCING POLYMER ARTICLE HAVING METALLIZED SURFACE

Ryutoku Yosomiya; Mistutoshi Hirata, both of Funabashi; Kiyotaka Morimoto, Koshigaya; Soichiro Takenishi, Tokushima, and Toshinori Marutsuka, Tokyo, all of Japan, assignors to Nisshinbo Industries, Inc., Tokyo, Japan

Filed Nov. 30, 1988, Ser. No. 278,202
Claims priority, application Japan, Nov. 30, 1987, 62-299878
Int. Cl.[5] B05D 3/10
U.S. Cl. 264—129 8 Claims

1. A method of producing a polymer article having a metallized surface, which consists essentially of dissolving a polymer and a salt of a metal selected from the group consisting of iron, copper, nickel and cobalt in a common solvent, forming a polymer article containing the said metal salt dispersed therein from the solution, and then treating the article with a reducing agent the amount of the metal salt being from 1 to 200 parts by weight per 100 parts by weight of the polymer.

5,183,612
PROCESS AND APPARATUS FOR MANUFACTURING FRAME WITH GROOVE FOR USE WITH PANEL

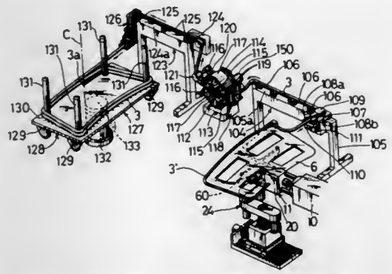
Yoshihiro Suita, and Tosikazu Ito, both of Obu, Japan, assignors to Tokai Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jan. 14, 1992, Ser. No. 820,247
Claims priority, application Japan, Jan. 14, 1991, 3-014770
Int. Cl.[5] B29C 41/24, 41/44, 47/08
U.S. Cl. 264—145 7 Claims

1. A process for manufacturing a frame with a groove such as a molding for use with a panel such as a windshield of an automobile, comprising the steps of:
providing a dummy panel having an outer configuration and a thickness equal to those of said panel;

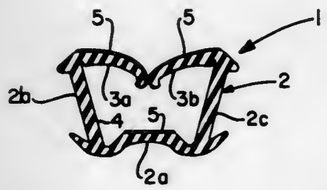
VOL 1147 ISS 1 FE 2 1993 UMI

providing molding die means having an extrusion port for extruding a molding material to form a molding product;
engaging a part of the peripheral edge of said dummy panel into said extrusion port of said molding die means;
continuously extruding said molding material from said extrusion port of said molding die means;
continuously moving said extrusion port of said molding die means along the peripheral edge of said dummy panel by



providing three-dimensional relative movement between said molding die means and said dummy panel so that said molding product is continuously formed over the entire length of the peripheral edge of said dummy panel; and
stripping said molding product from the peripheral edge of said dummy panel to obtain said frame with a groove, the groove being closely engageable with the peripheral edge of said panel.

5,183,613
PROCESS FOR THE PREPARATION OF SOLVENTLESS, LOW FRICTION, ABRASION-RESISTANT COATINGS FOR ELASTOMERIC SUBSTRATES
Charles O. Edwards, Akron, Ohio, assignor to GenCorp Inc., Fairlawn, Ohio
Division of Ser. No. 571,485, Aug. 22, 1990, abandoned. This application Oct. 10, 1991, Ser. No. 773,744
Int. Cl.[5] B29C *47/06*
U.S. Cl. 264—171 **12 Claims**

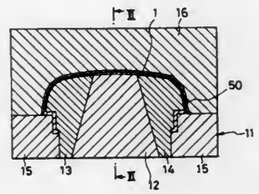


1. A method for forming a composite, comprising the steps of:
contacting a solvent-free, substantially melted polyolefin compound with an uncured elastomeric substrate, said polyolefin compound having a low melt index and a high density, and optionally containing a softening compound; and
curing said elastomeric substrate, so that said polyolefin compound is adhered to said elastomeric substrate and provides a solid, low-friction, abrasion-resistant coating on said substrate.

5,183,614
METHOD FOR PRODUCING X-RAY DETECTABLE SPANDEX FIBERS
Allan R. Champion, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 26, 1989, Ser. No. 301,470
The portion of the term of this patent subsequent to Jan. 2, 2009, has been disclaimed.
Int. Cl.[5] D01F *6/70*
U.S. Cl. 264—184 **9 Claims**

1. A process of producing an X-ray detectable spandex fiber comprising:
a) dissolving a long chain synthetic polymer comprising at least 85% segmented polyurethane in an organic solvent to form a polymer spinning solution;
b) blending a finely divided X-ray opaque filler material comprising an element of atomic number of at lest 20 into the polymer spinning solution before forming the fiber, wherein the amount of X-ray opaque filler material is at least 25% by weight of the total polymer and filler material;
c) air gap spinning fibers from the polymer solution/X-ray opaque filler material blend; and
d) passing the fibers through an aqueous bath.

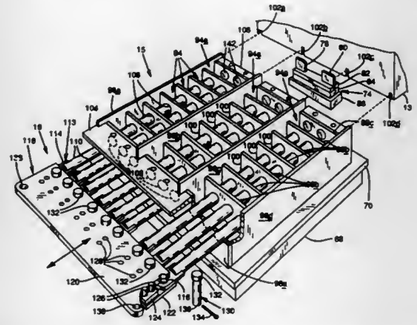
5,183,615
MOLDING METHOD OF AIR BAG COVER
Takayasu Zushi, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan
Filed Oct. 16, 1991, Ser. No. 777,633
Claims priority, application Japan, Nov. 13, 1990, 2-306623
Int. Cl.[5] B29C *45/16, 45/40*
U.S. Cl. 264—219 **2 Claims**



1. A method of molding a module cover for an air bag device of first and second synthetic resin materials, the module cover having a main cover portion, edge portions, and at least one pair of undercut portions formed at the edge portions of the main cover portion, comprising,
preparing first and second upper molds for forming an outside of the main cover portion, and a lower mold for forming an inside of the main cover portion and the undercut portions, the first upper mold being smaller than the second upper mold, the lower mold including a central mold for molding a central section of the inside of the main cover portion, at least one pair of lateral molds for molding side sections of the inside of the main cover portion and insides of the edge portions and the undercut portions, the pair of lateral molds being arranged symmetrical to the central mold, and a frame mold for molding outsides of the edge portions and the undercut portions, the central mold and the frame mold being connected together as one unit, the central mold and the lateral molds having oblique mating faces so that the lateral molds are slidable laterally to be located above the central mold away from the edge portions of the module cover,
disposing the first upper mold over the lower mold to define a first cavity therebetween,
injecting the first resin material into the first cavity and hardening the first resin material to form a core layer comprising the main cover portion, the edge portions and the undercut portions of the module cover,

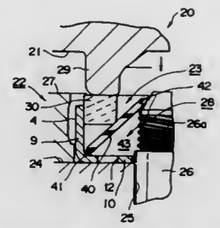
removing the first upper mold and placing the second upper mold over the main cover portion of the core layer in engagement with the lower mold, to form a second cavity between the core layer and the second upper mold about the main cover portion of the core layer,
injecting the second resin material into the second cavity and hardening the second resin material to form a skin layer over the main cover portion of the core layer,
removing the second upper mold from the skin layer,
separating the frame mold and the central mold as one unit from the core layer while moving inside the core layer the lateral molds toward each other slidably along the oblique mating faces of the lateral molds and the central mold so that the lateral molds are located away from the edge portions of the core layer, and
removing the lateral molds from the core layer to form the module cover comprising the main cover portion, the edge portions, and the at least one pair of undercut portions formed at the edge portions, wherein the main cover portion includes the core layer of the first synthetic resin material and the skin layer of the second synthetic resin material.

5,183,616
METHOD FOR MAKING ANTIQUED CONCRETE CORED BRICKS AND CAPPING BRICKS
Thomas W. Hedrick, Sikeston, Mo., assignor to Hedrick Concrete Products Corp., Sikeston, Mo.
Filed Nov. 7, 1989, Ser. No. 433,044
Int. Cl.[5] B28B *1/08, 3/02, 7/24;* **B29C** *43/02*
U.S. Cl. 264—219 **4 Claims**



1. A method for making concrete cored bricks and capping bricks comprising:
providing a mold having a row of mold cavities separated by cross members, each cross member having at least one core-bar hole formed therein, and each mold cavity being defined by a front cross member and a rear cross member, the row of mold cavities ending with a back cavity in which a capping brick is formed;
inserting a core bar through each core-bar hole in each cross member of each mold cavity preceding the back cavity, and into and filling the core-bar hole in the front cross-member associated with the back cavity, wherein the core bar does not extend through the back mold cavity and into the core-bar hole in the rear cross member of the back cavity;
plugging the core-bar in the rear cross member associated with the back cavity with a plugging means thereby providing for the formation of a capping brick therein;
filling the mold cavities with concrete to form plural uncured bricks, including at least one cored brick and at least one capping brick;
compacting the bricks;
removing the core bar from the mold cavities; and
ejecting the bricks from the mold.

5,183,617
METHOD OF MANUFACTURING A HERMETIC SEALING APPARATUS FOR SEALING TWO MEMBERS WHICH ROTATE RELATIVE TO EACH OTHER
Takayuki Saitoh, Fukushima, Japan, assignor to NOK Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 627,892, Dec. 13, 1990, Pat. No. 5,106,565, which is a continuation of Ser. No. 260,406, Oct. 20, 1988, abandoned. This application Oct. 11, 1991, Ser. No. 775,331
Int. Cl.[5] B29C *43/18*
U.S. Cl. 264—249 **2 Claims**



1. A method of manufacturing a hermetic sealing apparatus for sealing two members rotating relative to each other with a lubricant on one side and atmosphere on another side, said hermetic sealing apparatus comprising a first annular seal ring made of rubber-like resilient material on the lubricant side, a second annular seal ring made of resin material on the atmosphere side, and an annular metal backup ring, said manufacturing method comprising the steps of:
providing a mold having a central core;
preparing a conical resin sheet for the second annular seal ring said resin sheet being entirely made of polytetrafluorethlene;
placing said annular metal backup ring in said mold, said annular metal backup ring having substantially an L-shaped cross section composed of a cylindrical portion and a radially inward extending flange portion with a plurality of circumferentially spaced holes formed in said flange portion;
placing said second annular seal ring entirely made of polytetrafluoroethlene in said mold with a circumferential portion of said second annular seal ring covering said flange portion of said annular metal backup ring so that one end portion of said second annular seal ring abuts against the flange portion of the L-shaped annular metal backup ring and another end portion leans on the central core of the mold;
placing the rubber-like resilient material for forming said first annular seal ring in said mold, said rubber-like resilient material contacting said cylindrical portion of said annular metal backup ring and an inner side surface of said second seal ring, and subjecting said rubber-like resilient material to pressure to form said first annular seal ring; and
deforming said second annular seal ring so as to protrude into each of said holes of said flange portion of the annular metal backup ring by the pressurized rubber-like resilient material;
whereby said protruding of the second annular seal ring into the holes of said flange portion of the annular metal backup ring firmly secures and fixes said second annular seal ring between said first seal ring and said flange portion.

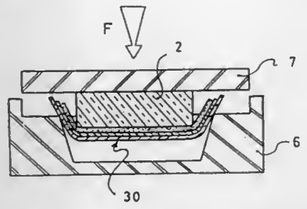
VOL 1147 ISS 1 FEB 2 1993 UMI

5,183,618

PROCESS FOR MANUFACTURING A SKI

Roger Pascal, Annecy Le Vieux, and Gilles Recher, Annecy, both of France, assignors to Salomon S.A., Chavanod, France

Filed Feb. 22, 1988, Ser. No. 158,925
Claims priority, application France, Feb. 27, 1987, 8703119; Sep. 23, 1987, 8713398
Int. Cl.[5] B29C *43/00*
U.S. Cl. 264—257 60 Claims



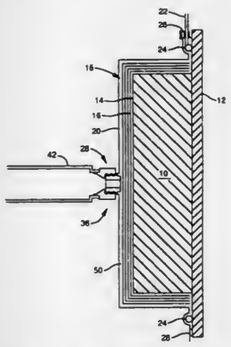
1. A process of manufacturing a ski whose body comprises a core covered with a shell, said shell comprising a sub-assembly, said process comprising the steps of:
(a) positioning said sub-assembly adjacent a mold cavity of a mold;
(b) positioning said core adjacent said shell; and
(c) exerting a force against said core to force said shell within said mold cavity.

5,183,619

PROCESS FOR FORMING FIBERGLASS ARTICLES

Robert J. Tolton, 2405 N. 2300 E., Layton, Utah 84040

Filed May 9, 1991, Ser. No. 698,008
Int. Cl.[5] B28B *7/30*
U.S. Cl. 264—257 12 Claims



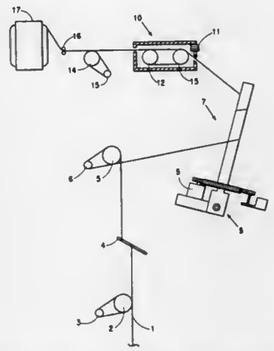
1. A process of applying a fluid through a vacuum bag in the, forming of a plastic article, said process comprising the steps of:
applying at least one layer of dry laminate material onto a mold;
positioning a vacuum path about the mold, the vacuum path including at least one bleeder line about the mold;
placing a vacuum bag over the laminate;
partially sealing the vacuum bag;
inserting at least one valve nozzle between the vacuum bag and the laminate;
attaching a tube connector with a resin reservoir thereon onto each valve nozzle;
sealing the vacuum bag to the mold;
applying vacuum to the vacuum path;
opening a flow path through the valve nozzle by breaking a blocking section of the vacuum bag therein;
putting the fluid into the reservoir;
raising the valve nozzle to allow the fluid to be vacuum pulled into the laminate; and
lowering the valve nozzle to stop the fluid flow.

5,183,620

PROCESS OF DRAWING YARN USING AN OSCILLATING DRAW ASSIST ELEMENT

James E. Duncan, and Dean H. Smiley, both of Richmond, Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 561,035, Aug. 1, 1990, abandoned. This application Dec. 28, 1990, Ser. No. 635,917
Int. Cl.[5] D02J *1/22*
U.S. Cl. 264—290.7 9 Claims



1. In a process in which polyamide yarn having a lubricating finish is drawn while being spirally advanced in frictional contact with the outer surface of a yarn draw assist element, said outer surface of said draw assist element moving at a speed at least 100 times slower than the speed at which the yarn is advanced, and said yarn directly advancing from said yarn draw assist element to a roll initial contact location on a pair of spaced-apart heated rolls and spirally advancing on said rolls through at least one wrap in contact with the outwardly-facing surfaces of said heated rolls, the distance that the yarn spirally advances longitudinally in said wrap defining the wrap advance on said rolls, the improvement comprising oscillating said roll initial contact location of said rolls by moving said outer surface of said draw assist element in relation to said pair of heated rolls to oscillate said wrap on said rolls a distance which is at least equal to said wrap advance.

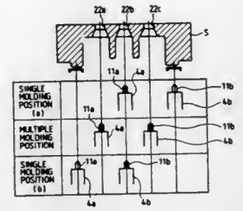
5,183,621

METHOD OF BOTH SINGLE AND DOUBLE INJECTION MOLDING

Makoto Yukihiro, and Mamoru Katagiri, both of Hiroshima, Japan, assignors to The Japan Steel Works, Ltd., Tokyo and Matsushita Electric Industrial Co., Ltd., Osaka, both of, Japan

Filed Feb. 14, 1991, Ser. No. 655,497
Int. Cl.[5] B29B *11/08*; C29C *45/07, 45/10*
U.S. Cl. 264—297.2 1 Claim

1. A method of performing single and double injection molding, comprising:
moving a transverse moving unit in a transverse direction parallel to a stationary platen having three laterally positioned nozzle insertion holes at equal intervals in a horizontal rod, so that two injection units provided parallel to each other and slidably supported on support members fixedly attached to said moving unit are moved and positioned in a double injection molding position in which nozzles of said injection units are oriented to two outer ones of the lateral nozzle insertion holes;
performing double injection using both of said injection units;
moving said moving unit transversely parallel to said stationary platen so that said injection units are moved and positioned in a single injection molding position in which the nozzle of either one of said injection units is oriented to a middle one of the three nozzle insertion holes and in which the other of said injection units is positioned laterally of said three nozzle insertion holes; and
performing single injection molding thereafter using said either one of said injection units.



5,183,622

METHOD FOR FORM-PRESSING WOOD FIBRE PANELS AND FORM PRESSED PANELS, FOR EXAMPLE DOOR SKINS

Göran Persson, Jönköping, Sweden, assignor to Swedoor AB, Sweden

Filed Sep. 21, 1990, Ser. No. 586,497
Claims priority, application Sweden, Sep. 29, 1989, 8903198-3
Int. Cl.[5] B29C *43/00*
U.S. Cl. 264—320 7 Claims

1. A method for form-pressing a wood fiber panel having a substantially uniform initial thickness of between about 2 and 6 mm and a density of between about 700 and 900 kg/m^3, said panel containing a binding agent which displays thermoplastic properties during heating, said method comprising the steps of:
preheating said panel so that the wood fibers and the binding agent form a stretchable, self-sustaining composition;
form-pressing said pre-heated composition while still in its self-sustaining condition to a depth of up to about 6 mm by applying pressure which is slowly increased from 0 up to about 30 kg/cm^2 while continuining to supply heat thereto;
interrupting said pressure and heat supply before reaching the elastic limit of said self-sustaining stretchable composition; and allowing said composition to cool.

5,183,623

PROCESS FOR PRODUCING TRANSPARENT AND HEAT-RESISTANT POLYESTER CONTAINERS

Kuniaki Kawaguichi; Toshio Nakane; Akihide Shimoda, and Kenji Hijikata, all of Shizuoka, Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Oct. 4, 1991, Ser. No. 770,051
Claims priority, application Japan, Oct. 17, 1990, 2-280259
Int. Cl.[5] B29C *47/88, 51/02, 51/10, 71/02*
U.S. Cl. 264—544 1 Claim

1. A process for producing a transparent and heat-resistant container which comprises the steps of:
(a) forming a sheet from a melt of a polyester resin having at least 80 mole % of ester units derived form 1,3-propanediol and terephthalic acid or an ester-forming derivative thereof;
(b) quenching and solidifying the sheet such that the solidified sheet has low crystallinity;
(c) aging said quenched and solidified sheet so as to obtain a low crystallinity sheet; and then
(d) thermoforming the resulting low crystallinity sheet to obtain a container, and wherein
said aging step (a) is conducted at a temperature which satisfies the relationship represented by the following equations (1) and (2):

$$Ta \leqq Tcc \quad (1)$$

$$(\Delta Hcc)a \geqq 5.0 \quad (2)$$

wherein Ta is the aging temperature (° C.), Tcc is the cold crystallization temperature (° C.), and (αHcc)a is the heat of cold crystallization (J/g), said cold crystallization temperature and said heat of cold crystallization each being determined by differential thermal analysis at a rate of temperature increase of 10° C./min; and wherein
said polyester resin satisfies the relationship represented by the following equation (3):

$$Tg + 65 \geqq Tcc \quad (3)$$

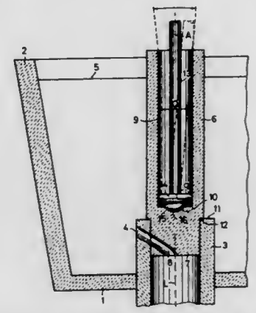
wherein Tg is the glass transition temperature (° C.) of the polyester resin as determined by differential thermal analysis at a rate of temperature increase of 10° C./min, and Tcc is as defined previously.

5,183,624

SHUTOFF ASSEMBLY AND IMPROVED DRIVE ROD THEREFOR

Raimund Brückner, Engenhahn; Ullrich Hintzen, Taunusstein-Watzhahn, both of Fed. Rep. of Germany; Steve Lee, Donbartonshire, Scotland; Andreas Schuler, Taunusstein-Wehen, and Martin Wiesel, Wiesbaden, both of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Oct. 10, 1991, Ser. No. 774,229
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1990, 4032083
Int. Cl.[5] B22D *41/18*
U.S. Cl. 266—236 30 Claims

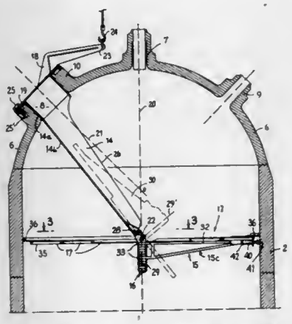


1. In a shutoff or control assembly for use in regulating the discharge from a metallurgical vessel and including a refractory ceramic rotor member to be coupled to a stator to be rotatable relative thereto to control discharge, and a drive rod separate from said rotor member and having an outer end to be connected to and rotated by a drive unit and an inner end portion extending into said rotor member and having engagement means engaging with an interior portion of said rotor member such that rotation of said drive rod causes rotation of said rotor member, the improvement wherein:

VOL 1147 ISS 1 FEB 2 1993 UMI

at least said engagement means of said inner end portion of said drive rod is formed of a ceramic material.

5,183,625
REMOVABLE PLATFORM FOR WORKING INSIDE A CASING OF A PRESSURIZER OF A PRESSURIZED-WATER NUCLEAR REACTOR
Michel Batistoni, Dracy le Fort, France, assignor to Famatome, Courbevoie, France
Filed Apr. 2, 1991, Ser. No. 679,228
Claims priority, application France, Apr. 2, 1990, 90 04190
Int. Cl.[5] G21C *17/017*
U.S. Cl. 376—260 **8 Claims**



1. Removable platform for working inside a casing of a generally cylindrical pressurizer of a pressurized-water nuclear reactor, arranged with its axis vertical and closed at its upper end by a domed bottom through which passes at least one inspection port, said platform being adapted to being installed in said casing and dismounted and extracted by means of operations conducted from outside said casing, said platform comprising

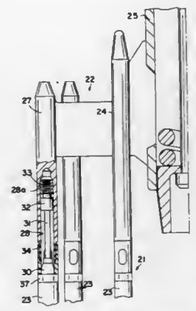
(a) a chute having a handling and fastening assembly at a first end of said chute, consisting of an element for catching on a lifting means, a cylindrical tube and a flange for engaging it into an inspection orifice of said casing and fastening it by screwing of said flange to an outer part of said casing, and a supporting part in a form of a portion of a cylinder open laterally and extending said tube substantially in an axial direction of said tube;

(b) a supporting shaft mounted in an articulated manner at a second end of said chute opposite said first end, said second end being located in the vicinity of an axis of said casing when said chute is installed in said casing, an axis of articulation of said supporting shaft then being in a horizontal position, so that said supporting shaft can pivot between a folded-up position substantially perpendicular to a longitudinal direction of said chute and an operating position in which said support shaft is substantially coaxial relative to said casing;

(c) an assembly of supporting arms mounted on said supporting shaft for pivoting movement between a folded-up position in which said supporting arms are substantially parallel to and laid against one another, said supporting arms then being capable of being placed and maintained in said chute in its axial direction, said supporting shaft being in its folded-up position, and an unfolded position in which said arms (**15**), by pivoting about said axis of said supporting shaft in vertical position, can be placed in angular arrangements distributed substantially uniformly about said axis (**20**) of said casing (**2**); and

(d) a plurality of plane elements intended for resting on said supporting arms in unfolded position, to form a work platform over substantially an entire cross-section of said casing (**2**).

5,183,626
CONTROL CLUSTER INCLUDING DEMOUNTABLE FUEL FOR A NUCLEAR FUEL ASSEMBLY
Jean-Pierre Denizou, Craponne, France, assignor to Framatome, Courbevoie and Cogema, Velizy Villacoublay, both of, France
Filed Jun. 28, 1989, Ser. No. 372,494
Claims priority, application France, Jun. 28, 1988, 88 08674
Int. Cl.[5] G21C *7/10*
U.S. Cl. 376—327 **4 Claims**



1. Control cluster including demountable cylindrical rods comprising a crosspiece constituted by a plurality of fins disposed angularly in relation to one another and each comprising at least one protective tube having a blind bore which is internally threaded over a part of its length, an axis of said bore extending in a longitudinal direction of said control cluster, as well as a set of cylindrical rods each comprising an active part and an end part adapted to be engaged and fixed in said bore of a said protective tube and comprising, in an axial extension of a plug for closing said active part, a connecting part which is threaded over a part of its length to enable screwing of said rod into the bore of a corresponding protective tube, wherein, for each one of said demountable rods:

(a) the end part of said protective tube is open towards the exterior and comprises a reduced external diameter part over a certain length and at least one seat on a wall of said protective tube for seating said rod, and openings through its wall in said reduced diameter part;

(b) said end part of said rod is integral with a ferrule which is coaxial with said rod and which surrounds said connecting part of said rod over a portion of its length corresponding to said portion engaged in said reduced diameter part of said protective tube, said ferrule having an internal diameter substantially equal to said reduced diameter of said protective tube and being engaged on said reduced diameter part of the protective tube;

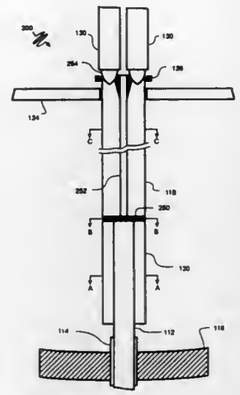
(c) a prismatic engagement surface is provided on said external surface of said rod; and

(d) said rod is locked in said protective tube by deformed parts of said ferrule housed within said openings of said end part of said protective tube.

5,183,627
NUCLEAR REACTOR WITH LOW-LEVEL CORE COOLANT INTAKE
Roy C. Challberg, Livermore, and Harold E. Townsend, Campbell, both of Calif., assignors to General Electric Company, San Jose, Calif.
Filed Nov. 27, 1991, Ser. No. 798,789
Int. Cl.[5] G21C *15/00*
U.S. Cl. 376—352 **5 Claims**

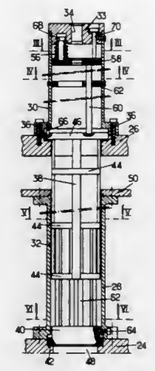
1. A reactor comprising:
a reactor vessel having a bottom, a sidewall, and a top;
a core within said reactor vessel;

control rod guide tubes for guiding vertical movement of controls rods relative to said core;
control rod drive housings extending between said vessel bottom and respective ones of said control rod guide tubes; and



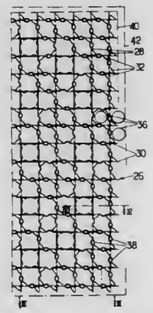
channel means for defining annular channels about said control rod drive housings, said channels having entrances within 25 centimeters of said vessel bottom and having exits providing for fluid communication with said control rod guide tubes.

5,183,628
NUCLEAR REACTOR INTERNALS WITH CLUSTER GUIDES
Jacques Baujat, Versailles, and Gérard Chevereau, Le Raincy, both of France, assignors to Framatome, Courbevoie, France
Filed May 6, 1991, Ser. No. 695,907
Claims priority, application France, May 7, 1990, 90 05729
Int. Cl.[5] G21C *1/04*
U.S. Cl. 376—353 **8 Claims**



1. In a nuclear reactor having a core, internals mounted over said core, comprising: a lower plate provided with openings for coolant leaving the core; an upper plate; a plurality of support columns mutually connecting the plates; and a plurality of guides for vertically movable control clusters each of which comprises a plurality of parallel control rods, wherein each of said guides has an upper section securely fixed to the upper plate and a lower section extending between the upper and lower plates, wherein the lower section of each said guide has a base bearing on a respective frusto-conical bearing surface of a seat which is fast with said lower plate and wherein said lower section is subjected to the downward force of resilient means biasing said base onto said seat.

5,183,629
ADDITIONAL GRID FOR A NUCLEAR REACTOR FUEL ASSEMBLY, AND ASSEMBLY COMPRISING AN APPLICATION THEREOF
Jean-Noël Canat, Lyons, and Régis Mortgat, Couzon au Mont d'Or, both of France, assignors to Framatome, Courbevoie and Compagnie Generale des Matieres Nucleaires, Velizy Villacoublay, both of, France
Filed Jul. 24, 1991, Ser. No. 735,251
Claims priority, application France, Jul. 24, 1990, 90 09447
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—439 **11 Claims**



1. Coolant mixing grid for a nuclear fuel assembly for location between grids constituting structural parts of said fuel assembly, said mixing grid being devoid of a belt and comprising at least two crossed sets of mutually parallel plates fixed to each other at cross-points of said plates, said plates being provided with coolant stirring fins and defining cells, some of said cells receiving guide tubes and others of said cells receiving fuel rods, each of said plates being provided, on each of faces of each of said cells receiving fuel rods, with bosses projecting radially inwardly into a said cell by an amount which is sufficiently small to leave radial clearance for a respective fuel rod passing through said cell, and an amount of projection of said bosses being proportioned relative to projection of said fins, so that in case of bending vibration the respective rod comes into contact with said bosses without reaching said fins, lengths of individual said plates being such that a footprint of said grid is less than a polygon constituting a virtual envelope of said rods.

5,183,630
PROCESS FOR PRODUCTION OF PERMANENT MAGNET ALLOY HAVING IMPROVED RESISTENCE TO OXIDATION
Toshio Ueda; Yuichi Sato; Masayasu Senda; Seiji Isoyama, and Seiichi Hisano, all of Tokyo, Japan, assignors to Dowa Mining Co., Ltd., Tokyo, Japan
Division of Ser. No. 565,452, Aug. 9, 1990. This application Jun. 4, 1991, Ser. No. 710,800
Claims priority, application Japan, Aug. 25, 1989, 1-217500; Aug. 25, 1989, 1-217501; Nov. 22, 1989, 1-301907; Nov. 22, 1989, 1-301908
Int. Cl.[5] B22F *1/02*
U.S. Cl. 419—31 **46 Claims**

1. In a process for producing a permanent magnet alloy based on a R—Fe—B—C system where R is at least one of the rare earth elements including Y, comprising the steps of preparing a molten crude alloy, producing a powder directly

VOL
1147
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therefrom or by casting it into an alloy ingot and then grinding it into the powder, compacting the thus obtained powder and sintering the compacted product, the improvement comprising the ingot or powder of the alloy before being sent to the compacting step being subjected to a heat treatment which is carried out at a temperature of 500°–1,100° C. for a period of up to 24 hours so as to produce a permanent magnet alloy based on a R—Fe—B—C system whose individual magnetic crystal grains are covered with an oxidation-resistant protective film which has a C content of 0.05–16 wt % and higher than that of said individual crystal grains and wherein the composition of said magnet alloy as the sum of the magnetic crystal grains and the oxidation-resistant protective film comprises 10–30% R, less than 2%, not inclusive of zero percent, of B, 0.1–20% C, all percentages being on an atomic basis, with the balance being Fe and incidental impurities.

5,183,631

COMPOSITE MATERIAL AND A METHOD FOR PRODUCING THE SAME

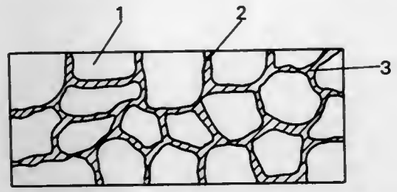
Koichi Kugimiya; Yasuhiro Sugaya; Osamu Inoue; Mitsuo Satomi, and Ken Hirota, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jnn. 8, 1990, Ser. No. 535,080

Claims priority, applicatioo Japan, Jun. 9, 1989, 1-147902; Jul. 7, 1989, 1-175901; Jul. 19, 1989, 1-186488; Sep. 28, 1989, 1-253321; Oct. 26, 1989, 1-280554; Nov. 6, 1989, 1-288356; Nov. 6, 1989, 1-288358; Nov. 6, 1989, 1-288359; Nov. 6, 1989, 1-288360; Jan. 12, 1990, 2-4980; Mar. 26, 1990, 2-76062; Apr. 18, 1990, 2-101934

Int. Cl.[5] B22F *1/02*

U.S. Cl. 419—10 **14 Claims**



1. A method for producing a composite material with a resistivity of at least 10 ohm-cm, comprising the steps of:

providing grains made of a first substance, said first substance comprising at least one of a metal and an alloy thereof;

forming a thin coating film on the surface of said grains to prepare coated grains, said thin coating film being made of a second dielectric substance and having a mean thickness smaller than the mean particle size of said grains, said second dielectric substance comprising an inorganic material;

compacting said coated grains into a green body; and

densifying said green body in an active gas atmosphere, while forming an additional thin coating film on the surface of said grains, said additional thin coating film being made of the second dielectric substance or a third dielectric substance and having a mean thickness smaller than the mean particle size of said grains.

5,183,632

METHOD OF MANUFACTURING AN ALUMINUM-BASE COMPOSITE DISC ROTOR

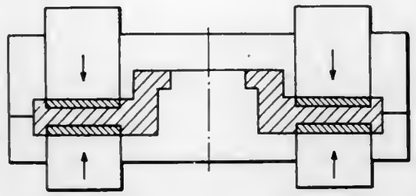
Manabu Kiuchi, Zushi, and Masao Arai, Kumagaya, both of Japan, assignors to Akebono Brake Industry Co., Ltd., Tokyo and Akebono Research and Development Centre Ltd., Hanyu, both of, Japan

Filed Mar. 3, 1992, Ser. No. 845,194

Claims priority, application Japan, Mar. 20, 1991, 3-81814

Int. Cl.[5] B22F *3/14*

U.S. Cl. 419—48 **4 Claims**



1. A method of manufacturing an aluminum-base composite disc rotor comprising:

i) preparing a rough-shaped disc rotor made of a mixture of aluminum powder or aluminum alloy powder with reinforcing particles;

ii) placing a mixture of aluminum powder or aluminum alloy powder with reinforcing particles on each of the fixed positions of said rough-shaped disc rotor;

iii) heating said mixture to at least a region of mashy state temperature; and

iv) molding said mixture under pressure.

5,183,633

STEEL HAVING IMPROVED WELDABILITY AND METHOD THEREOF

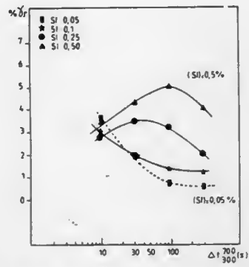
Maurickx Thierry, Dunkerque; Verrier Pascal, Lumbres, and Taillard Roland, Villeneuve D'Asco, all of France, assignors to Sollac, Puteaux, France

Filed Oct. 9, 1991, Ser. No. 773,434

Claims priority, application France, Oct. 18, 1990, 90 12916

Int. Cl.[5] C22C *38/12*

U.S. Cl. 420—92 **4 Claims**



1. Steel having improved weldability, comprising, by weight;

0.07 to 0.11% carbon,

1.40 to 1.70% manganese,

0.20 to 0.55% nickel,

0 to 0.30% copper,

0 to 0.02 niobium,

0.005 to 0.20% titanium,

0.002 to 0.006% nitrogen,

0 to 0.15% silicon,

the balance being iron.

5,183,634

HIGH STRENGTH SPRING STEEL

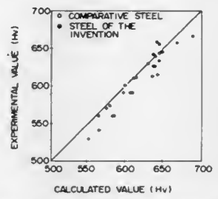
Tsuyoshi Abe, Chiba; Nobumasa Umezawa, Funabashi; Tatsuo Fukuzumi, Tokyo; Katsuyuki Uchibori, Chiba; Junji Ozaki, Tokyo, and Hirobaru Motomura, Ichihara, all of Japan, assignors to Mitsubishi Steel Mfg. Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1991, Ser. No. 805,202

Claims priority, application Japan, Feb. 22, 1991, 3-48766; Jun. 19, 1991, 3-147460

Int. Cl.[5] C22C *38/22, 38/24*

U.S. Cl. 420—110 **1 Claim**



1. A high strength spring steel consisting of, in weight percentage, 0.50 to 0.70% C, 1.00 to 2.50% Si, 0.30 to 1.20% Mn, 0.80 to less than 1.20% Cr, 0.05 to 0.30% Mo, 0.05 to 0.30% V, 0.01 to 0.30% Nb, 0.005 to 0.100% Al and the balance being Fe and unavoidable impurities.

5,183,635

HEAT TREATABLE TI-AL-NB-SI ALLOY FOR GAS TURBINE ENGINE

Stephen Kerry, Fleet, England; James E. Restall, deceased, late of Camberley, England by Janet E. Restall, executrix , and Michael I. Wood, Dorking, England, assignors to The Secretary of State for Defence in her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

PCT No. PCT/GB88/00624, § 371 Date Feb. 25, 1990, § 102(e) Date Feb. 25, 1990, PCT Pub. No. WO89/01052, PCT Pub. Date Feb. 9, 1989

PCT Filed Jul. 28, 1988, Ser. No. 465,120

Claims priority, application United Kingdom, Jul. 31, 1987, 8718192

Int. Cl.[5] C22C *14/00*

U.S. Cl. 420—420 **10 Claims**

1. A heat-treatable titanium alloy which is suitable for use as components in the compressor section of a gas turbine engine and which is based on or contains the intermetallic phase Ti_3Al, consisting essentially of the following constituents in atomic proportions:

20 to 23% aluminum

9 to 15% niobium

0.5 to 1.0% silicon

0 to 3% zirconium

0 to 3% vanadium

0 to 3% molybdenum

balance essentially titanium;

and wherein the proportion of optional constituents from the group consisting of zirconium, vanadium and molybdenum, when two or more are present in combination, is up to 5 atomic percent.

5,183,636

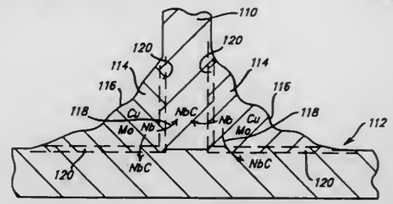
BRAZE FILLER METAL WITH ENHANCED CORROSION RESISTANCE

Samuel C. DuBois, Troy, Mich., assignor to Wall Colmonoy Corporation, Madison Heights, Mich.

Filed Jul. 1, 1991, Ser. No. 723,943

Int. Cl.[5] C22C *19/05*

U.S. Cl. 420—442 **7 Claims**



1. A braze filler metal composition exhibiting corrosion resistance both at the boundary layer between the base metal and the filler metal and in the filler metal fillet which is substantially iron free in its composition, said composition consisting essentially of:

a nickel based alloy including from about 5% to about 9% chromium; from about 3.5% to about 5.5% silicon; from about 2.0% to about 4.0% boron and containing effective amounts of: a) from about 2% to about 12% of a fillet metal corrosion inhibiter for protecting the fillet metal from corrosion due to the diffusion of iron from the base metal into the filler metal fillet during brazing, said inhibiter being selected from the group consisting of copper molybdenum and mixtures thereof, said alloy containing at least 1% of copper; and b) from about 1% to about 6% of a diffusing carbide forming base metal protector having a higher affinity for forming carbides than chromium, said protector being for diffusion into the base metal for preferentially forming carbides which might otherwise form chromium carbides from chromium in the base metal thereby substantially reducing chromium carbide formation at the grain boundaries in the base metal and at the diffusion layer, said diffusing carbide forming base metal prohibitor selected from the group consisting of niobium, tantalum and mixtures thereof wherein said composition is substantially free of iron.

5,183,637

WEAR RESISTANT COPPER ALLOYS

Tadashi Tanaka, Konan; Masaaki Sakamoto, Nagoya; Koichi Yamamoto, Komaki, and Tohru Kato, Seto, all of Japan, assignors to Daido Metal Company Ltd., Nagoya, Japan

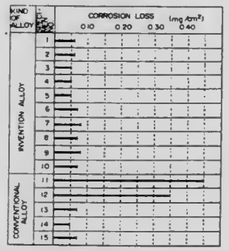
Filed Feb. 6, 1992, Ser. No. 832,124

Claims priority, application Japan, Feb. 7, 1991, 3-016539

Int. Cl.[5] C22C *30/00, 5/06*

U.S. Cl. 420—479 **6 Claims**

1. A wear-resistant copper alloy having a high strength and



high toughness comprising, by weight, 1.2 to 8.5% Mn, 0.3 to

VOL 1147 ISS 1 FEB 2 1993 UMI

2.5% Si, 3.0 to 8.0% Al, 20 to 40% Zn, and the balance of Cu and unavoidable impurities, said alloy further comprising 0.05 to 1.5% by weight of Te for an improvement in anti-seizure property.

5,183,638

AUTOMATIC IMMUNITY ANALYSIS APPARATUS WITH MAGNETIC PARTICLE SEPARATION

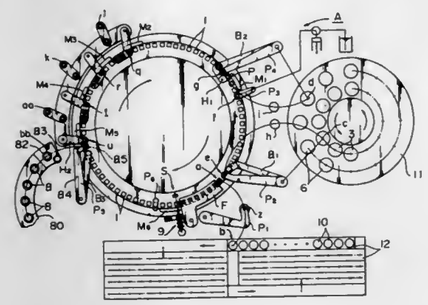
Koichi Wakatake, Tokyo, Japan, assignor to Kabushiki Kaisha Nittec and Mitsui Pharmaceuticals, Inc., both of Tokyo, Japan

Filed Dec. 3, 1990, Ser. No. 620,608

Claims priority, application Japan, Dec. 4, 1989, 1-313363; Jan. 19, 1990, 2-3063; Jan. 24, 1990, 2-4633; Jan. 24, 1990, 2-4634; Mar. 16, 1990, 2-26198

Int. Cl.[5] **G01N** *21/01, 21/11;* **B01F** *11/00*

U.S. Cl. 422—64 **4 Claims**



1. An automatic immunity analysis apparatus comprising reaction vessels arranged in a series, a conveying means for said reaction vessels, a first dividing means for sucking a sample in a predetermined quantity at a predetermined position and dividing and charging said sample into each of said reaction vessels, a first agitating means for dividing, charging and agitating an antibody insoluble magnetic solution into each of said reaction vessels containing said sample divided and charged, a second dividing means which is positioned after said first agitating means, said second dividing means for dividing and charging a stroma solution into each of said vessels, a first adsorbing means for adsorbing said antibody insoluble magnetic solution onto an inner wall surface of each of said reaction vessels, a first cleaning means for discarding a reactions solution out of each of said reaction vessels while said antibody insoluble magnetic solution is still adsorbed on the inner wall of each of said reaction vessels and then cleaning each of said vessels, a second agitating means for dividing and agitating an enzyme labeling antibody solution, a second absorbing means for adsorbing said antibody insoluble magnetic solution onto an inner wall surface of each of said reaction vessels, a second cleaning means for discarding a reaction solution out of each of said reaction vessels while said antibody insoluble magnetic solution is still adsorbed on the inner wall of each of said reaction vessels and then cleaning each of said vessels, a third dividing means for dividing and charging a reaction stop solution, a measuring means for optically measuring a sample in each of said reaction vessels at an optical measuring position, and a third cleaning means for cleaning the inside of each of said reaction vessels after completion of a measurement, wherein said first dividing means, said first agitating means, said second dividing means, said first adsorbing means, said first cleaning means, said second agitating means, said second absorbing means, said second cleaning means, said third dividing means, said measuring means and said third cleaning means are arranged sequentially beginning with said first dividing means and ending with said third cleaning means on said conveying means in said automatic immunity analysis apparatus, wherein

said first agitating means further comprises a reagent vessel holder which is rotated by means of a driving apparatus, a rotating body which is engaged with a retention hole of said reagent vessel holder in a freely rotatable manner and has an aperture in a side surface, a fixed gear body having a first peripheral surface of which gear teeth are cut thereon, said fixed gear body mounted on said reagent vessel holder, a gear body which engages with the gear teeth of said fixed gear body and drives said rotating body when said reagent vessel holder rotates, said fixed gear body further including protrusion bodies which are elevated in predetermined intervals along a second peripheral surface of said fixed gear body, said protrusion bodies extending through said aperture during driving of said rotation body, wherein

an antibody insoluble magnetic solution accommodated in said rotating body is rotated and agitated when said reagent vessel holder revolves, and accommodated in said rotating body in such a manner that said reagent antibody insoluble magnetic solution is shaken and agitated by one of said protrusion bodies extending through said aperture.

5,183,639

Patent Not Issued For This Number

5,183,640

APPARATUS FOR PRODUCING RUBBER MIXTURES

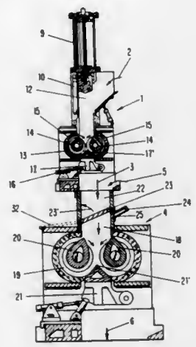
Julius Peter, Dommayergasse 7, A-1130 Vienna, Austria, and Günter Weckerle, Northeim, Fed. Rep. of Germany, assignors to Continental Aktiengesellschaft, Hanover, Fed. Rep. of Germany and Julius Peter, Vienna, Austria

Filed Aug. 28, 1991, Ser. No. 751,151

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1990, 4027261

Int. Cl.[5] **C08F** *6/00;* **B28C** *7/16*

U.S. Cl. 422—135 **12 Claims**



1. An apparatus for producing rubber mixtures, comprising:

a master batcher, comprising a ram kneader that operates in a batch process;

a ram-less final mixer that is disposed below said ram kneader, also operates in a batch process, and has a greater volume capacity than does said ram kneader, with said final mixer having a mixing chamber that is provided with rotors;

an at least substantially vertically disposed transfer channel that interconnects said ram kneader to said final mixer and serves for the transfer of a master batch from said ram kneader to said mixing chamber of said final mixer;

at least one exhaust opening disposed above said mixing chamber of said final mixer in wall means of at least one of said transfer channel and said mixing chamber of said final mixer; and

means for sealingly closing off said transfer channel above said at least one exhaust opening.

5,183,641

DISTRIBUTOR PLATE IN A FLUIDIZED BED REACTOR

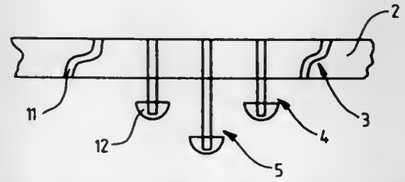
Juhani Isaksson, Karhula, Finland, assignor to A. Ahlstrom Corporation, Karhula, Finland

Division of Ser. No. 232,774, Aug. 16, 1988. This application Sep. 26, 1990, Ser. No. 578,420

The portion of the term of this patent subsequent to May 14, 2008, has been disclaimed.

Int. Cl.[5] **F23D** *1/00;* **F27B** *15/02;* **B01J** *8/18*

U.S. Cl. 422—143 **22 Claims**



14. A method of starting up a fluidized bed reactor having a reaction chamber, a wind box, a grid plate at an interface therebetween and a first and second sets of nozzles through the grid plate each for flowing fluidizing gas from the wind box and substantially evenly distributing the fluidizing gas across said grid plate and into the reaction chamber, comprising the steps of providing particulate bed material inside said first set of nozzles and establishing at least in part a first predetermined pressure drop across said first set of nozzles before fluidizing gas may flow therethrough, initiating flow of fluidizing gas from the wind box into said reaction chamber through the said first set of nozzles at said first predetermined pressure drop across the grid plate sufficient to blow the particulate bed material out of said first set of nozzles, providing particulate bed material inside said second set of nozzles, and establishing at least in part a second predetermined pressure drop across said second set of nozzles before gas may flow therethrough, and initiating the flow of fluidizing gas through said second set of said nozzles from the wind box into said reaction chamber at said second predetermined pressure drop across the grid plate higher than said first predetermined pressure drop and sufficient to blow the particulate bed material out of said second set of nozzles, whereby, at reactor start-up, fluidizing gas flows through said first set of nozzles before flowing through said second set of nozzles.

5,183,642

INSTALLATION FOR STEAM CRACKING HYDROCARBONS, WITH SOLID EROSIVE PARTICLES BEING RECYCLED

Eric Lenglet, Marly le Roi, France, assignor to Procedes Petroliers et Petrochimiques, Marly Le Roi, France, a part interest

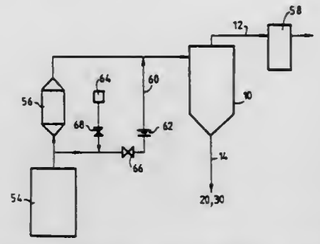
PCT No. PCT/FR90/00711, § 371 Date May 30, 1991, § 102(e) Date May 30, 1991, PCT Pub. No. WO91/05031, PCT Pub. Date Apr. 18, 1991

PCT Filed Oct. 5, 1990, Ser. No. 700,196

Claims priority, application France, Oct. 6, 1989, 89 13070

Int. Cl.[5] **B01J** *8/08;* **C01G** *9/36*

U.S. Cl. 422—213 **21 Claims**



1. A hydrocarbon steam cracking installation comprising at least one furnace for cracking hydrocarbons, an indirect quench heat exchanger connected to said furnace for receiving effluent leaving the furnace, direct quench means, an effluent duct connecting said indirect quench heat exchanger to said direct quench means, a particle injection duct cooperating with said at least one furnace for injecting solid particles into said furnace, a separator connected between said indirect quench heat exchanger and said direct quench means for separating solid particles from the gaseous effluent passing from said indirect quench heat exchanger to said direct quench means, said separator including a solids outlet for discharge of solid particles collected by the separator, a tank for storing solid particles, said tank having an inlet connected to said solids outlet of said separator and having an outlet connected to said particle injection duct whereby solid particles may be introduced into said duct, a source of gas under pressure connected to said particle injection duct, and a conduit also connecting said source of gas under pressure to said tank for increasing the inside pressure of said tank to a value that is not less than the pressure in said particle injection duct.

5,183,643

MEDICAL INSTRUMENT STERILIZATION CONTAINER

Robert L. Nichols, 4555 N. Jackson, Jacksonville, Tex. 75766

Continuation of Ser. No. 477,594, Feb. 9, 1990, abandoned, which is a continuation of Ser. No. 335,361, Apr. 10, 1989, Pat. No. 4,900,519, which is a continuation of Ser. No. 208,730, Jun. 17, 1988, Pat. No. 4,915,918, which is a continuation of Ser. No. 821,136, Jan. 22, 1986, Pat. No. 4,752,453, which is a division of Ser. No. 668,090, Nov. 5, 1984, Pat. No. 4,617.178. This application Sep. 17, 1991, Ser. No. 762,060

The portion of the term of this patent subsequent to Mar. 1, 2005, has been disclaimed.

Int. Cl.[5] **A61L** *2/26*

U.S. Cl. 422—297 **3 Claims**

1. A sterilization container for use in connection with the sterilization of medical instruments, said sterilization container comprising:

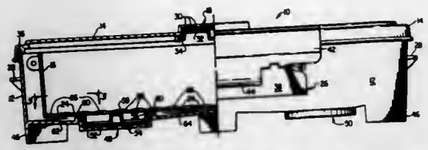
a tray for supporting medical instruments;

a housing having a bottom and side walls for receiving said tray;

a lid having edges and a raised portion spaced from said edges, said lid adapted to form a sealing arrangement with said housing;

VOL 1147 ISS 1 FE 2 1993 UMI

an aperture through said raised portion of said lid;
a first filter, disposed in said aperture, for allowing the passage of sterilizing gases therethrough while preventing the passage of contaminants;
said housing bottom sloping to at least one location, said location having an opening to drain said condensate from



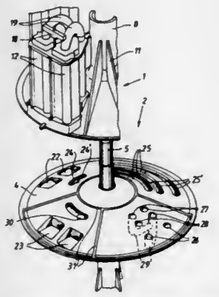
said housing, said opening being laterally spaced from said aperture, when said lid is sealed over said housing, such that an axis of said aperture is spaced apart from said opening; and
a second filter, disposed in said opening, for passing said condensate and said gases therethrough but inhibiting passage of said contaminants into said housing.

5,183,644

APPARATUS FOR TREATING PACKAGE CONTAINER BLANKS

Lars Martensson, Veberod, and Jan Andersson, Ystad, both of Sweden, assignors to Tetra Alfa Holdings SA, Pully, Switzerland

Filed Apr. 16, 1991, Ser. No. 686,154
Claims priority, application Sweden, Apr. 27, 1990, 9001534
Int. Cl.[5] A61L *2/00;* **B08B** *3/00;* **B65B** *55/04*
U.S. Cl. 422—304 **16 Claims**



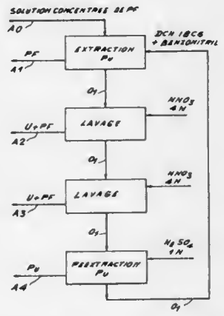
1. An apparatus for treating package container blanks with a fluid, comprising: a rotary portion mounted for rotation about a drive shaft and having a chamber mounted thereon for receiving a package container blank, and a fixed portion extending around said drive shaft and having a stator surface that faces the rotary portion, said rotary portion being rotatable relative to said fixed portion and said rotary portion having a rotor surface that faces said fixed portion, said rotor surface and said stator surface being substantially conical, said fixed portion having a first inlet channel formed therein, conduit means in said rotary portion for interconnecting said first inlet channel and said chamber at a first rotary position of said rotary portion, said fixed portion having an infeed aperture opening to the stator surface, said chamber being aligned with said infeed aperture when said rotary portion is in a second rotary position so that container blanks may be inserted into said chamber through said infeed aperture when said rotary portion is in the second rotary position and fluid may be supplied through said conduit means to said chamber upon rotation of said rotary portion to said first rotary position.

5,183,645

METHOD FOR RECOVERING WITH THE AID OF A CROWN COMPOUND PLUTONIUM (IV) PRESENT IN SOLUTIONS, SUCH AS AQUEOUS EFFLUENTS, CONCENTRATED SOLUTIONS OF FISSION PRODUCTS AND CONCENTRATED SOLUTIONS OF PLUTONIUM

Jacques Foos, Orsay; Marc Lemaire, Villeurbanne; Alain Guy, Pontcarre; Vincent Guyon, Paris; Rodolphe Chomel, Orange; André Deloge; Pierre Doutreluigne, both of Bagnols/Céze, and Henri Le Roy, Equeurdreville, all of France, assignors to Cogema-Compagnie Generale des Matieres Nucleaires, Velizy Villacoublay, France

Filed Dec. 11, 1990, Ser. No. 625,550
Claims priority, application France, Dec. 15, 1989, 89 16639
The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.
Int. Cl.[5] B01D *11/04*
U.S. Cl. 423—8 **9 Claims**



1. Method to recover plutonium (IV) from a first aqueous solution constituted by either a concentrated solution of fission products derived from the first cycle for reprocessing irradiated nuclear fuels or by an aqueous effluent derived from an irradiated nuclear fuels reprocessing installation or by a concentrated solution of plutonium containing americium, comprising the steps of:
a) placing the first aqueous solution in contact with an organic solution including at least one crown compound so as to extract plutonium from the first aqueous solution and to obtain an organic solution containing plutonium,
b) washing the organic solution containing plutonium with one or more portions of a second aqueous solution of nitric acid,
c) re-extracting the plutonium from the organic solution into a third aqueous solution.

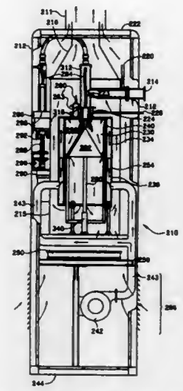
5,183,646

INCINERATOR FOR COMPLETE OXIDATION OF IMPURITIES IN A GAS STREAM

Lawrence B. Anderson, Encinitas; Timothy E. Hammon, Cardiff, and Cliff Frieler, Highland Park, all of Calif., assignors to Custom Engineered Materials, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 486,617, Feb. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 355,987, May 22, 1989, abandoned, and a continuation-in-part of Ser. No. 336,718, May 12, 1989, abandoned. This application Feb. 28, 1991, Ser. No. 662,124
Int. Cl.[5] B01D *53/34;* **F01N** *3/26;* **F23D** *14/66, 14/84*
U.S. Cl. 423—210 **26 Claims**

1. A device for oxidizing materials in a gas stream, comprising:
a combustion chamber in said device, said device and said combustion chamber both having a top and a bottom, said device further having a gas outlet and being adapted to operate in conjunction with means applying negative pressure to said outlet;
means for introducing process gas and a source of fuel into the top of said combustion chamber;
means for introducing oxygen carrying gas into the top of said combustion chamber;
means for mixing said oxygen carrying gas with said process



gas and fuel so that said mixture can burn in said combustion chamber to form an exhaust gas;
means for directing said mixture outwardly toward the wall of said combustion chamber as it is burning;
means for permitting said gas to exit from the bottom of said combustion chamber; and
means for directing said gas from said combustion chamber out of the outlet of said device.

5,183,647

METHOD FOR PURIFYING NITROGEN TRIFLUORIDE GAS

Isao Harada; Hisashi Hokonohara, and Toshiaki Yamaguchi, all of Yamaguchi, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

PCT No. PCT/JP89/01038, § 371 Date May 28, 1991, § 102(e) Date May 28, 1991, PCT Pub. No. WO91/04942, PCT Pub. Date Apr. 18, 1991
PCT Filed Oct. 9, 1989, Ser. No. 689,941
The portion of the term of this patent subsequent to Aug. 14, 2007, has been disclaimed.
Int. Cl.[5] C01B *9/08*
U.S. Cl. 423—239 **14 Claims**

7. A method for purifying nitrogen trifluoride gas containing at least dinitrogen difluoride as impurities which comprises:
a. providing a vessel at least the inner wall of which is composed of nickel;
b. then forming a film of nickel fluoride by bringing at least fluorine gas into contact for 10 minutes to 15 hours with the nickel inner wall of the vessel, the vessel being heated to about 30° to 200° C., said at least fluorine gas contacting the nickel inner wall first having a low F_2 gas concentration and then being enhanced to finally having a 100 percent content of F_2 gas;
c. then packing the vessel with a solid fluoride, the nickel inner wall of the vessel being covered with the nickel fluoride film, to form a packed bed;
d. then heating the nitrogen trifluoride gas in the packed bed at 150° to 600° C., and
e. then heating the nickel fluoride film at 400° to 800° C. in an inert atmosphere.

5,183,648

PROCESS FOR PREPARING MAGNESIA HAVING REDUCED HYDRATION TENDENCY, HYDRATION RESISTANT MAGNESIA, DRY MIXTURE FOR PREPARING MAGNESIA BASED CASTABLES AND MAGNESIA BASED CASTABLE

Anthony J. Wolfert, Arnhem, Netherlands, assignor to Shell Research Limited, United Kingdom

Filed Mar. 8, 1991, Ser. No. 665,794
Claims priority, application United Kingdom, Mar. 15, 1990, 9005815
Int. Cl.[5] C01F *5/02*
U.S. Cl. 423—267 **9 Claims**

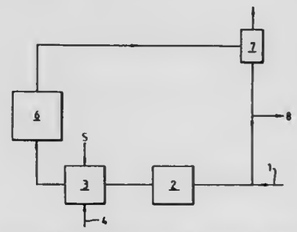
1. A process for preparing magnesia having a reduced hydration tendency, comprising contacting particles of refractory grade magnesia with a 0.01M to 5M solution of an inorganic acid or salt thereof, recovering the treated magnesia, and drying the treated magnesia.

5,183,649

PRODUCTION OF PHOSPHORUS COMPOUNDS

William S. Holmes, Compton, and Robert Marshall, Stourbridge, both of England, assignors to Albright & Wilson Ltd., Warley, England

Filed Apr. 11, 1991, Ser. No. 684,044
Claims priority, application United Kingdom, Apr. 12, 1990, 9008422
Int. Cl.[5] C01B *25/10*
U.S. Cl. 423—300 **23 Claims**



1. A process for the production of a chlorophosphorus compound selected from the group consisting of phosphorus trichloride and a mixture of phosphorus trichloride and phosphorus oxychloride, said process comprising:
(i) recycling a liquid medium comprising said chlorophosphorus compound and adding yellow phosphorus thereto to form a condensed phase mixture of phosphorus in said liquid medium,
(ii) inputting into said condensed phase mixture under conditions of highly-turbulent flow a gas selected from the group consisting of chlorine and a mixture of chlorine and oxygen, such that the atomic ratio of oxygen to phosphorus is less than 1:1 to form a reaction mixture, said highly-turbulent flow resulting in an apparent Reynolds number of at least 2000 and being at (a) the points of contact of said reaction mixture and said gas and (b) thereafter in a reaction zone, whereby a reaction material comprising said chlorophosphorus compound and elemental phosphorus is produced, wherein (1) the overall atomic ratio of inputted chlorine to added phosphorus is 3:1 or less and the atomic ratio of inputted oxygen to added phosphorus in the condensed phase mixture is zero to produce phosphorus trichloride, or (2) the atomic ratio of inputted oxygen to added phosphorus in the condensed phase mixture is 0.1:1 to 0.98:1 and the atomic ratio of inputted chlorine to inputted oxygen is 3:1 to 10.1 to produce a mixture of phosphorus oxychloride and phosphorus trichloride,
(iii) cooling said reaction material and,
(iv) recycling at least a portion of said reaction material to (i)

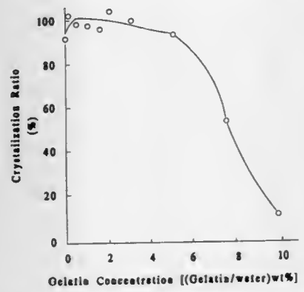
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as said liquid medium for mixing with additional yellow phosphorus.

5,183,650
MICRO-PARTICULATE ALUMINOSILICATE AND PROCESS FOR PRODUCING THE SAME

Yoshiaki Goto, Otsu, and Kozo Arai, Kiryu, both of Japan, assignors to Tokushu Kika Kogyo Co., Ltd., Osaka, Japan

Filed Apr. 17, 1991, Ser. No. 686,517
Int. Cl.[5] C01B *33/34*
U.S. Cl. 423—710 **3 Claims**



1. A process for producing a micro-particulate aluminosilicate, comprising the steps of:
preparing an aqueous solution as a solvent, said aqueous solution containing gelatin dissolved therein;
adding to said aqueous solution a metal hydroxide or a metal salt, a metal aluminate and colloidal silica as essential components and stirring the mixture to uniformly disperse said essential components and allow the mixture to mature; and
heating said mixture to synthesize said micro-particulate aluminosilicate.

5,183,651
PROCESS FOR THE PREPARATION OF CRYSTALLINE SODIUM SILICATES

Günther Schimmel; Michael Kotzian, and Reinbard Gradl, all of Erftstadt, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

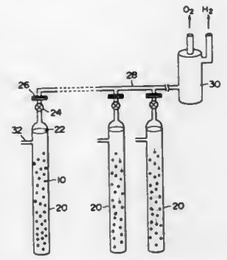
Filed Dec. 28, 1990, Ser. No. 635,933
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1990, 4000705
Int. Cl.[5] C01B *33/32*
U.S. Cl. 423—334 **3 Claims**

1. A process for the preparation of crystalline sodium silicates having a layer structure and the formula $Na_2Si_xO_{2x+1}$ in which x is between 2 and 3 consisting of the steps:
a) fusing sand and soda in a molar ratio of SiO_2/Na_2O of 2 to 3.5 at temperatures of 1200° to 1400° C. with the resultant formation, after cooling the melt, of a lumpy water glass;
b) grinding the lumpy water glass to a particle size of less than 2 mm;
c) treating the ground water glass at temperatures of 600° to 800° C. for 10 to 120 minutes in an elongated reaction zone with mechanical circulation; and
d) grinding the material leaving the reaction zone to a particle fineness of less than 1 mm.

5,183,652
RADIOACTIVE CATALYST AND OXIDATION-REDUCTION METHOD AND APPARATUS USING SAME

Nohuyuki Sasao, Naka, and Yukio Wada, Mito, both of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Division of Ser. No. 631,998, Dec. 21, 1990, Pat. No. 5,093,302, which is a continuation-in-part of Ser. No. 404,966, Sep. 8, 1989, abandoned. This application Oct. 8, 1991, Ser. No. 773,121
Claims priority, application Japan, Oct. 1, 1988, 63-248755
Int. Cl.[5] C01B *3/04, 13/02*
U.S. Cl. 423—579 **4 Claims**



1. An oxidation-reduction method comprising providing a radioactive catalyst comprising a fine particle of semiconductor having a particle size of 0.1 to 10 μm, and a radioactive platinum group element, which generates radiation energy of about 10^5 to about 10^6 eV, deposited on said particle of semiconductor, whereby said radioactive catalyst can serve as a source of radiation and also as a catalyst for an oxidation-reduction reaction; bringing the radioactive catalyst into contact with a fluid to be processed to produce electron-hole pairs in the semiconductor of said catalyst by radiation generated from said radioactive platinum group element deposited on said semiconductor particle; and thereby causing an oxidation-reduction reaction.

3. An oxidation-reduction apparatus comprising a container packed with a radioactive catalyst comprising a fine particle of semiconductor having a particle size of 0.1 to 10 μm, and a radioactive platinum group element, which generates radiation energy of about 10^5 to about 10^6 eV, deposited on said particle of semiconductor, whereby said radioactive catalyst can serve as a source of radiation and also as a catalyst for an oxidation-reduction reaction; means for supplying a fluid to be processed into said container; and means for discharging products of oxidation-reduction reaction from said container.

5,183,653
BORONIC ACID ADDUCTS OF METAL DIOXIME COMPLEXES USEFUL IN LABELLING PROTEINS AND OTHER AMINE-CONTAINING COMPOUNDS

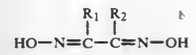
Karen E. Linder, Highland Park; Adrian D. Nunn, Ringoes, and Kondareddiar Ramalingam, North Brunswick, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 13, 1990, Ser. No. 508,433
Int. Cl.[5] A61K *49/02, 43/00*
U.S. Cl. 424—1.1 **32 Claims**

1. Boronic acid adducts of Metal dioxime complexes having the formula

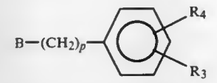
$$MX(Y)_3Z \qquad I$$

wherein:
M is an isotope of technetium or rhenium,
X is an anion,
Y is a vicinal dioxime having the formula



II

or a pharmaceutically acceptable salt thereof, and R_1 and R_2 are each independently hydrogen, halogen, alkyl, aryl or a 5 or 6-membered nitrogen, sulfur or oxygen containing heterocycle, or together R_1 and R_2 are $-(CR_8R_9)_n-$ wherein n is 3, 4, 5 or 6 and R_8 and R_9 are each independently hydrogen or alkyl; and
Z is a boron derivative having the formula



wherein P is zero or an integer from one to six, R_3 is NCS, and R_4 is hydrogen, or a water solubilizing functionality selected from the group consisting of COOH, carboxyalkyl, hydroxyalkyl, SO_3H, alkyl-sulfonate, sulphonamide, or hydroxyl, or a pharmaceutically acceptable salt thereof.

5,183,654
NONIONIC X-RAY CONTRAST MEDIUM WITH HIGH IODINE CONTENT

Ulrich Speck, and Peter Blaszkiewicz, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Nov. 2, 1990, Ser. No. 607,115
Claims priority, application Fed. Rep. of Germany, Nov. 3, 1989, 3937118
Int. Cl.[5] A61K *49/04;* C07C *233/65*
U.S. Cl. 424—5 **4 Claims**

1. 5-hydroxyacetamido-2,4,6-triido-isophthalic acid-(2,3-dihydroxy-N-methyl-propyl)-(2-hydroxy-ethyl)-diamide.

5,183,655
COMBINED ODOR CONTROLLING ANIMAL LITTER

Anna G. Stanislowski, Walnut Creek; J. Bruce England, Pleasanton, and Steven D. Ratcliff, Antioch, all of Calif., assignors to The Clorox Company, Oakland, Calif.

Continuation of Ser. No. 705,278, May 24, 1991, Pat. No. 5,135,743, which is a continuation of Ser. No. 370,476, Jun. 23, 1989, Pat. No. 5,018,482, which is a continuation-in-part of Ser. No. 208,953, Jun. 17, 1988, Pat. No. 4,949,672. This application May 26, 1992, Ser. No. 888,957
Int. Cl.[5] A61L *11/00*
U.S. Cl. 424—76.6 **7 Claims**

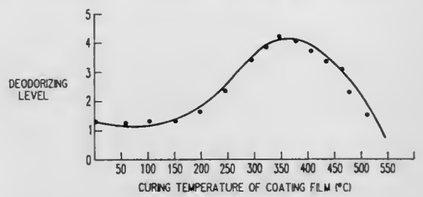
7. A method of delivering an ammonia-controlling-effective amount of odor controlling agent to an animal waste comprising: applying directly to said waste an aqueous dispersion which comprises a mixture of an ammonia-controlling-effective amount of pine oil and a borate-based compound selected from the group consisting of polyborate, borax and boric acid/borax mixture.

5,183,656
DEODORANT AND PRODUCT IN WHICH THE DEODORANT IS USED

Kazuo Uesaka, Amagasaki; Kazumasa Okita, Ueno, and Tsutomu Arai, Saitama, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo and Okitsumo Incorporated, Mie, both of, Japan

Filed Aug. 2, 1991, Ser. No. 739,433
Claims priority, application Japan, Aug. 3, 1990, 2-207389
Int. Cl.[5] A61L *9/00*
U.S. Cl. 424—76.1 **9 Claims**

1. A deodorant composition, comprising a binder comprising an effective amount of an inorganic silicon compound; and a metal oxide or salt of at least one metal selected from the group consisting of titanium, lanthanum and manganese; or



zirconium phosphate or a combination thereof, which deodorant comprises from 5 to 98 wt % of said binder, from 0.50 to 90 wt % of the metal oxide or salt, from 0 to 94.5 wt % of a colorant or a filler or both, and from 0 to 5 wt % of an additive.

5,183,657
ANTIBODIES FOR USE IN ANTILYMPHOCYTE ANTIBODY THERAPY

Wim Buurman, Maastricht, Netherlands, assignor to Celltech Limited, Berkshire, United Kingdom

PCT No. PCT/GB89/00254, § 371 Date Oct. 22, 1990, § 102(e) Date Oct. 22, 1990, PCT Pub. No. WO89/08460, PCT Pub. Date Sept. 21, 1989
PCT Filed Mar. 13, 1989
Continuation of Ser. No. 585,065, Oct. 22, 1990, abandoned. This application May 7, 1992, Ser. No. 881,317
Claims priority, application United Kingdom, Mar. 11, 1988, 8805792
Int. Cl.[5] A61K *39/395*
U.S. Cl. 424—85.8 **8 Claims**

1. A pharmaceutical composition which comprises an antibody against human α-tumour necrosis and an antilymphocyte antibody in admixture with one or more pharmaceutically acceptable carriers, excipients or diluents.

5,183,658
HANTAAN VIRUS STRAIN ROK84/105 AND VACCINE THEREFOR

Ho W. Lee; Sun J. Riu, both of Seoul, and Chang N. An, Suwon, all of Rep. of Korea, assignors to Korea Green Cross Corporation, Rep. of Korea

Filed Nov. 16, 1989, Ser. No. 438,327
Claims priority, application Rep. of Korea, Nov. 18, 1988, 15199/1988
Int. Cl.[5] A61K *39/12;* C12N *7/00*
U.S. Cl. 424—89 **15 Claims**

1. A vaccine for Hantaan virus which is prepared by a process comprising the steps of introducing Hantaan virus strain ROK 84/105 into a rat or mouse, subsequently removing brain tissue from the brain of the rat or mouse, extracting the brain tissue with an extraction fluid, purifiying the resulting virus extract, and inactivating the virus in the resulting virus extract, wherein Hantaan virus strain ROK 84/105 is a strain of Hantaan virus having an international deposit number of ATCC VR 2250.

5,183,659
PROTECTION OF EQUINES AGAINST *STREPTOCOCCUS EQUI*

John F. Timoney, Lansing, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 754,613, Jul. 12, 1985, abandoned. This application Jun. 15, 1988, Ser. No. 207,320
Int. Cl.[5] A61K *39/02;* C12N *15/00*
U.S. Cl. 424—92 **10 Claims**

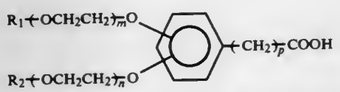
1. A vaccine for protecting equines against *S. equi* which comprises an avirulent strain of *S. equi* known as *S. equi* 709-27

VOL 1147 ISS 1 FE 2 1993 UMI

which can be inoculated intranasally or orally in the susceptible equine.

5,183,660
POLYETHYLENE GLYCOL DERIVATIVES, THEIR MODIFIED PEPTIDES, METHODS FOR PRODUCING THEM AND USE OF THE MODIFIED PEPTIDES
Yoshiharu Ikeda, Somerville, Mass.; Yoshiyuki Kai, Kobe, and Keiichi Ono, Sakai, both of Japan, assignors to Sumitomo Pharmaceuticals Company, Limited, Osaka, Japan
Filed Aug. 15, 1991, Ser. No. 745,496
Claims priority, application Japan, Aug. 28, 1990, 2-227541
Int. Cl.[5] A61K *37/02, 37/48;* **C07C** *63/04, 65/21*
U.S. Cl. 424—94.3 **14 Claims**

13. A method for producing a modified peptide comprising reacting a carboxyl group-activated compound of a polyethylene glycol derivative of the formula



(I)

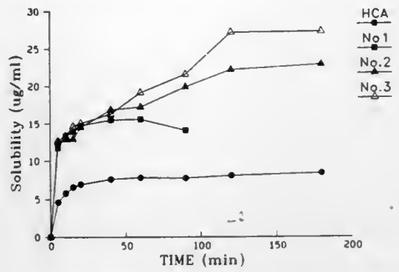
wherein R_1 and R_2 are the same or different and each represents a lower alkyl, m and n are the same or different and each represents a positive integer and p is 0 or a positive integer, with a peptide having at least one free amino group.

5,183,661
DEER REPELLENT DEVICE AND METHOD
James Messina, Rte. 24, Box 122, Chester, N.J. 07930
Filed Dec. 9, 1991, Ser. No. 804,776
The portion of the term of this patent subsequent to Oct. 23, 2007, has been disclaimed.
Int. Cl.[5] A01N *25/24, 65/00, 47/14*
U.S. Cl. 424—405 **4 Claims**

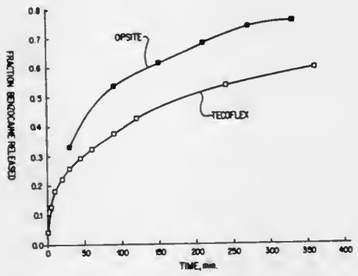
1. A deer repellent assembly comprising:
a 100 foot length of one-quarter inch diameter elongate flexible rope of a cotton and polyester solid braid material for use as a support medium; and
16 fluid ounces of deer repellent liquid formulation consisting of about 15 fluid ounces of water and about 0.125 ounces by weight of deshelled chicken eggs and about 0.063 ounces by weight of pepper and about 0.968 ounces by weight of seventy-five percent thiram dry and an adhesive in a quantity sufficient for adherence to the flexible rope;
said deer repellent liquid formulation being evenly distributed along the entire length of the flexible rope sufficient to wet the rope.

5,183,662
CONTROLLED DRUG RELEASE COMPOSITION
Yasushi Morita, Osaka; Akira Ohtori, Fuknoka, and Masako Andoh, Hyogo, all of Japan, assignors to Senju Pharmaceutical Co., Ltd., Osaka, Japan
Filed Aug. 27, 1991, Ser. No. 750,482
Claims priority, application Japan, Aug. 30, 1990, 2-229887
Int. Cl.[5] A61K *9/14, 9/70, 31/56*
U.S. Cl. 424—426 **3 Claims**

1. A controlled drug release composition which comprises at least one poorly soluble steroidal drug; at least one water-soluble macromolecular compound selected from the group consisting of polyvinylpyrrolidone, polyethylene glycol and hydroxypropylcellulose in a proportion of 3 to 5 weight parts per weight part of the poorly soluble drug; and at least one biodegradable macromolecular compound selected from the group consisting of polylactic acid, polyglycolic acid and the corresponding copolymers thereof in a proportion of 1 to 3 parts per weight part of the poorly soluble drug.



5,183,663
TREATING SKIN LESIONS
Richard W. Greiner, Kennett Square, Pa., assignor to Hercules Incorporated, Wilmington, Del.
Filed Jun. 7, 1989, Ser. No. 362,800
Int. Cl.[5] A61F *13/00*
U.S. Cl. 424—443 **1 Claim**

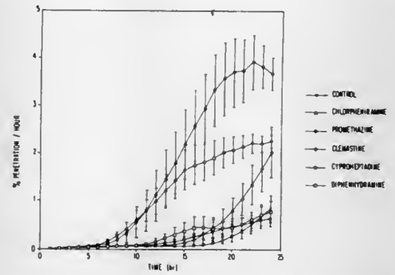


1. A dry bandage comprising a gas- and moisture-permeable, flexible thermoplastic film impregnated with a pharmaceutical that is releasable from the film into a lesion upon application thereto wherein the thermoplastic film is impregnated with the pharmaceutical by contacting the film with the pharmaceutical dissolved in a liquefied gas maintained at supercritical conditions.

5,183,664
THIN FILM ADHESIVE DRESSINGS PREPARATION AND USE
Christopher W. G. Ansell, Sawston, United Kingdom, assignor to Smith and Nephew Associated Companies p.l.c., United Kingdom
Continuation of Ser. No. 339,134, Apr. 17, 1989, abandoned, which is a continuation of Ser. No. 146,778, Dec. 21, 1987, abandoned. This application Dec. 21, 1990, Ser. No. 632,055
Claims priority, application United Kingdom, Sep. 20, 1986, 8622695; Dec. 6, 1986, 8629231; Jan. 16, 1987, 8700943; Jan. 16, 1987, 8700944; Jan. 22, 1987, 871434; PCT Int'l Appl., Sep. 21, 1987, PCT/GB87.00657
Int. Cl.[5] A61L *15/16*
U.S. Cl. 424—445 **30 Claims**

1. A thin film wound dressing which comprises a backing layer having over one surface thereof a continuous adhesive layer, which adhesive comprises a gel adhesive which is not self-adherent and which may be removed from the skin without damage thereto, wherein the dressing has a moisture vapour transmission rate of at least 300 gm^{-2} hr^{-2} at 37° C. and 100 to 10% relative humidity difference when in contact with moisture vapour and wherein the content of water leachable materials from the adhesive is less than 10%.

5,183,665
COMPOSITION FOR PERCUTANEOUS ADMINISTRATION AND METHOD FOR ENHANCING PERCUTANEOUS ABSORPTION OF A PHYSIOLOGICALLY ACTIVE INGREDIENT EMPOLYING THE SAME
Mitsuhiko Hori, San Francisco, Calif., assignor to Nitto Denko Corporation, Osaka, Japan
Filed Jan. 23, 1989, Ser. No. 299,506
Int. Cl.[5] A61F *13/00*
U.S. Cl. 424—449 **5 Claims**

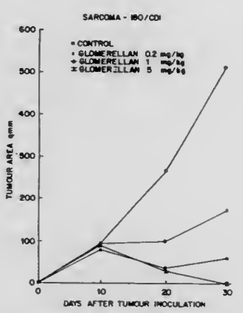


1. A method for enhancing percutaneous permeability and absorption of a physiologically active ingredient comprising percutaneously administering:
(a) a pharmaceutically effective amount of a physiologically active ingredient selected from at least one member of the group consisting of a benzodiazepin, a diuretic, a hypertensive, an ethylenediamine, a non-steroid anti-inflammatory agent, sodium salicylate, an anti-cancer agent, a steroid anti-inflammatory agent, an anti-epileptic, an anti-arrhythmic, a psychoneurotropic agent, an antibiotic and a central nervous system stimulant, wherein said pharmaceutically effective amount is about 0.01 to 20% by weight of the total composition, and
(b) a percutaneous absorption enhancing effective amount of an anti-histamine selected from the group consisting of diphehydramine, clematine, cyproheptadine, triperenamine, diphenylpyraline, chlorpheniramine, promethazine, doxylamine, dimenhydrimate, tripelennamine, methapyrilene, pyrilene, thonzylamine, prophenpyridamine and chlorcyclizine, wherein said percutaneous absorption enhancing effective amount is about 0.01 to 20% by weight of the total composition,
wherein component (A) is a different compound from component (B).

5,183,666
PRESSING NOT DELAYED RELEASE OF ACTIVE COMPOUND, PROCESS FOR ITS PRODUCTION AND USE OF POLYHYDROXYBUTYRIC ACID FOR THE PRODUCTION OF SUCH A PRESSING
Brigitta Korsatko-Wabnegg, and Werner Korsatko, both of Graz, Austria, assignors to PCD Polymere Gesellschaft m.b.H., Schwechat-Mannsworth, Austria
Filed Oct. 31, 1990, Ser. No. 606,162
Claims priority, application Austria, Nov. 30, 1989, 2734/89
Int. Cl.[5] A61K *9/14*
U.S. Cl. 424—464 **6 Claims**

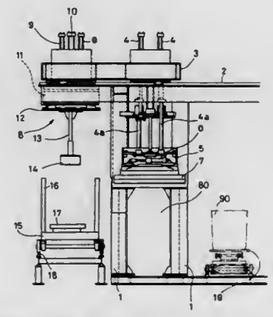
1. Pressing for oral administration having non-delayed release of active compound comprising at least one solid pharmaceutically active compound and as matrix material a homo- and/or copolymer of D(−)-3-hydroxybutyric acid and an amount of at least one solid disintegrant sufficient to cancel the delayed release properties of the homo- and/or copolymer of D(−)-3-hydroxybutyric acid.

5,183,667
THERAPEUTIC IMMUNOSTIMULATION BY GLOMBRELLA CINGULATA
Helmut Koch, Tervuren, and Harald W. W. Röper, Brussel, both of Belgium, assignors to Cerestar Holding B.V., Sas van Gent, Netherlands
Filed Mar. 29, 1991, Ser. No. 677,485
Claims priority, application United Kingdom, Apr. 5, 1990, 9007730
Int. Cl.[5] A61K *9/28, 31/70, 9/48;* **A01N** *25/34*
U.S. Cl. 424—474 **1 Claim**



1. A method of treating a tumour disease which comprises administering a therapeutically effective amount of the extracellular beta-glucan Glomerellan produced by Glomerella cingulata CMI CC 330957 or by mutants or variants thereof to immune-stimulate those in need thereof.

5,183,668
PRESSURIZED SLIP CASTING APPARATUS
Kazushige Murata, and Takeshi Ito, both of Aichi, Japan, assignors to Inax Corporation, Tokoname, Japan
Filed Nov. 4, 1991, Ser. No. 786,940
Claims priority, application Japan, Nov. 9, 1990, 2-305338
Int. Cl.[5] B28B *21/00*
U.S. Cl. 425—84 **3 Claims**



1. A pressurized slip casting apparatus comprising:
a horizontal rail;
a replacer made horizontally movable on said horizontal rail;

VOL
1147
ISS
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an upper mold carried vertically movably on said replacer; and

a lower mold for receiving said upper mold in alignment, when said upper mold descends, to cast a slip under pressure inbetween thereby to prepare a green body of a sanitation fixture,

wherein the improvement comprises:

dehydrating means carried vertically movably on said replacer:

a spongy member mounted on a lower end of said dehydrating means for absorbing water from the inside of said lower mold; and

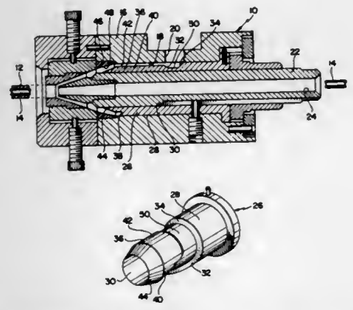
a push plate arranged at a side of said lower mold for abutting and squeezing said spongy member to dehydrate the spongy member.

5,183,669

DEFLECTOR FOR CROSSHEAD EXTRUDER

A. Roger Guillemette, 10 Pike St., West Warwick, R.I. 02893

Filed May 28, 1991, Ser. No. 705,947
Int. Cl.[5] B05C *3/10*; B29C *47/28*
U.S. Cl. 425—113 **4 Claims**



1. A deflector for a crosshead;

said crosshead including a body having a main bore extending therethrough, a radial passage extending into a first side of said bore for the introduction of a stream of molten plastic, and a core tube mounted coaxially therein, said core tube having a central bore,

said deflector comprising a cylindrical surface that fits snugly in the main bore adjacent said radial passage, a recessed deflector surface in communication with said radial passage, and a bore for receiving and supporting the core tube coaxially of the main bore,

said cylindrical surface terminating in a generally radial bevelled guide surface which originates adjacent the upstream end of said radial passage and leads to said recessed deflector surface, said guide surface extending around said deflector and curving in a smooth curve away from said radial passage only in a downstream direction so as to merge at a point opposite said first side,

said deflector including an enlargement which extends coaxially around a portion of the deflector adjacent the downstream end thereof and extends around said deflector in opposite directions for about 90° at said first side before curving downstream, said enlargement having a cylindrical outer surface of a diameter greater than that of the recessed deflector surface and less than that of the main bore so as to define an axial passage between said cylindrical outer surface and said main bore whereby molten plastic entering through said radial passage simultaneously flows along said recessed deflector surface and through said axial passage,

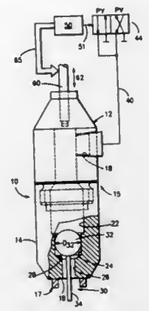
said deflector further including a frusto-conical bevel at the downstream end thereof.

5,183,670

BI-FUNCTIONAL TRANSFER FOOT

Allen E. Trudeau, Ansonia, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 30, 1991, Ser. No. 693,749
Int. Cl.[5] B29C *31/00*; B65H *5/00*
U.S. Cl. 425—126.1 **2 Claims**



1. A bi-functional transfer foot for performing pickup and placement operations on a tacky surface of preimpregnated composite materials, said bi-functional transfer foot being activated to perform pickup operations in response to a vacuum force provided by a vacuum source, said bi-functional transfer foot being operative to perform placement operations in response to a pressure force provided by a pressure source, said bi-functional transfer foot being alternately fluidically interconnected to the vacuum source and the pressure source by a switching valve, and wherein activation and operation of said bi-functional transfer foot is provided by control means that provides a control signal for regulating operation of the switching valve, comprising:

valve means structurally configured and operative for utilizing the vacuum force for engaging and retaining the tacky surface of preimpregnated composite materials for pickup operations and for utilizing the pressure source to generate a mechanical force to disengage and release the tacky surface of preimpregnated composite materials for placement operations, said valve means including

a valve housing including a first body member and a second body member sealingly engaged in combination, said second body member having a contact face at one exterior end thereof, said second body member having first, second, and third fluidically interconnected cylindrical chambers coaxially formed therein and an angled shoulder intermediate said second and third cylindrical chambers, said first body member including a pneumatic port fluidically interconnected to the switching valve and a cylindrical pneumatic passage fluidically interconnecting said pneumatic port to said first cylindrical chamber, said first, second, and third cylindrical chambers having first, second, and third diameters, respectively, wherein said first diameter is greater than said second diameter and said second diameter is greater than said third diameter, and wherein said contact face has an opening fluidically interconnected to said third cylindrical chamber and defined by said third diameter thereof,

a sealing member affixed to said contact face to circumscribe said opening thereof, said sealing member having a configuration to minimize adherence between said sealing member and the tacky surface of preimpregnated composite materials during pickup operations, and

a valve member displaceable within said second body member between said second cylindrical chamber and said first cylindrical chamber and vice versa in response to the vacuum force and the pressure force, respectively, said valve member including a spherical head having an integral knock-off stem protruding therefrom, said spherical head having a predetermined configuration such that displacement of said valve member from said first cylindrical chamber to said second cylindrical chamber in response to the pressure force causes said spherical head to set against said angled shoulder wherein a seal is provided between said second cylindrical chamber and said third cylindrical chamber that effectively terminates airflow through said third cylindrical chamber, and wherein said knock-off stem has a predetermined length such that said knock-off stem provides the mechanical force to disengage and release the tacky surface of preimpregnated composite materials from said bi-functional transfer foot during placement operations when said spherical head is caused to seat against said angled shoulder; and wherein

the control means regulates the switching valve to cause bi-functional operation of said valve means in ON and OFF states for pickup and placement operations, respectively, said bi-functional transfer foot being normally biased to said OFF state by the switching valve wherein the pressure source is fluidically interconnected to said pneumatic port so that said movable valve member is positioned in response to the pressure force so that said spherical head thereof is seated against said angled shoulder and said knock-off stem protrudes beyond said sealing member, and wherein the switching valve fluidically interconnects the vacuum source to said pneumatic port to activate said bi-functional transfer foot to said ON state in response to the control signal from the control means when said sealing member and said knock-off stem are proximate the tacky surface of preimpregnated composite materials wherein said valve member is displaced within said second body member from said second cylindrical chamber into said first cylindrical chamber to cause said spherical head to unseat from said angled shoulder so that the vacuum force is fluidically interconnected to said third cylindrical chamber and exerted at said opening to engage and retain the tacky surface of preimpregnated composite materials, and further wherein the tacky surface adheres to the sealing member with the tacky surface of preimpregnated composite materials engaged and retained by the vacuum force exerted by said bi-functional transfer foot.

5,183,671

APPARATUS FOR PROCESSING FISH FOOD

Thomas F. Perez, 21 Legeyt Rd., North Canton, Conn. 06059

Filed Jun. 1, 1990, Ser. No. 531,924
Int. Cl.[5] A23P *1/00*
U.S. Cl. 425—190 **17 Claims**

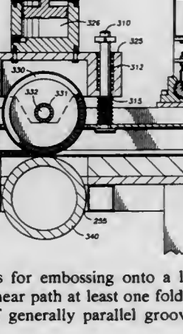
1. A fish food extruder for extruding a viscous wad of fish food into thin filaments, comprising:

a tubular member having an upper end and a lower, closed end defining an extrusion aperture with an effective diameter no greater than about 0.05 inch;

a plunger member situated for telescoping displacement axially within the tubular member, the plunger member having a first, closed end facing the lower end of the tubular member and defining a chamber therebetween for confining a wad of said fish food, and a plunger extension portion including a second end of the plunger member which extends axially beyond the upper end of the tubular member;

a frame member extending longitudinally from the tubular member in parallel with the axis thereof, the frame member containing a plurality of teeth facing said axis; and

manually operable actuating means coupling the plunger extension portion with the frame member, for selectively displacing the plunger member with a mechanical advantage through the tubular member to extrude the wad in the chamber through said aperture, the actuating means including a first handle comprising a lever having a pivot end for engaging one of said teeth, the lever including a free end to be grasped in one hand by the user for manually rotating the lever about said engaged tooth, means intermediate the pivot end and free end for engaging the plunger extension portion and is placing the plunger axially in the tubular member to extrude the wad as the lever is rotated in a first direction of rotation, and means for



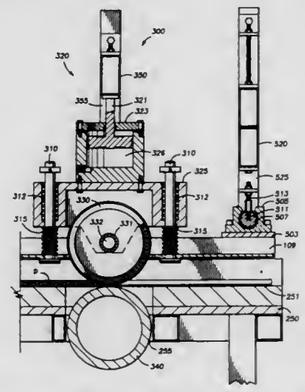
permitting the manual transfer of the pivot end of the lever to engage a tooth adjacent to the engaged tooth when the lever is rotated in a second direction of rotation opposite to the first direction of rotation, the actuating means further including a second handle rigidly connected to one of the tubular member and frame member to be grasped by the user's other hand while the user rotates the first handle in the first direction to extrude the wad.

5,183,672

APPARATUS FOR FORMING AT LEAST ONE FOLD LINE PATTERN IN A RIGID PLASTIC MATERIAL

Gary W. Fetterhoff, 1505 E. Reno, Broken Arrow, Okla. 74012, and William R. Blake, Tulsa, Okla., assignors to Gary W. Fetterhoff and James M. Park, both of Tulsa, Okla.

Filed Apr. 16, 1991, Ser. No. 686,036
Int. Cl.[5] B29C *59/04*
U.S. Cl. 425—304 **12 Claims**



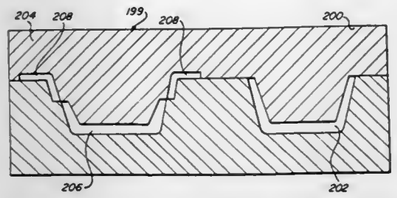
1. An apparatus for embossing onto a length of material moving along a linear path at least one fold line pattern comprising a series of generally parallel grooves, the apparatus comprising:

a frame;

VOL 1147 ISS 1 FEB 2 1993 UMI

a means for moving said material along a linear path;
a means for feeding said material, said feeding means being situated at an upstream end of the conveyor system and located to position the said material on the moving means;
a means for heating said material, said heating means being situated downstream of the feeding means and located to heat the area to be embossed with the fold line pattern to a temperature sufficient to form the fold line pattern; and
a means for embossing said plastic material, said embossing means comprising a knurled flat roller and a cooperating embossing roller comprising a series of ridges suitable for embossing the fold pattern.

5,183,673
APPARATUS FOR CONTROLLING WEIGHT AND WALL THICKNESS OF A BLOW MOLDED ARTICLE
Peter T. Schurman, Woodbridge, Conn., assignor to The Plastic Forming Company, Inc., Woodbridge, Conn.
Division of Ser. No. 499,018, Mar. 26, 1990, Pat. No. 5,061,417.
This application Jun. 25, 1991, Ser. No. 720,943
Int. Cl.[5] B29C *49/48*
U.S. Cl. 425—522 **14 Claims**



1. A family of blow molds for manufacturing at least two blow molded manufactured articles of different depth, including a first manufactured article having a depth and a second manufactured article having a depth which is substantially less than the depth of the first manufactured article, comprising:
a first mold having mold parts for joining together to define
a first mold chamber for receiving a portion of a moldable parison to blow mold the first manufactured article;
a second mold having mold parts for joining together to define
a separate second mold chamber for receiving a portion of the moldable parison to blow mold the second manufactured article, and
at least one waste article forming chamber adjacent to and connecting with at least a portion of said second mold chamber for receiving a portion of the mountable parison and forming at least one separable waste article simultaneously with the blow molding of said second manufactured article, said waste article forming chamber being of a size and shape selected such that a waste article formed in the waste article chamber and the second manufactured article have a total apparent surface area proportional to the total apparent parting line area of the second mold chamber and waste article forming chamber which is a selected percentage of the surface area of the first manufactured article proportional to the parting line area of the first mold chamber, whereby the wall thickness of the first and second manufactured articles are controlled to predetermined thicknesses.

5,183,674
FOOD AND FEEDSTUFF
Thomas Olin, Enbacken 33, S-183 46 Täby, Sweden
PCT No. PCT/SE89/00707, § 371 Date Apr. 25, 1991, § 102(e) Date Apr. 25, 1991, PCT Pub. No. WO90/06064, PCT Pub. Date Jun. 14, 1990
PCT Filed Dec. 1, 1989, Ser. No. 678,972
Claims priority, application Sweden, Dec. 2, 1988, 8804376
Int. Cl.[5] A23K *1/00*
U.S. Cl. 426—2 **23 Claims**

1. A process for reducing the excretion of nitrogen from humans or animals while maintaining protein formation, said process comprising administering to said humans or animals food and/or feedstuff wherein protein from said food and feedstuff has been replaced by at least one keto acid of a non-essential amino acid according to the formula R—CO—COOX, wherein R is a part of a non-essential amino acid and X is selected from the group consisting of hydrogen, an alkali metal, an alkaline earth metal or an organic base, wherein said keto acid is present in an amount of 1 to 20% by weight of the protein dry matter present and wherein nitrogen excretion is substantially reduced.

5,183,675
PROCESS FOR PRODUCING SALAD OIL
Koichi Tamura, Yokohama; Nobuo Taguchi, Yokosuka, and Satoshi Tashiro, Yokohama, all of Japan, assignors to The Nisshin Oil Mills, Ltd., Tokyo, Japan
Filed Jul. 9, 1991, Ser. No. 727,445
Claims priority, application Japan, Nov. 28, 1990, 2-327113
Int. Cl.[5] A23D *9/02*
U.S. Cl. 426—33 **7 Claims**

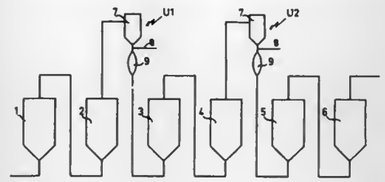
1. A process for producing a salad oil which comprises transesterifying a mixture of (A) an oil or fat produced from palm oil and having the following characteristics:

iodine value:	55 to 75
constituent fatty acids:	
palmitic acid:	30 to 42% by weight
oleic acid:	42 to 48% by weight
linoleic acid:	11 to 20% by weight
tripalmitin:	2% by weight or less
open-tube melting point:	5 to 25° C.

and (B) a liquid edible oil other than the component (A) in a weight ratio of 5:95 to 95:5 with immobilized lipase having 1,3-specificity in the absence of solvent and then fractionating the product in the absence of solvent.

5,183,676
PROCESS FOR COUNTERCURRENT EXTRACTION OF COFFEE
Klaus Schlecht, Orbe, Switzerland, assignor to Nestec S.A., Vevey, Switzerland
Filed Oct. 3, 1991, Ser. No. 770,584
Claims priority, application European Pat. Off., Oct. 24, 1990, 90120388.5
Int. Cl.[5] A23F *5/26*
U.S. Cl. 426—434 **6 Claims**

1. In a process for extracting roast and ground coffee material in a countercurrent extraction apparatus having a plurality of cells interconnected in series, wherein an extraction liquid is passed downstream from one cell to a next adjacently positioned cell in the series and through the coffee material contained in each cell in countercurrent fashion to obtain an extract from the coffee material, and wherein extract is obtained from at least one cell in the series and is subjected to evaporation at a temperature reduced from a temperature employed for extraction in the extraction cells, the improvements comprising:
obtaining a first extract having a temperature above 150° C. from an extraction cell, flash evaporating the first extract at a temperature reduced from 150° C. to obtain a first extract product, heating the first extract product to a temperature sufficient for extraction of coffee material contained in a downstream extraction cell and introducing the heated extract product into the downstream cell adjacent the cell in the series from which the first extract was obtained; and
obtaining a second extract from an extraction cell which is positioned in the series at least one cell downstream from



the cell from which the first extract was obtained and which is positioned prior to a last downstream cell in the series, flash evaporating the second extract to obtain a second extract product, heating the second extract product to a temperature sufficient for extraction of coffee material contained in a downstream extraction cell and introducing the heated second extract product into the downstream cell adjacent the cell in the series from which the second extract was obtained; and
wherein the second flash evaporation is carried out at a temperature higher than the first flash evaporation.

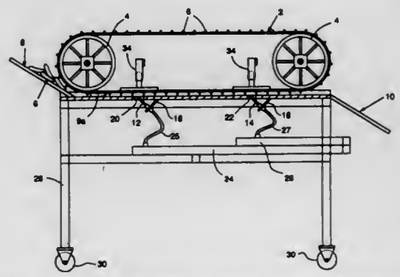
5,183,677
BETA-GLUCANE ENRICHED ALIMENTARY FIBER
Ilkka Lehtomäki; Pertti Karinen, both of Rajamaki; Risto Bergelin, Koskenkorva, and Olavi Myllymäki, Espoo, all of Finland, assignors to Oy Alko AB, Helsinki, Finland
Continuatioo of Ser. No. 461,378, Jan. 5, 1990. This application Sep. 25, 1991, Ser. No. 764,956
Claims priority, application Finland, Jan. 6, 1989, 890079
Int. Cl.[5] A23J *1/12*
U.S. Cl. 426—436 **2 Claims**

1. A beta-glucane enriched grain fiber having a beta-glucane concentration of about 15 to 40% by weight and a starch concentration of 5 to 30% by weight.

5,183,678
METHOD FOR PREPARING PUFF SNACK
Kazumitsu Taga, Neyagawa; Toshihiko Narukami, Ikoma, and Yoshiyuki Miyaoku, Sakai, all of Japan, assignors to House Food Industrial Co., Ltd., Higashi-Osaka, Japan
Filed Oct. 15, 1991, Ser. No. 775,897
Int. Cl.[5] A23L *1/00*
U.S. Cl. 426—448 **20 Claims**

1. A method for preparing a puff snack comprising the steps of puffing an ingredient essentially consisting of a bean which may or may not have the husk and having a water content of 9 to 20% in an extruder having a die, wherein the temperature of the die ranges from 90° to 150° C. for said ingredient having a water content of 9 to 11%; the temperature of the die ranges from 100° to 210° C. for said ingredient having a water content of more than 11% and not more than 15%; and the temperature of the die ranges from 160° to 240° C. for said ingredient having a water content of more than 15% and not more than 20%; so that the degree of puffing falls within the range of from 3.0 to 28.0 times the volume of the bean to give a puff product having a water content of not more than 7% by weight or drying the puff product until the water content is not more than 7% by weight and then applying at least one material selected from the group consisting of fat and oil to the resulting puffed product.

5,183,679
METHOD FOR PROCESSING FROZEN FOOD USING SUPER HIGH PRESSURE WATER JETS
Howard L. Kee, Palermo, Calif., assignor to Kee Equipment & Engineering, Inc., Palermo, Calif.
Filed Jul. 22, 1991, Ser. No. 733,666
Int. Cl.[5] A23L *1/00*
U.S. Cl. 426—479 **6 Claims**



1. A method for processing a frozen food item, including the steps of:
conveying the frozen food item past a nozzle array; and
directing one or more super high pressure water jets at a pressure of at least 2000 p.s.i. from the nozzle array with grazing incidence at the frozen food item, to apply a shearing force to the frozen food item as the frozen food item passes the nozzle array.

5,183,680
BAKING AGENT FOR LEAVENED DOUGH
Heinz D. Jodlbauer, Berlin, Fed. Rep. of Germany, assignor to A. Nattermann & Cie. GmbH Corporation of the Federal Republic of Germany, Koln, Fed. Rep. of Germany
Continuation of Ser. No. 547,390, Jul. 3, 1990, abandoned, which is a continuation of Ser. No. 310,036, Feb. 10, 1989, abandoned, which is a continuation of Ser. No. 050,062, May 13, 1987, abandoned. This application Aug. 8, 1991, Ser. No. 742,538
Claims priority, application Fed. Rep. of Germany, May 16, 1986, 3616597
Int. Cl.[5] A21D *2/32*
U.S. Cl. 426—611 **6 Claims**

1. A baking agent for leavened dough including a phospholipid fraction comprising phosphatidyl choline, phosphatidyl ethanolamine and phosphatidyl inositol, and a fat component, the baking agent comprising:
wherein the phospholipid fraction contains 8% to 17% by weight phosphatidyl choline and 18% to 26% by weight phosphatidyl ethanolamine;
wherein the phospholipid fraction further includes lysophosphatidyl choline, lysophosphatidyl ethanolamine, lysophosphatidyl inositol, phosphatide acid, lysophosphatide acid, phosphatidyl glycerol, lysophosphatidyl glycerol, N-acylphosphatidyl ethanolamine an lyso-N-acyl-phosphatidyl ethanolamine; and
wherein the phospholipid fraction further includes sterols, sterol glycosides, sugar and/or monoglycerides, diglycerides or triglycerides.

VOL
1147
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1993
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5,183,681

METHOD FOR PREPARING RETORT TOFU

Hidefumi Okamoto, Sakai, and Koji Sengoku, Nara, both of Japan, assignors to House Food Industrial Co., Ltd., Osaka, Japan

Filed Apr. 26, 1991, Ser. No. 691,835
Claims priority, application Japan, May 7, 1990, 2-117053
Int. Cl.[5] A23L *1/20*
U.S. Cl. 426—634 **15 Claims**

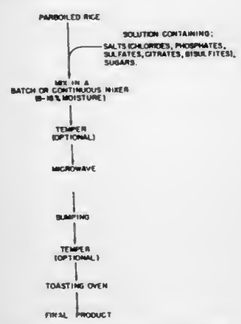
1. A method for preparing retort tofu comprising the steps of adding a coagulating agent to soy milk obtained by removing bean-curd refuse from refuse from a mixture of ground soybean and water, charging the mixture in a heat-resistant container, closely sealing the container and then subjecting the sealed container to a retort treatment, wherein a content of insoluble solids present in the soy milk is controlled to not more than 3% by weight on the basis of the total weight of the soy milk when the content of insoluble solids is determined by centrifuging the soy milk at 1690×g for 3 minutes whereby said controlled amounts of insoluble solids results in a product with increased resiliency.

5,183,682

LOW MOISTURE HOT ROLLING PROCESS AND PRODUCT

Chron-Si Lai, Harrisburg, Pa., assignor to Hershey Foods, Hershey, Pa.

Filed Sep. 29, 1989, Ser. No. 415,095
Int. Cl.[5] A23L *1/18*
U.S. Cl. 426—636 **25 Claims**



1. A low moisture hot rolling process for preparing expanded grain products consisting essentially of:
   a. uniformly wetting parboiled grain to a moisture content of between about 8% to 16%;
   b. plasticizing the moistened grain at a temperature of from 50° C. to 100° C. whereby no sever loss of moisture occurs during heating;
   c. compressing the plasticized grain at a moisture content of 11% to 15% and a temperature of 65° C. to 100° C.; and
   d. toasting the compressed grain to obtain an expanded grain product.

5,183,683

PROCESS FOR PRODUCING A FUNCTIONAL PROTEIN PRODUCT FROM VEGETABLE PROTEIN MATERIALS

Stephen D. Mott, Market Harborough, Great Britain, and Richard F. Johnson, Kettering, England, assignors to Protein Technologies International, Inc., St. Louis, Mo.

Filed Jul. 18, 1989, Ser. No. 381,226
Claims priority, application United Kingdom, Jul. 18, 1988, 8817061
Int. Cl.[5] A23L *1/31*
U.S. Cl. 426—641 **8 Claims**

1. A process for producing a granular protein product comprising: blending about one part by weight of a vegetable protein material selected from the group consisting of vegetable protein concentrates and vegetable protein isolates with about 1 to 3 parts by weight of water and about 1 to 6 parts by weight of a frozen animal protein product under conditions of shear to produce a granular protein product.

5,183,684

SINGLE AND MULTILAYER COATINGS CONTAINING ALUMINUM NITRIDE

Leslie E. Carpenter, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 20, 1989, Ser. No. 438,859
Int. Cl.[5] B05D *3/06, 3/02;* C23C *16/00*
U.S. Cl. 427—574 **34 Claims**

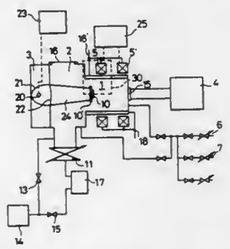
1. A process for the formation of an aluminum nitride ceramic or ceramic-like coating on a substrate comprising the steps of:
   (a) coating said substrate with a liquid containing an alkylaluminum amide having the formula $(R_2AlNH_2)_3$, where R is an alkyl group containing from 1 to 4 carbon atoms;
   (b) drying said liquid and thereby depositing a preceramic coating on said substrate; and
   (c) ceramifying said preceramic coating to an aluminum nitride-containing ceramic by heating said preceramic coating to a temperature of between about 400° to about 1000° C. in the presence of ammonia.

5,183,685

DIAMOND FILM DEPOSITION BY ECR CVD USING A CATALYST GAS

Shumpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 509,801, Apr. 17, 1990, abandoned, which is a division of Ser. No. 387,800, Aug. 1, 1989, abandoned, which is a division of Ser. No. 216,333, Jul. 8, 1988, Pat. No. 4,871,581. This application Aug. 19, 1991, Ser. No. 749,618
Claims priority, application Japan, Jul. 13, 1987, 62-175559
Int. Cl.[5] B05D *3/06, 3/14;* C23C *16/26*
U.S. Cl. 427—571 **12 Claims**



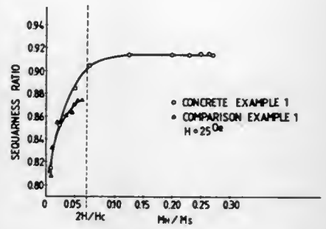
1. A method of depositing a diamond coating comprising the steps of:
   placing an object for deposition in a reaction chamber;
   introducing a carbon compound gas into said reaction chamber; and
   inputting an electromagnetic power to said reaction chamber in order to decompose said carbon compound gas and deposit the diamond on the surface of said object,
   wherein a catalytic gas is introduced into said reaction chamber in order to expedite the deposition of said diamond, said catalytic gas being selected from the group consisting of the halide of nickel, the hydride of nickel and the halide of manganese.

5,183,686

METHOD FOR MANUFACTURING MAGNETIC RECORDING MEDIA

Kazunori Komatsu, and Mikio Tomaru, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Tokyo, Japan

Filed Feb. 19, 1992, Ser. No. 836,890
Claims priority, application Japan, Feb. 20, 1991, 3-045533
Int. Cl.[5] B05D *3/14*
U.S. Cl. 427—549 **11 Claims**



1. A method for manufacturing a magnetic recording medium, comprising the steps of:
   preparing a magnetic solution by dispersing ferromagnetic particles therein such that the magnetization M_H of said magnetic solution provided by a magnetic field H (Oe) having a predetermined field strength being applied thereto for one minute satisfies the following relation:

$$M_H/M_S > 2H/Hc$$

   where M_S is the saturation magnetization of said magnetic solution, Hc is the coercive force (Oe) of the ferromagnetic particles in said magnetic solution, and $Hc/5 \geqq H \geqq Hc/50$;
   continuously conveying a support;
   applying said magnetic solution to said support being continuously conveyed to form a magnetic layer thereon; and
   subjecting said magnetic layer thus formed on said support to magnetic orientation treatment and drying.

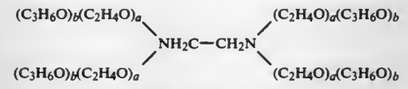
5,183,687

METHOD OF TREATING POULTRY FOR COCCIDIOSIS

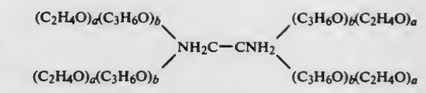
Robert L. Hunter, Tucker, Ga., assignor to Emory University, Atlanta, Ga.

Continuation of Ser. No. 107,358, Oct. 9, 1987, which is a continuation-in-part of Ser. No. 90,795, Aug. 28, 1987, abandoned, which is a continuation-in-part of Ser. No. 872,111, Jun. 13, 1986, abandoned, which is a continuation-in-part of Ser. No. 787,770, Oct. 15, 1985, abandoned, which is a continuation-in-part of Ser. No. 745,917, Jun. 18, 1985, abandoned. This application Nov. 7, 1990, Ser. No. 610,417
Int. Cl.[5] A61K *31/74*
U.S. Cl. 424—78.34 **7 Claims**

1. A method treating poultry with coccidiosis comprising the step of administering to the poultry with coccidiosis an effective amount of a biologically-active copolymer, the octablock copolymer being selected from the group consisting of an octablock copolymer having the following formula:



and an octablock copolymer having the following formula:



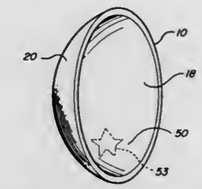
wherein:
   the mean aggregate molecular weight of the portion of the octablock copolymer represented by the polyoxypropylene is between approximately 5000 and 7000 daltons;
   a is a number such that the portion represented by polyoxyethylene constitutes between approximately 10% to 40% of the compound by weight; and
   b is a number such that the polyoxypropylene portion of the total molecular weight of the octablock copolymer constitutes between approximately 50% and 90% of the compound by weight.

5,183,688

CONVEX REFLECTIVE SIGN AND METHOD OF MAKING SAME

Paul Sorko-Ram, 1111 N. Centerville Rd., Sturgis, Mich. 49091

Continuation-in-part of Ser. No. 428,637, Oct. 30, 1989, abandoned. This application Jan. 8, 1991, Ser. No. 638,701
Int. Cl.[5] B05D *5/06*
U.S. Cl. 427—164 **5 Claims**



1. The method of creating a transparent area on an acrylic mirrored surface comprising the steps of:
   a. applying a removable mask with a desired pattern of openings therein to one surface of a two-sided transparent acrylic material;
   b. applying over said mask a water-based resist mixture comprising polyvinyl alcohol, water, isopropyl alcohol, a surfactant and cornstarch;
   c. allowing said resist mixture to dry;
   c. allowing said resist mixture to dry;
   d. removing said mask, leaving said resist;
   e. depositing a thin film of reflective material on said one surface, including said resist; and
   f. removing said resist.

5,183,689

PROCESS FOR AN IMPROVED LAMINATED OF ZNSE AND ZNS

Raymond L. Taylor, Saugus; Lee E. Burns, Woburn, and James C. MacDonald, Reading, all of Mass., assignors to CVD, Inc., Woburn, Mass.

Filed Jul. 15, 1991, Ser. No. 729,980
Int. Cl.[5] C23C *16/00, 16/22*
U.S. Cl. 427—164 **2 Claims**

1. An improved method for the preparation of an infra-red optical element by chemical vapor deposition of ZnS on a ZnSe substrate at high temperature which eliminates the curvature of the interface caused by the unequal coefficients of thermal expansion for the ZnS and ZnSe, the improvement comprising:
   establishing a heating and cooling regimen for the chemical vapor deposition;

VOL 1147 ISS 1 FE 2 1993 UMI

determining the curvature of the interface during said regimen;

imparting the negative of that curvature to the surface of the substrate destined to be in contact with the ZnS; and



coating the substrate with ZnS by chemical vapor deposition;

whereby the interface between the ZnSe and ZnS is substantially flat.

5,183,690

STARCH ENCAPSULATION OF BIOLOGICALLY ACTIVE AGENTS BY A CONTINUOUS PROCESS

Merle E. Carr, Chillicothe; William M. Doane, Morton; Robert E. Wing, Peoria, and Edward B. Bagley, Morton, all of Ill., assignors to The United States of America, as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jun. 25, 1990, Ser. No. 542,566

Int. Cl.[5] B01J *13/04;* **A29C** *47/00;* **A61K** *9/62, 9/16*

U.S. Cl. 427—213.31 **7 Claims**

1. A continuous process for imparting predetermined release properties to an encapsulated biologically active agent in a matrix of starchy material comprising the steps:

a. establishing an array of processing parameters in a process for producing said encapsulated biologically active agent by extrusion, which parameters have an effect on the release properties of the active agent from the matrix of starchy material;

b. preselecting a set of conditions defined by the parameters, which set of conditions will yield the predetermined release properties;

c. continuously blending the starchy material, the active agent, and water in an ingredient stream, wherein the starchy material is at a solids concentration of at least 40% and comprises an unmodified regular or waxy cereal, potato, or tapioca starch or a flour containing said starch, or a mixture of these starches or flours;

d. continuously extruding said ingredient stream as an extrudate; and

e. continuously recovering the extrudate;

wherein the conditions of blending, extruding, and recovering comprise said set of conditions whereby the extrudate is an encapsulated biologically active agent having the predetermined release properties.

5,183,691

PAPER COATING HEAD, APPARATUS AND METHOD

Morgan V. Hassell; Frederick J. Stephens, both of St. Austell, and Ernest J. Edwards, Kenilworth, all of England, assignors to ECC International Limited, United Kingdom

Filed Nov. 3, 1989, Ser. No. 431,459

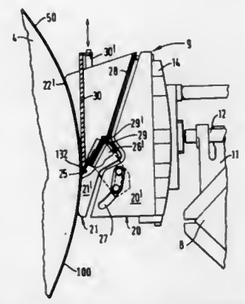
Claims priority, application United Kingdom, Nov. 4, 1988, 8825908

Int. Cl.[5] B05D *3/12, 5/00;* **B05C** *3/18, 3/20*

U.S. Cl. 427—286 **12 Claims**

2. A coating apparatus for coating the surface of a sheet material, the apparatus comprising means for moving a sheet material relatively to a coating head and in contact therewith, said coating head comprising a first body portion, securable at a predetermined spacing from the surface to be coated, a coating blade securable to the first body portion and projecting towards said surface to be coated and a second body portion resiliently mounted with respect to the first body portion and, in use, defining with the sheet material with which it is in contact and with the blade, a coating pool from which the coating composition is applied to the sheet material; and reservoir means for feeding said coating composition to said coating pool.

4. A method of coating a sheet material, the method comprising rotating the sheet material in the form of a cylinder about the axis of the cylinder and applying a coating to the sheet material by a coating head having a reservoir loaded with coating composition, the head being moved parallel to the axis



of the cylinder while the latter is rotated, thereby applying the coating composition to a helical strip portion of the cylinder of sheet material, said coating head comprising a first body portion, securable at a predetermined spacing from the surface to be coated, a coating blade securable to the first body portion and projecting towards said surface to be coated and a second body portion resiliently mounted with respect to the first body portion and, in use, defining with the sheet material with which it is in contact and with the blade, a coating pool which is fed by said reservoir and from which the coating composition is applied to the sheet material.

5,183,692

POLYIMIDE COATING HAVING ELECTROLESS METAL PLATE

Prosanto K. Mukerji, Schaumburg; Russell Mallen, Glen Ellyn; George Demet, Arlington Heights, and Harry Fuerhaupter, Villa Park, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 1, 1991, Ser. No. 724,029

Int. Cl.[5] C23C *26/00*

U.S. Cl. 427—304 **4 Claims**

1. An electroless deposition method for forming a metal-clad polyimide coating comprising

applying to a substrate a liquid film composed of an imidizable polyamic acid compound dissolved in a vaporizable solvent,

heating the liquid film at a temperature and for a time effective to imidize the compound and vaporize the solvent to to form a soft-cured polyimide film comprising between about 5 and 15 weight percent solvent,

contacting an exposed surface of the soft-cured film with an aqueous suspension of palladium-tin colloidal particles to deposit the particles onto the film surface,

treating the deposited particles dissociate the tin and produce palladium nuclei dispersed on the surface,

heating the soft-cured film at a temperature and for a time effective to vaporize the residual solvent to form a hard-cured polyimide layer, whereupon the palladium nuclei are dispersed on the surface of said hard-cured layer, and

treating the nuclei-bearing hard-cured surface with an electroless deposition solution containing a reducible metallic species selected from the group consisting of copper ions and nickel ions, and a reducing agent suitable for reducing said species in the presence of palladium nuclei to a metal state, whereupon the palladium nuclei catalyze reduction of the species to initiate deposition of metal onto the surface, said treatment continuing for a time sufficient to form a continuous metal plate tightly bonded to the hard-cured polyimide layer.

5,183,693

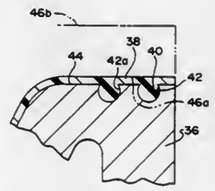
MOLD METHOD AND APPARATUS FOR STABILIZING THE LOCATION OF A SKIN INSERT

Richard D. Rhodes, Jr., Somersworth, and W. David Fredericks, Brookfield, both of N.H., assignors to Davidson Textron Inc., Dover, N.H.

Division of Ser. No. 420,382, Oct. 12, 1989, Pat. No. 5,006,288. This application Feb. 25, 1991, Ser. No. 660,044

Int. Cl.[5] B29C *33/14, 39/10;* **B32B** *3/30*

U.S. Cl. 428—34.1 **3 Claims**



1. A flexible thermoplastic mold skin insert forming the outer surface of a composite plastic article formed in a foaming mold; said foaming mold having a cavity portion with a raised outer peripheral surface with recessed openings therein and the mold cavity portion further including a depressed skin support surface located beneath the raised outer peripheral surface and wherein the skin insert is supportable on said cavity portion in a stabilized location thereon;

said skin insert having a peripheral edge portion thereon conformable to said raised outer peripheral surface; said skin insert having a first surface engageable with said cavity portion at both said raised outer peripheral surface and said depressed skin support surface and said skin insert further having a second surface adapted to be covered by form material within said foaming mold;

said skin insert having a plurality of integrally foamed retention means formed substantially perpendicular to said first surface at said peripheral edge; said retention means including a root segment joined to said first surface thereof and having a distal end spaced outwardly of said first surface only at said peripheral edge; said integrally formed retention means engageable with said recessed openings for retaining said skin insert within said cavity portion;

said skin insert having an inner portion thereon depressed with respect to said peripheral edge portion; said inner portion conformable to said cavity portion inboard of said raised outer peripheral surface and further including a transition portion joining said inner portion to said peripheral edge to provide for wrinkle free positioning of said inner portion and said transition portion on said mold cavity part and said integrally formed retention means adapted to interlock within said recessed openings to maintain said inner portion and said transition portion wrinkle free during foaming of the composite part.

5,183,694

INHIBITING CORROSION IN REINFORCED CONCRETE

Michael G. Webb, 18 Broadoak Road, Bramhall, Cheshire SK7 3BL, Great Britain

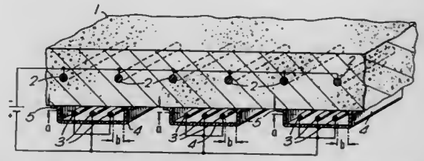
PCT No. PCT/GB89/00404, § 371 Date Oct. 19, 1990, § 102(e) Date Oct. 19, 1990, PCT Pub. No. WO89/10435, PCT Pub. Date Nov. 2, 1989

PCT Filed Apr. 19, 1988, Ser. No. 598,722

Claims priority, application United Kingdom, Apr. 19, 1988, 8809230

Int. Cl.[5] B32B *3/02*

U.S. Cl. 428—67 **19 Claims**



1. A reinforced structure of masonry or cementitious material having apparatus for inhibiting corrosion of reinforcement thereof, comprising a pattern of two or more assemblies located on a surface of the structure, each of which comprises:

(a) one or more electrodes overlaying a surface of the structure

(b) ionically conductive cementitious grouting material connecting the electrode(s) to the said surface; and

(c) a moisture-resistant cover having a moisture vapor transmission rate of less than 10^3 g mil per m^2 per 24 hours overlying the electrode(s) and the grouting material, an edge portion of which cover extends at least partly around the electrode(s) and the grouting material towards the said surface of the reinforced structure.

5,183,695

INTERIOR FINISH SURFACE MATERIAL FOR AUTOMOBILES

Shobei Masuhra, Takatsuki; Satoshi Tonoki, Suita; Toshiya Shibukawa, Atsugi, and Hirsohi Sugawara, Zushi, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka and Nissan Motor Co., Ld., Yokohama, both of, Japan

Filed Jun. 5, 1992, Ser. No. 894,473

Claims priority, application Japan, Jun. 7, 1991, 3-136493

Int. Cl.[5] B32B *3/26*

U.S. Cl. 428—151 **25 Claims**

1. An interior finish surface material for automobiles comprising a surface layer and at least one of a base layer and a foam layer provided between said surface layer and said base layer, said surface layer being made from a composition comprising (A) 100 parts by weight of a vinyl chloride resin, (B) 20 to 200 parts by weight of at least one of a plasticizer and a thermoplastic elastomer, (C) 2 to 150 parts by weight of an AMBS resin and (D) 0 to 100 parts by weight of an inorganic filler.

5,183,696

COATING OF SUBSTRATES

Martin C. Sanderson, York, England, assignor to CCL Label, Inc., Grand Rapids, Mich.

Filed May 17, 1990, Ser. No. 525,382

Claims priority, application United Kingdom, May 17, 1989, 8911354

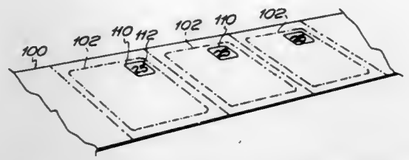
Int. Cl.[5] C09J *7/02*

U.S. Cl. 428—194 **9 Claims**

1. An improved linerless label of the type including a sheet substrate having silicone release coating on one side thereof and a pressure sensitive adhesive on the other side thereof, wherein the improvement comprises a keying coating applied

VOL
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to the release coating, at least a portion of said keying coating being outermost and exposed, said keying coating comprising a mixture of silicone low tack pressure sensitive adhesive and a solvent.

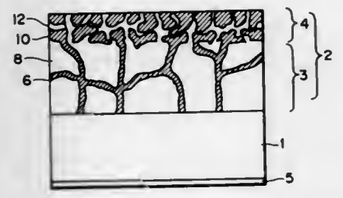


5,183,697

THERMAL IMAGE TRANSFER RECORDING MEDIUM

Youji Ide, Mishima, and Keiichi Shiokawa, Numazu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 675,679, Mar. 27, 1991, abandoned. This application May 5, 1992, Ser. No. 879,129
Claims priority, application Japan, Mar. 28, 1990, 2-77098
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—195 **20 Claims**



1. A thermal image transfer recording medium comprising a support and an ink layer formed thereon which comprises (i) a lower thermal image transfer portion located in the vicinity of the support, comprising a three-dimensional network structure of a resin with a voidage A and a thermofusible ink which is held within said network structure, and (ii) an upper thermal image transfer portion located on top of said lower thermal image transfer portion, comprising a fine porous structure of a resin with a voidage B which is smaller than the voidage A of the network structure, and a thermofusible wax component which is held within said porous structure, and said network structure being at least partially connected to both said porous structure and said support.

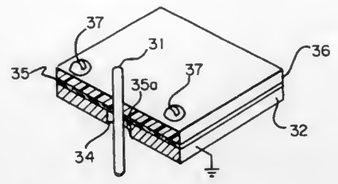
5,183,698

ELECTRICAL OVERSTRESS PULSE PROTECTION

Roger C. Stephenson, Woodland Hills, and Hugh M. Hyatt, Camarillo, both of Calif., assignors to G & H Technology, Inc., Camarillo, Calif.

Filed Mar. 7, 1991, Ser. No. 666,026
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 **26 Claims**

1. A device for protecting against high voltage electrical overstress pulses or transients, comprising a pair of electrodes having faces positioned in spaced contraposed relation to each other, wherein at least one of said electrodes includes a thin lamina of metal and said face thereof is a thin edge of the lamina, and a non-linear electrical resistance composite material, comprising semiconductive particles bound in an insulation matrix, interposed between and making electrical contact with both said contraposed faces, said composite material exhibiting a high resistance to current flow when a low voltage is applied between said electrodes and a low resistance to current flow when a high voltage is applied between said electrodes.



5,183,699

WAFER PROCESSING FILMS

Yasuo Takemura; Osamu Narimatsu, and Kazuyoshi Komatsu, all of Nagoya, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

PCT No. PCT/JP90/00967, § 371 Date Apr. 1, 1991, § 102(e) Date Apr. 1, 1991, PCT Pub. No. WO91/02377, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 30, 1990, Ser. No. 667,402
Claims priority, application Japan, Aug. 1, 1989, 1-197965
Int. Cl.[5] B32B *7/02*
U.S. Cl. 428—214 **5 Claims**

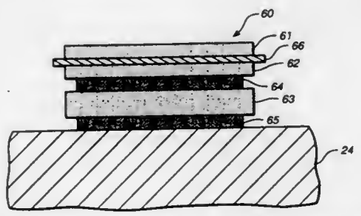
1. A wafer processing film comprising a base film, an adhesive layer provided on one surface of said base film and a polypropylene film arranged on said adhesive, layer., the surface roughness of the surface of said polypropylene film in contact with said adhesive layer being not greater than 2 μm.

5,183,700

SOLAR CONTROL PROPERTIES IN LOW EMISSIVITY COATINGS

R. Russell Austin, Novato, Calif., assignor to Viratec Thin Films, Inc., Faribault, Minn.

Filed Aug. 10, 1990, Ser. No. 565,941
Int. Cl.[5] B32B *17/06*
U.S. Cl. 428—216 **8 Claims**



1. An interference coating on a transparent substrate, comprising a first film of a transparent material having a high refractive index and an optical thickness less than about one-quarter wavelength at a wavelength between about 450 and 650 nanometers; a transparent conductive second film having a thickness between about 7 and 25 nanometers; a third film of transparent material having a high refractive index and an optical thickness less than about one-quarter wavelength at a wavelength between about 450 to 650 nanometers; a fourth film having a low refractive index and an optical thickness of about one-eighth wavelength at a wavelength between about 800 and 1100 nanometers; a fifth film having a high refractive index and an optical thickness of about one-quarter wavelength at a wavelength between about 800 and 1100 nanometers; the refractive index of said first, third and fifth films between about 1.79 and 2.7 at a wavelength of about 520 nanometers, and the refractive index of said fourth film between about 1.35 and 1.79 at a wavelength of about 520 nanometers; and wherein said first, second, third, fourth, and fifth films are numbered sequentially beginning with the film farthest from the transparent substrate.

5,183,701

ARTICLES OF HIGHLY ORIENTED POLYOLEFINS OF ULTRAHIGH MOLECULAR WEIGHT, PROCESS FOR THEIR MANUFACTURE, AND THEIR USE

Martinus J. N. Jacobs, Galeen, and Hendrikus J. J. Rutten, Maastricht, both of Netherlands, assignors to Dyneema V.O.F., Sittard, Netherlands

Continuation of Ser. No. 251,453, Sep. 30, 1988, abandoned. This application Aug. 19, 1991, Ser. No. 747,490
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1987, 3733426
Int. Cl.[5] B32B *33/00;* **C08J** *5/06;* **D06M** *10/04, 10/06*
U.S. Cl. 428—229 **12 Claims**

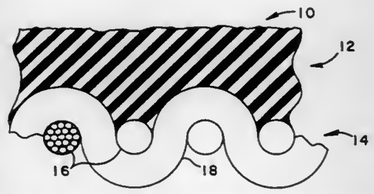
1. A polyolefin article having good wetting and adhesive properties for use in combination with matrix materials in the manufacture of composite materials, comprising highly oriented polyolefins having molecular weights greater than 600,000 g/mol, a surface of said article being subjected to a plasma treatment in the presence of reactive gases,
wherein the plasma treatment is carried out under a pressure from 0.2 to 5 mmHg, and at an energy density from 5 to 100 kW/m^3, with a residence time from 5 seconds to 200 seconds
and wherein tensile strength of the plasma treated article is not essentially modified.

5,183,702

BARRIER FABRICS

Jeffrey L. Taylor, Cincinnati, Ohio; Roy Luckenbach, Charlotte, N.C.; Michael Coco, Bridgeport, and Carl Twickler, Easton, both of Conn., assignors to Dover Corporation, New York, N.Y.

Filed Apr. 3, 1991, Ser. No. 679,735
Int. Cl.[5] B32B *7/00*
U.S. Cl. 428—266 **9 Claims**



1. A barrier fabric for use in reusable medical/surgical products, which are to be washed, dried and sterilized subsequent to each use,
said barrier fabric being functionally characterized in that it is impermeable to liquids under a pressure no less than five pounds per square inch, and
this impermeability standard is maintained after the barrier fabric has been subject to at least 75 institutional washing/sterilization cycles,
said barrier fabric comprising
a liquid impervious membrane and
a fabric substrate to which the membrane is attached,
characterized in that
the membrane is formed by a typical, cured methyl vinyl silicone polymer,
the fabric substrate is formed of tightly woven polyester yarns, which form a plurality of curved yarn portions in the form of "nubs" which define one surface of the fabric, and
the silicone membrane is attached to said one surface of the fabric substrate by a bonding mechanism comprised of
portions of the membrane conforming to and in intimate contact with a substantial portion of each of said "nubs", and
a hydrophilic surface characteristic of the portions of said "nubs", with which the membrane is in intimate contact.

5,183,703

BELT STRAP FOR SAFETY BELTS

Johann Berger, Obere Schloss-Strasse 114, D-7077 Aldorf, and Josef Berger, Schwäb. Gmünd-Grossdeinbach, both of Fed. Rep. of Germany, assignors to Johann Berger, Alfdorf, Fed. Rep. of Germany

Filed Jun. 29, 1990, Ser. No. 545,651
Claims priority, application European Pat. Off., Jun. 30, 1989, 89111896.0
Int. Cl.[5] D03D *15/00*
U.S. Cl. 428—292 **4 Claims**



1. A low friction woven belt strap for a safety belt, comprising warp threads made up of individual filaments of at least 15 dtex, said filaments of each thread being substantially parallel at various first regions of the thread but entangled together at various second regions spaced longitudinally of each thread.

5,183,704

HIGHLY MICROPOROUS 2:1 LAYERED SILICATE MATERIALS

Walter J. Bohrn; Kimberly S. Diffenbaugh; Shelly N. Garman, all of Lancaster, Pa., and Jatin C. Khanpara, St. Joseph, Mich., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Feb. 11, 1991, Ser. No. 653,177
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—305.5 **20 Claims**



1. A process for the preparation of a porous lamellar structured 2:1 layered silicate material comprising flocculating an aqueous dispersion of chemically delaminated lamellae which are selected from the group consisting of mica and vermiculite, with a cationic flocculant which gives the lamellae interlayer cations and, with the lamellae, forms a floc which has an aqueous liquid medium, contacting the floc with a displacement solvent that has at least some miscibility with the aqueous liquid medium whereby the displacement solvent mixes with and extracts the aqueous liquid medium from the floc and drying the floc to leave the lamellae arranged in a lamellar structure, further providing that the lamellae do not collapse so

VOL 1147 ISS 1 FE 2 1993 UMI

that after the displacement solvent is removed in drying the lamellar structure is left with a pore volume greater than about 60%.

5,183,705
PRESSURE-SENSITIVE ADHESIVE COMPOSITION HAVING HIGH SHEAR STRENGTH

Ronald B. Birkholz, White Bear Lake, and Mark D. Glad, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 28, 1992, Ser. No. 843,513
Int. Cl.[5] C09U *7/02*
U.S. Cl. 428—343 **26 Claims**

2. A normally tacky pressure-sensitive adhesive composition comprising:
(a) a radial teleblock copolymer of the formula:

$$(A\text{-}B)_n\text{-}Z$$

wherein
A represents a monoalkenyl arene polymer block linked to an elastomeric conjugated diene polymer block,
B represents an elastomeric conjugated diene polymer block,
n represents an integer equal to or greater than 3,
Z represents a multifunctional linking agent;
(b) a tackifying resin; and
(c) an extending oil in an amount of 5 to 20 parts by weight per hundred parts by weight of said copolymer.

22. An article comprising a substrate having on at least one major surface thereof a layer of the composition of claim 2.

5,183,706
FORMING WEB FOR LINING A RIGID CONTAINER

Solomon Bekele, Taylors, S.C., assignor to W. R. Grace & Co.-Conn., Duncan, S.C.

Filed Aug. 3, 1990, Ser. No. 562,537
Int. Cl.[5] B32B *7/12*
U.S. Cl. 428—349 **18 Claims**



1. A forming web comprising:
a) an outer sealably layer;
b) an interior barrier layer comprising a polymeric material with low oxygen transmission;
c) a polymeric layer which adds bulk to the web, said polymeric material selected from the group, consisting of polystyrene polymer and copolymer; and
d) an innermost adherent layer comprising a polymeric material selected from the group consisting of ethylene acrylic acid copolymer, ethylene methacrylic acid copolymer, tackified ethylene vinyl acetate copolymer, chemically modified ethylene ethyl acrylate copolymer, chemically modified ethylene methyl acrylate copolymer, chemically modified ethylene vinyl acetate copolymer, chemically modified linear low density polyethylene, chemically modified high density polyethylene, chemically modified low density polyethylene, and chemically modified polypropylene; said adherent layer capable of bonding to a paperboard or other container, or to other thermoplastic materials.

5,183,707
INDIVIDUALIZED, POLYCARBOXYLIC ACID CROSSLINKED FIBERS

Carlisle M. Herron, and David J. Cooper, both of Memphis, Tenn., assignors to The Procter & Gamble Cellulose Company, Memphis, Tenn.

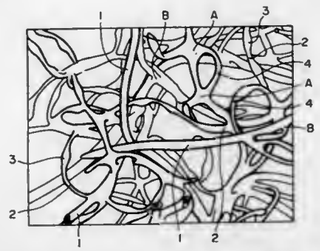
Continuation-in-part of Ser. No. 432,648, Nov. 7, 1989, abandoned. This application Oct. 17, 1990, Ser. No. 596,605
Int. Cl.[5] D21H *11/20;* **D21C** *9/00*
U.S. Cl. 428—364 **13 Claims**

1. Individualized, crosslinked wood pulp cellulosic fibers, said fibers comprising cellulosic fibers in substantially individual form having an effective amount of a C_2–C_9 polycarboxylic acid crosslinking agent reacted with said fibers in intrafiber ester crosslink bond form, wherein said crosslinked fibers have a water retention value of from about 28 to about 60, and wherein said C_2–C_9 polycarboxylic acid crosslinking agent is selected from the group consisting of:
(a) aliphatic and alicyclic C_2–C_9 polycarboxylic acids either olefinically saturated or unsaturated and having at least three carboxyl groups per molecule; and
(b) aliphatic and alicyclic C_2–C_9 polycarboxylic acids having two carboxyl groups per molecule and having a carbon-carbon double bond located alpha, beta to one or both of the carboxyl groups,
wherein one carboxyl group in said C_2–C_9 polycarboxylic acid crosslinking agent is separated from a second carboxyl group by either two or three carbon atoms.

5,183,708
CUSHION STRUCTURE AND PROCESS FOR PRODUCING THE SAME

Makoto Yoshida, Ibaraki; Hironori Yamada, Matsuyama; Nobuo Takahashi, Ikoma, and Kazushi Fujimoto, Matsumoto, all of Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP91/00703, § 371 Date Jan. 23, 1992, § 102(e) Date Jan. 23, 1992, PCT Pub. No. WO91/19032, PCT Pub. Date Dec. 12, 1991
PCT Filed May 27, 1991, Ser. No. 809,524
Claims priority, application Japan, May 28, 1990, 2-135346
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—373 **30 Claims**

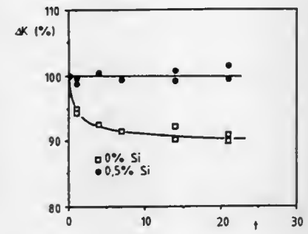


1. A cushion structure comprising an aggregate of non-elastomeric, crimped polyester staple fiber as the matrix and having a density of 0.005 to 0.10 g/cm^3 and a thickness of at least 5 mm, which is characterized in that the aggregate contains, as dispersed and mixed therein, an elastomeric conjugated fiber composed of a thermoplastic elastomer having a melting point lower than that of the polyester polymer constituting the staple fibers, by at least 40° C. and a non-elastomeric polyester, the former being exposed at least at the fiber surface, in which cushion structure
(A) amebic, all-directionally flexible heat-bonded spots formed by mutual heat fusion of said elastomeric conjugated fibers at their crossing points,
and
(B) semi-all-directionally flexible heat-bonded spots formed by heat fusion of said elastomeric conjugated fibers with said non-elastomeric polyester staple fibers at their crossing points,
are present scatteringly and in the elastomeric conjugated fiber present between any two adjacent, flexible heat-bonded spots, some of the conjugated fibers have at least one thick portion in the longitudinal direction.

5,183,709
ACICULAR COBALT-MODIFIED IRON OXIDES AND THEIR PREPARATION

Ekkehard Schwab, Neustadt; Ronald J. Veitch, Ludwigshafen, and Helmut Auweter, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 21, 1990, Ser. No. 507,765
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1989, 3912976
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—404 **2 Claims**



1. An acicular, cobalt-modified iron oxide consisting of a core of an iron oxide of the formula FeO_x where x is from 1.33 to 1.5 and ferrite shell which contains a total amount of from 0.4 to 12% by weight of cobalt ions and not more than 5% by weight of iron(II) ions, the percentages being based on the total amount of the material, wherein this cobalt-modified iron oxide has an alkali metal silicate adsorbed on its surface and an isoelectric point corresponding to pH≦6.5 and the coercive force decreases by less than 5% after storage in air for 21 days at 50° C.

5,183,710
HYDROPHOBIC INORGANIC MATERIALS AND PROCESS FOR MAKING SAME

Anthony J. Gerbino, Homer, N.Y., assignor to U-SUS Distributors, Inc., Scottsdale, Ariz.

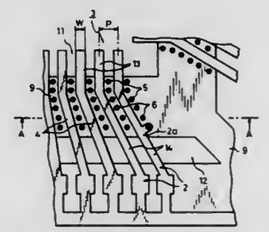
Continuation-in-part of Ser. No. 575,239, Aug. 30, 1990, abandoned. This application Apr. 23, 1991, Ser. No. 690,009
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—405 **24 Claims**

16. A hydrophobic inorganic material, comprising an inorganic substrate, a siloxane bonding agent chemically bonded to said substrate at least by Substrate—O—Si bonds, and a hydrophobic silica, said siloxane bonding agent being chemically bonded to said hydrophobic silica at least by Si—O—Si bonds.

5,183,711
AUTOMATIC BONDING TAPE USED IN SEMICONDUCTOR DEVICE

Norio Wada; Katsuya Fukase, and Hirofumi Uchida, all of Nagano, Japan, assignors to Shinko Electric Industries Co., Ltd., Nagano, Japan

Continuation of Ser. No. 450,067, Dec. 13, 1989, Pat. No. 5,087,530. This application May 28, 1991, Ser. No. 706,155
Claims priority, application Japan, Dec. 13, 1988, 63-314400
The portion of the term of this patent subsequent to Feb. 11, 2009, has been disclaimed.
Int. Cl.[5] H01L *23/495, 23/498*
U.S. Cl. 428—596 **9 Claims**



1. A tape for manufacturing high-frequency semiconductor devices, which tape comprises:
a flexible insulative film;
a plurality of electrically conductive circuit patterns formed on first areas of a first surface of said insulative film for transmitting high-frequency signals, at least one of said conductive circuit patterns being used as a ground connecting line;
a plurality of holes formed in second, other areas of the insulative film, each of said holes having an inner peripheral wall;
a metallic ground layer formed on a second surface of said insulative film opposite to said first surface; and
electrically conductive material formed on the inner peripheral walls of said holes or filled in said holes to prevent crosstalk between said circuit patterns, said ground layer being electrically connected to said respective conductive material and also electrically connected to said ground connecting line.

5,183,712
BATTERY HAVING RESERVE CELL AND THREE OR MORE TERMINALS

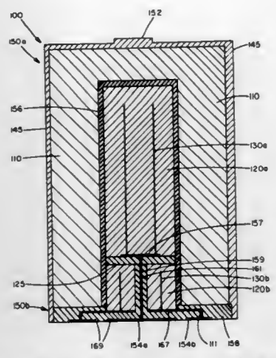
Donald T. Beldock, 50 E. 72nd St., Apt. 13A, New York, N.Y. 10021-4246, and Paul P. Craig, Martinez, Calif., assignors to Donald T. Beldock, New York, N.Y.

Continuation-in-part of Ser. No. 649,907, Feb. 4, 1991. This application Jun. 10, 1991, Ser. No. 712,951
Int. Cl.[5] H01M *12/00, 2/10*
U.S. Cl. 429—9 **32 Claims**

1. A sealed battery, comprising:
a) cathodic and anodic materials in proximity with each other, with at least one of said cathodic and anodic materials being divided into primary and reserve portions;
b) isolation means adjacently contacting said primary and reserve portions for isolating said primary and reserve portions;
c) a membrane through which ions can flow, said membrane separating said cathodic and anodic materials; and
d) first, second, and third terminals, wherein one of said cathodic and anodic materials is coupled to said first terminal, the primary portion of the other of said cathodic and anodic materials is coupled to said second terminal,

VOL
1147
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and the secondary portion of the other of said cathodic and anodic materials is coupled to said third terminal, and

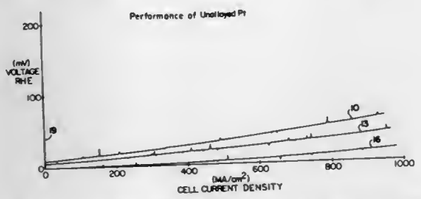


wherein said first and second terminals are located on opposed ends of said sealed battery.

5,183,713
CARBON MONOXIDE TOLERANT PLATINUM-TANTALUM ALLOYED CATALYST

Harold R. Kunz, Vernon, Conn., assignor to International Fuel Cells Corporation, South Windsor, Conn.

Filed Jan. 17, 1991, Ser. No. 642,629
Int. Cl.[5] H01M *4/92*
U.S. Cl. 429—44 **10 Claims**



4. A fuel cell, said fuel cell comprised of a cathode with a cathode catalyst, an anode, and a phosphoric acid electrolyte disposed therebetween, a cathode chamber on the nonelectrolyte side of the cathode, an anode chamber on the nonelectrolyte side of the anode, wherein the improvement comprises a binary platinum-tantalum alloyed anode catalyst which comprises about 2 wt % to about 50 wt % platinum to support, and about 2 atom % to about 10 atom % tantalum with said platinum, on an electrically conductive support.

5,183,714
BATTERY CASING

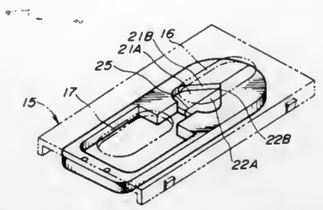
Hidero Mitsui, Kanagawa; Naoki Kamaya, Tokyo; Hiroaki Itoh, and Yuu Sasaki, both of Chiba, all of Japan, assignors to Sony Corporation, Japan

Filed Sep. 19, 1991, Ser. No. 762,405
Claims priority, application Japan, Oct. 9, 1990, 2-272028
Int. Cl.[5] H01M *10/38*
U.S. Cl. 429—123 **8 Claims**

1. A battery casing for attachment on an electric equipment having positive and negative terminal rods, said battery casing comprising:

positive and negative terminal plates exposed for connection to said respective terminal rods when said battery casing is attached on said electric equipment; and

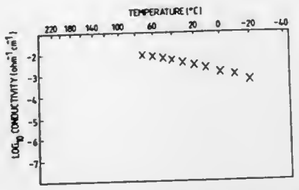
means for covering at least one of said terminal plates, said covering means operating in response to movement of the corresponding one of said terminal rods during the course of attachment of said battery casing on said electric equipment so as to uncover said one terminal plate to permit said one terminal rod to come into contact with said one terminal plate.



5,183,715
SOLID STATE CELL ELECTROLYTE

John M. North, Compton, United Kingdom, assignor to Gould Electronics Limited and Dowty Electronic Components Limited, Eastlake, Ohio

Continuation of Ser. No. 642,136, Jan. 15, 1991, Pat. No. 5,085,952, which is a continuation of Ser. No. 421,085, Oct. 13, 1989, abandoned, which is a continuation of Ser. No. 151,152, Feb. 1, 1988, abandoned. This application Nov. 15, 1991, Ser. No. 792,691
Claims priority, application United Kingdom, Feb. 18, 1987, 8703736; Aug. 26, 1987, 8720140
Int. Cl.[5] H01M *6/14*
U.S. Cl. 429—192 **5 Claims**



1. A solid state electrochemical cell comprising a lithium-containing anode, a cathode, and a solid polymer electrolyte comprising a complex of poly(ethylene oxide) associated with a mixture consisting essentially of ethylene carbonate and propylene carbonate and a lithium salt which is capable of conducting lithium ions and wherein the solid polymer electrolyte remains in the amorphous form at a lower temperature than a solid polymer electrolyte containing the same components but without any propylene carbonate.

5,183,716
ALL SOLID-STATE BATTERY

Yoshifumi Nakacho; Akiyoshi Inubushi, and Yuji Tada, all of Tokushima, Japan, assignors to Otsuka Kagaku Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP90/00208, § 371 Date Feb. 21, 1990, § 102(e) Date Feb. 21, 1990, PCT Pub. No. WO90/10315, PCT Pub. Date Sep. 7, 1990
PCT Filed Feb. 21, 1990, Ser. No. 598,650
Claims priority, application Japan, Feb. 22, 1989, 1-44327
Int. Cl.[5] H01M *10/40*
U.S. Cl. 429—192 **4 Claims**

1. A solid-state battery comprising a positive electrode, a negative electrode, and a solid electrolyte represented by

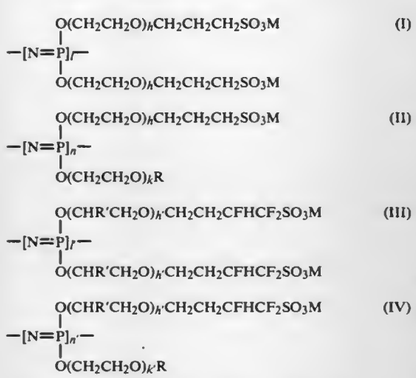
$$[A]_u.(\{[N=P(Z)_2].(MX)_v\}_w)$$

wherein

a) A is a single ionic polymer is at least one of

i) an oligoethylene oxypolyphosphazene compound having a sulfone group or

ii) an oligoalkylene oxypolyphosphazene compound having a fluoroalkylsulfone group, the respective oxypolyphosphazenes having a structure represented by one of formulas (I), (II), (III), and (IV):



R is one or a combination of methyl, ethyl and propyl, R′ is hydrogen or methyl, h and k, or h′ and k′ are each the average number of repeating ethyleneoxy units or alkyleneoxy units and are each a real number in the range of $0 \leqq h \leqq 20$, $0 \leqq k \leqq 20$, $0 \leqq h' \leqq 20$, $0 \leqq k' \leqq 20$, and l, n, l′ and n′ are each an integer of 0 or greater and in the range of $3 \leqq l+n+l'+n' \leqq 200{,}000$;

b) Z is a group represented by $Y—(OCH_2CH_2)_y—O—$ wherein Y is one or a combination of methyl, ethyl and propyl, and y is a real number in the range of $1 \leqq y \leqq 30$;

c) M is an element selected from the main group and subgroup of Groups I and II, transition metals from Groups III to VIII, and lanthanide;

d) X is at least one anion selected from the group consisting of $CF_3SO_3^-$, ClO_4^-, BF_4^-, AsF_6^-, PF_6^-;

e) u is the ratio of [A] to $\{[N=P(Z)_2].(MX)_v\}_w$ and is a real number in the range of $0 < u \leqq 5$;

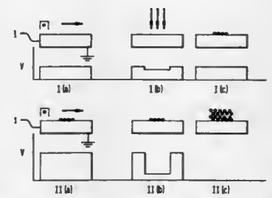
f) v is the ratio of (MX) to $[N=P(Z)_2]$ and is a real number of $0.001 \leqq v \leqq 5$; and

g) w is an integer in the range of $3 \leqq w \leqq 200{,}000$.

5,183,717
FIELD-ENHANCED CHARGE INJECTION AMPLIFICATION

John W. May, Rochester, and Anujit Mukherjee, Pittsford, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 3, 1990, Ser. No. 562,347
Int. Cl.[5] G03G *12/22*
U.S. Cl. 430—97 **8 Claims**



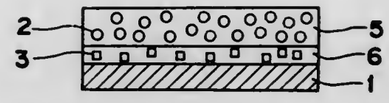
1. A method of amplifying a weak electrostatic image which electrostatic image is obtained by uniformly charging a photoconductive imaging member to a first potential of a first polarity, and imagewise exposing said imaging member to a low level of radiation, said amplification method comprising:

applying a charge injecting toner to said imaging member to create a toner image defined by said electrostatic image, without fusing or otherwise treating said toner image to reduce the charge on said imaging member, charging said imaging member with a charge of the same polarity as the first polarity, but of sufficiently higher voltage than the original charge placed on the imaging member to create an amplified electrostatic image created by charge injection of the charge into said imaging member through said unfused toner image, said amplified electrostatic image having charge of higher potential in areas of less toner and charge of lower potential in areas of more toner.

5,183,718
PHOTOSENSITIVE MEMBER COMPRISING SPECIFIC DISTYRYL COMPOUND

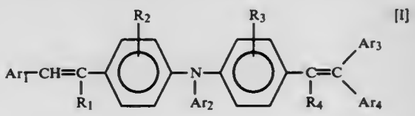
Hideaki Ueda, Kawanishi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 600,720, Oct. 22, 1990, abandoned. This application Jun. 18, 1992, Ser. No. 899,596
Claims priority, application Japan, Oct. 23, 1989, 1-275443; Jun. 27, 1990, 2-170781
Int. Cl.[5] G03G *5/047, 5/09*
U.S. Cl. 430—59 **18 Claims**



1. A photosensitive member comprising an electrically conductive substrate; and

a photosensitive layer formed on or over the substrate and comprising a charge generating material and a distyryl compound represented by the general formula [I]



[I]

in which

Ar_1 is a hydrogen atom, an alkyl group, an aralkyl group, an alkenyl group, an alkynyl group, or a heterocyclic group, wherein the aryl group and the heterocyclic group may have a substituent;

Ar_2 is an alkyl group, an aralkyl group or an aryl group, each of which may have a substituent;

Ar_3 and Ar_4 are independently an alkyl group, an aryl group, an aralkyl group or a heterocyclic group, each of which may have a substituent;

R_1 and R_4 are a hydrogen atom, an alkyl group, an aryl group, an aralkyl group;

R_2 and R_3 are a hydrogen atom, an alkyl group, an alkoxy group or a halogen atom.

2. A photosensitive member of claim 1, wherein the photosensitive layer comprises a charge transporting layer comprising said distyryl compound and a charge generating layer comprising said charge generating material.

VOL
1147
ISS
1
FE
2
1993
UMI

5,183,719

ELECTROPHOTOGRAPHIC MATERIAL HAVING AN AMORPHOUS SILICON PHOTOCONDUCTIVE LAYER, AN INTERMEDIATE LAYER AND A SURFACE LAYER

Shigeru Yagi; Yuzuru Fukuda; Taketoshi Higashi, and Masaki Yokol, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 31, 1991, Ser. No. 738,520
Claims priority, application Japan, Aug. 1, 1990, 2-202495
Int. Cl.[5] G03G *5/14*
U.S. Cl. 430—66 **10 Claims**

1. An electrophotographic photoreceptor comprising an electrically conductive substrate having thereon at least a photoconductive layer and a surface layer wherein the photoconductive layer is made mainly of amorphous silicon containing hydrogen and the surface layer is made of a high molecular weight binder with an electrically conductive metal oxide powder dispersed therein, and at least one intermediate layer between the photoconductive layer and the surface layer made mainly of a material containing hydrogen wherein the material is amorphous silicon carbide, amorphous silicon nitride, amorphous silicon oxide or amorphous carbon.

5,183,720

ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Eiichi Kato, and Kazuo Ishii, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

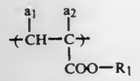
Filed Jul. 20, 1990, Ser. No. 555,017
Claims priority, application Japan, Jul. 21, 1989, 1-189245
Int. Cl.[5] G03G *9/00*
U.S. Cl. 430—96 **12 Claims**

1. An electrophotographic light-sensitive material comprising a support having provided thereon at least one photoconductive layer containing an inorganic photoconductive substance and a binder resin, wherein the binder resin comprises (A) at least one resin having a weight average molecular weight of from 1×10^3 to 2×10^4 and containing not less than 30% by weight of a copolymerizable component corresponding to a repeating unit represented by the general formula (I) described below and from 0.5 to 20% by weight of a copolymerizable component having at least one acidic group selected from the group consisting of $-PO_3H_2$, $-SO_3H$, $-COOH$, $-OH$,



(wherein R represents a hydrocarbon group or $-OR'$ (wherein R' represents a hydrocarbon group)) and a cyclic acid anhydride-containing group;

(I)



wherein a_1 and a_2 each represents a hydrogen atom, a halogen atom, a cyano group or a hydrocarbon group; and R_1 represents a hydrocarbon group; and (B) at least one copolymer having a weight average molecular weight of from 5×10^4 to 1×10^6 and comprising at least a monofunctional macromonomer (M) having a weight average molecular weight of not more than 2×10^4 and a monomer represented by the general formula (V) described below, the macromonomer (M) comprising at least one polymerizable component corresponding to a repeating unit represented by the general formulae (IVa) and (IVb) described below, and at least one polymerizable component containing at least one acidic group selected from $-COOH$, $-PO_3H_2$, $-SO_3H$, $-OH$,

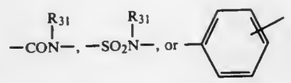


(wherein R_0 represents a hydrocarbon group or $-OR_0'$ (wherein R_0' represents a hydrocarbon group)), —CHO, and an acid anhydride-containing group, and the macromonomer (M) having a polymerizable double bond group represented by the general formula (III) described below bonded to only one terminal of the main chain of the polymer;

(III)

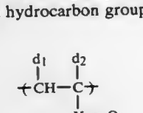


wherein X_0 represents $-COO-$, $-OCO-$, $-CH_2OCO-$, $-CH_2COO-$, —O—, $-SO_2-$, —CO—, —CONHCOO—, —CONHCONH—,

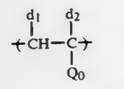


(wherein R_{31} represents a hydrogen atom or a hydrocarbon group), and c_1 and c_2, which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group, $-COO-Z_1$ or $-COO-Z_1$ bonded via a hydrocarbon group (wherein Z_1 represents a hydrogen atom or a hydrocarbon group which may be substituted);

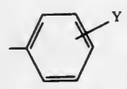
(IVa)



(IVb)

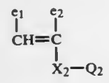


wherein X_1 has the same meaning as X_0 in the general formula (III); Q_1 represents an aliphatic group having from 1 to 18 carbon atoms or an aromatic group having from 6 to 12 carbon atoms; d_1 and d_2, which may be the same or different, have the same meaning as c_1 and c_2 in the general formula (III); and Q_0 represents —CN, $-CONH_2$, or



(wherein Y represents a hydrogen atom, a halogen atom, an alkoxy group or $-COOZ_2$ (wherein Z_2 represents an alkyl group, an aralkyl group, or an aryl group));

(V)



wherein X_2 has the same meaning as X_1 in the general formula (IVa); Q_2 has the same meaning as Q_1 in the general formula (IVa); and e_1 and e_2, which may be the same or different, have the same meaning as c_1 and c_2 in the general formula (III).

5,183,721

ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Eiichi Kato, and Kazuo Ishii, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 20, 1990, Ser. No. 495,953
Claims priority, application Japan, Mar. 20, 1989, 1-69011; Apr. 14, 1989, 1-93144
Int. Cl.[5] G03G *5/00*
U.S. Cl. 430—96 **8 Claims**

1. An electrophotographic light-sensitive material comprising a support having provided thereon a photoconductive layer containing at least inorganic photoconductive particles and a binder resin, wherein the binder resin comprises a graft-type copolymer formed from at least a monofunctional macromonomer (M) having a weight average molecular weight of not more than 2×10^4 and a monomer represented by the following formula (III), said macromonomer (M) comprising at least one polymer component represented by the following formulae (IIa) and (IIb) and at least one polymer component containing at least one polar group selected from —COOH, $-PO_3H_2$, $-SO_3H$, —OH, and

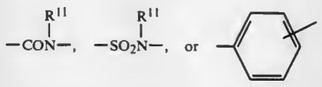


(wherein R^1 represents a hydrocarbon group or $-OR^2$ (wherein R^2 represents a hydrocarbon group)), and said macromonomer (M) having a polymerizable double bond group represented by the following formula (I) bonded to only one terminal of the main chain of the polymer;

(I)

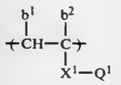


wherein X^o represents $-COO-$, $-OCO-$, $-CH_2OCO-$, $-CH_2COO-$, —O—, $-SO_2-$, —CO—,



(wherein R^{11} represents a hydrogen atom or a hydrocarbon group), and a^1 and a^2, which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group, $-COO-Z^1$ or $-COO-Z^1$ bonded via a hydrocarbon group (wherein Z^1 represents a hydrogen atom or a hydrocarbon group which may be substituted);

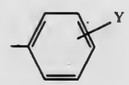
(IIa)



(IIb)

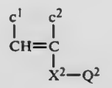


wherein X^1 has the same meaning as X^o in formula (I); Q^1 represents an aliphatic group having from 1 to 18 carbon atoms or an aromatic group having from 6 to 12 carbon atoms; b^1 and b^2, which may be the same or different have the same meaning as a^1 and a^2 in formula (I); and V represents —CN, $-CONH_2$, or



wherein Y represents a hydrogen atom, a halogen atom, an alkoxy group or $-COOZ^2$ (wherein Z^2 represents an alkyl group, an aralkyl group, or an aryl group));

(III)



wherein X^2 has the same meaning as X^o in formula (I); Q^2 has the same meaning as Q^1 in formula (IIa); and c^1 and c_2, which may be the same of different, have the same meaning as a^1 and a^2 in formula (I).

5,183,722

POSITIVE PHOTOSENSITIVE COMPOSITION FOR FORMING LENSES CONTAINING 1,2-NAPHTHOQUINONE DIAZIDE SULFONATE PHOTOSENSITIZER, ALKALI-SOLUBLE RESIN AND THERMOSETTING AGENT AND PROCESS FOR PRODUCING THE COMPOSITION

Yoshitaka Tsutsumi, Kudamatsu; Teruhisa Uemura, and Masazumi Hasegawa, both of Shinnanyo, all of Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Filed Nov. 30, 1990, Ser. No. 620,002
Claims priority, application Japan, Dec. 1, 1989, 1-310512
Int. Cl.[5] G03F *7/023;* **G03C** *1/61*
U.S. Cl. 430—169 **8 Claims**

1. A positive photosensitive composition for forming lenses, which comprises in admixture a polymer in an amount effective to maintain transparency when said lenses are heated again after being molded, a photosensitive agent in a photosensitizing effective amount, a thermosetting agent in an amount effective to impart heat resistance and solvent resistance to said lenses, and an amount of a solvent sufficient to at least dissolve the polymer, photosensitive agent and thermosetting agent, wherein said polymer is an alkali-soluble resin having an aromatic ring component and a carboxylic acid component partially modified by esterification or amidification, a vinyl phenol polymer or a hydrogenated vinyl phenol polymer having hydroxyl groups modified by alkylation, acylation or sulfonylation, or a novolak polymer or a hydrogenated novolak polymer having hydroxyl groups modified by alkylation, acylation or sulfonylation, said photosensitive agent is a 1,2-naphthoquinone diazide sulfonate and said thermosetting agent is a thermosetting agent capable of imparting heat resistance and solvent resistance at the time of forming lenses by heat treatment.

VOL 1147 ISS 1 FE 2 1993 UMI

5,183,723

COLORED IMAGE ON A DEGRADABLE SHEET MATERIAL AND METHOD OF FORMATION

Stephan J. W. Platzer, Califon; Arthur E. Procter, Long Valley, both of N.J., and Thomas Dunder, Chapel Hill, N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Division of Ser. No. 260,785, Oct. 21, 1988, Pat. No. 5,100,757.
This application Dec. 13, 1991, Ser. No. 807,290
Int. Cl.[5] C03F *7/021, 7/023, 7/032;* **G03C** *5/18*
U.S. Cl. 430—160 **22 Claims**

1. A photosensitive article which comprises a colored image on a degradable sheet material, said article prepared by

a. providing a receiver sheet composite formed by adhering two self-supporting, transparent, heat, pressure and developer resistant polymeric films having transparent, pressure or heat sensitive adhesive layers on only one side of the polymeric films to opposite sides of a degradable sheet material via the adhesive layers; and

b. providing a photosensitive element which comprises in order:

i) a substrate having a release surface; and

ii) a photosensitive layer on said release surface, which photosensitive layer comprises a light sensitive component selected from the group consisting of negative working, polymeric diazonium compounds or positive working quinone diazide compounds or photopolymerizable compositions in an amount sufficient to photosensitive the layer; and a resinous binder composition in an amount sufficient to bind the layer components into a uniform film; and at least one colorant in an amount sufficient to uniformly color the layer; and

iii) an optional, nonphotosensitive, colorless adhesive layer directly adhered to said colored photosensitive layer, which adhesive layer has a softening point in the range of from about 60° C. to about 180° C.; and

c. either

i) laminating said photosensitive element with heat and pressure via said photosensitive or adhesive layer of the photosensitive element to one side of said receiver sheet composite; and removing said substrate by the application of peeling forces; and imagewise exposing said photosensitive layer to actinic radiation to thereby produce image areas in either the exposed or unexposed areas and oppositely non-image areas in either the unexposed or exposed areas; or

ii) imagewise exposing said photosensitive layer to actinic radiation to thereby produce image areas in either the exposed or unexposed areas and oppositely non-image areas in either the unexposed or exposed areas; and laminating said photosensitive element with heat and pressure via said photosensitive or adhesive layer of the photosensitive element to one side of said receiver sheet composite; and removing said substrate by the application of peeling forces; or

iii) laminating said photosensitive element with heat and pressure via said photosensitive or adhesive layer of the photosensitive element to one side of said receiver sheet composite; and imagewise exposing said photosensitive layer to actinic radiation to thereby produce image areas in either the exposed or unexposed areas and oppositely nonimage areas in either the unexposed or exposed areas; and removing said substrate by the application of peeling forces; and thereafter

d. removing the nonimage areas of said photosensitive layer produced in step (c) with a liquid developer, which removing is conducted at a temperature at which said photosensitive element is substantially nontacky; wherein the image areas are in the exposed areas and the non-image areas are in the unexposed areas when the light sensitive component is a negative working, polymeric diazonium compound or a photopolymerizable composition, and the image areas are in the unexposed areas and the non-image areas are in the exposed areas when the light sensitive component is a positive working quinone diazide compound; and thereafter

e. optionally repeating steps (b) through (d) at least once whereby another photosensitive element produced according to step (b) having at least one different colorant is laminated onto the nonremoved image portions of the previously processed photosensitive layer or layers on the receiver sheet composite; and

f. optionally repeating steps (b) through (e) with other photosensitive elements produced according to step (b) which are laminated, exposed, and developed on the other side of the receiver sheet composite.

5,183,724

METHOD OF PRODUCING A STRIP OF LEAD FRAMES FOR INTEGRATED CIRCUIT DIES IN A CONTINUOUS SYSTEM

Frank J. Johnson, Santa Cruz, Calif., assignor to Amkor Electronics, Inc., West Chester, Pa.

Filed Dec. 18, 1990, Ser. No. 629,440
Int. Cl.[5] G03C *5/00;* **H01L** *21/60*
U.S. Cl. 430—312 **12 Claims**

11. A continuous method for producing a strip of lead frames for integrated circuit dies, comprising

feeding continuously a strip of platable material for making a strip of lead frames so that the strip serves as a substrate having upper and lower faces,

cleaning and preparing the substrate for plating with copper,

plating both faces of the substrate with copper in a continuous manner to a thickness of 5 to 10 microinches,

selectively silver plating the upper faces of the substrate to a thickness of 100 to 150 microinches,

simultaneously laminating both faces of the substrate with a photosensitive film,

exposing selected portions of the film to high intensity light and developing the exposed film which is retained on the strip as a resist film and washing away the unexposed, undeveloped film to reveal the outlines of a mini strip of six lead frames,

removing any exposed silver from the substrate,

removing the exposed area of the substrate by etching the substrate in FeC_{13},

stripping any silver edges overhanging,

removing the resist film,

removing any exposed copper plating from the substrate and retaining any copper covered by the silver plating,

rinsing the substrate clean and air drying it, and

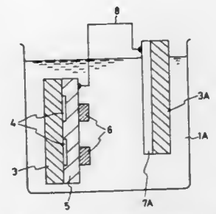
taping, downsetting, cutting and packing the substrate into mini strips of six lead frames.

5,183,725

ELECTRODE PATTERN FORMING METHOD

Hiromi Nishino; Keiji Tarui, both of Kitakatsuragi; Hideyuki Toyoshi, Tenri, and Tatsuo Morita, Souraku, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 1, 1990, Ser. No. 592,443
Claims priority, application Japan, Oct. 3, 1989, 1-259857; Nov. 22, 1989, 1-303772
Int. Cl.[5] G03F *7/00*
U.S. Cl. 430—313 **22 Claims**



1. An electrode pattern forming method comprising the steps of:

forming a primary transparent conductive film and an auxiliary transparent conductive film on first and second substrates, respectively;

covering said primary transparent conductive film with an aluminum film;

forming a photoresist on said aluminum film;

exposing said photoresist;

developing said photoresist by electrically connecting said primary film and said auxiliary film and immersing said first substrate and a portion of said second substrate in an electrolyte to prevent corrosion of said primary film and to form a photoresist pattern; and

etching said aluminum film using said photoresist pattern as a mask.

5,183,726

LIGHT-SENSITIVE RECORDING MEDIUM AND PROCESS FOR PRODUCING SAME

Hitoshi Taniguchi, and Fumio Matsui, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 12, 1991, Ser. No. 654,445
Claims priority, application Japan, Sep. 4, 1990, 2-233930
Int. Cl.[5] G11B *7/24*
U.S. Cl. 430—342 **5 Claims**

1. A light-sensitive recording medium comprising a substrate and a recording layer formed thereon, wherein said recording layer contains a photochromic material capable of cis-trans isomerization upon irradiation with light, and not more than 50 mol % of the photochromic material has a trans configuration when the recording layer is in a color-disappearing state which is formed by irradiating the recording layer with light having a wavelength of 360 to 460 nm to cause coloration of the recording layer and then irradiating the recording layer with light having a wavelength of 500 to 600 nm to cause color disappearance in the recording layer.

5,183,727

COLOR PHOTOGRAPHIC RECORDING MATERIAL PROCESSING

Eric R. Schmittou, and Allan F. Sowinski, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 19, 1991, Ser. No. 747,895
Int. Cl.[5] G03C *5/38*
U.S. Cl. 430—372 **7 Claims**

1. An image forming process for a color negative recording material comprising a support and at least one silver halide emulsion imaging unit sensitive to a region of the electromagnetic spectrum, said unit containing a dye-forming coupler, and at least one high tabularity silver halide emulsion sensitive to light, wherein:

a) said unit contains from about 0.2 to 3.0 g/m^2, based on silver, of a silver halide emulsion in which greater than 50% of the projected surface area is provided by tubular grains having a tabularity between 50 and 25,000;

b) said unit has an iodide content between 0 and 40 mole percent;

c) said color recording material has a silver halide content of less than about 7.0 g/m^2, based on silver;

d) said color recording material has an iodide content of less than about 0.35 g/m^2;

e) said color recording material has a positive contrast of 0.9 or less when the recording material is exposed and processed;

said process comprising subjecting said color negative recording material to color development and subsequently fixing the developed material in a fixer bath which has a thiosulfate concentration from about 0.05 to about 3.0 molar and has an ammonium concentration of 0.0 to about 1.2 molar.

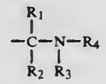
5,183,728

PHOTOGRAPHIC SILVER HALIDE MATERIALS AND PROCESS COMPRISING NEW PYRAZOLOAZOLE COUPLERS

Robert F. Romanet, and Teh-Hsuan Chen, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 297,459, Jan. 13, 1989, abandoned, which is a continuation of Ser. No. 23,518, Mar. 9, 1987, abandoned. This application Sep. 12, 1990, Ser. No. 580,978
Int. Cl.[5] G03C *7/32*
U.S. Cl. 430—386 **17 Claims**

1. A photographic element comprising a support, at least one photographic silver halide emulsion and a photographic pyrazoloazole coupler having substituted on the azole ring of the coupler a group represented by the structure:



wherein:

R_1 and R_2 are individually hydrogen, unsubstituted or substituted alkyl or unsubstituted or substituted aryl;

R3 and R4 are individually hydrogen, unsubstituted or substituted alkyl, unsubstituted or substituted aryl, or



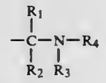
wherein at least one of R_3 and R_4 is alkyl, aryl or



R_5 is unsubstituted or substituted alkyl, unsubstituted or substituted aryl, or NH—R_6; and

R_6 is unsubstituted or substituted alkyl or unsubstituted or substituted aryl and wherein the photographic silver halide emulsion is a silver bromoiodide emulsion.

9. A process of forming a photographic image which comprises developing an exposed silver halide emulsion layer with a color developing agent in the presence of a photographic pyrazoloazole coupler wherein the pyrazoloazole coupler has substituted on the azole ring of the coupler a group represented by the formula:



wherein:

R_1 and R_2 are individually hydrogen, unsubstituted or substituted alkyl, or unsubstituted or substituted aryl;

R_3 and R_4 are individually hydrogen, unsubstituted or substituted alkyl, unsubstituted or substituted aryl, or



wherein at least one of R_3 and R_4 is alkyl or aryl or



R_5 is unsubstituted or substituted alkyl, or NH—R_6; and

VOL
1147
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R_6 is unsubstituted or substituted alkyl, or unsubstituted or substituted aryl and further wherein said silver halide emulsion layer is a silver bromoiodide emulsion layer.

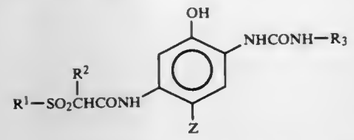
5,183,729
METHOD FOR FORMING COLOR IMAGE

Hideki Naito; Shigeki Yokoyama, and Jiro Tsukahara, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 29, 1991, Ser. No. 677,252
Claims priority, application Japan, Mar. 12, 1990, 2-153629; Mar. 30, 1990, 2-85620; Jan. 31, 1991, 3-31637
Int. Cl.[5] G03C *7/30, 7/34*
U.S. Cl. 430—385 **21 Claims**

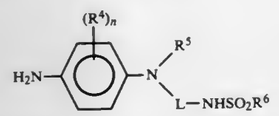
1. A method for forming a color image, which comprises imagewise exposing to light and then developing a silver halide color photographic material having at least one layer containing a cyan coupler represented by the following formula (I):

Formula (I)



wherein R^1 represents an alkenyl group, or a cycloalkyl group, R^2 represents an alkyl group having a total C-number of 4 to 30, an alkenyl group having a total C-number of 4 to 30, or a cycloalkyl group having a total C-number of 4 to 30, R^3 represents an aryl group, and Z represents a hydrogen atom or a group capable of being released upon a coupling reaction, with a color developer containing a color-developing agent represented by the following formula (D):

Formula (D)



wherein R^4 represents a hydrogen atom, a halogen atom, or a methyl group, R^5 and R^6 each represent a methyl group or an ethyl group, L represents a methylene group or an ethylene group, and n is 1 or 2.

5,183,730
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL IMPROVED IN GRADATION, PROCESSING STABILITY AND OTHER PROPERTIES

Toshihiko Yagi, Shiroyama, Japan, assignor to Konica Corporation, Tokyo, Japan

Filed Oct. 2, 1990, Ser. No. 591,975
Claims priority, application Japan, Oct. 4, 1989, 1-259529
Int. Cl.[5] G03C *1/46*
U.S. Cl. 430—503 **24 Claims**

1. A silver halide photographic light-sensitive material having a support and provided thereon a blue-sensitive emulsion layer, a green-sensitive emulsion layer and a red-sensitive emulsion layer, wherein at least one of said color-sensitive emulsion layers comprises (a) tabular silver halide grains having an average aspect ratio of grain diameter to grain thickness of not less than 1.2; and (b) core/shell type regular crystal silver halide grains of which the average projection area accounts for not more than 40% of that of said tabular silver halide grains.

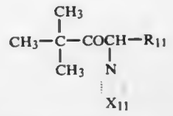
5,183,731
SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING EPOXY COMPOUND

Osamu Takahashi, and Nobuo Furutachi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 234,113, Aug. 19, 1988, abandoned. This application Jan. 25, 1991, Ser. No. 646,442
Claims priority, application Japan, Aug. 20, 1987, 62-207254
Int. Cl.[5] G03C *1/38, 7/32*
U.S. Cl. 430—551 **9 Claims**

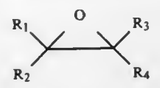
1. A silver halide color photographic light-sensitive material comprised of a support having thereon at least one light-sensitive emulsion layer containing at least one yellow coupler represented by the general formula (I) and a sparingly water soluble epoxy compound represented by the general formula (II) and having a solubility in water at 18° C. of not more than 1% by weight, said epoxy compound being present in an amount of 20 to 200 weight % based on the amount of coupler represented by formula (I):

(I)



where R_{11} represents a substituted N-phenylcarbamoyl group having 7 to 42 carbon atoms wherein the substituent is selected from a member consisting of an aliphatic group, an aliphatic oxy group, an aromatic oxy group, an ester group, an amido group, a carbamoyl group, a sulfamoyl group, an imido group and a halogen atom and X_{11} represents a non-metallic atomic group required for forming a 5- or 6-membered ring; and the coupler may form a dimer or a higher polymer;

(II)



R_1, R_2, R_3 and R_4, which may be the same or different, each represents a hydrogen atom, an aliphatic group, an aryl group, an aliphatic oxycarbonyl group, an aromatic oxycarbonyl group or a carbamoyl group, provided at least one of R_1, R_2, R_3 and R_4 represents a group other than hydrogen atoms; the total number of the carbon atoms contained in R_1, R_2, R_3 and R_4 is from 8 to 60; R_1 and R_2, R_3 and R_4, or R_1 and R_3 may be linked to form a 5 - to 7-membered ring; at least one of R_1, R_2, R_3 and R_4 may have at least one epoxy group; and the epoxy compound may form a dimer or a higher polymer.

5,183,732
PROCESS FOR THE PREPARATION OF HIGH CHLORIDE TABULAR GRAIN EMULSIONS (V)

Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 763,382, Sep. 20, 1991, abandoned. This application Jan. 13, 1992, Ser. No. 820,168
Int. Cl.[5] G03C *1/035, 1/07*
U.S. Cl. 430—569 **17 Claims**

1. A process of preparing a radiation sensitive high aspect ratio tabular grain emulsion, wherein tabular grains of less than 0.3 μm in thickness and an average aspect ratio of greater than 8:1 account for greater than 50 percent of the total grain projected area, said tabular grains containing at least 50 mole percent chloride, based on silver, comprising

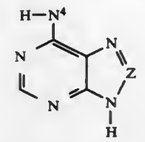
introducing silver ion into a gelatino-peptizer dispersing medium containing

a stoichiometric excess of chloride ions with respect to the silver ions further characterized by a chloride ion concentration of less than 0.5 molar,



a pH of from 4.6 to 9.0, and

a grain growth modifier of the formula:



where

N^4 is an amino moiety and

Z represents the atoms completing a 5 or 6 member ring.

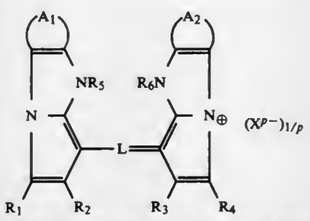
5,183,733
SILVER HALIDE PHOTOGRAPHIC MATERIALS

Yoshio Inagaki, and Tadashi Ikeda, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 28, 1991, Ser. No. 723,154
Claims priority, application Japan, Jun. 29, 1990, 2-172183
Int. Cl.[5] G03C *1/14*
U.S. Cl. 430—583 **8 Claims**

1. A silver halide photographic material, comprising a support having thereon a layer which contains a compound represented by the following general formula (I):

(I)



wherein A_1 and A_2 each represents groups of atoms which are required to complete aromatic rings, which may be substituted or unsubstituted; R_1, R_2, R_3 and R_4 each independently represents a hydrogen atom, an alkyl group, an alkenyl group, a phenyl group, a five- or six-membered heterocyclic group, an acyl group or an alkoxy group, which may be substituted or unsubstituted; R_5 and R_6 each independently represents an alkyl group, a phenyl group, a naphthyl group or a five- or six-membered heterocyclic group, which may be substituted or unsubstituted; X represents a p-valent anion; p represents 1, 2 or 3; L represents a methine group which may be substituted or unsubstituted, or a trivalent linking group wherein three, five or seven methine groups are linked by conjugated double bonds; and X may be bonded to A_1, A_2, R_1 to R_6 or L to form an intramolecular salt.

5,183,734
ANTIBODIES, DIAGNOSTIC SYSTEMS AND METHODS FOR ASSAYING SV40 HBXAG

Ann M. Moriarty, San Diego, Calif., assignor to The Scripps Research Institute, La Jolla, Calif.

Division of Ser. No. 54,424, May 26, 1987, Pat. No. 4,942,125, which is a continuation-in-part of Ser. No. 648,142, Sep. 7, 1984, Pat. No. 4,777,240, which is a continuation-in-part of Ser. No. 587,570, Mar. 8, 1984, abandoned. This application Jul. 17, 1990, Ser. No. 553,982
Int. Cl.[5] C12Q *1/70*
U.S. Cl. 435—5 **10 Claims**

1. A receptor molecule that includes an antibody combining site that specifically binds both with HBxAg and with an antigenic synthetic polypeptide selected from the group of polypeptides represented by the formulae:

(i) Gln-Leu-Asp-Pro-Ala-Arg-Asp-Val-Leu-Cys-Leu-Arg-Pro-Val-Gly;

(ii) Ser-Ala-Val-Pro-Thr-Asp-His-Gly-Ala-His-Leu-Ser-Leu-Arg-Gly-Leu-Pro-Val-Cys; and

(iii) Met-Glu-Thr-Thr-Val-Asn-Ala-His-Gln-Ile-Leu-Pro-Lys-Val-Leu-His-Lys-Arg-Thr-Leu-Gly,

wherein said receptor molecule consists of an antibody, a substantially whole antibody, a Fab fragment, or a $(Fab')_2$ fragment, and wherein said antibody combining site does not specifically bind an antigenic synthetic polypeptide represented by the formula:

(iv) Leu-Ser-Ala-Met-Ser-Thr-Thr-Asp-Leu-Glu-Ala-Tyr-Phe-Lys-Asp-Cys;

(v) Cys-Leu-Phe-Lys-Asp-Trp-Glu-Glu-Leu-Gly-Glu-Glu-Ile-Arg-Leu-Lys-Val; or

(vi) Ala-Pro-Ala-Pro-Cys-Asn-Phe-Phe-Thr-Ser-Ala.

5,183,735
METHOD AND DIAGNOSTIC TEST KIT FOR DETECTION OF ANTI-DSDNA ANTIBODIES

Luis R. Lopez, Aurora, and Marcia Sterhan, Louisville, both of Colo., assignors to Reaads Medical Products, Inc., Westminster, Colo.

Continuation-in-part of Ser. No. 315,567, Feb. 27, 1989. This application Dec. 27, 1990, Ser. No. 633,361
Int. Cl.[5] C12Q *1/68*
U.S. Cl. 435—6 **13 Claims**

1. A diagnostic element adapted to detect the presence of anti-dsDNA antibodies in a sample specimen upon contact with said sample specimen, comprising:

a support member, selected from the group consisting of plates, test tubes, and wells;

a coating on a surface portion of said support member, said first coating consisting essentially of methylated bovine serum albumin as a constituent thereof whereby said methylated bovine serum albumin provides immobilization sites;

dsDNA antigens specific for said anti-dsDNA antibodies, said dsDNA antigens being immobilized on said coating at occupied ones of said immobilization sites; and

a blocking layer disposed on said coating, said blocking layer consisting essentially of a blocking material operative to block a majority of said immobilization sites other than the occupied ones thereof whereby said blocking layer provides a contact surface available to be contacted by said sample specimen with said contact surface having dsDNA antigens forming binding sites specific for said anti-dsDNA antibodies while being substantially free of ssDNA antigens forming binding sites; wherein said blocking layer is operative to stabilize said dsDNA antigens immobilized on the occupied ones of said immobilization sites; and wherein said contact surface has a specificity greater than sixty-two percent.

VOL
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5,183,736
METHODS USING ESTROGEN RECEPTOR AS A CONSTITUTIVE TRANSCRIPTIONAL ACTIVATOR AND A REPRESSOR

Magnus Pfahl, Solana Beach, and Maty Tzukerman, San Diego, both of Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

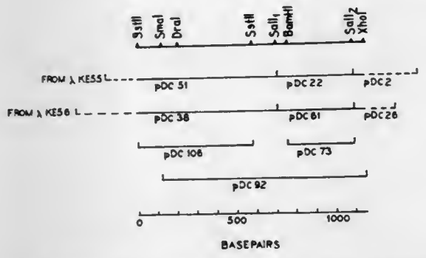
Filed Mar. 30, 1990, Ser. No. 502,325
Int. Cl.[5] C12Q *1/68*
U.S. Cl. 435—6 17 Claims

1. A method of comparatively determining the ability of a ligand to effect the constitutive activator or repressor activity of an estrogen receptor which has the constitutive activator or repressor activity and a estrogen receptor which lacks the constitutive activator or repressor activity comprising separately binding the ligand to the estrogen receptor which has the constitutive activator or repressor activity and the estrogen receptor which lacks the constitutive activator or repressor activity, determining the effect of the ligand on the activity of the estrogen receptor which has the constitutive activator or repressor activity and the estrogen receptor which lacks the constitutive activator or repressor activity, and comparing the activity.

5,183,737
REPETITIVE DNA SEQUENCE SPECIFIC FOR MYCOBACTERIUM TUBERCULOSIS TO BE USED FOR THE DIAGNOSIS OF TUBERCULOSIS

Jack T. Crawford, Atlanta, Ga.; Kathleen D. Eisenach, Little Rock, Ark.; M. Donald Cave, Little Rock, Ark., and Joseph H. Bates, Little Rock, Ark., assignors to The Board of Trustees of the University of Arkansas, Little Rock, Ark.

Division of Ser. No. 589,819, Sep. 28, 1990. This application Oct. 1, 1991, Ser. No. 769,234
Int. Cl.[5] C12G *1/68*
U.S. Cl. 435—6 5 Claims

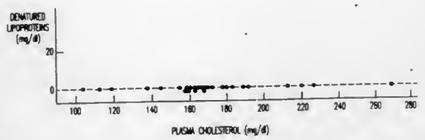


1. A method for characterizing stains of *M. tuberculosis* complex for epidemiological studies, comprising the step of:
hybridizing restricted DNA from isolated stains with DNA probes of the complete, repetitive sequence, wherein said DNA probe is selected from the group consisting of the entire repetitive DNA segment in *M. tuberculosis* complex as shown in FIG. 2, SalI-BamH1 fragment, and SstI1 fragment.

5,183,738
KIT FOR THE DETECTION OF DENATURED LIPOPROTEINS

Masakazu Adachi, Takasaki; Toshimitu Saitou, Gunma; Kimiyo Murata, Takasaki, and Aki Tamura, Maebashi, all of Japan, assignors to Japan Immuno Research Laboratories Co., Ltd., Takasaki, Japan

Filed Sep. 27, 1989, Ser. No. 413,484
Claims priority, application Japan, Sep. 29, 1988, 63-244987
Int. Cl.[5] C12Q *1/60*; G01N *33/577*
U.S. Cl. 435—7.1 7 Claims



1. A method for detecting abnormal lipid metabolism, comprising the steps of:
contacting a sample containing apoprotein A-I, apoprotein B-100 and denatured lipoproteins with a mixture of a first affinity gel coupled with a monoclonal antibody for said apoprotein A-I and a second affinity gel coupled with a monoclonal antibody for said apoprotein B-100 to remove said apoprotein A-I and said apoprotein B-100 from said sample;
determining the amount of denatured lipoproteins in said sample; and
correlating the amount of denatured lipoproteins to abnormal lipid metabolism.

5,183,739
MONOCLONAL ANTIBODIES SPECIFIC FOR NON-A1C GLYCATED HEMOGLOBIN AND IMMUNOASSAY METHODS

Margo Cohen, New York, N.Y., assignor to Exocell, Inc., Philadelphia, Pa.

Filed Feb. 27, 1990, Ser. No. 485,878
Int. Cl.[5] C12P *21/08*; C07K *15/28*; C12N *5/20*; G01N *33/53*
U.S. Cl. 435—7.21 10 Claims

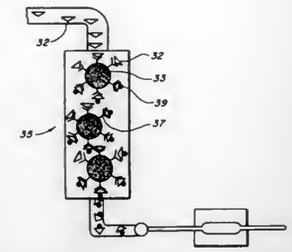
1. A hybridoma which produces an antibody which specifically binds to an epitope on glycohemoglobin comprising epsilon-D-fructosyllysine and not present on hemoglobin A_O or hemoglobin A_{1c} or other proteins.

5,183,740
FLOW IMMUNOSENSOR METHOD AND APPARATUS

Frances S. Ligler, Potomac; Gaber Bruce P., Bethesda, both of Md.; Anne W. Kusterbeck, Falls Church, and Gregory A. Wemhoff, Manassas, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 23, 1990, Ser. No. 486,024
Int. Cl.[5] G01N *33/53*, *33/569*
U.S. Cl. 435—7.32 12 Claims

1. A method of detecting a target comprising,
(a) providing a solid phase-immobilized antibody capable of specifically binding to the target,
(b) exposing an antigen binding site of the antibody to a labelled analog of the target to form a solid phase-immobilized, labelled antigen-antibody complex,
(c) continuously flowing an aqueous medium suspected of containing the target past the solid phase-immobilized, labelled antigen-antibody complex at a flow rate allowing the target to displace the labelled analog from the labelled antigen-antibody complex under nonequilibrium conditions, and



(d) detecting the displaced labelled analog, the amount of said displaced labelled analog being directly proportional to the concentration of said target in said medium.

5,183,741
INTEGRAL MULTILAYER ELEMENT FOR GLUCOSE ANALYSIS

Fuminori Arai, and Harumi Katsuyama, both of Asaki, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

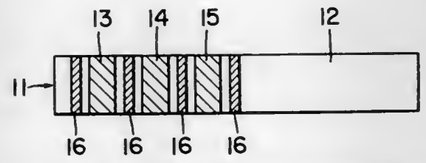
Continuation of Ser. No. 387,397, Jul. 27, 1989, abandoned, which is a continuation of Ser. No. 262,159, Oct. 19, 1988, abandoned, which is a continuation of Ser. No. 97,304, Sep. 14, 1987, abandoned, which is a continuation of Ser. No. 660,658, Oct. 15, 1984, abandoned. This application Oct. 22, 1990, Ser. No. 603,243
Claims priority, application Japan, Oct. 13, 1983, 58-191246
Int. Cl.[5] C12Q *1/54*, *1/26*, *1/28*; C12N *11/18*
U.S. Cl. 435—14 5 Claims

1. An integral multilayer element for chemical analysis of glucose in a liquid sample, which comprises, in the following order:
(a) a porous spreading layer;
(b) an oxygen-permeable, protein-impermeable light-blocking layer;
(c) a layer containing glucose oxidase;
(d) an indicator layer containing peroxidase and an indication for hydrogen peroxide showing a photometrically detectable change in the presence of peroxidase and hydrogen peroxide; and
(e) a water-impermeable, light-transmissive support.

5,183,742
TEST DEVICE FOR DETECTING GLUCOSE, PROTEIN UROBILINOGEN, AND/OR OCCULT BLOOD IN BODY FLUIDS AND/OR DETERMINING THE PH THEREOF

Konichi Omoto, Kawasaki, and Takeshi Miyazaki, Tokyo, both of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 703,480, Feb. 20, 1985, abandoned. This application May 8, 1989, Ser. No. 349,950
Claims priority, application Japan, Feb. 24, 1984, 59-33787
Int. Cl.[5] C12Q *1/54*
U.S. Cl. 435—14 5 Claims

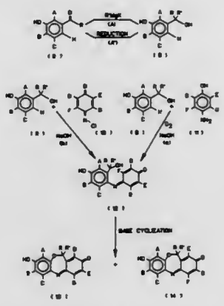


1. A test device for body fluids comprising a support having printed or coated on a surface thereof at least one detection region, each detection region comprising a reagent composition selected from the group of reagent compositions consisting of:
(a) a glucose detection reagent comprising a glucose oxidase, peroxidase, a peroxide oxidizable indicator, a glucose detection reagent binder and a color stabilizer which stabilizes said peroxide oxidizable indicator and a detectable product, said reagent being dissolved or dispersed in a nonaqueous solvent for the glucose detection reagent, said solvent excluding C_1 to C_2 alcohols;
(b) a protein detection reagent comprising a pH indicator, a pH buffer, a protein-adsorptive ion exchanger, and a protein detection reagent binder, said reagent being dissolved or dispersed in a non-aqueous solvent for the protein detection reagent; and
(c) a pH determination reagent comprising a pH indicator, and a pH determination reagent binder, said reagent being dissolved or dispersed in a non-aqueous solvent for the pH determination reagent; and
at least one water-retentive pattern portion formed on said surface of said support between and coplanar with each of said detection regions such that adjacent detection regions are separated by at least one water-retentive pattern portion;
wherein said support is nonadsorptive, the water retentive pattern portions have a capacity of absorbing water of at least 10 times their own weight, and spaces are provided on said support between each of said detection regions and each of said water-retentive pattern portions.

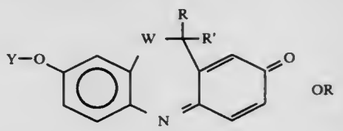
5,183,743
CHROMOGENIC DIBENZOXAZEPINONE AND DIBENZOTHIAZEPINONE ENZYME SUBSTRATES

Paul F. Corey, Elkhart, Ind., assignor to Miles Inc., Elkhart, Ind.

Division of Ser. No. 364,157, Jun. 12, 1989. This application Nov. 29, 1991, Ser. No. 800,112
Int. Cl.[5] C12Q *1/54*, *1/38*, *1/00*, *1/50*
U.S. Cl. 435—18 19 Claims

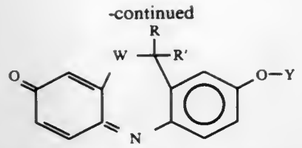


1. A method for determining a particular enzyme in a liquid test sample, comprising the steps of:
(a) contacting the test sample with a chromogenic enzyme substrate compound of the formula:



VOL 1147 ISS 1 FEB 2 1993 UMI

-continued



wherein W is O or S; R and R', which can be the same or different, are H, alkyl, or aryl; and Y is an enzyme-cleavable group that is

(i) capable of being cleaved from the nucleus of the enzyme substrate compound by said enzyme, or

(ii) capable of being modified by said enzyme to produce a secondary substrate compound in which Y is capable of being cleaved from the nucleus of the modified enzyme substrate compound by a secondary enzyme,

and, in the latter case (ii), the secondary substrate compound is contacted with said secondary enzyme; and

(b) measuring and correlating the resulting color generated by the cleaved nucleus of the enzyme substrate compound to the presence of said enzyme in said liquid test sample.

5,183,744

CELL HANDLING METHOD FOR CELL FUSION PROCESSOR

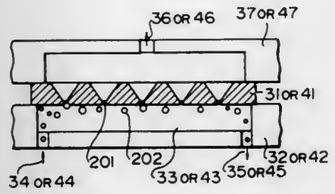
Yoshio Kawamura, Kokubunji; Shinji Tanaka, Akishima; Kazuo Sato; Kenko Uchida, both of Tokyo, and Hiroyuki Kohida, Fuchu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 23, 1989, Ser. No. 425,028

Claims priority, application Japan, Oct. 26, 1988, 63-268030; Nov. 11, 1988, 63-283601

Int. Cl.[5] A01N *1/02;* **C12Q** *1/24;* **C12M** *3/02*

U.S. Cl. 435—30 **3 Claims**



1. A method for transferring biological cells to a plurality of microchambers arranged in a pattern, which comprises supplying the biological cells to a first solution in contact with a plurality of holding means including absorption ports for retaining individual biological cells, said first solution having a specific gravity which causes the biological cells to move towards said holding means; holding an individual biological cell at each of said absorption ports of said holding means; removing other cells not held by said absorption ports of said holding means by supplying a second solution, said second solution causing the other cells to move away from said holding means and transferring the held biological cells within the absorption ports of said holding means to the plurality of microchambers arranged in a pattern.

5,183,745

ADENYL CYCLASE DERIVATIVES AND THEIR BIOLOGICAL USES

Antoine Danchin; Philippe Glaser, both of Paris; Evelyne Krin, Colombes; Octavien Barzu, Massy; Daniel Ladant, Cachan, and Agnès Ullmann, Paris, all of France, assignors to Institut Pasteur, Paris, France

Filed Oct. 25, 1989, Ser. No. 426,541

Claims priority, application France, Oct. 25, 1988, 88 13951

Int. Cl.[5] C12P *21/06;* **C12N** *9/88, 15/00;* **C07H** *15/12*

U.S. Cl. 435—69.1 **18 Claims**

2. An adenyl cyclase derivative, wherein:

(a) the amino acid sequence of said derivative consists essentially of an amino acid sequence of a *Bordetella pertussis* adenyl cyclase comprising an amino acid substitution in at least one site of said derivative, wherein said sites are selected from the group consisting of amino acids 54–77 of the *Bordetella pertussis* sequence of FIG. 2 and the calmodulin binding site, and said amino acid substitution is selected from the group consisting of:

i) a replacement of a lysine residue with an amino acid selected from the group consisting of glutamine, asparagine, aspartic acid, glutamic acid, methionine, leucine, isoleucine, and valine;

ii) a replacement of a tryptophan residue with an amino acid selected from the group consisting of aspartic acid, glutamic acid, asparagine, and glutamine; and

iii) a replacement of a lysine residue as indicated in i) and a replacement of a tryptophan residue as indicated in ii).

5,183,746

FORMULATION PROCESSES FOR PHARMACEUTICAL COMPOSITIONS OF RECOMBINANT BETA-INTERFERON

Ze'Ev Shaked, Berkeley; Tracy Stewart; Susan Hershenson, both of San Francisco; James W. Thomson, Albany; Terrance Taforo, San Leandro, and Jody Thomson, Albany, all of Calif., assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 923,423, Oct. 27, 1986, abandoned. This application Sep. 29, 1987, Ser. No. 100,679

Int. Cl.[5] A61K *37/66;* **C07K** *3/28*

U.S. Cl. 435—69.51 **7 Claims**

1. A method of screening for one or more biocompatible non-ionic polymeric detergents or for combinations of one or more of said detergents with another solubilizing or stabilizing agent capable of solubilizing and stabilizing pharmaceutical compositions of recombinant interferon-β (IFN-β), comprising the steps of:

(a) passing extracted, purified IFN-β in sodium dodecyl sulfate (SDS) on a desalting column equilibrated in sodium laurate in an elution buffer at pH 9.0–10.0 to form an eluate;

(b) lowering the pH of the eluate to about pH 2–3.3;

(c) centrifuging and filtering the eluate to remove the precipitated sodium laurate;

(d) adding to the filtrate an effective amount of one or more of said detergents or said combination of one or more of said detergents with another solubilizing or stabilizing agent;

(e) adjusting the pH of the filtrate to 3.5 to 9.5; and

(f) allowing said filtrate to stand for about 24 hours at pH 3.5 to 9.5.

5,183,747

TYPE II RESTRICTION ENDONUCLEASE SSP4800I

Klaus Kaluza, Bad Heilbrunn; Bruno Frey, Penzberg, and Michael Jarsch, Bad Heilbrunn, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

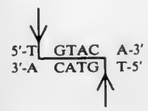
Filed Oct. 10, 1991, Ser. No. 777,759

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1990, 4032213

Int. Cl.[5] C12P *19/34;* **C12N** *9/22*

U.S. Cl. 435—91 **10 Claims**

1. Type II restriction endonuclease having the recognition sequence



and the cleavage site indicated by the arrows.

5,183,748

PROCESS FOR THE PREPARATION OF OLIGO- AND POLYDEOXYRIBONUCLEOTIDES

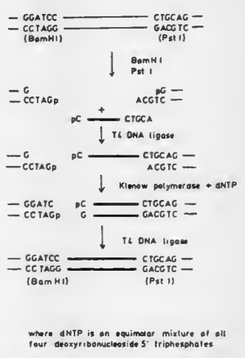
András Simoncsits; Miklós Kálmán; Csaba Kari; and Imre Cserpán, all of Szeged, Hungary, assignors to Vepex Contractor LTD., Budapest; MTA Szegedi Biologiai Kozpontja; Odesszai, both of Hungary

Filed Nov. 22, 1985, Ser. No. 800,669

Claims priority, application Hungary, Nov. 23, 1984, 4356/84

Int. Cl.[5] C12P *19/34;* **C12N** *15/00;* **C07H** *15/12*

U.S. Cl. 455—91 **10 Claims**



where dNTP is an equimolar mixture of all four deoxyribonucleoside 5' triphosphates

1. A process for the preparation of oligo- and polydeoxyribonucleotides comprising inserting a single-stranded DNA piece into a cloning vector, said vector containing a number of closely located recognition sequences of restriction enzymes giving a 3'-protruding end, each present only once in the said vector and which, following cleavage with two corresponding restriction enzymes, produces a linearized vector containing a 5'-protruding end and a 3'-protruding end, said single-stranded DNA piece being inserted into the linearized vector such that, after ligation, the linear vector containing said single-stranded DNA contains 5'-protruding regions at both ends, and synthesizing the complementary strand of said single-stranded DNA piece entirely enzymatically in the presence of deoxyribonucleoside 5'-triphosphates in said cloning vector.

5,183,749

MICROBIAL PROCESS FOR THE PREPARATION OF MILBEMYCIN DERIVATIVES

Gerado Ramos, Arlesheim; Oreste Ghisalba, Reinach; Hans-Peter Schär, Aesch; Bruno Frei, Liestal; Peter Maienfisch, Aesch, and Anthony C. O'Sullivan, Basel, all of Switzerland, assignors to Sankyo Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 147,956, Jan. 25, 1988, abandoned. This application Mar. 20, 1990, Ser. No. 496,183

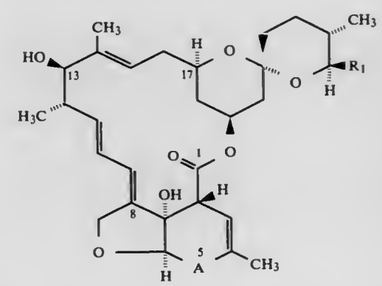
Claims priority, application Switzerland, Feb. 4, 1987, 395/87

Int. Cl.[5] C12P *17/18, 33/06;* **C12N** *1/14, 1/20*

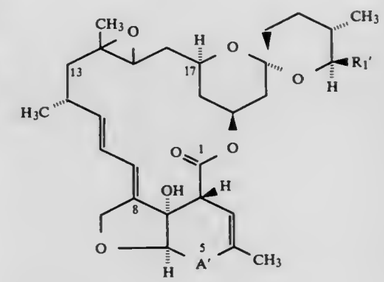
U.S. Cl. 435—119 **11 Claims**

1. A one-step microbial process for the preparation of 13β-hydroxy-milbemycins or 14,15-epoxy-milbemycins of formulas I or II:

(I)



(II)

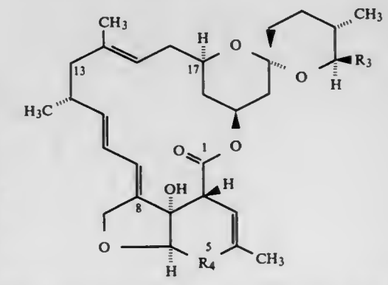


in which

R_1 and R_1' are methyl or isopropyl and A and A' are —CH-(OH)—, or R_1 and R_1' are ethyl and A and A' are —CH-(OH)— or —C(=N~OH)—,

or a mixture of compounds of formulas I and II, which process comprises bringing a milbemycin of formula III

(III)



dissolved in a liquid phase, in which R_3 is R_1 or R_1' and R_4 is A or A', and R_1, R_1', A and A' have the meanings given for

VOL 1147 ISS 1 FE 2 1993 UMI

formulas I and II, into contact with a microorganism selected from the group consisting of *Streptomyces diastatochromogenes* ATCC 31561, *Streptomyces violascens* ATCC 31560 and *Aspergillus niger* ATCC 20567 that is capable of 13β-hydroxylation or 14,15-epoxidation, or of both reactions, for a period of time that is sufficient for carrying out the 13β-hydroxylation or 14,15-epoxidation reaction or both reactions, and isolating the reaction product.

5,183,750

PROCESSES FOR THE PRODUCTION OF PHOSPHATIDIC ACID

Tsutomu Nishide; Daisuke Yasumura; Yoshinobu Nakajima, all of Ibaraki; Akiko Onodera, Hokkaido; Takuji Yasukawa, Ibaraki; Hirokazu Kokumai, Ibaraki; Tomoshige Umeda, Ibaraki; Seiji Nomura, Chiba, and Hideki Mori, Ibaraki, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed May 25, 1990, Ser. No. 528,982

Claims priority, application Japan, May 26, 1989, 1-133653; May 26, 1989, 1-133654; May 26, 1989, 1-133655

Int. Cl.[5] C12P *7/64, 7/62, 9/00;* **C12N** *9/16*

U.S. Cl. 435—134 **26 Claims**

1. A process for producing phosphatidic acid which comprises treating phospholipids with an enzyme capable of hydrolyzing a phospholipid into phosphatidic acid and a nitrogen-containing base and another enzyme capable of hydrolyzing a phospholipid into a diglyceride and a phosphoryl base; and recovering said phosphatidic acid.

5,183,751

STABILIZATION OF PEROXIDASE SOLUTIONS BY PARA-AMINO-SALICYCLIC ACID

Roland F. Maes, Bildhauerhof 34, Rosheim 67190 Mutzig, France

Continuation-in-part of Ser. No. 326,790, Mar. 21, 1989, abandoned. This application Apr. 30, 1991, Ser. No. 693,537

Claims priority, application France, Apr. 20, 1988, 85 05243

Int. Cl.[5] C12N *9/96*

U.S. Cl. 435—188 **13 Claims**

1. A method for stabilizing the enzymatic activity of horseradish peroxidase contained in an aqueous medium which comprises incorporating in said medium a stabilizing amount of para-amino-salicylic acid (PASA) or water-soluble salt thereof.

5,183,752

HEAT-LABILE PHOSPHATASE

John P. Markwell, Lincoln, Nebr.; Wayne K. Versaw, Madison, Wis.; John C. Osterman, Waverly, and Philip M. Kelley, Lincoln, both of Nebr., assignors to Board of Regents of the University of Nebraska, Lincoln, Nebr.

Filed Oct. 29, 1990, Ser. No. 605,539

Int. Cl.[5] C12N *9/16, 1/00;* **C12P** *19/34*

U.S. Cl. 435—196 **1 Claim**

1. A purified, heat-labile, phosphatase from *Aspergillus niger*, said phosphatase having a molecular weight of about 80,000 daltons, an isolectric point of about pI 4.6, and a half-life of about 5.3 minutes at about 50° C., exhibiting optimal enzymatic activity under neutral to slightly alkaline conditions of between about pH 7.0 to pH 8.5, removing the 5'-terminal phosphate group from a linear DNA polymeric molecule, and not the phosphate group from a monomeric adenosine triphosphate (ATP) molecule, and consisting of two identical pholypeptides subunits, said subunits having a molecular weight of about 37,000 daltons each.

5,183,753

PREPARATION OF XYLANASE BY CULTIVATING *THERMOMYCES LANUGINOSUS* DSM 5826 IN A MEDIUM CONTAINING CORN COBS

Wolfgang Wizani, Steyr; Hermann Esterbauer; Walter Steiner, both of Graz, all of Austria, and Joseph Gomes, Dhaka, Bangladesh, assignors to Voest-Alpine Industrienlagenbau Gesellschaft m.b.H., Linz, Austria

Filed May 8, 1991, Ser. No. 696,943

Claims priority, application Austria, May 8, 1990, 1030/90

Int. Cl.[5] C12N *9/00, 9/24, 9/26, 1/14*

U.S. Cl. 435—201 **5 Claims**

1. A process for the preparation of xylanase, comprising cultivating *Thermomyces lanuginosus* which contains corn cobs.

5,183,754

METHOD FOR PRODUCTION OF HUMAN TISSUE TYPE PLASMINOGEN ACTIVATOR

Shoichiro Miyahara, Yokohama; Atsunori Shindo, Kamakura; Maki Suzuki; Nobumi Kusuhara, both of Yokohama, and Nobuyoshi Makiguchi, Fujisawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Sep. 27, 1989, Ser. No. 412,818

Claims priority, application Japan, Oct. 4, 1988, 63-249081; Dec. 16, 1988, 63-316118

The portion of the term of this patent subsequent to Sep. 29, 2009, has been disclaimed.

Int. Cl.[5] C12N *9/64, 9/48*

U.S. Cl. 435—226 **4 Claims**

1. A method for producing human tissue type plasminogen activator using cells, wherein the human tissue type plasminogen activator is produced in parallel with growth of the cells in a cell culture medium in which bicarbonate ion equivalent to 3 to 10 g/l of $NaHCO_3$ based on the true volume of the medium is supplied to said cell culture medium to increase the osmotic pressure of the medium to a range of 350 to 520 milliosmoles/-liter.

5,183,755

ANTI-HUMAN PAPILLOMAVIRUS MONOCLONAL ANTIBODY, HYBRIDOMA PRODUCING THE SAME AND PROCESS FOR PREPARING THE SAME

Hiroshi Ohmoto, Osaka, and Seiichi Iwamoto, Kobe, both of Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Feb. 21, 1990, Ser. No. 482,717

Claims priority, application Japan, Feb. 21, 1989, 1-40714

Int. Cl.[5] C12N *5/22;* **C12P** *21/08;* **C07K** *15/28*

U.S. Cl. 435—240.27 **2 Claims**

1. An anti-human papillomavirus (HPV) monoclonal antibody which is produced by a hybridoma deposited under the accession number FERM BP-2278.

5,183,756

MONOCLONAL ANTIBODY (D612) HAVING SELECTIVE REACTIVITY FOR GASTROINTESTINAL CARICINOMAS AND METHOD FOR EMPLOYING THE SAME

Jeffrey Schlom, Potomac, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 234,130, Aug. 19, 1988, abandoned. This application Jun. 18, 1991, Ser. No. 715,748

Int. Cl.[5] C12N *5/20;* **C07K** *15/28;* **A61K** *39/395*

U.S. Cl. 435—240.27 **19 Claims**

1. A hybridoma assigned A.T.C.C. Accession No. HB 9796 which produces the monoclonal antibody designated D612 which immunologically binds to human gatrointestinal cancers and normal gastrointestinal epithelium, and not other cancers or other normal human tissues.

5,183,757

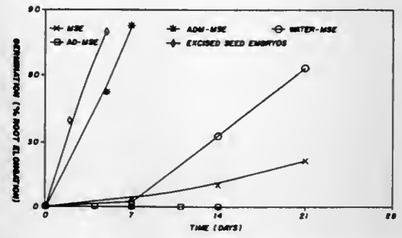
PROCESS FOR THE PRODUCTION, DESICCATION AND GERMINATION OF CONIFER SOMATIC EMBRYOS

Dane R. Roberts, Vancouver, Canada, assignor to British Columbia Research Corporation, Vancouver, Canada

Filed Aug. 1, 1989, Ser. No. 388,598

Int. Cl.[5] C12N *5/00;* **A01C** *1/06*

U.S. Cl. 435—240.49 **5 Claims**



1. A process for propagation of spruce somatic embryos which includes the steps of differentiating spruce somatic embryos in contact with a growth medium containing abscisic acid, separating the somatic embryos from said medium, and germinating the somatic embryos, characterized in that the embryos are matured on said medium and are partially dried prior to germination by exposing mature embryos separated from the said medium to an atmosphere having from greater than 85% up to 99% humidity.

5,183,758

PRODUCTION OF 7-CHLORO-3-METHOXY-2'-N-METHYLTETRACYCLINE WITH *ACTINOMADURA BRUNEA* ATCC 39216

Ann C. Horan, Summit, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 763,740, Aug. 8, 1985, abandoned. This application May 23, 1990, Ser. No. 528,006

Int. Cl.[5] C12N *1/20;* **C12P** *29/00;* **A61K** *31/65*

U.S. Cl. 435—252.1 **1 Claim**

1. A biologically pure culture of the microorganism *Actinomadura brunnea* ATCC 39216, said culture being capable of producing 7-chloro-8-methoxy-2'-N-methyltetracycline in a recoverable quantity upon fermentation, under aerobic conditions in an aqueous medium containing assimilable sources of nitrogen and carbon.

5,183,759

RECOMBINANT RHIZOBIUM BACTERIA INOCULANTS

Eric W. Triplett, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 358,744, May 30, 1989, abandoned. This application May 22, 1991, Ser. No. 707,245

Int. Cl.[5] C12R *1/41;* **C12P** *21/00, 21/04;* **C12N** *15/00*

U.S. Cl. 435—252.2 **2 Claims**

1. A recombinant Rhizobium bacterium that is capable of assisting in the formation of nitrogen fixation nodules on at least some plants, the bacterium having a foreign DNA sequence inserted in its natural bacterial genome expressively coding for trifolitoxin production, the foreign DNA sequence also coding for resistance to trifolitoxin, said trifolitoxin being a rhizobial proteinaceous material that is encoded for by a nucleotide sequence present in a 4.4 kb DNA fragment of *R. leguminosarum* bv. *trifolii* T24 that is in a pTFX1 portion of ATCC 67990, and said DNA sequence coding for resistance to trifolitoxin having a nucleotide sequence that is present in said 4.4 kb DNA fragment of *R. leguminosarum* bv. *trifolii* T24 that is in a pTFX1 portion of ATCC 67990, wherein the bacterium is selected from the group consisting of *Rhizobium leguminosarum, Rhizobium fredii,* and *Rhizobium meliloti.*

5,183,760

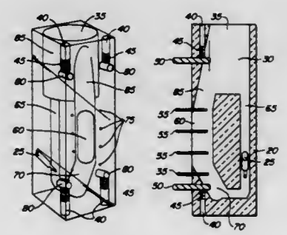
APPARATUS FOR IN VITRO DETERMINATION OF SUBSTANCES ACROSS MEMBRANES, BIOLOGICAL TISSUES, OR CELL CULTURES

Stephanie A. Sweetana, and George M. Grass, both of 101 First St., Los Altos, Calif. 94022

Continuation of Ser. No. 354,479, May 19, 1989, abandoned. This application Apr. 12, 1991, Ser. No. 685,167

Int. Cl.[5] C12H *1/12;* **G01N** *15/08, 13/04*

U.S. Cl. 435—285 **15 Claims**



1. In a diffusion cell block including a pair of half cells having aligned openings for holding a tissue section or membrane therebetween, wherein the improvement comprises forming each half cell as a rectangular block having a reservoir opening formed in one end and a recirculation path entirely within the block from the reservoir past the aligned opening, whereby a volume of fluid in the block can be recirculated past the aligned opening without flowing outside of the block.

5,183,761

METHOD OF MAKING CALIBRATION SOLUTION FOR VERIFYING CALIBRATION AND LINEARITY OF VERTICAL PHOTOMETERS

Mary J. Freeman, and Gary M. Freeman, both of 1795 St. Andrews Dr., Palm City, Fla. 34990

Filed Jul. 21, 1989, Ser. No. 383,938

Int. Cl.[5] G01N *31/00;* **G01D** *18/00;* **G12B** *13/00*

U.S. Cl. 436—8 **9 Claims**

1. A method of making a test kit to be used for taking vertical photometric measurements comprising:

(1) providing a control solution having at least one reagent and a wetting agent therein, provided in at least one vessel, said control solution having predetermined and predictable physical characteristics, said wetting agent forming a predetermined meniscus within said vessel,

(2) drying said solution to obtain a dried residue within said vessel having a pre-dispensed amount of said reagent, wherein said dried residue may be stored for subsequent use,

(3) reconstituting said dried residue using an amount of an activator to reform said control solution such that said reformed control solution will have substantially equivalent physical characteristics to said control solution provided in step one, including substantially reforming said predetermined meniscus in said vessel, such that said reformed control solution may be used to obtain accurate measurements based upon the pre-dispensed amount of said reagent.

VOL
1147
ISS
1
FE
2
1993
UMI

5,183,762

COPPER CONTAINING REAGENT FOR THE DETECTION AND DETERMINATION OF BILIRUBIN IN THE URINE

Franco Meiattini, Siena, Italy, assignor to Diesse Diagnostica Senese S.R.L., Milan, Italy

Filed Jun. 27, 1990, Ser. No. 544,599
Claims priority, application Italy, Sep. 21, 1989, 21789 A/89
Int. Cl.[5] G01N *21/78, 33/72*
U.S. Cl. 436—97 12 Claims

1. A reagent for the detection and determination of bilirubin in urine, consisting essentially of a buffer suitable to maintain the pH of the reagent between 3 and 7 and inert to cupric ions, an aromatic compound selected from the group consisting of sulfanilic acid and sulfanilamide, a cupric soluble salt and an alkaline metal nitrite.

5,183,763

COMPOSITION AND METHOD FOR DETECTING VAPOR AND LIQUID REACTANTS

William A. Mallow, Helotes, and Jerome J. Dziuk, Jr., San Antonio, both of Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Jun. 6, 1990, Ser. No. 534,198
Int. Cl.[5] G01N *33/00, 33/62*
U.S. Cl. 436—106 12 Claims

1. A composition for detecting nitrogen containing compounds of the class comprising amines and ammonia, consisting essentially of ethyl cellulose, at least 3.0% by weight amorphous silica, solvent and an indicator.

5,183,764

QUANTITATIVE ANALYSIS FOR DIABETIC CONDITION PREDICTOR INVOLVING CHIRO-INOSITOL

Alison S. Kennington, Laurel, Md., and Joseph Larner, Charlottesville, Va., assignors to University of Virginia Alumni Patents Foundation, Charlottesville, Va.

Continuation of Ser. No. 476,953, Feb. 8, 1990, abandoned, which is a continuation-in-part of Ser. No. 320,485, Mar. 8, 1989, abandoned, which is a continuation of Ser. No. 751,628, Aug. 26, 1991. This application Apr. 21, 1992, Ser. No. 870,771
Int. Cl.[5] G01N *33/00, 33/49, 33/493*
U.S. Cl. 436—131 3 Claims

1. A method for screening mammalian individuals to determine whether the individual exhibits insulin-resistance associated with a diabetic state, comprising:
obtaining a sample from said individual, said sample being selected from the group consisting of a serum sample, and a urine sample,
determing the concentration of chiro-inositol (CI) in said sample,
correlating said concentration with preestablished values indicating insulin-resistance in mammalian individuals,
wherein said preestablished values are less than about 0.3 micrograms/ml for urinary CI concentrations and less than about 0.03 micrograms/ml for serum CI concentrations being indicative of insulin-resistance.

2. A method for screening mammalian individuals to determine whether said individuals exhibit presymptomatic insulin-resistance, comprising:
obtaining a sample from said individual, said sample being selected from the group consisting of a serum sample and a urine sample,
determing the concentration of chiro-inositol (CI) in said individual,
correlated said CI concentration with preestablished values indicting presymptomatic insulin-resistance in mammalian individuals,
wherein said preestablished values are between about 0.3–1.0 micrograms/ml for urinary CI concentrations and between about 0.03–0.1 micrograms/ml for CI serum concentrations being indicative of presymptomatic insulin-resistance in mammalian individuals.

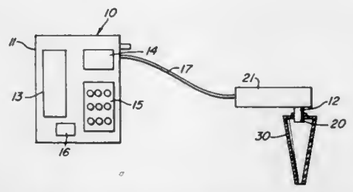
3. A method for screening mammalian individuals to determine whether said individuals exhibit insulin-resistance, comprising:
obtaining a sample from said individual, said sample being selected from the group consisting of a serum sample and a urine sample,
determing the concentration of chiro-inositol in said individual,
correlating said chiro-inositol concentration with preestablished values indicating insulin-resistance in mammalian individuals,
wherein said preestablished values are between about 0.3–1.0 micrograms/ml for urinary chiro-inositol concentrations and between about 0.03–0.1 micrograms/ml for chiro-inositol serum concentrations being indicative of insulin-resistance in mammalian individuals.

5,183,765

MEANS AND METHOD OF MEASURING AND DISPENSING

Humayun Qureshi, Wayland, and Donald Schwartz, Marblehead, both of Mass., assignors to DRD Diluter Corporation, Danvers, Mass.

Filed Oct. 11, 1990, Ser. No. 595,975
Int. Cl.[5] B01L *3/02*
U.S. Cl. 436—180 13 Claims



1. A method of metering and dispensing required amounts of liquid by the use of an aspiration tip defining a tip chamber having a predetermined total volume, interconnected with an aspiration probe carrying a conduit which is interconnected with a probe liquid volume available from a reservoir,
said method comprising flowing a selected amount of probe liquid from said probe liquid volume through said conduit in said probe to fill a preselected volume of said chamber with probe liquid, less than said total volume, but of a volume large enough to substantially fill said chamber along with supplemental liquid to be used in said chamber,
aspirating a portion of said probe liquid and a predetermined first volume of first liquid to be metered; and,
dispensing said first liquid.

5,183,766

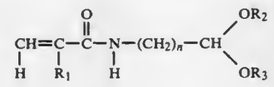
DISPERSION POLYMERS, PROCESSES FOR THEIR PREPARATION AND THEIR USE

Wolfgang Kapmeyer, Marburg, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Division of Ser. No. 39,107, Apr. 16, 1987, Pat. No. 4,962,046. This application Jun. 22, 1990, Ser. No. 542,049
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1986, 3613111
Int. Cl.[5] G01N *33/546;* C12Q *1/00*
U.S. Cl. 436—533 16 Claims

1. A process for the preparation of a dispersion polymer, which comprises the steps of first preparing a latex of a non-film-forming seed polymer having an incompletely polymerized monomer content of 5 to 50% by weight by carrying out the polymerization so that only 30% to 90% of the monomer

present is polymerized completely, subsequently separating off the monomers not bonded to the polymer and then polymerizing a monomer mixture which contains at least one compound of the formula I containing acetal groups



I

wherein n is 1—6;
R_1 is H or CH_3; and
R_2 and R_3 are identical or different, where
R_2 and R_3 are $(CH_2)_m$—CH_3, and m is 0—7, or



in which X, Y and Z are $(CH_2)_p$—CH_3 and P is 1—3, where X, Y and Z are identical or different, or R_2 and R_3 are an aryl radical,
and, in addition, up to 30% by weight, based on the mixture, of monomrs selected from acrylic acid, methacrylic acid, crotonic acid and mixtures thereof, and a further up to 30% by weight, again based on the total mixture, of carbocyclic aromatic vinylidene monomers in the presence of the seed polymer thus obtained.

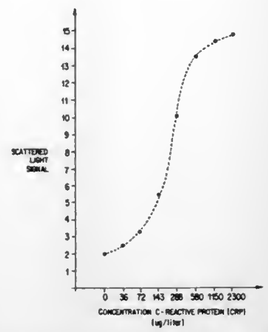
5,183,767

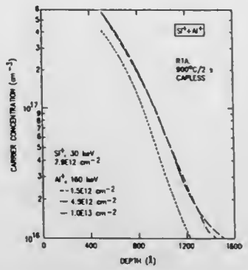
METHOD FOR INTERNAL GETTERING OF OXYGEN IN III-V COMPOUND SEMICONDUCTORS

Herve Baratte, Hofheim, Fed. Rep. of Germany; Joel P. de Souza, Porto Alegre, Brazil, and Devendra K. Sadana, Plesantville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 14, 1991, Ser. No. 655,512
Int. Cl.[5] H01L *21/306*
U.S. Cl. 437—11 22 Claims

1. A method of manufacturing a III-V semiconductor composition containing minor amounts of oxygen as an impurity, comprising placing an n-dopant by ion implantation in said III-V compound in an amount from about 4E12 cm^{-2} to less than about 2E13 cm^{-2} to form a dopant region and placing an oxygen reactive element by ion implantation in said III-V compound in an amount from about 1.5E12 cm^{-2} to about 4.5 E12 cm^{-2} to form an oxygen reactive element region so that





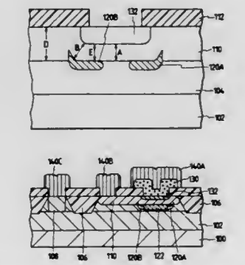
said regions are separated from one another in said III-V compound.

5,183,768

METHOD OF FABRICATING SEMICONDUCTOR DEVICE BY FORMING DOPED REGIONS THAT LIMIT WIDTH OF THE BASE

Shuichi Kameyama, Itami; Hiroshi Shimomura, and Kazuya Kikuchi, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Division of Ser. No. 503,603, Apr. 3, 1990, abandoned. This application Jul. 15, 1991, Ser. No. 729,965
Claims priority, application Japan, Apr. 4, 1989, 1-85411
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—26 5 Claims

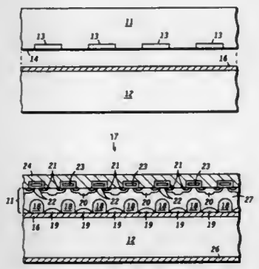


1. A method of fabricating a semiconductor device, comprising the steps of:
forming a first semiconductor region of a first conduction type, the first semiconductor region forming a transistor collector;
forming a second semiconductor region on the first semiconductor region, the second semiconductor region being of a second conduction type and forming a transistor base;
forming a mask on the second semiconductor region, the mask having an opening for a transistor emitter;
forming a third semiconductor region in an emitter-forming area within the second semiconductor region, the third semiconductor region being of the first type and forming a transistor emitter; and
implanting ions into the first and second semiconductor regions via the opening along a direction inclined with respect to a surface of the second semiconductor region and thereby forming a fourth semiconductor region of the first conduction type, the fourth semiconductor region having a main portion and an upper portion, wherein the main portion extends in a part of the first semiconductor region below an edge of the emitter-forming area within the second semiconductor region, the upper portion ex-

VOL
1147
ISS
1
FE
2
1993
UMI

tends from the main portion into a part of the second semiconductor region, the upper portion not reaching the upper surface of the second semiconductor region, and the surface of the upper portion is shaped so as to conform to the edge of the emitter-forming area to limit a width of the transistor base.

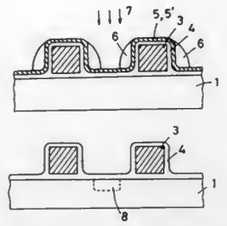
5,183,769
VERTICAL CURRENT FLOW SEMICONDUCTOR DEVICE UTILIZING WAFER BONDING
Robert E. Rutter, Tempe, and Frank S. d'Aragona, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 6, 1991, Ser. No. 696,405
Int. Cl.[5] H01L *29/70*
U.S. Cl. 437—31 **12 Claims**



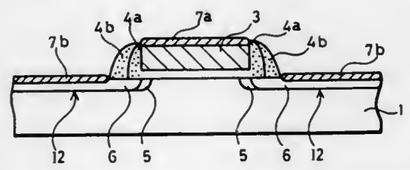
7. A method of forming a vertical current flow semiconductor device that has a minority carrier injection diode comprising:
providing an active wafer of a first conductivity type having a first surface and a plurality of predeposited dopant regions on a second surface of the active wafer;
providing a substrate having a wafer bonding adhesive layer on a first surface of the substrate;
forming an intermediate contact layer by wafer bonding the adhesive layer to the second surface of the active wafer wherein the wafer bonding facilitates forming the minority carrier injector diodes by diffusing the predeposited dopants into the second surface of the active wafer; and
forming an ohmic contact to the second surface of the substrate.

5,183,770
SEMICONDUCTOR DEVICE
Akitsu Ayukawa, and Shigeo Onishi, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Feb. 27, 1992, Ser. No. 842,515
Claims priority, application Japan, Mar. 4, 1991, 3-037585; May 27, 1991, 3-120805; Feb. 3, 1992, 4-017754
Int. Cl.[5] H01L *21/336, 21/324*
U.S. Cl. 437—41 **14 Claims**

1. A method for fabricating a semiconductor device, comprising the steps of:
(a) forming a gate electrode on a semiconductor silicon substrate with a gate oxide interposed therebetween;
(b) depositing an insulation film to entirely cover the substrate and the gate electrode, followed by depositing a polysilicon or amorphous silicon layer on the insulation film;
(c) forming side walls of SiO_2 on lateral sides of the gate electrode covered with the insulation film and the polysilicon or amorphous silicon layer, followed by ion implantation; and then
(d) subjecting the substrate to a heat treatment at a first temperature for forming a diffusion region after removal of the side walls, stacking an interlayer insulator over the substrate including the gate electrode after removal of the polysilicon or amorphous silicon layer, and then subjecting the substrate to a heat treatment at a second temperature higher than the first temperature for planarizing the interlayer insulator.

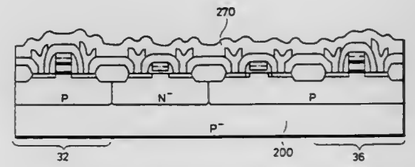


5,183,771
METHOD OF MANUFACTURING LDDFET HAVING DOUBLE SIDEWALL SPACERS
Katsuyoshi Mitsui, and masahide Inuishi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 462,536, Jan. 3, 1990, Pat. No. 5,089,865. This application Jul. 19, 1991, Ser. No. 732,541
Claims priority, application Japan, Jan. 7, 1989, 1-1602
Int. Cl.[5] H01L *21/336*
U.S. Cl. 437—44 **11 Claims**



1. A method for manufacturing a MIS semiconductor device having a salicide structure and a LDD structure, said method comprising the steps of:
forming a gate insulating film on a main surface of a semiconductor substrate;
forming a uniform thickness of polysilicon on said gate insulating film;
patterning said polysilicon of uniform thickness into a gate electrode of uniform thickness;
introducing impurities into said semiconductor substrate using the patterned polysilicon gate electrode as a mask to form an impurity region with relatively low concentration;
forming a first insulating film on the main surface of said semiconductor substrate and on the surface of said patterned polysilicon gate electrode;
patterning said first insulating film to form a first sidewall spacer on a sidewall of said patterned polysilicon gate electrode by performing anisotropic etching of said first insulating film;
introducing impurities into said semiconductor substrate using said polysilicon gate electrode and said first sidewall spacer as a mask to form an impurity region with relatively high concentration; then
forming a second insulating film on the surface of said semiconductor substrate, said first sidewall spacer and said polysilicon gate electrode;
patterning said second insulating film to form a second sidewall spacer on a sidewall of said first sidewall spacer by performing anisotropic etching on said second insulating film; and
forming a refractory metal silicide layer on the surface of said semiconductor substrate and on an upper surface of said gate electrode.

5,183,773
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE INCLUDING SUCH INPUT PROTECTION TRANSISTOR
Kazuaki Miyata, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 746,187, Aug. 15, 1991, which is a continuation of Ser. No. 506,614, Apr. 10, 1990, abandoned. This application Jan. 6, 1992, Ser. No. 817,190
Claims priority, application Japan, Apr. 13, 1989, 1-93707; Apr. 4, 1990, 2-91262
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **1 Claim**



1. A method of manufacturing a semiconductor device in which an internal circuit including a memory device and a transistor having an LDD structure, and an input protection device for protecting said internal circuit are formed on one semiconductor substrate, comprising the steps of:
forming an insulator film on a surface of said semiconductor substrate;
forming a first conductor film as a gate electrode on said insulator film in a region where said memory device is to be formed and in a region where said input protection device is to be formed;
forming an insulator film on said first conductor film;
forming a second conductor film as a gate electrode on insulator film on said first conductor film and on said insulator film in said region where said transistor is to be formed;
forming a resist film on said second conductor film corresponding to said gate forming region in said memory device forming region and in said input protection device forming region, forming said resist film on the overall surface of said second conductor film in said transistor forming region, and then etching with said resist film used as a mask, thereby forming a gate electrode formed of a plurality of conductor layers in said memory device forming region and in said input protection device forming region;
implanting high concentration impurity ions into the surface of said semiconductor substrate, with said gate electrode and said second conductor film in said transistor forming region used as masks, thereby forming impurity regions to be source and drain regions in said memory device forming region and in said input protection device forming region;
covering the overall surfaces of said memory device forming region and said input protection device forming region with a resist film, forming said resist film on said second conductor film corresponding to a gate forming region in said transistor forming region, and then etching with said resist film used as a mask, thereby forming a gate electrode in said transistor forming region; and
implanting low concentration impurity ions into the surface of said semiconductor substrate, with said resist film and said gate electrode in said transistor forming region used as masks, forming a sidewall at peripheries of said gate electrode, and then implanting high concentration impurity ions with said sidewall used as a mask, thereby forming source and drain impurity regions having the LDD structure in said transistor forming region.

5,183,772
MANUFACTURING METHOD FOR A DRAM CELL
Dae-je Jin; Kwang-byeog Seo, both of Seoul, and Tae-young Jeong, Kyunggi, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea
Continuation of Ser. No. 489,819, Mar. 9, 1990. This application Jan. 22, 1992, Ser. No. 824,885
Claims priority, application Rep. of Korea, May 10, 1989, 89-6207[U]
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **20 Claims**

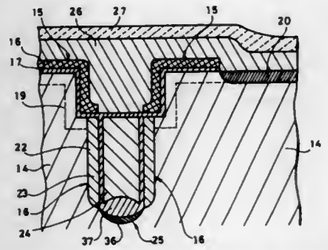
1. A manufacturing method for a DRAM cell provided with a stacked capacitor, comprising:
defining a switching transistor region by forming a field oxide layer on a first conduction type semiconductor substrate;
forming source and drain regions of a second conduction type different from said first conduction type in said switching transistor region;
forming respective first conductive layers on a part of said field oxide layer and on a gate oxide layer over a channel region within said switching transistor region;
forming a first insulating layer on said first conductive layers and on the surface of said semiconductor substrate;
forming a second conductive layer on the whole surface of said first insulating layer, and then, removing portion of said second conductive layer which are over said channel region and said drain region;
forming an opening for exposing a part of said source region;
forming a third conductive layer over remaining portions of said second conductive layer and over parts of said substrate, to provide a gentle slope at least from an edge of overlap of said second conductive layer and said third conductive layer to a region immediately adjacent that edge and above the first conductive layer over said channel region;
etching to remove portions of said second and third conductive layers;
forming a dielectric layer over remaining portions of said third conductive layer to serve as a dielectric medium of said capacitor; and
forming a fourth conductive layer on both said first insulating layer and said dielectric layer.

VOL
1147
ISS
1
FE
2
1993
UMI

5,183,774
METHOD OF MAKING A SEMICONDUCTOR MEMORY DEVICE

Shinichi Satoh, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 637,434, Jan. 4, 1991, abandoned, which is a division of Ser. No. 261,022, Oct. 20, 1988, Pat. No. 5,027,173. This application Dec. 16, 1991, Ser. No. 807,659
Claims priority, application Japan, Nov. 17, 1987, 65-291337
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **13 Claims**



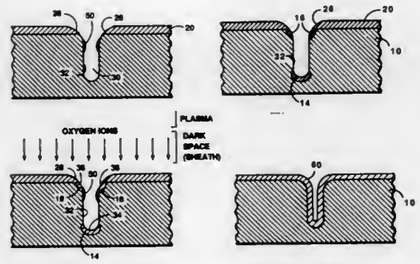
1. A method for manufacturing a semiconductor memory device on a semiconductor substrate comprising the steps of:
forming first and second pairs of substantially parallel trenches in said semiconductor substrate, said first pair of trenches arranged substantially orthogonal to said second pair of trenches thereby defining a rectangular block in said substrate;
forming a passive element region on bottom portions of said trenches;
forming first and second gate regions spaced apart on a major surface of said substrate along opposite side wall surfaces of said block formed by said parallel trenches, said first and second gate regions including respective first and second gate electrodes formed in said trenches along said opposite side wall surfaces and extending out of said trenches, parallel to said substrate, said first and second gate regions formed spaced apart on said major surface and electrically isolated from each other; and
forming a source/drain region common to said first and second gate regions on said major surface.

5,183,775
METHOD FOR FORMING CAPACITOR IN TRENCH OF SEMICONDUCTOR WAFER BY IMPLANTATION OF TRENCH SURFACES WITH OXYGEN

Karl B. Levy, Los Altos, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Jan. 23, 1990, Ser. No. 468,521
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—60 **12 Claims**

1. A process for forming a capacitor in a trench in a surface of a silicon wafer wherein said silicon wafer comprises one electrode of said capacitor which consists essentially of:
(a) forming a mask layer having an opening therein on said surface of said silicon wafer;
(b) placing said masked silicon wafer in an RIE etch apparatus;
(c) anisotropically RIE etching a trench in said silicon wafer through said mask opening on said wafer in said RIE apparatus;
(d) selectively anisotropically implanting oxygen atoms into a region of said wafer adjacent a curved bottom surface of said trench and into regions of said wafer adjacent top corner surfaces of said trench in said same RIE etch apparatus;
(e) then removing, from side surface of said trench, etch residues remaining from said etching step;
(f) thereafter growing an oxide layer on the surfaces of said trench which will serve as the dielectric of said capacitor by the steps of:
(i) heating said silicon wafer to a temperature with a range of from about 900° C. to about 1100° C.;
(ii) exposing said silicon wafer to a gaseous source of oxygen while maintaining said silicon wafer within said temperature range; and
(iii) continuing to expose said silicon wafer to said gaseous

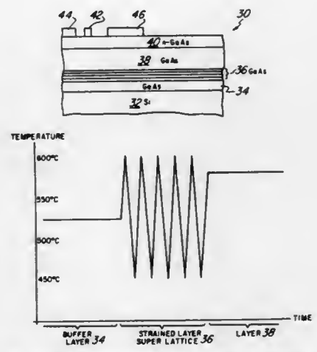


source of oxygen at said temperature for a period of from about 20 minutes to about 60 minutes;
whereby sufficient activation energy, in the form of thermal energy, will be supplied to the implanted wafer to permit the silicon in said silicon wafer to form Si-O bonds within said implanted oxygen atoms in said selected oxygen-implanted regions of said wafer; and
(g) filling said trench with a conductive material capable of forming the other electrode of said capacitor.

5,183,776
HETEROEPITAXY BY GROWTH OF THERMALLY STRAINED HOMOJUNCTION SUPERLATTICE BUFFER LAYERS

Jhang W. Lee, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 912,028, Sep. 26, 1986, abandoned. This application Aug. 3, 1989, Ser. No. 390,472
Int. Cl.[5] H01L *21/203, 21/205*
U.S. Cl. 437—110 **6 Claims**

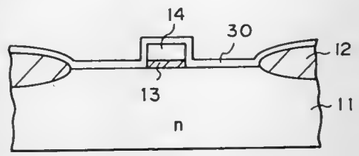


1. A method for heteroepitaxial growth of semiconductors, comprising the steps of:
(a) providing a substrate of a first semiconductor material;
(b) growing a first layer of a second semiconductor material on said substrate at a first temperature;
(c) growing a second layer of said second semiconductor material on said first layer at a second temperature differing from said first temperature;
(d) growing a third layer of said second semiconductor material on said second layer at said first temperature;
(e) growing a fourth layer of said second semiconductor material on said third layer at said second temperature;
(f) said first, second, third, and fourth layers each sufficiently thin to accommodate strain and together forming a strained layer superlattice;
(g) growing a fifth layer of said second semiconductor material on said superlattice.

5,183,777
METHOD OF FORMING SHALLOW JUNCTIONS

Masahiko Doki, Sagamihara, and Michiko Takei, Kawasaki, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 629,174, Dec. 19, 1990, abandoned, which is a continuation of Ser. No. 290,951, Dec. 28, 1988, abandoned. This application Sep. 13, 1991, Ser. No. 759,767
Claims priority, application Japan, Dec. 30, 1987, 62-335720; Apr. 28, 1988, 63-104018; Jul. 8, 1988, 63-171359
Int. Cl.[5] H01L *21/00, 21/02, 21/225, 21/265*
U.S. Cl. 437—160 **11 Claims**



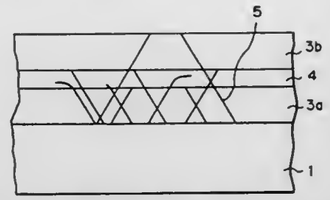
1. A method of forming a shallow junction comprising the steps of:
forming a film of a hydrogen compound of an element selected from the group consisting of boron, phosphorus and arsenic and having a thickness of from several atom layers to 1000 Å on a silicon layer, without impurities substantially penetrating said silicon layer by depositing said compound at a temperature of up to 150° C. and an accelerating energy of up to 20V; and
annealing the film under conditions sufficient to form an impurity region having a depth of 1000 Å or less and having an impurity concentration of 10^{18} to 10^{21} in the surface layer of the silicon layer.

5,183,778
METHOD OF PRODUCING A SEMICONDUCTOR DEVICE

Kanetake Takasaki, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 615,970, Nov. 20, 1990, Pat. No. 5,107,317. This application Dec. 30, 1991, Ser. No. 814,157
Claims priority, application Japan, Nov. 20, 1989, 1-299758
Int. Cl.[5] H01L *21/20, 21/203, 21/205*
U.S. Cl. 437—132 **5 Claims**

1. A method of producing a semiconductor device, comprising the steps of:
preparing a Si layer (**1**);
forming a first crystalline layer (3*a*) of GaAs or GaAs-containing compound on said Si layer (**1**);
forming a Ge or Ge-containing crystalline layer (**4**) on said first crystalline layer (3*a*); and

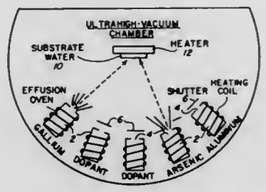


forming a second crystalline layer (3*b*) of GaAs or GaAs-containing compound on said Ge or Ge-containing crystalline layer (**4**).

5,183,779
METHOD FOR DOPING GAAS WITH HIGH VAPOR PRESSURE ELEMENTS

Bijan Tadayon, and Saied Tadayon, both of Germantown, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 3, 1991, Ser. No. 695,018
Int. Cl.[5] H01L *21/223*
U.S. Cl. 437—165 **32 Claims**



1. A method of doping a relatively high vapor pressure element into semiconductor materials, said semiconductor materials deposited on a substrate using a molecular beam epitaxy chamber, the method comprising the steps of:
1) a first diffusion step of diffusing a first semiconductor material onto said substrate to form a first diffusion layer;
2) a second diffusion step, performed after completion of said first diffusion step, of diffusing a second semiconductor material onto said first diffusion layer to form a second diffusion layer;
3) a third diffusion step of diffusing said relatively high vapor pressure element onto at least one of said first and second layers; and
4) heating the substrate to no more than a relatively low temperature during at least said third diffusion step so as to permit said relatively high vapor pressure element to bond to crystal sites of the semiconductor material.

5,183,780
METHOD OF FABRICATING SEMICONDUCTOR DEVICE

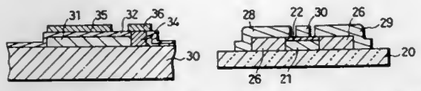
Shigeru Noguchi; Satoshi Ishida; Hiroshi Iwata; Keiichi Sano, and Shoichiro Nakayama, all of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 20, 1991, Ser. No. 658,389
Claims priority, application Japan, Feb. 22, 1990, 2-42135
Int. Cl.[5] H01L *21/26, 21/306*
U.S. Cl. 437—173 **34 Claims**

1. A method of fabricating a semiconductor device, comprising the steps of:
forming a semiconductor film on a substrate,

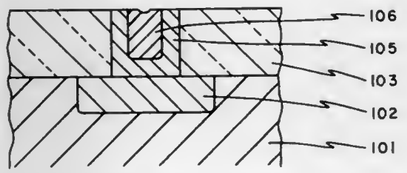
VOL 1147 ISS 1 FE 2 1993 UMI

forming an insulator film so as to cover said semiconductor film;
providing a dopant source;
irradiating at least a region of said device with a high-energy



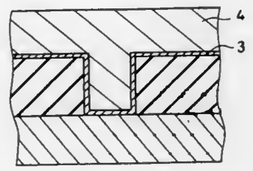
beam passing through said dopant source to melt both said insulator film and said semiconductor film in the irradiated region to form in said irradiated region a polycrystalline electrical contact region having dopant supplied from said dopant source.

5,183,781
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE
Eiichi Nakano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jan. 8, 1991, Ser. No. 638,757
Claims priority, application Japan, Jan. 12, 1990, 2-5108
Int. Cl.[5] H01L *21/28, 21/88*
U.S. Cl. 437—191 **6 Claims**



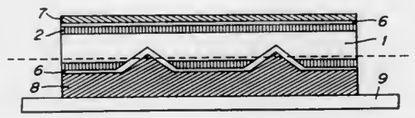
1. A method of manufacturing a semiconductor device comprising the steps of:
preparing a semiconductor substrate having a major surface with a diffusion layer formed at said major surface;
forming an interlayer insulating film on said major surface of said semiconductor substrate, said interlayer insulating film having an upper surface;
opening a contact hole in said interlayer insulating film, said opening extending from said upper surface of said interlayer insulating film to said major surface of said semiconductor substrate to expose a part of said diffusion layer, said contact hole having an inside wall surrounding said contact hole;
depositing a doped polycrystalline silicon film, while supplying phosphorus thereinto, said doped polycrystalline silicon film being deposited onto said upper surface of said interlayer insulating film, onto said inside wall of said contact hole, and onto said exposed part of said diffusion layer within said contact hole, the thickness of said doped polycrystalline silicon film being thin enough so that a said doped polycrystalline silicon film forms a concavity within and above said contact hole;
depositing a nondoped polycrystalline silicon film on said doped polycrystalline silicon film within and above said contact hole, said nondoped polycrystalline silicon film running over said concavity and over said doped polycrystalline silicon film above said upper surface of said interlayer insulating film;
etching away said nondoped polycrystalline silicon film by a reactive ion etching method with a sulfur hexafluoride gas, said etching continuing until it just exposes said doped polycrystalline silicon film above said upper surface of said interlayer insulation film and leaves said nondoped polycrystalline silicon film in only said concavity; and
further etching said doped polycrystalline silicon film and said nondoped polycrystalline silicon film simultaneously by a reactive ion etching method using a carbon fluoride gas, said further etching continuing until said upper surface of said interlayer insulating film is just exposed and the upper surface of said doped polycrystalline silicon film and said nondoped polycrystalline silicon film left in said contact hole is coplanar with said upper surface of said interlayer insulating film.

5,183,782
PROCESS FOR FABRICATING A SEMICONDUCTOR DEVICE INCLUDING A TUNGSTEN SILICIDE ADHESIVE LAYER
Shigeo Onishi; Tsutomu Yamadai, both of Nara, and Kazuya Ishihara, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Nov. 21, 1991, Ser. No. 794,146
Claims priority, application Japan, Jan. 26, 1991, 3-25601
Int. Cl.[5] H01L *21/283, 21/324*
U.S. Cl. 437—192 **9 Claims**



1. A process for fabricating a semiconductor device comprising the steps of:
depositing a tungsten silicide adhesive layer over a wafer having a SiO_2 insulating layer with a contact hole defined therein; then
treating said wafer by a rapid thermal annealing technique to impart further adherence to said tungsten silicide adhesive layer; and then
depositing tungsten over said tungsten silicide adhesive layer by CVD process to form a tungsten plug layer for electrical contact and a tungsten wiring layer.

5,183,783
METHOD FOR PRODUCTION OF DIELECTRIC-SEPARATION SUBSTRATE
Yutaka Ohta; Konomu Ohki, and Masatake Katayama, all of Gunma, Japan, assignors to Shin-Etsu Handotai Co., Ltd, Japan
Filed Dec. 23, 1991, Ser. No. 811,958
Claims priority, application Japan, Dec. 28, 1990, 2-417208
Int. Cl.[5] H01L *21/302*
U.S. Cl. 437—225 **6 Claims**



1. A method for the production of a dielectric-separation substrate having a supporting member made of polycrystaline silicon, characterized by forming a thermal oxide film on a single crystal silicon substrate having grooves incised in advance therein, then forming a irreversibly thermally shrinkable film on the rear surface of said single crystal silicon substrate prior to depositing polycrystalline silicon, subsequently depositing polycrystalline silicon on said single crystal silicon substrate, grinding the surface of the deposited polycrystalline silicon layer, and thereafter grinding said single crystal silicon substrate in conjunction with said irreversibly thermally shrinkable film.

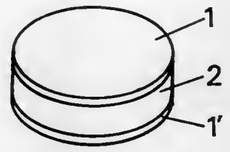
5,183,784
SILVER-GLASS PASTES
My N. Nguyen, San Diego, Calif.; Chee-Kong Lee, Singapore, Singapore, and Thomas L. Herrington, Ramona, Calif., assignors to Johnson Matthey Inc., Valley Forge, Pa.
Continuation-in-part of Ser. No. 482,489, Feb. 21, 1990, Pat. No. 5,075,262. This application Sep. 17, 1991, Ser. No. 760,454
Int. Cl.[5] C03C *8/18*
U.S. Cl. 501—19 **9 Claims**

1. In a silver-glass paste comprising silver flake, organic vehicle, organic resin, surfactant and a glass component, the improvement wherein the glass component comprises a mixture of lead phosphovanadate and lead telluride vanadate.

5,183,785
ALUMINUM BORATE CERAMICS AND PROCESS FOR PRODUCING SAME
Michael J. Readey, Denver, Colo., assignor to Coors Porcelain Company, Golden, Colo.
Filed Jun. 29, 1990, Ser. No. 545,864
Int. Cl.[5] C04B *35/10, 35/02, 35/18, 35/58*
U.S. Cl. 501—127 **11 Claims**

1. A process for producing an aluminum borate ceramic body comprising the steps of:
(a) calcining substantially dry boric acid-stabilized aluminum acetate powder at a temperature between about 800° C. and about 1600° C. in the presence of oxygen for a time sufficient to convert at least about 80% of the powder to aluminum borate;
(b) forming the calcined powder into a green body; and
(c) sintering the green body at a temperature between about 1300° C. and about 1800° C. for a time sufficient to form a sintered aluminum borate ceramic body having a porosity of at least about 40%.

5,183,786
DIELECTRIC MATERIAL, AND A CONDENSER MADE FROM THE SAME
Seiji Gejima, Neyagawa; Koji Kawakita, Joyo; Suzushi Kimura; Hideyuki Okinaka, both of Toyonaka, and Yasuhiko Hakotani, Nishinomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 18, 1991, Ser. No. 779,439
Claims priority, application Japan, Nov. 20, 1990, 2-317341
Int. Cl.[5] C04B *35/46*
U.S. Cl. 501—134 **7 Claims**

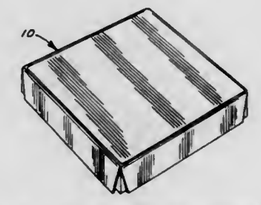


1. A dielectric material comprising a dielectric porcelain composition represented by the following general formula in the form of a pre-baked powder, and 1.0–25.0 mole % of lead oxide in which the amount of said lead oxide is converted into the amount of PbO:

$$(1-x)[Pb(Mg_{1/3}Nb_{2/3})Cu_aO_{3+a}]xBa(Ti_{1-b}Zr_b)O_3$$

wherein, x, a and b values satisfy $0.30<x<0.80$, $0 \leqq a \leqq 0.30$, and $0 \leqq b \leqq 0.15$.

5,183,787
AMPHOTERIC CERAMIC MICROWAVE HEATING SUSCEPTOR COMPOSITIONS WITH METAL SALT MODERATORS
Jonathan Seaborne, Corcoran, Minn., assignor to General Mills, Inc., Minneapolis, Minn.
Division of Ser. No. 270,179, Nov. 14, 1988, Pat. No. 4,965,427, which is a division of Ser. No. 94,972, Sep. 10, 1987, Pat. No. 4,808,780. This application Jul. 23, 1990, Ser. No. 557,853
Int. Cl.[5] C04B *33/24*
U.S. Cl. 501—143 **11 Claims**



1. A greenware composite composition useful as a susceptor for microwave heating with microwaves at about 2,450 MHz, comprising:
A. about 1% to 60% by weight of the composition of a binder selected from the group consisting of calcium sulphate, cements, calcite, dolomite, aragonite, silica fiber, whether amorphorus or crystalline, feldspar, pulverized polyamide fiber, colloidal silicas, fumed silicas, fiberglass, wood pulp, cotton fibers, thermoplastic resins and thermosetting resins;
B. about 15% to less than 99% by weight of the composition of an amphoteric ceramic susceptor material comprising a material which absorbs microwave energy and having a residual lattice charge; wherein the amphoteric ceramic susceptor material is selected from the group consisting of vermiculite, glauconite, Bentonite, zeolites, phologophite mica, biotite mica, Hectorite, Chlorite, Illite, Attapulgite, Saponite, Sepiolite, ferriginous smectite, kaolinites, Halloysites, and mixtures thereof, said amphoteric susceptor material being in a charged state by having been treated with an acid or base; and
C. about 0.5% to 6% by weight of the composition of a metal salt supplemental microwave absorbing material selected from the group consisting of sodium chloride, sodium sulfate, silver nitrate, silver citrate, sodium bicarbonate, potassium bicarbonate, magnesium sulfate, sodium citrate, potassium acetate, barium chloride, potassium iodide, potassium bromate, copper chloride, lithium chloride, ferric chloride and mixtures thereof, homogeneously dispersed through the composition; and
wherein the composition is unfired.

VOL 1147 ISS 1 FEB 2 1993 UMI

5,183,788

MODULAR SURFACE CATALYZED MEMBRANE CONTAINING A MICROPOROUS MEMBRANE CATALYST LAYER AND TRANSPORT LAYER

Allan J. Jacobson, Houston, Tex.; Wen-Yih F. Lai, Fair Lawn, N.J.; Michael G. Matturro, Lambertville, N.J.; Harry W. Deckman, Clinton, N.J.; James A. McHenry, Washington, N.J.; Robert P. Reynolds, Clinton, N.J., and Qiyao Zhang, Belvidere, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Oct. 10, 1991, Ser. No. 775,646
Int. Cl.[5] B01J *35/04*
U.S. Cl. 502—4 10 Claims

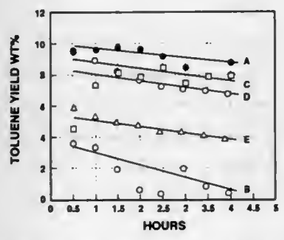
1. A catalytic membrane comprising:
a porous substrate having a first surface and a second surface, the substrate having micropores at least in a region extending from the first surface to the second surface
a catalyst deposited on at least the first surface;
a substantially continuous transport layer on the first surface of the substrate and the catalyst deposited thereon wherein the transport layer consists essentially of a transition metal compound capable of transporting catalytically active species.

5,183,789

OZONE REGENERATION OF PLATINUM, AND POLYMETALLIC PLATINUM REFORMING CATALYSTS

Joseph P. Boyle, Baton Rouge, La., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Mar. 11, 1991, Ser. No. 667,120
Int. Cl.[5] B01J *23/96, 38/14;* C10G *35/09, 35/085*
U.S. Cl. 502—52 6 Claims



1. A process for the regeneration of a coked platinum-alumina, or polymetallic-platinum alumina reforming catalyst, which comprises contacting said catalyst with a gaseous stream of ozone in air, said stream containing from about 1 percent to about 50 percent ozone, based on the volume of the gas, at temperature ranging from about 60° C. to about 120° C. and at a space velocity of from about 50 to about 200 standard cubic feet per hour per pound of catalyst sufficient to burn and substantially deplete said catalyst of sufficient carbon to restore the activity of the catalyst to substantially that of the corresponding fresh catalyst.

5,183,790

USE OF ZSM-57 IN CATALYTIC CRACKING FOR GASOLINE OCTANE IMPROVEMENT AND CO-PRODUCTION OF LIGHT OLEFINS

Girish K. Chitnis, Chadds Ford, Pa.; Joseph A. Herbst, Turnersville, N.J., and Ernest W. Valyocsik, Yardley, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Division of Ser. No. 645,167, Jan. 24, 1991, Pat. No. 5,098,555.
This application Nov. 8, 1991, Ser. No. 790,621
Int. Cl.[5] B01J *502/67*
U.S. Cl. 502—67 16 Claims

1. A cracking catalyst composition comprising, as a first component, a large pore crystalline molecular sieve and, as a second component, ZSM-57.

9. A catalyst according to claim 1, wherein the first component is selected from the group consisting of Zeolite Omega, ZSM-20, mordenite, Zeolite Beta, Zeolite L, and mixtures thereof.

15. A catalyst according to claim 1, wherein said catalyst composition comprises, as a third component, a zeolite other than ZSM-57 which has a Constraint Index of 1 to 12.

5,183,791

CATALYSTS FOR THE METATHESIS OF OLEFINS AND FUNCTIONALIZED OLEFINS

Siegfried Warwel, Aachen; Hans-Gerd Jägers, Gladbeck, and Andreas Deckers, Ludwigshafen, all of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Division of Ser. No. 658,861, Feb. 22, 1991, Pat. No. 5,143,885.
This application Feb. 24, 1992, Ser. No. 840,197
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1990, 4006540
Int. Cl.[5] B01J *31/12, 23/36, 21/06;* C07C *6/00*
U.S. Cl. 502—102 8 Claims

1. A catalyst for the metathesis of olefins and functionalized olefins, which consists essentially of B_2O_3—Re_2O_7 on an Al_2O_3—SiO_2 substrate, wherein the B_2O_3—Re_2O_7 content is from 2 to 30% by weight, based on the Al_2O_3—SiO_2 content, and which catalyst further contains an organo-tin compound having the formula SnR_4, wherein R is an alkyl group of from 1 to 8 carbon atoms.

5,183,792

CATALYST FOR MAKING POLYETHYLENE

Li Wang, Bloomingdale, Ill., and Roy T. Mitsche, Peoria, Ariz., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Filed Nov. 26, 1991, Ser. No. 798,214
Int. Cl.[5] B01J *21/06, 21/08, 23/26, 37/03*
U.S. Cl. 502—242 15 Claims

1. An olefin polymerization catalyst comprising chromium and titanium supported on silica prepared by the process comprising the steps of:
a) preparing an aqueous solution containing water soluble chromium and titanium compounds;
b) adding an ammonia-stabilized silica sol with an average silicate particle size of from about 2 to about 6 nm to solution of (a);
c) adding a sufficient amount of ammonium hydroxide to the solution of (b) to form a hydrogel;
d) aging, washing, and drying said hydrogel; and,
e) removing water from the pores of said hydrogel to form said catalyst.

5,183,793

AMMOXIDATION CATALYSTS AND METHODS FOR THEIR PREPARATION FOR USE IN THE PRODUCTION OF ISOPHTHALONITRILE

Christos Paparizos, Willownick, and Wilfrid G. Shaw, Lyndhurst, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Nov. 13, 1991, Ser. No. 789,836
Int. Cl.[5] B01J *23/84*
U.S. Cl. 502—338 9 Claims

1. A method for producing a catalyst suitable for ammoxidation comprising the steps of:
a) forming an iron-antimony oxide composition including calcining and
b) combining said composition with vanadium and bismuth compounds and optionally other metal compounds to produce a catalyst containing the elements and proportions represented by the general formula:

$$V_1Bi_aSb_bFe_cX_dY_eZ_fO_g$$

wherein,
X=Mo, Cu, W, Nb, Te, P, Sn, Ge, As
Y=Co, Ni, Ce, La, Mn, Cr
Z=Alkali, alkaline earth, B, Tl and,
a=0.1–10, b=0.01–20, c=0.01–5, d=0–5, e=0–3, f=0–1, and g is determined by the valance requirements of the elements present.

5,183,794

METHOD FOR PREPARING A CATALYST FOR POLYMERIZATION OF OLEFINS

Hilkka Knuuttila, Porvoo, and Eeva-Liisa Lakomaa, Espoo, both of Finland, assignors to Neste Oy, Espoo, Finland

Filed Jan. 16, 1991, Ser. No. 641,907
Claims priority, application Finland, Jan. 16, 1990, 900256
Int. Cl.[5] B01J *21/06, 23/26*
U.S. Cl. 502—242 18 Claims

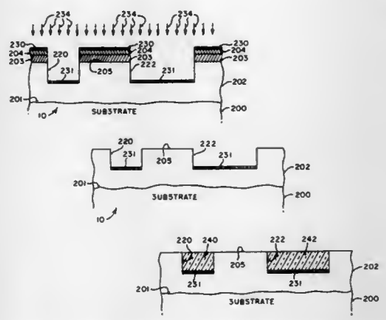
1. A method for preparing a polymerization catalyst for olefins, said catalyst containing catalytically active chromium and titanium compounds bound on an inorganic support, wherein said method comprises the steps of:
(a) vapourizing at least one precursor reagent of a catalytically active chromium or titanium compound;
(b) routing the obtained reagent vapour from step (a) into a reaction chamber where the vapour is brought to interact with an inorganic support material at about 160° to 500° C.;
(c) maintaining the vapour pressure of the reagent sufficiently high and the duration of interaction with the support sufficiently long so as to provide at least an equal amount or an excess amount of the reagent in relation to the available binding sites of the support material;
(d) removing the reagent not bound to the support material from the reaction chamber; and
(e) repeating the process step (a) through (d) at least once in order to bind at least another catalytically active compound to the support.

5,183,795

FULLY PLANAR METALIZATION PROCESS

Chiu H. Ting, Saratoga, and Pei-Lin Pai, Cupertino, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 660,922, Feb. 27, 1991, abandoned, which is a continuation of Ser. No. 450,180, Dec. 13, 1989, abandoned. This application Oct. 10, 1991, Ser. No. 774,372
Int. Cl.[5] H04L *21/02*
U.S. Cl. 437—230 13 Claims



1. A method for forming a planar interconnect level for VLSI devices comprising:
forming on a surface of a VLSI wafer a first dielectric layer having a planar top surface;
forming a masking layer on said first dielectric layer;
patterning said masking layer to define in said masking layer at least one location where an interconnect channel is to be formed;
etching said first dielectric layer at said location through said patterned masking layer to form an interconnect channel in said first dielectric layer;
implanting ions into the bottom surface of said interconnect channel, said ions forming a modified bottom surface of said interconnect channel to receive selective electroless metal deposition;
removing said patterned masking layer; and
depositing copper onto said modified bottom surface of said interconnect channel by selective electroless metal deposition, said deposition continuing until said interconnect channel is filled to a level substantially coincidence with the top surface of said first planar dielectric layer to thereby form a metal interconnect line, said metal interconnect line and said first dielectric layer forming a first planar interconnect level.

5,183,796

CATALYST FOR METATHETIC REACTIONS OF HYDROCARBONS AND METHOD FOR FORMING THE CATALYST

Pekka Knuuttila, Porvoo, and Eeva-Liisa Lakomaa, Espoo, both of Finland, assignors to Neste Oy, Espoo, Finland

Filed Jan. 16, 1991, Ser. No. 641,904
Claims priority, application Finland, Jan. 16, 1990, 900254
Int. Cl.[5] B01J *21/04, 23/02, 23/36*
U.S. Cl. 502—340 20 Claims

1. A heterogenic catalyst particularly suited for liquid- or vapour-phase metathetic reactions of hydrocarbons, said catalyst containing rhenium oxide bound onto an inorganic support material, wherein said catalyst is prepared by a method comprising the steps of:
vapourizing rhenium heptoxide precursor,
routing the rhenium heptoxide precursor vapour into a reaction chamber where the vapour is reacted with the support material at a temperature of about 160° to 500° C.,
maintaining the vapour pressure of the rhenium heptoxide precursor sufficiently high and the duration of the interaction with the support material sufficiently long so as to provide at least an equal amount of or an excess of the rhenium heptoxide precursor in relation to the available binding sites of the support material, and
removing the rhenium heptoxide precursor not bound to the support material from the reaction chamber to form said heterogenic rhenium oxide containing catalyst.

5,183,797

CATALYST FOR HYDROHALOGENATION OF HYDROCARBONS

Michael T. Holbrook; Lawrence A. Hebert, both of Baton Rouge, La.; Stephen W. Najmy, Midland, Mich.; Ernest F. Stine, Jr., Knoxville, Tenn., and Reimer Hasche, Hammah, Fed. Rep. of Germany, assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 699,530, May 14, 1991, Pat. No. 5,109,138, which is a continuation-in-part of Ser. No. 529,009, May 24, 1990, abandoned. This application Nov. 7, 1991, Ser. No. 789,217
Int. Cl.[5] B01J *21/04*
U.S. Cl. 502—355 5 Claims

1. A hydrohalogenation catalyst having reduced coking, decreased pressure drop over the catalyst lifetime, and increased catalyst life in a hydrohalogenation reactor charge for the reaction of methanol and a hydrogen halide gas mixture, said catalyst comprising at least two zones wherein the catalytic activity for hydrohalogenation of each zone is lower than that of each succeeding zone.

VOL 1147 ISS 1 FE 2 1993 UMI

5,183,798

MULTIPLE PASS LASER PRINTING FOR IMPROVED UNIFORMITY OF A TRANSFERRED IMAGE

Sanwal P. Sarraf; Sharon W. Weber, both of Webster; Hugh S. A. Gilmour, Rochester, and Linda I. Ficcaglia, Geneva, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 16, 1991, Ser. No. 730,739
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 7 Claims

1. In a process of forming a laser-induced thermal dye transfer image comprising:

a) contacting at least one dye-donor element comprising a support having thereon a dye layer, having an infrared-absorbing material associated therewith, with a dye-receiving element comprising a support having thereon a polymeric dye image-receiving layer, said dye-donor and dye-receiver being separated by spacer beads;

b) imagewise-heating said dye-donor element by means of a laser at a given power supplied to the laser; and

c) transferring a dye image to said dye-receiving element to form said laser-induced thermal dye transfer image,

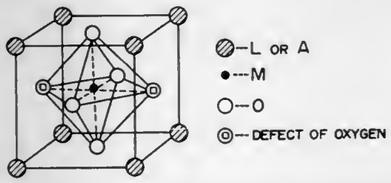
the improvement wherein another portion of said dye-donor element or another dye-donor element is imagewise-heated by said laser to transfer a second dye image which is approximately the same hue as said first dye image and is in register with said first dye image to produce a given density, the power supplied to said laser for said first and second imagewise heatings being lower than the power which would have to be supplied to said laser to produce the same given density with only one imagewise heating.

5,183,799

SUPERCONDUCTING MATERIALS INCLUDING LA-SR-NB-O, Y-BA-NB-O, LA-SR-NB-CU-O, AND Y-BA-NB-CU-O

Tetsuya Ogushi; Yoshinori Hakuraku, both of Kagoshima, and Hisanao Ogata, Ibraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 423,200, Oct. 18, 1989, abandoned, which is a division of Ser. No. 181,097, Apr. 13, 1988, Pat. No. 4,892,862. This application Jul. 10, 1991, Ser. No. 727,310
Claims priority, application Japan, Apr. 13, 1987, 62-88847; May 18, 1987, 62-118844; May 18, 1987, 62-118846; Aug. 21, 1987, 62-206359; Aug. 21, 1987, 62-206360
Int. Cl.[5] C01F *11/02, 17/00;* C01G *33/00;* H01L *39/12*
U.S. Cl. 505—1 5 Claims



2. A superconducting material which is represented by the formula:

$$(La_xSr_{1-x})_iNbO_y$$

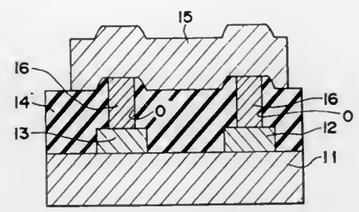
wherein x is $0<x<1$; i is 1, 3/2 or 2 and y is $0<y\leqq3$ in the case of $i=1$ or $0<y\leqq4$ in the case of $i=3/2$ or 2.

5,183,800

INTERCONNECTION METHOD FOR SEMICONDUCTOR DEVICE COMPRISING A HIGH-TEMPERATURE SUPERCONDUCTIVE MATERIAL

Yasuhito Nakagawa, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 192,671, May 10, 1988, abandoned.
This application Jun. 7, 1991, Ser. No. 711,716
Claims priority, application Japan, Jul. 15, 1987, 62-176220
Int. Cl.[5] H01L *21/28, 21/324*
U.S. Cl. 505—1 8 Claims



1. An interconnection method for a semiconductor device comprising the steps of:

depositing an interlevel insulation layer of predetermined thickness over a semiconductor substrate formed with a first level metal on a surface and active elements in a lower semiconductor layer;

forming through-holes through the interlevel insulation layer for connecting the first level metal with a second level interconnection;

depositing a metallic material within the through-holes;

depositing a high-temperature superconductive material over the surface of the interlevel insulation layer and the metallic material;

heat-treating the surface of the high-temperature superconductive material thus deposited over the interlevel insulation layer by laser annealing for imparting thereto superconductive characteristics and simultaneous alignment of crystal orientation; and

removing unnecessary portions of the high-temperature superconductive material by etching,

said step of depositing an interlevel insulation layer protecting the active elements from thermal damage caused by said step of heat treating by laser annealing.

5,183,801

STABILIZED BISMUTH OXIDE

Anil V. Virkar, and Kuan-Zong Fung, both of Salt Lake City, Utah, assignors to Gas Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 342,291, Apr. 24, 1989, Pat. No. 5,006,494. This application Apr. 9, 1991, Ser. No. 682,748
The portion of the term of this patent subsequent to Apr. 9, 2008, has been disclaimed.
Int. Cl.[5] C04B *35/48, 35/50*
U.S. Cl. 501—152 5 Claims

1. A stable bismuth oxide ceramic composition consisting essentially of:

bismuth oxide substantially present in a high temperature phase as the predominant component;

a rare earth oxide present in a quantity of about 10 mole percent to about 40 mole percent; and

an oxide compound having a cationic element having a valence of four or more present in minor quantities of about 0.1 mole percent to about 10 mole percent.

5,183,802

PHARMACEUTICAL COMPOSITIONS FOR INTRANASAL ADMINISTRATION OF CALCITONIN

Valerio Aliverti, Castellanza; Luciano Dorigotti, Basiglio; Teodoro Fonio, Arese, and Mario Pinza, Corsico, all of Italy, assignors to ISF Societa per Azioni, Italy

Filed Nov. 14, 1988, Ser. No. 270,905
Claims priority, application Italy, Nov. 13, 1987, 22647 A/87; Feb. 25, 1988, 19541 A/88
Int. Cl.[5] A61K *37/30*
U.S. Cl. 514—2 22 Claims

1. A pharmaceutical composition comprising a non-toxic, therapeutically effective amount of a calcitonin, a non-toxic effective amount of an absorption enhancer which is a glycyrrhizinate, and a pharmaceutically acceptable carrier.

5,183,803

Patent Not Issued For This Number

5,183,804

POLYPEPTIDE COMPRISING REPEATED CELL-ADHESIVE CORE SEQUENCES

Ikuo Saiki; Norio Nishi; Ichiro Azuma, and Seiichi Tokura, all of Hokkaido, Japan, assignors to Ichiro Azuma, Hokkaido, Japan

Filed Jun. 23, 1989, Ser. No. 370,182
Claims priority, application Japan, Jun. 24, 1988, 63-156133
Int. Cl.[5] C07K *7/06, 7/08, 7/10;* A61K *37/02*
U.S. Cl. 514—12 3 Claims

1. A polypeptide of the following formula:

$$(Arg\text{-}Gly\text{-}Asp)_n$$

wherein n is a number from 2 to 20 or a pharmaceutically acceptable salt thereof.

5,183,805

BIOACTIVE EGF PEPTIDES FOR PROMOTION OF TISSUE REGENERATION AND CANCER THERAPY

Jin S. Lee, and Mark Blick, both of Houston, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Aug. 13, 1990, Ser. No. 567,407
Int. Cl.[5] A61K *37/00, 37/02;* C07K *5/00, 7/00*
U.S. Cl. 514—13 16 Claims

1. A biologically active peptide fragment of EGF peptide consisting essentially of NCVVGYIGERCQYRDLK having a carboxyl end amide group and an amino end acetyl.

5,183,806

Patent Not Issued For This Number

5,183,807

USE OF MONOSIALOGANGLIOSIDE GM, TO PREVENT THE DEVELOPMENT OF TOLERANCE TO THE ANALGESIC EFFECT OF MORPHINE AND RELATED DRUGS

Francesco della Valle, Padua, and Gino Toffano, Montegrotto Terme, both of Italy, assignors to FIDIA S.p.A., Abano Terme, Italy

Filed Jun. 28, 1991, Ser. No. 723,280
Claims priority, application Italy, Jun. 29, 1990, 20822 A/90
Int. Cl.[5] A61K *31/70, 31/715, 31/44*
U.S. Cl. 514—25 8 Claims

1. A method for preventing the development of tolerance to the analgesic effect of morphine, of chemically correlated opiates and of methadone and its derivatives, which comprises administering to patients in need thereof, either prior to, contemporaneously with or successively to the analgesic administration of said compounds, a therapeutically effective amount of the ganglicside GM_1, its pharmacologically acceptable salts or its internal ester derivative, alone or together in mutual association.

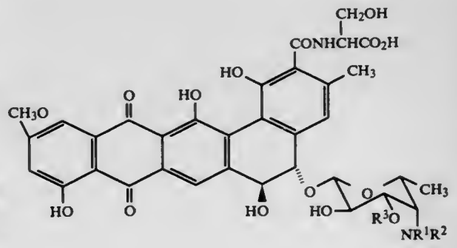
5,183,808

METHOD FOR TREATING FUNGAL INFECTIONS WITH SERINE ANALOGS OF BU-3608 ANTIBIOTICS

Yosuke Sawada, Tokyo; Masatoshi Kakushima, Yokohama; Maki Nishio, Tokyo; Takeo Miyaki, and Toshikazu Oki, both of Yokohama, all of Japan, assignors to Bristol-Myers Squibb Company, New York, N.Y.

Division of Ser. No. 699,548, May 14, 1991, Pat. No. 5,114,857, which is a division of Ser. No. 569,679, Aug. 20, 1990, Pat. No. 5,061,624, which is a division of Ser. No. 269,821, Nov. 10, 1988, Pat. No. 4,973,673. This application Feb. 19, 1992, Ser. No. 837,718
Int. Cl.[5] A61K *31/71*
U.S. Cl. 514—33 1 Claim

1. A method for treating fungal infections in a mamalian host which comprises administering to said host an antifungally effective amount of a compound having the formula



wherein the serine is D-serine; R^1 and R^2 are independently H or C_{1-16} alkyl; and R^3 is H or β-D-xylosyl; or a pharmaceutically acceptable salt thereof.

VOL
1147
ISS
1
FE
2
1993
UMI

5,183,809

CYCLODEXTRIN POLYMERS AND CYCLODEXTRINS IMMOBILIZED ON A SOLID SURFACE

Paul B. Weisz, Yardley, Pa.; Ynen W. Shing, Randolph, and Judah Folkman, Brookline, both of Mass., assignors to The Trustees of the University of Pennsylvania/Childrens Hospital Corporation, Philadelphia, Pa.

Filed Feb. 15, 1990, Ser. No. 480,407

Int. Cl.[5] **C08B** *37/16;* **C07H** *1/00;* **A61K** *31/56*

U.S. Cl. 514—58 **24 Claims**

1. A polyionic derivative of an alpha-, beta-, or gamma-cyclodextrin polymer in which the ionic group is sulfate, phosphate, carboxylate, or nitrate.

5,183,810

IMIDAZOLE ANGIOTENSIN II ANTAGONISTS INCORPORATING A SUBSTITUTED BENZYL ELEMENT

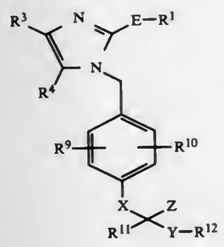
William J. Greenlee, Teaneck; Arthur A. Patchett, Westfield, both of N.J.; David Hangauer, East Amherst, N.Y.; Thomas F. Walsh, Westfield, N.J.; Kenneth J. Fitch, Cranford, N.J.; Ralph A. Rivero, Estontown, N.J., and Daljit S. Dhanoa, Tinton Falls, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 671,593, Mar. 19, 1991, abandoned, which is a continuation of Ser. No. 479,780, Feb. 13, 1990, abandoned. This application Aug. 13, 1991, Ser. No. 744,565

Int. Cl.[5] **A61K** *31/415;* **C07D** *403/04, 403/06, 403/10*

U.S. Cl. 514—63 **8 Claims**

1. A compound of Formula 1 which is



FORMULA I

or a pharmaceutically acceptable salt thereof wherein:

R^1 is:
- (a) $(C_1–C_6)$-alkyl, $(C_2–C_6)$-alkenyl or $(C_2–C_6)$-alkynyl each of which is unsubstituted or substituted with a substituent selected from the group consisting of:
  - i) aryl as defined below,
  - ii) $(C_3–C_7)$-cycloalkyl,
  - iii) Cl, Br, I, F,
  - iv) $COOR^2$,
  - vii) $N[(C_1–C_4)\text{-alkyl})]_2$,
  - viii) $NHSO_2R^2$,
  - ix) CF_3,
  - x) $COOR^2$, or
  - xi) SO_2NHR^{2a}; and
- (b) aryl, wherein aryl is defined as phenyl or naphthyl, unsubstituted or substituted with 1 or 2 substituents selected from the group consisting of:
  - i) Cl, Br, F, I,
  - ii) $(C_1–C_4)$-alkyl,
  - iii) $(C_1–C_4)$-alkoxy,
  - iv) NO_2
  - v) CF_3
  - vi) $SO_2NR^{2a}R^{2a}$,
  - vii) $(C_1–C_4)$-alkylthio,
  - viii) hydroxy,
  - ix) amino,
  - x) $(C_3–C_7)$-cycloalkyl,
  - xi) $(C_3–C_{10})$-alkenyl; and

E is:
- (a) a single bond,
- (b) $—S(O)_x(CH_2)_s—$, or
- (c) —O—; and

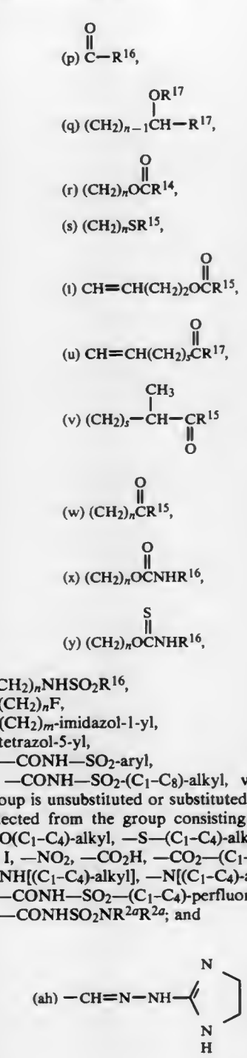
x is 0 to 2,
s is 0 to 5;
m is 1 to 5;
p is 0 to 3;
n is 1 to 10;

R^2 is:
- (a) H, or
- (b) $(C_1–C_6)$-alkyl, and

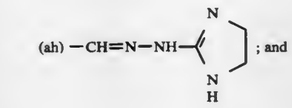
R^{2a} is:
- (a) R^2,
- (b) CH_2-aryl, or
- (c) aryl; and

R^3 is:
- (a) H,
- (b) $(C_1–C_6)$-alkyl, $(C_2–C_6)$-alkenyl or $(C_2–C_6)$-alkynyl,
- (c) Cl, Br, I, F,
- (d) NO_2
- (e) $(C_1–C_8)$-perfluoroalkyl,
- (f) C_6F_5,
- (g) CN,
- (h) NH_2,
- (i) $NH[(C_1–C_4)\text{-alkyl}]$,
- (j) $N[(C_1–C_4)\text{-alkyl}]_2$,
- (k) $NH[CO(C_1–C_4)\text{-alkyl}]$,
- (l) $N[(C_1–C_4)\text{-alkyl})\text{-}(CO(C_1–C_4)\text{-alkyl})]$,
- (m) $N(C_1–C_4)\text{-alkyl-COaryl}$,
- (n) $N(C_1–C_4)\text{alkyl-}SO_2\text{aryl}$,
- (o) CO_2H,
- (p) CO_2R^{2a},
- (q) phenyl,
- (r) phenyl-$(C_1–C_3)$-alkyl,
- (s) phenyl and phenyl-$(C_1–C_3)$-alkyl substituted on the phenyl ring with one or two substituents selected from:
  - i) $(C_1–C_4)$-alkyl,
  - ii) $(C_1–C_4)$-alkoxyl,
  - iii) F, Cl, Br, I,
  - iv) hydroxyl,
  - v) methoxyl,
  - vi) CF_3,
  - vii) CO_2R^{2a}, or
  - viii) NO_2; and

R^4 is:
- (a) H,
- (b) CN,
- (c) $(C_1–C_8)$-alkyl,
- (d) $(C_3–C_6)$-alkenyl,
- (e) $(C_1–C_8)$-perfluoroalkyl,
- (f) $(C_1–C_8)$-perfluoroalkenyl,
- (g) NH_2,
- (h) $NH(C_1–C_4)$-alkyl,
- (i) $N[(C_1–C_4)\text{-alkyl}]_2$,
- (j) $NH(C_1–C_4)$-acyl,
- (k) $N[(C_1–C_4)\text{-acyl})((C_1–C_4)\text{-alkyl})]$,
- (l) CO_2H,
- (m) CO_2R^{24},
- (n) phenyl,
- (o) phenyl-$(C_2–C_6)$-alkenyl,



- (z) $(CH_2)_nNHSO_2R^{16}$,
- (aa) $(CH_2)_nF$,
- (ab) $(CH_2)_m$-imidazol-1-yl,
- (ac) tetrazol-5-yl,
- (ad) $—CONH—SO_2$-aryl,
- (ae) $—CONH—SO_2$-$(C_1–C_8)$-alkyl, wherein the alkyl group is unsubstituted or substituted with a substituent selected from the group consisting of: —OH, —SH, $—O(C_1–C_4)$-alkyl, $—S—(C_1–C_4)$-alkyl, $—CF_3$, Cl, Br, F, I, $—NO_2$, $—CO_2H$, $—CO_2—(C_1–C_4)$-alkyl, $—NH_2$, $—NH[(C_1–C_4)\text{-alkyl}]$, $—N[(C_1–C_4)\text{-alkyl}]_2$; and
- (af) $—CONH—SO_2—(C_1–C_4)$-perfluoroalkyl,
- (ag) $—CONHSO_2NR^{2a}R^{2a}$; and



R^5 is:
- (a) CN,
- (b) NO_2, or
- (c) CO_2R^{2a}; and

R^9 and R^{10} are independently:
- (a) H,
- (b) $(C_1–C_6)$-alkyl, unsubstituted or substituted with $(C_3–C_7)$-cycloalkyl,
- (c) $(C_2–C_6)$-alkenyl,
- (d) $(C_2–C_6)$-alkynyl,
- (e) Cl, Br, F, I,
- (f) $(C_1–C_6)$-alkoxy,
- (g) when R^9 and R^{10} are on adjacent carbons, they can be joined to form an phenyl ring,
- (h) $(C_1–C_6)$-perfluoroalkyl,
- (i) $(C_3–C_7)$-cycloalkyl, unsubstituted or substituted with $(C_1–C_6)$-alkyl,
- (j) aryl,
- (k) $(C_1–C_6)\text{-alkyl-}S(O)_x—(CH_2)_n—$,
- (l) hydroxy-$(C_1–C_6)$-alkyl,
- (m) $—CF_3$,
- (n) $—CO_2R^{2a}$,
- (o) —OH,
- (p) $—NR^2R^{21}$,
- (q) $—[(C_1–C_6)\text{-alkyl}]NR^2R^{21}$,
- (r) $—NO_2$,
- (s) $—(CH_2)_n—SO_2—N(R^2)_2$,
- (t) $—NR^2CO—(C_1–C_4)$-alkyl, or
- (u) $—CON(R^2)_2$; and

X is:
- (a) —O—,
- (b) $—S(O)_x—$,
- (c) $—NR^{13}—$
- (d) $—CH_2O—$,
- (e) $—CH_2S(O)_x$,
- (f) $—CH_2NR^{13}—$,
- (g) $—OCH_2—$,
- (h) $—NR^{13}CH_2—$,
- (i) $—S(O)_xCH_2—$,
- (j) $—CH_2—$,
- (k) $—(CH_2)_2—$,
- (l) single bond, or
- (m) —CH═, wherein Y and R^{12} are absent forming a —C═C— bridge to the carbon bearing Z and R^{11}; and

Y is:
- (a) single bond,
- (b) —O—,
- (c) $—S(O)_x—$,
- (d) $—NR^{13}—$, or
- (e) $—CH_2—$; and

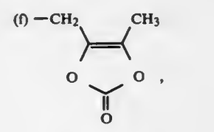
except that X and Y are not defined in such a way that the carbon atom to which Z is attached also simultaneously is bonded to two heteroatoms (O, N, S, SO, SO_2);

R^{11} and R^{12} are independently:
- (a) H,
- (b) $(C_1–C_6)$-alkyl, unsubstituted or substituted with a substituent selected from the group consisting of:
  - (i) aryl,
  - (ii) $(C_3–C_7)$-cycloalkyl,
  - (iii) NR^2R^{21},
  - (iv) OH,
  - (v) CO_2R^{2a}, or
  - (vi) $CON(R^2)_2$,
- (c) aryl or aryl-$(C_1–C_2)$-alkyl, unsubstituted or substituted with 1 to 3 substitutents selected from the group consisting of:
  - (i) Cl, Br, I, F,
  - (ii) $(C_1–C_6)$-alkyl,
  - (iii) $[(C_1–C_5)\text{-alkenyl}]CH_2—$,
  - (iv) $[(C_1–C_5)\text{-alkynyl}]CH_2—$,
  - (v) $(C_1–C_6)\text{-alkyl-}S(O)_x—(CH_2)_x—$,
  - (vi) $—CF_3$,
  - (vii) $—CO_2R^{2a}$,
  - (viii) —OH,
  - (ix) $—NR^2R^{21}$,
  - (x) $—NO_2$,
  - (xi) $—NR^2COR^2$,
  - (xii) $—CON(R^2)_2$,
  - (xiii) $—G—[(C_1–C_6)\text{-alkyl}]—R^{23}$,
  - (xiv) $—P(O)[O—(C_1–C_4)\text{-alkyl}]_2$,

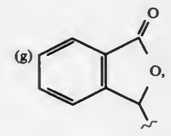
  and can additionally be substituted with 1 or 2 substituents selected from the group consisting of: Br, Cl or F,
- (d) $(C_3–C_7)$-cycloalkyl;

VOL 1147 ISS 1 FEB 2 1993 UMI

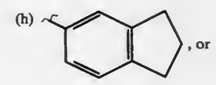
G is: a single bond, O, $S(O)_x$ or NR^{23}; and
R^{13} is:
(a) H,
(b) $(C_1–C_6)$-alkyl,
(c) aryl,
(d) aryl-$(C_1–C_6)$-alkyl—(C═O)—,
(e) $(C_1–C_6)$-alkyl—(C═O)—,
(f) $[(C_2–C_5)$-alkenyl$]CH_2$—,
(g) $[(C_2–C_5)$-alkynyl$]CH_2$—, or
(h) aryl-CH_2—; and
Z is:
(a) $—CO_2H$,
(b) $—CO_2R^{24}$,
(c) —tetrazol-5-yl,
(d) —CO—NH(tetrazol-5-yl)
(e) —CONH—SO_2-aryl,
(f) —CONH—SO_2—$(C_1–C_8)$-alkyl, wherein the alkyl group is unsubstituted or substituted with a substituent selected from the group consisting of: —OH, —SH, —O$(C_1–C_4)$-alkyl, —S—$(C_1–C_4)$-alkyl, $—CF_3$, Cl, Br, F, I, $—NO_2$, $—CO_2H$, $—CO_2$—$(C_1–C_4)$-alkyl, $—NH_2$, —NH$[(C_1–C_4)$-alkyl$]$, —N$[(C_1–C_4)$-alkyl$]_2$; and
(g) —CONHSO_2—$(C_1–C_4)$-perfluoroalkyl,
(i) —CONHS$O_2NR^{2a}R^{2a}$; and
(j) —SO_2NHCO-aryl,
(k) —SO_2NHCO—$(C_1–C_8)$-alkyl, wherein the alkyl group is unsubstituted or substituted with a substituent selected from the group consisting of: —OH, —SH, —O$(C_1–C_4)$-alkyl, —S—$(C_1–C_4)$-alkyl, $—CF_3$, Cl, Br, F, I, $—NO_2$, $—CO_2H$, $—CO_2$—$(C_1–C_4)$-alkyl, $—NH_2$, —NH$[(C_1–C_4)$-alkyl$]$, —N$[(C_1–C_4)$-alkyl$]_2$; and
(l) —SO_2NHCO—$(C_1–C_4)$-perfluoroalkyl,
(n) —SO_2NHCO$NR^{2a}R^{2a}$;
(o) —$PO(OH)_2$,
(p) —$PO(OR^2)_2$, or
(q) —PO(OH)(OR^2); and
R^{14} is:
(a) H,
(b) $(C_1–C_8)$-alkyl,
(c) $(C_1–C_8)$-perfluoroalkyl,
(d) $(C_3–C_6)$-cycloalkyl,
(e) phenyl, or
(f) benzyl; and
R^{15} is:
(a) H,
(b) $(C_1–C_6)$-alkyl,
(c) $(C_3–C_6)$-cycloalkyl,
(d) $(CH_2)_p$-phenyl,
(e) OR^{17},
(f) $NR^{18}R^{19}$; and
R^{16} is:
(a) $(C_1–C_8)$-alkyl,
(b) $(C_1–C_8)$-perfluoroalkyl,
(c) 1-adamantyl,
(d) 1-naphthyl,
(e) (1-naphthyl)ethyl, or
(f) $—(CH_2)_p$-phenyl; and
R^{17} is:
(a) H,
(b) $(C_1–C_6)$-alkyl,
(c) $(C_3–C_6)$-cycloalkyl,
(d) phenyl, or
(e) benzyl; and
R^{18} and R^{19} are independently:
(a) H,
(b) $(C_1–C_4)$-alkyl,
(c) phenyl,
(d) benzyl, or
(e) α-methylbenzyl; and
R^{21} is:
(a) H, or
(b) $(C_1–C_4)$-alkyl, is unsubstituted or substituted with:
i) NH_2,
ii) NH$[(C_1–C_4)$-alkyl$]$,
iii) N$[(C_1–C_4)$-alkyl$]_2$,
iv) CO_2H,
v) $CO_2(C_1–C_4)$-alkyl,
vi) OH,
vii) SO_3H, or
viii) SO_2NH_2; and
R^{22} is:
(a) H,
(b) $(C_1–C_4)$-alkyl,
(c) $(C_1–C_4)$-alkoxyl,
(d) aryl,
(e) aryl-$(C_1–C_4)$-alkyl,
(f) CO_2R^{2a},
(g) $CON(R^2)_2$,
(h) SO_2R^{2a},
(i) $SO_2N(R^2)_2$,
(j) P(O)$[(C_1–C_4)$-alkoxyl$]_2$, or
(k) imidazol-2-yl or imidazol-4-yl, in which the imidazole can be substituted with $(C_1–C_4)$-alkyl; and
R^{23} is:
(a) OH,
(b) NR^2R^{21},
(c) CO_2R^{2a},
(d) $CON(R^2)_2$,
(e) $S(O)_x$—$(C_1–C_4)$-alkyl,
R^{24} is:
(a) $(C_1–C_4)$-alkyl,
(b) CHR^{25}—O—COR^{26},
(c) CH_2CH_2—N$[(C_1–C_2)$-alkyl$]_2$,
(d) $(CH_2CH_2O)_y$—O—$[(C_1–C_4)$-alkyl$]$, wherein y is 1 or 2,
(e) aryl, or $—CH_2$-aryl, where aryl is as defined above or optionally substituted with $—CO_2$—$(C_1–C_4)$-alkyl,



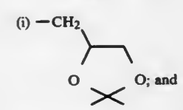
(f)



(g)



(h)

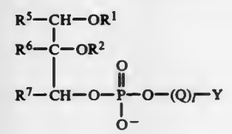


(i)

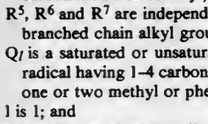
R^{25} and R^{26} independently are $(C_1–C_6)$-alkyl or phenyl.

5,183,811
GLYCEROL DERIVATIVE AND ANTI-HYPERTENSIVE AGENT
Mitsuo Masaki, Chiba; Hiromitsu Takeda, Washimiya; Toshiro Kamishiro, and Masao Yamamoto, both of Misato, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan
Division of Ser. No. 172,581, Mar. 24, 1988, Pat. No. 4,962,096. This application Jul. 19, 1990, Ser. No. 554,343
Claims priority, application Japan, Mar. 24, 1987, 62-69943; Mar. 24, 1987, 62-69944; Mar. 31, 1987, 62-80705; Mar. 31, 1987, 62-80706
Int. Cl.[5] C07F *9/58, 9/60, 9/6533, 9/62*; A61K *31/675*
U.S. Cl. 514—79 **6 Claims**

1. A glycerol derivative having the formula:



wherein
R^1 is a straight or branched chain alkyl group having 10–22 carbon atoms;
R^2 is a straight or branched chain acyl group having 1–6 carbon atoms or benzoyl;
R^5, R^6 and R^7 are independently hydrogen or a straight or branched chain alkyl group having 1–6 carbon atoms;
Q_l is a saturated or unsaturated alkylene divalent bridging radical having 1–4 carbon atoms optionally substituted by one or two methyl or phenyl groups.
l is 1; and
Y represents a heterocyclic group selected from the group consisting of 2-or-3-pyrrolidinyl, 2-3-or-4-piperdinyl, 2-morpholinyl, 2-or-3-perhydroazepinyl, 5-oxazolyl, 2-(1,2,3,4-tetrahydroquinolinyl), 2-or-3-(1,2,3,4-tetrahydroisoquinolinyl, 3-isoquinolinyl, 3-(1,2,5,6,-tetrahydropyridyl), and 3-pyridyl, which has a moiety represented by



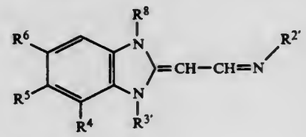
wherein R^3 and R^4 are independently a straight or branched chain alkyl group having 1–6 atoms, and said heterocyclic group optionally has one or two substituents selected from the group consisting of a straight or branched chain alkyl group having 1–6 carbon atoms or phenyl, or a pharmaceutically acceptable salt thereof.

5,183,812
PREPARATION AND USE OF THIOPHOSPHONATES AND THIO-ANALOGUES OF PHOSPHONOFORMIC ACID
Charles E. McKenna, 16625 Pequeno Pl., Pacific Palisades, Calif. 90272
Division of Ser. No. 369,468, Jun. 21, 1989, Pat. No. 5,072,032. This application Sep. 30, 1991, Ser. No. 768,155
Int. Cl.[5] A61K *31/66*; C07F *9/38, 9/40*
U.S. Cl. 514—120 **7 Claims**

1. A method for the conversion of trimethyl phosphonoformate into trimethyl thionophosphonoformate, said method comprising the steps of:
forming a reaction mixture of trimethyl phosphonoformate, an effective amount of Lawesson's reagent and polar, aprotic solvent; and
heating said reaction mixture until conversion is substantially complete.
6. A method of treating a human infected with the human immunodeficiency virus (HIV) to inhibit HIV activity comprising the administration of a pharmaceutically effective amount of thiophosphonoformic acid (TPFA) or a pharmaceutically acceptable salt thereof.

5,183,813
ANTIARRHYTHMIC AGENTS
Kenneth C. Mattes, Rochester, and Bhaskar R. Venepalli, Fairport, both of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.
Filed Feb. 19, 1992, Ser. No. 838,391
Int. Cl.[5] A61K *31/52, 31/415*
U.S. Cl. 514—150 **1 Claim**

1. A method of treating arrythmias or inhibiting ventricular tachycardias in a mammalian subject in need thereof comprising administering to said subject an effective amount of a compound having the formula:



wherein $R^{2'}$ is t-butyl or phenyl;
$R^{3'}$ is ethyl or 2,2,2,-trifluoroethyl;
R^4, R^5 and R^6 are independently H, alkyl, aryl, alkylsulfonamido, arylsulfonamido, alkoxy, aryloxy, alkylthio, arylazo, alkenyl, cyano, halo, nitro, alkyl-CO-O-, alkyl-O-CO-, aryl-CO-O-, aryl-O-CO-, alkylcarbonylimino, alkyliminocarbonyl, arylcarbonylimino, aryliminocarbonyl, alkyl-CO-or aryl-CO-, or R^4 and R^5, or R^5 and R^6, or R^4, R^5 and R^6 taken together represent the atoms necessary to complete a fused carbocyclic ring group containing from 1 to 3 rings; and
R^8 is alkyl, or aryl.

5,183,814
SELECTIVE OESTROGEN THERAPY FOR PERIMENOPAUSAL OR POSTMENOPAUSAL CONDITIONS
Michael Dukes, Wilmslow, United Kingdom, assignor to Imperial Chemical Industries PLC, London, England
Filed Jun. 6, 1989, Ser. No. 362,043
Claims priority, application United Kingdom, Jun. 6, 1988, 8813353
Int. Cl.[5] A61K *31/56, 31/165, 31/10*
U.S. Cl. 514—171 **4 Claims**

1. A method of selective oestrogen therapy of perimenopausal or postmenopausal conditions which comprises administering to a warm-blooded animal an oestrogen and a pure antioestrogen, the oestrogen and pure antioestrogen being present in amounts such that the oestrogen is effective only in selected oestrogen-responsive tissues and is selectively opposed in other oestrogen-responsive tissues.

5,183,815
NOVEL BONE ACTING AGENTS
Walfred S. Saari, Lansdale; Gideon A. Rodan, Bryn Mawr; Thorsten E. Fisher, and Paul S. Anderson, both of Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Continuation of Ser. No. 644,178, Jan. 22, 1991, abandoned. This application Feb. 19, 1992, Ser. No. 839,741
Int. Cl.[5] A61K *31/56, 31/58*
U.S. Cl. 514—172 **15 Claims**

1. A compound of the formula:

VOL 1147 ISS 1 FE 2 1993 UMI

A-B-C

wherein:

A is a residue of a hydroxyl containing steroidal hormone possessing human bone resorption antagonist activity or bone formation stimulatory activity;

C is a residue of an amino or hydroxy alkyl-1,1-bisphosphonate, possessing human bone affinity; and

B is a covalent linkage selected from the group consisting of carbamate, carbonate, thiocarbamate, and thiocarbonate, connecting A through the hydroxyl moiety to C through the respective amino or hydroxyl moiety, which linkage can hydrolyze in the human body in the vicinity of bone to release steroidal hormone A, and pharmaceutically acceptable salts or esters thereof.

5,183,816

BICYCLIC SULFUR-CONTAINING COMPOUNDS

Takakazu Morita, Toyonaka; Shiro Mita, Ashiya, and Yoichi Kawashima, Kyoto, all of Japan, assignors to Santen Pharmaceutical Co., Ltd., Osaka, Japan

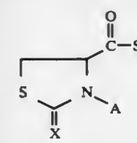
Filed Jun. 20, 1991, Ser. No. 718,220

Claims priority, application Japan, Jul. 3, 1990, 2-175782

Int. Cl.[5] A61K *31/54*; C07D *513/04*

U.S. Cl. 514—224.2 **12 Claims**

1. A compound of the formula (I) and pharmaceutically acceptable salts thereof,



(I)

wherein

X is oxygen or sulfur; and

A is a straight C_2 alkylene group which is unsubstituted or substituted by one or more C_1–C_6 alkyl groups.

5,183,817

COMBINATIONS OF RETINOIDS AND MINOXIDIL-TYPE COMPOUNDS FOR HAIR GROWTH

Gail S. Bazzano, 4506 Avron Blvd., Metairie, La. 70006

Continuation-in-part of Ser. No. 136,525, Dec. 22, 1987, abandoned, which is a continuation of Ser. No. 463,146, Feb. 2, 1983, abandoned, which is a continuation-in-part of Ser. No. 235,169, Feb. 17, 1981, abandoned, and a continuation-in-part of Ser. No. 318,607, Nov. 9, 1981, abandoned, and a continuation-in-part of Ser. No. 368,730, Jun. 9, 1982, abandoned, and a continuation-in-part of Ser. No. 414,854, Sep. 3, 1982, abandoned. This application Dec. 13, 1988, Ser. No. 283,646

Int. Cl.[5] A61K *31/505, 31/07*

U.S. Cl. 514—256 **30 Claims**

1. A composition for treating alopecia comprising a retinoid and a minoxidil compound, said compound being present in an amount of about 0.01 to 30 percent by weight and said retinoid being present in an amount of about 0.001 to 2 percent by weight in said composition.

5,183,818

ARYLALKYLETHER AND ARYLALKYLTHIOETHER INHIBITORS OF LIPOXYGENASE ENZYME ACTIVITY

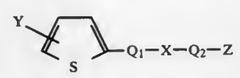
Dee W. Brooks, Libertyville; Andrew O. Stewart, Wildwood, both of Ill., and Jonathan G. Martin, Knoxville, Tenn., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Aug. 27, 1991, Ser. No. 750,362

Int. Cl.[5] A61K *31/38*; C07D *333/32*

U.S. Cl. 514—231.5 **7 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof wherein

X is oxygen or sulfur;

Y is one or two substituents independently selected from the group consisting of

hydrogen,
hydroxy,
halogen,
cyano,
alkyl of from one to six carbon atoms,
halogenated alkyl of from one to six carbon atoms,
alkoxy of from one to six carbon atoms,
alkylthio of from one to six carbon atoms,
alkoxy(carbocyclic aryl) in which the alkoxy portion contains from one to six carbon atoms,
alkylthio(carbocyclic aryl) in which the alkylthio portion contains from one to six carbon atoms,
(carbocyclic aryl)alkoxy in which the alkoxy portion contains from one to six carbon atoms,
(carbocyclic aryl)alkylthio in which the alkylthio portion contains from one to six carbon atoms,
(carbocyclic aryl)oxy,
(carbocyclic aryl)thio,
alkylamido of from one to six carbon atoms,
cycloalkyl of from three to eight carbon atoms,
alkanoyl of from one to six carbon atoms,
alkoxycarbonyl,
amino,
alkylamino of from one to six carbon atoms,
dialkylamino in which the two alkyl groups are independently selected from the group consisting of alkyl of from one to six carbon atoms,
—CRROR, —NRC(O)R, —NRC(O)OR, and —C(O)NRR wherein R, at each occurrence, is independently selected from hydrogen and alkyl of from one to six carbon atoms;

Q_1 is divalent alkylene of from one to six carbon atoms;

Q_2 is divalent alkylene from two to ten carbon atoms; and

Z is $N(OR_1)COR_2$ wherein

R_1 is selected from hydrogen or a pharmaceutically suitable salt, and

R_2 is selected from the group consisting of

amino,
alkylamino of from one to six carbon atoms in which the alkyl group is optionally substituted by
hydroxyl,
halogen,
alkoxy, or
carboxyl,
dialkylamino in which the alkyl groups are independently selected from one to six carbon atoms and in which the alkyl groups are optionally independently substituted by
hydroxyl,
halogen,
alkoxy, or
carboxyl,
cycloalkylamino of from three to six carbon atoms,
2-hydroxyethylamino,

N-morpholino,
N-thiomorpholino,
N-piperazino,
N'-alkyl-N-piperazino, and
cyclopropylmethylamino.

5,183,819

USE OF FUSED BICYCLIC IMIDES IN THE TREATMENT OF VARIOUS CNS DISORDERS

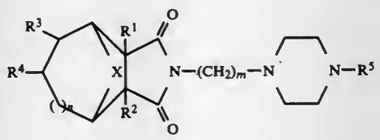
Magid A. M. Abou-Gharbia, Delaware, and John A. Moyer, Bucks, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed May 11, 1992, Ser. No. 881,443

Int. Cl.[5] A61K *31/495*

U.S. Cl. 514—255 **2 Claims**

1. A method of treating alcoholism, behavioral symptoms of Alzheimer's disease or sleep disorders which comprises administration to a mammal in need thereof a therapeutically effective amount of a compound having the formula:



wherein:

n is 0–4;

m is 2–4;

R^1 and R^2 are H or R^1 and R^2 taken together forms a 3–5 membered carbocyclic ring;

R^3 and R^4 are H or R^3 and R^4 taken together form a 3–6 membered carbocylic ring;

with a proviso that when R^1, R^2, R^3 and R^4 are other than hydrogen, n is other than zero;

X is lower alkylene, vinylene or oxygen;

R^5 is unsubstituted or substituted phenyl, 2-pyridinyl, 2-pyrimidinyl, 2-pyrazinyl or 3-pyrazinyl where the substituents are selected from lower alkyl, lower alkoxy, halo, cyano, nitro and trifluoromethyl;

or a pharmaceutically acceptable salt thereof.

5,183,820

LACTAM DERIVATIVES

Ian H. Coates, Hertford; Alexander W. Oxford; Peter C. North, both of Royston, and Barry J. Price, Tewin Wood, all of England, assignors to Glaxo Group Limited, London, England

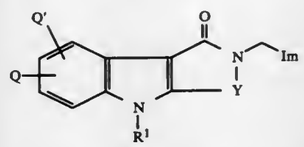
Continuation of Ser. No. 387,180, Aug. 1, 1989, abandoned. This application Apr. 26, 1991, Ser. No. 691,814

Claims priority, application United Kingdom, Aug. 2, 1988, 8818393; Feb. 23, 1989, 8904195; Feb. 28, 1989, 8904550

Int. Cl.[5] A61K *31/55*; C07D *401/14*

U.S. Cl. 514—292 **20 Claims**

1. A compound of formula (I)



(I)

wherein Im represents an imidazolyl group of the formula:



and R^1 represents a hydrogen atom or a group selected from C_{1-6}alkyl, C_{3-6}alkenyl, C_{3-10}alkynyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkylC_{1-4}alkyl-, phenyl, phenylC_{1-3}alkyl-, $—CO_2R^5$, —COR^5, —$CONR^5R^6$ or $—SO_2R^5$ (wherein R^5 and R^6, which may be the same or different, each represents a hydrogen atom, a C_{1-6}alkyl or C_{3-7}cycloalkyl group, or a phenyl or phenylC_{1-4}alkyl- group, in which the phenyl group is optionally substituted by one or more C_{1-4}alkyl, C_{1-4}alkoxy or hydroxy groups or halogen atoms, with the proviso that R^5 does not represent a hydrogen atom when R^1 represents a group $—CO_2R^5$ or $—SO_2R^5$);

one of the groups represented by R^2, R^3 and R^4 is a hydrogen atom or a C_{1-6}alkyl, C_{3-7}cycloalkyl, C_{3-6}alkenyl, phenyl or phenylC_{1-3}alkyl- group, and each of the other two groups, which may be the same or different, represents a hydrogen atom or a C_{1-6}alkyl group;

Y represents the group CH=CH or $(CH_2)_n$, wherein n represents 2 or 3;

Q represents a halogen atom, or a group selected from hydroxy, C_{1-4}alkoxy, phenylC_{1-3}alkoxy-, C_{1-6}alkyl, cyano, phenyl which may be unsubstituted or substituted by one or more C_{1-4}alkyl, C_{1-4}alkoxy or hydroxy groups or halogen atoms, $—NR^7R^8$, $—CONR^7R^8$ or $—(CH_2)_pCONR^7R^8$ (wherein R^7 and R^8, which may be the same or different, each represents a hydrogen atom or a C_{1-4}alkyl or C_{3-4}alkenyl group; and p represents 1, 2 or 3), $—(CH_2)_qNR^9R^{10}$ (wherein R^9 represents a hydrogen atom or a C_{1-4}alkyl group, and R^{10} represents a group $—COR^{11}$ or $—SO_2R^{11}$ wherein R^{11} represents a C_{1-4}alkyl group; and q represents 0, 1, 2 or 3), or $—(CH_2)_2CO_2R^{11}$(R^{11} being as defined previously);

Q' represents a hydrogen or a fluorine atom;

or a physiologically acceptable salt or solvate thereof.

5,183,821

METHOD FOR TREATING LEUKEMIAS USING N-(2-DIMETHYLAMINOETHYL)-3-AMINO-1,8-NAPHTHALIMIDE FOR TREATING LEUKEMIAS AND SOLID TUMORS

Miguel F. Brana; Antonio M. Sanz; Rafael P. Alvarez-Ossorio; Cristobal M. Roldan; Cristina R. F. De Gamboa; Jesus G. Garcia, and Jose M. C. Berlanga, all of Madrid, Spain, assignors to Laboratories Knoll, S.A., Madrid, Spain

Continuation of Ser. No. 296,340, Jan. 9, 1989, abandoned, which is a continuation of Ser. No. 864,009, May 16, 1986, abandoned, which is a continuation-in-part of Ser. No. 533,542, Sep. 19, 1983, abandoned. This application Jul. 8, 1991, Ser. No. 728,025

Int. Cl.[5] A61K *31/445*

U.S. Cl. 514—296 **6 Claims**

1. A method of treating a patient with leukemia, comprising administering to said patient a chemotherapeutically effective amount of N-(2-dimethylaminoethyl)-3-amino-1,8-naphthalimide.

VOL 1147 ISS 1 FEB 2 1993 UMI

5,183,822

SUBSTITUTED 3,4-ANNELATED BENZIMIDAZOL-2(1H)-ONES

Ineke Van Wijngaarden; Derk Hamminga, and Wouter Wouters, all of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

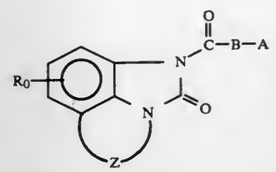
Filed Dec. 21, 1990, Ser. No. 631,957

Claims priority, application Netherlands, Dec. 27, 1989, 8903157

Int. Cl.[5] A61K *31/46;* **C07D** *519/00*

U.S. Cl. 514—305 **3 Claims**

1. A 3,4-annelated benzimidazol-2(1H)-one 1-carboxylic acid derivative of formula (1):



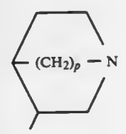
(1)

wherein

R_0 is hydrogen, alkyl, alkoxy or alkylthio having 1–4 carbon atoms, hydroxy, or halogen;

Z is ethylene or propylene, which may be substituted with 1–3 methyl groups,

A is a group of the formula (4):



(4)

wherein p has the value2, and

B is an oxygen atom or a group —N(R)—, wherein R is hydrogen, alkyl having 1–6 carbon atoms or benzyl;

or a pharmaceutically acceptable acid addition salt thereof.

5,183,823

PYRIDINE N-OXIDE COMPOUNDS WHICH ARE USEFUL AS HYPOGLYCEMIC AND HYPOLIPIDEMIC AGENTS

Takashi Sohda, Takatsuki, and Hitoshi Ikeda, Higashiosaka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

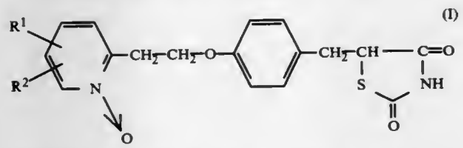
Filed Mar. 31, 1992, Ser. No. 861,280

Claims priority, application Japan, Apr. 11, 1991, 3-078835

Int. Cl.[5] C07D *417/12;* **A61K** *31/44*

U.S. Cl. 514—358 **10 Claims**

9. A pharmaceutical composition for treating diabetes comprising a thiazolidinedione derivative of the formula (I):



(I)

wherein R^1 and R^2 are the same or different and are a hydrogen atom or a lower alkyl group, or a pharmacologically acceptable salt thereof and a pharmacologically acceptable carrier or diluent.

5,183,824

AZOLE DERIVATIVES AND ANTIFUNGAL DRUGS CONTAINING THE SAME AS AN ACTIVE COMPONENT

Kimihiko Hori; Akira Sakaguchi, both of Utsunomiya; Koichi Ishida, Tochigi; Tomoko Nomura, Utsunomiya; Keiko Suzuki, Utsunomiya, and Shuichi Tsuchiya, Utsunomiya, all of Japan, assignors to Kao Corporation, Tokyo, Japan

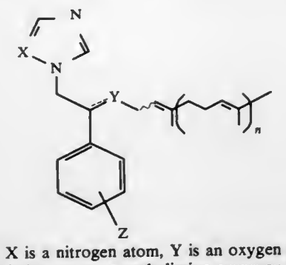
Division of Ser. No. 609,777, Nov. 7, 1990, Pat. No. 5,110,826. This application Feb. 3, 1992, Ser. No. 829,507

Claims priority, application Japan, Nov. 9, 1989, 1-290031; Feb. 6, 1990, 2-25155

Int. Cl.[5] A01N *43/653;* **C07D** *249/08*

U.S. Cl. 514—383 **2 Claims**

1. An azole derivative represented by the formula (1):



(I)

wherein X is a nitrogen atom, Y is an oxygen atom, a sulfur atom, an imino group, a methylimino group or a group represented by =N~O—, Z is one or two halogen atoms, n is 1 or 2, the wavy line indicates that the stereochemistry of the double bond is either E or Z; or an acid adduct thereof.

5,183,825

4-ARYLMETHYL-5-ALKYL-3H-PYRAZOL-3-ONES AND HYPOGLYCEMIC USE

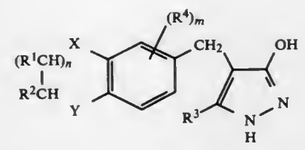
Kenneth L. Kees, Plainsboro, N.J., assignor to American Home Products Corporation, New York, N.Y.

Filed Apr. 7, 1992, Ser. No. 864,986

Int. Cl.[5] A61K *31/415;* **C07D** *231/20*

U.S. Cl. 514—404 **12 Claims**

1. A compound of the formula:



in which

the dotted lines represent optional unsaturation when n is 1 or 2;

R^1 is hydrogen, alkyl of 1 to 6 carbon atoms, aryl of 6 to 10 carbon atoms or arylalkyl of 7 to 12 carbon atoms;

R^2 is hydrogen, alkyl of 1 to 6 carbon atoms, aryl of 6 to 10 carbon atoms or arylalkyl of 7 to 12 carbon atoms;

R^3 is alkyl of 1 to 3 carbon atoms, perfluoromethyl or alkoxy of 1 to 6 carbon atoms;

R^4 is halogen, alkyl of 1 to 6 carbon atoms or alkoxy of 1 to 6 carbon atoms;

X is CR^5, in which

R^5 is hydrogen, halogen, alkyl of 1 to 6 carbon atoms, or alkoxy of 1 to 6 carbon atoms;

Y is CR^6, in which

R^6 is hydrogen, halogen, alkyl of 1 to 6 carbon atoms or alkoxy of 1 to 6 carbon atoms;

n is one of the integers 0, 1 or 2;

m is one of the integers 0, 1, 2 or 3;

or a pharmaceutically acceptable salt thereof.

5,183,826

ANTIVIRAL AGENT

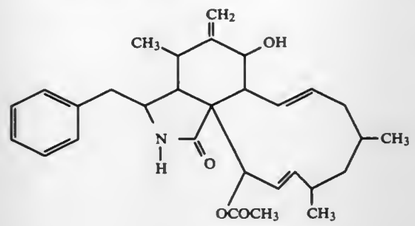
Gerald F. Bills, Rosselle; Otto D. Hensens, Redbank; Lawrence Koupal, Colonia; Russell B. Lingham, Watchung; John G. Ondeyka, Fanwood, and Deborah L. Zink, Manalpan, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Sep. 25, 1990, Ser. No. 587,812

Int. Cl.[5] A61K *31/40;* **C07D** *209/56*

U.S. Cl. 514—411 **4 Claims**

1. A compound having the formula:



5,183,827

ACETYLENES DISUBSTITUTED WITH A HETEROAROMATIC GROUP AND A 2-SUBSTITUTED CHROMANYL, THIOCHROMANYL OR 1,2,3,4-TETRAHYDROQUINOLINYL GROUP HAVING RETINOID-LIKE ACTIVITY

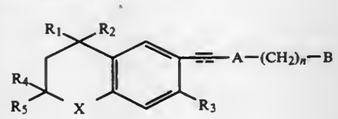
Roshantha A. S. Chandraratna, El Toro, Calif., assignor to Allergan, Inc., Irvine, Calif.

Division of Ser. No. 409,476, Sep. 19, 1989, Pat. No. 5,045,551. This application Jul. 18, 1991, Ser. No. 732,270

Int. Cl.[5] A61R *31/50*

U.S. Cl. 514—444 **17 Claims**

1. Compounds of the formula



where

X is S, O;

R_1, R_2 and R_3 are hydrogen or lower alkyl;

R_4 and R_5 are hydrogen or lower alkyl with the proviso that R_4 and R_5 both are not hydrogen;

n is an integer from 0 to 5;

A is selected from a group consisting of thienyl and furyl, and

B is hydrogen, COOH or a pharmaceutically acceptable salt thereof, $COOR_8$, $COONR_9R_{10}$, $—CH_2OH$, CH_2OR_{11}, CH_2OCOR_{11}, CHO, $CH(OR_{12})_2$, $CHOR_{13}O$, —COR", $CR"(OR_{12})_2$, or $CR"OR_{13}O$, where R" is an alkyl, cycloalkyl or alkenyl group having 1 to 5 carbons, R_8 is an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or R_8 is phenyl or lower alkylphenyl, R_9 and R_{10} independently are hydrogen, an alkyl group of 1 to 10 carbons, or a cycloalkyl group of 5 to 10 carbons, or phenyl or lower alkylphenyl, R_{11} is lower alkyl, phenyl or lower alkylphenyl, R_{12} is lower alkyl, R_{13} is divalent alkyl radical of 1–5 carbons.

5,183,828

POLYHYDROXYBENZOIC ACID DERIVATIVES

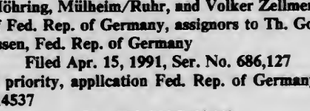
Bartholomeus van't Riet, 3419 Noble Ave., Richmond, Va. 23222; Howard L. Elford, 3313 Gloucester Rd., Richmond, Va. 23227, and Galen L. Wampler, 6938 Chamberlayne Rd., Mechanicsville, Va. 23111

Continuation-in-part of Ser. No. 302,946, Jan. 30, 1989, abandoned, which is a division of Ser. No. 907,562, Sep. 15, 1986, Pat. No. 4,942,253, which is a division of Ser. No. 497,370, May 23, 1983, Pat. No. 4,623,659. This application Jul. 20, 1990, Ser. No. 555,834

Int. Cl.[5] A61K *31/215, 31/275, 31/155, 31/165*

U.S. Cl. 514—508 **2 Claims**

1. A pharmaceutical formulation in unit dosage form for parenteral administration containing a compound of the following formula plus one or more pharmaceutically-acceptable excipients



in which n is 2–5m, m is 0 or 1, R" is H or OH, R' is NH or NOH and R is NH_2, NHOH or $O\text{-}C_{1\text{-}3}$ alkyl, subject to the provisos that when R' is NH, R can only be NH_2 or NHOH and that when R' is NOH, R can only be NH_2 or $O\text{-}C_{1\text{-}3}$ alkyl.

5,183,829

ORAL LIQUID COMPOSITIONS OF NON-STEROIDAL ANTI-INFLAMMATORY DRUGS

Henry C. Caldwell, Ambler, Pa., assignor to Applied Analytical Industries, Inc., Wilmington, N.C.

Filed Sep. 27, 1991, Ser. No. 766,774

Int. Cl.[5] A61K *31/19, 31/40*

U.S. Cl. 514—570 **12 Claims**

1. A one phase liquid composition for oral administration comprising:

(a) An anti-inflammatory but non-toxic quantity of a non-steroidal, anti-inflammatory drug in carboxylic acid form or a non-toxic, pharmaceutically acceptable alkali metal or ammonium salt thereof;

(b) a pharmaceutically acceptable quantity of a glycol which is propylene glycol or a polyethylene glycol selected from the range of 15–50% v/v;

(c) a quantity of ethanol selected from the range of 0–20% v/v;

(d) a pharmaceutically acceptable quantity of a polyol which is glycerin or sorbitol selected from the range of 30–80% v/v; and

(e) a pharmaceutically acceptable quantity of a dispersing agent which is polyvinylpyrrolidone, hydroxypropylcellulose or hydroxypropylmethylcellulose and which is selected form the range of 50:1 to 1:3 w/w of drug: dispersing agent.

5,183,830

METHOD FOR THE PREPARATION OF HIGHLY ELASTIC FORMS OF REDUCED COMPRESSION HARDNESS HAVING POLYURETHANE GROUPS

Volker Möhring, Mülheim/Ruhr, and Volker Zellmer, Bottrop, both of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Apr. 15, 1991, Ser. No. 686,127

Claims priority, application Fed. Rep. of Germany, May 7, 1990, 4014537

Int. Cl.[5] C08G *18/48*

U.S. Cl. 521—107 **7 Claims**

1. A method for the preparation of highly elastic polyurethane foams of reduced compression hardness by the reaction of polyisocyanate with polyether having a molecular weight of

VOL
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400 to 10,000 and containing at least two hydroxyl groups in the presence of cross-linking agent, catalyst and water and optionally in the presence of emulsifier, stabilizer and organic blowing agent, comprising carrying out the reaction of the polyurethane-forming components in the presence of a compound Y which contains at least one polyoxyalkylene group and at least one group A^-M^{30} in the molecule, wherein A is an anionic group selected from the group consisting of $—SO_3$, $—CH_2CH_2—SO_3$, $—(CH_2)_3—SO_3$, $—CH_2—CH(CH_3)—CH_2—SO_3$, $—CH_2—CH(OH)—CH_2—SO_3$, $—CH_2—CH(OH)—CH_2—S_2O_3$, —Z—COO— with Z being a divalent, optionally substituted hydrocarbon group, —CO—Z—COO—, PO_3, PO_2, $—(CH_2)_n—PO_3$, $—(CH_2)_n—PO_2$, with n=1, 2, 3 or 4, and wherein

M is a cation selected from the group consisting of alkali metal, alkaline earth metal, Mn, Fe, Co, Ni, Cu, Zn, Al, NH_4,

in an amount of 0.01 to 5% by weight, based on the weight of the polyether.

5,183,831

RADIATION CURABLE COMPOSITION WITH HIGH TEMPERATURE OIL RESISTANCE

Richard A. Bielat, Sterling Heights, Mich., and Kieran F. Drain, Manchenstein, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Aug. 22, 1991, Ser. No. 748,590
Int. Cl.[5] C08F *2/46*
U.S. Cl. 522—33 **30 Claims**

1. A radiation curable composition with high temperature oil resistance comprising

(1) a (meth)acrylated urethane component comprising

(a) the reaction product of hydroxyethyl(meth)acrylate and a monomeric or polymeric aromatic isocyanate,

(b) hydroxyethyl(meth)acrylate; and

(c) a (meth)acrylated prepolymer of a monomeric or polymeric aromatic isocyanate and at least one polycaprolactone polyol with a functionality > 2 and a molecular weight in the range of about 500 to about 3,000;

(2) an aromatic multifunctional epoxy (meth)acrylate having a molecular weight of less than about 1000;

(3) at least one free radical polymerizable monomer; and

(4) a free radical photoinitiator,

which composition exhibits at 25° C.: : (i) a Tg greater than about 45° C., (ii) an elongation of greater than about 3%, (iii) a tensile strength of greater than about 1300 psi and (iv) a shear storage modulus of greater than about 4300 psi.

5,183,832

COATING AGENT FOR COLLAGEN-CONTAINING MATERIALS

Erik Asmussen, Farum; Erik C. Munksgaard, Kokkedal, both of Denmark; Michael Müller, Bergisch Gladbach, Fed. Rep. of Germany; Wolfgang Podszun, Cologne, Fed. Rep. of Germany, and Jens Winkel, Cologne-Pesch, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 603,594, Oct. 25, 1990, abandoned, and a continuation of Ser. No. 389,847, Aug. 4, 1989, abandoned.
This application Oct. 15, 1991, Ser. No. 779,115
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1988, 3828170
Int. Cl.[5] C08F *2/50*; C08K *5/07*; C08G *2/26*
U.S. Cl. 522—84 **2 Claims**

1. A coating agent for collagen-containing materials, comprising the following ingredients:

a) 2–8% by weight of an aldehyde selected from the group consisting of formaldehyde, acetaldehyde, butyraldehyde, glutaric dialdehyde, glyoxal, benzaldehyde, salicylaldehyde, vanillin, phthalaldehyde, and furfural;

b) 15–40% by weight of a water-soluble monomer selected from the group consisting of (meth)acrylic acid, methacrylamide, hydroxyethyl methacrylate, hydroxypropyl methacrylate, ethylene glycol monomethacrylate, diethylene glycol monomethacrylate, triethylene glycol monomethacrylate, and triethylene glycol dimethacrylate;

c) 2–50% by weight bis-GMA;

d) 0.01–2.5% by weight of photoinitiator;

e) 25–60% by weight of water; and

f) 0.5–5% by weight of a constituent selected from the group consisting of acetone, butanone, methanol, ethanol, propanol, isopropanol, butanol, isobutanol, sec.-butanol, tert.-butanol, ethylene glycol monomethyl ether, tetrahydrofuran, 1,4-dioxane, the sodium salt of di-2-ethylhexylphosphate, oleyl alcohol sulphate, the sodium salt of sulphosuccinic acid dioctyl ester, methyltrioctylammonium chloride, methyltricaprylylammonium chloride, and poly-N-vinyl-2-pyrrolidone;

the total of constituents giving 100% by weight.

5,183,833

ULTRAVIOLET RADIATION PHOTOPOLYMERIZATION OF ACRYLIC ESTER PRESSURE SENSITIVE ADHESIVE FORMULATION

Dennis K. Fisher, and Brian J. Briddell, both of Jackson, Mich., assignors to Adco Products Inc., Michigan Center, Mich.

Division of Ser. No. 431,033, Nov. 2, 1989, Pat. No. 4,968,558.
This application Aug. 17, 1990, Ser. No. 568,760
Int. Cl.[5] C08F *2/50, 20/18, 20/20, 20/06*
U.S. Cl. 522—182 **15 Claims**

1. A method for the preparation of a normally tacky pressure sensitive adhesive by polymerizing an acrylic ester pressure sensitive adhesive formulation substantially free of non-polymerizable solvent, said acrylic ester pressure sensitive adhesive formulation comprising non-tertiary acrylic acid alkyl ester formed from an alcohol having from about 4 to about 10 carbon atoms and an ethylenically unsaturated monomer having a polar group, or a prepolymer prepared by the partial polymerization of said monomers, characterized by:

at least partially photopolymerizing said acrylic ester pressure sensitive adhesive formulation by exposure to a source of ultraviolet radiation that provides at least about 80 percent of its radiation in the wavelength band of from about 280 to about 350 nm

and provides from about 20 to about 25 percent of its radiation of the 200 to 400 nm wavelength band within the wavelength range of below about 300 nm and from about 75 to about 80 percent of its radiation of the 200 to 400 nm wavelength band within the wavelength range of from about 300 to about 400 nm,

and has a light intensity in the wavelength band of from 200 to 400 nm of no more than about 4.0 milliwatts/cm^2 at the surface of said formulation being polymerized, said photopolymerization being continued until at least 95% of the monomer has been converted to polymer.

5,183,834

PASTY DENTAL VENEER MAKING COMPOSITION

Karl J. Gorlich, Fuerth/Odw.; Fritz U. Bauer, Liederbach, and Joerg Konetzka, Darmstadt, all of Fed. Rep. of Germany, assignors to Dentsply G.m.b.H., Dreleich, Fed. Rep. of Germany

Filed Apr. 5, 1989, Ser. No. 333,474
Int. Cl.[5] A61K *6/08*
U.S. Cl. 523—105 **6 Claims**

1. A pasty dental composition adapted for heat polymerization above about 100° C. to form a polymer useful as a dental veneer comprising by weight about

(a) 20–60% polymerizable urethane-acrylic binders,

(b) 4.0–50% crushed silanized glass fillers,

(c) 10–55% pyrogenic silica,

(d) 0.05–3% alkylacylperoxide,

(e) 0.05–3% heat activated nonperoxide initators,

(f) 0.05–2% U.V. stabilizers, and

(g) 10–60% fractured acrylic polymers.

5,183,835

EPOXIDE RESIN-MODIFIED POLYESTERS DERIVED FROM CARBOXYL POLYOL

Lutz-Werner Gross, Haltern; Ulrich Poth, Munster; Dieter Hille, Bergisch-Gladbach, and Klaus Weidemeier, Munster, all of Fed. Rep. of Germany, assignors to BASF Lacke & Farben AG, Münster, Fed. Rep. of Germany

Continuation of Ser. No. 350,626, Apr. 25, 1989, abandoned.
This application Nov. 21, 1990, Ser. No. 617,459
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1986, 3636368
Int. Cl.[5] C08K *3/20*; C08L *63/02, 63/10, 67/02*
U.S. Cl. 523—402 **13 Claims**

1. A water dilutable coating composition for the production of heat-curable coating, in which the binder is comprised of an epoxide resin-modified, water-dilutable polyester produced by the reaction of:

A) a polyester (A) produced by polymerization:

a_1) a polycarboxylic acid containing at least three carboxyl groups or a reactive derivative thereof;

a_2) a polyol containing at least one carboxyl group other than components a_1) a_3) and a_4);

a_3) a polycarboxylic acid containing two carboxyl groups or a reactive derivative thereof, and

a_4) a polyol,

such that at least 10 mol % of the sum of components (a_1), (a_2), (a_3), (a_4), contains at least one (cyclo)aliphatic structural element having at least six carbon atoms,

said polyester (A) further having a number average molecular weight of less than 2,000, an acid number of 35 to 240 and an OH number from 56 to 320, and said (a_1) and (a_3) components in the polyester being co-condensed via at least two carboxyl groups, and

(B) 0.3 to 1.5 equivalents per polyester molecule of an epoxide resin (B) based on bisphenol and having an epoxide equivalent weight of 170 to 1,000 or a derivative thereof having at least one epoxide group per molecule, said reaction being conducted under conditions in which essentially only carboxyl groups react with epoxide groups,

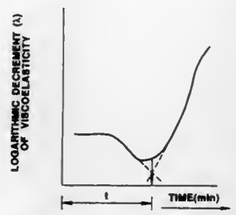
said epoxide resin-modified polyester being water-dilutable after at least part of the free carboxyl groups are neutralized.

5,183,836

COMPOSITE PAINT

Hiroyuki Kishi, Yokohama; Hitoshi Kimura, Chigasaki; Katsuya Yamamoto, Yokohama; Yoshinobu Tamura, Sagamihara; Tsuneo Sakauchi; Nagaoka, both of Yokohama, and Yasuyu Tsuchiya, Hirakata, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Nippon Paint Co., Ltd., Osaka, both of, Japan

Continuation of Ser. No. 521,863, May 11, 1990, abandoned.
This application Oct. 28, 1991, Ser. No. 784,096
Claims priority, application Japan, May 18, 1989, 1-122819
Int. Cl.[5] C08K *3/20*
U.S. Cl. 523—404 **8 Claims**



1. A paint composition for coating metal surfaces to which an overlayer paint (II) is to be coated thereover, the overlayer paint having a hardening starting time as determined according to a logarithmic decrement of viscoelasticity of said overlayer paint and by an oscillated pendulum type viscoelasticity measuring device ranging from 15 to 20 minutes, said paint composition consisting essentially of:

a cathodic electrodeposition paint composition consisting essentially of:

(a) a water based composition (A) in an amount ranging from 50 to 85 parts by weight upon conversion to a solid content, said water based composition consisting essentially of:

i) a reaction product (A-1) formed by a reaction between a epoxy resin having a number average molecular weight ranging from 100 to 3000 and at least one epoxy group per molecule on an average and containing a residual bisphenol A, and a monatomic secondary amine, said reaction product being present in an amount ranging from 60 to 80 parts by weight upon conversion to a solid content, and

ii) a blocked reaction product (A-2) formed by a reaction between a compound having 1 to 8 carbon atoms and having one OH group per molecule on an average, and a compound having at least two NCO groups per molecule on an average, said blocked reaction product being present in an amount ranging rom 20 to 40 parts by weight upon conversion to a solid content; and

(b) a partially cross-linked resin (B) formed by heating a water dispersion composition, said partially cross-linked resin being present in an amount ranging from 15 to 50 parts by weight upon conversion to a solid content, said water-dispersed composition consisting essentially of:

i) a methylol phenol compound (B-1) having an average molecular weight ranging from 200 to 1000, said methylol phenol compound being formed by a reaction between phenol and formaldehyde, said methylol phenol compound being present in an amount ranging between 20 to 50 parts by weight upon conversion to a solid content, and

ii) an addition reaction product (B-2) formed by an addition of 50 to 200 millimole of a monatomic secondary amine to 100 parts by weight of a polybutadiene resin having an average molecular weight ranging from 1000 to 3000 and an oxirane oxygen concentration ranging from 4 to 8 percent by weight, said addition reaction product being present in an amount ranging from 50 to 80 parts by weight upon conversion to a solid content,

wherein said cationic electrodeposition paint composition has a minimum melt viscosity not less than 0.2 during a hardening state as determined according to the logarithmic decrement of viscoelasticity of said cationic electrodeposition paint composition and by the oscillated pendulum viscoelasticity measuring device.

5,183,837

PROCESS FOR BINDING CELLULOSIC MATERIALS WITH A BINDING AGENT OF AN AQUEOUS EMULSIONS OF POLYISOCYANATES AND CELLULOSE ETHER

Agostino Lepori, Fagnano Olona, and Domenico Camaioni, Busto Arsizio, both of Italy, assignors to Presidenza del Consiglio dei Ministri - Ufficio del Ministro per il coordinamento delle Iniziativae per la Ricerca Scientifica e Tecnologica, Rome, Italy

Division of Ser. No. 740,853, Jul. 31, 1991, Pat. No. 5,108,507, which is a continuation of Ser. No. 327,607, Mar. 23, 1989, abandoned. This application Jan. 16, 1992, Ser. No. 821,046
Claims priority, application Italy, Mar. 30, 1988, 20027 A/88
Int. Cl.[5] C08L *1/28, 1/32*
U.S. Cl. 524—13 **2 Claims**

1. A process for binding cellulosic materials selected from the group consisting of wood, bark, residues from cane sugar

VOL
1147
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extraction, straw, bamboo and rice chaff as granulates, chips, fibers or meals, for the manufacture of chipboard panels, plywood, masonite and laminate boards; the improvement comprising binding said cellulosic materials with an agent consisting of at least one organic polyisocyanate and at least one water soluble cellulose ether dissolved in water in amounts of 0.1–10% b.w.; the cellulose ether being selected from the group consisting of a carboxy-methyl-cellulose having a substitution degree greater than 0.5, a viscosity of solution at 2% in water, measured by means of the Hoppler viscometer at 20° C., within the range of from 10 to 45,000 mPa.s, and a pH value lower than 8, carboxy-methyl-ethyl-cellulose, and carboxy-hydroxy-ethyl-cellulose and wherein the organic polyisocyanate is added to the aqueous solution of said cellulose ether with a stirring speed greater than 8,000 rpm for time periods within the range of from 5 to 60 seconds.

5,183,838

ACID ANHYDRIDE COMPLEX AND PROCESS FOR PRODUCING SAME, AND COMPOSITION CONTAINING SAME

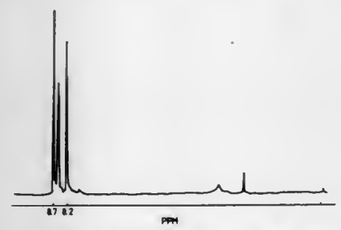
Takao Miwa, Katsuta; Takayoshi Ikeda, Tohkai; Shunichi Numata, Hitachi; Koji Fujisaki, Hitachi, and Hisae Shimanoki, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Chemical Company, Ltd., both of Tokyo, Japan

Continuation of Ser. No. 567,160, Aug. 14, 1990. This application Jul. 2, 1991, Ser. No. 724,777

Claims priority, application Japan, Sep. 1, 1989, 1-224445

Int. Cl.[5] C08K *5/15;* **C07D** *493/02*

U.S. Cl. 524—109 **7 Claims**



1. A complex consisting essentially of an aromatic acid dianhydride and an organic base substance coordinated with the dianhydride, said base substance having a donor number of at least 20 and being free from an active hydrogen atom therein, wherein the complex has an endothermic peak of 102° to 257° C.

5,183,839

FLUOROPOLYMERS AND FLUOROPOLYMER COATINGS

Shaul M. Aharoni, Morris Plains, N.J., assignor to Allied-Signal Inc., Morristownship, N.J.

Division of Ser. No. 628,541, Dec. 17, 1990, Pat. No. 5,061,769. This application Sep. 16, 1991, Ser. No. 760,306

Int. Cl.[5] C08K *5/15*

U.S. Cl. 524—113 **5 Claims**

1. A solution in about equal volumes of tetrahydrofuran and 1,3-bis(trifluoromethyl)benzene of a polymeric composition comprising fluorinated copolymer of the formula

$$-[-X_s-Y_t-Z_u-]-$$

wherein

s, t and u represent weight proportions of the respective X, Y and Z units, and have values within the ranges of

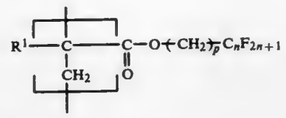
s = from about 0.5 to about 0.99;

t = from about 0.005 to about 0.495; and

u = from about 0.005 to about 0.495;

with the the sum of s + t + u being 1;

X represents units of the composition



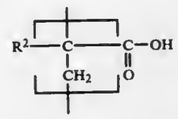
wherein

R_1 is H, $-CH_3$ or mixtures thereof;

p is 1 or 2;

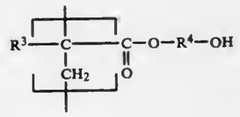
n is an integer of from about 1 to about 40;

Y represents units of the composition



wherein R^2 is H, $-CH_3$, or $-CH_2COOH$;

Z represents units of this composition



wherein

R^3 is H, $-CH_3$, or $-CH_2COOC_mH_{2m+1}$, wherein m is an integer of from about 1 to about 4; and

R^4 is an alkylene bridging group, straight chain, branched or cyclic, having from 1 to about 8 carbon atoms;

wherein the X, Y and Z units may be arranged in any sequence.

5,183,840

THERMOPLASTIC COMPOSITIONS BASED ON GRAFTED RUBBER AND POLYESTER, A PROCESS FOR THEIR MANUFACTURE, AND ARTICLES OBTAINED THEREFROM

Michel Erpelding, Saint Maximin, and Jacques Vandome, Rantigny, both of France, assignors to Societe Chimique Des Charbonnages, Paris La Defense, France

Continuation of Ser. No. 373,655, Jun. 29, 1989, abandoned, which is a division of Ser. No. 161,417, Feb. 23, 1988, Pat. No. 4,861,817, which is a continuation of Ser. No. 826,964, Feb. 7, 1986, abandoned. This application Jul. 31, 1991, Ser. No. 740,858

Claims priority, application France, Feb. 8, 1985, 85 01770

The portion of the term of this patent subsequent to Aug. 29, 2006, has been disclaimed.

Int. Cl.[5] C08L *51/04, 55/02, 67/02*

U.S. Cl. 524—228 **10 Claims**

1. Thermoplastic composition comprising:

(1) from 50 to 97% by weight based on the total weight of the thermoplastic composition of at least one polymer phase (A) comprising at least one terpolymer produced by grafting (a) at least one vinylaromatic monomer and (b) at least one unsaturated nitrile onto (c) at least one rubber, said terpolymer being dispersed in a matrix of a copolymer comprising units derived from (d) at least one unsaturated nitrile and (e) at least one vinylaromatic monomer, the overall composition of the polymer phase (A) being such that it contains from 17 to 35 parts of unsaturated nitrile, from 10 to 60 parts of rubber, and from 10 to 60 parts of vinylaromatic monomer per 100 parts by weight of said phase,

(2) from 3 to 50% by weight based on the total weight of the thermoplastic composition of at least one high molecular weight polybutylene terephthalate (B), the polybutylene terephthalate having a molecular weight between 80,000 and 150,000 weight average molecular weight, and

(3) at least one elastomer (C) which is different from said components (A) and (B) in a proportion of up to 25 parts by weight per 100 parts of the (A)+(B) mixture,

wherein the thermoplastic composition has a Vicat softening point above 113° C. and an Izod impact strength not below 330 J/m.

5,183,841

REMOVABLE PRESSURE-SENSITIVE ADHESIVES FOR RECYCLABLE SUBSTRATES

Margaret M. Bernard, La Verne, Calif., assignor to Avery Dennison Corporation, Pasadena, Calif.

Filed Dec. 24, 1991, Ser. No. 813,354

Int. Cl.[5] C08L *93/04, 31/02, 33/08;* **C08F** *220/10*

U.S. Cl. 524—272 **36 Claims**

1. A pressure-sensitive adhesive composition which comprises:

a) an acrylic, pressure-sensitive adhesive polymer formed by emulsion polymerization, which polymer comprises, on a polymerized basis and based on the total weight of the monomers:

(i) at least one alkyl acrylate containing from about 4 to about 8 carbon atoms in the alkyl group, the total amount of alkyl acrylate monomers being at least about 35 percent by weight of the monomers; and

(ii) at least one unsaturated carboxylic acid containing from about 3 to about 5 carbon atoms, present in a total positive amount up to about 5 percent by weight of the monomers, said formed emulsion polymer being combined with:

b) for each 100 parts by weight of the formed emulsion polymer:

(i) from about 3 to about 20 parts by weight of a rosin acid tackifier and,

(ii) from about 1 to about 10 parts by weight of a rosin based surfactant,

said pressure sensitive adhesive composition when applied to a paper being capable of self-separating from a nonpaper surface of polar or nonpolar substrates in less than about 5 minutes under the action of hot water of alkali.

5,183,842

METHOD OF PRODUCING AN ORGANIC, CORROSION-RESISTANT SURFACE COATING

Robert M. O'Neil, Flixton; Emyr Phillips, Tingley, and Robert C. Wasson, Penketh, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 561,557, Aug. 1, 1990, Pat. No. 5,128,396. This application Apr. 22, 1992, Ser. No. 872,743

Claims priority, application United Kingdom, Aug. 8, 1989, 8918086

Int. Cl.[5] C08K *5/10;* **C23F** *11/00*

U.S. Cl. 524—288 **4 Claims**

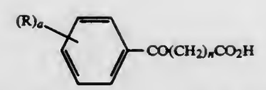
1. A method of producing an organic, corrosion-resistant surface coating on a corrodible metal surface comprising:

treating a corrodible metal surface with a composition comprising

a) an organic film-forming binder; and

b) a corrosion-inhibiting amount of a water-insoluble salt of

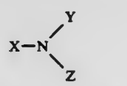
i) a ketoacid having the formula (I):



(I)

wherein a is 1, 2, 3, 4 or 5; the R substituents are the same or different and each is hydrogen; halogen; nitro; cyano; CF_3; C_1–C_{15} alkyl; C_5–C_{12} cycloalkyl; C_2–C_{15} alkenyl; C_1–C_{12} halogenoalkyl; C_1–C_{12} alkoxy; C_1–C_{12} thioalkyl; C_6–C_{12} aryl; C_6–C_{10} aryloxy; C_7–C_{12} aralkyl; $-CO_2R_1$ in which R_1 is a) hydrogen, b) C_1–C_{20} alkyl or said alkyl interrupted by one or more O-, N- or S-atoms, c) C_7–C_{12} aralkyl or d) C_6–C_{12} aryl or said aryl substituted with one or more carboxy groups; $-COR_1$ in which R_1 has its previous significance; NR_2R_3 in which R_2 and R_3 are the same or different and each is hydrogen or C_1–C_{24} alkyl or said alkyl interrupted by one or more O, S or NH moieties; or when a is 2, 3, 4 or 5, two adjacent groups R may be the atoms required to form a fused benzene or cyclohexyl ring; and n is an integer from 1 to 10; and

ii) an amine of formula II:



(II)

wherein X, Y and Z are the same or different, and are hydrogen; C_8–C_{24} alkyl or said alkyl interrupted by one or more O-atoms; phenyl; C_7–C_9 phenylalkyl; C_7–C_9 alkylphenyl; or two of X, Y and Z together with the N-atom to which they are attached form a 5-, 6- or 7-membered heterocyclic residue, or said residue containing a further oxygen, nitrogen or sulphur atom or said residue substituted by one or more C_1–C_4 alkyl, amino, hydroxy, carboxy or C_1–C_4 carboxy alkyl groups, and the other of X, Y and Z is hydrogen; provided that X, Y and Z are not simultaneously hydrogen;

then dry or curing the coating composition to produce a dried or cured surface coating on the metal surface.

5,183,843

POLYAMIDE RESIN COMPOSITIONS

Hideki Sakai; Kazuo Ishiwatari, and Fumitoshi Ikejiri, all of Wakicho, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Sep. 21, 1989, Ser. No. 410,129

Claims priority, application Japan, Sep. 22, 1988, 63-238430; Aug. 31, 1989, 1-225754

Int. Cl.[5] C08K *5/11*

U.S. Cl. 524—318 **31 Claims**

1. A polyamide resin molding composition which comprises:

(A) as the sole polyamide of the composition an aromatic polyamide resin consisting essentially of (a) a wholly aromatic dicarboxylic acid component which consists essentially of a terephthalic acid component in amounts of 40–100 mole % and an aromatic dicarboxylic acid component other than the terephthalic acid component in amounts of 60–0 mole %, the total of the terephthalic acid component and the other dicarboxylic acid component being 100 mole % and, (b) a diamine component comprising at least one of an aliphatic diamine component and an alicyclic diamine component;

(B) a fibrous reinforcement in amount of 0–200 parts by weight in relation to 100 parts by weight of the polyamide resin; and

(C) at least one additive selected from the group consisting

VOL 1147 ISS 1 FE 2 1993 UMI

of a higher fatty acid metal salt and a derivative of an aliphatic carboxylic acid of 26–32 carbons, the metal being selected from the I, II and III group metals of the periodic table, and the derivative being selected from the group consisting of an acid ester, a partially saponified ester and a metal salt, in amounts of 0.01–5 parts by weight in relation to 100 parts by weight of the polyamide resin.

5,183,844

POLY(ARYLENE SULFIDE) COMPOSITION AND METHOD USING SILICA TO REDUCE DROOL

Van C. Vives, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 2, 1990, Ser. No. 548,277
Int. Cl.[5] C08K *3/36*
U.S. Cl. 524—423 **12 Claims**

1. A composition having improved shear sensitivity comprising: poly(phenylene sulfide) in an amount in the range of from about 30% to about 65% by weight based on the total of said composition; fiberglass in an amount in the range of from about 5% to about 50% by weight based on the total weight of said composition; an additive selected from the group consisting of calcium carbonate, calcium sulfate, and talc, said additive being present in said composition in an amount in the range of from about 2% to about 58% by weight based on the total weight of said composition; and silica in an amount in the range of from about 4% to about 7.2% by weight based on the total weight of said composition, wherein said silica is a high surface silica having a surface area in the range of from about 50 to about 400 m^2/g.

5,183,845

POLYMER TREATMENT COMPOSITIONS

Jeff Parkinson, Lawrenceville, and Anthony J. O'Lenick, Jr., Lilburn, both of Ga., assignors to Siltech Inc., Norcross, Ga.

Filed Jan. 16, 1990, Ser. No. 465,986
Int. Cl.[5] C08K *5/22*
U.S. Cl. 524—726 **8 Claims**

1. An emulsion composition which comprises an admixture of the following components;

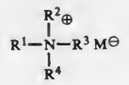
(a) a dimethylpolysiloxane;

(b) an amino functional dimethylpolysiloxane;

(c) a wetting agent, having a surface tension in water of 1% of below 30 dynes/cm^2;

(d) an emulsification compound having an HLB between 8 and 11;

(e) a cationic rain out agent which conforms to the following structure;



wherein;

R^1 R^2 R^3 and R^4 may be the same or different and are selected from alkyl, alkyl amido, aryl or heterocyclic with the proviso that a minimum of 18 carbon atoms are present in the molecule;

M is an anion needed for charge balance and is selected from halogen, or sulfate; and

(f) water.

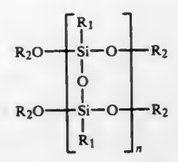
5,183,846

SILICONE LADDER POLYMER COATING COMPOSITION

Yoshiko Aiba; Hiroshi Adachi, and Etsushi Adachi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 2, 1991, Ser. No. 722,476
Claims priority, application Japan, Jul. 3, 1990, 2-178027
Int. Cl.[5] C08L *83/04*
U.S. Cl. 524—865 **4 Claims**

1. A silicone ladder polymer coating composition containing a silicone ladder polymer of the following general formula:



R_1 represents the same or different types of phenyl groups or lower alkyl groups, R_2 represents the same or different types of hydrogen atoms or lower alkyl groups, and n represents an integer of 20 to 1000, a nonpolar aromatic organic solvent being present in an amount such that solid matter occupies 5 to 30 percent by weight, and a silane coupling agent of 150 to 3000 p.p.m. with respect to said polymer, the silane coupling agent being selected from the group consisting of vinyltriethoxysilane, vinyltrimethoxysilane, β-(3,4 epoxycyclohexyl) ethyltrimethoxysilane, γ-glycidoxypropyltrimethoxysilane and γ-glycidoxypropylmethyldiethoxysilane.

5,183,847

MODIFIED CARBOXYLATED ROSIN POLYAMIDE/ACRYLICS

Sobby El-Hefnawi, Brooklyn, N.Y.; Shailesh C. Shah, Paramus, and Basil Wasyliw, Newark, both of N.J., assignors to BASF Corporation, Parsippany, N.J.

Filed Sep. 21, 1988, Ser. No. 247,201
Int. Cl.[5] C09F *1/00, 1/04*
U.S. Cl. 525—54.44 **6 Claims**

1. An interpolymer comprising the reaction product of a polyamide, with a carboxylated rosin and acrylic or styrene/acrylic co-polymer polyelectrolyte at a temperature of 180°–250° C.

5,183,848

CONTAINER CLOSURES, SEALED CONTAINERS AND SEALING COMPOSITIONS FOR THEM

David N. Samuel, Nr Sandy, and Richard S. Williams, Impington, both of England, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Division of Ser. No. 370,546, Jun. 23, 1989, abandoned. This application Jun. 7, 1991, Ser. No. 711,845
Claims priority, application United Kingdom, Jun. 29, 1988, 8815487; Aug. 26, 1988, 8820283
Int. Cl.[5] C08L *23/06, 29/02*
U.S. Cl. 525—57 **4 Claims**

1. A sealing composition having reduced oxygen permeability consisting essentially of a matrix formed of a blend of polyethylene and an elastomer selected from the group consisting of styrene butadiene styrene polymers, ethylene propylene copolymers, ethylene propylene diene copolymers and blends thereof; and an ethylene vinyl alcohol polymer.

5,183,849

POLYPHENYLENE ETHER COMPOSITION

Soichiro Yamaguchi; Koichi Matsuda, and Hideo Goto, all of Yamaguchi, Japan, assignors to Ube Cycon, Ltd., Tokyo, Japan

Filed Jun. 19, 1991, Ser. No. 717,479
Claims priority, application Japan, Jul. 10, 1990, 2-182248
Int. Cl.[5] C08L *71/12, 91/06*
U.S. Cl. 525—68 **7 Claims**

1. A polyphenylene ether composition, comprising 100 parts by weight of a mixture of the following components (a) and (b) and from 0.1 to 10.0 parts by weight of an acid-modified wax (c)

(a) polyphenylene ether or the combination of polyphenylene ether and an aromatic vinyl polymer and

(b) a graft copolymer obtained by emulsion polymerizing 20 to 90 parts by weight of an aromatic vinyl compound to 10 to 80 parts by weight which is reduced to rubber content, of an ethylene-propylene-nonconjugate diene copolymer rubber latex having a gel content of from 40 to 95% by weight and an average dispersed rubber particle diameter of from 0.2 to 1.0 μm by the use of a redox initiator composed of cumene hydroperoxide, ferrous sulfate, sodium pyrophosphate, and dextrose.

5,183,850

GRAFT POLYMERS AND THEIR USE AS FLAMEPROOFING AGENTS

Christian Lindner, Cologne, and Herbert Eichenauer, Dormagen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

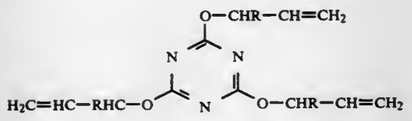
Filed Dec. 24, 1990, Ser. No. 633,028
Claims priority, application Fed. Rep. of Germany, Jan. 3, 1990, 4000047; Apr. 5, 1990, 4010960
Int. Cl.[5] C08L *51/04*
U.S. Cl. 525—73 **2 Claims**

1. A flameproofed molding composition comprising:

I) 80 to 99.9% by weight of a synthetic material selected from polystyrene, polymethyl methacrylate, styrene/acrylonitrile copolymer, methyl methacrylate/styrene copolymer, styrene/maleic anhydride copolymer and graft polymers on thermoplastics containing a rubber base; and

II) 0.1 to 20% by weight of a graft polymer of

a) 5 to 95% by weight of a copolymer of 20 to 60% by weight of a 1, 3, 5-triazine derivative corresponding to formula (I)



I

in which R=H, C_{1-2} alkyl, and 40 to 80% by weight of other vinyl monomers as the graft base and

b) 5 to 95% by weight of a polymer of styrene, α-methyl styrene, p-methyl styrene, acrylonitrile, methacrylonitrile, C_{1-8} alkyl acrylates, C_{1-8} alkyl methacrylates, maleic imides, maleic anhydride, vinyl ethers, vinyl esters, ethylene, methacrylamide, acrylic acid, methacrylic acid, styrene, sulfonic acid or mixtures thereof as the graft shell.

5,183,851

LOW HAZE TRANSPARENT COMPOSITIONS AND PROCESSES FOR PREPARING THEM

Francesco Visani; Carlo Tavazzani; Giuseppe Ajroldi, all of Milan, and Giovanni Castiglioni, Locate, all of Italy, assignors to ELF Atochem ITALIA S.r.l., Milan, Italy

Continuation of Ser. No. 455,796, Dec. 26, 1989, abandoned, which is a continuation of Ser. No. 117,551, Nov. 6, 1987, abandoned. This application Sep. 3, 1991, Ser. No. 752,977
Claims priority, application Italy, Nov. 11, 1986, 22280 A/86
Int. Cl.[5] C08L *33/12, 51/04;* C08F *265/06*
U.S. Cl. 525—85 **23 Claims**

1. Low haze impact-resistant transparent compositions which comprise:

(a) 40–99% by weight of a thermoplastic resin based on homopolymers and/or copolymers of alkyl esters of methacrylic acid with alkyl esters of acrylic acid, wherein the alkyl group contains from 1 to 8 carbon atoms; and

(b) 60–1% by weight of polymeric particles having multilayer structure, diameters in the range from 100 to 300 nm, and coefficient of variation, relative to the average value of particle diameters, less than 0.1, constituted by 8–30% by weight of a central core, comprising:

a central core based on a cross-linked elastomer intimately blended with an acrylic resin as defined in (a) wherein the amount of elastomer is within the range of from to 0.3 to 7% by weight of the entire particle;

optionally a first layer of said acrylic resin grafted on said central core;

a second layer of cross-linked elastomer grafted on said first resin layer; and

a third layer of resin grafted on said second layer of cross-linked elastomer;

said core being made by the following steps:

(i) preparing a seed of elastomer in aqueous emulsion by feeding and polymerizing monomers selected from the alkyl or alkoxylalkyl esters of acrylic acid, wherein the alkyl group contains from 1 to 8 carbon atoms, and those containing a double ethylenic unsaturation, optionally in mixture with amounts of vinylic monomer of up to 30% by weight, and containing from 0.5 to 2% by weight of grafting monomers;

(ii) swelling of the above seed, by absorption of one or more monomers selected from the alkyl esters of methacrylic acid, wherein the alkyl group contains from 1 to 8 carbon atoms, optionally in admixture with minor amounts of C_1–C_8 alkyl or alkoxy-alkyl esters of acrylic acid, and containing 0.05–2% by weight of grafting monomers, said swelling being carried out to such an extent to obtain final particles w[illegible] ove-mentioned coefficient of variation of diamet[illegible] nd

(iii) polymerizing said alkyl esters absorbed in the elastomeric seed, to yield the central core.

5,183,852

POLYBLENDS CONTAINING POLYURETHANE, POLYMER AND SILOXANE CROSSLINKER

Peter M. Gomez, Northampton, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed May 22, 1991, Ser. No. 703,959
Int. Cl.[5] C08F *8/32*
U.S. Cl. 525—101 **9 Claims**

1. A polyblend comprising

(a) from 20% to 89% by weight of a polyurethane;

(b) from 10% to 70% by weight of a polymer comprising:

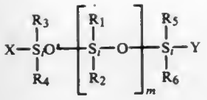
1. from 10% to 95% of a vinylaromatic monomer;

2. from 5% to 50% of a polymerisable unsaturated dicarboxylic acid; and

3. from 0% to 50% of a polymerisable ester of an unsaturated carboxylic acid;

(c) from 1% to 25% by weight of a siloxane crosslinker having the formula

VOL
1147
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wherein, R_1, R_2, R_3, R_4, R_5 and R_6 independently represent a straight, branched, or substituted alkyl group having from 1 to 8 carbon atoms or a carbocyclic group, having 5 to 6 carbon atoms, m is an integer such that the molecular weight of the resulting siloxane is from 1,500 to 60,000 and X and Y individually represents a terminal group carrying a reactive moiety independently selected from the group consisting of amine, hydroxy or epoxy moieties.

(d) from 0% to 50% by weight of a further polymeric ingredient;

wherein the amounts of components (a), (b), (c) and (d) total 100%.

5,183,853

ARTICLES OF A NEW CRYSTALLINE FORM OF SYNDIOTACTIC STYRENE POLYMER

Gaetano Guerra, Salerno; Vincenzo M. Vitagliano; Paolo Corradini, both of Napoli, and Enrico Albizzati, Arona, all of Italy, assignors to Himont Incorporated, Wilmington, Del.

Filed Feb. 27, 1990, Ser. No. 485,928

Claims priority, application Italy, Feb. 28, 1989, 19588 A/89

Int. Cl.[5] C08L *71/12;* C08F *6/00, 12/08*

U.S. Cl. 525—132 **6 Claims**

1. A manufactured article comprising syndiotactic styrene polymer, wherein the styrene polymer is predominantly in crystalline beta' form having an X-ray spectrum having maximum intensity reflections at 2θ equal to 12.2° and 20° and no appreciable intensity reflection at 2θ from 15° to 18° and obtained by processing the melt of the syndiotactic styrene polymer at a temperature of 50° C. higher than the melting temperature of said polymer.

5,183,854

Patent Not Issued For This Number

5,183,855

GRAFT COPOLYMER BASED ON AN ULTRAHIGH-MOLECULAR-WEIGHT POLYETHYLENE AND AN ETHYLENE COPOLYMER

John Hobes, Dinslaken, and Christiane Barth, Oberhausen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 19, 1991, Ser. No. 762,607

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1990, 4030565

Int. Cl.[5] C08L *23/08, 23/26*

U.S. Cl. 525—193 **21 Claims**

1. A graft copolymer containing from 5 to 50 parts by weight of polyethylene having a molecular weight of at least 1,000,000 g/mol and constituting Base Polymer I; 95 to 50 parts by weight of a Base Polymer II comprising 10% to 50% by weight of vinyl acetate or alkenecarboxylic acid ester and 50% to 90% by weight of ethylene; and 0.5 to 3.0 parts by weight of alkenecarboxylic acid or alkenecarboxylic anhydride per 100 parts of Base Polymers I and II, as a graft monomer.

5,183,856

THERMOPLASTIC ELASTOMER AND A PROCESS FOR ITS PRODUCTION

Sadao Kitagawa, and Mitushige Baba, both of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Feb. 22, 1991, Ser. No. 659,504

Claims priority, application Japan, Feb. 23, 1990, 2-42774; Feb. 23, 1990, 2-42775; Apr. 18, 1990, 2-102138

Int. Cl.[5] C08F *265/04;* C08L *33/08*

U.S. Cl. 525—282 **9 Claims**

1. A process for producing a thermoplastic elastomer which comprises:

polymerizing an acrylic ester in the presence of a polyfunctional monomer having in its molecule at least two ethylenically unsaturated bonds, thereby forming a crosslinked acrylic rubber having a glass transition temperature of 0° C. or lower in an amount of 55–90 parts by weight per 100 parts by weight of the final polymer composition; and

adding a methacrylate ester and a maleimide to the acrylic rubber so as to carry out copolymerization, thereby forming a methacrylate ester/maleimide copolymer having a glass transition temperature of 110° C or higher in an amount of 45-10 parts by weight per 100 parts by weight of the final polymer composition.

5,183,857

MODIFIED BLOCK COPOLYMER AND A PROCESS FOR PRODUCING THE SAME

Toshinori Shiraki, Yamato; Fusakazu Hayano, Chigasaki, and Hideo Morita, Yokobama, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 113,238, Oct. 27, 1987, Pat. No. 4,927,889, which is a division of Ser. No. 847,257, Apr. 2, 1986, Pat. No. 4,820,768, which is a division of Ser. No. 432,923, Sep. 20, 1982, Pat. No. 4,628,072. This application Nov. 30, 1989, Ser. No. 443,188

Claims priority, application Japan, Aug. 13, 1981, 56-125882; Aug. 24, 1981, 56-131650

The portion of the term of this patent subsequent to May 22, 2007, has been disclaimed.

Int. Cl.[5] C08F *257/00*

U.S. Cl. 525—285 **32 Claims**

1. A modified block copolymer comprising a linear base block copolymer of at least two monovinyl substituted aromatic hydrocarbon polymer blocks and at least one olefin compound polymer block having an ethylenic unsaturation degree not exceeding 20%, said linear base block copolymer having at least one maleic anhydride unit non-radically grafted thereonto, said linear base block copolymer having a monovinyl substituted aromatic hydrocarbon content of 5 to 95% by weight.

5,183,858

CORE-SHELL POLYMER, PRODUCTION AND USE THEREOF

Ichiro Sasaki, Suita; Junji Oshima, Toyonaka, and Minoru Yamada, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 501,761, Mar. 30, 1990, abandoned. This application Dec. 19, 1991, Ser. No. 810,439

Claims priority, application Japan, Mar. 31, 1989, 1-081826

Int. Cl.[5] C08F *279/02, 265, 04, 265, 06;* C08L *59/02*

U.S. Cl. 525—308 **7 Claims**

1. A core-shell polymer comprising a rubbery polymer core consisting essentially of (a) a conjugated diene, (b) a C_{2-8} alkyl acrylate, (c) a mixture of C_{2-8} alkyl acrylates, (d) a mixture of a conjugated diene and a C_{2-8} alkyl acrylate or (e) a mixture of (a) or (b) and at least one monomer copolymerizable therewith selected from the group consisting of an aromatic vinyl monomer, an aromatic vinylidene monomer, a vinyl cyanide, a vinylidene cyanide and an alkyl methacrylate and a glassy polymer shell which is formed from methyl methacrylate or a mixture of methyl methacrylate and at least one monomer copolymerizable therewith selected from the group consisting of an alkyl acrylate, an alkyl methacrylate, an aromatic vinyl monomer, an aromatic vinylidene monomer, a vinyl cyanide and a vinylidene cyanide, the transition temperature of the glassy polymer being not less than 60° C., the core-shell polymer having substantially no detectable anion.

5,183,859

POLYMER PARTICLES, PRODUCTION AND USE THEREOF

Ichiro Sasaki, Suita; Junji Oshima, Toyonaka, and Minoru Yamada, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Nov. 8, 1989, Ser. No. 433,201

Claims priority, application Japan, Nov. 9, 1988, 63-282862

Int. Cl.[5] C08F *265/06, 279/02, 265/04*

U.S. Cl. 525—309 **11 Claims**

1. A polymer particle comprising (1) a rubbery polymer core comprised of conjugated diene elastomers, C_{2-8} alkyl acrylate elastomers or mixtures thereof and (2) a methacrylic glassy polymer shell as formed in latex interpenetrating polymer networks, which is formed by swelling 100 parts by weight of the rubbery polymer with 10 to 200 parts by weight of a swelling solvent wherein the swelling solvent is miscible with methacrylic monomers and carrying out an emulsion polymerization reaction of the methacrylic monomers in the presence of the resultant swollen rubbery polymer.

5,183,860

IMPACT RESISTANT MOLDABLE POLYACETAL RESIN COMPOSITIONS AND PROCESSES FOR MAKING SAME

Osamu Kashihara, Shizuoka, Japan, assignor to Polyplastics Co., Ltd., Osaka, Japan

Filed Mar. 25, 1991, Ser. No. 673,984

Claims priority, application Japan, Mar. 28, 1990, 2-82330

Int. Cl.[5] C08L *61/02;* C08G *18/56*

U.S. Cl. 525—398 **15 Claims**

1. A moldable polyacetal resin composition comprising a polyacetal base resin ad an impact resistant effective amount of a thermoplastic polyurethane resin melt-blended with said polyacetal base resin, wherein said polyacetal base resin consists essentially of a mixture of (A_1) a low hydroxyl-containing polyacetal resin having less than 50 mmol/kg hydroxyl groups in its molecule, and (A_2) a high hydroxyl-containing polyacetal resin having between 70 to 300 mmol/kg hydroxyl groups in its molecule, and wherein said high hydroxyl-containing polyacetal resin and said low hydroxyl-containing polyacetal resin are respectively present in a weight ratio A_1:A_2 of between 97:3 to 70:30.

5,183,861

POLYALKYLOXAZOLINE/POLYLACTONE COPOLYMERS, PROCESSES FOR MAKING, AND USES

Judy S. Riffle; Gurudus D. Sinai-Zingde, and Andrew E. Brink, all of Blacksburg, Va., assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Filed May 23, 1989, Ser. No. 355,709

Int. Cl.[5] C08G *63/91*

U.S. Cl. 525—413 **4 Claims**

1. A block copolymer comprising as respective polymer units poly(2-oxazoline) and polylactone moieties.

5,183,862

HYPERBRANCHED POLYESTERS

Garret D. Figuly, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 548,681, Jun. 22, 1990. This application Apr. 9, 1992, Ser. No. 865,599

Int. Cl.[5] C08F *20/00*

U.S. Cl. 525—437 **5 Claims**

1. A capped polyester prepared by capping the X and Y functions of a soluble hyperbranched polyester having at least 1 branch per 10 monomer units prepared by conventional polycondensation of one or more monomers of the formula:

$$XR^2_n$$

wherein:

R^1 is a divalent C_{1-12} hydrocarbyl radical which is linear or branched aliphatic, alicyclic, aromatic or mixed aromatic-aliphatic;

R^2 is a C_{1-12} hydrocarbyl radical having a valence of (n+1), which radical is linear or branched aliphatic, alicyclic, aromatic or mixed aromatic-aliphatic, or R^2 is R^3N wherein R^3 is defined as for R^1;

either of R^1, R^2 or R^3 optionally also containing substituents that are unreactive under processing conditions;

X and Y are terminal functions selected from $—CO_2R'$ and —OR" wherein R^1 is H or C_{1-12} alkyl and R" is H or OC(O)R;

m is 0 or 1; and

n is an integer and is at least 2;

with the provisos that:

(i) both X and Y are not $—CO_2R'$ or —OR";

(ii) no X or Y function is adjacent to another X or Y function;

(iii) when R^2 is an aliphatic hydrocarbyl radical, Y is $—CO_2R'$; and

(iv) when R^2 is R^3N, m is 1; with a monofunctional capping agent.

5,183,863

VISCOELASTIC RESIN COMPOSITION FOR VIBRATION-DAMPING MATERIAL

Masanori Nakamura; Hiroshi Hirakouchi; Takeshi Yatsuka, all of Shiga; Nobuo Kadowaki, and Hiroshi Endoh, both of Chiba, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka and Nippon Steel Corporation, Tokyo, both of, Japan

Filed May 29, 1992, Ser. No. 890,116

Claims priority, application Japan, May 31, 1991, 3-157643

Int. Cl.[5] C08G *18/42*

U.S. Cl. 525—438 **11 Claims**

1. A viscoelastic resin composition for a vibration damping material comprising (A) at least one low specific gravity amorphous polyester resins wherein 40 mol % or more of the dibasic acid component is an aromatic dicarboxylic acid, (B) at least one high specific gravity amorphous polyester resins wherein 80 mol % or more of the dibasic acid component is an aromatic dicarboxylic acid and (C) at least one hardener selected from the group consisting of polyisocyanate compounds, epoxy group-containing compounds and acid anhydrides, characterized in that the difference in molecular weight between (A) and (B) is 10,000 or more, the molecular weight of one of (A) and (B) is 5,000 or higher, the difference in specific gravity at 30° C. between (A) and (B) is within the range of 0.06–0.15, and the weight ration (A):(B) is within the range of 90:10–30:70.

VOL
1147
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5,183,864

POLYAMIDE BLENDS BY REACTIVE PROCESSING

Robert G. Nelb, II, Midland, Mich., and Kemal Onder, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 247,789, Sep. 22, 1988, abandoned. This application Jul. 27, 1990, Ser. No. 558,955
Int. Cl.[5] C08L *77/10, 79/08, 59/02, 69/00*
U.S. Cl. 525—452 30 Claims

1. A process for the preparation of a thermoplastic polymer blend containing at least one first thermoplastic polymer and a second thermoplastic polymer, the second thermoplastic polymer having recurring imide and/or amide linkages which process comprises (a) mixing the first thermoplastic polymer with an organic diisocyanate and a polycarboxylic compound selected from the class consisting of a dicarboxylic acid, a tricarboxylic acid or anhydride thereof, and mixtures of said dicarboxylic and tricarboxylic acid or anhydride thereof at a temperature below the melting point of the first polymer and (b) reactively processing the mixture of step (a) whereby the second thermoplastic polymer is formed by the reaction of the organic diisocyanate with the polycarboxylic compound in the presence of said first polymer thereby forming said thermoplastic polymer blend.

5,183,865

THERMOSETTABLE POWDER COMPOSITIONS OF POLYMALEIMIDE AND ALLYL-FUNCTIONAL PREPOLYMER

Mohinder S. Chattha, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 289,856, Dec. 27, 1988, abandoned. This application Jan. 16, 1991, Ser. No. 642,103
Int. Cl.[5] C08L *63/10, 67/06, 79/02, 81/02*
U.S. Cl. 525—530 6 Claims

1. A shelf stable, powder composition adapted to form a high T_g, thermally stable, impact resistant thermoset material, which composition consists essentially of an intimate mixture of two components:

(A) an allyl-functional prepolymer component: (i) having a number average molecular weight between about 300 and about 3000 and (ii) being the reaction product of:

(a) an aromatic allyl-functional compound additionally containing a first reactive functionality; and

(b) a modifying compound containing a second reactive functionality capable of reacting with said first reactive functionality of compound (a), said first reactive functionality and said second reactive functionality being selected from the following reactive functionality pair: epoxide and amine, said compound (a) and compound (b) being reacted in an amount sufficient to react substantially all of said amine and epoxide functionalities which may be present on said compound (a) and compound (b); and

(B) polymaleimide component,

said allyl-functional prepolymer component and said polymaleimide component being present in said composition in amounts sufficient to provide between about 0.8 and 1.2 maleimide groups of said polymaleimide component for each allyl group present on said allyl-functional prepolymer component.

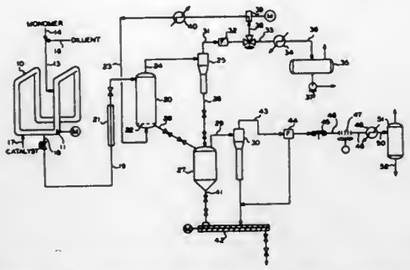
5,183,866

POLYMER RECOVERY PROCESS

John D. Hottovy, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 30, 1989, Ser. No. 400,620
Int. Cl.[5] C08F *2/14*
U.S. Cl. 526—88 20 Claims

1. A polymerization process comprising polymerizing monomers in a liquid diluent to produce a liquid slurry containing particles of normally solid polymer, periodically opening a product takeoff valve port to allow a charge of said liquid slurry of particles to flow into an elongated confined zone comprising a flash line heater and then into a flash chamber wherein the lighter components are separated from said particles, further characterized by the fact that the elongated confined zone is constructed such that the flow time of said charge of slurry in said elongated confined zone is equal to at least about 25% of the time between the closing of the product takeoff valve and the next opening of the settling leg valve.



5,183,867

POLYMERIZATION PROCESS USING A NEW SUPPORTED POLYMERIZATION CATALYST

Howard C. Welborn, Jr., Houston, Tex., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 906,103, Sep. 10, 1986, Pat. No. 5,077,255. This application Aug. 22, 1991, Ser. No. 748,378
Int. Cl.[5] C08F *4/606, 10/00*
U.S. Cl. 526—114 12 Claims

1. A process for polymerizing α-olefins either alone or in combination with one or more other olefins, said process comprising contacting said α-olefins either alone, or in combination with one or more other olefins, with a supported reaction product obtained by reacting at least one metallocene of a metal of Group IVB, VB and VIB of the Periodic Table of Elements at least one non-metallocene transition metal compound of a metal of Group IVB, VB, and VIB and an alumoxane in the presence of a support material consisting essentially of silica, alumina or silica-alumina.

5,183,868

OLEFIN POLYMERIZATION OVER PI-OLEFIN COMPLEX OF CHROMIUM SUPPORTED ON ALUMINOPHOSPHATE

Kim W. Nordquest, Rocky Mount, N.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 23, 1990, Ser. No. 556,631
Int. Cl.[5] C08F *4/69, 4/622*
U.S. Cl. 526—155 13 Claims

1. A polymerization process which comprises contacting at least one mono-1-olefin having 2 to 8 carbon atoms per molecule with a catalyst system comprising a pi-olefin complex of chromium (-1) supported on an activated aluminophosphate support wherein said pi-olefin is cycloheptatrienyl-(1,3-cycloheptadiene), or an alkyl substituted derivative thereof.

5,183,869

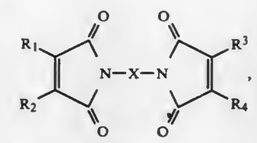
HARDENABLE COMPOSITIONS

Andreas Kramer, Düdingen; Rudolf Brunner, Belfaux, and Abdul-Cader Zahir, Oberwil, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 14, 1991, Ser. No. 699,541
Claims priority, application Switzerland, May 18, 1990, 1702/90
Int. Cl.[5] C08F *26/06*
U.S. Cl. 526—262 12 Claims

1. A composition comprising:

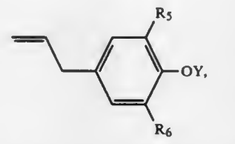
(A) a compound of formula I



(I)

wherein R_1, R_2, R_3 and R_4 are identical or different and each is hydrogen or methyl, and X is a divalent organic radical comprising 2 to 60 carbon atoms,

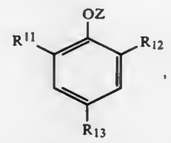
(B) a compound of formula II



(II)

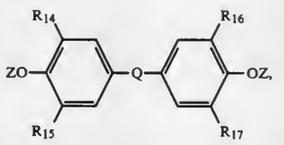
wherein R_5 and R_6 are identical or different and each, independently of the other, is C_1–C_8alkyl, and Y is hydrogen or an allyl radical, and

(C) an alkenylphenol of formula IV, V or VI



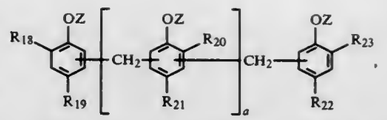
(IV)

wherein each of R_{11}, R_{12} and R_{13}, independently of the others, is a hydrogen atom or a C_3–C_{10}alkenyl group, at least one of the radicals R_{11} to R_{13} being an alkenyl group, and Z is hydrogen, C_1–C_{10}alkyl, C_6–C_{10}aryl or C_3–C_{10}alkenyl,



(V)

wherein Q is a direct bond, methylene, 2,2-propylidene, —CO—, —O—, —S—, —SO— or —SO_2—, and each of R_{14}, R_{15}, R_{16} and R_{17}, independently of the others, is a hydrogen atom or a C_3–C_{10}alkenyl group, at least one of the radicals R_{14} to R_{17} being an alkenyl group, and Z is hydrogen, C_1–C_{10}alkyl, C_6–C_{10}aryl or C_3–C_{10}alkenyl,



(VI)

wherein each of R_{18}, R_{19}, R_{20}, R_{21}, R_{22} and R_{23}, independently of the others, is a hydrogen atom, C_1–C_4alkyl or C_3–C_{10}alkenyl, at least one of the radicals R_{18} to R_{23} being an alkenyl group, and a is a number from 0 to 10, and Z is hydrogen, C_1–C_{10}alkyl, C_6–C_{10}aryl or C_3–C_{10}alkenyl.

5,183,870

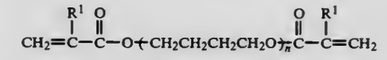
COMPOSITION FOR PLASTIC LENSES

Hiroshi Fukushima; Akira Motonaga; Eriko Suda, all of Nagoya; Mikito Nakajima, Suwa; Katsuyoshi Takeshita, Suwa, and Yusuke Kutsukake, Suwa, all of Japan, assignors to Mitsubishi Rayon Co., Ltd and Seiko Epson Corporation, both of Tokyo, Japan

Filed Feb. 7, 1991, Ser. No. 651,945
Claims priority, application Japan, Feb. 8, 1990, 2-27118; Feb. 19, 1990, 2-36148; Jul. 5, 1990, 2-176223; Jul. 5, 1990, 2-176224
Int. Cl.[5] C08F *24/00*
U.S. Cl. 526—273 8 Claims

1. A composition for plastic lenses which comprises

(A) 10 to 60 parts by weight of a polybutylene glycol di(-meth)acrylate represented by the general formula (I):

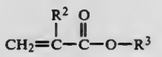


(I)

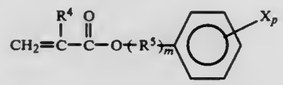
where R^1 is hydrogen or methyl, and n is an integer of 5 to 16;

(B) 20 to 80 parts by weight of at least one compound selected from the group consisting of a urethane poly(meth-)acrylate having two or more (meth)acryloyloxy groups in the molecule, and an epoxy poly(meth)acrylate having two or more (meth)acryloyloxy groups in the molecule;

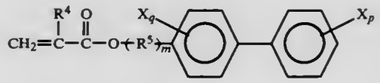
(C) 5 to 60 parts by weight of at least one mono(meth)acrylate selected from the group consisting of compounds represented by the general formulae (II), (III), (IV) and (V):



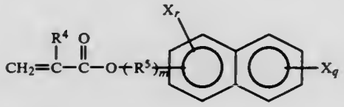
(II)



(III)



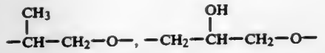
(IV)



(V)

where R^2 is hydrogen or methyl, R^3 is an alicyclic hydrocarbon radical having 5 to 16 carbon atoms, R^4 is hydrogen or methyl, R^5 is —CH_2—, —CH_2CH_2—O—,

VOL
1147
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1993
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or —$CH_2CH_2CH_2CH_2$—O—, X is chlorine, bromine or iodine, m is an integer of 0 to 3, p is an integer of 0 to 5, q is an integer of 0 to 4, and r is an integer of 0 to 3; and

(D) 0 to 60 parts by weight of a compound having at least one polymerizable double bond in the molecule,

with the total amount of components (A), (B), (C) and (D) being 100 parts by weight.

5,183,871

STYRENE POLYMER MOLDING MATERIAL AND PROCESS FOR PREPARING SAME

Komei Yamasaki, Chiba, and Funaki Keisuke, Ichihara, both of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed May 14, 1990, Ser. No. 523,065
Claims priority, application Japan, May 31, 1989, 135940
Int. Cl.[5] C08L *25/04*
U.S. Cl. 526—347.2 **13 Claims**

1. A molding material of styrene polymer having a high degree of syndiotacticity, a weight average molecular weight of 50,000 or more, and at least one melting point in the surface layer or subsurface parts thereof of the molding material in the range of 285° C. to 300° C. and, if present, an inner portion having a conventional syndiotactic configuration and a melting point no higher than 275° C., as measured by differential scanning calorimeter with a temperature rising rate of 20° C./min.

5,183,872

PROCESS FOR THE PEPARATION OF FINELY DIVIDED, WATER-SWELLABLE POLYSACCHARIDE GRAFT POLYMERS

Klaus Heidel, and Sigrid Scholz-Weigl, both of Marl, Fed. Rep. of Germany, assignors to Starchem GmbH, Krefeld, Fed. Rep. of Germany

Filed Oct. 25, 1991, Ser. No. 782,805
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1990, 4034882
Int. Cl.[5] C08F *251/00, 2/18;* A61F *13/15;* A61L *15/22*
U.S. Cl. 527—300 **11 Claims**

1. In a process for the preparation of finely divided, porous and rapidly water-swellable polysaccharide graft polymers, comprising the steps of semicontinuous reverse-phase suspension polymerization, partial dewatering and crosslinking, the improvement being that during the suspension polymerization step,

an aqueous solution containing from 60 to 95 parts of an olefinically unsaturated carboxylic acid which has been neutralized to the extent of from 50 to 100%,

from 0 to 50 parts of at least one other olefinically unsaturated monomer,

from 0 to 2 parts of crosslinking agent and

from 0.005 to 5 parts of polymerization initiator, is added continuously at from 40° to 100° C. over the course of from 0.5 to 5 hours to a suspension of from 5 to 40 parts of polysaccharide and from 0 to 2 parts of polymerization initiator in a nonpolar organic solvent which contains 1 to 10% by weight, based on the total weight of said olefinically unsaturated carboxylic acid, of a dispersant mixture of

(a) from 50 to 100% by weight of nonionic surfactant having a hydrophilic-lipophilic balance of 0.5 to 10, and

(b) from 0 to 50% by weight of nonionic surfactant having a hydrophilic-lipophilic balance of from 10.5 to 20, and wherein,

after from 75 to 100% of the aqueous monomer containing solution has been added, 0.2 to 4% by weight, based on the total weight of said olefinically unsaturated carboxylic acid, of an additional dispersant selected from the group consisting of an amphoteric ammonium compound containing an alkyl radical having 6 to 20 carbon atoms, a quaternary imidazolinium salt containing an alkyl radical having 6 to 20 carbon atoms, and mixtures thereof is added.

5,183,873

ROOM TEMPERATURE STABLE ORGANOPOLYSILOXANE COMPOSITIONS

George J. Vikane, Delagacion Tlalpan, Mexico, assignor to Wacker Silicones Corporation, Adrian, Mich.

Filed Oct. 21, 1991, Ser. No. 779,748
Int. Cl.[5] C08G *77/04*
U.S. Cl. 528—16 **16 Claims**

1. A composition which is stable at room temperature, but when heated to an elevated temperature cures to an elastomeric solid which comprises (A) an organopolysiloxane having silicon bonded hydroxyl groups, (B) a crosslinking agent selected from the group consisting of

(a) a silane of the formula

$$R_mSi(Z)_{4-m},$$

(b) partial hydrolyzates of silane (a) and

(c) an organohydrogenpolysiloxane of the average unit formula

$$R_nHSiO_{3-n}$$

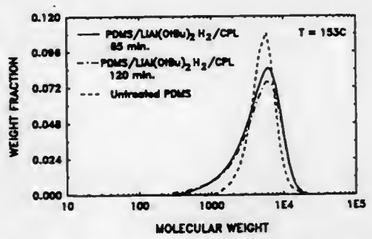
where R is selected from the group consisting of a monovalent hydrocarbon radical having from 1 to 18 carbon atoms and a substituted monovalent hydrocarbon radical having from 1 to 18 carbon atoms, Z is selected from the group consisting of a hydrocarbonoxy group of the formula (—OR') and a hydrocarbonoxy-hydrocarbonoxy group of the formula (—OR"OR'), where R' is a monovalent hydrocarbon radical having from 1 to 10 carbon atoms, R" is a divalent hydrocarbon radical having from 2 to 10 carbon atoms, m is an integer of from 0 to less than 2 and n is an integer greater than 0, but less than 2 and (C) an aluminum salt of a carboxylic acid having from 8 to 18 carbon atoms which is solid at room temperature.

5,183,874

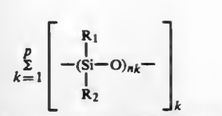
POLYORGANOSILOXANE-POLYAMIDE BLOCK COPOLYMERS

Cary A. Veith, Arlington, Va., assignor to Technical Development Associates, Copley, Ohio

Filed Oct. 18, 1990, Ser. No. 599,475
Int. Cl.[5] C08G *77/06*
U.S. Cl. 528—16 **11 Claims**

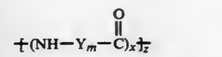


1. A process for preparing a block copolymer having a polyorganosiloxane block [B] having a number average molecular weight of about 10 kg/mole to about 150 kg/mole of the formula:



[B]

and a polyamide block [A] having a number average molecular weight of about 15 kg/mole to about 130 kg/mole of the formula:



[A]

wherein R_1 and R_2 are the same or different within each organosiloxane block and wherein R_1 and R_2 may vary among the p different organosiloxane blocks and are independently selected from the group consisting of alkyl having from 1 to 18 carbon atoms, aryl, alkenyl having from 1 to 12 carbon atoms and combinations thereof,

n_k is the number average degree of polymerization of the organosiloxane block and is from about 3 to 7000,

k is an integer from 1 to p,

p is the total number of organosiloxane blocks in the polyorganosiloxane block [B] and is an integer greater than or equal to one,

n is the overall number average degree of polymerization of the entire polyorganosiloxane block [B] and is an integer of from about 3 to 7000,

Y_m is an alkylene having from 3 to 13 carbon atoms,

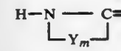
l is the total number of different cyclic lactam monomers in the polyamide block [A] and is an integer greater than or equal to one,

m is an integer of from 1 to l,

x is an integer greater than or equal to one, and

z is the overall polyamide block number average degree of polymerization and is an integer of from about 15 to 1200;

comprising mixing together an N-acyllactam functionalized homo- or copolyorganosiloxane, one or more cyclic lactam monomers of the formula:



and a catalyst of the formula:

$$LiAl(OR)_jH_{4-j}$$

wherein j=1, 2 or 3 and R is an alkyl having from 1 to 18 carbon atoms or an aryl to form the block copolymer.

5,183,875

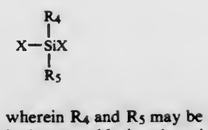
METHOD FOR MANUFACTURING A HAFNIUM-CONTAINING SILAZANE POLYMER AND A METHOD FOR MANUFACTURING A CERAMIC FROM SAID POLYMER

Yoshihumi Takeda, Nilgata, and Akira Hayashida, Tokyo, both of Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1990, Ser. No. 630,063
Claims priority, application Japan, Dec. 20, 1989, 1-330108
Int. Cl.[5] C08G *77/04*
U.S. Cl. 528—33 **10 Claims**

1. A method for manufacturing a hafnium-containing silazane polymer comprising reacting, under conditions to effect polymerization in a water-free atmosphere and at a temperature between about 25° C. and 350° C., a mixture of

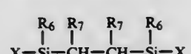
(A) a halide of an organic silicon compound selected from the group consisting of:



[III]

wherein R_4 and R_5 may be the same or different and are hydrogen, chlorine, bromine, methyl, ethyl, phenyl or vinyl and X is chlorine or bromine;

a compound having the formula:



[IV]

wherein R_6 is hydrogen, chlorine, bromine, methyl, ethyl, phenyl or vinyl, R_7 is hydrogen or methyl, and X is chlorine or bromine;

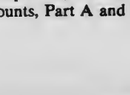
and mixtures thereof;

(B) a hafnium compound having the formula:

$$HfX_4$$ [I]

wherein X is chlorine or bromine; and

(C) a disilazane having the formula



[II]

wherein R_1, R_2 and R_3 may be the same or different and are hydrogen, methyl ethyl, phenyl or vinyl.

5,183,876

UREA GROUP-CONTAINING POLYISOCYANATES MODIFIED WITH LONG CHAIN COMPOUNDS AND A PROCESS FOR THEIR PREPARATION

Richard Kopp, Cologne; Gerhard Grögler, Leverkusen, and Heinrich Hess, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 383,948, Jul. 21, 1989, abandoned. This application Feb. 6, 1991, Ser. No. 651,693
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1988, 3826447
Int. Cl.[5] C08G *18/10*
U.S. Cl. 528—59 **13 Claims**

1. A modified urea group-containing polyisocyanate which is prepared by a process which comprises

a) reacting a starting polyisocyanate which is free from urea groups with a long chain compound having a molecular weight of about 800 to 6,000 and

b) subsequently reacting the modified polyisocyanate produced in a) with water to form urea groups in an inert reaction medium or in an aqueous mixture containing a dispersion stabilizer.

5,183,877

POLYUREA OR POLYUREA-URETHANE ADHESIVE FOR BONDING ELASTOMERS

Sandra K. M. Swanson, West St. Paul, Minn., assignor to H.B. Fuller Company, Minneapolis, Minn.

Filed Oct. 25, 1991, Ser. No. 782,578
Int. Cl.[5] C08G *18/10*
U.S. Cl. 528—64 **13 Claims**

1. As a polyurea adhesive composition formed by mixing two parts (A and B) together in predetermined relative amounts, Part A and Part B comprising, respectively:

VOL 1147 ISS 1 FE 2 1993 UMI

Part A—a mixture of

a) a synthetic polymer of di-p-aminobenzoate containing a poly(tetramethyleneglycol) (PTMEG) backbone, and

b) optionally an aromatic diamine selected from the group consisting of the aromatic diamines used as a chain extender which include but are not limited to methylene dianiline (MDA); 4,4'-methylene-bis-3-(chloro-2,6-diethylbenzenamine) (MCDEA); diethyltoluenedeamine (DETDA); 4,4'-methylene-bis-(2-ethyl-6-methylaniline) (MMEA); 4,4'-bis-(2,6-diethylaniline) (MDEA); 4,4'-methylene-bis-(2-isopropyl-6-methylaniline) (MMIPA); 4,4'-methylene-bis-(2-ethyl-6-methylcyclohexylamine) (M-MECA); 4,4'-bis(sec-butylamino), diphenylmethane; phenylenediamine; methylene-bis-orthochloroaniline (MBOCA); 4,4'-methylene-bis-(2-methylaniline) (MMA); 4,4'-methylene-bis-(2-chloro-6-ethylaniline) (MCEA); 4,4'-methylene-bis-(2,6-diethyl cyclohexylamine) (MDECA); 1,2-bis(2-aminophenylthio) ethane; N,N'-di-alkyl-p-phenylenediamine; 4,4'-bis(paraaminocyclohexyl) methane; 4,4'-methylene-bis(2,6-diisopropylaniline) (MDIPA); and dimethylthiotoluenediamine (DMTDA).

Part B—an isocyanate terminated polyurea prepolymer formed by mixing

a) a synthetic polymer of di-p-aminobenzoate containing a poly(tetramethyleneglycol (PTMEG) backbone with

b) a diisocyanate selected from the group consisting of 4,4'methylene diisocyanate (MDI); 2,4'-methylene diisocyanate; polymeric MDI; toluene diisocyanates; p- and m-phenylene diisocyanates; tetramethylene diisocyanate; 1,6-hexamethylene diisocyanate; 1,4-cyclohexylene diisocyanate; 4,4'-methylene dicyclohexyl diisocyanate; 4,4'-diphenylmethane diisocyanate; 1,5-naphthalene diisocyanate; carbodimide modified methylene diisocyanate; 1,5-tetrahydronapthalene diisocyanate; and mixtures of these.

5,183,878

EASILY PROCESSABLE, WHOLLY AROMATIC POLYESTER

Keiichi Kanaka; Noriyuki Hayashi; Toshihiro Kobashi; Yukihiko Kageyama, and Kenji Hijikata, all of Shizuoka, Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed Sep. 20, 1991, Ser. No. 763,238

Claims priority, application Japan, Sep. 20, 1990, 2-251335

Int. Cl.[5] C08G *63/00, 63/18, 63/02*

U.S. Cl. 528—193 **11 Claims**

1. An easily processable wholly aromatic polyester consisting essentially of structural units represented by the formulas (i) to (iii) where:

(i) is $-\overset{O}{\overset{\|}{C}}-Ar_1-\overset{O}{\overset{\|}{C}}-$,

(ii) is $-\overset{O}{\overset{\|}{C}}-Ar_2-\overset{O}{\overset{\|}{C}}-$, and

(iii) is $-O-Ar_3-O-$,

and wherein Ar_1 is 1,4-phenylene; Ar_2 is a mixture of 2,6-naphthalene and 2,7-naphthalene wherein 2,6-naphthalene is present in a concentration of 10 to 90 mole percent based upon the total concentration of 2,6-naphthalene and 2,7-naphthalene; and Ar_3 is selected from the group consisting of 1,4-phenylene, 4,4'-biphenylene, and mixtures of these; and unit (ii) constitutes 10 to 90 mole percent of the units derived from a dicarboxylic acid present in said polyester.

5,183,879

POLYMER GEL MANUFACTURING METHODS

Satoshi Yuasa, Yokohama, and Yoshinori Tomida, Ebina, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 19, 1989, Ser. No. 423,893

Claims priority, application Japan, Oct. 21, 1988, 63-264027; Oct. 28, 1988, 63-270886; Feb. 17, 1989, 1-36320

Int. Cl.[5] C08F *6/04*

U.S. Cl. 528—503 **43 Claims**

1. A method of manufacturing a polymer gel comprising the steps of:

preparing a polymer gel by polymerizing monomers from which a polymer gel can be formed at temperature equal to or less than a phase transition temperature of the resultant polymer gel; and

separating the resultant polymer gel into fractional portions thereof at a temperature equal to or greater than the phase transition temperature of said polymer gel.

5,183,880

Patent Not Issued For This Number

5,183,881

O-AMINOAZO COMPOUNDS

Horst Jäger, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

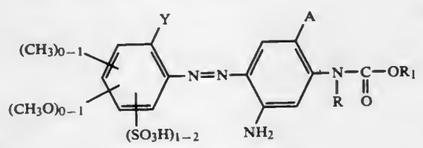
Filed Aug. 22, 1991, Ser. No. 748,604

Claims priority, application Fed. Rep. of Germany, Sep. 4, 1990, 4027970

Int. Cl.[5] C09B *29/085, 43/124*

U.S. Cl. 534—732 **3 Claims**

1. A compound of the formula



(IV)

in which

Y represents $-OCH_2$ or $-OC_2H_5$.

A represents hydrogen, Cl, —COOH, $-SO_3H$, $-CH_3$ or $-OCH_3$,

R represents hydrogen, $-CH_3$, $-C_2H_5$, $-C_2H_5OH$, $-CH_2CH_2COOH$ or $-CH_2CH_2SO_3H$, and

R_1 represents CH_3, $-C_2H_5$,n—C_3H_7, benzyl, phenyl or cyclohexyl.

5,183,882

2'-DEOXY-2'-METHYLIDENECYTIDINE DIHYDRATE, METHODS FOR ITS PRODUCTION AND COMPOSITIONS

Shinji Sakata; Takanori Miyashita, both of Choshi; Kazuhiko Kondo, Sapporo; Atsushi Sakai; Toshiyuki Shibata, both of Nakatsu, and Takayuki Ogawa, Chikujo, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka and Yamasa Shoyu Co., Ltd., Chiba, both of, Japan

Filed Feb. 19, 1991, Ser. No. 656,824

Claims priority, application Japan, Feb. 19, 1990, 2-37695

Int. Cl.[5] C04H *19/06;* **A61K** *31/70, 47/26*

U.S. Cl. 514—49 **8 Claims**

1. A composition which is obtained by liophylization of an aqueous solution containing 2'-deoxy-2'-methylidenecytidine dihydrate and saccharide(s).

5,183,883

CONJUGATE OF ADRIAMYCIN AND CYCLODEXTRIN

Hiroshi Tanaka, Chigasaki; Kaichiro Kominato, Yamato; Takeo Yoshioka, Ayase; Hiroshi Iguchi, Yokohama; Shin-ichi Hirano, Chigasaki; Yasuo Okajima, Fujisawa; Reijko Yamamoto, Sagamihara; Masataka Shirai, Tokyo; Hiroshi Nishida, Yokosuka; Hiroshi Tone, Yokohama, and Rokuro Okamoto, Fujisawa, all of Japan, assignors to Mercian Corporation, Tokyo, Japan

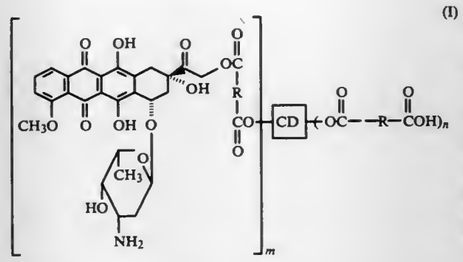
Filed Sep. 27, 1991, Ser. No. 766,791

Claims priority, application Japan, Sep. 28, 1990, 2-257209

Int. Cl.[5] C07K *15/24*

U.S. Cl. 563—6.4 **8 Claims**

1. A compound of formula (I)



(I)

wherein

R is a divalent hydrocarbon group selected from the group consisting of C_1–C_6 alkylene, —C=C—, C_5–C_7 cycloalkylene, 1,2-phenylene and 2,3- and 1,8-naphthalene,

CD is a cyclodextrin residue,

m is 1 to 8, and

n is 0 to 8.

5,183,884

DNA SEGMENT ENCODING A GENE FOR A RECEPTOR RELATED TO THE EPIDERMAL GROWTH FACTOR RECEPTOR

Matthias H. Kraus, Bethesda, Md., and Stuart A. Aaronson, Vienna, Va., assignors to United States of America, Washington, D.C.

Filed Dec. 1, 1989, Ser. No. 444,406

Int. Cl.[5] C07H *15/12;* **C12N** *1/20, 15/00*

U.S. Cl. 536—23.5 **8 Claims**

1. A DNA isolate consisting essentially of the nucleotide sequence of an erbB-3 gene defined in FIG. 4.

5,183,885

METHOD FOR CHROMATOGRAPHIC SEPARATION OF SYNTHETIC PHOSPHOROTHIOATE OLIGONUCLEOTIDES

B. John Bergot, Redwood City, Calif., assignor to Applied Biosystems, Inc., Foster City, Calif.

Filed Oct. 18, 1991, Ser. No. 779,012

Int. Cl.[5] C07B *63/00;* **C07H** *21/04, 1/06*

U.S. Cl. 536—25.41 **6 Claims**

1. A method of separating completely sulfurized phosphorothioate or phosphorodithioate oligonucleotides from a mixture of completely sulfurized and incompletely sulfurized phosphorothioate or phosphorodithioate oligonucleotides, the method comprising the steps of:

(a) impregnating a strong anion exchanger with the mixture of completely sulfurized and incompletely sulfurized phosphorothioate or phosphorodithioate oligonucleotides, the strong anion exchanger consisting of a mechanically rigid styrene-divinylbenzene matrix derivatized with a quaternary alkylammonium cation;

(b) passing through the strong anion exchanger a buffer solution comprising a a soft-base counter ion at a concentration which monotonically increases with time to a sample-desorbing concentration, the soft-base counter ion being selected from the group consisting of bromide, thiocyanate, azide, iodide, and sulfide; and

(d) recovering the eluate from step (b).

5,183,886

PROCESS FOR PREPARATION OF CRYSTALLINE OXYTITANIUM PHTHALOCYANINE SHOWING A,B OR C FORM

Iwao Takagishi, Yokohama, Japan, assignor to Mitsubishi Kasei Corporation, Tokyo, Japan

Continuation of Ser. No. 526,585, May 21, 1990, abandoned. This application May 22, 1992, Ser. No. 888,246

Claims priority, application Japan, May 22, 1989, 1-128426; Jul. 18, 1989, 1-185075; Jul. 27, 1989, 1-194815

Int. Cl.[5] C09B *67/50*

U.S. Cl. 540—141 **14 Claims**

1. A process for the preparation of crystalline oxytitanium phthalocyanine showing A, B or C crystalline form consisting of contacting dichlorotitanium phthalocyanine, dibromotitanium phthalocyanine or a mixture of them with at least one organic solvent selected from the group consisting of aromatic nitro compounds, nitrogen-containing cyclic ethers, aromatic amines, alcohols containing not less than 4 carbon atoms, aldehydes, ketones, lactones, lactams, acid amides, nitriles, alkyl sulfoxides and substituted phenols to produce the crystalline oxytitanium phthalocyanine.

5,183,887

SPIROCYCLIC 6-AMIDO-CARBAPENEMS AND AZETIDINONES

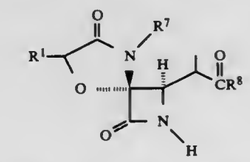
Mark L. Greenlee, Rahway; Thomas N. Salzmann, No. Plainfield, and Frank P. DiNinno, Old Bridge, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 576,087, Aug. 30, 1990, Pat. No. 5,055,463. This applicatioo Jul. 9, 1991, Ser. No. 727,192

Int. Cl.[5] C07D *498/1, 498/2*

U.S. Cl. 540—364 **11 Claims**

1. A compound of the structural formula:



wherein R^1 is hydrogen, C_{1-8} alkyl or C_{6-10} aryl; R^7 is hydrogen or a protecting group for amido nitrogen; and R^8 is hydroxy, hydrogen, C_{1-8} alkylthio cyano-C_2alkylthio, C_{6-10} arylthio, or 2-pyridylthio.

5,183,888

POLYCYCLIC DYES

Ronald W. Kenyon, Manchester; David F. Newton, Oldham, and Derek Thorp, Heywood, all of England, assignors to Imperial Chemical Industries PLC, London, England

Division of Ser. No. 410,630, Sep. 21, 1989, Pat. No. 5,084,580. This application Nov. 9, 1990, Ser. No. 611,288

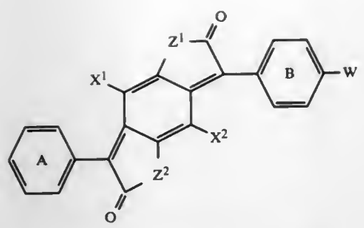
Claims priority, application United Kingdom, Oct. 3, 1988, 8823158

Int. Cl.[5] C07D *493/04*

U.S. Cl. 544—153 **1 Claim**

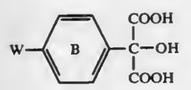
1. A process for the preparation of a polycyclic dye of Formula I:

VOL
1147
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I

by reacting a phenyltartronic acid of Formula II:



II

wherein:

W is $-NR^1R^2$ or $-OR^3$;

R^3 is H or C_{1-20}-alkyl, C_{2-20}-alkenyl, C_{4-8}-cycloalkyl or phenyl-C_{1-4}-alkylene group each of which is unsubstituted or is substituted by a group selected from alkyl, alkoxy, nitro, halogen, alkoxyalkoxy, cyclohexyl, phenyl, diphenyl, hydroxy, alkylcarbonyl, alkoxycarbonyl, alkoxyalkoxy carbonyl, alkoxycarbonyloxy, alkoxyalkoxycarbonyloxy, alkylcarbonyloxy, cyano and amino in which each alkyl is C_{1-4}-alkyl;

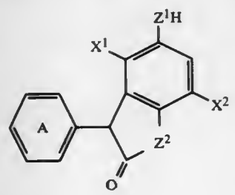
R^1 & R^2 are each independently H or C_{1-20}-alkyl, C_{2-20}-alkenyl, C_{4-8}-cycloalkyl, phenyl-C_{1-4}-alkylene or phenyl group each of which is unsubstituted or is substituted by a group selected from alkyl, alkoxy, nitro halogen, alkoxyalkoxy, cyclohexyl, phenyl, diphenyl, hydroxy, alkylcarbonyl, alkoxycarbonyl, alkoxyalkoxycarbonyl, alkoxycarbonyloxy, alkoxyalkoxycarbonyloxy, alkylcarbonyloxy, cyano and amino in which each alkyl is C_{1-4}-alkyl; or

R^1 & R^2 together with the nitrogen atom to which they are attached from a piperidino or morpholino group; or

R^1 or R^2 together with the nitrogen atom and the adjacent carbon atom of Ring B form a tetrahydroquinolinyl group; and

Ring B is unsubstituted, apart from the group W, or is substituted by from one or two further groups selected from alkyl; alkenyl; alkoxy; alkoxyalkoxy; alkoxycarbonylalkoxy; alkoxyalkoxycarbonyl alkoxy; alkylcarbonyloxyalkoxy; cyanoalkoxy; hydroxyalkoxy; chlorine; bromine; hydroxy; akylthio; arylthio; aryloxy; alkylcarbonyl and alkylsulphonyl; in which the alkyl or alkenyl contains up to 4 carbon atoms and the aryl is phenyl; $NHCOC_{1-4}$-alkyl; $-NHSO_2C_{1-4}$-alkyl; NR^1R^2 and OR^3, wherein R^1, R^2 and R^3 are as hereinbefore defined;

with either (a) a compound of Formula III:



III

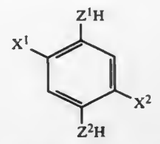
wherein,

Z^1 & Z^2 are each —O—;

X^1 & X^2 are each independently selected from H, halogen, cyano, alkyl, aryl, carbamoyl, sulphamoyl, COOH and carboxylic acid ester; &

Ring A is unsubstituted or is substituted by from one to three groups selected from alkyl; alkenyl; alkoxy; alkoxyalkoxy; alkoxycarbonylalkoxy; alkoxyalkoxycarbonylalkoxy; alkylcarbonyloxyalkoxy; cyanoalkoxy; hydroxyalkoxy; chlorine; bromine; hydroxy; akylthio; arylthio; aryloxy; alkylcarbonyl and alkylsulphonyl; in which the alkyl or alkenyl contains up to 4 carbon atoms and the aryl is phenyl; $NHCOC_{1-4}$-alkyl; $-NHSO_2C_{1-4}$-alkyl; NR^1R^2 and OR^3, wherein R^1, R^2 and R^3 are as hereinbefore defined;

or (b) a compound of Formula IV:



IV

wherein Z^1, Z^2, X^1 and X^2 are as hereinbefore defined; and oxidation of the intermediate compound to dehydrogenate the peripheral heterocyclic rings.

5,183,889

BENZONAPHTAHALENE DERIVATIVES, A PROCESS FOR THEIR PREPARATION AND THEIR USE IN THERAPEUTIC AND COSMETIC COMPOSITIONS

Braham Shroot, Antibes; Jacques Eustache, Grasse, and Jean-Michel Bernardon, Nice, all of France, assignors to Centre International de Recherches Dermatologiques (CIRD), Valbonne, France

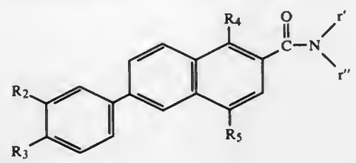
Division of Ser. No. 502,122, Mar. 30, 1990, Pat. No. 5,098,895, which is a division of Ser. No. 120,958, Nov. 16, 1987, Pat. No. 4,940,696, which is a division of Ser. No. 850,145, Apr. 10, 1986, Pat. No. 4,717,720. This application Dec. 9, 1991, Ser. No. 803,965

Claims priority, application Luxembourg, Apr. 11, 1985, 85849

Int. Cl.[5] **C07D** *265/30, 265/32;* **C07F** *7/02*

U.S. Cl. 544—174 **12 Claims**

1. A benzonaphthalene compound of the formula:



wherein

r' and r'' taken together form a heterocycle selected from the group consisting of piperidino, piperazino, morpholino and pyrrolidino,

R_2 represents hydrogen, branched or straight chain alkyl having 1–15 carbon atoms, alkoxy having 1–4 carbon atoms or a cycloaliphatic radical,

R_3 represents hydrogen, hydroxy, branched or straight chain alkyl, alkoxy having 1–10 carbon atoms, a cycloaliphatic radical selected from the group consisting of 1-methyl cyclohexyl and 1-adamantyl, a thiocycloaliphatic radical or $—O—Si(CH_3)_2—R_8$ wherein R_8 represents linear or branched lower alkyl,

R_4 and R_5, each independently, represent hydrogen, lower alkyl, hydroxy or lower acyloxy,

or a salt thereof.

5,183,890

Patent Not Issued For This Number

5,183,891

METHOD FOR THE PREPARATION OF SUBSTITUTED 1,4-DIHYDRO-4-OXO-CINNOLINE-3-CARBOXYLIC ACID, ESTERS AND SALTS THEREOF, AND INTERMEDIATES USED IN THEIR PREPARATION

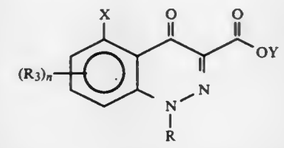
Jeffrey Labovitz, Palo Alto; William J. Guilford, San Leandro; Lawrence Fang, Foster City, and Yi Liang, San Jose, all of Calif., assignors to Orsan and Orsem, both of Paris, France

Filed Nov. 9, 1989, Ser. No. 434,077

Int. Cl.[5] **C07D** *237/28*

U.S. Cl. 544—235 **19 Claims**

1. A method for the preparation of a substituted cinnoline of the formula:



(I)

wherein X represents formula OR_1 or NR_1R_2, wherein R_1represents C_1–C_4 alkyl optionally substituted with C_1–C_4 alkoxy, 1 to 3 halogen atoms, or carboxy or C_1–C_4 alkoxycarbonyl; a C_2–C_4 alkenyl optionally substituted with 1 to 3 halogen atoms; or C_2–C_4 alkynyl; and R_2 independently represent H or alkyl;

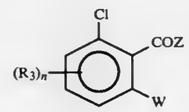
Y is H or C_1–C_{22} linear alkyl or alkenyl having up to four carbon-carbon double bonds, C_3–C_6 branched alkyl or alkenyl, C_1–C_4 alkoxyalkyl, cyclohexylmethyl, halogenated C_1–C_4 alkyl, phenyl, benzyl, $—(CH_2CH_2O)_mCH_2CH_3$ in which m is an integer from 1 to 5, or $—(CH_2OR_4)CH_2OR_5$ or $—CH_2CHOR_4CH_2OR_5$ in which either R_4 or R_5 but not both represent a C_1–C_{22} linear alkyl- or alkenylcarbonyl having up to four carbon-carbon double bonds and the other of R_4 or R_5 is H;

R is C_1–C_4 alkyl, phenyl, naphthyl, or phenyl or naphthyl substituted with one to three substituents selected from the group consisting of halogen, $CONH_2$, C_1–C_4 alkyl or haloalkyl, C_1–C_4 alkoxy or haloalkoxy, and cyano;

each R_3 independently represents H or C_1–C_4 alkyl, or haloalkyl, C_1–C_4 alkoxy or haloalkoxy, C_1–C_4 alkanoyl, cyano, nitro, hydroxy or halo; and

n is an integer from 0 to 3; which comprises:

reacting a compound of the formula

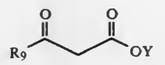


(IV)

wherein R_3 and n have the previously defined meanings;

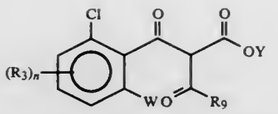
W is either F or Cl; and

Z is a leaving group selected from the group consisting of H, halogen, ester, and amide leaving groups;



(V)

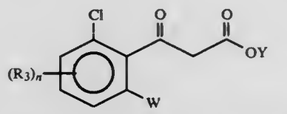
wherein R_9 is a hydrocarbon and Y has the previously defined meanings to form a trione of the formula



(VI)

wherein Y, W, R_3, R and n have the meanings as previously defined,

(1) converting said trione to a dione by heating in an organic solvent, said dione compound having the formula

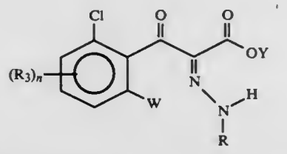


(VII)

wherein Y, W, R_3, and n have the meanings as previously defined,

and reacting said dione with a diazonium salt of the formula $RN^+{}_2A^-$

wherein R has the meanings as previously defined and A^- is any counter ion, to form a hydrazone of the formula

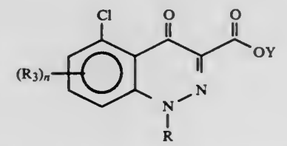


(VIII)

wherein Y, W, R_3, R, and n have the meanings as previously defined,

or (2) converting said trione directly to the hydrazone of formula VIII by reacting said trione with said diazonium salt of the formula $RN^+{}_2A^-$, wherein R and A have the meanings as previously defined;

causing said hydrazone to undergo a self-condensation reaction to produce a cinnoline precursor compound of the formula



(IX)

wherein Y, R_3, R, and n have the meanings as previously defined,

and reacting said cinnoline precursor compound with

(1) a compound of the formula

R_1OH or $R_1O^-M^+$

wherein M^+ is a metal cation and R_1 has the meanings as previously defined, or

(2) a compound of the formula

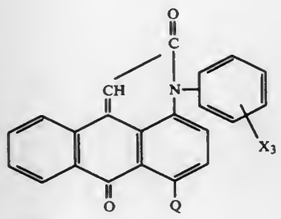
NHR_1R_2

wherein R_1 and R_2 have the meanings as previously defined to form the desired compound of formula I.

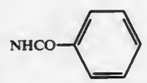
VOL 1147 ISS 1 FEB 2 1993 UMI

5,183,892
ANTHRAPYRIDONE COMPOUNDS
Toshio Nakamatsu, Osaka; Masanobu Terao, Hyogo; Shigetoshi Maneishi, Hyogo; Norio Kometani, Hyogo, and Yoshiaki Hayashi, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka and Daili Chemical Company, Limited, Hyogo, both of, Japan
Continuation-in-part of Ser. No. 384,769, Jul. 25, 1989, abandoned. This application Nov. 30, 1990, Ser. No. 621,236
Claims priority, application Japan, Jul. 29, 1988, 63-191918
Int. Cl.[5] C07D *221/18*
U.S. Cl. 546—76 **11 Claims**

1. An anthrapyridone compound represented by the following formula:



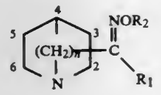
wherein Q is NH_2, $NHCH_3$, or



and X_3 is $—NHCOR^1$ or $—SO_2NR^7R^8$ wherein R^1, R^7 and R^8 are each C_{1-4} alkyl.

5,183,893
1-AZABICYCLOALKANE DERIVATIVES, THEIR PREPARATION PROCESS AND THEIR USE AS MEDICAMENTS
Giulio Galliani; Fernando Barzaghi, both of Monza; Carla Bonetti, Fontanella, and Emilio Toja, Milan, all of Italy, assignors to Roussel Uclaf, Paris, France
Division of Ser. No. 426,778, Oct. 26, 1989, Pat. No. 5,015,665. This application Mar. 26, 1991, Ser. No. 664,120
Claims priority, application Italy, Oct. 28, 1988, 22452 A/88
Int. Cl.[5] C07D *471/08*
U.S. Cl. 546—133 **15 Claims**

1. A compound of formula I

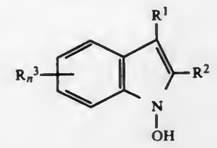


(I)

in which
n represents the number 2, and
R_1 and R_2, identical or different, represent hydrogen or an unsubstituted or substituted member of the group consisting of a linear, branched or cyclic alkyl, alkenyl and alkynyl which contain up to 6 carbon atoms in which the member, if substituted, is substituted by at least one of hydroxy, alkoxy containing up to 6 carbon atoms, benzyl, phenethyl, a $COOalk_1$ radical in which alk_1 represents alkyl containing up to 6 carbon atoms, and a $—CON(alk_2)_2$ radical in which alk_2 represents alkyl containing up to 6 carbon atoms, the radical $—C(R_1)=NOR_2$ being in the 2, 3 or 4 position, in all its isomer forms or a pharmaceutically acceptable addition salt thereof with an organic or mineral acid.

5,183,894
2-SUBSTITUTED-1-HYDROXYINDOLES
William R. Schleigh, Brockport, and Thomas R. Welter, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation-in-part of Ser. No. 562,997, Aug. 6, 1990, abandoned. This application Jul. 1, 1991, Ser. No. 724,232
Int. Cl.[5] C07D *209/42, 209/30, 213/50*; A01N *43/40*
U.S. Cl. 546—273 **10 Claims**

1. A compound having the following formula:



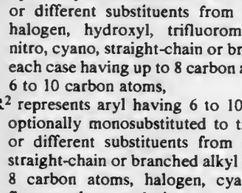
wherein,
R^1 is carbamoyl, t-butylcarbamoyl, dimethylcarbamoyl, carboxy, nitro or cyano;
R^2 is an alkenyl having 2–10 carbon atoms, and an N-substituted α-iminobenzyl group wherein the substituents are selected from the group consisting of phenyl, anilino and dimethylamino, or an aromatic group selected from the group consisting of phenyl, 4-nitrophenyl, 3-nitrophenyl, 3-trifluoromethylphenyl, 4-fluorophenyl, 4-formylphenyl, 4-carbamoylphenyl and 4-hydroxyiminomethylphenyl;
R^3 is a halogen atom; and
n is 0,1 or 2
provided that when R^2 is either phenyl or nitro substituted phenyl and n is 0, then R^1 is not cyano.

5,183,895
4-(N-BENZYL-N-METHYLAMINO)PYRIDINE ACID SALTS AND USE IN PREPARATION OF POLYMER-SUPPORTED CATALYSTS
Donald W. McQuigg; Edward E. Sowers, both of Mooresville; Gerald L. Goe; Eric F. V. Scriven, both of Greenwood, and James G. Keay, Indianapolis, all of Ind., assignors to Reilly Industries, Inc., Indianapolis, Ind.
Division of Ser. No. 690,393, Nov. 5, 1990, which is a continuation-in-part of Ser. No. 247,152, Sep. 21, 1988, Pat. No. 5,015,706. This application Feb. 18, 1992, Ser. No. 836,257
Int. Cl.[5] C07D *211/72*
U.S. Cl. 546—304 **14 Claims**

1. In preparing a vinyl-substituted 4-(N-benzyl-N-methylamino)pyridine monomer for use in a polymerization, the improvement comprising the steps of isolating and purifying the crude monomer once formed with an acid sufficiently strong to form a salt with said monomer for stable storage pending later use.

5,183,896
NEW DERIVATIVES OF 1,2,5,6-TETRAHYDROPYRIDIN-3-CARBOXALDEHYDE OXIME
Emilio Toja, Milan; Carla Bonetti, Fontanella; Fernando Barzaghi, and Giulio Galliani, both of Monza, all of Italy, assignors to Roussel Uclaf, Paris, France
Filed Mar. 11, 1991, Ser. No. 666,515
Claims priority, application Italy, Mar. 14, 1990, 19675 A/90
Int. Cl.[5] C07D *211/68*
U.S. Cl. 546—326 **11 Claims**

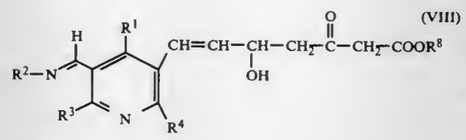
1. A compound of formula I



in which: R represents hydrogen, a linear, branched or cyclic alkyl, alkenyl or alkynyl containing up to 8 carbon atoms, and R′ and R″ are identical or different from each other, and represent a hydrogen, a linear, branched or cyclic alkyl, alkenyl or alkynyl containing up to 8 carbon atoms, or form together with the nitrogen to which they are linked a heterocyclic radical selected from the group consisting of piperidinyl, piperazinyl, N-methyl piperazinyl and morpholinyl, said morpholinyl being optionally substituted by an alkyl radical containing up to 4 carbon atoms.

5,183,897
CERTAIN INTERMEDIATE IMINO-SUBSTITUTED PYRIDINES
Rolf Angerbauer; Peter Fey; Walter Hübsch, all of Wuppertal; Thomas Philipps, Cologne; Hilmar Bischoff, Wuppertal; Dieter Petzinna, Duesseldorf, and Delf Schmidt, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengellschaft, Leverkusen, Fed. Rep. of Germany
Division of Ser. No. 558,029, Jul. 26, 1990, Pat. No. 5,064,841. This application Apr. 18, 1991, Ser. No. 687,272
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1989, 3925636
Int. Cl.[5] C07D *213/53, 213/54, 213/55, 213/57*
U.S. Cl. 546—330 **2 Claims**

1. A ketone of the formula

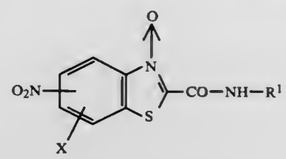


(VIII)

in which
R^1 represents aryl having 6 to 10 carbon atoms, which is optionally monosubstituted to trisubstituted by identical or different substituents from the group consisting of halogen, hydroxyl, trifluoromethyl, trifluoromethoxy, nitro, cyano, straight-chain or branched alkyl or alkoxy in each case having up to 8 carbon atoms and aryloxy having 6 to 10 carbon atoms,
R^2 represents aryl having 6 to 10 carbon atoms, which is optionally monosubstituted to trisubstituted by identical or different substituents from the group consisting of straight-chain or branched alkyl in each case having up to 8 carbon atoms, halogen, cyano, trifluoromethyl, trifluoromethoxy and nitro, or represents straight-chain or branched alkyl having up to 10 carbon atoms, which is optionally substituted by aryl having 6 to 10 carbon atoms, hydroxyl or alkoxy having up to 8 carbon atoms, or represents a group of the formula $—OR^5$, in which
R^5 denotes hydrogen or straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by aryl having 6 to 10 carbon atoms, or denotes aryl having 6 to 10 carbon atoms, which is optionally substituted by straight-chain or branched alkyl or alkoxy in each case having up to 8 carbon atoms, halogen, nitro, cyano, trifluoromethyl or trifluoromethoxy,
R^3 and R^4 are each isopropyl and R^8 represents alkyl.

5,183,898
PESTICIDAL NITRO-SUBSTITUTED BENZOTHIAZOLONES
Klaus Wagner, Cologne; Gerd Hänssler, Leverkusen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Division of Ser. No. 504,150, Apr. 2, 1990, Pat. No. 5,093,345. This application Nov. 15, 1991, Ser. No. 792,850
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1989, 3911227
Int. Cl.[5] C07D *277/68*
U.S. Cl. 548—178 **1 Claim**

1. A nitro-substituted benzothiazole-3-oxide of the formula



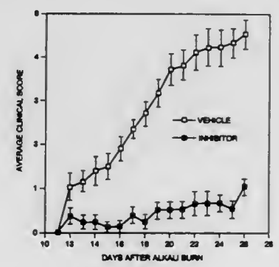
(IV)

in which
X represents hydrogen, halogen, alkyl or halogenoalkyl and
R^1 represents alkyl which is monosubstituted or disubstituted by identical or different substituents from the group consisting of cyano, carboxyl and alkoxycarbonyl.

5,183,899
PYRAZOLE DERIVATIVE
Takehiko Naka, Kobe, and Kohei Nishikawa, Kyoto, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Filed Jul. 31, 1990, Ser. No. 560,759
Claims priority, application Japan, Aug. 2, 1989, 1-200963; Sep. 11, 1989, 1-235124; Nov. 10, 1989, 1-293459
Int. Cl.[5] C07D *403/10*; A61K *31/415*
U.S. Cl. 548—253 **1 Claim**

1. A compound which is 5-butyl-N-(2-methoxyethyl)-1-[[2′-(1H)-tetrazol-5-yl)biphenyl-4-yl]methyl]pyrazole-3-carboxamide.

5,183,900
MATRIX METALLOPROTEASE INHIBITORS
Richard E. Galardy, 73 Faulkner Dr., Guilford, Conn. 06437, and Damian Grobelny, 43 Brassey Avenue, Rosanna, Victoria 3084, Australia
Filed Nov. 21, 1990, Ser. No. 615,798
Int. Cl.[5] C07D *401/06, 209/22*
U.S. Cl. 548—495 **4 Claims**



1. A compound of the formula

VOL 1147 ISS 1 FE 2 1993 UMI



wherein R^4 is 3-indolyl methylene, and the pharmaceutically acceptable amides thereof.

5,183,901
UREA-HYDROGEN PEROXIDE-POLYVINYLPYRROLIDONE

Robert B. Login, Oakland; John J. Merianos, Middletown; Russell B. Biss, Paramus, and Paul Garelick, Sonth Plainfield, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Jan. 24, 1992, Ser. No. 825,359
Int. Cl.[5] C01B *15/01*
U.S. Cl. 548—543 **13 Claims**

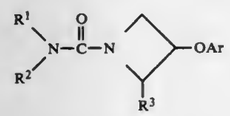
1. A process for the production of free-flowing powders of a urea-H_2O_2-PVP product comprising reacting a fluidized bed of PVP maintained at a reaction temperature of from ambient temperature to about 60° C. with finely divided droplets of a 15 to 30% by weight aqueous solution of urea-H_2O_2, and drying the product.

5,183,902
METHOD OF TREATING MUSCULAR TENSION, MUSCLE SPASTICITY AND ANXIETY WITH 3-ARYLOXY AND 3-ARYLTHIOAZETIDINECARBOXAMIDES

Chandler R. Taylor, Jr.; Albert D. Cale, Jr., both of Mechanicsville, and Harold F. Stauffer, Jr., Midlothian, all of Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Division of Ser. No. 921,521, Oct. 22, 1986, Pat. No. 5,068,231, and a continuation-in-part of Ser. No. 706,632, Feb. 28, 1985, abandoned. This application Aug. 9, 1991, Ser. No. 743,059
Int. Cl.[5] C07D *205/04*
U.S. Cl. 548—950 **10 Claims**

1. A 3-aryloxyazetidinecarboxamide compound selected from the group having the formula:



wherein:

Ar is phenyl or phenyl substituted by chloro, bromo, iodo, fluoro, loweralkyl, loweralkoxy, nitro, aminocarbonyl or trifluoromethyl;

R^3 is H or loweralkyl;

R^1 is C_3–C_9 cycloalkyl, allyl, 2-methyl-2-propenyl, propargyl, phenyl or phenyl substituted by halogen, loweralkyl, loweralkoxy, nitro, cyano, or trifluoromethyl; and

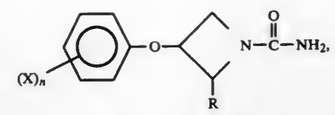
R^2 is H.

5,183,903
UREA FUSION PROCESS FOR THE SYNTHESIS OF 3-PHENOXY-1-AZETIDINECARBOXAMIDES

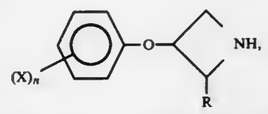
William J. Welstead, Jr., Richmond, Va., and Young S. Lo, Hockessin, Del., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

Filed Nov. 26, 1991, Ser. No. 798,674
Int. Cl.[5] C07D *205/04*
U.S. Cl. 548—952 **11 Claims**

1. A process for the preparation of compound having the formula:



wherein n is 1 to 3, R is H or methyl, and X is hydrogen, halogen, trifluoromethyl, C_1–C_4 alkyl, C_1–C_4 alkoxy, acetyl or aminocarbonyl and when n is 2 or 3, the values of X may be the same or different, which comprises heating together a compound having the formula:



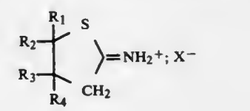
wherein n, X and R are as defined above, with from about 1 to about 10 molar equivalents of urea at from about 60° C. to about 150° C. for from 0.5 to 5 hours in the absence of a solvent.

5,183,904
HINDERED LINKING AGENTS AND METHODS

Stephen F. Carroll, Walnut Creek, Calif., and Dane A. Goff, Menlo Park, both of Calif., assignors to Xoma Corporation, Berkeley, Calif.

Division of Ser. No. 454,576, Dec. 21, 1989, Pat. No. 5,093,475, which is a continuation-in-part of Ser. No. 288,586, Dec. 22, 1988, abandoned. This application Nov. 20, 1991, Ser. No. 796,048
Int. Cl.[5] C07D *333/36*
U.S. Cl. 549—68 **9 Claims**

1. A compound of the following formula (I):



wherein,

X is halogen;

R_1 is $COOR_5$; halogen; nitro; halogenated $C_{1\text{-}8}$alkyl; unsubstituted $C_{1\text{-}8}$alkoxy; halogenated $C_{1\text{-}8}$alkoxy; unsubstituted $C_{2\text{-}8}$alkenyl; halogenated $C_{2\text{-}8}$alkenyl; unsubstituted $C_{2\text{-}8}$alkynyl; halogenated $C_{2\text{-}8}$alkynyl; unsubstituted $C_{3\text{-}8}$cycloalkyl; unsubstituted aryl; aryl substituted with 1 to 3 substituents selected from halogen, amino, unsubstituted or halogenated $C_{1\text{-}8}$alkyl, or unsubstituted or halogenated $C_{1\text{-}8}$alkoxy; unsubstituted heterocycle; or heterocycle substituted with 1 to 3 substituents selected from halogen, amino, unsubstituted or halogenated $C_{1\text{-}8}$alkyl, or unsubstituted or halogenated $C_{1\text{-}8}$alkoxy:

each of R_2, R_3 and R_4 is independently hydrogen or selected from the values of R_1; or

R_1 and R_2 together form a $C_{2\text{-}5}$alkylene bridge, unsubstituted or substituted with one to five $C_{1\text{-}4}$alkyl groups; or

R_1 or R_2 together with R_3 form a $C_{1\text{-}5}$alkylene bridge, unsubstituted or substituted with one to five $C_{1\text{-}4}$alkyl groups; and

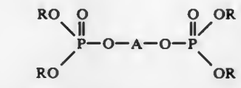
R_5 is hydrogen or $C_{1\text{-}8}$alkyl.

5,183,905
PHENOLPHTHALEIN BIS (DIHYDROCARBYL PHOSPHATE) COMPOUNDS

Alan M. Aaronson, Flushing Meadows, and Danielle A. Bright, Spring Valley, both of N.Y., assignors to Akzo NV, Arnhem, Netherlands

Continuation of Ser. No. 660,452, Feb. 25, 1991, abandoned. This application Apr. 20, 1992, Ser. No. 870,748
Int. Cl.[5] C07F *9/06*; C09K *21/00*
U.S. Cl. 549—218 **8 Claims**

1. A phenolphthalein bis(dihydrocarbyl phosphate) compound of the formula



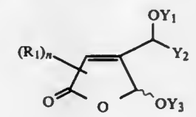
where R is selected from the group consisting of C_1–C_{20} alkyl, cycloalkyl, C_2–C_{12} alkenyl, and phenyl and —O—A—O—is a phenolphthalein moiety minus its hydroxy hydrogen atoms.

5,183,906
2- AND 5-ALKYL AND PHENYL SUBSTITUTED 4-(1-HYDROXY, 1-ACYLOXY OR 1-CARBAMOYLOXY)-5-HYDROXY-2 (5H)-FURANONES AS ANTI-INFLAMMATORY AGENTS

Gary C. M. Lee, Laguna Hills; Michael E. Garst, Newport Beach, and George Sachs, Encino, all of Calif., assignors to Allergan, Inc., Irvine, Calif.

Filed Apr. 30, 1991, Ser. No. 693,204
Int. Cl.[5] C07F *9/09*; C07D *307/34*
U.S. Cl. 549—218 **28 Claims**

1. A compound of the formula



where:

R_1 independently is H, phenyl, C_1–C_6 alkyl substituted phenyl, halogen substituted phenyl, or alkyl of 1 to 6 carbons and n is an integer having the values of 1 or 2, and where when n is 1 the R_1 group is attached to one of the 3 and the 5 positions of the 2-furanone, when n is 2 then the R_1 groups are attached to both the 3 and 5 positions with the proviso that when n is 1 then R_1 is not H;

Y_1 is H, alkyl of 1 to 20 carbons, phenyl C_1–C_{20} alkyl, C_1–C_{20} alkenyl containing one or more olephinic bonds, $PO(OH)_2$, $PO(OH)OR_2$, $PO(OH)R_2$, $PO(OR_2)_2$, where R_2 is independently alkyl of 1 to 20 carbons, phenyl, or halogen substituted phenyl or C_1–C_6 alkyl substituted phenyl, further Y_1 is CO—R_3, CO—OR_3, $CONHR_3$, SO_2R_3, $(CH_2)_p$—O—R_3, or $(CH_2)_p$—O—$(CH_2)_m$—O—R_3, where p, and m, are integers and are independently 1 to 20 and R_3 is H, C_1–C_{20} alkyl, C_1–C_{20} alkenyl containing one or more olefinic bonds, phenyl, halogen substituted phenyl or C_1–C_6 alkyl substituted phenyl, with the proviso that when Y_1 is CO—OR_3, or $CONHR_3$ then R_3 is not hydrogen;

Y_2 is H, an alkyl group of 6 to 25 carbons, phenyl, naphthyl, phenyl $(C_1$–$C_{20})$alkyl—, naphthyl $(C_1$–$C_{20})$alkyl—, C_1–C_6 alkyl substituted phenyl, halogen substituted naphthyl, C_1–C_6 substituted naphthyl, and

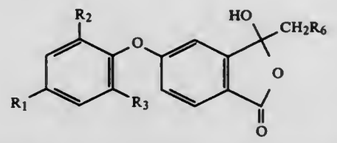
Y_3 is H, alkyl of 1 to 20 carbons, CO—R_4, CO—O—R_4, CO—NH—R_4, $PO(OR_4)_2$or $PO(OR_4)R_4$, where R_4 independently is H, alkyl of 1 to 20 carbons, phenyl, halogen substituted phenyl or C_1–C_6 alkyl substituted phenyl, with the proviso that when $Y_3$is $COOR_4$ or $CONHR_4$ then R_4 is not H, or a pharmaceutically acceptable salt thereof.

5,183,907
PROCESS FOR PREPARING DIPHENYL ETHERS

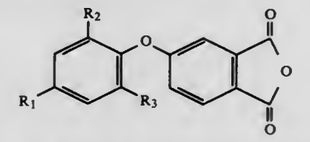
Stuart P. Briggs, Faversham, England, assignor to Shell Internationale Research Maatschappij B.V., The Hague, Netherlands

Continuation of Ser. No. 241,196, Sep. 7, 1988, abandoned. This application Oct. 29, 1991, Ser. No. 784,743
Claims priority, application United Kingdom, Sep. 30, 1987, 8722968
Int. Cl.[5] C07D *307/88*
U.S. Cl. 549—310 **9 Claims**

1. A process for the preparation of a diphenyl ether derivative of Formula II



wherein R_1 represents a hydrogen or halogen atom or an alkyl or haloalkyl group, R_2 and R_3, which may be the same or different, each independently represents a hydrogen or halogen atom, or an alkyl, haloalkl, nitro or cyano group, and R_6 represents a hydrogen atom or an alkyl group, said process comprising treating a compound of formula III



where R_1, R_2 and R_3 are as defined above with a dicarboxylic acid of formula R_6—$CH(COOH)_2$, where R_6 is as defined above, in the presence of an organic base, to obtain a reaction mixture containing product of formula II as the major product, and separating the product of the formula II from the reaction mixture.

5,183,908
PROCESS FOR THE PREPARATION OF SUBSTITUTED FURANONES

A. Frederick Elsasser, and Thomas J. Korte, both of Cincinnati, Ohio, assignors to Henkel Corporation, Ambler, Pa.

Continuation of Ser. No. 191,443, May 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 944,149, Dec. 19, 1986, abandoned. This application Feb. 27, 1990, Ser. No. 485,821
Int. Cl.[5] C07D *307/20*
U.S. Cl. 549—322 **4 Claims**

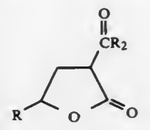
1. A process for preparing substituted furanones which comprises combining a 1,2-epoxyalkane containing from 3 to 6 carbon atoms, a beta-ketoester of the formula



where R_2 is a $C_{1\text{-}4}$ alkyl group and X is a $C_{4\text{-}10}$ alkoxy group, and water; adding aqueous sodium hydroxide or potassium hydroxide with agitation at a rate such that the temperature of the reaction mixture does not exceed 40° C., said reaction mixture containing 20% to 60% water and 2% to 4% molar excess of the base based on the beta-ketoester, with the molar

VOL 1147 ISS 1 FEB 2 1993 UMI

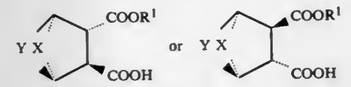
ratio of the 1,2-epoxyalkane to beta-ketoester ranging from 1:1.1 to 1:1.7; maintaining the temperature of the mixture from 20° C. to 35° C. until the reaction is essentially complete; adding mineral acid to adjust the pH to between 4 and 7; separating the organic phase from the aqueous phase; and recovering a substituted furanone product of the formula



wherein R is a C_{1-4} alkyl group and R_2 is the same as defined above from the organic phase.

5,183,909
MONO ESTER OF DICARBOXYLIC ACID
Mitsuaki Ohtani, Nara, and Takaharu Matsuura, Hyogo, both of Japan, assignors to Shionogi & Company, Ltd., Osaka, Japan
Division of Ser. No. 448,867, Dec. 12, 1989, Pat. No. 5,047,574. This application Jun. 20, 1991, Ser. No. 718,365
Claims priority, application Japan, Dec. 14, 1988, 63-315729
Int. Cl.[5] C07D *307/00*
U.S. Cl. 549—463 **1 Claim**

1. An optically active mono-ester of a dicarboxylic acid of the formulas:



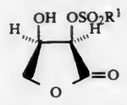
wherein X is —O—; Y is $—(CH_2)_2—$; R^1 is alkyl which may be substituted by alkoxy, halogen, amino, amino derivative, or nitro or R^1 is alkenyl, aryl, or aralkyl, each of which may be substituted by alkyl, alkoxy, halogen, amino, amino derivative, or nitro or the enantiomer of said carboxylic acid esters of the aforementioned formulas.

5,183,910
PROCESS AND INTERMEDIATES FOR CHIRAL EPOXIDES
Leland O. Weigel, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Division of Ser. No. 518,384, May 3, 1990, Pat. No. 5,097,049. This application Oct. 3, 1991, Ser. No. 770,676
Int. Cl.[5] C07D *301/02*
U.S. Cl. 549—539 **5 Claims**

1. A method for preparing a compound of the formula



which method comprises reacting a γ-lactone of the formula



under substantially anhydrous conditions with at least one equivalent of an alkoxide of the formula RO^- in the presence of an alcohol of the formula ROH wherein R is the hydrocarbon residue of a C_1–C_8 alcohol and R^1 is C_1–C_6 alkyl, trifluoromethyl, benzyl, phenyl, tolyl or trimethylphenyl.

5,183,911
PROCESS FOR THE PRODUCTION OF STABLE OZONIZED OILS FROM UNSATURATED VEGETABLE OILS
Josef Washüttl, Wien, Austria, and Renate Viebahn, Iffezheim, Fed. Rep. of Germany, assignors to Dr. J. Hansler GmbH, Iffezheim, Fed. Rep. of Germany
Continuation of Ser. No. 626,244, Dec. 12, 1990, abandoned, which is a continuation of Ser. No. 20,711, Mar. 2, 1987, abandoned. This application Apr. 6, 1992, Ser. No. 866,251
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1986, 3606735
Int. Cl.[5] C07B *51/43;* **C11B** *3/00, 13/00*
U.S. Cl. 554—181 **12 Claims**

1. A process for producing stable ozonized oils from unsaturated vegetable oils comprising the steps of:
placing an unsaturated vegetable oil in a vessel having means for bubbling a gaseous mixture therethrough:
bubbling said gaseous mixture through said unsaturated vegetable oil to produce a saturated, ozonized oil, said unsaturated vegetable oil being maintained at a constant temperature and said gaseous mixture comprising ozone and oxygen:
acidifying said ozonized oil;
adding an aqueous solution of antioxidation or reducing agent;
extracting undesirable by-products from said ozonized oil, said undesirable by-products being produced in said bubbling step, by shaking the mixture of said ozonized oil and said aqueous solution in the presence of a redox reaction system, said redox system selected from the group comprising ascorbic acid, vitamin E, vitamin A and a quinoid/benzoid system, said redox system being capable of radicalic reaction; and
removing said aqueous solution, containing said undesirable by-products so that a stable ozonized oil containing beneficial peroxide products remains.

5,183,912
ORGANOPENTASILOXANE AND METHOD FOR ITS PREPARATION
Tadashi Okawa, Chiba, Japan, assignor to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan
Filed Feb. 6, 1992, Ser. No. 832,152
Claims priority, application Japan, Feb. 13, 1991, 3-41270
Int. Cl.[5] C07F *7/08, 7/10, 7/18*
U.S. Cl. 556—425 **16 Claims**

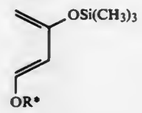
1. An organopentasiloxane having the formula

$$A—R^1—SiMe_2(OSiMe_2)_3OSiR^2_{(3-n)}(OR^2)_n$$

wherein Me denotes a methyl radical; A is selected from the group consisting of methacryloxy, glycidoxy and amino radicals; R^1 is a divalent organic group selected from the group consisting of an alkylene group having at least 2 carbon atoms and an alkyleneoxyalkylene group; R^2 is independently selected from monovalent hydrocarbon groups free of aliphatically unsaturated bonds; and n is an integer having a value of 1 to 3.

5,183,913
CYCLIC TRIKETONE COMPOUNDS AND TRIMETHYLSILYOXY BUTADIENE COMPOUNDS AND THEIR USE IN THE PREPARATION OF DAUNOMYCINQNE DERIVATIVES
Johan W. Scheeren, Malden; Joannes F. Martinus De Bie, Nijmegen, and Dirk De Vos, Oegstgeest, all of Netherlands, assignors to Pharmachemie B.V., Haarlem, Netherlands
Division of Ser. No. 473,538, Feb. 1, 1990, Pat. No. 5,097,051. This application Dec. 20, 1991, Ser. No. 812,902
Claims priority, application Netherlands, Feb. 10, 1989, 8900329
Int. Cl.[5] C07F *7/08, 7/10, 7/18*
U.S. Cl. 556—446 **10 Claims**

1.1-alkoxy-3-trimethylsilyloxy-1,3-butadienes of formula (1)



(1)

wherein R* is a group of the formula



wherein R^1 is methyl and R^2 is an alkyl group containing at least 2 carbon atoms, or R^1 is an alkyl group having 1–4 carbon atoms and R^2 is selected from the group consisting of an aryl group, a $—CH_2OR'$ group, a $—CH_2N<$ group, a $—CH_2SR''$ group and a $—CH_2—CH=CH_2$ group, and wherein R' and R'' are alkyl groups having 1–4 carbon atoms.

5,183,914
ALKOXYSILANES AND OLIGOMERIC ALKOXYSILOXANES BY A SILICATE-ACID ROUTE
Li-Tain Yeh, Cleveland; Malcolm E. Kenney, Cleveland Heights, both of Ohio; Gary N. Bokerman; John P. Cannady, both of Madison, Ind., and Ollie W. Marko, Carrollton, Ky., assignors to Dow Corning Corporation, Midland, Mich. and Case Western Reserve University, Cleveland, Ohio
Filed Apr. 29, 1991, Ser. No. 692,413
Int. Cl.[5] C07F *7/18*
U.S. Cl. 556—467 **30 Claims**

1. A method of manufacturing alkoxysilanes comprising:
a) reacting a metal orthosilicate with an acid selected from the group consisting of sulfurous acid and acids with a pKa greater than about 2.5 in the presence of an alcohol and then
b) reacting the product of (a) with ROH to form $Si(OR)_4$, wherein R is an alkyl group of 1–20 carbon atoms.

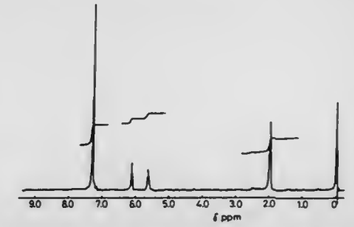
5,183,915
CATALYST AND PROCESS FOR THE PRODUCTION OF 3-CYANO-3,5,5-TRIALKYLCYCLOHEXANONE
Christian Forguy, Devon, Pa.; Frederick J. Goetz, Wilmington, Del.; Edward L. Graeber, Spring City, and Michael J. Lindstrom, Downington, both of Pa., assignors to Elf Atochem North America, Inc., Philadelphia, Pa.
Filed Mar. 5, 1992, Ser. No. 846,364
Int. Cl.[5] C07C *253/30, 253/10*
U.S. Cl. 558—341 **15 Claims**

1. A process for the preparation of 3-cyano-3,5,5-trialkylcyclohexanone by the reaction of 3,5,5-trialkylcyclohexenone having from 1 to 4 carbon atoms in each alkyl group with HCN in the absence of water and in the presence of a catalytic amount of a quaternary ammonium or quaternary phosphonim cyanide, and employing reaction conditions which will form 3-cyano-3,5,5-trialkylcyclohexanone.

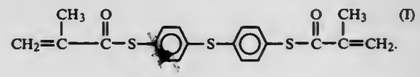
5,183,916
PROCESS FOR PRODUCING TRI-N-BUTYLPHOSPHOROTRITHIOITE
Ara H. Zakaryan; Peter E. Newallis, and Mark A. Tice, all of Leawood, Kans., assignors to Miles Inc., Pittsburgh, Pa.
Filed Apr. 14, 1989, Ser. No. 339,043
Int. Cl.[5] C07F *9/06*
U.S. Cl. 558—95 **10 Claims**

1. A process for the production of tri-n-butyl-phosphorotrithioite on a continuous or semi-continuous basis comprising
a) simultaneously introducing phosphorous trichloride and butylmercaptan into a reaction vessel which is maintained at a temperature of from about 60° to about 80° C.,
b) heating the mixture of a) to form tri-n-butylphosphotrithioite in a relatively substantial amount and,
c) recovering tri-n-butylphosphorotrithioite.

5,183,917
4,4'-BIS(METHACRYLOYLTHIO)DIPHENYLSULFIDE
Satoshi Maruyama, Kawasaki; Naoki Minorikawa; Tsutomu Arakawa, both of Kawasaki; Haruo Yoshida, Oita; Hirotska Tagoshi, and Kazuto Abe, both of Oita, all of Japan, assignors to Showa Denko K.K., Tokyo, Japan
PCT No. PCT/JP89/01076, § 371 Date Jun. 20, 1990, § 102(e) Date Jun. 20, 1990, PCT Pub. No. WO90/04587, PCT Pub. Date May 3, 1990
PCT Filed Oct. 20, 1989, Ser. No. 499,421
Claims priority, application Japan, Oct. 20, 1988, 63-265776; Oct. 20, 1988, 63-265778; Dec. 14, 1988, 63-315559; Jun. 20, 1989, 1-157528; Jul. 21, 1989, 1-190203
Int. Cl.[5] C07C *327/00, 327/22*
U.S. Cl. 558—251 **1 Claim**



1. 4,4'-Bis(methacryloylthio)diphenylsulfide having the formula (I):



(I)

5,183,918
PROCESS FOR THE PRODUCTION OF CARBONATE ESTERS
Frank P. Jakse, Florissant; Donald E. Morris, Kirkwood, and William Vanderlinde, Creve Coeur, all of Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed Aug. 25, 1989, Ser. No. 398,591
Int. Cl.[5] C07C *69/00*
U.S. Cl. 558—271 **16 Claims**

1. In a process for synthesizing an alkylsulfophenyl carbonate having a straight or branched chain alkyl group containing from about 6 to about 12 carbon atoms or a cycloalkyl group containing from about 6 to about 9 carbon atoms wherein an

VOL 1147 ISS 1 FEB 2 1993 UMI

akly chloroformate is reacted with a phenolsulfonate in an aqueous alkaline medium, the improvement comprising adding to said alkaline medium an acidifying agent whereby the reaction mass is neutralized to a pH of about 7 or below while said carbonate is in a said aqueous medium.

5,183,919

PROCESS FOR THE PREPARATION OF DIARYL CARBONATES

Cynthia L. Rand, Sanford, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 451,893, Dec. 18, 1989, abandoned. This application Jul. 30, 1991, Ser. No. 739,778

Int. Cl.[5] C07C *69/96*

U.S. Cl. 558—274 **18 Claims**

1. A process for the production of a diaryl carbonate comprising contacting an aryl haloformate with a phenolic compound in the presence of a catalytic amount of a catalyst comprising at least one aromatic heterocyclic nitrogen compound which has been activated by at least one hydroxyl substituent.

5,183,920

INTEGRATED PROCESS FOR THE PRODUCTION OF DIMETHYL CARBONATE

Harold D. Myers, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 13, 1992, Ser. No. 819,895

Int. Cl.[5] C07C *68/00, 69/96*

U.S. Cl. 558—277 **11 Claims**

1. An integrated process for the production of dimethyl carbonate from a carbon source suitable for the production of synthesis gas and oxygen comprising the steps of

(a) reacting the carbon source and oxygen to form a synthesis gas comprising hydrogen and carbon monoxide in a molar ratio of from 1:1 to 3:1;

(b) reacting the carbon monoxide and hydrogen formed in step (a) to produce methanol with excess carbon monoxide;

(c) reacting the methanol and carbon monoxide formed in step (b) with oxygen in the presence of a catalyst to form predominantly dimethyl carbonate and water;

(d) separating the products, any unreacted reactants and any by-products formed in steps (a), (b) and (c); and

(e) recycling any by-products formed in steps (a), (b) or (c) and any unreacted reactants.

7. An integrated process for the production of dimethyl carbonate from a carbon source suitable for the production of synthesis gas, oxygen and carbon dioxide, comprising the steps of

(a) reacting the carbon source, oxygen and carbon dioxide to form a synthesis gas comprising hydrogen and carbon monoxide in a molar ratio of from 1:1 to 3:1;

(b) reacting the carbon monoxide and hydrogen formed in step (a) to produce methanol with excess carbon monoxide;

(c) reacting the methanol and carbon monoxide formed in step (b) with oxygen in the presence of a catalyst to form predominantly dimethyl carbonate and water;

(d) separating the products, any unreacted reactants and any by-products formed in steps (a), (b) and (c); and

(e) recycling any by-products formed in steps (a), (b) or (c) and any unreacted reactants.

5,183,921

PROCESS FOR PRODUCING METHOXYIMINOACETAMIDE COMPOUNDS AND INTERMEDIATES

Akira Takase, Otsu; Hiroyuki Kai, Koriyama; Kuniyoshi Nishida, Koga; Shoji Shinomoto, Matsubara, and Masahiko Nagai, Amagasaki, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

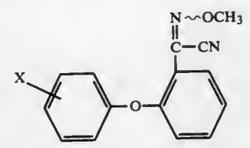
Filed Jul. 22, 1991, Ser. No. 733,303

Claims priority, application Japan, Jul. 26, 1990, 2-200696

Int. Cl.[5] C07C *255/34*

U.S. Cl. 558—301 **2 Claims**

1. A compound of the formula [II']:



[II']

wherein X is hydrogen, lower alkyl, lower alkoxy or halogen; and ~ is any configuration of E-isomer, Z-isomer or a mixture thereof.

5,183,922

PROCESS FOR THE OPTICAL RESOLUTION OF THREO-2-HYDROXY-3-(2'-AMINOPHENYLTHIO)-3-(4''-METHOXYPHENYL)-PROPIONIC ACID

Amleto Rizzi, Alte Ceccato, and Gaetano Marchioro, Vicenza, both of Italy, assignors to FIS - Fabbrica Italiana Sintetici S.p.A., Vicenza, Italy

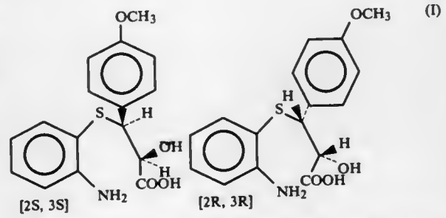
Filed Nov. 19, 1990, Ser. No. 615,686

Claims priority, application Italy, Nov. 23, 1989, 22496 A/89

Int. Cl.[5] C07C *319/28;* C07B *57/00*

U.S. Cl. 560—7 **5 Claims**

1. Process for resolving the optical antipodes of threo-2-hydroxy-3-(2'-aminophenylthio)-3-(4''-methoxyphenyl)-propionic acid, having the formula (I):



(I)

[2S, 3S] [2R, 3R]

characterized in that said acid is salified with cyclohexylamine in a polar organic solvent, and said optical antipodes are separated by means of the crystallization of their so formed enantiomeric salts.

5,183,923

PROCESS FOR PREPARING PRIMARY HYDROXYL-CONTAINING DIOLS

Michael Cuscurida, and George P. Speranza, both of Austin, Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Continuation-in-part of Ser. No. 179,826, Apr. 11, 1988, abandoned. This application Mar. 28, 1990, Ser. No. 500,432

The portion of the term of this patent subsequent to Dec. 19, 2006, has been disclaimed.

Int. Cl.[5] C07C *271/26*

U.S. Cl. 560—26 **6 Claims**

1. A method for preparing diols which contain essentially all primary hydroxyl groups comprising reaction of ethylene oxide, propylene oxide and/or butylene oxide with ethylene, propylene or butylene glycol t-butyl ether, then coupling these reaction products with organic diisocyanates, dibasic acids, or dibasic esters followed by cleavage of the t-butyl group with an acid catalyst.

5,183,924

DERIVATIVES OF BENZOCYCLOALKENYLDIHYDROXYALKANOIC ACIDS, PROCESSES OF PREPARATION AND MEDICATIONS CONTAINING THEM

Didier Festal, Ecully; Jean-Yves Nioche, Limonest; Denis Descours, Villeurbanne; Robert Bellemin, Lyons, and Jacques Decerprit, Neyron, all of France, assignors to Lipha, Lyonnaise Industrielle Pharmaceutique, Lyons, France

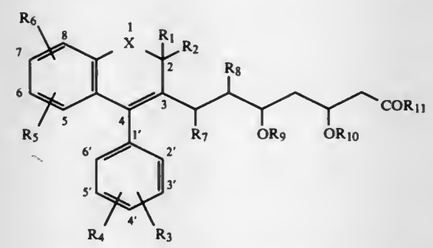
Division of Ser. No. 469,121, Jan. 24, 1990, Pat. No. 5,082,859. This application Oct. 24, 1991, Ser. No. 782,195

Claims priority, application France, Jan. 24, 1989, 89 00790

Int. Cl.[5] C03C *69/76*

U.S. Cl. 560—56 **14 Claims**

1. A compound formula I_1



in which X denotes a $—CH_2—$ methylene chain link; R_1 and R_2, which are identical or different, denote hydrogen atoms or alkyl radicals containing 1 to 3 carbon atoms; R_1 and R_2 may also together form a $—(CH_2)_n—$ alkylene in which n is 4 or 5, optionally, substituted symmetrically by one or two alkyl radicals containing 1 to 3 carbon atoms; R_3 and R_4, which may be identical or different, denote hydrogen, fluorine, chlorine or bromine atoms, CF_3 radicals, N,N-dialkylamino containing 1 to 3 carbon atoms, alkyl containing 1 to 4 carbon atoms, alkoxy containing 1 to 5 carbon atoms, phenyl optionally substituted by at most two substituents which are identical or different and denote C_{1-3} alkyl radicals or fluorine or chlorine atoms, it being understood that when one of the substituents R_3 and R_4 denotes a CF_3, N,N-dialkyamino, phenyl or substituted phenyl radical, it is present on the 3', 4' or 5' vertex and the other substituent denotes a hydrogen atom; R_5 and R_6, which may be identical or different, denote hydrogen, fluorine, chlorine or bromine atoms or the radicals: CF_3, C_{1-3} alkyl, C_{1-3} alkoxy or phenyl, optionally substituted by one or two C_{1-3} alkyl radicals, C_{1-3} alkoxy or fluorine or chlorine atoms, on condition that when one of the substituents R_5 and R_6 denotes CF_3, phenyl or substituted phenyl radicals, it is present on the vertex 6 or 7 and the other denotes a hydrogen atom; the substituents R_3 and R_4 or R_6 may also together form, on condition of being on two contiguous vertices, the diradicals of formulae: $—CH=CH—CH=CH—$, $—(CH_2)_m—$ or $—O(CH_2)_pO—$, in which m may be equal to 3 or 4 and p to 1 to 2, it being understood that when R_3 and R_4 or R_5 and R_6 denote the diradical $—O(CH_2)_pO—$, the latter is linked to the vertices 3' and 4' and 5' or 6 and 7; each of the substituents R_7 and R_8 denotes a hydrogen atom or, together with the existing C—C bond they form a double bond of trans (E) geometry; each of the substituents R_9 and R_{10} denotes a hydrogen atom or together they form a dialkylmethylene residue containing 1 to 3 carbon atoms, R_{11} denoting, with the CO group to which it is bonded, a free acid, ester, amide or acid salt functional group or forming a δ-lactone ring with R_9.

5,183,925

LEUKOTRIENE-B4 DERIVATIVES, PROCESS FOR THEIR PRODUCTION AND THEIR USE AS PHARMACEUTICAL AGENTS

Josef Heindl; Werner Skuballa; Bernd Buchmann; Wolfgang Frohlich, and Rolalnd Ederdt, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

PCT No. PCT/DE90/00209, § 371 Date Nov. 19, 1990, § 102(e) Date Nov. 19, 1990, PCT Pub. No. WO90/11272, PCT Pub. Date Oct. 4, 1990

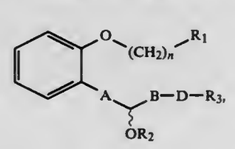
PCT Filed Mar. 16, 1990, Ser. No. 623,386

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1989, 3909326

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—61 **5 Claims**

1. Leukotriene-B_4 derivative of formula I,



(I)

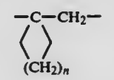
in which

n=1–10,

R_1 means radical $COOR_4$ with R_4 meaning a hydrogen atom, an alkyl radical with 1–10 C atoms, a cycloalkyl radical with 3–10 C atoms, an aryl radical with 6–10 C atoms optionally substituted by 1–2 chlorine, bromine, phenyl, alkyl with 1–4 C atoms, chloromethyl, fluoromethyl, trifluoromethyl, carboxy, C_1–C_4 alkoxy or hydroxy, a $—CH_2—CO—$aryl radical with 6–10 C atoms for an aryl or a 5–6-member heterocyclic radical with at least 1 heteroatom,

A means a cis, trans or trans, trans—CH=CH—CH=CH group or tetramethylene group,

B means a straight-chain or branched-chain, saturated or unsaturated alkylene group with up to 10 C atoms which can optionally be substituted by fluorine, or the group



with n=1, 2 or 3,

D means a direct compound, oxygen, sulfur, a —C≡C group or a $—CH=CR_8$ group with R_8 as hydrogen, C_1–C_5 alkyl, chlorine or bromine,

B and D together mean a direct bond,

R_2 means a hydrogen atom or an acid radical of an organic acid with 1–15 C atoms and

R_3 means a hydrogen atom, an alkyl radical with 1–10 C atoms, an alkyl radical with 1–10 C atoms substituted by chlorine or bromine, a cycloalkyl radical with 3–10 C atoms; an aryl radical with 6–10 C atoms substituted optionally by 1–2 chlorine, bromine, phenyl, alkyl with 1–4 C atoms, chloromethyl, fluoromethyl, trifluoromethyl, carboxy, C_1–C_4 alkoxy or hydroxy; or a 5–6-member heterocyclic radical with at least 1 heteroatom and if R_5 means a hydrogen atom, their salts with physiologically compatible bases and their cyclodextrin clathrates.

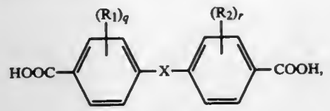
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5,183,926
PROCESS FOR THE PREPARATION OF AROMATIC DICARBOXYLIC ACIDS AND AROMATIC HYDROCARBONS

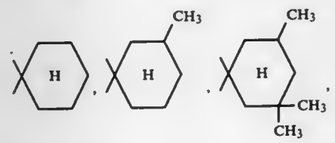
Richard Weider, Leverkusen, and Thomas Scholi, Meerbusch, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 565,541, Aug. 9, 1990, abandoned. This application Sep. 13, 1991, Ser. No. 759,794
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1989, 3927772
Int. Cl.[5] C07C *69/773, 51/16, 1/32, 63/331*
U.S. Cl. 560—76 **16 Claims**

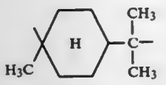
12. An aromatic dicarboxylic acid of the formula



in which
X denotes a moiety selected from the group consisting of the formulae



and the group



R_1 and R_2, independently of one another, denote straight-chain or branched C_1–C_4-alkyl and
q and r, independently of one another, represent integers from 0 to 4, a dichloride or a di-C_1–C_4-alkyl ester of the dicarboxylic acid.

5,183,927
PROCESS FOR THE PREPARATION OF IODOALKYNYL CARBAMATES

Atsushi Utsunomiya; Mitsuo Nakamura; Toshiaki Kuwatsuka, all of Mobara, and Yoshinori Tanaka, Yokohama, all of Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan

Filed Apr. 15, 1992, Ser. No. 868,577
Claims priority, application Japan, Apr. 16, 1991, 3-83673
Int. Cl.[5] C07C *261/00*
U.S. Cl. 560—115 **13 Claims**

1. A process for the preparation of iodoalkynyl carbamates of the general formula (1)

$$[IC{\equiv}C{-}(CH_2)_n{-}OCONH]_mR \quad (1)$$

where R is a substituted or unsubstituted alkyl, cycloalkyl, aryl or aralkyl group containing 1 to 20 carbon atoms and having a valence of m, and m and n are whole numbers of 1 to 3, which comprises iodinating an alkynyl carbamate of the general formula (2)

$$[HC{\equiv}C{-}(CH_2)_n{-}OCONH]_mR \quad (2)$$

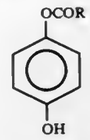
where R, m and n are as previously defined, with iodine monochloride.

5,183,928
PREPARATION OF HYDROQUINONE MONOCARBOXYLATES

Serge Ratton, Villefontaine, France, assignor to Rhone-Poulenc Specialities Chimiques, Courbevole, France

Continuation of Ser. No. 748,454, Jun. 25, 1985, abandoned. This application Feb. 26, 1988, Ser. No. 163,196
Claims priority, application France, Jun. 25, 1984, 84 10184
Int. Cl.[5] C07C *67/03, 69/16, 69/28*
U.S. Cl. 560—144 **11 Claims**

1. A process for the preparation of a hydroquinone monocarboxylate having the general formula:



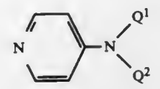
wherein R is a straight or branched chain alkyl radical having from 1 to 4 carbon atoms, comprising disproportionating a stoichiometric excess of a hydroquinone dicarboxylate with hydroquinone.

5,183,929
METHOD FOR PRODUCTION OF T-BUTYL 3-OXOBUTYRATES AND THEIR USE

Kenzo Naito, Kyoto; Yukio Ishibashi, Osaka, and Haruo Shinbo, Hyogo, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 295,516, Jan. 11, 1989, Pat. No. 5,109,131. This application Oct. 3, 1991, Ser. No. 770,333
Claims priority, application Japan, Jan. 14, 1988, 63-6133; Jun. 29, 1988, 63-161984
Int. Cl.[5] C07C *67/46*
U.S. Cl. 560—178 **1 Claim**

1. A method of producing tert-butyl 3-oxobutyrate, characterized by allowing tert-butyl alcohol to react with diketene at a temperature of 25° C. to 80° C. for 0.3 to 3 hours in the presence of a 4-(tertiary amino)pyridine of the formula:



wherein Q^1 and Q^2 independently stand for a C_{1-6} group of are combined together with the adjacent nitrogen atom to form a cyclic amino group.

5,183,930
TRANSESTERIFICATION CATALYST

Jeremia J. Venter, Telford, and Christine McDade, North Wales, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Jun. 17, 1992, Ser. No. 899,791
Int. Cl.[5] C07C *67/02*
U.S. Cl. 560—217 **9 Claims**

1. A process for the batch, continuous or semicontinuous preparation of carboxylic acid esters by ester interchange of a carboxylic acid ester with another carboxylic acid ester, an alcohol, or a carboxylic acid comprising heating the reactants at a temperature of between 50° C. and 200° C. in the presence of a supported transition metal transesterification catalyst prepared by:

a. preforming an oligomer by reacting water with a transition metal alkoxide of the general formula:

$$M(OR)_nQ_m$$

wherein M is a transition metal; OR is an alkoxy radical wherein R is an alkyl group of from 1 to 20 carbon atoms, n is an integer from 2 to the valence number of the transition metal M; Q is a group with valence number r which will not react with hydroxyl groups of the support, the alkoxide radical OR, or the alcohol ROH formed therefrom; and m is an integer such that n+rm equals the valence number of the transition metal M;
b. mixing a solution of the oligomer in an inert solvent with a solid substrate having a plurality of surface hydroxyl groups.

5,183,931
BENZYLIC OXIDATION AND CATALYST THEREFOR

Chung C. Tso, and Robert L. Wynn, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 10, 1992, Ser. No. 833,260
Int. Cl.[5] C07C *67/00, 51/16, 45/00, 33/18*
U.S. Cl. 560—241 **14 Claims**

1. A process for oxidizing an alkylaromatic having a benzylic hydrogen to its corresponding oxidized product selected from the group consisting of carboxylic acids, aldehydes, alcohols and esters comprising contacting said alkylaromatic in the presence of an oxygen-containing fluid in a reaction medium with a catalyst comprising a palladium salt, a metal persulfate, a third metal salt having a general formula of MX wherein M is an alkali or alkaline earth metal and X is selected from the group consisting of carboxylate, acrylate, sulfate, nitrate, phosphate, and halide and a tin salt, in a carboxylic acid under conditions sufficient to oxidize said benzylic hydrogen of said alkylaromatic.

5,183,932
HERBICIDAL SUBSTITUTED 4-AMINO-5-ALKYLTHIO-1,2,4-TRIAZOL-3-ONES

Klaus-Helmut Müller, Duesseldorf; Joachim Kluth, Langenfeld; Klaus König, Odenthal; Karl-Rudolf Gassen, Odenthal; Kurt Findeisen, Odenthal; Markus Lindig, Hilden; Klaus Lürssen, Bergisch Gladbach; Hans-Joachim Santel, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 504,463, Apr. 4, 1990, Pat. No. 5,021,080. This application Feb. 12, 1991, Ser. No. 654,124
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1989, 3911219; Oct. 10, 1989, 3933750
Int. Cl.[5] C07C *265/10, 211/16*
U.S. Cl. 560—330 **3 Claims**

1. A compound of the formula (XV)



(XV)

in which
Z represents N═C═O, or NH_2.

5,183,933
PROCESS FOR PREPARING 2,6-NAPHTHALENE-DICARBOXYLIC ACID

Jon J. Harper; George E. Kuhlmann, both of Naperville; Keith D. Larson, Chicago; Rosemary F. McMahon, Wheaton, and Paul A. Sanchez, Lisle, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

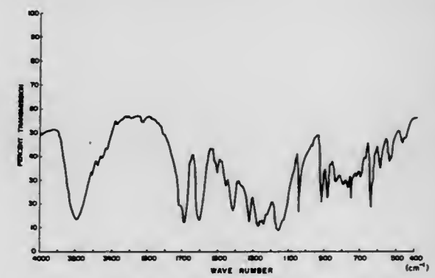
Filed Oct. 15, 1991, Ser. No. 776,812
Int. Cl.[5] C07C *51/265*
U.S. Cl. 562—414 **21 Claims**

1. A process for producing 2,6-naphthalenedicarboxylic acid by the liquid phase oxidation of 2,6-dimethylnaphthalene, comprising:
(a) continuously adding to a reaction zone the oxidation reaction components comprising 2,6-dimethylnaphthalene, a source of molecular oxygen, a solvent comprising an aliphatic monocarboxylic acid, and a catalyst comprising cobalt, manganese and bromine components, wherein the weight ratio of monocarboxylic acid solvent to 2,6-dimethylnaphthalene is about 2:1 to about 12:1, the atom ratio of manganese to cobalt is about 5:1 to about 0.3:1, the atom ratio of bromine to the total of cobalt and manganese is about 0.3:1 to about 0.8:1, and the total of cobalt and manganese, calculated as elemental cobalt and manganese, is at least about 0.40 weight percent based on the weight of solvent added to the reaction zone;
(b) maintaining the contents of the reaction zone at a temperature of about 370° F. to about 420° F., and at a pressure of from about 0.1 atmosphere absolute to about 35 atmospheres absolute, thereby oxidizing the 2,6-dimethylnaphthalene to 2,6-naphthalenedicarboxylic acid; and
(c) continuously withdrawing from the reaction zone a product mixture comprising 2,6-naphthalenedicarboxylic acid.

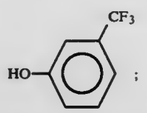
5,183,934
2-TRIFLUOROMETHYL-4-HYDROXYBENZOIC ACID

Yoshiichi Suzuki, Tokyo, Japan, assignor to Showa Shell Sekiyu Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 599,456, Oct. 18, 1990, abandoned. This application Mar. 30, 1992, Ser. No. 859,961
Int. Cl.[5] C07C *51/15*
U.S. Cl. 562—423 **3 Claims**

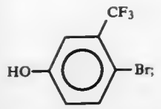


1. A process for preparing 2-trifluoromethyl-4-hydroxybenzoic acid comprising:
reacting a compound represented by the formula (I):

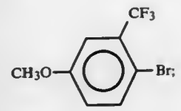


with bromine in a solvent whereby a compound represented by the formula (II) is obtained:

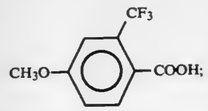
VOL 1147 ISS 1 FEB 2 1993 UMI



reacting a compound of formula (II) with methyl iodide at room temperature whereby a compound represented by the formula (III) is obtained:



reacting a compound represented by the formula (III) with magnesium and carbon dioxide to prepare the compound represented by the formula (IV)



and

reacting the compound having the formula (IV) with boron tribromide.

5,183,935

PROCESS FOR THE PREPARATION OF 5-(2',4'DIFLUOROPHENYL)-SALICYLIC ACID IN PURE FORM II

Claudio Giordano, Monza, and Maurizio Paiocchi, Milan, both of Italy, assignors to Zambon Group S.p.A., Vicenza, Italy

Filed Jul. 29, 1992, Ser. No. 921,066

Claims priority, application Italy, Aug. 1, 1991, MI91A002152

Int. Cl.[5] C07C *69/76*

U.S. Cl. 562—469 **5 Claims**

1. A process for preparing 5-(2',4'-difluorophenyl)-salicylic acid in form II substantially pure, consisting in dissolving a mixture of polymorphous crystals of 5-(2',4'-fidluorophenyl)-salicylic acid in a mixture of solvents consisting of an aromatic hydrocarbon and an aliphatic ketone at the reflux temperature, in adding a seed of 5-(2',4'-difluorophenyl)-salicylic acid in pure form II, in removing by distillation at least 90% by volume of the aliphatic ketone, in cooling to a temperature comprised between 10° and 20° C. and in filtering the suspension.

5,183,936

ANHYDROUS DILUENT PROCESS FOR THE PROPYLENE OXIDATION REACTION TO ACROLEIN AND ACROLEIN OXIDATION TO ACRYLIC ACID

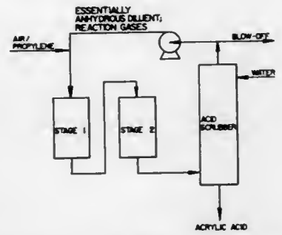
William G. Etzkorn, Cross Lanes, and Gordon G. Harkreader, Charleston, both of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation of Ser. No. 542,819, Jun. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 442,464, Nov. 30, 1989, abandoned, which is a continuation of Ser. No. 281,877, Dec. 8, 1988, abandoned, which is a continuation of Ser. No. 173,033, Mar. 28, 1988, abandoned, which is a continuation of Ser. No. 898,491, Aug. 21, 1986, abandoned. This application Oct. 25, 1991, Ser. No. 781,657

Int. Cl.[5] C07C *51/16*

U.S. Cl. 562—532 **21 Claims**

1. In a process for producing acrylic acid by a two-stage catalytic oxidation of propylene, wherein the first stage reaction produces primarily acrolein and the second stage reaction produces primarily acrylic acid by oxidation of acrolein, said process optionally using one or more recycle streams to either or both stages, both stages operating on feed streams containing oxygen and added inert diluent gas, the improvement comprising (a) utilizing one or more essentially inert essentially anhydrous diluent gases free of any intentionally-added water in a mole ratio of about 2.0 to about 32.0 moles of diluent per mole of propylene as the essentially inert essentially anhydrous



diluent gas feed added to the first stage, said added essentially inert anhydrous diluent gas feed having a composite heat capacity of at least 7.95 calories/gram-mole (°C.) and an oxygen-containing stream containing from about 1.1 to about 2.1 moles of molecular oxygen per mole of propylene and (b) utilizing one or more essentially inert essentially anhydrous diluent gases free of any intentionally added water as the inert diluent gas feed to the second stage, said added essentially inert anhydrous diluent having a composite heat capacity of at least about 7.95 calories/gram-mole (°C.)

5,183,937

ACETIC ACID RECOVERY

Mark R. Johnson, Grayslake, Ill., assignor to The NutraSweet Company, Deerfield, Ill.

Continuation of Ser. No. 479,902, Feb. 7, 1990, abandoned. This application Nov. 21, 1991, Ser. No. 798,361

Int. Cl.[5] C07B *51/42*

U.S. Cl. 562—608 **7 Claims**

1. In a process for the manufacture of N-formyl aspartic anhydride via the reaction of aspartic acid, formic acid, acetic anhydride in which crystals of N-formyl aspartic anhydride are formed and separated from a mother liquor which includes quantities of acetic acid, formic acid, acetic anhydride, formic acetic anhydride and high boiling aspartic acid derived components, the improvement comprising:

(a) separating said high boiling aspartic acid derived components from said mother liquor;

(b) heating said mother liquor to a temperature greater than or equal to about 70° C. for a time period ranging from about 1 hour to about 24 hours to convert all of said formic acetic anhydride to acetic acid and gaseous carbon monoxide and to fully deplete either said acetic anhydride or said formic acid, whichever is initially present in a stoichiometric lesser amount and thereby produce a mixture comprising acetic acid and either acetic anhydride or formic acid, whichever has not been depleted; and

(c) separating acetic acid initially present in the mother liquor and acetic acid formed in step (b) from the remainder of said mixture produced in step (b).

5,183,938

N,N'-BIS(4,4,4-TRINITROBUTYRYL)HYDRAZINE

Michael E. Sitzmann, Adelphi, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 15, 1992, Ser. No. 901,620

Int. Cl.[5] C07C *139/08;* **C06B** *47/08*

U.S. Cl. 564—151 **7 Claims**

1. N,N'-bis(4,4,4-trinitrobutyryl)hydrazine.

5,183,939

PROCESS FOR THE RACEMIZATION OF OPTICALLY ACTIVE 1-ARYL-ALKYLAMINES

Johannes R. Jansen, Monheim, and Martin Littmann, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

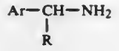
Filed Nov. 21, 1991, Ser. No. 796,109

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1990, 4038356

Int. Cl.[5] C07C *209/00*

U.S. Cl. 564—302 **4 Claims**

1. A process for the racemization of an optically active 1-aryl-alkylamine, which comprises reacting an optically active amine of the formula (I)



(I)

in which

C is an asymmetric carbon atom,

Ar is phenyl or naphthyl which is optionally monosubstituted to pentasubstituted by identical or different substituents selected from the group consisting of halogen, and alkyl, haloalkyl, alkoxy, haloalkoxy, alkythio, alkylsulphinyl or alkylsulphonyl in each case having 1 to 4 carbon atoms and in each case being straight-chain or branched, and

R is alkyl having 1 to 6 carbons atoms,

with an alkali, alkaline earth metal or earth metal alkoxide, in dimethyl sulphoxide at a temperature from 0° to 200° C.

5,183,940

POLY-(N-[2-HYDROXYBENZYL])-1,2-DIAMINOETHANES

Peter M. Quan, Rochdale, and Stephen W. Leeming, Flixton, both of England, assignors to Imperial Chemical Industries PLC, London, England

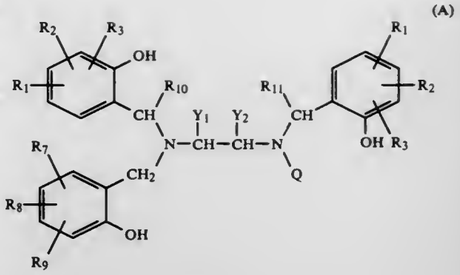
Continuation of Ser. No. 68,136, Jun. 29, 1987, abandoned. This application May 11, 1991, Ser. No. 884,230

Claims priority, application United Kingdom, Jul. 14, 1986, 8617118; Oct. 1, 1986, 8623570; May 15, 1987, 8711539

Int. Cl.[5] C07C *215/50*

U.S. Cl. 564—370 **9 Claims**

1. A compound of the general formula (A):



(A)

wherein:

Q is a hydrogen atom or a group $—CH_2Z$;

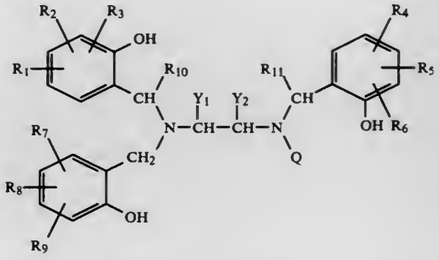
Z is a 2-hydroxyphenyl group R_1 is a hydrocarbyl group R_2, R_3, and R_7 to R_{11} are each, independently, a hydrogen atom;

Y_1 is a hydrogen atom, or an alkyl group containing up to 20 carbon atoms, or a phenyl group;

Y_2 is a hydrogen atom or an alkyl group containing up to 20 carbon atoms, or Y_1 and Y_2, together with the group form a saturated or unsaturated ring system; and

R_1, Y_1 and Y_2 are the same or different and together contain in total from 10 to 60 saturated carbon atoms.

2. A compound of the general formula (A):



(A)

wherein:

Q is a hydrogen atom, a hydrocarbyl group or a group $—CH_2Z$;

Z is a —COOH group or a 2-hydroxyphenyl group which may optionally be substituted by the groups R_{12}, R_{13} and R_{14};

R_1 to R_9, and R_{12} to R_{14}, which may be the same or different, are substituent groups selected from hydrogen, hydrocarbyl, alkoxy, halogen, hydrocarbyl sulphonyl, acyl, amino, nitro and cyano or, when R_1 and R_2 and/or R_4 and R_5 are adjacent substituents they may complete a benzo ring and R_1 to R_9 and R_{12} to R_{14} are such that the substituents on at least one of the rings are different form the substitutents on at least one other of the rings;

R_{10} and R_{11} are each, independently, a hydrogen atom or an alkyl group containing up to 20 carbon atoms;

Y_1 is a hydrogen atom, or an alkyl group containing up to 20 carbon atoms, or a phenyl group;

Y_2 is a hydrogen atom or an alkyl group containing up to 20 carbon atoms, or Y_1 and Y_2, together with the group form a saturated or unsaturated ring system; and R_1 to R_{14}, Y_1 to Y_2 are the same or different and together contain in total from 10 to 60 saturated carbon atoms.

VOL
1147
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1993
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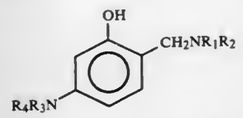
5,183,941

HAIR DYE COUPLER COMPOUNDS

Yuh-Guo Pan, Stamford, Conn.; Alexander Chan, Mineola, N.Y., and Lana Hochman, Westport, Conn., assignors to Clairol Incorporated, New York, N.Y.

Continuation of Ser. No. 353,925, May 18, 1989, abandoned. This application Oct. 23, 1990, Ser. No. 602,014
Int. Cl.[5] C07C *211/49*
U.S. Cl. 564—390 **9 Claims**

1. An oxidative hair dye coupler compound including its acid salts having the structure:



(I)

wherein R_1 and R_2 may be the same or different and are hydrogen or alkyl of from 1 to 6 carbons in the alkyl moiety, and R_3 and R_4 are hydrogen, alkyl and hydroxyalkyl, the alkyl group having from 1 to 6 carbons, said compound (I), when coupled with a paraphenylenediamine primary intermediate providing a dye characterized by a blue to blue-violet color.

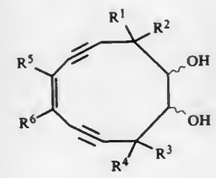
5,183,942

TEN-MEMBERED RING ENEDIYNEDIOLS AND ENEDIYNEDIONES HAVING DNA CLEAVING PROPERTIES

Kyriacos C. Nicolaou; Erik Sorensen, both of La Jolla; Chan-Kou Hwang, San Diego, all of Calif.; Robert Discordia, Liverpool, N.Y.; Robert G. Bergman, Kensington, and Robert E. Minto, Albany, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Filed Nov. 5, 1991, Ser. No. 788,161
Int. Cl.[5] C07C *49/105, 35/20*
U.S. Cl. 568—375 **8 Claims**

1. A compound of the formula



wherein

R^5 and R^6 are each hydrogen or R^5 and R^6 together with the carbon atoms of the depicted vinylene group forms a group W that is an aromatic monocyclic ring or bicyclic fused ring system that includes five or six atoms in the ring containing the depicted vinylene group; and

R^1, R^2, R^3 and R^4 are the same or different and are selected from the group consisting of hydrogen, C_1–C_6 alkyl, phenyl or benzyl, with the provisos that only one of R^1 and R^2 and one of R^3 and R^4 is hydrogen.

5,183,943

REACTIVATION OF HYDROFORMYLATION CATALYSTS

David R. Bryant, South Charleston; James E. Babin, Hurricane; James C. Nicholson, Charleston, all of W. Va., and Donald J. Weintritt, Jr., Houston, Tex., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Mar. 18, 1991, Ser. No. 670,874
Int. Cl.[5] C07C *45/50*
U.S. Cl. 568—454 **15 Claims**

1. A process for improving the catalytic activity of a solubilized rhodium tertiary organophosphine complex hydroformylation catalyst which has become partially deactivated due to halide and/or carboxylic acid poisoning, said process consisting essentially of

(1) mixing under non-hydroformylation conditions, an organic liquid medium containing said solubilized partially deactivated rhodium-tertiary organophosphine complex catalyst, with an aqueous solution containing from about 1 to about 25 percent by weight of a tertiary alkanolamine having the formula



wherein R represents a hydroxyalkyl radical having from 2 to 4 carbon atoms; wherein R^1 and R^2 each individually represent a radical selected from the group consisting of alkyl radicals having from 1 to 4 carbon atoms, hydroxyalkyl radicals having from 2 to 4 carbon atoms, and a phenyl radical, to form a water-soluble salt between said tertiary alkanolamine and said halide and/or carboxylic acid;

(2) allowing the resulting mixture to settle into two distinct liquid phases;

(3) separating the aqueous phase which contains said salt from the organic phase containing the solubilized rhodium-tertiary organophosphine complex hydroformylation catalyst resulting from steps (1) and (2); and;

(4) washing the separated organic phase obtained by step (3) with water, and recovering a solubilized rhodium-tertiary organophosphine complex hydroformylation catalyst that is more catalytically active than said Partially deactivated rhodium-tertiary organophosphine complex hydroformylation catalyst starting material.

5,183,944

METHOD OF DOPING AQUEOUS SOLUTIONS WITH ACROLEIN IN BIOCIDALLY EFFECTIVE CONCENTRATION

Peter Werle; Martin Trageser, both of Gelnhausen-Hoechst, and Hermann Piana, Hanau, all of Fed. Rep. of Germany, assignors to Degussa AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Nov. 26, 1991, Ser. No. 798,159
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1990, 4038471
Int. Cl.[5] C07C *45/00*
U.S. Cl. 568—465 **16 Claims**

1. A method for doping aqueous solutions with acrolein in biocidally effective concentration, said method comprising

(a) forming acrolein by deacetalization of acrolein acetal in aqueous phase with a strongly acidic catalyst,

(b) removing acrolein formed during said deacetalization from said aqueous phase, and

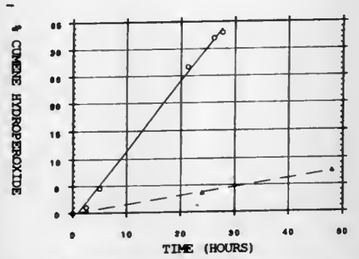
(c) transferring said acrolein into an aqueous solution to be doped by (I) conducting an inert gas stream through said aqueous phase to become doped with acrolein and introducing said gas stream into said aqueous solution to be doped, dissolving said acrolein out of said gas stream into said aqueous solution; or (II) by lowering the pressure over said aqueous phase using a liquid jet pump whose motive fluid is the aqueous solution to be doped or water to be added to it, in which the drawn off acrolein dissolves.

5,183,945

CATALYTIC PRODUCTION OF ARYL ALKYL HYDROPEROXIDES BY MANGANESE COMPLEXES

Robert T. Stibrany, Long Valley, and Sergiu M. Gorun, Upper Montclair, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Nov. 18, 1991, Ser. No. 794,096
Int. Cl.[5] C07C *409/22, 409/00*
U.S. Cl. 568—574 **9 Claims**



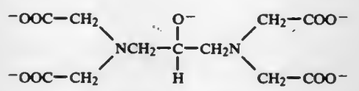
1. A process for preparing organic hydroperoxides by selectively converting aryl alkyl hydrocarbons to the corresponding organic hydroperoxides, comprising: contacting aryl alkyl hydrocarbons wherein the aryl alkyl hydrocarbons contain a benzylic hydrogen of the general formula:



wherein R_1 and R_2 may be organo groups or hydrogen groups and may be the same or different from each other with an oxygen-containing gas and a catalytically effective amount of a tetranuclear manganese complex catalyst having the formula:

$$M_2[Mn_4(O)(OH)(O_2CR)_2L_2]$$

wherein M is an alkali metal or an alkaline earth metal, R is selected from the group consisting of hydrogen and a hydrocarbyl group and L is a ligand having the formula:



to produce the corresponding organic hydroperoxides.

5,183,946

VINYLOXY HYDROXYALKYLCYCLOALKANE AND PREPARATION THEREFOR

Kon-Chang Liu, Wayne, and Paul D. Taylor, West Milford, both of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 371,168, Jun. 26, 1989, abandoned, which is a division of Ser. No. 307,457, Feb. 8, 1989, abandoned. This application Mar. 16, 1992, Ser. No. 852,421
Int. Cl.[5] C07C *41/00*
U.S. Cl. 568—670 **10 Claims**

1. A method of synthesizing the compound

$$HO(CH_2)_x—A—(CH_2)_{x'}OCH=CH_2$$

wherein x has a value of from 1 to 10; x' has a value of from 0 to 10 and A is a cycloalkylene group having from 3 to 8 carbon atoms in the ring and is optionally substituted with lower alkyl, which comprises reacting a diol having the structure

$$HO(CH_2)_{x'}—A—(CH_2)_xOH$$

wherein x, x' and A are as defined with acetylene in an inert diluent in an oxygen free atmosphere at a temperature of from about 120° C. and about 200° C. under a pressure of from about 10 psig. to about 200 psig. and recovering the product of the process.

5,183,947

ONE STEP SYNTHESIS OF METHYL T-BUTYL ETHER FROM T-BUTANOL USING FLUOROPHOSPHORIC ACID-MODIFIED CLAY CATALYSTS

John F. Knifton, Austin, and John R. Sanderson, Leander, both of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Jun. 19, 1992, Ser. No. 900,999
Int. Cl.[5] C07C *41/09*
U.S. Cl. 568—698 **7 Claims**

1. In a method wherein t-butanol is reacted with methanol in one step in the presence of a catalyst to provide methyl tert-butyl ether, the improvement comprising using as a catalyst a montmorillonite clay modified with an acid from the group consisting of a fluorophosphoric acid or phosphoric acid and continuously contacting said t-butanol and methanol in a molar amount of about 0.1 to 10 moles of methanol per mole of t-butanol with said catalyst at a temperature of about 20° C. to about 250° C. and a pressure of about atmospheric to about 1000 psig to obtain methyl tert-butyl ether product.

5,183,948

Patent Not Issued For This Number

5,183,949

RABBIT MODEL FOR DIAGNOSING AND TESTING VACCINES OR THERAPEUTIC AGENTS AGAINST AIDS

Thomas J. Kindt; Henrietta Kulaga, both of Bethesda, Md., and Thomas M. Folks, Atlanta, Ga., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 247,931, Sep. 22, 1988, abandoned. This application Mar. 15, 1989, Ser. No. 323,778
Int. Cl.[5] A61K *35/00*
U.S. Cl. 800—2 **2 Claims**

1. A rabbit infected with HIV-1 virus, said rabbit produced by the injection of human T-cells infected in vitro with HIV-1.

5,183,950

COMMERCIAL STORAGE AND SHIPMENT OF ENTOMOGENOUS NEMATODES

Irene Popiel, Mountain View; Karen D. Holtemann, San Jose, both of Calif.; Itamar Glazer, Bet Dagon, Israel, and Christopher Womersley, Honolulu, Hi., assignors to Biosys, Palo Alto, Calif.

Continuation-in-part of Ser. No. 897,660, Aug. 18, 1986, abandoned. This application Sep. 28, 1987, Ser. No. 101,530
Int. Cl.[5] C12N *5/18; A01K 67/00; A01N 25/34*
U.S. Cl. 800—2 **4 Claims**

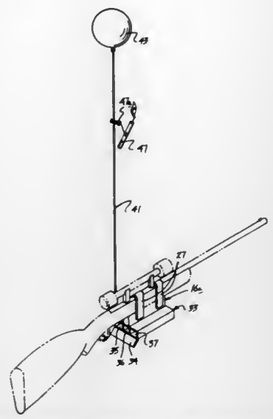
1. A process for placing entomogenous nematode infective juveniles selected from the group consisting of *N. carpocapsae, N. bibionis*, and *H. heliothidis* in an anhydrobiotic state which process comprises:

(a) substantially removing bulk surface moisture from said infective juveniles; and

VOL
1147
ISS
1
FE
2
1993
UMI

(b) inducing anhydrobiosis in said infective juveniles by exposure to air at a relative humidity of 97±2% for a period sufficient to achieve anhydrobiosis as defined by one or more of the following survival characteristics wherein:
(i) more than 60% survive when said nematodes are suspended in 20% methanol, said methanol is cooled to liquid nitrogen temperature for 24 hours, and said suspension is rapidly brought to room temperature;
(ii) more than 90% survive when maintained in an airtight container at a nematode/volume ratio of 10^6/30 ml of air atmosphere for
(1) 10 days at 25° C., or
(2) 8 days at 30° C., or
(3) 6 days at 35° C.;
(iii) said infective juveniles require less than 1 ml oxygen per 80 mg dry weight nematodes per day at 25° C. in the absence of external moisture; or
(iv) more than 90% of said infective juveniles survive exposure to air at 45° C. for 2 hr.

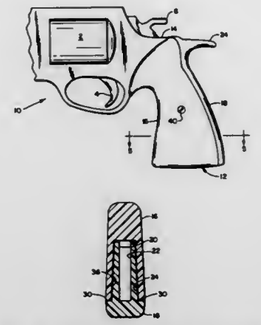
5,183,951
WEAPONRY SIGNAL APPARATUS
Richard R. Bilodeau, 227 Bean Hill Rd., Laconia, N.H. 03246
Filed Sep. 26, 1991, Ser. No. 765,874
Int. Cl.[5] F41A *17/08*
U.S. Cl. 42—1.01 **4 Claims**



1. A weaponry signal apparatus for securement to a weapon, wherein the apparatus includes
a housing, the housing including a transmitter and receiver, and
a housing first end wall spaced from a housing second end wall, and
the housing first end wall including an indicator light member means mounted thereon for illumination upon reception of a signal by the receiver from a remote transmitter, and
a first switch means for effecting selective actuation of the transmitter and receiver, and
the housing including a flange for securement of the housing to the weapon, and
the housing including a housing forward wall spaced from a housing rear wall, the housing forward wall mounting the switch means thereon, and
the housing forward wall includes a flashlight switch, the flashlight switch operatively associated with a flashlight lens directed through the housing second end wall for selective illumination of the flashlight lens, and the housing forward wall further including a plurality of spaced first hook and loop fastener patches spaced apart a predetermined spacing, and the housing rear wall including a plurality of spaced flexible straps spaced apart the predetermined spacing, each strap of the spaced flexible straps includes a second hook and loop fastener patch operative with one of said first hook and loop fastener patches, and a flexible antenna cable in operative association with the receiver, the flexible antenna cable secured to a flexible antenna at a junction, the junction including a clamp, and the clamp arranged for securement to a telescopic mount of the weapon.

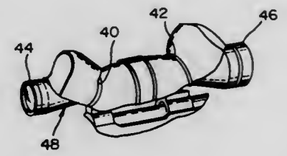
5,183,952
REVOLVER HAND GRIP
Francisco J. Morales, 758 Silver La., East Hartford, Conn. 06118
Filed Apr. 18, 1991, Ser. No. 687,183
Int. Cl.[5] F41C *23/10*
U.S. Cl. 42—71.02 **7 Claims**

1. A hand grip apparatus for an associated revolver which comprises:
first and second clam shell shaped portions; said first and second clam shell shaped portions are disposed in nested relationship, one of said portions including a tang dimensioned and configured to engage the hand of the user at



the web intermediate the thumb and forefinger and further including a third clam shell portion that is substantially the same as said one portion except that said third portion does not include a tang.

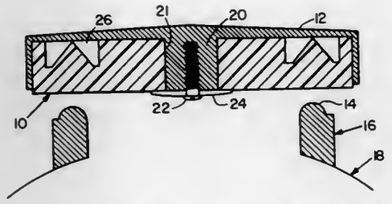
5,183,953
FLEXIBLE COVER/GUARD FOR RIFLE AND PISTON SCOPES HAVING A RESILIENT PROTECTIVE INNER PORTION AND A FABRIC OUTER PORTION SECURED THERETO
Robert A. Anderson, and Eric D. Anderson, both of Oak Harbor, Wash., assignors to Anderson Manufacturing Company, Inc., Oak Harbor, Wash.
Filed Jan. 8, 1992, Ser. No. 817,782
Int. Cl.[5] F41A *35/02*; B65D *65/02, 85/00*
U.S. Cl. 42—96 **7 Claims**



1. A cover/guard assembly for use with rifle and pistol scopes, comprising:
a cover element which includes a main body section which extends for the length of the scope and two end sections secured to the ends of the main body section in such a manner that the main body section is approximately U-shaped, such that the main body section extends over the top and down the sides of the scope and the end sections extend down the front and rear ends of the scope, wherein the cover element includes a stretchable, flexible, resilient protective inner portion and a stretchable fabric outer portion secured to the inner portion, permitting said sections of the cover element to be conveniently sewn together and thereafter to be stretched together to fit over the scope.

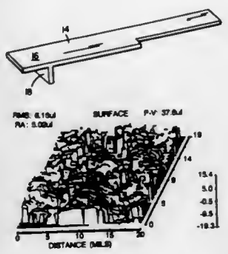
VOL 1147 ISS 1 FEB 2 1993 UMI

5,183,954
CUSHION FOR A TONE HOLE PAD
Steven A. Wasser, Wellesley, Mass., assignor to Verne O. Powell Flutes, Inc., Waltham, Mass.
Filed Aug. 27, 1990, Ser. No. 573,622
Int. Cl.[5] G10F *1/12*
U.S. Cl. 84—385 P 15 Claims



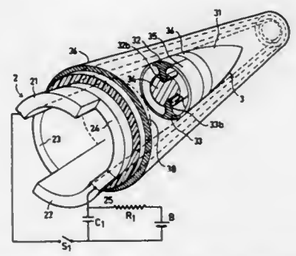
4. A cushioned pad, receivable by a cup, for engaging with the rim of a tone hole of a musical instrument comprising;
a valving surface portion, of a first density, for sealably contacting the rim of the tone hole; and
a compressible portion, of a second density, receivable within the interior of the cup and in contact with said valving surface portion, including at least one cavity in communication with the interior of the cup for providing compliance in said valving surface portion and for damping noise generated by the contact of said valving surface portion with said tone hole rim.

5,183,955
PIANO KEY COVERS FORMED OF IVORY SUBSTITUTE AND PIANOS HAVING SAME
Salvadore J. Calabrese, Clifton Park; Henry A. Scarton, Troy; S. Frank Murray, Clifton Park; Christopher M. Ettles, Glenmont; Warren C. Kennedy, Feura Bush; Saim Dinc; Bessem Jlidi, both of Troy, all of N.Y., and William Strong, Stamford, Conn., assignors to Renselaer Polytechnic Institute, Troy, N.Y. and Steinway Musical Properties, Inc., Waltham, Mass.
Filed May 18, 1990, Ser. No. 525,468
Int. Cl.[5] G10C *3/12*
U.S. Cl. 84—437 10 Claims



1. A piano key cover of synthetic material formed by a method comprising:
providing a mold for a piano key cover,
engraving a surface of said mold with a randomly oriented pattern of peak-to-valley texture replicating that characteristic of a surface of natural ivory,
placing in the mold a composition comprising suitable synthetic material pigmented to resemble natural ivory and filler, said filler being removable from a molded article by further treatment,
forming a piano key cover within said mold, said piano key cover having a surface, and
treating said piano key cover to remove said filler thereby causing said surface of said piano key cover to define a plurality of fine pores, replicating the surface of natural ivory.

5,183,956
PROJECTILE-LAUNCHING DEVICE
Gideon Rosenberg, Kiryat Tivon, Israel, assignor to State of Israel, Ministry of Defence Rafael-Armamend Development Authority, Haifa, Israel
Filed Nov. 27, 1990, Ser. No. 618,562
Claims priority, application Israel, Nov. 28, 1989, 92477
Int. Cl.[5] F41B *6/00*
U.S. Cl. 89—8 15 Claims

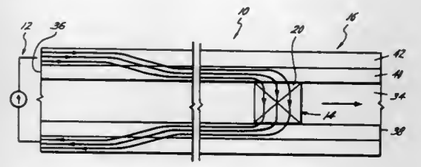


1. A device for accelerating a projectile to an extremely high velocity comprising:
a cylindrical launch tube, and a projectile assembly within said launch tube;
said launch tube including a pair of launch tube electrodes engageable with said projectile assembly for applying a high electrical voltage thereto;
said projectile assembly including the projectile to be accelerated, and a pair of travelling electrodes fixed to the rear end of the projectile and engageable with said a pair of launch tube electrodes during the travel of the projectile assembly through the launch tube;
said travelling electrodes being spaced circumferentially of the projectile assembly by insulating spacers, such as to be in sliding contact with said launch tube electrodes and to define a spark gap extending radially of the projectile assembly;
at least one of said pair of electrodes extending axially of said launch tube;
said projectile assembly further including a solid dielectric propellant in said spark gap which, by an electrical arc generated by the high voltage applied from said launch tube electrodes to said travelling electrodes, is quickly vaporized to form high-temperature, high-pressure gases travelling with the projectile and effective to increase its acceleration.

5,183,957
METHOD AND CONSTRUCTION FOR CONTROL OF CURRENT DISTRIBUTION IN RAILGUN ARMATURES
William F. Weldon; Herbert H. Woodson, and Glen C. Long, all of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.
Continuation of Ser. No. 203,556, Jun. 1, 1988, Pat. No. 4,953,441, which is a continuation of Ser. No. 885,915, Jul. 15, 1986, abandoned. This application Apr. 13, 1990, Ser. No. 509,057
The portion of the term of this patent subsequent to Sep. 4, 2007, has been disclaimed.
Int. Cl.[5] F41B *6/00*
U.S. Cl. 89—8 2 Claims

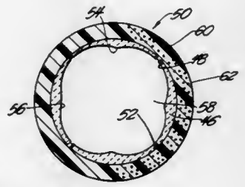
1. An electromagnetic railgun comprising:
an electrical power supply;
solid armature means having a leading edge and a trailing edge; and

rail means having a pair of spaced, juxtaposed rails defining an elongated bore therebetween and operable for receiving the solid armature means along the length of the bore,
the rail means being operably connected to the power supply to provide a current flow path through one of the rails, and into the other rail to propel the solid armature means along the bore in the direction of the leading edge when power is supplied,
the rail means including a layer of a copper and graphite mixture extending along substantially the entire length



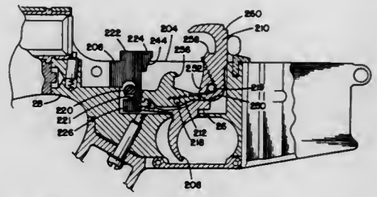
of the bore for permitting rapid current penetration between the solid armature and layer to inhibit the concentration of current density and eliminate arcing in the region of the trailing end of the solid armature means as the solid armature means is propelled along the bore,
the rail means including a layer of high conductivity material adjacent the layer of copper and graphite mixture and extending substantially the length thereof, the high conductivity material having a conductivity greater than the conductivity of the copper and graphite mixture.

5,183,958
NONMETALLIC GUN BARREL
Paul A. Petrovich, 11267 Judd Rd., Fowlerville, Mich. 48836
Division of Ser. No. 774,949, Oct. 11, 1991. This application Jun. 22, 1992, Ser. No. 901,647
Int. Cl.[5] F41A *21/04, 21/18*
U.S. Cl. 89—16 15 Claims



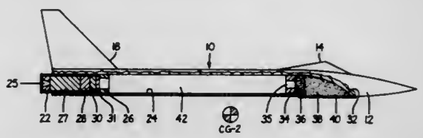
1. A gun barrel, comprising:
a tubular exterior portion;
a generally cylindrical interior portion divided into liner segments on an inner diameter of the exterior portion, the liner segments being harder and less elastically deformable than the exterior portion;
wherein sides of the segments define gaps between the segments;
elastic bodies protruding from the exterior portion into the gaps, the elastic bodies slidable against the sides;
whereby radially outward motion of the segments causes the elastic bodies to slide further into the gaps.

5,183,959
SEMI-AUTOMATIC FIREARM HAVING A SAFETY DEVICE PREVENTING CONVERSION TO FULL AUTOMATIC FIRING
Horace C. McCoan, Manchester, and James V. Collier, Vernon, both of Conn., assignors to Colt's Manufacturing Company Inc., West Hartford, Conn.
Filed Aug. 1, 1990, Ser. No. 561,450
Int. Cl.[5] F41A *19/00*
U.S. Cl. 89—148 15 Claims



1. An anti-conversion block for use in a semi-automatic firearm for preventing conversion of the firearm to a fully automatic firearm, the block comprising:
a first section having means for preventing operational installation of a predetermined type of trigger into the firearm;
a second section having means for preventing the operational installation of a predetermined type of hammer in the firearm; and
a third section having means for preventing the operational installation of a predetermined type of bolt assembly into the firearm.

5,183,960
ROCKET GLIDER STABILIZATION SYSTEM
James D. Shires, 28 W. Governor Dr., Newport News, Va. 23602
Filed Jun. 27, 1991, Ser. No. 722,528
Int. Cl.[5] F42B *4/08;* A63H *27/00*
U.S. Cl. 102—348 15 Claims

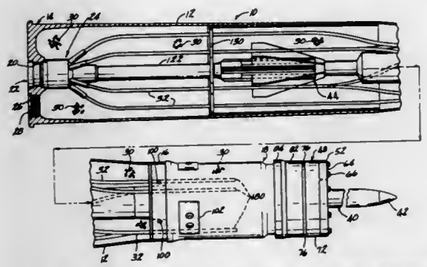


1. A rocket glider comprising:
a model rocket propelled aircraft having a center of gravity located at substantially the longitudinal center thereof;
a rocket engine having a solid rocket propellant disposed in the aft end of said aircraft for propelling said model aircraft;
a counterweight bay formed in the nose end of said model aircraft;
a counterweight material releasably provided in said counterweight bay to balance or offset the weight of said rocket engine and thereby maintain the center of gravity of said aircraft at substantially the longitudinal center thereof;
whereby when said model rocket aircraft is propelled on a flight by said rocket engine, as said solid propellant is expended from said rocket engine, the center of gravity of the aircraft will shift toward the aircraft nose end to effect a pitch down movement for said aircraft and including,
means responsive to the depletion of said solid propellant for releasing said counterweight material into the atmosphere and thereby return the center of gravity of the aircraft to

VOL 1147 ISS 1 FEB 2 1993 UMI

the substantially longitudinal center thereof to facilitate a controlled glide flight path back to the ground.

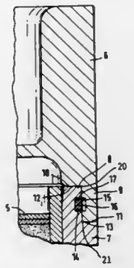
5,183,961
EXTENDED CHARGE CARTRIDGE ASSEMBLY
Ralph F. Campoli, Mine Hill, N.J., and John T. McGovern, Lancaster, Pa., assignors to Olin Corporation, Cheshire, Conn.
Filed Dec. 9, 1991, Ser. No. 803,806
Int. Cl.[5] F42B *5/067, 5/02*
U.S. Cl. 102—439 **22 Claims**



1. A cartridge assembly comprising a projectile assembly and a tubular cartridge case including a primer head and containing a propellant charge, said projectile assembly comprising:
a subcaliber elongated rod shaped penetrator;
a segmented sabot encircling and gripping a portion of said penetrator, said sabot having a generally annular front bourrelet providing a pressure barrier between said penetrator and said gun tube and an aft bourrelet spaced rearwardly from said front bourrelet having a plurality of circumferentially spaced post and shoe portions providing spaced lateral support to a portion of said penetrator; and
a combustible tubular case extension over said sabot between said bourrelets forming an annular cavity thereunder open to the interior of said tubular cartridge case between said post portions of said aft bourrelet, said cavity containing a portion of said propellant charge.

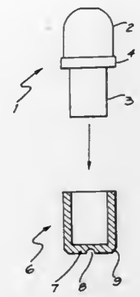
5,183,962
SUBMUNITION FOR A SPIN STABILIZED CARRIER PROJECTILE
Klaus D. Karius, Jüchen; Armin Eskam, Langenfeld, and Karl-Heinz Vogt, Essen, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany
Filed May 18, 1992, Ser. No. 884,141
Claims priority, application Fed. Rep. of Germany, May 17, 1991, 4116191
Int. Cl.[5] F42B *12/58*
U.S. Cl. 102—489 **11 Claims**

1. In a submunition unit for a spin stabilized carrier projectile comprising:
an outer casing having a first axially extending annular collar at its front end; an antenna mounted in said casing at said front end; a protective cover for said antenna, said cover having a second axially extending annular collar at its rear end, with said first and second collars axially overlapping and engaging one another and with a radially extending end surface of at least one of said collars engaging a radially extending surface associated with the other of said collars to axially support said cover on said casing; and means for securing said protective cover to said casing including a locking element mounted for movement in a direction toward the circumference of said casing to form a form-locking connection between said cover and said casing in response to an appropriate centrifugal force acting on said unit and to release the connection between said cover and said casing when the number of revolutions of said unit, and thus the centrifugal force, drops below a given value; the improvement wherein said locking element is a securing ring which expands under the influence of centrifugal forces, and said means further comprises: a first circumferential groove on an exterior surface of the radially inward one of said first and second collars, said first circumferential groove having a depth corresponding to the thickness of said securing ring in the radial direction and normally containing said securing ring; and a second



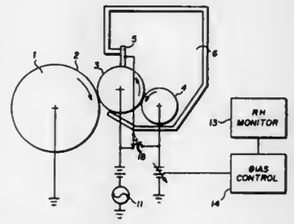
circumferential groove formed on an interior surface of the radially outer one of said first and second collars opposite said first circumferential groove, with said second circumferential groove having a depth less than said thickness of said securing ring, and both of said grooves having an axial height which includes an amount of play relative to the axial height of said securing ring that is greater than the axial deformation caused by the deformation forces generated at said first and second collars during launching of said unit.

5,183,963
TWO PIECE PROJECTILE
Stephen C. Beaufils, 14 Endeavour Road, George's Hall, Australia 2198 , and Alfonso Latella, 69 Ely Street, Revesby, Australia 2212
Filed Nov. 12, 1991, Ser. No. 789,982
Claims priority, application Australia, Nov. 13, 1990, PK3332
Int. Cl.[5] F42B *14/00*
U.S. Cl. 102—515 **10 Claims**



1. A projectile for use in a rifled gun barrel comprising:
a slug having a nose section at one end, a driving band circumferentially about the nose section and a shank section at an opposite end;
a jacket of plastics material, being a generally hollow smooth outer walled cylinder with a closed base encasing the shank section of the slug; and
fixing means securing the slug and jacket combination together sufficiently strongly to maintain the combination together during firing and subsequent flight of the projectile and wherein in combination the driving band and jacket have dimensions in relation to a pre-selected nominal rifled gun bore so that when fired along said bore the driving band and jacket engage the rifling to spin the projectile.

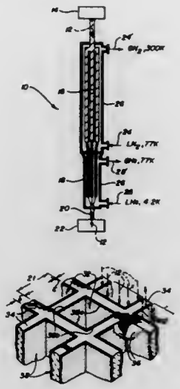
5,183,964
TONER CHARGE CONTROL
Eric C. Stelter, Rochester, and Joseph E. Gnth, Holley, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 3, 1992, Ser. No. 816,891
Int. Cl.[5] G03G *15/06*
U.S. Cl. 118—653 **6 Claims**



1. A method of developing electrostatic images on an image surface with toner from a toner supply, said method comprising the steps of:
rotating a toner-adder member in contact with a developer member to apply said toner to said developer member,
charging said toner at least in part by applying an electric field between the toner-adder member and the developer member, and
bringing such charged toner applied to the developer member into toner-applying relation with said electrostatic image to develop said image,
characterized by the steps of determining or predicting the ambient relative humidity and varying said electric field as a function of such relative humidity to control the charge applied to said toner.

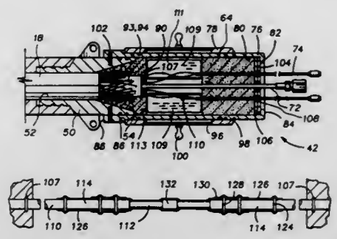
5,183,965
CERAMIC SUPERCONDUCTING DOWNLEAD
William N. Lawless, c/o CeramPhysics, Inc. 921 Eastwind Dr., Ste. 110, Westerville, Ohio 43081
Filed Aug. 3, 1990, Ser. No. 562,222
Int. Cl.[5] H01B *12/00;* H04B *1/00*
U.S. Cl. 174—15.5 **48 Claims**

1. An electrical conductor for use as a downlead to devices operating at low temperatures comprising:
a ceramic honeycomb body having a plurality of longitudinal channels formed therethrough by longitudinal walls; and
at least one film of a ceramic superconductor material disposed on at least one surface of at least one of said longitudinal channels, said at least one film extending substantially the length of said one of said longitudinal channels;
wherein the materials of said ceramic honeycomb body and said ceramic superconductor material are different; and wherein the crystal lattice of said ceramic honeycomb body and the crystal lattice of said ceramic superconductor



material substantially match, and at least portions of said respective crystal lattices are in substantial alignment.

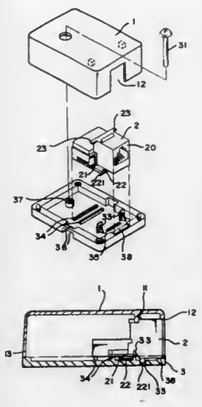
5,183,966
TERMINATION ASSEMBLY WITH IMPROVED WATERBLOCK
Larry Hurtado, League City; Rick A. Curto, and Dallas Martin, both of Friendswood, all of Tex., assignors to Western Atlas International, Inc., Houston, Tex.
Filed Nov. 19, 1990, Ser. No. 615,237
Int. Cl.[5] H02G *15/22*
U.S. Cl. 474—20 **15 Claims**



1. An apparatus for use in seismic surveying, comprising:
(a) a cable having a free end, a plurality of transmission lines and a stress member extending the length of the cable;
(b) a cable head having a first and second end, and a bore extending therebetween, said free end of the cable received by the first end of the cable head with the transmission lines extending from the second end of the cable head;
(c) potting means placed in the cable head for anchoring the stress member in the cable head;
(d) a sleeve coupled to the second end of the cable head for enclosing the plurality of transmission lines and distributing the transmission lines extending from the second end of the sleeve, said sleeve having an accessible chamber through at least one sealable port defined therein for providing access to the transmission lines; and
(e) means within the sleeve for preventing a fluid from entering the chamber.

VOL 1147 ISS 1 FE 2 1993 UMI

5,183,967
JUNCTION BOX
Mao S. Lin, No. 165-1, Kuo Ching Road, Pan-Chiau, Taipei Hsien, Taiwan
Filed Oct. 16, 1991, Ser. No. 777,144
Int. Cl.[5] H05K *5/00*
U.S. Cl. 174—52.1 **3 Claims**



1. A junction box, comprising a cover covered on a base holding at least one adapter therein, wherein said cover comprises at least one pair of pressure rods, at least one wire hole for inserting an exchange line, and at least one front notch; said at least one adapter each comprises a retaining strip on the bottom edge thereof, a jack on the front end thereof retained in said at least one front notch for connecting a telephone line by a plug, two opposite projections at the top stopped by said at least one pair of pressure rods, and two side blocks at two opposite sides, said retaining strip having a bottom projection projecting from the bottom edge thereof; and said base comprises at least one pair of lugs stopped against said two side blocks at the front, at least one first groove into which said bottom projection on said retaining strip is inserted, at least one pair of stop bars for supporting said at least one adapter, said at least one pair of stop bars including a first stop bar stopped against said retaining strip at the back, and a second groove for holding said jack in position.

5,183,968

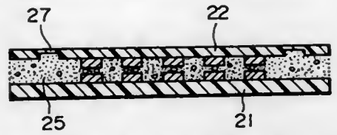
Patent Not Issued For This Number

5,183,969
ANISOTROPICALLY ELECTROCONDUCTIVE ADHESIVE AND ADHESIVELY BONDED STRUCTURE THEREWITH
Satoshi Odashima, Saitama, Japan, assignor to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan
Filed Oct. 1, 1991, Ser. No. 770,975
Claims priority, application Japan, Oct. 5, 1990, 2-268147
Int. Cl.[5] H05K *1/14*
U.S. Cl. 174—88 R **4 Claims**

1. An adhesively bonded structure of circuit boards formed by using an anisotropically electroconductive adhesive composition which comprises, as an integral body:

(A) two circuit boards each having an array of electrode terminals facing the other, one or both of the circuit boards having means for visual inspection of the electrode terminals; and

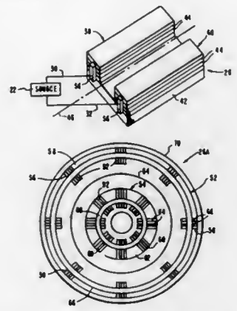
(B) a layer of an adhesive between the arrays of electrode terminals on the circuit boards as formed by curing an adhesive composition comprising, as a blend,



(a) an epoxy resin-based adhesive resin as a matrix containing a catalytic effective amount of a curing catalyst selected from the group consisting of polyamide-polyamine based compounds, aromatic polyamine compounds, imidazole compounds, tetrahydrophthalic anhydride, and which exhibits a change in color by curing, and

(b) electroconductive fine particles dispersed in the matrix.

5,183,970
ORIENTED SUPERCONDUCTORS FOR AC POWER TRANSMISSION
William J. Gallagher, Dobbs Ferry, and Thomas K. Worthington, New York, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.
Continuation of Ser. No. 517,010, May 1, 1990, abandoned. This application Mar. 9, 1992, Ser. No. 847,841
Int. Cl.[5] H01B *12/00*
U.S. Cl. 174—125.1 **12 Claims**

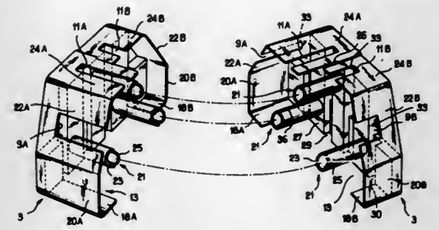


12. A power transmission line comprising:

a plurality of electrically conductive elements, the elements being arranged along an axis oriented in a direction of power flow, each element comprising a superconductive material having anisotropic magnetic parameters and a crystalline structure formed about a basal crystallographic plane, the material in each element exhibiting superconductivity and a linear hysteresis-free magnetization characteristic in the presence of an applied magnetic field less than a lower critical field, the lower critical field having a maximum value in a direction perpendicular to the basal plane; and

means for supporting said electrically conductive elements with their respective basal crystallographic planes extending radially outward from said axis, said supporting means holding a set of elements of said plurality of elements in an array to form a conductor of said transmission line.

5,183,971
PROTECTIVE CASING FOR ELECTRIC DISTRIBUTION BUSBARS
Jean Lafosse, Mirebeau sur Beze, and Paul Milliere, Varois et Chaignot, both of France, assignors to Telemecanique, Rueil-Malmaison, France
Filed Dec. 28, 1990, Ser. No. 633,172
Claims priority, application France, Dec. 28, 1989, 89 17345
Int. Cl.[5] H01B *17/24*
U.S. Cl. 174—138 F **24 Claims**



20. A protective casing (1) for electric distribution busbars (7), constructed of insulating material and adapted to surround a region of an array of electric distribution busbars, said casing being made up of two identical half-casings (3) each provided on the periphery of an open face with recesses (9A, 9B, 11A, 11B, 13) which form entrance and exit passageways for the busbars (7) after coupling of the half-casings (3), wherein the two half-casings are coupled together by displacement in mutual sliding motion in a coupling direction substantially perpendicular to said array up to a mutual coupling position which is variable according to the dimension of the busbars parallel to the direction of sliding displacement, and wherein a coupling region of each half-casing comprises an external engagement region (18A, 20A, 22A, 24A) on one side of a median plane (P—P') and an internal engagement region (18B, 20B, 22B, 24B) on the other side of said median plane, the two engagement regions are separated by recessed regions (26, 13) through which the median plane (P—P') passes, the half-casings (3) being connected by screw attachment means (37) extending within at least one insulating sleeve between adjacent conductive busbars (7), and wherein the insulating sleeve comprises two identical elementary sleeves (21) each forming part of one of the half-casings (3), each elementary sleeve comprising at least one outer tongue (23) and an inner tongue (25) which is angularly displaced with respect to the outer tongue and adapted to slide within the outer tongue of the elementary sleeve of the other half-casing.

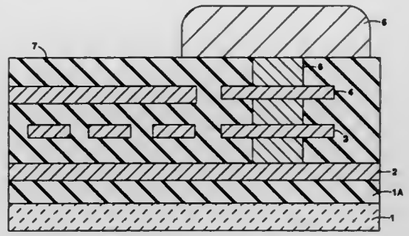
5,183,972
COPPER/EPOXY STRUCTURES
Diana C. Duane, Cedar Park, Tex.; Eric L. Zilley, St. Paul, Minn., and Robert C. Jordan, White Bear Lake, Minn., assignors to Microelectronics and Computer Technology Corporation, Austin, Tex. and Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 4, 1991, Ser. No. 650,137
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—251 **22 Claims**

1. A multilayer circuit comprising:

a substrate;

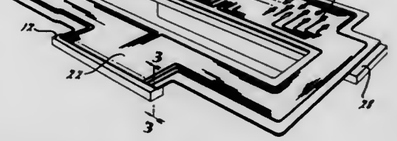
a first cured epoxy resin dielectric layer on said substrate wherein the thermal coefficient of expansion of said first cured epoxy resin dielectric layer and said substrate are matched;

at least two high density circuit pattern layers located above said first cured epoxy resin dielectric layer wherein said circuit pattern layers exhibit a conductor line density of greater than 300 lines per inch per level; and



a second cured epoxy resin dielectric layer located between said circuit pattern layers.

5,183,973
FLEXIBLE CABLE FOR INTERCONNECTING ELECTRONIC COMPONENTS
Lloyd D. Ingle, Lompoc; Leonard E. Peck, Jr., and Jose A. Santana, both of Goleta, all of Calif., assignors to Santa Barbara Research Center, Goleta, Calif.
Filed Aug. 14, 1989, Ser. No. 394,049
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—254 **18 Claims**



1. A flexible cable comprising:

a) a thin, flexible insulative substrate having first and second opposing sides, said substrate formed of a polyimide H film having a thickness from 0.0003 to 0.020 inch;

b) a layer of inorganic material adhered to the first side of the substrate, said inorganic material for facilitating adhesion thereto of at least one gold conductor; and

c) at least one gold conductor adhered to the inorganic material.

5,183,974
GAS PULSATION ATTENUATOR FOR AUTOMOTIVE AIR CONDITIONING COMPRESSOR
Richard D. Wilhelm, Amherst, and Nikolaos A. Adonakis, Grand Island, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 3, 1992, Ser. No. 862,706
Int. Cl.[5] F01N *1/00*
U.S. Cl. 181—0.5 **4 Claims**

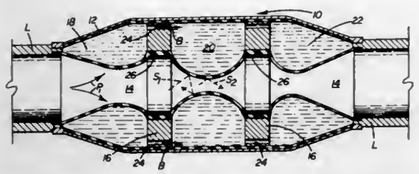
1. An apparatus for attenuating refrigerant gas pressure and sound energy pulsations emanating from a piston-type refrigerant compressor, comprising:

an annular elastomeric, fluid-filled body defining a central refrigerant gas flow passage;

divider means for said fluid-filled body to form multiple chambers; and

VOL
1147
ISS
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damping track means extending through said divider means providing fluid communication between said chambers;



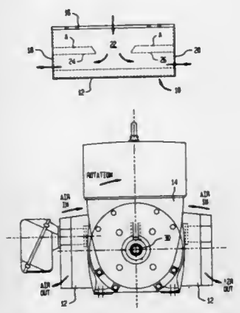
whereby said pressure and sound energy pulses are dampened to smooth and quiet the operation of the compressor by fluid flow between said chambers.

5,183,975

MUFFLER FOR A COOLING SYSTEM OF AN ELECTRIC MOTOR

Jack L. Craggs, and Robert R. Burke, both of Cincinnati, Ohio, assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed May 15, 1991, Ser. No. 700,300
Int. Cl.[5] H02K *5/24*
U.S. Cl. 181—202 **16 Claims**



1. A muffler for an air-cooling system used for channeling air for cooling heat-generating apparatus, the muffler comprising:

housing means mounted on the heat-generating apparatus and formed with air-inlet means, air-outlet means and air-passage means extending between and connecting the inlet means and the outlet means, whereby air from outside the housing means employed to cool the heat-generating apparatus enters the housing means through the inlet means, flows through the passage means and exits the housing means through the outlet means, noise having a spectrum of frequencies including a relatively low main discrete frequency, which corresponds to a relatively low wavelength, and a plurality of higher frequencies being generated in the cooling air during operation of the heat-generating apparatus and cooling system;

baffle means positioned within the housing means adjacent to the outlet means to interrupt lines of sight from the passage means to the outside of the housing means;

the housing means and the baffle means being made of a predetermined material having a predetermined mass, the material and mass being selected to attenuate direct egress of the higher frequencies of the noise spectrum to a substantial degree; and

a sound-absorbent material positioned on selected interior surfaces of the housing means and having an effective thickness equal to between approximately one-eighth and one-half of the wavelength of the relatively low main discrete frequency of the noise spectrum;

the inlet means, outlet means and air-passage means being of large cross section to enable cooling of the heat-generating apparatus using low air velocities at low back pressures; and

the inlet means and the outlet means being located relative to the heat-generating apparatus and directing exhaust air in such a manner to minimize recirculation of the air,

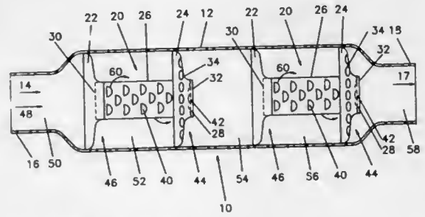
wherein the heat generating apparatus is an electric motor having a rotor and the cross section of the inlet means, outlet means and air-passage means being chosen so that the air velocity in the housing is less than 20% of peripheral speed of the rotor when the motor is in operation.

5,183,976

ADJUSTABLE SOUND ATTENUATING DEVICE

R. J. Plemons, Jr., 1126 Rockledge Rd., Attalla, Ala. 35954

Filed Nov. 26, 1991, Ser. No. 798,524
Int. Cl.[5] F01N *1/08*
U.S. Cl. 181—264 **20 Claims**



1. A muffler comprising:

an outer shell defining an elongated housing having a longitudinal axis and input and output ends;

a perforated tube disposed within said housing along said axis and having an input end and an output end spaced apart inwardly from said input and output end, respectively, of said housing, an annular chamber being defined between said tube and said housing;

a first baffle plate disposed within and transversely across said housing adjacent to the input end of said tube and defining an end chamber between the input end of said tube and said input housing end, said baffle providing a solid cover between said tube and said housing and having a central opening communicating said housing input end with said tube, whereby incoming gas will be channeled entirely into said tube; and

a second baffle plate disposed transversely across said housing adjacent to the output end of said tube, said second baffle plate having a plurality of apertures extending therethrough, whereby exhaust gas may be expelled from said annular chamber around the periphery of the housing.

5,183,977

MUFFLER ASSEMBLY OF INTERNAL COMBUSTION ENGINE

Yoshihiro Horitani, Hamamatsu, Japan, assignor to Suzuki Kabushiki Kaisha, Japan

Filed Mar. 8, 1991, Ser. No. 666,865
Claims priority, application Japan, Mar. 14, 1990, 2-61154
Int. Cl.[5] F01N *1/08*
U.S. Cl. 181—266 **20 Claims**

1. A muffler assembly of an internal combustion engine provided with an exhaust gas port, the muffler assembly being connected during use to one end of an exhaust pipe which has another end connected to the exhaust gas port of the engine, said muffler assembly comprising:

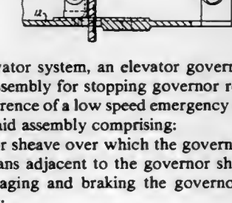
an inner casing in which is defined a first expansion chamber into which the one end of the exhaust pipe is inserted;

an outer casing disposed outside the inner casing so as to define second and third expansion chambers between the inner and outer casing;

first baffle pipe means disposed so as to mutually communicate the first and second expansion chambers;

second baffle pipe means disposed so as to mutually communicate the second and third expansion chambers; and

tail pipe means disposed so as to communicate the third expansion chamber and an outside of the outer casing;



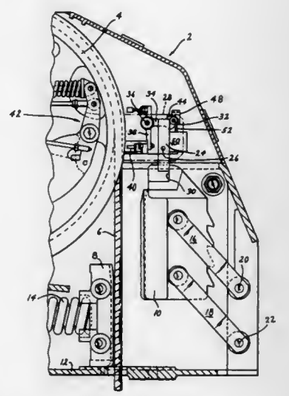
wherein exhaust gas from the exhaust gas port of the engine is first introduced into the first expansion chamber of the inner casing, then flows into the second and third expansion chambers in the outer casing through the first and second baffle pipe means, and is finally exhausted through the tail pipe means.

5,183,978

ELEVATOR GOVERNOR ROPE BLOCK ACTUATION IN LOW SPEED EMERGENCY SITUATIONS

William G. Sheridan, Southington, and Edward D. Reiskin, West Hartford, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Apr. 3, 1991, Ser. No. 679,873
Int. Cl.[5] B66B *5/00, 5/02*
U.S. Cl. 187—105 **4 Claims**



1. In an elevator system, an elevator governor rope emergency brake assembly for stopping governor rope movement upon the occurrence of a low speed emergency condition in an elevator car, said assembly comprising:

a) a governor sheave over which the governor rope passes;

b) block means adjacent to the governor sheave for selectively engaging and braking the governor rope against movement;

c) latch means for holding said block means in a brake-off condition;

d) release means for disabling said latch means to set said block means on the governor rope;

e) mechanical means on said governor sheave for actuating said release means in the event of governor sheave overspeed;

f) a solenoid tripper adjacent to said release means for selectively directly contacting and actuating said release means upon detection of said low speed emergency condition, said solenoid tripper being passive at all times other than upon detection of said emergency condition; and

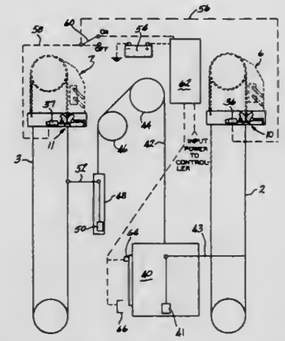
g) controller means for controlling operation of the elevator, said controller means being connected to said solenoid tripper and operable to activate the latter only upon detection of said emergency condition.

5,183,979

ELEVATOR GOVERNOR ROPE RESTRAINT WHEN ELEVATOR CAR MOVES WITH CAR DOORS OPEN

William G. Sheridan, Southington, Conn., and Edward D. Reiskin, New York, N.Y., assignors to Otis Elevator Company, Farmington, Conn.

Filed Jul. 22, 1991, Ser. No. 733,510
Int. Cl.[5] B66B *5/02*
U.S. Cl. 187—108 **1 Claim**



1. An elevator safety system for stopping movement of an elevator governor rope upon movement of an elevator cab away from a landing with the cab doors open, said system comprising:

a) first means for detecting the position of the cab relative to the landings;

b) second means for detecting the position of the cab doors;

c) controller means connected to said first and second means for receiving signals from the latter, said controller means being operable to emit a stop signal when door-open cab movement away from a loading is detected;

d) jaw means straddling said governor rope and movable between a rope-grasping position and a rope-free position, said jaw means comprising a pair of pivotal jaws, one of which is disposed on each side of said governor rope; spring means biasing one of said jaws toward the other; said jaws including intermeshed toothed portions for providing coordinated closing movement of said jaws onto the governor rope;

e) catch means for engaging the other of said jaws to hold said jaw means in said rope-free position whereby said governor rope is free to move unimpededly between said jaw means; and

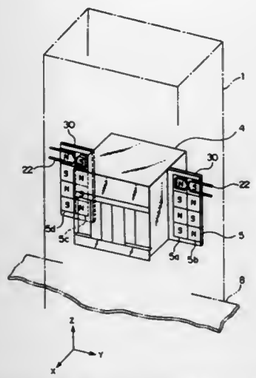
f) means connected to said controller means for disabling said catch means in response to said stop signal whereby said jaws automatically move to said rope-grasping position to stop further movement of the governor rope.

VOL
1147
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1993
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5,183,980
LINEAR MOTOR ELEVATOR DEVICE WITH A NULL-FLUX POSITION ADJUSTMENT

Shigeru Okuma; Takeshi Furuhashi, both of Nagoya; Hiroyuki Ikejima, and Toshiaki Ishii, both of Inazawa, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1991, Ser. No. 707,342
Claims priority, application Japan, Jun. 1, 1990, 2-143537
Int. Cl.[5] B66B *1/06*
U.S. Cl. 187—112 **4 Claims**



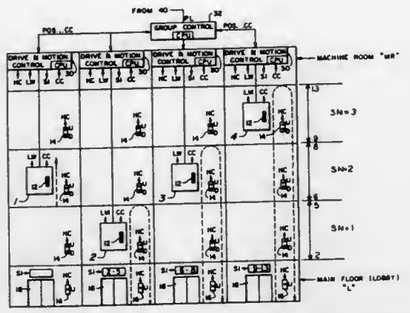
1. A linear motor elevator device for hoisting a hoisted body up and down within a hoist way by means of a linear motor, comprising:
primary side coils of a linear motor mounted on a side wall of said hoist way along a hoist path of the hoisted body, the primary side coils generating a magnetic field moving along the hoist way; and
secondary side magnets of the linear motor attached to a side of said hoisted body to oppose said primary side coils across a gap, whereby said moving magnetic field generated by the primary side coils drive said hoisted body within the hoist way;
wherein upon displacement of the hoisted body along a direction perpendicular to a hoisting direction of the hoisted body a circulating current which counterbalances a variation of magnetic flux caused by the displacement of the hoisted body flows through said primary side coils, thereby automatically adjusting a position of the hoisted body along said direction perpendicular to the driving direction.

5,183,981
"UP-PEAK"0 ELEVATOR CHANNELING SYSTEM WITH OPTIMIZED PREFERENTIAL SERVICE TO HIGH INTENSITY TRAFFIC FLOORS

Kandasamy Thangavelu, Avon, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Continuation-in-part of Ser. No. 318,295, Mar. 3, 1989, which is a continuation-in-part of Ser. No. 209,744, Jan. 21, 1988, Pat. No. 4,838,384. This application Mar. 2, 1990, Ser. No. 487,344
Int. Cl.[5] B66B *1/20*
U.S. Cl. 187—128 **8 Claims**

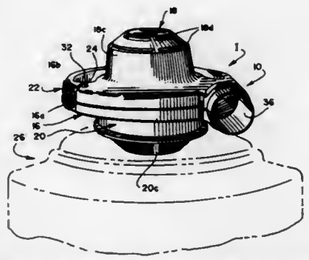
1. In an elevator dispatching system controlling the assignment of elevator cars in a building having a lobby and a plurality of floors above the lobby, a method of grouping contiguous floors into sectors, said method comprising the steps of:
obtaining information on the number of passengers arriving at each floor above the lobby from elevator cars traveling in an UP-direction, said information covering at least a predetermined time interval;
predicting, for a subsequent predetermined time interval, the number of passengers to be arriving at each of the floors above the lobby from elevator cars traveling in the UP-direction based on said obtained information;
determining the number of sectors to be formed based on the number of elevator cars;
determining average traffic per sector based on said predicted passenger arrival count and said determined number of sectors; and
starting from the first floor above the lobby and continuing through to the top floor in the building, selecting a set of contiguous floors for each sector such that the predicted traffic for each sector is less than a predetermined threshold, wherein
if the predicted traffic for a selectable next contiguous floor, added to the predicted traffic for all contiguous floors already selected for the sector, is less than the predetermined threshold, include said selectable floor in the sector,
otherwise, begin another sector with said selectable floor as the bottom floor in the other sector.



5,183,982
MANUALLY ADJUSTABLE HOUSING PORTIONS FOR ACTUATING AN ELECTRICAL APPLIANCE SWITCH

James F. Smith, Louisville, and Wesley A. Schroeder, Uniontown, both of Ohio, assignors to GMI Holdings, Inc., Alliance, Ohio

Filed Sep. 26, 1990, Ser. No. 588,374
Int. Cl.[5] H01H *9/06*
U.S. Cl. 200—61.85 **9 Claims**

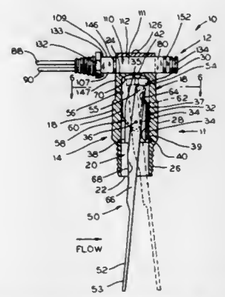


1. An electrical appliance operable in various modes, comprising:
a housing having first and second exterior surface portions;
switch means disposed within the housing for opening and closing an electrical circuit for the appliance; and
manually adjustable control means operatively connected to said switch means for selective manual adjustment between first and second positions to effect opening and closing said electrical circuit; said control means having a unitary control member with first and second exposed surfaces in angularly disposed relation, said first surface overlying said first exterior portion of said housing and being oriented for selective manual adjustment between said first and second positions when said appliance is in a first operating mode and said second surface overlying said second exterior portion of said housing and being oriented for selective manual adjustment between said first and second positions when said appliance is in a second operating mode.

5,183,983
FLOW SWITCH ASSEMBLY FOR FLUID FLOW MONITORING

David G. Knop, Chesterton, Ind., assignor to Dwyer Instruments, Inc., Michigan City, Ind.

Filed Mar. 20, 1992, Ser. No. 855,213
Int. Cl.[5] H01H *35/40*
U.S. Cl. 200—81.9 M **7 Claims**

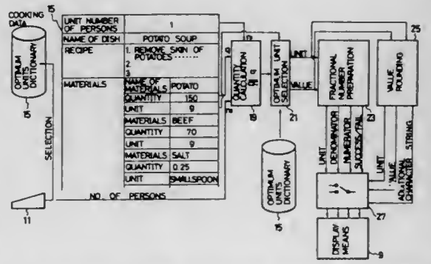


1. In a fluid flow monitoring assembly that includes an elongate sensing body adapted for crosswise application at one end thereof to and into a conduit through which the fluid to be monitored is to flow, with the sensing body being formed from non-magnetic material to define a bore extending longitudinally thereof that is open at one end thereof and that is closed at the other end thereof, and with the sensing body cross mounting at its closed end an elongate reed type off-on switch device for adjustment movement longitudinally laterally of the body between Normally Closed (NC) and Normally Open (NO) switching function positions, and with the sensing body pivotally mounting in its bore, for pivot movement in a plane that is in substantial coplanar relation to the direction of fluid flow through the conduit, a vane assembly that includes at one end of same a vane projecting from the body open end and a permanent magnet adjacent the other end of the vane assembly disposed adjacent the sensing body closed end for effecting by magnetic action the activation of the switch device to its desired switching function position, spring means mounted within the sensing body for resiliently opposing such pivotal action of the vane assembly, and means for clamping the switch device into fixed relation with the sensing body,
the improvement wherein:
the switch device comprises an elongate housing defining an elongated bore intermediate the ends thereof, a reed switch mounted in said housing bore in electrical circuit arrangement with lead wires extending from one of end of said housing, with said reed switch being disposed on the side of said housing that has a level that is closest to the path movement of the magnet on pivotal movement of the vane assembly, said side of said housing being the switch side of said housing,
said housing defining first and second stop means disposed one on either side of the sensing body for physical engagement with the sensing body, respectively, when the switch device is to be positioned to indicate the Normally Closed and Normally Open switch function positions of said reed switch, respectively,
with said reed switch being positioned longitudinally in said housing to have its Normally Closed function when said housing first stop means engages the sensing body,
and with said housing have the side of same opposite that of said switch side bearing indicia corresponding to the location of said first and second stop means.

5,183,984
COOKING APPARATUS WITH COOKING INFORMATION DISPLAY MEANS

Tatsuya Nakagawa, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 299,374, Jan. 23, 1989, abandoned. This application Feb. 24, 1992, Ser. No. 841,260
Claims priority, application Japan, Jan. 21, 1988, 63-9683; Jan. 21, 1988, 63-9684; Jan. 21, 1988, 63-9685
Int. Cl.[5] H05B *6/68*
U.S. Cl. 219—10.55 M **4 Claims**



1. A method of displaying suitable quantities of materials necessary for preparing each dish to be cooked in a cooking apparatus, comprising a control system for processing data for said dish and a display device for displaying information derived from the data, said method comprising the steps of:
(a) calculating quantities of materials necessary for preparing the dish for an indicated number of persons in accordance with the quantities of materials per person stored in a cooking information storage means of the cooking apparatus;
(b) converting the calculated quantities of the materials associated with a first unit to equivalent quantities represented by fewer effective digits associated with a second unit different than said first unit as a first display information;
(c) separating a decimal portion of the first display information from an integral portion, converting the decimal portion to a proper fraction, and adding the fraction to the integral portion to obtain second display information;
(d) dropping the digits of said first display information expressed in the decimal number system to obtain third display information; and
(e) selecting one of the first, second, and third display information and displaying on a display the selected display information, said steps (b), (c), (d) and (e) being performed by said control system.

VOL 1147 ISS 1 FEB 2 1993 UMI

5,183,985

CONTACTLESS HEATING FREQUENCY HEATING OF THIN FILAMENTS

Paulette S. Sidky, and Michael G. Hocking, both of Surrey, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

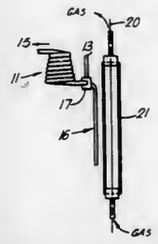
PCT No. PCT/GB89/00505, § 371 Date Dec. 27, 1990, § 102(e) Date Dec. 27, 1990, PCT Pub. No. WO89/11770, PCT Pub. Date Nov. 30, 1989

PCT Filed May 11, 1989, Ser. No. 623,808

Claims priority, application United Kingdom, May 19, 1988, 8811893

Int. Cl.[5] H05B *6/10*

U.S. Cl. 219—10.61 R **17 Claims**



1. A contactless heating apparatus for thin filaments, including a length of filament, said apparatus comprising:

a source of alternating current in the frequency range from HF to UHF;

means for supporting said length of filament;

a tuned induction circuit connected to the output of the source of alternating current, the induction circuit including an induction coil having a plurality of turns extending along a longitudinal axis arranged such that said coil is located adjacent to the filament and said longitudinal axis is parallel to the filament; and

a substantially linear conducting inductor element having one free end and the other end thereof connected to one turn of the induction coil such that said inductor element is disposed substantially parallel to the filament, wherein heating of the filament occurs adjacent to the conducting inductor element.

5,183,986

WIRE-TYPE ELECTRIC DISCHARGE MACHINING SYSTEM CAPABLE MAGNETICALLY OF COLLECTING MATERIAL THAT HAS BEEN REMOVED FROM A WORKPIECE AND CONFIRMING THE MAGNETIC ATTRACTION

Takuji Magara, and Masahiro Yamamoto, both of Aichi, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Oct. 8, 1991, Ser. No. 772,797

Claims priority, application Japan, Oct. 8, 1990, 2-269902; Mar. 8, 1991, 3-43062

Int. Cl.[5] B23H *7/02, 11/00*

U.S. Cl. 219—69.12 **13 Claims**

1. A wire-type electric discharge machining system comprising:

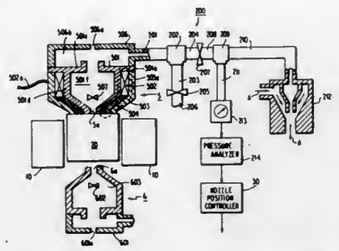
an electromagnet operable to attract a material cut from a workpiece during a machining operation;

an air hole movable in concert with said electromagnet relative to said workpiece, so that said air hole is obstructed when said material is attracted to said electromagnet;

a vacuum device for providing a flow of air through said air hole;

a pressure measuring device for measuring pressure in said vacuum device, said vacuum device tending to reduce pressure within itself;

first pressure determining means for determining whether said material is attracted to said electromagnet based upon the result of measurement taken by said pressure measuring device; and



first transfer control means for predeterminately moving said electromagnet relative to said workpiece based on the result of determination of said first pressure determining means.

5,183,987

CUT-OUT PIECE REMOVING METHOD IN ELECTRIC DISCHARGE MACHINING AND AN APPARATUS THEREFOR

Toshiyuki Aso, and Shinji Yoda, both of Yamanashi, Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

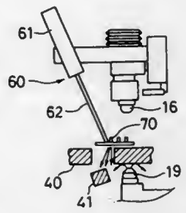
PCT No. PCT/JP91/00455, § 371 Date Dec. 5, 1991, § 102(e) Date Dec. 5, 1991, PCT Pub. No. WO91/15324, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 5, 1991, Ser. No. 777,526

Claims priority, application Japan, Apr. 5, 1990, 2-89039

Int. Cl.[5] B23H *7/02, 11/00*

U.S. Cl. 219—69.12 **7 Claims**



1. A cut-out piece removing method in electric discharge machining in which a piece is cut out from a workpiece, comprising the steps of:

(a) upwardly jetting fluid toward a bottom surface of the piece cut out of the workpiece; and

(b) horizontally moving the cut-out piece in unison with the workpiece while jetting the fluid;

wherein the cut-out piece is permitted to naturally drop from the workpiece when the cut-out piece reaches a horizontal moved position at which the jetted fluid no longer acts thereon.

5,183,988

ELECTRIC DISCHARGE MACHINING METHOD

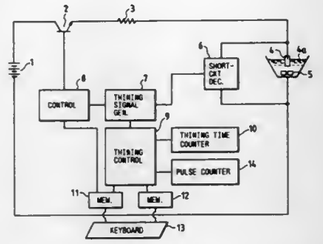
Hiroshi Takeuchi; Tomoko Sendai, and Yozo Sakai, all of Aichi, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Apr. 24, 1990, Ser. No. 514,644

Claims priority, application Japan, Apr. 24, 1989, 1-103952

Int. Cl.[5] B32H *1/02, 7/16, 7/20*

U.S. Cl. 219—69.17 **7 Claims**



1. An electric discharge machining method in which an electric discharge is generated in a gap between an electrode and a workpiece by applying a pulse voltage across the gap to thereby machine said workpiece, the gap being filled with a machining solution, comprising the steps of:

selecting a condition which tends to place the gap between said electrode and workpiece in an unstable state for machining said workpiece;

setting a period of time for which the condition selected lasts; and

reducing the discharge energy provided by the pulse voltage for the period of time thus set when the condition is detected.

5,183,989

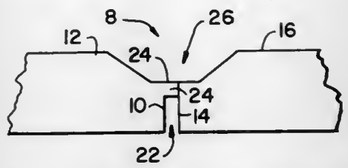
REDUCED HEAT INPUT KEYHOLE WELDING THROUGH IMPROVED JOINT DESIGN

John M. Sanders, and Dennis D. Harwig, both of Canton, Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jun. 17, 1991, Ser. No. 716,195

Int. Cl.[5] B23K *15/00*

U.S. Cl. 219—121.14 **5 Claims**



1. In a keyhole welding mode of a high energy density welding process employing a high velocity gas jet to maintain a molten keyhole through a joint thickness, the improvement comprising the steps of:

providing a projecting portion having a predetermined dimension on one edge of a member; and

abutting the projecting portion tightly against an even edge of another member to provide a controllable gap greater than or equal to about 0.030 inch for maintaining a controlled distance to enhance the keyhole welding mode by controlling the gap as deposited weld metal shrinks to increase penetrating ability of the jet, the controlled distance between the edges of the member being a slot defined by a predetermined width extending between the edges of the member up to the projecting portion.

5,183,990

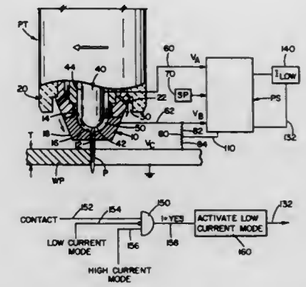
METHOD AND CIRCUIT FOR PROTECTING PLASMA NOZZLE

Edward A. Enyedy, Eastlake, Ohio, assignor to The Lincoln Electric Company, Cleveland, Ohio

Filed Apr. 12, 1991, Ser. No. 684,331

Int. Cl.[5] B23K *10/00*

U.S. Cl. 219—121.54 **37 Claims**



1. A system for protecting the nozzle of a plasma torch comprising a nozzle with a plasma outlet opening and an internal electrode chamber and an elongated electrode in said chamber and spaced from said nozzle a distance defining an annular gas passage means for allowing flow of a gas through said passage means and through said outlet for impingement against a workpiece below said outlet as an electrical power supply maintains an arc current to said electrode for sustaining said plasma from said nozzle to said workpiece, said system comprising: current control means for selectively shifting said power supply between a first high arc current mode and a second low arc current mode greater than zero, means for detecting contact of said nozzle with said workpiece and means responsive to said detection for holding said current control means in said second mode as long as said contact is detected.

5,183,991

METHOD OF WELDING GALVANIZED STEEL SHEETS WITH A LASER BEAM

Takeji Arai, Iruma, Japan, assignor to Fanuc Ltd, Minamitsuru, Japan

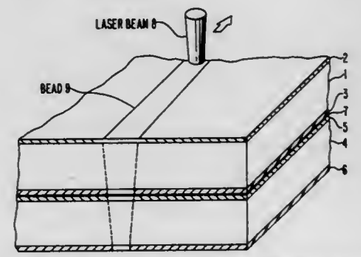
PCT No. PCT/JP90/01464, § 371 Date Jul. 15, 1991, § 102(e) Date Jul. 15, 1991, PCT Pub. No. WO91/07250, PCT Pub. Date May 30, 1991

PCT Filed Nov. 9, 1990, Ser. No. 720,848

Claims priority, application Japan, Nov. 22, 1989, 1-304328

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.64 **6 Claims**



1. A method of welding a first galvanized steel sheet to a second galvanized steel sheet or to a sheet of another metal with a laser beam, said method comprising the steps of:

VOL
1147
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1993
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forming an intermediate layer for suppressing evaporation of zinc over a zinc layer of said first galvanized steel sheet, and arranging the sheets to be welded in a welding position with said intermediate layer disposed between said galvanized steel sheets or between said galvanized steel sheet and said sheet of another metal; and

applying a laser beam to the sheets in said welding position, to thereby weld the sheets together with the laser beam.

5,183,992

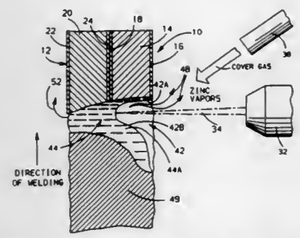
LASER WELDING METHOD

Umit Bilge, Mt. Clemens; Christopher E. Jurczyszyn, Livonia, and William C. Jenuwine, Marine City, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 29, 1991, Ser. No. 750,837

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.64 **4 Claims**



1. A method of laser lap welding two sheets of steel which have coatings of zinc on opposed sides thereof, the steps comprising, positioning said sheets in a generally vertical position and holding said sheets engaged, directing a laser beam against an outer surface of one of said sheets, and then moving said sheets and laser beam relative to each other in a vertical direction such that said laser beam melts the material of said sheets progressively in a vertical upward direction to create a cavity and such that melted molten material of said sheets flows vertically downwardly by gravity to thereby facilitate the escape of zinc: vapors caused by vaporization of said zinc by said laser beam.

5,183,993

LASER BEAM MACHINING SYSTEM AND LASER BEAM MACHINE COVER

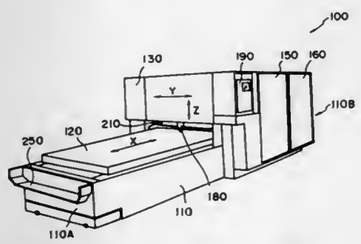
Takeshi Sato; Minoru Tashiro, and Naoomi Miyakawa, all of Aichi, Japan, assignors to Yamazaki Mazak Corporation, Japan

Filed Jun. 12, 1991, Ser. No. 713,847

Claims priority, application Japan, Jun. 19, 1990, 2-64036[U]

Int. Cl.[5] B23K *26/02*

U.S. Cl. 219—121.82 **9 Claims**



1. A laser beam machining system comprising:

a laser beam machine having:

a base,

a gate shaped column provided above said base,

a table driven underneath said column in an X-axis direction which is the longitudinal direction of said base,

a machining head supported by said column and driven in a Y-axis direction which crosses at a right angle with said X-axis, and

a cover for covering said table, said cover being slidable over an upper face of said table whereby said cover assumes an open position underneath said column;

a rail provided above said table; and

a conveying robot which runs along said rail.

5,183,994

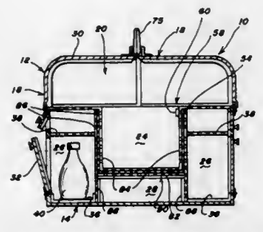
HEATED DRUG BOX

Dale D. Bowles, Sr., 2443 Hemlock Ave., and Charles L. Parmley, 23 Kelley, both of Granite City, Ill. 62040

Filed Oct. 26, 1990, Ser. No. 605,114

Int. Cl.[5] H05B *3/00*

U.S. Cl. 219—387 **6 Claims**



1. A heated drug box for transporting drugs and I. V. solutions at a safe working temperature comprising an insulated case having a bottom, sidewalls and a top enclosing an interior space partitioned into a main compartment, a pair of side compartments and a bottom compartment, said compartments being in thermal contact with each other but being separated by physical barriers, said side compartments bordering the main compartment and said main compartment positioned over and bordering the bottom compartment, said compartments being in thermal contact with a heater means connected to a power source under control of a temperature control means, said main compartment being accessible through a first door means in the top, each of said side compartments being accessible through a second door means in the sidewalls and sized for storage of I. V. solution containers and said third compartment being accessible through a third door means in the sidewalls.

5,183,995

HEAT REDUCTION LIQUID VOLUME COMPENSATOR

F. Clark Addison, 3804 W. Eisenhower Ave., Loveland, Colo. 80537, and Peder J. Thorstensen, P.O. Box 1025, Loveland, Colo. 80539

Filed Nov. 7, 1991, Ser. No. 789,047

Int. Cl.[5] H05B *3/72*

U.S. Cl. 219—433 **12 Claims**

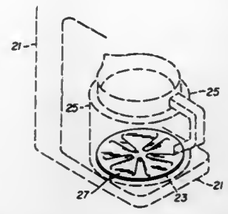
1. A heat reduction liquid volume compensator comprising:

a body adapted to seat over a heat source and carry the weight of a fluid container,

said body having a plurality of circumferentially spaced resilient segments, each said segment having an attached end and a free end,

said body defining two oppositely facing contact surface portions disposed in substantially parallel spaced planes in an extended position, at least one of said planes being defined by said free ends, and

said contact surface portions being movable in relation to each other, the spacing between said contact surface portions decreasing in response to the weight of said container, and the resilience of said segments causing said contact surface portions to return automatically to said extended position when said weight is removed, the resilience of the segments being sufficient to cause the spacing between said contact surface portions to increase sufficiently to result in a reduction of heat applied to said container by said heat source as the amount of liquid in said container is reduced.



5,183,996

COOK-TOP

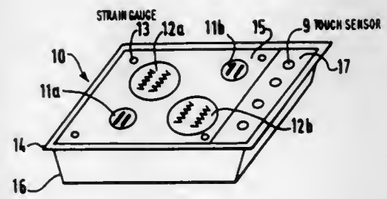
Jean-Pierre Hazan, Sucy-En-Brie; Rémy Polaert, Villecresnes, and Gilles Delmas, Epinany-Sous-Senart, all of France, assignors to U.S. Philips Corp., New York, N.Y.

Filed Jul. 1, 1991, Ser. No. 724,243

Claims priority, application France, Jul. 6, 1990, 90 08597

Int. Cl.[5] H05B *3/74*

U.S. Cl. 219—452 **14 Claims**



1. A cook-top (**10**) comprising a plurality of heating elements (**11***a*, **12***a*) activated by function controls, wherein the heating elements are covered by a plate (**15**) which is fixedly connected to strain-gauge modules (**30**) which detect forces exerted on the plate by loads placed above the heating elements, control means (**70**, **75**, **76**) identifying such a heating element whose load has been subject to a variation, by computing the center of gravity of said forces, and influencing its electric power supply.

5,183,997

HEATING APPARATUS FOR COOKING FOOD, ESPECIALLY A HOT PLATE

Hans-Georg Lotz, Gründau, Fed. Rep. of Germany, assignor to Leybold Aktiengesellschaft, Hanau am Main, Fed. Rep. of Germany

PCT No. PCT/EP90/00428, § 371 Date Sep. 18, 1991, § 102(e) Date Sep. 18, 1991, PCT Pub. No. WO90/11671, PCT Pub. Date Oct. 4, 1990

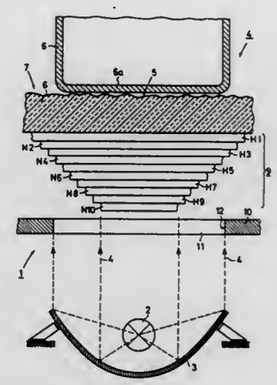
PCT Filed Mar. 21, 1989, Ser. No. 762,012

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1989, 3909246

Int. Cl.[5] H05B *3/74*

U.S. Cl. 219—464 **12 Claims**

1. Heating apparatus for cooking foods comprising at least one radiation source directed at a cook site for accommodating food to be cooked or a container for food to be cooked, said source emitting optical radiation with a visible content and an infrared content, a filter with a support body made of a material substantially transparent to the radiation, said filter being disposed between the radiation source and the cook site and provided with an interference layer system which reflects the visible content of the radiation at least predominantly to the radiation source and passes the infrared content of the radiation at least predominantly to the cook site, wherein the interference layer system comprises an alternating series of layers of silicon (H) and silicon dioxide (N) whose physical layer thicknesses in the case of the silicon is between 20 and 50 nm, and in the case of the SiO_2 between 80 and 110 nm.



5,183,998

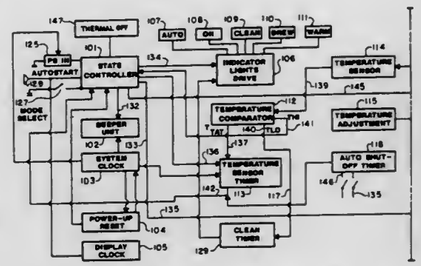
APPARATUS AND METHOD FOR HEATING WATER FOR INFUSION AND THE LIKE

Ronald J. Hoffman, Solon; Lawrence M. Pillion, University Heig, and Paul L. Jewell, Northfield Cent, all of Ohio, assignors to Mr. Coffee Inc.

Filed May 30, 1990, Ser. No. 529,900

Int. Cl.[5] H05B *1/02*

U.S. Cl. 219—492 **55 Claims**



1. Apparatus for heating water for infusing coffee or the like, said apparatus comprising:

heating means supplied by an A.C. power source;

power control means for connecting said A.C. power source to said heating means;

high power means for causing said power control means to apply full A.C. power to said heating means when a high power is required for the operation of said apparatus;

low power means for causing said power control means to apply a portion of subsequent AC cycles to said heating

VOL 1147 ISS 1 FEB 2 1993 UMI

means when a lower power is required, said low power means comprising phase delay means for limiting the application of A.C. power to the portion of subsequent A.C. cycles; and

said power control means including triac means for receiving a control signal from either the high power means or the low power means for applying A.C. power from an A.C. power source to said heater means; and

trigger means having inputs operatively connected to said high power means and to said low power means and whose output is operatively connected to the gate of said triac means, said trigger means generating a current spike for enabling said triac means during each half of an A.C. voltage cycle.

5,183,999

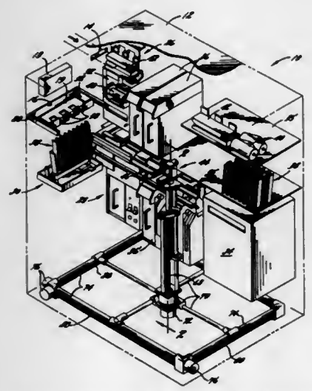
SELF-SERVICE TRANSACTION APPARATUS AND METHOD USING A ROBOT FOR ARTICLE TRANSPORT AND REPAIR OF INTERNAL ARTICLE HANDLING DEVICES

Paul A. Hakenewerth, Charlotte; Gene D. Rohrer, Concord, both of N.C., and Nils G. Stalberg, Lidingo, Sweden, assignors to International Business Machines, Armonk, N.Y.

Continuation of Ser. No. 335,067, Apr. 7, 1989, Pat. No. 5,105,069. This application Dec. 20, 1991, Ser. No. 811,415

Int. Cl.[5] G06F *15/30, 7/08;* **B25J** *11/00;* **E01B** *7/00*

U.S. Cl. 235—379 **8 Claims**



1. A self-service transaction apparatus for articles comprising:

a housing having an access port for permitting the passage of said articles between the interior of said housing and a user of said self-service transaction apparatus;

a plurality of article handling devices each mounted at a predetermined position within said housing for handling articles passed through said access port;

storage means mounted in said housing for storing a plurality of replacement handling devices;

a multi-purpose robot mounted in said housing, said robot having an article gripper including a pair of cooperating gripper jaws; and

control means mounted in said housing and connected to said robot for controlling said robot to transport at least one of said articles between said access port and at least one of said handling devices and to replace one of said handling devices at one of said predetermined positions with one of said replacement devices at said storing means.

5,184,000

AUTOMATIC CASH HANDLING SYSTEM OFFERING OPTIONAL PRINTED RECORD

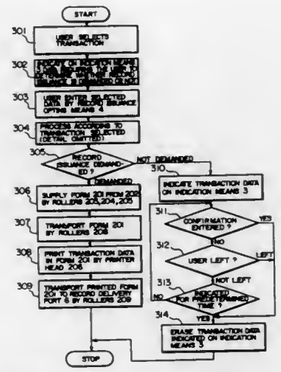
Yasunori Hamada, Tsuchiura; Junichi Oizumi, Ibaraki; Kousuke Noda, Tsuchiura, and Kunio Ushijima, Seto, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 10, 1988, Ser. No. 269,607

Claims priority, application Japan, Nov. 13, 1987, 62-285383

Int. Cl.[5] G06F *15/30, 3/12, 3/14*

U.S. Cl. 235—379 **5 Claims**



1. An automatic cash handling system for handling cash transactions with the user by use of a privately-held cash card, comprising:

means for issuing a record such as a transaction statement;

record issuance opting means for allowing the user to indicate whether the user demands record issuance before the cash handling system starts executing a processing in accordance with a transaction designated by the user;

indication means for indicating transaction data when the cash handling system starts the processing and the user relinquishes the demand for record issuance;

input means for allowing the user to enter confirmation data for confirming the transaction data indicated on the indication means;

function selecting means for selectively enabling or disabling said record issuance opting means; and

control means for controlling said issuing means, said record issuance opting means, said indication means, said input means and said function selecting means.

5,184,001

SYSTEM FOR REMOTE INFORMATION INTERCHANGE BETWEEN A PORTABLE OBJECT AND A STATION

Philippe Levionnais, Caen, France, assignor to Etat Francais, Ministre des Postes, des Telecommunications et de l'Espace (Centre National d'Etudes des Telecommunications), Issy-les-Moulineaux, France

Continuation of Ser. No. 452,633, Dec. 18, 1989, Pat. No. 5,083,013. This application Jul. 11, 1991, Ser. No. 728,639

Claims priority, application France, Dec. 16, 1988, 88 16672

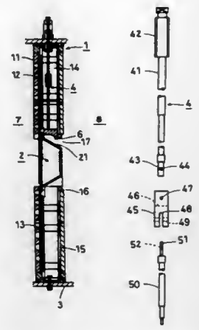
The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.

Int. Cl.[5] G06K *7/08*

U.S. Cl. 235—449 **10 Claims**

1. A station for use with a portable object inductively coupled thereto, comprising:

an oscillator including a feedback loop having a station inductor element therein and suitable for conferring a working frequency thereto which is variable relative to a rest frequency; a station processor means connected to the oscillator and capable of processing variations in the working frequency; said oscillator having characteristics such that, when the portable object becomes inductively



coupled to the station inductor element, variations will be produced in the working frequency of the oscillator capable of being processed by the station processor means.

5,184,002

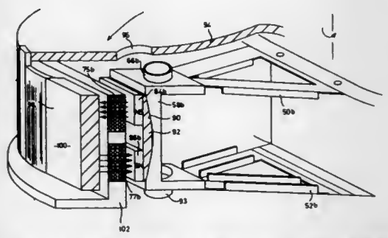
OPTICAL SCANNER

Ching Chu, Mississauga, Canada, assignor to Optical Recording Corporation, Toronto, Canada

Continuation of Ser. No. 440,695, Nov. 24, 1989, abandoned. This application Jul. 26, 1991, Ser. No. 735,669

Int. Cl.[5] G06K *7/10, 7/14, 7/00;* **G11B** *7/00*

U.S. Cl. 235—454 **31 Claims**



1. An optical scanner having a stationary housing, a scanner assembly continuously rotatable in said housing about an axis of rotation and having a plurality of mounting members uniformly distributed about the axis of rotation and each carrying an optical element at a location spaced from the rotational axis of said assembly to cause each said optical element to move in a circular path relative to the housing and pass periodically across and scan a record, each of said mounting members being flexible to permit movement of the respective optical element in a direction parallel to the axis of rotation, and electromagnetic drive means including a coil secured to said stationary housing and, when energized, to produce an electromagnetic field in said coil by regulating current flowing through said coil, said electromagnetic field operable upon respective ones of said mounting members to control flexure of said respective ones of said mounting members as the optical element associated therewith passes over said record to thereby focus a light beam on said record.

5,184,003

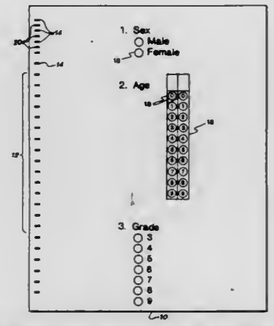
SCANNABLE FORM HAVING A CONTROL MARK COLUMN WITH ENCODED DATA MARKS

John V. McMillin, Iowa City, and Jay V. Clark, West Liberty, both of Iowa, assignors to National Computer Systems, Inc., Eden Prairie, Minn.

Continuation of Ser. No. 444,869, Dec. 4, 1989, abandoned. This application Jan. 24, 1992, Ser. No. 826,264

Int. Cl.[5] G06K *7/14;* **G09B** *7/00*

U.S. Cl. 235—454 **22 Claims**



1. A scannable form for use in an optical mark reading system with optical sensing means of the type wherein sensing the presence or absence of response marks placed by a respondent in predetermined response areas on the form is triggered by sensing of a sequence of scan control marks associated with the predetermined response areas, comprising:

a generally rectangular sheet of material;

at least one column of control marks located on said sheet and oriented substantially parallel with an edge of said rectangular sheet comprising a plurality of spaced scan control marks defining data mark areas located between adjacent scan control marks nd aligned within the column of control marks;

at least one response area on said sheet associated with one of said scan control marks comprising a plurality of response bubbles in a specified rotation with said scan control mark; and

a plurality of data marks located on said sheet in said data mark areas aligned within the control mark column, said data marks comprising optically scannable marks that represent encoded data information that is known or determined prior to a respondent completing said scannable form by marking one or more of said response bubbles, such that said data marks will be scanned and decoded by the optical mark reading system during the scanning of said control mark column.

5,184,004

OPTICAL CODE READER

Shuji Ueda, Neyagawa, and Shoro Mochida, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 27, 1989, Ser. No. 344,089

Claims priority, application Japan, Apr. 28, 1988, 63-106320

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—462 **4 Claims**

1. An optical code reader comprising:

an optical member having

a transparent cylindrical member,

a flat mirror formed on one end face of said transparent cylindrical member, having a reflection surface which faces toward an inside of said transparent cylindrical member,

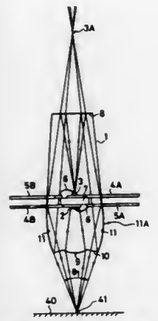
VOL
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a convex lens for converging light reflected from a code to be read, formed on a central portion of the other end face of said transparent cylindrical member which in operation is adapted to face said code to be read,

a ring-shaped transparent portion located surrounding said convex lens at an outer peripheral portion of said convex lens,

a light interrupting plate attached to said cylindrical member,

a light emitting device for emitting light toward said flat mirror and away from said code, mounted interior to said transparent cylindrical member on a first surface of said plate,



an elliptical mirror formed on a side face of said transparent cylindrical member having a reflection surface facing an inside of said member and located to have a focal point where said code is adapted to be located,

said elliptical mirror receiving light from said light emitting device, reflected by said flat mirror, and converging said light to said focal point through said transparent portion, and

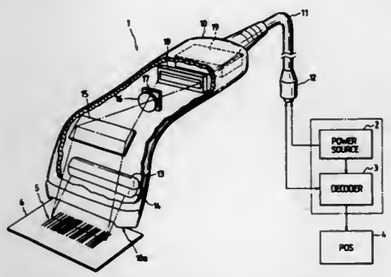
a light receiving device placed behind said light emitting device, on the other surface of said plate, said light receiving device mounted on the interior of said transparent cylindrical member and facing said other end face, for receiving light reflected by said code through said convex lens.

5,184,005

NON-DECODED TYPE BAR CODE READING APPARATUS

Naoki Ukai, Okazaki, and Koji Mori, Oobu, both of Japan, assignors to Nippondenso Co. Ltd., Kariya, Japan

Filed Jan. 7, 1991, Ser. No. 637,706
Claims priority, application Japan, Jan. 8, 1990, 2-2077
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—472 **19 Claims**



1. A bar code reading apparatus for optically reading a bar code to output as bar code information a digital signal indicating widths of successively alternately arranged bars and spaces of said bar code with its high-level durations and low-level separations to a decoder for decoding said digital signal indicative of said bar code information, said apparatus comprising:

a hand-operable housing;

producing means for producing an image of said bar code within said housing;

sensor means encased in said housing and equipped with a plurality of picture elements one-dimensionally arranged, for converting said image of said bar code into an electric signal at every picture element and for successively outputting said electric signals corresponding to said bar code;

signal processing means provided in said housing for smoothing said electric signal output from said sensor means at every picture element and for converting said electric signals into a digital signal, said digital signal having alternate high-level portions and low-level portions, said portions having time periods corresponding to said widths of said bars and spaces of said bar code;

width data producing means encased in said housing and responsive to said digital signal from said signal processing means, for producing a plurality of width data indicating said widths of said bars and spaces of said bar code on the basis of said high-level time periods and low-level time periods of said digital signal from said signal processing means;

memory means encased in said housing for successively storing said plurality of width data produced by said width data producing means;

classifying means encased in said housing for classifying said plurality of width data stored in said memory means into a plurality of groups;

correction means encased in said housing for correcting said plurality of width data so as to narrow scattering of said width data in each of said groups classified by said classifying means and for outputting corrected width data;

digital signal reproducing means encased in said housing for reproducing a digital signal having alternate high-level portions and low-level portions, said portions having time periods corresponding to said corrected width data output by said correction means; and

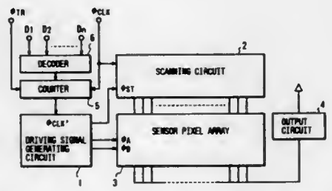
signal outputting means encased in said housing for outputting said digital signal reproduced by said reproducing means to decoder located external to said housing.

5,184,006

PHOTOELECTRIC CONVERSION APPARATUS HAVING CLOCK SIGNALS OF DIFFERENT FREQUENCIES

Isamu Ueno, Atsugi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1991, Ser. No. 688,276
Claims priority, application Japan, Apr. 23, 1990, 2-105181; Apr. 23, 1990, 2-105182
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **10 Claims**



1. Photoelectric conversion apparatus comprising:

photoelectric conversion sensor unit having a plurality of photoelectric conversion sensors;

driving signal generating means for outputting a control signal for a photoelectric converting operation of said photoelectric conversion sensor unit; and

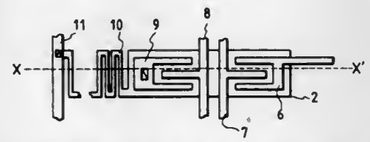
scanning means for outputting a control signal to output a photoelectrically converted signal from said photoelectric conversion sensor unit, wherein a first clock signal inputted into said driving signal generating means and a second clock signal inputted into said scanning means are independently provided.

5,184,007

METHOD OF DRIVING A THIN FILM TRANSISTOR TYPE OPTICAL SENSOR AND THE DRIVE UNIT

Toshihiro Saika, Zama; Isao Kohayashi, Sagamihara; Noriyuki Kaifu, Yokohama, and Tadao Endo, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1991, Ser. No. 675,336
Claims priority, application Japan, Mar. 27, 1990, 2-78405
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 **27 Claims**



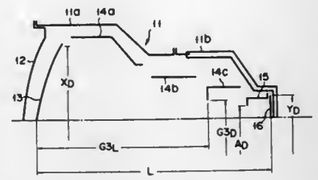
1. A method of driving a thin film transistor type optical sensor, comprising a gate electrode, a gate insulating layer, a thin film semiconductor layer, an ohmic contact layer, a source electrode and a drain electrode, said method comprising the step of driving the thin film transistor type optical sensor by providing the gate electrode with one of a threshold voltage for a thin film transistor provided adjacent to the thin film transistor type optical sensor and a voltage lower than said threshold voltage.

5,184,008

X-RAY IMAGING TUBE WITH SPECIFIC POSITIONAL AND SIZE RELATIONSHIP OF ELEMENTS

Keiichi Saito; Shigeharu Kawamura, both of Ootawara; Syozo Sato, Sagamihara, and Kiyohito Kawasumi, Kofu, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 10, 1991, Ser. No. 772,911
Claims priority, application Japan, Oct. 12, 1990, 2-272215
Int. Cl.[5] H01J *31/50*
U.S. Cl. 250—214 VT **3 Claims**



1. An X-ray imaging tube comprising:

a vacuum envelope, an input screen located in the input end of said envelope;

an output screen located in the output end of said vacuum envelope;

an anode located in the output end of said vacuum envelope; and

a plurality of beam-converging electrodes located in said vacuum envelope and arranged along the inner surface of said vacuum envelope,

wherein said components have specific positional relationship and particular sizes, thus satisfying the following relations:

$$3.5 \leqq G3_D/A_D \leqq 5.0$$

$$-3.65 \times MAG + 1.00 \leqq G3_L/L \leqq -3.65 \times MAG + 1.05$$

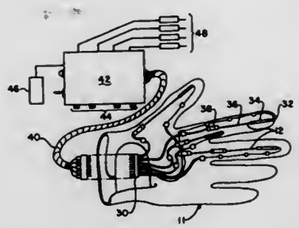
where L is the distance between said input and output screens, A_D is the inside diameter of said anode or that one of said beam-converging electrodes set at the same potential as said anode, which is located closer to said input screen than any other beam-converging electrodes set at the same potential as said anode, $G3_D$ is the inside diameter of that one of beam-converging electrodes set at potential of at least 2 KV, which is located closer to said input screen than any other electrode set at potential of at least 2 KV, $G3_L$ is the distance between said input screen and the electrode set at at least 2 KV and located closer to said input screen than any other electrode set at at least 2 KV, and MAG is the image-reducing ratio, i.e., (output-image diameter)/(maximum input effective diameter) of the X-ray imaging tube.

5,184,009

OPTICAL ATTENUATOR MOVEMENT DETECTION SYSTEM

Scott M. Wright, and Raymond E. Wright, both of 69 Lakewood Dr., Mineral City, Ohio 44656

Continuation-in-part of Ser. No. 335,833, Apr. 10, 1989, Pat. No. 4,972,074. This application Apr. 6, 1990, Ser. No. 505,563
The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.11 **22 Claims**



1. An optical detection system comprising:

light emitting means positioned in a first conduit so as to emit light into said first conduit,

light detecting means positioned in said first conduit adapted to receive light emitted into said first conduit by said light emitting means,

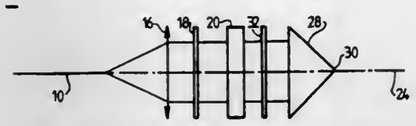
wherein the relative longitudinal distance that said light emitted into said first conduit travels between said light emitting means and said light detecting means is varied within said conduit in proportion to a variable to be detected.

VOL 1147 ISS 1 FEB 2 1993 UMI

5,184,010
SPECTRUM MODULATION ENCODING SENSOR SYSTEM FOR REMOTELY DETECTING A PHYSICAL MAGNITUDE, AND OPERATING BY REFLECTION

Michel Lequime, Eguilles, France, assignor to Bertin & Cie, Plaisir, France

PCT No. PCT/FR91/00015, § 371 Date Sep. 5, 1991, § 102(e) Date Sep. 5, 1991, PCT Pub. No. WO91/10880, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 11, 1991, Ser. No. 752,699
Claims priority, application France, Jan. 12, 1990, 90 00317
Int. Cl.[5] H01J 5/16
U.S. Cl. 250—227.21 11 Claims

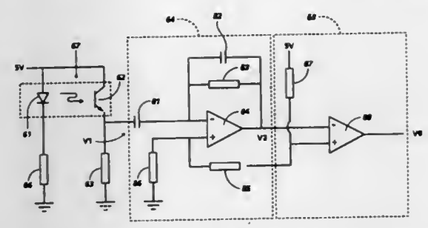


1. A system for remotely detecting a physical magnitude and operating by reflection, the system making use of the principle of encoding light by spectrum modulation, and comprising a source of incoherent light connected by an optical fiber to a sensor which has an optical axis and which comprises, successively on said optical axis, a collimator lens, a first polarizer, a birefringent sensitive component subjected to the physical magnitude to be measured, a second polarizer and a catadioptric reflection means, said catadioptric reflection means reflecting the light in a direction parallel to the direction of the incident light, the birefringent sensitive component having slow and fast axes, and the first and second polarizer having light-passing directions which are inclined relative to the said slow and fast axes of the birefringent sensitive component.

5,184,011
LINEAR ENCODER FOR DIGITAL PRINTING APPLICATIONS

Fred F. Hubble, III, Rochester; John M. Mitchell, Jr., Henrietta, and James P. Martin, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1991, Ser. No. 635,837
Int. Cl.[5] G01D 5/34
U.S. Cl. 250—231.14 10 Claims

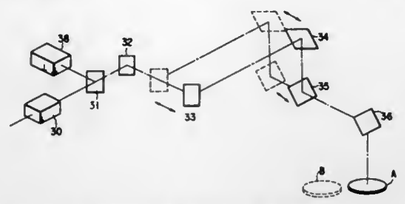


1. A printhead encoder including a scanning nip for achieving pixel to pixel registration when scanning a medium to be imprinted comprising:
- means for providing a sensing beam;
- means for causing interruptions in the sensing beam when scanning the medium to be imprinted;
- means for detecting the interruptions and for producing a first voltage pattern based on the interruptions; and
- means for outputting a second voltage pattern which is triggered at zero slope points of the first voltage pattern.

5,184,012
OPTICAL SCANNING APPARATUS WITH AXIS DEVIATION CORRECTION

Mitsunori Yamamoto, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1991, Ser. No. 813,813
Int. Cl.[5] H01J 3/14
U.S. Cl. 250—234 14 Claims

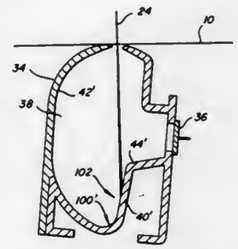


1. An optical scanning apparatus comprising:
- a light source;
- a converging lens for converging a beam emitted by said light source and forming a beam spot on an object;
- first deflecting means, movably arranged in an optical path and between said light source and said converging lens, for continuously changing an angle of the beam going out therefrom, thereby causing the beam spot formed on the object to move in a first direction;
- second deflecting means, movably arranged in the optical path and between said first deflecting means and said converging lens, for continuously changing an angle of the beam going out therefrom thereby causing the beam spot formed on the object to move in a second direction; and
- correcting means, arranged in the optical path and between said light source and said first deflecting means, for correcting deviation of an optical axis due to the movement of said first and second deflecting means,
- wherein at least one of said first and second deflecting means is moved so that a conjugate plane with respect to a pupil of said converging lens is located at a desired portion between said first and second deflecting means.

5,184,013
DIFFUSE LIGHT COLLECTOR WHICH MINIMIZES STREAK ARTIFACTS

John C. Boutet, and Thomas E. Kocher, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 22, 1991, Ser. No. 733,800
Int. Cl.[5] H01J 3/14; G01J 1/04
U.S. Cl. 250—236 3 Claims

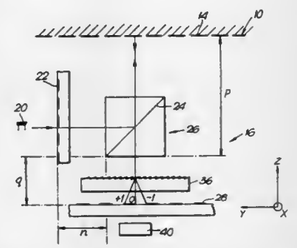


1. In a laser scanning apparatus, including means for scanning a laser beam across a substantially horizontally directed scanning region and means for translating an information medium through said scanning region, a diffuse light collector located below and adjacent to said scanning region for receiving light transmitted through said information medium, said collector comprising:
- a horizontally disposed, hollow collector member extending the length of said scanning region, having diffusely reflecting interior surfaces forming a diffusely reflecting light cavity and having an elongated slot adjacent to said laser scanning region for receiving light from said information medium into said cavity, wherein said hollow member has a slanted light impingement opposite said slot and a lower region below said face, whereby dirt which falls into said cavity through said slot, cascades off of said face into said lower region; and
- a photodetector communicating with said collector cavity for detecting light received into and diffusely reflected by said light cavity.

5,184,014
OPTO-ELECTRONIC SCALE READING APPARATUS

William F. N. Stephens, Badminton, and Stephen E. Lummes, Stroud, both of United Kingdom, assignors to Renishaw plc, Gloucestershire, United Kingdom

Filed Oct. 30, 1991, Ser. No. 785,090
Claims priority, application United Kingdom, Oct. 31, 1990, 9023659
Int. Cl.[5] H01J 3/14
U.S. Cl. 250—237 G 7 Claims

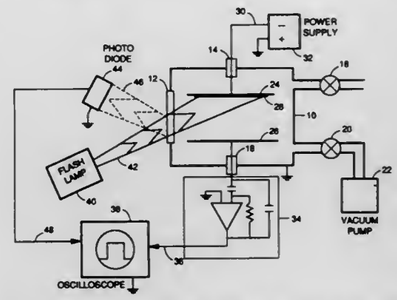


1. Opto-electronic scale reading apparatus comprising a reflective scale defined by a series of spaced-apart lines, and a readhead movable relative to the scale in the direction of spacing of the lines, the readhead comprising: an index grating; an analyser, the index grating and analyser occupying spatially distinct positions; a light source for illuminating the scale via the index grating, thereby to generate a periodic light pattern in the plane of the analyser, and a modulation of light intensity upon relative movement of the scale and readhead; means for generating from said intensity modulation a plurality of phase-shifted electrical signals, each signal having a frequency corresponding to the frequency of said modulation;
wherein:
means are provided for directing the light
- a) along a first path from the index grating to an intersection point;
- b) from the intersection point, to the scale and back to the intersection point along a common path in a direction substantially perpendicular to the scale; and
- c) from the intersection point to the analyser, along a second path.

5,184,015
CHARGED PARTICLE MOBILITY REFRIGERANT ANALYZER

Steve L. Allman; Chung-Hsuan Chen, and Fang C. Chen, all of Knoxville, Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Sep. 27, 1991, Ser. No. 766,542
Int. Cl.[5] B01D 59/44; H01J 49/00
U.S. Cl. 250—282 5 Claims

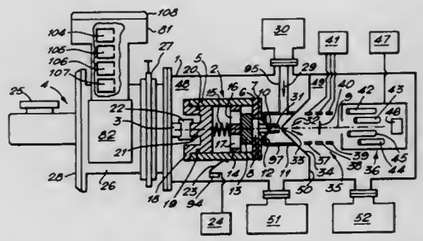


1. A method for determining the makeup of a mixture of known refrigerants comprising the steps of:
- providing an analysis chamber;
- providing an electric field of known potential within said analysis chamber;
- admitting into said analysis chamber a gaseous sample containing a mixture of known refrigerants;
- providing a pulse of free electrons within said electric field so that said pulse of free electrons interacts with said mixture so that a swarm of electrically charged particles is produced within said electric field;
- measuring the mobility of said electrically charged particles within said electric field; and,
- comparing said measurement to data obtained from mixtures of said refrigerants having known makeup.

5,184,016
GLOW DISCHARGE SPECTROMETRY

Gerard A. Ronan, Manchester, and Alistair Cole, Chester, both of England, assignors to VG Instruments Group Limited, Uxbridge, England

Filed Jan. 10, 1991, Ser. No. 639,802
Claims priority, application United Kingdom, Jan. 10, 1990, 9000547
Int. Cl.[5] H01J 37/08, 49/26
U.S. Cl. 250—288 23 Claims



1. A spectrometer for the analysis of a solid sample, said spectrometer comprising a discharge chamber into which a discharge gas may be introduced, means for maintaining a glow discharge in said discharge chamber adjacent to a said solid sample, and means for analyzing emission from said glow

VOL 1147 ISS 1 FEB 2 1993 UMI

discharge which is characteristic of said solid sample, wherein there is also provided a unitary source assembly engagable with said discharge chamber and wherein:

a) said unitary source assembly comprises first electrode means against which a said solid sample may be mounted and second electrode means which provide the engagement between said unitary source assembly and said discharge chamber;

b) said unitary source assembly is removable from engagement with said discharge chamber to facilitate introduction of a said solid sample; and

c) said means for maintaining a glow discharge comprises means for maintaining a potential difference between said first and said second electrode means when said unitary source assembly is engaged with said discharge chamber.

5,184,017

METHOD AND APPARATUS FOR DETECTING A COMPONENT GAS IN A SAMPLE

Edward L. Tury, Brighton, Mich.; Keith Kaste; Ross E. Johnson, both of San Luis Obispo, Calif., and David O. Danielson, Gregory, Mich., assignors to Sensors, Inc., Saline, Mich.

Division of Ser. No. 406,041, Sep. 12, 1989, Pat. No. 5,060,505.
This application Aug. 19, 1991, Ser. No. 746,939
Int. Cl.[5] G01N *21/61*
U.S. Cl. 250—343 **16 Claims**

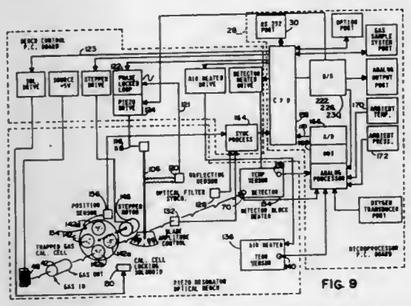


FIG. 9

1. An apparatus for detecting a component as in a sample comprising:

a sample chamber for containing a sample gas including the component gas to be detected;

source means for directing infrared radiation through the sample chamber in a preselected spectral band;

detector means responsive to radiation incident thereon in the preselected spectral band passing through the sample chamber from the source means for producing a detector output;

signal processing means responsive to said detector output for indicating the relative concentration of the component gas to be detected, said signal processing means including

a circuit having first and second inputs and adapted to producing a difference output that is the difference between a signal provided to said first input and a signal provided to said second input;

first means for concurrently applying said detector output to said first input and a zero-value signal to said second input with substantially nonabsorbent gas filling the sample chamber to produce an offset value on said difference output;

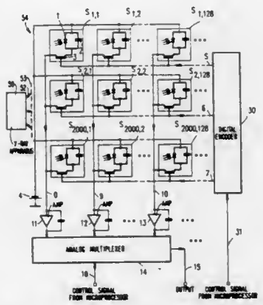
second means for concurrently applying both said detector output to said first input and said offset value to said second input with a sample gas including a component gas to be detected filling said sample chamber thereby producing a difference output that indicates the relative concentration of said component gas.

5,184,018

SENSOR MATRIX

Norbert Conrads, Hauset, Belgium; Ulrich Schiebel, and Herfried Wieczorek, both of Aachen, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 23, 1991, Ser. No. 644,713
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1990, 4002431
Int. Cl.[5] H04N *5/32*; G01T *1/24*
U.S. Cl. 250—370.09 **15 Claims**



1. A radiation sensor device comprising:

an array of radiation sensors arranged in rows and columns in a matrix, said sensors each generating a charge the magnitude of which is in dependence upon the amount of incident radiation on that sensor;

a plurality of electric switches, each associated with a different sensor, said sensors and switches each comprising thin film elements;

a plurality of switch control lines, each line corresponding to a different row for receiving an applied switch activate signal for activating the switches of that row to simultaneously output the charges of the sensors corresponding to the relevant activated switches of a sensor row;

a plurality of parallel read lines for receiving the outputted charges;

transfer means for converting the outputted charges on said read lines into a serial signal; and

an amplifier comprising a crystalline semiconductor coupled to each read line preceding said transfer means for amplifying the outputted charges on the corresponding read line.

5,184,019

LONG RANGE ALPHA PARTICLE DETECTOR

Duncan W. MacArthur; Michael A. Wolf; James L. McAtee; Wesley P. Unruh; Alfred L. Cucchiara, and Roger L. Huchton, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 494,286, Mar. 16, 1990, abandoned. This application Jun. 3, 1991, Ser. No. 709,566
Int. Cl.[5] H01J *47/02*
U.S. Cl. 250—380 **18 Claims**

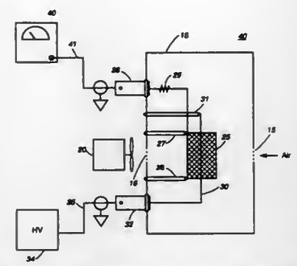
1. An alpha particle detector that operates by detecting air ions created by collisions with alpha particles comprising:

an electrically conductive enclosure defining first and second openings for admitting and exhausting air;

two or more electrical conductors insulatively mounted inside said enclosure;

means for generating a voltage in one of said electrical conductors, creating an electric field between said two or more electrical conductors;

fan means mounted outside said enclosure adjacent to said second opening for drawing air containing said air ions through said first opening in said enclosure and across said electric field between said two or more electrical conductors; and



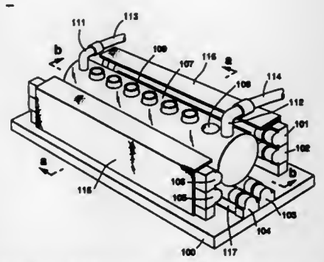
detecting means connected to another one of said two or more electrical conductors for indicating a current through said another one of said two or more electrical conductors produced by said air ions.

5,184,020

DEVICE AND METHOD FOR PHOTOACTIVATION

David P. Hearst, 1747 29th Ave., San Francisco, Calif. 94122; George D. Cimino, 1435 Liberty St., El Cerrito, Calif. 94530; John E. Hearst, 101 Southampton Ave., Berkeley, Calif. 94707, and Stephen T. Isaacs, 79 Loma Vista Dr., Orinda, Calif. 94563

Filed Oct. 26, 1989, Ser. No. 428,510
Int. Cl.[5] G01N *21/85*
U.S. Cl. 250—455.11 **33 Claims**



1. A photoactivation device for treating photoreactive compounds, comprising:

a) means for continuously flowing sample liquid containing photoreactive compound;

b) means for providing appropriate wavelengths of electromagnetic radiation in a fixed relationship with said continuous flowing means for cause activation of at least one photoreactive compound; and

c) means for maintaining the temperature of said continuously flowing sample liquid within a desired temperature range during said activation.

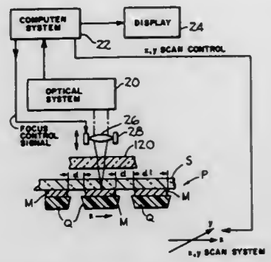
5,184,021

METHOD AND APPARATUS FOR MEASURING THE DIMENSIONS OF PATTERNED FEATURES ON A LITHOGRAPHIC PHOTOMASK

Ian R. Smith, Los Gatos, Calif., assignor to SiScan Systems, Inc., Campbell, Calif.

Filed Jun. 24, 1991, Ser. No. 719,519
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—560 **18 Claims**

1. A method for measuring the dimensions of the patterned features on a lithographic photomask comprising the steps of placing the photomask in a position to be viewed by an optical microscope using reflected light so that the unpatterned substrate side of the photomask is in a position facing the microscope, and obtaining reflectivity information at various points on the patterned layer of the photomask so as to provide information indicative of the dimensions of the features in the patterned layer of the photomask.

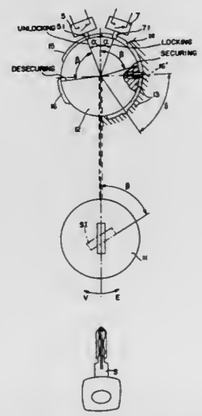


5,184,022

CENTRAL LOCKING SYSTEM AND SECURING DEVICE AND METHOD FOR CONTROLLING SAME

Klaus Claar, Gechingen; Hans Deischl, Jettingen; Martin Lindmayer, Böblingen; Jürgen Moczygemba, Lichtenstein; Jergen Schrader, Stuttgart; Josef Schumacher, Rentlingen; Claus Töpfer, and Peter Robitschko, both of Sindelfingen, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed Feb. 21, 1991, Ser. No. 658,678
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1990, 4006122
Int. Cl.[5] E05B *65/20*
U.S. Cl. 307—10.2 **16 Claims**



1. Method for electrically controlling a central locking system and a securing device for motor vehicles which have at least one lock cylinder with at least two associated control switches, wherein for the electrical control of the unlocking or locking of the central locking system and the disabling or enabling of the securing device, the lock cylinder is pivotable by means of a key out of a neutral position in an unlocking direction or oppositely in a locking direction and at least beyond a regular locking position by further pivoting in the locking direction into a securing position for enabling the

VOL
1147
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securing device, said securing device providing for additional mechanical blocking of locked closures by being enabled and disabled by means of signals generated by the two control switches, the method comprising:

controlling the central locking system respectively in the unlocking direction by actuating an unlocking one of the associated control switches and in the locking direction by actuating a locking one of the associated control switches;

successively actuating the two control switches during the pivoting of the lock cylinder into the securing position wherein the two control switches are in a joint switching state immediately following the successive actuation of the two control switches during the pivoting of the lock cylinder into the securing position;

evaluating the joint switching state for enabling the securing device;

disabling the securing device by actuating the unlocking one of the associated switches.

5,184,023

SELF-CONTAINED ANTI-THEFT DEVICE FOR MOTOR VEHICLES

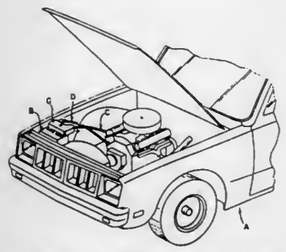
Louis D. Carlo, Cleveland, and Joey B. Adkins, Northfield, both of Ohio, assignors to James E. Winner, Sharon, Pa.

Continuation of Ser. No. 572,684, Aug. 27, 1990, Pat. No. 5,132,551, which is a division of Ser. No. 564,702, Dec. 23, 1983, Pat. No. 4,958,084. This application Dec. 26, 1991, Ser. No. 813,596

The portion of the term of this patent subsequent to Sep. 18, 2007, has been disclaimed.

Int. Cl.[5] B60R *25/04*

U.S. Cl. 307—10.3 **2 Claims**



1. An anti-theft device connected or attached to a standard battery of a motor vehicle having normal electrical components and a starting circuit including a starter, said battery providing a low level of current to operate said normal electrical components when said vehicle is operated and a high level of current to operate said starter, said anti-theft device comprising a switching means having a first position electrically connecting one of said battery's electrodes with said starting circuit, and a second position electrically disconnecting one of said battery's electrodes from said starting circuit, detector means for detecting flow of current across said battery's electrodes when greater than a preselected value which is greater than said low level, and means for shifting said switching means to said second position only upon detection of said preselected value of current flow and timing means for deactivating said shifting means for a known time upon receipt of a specific external command signal.

5,184,024

APPARATUS TO REGULATE THE ILLUMINATION RANGE OF A MOTOR VEHICLE

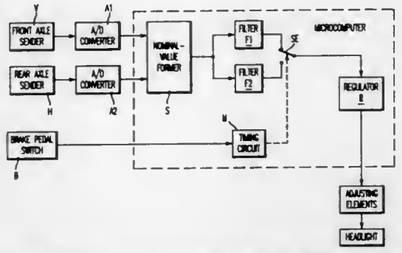
Micha Hussmann, Lippstadt, and Joachim Hufnagel, Menden, both of Fed. Rep. of Germany, assignors to Hella KG Hueck & Co., Lippstadt, Fed. Rep. of Germany

Filed Jul. 30, 1991, Ser. No. 737,724

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1990, 4024912

Int. Cl.[5] B60L *1/14;* **B60Q** *1/115*

U.S. Cl. 307—10.8 **2 Claims**



1. Apparatus to regulate the illumination range of a motor vehicle having a front axle sender at a front wheel axle and a rear axle sender at a rear wheel axle whose output signals are a function of the relative position of a motor vehicle body to the wheel axles, having a nominal-value former which forms nominal-value signals indicative of a difference between the signals from the front axle sender and the rear axle sender, having a first filter including an average-value former which, in dependence upon a first filter time constant of the first filter, forms filtered nominal-value signals from the nominal-value signals of the nominal-value former, and having a regulator which regulates adjusting elements for adjustment of positions of headlights, wherein the improvement that the apparatus further includes a second filter, the nominal-value former is coupled with the first filter and the second filter, the second filter has a second filter time constant which is shorter than the first filter time constant of the first filter, the regulator is coupled to the first filter or the second filter by a switch-over device, the switch-over device is controllable by a signal from a brake-pedal switch, and the brake pedal switch is coupled with a timing circuit whose output signals control the switch-over device.

5,184,025

COMPUTER-CONTROLLED UNINTERRUPTIBLE POWER SUPPLY

Patrick W. McCurry, Keizer; James R. Kellogg, Medford; Karl Boekelheide, Tigard; Kenneth D. Sexton; George A. Ellison, both of Salem, and Robert A. Hocker, Molalla, all of Oreg., assignors to Elegant Design Solutions, Inc., Salem, Oreg.

Continuation of Ser. No. 638,454, Jan. 4, 1991, abandoned, which is a continuation of Ser. No. 270,715, Nov. 14, 1988, Pat. No. 5,019,717. This application Oct. 1, 1991, Ser. No. 771,781

Int. Cl.[5] H02J *7/00;* **H02M** *3/335*

U.S. Cl. 307—66 **4 Claims**

1. A power supply system comprising:

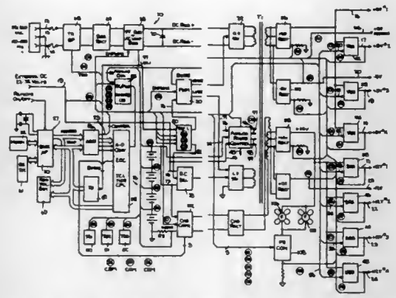
DC input means for providing a DC power signal to the system:

means for rectifying an ac power signal, when one is supplied to said system, and providing a rectified signal;

first regulating means for regulating said rectified signal and providing a first regulated DC signal, said first regulating means including a first switch mode regulator;

second regulating means for regulating a DC signal and providing a second regulated DC signal, said second regulating means including a second switch mode regulator having a switching frequency;

control means for causing either said DC power signal or said first regulated signal, when both said DC power signal and said AC power signal are supplied and one of them when only one of them is supplied, to be coupled to



the second regulating means; said control means being settable to cause a preselected one of said DC power signal and said first regulated signal to be coupled to said second regulating means when both said DC power signal and said AC power signal are supplied.

5,184,026

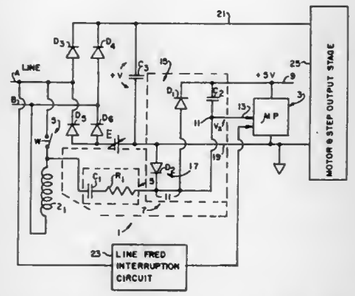
ISOLATION CIRCUIT FOR DETECTING THE STATE OF A LINE CONNECTED SWITCH

Ciaran S. O Breartuin, Clayton, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 19, 1990, Ser. No. 630,014

Int. Cl.[5] H02J *13/00*

U.S. Cl. 307—139 **7 Claims**



1. Un an apparatus having a switch operatively connected to a power line, the status of the switch being used to determine operational requirements for the apparatus, the apparatus including a microprocessor for determining an operational sequence for said apparatus in response to the status of said switch, the improvement comprising means for monitoring the status of the switch, said monitoring means including means for sensing positive and negative transitions on the power line, said sensing means having an input side electrically operatively connected to the switch and an output side, means for converting the sensed transitions into a rectangular wave form, said converting means having an input side connected to the output side of said sensing means and an output side connected to the microprocessor, said sensing means detecting the status of the switch by sensing a phase shift at the switch as an indication of the switch status.

5,184,027

CLOCK SIGNAL SUPPLY SYSTEM

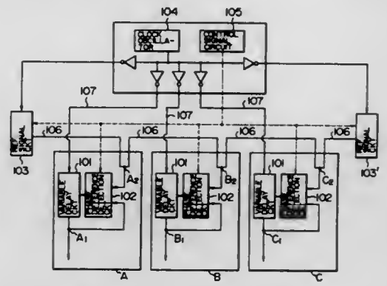
Noboru Masuda, Kokubunji; Ryotaro Kamikawai, Tokyo; Masayoshi Yagyu, Kokubunji; Masakazu Yamamoto; Hiroyuki Itoh, both of Kodaira, and Tatsuya Saito, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 152,916, Feb. 5, 1988, abandoned. This application Apr. 22, 1991, Ser. No. 688,696

Claims priority, application Japan, Mar. 20, 1987, 62-63782; Jun. 8, 1987, 62-141459; Jun. 8, 1987, 62-141460

Int. Cl.[5] H03K *5/00, 5/13*

U.S. Cl. 307—269 **21 Claims**



1. A clock signal supply system comprising:

a clock signal oscillator producing a clock signal;

a plurality of first means for receiving said clock signal applied thereto, said clock signal having an associated phase, and each of said first means further including means for adjusting the phase of the clock signal and producing an output of phase-adjusted clock signals from the received clock signal;

a plurality of first signal lines for transmitting the clock signals produced from the clock signal oscillator to each of the first means;

second means for generating a reference signal in predetermined relationship wit the clock signals produced from the clock signal oscillator, said second means including a first reference signal circuit and a second reference signal circuit;

a pair of second signal lines connecting said first and second reference signal circuits to each of said first means and to each other, and transmitting the reference signal from the second means to each of the first means, said second means generating the reference signal in either of a first or second direction along one of said pair of second signal lines between said first and second reference signal circuits;

wherein each of said first means includes means for comparing said phase-adjusted clock signal produced form the clock signal received through an associated first signal line, with the reference signal transmitted by said one of the second signal lines, and means for adjusting the phase of the clock signal received through the first signal lie into a predetermined phase relationship with the reference signal based on the results of the comparison by said means or comparing;

further wherein a first signal produced by said first reference signal circuit is transmitted along a first one of said pair of second signal lines in a first direction, and a second signal produced by said second reference signal circuit is transmitted in a second direction, opposite to the first direction, along the other of said pair of second signal lines; and

wherein said means for comparing compares said phase-adjusted clock signal that is produced from the clock signal received through the first signal line with said first signal received through said first one of said pair of second signal lines, and compares said phase-adjusted clock signal

VOL 1147 ISS 1 FEB 2 1993 UMI

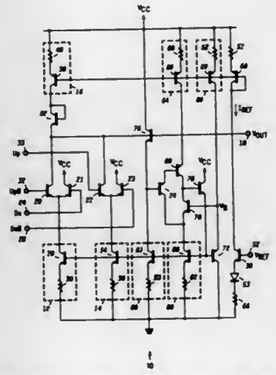
produced from the clock signal received through the first signal line with said second signal received through the second one of said pair of second signal lines, thereby to adjust the phase of the clock signal in such a manner to attain a predetermined phase relationship between the clock signal received through said first signal line and said first and second signals received through said pair of second signal lines respectively.

5,184,028

CURRENT COMPENSATING CHARGE PUMP CIRCUIT

Don W. Zobel, Miami, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 15, 1992, Ser. No. 898,998
Int. Cl.[5] H03K *3/01, 5/22*
U.S. Cl. 307—270 **7 Claims**



1. A charge pump circuit (**10**) for providing an output voltage (V_{OUT}) at an output terminal (**18**), comprising:

a reference circuit responsive to a reference voltage (V_{REF}) for providing a reference current;

a first pull up current source (**16**) having first and second terminals and a control terminal, said first terminal of said first pull up current source being coupled to a first supply voltage terminal (V_{CC}), said control terminal of said first pull up current source being coupled to said reference circuit;

a second pull up current source (**64**) having first and second terminals and a control terminal, said first terminal of said second pull up current source being coupled to said first supply voltage terminal, said control terminal of said second pull up current source being coupled to said reference circuit;

a first pull down current source (**12**) having first and second terminals and a control terminal, said second terminal of said first pull down current source being coupled to a second supply voltage terminal (GRD), said control terminal of said first pull down current source being coupled to a bias line for applying a voltage thereto;

a second pull down current source (**14**) having first and second terminals and a control terminal, said second terminal of said second pull down current source being coupled to said second supply voltage terminal, said control terminal of said second pull down current source being coupled to said control terminal of said first pull down current source;

a third pull down current source (**86**) having first and second terminals and a control terminal, said second terminal of said third pull down current source being coupled to said second supply voltage terminal, said control terminal of said third pull down current source being coupled to said control terminal of said second pull down current source;

a first switch (**20, 21**) coupled between said first terminal of said first pull down current source and the output terminal, said first switch being responsive to a first differential input signal for alternately enabling and disabling said first pull down current source;

a second switch (**22, 23**) coupled between said first terminal of said second pull down current source and the output terminal, said second switch being responsive to a second differential input signal for alternately enabling and disabling said second pull down current source; and

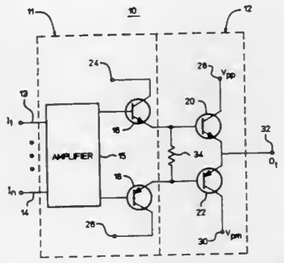
circuit means coupled to said second terminal of said first pull up current source, to the output terminal, to said second terminal of said second pull up current source, and to said first terminal of said third pull down current source for maintaining a voltage across said second pull up current source to be substantially equal to a voltage across said first pull up current source thereby allowing a current through said second pull up current source to remain substantially equal to a current through said first pull up current source due to a voltage change occurring at the output terminal.

5,184,029

DRIVER CIRCUIT FOR CIRCUIT TESTER

Philip N. King, Ft. Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 15, 1991, Ser. No. 776,108
Int. Cl.[5] H03K *3/01, 19/086*
U.S. Cl. 307—270 **15 Claims**



1. A driver circuit for providing high-speed test signals to an electronic device under test, the driver circuit comprising:

a pre-driver stage with inputs and outputs, said inputs connected to control signals, said outputs comprising actuation signals, said pre-driver stage comprising an amplifier connected to first and second switching transistors, said switching transistors capable of fast switching on and off, in and out of saturation, respectively; and

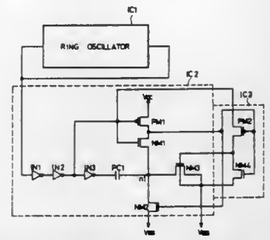
a driver stage which receives said actuation signals produced from said pre-driver stage and drives said test signals, said driver stage comprising first and second emitter follower transistors, said first emitter follower transistor coupled to said first switching transistor, said second emitter follower transistor coupled to said second switching transistor, said emitter follower transistors configured to switch on and off in a condition outside of saturation when driving said test signals.

5,184,030

BACK BIAS GENERATING CIRCUIT

Jin Y. Chung, and Deog Y. Kwak, both of Seoul, Rep. of Korea, assignors to Goldstar Electron Co., Ltd., Choongchungbook, Rep. of Korea

Filed Dec. 26, 1991, Ser. No. 813,611
Claims priority, application Rep. of Korea, Apr. 12, 1991, 5890/1991
Int. Cl.[5] H03K *3/01*
U.S. Cl. 307—296.01 **3 Claims**



1. A back bias generating circuit, comprising:

ring oscillating means for generating a signal of alternating current waveform;

back bias generating means coupled to said ring oscillating means for generating a back bias voltage;

said back bias generating means including first through third inverter gates for respectively inverting the signal from said ring oscillating means, a pumping capacitor for receiving at one terminal an output voltage from said third inverter gate, and a switching transistor having a gate and first and second conduction terminals for applying an output voltage at the other terminal of said pumping capacitor to a back bias terminal, said other terminal of said pumping capacitor being controlled, in accordance with a level of said signal from said ring oscillating means, such that said other terminal is connected to a ground terminal; and

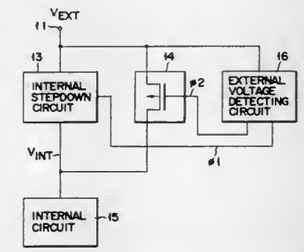
switching transistor control means for controlling a voltage to be applied between the gate and one of said conduction terminals of said switching transistor for switching said switching transistor in accordance with a level of said signal from said ring oscillating means.

5,184,031

SEMICONDUCTOR INTEGRATED CIRCUIT

Shigeyuki Hayakawa, Yokohama, and Leiichi Yanagisawa, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 7, 1991, Ser. No. 651,440
Claims priority, application Japan, Feb. 8, 1990, 2-27086
Int. Cl.[5] H03K *3/01*
U.S. Cl. 307—296.3 **23 Claims**



1. A semiconductor integrated circuit comprising:

an internal circuit having a node;

first means for receiving a supply voltage;

second means for receiving a second voltage;

voltage detecting means for detecting a value of the supply voltage;

voltage stepdown means for operating in one of

a first mode for stepping down the supply voltage to apply a voltage to the node while conducting a first amount of current through the second receiving means, and

a second mode while conducting an amount of current less than the first amount of current through the second receiving means, the voltage step down means operating in either the first mode or in the second mode in response to the voltage detecting means; and

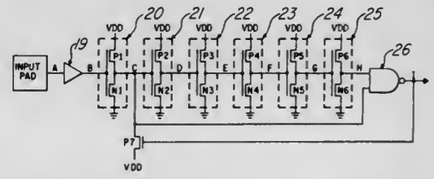
means, coupled between the first receiving means and the node and responsive to the voltage detecting means, for selectively applying a voltage to the node at times when the voltage stepdown means is operating in the second mode.

5,184,032

GLITCH REDUCTION IN INTEGRATED CIRCUITS, SYSTEMS AND METHODS

Jerald G. Leach, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 25, 1991, Ser. No. 691,266
Int. Cl.[5] H03K *17/19*
U.S. Cl. 307—443 **16 Claims**



1. An integrated circuit having a clock input pad and comprising:

a. circuitry operative in response to a clock signal having transitions, said clock transitions at said clock input pad being potentially subject to glitches; and

b. a glitch remover circuit having a logic gate having first and second inputs, said glitch remover circuit having a series of circuits coupled between said clock input pad and said first input, each one of said series of circuits having differing delays for positive signal edges than for negative signal edges, said second input coupled to the input of one of said series of circuits.

5,184,033

REGULATED BICMOS OUTPUT BUFFER

Jennifer Y. Chiao; Stephen Flannagan, and Taisheng Feng, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 20, 1991, Ser. No. 763,018
Int. Cl.[5] H03K *19/003, 19/0175;* **H03F** *3/45*
U.S. Cl. 307—446 **15 Claims**

1. A regulated BICMOS output buffer comprising:

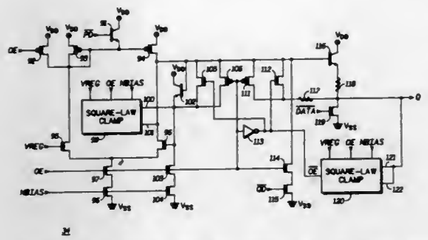
a difference amplifier for providing a first voltage signal in response to a difference between first and second input voltages, said first input voltage being a reference voltage;

a first transistor having a collector coupled to a first power supply voltage terminal, a base for receiving said first voltage signal, and an emitter coupled to a bonding pad;

a second transistor having a first current electrode coupled to said bonding pad, a control electrode for receiving a data signal, and a second current electrode coupled to a second power supply voltage terminal; and

VOL 1147 ISS 1 FE 2 1993 UMI

a third transistor having a collector coupled to said first power supply voltage terminal, a base for receiving said



first voltage signal, and an emitter for providing said second input voltage of said difference amplifier.

5,184,034

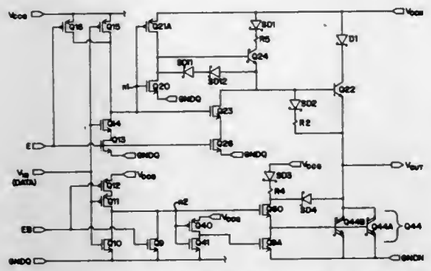
STATE-DEPENDENT DISCHARGE PATH CIRCUIT

James R. Ohannes, Portland; Stephen W. Clukey, South Portland; Ernest D. Haacke, Westbrook, and Roy L. Yarbrough, Hiram, all of Me., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Dec. 6, 1991, Ser. No. 804,906

Int. Cl.[5] H03K *19/013, 19/0952*

U.S. Cl. 307—473 **10 Claims**



1. A state-dependent-discharge-path circuit for discharging a control node of an output pullup transistor of a tristate output buffer, where said tristate output buffer comprises a data signal input and an enable signal input, wherein said data signal input is coupled to a pullup-predriver-inverter-stage, wherein said state-dependent discharge path comprises a first ground link and a second ground link wherein first ground link is coupled between said control node and a low potential power rail and comprises

(a) a first discharge transistor controlled by output of said pullup-predriver-inverter-stage and coupled in series with

(b) a breakdown-protection-voltage-drop device, and wherein said second ground link is coupled between said base node and ground and comprises

(a) a second discharge transistor controlled by output of said pullup predriver inverter stage and coupled in series with

(b) a discharge enable transistor which is controlled directly by said enable signal input.

5,184,035

BOOTSTRAP CIRCUIT INCORPORATED IN SEMICONDUCTOR MEMORY DEVICE FOR DRIVING WORD LINES

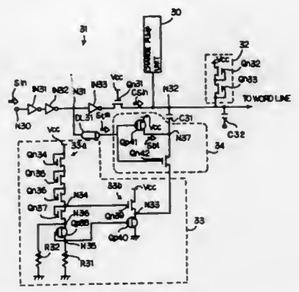
Tadahiko Sugibayashi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 8, 1991, Ser. No. 696,961

Claims priority, application Japan, May 11, 1990, 2-121752

Int. Cl.[5] H03K *19/01*

U.S. Cl. 307—482 **19 Claims**



1. A bootstrap circuit comprising

a) an input node which receives an input signal, the input node remaining in a low voltage level in the absence of the input signal;

b) an output node;

c) a bootstrap unit supplied from the input node with the input signal and including a bootstrap capacitor having first and second electrodes and a load capacitor coupled to the output node wherein the first electrode of the bootstrap capacitor is coupled to the output node and the bootstrap unit is responsive to a booting signal supplied to the second electrode of the bootstrap capacitor for bootstrapping an output voltage at the output node over a power voltage to a first predetermined level

d) a constant voltage source operative to produce a second predetermined voltage level higher than the low voltage level and lower then the booting signal; and

e) a switching unit coupled to the constant voltage source and to the bootstrap unit, said switching unit being operative to supply the booting signal to the second electrode of the bootstrap capacitor in the presence of the input signal and to feed the second predetermined voltage level to the second electrode of the bootstrap capacitor in the absence of the input signal.

5,184,036

METHOD OF LIMITING OUTPUT CURRENT FROM AN INTERFACE DRIVE CIRCUIT

Scott B. Kesler, and Mark W. Gose, both of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Aug. 9, 1991, Ser. No. 742,813

Int. Cl.[5] H03K *5/08;* **H03L** *5/00;* **H02H** *3/08*

U.S. Cl. 307—540 **4 Claims**

1. A circuit comprising:

a source of electric power;

an external resistor; and

an integrated circuit comprising

(a) a first voltage supply line having a first voltage level, VS1, coupled to the source of electric power,

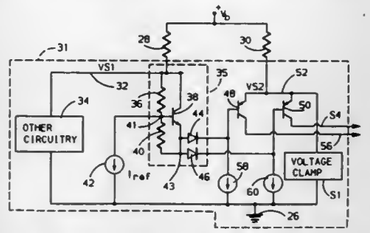
(b) a second voltage supply line having a second voltage level, VS2, coupled to the source of electric power by the external resistor, the second voltage level, VS2, varying in response to a resistor current flowing through the external resistor,

(c) an integrated circuit common ground,

(d) a drive transistor connected to the second voltage supply line and receiving power therefrom, the drive transistor having an output current controlled by a base drive current supplied to a base of the drive transistor,

(e) a control circuit coupled between the first voltage supply line and the integrated circuit ground, and

(f) means within the control circuit for limiting the base drive current in response to a variation in the resistor current and resulting variation in the second voltage level



VS2, said means limiting the base drive current by reducing the base drive current when VS1 - VS2 is equal to a predetermined value, V_{lim}, wherein

the control circuit comprises a control transistor having a collector connected to the first voltage supply line, an emitter coupled to the base of the drive transistor and a control transistor base coupled to a current source, the control transistor operable to reduce the base drive current when VS1 - VS2 equals V_{lim}.

5,184,037

MAGNETOSTRICTION TYPE ACTUATOR

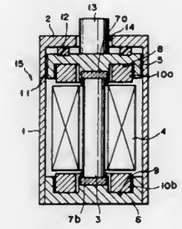
Tadahiko Kobayashi, and Masashi Sahashi, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 22, 1991, Ser. No. 659,172

Claims priority, application Japan, Feb. 23, 1990, 2-40928; Feb. 23, 1990, 2-40929; Feb. 23, 1990, 2-40930; Mar. 30, 1990, 2-83220

Int. Cl.[5] H01L *41/12*

U.S. Cl. 310—26 **15 Claims**



1. A magnetostriction type actuator comprising:

displacement generating means formed of a magnetic substance having magnetostriction;

a movable member fixed to said displacement generating means, which movable member is movable in the direction of displacement of said displacement generating means;

magnetic field generating means, provided around said displacement generating means, for applying a magnetic field to said displacement generating means;

a magnetic circuit component for constituting, along with said movable member, a main part of a closed magnetic circuit, within which magnetic circuit component said displacement generating means and said magnetic field generating means are stored; and

an elastic member, disposed within said magnetic circuit component, for applying a compression force to said displacement generating means via said movable member in the direction of displacement of said displacement generating means.

5,184,038

METHOD OF COUPLING MAGNETIC POSITION DETECTING DEVICE WITH BRUSHLESS DC MOTOR AND THE COUPLING STRUCTURE THEREOF

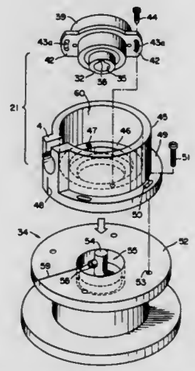
Masahiro Matsui, Akashi, and Yasuhiko Hashimoto, Kobe, both of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Hyogo, Japan

Continuation of Ser. No. 644,977, Jan. 23, 1991, abandoned. This application Feb. 20, 1992, Ser. No. 839,264

Claims priority, application Japan, Jan. 23, 1990, 2-14174; Nov. 29, 1990, 2-334871

Int. Cl.[5] H02K *15/00*

U.S. Cl. 310—42 **2 Claims**



1. A method of coupling a magnetic pole position detecting device to a brushless dc motor, the dc motor having an output shaft and a motor case, and the magnetic pole position detecting device including a rotor part having an input shaft with a slit indicative of a rotor zero point, a stator part having detecting circuit means for outputting the absolute value of a relative angle between the rotor part and the stator part, and a device case with a scribed locating mark on the surface thereof, said method comprising the steps of:

(a) determining relative angular positional relationships between the rotor part, the stator part and the device case of the magnetic pole position detecting device by

i) providing a jig that has a shaft with a pin and a plate having ascribed mark on its surface, and mounting the detecting device to the jig by inserting the pin of the jig in the slit of the detecting device and aligning the scribed mark on the surface of the device case with the scribed mark on the plate of the jig,

ii) then adjusting the relative angular positional relationship between the stator part and the rotor part by rotating the stator part until the detecting circuit means outputs a predetermined value, and

iii) fixing the stator part relative to the device case;

(b) coupling the output shaft of the motor to the rotor part of the magnetic pole position detecting device;

(c) rotating the shaft of the motor externally; and

(d) scribing another locating mark on the motor case in alignment with the mark scribed on the device case, under a condition in which the relative angular positional relationship between the motor case and the device case is

VOL 1147 ISS 1 FE 2 1993 UMI

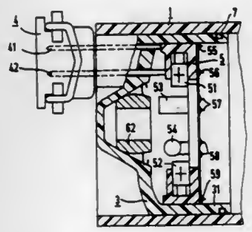
such that a back E.M.F. waveform of the motor and a waveform of the absolute value output by the detecting circuit means of the detecting device are in phase.

5,184,039

MOTOR/GEAR-TRAIN DRIVE UNIT, PARTICULARLY MOTOR-VEHICLE POWER-WINDOW DRIVE

Longin Kraft, Gerbrunn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 8, 1991, Ser. No. 742,847
Claims priority, application European Pat. Off., Aug. 23, 1990, 90116184.4
Int. Cl.[5] H02K *5/00*
U.S. Cl. 310—89 **16 Claims**



1. A motor/gear-train drive unit, comprising:
a motor frame having an inner surface;
a commutator motor enclosed in said motor frame;
a gear case disposed adjacent to said motor frame; and
a preassembled subassembly including:
a bearing cap;
a brush support plate mounted in said bearing cap; and
plug pins bonded to said brush support plate and extending outwardly, in a sealed manner, through said bearing cap;
said subassembly having an outer surface which conforms to said inner surface of said motor frame so as to be continuously displaceable, by insertion, relative to said motor frame and able to be secured to the motor frame in a final operating position; and
a peripheral seal ring tightly sealing said subassembly from said motor frame.

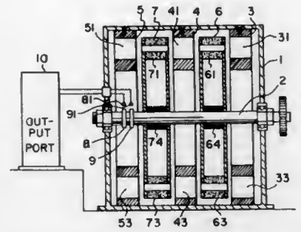
5,184,040

ELECTRIC POWER GENERATORS HAVING LIKE NUMBERS OF MAGNETS AND COILS

Jong H. Lim, Kumhwa Apt 14-209, Seodaemunku Cheonyeon-dong, D.P.R. of Korea

Filed Aug. 30, 1990, Ser. No. 575,536
Claims priority, application Rep. of Korea, Sep. 4, 1989, 1989-12812; Sep. 4, 1989, 1989-12813; Sep. 4, 1989, 1989-12814
Int. Cl.[5] H02K *16/00*
U.S. Cl. 310—114 **5 Claims**

1. An electric power generator having a body case comprising:
a driving shaft;
a first permanent magnet disk fixed to the body case of the electric power generator and including several permanent magnets and a supplementary permanent magnet associated with each permanent magnet, the magnets being inserted and fixed at a predetermined interval of a given angle for the driving shaft, wherein each supplementary permanent magnet is separated from its associated permanent magnet by a predetermined air gap;
a second permaoent magnet disk fixed to the body case and including several permanent magnets and a supplementary permanent magnet associated with each permanent magnet, the magnets being inserted and fixed at the predetermined interval of a given angle for the driving shaft, wherein each supplementary permanent magnet is separated from its associated permanent magnet by a predetermined air gap;
a third permanent magnet disk fixed to the body case and including several permanent magnets and a supplementary permanent magnet associated with each permanent magnet, the magnets being inserted and fixed at the predetermined interval of a given angle for the driving shaft, wherein each supplementary permanent magnet is separated from its associated permanent magnet by a predetermined air gap;



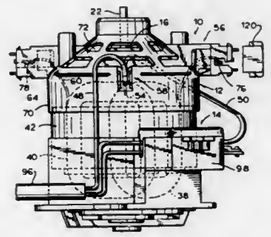
a first coil disk fixed to the driving shaft and located between the first and second permanent magnet disks and including several coils corresponding to the permanent magnets which are inserted and fixed at the predetermined interval of a given angle for the driving shaft;
a second coil disk fixed to the driving shaft and located between the second and third permanent magnet disks and including several coils corresponding to the permanent magnets which are inserted and fixed at the predetermined interval of a given angle for the driving shaft; and
line connection means for connecting output lines of the coils in parallel.

5,184,041

STRUCTURE FOR COUPLING FIELD WINDINGS TO MOTOR BRUSHES

Mark Baer, Linden, and R. Lent Crevling, Jr., Williamsport, both of Pa., assignors to Shop Vac Corporation, Williamsport, Pa.

Filed Mar. 12, 1991, Ser. No. 667,977
Int. Cl.[5] H02K *13/00*
U.S. Cl. 310—239 **19 Claims**



1. In a motor, the combination comprising
a nonconductive brush housing;
a conductive brush holder located in said brush housing, said brush holder for holding a brush for movement along a predetermined axis, said brush holder including a conductive tab extending outside of said brush housing;
a wire guide is located adjacent said brush housing for guiding a field winding to said tab along a predetermined path which includes a portion extending generally parallel to said predetermined axis;

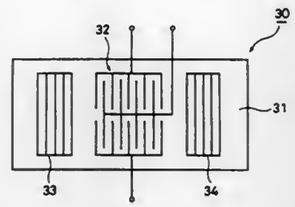
means for electrically coupling said field winding to said tab.

5,184,042

SURFACE WAVE DEVICE

Michio Kadota, and Kazuhiko Morozumi, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Filed May 16, 1991, Ser. No. 701,221
Claims priority, application Japan, May 21, 1990, 2-131592
Int. Cl.[5] H01L *41/03*
U.S. Cl. 310—313 A **8 Claims**



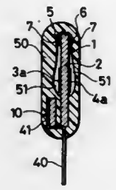
1. A surface wave device comprising:
a piezoelectric substrate made of a piezoelectric material; and
electrodes for exciting in said piezoelectric substrate a surface wave of an SH type whose displacement is mainly displacement in the direction perpendicular to the direction of the surface wave propagation,
said piezoelectric substrate being made of a piezoelectric material whose ratio of the elastic stiffness constant C_{33}^{D} to the elastic stiffness constant C_{44}^{E} is more than 4.

5,184,043

PIEZOELECTRIC RESONATOR

Takashi Yoshinaga, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 622,745, Dec. 5, 1990, abandoned. This application Dec. 17, 1991, Ser. No. 808,983
Claims priority, application Japan, Dec. 5, 1989, 1-140820[U]
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—320 **20 Claims**



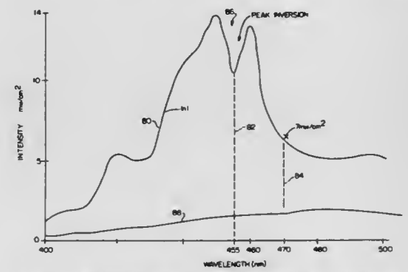
1. A method of producing an energy trapped type piezoelectric resonator vibrating in thickness expansion mode, said method comprising the steps of:
providing a substrate element having a front surface, a back surface and an upper edge, said front and back surfaces each having thereon a vibrating electrode part and a solder damping electrode which is between said upper edge and said vibrating electrode part and is in contact with no conductive part;
supporting said substrate by a downwardly protruding grounding electrode such that said front and back surfaces are substantially vertical and said upper edge is above said solder damping electrodes and said vibrating electrode parts on said front and back surfaces;
applying solder members on said solder damping electrodes on said front and back surfaces to thereby damp spurious vibrations of said substrate element;
causing a cavity forming material to drip from said upper edge slidingly over said solder damping electrodes and to thereby cover said vibrating electrode parts;
applying a sealing material over said front and back surfaces and over said cavity forming material covering said vibrating electrode parts; and
heating said sealing material so as to cause said cavity forming material to be absorbed by said sealing material and to thereby create a cavity between said vibrating electrode parts and said sealing material.

5,184,044

DENTAL CURING LAMP

Brian J. Thomas, Phoenix, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Aug. 13, 1990, Ser. No. 565,732
Int. Cl.[5] H01J *61/20*
U.S. Cl. 313—638 **16 Claims**



1. A low-watt metal halide discharge lamp for use in photocuring photo-curable compositions, comprising:
an envelope made of light transmissive material, having walls that define an arc chamber volume;
a fill of mercury, inert gas and a metal halide additive that includes an indium halide contained within said arc chamber volume, said mercury and said metal halide additive being adapted to vaporize during operation of said lamp and produce radiation energy that is maximized within the wavelength range between 400 and 500 nm;
a pair of electrodes, extending into said arc chamber volume, having electrode tips spaced apart from one another by a predetermined distance within said arc chamber volume; and
a pair of inlead assemblies electrically coupled to said pair of electrodes respectively and passing from said electrodes through a sealed section in said envelope to the exterior of said lamp;
wherein said lamp has a power input rating of not more than 35 watts, and said lamp contains amounts of indium halide and of mercury sufficient to cause an operating vapor pressure high enough to result in a spectral line reversal at the principal spectral line of said indium halide, and a broadband radiation in said range of 400–500 nm.

5,184,045

MAGNETRON FOR A MICROWAVE OVEN HAVING A PAIR OF CHOKE COILS WOUND AROUND A CORE IN THE SAME DIRECTIONS

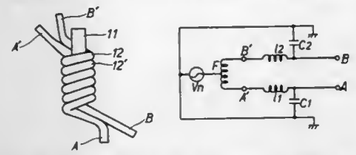
Jong H. Im, Daeku, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Apr. 20, 1990, Ser. No. 511,756
Int. Cl.[5] H01J *23/14*
U.S. Cl. 315—39.51 **2 Claims**

1. A magnetron for a microwave oven, comprising,
a core;
a pair of choke coils wound around said core, both choke coils are wound in the same direction as a noise flowing

VOL 1147 ISS 1 FE 2 1993 UMI

direction of radio frequency noise generated from an operating space through a filament to a pair of input terminals for making a pair of output terminals disposed at one end portion thereof and said pair of input terminals disposed at another end portion thereof so that input currents to said pair of input terminals are inverse to each other in



their flowing direction at a position where they pass through the core and noises are the same in their flowing direction; and

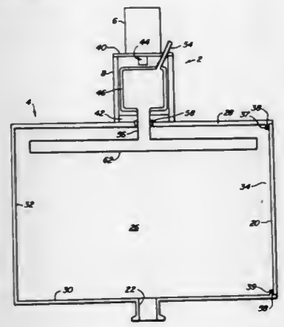
a filter circuit constituted by connecting said input terminals of said choke coils to a lead-through capacitor and by connecting said output terminals of said choke coils to a center lead and a peripheral lead, respectively.

5,184,046

CIRCULAR WAVEGUIDE PLASMA MICROWAVE STERILIZER APPARATUS

Bryant A. Campbell, Los Gatos, Calif., assignor to Abtox, Inc., Pleasanton, Calif.

Filed Sep. 28, 1990, Ser. No. 589,511
Int. Cl.[5] H05H *1/46*; A61L *2/00*
U.S. Cl. 315—111.21 **3 Claims**



1. An apparatus for plasma sterilization comprising:

a sterilization chamber;

a plasma container made of a material transparent to an electromagnetic radiation, said plasma container having a gas inlet for admitting a plasma generation gas and a plasma product outlet conduit for passing plasma gas products into said sterilization chamber;

at least one microwave plasma generator for producing plasma gas products in said plasma container, said microwave plasma generator further comprising:

a magnetron for generating electromagnetic radiation,

a cylindrical metal waveguide enclosing said plasma container for guiding the electromagnetic radiation thereto, and

an axially concentric magnetron antenna extending into the cylindrical waveguide for feeding the electromagnetic radiation from the magnetron to the cylindrical waveguide.

5,184,047

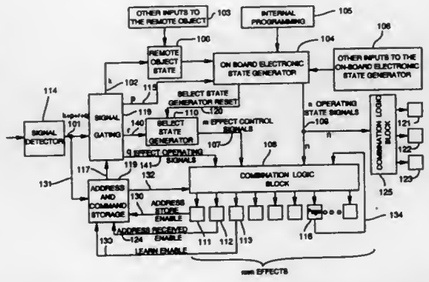
Patent Not Issued For This Number

5,184,048

MODEL RAILROAD REVERSING MOTOR CONTROL SYSTEM

Frederick E. Severson, 945 SW. Perfecta Ave., Beaverton, Oreg. 97005, and Patrick A. Quinn, 20195 SW. Imperial Dr., Aloha, Oreg. 97006

Division of Ser. No. 37,721, Apr. 13, 1987, Pat. No. 4,914,431, which is a continuation-in-part of Ser. No. 672,397, Nov. 16, 1984, abandoned. This application Feb. 14, 1990, Ser. No. 480,078
Int. Cl.[5] H02P *1/00*
U.S. Cl. 318—280 **13 Claims**



1. A reversing motor control circuit for use in a model train system having a track coupled to an interruptable electric power source for providing a track power signal, the circuit comprising:

input means for receiving the track power signal;

a pair of flip-flop circuits interconnected to form a clocked ring counter for indicating a present state that is one of a predetermined sequential series of states, the counter having a clock input for receiving a clocking signal to change the present state to a next one of the series of states;

clocking means coupled to the input means and to the clock input for providing the clocking signal to change the counter state to a next one of the series of states in response to an interruption in the track power signal having a duration of at least a predetermined clocking period;

a first logic gate coupled to the counter to decode the flip-flop outputs to form a forward signal;

a second logic gate coupled to the counter to decode the flip-flop outputs to form a reverse signal; and

power control means coupling the input means to the motor and responsive to the forward signal for driving the motor in a forward direction and responsive to the reverse signal for driving the motor in a reverse direction.

5,184,049

MOTOR BRAKE CONTROL CIRCUIT FOR REDUCING MOTOR STOPPING TIME

Hiroyuki Kiuchi, Komagane, Japan, assignor to Sankyo Seiki Mfg. Co., Ltd., Nagano, Japan

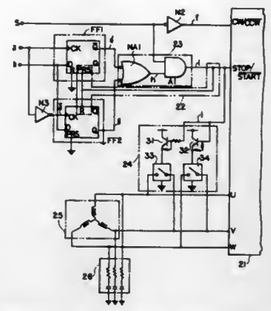
Filed Jun. 6, 1991, Ser. No. 711,301
Claims priority, application Japan, Jun. 22, 1990, 2-164537
Int. Cl.[5] H02P *3/00*
U.S. Cl. 318—362 **10 Claims**

1. A motor brake control circuit comprising:

a first discriminator circuit for detecting the sense of rotation of the motor by applying a rotational signal having a value proportional to the rate of rotation of the motor; a second discriminator circuit for detecting the sense of rotation of the motor by applying an inverted signal of said rotational signal;

a sense-of-rotation directing circuit for controlling the motor drive circuit and reversing the sense of rotation of the motor whenever a brake command is given to the motor;

a brake circuit for turning off the power being supplied to the motor coil whenever a change in the signals from the first and second discriminator circuits is detected for the



first time after the reversal of the sense of rotation of the motor; and

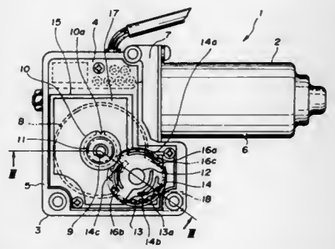
coil short circuit means for short-circuiting power terminals of the motor coil the instant the brake signal is issued from the brake circuit.

5,184,050

SUNROOF MOTOR WITH ROOF LID POSITION DETECTOR

Naoto Harada; Shuji Sekine; Takeo Furuya, and Nobuo Yoshioka, all of Yokohama, Japan, assignors to Jidosha Denki Kogyo K.K., Yokohama, Japan

Filed Jan. 8, 1992, Ser. No. 818,095
Claims priority, application Japan, Jan. 11, 1991, 3-000480[U]
Int. Cl.[5] B60J *7/05*
U.S. Cl. 318—467 **3 Claims**



1. A sunroof motor comprising:

a motor part for rotating an output shaft forwardly and reversely;

a roof lid detective disc to be turned according to the rotation of said output shaft as much as an angle in proportion to an amount of movement of a roof lid driven by the forward and reverse rotation of said output shaft;

a contact plate disposed on a face of said roof lid detective disc and provided with a plurality of contacts; and

a printed wiring board disposed opposite to the face of said roof lid detective disc, formed with a motor driving circuit and mounted with a relay to supply or shut off the electric power to the motor part;

said motor driving circuit of the printed wiring board being provided with a plurality of board-side contacts for detecting the roof lid to arrive at predetermined positions on bases of electrical contact with said contacts of the contact plate and shutting off the electrical power to the motor part through said relay.

5,184,051

METHOD FOR PROGRAM CONTROL FOR AN INDUSTRIAL ROBOT FOR AUTOMATIC COATING OF WORKPIECES

Werner Schweiker, and Volker Leininger, both of Grenchen, Switzerland, assignors to Behr-Industrieanlagen GmbH & Co., Fed. Rep. of Germany

Continuation of Ser. No. 60,726, Jun. 10, 1986, abandoned. This application Jan. 3, 1989, Ser. No. 293,564
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1986, 3619429
Int. Cl.[5] G05B *19/42*; B67D *5/08*
U.S. Cl. 318—568 **12 Claims**



1. A method of program control of a moving device having a coating unit for automatically coating workpieces, the method including the steps of; manually moving the moving device and its coating unit and producing a movement program for the moving device with storage of local parameters of the coating device for selected impingement points and storage of information regarding the necessary amount of paint and other coating parameters for each selected paint impingement points where process parameters changes are carried out, establishing an address for each paint impingement point, and producing and maintaining a parameter file separate from the movement program containing in tabulated form coded addresses corresponding to the addresses of the paint impingement points and the stored coating parameters for each of the paint impingement points.

5,184,052

COOPERATIVE OPERATION SYSTEM FOR NUMBERICAL CONTROL APPARATUS

Yoshiaki Ikeda, Minamitsuru, Japan, assignor to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP90/00936, § 371 Date Mar. 25, 1991, § 102(e) Date Mar. 25, 1991, PCT Pub. No. WO91/03010, PCT Pub. Date Mar. 7, 1991
PCT Filed Jul. 20, 1990, Ser. No. 668,515
Claims priority, application Japan, Aug. 18, 1989, 1-212492
Int. Cl.[5] G05B *19/18*
U.S. Cl. 318—569 **5 Claims**

1. A cooperative operation system for a plurality of numerical control apparatuses (CNCs), wherein each of said CNCs comprises:

a CNC control unit:

a switching circuit connected to said CNC control unit for switching an I/O signal used in said CNC control unit;

a RAM connected to said switching circuit for storing said I/O signal;

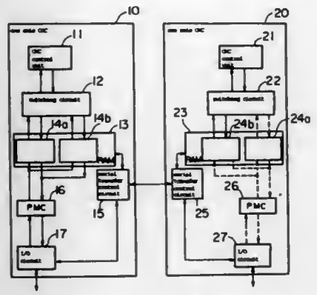
a programmable machine controller (PMC) connected to said RAM;

an I/O circuit connected to said PMC; and

a serial transfer control circuit connected to said I/O circuit

VOL
1147
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and said RAM for transferring the I/O signal to another CNC, wherein said PMC receives or transmits an I/O



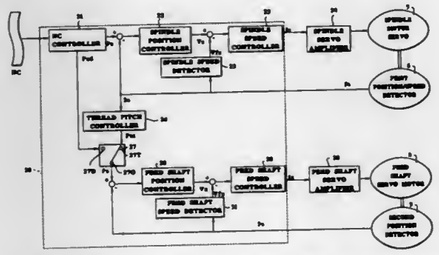
signal of said another CNC through said serial transfer control circuit.

5,184,053

CONTROL DEVICE FOR A TOOL DRIVING UNIT

Satoshi Maruo, Gifu; Chikamasa Hattori, Ichinomiya, and Fumio Kameyama, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Apr. 2, 1991, Ser. No. 679,101
Claims priority, application Japan, May 31, 1990, 2-144029
Int. Cl.[5] G05B *19/18*
U.S. Cl. 318—571 **22 Claims**



1. A control device for a tool driving unit wherein a tool mounted at a front end of a spindle is controlled to be rotated around a central axis of the spindle and to be longitudinally fed along the central axis of the spindle by said control device, said control device being controlled by a single microcomputer which outputs a spindle current command for driving a spindle motor to rotate the tool and a feed shaft current command for driving a feed shaft servo motor to longitudinally feed the tool, said single microcomputer comprising:

spindle position control means for detecting a first angular position of said spindle servo motor, determining a first positional difference between said first angular position and a spindle command, and outputting a spindle speed command for said spindle servo motor based on said first positional difference;

spindle speed control means for detecting a first rotational speed of said spindle servo motor, determining a first speed difference between said first rotational speed and said spindle speed command, and outputting said spindle current command based on said first speed difference;

feed shaft position control means for detecting a second angular position of said feed shaft servo motor, determining a second positional difference between said second angular position and a selected feed shaft command, and outputting a feed shaft speed command for said feed shaft servo motor based on said second positional difference; and

feed shaft speed control means for detecting a second rotational speed of said feed shaft servo motor, determining a second speed difference between said second rotational speed and said feed shaft speed command, and outputting said feed shaft current command based on said second speed difference;

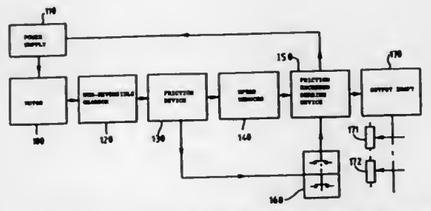
wherein said single microcomputer operates according to a time-division mode of operation so that said spindle position control means and said feed shaft position control means are repeatedly alternately operated, and said spindle speed control means and said feed shaft speed control means are repeatedly alternately operated.

5,184,054

FRICTION ACTUATOR

Jacques Delattre, Valpuiseaux; Philippe Gouze, Villemoisson, and Jacques Neuvessel, Neuilly S. Seine, all of France, assignors to Societe de Fabrication d'Instruments de Mesure (S.F.I.M.), Massy- Cedex, France

Filed Sep. 24, 1991, Ser. No. 764,321
Claims priority, application France, Sep. 24, 1990, 90 11740
Int. Cl.[5] B64C *27/82*
U.S. Cl. 318—586 **5 Claims**



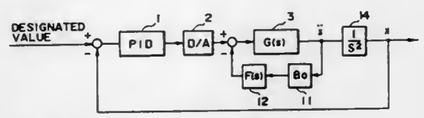
1. Actuator comprising a direct current motor driving a friction device through a non-reversible gearbox, said friction device connected to a speed reducer driving an output shaft of said motor, said friction device disposed between said non-reversible gearbox and said speed reducer and a friction exceeded sensing device disposed between said speed reducer and said output shaft adapted to cut off a supply of power to said motor.

5,184,055

DEVICE FOR POSITIONING CONTROL

Shinji Ohishi, Yokohama; Kotaro Akutsu, Machida, and Toshikazu Sakai, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1990, Ser. No. 592,982
Claims priority, application Japan, Oct. 6, 1989, 1-260276; Jun. 14, 1990, 2-153894
Int. Cl.[5] G05B *5/01*
U.S. Cl. 318—615 **14 Claims**



1. A device for positioning control, comprising:

a movable table;

an acceleration sensor disposed on said movable table for producing an acceleration signal;

a feedback loop for providing a control signal to control movement of said movable table; and

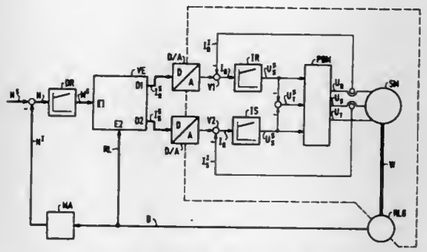
an acceleration feedback loop for receiving the acceleration signal produced by said acceleration sensor, wherein said acceleration feedback loop is provided as an internal loop to said feedback loop, said acceleration feedback loop comprising a filter circuit comprising a second-order low-pass filter.

5,184,056

METHOD OF REGULATING THE TORQUE RESPONSE OF A MULTIPHASE ELECTRONICALLY COMMUTATED ELECTRIC MOTOR

Richard Brune, Fuerth; Wolfgang Papiernik, and Günter Rochholz, both of Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 14, 1989, Ser. No. 450,682
Claims priority, application European Pat. Off., Jan. 13, 1989, 89100599.3
Int. Cl.[5] H02P *5/40*
U.S. Cl. 318—799 **21 Claims**



1. A method for regulating the torque response of a multiphase electronically commutated electric motor comprising:

generating a torque-regulating variable;

providing a rotor position signal;

forming from said rotor position signal a rotor-position dependent signal for each phase to be regulated, the rotor-position dependent signals being selected to compensate for the differences between the actual torque and the ideal torque at each rotor position resulting form the manufacture of said electric motor;

combining the torque-regulating variable with each of said rotor-position dependent signals to form a nominal current value for each current phase;

forming a current-regulating value from the difference between the instantaneous nominal current value and the instantaneous actual current value; and

generating a nominal voltage corresponding to said current-regulating value for each current phase and using said nominal voltages to control the electric motor using a pulse width modulator.

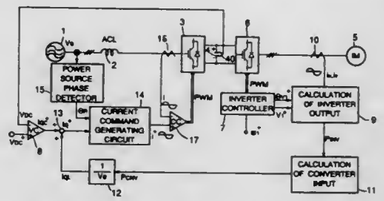
5,184,057

CONTROL METHOD AND DEVICE FOR AC MOTOR

Keijiro Sakai; Tunehiro Endo, both of Hitachiohta; Yuzuru Kubota; Takashi Ikimi, both of Hitachi; Nobuyoshi Mutoh, and Mitsuyuki Honbu, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 13, 1990, Ser. No. 581,898
Claims priority, application Japan, Sep. 14, 1989, 1-238446; Feb. 23, 1990, 2-42783; May 1, 1990, 2-115516
Int. Cl.[5] H02P *5/40*
U.S. Cl. 318—803 **41 Claims**

1. A control method for an AC motor designed, in transforming output power of a converter to AC power by an inverter for driving said AC motor with the AC power, to detect an AC current in the inverter output side and a Dc voltage in the inverter input side, calculate an inverter input average current for an integer multiple of a carrier half-cycle from said detected current, calculate input power of said inverter from said calculated average current and said detected DC voltage, produce a source current value by dividing said calculated input power by the AC voltage in the converter input side, produce a source current command value from said detected DC voltage in the inverter input side and an output voltage command indicating the target output voltage of said



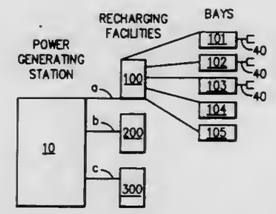
converter for restraining the deviation therebetween to become zero, modify said source current command value in accordance with said source current value, and apply a pulse signal based on said modified source current command value to said converter for controlling said converter so that an AC current in the converter input side follows said modified source current command value.

5,184,058

METHOD AND SYSTEM FOR ELECTRICITY STORAGE AND DISCHARGE

Bradley J. Hesse, Syracuse, and Philip J. Gentile, East Syracuse, both of N.Y., assignors to The Fleming Group, Syracuse, N.Y.

Filed May 20, 1991, Ser. No. 703,231
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—4 **14 Claims**



6. A method of recharging electrically driven vehicles, comprising the steps of:

a) drawing power from a main power generating plant during hours of off-peak demand;

b) transforming and rectifying said power for storage in a bank of capacitors each located at one of a plurality of recharging facilities disposed along travelled routes of said electrically driven vehicles, said recharging facilities having a number of recharging bays for recharging individual electrically driven vehicles; and

c) discharging the power stored in said bank of capacitors to electrically driven vehicles each disposed in respective ones of said recharging bays.

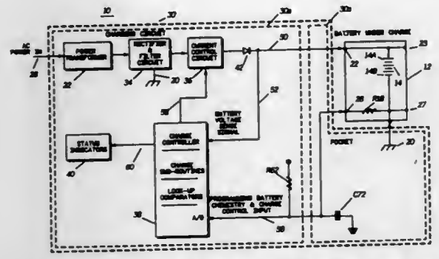
VOL 1147 ISS 1 FE 2 1993 UMI

5,184,059

EXPANDED BATTERY CAPACITY IDENTIFICATION SCHEME AND APPARATUS

Joseph Patino; Jose M. Fernandez, both of Plantation, and Henry A. Bogut, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 16, 1991, Ser. No. 760,413
Int. Cl.[5] H01M 10/44
U.S. Cl. 320—15 15 Claims



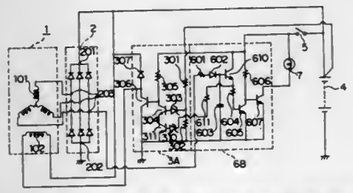
1. A battery charging system including a charging path for charging batteries, the system comprising:
a charging algorithm sensing circuit;
at least one battery cell having a positive terminal, a negative terminal, and a predetermined charging algorithm;
resistance means for providing a resistance value, the resistance means comprising two terminals, the resistance value related to the predetermined charging algorithm of the cell;
an identification capacitor having a stabilizing time coupled with the resistance means and coupled to one of the terminals of the battery cell to form a time constant related to the predetermined charging algorithm; and;
the charging algorithm sensing circuit further comprising:
means for providing an electrical current in the resistance means after the time constant;
means for periodically measuring the voltage developed across the resistance means until the voltage has stabilized, after the stabilizing time;
means for measuring the stabilizing time; and
means for converting the measured stabilizing time to a predetermined identifiable battery usage.

5,184,060

CONTROL APPARATUS FOR AN AC GENERATOR

Shiro Iwatani, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1991, Ser. No. 709,845
Claims priority, application Japan, Jun. 18, 1990, 2-157480
Int. Cl.[5] H02K 11/00; H02H 7/06
U.S. Cl. 322—99 4 Claims



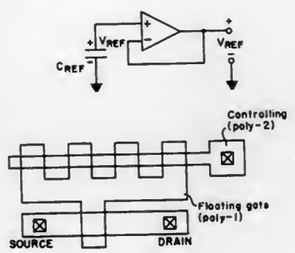
1. A control apparatus for an AC generator (1) having a field coil (102) and an armature coil (101) which provides a generation signal during power generation of the generator, said control apparatus comprising:
a rectifier (2) connected to the generator for rectifying the output voltage thereof;
a storage battery (4) connected to the field coil of the generator for supplying a current to the field coil, said battery also being connected through said rectifier to the armature coil of the generator so as to be charged by the generator through said rectifier;
a voltage regulator (3; 3A) connected between the generator and said battery for controlling the current supply from said battery to the field coil, said voltage regulator including a switch connected in series with the field coil of the generator for turning on and off the current supply from said storage battery to the field coil so as to control the output voltage of the generator to a predetermined value; and
a detector (6A; 6B) connected between the armature coil of the generator and said storage battery and between said rectifier and said storage battery for detecting an operating state of the generator and operating an indicator (7) so as to indicate the detected operating state of the generator;
said detector comprising means for preventing a significant battery leakage and discharge current flow through the detector upon the deterioration or failure of a rectifier diode, said preventing means comprising:
an indicator switch (605, 607) for turning said indicator on and off;
an emitter follower transistor (610) having an input terminal connected through a high impedance and the rectifier to the armature coil of the generator, and an output terminal connected to said indicator switch for controlling said indicator switch based on the generation signal from the armature coil; and
a relatively low value capacitor (603) connected to said emitter follower transistor for smoothing the generation signal from the armature coil.

5,184,061

VOLTAGE REGULATOR FOR GENERATING A CONSTANT REFERENCE VOLTAGE WHICH DOES NOT CHANGE OVER TIME OR WITH CHANGE IN TEMPERATURE

Bang-Wan Lee, Kyungmung-city, and Yl-Sung Bae, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suweon City, Rep. of Korea

Filed May 30, 1991, Ser. No. 708,285
Claims priority, application Rep. of Korea, Mar. 27, 1991, 91-4830
Int. Cl.[5] G05F 1/46, 1/567
U.S. Cl. 323—265 5 Claims



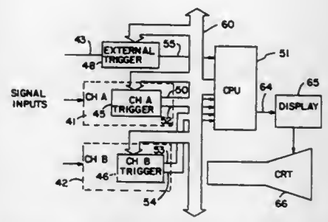
1. A voltage regulator circuit comprising:
an operational amplifier including an inverting terminal, a non-inverting terminal, and an output terminal electrically connected to said inverting terminal; and
a capacitor including a floating gate, a controlling gate, and an isolating layer, said capacitor being connected to the non-inverting terminal of said operational amplifier and having a programmed reference voltage charge stored therein,
wherein said operational amplifier receives and outputs said reference voltage charge which is unaffected by changes in temperature.

5,184,062

DYNAMICALLY CALIBRATED TRIGGER FOR OSCILLOSCOPES

Gregory J. Ladwig, Madison, Wis., assignor to Nicolet Instrument Corporation, Madison, Wis.

Filed May 11, 1990, Ser. No. 522,181
Int. Cl.[5] G01R 13/28, 35/00
U.S. Cl. 324—74 38 Claims



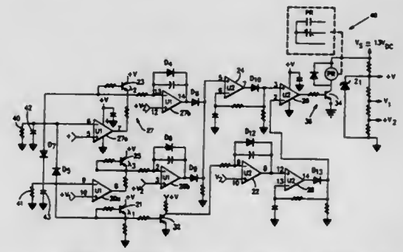
10. A method of calibrating a trigger signal channel of an oscilloscope which receives a trigger signal at an input and operates on it to provide a conditioned trigger signal having a gain and offset, the conditioned trigger signal being provided to one input of a comparator, with the other input of the comparator receiving a reference voltage against which the trigger signal is compared, wherein the comparator changes its output state as the trigger signal to the comparator goes through the reference voltage level, comprising the steps of:
(a) providing the output voltage of a gain digital-to-analog converter which converts a digital input word to an analog output voltage to a level digital-to-analog converter which receives the analog voltage output of the gain digital-to-analog converter as its reference input, and providing the analog output of the level digital-to-analog converter to the reference input of the comparator, the analog output of the level digital-to-analog converter voltage determined by the digital input word provided to it and the reference voltage from the gain digital-to-analog converter;
(b) applying a calibration signal to the input of the trigger signal channel which changes periodically and linearly between known high and low voltage values and which has zero offset to provide a conditioned calibration signal;
(c) applying a digital input to the gain digital-to-analog converter to provide an upper limit output voltage from the gain digital-to-analog converter which is applied to the level digital-to-analog converter;
(d) applying a digital input to the level digital-to-analog converter which is at a value at which the output voltage of the level digital-to-analog converter will be in about the middle of its output range such that the output of the comparator is changing states;
(e) changing the value of the digital data provided to the level digital-to-analog converter until its output voltage is at a level at which the trigger comparator stops changing states at a voltage level which is at the maximum of the conditioned calibration signal and storing the digital input value at this maximum as a top digital data value;
(f) changing the digital data value provided to the level digital-to-analog converter until its output voltage is at a level at which the comparator stops changing states at the minimum of the conditioned calibration signal and storing the digital input value at this minimum as a bottom digital data value;
(g) subtracting the bottom digital data value from the top digital data value and comparing the difference with a full desired digital input range of the level digital-to-analog converter and determining whether the difference is equal to the full desired digital input range of the level digital-to-analog converter, and, if not, then
(h) changing the value of the digital input to the gain digital-to-analog converter and repeating steps (b) through (g) above until the difference between the top and bottom input values is equal to the desired digital input range and then stopping and storing the value of the input to the gain digital-to-analog converter at that time as the gain correction count, and using that gain correction count as the input to the gain digital-to-analog converter for subsequent operation of the oscilloscope where the oscilloscope is triggering on a signal provided to the input of the trigger channel.

5,184,063

THREE PHASE REVERSAL DETECTION SYSTEM

Virgil E. Eisenhauer, Camillus, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 13, 1992, Ser. No. 834,748
Int. Cl.[5] G01R 25/00; H02H 3/18, 3/26
U.S. Cl. 324—86 3 Claims



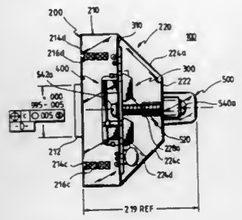
1. A polyphase line signal reversal detection system comprising:
at least first, second, and third input signal coupling means coupled to the polyphase line signal for generating respective output waveforms indicative of the input signals;
a first integrating circuit means having an integrating means coupled to said first and second input signal coupling means and responsive to the respective output waveforms for generating a first peak integrated signal, said first peak integrated signal is initiated during the positive half cycle of the first output waveform only when the second output waveform is in the negative half cycle and said first peak integrated signal is terminated when the second output waveform starts the positive half cycle;
a second integrating circuit means having an integrating means coupled to said second and third input signal coupling means and responsive to the respective output waveforms for generating a second peak integrated signal, said second peak integrated signal is initiated during the positive half cycle of the second output waveform only when the third output waveform is in the negative half cycle and said second peak integrated signal is terminated when the third output waveform starts the positive half cycle;
a reference integrating circuit means having an integrating means coupled to said first waveform coupling means and responsive to the first output for generating a reference integrated signal, said reference integrated signal is initiated at the start of the positive half cycle of the first output waveform and is terminated at the start of the negative half cycle of the first output waveform; and
a comparator circuit means for comparing said first peak integrated signal, said second integrated signal, and
said reference integrated signal, for providing an output indication signal of the phase sequence of the polyphase line signal.

VOL
1147
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5,184,064
ENCAPSULATED METER WITH OPTICAL PROGRAMMER

Bruce A. Vicknair, Baytown, and Robert A. Baten, Houston, both of Tex., assignors to Stewart & Stevenson Services, Inc., Houston, Tex.

Filed Mar. 25, 1991, Ser. No. 675,368
Int. Cl.[5] G01R 1/04, 21/00; H05K 5/06; G01D 11/24
U.S. Cl. 324—156 23 Claims

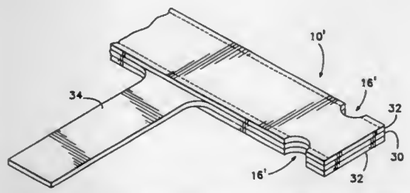


1. A meter, comprising:
optically programmable means for accumulating totals of a measured quantity;
means for displaying totals accumulated by said programmable means; and
optically transparent housing means in the form of a transparent aliphatic resin or epoxy resin molded around and completely encapsulating said programmable means and said displaying means, said programmable and displaying means being embedded in said housing means.

5,184,065
TWIST LOCK PROBE TIP

Warren L. Chism, Vancouver, Wash., assignor to Tektronix, Inc., Wilsonville, Oreg.

Division of Ser. No. 416,792, Oct. 2, 1989, abandoned. This application Oct. 7, 1991, Ser. No. 772,751
Int. Cl.[5] G01R 1/06
U.S. Cl. 324—158 P 4 Claims

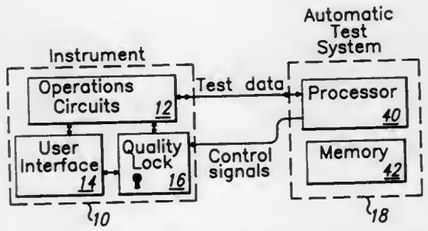


1. A twist lock probe tip for an electrical test probe comprising:
a flat elongate body of an insulating material having opposing notches formed therein for engaging leads of an integrated circuit device; and
a conductor coated on one of the surfaces of the flat elongate body with the conductor exposed within the notches for making electrical contact with one of the leads of the integrated circuit device, the other lead being in contact with the insulating elongate body.

5,184,066
METHOD AND APPARATUS FOR DISABLING ALL OPERATIONS OF AN ELECTRONIC INSTRUMENT EXCEPT FOR AN AUTOMATIC TEST PROCEDURE

Alexander McEachern, Oakland; Jamie Nicholson, Foster City, and Craig S. Waterman, San Francisco, all of Calif., assignors to Basic Measuring Instruments, Foster City, Calif.

Filed Apr. 24, 1991, Ser. No. 690,507
Int. Cl.[5] G01R 31/02; G06F 11/00
U.S. Cl. 324—158 R 7 Claims

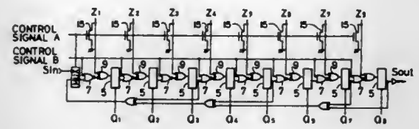


3. An electronic instrument which is tested by an automatic test system that performs a quality test of a plurality of operating characteristics of the instrument, the instrument including a quality lock device, the quality lock comprising:
a) means for coupling the instrument to the automatic test system including an instrument-to-test-system communication link wherein the instrument-to-test-system communication link is never disabled even though the instrument may be decoupled from the test system;
b) means for disabling operation of the instrument exclusive of the instrument to test system communication link until the instrument has passed the quality test, wherein the means for disabling operation is coupled to the instrument through the means for coupling;
c) means for disabling electronic communication between the instrument and any external circuit exclusive of the instrument to test system communication link until the instrument has passed the quality test, wherein the means for disabling electronic communication is coupled to the instrument through the means for coupling;
d) means for enabling operation of the instrument after the instrument has passed the quality test, wherein the means for enabling operation is coupled to the instrument through the means for coupling;
e) means for enabling electronic communication between the instrument and any external circuit after the instrument has passed the quality test, wherein the means for enabling electronic communication is coupled to the instrument through the means for coupling;
f) means for periodically disabling operation of the instrument exclusive of the instrument to test system communication link until the instrument has repassed the quality test, wherein the means for periodically disabling is coupled to the means for disabling; and
g) means for periodically disabling electronic communication between the instrument and any external circuit exclusive of the instrument to test system communication link until the instrument has repassed the quality test, wherein the means for periodically disabling electronic communication is coupled to the means for disabling electronic communication.

5,184,067
SIGNATURE COMPRESSION CIRCUIT

Yasuyuki Nozuyama, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 378,919, Jul. 12, 1989, abandoned. This application Nov. 26, 1991, Ser. No. 799,719
Claims priority, application Japan, Jul. 12, 1988, 63-171906
Int. Cl.[5] G01R 31/00, 31/28
U.S. Cl. 324—158 R 8 Claims



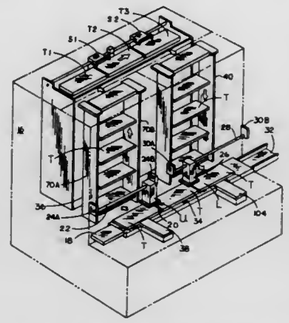
1. A test circuit comprising:
a signature compression circuit having a plurality of flip-flops connected in series to each other with gate circuits interposed between adjacent flip-flops, said gate circuits being connected to a first common signal line and coupled respectively to all output nodes of a logic circuit to be tested to receive outputs of said logic circuit, each gate circuit carrying out a logical operation on one output of said logic circuit and an output of one flip-flop to carry out signature compression of an output pattern including outputs of said logic circuit when a first common signal level on said first common signal line is signalled, each gate circuit supplying said outputs of said logic circuit respectively to said flip-flops and isolating said flip-flops from each other to output said outputs of said logic circuit through said signature compression circuit when said first common signal level is not signalled; and
a plurality of transistors connected between at least one node at a logical level and said output nodes of said logic circuit respectively, gate terminals of said transistors being connected to a second common signal line such that said transistors are turned on at the same time and all of said output nodes of said logic circuit are forced to be at said logical level in accordance with a second common signal level of said second common signal line, wherein said gate circuits enable shift operation of said signature compression circuit to shift out a test pattern stored in said flip-flops when said second common signal level is signalled on said second common signal line.

5,184,068
ELECTRONIC DEVICE TEST HANDLER

Ray G. Twigg; Mark W. Kling, both of San Diego; Santino Marrone, Poway, and Malcolm V. Hawkes, San Diego, all of Calif., assignors to Symtek Systems, Inc., San Diego, Calif.

Continuation of Ser. No. 587,218, Sep. 24, 1990, abandoned. This application Mar. 2, 1992, Ser. No. 845,744
Int. Cl.[5] G01R 31/28
U.S. Cl. 324—158 F 14 Claims

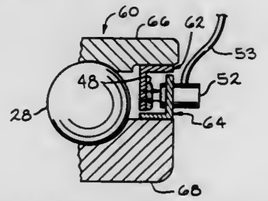
1. A device for presenting electronic devices to a tester for testing comprising:
(a) a plurality of carriers each for carrying a set of electronic devices,
(b) a loading stage,
(c) a pre-test chamber,
(d) a test stage,
(e) a post-test chamber,
(f) an unloading stage,
(g) means for loading a set of electronic devices onto each carrier when a carrier is at the loading stage,
(h) means for unloading a set of electronic devices from each carrier when a carrier is at the unloading stage,
(i) means for providing electrical contact between the tester and a set of electronic devices carried by a carrier when a carrier is at the test stage, and
(j) means for cyclically conveying the plurality of carriers in a closed loop from the loading stage through the pre-test chamber, from the pre-test chamber to the test stage, from the test stage to the post-test chamber, through the post-test chamber to the unloading stage, and from the unloading stage to the loading stage, each carrier being paused at the loading stage long enough to have a set of electronic devices loaded onto it, each carrier being paused at the test stage long enough for desired tests to be performed on the set of electronic devices carried by the carrier, each carrier being paused at the unload stage long enough for it to be unloaded of electronic devices.



5,184,069
ROTATIONAL SPEED SENSOR UTILIZING MAGNETIC INK TONE RING

Jonathan M. Adler, Ypsilanti; Russell E. Monahan, Ann Arbor, and Robert W. Frayer, Jr., Gregory, all of Mich., assignors to NTN Technical Center, (U.S.A.) Inc., Ann Arbor, Mich.

Filed Dec. 3, 1991, Ser. No. 802,125
Int. Cl.[5] G01B 7/14; G01P 3/48
U.S. Cl. 324—207.22 14 Claims



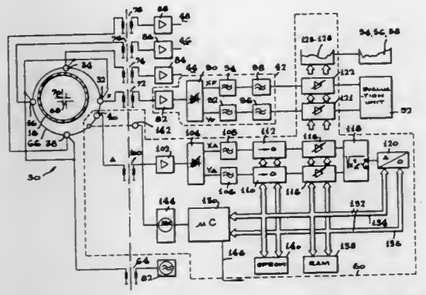
1. A rotation sensor for detecting relative rotation between two components which are coupled by an anti-friction bearing, comprising:
a tone ring defined by a layer of magnetic ink, said layer defining multiple magnetic poles, said tone ring fixed relative to one of said components, and
a transducer fixed relative to the other of said components positioned relative to said tone ring such that relative rotation between said components causes a varying magnetic field to interact with said transducer.

VOL 1147 ISS 1 FE 2 1993 UMI

5,184,070
EDDY-CURRENT DEFECT TEST INSTRUMENT WITH MULTIPLE TEST PROBES AND ONE DISTANCE PROBE

Herman Besendorfer, Altenriet; Gunter Stritzke, Gomaringen, and Franz Haditsch, Reutlingen, all of Fed. Rep. of Germany, assignors to Institut Dr. Friedrich Forster Pruferatebau, Reutlingen, Fed. Rep. of Germany

Filed Jan. 29, 1991, Ser. No. 647,752
Int. Cl.[5] G01R *33/12;* **G01N** *27/72, 27/82*
U.S. Cl. 324—225 **16 Claims**



1. An eddy-current test instrument having a rotary head provided with at least two test heads including eddy-current test probes offset mounted along a circular track for scanning a part to be tested; signal processing devices by means of which defect signals in the test probes are derived from defects in the part to be tested and wherein such defect signals are further processed; evaluation units wherein defect signals are evaluated; distance compensation devices wherein defect signals are compensated with respect to the distance h between the test probes and the part to be tested, including a distance probe wherein a distance signal is derived from the distance h, a signal processing device wherein the distance signal is processed to a control signal, and control elements connected between the signal processing devices and the evaluation units, said control elements modifying the defect signals as a function of control signals, comprising:

a single distance probe and one signal processing device;

means for providing control signals derived during one revolution of the distance probe identifying the peripheral position of said distance probe and storing the control signals in a first table (I); and

means responsive to a test probe passing a peripheral position for retrieving the control signal for this peripheral position and for controlling the control element(s) belonging to the respective test probes of said test head by the retrieved control signals.

5,184,071
NON-DESTRUCTIVE EDDY CURRENT TEST DEVICE USING ADDITIVE FLUX SUBSTRACTIVE FLUX SWITCHING

Jean-Pierre Tasca, Sainte Genevieve Des Bois, France, assignor to Compagnie Generale D'Automatisme CGA-HBS, Bretigny-Sur-Orge, France

Filed Dec. 12, 1991, Ser. No. 805,962
Claims priority, application France, Dec. 28, 1990, 90 16469
Int. Cl.[5] G01N *27/90;* **G01R** *33/12*
U.S. Cl. 324—238 **3 Claims**

1. A non-destructive eddy current test device using additive flux/substractive flux switching, comprising:

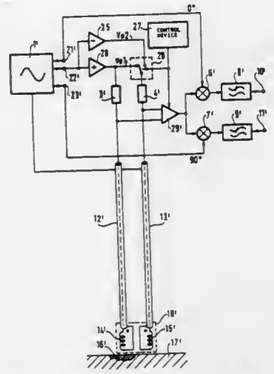
a control means for selecting either additive flux or subtractive flux operation;

supplying means for supplying first and second excitation signals alternating at the same frequency but in phase opposition to one another;

two analogous coils adjacent one another and electromagnetically coupled to a part under test so as to create two fluxes therein when excitation signals are supplied to said coils;

feeding means controlled by said control means and connected to said supplying means and to said coils for feeding said excitation signals to said coils whereby each coil will have a terminal voltage corresponding to an impedance of the respective coil, said feeding means feeding said first excitation signal to said first coil and feeding either of said first or second excitation signals to said first coil in accordance with the selection by said control means; and

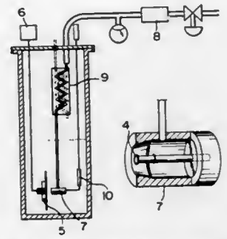
measuring means connected to said coils for measuring the difference between the impedances of said first and second coils, by either adding or subtracting the terminal voltages of said first and second coils in accordance with the selection by said control means.



5,184,072
APPARATUS FOR MEASURING WEAK STATIC MAGNETIC FIELD USING SUPERCONDUCTION STRIPS AND A SQUID MAGNETOMETER

Junpei Yuyama, 2-28-2, Morinosato, Atsugi-shi, Kanagawa-ken; Qiquan Geng, Green-haimu-Inui 2-304, 64, Yahata, Chigasaki-shi, Kanagawa-ken; Kazunori Chihara; Hirofumi Minami, both of Chigasaki, and Eiichi Goto, Fujisawa, all of Japan, assignors to Research Development Corporation, Tokyo; Junpei Yuyama, Atsugi and Qiquan Geng, Ohigasaki, all of, Japan, a part interest

Filed Sep. 19, 1991, Ser. No. 762,381
Claims priority, application Japan, Sep. 20, 1990, 2-251494
Int. Cl.[5] G01R *33/02, 33/035*
U.S. Cl. 324—248 **6 Claims**



1. An apparatus for measuring a weak static magnetic field, including a superconducting quantum interference device (SQUID) and a pick-up coil magnetically coupled thereto, said apparatus comprising:

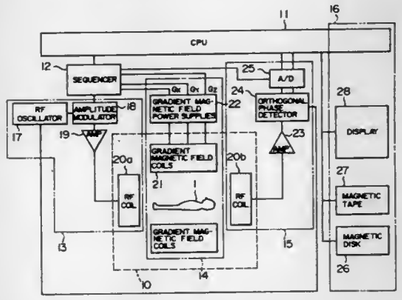
an array of superconducting strips which are arranged in a plane and separated by narrow slits, and

means for moving said array in a direction parallel to the plane and at a small distance from the pick-up coil.

5,184,073
METHOD FOR CORRECTING PHASE ERRORS IN A NUCLEAR MAGNETIC RESONANCE SIGNAL AND DEVICE FOR REALIZING SAME

Hiroyuki Takeuchi, Kashiwa; Tatsuo Nozokido, Sendai, and Chikako Nakamura, Matsudo, all of Japan, assignors to Hitachi Medical Corporation and Hitachi, Ltd., both of Tokyo, Japan

Filed Apr. 9, 1991, Ser. No. 682,472
Claims priority, application Japan, Apr. 9, 1990, 2-092233
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **14 Claims**



1. A method for correcting phase errors in a nuclear magnetic resonance signal comprising the steps of:

(a) measuring a first NMR signal in a pulse sequence, where at least neither phase encoding pulse nor frequency encoding pulse is applied to a body to be examined, directly before a normal measurement for obtaining an NMR signal for imaging is effected;

(b) obtaining a frequency spectrum for said first NMR signal and a first central frequency giving a peak of said frequency spectrum;

(c) effecting said normal measurement according to a predetermined pulse sequence;

(d) measuring a second NMR signal in a pulse sequence, where at least neither said phase encoding pulse nor said frequency encoding pulse is applied thereto, directly after said normal measurement;

(e) obtaining a frequency spectrum for said second NMR signal and a second central frequency giving a peak of said frequency spectrum;

(f) obtaining an amount of phase error for each of said NMR signals for imaging by using a difference between said first central frequency and said second central frequency and a measurement time for each of said NMR signals for imaging;

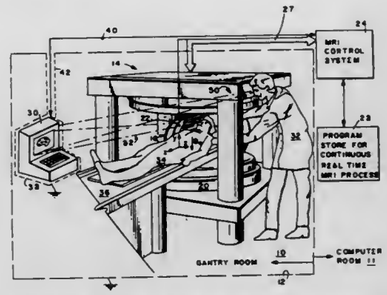
(g) correcting said phase error for each of said NMR signals for imaging; and

(h) reconstructing an image by using a signal corrected.

5,184,074
REAL-TIME MR IMAGING INSIDE GANTRY ROOM

Leon Kaufman, San Francisco; David M. Kramer, San Rafael; Barry McCarten, Palo Alto; Mitsuaki Arakawa, Hillsborough; Christine Hawryszko, San Mateo, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Feb. 4, 1991, Ser. No. 650,215
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **16 Claims**



1. A magnetic resonance imaging system comprising:

a shielded gantry room;

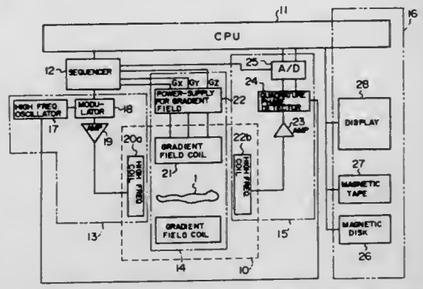
an MRI magnet with associated gradient coils, RF coils, patient transport and MRI viewing monitor all co-located within said shielded gantry room; and

an MRI control system located outside said shielded gantry room and connected to said gradient coils, RF coils and viewing monitor and adapted to continuously perform MRI in real-time to provide on said viewing monitor within the shielded gantry room an automatically continuously updated image sequence of a patient image volume within said magnet.

5,184,075
METHOD AND APPARATUS FOR COMPENSATING FOR NONUNIFORMITY OF STATIC MAGNETIC FIELD IN MRI SYSTEM

Hiroshi Nishimura, Kashiwa, Japan, assignor to Hitachi Medical Corporation, Tokyo, Japan

Filed Jan. 29, 1991, Ser. No. 647,407
Claims priority, application Japan, Jan. 31, 1990, 2-019042
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—309 **10 Claims**



1. A method of compensating for nonuniformity of a static magnetic field in a nuclear magnetic resonance (NMR) imaging system, comprising the steps of:

(a) selecting one of X-, Y- and Z-axes of a Cartesian coordinate system as a phase encoding direction;

(b) selectively exciting a region of field of view by applying a high frequency pulse of α° to an object under inspection;

VOL 1147 ISS 1 FE 2 1993 UMI

(c) measuring an NMR signal by applying a phase encoding gradient magnetic field and a frequency encoding gradient magnetic field after application of said high frequency pulse of α', the step (c) of measuring being performed a plurality of times while changing said phase encoding gradient magnetic field;

(d) detecting a peak value of the measurement data obtained by step (c) and determining a phase encoding quantity at which said peak value can be obtained;

(e) determining an intensity and a plurality of a linear component of nonuniformity components of the static magnetic field in said direction selected by obtaining an intensity and a polarity of said phase encoding gradient magnetic field corresponding to said peak value; and

(f) executing a pulse sequence for measuring the NMR signal by applying a gradient field added with a compensating gradient magnetic field having the same intensity as said linear component and a polarity opposite to that of said linear component to a gradient magnetic field applied in the selected direction.

5,184,076

MAGNETIC RESONANCE IMAGING COIL FOR APPLYING NMR AND ESR PULSES

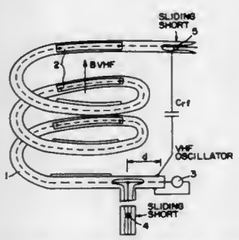
Gosta J. Ehnholm, Helsinki, Finland, assignor to Instrumentarium Corporation, Helsinki, Finland

Filed Apr. 4, 1991, Ser. No. 680,574

Claims priority, application United Kingdom, Apr. 4, 1990, 9007636

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—318 **15 Claims**



2. Magnetic resonance imaging apparatus comprising means for applying a magnetic field to a sample to be imaged, means for applying pulses of MR transition-exciting electromagnetic radiation to the sample, an NMR signal coil for detecting the resulting radiation from the sample, and means for applying pulses of electromagnetic radiation to the sample for stimulating coupled ESR transitions, characterized in that a pulse generating means is coupled to the NMR signal coil and antenna means is coupled to the coil and disposed at plural positions along the coil, whereby pulses for stimulating coupled ESR transitions may be transmitted from the pulse generating means through the coil to the antenna means and thence into the sample.

5,184,077

ABRASION-RESISTANT, HIGH PRESSURE DIELECTRIC SENSORS

David R. Day, Charlestown, and Farhad Bybordi, Topsfield, both of Mass., assignors to G-C Acquisition, Inc., Newton Centre, Mass.

Continuation of Ser. No. 505,236, Apr. 5, 1990, abandoned. This application Sep. 25, 1991, Ser. No. 766,956

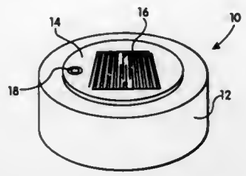
Int. Cl.[5] G01R *27/02*

U.S. Cl. 324—693 **18 Claims**

1. Apparatus for measuring the dielectric properties for an abrasive polymeric material during curing, the apparatus comprising:

an abrasion-resistant ceramic housing adapted for mounting within a vessel containing a polymeric material, the housing presenting at least one exposed surface to contact said material;

a first electrode disposed at said surface and exposed to make direct contact with the material; and



a second electrode also disposed at said surface and exposed in spaced-apart relationship to said first electrode to, likewise, make direct electrical contact with the material, said electrodes being flush-mounted with the exposed surface of the vessel and separated by a distance that permits measurement of the abrasive polymeric material's properties while minimizing boundary artifacts.

5,184,078

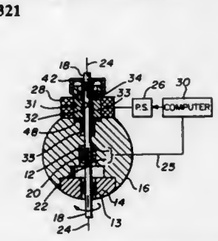
APPARATUS FOR ROTATING AN NMR TEST TUBE

Uri Rapoport, Oak Park, Ill., assignor to Elbit-ATI, Ltd., Oak Park, Ill.

Filed Mar. 8, 1991, Ser. No. 666,576

Int. Cl.[5] G01V *3/00*

U.S. Cl. 324—321 **14 Claims**



1. Apparatus for rotating a test tube containing a sample at a predetermined rotational speed in a magnetic field in an NMR apparatus comprising:

a motor driving a hollow shaft in the NMR apparatus;

friction means for flexibly and substantially circumferentially coupling the test tube to the hollow shaft with sufficient friction to rotate the test tube with the hollow shaft while allowing the test tube to be removed from and inserted in the hollow shaft during rotation of the shaft; and

control means coupled to the motor for operating the motor at said predetermined rotational speed.

5,184,079

METHOD AND APPARATUS FOR CORRECTING DATA DEVELOPED FROM A WELL TOOL DISPOSED AT A DIP ANGLE IN A WELLBORE TO ELIMINATE THE EFFECTS OF THE DIP ANGLE ON THE DATA

Thomas D. Barber, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Nov. 13, 1990, Ser. No. 612,931

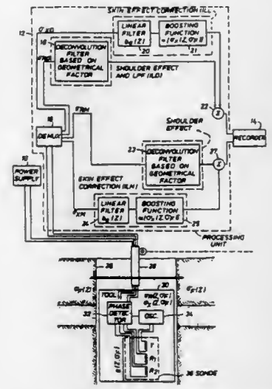
Int. Cl.[5] G01V *3/28, 3/18, 3/38*

U.S. Cl. 324—339 **14 Claims**

4. An apparatus for correcting an induction log for dip effect and developing an output signal reflecting the correction, the induction log being an input signal representing a plurality of formation profile data developed by an induction tool when said induction tool is disposed in a deviated borehole, said deviated borehole traversing a formation which includes a plurality of bedding planes, comprising:

means for determining an apparent dip angle representing an angle between a longitudinal axis of said deviated borehole and an axis perpendicular to said bedding planes;

means for converting said data developed by said induction tool when said tool is disposed in said deviated borehole to true bed thickness (TBT) format thereby producing TBT converted data;



means for processing and correcting the TBT converted data to reduce shoulder bed effects at approximately zero dip angle thereby producing processed, converted data;

means for determining two filters h(a1) and h(a2) as a function of two angles a1 and a2, where said two angles are related to said apparent dip angle as follows,

$$a1 < \text{said apparent dip angle} < a2,$$

said two filters h(a1) and h(a2) each being determined as a function of their angles a1 and a2 in accordance with the following expression,

$$\int_{-\infty}^{\infty} h(z - z')g(z')dz' = \delta(z - z')$$

where $\delta(z\text{-}z')$ is the Dirac delta function and g(z) is determined in accordance with the following expression,

$$g(z) = a\frac{d\sigma_m}{dz},$$

means for determining two values "sigma$_F$(a1) and sigma$_F$(a2)" as a function of said two filters h(a1) and h(a2), respectively, and as a function of said processed, converted data in accordance with the following expression, where said two values are parameters representing said formation profile data at angles a1 and a2,

$$\sigma_F(j) = \sum_{n=-(N-1)/2}^{(N-1)/2} h_a(n)\,\sigma(j-n)$$

means for interpolating to determine a value "sigma$_F$" as a function of said apparent dip angle representing a parameter of said formation at said apparent dip angle using said two values, said two angles, and said apparent dip angle, said value "sigma$_F$" being said output signal.

5,184,080

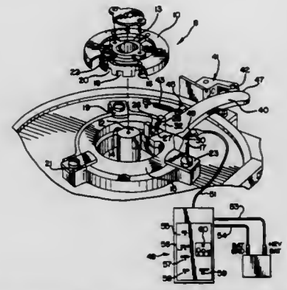
TEST APPARATUS FOR OPTO-ELECTRONIC TIME BASED GENERATOR OF AN IGNITION SYSTEM

Gregry M. Remmers, Ingleside, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Nov. 2, 1990, Ser. No. 608,541

Int. Cl.[5] F02P *17/00*

U.S. Cl. 324—392 **2 Claims**



1. A test apparatus for an opto-electronic time base generator of an ignition system for an internal combustion engine, the time base generator having an encoder disk which rotates synchronously with the crankshaft of the engine and includes a predetermined number of timing sections of a predetermined width which are at fixed locations relative to the crankshaft, and at least one synchronizing section which is at a fixed location relative to the crankshaft and to at least one of said timing sections and the time base generator having a photo-electric detector for detecting the presence or absence of the timing sections and the at least one synchronizing section and for generating digital signals representative thereof, said test apparatus comprising:

means for powering said photo-electric detector;

means for counting the number of the representations of timing sections of the digital signals in one or more revolutions of the encoder;

means for generating an indication of whether the result of said counting means equals the predetermined number of said timing sections;

means for generating a visual indication of a correct count responsive to the coincidence of a correct count signal and an enabling indicator count signal; and

means for generating a visual indication of an incorrect count responsive to the coincidence of an incorrect count signal and said enabling indicator count signal.

5,184,081

FAULT LOCATION

Thomas Oswald, Dartford, and Ian J. Hirst, Orpington, both of United Kingdom, assignors to Northern Telecom Europe, London, England

Filed Mar. 19, 1991, Ser. No. 671,452

Claims priority, application United Kingdom, Mar. 22, 1990, 9006447

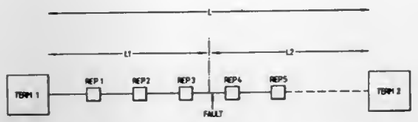
Int. Cl.[5] G01R *31/11*

U.S. Cl. 324—533 **8 Claims**

1. A method of locating an intermittent electrical fault in the power feed circuit of an optical repeater simplex transmission system, the method comprising detecting the arrival of a first optical error signal at a terminal of the system, detecting the arrival of a second signal at a terminal of the system, said first signal having arisen at a repeater adjacent the fault as a result of said electrical fault and having travelled to said terminal via a first optical path, said second signal either being an electrical surge pulse which has travelled from the fault to a terminal via a power conductor of the system, or being a second optical

VOL 1147 ISS 1 FE 2 1993 UMI

error signal which has arisen at a repeater adjacent the fault and travelled to a second terminal of the system via a second



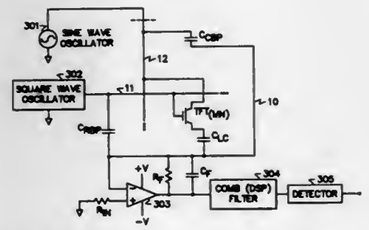
optical path, and determining the location of the fault by determining the time separation between the arrival of such first and second signals, and the rate of travel of the signals.

5,184,082

APPARATUS AND METHOD FOR TESTING AN ACTIVE MATRIX PIXEL DISPLAY

Larry A. Nelson, Albuquerque, N. Mex., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 18, 1991, Ser. No. 761,570
Int. Cl.[5] G01R *31/02, 27/02*
U.S. Cl. 324—537 **32 Claims**



1. A method of testing a condition of an active element pixel wherein the active element pixel has a column drive electrode, a row drive electrode, and a common electrode, and wherein the method of testing the condition of an active element pixel comprises the steps of:

a. driving the column drive electrode with a first periodic signal having a first frequency spectrum with first frequency components;

b. driving the row drive electrode with a second periodic signal having a second frequency spectrum with second frequency components wherein the combination of the first periodic signal and second periodic signal causes a third periodic signal in the common electrode wherein the third periodic signal has a modulated frequency spectrum with modulated frequency components and wherein the second frequency spectrum is selected to provide the modulated frequency spectrum with modulated frequency components positioned between the second frequency components;

c. filtering the first frequency spectrum from the modulated frequency spectrum to provide a filtered signal with a filtered signal magnitude; and

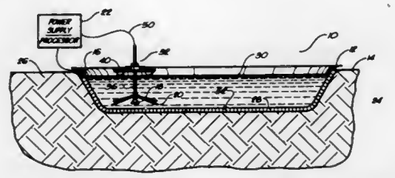
d. relating the filtered signal magnitude to the condition of the active element pixel.

5,184,083

APPARATUS AND METHOD FOR THE LOCATION OF LEAKS BY ARRAYED POTENTIALS AND DERIVED VECTORS

Thomas A. Groover, 1117 W. Drew, Houston, Tex. 77006

Filed Mar. 28, 1991, Ser. No. 676,282
Int. Cl.[5] G01N *27/00;* **G01R** *31/00;* **G01M** *3/16*
U.S. Cl. 324—559 **15 Claims**



1. An apparatus for the detection of leaks in an impoundment having at least one containment layer comprising:

a first electrode adapted to be positioned adjacent one side of the containment layer;

a probe assembly having an injection electrode connected thereto, said probe assembly having a plurality of sensor elements extending radially outwardly relative to said injection electrode, said sensor elements for sensing electrical potentials at points distal to said injection electrode, said injection electrode having a hemispherical configuration, said injection electrode adapted to be positioned such that a flat surface of said hemispherical configuration is adjacent another side of the containment layer;

a power source electrically connected to said first electrode and to said injection electrode, said power source for producing a current in said injection electrode, said current passing between said injection electrode and said first electrode through any leak in the containment layer; and

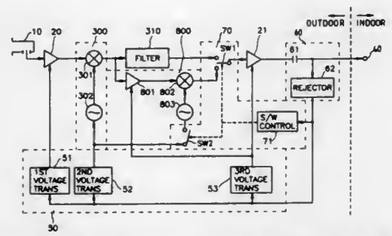
processor means interconnected to said sensor elements, said processor means for determining a direction of current flow from said injection electrode as sensed by said sensor elements.

5,184,084

DOUBLE BAND FREQUENCY CONVERTING SYSTEM

Ki-ho Yun, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi, Rep. of Korea

Filed Jul. 29, 1991, Ser. No. 736,923
Claims priority, application Rep. of Korea, Jul. 28, 1990, 90-11558
Int. Cl.[5] H04B *1/26, 15/00*
U.S. Cl. 328—15 **4 Claims**



1. A double band frequency converting system in a microwave radio receiver system having wave guide means for supplying a high frequency signal in a microwave frequency range at an output thereof, comprising:

first frequency converting means for changing the carrier frequency of said high frequency signal from a first value to a second lower value and outputting the changed high frequency signal at an output thereof;

second frequency converting means for changing the carrier frequency of the signal outputted by said first frequency converting means form said second lower value to a third value lower than said second lower value and outputting the resultant signal at an output thereof;

selection means for selecting one of the outputs of said first and second frequency converting means in response to a control signal; and

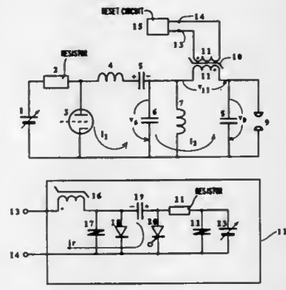
an intermediate frequency amplifier for amplifying the output selected by said selection means and transmitting the amplified output to a receiver.

5,184,085

HIGH-VOLTAGE PULSE GENERATING CIRCUIT, AND DISCHARGE-EXCITED LASER AND ACCELERATOR CONTAINING SUCH CIRCUIT

Shin Nakajima; Hiroyuki Aoyama; Rihito Kagawa, and Osamu Shimoe, all of Kumagaya, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Continuation of Ser. No. 537,073, Jun. 12, 1990, abandoned. This application Apr. 22, 1992, Ser. No. 873,632
Claims priority, application Japan, Jun. 29, 1989, 1-167365
Int. Cl.[5] H03K *3/45, 3/57*
U.S. Cl. 328—65 **17 Claims**



1. A high-voltage pulse generating circuit comprising a magnetic pulse compression circuit having a main saturable reactor provided with a reset circuit, said reset circuit including a second saturable reactor for providing said main saturable reactor with a pulse voltage or current for setting a magnetic flux density of said main saturable reactor at a gate initiation point to a predetermined constant level, wherein said second saturable reactor blocks a voltage surge of said main saturable reactor in an unsaturated region of said second saturable reactor, and wherein said second saturable reactor is saturated by the pulse current or voltage generated in the reset circuit for setting the magnetic flux density of said main saturable reactor.

5,184,086

DIFFERENTIAL AMPLIFIER

Haruyuki Inohana, and Shintaro Gomi, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 12, 1991, Ser. No. 789,888
Claims priority, application Japan, Jun. 17, 1991, 3-144885
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—252 **2 Claims**

1. A differential amplifier comprising:

a resistance element;

first and second transistors, emitters of which are connected to each other through said resistance element;

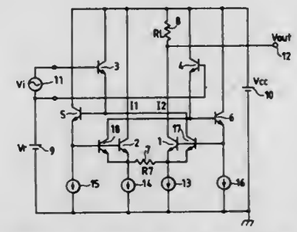
a third transistor, the emitter of which is connected to the collector of said first transistor;

a fourth transistor, the emitter of which is connected to the collector of said second transistor;

first level shift means for level-shifting a signal as much as a predetermined value which is provided at emitter of said third transistor, and applying said signal thus level-shifted to the base of said second transistor; and

second level shift means for level-shifting a signal as much as a predetermined value which is provided at the emitter of said fourth transistor, and applying said signal thus level-shifted to the base of said second transistor,

a fifth transistor, an emitter and a base of which are connected to the emitter and base of said second transistor so as to form a current mirror circuit; and



a sixth transistor, an emitter and a base of which are connected to the emitter and base of said first transistor so as to form a current mirror circuit;

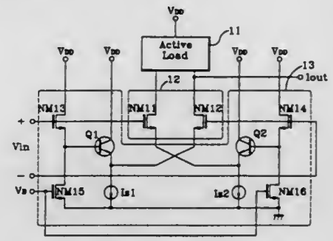
wherein based of said third and fourth transistors are employed as input terminals, and wherein at least one of the collectors of said fifth and sixth transistors are employed as an output terminal.

5,184,087

TRANSCONDUCTANCE AMPLIFIER USING PARASITIC BIPOLAR TRANSISTORS TO EMBODY A CONSTANT VOLTAGE SOURCE

Cheong W. Kim, Kyungki-Do, Rep. of Korea, assignor to Goldstar Electron Co., Ltd., Choongchungbook-Do, Rep. of Korea

Filed Dec. 26, 1991, Ser. No. 813,626
Claims priority, application Rep. of Korea, Mar. 30, 1991, 4308/1991
Int. Cl.[5] H03F *3/45, 3/16*
U.S. Cl. 330—253 **5 Claims**



1. A transconductance amplifier, comprising:

an active load including current mirrors;

amplifying means provided with a pair of first and second NMOS transistors including gate terminals connected respectively to positive and negative input signal terminals and drain terminals connected to said active load, the drain terminal of said second NMOS transistor being connected to a current output terminal; and

bias means provided with a pair of third and fourth NMOS transistors including gate terminals connected respectively to the positive and negative input signal terminals and drain terminals connected to a voltage source terminal, a pair of fifth and sixth NMOS transistors including gate terminals connected commonly to a bias voltage

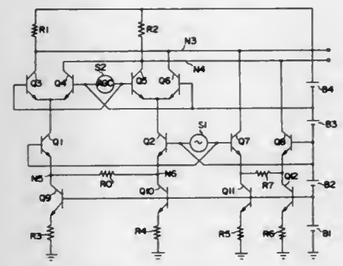
VOL 1147 ISS 1 FEB 2 1993 UMI

source terminal, source terminals connected to a ground terminal and drain terminals connected respectively to the source terminals of said third and fourth NMOS transistors, and a pair of first and second parasitic bipolar transistors including base terminals connected respectively to the source terminals of said third and fourth NMOS transistors, collector terminals connected to the voltage source terminal and emitter terminals connected respectively to source terminals of said second and first NMOS transistors in said amplifying means and to the ground terminal respectively through first and second current sources.

5,184,088
CONTROLLED-GAIN TRANSISTOR AMPLIFIER WITHOUT D-C SHIFT OR SIGNAL PHASE REVERSAL IN LOAD CURRENT

Jack Craft, Bridgewater, N.J., assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 10, 1992, Ser. No. 896,442
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—254 **5 Claims**

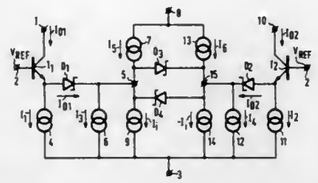


1. A controlled-gain transistor amplifier with constant quiescent load current despite change in gain responsive to a control signal voltage, said controlled-gain transistor amplifier including:
first, second, third, fourth, fifth and sixth transistors, each having a base electrode, an emitter electrode and a collector electrode;
means for connecting said first and second transistors as a first emitter-coupled differential amplifier including
means for applying an input signal voltage between the base electrodes of said first and second transistors;
means for connecting said third and fourth transistors as a first current splitter, including
an interconnection between the emitter electrodes of said third and fourth transistors to which the collector electrode of said first transistor connects, and including
means for applying said control signal voltage between the base electrodes of said third and fourth transistors;
means for connecting said fifth and sixth transistors as a second current splitter, including
an interconnection between the emitter electrodes of said fifth and sixth transistors to which the collector electrode of said second transistor connects, and including
means for applying said control signal voltage between the base electrodes of said fifth and sixth transistors;
means for applying an operating potential to a first interconnection, which is between the collector electrodes of said third and sixth transistors, and
means for applying an operating potential to a second interconnection, which is between the collector electrodes of said fourth and fifth transistors, at least one of which means for applying an operating potential includes
an output load; and
the improvement comprising:
seventh and eighth transistors, each having a base electrode, and emitter electrode and a collector electrode; and
means for connecting said seventh and eighth transistors as a second emitter-coupled differential amplifier, including
means for applying said input signal voltage between the base electrodes of said seventh and eighth transistors, and including
means for connecting the collector electrodes of said seventh and eighth transistors to separate ones of said first and second connections.

5,184,089
DIFFERENTIAL AMPLIFIER HAVING OUTPUT CURRENT LIMITING

Jan Van Gorsel, Almelo, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 15, 1992, Ser. No. 869,277
Claims priority, application European Pat. Off., Apr. 26, 1991, 91201004.8
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—254 **6 Claims**

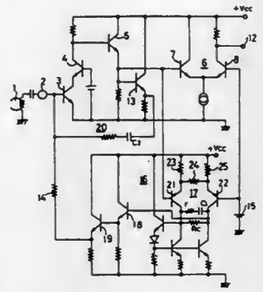


1. A differential amplifier having output current limiting, comprising:
first and second transistors each having a control electrode and a first and a second main electrode;
first and second output terminals coupled to the first main electrodes of the respective first and second transistors;
a first current terminal and a second current terminal;
at least a first diode having an anode coupled to the second main electrode of the first transistor and a cathode coupled to the first current terminal;
at least a second diode having an anode coupled to the second main electrode of the second transistor and a cathode coupled to the second current terminal;
a first current source coupled to the second main electrode of the first transistor for applying a first current (I_1) to the first transistor;
a second current source coupled to the second main electrode of the second transistor for applying a second current (I_2) to the second transistor;
a third current source coupled to the first current terminal for applying a third current (I_3) to the first current terminal;
a fourth current source coupled to the second current terminal for applying a fourth current (I_4) to the second current terminal,
means for applying reference voltages to the control electrodes of the first and second transistors;
a fifth current source coupled to the first current terminal for applying to the first current terminal a fifth current (I_5) which is smaller than the third current (I_3) and is opposite to the third current;
a sixth current source coupled to the second current terminal for applying to the second current terminal a sixth current (I_6) which is smaller than the fourth current (I_4) and is opposite to the fourth current;
at least a third diode whose anode is coupled to the first current terminal and whose cathode is coupled to the second current terminal;
at least a fourth diode whose cathode is coupled to the first current terminal and whose anode is coupled to the second current terminal;
a first signal current source coupled to the first current terminal for applying a first signal current ($+I_i$) to the first current terminal; and
a second signal current source coupled to the second current terminal for applying to the second current terminal a second signal current ($-I_i$) which is opposite to the first signal current ($+I_i$).

5,184,090
HEAD AMPLIFIER

Fukuji Anzai, Moriguchi, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi, Japan

PCT No. PCT/JP91/00091, § 371 Date Sep. 3, 1991, § 102(e) Date Sep. 3, 1991, PCT Pub. No. WO91/11803, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 28, 1990, Ser. No. 752,679
Claims priority, application Japan, Jan. 29, 1990, 2-18634
Int. Cl.[5] H03F *1/34*
U.S. Cl. 330—294 **7 Claims**



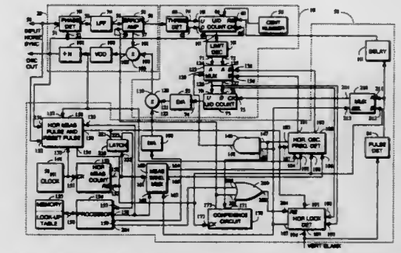
1. A head amplifier comprising:
an amplifier effective for producing an output in response to a playback signal from a head;
a differential amplifier;
means for feeding said output to said differential amplifier;
means for producing a reference voltage;
means for connecting said reference voltage to said differential amplifier;
means for comparing said output with said reference voltage; and
means for feeding back an output of said means for comparing to an input of said amplifier.

5,184,091
CIRCUIT FOR PHASE LOCKING AN OSCILLATOR WITHIN ANY ONE OF A PLURALITY OF FREQUENCY RANGES

Gopal K. Srivastava, Arlington Heights, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 4, 1991, Ser. No. 709,939
Int. Cl.[5] H03L *7/06*; H04N *5/05*
U.S. Cl. 331—10 **28 Claims**

27. A method for controlling a horizontal oscillator forming part of a phase locked loop in response to a received horizontal sync signal, said method comprising:
operating said oscillator in response to a control signal within a spectrum of frequencies divided into a plurality of frequency ranges including the frequency of the received sync signal for generating an oscillator signal representing the received signal to a first approximation by placing the frequency of said oscillator within the same frequency range as said sync signal; and
modifying said control signal is response to a frequency comparison of said oscillator and sync signals for adjusting the frequency of said oscillator signal for representing the frequency of the received sync signal to a second more precise approximation and establishing confidence in the

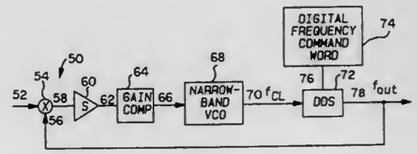


accuracy of said second approximation and enabling said phase locked loop in response to establish confidence.

5,184,092
PHASE-LOCKED LOOP FREQUENCY TRACKING DEVICE INCLUDING A DIRECT DIGITAL SYNTHESIZER

Iradj Shahriary, Santa Monica, and Kevin M. McNab, Hawthorne, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 633,864, Dec. 26, 1990, Pat. No. 5,130,671. This application Jun. 16, 1992, Ser. No. 899,391
Int. Cl.[5] H03L *7/08, 7/099, 7/16*
U.S. Cl. 331—16 **20 Claims**



1. A phase-locked loop comprising:
a phase detector for comparing the phase of an input signal having a time varying frequency with a return signal and for producing a DC magnitude signal proportional to the comparison;
a voltage controlled oscillator in communication with the phase detector for producing an AC signal representative of the DC magnitude signal from the phase detector; and
a signal generator for receiving the AC representative signal as a clocking frequency and producing the phase-locked loop output signal representative of the input signal, said output signal also acting as the return signal to the phase detector.

5,184,093
FREQUENCY SYNTHESIZER

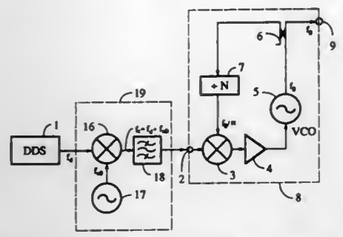
Kenji Itoh; Akio Iida, and Sbuji Urasaki, all of Kanagawa, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Feb. 25, 1992, Ser. No. 840,937
Claims priority, application Japan, Mar. 8, 1991, 3-043515; Nov. 26, 1991, 3-310339
Int. Cl.[5] H03L *7/00*
U.S. Cl. 331—25 **17 Claims**

1. A frequency synthesizer, including a direct digital synthesizer (DDS) for providing wave amplitude data as a standard signal source, and a phase lock loop for comparing a branched

VOL 1147 ISS 1 FEB 2 1993 UMI

synthesizer frequency with the standard signal source at a phase comparator, comprising:



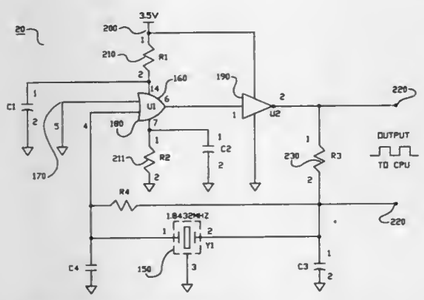
a frequency converter for converting the output frequency of the DDS to a higher frequency and for providing the resultant higher frequency to the phase comparator in the phase lock loop.

5,184,094

LOW POWER OSCILLATOR CIRCUITS

Raymond H. Kohler, Souderton, Pa., assignor to Moore Products Co., Spring House, Pa.

Filed Aug. 16, 1991, Ser. No. 746,353
Int. Cl.[5] H03B *5/06, 5/36*
U.S. Cl. 331—158 **22 Claims**



1. A clock circuit comprising:

resonator means for providing an input waveform of a specified frequency to the clock circuit;

generator means biased at a first voltage having at least two input terminals wherein one of the two input terminals is coupled to the resonator means for producing a substantially square wave output having a square frequency corresponding substantially to the input waveform frequency; and

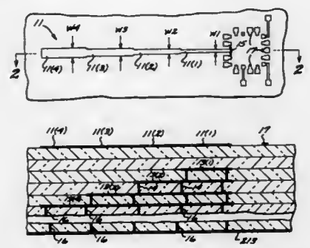
power output means coupled to the generator means for outputting a substantially square wave having substantially the same frequency as the input waveform, the power output means being biased at a higher voltage level than the generator means, such that the power output means is biased at the ned of its biased range.

5,184,095

CONSTANT IMPEDANCE TRANSITION BETWEEN TRANSMISSION STRUCTURES OF DIFFERENT DIMENSIONS

Curtis L. Hanz, Redondo Beach; Jon J. Gulick, Hawthorne; Kathleen L. Virga, Redondo Beach, and Allen Podell, Palo Alto, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 31, 1991, Ser. No. 739,009
Int. Cl.[5] H01P *5/00*
U.S. Cl. 333—33 **7 Claims**



1. A microstrip transmission line structure formed in a unitized multilayer circuit structure having a plurality of insulating layers, the microstrip transmission line structure comprising:

a series of connected microstrip strip sections having different widths disposed on an outside layer of the unitized multilayer circuit structure and forming a microstrip line;

respective ground planes for each of said strip sections formed between insulating layers and respectively spaced from the associated strip sections to provide a substantially constant impedance along the length of the microstrip line; and

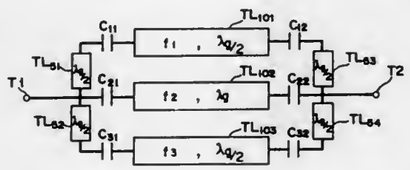
a plurality of conductive vias for electrically interconnecting said respective ground planes.

5,184,096

PARALLEL CONNECTION MULTI-STAGE BAND-PASS FILTER COMPRISING RESONATORS WITH IMPEDANCE MATCHING MEANS CAPACITIVELY COUPLED TO INPUT AND OUTPUT TERMINALS

Kikuo Wakino; Toshio Hishikawa; Youhei Ishikawa; Koichi Takebara, and Toru Tanizaki, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Division of Ser. No. 517,248, May 1, 1990, Pat. No. 5,097,236.
This application Aug. 27, 1991, Ser. No. 750,614
Claims priority, application Japan, May 2, 1989, 1-113927; Apr. 19, 1990, 2-103961
The portion of the term of this patent subsequent to Mar. 17, 2009, has been disclaimed.
Int. Cl.[5] H03H *7/00;* **H01P** *1/201*
U.S. Cl. 333—175 **9 Claims**



1. A parallel connection multi-stage band-pass filter comprising an input terminal and an output terminal for signals, and a plurality of resonators each provided with first and second ports;

said resonators having respective resonant frequencies different from and close to each other;

said first port of each of said resonators being electrically connected to said input terminal through first impedance matching means;

said second port of each of said resonators being electrically connected to said output terminal through second impedance matching means;

wherein said first port of each of said resonators is electrically connected to said input terminal through said first impedance matching means by capacitive coupling;

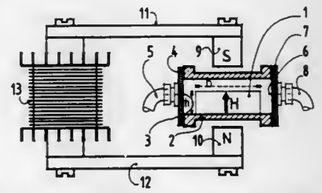
said second port of each of said resonators being electrically connected to said output terminal through said second impedance matching means by capacitive coupling.

5,184,097

AGILE MICROWAVE FILTER HAVING AT LEAST ONE FERRITE RESONATOR

Carole Brouzes, Asnieres; Claude Ressencourt, Acquigny, and Alain de Place, Paris, all of France, assignors to Alcatel Transmission par Faisceaux Hertziens, Levallois Perret Cedex, France

Filed Feb. 15, 1991, Ser. No. 655,604
Claims priority, application France, Feb. 23, 1990, 90 02280
Int. Cl.[5] H01P *1/219*
U.S. Cl. 333—202 **2 Claims**



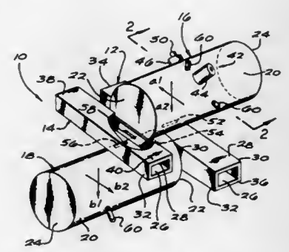
1. An agile microwave filter comprising: a waveguide, at least one dielectric confinement resonator operating in TM mode, made of ferrite material and placed on the bottom of said waveguide, said waveguide operating in evanescent mode, and means for applying a magnetic field of adjustable intensity to said at least one ferrite resonator for shifting the center frequency of the filter.

5,184,098

SWITCHABLE DUAL MODE DIRECTIONAL FILTER SYSTEM

Rolf Kich, Redondo Beach, and Paul J. Tatomir, Laguna Niguel, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 10, 1992, Ser. No. 832,877
Int. Cl.[5] H01P *1/208*
U.S. Cl. 333—208 **10 Claims**



1. A switchable mode directional filter system comprising: a first filter and a second filer;

an input waveguide defining a first input port and a second input port;

an output waveguide defining a first output port and a second output port;

input coupling means for coupling an input electromagnetic signal from said input waveguide into each of said filters;

output coupling means for coupling signals outputted by said filters into said output waveguide; and

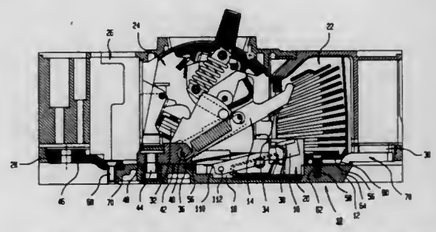
means operatively associated with at least one of said filters for switching the output signal between said first and second output ports.

5,184,099

CIRCUIT BREAKER WITH DUAL MOVABLE CONTACTS

Bernard DiMarco, Lilburn; Robert E. Black, Snellville, and Stephen D. Cella, Stone Mountain, all of Ga., assignors to Siemens Energy & Automation, Inc., Alpharetta, Ga.

Filed Jun. 13, 1991, Ser. No. 714,803
Int. Cl.[5] H01N *75/00*
U.S. Cl. 335—16 **12 Claims**



1. In a circuit breaker of the type including a first circuit breaker contact arm mechanically coupled to an operating mechanism, a circuit breaker contact arm support comprising:

a support;

a second circuit breaker contact arm supported by the support to pivot between a first position and a second position, the second circuit breaker contact arm being engageable with the first circuit breaker contact arm substantially at the first position; and

an arrangement disposed to apply a first force to the second circuit breaker contact arm while the second circuit breaker contact arm is in the first position and a second force to the second circuit breaker contact arm when the second circuit breaker contact arm is in the second position;

where the first and second forces urge the second circuit breaker contact arm toward the first position and the first force is greater than the second force.

5,184,100

CIRCUIT BREAKER

Jun Oyama, and Naoshi Uchida, both of Kanagawa, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Filed Apr. 25, 1991, Ser. No. 691,425
Claims priority, application Japan, Apr. 26, 1990, 2-111159; Jul. 19, 1990, 2-191682; Nov. 22, 1990, 2-318868
Int. Cl.[5] H01H *75/00*
U.S. Cl. 335—16 **7 Claims**

1. A circuit breaker, comprising:

a housing;

a terminal disposed in said housing;

a first movable arm disposed in said housing, including a first contact;

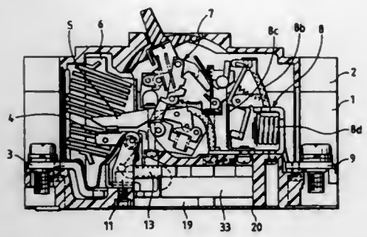
a support member disposed in said housing;

a second movable arm pivotally supported by said support member and being electrically connected to said terminal by a flexible lead, said second movable arm including a second contact and being disposed opposite said first

VOL 1147 ISS 1 FEB 2 1993 UMI

movable arm so that said second contact contacts said first contact when a normal current flows, wherein said first movable arm exerts an electromagnetic repulsive force on said second arm in a direction where the first and second movable arm repel each other to open said first and second contacts in response to a current exceeding a predetermined value;

an insulating member fitted with said support member and said terminal to form a unitary construction, said insulating member insulating said support member from said terminal;



a rear cover disposed on said housing;

a plate-like packing disposed between said housing and said rear cover; and

a chamber disposed in said housing, said chamber including an opening, said plate-like packing including a plurality of windows in alignment with said opening, wherein said rear cover is held tightly against said housing so that said chamber is hermetically isolated by said plate-like packing disposed between said rear cover and said housing.

5,184,101

UNDERVOLTAGE TRIPPING DEVICE

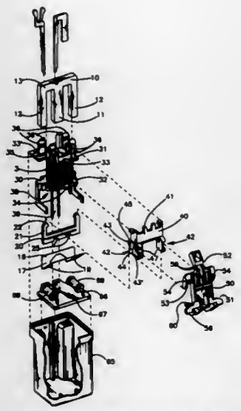
Kurt Ineichen, Emmenbrücke; Peter Rüedi, Neuenkirch, and Herbert Wirth, Gisikon, all of Switzerland, assignors to Weber AG, Emmenbrucke, Switzerland

Filed May 23, 1991, Ser. No. 704,336

Claims priority, application Switzerland, May 23, 1990, 1774/90

Int. Cl.[5] H01H *51/22*

U.S. Cl. 335—78 **12 Claims**



1. An undervoltage tripping device for actuating an appliance protective switch when the line voltage of an AC power line drops below a nominal value, the tripping device comprising:

a rectifier (67) connected to the AC power line for converting AC current to DC current;

a DC electromagnet including a magnetic winding (3) energizeable by DC current from the rectifier and a core (10) which is at least partially surrounded by the magnetic winding;

an armature (20) magnetically coupled with the core and movable between an attracted position and a dropped position, the armature being in the attracted position when the line voltage of the power line is at the nominal value, the armature being spring-loaded to move from the attracted position to the dropped position when the line voltage of the power line drops below the nominal value; and

a tripping member (50) connectable to the appliance protective switch and movable between a latched position and a released position for, when connected to the appliance protective switch and in the released position, actuating the appliance protective switch, the tripping member being mechanically coupled with the armature and movable relative to the armature, the armature acting as a ratchet for the tripping member to maintain the tripping member in the latched position when the line voltage of the power line is at the nominal value, the tripping member being spring-loaded from the latched position to the released position to thereby actuate the appliance protective switch when the line voltage of the power line drops below the nominal value, the tripping member moving the armature from the dropped position back to the attracted position when the tripping member is moved from the released position back to the latched position.

5,184,102

HOUSING FOR AN ELECTROMECHANICAL COMPONENT, PARTICULARLY FOR A RELAY

Erwin Müller, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

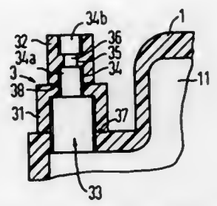
PCT No. PCT/DE89/00268, § 371 Date Jul. 17, 1991, § 102(e) Date Jul. 17, 1991, PCT Pub. No. WO90/08393, PCT Pub. Date Jul. 26, 1990

PCT Filed Apr. 27, 1989, Ser. No. 730,929

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1989, 8900466

Int. Cl.[5] H01H *9/02*

U.S. Cl. 335—202 **12 Claims**



1. A housing for an electromechanical component, comprising:

a housing wall that tightly terminates a gas-filled interior, said housing wall including a severable projection extending outwardly of said housing wall into which a channel extends proceeding from the interior of said housing wall, said channel in the projection has at least two sections having different cross sections that become smaller from inside toward outside of said housing wall in steps; and a cross-wall in an outer section of said two sections of the channel, said outer section being of a smaller cross section than an inner section of said two sections.

5,184,103

HIGH COUPLING TRANSFORMER ADAPTED TO A CHOPPING SUPPLY CIRCUIT

Jean Gadreau, Echirolles, and Andre Pascal, St. Joseph de Riviere, both of France, assignors to Bull, S.A., Paris, France

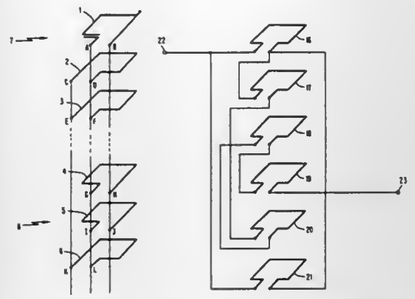
PCT No. PCT/FR88/00229, § 371 Date Jan. 17, 1989, § 102(e) Date Jan. 17, 1989, PCT Pub. No. WO88/09042, PCT Pub. Date Nov. 17, 1988

Continuation of Ser. No. 314,065, Jan. 17, 1989, abandoned. This PCT application May 10, 1988, Ser. No. 649,181

Claims priority, application France, May 15, 1987, 87 06835

Int. Cl.[5] H01F *15/04, 27/30*

U.S. Cl. 336—84 C **40 Claims**



1. A transformer adapted to be connected in a chopper power supply driven by a DC source having a terminal, the supply including a switching transistor having an electrode, the transformer comprising a primary winding and a secondary winding having first and second parts on opposite sides of the primary winding, each part of said secondary winding having turns connected in series and parallel, each of said windings including plural turns, individual ones of said turns being formed by a printed circuit electrically conducting layer, said layers being (i) magnetically coupled to each other, (ii) stacked in mutually parallel planes, and (iii) connected to each other so that:

(a) terminals of first and second of said layers respectively forming closest adjacent turns in the stack of the primary and secondary windings have approximately fixed potentials while the primary winding is connected to the terminal of the DC source and (b) third and fourth of said layers respectively forming most remote turns in the stack of primary and secondary windings have potentials that vary relative to the fixed potential to a greater extent than any other turns in the stack while the primary winding is connected to the terminal of the DC source and the electrode of the switching transistor.

5,184,104

ELECTROMAGNETIC INDUCTION APPARATUS WITH A SOUND SUPPRESSING ARRANGEMENT

Katsumi Kondo, Ako, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 302,416, Jan. 27, 1989, abandoned. This application Jun. 13, 1990, Ser. No. 538,093

Claims priority, application Japan, Feb. 29, 1988, 63-48231

Int. Cl.[5] H01F *15/00*

U.S. Cl. 336—100 **3 Claims**

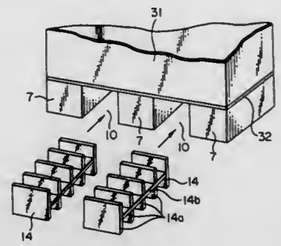
1. An electromagnetic induction apparatus comprising:

a support surface;

a tank having a bottom surface and containing an electrical device;

a plurality of support members attached to the bottom surface of the tank and supporting the weight of the tank on the support surface, the support members defining a chamber between the bottom surface of the tank and the support surface;

a sound suppressing plate having top and bottom surfaces and disposed in the chamber between the support surface and the bottom surface of the tank substantially parallel to



and spaced from both the bottom surface of the tank and the support surface; and

a plurality of support plates extending from the top and bottom surfaces of the sound suppressing plate and supporting the sound suppressing plate above the support surface.

5,184,105

BOBBIN FOR MULTIPLE-CONNECTED INDUCTOR

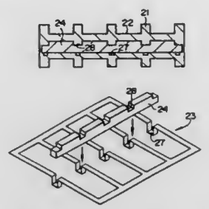
Kunihisa Endo, Tsurugashima, Japan, assignor to Toko Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 28, 1991, Ser. No. 661,371

Claims priority, application Japan, May 11, 1990, 2-49209[U]

Int. Cl.[5] H01F *15/10, 27/30*

U.S. Cl. 336—192 **7 Claims**



1. A bobbin for a multiple-connected inductor comprising:

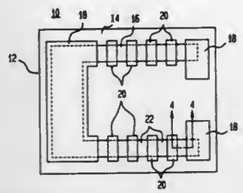
(a) an elongated member formed of synthetic resin and including at least three flanges and winding grooves for coils partitioned by said flanges;

a metal piece partially embedded in said member and projecting outside said member at a portion of each of said flanges to serve as an electrode or a connecting portion of the coils; and

a rod-shaped magnetic body disposed entirely within said member and extending over a plurality of said winding grooves under a state in which said magnetic body is supported by portions of said metal pieces which are entirely embedded within said member formed of synthetic resin.

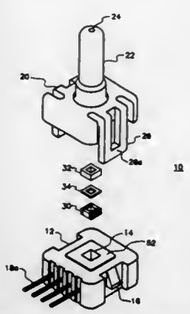
VOL 1147 ISS 1 FEB 2 1993 UMI

5,184,106
MAGNETIC FIELD SENSOR WITH IMPROVED ELECTRON MOBILITY
Dale L. Partin, Romeo, and Joseph P. Heremans, Troy, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Jan. 28, 1991, Ser. No. 646,893
Int. Cl.[5] H01L *43/00*
U.S. Cl. 338—32 R **45 Claims**



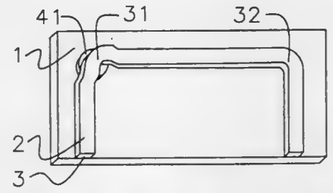
1. A magnetic field sensor comprising:
a substrate having a surface; and
an active film of a high electron mobility semiconductor material on said substrate surface, said active film comprising a first layer of the said semiconductor material which is undoped or lightly doped, and a second layer of said semiconductor material at least a portion of which is of highly doped n-type conductivity.

5,184,107
PIEZORESISTIVE PRESSURE TRANSDUCER WITH A CONDUCTIVE ELASTOMERIC SEAL
Dean J. Maurer, Freeport, Ill., assignor to Honeywell, Inc., Minneapolis, Minn.
Continuation of Ser. No. 646,568, Jan. 28, 1991, abandoned. This application Jan. 24, 1992, Ser. No. 826,206
Int. Cl.[5] H01C *10/10*
U.S. Cl. 338—42 **25 Claims**



1. A pressure transducer assembly comprising:
a diaphragm of semiconductor material having a central portion with a stress sensitive device formed thereon electrically conductive regions extending from the stress sensitive device to a peripheral portion of said diaphragm;
a housing containing said diaphragm and having at least one pressure port which communicates with said diaphragm, and said housing and having first and second opposing internal surfaces configured to form first and second seats for seals on opposite sides of the diaphragm;
electrical leads which extend from one of the interior to the exterior of the housing are positioned proximate to the first seats; and
first and second elastomeric seals located between said diaphragm and the first and second seats respectively, each of said elastomeric seals being molded in a configuration to extend from the seat on a separate one of the internal surfaces of said housing to a surface of said diaphragm at a location surrounding the central portion thereof, said housing being adapted to hold said first and second seals and said diaphragm between the first and second seats so as to form a pressure tight seal between said housing and said diaphragm on opposite sides thereof, said first elastomeric seal being electrically conductive so as to conduct current from the electrically conductive regions on said diaphragm to the electrical leads.

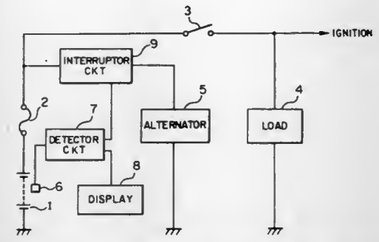
5,184,108
CONDUCTIVE CORNERS FOR SURGE SURVIVAL
Terry Bloom, Middlebury, and Craig Ernsberger, Granger, both of Ind., assignors to CTS Corporation, Elkhart, Ind.
Filed Jan. 2, 1991, Ser. No. 638,443
Int. Cl.[5] H01C *10/10*
U.S. Cl. 338—195 **15 Claims**



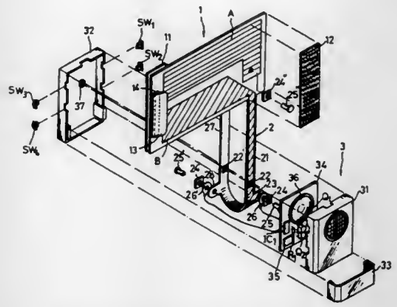
1. A composite electrical component having a finite resistance to current flow comprising a first conductive material having two terminations, said first conductive material being electrically continuous between said two terminations, said first conductive material having first relatively localized regions therein prone to failure or causing second relatively localized regions of said composite electrical component to fail during the application of large surges of electrical energy between said two terminations, the improvement comprising second conductive material located adjacent to said first and said second relatively localized regions and electrically connected to said first conductive material to shunt current from said first conductive material through said second conductive material while not disrupting the electrical continuity of said first conductive material between said two terminations, said second conductive composition limited in size and placement substantially to said first and said second relatively localized regions.

5,184,109
OVERCHARGE PREVENTIVE DEVICE FOR AUTOMOTIVE BATTERIES
Hirokazu Tanaka, and Koichi Ito, both of Himeji, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan
Filed Jan. 15, 1991, Ser. No. 641,413
Claims priority, application Japan, Jan. 17, 1990, 2-3451[U]; Jan. 20, 1990, 2-3985[U]
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 340—455 **7 Claims**

1. An overcharge preventive device for a battery charging circuit of an automobile which includes a battery and a charging generator circuit coupled across the battery, said overcharge preventive device comprising:
odorant sensor means for detecting an amount of gas developed from said battery when the battery is being charged by said charging generator circuit;
overcharge detector means, connected to an output of said odorant sensor means and disposed near said battery, for identifying when said generator circuit malfunctions and causes an excessively high charging rate to be supplied to the battery based on a level of said output of said odorant sensor means, said overcharge detector means detecting an overcharged state of the battery when the output of said odorant sensor means indicates that an amount of gas detected by said odorant sensor means has exceeded a predetermined level, the overcharge detector means outputting an output signal only when a generator circuit malfunction is identified;
interrupter means, connected to the overcharge detector means and connected between the battery and said charging generator circuit, for automatically electrically separating said charging generator circuit from said battery in response to said output of said overcharge detector means which is generated only when said generator circuit malfunction is identified; and
alerting means, connected to said overcharge detector means, for alerting a driver of said automobile that said generator circuit malfunction has occurred in response to the output of said overcharge detector means.

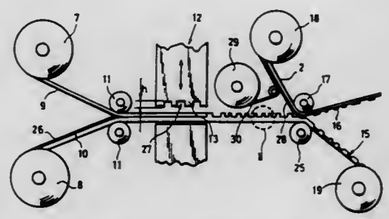


5,184,110
HANDLE-ATTACHABLE SUITCASE ALARM
Ming-Gin Horng, 6F-1, No. 86, Keh Nan St., Taipei, Taiwan
Filed Oct. 7, 1991, Ser. No. 772,542
Int. Cl.[5] G08B *13/14*; H01H *9/06*
U.S. Cl. 340—571 **4 Claims**



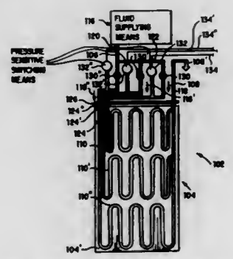
1. An alarm for attachment to the handle of a suitcase comprising:
a) a soft cover of steady insulation impedance for attachment to a handle of suitcase, the cover including plural contact faces and means for detachably securing the cover around the handle;
b) a conduction strip including two conduction sections, two ends attached to the cover, plural connection ears, each connection ear provided with a first through hole formed therein, and plural second through holes formed in the conduction strip;
c) a housing including a top cover, a loudspeaker screen, a battery cover, a seat having a square cotter, a plurality of switch openings and a base board mounted on the seat;
d) an alarm means including an alarm circuit having an alarm IC, two transistors, a resistor, a power switch, a battery and a loudspeaker; and
e) conductor terminals for connecting the alarm circuit to the connection ears, wherein bridging of the contact faces by an unauthorized human hand gripping the handle of a suitcase to which the cover is attached completes the circuit and triggers the alarm means.

5,184,111
CIRCUIT ARRANGEMENT ON A SUPPORT FILM
Fritz Pichl, Seehalden Strasse 17, CH-8802 Kilchberg, Switzerland
Filed Oct. 18, 1990, Ser. No. 599,701
Claims priority, application Switzerland, Oct. 20, 1989, 3818/89
Int. Cl.[5] G08B *13/24*
U.S. Cl. 340—572 **10 Claims**



1. A circuit arrangement comprising at least one cut electrically conductive track arranged on at least one surface of a support film by means of an adhesive layer, wherein the surface of the adhesive layer is free of other materials next to the conductive track, the support film being essentially free of deformations and fluctuations in thickness (t), both in the region of the conductive track arranged on it and outside this region; and wherein the conductive track has a stamping burr projecting away from the support film at the edges formed between the surface and the cut sides of the conductive track.

5,184,112
BED PATIENT POSITION MONITOR
Ignaty Gusakov, East Aurora, N.Y., assignor to Gaymar Industries, Inc., Orchard Park, N.Y.
Filed Sep. 11, 1991, Ser. No. 757,621
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—573 **24 Claims**



1. Apparatus for monitoring the position of a body relative to a support surface, comprising:
means for sensing movement of a body from a first position to a second position relative to a support surface, said sensing means including at least a first sensor and a second sensor;
means for providing an alarm signal including at least a first

VOL 1147 ISS 1 FE 2 1993 UMI

alarm member, a second alarm member and a third alarm member; and

means for electrically connecting said sensing means to said alarm signal means for selectively activating saidarm signal means in response to said movement, said connecting means comprising:

at least a first filter means having an input electrically connected to said first sensor, and an output, and a second filter means having an input electrically connected to said second sensor, and an output;

at least a first inverter means having an input electrically connected to said output of said first filter means, and an output, and a second inverter means having an input electrically connected to said output of said second filter means, and an output;

first means, having inputs electrically connected to the outputs of said first and second inverter means and an output electrically connected to said first alarm member for sending a first alarm signal to said first alarm member;

second means having inputs electrically connected to at least the outputs of said first and second filter means, and an output electrically connected to said second alarm member for sending a second alarm signal to said second alarm member; and

third means having inputs electrically connected to the outputs of said first and second filter means and said first and second inverter means, and an output electrically connected to said third alarm member for sending a third alarm signal to said third alarm member.

5,184,113

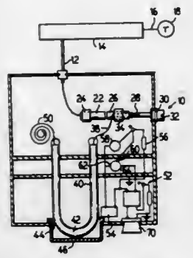
ELECTRICAL FIELD DISPLAY/SIGNAL DEVICE

Greg Baron, 5434 W. 31st St., Cicero, Ill. 60650

Continuation of Ser. No. 590,944, Oct. 1, 1990, abandoned. This application Oct. 29, 1991, Ser. No. 784,128

Int. Cl.[5] G08B *21/00*

U.S. Cl. 340—635 **13 Claims**



1. A display device for use with an electrical field generator comprising:

a housing for said device;

an electrical conductor extending from a point on said electrical field generator distant from a power supply to a first terminal fixedly secured within said housing;

a second terminal spaced from said first terminal;

means for adjusting the size of a space between said two terminals; and

a display means connected at a first end to said second terminal for indicating the presence or absence of an electrical potential at said point on said electrical field generator and connected at an opposite end to an isolator coil;

said display means being perceptible from an exterior of said housing.

5,184,114

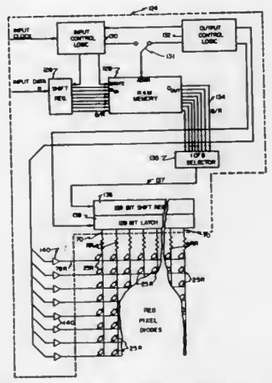
SOLID STATE COLOR DISPLAY SYSTEM AND LIGHT EMITTING DIODE PIXELS THEREFOR

Brent W. Brown, Smithfield, Utah, assignor to Integrated Systems Engineering, Inc., Logan, Utah

Continuation of Ser. No. 339,778, Apr. 18, 1989, abandoned, which is a continuation of Ser. No. 155,790, Feb. 16, 1988, abandoned, which is a continuation of Ser. No. 738,624, May 28, 1985, abandoned, which is a continuation-in-part of Ser. No. 439,149, Nov. 4, 1982, abandoned. This application Mar. 15, 1990, Ser. No. 495,006

Int. Cl.[5] G09G *3/32*

U.S. Cl. 340—701 **38 Claims**



1. A large matrix display system comprising:

an array comprising a large number of juxtaposed multicolor solid state integrated pixels and means arranging the pixels in a close matrix pattern;

each pixel comprising an exposed face comprising a plurality of differently colored separate LEDs and means compactly arranging the LEDs so that each pixel is an apparent point composite color light source to an observer of the array;

a plurality of separate conductor means forming a part of each pixel, one separate conductor means for the LEDs of each color, means by which each conductor means electrically communicates only with all of the LEDs of one color of the pixel whereby a coordinated series of different signals is respectively communicated to the LEDs of each color to sequentially visually create at each pixel A succession of composite colors one after another ranging across a large number of color combinations;

means comprising a source of separate but coordinated series of signals for the LEDs of the same color for each pixel of the matrix display;

means controlling and delivering said coordinated series of signals separately but simultaneously respectively to the LEDs of same color of each pixel of the matrix display in such ar168ner that each pixel will, at any point in time, display only one composite color from within said large number of color combinations comprising a visual integration of the period of illumination of each LED of each pixel produced by each of the plurality of coordinated signals delivered to the differently colored LEDs of each pixel and said one composite color of each pixel will sequentally change from time to time as said plurality of coordinated signals from said source means and controlling and delivering means change whereby images of composite colors, which vary with time across the spectrum of a large number of color combinations, are successively visually illuminated on the matrix display.

5,184,115

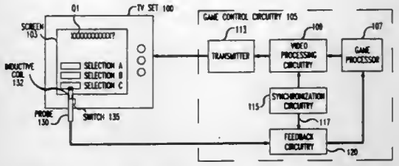
TOUCH-SCREEN ARRANGEMENT

Edward P. Black, Salt Lake City, Utah, and Douglas C. Smith, Rumson, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 4, 1990, Ser. No. 532,721

Int. Cl.[5] G09G *3/02*

U.S. Cl. 340—708 **30 Claims**



1. Apparatus for use with a CRT, said CRT emitting an electron beam which scans a viewing screen, said apparatus comprising

means including an inductive coil for detecting a magnetic field generated by the scan of said electron beam on said viewing screen, and

means for activating a generation of a signal indicative of a detection of said magnetic field.

5,184,116

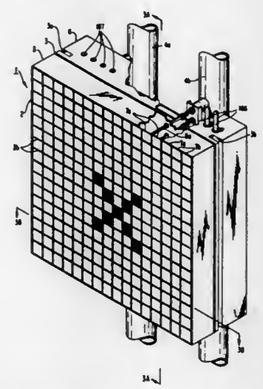
BACK-LIGHTABLE DIFFUSIVE DISPLAY SIGN

Ronald R. Daugherty, Washington, and Richard J. Petrocy, Carteret, both of N.J., assignors to Mediatronics, Inc., Carteret, N.J.

Filed Oct. 1, 1990, Ser. No. 590,914

Int. Cl.[5] G09G *3/16*

U.S. Cl. 340—764 **16 Claims**



1. A back-lightable sign which comprises in combination;

a source of light,

a display panel in the path of light from said source, said display panel for displaying alphanumeric characters and graphics comprising a plurality of mechanically movable display elements which move interchangeably from a first position in which a dark face is visible to a second position in which a bright face is visible;

means for manipulating said mechanically movable display elements from said first position to said second position and vice versa;

and diffusion means interposed between said source of light and said display panel for scattering the light falling on said display panel from said source whereby shadows cast by said means for manipulating said mechanically moving display elements are substantially invisible from the front of said display panel;

in which said diffusion means comprises a plate of solid translucent material interposed between said source of light and said display panel, said plate constructed and arranged to diffuse light passing through said plate;

wherein said mechanically-moveable elements are arranged in rows and columns corresponding to the width and length of said display panel, wherein each of said mechanically movable elements comprises a first rectangular plate having a dark surface, and a substantially identical second rectangular plate having a bright surface, said first plate and said second plate being fastened together along one of each of their edges to form a triangular configuration in which the dark plate faces outward on one side and the bright plate faces outward on the other side,

a yoke connected between the undersides of said plates in each of said elements, said yoke having bearings at opposite ends.

a pin interposed through said bearings in each row of said elements for rotating said mechanically movable element with said pin as an axis from a first position in which said dark face is in substantially parallel flush relation with the inner surface of said display panel to a second position in which said bright face is in substantially flush relation with the inner surface of said display panel, and vice versa;

means for retracting each of said pins and each of said rows of mechanically movable elements under spring bias in a direction away from the inner surface of said display panel for conditioning a row of said movable elements for rotation from one said position to another said position;

means comprising a comb having a plurality of teeth extended in the direction of said movable elements, which comb extends in a length direction of said display panel transverse to said pins, said comb constructed to be moved down under spring bias whereby said teeth contact said movable elements conditioned to rotate;

driving means for conditioning said mechanically movable elements to rotate from one said position to another said position, and driving means for driving a selected comb to move downward, whereby the teeth of said comb contact a conditional mechanically movable element in response to a code of preselected signals to move said movable elements to form a sign in accordance with said signals.

5,184,117

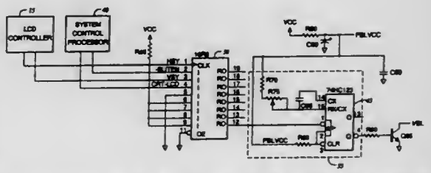
FLUORESCENT BACKLIGHT FLICKER CONTROL IN AN LCD DISPLAY

Lloyd W. Gauthier, St. Joseph, Mich., assignor to Zenith Data Systems Corporation, St. Joseph, Mich.

Filed Jun. 28, 1989, Ser. No. 373,017

Int. Cl.[5] G09G *3/36*

U.S. Cl. 340—784 **20 Claims**



1. A control circuit for driving a backlight for a display which mitigates noticeable flicker from the backlight comprising:

means for receiving a source of signals representative of horizontal sync signals which drive the display; and

means responsive to said receiving means for providing a backlight control signal of a predetermined frequency

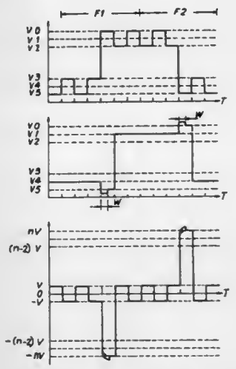
VOL 1147 ISS 1 FEB 2 1993 UMI

synchronized to said horizontal sync signal which includes a counter, wherein said counter divides said horizontal sync signal by a predetermined number.

5,184,118
LIQUID CRYSTAL DISPLAY APPARATUS AND METHOD OF DRIVING SAME

Katsunori Yamazaki, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 232,750, Aug. 15, 1988, Pat. No. 5,010,326. This application Feb. 23, 1990, Ser. No. 484,011
Claims priority, application Japan, Aug. 13, 1987, 62-202154; Feb. 9, 1988, 63-27922; Feb. 9, 1988, 63-27923; Feb. 9, 1988, 63-27924; Feb. 23, 1989, 1-43478
Int. Cl.[5] G09G *3/36*
U.S. Cl. 340—784 **21 Claims**

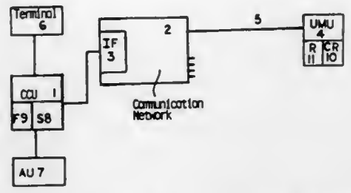


1. A liquid crystal display device having a plurality of picture elements which can be placed in lit and unlit states, comprising:
a first substrate;
a second substrate spaced apart from said first substrate;
a plurality of scanning electrodes and signal electrodes;
liquid crystal material disposed in the space between the substrates;
driving means for producing scan voltage waveforms and signal voltage waveforms, for supplying said scan voltage waveforms and signal voltage waveforms to said scanning electrodes and signal electrodes, respectively, whereby picture element voltages are applied across said picture elements, for periodically inverting the polarity of said scan voltage waveforms and signal voltage waveforms, and for producing at least one correction voltage combined with and for varying the voltage level of at least one of said scan voltage waveforms and signal voltage waveforms which are supplied to an associated picture element; and p1 wherein said scan voltage waveforms include at least one select signal and at least one non-select signal, said at least one correction voltage being produced at a time when the corresponding scan voltage waveform of a picture element changes between a select signal and non-select signal at or following said scan voltage and signal voltage polarity inversion.

5,184,119
UNAUTHORIZED UTILITY USE MONITOR APPARATUS AND METHOD

Evan J. Stanbury, Lakemba, and Lloyd S. Thomas, Gordon, both of Australia, assignors to Alcatel Australia Limited, Alexandria, Australia

Filed Jul. 6, 1990, Ser. No. 548,715
Claims priority, application Australia, Jul. 11, 1989, PJ 5156
Int. Cl.[5] H04B *1/00*
U.S. Cl. 340—825.60 **6 Claims**



1. A system for monitoring unauthorized use of a utility at each of a plurality of consumer's premises, the system including:
a consumer meter at each consumer's premises, the consumer meter being connected to measure use of the utility;
a local processor, including at least one memory register, at each consumer's premises operatively coupled to the consumer meter and for storing readings from the corresponding consumer meter, each consumer meter and local processor comprising a subscriber unit;
a communications network;
first communication means operatively coupled to the local processor and to the communications network, and disposed at each consumer's premises, for facilitating communication over the network with the subscriber unit;
a central processor at a central location including storage means for storing information concerning each consumer's premises;
second communication means operatively coupled to the communications network and the central processor, and disposed at the central location, for enabling information to be transmitted selectively between the central processor and each local processor via the communication network and the respective first communication means;
information input means operatively coupled to the central processor for generating an authorization signal for each consumer's premises, the storage means storing an authorization signal for each consumer's premises indicative of whether use of the utility is authorized or is not authorized;
wherein the central processor periodically polls each local processor to detect consumption of the utility, verifies whether or not consumption is authorized by checking the corresponding authorization signal in the storage means, and generates an unauthorized use signal when unauthorized use is detected at a corresponding consumer's premises.

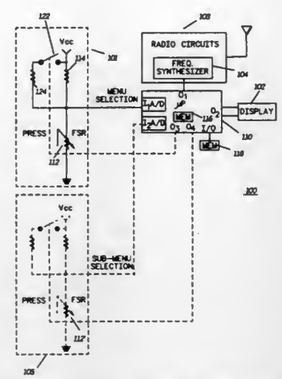
5,184,120
MENU SELECTION USING ADAPTIVE FORCE SENSING RESISTOR

Charles P. Schultz, Hialeah, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 4, 1991, Ser. No. 680,474
Int. Cl.[5] H03M *11/10*
U.S. Cl. 340—870.38 **9 Claims**

1. A method of menu selection, comprising the steps of:
calibrating a range of forces applied by a user on a force

sensitive resistor selector key to a selective range of forces required for selecting a plurality of menu items; and

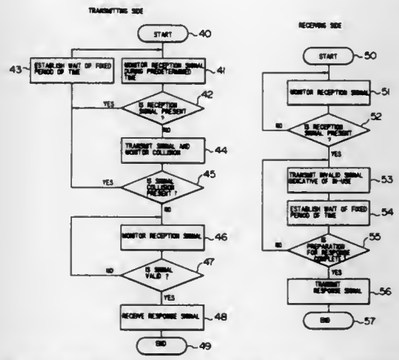


associating a selective subset from said range of forces by said user to each selection of a menu item.

5,184,121
FIELD SENSOR COMMUNICATION METHOD AND SYSTEM

Makoto Kogure; Akira Sase, and Masao Fukunaga, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 2, 1990, Ser. No. 487,124
Claims priority, application Japan, Mar. 3, 1989, 01-049837
Int. Cl.[5] G08C *19/16*
U.S. Cl. 340—870.11 **8 Claims**

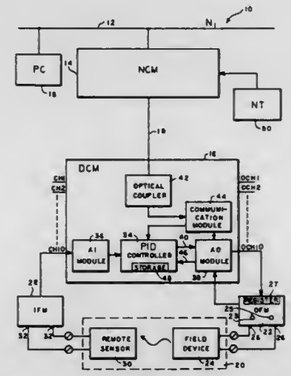


1. A field sensor communication method for a communication system comprising a field sensor for detecting a physical quantity of a process and a communication unit, either said field sensor or said communication unit transmitting or receiving a transmission signal through a signal transmission line, the method comprising the steps of:
transmitting a first signal from a transmitting side of either said field sensor or said communication unit to said signal transmission line after detecting an absence of said transmission signal on said signal transmission line during a first period of time which is not shorter than a predetermined time period; and
transmitting a second signal from a receiving side of the other of either said field sensor or said communication unit indicative of in-use of said signal transmission line at an interval of time which is shorter than said predetermined time period, said second signal being transmitted during a second period of time after the first period of time until the receiving side transmits a response signal after having received the first signal transmitted from the transmitting side.

5,184,122
FACILITY MANAGEMENT SYSTEM WITH IMPROVED RETURN TO AUTOMATIC CONTROL

Gaylon Decious, Milwaukee, and Clay Nesler, New Berlin, both of Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Filed Jan. 31, 1991, Ser. No. 648,590
Int. Cl.[5] G05B *7/00*
U.S. Cl. 340—870.16 **32 Claims**



1. A control system wherein said automatic control means is of type which controls a parameter to maintain said parameter at a given set point, said control system comprising:
device means responsive to an automatic signal when under automatic control or a manually selected control signal when under manual control for effecting said parameter;
sensor means for sensing the level of said parameter and providing a feedback signal responsive to said sensed parameter level;
automatic control means coupled to said sensor means and being responsive to being coupled to said device means for generating an automatic control signal for said device means having a level derived from the sum of integral, derivative, and proportional actions to said feedback signal for automatically controlling said device means;
interface means coupled between said automatic control means and said device means for coupling said automatic control means to said device means to place said device means under automatic control and for decoupling said automatic control means from said device means for placing said device means under manual control of a manually selected control signal; and
said automatic control means being responsive to being decoupled from said device means by said interface means for terminating the generation of said automatic control signal and arranged for providing said automatic control signal to said device means at an initial level based upon the level of said manually selected control signal upon being recoupled to said device means by said interface means.

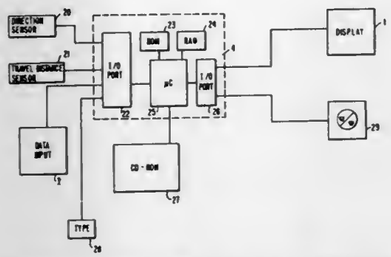
VOL 1147 ISS 1 FE 2 1993 UMI

5,184,123

METHOD OF AND ARRANGEMENT FOR REPRESENTING TRAVEL GUIDING INFORMATION

Wolfgang Bremer; Peter Knoll, and Frieder Heintz, all of Ettlingen, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 322,775, Mar. 3, 1989, abandoned. This application Sep. 4, 1990, Ser. No. 578,897
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1988, 3806848
Int. Cl.[5] G08G *1/123*
U.S. Cl. 340—995 **8 Claims**



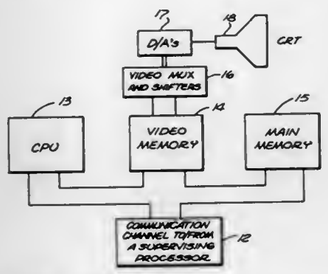
1. A method of representing point-referenced travel guiding information on a digitalizer screen forming a display of an electronic guiding and orienting device of a vehicle, said method comprising the steps of inputting a desired travel route on the digitalizer screen before start of travel along the desired travel route; representing the travel guiding information on the digitalizer screen at a distance from reference points including representing first travel guiding information required for a first reference point and second travel guiding information required for a second reference point; blocking the second travel guiding information for such a time until the vehicle reaches the first reference point for which the first travel guiding information is required; and adjusting the distance linearly in accordance with an instantaneous speed of the vehicle so that the distance increases with an increase of the instantaneous speed of the vehicle.

5,184,124

METHOD AND APPARATUS FOR COMPRESSING AND STORING PIXELS

J. Lane Molpus, Larkspur; Adam Levinthal, Redwood City, and Ross Werner, Woodside, all of Calif., assignors to Next Computer, Inc., Redwood City, Calif.

Filed Jan. 2, 1991, Ser. No. 637,598
Int. Cl.[5] H03M *7/30*
U.S. Cl. 341—50 **63 Claims**



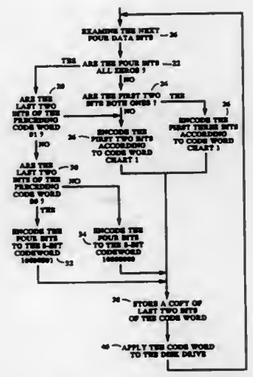
1. A circuit comprising:
processing means for providing a memory address and a data word of a first number of bits;
storage means coupled to said processing means for storing said data word, said storage means having at least first and second address spaces;
address decoding means coupled to said processing means to determine if said memory address provided by said processing means is found in said first or second address space;
compression means coupled to said address decoding means, said processing means and to said storage means, said compression means for compressing said data word when said data word is written to said first address space.

5,184,125

DATA ENCODING AND DEMODULATION SYSTEM

Lih-Jyh Weng, Lexington, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 373,804, Jun. 28, 1989, abandoned. This application Nov. 22, 1991, Ser. No. 798,858
Int. Cl.[5] H03M *7/00*
U.S. Cl. 341—59 **42 Claims**



1. A method of storing data in a storage device in the form of demodulation code words generated from an input string of data bits using a rate $\frac{1}{2}$, run-length limited d=2, k=7 code, the method including the steps of:
A. retaining in a buffer a predetermined number of bits of a previous demodulation code word, the retained bits being the demodulation code word bits which are at the end of the demodulation code word to which a next generated demodulation code word is to be appended;
B. encoding the right-most bits of the input string to generate demodulation code words and preliminary code words in accordance with the following:

DATA BITS	
	DEMODULATION CODE WORD
01	0100
111	100100
	PRELIMINARY CODE WORD
00	000X
10	100X
011	10000X
0000	1000000X

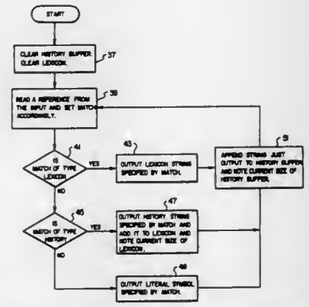
where the right-most bits of the data and the code words are the first in time;
C. for each preliminary code word examining a predetermined number of the bits retained in the buffer,
i. if the bits match a first predetermined pattern, appending to the beginning of the preliminary code word a ONE bit to form a demodulation code word,
ii. if the bits do not match the first predetermined pattern, appending a ZERO bit to the beginning of the preliminary code word to form a demodulation code word,
D. retaining in the buffer a predetermined number of bits of the demodulation code word formed in steps B and/or C, the retained bits being the demodulation code word bits which are at the end of the demodulation code word to which a next demodulation code word is to be appended, and eliminating from the buffer the bits of the previous demodulation code word;
E. transmitting the demodulation code word to a storage device and appending the demodulation code word to the previous demodulation code word in the storage device;
F. removing from the input string the data bits encoded in steps B and/or C; and
G. repeating steps C–F until the input string has been encoded.

5,184,126

METHOD OF DECOMPRESSING COMPRESSED DATA

Michael E. Nagy, Tampa, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1989, Ser. No. 458,116
Int. Cl.[5] H03M *7/40*
U.S. Cl. 341—67 **4 Claims**



1. A method of decompressing data made up of a sequence of literal references, history references, and lexicon references, which comprises the steps of:
a) reading a reference from said sequence;
b) emitting a lexicon string if said reference is a lexicon reference;
c) emitting a history string if said reference is a history reference;
d) adding the history string emitted in step c to a lexicon;
e) emitting a literal string if the reference is a literal reference;
f) adding the string emitted in step b, c or e to a history buffer; and,
g) repeating steps a through f until said sequence of references is exhausted.

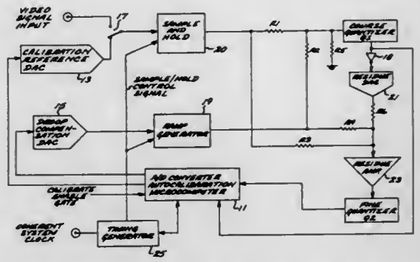
5,184,127

SAMPLE-AND-HOLD DROOP COMPENSATOR FOR HIGH SPEED HIGH RESOLUTION ANALOG-TO-DIGITAL CONVERTER

Terrence L. Myers, Fullerton, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Apr. 19, 1991, Ser. No. 687,803
Int. Cl.[5] H03M *1/06*
U.S. Cl. 341—122 **5 Claims**

1. A droop compensation circuit for compensating droop of a sample-and-hold circuit output, comprising:
ramp generating means for producing a ramp signal synchronized with the hold timing of the sample-and-hold circuit;
means for adding said ramp signal to the sample-and-hold circuit output to provide an analog sum signal, said ramp signal adjusted so as to tend to compensate the droop in the sample-and-hold circuit output; and
quantizing means for providing a digital representation of said analog sum signal.

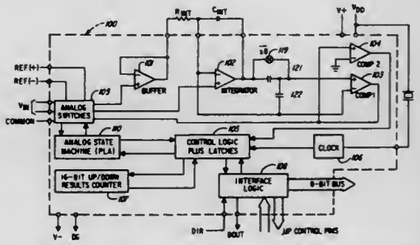


5,184,128

INTEGRATING A/D CONVERTER WITH MEANS FOR REDUCING ROLLOVER ERROR

Dane R. Snow, Santa Clara, Calif., assignor to Harris Corporation, Melbourne, Fla.

Filed Aug. 6, 1991, Ser. No. 740,700
Int. Cl.[5] H03M *1/82*
U.S. Cl. 341—128 **22 Claims**



1. In an integrating type A/D converter having an input pair of terminals for receiving an unknown analog input voltage signal having one of positive and negative polarity states, an integrator coupled to said input terminals for providing an integrated signal to be converted to an output digital signal representing the analog input voltage signal,
the improvement therewith comprising:
means for detecting the polarity state of the unknown analog input voltage signal, and if the polarity state thereof is opposite from a predetermined one of said positive and negative polarity states, for converting the polarity state of the input voltage signal to the predetermined polarity state;
means for applying the analog input voltage signal which is in or converted to said predetermined polarity state to the integrator for integration and conversion to an output digital signal, whereby the input voltage signal applied to the integrator is always of the same predetermined polarity state in order to eliminate rollover errors;
wherein said means for detecting and converting the polarity state of the unknown analog input voltage signal comprises switch means including a control logic unit and a set of analog switches having closed and open states which

VOL 1147 ISS 1 FE 2 1993 UMI

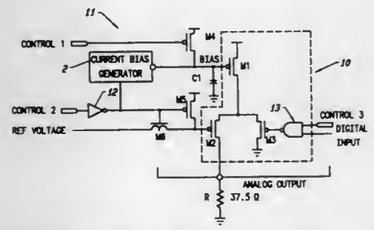
are settable by said control logic unit in response to detection of the polarity of the unknown analog input voltage signal, said switch means being operative for selectively connecting said pair of input terminals with said integrator in order to apply the input voltage signal to the integrator in said predetermined polarity direction; and

a pair of sources of reference voltages of predetermined high and low values corresponding to positive and negative polarity states of the input voltage signal, respectively, and said switch means being controlled by said logic control unit such that, during an integrate phase, the input voltage signal is applied to the integrator for a predetermined period of time in a polarity direction corresponding to said predetermined polarity state, wherein an integrated signal of the same polarity direction is provided at the output of said integrator, and then in a deintegrate phase, a reference voltage is applied to said integrator in an opposite polarity direction in order to deintegrate said integrated voltage signal to a predetermined level over a variable period of time corresponding to an amplitude of said integrated voltage signal.

5,184,129
SWITCHABLE DAC WITH CURRENT SURGE PROTECTION

Jimmy Fung, Cupertino; Jiu An, San Jose; David L. Campbell, Sunnyvale, and Steven Shyu, Cupertino, all of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 407,447, Sep. 13, 1989. This application Jun. 6, 1991, Ser. No. 712,146
Int. Cl.[5] H03M *1/66*
U.S. Cl. 341—144 **10 Claims**



1. In a digital-to-analog converter (DAC) having a plurality of stages, each of said stages having a current source coupled to a first and a second transistor which are operable as a differential pair, an apparatus for selectively switching said DAC between a normal operating mode and a sleep mode comprising:

means for providing a signal for switching said DAC between the DAC's normal operating mode and the DAC's sleep mode;

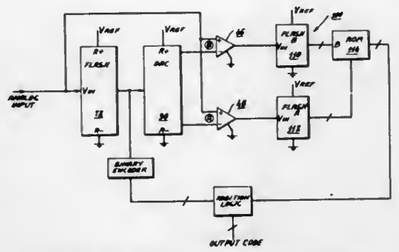
means for applying a potential to said first and said second transistors so as to render both of said first and said second transistors nonconductive when said DAC is switched from the DAC's normal operating mode to the DAC's sleep mode; and

means responsive to said signal providing means for allowing current to flow from said current source through at least one of said first and second transistors when said DAC is switched from the DAC's sleep mode the DAC's normal operating mode.

5,184,130
MULTI-STAGE A/D CONVERTER

Christopher W. Mangelsdorf, Reading, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed Feb. 8, 1991, Ser. No. 652,583
Int. Cl.[5] H03M *1/36*
U.S. Cl. 341—156 **20 Claims**



1. A multi-stage A-to-D converter, comprising:

a first A/D stage arranged to receive an analog input signal to be converted to a first digital signal;

first reference signal means for said first stage arranged to produce at a set of nodal points a set of reference signal levels of different magnitudes for comparison with said analog input signal to provide for producing said first digital signal of at least one most-significant bit responsive to the value of said analog input signal;

residue means forming part of said first A/D stage for developing first and second analog residue signals representing, respectively, the differences between said analog input signal and two of said reference levels;

a second A/D stage for producing a second digital signal comprising at least one bit of less significance than said most-significant bit corresponding to at least one of said residue signals; and

second reference signal means for said second A/D stage including means for developing a reference signal responsive to both said first and said second residue signals.

5,184,131
A-D CONVERTER SUITABLE FOR FUZZY CONTROLLER

Hiroshi Ikeda, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 20, 1990, Ser. No. 540,591
Claims priority, application Japan, Jul. 6, 1989, 1-172961; Jul. 6, 1989, 1-172962; Jul. 6, 1989, 1-172963
Int. Cl.[5] H03M *1/38*
U.S. Cl. 341—165 **13 Claims**

1. An analog-to-digital converter, comprising:

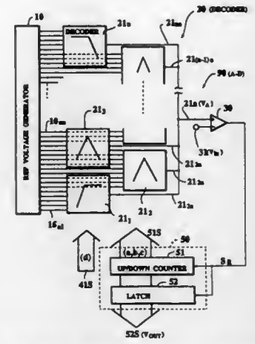
(a) reference voltage generating means for generating a plurality of different analog reference comparison voltages;

(b) decoder means connected to said reference voltage generating means and including at least one decoder block composed of plural array switches, for decoding a non-linear function coded by an arrangement of array switches to output the analog reference comparison voltages in response to digital signals in accordance with the coded function;

(c) at least one comparator means connected to said decoder means, for comparing the outputted analog reference comparison voltage with a voltage of an analog input signal to be converted and outputting a reset signal when the analog reference comparison voltage is substantially equal to the analog input signal voltage; and

(d) approximation register means connected to said at least one comparator and to said decoder means, for successively outputting the digital signals to said decoder means

to successively output the different analog reference comparison voltages to said comparator in accordance with the non-linear function and for outputting an A-D converted signal in response to the reset signal from said comparator, whereby the digital signals corresponding to

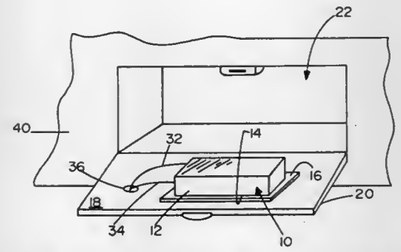


the analog signals can be obtained in accordance with the at least one non-linear function by selectively switching the array switches of said decoder means in response to the digital signals outputted from said approximation register means.

5,184,132
GARAGE DOOR OPENING DEVICE

William E. Baird, 697 S. Farben Dr., Diamond Bar, Calif. 91765

Filed Nov. 6, 1991, Ser. No. 788,493
Int. Cl.[5] H04Q *9/14*
U.S. Cl. 341—176 **2 Claims**



1. In an automobile having a dash board, a garage door opening device, including:

a garage door opener transmitter which provides a signal to a receiver that, upon receiving said signal, actuates a drive mechanism that opens a garage door, said transmitter being mounted to the dash board in a location normally hidden from view of a driver of the automobile,

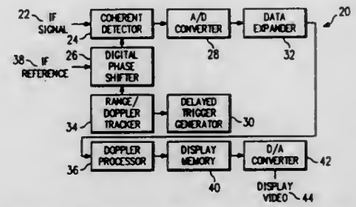
said transmitter including a pair of terminals across which a manually operable switch element is connected, said switch element having means for connecting said switch element across said terminals, with said switch element extending through an opening in the dash board to expose said switch element to the view of the driver and within easy reach of the driver,

said transmitter being enclosed within a glove compartment in the dash board, said glove compartment having a door which opens and closes and the switch element extends through an opening in the door.

5,184,133
ISAR IMAGING RADAR SYSTEM

Sherman H. Tsao, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 26, 1991, Ser. No. 798,459
Int. Cl.[5] G01S *13/90*
U.S. Cl. 342—25 **25 Claims**



1. A method for improving ISAR imaging radar signal processing to compensate for range migration effects in the ISAR signal from a moving reflector, comprising the steps of:

measuring the sampled return, $f(\xi_i, t_\kappa)$ where i is the range bin index of the ISAR signal and κ is the ISAR signal PRI index, according to the formula,

$$f(\xi_i, t_k) = \sum_h P\left(\epsilon_i' + 2\frac{D_h}{c} + \lambda\frac{sk}{cM}\right)e^{j4\pi\frac{Dh}{\lambda}}e^{j2\pi\frac{ik}{M}},$$

for $i=0, 1, \ldots, N-1$, $\kappa=0, 1, \ldots, M-1$, and h representing a point source of the reflector;

resampling said return according to the formula

$$f(\zeta_i, t_k) = f\left(\xi_i - \frac{\lambda sk}{cM}, t_k\right),$$

for $i=0, 1, \ldots, N-1$; and $\kappa=0, 1, \ldots, M-1$, for positive doppler frequency shift cells, $0<s\leqq M/2-1$, and computing the ISAR image from said cell compensations according to the formula

$$F(\zeta_i, S) = \left(\frac{1}{M}\right)\sum_{k=0}^{M-1} f(\zeta_i, t_k)\, e^{-j2\pi\frac{sk}{M}};$$

for $i=0, 1, \ldots, N-1$; and

resampling said return according to the formula

$$F(\zeta_i, t_k) = f\left(\xi_i + \frac{\lambda[M-s]k}{cM}, t_k\right)$$

for $i=0, 1, \ldots, N-1$; and $\kappa=0, 1, \ldots, M-1$, for negative doppler frequency shift cells, $M/2\leqq s\leqq M-1$, and computing the ISAR image from said cell compensations according to the formula

$$F(\zeta_i, S) = \left(\frac{1}{M}\right)\sum_{k=0}^{M-1} f(\zeta_i, t_k)\, e^{-j2\pi\frac{sk}{M}};$$

for $i=0, 1, \ldots, N-1$;

where:

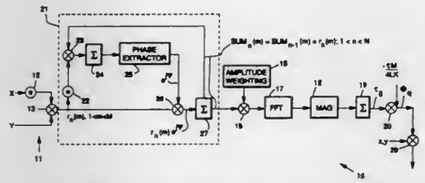
ξ is the wave coordinate variable

t=time

VOL 1147 ISS 1 FEB 2 1993 UMI

D is the initial displacement between the reference reflector and the arbitrary reflector
s is n integer variable indexing discrete speed
κ indexes the pulse number within the aperture
λ is the wave length of the radar signal
c is the speed of wave propagation
i indexes the sample number within one pulse return
$P(\xi)$ is the complex envelope of the transmitted pulse
$P'(\xi_i)$ is a sampled version of $P(\xi)$.

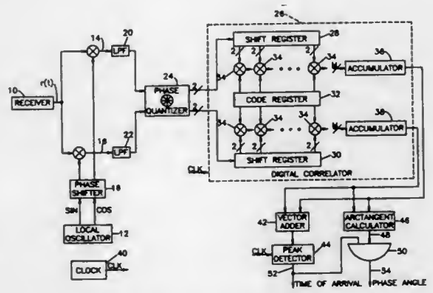
5,184,134
FAST PHASE DIFFERENCE AUTOFOCUS
Yoji G. Niho, Rancho Palos Verdes; Eric W. Day, Van Nuys, and Tammy L. Flanders, Playa Del Rey, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Nov. 27, 1991, Ser. No. 799,514
Int. Cl.[5] G01S *13/90*
U.S. Cl. 342—25 **8 Claims**



1. A fast phase difference autofocus method for removing phase errors from synthetic array radar signals, said method comprising the steps of:
dividing each range bin of the synthetic array radar data into two subarrays;
complex-conjugate multiplying the two subarrays together to produce a cross spectrum;
determining a complex phasor for the cross spectrum to align its phase so that the cross spectrum can be coherently added to the accumulated sum of cross spectrums from previously processed range bins;
multiplying the cross spectrum with the complex phasor and adding it to the accumulated sum of cross spectrums from previously processed range bins;
repeating the previous three steps for all range bins to form the final cross spectrum sum from all range bins;
applying an amplitude weighting function to the final cross spectrum sum;
performing an FFT to the amplitude-weighted cross spectrum sum to produce a cross correlation function;
magnitude-detecting the cross correlation function and determining a peak location of the cross correlation function;
multiplying the peak location by a scale factor to compute a center-to-end phase error estimate signal; and
generating a phase error correction signal and removing the phase error from the synthetic array radar data by multiplying the data with the phase error estimate signal.

5,184,135
PHASE MEASUREMENT OF RECEIVED PSEUDONOISE SEQUENCE USING DIGITAL CORRELATION
Ronald Y. Paradise, Hillsdale, N.J., assignor to GEC-Marconi Electronic Systems Corp., Wayne, N.J.
Filed Mar. 23, 1992, Ser. No. 856,549
Int. Cl.[5] G01S *13/44, 7/295*
U.S. Cl. 342—149 **7 Claims**

4. In a system where a phase modulated pseudonoise sequence signal is received by four antennas spaced as pairs in both azimuth and elevation, an arrangement for determining the azimuth and elevation phase differences of the signal received by the antennas comprising:
means for combining the signals received by the four antennas to obtain a sum signal which is the sum of all four received signals, an elevation difference signal which is equal to the difference between the sums of the signals received by the elevation spaced pairs of antennas, and an azimuth difference signal which is equal to the difference between the sums of the signals received by the azimuth spaced pairs of antennas, the combining means providing the following five signals:
a) a first signal which is said sum signal;
b) a second signal which is said sum signal plus said elevation difference signal phase shifted +90°;
c) a third signal which is said sum signal plus said elevation difference signal phase shifted −90°;

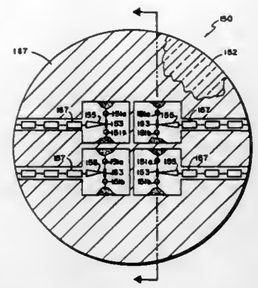


d) a fourth signal which is said sum signal plus said azimuth difference signal phase shifted +90°; and
e) a fifth signal which is said sum signal plus said azimuth difference signal phase shifted −90°; and
processing means including a digital correlator for processing said sum signal to provide a time of arrival signal, responding to said time of arrival signal for processing said second, third, fourth and fifth signals to provide phase signals representative of the phases relative to a local carrier of said second, third, fourth and fifth signals, calculating the elevation phase difference as the difference between the phases of the second and third signals and calculating the azimuth phase difference as the difference between the phases of the fourth and fifth signals.

5,184,136
PULSE RADAR AND COMPONENTS THEREFOR
Apostle G. Cardiasmenos, Acton, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Oct. 31, 1983, Ser. No. 552,548
Int. Cl.[5] G01S *13/44*; H04B *1/26*
U.S. Cl. 342—153 **7 Claims**

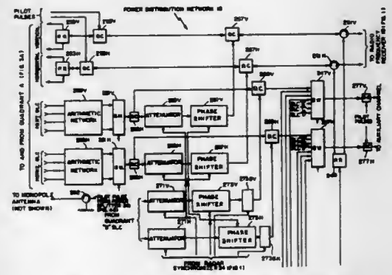
1. In a monopulse receiver operating in the 94 GHz band and higher bands, a first detector comprising:
(a) a first, a second, a third and a fourth balanced detector clustered about a central point on a common substrate, each one of such detectors including a pair of similarly poled beam-lead diodes;
(b) means for optically coupling, via the beam leads of each such diode, radio frequency signals to be detected;

(c) means for optically coupling first local oscillator signals to each pair of beam-lead diodes; and



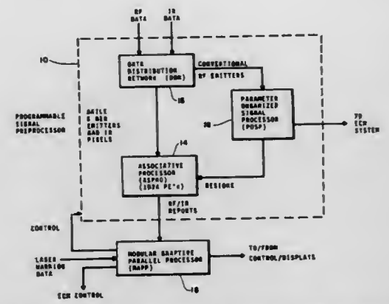
(d) an output line electrically connected to a junction between each pair of beam-lead diodes.

5,184,137
ALL WEATHER TACTICAL STRIKE SYSTEM (AWTSS) AND METHOD OF OPERATION
Jerome H. Pozgay, Needham, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Dec. 29, 1980, Ser. No. 234,037
Int. Cl.[5] G01S *7/40*
U.S. Cl. 342—174 **1 Claim**



1. The method of calibrating nominally identical receiver channels in an airborne radar using a phased array antenna divided into quadrants to permit monopulse operation when desired, such antenna being gimballed within a radome, such method comprising the steps of:
(a) periodically orienting the phased array antenna to direct the boresight line of such antenna toward a predetermined point on the radome;
(b) isotropically radiating, from the geometric center of the phased array antenna, a pilot pulse to provide, at the phase center of each quadrant of such antenna, an equi-phase and equi-amplitude signal at the operating frquency of the airborne radar;
(c) processing the equi-phase and equi-amplitude signal at each phase center in a different one of the receiver channels; and
(d) comparing the output signals from each one of the receiver channels to a corresponding reference signal to derive the desired calibration signals in accordance with the differences existing between each one of such output signals and the corresponding reference signal.

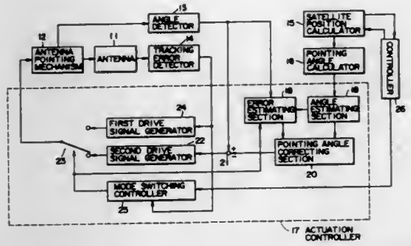
5,184,138
DATA DISTRIBUTION NETWORK
James W. Terry, Plano, Tex., and John P. Rasmussen, Clinton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed May 22, 1987, Ser. No. 67,578
Int. Cl.[5] G01S *7/44*
U.S. Cl. 342—195 **2 Claims**



1. A data distribution network (DDN) which improves processing throughputs (eight million bytes per second) whenever high data rates of unsorted data are supplied to a processing system input via a 64-bit line, wherein said data distribution network includes coarse steering logic, fine steering logic, and assignment logic for partially sorting and filtering data so that subsequent analysis procedures can find the data in a more orderly form, combining synthetic (hash) addresses with look-up tables;
wherein the course steering logic comprises a first course selector unit for selecting data either from said processing system input or from a global memory via a global memory interface unit, with data organized into input words, coarse hashing means coupled to receive data from the first course selector unit, using 14 of the 64 available input bits of each input word to decide to which of 16,384 (16K) bins the intercept belongs, means for reducing the 16K bins to 1K bins comprising a second course selector unit for selecting data either from said course hashing means or from the global memory via the global memory interface unit, the output of the second course selector unit being coupled to a course selector memory, and the output of the course selector memory being coupled for input to the fine steering logic, and also to the global memory via the global memory interface unit;
wherein the fine steering logic includes first and second fine hashing means, each coupled to receive data from the course selector memory and also from the first course selector unit, for accepting the reduced classification output from the coarse steering memory and adding to it some more raw data from the input word, a first fine selector unit coupled between the first fine hashing means and a first fine steering memory, and a second fine selector unit coupled between the second fine hashing means and a second fine steering memory, so that the fine steering logic actually performs two sorts on the itercept and uses the result of one sort to decide which of the two sort outputs will be used, with the final sort output containing a class number of the input words and the operation that will be performed in the assignment logic;
wherein the assignment logic includes means for producing the address of the final storage location for the input word in one of the input word's possible destinations, and also means for providing an environment filter that cuts off further processing of the signal if a count within a given class of intercepts has exceeded a programmable upper limit.

VOL 1147 ISS 1 FE 2 1993 UMI

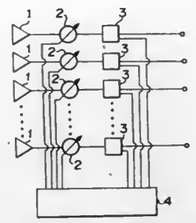
5,184,139
ANTENNA POINTING EQUIPMENT
Keiichi Hirako, Yokohama, and Yoshihisa Kawaguchi, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 27, 1991, Ser. No. 750,602
Claims priority, application Japan, Aug. 29, 1990, 2-229211; Aug. 29, 1990, 2-229212
Int. Cl.[5] H04B *7/185*
U.S. Cl. 342—354 **8 Claims**



1. An antenna pointing equipment for directing an antenna carried on a space navigation satellite to a target comprising:
pointing mechanism angle detecting means for detecting a pointing mechanism angle of said antenna;
reference angle estimating means for estimating a theoretical reference angle of said antenna on the basis of orbital elements of said space navigation satellite and said target;
error estimating means for obtaining an error of said theoretical reference angle from a difference between said pointing mechanism angle of said antenna detected by said pointing mechanism angle detecting means and said reference angle estimated by said reference angle estimating means;
correcting means for correcting said reference angle on the basis of said error obtained by said error estimating means;
acquisition control means for controlling the direction of said antenna on the basis of said reference angle corrected by said correcting means to acquire said target;
pointing error detecting means for detecting a pointing error of said antenna relative to said target in a state in which said target is acquired by said acquisition control means; and
tracking control means for controlling the direction of said antenna so as to correct said pointing error obtained by said pointing error detecting means to thereby track said target.

5,184,140
ANTENNA SYSTEM
Kenichi Hariu; Isamu Chiba, and Seiji Mano, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan
Filed Feb. 25, 1991, Ser. No. 660,692
Claims priority, application Japan, Feb. 26, 1990, 2-44721
Int. Cl.[5] H01Q *3/22, 3/24, 3/26*
U.S. Cl. 342—372 **13 Claims**

1. An antenna system comprising:
a plurality of element antennas;
a plurality of variable phase shifters and a plurality of variable amplitude type devices connected to said plurality of element antennas respectively, and
an arithmetic unit used to perform an arithmetical operation of the excitation amplitude and phase for exciting each of said plurality of element antennas, said arithmetic unit including the following means (a) thorough (g) and performing the arithmetical operation of the excitation amplitude and phase used to define a desired radiation pattern composed by each of said plurality of element antennas with respect to a preset allowable variation width D of the excitation amplitude;



(a) means for calculating the antenna gain G_j (j=1 to J) in accordance with the following equation:

$$G_j = \sum_{i=1}^{I} (A_i \cdot P_{ij})^* \cdot (A_i \cdot P_{ij})/(A_i^* \cdot A_i)$$

wherein
J=total number of inputted evaluation points
I=total number of elements antennas
P_{ij}=patterns of array elements
A_i=initial excitation amplitude and phase
i=1 to I
j=1 to J
*=complex conjugate
(b) means for determining the combination or set of values of A_i (i=1 to I) which provides a solution for minimizing an evaluation function F represented by the following equation:

$$F = \sum_{j=1}^{J} W_j |G_j - G_{oj}|^2$$

where
G_j (j=1 to J)=antenna gain obtained in accordance with the equation represented by said means (a)
G_{oj}=inputted desired antenna gain
W_j=weighting factor
j=1 to J
(c) means for standardizing the excitation amplitude a_i with the maximum value M provided that $a_i = |A_i|$. M=Max. a_i; (i=1 to I) in the set of the values of A_i obtained from the above means (b) to thereby replace the value of the excitation amplitude a_i, which is defined to make the value thus standardized below the allowable variation width D of the excitation amplitude, by M.D.
(d) means for fixing all the excitation amplitude a_i (i=1 to I) obtained from the above so as to determine the set of the excitation phase p_i (i=1 to I), which provides a solution for minimizing the evaluation function F represented by the following equation:

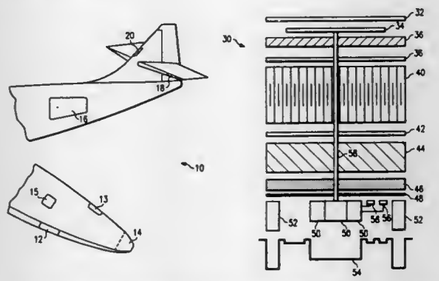
$$F = \sum_{j=1}^{J} W_j |G_j - G_{oj}|^2$$

where
$p_i = \tan^{-1} I_A i / R_A i$
$R_A i$=real part of A_i
$I_A i$=imaginary part of A_i
(e) means for calculating G_j (j=1 to J) with respect to the set of the values of A_i (i=1 to I) obtained from a_i and p_i determined from the above, in accordance with the following equation:

$$G_j = \sum_{i=1}^{I} (A_i \cdot P_{ij})^* \cdot (A_i \cdot P_{ij})/(A_i^* \cdot A_i)$$

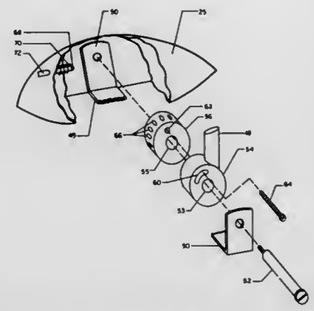
where the asterisk * represents the complex conjugate
(f) means for regarding a_i, p_i (i=1 to I) thus obtained as being desired excitation amplitude and phase, respectively, if all G_j obtained from the equation in said means (e) exceeds a desired antenna gain G_{oj} (j=1 to J), thereby terminating the arithmetical operation of the excitation amplitude and phase, and for making a judgment on an advance to the following step if it is below the desired antenna gain G_{oj}.
(g) means for making a judgment as to whether or not G_j is greater than G_{oj} in response to the determination that all G_j has been below the desired antenna gain G_{oj}, thus setting in such a manner that if $G_j \geqq G_{oj}$, then $W_j = 0$ and if $G_j < G_{oj}$, then $W_j = 1$ (j=1 to J), and for utilizing A_i (i=1 to I) obtained from the above means (b) as the initial excitation amplitude and phase and then returning again to the above means (a) so as to execute the arithmetical operation of the excitation amplitude and phase.

5,184,141
STRUCTURALLY-EMBEDDED ELECTRONICS ASSEMBLY
Jerome J. Connolly; Michael D. Barrick, both of Arlington; William L. D'Agostino, Irving; Gerald F. Thomas, Arlington, and Thomas W. Williams, Grand Prairie, all of Tex., assignors to Vought Aircraft Company, Dallas, Tex.
Filed Apr. 5, 1990, Ser. No. 505,757
Int. Cl.[5] H01Q *1/280, 1/420, 13/000*
U.S. Cl. 343—705 **23 Claims**



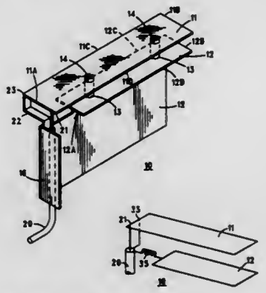
1. A structurally-embedded electronics assembly for integration with the load-carrying structure of a vehicle, said structurally-embedded electronics assembly comprising:
an outer skin member;
a primary load-carrying member positioned inboard from said outer skin member, said primary load-carrying member being structured for attachment to the load-carrying structure of the vehicle;
a honeycomb core member positioned between said primary load-carrying member and said outer skin member;
an electronics structure positioned between said outer skin member and said honeycomb core member;
a thermally conductive baseplate member positioned on the side of the primary load-carrying member which is away from said core member; and
a layer of acoustic damping adhesive operatively positioned between said primary load-carrying member and said thermally conductive baseplate member.

5,184,142
AUTOMOTIVE VEHICLE ANTENNA
Kurt P. Hornburg, 21W732 Glen Valley Dr.; Wayne A. Thelen, and William Thelen, both of 21W722Glen Valley Dr., all of Glen Ellyn, Ill. 60137
Filed Nov. 5, 1990, Ser. No. 609,439
Int. Cl.[5] H01Q *1/100, 1/400, 1/120*
U.S. Cl. 343—715 **20 Claims**



1. An antenna for use on an automotive vehicle comprising:
a conductive antenna element having a lower end;
an antenna base connected to said lower end and having a central opening;
a cylindrical collar for defining a preferred position for said conductive antenna element and having a central opening in alignment with said central opening in said base, said collar disposed adjacent said base and in engagement with said base and comprising a plurality of circumferentially spaced-apart indentations;
an antenna pivot support for pivotally supporting said base and said collar; and
a position adjustment device comprising a retractable retaining pin for engaging said indentations for allowing pivoting movement of said antenna when said pin is in a retracted position and for positioning said antenna in a selected upright orientation when said pin is in engagement with a predetermined one of said indentations.

5,184,143
LOW PROFILE ANTENNA
Paul D. Marko, Pembroke Pines, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 359,827, Jun. 1, 1989, abandoned. This application Feb. 26, 1991, Ser. No. 660,974
Int. Cl.[5] H01Q *9/30*
U.S. Cl. 343—749 **6 Claims**



1. A low profile antenna comprising:
a substantially rectangular driven plate having a first and a

VOL 1147 ISS 1 FEB 2 1993 UMI

second connection located along an edge of the width thereof,

a substantially rectangular ground plate spaced parallel from the driven plate,

a feedpoint located at said first connection along said edge of the driven plate,

a coaxial transmission line is coupled to the antenna,

the coaxial transmission line center conductor is connected to the edge of the driven plate, inductive means located underneath and parallel to the driven plate couples the coaxial transmission line shield to the ground plate, and

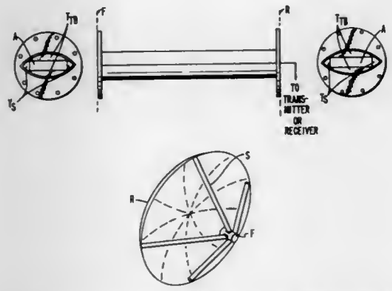
ground connecting means connected to the coaxial transmission line shield and to said edge of the driven plate at said second connection spaced from the feedpoint.

5,184,144

OGIVAL CROSS-SECTION COMBINED MICROWAVE WAVEGUIDE FOR REFLECTOR ANTENNA FEED AND SPAR SUPPORT THEREFOR

David M. Thombs, Chelmsford, Mass., assignor to Chu Associates, Inc., Littleton, Mass.

Filed Sep. 25, 1990, Ser. No. 587,411
Int. Cl.[5] H01Q *1/22*
U.S. Cl. 343—781 R **4 Claims**



1. A microwave antenna feed support for supporting a microwave antenna feed relative to a reflector, comprising a spar of ogival cross-section defined by two arcuate walls symmetrical about a common chord and meeting one another at acute angles to form edges of the spar, the spar having one end which is supported near a rim of the reflector, another end which connects to the antenna feed, and an internal surface of highly conductive material, and being internally cross-dimensioned with respect to the microwave wavelength to serve also as a waveguide for feeding microwave energy to and/or from the antenna feed, and further wherein the spar is terminated at said ends thereof by circular flanges of larger transverse dimensions and having rectangular waveguide transition apertures within and bounded by the ogival cross-section.

5,184,145

DISMOUNTABLE AND AIR-TRANSPORTABLE ANTENNA FOR TWO-WAY TELECOMMUNICATIONS WITH A SATELLITE

Yves Devillers, Paris; Frédéric Neveu, Carrieres Sous Poissy; Roger Behe, Cap D'ail, and Pierre Ramat, Rueil Malmaison, all of France, assignors to Minister of the Post, Telecommunications and Space (Centre National D'Etudes Des Telecommunications), Issy Les Moulineaux, France

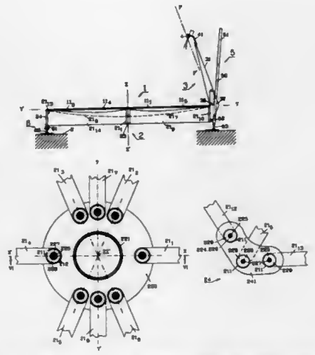
Filed Jul. 5, 1990, Ser. No. 547,083
Claims priority, application France, Jul. 6, 1989, 89-09092
Int. Cl.[5] H01Q *1/080, 3/020, 15/160, 19/130*
U.S. Cl. 343—840 **15 Claims**

1. A telecommunication antenna comprising

a substantially prismatic frame having a polygonal shape with lower and upper bases, said frame comprising plural substantially rectangular separable frame panels extending substantially perpendicular to said lower base, said frame panels being divided into peripheral panels forming faces of said frame and interior panels located between the center of said frame and edges of said frame formed between said peripheral panels,

peripheral tubes carried respectively by said peripheral panels and interior panels, said tubes being located substantially at said frame edges and extending substantially perpendicularly to said frame bases, and plural dismountable peripheral means, each arranged to connect two peripheral tubes of two adjacent peripheral panels and one interior panel, all of which are adjacent each other,

interior tubes carried by said interior panels, the interior tubes extending perpendicularly to said frame based and located substantially at said center of said frame and dismountable hub means for connecting all said interior tubes of said interior panels,



a parabolic reflector having plural separable reflector elements, each of said reflector elements being thin with a substantially uniform thickness and having at least two perpendicular, rectilinear edges respectively parallel to two perpendicular medial axes of said reflector, said frame panels each having a curved upper side which is located at the level of said upper frame base and conformed to the parabolic convex face of said reflector, and

dismountable securing means for securing each of said reflector elements onto said curved upper sides of at least one of said peripheral panels and one of said interior panels whereby said rectilinear edges of said reflector elements abut against each other to form a continuous parabolic face of said reflector.

5,184,146

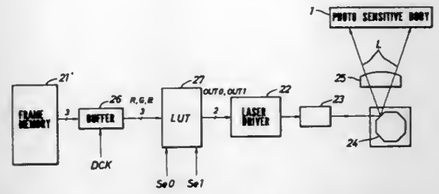
COLOR IMAGE FORMING METHOD AND APPARATUS

Kazuyoshi Tanaka; Toshifumi Isobe; Masahiko Itaya, and Akiko Naganuma, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jul. 27, 1990, Ser. No. 558,512
Claims priority, application Japan, Jul. 29, 1989, 1-197836; Aug. 11, 1989, 1-209257
Int. Cl.[5] H04N *1/21*
U.S. Cl. 346—1.1 **13 Claims**

4. A color image forming method for forming color images comprising selecting color image data of mono-color from color image data of a plurality of colors, irradiating a laser light onto a uniformly electrically charged photosensitive surface on the basis of the selected color image data to form a latent image on said photosensitive surface and developing said latent image to form toner images of a plurality of colors sequentially

characterized by that exposure potential provided by a first image exposure is equalized substantially to a surface potential



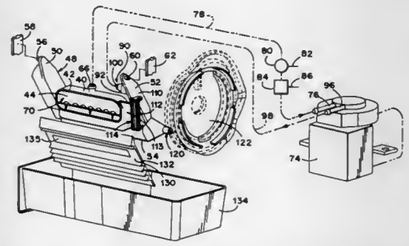
of a toner layer provided by exposure on the toner layer by modulation of light intensity of said laser light.

5,184,147

INK JET PRINT HEAD MAINTENANCE SYSTEM

Donald B. MacLane, Portland; Ted E. Deur, Hillsboro, both of Oreg.; Jeffrey J. Anderson, Camas, Wash.; Donald R. Titterington, Tualatin, Oreg.; James C. Oswald, Beaverton, Oreg., and Richard S. Meissner, Portland, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Apr. 22, 1991, Ser. No. 688,758
Int. Cl.[5] B41J *2/165*
U.S. Cl. 346—1.1 **34 Claims**



34. A method of maintaining an ink jet print head comprising:

positioning a purge chamber against an ink jet nozzle orifice surface to form a closed interior about the ink jet nozzle orifice surface, the purge chamber including an ink receiving opening which communicates with the interior of the purge chamber a baffle extending substantially across the ink receiving opening;

drawing a vacuum in the purge chamber through a vacuum port;

ejecting ink through nozzle orifices in the nozzle orifice plate into the purge chamber to strike the baffle, intercepting the ink within the purge chamber and deflecting the ink away from the vacuum port.

5,184,148

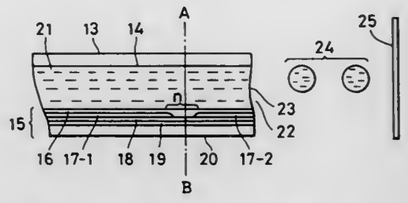
INK JET RECORDING HAVING AN INK WITH CARBON BLACK

Yuko Suga, Tokyo, and Masako Shimomura, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 16, 1990, Ser. No. 598,378
Claims priority, application Japan, Oct. 19, 1989, 1-273044; Aug. 31, 1990, 2-230271
Int. Cl.[5] B41J *2/05*; C09D *11/02*
U.S. Cl. 346—1.1 **31 Claims**

17. An ink jet recording method comprising the step of:

applying to a recording material ink droplets that are discharged from orifices of an ink jet recording head by applying to said ink heat energy that corresponds to a recording signal, wherein said ink comprises an aqueous medium containing acid carbon black having a volatile content within the range of 3.5 to 8% by weight of the total weight of the carbon black and a water-soluble resin having a weight average molecular weight within the range of 3,000 to 30,000, wherein the weight ratio of said acid carbon black to said water-soluble resin is within the range of 3:1 to 10:1, and wherein said step is performed on-demand.

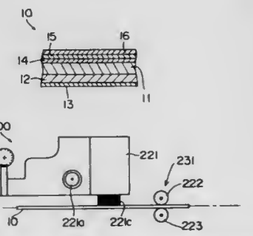


5,184,149

COMBINATION OF MAGNETIC CARD AND PRINTING APPARATUS THEREFOR

Tsugutoshi Tanaka, and Soji Ishiwata, both of Kanagawa, Japan, assignors to Nippon Aleph Corporation, Kanagawa, Japan

Filed Oct. 16, 1991, Ser. No. 777,128
Claims priority, application Japan, Aug. 23, 1991, 3-74285
Int. Cl.[5] G11B *9/00*; G01D *9/00*
U.S. Cl. 346—74.2 **25 Claims**



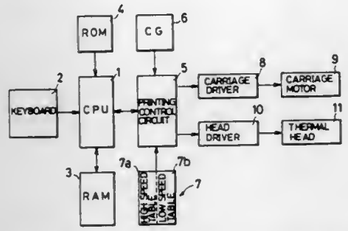
1. In a combination of a magnetic card and a printing apparatus therefor,

said magnetic card comprising a substrate made of a non-magnetic material, a printing surface on at least a part of one side of said substrate, said printing surface having a coloring layer, a conductive layer and a protective layer, said coloring layer being located on the one side of said substrate, and said conductive layer being located between said coloring layer and said protective layer, said magnetic card further including a magnetic recording layer formed on one of the one and other sides of said substrate, magnetic information being magnetic-recorded on said magnetic recording layer; and

said printer comprising electrosensitive means for discharge-breaking down said protective layer and said conductive layer of said printing surface, into a character pattern corresponding to said magnetic information magnetic-recorded on said magnetic recording layer, to expose at least a part of said coloring layer in at least an area of said protective layer and said conductive layer which is discharge-broken down, thereby indicating said character pattern.

VOL 1147 ISS 1 FEB 2 1993 UMI

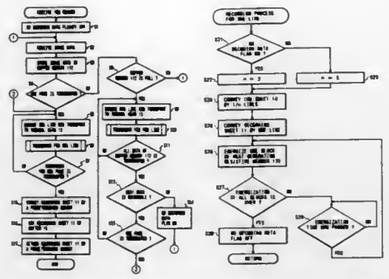
5,184,150
THERMAL PRINTER FOR PROVIDING PRINTED CHARACTERS WITH A UNIFORM DENSITY
Yukihiko Sugimoto, Kashihara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Aug. 3, 1990, Ser. No. 562,193
Claims priority, application Japan, Aug. 7, 1989, 1-204276
Int. Cl.[5] B41J *2/38, 2/365*
U.S. Cl. 346—76 PH **5 Claims**



1. A thermal printer for providing printed characters with a uniform density and for constantly applying proper energy to dot heating elements either in a high-speed printing mode or in a low-speed printing mode, said thermal printer comprising:
a high-speed printing table containing defined pulse widths respectively for a printing hysteresis of a current bit to an N-th previous bit, wherein N represents a positive integer;
a low-speed printing table containing defined pulse widths respectively for a printing hysteresis of a current bit to an M-th previous bit, wherein M represents a positive integer which is smaller than said N;
means connected to both said high-speed printing table and said low-speed printing table for selecting a printing mode of said thermal printer;
means connected to said mode selecting means for selecting either said high-speed printing table or said low-speed printing table in response to a selected printing speed mode in accordance with said printing mode selecting means;
means for determining a printing hysteresis of a current bit to said N-th or said M-th previous bit;
means for selecting a pulse width at an address location on either said high-speed printing table or said low-speed printing table as selected by said table selecting means, said pulse width being selected in accordance with the printing hysteresis of said current bit of said selected printing table; and
means for adjusting a time when a current flows through each of necessary dot heating elements to a time defined by said selected pulse width on either said high-speed printing table or said low-speed printing table as selected by said table selecting means.

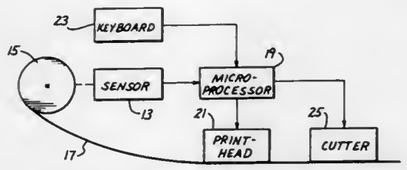
5,184,151
THERMAL TRANSFER RECORDING APPARATUS AND FACSIMILE APPARATUS
Takeshi Ono, Yokohama; Takehiro Yoshida, Tokyo; Satoshi Wada, Kawasaki; Tomoyuki Takeda, Yokohama; Masaya Kondo, Tokyo; Makoto Kobayashi, Tama; Takahiro Kato; Takashi Awai, both of Yokohama; Yasushi Ishida, Tokyo; Akihiro Tomoda, Yokohama; Minoru Yokoyama, Yokohama, and Masakatsu Yamada, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 31, 1991, Ser. No. 648,861
Claims priority, application Japan, Feb. 5, 1990, 2-024403
Int. Cl.[5] B41J *17/00, 33/00*
U.S. Cl. 346—76 PH **18 Claims**

1. A thermal transfer recording apparatus for transferring an ink contained on an ink sheet onto a recording medium to record an image on said recording medium, comprising:
conveying means for relatively conveying said ink sheet and said recording medium;
recording means for recording on said recording medium using said ink sheet; and



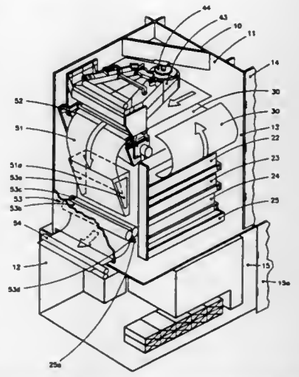
control means for controlling to make a conveyance amount by which said ink sheet is conveyed at a time of starting a recording operation large if the recording operation has been suspended after a predetermined quantity of an image data has been recorded by said recording means.

5,184,152
PRINTING APPARATUS AND METHOD FOR PRINTING ON AN ELONGATED MEMBER SUCH AS A TUBE
John B. French, San Clemente, Calif., assignor to Sumimoto Electric Interconnect Products, Inc., Sunnyvale, Calif.
Filed Dec. 4, 1990, Ser. No. 624,883
Int. Cl.[5] B41J *3/407*
U.S. Cl. 346—76 PH **22 Claims**



1. A printing apparatus for printing on an elongated member wherein encoded information relating to at least one characteristic of the elongated member is associated with the elongated member, said printing apparatus comprising:
a supporting structure;
a controllable printer mounted on the supporting structure for printing on the elongated member, said printer including a printhead;
sensor means for sensing the encoded information;
means for controlling the printer in accordance with the encoded information whereby the printer is controlled in accordance with said characteristic of the elongated member, said controlling means including means for justifying the printhead from a central region of the printhead; and
means for centering the elongated member on the central region of the printhead.

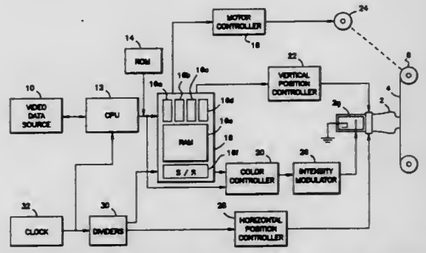
5,184,153
COMPACT LASER PRINTER WITH LIGHT TIGHT COMPARTMENT ACCESS
Steven D. Daniels, Churchville; Mark D. Bedzyk, Rochester; Roger S. Brahm, Canandaigua, and Anthony M. Olexy, Honeoye Falls, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 4, 1991, Ser. No. 637,429
Int. Cl.[5] H04N *1/21*
U.S. Cl. 346—108 **7 Claims**



1. An easily serviced laser printer having compactness attributes, comprising:
a light tight compartment formed by a rear wall, and left and right side walls extending forwardly from said rear wall toward the front of the printer, and a front closure door providing access to the interior of the compartment from the front, said compartment containing:
a sheet registration station,
a sheet exposure station located toward a first side wall from said registration station,
means for moving a sheet toward said first side wall from said registration station to said exposure station,
a laser optical station over said registration station for directing a modulated laser beam to said exposure station,
means located under said registration station for storing a supply of light sensitive sheets, said storing means being accessible from the front of the printer for sheet loading into said storing means in a front-to-rear direction, and
means located in front of said storing means and moveable up and down in front of said storing means for receiving a sheet from said storing means by movement of the sheet in a rear-to-front direction, then moving said sheet upwardly to said registration station to feed the sheet in a front-to-rear direction into the front of said registration station, and then moving back down to said storing means to receive another sheet.

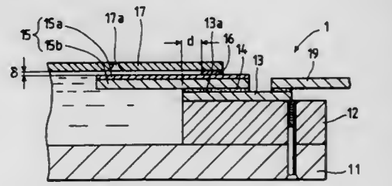
5,184,154
METHOD AND APPARATUS FOR IMAGE PRODUCTION BY SELECTIVE OR RANDOM EXPOSURE ELEMENT ACTIVATION
Kerry L. Shaklee, Brighton, Colo., assignor to Alliant Techsystems Inc., Edina, Minn.
Filed Sep. 26, 1990, Ser. No. 588,231
Int. Cl.[5] G01D *15/14;* **H04N** *3/16, 1/23*
U.S. Cl. 346—110 R **17 Claims**

8. Apparatus for producing on an image receiving medium an image formed of a sequence of adjacent image lines from stored image data representative of individual image lines, comprising:
first means for receiving the stored image data and for producing on the image receiving medium the image representative of the individual image lines, the first means including a plurality of parallel adjacent exposure elements which are individually and selectively activated to produce an adjacent image line on the image receiving medium;
second means for controlling the activation of the exposure elements so that no two adjacent image lines on the image receiving medium are produced by adjacent exposure elements; and
third means responsive to the second means for stepping the image receiving medium past the exposure elements so the image receiving medium moves one adjacent image line between activations of the exposure elements.



17. Apparatus for producing on a image receiving medium an image formed of a sequence of adjacent image lines from stored image data representative of individual image lines, comprising:
first means for receiving the stored image data and for producing on the image receiving medium the image representative of the individual image lines, the first means including a plurality of parallel adjacent exposure elements which are individually activated to produce an adjacent image line on the image receiving medium;
second means for controlling the activation of the exposure elements in a random order; and
third means responsive to the second means for stepping the image receiving medium past the exposure elements so the image receiving medium moves one image line between activation of the exposure elements.

5,184,155
INK JET PRINT HEAD
Shuji Yonekubo; Tsuyoshi Kitahara; Tatsuo Furuta; Takahiro Katakura, and Naomi Serizawa, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Nov. 9, 1990, Ser. No. 611,620
Claims priority, application Japan, Nov. 10, 1989, 1-292601; Feb. 15, 1990, 2-34748; Mar. 24, 1990, 2-74147
Int. Cl.[5] B41J *2/045*
U.S. Cl. 346—140 R **6 Claims**



1. An ink jet print head comprising:
a supporting body,

VOL 1147 ISS 1 FEB 2 1993 UMI

a plurality of piezoelectric conversion elements fixed to said supporting body at base ends thereof in a cantilevered manner such that an edge of said supporting body acts as a fulcrum of said piezoelectric conversion elements,

a nozzle plate positioned over said piezoelectric conversion elements with a gap therebetween, and

an adhesive for fixing said nozzle plate to said piezoelectric conversion elements at said base ends of said piezoelectric conversion elements, said adhesive terminating such that said gap extends inward of said fulcrum toward said base ends and said piezoelectric conversion elements by a distance;

wherein said distance at least exceeds a length of a region of stress concentration toward said base ends of said piezoelectric conversion elements from said fulcrum, said stress concentration being caused when said piezoelectric conversion elements are subjected to thermal stress; and

wherein said distance is at least 0.5 mm.

5,184,156

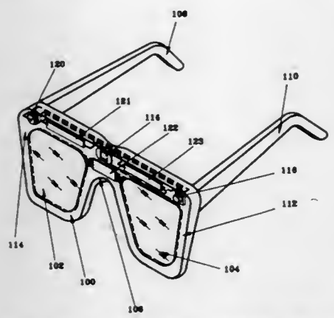
GLASSES WITH COLOR-SWITCHABLE, MULTI-LAYERED LENSES

Michael Black, Foster City, and Vladimir Kupershmidt, Fremont, both of Calif., assignors to Reliant Laser Corporation, Foster City, Calif.

Filed Nov. 12, 1991, Ser. No. 789,994

Int. Cl.[5] G02C *7/10*

U.S. Cl. 351—158 **17 Claims**



1. A pair of multilayered-lens, color-switchable glasses, comprising:

a frame having a rim portion and temples;

multilayered lens means for selectively filtering incident radiation, said multilayered lens means being mounted within said rim portion, said multilayered lens means being arranged to change color in response to an electrical input thereto;

photodetector means for determining the intensity level of incident radiation;

color-switching means for supplying an electrical input to said multilayered lens means for changing the color of said multilayered lens means;

electronic control means for changing the optical properties of said multilayered lens means;

an electronic circuit connected to said electronic control means; and

power supply means for supplying electrical energy to said control means via said electronic circuit.

5,184,157

OPHTHALMIC MEASUREMENT APPARATUS

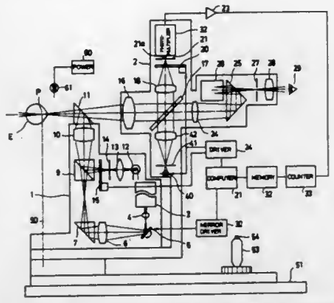
Tadashi Ichihashi, and Koichi Akiyama, both of Tokyo, Japan, assignors to Kowa Company Limited, Japan

Filed May 30, 1990, Ser. No. 530,290

Claims priority, application Japan, Jun. 29, 1989, 1-165207

Int. Cl.[5] A61B *3/10*

U.S. Cl. 351—208 **15 Claims**



1. An ophthalmic measurement apparatus in which a laser beam is projected at a selected point in a measurement zone within an eye to be examined and light scattered therefrom is photoelectrically detected for ophthalmic measurement, comprising:

a laser source for producing a laser beam;

projecting means for projecting the laser beam to converge it to the point in the measurement zone;

a light receiving section provided with a photosensor for photoelectrically detecting scattered laser light from the measurement zone via a measurement mask having an aperture of a prescribed size and positioned conjugate with the point of convergence of the laser beam;

deflecting means for deflecting the laser beam in a prescribed direction for scanning the area of the measurement zone during alignment of the eye and during measurement;

processing means for processing signals received from the light receiving section to perform the ophthalmic measurement; and

arranging means for arranging an alignment index at a position that is conjugate with the measurement mask so that during alignment an image of the alignment index appears superimposed on an image of the measurement zone formed at the aperture of the measurement mask;

wherein during alignment the measurement zone is scanned at high speed by the laser beam having the same scanning width as the scanning width used during measurement.

5,184,158

GATE FOR MOTION PICTURE CAMERA

Claus Grosser, Freising, Fed. Rep. of Germany, assignor to Arnold & Richter Cine Technik GmbH & Co. Betriebs KG, Munich, Fed. Rep. of Germany

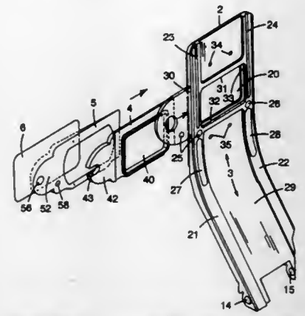
Filed Apr. 26, 1991, Ser. No. 692,224

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 4013909

Int. Cl.[5] G03B *1/48*

U.S. Cl. 352—226 **10 Claims**

1. A motion picture camera comprising film transport mechanism, film guide structure through which a motion picture film is moved by said film transport mechanism, and film guide structure having a film guide window and a sliding surface along which said motion picture film is moved by said film transport mechanism past said film guide window, and gate structure for disposition in said film guide structure, said gate structure comprising framelike film format mask structure that defines a frame window smaller than said film guide window, the frame of said film format mask being depressed relative to said sliding surface of said film guide structure to provide a lint trap region, said film guide structure including guide means for receiving said film format mask structure with said frame window in alignment with said guide window, said guide means including a slot on one side wall of said film guide



structure, upper and lower guide channels extending transversely to the film path and a groove disposed opposite to said slot in the side wall of said film guide structure and extending parallel to the film path, said film format mask structure having a gripping tab which projects laterally out of said slot when the film format mask structure has been inserted in said guide means, and a support shoulder on said tab that is adapted to abut said side wall of said film guide structure.

5,184,159

LIGHT SOURCE APPARATUS FOR ENDOSCOPE

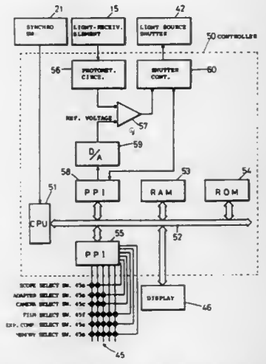
Katsuhiko Furuya, and Tadashi Takahashi, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1990, Ser. No. 553,600

Claims priority, application Japan, Jul. 25, 1989, 1-193685; Aug. 21, 1989, 1-215659

Int. Cl.[5] G03B *29/00*

U.S. Cl. 354—62 **7 Claims**



7. A light source apparatus for an endoscope, which has a light source for supplying light for illuminating an object to the endoscope that is equipped with a photographing device, comprising:

a read only memory that stores data which is required to determine a quantity of exposure light applied to a photographic plane in said photographing device, said read only memory being interchangeably provided;

a reader than reads said data from said read only memory; and

an exposure controller that controls said exposure light quantity using said data which is read by said reader.

5,184,160

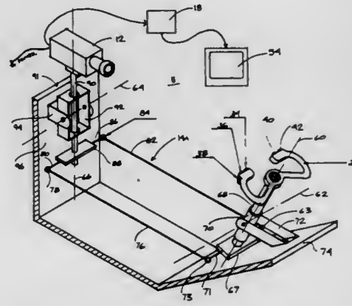
CAMERA POSITION ADJUSTMENT DEVICE

Yefim Massarsky, Newton, Mass., assignor to Foto Fantasy, Inc., Newton, Mass.

Filed Mar. 20, 1991, Ser. No. 672,369

Int. Cl.[5] G03B *15/06*

U.S. Cl. 354—76 **15 Claims**



1. A mechanical camera position adjustment device for allowing a user to adjust the relative position of a photography-booth camera to altar the position of the user's image, comprising:

a camera mounting including means for pivoting said camera on a vertical axis to provide horizontal field of view adjustment;

a remote camera adjustment mechanism operable by the user to move the camera; and

a mechanical linkage between said adjustment mechanism and said camera mount for directly translating user adjustment mechanism operation into camera movement to allow the user to directly control the camera position.

5,184,161

CAMERA WITH MAGNETIC RECORDING DEVICE

Akira Egawa, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1991, Ser. No. 756,316

Claims priority, application Japan, Sep. 7, 1990, 2-235586; Sep. 7, 1990, 2-235587; Sep. 7, 1990, 2-235588; Sep. 7, 1990, 2-235590; Sep. 7, 1990, 2-235591; Apr. 1, 1991, 3-068473; Jul. 31, 1991, 3-192029

Int. Cl.[5] G03B *17/24*

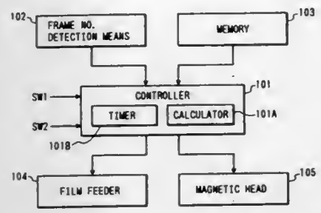
U.S. Cl. 354—105 **27 Claims**

26. A recording device for use in a camera capable of recording information on a film in the course of feeding thereof after the phototaking operation of each frame, or a camera provided with said recording device, comprising:

a) a recording member for recording information on the film;

VOL 1147 ISS 1 FEB 2 1993 UMI

b) a first detection circuit for detecting information of the film feeding speed at the feeding of a frame; and



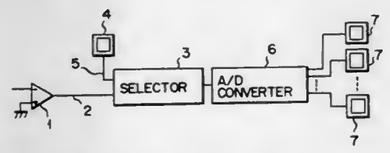
c) a control circuit for controlling the recording operation by said recording member at a next frame feeding, based on the information detected by said first detection circuit.

5,184,162

TESTING INTEGRATED CIRCUIT USING AN A/D CONVERTER BUILT IN A SEMICONDUCTOR CHIP

Kouji Saitoh, and Kazuyuki Uchida, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 20, 1991, Ser. No. 747,333
Claims priority, application Japan, Aug. 21, 1990, 2-219621
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—158 R **7 Claims**



1. A testing integrated circuit comprising:
selecting means, provided in an integrated circuit of a semiconductor chip, for selecting one of a first signal supplied from an external portion of said semiconductor chip and a second signal used for measuring voltage at a predetermined portion in an internal circuit of said semiconductor chip, said first signal being converted from analog to digital during normal operation of said semiconductor chip;
an analog to digital converter provided in said integrated circuit, said analog to digital converter receiving an analog signal output from said selecting means and producing a digital output; and
a plurality of output pads disposed in said semiconductor chip, said output pads transmitting said digital output from said analog to digital converter to said external portion, said output pads corresponding to a bit quantity of said analog to digital converter.

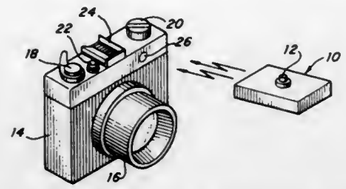
5,184,163

REMOTE TRIGGER METHOD AND APPARATUS FOR A CAMERA SHUTTER

Helmut Wagerer, Des Plaines, Ill., assignor to W. Haking Enterprises Limited, Hong Kong

Filed Aug. 5, 1991, Ser. No. 740,449
Int. Cl.[5] G03B *17/38*
U.S. Cl. 354—266 **3 Claims**

1. A remote control shutter release system for a camera, comprising:
a transmitter having a light emitting diode;
means associated with said transmitter for energizing said light emitting diode to cause said diode to emit a predetermined number of pulses or light at a predetermined pulse width, amplitude and repetition rate;
a shutter release within said camera; and
means for discriminating between ambient light and pulses from said light emitting diode associated with said camera, said discriminating means including means for receiving said pulses, said receiving means including means responsive to said pulses for operating said shutter release upon the receipt of pulses exceeding a predetermined amplitude and having said predetermined pulse width and repetition rate, said receiving means including means including a light responsive diode for proving an electrical signal in response to received light pulses, means including a high pass filter coupled to said diode for receiving the electrical signal from said diode and attenuating components of the electrical signal resulting from ambient light to provide a filtered signal, means including an analog threshold comparator electrically coupled to said filter for receiving said filtered signal and providing an output pulse signal only if



the filtered signal exceeds a predetermined amplitude determined by said analog threshold comparator, and means including a microprocessor coupled to said analog threshold comparator for receiving said output signal and determining the pulse width and repetition rate thereof and generating a shutter release signal only if the output pulse signal has a predetermined pulse width and a predetermined repetition rate;
said diode energizing means including an oscillator having a frequency of oscillation that determines said predetermined repetition rate, and a pulse generator responsive to said oscillator for generating pulses having a predetermined pulse width at a repetition rate determined by said frequency of oscillation; and
said transmitter including means for initiating operation of said oscillator, said initiating mean including manually operable means and means including timing means responsive to said manually operable means for operating said oscillator for a predetermined time interval.

5,184,164

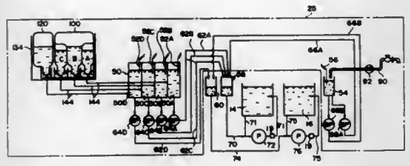
PHOTOSENSITIVE MATERIAL PROCESSOR

Junichi Kose; Akira Sugiyama; Minoru Yamada, and Ryoei Nozaki, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 30, 1991, Ser. No. 707,553
Claims priority, application Japan, Jun. 1, 1990, 2-143554; Jun. 1, 1990, 2-143560; Dec. 10, 1990, 2-400286[U]
Int. Cl.[5] G03D *13/00, 3/02*
U.S. Cl. 354—298 **26 Claims**

1. A photosensitive material processor having a processing tank for processing a photosensitive material, comprising:
a circulating system having a circulating pipeline and a circulating pump disposed in said circulating pipeline and adapted to circulate a liquid in said processing tank through said circulating pipeline by the operation of said circulating pump;
a mixing tank for preparing a processing solution by mixing a stock solution and a dilution liquid;
a stock solution supplying pump for supplying the stock solution to said mixing tank;

a dilution liquid supplying pump for supplying the dilution liquid to said mixing tank;
a supply pipeline for connecting said mixing tank and a portion of said circulating pipeline upstream of said circulating pump so that the processing solution prepared in said mixing tank is supplied to said processing tank; and



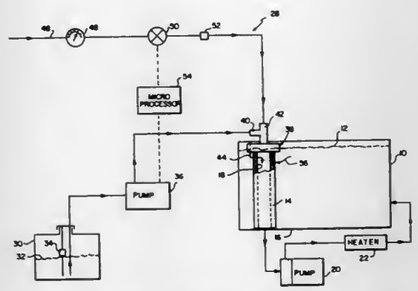
control means for controlling said stock solution supplying pump and said dilution liquid supplying pump so that a ratio of periods of discharge of the liquids becomes a predetermined ratio, and for operating said circulating pump after the stock solution and the dilution liquid are supplied to said mixing tank by predetermined amounts.

5,184,165

PROCESSOR WITH AUTOMATIC CHEMICAL DILUTION AND MIXING SYSTEM

Raymond G. Hauss, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 7, 1991, Ser. No. 711,837
Int. Cl.[5] G03D *3/02*
U.S. Cl. 354—324 **3 Claims**



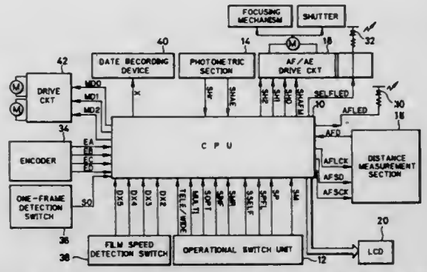
1. In a processor for photographic film or paper, the processor having a tank for holding a processing solution, a filter at least partially located within the tank, and means for removing processing solution from the tank through the filter and returning the processing solution to the tank, an improved system for replenishing the processing solution comprising:
a storage container for holding a concentrated replenishment solution,
means for delivering to the processing solution adjacent the filter a quantity of the concentrated replenishment solution so that the concentrated replenishment solution is drawn directly into the filter, and
means for providing to the processing solution adjacent the filter a quantity of water sufficient so that the quantity of water is drawn directly into the filter to dilute the concentrated solution.

5,184,166

SELF-PHOTOGRAPHING METHOD FOR CAMERAS

Michihiro Shiina; Yasuhiko Tanaka; Fumio Iwai; Yukio Noguchi; Takao Umetsu; Tatsuo Saito; Haruo Onozuka; Muneyoshi Saitoh, and Takao Koda, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 27, 1990, Ser. No. 634,831
Claims priority, application Japan, Dec. 28, 1989, 1-342460; Jan. 9, 1990, 2-2367; Jan. 18, 1990, 2-8857; Jan. 18, 1990, 2-8858; Jan. 18, 1990, 2-8859; Jan. 18, 1990, 2-8860; Jan. 30, 1990, 2-19986
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—400 **44 Claims**



1. A self-photographing method for a camera with a self-photographing mode, comprising the steps of:
setting a self-photographing mode in the camera;
actuating a switch means on the camera thereby to start a self-photographing operation of the camera;
measuring a subject distance at the beginning of said operation;
storing in the camera a first distance datum corresponding to said subject distance;
detecting second distance data of the same subject point as for the first distance datum at periodic intervals after storing said first distance datum;
comparing said first and second distance data to determine whether said distance data differ from each other;
executing an exposure operation of film in the camera when said first and second distance data differ from each other;
wherein said self-photographing mode is terminated before said predetermined exposure operation when said second distance data have been equal to said first distance datum throughout a predetermined time interval.

5,184,167

DISTANCE METERING DEVICE OF A CAMERA

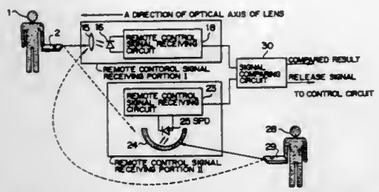
Yoshikazu Iida, Chigasaki; Toru Kosaka, Zama; Hiroyuki Tsuru, Tokyo; Riichi Higaki, Kawasaki, and Akira Katsuyama, Koganei, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Dec. 20, 1991, Ser. No. 810,826
Int. Cl.[5] G03B *3/00*
U.S. Cl. 354—403 **2 Claims**

1. A distance metering device of a camera comprising:
multi-point distance metering means having a multi-point distance metering mode for metering distances to a plurality of points in a photographing field and a one-point distance metering mode for metering a distance to only one point;
first remote control signal receiving means having a directivity to the photographing field, for receiving a signal transmitted from a remote control transmitter;
second remote control signal receiving means having a receiving sensitivity to a remote control transmitter located outside of the photographing field;

VOL 1147 ISS 1 FE 2 1993 UMI

remote control signal receiver selection means for selecting one of said first and second remote control singal receiving means; and



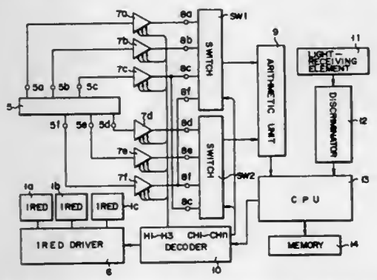
control means for forcibly switching the distance metering mode of said multi-point distance metering means to the multi-point distance metering mode when said first remote control signal receiving means is selected by said remote control signal receiver selection means.

5,184,168

DISTANCE MEASURING APPARATUS FOR CAMERA, WHICH CONTROLS OUTPUTS FROM MULTI-ELECTRODES PSD

Osamu Nonaka, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 12, 1991, Ser. No. 757,970
Claims priority, application Japan, Sep. 26, 1990, 2-257908; Jul. 31, 1991, 3-216123
Int. Cl.[5] G03B *13/36*; G01C *3/08*
U.S. Cl. 354—403 **15 Claims**



6. An active multi-point distance measuring apparatus comprising:

a light-emitting element array including a plurality of light-emitting elements for emitting distance measuring light to a plurality of points within a photographic frame;

a single optical position detection element having a longitudinal direction aligned with that of said light-emitting element array and arranged such that incident light moving ranges for the distance measuring light reflected by an object to be photographed are set to overlap each other, the incident light moving ranges being changed in accordance with an object distance,

said optical position detection element being provided with a plurality of electrodes at ends of each of said moving ranges and being arranged to output a signal current representing a light-receiving position of the reflected light through a corresponding one of said electrodes; and

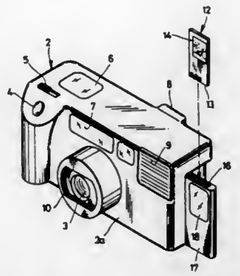
a distance arithmetic unit for calculating a distance to each object by using the signal current.

5,184,169

PHOTOGRAPHY MODE INPUT SYSTEMS

Yasuhiro Nishitani, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 19, 1991, Ser. No. 687,615
Claims priority, application Japan, Apr. 19, 1990, 2-103447
Int. Cl.[5] G03B *7/00*
U.S. Cl. 354—412 **17 Claims**



1. A photography mode input system for inputting an optional photography mode into a camera having a microcomputer for controlling exposure, comprising:

a card member having a signal element pattern corresponding to a predetermined optional photography mode, said card member being provided with graphic information indicating a corresponding photography mode; and

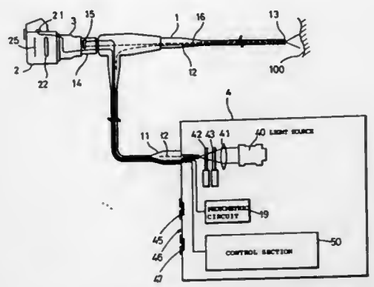
detecting means for detecting said signal element pattern, said detecting means being disposed on said camera and connected t said microcomputer, wherein said detecting means detect the presence or absence of signal elements constituting said signal element pattern, said signal elements occupying different respective predetermined positions on said card member.

5,184,170

PHOTOGRAPHING LIGHT QUANTITY CONTROLLER FOR ENDOSCOPE

Tadashi Takahashi; Katsuhiko Furuya; Masaaki Nakasima, and Takayuki Enomoto, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1990, Ser. No. 596,382
Claims priority, application Japan, Oct. 16, 1989, 1-270083; Feb. 14, 1990, 2-33216; Jul. 26, 1990, 2-20055
Int. Cl.[5] G03B *7/00*
U.S. Cl. 354—413 **18 Claims**



1. A photographing light quantity controller for an endoscope, which is used to control the quantity of illuminating light when a photograph is to be taken through said endoscope, said controller comprising:

a light source for supplying light, for illuminating an object to said endoscope;

means for initiating and synchronizing a photographing operation;

detecting means for detecting an illuminating condition in an observation state before a photographing operation is initiated and synchronized by said means for initiating; and

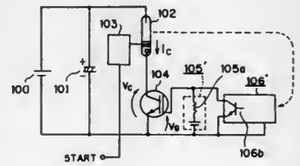
control means for charging the brightness of illuminating light that is supplied from said light source to said endoscope during the photographing operation on the basis of a signal that is detected by said means for detecting an illuminating condition in the observation state.

5,184,171

ELECTRONIC FLASH DEVICE

Akio Uenishi, Fukuoka, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1991, Ser. No. 644,562
Claims priority, application Japan, Feb. 5, 1990, 2-26821
Int. Cl.[5] G03B *15/05*; H05B *41/00*
U.S. Cl. 354—416 **11 Claims**



1. An electronic flash device, comprising:

first power supply means;

a main condenser charged by said first power supply means;

a discharge tube for flashing by consuming electric energy charged in said main condenser;

a trigger circuit for triggering said discharge tube in response to a flash start instruction;

an insulated gate type semiconductor switching device having main electrodes connected in series with said main condenser and said discharge tube to form a discharge loop;

second power supply means for supplying gate voltage sufficient to turn on said insulated gate type semiconductor switching device, to the gate of said insulated gate type semiconductor switching device throughout waiting and flashing states of said insulated gate type semiconductor switching device; and

a flash stop circuit for stopping flashing of said discharge tube by changing said gate voltage, in order to make said insulation gate type semiconductor switching device shift to an OFF state by predetermined time width, after predetermined time elapses from start of flashing of said discharge tube.

5,184,172

METHOD OF AND APPARATUS FOR AUTOMATICALLY CONTROLLING EXPOSURE

Akihiko Miyazaki, Tokyo, Japan, assignor to U. S. Philips Corporation, New York, N.Y.

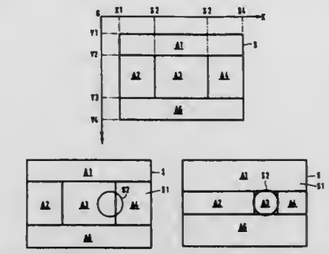
Filed Oct. 2, 1991, Ser. No. 771,386
Claims priority, application Japan, Nov. 28, 1990, 2-327413
Int. Cl.[5] G03B *7/08, 7/095*; H04N *5/238*; G01J *1/42*
U.S. Cl. 354—432 **8 Claims**

1. A method of automatically controlling opening of an iris based principally on luminance of an image in a specific zone within a picturing area characterized by the steps of:

dividing the picturing area into a specific zone and a plurality of zones adjacent to said specific zone;

calculating an average luminance of each image in said specific and adjacent zones;

with respect to each combination of said specific zone with a respective one of said plurality of zones, calculating a difference in average luminance between the two zones,



moving a boundary between the specific zone and the adjacent zone towards this adjacent zone when said difference is not greater than a specific value, and moving said boundary away from said adjacent zone when said difference is greater than said specific value; and

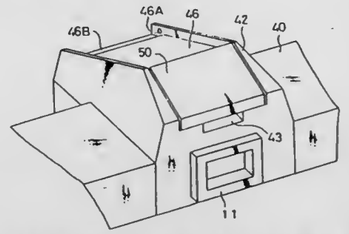
applying a maximum weight to the average luminance in said specific zone and controlling the iris based principally on this weighted average luminance.

5,184,173

PROTECTING APPARATUS OF DISPLAYING PORTION OF PHOTOGRAPHING DATA IN CAMERA

Tadayuki Kirigaya, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 444,809, Dec. 1, 1989, abandoned, which is a continuation of Ser. No. 172,212, Mar. 23, 1988, Pat. No. 4,903,062. This application Oct. 21, 1991, Ser. No. 779,158
Claims priority, application Japan, Mar. 26, 1987, 62-44832
The portion of the term of this patent subsequent to Feb. 20, 2007, has been disclaimed.
Int. Cl.[5] C03B *17/18*
U.S. Cl. 354—471 **21 Claims**



1. An apparatus for protecting a photographic data display portion of a camera body, said apparatus comprising a protective cover for protecting said photographic data display portion, said protective cover being movable between a closed position in which said photographic data display portion is directly covered and closed by said protective cover and an open position in which said photographic data display portion is uncovered by said protective cover, said camera body comprising a housing with said photographic data display portion being positioned in said housing, wherein said protective cover is rotatably held on said housing, and, in said covered postion, forms a portion of the exterior of said camera body, and connection/disconnection means for connecting said photographic data display portion to a source of power in association

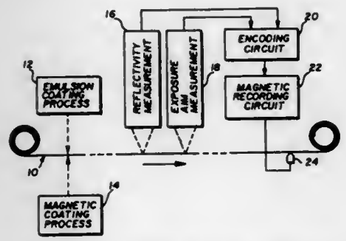
VOL 1147 ISS 1 FEB 2 1993 UMI

with movement of said protective cover to said open position and disconnecting said photographic data display portion from the source of power in association with movement of said protective cover to said closed postion.

5,184,174
PHOTOGRAPHIC SYSTEM WITH OFF-THE-FILM EXPOSURE METERING

Cynthia S. Bell, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 19, 1991, Ser. No. 794,290
Int. Cl.[5] G03B *7/099, 7/24;* G03C *5/00*
U.S. Cl. 354—480 **6 Claims**

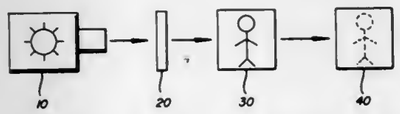


3. An elongate photographic film strip comprising:
a magnetic recording area; and
at least one field recorded on said magnetic area, said field including encoded data representing a surface reflectivity adjusted film exposure constant measured for said film strip at the time of film production.

5,184,175
SYSTEM AND METHOD FOR REPRODUCING AN IMAGE

Mary L. Schmoeger; Charles P. Hagmaier, Jr., both of Rochester; Mitchell J. Bogdanowicz, Spencerport; Christopher L. DuMont, and Richard C. Sehlin, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 718,685, Jun. 21, 1991, Pat. No. 5,122,769. This application Feb. 13, 1992, Ser. No. 835,564
Int. Cl.[5] G03B *27/32, 27/52, 27/72*
U.S. Cl. 355—32 **11 Claims**

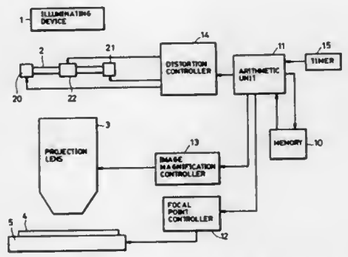


1. A system for reproducing an original color record on a light sensitive material, the system comprising:
(a) a color record having two or more sub-records with wavelength peaks in different regions of the electromagnetic spectrum;
(b) an additive wavelength light source;
(c) a light sensitive material onto which the color record can be illuminated by means of the light source; and
(d) selective filtration means between the light source and the light sensitive material; wherein the selective filtration means modifies the contrast of the reproduction by means of off-peak energy filtration, without modifying color balance of the reproduction or the wavelength peaks of each of the sub-records.

5,184,176
PROJECTION EXPOSURE APPARATUS WITH AN ABERRATION COMPENSATION DEVICE OF A PROJECTION LENS

Yasuyuki Unno, Hadano; Seiji Orii, and Masami Yonekawa, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 1, 1991, Ser. No. 769,445
Claims priority, application Japan, Oct. 8, 1990, 2-268346; Dec. 12, 1990, 2-409879
Int. Cl.[5] G03B *27/68, 27/42*
U.S. Cl. 355—52 **11 Claims**



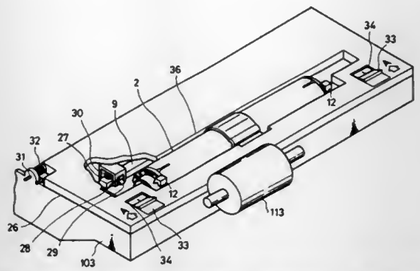
1. A projection exposure apparatus in which a pattern formed on an original is imaged onto a substrate at a predetermined magnification to form a pattern image on the substrate, said apparatus comprising:
first support means for supporting the original;
second support means for supporting the substrate;
a projection lens disposed between said first and second support means for imaging the pattern onto the substrate;
deforming means for deforming the original in its surface direction;
arithmetric means for calculating a deviation between an original geometric shape of the pattern formed on the original and a geometric shape of the pattern image formed on the substrate; and
control means for controlling said deforming means bases on the deviation calculated by said arithmetric means so that the geometric shape of the pattern image coincides with the original geometric shape of the pattern.

5,184,177
ELECTROPHOTOGRAPHIC PRINTING APPARATUS

Hiroshi Kikuchi; Shigeki Nakajima; Hisao Ono, and Yoshiharu Momiyama, all of Tokyo, Japan, assignors to OKI Electric Industry Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1991, Ser. No. 648,208
Claims priority, application Japan, Feb. 6, 1990, 2-25159
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—200 **6 Claims**

3. An electrophotographic printing apparatus, comprising:
a main body, said main body including a plurality of paper transporting rollers;
a frame mounted in the main body of said apparatus and having an opening which faces upward;
an operable lid mounted on said frame, covering said opening, and having a window;
an image-forming cartridge removably mounted to said main body, said image-forming cartridge including a photosensitive drum having a photoconductive layer on its surface, and means for supplying developing agent to the photosensitive drum wherein said image-forming cartridge being mountable to said frame and removable from said frame only when said lid is opened; and

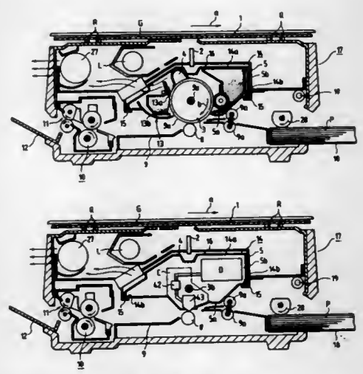


a developing agent tank removable mounted to said image forming cartridge and removable through said window when said lid is closed.

5,184,178
IMAGE RECORDING APPARATUS HAVING AN INTERCHANGEABLE CARTRIDGE

Yoshiaki Takayanagi, and Hiromitsu Hirabayashi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 404,851, Sep. 8, 1989, abandoned. This application Oct. 8, 1991, Ser. No. 771,866
Claims priority, application Japan, Sep. 13, 1988, 63-229567; Sep. 13, 1988, 63-229568
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—202 **17 Claims**

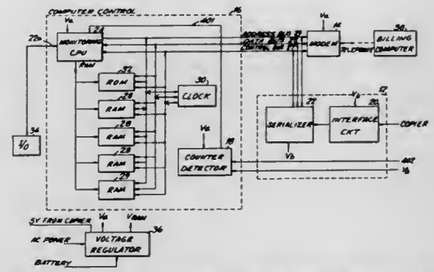


1. An image recording apparatus comprising:
a first cartridge detachably mountable in a holding portion of said apparatus and provided with recording means for recording an image on a sheet by an electrophotographic process;
guide means for loading or detaching said first cartridge or a second cartridge;
a second cartridge loadable in the holding portion of said apparatus in place for said first cartridge and provided with a thermal head for recording an image on a sheet;
roller means for transferring an image formed on a photosensitive member to the sheet when said first cartridge is loaded,
wherein said roller means is used as a platen for pushing out the sheet in the direction of the thermal head when said second cartridge is loaded.

5,184,179
PHOTOCOPY MONITORING SYSTEM AND METHOD FOR MONITORING COPIERS

Leonard Tarr, Woodbury, N.Y.; Gregory King, Andover, and Brian Johansen, Bricktown, both of N.J., assignors to Monitel Products Corp., Cedar Knolls, N.J.

Continuation-in-part of Ser. No. 341,018, Apr. 20, 1989, which is a continuation-in-part of Ser. No. 194,710, May 17, 1988, abandoned. This application Jul. 31, 1991, Ser. No. 739,060
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—206 **11 Claims**



1. A system for monitoring a paper processing device and reporting to a central station, the paper processing device including an internal diagnosing system for diagnosing malfunctions within the system, a display device for displaying the diagnosed malfunction, the diagnosing system providing an internal diagnostic signal specific to the paper processing device for causing the display device to display the malfunction comprising:
counter means for counting the number of papers processed by the paper processing device and producing a count signal corresponding to each paper processed;
first control means for receiving the count signal, totalling the count signal and transmitting the total count at at least one of a predetermined time interval and a predetermined count interval and producing a count trigger signal;
interface means for receiving the diagnostic signal without interfering with the operation of the display device, the first control means also receiving the diagnostic signal from the interface means and in response thereto producing a diagnostic trigger signal;
modem means for transmitting the total count signal to the central station upon receipt of said count trigger signal, the modem means also receiving the diagnostic trigger signal and transmitting the diagnostic signal in response thereto to the central station; and
voltage regulator means receiving an AC power input, a power input from the paper processing device and a battery power input, said voltage regulator means providing power to said first control means utilizing said battery power when said voltage regulator means detects an absence of an input of AC power and power from said paper processing device.

5,184,180
METHOD FOR SUPPLYING POWER TO A COPYING MACHINE

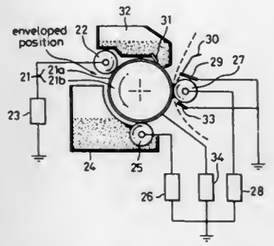
Hoon B. Choi, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 12, 1991, Ser. No. 712,892
Claims priority, application Rep. of Korea, Jun. 18, 1990, 8907/1990
Int. Cl.[5] G03G *15/02*
U.S. Cl. 355—219 **13 Claims**

1. A method for supplying power to a copying machine comprising the steps of:

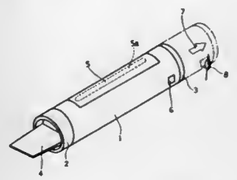
VOL 1147 ISS 1 FE 2 1993 UMI

generating a uniform potential on a surface of a photosensitive drum through an electrifier;
changing the potential in a predetermined portion through an enveloper to form a latent image;
attracting toner from a developer having a developer roller on said photosensitive drum corresponding to the latent image;
transcribing by a transcriber the attracted toner on paper supplied through a guide;



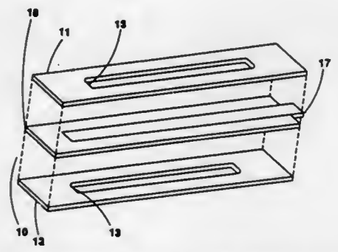
discharging by a discharging brush a charge generated on the paper supporting a transcribed image, said guide and said discharging brush being grounded;
supplying a predetermined DC voltage to said developer roller, electrifier and transcriber; and
supplying a symmetric AC voltage to said photosensitive drum concurrently with the supplying of said predetermined DC voltage to said developer roller, wherein said predetermined DC voltage supplying step and said symmetric AC voltage supplying step generate an asymmetric AC power on the surface of said photosensitive drum.

5,184,181
CARTRIDGE DISCRIMINATING SYSTEM
Shigeo Kurando; Yoshinori Makiura; Yutaka Shigemura; Junichi Ooura; Eiji Mifune, all of Osaka; Tatsuo Imafuku, Kagoshima; Hiroshi Komata, Hyogo, and Mikio Ido, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 99,118, Sep. 21, 1987, Pat. No. 4,963,939. This application Aug. 2, 1990, Ser. No. 561,910
Claims priority, application Japan, Sep. 24, 1986, 61-226383; Sep. 27, 1986, 61-228869; Sep. 27, 1986, 61-228870; Sep. 27, 1986, 61-228871; Sep. 30, 1986, 61-234104
Int. Cl.[5] G03G *15/08*
U.S. Cl. 355—260 **1 Claim**



1. A developer housing cartridge equipped with a hollow container for housing a developer and a cartridge indicating means for indicating the type or position of the cartridge, which is installed on an outer surface of the hollow container and wherein said cartridge indicating means is a small separate container housing toner and/or carrier of a same type as that of the developer housed in the cartridge.

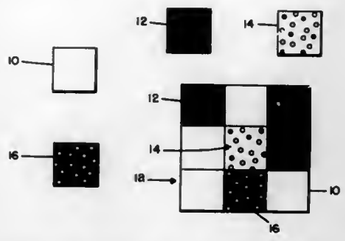
5,184,182
COPIER AND PRINTER TONER HOPPER SEALING DEVICE
Steven B. Michlin, 5310 Bentley Suite 105, West Bloomfield, Mich. 48322
Filed Mar. 4, 1992, Ser. No. 845,722
Int. Cl.[5] G03G *15/06, 21/00*
U.S. Cl. 355—260 **19 Claims**



1. A sealing means for sealing a toner hopper used in printer or copying machine toner cartridges, in order that used toner cartridges can be refilled with toner, sealed, and transported with little possibility of spilling any of the toner from the toner hopper, said toner hopper having an opening through which toner flows, said sealing means comprising a seal-insert and slide-seal, wherein said seal-insert comprises separate pieces fastened into one component by a joining means such that there are outer pieces and a middle piece sandwiched between said outer pieces, said outer pieces having corresponding slots and said middle piece having a slot wider than said slots in said outer pieces and being open at one end, said slots in said outer and middle pieces being aligned such that a passage is formed through said seal-insert, said slide-seal comprising a strip of material that may be slid through the open end of said slot in said middle piece, blocking said passage in said seal-insert, so that when said seal-insert is attached to the toner hopper over said toner hopper opening, said slide-seal would provide a reusable seal blocking or allowing toner flow through said toner hopper opening and through said seal-insert passage.

5,184,183
APPARATUS FOR PRINTING GREY SCALE IMAGES
John P. Karidis, Ossining, N.Y.; Timothy C. Reiley, Los Gatos, and Lawrence B. Schein, San Jose, both of Calif., assignors to International Business Machines, Corporation, Armonk, N.Y.
Division of Ser. No. 594,513, Oct. 9, 1990, Pat. No. 5,142,337. This application Jan. 22, 1992, Ser. No. 824,109
Int. Cl.[5] G03G *15/08*
U.S. Cl. 355—266 **3 Claims**

1. In combination with an electrophotographic printing system in which two distinct toners are developed, a first toner being an opaque first color for application by said printing system onto a defined region of a receiving surface and a second toner being composed of a mixture of said opaque first color and of an opaque second color and clear, which allows the printing of less than fully-dark pixels, for application by

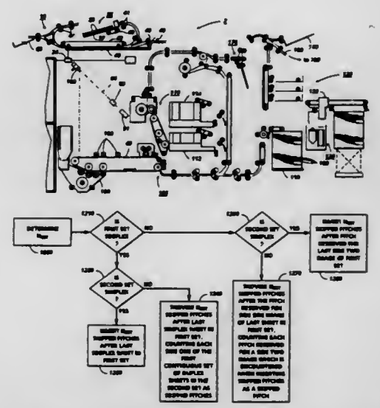


said printing system onto the defined region so as to overlie said first toner thereby allowing intermediate grey-scale levels.

5,184,184
IMAGE FORMING APPARATUS
Keisuke Hayashi, Fujisawa; Kouji Ishigaki, Yokohama; Kazuyuki Nakahara; Masato Yanagida, both of Tokyo, and Fumio Kishi, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Feb. 14, 1992, Ser. No. 835,579
Claims priority, application Japan, Feb. 17, 1991, 3-045885
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—296 **20 Claims**

1. An image forming apparatus comprising:
a body;
an image carrier;
developing means for developing a latent image electrostatically formed on said image carrier by a developer;
cleaning means for collecting the developer remaining on said image carrier after image transfer;
waste developer storing means for storing the developer collected by said cleaning means;
developer storing means for storing a fresh supplementary toner;
a loading section to be loaded with said developer storing means;
a developer supply section to be supplied with the supplementary developer from said developer storing means;
first transporting means for transporting said developer storing means from said loading section to said developer supply section;
collecting means for collecting empty developer storing means which has supplied the developer to said developer supply section; and
second transporting means for transporting said empty developer storing means from said developer supply section to said collecting means;
at least one of said collecting means and said waste developer storing means being removably mounted on said body.

5,184,185
METHOD FOR DUPLEX PRINTING SCHEDULING SYSTEM COMBINING FINISHER INTERSET SKIPPED PITCHES WITH DUPLEX SHEET SCHEDULING
David L. Rasmussen; Michael E. Farrell, both of Fairport, and Pedro R. Ortiz, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Aug. 29, 1991, Ser. No. 752,123
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—308 **10 Claims**



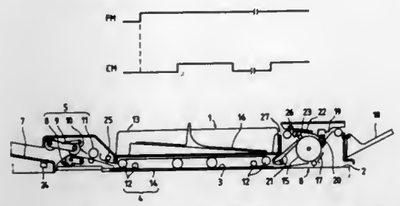
1. A method of scheduling a plurality of sets of copy sheets for being printed selectively on one or both sides and with an interset interval of pitches being provided between each consecutive set of copy sheets, at least some of the copy sheets in a second one of two adjacent sets of copy sheets being printed on both sides, said method comprising the steps of:
a) determining the interset interval, N_{INT}, of pitches required between said two adjacent sets of copy sheets;
b) determining a minimum number of skipped pitches, N_{SKIP}, required to be inserted between said two adjacent sets of copy sheets to proVide said determined interset interval; and
c) inserting said minimum number of skipped pitches, N_{SKIP}, between said two adjacent sets of copy sheets.

5,184,186
MOTOR CONTROL FOR AN AUTOMATIC DOCUMENT CONVEYING APPARATUS
Yasuhiko Kida, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan
Filed Sep. 30, 1991, Ser. No. 767,638
Claims priority, application Japan, Sep. 29, 1990, 2-261870
Int. Cl.[5] G03G *15/00 F*
U.S. Cl. 355—321 **2 Claims**

1. An automatic document conveying apparatus for use with an image forming apparatus, comprising:
means for temporarily storing a plurality of documents;
means for feeding the documents individually from the storing means;
first motor means for driving the feeding means;
means for conveying the documents individually to a predetermined position of the image forming apparatus, the image forming apparatus forming an image of each of the documents at the predetermined position;
second motor means for driving the conveying means;
means for ejecting the documents individually from the automatic document conveying apparatus; and
means, responsive to signals from the image forming apparatus, for controlling the first motor means to continuously

VOL 1147 ISS 1 FEB 2 1993 UMI

operate to continuously drive the feeding means while operating the second motor means in predetermined on and off manner until the image forming apparatus has



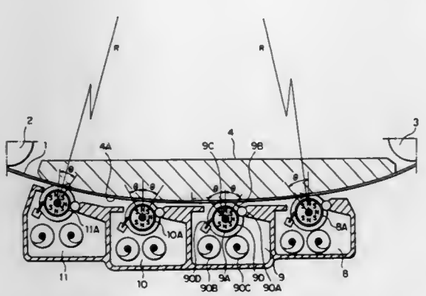
formed the image of said each of the documents stored in the storing means, said controlling means preventing the first motor means and the second motor means from being started simultaneously.

5,184,187

COLOR IMAGE FORMING APPARATUS

Satoshi Haneda; Shizuo Morita; Masakazu Fukuchi, and Shunji Matsuo, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jul. 29, 1991, Ser. No. 737,177
Claims priority, application Japan, Aug. 7, 1990, 2-209050
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 **4 Claims**



1. A color image forming apparatus comprising:
(a) a belt type image carrier extending around two rollers;
(b) a guide between said two rollers on which said image carrier member is suitably conveyed, said guide having a convex curvature toward said image carrier, and
(c) a plurality of developers facing said image carrier serially along a path of movement of said image carrier, each of said development provided with a magnetic roll in which a first magnetic pole facing said image carrier most adjacently and another magnetic pole next to the first magnetic pole are disposed at a predetermined angle, satisfying the following formula:

$$L/R < \theta$$

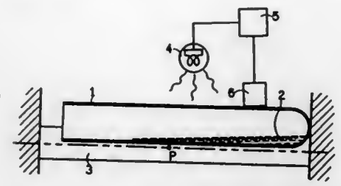
in which R is a radius of the curvature of said guide, L is a maximum length of said image carrier along its circumferential surface facing said plurality of developers and θ is said predetermined angle.

5,184,188

OPTICAL BLOOD HEMOSTATIC ANALYSIS APPARATUS AND METHOD

Brian S. Bull, Loma Linda, and Ralph A. Korpman, Redlands, both of Calif., assignors to Medical Devices Corporation, San Bernardino, Calif.

Filed Jan. 23, 1990, Ser. No. 468,594
Int. Cl.[5] G01N *33/48*
U.S. Cl. 356—39 **60 Claims**



1. An apparatus for optically measuring characteristics of a specimen fluid in a transparent container, the specimen fluid including whole blood, diluent, and disclosure reagent, the apparatus including:
a. means for agitating the specimen fluid in the transparent container, such that a substantial portion of the interior surface of the container is coated with a layer of the fluid;
b. means for directing a light beam through the layer of coating fluid of at least one coated surface of the container;
c. means for detecting a change in the light beam after the light traverses the at least one coated surface of the container;
d. means, coupled to the detecting means, for discriminating discrete clumps of material sticking to the surface of the container from the coating of fluid on the container surface, such discrete clumps of material being representative of a characteristic of the specimen fluid.

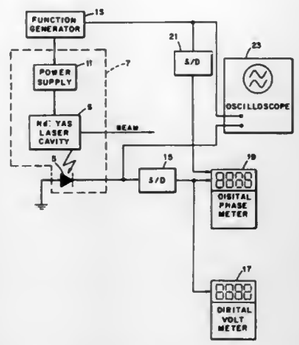
5,184,189

NON-INTRUSIVE BEAM POWER MONITOR FOR HIGH POWER PULSED OR CONTINUOUS WAVE LASERS

Robert A. Hawsey, and Matthew B. Scudiere, both of Oak Ridge, Tenn., assignors to The United States of Americas as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 412,713, Sep. 26, 1989, abandoned. This application May 29, 1991, Ser. No. 706,831
Int. Cl.[5] G01J *1/42*; H01S *3/13*
U.S. Cl. 356—218 **10 Claims**

1. A system for monitoring parameters of an output beam of a laser, comprising:
a. a laser beam generating device including a lasing medium from which an output laser beam is generated along a beam path upon excitation and from which incoherent light is simultaneously emitted about said lasing medium upon said excitation of said lasing medium;
b. a light detecting means disposed out of the beam path of said laser beam generating device for viewing only said incoherent light emitted from about said lasing medium and generating an output signal proportional thereto; and
c. indicating means responsive to the output of said light detecting means for indicating the output laser beam power level of said laser beam generating device in response to the amplitude of said output signal of said light detecting means.

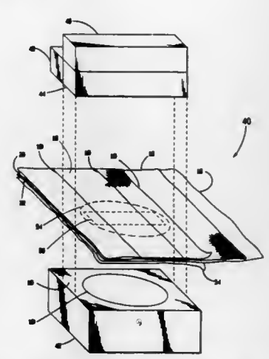


5,184,190

METHOD AND APPARATUS FOR DETECTING FLAWS AND DEFECTS IN HEAT SEALS

Kula R. Rai; Thomas M. Lew, and Robert B. Sinclair, all of San Antonio, Tex., assignors to Winzen International, Inc., San Antonio, Tex.

Filed May 28, 1991, Ser. No. 706,043
Int. Cl.[5] G01N *21/88, 21/89*
U.S. Cl. 356—239 **24 Claims**



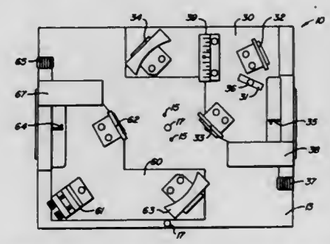
1. A method for examining a heat seal formed between a plurality of translucent sheets to detect the presence of including flaws and defects, comprising the steps of:
transmitting electromagnetic radiation through a lateral section of the heat seal;
detecting the intensity of radiation transmitted through the lateral seal section;
generating a line profile for the lateral seal section, said line profile having a shape related to the integrity of the heat seal and an amplitude defined by changes in the detected radiation intensity across the lateral seal section;
processing the generated line profile to identify certain shape characteristics indicative of the integrity of the heat seal; and
comparing the identified shape characteristics for the derived line profile with a predetermined line profile shape characteristic to detect the presence of a flaw or defect in the lateral seal section.

5,184,191

SAMPLE TABLE FOR MULTI-MODE SPECTRUM ANALYSIS

Krishnaswamy Krishnan, Norwell, Mass., assignor to Bio-Rad Laboratories, Inc., Hercules, Calif.

Filed Mar. 20, 1991, Ser. No. 672,518
Int. Cl.[5] G01N *21/01*
U.S. Cl. 356—244 **4 Claims**



1. A sample holding apparatus for directing an incoming spectrometer beam, the apparatus comprising:
base means defining a first plane parallel to the incoming spectrometer beam;
a first platform pivotally mounted to the base means;
a beam input optical train mounted to the first platform for directing an input beam onto a sample;
sample holder means mounted on the base means for holding the sample in the path of the beam from the beam input means; and
a second platform pivotally mounted to the base means;
a beam output optical train mounted to the second platform for receiving the beam after it strikes the sample and for transmitting the resultant beam away from the sample for analysis;
wherein the beam input optical train directs the spectrometer beam directly at the beam output optical train when the first and second platforms are parallel to one another, and wherein the beam input means directs the spectrometer beam toward the base means such that the beam reflects off the sample and at the beam output optical train when the first and second platforms are not parallel to one another.

5,184,192

PHOTOMETRIC APPARATUS WITH A FLOW CELL COATED WITH AN AMORPHOUS FLUOROPOLYMER

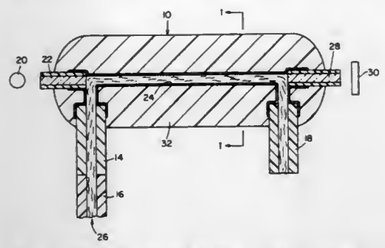
Anthony C. Gilby, Foxborough, and William W. Carson, Hopkinton, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Jul. 17, 1991, Ser. No. 731,677
Int. Cl.[5] G01N *21/05*; B29C *39/02*
U.S. Cl. 356—246 **7 Claims**

1. A flow cell for housing a liquid sample and for exposing a liquid sample to light which comprises
a conduit having a smooth inner wall formed of an amorphous fluoropolymer having a refractive index less than the refractive index of water,
said amorphous fluoropolymer having a thickness at least as

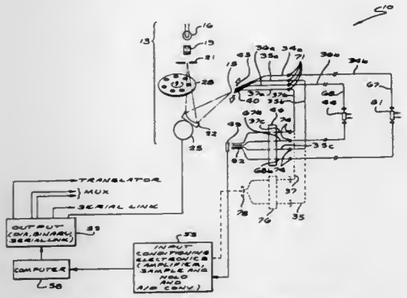
VOL 1147 ISS 1 FE 2 1993 UMI

great as the wavelength of light such that when said conduit is filled with water, visible light and ultra-violet light



can be transmitted along the axis of said conduit by total internal reflection, substantially without loss.

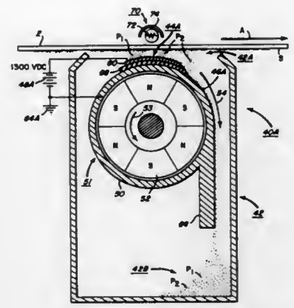
5,184,193
DUAL FIBER OPTIC SPECTROPHOTOMETER
David A. LeFebre, El Dorado Hills, Calif., assignor to Guided Wave, El Dorado Hills, Calif.
Filed Jan. 4, 1989, Ser. No. 293,218
Int. Cl.[5] G01J *3/08, 3/42;* G02B *26/02*
U.S. Cl. 356—325 **51 Claims**



1. A low noise spectrophotometer, comprising:
monochromater means for providing a light beam of variable wavelength at an output;
a first single strand fiber optic waveguide for conducting light from said monochromater means toward a sample;
a second single strand fiber optic waveguide for conducting light; and
translation means for alternatively positioning input ends of said first and second single strand fiber optic waveguides at the same position in space with respect to the output of said monochromater means, wherein said first and second fiber optic waveguides alternatively conduct light from said monochromater means to provide compensation for time and wavelength dependent fluctuations in the light intensity at the output of said monochromater means.

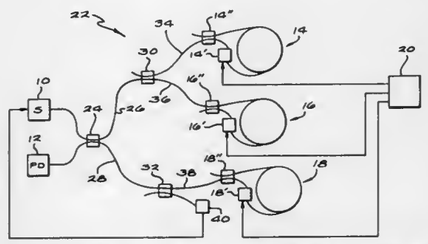
5,184,194
CARRIER PARTICLE SCAVENGING DEVICE
Michael Mosehauer; Catherine D. Newell, and Andrew J. Mauer, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 28, 1991, Ser. No. 783,488
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—297 **9 Claims**

1. A scavenging device for use in an electrostatographic reproduction machine to recapture charged carrier particles from a moving image-carrying surface, the scavenging device comprising:
(a) a first means including a plate member mounted on a non-magnetic shell and within a magnetic field of a magnetic roller core of said non-magnetic shell for capturing from an image-carrying surface charged carrier particles having a correct first polarity;
(b) a second means located downstream of said first means



relative to the direction of movement of the image-carrying surface for recapturing from such surface charged carrier particles having a wrong polarity opposite to said correct first polarity; and
(c) transport means for moving the recaptured charged carrier particles away from the image-carrying surface.

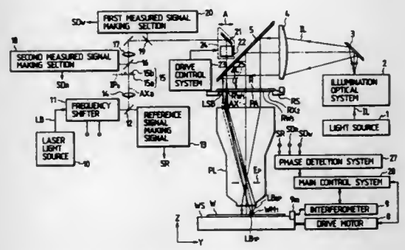
5,184,195
TRIAXIAL FIBER OPTIC SAGNAC INTERFEROMETER WITH SINGLE SOURCE AND DETECTOR
Eric L. Goldner, Valencia, Calif., assignor to Litton Systems, Inc., Woodland Hills, Calif.
Filed May 28, 1991, Ser. No. 705,762
Int. Cl.[5] G01C *19/72*
U.S. Cl. 356—350 **9 Claims**



1. A triaxial fiber optic Sagnac interferometer for measuring rotation rates about three axes comprising, in combination:
a) a source of optical energy;
b) a first, a second and a third gyroscope for measuring rotation rates about a first, a second and third axis respectively;
c) each of said gyroscopes comprising a coil of optical fiber;
d) means for launching said optical energy into each of said coils as counterpropagating waves;
e) phase modulators located in each of said coils for artificially modulating the phase difference between said counterpropagating waves;
f) a single detector for receiving the outputs of each of said gyroscopes;
g) an optical network for receiving the output of said source, distributing said output to said gyroscopes, receiving the output of said gyroscopes and transmitting said outputs to said single detector; and

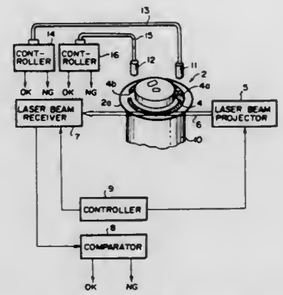
h) means for driving said phase modulators so that the outputs of said gyroscopes are distinguishable at said detector, said means including means for modulating said gyroscopes in accordance with three mutually out-of-phase modulation sequences, each of said modulation sequences comprising a measuring period and two blanking periods.

5,184,196
PROJECTION EXPOSURE APPARATUS
Masahiro Nakagawa; Hideo Mizutani, both of Yokohama; Kouichirou Komatsu, Tokyo, and Yawara Nojima, Chiba, all of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Dec. 19, 1991, Ser. No. 810,130
Claims priority, application Japan, Dec. 26, 1990, 2-406801
Int. Cl.[5] G01B *11/00*
U.S. Cl. 356—401 **7 Claims**



1. A projection exposure apparatus for projecting a predetermined pattern formed on a mask onto a photosensitive substrate, comprising;
a projection optical system for forming an image of the pattern on said substrate under exposure light having a first wavelength;
an illumination system for illuminating a mark on said photosensitive substrate with light having a second wavelength different from the first wavelength through said projection optical system so as to attain alignment; and said mark,
said illumination system comprising;
a light source for emitting the light having the second wavelength;
a first field stop for defining an illumination region on said photosensitive substrate said first field stop having at least two linear edges which extend in a direction substantially perpendicular to a sagittal direction in a visual field of said projection optical system and which are juxtaposed at a predetermined interval in the sagittal direction; and
a second field stop, for defining an illumination region on said photosensitive substrate, said second field stop having at least two linear edges which extend in a direction substantially perpendicular to a meridional direction in a visual field of said projection optical system and which are juxtaposed to be separated at a predetermined interval in the meridional direction: and
said first and second field stops being juxtaposed to be separated in an optical axis direction of said illumination system by a distance according to an astigmatism of said projection optical system caused by the light having the second wavelength, and said edges of said first and second field stops being focused on said photosensitive substrate through said projection optical system.

5,184,197
METHOD FOR INSPECTING MAGNETIC DISK CARTRIDGE
Tomohiro Nakata, and Akira Mizuta, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 31, 1991, Ser. No. 814,793
Claims priority, application Japan, Jan. 10, 1991, 3-001540
Int. Cl.[5] G01N *21/88;* G01B *11/28*
U.S. Cl. 356—426 **5 Claims**



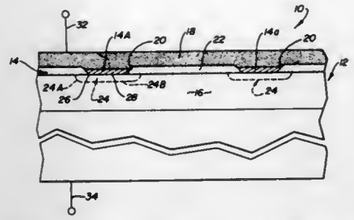
1. A method for inspecting a magnetio disk cartridge, wherein the state, with which an adhesive agent has been applied as an annular layer onto a flange of a center hub in order to adhere a magnetic disk body and the flange of the center hub to each other, is inspected,
the method for inspecting a magnetic disk cartridge comprising the steps of:
i) irradiating a collimated light beam to a cross section of the layer of said adhesive agent, which cross section is taken in the radial direction of said center hub, from a direction which is parallel to the surface of said flange and which is perpendicular to said cross section of the layer of said adhesive agent, said collimated light beam having a beam diameter such that the whole cross section may be included in the beam diameter,
ii) detecting the amount of the collimated light beam, which has passed through the region in the vicinity of said flange,
iii) calculating the area of said cross section of the layer of said adhesive agent from the detected amount of the collimated light beam, which has passed through the region in the vicinity of said flange, and
iv) inspecting the amount of said adhesive agent, which has been applied onto said flange, from the results of the calculation.

5,184,198
SPECIAL GEOMETRY SCHOTTKY DIODE
Meir Bartur, Brentwood, Calif., assignor to Solid State Devices, Inc., La Mirada, Calif.
Continuation of Ser. No. 566,237, Aug. 15, 1990, abandoned.
This application Jun. 12, 1991, Ser. No. 714,341
Int. Cl.[5] H01L *29/48, 23/48*
U.S. Cl. 257—471 **13 Claims**

1. A Schottky barrier diode, comprising:
a substrate having a plurality of sides;
a Schottky metal contact layer in contact with a first side of the substrate to form said Schottky barrier diode, said Schottky metal contact layer comprising a plurality of individual Schottky contact regions;

VOL 1147 ISS 1 FEB 2 1993 UMI

a first conductor electrically coupled to each of the Schottky contact regions;



a second conductor electrically coupled to a second side of the substrate; and

wherein each Schottky contact region is circular-shaped.

5,184,199

SILICON CARBIDE SEMICONDUCTOR DEVICE

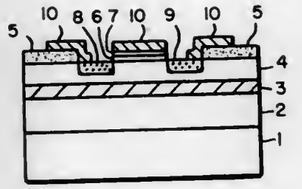
Yoshihisa Fujii; Akira Suzuki, both of Nara; Katsuki Furukawa, Sakai, and Mitsuhiro Shigeta, Kyoto, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 5, 1990, Ser. No. 533,573

Claims priority, application Japan, Jun. 7, 1989, 1-145617

Int. Cl.[5] H01L *29/10, 29/78, 27/01, 27/04*

U.S. Cl. 257—77 **7 Claims**



1. A silicon carbide semiconductor device comprising a semiconductor substrate and a silicon carbide single-crystal layer formed above said substrate, said silicon carbide single-crystal layer having a device active region, wherein an aluminum nitride single-crystal layer functioning as an electrically insulating layer is disposed between the silicon carbide single-crystal layer and the substrate.

5,184,200

THIN FILM SEMICONDUCTOR DEVICE WITH PARTICULAR GRAIN SIZE

Masato Yamanobe, Machida, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1992, Ser. No. 857,826

Claims priority, application Japan, Mar. 27, 1991, 3-085752

Int. Cl.[5] H01L *27/14*

U.S. Cl. 257—53 **10 Claims**

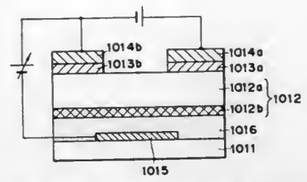
1. A semiconductor device comprising at least:

an insulative layer;

a semiconductor layer provided in contact with a first surface of said insulative layer;

first and second electrodes provided in contact with said semiconductor layer; and

a third electrode provided in contact with a second surface of said insulative layer, said second surface being opposite to said first surface,



wherein said semiconductor layer has a crystallite layer whose average grain diameter lies within a range from 50 to 350 Å and an amorphous layer.

5,184,201

STATIC INDUCTION TRANSISTOR

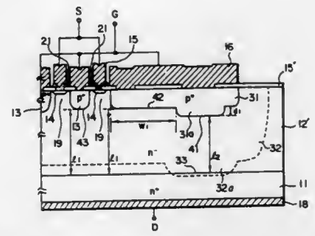
Shinobu Aoki; Haruo Takagi, and Takanori Okabe, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Continuation-in-part of Ser. No. 533,578, Jun. 5, 1990, abandoned. This application Nov. 8, 1991, Ser. No. 793,235

Claims priority, application Japan, Jun. 7, 1989, 1-144571; Jun. 13, 1989, 1-150268

Int. Cl.[5] H01L *29/747*

U.S. Cl. 257—266 **7 Claims**



1. A static induction transistor comprising a semiconductor layer of a first conductivity type, spaced apart gate regions of a second conductivity type disposed adjacent a first major surface of said semiconductor layer, a source region of said first conductivity type formed adjacent said first major surface of said semiconductor layer in between each of said gate regions, said source regions being shallower than said gate regions, and a drain region of said first conductivity type formed on a second major surface of said semiconductor layer generally opposite said first major surface, wherein one of said gate regions is located nearer to the periphery of said semiconductor layer than the other of said gate regions and has a portion formed deeper than the remainder of said one gate region so as to protrude toward said drain region, said deeper portion of said one gate region being located at a predetermined distance from that boundary of said one gate region that is closest to a source region, said predetermined distance being greater than the distance between said protruding deeper gate portion and said drain region and spaced sufficiently close to said drain region to restrict avalanche breakdown to the area immediately below said deeper portion and prevent holes from flowing into the channel regions below said source regions.

5,184,202

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Makio Uchida, Fuchu, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

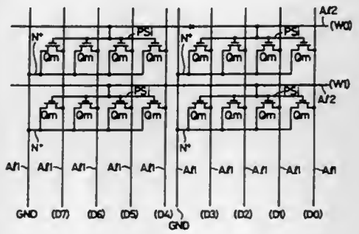
Continuation of Ser. No. 564,594, Aug. 9, 1990, Pat. No. 5,061,980, which is a continuation of Ser. No. 253,673, Oct. 5, 1988, Pat. No. 4,990,992, which is a division of Ser. No. 41,759, Apr. 21, 1987, Pat. No. 4,782,465, which is a continuation of Ser. No. 635,210, Jul. 27, 1984, abandoned. This application Jul. 29, 1991, Ser. No. 737,238

Claims priority, application Japan, Jul. 27, 1983, 58-135815

The portion of the term of this patent subsequent to Oct. 29, 2008, has been disclaimed.

Int. Cl.[5] H01L *29/78, 27/02, 27/10*

U.S. Cl. 257—390 **15 Claims**



1. A semiconductor integrated circuit device comprising:

a logic circuit; and

a memory coupled to said logic circuit for storing data, said memory including a word line, a plurality of sub-word lines each of which has first and second ends and a connecting portion at which a sub-word line is coupled to said word line with said plurality of sub-word lines substantially concurrently receiving a signal from said word line, a plurality of memory cell blocks each respectively coupled to a different one of said plurality of sub-word lines with each of said plurality of memory cell blocks including memory cells coupled between said first end and said connecting portion of the sub-word line and memory cells coupled between said second end and said connection portion of the sub-word line, a plurality of data lines which are coupled to said memory cells, and selection generator for generating and applying said signal to said word line.

5,184,203

SEMICONDUCTOR DEVICE HAVING A CHARGE TRANSFER DEVICE, MOSFETS, AND BIPOLAR TRANSISTORS—ALL FORMED IN A SINGLE SEMICONDUCTOR SUBSTRATE

Minoru Taguchi, Oomiya, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 16, 1991, Ser. No. 641,920

Claims priority, application Japan, Jan. 19, 1990, 2-9576

Int. Cl.[5] H01L *27/02, 29/78*

U.S. Cl. 257—370 **7 Claims**

1. A semiconductor device comprising:

a semiconductor substrate of a first conductivity type, having a major surface;

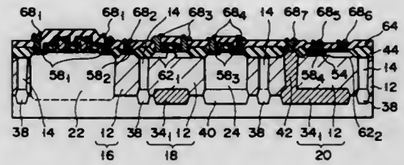
an epitaxial layer of a second conductivity type, formed on the major surface of said semiconductor substrate and having a top surface;

an isolation layer of the first conductivity type, formed in said the epitaxial layer, extending from the top surface thereof to the major surface of said semiconductor substrate, and dividing said epitaxial layer into first, second, and third islands;

a first semiconductor region of the first conductivity type, formed in said first island and extending to said major surface of said semiconductor substrate;

a second semiconductor region of the first conductivity type, formed in said second island and extending to said major surface of said semiconductor substrate;

a charge transfer device having a back gate formed of said first semiconductor region;



a first insulated-gate FET of the first conductivity type, having a back gate formed of said second island;

a second insulated-gate FET of the second conductivity type, having a back gate formed of said second semiconductor region; and

a bipolar transistor having a collector formed of said third island.

5,184,204

SEMICONDUCTOR DEVICE WITH HIGH SURGE ENDURANCE

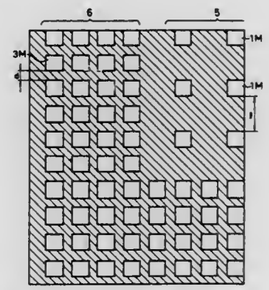
Teruyoshi Mihara, Yokosuka; Tsutomu Matsushita; Kenji Yao, both of Yokohama; Masakatsu Hoshi; Yutaka Enokido, both of Yokosuka, and Yukitsugu Hirota, Kamakura, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 24, 1991, Ser. No. 645,872

Claims priority, application Japan, Jan. 25, 1990, 2-13613

Int. Cl.[5] H01L *29/06, 29/34*

U.S. Cl. 357—629 **7 Claims**



1. A semiconductor device, comprising:

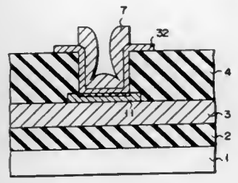
a semiconductor substrate of a first conduction type;

a group of cell diffusion layers of a second conduction type which is formed inside the semiconductor substrate and is connected to electrodes; and

a guard ring region of the second conduction type which is surrounding the cell diffusion layers and is connected to said electrodes, the guard ring region being formed from an array having an overall ring shape formed by a plurality of interconnected guard ring cells, where each of the guard ring cells is identical in shape to each of the cell diffusion layers and the guard ring cells are electrically connected mutually.

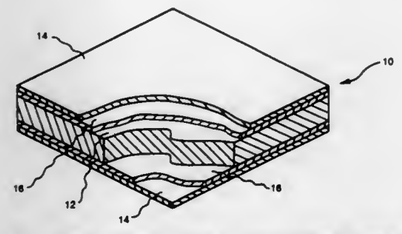
VOL 1147 ISS 1 FE 2 1993 UMI

5,184,205
SEMICONDUCTOR DEVICE HAVING MULTI-LAYERED WIRING, AND METHOD OF MANUFACTURING THE SAME
Hideki Shibata, Yokohama, Japan, assignor to Kabishiki Kaisha Toshiba, Kawasaki, Japan
Filed Jun. 6, 1991, Ser. No. 711,144
Claims priority, application Japan, Jun. 7, 1990, 2-147489
Int. Cl.[5] H01L *23/54*
U.S. Cl. 257—765 **2 Claims**



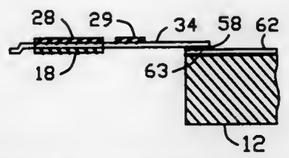
1. A semiconductor device comprising:
a semiconductor substrate;
a first metal wiring layer made of Al alloy and formed on said substrate;
a conductive film made of one material selected from the group consisting of polysilicon and silicide of metal having a high melting point, said conductive film being formed on a predetermined portion of said first metal wiring layer;
an inter-layer insulating film formed on said first metal wiring layer and said conductive film;
a contact hole formed in said inter-layer insulation film and having a diameter smaller than said conductive film;
a second metal wiring layer made of metal having a high melting point, provided in said contact hole, and connected to said conductive film; and
a third metal wiring layer made of Al alloy, formed on said second metal wiring layer, and electrically connected thereto.

5,184,206
DIRECT THERMOCOMPRESSION BONDING FOR THIN ELECTRONIC POWER CHIPS
Constantine A. Neugebauer, Schenectady; Homer H. Glascock, II, Scotia; Kyung W. Paik, Clifton Park; James G. McMullen, Pattersonville, all of N.Y., and Martha M. Neugebauer executrix of said Constantine A. Neugebaner, deceased , assignors to General Electric Company, Schenectady, N.Y.
Filed Oct. 26, 1990, Ser. No. 603,495
Int. Cl.[5] H01L *23/48, 29/40, 29/46;* **B23K** *31/02*
U.S. Cl. 257—762 **9 Claims**



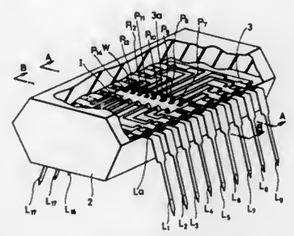
1. A metallic laminate bonded to a semiconductor substrate and comprising a first conductive metallic lamina on the substrate, a first bimetal-intermetallic lamina bonded to the first metallic lamina, a second conductive metallic lamina one side of which is bonded to said first bimetal-intermetallic lamina, and a third metallic lamina bonded to the other side of said second metallic lamina, said second metallic lamina thereby separating said third metallic lamina from direct contact with said first bimetal-intermetallic lamina and said first metallic lamina thereby separating said first bimetal-intermetallic lamina from direct contact with the substrate.

5,184,207
SEMICONDUCTOR DIE PACKAGES HAVING LEAD SUPPORT FRAME
Earl S. Cain, Napa, Calif., assignor to Tribotech, Napa, Calif.
Continuation of Ser. No. 281,016, Dec. 7, 1988, abandoned. This application Oct. 31, 1990, Ser. No. 609,088
Int. Cl.[5] H01L *23/48, 29/44*
U.S. Cl. 257—668 **17 Claims**



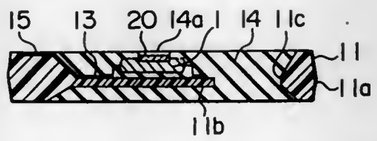
1. A lead pack for providing multiple independent electrical and mechanical lead attachments between a circuit and a semiconductor device comprising:
a lead support frame having upper and lower frame portions of insulating material sealed to one another, said lead support frame adapted to cooperate with means for packaging said semiconductor device, and
an array of spaced leads embedded between said frame portions and carried and supported solely by said lead support frame, each of said leads having one end extending inwardly inside of said frame for connection to the bonding pads of an associated semiconductor device and extending outwardly from said frame for connection to an associated circuit.

5,184,208
SEMICONDUCTOR DEVICE
Toshiyuki Sakuta, Hamura; Kazuyuki Miyazawa, Iruma; Satoshi Oguchi, Ohme; Aizo Kaneda; Masao Mitani, both of Yokohama; Shozo Nakamura, Yokohama; Kunihiko Nishi, Kokubunji, and Gen Murakami, Machida, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Continuation of Ser. No. 212,485, Jun. 28, 1988, abandoned. This application Jan. 14, 1991, Ser. No. 640,584
Claims priority, application Japan, Jun. 30, 1987, 62-161333; Sep. 17, 1987, 62-234645
Int. Cl.[5] H01L *23/48, 29/46, 23/28, 23/02*
U.S. Cl. 257—666 **34 Claims**



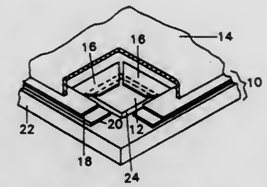
1. A semiconductor memory device comprising:
rectangular shaped semiconductor chip having a main surface and including a first pair of end sides that are relatively longer than a second pair thereof;
two rectangular shaped memory cell array regions formed on said main surface and arranged apart from each other, wherein each memory cell array region has one pair of longer end sides are directioned in parallel to the longer end sides of the chip;
two separate, peripheral circuit regions formed between said memory cell array regions on said main surface, wherein said two peripheral circuit regions are arranged in parallel with each other and each is extended adjacently along a relatively shorter end side of a respective one of said two rectangular shaped memory cell array regions;
a plurality of bonding pads formed between said peripheral circuit regions, at a portion of said main surface away from an outer peripheral area thereof, and arranged along the direction of the shorter end sides of said memory cell array regions, wherein each one of said two peripheral circuit regions is formed between said plurality of bonding pads, in proximity thereto, and a respective one of said memory cell array regions;
a plurality of leads, wherein each lead has an inner lead portion and an exposed outer lead portion extending outwardly from said inner lead portion, and wherein said inner lead portion has a front end part overlying said main surface of said semiconductor chip;
an insulating film interposed between the front end parts of said inner lead portions of said plurality of leads and the main surface of said semiconductor chip, wherein aid insulating film is contacting the front end parts of said inner lead portions and the main surface of said semiconductor chip;
means for electrically connecting the front end parts of said inner lead portions with said bonding pads, respectively; and
a molding resin for molding said semiconductor chip, the inner lead portions of said plurality of leads and said insulating film.

5,184,209
IC CARD AND MANUFACTURING METHOD THEREFOR
Shojiro Kodai; Katsunori Ochi, both of Itami, and Fumiaki Baba, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 22, 1990, Ser. No. 526,849
Claims priority, application Japan, May 23, 1989, 1-129302
Int. Cl.[5] H05K *7/00, 1/14*
U.S. Cl. 257—679 **27 Claims**



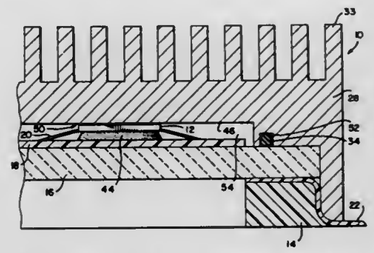
1. An IC card having a thickness comprising:
a molded synthetic resin circumferential frame having opposed first and second surfaces and including a periphery having a thickness extending between the first and second surfaces corresponding to the thickness of said IC card;
a circuit board unitary with and integrally molded with said circumferential frame, disposed within the periphery intermediate the first and second surfaces of said frame, including opposed third and fourth surfaces, and having an opening for the passage of resin sealant to the third and fourth surfaces during encapsulation of the IC card;
electric circuit means disposed on at least one of said third and fourth surfaces including an I/O portion disposed on one of said circuit board and said periphery for supplying information to and receiving information from external equipment; and
a resin sealant covering the third and fourth surfaces of said circuit board, hermetically encapsulating said electric circuit means, and having a thickness no greater than the thickness of said periphery, said resin sealing being disposed within said frame to form a card-like shape.

5,184,210
STRUCTURE FOR CONTROLLING IMPEDANCE AND CROSS-TALK IN A PRINTED CIRCUIT SUBSTRATE
Scott R. Westbrook, Los Altos, Calif., assignor to Digital Equipment Corporation, Maynard, Mass.
Continuation of Ser. No. 496,811, Mar. 20, 1990, abandoned. This application Mar. 13, 1991, Ser. No. 668,387
Int. Cl.[5] H01L *23/12;* **H01P** *3/08;* **H03K** *17/80*
U.S. Cl. 257—664 **23 Claims**



1. A signal carrying arrangement for an electronic circuit, comprising:
a multilayered substrate having
a signal layer including signal traces for carrying signals in the electronic circuit,
a layer of dielectric material disposed adjacent the signal layer, and
a signal cover layer, disposed such that the dielectric material is between the signal layer and the signal cover layer, including ventilation apertures therein which are spaced so that each of the signal traces traverses approximately an equal number of the apertures to reduce degradation of the signals in the signal traces.

5,184,211
APPARATUS FOR PACKAGING AND COOLING INTEGRATED CIRCUIT CHIPS
Leslie R. Fox, Boxborough, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Continuation of Ser. No. 162,671, Mar. 1, 1988, abandoned. This application Feb. 22, 1990, Ser. No. 485,850
Int. Cl.[5] H01L *23/12, 23/24, 23/34*
U.S. Cl. 257—706 **20 Claims**



1. As assembly for packaging and cooling circuit chips comprising:
a base;
compliant mean disposed on said base;
a heat sink for engagement with said base having an inner top surface; and
a clamshell housing completely surrounding at least a first

VOL 1147 ISS 1 FEB 2 1993 UMI

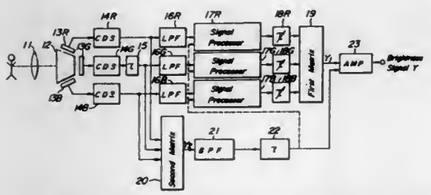
circuit chip, said clamshell housing being held in position between said compliant means and the inner top surface of said heat sink.

5,184,212

CIRCUIT FOR PRODUCING BRIGHTNESS SIGNAL FROM OUTPUT SIGNAL OF SOLID STATE IMAGE PICK-UP APPARATUS USING SPATIAL PIXEL SHIFT

Kazumi Yamamoto, Yokohama, and Masayuki Sugasawa, Tokyo, both of Japan, assignors to Ikegami Tsushinki Co., Ltd., Tokyo, Japan

Filed Sep. 6, 1991, Ser. No. 756,334
Claims priority, application Japan, Sep. 12, 1990, 2-240093
Int. Cl.[5] H04N *9/09*
U.S. Cl. 358—39 **11 Claims**



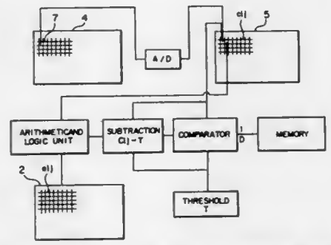
1. A circuit for producing a brightness signal from output color signals of a solid state image pick-up apparatus, in which at least two solid state image sensor s each having a number of light receiving elements arranged in matrix are arranged in such a manner that light receiving elements of one solid state image sensor are shifted spatially in a main-scanning direction over a distance substantially equal to one-half of a pitch of successive light receiving elements with respect to light receiving elements of the other solid state image sensor, comprising:
- delaying means for delaying an output signal generated by said one solid state image sensor by a delay time corresponding to one-half of a spatial sampling period so that a phase of the output signal of said one solid state image sensor is made to coincide with a phase of an output signal of said other solid state image sensor;
- first filtering means for cutting off higher frequency components contained in an output signal of said delaying means and in the output signal of said other solid state image sensor;
- signal processing means for processing output signals of said first filtering means;
- first matrix means for adding output signals of said signal processing means to each other at a predetermined ratio to produce a first brightness signal;
- second matrix means for adding the output signal of said delaying means and the output signal of said other solid state image sensor to each other at a ratio of 1:1 to derive a second brightness signal;
- second filtering means for extracting a high frequency component from said second brightness signal; and
- adding means for adding said high frequency component derived by said second filtering means to said first brightness signal.

5,184,213

BINARIZING METHOD FOR COLOR IMAGE USING MODIFIED ERROR DIFFUSION METHOD

Roh Ishida, Chiba, Japan, assignor to Toyo Ink Mfg. Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 583,306, Sep. 14, 1990, abandoned. This application Mar. 19, 1991, Ser. No. 671,417
Claims priority, application Japan, Sep. 20, 1989, 1-244734; Japan, Sep. 20, 1990, 2-250944; Feb. 14, 1991, 3-42716; Feb. 14, 1991, 3-42718
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—75 **15 Claims**



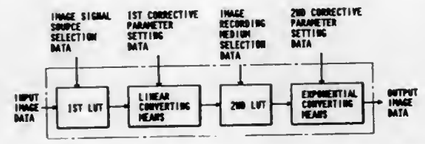
1. A method for color image information processing to reproduce multivalued color halftone image information by use of an output device capable of recording in binary values, comprising the steps of:
- preparing a diffusion coefficient matrix with periodicity in a 1- or 2-dimensional direction, and storing said diffusion coefficient matrix in a memory;
- binarizing by use of a comparator, an object value that is a density value of a referred input pixel of a color image or the sum of density value and error values, by comparison with a threshold, said comparator being operative to compare said object value with the threshold;
- employing an arithmetic logic unit to accomplish a dividing of a difference between said object value and the threshold into error values in a size proportional to the coefficients as elements in the partial matrix by use of said partial matrix, said partial matrix being part of said diffusion coefficient matrix, said periodicity in 1-dimensional or 2-dimensional direction consisting of the elements fixedly corresponding to each position of the input pixel;
- providing correspondence between the position of said partial matrix and a position of said referred input pixel; and
- adding said error values to the object values of the input pixels that correspond to the elements of said partial matrix of the diffusion coefficient matrix.

5,184,214

IMAGE OUTPUT SYSTEM

Setsuji Tatsumi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 7, 1990, Ser. No. 563,649
Claims priority, application Japan, Aug. 8, 1989, 1-206237
Int. Cl.[5] H04N *1/46, 9/04*; G03F *3/08*
U.S. Cl. 358—75 **5 Claims**



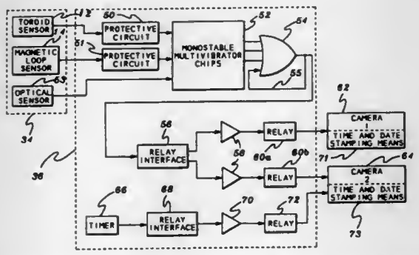
1. An image output system for processing an input image signal from an image signal source to produce an output image signal to record an image on an image recording medium, comprising:
- a first look-up table for converting an input image signal into an image signal which matches the image output system, said first look-up table being selected to match the image signal source;
- linear converting means for linearly converting said image signal, which has been converted by said first look-up table, into an image signal based on first corrective parameters set to achieve given color tone;
- a second look-up table for converting said image signal, which has been converted by said linear converting means, into an image signal which matches the image recording medium, said second look-up table being selected to match the image recording medium; and
- exponential converting means for converting said image signal, which has been converted by said second look-up table, into an exponential output image signal based on second corrective parameters set to achieve given color tone.

5,184,215

LIGHTNING DETECTING AND RECORDING SYSTEM

Philip P. Barker, Schenectady, N.Y., assignor to Niagara Mohawk Power Corporation, Syracuse, N.Y.

Filed Nov. 26, 1991, Ser. No. 800,454
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—93 **39 Claims**



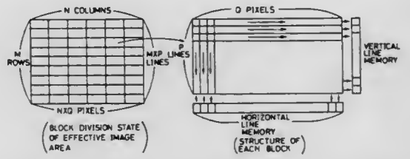
1. An automated system for detecting and recording a lightning strike in the vicinity of a power line, said system comprising:
- a housing having at least one viewport;
- first automated means for detecting a magnetic field disturbance resulting from said lightning strike in the vicinity of said power line, said first automated means outputting a first signal representative of said lightning strike when said lightning strike is detected;
- second automated means for detecting light resulting from said lightning strike in the vicinity of said power line, said second automated means outputting a signal when light is detected;
- means for filtering said signal output from said second automated means, said filtering means outputting a second signal representative of said lightning strike when said output signal from said second automated means is above a preselected level;
- control means coupled to receive the output of said first automated means and the output of said filtering means, said control means outputting a third signal in response to receiving at least one of said first signal and said second signal; and
- means responsive to the output of said control means for visually recording said lightning strike and a subsequent lightning strike in a flash in the vicinity of said power line, said recording means being located within said housing adjacent said at least one viewport for visually recording said lightning flash through said viewport.

5,184,216

IMAGE SENSING APPARATUS HAVING CAMERA-SHAKE DETECTION FUNCTION

Akio Kobayashi, Hirakata, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Mar. 29, 1991, Ser. No. 677,188
Claims priority, application Japan, Mar. 30, 1990, 2-85304; May 29, 1990, 2-141144; Jun. 22, 1990, 2-164801
Int. Cl.[5] H04N *5/225*
U.S. Cl. 358—105 **6 Claims**



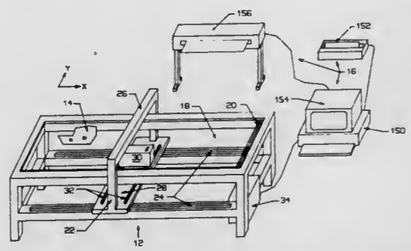
1. An image sensing apparatus having camera-shake detection function comprising:
- image sensing means for receiving light from an object and converting the same into a video signal,
- binary coding means for dividing an image sensed picture into a plurality of blocks and binary coding said video signal at a plurality of sampling points in each block by comparing the same with a first reference value determined for each block,
- distribution data calculating means for calculating data representing the distribution position of the object in the vertical direction and the horizontal direction in each block according to said binary coded data for each block,
- motion vector specifying means for specifying a motion vector of the object for each block according to said data representing the distribution position of the object, and
- motion vector selecting means for selecting a motion vector of the object of an entire image sensed picture by logic process based on said specified motion vectors for respective blocks.

5,184,217

SYSTEM FOR AUTOMATICALLY INSPECTING A FLAT SHEET PART

John W. Doering, 18252 Lincoln St., Villa Park, Calif. 92667

Filed Aug. 2, 1990, Ser. No. 562,025
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—106 **18 Claims**

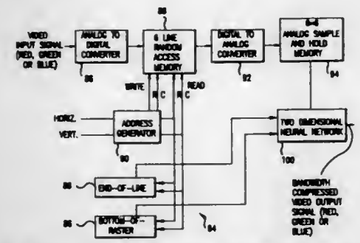


1. A system for automatically inspecting a workpiece for the perimeter and holes formed therein, said system comprising of:
- an inspection table having a transparent scratch resistant glass surface upon which the workpiece is to be laid;
- an etched glass calibration scale located at the edge of the glass surface of the table for sensor table calibration;
- a carriage mounted on rails on the table which is movable in a first direction; containing a light source, and an optical

VOL 1147 ISS 1 FEB 2 1993 UMI

sensor module which is movable in a second direction perpendicular to the first;
an imaging sensor with a plurality of photo sensing elements, a lens, two flat mirrors and a curved mirror situated within said optical sensor module;
a video sensor board situated with said optical sensor module;
a computer controlled two axis motion controller for controlling the positioning of the carriage in one direction and the optical sensor module in a second direction perpendicular to the first; and
a computer workstation interfacing with the motion controller, imaging sensor and video sensor board; providing the means for carriage motion control, and the processing of edge address data for workpiece perimeter and hole inspection;
wherein the curved mirror is a spherical section curved at a radius which aligns the viewing angle of each photo sensing element of the sensor so that it is perpendicular to and focused at the surface of the transparent table top.

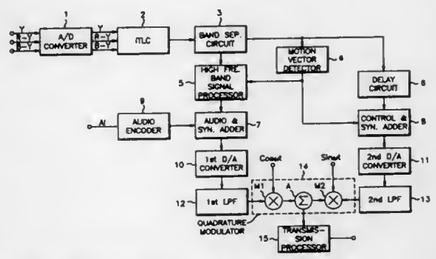
5,184,218
BANDWIDTH COMPRESSION AND EXPANSION SYSTEM
Richard C. Gerdes, Scottsdale, Ariz., assignor to WavePhore, Inc., Tempe, Ariz.
Filed Jul. 3, 1991, Ser. No. 725,563
Int. Cl.[5] H04N *7/01, 7/12*
U.S. Cl. 358—133 **31 Claims**



1. An arrangement for modifying the bandwidth of an analog input signal comprising the combination of means for periodically examining the analog input signal within a sampling region encompassing a first plurality of values of the analog input signal and within a subsampling region encompassing a second plurality of values of the analog input signal within a portion of the sampling region, and means responsive to each examining of the analog input signal for providing a corresponding output signal representing the second plurality of values within the subsampling region and related to those of the first plurality of values not included in the second plurality of values.

5,184,219
METHOD FOR TRANSMITTING SPECTRUM-COMPATIBLE HIGH-DEFINITION TELEVISION SIGNAL AND CIRCUIT THEREFOR IN A TELEVISION SIGNAL TRANSMISSION SYSTEM
Hyun-Deok Cho, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Apr. 26, 1991, Ser. No. 691,856
Claims priority, application Rep. of Korea, May 12, 1990, 1990-6789
Int. Cl.[5] H04N *7/04, 11/06*
U.S. Cl. 358—141 **44 Claims**

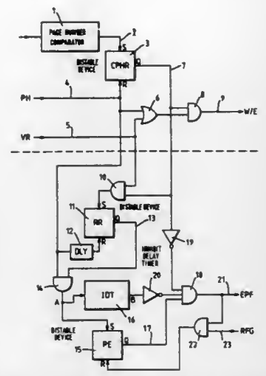
1. A circuit for transmitting spectrum-compatible high-definition television signals in a television signal transmission system, said circuit comprising:
analog-to-digital converter for converting analog luminance signal and chrominance signals into a digital signal;
means for integration by compressing on a time-base said digital signal;
band separation means for separating the output signal of said means for integration into a low frequency band signal and a high frequency band signal;
motion vector detection means for detecting a motion vector signal from the low frequency band signal;
high frequency processing means for processing the high frequency band signal of said band separation means in response to the motion vector signal;
first synchronizing means for adding the low frequency signal to the motion vector signal;



a first digital-to-analog converter for converting the output signal of said high frequency processing means to a first analog signal;
a second digital-to-analog converter for converting the output signal of said first synchronizing means to a second analog signal; and
quadrature modulation means for multiplying the first analog signal and the second analog signal by a first sinusoidal signal and a second sinusoidal signal, respectively, to provide a first multiplied signal and a second multiplied signal, and for synthesizing the first multiplied signal and second multiplied signal to provide a transmission signal.

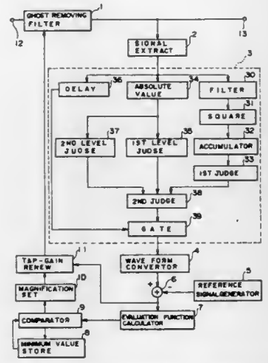
5,184,220
TELETEXT DECODER APPARATUS INCLUDING FEATURE OF INHIBITING GENERATION OF AN END-OF-PAGE SIGNAL
John R. Kinghorn, Brockenhurst, and Jeremy R. Stevens, Lymington, both of United Kingdom, assignors to U.S. Philips Corp., New York, N.Y.
Filed Jan. 28, 1991, Ser. No. 647,620
Claims priority, application United Kingdom, Jan. 31, 1990, 9002118
Int. Cl.[5] H04N *7/087, 7/04, 7/08*
U.S. Cl. 358—147 **14 Claims**

1. A teletext decoder comprising: means for detecting the page header of a required teletext page, means for detecting the next following page header, and means responsive to the detection of said next following page header for generating an end of page signal, means for detecting at least one row of said required teletext page, and means for inhibiting the generation of said end of page signal if 1) at least one row of said required teletext page has not been detected, or 2) there has been a



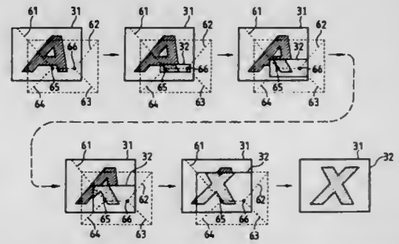
subsequent detection of a further page header of said required teletext page within a predetermined period.

5,184,221
APPARATUS FOR REMOVING GHOST COMPONENT DISTURBING PICTURE SIGNAL
Yuji Nishi, Iwai; Shigehiro Ito, Toride; Tatsushi Kuguchi, Iwai, and Kazuyuki Ebihara, Toride, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan
Filed Oct. 29, 1991, Ser. No. 783,826
Claims priority, application Japan, Oct. 29, 1990, 2291043
Int. Cl.[5] H04N *5/210*
U.S. Cl. 358—167 **4 Claims**



1. An apparatus for removing a ghost component which disturbs a picture signal by means of a ghost canceling reference signal included therein, including:
ghost removing filter means for removing the ghost component;
signal extracting means for extracting the reference signal from the picture signal by canceling a color burst signal and other signal components included therein except the reference signal;
waveform judging means for judging whether the extracted reference signal has a specific waveform;
signal inspection means for inspecting disturbance of the extracted reference signal suffered from the ghost component, if the extracted reference signal is judged to have the specific waveform; and
characteristic varying means, responsive to the inspection, for varying filtering characteristics of the filter means, wherein
the waveform judging means comprises:
level judging means for judging whether the extracted reference signal has a specific level in a reference time interval;
signal judging means for judging whether the color burst signal is canceled in the extracted reference signal;
signal outputting means for outputting a judgement signal if the extracted reference signal is judged to have the specific level in the reference time interval and the color burst signal is judged to be canceled; and
gate means, responsive to the judge signal, for applying the extracted reference signal to the signal inspection means.

5,184,222
WIPE GENERATOR HAVING START POSITION AND WIDTH CONTROLLER
Ryogo Yanagisawa, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jan. 2, 1991, Ser. No. 636,803
Claims priority, application Japan, Jan. 19, 1990, 2-11294; Apr. 20, 1990, 2-106190
Int. Cl.[5] H04N *5/262*
U.S. Cl. 358—183 **7 Claims**



1. A wipe waveform signal generating apparatus comprising:
a wipe width generator generating a wipe width;
a wipe waveform extended width holding device outputting a horizontal extended width and a vertical extended width;
a wipe waveform calculator receiving the wipe width, the horizontal extended width, and the vertical extended width, and outputting a rectangular-area horizontal width, a rectangular-area vertical width, a rectangular-area horizontal starting position, and a rectangular-area vertical starting position; and
a change signal generator receiving the rectangular-area horizontal width, the rectangular-area vertical width, the rectangular-area horizontal starting position, and the rectangular-area vertical starting position, and outputting a wipe waveform signal.

5,184,223
ELECTRONIC IMAGING APPARATUS
Shinichi Mihara, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Apr. 26, 1991, Ser. No. 692,254
Claims priority, application Japan, Apr. 28, 1990, 2-114447; May 29, 1990, 2-139468
Int. Cl.[5] H04N *5/30*
U.S. Cl. 358—209 **3 Claims**

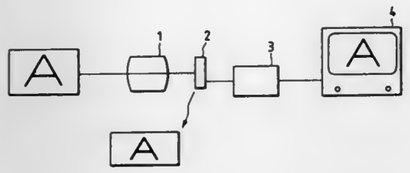
1. An electronic imaging apparatus comprising:
an imaging optical system including an imaging lens system for forming an image of an object at magnifications different between an x-z section and a y-z section when the

VOL 1147 ISS 1 FE 2 1993 UMI

object is placed on a z-axis in a three dimensional x-y-z space and an image sensor having a photoelectric converting surface substantially perpendicular to the z-axis for receiving said object image; and

a video signal processing circuit connected to said image sensor for changing a difference in expansion/contraction ratios between a scanning direction and a direction perpendicular thereto for reproducing said object image with video signals obtained from said image sensor;

wherein said imaging optical system comprises an anamorphic optical system and satisfies the condition:



$$|\Delta d| < 2\delta F/\beta^2$$

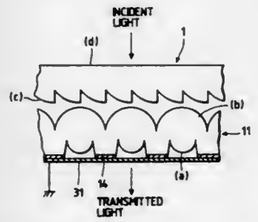
wherein Δd is the paraxial astigmatic difference in image between the x-z section and the y-z section of said anamorphic optical system, δ is the length of the shorter side of each pixel element of the image sensor, F is the F number of the imaging lens system, and β is the magnification of the optical system located on the image side of said anamorphic optical system.

5,184,224

TELEVISION PROJECTION SCREEN HAVING ANTI-STATIC ELEMENTS

Katsuaki Mitani; Toshiaki Matsumura, and Noboru Yasumatsuya, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 3, 1991, Ser. No. 725,077
Claims priority, application Japan, Jul. 3, 1990, 2-176144
Int. Cl.[5] H04N *5/74, 5/64, 5/72*
U.S. Cl. 358—231 **19 Claims**



1. A transmission-type screen comprising:

a lenticular lens for transmitting rays of light therethrough; and

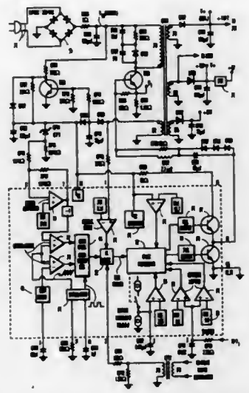
an electrically conductive layer mounted on a surface of said lenticular lens for preventing said surface from being electrostatically charged.

5,184,225

TELEVISION RECEIVER WITH SPOT BURN PROTECTION AND AFTER-GLOW SUPPRESSION

Wolfgang Heidebroek, and Zeith W. C. Hsing, both of Singapore, Singapore, assignors to Thomson Consumer Electronics, S.A., Courbevoie, France

Filed Jul. 3, 1991, Ser. No. 725,052
Int. Cl.[5] H04N *3/20, 3/24*
U.S. Cl. 358—243 **2 Claims**



1. A television receiver comprising a kinescope, a driver amplifier for driving said kinescope, a high voltage supply, a deflection circuit, a control circuit for generating a turn-off command signal to cause said television receiver to change from a "run" operating mode to a "stand-by" operating mode during a transition interval; and circuit means responsive to said turn-off command for disabling said high voltage supply and for initiating turn-off of said deflection circuit at a controlled rate during said transition interval: characterized in that:

said driver amplifier comprises a high voltage amplifier and a low voltage amplifier;

said high voltage amplifier includes a signal input for receiving a picture representative video signal, a control input for receiving a control signal and an output coupled to an electron gun of said kinescope;

said high voltage amplifier responding to a given level of said control signal applied to said control input for over-riding any value of said picture representative video signal applied to said signal input such that said high voltage driver amplifier causes said electron gun to produce a maximum output electron beam level;

said low voltage amplifier having a first input for receiving an on-screen display character signal, having a second input coupled to receive said turn-off command signal and having an output coupled to said control input of said high voltage amplifier;

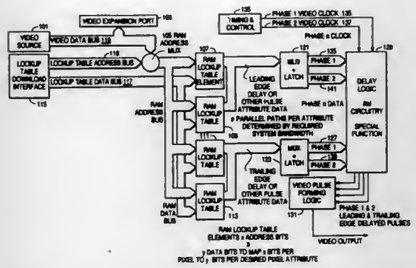
said low voltage amplifier being responsive to said turn-off command during said transition interval for over-riding any value of said character signal to cause said control signal to exhibit said given level, thereby over-riding said said picture representative signal in said high voltage amplifier during said transition interval so as to produce said maximum output electron beam level for discharging high voltage from said kinescope and for producing a display on said kinescope of uniform brightness across the display raster to as to prevent amplitude characteristics of either said picture representative signal or said on-screen display character signal from causing spot burn damage to said kinescope during said transition interval.

5,184,226

DIGITAL VIDEO PULSE WIDTH AND POSITION MODULATOR

Michael S. Cianciosi, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 25, 1991, Ser. No. 783,011
Int. Cl.[5] H04N *1/40;* **G01D** *9/42*
U.S. Cl. 358—296 **15 Claims**



1. A digital electronics system for generating pulses from a series of data words comprising:

means for translating the series of data words into a series of pulse attribute words, wherein each of said pulse attribute words includes information for controlling a formation of a corresponding pulse;

means for splitting the series of pulse attribute words into two channels;

means corresponding to each channel and accepting pulse attribute words from respective channels, for forming pulses using the information included in the pulse attribute words for controlling the formation of the pulses; and

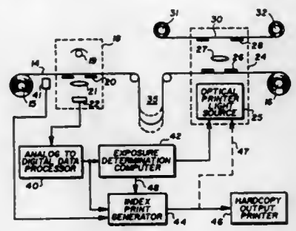
means for generating the pulses, wherein a first pulse is generated while a second pulse is being formed by the forming means.

5,184,227

PHOTOGRAPHIC PRINTER WITH INDEX PRINT GENERATION

Walter D. Foley, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 21, 1991, Ser. No. 795,585
Int. Cl.[5] H04N *1/387, 1/46;* **G03B** *1/00*
U.S. Cl. 358—302 **4 Claims**



1. A photographic printer having a print station for generating photographic prints from photographic film frame images and being adapted to produce index print images corresponding to said photographic prints, the printer comprising:

exposure determination film frame image scanner means independent of the print station for generating scanned film frame image signals to be used in determining print exposure operating conditions at the print station;

index print signal generating means responsive to said scanned film frame image signals for processing and storing said scanned film frame image signals as a matrix of film frame image signals suitable for use in producing an index print;

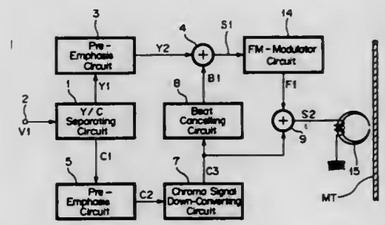
and printer output means responsive to a predetermined series of the stored scanned film frame image frame signals in said matrix for generating an index print therefrom.

5,184,228

RECORDING CIRCUIT FOR MIRROR MOTHER TAPE

Toshiharu Kobayashi, and Keisuke Unno, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 27, 1991, Ser. No. 722,170
Claims priority, application Japan, Jul. 5, 1990, 2-178232
Int. Cl.[5] H04N *9/79, 9/83*
U.S. Cl. 358—310 **4 Claims**



1. An apparatus for recording, on a mirror mother tape to be used in contact printing process, an incoming color video signal including a chrominance signal and a luminance signal, said apparatus comprising:

means for down converting said chrominance signal into a down converted chrominance signal having a reduced carrier frequency fC;

means for generating, from said down converted chrominance signal, a beat cancelling signal having a frequency 2 fC;

means for adding said beat cancelling signal to said luminance signal so as to generate an added signal;

means for combining said down converted chrominance signal with said added signal so as to provide a combined signal; and

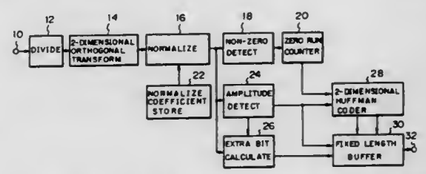
means for recording said combined signal on the mirror mother tape.

5,184,229

COMPRESSION CODING DEVICE AND EXPANSION DECODING DEVICE FOR PICTURE SIGNAL

Osamu Saito; Kenji Ito; Kenji Moronaga, and Mikio Watanabe, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 1, 1989, Ser. No. 444,701
Claims priority, application Japan, Dec. 9, 1988, 63-309870; Mar. 31, 1989, 1-78288
Int. Cl.[5] H04N *1/41*
U.S. Cl. 358—427 **17 Claims**



1. A device for coding a picture signal by dividing a single picture of digital picture data into a plurality of blocks and

VOL
1147
ISS
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compressing said digital picture data block by block, comprising:

coding means for coding each of the plurality of blocks of digital picture data;

region data detecting means, operatively communicative with said coding means, for detecting that the individual blocks of digital picture data lie in a predetermined range;

output data producing means, operatively communicative with said region data detecting means, for producing output data which includes the coded data;

said output data producing means outputting, depending on whether said digital picture data lies in said predetermined range, data specifying said digital picture data in addition to the coded data produced by said coding means;

orthogonal transforming means for applying two-dimensional orthogonal transform to the individual blocks of digital picture data; and

normalizing means for normalizing the transformed data produced by said orthogonal transforming means;

said coding means coding the normalized data produced by said normalizing means;

said region data detecting means comprising overflow detecting means for detecting that an amplitude of the normalized data has exceeded said predetermined range;

said output data producing means outputting, when said overflow detecting means has detected that the amplitude of the normalized data has exceeded said predetermined range, the data specifying the normalized data in addition to the coded data produced by said coding means.

5,184,230

UNDERWATER INSPECTION APPARATUS AND METHOD

John Watson, Alford, Scotland, assignor to British Technology Group Limited, London, England

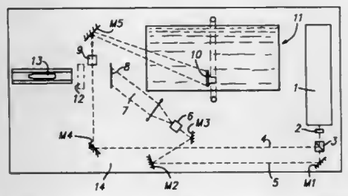
PCT No. PCT/GB89/00743, § 371 Date Dec. 31, 1990, § 102(e) Date Dec. 31, 1990, PCT Pub. No. WO90/00269, PCT Pub. Date Jan. 11, 1990

PCT Filed Jun. 30, 1989, Ser. No. 634,120

Claims priority, application United Kingdom, Jul. 1, 1988, 8815660

Int. Cl.[5] G03H *3/00*

U.S. Cl. 359—9 **5 Claims**



1. A holographic recording and reproducing system comprising:

means for using a beam of radiation from a source for recording holographic images of an object positioned in a first medium and replaying said images in a second medium;

means selectively responsive to the polarization of radiation reflected from said source; and

gating means for selectively limiting an extent, in a direction of propagation of said radiation, of the region from which images are recorded substantially to reduce the effect on a photosensitive medium of radiation other than radiation capable of producing said holographic images, wherein said gating means includes coherence gating means selectively to receive radiation from a predetermined target region.

5,184,231

HELMET SYSTEMS

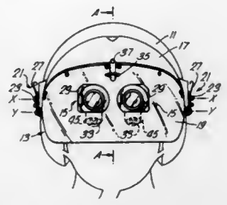
Stafford M. Ellis, East Preston, England, assignor to GEC-Marconi Limited, England

Filed Mar. 19, 1987, Ser. No. 35,042

Claims priority, application United Kingdom, Mar. 26, 1983, 8607586; Mar. 22, 1986, 8607162

Int. Cl.[5] G02B *27/64;* A42B *3/00*

U.S. Cl. 359—13 **7 Claims**



1. A helmet system comprising: a helmet; a vizor which is angularly displaceable with respect to the helmet about a transverse axis fixed with respect to the helmet; and an electro-optical system including a combiner eyepiece through which a user of the helmet system is able to view a scene forward of the user and which serves to reflect light rays derived from a display surface of the electro-optical system to the user to provide the user with a virtual image of the display surface superimposed on his view of the forward scene through the eyepiece; and wherein the electro-optical system is mounted on the said vizor so as to be angularly displaceable therewith about said transverse axis, and so that said eyepiece is positioned, when the vizor is in use, between a transparent part of the vizor and an eye of the user.

5,184,232

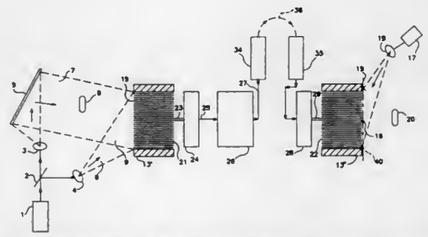
HOLOGRAPHIC DISPLAY IMAGING PROCESS

Michael Burney, 618 Lincoln Blvd. No. 5, Santa Monica, Calif. 90402

Continuation-in-part of Ser. No. 919,551, Oct. 15, 1986, abandoned, which is a continuation-in-part of Ser. No. 788,248, Oct. 17, 1985, abandoned. This application Sep. 23, 1987, Ser. No. 102,780

Int. Cl.[5] G02B *1/04, 1/22;* H04N *13/00*

U.S. Cl. 359—32 **21 Claims**



1. A holographic apparatus for continually sensing, transmitting and reconstructing a three-dimensional image comprising:

a means for receiving a continuously changeable holographic interference pattern, said means for receiving a continuously changeable holographic interference pattern comprising an end of a bundle of fiber optic fibers;

a means for continuously creating a changeable holographic interference pattern which is representative of a three-dimensional image on said receiving means;

a means for transmitting the received holographic interference pattern;

a means for continuously recreating said continuously changeable holographic interference pattern from said transmitted holographic interference pattern; and

a source of light illuminating said recreated changeable holographic interference pattern on said means for continuously recreating said continuously changeable holographic interference pattern; whereby the sensed three-dimensional image is reconstructed.

5,184,233

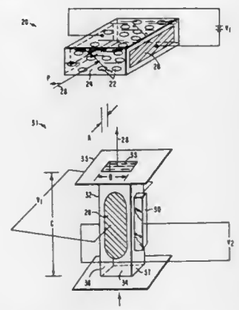
LIQUID CRYSTAL-BASED COMPOSITE MATERIAL INCLUDING ELECTRICALLY CONDUCTING ELONGATED PARTICLES AND HAVING ENHANCED MICROWAVE BIREFRINGENCE

Khoon C. Lim, Agoura; J. David Margerum, Woodland Hills; Anna M. Lackner, Los Angeles, and Leroy J. Miller, Canoga Park, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 573,503, Aug. 24, 1990, abandoned. This application Mar. 30, 1992, Ser. No. 863,501

Int. Cl.[5] G02F *1/137, 1/13*

U.S. Cl. 359—46 **19 Claims**



1. A microwave phase modulating cell, comprising:

a microwave wave guide;

a phase modulating medium disposed within the wave guide, the phase modulating medium comprising a liquid crystal having a dispersion of electrically conducting, elongated particles therein; and

means for controllably aligning the particles and the liquid crystal in a first direction in the phase modulating medium, wherein the means for controllably aligning aligns the particles with the liquid crystal when the particles and liquid crystals are aligned in the first direction.

14. A method for modulating the phase of a microwave, comprising the steps of:

providing a microwave phase modulating cell comprising:

a phase modulating medium, the phase modulating medium comprising a liquid crystal having a dispersion of electrically conducting, elongated particles therein, and

means for controllably aligning the particles and the liquid crystal in a selected direction in the phase modulating medium;

directing a beam of microwave energy through the cell in a microwave propagation direction; and

controllably aligning the particles and the liquid crystal in the selected direction, which includes aligning the particles with the liquid crystal, thereby changing the microwave index of refraction of the phase modulating medium.

5,184,234

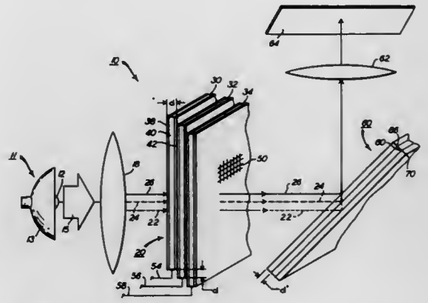
STACKED LCD COLOR PROJECTOR WITH EQUAL PATH LENGTHS

Christopher W. Mathewson, Rochester, N.Y., assignor to Sayett Group, Inc., Rochester, N.Y.

Filed Sep. 20, 1991, Ser. No. 764,145

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—53 **25 Claims**



1. Display apparatus comprising:

illumination means for creating an illumination beam;

first modulation means in the illumination beam having an array of modulation sites for forming an image;

second modulation means in the illumination beam having an array of modulation sites for forming a second image offset from the array of modulation means separated by a separation distance along the illumination beam;

path length compensating means in the illumination beam.

5,184,235

ACTIVE MATRIX LIQUID CRYSTAL DISPLAY PANEL WITH AN ELECTROSTATIC PROTECTION CIRCUIT

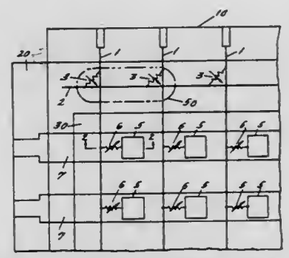
Osamu Sukegawa, Tokyo, Japan, assignor to NEC Corporation, Japan

Continuation of Ser. No. 661,225, Feb. 27, 1991, abandoned, which is a continuation of Ser. No. 438,766, Nov. 17, 1989, abandoned. This application Aug. 26, 1991, Ser. No. 758,262

Claims priority, application Japan, Nov. 18, 1988, 63-291608

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—60 **9 Claims**



1. An active matrix liquid crystal display panel, comprising:

a lower substrate having a display portion and a separate periphery portion;

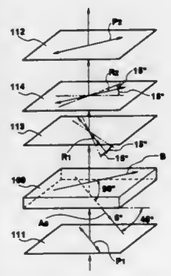
a plurality of pixel electrodes formed in said display portion on said lower substrate organized in a matrix including columns and rows;

a plurality of first lines formed on said lower substrate traversing said display portion and extending to said periphery portion, said first lines being connected respectively to said pixel electrodes of each column by first diodes;

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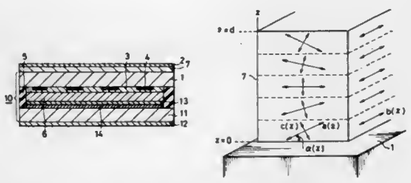
an upper substrate;
a plurality of second lines formed on a lower surface of said upper substrate, said second lines being provided respectively over each row of said pixel electrodes;
liquid crystal inserted between said display portion of said lower substrate and said lower surface of said upper substrate;
a wiring formed on the periphery portion of said lower substrate separately from said pixel electrodes and said first lines, said wiring being being formed to cross said first lines; and
a plurality of second diodes connected between said wiring and said first lines.

5,184,236
TWISTED NEMATIC LIQUID CRYSTAL DISPLAY DEVICE WITH RETARDATION PLATES HAVING PHASE AXIS DIRECTION WITHIN 15° OF ALIGNMENT DIRECTION
Takashi Miyashita, Hachioji; Yoshinaga Miyazawa, Fussa, and Zenta Kikuchi, Hamura, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan
Filed Aug. 2, 1991, Ser. No. 739,832
Claims priority, application Japan, Aug. 10, 1990, 2-85308[U]; Sep. 10, 1990, 2-239353; Sep. 10, 1990, 2-239354
Int. Cl.[5] G02F *1/1335, 1/137*
U.S. Cl. 359—63 **19 Claims**



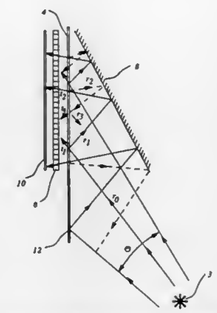
19. An active matrix liquid crystal display device having thin film transistors, comprising:
a first substrate, on one surface of which at least one common electrode and a first aligning film covering said first electrode are formed, said first aligning film covering at least a portion of said one surface of said first substrate and being executed by an aligning treatment in a predetermined first direction;
a second substrate, on one surface of which are formed a plurality of pixel electrodes, a plurality of thin film transistors, and a second aligning film covering said pixel electrodes and said thin film transistors, said thin film transistors being connected to said pixel electrodes and operated by a scanning signal and a data signal to be supplied from a scanning line and a data line of said pixel electrodes, said second aligning film covering at least a portion of said one surface of said second substrate and being executed by an aligning treatment in a second direction substantially perpendicular to the first direction of the first aligning film of said first substrate;
a seal member for bonding said first substrate to said second substrate with a predetermined gap therebetween so that the common electrode on said first substrate is opposed to the pixel electrodes on said second substrate;
a liquid crystal contained in a region defined by said first substrate, said second substrate and said seal member, and forming a liquid crystal layer in the region, liquid crystal molecules of said liquid crystal being aligned in a state such that they are twisted substantially 90°, and said liquid crystal layer having a refractive-index anisotropy Δn and a liquid crystal layer thickness d such that the value of a product Δn·d of the refractive-index anisotropy Δn and the liquid crystal layer thickness d of the liquid crystal is from 350 nm to 700 nm;
a pair of polarizing plates disposed outside of said first substrate and said second substrate to sandwich the substrates therebetween, a polarizing axis of a first of said polarizing plates being directed toward a direction perpendicular to or parallel to said first direction of the first aligning film of said first substrate, and a polarizing axis of a second of said polarizing plates being directed to cross at substantially a right angle to said first of said polarizing plates;
a first retardation plate disposed between one of said pair of first and second polarizing plates and said first substrate so that a direction of a delayed phase axis thereof is equal to said first direction of the first aligning film of said first substrate or different from said first direction within a range from −15° to +15°, and said first retardation plate having a refractive-index anisotropy Δn and a thickness d such that the product Δn·d of the refractive-index anisotropy Δn and the thickness d is from 300 nm to 600 nm; and
a second retardation plate disposed between the other of said pair of first and second polarizing plates and said second substrate so that a direction of a delayed phase axis thereof is substantially perpendicular to the direction of the delayed phase axis of said first retardation plate, and said second retardation plate having a refractive-index anisotropy Δn and a thickness d such that the product Δn·d of the refractive-index anisotropy Δn and the thickness d is substantially equal to the value of Δn·d of said first retardation plate.

5,184,237
SUPER-TWISTED NEMATIC TYPE LIQUID CRYSTAL DISPLAY DEVICE
Haruo Iimura, Yokohama; Yasuyuki Takiguchi, Kawasaki, and Akihiko Kanemoto, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Mar. 14, 1991, Ser. No. 669,576
Claims priority, application Japan, Mar. 27, 1990, 2-77393; Mar. 27, 1990, 2-77394
Int. Cl.[5] G02F *1/1335, 1/135, 1/1333*
U.S. Cl. 359—63 **15 Claims**



1. A liquid crystal display device comprising:
(a) a liquid crystal cell including a pair of substrates, each substrate having at least one transparent electrode and at least one aligning film, and a liquid crystal composition layer, having a positive dielectric anisotropy, positioned between the substrates, long axes of the liquid crystal molecules being aligned nearly homogeneously in a plane parallel to the substrate in the absence of an applied field and the molecules being twisted in an angle of 120° to 360° in a direction perpendicular to the substrate;
(b) a pair of polarizers positioned on opposite sides of the cell; and
(c) a first birefringent layer positioned between the cell and a first one of the polarizers, wherein said first birefringent layer has a first maximum refractive index direction at a first plane contacting the polarizer, and a second maximum refractive index direction at a second plane contacting the liquid crystal cell, the first and second directions are tilted relative to a plane parallel to one of the substrates, angles made between each of the first and second directions and the parallel plane are aligned symmetrically about the parallel plane, and angles made between the parallel plane and the maximum refractive index directions in the first birefringent layer vary continuously along the direction perpendicular to one of the substrates.

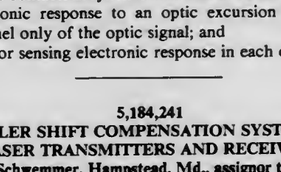
5,184,238
APPARATUS FOR PROJECTING LIGHT ONTO A SURFACE HAVING REFLECTOR MEANS FOR IMPROVING THE BRIGHTNESS OF THE IMAGE
Graham L. Wright, Ickenham, England, assignor to Thorn Emi plc, London, England
Filed Nov. 25, 1991, Ser. No. 797,036
Claims priority, application United Kingdom, Nov. 30, 1990, 9026151.2
Int. Cl.[5] G02F *1/13;* **G03B** *21/26*
U.S. Cl. 359—70 **8 Claims**



1. Apparatus for projecting light onto a surface comprising:
a light source for providing polarised light;
beam-splitting means for effecting partial reflection and partial transmission of light incident thereon from the light source;
reflector means for reflecting light incident thereon from the light source;
mirror means for directing towards the beam-splitting means light reflected from the beam-splitting means and also light reflected from the reflector means;
and louvre means located on a side of the beam-splitting means remote from the light source for allowing the passage of light therethrough in a predetermined range of incident angles relative to the beam-splitting means.

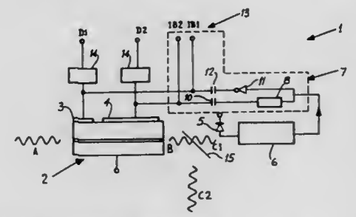
5,184,239
SEALING STRUCTURE OF LIQUID CRYSTAL INJECTION HOLES IN LIQUID CRYSTAL DISPLAY DEVICE
Kazuyoshi Sano, Ebina; Koh Fujimura, Hino; Takumi Suzuki, and Takashi Tsutsui, both of Atsugi, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Aug. 9, 1991, Ser. No. 743,076
Claims priority, application Japan, Aug. 10, 1990, 2-210260
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—80 **7 Claims**

1. A sealing structure of liquid crystal injection holes in a liquid crystal display device, comprising:
a plurality of liquid crystal injection holes formed by printing a sealant on a substrate for injecting a liquid crystal into a liquid crystal cell inside enclosed by the sealant;
a drain formed by printing the sealant on the substrate, by which a plurality of said liquid crystal injection holes communicate with each other;
at least one opening portion formed by printing the sealant on the substrate, by which said drain communicates with said cell inside, said opening portion communicating with a plurality of said injection holes by said drain; and



a sealing agent injected from one of said injection holes after said injecting of the liquid crystal for sealing a plurality of said injection holes and said drain.

5,184,240
DE-MULTIPLEXER
Ronan F. O'Dowd, 9 Rowan Close, Celbridge, Ireland
Filed Mar. 19, 1991, Ser. No. 671,363
Claims priority, application Ireland, Mar. 20, 1990, 1000/90
Int. Cl.[5] H04J *14/08*
U.S. Cl. 359—135 **10 Claims**



10. A de-multiplexer comprising:
an input port communicating with the cavity of a multi-region semiconductor laser amplifier device having a plurality of contacts;
monitoring means for monitoring an incoming optic signal which is time division multiplexed with at least two data channels and for extracting a clock signal;
activating means having an input connected to the monitoring means and an output connected to the contacts, the activating means comprising means for generating activating signals by splitting the clock signal and inverting a split signal, and means for delivering the activating signals to two contacts in synchronism so that each contact has an electronic response to an optic excursion in one data channel only of the optic signal; and
means for sensing electronic response in each contact.

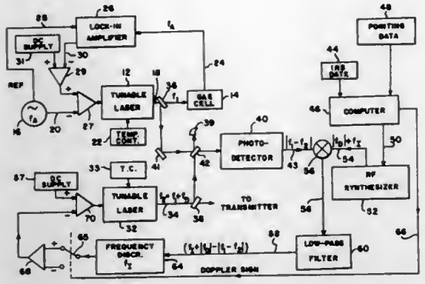
5,184,241
DOPPLER SHIFT COMPENSATION SYSTEM FOR LASER TRANSMITTERS AND RECEIVERS
Geary K. Schwemmer, Hampstead, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics & Space Admininstration, Washington, D.C.
Filed Jun. 21, 1989, Ser. No. 369,171
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—161 **12 Claims**

1. Apparatus for compensating for doppler shifts in optical transmission and receiving systems, including:
means for providing optical signal transmission and receiving;
means for providing a stable frequency standard;

VOL
1147
ISS
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1993
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means for computing anticipated doppler shifts between the transmission and receipt of said optical signal; and

means responsive to said frequency standard and said doppler shift computing means to provide for system doppler compensation in the form of a frequency change to either or both of said optical signal transmission and receiving means.



5,184,242

SUPERVISORY CIRCUIT FOR OPTICAL REPEATER

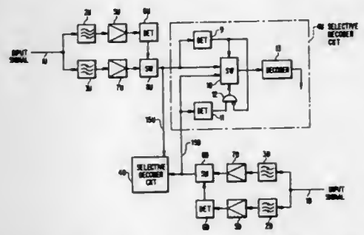
Shuji Yamashita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 17, 1990, Ser. No. 628,024

Claims priority, application Japan, Dec. 15, 1989, 1-326899

Int. Cl.[5] H04B *10/08*

U.S. Cl. 359—177 **4 Claims**



1. A supervisory circuit for an optical repeater, comprising:

separating means for separating a control signal from a transmission signal, said control signal being superposed on said transmission signal being propagated over a first channel;

detecting means responsive to said transmission signal for detecting a predetermined frequency component of noise attributed to a fault on said first channel and generating a signal indicating whether or not said noise exists on said first channel, said predetermined frequency component being different from a frequency component of said control signal;

switching means for sending in response to said signal indicating that said noise does not exist, said control signal separated by said separating means and intercepting said control signal separated by said separating means, in response to said signal indicating that said noise exists; and

selective decoding means for selecting and decoding either said control signal on said first channel fed from said switching means or another control signal fed from a second channel, depending on a combination of presence/absence of said control signals.

5,184,243

OPTICAL TRANSMITTING APPARATUS FOR MINIMAL DISPERSION ALONG AN OPTICAL FIBER

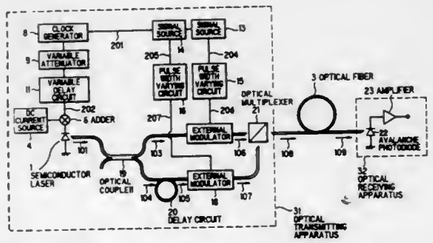
Naoya Henmi; Tetsuyuki Suzaki, and Tomoki Saito, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Nov. 30, 1990, Ser. No. 620,111

Claims priority, application Japan, Nov. 30, 1989, 1-310930; Aug. 31, 1990, 2-232218; Sep. 5, 1990, 2-234993; Sep. 5, 1990, 2-234994

Int. Cl.[5] H04B *10/04*

U.S. Cl. 359—181 **6 Claims**



1. An optical transmitting apparatus, comprising:

a semiconductor laser light source for emitting a frequency-modulated light;

a source of injection current;

a clock signal source for generating a clock signal for modulating said injection current;

means for applying said injection current to said semiconductor laser light source for modulating said emitted light in accordance with said injection current;

means for adjusting an amplitude and a phase of said clock signal to modify the modulation of said injection current;

n transmitting signal sources for generating n transmitting signals synchronous with said clock signal, where n is a positive integer;

means for dividing said frequency-modulated light into n signal lights propagated through n light paths;

n external modulators coupled to said light paths and responsive, respectively, to one of said transmitting signals, for modulating in intensity said n divided signal lights to provide n intensity-modulated lights traveling in respective ones of said n light paths;

means for providing a time difference among said n intensity-modulated lights; and

means for combining said n intensity-modulated lights traveling through said light paths;

wherein said adjusting means adjusts said amplitude and said phase of said clock signal, so that said n intensity-modulated lights are supplied to said light paths in a time-order of frequency components having slow to fast transmission speeds in compliance with a wavelength dispersion property of said light paths; and

said providing means being provided at position selected from positions between said dividing means and a corresponding one of said external modulators and between said corresponding one and said combining means.

5,184,244

OPTICAL COMMUNICATION SYSTEM AND COMMUNICATION METHOD

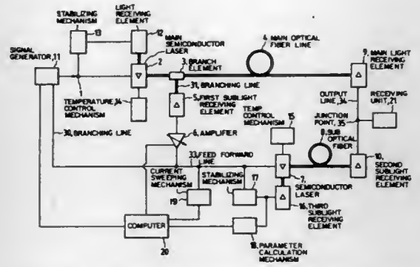
Akira Nishimura; Shuzo Suzuki, and Masayuki Shigematsu, all of Kanagawa, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 440,247, Nov. 22, 1989, abandoned. This application Oct. 8, 1991, Ser. No. 771,838

Claims priority, application Japan, Nov. 25, 1988, 63-297486; Dec. 23, 1988, 63-325490

Int. Cl.[5] H04B *10/04*

U.S. Cl. 359—187 **8 Claims**



1. An optical communication system for directly intensity-modulating an optical signal in response to an analog signal and transmitting the intensity-modulated optical signal, said optical communication system comprising:

means for generating said analog signal;

first branching means for branching said analog signal into a first signal and a second signal;

main light emitting means for intensity-modulating an optical signal with said first signal and outputting the modulated optical signal;

second branching means for branching said modulated optical signal output by said main light emitting means into a first optical signal and a second optical signal;

first light receiving means for generating a first electrical signal in accordance with said first optical signal;

second light receiving means for generating a second electrical signal in accordance with said second optical signal;

comparison means for comparing said first electrical signal and said second signal of said analog signal, and outputting a comparison electrical signal;

auxiliary light emitting means for emitting a light in accordance with said comparison electrical signal from said comparison means;

third light receiving means for producing an electrical signal in accordance with said light from said auxiliary light emitting means;

superimposing means for superimposing the electrical signals from said second and third light receiving means; and

adjusting means connected between said auxiliary light emitting means and said analog signal generating means for calculating parameters of an input/output characteristic of said auxiliary light emitting means to adjust operating parameters in said optical communication system, said parameters being calculated via a predetermined mathematical algorithm, said adjusting means comprising:

sweep means for sweeping an input current into said auxiliary light emitting means;

fourth light receiving means for receiving said optical signal emitted from said auxiliary light emitting means and for generating a current in accordance with said optical signal; and

arithmetic operating means connected to said fourth light receiving means and said sweep means for calculating parameters of an input/output characteristic of said auxiliary light emitting means.

5,184,245

OPTICAL SCANNING SYSTEM

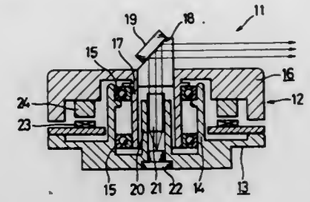
Kazunori Murakami; Tomonori Ikumi; Yasuo Matsumoto, all of Shizuoka, and Yasuo Iwafune, Tokyo, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1991, Ser. No. 680,132

Claims priority, application Japan, Apr. 3, 1990, 2-88448; Jul. 10, 1990, 2-73192[U]

Int. Cl.[5] G02B *26/08*

U.S. Cl. 359—196 **9 Claims**



7. An optical scanning system comprising:

a motor having an output shaft;

a light deflecting member attached to the output shaft of said motor;

a laser;

a collimator lens disposed between said light deflecting member and said laser having an optical axis in alignment with the optical axis of the laser;

wherein a space is formed in the output shaft of the motor with the light deflecting member attached to one end of the output shaft of the motor such that an optical path extends through the space formed in the output shaft of the motor between the laser and the light deflecting member; and

wherein said motor includes a stator having a surface which extends substantially perpendicular to an axis of rotation of said output shaft, said surface having one of a magnet and a coil thereon, said motor further including a rotor which includes a surface extending substantially perpendicular to the axis of rotation of said output shaft, wherein said rotor is connected to said output shaft, and wherein said surface of the rotor includes one of a magnet and a coil opposed to the said one of a magnet and a coil disposed on the stator to thereby produce electromechanical force for rotating said rotor and said output shaft;

said scanning system further including a support member connected to the stator and extending substantially parallel to the axis of rotation of said output shaft, said support member extending interiorly of said one of a magnet and a coil of said stator, and interiorly of said one of a magnet and a coil of said rotor, and wherein at least one bearing is provided between the output shaft and said support member such that said output shaft is supported for rotation by said support member.

5,184,246

SCANNING OF MOVING OBJECTS USING UNIQUE POLYGON MOUNTED ON CAROUSEL WHICH ROTATES AT TWICE POLYGON'S SPEED

Nira Schwartz, and Arie Shahar, both of 2800 Plaza Del Amo, Unit 187, Torrance, Calif. 90503

Filed Feh. 25, 1991, Ser. No. 660,542

Int. Cl.[5] G02B *26/10*

U.S. Cl. 359—216 **25 Claims**

22. A scanning system, comprising:

a polygon having at least one planar side mirror and an axis of rotation, said side mirror defining a plane parallel to and facing away from said axis of rotation;

carousel means being rotatable about said axis of rotation of said polygon, said carousel means being arranged to sup-

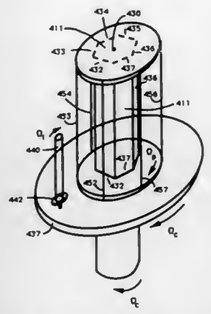
VOL 1147 ISS 1 FEB 2 1993 UMI

port at least one object in a position spaced from said axis of rotation;

secondary mirror means comprising at least one secondary mirror, said secondary mirror defining a plane arranged parallel to said plane of said side mirror;

means for rotating said polygon at a first angular velocity about said axis of rotation;

means for rotating said carousel at twice said first angular velocity about said axis of rotation; and



means for directing light from a light source onto said polygon, such that light is reflected from said polygon to said secondary mirror means and thence to said object on said carousel means,

whereby when said polygon is rotated about said axis of rotation, said side mirror and said secondary mirror together behave similarly to a mirror lying in a plane including said axis of rotation.

5,184,247

OPTICALLY STABILIZED FEEDBACK AMPLIFIER

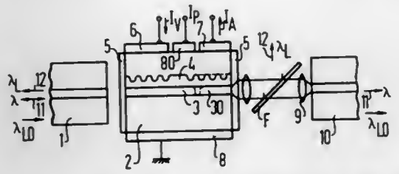
Robert Schimpe, Ottobrunn/Riemerling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 17, 1990, Ser. No. 554,270

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1989, 3923628

Int. Cl.[5] H01S *3/18, 3/133, 3/098*

U.S. Cl. 359—344 **20 Claims**



1. In an arrangement having a semiconductor laser that includes at least one optical amplification medium with maximum optical gain in laser operations at a mark wavelength λ_M, a resonator, and means for forming a wavelength filter, said means for forming a wavelength filter selecting a wavelength λ_L provided for the laser operation, the improvement comprising the means forming the wavelength filter being constructed so that the difference between the threshold gain of the resonator and the gain of the amplification medium during the laser operation is lower at the selected wavelength λ_L than at the marked wavelength λ_M and that the arrangement further includes an apparatus for the optical irradiation of the amplifying medium with at least one wavelength.

5,184,248

IMAGE PROJECTION APPARATUS

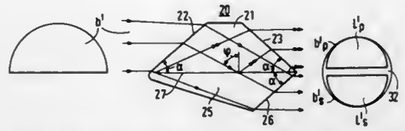
Adrianus J. S. M. de Vaan, and Adrianus H. J. van den Brandt, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 665,507, Mar. 6, 1991. This application Sep. 24, 1991, Ser. No. 764,667

Claims priority, application Netherlands, Jul. 16, 1990, 9001610

Int. Cl.[5] G02B *5/30, 27/28*

U.S. Cl. 359—483 **62 Claims**



1. An image projection apparatus comprising an illumination system, an image display system having at least one display panel for generating an image to be projected, in which the direction of polarization of an illumination beam supplied by the illumination system is modulated with the image information, a projection lens system for projecting the image formed by the image display system on a projection screen and a polarization-sensitive beam splitter arranged between the illumination system and the image display system for splitting the illumination beam into two differently polarized sub-beams the first of which is directly suitable to be modulated by the image display system and a polarization-rotating element for converting the second sub-beam into a beam having the same state of polarization as the first sub-beam, said first and second sub-beams being incident on the image display system, characterized in that the polarization-sensitive beam splitter comprises an oriented layer of birefringent material, in that the illumination beam directed towards the beam splitter has a semi-circular cross-section in a plane proximate to the beam splitter, in that the sub-beams traverse the same optical path length through the beam splitter and in that the sub-beams exiting from the combination of beam splitter and polarization-rotating element have a semi-circular cross-section and both fit within a circle.

5,184,249

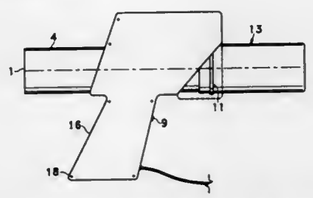
ELECTRIC KALEIDOSCOPE

Calvin H. Dickman, Rte. 4, Box 221, Harriman, Tenn. 37748

Filed Dec. 6, 1991, Ser. No. 802,828

Int. Cl.[5] G02B *23/00*

U.S. Cl. 359—616 **6 Claims**



1. An electric powered kaleidoscope for allowing a viewer to view kaleidoscopic images of objects comprising: viewing tube having front and rear ends and inner walls, mirrors in connection with said inner walls for forming and reflecting said images to said viewer, eyepiece means for allowing the passage of light in connection with said rear of said tube, objective lens at said front of said tube, end cap assembly in rotatable connection with said front end of said tube, said end cap assembly having an interior space for placing objects for viewing and having an end cap lens located at the front of said end cap assembly, motor housing attached to said viewing tube and having an electric motor, said electric motor in mechanical connection with said end cap assembly so that the operation of said electric motor rotates said end cap assembly, said kaleidoscope having an on-off electric power switch, a detachable light and reflector assembly to provide artificial light when needed to view said images.

5,184,250

DEVICE FOR THE DISPLAY OF SIMULATED IMAGES FOR HELMETS

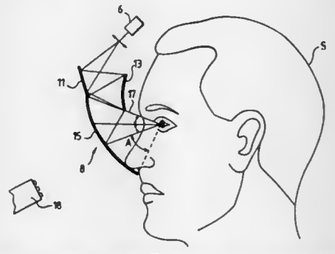
Michel Lacroix, Bois d'Arcy, France, assignor to Thomson-CSF, Puteaux, France

Filed May 31, 1991, Ser. No. 708,282

Claims priority, application France, Jun. 1, 1990, 90 06873

Int. Cl.[5] G02B *27/10, 17/00, 23/04, 23/06;* **G09B** *9/08*

U.S. Cl. 359—631 **15 Claims**



1. A device for the display of simulated images for helmets, comprising at least one device for collimation at infinity with a spherical mirror and a spherical screen fixedly joined to a helmet worn by the user, associated with a remote projector connected, firstly, by an optic fiber to an optic relay device fixed to the helmet and, secondly, to an image generator, the image generator being connected to a device for sensing the position of the head of the helmet wearer.

5,184,251

VARI-FOCAL LENS SYSTEM

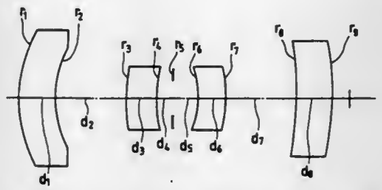
Hirofumi Tsuchida, and Norihiko Aoki, both of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 9, 1991, Ser. No. 697,442

Claims priority, application Japan, May 9, 1990, 2-117729

Int. Cl.[5] G02B *13/18, 15/14*

U.S. Cl. 359—654 **8 Claims**



1. A vari-focal lens system comprising, in order from the object side;

a first lens unit having a negative refractive power,

a second lens unit having a positive refractive power,

an aperture stop,

a third lens unit having a positive refractive power, and

a fourth lens unit having a negative refractive power,

wherein at least one radial type graded refractive index lens element is disposed before said aperture stop and at least one radial type graded refractive index lens element is disposed after said aperture stop, and

wherein said vari-focal lens system varies focal length thereof by varying at least an airspace disposed between said first lens unit and said second lens unit as well as an airspace disposed between said third lens unit and said fourth lens unit.

5,184,252

FINDER OPTICAL SYSTEM

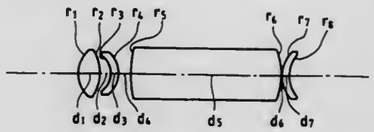
Yuji Miyauchi, Okaya; Shinichi Yoshii, Urawa, and Tatsuru Kanamori, Tokyo, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1991, Ser. No. 680,548

Claims priority, application Japan, Apr. 6, 1990, 2-91771; Apr. 6, 1990, 2-91772

Int. Cl.[5] G02B *13/18, 13/02, 9/12, 9/34*

U.S. Cl. 359—715 **4 Claims**



1. A finder optical system comprising: an objective including a first positive lens component and a second negative lens component, an image erecting optical system for erecting an image formed by said objective, and an eyepiece for allowing observation of the image formed by said objective and erected by said image erecting optical system; said finder optical system satisfying the following condition:

$$0.03 < |f_p/f_n| < 0.4$$

wherein the reference symbol f_p represents the focal length of said first lens component and the reference symbol f_n designates the focal length of said second lens component.

5,184,253

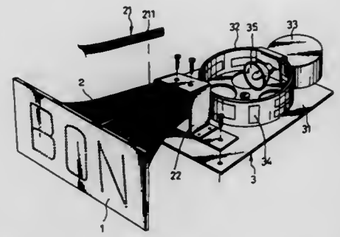
FIBER OPTIC ILLUMINATOR DISPLAY

Steven Hwang, 4F, No. 6-6, Alley 11, Lane 147, Sec. 3, Hsin Yi Rd., Taipei, Taiwan

Filed Dec. 18, 1991, Ser. No. 808,887

Int. Cl.[5] G02B *5/22*

U.S. Cl. 359—889 **1 Claim**



1. A fiber optic illuminator display, comprising:

a display board having patterns formed by holes;

a color filter light source assembly, said color filter light source assembly comprising a base board having a color filter cylinder driven to rotate by a motor, said color filter cylinder having a plurality of color filters around the cylinder, a light source on said base board inside said color filter cylinder, and an optical fiber holder on said base

VOL
1147
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board outside said color filter cylinder and in alignment with said light source;

a bunched optical fiber set connected between said holder and said display board for transmitting light rays from said light source to said patterns via said color filters; and

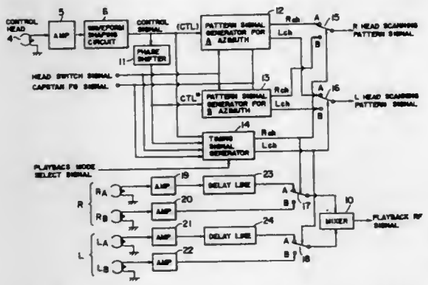
characterized in that said bunched optical fiber set is consisted of a plurality of bus wires attached with one above another or side by side, said bus wires each being consisted of a plurality of optical fiber filaments arranged in a row, said optical fiber filaments each having one end fastened in said holder and an opposite end respectively inserted in the holes on said diplay board.

5,184,254

PLAYBACK APPARATUS FOR PLAYING BACK VIDEO INFORMATION RECORDED ON MAGNETIC TAPE AND PROVIDING SMOOTH-FRAME STILL OR SLOW MOTION VIDEO

Masahiro Kaneko; Masashi Takemura, and Kobei Yamashita, all of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 20, 1990, Ser. No. 511,786
Claims priority, application Japan, Apr. 21, 1989, 1-100116
Int. Cl.[5] H04N *5/783;* **G11B** *5/592*
U.S. Cl. 360—10.2 **4 Claims**



1. A Playback apparatus for playing back information signals prerecorded on a magnetic tape along tracks inclined with respect to a longitudinal direction of said magnetic tape in a manner such that tracks of common azimuth angle are formed on every track, said apparatus comprising:

a first head assembly comprising a first head for scanning tracks of a first azimuth and a second head for scanning tracks of a second azimuth, said first head assembly being movably arranged in a direction perpendicular to a track scanning direction;

a second head assembly comprising a third head for scanning tracks of said first azimuth and a fourth head for scanning tracks of said second azimuth, said second head assembly being arranged movably in a direction perpendicular to a track scanning direction;

a rotary drum for carrying said first and second head assemblies and winding said magnetic tape at a predetermined angular range;

first displacement means for supporting and displacing said first head assembly in accordance with a selected tape speed mode, and for causing each of the heads in the first head assembly to scan said tracks having azimuth angles common to azimuth angles of said heads, when a recorded image signal on said tape is played back from said magnetic tape; and

second displacement means for supporting and displacing said second head assembly in accordance with a selected tap speed mode, said second displacement means being disposed 180 degrees angularly opposite to said first displacement means and for causing each of the heads in the second head assembly to scan said tracks having azimuth angles common to azimuth angles of said heads, when a recorded image signal on said magnetic tap is played back from said magnetic tape:

wherein said first to fourth heads are arranged on an outer circumference of said rotary drum in the order of the first, second, third and fourth heads: and

wherein control means is provided for controlling displacement of said first and second head assemblies, and said control means comprises:

a waveform shaping circuit for shaping a waveform of a control signal recorded along said magnetic tape and picked up by a control head,

a phase-shifter for phase-shifting said control signal by a phase angle of 180 degrees to generate a phase-shifted control signal,

first pattern generating means for generating a first head scanning pattern signal for controlling the first and third heads and which drives said first and second displacement means in response to said control signal for tracking said tracks of said first azimuth,

second pattern signal generating means for generating a second head scanning pattern signal for controlling the second and fourth heads which drives said first and second displacement means in response to said phase-shifted control signal for tracking said tracks of said second azimuth,

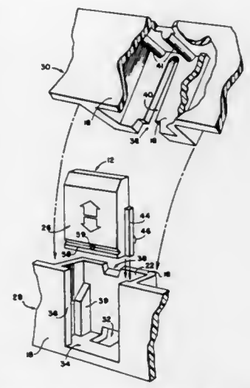
switching means for switching playback signals from said first head and said second head of said first head assembly, so that output from only one of said first and second heads is used at one time and for switching playback signals from said third head and said fourth head of said second head assembly, so that output from only one of said third and fourth heads is used at one time in order to produce a video signal corresponding to said selected tape speed mode.

5,184,255

VIDEO TAPE CASSETTE WITH A REUSABLE RECORDING ENABLE/DISABLE SLIDE TAB

Alan B. Lowry, Canton, Mass.; Paul J. Gelardi, Cape Porpoise, Me., and Donald R. Rochelo, Pittsfield, Mass., assignors to Shape Inc., Biddleford, Me.

Filed Jan. 16, 1987, Ser. No. 3,761
The portion of the term of this patent subsequent to Oct. 2, 2006, has been disclaimed.
Int. Cl.[5] G11B *15/04, 23/02*
U.S. Cl. 360—60 **27 Claims**



1. A write-enable indicator for a tape cassette having a tape cassette housing with a top cover shell half and a lower base shell half, the tape cassette housing forming an elongated front surface through which the tape contained by the tape cassette housing is accessed, an elongated rear surface opposite the front surface, side surfaces, and top and bottom surfaces, the write enable indicator comprising:

(a) movable means for enabling recording of a signal on the tape when said movable means is in a first position and for disabling the recording of a signal on the tape when said movable means is in a second position;

(b) retaining means for retaining said movable means in the first and second positions and for permitting said movable means to repeatedly move between the first and second positions in response to an external force,

wherein said movable means includes

sliding means for moving between the first and second positions along a first axis; and

movement retarding means for retarding the movement of said sliding means, said movement retarding means cooperating with said retaining means to prevent said sliding means from moving from the first and second positions except when the external force is applied;

wherein said retaining means includes

a first wall of the tape cassette housing, said first wall having a first surface; and

a second wall of the tape cassette housing, having a second surface facing the first surface of the first wall to form a cavity therebetween,

wherein said sliding means moves between the first and second positions by sliding between the first and second surfaces,

wherein the movable means and retaining means are located in the rear surface of the cassette housing,

wherein the movable means is movable along a first axis in the transverse direction on the tape cassette housing rear surface between the first enabling position and the second disabling position,

wherein said movement retarding means exerts an internal force along a second axis different from the first axis to produce friction between said retaining means and said sliding means at least when said sliding means is in the first and second positions,

wherein the first surface of the first wall includes two depressions separated along the first axis, and

wherein said movement retarding means comprises a flexible member having a first end attached to said sliding means and a second end projecting into the first and second depressions when said sliding means is in the first and second positions, respectively.

5,184,256

WRITE-DATA SIGNAL COMPENSATION APPARATUS FOR DISK STORAGE

Eiji Chikusa, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Jun. 8, 1990, Ser. No. 540,925
Claims priority, application Japan, Jun. 16, 1989, 1-153681
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—65 **10 Claims**

1. A write-data signal compensation apparatus for disk storage for modifying a first write signal having a particular modulation data pattern into a second write signal having a data pattern expedient to be read out from a disk before the second write signal is written to the disk by a write head, said write-data signal compensation apparatus comprising:

write signal compensation means for converting said first write signal into said second write signal by using a plurality of different compensation amounts, said write signal compensation means including a plurality of write compensation circuits, each of said write compensation circuits having an input to which said first write signal is applied and an output from which said second write signal is produced, each of said write compensation circuits changing transition points of pulses of said first write signal so as to compensate pulse widths of the pulses of said first write signal by predetermined amounts to obtain said second write signal, pulse rates of the pulses of said first write signal and said second write signal being maintained at the same rate;

compensation amount selecting means for selecting one of said plurality of different compensation amounts according to the radial position of said write head on said disk; and

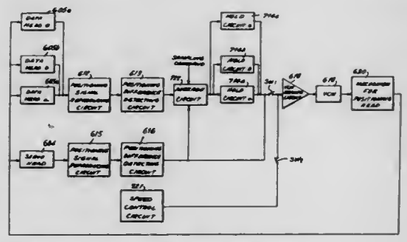
compensation amount switching means for switching inputs and/or outputs of said write signal compensation means in response to the output of said compensation amount selecting means.

5,184,257

HEAD POSITIONING CONTROL FOR A SPINDLE MOTOR DISK DRIVE

Yoshiro Koga; Akihiro Gomi; Takashi Miyasaka; Yasunaga Miyazawa; Kenichi Endo; Junichiro Shinozaki; Kaneo Yoda; Takashi Ichikawa; Hitoshi Miyasaka, and Chiharu Kaburagi, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 643,243, Feb. 8, 1991, abandoned, which is a division of Ser. No. 481,755, Feb. 15, 1990, Pat. No. 5,023,733, which is a continuation of Ser. No. 107,722, Oct. 7, 1987, abandoned, which is a continuation-in-part of Ser. No. 93,201, Dec. 15, 1986, abandoned. This application Dec. 6, 1991, Ser. No. 807,767
Claims priority, application Japan, Dec. 16, 1985, 60-282189; Dec. 19, 1985, 60-286431; Feb. 21, 1986, 61-36778; Feb. 25, 1986, 61-39732; Apr. 2, 1986, 61-75903; Apr. 28, 1986, 61-99816; May 7, 1986, 61-104161; Jun. 30, 1986, 61-153006; Oct. 7, 1986, 61-238269; Oct. 8, 1986, 61-239602; Oct. 8, 1986, 61-239603; Oct. 8, 1986, 61-239604; Oct. 21, 1986, 61-238270; Oct. 21, 1986, 61-250066; Nov. 25, 1986, 61-280319; Nov. 25, 1986, 61-280320
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—77.05 **29 Claims**



1. A magnetic recording device comprising:

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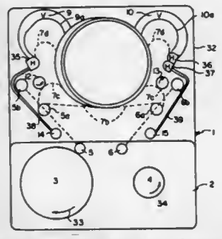
a spindle;
at least one magnetic disk mounted in spaced relationship along the spindle, a plurality of tracks formed on said at least one magnetic disk;
head means for recording and reproducing data on said at least one magnetic disk;
actuator means for moving the head means to selected tracks on said at least one magnetic disk;
first positioning means providing first positioning data for positioning said head means; the at least one magnetic disk being formed with at least one data surface, second positioning data being formed on the at least one data surface for positioning said head means; and
control means coupled to the actuator means for controlling the positioning of the head means in response to the first and second positioning data, said head means including a plurality of data heads, the control means being adapted to position each data head by superimposing second positioning information derived from the second positioning data on first positioning information derived from said first positioning data; said control means including adding means for superimposing the second positioning information on the first positioning information; the control means being adapted to add the second positioning information gradually to the first positioning information prior to the settling of the first positioning means to a destination track.

5,184,258

HELICAL SCAN MAGNETIC TAPE RECORDER WITH CAPSTAN ASSISTED VACUUM THREADING

Frederic F. Grant, Bellflower; Vincent J. Piarulli, Simi Valley, both of Calif.; Alexander R. Maxey, Eugene, Oreg., Robert Ryerson, San Gabriel, Calif., assignors to Datatape Incorporated, Pasadena, Calif.

Filed Jun. 10, 1991, Ser. No. 712,834
Int. Cl.[5] G11B *15/60*
U.S. Cl. 360—85 **3 Claims**



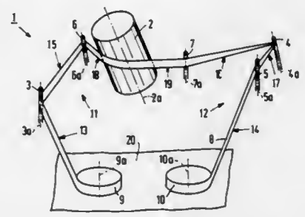
1. A helical scan magnetic tape recorder comprising:
a rotary magnetic head scanner;
supply and take-up vacuum cavities located contiguous to and on respective opposite sides of said scanner;
means for receiving a magnetic tape cassette including spaced, coplanar, supply and take-up reels having magnetic tape spooled on said reels with a span of magnetic tape extending between said reels;
supply and take-up capstans, spaced from said rotary head scanner and located in a tape transport path between said vacuum cavities and a received magnetic tape cassette;
mechanical threading means for removing said tape from said cassette and moving it to a tape vacuum loading position where said tape partially contacts said rotary head scanner;
vacuum means for applying vacuum to said vacuum cavities, after said tape has been moved to said tape vacuum loading position, to draw said tape into contact with said vacuum cavities on opposite sides of said rotary head scanner to substantially wrap said tape around said rotary head scanner; and
wherein said supply and take-up capstans contact said tape during said vacuum threading and are rotated to assist drawing said tape into said vacuum cavities.

5,184,259

HELICAL-SCAN MAGNETIC TAPE APPARATUS HAVING A TAPE-TRANSPORT PATH WITH TWISTING PATH-SECTIONS FOR TAPE-PATH CORRECTION

Johannes C. A. Muller, and Norbert C. Vollmann, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 368,733, Jun. 20, 1989, abandoned. This application Jul. 19, 1991, Ser. No. 732,946
Claims priority, application Netherlands, Jul. 5, 1988, 8801699
Int. Cl.[5] G11B *5/027*
U.S. Cl. 360—85 **8 Claims**



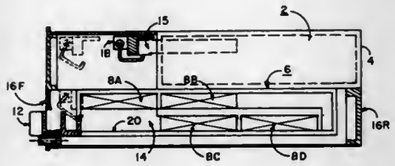
1. A helical-scan magnetic-tape apparatus (1) comprising at least three tape guides (2, 3, 4) having axes (2a, 3a, 4a), and including a magnetic-head unit (2), which also serves as one of said tape guides, at least two of said guides also acting as tape-threading elements (3, 4) which are movable between a first position, corresponding to a non-operational situation in which the magnetic tape (8) is not in contact with the tape guides (2, 3, 4), and a second position, corresponding to an operational situation in which the magnetic tape (8) is in contact with the tape guides (2, 3, 4), which apparatus (1) is constructed to cooperate with a magnetic tape (8) which is is wound on first and second co-planar reels (9, 10), which each have an axis (92, 102) and extends between said first reel (9) and said second reel (10) in the operational situation, a first branch (11) being provided between the first reel (9) and the magnetic-head unit (2) and a second branch (12) being provided between the second reel (10) and the magnetic-head unit (2), each branch (11, 12) including at least one tape guide (3, 4), a first path section (13) being provided between said first reel (9) and the tape guide (3) nearest said first reel, viewed in the direction of tape transport, a second path section (14) being provided between said second reel (10) and the nearest tape guide (4), viewed in the direction of tape transport, and further path sections (15, 16) being provided between two tape guides situated one after the other viewed in the direction of tape transport, both the first and second path section (13, 14) being disposed in the same plane (20) as the reels (9, 10), wherein:
at least three path sections (14, 15, 16) of the tape (8) are twisted by one of:
the axes of two adjacent tape guides, and the axes of a reel and an adjacent tape guide, between which a twisting tape path sections extends,
the first branch (11) includes at least one of said path sections; (15) and
the second branch (12) includes at least two of said path sections (14, 16) in which the tape path (8) is twisted, at least two twisted path sections within a given branch being nonparallel.

5,184,260

MAGNETIC TAPE DRIVE WITH INTEGRAL MULTIPLE-CASSETTE REMOVABLE MAGAZINE

Michel A. Pierrat, Boulder, Colo., assignor to Ency Nova Inc., Boulder, Colo.

Continuation-in-part of Ser. No. 555,576, Jul. 10, 1990, abandoned, and a continuation-in-part of Ser. No. 679,910, Apr. 3, 1991, abandoned. This application Jul. 9, 1991, Ser. No. 727,647
Int. Cl.[5] G11B *15/68*
U.S. Cl. 360—92 **37 Claims**



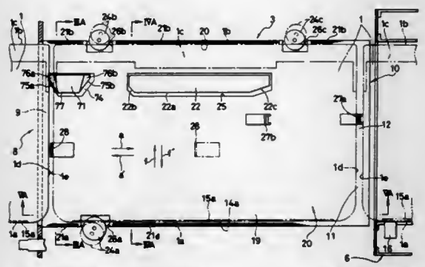
1. Apparatus for storing and manipulating cassettes having a magazine for storing cassettes comprising
a first deck including means for supporting a plurality of cassettes in a first plane and having a designated cassette pick-up position,
a second deck including means for supporting a plurality of cassettes in a second plane parallel with and displaced from said first plane,
first reciprocating cassette drive means for moving each of said cassettes in said first deck in a first direction and simultaneously moving each of the cassettes in said second deck in the opposite direction including means for transferring said cassettes between said decks, whereby said cassettes are caused to successively be positioned in said pick-up position, and
robot arm means for removing one of said cassettes from and replacing it in said pick-up position.

5,184,261

VARIOUS-SIZED-CASSETTE HOUSING SHELF

Hideaki Noguchi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 26, 1991, Ser. No. 674,980
Claims priority, application Japan, Mar. 28, 1990, 2-079974; Mar. 28, 1990, 2-079975; Mar. 28, 1990, 2-079977
Int. Cl.[5] G11B *15/68*
U.S. Cl. 360—94 **4 Claims**



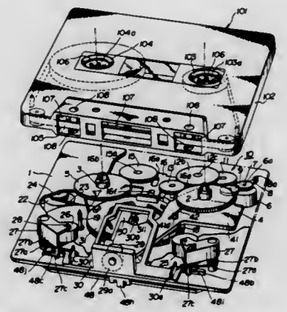
1. A cassette housing shelf for selectively accommodating relatively large-sized and small-sized cassettes which respectively have relatively large and small widths, comprising: a horizontal shelf-plate having a cassette-bearing surface with parallel opposite side margins; upstanding side walls extending from said side margins of the shelf plate and between which a cassette-receiving space is defined above said cassette-bearing surface with an inlet at one end of said shelf plate, said side walls being spaced apart by a distance approximately equal to said relatively large width of the large-sized cassette so that the latter is laterally guided by said side walls when inserted through said inlet into said cassette-receiving space; an elongated guiding element extending generally parallel to said side walls and being movable between a raised operative position above said cassette-bearing surface and a depressed inoperative position submerged relative to said cassette-bearing surface, said guiding element in said operative position being spaced from one of said side walls by a distance approximately equal to said relatively small width of the small-sized cassette so that the latter can be laterally guided between said guiding element and said one side wall when said small-sized cassette is inserted through said inlet into said cassette-receiving space; first and second sensing elements disposed adjacent said inlet at said one side wall and the other of said side walls, respectively, and being movable independently of each other between inner positions where said sensing elements project beyond said side walls at least partly into said cassette-receiving space and outer positions withdrawn from said space; means yieldably urging said sensing elements to said inner positions thereof; means responsive to movement of said second sensing element to said inner position thereof for urging said guiding element to said raised operative position and for permitting said guiding element to move to said depressed inoperative position when said second sensing element is moved to said outer position thereof; means engageable with said guiding element for blocking movement of the latter to said depressed inoperative position; and means responsive to movement of said first sensing element from said inner position to said outer position thereof for disengaging from said guiding element said means for blocking movement of the latter to said depressed inoperative position so that said guiding element is thereby permitted to move to said depressed inoperative position only when a large-sized cassette, in being inserted through said inlet into said cassette-receiving space, simultaneously displaces said first and second sensing elements to said outer positions thereof.

5,184,262

DUAL MOTOR MODE SWITCHING MECHANISM FOR A RECORDING AND/OR REPRODUCING APPARATUS

Hisanori Watanabe, Kanagawa, and Shinji Ito, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 23, 1990, Ser. No. 512,987
Claims priority, application Japan, Apr. 27, 1989, 1-108773
Int. Cl.[5] G11B *5/008*
U.S. Cl. 360—96.2 **11 Claims**



1. A mode switching mechanism in an apparatus for recording and/or reproducing signals from or onto tape wound on a supply reel and a take up reel, the mechanism comprising
capstan means for transporting the tape;
a capstan motor for rotationally driving the capstan means;
a pair of reel gears for driving the supply and take up reels;

VOL 1147 ISS 1 FE 2 1993 UMI

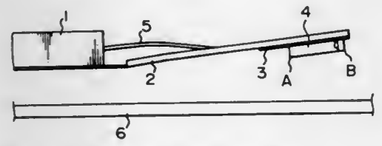
a reel motor for selectively driving the reel gears, the reel motor being rotatable in either direction;
transmission gear means for transmitting drive power of the reel motor;
movable swing arm means for rotatably supporting the transmission gear means, the movable swing arm means being movable selectively in a first direction and in a second direction in dependence upon the rotational direction of the reel motor;
intermediate gear means for selectively transmitting the drive power from the transmission gear means to the reel gears;
drive gear means rotationally driven by the capstan motor;
cam gear means having a peripheral gear section inclusive of interrupted portions and also having a cam surface section, a triggered section and a retained portion on a major planar surface, the cam gear means being rotationally driven in one direction by means of the gear section by the drive gear means;
mode switching means for selectively switching and setting a plurality of operational modes by the cam surface section in dependence upon a rotational angular position of the cam gear means;
cam gear retention means having a retainer for retaining the retained portion of the cam gear means and being movably supported between a first position in which the retainer retains the retained portion and the rotational angular position of the cam gear means is set to a position in which the interrupted portions face the drive gear means and a second position of releasing retention between the retainer and the retained portion; and
trigger means for thrusting the triggered section for rotationally biasing the cam gear means in one direction;
wherein the reel motor can be rotationally driven in a forward direction to shift the movable swing arm means in the first direction for rotationally driving the reel gears, and
the reel motor can be rotationally driven in a reverse direction for shifting the movable swing arm means in the second direction, the cam gear retention means being moved from the first position to the second position to release retention between the retainer and the retained portion, and the cam gear means being rotationally driven for driving the mode switching means for switching operational modes.

5,184,263

LOADING METHOD AND DRIVE UNIT FOR A FLOATING MAGNETIC HEAD FOR LOADING THE MAGNETIC HEAD WHILE PREVENTING CONTACT BETWEEN THE MAGNETIC HEAD AND A MAGNETIC DISK

Masaharu Fukakusa, and Hiroshi Tomiyasu, both of Kumamoto, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 8, 1990, Ser. No. 610,576
Claims priority, application Japan, Nov. 14, 1989, 1-295852
Int. Cl.[5] G11B *5/54, 5/60, 21/12, 21/21*
U.S. Cl. 360—103 **5 Claims**



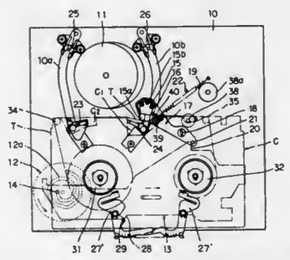
3. A magnetic disk drive unit, comprising:
a magnetic disk having at least one recording surface;
an arm supported for movement along said recording surface of said magnetic disk;
a flexure member mounted on said arm;
a magnetic head having a floating surface and mounted on said flexure member by a gimbal means, said magnetic disk being adapted for movement relative to said magnetic head in a movement direction from an upstream end to a downstream end of the magnetic head to induce an air flow which travels along the floating surface of the magnetic head in a direction from the upstream end to the downstream end of the magnetic head such that the magnetic head tends to float above the magnetic disk in said air flow, said magnetic head being positioned by said flexure member initially in a parked position such that said upstream end of the magnetic head is closer to said recording surface of the magnetic disk than is the downstream end of the magnetic head; and
a pressing member for moving said flexure member to move said magnetic head toward a loaded position by causing said magnetic head to move through a position at which the upstream end and the downstream end of the magnetic head are equally spaced from the recording medium and a position at which the downstream end of the magnetic head is closer to the recording medium than is the upstream end of the magnetic head so as to thereafter approach said recording surface of the magnetic disk with the downstream end of the magnetic head being closer to said recording medium than is said upstream end of said magnetic head and to move toward the magnetic disk until a gap between the magnetic head and the recording surface of the magnetic disk has a predetermined magnitude.

5,184,264

ADJUSTABLY MOUNTED AUDIO CONTROL HEAD

Bo H. Choi, Kyungki, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 413,217, Sep. 27, 1989, abandoned. This application Nov. 12, 1991, Ser. No. 794,804
Claims priority, application Rep. of Korea, Sep. 30, 1988, 12863
Int. Cl.[5] G11B *5/54*
U.S. Cl. 360—105 **3 Claims**



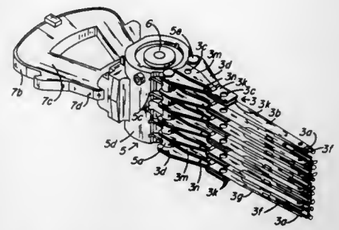
1. A high speed searching device in a video cassette tape recorder including tape loading assemblies for drawing a magnetic tape out of a cassette and around a rotatable head drum into a magnetic tape playback location comprising
a base plate;
a connecting plate movably mounted on said base plate,
means for moving said connecting plate,
a head lever rotatably mounted on said base plate and supporting an audio and control head assembly at one end thereof,
means for positioning said audio and control head assembly selectively in a high speed searching position or in a play back portion,
said means for positioning said audio and control head assembly in a high speed searching position including means for swinging said audio and control head assembly toward a middle pocket of a tape cassette by the rotation of said head lever in response to movement of said connecting plate, so that in the high speed searching position the audio and control head assembly acts on the tape within the body of the cassette and without the tape being withdrawn from the cassette, and
said means for swinging said audio and control head assembly including an interlocking pin carried by said head lever and engaging an interlocking ridge portion of said connecting plate.

5,184,265

MAGNETIC HEAD SUSPENSION ASSEMBLY IN A DISK DRIVE

Wayne E. Foote, Eagle; Paul K. Mui, Boise, and Roger R. Sleger, Meridian, all of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 434,749, Nov. 13, 1989, abandoned. This application Jun. 10, 1991, Ser. No. 713,621
The portion of the term of this patent subsequent to Feb. 19, 2008, has been disclaimed.
Int. Cl.[5] G11B *5/55, 5/48, 33/14*
U.S. Cl. 360—106 **10 Claims**



1. A low inertia magnetic head suspension assembly for a magnetic disk memory drive, having at least one magnetizable memory disk, comprising:
an elongated load beam having first and second ends, said load beam being of resilient stainless steel sheet metal having a predetermined thickness;
a magnetic head resiliently mounted on said first end of said load beam;
an arm of stainless steel sheet metal of a predetermined thickness, having first and second ends and having a thermal expansion coefficient substantially the same as that of said load beam and of a cross-sectional configuration to provide structural rigidity;
said second end of said load beam being welded directly to said first end of said arm;
actuator means having a thermal coefficient of expansion substantially the same as that of said load beam;
said second end of said arm being attached directly to said actuator means with said magnetic head on the first end of said load beam positioned adjacent one surface of said memory disk.

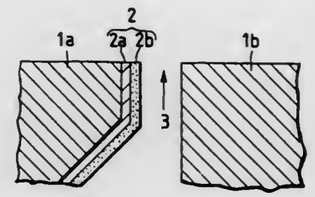
5,184,266

METAL-IN-GAP HEAD WITH DOUBLE METAL LAYER

Yasushi Kanai; Hiroe Takano, both of Nagaoka; Shushi Saoshita, Toyama, and Atsumi Nitta, Nagaoka, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1991, Ser. No. 686,733
Claims priority, application Japan, Apr. 23, 1990, 2-107143
Int. Cl.[5] G11B *5/235*
U.S. Cl. 360—120 **4 Claims**

1. A magnetic head of the metal-in-gap type having a metal layer in a magnetic gap formed in a magnetic core, the metal layer comprising a magnetic metal, wherein the metal layer comprises a plurality of thin film layers, each of the thin film layers comprised of a material having a saturation magnetic flux density higher than the saturation magnetic flux density of the magnetic core, and the material constituting the thin film layer located nearer to the magnetic gap is higher in saturation



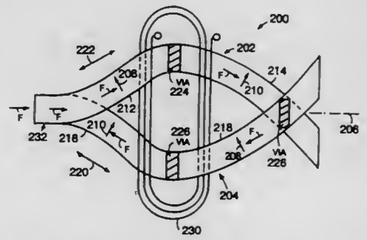
magnetic flux density than the material constituting the thin film layer farther from the magnetic gap.

5,184,267

TRANSDUCER WITH IMPROVED INDUCTIVE COUPLING

Micheal L. Mallary, Berlin, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 360,334, Jun. 2, 1989, abandoned. This application Oct. 25, 1990, Ser. No. 603,162
Int. Cl.[5] G11B *5/147, 5/17;* **B32B** *9/00*
U.S. Cl. 360—126 **43 Claims**



16. A thin film magnetic transducer comprising
a yoke having a plurality of planar arms extending generally along a first direction and laterally spaced from each other over a majority of their lengths In a direction generally parallel to the planes of said arms, said arms being connected together by a portion extending generally parallel to said planes and which is short relative to said lengths of said arms, said arms each having an easy axis of magnetization oriented transverse to said first direction so that flux will conduct through said arms predominantly by rotation rather than by wall motion,
at least said transverse portion of said yoke including a plurality of layers having different easy axes of magnetization at least one of which is transverse to the direction of flux conduction in said portion to reduce the amount of flux conduction that occurs by wall motion therein, and
a coil having at least one turn, said yoke and said coil being intertwined to provide at least two flux interactions between said yoke and said at least one turn.

VOL 1147 ISS 1 FEB 2 1993 UMI

5,184,268

MAGNETIC TAPE CASSETTE

Masato Mizuno, and Kengo Oishi, both Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

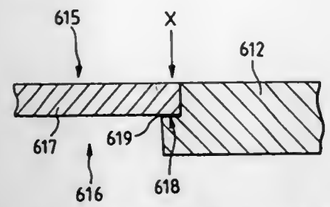
Division of Ser. No. 799,204, Nov. 27, 1991, which is a division of Ser. No. 697,560, May 9, 1991, Pat. No. 5,101,307, which is a division of Ser. No. 323,926, Mar. 15, 1989, Pat. No. 5,041,938.

This application May 28, 1992, Ser. No. 889,244

Claims priority, application Japan, Mar. 15, 1988, 63-33175; Mar. 15, 1988, 63-33176; Mar. 22, 1988, 63-36416; Apr. 1, 1988, 63-42993; Apr. 7, 1988, 63-46184; Apr. 7, 1988, 63-46185; Apr. 18, 1988, 63-50834

Int. Cl.[5] G11B *23/087*

U.S. Cl. 360—132 4 Claims



1. In a magnetic tape cassette comprising upper and lower cassette halves defining a hollow cassette case within which a magnetic tape, wound on a pair of hubs, is mounted so that the magnetic tape can run, the upper cassette half having a transparent window at an upper wall thereof, the improvement wherein the transparent window comprises a transparent synthetic resin plate sealing an opening formed through an upper wall of the upper cassette half, the synthetic resin plate being bonded to an edge portion of the opening by an ultraviolet-cured resin formed therebetween.

5,184,269

OVERLOAD PROTECTIVE DEVICE

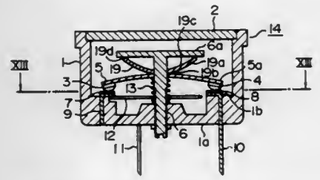
Toshio Shimada, Tochigi; Morio Kobayashi, Oyama; Takemi Tada, and Shigeya Kawaminami, both of Tochigi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 8, 1991, Ser. No. 682,264

Claims priority, application Japan, Apr. 6, 1990, 2-090324; Aug. 6, 1990, 2-206758; Aug. 29, 1990, 2-225051

Int. Cl.[5] H02H *5/04, 7/08*

U.S. Cl. 361—24 22 Claims



1. An overload protective device to be disposed in an electric circuit serving to supply current to a load, said device comprising:

a case;

a pair of fixed terminals each having a fixed contact inside of said case;

a shaft extending in said case with one end thereof fixed to said case and the other end thereof constituting a free end formed with a head portion of a diameter greater than that of said shaft;

an inversible disk-like bimetal of curved shape having formed in a central portion thereof a hole through which said shaft extends and movable contacts capable of coming in contact with said fixed contacts respectively; and

elastic means serving to resiliently bias said bimetal toward said head portion,

wherein a thermoactive disk member of a curved shape is disposed between said head portion and said bimetal and movable in response to heat from a first position where said thermoactive member is in contact with said head portion at a peripheral edge portion of said thermoactive member with a central portion thereof projecting against said bimetal to urge said bimetal against a force of said elastic means, to a second position where the central portion of said thermoactive member projects against said head portion to release at least a part of a force of said elastic means, thereby breaking said electric circuit permanently.

5,184,270

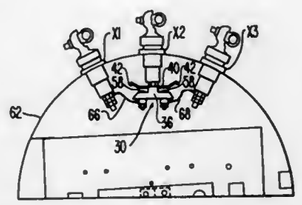
INTERNAL ARC GAP FOR SECONDARY SIDE SURGE PROTECTION AND DISSIPATION OF A GENERATED ARC

Edward L. Boyd; E. R. Eley, both of Athens, Ga., and Jeewan L. Puri, Venetia, Pa., assignors to ABB Power T&D Company, Inc., Blue Bell, Pa.

Continuation-in-part of Ser. No. 538,035, Jun. 13, 1990. This application May 8, 1991, Ser. No. 696,969

Int. Cl.[5] H02H *7/04*

U.S. Cl. 361—35 23 Claims



1. A system for protecting the primary windings of a distribution transformer from surge currents which exceed a predetermined level, said system comprising:

a tank for accommodating the transformer, said tank including a gas space therein;

a first expanding arc gap extending between a first terminal and a second terminal on a secondary side of the transformer; and

a second expanding arc gap extending between a third terminal and said second terminal on the secondary side of the transformer,

wherein said first and second arc gaps are positioned in and exposed to said gas space of said tank such that a surge current which exceeds said predetermined level will bypass secondary windings of the transformer.

5,184,271

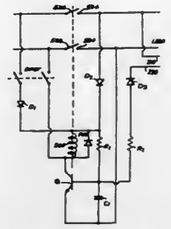
SHOCK HAZARD PROTECTION SYSTEM

Richard C. Doyle, Greenlawn, and Lester Rivera, Glendale, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Continuation of Ser. No. 654,715, Apr. 1, 1991, abandoned, which is a continuation of Ser. No. 544,769, Jun. 27, 1990, abandoned, which is a continuation of Ser. No. 416,618, Oct. 3, 1989, abandoned, which is a continuation of Ser. No. 323,451, Mar. 14, 1989, abandoned, which is a continuation of Ser. No. 177,726, Apr. 5, 1988, abandoned, which is a continuation of Ser. No. 2,833, Jan. 9, 1987, abandoned, which is a continuation of Ser. No. 885,114, Jul. 14, 1986, abandoned, which is a continuation of Ser. No. 558,262, Dec. 5, 1983, abandoned. This application Dec. 23, 1991, Ser. No. 814,304

Int. Cl.[5] H02H *3/16*

U.S. Cl. 361—49 5 Claims



1. In combination with a load operatively connected to a source immersion detecting means, said immersion detection means comprising a first conductor situated within said load and connected to a phase line of an A–C source and a second conductor being situated within said load and spaced apart from said first conductor, for detecting a water-related shock hazard condition contained within said load, and conducting means connected to said immersion detecting means, circuit interrupting means comprising:

a pair of first and second contacts supported for engagement and disengagement with respect to one another,

a coil electrically connected to said immersion detecting means via said conducting means, comprising a third conductor directly connected to said second conductor and a diode, a resistor and a transistor connected in series with each other and in-line with said third conductor, said transistor operating to cut off current to said coil and disengage said first and second contacts when a water-related shock hazard condition is detected,

a magnetizable plunger member having portions thereof disposed within said coil and movable in response to energization of said coil,

means for defining a path of a magnetic field generated by said coil, and

latch means manually operable to move said plunger to bring said first and second contacts into engagement with each other.

5,184,272

HIGH-SIDE SWITCH WITH OVERCURRENT PROTECTING CIRCUIT

Koichi Suda, Hitachi; Hitoshi Matsuzaki, Mito; Masayuki Wada, Katsuta, and Shoichi Ozeki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Haramachi Semi-Conductor Ltd., Hitachi, both of, Japan

Filed Mar. 29, 1990, Ser. No. 500,881

Claims priority, application Japan, Mar. 31, 1989, 1-78247; Jul. 5, 1989, 1-171803

Int. Cl.[5] H02H *3/18*

U.S. Cl. 361—87 14 Claims

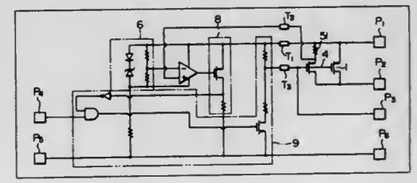
4. A switching circuit comprising:

a main P-channel MOSFET turned on or off in accordance with an external control signal, the source and drain of the main P-channel MOSFET being connected to the positive terminal of a D.C. power source and a load, respectively;

a bypass P-channel MOSFET connected between the source and drain of the main P-channel MOSFET, the bypass P-channel MOSFET being turned on or off in accordance with the external control signal, the bypass P-channel MOSFET being smaller in current capacity than the main P-channel MOSFET;

detection means for detecting a voltage indicative of current value flowing through the bypass P-channel MOSFET;

reference-voltage generating means connected to the positive terminal of the D.C. power source for generating a reference voltage having a constant value independently of variations in output voltage of the D.C. power source, wherein the reference voltage generating means includes a series combination of a diode, a Zener diode and a first resistor, a Zener diode connected between the base and collector of the bipolar transistor, a series combination of second and third resistors, and a fourth resistor connected between the base and emitter of the bipolar transistor, the series combination of the bipolar transistor and the first resistor is connected between the positive and negative terminals of the D.C. power source, the series combination of the second and third resistors is connected between the emitter and collector of the bipolar transistor, and the connecting point of the second and third resistors is used as an output terminal of the reference-voltage generating means;



comparator means for comparing a detected voltage from the detection means with the reference voltage from the reference-voltage generating means, to convert the detected voltage into a logic voltage, the comparator means being operated on a supply voltage which is a floating voltage dependent upon the supply potential of the D.C. power source;

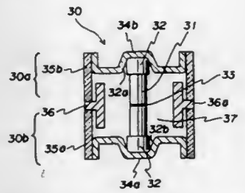
conversion means for converting the logic voltage from the comparator means into a voltage measured from a ground potential; and

control means for exerting ON-OFF control over the external control signal which is supplied to the main P-channel MOSFET and the bypass P-channel MOSFET, in accordance with the output of the conversion means.

6. A switching circuit according to claim 4, wherein the main P-channel MOSFET, the bypass P-channel MOSFET, the detection means, the reference-voltage generating means, the comparator means, the conversion means and the control means are formed in the same semiconductor substrate.

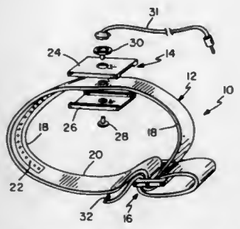
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5,184,273
MICROGAP TYPE SURGE ABSORBER
Yoshiyuki Tanaka, and Takaaki Itoh, both of Saitama, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan
Filed Nov. 26, 1991, Ser. No. 798,528
Claims priority, application Japan, Nov. 27, 1990, 2-320898
Int. Cl.[5] H01H *9/04, 9/06*
U.S. Cl. 361—120 **7 Claims**



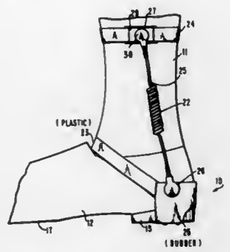
1. A microgap surge protector which comprises:
a) a wall forming a sealed chamber;
b) a rod-shaped element within the chamber formed from an electrically insulating material, said element having:
a coating thereon of an electrically conducting material, said coating having a microgap therein centered between the ends of the element;
first and second electrodes, one at each end of the element in electrically conductive contact with the coating;
(c) means for providing an electrical connection between the exterior of the chamber and the first and second electrodes;
d) a third cylindrical electrode having a hollow portion therein within the chamber and having a diameter larger than the rod-shaped element and a length greater than the width of the microgap, the rod-shaped element being aligned within the hollow portion and coaxially with the third electrode such that it is spaced apart from the interior surface of the third electrode and the microgap is positioned between the ends of the third electrode;
e) an inert gas filling the interior of the chamber.

5,184,274
ADJUSTABLE, ELASTIC STATIC CONTROL WRISTBAND
John W. Weiss, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sep. 7, 1990, Ser. No. 579,168
Int. Cl.[5] H05F *3/00*
U.S. Cl. 361—220 **18 Claims**



1. A device for electrically connecting an individual to a conductive grounding tether, comprising:
a first strap having an electrically conductive portion for contacting a limb of the individual, said first strap having first and second ends, and an intermediate portion;
a second strap which is elastic and electrically insulative, having first and second ends, said first end thereof being attached to said second end of said first strap;
a connector case attached to said intermediate portion of said first strap, and having connector means for electrically connecting said conductive portion of said first strap to the tether;
clasp means for adjusting the effective length of said second strap, said first end of said first strap being attached to said clasp means, and said second end of said second strap being attached to said clasp means; and
first and second straps, connector case and clasp means defining a closed loop for encircling the limb of the individual.

5,184,275
HEEL GROUNDING DEVICE
Dave C. Wiegel, Manhattan Beach; Dan A. Bradshaw, Hawthorne, and Stasys Petravicius, Ranchos Palos Verdes, all of Calif., assignors to Hughes Aircraft Company, Los Angles, Calif.
Filed Dec. 21, 1989, Ser. No. 454,814
Int. Cl.[5] H05F *3/02*
U.S. Cl. 361—223 **2 Claims**

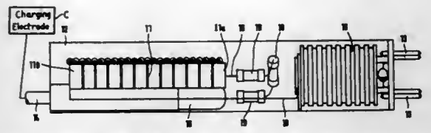


1. An electrostatic discharge device attached to an operator communicating with an electrically conductive grounding element comprising:
partially electronically conductive element (**20**) composed of carbonized rubber material attached to the operator worn against the heel (**15**) of a shoe (**20**) of the operator;
a plurality of metal rivets (**31, 32, 33**) arranged in a triangular configuration protruding no more than 1/16 inch from said partially electronically conductive element (**20**) for discharging static electricity for the safety and comfort of the operator;
a ground lead (**25**) with a first fastener (**27**) containing an electrical resistor (**30**) therein and a second fastener (**26**), said ground lead having a coil (**22**) which can elongate or contact, and is connected to said partially conductive element (**20**) by said second fastener (**26**);
a first strap (**23**) connected to said partially conductive element (**20**), said first strap consisting of plastic material consisting of two pieces with a velcro material in a hook and pile attachment configuration; and
a second strap (**24**) made of elastic fabric attached using a metal buckle (**29**) to a leg of said operator by said first fastener (**27**) of said lead (**25**) and said partially conductive element (**20**) by way of said lead (**25**) with said second fastener (**26**).

5,184,276
ELECTROSTATIC PAINT SPRAY GUN
Georg Simon, Altstatten, Switzerland, assignor to Wagner International AG, Switzerland
Filed Jun. 5, 1991, Ser. No. 711,170
Claims priority, application Fed. Rep. of Germany, Jun. 26, 1990, 4020289
Int. Cl.[5] B05B *5/025*
U.S. Cl. 361—228 **11 Claims**

1. An electrostatic paint spray gun having a built-in high-voltage generator comprising a transformer and a high-voltage

cascade following thereupon and extending in a barrel of said gun, whereby a low-voltage input of said cascade is connected to an output of said transformer, a high-voltage output of said cascade is connected to a high-voltage electrode of said gun


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VOL 1147 ISS 1 FEB 2 1993 UMI

means and being supplied with power from said power supply means for controlling the operation of said remotely controllable circuit breaker using a printed circuit board to carry control signals to the corresponding circuit breaker position; and

bus means including a plurality of connectors such that a connector is adjacent each of said plurality of circuit breaker positions, wherein the bus means couples said interface module means said remotely controllable circuit breaker occupying one of said plurality of circuit breaker positions.

5,184,279

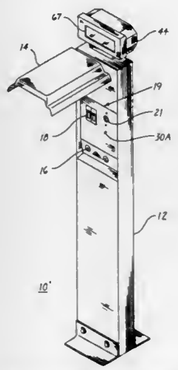
POWER PEDESTAL HAVING TELEVISION, TELEPHONE AND LUMINAIRE ADAPTER UNIT

Dale W. Horn, Mapleton, Minn., assignor to General Electric Company, New York, N.Y.

Division of Ser. No. 658,497, Feb. 21, 1991. This application Jul. 13, 1992, Ser. No. 912,394

Int. Cl.[5] H02B *1/26*

U.S. Cl. 361—356 **4 Claims**



1. An electric power pedestal comprising:

an enclosure having a base and a cover:

an electric circuit breaker within said base and accessible from a front surface thereon;

an electric power receptacle within said base and accessible from said front surface; and

said cover being hingeably attached to a top surface of said base and arranged over said electric circuit breaker and said power receptacle to prevent access to said circuit breaker and said power pedestal when said cover is against said base and to provide access to said circuit breaker and said power receptacle when said cover is rotated away from said base, said cover comprising a translucent material to provide further visual access to said circuit breaker and said power receptacle when said cover is against said base.

5,184,280

POWER RECTIFIER WITH FLEXIBLE STACKED SHEAVE BUS BAR FOR HIGH CURRENT CARRYING CONNECTIONS

Fakhry A. Fouad, Plano, Tex., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 31, 1991, Ser. No. 786,236

Int. Cl.[5] H02B *1/20*

U.S. Cl. 361—361 **10 Claims**

1. A high power bulk power processing rectifier comprising:

a plurality of components to be interconnected including, high power ferro transformers, inductors, capacitors and interconnecting current carrying busses;

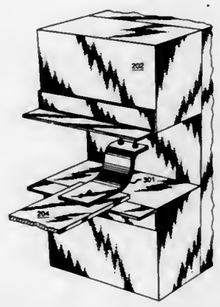
the components including conductor connection bolts to which current carrying conductors are attached to interconnect at least two components;

the at least two components having the conductor connection bolts of each component of the at least two components occurring on different planar levels from each other;

wherein the improvement comprises:

at least one flexible bus bar interconnecting the at least two components,

the flexible bus bar comprising a selected number greater



than one of thin conducting leaves stacked on top of and directly contiguous to each other providing sufficient current carrying cross section and each thin conducting leave having a first and second pair of apertures located at opposite ends of each leave, respectively, to facilitate bolt connections to the conductor connection bolts;

all of the thin conducting leaves of the flexible bus bar being bolted through the paired apertures at each end to the at least two components each having a connection location which lie in differing planes with respect to each other,

the flexible bus bar flexing and assuming a bending non planar contour when bolted to differing planes of the connection locations of the at least two components.

5,184,281

HEAT DISSIPATION APPARATUS

Victor M. Samarov, Carlisle, and Zeljko Arbanas, Lawrence, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Mar. 3, 1992, Ser. No. 845,402

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—386 **25 Claims**

1. An apparatus for dissipating heat from a system, the system having a base on which is mounted first and second heat transfer surfaces, the first heat transfer surface being separated from the second heat transfer surface by a space, said apparatus comprising:

means for dissipating heat from the first and second heat transfer surfaces, said heat dissipation means having first and second thermally conductive walls, said heat dissipation means being configured such that with said heat dissipation means mounted on the base, said first conductive wall is adjacent to the first heat transfer surface, and said second conductive wall is adjacent to the second heat transfer surface;

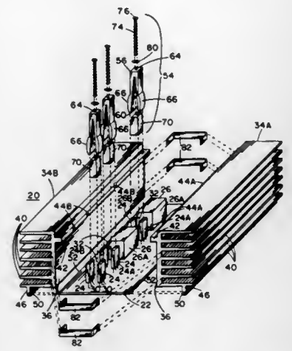
a yoke having first and second tines, said first and second tines being separated by a yoke recess;

a wedge which is adapted for insertion within said recess;

means for adjusting the position of said wedge within said recess; and

said yoke, said wedge, and said adjustment means being configured such that with said wedge inserted in said yoke

recess, and said yoke positioned within the space, said adjustment means can adjust the position of said wedge within said recess such that said first and second tines



press the first and second heat transfer surfaces into thermal communication with said first and second conductive walls, respectively.

5,184,282

IC CARD ADAPTER

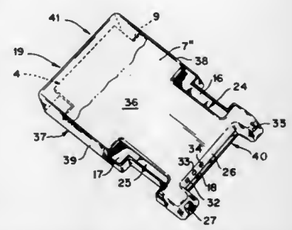
Takashi Kaneda, Chiba, Japan, and Thomas Villwock, Niedernhausen, Fed. Rep. of Germany, assignors to MIPS Co., Ltd., Tokyo, Japan and Dataline Technologies GmbH, Frankfurt-Niedernhausen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 698,795, May 13, 1991, which is a continuation of Ser. No. 392,454, Aug. 11, 1989, Pat. No. 5,036,429. This application Dec. 13, 1991, Ser. No. 806,293

Claims priority, application Japan, Feb. 27, 1989, 1-20199

Int. Cl.[5] H05K *1/14*

U.S. Cl. 361—395 **30 Claims**



1. An IC card adapter connectable to an electronic device, said adapter comprising a housing having a top, a bottom and four sides, three of the sides of the housing having slots defined therein, each slot having a card receptor portion for receiving an individual IC card, at least one of the car receptor portions being in a first plane which is noncoincident and generally parallel to a second plane in which at least one other card receptor portion is located, IC cards being readily detachable from the card receptor portion.

5,184,283

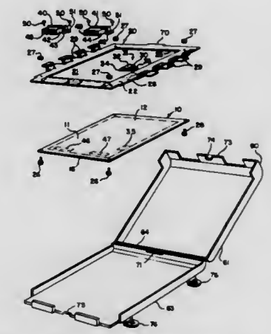
POWER DEVICE ASSEMBLY AND METHOD

Gregory R. Hamel, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 23, 1991, Ser. No. 812,412

Int. Cl.[5] H05K *7/20*

U.S. Cl. 361—395 **14 Claims**



1. A power device assembly comprising

(a) a circuit board sub-assembly comprising:

a circuit, board having an upper surface, a lower surface andd a periphery;

a heat sink frame mounted to the circuit board and defining an open area exposing at least a major portion of the upper surface of the circuit board, the heat sink frame extending outwardly beyond the periphery of the circuit board; and

at least one power device having a body and electrically conductive leads extending from the body to electrical contact with the circuit board, the body being mounted in thermally conductive contact with the heat sink frame; and

(b) a protective housing enclosing the circuit board subassembly, at least a portion of the heat sink frame extending outwardly from the protective housing.

5,184,284

METHOD AND APPARATUS FOR IMPLEMENTING ENGINEERING CHANGES FOR INTEGRATED CIRCUIT MODULE

Brian T. Ashelin, Kasson; Mark A. Bergquist, and Dennis E. Noltee, Sr., both of Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 3, 1991, Ser. No. 754,137

Int. Cl.[5] H05K *1/14;* **H01L** *39/06;* **H01R** *9/09*

U.S. Cl. 361—400 **13 Claims**

1. An apparatus for correcting or modifying the function of an integrated circuit by adding electrical circuit components to the integrated circuit, said apparatus comprising:

a circuit module for encapsulating the integrated circuit;

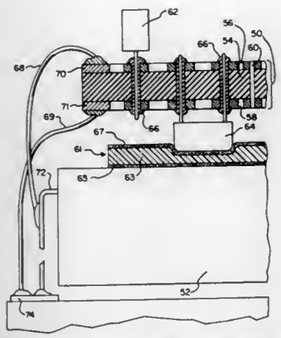
a printed-circuit board, said board having lateral boundaries less than or equal to the lateral boundaries of said module;

one or more change circuits for correcting or adding function to one or more circuits integrated into the module, each of said change circuits mounted on said board and including discrete, replaceable electrical components interconnected by printed circuits on said board;

one surface of said board being positioned adjacent to, spaced apart from and within the peripheral boundaries of

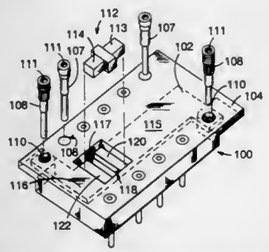
VOL 1147 ISS 1 FE 2 1993 UMI

one surface of said module whereby the card does not extend beyond the boundaries of the module;



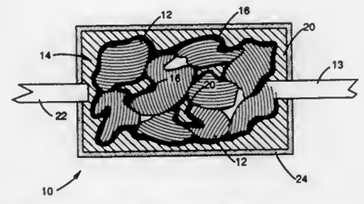
electrically conductive wires attached between the change circuits on said board and the module's integrated circuit to be corrected or modified.

5,184,285
SOCKET CONSTRUCTED WITH MOLDED-IN LEAD FRAME PROVIDING MEANS FOR INSTALLING APPITIONAL COMPONENT SUCH AS A CHIP CAPACITOR
James V. Murphy, Warwick, and Michael J. Murphy, East Greenwich, both of R.I., assignors to Advanced Interconnections Corporation, West Warwick, R.I.
Filed Nov. 17, 1987, Ser. No. 121,568
Int. Cl.[5] H05K *5/02*
U.S. Cl. 361—421 **5 Claims**



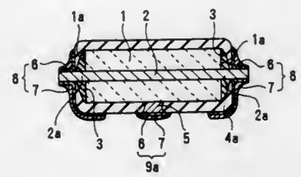
1. A socket for connection of a first electrical component to a circuit board comprising
a plurality of pins, each said pin configured for connection of the first component,
a pair of lead frame elements cut from the same lead frame, each said lead frame element having at least one hole through which a said pin extends, each of said pins that extend through a said hole being individually secured to a said lead frame element by soldering or press filting, and each said element including a connection region,
a molded plastic body formed of insulative plastic molded around said lead frame elements and surrounding said pins, said molded body having generally parallel upper and lower surfaces, and said body further having an opening extending from one of said surfaces into the interior of said body sufficiently far to expose said connection regions, and said opening having a size and depth adapted to receive a second component, and
a second electrical component positioned within said opening and soldered to each of said connection regions.

5,184,286
PROCESS FOR MANUFACTURING TANTALUM CAPACITORS
Robert J. Lauf, Oak Ridge; Cressie E. Holcombe, Knoxville, and Norman L. Dykes, Oak Ridge, all of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.
Filed Mar. 18, 1992, Ser. No. 853,474
Int. Cl.[5] H01G *9/05;* **B22F** *1/00*
U.S. Cl. 361—529 **18 Claims**



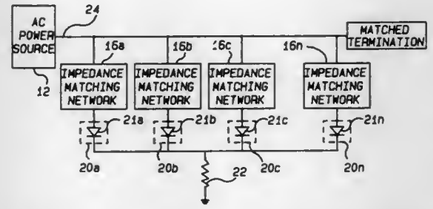
16. A tantalum capacitor comprising:
a porous tantalum compact having a plurality of pore spaces therein and all exposed tantalum surfaces having ripples therein;
an oxide layer overlaying all said ripples in said surfaces;
a conductive material infiltrating said compact into all said pore spaces and coating said oxide layer;
a pair of metallic leads operatively connected to said compact to form said capacitor; and
a protective coating overlaying said infiltrated compact.

5,184,287
CHIP TYPE SOLID ELECTROLYTIC CAPACITOR
Hiromichi Taniguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jun. 9, 1992, Ser. No. 895,843
Claims priority, application Japan, Jun. 14, 1991, 3-142847
Int. Cl.[5] H01G *9/00*
U.S. Cl. 361—540 **6 Claims**



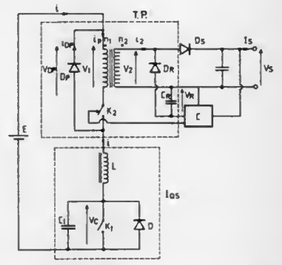
1. A chip type solid electrolytic capacitor comprising:
a capacitor element obtained by sequentially forming an oxide film, a solid electrolytic layer, and a cathode conductive layer on an anode body consisting of a valve metal in which anode leads are extracted from two opposite end faces;
an insulating sheathing resin layer coated on an entire outer surface except for both anode lead extraction end faces and a predetermined portion of one surface;
two anode terminals formed on said both anode lead extraction end faces and peripheral portions thereof; and
a cathode terminal formed said cathode conductive layer exposed from said insulating sheathing resin layer.

5,184,288
HIGH FREQUENCY POLY-PHASE RECTIFIER FOR CONVERTING AC POWER SIGNAL TO DC
Robert D. Washburn, Malibu; Robert S. Wedeen, Manhattan Beach; Robert F. McClanahan, Valencia; William J. Council, Newbury Park, and David M. Lusher, Gardena, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jun. 27, 1991, Ser. No. 722,573
Int. Cl.[5] H02M *7/08*
U.S. Cl. 363—4 **12 Claims**



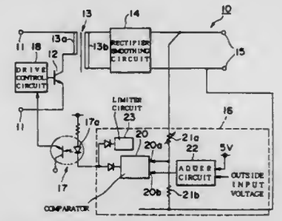
1. A power rectifying circuit for converting alternating current (AC) to direct current (DC), comprising:
input means for receiving an AC power signal ;
output means for supplying a load;
a network including a plurality of rectifiers coupling the input to the output, the rectifiers being arranged parallel to each other such that the AC power signal is split among the rectifiers; and
means for phase shifting the AC power signal comprising means coupled to a transmission line and displaced along its electrical length in such a manner as to provide incremental phase shifts to each rectifier, so that the AC power signal is applied to each of the rectifiers with a different phase.

5,184,289
MAGNETIC CONTROL PROCESS FOR TRANSFERING ENERGY IN A STATIC CONVERTER
André Bonnet, Quartier du Clos, 13360 Roquevaire, and Jean-Pierre Danner, Chemin des Severiers, 13600 La Ciotat, both of France
Filed Jul. 15, 1991, Ser. No. 731,826
Claims priority, application Switzerland, Jul. 13, 1990, 2343/90; Mar. 5, 1991, 664/91
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—20 **7 Claims**



1. A process using the saturation of a transformer magnetic core to control the energy transfer of a static converter having an input and an output, and including at least one transformer having a primary and a secondary winding wound on a magnetic core, said static converter acting as a current source towards said primary winding of said transformer, and comprising the steps of:
controlling the magnetization state of said transformer magnetic core through a regulation circuit,
controlling the energy transfer from the input to the output of said static converter by utilizing the controlled magnetization state of said transformer magnetic core to allow energy to be transferred to said output of said static converter without damaging said static converter acting as a current source, when said transformer magnetic core has not been set to a state of saturation by said regulation circuit, and to prevent energy from being transferred to said output of said static converter when said transformer magnetic core has been set to a state of saturation by said regulation circuit.

5,184,290
SWITCHING REGULATOR
Kenichi Ozawa, and Shinichi Suekane, both of Kanagawa, Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan
Filed Mar. 17, 1992, Ser. No. 853,066
Claims priority, application Japan, Mar. 3, 1991, 3-29386[U]
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—21 **14 Claims**



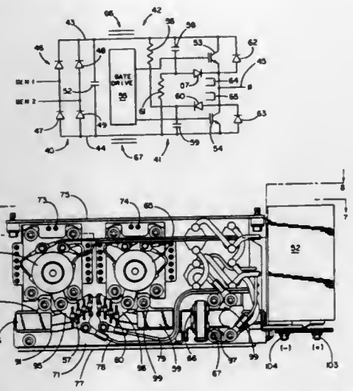
1. A switching regulator comprising: a transformer having a primary coil and a secondary coil;
a switching transistor having a base, a collector and an emitter, said switching transistor being connected in series to said primary coil of said transformer;
wherein input voltage is applied to said primary coil of said transformer through said collector and said emitter of said switching transistor,
a pair of output terminals connected to said secondary coil of said transformer;
a comparator for comparing output voltage occurring between said output terminals with a variable reference voltage to generate an output signal; and
a control circuit for applying a drive control signal to said base of said switching transistor on the basis of said output signal from said comparator.

5,184,291
CONVERTER AND INVERTER SUPPORT MODULE
Lawrence E. Crowe, 16409 Lindenwood Rd., Lindenwood, Ill. 61049, and Mark W. Metzler, 50 Delburne Dr., Davis, Ill. 61019
Filed Jun. 13, 1991, Ser. No. 714,798
Int. Cl.[5] H02M *5/458*
U.S. Cl. 363—37 **26 Claims**

1. A module for receiving input AC and for supplying only one phase of output AC, wherein said module can be attached to and/or withdrawn form a module support as a unit, said module comprising:
heat sink means for cooling components attached in cooling relation thereto;
rectifier means for rectifying said input AC into DC, said rectifier means being attached in cooling relation to said heat sink means;
inverter switching means for inverting said DC into said one phase of said output AC, said inverter switching means

VOL
1147
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being attached, at least in part, in cooling relation to said heat sink means, said inverter switching means including an AC filter having an inductor and a capacitor attached to said heat sink means; and



connector means for interconnecting said rectifier means and said inverter switching means so that said input AC, when supplied to said module, is converted to said one phase of said output AC.

5,184,292

CLOSED-LOOP CONTROL METHOD AND APPARATUS

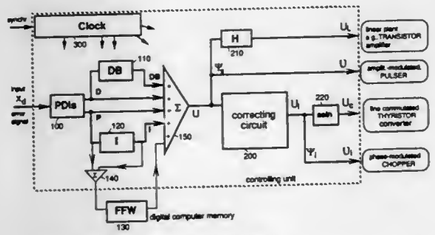
Frank Schneider, Garching, Fed. Rep. of Germany, assignor to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Fed. Rep. of Germany

Filed Sep. 17, 1990, Ser. No. 583,516

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1989, 3931133

Int. Cl.[5] G05B *11/42*

U.S. Cl. 364—162 **29 Claims**



1. Controlling apparatus comprising

a) an input for receiving an error signal representing a deviation of an actual value of a variable from a desired value of said variable,

b) an output (U) for providing a manipulated signal in response to said error signal, said manipulated signal being effective in a predetermined manipulating range,

c) first controller means (**100**) having a first output (D) for providing a signal which a function of the rate of change of the error signal, and a second output (P) for providing a proportional signal which is a function of the magnitude of said error,

d) means (**150**) for combining the signals from said first and second outputs of said first controller means, and to produce said manipulated signal and to apply it to the output of said apparatus, and further characterized by

e) clock means (**300**) for producing clock signals defining subsequent time intervals,

f) limiting means (**105**) for limiting in each time interval a manipulated signal that has a portion exceeding said manipulating range to prevent exceeding said manipulating range, and

g) transfer means (**103, 104**) for combining the portion of the manipulating signal which exceeds said manipulating range with the manipulated signal of the next following time interval.

5,184,293

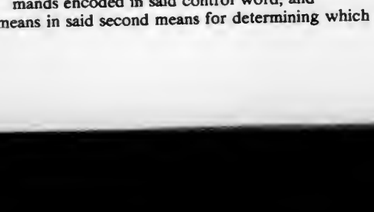
APPARATUS FOR AUTOMATIC DEPTH CONTROL FOR EARTH MOVING AND GRADING

Christopher O. Middleton, Capitola, and Colin L. Robson, San Jose, both of Calif., assignors to Spectra Physics, Freemont, Calif.

Continuation of Ser. No. 204,541, Jun. 9, 1988, Pat. No. 4,924,374. This application Mar. 23, 1990, Ser. No. 497,981

Int. Cl.[5] G06F *15/20*; G05D *1/04*

U.S. Cl. 364—167.01 **7 Claims**



1. An apparatus for generating control signals for use by a conventional control circuit in controlling the hydraulic mechanism for movement of a tool portion of a grading machine so as to maintain a selected distance between said tool portion and a reference surface comprising:

look-up table means for storing a plurality of control words at a plurality of addresses, each said control word indicating the desired amount and direction of change for the position of said tool portion including at least one control word indicating that no change is necessary;

calibration means for using acoustic energy to locate a reference surface at a chosen distance from a predetermined portion of said grading machine and to establish the chosen distance as a reference distance and mapping said reference distance to a pointer address for an address in said look-up table where said at least one control word indicating no change in tool position is necessary is stored; and

second means for detecting a distance proportional to an actual distance between said reference surface and said tool portion and for mapping said detected distance to a pointer address to access a control word in said look-up table indicating a correction factor and direction of change which will move said tool portion to said selected distance from said reference surface;

a selected type of hydraulic control means from a class of similar type hydraulic control means all of which include hydraulic pressure control valves to control hydraulic pressure applied to rams in said hydraulic mechanism, said selected hydraulic control means being coupled to said second means and to said hydraulic mechanism for receiving said control signals and for manipulating said hydraulic control valves in an appropriate manner to cause said tool position to be varied in accordance with the commands encoded in said control word; and

means in said second means for determining which type of

said hydraulic control means has been selected for coupling to said second means by reading signals sent to said second means from said selected hydraulic control means and for causing electrically compatible control signals to be generated and sent to said selected hydraulic control means to implement the commands for tool portion positioning encoded in said access control word.

5,184,294

APPARATUS FOR GENERATING NUMERICAL CONTROL INFORMATION FOR MACHINING PARTS

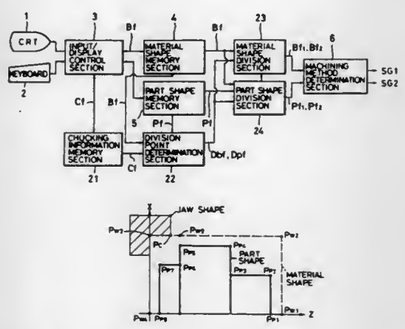
Yasushi Fukaya, Ooguchi, Japan, assignor to Kabushiki Kaisha Okuma Tekkosho, Aichi, Japan

Filed Apr. 26, 1990, Ser. No. 514,837

Claims priority, application Japan, Apr. 28, 1989, 1-111600

Int. Cl.[5] G06F *15/46*; G05B *19/92*

U.S. Cl. 364—191 **2 Claims**



1. An apparatus for generating numerical control information for machining a part member, comprising:

a division point determination means for determining a division point between first and second steps based on a material shape, a part shape and a jaw shape supplied;

a part shape division means for generating a first step part shape and a second step part shape based on the division point, the material shape and the part shape; and

a material shape division means for generating a first step material shape and a second step material shape based on the division point, the material shape and the first step part shape;

wherein numerical control information for the first step is formed from the first step material shape and the first step part shape, while numerical control information for the second step is formed from the second step material shape and the second step part shape;

and wherein said division point determination means finds a first group of corner points which do not interfere with a jaw shape from a group of corner points on the part shape, and finds a second group of corner points having maximum coordinate values in a diametral direction of the part shape from among the first group of corner points, and finds a corner point having a minimum coordinate value in a longitudinal direction of the part shape from among the second group of corner points, the corner point thereby being used as the division point for outside diameter machining.

5,184,295

SYSTEM AND METHOD FOR TEACHING PHYSICAL SKILLS

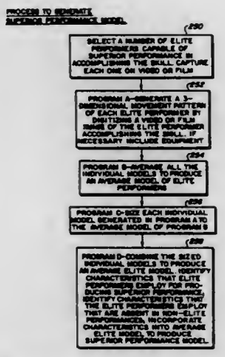
Ralph V. Mann, 1515 SE. 27 Terrace, Ocala, Fla. 32671

Division of Ser. No. 867,047, May 30, 1986, Pat. No. 4,891,748. This application Oct. 16, 1989, Ser. No. 422,015

The portion of the term of this patent subsequent to Jan. 2, 2007, has been disclaimed.

Int. Cl.[5] G06F *15/44*

U.S. Cl. 364—410 **34 Claims**



34. A system for generating a model of superior performance for teaching a student a physical skill, in which a number of elite performers who superiorly perform the physical skill are identified, the system comprising:

(a) means for generating a plurality of video frames of a three-dimensional movement pattern for each elite performer performing the physical skill;

(b) means for standardizing the frames of the video movement patterns such that a frame for each elite performer corresponds to an equivalent movement pattern for the other elite performers;

(c) means for averaging the equivalent frames of movement patterns for all of the elite performers for producing an average model representative of an average movement pattern;

(d) means for sizing each of the three-dimensional movement patterns to the average model, and for combining the movement patterns of all of the elite performers; and

(e) means for averaging all of the movement patterns of the sizing means for producing a model incorporating the patterns of all of the elite performers.

5,184,296

ELECTRONIC TRANSLATOR WITH MULTIPLE SPEED SEARCHING FUNCTION

Shinichi Matsumoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 713,606, Jun. 11, 1991, abandoned, which is a continuation of Ser. No. 424,870, Oct. 20, 1989, abandoned. This application Dec. 4, 1991, Ser. No. 801,587

Claims priority, application Japan, Oct. 28, 1988, 63-270900

Int. Cl.[5] G06F *15/38*

U.S. Cl. 364—419 **7 Claims**

1. An electronic apparatus comprising:

input means for inputting words;

memory means for storing data representing a plurality of words consecutively in said memory means and corresponding to the inputted words and for storing data representing a plurality of corresponding words corresponding to said data representing said plurality of words;

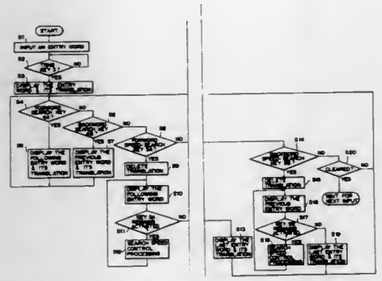
display means for displaying a word inputted by said input means and a corresponding word, from said memory

VOL 1147 ISS 1 FEB 2 1993 UMI

means, represented by data corresponding to data representing a word stored in said memory means corresponding to said inputted word;

instruction means for generating a first or second instruction instructing the reading of data representing a consecutive word consecutively stored in said memory means relative to said word displayed on said display means, and instructing the display of said consecutive word on said display means in place of the previously displayed word;

first control means for controlling said display means to display the consecutive word read from said memory means while the first instruction is being generated by said instruction means; and



second control means for controlling said display means to display the consecutive word read from said memory means while the second instruction is being generated by said instruction means, and for, while the second instruction by said instruction means is not being generated, searching said memory means for data representing a corresponding word corresponding to the consecutive word then displayed on said display means, and controlling said display means to display the searched corresponding word;

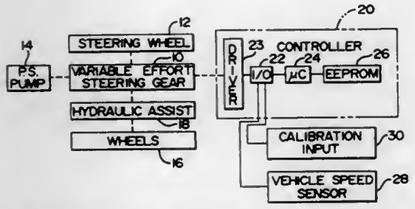
wherein said data representing a word stored in said memory means represents a word in a first language, and said data representing a corresponding word represents a word in a second language or a definition of the word in the first language.

5,184,297

METHOD OF CALIBRATING POWER STEERING FOR UNIFORM VEHICLE-TO-VEHICLE STEERING EFFORT

David W. Graber, Millington; Dennis C. Eckhardt, Saginaw; Andrzej M. Pawlak, Troy, and Bryan L. Faist, Frankenmuth, all of Micb., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 24, 1990, Ser. No. 602,568
Int. Cl.[5] B62D *5/00*
U.S. Cl. 364—424.05 **3 Claims**



1. In a vehicle power steering system including a steering gear which develops steering assist force in response to an input force, and an electrically controllable variable steering effort mechanism for varying the developed steering assist force, a method of calibrating said system to a standard value of steering assist force comprising the steps of:

measuring a steering assist force developed in response to an applied input force;

determining a variance of the measured assist force from a standard value;

calculating a correction value corresponding to said variance;

storing the correction value; and

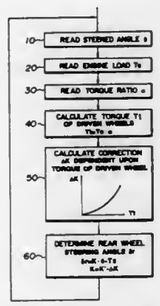
controlling the variable steering effort mechanism in accordance with the correction value to at least partially compensate for said variance.

5,184,298

REAR WHEEL STEERING SYSTEM FOR VEHICLE

Takashi Imaseki; Minoru Tamura; Toru Iwata, and Yuichi Fukuyama, all of Kanagawa, Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Aug. 30, 1990, Ser. No. 575,012
Claims priority, application Japan, Sep. 1, 1989, 1-227074
Int. Cl.[5] B62D *6/00*
U.S. Cl. 364—424.05 **15 Claims**



1. A rear wheel steering system for a vehicle having front and rear steered wheels and an engine driving a wheel set comprising:

first means for determining the amount of torque transmitted from the vehicle engine to the driven wheel set and providing a signal indicative thereof;

second means for determining front wheel steering angle to provide a signal indicative thereof;

third means responsive to the signal from said second means for calculating rear wheel steering angle based on the steered angle of the front wheel;

fourth means responsive to the signal from said first means for determining a correction for the rear wheel steering angle calculated by said third means, the correction having an amplitude of a preselected relation to the magnitude of the amount of torque transmitted from the engine to the driven wheel set to provide a rear wheel target steering angle, the fourth means deriving a signal indicative of the rear wheel target steering angle; and

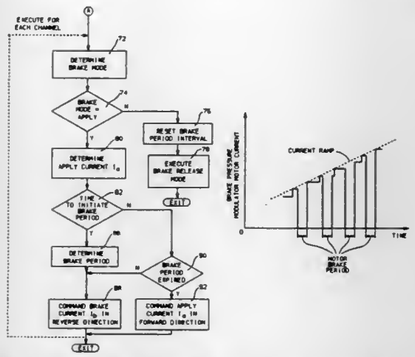
fifth means responsive to the amplitude of the signal derived by said fourth means for steering the rear wheel set in accordance with the rear wheel steering angle calculated by said third means and as modified by said correction.

5,184,299

ANTILOCK BRAKE SYSTEM MOTOR SPEED CONTROL

Martin A. Hogan, Northville; Kevin G. Leppek, Troy, both of Mich., and Peter J. Spadafora, Howald, Luxembourg, assignors to General Motors Corporation, Detroit, Mich. and Deleco Electronics Corporation, Kokomo, Ind.

Filed May 31, 1990, Ser. No. 531,397
Int. Cl.[5] B60T *8/64*
U.S. Cl. 364—426.02 **8 Claims**



1. A method of controlling the wheel brake pressure applied to the brake of a vehicle wheel traveling over a road surface in a vehicle braking system having a pressure modulator including a motor for generating a motor torque in response to motor current to control the applied wheel brake pressure, the method comprising the steps of:

sensing an incipient wheel lockup condition;

controlling the motor current to release wheel brake pressure when an incipient wheel lockup condition is sensed to allow wheel recovery from the incipient wheel lockup condition;

ramping the motor current following wheel recovery to increase the applied wheel brake pressure until an incipient wheel lockup is again sensed; and

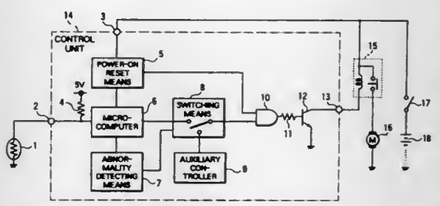
recurrently braking the motor while the motor current is ramped, the braking providing control of motor speed.

5,184,300

CONTROL APPARATUS FOR A VEHICLE FOR CONTROLLING A DEVICE MOUNTED THEREON

Toshiro Hara; Yoshimasa Sato, and Noboru Yagi, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1991, Ser. No. 654,984
Claims priority, application Japan, Mar. 12, 1990, 2-61574
Int. Cl.[5] G05B *15/00*
U.S. Cl. 364—431.1 **6 Claims**



1. A control apparatus for a vehicle for controlling a device (16) mounted thereon, the apparatus comprising:

a) a main controller (6) for controlling the device in an on-off manner;

b) reset means (5) for initially resetting the main controller for a predetermined time period after a key switch (17) of the vehicle is turned on, said resetting causing the main controller to appear to be functioning abnormally during the predetermined time period;

c) an auxiliary controller (9) for controlling the device in a continuously on manner in place of the main controller when the main controller is abnormal;

d) switching means (8) for performing switching between a first position in which the device is controlled by the main controller and a second position in which the device is controlled by the auxiliary controller;

e) means (7) for detecting an abnormality of the main controller and switching over the switching means into the second position when an abnormality of the main controller is detected; and

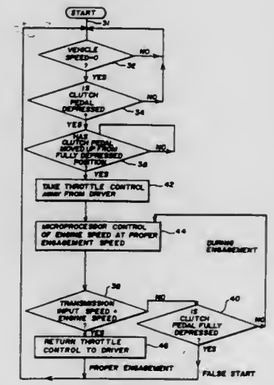
f) disabling means (10) for disabling the output of the auxiliary controller during the predetermined time period when the main controller is being reset by the reset means and appears to be functioning abnormally, to thereby prevent the device from being controlled in a continuously on manner during said predetermined time period.

5,184,301

AUTOMOTIVE VEHICLE MICROPROCESSOR CONTROL HAVING CLUTCH PRIORITY ENGINE SPEED CONTROL

Mark W. Stasell, Fort Wayne, Ind., assignor to Navistar International Transportation Corp., Chicago, Ill.

Filed Nov. 27, 1990, Ser. No. 618,755
Int. Cl.[5] B60K *41/02*
U.S. Cl. 364—431.07 **2 Claims**



1. In an automotive vehicle having a powertrain which comprises an internal combustion engine, a clutch, a manual transmission, and road-engaging wheels, said engine comprising a throttle and an output shaft, said clutch serving to couple said engine output shaft with said transmission input shaft, said powertrain comprising means coupling said transmission output shaft with at least some of said wheels, said vehicle comprising controls that are selectively operable by a driver of the vehicle comprising a clutch control comprising a clutch pedal disposed for operation by the driver for selectively engaging and disengaging the clutch and a throttle control comprising an accelerator pedal disposed for operation by the driver for selectively setting the throttle, said vehicle further comprising a microprocessor that is operatively coupled with said powertrain such that said microprocessor can act on information comprising throttle setting, vehicle road speed, engine output

VOL 1147 ISS 1 FEB 2 1993 UMI

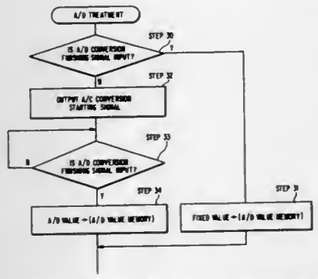
shaft speed, and transmission input shaft speed, and can distinguish between clutch engagement and disengagement, the improvement which comprises means, effective upon an attempt to launch the vehicle from standstill by the driver's operating the clutch control via said clutch pedal to cause the clutch to operate from disengagement toward engagement and also operating the throttle control via said accelerator pedal, to cause the throttle to occupy a setting that causes the engine output shaft to rotate at a certain speed programmed into the microprocessor and desired for minimizing powertrain wear and tear in consequence of clutch engagement at vehicle launch, to maintain said certain speed for said engine output shaft irrespective of how said throttle control is operated by the driver via said accelerator pedal until said transmission input shaft has been accelerated to a predetermined speed programmed into the microprocessor and indicating a proper launch, and to return the control of said throttle setting to the driver upon an occurrence of said proper launch.

5,184,302

ENGINE CONTROL APPARATUS INCLUDING A/D CONVERTER FAILURE DETECTION ELEMENT AND METHOD THEREFOR

Yasuhiko Ishida, and Katsuhiko Kondo, both of Himeji, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Jan. 30, 1991, Ser. No. 647,967
Claims priority, application Japan, Feb. 8, 1990, 2-30250
Int. Cl.[5] G05B *23/02;* **H03M** *1/10*
U.S. Cl. 364—431.11 **4 Claims**



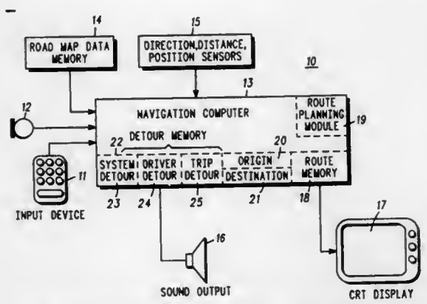
1. A method for operating a control apparatus for an engine having a plurality of controlled sections, said method comprising the steps of:
detecting at least one analog signal representative of operational condition of said engine;
converting said analog signal into a digital output;
detecting whether an abnormality occurs in said converting step;
when said abnormality does not occur, calculating a control quantity for said engine based on said digital output;
when said abnormality does occur, calculating said control quantity for said engine based on a previously determined fixed value in place of said digital output; and
actuating at least one of said controlled sections of said engine in accordance with said control quantity;
wherein said detecting step further comprises the step of examining, at the beginning of each operation, whether an A/D conversion finishing signal is present so as to permit, when said finishing signal is present, a determination of occurrence of said abnormality during said converting step.

5,184,303

VEHICLE ROUTE PLANNING SYSTEM

Laura J. Link, Hanover Park, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 28, 1991, Ser. No. 662,674
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—449 **28 Claims**



21. A vehicle route planning system comprising:
map memory means for storing fixed road path data corresponding to fixed roadways available for vehicle travel;
detour means for having a system user designate, via stored detour data, which of said road path data should be excluded in calculating a desired route between vehicle start and destination locations;
route planning means coupled to said map memory means and detour means for utilizing said fixed road path data, exclusive of the road path data corresponding to said detour data, to calculate route data defining a desired route, via said fixed roadways, for vehicle travel between said vehicle start and destination locations, and
means for providing route information to said system user based on said calculated route data,
wherein the improvement comprises said detour means comprising driver detour means for having a user designate at least some of said detour data as driver detour data associated with an ID code identifying a vehicle driver and wherein said route planning means excludes road path data corresponding to said driver detour data for all desired routes to be calculated between any start and designation locations for a vehicle driver identified to said system as having an ID code corresponding to the ID code associated with said driver detour data.

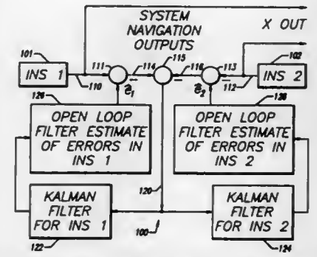
26. A vehicle route planning system comprising:
map memory means for storing fixed road path data corresponding to fixed roadways available for vehicle travel;
route planning means coupled to said map memory means for utilizing said fixed road path data to calculate route data defining a desired route, via said fixed roadways, for vehicle travel between vehicle start and destination locations, and
means for providing route information to a system user based on said calculated route data,
wherein the improvement comprises driver memory means for having a user designate and store some data as driver route calculation data associated with an ID code identifying a vehicle driver and wherein said route planning means recalls and utilizes said stored driver route calculation data for calculating routes for a vehicle driver identified to said system as having an ID code corresponding to the ID code associated with said driver route calculation data.

5,184,304

FAULT-TOLERANT INERTIAL NAVIGATION SYSTEM

James R. Hnddle, Chatsworth, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Apr. 26, 1991, Ser. No. 692,348
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—453 **8 Claims**



1. A fault-tolerant inertial navigation system, comprising:
only two independent inertial navigation units, each of said inertial navigation units performing navigational functions, and each of said inertial navigation units comprising a plurality of single degree of freedom navigational instruments, none of which produce redundant measurements, including at least three linear force sensors and three angular change sensors, any two of said linear sensors and any two of said angular change sensors of either unit aligned other than co-linear; and, all three of said linear sensors, and all three of said angular change sensors positioned in different planes;
each of said inertial navigation units producing a set of independently derived navigational solutions at each of their respective outputs, said independently derived navigational solutions providing estimates of error parameters indicative of the performance of each sensor in each of said navigation units;
means for comparing said independent navigational solutions of each of said navigation units and detecting any significantly degraded performance of either of said navigation units, by contrasting said estimates of error parameters of each instrument in one navigation unit with the estimates of error parameters in the other navigation unit:
whereby, one of said navigation units indicating such degraded performance, is isolated and identified as to being faulty.

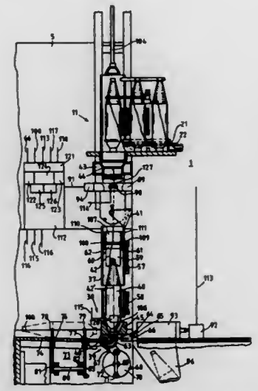
5,184,305

METHOD AND APPARATUS FOR OPERATING AN AUTOMATIC TEXTILE MACHINE

Reinhard Gronenberg, Mönchengladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst AG & Co., Mönchengladbach, Fed. Rep. of Germany

Filed Dec. 3, 1990, Ser. No. 621,627
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1989, 3939789
Int. Cl.[5] G06F *15/46;* **D01H** *13/14;* **B65H** *67/06*
U.S. Cl. 364—470 **22 Claims**

1. Method for operating a textile machine that operates automatically according to an operating program, which comprises:
subdividing a course of operation into individual operating steps;
monitoring at least one of the operating steps with at least one sensor for detecting at least one of presence of an article, absence of an article, movement past the sensor of an article connected to the textile machine, success of an operation and failure of an operation; and
tripping an automatic intervention into the course of operation as a function of the outcome of the monitoring step;
automatically monitoring a functional capability of the sensor; and



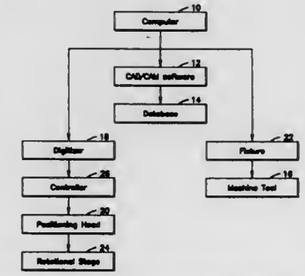
automatically switching over from the operating program to a prepared substitute program no longer requiring the sensor for continued operation of the textile machine after failure of the sensor.

5,184,306

AUTOMATED HIGH-PRECISION FABRICATION OF OBJECTS OF COMPLEX AND UNIQUE GEOMETRY

Arthur G. Erdman, New Brighton; Elizabeth D. Rekow, Fridley; Donald R. Riley, Edina; Barney Klamecki, Minneapolis; Yang Zhu, St. Paul, all of Minn., and Jeong-Ho Ahn, Seoul, Rep. of Korea, assignors to Regents of the University of Minnesota, Minneapolis, Minn.

Continuation of Ser. No. 365,140, Jun. 9, 1989, Pat. No. 5,128,870. This application Dec. 20, 1991, Ser. No. 812,588
Int. Cl.[5] G06F *15/46, 15/60*
U.S. Cl. 364—474.05 **52 Claims**

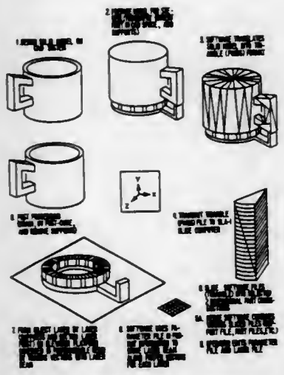


1. A method of machining a reproduction of a 3-dimensional object such that the reproduction substantially duplicates all surfaces of said object, comprising:
(a) retrieving at least one generic form of said object from a computer, said generic form comprised of at least one set of coordinates residing on a plurality of scan lines;
(b) using a computer, automatically identifying feature coordinates in said set of coordinates to emphasize features on said generic form;
(c) generating a plurality of parametric curves extending through said feature coordinates;
(d) generating a parting line through said scan lines to divide said generic form into a plurality of regions to avoid undercuts and associated interferences during machining;

VOL 1147 ISS 1 FEB 2 1993 UMI

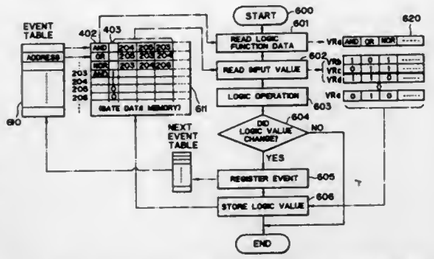
(e) generating a plurality of contour lines between coordinates on adjacent said scan lines, said coordinates including said feature coordinates;
(f) fixturing a material to be shaped into the reproduction of said object such that said material may be machined; and
(g) transmitting a plurality of tool paths computed from said contour lines from the computer to a machine tool such that said machine tool is directed to machine the reproduction of said object.

5,184,307
METHOD AND APPARATUS FOR PRODUCTION OF HIGH RESOLUTION THREE-DIMENSIONAL OBJECTS BY STEREOLITHOGRAPHY
Charles W. Hull, Santa Clarita; Stuart T. Spence, So. Pasadena; David J. Albert, Aptos; Dennis R. Smalley, Baldwin Park; Richard A. Harlow, Marina Del Rey; Phil Stinebangh, Sunnyvale; Harry L. Tarnoff, Van Nuys; Hop D. Nguyen, Little Rock; Charles W. Lewis, Van Nuys; Tom J. Vorgitch, Simi Valley, and David Z. Remba, Studio City, all of Calif., assignors to 3D Systems, Inc., Valencia, Calif.
Continuation-in-part of Ser. No. 269,801, Nov. 8, 1988, which is a continuation-in-part of Ser. No. 182,830, Apr. 18, 1988, Pat. No. 5,059,359. This application Mar. 31, 1989, Ser. No. 331,644
Int. Cl.[5] G06F *15/46;* **B29C** *35/08, 67/00*
U.S. Cl. 364—474.24 **81 Claims**



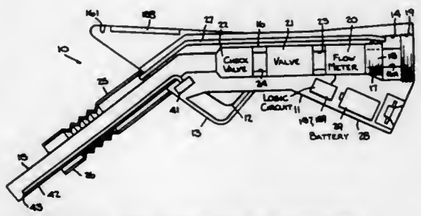
1. A system for producing a three-dimensional object comprising:
means for deriving data descriptive of cross-sections of the object from data descriptive of the object, including at least some skin data descriptive of at least part of at least one cross-section;
a container containing at least in part material capable of selective physical transformation upon exposure to the synergistic stimulation;
means for successively providing layers of said material;
means for selectively exposing said layers of said material to said synergistic stimulation in accordance with said data descriptive of said cross-sections of said object to form successive object cross-sections; and
control means for obtaining said cross-sectional descriptive data from said deriving means, and utilizing said data to control said means for successively providing said layers, and said means for selectively exposing said layers, to produce said three-dimensional object comprising said successively formed cross-sections.

5,184,308
FAULT SIMULATION METHOD
Masahiko Nagai, Kanagawa; Hiroo Watai, Hadano; Takaharu Nagumo, Kokubunji, and Kaoru Moriwaki, Hadano, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 1, 1990, Ser. No. 591,148
Claims priority, application Japan, Oct. 2, 1989, 1-257236
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—489 **8 Claims**



1. A fault simulation method for detecting a fault in a logic circuit comprising one or more logic gates having pins for data input and data output and functioning as an object of fault simulation, on the basis of logic simulation to be implemented by injecting a fault logic value into a position of fault assumption in the logic circuit, comprising the steps of:
performing logical modification of the logic circuit into a logic circuit configuration including logic gates of a predetermined basic gate form;
forming pin management data for the logic gates of the logic circuit after the logical modification which indicates correspondence of pins of the modified logic circuit to the position of fault assumption of each of the pins prior to the logical modification;
injecting the fault logic value into the position of fault assumption of pins of the gate of the logic circuit subsequent to the logic modification in a position corresponding to each of the pins prior to the logic modification based on the pin management data; and
executing fault simulation using the logic circuit into which the fault logic value is injected.

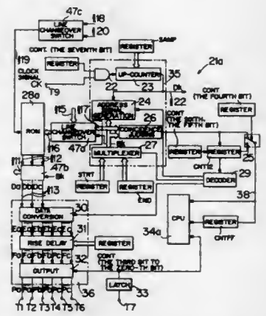
5,184,309
FLUID DISPENSING NOZZLE INCLUDING IN LINE FLOW METER AND DATA PROCESSING UNIT
W. Dwain Simpson, Wilton, and James H. Pyle, Weston, both of Conn., assignors to Saber Equipment Corp., Stratford, Conn.
Filed Mar. 20, 1990, Ser. No. 496,219
Int. Cl.[5] B67D *5/22*
U.S. Cl. 364—510 **12 Claims**



1. A nozzle to dispense a fluid, which comprises:
a handle element;
a modular housing within said handle element, said modular housing being slidably removable from said handle element, said modular housing including:

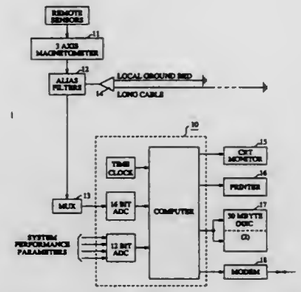
a fluid flow passage extending therethrough, and
a controllable flow control valve arranged in said fluid flow passage for control of fluid therethrough;
a flow meter arranged to measure a flow of fluid through said fluid flow passage;
an electronic data processing unit mounted in said handle element;
said electronic data processing unit including a data input port coupled to said flow meter for input of data indicative of fluid flow through said nozzle, wherein when said modular housing is slidably removed from said handle element, each of said flow control valve, said fluid flow meter, and said fluid flow passage remain with said modular housing and said electronic data processing unit remains with said handle element.

5,184,310
SIGNAL GENERATION CIRCUIT
Norio Takenouchi, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 30, 1990, Ser. No. 501,857
Claims priority, application Japan, Mar. 31, 1989, 1-82411; Mar. 1, 1990, 2-51363
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—550 **10 Claims**



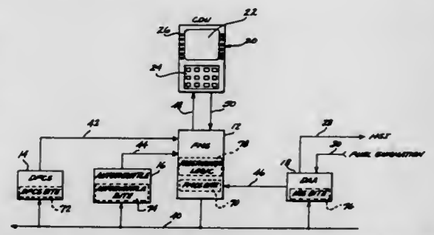
10. A signal generation circuit comprising:
random access memory for storing a rotational speed of a motor set by an external controller;
read only memory for storing an operational program and waveform data;
central processing means for addressing the operational program stored in said read only memory;
waveform generating means for addressing and processing waveform data in accordance with the operational program to generate a compressor control signal used to control a motor such that its rotational speed matches the rotational speed stored in said random access memory; and
line changeover means for operatively connecting said random access memory and said read only memory to said central processing means when the operational program is to read from said read only memory and for operatively connecting said random access memory and said read only memory to said waveform generating means when waveform data is to be read from said read only memory.

5,184,311
METHOD OF OPERATING AN INSTALLATION THAT COMPRISES ONE OR MORE LONG ELECTRICAL CONDUCTORS
Joseph S. Kraus, Stirling; Louis J. Lanzerotti, Morristown, and Lester V. Medford, Murray Hill, all of N.J., assignors to AT& Bell Laboratories, Murray Hill, N.J.
Filed Jun. 19, 1990, Ser. No. 540,434
Int. Cl.[5] G01V *3/08*
U.S. Cl. 364—554.01 **9 Claims**



1. Method of operating an installation, the installation comprising one or more long electrical conductors extending over a geographic region; and means, connected to the conductor or conductors, for causing the flow of electric current in said one or more of the conductors; said method comprising:
a) obtaining data comprising substantially real-time data representative of the time derivative of Earth's magnetic field at or near Earth's surface at a multiplicity of locations including one or more locations within the geographic region, said derivative to be designated dB/dt;
b) comparing all or part of said data, or of quantities derived from said data, to pre-determined critical values; and
c) if indicated by the result of the comparison of b), changing the operating conditions of the installation such that the installation is less vulnerable to the effects of geomagnetically induced currents.

5,184,312
DISTRIBUTED BUILT-IN TEST EQUIPMENT SYSTEM FOR DIGITAL AVIONICS
Gordon F. Ellis, Woodinville, Wash., assignor to The Boeing Company, Seattle, Wash.
Continuation of Ser. No. 793,586, Oct. 13, 1985, abandoned. This application Apr. 26, 1991, Ser. No. 692,781
Int. Cl.[5] G06F *11/00*
U.S. Cl. 364—551.01 **15 Claims**



1. A digital avionics system designed for installation in an aircraft as an integral part thereof, the system comprising:
a plurality of line replaceable units (LRUs), each designed to transmit an output signal containing information from which faulty operation of said each LRU may be detected;

VOL 1147 ISS 1 FEB 2 1993 UMI

a distributed computer system, designed for installation in an aircraft as an integral part thereof, coupled to said plurality of LRUs, for receiving said output signals provided by said plurality of LRUs, said computer system comprising a built-in test equipment (BITE) program (a) for performing diagnostic operations using said information in said output signals so as to isolate faulty ones of said plurality of LRUs and (b) for performing test operations after faulty LRUs have been replaced to verify replacement LRUs function properly, said BITE program comprising an interactive, natural language interface for facilitating operation of said BITE program by a user thereof; and

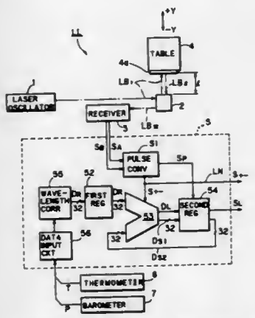
control/display means, designed for installation in the cockpit of the aircraft, coupled to said distributed computer system, for permitting a user of the avionics system to communicate therewith, and for permitting a maintenance technician to operate said BITE program using said interactive, natural language interface.

5,184,313

CONVERSION DEVICE FOR LASER INTERFEROMETIC MEASURING APPARATUS

Akira Kuwabara, and Yasufumi Koyama, both of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co., Ltd., Japan

Filed May 31, 1990, Ser. No. 531,040
Claims priority, application Japan, May 31, 1989, 1-140100
Int. Cl.[5] G01B *11/14*
U.S. Cl. 364—561 **9 Claims**



1. Distance measuring apparatus including a laser interferometic measuring device and a conversion device;

said laser interferometic measuring device generating out of phase first and second pulses each time a distance being measured changes by a reference distance λ/N, where λ is a wavelength of a laser beam employed in said laser interferometic measuring device and N is a positive integer;

said conversion device receiving said pulses and generating an output signal representing the distance measured by said apparatus, said conversion device comprising:

(a) first register means for holding a conversion coefficient representing said reference distance in the form of digital data having M-digits, where M is a positive integer and a unit distance in said measuring system of units corresponds to a unit number in an (M+1)-th digit from a least significant digit in said digital data;

(b) means for converting said first and second pulses into a timing pulse which is generated every time said distance being measured is changed by said reference distance;

(c) an arithmetic calculator means for receiving a predetermined initial value and for adding said conversion coefficient to said initial value every time said timing pulse is generated, said arithmetic calculator means being operable to generate a carry signal every time a result of calculation exceeds a full range of M-digits; and

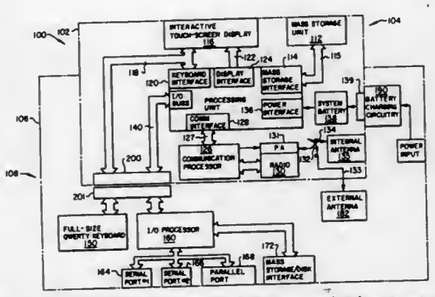
(d) means for generating said distance signal every time said carry signal is generated.

5,184,314

MOBILE DATA PROCESSING AND COMMUNCATIONS SYSTEM WITH REMOVABLE PORTABLE COMPUTER

Edward J. Kelly, 3317 Skyview, Lynchburg, Va. 24501, and Joseph P. Howard, 25 Cedar Dr., Lebanon, Oreg. 97355

Filed Jul. 31, 1991, Ser. No. 738,559
Int. Cl.[5] G06F *1/00*
U.S. Cl. 364—709.01 **10 Claims**



1. A mobile data processing and communications system comprising:

a hand-held portable computer having a touch-screen interactive display, a microprocessor and a communications processor, the portable computer having a first mode of operation wherein data is entered through, and displayed on the touch-screen interactive display, said portable computer further including a means coupled to the communications processor for transmitting data by RF transmission to a central computer;

a keyboard converter having a full size Qwerty keyboard, an input/output processor, a means for transmitting data by RF transmission and a cradle for receiving the hand-held portable computer; and

means for interfacing the hand-held portable computer with the keyboard converter when the keyboard converter cradle receives the portable computer, the portable computer having a second mode of operation wherein data may be input to the portable computer through the Qwerty keyboard and displayed on the touch-screen interactive display of the portable computer, said means for interfacing including means to enable transmission of data to the central computer from the means for transmitting of the keyboard converter when the keyboard converter cradle receives the portable computer.

5,184,315

COMPREHENSIVE COMPUTER DATA AND CONTROL ENTRIES FROM VERY FEW KEYS OPERABLE IN A FAST TOUCH TYPING MODE

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Continuation of Ser. No. 678,543, Apr. 16, 1991, abandoned, which is a continuation of Ser. No. 597,034, Sep. 20, 1990, Pat. No. 5,062,070, which is a continuation of Ser. No. 395,216, Aug. 17, 1989, abandoned, which is a continuation-in-part of Ser. No. 729,559, May 2, 1985, abandoned, and a continuation-in-part of Ser. No. 787,633, Oct. 15, 1985. This application May 5, 1992, Ser. No. 879,128
Int. Cl.[5] G06F *3/023*
U.S. Cl. 364—709.16 **2 Claims**

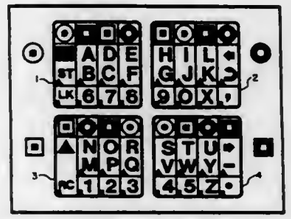
1. A four key alphanumeric keyboard entry system providing for forty eight entries, comprising in combination:

four keys;

a graphic key chart on each key showing symbolically twelve entry command choices available for each key including for the set of four keys entry choices for twenty six alphabetic characters and ten decimal digits, said entry command choices being arranged in a pattern of three rows and four columns, and three further sets of indicia markers on each key with sets respectively identifying the four columns and two of the three rows of keys, the four column markers respectively identifying each of the four keys;

a computer for executing the entry command choices;

keyboard entry means for providing entry command signals responsive to the entry choices shown on the four keys for a two-stroke-per-entry mode accommodating the forty eight command entry choices, including the indicia markers, said two strokes being identified by a first stroke entry choice of a key upon which the desired symbol is found



and the second stroke entry being identified by a column marker for the column in which the desired symbol is located;

mode selection means for establishing three modes for respectively processing entries identified on the three respective rows of entry choices, a first default mode for providing entry signals from the row not marked by the indicia markers and two further modes respectively for providing entry signals from the two rows identified by indicia markers when selected by a preceding entry choice of the indicia marker for designing the respective row, thereby implementing a four-stroke-per-entry selection mode for command entries in the two rows with indicia markers; and

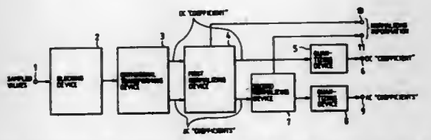
keyboard assignment means for assigning to the row not marked by indicia markers for direct two-stroke-per-entry selection mode, those entry choices and symbols more frequently encountered in operation.

5,184,316

SYSTEM FOR VERY EFFICIENTLY CODING BY PERFORMING INTERBLOCK AND INTRABLOCK NORMALIZATION

Kenji Sugiyama, Noda, Japan, assignor to Victor Company of Japan, Ltd., Japan

Filed Sep. 14, 1989, Ser. No. 407,165
Claims priority, application Japan, Sep. 16, 1988, 63-233307
Int. Cl.[5] G06F *7/00, 15/00*
U.S. Cl. 364—715.02 **11 Claims**



1. A highly efficient coding system for converting electrical input digital image signals to efficiently coded electrical output signals, comprising:

a blocking means for dividing electrical input digital image signals representing sampled values into a plurality of blocks and outputting first electrical output signals representing the plurality of blocks;

an orthogonal transformation means for receiving the first electrical output signals of said blocking means corresponding to the blocks and for generating an electrical mean component signal representing a mean component of a result of an orthogonal transformation of the first electrical output signals and an electrical variation component signal representing a variation component of the result of the orthogonal transformation of the first electrical output signals;

a first normalizing means for receiving the electrical mean component signal and the electrical variation component signal and for generating second electrical output signals representing results of an interblock normalization of the electrical mean component signal and the variation component signal; and

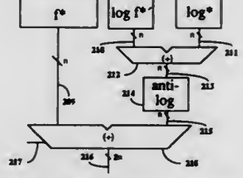
a second normalizing means for receiving the second electrical output signals and for generating third electrical output signals representing a result of a normalization of variation components of the second electrical output signals of said first normalizing means in each of the blocks.

5,184,317

METHOD AND APPARATUS FOR GENERATING MATHEMATICAL FUNCTIONS

Lester C. Pickett, 178 Centre, Suite 21, Mountain View, Calif. 94041

Continuation of Ser. No. 366,376, Jun. 14, 1989, abandoned. This application Jan. 30, 1991, Ser. No. 623,238
Int. Cl.[5] G06F *15/32, 7/38*
U.S. Cl. 364—735 **35 Claims**



1. In an apparatus for generating an output signal which approximates a designated differentiable function of an input argument signal, said apparatus including:

means coupled to receive said input argument signal for partitioning between a most significant dominant portion and a next most significant adjunct portion;

means comprising random access memory coupled to receive said dominant portion for mapping into a primary function signal in accordance with a primary map comprising said designated function of said dominant portion;

means coupled to receive said dominant portion and said adjunct portion for mapping into a correction signal in accordance with a correction map; and

means coupled to receive said primary function signal and said correction signal for adding to produce said output signal;

an improvement wherein:

said primary map comprises said designated function of a primary combination comprising said dominant portion and a predetermined bias related to a maximum magnitude of said adjunct portion.

VOL 1147 ISS 1 FEB 2 1993 UMI

5,184,318

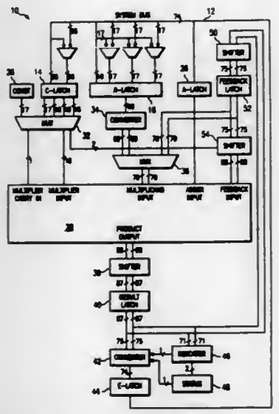
RECTANGULAR ARRAY SIGNED DIGIT MULTIPLIER

Willard S. Briggs, Carrollton, and David W. Matula, Dallas, both of Tex., assignors to Cyrix Corporation, Richardson, Tex.

Continuation of Ser. No. 402,798, Sep. 5, 1989. This application Dec. 24, 1991, Ser. No. 813,942

Int. Cl.[5] G06F *7/52*

U.S. Cl. 364—754 **6 Claims**



1. An arithmetic circuit, comprising:
a first register for storing a first operand;
a second register for storing a second operand;
a multiplier circuit having first and second inputs respectively coupled to said first and second registers, said multiplier circuit operable to generate and output a result comprising a product of said first and second operands in signed digit format, said product always being exact;
a data path coupling said output of said multiplier to said second input of said multiplier; and
a multiplexer circuit disposed in said data path, said multiplexer having a first input coupled to said second register, a second input coupled to said output of said multiplier circuit and an output coupled to said second input of said multiplier circuit,
wherein said multiplexer circuit is operable to select one of said signed digit result and said second operand to be input into said multiplier circuit, and said multiplier circuit is operable to use said signed digit result as an operand of a multiplication operation without converting said signed digit result to a non-redundant format; and
a shifter circuit disposed in said data path between said output of said multiplier circuit and said second input of said multiplexer circuit, said shifter circuit operable to shift data in said data path left a number of bit positions substantially equal to the number of bit positions of said first operand.

5,184,319

FORCE FEEDBACK AND TEXTURES SIMULATING INTERFACE DEVICE

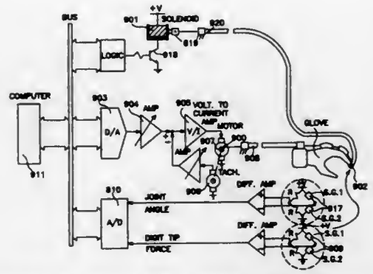
James F. Kramer, P.O. Box 5984, Stanford, Calif. 94309

Filed Feb. 2, 1990, Ser. No. 474,168

Int. Cl.[5] B25J *3/00*

U.S. Cl. 364—806 **24 Claims**

1. A device for producing a signal at a sensing body part simulating the interaction between an interactive entity and a virtual or physical object, said device comprising:
means for generating a force simulating the interaction between said interactive entity and said object; and
at least one of:
(a) means for applying said generated force between said sensing body part and a second body part which serves as a non-sensing part;
(b) means for applying said generated force to said sensing body part, said applying means comprising an entity displaced from said sensing body part in a first unactivated position and touching said sensing body part in a second activated position; and



(c) means for applying said generated force to produce a displacement of one or a plurality of texture elements, each element comprising an extendable and retractable pin or a focused fluid stream; and
(d) means for applying said generated force to a sensing body part by means of at least one elongated element guided by a housing along the surface of the body across a joint, which joint is to be affected as a result of said generated force applied to said element.

5,184,320

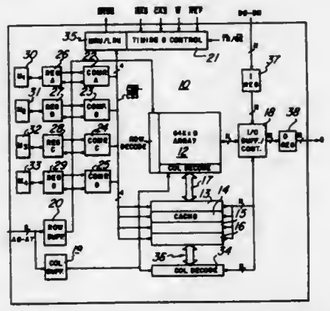
CACHED RANDOM ACCESS MEMORY DEVICE AND SYSTEM

Thomas A. Dye, Cedar Park, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 155,668, Feb. 12, 1988, abandoned. This application Feb. 21, 1990, Ser. No. 484,446

Int. Cl.[5] G11C *15/04*; G06F *12/00*

U.S. Cl. 365—49 **6 Claims**



1. An integrated circuit memory device having an on chip cache memory, comprising:
a memory array to store data, having memory cells operatively arranged in rows and columns, addressable through row address signals and column address signals;
a plurality of cache memory lines coupled to the memory array to store data, each cache memory line having its memory cells arranged in a row corresponding to a memory array row;
a circuit connected to the memory array and to the cache memory line that is responsive to the memory address signals to determine cache hits and cache misses, the circuit including;
a register, coupled to the memory array to store row address signals;
a comparator, coupled to the register and coupled to the plurality of cache memory lines, to determine cache hits and misses by comparing a received row address signal with a prior received row address signal stored in the register, a cache hit occurring when the received row address signal matches the stored row address signal, a cache miss occurring when the received row address signal does not match the stored row address signal; and
a status register connected to the register to show whether the stored data in a cache memory line differs from the stored data in the corresponding memory array row.

5,184,321

SEMICONDUCTOR MEMORY DEVICE COMPRISING A PLURALITY OF MEMORY ARRAYS WITH IMPROVED PERIPHERAL CIRCUIT LOCATION AND INTERCONNECTION ARRANGEMENT

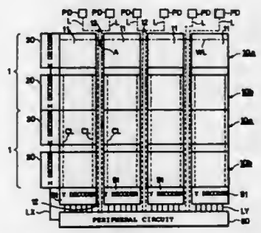
Yasuhiro Konishi; Masaki Kumanoya; Katsumi Dosaka; Takahiro Komatsu, and Yoshinori Inoue, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 437,874, Nov. 17, 1989, abandoned. This application Jan. 16, 1992, Ser. No. 821,875

Claims priority, application Japan, Dec. 6, 1988, 63-309242

Int. Cl.[5] G11C *5/06*

U.S. Cl. 365—51 **26 Claims**



1. A semiconductor memory device comprising:
a semiconductor chip;
a first memory means provided on said semiconductor chip and formed of a predetermined layers;
second memory means provided on said semiconductor chip and formed of predetermined layers;
driving circuit means comprising a peripheral circuit provided on said semiconductor chip for driving said first and second memory means, said first and second memory means being arranged in a common column on one and the other sides of said driving circuit means, respectively;
one ore more pads provided on said semiconductor chip for receiving externally applied signals and predetermined potentials, said driving circuit means and the pads are all arranged in said common column; and
interconnecting means, including interconnections formed of a layer other than said predetermined layers, for interconnecting said pads and said driving circuit mean; wherein
said interconnections are provided so as to cross one of said first and second memory means, whereby no additional chip area is required to form said interconnections,
said first memory means includes a first memory array,
said second memory means includes a second memory array,
each of said first and second memory arrays includes a plurality of memory cells arranged in a plurality of columns and in a plurality of rows, a plurality of word lines provided corresponding to said plurality of rows and each connected to the memory cells belonging to the corresponding row, and a plurality of bit lines provided corresponding to said plurality of columns and each connected to the memory cells belonging to the corresponding column,
each of said first and second memory arrays is divided with predetermined spacings into a plurality of blocks so as to divide each of said plurality of word lines at a plurality of points, and
said interconnections are provided so as to cross said first and second memory arrays in said predetermined spacing region between said plurality of blocks; and
further including a plurality of low resistance lines provided above said plurality of word lines in parallel thereto, each of said plurality of low resistance lines being connected to the corresponding word line at said plurality of points.

5,184,322

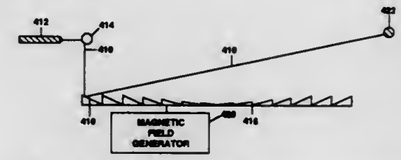
OPTICAL STORAGE DEVICE WITH A STATIONARY MASS STORAGE MEDIUM

Nathan Okun, 1735 Callas Ct., Oxnard, Calif. 93035, and John Engberg, 2855 Harbor Blvd., Ventura, Calif. 93001

Filed Jan. 29, 1990, Ser. No. 471,765

Int. Cl.[5] G11C *13/06, 13/04, 7/00*; G11B *13/00*

U.S. Cl. 365—122 **10 Claims**



1. A data storage device comprising:
a. a laser scanning device means for emitting a scanning laser beam,
b. a mass storage medium which remains stationary as data is transferred by said laser scanning means from said mass storage medium, and
c. a staring array receiver for receiving said data from said mass storage medium by said scanning laser beam,
d. wherein, said mass storage medium remains stationary while said data is located by said laser scanning means.

5,184,323

PHOTOREFRACTIVE DEVICE AND PROCESS FOR ITS USE

Jay S. Schildkraut; Ralph H. Young, both of Rochester; David J. Williams, Fairport, and Michael Scozzafava, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 491,398, Mar. 9, 1990, Pat. No. 4,999,809. This application Jul. 5, 1990, Ser. No. 548,403

The portion of the term of this patent subsequent to Mar. 12, 2008, has been disclaimed.

Int. Cl.[5] G11C *13/04, 11/42*

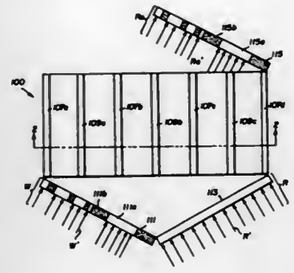
U.S. Cl. 365—124 **11 Claims**

1. An imaging array consisting of a plurality of photorefractive devices connected electrically in parallel, each said photorefractive device being comprised of:
first and second electrical biasing means for establishing a potential gradient between first and second spaced locations and, interposed between said first and second electrical biasing means;

VOL 1147 ISS 1 FE 2 1993 UMI

intermediate means capable of optically coupling two spatially intersecting beams of electromagnetic radiation when a potential gradient is applied to said intermediate means by said first and second electrical biasing means; and

characterized in that said intermediate means consists of a photorefractive medium comprised of a homogeneous



charge neutral organic photoconductor containing organic noncentrosymmetric molecular dipoles capable of imparting to said photorefractive medium a second order polarization susceptibility of greater than 10^{-9} esu, said molecular dipoles each containing an electron donor moiety linked through a conjugated π bonding system to an electron acceptor moiety.

5,184,324

DYNAMIC SEMICONDUCTOR MULTI-VALUE MEMORY DEVICE

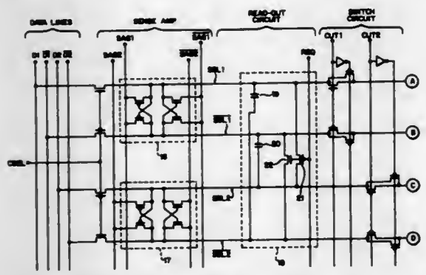
Yoshiji Obta, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Japan

Filed Jul. 5, 1991, Ser. No. 727,233

Claims priority, application Japan, Dec. 20, 1990, 2-403964

Int. Cl.[5] G11C *5/10*

U.S. Cl. 365—149 **4 Claims**



1. In a dynamic semiconductor memory device comprising: memory cells each for storing multi-value data; and a plurality of bit line pairs of first and second bit lines, said first and second bit lines being complementary to each other, said memory device further comprises:

first capacitor means connected between the first bit line of one of said bit line pairs and the second bit line of another one of said bit line pairs, said other one bit line pair being adjacent to said one bit line pair; and

second capacitor means connected between the second bit line of said one bit line pair and the first bit line of said other one bit line pair.

5,184,325

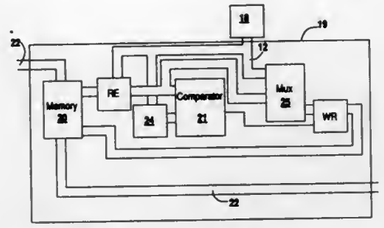
DYNAMIC ASSOCIATIVE MEMORY WITH LOGIC-IN-REFRESH

G. Jack Lipovski, Austin, Tex., assignor to Board of Regents, The University of Texas System, Tex.

Continuation-in-part of Ser. No. 321,847, Mar. 10, 1989, Pat. No. 4,989,180. This application Sep. 5, 1990, Ser. No. 577,991

Int. Cl.[5] G11C *11/406, 11/402, 15/00*

U.S. Cl. 365—189.07 **14 Claims**



1. A data storage device comprising:

dynamic data storage means, integrated on a single semiconductor chip, for storing a plurality of multiple bit data words in addressable predetermined multiple bit word storage locations, said multiple bit word storage locations requiring refreshing in order to retain data;

addressing circuit means integrated on said single chip for periodically addressing each of said data bit storage locations;

refresh circuit means, integrated on said single chip and randomly connectable by said addressing circuit means to each of said multiple bit word storage locations, for periodically refreshing each of said multiple bit words in said adjacent storage locations; and

logic means, including data comparator means integrated on said single chip and connected to said refresh circuit means, for comparing each bit of a predetermined comparand with each corresponding bit of each said data word stored in said predetermined word storage locations, whereby each data word bit addressed by said addressing circuit means can be searched, and for providing an indication of a match between said bits of said comparand and the corresponding bits of at least one of said data words.

5,184,326

INTEGRATED SEMICONDUCTOR MEMORY OF THE DRAM TYPE AND METHOD FOR TESTING THE SAME

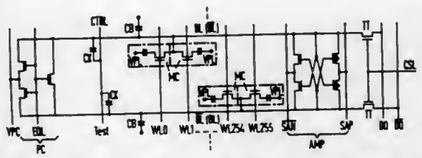
Kurt Hoffmann, Taufkirchen; Rainer Kraus, München, and Oskar Kowarik, Grafing, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 15, 1990, Ser. No. 494,122

Claims priority, application European Pat. Off., Mar. 16, 1989, 89104715.1

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—201 **28 Claims**



1. Integrated semiconductor memory of the DRAM type, comprising word lines, bit line pairs, memory cells in a matrix being connected to said word lines and said bit lines, a plurality of sense amplifiers, each sense amplifier being connected to a

respective bit line pair, each of said bit line pairs being divided into one bit line and one reference bit line, a control line, at least one first coupling capacitor for each of said bit lines, and at least one second coupling capacitor for each of said reference bit lines, each of said coupling capacitors having a first lead connected to a respective line of said bit line pairs and a second lead connected to said control line, means for applying a fixed potential to said control line when operating said semiconductor memory in a normal operating mode, and means for applying via said first and second coupling capacitor a test signal to said bit line pairs when operating said semiconductor memory in a test operating mode.

5,184,327

SEMICONDUCTOR MEMORY DEVICE HAVING ON-CHIP TEST CIRCUIT AND METHOD FOR TESTING THE SAME

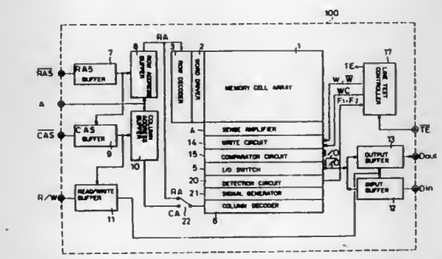
Yoshio Matsuda; Kazutami Arimoto; Tsukasa Ooishi; Masaki Tsukude, and Kazuyasu Fujishima, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 532,338, Jun. 5, 1990. This application Jul. 9, 1991, Ser. No. 727,218

Claims priority, application Japan, Jun. 14, 1989, 1-152653

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—201 **9 Claims**



1. A method for testing a semiconductor memory device comprising a plurality of word lines, a plurality of bit lines arranged for intersecting said word lines, a plurality of memory cells arranged at points of intersection of said word lines and said bit lines, a plurality of detection means, and an output line, said method comprising the steps of

sequentially selecting said word lines,

detecting a possible failure of said memory cells connected to the selected word line by said detection means,

applying detection results by said detection means to junction points of said output line,

sequentially selecting portions between predetermined ones of said junction points of said output line in correspondence with word line selection and dividing said output line into at least two parts at the selected portion, and

monitoring detection results applied to the respective divided parts of said output line and finding out a portion at which a detection result is changed in each divided part of said output line.

5,184,328

UNDERWATER RELEASE MECHANISM

Alex Dumestre, III, Covington, La., assignor to Navigation Technology Corporation, Covington, La.

Filed Mar. 4, 1992, Ser. No. 846,005

Int. Cl.[5] H04B *1/59;* **B63B** *22/06, 22/26*

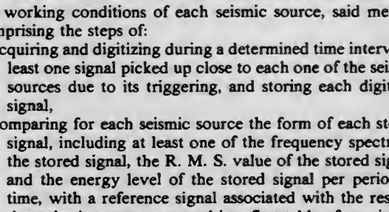
U.S. Cl. 367—4 **18 Claims**

1. An underwater acoustic release mechanism for use in high hydro-static pressures, comprising:

a) a housing;

b) a spool section of the housing for carrying a length of rope for extension between the sea surface area and an underwater location;

c) a release module carried by the housing and including a connector that can engage an end portion of the rope so that it will not unwind from the spool section;



d) means for releasing the connector from engagement with the rope and comprising in part a meltable substance that can expand upon melting; and

e) linkage means for translating an expansion of the meltable substance into movement of the connector.

5,184,329

METHOD AND DEVICE FOR OPTIMIZING THE TRIGGERING OF AN ARRAY OF MARINE SEISMIC SOURCES

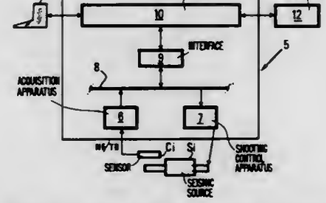
Alain Regnault, Antony; Jacques Cretin, le Chesnay, and Pascal Froidevaux, Paris, all of France, assignors to Institut Francais de Petrole, Rueil-Malmaison and Compagnie Generale de Geophysique, Massy, both of, France

Filed Jun. 28, 1991, Ser. No. 723,391

Claims priority, application France, Jun. 29, 1990, 90 08267

Int. Cl.[5] G01V *1/38;* **H04R** *1/02*

U.S. Cl. 367—23 **9 Claims**



1. A method of optimizing the triggering of each seismic source within an array of marine seismic sources being towed in immersion by a ship and under control of a shooting control system to manage the triggering times of the seismic sources in order to obtain determined phase shifts between the impulses respectively emitted by the different seismic sources while updating the triggering time shifts to be applied to the different seismic sources to take into account the alteration over time of the working conditions of each seismic source, said method comprising the steps of:

acquiring and digitizing during a determined time interval at least one signal picked up close to each one of the seismic sources due to its triggering, and storing each digitized signal,

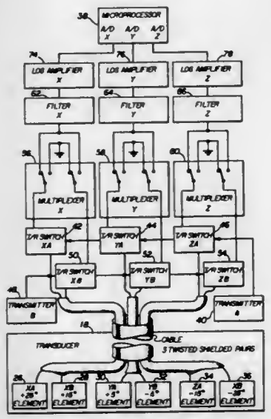
comparing for each seismic source the form of each stored signal, including at least one of the frequency spectra of the stored signal, the R. M. S. value of the stored signal, and the energy level of the stored signal per period of time, with a reference signal associated with the respective seismic source as stored in a first table of previously acquired data relating to the seismic sources, to ascertain whether said seismic source has worked properly,

validating the stored signals of those seismic sources ascertained to have worked properly;

VOL 1147 ISS 1 FE 2 1993 UMI

updating the reference signals stored in the first table by incorporating the validated signals therein;
determining the optimum triggering times of the different seismic sources in accordance with the updated reference signals; and
triggering the different seismic sources at the determined optimum triggering times.

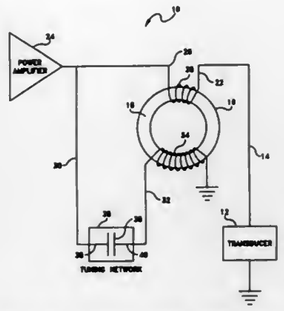
5,184,330
MULTI-BEAM SONAR FISH DETECTION APPARATUS PROVIDING REAL-TIME THREE-DIMENSIONAL WIRE-FRAME DISPLAY REPRESENTATION
James W. Adams, Eufaula; Louis S. Loving, Clayton; David A. Betts, Eufaula; David P. Donnelly, Eufaula, and Alvin Nunley, III, Eufaula, all of Ala., assignors to Techsonic Industries, Inc., Lake Eufaula, Ala.
Filed Jun. 25, 1991, Ser. No. 720,644
Int. Cl.[5] G01S *15/96*
U.S. Cl. 367—111 **7 Claims**



1. A sonar depth sounder apparatus comprising:
a transducer with at least two elements, which produce a series of sonar signals, wherein the elements emit sonar signals toward the bottom surface of a body of water;
at least two receivers capable of receiving returned sonar signals which have been reflected back toward the transducer elements by the bottom surface of the body of water;
a microprocessor for analyzing the returned sonar signals and generating information regarding the contour of the bottom surface of the body of water; and
a visual display for displaying the information regarding the contour of the bottom surface of the body of water, wherein said display is capable of depicting a plurality of different three-dimensional views of the bottom surface of the body of water.

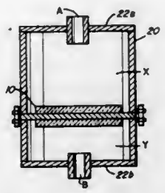
5,184,331
TRANSDUCER CIRCUIT FOR REMOVING REACTIVE COMPONENT OF TRANSDUCER SIGNAL
Michael J. Sullivan, Oakdale, and Douglas G. Dussault, East Lyme, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Jun. 1, 1992, Ser. No. 891,120
Int. Cl.[5] H04B *1/06*
U.S. Cl. 367—135 **6 Claims**

1. A transducer circuit comprising:
an acoustic transducer having an output lead carrying an alternating current signal having a substantial reactive component that varies with frequency;
an inductor having a core with a primary winding, one end of which is connected to the said output lead;
a power amplifier to which the other end of the inductor winding is connected;



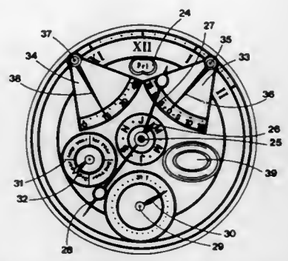
a control circuit having an input lead that is connected to the said other end of the primary winding; and
a secondary winding on the inductor core to which the control circuit output lead is connected, which winding operates in bucking relationship to the primary winding, so that the power amplifier is tuned to the transducer over a wide range of frequencies.

5,184,332
MULTIPORT UNDERWATER SOUND TRANSDUCER
John L. Butler, Marshfield, Mass., assignor to Image Acoustics, Inc., Cohasset, Mass.
Filed Dec. 6, 1990, Ser. No. 623,342
Int. Cl.[5] H04R *17/00*
U.S. Cl. 367—162 **57 Claims**



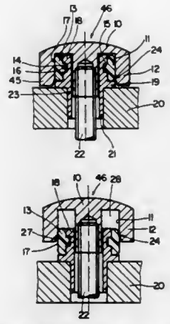
1. An underwater sound transducer comprising;
a hollow closed housing enclosing a volume including at least two resonant chambers,
a vibrating member having a first surface and a second surface,
said vibrating member being disposed within said housing and at least partially defining said resonant chambers with said first surface of said vibrating member facing said first resonant chamber and said second surface of said vibrating member facing said second resonant chamber,
first and second resonating means for respectively coupling said first and second resonant chambers to the area outside of said housing,
said first and second resonating means set to resonate at slightly different frequencies and producing an additive output at frequencies between said slightly different frequencies,
in combination with a liquid environment in which the resonating means operate to direct acoustic signals into the liquid.

5,184,333
CLOCK MOVEMENT
Michel Caspar, Le Sentier, Switzerland, assignor to Montres Breguet S.A., Le Brassus, Switzerland
Filed Mar. 31, 1992, Ser. No. 860,978
Claims priority, application Switzerland, Apr. 17, 1991, 1151/91
Int. Cl.[5] G04B *19/24*
U.S. Cl. 368—28 **6 Claims**
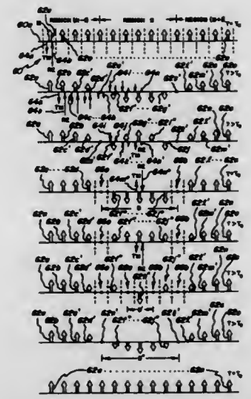


1. A clock movement comprising a first perpetual calendar mechanism and a second equation-of-time mechanism, said movement further comprising a third mechanism including means, cooperating with said perpetual calendar mechanism and said equation-of-time mechanism, for perpetually displaying the difference between the civil time, displayed by the first mechanism, and the true time.

5,184,334
SEALED CONTROL ARRANGEMENT FOR A TIMEPIECE
Alfred Vollert, La Chaux-de-Fonds, Switzerland, assignor to Fabrique Ebel SA, La Chaux-de-Fonds, Switzerland
Filed Nov. 26, 1990, Ser. No. 617,647
Claims priority, application France, Nov. 27, 1989, 89 15690
Int. Cl.[5] G04B *29/00*
U.S. Cl. 368—319 **8 Claims**



1. A sealed control arrangement for a timepiece, said sealed control arrangement being lodged in a case and including a crown rotatable about a tube projecting from said case, a stem extending into said tube, said stem being movable between at least two axial positions including a neutral pushed-in position and an active drawn-out position, said crown comprising a head integrally formed with a central cylindrical portion that is fastened to said stem, said head being integrally formed with a lateral skirt concentric with said central cylindrical portion and outwardly spaced therefrom so as to form an annular housing between said central cylindrical portion and an internal wall of said skirt, said internal wall exhibiting a cylindrical wall surface having a constant diameter over its entire height, said annular housing being shaped to receive said tube; a packing in the form of an annular bandage compressed between said tube and said internal wall, said packing having an external portion shaped such that a lower edge of said internal wall of said skirt is always in contact with said external portion of said packing regardless of the axial position of said stem, said tube having an annular groove and said packing having an annular projection on an internal portion thereof which penetrates into said annular groove to prevent movement of said packing relative to said tube as said stem is moved.

5,184,335
METHOD AND SYSTEM FOR ERASING PREVIOUSLY RECORDED DOMAINS IN A MAGNETO-OPTIC RECORDING MEDIUM
Mark H. Kryder, Allegheny, and Han-Ping D. Shieh, Pittsburgh, both of Pa., assignors to Movid Information Technology, Inc., Schenectady, N.Y.
Continuation of Ser. No. 279,255, Nov. 28, 1988, abandoned, which is a continuation-in-part of Ser. No. 33,931, Apr. 4, 1987, abandoned, which is a continuation of Ser. No. 837,130, Mar. 19, 1986, abandoned. This application May 10, 1991, Ser. No. 700,882
Int. Cl.[5] G11B *13/04, 11/10, 11/12*
U.S. Cl. 369—13 **31 Claims**



1. A method of selectively modifying information stored in a small region of a recording medium in a magneto-optic disk comprising the steps of:
providing a thin-film layer of ferrimagnetic material as said recording medium having a compensation temperature a few tens of degrees centigrade above room temperature;
creating said small region in said recording medium surrounded by a magnetic domain wall, said small region having a direction of magnetization opposite to the direction of magnetization in the region immediately outside said magnetic domain wall;
associating the information with an existing direction of net magnetization of said small region at ambient temperature; and
irradiating said small region with a beam of energy, said beam imparting sufficient energy to said small region to temporarily raise the temperature of at least part of said small region above said compensation temperature to cause self inversion of the direction of net magnetization exhibited by at least a portion of said small region after cooling to ambient temperature without requiring the use of both external magnetic bias field and internal biasing layer to erase said small region in said medium, whereby the information stored in said small region is modified.

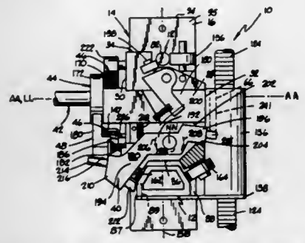
VOL 1147 ISS 1 FEB 2 1993 UMI

5,184,336

MECHANICAL ASSEMBLY FOR ALTERNATELY PRODUCING DISPLACEMENT OF A CARRIAGE AND ROTATION OF A CARRIAGE MOUNTED GEAR

Mark E. Wanger; Jennifer L. Methlie; Donald J. Stavely, and Thomas C. Oliver, all of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 298,388, Jan. 18, 1989, Pat. No. 5,101,387. This application Dec. 13, 1991, Ser. No. 808,268
The portion of the term of this patent subsequent to Apr. 23, 2008, has been disclaimed.
Int. Cl.[5] G11B *17/22*
U.S. Cl. 369—34 **6 Claims**



1. A mechanical assembly for clutchlessly alternately producing displacement of a carriage with respect to a carriage track and rotation of a gear mounted on the carriage, in response to torque provided from a single drive motor comprising:

a) latching means, having a latched state and an unlatched state, operably associated with said carriage for latchingly preventing relative movement between said carriage and said track during said latched state;

b) locking means, having a locked state and an unlocked state, operatively associated with said gear for lockingly preventing relative rotation of said gear during said locked state.

5,184,337

OPTICAL RECORDING/REPRODUCING APPARATUS HAVING MEANS FOR PERIODICALLY SUPERVISING DRIVE CURRENT SUPPLIED TO ACTUATOR

Takao Rokutan, Higashimurayama, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 18, 1991, Ser. No. 716,878
Claims priority, application Japan, Jun. 19, 1990, 2-162436
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.25 **22 Claims**

1. An optical recording/reproducing apparatus comprising:

condensing means for condensing a beam spot, which is used to record or reproduce information to and from an optical recording medium having a plurality of tracks, onto said optical recording medium;

displacement means for displacing at least a portion of said condensing means with respect to said optical recording medium in at least either direction in which a focal point is adjusted or a direction which transverses said track;

drive means for supplying a drive current to said displacement means;

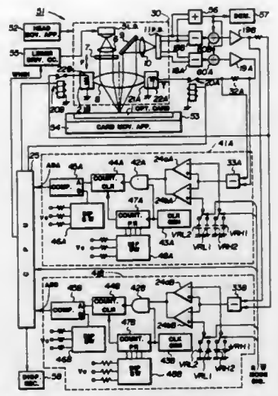
cutting means for cutting said drive current;

comparison means for detecting whether or not said drive current output from said drive means exceeds a predetermined range;

counting means for counting the number of times at which said comparison means has determined that said drive current output from said drive means exceeds said predetermined range, said counting being made in a predetermined supervisory period at every detection time the interval of which is shorter than said supervisory time;

determination means for determining whether or not a counted value counted by said counting means exceeds a reference number; and

control means for cutting said drive current by operating



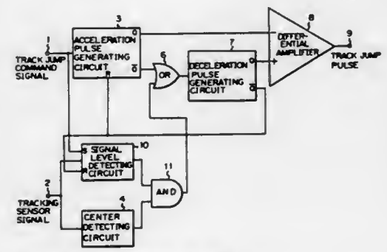
said cutting means in accordance with a determination signal denoting a fact that a determination has been made by said determination means that said counted value exceeds said reference number.

5,184,338

OPTICAL DISC SYSTEM WITH IMPROVED TRACK JUMPING OPERATION

Kyouzi Shimoda, and Kyosuke Yoshimoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaishe, Japan

Continuation of Ser. No. 199,471, May 27, 1988, abandoned. This application Feb. 13, 1991, Ser. No. 655,181
Claims priority, application Japan, Jun. 25, 1987, 62-156470
Int. Cl.[5] G11B *7/085*
U.S. Cl. 369—44.25 **3 Claims**



1. An optical disc system having:

tracking actuator means for positioning a light spot on an optical disc in a radial direction thereof;

photodetector means for generating a trackigns ensor signal to detect off-track information with respect to the position of said light spot on said optical disc;

circuit means for causing said tracking actuator means to jump said light spot from its present position on a track to a position on an adjacent track;

acceleration pulse generating means for generating a signal to cause acceleration of said tracking actuator means during a track jumping operation;

deceleration pulse generating means for generating a signal to cause deceleration of said tracking actuator means during said track jumping operation; and

center detecting means for detecting when the said light spot is at the midpoint between adjacent tracks in response to a zero crossing point of said trackign sensor signal,

said optical disc system characterized by including switching means responsive to an output signal of said center detecting means for switching control from said acceleration pulse means to said deceleration pulse means after a period of time has elapsed from the start of said track jumping operation, so that a false detection of the zero crossing point of said tracking sensor signal is prevented during said time period,

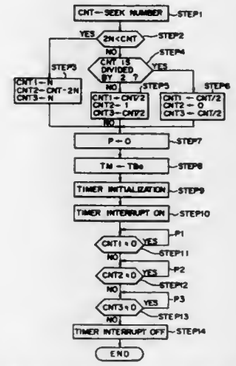
signal level detecting circuit means responsive to said tracking sensor signal and having a detection level which is smaller than the level which corresponds to the maximum amplitude of said tracking sensor signal, whereby said time period is provided by the time period required for said tracking sensor signal to reach said detection level from the start of said track jumping operation.

5,184,339

INFORMATION RECORDING-REPRODUCING HEAD DRIVING CIRCUIT

Keiji Tsuchiya, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 30, 1991, Ser. No. 707,781
Claims priority, application Japan, May 31, 1990, 2-143725
Int. Cl.[5] G11B *7/085*
U.S. Cl. 369—44.280 **3 Claims**



1. An information recording-reproducing head driving circuit for moving an information recording-reproducing head from a current position on a recording medium to a desired position while velocity-controlling the head, including:

a pulse motor for moving the information recording-reproducing head relative to the recording medium;

a timer for counting down a count value set to determine the driving timing of said pulse motor; and

control means for calculating the count value on the basis of a predetermined time table and for setting the count value in said timer, and for generating a driving pulse for said pulse motor when said timer has counted down the count value,

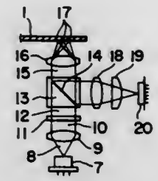
said control means subtracting a desired value extracted from said time table from the count value set in said timer the last time to thereby accomplish the calculation of a new count value.

5,184,340

METHOD AND APPARATUS FOR RECORDING AND REPRODUCING INFORMATION ON AN OPTICAL MEDIUM

Kenjiro Kachi, Tsurugashima, and Kazuo Noda, Yokohama, both of Japan, assignors to Nippon Conlux Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1988, Ser. No. 260,603
Claims priority, application Japan, Oct. 23, 1987, 62-266212
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.37 **10 Claims**



1. A method for recording and reproducing information recorded on an optical recording medium, said medium having at least one information track and at least two guiding tracks positioned on both sides of the information track respectively, comprising:

irradiating a light spot for recording and reproducing information on the information track and a plurality of light spots for tracking on the guiding tracks of the optical recording medium, respective parts of said plurality of light spots irradiating the guiding tracks;

projecting reflected beams from the optical recording medium responding to said light spots on photosensor having a photosensor for detecting information and at least two photosensors for detecting guiding tracks;

the reflected beam from the information track being projected on said photosensor for detecting information and the reflected beam from said guiding tracks being projected on said photosensors for detecting the guiding tracks; and

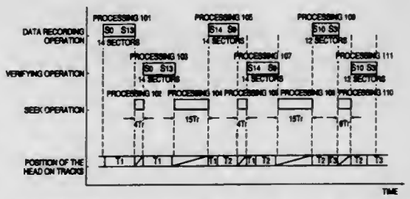
producing two outputs from a plurality of electrical outputs of said photosensors for tracking to provide tracking-control signals.

5,184,341

INFORMATION RECORDING METHOD HAVING SUCCESSIVE DATA WRITE AND DATA VERIFY OPERATIONS

Hiroshi Hamasaka, Nishinomiya; Isao Satoh, Neyagawa, and Yoshihisa Fukushima, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 28, 1990, Ser. No. 486,099
Claims priority, application Japan, Mar. 3, 1989, 1-52287; Mar. 23, 1989, 1-70866
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—54 **5 Claims**



1. An information recording method for recording information on a recording medium having a spiral track structure

VOL 1147 ISS 1 FEB 2 1993 UMI

which is divided into a plurality of sectors, said method comprising:

a first step of conducting a data write operation for recording data on N sectors along said spiral track structure of said recording medium, N being a positive integer;

a second step of conducting a data verifying operation for verifying the correctness of said data previously recorded on said N sectors along said spiral track structure in said first step;

where N is obtained by subtracting a number of sectors across which a recording head is conveyed relative said recording medium during a time period required for changing from said data write operation to said data verifying operation from a number, or a multiple of a number, of sectors contained in one track;

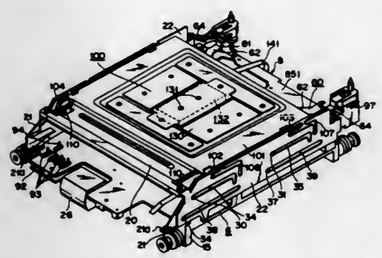
a third step of repeated and sequentially carrying out said first and second steps until a completion of said recording of information on said recording medium.

5,184,342

INFORMATION PROCESSING DEVICE

Masaru Ishii, Kamakura, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 14, 1991, Ser. No. 699,713
Claims priority, application Japan, May 15, 1990, 2-125170
Int. Cl.[5] G11B *23/00, 13/04*
U.S. Cl. 369—100 **23 Claims**



1. A device for storing information in an information storage medium by directing a light beam with a magnetic field applied to the information storage medium, comprising:

light beam generating means for generating the light beam;

magnetic field generating means for generating the magnetic field;

housing means for housing the light beam generating means and magnetic field generating means, the housing means having an access hole through which the information storage medium is inserted;

support means for supporting both the information storage medium inserted via the access hole into the housing means and the magnetic field generating means such that the information storage medium and magnetic field generating means are movable along the storage medium insertion direction, and in a direction included to the storage medium insertion direction, the support means being so provided at the housing means as to be movable along the storage medium insertion direction;

movable means for moving the support means in a direction corresponding to the storage medium insertion direction; and

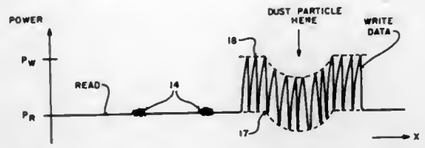
guide means for guiding the support means, which is moved by the movable means, in the storage medium insertion direction and for guiding the storage medium to a position where the medium faces the light beam generating means and the magnetic field generating means to a position where the magnetic field generating means faces the light beam generating means through the storage medium.

5,184,343

COMPENSATION FOR DUST ON AN OPTICAL DISK BY INCREASING LASER WRITING POWER

Donald F. Johann, 3724 Carlson Cir., Palo Alto, Calif. 94306, and Alan C. Burroughs, 851 Arnold Way, San Jose, Calif. 95128

Filed May 6, 1991, Ser. No. 696,230
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—116 **17 Claims**



1. In a system employing a focussed laser beam to record information on an optical storage medium, an apparatus which compensates for the presence of a contaminate particle or defect on the surface of said medium during the writing of data, said apparatus comprising:

means for sensing the reflected laser light back from said medium;

means for detecting, during a write operation, that the power of said reflected laser light has been reduced due to the presence of said particle or defect on said surface, said detection means including a means for generating a representation of the average read power level of said reflected light, and a means for comparing the instantaneous read power level with said average read power level of said reflected light, the difference being proportional to the reduction in reflected laser power due to said particle or defect; and

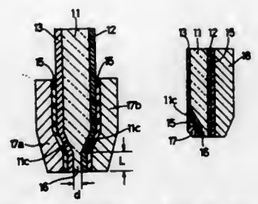
means for increasing the power of said laser beam by an amount sufficient to overcome the light power reduction effects of said particle or defect such that said data is effectively recorded on said medium.

5,184,344

RECORDING HEAD INCLUDING ELECTRODE SUPPORTING SUBSTRATE HAVING THIN-WALLED CONTACT END PORTION, AND SUBSTRATE-REINFORCING LAYER

Yukihisa Takeuchi; Toshikazu Hirota; Shigeki Okada, and Natsumi Shimogawa, all of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Aug. 20, 1990, Ser. No. 570,302
Claims priority, application Japan, Aug. 21, 1989, 1-214624; Sep. 28, 1989, 1-253504
Int. Cl.[5] G01D *15/06;* **B41J** *3/20, 3/00*
U.S. Cl. 369—126 **17 Claims**



1. A recording head operable to apply an electric current to an electrically resistive layer provided on one of a recording medium and a planar intermediate member, said planar intermediate layer being interposed between the recording medium and the recording head, said recording head having an electrically insulating ceramic substrate, at least one recording electrode formed on one of two opposite major surfaces of said substrate, and at least one return circuit electrode formed on the other major surface of the substrate, said recording head including an operating end at which said substrate and said electrodes are held together in direct contact with said one of the recording medium and the planar intermediate member, so that the electric current is applied to said electrically resistive layer, wherein the improvement comprises:

said substrate being formed of a material whose wear resistance is lower than that of said recording and return circuit electrodes, and includes a proximal portion, and a thin-walled distal end portion extending from the proximal portion by a predetermined length for contact with said one of the recording medium and the planar intermediate member, the distal end portion having a constant thickness, between electrodes, smaller than that of the proximal portion, as viewed in a direction perpendicular to a direction of extension of the distal end portion;

said substrate having a recessed portion formed in at least one of said opposite major surfaces such that said recessed portion at least partially defines said thickness of said distal end portion; and

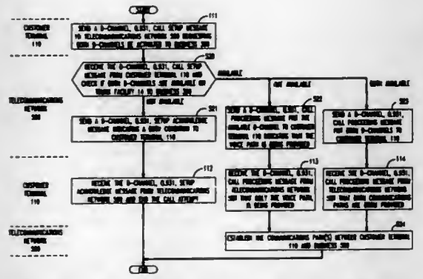
a reinforcing layer disposed to reinforce said thin-walled distal end portion, such that at least a portion of said reinforcing layer is positioned in said recessed portion.

5,184,345

ENHANCED ISDN 800 SERVICE

Paramdeep S. Sahni, Marlboro, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 2, 1991, Ser. No. 636,812
Int. Cl.[5] H04J *3/12;* **H04M** *11/06*
U.S. Cl. 370—54 **22 Claims**



6. A method for providing a second communications path between a calling party and a called party through a telecommunications network, the method comprising the steps of:

receiving a network address of the calling party from the telecommunications network at a location of the called party as a result of establishing a first communications path between the calling party and the called party through the telecommunications network, the calling party network address identifying the calling party's location in the telecommunications network;

providing audio information to the calling party on the first communications path through the telecommunications network;

sending an ISDN message to the telecommunications network, the ISDN message including a request to establish the second communications path to the calling party's location, the request including the calling party network address;

receiving an ISDN message from the telecommunications network that the second communications path is being provided; and

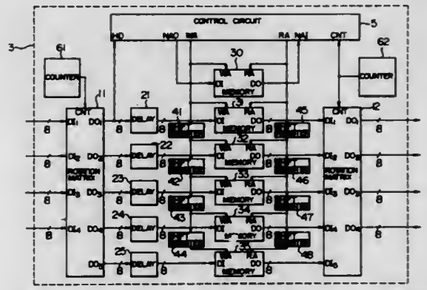
providing image information on the second communications path to the calling party, where the image information is exchanged concurrently with the audio information.

5,184,346

SWITCHING SYSTEM

Takahiko Kozaki, Koganei; Kenichi Asano, Akishima; Mineo Ogino, Hanno; Eiichi Amada, Tokyo, all of Japan; Noboru Endo, Freehold, N.J., and Yoshito Sakurai, Yokohama, Japan, assignors to Hitachi, Ltd. and Hitachi VLSI Engineering Corporation & Link Laboratory Inc., both of Tokyo, Japan

Filed May 21, 1990, Ser. No. 526,381
Claims priority, application Japan, May 31, 1989, 1-136032
Int. Cl.[5] H04Q *11/04;* **H04J** *03/24*
U.S. Cl. 370—60 **21 Claims**



1. A switching system for a cell of a fixed length having plural units of data, at least one unit including a header portion and remaining units including a data portion, the cell being inputted to a first incoming highway of incoming highways, to exchange communication information between the first incoming highway and a first outgoing highway of plural outgoing highways based upon information contained in said header portion, comprising:

first switching means including a plurality of input terminals and a plurality of output terminals, a first input terminal of said input terminals being connected to the first incoming highway, for sequentially connecting each of the input terminals to each of the output terminals for every one unit of the data in the fixed length cell, and for sequentially outputting continuous data at predetermined bit positions of the plurality of output terminals to a corresponding sequence of a plurality of memory means;

each of the plurality of memory means including means for storing data from at least one of said plural output terminals of said first switching means in response to a write address, and for reading the stored data in response to a read address;

address generating means for outputting said write address and read address in response to the header portion of the cell outputted from said first switching means;

first shift means for applying the write address derived from said address generating means to said plurality of memory means while timing said first shift means application the continuous output of data of the cell such that the plural units of data of the cell appearing on the first incoming highway are written at an identical address at each of said plurality of memory means;

second switching means including a plurality of input terminals connected to each of corresponding outputs of said plurality of memory means, and a plurality of output terminals corresponding to the plural outgoing highways, for sequentially connecting each of the input terminals to each of the plurality of output terminals to output every unit of data of the cell from each of said plurality of memory means to said first outgoing highway of said plurality of outgoing highways through a first output terminal; and,

VOL
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1993
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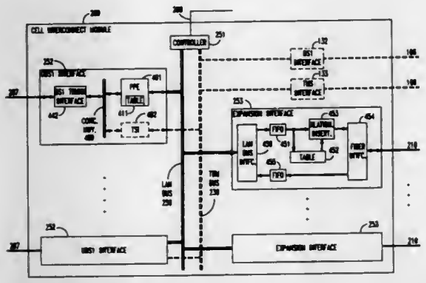
second shift means for applying the read address derived from said address generating means to said plurality of memory means while timing said second shift means application with the output of the data of the cell read out from said plurality of memory means to allow output from the second switching means.

5,184,347

ADAPTIVE SYNCHRONIZATION ARRANGEMENT

Charles Y. Farwell, Denver; Michel L. Hearn, Broomfield; Richard M. Heidebrecht, Boulder, all of Colo.; Kelvin K. Ho, Somerset, N.J., and Douglas A. Spencer, Boulder, Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 9, 1991, Ser. No. 727,491
Int. Cl.[5] H04L *7/00*
U.S. Cl. 370—94.1 **46 Claims**



1. An apparatus comprising:
a first operating unit having its operations synchronized with first clock signals;
a second operating unit having its operations synchronized with second clock signals which are asynchronous with the first clock signals;
a third operating unit for interfacing the operations of the first unit with the operations of the second unit, the third unit having its operations nominally synchronized with the operations of the first unit;
means for monitoring an extent of asynchrony between the operations of the second and the third units, to determine whether the extent of asynchrony lies outside of a predetermined range of allowed asynchrony; and
means responsive to a determination that the extent of asynchrony does lie outside of the predetermined range, for adjusting the synchronization of the operations of the third unit with the operations of the first unit, to move the extent of asynchrony between the operations of the second and the third units to within the range.

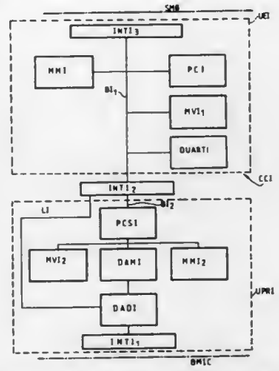
5,184,348

ISND MULTIPROTOCOL COMMUNICATIONS CONTROLLER

Najib Abdelmouttalib, Conflans-Sainte-Honorine, and Didier Duflot, Issy-Les-Moulineaux, both of France, assignors to Bull, S.A., France

Filed Dec. 20, 1989, Ser. No. 453,581
Claims priority, application France, Dec. 27, 1988, 88 17208
Int. Cl.[5] H04J *3/12*
U.S. Cl. 370—95.1 **29 Claims**

22. An ISDN multiprotocol communications controller for controlling at least one communications link supported physically by a transmission line terminated at data circuit terminating equipment and having a specific number of data channels controlled according to a multiplicity of protocols, between at least one computer and a set of terminals through an automatic telephone branch exchange, comprising:
a basic controller for receiving data coming from the computer and the terminals via an S_2 link and controlling upper layers of an OSI communications model; and
a peripheral device disposed in series between the basic controller and the data circuit terminating equipment, for controlling communications between the computer and the terminals, including:
a signal processor connected to the basic controller and having a programmable memory containing programs for processing the multiplicity of protocols used in the S_2 link; and



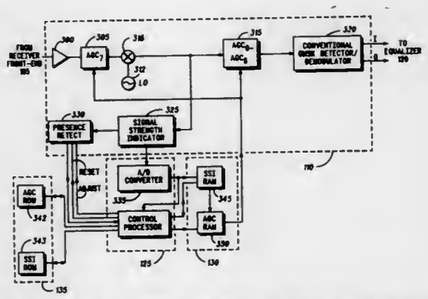
means connected to the data circuit terminating equipment, for dynamically allocating time-division data channels corresponding to the data channels of the communication link.

5,184,349

AMPLITUDE CONTROL OF A BURST SIGNAL IN A RECEIVER

Kenneth B. Riordan, Wauconda, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 642,253, Jan. 16, 1991, abandoned. This application Aug. 21, 1992, Ser. No. 933,611
Int. Cl.[5] H04B *7/212*
U.S. Cl. 370—95.3 **20 Claims**



1. A receiver module in a time-division multiple access (TDMA) communication system for controlling the amplitude of a randomly received burst signal, the randomly received burst signal being input into the receiver module during the time of one TDMA timeslot, the receiver module comprising:
means for storing amplitude control values related to continuous signal amplitudes;
means for detecting when during the TDMA timeslot time the randomly received burst signal arrives;
means, responsive to said means for detecting, for monitoring the amplitude of said randomly received burst signal for at least one predetermined time period of the TDMA timeslot;
means, coupled to said means for storing and responsive to said means for monitoring, for selecting an amplitude control value corresponding to the amplitude of said randomly received burst signal; and
means, responsive to said selected amplitude control value, for controlling the amplitude of said randomly received burst signal after at least said one predetermined time period.

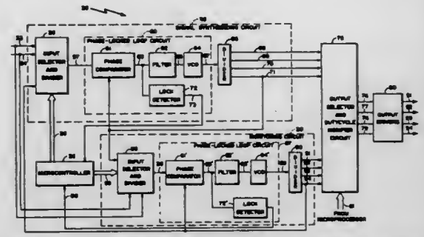
5,184,350

TELEPHONE COMMUNICATION SYSTEM HAVING AN ENHANCED TIMING CIRCUIT

Paul S. Dara, Broken Arrow, Okla., assignor to Raytheon Company, Lexington, Mass.

Filed Apr. 17, 1991, Ser. No. 686,645
Int. Cl.[5] H04J *3/06*
U.S. Cl. 370—105.3 **17 Claims**

8. A digital loop carrier system coupled between a plurality of subscribers and central office equipment, said digital loop carrier system comprising:
a plurality of line cards, each one of said cards corresponding to at least one of the plurality of subscribers and adapted for being coupled thereto;
a multiplexer/demultiplexer switch coupled to said plurality of line cards;
a plurality of transmission formatting/de-formatting circuits coupled to said multiplexer/demultiplexer switch and adapted for coupling to said central office equipment; and
a control circuit and a timing circuit, each of said control and timing circuits being coupled to said plurality of line cards, said multiplexer/demultiplexer switch, and said plurality of transmission formatting/de-formatting circuits, wherein said timing circuit comprises signal synthesizing means, responsive to an input reference clock signal, for generating a first plurality of frequency synthesized output signals, each one of said first plurality of output signals having a different frequency; and monitoring means including a phase-locked loop circuit, coupled to the signal synthesizing means, for providing at an output of such phase-locked loop circuit, a control signal indicating the deviation of the frequency of the at least one of the plurality of frequency synthesized output signals from a reference frequency.



VOL
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ISS
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DESIGN PATENTS

GRANTED Febuary 2, 1993

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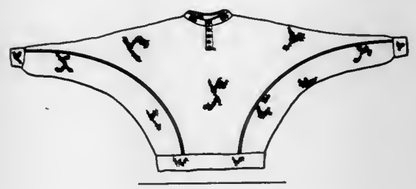
For CLASS	See PATENT NO.
D18- 054	D 332,953

VOL
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1993
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332,858
WARM-UP JACKET
David B. Aubuchon, Festus; Eric Reinsfelder, and Deborah L. Simmons, both of St. Louis, all of Mo., assignors to Figgie International Inc., Willoughby, Ohio
Filed Jan. 23, 1990, Ser. No. 468,952
Term of patent 14 years
U.S. Cl. D2—191



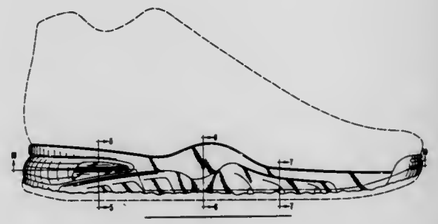
332,859
WARM-UP JACKET
David B. Aubuchon, Festus; Eric Reinsfelder, and Deborah L. Simmons, both of St. Louis, all of Mo., assignors to Figgie International Inc., Willoughby, Ohio
Filed Jan. 23, 1990, Ser. No. 468,961
Term of patent 14 years
U.S. Cl. D2—208



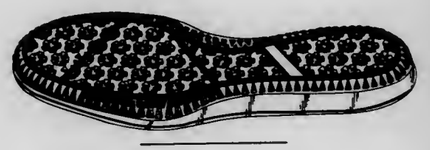
332,860
SHOE UPPER
Charles Legassie, Canton; Judith Ringel, Milton; and Steven F. Smith, Taunton, all of Mass., assignors to Reebok International Ltd., Stoughton, Mass.
Division of Ser. No. 483,435, Mar. 26, 1990, Pat. No. Des. 320,107. This application Jul. 31, 1991, Ser. No. 738,482
Term of patent 14 years
U.S. Cl. D2—314



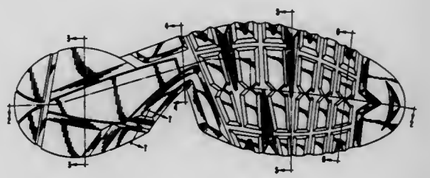
332,861
SHOE MIDSOLE
William J. Worthington, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed May 1, 1992, Ser. No. 877,158
Term of patent 14 years
U.S. Cl. D2—314



332,862
SHOE SOLE
Junichi Kiyosawa, and Toshikazu Ujishima, both of Kobe, Japan, assignors to Asics Corporation, Hyogo, Japan
Filed Aug. 22, 1991, Ser. No. 748,892
Claims priority, application Japan, Feb. 28, 1991, 2-5514
Term of patent 14 years
U.S. Cl. D2—320

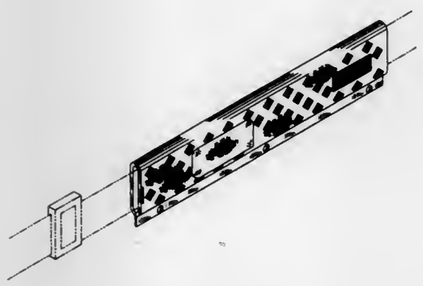


332,863
OUTSOLE
Robert J. Lucas, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Feb. 25, 1992, Ser. No. 840,988
Term of patent 14 years
U.S. Cl. D2—320



VOL 1147 ISS 1 FEB 2 1993 UMI

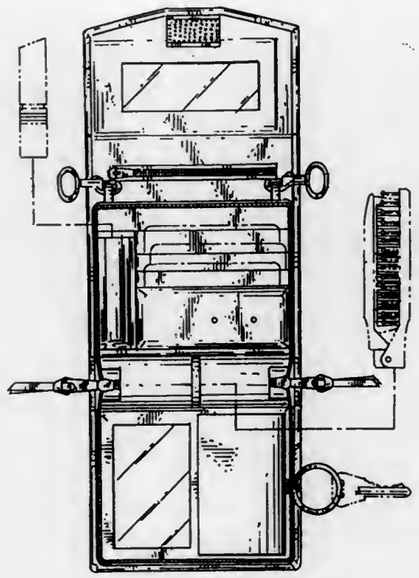
332,864
SEAT BELT COVER
Elizabeth A. Hansen, 175 Bethune Way, Chula Vista, Calif. 92011
Filed Mar. 14, 1991, Ser. No. 669,289
Term of patent 14 years
U.S. Cl. D2—639



332,865
BABY CARRYING BAG
Margaretha H. M. Wilmink, 117, Biltstraat, NL-3572 AP Utrecht, Netherlands
Continuation-in-part of Ser. No. 25,867, Mar. 16, 1987, abandoned. This application Oct. 16, 1990, Ser. No. 598,215
Claims priority, application Int'l Pat. Institute, Sep. 16, 1986, DM 007/495
Term of patent 14 years
U.S. Cl. D3—31



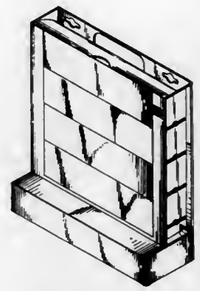
332,866
COMBINED PURSE AND WALLET
David Kopel, Chatsworth, and John I. Cisowski, West Hills, both of Calif., assignors to Koltov, Inc., Chatsworth, Calif.
Filed May 13, 1991, Ser. No. 699,779
Term of patent 14 years
U.S. Cl. D3—43



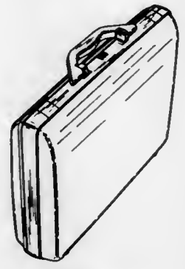
332,867
COMBINED CARRIER AND HOLDER FOR CIRCULAR SAW BLADES
Edward K. Blake, Jr., 17851 Locherbie, Birmingham, Mich. 48009
Filed Nov. 27, 1990, Ser. No. 618,825
Term of patent 14 years
U.S. Cl. D3—73



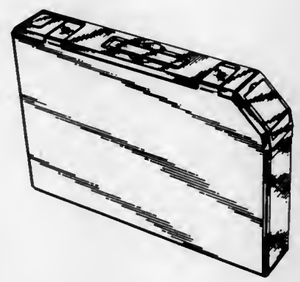
332,868
PORTABLE TOOL CASE
Pi-Chi Chen, No. 1-1, Lane East, Lai Tsuo, Taichung, Taiwan
Filed Apr. 24, 1991, Ser. No. 690,228
Term of patent 14 years
U.S. Cl. D3—74



332,869
ATTACHE CASE
Berndt Diefenbach, Starnberg, Fed. Rep. of Germany, assignor to Carlton International PLC, Enfield, United Kingdom
Filed Jul. 13, 1990, Ser. No. 553,672
Term of patent 14 years
U.S. Cl. D3—76



332,870
STORAGE CASE
Cameron L. Fink; Robert W. Schram, and Anthony J. Gentile, all of London, Canada, assignors to Sterling Marking Products Inc-, London, Canada
Filed Jan. 22, 1991, Ser. No. 648,424
Term of patent 14 years
U.S. Cl. D3—76



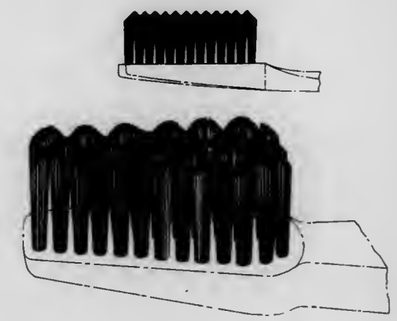
332,871
KNIFE SHEATH
Brett P. Seber, Escondido, Calif., assignor to Buck Knives, Inc., El Cajon, Calif.
Filed Sep. 30, 1991, Ser. No. 767,208
Term of patent 14 years
U.S. Cl. D3—102



332,872
HORIZONTAL KNIFE SHEATH
Brett P. Seber, Escondido, Calif., assignor to Buck Knives, Inc., El Cajon, Calif.
Filed Sep. 30, 1991, Ser. No. 767,913
Term of patent 14 years
U.S. Cl. D3—102

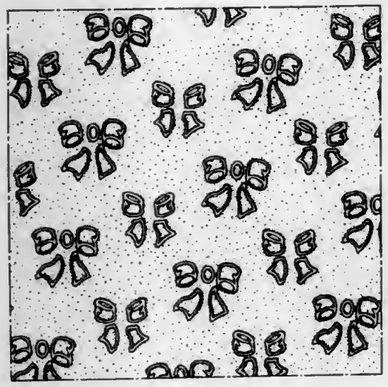


332,873
SET OF BRISTLES FOR A TOOTHBRUSH
Thomas J. Hall, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jul. 13, 1990, Ser. No. 553,192
Term of patent 14 years
U.S. Cl. D4—104

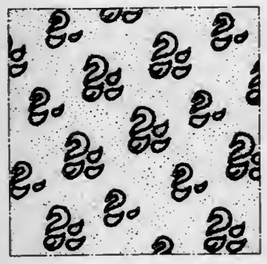


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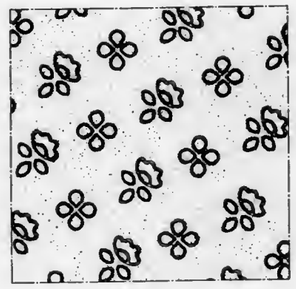
332,874
EMBOSSED TISSUE
Joanne P. Shufelt, Dunwoody; Donna S. Johnston, Roswell, both of Ga., and Tim J. Van Straten, Green Bay, Wis., assignors to Georgia-Pacific Corporation, Atlanta, Ga.
Filed Aug. 6, 1990, Ser. No. 563,342
Term of patent 14 years
U.S. Cl. D5—53



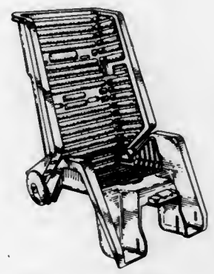
332,875
EMBOSSED TISSUE
Joanne P. Shufelt, Dunwoody; Donna S. Johnston, Roswell, both of Ga., and Tim J. Van Straten, Green Bay, Wis., assignors to Georgia-Pacific Corporation, Atlanta, Ga.
Filed Aug. 6, 1990, Ser. No. 563,343
Term of patent 14 years
U.S. Cl. D5—53



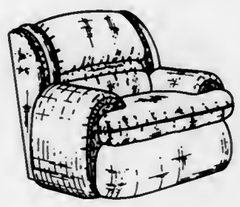
332,876
EMBOSSED TISSUE
Joanne P. Shufelt, Dunwoody, Ga.; Tim J. Van Straten, Green Bay, Wis., and Danna Davis, Alpine, N.J., assignors to Georgia Pacific Corporation, Atlanta, Ga.
Filed Aug. 22, 1990, Ser. No. 572,093
Term of patent 14 years
U.S. Cl. D5—53



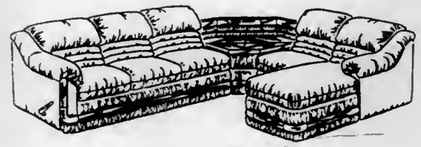
332,877
CHILD'S BICYCLE SEAT
Dixon Newbold, Glocester, R.I., assignor to Bell Sports, Inc., Providence, R.I.
Filed Sep. 29, 1989, Ser. No. 415,189
Term of patent 14 years
U.S. Cl. D6—333



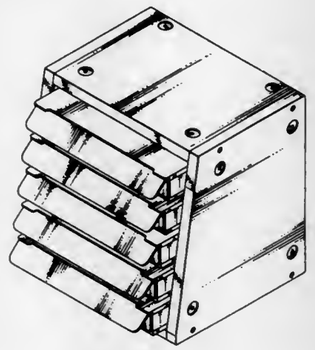
332,878
SEAT
Frank A. Warren, Denville, N.J., assignor to Bushline Corporation, New Tazewell, Tenn.
Filed Dec. 1, 1989, Ser. No. 445,322
Term of patent 14 years
U.S. Cl. D6—334



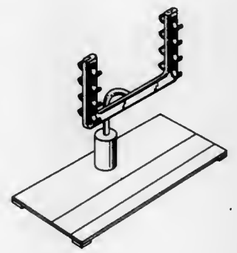
332,879
COMBINED SECTIONAL SOFA AND TABLE UNIT
Robert A. Gera, Glencoe, Ill., assignor to Universal Furniture Industries, Inc., High Point, N.C.
Filed Dec. 7, 1989, Ser. No. 447,246
Term of patent 14 years
U.S. Cl. D6—336



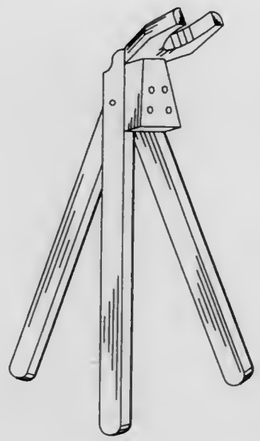
332,880
DISPLAY CABINET
Derwyn Cugley, Brea, and Thomas L. Evans, Laguna Nigel, both of Calif., assignors to VSI Fasteners, Inc., Stanton, Calif.
Filed Jul. 24, 1990, Ser. No. 557,503
Term of patent 14 years
U.S. Cl. D6—446



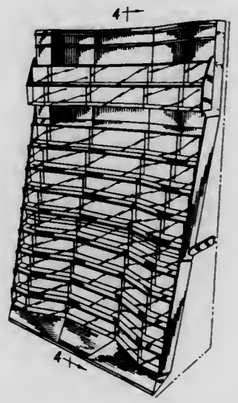
332,881
DISPLAY STAND FOR WRITING INSTRUMENTS
Pamela L. Blackburn, 1953 Victoria Ave., and Tyree E. Sampson, 1951 Victoria Ave., both of Dayton, Ohio 45406
Filed Jan. 12, 1990, Ser. No. 463,985
Term of patent 14 years
U.S. Cl. D6—450



332,882
STRING MUSICAL INSTRUMENT SUPPORT STAND
Jay D. Graves, 4614 Laurel, Bellaire, Tex. 77401
Filed Jun. 4, 1990, Ser. No. 534,661
Term of patent 14 years
U.S. Cl. D6—466

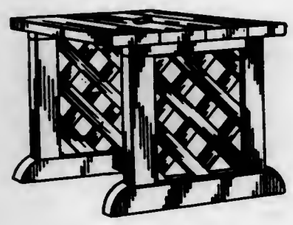


332,883
DISPLAY RACK
Jennis Stande, Gladstone, Mo., assignor to Hallmark Cards, Incorporated, Kansas City, Mo.
Filed Jan. 24, 1990, Ser. No. 470,049
Term of patent 14 years
U.S. Cl. D6—467

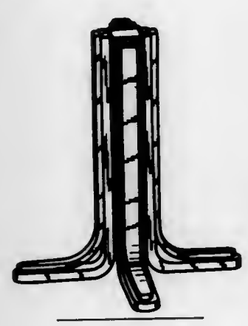


VOL
1147
ISS
1
FE
2
1993
UMI

332,884
TABLE
Scott R. Milanowski, 1800 Mapleview, SE., Kentwood, Mich. 49508
Filed Jul. 12, 1990, Ser. No. 552,204
Term of patent 14 years
U.S. Cl. D6—480



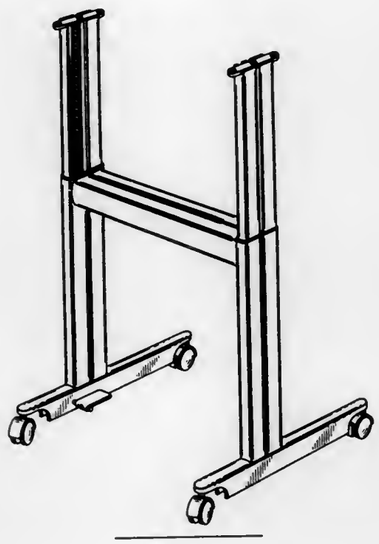
332,885
TABLE BASE
Virgil Miller, Archbold, Ohio, assignor to Sauder Manufacturing Company, Archbold, Ohio
Filed Apr. 2, 1990, Ser. No. 503,162
Term of patent 14 years
U.S. Cl. D6—495



332,886
SUPPORT PEDESTAL FOR A TABLE
Steven A. Beaudry, 12261 Drake St., Coon Rapids, Minn. 55433
Division of Ser. No. 655,233, Feb. 8, 1991, Pat. No. D. 326,201, which is a division of Ser. No. 81,436, Aug. 4, 1987, Pat. No. D. 316,350. This application Mar. 9, 1992, Ser. No. 847,820
Term of patent 14 years
U.S. Cl. D6—495



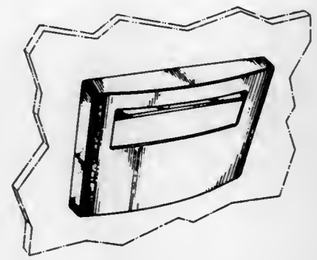
332,887
MOBILE TABLE BASE
Kim Fjello-Jensen, Svendborg, Denmark, assignor to Fjello-Jensen A/S, Denmark
Filed Sep. 14, 1989, Ser. No. 407,014
Claims priority, application Denmark, Aug. 21, 1989, 1005/89
Term of patent 14 years
U.S. Cl. D6—496



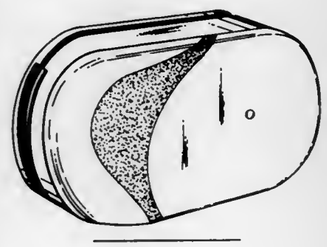
332,888
WINE RACK
David Cook, 203A Kope Rd., Perkiomenville, Pa. 18074
Filed May 1, 1990, Ser. No. 517,059
Term of patent 14 years
U.S. Cl. D6—514



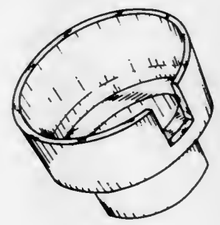
332,889
TOILET SEAT COVER DISPENSER
David M. Hines, Santa Ana, Calif., assignor to Bobrick Washroom Equipment, Inc., North Hollywood, Calif.
Filed Nov. 15, 1991, Ser. No. 792,777
Term of patent 14 years
U.S. Cl. D6—518



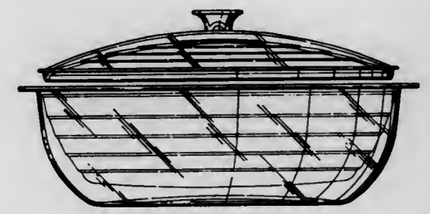
332,890
REMOTELY CONTROLLED CURTAIN POSITIONER COVER
Mark R. Bishai, 2552 Mountain Dr., Upland, Calif. 91786
Filed Nov. 20, 1989, Ser. No. 439,508
Term of patent 14 years
U.S. Cl. D6—580



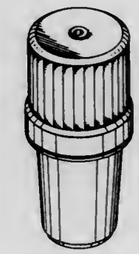
332,891
BEVERAGE CONTAINER ADAPTOR
R. Mack Cumberland, Harbor East, 39-C, Mount Ida, Ark. 71957
Filed Oct. 15, 1990, Ser. No. 597,587
Term of patent 14 years
U.S. Cl. D7—399



332,892
BOWL WITH COVER
Cliff K. Sun, Kwung Tong, Hong Kong, assignor to Kin Hip Metal & Plastic Factory, Ltd., Kwun Tong, Hong Kong
Filed Feb. 6, 1990, Ser. No. 476,019
Claims priority, application United Kingdom, Nov. 30, 1989, 2002032
Term of patent 14 years
U.S. Cl. D7—540



332,893
SPILL PROOF CONTAINER
Keith D. Patternson, Providence, R.I., assignor to Little Kids, Inc., Providence, R.I.
Filed Jun. 18, 1991, Ser. No. 717,103
Term of patent 14 years
U.S. Cl. D7—510

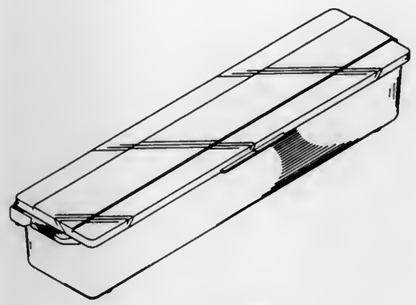


332,894
CUP WITH CLOSURE SPOUT
Richard D. Green, 12979 Culver Blvd., Los Angeles, Calif. 90066
Filed Jul. 29, 1991, Ser. No. 736,828
Term of patent 14 years
U.S. Cl. D7—511

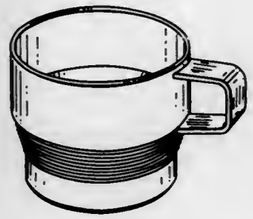


VOL 1147 ISS 1 FE 2 1993 UMI

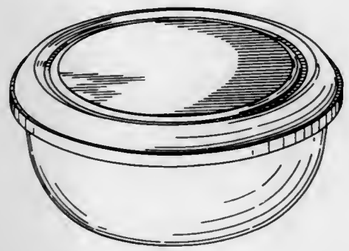
332,895
BAR CONDIMENT TRAY
Ferdinand F. Salzmann, Prairie du Sac, Wis., assignor to Traex Corporation, Dane, Wis.
Filed Jul. 3, 1990, Ser. No. 547,907
Term of patent 14 years
U.S. Cl. D7—590



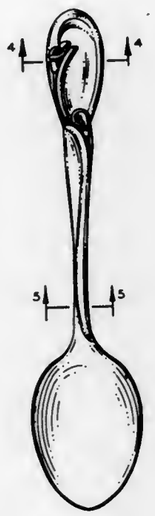
332,896
CUP-HOLDER
Siegfried Hoelterscheidt, Hückelhoven, Fed. Rep. of Germany, assignor to Walter Henkels GmbH, Fed. Rep. of Germany
Filed Mar. 6, 1991, Ser. No. 665,179
Term of patent 14 years
U.S. Cl. D7—622



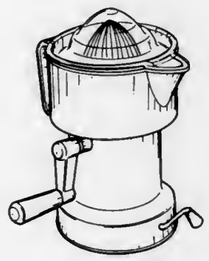
332,897
COMBINED CONTAINER WITH LID
Anne C. Bucher, Rolling Meadows, and Marcia Baxter, Chicago, both of Ill., assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Jun. 19, 1991, Ser. No. 717,718
Term of patent 14 years
U.S. Cl. D7—629



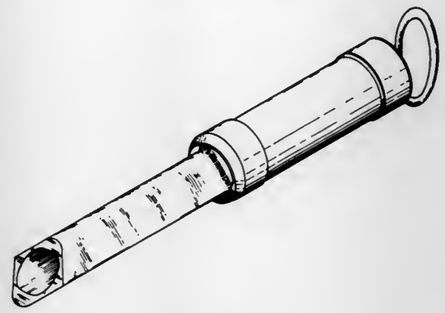
332,898
SPOON
Paul E. Gebhardt, Oneida, N.Y., assignor to Oneida Ltd., Onelda, N.Y.
Filed Apr. 2, 1990, Ser. No. 504,262
Term of patent 14 years
U.S. Cl. D7—660



332,899
JUICER
So Shun, Kowloon, Hong Kong, assignor to Ki Mee Metal & Plastic Factory Limited, Hong Kong
Filed Dec. 28, 1990, Ser. No. 635,781
Claims priority, application United Kingdom, Jul. 16, 1990, 2008324
Term of patent 14 years
U.S. Cl. D7—666



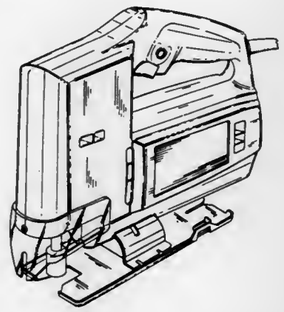
332,900
FOOD STUFFING KNIFE
John G. Aquilina, 1004 Hamilton Road, McDowell, Queensland, 4053, Australia
Filed Oct. 11, 1990, Ser. No. 595,924
Claims priority, application Australia, Apr. 11, 1990, 1089/90
Term of patent 14 years
U.S. Cl. D7—669



332,901
CAULKING TOOL
Carl E. Campbell, Morrison, Colo., assignor to Christian Brothers, Inc., Morrison, Colo.
Filed Aug. 30, 1990, Ser. No. 574,938
Term of patent 14 years
U.S. Cl. D8—45



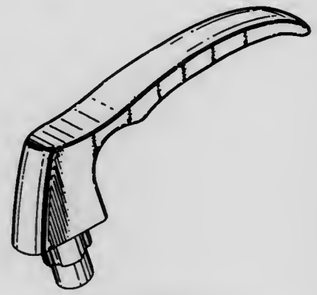
332,902
SABRE SAW
Richard E. Dobson, Easley, S.C., assignor to Ryobi Motor Products Corp., Easley, S.C.
Filed Jul. 30, 1990, Ser. No. 559,885
Term of patent 14 years
U.S. Cl. D8—64



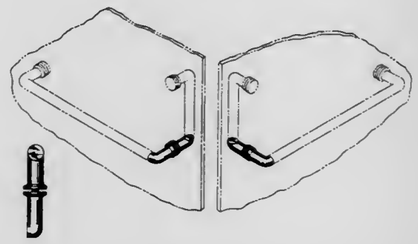
332,903
HANDLE FOR A FIREPLACE TOOL
John S. Adams, 1566 Rockdale Rd., Dubuque, Iowa 52001
Filed Sep. 14, 1990, Ser. No. 582,539
Term of patent 14 years
U.S. Cl. D8—107



332,904
HANDLE
David D. Plummer, Hudson, Wis., and Randy A. Davis, Minneapolis, Minn., assignors to Andersen Corporation, Bayport, Minn.
Filed Mar. 18, 1991, Ser. No. 671,290
Term of patent 14 years
U.S. Cl. D8—308

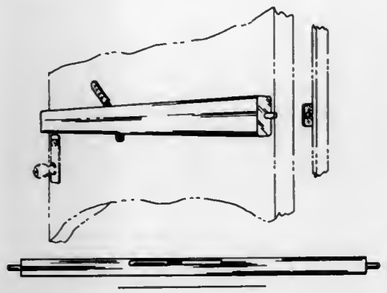


332,905
SUPPORT FOR A HANDLE UNIT
Todd D. Dannenberg, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jun. 22, 1990, Ser. No. 542,601
Term of patent 14 years
U.S. Cl. D8—321

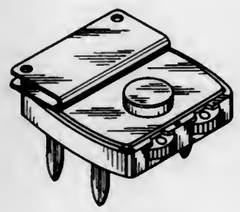


VOL
1147
ISS
1
FE
2
1993
UMI

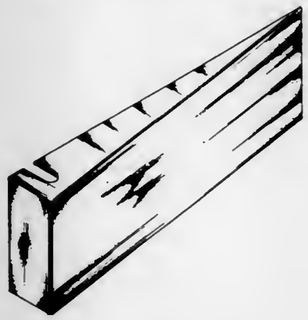
332,906
SECURITY LATCH
Gary L. Hall, 11 Hickory Hills Cir., and Denis A. Hall, 4021 Longview, both of Little Rock, Ark. 72212
Filed Jan. 25, 1990, Ser. No. 469,844
Term of patent 14 years
U.S. Cl. D8—331



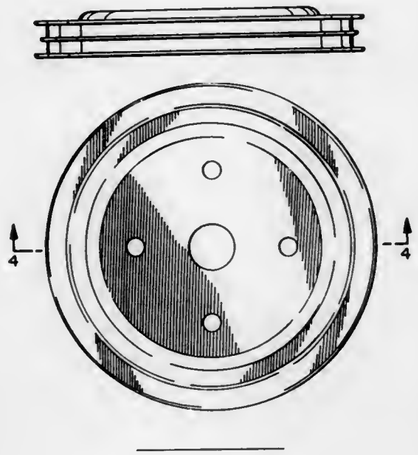
332,907
LUGGAGE LOCK
Urs Gisiger, Schulhausstrasse 19, 2545 Selzach, Switzerland
Filed Aug. 2, 1990, Ser. No. 562,943
The portion of the term of this patent subsequent to Jul. 7, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—331



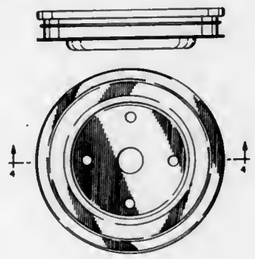
332,908
DOOR BOLT SHROUD
Terrance J. Olsen, 5590 Calle Vista Linda, Yorba Linda, Calif. 92670
Filed Jul. 2, 1990, Ser. No. 550,703
Term of patent 14 years
U.S. Cl. D8—346



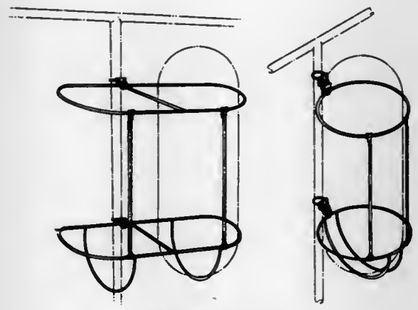
332,909
PULLEY
Toshiaki Kanemitsu, Kobe; Kazuyuki Oda, Hyogo, and Shuji Kanemitsu, Kobe, all of Japan, assignors to Kabushiki Kaisha Kanemitsu, Japan
Filed May 29, 1991, Ser. No. 706,731
Claims priority, application Japan, Dec. 12, 1990, DES 2-41688; Dec. 12, 1990, DES 2-41690; Dec. 12, 1990, DES 2-41698; Dec. 19, 1990, DES 2-42512
Term of patent 14 years
U.S. Cl. D8—360



332,910
PULLEY
Toshiaki Kanemitsu, Kobe, and Kazuyuki Oda, Hyogo, both of Japan, assignors to Kabushiki Kaisha Kanemitsu, Japan
Filed May 29, 1991, Ser. No. 706,733
Claims priority, application Japan, Dec. 12, 1990, Des. 2-41691; Dec. 12, 1990, Des. 2-41692
Term of patent 14 years
U.S. Cl. D8—360



332,911
FENDER HOLDER
Robert G. Barbour, and Glenn A. Smith, both of Los Angeles, Calif., assignors to Windline Marine, Los Angeles, Calif.
Filed Mar. 6, 1990, Ser. No. 489,594
Term of patent 14 years
U.S. Cl. D8—373



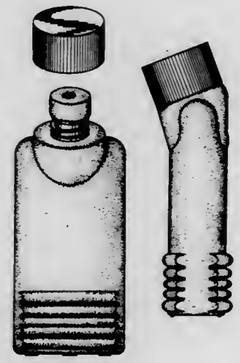
332,912
BOTTLE
Nicola Trussardi, Milano, Italy, assignor to Trussardi S.p.A., Milano, Italy
Filed Jan. 14, 1991, Ser. No. 641,117
Claims priority, application World Int. Prop. O., Jul. 31, 1990, DMA/001297
Term of patent 14 years
U.S. Cl. D9—300



332,913
COMBINED BOTTLE AND PUMP DISPENSER
Lisa Carroll, New York, N.Y., assignor to L'Oreal S.A., Paris, France
Filed May 17, 1991, Ser. No. 701,984
Term of patent 14 years
U.S. Cl. D9—300

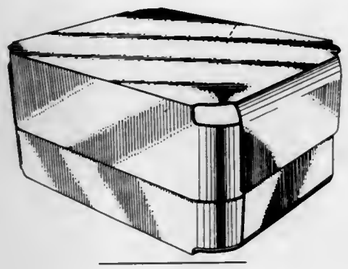


332,914
COMBINED CONTAINER AND APPLICATOR FOR LIQUIDS
Brian Stephens, Dun Laoghaire, Ireland, assignor to Glanmire Industries Limited, Little Island, Ireland
Filed Jun. 27, 1990, Ser. No. 544,853
Claims priority, application Ireland, Feb. 26, 1990, D70/90
Term of patent 14 years
U.S. Cl. D9—338

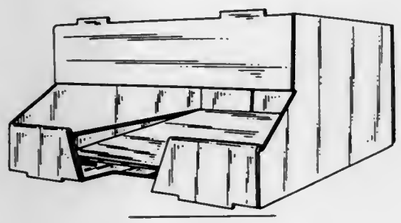


VOL
1147
ISS
1
FE
2
1993
UMI

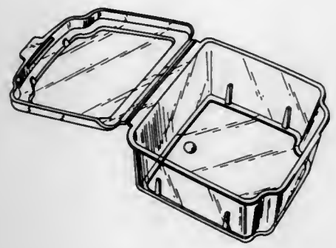
332,915
CAN CARTON
Norbert Hoell, Southgate, Ky., and Charles A. Miller, Williamsburg, Ohio, assignors to The C. W. Zumbiel Co., Cincinnati, Ohio
Filed Sep. 4, 1991, Ser. No. 754,690
Term of patent 14 years
U.S. Cl. D9—346



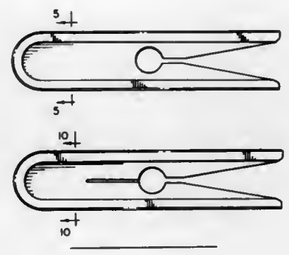
332,916
COMBINED PACKAGE AND DISPENSING DISPLAY UNIT FOR CANDY
Ingvar Bärnskog, Mantorp, Sweden, assignor to AB Cloetta, Sweden
Filed Jul. 10, 1990, Ser. No. 550,727
Claims priority, application Sweden, Mar. 9, 1990, 90-569
Term of patent 14 years
U.S. Cl. D9—417



332,917
CONTAINER
John F. McDevitt, Evanston; David J. Johnson, Beach Park, and Denis H. Nelson, Wheaton, all of Ill., assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Jul. 11, 1991, Ser. No. 728,937
Term of patent 14 years
U.S. Cl. D9—423



332,918
BAG CARRYING HANDLE
Leslie H. Fleming, La Rambla Sbopping Center, Ponce, P.R. 00731
Filed Apr. 4, 1991, Ser. No. 680,283
Term of patent 14 years
U.S. Cl. D9—434



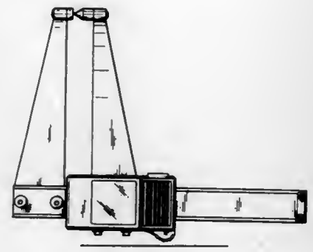
332,919
JAR
Lisa Turnbull, Scotch Plains, N.J., and Dale G. DeVore, Elmore, Ohio, assignors to CPC International Inc., Englewood Cliffs, N.J.
Filed Oct. 7, 1991, Ser. No. 773,399
Term of patent 14 years
U.S. Cl. D9—500



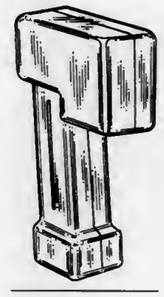
332,920
BOTTLE
Paolo Tiramani, Greenwich, Conn., and Thomas Van Dyk, Prospect Park, N.J., assignors to Goody Products, Inc., Kearney, N.J.
Filed Feb. 12, 1991, Ser. No. 646,989
Term of patent 14 years
U.S. Cl. D9—552



332,921
DIGITAL CALIPER
Richard L. Victor, Sr., Mendon, Mass., assignor to Central Tools, Inc., Cranston, R.I.
Filed Sep. 16, 1991, Ser. No. 760 250
Term of patent 14 years
U.S. Cl. D10—73



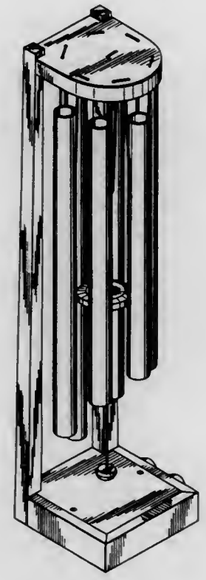
332,922
FISHING WEIGH SCALE
Richard J. Robbins, Derby, Kans., assignor to Zebco Corporation, Tulsa, Okla.
Filed Jan. 24, 1990, Ser. No. 470,034
Term of patent 14 years
U.S. Cl. D10—89



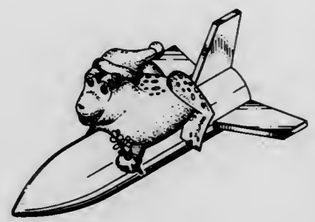
332,923
ENGINE OPERATING TIME HOUR METER
Nicholas G. Polydoris, Wilmette; Paul Mitchell, Glenview; Stanislaw Kocol; James George, both of Chicago, and Stan Mazulis, Wildwood, all of Ill., assignors to ENM Company, Chicago, Ill.
Filed May 25, 1990, Ser. No. 529,175
Term of patent 14 years
U.S. Cl. D10—100



332,924
INDOOR CHIMES
Stan Schutze, 6864 Richard St., San Diego, Calif. 92115
Filed Apr. 22, 1991, Ser. No. 688,357
Term of patent 14 years
U.S. Cl. D10—118

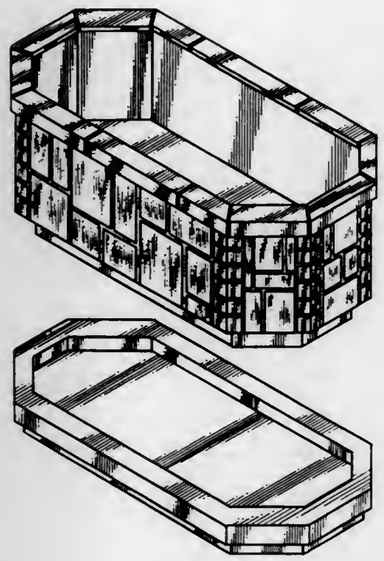


332,925
CHRISTMAS ORNAMENT
Brian Kocheran, 301 - 6350 Willingdon Avenue, Burnaby, British Columbia, Canada V5H 2V4 , and Mark Lash, 204 Wood Street, New Westminster, British Columbia, Canada V3M 5K4
Filed Apr. 3, 1991, Ser. No. 679,590
Term of patent 14 years
U.S. Cl. D11—125

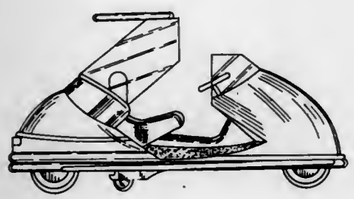


VOL 1147 ISS 1 FE 2 1993 UMI

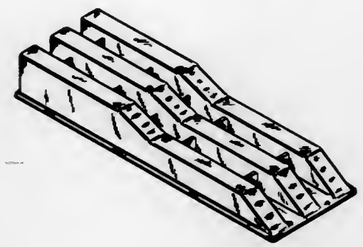
332,926
LANDSCAPE FLOWER PLANTER
Nathan B. Grant, 54 Cramer Rd., Poughkeepsie, N.Y. 12603
Filed Mar. 18, 1991, Ser. No. 670,617
Term of patent 14 years
U.S. Cl. D11—149



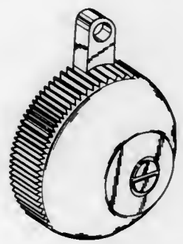
332,927
MOTOR VEHICLE
Ferdinand H. Ferino, 736 Robinson Ave., San Diego, Calif. 92103
Filed Oct. 23, 1990, Ser. No. 601,581
Term of patent 14 years
U.S. Cl. D12—1



332,928
RECREATIONAL VEHICLE TRAILER LEVELER
Charles C. Gilbert, 1314 Auburn Dr., and Howard J. Humphries, 2481 San Carlos Cir., both of Colorado Springs, Colo. 80909
Filed May 14, 1991, Ser. No. 699,564
Term of patent 14 years
U.S. Cl. D12—106



332,929
KEY FOR BICYCLE HANDLEBAR LOCK
Laroy J. Van Dyke, Andubon, Pa., assignor to Innovative Bicycle Products, Inc., Huntingdon Valley, Pa.
Filed Feb. 22, 1991, Ser. No. 659,128
Term of patent 14 years
U.S. Cl. D12—117



332,930
PATIENT TRANSFER STRETCHER
Scott W. Clark, 2771 Delaney Ct., Palm Harbor, Fla. 34684, and David D. Watson, 4650 S. Elden Pt., Inverness, Fla. 32650
Filed Apr. 9, 1991, Ser. No. 682,219
Term of patent 14 years
U.S. Cl. D12—128



332,931
BICYCLE TIRE
Rio Marui, Higahinada, Japan, assignor to Marui Ltd., Kobe, Japan
Filed Mar. 19, 1990, Ser. No. 495,299
Term of patent 14 years
U.S. Cl. D12—136



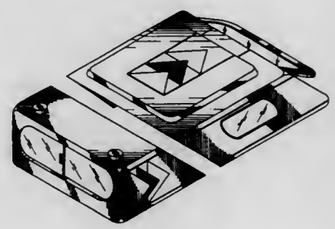
332,932
REMOVABLE BOARDING HANDLE FOR BOATS
Richard A. Nichols, 617 Mathews Road, Port Robinson, Ontario, Canada L0S 1K0 , and John R. Jell, 966 Inverhouse Drive, Suite 1506, Mississauga, Ontario, Canada L5J 4B6
Filed Jan. 14, 1991, Ser. No. 641,088
Term of patent 14 years
U.S. Cl. D12—317



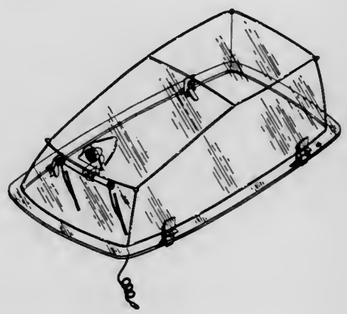
332,933
AUTOMOBILE TIRE
Toru Tsuda, and Yasuhiro Hamada, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Sep. 5, 1990, Ser. No. 578,104
Claims priority, application Japan, Mar. 5, 1990, 2-6923
Term of patent 14 years
U.S. Cl. D12—147



332,934
COMBINED TRUCK MOUNTED SPOILER AND CAMPER SHELL
Michael Brown, and Karen Brown, both of 2574 Buenger Blvd., Granite City, Ill. 62040
Filed Mar. 27, 1991, Ser. No. 675,703
Term of patent 14 years
U.S. Cl. D12—156

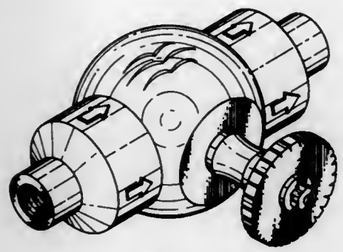


332,935
COVER FOR BOAT PASSENGER AREA
Laverne Moore, P.O. Box 184, Lumberbridge, N.C. 28357
Filed Oct. 4, 1990, Ser. No. 592,868
Term of patent 14 years
U.S. Cl. D12—317

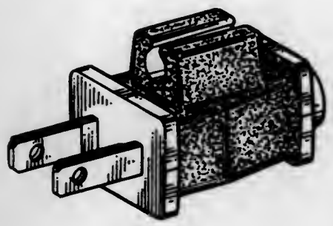


VOL
1147
ISS
1
FE
2
1993
UMI

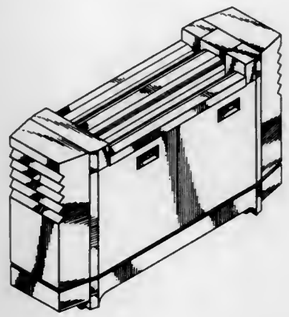
332,936
FLUID POWER ELECTRICITY GENERATOR
David Lawrence, P.O. Box 74, Modoc, S.C. 29838
Filed Apr. 20, 1990, Ser. No. 511,532
Term of patent 14 years
U.S. Cl. D13—112



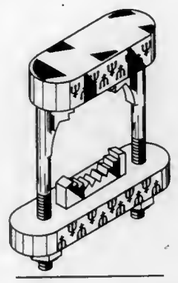
332,937
MOLDED PLUG
James D. Priest, New Paris, Ohio, and Shakil U. Qureshi, Richmond, Tex., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Jan. 29, 1990, Ser. No. 471,984
Term of patent 14 years
U.S. Cl. D13—138



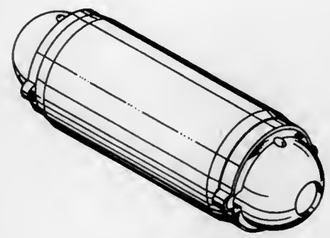
332,938
ELECTRICAL CONNECTOR HOUSING
Lahman D. Lambert, II, Carlisle, Pa., and Dean A. Puerner, Maricopa, Ariz., assignors to AMP Incorporated, Harrisburg, Pa.
Continuation-in-part of Ser. No. 494,053, Mar. 15, 1990, Pat. No. 4,791,571. This application Nov. 8, 1990, Ser. No. 610,592
Term of patent 14 years
U.S. Cl. D13—133



332,939
WELDABLE GROUNDING CLAMP
Robert M. McDonough, Jr., 105 S. Charlene Dr., Panama City, Fla. 32404
Filed Aug. 15, 1990, Ser. No. 567,548
Term of patent 14 years
U.S. Cl. D13—149



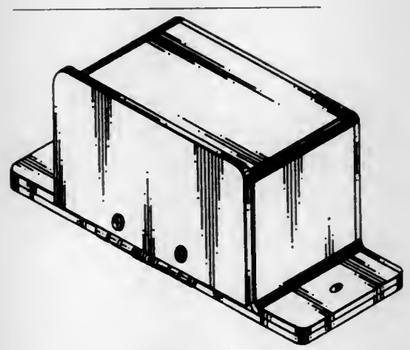
332,940
HOLDER FOR SECURING CONNECTION OF ELECTRICAL EXTENTION CORDS
Robert L. Finlay, Emporia, Kans., assignor to BPE, Inc., Emporia, Kans.
Filed Jul. 2, 1990, Ser. No. 547,098
Term of patent 14 years
U.S. Cl. D13—154



332,941
HOLLOW COVING FOR CONCEALING ELECTRICAL WIRES
Steve E. Kaplan, Elyria, Ohio, assignor to Multilink, Inc., Elyria, Ohio
Filed Jan. 10, 1991, Ser. No. 641,118
Term of patent 14 years
U.S. Cl. D13—155



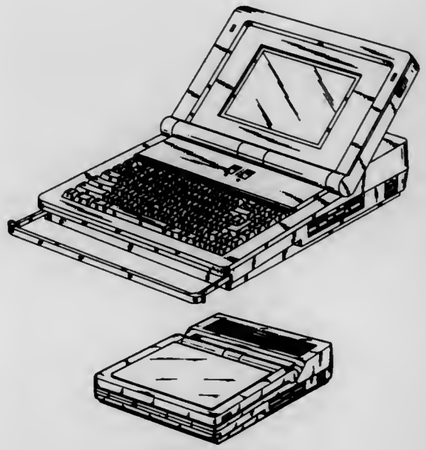
332,942
VEHICLE TRAILER ELECTRICAL CONNECTOR STORAGE BOX
Wayne S. Julien, Orlando, Fla., assignor to J & W Products, Inc., Orlando, Fla.
Filed Aug. 27, 1990, Ser. No. 572,794
Term of patent 14 years
U.S. Cl. D13—184



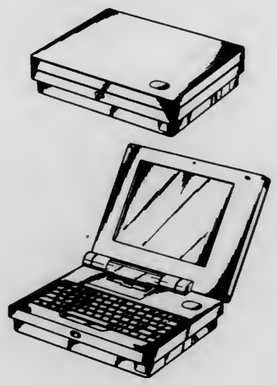
332,943
IC CARD INPUT AND OUTPUT TERMINAL
Norimi Koiwa, and Shigemi Sato, both of Tokyo, Japan, assignors to OKI Electric Industry Co., Ltd. and NTT Data Communications Systems Corporation, both of Tokyo, Japan
Filed May 18, 1990, Ser. No. 525,023
Claims priority, application Japan, Feb. 22, 1990, 2-5369
Term of patent 14 years
U.S. Cl. D14—105



332,944
LAP TOP COMPUTER
Gyu C. Kim, Yongin-gun, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyunggi-Do, Rep. of Korea
Filed Jul. 19, 1990, Ser. No. 554,846
Claims priority, application Rep. of Korea, Apr. 25, 1990, 90-5621
Term of patent 14 years
U.S. Cl. D14—106

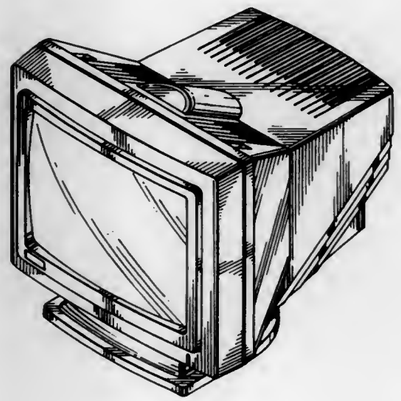


332,945
PORTABLE DATA TERMINAL
Dino M. Savio, Clearwater, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 22, 1991, Ser. No. 703,994
Term of patent 14 years
U.S. Cl. D14—106

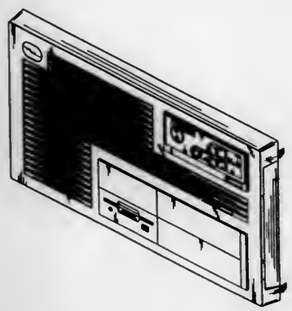


VOL 1147 ISS 1 FEB 2 1993 UMI

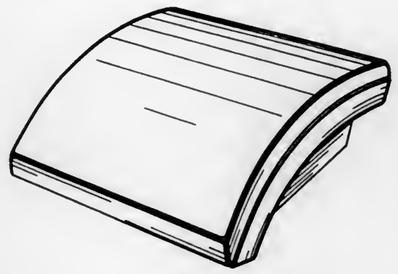
332,946
COMPUTER MONITOR
George Kao, Taipei, Taiwan, assignor to Peripheral Technology, Inc., Taipei, Taiwan
Filed Dec. 10, 1990, Ser. No. 624,775
Claims priority, application Taiwan, Nov. 9, 1990, 79307377
Term of patent 14 years
U.S. Cl. D14—113



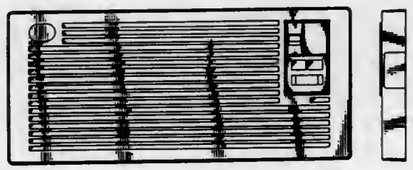
332,947
FRONT PANEL FOR A DATA PROCESSING SYSTEM
Jeffrey L. Kline; Tristan A. Merino; Billy D. Purcell, all of Austin, and Edward J. Sabella, Georgetown, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 13, 1990, Ser. No. 480,180
Term of patent 14 years
U.S. Cl. D14—115



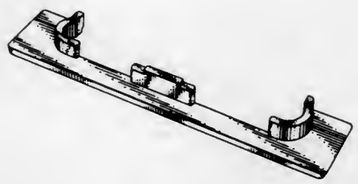
332,948
HOUSING FOR A KEYBOARD
Lance Barr, Redmond, Wash., assignor to Nintendo of America Inc., Redmond, Wash.
Filed Dec. 27, 1989, Ser. No. 501,831
Term of patent 14 years
U.S. Cl. D14—115



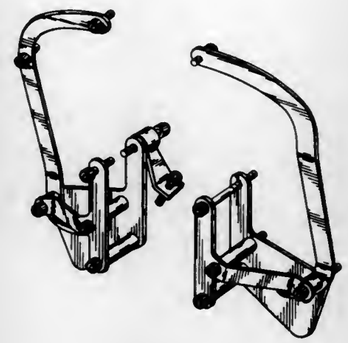
332,949
FRONT PANEL FOR A DIRECT ACCESS STORAGE UNIT FOR A DATA PROCESSING SYSTEM
Wayne L. Aderman, Zumbro Falls, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 28, 1990, Ser. No. 546,057
Term of patent 14 years
U.S. Cl. D14—115



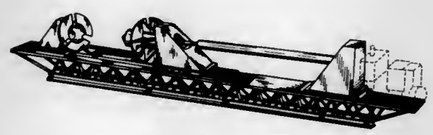
332,950
SNAP GUIDE
Bruce L. Kirwan, Concord, and Thomas W. Petrie, Oakland, both of Calif., assignors to Thunderware, Inc., Orinda, Calif.
Filed Nov. 5, 1990, Ser. No. 608,891
Term of patent 14 years
U.S. Cl. D14—116



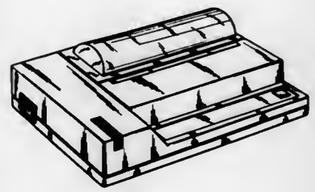
332,951
ENGINE ACCESSORY MOUNTING BRACKET
William R. Seats, 656 E. Cypress, Covina, Calif. 91723
Filed Dec. 14, 1990, Ser. No. 627,378
Term of patent 14 years
U.S. Cl. D15—5



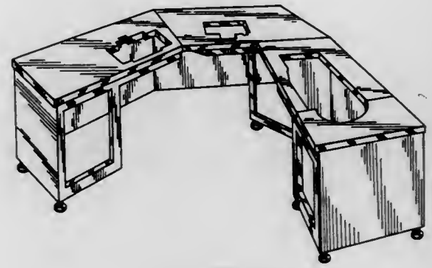
332,952
MACHINE FOR BUNDLING TIRES
Ricky J. Hoke, Box 324A Humaston Rd., Rome, N.Y. 13440
Filed May 18, 1990, Ser. No. 524,832
Term of patent 14 years
U.S. Cl. D15—9



332,953
PRINTER
Christian Sturtzer, Axena, France, assignor to Sinfa, Herblay, France
Filed Nov. 15, 1990, Ser. No. 613,258
Claims priority, application France, May 16, 1990, 903150
Term of patent 14 years
U.S. Cl. D18—54



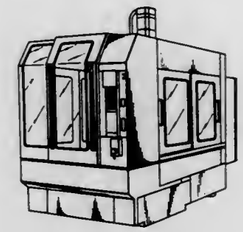
332,954
WORK STATION TO STITCH MANUFACTURED ITEMS
Roberto Sanvito, Milan, Italy, assignor to Rimoldi, S.R.L., Italy
Continuation-in-part of Ser. No. 218,929, Jul. 13, 1988, abandoned. This application Dec. 29, 1990, Ser. No. 633,423
Claims priority, application Italy, May 30, 1988, 21322 B/88
Term of patent 14 years
U.S. Cl. D15—66



332,955
PIVOTAL CHUTE
Herman E. Hull, 7163 County Rd. 135, Kenton, Ohio 43326
Filed Jan. 11, 1990, Ser. No. 463,603
Term of patent 14 years
U.S. Cl. D15—122

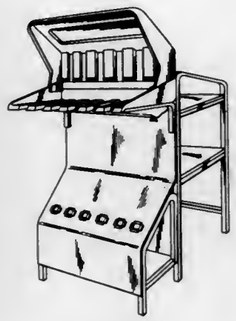


332,956
NUMERICALLY CONTROLLED DRILLING MACHINE
Nobuyuki Suda, Oshino, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan
Filed Feb. 26, 1991, Ser. No. 661,087
Claims priority, application Japan, Oct. 5, 1990, 2-33426
Term of patent 14 years
U.S. Cl. D15—132

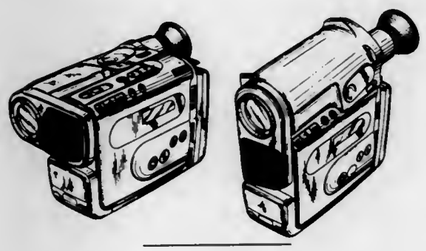


VOL
1147
ISS
1
FE
2
1993
UMI

332,957
LUBRICATION WORK STATION
Gary W. Kling; Jerry D. Shew, both of Charlotte, N.C., and Theodore W. Beise, Arlington Heights, Ill., assignors to Stewart Warner Alemite Corporation, Charlotte, N.C.
Filed Nov. 1, 1990, Ser. No. 608,183
Term of patent 14 years
U.S. Cl. D15—151



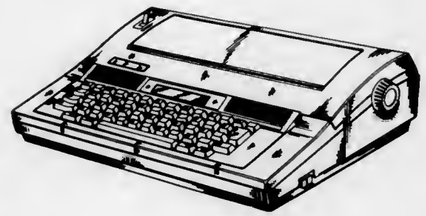
332,958
COMBINED VIDEO TAPE RECORDER AND CAMERA
Atsuhiko Urushihara, Kokubunji; Atsutoshi Sato, Koganei; Hiroto Takita, Higashi Kurume; Takanori Nishiyama, Koganei; Akira Takahashi, Saitama, and Masami Mizuno, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 25, 1991, Ser. No. 674,054
Claims priority, application Japan, Sep. 25, 1990, 2-31765
Term of patent 14 years
U.S. Cl. D16—202



332,959
HARMONICA HOLDER
Thomas M. Ileo, 94 Whitehall St., Providence, R.I. 02909
Filed Jun. 25, 1990, Ser. No. 543,298
Term of patent 14 years
U.S. Cl. D17—13



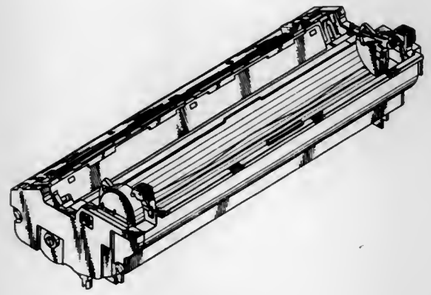
332,960
TYPEWRITER
Paul M. Pierce, Syracuse, N.Y., assignor to Smith Corona Corporation, Cortland, N.Y.
Filed Aug. 20, 1990, Ser. No. 570,175
The portion of the term of this patent subsequent to Nov. 6, 2004, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—1



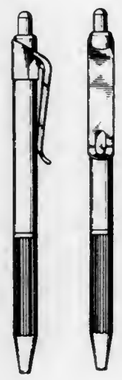
332,961
CALCULATOR
Richard Peersmann, Scheveningen, Netherlands, assignor to Pollyflame International B.V., Netherlands
Filed Mar. 8, 1990, Ser. No. 490,269
Claims priority, application Hague, Dec. 11, 1989, DM/015317
Term of patent 14 years
U.S. Cl. D18—7



332,962
IMAGE DRUM CARTRIDGE
Hiroshi Kikuchi; Hisao Ono; Yoshiharu Momiyama, and Shigeki Nakajima, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan
Filed Dec. 28, 1989, Ser. No. 458,381
Claims priority, application Japan, Nov. 2, 1989, 1-39926
Term of patent 14 years
U.S. Cl. D18—43



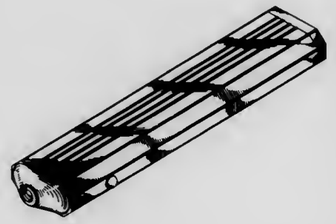
332,963
WRITING INSTRUMENT
Por Anavil, and Julian M. H. Deeley, both of Bangkok, Thailand, assignors to D.T.C. Industries Limited, Thailand
Filed Jan. 19, 1989, Ser. No. 300,053
Term of patent 14 years
U.S. Cl. D19—49



332,964
MARKING INSTRUMENT
Giorgetto Giugiaro, Turin, Italy, assignor to The Gillette Company, Boston, Mass.
Filed Mar. 15, 1991, Ser. No. 670,214
Claims priority, application Argentina, Sep. 17, 1990, 056877
Term of patent 14 years
U.S. Cl. D19—49

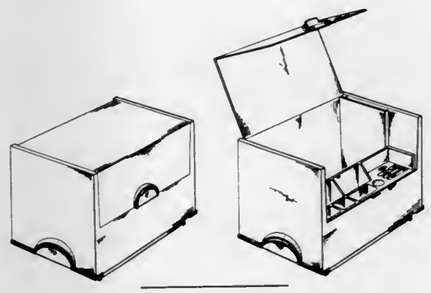


332,965
LASER POINTER
Tzyh-Sheng Wu, and Jair-Horng Lian, both of Taipei, Taiwan, assignors to Pacific Electric Wire & Cable Co., Ltd., Taipei, Taiwan
Filed Aug. 28, 1990, Ser. No. 574,239
Term of patent 14 years
U.S. Cl. D19—59

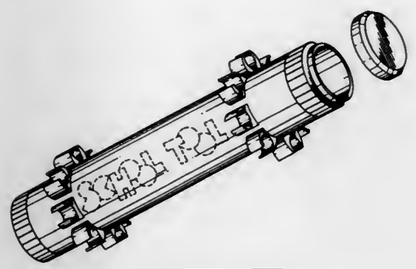


VOL
1147
ISS
1
FE
2
1993
UMI

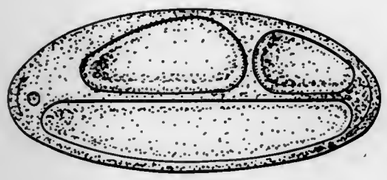
332,966
COMBINED FILE BOX AND ORGANIZER FOR ASSORTED DESK ARTICLES
Bruce Ancona, and Jane Ancona, both of New York, N.Y., assignors to M. Kamenstein, Inc., White Plains, N.Y.
Filed Jul. 16, 1991, Ser. No. 729,088
Term of patent 14 years
U.S. Cl. D19—75



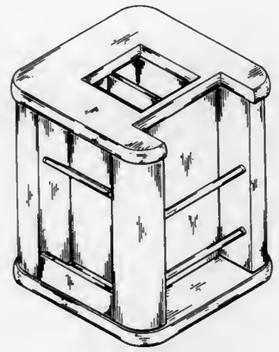
332,967
SCHOOL SUPPLY HOLDER
Buck Oglesby, P.O. Box 464, Lyons, Ga. 30436
Filed Feb. 14, 1990, Ser. No. 479,749
Term of patent 14 years
U.S. Cl. D19—77



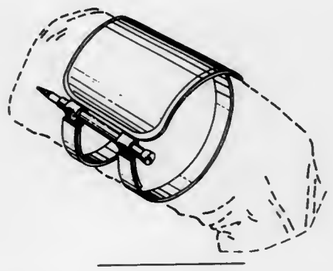
332,968
HOLDER FOR ASSORTED DESK ARTICLES
Richard F. M. Peersmann, Scheveningen, Netherlands, assignor to Pollyflame International B.V., Roelofarendsveen, Netherlands
Filed Jul. 3, 1991, Ser. No. 725,743
Claims priority, application United Kingdom, Jan. 8, 1991, 2012178
Term of patent 14 years
U.S. Cl. D19—77



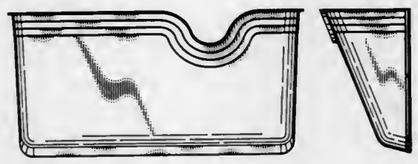
332,969
OFFICE GADGET ORGANIZER
Bruce Ancona, and Jane Ancona, both of New York, N.Y., assignors to M. Kamenstein, Inc., White Plains, N.Y.
Filed Jul. 29, 1991, Ser. No. 735,121
Term of patent 14 years
U.S. Cl. D19—77



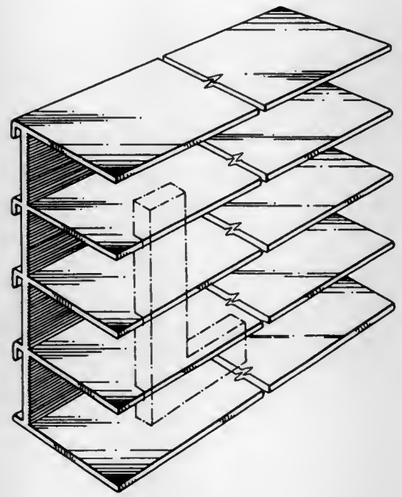
332,970
COMBINED THIGH-MOUNTABLE WRITING SURFACE AND WRITING INSTRUMENT
Chad A. Myers, Fort Collins, Colo., assignor to Monty Fritts and Darren Myers, Ottawa, Kans.
Filed Jun. 24, 1991, Ser. No. 719,526
Term of patent 14 years
U.S. Cl. D19—78



332,971
VERTICALLY-MOUNTABLE FILE ASSEMBLY MODULE
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.
Filed Jun. 13, 1991, Ser. No. 714,747
Term of patent 14 years
U.S. Cl. D19—90



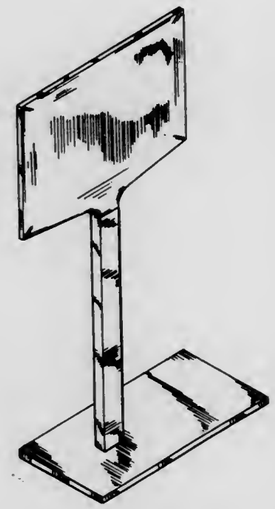
332,972
GRAPHICS DISPLAY SUPPORT STAND
Richard G. Lott, 4238 Dumfries Street, Vancouver, British Columbia, Canada V5N 3T2
Filed May 7, 1990, Ser. No. 520,227
Claims priority, application Canada, Nov. 7, 1989, 0711895
Term of patent 14 years
U.S. Cl. D20—10



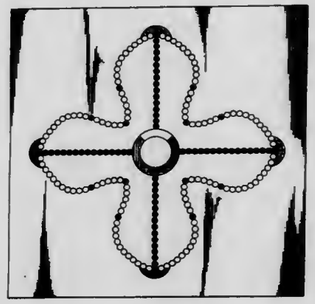
332,973
SIGN
James M. Jenkins, and Jerry D. Jenkins, both of Rte. 2. Box 214-B, Ellerbe, N.C. 28338
Filed Mar. 18, 1991, Ser. No. 670,616
Term of patent 14 years
U.S. Cl. D20—10



332,974
ADVERTISING SIGNBOARD
Réjean Asselin, Laval, Canada, assignor to Re/Max Quebec Inc., Laval, Canada
Filed Jan. 31, 1991, Ser. No. 648,380
Term of patent 14 years
U.S. Cl. D20—41

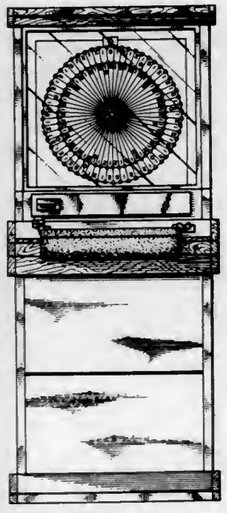


332,975
GAME BOARD
Fernando N. Terminel, P.O. Box 16799, South Lake Tahoe, Calif. 95702
Filed Nov. 26, 1990, Ser. No. 617,862
Term of patent 14 years
U.S. Cl. D21—35



VOL 1147 ISS 1 FE 2 1993 UMI

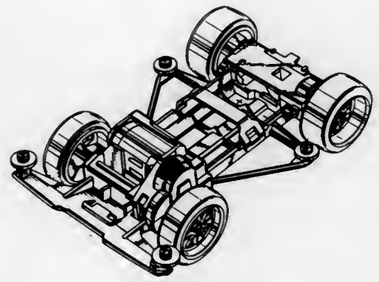
332,976
SLOT MACHINE
Leroy H. Gutknecht, 735 Oakmount #408, and Michael A. Wichinsky, 2575 S. Highland Dr., both of Las Vegas, Nev. 89109
Filed Mar. 23, 1990, Ser. No. 497,644
Term of patent 14 years
U.S. Cl. D21—39



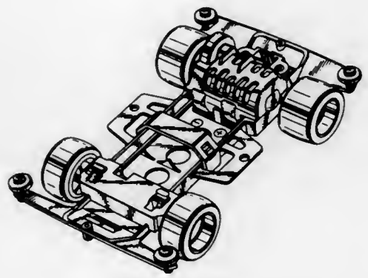
332,977
STUNT RIDING TOY
Michael L. Huffman, and Michael D. Commerford, both of Festus, Mo., assignors to High Tech Toys, Inc., Festus, Mo.
Filed May 20, 1991, Ser. No. 702,711
Term of patent 14 years
U.S. Cl. D21—71



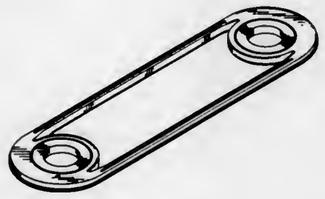
332,978
TOY VEHICLE CHASSIS
Hirotsugu Tsuchiya, Shizuoka, Japan, assignor to Kabushiki Kaisha Tamiya Mokei, Shizuoka, Japan
Filed Feb. 20, 1991, Ser. No. 658,364
Claims priority, application Japan, Dec. 28, 1990, 2-43766
Term of patent 14 years
U.S. Cl. D21—141



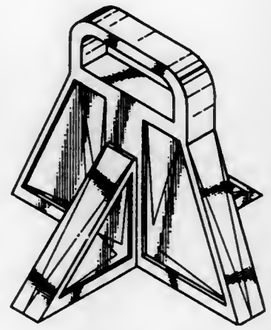
332,979
TOY VEHICLE CHASSIS
Hirotsugu Tsuchiya, Shizuoka, Japan, assignor to Kabushiki Kaisha Tamiya Mokei, Shizuoka, Japan
Filed Feb. 20, 1991, Ser. No. 658,366
Claims priority, application Japan, Dec. 28, 1990, 2-43767
Term of patent 14 years
U.S. Cl. D21—147



332,980
RESISTANCE STRAP FOR AN EXERCISE MACHINE
Jerry L. Wilson; Jon R. Schneider, both of Hillsboro, and Frederick E. Collins, Creswell, all of Oreg., assignors to Jerry L. Wilson, Hillsboro, Oreg.
Filed Jun. 17, 1991, Ser. No. 716,322
Term of patent 14 years
U.S. Cl. D21—191



332,981
PUSHUP STAND
James R. Poli, 629 Beatty Rd., Monroeville, Pa. 15146
Filed Aug. 22, 1990, Ser. No. 570,704
Term of patent 14 years
U.S. Cl. D21—198



332,982
GAME BALL
Richard Norman; Sonja Norman, both of Sutton, and David Chamberlain, Knowlton, all of Canada, assignors to Profitable Entertainment Products, Inc., Knowlton, Canada
Filed Mar. 15, 1990, Ser. No. 493,673
Term of patent 14 years
U.S. Cl. D21—204



332,983
GROOVED GOLF IRON
Craig D. Dauguard, 9046 Independence, Canoga Park, Calif. 91304
Filed Aug. 11, 1989, Ser. No. 393,312
Term of patent 14 years
U.S. Cl. D21—220

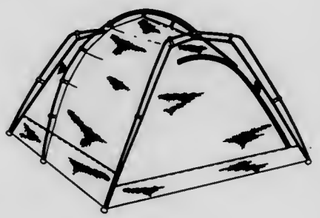


332,984
GOLF CLUB HEAD
Kanji Iinuma, Musashino, and Yuichi Aizawa, Higashikurume, both of Japan, assignors to Daiwa Golf Co., Ltd., Higashikurume, Japan
Filed Aug. 3, 1990, Ser. No. 563,111
Claims priority, application Japan, Feb. 5, 1990, 2-3213
Term of patent 14 years
U.S. Cl. D21—220



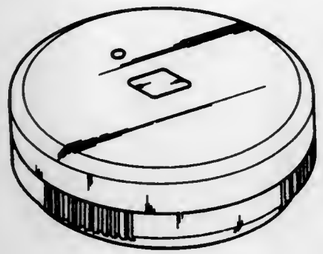
D332,985
Patent Not Issued For This Number

332,986
TENT
Kye S. Choi, Seoul, Rep. of Korea, assignor to Banpo Corporation, Seoul, Rep. of Korea
Filed Jan. 30, 1991, Ser. No. 648,399
Term of patent 14 years
U.S. Cl. D21—253

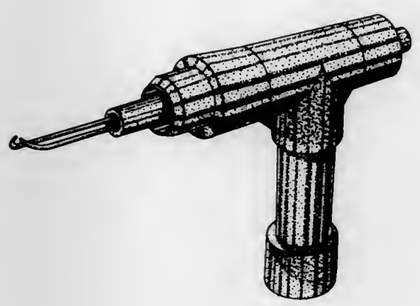


VOL
1147
ISS
1
FE
2
1993
UMI

332,987
ULTRASONIC COCKROACH REPELLENT
Jau Der-Jinn, 12F-3, No. 163, Nanking E. Rd., Sec. 5, Taipei, Taiwan
Filed Oct. 26, 1990, Ser. No. 605,015
Term of patent 14 years
U.S. Cl. D22—120



332,988
ELECTRONIC TICK REMOVER
James R. Pacenti, Little Creek Rd., Martins Creek, Pa. 18063
Filed Nov. 15, 1990, Ser. No. 614,736
Term of patent 14 years
U.S. Cl. D22—123



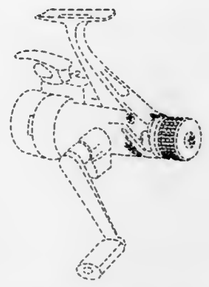
332,989
FISHING LURE
Glenn L. Brown, 976 NW. Lanai Loop, Seal Rock, Oreg. 97376
Filed Mar. 25, 1991, Ser. No. 675,464
Term of patent 14 years
U.S. Cl. D22—128



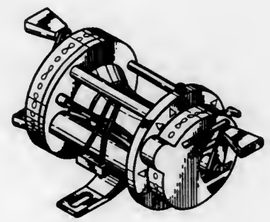
332,990
TELESCOPIC FISH STUNNING CLUB
John M. Grady, 414 Sandy Bend, Castle Rock, Wash. 98611, and Wayne Roethler, 7419 Willow Grove Rd., Longview, Wash. 98632
Filed Jun. 26, 1990, Ser. No. 544,160
Term of patent 14 years
U.S. Cl. D22—134



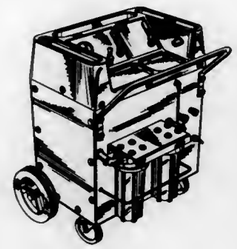
332,991
DRAG SETTING WINDOW FOR A SPINNING FISHING REEL
Richard J. Robbins, Derby, Kans., and Richard J. Feehan, Pawnee, Okla., assignors to Zebco Corporation, Tulsa, Okla.
Filed Sep. 5, 1989, Ser. No. 402,433
Term of patent 14 years
U.S. Cl. D22—141



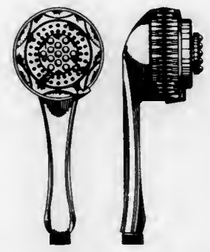
332,992
AUTOMATIC HOOK SETTING FISH REEL
Wayne E. Mintz, 4898 Enser Rd., Eden, N.Y. 14057
Filed Aug. 8, 1990, Ser. No. 564,299
Term of patent 14 years
U.S. Cl. D22—140



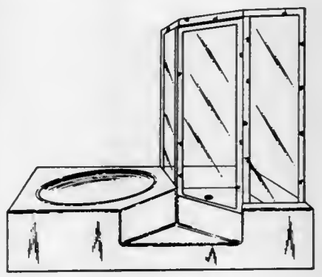
332,993
ANTIFREEZE RECYCLER
William S. Dea, Bloomington; Curt A. Deiner, Prior Lake, and James G. Nyberg, Minneapolis, all of Minn., assignors to Century Mfg. Co., Minneapolis, Minn.
Filed Oct. 30, 1990, Ser. No. 605,771
Term of patent 14 years
U.S. Cl. D23—207



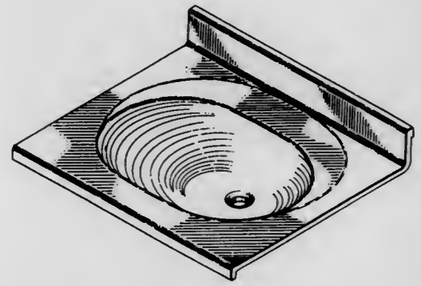
332,994
SHOWER HEAD
Hing-Wah Huen, Kowloon, Hong Kong, assignor to The Fairform Mfg. Co., Ltd., Hong Kong
Filed Apr. 25, 1991, Ser. No. 692,033
Claims priority, application United Kingdom, Nov. 7, 1990, 2010885
Term of patent 14 years
U.S. Cl. D23—223



332,995
COMBINED BATHTUB AND SHOWER STALL
Alan B. Dworetzky, 1108 Redgate Ave., Norfolk, Va. 23507
Filed Apr. 27, 1990, Ser. No. 515,272
Term of patent 14 years
U.S. Cl. D23—275



332,996
LAVATORY
Richard S. Hart, Elgin; Jeffrey P. Heuel, Elmhurst, both of Ill.; Thomas R. Nusz, Hockessin, Del., and Richard A. Valiga, Bartlett, Ill., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Jul. 11, 1990, Ser. No. 551,125
Term of patent 14 years
U.S. Cl. D23—294

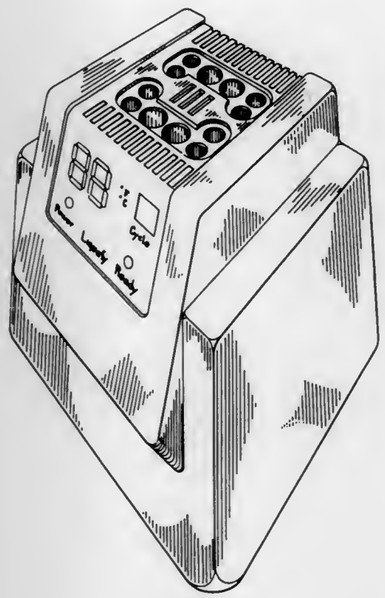


332,997
HEATED TOILET SEAT
Michael Keefe, 5936 S. Spaulding Ave., Chicago, Ill. 60629
Filed Aug. 13, 1990, Ser. No. 565,749
Term of patent 14 years
U.S. Cl. D23—311

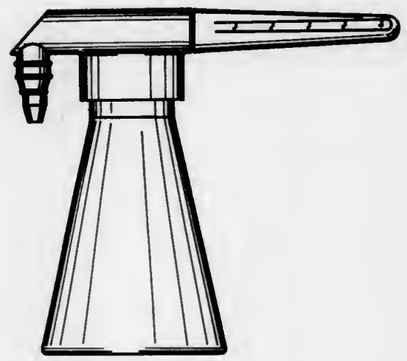


VOL
1147
ISS
1
FE
2
1993
UMI

332,998
HEATING UNIT FOR USE IN MELTING AND KEEPING HYDROCOLLOID CARTRIDGES IN LIQUID FORM
Robert E. Burridge, Santa Barbara, Calif., assignor to Belport Co., Inc., Camarillo, Calif.
Filed Dec. 31, 1990, Ser. No. 636,992
Term of patent 14 years
U.S. Cl. D23—335



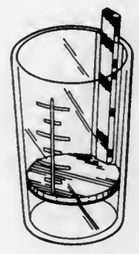
333,000
DISPOSABLE MEDICAL ATOMIZER FOR WOUND IRRIGATION
Gregory W. Good, Fairbope, and Matthew D. Smith, Berlin, both of Pa., assignors to DeVilbiss Health Care, Inc., Somerset, Pa.
Filed Nov. 6, 1990, Ser. No. 611,345
Term of patent 14 years
U.S. Cl. D24—108



332,999
AIR FRESHENER DISPENSER
Earl Hoyt, Franklin Lakes, and Manharbhai K. Patel, Saddle Brook, both of N.J., assignors to Reckitt & Colman Inc., Wayne, N.J.
Filed Jan. 10, 1991, Ser. No. 639,695
Term of patent 14 years
U.S. Cl. D23—367



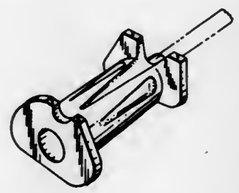
333,001
COMBINED MIXING CUP AND MIXING ELEMENT THEREFOR
Corydean K. Harvey, P.O. Box 451, Hopkinsville, Ky. 42240
Filed Nov. 14, 1988, Ser. No. 270,284
Term of patent 14 years
U.S. Cl. D24—116



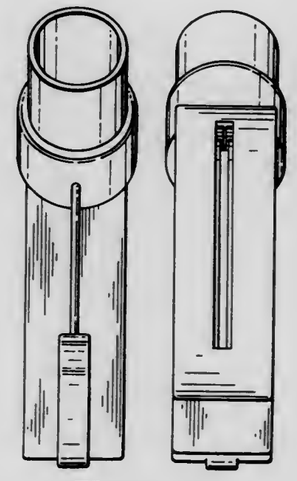
333,002
INTERDENTAL BRUSH HANDLE
Emanuel B. Tarrson, and Dane Maric, both of Chicago, Ill., assignors to John O. Butler Company, Chicago, Ill.
Filed Aug. 14, 1990, Ser. No. 567,534
Term of patent 14 years
U.S. Cl. D24—133



333,003
NEEDLE HEAD FOR A BIOPSY CANNULA
Kenneth E. Chettleburgh, Sparta, Mich., assignor to DLP, Inc., Grand Rapids, Mich.
Filed Jul. 31, 1990, Ser. No. 560,327
Term of patent 14 years
U.S. Cl. D24—146



333,004
VENTILATORY INSTRUMENT FOR MEASURING PEAK EXPIRATORY FLOW
George A. McNamee, Saffron Walden; James A. Stockwell, and Ronald F. Checksfield, both of London, all of England, assignors to Ferraris Development and Engineering Company Limited, London, England
Filed Sep. 28, 1990, Ser. No. 589,891
Claims priority, application United Kingdom, Mar. 29, 1990, 2005774
Term of patent 14 years
U.S. Cl. D24—164



333,005
TRANSPORTABLE OXYGEN THERAPY UNIT
Dale M. Taylor, Salt Lake City, Utah, assignor to Ceramatec, Inc., Salt Lake City, Utah
Filed Oct. 30, 1990, Ser. No. 606,336
Term of patent 14 years
U.S. Cl. D24—164

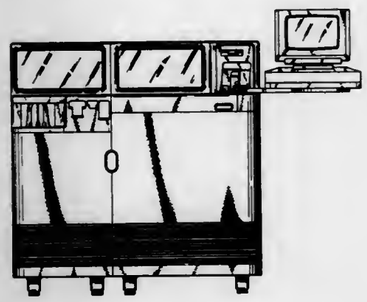


VOL
1147
ISS
1
FE
2
1993
UMI

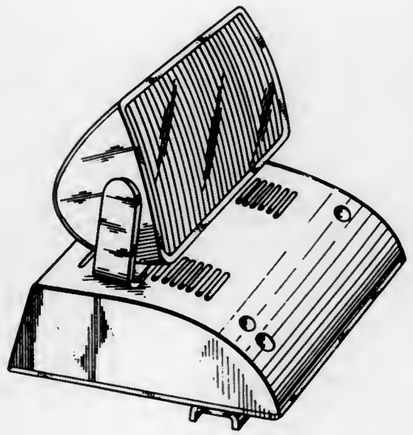
333,006
AUTOMATIC LATEX TUBE TOURNIQUET
Sai Y. Tam, G.P.O. Box 11071, Hong Kong, Hong Kong
Filed Aug. 15, 1990, Ser. No. 568,313
Term of patent 14 years
U.S. Cl. D24—169



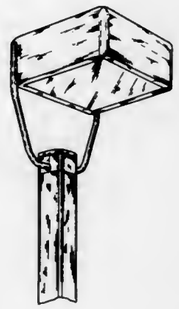
333,007
CLINICAL ANALYZER
Angelo LaBarbera, Honeoye, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 17, 1990, Ser. No. 628,755
Term of patent 14 years
U.S. Cl. D24—232



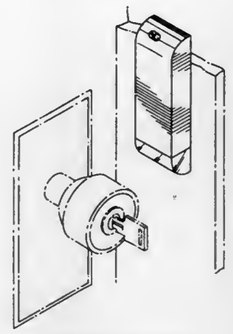
333,008
ADJUSTABLE EXTERIOR LIGHT
John S. Frost; David P. Tanner, both of Thousand Oaks, Calif., and Ronald L. Sitzema, Jr., Ellsworth, Mich., assignors to Siemens Solar Industries, L. P., Camarillo, Calif.
Filed Jan. 4, 1991, Ser. No. 637,882
Term of patent 14 years
U.S. Cl. D26—63



333,009
FLOODLIGHT
Kent A. Solberg, Racine, and Donald Wandler, Caledonia, both of Wis., assignors to Ruud Lighting, Inc., Racine, Wis.
Filed Feb. 8, 1991, Ser. No. 652,908
Term of patent 14 years
U.S. Cl. D26—68



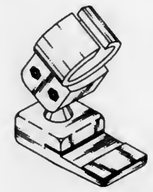
333,010
DOORJAMB LIGHT
Robert I. Lowe, Sr., Rte. 1, Box 73-C, Islandton, S.C. 29929
Filed Jun. 15, 1989, Ser. No. 366,402
Term of patent 14 years
U.S. Cl. D26—72



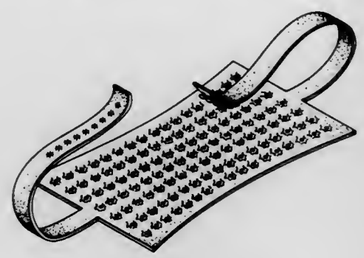
333,011
LUMINAIRE
Robert L. Ewing, Granville; Peter A. Koloski, Columbus; Robert J. Hayes, Gahanna; Richard J. Malecha, Delaware, and David G. Meredith, Westerville, all of Ohio, assignors to Holophane Company, Inc., Newark, Ohio
Filed Apr. 20, 1990, Ser. No. 513,332
Term of patent 14 years
U.S. Cl. D26—88



333,012
FLASHLIGHT HOLDER
James Fleming, 140 Sherry La., Kalispell, Mont. 59901
Filed Dec. 12, 1989, Ser. No. 448,824
Term of patent 14 years
U.S. Cl. D26—138



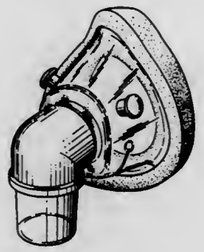
333,013
HAIR FROSTING BAND FOR THE HEAD
Chris C. Scianna, 29 Johnson Ave., Medford, Mass. 02155
Filed Jul. 26, 1990, Ser. No. 559,556
Term of patent 14 years
U.S. Cl. D28—20



333,014
DISPENSING CONTAINER FOR A COSMETIC PRODUCT
Frank J. Lang, Henderson, Nev., assignor to Federal Package, Ltd., Chaska, Minn.
Filed Oct. 26, 1990, Ser. No. 603,858
Term of patent 14 years
U.S. Cl. D28—76



333,015
NASAL MASK
Robert B. Farmer, Boulder, and R. Scott St. John, Golden, both of Colo., assignors to Lifecare International, Inc., Lafayette, Colo.
Filed Dec. 2, 1991, Ser. No. 801,175
Term of patent 14 years
U.S. Cl. D29—8

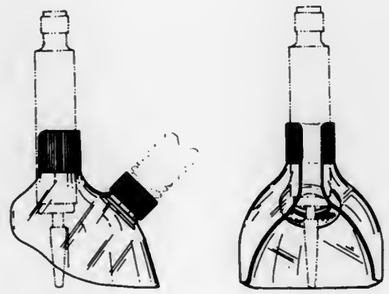


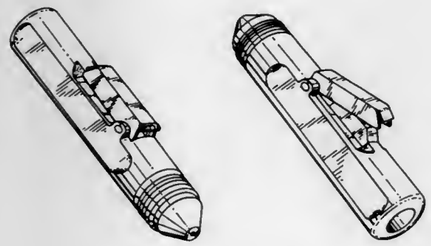
VOL
1147
ISS
1
FE
2
1993
UMI

333,016
HAND RESTRAINT MITT
Linda J. Lambert, P.O. Box 505, Whittier, N.C. 28789
Filed May 31, 1990, Ser. No. 532,974
Term of patent 14 years
U.S. Cl. D29—20



333,017
ANIMAL WATERING VALVE
Goran Karlsson, Enhorna, Sweden, assignor to Alfa-Laval Agri Scandinavia, Sodertalje, Sweden
Filed Mar. 13, 1990, Ser. No. 492,878
Claims priority, application Sweden, Sep. 14, 1989, 89-2066
Term of patent 14 years
U.S. Cl. D30—132



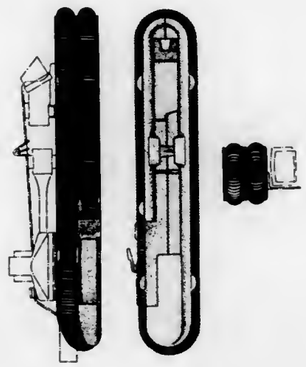


333,018
FLOOR POLISHER
Eugene L. Bothun, Loveland; Frederick M. Bores, Highlands Ranch, and Edward T. Biegel, Littleton, all of Colo., assignors to Windsor Industries, Inc., Englewood, Colo.
Filed Oct. 15, 1990, Ser. No. 597,768
Term of patent 14 years
U.S. Cl. D32—19

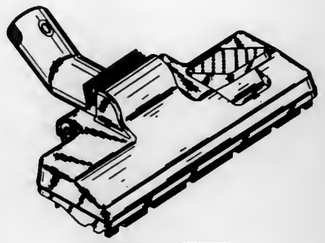


333,019
SAFETY VACUUM SHIELD
Robert S. Whitman, 2714 Northview Rd., Philadelphia, Pa. 19152
Filed Sep. 4, 1990, Ser. No. 577,587
Term of patent 14 years
U.S. Cl. D32—31

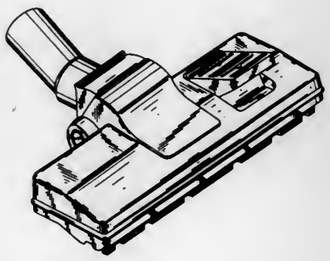
333,020
COMBINED VACUUM CLEANER HOSE AND RACK
Darwin T. McKnight, Louisville, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed Apr. 29, 1991, Ser. No. 692,517
Term of patent 14 years
U.S. Cl. D32—31



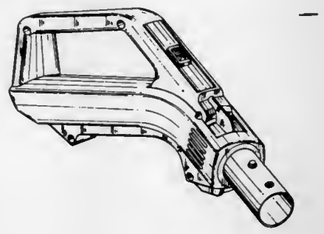
333,021
SUCTION CLEANER NOZZLE
Jacob Breur, Peize, Netherlands, assignor to Wessel-Werk GmbH, Reichshof, Fed. Rep. of Germany
Filed Sep. 1, 1989, Ser. No. 402,142
Term of patent 14 years
U.S. Cl. D32—32



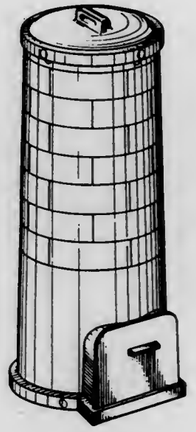
333,022
SUCTION CLEANER NOZZLE
Wilfried Kramer, Reichshof-Odenspiel; Klaus-Dieter Riehl, Drolshagen-Brachtpe, and Otto Illesy, Reichshof-Erdingen, all of Fed. Rep. of Germany, assignors to Wessel-Werk GmbH & Co. Kommanditgesellschaft, Reichshof, Fed. Rep. of Germany
Filed Sep. 1, 1989, Ser. No. 402,143
Term of patent 14 years
U.S. Cl. D32—32



333,023
VACUUM CLEANER HOSE HANDLE
Roy H. Herron, Jr., Starr, S.C., assignor to Ryobi Motor Products Corp., Easley, S.C.
Filed Oct. 10, 1990, Ser. No. 595,012
Term of patent 14 years
U.S. Cl. D32—34



333,024
COMPOST CONTAINER
Jan van Buiten, Lunteren, Netherlands, assignor to N.V. Vuilafvoer Maatschappij VAM, Netherlands
Filed Sep. 17, 1991, Ser. No. 761,021
Term of patent 14 years
U.S. Cl. D34—1

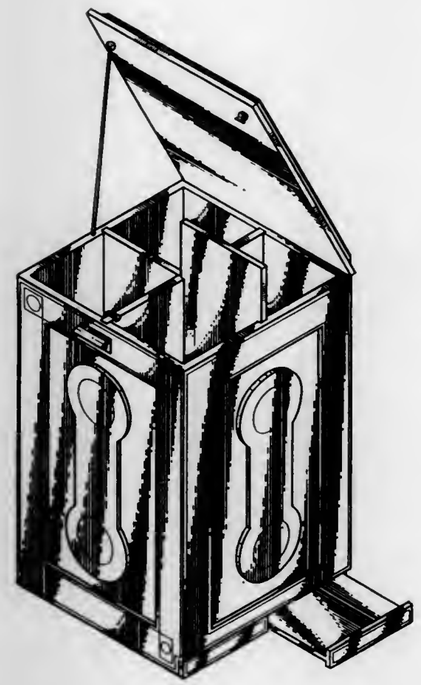


333,025
TRASH CONTAINER
Jean Doherty, 331 Division Ave., Hasbrouck Heights, N.J. 07604-1721
Filed Mar. 27, 1991, Ser. No. 675,709
Term of patent 14 years
U.S. Cl. D34—7

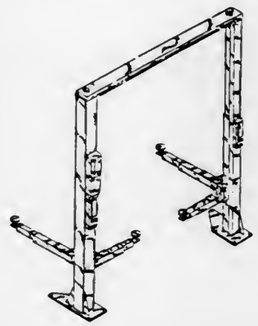


VOL
1147
ISS
1
FE
2
1993
UMI

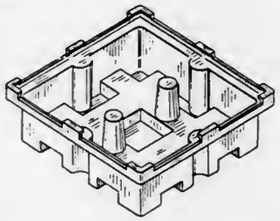
333,026
DIVIDED AND COMPARTMENTED TRASH CONTAINER
Janet L. Befus, 37 Woodland Dr., Northford, Conn. 06472
Filed Apr. 4, 1991, Ser. No. 680,685
Term of patent 14 years
U.S. Cl. D34—7



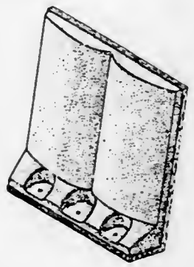
333,027
COMBINED HOISTING PLATFORM AND CONTROL CONSOLE THEREFOR
Hans Nussbaum, Korkerstrasse 24, 7640 Kehl-Bodersweier, Fed. Rep. of Germany
Filed Jul. 26, 1991, Ser. No. 736,893
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1991, M 9100946.4
Term of patent 14 years
U.S. Cl. D34—33



333,028
PALLET CONTAINER
Robert J. Lux, Jr., Broken Arrow, Okla., assignor to Armin Thermodynamics Corporation, Broken Arrow, Okla.
Filed Jul. 24, 1991, Ser. No. 735,361
Term of patent 14 years
U.S. Cl. D34—38



333,029
GRAVE MARKER
Debra J. Hartline, 113 Cemetery St., Lilly, Pa. 15938
Filed May 9, 1990, Ser. No. 520,863
Term of patent 14 years
U.S. Cl. D99—17



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF FEBRUARY, 1993

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See*—
Isaksson, Juhani, 5,183,641, Cl. 422-143.000.
A. H. Robins Company, Incorporated: *See*—
Taylor, Chandler R., Jr.; Cale, Albert D., Jr.; and Stauffer, Harold F., Jr., 5,183,902, Cl. 548-950.000.
Welstead, William J., Jr.; and Lo, Young S., 5,183,903, Cl. 548-952.000.
A. Nattermann & Cie. GmbH Corporation of the Federal Republic of Germany: *See*—
Jodlbauer, Heinz D., 5,183,680, Cl. 426-611.000.
Aaronson, Alan M.; and Bright, Danielle A., to Akzo NV. Phenolphthalein bis (dihydrocarbyl phosphate) compounds. 5,183,905, Cl. 549-218.000.
Aaronson, Stuart A.: *See*—
Kraus, Matthias H.; and Aaronson, Stuart A., 5,183,884, Cl. 536-23.500.
ABB Lummus Crest Inc.: *See*—
Reilly, James W.; and Hamilton, Gary, 5,183,556, Cl. 208-57.000.
ABB Power T&D Company, Inc.: *See*—
Boyd, Edward L.; Eley, E. R.; and Puri, Jeewan L., 5,184,270, Cl. 361-35.000.
Abbott Laboratories: *See*—
Brooks, Dee W.; Stewart, Andrew O.; and Martin, Jonathan G., 5,183,818, Cl. 514-231.500.
Abdelmouttalib, Najib; and Duflot, Didier, to Bull, S.A. ISDN multiprotocol communications controller. 5,184,348, Cl. 370-95.100.
Abe, Kazuto: *See*—
Maruyama, Satoshi; Minorikawa, Naoki; Arakawa, Tsutomu; Yoshida, Haruo; Tagoshi, Hirotaka; and Abe, Kazuto, 5,183,917, Cl. 558-251.000.
Abe, Minoru; and Takano, Tetsuji, to Kabushiki Kaisha Daikin Seisakusho. Release mechanism for pull-type clutch. 5,183,141, Cl. 192-91.00A.
Abe, Toshihiko, to Japan as represented by Director General of Agency of Industrial Science and Technology. Method for forming and ultrasonic image. 5,183,049, Cl. 128-663.010.
Abe, Tsuyoshi; Umezawa, Nobumasa; Fukuzumi, Tatsuo; Uchibori, Katsuyuki; Ozaki, Junji; and Motomura, Hiroharu, to Mitsubishi Steel Mfg. Co., Ltd. High strength spring steel. 5,183,634, Cl. 420-110.000.
Abeille, Pierre; and Bredif, Didier, to Schlumberger Industries. Coupling for axially locking a reel of a tape cassette and for driving it without backlash. 5,183,219, Cl. 242-68.100.
Abou-Gharbia, Magid A. M.; and Moyer, John A., to American Home Products Corporation. Use of fused bicyclic imides in the treatment of various CNS disorders. 5,183,819, Cl. 514-255.000.
Abtox, Inc.: *See*—
Campbell, Bryant A., 5,184,046, Cl. 315-111.210.
Acerno, Michael J.; and Guarino, Mark A. Sulky. 5,183,279, Cl. 280-63.000.
Acker, Gregory G.: *See*—
Burkholder, Richard A.; and Acker, Gregory G., 5,183,054, Cl. 128-754.000.
Ackerman, Yuri; and Gutierrez, Joseph A., to Chicago Rawhide Manufacturing Co. Seal for sending unit. 5,183,267, Cl. 277-12.000.
Acona, Bruce; and Ancona, Jane, to M. Kamenstein, Inc. Kitchen storage unit. 5,183,165, Cl. 211-77.000.
Acuderm, Inc.: *See*—
Yeh, Charles R.; and Huldin, Donald H., 5,183,053, Cl. 128-754.000.
Adachi, Etsushi: *See*—
Aiba, Yoshiko; Adachi, Hiroshi; and Adachi, Etsushi, 5,183,846, Cl. 524-865.000.
Adachi, Hiroshi: *See*—
Aiba, Yoshiko; Adachi, Hiroshi; and Adachi, Etsushi, 5,183,846, Cl. 524-865.000.
Adachi, Masakazu; Saitou, Toshimitu; Murata, Kimiyo; and Tamura, Aki, to Japan Immuno Research Laboratories Co., Ltd. Kit for the detection of denatured lipoproteins. 5,183,738, Cl. 435-7.100.
Adam, Maurice: *See*—
Alivizatos, Margaret A., 5,182,828, Cl. 5-631.000.
Adams, Bruce E.: *See*—
Wickersheim, Kenneth A.; and Adams, Bruce E., 5,183,338, Cl. 374-131.000.
Adams, James W.; Loving, Louis S.; Betts, David A.; Donnelly, David P.; and Nunley, Alvin, III, to Techsonic Industries, Inc. Multi-beam sonar fish detection apparatus providing real-time three-dimensional wire-frame display representation. 5,184,330, Cl. 367-111.000.
Adams, Jonah, Jr.: *See*—
Rinehart, Steven R.; and Adams, Jonah, Jr., 5,183,523, Cl. 156-367.000.
Adams, Lawrence J.: *See*—
Lodico, James I.; Coder, David R.; Adams, Lawrence J.; Guthrie, Rebecca A. F.; Andes, Raymond M., Jr.; and Alexander, Philip G., 5,183,487, Cl. 55-289.000.
Adams, Michael B., to Brazeway, Incorporated. Opposed canted evaporator. 5,183,105, Cl. 165-140.000.
Adco Products Inc.: *See*—
Fisher, Dennis K.; and Briddell, Brian J., 5,183,833, Cl. 522-182.000.
Addison, F. Clark; and Thorstensen, Peder J. Heat reduction liquid volume compensator. 5,183,995, Cl. 219-433.000.
Adkins, Joey B.: *See*—
Carlo, Louis D.; and Adkins, Joey B., 5,184,023, Cl. 307-10.300.
Adler, Jonathan M.; Monahan, Russell E.; and Frayer, Robert W., Jr., to NTN Technical Center, (U.S.A.) Inc. Rotational speed sensor utilizing magnetic ink tone ring. 5,184,069, Cl. 324-207.220.
Adonakis, Nikolaos A.: *See*—
Wilhelm, Richard D.; and Adonakis, Nikolaos A., 5,183,974, Cl. 181-0.500.
Advanced Interconnections Corporation: *See*—
Murphy, James V.; and Murphy, Michael J., 5,184,285, Cl. 361-421.000.
Advanced Micro Devices, Inc.: *See*—
DiNapoli, Antonio; Goff, Gerald L.; and Sikes, Roger A., 5,183,245, Cl. 269-254.00R.
Fung, Jimmy; An, Jiu; Campbell, David L.; and Shyu, Steven, 5,184,129, Cl. 341-144.000.
Aerochem Research Laboratories, Inc.: *See*—
Felder, William, 5,183,481, Cl. 55-15.000.
Aeromix Systems, Incorporated: *See*—
Rajendren, Richard; Gross, Peter S.; and Bollensen, Eric G., 5,183,596, Cl. 261-93.000.
Aeroquip Corporation: *See*—
Allread, Alan R.; Chichester, Dennis B.; Rogers, Russell L.; and Knowles, Steven M., 5,182,922, Cl. 62-239.000.
Agroteam Consultants Ltd.: *See*—
Cohen, Amir, 5,183,208, Cl. 239-542.000.
Aharoni, Shaul M., to Allied-Signal Inc. Fluoropolymers and fluoropolymer coatings. 5,183,839, Cl. 524-113.000.
Ahn, Jeong-Ho: *See*—
Erdman, Arthur G.; Rekow, Elizabeth D.; Riley, Donald R.; Klamecki, Barney; Zhu, Yang; and Ahn, Jeong-Ho, 5,184,306, Cl. 364-474.050.
Aiba, Yoshiko; Adachi, Hiroshi; and Adachi, Etsushi, to Mitsubishi Denki Kabushiki Kaisha. Silicone ladder polymer coating composition. 5,183,846, Cl. 524-865.000.
Aichi Sharyo Co. Ltd.: *See*—
Fujimoto, Mineyuki, 5,183,168, Cl. 212-232.000.
Aisin Seiki Kabushiki Kaisha: *See*—
Akahoshi, Sumihisa; Akimura, Hitoshi; Nakabayashi, Isao; Ishii, Masami; Ohi, Tamio; and Yoshida, Makoto, 5,183,591, Cl. 252-503.000.
Goto, Shigeki, 5,182,969, Cl. 74-866.000.
Goto, Shigeki; Shimei, Masato; Miyazawa, Tetsuhiro; Saitou, Yoshitami; and Isono, Nobuyuki, 5,182,970, Cl. 74-866.000.
Koga, Yoshitaka; and Sugiura, Sadao, 5,183,308, Cl. 296-75.000.
Ajiki, Yoshio: *See*—
Fujii, Isao; Ajiki, Yoshio; Ishida, Yoichi; and Matsuura, Hiromi, 5,183,011, Cl. 123-1.00A.
Ajroldi, Giuseppe: *See*—
Visani, Francesco; Tavazzani, Carlo; Ajroldi, Giuseppe; and Castiglioni, Giovanni, 5,183,851, Cl. 525-85.000.
Akahoshi, Sumihisa; Akimura, Hitoshi; Nakabayashi, Isao; Ishii, Masami; Ohi, Tamio; and Yoshida, Makoto, to Ube Cycon, Ltd.; and Aisin Seiki Kabushiki Kaisha. Electroconductive resin composition. 5,183,591, Cl. 252-503.000.
Akasaka, Yoshimichi; Nakamura, Ichiro; and Gotoh, Yasuharu, to Hitachi Construction Machinery Co., Ltd. Bent axis type variable displacement hydraulic machine. 5,182,978, Cl. 91-499.000.
Akebono Brake Industry Co., Ltd.: *See*—
Kiuchi, Manabu; and Arai, Masao, 5,183,632, Cl. 419-48.000.
Maeda, Kazuo; and Kinoshita, Koichi, 5,183,136, Cl. 188-73.440.
Akebono Research and Development Centre Ltd.: *See*—
Kiuchi, Manabu; and Arai, Masao, 5,183,632, Cl. 419-48.000.
Akimura, Hitoshi: *See*—
Akahoshi, Sumihisa; Akimura, Hitoshi; Nakabayashi, Isao; Ishii, Masami; Ohi, Tamio; and Yoshida, Makoto, 5,183,591, Cl. 252-503.000.
Akiyama, Koichi: *See*—
Ichihashi, Tadashi; and Akiyama, Koichi, 5,184,157, Cl. 351-208.000.

VOL
1147
ISS
1
FE
2
1993
UMI

Akutsu, Kotaro: *See—*
Ohishi, Shinji; Akutsu, Kotaro; and Sakai, Toshikazu, 5,184,055, Cl. 318-615.000.

Akzo NV: *See—*
Aaronson, Alan M.; and Bright, Danielle A., 5,183,905, Cl. 549-218.000.

Albaisa, Alfonso: *See—*
Mrozowski, Joseph E.; Fusco, Jeffery K.; and Albaisa, Alfonso, 5,183,192, Cl. 224-42.210.

Albert, David J.: *See—*
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,184,307, Cl. 364-474.240.

Albizzati, Enrico: *See—*
Guerra, Gaetano; Vitagliano, Vincenzo M.; Corradini, Paolo; and Albizzati, Enrico, 5,183,853, Cl. 525-132.000.

Albright & Wilson Ltd.: *See—*
Holmes, William S.; and Marshall, Robert, 5,183,649, Cl. 423-300.000.

Alcatel Australia Limited: *See—*
Stanbury, Evan J.; and Thomas, Lloyd S., 5,184,119, Cl. 340-825.600.

Alcatel Fibres Optiques: *See—*
Brehm, Claude; Dupont, Philippe; and Tardy, Andre , 5,183,489, Cl. 65-4.200.

Alcatel Transmission par Faisceaux Hertziens: *See—*
Brouzes, Carole; Ressencourt, Claude; and de Place, Alain, 5,184,097, Cl. 333-202.000.

Aldous, Stephen C.; and Dake, Guy M., to Megahertz Corporation. Systems for connection of physical/electrical media connectors to computer communications cards. 5,183,404, Cl. 439-55.000.

Alexander, Philip G.: *See—*
Lodico, James I.; Coder, David R.; Adams, Lawrence J.; Guthrie, Rebecca A. F.; Andes, Raymond M., Jr.; and Alexander, Philip G., 5,183,487, Cl. 55-289.000.

Alinari, Carlo. Propulsion system for speedboats. 5,183,423, Cl. 440-53.000.

Aliverti, Valerio; Dorigotti, Luciano; Fonio, Teodoro; and Pinza, Mario, to ISF Societa per Azioni. Pharmaceutical compositions for intranasal administration of calcitonin. 5,183,802, Cl. 514-2.000.

Alivizatos, Margaret A., to Adam, Maurice. Roll preventing structures. 5,182,828, Cl. 5-631.000.

Allergan, Inc.: *See—*
Chandraratna, Roshantha A. S., 5,183,827, Cl. 514-444.000.
Lee, Gary C. M.; Garst, Michael E.; and Sachs, George, 5,183,906, Cl. 549-218.000.

Alliant Techsystems Inc.: *See—*
Shaklee, Kerry L., 5,184,154, Cl. 346-110.00R.

Allied-Signal Inc.: *See—*
Aharoni, Shaul M., 5,183,839, Cl. 524-113.000.
Alten, Charles J.; Cuccio, John S., Jr.; Kington, Harry L.; and Fontana, James D., 5,183,270, Cl. 277-81.00R.
Chary, Henry H., 5,182,960, Cl. 74-417.000.
Chary, Henry H.; Fitgibbon, Thomas F.; and Gibson, Christopher M., 5,183,150, Cl. 198-782.000.
Huggett, Colin E.; and Wuertz, Kenneth L., 5,183,387, Cl. 416-147.000.
Stancliffe, A. Colin; Vidano, Paul; and Pogue, Bill P., 5,183,106, Cl. 165-166.000.
Wang, Li; and Mitsche, Roy T., 5,183,792, Cl. 502-242.000.

Allman, Steve L.; Chen, Chung-Hsuan; and Chen, Fang C., to Martin Marietta Energy Systems, Inc. Charged particle mobility refrigerant analyzer. 5,184,015, Cl. 250-282.000.

Allmendinger, Franz; Ebner, Arno; Ettischer, Helmut; and Straub, Timo, to Eastman Kodak Company. Device for stapling sheets individually supplied and deposited on a stack. 5,183,195, Cl. 227-29.000.

Allread, Alan R.; Chichester, Dennis B.; Rogers, Russell L.; and Knowles, Steven M., to Aeroquip Corporation. Automotive air-conditioning system. 5,182,922, Cl. 62-239.000.

Allwaste Services, Inc.: *See—*
Fanta, David E.; Hamby, Johnnie L.; and Schleicher, Hart E., 5,183,086, Cl. 141-10.000.

Alps Electric Co., Ltd.: *See—*
Kanai, Yasushi; Takano, Hiroe; Saoshita, Shushi; and Nitta, Atsumi, 5,184,266, Cl. 360-120.000.

Alsip, Ron. Toilet seat clock apparatus. 5,182,823, Cl. 4-661.000.

Alt, Claus-Christian, to Mercedes-Benz AG. Arrangement of a differential for driving two vehicle wheels. 5,183,445, Cl. 475-230.000.

Alten, Charles J.; Cuccio, John S., Jr.; Kington, Harry L.; and Fontana, James D., to Allied-Signal Inc. Composite seal rotor. 5,183,270, Cl. 277-81.00R.

Alvarez, David G.: *See—*
Dighton, Gaylon L.; and Alvarez, David G., 5,182,870, Cl. 34-26.000.

Alvarez-Ossorio, Rafael P.: *See—*
Brana, Miguel F.; Sanz, Antonio M.; Alvarez-Ossorio, Rafael P.; Roldan, Cristobal M.; De Gamboa, Cristina R. F.; Garcia, Jesus G.; and Berlanga, Jose M. C., 5,183,821, Cl. 514-296.000.

Alvarez, Robert J.; Bredesen, Scott E.; Wilson, James J.; Flim, Duane D.; Kniffen, Todd E.; and Schahrer, Clinton O., to Mile High Equipment Company. Integrally formed, modular ice cuber having a stainless steel evaporator and microcontroller. 5,182,925, Cl. 62-347.000.

Amada Company, Limited: *See—*
Sartorio, Franco; Prunotto, Gianpaolo; Sgandurra, Francesco; and Arghiracopulos, Salvatore, 5,182,936, Cl. 72-420.000.

Amada, Eiichi: *See—*
Kozaki, Takahiko; Asano, Kenichi; Ogino, Mineo; Amada, Eiichi; Endo, Noboru; and Sakurai, Yoshito, 5,184,346, Cl. 370-60.000.

Amano Corporation: *See—*
Suzuki, Masato, 5,183,345, Cl. 400-211.000.

Amberson, James R.; Ehlert, William C.; and Olson, George E., to Armco Inc. Telephone enclosure. 5,182,883, Cl. 52-73.000.

Amerada Hess Corporation: *See—*
Boughner, Murphy D.; Padilla, Paul J.; and Bowling, Floyd A., 5,182,946, Cl. 73-151.000.

American Home Products Corporation: *See—*
Abou-Gharbia, Magid A. M.; and Moyer, John A., 5,183,819, Cl. 514-255.000.
Kees, Kenneth L., 5,183,825, Cl. 514-404.000.

Amkor Electronics, Inc.: *See—*
Johnson, Frank J., 5,183,724, Cl. 430-312.000.

Amoco Corporation: *See—*
Fjare, Douglas E.; Beuhler, Allyson J.; and Navar, Cynthia A., 5,183,534, Cl. 156-668.000.
Harper, Jon J.; Kuhlmann, George E.; Larson, Keith D.; McMahon, Rosemary F.; and Sanchez, Paul A., 5,183,933, Cl. 562-414.000.
Higginbotham, Jeff A.; Garcia, George; and Richards, Robert L., 5,183,340, Cl. 384-420.000.

Amos, Dennis R., to Westinghouse Electric Corp. Method of forming a trailing edge on a steam turbine blade and the blade made thereby. 5,183,390, Cl. 416-224.000.

AMP Incorporated: *See—*
Elicker, Robert W.; and Gorenc, Daniel L., 5,183,405, Cl. 439-108.000.

An, Chang N.: *See—*
Lee, Ho W.; Riu, Sun J.; and An, Chang N., 5,183,658, Cl. 424-89.000.

An, Jiu: *See—*
Fung, Jimmy; An, Jiu; Campbell, David L.; and Shyu, Steven, 5,184,129, Cl. 341-144.000.

Analog Devices, Incorporated: *See—*
Mangelsdorf, Christopher W., 5,184,130, Cl. 341-156.000.

Ancona, Jane: *See—*
Acona, Bruce; and Ancona, Jane, 5,183,165, Cl. 211-77.000.

Anderson, Brent C.: *See—*
Frenkel, Jeffry T.; and Anderson, Brent C., 5,182,941, Cl. 73-40.000.

Anderson, Eric D.: *See—*
Anderson, Robert A.; and Anderson, Eric D., 5,183,953, Cl. 42-96.000.

Anderson, Jeffrey J.: *See—*
MacLane, Donald B.; Deur, Ted E.; Anderson, Jeffrey J.; Titterington, Donald R.; Oswald, James C.; and Meissner, Richard S., 5,184,147, Cl. 346-1.100.

Anderson, Lawrence B.; Hammon, Timothy E.; and Frieler, Cliff, to Custom Engineered Materials, Inc. Incinerator for complete oxidation of impurities in a gas stream. 5,183,646, Cl. 423-210.000.

Anderson Manufacturing Company, Inc.: *See—*
Anderson, Robert A.; and Anderson, Eric D., 5,183,953, Cl. 42-96.000.

Anderson, Paul S.: *See—*
Saari, Walfred S.; Rodan, Gideon A.; Fisher, Thorsten E.; and Anderson, Paul S., 5,183,815, Cl. 514-172.000.

Anderson, Robert A.; and Anderson, Eric D., to Anderson Manufacturing Company, Inc. Flexible cover/guard for rifle and piston scopes having a resilient protective inner portion and a fabric outer portion secured thereto. 5,183,953, Cl. 42-96.000.

Andersson, Jan: *See—*
Martensson, Lars; and Andersson, Jan, 5,183,644, Cl. 422-304.000.

Anderton, Peter W.: *See—*
Taft, Morris E.; Anderton, Peter W.; and Maguire, Roy L., 5,183,318, Cl. 305-39.000.

Andes, Raymond M., Jr.: *See—*
Lodico, James I.; Coder, David R.; Adams, Lawrence J.; Guthrie, Rebecca A. F.; Andes, Raymond M., Jr.; and Alexander, Philip G., 5,183,487, Cl. 55-289.000.

Andoh, Masako: *See—*
Morita, Yasushi; Ohtori, Akira; and Andoh, Masako, 5,183,662, Cl. 424-426.000.

Andre, Jean-Claude: *See—*
Helle, Jean-Louis; Andre, Jean-Claude; and Schaeffer, Philippe, 5,183,598, Cl. 264-22.000.

Angerbauer, Rolf; Fey, Peter; Hubsch, Walter; Philipps, Thomas; Bischoff, Hilmar; Petzinna, Dieter; and Schmidt, Delf, to Bayer Aktiengesellschaft. Certain intermediate imino-substituted pyridines. 5,183,897, Cl. 546-330.000.

Ansell, Christopher W. G., to Smith and Nephew Associated Companies p.l.c. Thin film adhesive dressings preparation and use. 5,183,664, Cl. 424-445.000.

Anthony, James R.; and Wiseman, Michael A., to Indiana Mills & Manufacturing, Inc. Belt buckle with ejector module and tongue stop. 5,182,837, Cl. 24-642.000.

Antonious, Anthony J. Golf club with improved hosel construction. 5,183,255, Cl. 273-167.00G.

Anzai, Fukuji, to Sanyo Electric Co., Ltd. Head amplifier. 5,184,090, Cl. 330-294.000.

Aoki, Norihiko: *See—*
Tsuchida, Hirofumi; and Aoki, Norihiko, 5,184,251, Cl. 359-654.000.

Aoki, Shinobu; Takagi, Haruo; and Okabe, Takanori, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Static induction transistor. 5,184,201, Cl. 257-266.000.

Aoyama, Hiroyuki: *See—*
Nakajima, Shin; Aoyama, Hiroyuki; Kagawa, Rihito; and Shimoe, Osamu, 5,184,085, Cl. 328-65.000.

Applied Analytical Industries, Inc.: *See—*
Caldwell, Henry C., 5,183,829, Cl. 514-570.000.

Applied Biosystems, Inc.: *See—*
Bergot, B. John, 5,183,885, Cl. 536-25.410.

Applied Hydro Dynamics, Inc.: *See—*
Sajewski, Ronald, 5,183,513, Cl. 134-22.120.

Applied Materials, Inc.: *See—*
Levy, Karl B., 5,183,775, Cl. 437-60.000.

Aquotech, Inc.: *See—*
Bragger, Barry L., 5,183,512, Cl. 134-1.000.

Aragon, William G., Jr. Motion sensitive, fiber optic, strike indicating fishing rod assembly. 5,182,873, Cl. 43-17.000.

Arai, Fuminori; and Katsuyama, Harumi, to Fuji Photo Film Co., Ltd. Integral multilayer element for glucose analysis. 5,183,741, Cl. 435-14.000.

Arai, Fumio: *See—*
Yamaguchi, Akira; Uno, Masaru; Sekikawa, Norio; Arai, Fumio; and Matsuzaki, Kenji, 5,183,484, Cl. 55-34.000.

Arai, Kozo: *See—*
Goto, Yoshiaki; and Arai, Kozo, 5,183,650, Cl. 423-710.000.

Arai, Masao: *See—*
Kiuchi, Manabu; and Arai, Masao, 5,183,632, Cl. 419-48.000.

Arai, Michio. Shield mounting structure for helmet. 5,182,816, Cl. 2-424.000.

Arai, Takeji, to Fanuc Ltd. Method of welding galvanized steel sheets with a laser beam. 5,183,991, Cl. 219-121.640.

Arai, Tsutomu: *See—*
Uesaka, Kazuo; Okita, Kazumasa; and Arai, Tsutomu, 5,183,656, Cl. 424-76.100.

Arakawa, Mitsuaki; and Hawryszko, Christine, to University of California, The Regents of the. Real-time MR imaging inside gantry room. 5,184,074, Cl. 324-309.000.

Arakawa, Tsutomu: *See—*
Maruyama, Satoshi; Minorikawa, Naoki; Arakawa, Tsutomu; Yoshida, Haruo; Tagoshi, Hirotaka; and Abe, Kazuto, 5,183,917, Cl. 558-251.000.

Aralt, Per T. Arrangement for loading and unloading of heavy packages. 5,183,376, Cl. 414-592.000.

Arbanas, Zeljko: *See—*
Samarov, Victor M.; and Arbanas, Zeljko, 5,184,281, Cl. 361-386.000.

Arghiracopulos, Salvatore: *See—*
Sartorio, Franco; Prunotto, Gianpaolo; Sgandurra, Francesco; and Arghiracopulos, Salvatore, 5,182,936, Cl. 72-420.000.

Arima, Hidetoshi, to Tokai Kogyo Kabushiki Kaisha. Apparatus and process for a manufacturing a weather strip. 5,183,522, Cl. 156-244.130.

Arimoto, Kazutami: *See—*
Matsuda, Yoshio; Arimoto, Kazutami; Ooishi, Tsukasa; Tsukude, Masaki; and Fujishima, Kazuyasu, 5,184,327, Cl. 365-201.000.

Ariyama, Tatsuro; Isozaki, Shinichi; Yamada, Kenzo; Matsuo, Masahiro; and Kanatani, Genji, to NKK Corporation. Method for controlling a flow rate of gas for prereducing ore and apparatus therefor. 5,183,495, Cl. 75-379.000.

Armbruster, Horst, to Behr GmbH & Co. Heat exchanger. 5,182,856, Cl. 29-890.039.

Armco Inc.: *See—*
Amberson, James R.; Ehlert, William C.; and Olson, George E., 5,182,883, Cl. 52-73.000.

Armstrong World Industries, Inc.: *See—*
Bohrn, Walter J.; Diffenbaugh, Kimberly S.; Garman, Shelly N.; and Khanpara, Jatin C., 5,183,704, Cl. 428-305.500.

Arnold & Richter Cine Technik GmbH & Co. Betriebs KG: *See—*
Grosser, Claus, 5,184,158, Cl. 352-226.000.

Arzouman, Harry H.; and Slay, Clyde E., to Safe-T-Jack, Inc. Apparatus for aligning and releasing a two-part jack system. 5,183,235, Cl. 254-8.00B.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Shiraki, Toshinori; Hayano, Fusakazu; and Morita, Hideo, 5,183,857, Cl. 525-285.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Furuya, Katsuhiko; and Takahashi, Tadashi, 5,184,159, Cl. 354-62.000.
Kirigaya, Tadayuki, 5,184,173, Cl. 354-471.000.
Takahashi, Tadashi; Furuya, Katsuhiko; Nakasima, Masaaki; and Enomoto, Takayuki, 5,184,170, Cl. 354-413.000.

Asakura, Eizo: *See—*
Yoshinaka, Minoru; Asakura, Eizo; Oku, Mitsumasa; Kitano, Motoi; Nakatani, Yoshio; Yoshida, Hideyuki; Hatta, Toshiya; and Nakatani, Seiichi, 5,183,594, Cl. 252-518.000.

Asano, Kenichi: *See—*
Kozaki, Takahiko; Asano, Kenichi; Ogino, Mineo; Amada, Eiichi; Endo, Noboru; and Sakurai, Yoshito, 5,184,346, Cl. 370-60.000.

Asano, Takanobu; and Ishii, Katsumi, to Tokyo Electron Sagami Limited. Wafer counter having device for aligning wafers. 5,183,378, Cl. 414-757.000.

Ashelin, Brian T.; Bergquist, Mark A.; and Noltee, Dennis E., Sr., to International Business Machines Corporation. Method and apparatus for implementing engineering changes for integrated circuit module. 5,184,284, Cl. 361-400.000.

Asmussen, Erik; Munksgaard, Erik C.; Muller, Michael; Podszun, Wolfgang; and Winkel, Jens, to Bayer Aktiengesellschaft. Coating agent for collagen-containing materials. 5,183,832, Cl. 522-84.000.

Aso, Toshiyuki; and Yoda, Shinji, to Fanuc Ltd. Cut-out piece removing method in electric discharge machining and an apparatus therefor. 5,183,987, Cl. 219-69.120.

Associated Synapse Biologics: *See—*
Borodic, Gary E., 5,183,462, Cl. 604-51.000.

Asten Group, Inc.: *See—*
Kuster, Heinz; and Kuster, Stephan, 5,183,081, Cl. 139-59.000.

Astronautics Corporation of America: *See—*
Barclay, John A.; Waynert, Joseph A.; DeGregoria, Anthony J.; Johnson, Joseph W.; and Claybaker, Peter J., 5,182,914, Cl. 62-3.100.

AT&T Bell Laboratories: *See—*
Black, Edward P.; and Smith, Douglas C., 5,184,115, Cl. 340-708.000.
Farwell, Charles Y.; Hearn, Michel L.; Heidebrecht, Richard M.; Ho, Kelvin K.; and Spencer, Douglas A., 5,184,347, Cl. 370-94.100.
Fouad, Fakhry A., 5,184,280, Cl. 361-361.000.
Kraus, Joseph S.; Lanzerotti, Louis J.; and Medford, Lester V., 5,184,311, Cl. 364-554.010.
Sahni, Paramdeep S., 5,184,345, Cl. 370-54.000.

Atlas Die, Inc.: *See—*
Love, Marc C., 5,183,202, Cl. 229-123.000.

Atlas Pacific Engineering Company: *See—*
Meissner, Konrad E., 5,182,983, Cl. 99-486.000.

Atsugi Unisia Corporation: *See—*
Morita, Shoji; Yamada, Yoshihiko; and Hara, Seinosuke, 5,183,015, Cl. 123-90.160.

Aubel, John A.; Devall, Jeffrey E.; Gimby, David R.; and Shipp, Philip A., to Borg-Warner Automotive Electronic & Mechanical Systems Corporation. Refueling vapor recovery system. 5,183,087, Cl. 141-59.000.

Audi A.G.: *See—*
Stege, Jurgen, 5,183,170, Cl. 220-86.200.

Ausimont S.r.l.: *See—*
Brunetta, Fabio; and Pantini, Giovanni, 5,183,589, Cl. 252-308.000.

Austin, R. Russell, to Viratec Thin Films, Inc. Solar control properties in low emissivity coatings. 5,183,700, Cl. 428-216.000.

Auto-Stamp Institute Inc.: *See—*
Ichikawa, Kiyomichi, 5,183,249, Cl. 271-186.000.

Automated Pipeline Instruments Incorporated: *See—*
Bailey, Kenneth M.; Mitchener, Rex L.; Wehking, Timothy J.; and Reith, Craig P., 5,182,940, Cl. 73-36.000.

Auweter, Helmut: *See—*
Schwab, Ekkehard; Veitch, Ronald J.; and Auweter, Helmut, 5,183,709, Cl. 428-404.000.

Avery Dennison Corporation: *See—*
Bernard, Margaret M., 5,183,459, Cl. 602-52.000.
Bernard, Margaret M., 5,183,841, Cl. 524-272.000.

Awai, Takashi: *See—*
Ono, Takeshi; Yoshida, Takehiro; Wada, Satoshi; Takeda, Tomoyuki; Kondo, Masaya; Kobayashi, Makoto; Kato, Takahiro; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Yamada, Masakatsu, 5,184,151, Cl. 346-76.0PH.

Ayabe, Kazuhiko, to Suzuki Motor Corp. Mounting structure for lower arm bracket. 5,183,286, Cl. 280-688.000.

Ayers, Laura J.: *See—*
Snyder, Thomas S.; Gass, William R.; Worcester, Samuel A.; Ayers, Laura J.; and Boris, Gregory F., 5,183,541, Cl. 204-105.00R.

Ayukawa, Akitsu; and Onishi, Shigeo, to Sharp Kabushiki Kaisha. Semiconductor device. 5,183,770, Cl. 437-41.000.

Azuma, Ichiro: *See—*
Saiki, Ikuo; Nishi, Norio; Azuma, Ichiro; and Tokura, Seiichi, 5,183,804, Cl. 514-12.000.

B. F. Goodrich Company, The: *See—*
Boo, H. Khim; Mittendorf, Donald H.; and Sell, Walter A., 5,183,212, Cl. 241-17.000.

Baas, Hendrik A. Wind turbine. 5,183,383, Cl. 416-9.000.

Baba, Fumiaki: *See—*
Kodai, Shojiro; Ochi, Katsunori; and Baba, Fumiaki, 5,184,209, Cl. 257-679.000.

Baba, Masahiko; and Ohtsuna, Hiroshi, to Shin-Etsu Handotai Company, Limited. Method of automatic control of growing neck portion of a single crystal by the CZ method. 5,183,528, Cl. 156-601.000.

Baba, Mitushige: *See—*
Kitagawa, Sadao; and Baba, Mitushige, 5,183,856, Cl. 525-282.000.

Babcock & Wilcox Company, The: *See—*
Sanders, John M.; and Harwig, Dennis D., 5,183,989, Cl. 219-121.140.

Babin, James E.: *See—*
Bryant, David R.; Babin, James E.; Nicholson, James C.; and Weintritt, Donald J., Jr., 5,183,943, Cl. 568-454.000.

Bacon, James: *See—*
Menahem, Israel; and Bacon, James, 5,182,961, Cl. 74-471.0XY.

Bacon, John L.; and Bacon, Jonathan M. Exercise machine. 5,183,452, Cl. 482-97.000.

Bacon, Jonathan M.: *See—*
Bacon, John L.; and Bacon, Jonathan M., 5,183,452, Cl. 482-97.000.

VOL
1147
ISS
1
FE
2
1993
UMI

Bae, Yl-Sung: *See*—
Lee, Bang-Wan; and Bae, Yl-Sung, 5,184,061, Cl. 323-265.000.
Baehr, Richard R., Jr.: *See*—
Scher, Herbert I.; Ungar, Israel S.; and Baehr, Richard R., Jr., 5,183,600, Cl. 264-26.000.
Baer, Mark; and Crevling, R. Lent, Jr., to Shop Vac Corporation. Structure for coupling field windings to motor brushes. 5,184,041, Cl. 310-239.000.
Bagley, Edward B.: *See*—
Carr, Merle E.; Doane, William M.; Wing, Robert E.; and Bagley, Edward B., 5,183,690, Cl. 427-213.310.
Bailey, Kenneth M.; Mitchener, Rex L.; Wehking, Timothy J.; and Reith, Craig P., to Automated Pipeline Instruments Incorporated. Flash point testing apparatus and method. 5,182,940, Cl. 73-36.000.
Bailey, Ted E.: *See*—
Daiber, Paul C.; Greenwood, Anthony P.; and Bailey, Ted E., 5,183,342, Cl. 384-475.000.
Bain, Ronald: *See*—
Phillips, Joseph; Prough, J. Robert; Bilodeau, Victor L.; Greenwood, Brian; Bain, Ronald; and Weston, John, 5,183,536, Cl. 162-57.000.
Bair, Keith A.: *See*—
Wood, Michael R.; Bair, Keith A.; Chen, Fu; and Vasconcellos, Stephen R., 5,183,576, Cl. 210-734.000.
Baird, William E. Garage door opening device. 5,184,132, Cl. 341-176.000.
Bak, Johannes A.: *See*—
Nordstrom, Immo R.; and Bak, Johannes A., 5,183,305, Cl. 294-81.200.
Baker Hughes Incorporated: *See*—
Roof, Glenn L.; and Kremer, Lawrence N., 5,183,560, Cl. 208-236.000.
Baker, Richard H.: *See*—
Pearson, Alan L.; and Baker, Richard H., 5,183,319, Cl. 312-196.000.
Ball, Kenneth A.: *See*—
Ortolano, Ralph J.; Ball, Kenneth A.; and Bowman, Gary, 5,183,244, Cl. 269-43.000.
Band, David M.; and Penman, David G., to Surgicraft Limited. Low resistance electrical pick-up and manufacture thereof. 5,183,043, Cl. 128-642.000.
Baratte, Herve; de Souza, Joel P.; and Sadana, Devendra K., to International Business Machines Corporation. Method for internal gettering of oxygen in III-V compound semiconductors. 5,183,767, Cl. 437-11.000.
Barber, Thomas D., to Schlumberger Technology Corporation. Method and apparatus for correcting data developed from a well tool disposed at a dip angle in a wellbore to eliminate the effects of the dip angle on the data. 5,184,079, Cl. 324-339.000.
Barclay, John A.; Waynert, Joseph A.; DeGregoria, Anthony J.; Johnson, Joseph W.; and Claybaker, Peter J., to Astronautics Corporation of America. Rotary dipole active magnetic regenerative refrigerator. 5,182,914, Cl. 62-3.100.
Bardsley, Harold B., to Spencer Wright Industries, Inc. Tufting machine yarn feed roller assembly. 5,182,997, Cl. 112-80.730.
Barker, Philip P., to Niagara Mohawk Power Corporation. Lightning detecting and recording system. 5,184,215, Cl. 358-93.000.
Barnette, Charles J., to Kent Adhesive Products, Inc. Dust cover laminate for books. 5,183,295, Cl. 281-29.000.
Baroid Technology, Inc.: *See*—
Leaney, Peter A.; and Smith, Robert J., 5,183,113, Cl. 166-316.000.
Baron, Greg. Electrical field display/signal device. 5,184,113, Cl. 340-635.000.
Barozzini, Claude: *See*—
Rishel, Michael; Powers, Larry; and Barozzini, Claude, 5,183,330, Cl. 362-372.000.
Barrett, Dana G.: *See*—
Raymond, Marvin L.; Barrett, Dana G.; and Greene, Phillip B., 5,183,010, Cl. 119-172.000.
Barrick, Michael D.: *See*—
Connolly, Jerome J.; Barrick, Michael D.; D'Agostino, William L.; Thomas, Gerald F.; and Williams, Thomas W., 5,184,141, Cl. 343-705.000.
Barth, Christiane: *See*—
Hobes, John; and Barth, Christiane, 5,183,855, Cl. 525-193.000.
Barth, Frederic. Dental cleansing device and interdental floss for such a device. 5,183,064, Cl. 132-323.000.
Barth, Gerald D., to Illinois Tool Works Inc. Rotary fastener with anti-strip-out nibs. 5,183,359, Cl. 411-188.000.
Bartoli, Andrew: *See*—
Patuszynski, Duane R.; O'Callaghan, John S.; and Bartoli, Andrew, 5,182,991, Cl. 101-216.000.
Barton, Bruce G., Jr., to Thunderline Corporation. Extendable wall sleeves. 5,182,885, Cl. 52-98.000.
Bartsch, Marlies: *See*—
Fidelak, Michael; and Bartsch, Marlies, 5,182,947, Cl. 73-304.00C.
Bartur, Meir, to Solid State Devices, Inc. Special geometry Schottky diode. 5,184,198, Cl. 257-471.000.
Barzaghi, Fernando: *See*—
Galliani, Giulio; Barzaghi, Fernando; Bonetti, Carla; and Toja, Emilio, 5,183,893, Cl. 546-133.000.
Toja, Emilio; Bonetti, Carla; Barzaghi, Fernando; and Galliani, Giulio, 5,183,896, Cl. 546-326.000.
Barzu, Octavien: *See*—
Danchin, Antoine; Glaser, Philippe; Krin, Evelyne; Barzu, Octavien; Ladant, Daniel; and Ullmann, Agnes, 5,183,745, Cl. 435-69.100.
BASF Aktiengesellschaft: *See*—
Schwab, Ekkehard; Veitch, Ronald J.; and Auweter, Helmut, 5,183,709, Cl. 428-404.000.
BASF Corporation: *See*—
El-Hefnawi, Sobhy; Shah, Shailesh C.; and Wasyliw, Basil, 5,183,847, Cl. 525-54.440.
Patterson, Jimmy L.; and Riley, Robert E., 5,183,582, Cl. 252-182.200.
Wishneski, Todd W.; and Margitich, Donald E., 5,183,583, Cl. 252-182.240.
BASF Lacke & Farben AG: *See*—
Gross, Lutz-Werner; Poth, Ulrich; Hille, Dieter; and Weidemeier, Klaus, 5,183,835, Cl. 523-402.000.
Basic Measuring Instruments: *See*—
McEachern, Alexander; Nicholson, Jamie; and Waterman, Craig S., 5,184,066, Cl. 324-158.00R.
Basile, Vincent L., II: *See*—
Townsend, Ray T.; and Basile, Vincent L., II, 5,183,433, Cl. 452-51.000.
Bassi, Dario; and Palau, Joseph, to Etablissements Staubli-Verdol. Shed forming device for griffe frames. 5,183,080, Cl. 139-55.100.
Bastin, Jeffrey R.: *See*—
Logan, James D.; and Bastin, Jeffrey R., 5,183,110, Cl. 166-278.000.
Bastin-Logan Water Services, Inc.: *See*—
Logan, James D.; and Bastin, Jeffrey R., 5,183,110, Cl. 166-278.000.
Bate, Frederick D., to Elmwood Packaging Machinery Ltd. Packaging method and apparatus. 5,182,894, Cl. 53-399.000.
Bateman, Colin N.; Clark, Peter L.; and Carter, William G., to National Research Development Corporation. Building elements and joints therefor. 5,182,886, Cl. 52-125.600.
Baten, Robert A.: *See*—
Vicknair, Bruce A.; and Baten, Robert A., 5,184,064, Cl. 324-156.000.
Bates, Joseph H.: *See*—
Crawford, Jack T.; Eisenach, Kathleen D.; Cave, M. Donald; and Bates, Joseph H., 5,183,737, Cl. 435-6.000.
Batistoni, Michel, to Framatome. Removable platform for working inside a casing of a pressurizer of a pressurized-water nuclear reactor. 5,183,625, Cl. 376-260.000.
Battelle Memorial Institute: *See*—
Treat, Russell L.; Gee, Glendon W.; and Whyatt, Greg A., 5,183,355, Cl. 405-128.000.
Batts, Inc.: *See*—
Garrison, Judd F.; and Blanchard, Russell O., 5,183,191, Cl. 223-96.000.
Baudin, Gilles, to L'Oreal. Control value for a container containing a fluid under gaseous pressure and container provided with a value of this kind. 5,183,189, Cl. 222-397.000.
Bauer, Friedrich: *See*—
Saur, Roland; Bauer, Friedrich; and Rothenpieler, Joachim, 5,183,012, Cl. 123-41.080.
Bauer, Fritz U.: *See*—
Gorlich, Karl J.; Bauer, Fritz U.; and Konetzka, Joerg, 5,183,834, Cl. 523-105.000.
Baujat, Jacques; and Chevereau, Gerard, to Framatome. Nuclear reactor internals with cluster guides. 5,183,628, Cl. 376-353.000.
Baumann, Hans, to Grob & Co. Aktiengesellschaft. Frame stave for a heddle frame. 5,183,082, Cl. 139-92.000.
Baxter, David E.: *See*—
Brown, Robert L.; Baxter, David E.; and England, Todd A., 5,183,509, Cl. 118-696.000.
Brown, Robert L.; and Baxter, David E., 5,183,605, Cl. 264-40.500.
Baxter, Douglas P.: *See*—
Callahan, David D.; Reese, Craig; Baxter, Douglas P.; and Murray, Stephen M., 5,183,147, Cl. 198-524.000.
Baxter International Inc.: *See*—
Sarian, Grigor; Crandall, Barry R.; and Duncan, Jeff R., 5,183,039, Cl. 128-400.000.
Bayer Aktiengesellschaft: *See*—
Angerbauer, Rolf; Fey, Peter; Hubsch, Walter; Philipps, Thomas; Bischoff, Hilmar; Petzinna, Dieter; and Schmidt, Delf, 5,183,897, Cl. 546-330.000.
Asmussen, Erik; Munksgaard, Erik C.; Muller, Michael; Podszun, Wolfgang; and Winkel, Jens, 5,183,832, Cl. 522-84.000.
Jager, Horst, 5,183,881, Cl. 534-732.000.
Jansen, Johannes R.; and Littmann, Martin, 5,183,939, Cl. 564-302.000.
Kopp, Richard; Grogler, Gerhard; and Hess, Heinrich, 5,183,876, Cl. 528-59.000.
Lindner, Christian; and Eichenauer, Herbert, 5,183,850, Cl. 525-73.000.
Muller, Klaus-Helmut; Kluth, Joachim; Konig, Klaus; Gassen, Karl-Rudolf; Findeisen, Kurt; Lindig, Markus; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,183,932, Cl. 560-330.000.
Wagner, Klaus; Hanssler, Gerd; and Brandes, Wilhelm, 5,183,898, Cl. 548-178.000.
Weider, Richard; and Scholl, Thomas, 5,183,926, Cl. 560-76.000.
Bazzano, Gail S. Combinations of retinoids and minoxidil-type compounds for hair growth. 5,183,817, Cl. 514-256.000.

Beach, Kirk W.; Phillips, David J.; and Kansky, John, to University of Washington, Board of Regents of the. Ultrasonic plethysmograph. 5,183,046, Cl. 128-661.070.
Beall, George H.; Gadkaree, Kishor P.; Grandi, Thomas P.; and Quinn, Candace J. Polymer membranes for separation process. 5,183,607, Cl. 264-41.000.
Beaufils, Stephen C.; and Latella, Alfonso. Two piece projectile. 5,183,963, Cl. 102-515.000.
Bechu, Jean-Pierre, to Caoutchouc Manufacture et Plastiques S.A. Motor vehicle windshield washer system. 5,183,099, Cl. 165-41.000.
Becker, Eberhard; Schulte, Franz; Sprung, Hartwig; Staggl, Ronald; and Stoeber, Manfred, to Mannesmann AG. Guiding a robot in an array. 5,183,377, Cl. 414-751.000.
Becton, Dickinson and Company: *See*—
Capaccio, Paul R., 5,183,469, Cl. 604-192.000.
Bedzyk, Mark D.: *See*—
Daniels, Steven D.; Bedzyk, Mark D.; Brahm, Roger S.; and Olexy, Anthony M., 5,184,153, Cl. 346-108.000.
Beese, Ulrich: *See*—
Hawkins, Larry S.; and Beese, Ulrich, 5,183,180, Cl. 220-908.000.
Behe, Roger: *See*—
Devillers, Yves; Neveu, Frederic; Behe, Roger; and Ramat, Pierre, 5,184,145, Cl. 343-840.000.
Behr GmbH & Co.: *See*—
Armbruster, Horst, 5,182,856, Cl. 29-890.039.
Behr-Industrieanlagen GmbH & Co.: *See*—
Schweiker, Werner; and Leininger, Volker, 5,184,051, Cl. 318-568.000.
Behr-Thomson-Dehnstoffregler GmbH & Co.: *See*—
Saur, Roland; Bauer, Friedrich; and Rothenpieler, Joachim, 5,183,012, Cl. 123-41.080.
Behringwerke Aktiengesellschaft: *See*—
Kapmeyer, Wolfgang, 5,183,766, Cl. 436-533.000.
Bekele, Solomon, to W. R. Grace & Co.-Conn. Forming web for lining a rigid container. 5,183,706, Cl. 428-349.000.
Beldock, Donald T.; and Craig, Paul P., to Beldock, Donald T. Battery having reserve cell and three or more terminals. 5,183,712, Cl. 429-9.000.
Bell, Cynthia S., to Eastman Kodak Company. Photographic system with off-the-film exposure metering. 5,184,174, Cl. 354-480.000.
Bell & Howell Document Management Products Company: *See*—
Patuszynski, Duane R.; O'Callaghan, John S.; and Bartoli, Andrew, 5,182,991, Cl. 101-216.000.
Bellemin, Robert: *See*—
Festal, Didier; Nioche, Jean-Yves; Descours, Denis; Bellemin, Robert; and Decerprit, Jacques, 5,183,924, Cl. 560-56.000.
Beloit Technologies, Inc.: *See*—
Hergert, Richard E.; Hergert, Richard R.; Neill, Eugene B.; Pantaleo, Scott B.; Roerig, Arnold J.; Rogers, Thomas D.; Shands, Jay A.; and Takeguchi, Noriaki, 5,183,537, Cl. 162-216.000.
Belokin, Martin P.: *See*—
Belokin, Paul, Jr.; Belokin, Martin P.; and Belokin, Norman P., 5,183,166, Cl. 211-149.000.
Belokin, Norman P.: *See*—
Belokin, Paul, Jr.; Belokin, Martin P.; and Belokin, Norman P., 5,183,166, Cl. 211-149.000.
Belokin, Paul, Jr.; Belokin, Martin P.; and Belokin, Norman P. Foldable shelf display. 5,183,166, Cl. 211-149.000.
Benecke, Wolfgang, to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V. Micromechanical manipulator. 5,182,910, Cl. 60-529.000.
Benjamin, Wesley: *See*—
Hallerstrom, Robert; Durgin, Kirby; and Benjamin, Wesley, 5,183,299, Cl. 285-47.000.
Benn, James A., to Curtis Manufacturing Company, Inc. Cross-flow filtration system and method for filtering a solvent-particulate waste stream. 5,183,572, Cl. 210-650.000.
Berg, Ralph O.; Lang, Fred J., Jr.; and Kupka, Dennis B., to Eastman Kodak Company. Adjustable valve stem apparatus for valve gated injection molding devices. 5,183,069, Cl. 137-15.000.
Berge, Richard H., Jr.; and Larsen, Mark A., to New Morning Windows, Inc. Door frame cladding apparatus. 5,182,880, Cl. 49-504.000.
Bergelin, Risto: *See*—
Lehtomaki, Ilkka; Karinen, Pertti; Bergelin, Risto; and Myllymaki, Olavi, 5,183,677, Cl. 426-436.000.
Berger, Johann; and Berger, Josef, to Berger, Johann. Belt strap for safety belts. 5,183,703, Cl. 428-292.000.
Berger, Josef: *See*—
Berger, Johann; and Berger, Josef, 5,183,703, Cl. 428-292.000.
Bergman, Robert G.: *See*—
Nicolaou, Kyriacos C.; Sorensen, Erik; Hwang, Chan-Kou; Discordia, Robert; Bergman, Robert G.; and Minto, Robert E., 5,183,942, Cl. 568-375.000.
Bergot, B. John, to Applied Biosystems, Inc. Method for chromatographic separation of synthetic phosphorothioate oligonucleotides. 5,183,885, Cl. 536-25.410.
Bergquist, Mark A.: *See*—
Ashelin, Brian T.; Bergquist, Mark A.; and Noltee, Dennis E., Sr., 5,184,284, Cl. 361-400.000.
Berlanga, Jose M. C.: *See*—
Brana, Miguel F.; Sanz, Antonio M.; Alvarez-Ossorio, Rafael P.; Roldan, Cristobal M.; De Gamboa, Cristina R. F.; Garcia, Jesus G.; and Berlanga, Jose M. C., 5,183,821, Cl. 514-296.000.
Bernard, Margaret M., to Avery Dennison Corporation. Emulsion pressure-sensitive adhesive polymers in bandage and medical tape constructions. 5,183,459, Cl. 602-52.000.
Bernard, Margaret M., to Avery Dennison Corporation. Removable pressure-sensitive adhesives for recyclable substrates. 5,183,841, Cl. 524-272.000.
Bernardon, Jean-Michel: *See*—
Shroot, Braham; Eustache, Jacques; and Bernardon, Jean-Michel, 5,183,889, Cl. 544-174.000.
Berol Nobel Stenungsund AB: *See*—
Carlsson, Goran; and Hellsten, Martin, 5,183,476, Cl. 44-445.000.
Berry, Robert R.: *See*—
Gilchrist, Alan R.; Duran, Edward M.; Dry, Dennis P.; and Berry, Robert R., 5,183,389, Cl. 416-193.00A.
Bertin & Cie: *See*—
Lequime, Michel, 5,184,010, Cl. 250-227.210.
Besendorfer, Herman; Stritzke, Gunter; and Haditsch, Franz, to Institut Dr. Friedrich Forster Pruferatebau. Eddy-current defect test instrument with multiple test probes and one distance probe. 5,184,070, Cl. 324-225.000.
Better Living Products: *See*—
Comstock, Roger D.; Tischner, Ryan K.; and Pearce, Wayne E., 5,183,182, Cl. 222-129.000.
Betts, David A.: *See*—
Adams, James W.; Loving, Louis S.; Betts, David A.; Donnelly, David P.; and Nunley, Alvin, III, 5,184,330, Cl. 367-111.000.
Betz Laboratories, Inc.: *See*—
Forester, David R., 5,183,554, Cl. 208-48.0AA.
Forester, David R.; and Roling, Paul V., 5,183,555, Cl. 208-48.0AA.
Vasconcellos, Stephen R.; Boyce, P. Douglas; and Smith, Larry P., 5,183,575, Cl. 210-724.000.
Wood, Michael R.; Bair, Keith A.; Chen, Fu; and Vasconcellos, Stephen R., 5,183,576, Cl. 210-734.000.
Beuhler, Allyson J.: *See*—
Fjare, Douglas E.; Beuhler, Allyson J.; and Navar, Cynthia A., 5,183,534, Cl. 156-668.000.
Bianchi, Mauro, to Mauro Bianchi S.A. Suspension process and apparatus of the type having different stiffnesses with provision to smooth the change from one stiffness to another. 5,183,285, Cl. 280-670.000.
Bielat, Richard A.; and Drain, Kieran F., to Ciba-Geigy Corporation. Radiation curable composition with high temperature oil resistance. 5,183,831, Cl. 522-33.000.
Bielfeldt, Friedrich B., to Maschinenfabrik J. Dieffenbacher GmbH & Co. Method for realigning steel bands with respect to a longitudinal axis of a continuously working press. 5,182,986, Cl. 100-41.000.
Bilak, Ronald E.: *See*—
Weber, Joseph R.; and Bilak, Ronald E., 5,183,544, Cl. 204-252.000.
Bilge, Umit; Jurczyszyn, Christopher E.; and Jenuwine, William C., to General Motors Corporation. Laser welding method. 5,183,992, Cl. 219-121.640.
Bills, Gerald F.; Hensens, Otto D.; Koupal, Lawrence; Lingham, Russell B.; Ondeyka, John G.; and Zink, Deborah L., to Merck & Co., Inc. Antiviral agent. 5,183,826, Cl. 514-411.000.
Bills, Maria L. Container device and method for making same. 5,183,199, Cl. 229-23.00A.
Bilodeau, Richard R. Weaponry signal apparatus. 5,183,951, Cl. 42-1.010.
Bilodeau, Victor L.: *See*—
Phillips, Joseph; Prough, J. Robert; Bilodeau, Victor L.; Greenwood, Brian; Bain, Ronald; and Weston, John, 5,183,536, Cl. 162-57.000.
Bio-Rad Laboratories, Inc.: *See*—
Krishnan, Krishnaswamy, 5,184,191, Cl. 356-244.000.
Penaluna, William A.; and Ragsdale, Charles W., 5,183,101, Cl. 165-47.000.
Biosys: *See*—
Popiel, Irene; Holtemann, Karen D.; Glazer, Itamar; and Womersley, Christopher, 5,183,950, Cl. 800-2.000.
Birkholz, Ronald B.; and Glad, Mark D., to Minnesota Mining and Manufacturing Company. Pressure-sensitive adhesive composition having high shear strength. 5,183,705, Cl. 428-343.000.
Bischoff, Hilmar: *See*—
Angerbauer, Rolf; Fey, Peter; Hubsch, Walter; Philipps, Thomas; Bischoff, Hilmar; Petzinna, Dieter; and Schmidt, Delf, 5,183,897, Cl. 546-330.000.
Biss, Russell B.: *See*—
Login, Robert B.; Merianos, John J.; Biss, Russell B.; and Garelick, Paul, 5,183,901, Cl. 548-543.000.
Bitton, Mary K. Children's toy and bath soap assembly. 5,183,429, Cl. 446-73.000.
Black, David D.; and Vering, Anthony W., to Chicago Rawhide Manufacturing Co. Unitized grit seal with removable thrust bumper. 5,183,269, Cl. 277-37.000.
Black & Decker Inc.: *See*—
Wheeler, Dale K., 5,182,848, Cl. 29-596.000.
Black, Edward P.; and Smith, Douglas C., to AT&T Bell Laboratories. Touch-screen arrangement. 5,184,115, Cl. 340-708.000.
Black, James W. Non-linear propulsion and energy conversion system. 5,182,958, Cl. 74-84.00R.
Black, Michael; and Kupershmidt, Vladimir, to Reliant Laser Corporation. Glasses with color-switchable, multi-layered lenses. 5,184,156, Cl. 351-158.000.
Black, Robert E.: *See*—
DiMarco, Bernard; Black, Robert E.; and Cella, Stephen D., 5,184,099, Cl. 335-16.000.
Blake, William R.: *See*—
Fetterhoff, Gary W.; and Blake, William R., 5,183,672, Cl. 425-304.000.

VOL
1147
ISS
1
FE
2
1993
UMI

Blake, William S.: *See—*
Hutcheson, Jerry D.; and Blake, William S., 5,183,185, Cl. 222-209.000.
Blanchard, Russell O.: *See—*
Garrison, Judd F.; and Blanchard, Russell O., 5,183,191, Cl. 223-96.000.
Blaszkiewicz, Peter: *See—*
Speck, Ulrich; and Blaszkiewicz, Peter, 5,183,654, Cl. 424-5.000.
Blenk, Michael H.; Diemer, Russell B., Jr.; and Hager, John P., to Du Pont de Nemours, E. I., and Company. Copper speiss as a co-additive in refining crude lead bullion. 5,183,496, Cl. 75-702.000.
Blenk, Michael H.; Diemer, Russell B., Jr.; and Hager, John P., to Du Pont de Nemours, E. I., and Company. Iron and a copper speiss as co-additives in refining crude lead bullion. 5,183,497, Cl. 75-702.000.
Blick, Mark: *See—*
Lee, Jin S.; and Blick, Mark, 5,183,805, Cl. 514-13.000.
Blin, Philippe, to Hutchinson S.A. Heat and fire resistant protective covering for hoses, cables and the like. 5,183,079, Cl. 138-110.000.
Blom, Jan, to Hollandsche Beton Groep Nov. Sports floor. 5,183,438, Cl. 472-92.000.
Bloom, Terry; and Ernsberger, Craig, to CTS Corporation. Conductive corners for surge survival. 5,184,108, Cl. 338-195.000.
Blumer, Hans. Method of, and apparatus for, detecting the position of a marking or separating element in a stack of substantially flat products. 5,183,247, Cl. 270-95.000.
Board of Regents, The University of Texas System: *See—*
Lee, Jin S.; and Blick, Mark, 5,183,805, Cl. 514-13.000.
Lipovski, G. Jack, 5,184,325, Cl. 365-189.070.
Weldon, William F.; Woodson, Herbert H.; and Long, Glen C., 5,183,957, Cl. 89-8.000.
Boart International, Limited: *See—*
Williams, David S., 5,182,971, Cl. 76-5.100.
Bock, Martin: *See—*
Tenbrink, Detlef; Bock, Martin; Heymann, Kurt; and Rimkus, Martin, 5,183,553, Cl. 205-162.000.
Bodziak, Douglas P.; Grovender, Steven L.; Hunder, Ray A.; Molenda, Robert P.; and Roth, Steven P., to Minnesota Mining and Manufacturing. Hexagonal pad. 5,183,297, Cl. 283-67.000.
Boehm, Valentine R., Jr.: *See—*
Stransky, Larry W.; Boehm, Valentine R., Jr.; and Phillips, Michael A., 5,182,905, Cl. 60-204.000.
Boehringer Mannheim GmbH: *See—*
Kaluza, Klaus; Frey, Bruno; and Jarsch, Michael, 5,183,747, Cl. 435-91.000.
Boeing Company, The: *See—*
Ellis, Gordon F., 5,184,312, Cl. 364-551.010.
Lazaro, Luis J., Jr.; and Harsch, Franklin D., 5,183,413, Cl. 439-589.000.
Boekelheide, Karl: *See—*
McCurry, Patrick W.; Kellogg, James R.; Boekelheide, Karl; Sexton, Kenneth D.; Ellison, George A.; and Hocker, Robert A., 5,184,025, Cl. 307-66.000.
Bogdanowicz, Mitchell J.: *See—*
Schmoeger, Mary L.; Hagmaier, Charles P., Jr.; Bogdanowicz, Mitchell J.; DuMont, Christopher L.; and Sehlin, Richard C., 5,184,175, Cl. 355-32.000.
Bogut, Henry A.: *See—*
Patino, Joseph; Fernandez, Jose M.; and Bogut, Henry A., 5,184,059, Cl. 320-15.000.
Bohmer, Rainer; Bruhn, Rainer; Rienhardt, Hans-Peter; and Walther, Bernd, to SWF Auto-Electric GmbH. Drive unit, in particular for a windshield wiper system on a motor vehicle. 5,182,957, Cl. 74-42.000.
Bohrn, Walter J.; Diffenbaugh, Kimberly S.; Garman, Shelly N.; and Khanpara, Jatin C., to Armstrong World Industries, Inc. Highly microporous 2:1 layered silicate materials. 5,183,704, Cl. 428-305.500.
Bokerman, Gary N.: *See—*
Yeh, Li-Tain; Kenney, Malcolm E.; Bokerman, Gary N.; Cannady, John P.; and Marko, Ollie W., 5,183,914, Cl. 556-467.000.
Bollensen, Eric G.: *See—*
Rajendren, Richard; Gross, Peter S.; and Bollensen, Eric G., 5,183,596, Cl. 261-93.000.
Boller, Peter K., to Lily Cups, Inc. Drink through container lid. 5,183,172, Cl. 220-270.000.
Bond, Robert H.; Olla, Michael A.; Morrison, Barry; and Garrison, Linn C., to SGS-Thomson Microelectronics, Inc. Method for holding a strip of conductive lead frames. 5,182,851, Cl. 29-827.000.
Bonetti, Carla: *See—*
Galliani, Giulio; Barzaghi, Fernando; Bonetti, Carla; and Toja, Emilio, 5,183,893, Cl. 546-133.000.
Toja, Emilio; Bonetti, Carla; Barzaghi, Fernando; and Galliani, Giulio, 5,183,896, Cl. 546-326.000.
Bonne, Andreas; Claar, Klaus; and Schrader, Jurgen, to Mercedes-Benz AG. Fastening for a movable part of a motor vehicle. 5,183,300, Cl. 292-216.000.
Bonnet, Andre ; and Danner, Jean-Pierre. Magnetic control process for transfering energy in a static converter. 5,184,289, Cl. 363-20.000.
Boo, H. Khim; Mittendorf, Donald H.; and Sell, Walter A., to B. F. Goodrich Company, The. Method for separating multilayer plastics into its components. 5,183,212, Cl. 241-17.000.
Bools, William G., to General Electric Company. Cable backshell. 5,183,417, Cl. 439-610.000.
Booze, Janice E. Nursing garment. 5,182,813, Cl. 2-104.000.
Bopp, Stefan, to Mercedes-Benz AG. Air filter device for an internal-combustion engine. 5,183,017, Cl. 123-198.00D.
Borchard, John. Compact self-adjusting weighing system having stable measurement resolution. 5,183,124, Cl. 177-210.0FP.
Borg-Warner Automotive Electronic & Mechanical Systems Corporation: *See—*
Aubel, John A.; Devall, Jeffrey E.; Gimby, David R.; and Shipp, Philip A., 5,183,087, Cl. 141-59.000.
Borg-Warner Automotive Inc.: *See—*
Robbins, Francis B., 5,183,444, Cl. 475-210.000.
Borg-Warner Automotive Transmission & Engine Components Corporation: *See—*
Mott, Philip J., 5,182,968, Cl. 74-856.000.
Borg-Warner Automotive Transmission & Engine Components Corporations: *See—*
Malecha, Gregory J., 5,183,139, Cl. 192-45.000.
Boris, Gregory F.: *See—*
Snyder, Thomas S.; Gass, William R.; Worcester, Samuel A.; Ayers, Laura J.; and Boris, Gregory F., 5,183,541, Cl. 204-105.00R.
Borodic, Gary E., to Associated Synapse Biologics. Controlled administration of chemodenervating pharmaceuticals. 5,183,462, Cl. 604-51.000.
Bory, Barbara H.: *See—*
Lew, Jeanie; and Bory, Barbara H., 5,183,580, Cl. 252-8.600.
Boudot, Daniel, to Pont-A-Mousson S.A. Equipment installation for positioning and clamping foundry molds. 5,183,097, Cl. 164-306.000.
Boughner, Murphy D.; Padilla, Paul J.; and Bowling, Floyd A., to Amerada Hess Corporation. Portable well analyzer. 5,182,946, Cl. 73-151.000.
Boutet, John C.; and Kocher, Thomas E., to Eastman Kodak Company. Diffuse light collector which minimizes streak artifacts. 5,184,013, Cl. 250-236.000.
Bowles, Dale D., Sr.; and Parmley, Charles L. Heated drug box. 5,183,994, Cl. 219-387.000.
Bowling, Floyd A.: *See—*
Boughner, Murphy D.; Padilla, Paul J.; and Bowling, Floyd A., 5,182,946, Cl. 73-151.000.
Bowman, Gary: *See—*
Ortolano, Ralph J.; Ball, Kenneth A.; and Bowman, Gary, 5,183,244, Cl. 269-43.000.
Boyce, P. Douglas: *See—*
Vasconcellos, Stephen R.; Boyce, P. Douglas; and Smith, Larry P., 5,183,575, Cl. 210-724.000.
Boyd, Dana M., to Mobil Oil Corporation. Bag dispensing system and bag pack. 5,183,158, Cl. 206-554.000.
Boyd, Edward L.; Eley, E. R.; and Puri, Jeewan L., to ABB Power T&D Company, Inc. Internal arc gap for secondary side surge protection and dissipation of a generated arc. 5,184,270, Cl. 361-35.000.
Boyle, Joseph P., to Exxon Research and Engineering Company. Ozone regeneration of platinum, and polymetallic platinum reforming catalysts. 5,183,789, Cl. 502-52.000.
Bradshaw, Dan A.: *See—*
Wiegel, Dave C.; Bradshaw, Dan A.; and Petravicius, Stasys, 5,184,275, Cl. 361-223.000.
Bragger, Barry L., to Aquotech, Inc. Method of cleaning semiconductor wafer and computer disks by purified water treated with electric AC signal. 5,183,512, Cl. 134-1.000.
Brahm, Roger S.: *See—*
Daniels, Steven D.; Bedzyk, Mark D.; Brahm, Roger S.; and Olexy, Anthony M., 5,184,153, Cl. 346-108.000.
Brana, Miguel F.; Sanz, Antonio M.; Alvarez-Ossorio, Rafael P.; Roldan, Cristobal M.; De Gamboa, Cristina R. F.; Garcia, Jesus G.; and Berlanga, Jose M. C., to Laboratories Knoll, S.A. Method for treating leukemias using N-(2-dimethylaminoethyl)-3-amino-1,8-naphthalimide for treating leukemias and solid tumors. 5,183,821, Cl. 514-296.000.
Branca, Phillip A.; Hubis, Daniel E.; Mallouk, Robert S.; and Perry, Randal L. Electrolytic cell with composite, porous diaphragm. 5,183,545, Cl. 204-252.000.
Brandau, Egbert; Huschka, Hans; Kadner, Martin; and Schroder, Waldemar, to Nukem GmbH. Method for manufacturing spherical particles out of liquid phase. 5,183,493, Cl. 75-335.000.
Brandell, Bernie. Wrist mounted map holder apparatus. 5,183,193, Cl. 224-219.000.
Brandes, Wilhelm: *See—*
Wagner, Klaus; Hanssler, Gerd; and Brandes, Wilhelm, 5,183,898, Cl. 548-178.000.
Branum, Brian. Goggles having an extrusion-mounted lens. 5,182,817, Cl. 2-439.000.
Brazeway, Incorporated: *See—*
Adams, Michael B., 5,183,105, Cl. 165-140.000.
Breda, Bernard: *See—*
Salerno, Martine S.; Mounier, Remy; and Breda, Bernard, 5,183,588, Cl. 252-312.000.
Bredesen, Scott E.: *See—*
Alvarez, Robert J.; Bredesen, Scott E.; Wilson, James J.; Flim, Duane D.; Kniffen, Todd E.; and Schahrer, Clinton O., 5,182,925, Cl. 62-347.000.
Bredif, Didier: *See—*
Abeille, Pierre; and Bredif, Didier, 5,183,219, Cl. 242-68.100.
Brehm, Claude; Dupont, Philippe; and Tardy, Andre , to Alcatel Fibres Optiques. Method of making multi-ferrules having a series of channels with parallel axes. 5,183,489, Cl. 65-4.200.
Bremer, Wolfgang; Knoll, Peter; and Heintz, Frieder, to Robert Bosch GmbH. Method of and arrangement for representing travel guiding information. 5,184,123, Cl. 340-995.000.
Bressel, Burkhard; Meyer, Heinrich; Meyer, Walter; and Gedrat, Klaus, to Schering Aktiengesellschaft. Process for metallization of a nonconductor surface, especially on a circuit board having preexisting copper surfaces. 5,183,552, Cl. 205-158.000.

Briddell, Brian J.: *See—*
Fisher, Dennis K.; and Briddell, Brian J., 5,183,833, Cl. 522-182.000.
Bridgestone Corporation: *See—*
Toyosawa, Shinichi; Nakajima, Tadashi; Suzuki, Kinya; Kawagoe, Takahiro; Miyazaki, Tadaaki; Kitamura, Takashi; Fuse, Tadashi; Ogawa, Masao; Masuda, Yoshitomo; Daifuku, Hideharu; and Fujio, Ryota, 5,183,543, Cl. 204-242.000.
Briggs, Stuart P., to Shell Internationale Research Maatschappij B.V. Process for preparing diphenyl ethers. 5,183,907, Cl. 549-310.000.
Briggs, Willard S.; and Matula, David W., to Cyrix Corporation. Rectangular array signed digit multiplier. 5,184,318, Cl. 364-754.000.
Bright, Danielle A.: *See—*
Aaronson, Alan M.; and Bright, Danielle A., 5,183,905, Cl. 549-218.000.
Brink, Andrew E.: *See—*
Riffle, Judy S.; Sinai-Zingde, Gurudus D.; and Brink, Andrew E., 5,183,861, Cl. 525-413.000.
Bristol-Myers Squibb Company: *See—*
Sawada, Yosuke; Kakushima, Masatoshi; Nishio, Maki; Miyaki, Takeo; and Oki, Toshikazu, 5,183,808, Cl. 514-33.000.
British Columbia Research Corporation: *See—*
Roberts, Dane R., 5,183,757, Cl. 435-240.490.
British Technology Group Limited: *See—*
Watson, John, 5,184,230, Cl. 359-9.000.
Brittain, Charles: *See—*
Ross, Gilbert B.; and Brittain, Charles, 5,182,842, Cl. 29-240.000.
Brodene, Timothy; Plotner, Michael; and Cramer, Bruce, to FEDCO Automotive Components Co., Inc. Heater cores having exposed surfaces burnished by wet blasting. 5,182,882, Cl. 51-317.000.
Brog, Terrence K.; and Manning, William R., to Cooper Indusries, Inc. Alumina-zirconia ceramic. 5,183,610, Cl. 264-56.000.
Brooks, Dee W.; Stewart, Andrew O.; and Martin, Jonathan G., to Abbott Laboratories. Arylalkylether and arylalkylthioether inhibitors of lipoxygenase enzyme activity. 5,183,818, Cl. 514-231.500.
Brooks, Russell G. Universal collapsible bag support stand. 5,183,226, Cl. 248-97.000.
Brother Kogyo Kabushiki Kaisha: *See—*
Kato, Hiroyuki, 5,183,348, Cl. 400-616.200.
Maruo, Satoshi; Hattori, Chikamasa; and Kameyama, Fumio, 5,184,053, Cl. 318-571.000.
Brouzes, Carole; Ressencourt, Claude; and de Place, Alain, to Alcatel Transmission par Faisceaux Hertziens. Agile microwave filter having at least one ferrite resonator. 5,184,097, Cl. 333-202.000.
Brown, Brent W., to Integrated Systems Engineering, Inc. Solid state color display system and light emitting diode pixels therefor. 5,184,114, Cl. 340-701.000.
Brown, Robert L. Trash receptacle assembly. 5,183,175, Cl. 220-408.000.
Brown, Robert L.; Baxter, David E.; and England, Todd A., to GenCorp Inc. Apparatus for application of a material to an internal surface of items of manufacture. 5,183,509, Cl. 118-696.000.
Brown, Robert L.; and Baxter, David E., to GenCorp Inc. Method for injection into a self-clamping mold. 5,183,605, Cl. 264-40.500.
Brucker, Gerard K.: *See—*
Hojnacki, Robert J.; Pearson, Daniel C.; Brucker, Gerard K.; Gober, Michael J.; and Shaw, Daniel J., Jr., 5,183,159, Cl. 206-583.000.
Bruckner, Raimund; Hintzen, Ullrich; Lee, Steve; Schuler, Andreas; and Wiesel, Martin, to Didier-Werke AG. Shutoff assembly and improved drive rod therefor. 5,183,624, Cl. 266-236.000.
Bruhn, Rainer: *See—*
Bohmer, Rainer; Bruhn, Rainer; Rienhardt, Hans-Peter; and Walther, Bernd, 5,182,957, Cl. 74-42.000.
Brune, Richard; Papiernik, Wolfgang; and Rochholz, Guenter, to Siemens Aktiengesellschaft. Method of regulating the torque response of a multiphase electronically commutated electric motor. 5,184,056, Cl. 318-799.000.
Brunetta, Fabio; and Pantini, Giovanni, to Ausimont S.r.l. Stable emulsions of perfluoropolyethers. 5,183,589, Cl. 252-308.000.
Brunnenkant, Siegfried W. Helicopter icing spray system. 5,182,944, Cl. 73-117.100.
Brunner, Rudolf: *See—*
Kramer, Andreas; Brunner, Rudolf; and Zahir, Abdul-Cader, 5,183,869, Cl. 526-262.000.
Bruno, John. Needle removal/containment and transport apparatus for safe storage and disposal of hypodermic needles/syringe assemblies. 5,183,156, Cl. 206-366.000.
Bryant, David R.; Babin, James E.; Nicholson, James C.; and Weintritt, Donald J., Jr., to Union Carbide Chemicals & Plastics Technology Corporation. Reactivation of hydroformylation catalysts. 5,183,943, Cl. 568-454.000.
Buchmann, Bernd: *See—*
Heindl, Josef; Skuballa, Werner; Buchmann, Bernd; Frohlich, Wolfgang; and Ederdt, Rolalnd, 5,183,925, Cl. 560-61.000.
Buckelew, Jack E. Pavement hole seal covered repair fill. 5,183,353, Cl. 404-69.000.
Buckley, Edward M.: *See—*
Gstts, James D.; Buckley, Edward M.; and Jamieson, John W., 5,183,457, Cl. 600-21.000.
Budde, Volker, to Carl Freudenberg, Firma. Hydraulic valve clearance compensator. 5,183,016, Cl. 123-90.550.
Buehler AG: *See—*
Mueller, Roman, 5,183,161, Cl. 209-467.000.
Bufford, Charles D.; and Gruidel, James M., to Dutton-Lainson Company. Panel construction for bathing tub. 5,182,821, Cl. 4-592.000.
Bull, Brian S.; and Korpman, Ralph A., to Medical Devices Corporation. Optical blood hemostatic analysis apparatus and method. 5,184,188, Cl. 356-39.000.
Bull, S.A.: *See—*
Abdelmouttalib, Najib; and Duflot, Didier, 5,184,348, Cl. 370-95.100.
Gadreau, Jean; and Pascal, Andre, 5,184,103, Cl. 336-84.00C.
Burchill, Gary W.; Gillett, Frank E.; Ramaswamy, Rajan; and Winslow, Peter S. Fish line stripping basket. 5,182,877, Cl. 43-54.100.
Burckhardt, Christoph B., to Kontron Instruments Holdings NV. Doppler flow velocity meter. 5,183,047, Cl. 128-661.090.
Burkat, Alexander, to Walt Disney Company, The. Pressure activated seat belt locking mechanism. 5,182,836, Cl. 24-633.000.
Burke, Robert R.: *See—*
Craggs, Jack L.; and Burke, Robert R., 5,183,975, Cl. 181-202.000.
Burkholder, Richard A.; and Acker, Gregory G., to Sherwood Medical Company. Actuated biopsy cutting needle with removable stylet. 5,183,054, Cl. 128-754.000.
Burks, Lonnie R. Method for cleaning boat hulls. 5,183,000, Cl. 114-222.000.
Burney, Michael. Holographic display imaging process. 5,184,232, Cl. 359-32.000.
Burns, Lee E.: *See—*
Taylor, Raymond L.; Burns, Lee E.; and MacDonald, James C., 5,183,689, Cl. 427-164.000.
Burroughs, Alan C.: *See—*
Johann, Donald F.; and Burroughs, Alan C., 5,184,343, Cl. 369-116.000.
Butler, John L., to Image Acoustics, Inc. Multiport underwater sound transducer. 5,184,332, Cl. 367-162.000.
Buurman, Wim, to Celltech Limited. Antibodies for use in antilymphocyte antibody therapy. 5,183,657, Cl. 424-85.800.
BWG Bergwerk-und Walzwerk Maschinenbau GmbH: *See—*
Noe, Oskar; Noe, Rolf; and Noe, Andreas, 5,182,931, Cl. 72-183.000.
Bybordi, Farhad: *See—*
Day, David R.; and Bybordi, Farhad, 5,184,077, Cl. 324-693.000.
Cain, Earl S., to Tribotech. Semiconductor die packages having lead support frame. 5,184,207, Cl. 257-668.000.
Calabrese, Salvadore J.; Scarton, Henry A.; Murray, S. Frank; Ettles, Christopher M.; Kennedy, Warren C.; Dinc, Saim; Jlidi, Bessem; and Strong, William, to Renselaer Polytechnic Institute; and Steinway Musical Properties, Inc. Piano key covers formed of ivory substitute and pianos having same. 5,183,955, Cl. 84-437.000.
Caldwell, Henry C., to Applied Analytical Industries, Inc. Oral liquid compositions of non-steroidal anti-inflammatory drugs. 5,183,829, Cl. 514-570.000.
Cale, Albert D., Jr.: *See—*
Taylor, Chandler R., Jr.; Cale, Albert D., Jr.; and Stauffer, Harold F., Jr., 5,183,902, Cl. 548-950.000.
Callahan, David D.; Reese, Craig; Baxter, Douglas P.; and Murray, Stephen M., to Murray Equipment, Inc. Chemical handling system. 5,183,147, Cl. 198-524.000.
Camaioni, Domenico: *See—*
Lepori, Agostino; and Camaioni, Domenico, 5,183,837, Cl. 524-13.000.
Camp, William P., Jr.: *See—*
Jacobs, William A.; and Camp, William P., Jr., 5,182,840, Cl. 492-24.000.
Campbell, Bryant A., to Abtox, Inc. Circular waveguide plasma microwave sterilizer apparatus. 5,184,046, Cl. 315-111.210.
Campbell, David L.: *See—*
Fung, Jimmy; An, Jiu; Campbell, David L.; and Shyu, Steven, 5,184,129, Cl. 341-144.000.
Camper, Franklin: *See—*
Latchinian, Gerard; Latchinian, Ramy; and Camper, Franklin, 5,183,142, Cl. 194-206.000.
Campoli, Ralph F.; and McGovern, John T., to Olin Corporation. Extended charge cartridge assembly. 5,183,961, Cl. 102-439.000.
Canadian Aging & Rehabilitation Product Development Corporation: *See—*
Roy, Orest Z.; Fulford, Raymond E.; and Legal, Jules O., 5,183,133, Cl. 180-252.000.
Canare Electric Co., Ltd.: *See—*
Yoshimori, Naoki, 5,182,859, Cl. 30-90.600.
Canat, Jean-Noel; and Mortgat, Regis, to Framatome; and Compagnie Generale des Matieres Nucleaires. Additional grid for a nuclear reactor fuel assembly, and assembly comprising an application thereof. 5,183,629, Cl. 376-439.000.
Cannady, John P.: *See—*
Yeh, Li-Tain; Kenney, Malcolm E.; Bokerman, Gary N.; Cannady, John P.; and Marko, Ollie W., 5,183,914, Cl. 556-467.000.
Canon Kabushiki Kaisha: *See—*
Egawa, Akira, 5,184,161, Cl. 354-105.000.
Matsumoto, Shinichi, 5,184,296, Cl. 364-419.000.
Ohishi, Shinji; Akutsu, Kotaro; and Sakai, Toshikazu, 5,184,055, Cl. 318-615.000.
Ono, Takeshi; Yoshida, Takehiro; Wada, Satoshi; Takeda, Tomoyuki; Kondo, Masaya; Kobayashi, Makoto; Kato, Takahiro; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Yamada, Masakatsu, 5,184,151, Cl. 346-76.0PH.
Saika, Toshihiro; Kobayashi, Isao; Kaifu, Noriyuki; and Endo, Tadao, 5,184,007, Cl. 250-208.100.

VOL 1147 ISS 1 FE 2 1993 UMI

Suga, Yuko; and Shimomura, Masako, 5,184,148, Cl. 346-1.100.
Takayanagi, Yoshiaki; and Hirabayashi, Hiromitsu, 5,184,178, Cl. 355-202.000.
Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Iwaki, Takashi; Mori, Shosei; and Shinjo, Kenji, 5,183,586, Cl. 252-299.610.
Tsuchiya, Keiji, 5,184,339, Cl. 369-44.280.
Ueno, Isamu, 5,184,006, Cl. 250-208.100.
Umetsu, Sachio; and Miura, Toshihiko, 5,182,843, Cl. 29-445.000.
Unno, Yasuyuki; Orii, Seiji; and Yonekawa, Masami, 5,184,176, Cl. 355-52.000.
Yamanobe, Masato, 5,184,200, Cl. 257-53.000.
Yuasa, Satoshi; and Tomida, Yoshinori, 5,183,879, Cl. 528-503.000.

Caoutchouc Manufacture et Plastiques S.A.: *See—*
Bechu, Jean-Pierre, 5,183,099, Cl. 165-41.000.

Capaccio, Paul R., to Becton, Dickinson and Company. Device for the removal and replacement of a needle shield. 5,183,469, Cl. 604-192.000.

Cardiasmenos, Apostle G., to Raytheon Company. Pulse radar and components therefor. 5,184,136, Cl. 342-153.000.

Cardis, Angeline B.; and Shanholtz, Carl E., to Mobil Oil Corporation. Fuel compositions containing reaction products of aromatic triazoles and fatty acids salt as antiwear additives. 5,183,475, Cl. 44-343.000.

Carl Freudenberg, Firma: *See—*
Budde, Volker, 5,183,016, Cl. 123-90.550.

Carlo, Louis D.; and Adkins, Joey B., to Winner, James E. Self-contained anti-theft device for motor vehicles. 5,184,023, Cl. 307-10.300.

Carlsson, Goran; and Hellsten, Martin, to Berol Nobel Stenungsund AB. Ethanol fuel and its use as a diesel fuel. 5,183,476, Cl. 44-445.000.

Carns, Lawrence G.; and Tuot, James, to Nestec S.A. Recovery of aroma gases. 5,182,926, Cl. 62-352.000.

Carpenter, Leslie E., to Dow Corning Corporation. Single and multilayer coatings containing aluminum nitride. 5,183,684, Cl. 427-574.000.

Carpenter, Peter J., to Trico Products Corporation. Pivot joint. 5,183,352, Cl. 403-79.000.

Carr, Merle E.; Doane, William M.; Wing, Robert E.; and Bagley, Edward B., to United States of America, Agriculture. Starch encapsulation of biologically active agents by a continuous process. 5,183,690, Cl. 427-213.310.

Carrano, James A., to DEC International, Inc. Livestock sorting system having identification sensor and gate mounted exit switch. 5,183,008, Cl. 119-155.000.

Carrier Corporation: *See—*
Eisenhauer, Virgil E., 5,184,063, Cl. 324-86.000.

Carrier, Odie R.; and Pike, Steven C. Sheet-mattress retainer. 5,182,827, Cl. 5-498.000.

Carroll, Jim K., to Caterpillar Inc. Low noise rotating fan and shroud assembly. 5,183,382, Cl. 415-173.600.

Carroll, Stephen F.; and Goff, Dane A., to Xoma Corporation. Hindered linking agents and methods. 5,183,904, Cl. 549-68.000.

Carson, William W.: *See—*
Gilby, Anthony C.; and Carson, William W., 5,184,192, Cl. 356-246.000.

Carter, Charles G.; Jovancicevic, Vladimir; Hartman, Judith A.; and Kreh, Robert P., to W. R. Grace & Co.-Conn. Corrosion inhibitors. 5,183,590, Cl. 252-392.000.

Carter, William G.: *See—*
Bateman, Colin N.; Clark, Peter L.; and Carter, William G., 5,182,886, Cl. 52-125.600.

Case, Richard N., to RCP Enterprises, Inc. Underwater flashlight holder. 5,183,326, Cl. 362-191.000.

Case Western Reserve University: *See—*
Yeh, Li-Tain; Kenney, Malcolm E.; Bokerman, Gary N.; Cannady, John P.; and Marko, Ollie W., 5,183,914, Cl. 556-467.000.

Casio Computer Co., Ltd.: *See—*
Miyashita, Takashi; Miyazawa, Yoshinaga; and Kikuchi, Zenta, 5,184,236, Cl. 359-63.000.

Caspar, Michel, to Montres Breguet S.A. Clock movement. 5,184,333, Cl. 368-28.000.

Cassady, Gregory T.: *See—*
Rowbotham, Ronald H.; and Cassady, Gregory T., 5,183,122, Cl. 175-52.000.

Castiglioni, Giovanni: *See—*
Visani, Francesco; Tavazzani, Carlo; Ajroldi, Giuseppe; and Castiglioni, Giovanni, 5,183,851, Cl. 525-85.000.

Catalytica, Inc.: *See—*
Dalla Betta, Ralph A.; Ezawa, Nobuyasu; Tsurumi, Kazunori; Schlatter, James C.; and Nickolas, Sarento G., 5,183,401, Cl. 431-7.000.

Caterpillar Inc.: *See—*
Carroll, Jim K., 5,183,382, Cl. 415-173.600.
Devier, Lonnie J.; Krone, John J.; Lunzman, Stephen V.; and Marsden, Howard A., 5,182,908, Cl. 60-420.000.
Greer, Robert D., 5,182,980, Cl. 92-5.00R.
Morgan, Denny E., 5,182,979, Cl. 92-5.00R.
Styfhoorn, John, 5,182,988, Cl. 100-98.00R.
Taft, Morris E.; Anderton, Peter W.; and Maguire, Roy L., 5,183,318, Cl. 305-39.000.

Cavanna S.p.A.: *See—*
Francioni, Renzo, 5,183,144, Cl. 198-382.000.

Cave, M. Donald: *See—*
Crawford, Jack T.; Eisenach, Kathleen D.; Cave, M. Donald; and Bates, Joseph H., 5,183,737, Cl. 435-6.000.

CCL Label, Inc.: *See—*
Sanderson, Martin C., 5,183,696, Cl. 428-194.000.

Cebal: *See—*
Rebeyrolle, Michel; and Schneider, Bernard, 5,183,188, Cl. 222-383.000.

Cella, Stephen D.: *See—*
DiMarco, Bernard; Black, Robert E.; and Cella, Stephen D., 5,184,099, Cl. 335-16.000.

Celltech Limited: *See—*
Buurman, Wim, 5,183,657, Cl. 424-85.800.

Cencula, Arthur A. Tow rope bobbin assembly. 5,183,220, Cl. 242-85.100.

Centre International de Recherches Dermatologiques (CIRD): *See—*
Shroot, Braham; Eustache, Jacques; and Bernardon, Jean-Michel, 5,183,889, Cl. 544-174.000.

Cerestar Holding B.V.: *See—*
Koch, Helmut; and Roper, Harald W. W., 5,183,667, Cl. 424-474.000.

Chagnot, Catherine J., to Stirling Technology, Inc. Air to air heat recovery ventilator. 5,183,098, Cl. 165-8.000.

Challberg, Roy C.; and Townsend, Harold E., to General Electric Company. Nuclear reactor with low-level core coolant intake. 5,183,627, Cl. 376-352.000.

Champion, Allan R., to Du Pont de Nemours, E. I., and Company. Method for producing X-ray detectable spandex fibers. 5,183,614, Cl. 264-184.000.

Chan, Alexander: *See—*
Pan, Yuh-Guo; Chan, Alexander; and Hochman, Lana, 5,183,941, Cl. 564-390.000.

Chandraratna, Roshantha A. S., to Allergan, Inc. Acetylenes disubstituted with a heteroaromatic group and a 2-substituted chromanyl, thiochromanyl or 1,2,3,4-tetrahydroquinolinyl group having retinoid-like activity. 5,183,827, Cl. 514-444.000.

Chang, Allen T.: *See—*
Scoggins, Lacey E.; Lee, Fu M.; Chang, Allen T.; and Perkins, Wiley D., 5,183,538, Cl. 203-28.000.

Chary, Henry H., to Allied-Signal Inc. Bevel gear drive arrangement. 5,182,960, Cl. 74-417.000.

Chary, Henry H.; Fitgibbon, Thomas F.; and Gibson, Christopher M., to Allied-Signal Inc. Cargo drive unit with a hysteresis coupling. 5,183,150, Cl. 198-782.000.

Chase, Peter D., to Louisiana-Pacific Corporation. Tongue and groove board product. 5,182,892, Cl. 52-539.000.

Chattha, Mohinder S., to Ford Motor Company. Thermosettable powder compositions of polymaleimide and allyl-functional prepolymer. 5,183,865, Cl. 525-530.000.

Chemetron-Railway Products, Inc.: *See—*
Wechselberger, Emmerich E.; and Frost, Ralph S., 5,183,519, Cl. 148-582.000.

Chen, Chi J.: *See—*
Liu, Ti Y.; Chen, Chi J.; and Chen, Shou H., 5,183,494, Cl. 75-349.000.

Chen, Chi-Tsun: *See—*
Tung, Fu-Ching; Chen, Chi-Tsun; and Lieu, Sheng-Feng, 5,182,898, Cl. 53-570.000.

Chen, Ching-Shi: *See—*
Landry, Christian C.; Kuo, Jause; Chen, Ching-Shi; and Wu, William, 5,183,321, Cl. 312-250.000.

Chen, Chung-Hsuan: *See—*
Allman, Steve L.; Chen, Chung-Hsuan; and Chen, Fang C., 5,184,015, Cl. 250-282.000.

Chen, Evan N., to Warner-Lambert Company. Razor mechanism. 5,182,858, Cl. 30-85.000.

Chen, Fang C.: *See—*
Allman, Steve L.; Chen, Chung-Hsuan; and Chen, Fang C., 5,184,015, Cl. 250-282.000.

Chen, Fu: *See—*
Wood, Michael R.; Bair, Keith A.; Chen, Fu; and Vasconcellos, Stephen R., 5,183,576, Cl. 210-734.000.

Chen, Henry. Electric coupler for a lighted inflatable device. 5,183,329, Cl. 362-352.000.

Chen, Lien-Yan: *See—*
Wong, Henry; Quates, Ronald D.; and Chen, Lien-Yan, 5,183,268, Cl. 277-27.000.

Chen, Ming-Ho. Anti-destruction structure for an automatic vending machine. 5,183,320, Cl. 312-229.000.

Chen, Shou H.: *See—*
Liu, Ti Y.; Chen, Chi J.; and Chen, Shou H., 5,183,494, Cl. 75-349.000.

Chen, Teh-Hsuan: *See—*
Romanet, Robert F.; and Chen, Teh-Hsuan, 5,183,728, Cl. 430-386.000.

Cheng, W. H. Adjustable multi-desk rack. 5,183,167, Cl. 211-187.000.

Chern, Shyh Y.; and Chiang, Wei C. F. Anti-roll device for motor vehicles. 5,182,959, Cl. 74-411.500.

Chevereau, Gerard: *See—*
Baujat, Jacques; and Chevereau, Gerard, 5,183,628, Cl. 376-353.000.

Chiang, Wei C. F.: *See—*
Chern, Shyh Y.; and Chiang, Wei C. F., 5,182,959, Cl. 74-411.500.

Chiao, Jennifer Y.; Flannagan, Stephen; and Feng, Taisheng, to Motorola, Inc. Regulated BiCMOS output buffer. 5,184,033, Cl. 307-446.000.

Chiba, Isamu: *See—*
Hariu, Kenichi; Chiba, Isamu; and Mano, Seiji, 5,184,140, Cl. 342-372.000.

Chicago Rawhide Manufacturing Co.: *See—*
Ackerman, Yuri; and Gutierrez, Joseph A., 5,183,267, Cl. 277-12.000.
Black, David D.; and Vering, Anthony W., 5,183,269, Cl. 277-37.000.

Chichester, Dennis B.: *See—*
Allread, Alan R.; Chichester, Dennis B.; Rogers, Russell L.; and Knowles, Steven M., 5,182,922, Cl. 62-239.000.

Chien, Sze-Foo; and Traverse, Eugene F., to Texaco Inc. Method for determination of average downhole steam quality by measuring the slip ratio between the vapor and liquid phases of steam. 5,182,939, Cl. 73-29.010.

Chihara, Kazunori: *See—*
Yuyama, Junpei; Geng, Qiquan; Chihara, Kazunori; Minami, Hirofumi; and Goto, Eiichi, 5,184,072, Cl. 324-248.000.

Chikusa, Eiji, to Fuji Electric Co., Ltd. Write-data signal compensation apparatus for disk storage. 5,184,256, Cl. 360-65.000.

Chintis, Michael, to Hunter Mining Company. Method of recovering elemental mercury from soils. 5,183,499, Cl. 75-742.000.

Chism, Warren L., to Tektronix, Inc. Twist lock probe tip. 5,184,065, Cl. 324-158.00P.

Chisso Corporation: *See—*
Kitano, Kisei; Ushioda, Makoto; Uchida, Manabu; and Suzuki, Toshiharu, 5,183,587, Cl. 252-299.630.

Chitnis, Girish K.; Herbst, Joseph A.; and Valyocsik, Ernest W., to Mobil Oil Corp. Use of ZSM-57 in catalytic cracking for gasoline octane improvement and co-production of light olefins. 5,183,790, Cl. 502-67.000.

Chiu, Herbert, Jr. Partition system forming a vehicle storage compartment. 5,183,307, Cl. 296-24.100.

Cho, Hyun-Deok, to Samsung Electronics Co., Ltd. Method for transmitting spectrum-compatible high-definition television signal and circuit therefor in a television signal transmission system. 5,184,219, Cl. 358-141.000.

Choi, Bo H., to Goldstar Co., Ltd. Adjustably mounted audio control head. 5,184,264, Cl. 360-105.000.

Choi, Hoon B., to Gold Star Co., Ltd. Method for supplying power to a copying machine. 5,184,180, Cl. 355-219.000.

Choi, Sang-sin: *See—*
Ho-jin, Cho; and Choi, Sang-sin, 5,183,426, Cl. 445-68.000.

Cholinski, Edward J., to Epicor Technology, Inc. Apparatus for patch coating printed circuit boards. 5,183,508, Cl. 118-683.000.

Chomel, Rodolphe: *See—*
Foos, Jacques; Lemaire, Marc; Guy, Alain; Guyon, Vincent; Chomel, Rodolphe; Deloge, Andre ; Doutreluigne, Pierre; and Le Roy, Henri, 5,183,645, Cl. 423-8.000.

Christensen, Kenneth. Weight supporting glove. 5,182,814, Cl. 2-161.00A.

Chu, Ang-Ling: *See—*
Durand, David; Vieau, David P.; Wei, Tai S.; and Chu, Ang-Ling, 5,183,593, Cl. 252-514.000.

Chu Associates, Inc.: *See—*
Thombs, David M., 5,184,144, Cl. 343-781.00R.

Chu, Ching, to Optical Recording Corporation. Optical scanner. 5,184,002, Cl. 235-454.000.

Chung, Jin Y.; and Kwak, Deog Y., to Goldstar Electron Co., Ltd. Back bias generating circuit. 5,184,030, Cl. 307-296.010.

Chung, Tae K. Automatic seat belt assembly for a vehicle. 5,183,290, Cl. 280-802.000.

Cianciosi, Michael S., to Xerox Corporation. Digital video pulse width and position modulator. 5,184,226, Cl. 358-296.000.

Ciba-Geigy Corporation: *See—*
Bielat, Richard A.; and Drain, Kieran F., 5,183,831, Cl. 522-33.000.
Kramer, Andreas; Brunner, Rudolf; and Zahir, Abdul-Cader, 5,183,869, Cl. 526-262.000.
O'Neil, Robert M.; Phillips, Emyr; and Wasson, Robert C., 5,183,842, Cl. 524-288.000.
Suchy, Milos; Winternitz, Paul; and Zeller, Martin, 5,183,492, Cl. 504-243.000.

Cimino, George D.: *See—*
Hearst, David P.; Cimino, George D.; Hearst, John E.; and Isaacs, Stephen T., 5,184,020, Cl. 250-455.110.

Cipriano, Nickolas A. Wrestling bed. 5,182,824, Cl. 5-2.100.

Cla-Val Co.: *See—*
Reese, James R., 5,183,074, Cl. 137-488.000.

Claar, Klaus; Deischl, Hans; Lindmayer, Martin; Moczygemba, Jurgen; Schrader, Jergen; Schumacher, Josef; Topfer, Claus; and Robitschko, Peter, to Mercedes-Benz AG. Central locking system and securing device and method for controlling same. 5,184,022, Cl. 307-10.200.

Claar, Klaus: *See—*
Bonne, Andreas; Claar, Klaus; and Schrader, Jurgen, 5,183,300, Cl. 292-216.000.

Clairol Incorporated: *See—*
Pan, Yuh-Guo; Chan, Alexander; and Hochman, Lana, 5,183,941, Cl. 564-390.000.

Clark, Brant V. Fish lure holder. 5,182,878, Cl. 43-57.100.

Clark, Jay V.: *See—*
McMillin, John V.; and Clark, Jay V., 5,184,003, Cl. 235-454.000.

Clark, Peter L.: *See—*
Bateman, Colin N.; Clark, Peter L.; and Carter, William G., 5,182,886, Cl. 52-125.600.

Clark, Steven J., to Montana Power Company, The, a part interest. Heating and cooling system. 5,183,102, Cl. 165-48.100.

Claybaker, Peter J.: *See—*
Barclay, John A.; Waynert, Joseph A.; DeGregoria, Anthony J.; Johnson, Joseph W.; and Claybaker, Peter J., 5,182,914, Cl. 62-3.100.

Clearman, Jack F.; and Conner, Billy T., to R. J. Reynolds Tobacco Company. Cigarette. 5,183,062, Cl. 131-194.000.

Clermont, Christian: *See—*
Porta, Julien; and Clermont, Christian, 5,182,868, Cl. 34-18.000.

Clever, Eric; and Lyons, Ray. Hermaphroditic multiple contact connector. 5,183,409, Cl. 439-291.000.

Clinton, Peter M.: *See—*
Zakheim, Howard; Clinton, Peter M.; Goldschneider, James D.; Kasmer, Christopher A.; Zahn, Markus; and Hoffmeyer, Charles L., 5,183,214, Cl. 241-30.000.

Clorox Company, The: *See—*
Stanislowski, Anna G.; England, J. Bruce; and Ratcliff, Steven D., 5,183,655, Cl. 424-76.600.

Clukey, Stephen W.: *See—*
Ohannes, James R.; Clukey, Stephen W.; Haacke, Ernest D.; and Yarbrough, Roy L., 5,184,034, Cl. 307-473.000.

CMI International, Inc.: *See—*
Voss, Karl D., 5,182,854, Cl. 29-888.061.

Coates, Ian H.; Oxford, Alexander W.; North, Peter C.; and Price, Barry J., to Glaxo Group Limited. Lactam derivatives. 5,183,820, Cl. 514-292.000.

Coco, Michael: *See—*
Taylor, Jeffrey L.; Luckenbach, Roy; Coco, Michael; and Twickler, Carl, 5,183,702, Cl. 428-266.000.

Coder, David R.: *See—*
Lodico, James I.; Coder, David R.; Adams, Lawrence J.; Guthrie, Rebecca A. F.; Andes, Raymond M., Jr.; and Alexander, Philip G., 5,183,487, Cl. 55-289.000.

Cogema: *See—*
Denizou, Jean-Pierre, 5,183,626, Cl. 376-327.000.

Cogema-Compagnie Generale des Matieres Nucleaires: *See—*
Foos, Jacques; Lemaire, Marc; Guy, Alain; Guyon, Vincent; Chomel, Rodolphe; Deloge, Andre ; Doutreluigne, Pierre; and Le Roy, Henri, 5,183,645, Cl. 423-8.000.

Cohen, Amir, to Agroteam Consultants Ltd. Drip irrigation emitter. 5,183,208, Cl. 239-542.000.

Cohen, Haim: *See—*
Oren, Yoram; Cohen, Haim; and Soffer, Abraham, 5,183,546, Cl. 204-290.00R.

Cohen, Margo, to Exocell, Inc. Monoclonal antibodies specific for non-A1C glycated hemoglobin and immunoassay methods. 5,183,739, Cl. 435-7.210.

Cole, Alistair: *See—*
Ronan, Gerard A.; and Cole, Alistair, 5,184,016, Cl. 250-288.000.

Coleman, James P., to Monsanto Company. Peroxygen bleach activators and bleaching compositions. 5,183,584, Cl. 252-186.380.

Colin Electronics Co., Ltd.: *See—*
Kawamura, Norio, 5,183,050, Cl. 128-687.000.

Collet, Erwin; Rathgeber, Roland; and Jerxsen, Udo, to Westfalia Becorit Industrietechnik GmbH. Apparatus for cooling spent anodes of electrolytic melting baths. 5,182,869, Cl. 34-20.000.

Collier, James V.: *See—*
McCoan, Horace C.; and Collier, James V., 5,183,959, Cl. 89-148.000.

Colt's Manufacturing Company Inc.: *See—*
McCoan, Horace C.; and Collier, James V., 5,183,959, Cl. 89-148.000.

Combi Corporation: *See—*
Takahashi, Takehiko; Iwata, Ryuji; and Shimizu, Yuji, 5,183,315, Cl. 297-488.000.

Commissariat a l'Energie Atomique: *See—*
Cruz, Didier, 5,183,370, Cl. 414-416.000.

Commtech International Management Corporation: *See—*
Joseph, Jose P.; and Madou, Marc J., 5,183,549, Cl. 204-415.000.

Compagnie Generale d'Automatisme CGA-HBS: *See—*
Tasca, Jean-Pierre, 5,184,071, Cl. 324-238.000.

Compagnie Generale de Geophysique: *See—*
Regnault, Alain; Cretin, Jacques; and Froidevaux, Pascal, 5,184,329, Cl. 367-23.000.

Compagnie Generale des Matieres Nucleaires: *See—*
Canat, Jean-Noel; and Mortgat, Regis, 5,183,629, Cl. 376-439.000.

Comstock, Roger D.; Tischner, Ryan K.; and Pearce, Wayne E., to Better Living Products. Liquid dispenser for vertical wall mounting. 5,183,182, Cl. 222-129.000.

Concannon, Michael: *See—*
Feldman, Lewis; and Concannon, Michael, 5,183,386, Cl. 416-119.000.

Concorde Tool Corp.: *See—*
MacMillan, Donald M., 5,182,965, Cl. 74-543.000.

Concordia Mfg. Co., Inc.: *See—*
Stuart, Lambert M., 5,182,839, Cl. 28-283.000.

Concrete Technology, Inc.: *See—*
Spinney, Stewart C., 5,183,505, Cl. 106-672.000.

Conner, Billy T.: *See—*
Clearman, Jack F.; and Conner, Billy T., 5,183,062, Cl. 131-194.000.

Connolly, Jerome J.; Barrick, Michael D.; D'Agostino, William L.; Thomas, Gerald F.; and Williams, Thomas W., to Vought Aircraft Company. Structurally-embedded electronics assembly. 5,184,141, Cl. 343-705.000.

Conrads, Norbert; Schiebel, Ulrich; and Wieczorek, Herfried, to U.S. Philips Corporation. Sensor matrix. 5,184,018, Cl. 250-370.090.

VOL
1147
ISS
1
FE
2
1993
UMI

Continental Aktiengesellschaft: *See—*
Peter, Julius; and Weckerle, Gunter, 5,183,640, Cl. 422-135.000.
Contour Roll Company: *See—*
Gutowski, Timothy A., 5,182,985, Cl. 100-35.000.
Cook, Arnold J. Method and apparatus for single die composite production. 5,183,096, Cl. 164-97.000.
Cook, James E.; and Eriksen, O. Harald S. Double acting simplex plunger pump. 5,183,396, Cl. 417-534.000.
Cook, John E., to Siemens Automotive Limited. Multi-slope canister purge solenoid valve. 5,183,022, Cl. 123-520.000.
Cooke, Michael J.; and McGeown, Arthur J., to Electrotech Limited. Workpiece support. 5,183,402, Cl. 432-5.000.
Cooper, David J.: *See—*
Herron, Carlisle M.; and Cooper, David J., 5,183,707, Cl. 428-364.000.
Cooper Indusries, Inc.: *See—*
Brog, Terrence K.; and Manning, William R., 5,183,610, Cl. 264-56.000.
Coors Porcelain Company: *See—*
Readey, Michael J., 5,183,785, Cl. 501-127.000.
Coors Technical Ceramics Company: *See—*
Prosser, Albert C., 5,183,068, Cl. 137-1.000.
Coplin, John F., to Rolls-Royce Business Ventures Limited. Gas turbine engine power unit. 5,182,904, Cl. 60-39.161.
Corey, Paul F., to Miles Inc. Chromogenic dibenzoxazepinone and dibenzothiazepinone enzyme substrates. 5,183,743, Cl. 435-18.000.
Cornax, Dennis, to Rohr, Inc. Interlocking ring fan jet engine support system. 5,183,223, Cl. 244-54.000.
Cornell Research Foundation, Inc.: *See—*
Raj, Rishi; and Sievers, Albert J., 5,183,602, Cl. 252-587.000.
Timoney, John F., 5,183,659, Cl. 424-92.000.
Corning Incorporated: *See—*
Guile, Donald L., 5,183,608, Cl. 264-44.000.
Cornwall, Kenneth R. Firestop device for flammable floor construction. 5,183,070, Cl. 137-75.000.
Corradini, Paolo: *See—*
Guerra, Gaetano; Vitagliano, Vincenzo M.; Corradini, Paolo; and Albizzati, Enrico, 5,183,853, Cl. 525-132.000.
Council, William J.: *See—*
Washburn, Robert D.; Wedeen, Robert S.; McClanahan, Robert F.; Council, William J.; and Lusher, David M., 5,184,288, Cl. 363-4.000.
Cox, Jerry D.; Linz, Raymond E.; Thome, Jeanne M.; Perry, Winfield B.; Hadley, Franklin O., Jr.; and Knobel, Vladimir A., to General Electric Company. Automated spindle slurry system. 5,182,881, Cl. 51-7.000.
Craft, Jack, to Samsung Electronics Co., Ltd. Controlled-gain transistor amplifier without D-C shift or signal phase reversal in load current. 5,184,088, Cl. 330-254.000.
Craggs, Jack L.; and Burke, Robert R., to Siemens Energy & Automation, Inc. Muffler for a cooling system of an electric motor. 5,183,975, Cl. 181-202.000.
Craig, Paul P.: *See—*
Beldock, Donald T.; and Craig, Paul P., 5,183,712, Cl. 429-9.000.
Cramer, Bruce: *See—*
Brodene, Timothy; Plotner, Michael; and Cramer, Bruce, 5,182,882, Cl. 51-317.000.
Crandall, Barry R.: *See—*
Sarian, Grigor; Crandall, Barry R.; and Duncan, Jeff R., 5,183,039, Cl. 128-400.000.
Crawford, Jack T.; Eisenach, Kathleen D.; Cave, M. Donald; and Bates, Joseph H., to University of Arkansas, The Board of Trustees of the. Repetitive DNA sequence specific for mycobacterium tuberculosis to be used for the diagnosis of tuberculosis. 5,183,737, Cl. 435-6.000.
Cretin, Jacques: *See—*
Regnault, Alain; Cretin, Jacques; and Froidevaux, Pascal, 5,184,329, Cl. 367-23.000.
Crevling, R. Lent, Jr.: *See—*
Baer, Mark; and Crevling, R. Lent, Jr., 5,184,041, Cl. 310-239.000.
Crimmins, Robert A.; and Flasza, Michael D., to D&K Custom Machine Design, Inc. Method and apparatus for feeding sheets. 5,183,242, Cl. 271-14.000.
Cross Company, The: *See—*
Cudini, A. Mario; Roman, Horst; and Drew, Kenneth A., 5,182,974, Cl. 82-124.000.
Crowe, Lawrence E.; and Metzler, Mark W. Converter and inverter support module. 5,184,291, Cl. 363-37.000.
Crutchfield, Marvin M.; and Reuben, Bertie J., to Monsanto Company. Enzyme activated peroxydisulfate bleach composition. 5,183,473, Cl. 8-110.000.
Cruz, Didier, to Commissariat a l'Energie Atomique. Apparatus for placing or storing flat articles in a cassette with intermediate racks. 5,183,370, Cl. 414-416.000.
Cserpan, Imre: *See—*
Simoncsits, Andras; Kalman, Miklos; Kari, Csaba; and Cserpan, Imre, 5,183,748, Cl. 455-91.000.
CTS Corporation: *See—*
Bloom, Terry; and Ernsberger, Craig, 5,184,108, Cl. 338-195.000.
Cucchiara, Alfred L.: *See—*
MacArthur, Duncan W.; Wolf, Michael A.; McAtee, James L.; Unruh, Wesley P.; Cucchiara, Alfred L.; and Huchton, Roger L., 5,184,019, Cl. 250-380.000.
Cuccio, John S., Jr.: *See—*
Alten, Charles J.; Cuccio, John S., Jr.; Kington, Harry L.; and Fontana, James D., 5,183,270, Cl. 277-81.00R.
Cudini, A. Mario; Roman, Horst; and Drew, Kenneth A., to Cross Company, The. Dual spindle vertical axis CNC piston turning and grooving machine. 5,182,974, Cl. 82-124.000.
Cummins Engine Co., Inc.: *See—*
Vittorio, David A.; and Reedy, Steven W., 5,183,018, Cl. 123-321.000.
Cunningham, Douglas J., to L.A. Rumbold Limited. Two position adjustable passenger arrangement having cam, plunger, and pivoting lever. 5,183,313, Cl. 297-344.000.
Curry, Shawn. Device for compartmentalizing a container. 5,183,228, Cl. 248-100.000.
Curtis Manufacturing Company, Inc.: *See—*
Benn, James A., 5,183,572, Cl. 210-650.000.
Curto, Rick A.: *See—*
Hurtado, Larry; Curto, Rick A.; and Martin, Dallas, 5,183,966, Cl. 474-20.000.
Cuscurida, Michael; and Speranza, George P., to Texaco Chemical Company. Process for preparing primary hydroxyl-containing diols. 5,183,923, Cl. 560-26.000.
Custom Engineered Materials, Inc.: *See—*
Anderson, Lawrence B.; Hammon, Timothy E.; and Frieler, Cliff, 5,183,646, Cl. 423-210.000.
CVD, Inc.: *See—*
Taylor, Raymond L.; Burns, Lee E.; and MacDonald, James C., 5,183,689, Cl. 427-164.000.
Cyr, Dwayne L.; and McCollom, Dale A. Child's sink apparatus. 5,182,822, Cl. 4-625.000.
Cyrix Corporation: *See—*
Briggs, Willard S.; and Matula, David W., 5,184,318, Cl. 364-754.000.
Czerniawski, Benjamin J. Cantilever dental implant guidestent and method. 5,183,414, Cl. 433-76.000.
D&K Custom Machine Design, Inc.: *See—*
Crimmins, Robert A.; and Flasza, Michael D., 5,183,242, Cl. 271-14.000.
D'Agostino, William L.: *See—*
Connolly, Jerome J.; Barrick, Michael D.; D'Agostino, William L.; Thomas, Gerald F.; and Williams, Thomas W., 5,184,141, Cl. 343-705.000.
Dahms, Steven J.: *See—*
Stinson, D. Ray; Stinson, Linda D.; Roberts, Brian F.; Dahms, Steven J.; Estes, Brian P.; and Robertson, Tommy H., 5,182,825, Cl. 5-451.000.
Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Omoto, Kouichi; and Miyazaki, Takeshi, 5,183,742, Cl. 435-14.000.
Daiber, Paul C.; Greenwood, Anthony P.; and Bailey, Ted E., to General Electric Company. Lubricated bearing assembly. 5,183,342, Cl. 384-475.000.
Daido Metal Company Ltd.: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Kato, Tohru, 5,183,637, Cl. 420-479.000.
Daifuku, Hideharu: *See—*
Toyosawa, Shinichi; Nakajima, Tadashi; Suzuki, Kinya; Kawagoe, Takahiro; Miyazaki, Tadaaki; Kitamura, Takashi; Fuse, Tadashi; Ogawa, Masao; Masuda, Yoshitomo; Daifuku, Hideharu; and Fujio, Ryota, 5,183,543, Cl. 204-242.000.
Daili Chemical Company, Limited: *See—*
Nakamatsu, Toshio; Terao, Masanobu; Muneishi, Shigetoshi; Kometani, Norio; and Hayashi, Yoshiaki, 5,183,892, Cl. 546-76.000.
Dainippon Screen Mfg. Co., Ltd.: *See—*
Kuwabara, Akira; and Koyama, Yasufumi, 5,184,313, Cl. 364-561.000.
Daiwa Seiko, Inc.: *See—*
Kawai, Michiki; and Miyazaki, Takeo, 5,183,221, Cl. 242-310.000.
Dake, Guy M.: *See—*
Aldous, Stephen C.; and Dake, Guy M., 5,183,404, Cl. 439-55.000.
Dalen, Bjoern; Nilsson, Kenth-Ake-Sune; Hoegnelid, Kurt; and Wecke, Liliane, to Siemens Aktiengesellschaft. Inductive motion sensor. 5,183,056, Cl. 128-782.000.
Dalla Betta, Ralph A.; Ezawa, Nobuyasu; Tsurumi, Kazunori; Schlatter, James C.; and Nickolas, Sarento G., to Catalytica, Inc.; and Tanaka Kikinzoku Kogyo KK. Two stage process for combusting fuel mixtures. 5,183,401, Cl. 431-7.000.
Danchin, Antoine; Glaser, Philippe; Krin, Evelyne; Barzu, Octavien; Ladant, Daniel; and Ullmann, Agnes, to Institut Pasteur. Adenyl cyclase derivatives and their biological uses. 5,183,745, Cl. 435-69.100.
Daniels, Steven D.; Bedzyk, Mark D.; Brahm, Roger S.; and Olexy, Anthony M., to Eastman Kodak Company. Compact laser printer with light tight compartment access. 5,184,153, Cl. 346-108.000.
Danielson, David O.: *See—*
Tury, Edward L.; Kaste, Keith; Johnson, Ross E.; and Danielson, David O., 5,184,017, Cl. 250-343.000.
Danner, Jean-Pierre: *See—*
Bonnet, Andre; and Danner, Jean-Pierre, 5,184,289, Cl. 363-20.000.
Dara, Paul S., to Raytheon Company. Telephone communication system having an enhanced timing circuit. 5,184,350, Cl. 370-105.300.
d'Aragona, Frank S.: *See—*
Rutter, Robert E.; and d'Aragona, Frank S., 5,183,769, Cl. 437-31.000.
Darden, Louis R. Plastic bag dispensing system. 5,183,157, Cl. 206-390.000.
Darnell, Charles F.; and Hafez, Mahmoud M., to Exxon Research and Engineering Company. Hollow fiber module built up from concentric cylinders of hollow fibers. 5,183,566, Cl. 210-321.800.

Dassault Aviation: *See—*
Helle, Jean-Louis; Andre, Jean-Claude; and Schaeffer, Philippe, 5,183,598, Cl. 264-22.000.
Dataline Technologies GmbH: *See—*
Kaneda, Takashi; and Villwock, Thomas, 5,184,282, Cl. 361-395.000.
Datatape Incorporated: *See—*
Ryerson, Robert, 5,184,258, Cl. 360-85.000.
Daugherty, Ronald R.; and Petrocy, Richard J., to Mediatronics, Inc. Back-lightable diffusive display sign. 5,184,116, Cl. 340-764.000.
Davenport, Gary F.: *See—*
Monte, Charles; Worthington, Norman A., III; Mandel, Jonathan; and Davenport, Gary F., 5,183,398, Cl. 434-227.000.
Davidson Textron Inc.: *See—*
Rhodes, Richard D., Jr.; and Fredericks, W. David, 5,183,693, Cl. 428-34.100.
Davis, James D.: *See—*
Warren, Bobby G., Jr.; and Davis, James D., 5,183,369, Cl. 414-339.000.
Day, David R.; and Bybordi, Farhad, to G-C Acquisition, Inc. Abrasion-resistant, high pressure dielectric sensors. 5,184,077, Cl. 324-693.000.
Day, Eric W.: *See—*
Niho, Yoji G.; Day, Eric W.; and Flanders, Tammy L., 5,184,134, Cl. 342-25.000.
DCN Industries, Inc.: *See—*
Dean, David W., 5,182,845, Cl. 29-469.000.
Dean, David W., to DCN Industries, Inc. Method of making stuffed figure with sculptured soft face. 5,182,845, Cl. 29-469.000.
Dearman, Peter T., to Neotronics Medical Limited. Resuscitator valve. 5,183,037, Cl. 128-204.180.
Debaes, John, to N.V. Michel Van de Wiele. Gripper guide for double-gripper weaving machines. 5,183,083, Cl. 139-449.000.
Debbas, Elie. Apparatus for locating a breast mass. 5,183,463, Cl. 604-98.000.
DEC International, Inc.: *See—*
Carrano, James A., 5,183,008, Cl. 119-155.000.
Decerprit, Jacques: *See—*
Festal, Didier; Nioche, Jean-Yves; Descours, Denis; Bellemin, Robert; and Decerprit, Jacques, 5,183,924, Cl. 560-56.000.
Decious, Gaylon; and Nesler, Clay, to Johnson Service Company. Facility management system with improved return to automatic control. 5,184,122, Cl. 340-870.160.
Deckers, Andreas: *See—*
Warwel, Siegfried; Jagers, Hans-Gerd; and Deckers, Andreas, 5,183,791, Cl. 502-102.000.
Deckman, Harry W.: *See—*
Jacobson, Allan J.; Lai, Wen-Yih F.; Matturro, Michael G.; Deckman, Harry W.; McHenry, James A.; Reynolds, Robert P.; and Zhang, Qiyao, 5,183,788, Cl. 502-4.000.
DeCloux, Richard J. Die cast system for control of stair climbing exercise device. 5,183,449, Cl. 482-53.000.
Deere & Company: *See—*
Lodico, James I.; Coder, David R.; Adams, Lawrence J.; Guthrie, Rebecca A. F.; Andes, Raymond M., Jr.; and Alexander, Philip G., 5,183,487, Cl. 55-289.000.
Viaud, Jean, 5,182,987, Cl. 100-87.000.
Deering, Richard A., to Research Products Corporation. Multi-stage filter frame assembly. 5,183,488, Cl. 55-320.000.
De Gamboa, Cristina R. F.: *See—*
Brana, Miguel F.; Sanz, Antonio M.; Alvarez-Ossorio, Rafael P.; Roldan, Cristobal M.; De Gamboa, Cristina R. F.; Garcia, Jesus G.; and Berlanga, Jose M. C., 5,183,821, Cl. 514-296.000.
de' Giudici, Angelo, to Feltrifico Veneto S.p.A. Method and plant for making laps for felts. 5,182,835, Cl. 19-296.000.
Degnan, Thomas F.: *See—*
Kresge, Charles T.; Leonowicz, Michael E.; Roth, Wieslaw J.; Vartuli, James C.; Keville, Kathleen M.; Shih, Stuart S.; Degnan, Thomas F.; Dwyer, Francis G.; and Landis, Michael E., 5,183,561, Cl. 208-251.00R.
Degnan, Thomas F., Jr.; Keville, Kathleen M.; Landis, Michael E.; Marler, David O.; and Mazzone, Dominick N., to Mobil Oil Corporation. Hydrocracking process using ultra-large pore size catalysts. 5,183,557, Cl. 208-111.000.
Degnan, Thomas F., Jr.: *See—*
Kirker, Garry W.; Degnan, Thomas F., Jr.; Huss, Albin, Jr.; and Landis, Michael E., 5,183,559, Cl. 208-119.000.
DeGregoria, Anthony J.: *See—*
Barclay, John A.; Waynert, Joseph A.; DeGregoria, Anthony J.; Johnson, Joseph W.; and Claybaker, Peter J., 5,182,914, Cl. 62-3.100.
Degussa AG: *See—*
Werle, Peter; Trageser, Martin; and Piana, Hermann, 5,183,944, Cl. 568-465.000.
Deischl, Hans: *See—*
Claar, Klaus; Deischl, Hans; Lindmayer, Martin; Moczygemba, Jurgen; Schrader, Jergen; Schumacher, Josef; Topfer, Claus; and Robitschko, Peter, 5,184,022, Cl. 307-10.200.
Delaney, Henry W., Jr., to Emson Research Inc. Spray dispensing device having a tapered mixing chamber. 5,183,186, Cl. 222-211.000.
Delattre, Jacques; Gouze, Philippe; and Neuvessel, Jacques, to Societe de Fabrication d'Instruments de Mesure (S.F.I.M.). Friction actuator. 5,184,054, Cl. 318-586.000.
Delco Electronics Corporation: *See—*
Kesler, Scott B.; and Gose, Mark W., 5,184,036, Cl. 307-540.000.
Deleco Electronics Corporation: *See—*
Hogan, Martin A.; Leppek, Kevin G.; and Spadafora, Peter J., 5,184,299, Cl. 364-426.020.
della Valle, Francesco; and Toffano, Gino, to FIDIA S.p.A. Use of monosialoganglioside GM, to prevent the development of tolerance to the analgesic effect of morphine and related drugs. 5,183,807, Cl. 514-25.000.
Delmas, Gilles: *See—*
Hazan, Jean-Pierre; Polaert, Remy; and Delmas, Gilles, 5,183,996, Cl. 219-452.000.
Deloge, Andre : *See—*
Foos, Jacques; Lemaire, Marc; Guy, Alain; Guyon, Vincent; Chomel, Rodolphe; Deloge, Andre ; Doutreluigne, Pierre; and Le Roy, Henri, 5,183,645, Cl. 423-8.000.
De Matthaeis, Sisto L.: *See—*
Ricco, Mario; De Matthaeis, Sisto L.; and Maldera, Domenico, 5,183,209, Cl. 239-585.100.
Demet, George: *See—*
Mukerji, Prosanto K.; Mallen, Russell; Demet, George; and Fuerhaupter, Harry, 5,183,692, Cl. 427-304.000.
Denizou, Jean-Pierre, to Framatome; and Cogema. Control cluster including demountable fuel for a nuclear fuel assembly. 5,183,626, Cl. 376-327.000.
Dennys, Jean-Pierre, to Societe Industrielle d'Equipment Mecanique. Sealing gasket for a control valve. 5,183,273, Cl. 277-170.000.
Dentsply G.m.b.H.: *See—*
Gorlich, Karl J.; Bauer, Fritz U.; and Konetzka, Joerg, 5,183,834, Cl. 523-105.000.
de Place, Alain: *See—*
Brouzes, Carole; Ressencourt, Claude; and de Place, Alain, 5,184,097, Cl. 333-202.000.
Descours, Denis: *See—*
Festal, Didier; Nioche, Jean-Yves; Descours, Denis; Bellemin, Robert; and Decerprit, Jacques, 5,183,924, Cl. 560-56.000.
de Souza, Joel P.: *See—*
Baratte, Herve; de Souza, Joel P.; and Sadana, Devendra K., 5,183,767, Cl. 437-11.000.
Deur, Ted E.: *See—*
MacLane, Donald B.; Deur, Ted E.; Anderson, Jeffrey J.; Titterington, Donald R.; Oswald, James C.; and Meissner, Richard S., 5,184,147, Cl. 346-1.100.
de Vaan, Adrianus J. S. M.; and van den Brandt, Adrianus H. J., to U.S. Philips Corporation. Image projection apparatus. 5,184,248, Cl. 359-483.000.
Devall, Jeffrey E.: *See—*
Aubel, John A.; Devall, Jeffrey E.; Gimby, David R.; and Shipp, Philip A., 5,183,087, Cl. 141-59.000.
Devier, Lonnie J.; Krone, John J.; Lunzman, Stephen V.; and Marsden, Howard A., to Caterpillar Inc. Control system for integrating a work attachment to a work vehicle. 5,182,908, Cl. 60-420.000.
Devillers, Yves; Neveu, Frederic; Behe, Roger; and Ramat, Pierre, to Minister of the Post, Telecommunications and Space (Centre National D'Etudes Des Telecommunications). Dismountable and air-transportable antenna for two-way telecommunications with a satellite. 5,184,145, Cl. 343-840.000.
De Vos, Dirk: *See—*
Scheeren, Johan W.; Martinus De Bie, Joannes F.; and De Vos, Dirk, 5,183,913, Cl. 556-446.000.
Dewar, John H., to United Technologies Automotive, Inc. Battery terminal connector. 5,183,419, Cl. 439-765.000.
Dhanoa, Daljit S.: *See—*
Greenlee, William J.; Patchett, Arthur A.; Hangauer, David; Walsh, Thomas F.; Fitch, Kenneth J.; Rivero, Ralph A.; and Dhanoa, Daljit S., 5,183,810, Cl. 514-63.000.
D'Heureuse, Walter; Greive, Martin; Heppenstiel, Gerhard; and Kusch, Hans-Jurgen, to Heidelberg Druckmaschinen AG. Sealing device. 5,182,989, Cl. 101-148.000.
Dickman, Calvin H. Electric kaleidoscope. 5,184,249, Cl. 359-616.000.
Dickson, Joseph F., to Quamco, Inc. Seam-free thread rolling dies. 5,182,937, Cl. 72-469.000.
Didier-Werke AG: *See—*
Bruckner, Raimund; Hintzen, Ullrich; Lee, Steve; Schuler, Andreas; and Wiesel, Martin, 5,183,624, Cl. 266-236.000.
Diemer, Russell B., Jr.: *See—*
Blenk, Michael H.; Diemer, Russell B., Jr.; and Hager, John P., 5,183,496, Cl. 75-702.000.
Blenk, Michael H.; Diemer, Russell B., Jr.; and Hager, John P., 5,183,497, Cl. 75-702.000.
Diesse Diagnostica Senese S.R.L.: *See—*
Meiattini, Franco, 5,183,762, Cl. 436-97.000.
Dietl, Rudolf, to J. Strobel & Sohne GmbH & Co. Sewing machine feeder drive and stitch-length adjustment mechanism. 5,182,999, Cl. 112-178.000.
Diffenbaugh, Kimberly S.: *See—*
Bohrn, Walter J.; Diffenbaugh, Kimberly S.; Garman, Shelly N.; and Khanpara, Jatin C., 5,183,704, Cl. 428-305.500.
Different Dimensions, Inc.: *See—*
Zuckerman, Andrew M., 5,183,190, Cl. 223-96.000.
Dighton, Gaylon L.; and Alvarez, David G., to Dow Chemical Company, The. System and method for recovering volatile organic gases emitted from a polyethylene resin product. 5,182,870, Cl. 34-26.000.
Digital Equipment Corporation: *See—*
Fox, Leslie R., 5,184,211, Cl. 257-706.000.
Mallary, Micheal L., 5,184,267, Cl. 360-126.000.
Novotny, Shlomo D,, 5,183,104, Cl. 165-104.330.

VOL 1147 ISS 1 FE 2 1993 UMI

Samarov, Victor M.; and Arbanas, Zeljko, 5,184,281, Cl. 361-386.000.
Weng, Lih-Jyh, 5,184,125, Cl. 341-59.000.
Westbrook, Scott R., 5,184,210, Cl. 257-664.000.

Dillingham, Edward W.: *See—*
Holland, Douglas K.; and Dillingham, Edward W., 5,183,478, Cl. 48-197.00R.

DiMarco, Bernard; Black, Robert E.; and Cella, Stephen D., to Siemens Energy & Automation, Inc. Circuit breaker with dual movable contacts. 5,184,099, Cl. 335-16.000.

DiNapoli, Antonio; Goff, Gerald L.; and Sikes, Roger A., to Advanced Micro Devices, Inc. Semi-conductor wafer retention clip. 5,183,245, Cl. 269-254.00R.

Dinc, Saim: *See—*
Calabrese, Salvadore J.; Scarton, Henry A.; Murray, S. Frank; Ettles, Christopher M.; Kennedy, Warren C.; Dinc, Saim; Jlidi, Bessem; and Strong, William, 5,183,955, Cl. 84-437.000.

DiNinno, Frank P.: *See—*
Greenlee, Mark L.; Salzmann, Thomas N.; and DiNinno, Frank P., 5,183,887, Cl. 540-364.000.

Dinverno, Daniel. Van-mounted service carts for skilled tradesmen. 5,183,372, Cl. 414-538.000.

D'Iribarne, Benoit; Mairlot, Henri; and Houang, Paul, to Saint-Gobain Recherche. Material for the tempering of glass. 5,183,491, Cl. 65-351.000.

Discordia, Robert: *See—*
Nicolaou, Kyriacos C.; Sorensen, Erik; Hwang, Chan-Kou; Discordia, Robert; Bergman, Robert G.; and Minto, Robert E., 5,183,942, Cl. 568-375.000.

Ditto Sales, Inc: *See—*
Gutgsell, David R., 5,182,996, Cl. 108-64.000.

Doane, William M.: *See—*
Carr, Merle E.; Doane, William M.; Wing, Robert E.; and Bagley, Edward B., 5,183,690, Cl. 427-213.310.

Dr. J. Hansler GmbH: *See—*
Washuttl, Josef; and Viebahn, Renate, 5,183,911, Cl. 554-181.000.

Dr. Johannes Heidenhain GmbH: *See—*
Nelle, Gunther, 5,182,867, Cl. 33-702.000.

Doering, John W. System for automatically inspecting a flat sheet part. 5,184,217, Cl. 358-106.000.

Doki, Masahiko; and Takei, Michiko, to Fujitsu Limited. Method of forming shallow junctions. 5,183,777, Cl. 437-160.000.

Dommer, Armin; and Dommer, Dieter. Device for insertion by welding of a plastic pipe section into a shaped plastic piece. 5,183,524, Cl. 156-423.000.

Dommer, Dieter: *See—*
Dommer, Armin; and Dommer, Dieter, 5,183,524, Cl. 156-423.000.

Donnelly, David P.: *See—*
Adams, James W.; Loving, Louis S.; Betts, David A.; Donnelly, David P.; and Nunley, Alvin, III, 5,184,330, Cl. 367-111.000.

Dorigotti, Luciano: *See—*
Aliverti, Valerio; Dorigotti, Luciano; Fonio, Teodoro; and Pinza, Mario, 5,183,802, Cl. 514-2.000.

Doryokuro Kakunenryo Kaihatsu Jigyodan: *See—*
Sasao, Nobuyuki; and Wada, Yukio, 5,183,652, Cl. 423-579.000.

Dosaka, Katsumi: *See—*
Konishi, Yasuhiro; Kumanoya, Masaki; Dosaka, Katsumi; Komatsu, Takahiro; and Inoue, Yoshinori, 5,184,321, Cl. 365-51.000.

Douard, Pierre R., to Fluidelec. Apparatus for transporting light loads by means of self-propelled carriages on rails. 5,183,368, Cl. 414-222.000.

Douglas, James R.: *See—*
Frank, Jimmy L.; Wolfe, John R., Jr.; and Douglas, James R., 5,182,862, Cl. 33-199.00R.

Doutreluigne, Pierre: *See—*
Foos, Jacques; Lemaire, Marc; Guy, Alain; Guyon, Vincent; Chomel, Rodolphe; Deloge, Andre ; Doutreluigne, Pierre; and Le Roy, Henri, 5,183,645, Cl. 423-8.000.

Dover Corporation: *See—*
Taylor, Jeffrey L.; Luckenbach, Roy; Coco, Michael; and Twickler, Carl, 5,183,702, Cl. 428-266.000.

Dow Chemical Company, The: *See—*
Dighton, Gaylon L.; and Alvarez, David G., 5,182,870, Cl. 34-26.000.
Holbrook, Michael T.; Hebert, Lawrence A.; Najmy, Stephen W.; Stine, Ernest F., Jr.; and Hasche, Reimer, 5,183,797, Cl. 502-355.000.
Langhorst, Martin A.; and Henry, Joseph B., 5,183,604, Cl. 264-40.100.
Myers, Harold D., 5,183,920, Cl. 558-277.000.
Nelb, Robert G., II; and Onder, Kemal, 5,183,864, Cl. 525-452.000.
Rand, Cynthia L., 5,183,919, Cl. 558-274.000.

Dow Corning Corporation: *See—*
Carpenter, Leslie E., 5,183,684, Cl. 427-574.000.
Yeh, Li-Tain; Kenney, Malcolm E.; Bokerman, Gary N.; Cannady, John P.; and Marko, Ollie W., 5,183,914, Cl. 556-467.000.

Dow Corning Toray Silicone Co., Ltd.: *See—*
Okawa, Tadashi, 5,183,912, Cl. 556-425.000.

Dowa Mining Co., Ltd.: *See—*
Ueda, Toshio; Sato, Yuichi; Senda, Masayasu; Isoyama, Seiji; and Hisano, Seiichi, 5,183,630, Cl. 419-31.000.

Dowty Electronic Components Limited: *See—*
North, John M., 5,183,715, Cl. 429-192.000.

Doyle, Richard C.; and Rivera, Lester, to Leviton Manufacturing Company, Inc. Shock hazard protection system. 5,184,271, Cl. 361-49.000.

Dragerwerk Aktiengesellschaft: *See—*
Mattiessen, Hans, 5,183,550, Cl. 204-415.000.

Dragicevic, Zoran, to Laycock SA. Process for the extraction or flushing out of a substance from a heterogenous system, and installation for carrying out the process. 5,183,578, Cl. 210-773.000.

Drago, Ronald P., to Spectrum Innovations, Inc. Method for fishing lines in serial conduits. 5,183,237, Cl. 254-134.400.

Drain, Kieran F.: *See—*
Bielat, Richard A.; and Drain, Kieran F., 5,183,831, Cl. 522-33.000.

Draper, A. Allen. Collapsible toy building. 5,183,427, Cl. 446-4.000.

DRD Diluter Corporation: *See—*
Qureshi, Humayun; and Schwartz, Donald, 5,183,765, Cl. 436-180.000.

Drew, Kenneth A.: *See—*
Cudini, A. Mario; Roman, Horst; and Drew, Kenneth A., 5,182,974, Cl. 82-124.000.

Droulon, Georges, to Ets. Cousin Freres. Locking device for rectilinear or circular displacement mechanical jacks. 5,183,236, Cl. 254-95.000.

Dry, Dennis P.: *See—*
Gilchrist, Alan R.; Duran, Edward M.; Dry, Dennis P.; and Berry, Robert R., 5,183,389, Cl. 416-193.00A.

DT Membranfilter Vertriebs GmbH: *See—*
Mohn, Jurgen; and Heine, Wilhelm, 5,183,567, Cl. 210-321.750.

Duane, Diana C.; Zilley, Eric L.; and Jordan, Robert C., to Microelectronics and Computer Technology Corporation; and Minnesota Mining and Manufacturing Company. Copper/epoxy structures. 5,183,972, Cl. 174-251.000.

DuBois, Samuel C., to Wall Colmonoy Corporation. Braze filler metal with enhanced corrosion resistance. 5,183,636, Cl. 420-442.000.

Dubrul, William R.; and Hillsman, Cecily M., to Interventional Thermodynamics, Inc. Radially expandable dilator. 5,183,464, Cl. 128-3.000.

Duflot, Didier: *See—*
Abdelmouttalib, Najib; and Duflot, Didier, 5,184,348, Cl. 370-95.100.

Duggan, Michael D. Baby bottle holder. 5,183,229, Cl. 248-102.000.

Dukes, Michael, to Imperial Chemical Industries PLC. Selective oestrogen therapy for perimenopausal or postmenopausal conditions. 5,183,814, Cl. 514-171.000.

Dumestre, Alex, III, to Navigation Technology Corporation. Underwater release mechanism. 5,184,328, Cl. 367-4.000.

DuMont, Christopher L.: *See—*
Schmoeger, Mary L.; Hagmaier, Charles P., Jr.; Bogdanowicz, Mitchell J.; DuMont, Christopher L.; and Sehlin, Richard C., 5,184,175, Cl. 355-32.000.

Duncan, James E.; and Smiley, Dean H., to Du Pont de Nemours, E. I., and Company. Process of drawing yarn using an oscillating draw assist element. 5,183,620, Cl. 264-290.700.

Duncan, Jeff R.: *See—*
Sarian, Grigor; Crandall, Barry R.; and Duncan, Jeff R., 5,183,039, Cl. 128-400.000.

Dunder, Thomas: *See—*
Platzer, Stephan J. W.; Procter, Arthur E.; and Dunder, Thomas, 5,183,723, Cl. 430-160.000.

Duphar International Research B.V.: *See—*
Van Wijngaarden, Ineke; Hamminga, Derk; and Wouters, Wouter, 5,183,822, Cl. 514-305.000.

Du Pont de Nemours, E. I., and Company: *See—*
Blenk, Michael H.; Diemer, Russell B., Jr.; and Hager, John P., 5,183,496, Cl. 75-702.000.
Blenk, Michael H.; Diemer, Russell B., Jr.; and Hager, John P., 5,183,497, Cl. 75-702.000.
Champion, Allan R., 5,183,614, Cl. 264-184.000.
Duncan, James E.; and Smiley, Dean H., 5,183,620, Cl. 264-290.700.
Figuly, Garret D., 5,183,862, Cl. 525-437.000.
Zakheim, Howard; Clinton, Peter M.; Goldschneider, James D.; Kasmer, Christopher A.; Zahn, Markus; and Hoffmeyer, Charles L., 5,183,214, Cl. 241-30.000.

Dupont, Philippe: *See—*
Brehm, Claude; Dupont, Philippe; and Tardy, Andre , 5,183,489, Cl. 65-4.200.

Duran, Edward M.: *See—*
Gilchrist, Alan R.; Duran, Edward M.; Dry, Dennis P.; and Berry, Robert R., 5,183,389, Cl. 416-193.00A.

Durand, David; Vieau, David P.; Wei, Tai S.; and Chu, Ang-Ling, to Poly-Flex Circuits, Inc. Electrically conductive cement. 5,183,593, Cl. 252-514.000.

Durgin, Kirby: *See—*
Hallerstrom, Robert; Durgin, Kirby; and Benjamin, Wesley, 5,183,299, Cl. 285-47.000.

Dussault, Douglas G.: *See—*
Sullivan, Michael J.; and Dussault, Douglas G., 5,184,331, Cl. 367-135.000.

Dutton-Lainson Company: *See—*
Bufford, Charles D.; and Gruidel, James M., 5,182,821, Cl. 4-592.000.

Dwyer, Francis G.: *See—*
Kresge, Charles T.; Leonowicz, Michael E.; Roth, Wieslaw J.; Vartuli, James C.; Keville, Kathleen M.; Shih, Stuart S.; Degnan, Thomas F.; Dwyer, Francis G.; and Landis, Michael E., 5,183,561, Cl. 208-251.00R.

Dwyer Instruments, Inc.: *See—*
Knop, David G., 5,183,983, Cl. 200-81.90M.

Dye, Thomas A., to Texas Instruments Incorporated. Cached random access memory device and system. 5,184,320, Cl. 365-49.000.

Dykes, Norman L.: *See—*
Lauf, Robert J.; Holcombe, Cressie E.; and Dykes, Norman L., 5,184,286, Cl. 361-529.000.

Dyneema V.O.F.: *See—*
Jacobs, Martinus J. N.; and Rutten, Hendrikus J. J., 5,183,701, Cl. 428-229.000.

Dziuk, Jerome J., Jr.: *See—*
Mallow, William A.; and Dziuk, Jerome J., Jr., 5,183,763, Cl. 436-106.000.

E. J. Brooks Co.: *See—*
Lundberg, George A., Jr., 5,183,301, Cl. 292-318.000.

E. R. Squibb & Sons, Inc.: *See—*
Linder, Karen E.; Nunn, Adrian D.; and Ramalingam, Kondarediar, 5,183,653, Cl. 424-1.100.

Eastman Kodak Company: *See—*
Allmendinger, Franz; Ebner, Arno; Ettischer, Helmut; and Straub, Timo, 5,183,195, Cl. 227-29.000.
Bell, Cynthia S., 5,184,174, Cl. 354-480.000.
Berg, Ralph O.; Lang, Fred J., Jr.; and Kupka, Dennis B., 5,183,069, Cl. 137-15.000.
Boutet, John C.; and Kocher, Thomas E., 5,184,013, Cl. 250-236.000.
Daniels, Steven D.; Bedzyk, Mark D.; Brahm, Roger S.; and Olexy, Anthony M., 5,184,153, Cl. 346-108.000.
Foley, Walter D., 5,184,227, Cl. 358-302.000.
Hauss, Raymond G., 5,184,165, Cl. 354-324.000.
Maskasky, Joe E., 5,183,732, Cl. 430-569.000.
May, John W.; and Mukherjee, Anujit, 5,183,717, Cl. 430-97.000.
Mosehauer, Michael; Newell, Catherine D.; and Mauer, Andrew J., 5,184,194, Cl. 355-297.000.
Romanet, Robert F.; and Chen, Teh-Hsuan, 5,183,728, Cl. 430-386.000.
Sarraf, Sanwal P.; Weber, Sharon W.; Gilmour, Hugh S. A.; and Ficcaglia, Linda I., 5,183,798, Cl. 303-227.000.
Schildkraut, Jay S.; Young, Ralph H.; Williams, David J.; and Scozzafava, Michael, 5,184,323, Cl. 365-124.000.
Schleigh, William R.; and Welter, Thomas R., 5,183,894, Cl. 546-273.000.
Schmittou, Eric R.; and Sowinski, Allan F., 5,183,727, Cl. 430-372.000.
Schmoeger, Mary L.; Hagmaier, Charles P., Jr.; Bogdanowicz, Mitchell J.; DuMont, Christopher L.; and Sehlin, Richard C., 5,184,175, Cl. 355-32.000.
Stelter, Eric C.; and Guth, Joseph E., 5,183,964, Cl. 118-653.000.
Wolber, Jack; Lord, Steve; and Froehling, Dieter, 5,183,252, Cl. 271-276.000.

Ebara Corporation: *See—*
Fujiwara, Satoru, 5,182,919, Cl. 62-193.000.

Eberle, Michael J., to Endosonics Corporation. Method and apparatus for removing artifacts from an ultrasonically generated image of a small cavity. 5,183,048, Cl. 128-662.060.

Ebihara, Kazuyuki: *See—*
Nishi, Yuji; Ito, Shigehiro; Kuguchi, Tatsushi; and Ebihara, Kazuyuki, 5,184,221, Cl. 358-167.000.

Ebner, Arno: *See—*
Allmendinger, Franz; Ebner, Arno; Ettischer, Helmut; and Straub, Timo, 5,183,195, Cl. 227-29.000.

ECC International Limited: *See—*
Hassell, Morgan V.; Stephens, Frederick J.; and Edwards, Ernest J., 5,183,691, Cl. 427-286.000.

Eckhardt, Dennis C.: *See—*
Graber, David W.; Eckhardt, Dennis C.; Pawlak, Andrzej M.; and Faist, Bryan L., 5,184,297, Cl. 364-424.050.

Ecopac, L. P.: *See—*
Hutcheson, Jerry D.; and Blake, William S., 5,183,185, Cl. 222-209.000.

Ederdt, Rolalnd: *See—*
Heindl, Josef; Skuballa, Werner; Buchmann, Bernd; Frohlich, Wolfgang; and Ederdt, Rolalnd, 5,183,925, Cl. 560-61.000.

Edgell, James E.; and Jordan, David L., to Hubbell Incorporated. Cantilevered spoke mounting for lighting fixture. 5,183,331, Cl. 362-426.000.

Edwards, Charles O., to GenCorp Inc. Process for the preparation of solventless, low friction, abrasion-resistant coatings for elastomeric substrates. 5,183,613, Cl. 264-171.000.

Edwards, Ernest J.: *See—*
Hassell, Morgan V.; Stephens, Frederick J.; and Edwards, Ernest J., 5,183,691, Cl. 427-286.000.

Edwards, Robert J.; and Luperti, Harry E., to Pitney Bowes Inc. Diverting apparatus and method for in-line inserting equipment. 5,183,246, Cl. 270-45.000.

Egawa, Akira, to Canon Kabushiki Kaisha. Camera with magnetic recording device. 5,184,161, Cl. 354-105.000.

Ehlert, William C.: *See—*
Amberson, James R.; Ehlert, William C.; and Olson, George E., 5,182,883, Cl. 52-73.000.

Ehnholm, Gosta J., to Instrumentarium Corporation. Magnetic resonance imaging coil for applying NMR and ESR pulses. 5,184,076, Cl. 324-318.000.

Eichenauer, Herbert: *See—*
Lindner, Christian; and Eichenauer, Herbert, 5,183,850, Cl. 525-73.000.

Eisenach, Kathleen D.: *See—*
Crawford, Jack T.; Eisenach, Kathleen D.; Cave, M. Donald; and Bates, Joseph H., 5,183,737, Cl. 435-6.000.

Eisenhauer, Virgil E., to Carrier Corporation. Three phase reversal detection system. 5,184,063, Cl. 324-86.000.

Elasis Sistema Ricerca Fiat Nel Mezzogiorno Societa Consortile per Azioni: *See—*
Ricco, Mario; De Matthaeis, Sisto L.; and Maldera, Domenico, 5,183,209, Cl. 239-585.100.

Elbit-ATI, Ltd.: *See—*
Rapoport, Uri, 5,184,078, Cl. 324-321.000.

Electrotech Limited: *See—*
Cooke, Michael J.; and McGeown, Arthur J., 5,183,402, Cl. 432-5.000.

Elegant Design Solutions, Inc.: *See—*
McCurry, Patrick W.; Kellogg, James R.; Boekelheide, Karl; Sexton, Kenneth D.; Ellison, George A.; and Hocker, Robert A., 5,184,025, Cl. 307-66.000.

Eley, E. R.: *See—*
Boyd, Edward L.; Eley, E. R.; and Puri, Jeewan L., 5,184,270, Cl. 361-35.000.

ELF Atochem Italia S.r.l.: *See—*
Visani, Francesco; Tavazzani, Carlo; Ajroldi, Giuseppe; and Castiglioni, Giovanni, 5,183,851, Cl. 525-85.000.

Elf Atochem North America, Inc.: *See—*
Forguy, Christian; Goetz, Frederick J.; Graeber, Edward L.; and Lindstrom, Michael J., 5,183,915, Cl. 558-341.000.

Elford, Howard L.: *See—*
van't Riet, Bartholomeus; Elford, Howard L.; and Wampler, Galen L., 5,183,828, Cl. 514-508.000.

El-Hefnawi, Sobhy; Shah, Shailesh C.; and Wasyliw, Basil, to BASF Corporation. Modified carboxylated rosin polyamide/acrylics. 5,183,847, Cl. 525-54.440.

Eli Lilly and Company: *See—*
Weigel, Leland O., 5,183,910, Cl. 549-539.000.

Elicker, Robert W.; and Gorenc, Daniel L., to AMP Incorporated. Grounded electrical connector assembly. 5,183,405, Cl. 439-108.000.

Eller, J. David. Method, system and apparatus for handling substances on or in water. 5,183,579, Cl. 210-776.000.

Ellinger, Sylvester M.; Spillman, William B., Jr.; and Patriquin, Douglas R., to Simmonds Precision Products, Inc. Method and apparatus for shaft torque measurement with temperature compensation. 5,182,953, Cl. 73-862.335.

Ellis, Gordon F., to Boeing Company, The. Distributed built-in test equipment system for digital avionics. 5,184,312, Cl. 364-551.010.

Ellis, Stafford M., to GEC-Marconi Limited. Helmet systems. 5,184,231, Cl. 359-13.000.

Ellison, George A.: *See—*
McCurry, Patrick W.; Kellogg, James R.; Boekelheide, Karl; Sexton, Kenneth D.; Ellison, George A.; and Hocker, Robert A., 5,184,025, Cl. 307-66.000.

Elmer, Neil C.: *See—*
Haun, Robert E.; Elmer, Neil C.; and Lampson, Robin A., 5,183,498, Cl. 75-709.000.

Elmwood Packaging Machinery Ltd.: *See—*
Bate, Frederick D., 5,182,894, Cl. 53-399.000.

Elsasser, A. Frederick; and Korte, Thomas J., to Henkel Corporation. Process for the preparation of substituted furanones. 5,183,908, Cl. 549-322.000.

Emerson Electric Co.: *See—*
O Breartuin, Ciaran S., 5,184,026, Cl. 307-139.000.

Emilsson, Fred S., to SAB Wabco Holdings B.V. Rail vehicle wheel. 5,183,306, Cl. 295-11.000.

Emory University: *See—*
Hunter, Robert L.; and Ragland, William L., 5,183,687, Cl. 424-78.340.

Emson Research Inc.: *See—*
Delaney, Henry W., Jr., 5,183,186, Cl. 222-211.000.

Ency Nova Inc.: *See—*
Pierrat, Michel A., 5,184,260, Cl. 360-92.000.

Endo, Atsushi: *See—*
Tsutsumi, Michinari; Endo, Atsushi; and Yada, Toshio, 5,183,533, Cl. 156-656.000.

Endo, Kenichi: *See—*
Koga, Yoshiro; Gomi, Akihiro; Miyasaka, Takashi; Miyazawa, Yasunaga; Endo, Kenichi; Shinozaki, Junichiro; Yoda, Kaneo; Ichikawa, Takashi; Miyasaka, Hitoshi; and Kaburagi, Chiharu, 5,184,257, Cl. 360-77.050.

Endo, Kunihisa, to Toko Kabushiki Kaisha. Bobbin for multiple-connected inductor. 5,184,105, Cl. 336-192.000.

Endo, Noboru: *See—*
Kozaki, Takahiko; Asano, Kenichi; Ogino, Mineo; Amada, Eiichi; Endo, Noboru; and Sakurai, Yoshito, 5,184,346, Cl. 370-60.000.

Endo, Tadao: *See—*
Saika, Toshihiro; Kobayashi, Isao; Kaifu, Noriyuki; and Endo, Tadao, 5,184,007, Cl. 250-208.100.

Endo, Takayoshi: *See—*
Yamanashi, Makoto; Jinno, Keishi; Watanabe, Tamio; Endo, Takayoshi; and Yagi, Sakai, 5,183,418, Cl. 439-752.000.

Endo, Tunehiro: *See—*
Sakai, Keijiro; Endo, Tunehiro; Kubota, Yuzuru; Ikimi, Takashi; Mutoh, Nobuyoshi; and Honbu, Mitsuyuki, 5,184,057, Cl. 318-803.000.

VOL
1147
ISS
1
FE
2
1993
UMI

Endoh, Hiroshi: *See—*
Nakamura, Masanori; Hirakouchi, Hiroshi; Yatsuka, Takeshi; Kadowaki, Nobuo; and Endoh, Hiroshi, 5,183,863, Cl. 525-438.000.

Endosonics Corporation: *See—*
Eberle, Michael J., 5,183,048, Cl. 128-662.060.

Engberg, John: *See—*
Okun, Nathan; and Engberg, John, 5,184,322, Cl. 365-122.000.

England, J. Bruce: *See—*
Stanislowski, Anna G.; England, J. Bruce; and Ratcliff, Steven D., 5,183,655, Cl. 424-76.600.

England, Todd A.: *See—*
Brown, Robert L.; Baxter, David E.; and England, Todd A., 5,183,509, Cl. 118-696.000.

Enokido, Yutaka: *See—*
Mihara, Teruyoshi; Matsushita, Tsutomu; Yao, Kenji; Hoshi, Masakatsu; Enokido, Yutaka; and Hirota, Yukitsugu, 5,184,204, Cl. 357-629.000.

Enomoto, Takayuki: *See—*
Takahashi, Tadashi; Furuya, Katsuhiko; Nakasima, Masaaki; and Enomoto, Takayuki, 5,184,170, Cl. 354-413.000.

Enyedy, Edward A., to Lincoln Electric Company, The. Method and circuit for protecting plasma nozzle. 5,183,990, Cl. 219-121.540.

Epicor Industries, Inc.: *See—*
Heckman, Greg A., 5,183,173, Cl. 220-367.000.

Epicor Technology, Inc.: *See—*
Cholinski, Edward J., 5,183,508, Cl. 118-683.000.

Erdman, Arthur G.; Rekow, Elizabeth D.; Riley, Donald R.; Klamecki, Barney; Zhu, Yang; and Ahn, Jeong-Ho, to University of Minnesota, Regents of the. Automated high-precision fabrication of objects of complex and unique geometry. 5,184,306, Cl. 364-474.050.

Eriksen, O. Harald S.: *See—*
Cook, James E.; and Eriksen, O. Harald S., 5,183,396, Cl. 417-534.000.

Ernsberger, Craig: *See—*
Bloom, Terry; and Ernsberger, Craig, 5,184,108, Cl. 338-195.000.

Erpelding, Michel; and Vandome, Jacques, to Societe Chimique des Charbonnages. Thermoplastic compositions based on grafted rubber and polyester, a process for their manufacture, and articles obtained therefrom. 5,183,840, Cl. 524-228.000.

ESCO Corporation: *See—*
Ottestad, Jack B., 5,183,316, Cl. 299-69.000.

Eshita, Tooru: *See—*
Suzuki, Masaaki; and Eshita, Tooru, 5,182,861, Cl. 33-18.100.

Eskam, Armin: *See—*
Karius, Klaus D.; Eskam, Armin; and Vogt, Karl-Heinz, 5,183,962, Cl. 102-489.000.

Esterbauer, Hermann: *See—*
Wizani, Wolfgang; Esterbauer, Hermann; Steiner, Walter; and Gomes, Joseph, 5,183,753, Cl. 435-201.000.

Estes, Brian P.: *See—*
Stinson, D. Ray; Stinson, Linda D.; Roberts, Brian F.; Dahms, Steven J.; Estes, Brian P.; and Robertson, Tommy H., 5,182,825, Cl. 5-451.000.

Etablissements Staubli-Verdol: *See—*
Bassi, Dario; and Palau, Joseph, 5,183,080, Cl. 139-55.100.

Ethyl Corporation: *See—*
Wiegand, Karl E.; and Hu, Patrick C., 5,183,061, Cl. 128-897.000.

Ets. Cousin Freres: *See—*
Droulon, Georges, 5,183,236, Cl. 254-95.000.

Ettischer, Helmut: *See—*
Allmendinger, Franz; Ebner, Arno; Ettischer, Helmut; and Straub, Timo, 5,183,195, Cl. 227-29.000.

Ettles, Christopher M.: *See—*
Calabrese, Salvadore J.; Scarton, Henry A.; Murray, S. Frank; Ettles, Christopher M.; Kennedy, Warren C.; Dinc, Saim; Jlidi, Bessem; and Strong, William, 5,183,955, Cl. 84-437.000.

Etzkorn, William G.; and Harkreader, Gordon G., to Union Carbide Chemicals & Plastics Technology Corporation. Anhydrous diluent process for the propylene oxidation reaction to acrolein and acrolein oxidation to acrylic acid. 5,183,936, Cl. 562-532.000.

Eustache, Jacques: *See—*
Shroot, Braham; Eustache, Jacques; and Bernardon, Jean-Michel, 5,183,889, Cl. 544-174.000.

EVG Entwicklungs-u Verwertungs-Gesellschaft m.b.H.: *See—*
Ritter, Gerhard; Ritter, Klaus; and Schmidt, Gerhard, 5,182,932, Cl. 72-217.000.

Exergen Corporation: *See—*
Pompei, Francesco, 5,183,337, Cl. 374-2.000.

Exocell, Inc.: *See—*
Cohen, Margo, 5,183,739, Cl. 435-7.210.

Exxon Chemical Patents Inc.: *See—*
Welborn, Howard C., Jr., 5,183,867, Cl. 526-114.000.

Exxon Research and Engineering Company: *See—*
Boyle, Joseph P., 5,183,789, Cl. 502-52.000.
Darnell, Charles F.; and Hafez, Mahmoud M., 5,183,566, Cl. 210-321.800.
Jacobson, Allan J.; Lai, Wen-Yih F.; Matturro, Michael G.; Deckman, Harry W.; McHenry, James A.; Reynolds, Robert P.; and Zhang, Qiyao, 5,183,788, Cl. 502-4.000.
Stibrany, Robert T.; and Gorun, Sergiu M., 5,183,945, Cl. 568-574.000.

Ezawa, Nobuyasu: *See—*
Dalla Betta, Ralph A.; Ezawa, Nobuyasu; Tsurumi, Kazunori; Schlatter, James C.; and Nickolas, Sarento G., 5,183,401, Cl. 431-7.000.

Fabbri, William, to Keene Corporation. Fluorescent light fixture with open ballast housing. 5,183,327, Cl. 362-219.000.

Fabrique Ebel SA: *See—*
Vollert, Alfred, 5,184,334, Cl. 368-319.000.

Faist, Bryan L.: *See—*
Graber, David W.; Eckhardt, Dennis C.; Pawlak, Andrzej M.; and Faist, Bryan L., 5,184,297, Cl. 364-424.050.

Fan, Lai-Duien G.: *See—*
Hwa, Chih M.; Kelly, John A.; Tai, Wun T.; Fan, Lai-Duien G.; Kreh, Robert P.; and Greaves, Brian, 5,183,574, Cl. 210-701.000.

Fang, Lawrence: *See—*
Labovitz, Jeffrey; Guilford, William J.; Fang, Lawrence; and Liang, Yi, 5,183,891, Cl. 544-235.000.

Fanta, David E.; Hamby, Johnnie L.; and Schleicher, Hart E., to All-waste Services, Inc. Encapsulation method for the containment of waste and salvageable products. 5,183,086, Cl. 141-10.000.

Fanuc Ltd.: *See—*
Arai, Takeji, 5,183,991, Cl. 219-121.640.
Aso, Toshiyuki; and Yoda, Shinji, 5,183,987, Cl. 219-69.120.
Ikeda, Yoshiaki, 5,184,052, Cl. 318-569.000.

Fargher, David G. W.: *See—*
Lee, Ching-Pang; Rieck, Harold P., Jr.; Palmer, Nicholas C.; and Fargher, David G. W., 5,183,385, Cl. 416-97.00R.

Farrell, Michael E.: *See—*
Rasmussen, David L.; Farrell, Michael E.; and Ortiz, Pedro R., 5,184,185, Cl. 355-308.000.

Farris, Timothy M.: *See—*
Pelachyk, Richard; Satterlee, Lowell W.; Zuccaro, Dante C.; and Farris, Timothy M., 5,183,302, Cl. 292-336.300.

Farwell, Charles Y.; Hearn, Michel L.; Heidebrecht, Richard M.; Ho, Kelvin K.; and Spencer, Douglas A., to AT&T Bell Laboratories. Adaptive synchronization arrangement. 5,184,347, Cl. 370-94.100.

FEDCO Automotive Components Co., Inc.: *See—*
Brodene, Timothy; Plotner, Michael; and Cramer, Bruce, 5,182,882, Cl. 51-317.000.

Felder, William, to Aerochem Research Laboratories, Inc. Supersonic virtual impactor. 5,183,481, Cl. 55-15.000.

Feldman, Lewis; and Concannon, Michael. Vertical axis sail bladed wind turbine. 5,183,386, Cl. 416-119.000.

Feltrifico Veneto S.p.A.: *See—*
de' Giudici, Angelo, 5,182,835, Cl. 19-296.000.

Feng, Taisheng: *See—*
Chiao, Jennifer Y.; Flannagan, Stephen; and Feng, Taisheng, 5,184,033, Cl. 307-446.000.

Fenton, Gary L.; Sill, Gerald A.; Ingram, Robert S.; and Jimenez, James G., to Stoughton Trailers, Inc. Container stacking apparatus. 5,183,375, Cl. 410-35.000.

Fernandez, Jose M.: *See—*
Patino, Joseph; Fernandez, Jose M.; and Bogut, Henry A., 5,184,059, Cl. 320-15.000.

Ferrari, Harry M.: *See—*
Snyder, Thomas S.; Jackovitz, John F.; and Ferrari, Harry M., 5,183,548, Cl. 204-299.00R.

Festal, Didier; Nioche, Jean-Yves; Descours, Denis; Bellemin, Robert; and Decerprit, Jacques, to Lipha, Lyonnaise Industrielle Pharmaceutique. Derivatives of benzocycloalkenyldihydroxyalkanoic acids, processes of preparation and medications containing them. 5,183,924, Cl. 560-56.000.

Fetterhoff, Gary W.; and Blake, William R., to Fetterhoff, Gary W.; and Park, James M. Apparatus for forming at least one fold line pattern in a rigid plastic material. 5,183,672, Cl. 425-304.000.

Fey, Peter: *See—*
Angerbauer, Rolf; Fey, Peter; Hubsch, Walter; Philipps, Thomas; Bischoff, Hilmar; Petzinna, Dieter; and Schmidt, Delf, 5,183,897, Cl. 546-330.000.

Ficcaglia, Linda I.: *See—*
Sarraf, Sanwal P.; Weber, Sharon W.; Gilmour, Hugh S. A.; and Ficcaglia, Linda I., 5,183,798, Cl. 503-227.000.

Fichtel & Sachs AG: *See—*
Leiter, Berndt, 5,182,962, Cl. 74-473.00R.

Fidelak, Michael; and Bartsch, Marlies, to HL Planartechnik GmbH. Electric measuring arrangement for determining the level of an electrically conductive liquid. 5,182,947, Cl. 73-304.00C.

FIDIA S.p.A.: *See—*
della Valle, Francesco; and Toffano, Gino, 5,183,807, Cl. 514-25.000.

Fiedler, Robert R., to Isco, Inc. Valve pump. 5,183,391, Cl. 417-118.000.

Field, John D. Swimming flipper. 5,183,424, Cl. 441-64.000.

Figuly, Garret D., to Du Pont de Nemours, E. I., and Company. Hyperbranched polyesters. 5,183,862, Cl. 525-437.000.

Filterwerk Mann & Hummel GmbH: *See—*
Karls, Dieter, 5,182,871, Cl. 34-54.000.

Findeisen, Kurt: *See—*
Muller, Klaus-Helmut; Kluth, Joachim; Konig, Klaus; Gassen, Karl-Rudolf; Findeisen, Kurt; Lindig, Markus; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,183,932, Cl. 560-330.000.

FIS - Fabbrica Italiana Sintetici S.p.A.: *See—*
Rizzi, Amleto; and Marchioro, Gaetano, 5,183,922, Cl. 560-7.000.

Fisher, Dennis K.; and Briddell, Brian J., to Adco Products Inc. Ultraviolet radiation photopolymerization of acrylic ester pressure sensitive adhesive formulation. 5,183,833, Cl. 522-182.000.

Fisher, Thorsten E.: *See—*
Saari, Walfred S.; Rodan, Gideon A.; Fisher, Thorsten E.; and Anderson, Paul S., 5,183,815, Cl. 514-172.000.

Fitch, Kenneth J.: *See—*
Greenlee, William J.; Patchett, Arthur A.; Hangauer, David; Walsh, Thomas F.; Fitch, Kenneth J.; Rivero, Ralph A.; and Dhanoa, Daljit S., 5,183,810, Cl. 514-63.000.

Fitgibbon, Thomas F.: *See—*
Chary, Henry H.; Fitgibbon, Thomas F.; and Gibson, Christopher M., 5,183,150, Cl. 198-782.000.

Fjare, Douglas E.; Beuhler, Allyson J.; and Navar, Cynthia A., to Amoco Corporation. Wet-etch process and composition. 5,183,534, Cl. 156-668.000.

Flanders, Tammy L.: *See—*
Niho, Yoji G.; Day, Eric W.; and Flanders, Tammy L., 5,184,134, Cl. 342-25.000.

Flannagan, Stephen: *See—*
Chiao, Jennifer Y.; Flannagan, Stephen; and Feng, Taisheng, 5,184,033, Cl. 307-446.000.

Flasza, Michael D.: *See—*
Crimmins, Robert A.; and Flasza, Michael D., 5,183,242, Cl. 271-14.000.

Fleege, Dennis W.: *See—*
Jordan, Scott C.; Wolf, Robert L.; Fleege, Dennis W.; and Sharp, Jeffrey O., 5,184,278, Cl. 361-346.000.

Fleming Group, The: *See—*
Hesse, Bradley J.; and Gentile, Philip J., 5,184,058, Cl. 320-4.000.

Fleming, William T., to Walter Kidde Aerospace, Inc. Variable pressure regulator for extended fire-extinguishing system. 5,183,116, Cl. 169-43.000.

Flemming, Elvin-Jensen. Bulk Containers. 5,183,178, Cl. 220-650.000.

Flim, Duane D.: *See—*
Alvarez, Robert J.; Bredesen, Scott E.; Wilson, James J.; Flim, Duane D.; Kniffen, Todd E.; and Schahrer, Clinton O., 5,182,925, Cl. 62-347.000.

Flower, Wallace C.: *See—*
Siwek, C. Kenneth; Flower, Wallace C.; and Garn, Gene D., 5,183,137, Cl. 188-381.000.

Floyd, Burton R., Jr., to Floyd and Gilbert Company, The. Circle marking and cutting guide template. 5,183,373, Cl. 409-179.000.

Floyd and Gilbert Company, The: *See—*
Floyd, Burton R., Jr., 5,183,373, Cl. 409-179.000.

Fluidelec: *See—*
Douard, Pierre R., 5,183,368, Cl. 414-222.000.

FMC Corporation: *See—*
Wong, Henry; Quates, Ronald D.; and Chen, Lien-Yan, 5,183,268, Cl. 277-27.000.

Focke & Co.: *See—*
Focke, Heinz; and Liedtke, Kurt, 5,183,380, Cl. 414-795.800.

Focke, Heinz; and Liedtke, Kurt, to Focke & Co. Apparatus including an endless pocket conveyor for automatically transferring stacks of packaging blanks to a blank magazine of a packaging machine. 5,183,380, Cl. 414-795.800.

Foley, Walter D., to Eastman Kodak Company. Photographic printer with index print generation. 5,184,227, Cl. 358-302.000.

Folkman, Judah: *See—*
Weisz, Paul B.; Shing, Yuen W.; and Folkman, Judah, 5,183,809, Cl. 514-58.000.

Folks, Thomas M.: *See—*
Kindt, Thomas J.; Kulaga, Henrietta; and Folks, Thomas M., 5,183,949, Cl. 800-2.000.

Fonio, Teodoro: *See—*
Aliverti, Valerio; Dorigotti, Luciano; Fonio, Teodoro; and Pinza, Mario, 5,183,802, Cl. 514-2.000.

Fontana, James D.: *See—*
Alten, Charles J.; Cuccio, John S., Jr.; Kington, Harry L.; and Fontana, James D., 5,183,270, Cl. 277-81.00R.

Foos, Jacques; Lemaire, Marc; Guy, Alain; Guyon, Vincent; Chomel, Rodolphe; Deloge, Andre; Doutreluigne, Pierre; and Le Roy, Henri, to Cogema-Compagnie Generale des Matieres Nucleaires. Method for recovering with the aid of a crown compound plutonium (IV) present in solutions, such as aqueous effluents, concentrated solutions of fission products and concentrated solutions of plutonium. 5,183,645, Cl. 423-8.000.

Foote, Wayne E.; Mui, Paul K.; and Sleger, Roger R., to Hewlett-Packard Company. Magnetic head suspension assembly in a disk drive. 5,184,265, Cl. 360-106.000.

Ford Motor Company: *See—*
Chattha, Mohinder S., 5,183,865, Cl. 525-530.000.
Hamel, Gregory R., 5,184,283, Cl. 361-395.000.
Potter, Timothy J.; Tamor, Michael A.; and Wu, Ching-Hsong, 5,183,529, Cl. 156-613.000.

Forester, David R., to Betz Laboratories, Inc. Method for controlling fouling deposit formation in a liquid hydrocarbonaceous medium. 5,183,554, Cl. 208-48.0AA.

Forester, David R.; and Roling, Paul V., to Betz Laboratories, Inc. Method for controlling fouling deposit formation in a liquid hydrocarbonaceous medium. 5,183,555, Cl. 208-48.0AA.

Forguy, Christian; Goetz, Frederick J.; Graeber, Edward L.; and Lindstrom, Michael J., to Elf Atochem North America, Inc. Catalyst and process for the production of 3-cyano-3,5,5-trialkylcyclohexanone. 5,183,915, Cl. 558-341.000.

Fort Lock Corporation: *See—*
Myers, Gary L., 5,182,929, Cl. 70-337.000.

Forward, Robert L. Statite: spacecraft that utilizes sight pressure and method of use. 5,183,225, Cl. 244-168.000.

Foto Fantasy, Inc.: *See—*
Massarsky, Yefim, 5,184,160, Cl. 354-76.000.

Fouad, Fakhry A., to AT&T Bell Laboratories. Power rectifier with flexible stacked sheave bus bar for high current carrying connections. 5,184,280, Cl. 361-361.000.

Foulkes, Albert E., Jr.; and McHugh, John M. Expandable fixture pin for machine tools. 5,183,358, Cl. 411-59.000.

Fox Bay Industries, Inc.: *See—*
Walker, Wayne E.; and Walker, Grant A., 5,183,230, Cl. 248-118.000.

Fox, Leslie R., to Digital Equipment Corporation. Apparatus for packaging and cooling integrated circuit chips. 5,184,211, Cl. 257-706.000.

Foxconn International, Inc.: *See—*
Yin, Mercury, 5,183,421, Cl. 439-857.000.

Framatome: *See—*
Batistoni, Michel, 5,183,625, Cl. 376-260.000.
Baujat, Jacques; and Chevereau, Gerard, 5,183,628, Cl. 376-353.000.
Canat, Jean-Noel; and Mortgat, Regis, 5,183,629, Cl. 376-439.000.
Denizou, Jean-Pierre, 5,183,626, Cl. 376-327.000.

Francioni, Renzo, to Cavanna S.p.A. Apparatus for orienting products on a conveyor line particularly for automatic packaging machines and method relating thereto. 5,183,144, Cl. 198-382.000.

Frank, Jimmy L.; Wolfe, John R., Jr.; and Douglas, James R., to Gagemaker, Inc. Indicating thread gage. 5,182,862, Cl. 33-199.00R.

Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See—*
Theurer, Josef, 5,182,995, Cl. 104-2.000.

Fraser, David W.: *See—*
Robar, Sheldon C.; Fraser, David W.; and Wiley, Bernard A., 5,182,913, Cl. 60-671.000.

Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V.: *See—*
Benecke, Wolfgang, 5,182,910, Cl. 60-529.000.

Frayer, Robert W., Jr.: *See—*
Adler, Jonathan M.; Monahan, Russell E.; and Frayer, Robert W., Jr., 5,184,069, Cl. 324-207.220.

Fredericks, W. David: *See—*
Rhodes, Richard D., Jr.; and Fredericks, W. David, 5,183,693, Cl. 428-34.100.

Freeman, Gary M.: *See—*
Freeman, Mary J.; and Freeman, Gary M., 5,183,761, Cl. 436-8.000.

Freeman, Lewis G. Lifting eyebolt assembly. 5,183,360, Cl. 411-400.000.

Freeman, Mary J.; and Freeman, Gary M. Method of making calibration solution for verifying calibration and linearity of vertical photometers. 5,183,761, Cl. 436-8.000.

Frei, Bruno: *See—*
Ramos, Gerado; Ghisalba, Oreste; Schar, Hans-Peter; Frei, Bruno; Maienfisch, Peter; and O'Sullivan, Anthony C., 5,183,749, Cl. 435-119.000.

French, John B., to Sumimoto Electric Interconnect Products, Inc. Printing apparatus and method for printing on an elongated member such as a tube. 5,184,152, Cl. 346-76.0PH.

Frenkel, Jeffry T.; and Anderson, Brent C., to Hughes Missile Systems Company. Method of leak detection using a releasable surface film. 5,182,941, Cl. 73-40.000.

Frey, Bruno: *See—*
Kaluza, Klaus; Frey, Bruno; and Jarsch, Michael, 5,183,747, Cl. 435-91.000.

Frieler, Cliff: *See—*
Anderson, Lawrence B.; Hammon, Timothy E.; and Frieler, Cliff, 5,183,646, Cl. 423-210.000.

Frigoscandia Food Process Systems AB: *See—*
Wierman, Michael J.; and Olsson, Lennart F., 5,183,149, Cl. 198-778.000.

Froehling, Dieter: *See—*
Wolber, Jack; Lord, Steve; and Froehling, Dieter, 5,183,252, Cl. 271-276.000.

Frohlich, Wolfgang: *See—*
Heindl, Josef; Skuballa, Werner; Buchmann, Bernd; Frohlich, Wolfgang; and Ederdt, Rolalnd, 5,183,925, Cl. 560-61.000.

Froidevaux, Pascal: *See—*
Regnault, Alain; Cretin, Jacques; and Froidevaux, Pascal, 5,184,329, Cl. 367-23.000.

Frost, Ralph S.: *See—*
Wechselberger, Emmerich E.; and Frost, Ralph S., 5,183,519, Cl. 148-582.000.

Fuerhaupter, Harry: *See—*
Mukerji, Prosanto K.; Mallen, Russell; Demet, George; and Fuerhaupter, Harry, 5,183,692, Cl. 427-304.000.

Fuji Electric Co., Ltd.: *See—*
Chikusa, Eiji, 5,184,256, Cl. 360-65.000.
Oyama, Jun; and Uchida, Naoshi, 5,184,100, Cl. 335-16.000.

Fuji Electrochemical Co., Ltd.: *See—*
Yasumura, Takaaki; Kiyomiya, Teruo; Mizuno, Yasutoshi; and Matsui, Kazuo, 5,183,517, Cl. 148-303.000.

Fuji Photo Film Co., Ltd.: *See—*
Arai, Fuminori; and Katsuyama, Harumi, 5,183,741, Cl. 435-14.000.
Inagaki, Yoshio; and Ikeda, Tadashi, 5,183,733, Cl. 430-583.000.
Kato, Eiichi; and Ishii, Kazuo, 5,183,720, Cl. 430-96.000.
Kato, Eiichi; and Ishii, Kazuo, 5,183,721, Cl. 430-96.000.
Komatsu, Kazunori; and Tomaru, Mikio, 5,183,686, Cl. 427-549.000.
Kose, Junichi; Sugiyama, Akira; Yamada, Minoru; and Nozaki, Ryoei, 5,184,164, Cl. 354-298.000.
Mizuno, Masato; and Oishi, Kengo, 5,184,268, Cl. 360-132.000.
Naito, Hideki; Yokoyama, Shigeki; and Tsukahara, Jiro, 5,183,729, Cl. 430-385.000.

VOL 1147 ISS 1 FE 2 1993 UMI

Nakata, Tomohiro; and Mizuta, Akira, 5,184,197, Cl. 356-426.000.
Nishitani, Yasuhiro, 5,184,169, Cl. 354-412.000.
Saito, Osamu; Ito, Kenji; Moronaga, Kenji; and Watanabe, Mikio, 5,184,229, Cl. 358-427.000.
Shiina, Michihiro; Tanaka, Yasuhiko; Iwai, Fumio; Noguchi, Yukio; Umetsu, Takao; Saito, Tatsuo; Onozuka, Haruo; Saitoh, Muneyoshi; and Koda, Takao, 5,184,166, Cl. 354-400.000.
Takahashi, Osamu; and Furutachi, Nobuo, 5,183,731, Cl. 430-551.000.
Tatsumi, Setsuji, 5,184,214, Cl. 358-75.000.
Torisawa, Nobuyuki, 5,183,241, Cl. 271-12.000.

Fuji Xerox Co., Ltd.: *See*—
Yagi, Shigeru; Fukuda, Yuzuru; Higashi, Taketoshi; and Yokoi, Masaki, 5,183,719, Cl. 430-66.000.

Fujii, Isao; Ajiki, Yoshio; Ishida, Yoichi; and Matsuura, Hiromi, to Honda Giken Kogyo Kabushiki Kaisha. Method of controlling the supply of fuel in hydrogen-fueled engine. 5,183,011, Cl. 123-1.00A.

Fujii, Makoto: *See*—
Shizuno, Hisamitsu; Kisi, Hirosi; Saito, Hirosi; and Fujii, Makoto, 5,184,277, Cl. 361-321.000.

Fujii, Nobuhiko: *See*—
Kurimoto, Yukuo; Fujii, Nobuhiko; Kohno, Mitunori; and Umebara, Takao, 5,183,135, Cl. 186-61.000.

Fujii, Toshiro; Ikeda, Hayato; Katoh, Ryo; and Inukai, Hitoshi, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Swash plate type compressor with a central inlet passage. 5,183,394, Cl. 417-269.000.

Fujii, Yoshihisa; Suzuki, Akira; Furukawa, Katsuki; and Shigeta, Mitsuhiro, to Sharp Kabushiki Kaisha. Silicon carbide semiconductor device. 5,184,199, Cl. 257-77.000.

Fujimoto, Kazushi: *See*—
Yoshida, Makoto; Yamada, Hironori; Takahashi, Nobuo; and Fujimoto, Kazushi, 5,183,708, Cl. 428-373.000.

Fujimoto, Mineyuki, to Aichi Sharyo Co. Ltd. Mobile vehicular apparatus with aerial cabin. 5,183,168, Cl. 212-232.000.

Fujimoto, Shinichiro: *See*—
Yamasaki, Yoshikiyo; and Fujimoto, Shinichiro, 5,183,034, Cl. 128-36.000.

Fujimura, Koh: *See*—
Sano, Kazuyoshi; Fujimura, Koh; Suzuki, Takumi; and Tsutsui, Takashi, 5,184,239, Cl. 359-80.000.

Fujimura, Setsuo: *See*—
Sagawa, Masato; Fujimura, Setsuo; and Matsuura, Yutaka, 5,183,516, Cl. 148-302.000.

Fujio, Ryota: *See*—
Toyosawa, Shinichi; Nakajima, Tadashi; Suzuki, Kinya; Kawagoe, Takahiro; Miyazaki, Tadaaki; Kitamura, Takashi; Fuse, Tadashi; Ogawa, Masao; Masuda, Yoshitomo; Daifuku, Hideharu; and Fujio, Ryota, 5,183,543, Cl. 204-242.000.

Fujisaki, Koji: *See*—
Miwa, Takao; Ikeda, Takayoshi; Numata, Shunichi; Fujisaki, Koji; and Shimanoki, Hisae, 5,183,838, Cl. 524-109.000.

Fujisawa, Kazuhiro: *See*—
Miyamoto, Yoshiaki; Sasaki, Teruo; Fujisawa, Kazuhiro; and Kato, Seinosuke, 5,182,888, Cl. 52-167.0DF.

Fujisawa, Mutsumi, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Power transfer device having center differential gear for four-wheel drive vehicle. 5,183,132, Cl. 180-247.000.

Fujishima, Kazuyasu: *See*—
Matsuda, Yoshio; Arimoto, Kazutami; Ooishi, Tsukasa; Tsukude, Masaki; and Fujishima, Kazuyasu, 5,184,327, Cl. 365-201.000.

Fujitsu Limited: *See*—
Doki, Masahiko; and Takei, Michiko, 5,183,777, Cl. 437-160.000.
Kimura, Takafumi, 5,183,510, Cl. 118-719.000.
Kobayashi, Yasushi; and Kogure, Seiji, 5,182,853, Cl. 29-841.000.
Takasaki, Kanetake, 5,183,778, Cl. 437-132.000.

Fujiwara, Satoru, to Ebara Corporation. Oil recovery system for closed type centrifugal refrigerating machine. 5,182,919, Cl. 62-193.000.

Fukakusa, Masaharu; and Tomiyasu, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Loading method and drive unit for a floating magnetic head for loading the magnetic head while preventing contact between the magnetic head and a magnetic disk. 5,184,263, Cl. 360-103.000.

Fukase, Katsuya: *See*—
Wada, Norio; Fukase, Katsuya; and Uchida, Hirofumi, 5,183,711, Cl. 428-596.000.

Fukaya, Yasushi, to Kabushiki Kaisha Okuma Tekkosho. Apparatus for generating numerical control information for machining parts. 5,184,294, Cl. 364-191.000.

Fukuchi, Masakazu: *See*—
Haneda, Satoshi; Morita, Shizuo; Fukuchi, Masakazu; and Matsuo, Shunji, 5,184,187, Cl. 355-326.000.

Fukuda, Yuzuru: *See*—
Yagi, Shigeru; Fukuda, Yuzuru; Higashi, Taketoshi; and Yokoi, Masaki, 5,183,719, Cl. 430-66.000.

Fukui, Wataru; Iwata, Toshio; Ohashi, Yutaka; and Ikeuchi, Masayuki, to Mitsubishi Denki K.K. Cylinder identification apparatus. 5,182,943, Cl. 73-116.000.

Fukunaga, Masao: *See*—
Kogure, Makoto; Sase, Akira; and Fukunaga, Masao, 5,184,121, Cl. 340-870.110.

Fukuoka, Kazuhiro; Kiyohara, Keiki; Konishi, Tadayuki; Miyatake, Isao; and Hamamoto, Masaji, to Kosaku & Co., Ltd. Electroless plating bath composition and method for production thereof. 5,183,500, Cl. 106-1.220.

Fukushima, Hiroshi; Motonaga, Akira; Suda, Eriko; Nakajima, Mikito; Takeshita, Katsuyoshi; and Kutsukake, Yusuke, to Mitsubishi Rayon Co., Ltd; and Seiko Epson Corporation. Composition for plastic lenses. 5,183,870, Cl. 526-273.000.

Fukushima, Yoshihisa: *See*—
Hamasaka, Hiroshi; Satoh, Isao; and Fukushima, Yoshihisa, 5,184,341, Cl. 369-54.000.

Fukuyama, Yuichi: *See*—
Imaseki, Takashi; Tamura, Minoru; Iwata, Toru; and Fukuyama, Yuichi, 5,184,298, Cl. 364-424.050.

Fukuzumi, Tatsuo: *See*—
Abe, Tsuyoshi; Umezawa, Nobumasa; Fukuzumi, Tatsuo; Uchibori, Katsuyuki; Ozaki, Junji; and Motomura, Hiroharu, 5,183,634, Cl. 420-110.000.

Fulford, Raymond E.: *See*—
Roy, Orest Z.; Fulford, Raymond E.; and Legal, Jules O., 5,183,133, Cl. 180-252.000.

Fung, Jimmy; An, Jiu; Campbell, David L.; and Shyu, Steven, to Advanced Micro Devices, Inc. Switchable DAC with current surge protection. 5,184,129, Cl. 341-144.000.

Fung, Kuan-Zong: *See*—
Virkar, Anil V.; and Fung, Kuan-Zong, 5,183,801, Cl. 501-152.000.

Furuhashi, Takeshi: *See*—
Okuma, Shigeru; Furuhashi, Takeshi; Ikejima, Hiroyuki; and Ishii, Toshiaki, 5,183,980, Cl. 187-112.000.

Furukawa Electric Co., Ltd., The: *See*—
Mikami, Toshihiro; Kohmura, Yukio; Ishida, Yoshinori; and Nogami, Akira, 5,183,490, Cl. 65-144.000.

Furukawa, Katsuki: *See*—
Fujii, Yoshihisa; Suzuki, Akira; Furukawa, Katsuki; and Shigeta, Mitsuhiro, 5,184,199, Cl. 257-77.000.

Furuta, Tatsuo: *See*—
Yonekubo, Shuji; Kitahara, Tsuyoshi; Furuta, Tatsuo; Katakura, Takahiro; and Serizawa, Naomi, 5,184,155, Cl. 346-140.00R.

Furutachi, Nobuo: *See*—
Takahashi, Osamu; and Furutachi, Nobuo, 5,183,731, Cl. 430-551.000.

Furuya, Katsuhiko; and Takahashi, Tadashi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Light source apparatus for endoscope. 5,184,159, Cl. 354-62.000.

Furuya, Katsuhiko: *See*—
Takahashi, Tadashi; Furuya, Katsuhiko; Nakasima, Masaaki; and Enomoto, Takayuki, 5,184,170, Cl. 354-413.000.

Furuya, Takeo: *See*—
Harada, Naoto; Sekine, Shuji; Furuya, Takeo; and Yoshioka, Nobuo, 5,184,050, Cl. 318-467.000.

Fusco, Jeffery K.: *See*—
Mrozowski, Joseph E.; Fusco, Jeffery K.; and Albaisa, Alfonso, 5,183,192, Cl. 224-42.210.

Fuse, Tadashi: *See*—
Toyosawa, Shinichi; Nakajima, Tadashi; Suzuki, Kinya; Kawagoe, Takahiro; Miyazaki, Tadaaki; Kitamura, Takashi; Fuse, Tadashi; Ogawa, Masao; Masuda, Yoshitomo; Daifuku, Hideharu; and Fujio, Ryota, 5,183,543, Cl. 204-242.000.

G A Industries, Inc.: *See*—
Lescovich, Joseph E., 5,183,568, Cl. 210-360.100.

G-C Acquisition, Inc.: *See*—
Day, David R.; and Bybordi, Farhad, 5,184,077, Cl. 324-693.000.

G & H Technology, Inc.: *See*—
Stephenson, Roger C.; and Hyatt, Hugh M., 5,183,698, Cl. 428-209.000.

Gabel, Richard A.: *See*—
Williams, Robert; Sirvet, Enn; and Gabel, Richard A., 5,183,145, Cl. 198-441.000.

Gaber Bruce P.: *See*—
Ligler, Frances S.; Gaber Bruce P.; Kusterbeck, Anne W.; and Wemhoff, Gregory A., 5,183,740, Cl. 435-7.320.

Gadkaree, Kishor P.: *See*—
Beall, George H.; Gadkaree, Kishor P.; Grandi, Thomas P.; and Quinn, Candace J., 5,183,607, Cl. 264-41.000.

Gadreau, Jean; and Pascal, Andre, to Bull, S.A. High coupling transformer adapted to a chopping supply circuit. 5,184,103, Cl. 336-84.00C.

Gagemaker, Inc.: *See*—
Frank, Jimmy L.; Wolfe, John R., Jr.; and Douglas, James R., 5,182,862, Cl. 33-199.00R.

Galardy, Richard E.; and Grobelny, Damian. Matrix metalloprotease inhibitors. 5,183,900, Cl. 548-495.000.

Gale, John A. Interlocking strain relief shelf bracket. 5,183,232, Cl. 248-220.200.

Gallagher, William J.; and Worthington, Thomas K., to International Business Machines Corp. Oriented superconductors for AC power transmission. 5,183,970, Cl. 174-125.100.

Galliani, Giulio; Barzaghi, Fernando; Bonetti, Carla; and Toja, Emilio, to Roussel Uclaf. 1-azabicycloalkane derivatives, their preparation process and their use as medicaments. 5,183,893, Cl. 546-133.000.

Galliani, Giulio: *See*—
Toja, Emilio; Bonetti, Carla; Barzaghi, Fernando; and Galliani, Giulio, 5,183,896, Cl. 546-326.000.

Galvez, Bennie R. Seasonal attic turbine ventilator. 5,183,435, Cl. 454-18.000.

Gano, John C., to Otis Engineering Corporation. Safety valve. 5,183,115, Cl. 166-319.000.

Garcia, George: *See*—
Higginbotham, Jeff A.; Garcia, George; and Richards, Robert L., 5,183,340, Cl. 384-420.000.

Garcia, Jesus G.: *See*—
Brana, Miguel F.; Sanz, Antonio M.; Alvarez-Ossorio, Rafael P.; Roldan, Cristobal M.; De Gamboa, Cristina R. F.; Garcia, Jesus G.; and Berlanga, Jose M. C., 5,183,821, Cl. 514-296.000.

Garelick, Paul: *See*—
Login, Robert B.; Merianos, John J.; Biss, Russell B.; and Garelick, Paul, 5,183,901, Cl. 548-543.000.

Garman, Shelly N.: *See*—
Bohrn, Walter J.; Diffenbaugh, Kimberly S.; Garman, Shelly N.; and Khanpara, Jatin C., 5,183,704, Cl. 428-305.500.

Garn, Gene D.: *See*—
Siwek, C. Kenneth; Flower, Wallace C.; and Garn, Gene D., 5,183,137, Cl. 188-381.000.

Garrison, Judd F.; and Blanchard, Russell O., to Batts, Inc. Hangers with long lasting non-slip surfaces. 5,183,191, Cl. 223-96.000.

Garrison, Linn C.: *See*—
Bond, Robert H.; Olla, Michael A.; Morrison, Barry; and Garrison, Linn C., 5,182,851, Cl. 29-827.000.

Garro, Samuel J.: *See*—
Martin, James H.; and Garro, Samuel J., 5,183,187, Cl. 222-287.000.

Garst, Michael E.: *See*—
Lee, Gary C. M.; Garst, Michael E.; and Sachs, George, 5,183,906, Cl. 549-218.000.

Gas Research Institute: *See*—
Virkar, Anil V.; and Fung, Kuan-Zong, 5,183,801, Cl. 501-152.000.

Gass, William R.: *See*—
Snyder, Thomas S.; Gass, William R.; Worcester, Samuel A.; Ayers, Laura J.; and Boris, Gregory F., 5,183,541, Cl. 204-105.00R.

Gassen, Karl-Rudolf: *See*—
Muller, Klaus-Helmut; Kluth, Joachim; Konig, Klaus; Gassen, Karl-Rudolf; Findeisen, Kurt; Lindig, Markus; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,183,932, Cl. 560-330.000.

Gates Rubber Company, The: *See*—
Lee, Albert H., Jr.; and Sabo, Carl H., 5,183,108, Cl. 166-187.000.

Gatten, Ronald A.; Miller, Leslie A.; McCall, Thomas J., Jr.; and Nau, Vance J., to Spectra-Physics, Inc. Apparatus for degassing a liquid. 5,183,486, Cl. 55-159.000.

Gatts, James D.; Buckley, Edward M.; and Jamieson, John W., to Infant Advantage, Inc. Infant environmental transition system and method. 5,183,457, Cl. 600-21.000.

Gauthier, Lloyd W., to Zenith Data Systems Corporation. Fluorescent backlight flicker control in an LCD display. 5,184,117, Cl. 340-784.000.

Gavagna, Libero, to MIGEN S.r.l. Device for the operation of hoses containing a liquid under very high pressure. 5,183,218, Cl. 242-54.00R.

Gavin, Daniel J. Spray nozzle. 5,183,206, Cl. 239-317.000.

Gaymar Industries, Inc.: *See*—
Gusakov, Ignaty, 5,184,112, Cl. 340-573.000.

GEC-Marconi Electronic Systems Corp.: *See*—
Paradise, Ronald Y., 5,184,135, Cl. 342-149.000.

GEC-Marconi Limited: *See*—
Ellis, Stafford M., 5,184,231, Cl. 359-13.000.

Gedrat, Klaus: *See*—
Bressel, Burkhard; Meyer, Heinrich; Meyer, Walter; and Gedrat, Klaus, 5,183,552, Cl. 205-158.000.

Gee, Glendon W.: *See*—
Treat, Russell L.; Gee, Glendon W.; and Whyatt, Greg A., 5,183,355, Cl. 405-128.000.

Geistlinger, Dewey F. Paint can shaker. 5,183,334, Cl. 366-129.000.

Gejima, Seiji; Kawakita, Koji; Kimura, Suzushi; Okinaka, Hideyuki; and Hakotani, Yasuhiko, to Matsushita Electric Industrial Co., Ltd. Dielectric material, and a condenser made from the same. 5,183,786, Cl. 501-134.000.

Gelardi, Paul J.: *See*—
Lowry, Alan B.; Gelardi, Paul J.; and Rochelo, Donald R., 5,184,255, Cl. 360-60.000.

Gellner, Harald, to Mercedes-Benz AG. Change-speed gearbox hand lever connecting device. 5,182,964, Cl. 74-523.000.

Gemtex Company Limited: *See*—
Grimes, John R., 5,183,479, Cl. 51-293.000.

GenCorp Inc.: *See*—
Brown, Robert L.; Baxter, David E.; and England, Todd A., 5,183,509, Cl. 118-696.000.
Brown, Robert L.; and Baxter, David E., 5,183,605, Cl. 264-40.500.
Edwards, Charles O., 5,183,613, Cl. 264-171.000.

General Dynamics Corp., Air Defense Systems Division: *See*—
Hethcoat, Gary L., 5,183,066, Cl. 134-54.000.

General Dynamics Land Systems, Inc.: *See*—
VanSweden, Harry, 5,183,287, Cl. 280-705.000.

General Electric Company: *See*—
Bools, William G., 5,183,417, Cl. 439-610.000.
Challberg, Roy C.; and Townsend, Harold E., 5,183,627, Cl. 376-352.000.
Cox, Jerry D.; Linz, Raymond E.; Thome, Jeanne M.; Perry, Winfield B.; Hadley, Franklin O., Jr.; and Knobel, Vladimir A., 5,182,881, Cl. 51-7.000.
Daiber, Paul C.; Greenwood, Anthony P.; and Bailey, Ted E., 5,183,342, Cl. 384-475.000.
Gilchrist, Alan R.; Sullivan, Thomas J.; and Walker, Roger C., 5,182,906, Cl. 60-226.100.
Gilchrist, Alan R.; Duran, Edward M.; Dry, Dennis P.; and Berry, Robert R., 5,183,389, Cl. 416-193.00A.
Horn, Dale W., 5,184,279, Cl. 361-356.000.
Lee, Ching-Pang; Rieck, Harold P., Jr.; Palmer, Nicholas C.; and Fargher, David G. W., 5,183,385, Cl. 416-97.00R.
Martin, Jack R., 5,182,855, Cl. 29-889.220.
Neugebauer, Constantine A.; Glascock, Homer H., II; Paik, Kyung W.; McMullen, James G.; and Neugebauer, Martha M., 5,184,206, Cl. 257-762.000.
Osteen, Mitchell M., 5,183,328, Cl. 362-294.000.
Stransky, Larry W.; Boehm, Valentine R., Jr.; and Phillips, Michael A., 5,182,905, Cl. 60-204.000.

General Mills, Inc.: *See*—
Seaborne, Jonathan, 5,183,787, Cl. 501-143.000.

General Motors Corporation: *See*—
Bilge, Umit; Jurczyszyn, Christopher E.; and Jenuwine, William C., 5,183,992, Cl. 219-121.640.
Graber, David W.; Eckhardt, Dennis C.; Pawlak, Andrzej M.; and Faist, Bryan L., 5,184,297, Cl. 364-424.050.
Hogan, Martin A.; Leppek, Kevin G.; and Spadafora, Peter J., 5,184,299, Cl. 364-426.020.
Partin, Dale L.; and Heremans, Joseph P., 5,184,106, Cl. 338-32.00R.
Pelachyk, Richard; Satterlee, Lowell W.; Zuccaro, Dante C.; and Farris, Timothy M., 5,183,302, Cl. 292-336.300.
Wilhelm, Richard D.; and Adonakis, Nikolaos A., 5,183,974, Cl. 181-0.500.

Geng, Qiquan: *See*—
Yuyama, Junpei; Geng, Qiquan; Chihara, Kazunori; Minami, Hirofumi; and Goto, Eiichi, 5,184,072, Cl. 324-248.000.

Genlyte Group Incorporated, The: *See*—
Rishel, Michael; Powers, Larry; and Barozzini, Claude, 5,183,330, Cl. 362-372.000.

Gentile, Philip J.: *See*—
Hesse, Bradley J.; and Gentile, Philip J., 5,184,058, Cl. 320-4.000.

Gerbino, Anthony J., to U-SUS Distributors, Inc. Hydrophobic inorganic materials and process for making same. 5,183,710, Cl. 428-405.000.

Gerdes, Richard C., to WavePhore, Inc. Bandwidth compression and expansion system. 5,184,218, Cl. 358-133.000.

Gerrans, Wilbur, to Pakon, Inc. Slide mounter with movable knife assembly. 5,182,897, Cl. 53-520.000.

Getzmann, Hermann. Grinding appliance. 5,183,215, Cl. 241-62.000.

Gharagozloo, Hamid: *See*—
Montasham, Mani; and Gharagozloo, Hamid, 5,183,094, Cl. 160-370.200.

Ghisalba, Oreste: *See*—
Ramos, Gerado; Ghisalba, Oreste; Schar, Hans-Peter; Frei, Bruno; Maienfisch, Peter; and O'Sullivan, Anthony C., 5,183,749, Cl. 435-119.000.

Ghoda, Isamu: *See*—
Ohyama, Tsukasa; Shimokawa, Yasushi; Ghoda, Isamu; Takuma, Keisuke; and Koshida, Hitoshi, 5,183,474, Cl. 8-471.000.

Gibson, Christopher M.: *See*—
Chary, Henry H.; Fitgibbon, Thomas F.; and Gibson, Christopher M., 5,183,150, Cl. 198-782.000.

Gibson, William R.: *See*—
Meeker, Paul K.; and Gibson, William R., 5,183,311, Cl. 297-151.000.

Gilby, Anthony C.; and Carson, William W., to Millipore Corporation. Photometric apparatus with a flow cell coated with an amorphous fluoronolymer. 5,184,192, Cl. 356-246.000.

Gilchrist, Alan R.; Sullivan, Thomas J.; and Walker, Roger C., to General Electric Company. Hybrid spinner nose configuration in a gas turbine engine having a bypass duct. 5,182,906, Cl. 60-226.100.

Gilchrist, Alan R.; Duran, Edward M.; Dry, Dennis P.; and Berry, Robert R., to General Electric Company. Anti-rock blade tang. 5,183,389, Cl. 416-193.00A.

Gillett, Frank E.: *See*—
Burchill, Gary W.; Gillett, Frank E.; Ramaswamy, Rajan; and Winslow, Peter S., 5,182,877, Cl. 43-54.100.

Gilmour, Hugh S. A.: *See*—
Sarraf, Sanwal P.; Weber, Sharon W.; Gilmour, Hugh S. A.; and Ficcaglia, Linda I., 5,183,798, Cl. 503-227.000.

Gimby, David R.: *See*—
Aubel, John A.; Devall, Jeffrey E.; Gimby, David R.; and Shipp, Philip A., 5,183,087, Cl. 141-59.000.

Giordano, Claudio; and Paiocchi, Maurizio, to Zambon Group S.p.A. Process for the preparation of 5-(2',4'difluorophenyl)-salicylic acid in pure form II. 5,183,935, Cl. 562-469.000.

GKN Automotive: *See*—
Heymann, Norbert, 5,182,866, Cl. 33-645.000.

GKN Automotive, Inc.: *See*—
Schneider, Dean J., 5,183,351, Cl. 403-50.000.

Glad, Mark D.: *See*—
Birkholz, Ronald B.; and Glad, Mark D., 5,183,705, Cl. 428-343.000.

Glascock, Homer H., II: *See*—
Neugebauer, Constantine A.; Glascock, Homer H., II; Paik, Kyung W.; McMullen, James G.; and Neugebauer, Martha M., 5,184,206, Cl. 257-762.000.

Glaser, Philippe: *See*—
Danchin, Antoine; Glaser, Philippe; Krin, Evelyne; Barzu, Octavien; Ladant, Daniel; and Ullmann, Agnes, 5,183,745, Cl. 435-69.100.

VOL
1147
ISS
1
FE
2
1993
UMI

Glaxo Group Limited: *See*—
Coates, Ian H.; Oxford, Alexander W.; North, Peter C.; and Price, Barry J., 5,183,820, Cl. 514-292.000.

Glazer, Itamar: *See*—
Popiel, Irene; Holtemann, Karen D.; Glazer, Itamar; and Womersley, Christopher, 5,183,950, Cl. 800-2.000.

Glen, Bryan D. Baseboard with movable electrical outlet. 5,183,406, Cl. 439-120.000.

GMI Holdings, Inc.: *See*—
Smith, James F.; and Schroeder, Wesley A., 5,183,982, Cl. 200-61.850.

Gober, Michael J.: *See*—
Hojnacki, Robert J.; Pearson, Daniel C.; Brucker, Gerard K.; Gober, Michael J.; and Shaw, Daniel J., Jr., 5,183,159, Cl. 206-583.000.

Goe, Gerald L.: *See*—
McQuigg, Donald W.; Sowers, Edward E.; Goe, Gerald L.; Scriven, Eric F. V.; and Keay, James G., 5,183,895, Cl. 546-304.000.

Goetz, Frederick J.: *See*—
Forguy, Christian; Goetz, Frederick J.; Graeber, Edward L.; and Lindstrom, Michael J., 5,183,915, Cl. 558-341.000.

Goff, Dane A.: *See*—
Carroll, Stephen F.; and Goff, Dane A., 5,183,904, Cl. 549-68.000.

Goff, Gerald L.: *See*—
DiNapoli, Antonio; Goff, Gerald L.; and Sikes, Roger A., 5,183,245, Cl. 269-254.00R.

Gold Star Co., Ltd.: *See*—
Choi, Hoon B., 5,184,180, Cl. 355-219.000.

Golden Cat Corporation: *See*—
Raymond, Marvin L.; Barrett, Dana G.; and Greene, Phillip B., 5,183,010, Cl. 119-172.000.

Goldner, Eric L., to Litton Systems, Inc. Triaxial fiber optic Sagnac interferometer with single source and detector. 5,184,195, Cl. 356-350.000.

Goldsby, Irma J. Layered reducing garment. 5,182,812, Cl. 2-79.000.

Goldschneider, James D.: *See*—
Zakheim, Howard; Clinton, Peter M.; Goldschneider, James D.; Kasmer, Christopher A.; Zahn, Markus; and Hoffmeyer, Charles L., 5,183,214, Cl. 241-30.000.

Goldstar Co., Ltd.: *See*—
Choi, Bo H., 5,184,264, Cl. 360-105.000.
Im, Jong H., 5,184,045, Cl. 315-39.510.

Goldstar Electron Co., Ltd.: *See*—
Chung, Jin Y.; and Kwak, Deog Y., 5,184,030, Cl. 307-296.010.
Kim, Cheong W., 5,184,087, Cl. 330-253.000.

Gomes, Joseph: *See*—
Wizani, Wolfgang; Esterbauer, Hermann; Steiner, Walter; and Gomes, Joseph, 5,183,753, Cl. 435-201.000.

Gomez, Peter M., to Monsanto Company. Polyblends containing polyurethane, polymer and siloxane crosslinker. 5,183,852, Cl. 525-101.000.

Gomi, Akihiro: *See*—
Koga, Yoshiro; Gomi, Akihiro; Miyasaka, Takashi; Miyazawa, Yasunaga; Endo, Kenichi; Shinozaki, Junichiro; Yoda, Kaneo; Ichikawa, Takashi; Miyasaka, Hitoshi; and Kaburagi, Chiharu, 5,184,257, Cl. 360-77.050.

Gomi, Shintaro: *See*—
Inohana, Haruyuki; and Gomi, Shintaro, 5,184,086, Cl. 330-252.000.

Goodrich, Rollie M.: *See*—
Herdzina, Frank J.; and Goodrich, Rollie M., 5,182,934, Cl. 72-405.000.

Goodworth, John P. Panel, clip and method of mounting panel. 5,182,893, Cl. 52-745.050.

Gorenc, Daniel L.: *See*—
Elicker, Robert W.; and Gorenc, Daniel L., 5,183,405, Cl. 439-108.000.

Gorlich, Karl J.; Bauer, Fritz U.; and Konetzka, Joerg, to Dentsply G.m.b.H. Pasty dental veneer making composition. 5,183,834, Cl. 523-105.000.

Goro S. A.: *See*—
Schick, Jean-Francois, 5,182,933, Cl. 72-335.000.

Gorun, Sergiu M.: *See*—
Stibrany, Robert T.; and Gorun, Sergiu M., 5,183,945, Cl. 568-574.000.

Gose, Mark W.: *See*—
Kesler, Scott B.; and Gose, Mark W., 5,184,036, Cl. 307-540.000.

Goto, Eiichi: *See*—
Yuyama, Junpei; Geng, Qiquan; Chihara, Kazunori; Minami, Hirofumi; and Goto, Eiichi, 5,184,072, Cl. 324-248.000.

Goto, Hideo: *See*—
Yamaguchi, Soichiro; Matsuda, Koichi; and Goto, Hideo, 5,183,849, Cl. 525-68.000.

Goto, Shigeki, to Aisin Seiki Kabushiki Kaisha. Hydraulic control device for automatic transmission. 5,182,969, Cl. 74-866.000.

Goto, Shigeki; Shimei, Masato; Miyazawa, Tetsuhiro; Saitou, Yoshitami; and Isono, Nobuyuki, to Aisin Seiki Kabushiki Kaisha. Hydraulic control system for automatic transmission. 5,182,970, Cl. 74-866.000.

Goto, Yoshiaki; and Arai, Kozo, to Tokushu Kika Kogyo Co., Ltd. Micro-particulate aluminosilicate and process for producing the same. 5,183,650, Cl. 423-710.000.

Gotoh, Yasuharu: *See*—
Akasaka, Yoshimichi; Nakamura, Ichiro; and Gotoh, Yasuharu, 5,182,978, Cl. 91-499.000.

Gould Electronics Limited: *See*—
North, John M., 5,183,715, Cl. 429-192.000.

Gouze, Philippe: *See*—
Delattre, Jacques; Gouze, Philippe; and Neuvessel, Jacques, 5,184,054, Cl. 318-586.000.

Graber, David W.; Eckhardt, Dennis C.; Pawlak, Andrzej M.; and Faist, Bryan L., to General Motors Corporation. Method of calibrating power steering for uniform vehicle-to-vehicle steering effort. 5,184,297, Cl. 364-424.050.

Gradl, Reinhard: *See*—
Schimmel, Gunther; Kotzian, Michael; and Gradl, Reinhard, 5,183,651, Cl. 423-334.000.

Graeber, Edward L.: *See*—
Forguy, Christian; Goetz, Frederick J.; Graeber, Edward L.; and Lindstrom, Michael J., 5,183,915, Cl. 558-341.000.

Grandi, Thomas P.: *See*—
Beall, George H.; Gadkaree, Kishor P.; Grandi, Thomas P.; and Quinn, Candace J., 5,183,607, Cl. 264-41.000.

Grass, George M.: *See*—
Sweetana, Stephanie A.; and Grass, George M., 5,183,760, Cl. 435-285.000.

Gratz, Irwin: *See*—
Kraidin, Jonathan; and Gratz, Irwin, 5,183,051, Cl. 128-687.000.

Greaves, Brian: *See*—
Hwa, Chih M.; Kelly, John A.; Tai, Wun T.; Fan, Lai-Duien G.; Kreh, Robert P.; and Greaves, Brian, 5,183,574, Cl. 210-701.000.

Greenberg, Allen A. Method of shaker molding and composition therefor. 5,183,503, Cl. 106-38.510.

Greene, Phillip B.: *See*—
Raymond, Marvin L.; Barrett, Dana G.; and Greene, Phillip B., 5,183,010, Cl. 119-172.000.

Greenlee, Mark L.; Salzmann, Thomas N.; and DiNinno, Frank P., to Merck & Co., Inc. Spirocyclic 6-amido-carbapenems and azetidinones. 5,183,887, Cl. 540-364.000.

Greenlee, William J.; Patchett, Arthur A.; Hangauer, David; Walsh, Thomas F.; Fitch, Kenneth J.; Rivero, Ralph A.; and Dhanoa, Daljit S., to Merck & Co., Inc. Imidazole angiotensin II antagonists incorporating a substituted benzyl element. 5,183,810, Cl. 514-63.000.

Greenmaster Industrial Corp.: *See*—
Wang, Leao, 5,183,448, Cl. 482-52.000.

Greenslade, Joe E. Apparatus for measuring workpiece concentricity. 5,182,865, Cl. 33-550.000.

Greenwich Pharmaceuticals Incorporated: *See*—
Arora, Sudershan K., 5,183,806, Cl. 514-23.000.

Greenwood, Anthony P.: *See*—
Daiber, Paul C.; Greenwood, Anthony P.; and Bailey, Ted E., 5,183,342, Cl. 384-475.000.

Greenwood, Brian: *See*—
Phillips, Joseph; Prough, J. Robert; Bilodeau, Victor L.; Greenwood, Brian; Bain, Ronald; and Weston, John, 5,183,536, Cl. 162-57.000.

Greer, Robert D., to Caterpillar Inc. Hydraulic cylinder position sensor mounting apparatus. 5,182,980, Cl. 92-5.00R.

Greiner, Richard W., to Hercules Incorporated. Treating skin lesions. 5,183,663, Cl. 424-443.000.

Greive, Martin: *See*—
D'Heureuse, Walter; Greive, Martin; Heppenstiel, Gerhard; and Kusch, Hans-Jurgen, 5,182,989, Cl. 101-148.000.

Gresch, Jeffrey. Multi-purpose elevated bucket. 5,183,280, Cl. 280-79.500.

Grimaldi, Anthony J.; and Grimaldi, Anthony J., Jr. Basketball retrieval and return device. 5,183,253, Cl. 273-1.50A.

Grimaldi, Anthony J., Jr.: *See*—
Grimaldi, Anthony J.; and Grimaldi, Anthony J., Jr., 5,183,253, Cl. 273-1.50A.

Grimes, John R., to Gemtex Company Limited. Abrasive disks and method of making. 5,183,479, Cl. 51-293.000.

Grindeland, David B.: *See*—
Rupnick, Charles J.; Stoddard, Damon R.; and Grindeland, David B., 5,182,949, Cl. 73-517.00B.

Grob & Co. Aktiengesellschaft: *See*—
Baumann, Hans, 5,183,082, Cl. 139-92.000.

Grobelny, Damian: *See*—
Galardy, Richard E.; and Grobelny, Damian, 5,183,900, Cl. 548-495.000.

Grogler, Gerhard: *See*—
Kopp, Richard; Grogler, Gerhard; and Hess, Heinrich, 5,183,876, Cl. 528-59.000.

Gronenberg, Reinhard, to W. Schlafhorst AG & Co. Method and apparatus for operating an automatic textile machine. 5,184,305, Cl. 364-470.000.

Groover, Thomas A. Apparatus and method for the location of leaks by arrayed potentials and derived vectors. 5,184,083, Cl. 324-559.000.

Gross, Lutz-Werner; Poth, Ulrich; Hille, Dieter; and Weidemeier, Klaus, to BASF Lacke & Farben AG. Epoxide resin-modified polyesters derived from carboxyl polyol. 5,183,835, Cl. 523-402.000.

Gross, Peter S.: *See*—
Rajendren, Richard; Gross, Peter S.; and Bollensen, Eric G., 5,183,596, Cl. 261-93.000.

Grosser, Claus, to Arnold & Richter Cine Technik GmbH & Co. Betriebs KG. Gate for motion picture camera. 5,184,158, Cl. 352-226.000.

Grovender, Steven L.: *See*—
Bodziak, Douglas P.; Grovender, Steven L.; Hunder, Ray A.; Molenda, Robert P.; and Roth, Steven P., 5,183,297, Cl. 283-67.000.

Gruidel, James M.: *See*—
Bufford, Charles D.; and Gruidel, James M., 5,182,821, Cl. 4-592.000.

Grzych, Stephen D. Reusable bottle handle. 5,183,169, Cl. 215-100.00A.

GTE Valenite Corporation: *See*—
Reiterman, Lee; Martin, Dale D.; and Krysik, Joseph, 5,183,363, Cl. 408-59.000.

Guarino, Mark A.: *See*—
Acerno, Michael J.; and Guarino, Mark A., 5,183,279, Cl. 280-63.000.

Guerra, Gaetano; Vitagliano, Vincenzo M.; Corradini, Paolo; and Albizzati, Enrico, to Himont Incorporated. Articles of a new crystalline form of syndiotactic styrene polymer. 5,183,853, Cl. 525-132.000.

Guiboche, Thomas. Pedal boat. 5,183,422, Cl. 440-26.000.

Guided Wave: *See*—
LeFebre, David A., 5,184,193, Cl. 356-325.000.

Guile, Donald L., to Corning Incorporated. Method of making diesel particulate filters. 5,183,608, Cl. 264-44.000.

Guilford, William J.: *See*—
Labovitz, Jeffrey; Guilford, William J.; Fang, Lawrence; and Liang, Yi, 5,183,891, Cl. 544-235.000.

Guillemette, A. Roger. Deflector for crosshead extruder. 5,183,669, Cl. 425-113.000.

Guillin, Daniel; and Nicolas, Michel, to Telemecanique. Unidirectional flow limiter. 5,183,076, Cl. 137-513.700.

Gulbrantson, William. Hydraulic centrifugal piston motor. 5,182,977, Cl. 91-197.000.

Gulf States Paper Corporation: *See*—
Gulliver, Richard F., 5,183,201, Cl. 229-117.120.

Gulick, Jon J.: *See*—
Hanz, Curtis L.; Gulick, Jon J.; Virga, Kathleen L.; and Podell, Allen, 5,184,095, Cl. 333-33.000.

Gulliver, Richard F., to Gulf States Paper Corporation. Carton tray with improved corner construction and method of making. 5,183,201, Cl. 229-117.120.

Gunderson, Richard W.: *See*—
Steinberg, Timothy D.; and Gunderson, Richard W., 5,183,207, Cl. 239-526.000.

Gusakov, Ignaty, to Gaymar Industries, Inc. Bed patient position monitor. 5,184,112, Cl. 340-573.000.

Guse, Rudolf; Nobis, Dieter; and Malinowski, Hans, to SMS Schloemann-Siemag Aktiengesellschaft. Method and apparatus for manufacturing hot-rolled strips or sections from continuously cast primary material. 5,182,847, Cl. 29-527.700.

Gutgsell, David R., to Ditto Sales, Inc. Pivoting bracket assembly for connecting table tops. 5,182,996, Cl. 108-64.000.

Guth, Joseph E.: *See*—
Stelter, Eric C.; and Guth, Joseph E., 5,183,964, Cl. 118-653.000.

Guthrie, Rebecca A. F.: *See*—
Lodico, James I.; Coder, David R.; Adams, Lawrence J.; Guthrie, Rebecca A. F.; Andes, Raymond M., Jr.; and Alexander, Philip G., 5,183,487, Cl. 55-289.000.

Gutierrez, Joseph A.: *See*—
Ackerman, Yuri; and Gutierrez, Joseph A., 5,183,267, Cl. 277-12.000.

Gutowski, Timothy A., to Contour Roll Company. Pneumatic press with reversed piston and cylinder. 5,182,985, Cl. 100-35.000.

Gutzeit, Reinhard, to Robert Bosch GmbH. Traction control braking system with a piston storage unit connected to a reservoir and pump. 5,183,317, Cl. 303-113.200.

Guy, Alain: *See*—
Foos, Jacques; Lemaire, Marc; Guy, Alain; Guyon, Vincent; Chomel, Rodolphe; Deloge, Andre ; Doutreluigne, Pierre; and Le Roy, Henri, 5,183,645, Cl. 423-8.000.

Guyon, Vincent: *See*—
Foos, Jacques; Lemaire, Marc; Guy, Alain; Guyon, Vincent; Chomel, Rodolphe; Deloge, Andre ; Doutreluigne, Pierre; and Le Roy, Henri, 5,183,645, Cl. 423-8.000.

H. B. Fuller Company: *See*—
Swanson, Sandra K. M., 5,183,877, Cl. 528-64.000.

Haacke, Ernest D.: *See*—
Ohannes, James R.; Clukey, Stephen W.; Haacke, Ernest D.; and Yarbrough, Roy L., 5,184,034, Cl. 307-473.000.

Haditsch, Franz: *See*—
Besendorfer, Herman; Stritzke, Gunter; and Haditsch, Franz, 5,184,070, Cl. 324-225.000.

Hadley, Franklin O., Jr.: *See*—
Cox, Jerry D.; Linz, Raymond E.; Thome, Jeanne M.; Perry, Winfield B.; Hadley, Franklin O., Jr.; and Knobel, Vladimir A., 5,182,881, Cl. 51-7.000.

Hafez, Mahmoud M.: *See*—
Darnell, Charles F.; and Hafez, Mahmoud M., 5,183,566, Cl. 210-321.800.

Hager, John P.: *See*—
Blenk, Michael H.; Diemer, Russell B., Jr.; and Hager, John P., 5,183,496, Cl. 75-702.000.
Blenk, Michael H.; Diemer, Russell B., Jr.; and Hager, John P., 5,183,497, Cl. 75-702.000.

Hagiwara, Michiaki: *See*—
Ueno, Shuji; Hagiwara, Michiaki; Mishima, Ryoji; and Isoishi, Kiyoshi, 5,183,515, Cl. 148-101.000.

Hagmaier, Charles P., Jr.: *See*—
Schmoeger, Mary L.; Hagmaier, Charles P., Jr.; Bogdanowicz, Mitchell J.; DuMont, Christopher L.; and Sehlin, Richard C., 5,184,175, Cl. 355-32.000.

Hakenewerth, Paul A.; Rohrer, Gene D.; and Stalberg, Nils G., to International Business Machines. Self-service transaction apparatus and method using a robot for article transport and repair of internal article handling devices. 5,183,999, Cl. 235-379.000.

Hakotani, Yasuhiko: *See*—
Gejima, Seiji; Kawakita, Koji; Kimura, Suzushi; Okinaka, Hideyuki; and Hakotani, Yasuhiko, 5,183,786, Cl. 501-134.000.

Hakuraku, Yoshinori: *See*—
Ogushi, Tetsuya; Hakuraku, Yoshinori; and Ogata, Hisanao, 5,183,799, Cl. 505-1.000.

Hale, Calvin L. Game apparatus. 5,183,256, Cl. 273-241.000.

Hallerstrom, Robert; Durgin, Kirby; and Benjamin, Wesley. Insulated pipe with end protection. 5,183,299, Cl. 285-47.000.

Halliburton Company: *See*—
Poulsen, Don K., 5,183,109, Cl. 166-250.000.

Hamada, Yasunori; Oizumi, Junichi; Noda, Kousuke; and Ushijima, Kunio, to Hitachi, Ltd. Automatic cash handling system offering optional printed record. 5,184,000, Cl. 235-379.000.

Hamamoto, Masaji: *See*—
Fukuoka, Kazuhiro; Kiyohara, Keiki; Konishi, Tadayuki; Miyatake, Isao; and Hamamoto, Masaji, 5,183,500, Cl. 106-1.220.

Hamasaka, Hiroshi; Satoh, Isao; and Fukushima, Yoshihisa, to Matsushita Electric Industrial Co., Ltd. Information recording method having successive data write and data verify operations. 5,184,341, Cl. 369-54.000.

Hamby, Johnnie L.: *See*—
Fanta, David E.; Hamby, Johnnie L.; and Schleicher, Hart E., 5,183,086, Cl. 141-10.000.

Hamel, Gregory R., to Ford Motor Company. Power device assembly and method. 5,184,283, Cl. 361-395.000.

Hamilton, Gary: *See*—
Reilly, James W.; and Hamilton, Gary, 5,183,556, Cl. 208-57.000.

Hammett, Robert C.: *See*—
Mashaw, Howard R., Jr.; and Hammett, Robert C., 5,183,114, Cl. 166-319.000.

Hamminga, Derk: *See*—
Van Wijngaarden, Ineke; Hamminga, Derk; and Wouters, Wouter, 5,183,822, Cl. 514-305.000.

Hammon, Timothy E.: *See*—
Anderson, Lawrence B.; Hammon, Timothy E.; and Frieler, Cliff, 5,183,646, Cl. 423-210.000.

Hanamura, Yoshihiko: *See*—
Nishio, Kouji; and Hanamura, Yoshihiko, 5,183,044, Cl. 128-648.000.

Haneda, Satoshi; Morita, Shizuo; Fukuchi, Masakazu; and Matsuo, Shunji, to Konica Corporation. Color image forming apparatus. 5,184,187, Cl. 355-326.000.

Hanel, Peter; Helmrich, Harald; and Sander, Ulrich, to Metallgesellschaft Aktiengesellschaft. Multilayer membrane and process of manufacturing the same. 5,183,571, Cl. 210-649.000.

Hangauer, David: *See*—
Greenlee, William J.; Patchett, Arthur A.; Hangauer, David; Walsh, Thomas F.; Fitch, Kenneth J.; Rivero, Ralph A.; and Dhanoa, Daljit S., 5,183,810, Cl. 514-63.000.

Hansen, Lowell D., to Vickers, Incorporated. Combined centrifugal and undervane-type rotary hydraulic machine. 5,183,392, Cl. 417-203.000.

Hanson, C. William, III: *See*—
Hoffman, Eric A.; Hanson, C. William, III; and Ward, Charles F., III, 5,183,038, Cl. 128-204.210.

Hanson, John D., to Siemens Automotive Limited. Evaporative emission control system for supercharged internal combustion engine. 5,183,023, Cl. 123-520.000.

Hanssler, Gerd: *See*—
Wagner, Klaus; Hanssler, Gerd; and Brandes, Wilhelm, 5,183,898, Cl. 548-178.000.

Hanz, Curtis L.; Gulick, Jon J.; Virga, Kathleen L.; and Podell, Allen, to Hughes Aircraft Company. Constant impedance transition between transmission structures of different dimensions. 5,184,095, Cl. 333-33.000.

Hara, Seinosuke: *See*—
Morita, Shoji; Yamada, Yoshihiko; and Hara, Seinosuke, 5,183,015, Cl. 123-90.160.

Hara, Toshiro; Sato, Yoshimasa; and Yagi, Noboru, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for a vehicle for controlling a device mounted thereon. 5,184,300, Cl. 364-431.100.

Harada, Isao; Hokonohara, Hisashi; and Yamaguchi, Toshiaki, to Mitsui Toatsu Chemicals, Inc. Method for purifying nitrogen trifluoride gas. 5,183,647, Cl. 423-239.000.

Harada, Naoto; Sekine, Shuji; Furuya, Takeo; and Yoshioka, Nobuo, to Jidosha Denki Kogyo K.K. Sunroof motor with roof lid position detector. 5,184,050, Cl. 318-467.000.

Harburg, Rudy W. Self regulating pinwheel kite tail. 5,183,224, Cl. 244-155.00R.

Hardwig, Ronald B. Device for installing an in-line valve. 5,183,364, Cl. 408-67.000.

Hariu, Kenichi; Chiba, Isamu; and Mano, Seiji, to Mitsubishi Denki Kabushiki Kaisha. Antenna system. 5,184,140, Cl. 342-372.000.

Harjunmaa, Hannu; Mendelson, Yitzhak; and Wang, Yi, to Vivascan Corporation. Electromagnetic method and apparatus to measure constituents of human or animal tissue. 5,183,042, Cl. 128-633.000.

Harkreader, Gordon G.: *See*—
Etzkorn, William G.; and Harkreader, Gordon G., 5,183,936, Cl. 562-532.000.

Harlow, Richard A.: *See*—
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry

VOL 1147 ISS 1 FE 2 1993 UMI

L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,184,307, Cl. 364-474.240.

Harper, Jon J.; Kuhlmann, George E.; Larson, Keith D.; McMahon, Rosemary F.; and Sanchez, Paul A., to Amoco Corporation. Process for preparing 2,6-naphthalene-dicarboxylic acid. 5,183,933, Cl. 562-414.000.

Harrell, James E., Jr. System for efficiently exchanging heat or cooling ground water in a deep well. 5,183,100, Cl. 165-45.000.

Harrington, Michael B. Pipe fitting reducers. 5,183,298, Cl. 285-12.000.

Harris Corporation: *See—*
Snow, Dane R., 5,184,128, Cl. 341-128.000.

Harsch, Franklin D.: *See—*
Lazaro, Luis J., Jr.; and Harsch, Franklin D., 5,183,413, Cl. 439-589.000.

Hartel, Gunter; Schurfeld, Armin; Losing, Karl-Heinrich; Thonnesen, Dieter; and Remde, Ulrich, to Pierburg GmbH. Process and apparatus for utilization of fuels with alcohol additives for an internal combustion engine. 5,182,942, Cl. 73-61.460.

Hartman, Judith A.: *See—*
Carter, Charles G.; Jovancicevic, Vladimir; Hartman, Judith A.; and Kreb, Robert P., 5,183,590, Cl. 252-392.000.

Haruch, James, to Spraying Systems Co. Spray gun with selective hydraulic and air assisted operating modes. 5,183,322, Cl. 239-394.000.

Harwig, Dennis D.: *See—*
Sanders, John M.; and Harwig, Dennis D., 5,183,989, Cl. 219-121.140.

Hasche, Reimer: *See—*
Holbrook, Michael T.; Hebert, Lawrence A.; Najmy, Stephen W.; Stine, Ernest F., Jr.; and Hasche, Reimer, 5,183,797, Cl. 502-355.000.

Hasegawa, Masazumi: *See—*
Tsutsumi, Yoshitaka; Uemura, Teruhisa; and Hasegawa, Masazumi, 5,183,722, Cl. 430-169.000.

Hashimoto, Yasuhiko: *See—*
Matsui, Masahiro; and Hashimoto, Yasuhiko, 5,184,038, Cl. 310-42.000.

Hassell, Morgan V.; Stephens, Frederick J.; and Edwards, Ernest J., to ECC International Limited. Paper coating head, apparatus and method. 5,183,691, Cl. 427-286.000.

Hatagishi, Yuji, to Yazaki Corporation. Connector with fitting operation cam members. 5,183,408, Cl. 439-147.000.

Hathorn, Jack L.: *See—*
Scheier, Donald J.; and Hathorn, Jack L., 5,183,434, Cl. 452-131.000.

Hatta, Toshiya: *See—*
Yoshinaka, Minoru; Asakura, Eizo; Oku, Mitsumasa; Kitano, Motoi; Nakatani, Yoshio; Yoshida, Hideyuki; Hatta, Toshiya; and Nakatani, Seiichi, 5,183,594, Cl. 252-518.000.

Hattori, Chikamasa: *See—*
Maruo, Satoshi; Hattori, Chikamasa; and Kameyama, Fumio, 5,184,053, Cl. 318-571.000.

Hattori, Ryuichi; and Nakagawa, Nobuhide, to House Food Industrial Co., Ltd. Continuous vacuum frier. 5,182,982, Cl. 99-404.000.

Haun, Robert E.; Elmer, Neil C.; and Lampson, Robin A., to Retech, Inc. Gas barrier for the refining superalloy. 5,183,498, Cl. 75-709.000.

Hauss, Raymond G., to Eastman Kodak Company. Processor with automatic chemical dilution and mixing system. 5,184,165, Cl. 354-324.000.

Hautamaki, Jeffrey L. Martial arts practice device. 5,183,451, Cl. 482-86.000.

Havens, Dale I.: *See—*
von Kaler, Roland L.; and Havens, Dale I., 5,182,966, Cl. 74-606.00R.

Hawkes, Malcolm V.: *See—*
Twigg, Ray G.; Klug, Mark W.; Marrone, Santino; and Hawkes, Malcolm V., 5,184,068, Cl. 324-158.00F.

Hawkins, Larry S.; and Beese, Ulrich, to Otto Industries, Inc. Plastic refuse container. 5,183,180, Cl. 220-908.000.

Hawryszko, Christine: *See—*
Arakawa, Mitsuaki; and Hawryszko, Christine, 5,184,074, Cl. 324-309.000.

Hawsey, Robert A.; and Scudiere, Matthew B., to United States of America, Energy. Non-intrusive beam power monitor for high power pulsed or continuous wave lasers. 5,184,189, Cl. 356-218.000.

Hayakawa, Shigeyuki; and Yanagisawa, Leiichi, to Kabushiki Kaisha Toshiba. Semiconductor integrated circuit. 5,184,031, Cl. 307-296.300.

Hayano, Fusakazu: *See—*
Shiraki, Toshinori; Hayano, Fusakazu; and Morita, Hideo, 5,183,857, Cl. 525-285.000.

Hayashi, Kazuyuki: *See—*
Ishizuka, Masahiro; and Hayashi, Kazuyuki, 5,183,440, Cl. 474-101.000.

Hayashi, Keisuke; Ishigaki, Kouji; Nakahara, Kazuyuki; Yanagida, Masato; and Kishi, Fumio, to Ricoh Company, Ltd. Image forming apparatus. 5,184,184, Cl. 355-296.000.

Hayashi, Mamoru: *See—*
Shiba, Noriyuki; and Hayashi, Mamoru, 5,182,993, Cl. 101-365.000.

Hayashi, Noriyuki: *See—*
Kanaka, Keiichi; Hayashi, Noriyuki; Kobashi, Toshihiro; Kageyama, Yukihiko; and Hijikata, Kenji, 5,183,878, Cl. 528-193.000.

Hayashi, Shigenori: *See—*
Yamazaki, Shunpei; Hayashi, Shigenori; Inujima, Takashi; and Hirose, Naoki, 5,183,511, Cl. 118-723.000.

Hayashi, Yoshiaki: *See—*
Nakamatsu, Toshio; Terao, Masanobu; Muneishi, Shigetoshi; Kometani, Norio; and Hayashi, Yoshiaki, 5,183,892, Cl. 546-76.000.

Hayashida, Akira: *See—*
Takeda, Yoshihumi; and Hayashida, Akira, 5,183,875, Cl. 528-33.000.

Hayman, Michael H.; Morgan, Lee R.; and Liprie, Samuel F., to Omnitron International, Inc. Apparatus for in situ radiotherapy. 5,183,455, Cl. 600-7.000.

Hazan, Jean-Pierre; Polaert, Remy; and Delmas, Gilles, to U.S. Philips Corp. Cook-top. 5,183,996, Cl. 219-452.000.

Head Sportgerate Gesellschaft m.b.H. & Co. OHG: *See—*
Umlauft, Helmut; and Wager, Karl-Heinz, 5,183,265, Cl. 273-73.00C.

Healthdyne, Inc.: *See—*
Servido, John L.; Tucker, Robert E.; and Murphy, James, 5,183,483, Cl. 55-26.000.

Hearn, Michel L.: *See—*
Farwell, Charles Y.; Hearn, Michel L.; Heidebrecht, Richard M.; Ho, Kelvin K.; and Spencer, Douglas A., 5,184,347, Cl. 370-94.100.

Hearst, David P.; Cimino, George D.; Hearst, John E.; and Isaacs, Stephen T. Device and method for photoactivation. 5,184,020, Cl. 250-455.110.

Hearst, John E.: *See—*
Hearst, David P.; Cimino, George D.; Hearst, John E.; and Isaacs, Stephen T., 5,184,020, Cl. 250-455.110.

Hebert, Lawrence A.: *See—*
Holbrook, Michael T.; Hebert, Lawrence A.; Najmy, Stephen W.; Stine, Ernest F., Jr.; and Hasche, Reimer, 5,183,797, Cl. 502-355.000.

Heckman, Greg A., to Epicor Industries, Inc. Auto venting fuel cap. 5,183,173, Cl. 220-367.000.

Heddon, Will. Bowling lane and refinishing method. 5,183,262, Cl. 273-51.000.

Hedrick Concrete Products Corp.: *See—*
Hedrick, Thomas W., 5,183,616, Cl. 264-219.000.

Hedrick, Thomas W., to Hedrick Concrete Products Corp. Method for making antiqued concrete cored bricks and capping bricks. 5,183,616, Cl. 264-219.000.

Heidebrecht, Richard M.: *See—*
Farwell, Charles Y.; Hearn, Michel L.; Heidebrecht, Richard M.; Ho, Kelvin K.; and Spencer, Douglas A., 5,184,347, Cl. 370-94.100.

Heidebroek, Wolfgang; and Hsing, Zeith W. C., to Thomson Consumer Electronics, S.A. Television receiver with spot burn protection and after-glow suppression. 5,184,225, Cl. 358-243.000.

Heidel, Klaus; and Scholz-Weigl, Sigrid, to Starchem GmbH. Process for the peparation of finely divided, water-swellable polysaccharide graft polymers. 5,183,872, Cl. 527-300.000.

Heidelberg Druckmaschinen AG: *See—*
D'Heureuse, Walter; Greive, Martin; Heppenstiel, Gerhard; and Kusch, Hans-Jurgen, 5,182,989, Cl. 101-148.000.

Heimann, Robert L.: *See—*
Perisho, Randal J.; Heimann, Robert L.; and Soucie, Wayne L., 5,182,963, Cl. 74-512.000.

Heindl, Josef; Skuballa, Werner; Buchmann, Bernd; Frohlich, Wolfgang; and Ederdt, Rolalnd, to Schering Aktiengesellschaft. Leukotriene-B4 derivatives, process for their production and their use as pharmaceutical agents. 5,183,925, Cl. 560-61.000.

Heine, Wilhelm: *See—*
Mohn, Jurgen; and Heine, Wilhelm, 5,183,567, Cl. 210-321.750.

Heintz, Frieder: *See—*
Bremer, Wolfgang; Knoll, Peter; and Heintz, Frieder, 5,184,123, Cl. 340-995.000.

Heinzle, Egon, to Snowboardlinik und Handelsges m.b.H. Clamping holder for suspending skis. 5,183,164, Cl. 211-70.500.

Helis: *See—*
Line, Henri, 5,183,374, Cl. 409-286.000.

Hella KG Hueck & Co.: *See—*
Hussmann, Micha; and Hufnagel, Joachim, 5,184,024, Cl. 307-10.800.

Helle, Jean-Louis; Andre, Jean-Claude; and Schaeffer, Philippe, to Dassault Aviation. Process of and apparatus for making three-dimensional objects. 5,183,598, Cl. 264-22.000.

Hellsten, Martin: *See—*
Carlsson, Goran; and Hellsten, Martin, 5,183,476, Cl. 44-445.000.

Helmrich, Harald: *See—*
Hanel, Peter; Helmrich, Harald; and Sander, Ulrich, 5,183,571, Cl. 210-649.000.

Henkel Corporation: *See—*
Elsasser, A. Frederick; and Korte, Thomas J., 5,183,908, Cl. 549-322.000.

Henmi, Naoya; Suzaki, Tetsuyuki; and Saito, Tomoki, to NEC Corporation. Optical transmitting apparatus for minimal dispersion along an optical fiber. 5,184,243, Cl. 359-181.000.

Henry, Joseph B.: *See—*
Langhorst, Martin A.; and Henry, Joseph B., 5,183,604, Cl. 264-40.100.

Henry, Wayne L.: *See—*
Kreh, Robert P.; and Henry, Wayne L., 5,183,573, Cl. 210-697.000.

Hensens, Otto D.: *See—*
Bills, Gerald F.; Hensens, Otto D.; Koupal, Lawrence; Lingham, Russell B.; Ondeyka, John G.; and Zink, Deborah L., 5,183,826, Cl. 514-411.000.

Heppenstiel, Gerhard: *See—*
D'Heureuse, Walter; Greive, Martin; Heppenstiel, Gerhard; and Kusch, Hans-Jurgen, 5,182,989, Cl. 101-148.000.

Herbst, Joseph A.: *See—*
Chitnis, Girish K.; Herbst, Joseph A.; and Valyocsik, Ernest W., 5,183,790, Cl. 502-67.000.

Hercules Incorporated: *See—*
Greiner, Richard W., 5,183,663, Cl. 424-443.000.

Herdzina, Frank J.; and Goodrich, Rollie M., to Service Tool Die & Mfg. Co. Dual lane conversion system. 5,182,934, Cl. 72-405.000.

Heremans, Joseph P.: *See—*
Partin, Dale L.; and Heremans, Joseph P., 5,184,106, Cl. 338-32.00R.

Hergert, Richard E.; Hergert, Richard R.; Neill, Eugene B.; Pantaleo, Scott B.; Roerig, Arnold J.; Rogers, Thomas D.; Shands, Jay A.; and Takeguchi, Noriaki, to Beloit Technologies, Inc. Headbox tube bank apparatus and method of directing flow therethrough. 5,183,537, Cl. 162-216.000.

Hergert, Richard R.: *See—*
Hergert, Richard E.; Hergert, Richard R.; Neill, Eugene B.; Pantaleo, Scott B.; Roerig, Arnold J.; Rogers, Thomas D.; Shands, Jay A.; and Takeguchi, Noriaki, 5,183,537, Cl. 162-216.000.

Herman Miller, Inc.: *See—*
McClung, Duane G.; and Mueller, Thomas C., 5,183,090, Cl. 144-350.000.

Hernandez, Trinidad. Bottle sling apparatus. 5,183,183, Cl. 222-175.000.

Herrington, Thomas L.: *See—*
Nguyen, My N.; Lee, Chee-Kong; and Herrington, Thomas L., 5,183,784, Cl. 501-19.000.

Herron, Carlisle M.; and Cooper, David J., to Procter & Gamble Cellulose Company, The. Individualized, polycarboxylic acid crosslinked fibers. 5,183,707, Cl. 428-364.000.

Hershenson, Susan: *See—*
Shaked, Ze'Ev; Stewart, Tracy; Hershenson, Susan; Thomson, James W.; Taforo, Terrance; and Thomson, Jody, 5,183,746, Cl. 435-69.510.

Hershey Foods: *See—*
Lai, Chron-Si, 5,183,682, Cl. 426-636.000.

Hess, Heinrich: *See—*
Kopp, Richard; Grogler, Gerhard; and Hess, Heinrich, 5,183,876, Cl. 528-59.000.

Hesse, Bradley J.; and Gentile, Philip J., to Fleming Group, The. Method and system for electricity storage and discharge. 5,184,058, Cl. 320-4.000.

Hethcoat, Gary L., to General Dynamics Corp., Air Defense Systems Division. Spray nozzle cleaning apparatus and method. 5,183,066, Cl. 134-54.000.

Hewlett-Packard Company: *See—*
Foote, Wayne E.; Mui, Paul K.; and Sleger, Roger R., 5,184,265, Cl. 360-106.000.
King, Philip N., 5,184,029, Cl. 307-270.000.
Meichsner, Roland; and Schmickl, Werner, 5,183,502, Cl. 106-22.00K.
Wanger, Mark E.; Methlie, Jennifer L.; Stavely, Donald J.; and Oliver, Thomas C., 5,184,336, Cl. 369-34.000.

Heymann, Kurt: *See—*
Tenbrink, Detlef; Bock, Martin; Heymann, Kurt; and Rimkus, Martin, 5,183,553, Cl. 205-162.000.

Heymann, Norbert, to GKN Automotive. Apparatus and method for identifying the lateral position of a workpiece. 5,182,866, Cl. 33-645.000.

Higaki, Riichi: *See—*
Iida, Yoshikazu; Kosaka, Toru; Tsuru, Hiroyuki; Higaki, Riichi; and Katayama, Akira, 5,184,167, Cl. 354-403.000.

Higashi, Taketoshi: *See—*
Yagi, Shigeru; Fukuda, Yuzuru; Higashi, Taketoshi; and Yokoi, Masaki, 5,183,719, Cl. 430-66.000.

Higginbotham, Jeff A.; Garcia, George; and Richards, Robert L., to Amoco Corporation. Bearing and bearing assembly. 5,183,340, Cl. 384-420.000.

Higuchi, Kazuhiko; Hirahara, Shuzo; Saito, Tutomu; Nagato, Hitoshi; and Iwamoto, Akito, to Kabushiki Kaisha Toshiba. Apparatus for printing images on booklets. 5,183,347, Cl. 400-583.300.

Hijikata, Kenji: *See—*
Kanaka, Keiichi; Hayashi, Noriyuki; Kobashi, Toshihiro; Kageyama, Yukihiko; and Hijikata, Kenji, 5,183,878, Cl. 528-193.000.
Kawaguichi, Kuniaki; Nakane, Toshio; Shimoda, Akihide; and Hijikata, Kenji, 5,183,623, Cl. 264-544.000.

Hille, Dieter: *See—*
Gross, Lutz-Werner; Poth, Ulrich; Hille, Dieter; and Weidemeier, Klaus, 5,183,835, Cl. 523-402.000.

Hillsman, Cecily M.: *See—*
Dubrul, William R.; and Hillsman, Cecily M., 5,183,464, Cl. 128-3.000.

Hilmar, Martin D.: *See—*
Najjar, Mitri S.; and Hilmar, Martin D., 5,183,482, Cl. 55-16.000.

Himont Incorporated: *See—*
Guerra, Gaetano; Vitagliano, Vincenzo M.; Corradini, Paolo; and Albizzati, Enrico, 5,183,853, Cl. 525-132.000.

Hintzen, Ullrich: *See—*
Bruckner, Raimund; Hintzen, Ullrich; Lee, Steve; Schuler, Andreas; and Wiesel, Martin, 5,183,624, Cl. 266-236.000.

Hirabayashi, Hiromitsu: *See—*
Takayanagi, Yoshiaki; and Hirabayashi, Hiromitsu, 5,184,178, Cl. 355-202.000.

Hirahara, Shuzo: *See—*
Higuchi, Kazuhiko; Hirahara, Shuzo; Saito, Tutomu; Nagato, Hitoshi; and Iwamoto, Akito, 5,183,347, Cl. 400-583.300.

Hirako, Keiichi; and Kawaguchi, Yoshihisa, to Kabushiki Kaisha Toshiba. Antenna pointing equipment. 5,184,139, Cl. 342-354.000.

Hirakouchi, Hiroshi: *See—*
Nakamura, Masanori; Hirakouchi, Hiroshi; Yatsuka, Takeshi; Kadowaki, Nobuo; and Endoh, Hiroshi, 5,183,863, Cl. 525-438.000.

Hirano, Shin-ichi: *See—*
Tanaka, Hiroshi; Kominato, Kaichiro; Yoshioka, Takeo; Iguchi, Hiroshi; Hirano, Shin-ichi; Okajima, Yasuo; Yamamoto, Reijko; Shirai, Masataka; Nishida, Hiroshi; Tone, Hiroshi; and Okamoto, Rokuro, 5,183,883, Cl. 563-6.400.

Hirata, Mistutoshi: *See—*
Yosomiya, Ryutoku; Hirata, Mistutoshi; Morimoto, Kiyotaka; Takenishi, Soichiro; and Marutsuka, Toshinori, 5,183,611, Cl. 264-129.000.

Hirose, Nanki: *See—*
Yamazaki, Shunpei; Hayashi, Shigenori; Inujima, Takashi; and Hirose, Naoki, 5,183,511, Cl. 118-723.000.

Hirota, Ken: *See—*
Kugimiya, Koichi; Sugaya, Yasuhiro; Inoue, Osamu; Satomi, Mitsuo; and Hirota, Ken, 5,183,631, Cl. 419-10.000.

Hirota, Toshikazu: *See—*
Takeuchi, Yukihisa; Hirota, Toshikazu; Okada, Shigeki; and Shimogawa, Natsumi, 5,184,344, Cl. 369-126.000.

Hirota, Yukitsugu: *See—*
Mihara, Teruyoshi; Matsushita, Tsutomu; Yao, Kenji; Hoshi, Masakatsu; Enokido, Yutaka; and Hirota, Yukitsugu, 5,184,204, Cl. 357-629.000.

Hirst, Ian J.: *See—*
Oswald, Thomas; and Hirst, Ian J., 5,184,081, Cl. 324-533.000.

Hisano, Seiichi: *See—*
Ueda, Toshio; Sato, Yuichi; Senda, Masayasu; Isoyama, Seiji; and Hisano, Seiichi, 5,183,630, Cl. 419-31.000.

Hishikawa, Toshio: *See—*
Wakino, Kikuo; Hishikawa, Toshio; Ishikawa, Youhei; Takehara, Koichi; and Tanizaki, Toru, 5,184,096, Cl. 333-175.000.

Hitachi Chemical Company Ltd.: *See—*
Ichimura, Nobuo; Miyamoto, Yauso; and Yamazaki, Mitsuo, 5,183,592, Cl. 252-512.000.
Miwa, Takao; Ikeda, Takayoshi; Numata, Shunichi; Fujisaki, Koji; and Shimanoki, Hisae, 5,183,838, Cl. 524-109.000.

Hitachi Construction Machinery Co., Ltd.: *See—*
Akasaka, Yoshimichi; Nakamura, Ichiro; and Gotoh, Yasuharu, 5,182,978, Cl. 91-499.000.

Hitachi Haramachi Semi-Conductor Ltd.: *See—*
Suda, Koichi; Matsuzaki, Hitoshi; Wada, Masayuki; and Ozeki, Shoichi, 5,184,272, Cl. 361-87.000.

Hitachi Koki Co., Ltd.: *See—*
Kurosawa, Makoto; Koseki, Masaaki; Takahashi, Tetsuroh; and Terakado, Takeshi, 5,183,454, Cl. 493-459.000.

Hitachi, Ltd.: *See—*
Hamada, Yasunori; Oizumi, Junichi; Noda, Kousuke; and Ushijima, Kunio, 5,184,000, Cl. 235-379.000.
Kawamura, Yoshio; Tanaka, Shinji; Sato, Kazuo; Uchida, Kenko; and Kohida, Hiroyuki, 5,183,744, Cl. 435-30.000.
Kogure, Makoto; Sase, Akira; and Fukunaga, Masao, 5,184,121, Cl. 340-870.110.
Kozaki, Takahiko; Asano, Kenichi; Ogino, Mineo; Amada, Eiichi; Endo, Noboru; and Sakurai, Yoshito, 5,184,346, Cl. 370-60.000.
Masuda, Noboru; Kamikawai, Ryotaro; Yagyu, Masayoshi; Yamamoto, Masakazu; Itoh, Hiroyuki; and Saito, Tatsuya, 5,184,027, Cl. 307-269.000.
Miwa, Takao; Ikeda, Takayoshi; Numata, Shunichi; Fujisaki, Koji; and Shimanoki, Hisae, 5,183,838, Cl. 524-109.000.
Nagai, Masahiko; Watai, Hiroo; Nagumo, Takaharu; and Moriwaki, Kaoru, 5,184,308, Cl. 364-489.000.
Ogushi, Tetsuya; Hakuraku, Yoshinori; and Ogata, Hisanao, 5,183,799, Cl. 505-1.000.
Sakai, Keijiro; Endo, Tunehiro; Kubota, Yuzuru; Ikimi, Takashi; Mutoh, Nobuyoshi; and Honbu, Mitsuyuki, 5,184,057, Cl. 318-803.000.
Sakuta, Toshiyuki; Miyazawa, Kazuyuki; Oguchi, Satoshi; Kaneda, Aizo; Mitani, Masao; Nakamura, Shozo; Nishi, Kunihiko; and Murakami, Gen, 5,184,208, Cl. 257-666.000.
Shimada, Toshio; Kobayashi, Morio; Tada, Takemi; and Kawaminami, Shigeya, 5,184,269, Cl. 361-24.000.
Suda, Koichi; Matsuzaki, Hitoshi; Wada, Masayuki; and Ozeki, Shoichi, 5,184,272, Cl. 361-87.000.
Tada, Takemi; Tanaka, Hirosi; and Usui, Osami, 5,183,400, Cl. 417-572.000.
Takeuchi, Hiroyuki; Nozokido, Tatsuo; and Nakamura, Chikako, 5,184,073, Cl. 324-309.000.
Uchida, Makio, 5,184,202, Cl. 257-390.000.

Hitachi Medical Corporation: *See—*
Nishimura, Hiroshi, 5,184,075, Cl. 324-309.000.
Takeuchi, Hiroyuki; Nozokido, Tatsuo; and Nakamura, Chikako, 5,184,073, Cl. 324-309.000.

Hitachi Metals, Ltd.: *See—*
Nakajima, Shin; Aoyama, Hiroyuki; Kagawa, Rihito; and Shimoe, Osamu, 5,184,085, Cl. 328-65.000.

Hitachi VLSI Engineering Corporation: *See—*
Kozaki, Takahiko; Asano, Kenichi; Ogino, Mineo; Amada, Eiichi; Endo, Noboru; and Sakurai, Yoshito, 5,184,346, Cl. 370-60.000.

VOL
1147
ISS
1
FE
2
1993
UMI

HL Planartechnik GmbH: *See—*
Fidelak, Michael; and Bartsch, Marlies, 5,182,947, Cl. 73-304.00C.
Ho, Jackson. Punching and binding machine. 5,183,361, Cl. 412-16.000.
Ho-jin, Cho; and Choi, Sang-sin, to Samsung Electron Devices Co., Ltd. Shadow mask stretching apparatus for flat cathode ray tube. 5,183,426, Cl. 445-68.000.
Ho, Kelvin K.: *See—*
Farwell, Charles Y.; Hearn, Michel L.; Heidebrecht, Richard M.; Ho, Kelvin K.; and Spencer, Douglas A., 5,184,347, Cl. 370-94.100.
Hobbs, Donna M. Method for cleaning pierced earlobes. 5,183,461, Cl. 604-49.000.
Hobes, John; and Barth, Christiane, to Hoechst Aktiengesellschaft. Graft copolymer based on an ultrahigh-molecular-weight polyethylene and an ethylene copolymer. 5,183,855, Cl. 525-193.000.
Hochman, Lana: *See—*
Pan, Yuh-Guo; Chan, Alexander; and Hochman, Lana, 5,183,941, Cl. 564-390.000.
Hocker, Robert A.: *See—*
McCurry, Patrick W.; Kellogg, James R.; Boekelheide, Karl; Sexton, Kenneth D.; Ellison, George A.; and Hocker, Robert A., 5,184,025, Cl. 307-66.000.
Hocking, Michael G.: *See—*
Sidky, Paulette S.; and Hocking, Michael G., 5,183,985, Cl. 219-10.61R.
Hoechst Aktiengesellschaft: *See—*
Hobes, John; and Barth, Christiane, 5,183,855, Cl. 525-193.000.
Schimmel, Gunther; Kotzian, Michael; and Gradl, Reinhard, 5,183,651, Cl. 423-334.000.
Hoechst Celanese Corporation: *See—*
Platzer, Stephan J. W.; Procter, Arthur E.; and Dunder, Thomas, 5,183,723, Cl. 430-160.000.
Hoegnelid, Kurt: *See—*
Dalen, Bjoern; Nilsson, Kenth-Ake-Sune; Hoegnelid, Kurt; and Wecke, Liliane, 5,183,056, Cl. 128-782.000.
Hoffman, Eric A.; Hanson, C. William, III; and Ward, Charles F., III, to University of Pennsylvania, The Trustees of the. Gated programmable ventilator. 5,183,038, Cl. 128-204.210.
Hoffman, Paul. Centrifugal nozzle. 5,183,205, Cl. 239-222.130.
Hoffman, Ronald J.; Pillion, Lawrence M.; and Jewell, Paul L., to Mr. Coffee Inc. Apparatus and method for heating water for infusion and the like. 5,183,998, Cl. 219-492.000.
Hoffmann, Kurt; Kraus, Rainer; and Kowarik, Oskar, to Siemens Aktiengesellschaft. Integrated semiconductor memory of the dram type and method for testing the same. 5,184,326, Cl. 365-201.000.
Hoffmeyer, Charles L.: *See—*
Zakheim, Howard; Clinton, Peter M.; Goldschneider, James D.; Kasmer, Christopher A.; Zahn, Markus; and Hoffmeyer, Charles L., 5,183,214, Cl. 241-30.000.
Hogan, Martin A.; Leppek, Kevin G.; and Spadafora, Peter J., to General Motors Corporation; and Deleco Electronics Corporation. Antilock brake system motor speed control. 5,184,299, Cl. 364-426.020.
Hojnacki, Robert J.; Pearson, Daniel C.; Brucker, Gerard K.; Gober, Michael J.; and Shaw, Daniel J., Jr., to United Foam Plastics. Suspension cushioning package. 5,183,159, Cl. 206-583.000.
Hokonohara, Hisashi: *See—*
Harada, Isao; Hokonohara, Hisashi; and Yamaguchi, Toshiaki, 5,183,647, Cl. 423-239.000.
Holbrook, Michael T.; Hebert, Lawrence A.; Najmy, Stephen W.; Stine, Ernest F., Jr.; and Hasche, Reimer, to Dow Chemical Company, The. Catalyst for hydrohalogenation of hydrocarbons. 5,183,797, Cl. 502-355.000.
Holcombe, Cressie E.: *See—*
Lauf, Robert J.; Holcombe, Cressie E.; and Dykes, Norman L., 5,184,286, Cl. 361-529.000.
Holland, Douglas K.; and Dillingham, Edward W., to Texaco Inc. Process for dewatering quenched slag. 5,183,478, Cl. 48-197.00R.
Hollander, Milton B.; Jacobs, David R.; and McKinley, William E., to Omega Engineering, Inc. Molded connector with spool. 5,183,420, Cl. 439-457.000.
Hollandsche Beton Groep Nov.: *See—*
Blom, Jan, 5,183,438, Cl. 472-92.000.
Holler, Roger A.; and Ulrich, Peter R., to United States of America, Navy. Cable pack winding and payout system. 5,183,217, Cl. 242-47.000.
Hollymatic Corporation: *See—*
Wagner, Richard C., 5,182,984, Cl. 99-509.000.
Holmes, William S.; and Marshall, Robert, to Albright & Wilson Ltd. Production of phosphorus compounds. 5,183,649, Cl. 423-300.000.
Holotek Ltd.: *See—*
Kramer, Charles J., 5,183,350, Cl. 403-4.000.
Holset Engineering Company Limited: *See—*
McKean, Peter S., 5,183,381, Cl. 415-150.000.
Holtemann, Karen D.: *See—*
Popiel, Irene; Holtemann, Karen D.; Glazer, Itamar; and Womersley, Christopher, 5,183,950, Cl. 800-2.000.
Honbu, Mitsuyuki: *See—*
Sakai, Keijiro; Endo, Tunehiro; Kubota, Yuzuru; Ikimi, Takashi; Mutoh, Nobuyoshi; and Honbu, Mitsuyuki, 5,184,057, Cl. 318-803.000.
Honda, Akito. Method of producing a stuffed doll. 5,182,844, Cl. 29-469.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Fujii, Isao; Ajiki, Yoshio; Ishida, Yoichi; and Matsuura, Hiromi, 5,183,011, Cl. 123-1.00A.
Kuroda, Shigetaka; and Iwata, Yoichi, 5,182,907, Cl. 60-276.000.
Nakamura, Michio; Okunosono, Toshihiko; and Kajikawa, Tsuneo, 5,183,130, Cl. 180-219.000.
Suga, Toshiyuki; Kitajima, Shinichi; and Kobayashi, Yoshihiko, 5,183,021, Cl. 123-478.000.
Yumoto, Toshiyuki; Ohsono, Kouhei; Kanda, Masahiro; and Matsuda, Takahiro, 5,183,439, Cl. 474-28.000.
Honeywell, Inc.: *See—*
Maurer, Dean J., 5,184,107, Cl. 338-42.000.
Menahem, Israel; and Bacon, James, 5,182,961, Cl. 74-471.0XY.
Nelson, Larry A., 5,184,082, Cl. 324-537.000.
Hong, Chin-Chen. Stirring device for facilitating dialysis. 5,183,564, Cl. 210-232.000.
Honma, Akihiro; and Kurokawa, Masahiro, to Mitsubishi Gas Chemical Company, Inc. Method of purifying crude glycidyl (meth)acrylate. 5,183,539, Cl. 203-38.000.
Hopkins, George I. Crawling insect trap. 5,182,879, Cl. 43-131.000.
Horak, Dieter; and Schafer, Hans-Heinz, to W. Schlafhorst AG & Co. Method and apparatus for checking the operation of a pneumatic splicer. 5,182,900, Cl. 57-22.000.
Horan, Ann C., to Schering Corporation. Production of 7-chloro-3-methoxy-2'-N-methyltetracycline with *Actinomadura brunea* ATCC 39216. 5,183,758, Cl. 435-252.100.
Hori, Kimihiko; Sakaguchi, Akira; Ishida, Koichi; Nomura, Tomoko; Suzuki, Keiko; and Tsuchiya, Shuichi, to Kao Corporation. Azole derivatives and antifungal drugs containing the same as an active component. 5,183,824, Cl. 514-383.000.
Hori, Mitsuhiko, to Nitto Denko Corporation. Composition for percutaneous administration and method for enhancing percutaneous absorption of a physiologically active ingredient empolying the same. 5,183,665, Cl. 424-449.000.
Horitani, Yoshihiro, to Suzuki Kabushiki Kaisha. Muffler assembly of internal combustion engine. 5,183,977, Cl. 181-266.000.
Horn, Dale W., to General Electric Company. Power pedestal having television, telephone and luminaire adapter unit. 5,184,279, Cl. 361-356.000.
Hornburg, Kurt P.; Thelen, Wayne A.; and Thelen, William. Automotive vehicle antenna. 5,184,142, Cl. 343-715.000.
Horng, Ming-Gin. Handle-attachable suitcase alarm. 5,184,110, Cl. 340-571.000.
Hoshi, Masakatsu: *See—*
Mihara, Teruyoshi; Matsushita, Tsutomu; Yao, Kenji; Hoshi, Masakatsu; Enokido, Yutaka; and Hirota, Yukitsugu, 5,184,204, Cl. 357-629.000.
Hoshizaki Denki Kabushiki Kaisha: *See—*
Kado, Syuji; Tatematsu, Susumu; and Ikari, Hideyuki, 5,182,917, Cl. 62-137.000.
Hoskin, Robert F. Brake for in-line roller skate. 5,183,275, Cl. 280-11.200.
Hosoi, Keiji, to Suzuki Motor Corporation. Ignition timing control apparatus for engine. 5,183,020, Cl. 123-406.000.
Hospal Industrie: *See—*
Porta, Julien; and Clermont, Christian, 5,182,868, Cl. 34-18.000.
Hottovy, John D., to Phillips Petroleum Company. Polymer recovery process. 5,183,866, Cl. 526-88.000.
Houang, Paul: *See—*
D'Iribarne, Benoit; Mairlot, Henri; and Houang, Paul, 5,183,491, Cl. 65-351.000.
House Food Industrial Co., Ltd.: *See—*
Hattori, Ryuichi; and Nakagawa, Nobuhide, 5,182,982, Cl. 99-404.000.
Okamoto, Hidefumi; and Sengoku, Koji, 5,183,681, Cl. 426-634.000.
Taga, Kazumitsu; Narukami, Toshihiko; and Miyaoku, Yoshiyuki, 5,183,678, Cl. 426-448.000.
Houseki, Sigeki: *See—*
Takeishi, Hideo; Houseki, Sigeki; and Matsubara, Isao, 5,183,210, Cl. 239-703.000.
Howard, Joseph P.: *See—*
Kelly, Edward J.; and Howard, Joseph P., 5,184,314, Cl. 364-709.010.
Howe, Harold, to Technetics Corp. Bundle and place method for the manufacture of brush seals. 5,183,197, Cl. 228-160.000.
Hsing, Zeith W. C.: *See—*
Heidebroek, Wolfgang; and Hsing, Zeith W. C., 5,184,225, Cl. 358-243.000.
Hu, Patrick C.: *See—*
Wiegand, Karl E.; and Hu, Patrick C., 5,183,061, Cl. 128-897.000.
Hubbell Incorporated: *See—*
Edgell, James E.; and Jordan, David L., 5,183,331, Cl. 362-426.000.
Hubble, Fred F., III; Mitchell, John M., Jr.; and Martin, James P., to Xerox Corporation. Linear encoder for digital printing applications. 5,184,011, Cl. 250-231.140.
Hubis, Daniel E.: *See—*
Branca, Phillip A.; Hubis, Daniel E.; Mallouk, Robert S.; and Perry, Randal L., 5,183,545, Cl. 204-252.000.
Hubsch, Walter: *See—*
Angerbauer, Rolf; Fey, Peter; Hubsch, Walter; Philipps, Thomas; Bischoff, Hilmar; Petzinna, Dieter; and Schmidt, Delf, 5,183,897, Cl. 546-330.000.
Huchton, Roger L.: *See—*
MacArthur, Duncan W.; Wolf, Michael A.; McAtee, James L.; Unruh, Wesley P.; Cucchiara, Alfred L.; and Huchton, Roger L., 5,184,019, Cl. 250-380.000.
Huddle, James R., to Litton Systems, Inc. Fault-tolerant inertial navigation system. 5,184,304, Cl. 364-453.000.

Huels Aktiengesellschaft: *See—*
Warwel, Siegfried; Jagers, Hans-Gerd; and Deckers, Andreas, 5,183,791, Cl. 502-102.000.
Hufnagel, Joachim: *See—*
Hussmann, Micha; and Hufnagel, Joachim, 5,184,024, Cl. 307-10.800.
Huggett, Colin E.; and Wuertz, Kenneth L., to Allied-Signal, Inc. Fault-tolerant apparatus for controlling blade pitch. 5,183,387, Cl. 416-147.000.
Hughes Aircraft Company: *See—*
Hanz, Curtis L.; Gulick, Jon J.; Virga, Kathleen L.; and Podell, Allen, 5,184,095, Cl. 333-33.000.
Kich, Rolf; and Tatomir, Paul J., 5,184,098, Cl. 333-208.000.
Lim, Khoon C.; Margerum, J. David; Lackner, Anna M.; and Miller, Leroy J., 5,184,233, Cl. 359-46.000.
Marco, Alex A., 5,182,849, Cl. 29-600.000.
Myers, Terrence L., 5,184,127, Cl. 341-122.000.
Niho, Yoji G.; Day, Eric W.; and Flanders, Tammy L., 5,184,134, Cl. 342-25.000.
Shahriary, Iradj; and McNab, Kevin M., 5,184,092, Cl. 331-16.000.
Washburn, Robert D.; Wedeen, Robert S.; McClanahan, Robert F.; Council, William J.; and Lusher, David M., 5,184,288, Cl. 363-4.000.
Wiegel, Dave C.; Bradshaw, Dan A.; and Petravicius, Stasys, 5,184,275, Cl. 361-223.000.
Hughes Missile Systems Company: *See—*
Frenkel, Jeffry T.; and Anderson, Brent C., 5,182,941, Cl. 73-40.000.
Hughes, Richard E. Differential mechanism. 5,183,446, Cl. 475-236.000.
Huldin, Donald H.: *See—*
Yeh, Charles R.; and Huldin, Donald H., 5,183,053, Cl. 128-754.000.
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., to 3D Systems, Inc. Method and apparatus for production of high resolution three-dimensional objects by stereolithography. 5,184,307, Cl. 364-474.240.
Hunder, Ray A.: *See—*
Bodziak, Douglas P.; Grovender, Steven L.; Hunder, Ray A.; Molenda, Robert P.; and Roth, Steven P., 5,183,297, Cl. 283-67.000.
Hunter Manufacturing Inc.: *See—*
Shaughnessy, Ernie, 5,183,310, Cl. 296-106.000.
Hunter Mining Company: *See—*
Chintis, Michael, 5,183,499, Cl. 75-742.000.
Hunter, Robert L.; and Ragland, William L., to Emory University. Method of treating poultry for coccidiosis. 5,183,687, Cl. 424-78.340.
Hurdle, D. T.: *See—*
Hurdle, Terry D., 5,183,325, Cl. 362-109.000.
Hurdle, Terry D., to Hurdle, D. T. Illumination apparatus for remote control device. 5,183,325, Cl. 362-109.000.
Hurtado, Larry; Curto, Rick A.; and Martin, Dallas, to Western Atlas International, Inc. Termination assembly with improved waterblock. 5,183,966, Cl. 474-20.000.
Huschka, Hans: *See—*
Brandau, Egbert; Huschka, Hans; Kadner, Martin; and Schroder, Waldemar, 5,183,493, Cl. 75-335.000.
Huss, Albin, Jr.: *See—*
Kirker, Garry W.; Degnan, Thomas F., Jr.; Huss, Albin, Jr.; and Landis, Michael E., 5,183,559, Cl. 208-119.000.
Hussmann, Micha; and Hufnagel, Joachim, to Hella KG Hueck & Co. Apparatus for regulate the illumination range of a motor vehicle. 5,184,024, Cl. 307-10.800.
Hutcheson, Jerry D.; and Blake, William S., to Ecopac, L. P. Mechanically pressurized dispenser system. 5,183,185, Cl. 222-209.000.
Hutchinson S.A.: *See—*
Blin, Philippe, 5,183,079, Cl. 138-110.000.
Hwa, Chih M.; Kelly, John A.; Tai, Wun T.; Fan, Lai-Duien G.; Kreh, Robert P.; and Greaves, Brian, to W. R. Grace & Co.-Conn. Method of dispersing iron. 5,183,574, Cl. 210-701.000.
Hwang, Chan-Kou: *See—*
Nicolaou, Kyriacos C.; Sorensen, Erik; Hwang, Chan-Kou; Discordia, Robert; Bergman, Robert G.; and Minto, Robert E., 5,183,942, Cl. 568-375.000.
Hwang, Steven. Fiber optic illuminator display. 5,184,253, Cl. 359-889.000.
Hyatt, Hugh M.: *See—*
Stephenson, Roger C.; and Hyatt, Hugh M., 5,183,698, Cl. 428-209.000.
Ichihashi, Tadashi; and Akiyama, Koichi, to Kowa Company Limited. Ophthalmic measurement apparatus. 5,184,157, Cl. 351-208.000.
Ichikawa, Kiyomichi, to Auto-Stamp Institute Inc. Paper conveyor. 5,183,249, Cl. 271-186.000.
Ichikawa, Takashi: *See—*
Koga, Yoshiro; Gomi, Akihiro; Miyasaka, Takashi; Miyazawa, Yasunaga; Endo, Kenichi; Shinozaki, Junichiro; Yoda, Kaneo; Ichikawa, Takashi; Miyasaka, Hitoshi; and Kaburagi, Chiharu, 5,184,257, Cl. 360-77.050.
Ichimura, Nobuo; Miyamoto, Yasuo; and Yamazaki, Mitsuo, to Hitachi Chemical Company Ltd. Electroconductive adhesive comprising an epoxy novolak resin and phenol-aralkyl resin. 5,183,592, Cl. 252-512.000.
Ide, Youji; and Shiokawa, Keiichi, to Ricoh Company, Ltd. Thermal image transfer recording medium. 5,183,697, Cl. 428-195.000.
Idemitsu Kosan Co., Ltd.: *See—*
Yamasaki, Komei; and Keisuke, Funaki, 5,183,871, Cl. 526-347.200.
Ido, Mikio: *See—*
Kurando, Shigeo; Makiura, Yoshinori; Shigemura, Yutaka; Ooura, Junichi; Mifune, Eiji; Imafuku, Tatsuo; Komata, Hiroshi; and Ido, Mikio, 5,184,181, Cl. 355-260.000.
Iguchi, Hiroshi: *See—*
Tanaka, Hiroshi; Kominato, Kaichiro; Yoshioka, Takeo; Iguchi, Hiroshi; Hirano, Shin-ichi; Okajima, Yasuo; Yamamoto, Reijko; Shirai, Masataka; Nishida, Hiroshi; Tone, Hiroshi; and Okamoto, Rokuro, 5,183,883, Cl. 563-6.400.
Iida, Akio: *See—*
Itoh, Kenji; Iida, Akio; and Urasaki, Shuji, 5,184,093, Cl. 331-25.000.
Iida, Tadasato; Takahashi, Fusakichi; Wada, Kouji; and Nigo, Toshiro, to Kabushiki Kaisha Toshiba. Portable type air conditioning apparatus. 5,182,915, Cl. 62-89.000.
Iida, Yoshikazu; Kosaka, Toru; Tsuru, Hiroyuki; Higaki, Riichi; and Katayama, Akira, to Nikon Corporation. Distance metering device of a camera. 5,184,167, Cl. 354-403.000.
Iimura, Haruo; Takiguchi, Yasuyuki; and Kanemoto, Akihiko, to Ricoh Company, Ltd. Super-twisted nematic type liquid crystal display device. 5,184,237, Cl. 359-63.000.
Ikari, Hideyuki: *See—*
Kado, Syuji; Tatematsu, Susumu; and Ikari, Hideyuki, 5,182,917, Cl. 62-137.000.
Ikeda Bussan Co., Ltd.: *See—*
Kawakita, Tadashi, 5,183,447, Cl. 475-341.000.
Ikeda, Hayato: *See—*
Fujii, Toshiro; Ikeda, Hayato; Katoh, Ryo; and Inukai, Hitoshi, 5,183,394, Cl. 417-269.000.
Ikeda, Hiroshi, to Nissan Motor Co., Ltd. A-D converter suitable for fuzzy controller. 5,184,131, Cl. 341-165.000.
Ikeda, Hitoshi: *See—*
Sohda, Takashi; and Ikeda, Hitoshi, 5,183,823, Cl. 514-358.000.
Ikeda, Jiro, to Sony Corporation. Sputtering apparatus and system for sputtering employing same. 5,183,547, Cl. 204-298.250.
Ikeda, Tadashi: *See—*
Inagaki, Yoshio; and Ikeda, Tadashi, 5,183,733, Cl. 430-583.000.
Ikeda, Takayoshi: *See—*
Miwa, Takao; Ikeda, Takayoshi; Numata, Shunichi; Fujisaki, Koji; and Shimanoki, Hisae, 5,183,838, Cl. 524-109.000.
Ikeda, Yoshiaki, to Fanuc Ltd. Cooperative operation system for numberical control apparatus. 5,184,052, Cl. 318-569.000.
Ikeda, Yoshiharu; Kai, Yoshiyuki; and Ono, Keiichi, to Sumitomo Pharmaceuticals Company, Limited. Polyethylene glycol derivatives, their modified peptides, methods for producing them and use of the modified peptides. 5,183,660, Cl. 424-94.300.
Ikegami Tsushinki Co., Ltd.: *See—*
Yamamoto, Kazumi; and Sugasawa, Masayuki, 5,184,212, Cl. 358-39.000.
Ikejima, Hiroyuki: *See—*
Okuma, Shigeru; Furuhashi, Takeshi; Ikejima, Hiroyuki; and Ishii, Toshiaki, 5,183,980, Cl. 187-112.000.
Ikejiri, Fumitoshi: *See—*
Sakai, Hideki; Ishiwatari, Kazuo; and Ikejiri, Fumitoshi, 5,183,843, Cl. 524-318.000.
Ikeuchi, Masayuki: *See—*
Fukui, Wataru; Iwata, Toshio; Ohashi, Yutaka; and Ikeuchi, Masayuki, 5,182,943, Cl. 73-116.000.
Ikimi, Takashi: *See—*
Sakai, Keijiro; Endo, Tunehiro; Kuuota, Yuzuru; Ikimi, Takashi; Mutoh, Nobuyoshi; and Honbu, Mitsuyuki, 5,184,057, Cl. 318-803.000.
Ikumi, Tomonori: *See—*
Murakami, Kazunori; Ikumi, Tomonori; Matsumoto, Yasuo; and Iwafune, Yasuo, 5,184,245, Cl. 359-196.000.
Illinois Tool Works Inc.: *See—*
Barth, Gerald D., 5,183,359, Cl. 411-188.000.
Im, Jong H., to Goldstar Co., Ltd. Magnetron for a microwave oven having a pair of choke coils wound around a core in the same directions. 5,184,045, Cl. 315-39.510.
Imafuku, Tatsuo: *See—*
Kurando, Shigeo; Makiura, Yoshinori; Shigemura, Yutaka; Ooura, Junichi; Mifune, Eiji; Imafuku, Tatsuo; Komata, Hiroshi; and Ido, Mikio, 5,184,181, Cl. 355-260.000.
Image Acoustics, Inc.: *See—*
Butler, John L., 5,184,332, Cl. 367-162.000.
Imaseki, Takashi; Tamura, Minoru; Iwata, Toru; and Fukuyama, Yuichi, to Nissan Motor Company, Limited. Rear wheel steering system for vehicle. 5,184,298, Cl. 364-424.050.
Imoto, Toshiyuki: *See—*
Takamura, Susumu; Nakamura, Takashi; Okawauchi, Makoto; Toda, Harumi; Kanki, Ichiro; Yoshida, Minoru; Imoto, Toshiyuki; Negayama, Naomi; and Oka, Koichi, 5,183,045, Cl. 128-653.200.
Imperial Chemical Industries PLC: *See—*
Dukes, Michael, 5,183,814, Cl. 514-171.000.
Kenyon, Ronald W.; Newton, David F.; and Thorp, Derek, 5,183,888, Cl. 544-153.000.
Quan, Peter M.; and Leeming, Stephen W., 5,183,940, Cl. 564-370.000.
Inaba, Shigemitsu; and Matsumoto, Mitsuhiro, to Yazaki Corporation. Connector assembly. 5,183,410, Cl. 439-489.000.
Inada, Haruhiro; and Muramoto, Hisao, to Mazda Motor Corporation. Air bag device for automobile. 5,183,288, Cl. 280-732.000.
Inagaki, Yoshio; and Ikeda, Tadashi, to Fuji Photo Film Co., Ltd. Silver halide photographic materials. 5,183,733, Cl. 430-583.000.

VOL
1147
ISS
1
FE
2
1993
UMI

Inax Corporation: *See—*
Murata, Kazushige; and Ito, Takeshi, 5,183,668, Cl. 425-84.000.
Indiana Mills & Manufacturing, Inc.: *See—*
Anthony, James R.; and Wiseman, Michael A., 5,182,837, Cl. 24-642.000.
Industrial Technology Research Institute: *See—*
Tung, Fu-Ching; Chen, Chi-Tsun; and Lieu, Sheng-Feng, 5,182,898, Cl. 53-570.000.
Yan, Wen-Jyh, 5,182,921, Cl. 62-235.100.
Industrial Technology Research Instiute: *See—*
Liu, Ti Y.; Chen, Chi J.; and Chen, Shou H., 5,183,494, Cl. 75-349.000.
Ineichen, Kurt; Ruedi, Peter; and Wirth, Herbert, to Weber AG. Undervoltage tripping device. 5,184,101, Cl. 335-78.000.
Infant Advantage, Inc.: *See—*
Gatts, James D.; Buckley, Edward M.; and Jamieson, John W., 5,183,457, Cl. 600-21.000.
Ingersoll-Rand Company: *See—*
Urda, Paul, 5,183,441, Cl. 474-138.000.
Ingle, Lloyd D.; Peck, Leonard E., Jr.; and Santana, Jose A., to Santa Barbara Research Center. Flexible cable for interconnecting electronic components. 5,183,973, Cl. 174-254.000.
Ingram, Robert S.: *See—*
Fenton, Gary L.; Sill, Gerald A.; Ingram, Robert S.; and Jimenez, James G., 5,183,375, Cl. 410-35.000.
Inohana, Haruyuki; and Gomi, Shintaro, to Pioneer Electron Corporation. Differential amplifier. 5,184,086, Cl. 330-252.000.
Inoue, Osamu: *See—*
Kugimiya, Koichi; Sugaya, Yasuhiro; Inoue, Osamu; Satomi, Mitsuo; and Hirota, Ken, 5,183,631, Cl. 419-10.000.
Inoue, Yoshinori: *See—*
Konishi, Yasuhiro; Kumanoya, Masaki; Dosaka, Katsumi; Komatsu, Takahiro; and Inoue, Yoshinori, 5,184,321, Cl. 365-51.000.
Institut Dr. Friedrich Forster Pruferatebau: *See—*
Besendorfer, Herman; Stritzke, Gunter; and Haditsch, Franz, 5,184,070, Cl. 324-225.000.
Institut Francais de Petrole: *See—*
Regnault, Alain; Cretin, Jacques; and Froidevaux, Pascal, 5,184,329, Cl. 367-23.000.
Institut Pasteur: *See—*
Danchin, Antoine; Glaser, Philippe; Krin, Evelyne; Barzu, Octavien; Ladant, Daniel; and Ullmann, Agnes, 5,183,745, Cl. 435-69.100.
Instrumentarium Corporation: *See—*
Ehnholm, Gosta J., 5,184,076, Cl. 324-318.000.
Integrated Systems Engineering, Inc.: *See—*
Brown, Brent W., 5,184,114, Cl. 340-701.000.
Intel Corporation: *See—*
Ting, Chiu H.; and Pai, Pei-Lin, 5,183,795, Cl. 437-230.000.
International Business Machines: *See—*
Hakenewerth, Paul A.; Rohrer, Gene D.; and Stalberg, Nils G., 5,183,999, Cl. 235-379.000.
International Business Machines Corporation: *See—*
Ashelin, Brian T.; Bergquist, Mark A.; and Noltee, Dennis E., Sr., 5,184,284, Cl. 361-400.000.
Baratte, Herve; de Souza, Joel P.; and Sadana, Devendra K., 5,183,767, Cl. 437-11.000.
Gallagher, William J.; and Worthington, Thomas K., 5,183,970, Cl. 174-125.100.
Karidis, John P.; Reiley, Timothy C.; and Schein, Lawrence B., 5,184,183, Cl. 355-266.000.
Nagy, Michael E., 5,184,126, Cl. 341-67.000.
International Fuel Cells Corporation: *See—*
Kunz, Harold R., 5,183,713, Cl. 429-44.000.
International Medical, Inc.: *See—*
Wettermann, Peter H., 5,183,470, Cl. 604-281.000.
Interventional Thermodynamics, Inc.: *See—*
Dubrul, William R.; and Hillsman, Cecily M., 5,183,464, Cl. 128-3.000.
Inubushi, Akiyoshi: *See—*
Nakacho, Yoshifumi; Inubushi, Akiyoshi; and Tada, Yuji, 5,183,716, Cl. 429-192.000.
Inuishi, masahide: *See—*
Mitsui, Katsuyoshi; and Inuishi, masahide, 5,183,771, Cl. 437-44.000.
Inujima, Takashi: *See—*
Yamazaki, Shunpei; Hayashi, Shigenori; Inujima, Takashi; and Hirose, Naoki, 5,183,511, Cl. 118-723.000.
Inukai, Hitoshi: *See—*
Fujii, Toshiro; Ikeda, Hayato; Katoh, Ryo; and Inukai, Hitoshi, 5,183,394, Cl. 417-269.000.
Isaacs, Stephen T.: *See—*
Hearst, David P.; Cimino, George D.; Hearst, John E.; and Isaacs, Stephen T., 5,184,020, Cl. 250-455.110.
Isaksson, Juhani, to A. Ahlstrom Corporation. Distributor plate in a fluidized bed reactor. 5,183,641, Cl. 422-143.000.
ISC Chemicals Limited: *See—*
Slinn, David S. L., 5,183,067, Cl. 134-61.000.
Isco, Inc.: *See—*
Fiedler, Robert R., 5,183,391, Cl. 417-118.000.
ISF Societa per Azioni: *See—*
Aliverti, Valerio; Dorigotti, Luciano; Fonio, Teodoro; and Pinza, Mario, 5,183,802, Cl. 514-2.000.
Ishibashi, Yukio: *See—*
Naito, Kenzo; Ishibashi, Yukio; and Shinbo, Haruo, 5,183,929, Cl. 560-178.000.
Ishida, Koichi: *See—*
Hori, Kimihiko; Sakaguchi, Akira; Ishida, Koichi; Nomura, Tomoko; Suzuki, Keiko; and Tsuchiya, Shuichi, 5,183,824, Cl. 514-383.000.
Ishida, Roh, to Toyo Ink Mfg. Co., Ltd. Binarizing method for color image using modified error diffusion method. 5,184,213, Cl. 358-75.000.
Ishida, Satoshi: *See—*
Noguchi, Shigeru; Ishida, Satoshi; Iwata, Hiroshi; Sano, Keiichi; and Nakayama, Shoichiro, 5,183,780, Cl. 437-173.000.
Ishida, Yasuhiko; and Kondo, Katsuhiko, to Mitsubishi Denki K.K. Engine control apparatus including A/D converter failure detection element and method therefor. 5,184,302, Cl. 364-431.110.
Ishida, Yasushi: *See—*
Ono, Takeshi; Yoshida, Takehiro; Wada, Satoshi; Takeda, Tomoyuki; Kondo, Masaya; Kobayashi, Makoto; Kato, Takahiro; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Yamada, Masakatsu, 5,184,151, Cl. 346-76.0PH.
Ishida, Yoichi: *See—*
Fujii, Isao; Ajiki, Yoshio; Ishida, Yoichi; and Matsuura, Hiromi, 5,183,011, Cl. 123-1.00A.
Ishida, Yoshinori: *See—*
Mikami, Toshihiro; Kohmura, Yukio; Ishida, Yoshinori; and Nogami, Akira, 5,183,490, Cl. 65-144.000.
Ishigaki, Kouji: *See—*
Hayashi, Keisuke; Ishigaki, Kouji; Nakahara, Kazuyuki; Yanagida, Masato; and Kishi, Fumio, 5,184,184, Cl. 355-296.000.
Ishihara, Kazuya: *See—*
Onishi, Shigeo; Yamadai, Tsutomu; and Ishihara, Kazuya, 5,183,782, Cl. 437-192.000.
Ishii, Katsumi: *See—*
Asano, Takanobu; and Ishii, Katsumi, 5,183,378, Cl. 414-757.000.
Ishii, Kazuo: *See—*
Kato, Eiichi; and Ishii, Kazuo, 5,183,720, Cl. 430-96.000.
Kato, Eiichi; and Ishii, Kazuo, 5,183,721, Cl. 430-96.000.
Ishii, Masami: *See—*
Akahoshi, Sumihisa; Akimura, Hitoshi; Nakabayashi, Isao; Ishii, Masami; Ohi, Tamio; and Yoshida, Makoto, 5,183,591, Cl. 252-503.000.
Ishii, Masaru, to Kabushiki Kaisha Toshiba. Information processing device. 5,184,342, Cl. 369-100.000.
Ishii, Toshiaki: *See—*
Okuma, Shigeru; Furuhashi, Takeshi; Ikejima, Hiroyuki; and Ishii, Toshiaki, 5,183,980, Cl. 187-112.000.
Ishikawa, Youhei: *See—*
Wakino, Kikuo; Hishikawa, Toshio; Ishikawa, Youhei; Takehara, Koichi; and Tanizaki, Toru, 5,184,096, Cl. 333-175.000.
Ishikawajima-Harima Heavy Industries Co., Ltd.: *See—*
Uno, Nayomon; and Mutaguchi, Masao, 5,182,887, Cl. 52-167.00R.
Ishiwata, Soji: *See—*
Tanaka, Tsugutoshi; and Ishiwata, Soji, 5,184,149, Cl. 346-74.200.
Ishiwatari, Kazuo: *See—*
Sakai, Hideki; Ishiwatari, Kazuo; and Ikejiri, Fumitoshi, 5,183,843, Cl. 524-318.000.
Ishizuka, Masahiro; and Hayashi, Kazuyuki, to Mitsubishi Denki Kabushiki Kaisha. Method for converting elliptical to rectangular motion. 5,183,440, Cl. 474-101.000.
Isobe, Toshifumi: *See—*
Tanaka, Kazuyoshi; Isobe, Toshifumi; Itaya, Masahiko; and Naganuma, Akiko, 5,184,146, Cl. 346-1.100.
Isoishi, Kiyoshi: *See—*
Ueno, Shuji; Hagiwara, Michiaki; Mishima, Ryoji; and Isoishi, Kiyoshi, 5,183,515, Cl. 148-101.000.
Isono, Nobuyuki: *See—*
Goto, Shigeki; Shimei, Masato; Miyazawa, Tetsuhiro; Saitou, Yoshitami; and Isono, Nobuyuki, 5,182,970, Cl. 74-866.000.
Isoyama, Seiji: *See—*
Ueda, Toshio; Sato, Yuichi; Senda, Masayasu; Isoyama, Seiji; and Hisano, Seiichi, 5,183,630, Cl. 419-31.000.
Isozaki, Shinichi: *See—*
Ariyama, Tatsuro; Isozaki, Shinichi; Yamada, Kenzo; Matsuo, Masahiro; and Kanatani, Genji, 5,183,495, Cl. 75-379.000.
ISP Investments Inc.: *See—*
Liu, Kou-Chang; and Taylor, Paul D., 5,183,946, Cl. 568-670.000.
Login, Robert B.; Merianos, John J.; Biss, Russell B.; and Garelick, Paul, 5,183,901, Cl. 548-543.000.
Israel, Howard: *See—*
Syrop, Steven B.; and Israel, Howard, 5,183,057, Cl. 128-845.000.
Itaya, Masahiko: *See—*
Tanaka, Kazuyoshi; Isobe, Toshifumi; Itaya, Masahiko; and Naganuma, Akiko, 5,184,146, Cl. 346-1.100.
ITO Co., Ltd.: *See—*
Toriu, Mamoru; and Kitamura, Mitsuru, 5,183,041, Cl. 128-421.000.
Ito, Hideaki; and Miyamoto, Masanori, to Yamaha Hatsudoki Kabushiki Kaisha. Two-cycle diesel engine. 5,183,013, Cl. 123-48.00R.
Ito, Katsuhiro: *See—*
Koyama, Toshiya; Matsumoto, Yukio; Yoshimoto, Hataaki; and Ito, Katsuhiro, 5,183,585, Cl. 252-299.010.
Ito, Kenji: *See—*
Saito, Osamu; Ito, Kenji; Moronaga, Kenji; and Watanabe, Mikio, 5,184,229, Cl. 358-427.000.

Ito, Koichi: *See—*
Tanaka, Hirokazu; and Ito, Koichi, 5,184,109, Cl. 340-455.000.
Ito, Masayoshi; Yamada, Kiichi; Otake, Katsunori; Miyata, Yasunobu; Narita, Tomohiro; and Nishikawa, Susumu, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Apparatus for controlling the output of a vehicle equipped with an internal combustion engine. 5,183,128, Cl. 180-197.000.
Ito, Shigehiro: *See—*
Nishi, Yuji; Ito, Shigehiro; Kuguchi, Tatsushi; and Ebihara, Kazuyuki, 5,184,221, Cl. 358-167.000.
Ito, Shinji: *See—*
Watanabe, Hisanori; and Ito, Shinji, 5,184,262, Cl. 360-96.200.
Ito, Takeshi: *See—*
Murata, Kazushige; and Ito, Takeshi, 5,183,668, Cl. 425-84.000.
Ito, Tosikazu: *See—*
Suita, Yoshihiro; and Ito, Tosikazu, 5,183,612, Cl. 264-145.000.
Itoh, Hiroaki: *See—*
Mitsui, Hidero; Kamaya, Naoki; Itoh, Hiroaki; and Sasaki, Yuu, 5,183,714, Cl. 429-123.000.
Itoh, Hiroyuki: *See—*
Masuda, Noboru; Kamikawai, Ryotaro; Yagyu, Masayoshi; Yamamoto, Masakazu; Itoh, Hiroyuki; and Saito, Tatsuya, 5,184,027, Cl. 307-269.000.
Itoh, Kenji; Iida, Akio; and Urasaki, Shuji, to Mitsubishi Denki Kabushiki Kaisha. Frequency synthesizer. 5,184,093, Cl. 331-25.000.
Itoh, Takaaki: *See—*
Tanaka, Yoshiyuki; and Itoh, Takaaki, 5,184,273, Cl. 361-120.000.
Iwafune, Yasuo: *See—*
Murakami, Kazunori; Ikumi, Tomonori; Matsumoto, Yasuo; and Iwafune, Yasuo, 5,184,245, Cl. 359-196.000.
Iwai, Fumio: *See—*
Shiina, Michihiro; Tanaka, Yasuhiko; Iwai, Fumio; Noguchi, Yukio; Umetsu, Takao; Saito, Tatsuo; Onozuka, Haruo; Saitoh, Muneyoshi; and Koda, Takao, 5,184,166, Cl. 354-400.000.
Iwaki, Takashi: *See—*
Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Iwaki, Takashi; Mori, Shosei; and Shinjo, Kenji, 5,183,586, Cl. 252-299.610.
Iwamoto, Akito: *See—*
Higuchi, Kazuhiko; Hirahara, Shuzo; Saito, Tutomu; Nagato, Hitoshi; and Iwamoto, Akito, 5,183,347, Cl. 400-583.300.
Iwamoto, Seiichi: *See—*
Ohmoto, Hiroshi; and Iwamoto, Seiichi, 5,183,755, Cl. 435-240.270.
Iwase, Yukio, to Prince Corporation. Apparatus for mounting and removing the supporting frame of a quilt or the like in sewing machines. 5,182,998, Cl. 112-117.000.
Iwata, Hiroshi: *See—*
Noguchi, Shigeru; Ishida, Satoshi; Iwata, Hiroshi; Sano, Keiichi; and Nakayama, Shoichiro, 5,183,780, Cl. 437-173.000.
Iwata, Ryuji: *See—*
Takahashi, Takehiko; Iwata, Ryuji; and Shimizu, Yuji, 5,183,315, Cl. 297-488.000.
Iwata, Toru: *See—*
Imaseki, Takashi; Tamura, Minoru; Iwata, Toru; and Fukuyama, Yuichi, 5,184,298, Cl. 364-424.050.
Iwata, Toshio: *See—*
Fukui, Wataru; Iwata, Toshio; Ohashi, Yutaka; and Ikeuchi, Masayuki, 5,182,943, Cl. 73-116.000.
Iwata, Yoichi: *See—*
Kuroda, Shigetaka; and Iwata, Yoichi, 5,182,907, Cl. 60-276.000.
Iwatani, Shiro, to Mitsubishi Denki Kabushiki Kaisha. Control apparatus for an AC generator. 5,184,060, Cl. 322-99.000.
J. A. L. Taiwan Ltd.: *See—*
Yu, Jason, 5,183,411, Cl. 439-578.000.
J. L. Clark, Inc.: *See—*
Pherigo, Douglas E., 5,183,171, Cl. 220-256.000.
J. Strobel & Sohne GmbH & Co.: *See—*
Dietl, Rudolf, 5,182,999, Cl. 112-178.000.
Jackovitz, John F.; Kunkle, Richard P.; and Peterson, Steven H., to Westinghouse Electric Corp. Apparatus and method for separating zirconium isotopes using balanced ion electromigration. 5,183,542, Cl. 204-180.100.
Jackovitz, John F.: *See—*
Snyder, Thomas S.; Jackovitz, John F.; and Ferrari, Harry M., 5,183,548, Cl. 204-299.00R.
Jacobs, David R.: *See—*
Hollander, Milton B.; Jacobs, David R.; and McKinley, William E., 5,183,420, Cl. 439-457.000.
Jacobs, Martinus J. N.; and Rutten, Hendrikus J. J., to Dyneema V.O.F. Articles of highly oriented polyolefins of ultrahigh molecular weight, process for their manufacture, and their use. 5,183,701, Cl. 428-229.000.
Jacobs, William A.; and Camp, William P., Jr., to Wooster Brush Company, The. Epoxy floor roller tool and method of making same. 5,182,840, Cl. 492-24.000.
Jacobson, Allan J.; Lai, Wen-Yih F.; Matturro, Michael G.; Deckman, Harry W.; McHenry, James A.; Reynolds, Robert P.; and Zhang, Qiyao, to Exxon Research and Engineering Company. Modular surface catalyzed membrane containing a microporous membrane catalyst layer and transport layer. 5,183,788, Cl. 502-4.000.
Jaehrling, Peter; and Schweikert, Eugen, to Siemens Aktiengesellschaft. Arrangement for transcutaneous filling or replenishment of liquid medications in an implantable medication dosing device. 5,183,472, Cl. 604-284.000.
Jager, Horst, to Bayer Aktiengesellschaft. o-Aminozao compounds. 5,183,881, Cl. 534-732.000.
Jagers, Hans-Gerd: *See—*
Warwel, Siegfried; Jagers, Hans-Gerd; and Deckers, Andreas, 5,183,791, Cl. 502-102.000.
Jakse, Frank P.; Morris, Donald E.; and Vanderlinde, William, to Monsanto Company. Process for the production of carbonate esters. 5,183,918, Cl. 558-271.000.
James M. Montgomery Engineers, Inc.: *See—*
Lang, John S.; Trussell, R. Rhodes; and Kawamura, Susumu, 5,183,335, Cl. 366-174.000.
Jamieson, John W.: *See—*
Gatts, James D.; Buckley, Edward M.; and Jamieson, John W., 5,183,457, Cl. 600-21.000.
Janese, Woodrow W. Cephalic expansion apparatus and the method of using to treat head injury. 5,183,058, Cl. 128-847.000.
Jansen, Johannes R.; and Littmann, Martin, to Bayer Aktiengesellschaft. Process for the racemization of optically active 1-aryl-alkylamines. 5,183,939, Cl. 564-302.000.
Japan as represented by Director General of Agency of Industrial Science and Technology: *See—*
Abe, Toshihiko, 5,183,049, Cl. 128-663.010.
Japan Immuno Research Laboratories Co., Ltd.: *See—*
Adachi, Masakazu; Saitou, Toshimitu; Murata, Kimiyo; and Tamura, Aki, 5,183,738, Cl. 435-7.100.
Japan Institute of Advanced Dentistry: *See—*
Masuhara, Eiichi; and Komiya, Shigeo, 5,183,403, Cl. 433-9.000.
Japan Steel Works, Ltd., The: *See—*
Yukihiro, Makoto; and Katagiri, Mamoru, 5,183,621, Cl. 264-297.200.
Jarlsson, Assai. Apparatus for limiting lateral movement in trailers. 5,183,283, Cl. 280-426.000.
Jarsch, Michael: *See—*
Kaluza, Klaus; Frey, Bruno; and Jarsch, Michael, 5,183,747, Cl. 435-91.000.
Jelic, Ralph, to Verosol USA Inc. Cording designs for operable arch window blind. 5,183,092, Cl. 160-84.100.
Jenuwine, William C.: *See—*
Bilge, Umit; Jurczyszyn, Christopher E.; and Jenuwine, William C., 5,183,992, Cl. 219-121.640.
Jeong, Tae-young: *See—*
Jin, Dae-je; Seo, Kwang-byeog; and Jeong, Tae-young, 5,183,772, Cl. 437-52.000.
Jerxsen, Udo: *See—*
Collet, Erwin; Rathgeber, Roland; and Jerxsen, Udo, 5,182,869, Cl. 34-20.000.
Jewell, Paul L.: *See—*
Hoffman, Ronald J.; Pillion, Lawrence M.; and Jewell, Paul L., 5,183,998, Cl. 219-492.000.
Jidosha Denki Kogyo K.K.: *See—*
Harada, Naoto; Sekine, Shuji; Furuya, Takeo; and Yoshioka, Nobuo, 5,184,050, Cl. 318-467.000.
Jimenez, James G.: *See—*
Fenton, Gary L.; Sill, Gerald A.; Ingram, Robert S.; and Jimenez, James G., 5,183,375, Cl. 410-35.000.
Jin, Dae-je; Seo, Kwang-byeog; and Jeong, Tae-young, to Samsung Electronics Co., Ltd. Manufacturing method for a DRAM cell. 5,183,772, Cl. 437-52.000.
Jinno, Keishi: *See—*
Yamanashi, Makoto; Jinno, Keishi; Watanabe, Tamio; Endo, Takayoshi; and Yagi, Sakai, 5,183,418, Cl. 439-752.000.
Jisai, Yasuhiro; Tanaka, Yukiomi; and Shigeta, Akira, to Kao Corporation. Detergent composition containing polyethylenimine copolymer. 5,183,601, Cl. 252-524.000.
Jlidi, Bessem: *See—*
Calabrese, Salvadore J.; Scarton, Henry A.; Murray, S. Frank; Ettles, Christopher M.; Kennedy, Warren C.; Dinc, Saim; Jlidi, Bessem; and Strong, William, 5,183,955, Cl. 84-437.000.
Jodlbauer, Heinz D., to A. Nattermann & Cie. GmbH Corporation of the Federal Republic of Germany. Baking agent for leavened dough. 5,183,680, Cl. 426-611.000.
Johann, Donald F.; and Burroughs, Alan C. Compensation for dust on an optical disk by increasing laser writing power. 5,184,343, Cl. 369-116.000.
Johansen, Brian: *See—*
Tarr, Leonard; King, Gregory; and Johansen, Brian, 5,184,179, Cl. 355-206.000.
Johnson, Dennis. Barrier system. 5,182,889, Cl. 52-298.000.
Johnson Food Equipment, Inc.: *See—*
Scheier, Donald J.; and Hathorn, Jack L., 5,183,434, Cl. 452-131.000.
Johnson, Frank J., to Amkor Electronics, Inc. Method of producing a strip of lead frames for integrated circuit dies in a continuous system. 5,183,724, Cl. 430-312.000.
Johnson, Joseph W.: *See—*
Barclay, John A.; Waynert, Joseph A.; DeGregoria, Anthony J.; Johnson, Joseph W.; and Claybaker, Peter J., 5,182,914, Cl. 62-3.100.
Johnson, Mark R., to NutraSweet Company, The. Acetic acid recovery. 5,183,937, Cl. 562-608.000.
Johnson Matthey Inc.: *See—*
Nguyen, My N.; Lee, Chee-Kong; and Herrington, Thomas L., 5,183,784, Cl. 501-19.000.
Johnson, Richard F.: *See—*
Mott, Stephen D.; and Johnson, Richard F., 5,183,683, Cl. 426-641.000.

VOL
1147
ISS
1
FE
2
1993
UMI

Johnson, Ross E.: *See*—
Tury, Edward L.; Kaste, Keith; Johnson, Ross E.; and Danielson, David O., 5,184,017, Cl. 250-343.000.
Johnson Service Company: *See*—
Decious, Gaylon; and Nealer, Clay, 5,184,122, Cl. 340-870.160.
Jokari/US., Inc.: *See*—
Wilhite, Gerald D., 5,183,227, Cl. 248-99.000.
Jolliff, Norman E., to Tecumseh Products Company. Transmission parking brake. 5,183,138, Cl. 192-4.00C.
Jones, Robert. Game target overlay for billiard table. 5,183,254, Cl. 273-14.000.
Jordan, David L.: *See*—
Edgell, James E.; and Jordan, David L., 5,183,331, Cl. 362-426.000.
Jordan, Gregory E. Rigid low profile pickup tonneau. 5,183,309, Cl. 296-100.000.
Jordan, Robert C.: *See*—
Duane, Diana C.; Zilley, Eric L.; and Jordan, Robert C., 5,183,972, Cl. 174-251.000.
Jordan, Scott C.; Wolf, Robert L.; Fleege, Dennis W.; and Sharp, Jeffrey O., to Square D Company. Lighting control and emergy management system. 5,184,278, Cl. 361-346.000.
Jorritsma, Johannes N. Method and aparatus for calculating flow rates through a pumping station. 5,182,951, Cl. 73-861.000.
Jorstad, John L.; Morely, Richard A.; and Overbagh, William H., to Reynolds Metals Company. Engine block and cylinder liner assembly and method. 5,183,025, Cl. 123-669.000.
Joseph, Jose P.; and Madou, Marc J., to Commtech International Management Corporation. Multi-analyte sensing electrolytic cell. 5,183,549, Cl. 204-415.000.
Jovancicevic, Vladimir: *See*—
Carter, Charles G.; Jovancicevic, Vladimir; Hartman, Judith A.; and Kreh, Robert P., 5,183,590, Cl. 252-392.000.
Jukola, Bero; and Rebsamen, Werner, to Kustannusosakeyhtio Otava. Pre-assembled soft cover for a book, and method of making the same. 5,183,294, Cl. 281-23.000.
Julian, Vincent D. Waste management system. 5,183,293, Cl. 280-430.000.
Jurczyszyn, Christopher E.: *See*—
Bilge, Umit; Jurczyszyn, Christopher E.; and Jenuwine, William C., 5,183,992, Cl. 219-121.640.
Kaburagi, Chiharu: *See*—
Koga, Yoshiro; Gomi, Akihiro; Miyasaka, Takashi; Miyazawa, Yasunaga; Endo, Kenichi; Shinozaki, Junichiro; Yoda, Kaneo; Ichikawa, Takashi; Miyasaka, Hitoshi; and Kaburagi, Chiharu, 5,184,257, Cl. 360-77.050.
Kabushiki Kaisha Daikin Seisakusho: *See*—
Abe, Minoru; and Takano, Tetsuji, 5,183,141, Cl. 192-91.00A.
Kabushiki Kaisha Fuji Iryoki: *See*—
Yamasaki, Yoshikiyo; and Fujimoto, Shinichiro, 5,183,034, Cl. 128-36.000.
Kabushiki Kaisha Japan Health: *See*—
Yamasaki, Yoshikiyo; and Fujimoto, Shinichiro, 5,183,034, Cl. 128-36.000.
Kabushiki Kaisha Nittec: *See*—
Wakatake, Koichi, 5,183,638, Cl. 422-64.000.
Kabushiki Kaisha Okuma Tekkosho: *See*—
Fukaya, Yasushi, 5,184,294, Cl. 364-191.000.
Kabushiki Kaisha Topcon: *See*—
Nishio, Kouji; and Hanamura, Yoshihiko, 5,183,044, Cl. 128-648.000.
Kabushiki Kaisha Toshiba: *See*—
Hayakawa, Shigeyuki; and Yanagisawa, Leiichi, 5,184,031, Cl. 307-296.300.
Higuchi, Kazuhiko; Hirahara, Shuzo; Saito, Tutomu; Nagato, Hitoshi; and Iwamoto, Akito, 5,183,347, Cl. 400-583.300.
Hirako, Keiichi; and Kawaguchi, Yoshihisa, 5,184,139, Cl. 342-354.000.
Iida, Tadasato; Takahashi, Fusakichi; Wada, Kouji; and Nigo, Toshiro, 5,182,915, Cl. 62-89.000.
Ishii, Masaru, 5,184,342, Cl. 369-100.000.
Kobayashi, Tadahiko; and Sahashi, Masashi, 5,184,037, Cl. 310-26.000.
Nakagawa, Tatsuya, 5,183,984, Cl. 219-10.55M.
Nozuyama, Yasuyuki, 5,184,067, Cl. 324-158.00R.
Oike, Hiroshi; and Kawamoto, Akira, 5,182,916, Cl. 62-135.000.
Saito, Keiichi; Kawamura, Shigeharu; Sato, Syozo; and Kawasumi, Kiyohito, 5,184,008, Cl. 250-214.0VT.
Saitoh, Kouji; and Uchida, Kazuyuki, 5,184,162, Cl. 324-158.00R.
Taguchi, Minoru, 5,184,203, Cl. 257-370.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Aoki, Shinobu; Takagi, Haruo; and Okabe, Takanori, 5,184,201, Cl. 257-266.000.
Fujii, Toshiro; Ikeda, Hayato; Katoh, Ryo; and Inukai, Hitoshi, 5,183,394, Cl. 417-269.000.
Kachi, Kenjiro; and Noda, Kazuo, to Nippon Coulux Co., Ltd. Method and apparatus for recording and reproducing information on an optical medium. 5,184,340, Cl. 369-44.370.
Kadner, Martin: *See*—
Brandau, Egbert; Huschka, Hans; Kadner, Martin; and Schroder, Waldemar, 5,183,493, Cl. 75-335.000.
Kado, Syuji; Tatematsu, Susumu; and Ikari, Hideyuki, to Hoshizaki Denki Kabushiki Kaisha. Food service counter of the ice storage type. 5,182,917, Cl. 62-137.000.
Kadota, Michio; and Morozumi, Kazuhiko, to Murata Manufacturing Co., Ltd. Surface wave device. 5,184,042, Cl. 310-313.00A.
Kadowaki, Nobuo: *See*—
Nakamura, Masanori; Hirakouchi, Hiroshi; Yatsuka, Takeshi; Kadowaki, Nobuo; and Endoh, Hiroshi, 5,183,863, Cl. 525-438.000.
Kagawa, Rihito: *See*—
Nakajima, Shin; Aoyama, Hiroyuki; Kagawa, Rihito; and Shimoe, Osamu, 5,184,085, Cl. 328-65.000.
Kageyama, Fumio; Kanazawa, Hirotaka; Takahara, Shin; and Morita, Toshiki, to Mazda Motor Corporation. Suspension-traction total control system. 5,183,127, Cl. 180-197.000.
Kageyama, Yukihiko: *See*—
Kanaka, Keiichi; Hayashi, Noriyuki; Kobashi, Toshihiro; Kageyama, Yukihiko; and Hijikata, Kenji, 5,183,878, Cl. 528-193.000.
Kahishiki Kaisha Toshiba: *See*—
Shibata, Hideki, 5,184,205, Cl. 257-765.000.
Kai, Hiroyuki: *See*—
Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, 5,183,921, Cl. 558-301.000.
Kai, Yoshiyuki: *See*—
Ikeda, Yoshiharu; Kai, Yoshiyuki; and Ono, Keiichi, 5,183,660, Cl. 424-94.300.
Kaifu, Noriyuki: *See*—
Saika, Toshihiro; Kobayashi, Isao; Kaifu, Noriyuki; and Endo, Tadao, 5,184,007, Cl. 250-208.100.
Kajikawa, Saburou: *See*—
Yamaguchi, Seiji; Moro, Masaru; Kajikawa, Saburou; Kimura, Masahiro; Okubo, Hideo; Matsuyo, Tadashi; and Kawakami, Hiroshi, 5,182,833, Cl. 15-319.000.
Kajikawa, Tsuneo: *See*—
Nakamura, Michio; Okunosono, Toshihiko; and Kajikawa, Tsuneo, 5,183,130, Cl. 180-219.000.
Kakushima, Masatoshi: *See*—
Sawada, Yosuke; Kakushima, Masatoshi; Nishio, Maki; Miyaki, Takeo; and Oki, Toshikazu, 5,183,808, Cl. 514-33.000.
Kalman, Miklos: *See*—
Simoncsits, Andras; Kalman, Miklos; Kari, Csaba; and Cserpan, Imre, 5,183,748, Cl. 455-91.000.
Kaluza, Klaus; Frey, Bruno; and Jarsch, Michael, to Boehringer Mannheim GmbH. Type II restriction endonuclease Sap4800I. 5,183,747, Cl. 435-91.000.
Kamaya, Naoki: *See*—
Mitsui, Hidero; Kamaya, Naoki; Itoh, Hiroaki; and Sasaki, Yuu, 5,183,714, Cl. 429-123.000.
Kamen, Melvin E., to Revlon Consumer Products Corporation. Lipstick dispenser formed with lipstick formulation. 5,183,349, Cl. 401-88.000.
Kameyama, Fumio: *See*—
Maruo, Satoshi; Hattori, Chikamasa; and Kameyama, Fumio, 5,184,053, Cl. 318-571.000.
Kameyama, Shuichi; Shimomura, Hiroshi; and Kikuchi, Kazuya, to Matsushita Electric Industrial Co., Ltd. Method of fabricating semiconductor device by forming doped regions that limit width of the base. 5,183,768, Cl. 437-26.000.
Kamikawai, Ryotaro: *See*—
Masuda, Noboru; Kamikawai, Ryotaro; Yagyu, Masayoshi; Yamamoto, Masakazu; Itoh, Hiroyuki; and Saito, Tatsuya, 5,184,027, Cl. 307-269.000.
Kamishiro, Toshiro: *See*—
Masaki, Mitsuo; Takeda, Hiromitsu; Kamishiro, Toshiro; and Yamamoto, Masao, 5,183,811, Cl. 514-79.000.
Kamyr, Inc.: *See*—
Phillips, Joseph; Prough, J. Robert; Bilodeau, Victor L.; Greenwood, Brian; Bain, Ronald; and Weston, John, 5,183,536, Cl. 162-57.000.
Kanai, Yasushi; Takano, Hiroe; Saoshita, Shushi; and Nitta, Atsumi, to Alps Electric Co., Ltd. Metal-in-gap head with double metal layer. 5,184,266, Cl. 360-120.000.
Kanaka, Keiichi; Hayashi, Noriyuki; Kobashi, Toshihiro; Kageyama, Yukihiko; and Hijikata, Kenji, to Polyplastics Co., Ltd. Easily processable, wholly aromatic polyester. 5,183,878, Cl. 528-193.000.
Kanamori, Tatsuru: *See*—
Miyauchi, Yuji; Yoshii, Shinichi; and Kanamori, Tatsuru, 5,184,252, Cl. 359-715.000.
Kanatani, Genji: *See*—
Ariyama, Tatsuro; Isozaki, Shinichi; Yamada, Kenzo; Matsuo, Masahiro; and Kanatani, Genji, 5,183,495, Cl. 75-379.000.
Kanazawa, Hirotaka: *See*—
Kageyama, Fumio; Kanazawa, Hirotaka; Takahara, Shin; and Morita, Toshiki, 5,183,127, Cl. 180-197.000.
Kanda, Masahiro: *See*—
Yumoto, Toshiyuki; Ohsono, Kouhei; Kanda, Masahiro; and Matsuda, Takahiro, 5,183,439, Cl. 474-28.000.
Kanebo, Ltd.: *See*—
Ohmoto, Hiroshi; and Iwamoto, Seiichi, 5,183,755, Cl. 435-240.270.
Kaneda, Aizo: *See*—
Sakuta, Toshiyuki; Miyazawa, Kazuyuki; Oguchi, Satoshi; Kaneda, Aizo; Mitani, Masao; Nakamura, Shozo; Nishi, Kunihiko; and Murakami, Gen, 5,184,208, Cl. 257-666.000.
Kaneda, Takashi; and Villwock, Thomas, to MIPS Co., Ltd.; and Dataline Technologies GmbH. IC card adapter. 5,184,282, Cl. 361-395.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Masuhra, Shohei; Tonoki, Satoshi; Shibukawa, Toshiya; and Sugawara, Hirsohi, 5,183,695, Cl. 428-151.000.

Kaneko, Masahiro; Takemura, Masashi; and Yamashita, Kohei, to Victor Company of Japan, Ltd. Playback apparatus for playing back video information recorded on magnetic tape and providing smooth-frame still or slow motion video. 5,184,254, Cl. 360-10.200.
Kanemoto, Akihiko: *See*—
Iimura, Haruo; Takiguchi, Yasuyuki; and Kanemoto, Akihiko, 5,184,237, Cl. 359-63.000.
Kanki, Ichiro: *See*—
Takamura, Susumu; Nakamura, Takashi; Okawauchi, Makoto; Toda, Harumi; Kanki, Ichiro; Yoshida, Minoru; Imoto, Toshiyuki; Negayama, Naomi; and Oka, Koichi, 5,183,045, Cl. 128-653.200.
Kanner, Rowland W.: *See*—
Ranalletta, Joseph V.; Williams, Fred E., Jr.; and Kanner, Rowland W., 5,183,184, Cl. 222-189.000.
Kansky, John: *See*—
Beach, Kirk W.; Phillips, David J.; and Kansky, John, 5,183,046, Cl. 128-661.070.
Kao Corporation: *See*—
Hori, Kimihiko; Sakaguchi, Akira; Ishida, Koichi; Nomura, Tomoko; Suzuki, Keiko; and Tsuchiya, Shuichi, 5,183,824, Cl. 514-383.000.
Jisai, Yasuhiro; Tanaka, Yukiomi; and Shigeta, Akira, 5,183,601, Cl. 252-524.000.
Nishide, Tsutomu; Yasumura, Daisuke; Nakajima, Yoshinobu; Onodera, Akiko; Yasukawa, Takuji; Kokumai, Hirokazu; Umeda, Tomoshige; Nomura, Seiji; and Mori, Hideki, 5,183,750, Cl. 435-134.000.
Kao, Jack: *See*—
Lee, Larry; and Kao, Jack, 5,182,872, Cl. 40-152.000.
Kapmeyer, Wolfgang, to Behringwerke Aktiengesellschaft. Dispersion polymers, processes for their preparation and their use. 5,183,766, Cl. 436-533.000.
Kari, Csaba: *See*—
Simoncsits, Andras; Kalman, Miklos; Kari, Csaba; and Cserpan, Imre, 5,183,748, Cl. 455-91.000.
Karidis, John P.; Reiley, Timothy C.; and Schein, Lawrence B., to International Business Machines, Corporation. Apparatus for printing grey scale images. 5,184,183, Cl. 355-266.000.
Karinen, Pertti: *See*—
Lehtomaki, Ilkka; Karinen, Pertti; Bergelin, Risto; and Myllymaki, Olavi, 5,183,677, Cl. 426-436.000.
Karius, Klaus D.; Eskam, Armin; and Vogt, Karl-Heinz, to Rheinmetall GmbH. Submunition for a spin stabilized carrier projectile. 5,183,962, Cl. 102-489.000.
Karls, Dieter, to Filterwerk Mann & Hummel GmbH. Apparatus for drying bulk materials. 5,182,871, Cl. 34-54.000.
Kashihara, Osamu, to Polyplastics Co., Ltd. Impact resistant moldable polyacetal resin compositions and processes for making same. 5,183,860, Cl. 525-398.000.
Kasmer, Christopher A.: *See*—
Zakheim, Howard; Clinton, Peter M.; Goldschneider, James D.; Kasmer, Christopher A.; Zahn, Markus; and Hoffmeyer, Charles L., 5,183,214, Cl. 241-30.000.
Kaste, Keith: *See*—
Tury, Edward L.; Kaste, Keith; Johnson, Ross E.; and Danielson, David O., 5,184,017, Cl. 250-343.000.
Kasuga, Tomoyuki: *See*—
Ohta, Norio; Oda, Yukio; Naya, Toshiaki; and Kasuga, Tomoyuki, 5,183,026, Cl. 125-11.160.
Katagiri, Mamoru: *See*—
Yukihiro, Makoto; and Katagiri, Mamoru, 5,183,621, Cl. 264-297.200.
Katakura, Takahiro: *See*—
Yonekubo, Shuji; Kitahara, Tsuyoshi; Furuta, Tatsuo; Katakura, Takahiro; and Serizawa, Naomi, 5,184,155, Cl. 346-140.00R.
Katayama, Akira: *See*—
Iida, Yoshikazu; Kosaka, Toru; Tsuru, Hiroyuki; Higaki, Riichi; and Katayama, Akira, 5,184,167, Cl. 354-403.000.
Katayama, Masatake: *See*—
Ohta, Yutaka; Ohki, Konomu; and Katayama, Masatake, 5,183,783, Cl. 437-225.000.
Kato, Eiichi; and Ishii, Kazuc, to Fuji Photo Film Co., Ltd. Electrophotographic light-sensitive material. 5,183,720, Cl. 430-96.000.
Kato, Eiichi; and Ishii, Kazuo, to Fuji Photo Film Co., Ltd. Electrophotographic light-sensitive material. 5,183,721, Cl. 430-96.000.
Kato, Hiroyuki, to Brother Kogyo Kabushiki Kaisha. Printer having tractor unit attachable to one of upstream and downstream sides of platen. 5,183,348, Cl. 400-616.200.
Kato, Mitsuo: *See*—
Yoshizawa, Yasuo; and Kato, Mitsuo, 5,182,967, Cl. 74-834.000.
Kato, Seinosuke: *See*—
Miyamoto, Yoshiaki; Sasaki, Teruo; Fujisawa, Kazuhiro; and Kato, Seinosuke, 5,182,888, Cl. 52-167.0DF.
Kato, Takahiro: *See*—
Ono, Takeshi; Yoshida, Takehiro; Wada, Satoshi; Takeda, Tomoyuki; Kondo, Masaya; Kobayashi, Makoto; Kato, Takahiro; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Yamada, Masakatsu, 5,184,151, Cl. 346-76.0PH.
Kato, Tohru: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Kato, Tohru, 5,183,637, Cl. 420-479.000.
Katoh, Ryo: *See*—
Fujii, Toshiro; Ikeda, Hayato; Katoh, Ryo; and Inukai, Hitoshi, 5,183,394, Cl. 417-269.000.
Katsuyama, Harumi: *See*—
Arai, Fuminori; and Katsuyama, Harumi, 5,183,741, Cl. 435-14.000.
Kawagoe, Takahiro: *See*—
Toyosawa, Shinichi; Nakajima, Tadashi; Suzuki, Kinya; Kawagoe, Takahiro; Miyazaki, Tadaaki; Kitamura, Takashi; Fuse, Tadashi; Ogawa, Masao; Masuda, Yoshitomo; Daifuku, Hideharu; and Fujio, Ryota, 5,183,543, Cl. 204-242.000.
Kawaguchi, Yoshihisa: *See*—
Hirako, Keiichi; and Kawaguchi, Yoshihisa, 5,184,139, Cl. 342-354.000.
Kawaguichi, Kuniaki; Nakane, Toshio; Shimoda, Akihide; and Hijikata, Kenji, to Polyplastics Co., Ltd. Process for producing transparent and heat-resistant polyester containers. 5,183,623, Cl. 264-544.000.
Kawai, Michiki; and Miyazaki, Takeo, to Daiwa Seiko, Inc. Fishing reel. 5,183,221, Cl. 242-310.000.
Kawakami, Hiroshi: *See*—
Yamaguchi, Seiji; Moro, Masaru; Kajikawa, Saburou; Kimura, Masahiro; Okubo, Hideo; Matsuyo, Tadashi; and Kawakami, Hiroshi, 5,182,833, Cl. 15-319.000.
Kawakita, Koji: *See*—
Gejima, Seiji; Kawakita, Koji; Kimura, Suzushi; Okinaka, Hideyuki; and Hakotani, Yasuhiko, 5,183,786, Cl. 501-134.000.
Kawakita, Tadashi, to Ikeda Bussan Co., Ltd. Seat reclining mechanism. 5,183,447, Cl. 475-341.000.
Kawaminami, Shigeya: *See*—
Shimada, Toshio; Kobayashi, Morio; Tada, Takemi; and Kawaminami, Shigeya, 5,184,269, Cl. 361-24.000.
Kawamoto, Akira: *See*—
Oike, Hiroshi; and Kawamoto, Akira, 5,182,916, Cl. 62-135.000.
Kawamura, Norio, to Colin Electronics Co., Ltd. Pulse wave sensor. 5,183,050, Cl. 128-687.000.
Kawamura, Shigeharu: *See*—
Saito, Keiichi; Kawamura, Shigeharu; Sato, Syozo; and Kawasumi, Kiyohito, 5,184,008, Cl. 250-214.0VT.
Kawamura, Susumu: *See*—
Lang, John S.; Trussell, R. Rhodes; and Kawamura, Susumu, 5,183,335, Cl. 366-174.000.
Kawamura, Yoshio; Tanaka, Shinji; Sato, Kazuo; Uchida, Kenko; and Kohida, Hiroyuki, to Hitachi, Ltd. Cell handling method for cell fusion processor. 5,183,744, Cl. 435-30.000.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Matsui, Masahiro; and Hashimoto, Yasuhiko, 5,184,038, Cl. 310-42.000.
Kawashima, Yoichi: *See*—
Morita, Takakazu; Mita, Shiro; and Kawashima, Yoichi, 5,183,816, Cl. 514-224.200.
Kawashita, Hideo; Ohta, Mituhiro; and Ogino, Kazuya, to Sumitomo Chemical Company, Limited; and Taoka Chemical Co. Ltd. Ink compositions for ink jet recording. 5,183,501, Cl. 106-22.00D.
Kawasumi, Kiyohito: *See*—
Saito, Keiichi; Kawamura, Shigeharu; Sato, Syozo; and Kawasumi, Kiyohito, 5,184,008, Cl. 250-214.0VT.
Keay, James G.: *See*—
McQuigg, Donald W.; Sowers, Edward E.; Goe, Gerald L.; Scriven, Eric F. V.; and Keay, James G., 5,183,895, Cl. 546-304.000.
Kee Equipment & Engineering, Inc.: *See*—
Kee, Howard L., 5,183,679, Cl. 426-479.000.
Kee, Howard L., to Kee Equipment & Engineering, Inc. Method for processing frozen food using super high pressure water jets. 5,183,679, Cl. 426-479.000.
Keene Corporation: *See*—
Fabbri, William, 5,183,327, Cl. 362-219.000.
Kees, Kenneth L., to American Home Products Corporation. 4-arylmethyl-5-alkyl-3H-pyrazol-3-ones and hypoglycemic use. 5,183,825, Cl. 514-404.000.
Keiper, Raymond. Flow control valve. 5,183,077, Cl. 137-625.470.
Keisuke, Funaki: *See*—
Yamasaki, Komei; and Keisuke, Funaki, 5,183,871, Cl. 526-347.200.
Kellenbach, Arthur. Weighing system and force transmission. 5,183,126, Cl. 177-211.000.
Kelley, Philip M.: *See*—
Markwell, John P.; Versaw, Wayne K.; Osterman, John C.; and Kelley, Philip M., 5,183,752, Cl. 435-196.000.
Kellogg, James R.: *See*—
McCurry, Patrick W.; Kellogg, James R.; Boekelheide, Karl; Sexton, Kenneth D.; Ellison, George A.; and Hocker, Robert A., 5,184,025, Cl. 307-66.000.
Kelly, Edward J.; and Howard, Joseph P. Mobile data processing and communcations system with removable portable computer. 5,184,314, Cl. 364-709.010.
Kelly, John A.: *See*—
Hwa, Chih M.; Kelly, John A.; Tai, Wun T.; Fan, Lai-Duien G.; Kreh, Robert P.; and Greaves, Brian, 5,183,574, Cl. 210-701.000.
Kelly, Wayne T.; and Levy, Steven L. Mimetic thermostat. 5,183,204, Cl. 236-94.000.
Kempf, Manfred; and Schlecht, Karl, to Putzmeister-Werk Maschinenfabrik GmbH. Method and device for distributing pumpable thick matter into several delivery pipes. 5,183,356, Cl. 405-146.000.
Kennedy, Warren C.: *See*—
Calabrese, Salvadore J.; Scarton, Henry A.; Murray, S. Frank; Ettles, Christopher M.; Kennedy, Warren C.; Dinc, Saim; Jlidi, Bessem; and Strong, William, 5,183,955, Cl. 84-437.000.
Kenney, Malcolm E.: *See*—
Yeh, Li-Tain; Kenney, Malcolm E.; Bokerman, Gary N.; Cannady, John P.; and Marko, Ollie W., 5,183,914, Cl. 556-467.000.

VOL
1147
ISS
1
FE
2
1993
UMI

Kennington, Alison S.; and Larner, Joseph, to University of Virginia Alumni Patents Foundation. Quantitative analysis for diabetic condition predictor involving chiro-inositol. 5,183,764, Cl. 436-131.000.
Kent Adhesive Products, Inc.: *See*—
Barnette, Charles J., 5,183,295, Cl. 281-29.000.
Kenyon, Ronald W.; Newton, David F.; and Thorp, Derek, to Imperial Chemical Industries PLC. Polycyclic dyes. 5,183,888, Cl. 544-153.000.
Kerry, Stephen; Restall, James E., deceased (by Restall, Janet E., executrix); and Wood, Michael L, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of tbe. Heat treatable Ti-Al-Nb-Si alloy for gas turbine engine. 5,183,635, Cl. 420-420.000.
Kershaw, John K.; and McCray, Philip C., to Knox Kershaw, Inc. High-capacity ballast reconditioning apparatus. 5,183,118, Cl. 171-16.000.
Kesler, Scott B.; and Gose, Mark W., to Delco Electronics Corporation. Method of limiting output current from an interface drive circuit. 5,184,036, Cl. 307-540.000.
Keville, Kathleen M.: *See*—
Degnan, Thomas F., Jr.; Keville, Kathleen M.; Landis, Michael E.; Marler, David O.; and Mazzone, Dominick N., 5,183,557, Cl. 208-111.000.
Kresge, Charles T.; Leonowicz, Michael E.; Roth, Wieslaw J.; Vartuli, James C.; Keville, Kathleen M.; Shih, Stuart S.; Degnan, Thomas F.; Dwyer, Francis G.; and Landis, Michael E., 5,183,561, Cl. 208-251.00R.
Khalil, Carlos N.; Romeu, Regis K.; and Rabinovitz, Andre , to Petroleo Brasileiro S.A. Process for the dewaxing of producing formations. 5,183,581, Cl. 252-8.552.
Khanpara, Jatin C.: *See*—
Bohrn, Walter J.; Diffenbaugh, Kimberly S.; Garman, Shelly N.; and Khanpara, Jatin C., 5,183,704, Cl. 428-305.500.
Kheir, Elie B. Tennis racket. 5,183,260, Cl. 273-73.00J.
Kich, Rolf; and Tatomir, Paul J., to Hughes Aircraft Company. Switchable dual mode directional filter system. 5,184,098, Cl. 333-208.000.
Kida, Yasuhiko, to Mita Industrial Co., Ltd. Motor control for an automatic document conveying apparatus. 5,184,186, Cl. 355-321.000.
Kikuchi, Hiroshi; Nakajima, Shigeki; Ono, Hisao; and Momiyama, Yoshiharu, to OKI Electric Industry Co., Ltd. Electrophotographic printing apparatus. 5,184,177, Cl. 355-200.000.
Kikuchi, Kazuya: *See*—
Kameyama, Shuichi; Shimomura, Hiroshi; and Kikuchi, Kazuya, 5,183,768, Cl. 437-26.000.
Kikuchi, Zenta: *See*—
Miyashita, Takashi; Miyazawa, Yoshinaga; and Kikuchi, Zenta, 5,184,236, Cl. 359-63.000.
Kim, Cheong W., to Goldstar Electron Co., Ltd. Transconductance amplifier using parasitic bipolar transistors to embody a constant voltage source. 5,184,087, Cl. 330-253.000.
Kimura, Hitoshi: *See*—
Kishi, Hiroyuki; Kimura, Hitoshi; Yamamoto, Katsuya; Tamura, Yoshinobu; Sakauchi, Tsuneo; Nagaoka, ;Masahide; and Tsuchiya, Yasuyu, 5,183,836, Cl. 523-404.000.
Kimura, Masahiro: *See*—
Yamaguchi, Seiji; Moro, Masaru; Kajikawa, Saburou; Kimura, Masahiro; Okubo, Hideo; Matsuyo, Tadashi; and Kawakami, Hiroshi, 5,182,833, Cl. 15-319.000.
Kimura, Suzushi: *See*—
Gejima, Seiji; Kawakita, Koji; Kimura, Suzushi; Okinaka, Hideyuki; and Hakotani, Yasuhiko, 5,183,786, Cl. 501-134.000.
Kimura, Takafumi, to Fujitsu Limited. Apparatus and process for cbemical vapor deposition. 5,183,510, Cl. 118-719.000.
Kindt, Thomas J.; Kulaga, Henrietta; and Folks, Thomas M., to United States of America, Health and Human Services. Rabbit model for diagnosing and testing vaccines or therapeutic agents against AIDS. 5,183,949, Cl. 800-2.000.
King, Gregory: *See*—
Tarr, Leonard; King, Gregory; and Johansen, Brian, 5,184,179, Cl. 355-206.000.
King, Philip N., to Hewlett-Packard Company. Driver circuit for circuit tester. 5,184,029, Cl. 307-270.000.
Kinghorn, John R.; and Stevens, Jeremy R., to U.S. Philips Corp. Teletext decoder apparatus including feature of inhibiting generation of an end-of-page signal. 5,184,220, Cl. 358-147.000.
Kington, Harry L.: *See*—
Alten, Charles J.; Cuccio, John S., Jr.; Kington, Harry L.; and Fontana, James D., 5,183,270, Cl. 277-81.00R.
Kinoshita, Koichi: *See*—
Maeda, Kazuo; and Kinoshita, Koichi, 5,183,136, Cl. 188-73.440.
Kirigaya, Tadayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Protecting apparatus of displaying portion of photographing data in camera. 5,184,173, Cl. 354-471.000.
Kirker, Garry W.; Degnan, Thomas F., Jr.; Huss, Albin, Jr.; and Landis, Michael E., to Mobil Oil Corp. Rare earth exchanged layered silicate catalysts. 5,183,559, Cl. 208-119.000.
Kishi, Fumio: *See*—
Hayashi, Keisuke; Ishigaki, Kouji; Nakahara, Kazuyuki; Yanagida, Masato; and Kishi, Fumio, 5,184,184, Cl. 355-296.000.
Kishi, Hiroyuki; Kimura, Hitoshi; Yamamoto, Katsuya; Tamura, Yoshinobu; Sakauchi, Tsuneo; Nagaoka, ;Masahide; and Tsuchiya, Yasuyu, to Nissan Motor Co., Ltd.; and Nippon Paint Co., Ltd. Composite paint. 5,183,836, Cl. 523-404.000.
Kisi, Hirosi: *See*—
Shizuno, Hisamitsu; Kisi, Hirosi; Saito, Hirosi; and Fujii, Makoto, 5,184,277, Cl. 361-321.000.
Kitagawa, Sadao; and Baba, Mitushige, to Mitsubishi Petrochemical Company Limited. Thermoplastic elastomer and a process for its production. 5,183,856, Cl. 525-282.000.
Kitahara, Tsuyoshi: *See*—
Yonekubo, Shuji; Kitahara, Tsuyoshi; Furuta, Tatsuo; Katakura, Takahiro; and Serizawa, Naomi, 5,184,155, Cl. 346-140.00R.
Kitajima, Eiji; Oyama, Takashi; Maruden, Eiji; Teraoka, Hirokazu; Yamasaki, Haruki; and Shimizu, Susumu, to Koa Oil Company Limited; and Tanaka Kikinzoku Kogyo Kabushiki Kaisha. Process for producing a coil-shaped carbon fiber bundle. 5,183,603, Cl. 264-29.200.
Kitajima, Shinichi: *See*—
Suga, Toshiyuki; Kitajima, Shinichi; and Kobayashi, Yoshihiko, 5,183,021, Cl. 123-478.000.
Kitamura, Mitsuru: *See*—
Toriu, Mamoru; and Kitamura, Mitsuru, 5,183,041, Cl. 128-421.000.
Kitamura, Takashi: *See*—
Toyosawa, Shinichi; Nakajima, Tadashi; Suzuki, Kinya; Kawagoe, Takahiro; Miyazaki, Tadaaki; Kitamura, Takashi; Fuse, Tadashi; Ogawa, Masao; Masuda, Yoshitomo; Daifuku, Hideharu; and Fujio, Ryota, 5,183,543, Cl. 204-242.000.
Kitano, Kisei; Ushioda, Makoto; Uchida, Manabu; and Suzuki, Toshiharu, to Chisso Corporation. Liquid crystalline compound. 5,183,587, Cl. 252-299.630.
Kitano, Motoi: *See*—
Yoshinaka, Minoru; Asakura, Eizo; Oku, Mitsumasa; Kitano, Motoi; Nakatani, Yoshio; Yoshida, Hideyuki; Hatta, Toshiya; and Nakatani, Seiichi, 5,183,594, Cl. 252-518.000.
Kiuchi, Hiroyuki, to Sankyo Seiki Mfg. Co., Ltd. Motor brake control circuit for reducing motor stopping time. 5,184,049, Cl. 318-362.000.
Kiuchi, Manabu; and Arai, Masao, to Akebono Brake Industry Co., Ltd.; and Akebono Research and Development Centre Ltd. Method of manufacturing an aluminum-base composite disc rotor. 5,183,632, Cl. 419-48.000.
Kiyohara, Keiki: *See*—
Fukuoka, Kazuhiro; Kiyohara, Keiki; Konishi, Tadayuki; Miyatake, Isao; and Hamamoto, Masaji, 5,183,500, Cl. 106-1.220.
Kiyomiya, Teruo: *See*—
Yasumura, Takaaki; Kiyomiya, Teruo; Mizuno, Yasutoshi; and Matsui, Kazuo, 5,183,517, Cl. 148-303.000.
Klamecki, Barney: *See*—
Erdman, Arthur G.; Rekow, Elizabeth D.; Riley, Donald R.; Klamecki, Barney; Zhu, Yang; and Ahn, Jeong-Ho, 5,184,306, Cl. 364-474.050.
Kleinschmidt, Ernst: *See*—
Wanninger, Paul; Wild, Richard; Kleinschmidt, Ernst; and Spath, Helmut, 5,183,520, Cl. 149-19.910.
Kline, John F.; Pensavecchia, Frank G.; LaPonsey, Stephen M.; and Williams, Richard A., to Presstek, Inc. Method of reducing printing artifacts. 5,182,990, Cl. 101-211.000.
Klug, Mark W.: *See*—
Twigg, Ray G.; Klug, Mark W.; Marrone, Santino; and Hawkes, Malcolm V., 5,184,068, Cl. 324-158.00F.
Kluth, Joachim: *See*—
Muller, Klaus-Helmut; Kluth, Joachim; Konig, Klaus; Gassen, Karl-Rudolf; Findeisen, Kurt; Lindig, Markus; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,183,932, Cl. 560-330.000.
Knez Building Materials Company: *See*—
Knez, John S., Jr., 5,183,213, Cl. 241-24.000.
Knez, John S., Jr., to Knez Building Materials Company. Method for recycling wallboard. 5,183,213, Cl. 241-24.000.
Kniffen, Todd E.: *See*—
Alvarez, Robert J.; Bredesen, Scott E.; Wilson, James J.; Flim, Duane D.; Kniffen, Todd E.; and Schahrer, Clinton O., 5,182,925, Cl. 62-347.000.
Knifton, John F.; and Sanderson, John R., to Texaco Chemical Company. One step synthesis of methyl t-butyl ether from t-butanol using fluorophosphoric acid-modified clay catalysts. 5,183,947, Cl. 568-698.000.
Knight, Stepben D., to Trico Products Corporation. Windscreen wiper blade arrangement with orientation indicating means. 5,182,831, Cl. 15-250.420.
Knobel, Vladimir A.: *See*—
Cox, Jerry D.; Linz, Raymond E.; Thome, Jeanne M.; Perry, Winfield B.; Hadley, Franklin O., Jr.; and Knobel, Vladimir A., 5,182,881, Cl. 51-7.000.
Knoll, Peter: *See*—
Bremer, Wolfgang; Knoll, Peter; and Heintz, Frieder, 5,184,123, Cl. 340-995.000.
Knop, David G., to Dwyer Instruments, Inc. Flow switch assembly for fluid flow monitoring. 5,183,983, Cl. 200-81.90M.
Knowles, Steven M.: *See*—
Allread, Alan R.; Chichester, Dennis B.; Rogers, Russell L.; and Knowles, Steven M., 5,182,922, Cl. 62-239.000.
Knox Kershaw, Inc.: *See*—
Kershaw, John K.; and McCray, Philip C., 5,183,118, Cl. 171-16.000.
Knuuttila, Hilkka; and Lakomaa, Eeva-Liisa, to Neste Oy. Method for preparing a catalyst for polymerization of olefins. 5,183,794, Cl. 502-242.000.
Knuuttila, Pekka; and Lakomaa, Eeva-Liisa, to Neste Oy. Catalyst for metathetic reactions of hydrocarbons and method for forming the catalyst. 5,183,796, Cl. 502-340.000.

Koa Oil Company Limited: *See*—
Kitajima, Eiji; Oyama, Takashi; Maruden, Eiji; Teraoka, Hirokazu; Yamasaki, Haruki; and Shimizu, Susumu, 5,183,603, Cl. 264-29.200.
Kobashi, Toshihiro: *See*—
Kanaka, Keiichi; Hayashi, Noriyuki; Kobashi, Toshihiro; Kageyama, Yukihiko; and Hijikata, Kenji, 5,183,878, Cl. 528-193.000.
Kobayashi, Akio, to Sanyo Electric Co., Ltd. Image sensing apparatus having camera-shake detection function. 5,184,216, Cl. 358-105.000.
Kobayashi, Isao: *See*—
Saika, Toshihiro; Kobayashi, Isao; Kaifu, Noriyuki; and Endo, Tadao, 5,184,007, Cl. 250-208.100.
Kobayashi, Makoto: *See*—
Ono, Takeshi; Yoshida, Takehiro; Wada, Satoshi; Takeda, Tomoyuki; Kondo, Masaya; Kobayashi, Makoto; Kato, Takahiro; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Yamada, Masakatsu, 5,184,151, Cl. 346-76.0PH.
Kobayashi, Morio: *See*—
Shimada, Toshio; Kobayashi, Morio; Tada, Takemi; and Kawaminami, Shigeya, 5,184,269, Cl. 361-24.000.
Kobayashi, Tadahiko; and Sahashi, Masashi, to Kabushiki Kaisha Toshiba. Magnetostriction type actuator. 5,184,037, Cl. 310-26.000.
Kobayashi, Toshiharu; and Unno, Keisuke, to Sony Corporation. Recording circuit for mirror mother tape. 5,184,228, Cl. 358-310.000.
Kobayashi, Yasushi; and Kogure, Seiji, to Fujitsu Limited. Method for encapsulting IC chip. 5,182,853, Cl. 29-841.000.
Kobayashi, Yoshihiko: *See*—
Suga, Toshiyuki; Kitajima, Shinichi; and Kobayashi, Yoshihiko, 5,183,021, Cl. 123-478.000.
Koch, Helmut; and Roper, Harald W. W., to Cerestar Holding B.V. Therapeutic immunostimulation by *Glombrella cingulata*. 5,183,667, Cl. 424-474.000.
Kocher, Thomas E.: *See*—
Boutet, John C.; and Kocher, Thomas E., 5,184,013, Cl. 250-236.000.
Koda, Takao: *See*—
Shiina, Michihiro; Tanaka, Yasuhiko; Iwai, Fumio; Noguchi, Yukio; Umetsu, Takao; Saito, Tatsuo; Onozuka, Haruo; Saitoh, Muneyoshi; and Koda, Takao, 5,184,166, Cl. 354-400.000.
Kodai, Shojiro; Ochi, Katsunori; and Baba, Fumiaki, to Mitsubishi Denki Kabushiki Kaisha. IC card and manufacturing method therefor. 5,184,209, Cl. 257-679.000.
Koestner, Ken: *See*—
Nappholz, Tibor A.; Koestner, Ken; and Valenta, Harry L., Jr., 5,183,040, Cl. 128-419.0PG.
Koga, Yoshiro; Gomi, Akihiro; Miyasaka, Takashi; Miyazawa, Yasunaga; Endo, Kenichi; Shinozaki, Junichiro; Yoda, Kaneo; Ichikawa, Takashi; Miyasaka, Hitoshi; and Kaburagi, Chiharu, to Seiko Epson Corporation. Head positioning control for a spindle motor disk drive. 5,184,257, Cl. 360-77.050.
Koga, Yoshitaka; and Sugiura, Sadao, to Aisin Seiki Kabushiki Kaisha. Footrest apparatus. 5,183,308, Cl. 296-75.000.
Kogure, Makoto; Sase, Akira; and Fukunaga, Masao, to Hitachi, Ltd. Field sensor communication method and system. 5,184,121, Cl. 340-870.110.
Kogure, Seiji: *See*—
Kobayashi, Yasushi; and Kogure, Seiji, 5,182,853, Cl. 29-841.000.
Kohida, Hiroyuki: *See*—
Kawamura, Yoshio; Tanaka, Shinji; Sato, Kazuo; Uchida, Kenko; and Kohida, Hiroyuki, 5,183,744, Cl. 435-30.000.
Kohler, Michael. Baseball board game. 5,183,266, Cl. 273-88.000.
Kohler, Raymond H., to Moore Products Co. Low power oscillator circuits. 5,184,094, Cl. 331-158.000.
Kohmura, Yukio: *See*—
Mikami, Toshihiro; Kohmura, Yukio; Ishida, Yoshinori; and Nogami, Akira, 5,183,490, Cl. 65-144.000.
Kohno, Mitunori: *See*—
Kurimoto, Yukuo; Fujii, Nobuhiko; Kohno, Mitunori; and Umebara, Takao, 5,183,135, Cl. 186-61.000.
Koiwa, Mitsuru: *See*—
Morita, Shingo; and Koiwa, Mitsuru, 5,183,024, Cl. 123-598.000.
Kokumai, Hirokazu: *See*—
Nishide, Tsutomu; Yasumura, Daisuke; Nakajima, Yoshinobu; Onodera, Akiko; Yasukawa, Takuji; Kokumai, Hirokazu; Umeda, Tomoshige; Nomura, Seiji; and Mori, Hideki, 5,183,750, Cl. 435-134.000.
Komata, Hiroshi: *See*—
Kurando, Shigeo; Makiura, Yoshinori; Shigemura, Yutaka; Ooura, Junichi; Mifune, Eiji; Imafuku, Tatsuo; Komata, Hiroshi; and Ido, Mikio, 5,184,181, Cl. 355-260.000.
Komatsu, Kazunori; and Tomaru, Mikio, to Fuji Photo Film Co., Ltd. Method for manufacturing magnetic recording media. 5,183,686, Cl. 427-549.000.
Komatsu, Kazuyoshi: *See*—
Takemura, Yasuo; Narimatsu, Osamu; and Komatsu, Kazuyoshi, 5,183,699, Cl. 428-214.000.
Komatsu, Kouichirou: *See*—
Nakagawa, Masahiro; Mizutani, Hideo; Komatsu, Kouichirou; and Nojima, Yawara, 5,184,196, Cl. 356-401.000.
Komatsu, Takahiro: *See*—
Konishi, Yasuhiro; Kumanoya, Masaki; Dosaka, Katsumi; Komatsu, Takahiro; and Inoue, Yoshinori, 5,184,321, Cl. 365-51.000.
Kometani, Norio: *See*—
Nakamatsu, Toshio; Terao, Masanobu; Muneishi, Shigetoshi; Kometani, Norio; and Hayashi, Yoshiaki, 5,183,892, Cl. 546-76.000.
Kominato, Kaichiro: *See*—
Tanaka, Hiroshi; Kominato, Kaichiro; Yoshioka, Takeo; Iguchi, Hiroshi; Hirano, Shin-ichi; Okajima, Yasuo; Yamamoto, Reijko; Shirai, Masataka; Nishida, Hiroshi; Tone, Hiroshi; and Okamoto, Rokuro, 5,183,883, Cl. 563-6.400.
Komiya, Shigeo: *See*—
Masuhara, Eiichi; and Komiya, Shigeo, 5,183,403, Cl. 433-9.000.
Komori Corporation: *See*—
Sugiyama, Hiroyuki; Miyamoto, Toshio; and Maejima, Kazuhiro, 5,182,994, Cl. 101-415.100.
Kondo, Fumio, to Tokyo Automatic Machinery Works, Ltd. Screw feeder. 5,183,148, Cl. 198-674.000.
Kondo, Isao; and Taki, Yosio, to Seiko Epson Corporation. Parts assembling device. 5,182,850, Cl. 29-784.000.
Kondo, Katsuhiko: *See*—
Ishida, Yasuhiko; and Kondo, Katsuhiko, 5,184,302, Cl. 364-431.110.
Kondo, Katsumi, to Mitsubishi Denki Kabushiki Kaisha. Electromagnetic induction apparatus with a sound suppressing arrangement. 5,184,104, Cl. 336-100.000.
Kondo, Kazuhiko: *See*—
Sakata, Shinji; Miyashita, Takanori; Kondo, Kazuhiko; Sakai, Atsushi; Shibata, Toshiyuki; and Ogawa, Takayuki, 5,183,882, Cl. 514-49.000.
Kondo, Masaya: *See*—
Ono, Takeshi; Yoshida, Takehiro; Wada, Satoshi; Takeda, Tomoyuki; Kondo, Masaya; Kobayashi, Makoto; Kato, Takahiro; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Yamada, Masakatsu, 5,184,151, Cl. 346-76.0PH.
Konetzka, Joerg: *See*—
Gorlich, Karl J.; Bauer, Fritz U.; and Konetzka, Joerg, 5,183,834, Cl. 523-105.000.
Konica Corporation: *See*—
Haneda, Satoshi; Morita, Shizuo; Fukuchi, Masakazu; and Matsuo, Shunji, 5,184,187, Cl. 355-326.000.
Tanaka, Kazuyoshi; Isobe, Toshifumi; Itaya, Masahiko; and Naganuma, Akiko, 5,184,146, Cl. 346-1.100.
Yagi, Toshihiko, 5,183,730, Cl. 430-503.000.
Konig, Klaus: *See*—
Muller, Klaus-Helmut; Kluth, Joachim; Konig, Klaus; Gassen, Karl-Rudolf; Findeisen, Kurt; Lindig, Markus; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,183,932, Cl. 560-330.000.
Konishi, Sakuichi: *See*—
Kuwajima, Teruaki; Umeda, Shinichiro; and Konishi, Sakuichi, 5,183,504, Cl. 106-404.000.
Konishi, Tadayuki: *See*—
Fukuoka, Kazuhiro; Kiyohara, Keiki; Konishi, Tadayuki; Miyatake, Isao; and Hamamoto, Masaji, 5,183,500, Cl. 106-1.220.
Konishi, Yasuhiro; Kumanoya, Masaki; Dosaka, Katsumi; Komatsu, Takahiro; and Inoue, Yoshinori, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device comprising a plurality of memory arrays with improved peripheral circuit location and interconnection arrangement. 5,184,321, Cl. 365-51.000.
Kontes Glass Company: *See*—
Poltorak, Jeffrey P.; and Swift, Omar A., 5,183,336, Cl. 366-273.000.
Kontron Instruments Holdings NV: *See*—
Burckhardt, Christoph B., 5,183,047, Cl. 128-661.090.
Kopp, Richard; Grogler, Gerhard; and Hess, Heinrich, to Bayer Aktiengesellschaft. Urea group-containing polyisocyanates modified with long chain compounds and a process for their preparation. 5,183,876, Cl. 528-59.000.
Korea Green Cross Corporation: *See*—
Lee, Ho W.; Riu, Sun J.; and An, Chang N., 5,183,658, Cl. 424-89.000.
Korpman, Ralph A.: *See*—
Bull, Brian S.; and Korpman, Ralph A., 5,184,188, Cl. 356-39.000.
Korsatko-Wabnegg, Brigitta; and Korsatko, Werner, to PCD Polymere Gesellschaft m.b.H. Pressing not delayed release of active compound, process for its production and use of polyhydroxybutyric acid for the production of such a pressing. 5,183,666, Cl. 424-464.000.
Korsatko, Werner: *See*—
Korsatko-Wabnegg, Brigitta; and Korsatko, Werner, 5,183,666, Cl. 424-464.000.
Korte, Thomas J.: *See*—
Elsasser, A. Frederick; and Korte, Thomas J., 5,183,908, Cl. 549-322.000.
Kosaka, Toru: *See*—
Iida, Yoshikazu; Kosaka, Toru; Tsuru, Hiroyuki; Higaki, Riichi; and Katayama, Akira, 5,184,167, Cl. 354-403.000.
Kosaku & Co., Ltd.: *See*—
Fukuoka, Kazuhiro; Kiyohara, Keiki; Konishi, Tadayuki; Miyatake, Isao; and Hamamoto, Masaji, 5,183,500, Cl. 106-1.220.
Kose, Junichi; Sugiyama, Akira; Yamada, Minoru; and Nozaki, Ryoei, to Fuji Pboto Film Co., Ltd. Photosensitive material processor. 5,184,164, Cl. 354-298.000.
Koseki, Masaaki: *See*—
Kurosawa, Makoto; Koseki, Masaaki; Takahashi, Tetsuroh; and Terakado, Takeshi, 5,183,454, Cl. 493-459.000.

VOL 1147 ISS 1 FE 2 1993 UMI

Koshida, Hitoshi: *See*—
Ohyama, Tsukasa; Shimokawa, Yasushi; Ghoda, Isamu; Takuma, Keisuke; and Koshida, Hitoshi, 5,183,474, Cl. 8-471.000.

Kotzian, Michael: *See*—
Schimmel, Gunther; Kotzian, Michael; and Gradl, Reinhard, 5,183,651, Cl. 423-334.000.

Koudelka, Vladimir, to Permon, statni podnik pan. Submersible pneumatic drilling unit. 5,183,121, Cl. 173-206.000.

Koupal, Lawrence: *See*—
Bills, Gerald F.; Hensens, Otto D.; Koupal, Lawrence; Lingham, Russell B.; Ondeyka, John G.; and Zink, Deborah L., 5,183,826, Cl. 514-411.000.

Kowa Company Limited: *See*—
Ichihashi, Tadashi; and Akiyama, Koichi, 5,184,157, Cl. 351-208.000.

Kowarik, Oskar: *See*—
Hoffmann, Kurt; Kraus, Rainer; and Kowarik, Oskar, 5,184,326, Cl. 365-201.000.

Koyama, Toshiya; Matsumoto, Yukio; Yoshimoto, Hataaki; and Ito, Katsuhiro, to Ube Industries, Ltd. Liquid crystal emulsion composition. 5,183,585, Cl. 252-299.010.

Koyama, Yasufumi: *See*—
Kuwabara, Akira; and Koyama, Yasufumi, 5,184,313, Cl. 364-561.000.

Kozaki, Takahiko; Asano, Kenichi; Ogino, Mineo; Amada, Eiichi; Endo, Noboru; and Sakurai, Yoshito, to Hitachi, Ltd.; Hitachi VLSI Engineering Corporation; and Link Laboratory Inc. Switching system. 5,184,346, Cl. 370-60.000.

Kraeutler, Bernard, to Nergeco (societe anonyme). Removable sealing device for a raisable-curtain industrial door. 5,183,093, Cl. 160-84.100.

Kraft, Longin, to Siemens Aktiengesellschaft. Motor/gear-train drive unit, particularly motor-vehicle power-window drive. 5,184,039, Cl. 310-89.000.

Kraidin, Jonathan; and Gratz, Irwin. Means and apparatus for continuously determining cardiac output in a subject. 5,183,051, Cl. 128-687.000.

Kramer, Andreas; Brunner, Rudolf; and Zahir, Abdul-Cader, to Ciba-Geigy Corporation. Hardenable compositions. 5,183,869, Cl. 526-262.000.

Kramer, Charles J., to Holotek Ltd. Adjustable fixed mount for a hologon deflector. 5,183,350, Cl. 403-4.000.

Kramer, James F. Force feedback and textures simulating interface device. 5,184,319, Cl. 364-806.000.

Kraus, Joseph S.; Lanzerotti, Louis J.; and Medford, Lester V., to AT&T Bell Laboratories. Method of operating an installation that comprises one or more long electrical conductors. 5,184,311, Cl. 364-554.010.

Kraus, Matthias H.; and Aaronson, Stuart A., to United States of America, America. DNA segment encoding a gene for a receptor related to the epidermal growth factor receptor. 5,183,884, Cl. 536-23.500.

Kraus, Rainer: *See*—
Hoffmann, Kurt; Kraus, Rainer; and Kowarik, Oskar, 5,184,326, Cl. 365-201.000.

Kreh, Robert P.; and Henry, Wayne L., to W. R. Grace & Co.-Conn. Multipurpose scale preventer/remover. 5,183,573, Cl. 210-697.000.

Kreh, Robert P.: *See*—
Carter, Charles G.; Jovancicevic, Vladimir; Hartman, Judith A.; and Kreh, Robert P., 5,183,590, Cl. 252-392.000.
Hwa, Chib M.; Kelly, John A.; Tai, Wun T.; Fan, Lai-Duien G.; Kreh, Robert P.; and Greaves, Brian, 5,183,574, Cl. 210-701.000.

Kremer, Lawrence N.: *See*—
Roof, Glenn L.; and Kremer, Lawrence N., 5,183,560, Cl. 208-236.000.

Kresge, Charles T.; Leonowicz, Michael E.; Roth, Wieslaw J.; Vartuli, James C.; Keville, Kathleen M.; Shih, Stuart S.; Degnan, Thomas F.; Dwyer, Francis G.; and Landis, Michael E., to Mobil Oil Corp. Demetallation of hydrocarbon feedstocks with a synthetic mesoporous crystalline material. 5,183,561, Cl. 208-251.00R.

Krin, Evelyne: *See*—
Danchin, Antoine; Glaser, Philippe; Krin, Evelyne; Barzu, Octavien; Ladant, Daniel; and Ullmann, Agnes, 5,183,745, Cl. 435-69.100.

Krishnan, Krishnaswamy, to Bio-Rad Laboratories, Inc. Sample table for multi-mode spectrum analysis. 5,184,191, Cl. 356-244.000.

Krone, John J.: *See*—
Devier, Lonnie J.; Krone, John J.; Lunzman, Stephen V.; and Marsden, Howard A., 5,182,908, Cl. 60-420.000.

Kryder, Mark H.; and Shieh, Han-Ping D., to Movid Information Technology, Inc. Method and system for erasing previously recorded domains in a magneto-optic recording medium. 5,184,335, Cl. 369-13.000.

Krysik, Joseph: *See*—
Reiterman, Lee; Martin, Dale D.; and Krysik, Joseph, 5,183,363, Cl. 408-59.000.

Kubota, Yasuhiko: *See*—
Mima, Hiroshi; Suzuki, Tadashi; and Kubota, Yasuhiko, 5,182,902, Cl. 57-279.000.

Kubota, Yuzuru: *See*—
Sakai, Keijiro; Endo, Tunehiro; Kubota, Yuzuru; Ikimi, Takashi; Mutoh, Nobuyoshi; and Honbu, Mitsuyuki, 5,184,057, Cl. 318-803.000.

Kuc, Victor D., to Triangle Engineered Products Co. Lubrication system for air compressor. 5,183,134, Cl. 184-6.160.

Kuebler, Christopher D. Pass-football. 5,183,263, Cl. 273-65.0EG.

Kugimiya, Koichi; Sugaya, Yasuhiro; Inoue, Osamu; Satomi, Mitsuo; and Hirota, Ken, to Matsushita Electric Industrial Co., Ltd. Composite material and a method for producing the same. 5,183,631, Cl. 419-10.000.

Kuguchi, Tatsushi: *See*—
Nishi, Yuji; Ito, Shigehiro; Kuguchi, Tatsushi; and Ebihara, Kazuyuki, 5,184,221, Cl. 358-167.000.

Kuhlman, Delmar A. Skimmer. 5,182,860, Cl. 30-325.000.

Kuhlmann, George E.: *See*—
Harper, Jon J.; Kuhlmann, George E.; Larson, Keith D.; McMahon, Rosemary F.; and Sanchez, Paul A., 5,183,933, Cl. 562-414.000.

Kulaga, Henrietta: *See*—
Kindt, Thomas J.; Kulaga, Henrietta; and Folks, Thomas M., 5,183,949, Cl. 800-2.000.

Kumanoya, Masaki: *See*—
Konishi, Yasuhiro; Kumanoya, Masaki; Dosaka, Katsumi; Komatsu, Takahiro; and Inoue, Yoshinori, 5,184,321, Cl. 365-51.000.

Kumar, Swadesh, to Ortho-Dent. Mobile hinge member and orthodontic appliance using it. 5,183,388, Cl. 433-19.000.

Kunkle, Richard P.: *See*—
Jackovitz, John F.; Kunkle, Richard P.; and Peterson, Steven H., 5,183,542, Cl. 204-180.100.

Kunz, Harold R., to International Fuel Cells Corporation. Carbon monoxide tolerant platinum-tantalum alloyed catalyst. 5,183,713, Cl. 429-44.000.

Kuo, Jause: *See*—
Landry, Christian C.; Kuo, Jause; Chen, Ching-Shi; and Wu, William, 5,183,321, Cl. 312-250.000.

Kupershmidt, Vladimir: *See*—
Black, Michael; and Kupershmidt, Vladimir, 5,184,156, Cl. 351-158.000.

Kupka, Dennis B.: *See*—
Berg, Ralph O.; Lang, Fred J., Jr.; and Kupka, Dennis B., 5,183,069, Cl. 137-15.000.

Kurando, Shigeo; Makiura, Yoshinori; Shigemura, Yutaka; Ooura, Junichi; Mifune, Eiji; Imafuku, Tatsuo; Komata, Hiroshi; and Ido, Mikio, to Mita Industrial Co., Ltd. Cartridge discriminating system. 5,184,181, Cl. 355-260.000.

Kurimoto, Yukuo; Fujii, Nobuhiko; Kohno, Mitunori; and Umebara, Takao, to Tokyo Electric Co., Ltd. Apparatus for inputting commodity data. 5,183,135, Cl. 186-61.000.

Kurita Water Industries Ltd.: *See*—
Totoki, Toshio; Shigemi, Hirotake; and Yasukawa, Yoshio, 5,183,562, Cl. 210-85.000.

Kuroda, Shigetaka; and Iwata, Yoichi, to Honda Giken Kogyo Kabushiki Kaisha. System for monitoring performance of HC sensors for internal combustion engines. 5,182,907, Cl. 60-276.000.

Kurokawa, Masahiro: *See*—
Honma, Akihiro; and Kurokawa, Masahiro, 5,183,539, Cl. 203-38.000.

Kurosawa, Makoto; Koseki, Masaaki; Takahashi, Tetsuroh; and Terakado, Takeshi, to Hitachi Koki Co., Ltd. Paper curl correction apparatus. 5,183,454, Cl. 493-459.000.

Kuroyama, Yutaka; Maeno, Masami; and Sakakibara, Ikuo, to Nippon Oil and Fats Co., Ltd. Cutting tool assembly. 5,183,362, Cl. 407-118.000.

Kusch, Hans-Jurgen: *See*—
D'Heureuse, Walter; Greive, Martin; Heppenstiel, Gerhard; and Kusch, Hans-Jurgen, 5,182,989, Cl. 101-148.000.

Kustannusosakeyhtio Otava: *See*—
Jukola, Bero; and Rebsamen, Werner, 5,183,294, Cl. 281-23.000.

Kuster, Heinz; and Kuster, Stephan, to Asten Group, Inc. Weave shed formation apparatus for end reweaving type joining apparatus. 5,183,081, Cl. 139-59.000.

Kuster, Stephan: *See*—
Kuster, Heinz; and Kuster, Stephan, 5,183,081, Cl. 139-59.000.

Kusterbeck, Anne W.: *See*—
Ligler, Frances S.; Gaber Bruce P.; Kusterbeck, Anne W.; and Wemhoff, Gregory A., 5,183,740, Cl. 435-7.320.

Kusuhara, Nobumi: *See*—
Miyahara, Shoichiro; Shindo, Atsunori; Suzuki, Maki; Kusuhara, Nobumi; and Makiguchi, Nobuyoshi, 5,183,754, Cl. 435-226.000.

Kutsukake, Yusuke: *See*—
Fukushima, Hiroshi; Motonaga, Akira; Suda, Eriko; Nakajima, Mikito; Takeshita, Katsuyoshi; and Kutsukake, Yusuke, 5,183,870, Cl. 526-273.000.

Kuwabara, Akira; and Koyama, Yasufumi, to Dainippon Screen Mfg. Co., Ltd. Conversion device for laser interferometic measuring apparatus. 5,184,313, Cl. 364-561.000.

Kuwajima, Teruaki; Umeda, Shinichiro; and Konishi, Sakuichi, to Nippon Paint Co., Ltd. Aqueous coating composition. 5,183,504, Cl. 106-404.000.

Kuwatsuka, Toshiaki: *See*—
Utsunomiya, Atsushi; Nakamura, Mitsuo; Kuwatsuka, Toshiaki; and Tanaka, Yoshinori, 5,183,927, Cl. 560-115.000.

Kwak, Deog Y.: *See*—
Chung, Jin Y.; and Kwak, Deog Y., 5,184,030, Cl. 307-296.010.

Kyriacou, Andreas, to Paradigm Biotechnologies Partnership. Filtration apparatus and process. 5,183,569, Cl. 210-636.000.

L.A. Rumbold Limited: *See*—
Cunningham, Douglas J., 5,183,313, Cl. 297-344.000.

La Jolla Cancer Research Foundation: *See*—
Pfahl, Magnus; and Tzukerman, Maty, 5,183,736, Cl. 435-6.000.

Laboratories Knoll, S.A.: *See*—
Brana, Miguel F.; Sanz, Antonio M.; Alvarez-Ossorio, Rafael P.; Roldan, Cristobal M.; De Gamboa, Cristina R. F.; Garcia, Jesus G.; and Berlanga, Jose M. C., 5,183,821, Cl. 514-296.000.

Labovitz, Jeffrey; Guilford, William J.; Fang, Lawrence; and Liang, Yi, to Orsan; and Orsem. Method for the preparation of substituted 1,4-dihydro-4-oxo-cinnoline-3-carboxylic acid, esters and salts thereof, and intermediates used in their preparation. 5,183,891, Cl. 544-235.000.

Lackner, Anna M.: *See*—
Lim, Khoon C.; Margerum, J. David; Lackner, Anna M.; and Miller, Leroy J., 5,184,233, Cl. 359-46.000.

Lacroix, Michel, to Thomson-CSF. Device for the display of simulated images for helmets. 5,184,250, Cl. 359-631.000.

Ladant, Daniel: *See*—
Danchin, Antoine; Glaser, Philippe; Krin, Evelyne; Barzu, Octavien; Ladant, Daniel; and Ullmann, Agnes, 5,183,745, Cl. 435-69.100.

Ladwig, Gregory J., to Nicolet Instrument Corporation. Dynamically calibrated trigger for oscilloscopes. 5,184,062, Cl. 324-74.000.

Lafosse, Jean; and Milliere, Paul, to Telemecanique. Protective casing for electric distribution busbars. 5,183,971, Cl. 174-138.00F.

Lai, Chron-Si, to Hershey Foods. Low moisture hot rolling process and product. 5,183,682, Cl. 426-636.000.

Lai, Wen-Yih F.: *See*—
Jacobson, Allan J.; Lai, Wen-Yih F.; Matturro, Michael G.; Deckman, Harry W.; McHenry, James A.; Reynolds, Robert P.; and Zhang, Qiyao, 5,183,788, Cl. 502-4.000.

Laitram Corporation, The: *See*—
Lapeyre, James M., 5,184,315, Cl. 364-709.160.

Lakomaa, Eeva-Liisa: *See*—
Knuuttila, Hilkka; and Lakomaa, Eeva-Liisa, 5,183,794, Cl. 502-242.000.
Knuuttila, Pekka; and Lakomaa, Eeva-Liisa, 5,183,796, Cl. 502-340.000.

Lampson, Robin A.: *See*—
Haun, Robert E.; Elmer, Neil C.; and Lampson, Robin A., 5,183,498, Cl. 75-709.000.

Lanctot, Paul A. Hockey stick. 5,183,264, Cl. 273-67.00A.

Landis, Michael E.: *See*—
Degnan, Thomas F., Jr.; Keville, Kathleen M.; Landis, Michael E.; Marler, David O.; and Mazzone, Dominick N., 5,183,557, Cl. 208-111.000.
Kirker, Garry W.; Degnan, Thomas F., Jr.; Huss, Albin, Jr.; and Landis, Michael E., 5,183,559, Cl. 208-119.000.
Kresge, Charles T.; Leonowicz, Michael E.; Roth, Wieslaw J.; Vartuli, James C.; Keville, Kathleen M.; Shih, Stuart S.; Degnan, Thomas F.; Dwyer, Francis G.; and Landis, Michael E., 5,183,561, Cl. 208-251.00R.

Landry, Christian C.; Kuo, Jause; Chen, Ching-Shi; and Wu, William. Hand brake mechanism for a central processing unit cabinet. 5,183,321, Cl. 312-250.000.

Lang, Fred J., Jr.: *See*—
Berg, Ralph O.; Lang, Fred J., Jr.; and Kupka, Dennis B., 5,183,069, Cl. 137-15.000.

Lang, John S.; Trussell, R. Rhodes; and Kawamura, Susumu, to James M. Montgomery Engineers, Inc. Hydraulic jet flash mixer with flow deflector. 5,183,335, Cl. 366-174.000.

Langhoff, Peter W.: *See*—
Parker, Robin Z.; and Langhoff, Peter W., 5,182,912, Cl. 60-641.800.

Langhorst, Martin A.; and Henry, Joseph B., to Dow Chemical Company, The. Size separation of particles contained within a material by the use of nonaqueous hydrodynamic chromatography. 5,183,604, Cl. 264-40.100.

Langouet, Luc, to Vilter Manufacturing Corporation. Compressor slide valve control. 5,183,395, Cl. 417-310.000.

Lanzerotti, Louis J.: *See*—
Kraus, Joseph S.; Lanzerotti, Louis J.; and Medford, Lester V., 5,184,311, Cl. 364-554.010.

LaPalomento, Joseph. Universal fixture support. 5,183,233, Cl. 248-343.000.

Lapeyre, James M., to Laitram Corporation, The. Comprehensive computer data and control entries from very few keys operable in a fast touch typing mode. 5,184,315, Cl. 364-709.160.

LaPonsey, Stephen M.: *See*—
Kline, John F.; Pensavecchia, Frank G.; LaPonsey, Stephen M.; and Williams, Richard A., 5,182,990, Cl. 101-211.000.

Larner, Joseph: *See*—
Kennington, Alison S.; and Larner, Joseph, 5,183,764, Cl. 436-131.000.

Larsen, Mark A.: *See*—
Berge, Richard H., Jr.; and Larsen, Mark A., 5,182,880, Cl. 49-504.000.

Larson, Keith D.: *See*—
Harper, Jon J.; Kuhlmann, George E.; Larson, Keith D.; McMahon, Rosemary F.; and Sanchez, Paul A., 5,183,933, Cl. 562-414.000.

Latchinian, Gerard; Latchinian, Ramy; and Camper, Franklin, to Ramy Systems, Inc. Automated cashier system. 5,183,142, Cl. 194-206.000.

Latchinian, Ramy: *See*—
Latchinian, Gerard; Latchinian, Ramy; and Camper, Franklin, 5,183,142, Cl. 194-206.000.

Latella, Alfonso: *See*—
Beaufils, Stephen C.; and Latella, Alfonso, 5,183,963, Cl. 102-515.000.

Lauf, Robert J.; Holcombe, Cressie E.; and Dykes, Norman L., to Martin Marietta Energy Systems, Inc. Process for manufacturing tantalum capacitors. 5,184,286, Cl. 361-529.000.

Lawless, William N. Ceramic superconducting downlead. 5,183,965, Cl. 174-15.500.

Lax, Ronald G.: *See*—
Ringle, Larry L.; and Lax, Ronald G., 5,183,063, Cl. 132-321.000.

Laycock SA: *See*—
Dragicevic, Zoran, 5,183,578, Cl. 210-773.000.

Layman, Curtis M.: *See*—
Malito, John T.; and Layman, Curtis M., 5,183,211, Cl. 241-16.000.

Lazaro, Lnis J., Jr.; and Harsch, Franklin D., to Boeing Company, The. Modular, circular, environment resistant electrical connector assembly having retention clips for manually or automatically loading of electrical contacts. 5,183,413, Cl. 439-589.000.

Leach, Jerald G., to Texas Instruments Incorporated. Glitch reduction in integrated circuits, systems and methods. 5,184,032, Cl. 307-443.000.

Leaney, Peter A.; and Smith, Robert J., to Baroid Technology, Inc. Down-hole decelerators. 5,183,113, Cl. 166-316.000.

Lee, Albert H., Jr.; and Sabo, Carl H., to Gates Rubber Company, The. Inflatable packer. 5,183,108, Cl. 166-187.000.

Lee, Bang-Wan; and Bae, Yl-Sung, to Samsung Electronics Co., Ltd. Voltage regulator for generating a constant reference voltage which does not change over time or with change in temperature. 5,184,061, Cl. 323-265.000.

Lee, Chee-Kong: *See*—
Nguyen, My N.; Lee, Chee-Kong; and Herrington, Thomas L., 5,183,784, Cl. 501-19.000.

Lee, Ching-Pang; Rieck, Harold P., Jr.; Palmer, Nicholas C.; and Fargher, David G. W., to General Electric Company. Turbine blade squealer tip having air cooling holes contiguous with tip interior wall surface. 5,183,385, Cl. 416-97.00R.

Lee, Fu M.: *See*—
Scoggins, Lacey E.; Lee, Fu M.; Chang, Allen T.; and Perkins, Wiley D., 5,183,538, Cl. 203-28.000.

Lee, Gary C. M.; Garst, Michael E.; and Sachs, George, to Allergan, Inc. 2- and 5-alkyl and phenyl substituted 4-(1-hydroxy, 1-acyloxy or 1-carbamoyloxy)-5-hydroxy-2 (5H)-furanones as anti-inflammatory agents. 5,183,906, Cl. 549-218.000.

Lee, Ho W.; Riu, Sun J.; and An, Chang N., to Korea Green Cross Corporation. Hantaan virus strain ROK84/105 and vaccine therefor. 5,183,658, Cl. 424-89.000.

Lee, Jhang W., to Texas Instruments Incorporated. Heteroepitaxy by growth of thermally strained homojunction superlattice buffer layers. 5,183,776, Cl. 437-110.000.

Lee, Jin S.; and Blick, Mark, to Board of Regents, The University of Texas System. Bioactive EGF peptides for promotion of tissue regeneration and cancer therapy. 5,183,805, Cl. 514-13.000.

Lee, Larry; and Kao, Jack. Sound producing control switch for a picture-frame. 5,182,872, Cl. 40-152.000.

Lee, Steve: *See*—
Bruckner, Raimund; Hintzen, Ullrich; Lee, Steve; Schuler, Andreas; and Wiesel, Martin, 5,183,624, Cl. 266-236.000.

Leeming, Stephen W.: *See*—
Quan, Peter M.; and Leeming, Stephen W., 5,183,940, Cl. 564-370.000.

LeFebre, David A., to Guided Wave. Dual fiber optic spectrophotometer. 5,184,193, Cl. 356-325.000.

Lefferts, Johannes, to Siteg Siebtechnik GmbH. Double helix, method of making same and spiral link belt made therefrom. 5,183,442, Cl. 474-239.000.

Legal, Jules O.: *See*—
Roy, Orest Z.; Fulford, Raymond E.; and Legal, Jules O., 5,183,133, Cl. 180-252.000.

Le Gauyer, Philippe, to Valeo Thermique Moteur. Tubular manifold for a heat exchanger and a method of making it. 5,183,107, Cl. 165-176.000.

Lehman, Dexter: *See*—
Wright, William R.; and Lehman, Dexter, 5,182,834, Cl. 15-330.000.

Lehmann, Richard W., to Zimpro Passavant Environmental Systems, Inc. Process for treatment of wastewater containing inorganic ammonium salts. 5,183,577, Cl. 210-761.000.

Lehtomaki, Ilkka; Karinen, Pertti; Bergelin, Risto; and Myllymaki, Olavi, to Oy Alko AB. Beta-glucane enriched alimentary fiber. 5,183,677, Cl. 426-436.000.

Leininger, Volker: *See*—
Schweiker, Werner; and Leininger, Volker, 5,184,051, Cl. 318-568.000.

Leiter, Berndt, to Fichtel & Sachs AG. Actuating force transmission unit for a gear change mechanism of a bicycle. 5,182,962, Cl. 74-473.00R.

Lemaire, Marc: *See*—
Foos, Jacques; Lemaire, Marc; Guy, Alain; Guyon, Vincent; Chomel, Rodolphe; Deloge, Andre ; Doutreluigne, Pierre; and Le Roy, Henri, 5,183,645, Cl. 423-8.000.

Lenglet, Eric, to Procedes Petroliers et Petrochimiques, a part interest. Installation for steam cracking hydrocarbons, with solid erosive particles being recycled. 5,183,642, Cl. 422-213.000.

Leonardi, David. Eye shield retention system. 5,183,059, Cl. 128-858.000.

Leonowicz, Michael E.: *See*—
Kresge, Charles T.; Leonowicz, Michael E.; Roth, Wieslaw J.; Vartuli, James C.; Keville, Kathleen M.; Shih, Stuart S.; Degnan, Thomas F.; Dwyer, Francis G.; and Landis, Michael E., 5,183,561, Cl. 208-251.00R.

VOL 1147 ISS 1 FE 2 1993 UMI

Lepori, Agostino; and Camaioni, Domenico, to Presidenza del Consiglio dei Ministri - Ufficio del Ministro per il coordinamento delle Iniziativae per la Ricerca Scientifica e Tecnologica. Process for binding cellulosic materials with a binding agent of an aqueous emulsions of polyisocyanates and cellulose ether. 5,183,837, Cl. 524-13.000.

Leppek, Kevin G.: *See—*
Hogan, Martin A.; Leppek, Kevin G.; and Spadafora, Peter J., 5,184,299, Cl. 364-426.020.

Lequime, Michel, to Bertin & Cie. Spectrum modulation encoding sensor system for remotely detecting a physical magnitude, and operating by reflection. 5,184,010, Cl. 250-227.210.

Lerke, Charles J. Map reading game apparatus. 5,183,258, Cl. 273-252.000.

Le Roy, Henri: *See—*
Foos, Jacques; Lemaire, Marc; Guy, Alain; Guyon, Vincent; Chomel, Rodolphe; Deloge, Andre ; Doutrelugne, Pierre; and Le Roy, Henri, 5,183,645, Cl. 423-8.000.

Lescovich, Joseph E., to G A Industries, Inc. Self-cleaning strainer. 5,183,568, Cl. 210-360.100.

L'Etat Francais represente par le Ministre des Postes, des Telecommunications et de l'Espace (Centre National d'Etudes des Telecommunications): *See—*
Levionnais, Philippe, 5,184,001, Cl. 235-449.000.

Lever Brothers Company, Division of Conopco Inc.: *See—*
Lew, Jeanie; and Bory, Barbara H., 5,183,580, Cl. 252-8.600.

Levinthal, Adam: *See—*
Molpus, J. Lane; Levinthal, Adam; and Werner, Ross, 5,184,124, Cl. 341-50.000.

Levionnais, Philippe, to L'Etat Francais represente par le Ministre des Postes, des Telecommunications et de l'Espace (Centre National d'Etudes des Telecommunications). System for remote information interchange between a portable object and a station. 5,184,001, Cl. 235-449.000.

Leviton Manufacturing Company, Inc.: *See—*
Doyle, Richard C.; and Rivera, Lester, 5,184,271, Cl. 361-49.000.

Levy, Karl B., to Applied Materials, Inc. Method for forming capacitor in trench of semiconductor wafer by implantation of trench surfaces with oxygen. 5,183,775, Cl. 437-60.000.

Levy, Steven L.: *See—*
Kelly, Wayne T.; and Levy, Steven L., 5,183,204, Cl. 236-94.000.

Lew, Jeanie; and Bory, Barbara H., to Lever Brothers Company, Division of Conopco Inc. Liquid fabric conditioner containing fabric softener and green colorant. 5,183,580, Cl. 252-8.600.

Lew, Thomas M.: *See—*
Rai, Kula R.; Lew, Thomas M.; and Sinclair, Robert B., 5,184,190, Cl. 356-239.000.

Lewis, Charles W.: *See—*
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,184,307, Cl. 364-474.240.

Lewis, Earl L. Balanced jigging lure. 5,182,876, Cl. 43-42.390.

Leybold Aktiengesellschaft: *See—*
Lotz, Hans-Georg, 5,183,997, Cl. 219-464.000.

Liang, Yi: *See—*
Labovitz, Jeffrey; Guilford, William J.; Fang, Lawrence; and Liang, Yi, 5,183,891, Cl. 544-235.000.

Liboff, Abraham R.; McLeod, Bruce R.; and Smith, Stephen D., to Life Resonances, Inc. Method and apparatus for the treatment of cancer. 5,183,456, Cl. 600-9.000.

Liedtke, Kurt: *See—*
Focke, Heinz; and Liedtke, Kurt, 5,183,380, Cl. 414-795.800.

Lieu, Sheng-Feng: *See—*
Tung, Fu-Ching; Chen, Chi-Tsun; and Lieu, Sheng-Feng, 5,182,898, Cl. 53-570.000.

Life Resonances, Inc.: *See—*
Liboff, Abraham R.; McLeod, Bruce R.; and Smith, Stephen D., 5,183,456, Cl. 600-9.000.

Ligler, Frances S.; Gaber Bruce P.; Kusterbeck, Anne W.; and Wemhoff, Gregory A., to United States of America, Navy. Flow immunosensor method and apparatus. 5,183,740, Cl. 435-7.320.

Lily Cups, Inc.: *See—*
Boller, Peter K., 5,183,172, Cl. 220-270.000.

Lim, Jong H. Electric power generators having like numbers of magnets and coils. 5,184,040, Cl. 310-114.000.

Lim, Khoon C.; Margerum, J. David; Lackner, Anna M.; and Miller, Leroy J., to Hughes Aircraft Company. Liquid crystal-based composite material including electrically conducting elongated particles and having enhanced microwave birefringence. 5,184,233, Cl. 359-46.000.

Lin, Mao S. Junction box. 5,183,967, Cl. 174-52.100.

Lin, Mon S. Bubble blowing toy. 5,183,428, Cl. 446-15.000.

Lincoln Electric Company, The: *See—*
Enyedy, Edward A., 5,183,990, Cl. 219-121.540.

Lindbloom, Leon J.: *See—*
Wright, Roger G.; Lindbloom, Leon J.; and Midlam, Lewis C., 5,183,354, Cl. 404-81.000.

Linder, Karen E.; Nunn, Adrian D.; and Ramalingam, Kondareddiar, to E. R. Squibb & Sons, Inc. Boronic acid adducts of metal dioxime complexes useful in labelling proteins and other amine-containing compounds. 5,183,653, Cl. 424-1.100.

Lindig, Markus: *See—*
Muller, Klaus-Helmut; Kluth, Joachim; Konig, Klaus; Gassen, Karl-Rudolf; Findeisen, Kurt; Lindig, Markus; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,183,932, Cl. 560-330.000.

Lindmayer, Martin: *See—*
Claar, Klaus; Deischl, Hans; Lindmayer, Martin; Moczygemba, Jurgen; Schrader, Jergen; Schumacher, Josef; Topfer, Claus; and Robitschko, Peter, 5,184,022, Cl. 307-10.200.

Lindner, Christian; and Eichenauer, Herbert, to Bayer Aktiengesellschaft. Graft polymers and their use as flameproofing agents. 5,183,850, Cl. 525-73.000.

Lindstrom, Michael J.: *See—*
Forguy, Christian; Goetz, Frederick J.; Graeber, Edward L.; and Lindstrom, Michael J., 5,183,915, Cl. 558-341.000.

Line, Henri, to Helis. Horizontal broach with a mobile standard. 5,183,374, Cl. 409-286.000.

Lingham, Russell B.: *See—*
Bills, Gerald F.; Hensens, Otto D.; Koupal, Lawrence; Lingham, Russell B.; Ondeyka, John G.; and Zink, Deborah L., 5,183,826, Cl. 514-411.000.

Link Laboratory Inc.: *See—*
Kozaki, Takahiko; Asano, Kenichi; Ogino, Mineo; Amada, Eiichi; Endo, Noboru; and Sakurai, Yoshito, 5,184,346, Cl. 370-60.000.

Link, Laura J., to Motorola, Inc. Vehicle route planning system. 5,184,303, Cl. 364-449.000.

Linn, Richard A. Pad holder. 5,183,153, Cl. 206-232.000.

Linz, Raymond E.: *See—*
Cox, Jerry D.; Linz, Raymond E.; Thome, Jeanne M.; Perry, Winfield B.; Hadley, Franklin O., Jr.; and Knobel, Vladimir A., 5,182,881, Cl. 51-7.000.

Lipha, Lyonnaise Industrielle Pharmaceutique: *See—*
Festal, Didier; Nioche, Jean-Yves; Descours, Denis; Bellemin, Robert; and Decerprit, Jacques, 5,183,924, Cl. 560-56.000.

Lipovski, G. Jack, to Board of Regents, The University of Texas System. Dynamic associative memory with logic-in-refresh. 5,184,325, Cl. 365-189.070.

Liprie, Samuel F.: *See—*
Hayman, Michael H.; Morgan, Lee R.; and Liprie, Samuel F., 5,183,455, Cl. 600-7.000.

Lisco, Inc.: *See—*
Meeker, Paul K.; and Gibson, William R., 5,183,311, Cl. 297-151.000.

Littmann, Martin: *See—*
Jansen, Johannes R.; and Littmann, Martin, 5,183,939, Cl. 564-302.000.

Litton Systems, Inc.: *See—*
Goldner, Eric L., 5,184,195, Cl. 356-350.000.
Huddle, James R., 5,184,304, Cl. 364-453.000.

Liu, Kou-Chang; and Taylor, Paul D., to ISP Investments Inc. Vinyloxy hydroxyalkylcycloalkane and preparation therefor. 5,183,946, Cl. 568-670.000.

Liu, Ti Y.; Chen, Chi J.; and Chen, Shou H., to Industrial Technology Research Instiute. Process for manufacturing rare earth-iron-boron permanent magnet alloy powders. 5,183,494, Cl. 75-349.000.

Lo, Young S.: *See—*
Welstead, William J., Jr.; and Lo, Young S., 5,183,903, Cl. 548-952.000.

Lodico, James I.; Coder, David R.; Adams, Lawrence J.; Guthrie, Rebecca A. F.; Andes, Raymond M., Jr.; and Alexander, Philip G., to Deere & Company. Trash handling apparatus for a self-cleaning rotary screen. 5,183,487, Cl. 55-289.000.

Logan, James D.; and Bastin, Jeffrey R., to Bastin-Logan Water Services, Inc. Gravel well assembly. 5,183,110, Cl. 166-278.000.

Login, Robert B.; Merianos, John J.; Biss, Russell B.; and Garelick, Paul, to ISP Investments Inc. Urea-hydrogen peroxide-polyvinylpyrrolidone. 5,183,901, Cl. 548-543.000.

Long, Glen C.: *See—*
Weldon, William F.; Woodson, Herbert H.; and Long, Glen C., 5,183,957, Cl. 89-8.000.

Longyear Company: *See—*
Paech, Ivor N., 5,183,366, Cl. 414-22.520.

Lopez, Luis R.; and Sterhan, Marcia, to Reaads Medical Products, Inc. Method and diagnostic test kit for detection of anti-dsDNA antibodies. 5,183,735, Cl. 435-6.000.

Lorbiecki, James R., to Milsco Manufacturing Company. Concealed mechanism for detachably mounting a vehicle seat. 5,183,314, Cl. 297-440.000.

Lord Corporation: *See—*
Siwek, C. Kenneth; Flower, Wallace C.; and Garn, Gene D., 5,183,137, Cl. 188-381.000.

Lord, Steve: *See—*
Wolber, Jack; Lord, Steve; and Froehling, Dieter, 5,183,252, Cl. 271-276.000.

L'Oreal: *See—*
Baudin, Gilles, 5,183,189, Cl. 222-397.000.

Losing, Karl-Heinrich: *See—*
Hartel, Gunter; Schurfeld, Armin; Losing, Karl-Heinrich; Thonnesen, Dieter; and Remde, Ulrich, 5,182,942, Cl. 73-61.460.

Lotz, Hans-Georg, to Leybold Aktiengesellschaft. Heating apparatus for cooking food, especially a hot plate. 5,183,997, Cl. 219-464.000.

Louisiana-Pacific Corporation: *See—*
Chase, Peter D., 5,182,892, Cl. 52-539.000.

Love, Marc C., to Atlas Die, Inc. Reclosable dispenser carton. 5,183,202, Cl. 229-123.000.

Loving, Louis S.: *See—*
Adams, James W.; Loving, Louis S.; Betts, David A.; Donnelly, David P.; and Nunley, Alvin, III, 5,184,330, Cl. 367-111.000.

Lowry, Alan B.; Gelardi, Paul J.; and Rochelo, Donald R., to Shape Inc. Video tape cassette with a reusable recording enable/disable slide tab. 5,184,255, Cl. 360-60.000.

Lu, Shih-Lai, to Minnesota Mining and Manufacturing Company. Method of molding microstructure bearing composite plastic articles. 5,183,597, Cl. 264-1.400.

Luckenbach, Roy: *See—*
Taylor, Jeffrey L.; Luckenbach, Roy; Coco, Michael; and Twickler, Carl, 5,183,702, Cl. 428-266.000.

Lugo, Nicolas R. Shopping bag system and method. 5,182,895, Cl. 53-469.000.

Lummes, Stephen E.: *See—*
Stephens, William F. N.; and Lummes, Stephen E., 5,184,014, Cl. 250-237.00G.

Lundberg, George A., Jr., to E. J. Brooks Co. Locking or security seal. 5,183,301, Cl. 292-318.000.

Lunzman, Stephen V.: *See—*
Devier, Lonnie J.; Krone, John J.; Lunzman, Stephen V.; and Marsden, Howard A., 5,182,908, Cl. 60-420.000.

Luperti, Harry E.: *See—*
Edwards, Robert J.; and Luperti, Harry E., 5,183,246, Cl. 270-45.000.

Lurssen, Klaus: *See—*
Muller, Klaus-Helmut; Kluth, Joachim; Konig, Klaus; Gassen, Karl-Rudolf; Findeisen, Kurt; Lindig, Markus; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,183,932, Cl. 560-330.000.

Lusher, David M.: *See—*
Washburn, Robert D.; Wedeen, Robert S.; McClanahan, Robert F.; Council, William J.; and Lusher, David M., 5,184,288, Cl. 363-4.000.

Luxtron Corporation: *See—*
Wickersheim, Kenneth A.; and Adams, Bruce E., 5,183,338, Cl. 374-131.000.

Lyon, Robert K. Fluid reservoir containing arrow. 5,183,259, Cl. 273-418.000.

Lyons, Ray: *See—*
Clever, Eric; and Lyons, Ray, 5,183,409, Cl. 439-291.000.

M. Kamenstein, Inc.: *See—*
Acona, Bruce; and Ancona, Janc, 5,183,165, Cl. 211-77.000.

MacArthur, Duncan W.; Wolf, Michael A.; McAtee, James L.; Unruh, Wesley P.; Cucchiara, Alfred L.; and Huchton, Roger L., to United States of America, Energy. Long range alpha particle detector. 5,184,019, Cl. 250-380.000.

Maccherone, Larry, to Sweetheart Cup Company Inc. Apparatus and method for heat-sealing a film cover to open ended containers. 5,182,896, Cl. 53-478.000.

MacDonald, James C.: *See—*
Taylor, Raymond L.; Burns, Lee E.; and MacDonald, James C., 5,183,689, Cl. 427-164.000.

MacLane, Donald B.; Deur, Ted E.; Anderson, Jeffrey J.; Titterington, Donald R.; Oswald, James C.; and Meissner, Richard S., to Tektronix, Inc. Ink jet print head maintenance system. 5,184,147, Cl. 346-1.100.

MacMillan, Donald M., to Concorde Tool Corp. Adjustable length handle comprising automatically adjustable length mechanical power transmission. 5,182,965, Cl. 74-543.000.

Madou, Marc J.: *See—*
Joseph, Jose P.; and Madou, Marc J., 5,183,549, Cl. 204-415.000.

Maeda, Kazuo; and Kinoshita, Koichi, to Akebono Brake Industry Co., Ltd. Pin boot for a disc brake. 5,183,136, Cl. 188-73.440.

Maeda, Kenji. Kneading method of concrete. 5,183,332, Cl. 366-2.000.

Maejima, Kazuhiro: *See—*
Sugiyama, Hiroyuki; Miyamoto, Toshio; and Maejima, Kazuhiro, 5,182,994, Cl. 101-415.100.

Maeno, Masami: *See—*
Kuroyama, Yutaka; Maeno, Masami; and Sakakibara, Ikuo, 5,183,362, Cl. 407-118.000.

Maes, Roland F. Stabilization of peroxidase solutions by para-aminosalicyclic acid. 5,183,751, Cl. 435-188.000.

Magara, Takuji; and Yamamoto, Masahiro, to Mitsubishi Denki K.K. Wire-type electric discharge machining system capable magnetically of collecting material that has been removed from a workpiece and confirming the magnetic attraction. 5,183,986, Cl. 219-69.120.

Maguire, Roy L.: *See—*
Taft, Morris E.; Anderton, Peter W.; and Maguire, Roy L., 5,183,318, Cl. 305-39.000.

Maienfisch, Peter: *See—*
Ramos, Gerado; Ghisalba, Oreste; Schar, Hans-Peter; Frei, Bruno; Maienfisch, Peter; and O'Sullivan, Anthony C., 5,183,749, Cl. 435-119.000.

Mair, Billie J. Apparatus and method for grasping and stably lifting lids having a handle. 5,183,304, Cl. 294-10.000.

Mairlot, Henri: *See—*
D'Iribarne, Benoit; Mairlot, Henri; and Houang, Paul, 5,183,491, Cl. 65-351.000.

Makiguchi, Nobuyoshi: *See—*
Miyahara, Shoichiro; Shindo, Atsunori; Suzuki, Maki; Kusuhara, Nobumi; and Makiguchi, Nobuyoshi, 5,183,754, Cl. 435-226.000.

Makiura, Yoshinori: *See—*
Kurando, Shigeo; Makiura, Yoshinori; Shigemura, Yutaka; Ooura, Junichi; Mifune, Eiji; Imafuku, Tatsuo; Komata, Hiroshi; and Ido, Mikio, 5,184,181, Cl. 355-260.000.

Maldera, Domenico: *See—*
Ricco, Mario; De Matthaeis, Sisto L.; and Maldera, Domenico, 5,183,209, Cl. 239-585.100.

Malecha, Gregory J., to Borg-Warner Automotive Transmission & Engine Components Corporations. Overrunning clutch having a cage design for directing lube flow. 5,183,139, Cl. 192-45.000.

Malinowski, Hans: *See—*
Guse, Rudolf; Nobis, Dieter; and Malinowski, Hans, 5,182,847, Cl. 29-527.700.

Malito, John T.; and Layman, Curtis M., to Nalco Chemical Company. Chemical aids for wet-grinding phosphate rock. 5,183,211, Cl. 241-16.000.

Mallary, Micheal L., to Digital Equipment Corporation. Transducer with improved inductive coupling. 5,184,267, Cl. 360-126.000.

Mallen, Russell: *See—*
Mukerji, Prosanto K.; Mallen, Russell; Demet, George; and Fuerhaupter, Harry, 5,183,692, Cl. 427-304.000.

Mallouk, Robert S.: *See—*
Branca, Phillip A.; Hubis, Daniel E.; Mallouk, Robert S.; and Perry, Randal L., 5,183,545, Cl. 204-252.000.

Mallow, William A.; and Dziuk, Jerome J., Jr., to Southwest Research Institute. Composition and method for detecting vapor and liquid reactants. 5,183,763, Cl. 436-106.000.

Mammarella, Nicolino: *See—*
Ruffini, Alberto; and Mammarella, Nicolino, 5,183,521, Cl. 156-142.000.

Mandel, Jonathan: *See—*
Monte, Charles; Worthington, Norman A., III; Mandel, Jonathan; and Davenport, Gary F., 5,183,398, Cl. 434-227.000.

Mangelsdorf, Christopher W., to Analog Devices, Incorporated. Multistage A/D converter. 5,184,130, Cl. 341-156.000.

Mann, Ralph V. System and method for teaching physical skills. 5,184,295, Cl. 364-410.000.

Mannesmann AG: *See—*
Becker, Eberhard; Schulte, Franz; Sprung, Hartwig; Staggl, Ronald; and Stoeber, Manfred, 5,183,377, Cl. 414-751.000.

Mannesmann Rexroth GmbH: *See—*
Stellwagen, Armin, 5,182,909, Cl. 60-426.000.

Manning, William R.: *See—*
Brog, Terrence K.; and Manning, William R., 5,183,610, Cl. 264-56.000.

Mano, Seiji: *See—*
Hariu, Kenichi; Chiba, Isamu; and Mano, Seiji, 5,184,140, Cl. 342-372.000.

Manteuffel, Hans J. M.: *See—*
Zimmermann, Heinz; and Manteuffel, Hans J. M., 5,183,565, Cl. 210-269.000.

Manz, Kenneth W.; and Powers, Christopher M., to SPX Corporation. Refrigerant recovery system. 5,182,918, Cl. 62-149.000.

Marchioro, Gaetano: *See—*
Rizzi, Amleto; and Marchioro, Gaetano, 5,183,922, Cl. 560-7.000.

Marco, Alex A., to Hughes Aircraft Company. Process of manufacturing lightweight, low cost microwave components. 5,182,849, Cl. 29-600.000.

Margerum, J. David: *See—*
Lim, Khoon C.; Margerum, J. David; Lackner, Anna M.; and Miller, Leroy J., 5,184,233, Cl. 359-46.000.

Margitich, Donald E.: *See—*
Wishneski, Todd W.; and Margitich, Donald E., 5,183,583, Cl. 252-182.240.

Marko, Ollie W.: *See—*
Yeh, Li-Tain; Kenney, Malcolm E.; Bokerman, Gary N.; Cannady, John P.; and Marko, Ollie W., 5,183,914, Cl. 556-467.000.

Marko, Paul D., to Motorola, Inc. Low profile antenna. 5,184,143, Cl. 343-749.000.

Marks, Kipley R. Nozzle mountings. 5,182,820, Cl. 4-541.400.

Markwell, John P.; Versaw, Wayne K.; Osterman, John C.; and Kelley, Philip M., to University of Nebraska, Board of Regents of the. Heat-labile phosphatase. 5,183,752, Cl. 435-196.000.

Marler, David O.: *See—*
Degnan, Thomas F., Jr.; Keville, Kathleen M.; Landis, Michael E.; Marler, David O.; and Mazzone, Dominick N., 5,183,557, Cl. 208-111.000.

Marquis, Edward T.; Speranza, George P.; and Su, Wei-Yang, to Texaco Chemical Company. Process for dissolving or removing rigid polyurethane foam by contacting with 1,2-dimethyl imidazole. 5,183,514, Cl. 134-38.000.

Marrone, Santino: *See—*
Twigg, Ray G.; Klug, Mark W.; Marrone, Santino; and Hawkes, Malcolm V., 5,184,068, Cl. 324-158.00F.

Marsden, Howard A.: *See—*
Devier, Lonnie J.; Krone, John J.; Lunzman, Stephen V.; and Marsden, Howard A., 5,182,908, Cl. 60-420.000.

Marshall, Robert: *See—*
Holmes, William S.; and Marshall, Robert, 5,183,649, Cl. 423-300.000.

Martensson, Lars; and Andersson, Jan, to Tetra Alfa Holdings SA. Apparatus for treating package container blanks. 5,183,644, Cl. 422-304.000.

Martin, Dale D.: *See—*
Reiterman, Lee; Martin, Dale D.; and Krysik, Joseph, 5,183,363, Cl. 408-59.000.

Martin, Dallas: *See—*
Hurtado, Larry; Curto, Rick A.; and Martin, Dallas, 5,183,966, Cl. 474-20.000.

VOL
1147
ISS
1
FE
2
1993
UMI

Martin, Jack R., to General Electric Company. Turbine nozzle manufacturing method. 5,182,855, Cl. 29-889.220.
Martin, James H.; and Garro, Samuel J. Piston operated fluid dispensing device. 5,183,187, Cl. 222-287.000.
Martin, James P.: *See*—
Hubble, Fred F., III; Mitchell, John M., Jr.; and Martin, James P., 5,184,011, Cl. 250-231.140.
Martin, Jonathan G.: *See*—
Brooks, Dee W.; Stewart, Andrew O.; and Martin, Jonathan G., 5,183,818, Cl. 514-231.500.
Martin Marietta Energy Systems, Inc.: *See*—
Allman, Steve L.; Chen, Chung-Hsuan; and Chen, Fang C., 5,184,015, Cl. 250-282.000.
Lauf, Robert J.; Holcombe, Cressie E.; and Dykes, Norman L., 5,184,286, Cl. 361-529.000.
Martindell, J. Richard. Depth locator apparatus for insert bit holders. 5,182,973, Cl. 81-429.000.
Martinus De Bie, Joannes F.: *See*—
Scheeren, Johan W.; Martinus De Bie, Joannes F.; and De Vos, Dirk, 5,183,913, Cl. 556-446.000.
Maruden, Eiji: *See*—
Kitajima, Eiji; Oyama, Takashi; Maruden, Eiji; Teraoka, Hirokazu; Yamasaki, Haruki; and Shimizu, Susumu, 5,183,603, Cl. 264-29.200.
Maruo, Satoshi; Hattori, Chikamasa; and Kameyama, Fumio, to Brother Kogyo Kabushiki Kaisha. Control device for a tool driving unit. 5,184,053, Cl. 318-571.000.
Marutsuka, Toshinori: *See*—
Yosomiya, Ryutoku; Hirata, Mistutoshi; Morimoto, Kiyotaka; Takenishi, Soichiro; and Marutsuka, Toshinori, 5,183,611, Cl. 264-129.000.
Maruyama, Satoshi; Minorikawa, Naoki; Arakawa, Tsutomu; Yoshida, Haruo; Tagoshi, Hirotaka; and Abe, Kazuto, to Showa Denko K.K. 4,4'-bis(methacryloylthio)diphenylsulfide. 5,183,917, Cl. 558-251.000.
Marx, Ralph H. Finger support. 5,183,458, Cl. 602-22.000.
Masaki, Mitsuo; Takeda, Hiromitsu; Kamishiro, Toshiro; and Yamamoto, Masao, to Nippon Chemiphar Co., Ltd. Glycerol derivative and anti-hypertensive agent. 5,183,811, Cl. 514-79.000.
Maschinenfabrik J. Dieffenbacher GmbH & Co.: *See*—
Bielfeldt, Friedrich B., 5,182,986, Cl. 100-41.000.
Mashaw, Howard R., Jr.; and Hammett, Robert C., to Otis Engineering Corporation. Sleeve valve device and shifting tool therefor. 5,183,114, Cl. 166-319.000.
Maskasky, Joe E., to Eastman Kodak Company. Process for the preparation of high chloride tabular grain emulsions (V). 5,183,732, Cl. 430-569.000.
Mason, Robert F. Dental flossing tool. 5,183,065, Cl. 132-323.000.
Massarsky, Yefim, to Foto Fantasy, Inc. Camera position adjustment device. 5,184,160, Cl. 354-76.000.
Masuda, Noboru; Kamikawai, Ryotaro; Yagyu, Masayoshi; Yamamoto, Masakazu; Itoh, Hiroyuki; and Saito, Tatsuya, to Hitachi, Ltd. Clock signal supply system. 5,184,027, Cl. 307-269.000.
Masuda, Toshio. Foliar spray agent for protecting agricultural and horticultural plants against disease injury. 5,183,477, Cl. 47-58.000.
Masuda, Yoshitomo: *See*—
Toyosawa, Shinichi; Nakajima, Tadashi; Suzuki, Kinya; Kawagoe, Takahiro; Miyazaki, Tadaaki; Kitamura, Takashi; Fuse, Tadashi; Ogawa, Masao; Masuda, Yoshitomo; Daifuku, Hideharu; and Fujio, Ryota, 5,183,543, Cl. 204-242.000.
Masuhara, Eiichi; and Komiya, Shigeo, to Japan Institute of Advanced Dentistry. Process for adhesion of orthodontic bracket. 5,183,403, Cl. 433-9.000.
Masuhra, Shohei; Tonoki, Satoshi; Shibukawa, Toshiya; and Sugawara, Hirsohi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha; and Nissan Motor Co., Ltd. Interior finish surface material for automobiles. 5,183,695, Cl. 428-151.000.
Matheson Gas Products, Inc.: *See*—
Pengler, Rudolf, 5,183,072, Cl. 137-113.000.
Mathewson, Christopher W., to Sayett Group, Inc. Stacked LCD color projector with equal path lengths. 5,184,234, Cl. 359-53.000.
Matsubara, Isao: *See*—
Takeishi, Hideo; Houseki, Sigeki; and Matsubara, Isao, 5,183,210, Cl. 239-703.000.
Matsuda, Koichi: *See*—
Yamaguchi, Soichiro; Matsuda, Koichi; and Goto, Hideo, 5,183,849, Cl. 525-68.000.
Matsuda, Takahiro: *See*—
Yumoto, Toshiyuki; Ohsono, Kouhei; Kanda, Masahiro; and Matsuda, Takahiro, 5,183,439, Cl. 474-28.000.
Matsuda, Yoshio; Arimoto, Kazutami; Ooishi, Tsukasa; Tsukude, Masaki; and Fujishima, Kazuyasu, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having on-chip test circuit and method for testing the same. 5,184,327, Cl. 365-201.000.
Matsui, Fumio: *See*—
Taniguchi, Hitoshi; and Matsui, Fumio, 5,183,726, Cl. 430-342.000.
Matsui, Kazuo: *See*—
Yasumura, Takaaki; Kiyomiya, Teruo; Mizuno, Yasutoshi; and Matsui, Kazuo, 5,183,517, Cl. 148-303.000.
Matsui, Masahiro; and Hashimoto, Yasuhiko, to Kawasaki Jukogyo Kabushiki Kaisha. Method of coupling magnetic position detecting device with brushless dc motor and the coupling structure thereof. 5,184,038, Cl. 310-42.000.
Matsumoto, Mitsuhiro: *See*—
Inaba, Shigemitsu; and Matsumoto, Mitsuhiro, 5,183,410, Cl. 439-489.000.
Matsumoto, Nobuo, to Tokai Rubber Industries, Ltd. Fluid-filled elastic mount having caulked portion for sealing off fluid chamber. 5,183,243, Cl. 267-140.130.
Matsumoto, Shinichi, to Canon Kabushiki Kaisha. Electronic translator with multiple speed searching function. 5,184,296, Cl. 364-419.000.
Matsumoto, Yasuo: *See*—
Murakami, Kazunori; Ikumi, Tomonori; Matsumoto, Yasuo; and Iwafune, Yasuo, 5,184,245, Cl. 359-196.000.
Matsumoto, Yukio: *See*—
Koyama, Toshiya; Matsumoto, Yukio; Yoshimoto, Hataaki; and Ito, Katsuhiro, 5,183,585, Cl. 252-299.010.
Matsumura, Toshiaki: *See*—
Mitani, Katsuaki; Matsumura, Toshiaki; and Yasumatsuya, Noboru, 5,184,224, Cl. 358-231.000.
Matsuo, Masahiro: *See*—
Ariyama, Tatsuro; Isozaki, Shinichi; Yamada, Kenzo; Matsuo, Masahiro; and Kanatani, Genji, 5,183,495, Cl. 75-379.000.
Matsuo, Shunji: *See*—
Haneda, Satoshi; Morita, Shizuo; Fukuchi, Masakazu; and Matsuo, Shunji, 5,184,187, Cl. 355-326.000.
Matsuoka, Fumio; Negoro, Kouichi; Sugimoto, Takeshi; Yamaguchi, Toshiaki; and Yamashita, Tetsuya, to Mitsubishi Denki Kabushiki Kaisha. Refrigeration cycle system. 5,182,920, Cl. 62-206.000.
Matsuoka, Takeji, to MEC Machinery Co., Ltd. Method for making coiled springs. 5,182,930, Cl. 72-138.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Fukakusa, Masaharu; and Tomiyasu, Hiroshi, 5,184,263, Cl. 360-103.000.
Gejima, Seiji; Kawakita, Koji; Kimura, Suzushi; Okinaka, Hideyuki; and Hakotani, Yasuhiko, 5,183,786, Cl. 501-134.000.
Hamasaka, Hiroshi; Satoh, Isao; and Fukushima, Yoshihisa, 5,184,341, Cl. 369-54.000.
Kameyama, Shuichi; Shimomura, Hiroshi; and Kikuchi, Kazuya, 5,183,768, Cl. 437-26.000.
Kugimiya, Koichi; Sugaya, Yasuhiro; Inoue, Osamu; Satomi, Mitsuo; and Hirota, Ken, 5,183,631, Cl. 419-10.000.
Mitani, Katsuaki; Matsumura, Toshiaki; and Yasumatsuya, Noboru, 5,184,224, Cl. 358-231.000.
Shiratori, Tetsuya; Yamazaki, Fumio; and Taniguchi, Seiichi, 5,183,425, Cl. 445-29.000.
Ueda, Shuji; and Mochida, Shoro, 5,184,004, Cl. 235-462.000.
Yamaguchi, Seiji; Moro, Masaru; Kajikawa, Saburou; Kimura, Masahiro; Okubo, Hideo; Matsuyo, Tadashi; and Kawakami, Hiroshi, 5,182,833, Cl. 15-319.000.
Yanagisawa, Ryogo, 5,184,222, Cl. 358-183.000.
Yoshinaka, Minoru; Asakura, Eizo; Oku, Mitsumasa; Kitano, Motoi; Nakatani, Yoshio; Yoshida, Hideyuki; Hatta, Toshiya; and Nakatani, Seiichi, 5,183,594, Cl. 252-518.000.
Yukihiro, Makoto; and Katagiri, Mamoru, 5,183,621, Cl. 264-297.200.
Matsushita, Tsutomu: *See*—
Mihara, Teruyoshi; Matsushita, Tsutomu; Yao, Kenji; Hoshi, Masakatsu; Enokido, Yutaka; and Hirota, Yukitsugu, 5,184,204, Cl. 357-629.000.
Matsuura, Hiromi: *See*—
Fuji, Isao; Ajiki, Yoshio; Ishida, Yoichi; and Matsuura, Hiromi, 5,183,011, Cl. 123-1.00A.
Matsuura, Takaharu: *See*—
Ohtani, Mitsuaki; and Matsuura, Takaharu, 5,183,909, Cl. 549-463.000.
Matsuura, Yutaka: *See*—
Sagawa, Masato; Fujimura, Setsuo; and Matsuura, Yutaka, 5,183,516, Cl. 148-302.000.
Matsuyo, Tadashi: *See*—
Yamaguchi, Seiji; Moro, Masaru; Kajikawa, Saburou; Kimura, Masahiro; Okubo, Hideo; Matsuyo, Tadashi; and Kawakami, Hiroshi, 5,182,833, Cl. 15-319.000.
Matsuzaki, Hitoshi: *See*—
Suda, Koichi; Matsuzaki, Hitoshi; Wada, Masayuki; and Ozeki, Shoichi, 5,184,272, Cl. 361-87.000.
Matsuzaki, Kenji: *See*—
Yamaguchi, Akira; Uno, Masaru; Sekikawa, Norio; Arai, Fumio; and Matsuzaki, Kenji, 5,183,484, Cl. 55-34.000.
Mattes, Kenneth C.; and Venepalli, Bhaskar R., to Sterling Winthrop Inc. Antiarrhythmic agents. 5,183,813, Cl. 514-150.000.
Mattiessen, Hans, to Dragerwerk Aktiengesellschaft. Measuring cell for electrochemically detecting a gas. 5,183,550, Cl. 204-415.000.
Matturro, Michael G.: *See*—
Jacobson, Allan J.; Lai, Wen-Yih F.; Matturro, Michael G.; Deckman, Harry W.; McHenry, James A.; Reynolds, Robert P.; and Zhang, Qiyao, 5,183,788, Cl. 502-4.000.
Matula, David W.: *See*—
Briggs, Willard S.; and Matula, David W., 5,184,318, Cl. 364-754.000.
Mauer, Andrew J.: *See*—
Mosehauer, Michael; Newell, Catherine D.; and Mauer, Andrew J., 5,184,194, Cl. 355-297.000.
Maurer, Dean J., to Honeywell, Inc. Piezoresistive pressure transducer with a conductive elastomeric seal. 5,184,107, Cl. 338-42.000.
Maurice, Daniel. Flat panel illumination system. 5,183,323, Cl. 362-32.000.
Mauro Bianchi S.A.: *See*—
Bianchi, Mauro, 5,183,285, Cl. 280-670.000.
Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V.: *See*—
Schneider, Frank, 5,184,292, Cl. 364-162.000.

May, John W.; and Mukherjee, Anujit, to Eastman Kodak Company. Field-enhanced charge injection amplification. 5,183,717, Cl. 430-97.000.
Mazda Motor Corporation: *See*—
Inada, Haruhiro; and Muramoto, Hisao, 5,183,288, Cl. 280-732.000.
Kageyama, Fumio; Kanazawa, Hirotaka; Takahara, Shin; and Morita, Toshiki, 5,183,127, Cl. 180-197.000.
Mazzone, Dominick N.: *See*—
Degnan, Thomas F., Jr.; Keville, Kathleen M.; Landis, Michael E.; Marler, David O.; and Mazzone, Dominick N., 5,183,557, Cl. 208-111.000.
McAtee, James L.: *See*—
MacArthur, Duncan W.; Wolf, Michael A.; McAtee, James L.; Unruh, Wesley P.; Cucchiara, Alfred L.; and Huchton, Roger L., 5,184,019, Cl. 250-380.000.
McCall, Thomas J., Jr.: *See*—
Gatten, Ronald A.; Miller, Leslie A.; McCall, Thomas J., Jr.; and Nau, Vance J., 5,183,486, Cl. 55-159.000.
McClain, Ray. High volume padding machine. 5,183,160, Cl. 209-234.000.
McClanahan, Robert F.: *See*—
Washburn, Robert D.; Wedeen, Robert S.; McClanahan, Robert F.; Council, William J.; and Lusher, David M., 5,184,288, Cl. 363-4.000.
McClung, Duane G.; and Mueller, Thomas C., to Herman Miller, Inc. Panel edge construction. 5,183,090, Cl. 144-350.000.
McCoan, Horace C.; and Collier, James V., to Colt's Manufacturing Company Inc. Semi-automatic firearm having a safety device preventing conversion to full automatic firing. 5,183,959, Cl. 89-148.000.
McCollom, Dale A.: *See*—
Cyr, Dwayne L.; and McCollom, Dale A., 5,182,822, Cl. 4-625.000.
McCray, Philip C.: *See*—
Kershaw, John K.; and McCray, Philip C., 5,183,118, Cl. 171-16.000.
McCurry, Patrick W.; Kellogg, James R.; Boekelheide, Karl; Sexton, Kenneth D.; Ellison, George A.; and Hocker, Robert A., to Elegant Design Solutions, Inc. Computer-controlled uninterruptible power supply. 5,184,025, Cl. 307-66.000.
McDade, Christine: *See*—
Venter, Jeremia J.; and McDade, Christine, 5,183,930, Cl. 560-217.000.
McEachern, Alexander; Nicholson, Jamie; and Waterman, Craig S., to Basic Measuring Instruments. Method and apparatus for disabling all operations of an electronic instrument except for an automatic test procedure. 5,184,066, Cl. 324-158.00R.
McGeown, Arthur J.: *See*—
Cooke, Michael J.; and McGeown, Arthur J., 5,183,402, Cl. 432-5.000.
McGovern, John T.: *See*—
Campoli, Ralph F.; and McGovern, John T., 5,183,961, Cl. 102-439.000.
McHenry, James A.: *See*—
Jacobson, Allan J.; Lai, Wen-Yih F.; Matturro, Michael G.; Deckman, Harry W.; McHenry, James A.; Reynolds, Robert P.; and Zhang, Qiyao, 5,183,788, Cl. 502-4.000.
McHugh, John M.: *See*—
Foulkes, Albert E., Jr.; and McHugh, John M., 5,183,358, Cl. 411-59.000.
McKean, Peter S., to Holset Engineering Company Limited. Variable geometry turbine inlet wall mounting assembly. 5,183,381, Cl. 415-150.000.
McKenna, Charles E. Preparation and use of thiophosphonates and thio-analogues of phosphonoformic acid. 5,183,812, Cl. 514-120.000.
McKinley, William E.: *See*—
Hollander, Milton B.; Jacobs, David R.; and McKinley, William E., 5,183,420, Cl. 439-457.000.
McLees, Donald J. Snap ring needle guard. 5,183,468, Cl. 604-164.000.
McLeod, Bruce R.: *See*—
Liboff, Abraham R.; McLeod, Bruce R.; and Smith, Stephen D., 5,183,456, Cl. 600-9.000.
McMahon, Michael R. Air filter cleaning apparatus. 5,182,832, Cl. 15-304.000.
McMahon, Rosemary F.: *See*—
Harper, Jon J.; Kuhlmann, George E.; Larson, Keith D.; McMahon, Rosemary F.; and Sanchez, Paul A., 5,183,933, Cl. 562-414.000.
McMillin, John V.; and Clark, Jay V., to National Computer Systems, Inc. Scannable form having a control mark column with encoded data marks. 5,184,003, Cl. 235-454.000.
McMullen, James G.: *See*—
Neugebauer, Constantine A.; Glascock, Homer H., II; Paik, Kyung W.; McMullen, James G.; and Neugebauer, Martha M., 5,184,206, Cl. 257-762.000.
McNab, Kevin M.: *See*—
Shahriary, Iradj; and McNab, Kevin M., 5,184,092, Cl. 331-16.000.
McQuigg, Donald W.; Sowers, Edward E.; Goe, Gerald L.; Scriven, Eric F. V.; and Keay, James G., to Reilly Industries, Inc. 4-(N-benzyl-N-methylamino)pyridine acid salts and use in preparation of polymer-supported catalysts. 5,183,895, Cl. 546-304.000.
MEC Machinery Co., Ltd.: *See*—
Matsuoka, Takeji, 5,182,930, Cl. 72-138.000.
Medford, Lester V.: *See*—
Kraus, Joseph S.; Lanzerotti, Louis J.; and Medford, Lester V., 5,184,311, Cl. 364-554.010.
Mediatronics, Inc.: *See*—
Daugherty, Ronald R.; and Petrocy, Richard J., 5,184,116, Cl. 340-764.000.
Medical Devices Corporation: *See*—
Bull, Brian S.; and Korpman, Ralph A., 5,184,188, Cl. 356-39.000.
Meeker, Paul K.; and Gibson, William R., to Lisco, Inc. Portable high chair/booster seat. 5,183,311, Cl. 297-151.000.
Megahertz Corporation: *See*—
Aldous, Stephen C.; and Dake, Guy M., 5,183,404, Cl. 439-55.000.
Meiattini, Franco, to Diesse Diagnostica Senese S.R.L. Copper containing reagent for the detection and determination of bilirubin in the urine. 5,183,762, Cl. 436-97.000.
Meichsner, Roland; and Schmickl, Werner, to Hewlett-Packard Company. Water based ink for ink-jet printing. 5,183,502, Cl. 106-22.00K.
Meier, Josef; and Niehaus, Gottfried, to Meier & Niehaus GmbH. Lining for receptacles. 5,183,176, Cl. 220-470.000.
Meier & Niehaus GmbH: *See*—
Meier, Josef; and Niehaus, Gottfried, 5,183,176, Cl. 220-470.000.
Meissner, Konrad E., to Atlas Pacific Engineering Company. Peach pitter blade assembly. 5,182,983, Cl. 99-486.000.
Meissner, Richard S.: *See*—
MacLane, Donald B.; Deur, Ted E.; Anderson, Jeffrey J.; Titterington, Donald R.; Oswald, James C.; and Meissner, Richard S., 5,184,147, Cl. 346-1.100.
Menahem, Israel; and Bacon, James, to Honeywell Inc. Three degree of freedom translational axis hand controller mechanism. 5,182,961, Cl. 74-471.0XY.
Mendelson, Yitzhak: *See*—
Harjunmaa, Hannu; Mendelson, Yitzhak; and Wang, Yi, 5,183,042, Cl. 128-633.000.
Menheere, Johannes C. J., to Wavin B.V. Inner tube element for use in a device for taking soil samples, and method for manufacturing such an inner tube element. 5,182,954, Cl. 73-864.450.
Mercedes-Benz AG: *See*—
Alt, Claus-Christian, 5,183,445, Cl. 475-230.000.
Bonne, Andreas; Claar, Klaus; and Schrader, Jurgen, 5,183,300, Cl. 292-216.000.
Bopp, Stefan, 5,183,017, Cl. 123-198.00D.
Claar, Klaus; Deischl, Hans; Lindmayer, Martin; Moczygemba, Jurgen; Schrader, Jergen; Schumacher, Josef; Topfer, Claus; and Robitschko, Peter, 5,184,022, Cl. 307-10.200.
Gellner, Harald, 5,182,964, Cl. 74-523.000.
Mercian Corporation: *See*—
Tanaka, Hiroshi; Kominato, Kaichiro; Yoshioka, Takeo; Iguchi, Hiroshi; Hirano, Shin-ichi; Okajima, Yasuo; Yamamoto, Reijko; Shirai, Masataka; Nishida, Hiroshi; Tone, Hiroshi; and Okamoto, Rokuro, 5,183,883, Cl. 563-6.400.
Merck & Co., Inc.: *See*—
Bills, Gerald F.; Hensens, Otto D.; Koupal, Lawrence; Lingham, Russell B.; Ondeyka, John G.; and Zink, Deborah L., 5,183,826, Cl. 514-411.000.
Greenlee, Mark L.; Salzmann, Thomas N.; and DiNinno, Frank P., 5,183,887, Cl. 540-364.000.
Greenlee, William J.; Patchett, Arthur A.; Hangauer, David; Walsh, Thomas F.; Fitch, Kenneth J.; Rivero, Ralph A.; and Dhanoa, Daljit S., 5,183,810, Cl. 514-63.000.
Saari, Walfred S.; Rodan, Gideon A.; Fisher, Thorsten E.; and Anderson, Paul S., 5,183,815, Cl. 514-172.000.
Merianos, John J.: *See*—
Login, Robert B.; Merianos, John J.; Biss, Russell B.; and Garelick, Paul, 5,183,901, Cl. 548-543.000.
Merkel, Stephen L., to Nordson Corporation. Method and apparatus for detecting bubbles in pressurized liquid dispensing systems. 5,182,938, Cl. 73-19.050.
Messerschmitt-Bolkow-Blohm GmbH: *See*—
Wanninger, Paul; Wild, Richard; Kleinschmidt, Ernst; and Spath, Helmut, 5,183,520, Cl. 149-19.910.
Messina, James. Deer repellent device and method. 5,183,661, Cl. 424-405.000.
Metallgesellschaft Aktiengesellschaft: *See*—
Hanel, Peter; Helmrich, Harald; and Sander, Ulrich, 5,183,571, Cl. 210-649.000.
Methlie, Jennifer L.: *See*—
Wanger, Mark E.; Methlie, Jennifer L.; Stavely, Donald J.; and Oliver, Thomas C., 5,184,336, Cl. 369-34.000.
Metzler, Mark W.: *See*—
Crowe, Lawrence E.; and Metzler, Mark W., 5,184,291, Cl. 363-37.000.
Meyer, Heinrich: *See*—
Bressel, Burkhard; Meyer, Heinrich; Meyer, Walter; and Gedrat, Klaus, 5,183,552, Cl. 205-158.000.
Meyer, Walter: *See*—
Bressel, Burkhard; Meyer, Heinrich; Meyer, Walter; and Gedrat, Klaus, 5,183,552, Cl. 205-158.000.
Michlin, Steven B. Copier and printer toner hopper sealing device. 5,184,182, Cl. 355-260.000.
Microelectronics and Computer Technology Corporation: *See*—
Duane, Diana C.; Zilley, Eric L.; and Jordan, Robert C., 5,183,972, Cl. 174-251.000.
Middleton, Christopher O.; and Robson, Colin L., to Spectra Physics. Apparatus for automatic depth control for earth moving and grading. 5,184,293, Cl. 364-167.010.
Midlam, Lewis C.: *See*—
Wright, Roger G.; Lindbloom, Leon J.; and Midlam, Lewis C., 5,183,354, Cl. 404-81.000.

VOL
1147
ISS
1
FE
2
1993
UMI

Mifune, Eiji: *See*—
Kurando, Shigeo; Makiura, Yoshinori; Shigemura, Yutaka; Ooura, Junichi; Mifune, Eiji; Imafuku, Tatsuo; Komata, Hiroshi; and Ido, Mikio, 5,184,181, Cl. 355-260.000.
MIGEN S.r.l.: *See*—
Gavagna, Libero, 5,183,218, Cl. 242-54.00R.
Mihara, Shinichi, to Olympus Optical Co., Ltd. Electronic imaging apparatus. 5,184,223, Cl. 358-209.000.
Mihara, Teruyoshi; Matsushita, Tsutomu; Yao, Kenji; Hoshi, Masakatsu; Enokido, Yutaka; and Hirota, Yukitsugu, to Nissan Motor Co., Ltd. Semiconductor device with high surge endurance. 5,184,204, Cl. 357-629.000.
Mikami, Toshihiro; Kohmura, Yukio; Ishida, Yoshinori; and Nogami, Akira, to Furukawa Electric Co., Ltd., The. Optical fiber soot synthesis apparatus. 5,183,490, Cl. 65-144.000.
Mile High Equipment Company: *See*—
Alvarez, Robert J.; Bredesen, Scott E.; Wilson, James J.; Flim, Duane D.; Kniffen, Todd E.; and Schahrer, Clinton O., 5,182,925, Cl. 62-347.000.
Miles Inc.: *See*—
Corey, Paul F., 5,183,743, Cl. 435-18.000.
Zakaryan, Ara H.; Newallis, Peter E.; and Tice, Mark A., 5,183,916, Cl. 558-95.000.
Millay, George D.; and Powell, John D., to Wet 'N Wild, Inc. Method and apparatus for initiating a water ride. 5,183,437, Cl. 472-117.000.
Miller, Carl A.; Silverberg, Morton; and Supron, Steven A., to Pitney Bowes Inc. Mechanism and method for laterally aligning an accumulation of sheets. 5,183,250, Cl. 271-222.000.
Miller, Leroy J.: *See*—
Lim, Khoon C.; Margerum, J. David; Lackner, Anna M.; and Miller, Leroy J., 5,184,233, Cl. 359-46.000.
Miller, Leslie A.: *See*—
Gatten, Ronald A.; Miller, Leslie A.; McCall, Thomas J., Jr.; and Nau, Vance J., 5,183,486, Cl. 55-159.000.
Milliere, Paul: *See*—
Lafosse, Jean; and Milliere, Paul, 5,183,971, Cl. 174-138.00F.
Millipore Corporation: *See*—
Gilby, Anthony C.; and Carson, William W., 5,184,192, Cl. 356-246.000.
Milsco Manufacturing Company: *See*—
Lorbiecki, James R., 5,183,314, Cl. 297-440.000.
Milwaukee Valve Company, Inc: *See*—
Roberts, John L., 5,183,073, Cl. 137-385.000.
Mima, Hiroshi; Suzuki, Tadashi; and Kubota, Yasuhiko, to Murata Kikai Kabushiki Kaisha. Processing robot for a two-for-one-one twister. 5,182,902, Cl. 57-279.000.
Minami, Hirofumi: *See*—
Yuyama, Junpei; Geng, Qiquan; Chihara, Kazunori; Minami, Hirofumi; and Goto, Eiichi, 5,184,072, Cl. 324-248.000.
Minette, Daniel C., to Western Atlas International, Inc. Borehole formation model for testing nuclear logging instruments. 5,182,955, Cl. 73-865.600.
Minister of the Post, Telecommunications and Space (Centre National D'Etudes Des Telecommunications): *See*—
Devillers, Yves; Neveu, Frederic; Behe, Roger; and Ramat, Pierre, 5,184,145, Cl. 343-840.000.
Minnesota Mining and Manufacturing: *See*—
Bodziak, Douglas P.; Grovender, Steven L.; Hunder, Ray A.; Molenda, Robert P.; and Roth, Steven P., 5,183,297, Cl. 283-67.000.
Minnesota Mining and Manufacturing Company: *See*—
Birkholz, Ronald B.; and Glad, Mark D., 5,183,705, Cl. 428-343.000.
Duane, Diana C.; Zilley, Eric L.; and Jordan, Robert C., 5,183,972, Cl. 174-251.000.
Fundingsland, Jon W.; and Rogers, Ralph F., 5,183,415, Cl. 433-80.000.
Lu, Shih-Lai, 5,183,597, Cl. 264-1.400.
Weiss, John W., 5,184,274, Cl. 361-220.000.
Minolta Camera Kabushiki Kaisha: *See*—
Ueda, Hideaki, 5,183,718, Cl. 430-59.000.
Minorikawa, Naoki: *See*—
Maruyama, Satoshi; Minorikawa, Naoki; Arakawa, Tsutomu; Yoshida, Haruo; Tagoshi, Hirotaka; and Abe, Kazuto, 5,183,917, Cl. 558-251.000.
Minowa, Masahiro, to Seiko Epson Corporation. Printer system for selective printing on first and second print media located in separate print zones. 5,183,333, Cl. 400-605.000.
Minster Machine Company, The: *See*—
Schockman, Robert L., 5,182,935, Cl. 72-417.000.
Minto, Robert E.: *See*—
Nicolaou, Kyriacos C.; Sorensen, Erik; Hwang, Chan-Kou; Discordia, Robert; Bergman, Robert G.; and Minto, Robert E., 5,183,942, Cl. 568-375.000.
MIPS Co., Ltd.: *See*—
Kaneda, Takashi; and Villwock, Thomas, 5,184,282, Cl. 361-395.000.
Mishima, Ryoji: *See*—
Ueno, Shuji; Hagiwara, Michiaki; Mishima, Ryoji; and Isoishi, Kiyoshi, 5,183,515, Cl. 148-101.000.
Mr. Coffee Inc.: *See*—
Hoffman, Ronald J.; Pillion, Lawrence M.; and Jewell, Paul L., 5,183,998, Cl. 219-492.000.
Mita Industrial Co., Ltd.: *See*—
Kida, Yasuhiko, 5,184,186, Cl. 355-321.000.
Kurando, Shigeo; Makiura, Yoshinori; Shigemura, Yutaka; Ooura, Junichi; Mifune, Eiji; Imafuku, Tatsuo; Komata, Hiroshi; and Ido, Mikio, 5,184,181, Cl. 355-260.000.
Maekawa, Takashi, 5,183,239, Cl. 271-3.100.
Okada, Hiromi; and Otsuka, Masao, 5,183,248, Cl. 271-127.000.
Mita, Shiro: *See*—
Morita, Takakazu; Mita, Shiro; and Kawashima, Yoichi, 5,183,816, Cl. 514-224.200.
Mitani, Katsuaki; Matsumura, Toshiaki; and Yasumatsuya, Noboru, to Matsushita Electric Industrial Co., Ltd. Television projection screen having anti-static elements. 5,184,224, Cl. 358-231.000.
Mitani, Masao: *See*—
Sakuta, Toshiyuki; Miyazawa, Kazuyuki; Oguchi, Satoshi; Kaneda, Aizo; Mitani, Masao; Nakamura, Shozo; Nishi, Kunihiko; and Murakami, Gen, 5,184,208, Cl. 257-666.000.
Mitchell, John M., Jr.: *See*—
Hubble, Fred F., III; Mitchell, John M., Jr.; and Martin, James P., 5,184,011, Cl. 250-231.140.
Mitchener, Rex L.: *See*—
Bailey, Kenneth M.; Mitchener, Rex L.; Wehking, Timothy J.; and Reith, Craig P., 5,182,940, Cl. 73-36.000.
Mitsche, Roy T.: *See*—
Wang, Li; and Mitsche, Roy T., 5,183,792, Cl. 502-242.000.
Mitsubishi Denki K.K.: *See*—
Fukui, Wataru; Iwata, Toshio; Ohashi, Yutaka; and Ikeuchi, Masayuki, 5,182,943, Cl. 73-116.000.
Ishida, Yasuhiko; and Kondo, Katsuhiko, 5,184,302, Cl. 364-431.110.
Magara, Takuji; and Yamamoto, Masahiro, 5,183,986, Cl. 219-69.120.
Takeuchi, Hiroshi; Sendai, Tomoko; and Sakai, Yozo, 5,183,988, Cl. 219-69.170.
Tanaka, Hirokazu; and Ito, Koichi, 5,184,109, Cl. 340-455.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Aiba, Yoshiko; Adachi, Hiroshi; and Adachi, Etsushi, 5,183,846, Cl. 524-865.000.
Hara, Toshiro; Sato, Yoshimasa; and Yagi, Noboru, 5,184,300, Cl. 364-431.100.
Hariu, Kenichi; Chiba, Isamu; and Mano, Seiji, 5,184,140, Cl. 342-372.000.
Ishizuka, Masahiro; and Hayashi, Kazuyuki, 5,183,440, Cl. 474-101.000.
Itoh, Kenji; Iida, Akio; and Urasaki, Shuji, 5,184,093, Cl. 331-25.000.
Iwatani, Shiro, 5,184,060, Cl. 322-99.000.
Kodai, Shojiro; Ochi, Katsunori; and Baba, Fumiaki, 5,184,209, Cl. 257-679.000.
Kondo, Katsumi, 5,184,104, Cl. 336-100.000.
Konishi, Yasuhiro; Kumanoya, Masaki; Dosaka, Katsumi; Komatsu, Takahiro; and Inoue, Yoshinori, 5,184,321, Cl. 365-51.000.
Matsuda, Yoshio; Arimoto, Kazutami; Ooishi, Tsukasa; Tsukude, Masaki; and Fujishima, Kazuyasu, 5,184,327, Cl. 365-201.000.
Matsuoka, Fumio; Negoro, Kouichi; Sugimoto, Takeshi; Yamaguchi, Toshiaki; and Yamashita, Tetsuya, 5,182,920, Cl. 62-206.000.
Mitsui, Katsuyoshi; and Inuishi, masahide, 5,183,771, Cl. 437-44.000.
Miyata, Kazuaki, 5,183,773, Cl. 437-52.000.
Morita, Shingo; and Koiwa, Mitsuru, 5,183,024, Cl. 123-598.000.
Okuma, Shigeru; Furuhashi, Takeshi; Ikejima, Hiroyuki; and Ishii, Toshiaki, 5,183,980, Cl. 187-112.000.
Satoh, Shinichi, 5,183,774, Cl. 437-52.000.
Shimoda, Kyouzi; and Yoshimoto, Kyosuke, 5,184,338, Cl. 369-44.250.
Tsutsumi, Michinari; Endo, Atsushi; and Yada, Toshio, 5,183,533, Cl. 156-656.000.
Uenishi, Akio, 5,184,171, Cl. 354-416.000.
Uesaka, Kazuo; Okita, Kazumasa; and Arai, Tsutomu, 5,183,656, Cl. 424-76.100.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Honma, Akihiro; and Kurokawa, Masahiro, 5,183,539, Cl. 203-38.000.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Fujisawa, Mutsumi, 5,183,132, Cl. 180-247.000.
Ito, Masayoshi; Yamada, Kiichi; Otake, Katsunori; Miyata, Yasunobu; Narita, Tomohiro; and Nishikawa, Susumu, 5,183,128, Cl. 180-197.000.
Mitsubishi Kasei Corporation: *See*—
Takagishi, Iwao, 5,183,886, Cl. 540-141.000.
Ueno, Shuji; Hagiwara, Michiaki; Mishima, Ryoji; and Isoishi, Kiyoshi, 5,183,515, Cl. 148-101.000.
Mitsubishi Materials Corporation: *See*—
Tanaka, Yoshiyuki; and Itoh, Takaaki, 5,184,273, Cl. 361-120.000.
Mitsubishi Petrochemical Company Limited: *See*—
Kitagawa, Sadao; and Baba, Mitushige, 5,183,856, Cl. 525-282.000.
Mitsubishi Rayon Co., Ltd: *See*—
Fukushima, Hiroshi; Motonaga, Akira; Suda, Eriko; Nakajima, Mikito; Takeshita, Katsuyoshi; and Kutsukake, Yusuke, 5,183,870, Cl. 526-273.000.
Mitsubishi Steel Mfg. Co., Ltd.: *See*—
Abe, Tsuyoshi; Umezawa, Nobumasa; Fukuzumi, Tatsuo; Uchibori, Katsuyuki; Ozaki, Junji; and Motomura, Hiroharu, 5,183,634, Cl. 420-110.000.
Mitsui, Hidero; Kamaya, Naoki; Itoh, Hiroaki; and Sasaki, Yuu, to Sony Corporation. Battery casing. 5,183,714, Cl. 429-123.000.

Mitsui, Katsuyoshi; and Inuishi, masahide, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing LDDFET having double sidewall spacers. 5,183,771, Cl. 437-44.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Sakai, Hideki; Ishiwatari, Kazuo; and Ikejiri, Fumitoshi, 5,183,843, Cl. 524-318.000.
Mitsui Pharmaceuticals, Inc.: *See*—
Wakatake, Koichi, 5,183,638, Cl. 422-64.000.
Mitsui Toatsu Chemicals, Inc.: *See*—
Harada, Isao; Hokonohara, Hisashi; and Yamaguchi, Toshiaki, 5,183,647, Cl. 423-239.000.
Miyahara, Shoichiro; Shindo, Atsunori; Suzuki, Maki; Kusuhara, Nobumi; and Makiguchi, Nobuyoshi, 5,183,754, Cl. 435-226.000.
Ohyama, Tsukasa; Shimokawa, Yasushi; Ghoda, Isamu; Takuma, Keisuke; and Koshida, Hitoshi, 5,183,474, Cl. 8-471.000.
Takemura, Yasuo; Narimatsu, Osamu; and Komatsu, Kazuyoshi, 5,183,699, Cl. 428-214.000.
Utsunomiya, Atsushi; Nakamura, Mitsuo; Kuwatsuka, Toshiaki; and Tanaka, Yoshinori, 5,183,927, Cl. 560-115.000.
Mittendorf, Donald H.: *See*—
Boo, H. Khim; Mittendorf, Donald H.; and Sell, Walter A., 5,183,212, Cl. 241-17.000.
Miura, Toshihiko: *See*—
Umetsu, Sachio; and Miura, Toshihiko, 5,182,843, Cl. 29-445.000.
Miwa, Takao; Ikeda, Takayoshi; Numata, Shunichi; Fujisaki, Koji; and Shimanoki, Hisae, to Hitachi, Ltd.; and Hitachi Chemical Company, Ltd. Acid anhydride complex and process for producing same, and composition containing same. 5,183,838, Cl. 524-109.000.
Miyahara, Kazuhiro, to NGK Insulators, Ltd. Method of manufacturing ceramic honeycomb-structural body. 5,183,609, Cl. 264-44.000.
Miyahara, Shoichiro; Shindo, Atsunori; Suzuki, Maki; Kusuhara, Nobumi; and Makiguchi, Nobuyoshi, to Mitsui Toatsu Chemicals, Incorporated. Method for production of human tissue type plasminogen activator. 5,183,754, Cl. 435-226.000.
Miyakawa, Naoomi: *See*—
Sato, Takeshi; Tashiro, Minoru; and Miyakawa, Naoomi, 5,183,993, Cl. 219-121.820.
Miyaki, Takeo: *See*—
Sawada, Yosuke; Kakushima, Masatoshi; Nishio, Maki; Miyaki, Takeo; and Oki, Toshikazu, 5,183,808, Cl. 514-33.000.
Miyamoto, Masanori: *See*—
Ito, Hideaki; and Miyamoto, Masanori, 5,183,013, Cl. 123-48.00R.
Miyamoto, Toshio: *See*—
Sugiyama, Hiroyuki; Miyamoto, Toshio; and Maejima, Kazuhiro, 5,182,994, Cl. 101-415.100.
Miyamoto, Yauso: *See*—
Ichimura, Nobuo; Miyamoto, Yauso; and Yamazaki, Mitsuo, 5,183,592, Cl. 252-512.000.
Miyamoto, Yoshiaki; Sasaki, Teruo; Fujisawa, Kazuhiro; and Kato, Seinosuke, to Sumitomo Gomu Kogyo Kabushiki Kaisha. Earthquake-proofing device of peripherally restrained type. 5,182,888, Cl. 52-167.0DF.
Miyaoku, Yoshiyuki: *See*—
Taga, Kazumitsu; Narukami, Toshihiko; and Miyaoku, Yoshiyuki, 5,183,678, Cl. 426-448.000.
Miyasaka, Hitoshi: *See*—
Koga, Yoshiro; Gomi, Akihiro; Miyasaka, Takashi; Miyazawa, Yasunaga; Endo, Kenichi; Shinozaki, Junichiro; Yoda, Kaneo; Ichikawa, Takashi; Miyasaka, Hitoshi; and Kaburagi, Chiharu, 5,184,257, Cl. 360-77.050.
Miyasaka, Takashi: *See*—
Koga, Yoshiro; Gomi, Akihiro; Miyasaka, Takashi; Miyazawa, Yasunaga; Endo, Kenichi; Shinozaki, Junichiro; Yoda, Kaneo; Ichikawa, Takashi; Miyasaka, Hitoshi; and Kaburagi, Chiharu, 5,184,257, Cl. 360-77.050.
Miyashita, Mitsuo. Stapler assistor. 5,183,196, Cl. 227-63.000.
Miyashita, Takanori: *See*—
Sakata, Shinji; Miyashita, Takanori; Kondo, Kazuhiko; Sakai, Atsushi; Shibata, Toshiyuki; and Ogawa, Takayuki, 5,183,882, Cl. 514-49.000.
Miyashita, Takashi; Miyazawa, Yoshinaga; and Kikuchi, Zenta, to Casio Computer Co., Ltd. Twisted nematic liquid crystal display device with retardation plates having phase axis direction within 15° of alignment direction. 5,184,236, Cl. 359-63.000.
Miyata, Kazuaki, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing semiconductor device including such input protection transistor. 5,183,773, Cl. 437-52.000.
Miyata, Yasunobu: *See*—
Ito, Masayoshi; Yamada, Kiichi; Otake, Katsunori; Miyata, Yasunobu; Narita, Tomohiro; and Nishikawa, Susumu, 5,183,128, Cl. 180-197.000.
Miyatake, Isao: *See*—
Fukuoka, Kazuhiro; Kiyohara, Keiki; Konishi, Tadayuki; Miyatake, Isao; and Hamamoto, Masaji, 5,183,500, Cl. 106-1.220.
Miyauchi, Yuji; Yoshii, Shinichi; and Kanamori, Tatsuru, to Olympus Optical Co., Ltd. Finder optical system. 5,184,252, Cl. 359-715.000.
Miyazaki, Akihiko, to U.S. Philips Corporation. Method of and apparatus for automatically controlling exposure. 5,184,172, Cl. 354-432.000.
Miyazaki, Hiroya: *See*—
Ouchi, Hideo; and Miyazaki, Hiroya, 5,183,341, Cl. 384-446.000.
Miyazaki, Tadaaki: *See*—
Toyosawa, Shinichi; Nakajima, Tadashi; Suzuki, Kinya; Kawagoe, Takahiro; Miyazaki, Tadaaki; Kitamura, Takashi; Fuse, Tadashi; Ogawa, Masao; Masuda, Yoshitomo; Daifuku, Hideharu; and Fujio, Ryota, 5,183,543, Cl. 204-242.000.
Miyazaki, Takeo: *See*—
Kawai, Michiki; and Miyazaki, Takeo, 5,183,221, Cl. 242-310.000.
Miyazaki, Takeshi: *See*—
Omoto, Kouichi; and Miyazaki, Takeshi, 5,183,742, Cl. 435-14.000.
Miyazawa, Kazuyuki: *See*—
Sakuta, Toshiyuki; Miyazawa, Kazuyuki; Oguchi, Satoshi; Kaneda, Aizo; Mitani, Masao; Nakamura, Shozo; Nishi, Kunihiko; and Murakami, Gen, 5,184,208, Cl. 257-666.000.
Miyazawa, Tetsuhiro: *See*—
Goto, Shigeki; Shimei, Masato; Miyazawa, Tetsuhiro; Saitou, Yoshitami; and Isono, Nobuyuki, 5,182,970, Cl. 74-866.000.
Miyazawa, Yasunaga: *See*—
Koga, Yoshiro; Gomi, Akihiro; Miyasaka, Takashi; Miyazawa, Yasunaga; Endo, Kenichi; Shinozaki, Junichiro; Yoda, Kaneo; Ichikawa, Takashi; Miyasaka, Hitoshi; and Kaburagi, Chiharu, 5,184,257, Cl. 360-77.050.
Miyazawa, Yoshinaga: *See*—
Miyashita, Takashi; Miyazawa, Yoshinaga; and Kikuchi, Zenta, 5,184,236, Cl. 359-63.000.
Mizuno, Masato; and Oishi, Kengo, to Fuji Photo Film Co., Ltd. Magnetic tape cassette. 5,184,268, Cl. 360-132.000.
Mizuno, Yasutoshi: *See*—
Yasumura, Takaaki; Kiyomiya, Teruo; Mizuno, Yasutoshi; and Matsui, Kazuo, 5,183,517, Cl. 148-303.000.
Mizuta, Akira: *See*—
Nakata, Tomohiro; and Mizuta, Akira, 5,184,197, Cl. 356-426.000.
Mizutani, Hideo: *See*—
Nakagawa, Masahiro; Mizutani, Hideo; Komatsu, Kouichirou; and Nojima, Yawara, 5,184,196, Cl. 356-401.000.
Mobil Oil Corporation: *See*—
Boyd, Dana M., 5,183,158, Cl. 206-554.000.
Cardis, Angeline B.; and Shanholtz, Carl E., 5,183,475, Cl. 44-343.000.
Chitnis, Girish K.; Herbst, Joseph A.; and Valyocsik, Ernest W., 5,183,790, Cl. 502-67.000.
Degnan, Thomas F., Jr.; Keville, Kathleen M.; Landis, Michael E.; Marler, David O.; and Mazzone, Dominick N., 5,183,557, Cl. 208-111.000.
Kirker, Garry W.; Degnan, Thomas F., Jr.; Huss, Albin, Jr.; and Landis, Michael E., 5,183,559, Cl. 208-119.000.
Kresge, Charles T.; Leonowicz, Michael E.; Roth, Wieslaw J.; Vartuli, James C.; Keville, Kathleen M.; Shih, Stuart S.; Degnan, Thomas F.; Dwyer, Francis G.; and Landis, Michael E., 5,183,561, Cl. 208-251.00R.
Owen, Hartley; and Schipper, Paul H., 5,183,558, Cl. 208-113.000.
Paul, James M.; and Morris, Richard L., 5,183,112, Cl. 166-312.000.
Raterman, Michael F.; and Thiel, Michael D., 5,183,480, Cl. 55-12.000.
Mochida, Shoro: *See*—
Ueda, Shuji; and Mochida, Shoro, 5,184,004, Cl. 235-462.000.
Moczygemba, Jurgen: *See*—
Claar, Klaus; Deischl, Hans; Lindmayer, Martin; Moczygemba, Jurgen; Schrader, Jergen; Schumacher, Josef; Topfer, Claus; and Robitschko, Peter, 5,184,022, Cl. 307-10.200.
Moeneclaey, Denis, to Picanol N.V., naamloze vennootschap. Rapier guide with two series of guide elements. 5,183,084, Cl. 139-449.000.
Mohn, Jurgen; and Heine, Wilhelm, to DT Membranfilter Vertriebs GmbH. Apparatus for filtering and separating flowing medium. 5,183,567, Cl. 210-321.750.
Mohring, Volker; and Zellmer, Volker, to Th. Goldschmidt AG. Method for the preparation of highly elastic forms of reduced compression hardness having polyurethane groups. 5,183,830, Cl. 521-107.000.
Molenda, Robert P.: *See*—
Bodziak, Douglas P.; Grovender, Steven L.; Hunder, Ray A.; Molenda, Robert P.; and Roth, Steven P., 5,183,297, Cl. 283-67.000.
Molpus, J. Lane; Levinthal, Adam; and Werner, Ross, to Next Computer, Inc. Method and apparatus for compressing and storing pixels. 5,184,124, Cl. 341-50.000.
Momiyama, Yoshiharu: *See*—
Kikuchi, Hiroshi; Nakajima, Shigeki; Ono, Hisao; and Momiyama, Yoshiharu, 5,184,177, Cl. 355-200.000.
Monahan, Russell E.: *See*—
Adler, Jonathan M.; Monahan, Russell E.; and Frayer, Robert W., Jr., 5,184,069, Cl. 324-207.220.
Monarch Knitting Machinery Corporation: *See*—
Pernick, David, 5,182,927, Cl. 66-54.000.
Monitel Products Corp.: *See*—
Tarr, Leonard; King, Gregory; and Johansen, Brian, 5,184,179, Cl. 355-206.000.
Monsanto Company: *See*—
Coleman, James P., 5,183,584, Cl. 252-186.380.
Crutchfield, Marvin M.; and Reuben, Bertie J., 5,183,473, Cl. 8-110.000.
Gomez, Peter M., 5,183,852, Cl. 525-101.000.
Jakse, Frank P.; Morris, Donald E.; and Vanderlinde, William, 5,183,918, Cl. 558-271.000.
Montana Power Company, The: *See*—
Clark, Steven J., 5,183,102, Cl. 165-48.100.
Montanari, Jean-Louis, to Societe Francaise de Detecteurs Infrarouges (SOFRADIR). Reversible production process for assembly of circuit board and substrate. 5,182,852, Cl. 29-840.000.
Montasham, Mani; and Gharagozloo, Hamid. Sun shield assembly. 5,183,094, Cl. 160-370.200.

VOL 1147 ISS 1 FE 2 1993 UMI

Monte, Charles; Worthington, Norman A., III; Mandel, Jonathan; and Davenport, Gary F., to Software Toolworks, The. Apparatus and method for interactive instruction of a student. 5,183,398, Cl. 434-227.000.

Montres Breguet S.A.: *See—*
Caspar, Michel, 5,184,333, Cl. 368-28.000.

Moore Business Forms, Inc.: *See—*
Parker, Rebecca L., 5,183,527, Cl. 156-555.000.
Walter, George E., 5,183,526, Cl. 156-556.000.

Moore Products Co.: *See—*
Kohler, Raymond H., 5,184,094, Cl. 331-158.000.

Morales, Francisco J. Revolver hand grip. 5,183,952, Cl. 42-71.020.

Morely, Richard A.: *See—*
Jorstad, John L.; Morely, Richard A.; and Overbagh, William H., 5,183,025, Cl. 123-669.000.

Morgan, Denny E., to Caterpillar Inc. Linear position sensor with equalizing means. 5,182,979, Cl. 92-5.00R.

Morgan, Lee R.: *See—*
Hayman, Michael H.; Morgan, Lee R.; and Liprie, Samuel F., 5,183,455, Cl. 600-7.000.

Mori, Hideki: *See—*
Nishide, Tsutomu; Yasumura, Daisuke; Nakajima, Yoshinobu; Onodera, Akiko; Yasukawa, Takuji; Kokumai, Hirokazu; Umeda, Tomoshige; Nomura, Seiji; and Mori, Hideki, 5,183,750, Cl. 435-134.000.

Mori, Koji: *See—*
Ukai, Naoki; and Mori, Koji, 5,184,005, Cl. 235-472.000.

Mori, Shosei: *See—*
Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Iwaki, Takashi; Mori, Shosei; and Shinjo, Kenji, 5,183,586, Cl. 252-299.610.

Moriarty, Ann M., to Scripps Research Institute, The. Antibodies, diagnostic systems and methods for assaying SV40 HBxAg. 5,183,734, Cl. 435-5.000.

Morimoto, Kiyotaka: *See—*
Yosomiya, Ryutoku; Hirata, Mistutoshi; Morimoto, Kiyotaka; Takenishi, Soichiro; and Marutsuka, Toshinori, 5,183,611, Cl. 264-129.000.

Morita, Hideo: *See—*
Shiraki, Toshinori; Hayano, Fusakazu; and Morita, Hideo, 5,183,857, Cl. 525-285.000.

Morita, Shingo; and Koiwa, Mitsuru, to Mitsubishi Denki Kabushiki Kaisha. Ignition device for internal combustion engine. 5,183,024, Cl. 123-598.000.

Morita, Shizuo: *See—*
Haneda, Satoshi; Morita, Shizuo; Fukuchi, Masakazu; and Matsuo, Shunji, 5,184,187, Cl. 355-326.000.

Morita, Shoji; Yamada, Yoshihiko; and Hara, Seinosuke, to Atsugi Unisia Corporation. Valve operating apparatus. 5,183,015, Cl. 123-90.160.

Morita, Takakazu; Mita, Shiro; and Kawashima, Yoichi, to Santen Pharmaceutical Co., Ltd. Bicyclic sulfur-containing compounds. 5,183,816, Cl. 514-224.200.

Morita, Tatsuo: *See—*
Nishino, Hiromi; Tarui, Keiji; Toyoshi, Hideyuki; and Morita, Tatsuo, 5,183,725, Cl. 430-313.000.

Morita, Toshiki: *See—*
Kageyama, Fumio; Kanazawa, Hirotaka; Takahara, Shin; and Morita, Toshiki, 5,183,127, Cl. 180-197.000.

Morita, Yasushi; Ohtori, Akira; and Andoh, Masako, to Senju Pharmaceutical Co., Ltd. Controlled drug release composition. 5,183,662, Cl. 424-426.000.

Moriwaki, Kaoru: *See—*
Nagai, Masahiko; Watai, Hiroo; Nagumo, Takaharu; and Moriwaki, Kaoru, 5,184,308, Cl. 364-489.000.

Moro, Masaru: *See—*
Yamaguchi, Seiji; Moro, Masaru; Kajikawa, Saburou; Kimura, Masahiro; Okubo, Hideo; Matsuyo, Tadashi; and Kawakami, Hiroshi, 5,182,833, Cl. 15-319.000.

Moronaga, Kenji: *See—*
Saito, Osamu; Ito, Kenji; Moronaga, Kenji; and Watanabe, Mikio, 5,184,229, Cl. 358-427.000.

Morooka, Toru; and Okamoto, Yuji, to Sharp Kabushiki Kaisha. Automatic document feeder. 5,183,240, Cl. 271-3.100.

Morozumi, Kazuhiko: *See—*
Kadota, Michio; and Morozumi, Kazuhiko, 5,184,042, Cl. 310-313.00A.

Morris, Donald E.: *See—*
Jakse, Frank P.; Morris, Donald E.; and Vanderlinde, William, 5,183,918, Cl. 558-271.000.

Morris, Glenn H., Sr. Child drowning protecting guard for an open head nestable container. 5,183,179, Cl. 220-694.000.

Morris, Richard L.: *See—*
Paul, James M.; and Morris, Richard L., 5,183,112, Cl. 166-312.000.

Morrison, Barry: *See—*
Bond, Robert H.; Olla, Michael A.; Morrison, Barry; and Garrison, Linn C., 5,182,851, Cl. 29-827.000.

Mortgat, Regis: *See—*
Canat, Jean-Noel; and Mortgat, Regis, 5,183,629, Cl. 376-439.000.

Mosehauer, Michael; Newell, Catherine D.; and Mauer, Andrew J., to Eastman Kodak Company. Carrier particle scavenging device. 5,184,194, Cl. 355-297.000.

Motomura, Hiroharu: *See—*
Abe, Tsuyoshi; Umezawa, Nobumasa; Fukuzumi, Tatsuo; Uchibori, Katsuyuki; Ozaki, Junji; and Motomura, Hiroharu, 5,183,634, Cl. 420-110.000.

Motonaga, Akira: *See—*
Fukushima, Hiroshi; Motonaga, Akira; Suda, Eriko; Nakajima, Mikito; Takeshita, Katsuyoshi; and Kutsukake, Yusuke, 5,183,870, Cl. 526-273.000.

Motorola, Inc.: *See—*
Chiao, Jennifer Y.; Flannagan, Stephen; and Feng, Taisheng, 5,184,033, Cl. 307-446.000.
Link, Laura J., 5,184,303, Cl. 364-449.000.
Marko, Paul D., 5,184,143, Cl. 343-749.000.
Mukerji, Prosanto K.; Mallen, Russell; Demet, George; and Fuerhaupter, Harry, 5,183,692, Cl. 427-304.000.
Patino, Joseph; Fernandez, Jose M.; and Bogut, Henry A., 5,184,059, Cl. 320-15.000.
Riordan, Kenneth B., 5,184,349, Cl. 370-95.300.
Rutter, Robert E.; and d'Aragona, Frank S., 5,183,769, Cl. 437-31.000.
Schultz, Charles P., 5,184,120, Cl. 340-870.380.
Sugai, Maureen, 5,183,181, Cl. 221-155.000.
Zobel, Don W., 5,184,028, Cl. 307-270.000.

Mott, Philip J., to Borg-Warner Automotive Transmission & Engine Components Corporation. Force ratio control of continuously variable transmissions. 5,182,968, Cl. 74-856.000.

Mott, Stephen D.; and Johnson, Richard F., to Protein Technologies International, Inc. Process for producing a functional protein product from vegetable protein materials. 5,183,683, Cl. 426-641.000.

Mouney, Daniel F. Nasal aspirator. 5,183,467, Cl. 604-149.000.

Mounier, Remy: *See—*
Salerno, Martine S.; Mounier, Remy; and Breda, Bernard, 5,183,588, Cl. 252-312.000.

Movern, John B. Restricted use hypodermic syringe. 5,183,466, Cl. 604-110.000.

Movid Information Technology, Inc.: *See—*
Kryder, Mark H.; and Shieh, Han-Ping D., 5,184,335, Cl. 369-13.000.

Moyer, John A.: *See—*
Abou-Gharbia, Magid A. M.; and Moyer, John A., 5,183,819, Cl. 514-255.000.

Mrozowski, Joseph E.; Fusco, Jeffery K.; and Albaisa, Alfonso, to Nissan Design International, Inc. Spare tire lowering system. 5,183,192, Cl. 224-42.210.

Mta Szegedi Biologiai Kozpontja: *See—*
Simoncsits, Andras; Kalman, Miklos; Kari, Csaba; and Cserpan, Imre, 5,183,748, Cl. 455-91.000.

Mueller, Roman, to Buehler AG. Process and apparatus for separating grain mixture. 5,183,161, Cl. 209-467.000.

Mueller, Thomas C.: *See—*
McClung, Duane G.; and Mueller, Thomas C., 5,183,090, Cl. 144-350.000.

Mui, Paul K.: *See—*
Foote, Wayne E.; Mui, Paul K.; and Sleger, Roger R., 5,184,265, Cl. 360-106.000.

Mukerji, Prosanto K.; Mallen, Russell; Demet, George; and Fuerhaupter, Harry, to Motorola, Inc. Polyimide coating having electroless metal plate. 5,183,692, Cl. 427-304.000.

Mukherjee, Anujit: *See—*
May, John W.; and Mukherjee, Anujit, 5,183,717, Cl. 430-97.000.

Muller, Erwin, to Siemens Aktiengesellschaft. Housing for an electromechanical component, particularly for a relay. 5,184,102, Cl. 335-202.000.

Muller, Heiner. Device for training of differentiation. 5,183,399, Cl. 434-322.000.

Muller, Johannes C. A.; and Vollmann, Norbert C., to U.S. Philips Corporation. Helical-scan magnetic tape apparatus having a tape-transport path with twisting path-sections for tape-path correction. 5,184,259, Cl. 360-85.000.

Muller, Klaus-Helmut; Kluth, Joachim; Konig, Klaus; Gassen, Karl-Rudolf; Findeisen, Kurt; Lindig, Markus; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Herbicidal substituted 4-amino-5-alkylthio-1,2,4-triazol-3-ones. 5,183,932, Cl. 560-330.000.

Muller, Michael: *See—*
Asmussen, Erik; Munksgaard, Erik C.; Muller, Michael; Podszun, Wolfgang; and Winkel, Jens, 5,183,832, Cl. 522-84.000.

Muneishi, Shigetoshi: *See—*
Nakamatsu, Toshio; Terao, Masanobu; Muneishi, Shigetoshi; Kometani, Norio; and Hayashi, Yoshiaki, 5,183,892, Cl. 546-76.000.

Munksgaard, Erik C.: *See—*
Asmussen, Erik; Munksgaard, Erik C.; Muller, Michael; Podszun, Wolfgang; and Winkel, Jens, 5,183,832, Cl. 522-84.000.

Murakami, Gen: *See—*
Sakuta, Toshiyuki; Miyazawa, Kazuyuki; Oguchi, Satoshi; Kaneda, Aizo; Mitani, Masao; Nakamura, Shozo; Nishi, Kunihiko; and Murakami, Gen, 5,184,208, Cl. 257-666.000.

Murakami, Hiroshi; and Sakaida, Tetsu. Speed reducer. 5,183,443, Cl. 475-168.000.

Murakami, Kazunori; Ikumi, Tomonori; Matsumoto, Yasuo; and Iwafune, Yasuo, to Tokyo Electric Co., Ltd. Optical scanning system. 5,184,245, Cl. 359-196.000.

Muramoto, Hisao: *See—*
Inada, Haruhiro; and Muramoto, Hisao, 5,183,288, Cl. 280-732.000.

Murata, Kazushige; and Ito, Takeshi, to Inax Corporation. Pressurized slip casting apparatus. 5,183,668, Cl. 425-84.000.

Murata Kikai Kabushiki Kaisha: *See—*
Mima, Hiroshi; Suzuki, Tadashi; and Kubota, Yasuhiko, 5,182,902, Cl. 57-279.000.

Murata, Kimiyo: *See—*
Adachi, Masakazu; Saitou, Toshimitu; Murata, Kimiyo; and Tamura, Aki, 5,183,738, Cl. 435-7.100.

Murata Manufacturing Co., Ltd.: *See—*
Kadota, Michio; and Morozumi, Kazuhiko, 5,184,042, Cl. 310-313.00A.
Wakino, Kikuo; Hishikawa, Toshio; Ishikawa, Youhei; Takehara, Koichi; and Tanizaki, Toru, 5,184,096, Cl. 333-175.000.
Yoshinaga, Takashi, 5,184,043, Cl. 310-320.000.

Murphy, James: *See—*
Servido, John L.; Tucker, Robert E.; and Murphy, James, 5,183,483, Cl. 55-26.000.

Murphy, James V.; and Murphy, Michael J., to Advanced Interconnections Corporation. Socket constructed with molded-in lead frame providing means for installing additional component such as a chip capacitor. 5,184,285, Cl. 361-421.000.

Murphy, Michael J.: *See—*
Murphy, James V.; and Murphy, Michael J., 5,184,285, Cl. 361-421.000.

Murray Equipment, Inc.: *See—*
Callahan, David D.; Reese, Craig; Baxter, Douglas P.; and Murray, Stephen M., 5,183,147, Cl. 198-524.000.

Murray, S. Frank: *See—*
Calabrese, Salvadore J.; Scarton, Henry A.; Murray, S. Frank; Ettles, Christopher M.; Kennedy, Warren C.; Dinc, Saim; Jlidi, Bessem; and Strong, William, 5,183,955, Cl. 84-437.000.

Murray, Stephen M.: *See—*
Callahan, David D.; Reese, Craig; Baxter, Douglas P.; and Murray, Stephen M., 5,183,147, Cl. 198-524.000.

Mutaguchi, Masao: *See—*
Uno, Nayomon; and Mutaguchi, Masao, 5,182,887, Cl. 52-167.00R.

Mutoh Industries Ltd.: *See—*
Suzuki, Masaaki; and Eshita, Tooru, 5,182,861, Cl. 33-18.100.

Mutoh, Nobuyoshi: *See—*
Sakai, Keijiro; Endo, Tunehiro; Kubota, Yuzuru; Ikimi, Takashi; Mutoh, Nobuyoshi; and Honbu, Mitsuyuki, 5,184,057, Cl. 318-803.000.

Myers, Gary L., to Fort Lock Corporation. Method of providing a universal keyway lock and plug therefor. 5,182,929, Cl. 70-337.000.

Myers, Harold D., to Dow Chemical Company, The. Integrated process for the production of dimethyl carbonate. 5,183,920, Cl. 558-277.000.

Myers, Terrence L., to Hughes Aircraft Company. Sample-and-hold droop compensator for high speed high resolution analog-to-digital converter. 5,184,127, Cl. 341-122.000.

Myllymaki, Olavi: *See—*
Lehtomaki, Ilkka; Karinen, Pertti; Bergelin, Risto; and Myllymaki, Olavi, 5,183,677, Cl. 426-436.000.

Nagafuji, Toshiaki, to NEC Corporation. Connector for coaxial cable. 5,183,412, Cl. 439-578.000.

Nagai, Masahiko; Watai, Hiroo; Nagumo, Takaharu; and Moriwaki, Kaoru, to Hitachi, Ltd. Fault simulation method. 5,184,308, Cl. 364-489.000.

Nagai, Masahiko: *See—*
Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, 5,183,921, Cl. 558-301.000.

Naganuma, Akiko: *See—*
Tanaka, Kazuyoshi; Isobe, Toshifumi; Itaya, Masahiko; and Naganuma, Akiko, 5,184,146, Cl. 346-1.100.

Nagaoka, ;Masahide: *See—*
Kishi, Hiroyuki; Kimura, Hitoshi; Yamamoto, Katsuya; Tamura, Yoshinobu; Sakauchi, Tsuneo; Nagaoka, ;Masahide; and Tsuchiya, Yasuyu, 5,183,836, Cl. 523-404.000.

Nagato, Hitoshi: *See—*
Higuchi, Kazuhiko; Hirahara, Shuzo; Saito, Tutomu; Nagato, Hitoshi; and Iwamoto, Akito, 5,183,347, Cl. 400-583.300.

Nagumo, Takaharu: *See—*
Nagai, Masahiko; Watai, Hiroo; Nagumo, Takaharu; and Moriwaki, Kaoru, 5,184,308, Cl. 364-489.000.

Nagy, Michael E., to International Business Machines Corporation. Method of decompressing compressed data. 5,184,126, Cl. 341-67.000.

Naito, Genpei, to Nissan Motor Co., Ltd. System for controlling drive torque distributing clutch of vehicle. 5,183,131, Cl. 180-233.000.

Naito, Hideki; Yokoyama, Shigeki; and Tsukahara, Jiro, to Fuji Photo Film Co., Ltd. Method for forming color image. 5,183,729, Cl. 430-385.000.

Naito, Kenzo; Ishibashi, Yukio; and Shinbo, Haruo, to Takeda Chemical Industries, Ltd. Method for production of T-butyl 3-oxobutyrates and their use. 5,183,929, Cl. 560-178.000.

Najjar, Mitri S.; and Hilmar, Martin D., to Texaco Inc. Separation by membrane techniques. 5,183,482, Cl. 55-16.000.

Najmy, Stephen W.: *See—*
Holbrook, Michael T.; Hebert, Lawrence A.; Najmy, Stephen W.; Stine, Ernest F., Jr.; and Hasche, Reimer, 5,183,797, Cl. 502-355.000.

Naka, Takehiko; and Nishikawa, Kohei, to Takeda Chemical Industries, Ltd. Pyrazole derivative. 5,183,899, Cl. 548-253.000.

Nakabayashi, Isao: *See—*
Akahoshi, Sumihisa; Akimura, Hitoshi; Nakabayashi, Isao; Ishii, Masami; Ohi, Tamio; and Yoshida, Makoto, 5,183,591, Cl. 252-503.000.

Nakacho, Yoshifumi; Inubushi, Akiyoshi; and Tada, Yuji, to Otsuka Kagaku Kabushiki Kaisha. All solid-state battery. 5,183,716, Cl. 429-192.000.

Nakagawa, Masahiro; Mizutani, Hideo; Komatsu, Kouichirou; and Nojima, Yawara, to Nikon Corporation. Projection exposure apparatus. 5,184,196, Cl. 356-401.000.

Nakagawa, Nobuhide: *See—*
Hattori, Ryuichi; and Nakagawa, Nobuhide, 5,182,982, Cl. 99-404.000.

Nakagawa, Tatsuya, to Kabushiki Kaisha Toshiba. Cooking apparatus with cooking information display means. 5,183,984, Cl. 219-10.55M.

Nakagawa, Yasuhito, to Sharp Kabushiki Kaisha. Interconnection method for semiconductor device comprising a high-temperature superconductive material. 5,183,800, Cl. 505-1.000.

Nakahara, Kazuyuki: *See—*
Hayashi, Keisuke; Ishigaki, Kouji; Nakahara, Kazuyuki; Yanagida, Masato; and Kishi, Fumio, 5,184,184, Cl. 355-296.000.

Nakajima, Mikito: *See—*
Fukushima, Hiroshi; Motonaga, Akira; Suda, Eriko; Nakajima, Mikito; Takeshita, Katsuyoshi; and Kutsukake, Yusuke, 5,183,870, Cl. 526-273.000.

Nakajima, Shigeki: *See—*
Kikuchi, Hiroshi; Nakajima, Shigeki; Ono, Hisao; and Momiyama, Yoshiharu, 5,184,177, Cl. 355-200.000.

Nakajima, Shin; Aoyama, Hiroyuki; Kagawa, Rihito; and Shimoe, Osamu, to Hitachi Metals, Ltd. High-voltage pulse generating circuit, and discharge-excited laser and accelerator containing such circuit. 5,184,085, Cl. 328-65.000.

Nakajima, Tadashi: *See—*
Toyosawa, Shinichi; Nakajima, Tadashi; Suzuki, Kinya; Kawagoe, Takahiro; Miyazaki, Tadaaki; Kitamura, Takashi; Fuse, Tadashi; Ogawa, Masao; Masuda, Yoshitomo; Daifuku, Hideharu; and Fujio, Ryota, 5,183,543, Cl. 204-242.000.

Nakajima, Yoshinobu: *See—*
Nishide, Tsutomu; Yasumura, Daisuke; Nakajima, Yoshinobu; Onodera, Akiko; Yasukawa, Takuji; Kokumai, Hirokazu; Umeda, Tomoshige; Nomura, Seiji; and Mori, Hideki, 5,183,750, Cl. 435-134.000.

Nakamatsu, Toshio; Terao, Masanobu; Muneishi, Shigetoshi; Kometani, Norio; and Hayashi, Yoshiaki, to Sumitomo Chemical Company, Limited; and Daili Chemical Company, Limited. Anthrapyridone compounds. 5,183,892, Cl. 546-76.000.

Nakamura, Chikako: *See—*
Takeuchi, Hiroyuki; Nozokido, Tatsuo; and Nakamura, Chikako, 5,184,073, Cl. 324-309.000.

Nakamura, Ichiro: *See—*
Akasaka, Yoshimichi; Nakamura, Ichiro; and Gotoh, Yasuharu, 5,182,978, Cl. 91-499.000.

Nakamura, Masanori; Hirakouchi, Hiroshi; Yatsuka, Takeshi; Kadowaki, Nobuo; and Endoh, Hiroshi, to Toyo Boseki Kabushiki Kaisha; and Nippon Steel Corporation. Viscoelastic resin composition for vibration-damping material. 5,183,863, Cl. 525-438.000.

Nakamura, Michio; Okunosono, Toshihiko; and Kajikawa, Tsuneo, to Honda Giken Kogyo Kabushiki Kaisha. Muffler device for motorcycle. 5,183,130, Cl. 180-219.000.

Nakamura, Mitsuo: *See—*
Utsunomiya, Atsushi; Nakamura, Mitsuo; Kuwatsuka, Toshiaki; and Tanaka, Yoshinori, 5,183,927, Cl. 560-115.000.

Nakamura, Shozo: *See—*
Sakuta, Toshiyuki; Miyazawa, Kazuyuki; Oguchi, Satoshi; Kaneda, Aizo; Mitani, Masao; Nakamura, Shozo; Nishi, Kunihiko; and Murakami, Gen, 5,184,208, Cl. 257-666.000.

Nakamura, Takashi: *See—*
Takamura, Susumu; Nakamura, Takashi; Okawauchi, Makoto; Toda, Harumi; Kanki, Ichiro; Yoshida, Minoru; Imoto, Toshiyuki; Negayama, Naomi; and Oka, Koichi, 5,183,045, Cl. 128-653.200.

Nakane, Toshio: *See—*
Kawaguichi, Kuniaki; Nakane, Toshio; Shimoda, Akihide; and Hijikata, Kenji, 5,183,623, Cl. 264-544.000.

Nakano, Eiichi, to NEC Corporation. Method of manufacturing semiconductor device. 5,183,781, Cl. 437-191.000.

Nakasima, Masaaki: *See—*
Takahashi, Tadashi; Furuya, Katsuhiko; Nakasima, Masaaki; and Enomoto, Takayuki, 5,184,170, Cl. 354-413.000.

Nakata, Tomohiro; and Mizuta, Akira, to Fuji Photo Film Co., Ltd. Method for inspecting magnetic disk cartridge. 5,184,197, Cl. 356-426.000.

Nakatani, Seiichi: *See—*
Yoshinaka, Minoru; Asakura, Eizo; Oku, Mitsumasa; Kitano, Motoi; Nakatani, Yoshio; Yoshida, Hideyuki; Hatta, Toshiya; and Nakatani, Seiichi, 5,183,594, Cl. 252-518.000.

Nakatani, Yoshio: *See—*
Yoshinaka, Minoru; Asakura, Eizo; Oku, Mitsumasa; Kitano, Motoi; Nakatani, Yoshio; Yoshida, Hideyuki; Hatta, Toshiya; and Nakatani, Seiichi, 5,183,594, Cl. 252-518.000.

Nakayama, Shoichiro: *See—*
Noguchi, Shigeru; Ishida, Satoshi; Iwata, Hiroshi; Sano, Keiichi; and Nakayama, Shoichiro, 5,183,780, Cl. 437-173.000.

Nalco Chemical Company: *See—*
Malito, John T.; and Layman, Curtis M., 5,183,211, Cl. 241-16.000.

Namur, Marc. Dagger board storage housing for sailboards. 5,183,367, Cl. 441-79.000.

Nania, Yves, to Renolux. Child automobile seat with flange revolving upon arched ribs. 5,183,312, Cl. 297-250.000.

Nappholz, Tibor A.; Koestner, Ken; and Valenta, Harry L., Jr., to Telectronics Pacing Systems, Inc. Apparatus and method for detecting abnormal cardiac rhythms using an ultrasound sensor in an arrhythmia control system. 5,183,040, Cl. 128-419.0PG.

VOL
1147
ISS
1
FE
2
1993
UMI

Narimatsu, Osamu: *See—*
Takemura, Yasuo; Narimatsu, Osamu; and Komatsu, Kazuyoshi, 5,183,699, Cl. 428-214.000.
Narita, Tomohiro: *See—*
Ito, Masayoshi; Yamada, Kiichi; Otake, Katsunori; Miyata, Yasunobu; Narita, Tomohiro; and Nishikawa, Susumu, 5,183,128, Cl. 180-197.000.
Narukami, Toshihiko: *See—*
Taga, Kazumitsu; Narukami, Toshihiko; and Miyaoku, Yoshiyuki, 5,183,678, Cl. 426-448.000.
National Computer Systems, Inc.: *See—*
McMillin, John V.; and Clark, Jay V., 5,184,003, Cl. 235-454.000.
National Gypsum Company: *See—*
Zak, James L.; and Smith, Richard E., 5,183,152, Cl. 206-524.400.
National Research Development Corporation: *See—*
Bateman, Colin N.; Clark, Peter L.; and Carter, William G., 5,182,886, Cl. 52-125.600.
National Semiconductor Corporation: *See—*
Ohannes, James R.; Clukey, Stephen W.; Haacke, Ernest D.; and Yarbrough, Roy L., 5,184,034, Cl. 307-473.000.
Nau, Vance J.: *See—*
Gatten, Ronald A.; Miller, Leslie A.; McCall, Thomas J., Jr.; and Nau, Vance J., 5,183,486, Cl. 55-159.000.
Navar, Cynthia A.: *See—*
Fjare, Douglas E.; Beuhler, Allyson J.; and Navar, Cynthia A., 5,183,534, Cl. 156-668.000.
Navigation Technology Corporation: *See—*
Dumestre, Alex, III, 5,184,328, Cl. 367-4.000.
Navistar International Transportation Corp.: *See—*
Stasell, Mark W., 5,184,301, Cl. 364-431.070.
Nawoj, John P. Child commode seat apparatus. 5,182,818, Cl. 4-235.000.
Naya, Toshiaki: *See—*
Ohta, Norio; Oda, Yukio; Naya, Toshiaki; and Kasuga, Tomoyuki, 5,183,026, Cl. 125-11.160.
NCR Corporation: *See—*
Nicoll, Kenneth A., 5,183,140, Cl. 192-56.00R.
NEC Corporation: *See—*
Henmi, Naoya; Suzaki, Tetsuyuki; and Saito, Tomoki, 5,184,243, Cl. 359-181.000.
Nagafuji, Toshiaki, 5,183,412, Cl. 439-578.000.
Nakano, Eiichi, 5,183,781, Cl. 437-191.000.
Sugibayashi, Tadahiko, 5,184,035, Cl. 307-482.000.
Sukegawa, Osamu, 5,184,235, Cl. 359-60.000.
Taniguchi, Hiromichi, 5,184,287, Cl. 361-540.000.
Yamashita, Shuji, 5,184,242, Cl. 359-177.000.
Negayama, Naomi: *See—*
Takamura, Susumu; Nakamura, Takashi; Okawauchi, Makoto; Toda, Harumi; Kanki, Ichiro; Yoshida, Minoru; Imoto, Toshiyuki; Negayama, Naomi; and Oka, Koichi, 5,183,045, Cl. 128-653.200.
Negoro, Kouichi: *See—*
Matsuoka, Fumio; Negoro, Kouichi; Sugimoto, Takeshi; Yamaguchi, Toshiaki; and Yamashita, Tetsuya, 5,182,920, Cl. 62-206.000.
Neill, Eugene B.: *See—*
Hergert, Richard E.; Hergert, Richard R.; Neill, Eugene B.; Pantaleo, Scott B.; Roerig, Arnold J.; Rogers, Thomas D.; Shands, Jay A.; and Takeguchi, Noriaki, 5,183,537, Cl. 162-216.000.
Neis, George Glenn: *See—*
Paplinski, Walter, 5,183,284, Cl. 280-508.000.
Nelb, Robert G., II; and Onder, Kemal, to Dow Chemical Company, The. Polyamide blends by reactive processing. 5,183,864, Cl. 525-452.000.
Nelle, Gunther, to Dr. Johannes Heidenhain GmbH. Position measuring apparatus. 5,182,867, Cl. 33-702.000.
Nelson, Larry A., to Honeywell Inc. Apparatus and method for testing an active matrix pixel display. 5,184,082, Cl. 324-537.000.
Neotronics Medical Limited: *See—*
Dearman, Peter T., 5,183,037, Cl. 128-204.180.
Nergeco (societe anonyme): *See—*
Kraeutler, Bernard, 5,183,093, Cl. 160-84.100.
Nesler, Clay: *See—*
Decious, Gaylon; and Nesler, Clay, 5,184,122, Cl. 340-870.160.
Neste Oy: *See—*
Knuuttila, Hilkka; and Lakomaa, Eeva-Liisa, 5,183,794, Cl. 502-242.000.
Knuuttila, Pekka; and Lakomaa, Eeva-Liisa, 5,183,796, Cl. 502-340.000.
Nestec S.A.: *See—*
Carns, Lawrence G.; and Tuot, James, 5,182,926, Cl. 62-352.000.
Schlecht, Klaus, 5,183,676, Cl. 426-434.000.
Neugebauer, Constantine A.; Glascock, Homer H., II; Paik, Kyung W.; McMullen, James G.; and Neugebauer, Martha M., to General Electric Company. Direct thermocompression bonding for thin electronic power chips. 5,184,206, Cl. 257-762.000.
Neugebauer, Martha M.: *See—*
Neugebauer, Constantine A.; Glascock, Homer H., II; Paik, Kyung W.; McMullen, James G.; and Neugebauer, Martha M., 5,184,206, Cl. 257-762.000.
Neuvessel, Jacques: *See—*
Delattre, Jacques; Gouze, Philippe; and Neuvessel, Jacques, 5,184,054, Cl. 318-586.000.
Nevamar Corporation: *See—*
Scher, Herbert I.; Ungar, Israel S.; and Baehr, Richard R., Jr., 5,183,600, Cl. 264-26.000.
Neveu, Frederic: *See—*
Devillers, Yves; Neveu, Frederic; Behe, Roger; and Ramat, Pierre, 5,184,145, Cl. 343-840.000.
New Jersey Machine Inc.: *See—*
Reuteler, Urs, 5,183,146, Cl. 198-444.000.
New Morning Windows, Inc.: *See—*
Berge, Richard H., Jr.; and Larsen, Mark A., 5,182,880, Cl. 49-504.000.
Newallis, Peter E.: *See—*
Zakaryan, Ara H.; Newallis, Peter E.; and Tice, Mark A., 5,183,916, Cl. 558-95.000.
Newell, Catherine D.: *See—*
Mosehauer, Michael; Newell, Catherine D.; and Mauer, Andrew J., 5,184,194, Cl. 355-297.000.
Newton, David F.: *See—*
Kenyon, Ronald W.; Newton, David F.; and Thorp, Derek, 5,183,888, Cl. 544-153.000.
Next Computer, Inc.: *See—*
Molpus, J. Lane; Levinthal, Adam; and Werner, Ross, 5,184,124, Cl. 341-50.000.
NGK Insulators, Ltd.: *See—*
Miyahara, Kazuhiro, 5,183,609, Cl. 264-44.000.
Takeuchi, Yukihisa; Hirota, Toshikazu; Okada, Shigeki; and Shimogawa, Natsumi, 5,184,344, Cl. 369-126.000.
Nguyen, Hop D.: *See—*
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,184,307, Cl. 364-474.240.
Nguyen, My N.; Lee, Chee-Kong; and Herrington, Thomas L., to Johnson Matthey Inc. Silver-glass pastes. 5,183,784, Cl. 501-19.000.
Niagara Mohawk Power Corporation: *See—*
Barker, Philip P., 5,184,215, Cl. 358-93.000.
Nichols, Charles R.: *See—*
Woodall, Bobbie L.; Nichols, Charles R.; and Nichols, Thelma E., 5,182,956, Cl. 74-18.200.
Nichols, Robert L. Medical instrument sterilization container. 5,183,643, Cl. 422-297.000.
Nichols, Thelma E.: *See—*
Woodall, Bobbie L.; Nichols, Charles R.; and Nichols, Thelma E., 5,182,956, Cl. 74-18.200.
Nicholson, James C.: *See—*
Bryant, David R.; Babin, James E.; Nicholson, James C.; and Weintritt, Donald J., Jr., 5,183,943, Cl. 568-454.000.
Nicholson, Jamie: *See—*
McEachern, Alexander; Nicholson, Jamie; and Waterman, Craig S., 5,184,066, Cl. 324-158.00R.
Nickolas, Sarento G.: *See—*
Dalla Betta, Ralph A.; Ezawa, Nobuyasu; Tsurumi, Kazunori; Schlatter, James C.; and Nickolas, Sarento G., 5,183,401, Cl. 431-7.000.
Nicolaou, Kyriacos C.; Sorensen, Erik; Hwang, Chan-Kou; Discordia, Robert; Bergman, Robert G.; and Minto, Robert E., to Scripps Research Institute, The. Ten-membered ring enediynediols and enediynediones having DNA cleaving properties. 5,183,942, Cl. 568-375.000.
Nicolas, Michel: *See—*
Guillin, Daniel; and Nicolas, Michel, 5,183,076, Cl. 137-513.700.
Nicolet Instrument Corporation: *See—*
Ladwig, Gregory J., 5,184,062, Cl. 324-74.000.
Nicoll, Kenneth A., to NCR Corporation. Torque limiting mechanism for use in a drive system. 5,183,140, Cl. 192-56.00R.
Niehaus, Gottfried: *See—*
Meier, Josef; and Niehaus, Gottfried, 5,183,176, Cl. 220-470.000.
Nigo, Toshiro: *See—*
Iida, Tadasato; Takahashi, Fusakichi; Wada, Kouji; and Nigo, Toshiro, 5,182,915, Cl. 62-89.000.
Niho, Yoji G.; Day, Eric W.; and Flanders, Tammy L., to Hughes Aircraft Company. Fast phase difference autofocus. 5,184,134, Cl. 342-25.000.
Nihonmatai Co., Ltd.: *See—*
Noguchi, Tatsuo, 5,183,432, Cl. 446-220.000.
Nikon Corporation: *See—*
Iida, Yoshikazu; Kosaka, Toru; Tsuru, Hiroyuki; Higaki, Riichi; and Katayama, Akira, 5,184,167, Cl. 354-403.000.
Nakagawa, Masahiro; Mizutani, Hideo; Komatsu, Kouichirou; and Nojima, Yawara, 5,184,196, Cl. 356-401.000.
Nilsson, Kenth-Ake-Sune: *See—*
Dalen, Bjoern; Nilsson, Kenth-Ake-Sune; Hoegnelid, Kurt; and Wecke, Liliane, 5,183,056, Cl. 128-782.000.
Nioche, Jean-Yves: *See—*
Festal, Didier; Nioche, Jean-Yves; Descours, Denis; Bellemin, Robert; and Decerprit, Jacques, 5,183,924, Cl. 560-56.000.
Nippon Aleph Corporation: *See—*
Tanaka, Tsugutoshi; and Ishiwata, Soji, 5,184,149, Cl. 346-74.200.
Nippon Chemiphar Co., Ltd.: *See—*
Masaki, Mitsuo; Takeda, Hiromitsu; Kamishiro, Toshiro; and Yamamoto, Masao, 5,183,811, Cl. 514-79.000.
Nippon Conlux Co., Ltd.: *See—*
Kachi, Kenjiro; and Noda, Kazuo, 5,184,340, Cl. 369-44.370.
Nippon Oil and Fats Co., Ltd.: *See—*
Kuroyama, Yutaka; Maeno, Masami; and Sakakibara, Ikuo, 5,183,362, Cl. 407-118.000.

Nippon Paint Co., Ltd.: *See—*
Kishi, Hiroyuki; Kimura, Hitoshi; Yamamoto, Katsuya; Tamura, Yoshinobu; Sakauchi, Tsuneo; Nagaoka, ;Masahide; and Tsuchiya, Yasuyu, 5,183,836, Cl. 523-404.000.
Kuwajima, Teruaki; Umeda, Shinichiro; and Konishi, Sakuichi, 5,183,504, Cl. 106-404.000.
Nippon Seiko Kabushiki Kaisha: *See—*
Ouchi, Hideo; and Miyazaki, Hiroya, 5,183,341, Cl. 384-446.000.
Nippon Steel Corporation: *See—*
Nakamura, Masanori; Hirakouchi, Hiroshi; Yatsuka, Takeshi; Kadowaki, Nobuo; and Endoh, Hiroshi, 5,183,863, Cl. 525-438.000.
Tamehiro, Hiroshi; Ogata, Yoshinori; and Terada, Yoshio, 5,183,198, Cl. 228-186.000.
Nippondenso Co. Ltd.: *See—*
Ukai, Naoki; and Mori, Koji, 5,184,005, Cl. 235-472.000.
Nishi, Kunihiko: *See—*
Sakuta, Toshiyuki; Miyazawa, Kazuyuki; Oguchi, Satoshi; Kaneda, Aizo; Mitani, Masao; Nakamura, Shozo; Nishi, Kunihiko; and Murakami, Gen, 5,184,208, Cl. 257-666.000.
Nishi, Norio: *See—*
Saiki, Ikuo; Nishi, Norio; Azuma, Ichiro; and Tokura, Seiichi, 5,183,804, Cl. 514-12.000.
Nishi, Yuji; Ito, Shigehiro; Kuguchi, Tatsushi; and Ebihara, Kazuyuki, to Victor Company of Japan, Ltd. Apparatus for removing ghost component disturbing picture signal. 5,184,221, Cl. 358-167.000.
Nishida, Hiroshi: *See—*
Tanaka, Hiroshi; Kominato, Kaichiro; Yoshioka, Takeo; Iguchi, Hiroshi; Hirano, Shin-ichi; Okajima, Yasuo; Yamamoto, Reijko; Shirai, Masataka; Nishida, Hiroshi; Tone, Hiroshi; and Okamoto, Rokuro, 5,183,883, Cl. 563-6.400.
Nishida, Kuniyoshi: *See—*
Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, 5,183,921, Cl. 558-301.000.
Nishide, Tsutomu; Yasumura, Daisuke; Nakajima, Yoshinobu; Onodera, Akiko; Yasukawa, Takuji; Kokumai, Hirokazu; Umeda, Tomoshige; Nomura, Seiji; and Mori, Hideki, to Kao Corporation. Processes for the production of phosphatidic acid. 5,183,750, Cl. 435-134.000.
Nishigaki, Takayuki: *See—*
Wada, Noriyuki; and Nishigaki, Takayuki, 5,183,271, Cl. 277-152.000.
Nishikawa, Kohei: *See—*
Naka, Takehiko; and Nishikawa, Kohei, 5,183,899, Cl. 548-253.000.
Nishikawa, Susumu: *See—*
Ito, Masayoshi; Yamada, Kiichi; Otake, Katsunori; Miyata, Yasunobu; Narita, Tomohiro; and Nishikawa, Susumu, 5,183,128, Cl. 180-197.000.
Nishimura, Akira; Suzuki, Shuzo; and Shigematsu, Masayuki, to Sumitomo Electric Industries, Ltd. Optical communication system and communication method. 5,184,244, Cl. 359-187.000.
Nishimura, Hiroshi, to Hitachi Medical Corporation. Method and apparatus for compensating for nonuniformity of static magnetic field in MRI system. 5,184,075, Cl. 324-309.000.
Nishino, Hiromi; Tarui, Keiji; Toyoshi, Hideyuki; and Morita, Tatsuo, to Sharp Kabushiki Kaisha. Electrode pattern forming method. 5,183,725, Cl. 430-313.000.
Nishio, Kouji; and Hanamura, Yoshihiko, to Kabushiki Kaisha Topcon. Noncontact type tonometer. 5,183,044, Cl. 128-648.000.
Nishio, Maki: *See—*
Sawada, Yosuke; Kakushima, Masatoshi; Nishio, Maki; Miyaki, Takeo; and Oki, Toshikazu, 5,183,808, Cl. 514-33.000.
Nishitani, Yasuhiro, to Fuji Photo Film Co., Ltd. Photography mode input systems. 5,184,169, Cl. 354-412.000.
Nissan Design International, Inc.: *See—*
Mrozowski, Joseph E.; Fusco, Jeffery K.; and Albaisa, Alfonso, 5,183,192, Cl. 224-42.210.
Nissan Motor Co., Ltd.: *See—*
Ikeda, Hiroshi, 5,184,131, Cl. 341-165.000.
Imaseki, Takashi; Tamura, Minoru; Iwata, Toru; and Fukuyama, Yuichi, 5,184,298, Cl. 364-424.050.
Kishi, Hiroyuki; Kimura, Hitoshi; Yamamoto, Katsuya; Tamura, Yoshinobu; Sakauchi, Tsuneo; Nagaoka, ;Masahide; and Tsuchiya, Yasuyu, 5,183,836, Cl. 523-404.000.
Masuhra, Shohei; Tonoki, Satoshi; Shibukawa, Toshiya; and Sugawara, Hirsohi, 5,183,695, Cl. 428-151.000.
Mihara, Teruyoshi; Matsushita, Tsutomu; Yao, Kenji; Hoshi, Masakatsu; Enokido, Yutaka; and Hirota, Yukitsugu, 5,184,204, Cl. 357-629.000.
Naito, Genpei, 5,183,131, Cl. 180-233.000.
Nisshin Oil Mills, Ltd., The: *See—*
Tamura, Koichi; Taguchi, Nobuo; and Tashiro, Satoshi, 5,183,675, Cl. 426-33.000.
Nisshinbo Industries, Inc.: *See—*
Yosomiya, Ryutoku; Hirata, Mistutoshi; Morimoto, Kiyotaka; Takenishi, Soichiro; and Marutsuka, Toshinori, 5,183,611, Cl. 264-129.000.
Nitta, Atsumi: *See—*
Kanai, Yasushi; Takano, Hiroe; Saoshita, Shushi; and Nitta, Atsumi, 5,184,266, Cl. 360-120.000.
Nitto Denko Corporation: *See—*
Hori, Mitsuhiko, 5,183,665, Cl. 424-449.000.
NKK Corporation: *See—*
Ariyama, Tatsuro; Isozaki, Shinichi; Yamada, Kenzo; Matsuo, Masahiro; and Kanatani, Genji, 5,183,495, Cl. 75-379.000.
Nobbe, Paul J. Wooden pole bender. 5,183,091, Cl. 144-360.000.
Nobi, Josef. Bumper bowling game with gravity released ball projector. 5,183,261, Cl. 273-38.000.
Nobis, Dieter: *See—*
Guse, Rudolf; Nobis, Dieter; and Malinowski, Hans, 5,182,847, Cl. 29-527.700.
Noda, Kazuo: *See—*
Kachi, Kenjiro; and Noda, Kazuo, 5,184,340, Cl. 369-44.370.
Noda, Kousuke: *See—*
Hamada, Yasunori; Oizumi, Junichi; Noda, Kousuke; and Ushijima, Kunio, 5,184,000, Cl. 235-379.000.
Noe, Andreas: *See—*
Noe, Oskar; Noe, Rolf; and Noe, Andreas, 5,182,931, Cl. 72-183.000.
Noe, Oskar; Noe, Rolf; and Noe, Andreas, to BWG Bergwerk-und Walzwerk Maschinenbau GmbH. Method for continuous tension stretching of thin strips, particularly metal strips. 5,182,931, Cl. 72-183.000.
Noe, Rolf: *See—*
Noe, Oskar; Noe, Rolf; and Noe, Andreas, 5,182,931, Cl. 72-183.000.
Nogami, Akira: *See—*
Mikami, Toshihiro; Kohmura, Yukio; Ishida, Yoshinori; and Nogami, Akira, 5,183,490, Cl. 65-144.000.
Noguchi, Hideaki, to Sony Corporation. Various-sized-cassette housing shelf. 5,184,261, Cl. 360-94.000.
Noguchi, Shigeru; Ishida, Satoshi; Iwata, Hiroshi; Sano, Keiichi; and Nakayama, Shoichiro, to Sanyo Electric Co., Ltd. Method of fabricating semiconductor device. 5,183,780, Cl. 437-173.000.
Noguchi, Tatsuo, to Nihonmatai Co., Ltd. Floating body of sophisticated shape produced from a single sheet of film with a single sealing. 5,183,432, Cl. 446-220.000.
Noguchi, Yukio: *See—*
Shiina, Michihiro; Tanaka, Yasuhiko; Iwai, Fumio; Noguchi, Yukio; Umetsu, Takao; Saito, Tatsuo; Onozuka, Haruo; Saitoh, Muneyoshi; and Koda, Takao, 5,184,166, Cl. 354-400.000.
Nojima, Yawara: *See—*
Nakagawa, Masahiro; Mizutani, Hideo; Komatsu, Kouichirou; and Nojima, Yawara, 5,184,196, Cl. 356-401.000.
NOK Corporation: *See—*
Saitoh, Takayuki, 5,183,617, Cl. 264-249.000.
Wada, Noriyuki; and Nishigaki, Takayuki, 5,183,271, Cl. 277-152.000.
Noltee, Dennis E., Sr.: *See—*
Ashelin, Brian T.; Bergquist, Mark A.; and Noltee, Dennis E., Sr., 5,184,284, Cl. 361-400.000.
Nomura, Seiji: *See—*
Nishide, Tsutomu; Yasumura, Daisuke; Nakajima, Yoshinobu; Onodera, Akiko; Yasukawa, Takuji; Kokumai, Hirokazu; Umeda, Tomoshige; Nomura, Seiji; and Mori, Hideki, 5,183,750, Cl. 435-134.000.
Nomura, Tomoko: *See—*
Hori, Kimihiko; Sakaguchi, Akira; Ishida, Koichi; Nomura, Tomoko; Suzuki, Keiko; and Tsuchiya, Shuichi, 5,183,824, Cl. 514-383.000.
Nonaka, Osamu, to Olympus Optical Co., Ltd. Distance measuring apparatus for camera, which controls outputs from multi-electrodes PSD. 5,184,168, Cl. 354-403.000.
Nordquest, Kim W., to Phillips Petroleum Company. Olefin polymerization over pi-olefin complex of chromium supported on aluminophosphate. 5,183,868, Cl. 526-155.000.
Nordson Corporation: *See—*
Merkel, Stephen L., 5,182,938, Cl. 73-19.050.
Nordstrom, Immo R.; and Bak, Johannes A. Method and apparatus for handling cargo containers. 5,183,305, Cl. 294-81.200.
Norlander, Norman E.; and Thompson, Ralph A., to Weyerhaeuser Company. Chipper knife assembly. 5,183,089, Cl. 144-231.000.
North, John M., to Gould Electronics Limited; and Dowty Electronic Components Limited. Solid state cell electrolyte. 5,183,715, Cl. 429-192.000.
North, Peter C.: *See—*
Coates, Ian H.; Oxford, Alexander W.; North, Peter C.; and Price, Barry J., 5,183,820, Cl. 514-292.000.
Northern Telecom Europe: *See—*
Oswald, Thomas; and Hirst, Ian J., 5,184,081, Cl. 324-533.000.
Notoya, Kohei; Yoshida, Keiji; and Yamazaki, Iwao, to Takeda Chemical Industries, Ltd. Process for preparing osteogenesis promoting substance. 5,183,570, Cl. 210-641.000.
Novotny, Shlomo D., to Digital Equipment Corporation. Closed-cycle expansion-valve impingement cooling system. 5,183,104, Cl. 165-104.330.
Nozaki, Ryoei: *See—*
Kose, Junichi; Sugiyama, Akira; Yamada, Minoru; and Nozaki, Ryoei, 5,184,164, Cl. 354-298.000.
Nozokido, Tatsuo: *See—*
Takeuchi, Hiroyuki; Nozokido, Tatsuo; and Nakamura, Chikako, 5,184,073, Cl. 324-309.000.
Nozuyama, Yasuyuki, to Kabushiki Kaisha Toshiba. Signature compression circuit. 5,184,067, Cl. 324-158.00R.
NTN Technical Center, (U.S.A.) Inc.: *See—*
Adler, Jonathan M.; Monahan, Russell E.; and Frayer, Robert W., Jr., 5,184,069, Cl. 324-207.220.
Nukem GmbH: *See—*
Brandau, Egbert; Huschka, Hans; Kadner, Martin; and Schroder, Waldemar, 5,183,493, Cl. 75-335.000.

VOL
1147
ISS
1
FE
2
1993
UMI

Numata, Shunichi: *See—*
Miwa, Takao; Ikeda, Takayoshi; Numata, Shunichi; Fujisaki, Koji; and Shimanoki, Hisae, 5,183,838, Cl. 524-109.000.
Nunley, Alvin, III: *See—*
Adams, James W.; Loving, Louis S.; Betts, David A.; Donnelly, David P.; and Nunley, Alvin, III, 5,184,330, Cl. 367-111.000.
Nunn, Adrian D.: *See—*
Linder, Karen E.; Nunn, Adrian D.; and Ramalingam, Kondarediar, 5,183,653, Cl. 424-1.100.
NutraSweet Company, The: *See—*
Johnson, Mark R., 5,183,937, Cl. 562-608.000.
N.V. Michel Van de Wiele: *See—*
Debaes, John, 5,183,083, Cl. 139-449.000.
O Breartuin, Ciaran S., to Emerson Electric Co. Isolation circuit for detecting the state of a line connected switch. 5,184,026, Cl. 307-139.000.
O'Callaghan, John S.: *See—*
Patuszynski, Duane R.; O'Callaghan, John S.; and Bartoli, Andrew, 5,182,991, Cl. 101-216.000.
Ochi, Katsunori: *See—*
Kodai, Shojiro; Ochi, Katsunori; and Baba, Fumiaki, 5,184,209, Cl. 257-679.000.
Oda, Yukio: *See—*
Ohta, Norio; Oda, Yukio; Naya, Toshiaki; and Kasuga, Tomoyuki, 5,183,026, Cl. 125-11.160.
O'Daniel, Harold W. Extendable rolloff trailer. 5,183,371, Cl. 414-477.000.
Odashima, Satoshi, to Shin-Etsu Polymer Co., Ltd. Anisotropically electroconductive adhesive and adhesively bonded structure therewith. 5,183,969, Cl. 174-88.00R.
O'Dowd, Ronan F. De-multiplexer. 5,184,240, Cl. 359-135.000.
O'Fearna, Patrick J. Hose bibb closure. 5,182,928, Cl. 70-232.000.
Ogata, Hisanao: *See—*
Ogushi, Tetsuya; Hakuraku, Yoshinori; and Ogata, Hisanao, 5,183,799, Cl. 505-1.000.
Ogata, Yoshinori: *See—*
Tamehiro, Hiroshi; Ogata, Yoshinori; and Terada, Yoshio, 5,183,198, Cl. 228-186.000.
Ogawa, Kazunori, to Teijin Seiki Co., Ltd. Counterbalance valve. 5,183,071, Cl. 137-106.000.
Ogawa, Masao: *See—*
Toyosawa, Shinichi; Nakajima, Tadashi; Suzuki, Kinya; Kawagoe, Takahiro; Miyazaki, Tadaaki; Kitamura, Takashi; Fuse, Tadashi; Ogawa, Masao; Masuda, Yoshitomo; Daifuku, Hideharu; and Fujio, Ryota, 5,183,543, Cl. 204-242.000.
Ogawa, Takayuki: *See—*
Sakata, Shinji; Miyashita, Takanori; Kondo, Kazuhiko; Sakai, Atsushi; Shibata, Toshiyuki; and Ogawa, Takayuki, 5,183,882, Cl. 514-49.000.
Ogino, Kazuya: *See—*
Kawashita, Hideo; Ohta, Mituhiro; and Ogino, Kazuya, 5,183,501, Cl. 106-22.00D.
Ogino, Mineo: *See—*
Kozaki, Takahiko; Asano, Kenichi; Ogino, Mineo; Amada, Eiichi; Endo, Noboru; and Sakurai, Yoshito, 5,184,346, Cl. 370-60.000.
Oguchi, Satoshi: *See—*
Sakuta, Toshiyuki; Miyazawa, Kazuyuki; Oguchi, Satoshi; Kaneda, Aizo; Mitani, Masao; Nakamura, Shozo; Nishi, Kunihiko; and Murakami, Gen, 5,184,208, Cl. 257-666.000.
Ogushi, Tetsuya; Hakuraku, Yoshinori; and Ogata, Hisanao, to Hitachi, Ltd. Superconducting materials including La-Sr-Nb-O, Y-Ba-Nb-O, La-Sr-Nb-Cu-O, and Y-Ba-Nb-Cu-O. 5,183,799, Cl. 505-1.000.
Ohannes, James R.; Clukey, Stephen W.; Haacke, Ernest D.; and Yarbrough, Roy L., to National Semiconductor Corporation. State-dependent discharge path circuit. 5,184,034, Cl. 307-473.000.
Ohashi, Yutaka: *See—*
Fukui, Wataru; Iwata, Toshio; Ohashi, Yutaka; and Ikeuchi, Masayuki, 5,182,943, Cl. 73-116.000.
Ohgi Paint Trading Co., Ltd.: *See—*
Takeishi, Hideo; Houseki, Sigeki; and Matsubara, Isao, 5,183,210, Cl. 239-703.000.
Ohi, Tamio: *See—*
Akahoshi, Sumihisa; Akimura, Hitoshi; Nakabayashi, Isao; Ishii, Masami; Ohi, Tamio; and Yoshida, Makoto, 5,183,591, Cl. 252-503.000.
Ohishi, Shinji; Akutsu, Kotaro; and Sakai, Toshikazu, to Canon Kabushiki Kaisha. Device for positioning control. 5,184,055, Cl. 318-615.000.
Ohki, Konomu: *See—*
Ohta, Yutaka; Ohki, Konomu; and Katayama, Masatake, 5,183,783, Cl. 437-225.000.
Ohmoto, Hiroshi; and Iwamoto, Seiichi, to Kanebo, Ltd. Anti-human papillomavirus monoclonal antibody, hybridoma producing the same and process for preparing the same. 5,183,755, Cl. 435-240.270.
Ohsono, Kouhei: *See—*
Yumoto, Toshiyuki; Ohsono, Kouhei; Kanda, Masahiro; and Matsuda, Takahiro, 5,183,439, Cl. 474-28.000.
Ohta, Mituhiro: *See—*
Kawashita, Hideo; Ohta, Mituhiro; and Ogino, Kazuya, 5,183,501, Cl. 106-22.00D.
Ohta, Norio; Oda, Yukio; Naya, Toshiaki; and Kasuga, Tomoyuki, to Toyoda Koki Kabushiki Kaisha. Method and apparatus for dressing an angular grinding wheel. 5,183,026, Cl. 125-11.160.
Ohta, Yoshiji, to Sharp Kabushiki Kaisha. Dynamic semiconductor multi-value memory device. 5,184,324, Cl. 365-149.000.
Ohta, Yutaka; Ohki, Konomu; and Katayama, Masatake, to Shin-Etsu Handotai Co., Ltd. Method for production of dielectric-separation substrate. 5,183,783, Cl. 437-225.000.
Ohtani, Mitsuaki; and Matsuura, Takaharu, to Shionogi & Company, Ltd. Mono ester of dicarboxylic acid. 5,183,909, Cl. 549-463.000.
Ohtori, Akira: *See—*
Morita, Yasushi; Ohtori, Akira; and Andoh, Masako, 5,183,662, Cl. 424-426.000.
Ohtsuna, Hiroshi: *See—*
Baba, Masahiko; and Ohtsuna, Hiroshi, 5,183,528, Cl. 156-601.000.
Ohyama, Tsukasa; Shimokawa, Yasushi; Ghoda, Isamu; Takuma, Keisuke; and Koshida, Hitoshi, to Mitsui Toatsu Chemicals Inc. Heat-sensitive sublimation transfer cyan dye and transfer sheet. 5,183,474, Cl. 8-471.000.
Oike, Hiroshi; and Kawamoto, Akira, to Kabushiki Kaisha Toshiba. Automatic ice maker and household refrigerator equipped therewith. 5,182,916, Cl. 62-135.000.
Oishi, Kengo: *See—*
Mizuno, Masato; and Oishi, Kengo, 5,184,268, Cl. 360-132.000.
Oizumi, Junichi: *See—*
Hamada, Yasunori; Oizumi, Junichi; Noda, Kousuke; and Ushijima, Kunio, 5,184,000, Cl. 235-379.000.
Oka, Koichi: *See—*
Takamura, Susumu; Nakamura, Takashi; Okawauchi, Makoto; Toda, Harumi; Kanki, Ichiro; Yoshida, Minoru; Imoto, Toshiyuki; Negayama, Naomi; and Oka, Koichi, 5,183,045, Cl. 128-653.200.
Okabe, Takanori: *See—*
Aoki, Shinobu; Takagi, Haruo; and Okabe, Takanori, 5,184,201, Cl. 257-266.000.
Okada, Hiromi; and Otsuka, Masao, to Mita Industrial Co., Ltd. Sheet feeding device. 5,183,248, Cl. 271-127.000.
Okada, Shigeki: *See—*
Takeuchi, Yukihisa; Hirota, Toshikazu; Okada, Shigeki; and Shimogawa, Natsumi, 5,184,344, Cl. 369-126.000.
Okajima, Yasuo: *See—*
Tanaka, Hiroshi; Kominato, Kaichiro; Yoshioka, Takeo; Iguchi, Hiroshi; Hirano, Shin-ichi; Okajima, Yasuo; Yamamoto, Reijko; Shirai, Masataka; Nishida, Hiroshi; Tone, Hiroshi; and Okamoto, Rokuro, 5,183,883, Cl. 563-6.400.
Okamoto, Haruo. Folder type paper box. 5,183,200, Cl. 229-23.00R.
Okamoto, Hidefumi; and Sengoku, Koji, to House Food Industrial Co., Ltd. Method for preparing retort Tofu. 5,183,681, Cl. 426-634.000.
Okamoto, Rokuro: *See—*
Tanaka, Hiroshi; Kominato, Kaichiro; Yoshioka, Takeo; Iguchi, Hiroshi; Hirano, Shin-ichi; Okajima, Yasuo; Yamamoto, Reijko; Shirai, Masataka; Nishida, Hiroshi; Tone, Hiroshi; and Okamoto, Rokuro, 5,183,883, Cl. 563-6.400.
Okam .to, Yuji: *See—*
Morooka, Toru; and Okamoto, Yuji, 5,183,240, Cl. 271-3.100.
Okawa, Tadashi, to Dow Corning Toray Silicone Co., Ltd. Organopentasiloxane and method for its preparation. 5,183,912, Cl. 556-425.000.
Okawauchi, Makoto: *See—*
Takamura, Susumu; Nakamura, Takashi; Okawauchi, Makoto; Toda, Harumi; Kanki, Ichiro; Yoshida, Minoru; Imoto, Toshiyuki; Negayama, Naomi; and Oka, Koichi, 5,183,045, Cl. 128-653.200.
OKI Electric Industry Co., Ltd.: *See—*
Kikuchi, Hiroshi; Nakajima, Shigeki; Ono, Hisao; and Momiyama, Yoshiharu, 5,184,177, Cl. 355-200.000.
Oki, Toshikazu: *See—*
Sawada, Yosuke; Kakushima, Masatoshi; Nishio, Maki; Miyaki, Takeo; and Oki, Toshikazu, 5,183,808, Cl. 514-33.000.
Okinaka, Hideyuki: *See—*
Gejima, Seiji; Kawakita, Koji; Kimura, Suzushi; Okinaka, Hideyuki; and Hakotani, Yasuhiko, 5,183,786, Cl. 501-134.000.
Okita, Kazumasa: *See—*
Uesaka, Kazuo; Okita, Kazumasa; and Arai, Tsutomu, 5,183,656, Cl. 424-76.100.
Okitsumo Incorporated: *See—*
Uesaka, Kazuo; Okita, Kazumasa; and Arai, Tsutomu, 5,183,656, Cl. 424-76.100.
Oku, Mitsumasa: *See—*
Yoshinaka, Minoru; Asakura, Eizo; Oku, Mitsumasa; Kitano, Motoi; Nakatani, Yoshio; Yoshida, Hideyuki; Hatta, Toshiya; and Nakatani, Seiichi, 5,183,594, Cl. 252-518.000.
Okubo, Hideo: *See—*
Yamaguchi, Seiji; Moro, Masaru; Kajikawa, Saburou; Kimura, Masahiro; Okubo, Hideo; Matsuyo, Tadashi; and Kawakami, Hiroshi, 5,182,833, Cl. 15-319.000.
Okuma, Shigeru; Furuhashi, Takeshi; Ikejima, Hiroyuki; and Ishii, Toshiaki, to Mitsubishi Denki Kabushiki Kaisha. Linear motor elevator device with a null-flux position adjustment. 5,183,980, Cl. 187-112.000.
Okun, Nathan; and Engberg, John. Optical storage device with a stationary mass storage medium. 5,184,322, Cl. 365-122.000.
Okunosono, Toshihiko: *See—*
Nakamura, Michio; Okunosono, Toshihiko; and Kajikawa, Tsuneo, 5,183,130, Cl. 180-219.000.
O'Lenick, Anthony J., Jr.: *See—*
Parkinson, Jeff; and O'Lenick, Anthony J., Jr., 5,183,845, Cl. 524-726.000.
Olexy, Anthony M.: *See—*
Daniels, Steven D.; Bedzyk, Mark D.; Brahm, Roger S.; and Olexy, Anthony M., 5,184,153, Cl. 346-108.000.

Olin Corporation: *See—*
Campoli, Ralph F.; and McGovern, John T., 5,183,961, Cl. 102-439.000.
Olin, Thomas. Food and feedstuff. 5,183,674, Cl. 426-2.000.
Oliver, Thomas C.: *See—*
Wanger, Mark E.; Methlie, Jennifer L.; Stavely, Donald J.; and Oliver, Thomas C., 5,184,336, Cl. 369-34.000.
Olla, Michael A.: *See—*
Bond, Robert H.; Olla, Michael A.; Morrison, Barry; and Garrison, Linn C., 5,182,851, Cl. 29-827.000.
Olson, George E.: *See—*
Amberson, James R.; Ehlert, William C.; and Olson, George E., 5,182,883, Cl. 52-73.000.
Olsson, Lennart F.: *See—*
Wierman, Michael J.; and Olsson, Lennart F., 5,183,149, Cl. 198-778.000.
Olympus Optical Co., Ltd.: *See—*
Mihara, Shinichi, 5,184,223, Cl. 358-209.000.
Miyauchi, Yuji; Yoshii, Shinichi; and Kanamori, Tatsuru, 5,184,252, Cl. 359-715.000.
Nonaka, Osamu, 5,184,168, Cl. 354-403.000.
Rokutan, Takao, 5,184,337, Cl. 369-44.250.
Tsuchida, Hirofumi; and Aoki, Norihiko, 5,184,251, Cl. 359-654.000.
Yamamoto, Mitsunori, 5,184,012, Cl. 250-234.000.
Omega Engineering, Inc.: *See—*
Hollander, Milton B.; Jacobs, David R.; and McKinley, William E., 5,183,420, Cl. 439-457.000.
Pyzik, Thomas E., 5,182,952, Cl. 73-861.790.
Omnitron International, Inc.: *See—*
Hayman, Michael H.; Morgan, Lee R.; and Liprie, Samuel F., 5,183,455, Cl. 600-7.000.
Omoto, Kouichi; and Miyazaki, Takeshi, to Dai Nippon Insatsu Kabushiki Kaisha. Test device for detecting glucose, protein urobilinogen, and/or occult blood in body fluids and/or determining the PH thereof. 5,183,742, Cl. 435-14.000.
Omron Tateisi Electronics Co.: *See—*
Toriu, Mamoru; and Kitamura, Mitsuru, 5,183,041, Cl. 128-421.000.
Onder, Kemal: *See—*
Nelb, Robert G., II; and Onder, Kemal, 5,183,864, Cl. 525-452.000.
Ondeyka, John G.: *See—*
Bills, Gerald F.; Hensens, Otto D.; Koupal, Lawrence; Lingham, Russell B.; Ondeyka, John G.; and Zink, Deborah L., 5,183,826, Cl. 514-411.000.
O'Neil, Robert M.; Phillips, Emyr; and Wasson, Robert C., to Ciba-Geigy Corporation. Method of producing an organic, corrosion-resistant surface coating. 5,183,842, Cl. 524-288.000.
Onishi, Shigeo; Yamadai, Tsutomu; and Ishihara, Kazuya, to Sharp Kabushiki Kaisha. Process for fabricating a semiconductor device including a tungsten silicide adhesive layer. 5,183,782, Cl. 437-192.000.
Onishi, Shigeo: *See—*
Ayukawa, Akitsu; and Onishi, Shigeo, 5,183,770, Cl. 437-41.000.
Ono, Hisao: *See—*
Kikuchi, Hiroshi; Nakajima, Shigeki; Ono, Hisao; and Momiyama, Yoshiharu, 5,184,177, Cl. 355-200.000.
Ono, Keiichi: *See—*
Ikeda, Yoshiharu; Kai, Yoshiyuki; and Ono, Keiichi, 5,183,660, Cl. 424-94.300.
Ono, Takeshi; Yoshida, Takehiro; Wada, Satoshi; Takeda, Tomoyuki; Kondo, Masaya; Kobayashi, Makoto; Kato, Takahiro; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Yamada, Masakatsu, to Canon Kabushiki Kaisha. Thermal transfer recording apparatus and facsimile apparatus. 5,184,151, Cl. 346-76.0PH.
Onodera, Akiko: *See—*
Nishide, Tsutomu; Yasumura, Daisuke; Nakajima, Yoshinobu; Onodera, Akiko; Yasukawa, Takuji; Kokumai, Hirokazu; Umeda, Tomoshige; Nomura, Seiji; and Mori, Hideki, 5,183,750, Cl. 435-134.000.
Onozuka, Haruo: *See—*
Shiina, Michihiro; Tanaka, Yasuhiko; Iwai, Fumio; Noguchi, Yukio; Umetsu, Takao; Saito, Tatsuo; Onozuka, Haruo; Saitoh, Muneyoshi; and Koda, Takao, 5,184,166, Cl. 354-400.000.
Ooishi, Tsukasa: *See—*
Matsuda, Yoshio; Arimoto, Kazutami; Ooishi, Tsukasa; Tsukude, Masaki; and Fujishima, Kazuyasu, 5,184,327, Cl. 365-201.000.
Ooura, Junichi: *See—*
Kurando, Shigeo; Makiura, Yoshinori; Shigemura, Yutaka; Ooura, Junichi; Mifune, Eiji; Imafuku, Tatsuo; Komata, Hiroshi; and Ido, Mikio, 5,184,181, Cl. 355-260.000.
Optical Recording Corporation: *See—*
Chu, Ching, 5,184,002, Cl. 235-454.000.
Oren, Yoram; Cohen, Haim; and Soffer, Abraham, to State of Israel, Israel Atomic Energy Commission. Optimized multiporous carbon bed for electrochemical filters. 5,183,546, Cl. 204-290.00R.
Orii, Seiji: *See—*
Unno, Yasuyuki; Orii, Seiji; and Yonekawa, Masami, 5,184,176, Cl. 355-52.000.
Orsan: *See—*
Labovitz, Jeffrey; Guilford, William J.; Fang, Lawrence; and Liang, Yi, 5,183,891, Cl. 544-235.000.
Orscheln Co.: *See—*
Perisho, Randal J.; Heimann, Robert L.; and Soucie, Wayne L., 5,182,963, Cl. 74-512.000.
Orsem: *See—*
Labovitz, Jeffrey; Guilford, William J.; Fang, Lawrence; and Liang, Yi, 5,183,891, Cl. 544-235.000.
Ortho-Dent: *See—*
Kumar, Swadesh, 5,183,388, Cl. 433-19.000.
Ortiz, Pedro R.: *See—*
Rasmussen, David L.; Farrell, Michael E.; and Ortiz, Pedro R., 5,184,185, Cl. 355-308.000.
Ortolano, Ralph J.; Ball, Kenneth A.; and Bowman, Gary, to Southern California Edison. Blade assembling. 5,183,244, Cl. 269-43.000.
Oshima, Junji: *See—*
Sasaki, Ichiro; Oshima, Junji; and Yamada, Minoru, 5,183,858, Cl. 525-308.000.
Sasaki, Ichiro; Oshima, Junji; and Yamada, Minoru, 5,183,859, Cl. 525-309.000.
Osteen, Mitchell M., to General Electric Company. Luminaire having an improved thermal management arrangement. 5,183,328, Cl. 362-294.000.
Osterman, John C.: *See—*
Markwell, John P.; Versaw, Wayne K.; Osterman, John C.; and Kelley, Philip M., 5,183,752, Cl. 435-196.000.
O'Sullivan, Anthony C.: *See—*
Ramos, Gerado; Ghisalba, Oreste; Schar, Hans-Peter; Frei, Bruno; Maienfisch, Peter; and O'Sullivan, Anthony C., 5,183,749, Cl. 435-119.000.
Oswald, James C.: *See—*
MacLane, Donald B.; Deur, Ted E.; Anderson, Jeffrey J.; Titterington, Donald R.; Oswald, James C.; and Meissner, Richard S., 5,184,147, Cl. 346-1.100.
Oswald, Thomas; and Hirst, Ian J., to Northern Telecom Europe. Fault location. 5,184,081, Cl. 324-533.000.
Otake, Katsunori: *See—*
Ito, Masayoshi; Yamada, Kiichi; Otake, Katsunori; Miyata, Yasunobu; Narita, Tomohiro; and Nishikawa, Susumu, 5,183,128, Cl. 180-197.000.
Otis Elevator Company: *See—*
Sheridan, William G.; and Reiskin, Edward D., 5,183,978, Cl. 187-105.000.
Sheridan, William G.; and Reiskin, Edward D., 5,183,979, Cl. 187-108.000.
Thangavelu, Kandasamy, 5,183,981, Cl. 187-128.000.
Otis Engineering Corporation: *See—*
Gano, John C., 5,183,115, Cl. 166-319.000.
Mashaw, Howard R., Jr.; and Hammett, Robert C., 5,183,114, Cl. 166-319.000.
Otsuka Electronic Co., Ltd.: *See—*
Takamura, Susumu; Nakamura, Takashi; Okawauchi, Makoto; Toda, Harumi; Kanki, Ichiro; Yoshida, Minoru; Imoto, Toshiyuki; Negayama, Naomi; and Oka, Koichi, 5,183,045, Cl. 128-653.200.
Otsuka Kagaku Kabushiki Kaisha: *See—*
Nakacho, Yoshifumi; Inubushi, Akiyoshi; and Tada, Yuji, 5,183,716, Cl. 429-192.000.
Otsuka, Masao: *See—*
Okada, Hiromi; and Otsuka, Masao, 5,183,248, Cl. 271-127.000.
Ottestad, Jack B., to ESCO Corporation. Mounting bracket for a working device. 5,183,316, Cl. 299-69.000.
Otto Industries, Inc.: *See—*
Hawkins, Larry S.; and Beese, Ulrich, 5,183,180, Cl. 220-908.000.
Ouchi, Hideo; and Miyazaki, Hiroya, to Nippon Seiko Kabushiki Kaisha. Speed sensing bearing unit. 5,183,341, Cl. 384-446.000.
Outboard Marine Corporation: *See—*
Remmers, Gregry M., 5,184,080, Cl. 324-392.000.
Overbagh, William H.: *See—*
Jorstad, John L.; Morely, Richard A.; and Overbagh, William H., 5,183,025, Cl. 123-669.000.
Owen, Hartley; and Schipper, Paul H., to Mobil Oil Corporation. Heavy oil catalytic cracking process and apparatus. 5,183,558, Cl. 208-113.000.
Oxford, Alexander W.: *See—*
Coates, Ian H.; Oxford, Alexander W.; North, Peter C.; and Price, Barry J., 5,183,820, Cl. 514-292.000.
Oy Alko AB: *See—*
Lehtomaki, Ilkka; Karinen, Pertti; Bergelin, Risto; and Myllymaki, Olavi, 5,183,677, Cl. 426-436.000.
Oyama, Jun; and Uchida, Naoshi, to Fuji Electric Co., Ltd. Circuit breaker. 5,184,100, Cl. 335-16.000.
Oyama, Takashi: *See—*
Kitajima, Eiji; Oyama, Takashi; Maruden, Eiji; Teraoka, Hirokazu; Yamasaki, Haruki; and Shimizu, Susumu, 5,183,603, Cl. 264-29.200.
Ozaki, Junji: *See—*
Abe, Tsuyoshi; Umezawa, Nobumasa; Fukuzumi, Tatsuo; Uchibori, Katsuyuki; Ozaki, Junji; and Motomura, Hiroharu, 5,183,634, Cl. 420-110.000.
Ozawa, Kenichi; and Suekane, Shinichi, to Stanley Electric Co., Ltd. Switching regulator. 5,184,290, Cl. 363-21.000.
Ozeki, Shoichi: *See—*
Suda, Koichi; Matsuzaki, Hitoshi; Wada, Masayuki; and Ozeki, Shoichi, 5,184,272, Cl. 361-87.000.
Padilla, Paul J.: *See—*
Boughner, Murphy D.; Padilla, Paul J.; and Bowling, Floyd A., 5,182,946, Cl. 73-151.000.
Paech, Ivor N., to Longyear Company. Rod handler apparatus. 5,183,366, Cl. 414-22.520.

VOL
1147
ISS
1
FE
2
1993
UMI

Pai, Pei-Lin: *See*—
Ting, Chiu H.; and Pai, Pei-Lin, 5,183,795, Cl. 437-230.000.
Paik, Kyung W.: *See*—
Neugebauer, Constantine A.; Glascock, Homer H., II; Paik, Kyung W.; McMullen, James G.; and Neugebauer, Martha M., 5,184,206, Cl. 257-762.000.
Paiocchi, Maurizio: *See*—
Giordano, Claudio; and Paiocchi, Maurizio, 5,183,935, Cl. 562-469.000.
Pakon, Inc.: *See*—
Gerrans, Wilbur, 5,182,897, Cl. 53-520.000.
Palau, Joseph: *See*—
Bassi, Dario; and Palau, Joseph, 5,183,080, Cl. 139-55.100.
Palm, Erich, to SFS Stadler Holding AG. Rivet fastener with drilling bit. 5,183,357, Cl. 411-29.000.
Palmer, Nicholas C.: *See*—
Lee, Ching-Pang; Rieck, Harold P., Jr.; Palmer, Nicholas C.; and Fargher, David G. W., 5,183,385, Cl. 416-97.00R.
Pan, Yuh-Guo; Chan, Alexander; and Hochman, Lana, to Clairol Incorporated. Hair dye coupler compounds. 5,183,941, Cl. 564-390.000.
Pantaleo, Scott B.: *See*—
Hergert, Richard E.; Hergert, Richard R.; Neill, Eugene B.; Pantaleo, Scott B.; Roerig, Arnold J.; Rogers, Thomas D.; Shands, Jay A.; and Takeguchi, Noriaki, 5,183,537, Cl. 162-216.000.
Pantini, Giovanni: *See*—
Brunetta, Fabio; and Pantini, Giovanni, 5,183,589, Cl. 252-308.000.
Paparizos, Christos; and Shaw, Wilfrid G., to Standard Oil Company, The. Ammoxidation catalysts and methods for their preparation for use in the production of isophthalonitrile. 5,183,793, Cl. 502-338.000.
Papiernik, Wolfgang: *See*—
Brune, Richard; Papiernik, Wolfgang; and Rochholz, Guenter, 5,184,056, Cl. 318-799.000.
Paplinski, Walter, to Neis, George Glenn, a part interest. Coupling mechanism. 5,183,284, Cl. 280-508.000.
Paradigm Biotechnologies Partnership: *See*—
Kyriacou, Andreas, 5,183,569, Cl. 210-636.000.
Paradise, Ronald Y., to GEC-Marconi Electronic Systems Corp. Phase measurement of received pseudonoise sequence using digital correlation. 5,184,135, Cl. 342-149.000.
Park, James M.; and Stichter, Ralph L. Hydraulic wheel cylinder tool. 5,182,841, Cl. 29-229.000.
Park, James M.: *See*—
Fetterhoff, Gary W.; and Blake, William R., 5,183,672, Cl. 425-304.000.
Parker, Corvin L. Folding and nesting boat. 5,183,002, Cl. 114-353.000.
Parker, Rebecca L., to Moore Business Forms, Inc. Perimeter pressure seal module. 5,183,527, Cl. 156-555.000.
Parker, Robin Z.; and Langhoff, Peter W., to Solar Reactor Technologies, Inc. Fluid absorption receiver for solar radiation. 5,182,912, Cl. 60-641.800.
Parkinson, Jeff; and O'Lenick, Anthony J., Jr., to Siltech Inc. Polymer treatment compositions. 5,183,845, Cl. 524-726.000.
Parmley, Charles L.: *See*—
Bowles, Dale D., Sr.; and Parmley, Charles L., 5,183,994, Cl. 219-387.000.
Partin, Dale L.; and Heremans, Joseph P., to General Motors Corporation. Magnetic field sensor with improved electron mobility. 5,184,106, Cl. 338-32.00R.
Pascal, Andre: *See*—
Gadreau, Jean; and Pascal, Andre, 5,184,103, Cl. 336-84.00C.
Pascal, Roger; and Recher, Gilles, to Salomon S.A. Process for manufacturing a ski. 5,183,618, Cl. 264-257.000.
Pascal, Verrier: *See*—
Thierry, Maurickx; Pascal, Verrier; and Roland, Taillard, 5,183,633, Cl. 420-92.000.
Passemard, Jean R.: *See*—
Villalta, Josue J.; and Passemard, Jean R., 5,183,032, Cl. 128-20.000.
Patchett, Arthur A.: *See*—
Greenlee, William J.; Patchett, Arthur A.; Hangauer, David; Walsh, Thomas F.; Fitch, Kenneth J.; Rivero, Ralph A.; and Dhanoa, Daljit S., 5,183,810, Cl. 514-63.000.
Patino, Joseph; Fernandez, Jose M.; and Bogut, Henry A., to Motorola, Inc. Expanded battery capacity identification scheme and apparatus. 5,184,059, Cl. 320-15.000.
Patriquin, Douglas R.: *See*—
Ellinger, Sylvester M.; Spillman, William B., Jr.; and Patriquin, Douglas R., 5,182,953, Cl. 73-862.335.
Patterson, Jimmy L.; and Riley, Robert E., to BASF Corporation. Blowing agent-containing polymeric MDI compositions. 5,183,582, Cl. 252-182.200.
Patuszynski, Duane R.; O'Callaghan, John S.; and Bartoli, Andrew, to Bell & Howell Document Management Products Company. Multiposition incremental document endorser. 5,182,991, Cl. 101-216.000.
Paul, James M.; and Morris, Richard L., to Mobil Oil Corporation. Method for scale removal in a wellbore. 5,183,112, Cl. 166-312.000.
Pawlak, Andrzej M.: *See*—
Graber, David W.; Eckhardt, Dennis C.; Pawlak, Andrzej M.; and Faist, Bryan L., 5,184,297, Cl. 364-424.050.
Pawlak, Stephen M.; Rimbey, Roger J.; and Rodee, Mark D., to Smith Corona Corporation. Quiet impact printer mechanism. 5,183,344, Cl. 400-160.000.
PCD Polymere Gesellschaft m.b.H.: *See*—
Korsatko-Wabnegg, Brigitta; and Korsatko, Werner, 5,183,666, Cl. 424-464.000.
Pearce, Wayne E.: *See*—
Comstock, Roger D.; Tischner, Ryan K.; and Pearce, Wayne E., 5,183,182, Cl. 222-129.000.
Pearson, Alan L.; and Baker, Richard H., to Steelcase, Inc. Adjustable support for overhead furniture units. 5,183,319, Cl. 312-196.000.
Pearson, Daniel C.: *See*—
Hojnacki, Robert J.; Pearson, Daniel C.; Brucker, Gerard K.; Gober, Michael J.; and Shaw, Daniel J., Jr., 5,183,159, Cl. 206-583.000.
Peck, Leonard E., Jr.: *See*—
Ingle, Lloyd D.; Peck, Leonard E., Jr.; and Santana, Jose A., 5,183,973, Cl. 174-254.000.
Peerless Saw Company, The: *See*—
Wittkopp, Connell A., 5,182,976, Cl. 83-835.000.
Pelachyk, Richard; Satterlee, Lowell W.; Zuccaro, Dante C.; and Farris, Timothy M., to General Motors Corporation. Door handle housing attachment for vehicle door. 5,183,302, Cl. 292-336.300.
Pellerin, James A. Bow pod or holder. 5,183,231, Cl. 248-156.000.
Penaluna, William A.; and Ragsdale, Charles W., to Bio-Rad Laboratories, Inc. Circulating chiller for electrified solutions. 5,183,101, Cl. 165-47.000.
Pengler, Rudolf, to Matheson Gas Products, Inc. Automatic switch-over valve. 5,183,072, Cl. 137-113.000.
Penman, David G.: *See*—
Band, David M.; and Penman, David G., 5,183,043, Cl. 128-642.000.
Pensavecchia, Frank G.: *See*—
Kline, John F.; Pensavecchia, Frank G.; LaPonsey, Stephen M.; and Williams, Richard A., 5,182,990, Cl. 101-211.000.
Perez, Thomas F. Apparatus for processing fish food. 5,183,671, Cl. 425-190.000.
Perisho, Randal J.; Heimann, Robert L.; and Soucie, Wayne L., to Orscheln Co. Soft release control mechanism with spring clutch and viscous damping. 5,182,963, Cl. 74-512.000.
Perkins, Wiley D.: *See*—
Scoggins, Lacey E.; Lee, Fu M.; Chang, Allen T.; and Perkins, Wiley D., 5,183,538, Cl. 203-28.000.
Permon, statni podnik pan: *See*—
Koudelka, Vladimir, 5,183,121, Cl. 173-206.000.
Pernick, David, to Monarch Knitting Machinery Corporation. Cam system for circular knitting machine. 5,182,927, Cl. 66-54.000.
Perry, Randal L.: *See*—
Branca, Phillip A.; Hubis, Daniel E.; Mallouk, Robert S.; and Perry, Randal L., 5,183,545, Cl. 204-252.000.
Perry, Winfield B.: *See*—
Cox, Jerry D.; Linz, Raymond E.; Thome, Jeanne M.; Perry, Winfield B.; Hadley, Franklin O., Jr.; and Knobel, Vladimir A., 5,182,881, Cl. 51-7.000.
Persson, Goran, to Swedoor AB. Method for form-pressing wood fibre panels and form pressed panels, for example door skins. 5,183,622, Cl. 264-320.000.
Peter, Julius; and Weckerle, Gunter, to Continental Aktiengesellschaft; and Peter, Julius. Apparatus for producing rubber mixtures. 5,183,640, Cl. 422-135.000.
Peters, William H. Attachment plate for roofing sheets. 5,182,890, Cl. 52-410.000.
Peterson, Steven H.: *See*—
Jackovitz, John F.; Kunkle, Richard P.; and Peterson, Steven H., 5,183,542, Cl. 204-180.100.
Petravicius, Stasys: *See*—
Wiegel, Dave C.; Bradshaw, Dan A.; and Petravicius, Stasys, 5,184,275, Cl. 361-223.000.
Petri, A.G.: *See*—
Zeller, Gregor; and Randelzhofer, Konrad, 5,183,289, Cl. 280-743.000.
Petrocy, Richard J.: *See*—
Daugherty, Ronald R.; and Petrocy, Richard J., 5,184,116, Cl. 340-764.000.
Petroleo Brasileiro S.A.: *See*—
Khalil, Carlos N.; Romeu, Regis K.; and Rabinovitz, Andre , 5,183,581, Cl. 252-8.552.
Petrovich, Paul A. Nonmetallic gun barrel. 5,183,958, Cl. 89-16.000.
Petzinna, Dieter: *See*—
Angerbauer, Rolf; Fey, Peter; Hubsch, Walter; Philipps, Thomas; Bischoff, Hilmar; Petzinna, Dieter; and Schmidt, Delf, 5,183,897, Cl. 546-330.000.
Pfahl, Magnus; and Tzukerman, Maty, to La Jolla Cancer Research Foundation. Methods using estrogen receptor as a constitutive transcriptional activator and a repressor. 5,183,736, Cl. 435-6.000.
Pharmachemie B.V.: *See*—
Scheeren, Johan W.; Martinus De Bie, Joannes F.; and De Vos, Dirk, 5,183,913, Cl. 556-446.000.
Pherigo, Douglas E., to J. L. Clark, Inc. Closure with dispensing fitment and screw-on cap. 5,183,171, Cl. 220-256.000.
Philip Morris Incorporated: *See*—
Rinehart, Steven R.; and Adams, Jonah, Jr., 5,183,523, Cl. 156-367.000.
Philipps, Thomas: *See*—
Angerbauer, Rolf; Fey, Peter; Hubsch, Walter; Philipps, Thomas; Bischoff, Hilmar; Petzinna, Dieter; and Schmidt, Delf, 5,183,897, Cl. 546-330.000.
Phillips, David J.: *See*—
Beach, Kirk W.; Phillips, David J.; and Kansky, John, 5,183,046, Cl. 128-661.070.

Phillips, Emyr: *See*—
O'Neil, Robert M.; Phillips, Emyr; and Wasson, Robert C., 5,183,842, Cl. 524-288.000.
Phillips, Joseph; Prough, J. Robert; Bilodeau, Victor L.; Greenwood, Brian; Bain, Ronald; and Weston, John, to Kamyr, Inc. Atmospheric diffuser improved lower screens backflushing. 5,183,536, Cl. 162-57.000.
Phillips, Michael A.: *See*—
Stransky, Larry W.; Boehm, Valentine R., Jr.; and Phillips, Michael A., 5,182,905, Cl. 60-204.000.
Phillips Petroleum Company: *See*—
Hottovy, John D., 5,183,866, Cl. 526-88.000.
Nordquest, Kim W., 5,183,868, Cl. 526-155.000.
Scoggins, Lacey E.; Lee, Fu M.; Chang, Allen T.; and Perkins, Wiley D., 5,183,538, Cl. 203-28.000.
Tso, Chung C.; and Wynn, Robert L., 5,183,931, Cl. 560-241.000.
Vives, Van C., 5,183,844, Cl. 524-423.000.
Piana, Hermann: *See*—
Werle, Peter; Trageser, Martin; and Piana, Hermann, 5,183,944, Cl. 568-465.000.
Picanol N.V., naamloze vennootschap: *See*—
Moeneclaey, Denis, 5,183,084, Cl. 139-449.000.
Pichl, Fritz. Circuit arrangement on a support film. 5,184,111, Cl. 340-572.000.
Pickett, Lester C. Method and apparatus for generating mathematical functions. 5,184,317, Cl. 364-735.000.
Pierburg GmbH: *See*—
Hartel, Gunter; Schurfeld, Armin; Losing, Karl-Heinrich; Thonnesen, Dieter; and Remde, Ulrich, 5,182,942, Cl. 73-61.460.
Pierrat, Michel A., to Ency Nova Inc. Magnetic tape drive with integral multiple-cassette removable magazine. 5,184,260, Cl. 360-92.000.
Pike, Steven C.: *See*—
Carrier, Odie R.; and Pike, Steven C., 5,182,827, Cl. 5-498.000.
Pillion, Lawrence M.: *See*—
Hoffman, Ronald J.; Pillion, Lawrence M.; and Jewell, Paul L., 5,183,998, Cl. 219-492.000.
Pinza, Mario: *See*—
Aliverti, Valerio; Dorigotti, Luciano; Fonio, Teodoro; and Pinza, Mario, 5,183,802, Cl. 514-2.000.
Pioneer Electron Corporation: *See*—
Inohana, Haruyuki; and Gomi, Shintaro, 5,184,086, Cl. 330-252.000.
Pioneer Electronic Corporation: *See*—
Taniguchi, Hitoshi; and Matsui, Fumio, 5,183,726, Cl. 430-342.000.
Pirelli Trasmissioni Industriali S.p.A.: *See*—
Ruffini, Alberto; and Mammarella, Nicolino, 5,183,521, Cl. 156-142.000.
Pitney Bowes Inc.: *See*—
Edwards, Robert J.; and Luperti, Harry E., 5,183,246, Cl. 270-45.000.
Miller, Carl A.; Silverberg, Morton; and Supron, Steven A., 5,183,250, Cl. 271-222.000.
pK Scientific, Inc.: *See*—
Ranalletta, Joseph V.; Williams, Fred E., Jr.; and Kanner, Rowland W., 5,183,184, Cl. 222-189.000.
Plastic Forming Company, Inc., The: *See*—
Schurman, Peter T., 5,183,673, Cl. 425-522.000.
Platzer, Stephan J. W.; Procter, Arthur E.; and Dunder, Thomas, to Hoechst Celanese Corporation. Colored image on a degradable sheet material and method of formation. 5,183,723, Cl. 430-160.000.
Plemons, R. J., Jr. Adjustable sound attenuating device. 5,183,976, Cl. 181-264.000.
Plotner, Michael: *See*—
Brodene, Timothy; Plotner, Michael; and Cramer, Bruce, 5,182,882, Cl. 51-317.000.
Podell, Allen: *See*—
Hanz, Curtis L.; Gulick, Jon J.; Virga, Kathleen L.; and Podell, Allen, 5,184,095, Cl. 333-33.000.
Podszun, Wolfgang: *See*—
Asmussen, Erik; Munksgaard, Erik C.; Muller, Michael; Podszun, Wolfgang; and Winkel, Jens, 5,183,832, Cl. 522-84.000.
Pogue, Bill P.: *See*—
Stancliffe, A. Colin; Vidano, Paul; and Pogue, Bill P., 5,183,106, Cl. 165-166.000.
Polaert, Remy: *See*—
Hazan, Jean-Pierre; Polaert, Remy; and Delmas, Gilles, 5,183,996, Cl. 219-452.000.
Policht, Stanislaw A., to Qualex. Photograph album and method for making same. 5,183,296, Cl. 281-46.000.
Poltorak, Jeffrey P.; and Swift, Omar A., to Kontes Glass Company. Stirring assembly. 5,183,336, Cl. 366-273.000.
Poly-Flex Circuits, Inc.: *See*—
Durand, David; Vieau, David P.; Wei, Tai S.; and Chu, Ang-Ling, 5,183,593, Cl. 252-514.000.
Polyplastics Co., Ltd.: *See*—
Kanaka, Keiichi; Hayashi, Noriyuki; Kobashi, Toshihiro; Kageyama, Yukihiko; and Hijikata, Kenji, 5,183,878, Cl. 528-193.000.
Kashihara, Osamu, 5,183,860, Cl. 525-398.000.
Kawaguichi, Kuniaki; Nakane, Toshio; Shimoda, Akihide; and Hijikata, Kenji, 5,183,623, Cl. 264-544.000.
Pompei, Francesco, to Exergen Corporation. Thermometer calibration. 5,183,337, Cl. 374-2.000.
Pont-A-Mousson S.A.: *See*—
Boudot, Daniel, 5,183,097, Cl. 164-306.000.
Popiel, Irene; Holtemann, Karen D.; Glazer, Itamar; and Womersley, Christopher, to Biosys. Commercial storage and shipment of entomogenous nematodes. 5,183,950, Cl. 800-2.000.
Porta, Julien; and Clermont, Christian, to Hospal Industrie. Method and apparatus for drying the ends of a bundle of hollow fibers for a membrane device made up of hollow fibers. 5,182,868, Cl. 34-18.000.
Poth, Ulrich: *See*—
Gross, Lutz-Werner; Poth, Ulrich; Hille, Dieter; and Weidemeier, Klaus, 5,183,835, Cl. 523-402.000.
Potter, Timothy J.; Tamor, Michael A.; and Wu, Ching-Hsong, to Ford Motor Company. Fabrication of polycrystalline free-standing diamond films. 5,183,529, Cl. 156-613.000.
Poulsen, Don K., to Halliburton Company. Method for optimizing hydraulic fracture treatment of subsurface formations. 5,183,109, Cl. 166-250.000.
Powell, Bruce W.; and Powell, Judith F. Handworn mechanism for signalling by scuba divers. 5,183,003, Cl. 116-26.000.
Powell, Harry C., Jr., to Powell Machinery, Inc. Handling of fruit using dual plastic cup construction. 5,183,151, Cl. 198-803.010.
Powell, John D.: *See*—
Millay, George D.; and Powell, John D., 5,183,437, Cl. 472-117.000.
Powell, Judith F.: *See*—
Powell, Bruce W.; and Powell, Judith F., 5,183,003, Cl. 116-26.000.
Powell Machinery, Inc.: *See*—
Powell, Harry C., Jr., 5,183,151, Cl. 198-803.010.
Powell, Robert M. Collapsible scooter. 5,183,129, Cl. 180-208.000.
Powell, Timothy R. Fishing line cutter, and rod and reel therewith. 5,182,874, Cl. 43-25.000.
Powers, Christopher M.: *See*—
Manz, Kenneth W.; and Powers, Christopher M., 5,182,918, Cl. 62-149.000.
Powers, Larry: *See*—
Rishel, Michael; Powers, Larry; and Barozzini, Claude, 5,183,330, Cl. 362-372.000.
Pozgay, Jerome H., to Raytheon Company. All weather tactical strike system (AWTSS) and method of operation. 5,184,137, Cl. 342-174.000.
Pratt, Kenneth W., to Seneca Sports, Inc. Training wheel for in-line skates. 5,183,276, Cl. 280-11.220.
Predohl, Willi, to Reifenhauser GmbH & Co. Maschinenfabrik. Method of making a plastic foil and for winding the plastic foil into a coil or roll. 5,183,606, Cl. 264-40.100.
Presidenza del Consiglio dei Ministri - Ufficio del Ministro per il coordinamento delle Iniziativae per la Ricerca Scientifica e Tecnologica: *See*—
Lepori, Agostino; and Camaioni, Domenico, 5,183,837, Cl. 524-13.000.
Presstek, Inc.: *See*—
Kline, John F.; Pensavecchia, Frank G.; LaPonsey, Stephen M.; and Williams, Richard A., 5,182,990, Cl. 101-211.000.
Price, Barry J.: *See*—
Coates, Ian H.; Oxford, Alexander W.; North, Peter C.; and Price, Barry J., 5,183,820, Cl. 514-292.000.
Prince Corporation: *See*—
Iwase, Yukio, 5,182,998, Cl. 112-117.000.
Procedes Petroliers et Petrochimiques: *See*—
Lenglet, Eric, 5,183,642, Cl. 422-213.000.
Procter, Arthur E.: *See*—
Platzer, Stephan J. W.; Procter, Arthur E.; and Dunder, Thomas, 5,183,723, Cl. 430-160.000.
Procter & Gamble Cellulose Company, The: *See*—
Herron, Carlisle M.; and Cooper, David J., 5,183,707, Cl. 428-364.000.
Prosser, Albert C., to Coors Technical Ceramics Company. Ball and seat valve. 5,183,068, Cl. 137-1.000.
Protein Technologies International, Inc.: *See*—
Mott, Stephen D.; and Johnson, Richard F., 5,183,683, Cl. 426-641.000.
Prough, J. Robert: *See*—
Phillips, Joseph; Prough, J. Robert; Bilodeau, Victor L.; Greenwood, Brian; Bain, Ronald; and Weston, John, 5,183,536, Cl. 162-57.000.
Prunotto, Gianpaolo: *See*—
Sartorio, Franco; Prunotto, Gianpaolo; Sgandurra, Francesco; and Arghiracopulos, Salvatore, 5,182,936, Cl. 72-420.000.
Puri, Jeewan L.: *See*—
Boyd, Edward L.; Eley, E. R.; and Puri, Jeewan L., 5,184,270, Cl. 361-35.000.
Putzmeister-Werk Maschinenfabrik GmbH: *See*—
Kempf, Manfred; and Schlecht, Karl, 5,183,356, Cl. 405-146.000.
Pyle, James H.: *See*—
Simpson, W. Dwain; and Pyle, James H., 5,184,309, Cl. 364-510.000.
Pyzik, Thomas E., to Omega Engineering, Inc. Paddlewheel flowmeter assembly. 5,182,952, Cl. 73-861.790.
Qualex: *See*—
Policht, Stanislaw A., 5,183,296, Cl. 281-46.000.
Quamco, Inc.: *See*—
Dickson, Joseph F., 5,182,937, Cl. 72-469.000.
Quan, Peter M.; and Leeming, Stephen W., to Imperial Chemical Industries PLC. Poly-(n-[2-hydroxybenzyl])-1,2-diaminoethanes. 5,183,940, Cl. 564-370.000.
Quates, Ronald D.: *See*—
Wong, Henry; Quates, Ronald D.; and Chen, Lien-Yan, 5,183,268, Cl. 277-27.000.

VOL
1147
ISS
1
FE
2
1993
UMI

Quinn, Candace J.: *See—*
Beall, George H.; Gadkaree, Kishor P.; Grandi, Thomas P.; and Quinn, Candace J., 5,183,607, Cl. 264-41.000.

Quinn, Patrick A.: *See—*
Severson, Frederick E.; and Quinn, Patrick A., 5,184,048, Cl. 318-280.000.

Quintero, Dennis E. Specialized ear-handled holder-container. 5,183,174, Cl. 220-404.000.

Qureshi, Humayun; and Schwartz, Donald, to DRD Diluter Corporation. Means and method of measuring and dispensing. 5,183,765, Cl. 436-180.000.

R. J. Reynolds Tobacco Company: *See—*
Clearman, Jack F.; and Conner, Billy T., 5,183,062, Cl. 131-194.000.

Rabinovitz, Andre : *See—*
Khalil, Carlos N.; Romeu, Regis K.; and Rabinovitz, Andre , 5,183,581, Cl. 252-8.552.

Radon, Roman, to Townley Foundry & Machine Co., Inc. Cryogenically super-hardened high-chromium white cast iron and method thereof. 5,183,518, Cl. 148-324.000.

Ragin, John C., III. Detachable brake for skate. 5,183,292, Cl. 280-825.000.

Ragland, William L.: *See—*
Hunter, Robert L.; and Ragland, William L., 5,183,687, Cl. 424-78.340.

Ragsdale, Charles W.: *See—*
Penaluna, William A.; and Ragsdale, Charles W., 5,183,101, Cl. 165-47.000.

Rai, Kula R.; Lew, Thomas M.; and Sinclair, Robert B., to Winzen International, Inc. Method and apparatus for detecting flaws and defects in beat seals. 5,184,190, Cl. 356-239.000.

Raj, Rishi; and Sievers, Albert J., to Cornell Research Foundation, Inc. Infra red diamond composites. 5,183,602, Cl. 252-587.000.

Rajendren, Richard; Gross, Peter S.; and Bollensen, Eric G., to Aeromix Systems, Incorporated. Replaceable seal module for liquid aerators. 5,183,596, Cl. 261-93.000.

Ramalingam, Kondareddiar: *See—*
Linder, Karen E.; Nunn, Adrian D.; and Ramalingam, Kondaredediar, 5,183,653, Cl. 424-1.100.

Ramaswamy, Rajan: *See—*
Burchill, Gary W.; Gillett, Frank E.; Ramaswamy, Rajan; and Winslow, Peter S., 5,182,877, Cl. 43-54.100.

Ramat, Pierre: *See—*
Devillers, Yves; Neveu, Frederic; Behe, Roger; and Ramat, Pierre, 5,184,145, Cl. 343-840.000.

Ramos, Gerado; Ghisalba, Oreste; Schar, Hans-Peter; Frei, Bruno; Maienfisch, Peter; and O'Sullivan, Anthony C., to Sankyo Company, Ltd. Microbial process for the preparation of milbemycin derivatives. 5,183,749, Cl. 435-119.000.

Ramsey, John W., Jr., to Tacticon Corp. Electric powered tip-driven fan with metal/air battery assembly therefor. 5,183,222, Cl. 244-53.00R.

Ramy Systems, Inc.: *See—*
Latchinian, Gerard; Latchinian, Ramy; and Camper, Franklin, 5,183,142, Cl. 194-206.000.

Ranalletta, Joseph V.; Williams, Fred E., Jr.; and Kanner, Rowland W., to Ryder International Corporation; and pK Scientific, Inc. Liquid dispenser nozzle assembly. 5,183,184, Cl. 222-189.000.

Rand, Cynthia L., to Dow Chemical Company, The. Process for the preparation of diaryl carbonates. 5,183,919, Cl. 558-274.000.

Randelzhofer, Konrad: *See—*
Zeller, Gregor; and Randelzhofer, Konrad, 5,183,289, Cl. 280-743.000.

Rando, Joseph F., to Spectra-Physics Laserplane, Inc. Automatic plumb and level tool with acoustic measuring capability. 5,182,863, Cl. 33-227.000.

Ranger, Gary C. Hot water supply system. 5,183,029, Cl. 126-362.000.

Rapoport, Uri, to Elbit-ATI, Ltd. Apparatus for rotating an NMR test tube. 5,184,078, Cl. 324-321.000.

Rasmussen, David L.; Farrell, Michael E.; and Ortiz, Pedro R., to Xerox Corporation. Method for duplex printing scheduling system combining finisher interset skipped pitches with duplex sheet scheduling. 5,184,185, Cl. 355-308.000.

Rasmussen, John P.: *See—*
Terry, James W.; and Rasmussen, John P., 5,184,138, Cl. 342-195.000.

Ratcliff, Steven D.: *See—*
Stanislowski, Anna G.; England, J. Bruce; and Ratcliff, Steven D., 5,183,655, Cl. 424-76.600.

Raterman, Michael F.; and Thiel, Michael D., to Mobil Oil Corporation. Apparatus and method for collecting particulates by electrostatic precipitation. 5,183,480, Cl. 55-12.000.

Rathgeber, Roland: *See—*
Collet, Erwin; Rathgeber, Roland; and Jerxsen, Udo, 5,182,869, Cl. 34-20.000.

Ratton, Serge, to Rhone-Poulenc Specialities Chimiques. Preparation of hydroquinone monocarboxylates. 5,183,928, Cl. 560-144.000.

Raymond, Marvin L.; Barrett, Dana G.; and Greene, Phillip B., to Golden Cat Corporation. Additive for binding liquid waste. 5,183,010, Cl. 119-172.000.

Raytheon Company: *See—*
Cardiasmenos, Apostle G., 5,184,136, Cl. 342-153.000.
Dara, Paul S., 5,184,350, Cl. 370-105.300.
Pozgay, Jerome H., 5,184,137, Cl. 342-174.000.

RCP Enterprises, Inc.: *See—*
Case, Richard N., 5,183,326, Cl. 362-191.000.

Reasds Medical Products, Inc.: *See—*
Lopez, Luis R.; and Sterhan, Marcia, 5,183,735, Cl. 435-6.000.

Readey, Michael J., to Coors Porcelain Company. Aluminum borate ceramics and process for producing same. 5,183,785, Cl. 501-127.000.

Rebeyrolle, Michel; and Schneider, Bernard, to Cebal. Method of making a dispensing head, and the corresponding head and dispenser. 5,183,188, Cl. 222-383.000.

Rebsamen, Werner: *See—*
Jukola, Bero; and Rebsamen, Werner, 5,183,294, Cl. 281-23.000.

Recher, Gilles: *See—*
Pascal, Roger; and Recher, Gilles, 5,183,618, Cl. 264-257.000.

Reedy, Steven W.: *See—*
Vittorio, David A.; and Reedy, Steven W., 5,183,018, Cl. 123-321.000.

Reese, Craig: *See—*
Callahan, David D.; Reese, Craig; Baxter, Douglas P.; and Murray, Stephen M., 5,183,147, Cl. 198-524.000.

Reese, James R., to Cla-Val Co. Pressure-reducing valve, and aircraft fueling system incorporating the same. 5,183,074, Cl. 137-488.000.

Regnault, Alain; Cretin, Jacques; and Froidevaux, Pascal, to Institut Francais de Petrole; and Compagnie Generale de Geophysique. Method and device for optimizing the triggering of an array of marine seismic sources. 5,184,329, Cl. 367-23.000.

Reifenhauser GmbH & Co. Maschinenfabrik: *See—*
Predohl, Willi, 5,183,606, Cl. 264-40.100.

Reiley, Timothy C.: *See—*
Karidis, John P.; Reiley, Timothy C.; and Schein, Lawrence B., 5,184,183, Cl. 355-266.000.

Reilly Industries, Inc.: *See—*
McQuigg, Donald W.; Sowers, Edward E.; Goe, Gerald L.; Scriven, Eric F. V.; and Keay, James G., 5,183,895, Cl. 546-304.000.

Reilly, James W.; and Hamilton, Gary, to ABB Lummus Crest Inc. Production of diesel fuel by hydrogenation of a diesel feed. 5,183,556, Cl. 208-57.000.

Reiskin, Edward D.: *See—*
Sheridan, William G.; and Reiskin, Edward D., 5,183,978, Cl. 187-105.000.
Sheridan, William G.; and Reiskin, Edward D., 5,183,979, Cl. 187-108.000.

Reiterman, Lee; Martin, Dale D.; and Krysik, Joseph, to GTE Valenite Corporation. Non-contact coolant supply apparatus. 5,183,363, Cl. 408-59.000.

Reith, Craig P.: *See—*
Bailey, Kenneth M.; Mitchener, Rex L.; Wehking, Timothy J.; and Reith, Craig P., 5,182,940, Cl. 73-36.000.

Rekow, Elizabeth D.: *See—*
Erdman, Arthur G.; Rekow, Elizabeth D.; Riley, Donald R.; Klamecki, Barney; Zhu, Yang; and Ahn, Jeong-Ho, 5,184,306, Cl. 364-474.050.

Reliant Laser Corporation: *See—*
Black, Michael; and Kupershmidt, Vladimir, 5,184,156, Cl. 351-158.000.

Remba, David Z.: *See—*
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,184,307, Cl. 364-474.240.

Remde, Ulrich: *See—*
Hartel, Gunter; Schurfeld, Armin; Losing, Karl-Heinrich; Thonnesen, Dieter; and Remde, Ulrich, 5,182,942, Cl. 73-61.460.

Remmers, Gregry M., to Outboard Marine Corporation. Test apparatus for opto-electronic time based generator of an ignition system. 5,184,080, Cl. 324-392.000.

Renishaw plc: *See—*
Stephens, William F. N.; and Lummes, Stephen E., 5,184,014, Cl. 250-237.00G.

Renolux: *See—*
Nania, Yves, 5,183,312, Cl. 297-250.000.

Renselaer Polytechnic Institute: *See—*
Calabrese, Salvadore J.; Scarton, Henry A.; Murray, S. Frank; Ettles, Christopher M.; Kennedy, Warren C.; Dinc, Saim; Jlidi, Bessem; and Strong, William, 5,183,955, Cl. 84-437.000.

Research Development Corporation: *See—*
Yuyama, Junpei; Geng, Qiquan; Chihara, Kazunori; Minami, Hirofumi; and Goto, Eiichi, 5,184,072, Cl. 324-248.000.

Research Products Corporation: *See—*
Deering, Richard A., 5,183,488, Cl. 55-320.000.

Ressencourt, Claude: *See—*
Brouzes, Carole; Ressencourt, Claude; and de Place, Alain, 5,184,097, Cl. 333-202.000.

Restall, James E., deceased: *See—*
Kerry, Stephen; Restall, James E., deceased; and Wood, Michael I., 5,183,635, Cl. 420-420.000.

Restall, Janet E., executrix: *See—*
Kerry, Stephen; Restall, James E., deceased; and Wood, Michael I., 5,183,635, Cl. 420-420.000.

Retech, Inc.: *See—*
Haun, Robert E.; Elmer, Neil C.; and Lampson, Robin A., 5,183,498, Cl. 75-709.000.

Reuben, Bertie J.: *See—*
Crutchfield, Marvin M.; and Reuben, Bertie J., 5,183,473, Cl. 8-110.000.

Reuteler, Urs, to New Jersey Machine Inc. Vial or ampoule infeed conveyor mechanism. 5,183,146, Cl. 198-444.000.

Revlon Consumer Products Corporation: *See—*
Kamen, Melvin E., 5,183,349, Cl. 401-88.000.

Reynolds Metals Company: *See—*
Jorstad, John L.; Morely, Richard A.; and Overbagh, William H., 5,183,025, Cl. 123-669.000.

Reynolds, Robert P.: *See—*
Jacobson, Allan J.; Lai, Wen-Yih F.; Matturro, Michael G.; Deckman, Harry W.; McHenry, James A.; Reynolds, Robert P.; and Zhang, Qiyao, 5,183,788, Cl. 502-4.000.

Rheinmetall GmbH: *See—*
Karius, Klaus D.; Eskam, Armin; and Vogt, Karl-Heinz, 5,183,962, Cl. 102-489.000.

Rhodes, Richard D., Jr.; and Fredericks, W. David, to Davidson Textron Inc. Mold method and apparatus for stabilizing the location of a skin insert. 5,183,693, Cl. 428-34.100.

Rhone-Poulenc Specialities Chimiques: *See—*
Ratton, Serge, 5,183,928, Cl. 560-144.000.

Ricco, Mario; De Matthaeis, Sisto L.; and Maldera, Domenico, to Elasis Sistema Ricerca Fiat Nel Mezzogiorno Societa Consortile per Azioni. Assembly of an electromagnet core of an electromagnetic internal combustion engine fuel injector. 5,183,209, Cl. 239-585.100.

Richards, Robert L.: *See—*
Higginbotham, Jeff A.; Garcia, George; and Richards, Robert L., 5,183,340, Cl. 384-420.000.

Ricoh Company, Ltd.: *See—*
Hayashi, Keisuke; Ishigaki, Kouji; Nakahara, Kazuyuki; Yanagida, Masato; and Kishi, Fumio, 5,184,184, Cl. 355-296.000.
Ide, Youji; and Shiokawa, Keiichi, 5,183,697, Cl. 428-195.000.
Iimura, Haruo; Takiguchi, Yasuyuki; and Kanemoto, Akihiko, 5,184,237, Cl. 359-63.000.
Sano, Kazuyoshi; Fujimura, Koh; Suzuki, Takumi; and Tsutsui, Takashi, 5,184,239, Cl. 359-80.000.

Rieck, Harold P., Jr.: *See—*
Lee, Ching-Pang; Rieck, Harold P., Jr.; Palmer, Nicholas C.; and Fargher, David G. W., 5,183,385, Cl. 416-97.00R.

Rienhardt, Hans-Peter: *See—*
Bohmer, Rainer; Bruhn, Rainer; Rienhardt, Hans-Peter; and Walther, Bernd, 5,182,957, Cl. 74-42.000.

Riffle, Judy S.; Sinai-Zingde, Gurudus D.; and Brink, Andrew E., to Virginia Tech Intellectual Properties, Inc. Polyalkyloxazoline/-polylactone copolymers, processes for making, and uses. 5,183,861, Cl. 525-413.000.

Righetti, John Alexander: *See—*
Righetti, Randall D., 5,182,875, Cl. 43-42.240.

Righetti, Randall D., to Righetti, John Alexander, a part interest. Flexible type fishing lure. 5,182,875, Cl. 43-42.240.

Riley, Donald R.: *See—*
Erdman, Arthur G.; Rekow, Elizabeth D.; Riley, Donald R.; Klamecki, Barney; Zhu, Yang; and Ahn, Jeong-Ho, 5,184,306, Cl. 364-474.050.

Riley, Robert E.: *See—*
Patterson, Jimmy L.; and Riley, Robert E., 5,183,582, Cl. 252-182.200.

Rimbey, Roger J.: *See—*
Pawlak, Stephen M.; Rimbey, Roger J.; and Rodee, Mark D., 5,183,344, Cl. 400-160.000.

Rimkus, Martin: *See—*
Tenbrink, Detlef; Bock, Martin; Heymann, Kurt; and Rimkus, Martin, 5,183,553, Cl. 205-162.000.

Rinehart, Steven R.; and Adams, Jonah, Jr., to Philip Morris Incorporated. Apparatus for ultrasonically bonding endcaps to a container of dissimilar material. 5,183,523, Cl. 156-367.000.

Ringle, Larry L.; and Lax, Ronald G., to Ringle, Larry Lee. Dental floss and pre-threaded leader. 5,183,063, Cl. 132-321.000.

Ringle, Larry Lee: *See—*
Ringle, Larry L.; and Lax, Ronald G., 5,183,063, Cl. 132-321.000.

Riordan, Kenneth B., to Motorola, Inc. Amplitude control of a burst signal in a receiver. 5,184,349, Cl. 370-95.300.

Rishel, Michael; Powers, Larry; and Barozzini, Claude, to Genlyte Group Incorporated, The. Lighting fixture with lamp holder including integral resilient fins. 5,183,330, Cl. 362-372.000.

Ritter, Gerhard; Ritter, Klaus; and Schmidt, Gerhard, to EVG Entwicklungs-u Verwertungs-Gesellschaft m.b.H. Apparatus for bending steel bars to form concrete reinforcement elements. 5,182,932, Cl. 72-217.000.

Ritter, Klaus: *See—*
Ritter, Gerhard; Ritter, Klaus; and Schmidt, Gerhard, 5,182,932, Cl. 72-217.000.

Ritzenthaler, Robert. Mobile mount system. 5,183,162, Cl. 211-1.570.

Riu, Sun J.: *See—*
Lee, Ho W.; Riu, Sun J.; and An, Chang N., 5,183,658, Cl. 424-89.000.

Rivera, Lester: *See—*
Doyle, Richard C.; and Rivera, Lester, 5,184,271, Cl. 361-49.000.

Rivero, Ralph A.: *See—*
Greenlee, William J.; Patchett, Arthur A.; Hangauer, David; Walsh, Thomas F.; Fitch, Kenneth J.; Rivero, Ralph A.; and Dhanoa, Daljit S., 5,183,810, Cl. 514-63.000.

Rizzi, Amleto; and Marchioro, Gaetano, to FIS - Fabbrica Italiana Sintetici S.p.A. Process for the optical resolution of threo-2-hydroxy-3-(2'-aminophenylthio)-3-(4''-methoxyphenyl)-propionic acid. 5,183,922, Cl. 560-7.000.

RMS Engineering, Inc.: *See—*
Shellhause, Ronald L., 5,182,911, Cl. 60-533.000.

Robar, Sheldon C.; Fraser, David W.; and Wiley, Bernard A. Engine system using refrigerant fluid. 5,182,913, Cl. 60-671.000.

Robbins, E. Stanley; Robbins, Rodney W.; Watt, Darrel J.; and Wilson, Wendell G., to Robbins Industries, Inc. Adjustable measuring container. 5,182,948, Cl. 73-429.000.

Robbins, Francis B., to Borg-Warner Automotive Inc. Continuously variable transmission. 5,183,444, Cl. 475-210.000.

Robbins Industries, Inc.: *See—*
Robbins, E. Stanley; Robbins, Rodney W.; Watt, Darrel J.; and Wilson, Wendell G., 5,182,948, Cl. 73-429.000.

Robbins, Rodney W.: *See—*
Robbins, E. Stanley; Robbins, Rodney W.; Watt, Darrel J.; and Wilson, Wendell G., 5,182,948, Cl. 73-429.000.

Robert Bosch GmbH: *See—*
Bremer, Wolfgang; Knoll, Peter; and Heintz, Frieder, 5,184,123, Cl. 340-995.000.
Gutzeit, Reinhard, 5,183,317, Cl. 303-113.200.
Setter, Siegfried, 5,182,945, Cl. 73-118.100.

Roberts, Brian F.: *See—*
Stinson, D. Ray; Stinson, Linda D.; Roberts, Brian F.; Dahms, Steven J.; Estes, Brian P.; and Robertson, Tommy H., 5,182,825, Cl. 5-451.000.

Roberts, Dane R., to British Columbia Research Corporation. Process for the production, desiccation and germination of conifer somatic embryos. 5,183,757, Cl. 435-240.490.

Roberts, John L., to Milwaukee Valve Company, Inc. Handle locking mechanism for quarter turn valves. 5,183,073, Cl. 137-385.000.

Robertson, Tommy H.: *See—*
Stinson, D. Ray; Stinson, Linda D.; Roberts, Brian F.; Dahms, Steven J.; Estes, Brian P.; and Robertson, Tommy H., 5,182,825, Cl. 5-451.000.

Robinson, Maureen G. Dispensing liquid animal pick applicator. 5,183,006, Cl. 119-85.000.

Robitschko, Peter: *See—*
Claar, Klaus; Deischl, Hans; Lindmayer, Martin; Moczygemba, Jurgen; Schrader, Jergen; Schumacher, Josef; Topfer, Claus; and Robitschko, Peter, 5,184,022, Cl. 307-10.200.

Robson, Colin L.: *See—*
Middleton, Christopher O.; and Robson, Colin L., 5,184,293, Cl. 364-167.010.

Rochelo, Donald R.: *See—*
Lowry, Alan B.; Gelardi, Paul J.; and Rochelo, Donald R., 5,184,255, Cl. 360-60.000.

Rochholz, Guenter: *See—*
Brune, Richard; Papiernik, Wolfgang; and Rochholz, Guenter, 5,184,056, Cl. 318-799.000.

Rodan, Gideon A.: *See—*
Saari, Walfred S.; Rodan, Gideon A.; Fisher, Thorsten E.; and Anderson, Paul S., 5,183,815, Cl. 514-172.000.

Rodden, John B., to Shell Oil Company. System for removal and disposal of minor amounts of organics from contaminated water. 5,183,563, Cl. 210-180.000.

Rodee, Mark D.: *See—*
Pawlak, Stephen M.; Rimbey, Roger J.; and Rodee, Mark D., 5,183,344, Cl. 400-160.000.

Roerig, Arnold J.: *See—*
Hergert, Richard E.; Hergert, Richard R.; Neill, Eugene B.; Pantaleo, Scott B.; Roerig, Arnold J.; Rogers, Thomas D.; Shands, Jay A.; and Takeguchi, Noriaki, 5,183,537, Cl. 162-216.000.

Rogers, Ralph F.: *See—*
Fundingsland, Jon W.; and Rogers, Ralph F., 5,183,415, Cl. 433-80.000.

Rogers, Russell L.: *See—*
Allread, Alan R.; Chichester, Dennis B.; Rogers, Russell L.; and Knowles, Steven M., 5,182,922, Cl. 62-239.000.

Rogers, Thomas D.: *See—*
Hergert, Richard E.; Hergert, Richard R.; Neill, Eugene B.; Pantaleo, Scott B.; Roerig, Arnold J.; Rogers, Thomas D.; Shands, Jay A.; and Takeguchi, Noriaki, 5,183,537, Cl. 162-216.000.

Rogge, Dieter, to Windmoller & Holscher. Doctor device for the self-washing inking unit of a rotary printing press. 5,182,992, Cl. 101-363.000.

Rohm and Haas Company: *See—*
Venter, Jeremia J.; and McDade, Christine, 5,183,930, Cl. 560-217.000.

Rohr, Inc.: *See—*
Cornax, Dennis, 5,183,223, Cl. 244-54.000.

Rohrer, Gene D.: *See—*
Hakenewerth, Paul A.; Rohrer, Gene D.; and Stalberg, Nils G., 5,183,999, Cl. 235-379.000.

Rokutan, Takao, to Olympus Optical Co., Ltd. Optical recording/reproducing apparatus having means for periodically supervising drive current supplied to actuator. 5,184,337, Cl. 369-44.250.

Roland, Taillard: *See—*
Thierry, Maurickx; Pascal, Verrier; and Roland, Taillard, 5,183,633, Cl. 420-92.000.

Roldan, Cristobal M.: *See—*
Brana, Miguel F.; Sanz, Antonio M.; Alvarez-Ossorio, Rafael P.; Roldan, Cristobal M.; De Gamboa, Cristina R. F.; Garcia, Jesus G.; and Berlanga, Jose M. C., 5,183,821, Cl. 514-296.000.

Roling, Paul V.: *See—*
Forester, David R.; and Roling, Paul V., 5,183,555, Cl. 208-48.0AA.

Roll'n Well Servicing Inc.: *See—*
Rowbotham, Ronald H.; and Cassady, Gregory T., 5,183,122, Cl. 175-52.000.

Rolls-Royce Business Ventures Limited: *See—*
Coplin, John F., 5,182,904, Cl. 60-39.161.

VOL
1147
ISS
1
FE
2
1993
UMI

Roman, Horst: *See—*
Cudini, A. Mario; Roman, Horst; and Drew, Kenneth A., 5,182,974, Cl. 82-124.000.

Romanet, Robert F.; and Chen, Teh-Hsuan, to Eastman Kodak Company. Photographic silver halide materials and process comprising new pyrazoloazole couplers. 5,183,728, Cl. 430-386.000.

Romano, James J.: *See—*
Thomas, James M. C.; Stolpmann, James R.; Sutton, William T.; and Romano, James J., 5,182,826, Cl. 5-453.000.

Romeu, Regis K.: *See—*
Khalil, Carlos N.; Romeu, Regis K.; and Rabinovitz, Andre , 5,183,581, Cl. 252-8.552.

Ronan, Gerard A.; and Cole, Alistair, to VG Instruments Group Limited. Glow discharge spectrometry. 5,184,016, Cl. 250-288.000.

Roof, Glenn L.; and Kremer, Lawrence N., to Baker Hughes Incorporated. Treatment of oils using choline base. 5,183,560, Cl. 208-236.000.

Roper, Harald W. W.: *See—*
Koch, Helmut; and Roper, Harald W. W., 5,183,667, Cl. 424-474.000.

Rosenberg, Gideon, to State of Israel, Ministry of Defence Rafael-Armamend Development Authority. Projectile-launching device. 5,183,956, Cl. 89-8.000.

Ross, Gilbert B.; and Brittain, Charles. Oil filter disassembly and recycling apparatus. 5,182,842, Cl. 29-240.000.

Rossoff, Leonard J. Fiberoptic intubating laryngoscope. 5,183,031, Cl. 128-6.000.

Roth, Steven P.: *See—*
Bodziak, Douglas P.; Grovender, Steven L.; Hunder, Ray A.; Molenda, Robert P.; and Roth, Steven P., 5,183,297, Cl. 283-67.000.

Roth, Wieslaw J.: *See—*
Kresge, Charles T.; Leonowicz, Michael E.; Roth, Wieslaw J.; Vartuli, James C.; Keville, Kathleen M.; Shih, Stuart S.; Degnan, Thomas F.; Dwyer, Francis G.; and Landis, Michael E., 5,183,561, Cl. 208-251.00R.

Rothenpieler, Joachim: *See—*
Saur, Roland; Bauer, Friedrich; and Rothenpieler, Joachim, 5,183,012, Cl. 123-41.080.

Roussel Uclaf: *See—*
Galliani, Giulio; Barzaghi, Fernando; Bonetti, Carla; and Toja, Emilio, 5,183,893, Cl. 546-133.000.
Toja, Emilio; Bonetti, Carla; Barzaghi, Fernando; and Galliani, Giulio, 5,183,896, Cl. 546-326.000.

Rowbotham, Ronald H.; and Cassady, Gregory T., to Roll'n Well Servicing Inc. Derrick assembly capable of conveying pipe sections between a drill string and a rack for said pipe sections. 5,183,122, Cl. 175-52.000.

Roy, Orest Z.; Fulford, Raymood E.; and Legal, Jules O., to Canadian Aging & Rehabilitation Product Development Corporation. Motor-driven chair. 5,183,133, Cl. 180-252.000.

Rubin, Isadore E. Method for recovering solvents through the use of an extender. 5,183,540, Cl. 203-41.000.

Ruedi, Peter: *See—*
Ineichen, Kurt; Ruedi, Peter; and Wirth, Herbert, 5,184,101, Cl. 335-78.000.

Ruffini, Alberto; and Mammarella, Nicolino, to Pirelli Trasmissioni Industriali S.p.A. Process and apparatus for producing splined driving belts. 5,183,521, Cl. 156-142.000.

Rupnick, Charles J.; Stoddard, Damon R.; and Grindeland, David B., to Sundstrand Corporation. Accelerometer with support caging. 5,182,949, Cl. 73-517.00B.

Rutten, Hendrikus J. J.: *See—*
Jacobs, Martinus J. N.; and Rutten, Hendrikus J. J., 5,183,701, Cl. 428-229.000.

Rutter, Robert E.; and d'Aragona, Frank S., to Motorola, Inc. Vertical current flow semiconductor device utilizing wafer bonding. 5,183,769, Cl. 437-31.000.

Ryder International Corporation: *See—*
Ranalletta, Joseph V.; Williams, Fred E., Jr.; and Kanner, Rowland W., 5,183,184, Cl. 222-189.000.

Ryerson, Robert, to Datatape Incorporated. Helical scan magnetic tape recorder with capstan assisted vacuum threading. 5,184,258, Cl. 360-85.000.

Saari, Walfred S.; Rodan, Gideon A.; Fisher, Thorsten E.; and Anderson, Paul S., to Merck & Co., Inc. Bone acting agents. 5,183,815, Cl. 514-172.000.

SAB Wabco Holdings B.V.: *See—*
Emilsson, Fred S., 5,183,306, Cl. 295-11.000.

Saber Equipment Corp.: *See—*
Simpson, W. Dwain; and Pyle, James H., 5,184,309, Cl. 364-510.000.

Sabo, Carl H.: *See—*
Lee, Albert H., Jr.; and Sabo, Carl H., 5,183,108, Cl. 166-187.000.

Sachs, George: *See—*
Lee, Gary C. M.; Garst, Michael E.; and Sachs, George, 5,183,906, Cl. 549-218.000.

Sadana, Devendra K.: *See—*
Baratte, Herve; de Souza, Joel P.; and Sadana, Devendra K., 5,183,767, Cl. 437-11.000.

Safe-T-Jack, Inc.: *See—*
Arzouman, Harry H.; and Slay, Clyde E., 5,183,235, Cl. 254-8.00B.

Sagawa, Masato; Fujimura, Setsuo; and Matsuura, Yutaka, to Sumitomo Special Metals Co., Ltd. Magnetic materials and permanent magnets. 5,183,516, Cl. 148-302.000.

Sahashi, Masashi: *See—*
Kobayashi, Tadahiko; and Sahashi, Masashi, 5,184,037, Cl. 310-26.000.

Sahni, Paramdeep S., to AT&T Bell Laboratories. Enhanced ISDN 800 service. 5,184,345, Cl. 370-54.000.

Saika, Toshihiro; Kobayashi, Isao; Kaifu, Noriyuki; and Endo, Tadao, to Canon Kabushiki Kaisha. Method of driving a thin film transistor type optical sensor and the drive unit. 5,184,007, Cl. 250-208.100.

Saiki, Ikuo; Nishi, Norio; Azuma, Ichiro; and Tokura, Seiichi, to Azuma, Ichiro. Polypeptide comprising repeated cell-adhesive core sequences. 5,183,804, Cl. 514-12.000.

Saint-Gobain Recherche: *See—*
D'Iribarne, Benoit; Mairlot, Henri; and Houang, Paul, 5,183,491, Cl. 65-351.000.

Saito, Hirosi: *See—*
Shizuno, Hisamitsu; Kisi, Hirosi; Saito, Hirosi; and Fujii, Makoto, 5,184,277, Cl. 361-321.000.

Saito, Keiichi; Kawamura, Shigeharu; Sato, Syozo; and Kawasumi, Kiyohito, to Kabushiki Kaisha Toshiba. X-ray imaging tube with specific positional and size relationship of elements. 5,184,008, Cl. 250-214.0VT.

Saito, Osamu; Ito, Kenji; Moronaga, Kenji; and Watanabe, Mikio, to Fuji Photo Film Co., Ltd. Compression coding device and expansion decoding device for picture signal. 5,184,229, Cl. 358-427.000.

Saito, Seishiro, to Tachi-S Co., Ltd. Seat slide device. 5,183,234, Cl. 248-430.000.

Saito, Tatsuo: *See—*
Shiina, Michihiro; Tanaka, Yasuhiko; Iwai, Fumio; Noguchi, Yukio; Umetsu, Takao; Saito, Tatsuo; Onozuka, Haruo; Saitoh, Muneyoshi; and Koda, Takao, 5,184,166, Cl. 354-400.000.

Saito, Tatsuya: *See—*
Masuda, Noboru; Kamikawai, Ryotaro; Yagyu, Masayoshi; Yamamoto, Masakazu; Itoh, Hiroyuki; and Saito, Tatsuya, 5,184,027, Cl. 307-269.000.

Saito, Tomoki: *See—*
Henmi, Naoya; Suzaki, Tetsuyuki; and Saito, Tomoki, 5,184,243, Cl. 359-181.000.

Saito, Tutomu: *See—*
Higuchi, Kazuhiko; Hirahara, Shuzo; Saito, Tutomu; Nagato, Hitoshi; and Iwamoto, Akito, 5,183,347, Cl. 400-583.300.

Saitoh, Kouji; and Uchida, Kazuyuki, to Kabushiki Kaisha Toshiba. Testing integrated circuit using an A/D converter built in a semiconductor chip. 5,184,162, Cl. 324-158.00R.

Saitoh, Muneyoshi: *See—*
Shiina, Michihiro; Tanaka, Yasuhiko; Iwai, Fumio; Noguchi, Yukio; Umetsu, Takao; Saito, Tatsuo; Onozuka, Haruo; Saitoh, Muneyoshi; and Koda, Takao, 5,184,166, Cl. 354-400.000.

Saitoh, Takayuki, to NOK Corporation. Method of manufacturing a hermetic sealing apparatus for sealing two members which rotate relative to each other. 5,183,617, Cl. 264-249.000.

Saitou, Toshimitu: *See—*
Adachi, Masakazu; Saitou, Toshimitu; Murata, Kimiyo; and Tamura, Aki, 5,183,738, Cl. 435-7.100.

Saitou, Yoshitami: *See—*
Goto, Shigeki; Shimei, Masato; Miyazawa, Tetsuhiro; Saitou, Yoshitami; and Isono, Nobuyuki, 5,182,970, Cl. 74-866.000.

Sajewski, Ronald, to Applied Hydro Dynamics, Inc. Method of cleaning internal surfaces utilizing cavitating fluid. 5,183,513, Cl. 134-22.120.

Sakaguchi, Akira: *See—*
Hori, Kimihiko; Sakaguchi, Akira; Ishida, Koichi; Nomura, Tomoko; Suzuki, Keiko; and Tsuchiya, Shuichi, 5,183,824, Cl. 514-383.000.

Sakai, Atsushi: *See—*
Sakata, Shinji; Miyashita, Takanori; Kondo, Kazuhiko; Sakai, Atsushi; Shibata, Toshiyuki; and Ogawa, Takayuki, 5,183,882, Cl. 514-49.000.

Sakai, Hideki; Ishiwatari, Kazuo; and Ikejiri, Fumitoshi, to Mitsui Petrochemical Industries, Ltd. Polyamide resin compositions. 5,183,843, Cl. 524-318.000.

Sakai, Keijiro; Endo, Tunehiro; Kubota, Yuzuru; Ikimi, Takashi; Mutoh, Nobuyoshi; and Honbu, Mitsuyuki, to Hitachi, Ltd. Control method and device for AC motor. 5,184,057, Cl. 318-803.000.

Sakai, Toshikazu: *See—*
Ohishi, Shinji; Akutsu, Kotaro; and Sakai, Toshikazu, 5,184,055, Cl. 318-615.000.

Sakai, Yozo: *See—*
Takeuchi, Hiroshi; Sendai, Tomoko; and Sakai, Yozo, 5,183,988, Cl. 219-69.170.

Sakaida, Tetsu: *See—*
Murakami, Hiroshi; and Sakaida, Tetsu, 5,183,443, Cl. 475-168.000.

Sakakibara, Ikuo: *See—*
Kuroyama, Yutaka; Maeno, Masami; and Sakakibara, Ikuo, 5,183,362, Cl. 407-118.000.

Sakamaki, Kazuo, to Yukiwa Seiko Kabushikikaisya. Chuck for tools. 5,183,274, Cl. 279-62.000.

Sakamoto, Masaaki: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Kato, Tohru, 5,183,637, Cl. 420-479.000.

Sakata, Shinji; Miyashita, Takanori; Kondo, Kazuhiko; Sakai, Atsushi; Shibata, Toshiyuki; and Ogawa, Takayuki, to Yoshitomi Pharmaceutical Industries, Ltd.; and Yamasa Shoyu Co., Ltd. 2'-deoxy-2'-methylidenecytidine dihydrate, methods for its production and compositions. 5,183,882, Cl. 514-49.000.

Sakauchi, Tsuneo: *See—*
Kishi, Hiroyuki; Kimura, Hitoshi; Yamamoto, Katsuya; Tamura, Yoshinobu; Sakauchi, Tsuneo; Nagaoka, ;Masahide; and Tsuchiya, Yasuyu, 5,183,836, Cl. 523-404.000.

Sakurai, Yoshito: *See—*
Kozaki, Takahiko; Asano, Kenichi; Ogino, Mineo; Amada, Eiichi; Endo, Noboru; and Sakurai, Yoshito, 5,184,346, Cl. 370-60.000.

Sakuta, Toshiyuki; Miyazawa, Kazuyuki; Oguchi, Satoshi; Kaneda, Aizo; Mitani, Masao; Nakamura, Shozo; Nishi, Kunihiko; and Murakami, Gen, to Hitachi, Ltd. Semiconductor device. 5,184,208, Cl. 257-666.000.

Saldana, Marshall. Modular barbeque grill. 5,183,027, Cl. 126-25.00R.

Salerno, Martine S.; Mounier, Remy; and Breda, Bernard, to Yves Saint Laurent Parfums. Ternary system based on perfluorinated ethers. 5,183,588, Cl. 252-312.000.

Salomon S.A.: *See—*
Pascal, Roger; and Recher, Gilles, 5,183,618, Cl. 264-257.000.

Salzmann, Thomas N.: *See—*
Greenlee, Mark L.; Salzmann, Thomas N.; and DiNinno, Frank P., 5,183,887, Cl. 540-364.000.

Samarov, Victor M.; and Arbanas, Zeljko, to Digital Equipment Corporation. Heat dissipation apparatus. 5,184,281, Cl. 361-386.000.

Samsung Electron Devices Co., Ltd.: *See—*
Ho-jin, Cho; and Choi, Sang-sin, 5,183,426, Cl. 445-68.000.

Samsung Electronics Co., Ltd.: *See—*
Cho, Hyun-Deok, 5,184,219, Cl. 358-141.000.
Craft, Jack, 5,184,088, Cl. 330-254.000.
Jin, Dae-je; Seo, Kwang-byeog; and Jeong, Tae-young, 5,183,772, Cl. 437-52.000.
Lee, Bang-Wan; and Bae, Yi-Sung, 5,184,061, Cl. 323-265.000.
Yun, Ki-ho, 5,184,084, Cl. 328-15.000.

Samuel, David N.; and Williams, Richard S., to W. R. Grace & Co.-Conn. Container closures, sealed containers and sealing compositions for them. 5,183,848, Cl. 525-57.000.

Sanchez, Paul A.: *See—*
Harper, Jon J.; Kuhlmann, George E.; Larson, Keith D.; McMahon, Rosemary F.; and Sanchez, Paul A., 5,183,933, Cl. 562-414.000.

Sander, Ulrich: *See—*
Hanel, Peter; Helmrich, Harald; and Sander, Ulrich, 5,183,571, Cl. 210-649.000.

Sanders, John M.; and Harwig, Dennis D., to Babcock & Wilcox Company, The. Reduced heat input keyhole welding through improved joint design. 5,183,989, Cl. 219-121.140.

Sanders, Raymond W. Multiple purpose certified mail envelope assembly. 5,183,203, Cl. 229-300.000.

Sanderson, John R.: *See—*
Knifton, John F.; and Sanderson, John R., 5,183,947, Cl. 568-698.000.

Sanderson, Martin C., to CCL Label, Inc. Coating of substrates. 5,183,696, Cl. 428-194.000.

Sankyo Company, Ltd.: *See—*
Ramos, Gerado; Ghisalba, Oreste; Schar, Hans-Peter; Frei, Bruno; Maienfisch, Peter; and O'Sullivan, Anthony C., 5,183,749, Cl. 435-119.000.

Sankyo Seiki Mfg. Co., Ltd.: *See—*
Kiuchi, Hiroyuki, 5,184,049, Cl. 318-362.000.

Sano, Kazuyoshi; Fujimura, Koh; Suzuki, Takumi; and Tsutsui, Takashi, to Ricoh Company, Ltd. Sealing structure of liquid crystal injection holes in liquid crystal display device. 5,184,239, Cl. 359-80.000.

Sano, Keiichi: *See—*
Noguchi, Shigeru; Ishida, Satoshi; Iwata, Hiroshi; Sano, Keiichi; and Nakayama, Shoichiro, 5,183,780, Cl. 437-173.000.

Santa Barbara Research Center: *See—*
Ingle, Lloyd D.; Peck, Leonard E., Jr.; and Santana, Jose A., 5,183,973, Cl. 174-254.000.

Santana, Jose A.: *See—*
Ingle, Lloyd D.; Peck, Leonard E., Jr.; and Santana, Jose A., 5,183,973, Cl. 174-254.000.

Santel, Hans-Joachim: *See—*
Muller, Klaus-Helmut; Kluth, Joachim; Konig, Klaus; Gassen, Karl-Rudolf; Findeisen, Kurt; Lindig, Markus; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,183,932, Cl. 560-330.000.

Santen Pharmaceutical Co., Ltd.: *See—*
Morita, Takakazu; Mita, Shiro; and Kawashima, Yoichi, 5,183,816, Cl. 514-224.200.

Sanyo Electric Co., Ltd.: *See—*
Anzai, Fukuji, 5,184,090, Cl. 330-294.000.
Kobayashi, Akio, 5,184,216, Cl. 358-105.000.
Noguchi, Shigeru; Ishida, Satoshi; Iwata, Hiroshi; Sano, Keiichi; and Nakayama, Shoichiro, 5,183,780, Cl. 437-173.000.
Terakado, Shingo, 5,183,531, Cl. 156-643.000.

Sanz, Antonio M.: *See—*
Brana, Miguel F.; Sanz, Antonio M.; Alvarez-Ossorio, Rafael P.; Roldan, Cristobal M.; De Gamboa, Cristina R. F.; Garcia, Jesus G.; and Berlanga, Jose M. C., 5,183,821, Cl. 514-296.000.

Saoshita, Shushi: *See—*
Kanai, Yasushi; Takano, Hiroe; Saoshita, Shushi; and Nitta, Atsumi, 5,184,266, Cl. 360-120.000.

Sardella, Louis M. Conveyor system and feeding sheets. 5,183,251, Cl. 271-276.000.

Sarian, Grigor; Crandall, Barry R.; and Duncan, Jeff R., to Baxter International Inc. Temperature control device for fluid filled pad. 5,183,039, Cl. 128-400.000.

Sarraf, Sanwal P.; Weber, Sharon W.; Gilmour, Hugh S. A.; and Ficcaglia, Linda I., to Eastman Kodak Company. Multiple pass laser printing for improved uniformity of a transferred image. 5,183,798, Cl. 503-227.000.

Sartorio, Franco; Prunotto, Gianpaolo; Sgandurra, Francesco; and Arghiracopulos, Salvatore, to Amada Company, Limited. Plate bending machine equipped with a plate clamping manipulator and a plate position detecting device. 5,182,936, Cl. 72-420.000.

Sasaki, Ichiro; Oshima, Junji; and Yamada, Minoru, to Takeda Chemical Industries, Ltd. Core-shell polymer, production and use thereof. 5,183,858, Cl. 525-308.000.

Sasaki, Ichiro; Oshima, Junji; and Yamada, Minoru, to Takeda Chemical Industries, Ltd. Polymer particles, production and use thereof. 5,183,859, Cl. 525-309.000.

Sasaki, Teruo: *See—*
Miyamoto, Yoshiaki; Sasaki, Teruo; Fujisawa, Kazuhiro; and Kato, Seinosuke, 5,182,888, Cl. 52-167.0DF.

Sasaki, Yuu: *See—*
Mitsui, Hidero; Kamaya, Naoki; Itoh, Hiroaki; and Sasaki, Yuu, 5,183,714, Cl. 429-123.000.

Sasao, Nobuyuki; and Wada, Yukio, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Radioactive catalyst and oxidation-reduction method and apparatus using same. 5,183,652, Cl. 423-579.000.

Sase, Akira: *See—*
Kogure, Makoto; Sase, Akira; and Fukunaga, Masao, 5,184,121, Cl. 340-870.110.

Sato, Kazuo: *See—*
Kawamura, Yoshio; Tanaka, Shinji; Sato, Kazuo; Uchida, Kenko; and Kohida, Hiroyuki, 5,183,744, Cl. 435-30.000.

Sato, Syozo: *See—*
Saito, Keiichi; Kawamura, Shigeharu; Sato, Syozo; and Kawasumi, Kiyohito, 5,184,008, Cl. 250-214.0VT.

Sato, Takeshi; Tashiro, Minoru; and Miyakawa, Naoomi, to Yamazaki Mazak Corporation. Laser beam machining system and laser beam machine cover. 5,183,993, Cl. 219-121.820.

Sato, Yoshimasa: *See—*
Hara, Toshiro; Sato, Yoshimasa; and Yagi, Noboru, 5,184,300, Cl. 364-431.100.

Sato, Yuichi: *See—*
Ueda, Toshio; Sato, Yuichi; Senda, Masayasu; Isoyama, Seiji; and Hisano, Seiichi, 5,183,630, Cl. 419-31.000.

Satoh, Isao: *See—*
Hamasaka, Hiroshi; Satoh, Isao; and Fukushima, Yoshihisa, 5,184,341, Cl. 369-54.000.

Satoh, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Method of making a semiconductor memory device. 5,183,774, Cl. 437-52.000.

Satomi, Mitsuo: *See—*
Kugimiya, Koichi; Sugaya, Yasuhiro; Inoue, Osamu; Satomi, Mitsuo; and Hirota, Ken, 5,183,631, Cl. 419-10.000.

Satterlee, Lowell W.: *See—*
Pelachyk, Richard; Satterlee, Lowell W.; Zuccaro, Dante C.; and Farris, Timothy M., 5,183,302, Cl. 292-336.300.

Saur, Roland; Bauer, Friedrich; and Rothenpieler, Joachim, to Behr-Thomson-Dehnstoffregler GmbH & Co. Thermostatic valve. 5,183,012, Cl. 123-41.080.

Sawada, Yosuke; Kakushima, Masatoshi; Nishio, Maki; Miyaki, Takeo; and Oki, Toshikazu, to Bristol-Myers Squibb Company. Method for treating fungal infections with serine analogs of BU-3608 antibiotics. 5,183,808, Cl. 514-33.000.

Sayett Group, Inc.: *See—*
Mathewson, Christopher W., 5,184,234, Cl. 359-53.000.

Scarton, Henry A.: *See—*
Calabrese, Salvadore J.; Scarton, Henry A.; Murray, S. Frank; Ettles, Christopher M.; Kennedy, Warren C.; Dinc, Saim; Jlidi, Bessem; and Strong, William, 5,183,955, Cl. 84-437.000.

Schaeffer, Philippe: *See—*
Helle, Jean-Louis; Andre, Jean-Claude; and Schaeffer, Philippe, 5,183,598, Cl. 264-22.000.

Schafer, Hans-Heinz: *See—*
Horak, Dieter; and Schafer, Hans-Heinz, 5,182,900, Cl. 57-22.000.

Schaffner, Larey D. Power limiter control for a variable displacement axial piston pump. 5,183,393, Cl. 417-218.000.

Schahrer, Clinton O.: *See—*
Alvarez, Robert J.; Bredesen, Scott E.; Wilson, James J.; Flim, Duane D.; Kniffen, Todd E.; and Schahrer, Clinton O., 5,182,925, Cl. 62-347.000.

Schar, Hans-Peter: *See—*
Ramos, Gerado; Ghisalba, Oreste; Schar, Hans-Peter; Frei, Bruno; Maienfisch, Peter; and O'Sullivan, Anthony C., 5,183,749, Cl. 435-119.000.

Scheeren, Johan W.; Martinus De Bie, Joannes F.; and De Vos, Dirk, to Pharmachemie B.V. Cyclic triketone compounds and trimethylsilyoxy butadiene compounds and their use in the preparation of daunomycinone derivatives. 5,183,913, Cl. 556-446.000.

Scheier, Donald J.; and Hathorn, Jack L., to Johnson Food Equipment, Inc. Method and apparatus for removing the skin from poultry carcasses. 5,183,434, Cl. 452-131.000.

Schein, Lawrence B.: *See—*
Karidis, John P.; Reiley, Timothy C.; and Schein, Lawrence B., 5,184,183, Cl. 355-266.000.

Schellstede, Herman J. Extended reach penetrating tool and method of forming a radial hole in a well casing. 5,183,111, Cl. 166-298.000.

Scher, Herbert I.; Ungar, Israel S.; and Baehr, Richard R., Jr., to Nevamar Corporation. Method and apparatus for continuous casting of polymerizable material. 5,183,600, Cl. 264-26.000.

Scherer, Welby J. Particulate material dispensing device. 5,183,507, Cl. 118-18.000.

VOL
1147
ISS
1
FE
2
1993
UMI

Schering Aktiengesellschaft: *See—*
Bressel, Burkhard; Meyer, Heinrich; Meyer, Walter; and Gedrat, Klaus, 5,183,552, Cl. 205-158.000.
Heindl, Josef; Skuballa, Werner; Buchmann, Bernd; Frohlich, Wolfgang; and Ederdt, Rolalnd, 5,183,925, Cl. 560-61.000.
Shaked, Ze'Ev; Stewart, Tracy; Hershenson, Susan; Thomson, James W.; Taforo, Terrance; and Thomson, Jody, 5,183,746, Cl. 435-69.510.
Speck, Ulrich; and Blaszkiewicz, Peter, 5,183,654, Cl. 424-5.000.
Tenbrink, Detlef; Bock, Martin; Heymann, Kurt; and Rimkus, Martin, 5,183,553, Cl. 205-162.000.
Schering Corporation: *See—*
Horan, Ann C., 5,183,758, Cl. 435-252.100.
Scherz, Hal C. Wound dressing retention apparatus. 5,183,460, Cl. 602-79.000.
Schick, Jean-Francois, to Goro S. A. Method of producing devices for interconnecting conveyor or similar belts. 5,182,933, Cl. 72-335.000.
Schiebel, Ulrich: *See—*
Conrads, Norbert; Schiebel, Ulrich; and Wieczorek, Herfried, 5,184,018, Cl. 250-370.090.
Schildkraut, Jay S.; Young, Ralph H.; Williams, David J.; and Scozzafava, Michael, to Eastman Kodak Company. Photorefractive device and process for its use. 5,184,323, Cl. 365-124.000.
Schimmel, Gunther; Kotzian, Michael; and Gradl, Reinhard, to Hoechst Aktiengesellschaft. Process for the preparation of crystalline sodium silicates. 5,183,651, Cl. 423-334.000.
Schimpe, Robert, to Siemens Aktiengesellschaft. Optically stabilized feedback amplifier. 5,184,247, Cl. 359-344.000.
Schipper, Paul H.: *See—*
Owen, Hartley; and Schipper, Paul H., 5,183,558, Cl. 208-113.000.
Schlatter, James C.: *See—*
Dalla Betta, Ralph A.; Ezawa, Nobuyasu; Tsurumi, Kazunori; Schlatter, James C.; and Nickolas, Sarento G., 5,183,401, Cl. 431-7.000.
Schlecht, Karl: *See—*
Kempf, Manfred; and Schlecht, Karl, 5,183,356, Cl. 405-146.000.
Schlechi, Klaus, to Nestec S.A. Process for countercurrent extraction of coffee. 5,183,676, Cl. 426-434.000.
Schleicher, Hart E.: *See—*
Fanta, David E.; Hamby, Johnnie L.; and Schleicher, Hart E., 5,183,086, Cl. 141-10.000.
Schleigh, William R.; and Welter, Thomas R., to Eastman Kodak Company. 2-substituted-1-hydroxyindoles. 5,183,894, Cl. 546-273.000.
Schlom, Jeffrey, to United States of America, Health and Human Services. Monoclonal antibody (D612) having selective reactivity for gastrointestinal caricinomas and method for employing the same. 5,183,756, Cl. 435-240.270.
Schlumberger Industries: *See—*
Abeille, Pierre; and Bredif, Didier, 5,183,219, Cl. 242-68.100.
Schlumberger Technology Corporation: *See—*
Barber, Thomas D., 5,184,079, Cl. 324-339.000.
Schmickl, Werner: *See—*
Meichsner, Roland; and Schmickl, Werner, 5,183,502, Cl. 106-22.00K.
Schmidt, Delf: *See—*
Angerbauer, Rolf; Fey, Peter; Hubsch, Walter; Philipps, Thomas; Bischoff, Hilmar; Petzinna, Dieter; and Schmidt, Delf, 5,183,897, Cl. 546-330.000.
Schmidt, Gerhard: *See—*
Ritter, Gerhard; Ritter, Klaus; and Schmidt, Gerhard, 5,182,932, Cl. 72-217.000.
Schmidt, Robert R.: *See—*
Muller, Klaus-Helmut; Kluth, Joachim; Konig, Klaus; Gassen, Karl-Rudolf; Findeisen, Kurt; Lindig, Markus; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,183,932, Cl. 560-330.000.
Schmittou, Eric R.; and Sowinski, Allan F., to Eastman Kodak Company. Color photographic recording material processing. 5,183,727, Cl. 430-372.000.
Schmoeger, Mary L.; Hagmaier, Charles P., Jr.; Bogdanowicz, Mitchell J.; DuMont, Christopher L.; and Sehlin, Richard C., to Eastman Kodak Company. System and method for reproducing an image. 5,184,175, Cl. 355-32.000.
Schneider, Bernard: *See—*
Rebeyrolle, Michel; and Schneider, Bernard, 5,183,188, Cl. 222-383.000.
Schneider, Dean J., to GKN Automotive, Inc. Boot retainer for a mechanical joint. 5,183,351, Cl. 403-50.000.
Schneider, Frank, to Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V. Closed-loop control method and apparatus. 5,184,292, Cl. 364-162.000.
Schockman, Robert L., to Minster Machine Company, The. Single reciprocating dynamic balancer for a double action stamping press. 5,182,935, Cl. 72-417.000.
Scholl, Thomas: *See—*
Weider, Richard; and Scholl, Thomas, 5,183,926, Cl. 560-76.000.
Scholz-Weigl, Sigrid: *See—*
Heidel, Klaus; and Scholz-Weigl, Sigrid, 5,183,872, Cl. 527-300.000.
Schrader, Jergen: *See—*
Claar, Klaus; Deischl, Hans; Lindmayer, Martin; Moczygemba, Jurgen; Schrader, Jergen; Schumacher, Josef; Topfer, Claus; and Robitschko, Peter, 5,184,022, Cl. 307-10.200.
Schrader, Jurgen: *See—*
Bonne, Andreas; Claar, Klaus; and Schrader, Jurgen, 5,183,300, Cl. 292-216.000.
Schroder, Waldemar: *See—*
Brandau, Egbert; Huschka, Hans; Kadner, Martin; and Schroder, Waldemar, 5,183,493, Cl. 75-335.000.
Schroeder, Wesley A.: *See—*
Smith, James F.; and Schroeder, Wesley A., 5,183,982, Cl. 200-61.850.
Schuler, Andreas: *See—*
Bruckner, Raimund; Hintzen, Ullrich; Lee, Steve; Schuler, Andreas; and Wiesel, Martin, 5,183,624, Cl. 266-236.000.
Schulte, Franz: *See—*
Becker, Eberhard; Schulte, Franz; Sprung, Hartwig; Staggl, Ronald; and Stoeber, Manfred, 5,183,377, Cl. 414-751.000.
Schultz, Charles P., to Motorola, Inc. Menu selection using adaptive force sensing resistor. 5,184,120, Cl. 340-870.380.
Schumacher, Josef: *See—*
Claar, Klaus; Deischl, Hans; Lindmayer, Martin; Moczygemba, Jurgen; Schrader, Jergen; Schumacher, Josef; Topfer, Claus; and Robitschko, Peter, 5,184,022, Cl. 307-10.200.
Schurfeld, Armin: *See—*
Hartel, Gunter; Schurfeld, Armin; Losing, Karl-Heinrich; Thonnesen, Dieter; and Remde, Ulrich, 5,182,942, Cl. 73-61.460.
Schurman, Peter T., to Plastic Forming Company, Inc., The. Apparatus for controlling weight and wall thickness of a blow molded article. 5,183,673, Cl. 425-522.000.
Schurr, Michael, to Soehnle-Waagen GmbH & Co. Load-sensing element for a balance. 5,183,125, Cl. 177-211.000.
Schussler, Karl H. Device for gassing liquids. 5,183,595, Cl. 261-64.300.
Schwab, Ekkehard; Veitch, Ronald J.; and Auweter, Helmut, to BASF Aktiengesellschaft. Acicular cobalt-modified iron oxides and their preparation. 5,183,709, Cl. 428-404.000.
Schwartz, Donald: *See—*
Qureshi, Humayun; and Schwartz, Donald, 5,183,765, Cl. 436-180.000.
Schwartz, Nira; and Shahar, Arie. Scanning of moving objects using unique polygon mounted on carousel which rotates at twice polygon's speed. 5,184,246, Cl. 359-216.000.
Schweiker, Werner; and Leininger, Volker, to Behr-Industrieanlagen GmbH & Co. Method for program control for an industrial robot for automatic coating of workpieces. 5,184,051, Cl. 318-568.000.
Schweikert, Eugen: *See—*
Jaehrling, Peter; and Schweikert, Eugen, 5,183,472, Cl. 604-284.000.
Schwemmer, Geary K., to United States of America, National Aeronautics & Space Admininstration. Doppler shift compensation system for laser transmitters and receivers. 5,184,241, Cl. 359-161.000.
SCM Consultants, Inc.: *See—*
Wright, Roger G.; Lindbloom, Leon J.; and Midlam, Lewis C., 5,183,354, Cl. 404-81.000.
Scoggins, Lacey E.; Lee, Fu M.; Chang, Allen T.; and Perkins, Wiley D., to Phillips Petroleum Company. Extraction plus ion exchange processing of a brine stream. 5,183,538, Cl. 203-28.000.
Scozzafava, Michael: *See—*
Schildkraut, Jay S.; Young, Ralph H.; Williams, David J.; and Scozzafava, Michael, 5,184,323, Cl. 365-124.000.
Scripps Research Institute, The: *See—*
Moriarty, Ann M., 5,183,734, Cl. 435-5.000.
Nicolaou, Kyriacos C.; Sorensen, Erik; Hwang, Chan-Kou; Discordia, Robert; Bergman, Robert G.; and Minto, Robert E., 5,183,942, Cl. 568-375.000.
Scriven, Eric F. V.: *See—*
McQuigg, Donald W.; Sowers, Edward E.; Goe, Gerald L.; Scriven, Eric F. V.; and Keay, James G., 5,183,895, Cl. 546-304.000.
Scudiere, Matthew B.: *See—*
Hawsey, Robert A.; and Scudiere, Matthew B., 5,184,189, Cl. 356-218.000.
Seaborne, Jonathan, to General Mills, Inc. Amphoteric ceramic microwave heating susceptor compositions with metal salt moderators. 5,183,787, Cl. 501-143.000.
Seager, Stephen W. J. Device for obtaining testicular or penile size and volume measurements. 5,183,055, Cl. 128-774.000.
Sears, Carroll. Fastener hand tool. 5,182,829, Cl. 7-166.000.
Sehlin, Richard C.: *See—*
Schmoeger, Mary L.; Hagmaier, Charles P., Jr.; Bogdanowicz, Mitchell J.; DuMont, Christopher L.; and Sehlin, Richard C., 5,184,175, Cl. 355-32.000.
Seiko Epson Corporation: *See—*
Fukushima, Hiroshi; Motonaga, Akira; Suda, Eriko; Nakajima, Mikito; Takeshita, Katsuyoshi; and Kutsukake, Yusuke, 5,183,870, Cl. 526-273.000.
Koga, Yoshiro; Gomi, Akihiro; Miyasaka, Takashi; Miyazawa, Yasunaga; Endo, Kenichi; Shinozaki, Junichiro; Yoda, Kaneo; Ichikawa, Takashi; Miyasaka, Hitoshi; and Kaburagi, Chiharu, 5,184,257, Cl. 360-77.050.
Kondo, Isao; and Taki, Yosio, 5,182,850, Cl. 29-784.000.
Minowa, Masahiro, 5,183,333, Cl. 400-605.000.
Yamazaki, Katsunori, 5,184,118, Cl. 340-784.000.
Yonekubo, Shuji; Kitahara, Tsuyoshi; Furuta, Tatsuo; Katakura, Takahiro; and Serizawa, Naomi, 5,184,155, Cl. 346-140.00R.
Seiko Instruments, Inc.: *See—*
Takeda, Haruo, 5,182,950, Cl. 73-811.000.
Sekikawa, Norio: *See—*
Yamaguchi, Akira; Uno, Masaru; Sekikawa, Norio; Arai, Fumio; and Matsuzaki, Kenji, 5,183,484, Cl. 55-34.000.

Sekine, Shuji: *See—*
Harada, Naoto; Sekine, Shuji; Furuya, Takeo; and Yoshioka, Nobuo, 5,184,050, Cl. 318-467.000.
Sell, Walter A.: *See—*
Boo, H. Khim; Mittendorf, Donald H.; and Sell, Walter A., 5,183,212, Cl. 241-17.000.
Semiconductor Energy Laboratory Co., Ltd.: *See—*
Yamazaki, Shumpei, 5,183,685, Cl. 427-571.000.
Yamazaki, Shunpei; Hayashi, Shigenori; Inujima, Takashi; and Hirose, Naoki, 5,183,511, Cl. 118-723.000.
Yamazaki, Shunpei, 5,183,530, Cl. 156-643.000.
Senda, Masayasu: *See—*
Ueda, Toshio; Sato, Yuichi; Senda, Masayasu; Isoyama, Seiji; and Hisano, Seiichi, 5,183,630, Cl. 419-31.000.
Sendai, Tomoko: *See—*
Takeuchi, Hiroshi; Sendai, Tomoko; and Sakai, Yozo, 5,183,988, Cl. 219-69.170.
Seneca Sports, Inc.: *See—*
Pratt, Kenneth W., 5,183,276, Cl. 280-11.220.
Sengoku, Koji: *See—*
Okamoto, Hidefumi; and Sengoku, Koji, 5,183,681, Cl. 426-634.000.
Senju Pharmaceutical Co., Ltd.: *See—*
Morita, Yasushi; Ohtori, Akira; and Andoh, Masako, 5,183,662, Cl. 424-426.000.
Sensors, Inc.: *See—*
Tury, Edward L.; Kaste, Keith; Johnson, Ross E.; and Danielson, David O., 5,184,017, Cl. 250-343.000.
Seo, Kwang-byeog: *See—*
Jin, Dae-je; Seo, Kwang-byeog; and Jeong, Tae-young, 5,183,772, Cl. 437-52.000.
Sequa Corporation: *See—*
Williams, Robert; Sirvet, Enn; and Gabel, Richard A., 5,183,145, Cl. 198-441.000.
Serizawa, Naomi: *See—*
Yonekubo, Shuji; Kitahara, Tsuyoshi; Furuta, Tatsuo; Katakura, Takahiro; and Serizawa, Naomi, 5,184,155, Cl. 346-140.00R.
Service Tool Die & Mfg. Co.: *See—*
Herdzina, Frank J.; and Goodrich, Rollie M., 5,182,934, Cl. 72-405.000.
Servido, John L.; Tucker, Robert E.; and Murphy, James, to Healthdyne, Inc. Pneumatic circuit control for pressure swing adsorption systems. 5,183,483, Cl. 55-26.000.
Setter, Siegfried, to Robert Bosch GmbH. Method and arrangement for checking the controllability of a tank venting valve. 5,182,945, Cl. 73-118.100.
Sevastakis, Gus: *See—*
Xanthakos, Dimitrios; and Sevastakis, Gus, 5,183,465, Cl. 604-108.000.
Severson, Frederick E.; and Quinn, Patrick A. Model railroad reversing motor control system. 5,184,048, Cl. 318-280.000.
Sexton, Kenneth D.: *See—*
McCurry, Patrick W.; Kellogg, James R.; Boekelheide, Karl; Sexton, Kenneth D.; Ellison, George A.; and Hocker, Robert A., 5,184,025, Cl. 307-66.000.
SFS Stadler Holding AG: *See—*
Palm, Erich, 5,183,357, Cl. 411-29.000.
Sgandurra, Francesco: *See—*
Sartorio, Franco; Prunotto, Gianpaolo; Sgandurra, Francesco; and Arghiracopulos, Salvatore, 5,182,936, Cl. 72-420.000.
SGS-Thomson Microelectronics, Inc.: *See—*
Bond, Robert H.; Olla, Michael A.; Morrison, Barry; and Garrison, Linn C., 5,182,851, Cl. 29-827.000.
Shah, Mrugesh K. Automatic seat and shoulder belt apparatus. 5,183,291, Cl. 280-804.000.
Shah, Shailesh C.: *See—*
El-Hefnawi, Sobhy; Shah, Shailesh C.; and Wasyliw, Basil, 5,183,847, Cl. 525-54.440.
Shahar, Arie: *See—*
Schwartz, Nira; and Shahar, Arie, 5,184,246, Cl. 359-216.000.
Shahriary, Iradj; and McNab, Kevin M., to Hughes Aircraft Company. Phase-locked loop frequency tracking device including a direct digital synthesizer. 5,184,092, Cl. 331-16.000.
Shaked, Ze'Ev; Stewart, Tracy; Hershenson, Susan; Thomson, James W.; Taforo, Terrance; and Thomson, Jody, to Schering Aktiengesellschaft. Formulation processes for pharmaceutical compositions of recombinant β-interferon. 5,183,746, Cl. 435-69.510.
Shaklee, Kerry L., to Alliant Techsystems Inc. Method and apparatus for image production by selective or random exposure element activation. 5,184,154, Cl. 346-110.00R.
Shands, Jay A.: *See—*
Hergert, Richard E.; Hergert, Richard R.; Neill, Eugene B.; Pantaleo, Scott B.; Roerig, Arnold J.; Rogers, Thomas D.; Shands, Jay A.; and Takeguchi, Noriaki, 5,183,537, Cl. 162-216.000.
Shanholtz, Carl E.: *See—*
Cardis, Angeline B.; and Shanholtz, Carl E., 5,183,475, Cl. 44-343.000.
Shanley, Thomas M. Fan foldable membership card mailers. 5,183,436, Cl. 462-6.000.
Shape Inc.: *See—*
Lowry, Alan B.; Gelardi, Paul J.; and Rochelo, Donald R., 5,184,255, Cl. 360-60.000.
Sharp, Jeffrey O.: *See—*
Jordan, Scott C.; Wolf, Robert L.; Fleege, Dennis W.; and Sharp, Jeffrey O., 5,184,278, Cl. 361-346.000.
Sharp Kabushiki Kaisha: *See—*
Ayukawa, Akitsu; and Onishi, Shigeo, 5,183,770, Cl. 437-41.000.
Fujii, Yoshihisa; Suzuki, Akira; Furukawa, Katsuki; and Shigeta, Mitsuhiro, 5,184,199, Cl. 257-77.000.
Morooka, Toru; and Okamoto, Yuji, 5,183,240, Cl. 271-3.100.
Nakagawa, Yasuhito, 5,183,800, Cl. 505-1.000.
Nishino, Hiromi; Tarui, Keiji; Toyoshi, Hideyuki; and Morita, Tatsuo, 5,183,725, Cl. 430-313.000.
Ohta, Yoshiji, 5,184,324, Cl. 365-149.000.
Onishi, Shigeo; Yamadai, Tsutomu; and Ishihara, Kazuya, 5,183,782, Cl. 437-192.000.
Sugimoto, Yukihiko, 5,184,150, Cl. 346-76.0PH.
Takenouchi, Norio, 5,184,310, Cl. 364-550.000.
Shau, Gua-Ming: *See—*
Trent, Lane; and Shau, Gua-Ming, 5,183,004, Cl. 119-5.000.
Shaughnessy, Ernie, to Hunter Manufacturing Inc. Latching mechanism for cap tailgate door. 5,183,310, Cl. 296-106.000.
Shaw, Daniel J., Jr.: *See—*
Hojnacki, Robert J.; Pearson, Daniel C.; Brucker, Gerard K.; Gober, Michael J.; and Shaw, Daniel J., Jr., 5,183,159, Cl. 206-583.000.
Shaw, Wilfrid G.: *See—*
Paparizos, Christos; and Shaw, Wilfrid G., 5,183,793, Cl. 502-338.000.
Shaw, William S. Universal commode stopper. 5,182,819, Cl. 4-393.000.
Shell Internationale Research Maatschappij B.V.: *See—*
Briggs, Stuart P., 5,183,907, Cl. 549-310.000.
Shell Oil Company: *See—*
Rodden, John B., 5,183,563, Cl. 210-180.000.
Shell Research Limited: *See—*
Wolfert, Anthony J., 5,183,648, Cl. 423-267.000.
Shellhause, Ronald L., to RMS Engineering, Inc. Hydraulic pressure actuating systems with pivotable mounting. 5,182,911, Cl. 60-533.000.
Sheridan, William G.; and Reiskin, Edward D., to Otis Elevator Company. Elevator governor rope block actuation in low speed emergency situations. 5,183,978, Cl. 187-105.000.
Sheridan, William G.; and Reiskin, Edward D., to Otis Elevator Company. Elevator governor rope restraint when elevator car moves with car doors open. 5,183,979, Cl. 187-108.000.
Sherwood Medical Company: *See—*
Burkholder, Richard A.; and Acker, Gregory G., 5,183,054, Cl. 128-754.000.
Shiba, Noriyuki; and Hayashi, Mamoru, to Tokyo Kikai Seisakusho, Ltd. Ink supply source driving apparatus for rotary presses. 5,182,993, Cl. 101-365.000.
Shibata, Hideki, to Kahishiki Kaisha Toshiba. Semiconductor device having multi-layered wiring, and method of manufacturing the same. 5,184,205, Cl. 257-765.000.
Shibata, Toshiyuki: *See—*
Sakata, Shinji; Miyashita, Takanori; Kondo, Kazuhiko; Sakai, Atsushi; Shibata, Toshiyuki; and Ogawa, Takayuki, 5,183,882, Cl. 514-49.000.
Shibata, Yutaka: *See—*
Tazawa, Shigeru; and Shibata, Yutaka, 5,183,343, Cl. 400-103.000.
Shibukawa, Toshiya: *See—*
Masuhra, Shohei; Tonoki, Satoshi; Shibukawa, Toshiya; and Sugawara, Hirsohi, 5,183,695, Cl. 428-151.000.
Shieh, Han-Ping D.: *See—*
Kryder, Mark H.; and Shieh, Han-Ping D., 5,184,335, Cl. 369-13.000.
Shigematsu, Masayuki: *See—*
Nishimura, Akira; Suzuki, Shuzo; and Shigematsu, Masayuki, 5,184,244, Cl. 359-187.000.
Shigemi, Hirotake: *See—*
Totoki, Toshio; Shigemi, Hirotake; and Yasukawa, Yoshio, 5,183,562, Cl. 210-85.000.
Shigemura, Yutaka: *See—*
Kurando, Shigeo; Makiura, Yoshinori; Shigemura, Yutaka; Ooura, Junichi; Mifune, Eiji; Imafuku, Tatsuo; Komata, Hiroshi; and Ido, Mikio, 5,184,181, Cl. 355-260.000.
Shigeta, Akira: *See—*
Jisai, Yasuhiro; Tanaka, Yukiomi; and Shigeta, Akira, 5,183,601, Cl. 252-524.000.
Shigeta, Mitsuhiro: *See—*
Fujii, Yoshihisa; Suzuki, Akira; Furukawa, Katsuki; and Shigeta, Mitsuhiro, 5,184,199, Cl. 257-77.000.
Shih, Stuart S.: *See—*
Kresge, Charles T.; Leonowicz, Michael E.; Roth, Wieslaw J.; Vartuli, James C.; Keville, Kathleen M.; Shih, Stuart S.; Degnan, Thomas F.; Dwyer, Francis G.; and Landis, Michael E., 5,183,561, Cl. 208-251.00R.
Shiina, Michihiro; Tanaka, Yasuhiko; Iwai, Fumio; Noguchi, Yukio; Umetsu, Takao; Saito, Tatsuo; Onozuka, Haruo; Saitoh, Muneyoshi; and Koda, Takao, to Fuji Photo Film Co., Ltd. Self-photographing method for cameras. 5,184,166, Cl. 354-400.000.
Shimada, Toshio; Kobayashi, Morio; Tada, Takemi; and Kawaminami, Shigeya, to Hitachi, Ltd. Overload protective device. 5,184,269, Cl. 361-24.000.
Shimanoki, Hisae: *See—*
Miwa, Takao; Ikeda, Takayoshi; Numata, Shunichi; Fujisaki, Koji; and Shimanoki, Hisae, 5,183,838, Cl. 524-109.000.
Shimei, Masato: *See—*
Goto, Shigeki; Shimei, Masato; Miyazawa, Tetsuhiro; Saitou, Yoshitami; and Isono, Nobuyuki, 5,182,970, Cl. 74-866.000.
Shimizu, Susumu: *See—*
Kitajima, Eiji; Oyama, Takashi; Maruden, Eiji; Teraoka, Hirokazu; Yamasaki, Haruki; and Shimizu, Susumu, 5,183,603, Cl. 264-29.200.

VOL 1147 ISS 1 FE 2 1993 UMI

Shimizu, Yuji: *See*—
Takahashi, Takehiko; Iwata, Ryuji; and Shimizu, Yuji, 5,183,315, Cl. 297-488.000.

Shimoda, Akihide: *See*—
Kawaguichi, Kuniaki; Nakane, Toshio; Shimoda, Akihide; and Hijikata, Kenji, 5,183,623, Cl. 264-544.000.

Shimoda, Kyouzi; and Yoshimoto, Kyosuke, to Mitsubishi Denki Kabushiki Kaisha. Optical disc system with improved track jumping operation. 5,184,338, Cl. 369-44.250.

Shimoe, Osamu: *See*—
Nakajima, Shin; Aoyama, Hiroyuki; Kagawa, Rihito; and Shimoe, Osamu, 5,184,085, Cl. 328-65.000.

Shimogawa, Natsumi: *See*—
Takeuchi, Yukihisa; Hirota, Toshikazu; Okada, Shigeki; and Shimogawa, Natsumi, 5,184,344, Cl. 369-126.000.

Shimokawa, Yasushi: *See*—
Ohyama, Tsukasa; Shimokawa, Yasushi; Ghoda, Isamu; Takuma, Keisuke; and Koshida, Hitoshi, 5,183,474, Cl. 8-471.000.

Shimomura, Hiroshi: *See*—
Kameyama, Shuichi; Shimomura, Hiroshi; and Kikuchi, Kazuya, 5,183,768, Cl. 437-26.000.

Shimomura, Masako: *See*—
Suga, Yuko; and Shimomura, Masako, 5,184,148, Cl. 346-1.100.

Shin-Etsu Chemical Co., Ltd.: *See*—
Takeda, Yoshihumi; and Hayashida, Akira, 5,183,875, Cl. 528-33.000.

Shin-Etsu Handotai Company, Limited: *See*—
Baba, Masahiko; and Ohtsuna, Hiroshi, 5,183,528, Cl. 156-601.000.

Shin-Etsu Handotai Co., Ltd: *See*—
Ohta, Yutaka; Ohki, Konomu; and Katayama, Masatake, 5,183,783, Cl. 437-225.000.

Shin-Etsu Polymer Co., Ltd.: *See*—
Odashima, Satoshi, 5,183,969, Cl. 174-88.00R.

Shinbo, Haruo: *See*—
Naito, Kenzo; Ishibashi, Yukio; and Shinbo, Haruo, 5,183,929, Cl. 560-178.000.

Shindo, Atsunori: *See*—
Miyahara, Shoichiro; Shindo, Atsunori; Suzuki, Maki; Kusuhara, Nobumi; and Makiguchi, Nobuyoshi, 5,183,754, Cl. 435-226.000.

Shing, Yuen W.: *See*—
Weisz, Paul B.; Shing, Yuen W.; and Folkman, Judah, 5,183,809, Cl. 514-58.000.

Shinjo, Kenji: *See*—
Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Iwaki, Takashi; Mori, Shosei; and Shinjo, Kenji, 5,183,586, Cl. 252-299.610.

Shinko Electric Industries Co., Ltd.: *See*—
Wada, Norio; Fukase, Katsuya; and Uchida, Hirofumi, 5,183,711, Cl. 428-596.000.

Shinomoto, Shoji: *See*—
Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, 5,183,921, Cl. 558-301.000.

Shinozaki, Junichiro: *See*—
Koga, Yoshiro; Gomi, Akihiro; Miyasaka, Takashi; Miyazawa, Yasunaga; Endo, Kenichi; Shinozaki, Junichiro; Yoda, Kaneo; Ichikawa, Takashi; Miyasaka, Hitoshi; and Kaburagi, Chiharu, 5,184,257, Cl. 360-77.050.

Shiokawa, Keiichi: *See*—
Ide, Youji; and Shiokawa, Keiichi, 5,183,697, Cl. 428-195.000.

Shionogi & Company, Ltd.: *See*—
Ohtani, Mitsuaki; and Matsuura, Takaharu, 5,183,909, Cl. 549-463.000.
Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, 5,183,921, Cl. 558-301.000.

Shipp, Philip A.: *See*—
Aubel, John A.; Devall, Jeffrey E.; Gimby, David R.; and Shipp, Philip A., 5,183,087, Cl. 141-59.000.

Shirai, Masataka: *See*—
Tanaka, Hiroshi; Kominato, Kaichiro; Yoshioka, Takeo; Iguchi, Hiroshi; Hirano, Shin-ichi; Okajima, Yasuo; Yamamoto, Reijko; Shirai, Masataka; Nishida, Hiroshi; Tone, Hiroshi; and Okamoto, Rokuro, 5,183,883, Cl. 563-6.400.

Shiraki, Toshinori; Hayano, Fusakazu; and Morita, Hideo, to Asahi Kasei Kogyo Kabushiki Kaisha. Modified block copolymer and a process for producing the same. 5,183,857, Cl. 525-285.000.

Shiratori, Tetsuya; Yamazaki, Fumio; and Taniguchi, Seiichi, to Matsushita Electric Industrial Co., Ltd. Flat picture display device. 5,183,425, Cl. 445-29.000.

Shirdavani, Hossain A. Garment weight transfer apparatus. 5,183,194, Cl. 224-224.000.

Shires, James D. Rocket glider stabilization system. 5,183,960, Cl. 102-348.000.

Shito, Souichi. Device for protecting portion between toes. 5,183,060, Cl. 128-882.000.

Shizuno, Hisamitsu; Kisi, Hirosi; Saito, Hirosi; and Fujii, Makoto, to Taiyo Yuden Kabusikigaisha. Ceramic capacitor and method for fabricating the same. 5,184,277, Cl. 361-321.000.

Shop Vac Corporation: *See*—
Baer, Mark; and Crevling, R. Lent, Jr., 5,184,041, Cl. 310-239.000.

Shore, Kirstina D. Fire safety and hazards game. 5,183,257, Cl. 273-243.000.

Showa Aluminum Kabushiki Kaisha: *See*—
Tokutake, Toshinori, 5,183,103, Cl. 165-167.000.

Showa Denko K.K.: *See*—
Maruyama, Satoshi; Minorikawa, Naoki; Arakawa, Tsutomu; Yoshida, Haruo; Tagoshi, Hirotaka; and Abe, Kazuto, 5,183,917, Cl. 558-251.000.

Showa Shell Sekiyu Kabushiki Kaisha: *See*—
Suzuki, Yoshiichi, 5,183,934, Cl. 562-423.000.

Shroot, Braham; Eustache, Jacques; and Bernardon, Jean-Michel, to Centre International de Recherches Dermatologiques (CIRD). Benzonaphtahalene derivatives, a process for their preparation and their use in therapeutic and cosmetic compositions. 5,183,889, Cl. 544-174.000.

Shyu, Steven: *See*—
Fung, Jimmy; An, Jiu; Campbell, David L.; and Shyu, Steven, 5,184,129, Cl. 341-144.000.

Sidky, Paulette S.; and Hocking, Michael G., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Contactless heating frequency heating of thin filaments. 5,183,985, Cl. 219-10.61R.

Siemens Aktiengesellschaft: *See*—
Brune, Richard; Papiernik, Wolfgang; and Rochholz, Guenter, 5,184,056, Cl. 318-799.000.
Dalen, Bjoern; Nilsson, Kenth-Ake-Sune; Hoegnelid, Kurt; and Wecke, Liliane, 5,183,056, Cl. 128-782.000.
Hoffmann, Kurt; Kraus, Rainer; and Kowarik, Oskar, 5,184,326, Cl. 365-201.000.
Jaehrling, Peter; and Schweikert, Eugen, 5,183,472, Cl. 604-284.000.
Kraft, Longin, 5,184,039, Cl. 310-89.000.
Muller, Erwin, 5,184,102, Cl. 335-202.000.
Schimpe, Robert, 5,184,247, Cl. 359-344.000.

Siemens Automotive Limited: *See*—
Cook, John E., 5,183,022, Cl. 123-520.000.
Hanson, John D., 5,183,023, Cl. 123-520.000.

Siemens Energy & Automation, Inc.: *See*—
Craggs, Jack L.; and Burke, Robert R., 5,183,975, Cl. 181-202.000.
DiMarco, Bernard; Black, Robert E.; and Cella, Stephen D., 5,184,099, Cl. 335-16.000.

Sievers, Albert J.: *See*—
Raj, Rishi; and Sievers, Albert J., 5,183,602, Cl. 252-587.000.

Sikes, Roger A.: *See*—
DiNapoli, Antonio; Goff, Gerald L.; and Sikes, Roger A., 5,183,245, Cl. 269-254.00R.

Silk Engineering (Derby) Limited: *See*—
Silk, George, 5,183,365, Cl. 408-80.000.

Silk, George, to Silk Engineering (Derby) Limited. Boring and surfacing machine. 5,183,365, Cl. 408-80.000.

Sill, Gerald A.: *See*—
Fenton, Gary L.; Sill, Gerald A.; Ingram, Robert S.; and Jimenez, James G., 5,183,375, Cl. 410-35.000.

Siltech Inc.: *See*—
Parkinson, Jeff; and O'Lenick, Anthony J., Jr., 5,183,845, Cl. 524-726.000.

Silverberg, Morton: *See*—
Miller, Carl A.; Silverberg, Morton; and Supron, Steven A., 5,183,250, Cl. 271-222.000.

Simmonds Precision Products, Inc.: *See*—
Ellinger, Sylvester M.; Spillman, William B., Jr.; and Patriquin, Douglas R., 5,182,953, Cl. 73-862.335.

Simon, Georg, to Wagner International AG. Electrostatic paint spray gun. 5,184,276, Cl. 361-228.000.

Simon, Pal, to U.S. Philips Corp. Shaving apparatus. 5,182,857, Cl. 30-34.050.

Simoncsits, Andras; Kalman, Miklos; Kari, Csaba; and Cserpan, Imre, to Vepex Contractor Ltd.; and Mta Szegedi Biologiai Kozpontja. Process for the preparation of oligo- and polydeoxyribonucleotides. 5,183,748, Cl. 455-91.000.

Simpson, W. Dwain; and Pyle, James H., to Saber Equipment Corp. Fluid dispensing nozzle including in line flow meter and data processing unit. 5,184,309, Cl. 364-510.000.

Sinai-Zingde, Gurudus D.: *See*—
Riffle, Judy S.; Sinai-Zingde, Gurudus D.; and Brink, Andrew E., 5,183,861, Cl. 525-413.000.

Sinclair, Robert B.: *See*—
Rai, Kula R.; Lew, Thomas M.; and Sinclair, Robert B., 5,184,190, Cl. 356-239.000.

Sirvet, Enn: *See*—
Williams, Robert; Sirvet, Enn; and Gabel, Richard A., 5,183,145, Cl. 198-441.000.

SiScan Systems, Inc.: *See*—
Smith, Ian R., 5,184,021, Cl. 250-560.000.

Siteg Siebtechnik GmbH: *See*—
Lefferts, Johannes, 5,183,442, Cl. 474-239.000.

Sitzmann, Michael E., to United States of America, Navy. N,N'-bis(4,4,4-trinitrobutyryl)hydrazine. 5,183,938, Cl. 564-151.000.

Siwek, C. Kenneth; Flower, Wallace C.; and Garn, Gene D., to Lord Corporation. Dual-rate surface effect dampers. 5,183,137, Cl. 188-381.000.

Skaleski, Robert A. Improved finger tip mounted holding device. 5,182,972, Cl. 81-44.000.

Skuballa, Werner: *See*—
Heindl, Josef; Skuballa, Werner; Buchmann, Bernd; Frohlich, Wolfgang; and Ederdt, Rolalnd, 5,183,925, Cl. 560-61.000.

Slaiken, Stephen J. Interlocking-continuous base bookends. 5,183,163, Cl. 211-43.000.

Slay, Clyde E.: *See*—
Arzouman, Harry H.; and Slay, Clyde E., 5,183,235, Cl. 254-8.00B.

Sleger, Roger R.: *See*—
Foote, Wayne E.; Mui, Paul K.; and Sleger, Roger R., 5,184,265, Cl. 360-106.000.

Slemp, Mark C. Golf ball holder dispenser. 5,183,154, Cl. 206-315.900.

Slinn, David S. L., to ISC Chemicals Limited. Cleaning and drying of electronic assemblies. 5,183,067, Cl. 134-61.000.

Slocum, Donald. Raised insulated and water resistant composite flooring material. 5,182,891, Cl. 52-480.000.

Smalley, Dennis R.: *See*—
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,184,307, Cl. 364-474.240.

Smiley, Dean H.: *See*—
Duncan, James E.; and Smiley, Dean H., 5,183,620, Cl. 264-290.700.

Smith Corona Corporation: *See*—
Pawlak, Stephen M.; Rimbey, Roger J.; and Rodee, Mark D., 5,183,344, Cl. 400-160.000.

Smith, Douglas C.: *See*—
Black, Edward P.; and Smith, Douglas C., 5,184,115, Cl. 340-708.000.

Smith, Ian R., to SiScan Systems, Inc. Method and apparatus for measuring the dimensions of patterned features on a lithographic photomask. 5,184,021, Cl. 250-560.000.

Smith, James F.; and Schroeder, Wesley A., to GMI Holdings, Inc. Manually adjustable housing portions for actuating an electrical appliance switch. 5,183,982, Cl. 200-61.850.

Smith, Larry P.: *See*—
Vasconcellos, Stephen R.; Boyce, P. Douglas; and Smith, Larry P., 5,183,575, Cl. 210-724.000.

Smith and Nephew Associated Companies p.l.c.: *See*—
Ansell, Christopher W. G., 5,183,664, Cl. 424-445.000.

Smith, Richard E.: *See*—
Zak, James L.; and Smith, Richard E., 5,183,152, Cl. 206-524.400.

Smith, Robert J.: *See*—
Leaney, Peter A.; and Smith, Robert J., 5,183,113, Cl. 166-316.000.

Smith, Stephen D.: *See*—
Liboff, Abraham R.; McLeod, Bruce R.; and Smith, Stephen D., 5,183,456, Cl. 600-9.000.

SMS Schloemann-Siemag Aktiengesellschaft: *See*—
Guse, Rudolf; Nobis, Dieter; and Malinowski, Hans, 5,182,847, Cl. 29-527.700.

Smuckler, Jack H. Rapid curing, electrically conductive adhesive. 5,183,599, Cl. 264-22.000.

Smyly, George M., Sr. Trailered cradle and boat/yacht managing method. 5,183,282, Cl. 280-414.100.

Snow, Dane R., to Harris Corporation. Integrating A/D converter with means for reducing rollover error. 5,184,128, Cl. 341-128.000.

Snowboardlinik und Handelsges m.b.H.: *See*—
Heinzle, Egon, 5,183,164, Cl. 211-70.500.

Snyder, Thomas S.; Gass, William R.; Worcester, Samuel A.; Ayers, Laura J.; and Boris, Gregory F., to Westinghouse Electric Corp. Decontamination of radioactive metals. 5,183,541, Cl. 204-105.00R.

Snyder, Thomas S.; Jackovitz, John F.; and Ferrari, Harry M., to Westinghouse Electric Corp. System and method for continuous separation of isotopes. 5,183,548, Cl. 204-299.00R.

Societe Chimique des Charbonnages: *See*—
Erpelding, Michel; and Vandome, Jacques, 5,183,840, Cl. 524-228.000.

Societe de Fabrication d'Instruments de Mesure (S.F.I.M.): *See*—
Delattre, Jacques; Gouze, Philippe; and Neuvessel, Jacques, 5,184,054, Cl. 318-586.000.

Societe Francaise de Detecteurs Infrarouges (SOFRADIR): *See*—
Montanari, Jean-Louis, 5,182,852, Cl. 29-840.000.

Societe Industrielle d'Equipment Mecanique: *See*—
Dennys, Jean-Pierre, 5,183,273, Cl. 277-170.000.

Soehnle-Waagen GmbH & Co.: *See*—
Schurr, Michael, 5,183,125, Cl. 177-211.000.

Soffer, Abraham: *See*—
Oren, Yoram; Cohen, Haim; and Soffer, Abraham, 5,183,546, Cl. 204-290.00R.

Software Toolworks, The: *See*—
Monte, Charles; Worthington, Norman A., III; Mandel, Jonathan; and Davenport, Gary F., 5,183,398, Cl. 434-227.000.

Sohda, Takashi; and Ikeda, Hitoshi, to Takeda Chemical Industries, Ltd. Pyridine N-oxide compounds which are useful as hypoglycemic and hypolipidemic agents. 5,183,823, Cl. 514-358.000.

Solar Reactor Technologies, Inc.: *See*—
Parker, Robin Z.; and Langhoff, Peter W., 5,182,912, Cl. 60-641.800.

Solid State Devices, Inc.: *See*—
Bartur, Meir, 5,184,198, Cl. 257-471.000.

Sollac: *See*—
Thierry, Maurickx; Pascal, Verrier; and Roland, Taillard, 5,183,633, Cl. 420-92.000.

Sony Corporation: *See*—
Ikeda, Jiro, 5,183,547, Cl. 204-298.250.
Kobayashi, Toshiharu; and Unno, Keisuke, 5,184,228, Cl. 358-310.000.
Mitsui, Hidero; Kamaya, Naoki; Itoh, Hiroaki; and Sasaki, Yuu, 5,183,714, Cl. 429-123.000.
Noguchi, Hideaki, 5,184,261, Cl. 360-94.000.
Watanabe, Hisanori; and Ito, Shinji, 5,184,262, Cl. 360-96.200.

Sorensen, Brad. Carpet stretching apparatus particularly for long lengths of carpet. 5,183,238, Cl. 254-209.000.

Sorensen, Erik: *See*—
Nicolaou, Kyriacos C.; Sorensen, Erik; Hwang, Chan-Kou; Discordia, Robert; Bergman, Robert G.; and Minto, Robert E., 5,183,942, Cl. 568-375.000.

Sorko-Ram, Paul. Convex reflective sign and method of making same. 5,183,688, Cl. 427-164.000.

Sorrell, Harold E. Combination shut-off and test-injection valve. 5,183,078, Cl. 137-883.000.

Soucie, Wayne L.: *See*—
Perisho, Randal J.; Heimann, Robert L.; and Soucie, Wayne L., 5,182,963, Cl. 74-512.000.

Southern California Edison: *See*—
Ortolano, Ralph J.; Ball, Kenneth A.; and Bowman, Gary, 5,183,244, Cl. 269-43.000.

Southwest Research Institute: *See*—
Mallow, William A.; and Dziuk, Jerome J., Jr., 5,183,763, Cl. 436-106.000.

Sowers, Edward E.: *See*—
McQuigg, Donald W.; Sowers, Edward E.; Goe, Gerald L.; Scriven, Eric F. V.; and Keay, James G., 5,183,895, Cl. 546-304.000.

Sowinski, Allan F.: *See*—
Schmittou, Eric R.; and Sowinski, Allan F., 5,183,727, Cl. 430-372.000.

Spadafora, Peter J.: *See*—
Hogan, Martin A.; Leppek, Kevin G.; and Spadafora, Peter J., 5,184,299, Cl. 364-426.020.

Spademan, Richard G. Walker brace. 5,183,036, Cl. 602-10.000.

Spath, Helmut: *See*—
Wanninger, Paul; Wild, Richard; Kleinschmidt, Ernst; and Spath, Helmut, 5,183,520, Cl. 149-19.910.

Speck, Ulrich; and Blaszkiewicz, Peter, to Schering Aktiengesellschaft. Nonionic x-ray contrast medium with high iodine content. 5,183,654, Cl. 424-5.000.

Spectra Physics: *See*—
Middleton, Christopher O.; and Robson, Colin L., 5,184,293, Cl. 364-167.010.

Spectra-Physics, Inc.: *See*—
Gatten, Ronald A.; Miller, Leslie A.; McCall, Thomas J., Jr.; and Nau, Vance J., 5,183,486, Cl. 55-159.000.

Spectra-Physics Laserplane, Inc.: *See*—
Rando, Joseph F., 5,182,863, Cl. 33-227.000.

Spectrum Innovations, Inc.: *See*—
Drago, Ronald P., 5,183,237, Cl. 254-134.400.

Spence, Stuart T.: *See*—
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,184,307, Cl. 364-474.240.

Spencer, Douglas A.: *See*—
Farwell, Charles Y.; Hearn, Michel L.; Heidebrecht, Richard M.; Ho, Kelvin K.; and Spencer, Douglas A., 5,184,347, Cl. 370-94.100.

Spencer Wright Industries, Inc.: *See*—
Bardsley, Harold B., 5,182,997, Cl. 112-80.730.

Speranza, George P.: *See*—
Cuscurida, Michael; and Speranza, George P., 5,183,923, Cl. 560-26.000.
Marquis, Edward T.; Speranza, George P.; and Su, Wei-Yang, 5,183,514, Cl. 134-38.000.

Spillman, William B., Jr.: *See*—
Ellinger, Sylvester M.; Spillman, William B., Jr.; and Patriquin, Douglas R., 5,182,953, Cl. 73-862.335.

Spinney, Stewart C., to Concrete Technology, Inc. Cellular concrete. 5,183,505, Cl. 106-672.000.

Spraying Systems Co.: *See*—
Haruch, James, 5,183,322, Cl. 239-394.000.

Sprung, Hartwig: *See*—
Becker, Eberhard; Schulte, Franz; Sprung, Hartwig; Staggl, Ronald; and Stoeber, Manfred, 5,183,377, Cl. 414-751.000.

SPX Corporation: *See*—
Manz, Kenneth W.; and Powers, Christopher M., 5,182,918, Cl. 62-149.000.

Square D Company: *See*—
Jordan, Scott C.; Wolf, Robert L.; Fleege, Dennis W.; and Sharp, Jeffrey O., 5,184,278, Cl. 361-346.000.

Srivastava, Gopal K., to Zenith Electronics Corporation. Circuit for phase locking an oscillator within any one of a plurality of frequency ranges. 5,184,091, Cl. 331-10.000.

Srol, Karl. Reusable safety cap for booster cable. 5,183,407, Cl. 439-135.000.

SSI Medical Services, Inc.: *See*—
Thomas, James M. C.; Stolpmann, James R.; Sutton, William T.; and Romano, James J., 5,182,826, Cl. 5-453.000.

Staff Co., Ltd.: *See*—
Todokoro, Masatoshi, 5,183,431, Cl. 446-142.000.

Staggl, Ronald: *See*—
Becker, Eberhard; Schulte, Franz; Sprung, Hartwig; Staggl, Ronald; and Stoeber, Manfred, 5,183,377, Cl. 414-751.000.

Stahlecker, Fritz, to Stahlecker, Hans, a part interest. Spinning or twisting spindle arrangement. 5,182,901, Cl. 57-135.000.

Stahlecker, Fritz, to Stahlecker, Fritz; and Stahlecker, Hans, a part interest. Open-end spinning machine. 5,182,903, Cl. 57-301.000.

VOL 1147 ISS 1 FEB 2 1993 UMI

Stahlecker, Hans: *See—*
Stahlecker, Fritz, 5,182,901, Cl. 57-135.000.
Stahlecker, Fritz, 5,182,903, Cl. 57-301.000.

Stalberg, Nils G.: *See—*
Hakenewerth, Paul A.; Rohrer, Gene D.; and Stalberg, Nils G., 5,183,999, Cl. 235-379.000.

Stanbury, Evan J.; and Thomas, Lloyd S., to Alcatel Australia Limited. Unauthorized utility use monitor apparatus and method. 5,184,119, Cl. 340-825.600.

Stancliffe, A. Colin; Vidano, Paul; and Pogue, Bill P., to Allied-Signal Inc. Heat exchange. 5,183,106, Cl. 165-166.000.

Standard Oil Company, The: *See—*
Paparizos, Christos; and Shaw, Wilfrid G., 5,183,793, Cl. 502-338.000.

Standard Products Company, The: *See—*
Zoller, Robert A., 5,183,303, Cl. 293-120.000.

Standex International GmbH: *See—*
Werthmann, Wilfried, 5,183,551, Cl. 205-70.000.

Stanislowski, Anna G.; England, J. Bruce; and Ratcliff, Steven D., to Clorox Company, The. Combined odor controlling animal litter. 5,183,655, Cl. 424-76.600.

Stanley Electric Co., Ltd.: *See—*
Ozawa, Kenichi; and Suekane, Shinichi, 5,184,290, Cl. 363-21.000.

Starchem GmbH: *See—*
Heidel, Klaus; and Scholz-Weigl, Sigrid, 5,183,872, Cl. 527-300.000.

Stasell, Mark W., to Navistar International Transportation Corp. Automotive vehicle microprocessor control having clutch priority engine speed control. 5,184,301, Cl. 364-431.070.

State of Israel, Israel Atomic Energy Commission: *See—*
Oren, Yoram; Cohen, Haim; and Soffer, Abraham, 5,183,546, Cl. 204-290.00R.

State of Israel, Ministry of Defence Rafael-Armamend Development Authority: *See—*
Rosenberg, Gideon, 5,183,956, Cl. 89-8.000.

Stauffer, Harold F., Jr.: *See—*
Taylor, Chandler R., Jr.; Cale, Albert D., Jr.; and Stauffer, Harold F., Jr., 5,183,902, Cl. 548-950.000.

Stavely, Donald J.: *See—*
Wanger, Mark E.; Methlie, Jennifer L.; Stavely, Donald J.; and Oliver, Thomas C., 5,184,336, Cl. 369-34.000.

Steelcase, Inc.: *See—*
Pearson, Alan L.; and Baker, Richard H., 5,183,319, Cl. 312-196.000.

Stege, Jurgen, to Audi A.G. Fuel tank for motor vehicles. 5,183,170, Cl. 220-86.200.

Stein, Gunter. Check valve. 5,183,075, Cl. 137-493.600.

Steinberg, Timothy D.; and Gunderson, Richard W., to Wagner Spray Tech Corporation. Air seal for paint guns. 5,183,207, Cl. 239-526.000.

Steiner, Walter: *See—*
Wizani, Wolfgang; Esterbauer, Hermann; Steiner, Walter; and Gomes, Joseph, 5,183,753, Cl. 435-201.000.

Steinway Musical Properties, Inc.: *See—*
Calabrese, Salvadore J.; Scarton, Henry A.; Murray, S. Frank; Ettles, Christopher M.; Kennedy, Warren C.; Dinc, Saim; Jlidi, Bessem; and Strong, William, 5,183,955, Cl. 84-437.000.

Stellwagen, Armin, to Mannesmann Rexroth GmbH. Valve system for load-independent hydraulic control of a plurality of hydraulic consumers. 5,182,909, Cl. 60-426.000.

Stelmach, John J. Martial arts training apparatus. 5,183,450, Cl. 482-83.000.

Stelter, Eric C.; and Guth, Joseph E., to Eastman Kodak Company. Toner charge control. 5,183,964, Cl. 118-653.000.

Stenner, John R. Filament, cordage locking device. 5,182,838, Cl. 24-712.700.

Stephens, David M. Bicycle frame element protector. 5,183,281, Cl. 280-279.000.

Stephens, Frederick J.: *See—*
Hassell, Morgan V.; Stephens, Frederick J.; and Edwards, Ernest J., 5,183,691, Cl. 427-286.000.

Stephens, William F. N.; and Lummes, Stephen E., to Renishaw plc. Opto-electronic scale reading apparatus. 5,184,014, Cl. 250-237.00G.

Stephenson, Roger C.; and Hyatt, Hugh M., to G & H Technology, Inc. Electrical overstress pulse protection. 5,183,698, Cl. 428-209.000.

Sterhan, Marcia: *See—*
Lopez, Luis R.; and Sterhan, Marcia, 5,183,735, Cl. 435-6.000.

Sterling Winthrop Inc.: *See—*
Mattes, Kenneth C.; and Venepalli, Bhaskar R., 5,183,813, Cl. 514-150.000.

Stevens, Jeremy R.: *See—*
Kinghorn, John R.; and Stevens, Jeremy R., 5,184,220, Cl. 358-147.000.

Stevenson, Gregory S. Sleeve valve system for internal combustion engine having elliptical path. 5,183,014, Cl. 123-59.0AC.

Stewart, Andrew O.: *See—*
Brooks, Dee W.; Stewart, Andrew O.; and Martin, Jonathan G., 5,183,818, Cl. 514-231.500.

Stewart & Stevenson Services, Inc.: *See—*
Vicknair, Bruce A.; and Baten, Robert A., 5,184,064, Cl. 324-156.000.

Stewart, Tracy: *See—*
Shaked, Ze'Ev; Stewart, Tracy; Hershenson, Susan; Thomson, James W.; Taforo, Terrance; and Thomson, Jody, 5,183,746, Cl. 435-69.510.

Stibrany, Robert T.; and Gorun, Sergiu M., to Exxon Research and Engineering Company. Catalytic production of aryl alkyl hydroperoxides by manganese complexes. 5,183,945, Cl. 568-574.000.

Stichter, Ralph L.: *See—*
Park, James M.; and Stichter, Ralph L., 5,182,841, Cl. 29-229.000.

Stine, Ernest F., Jr.: *See—*
Holbrook, Michael T.; Hebert, Lawrence A.; Najmy, Stephen W.; Stine, Ernest F., Jr.; and Hasche, Reimer, 5,183,797, Cl. 502-355.000.

Stinebaugh, Phil: *See—*
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,184,307, Cl. 364-474.240.

Stinson, D. Ray; Stinson, Linda D.; Roberts, Brian F.; Dahms, Steven J.; Estes, Brian P.; and Robertson, Tommy H., to Stinson, D. Ray; and Stinson, Linda D. Waterbed. 5,182,825, Cl. 5-451.000.

Stinson, Linda D.: *See—*
Stinson, D. Ray; Stinson, Linda D.; Roberts, Brian F.; Dahms, Steven J.; Estes, Brian P.; and Robertson, Tommy H., 5,182,825, Cl. 5-451.000.

Stirling Technology, Inc.: *See—*
Chagnot, Catherine J., 5,183,098, Cl. 165-8.000.

Stoddard, Damon R.: *See—*
Rupnick, Charles J.; Stoddard, Damon R.; and Grindeland, David B., 5,182,949, Cl. 73-517.00B.

Stoeber, Manfred: *See—*
Becker, Eberhard; Schulte, Franz; Sprung, Hartwig; Staggl, Ronald; and Stoeber, Manfred, 5,183,377, Cl. 414-751.000.

Stolpmann, James R.: *See—*
Thomas, James M. C.; Stolpmann, James R.; Sutton, William T.; and Romano, James J., 5,182,826, Cl. 5-453.000.

Stoughton Trailers, Inc.: *See—*
Fenton, Gary L.; Sill, Gerald A.; Ingram, Robert S.; and Jimenez, James G., 5,183,375, Cl. 410-35.000.

Stransky, Larry W.; Boehm, Valentine R., Jr.; and Phillips, Michael A., to General Electric Company. Method for automatic bypass operation. 5,182,905, Cl. 60-204.000.

Stranzinger, Margarete. Float. 5,183,001, Cl. 114-266.000.

Straub, Timo: *See—*
Allmendinger, Franz; Ebner, Arno; Ettischer, Helmut; and Straub, Timo, 5,183,195, Cl. 227-29.000.

Strickland, Edward. Fire extinguisher. 5,183,117, Cl. 169-46.000.

Stritzke, Gunter: *See—*
Besendorfer, Herman; Stritzke, Gunter; and Haditsch, Franz, 5,184,070, Cl. 324-225.000.

Strong, William: *See—*
Calabrese, Salvadore J.; Scarton, Henry A.; Murray, S. Frank; Ettles, Christopher M.; Kennedy, Warren C.; Dinc, Saim; Jlidi, Bessem; and Strong, William, 5,183,955, Cl. 84-437.000.

Stuart, Lambert M., to Concordia Mfg. Co., Inc. Apparatus and method for commingling continuous multifilament yarns. 5,182,839, Cl. 28-283.000.

Styfhoorn, John, to Caterpillar Inc. Oil filter crusher. 5,182,988, Cl. 100-98.00R.

Su, Wei-Yang: *See—*
Marquis, Edward T.; Speranza, George P.; and Su, Wei-Yang, 5,183,514, Cl. 134-38.000.

Suchy, Milos; Winternitz, Paul; and Zeller, Martin, to Ciba-Geigy Corporation. Herbicidal 3-aryluracils. 5,183,492, Cl. 504-243.000.

Suda, Eriko: *See—*
Fukushima, Hiroshi; Motonaga, Akira; Suda, Eriko; Nakajima, Mikito; Takeshita, Katsuyoshi; and Kutsukake, Yusuke, 5,183,870, Cl. 526-273.000.

Suda, Koichi; Matsuzaki, Hitoshi; Wada, Masayuki; and Ozeki, Shoichi, to Hitachi, Ltd.; and Hitachi Haramachi Semi-Conductor Ltd. High-side switch with overcurrent protecting circuit. 5,184,272, Cl. 361-87.000.

Suekane, Shinichi: *See—*
Ozawa, Kenichi; and Suekane, Shinichi, 5,184,290, Cl. 363-21.000.

Suga, Toshiyuki; Kitajima, Shinichi; and Kobayashi, Yoshihiko, to Honda Giken Kogyo Kabushiki Kaisha. Air-fuel ratio control system for internal combustion engines. 5,183,021, Cl. 123-478.000.

Suga, Yuko; and Shimomura, Masako, to Canon Kabushiki Kaisha. Ink jet recording having an ink with carbon black. 5,184,148, Cl. 346-1.100.

Sugai, Maureen, to Motorola, Inc. Singulating assembly for presenting work pieces. 5,183,181, Cl. 221-155.000.

Sugasawa, Masayuki: *See—*
Yamamoto, Kazumi; and Sugasawa, Masayuki, 5,184,212, Cl. 358-39.000.

Sugawara, Hirsohi: *See—*
Masuhra, Shohei; Tonoki, Satoshi; Shibukawa, Toshiya; and Sugawara, Hirsohi, 5,183,695, Cl. 428-151.000.

Sugaya, Yasuhiro: *See—*
Kugimiya, Koichi; Sugaya, Yasuhiro; Inoue, Osamu; Satomi, Mitsuo; and Hirota, Ken, 5,183,631, Cl. 419-10.000.

Sugibayashi, Tadahiko, to NEC Corporation. Bootstrap circuit incorporated in semiconductor memory device for driving word lines. 5,184,035, Cl. 307-482.000.

Sugimoto, Takeshi: *See—*
Matsuoka, Fumio; Negoro, Kouichi; Sugimoto, Takeshi; Yamaguchi, Toshiaki; and Yamashita, Tetsuya, 5,182,920, Cl. 62-206.000.

Sugimoto, Yukihiko, to Sharp Kabushiki Kaisha. Thermal printer for providing printed characters with a uniform density. 5,184,150, Cl. 346-76.0PH.

Sugiura, Sadao: *See—*
Koga, Yoshitaka; and Sugiura, Sadao, 5,183,308, Cl. 296-75.000.

Sugiyama, Akira: *See—*
Kose, Junichi; Sugiyama, Akira; Yamada, Minoru; and Nozaki, Ryoei, 5,184,164, Cl. 354-298.000.

Sugiyama, Hiroyuki; Miyamoto, Toshio; and Maejima, Kazuhiro, to Komori Corporation. Plate lockup apparatus for sheet-fed press. 5,182,994, Cl. 101-415.100.

Sugiyama, Kenji, to Victor Company of Japan, Ltd. System for very efficiently coding by performing interblock and intrablock normalization. 5,184,316, Cl. 364-715.020.

Suhara, Hidenori, to Yamaha Hatsudoki Kabushiki Kaisha. Idling control device for high pressure fuel injection engine. 5,183,019, Cl. 123-339.000.

Suita, Yoshihiro; and Ito, Tosikazu, to Tokai Kogyo Kabushiki Kaisha. Process and apparatus for manufacturing frame with groove for use with panel. 5,183,612, Cl. 264-145.000.

Sukegawa, Osamu, to NEC Corporation. Active matrix liquid crystal display panel with an electrostatic protection circuit. 5,184,235, Cl. 359-60.000.

Sullivan, James F., Jr., to Triple/S Dynamics, Inc. Apparatus and methods for conveying materials. 5,183,143, Cl. 198-370.000.

Sullivan, Michael J.; and Dussault, Douglas G., to United States of America, Navy. Transducer circuit for removing reactive component of transducer signal. 5,184,331, Cl. 367-135.000.

Sullivan, Michael R. Means for producing high precision castings. 5,183,095, Cl. 164-34.000.

Sullivan, Thomas J.: *See—*
Gilchrist, Alan R.; Sullivan, Thomas J.; and Walker, Roger C., 5,182,906, Cl. 60-226.100.

Sumimoto Electric Interconnect Products, Inc.: *See—*
French, John B., 5,184,152, Cl. 346-76.0PH.

Sumitomo Chemical Company, Limited: *See—*
Kawashita, Hideo; Ohta, Mituhiro; and Ogino, Kazuya, 5,183,501, Cl. 106-22.00D.
Nakamatsu, Toshio; Terao, Masanobu; Muneishi, Shigetoshi; Kometani, Norio; and Hayashi, Yoshiaki, 5,183,892, Cl. 546-76.000.

Sumitomo Electric Industries, Ltd.: *See—*
Nishimura, Akira; Suzuki, Shuzo; and Shigematsu, Masayuki, 5,184,244, Cl. 359-187.000.

Sumitomo Gomu Kogyo Kabushiki Kaisha: *See—*
Miyamoto, Yoshiaki; Sasaki, Teruo; Fujisawa, Kazuhiro; and Kato, Seinosuke, 5,182,888, Cl. 52-167.0DF.

Sumitomo Pharmaceuticals Company, Limited: *See—*
Ikeda, Yoshiharu; Kai, Yoshiyuki; and Ono, Keiichi, 5,183,660, Cl. 424-94.300.

Sumitomo Seika Chemicals Co., Ltd.: *See—*
Yamaguchi, Akira; Uno, Masaru; Sekikawa, Norio; Arai, Fumio; and Matsuzaki, Kenji, 5,183,484, Cl. 55-34.000.

Sumitomo Special Metals Co., Ltd.: *See—*
Sagawa, Masato; Fujimura, Setsuo; and Matsuura, Yutaka, 5,183,516, Cl. 148-302.000.

Sun, Han-Ching. Rake connection assembly. 5,182,899, Cl. 56-400.170.

Sunds Defibrator Rauma Oy: *See—*
Tikka, Panu, 5,183,535, Cl. 162-19.000.

Sundstrand Corporation: *See—*
Rupnick, Charles J.; Stoddard, Damon R.; and Grindeland, David B., 5,182,949, Cl. 73-517.00B.

Supron, Steven A.: *See—*
Miller, Carl A.; Silverberg, Morton; and Supron, Steven A., 5,183,250, Cl. 271-222.000.

Surgicraft Limited: *See—*
Band, David M.; and Penman, David G., 5,183,043, Cl. 128-642.000.

Sutton, William T.: *See—*
Thomas, James M. C.; Stolpmann, James R.; Sutton, William T.; and Romano, James J., 5,182,826, Cl. 5-453.000.

Suzaki, Tetsuyuki: *See—*
Henmi, Naoya; Suzaki, Tetsuyuki; and Saito, Tomoki, 5,184,243, Cl. 359-181.000.

Suzuki, Akira: *See—*
Fujii, Yoshihisa; Suzuki, Akira; Furukawa, Katsuki; and Shigeta, Mitsuhiro, 5,184,199, Cl. 257-77.000.

Suzuki Kabushiki Kaisha: *See—*
Horitani, Yoshihiro, 5,183,977, Cl. 181-266.000.

Suzuki, Keiko: *See—*
Hori, Kimihiko; Sakaguchi, Akira; Ishida, Koichi; Nomura, Tomoko; Suzuki, Keiko; and Tsuchiya, Shuichi, 5,183,824, Cl. 514-383.000.

Suzuki, Kinya: *See—*
Toyosawa, Shinichi; Nakajima, Tadashi; Suzuki, Kinya; Kawagoe, Takahiro; Miyazaki, Tadaaki; Kitamura, Takashi; Fuse, Tadashi; Ogawa, Masao; Masuda, Yoshitomo; Daifuku, Hideharu; and Fujio, Ryota, 5,183,543, Cl. 204-242.000.

Suzuki, Kunio: *See—*
Tomita, Nobuaki; and Suzuki, Kunio, 5,182,846, Cl. 29-527.200.

Suzuki, Maki: *See—*
Miyahara, Shoichiro; Shindo, Atsunori; Suzuki, Maki; Kusuhara, Nobumi; and Makiguchi, Nobuyoshi, 5,183,754, Cl. 435-226.000.

Suzuki, Masaaki; and Eshita, Tooru, to Mutoh Industries Ltd. Sheet-driven type automatic drafting machine. 5,182,861, Cl. 33-18.100.

Suzuki, Masato, to Amano Corporation. Two-color shifting device for printing ribbon. 5,183,345, Cl. 400-211.000.

Suzuki Motor Corp.: *See—*
Ayabe, Kazuhiko, 5,183,286, Cl. 280-688.000.
Hosoi, Keiji, 5,183,020, Cl. 123-406.000.

Suzuki, Shuzo: *See—*
Nishimura, Akira; Suzuki, Shuzo; and Shigematsu, Masayuki, 5,184,244, Cl. 359-187.000.

Suzuki, Tadashi: *See—*
Mima, Hiroshi; Suzuki, Tadashi; and Kubota, Yasuhiko, 5,182,902, Cl. 57-279.000.

Suzuki, Takumi: *See—*
Sano, Kazuyoshi; Fujimura, Koh; Suzuki, Takumi; and Tsutsui, Takashi, 5,184,239, Cl. 359-80.000.

Suzuki, Toshiharu: *See—*
Kitano, Kisei; Ushioda, Makoto; Uchida, Manabu; and Suzuki, Toshiharu, 5,183,587, Cl. 252-299.630.

Suzuki, Yoshiichi, to Showa Shell Sekiyu Kabushiki Kaisha. 2-trifluoromethyl-4-hydroxybenzoic acid. 5,183,934, Cl. 562-423.000.

Swann, James. Geometric toy construction system. 5,183,430, Cl. 446-104.000.

Swanson, Sandra K. M., to H. B. Fuller Company. Polyurea or polyurea-urethane adhesive for bonding elastomers. 5,183,877, Cl. 528-64.000.

Swedoor AB: *See—*
Persson, Goran, 5,183,622, Cl. 264-320.000.

Sweetana, Stephanie A.; and Grass, George M. Apparatus for in vitro determination of substances across membranes, biological tissues, or cell cultures. 5,183,760, Cl. 435-285.000.

Sweetheart Cup Company Inc.: *See—*
Maccherone, Larry, 5,182,896, Cl. 53-478.000.

SWF Auto-Electric GmbH: *See—*
Bohmer, Rainer; Bruhn, Rainer; Rienhardt, Hans-Peter; and Walther, Bernd, 5,182,957, Cl. 74-42.000.

Swift, Omar A.: *See—*
Poltorak, Jeffrey P.; and Swift, Omar A., 5,183,336, Cl. 366-273.000.

Symtek Systems, Inc.: *See—*
Twigg, Ray G.; Klug, Mark W.; Marrone, Santino; and Hawkes, Malcolm V., 5,184,068, Cl. 324-158.00F.

Syrop, Steven B.; and Israel, Howard. Fluid motion device (FMD) for exercising the temporomandibular joint. 5,183,057, Cl. 128-845.000.

Tachi-S Co., Ltd.: *See—*
Saito, Seishiro, 5,183,234, Cl. 248-430.000.

Tacticon Corp.: *See—*
Ramsey, John W., Jr., 5,183,222, Cl. 244-53.00R.

Tada, Takemi; Tanaka, Hirosi; and Usui, Osami, to Hitachi, Ltd. Pipe connection structure of a compressor. 5,183,400, Cl. 417-572.000.

Tada, Takemi: *See—*
Shimada, Toshio; Kobayashi, Morio; Tada, Takemi; and Kawaminami, Shigeya, 5,184,269, Cl. 361-24.000.

Tada, Yuji: *See—*
Nakacho, Yoshifumi; Inubushi, Akiyoshi; and Tada, Yuji, 5,183,716, Cl. 429-192.000.

Tadayon, Bijan; and Tadayon, Saied, to United States of America, Navy. Method for doping GaAs with high vapor pressure elements. 5,183,779, Cl. 437-165.000.

Tadayon, Saied: *See—*
Tadayon, Bijan; and Tadayon, Saied, 5,183,779, Cl. 437-165.000.

Taforo, Terrance: *See—*
Shaked, Ze'Ev; Stewart, Tracy; Hershenson, Susan; Thomson, James W.; Taforo, Terrance; and Thomson, Jody, 5,183,746, Cl. 435-69.510.

Taft, Morris E.; Anderton, Peter W.; and Maguire, Roy L., to Caterpillar Inc. Endless track chain for track-type vehicles. 5,183,318, Cl. 305-39.000.

Taga, Kazumitsu; Narukami, Toshihiko; and Miyaoku, Yoshiyuki, to House Food Industrial Co., Ltd. Method for preparing puff snack. 5,183,678, Cl. 426-448.000.

Tagoshi, Hirotaka: *See—*
Maruyama, Satoshi; Minorikawa, Naoki; Arakawa, Tsutomu; Yoshida, Haruo; Tagoshi, Hirotaka; and Abe, Kazuto, 5,183,917, Cl. 558-251.000.

Taguchi, Minoru, to Kabushiki Kaisha Toshiba. Semiconductor device having a charge transfer device, MOSFETs, and bipolar transistors—all formed in a single semiconductor substrate. 5,184,203, Cl. 257-370.000.

Taguchi, Nobuo: *See—*
Tamura, Koichi; Taguchi, Nobuo; and Tashiro, Satoshi, 5,183,675, Cl. 426-33.000.

Tai, Wun T.: *See—*
Hwa, Chih M.; Kelly, John A.; Tai, Wun T.; Fan, Lai-Duien G.; Kreh, Robert P.; and Greaves, Brian, 5,183,574, Cl. 210-701.000.

Taiyo Yuden Kabusikigaisha: *See—*
Shizuno, Hisamitsu; Kisi, Hirosi; Saito, Hirosi; and Fujii, Makoto, 5,184,277, Cl. 361-321.000.

Takagi, Haruo: *See—*
Aoki, Shinobu; Takagi, Haruo; and Okabe, Takanori, 5,184,201, Cl. 257-266.000.

Takagishi, Iwao, to Mitsubishi Kasei Corporation. Process for preparation of crystalline oxytitanium phthalocyanine showing A,B or C form. 5,183,886, Cl. 540-141.000.

Takahara, Shin: *See—*
Kageyama, Fumio; Kanazawa, Hirotaka; Takahara, Shin; and Morita, Toshiki, 5,183,127, Cl. 180-197.000.

Takahashi, Fusakichi: *See—*
Iida, Tadasato; Takahashi, Fusakichi; Wada, Kouji; and Nigo, Toshiro, 5,182,915, Cl. 62-89.000.

Takahashi, Nobuo: *See—*
Yoshida, Makoto; Yamada, Hironori; Takahashi, Nobuo; and Fujimoto, Kazushi, 5,183,708, Cl. 428-373.000.

VOL
1147
ISS
1
FE
2
1993
UMI

Takahashi, Osamu; and Furutachi, Nobuo, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material containing epoxy compound. 5,183,731, Cl. 430-551.000.
Takahashi, Tadashi; Furuya, Katsuhiko; Nakasima, Masaaki; and Enomoto, Takayuki, to Asahi Kogaku Kogyo Kabushiki Kaisha. Photographing light quantity controller for endoscope. 5,184,170, Cl. 354-413.000.
Takahashi, Tadashi: *See*—
Furuya, Katsuhiko; and Takahashi, Tadashi, 5,184,159, Cl. 354-62.000.
Takahashi, Takehiko; Iwata, Ryuji; and Shimizu, Yuji, to Combi Corporation. Infant restraining chair. 5,183,315, Cl. 297-488.000.
Takahashi, Tetsuroh: *See*—
Kurosawa, Makoto; Koseki, Masaaki; Takahashi, Tetsuroh; and Terakado, Takeshi, 5,183,454, Cl. 493-459.000.
Takamura, Susumu; Nakamura, Takashi; Okawauchi, Makoto; Toda, Harumi; Kanki, Ichiro; Yoshida, Minoru; Imoto, Toshiyuki; Negayama, Naomi; and Oka, Koichi, to Otsuka Electronic Co., Ltd. NMR measuring method and measuring apparatus for tissue of a living body. 5,183,045, Cl. 128-653.200.
Takano, Hiroe: *See*—
Kanai, Yasushi; Takano, Hiroe; Saoshita, Shushi; and Nitta, Atsumi, 5,184,266, Cl. 360-120.000.
Takano, Tetsuji: *See*—
Abe, Minoru; and Takano, Tetsuji, 5,183,141, Cl. 192-91.00A.
Takasaki, Kanetake, to Fujitsu Limited. Method of producing a semiconductor device. 5,183,778, Cl. 437-132.000.
Takase, Akira; Kai, Hiroyuki; Nishida, Kuniyoshi; Shinomoto, Shoji; and Nagai, Masahiko, to Shionogi & Co., Ltd. Process for producing methoxyiminoacetamide compounds and intermediates. 5,183,921, Cl. 558-301.000.
Takata Corporation: *See*—
Zushi, Takayasu, 5,183,615, Cl. 264-219.000.
Takayanagi, Yoshiaki; and Hirabayashi, Hiromitsu, to Canon Kabushiki Kaisha. Image recording apparatus having an interchangeable cartridge. 5,184,178, Cl. 355-202.000.
Takeda Chemical Industries, Ltd.: *See*—
Naito, Kenzo; Ishibashi, Yukio; and Shinbo, Haruo, 5,183,929, Cl. 560-178.000.
Naka, Takehiko; and Nishikawa, Kohei, 5,183,899, Cl. 548-253.000.
Notoya, Kohei; Yoshida, Keiji; and Yamazaki, Iwao, 5,183,570, Cl. 210-641.000.
Sasaki, Ichiro; Oshima, Junji; and Yamada, Minoru, 5,183,858, Cl. 525-308.000.
Sasaki, Ichiro; Oshima, Junji; and Yamada, Minoru, 5,183,859, Cl. 525-309.000.
Sohda, Takashi; and Ikeda, Hitoshi, 5,183,823, Cl. 514-358.000.
Takeda, Haruo, to Seiko Instruments, Inc. Tension type dynamic viscoelasticity measuring apparatus. 5,182,950, Cl. 73-811.000.
Takeda, Hiromitsu: *See*—
Masaki, Mitsuo; Takeda, Hiromitsu; Kamishiro, Toshiro; and Yamamoto, Masao, 5,183,811, Cl. 514-79.000.
Takeda, Tomoyuki: *See*—
Ono, Takeshi; Yoshida, Takehiro; Wada, Satoshi; Takeda, Tomoyuki; Kondo, Masaya; Kobayashi, Makoto; Kato, Takahiro; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Yamada, Masakatsu, 5,184,151, Cl. 346-76.0PH.
Takeda, Yoshihumi; and Hayashida, Akira, to Shin-Etsu Chemical Co., Ltd. Method for manufacturing a hafnium-containing silazane polymer and a method for manufacturing a ceramic from said polymer. 5,183,875, Cl. 528-33.000.
Takeguchi, Noriaki: *See*—
Hergert, Richard E.; Hergert, Richard R.; Neill, Eugene B.; Pantaleo, Scott B.; Roerig, Arnold J.; Rogers, Thomas D.; Shands, Jay A.; and Takeguchi, Noriaki, 5,183,537, Cl. 162-216.000.
Takehara, Koichi: *See*—
Wakino, Kikuo; Hishikawa, Toshio; Ishikawa, Youhei; Takehara, Koichi; and Tanizaki, Toru, 5,184,096, Cl. 333-175.000.
Takei, Michiko: *See*—
Doki, Masahiko; and Takei, Michiko, 5,183,777, Cl. 437-160.000.
Takeishi, Hideo; Houseki, Sigeki; and Matsubara, Isao, to Ohgi Paint Trading Co., Ltd. Electrostatic spray coating apparatus. 5,183,210, Cl. 239-703.000.
Takemura, Masashi: *See*—
Kaneko, Masahiro; Takemura, Masashi; and Yamashita, Kohei, 5,184,254, Cl. 360-10.200.
Takemura, Yasuo; Narimatsu, Osamu; and Komatsu, Kazuyoshi, to Mitsui Toatsu Chemicals, Inc. Wafer processing films. 5,183,699, Cl. 428-214.000.
Takenishi, Soichiro: *See*—
Yosomiya, Ryutoku; Hirata, Mistutoshi; Morimoto, Kiyotaka; Takenishi, Soichiro; and Marutsuka, Toshinori, 5,183,611, Cl. 264-129.000.
Takenouchi, Norio, to Sharp Kabushiki Kaisha. Signal generation circuit. 5,184,310, Cl. 364-550.000.
Takeshita, Katsuyoshi: *See*—
Fukushima, Hiroshi; Motonaga, Akira; Suda, Eriko; Nakajima, Mikito; Takeshita, Katsuyoshi; and Kutsukake, Yusuke, 5,183,870, Cl. 526-273.000.
Takeuchi, Hiroshi; Sendai, Tomoko; and Sakai, Yozo, to Mitsubishi Denki K.K. Electric discharge machining method. 5,183,988, Cl. 219-69.170.
Takeuchi, Hiroyuki; Nozokido, Tatsuo; and Nakamura, Chikako, to Hitachi Medical Corporation; and Hitachi, Ltd. Method for correcting phase errors in a nuclear magnetic resonance signal and device for realizing same. 5,184,073, Cl. 324-309.000.
Takeuchi, Yukihisa; Hirota, Toshikazu; Okada, Shigeki; and Shimogawa, Natsumi, to NGK Insulators, Ltd. Recording head including electrode supporting substrate having thin-walled contact end portion, and substrate-reinforcing layer. 5,184,344, Cl. 369-126.000.
Taki, Yosio: *See*—
Kondo, Isao; and Taki, Yosio, 5,182,850, Cl. 29-784.000.
Takiguchi, Yasuyuki: *See*—
Iimura, Haruo; Takiguchi, Yasuyuki; and Kanemoto, Akihiko, 5,184,237, Cl. 359-63.000.
Takuma, Keisuke: *See*—
Ohyama, Tsukasa; Shimokawa, Yasushi; Ghoda, Isamu; Takuma, Keisuke; and Koshida, Hitoshi, 5,183,474, Cl. 8-471.000.
Tamehiro, Hiroshi; Ogata, Yoshinori; and Terada, Yoshio, to Nippon Steel Corporation. Method of producing clad steel plate having good low-temperature toughness. 5,183,198, Cl. 228-186.000.
Tamor, Michael A.: *See*—
Potter, Timothy J.; Tamor, Michael A.; and Wu, Ching-Hsong, 5,183,529, Cl. 156-613.000.
Tamura, Aki: *See*—
Adachi, Masakazu; Saitou, Toshimitu; Murata, Kimiyo; and Tamura, Aki, 5,183,738, Cl. 435-7.100.
Tamura, Koichi; Taguchi, Nobuo; and Tashiro, Satoshi, to Nisshin Oil Mills, Ltd., The. Process for producing salad oil. 5,183,675, Cl. 426-33.000.
Tamura, Minoru: *See*—
Imaseki, Takashi; Tamura, Minoru; Iwata, Toru; and Fukuyama, Yuichi, 5,184,298, Cl. 364-424.050.
Tamura, Yoshinobu: *See*—
Kishi, Hiroyuki; Kimura, Hitoshi; Yamamoto, Katsuya; Tamura, Yoshinobu; Sakauchi, Tsuneo; Nagaoka, ;Masahide; and Tsuchiya, Yasuyu, 5,183,836, Cl. 523-404.000.
Tanaka, Hirokazu; and Ito, Koichi, to Mitsubishi Denki K.K. Overcharge preventive device for automotive batteries. 5,184,109, Cl. 340-455.000.
Tanaka, Hiroshi; Kominato, Kaichiro; Yoshioka, Takeo; Iguchi, Hiroshi; Hirano, Shin-ichi; Okajima, Yasuo; Yamamoto, Reijko; Shirai, Masataka; Nishida, Hiroshi; Tone, Hiroshi; and Okamoto, Rokuro, to Mercian Corporation. Conjugate of adriamycin and cyclodextrin. 5,183,883, Cl. 563-6.400.
Tanaka, Hirosi: *See*—
Tada, Takemi; Tanaka, Hirosi; and Usui, Osami, 5,183,400, Cl. 417-572.000.
Tanaka, Kazuyoshi; Isobe, Toshifumi; Itaya, Masahiko; and Naganuma, Akiko, to Konica Corporation. Color image forming method and apparatus. 5,184,146, Cl. 346-1.100.
Tanaka Kikinzoku Kogyo KK: *See*—
Dalla Betta, Ralph A.; Ezawa, Nobuyasu; Tsurumi, Kazunori; Schlatter, James C.; and Nickolas, Sarento G., 5,183,401, Cl. 431-7.000.
Tanaka Kikinzoku Kogyo Kabushiki Kaisha: *See*—
Kitajima, Eiji; Oyama, Takashi; Maruden, Eiji; Teraoka, Hirokazu; Yamasaki, Haruki; and Shimizu, Susumu, 5,183,603, Cl. 264-29.200.
Tanaka, Shinji: *See*—
Kawamura, Yoshio; Tanaka, Shinji; Sato, Kazuo; Uchida, Kenko; and Kohida, Hiroyuki, 5,183,744, Cl. 435-30.000.
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Kato, Tohru, to Daido Metal Company Ltd. Wear resistant copper alloys. 5,183,637, Cl. 420-479.000.
Tanaka, Tsugutoshi; and Ishiwata, Soji, to Nippon Aleph Corporation. Combination of magnetic card and printing apparatus therefor. 5,184,149, Cl. 346-74.200.
Tanaka, Yasuhiko: *See*—
Shiina, Michihiro; Tanaka, Yasuhiko; Iwai, Fumio; Noguchi, Yukio; Umetsu, Takao; Saito, Tatsuo; Onozuka, Haruo; Saitoh, Muneyoshi; and Koda, Takao, 5,184,166, Cl. 354-400.000.
Tanaka, Yoshinori: *See*—
Utsunomiya, Atsushi; Nakamura, Mitsuo; Kuwatsuka, Toshiaki; and Tanaka, Yoshinori, 5,183,927, Cl. 560-115.000.
Tanaka, Yoshiyuki; and Itoh, Takaaki, to Mitsubishi Materials Corporation. Microgap type surge absorber. 5,184,273, Cl. 361-120.000.
Tanaka, Yukiomi: *See*—
Jisai, Yasuhiro; Tanaka, Yukiomi; and Shigeta, Akira, 5,183,601, Cl. 252-524.000.
Tang, Kuo-Tai. Steerable roller skate. 5,183,277, Cl. 280-11.280.
Taniguchi, Hiromichi, to NEC Corporation. Chip type solid electrolytic capacitor. 5,184,287, Cl. 361-540.000.
Taniguchi, Hitoshi; and Matsui, Fumio, to Pioneer Electronic Corporation. Light-sensitive recording medium and process for producing same. 5,183,726, Cl. 430-342.000.
Taniguchi, Seiichi: *See*—
Shiratori, Tetsuya; Yamazaki, Fumio; and Taniguchi, Seiichi, 5,183,425, Cl. 445-29.000.
Tanizaki, Toru: *See*—
Wakino, Kikuo; Hishikawa, Toshio; Ishikawa, Youhei; Takehara, Koichi; and Tanizaki, Toru, 5,184,096, Cl. 333-175.000.
Taoka Chemical Co. Ltd.: *See*—
Kawashita, Hideo; Ohta, Mituhiro; and Ogino, Kazuya, 5,183,501, Cl. 106-22.00D.
Tardy, Andre : *See*—
Brehm, Claude; Dupont, Philippe; and Tardy, Andre , 5,183,489, Cl. 65-4.200.

Tarics, Alexander G. Integrated building system and method. 5,182,884, Cl. 52-79.140.
Tarnoff, Harry L.: *See*—
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,184,307, Cl. 364-474.240.
Tarr, Leonard; King, Gregory; and Johansen, Brian, to Monitel Products Corp. Photocopy monitoring system and method for monitoring copiers. 5,184,179, Cl. 355-206.000.
Tarui, Keiji: *See*—
Nishino, Hiromi; Tarui, Keiji; Toyoshi, Hideyuki; and Morita, Tatsuo, 5,183,725, Cl. 430-313.000.
Tasca, Jean-Pierre, to Compagnie Generale d'Automatisme CGA-HBS. Non-destructive eddy current test device using additive flux substractive flux switching. 5,184,071, Cl. 324-238.000.
Tashiro, Minoru: *See*—
Sato, Takeshi; Tashiro, Minoru; and Miyakawa, Naoomi, 5,183,993, Cl. 219-121.820.
Tashiro, Satoshi: *See*—
Tamura, Koichi; Taguchi, Nobuo; and Tashiro, Satoshi, 5,183,675, Cl. 426-33.000.
Tatematsu, Susumu: *See*—
Kado, Syuji; Tatematsu, Susumu; and Ikari, Hideyuki, 5,182,917, Cl. 62-137.000.
Tatomir, Paul J.: *See*—
Kich, Rolf; and Tatomir, Paul J., 5,184,098, Cl. 333-208.000.
Tatsumi, Setsuji, to Fuji Photo Film Co., Ltd. Image output system. 5,184,214, Cl. 358-75.000.
Tavazzani, Carlo: *See*—
Visani, Francesco; Tavazzani, Carlo; Ajroldi, Giuseppe; and Castiglioni, Giovanni, 5,183,851, Cl. 525-85.000.
Taylor, Chandler R., Jr.; Cale, Albert D., Jr.; and Stauffer, Harold F., Jr., to A. H. Robins Company, Incorporated. Method of treating muscular tension, muscle spasticity and anxiety with 3-aryloxy and 3-arylthioazetidinecarboxamides. 5,183,902, Cl. 548-950.000.
Taylor, Jeffrey L.; Luckenbach, Roy; Coco, Michael; and Twickler, Carl, to Dover Corporation. Barrier fabrics. 5,183,702, Cl. 428-266.000.
Taylor, Paul D.: *See*—
Liu, Kou-Chang; and Taylor, Paul D., 5,183,946, Cl. 568-670.000.
Taylor, Raymond L.; Burns, Lee E.; and MacDonald, James C., to CVD, Inc. Process for an improved laminated of ZnSe and ZnS. 5,183,689, Cl. 427-164.000.
Tazawa, Shigeru; and Shibata, Yutaka, to Tohoku Ricoh Co., Ltd. Method of printing bar codes by a bar code printer. 5,183,343, Cl. 400-103.000.
Technetics Corp.: *See*—
Howe, Harold, 5,183,197, Cl. 228-160.000.
Technical Development Associates: *See*—
Veith, Cary A., 5,183,874, Cl. 528-16.000.
Techsonic Industries, Inc.: *See*—
Adams, James W.; Loving, Louis S.; Betts, David A.; Donnelly, David P.; and Nunley, Alvin, III, 5,184,330, Cl. 367-111.000.
Tecumseh Products Company: *See*—
Jolliff, Norman E., 5,183,138, Cl. 192-4.00C.
von Kaler, Roland L.; and Havens, Dale I., 5,182,966, Cl. 74-606.00R.
Teijin Limited: *See*—
Yoshida, Makoto; Yamada, Hironori; Takahashi, Nobuo; and Fujimoto, Kazushi, 5,183,708, Cl. 428-373.000.
Teijin Seiki Co., Ltd.: *See*—
Ogawa, Kazunori, 5,183,071, Cl. 137-106.000.
Tektronix, Inc.: *See*—
Chiam, Warren L., 5,184,065, Cl. 324-158.00P.
MacLane, Donald B.; Deur, Ted E.; Anderson, Jeffrey J.; Titterington, Donald R.; Oswald, James C.; and Meissner, Richard S., 5,184,147, Cl. 346-1.100.
Telectronics Pacing Systems, Inc.: *See*—
Nappholz, Tibor A.; Koestner, Ken; and Valenta, Harry L., Jr., 5,183,040, Cl. 128-419.0PG.
Telemecanique: *See*—
Guillin, Daniel; and Nicolas, Michel, 5,183,076, Cl. 137-513.700.
Lafosse, Jean; and Milliere, Paul, 5,183,971, Cl. 174-138.00F.
Tenbrink, Detlef; Bock, Martin; Heymann, Kurt; and Rimkus, Martin, to Schering Aktiengesellschaft. Method of forming a high temperature resistant copper coating on an inorganic dielectric. 5,183,553, Cl. 205-162.000.
Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Iwaki, Takashi; Mori, Shoei; and Shinjo, Kenji, to Canon Kabushiki Kaisha. Ferroelectric chiral smectic liquid crystal composition and liquid crystal device using same. 5,183,586, Cl. 252-299.610.
Terada, Yoshio: *See*—
Tamehiro, Hiroshi; Ogata, Yoshinori; and Terada, Yoshio, 5,183,198, Cl. 228-186.000.
Terakado, Shingo, to Sanyo Electric Co., Ltd. Dry etching method. 5,183,531, Cl. 156-643.000.
Terakado, Takeshi: *See*—
Kurosawa, Makoto; Koseki, Masaaki; Takahashi, Tetsuroh; and Terakado, Takeshi, 5,183,454, Cl. 493-459.000.
Terao, Masanobu: *See*—
Nakamatsu, Toshio; Terao, Masanobu; Muneishi, Shigetoshi; Kometani, Norio; and Hayashi, Yoshiaki, 5,183,892, Cl. 546-76.000.
Teraoka, Hirokazu: *See*—
Kitajima, Eiji; Oyama, Takashi; Maruden, Eiji; Teraoka, Hirokazu; Yamasaki, Haruki; and Shimizu, Susumu, 5,183,603, Cl. 264-29.200.
Terry, James W.; and Rasmussen, John P., to United States of America, Air Force. Data distribution network. 5,184,138, Cl. 342-195.000.
Terwilliger, Richard A. Automatic biopsy instrument with cutting cannula. 5,183,052, Cl. 128-753.000.
Tesar, Herbert. Keycap overlay snap-on system. 5,183,346, Cl. 400-490.000.
Tetra Alfa Holdings SA: *See*—
Martensson, Lars; and Andersson, Jan, 5,183,644, Cl. 422-304.000.
Texaco Chemical Company: *See*—
Cuscurida, Michael; and Speranza, George P., 5,183,923, Cl. 560-26.000.
Knifton, John F.; and Sanderson, John R., 5,183,947, Cl. 568-698.000.
Marquis, Edward T.; Speranza, George P.; and Su, Wei-Yang, 5,183,514, Cl. 134-38.000.
Texaco Inc.: *See*—
Chien, Sze-Foo; and Traverse, Eugene F., 5,182,939, Cl. 73-29.010.
Holland, Douglas K.; and Dillingham, Edward W., 5,183,478, Cl. 48-197.00R.
Najjar, Mitri S.; and Hilmar, Martin D., 5,183,482, Cl. 55-16.000.
Texas Instruments Incorporated: *See*—
Dye, Thomas A., 5,184,320, Cl. 365-49.000.
Leach, Jerald G., 5,184,032, Cl. 307-443.000.
Lee, Jhang W., 5,183,776, Cl. 437-110.000.
Tsao, Sherman H., 5,184,133, Cl. 342-25.000.
Th. Goldschmidt AG: *See*—
Mohring, Volker; and Zellmer, Volker, 5,183,830, Cl. 521-107.000.
Thangavelu, Kandasamy, to Otis Elevator Company. "Up-peak" elevator channeling system with optimized preferential service to high intensity traffic floors. 5,183,981, Cl. 187-128.000.
Thelen, Wayne A.: *See*—
Hornburg, Kurt P.; Thelen, Wayne A.; and Thelen, William, 5,184,142, Cl. 343-715.000.
Thelen, William: *See*—
Hornburg, Kurt P.; Thelen, Wayne A.; and Thelen, William, 5,184,142, Cl. 343-715.000.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Reralling device. 5,182,995, Cl. 104-2.000.
Thiel, Michael D.: *See*—
Raterman, Michael F.; and Thiel, Michael D., 5,183,480, Cl. 55-12.000.
Thierry, Maurickx; Pascal, Verrier; and Roland, Taillard, to Sollac. Steel having improved weldability and method thereof. 5,183,633, Cl. 420-92.000.
Thomas, Brian J., to Welch Allyn, Inc. Dental curing lamp. 5,184,044, Cl. 313-638.000.
Thomas, Charles E., to United Container Machinery Group, Inc. Heater for a double facing corrugating machine. 5,183,525, Cl. 156-470.000.
Thomas, Gerald F.: *See*—
Connolly, Jerome J.; Barrick, Michael D.; D'Agostino, William L.; Thomas, Gerald F.; and Williams, Thomas W., 5,184,141, Cl. 343-705.000.
Thomas, James M. C.; Stolpmann, James R.; Sutton, William T.; and Romano, James J., to SSI Medical Services, Inc. Method of blower control. 5,182,826, Cl. 5-453.000.
Thomas, Lloyd S.: *See*—
Stanbury, Evan J.; and Thomas, Lloyd S., 5,184,119, Cl. 340-825.600.
Thomas, Roy. Lighting accessory. 5,183,324, Cl. 362-103.000.
Thombs, David M., to Chu Associates, Inc. Ogival cross-section combined microwave waveguide for reflector antenna feed and spar support therefor. 5,184,144, Cl. 343-781.00R.
Thome, Jeanne M.: *See*—
Cox, Jerry D.; Linz, Raymond E.; Thome, Jeanne M.; Perry, Winfield B.; Hadley, Franklin O., Jr.; and Knobel, Vladimir A., 5,182,881, Cl. 51-7.000.
Thompson, Ralph A.: *See*—
Norlander, Norman E.; and Thompson, Ralph A., 5,183,089, Cl. 144-231.000.
Thomson Consumer Electronics, S.A.: *See*—
Heidebroek, Wolfgang; and Hsing, Zeith W. C., 5,184,225, Cl. 358-243.000.
Thomson-CSF: *See*—
Lacroix, Michel, 5,184,250, Cl. 359-631.000.
Thomson, James W.: *See*—
Shaked, Ze'Ev; Stewart, Tracy; Hershenson, Susan; Thomson, James W.; Taforo, Terrance; and Thomson, Jody, 5,183,746, Cl. 435-69.510.
Thomson, Jody: *See*—
Shaked, Ze'Ev; Stewart, Tracy; Hershenson, Susan; Thomson, James W.; Taforo, Terrance; and Thomson, Jody, 5,183,746, Cl. 435-69.510.
Thonnesen, Dieter: *See*—
Hartel, Gunter; Schurfeld, Armin; Losing, Karl-Heinrich; Thonnesen, Dieter; and Remde, Ulrich, 5,182,942, Cl. 73-61.460.
Thorn Emi plc: *See*—
Wright, Graham L., 5,184,238, Cl. 359-70.000.
Thorp, Derek: *See*—
Kenyon, Ronald W.; Newton, David F.; and Thorp, Derek, 5,183,888, Cl. 544-153.000.

VOL 1147 ISS 1 FE 2 1993 UMI

Thorstensen, Peder J.: *See—*
Addison, F. Clark; and Thorstensen, Peder J., 5,183,995, Cl. 219-433.000.

Thunderline Corporation: *See—*
Barton, Bruce G., Jr., 5,182,885, Cl. 52-98.000.

Tice, Mark A.: *See—*
Zakaryan, Ara H.; Newallis, Peter E.; and Tice, Mark A., 5,183,916, Cl. 558-95.000.

Tikka, Panu, to Sunds Defibrator Rauma Oy. Process for preparing kraft pulp using black liquor pretreatment reaction. 5,183,535, Cl. 162-19.000.

Timmermans, Hans. Method and apparatus for compressing a stent prior to insertion. 5,183,085, Cl. 140-89.000.

Timoney, John F., to Cornell Research Foundation, Inc. Protection of equines against *Streptococcus equi*. 5,183,659, Cl. 424-92.000.

Ting, Chiu H.; and Pai, Pei-Lin, to Intel Corporation. Fully planar metalization process. 5,183,795, Cl. 437-230.000.

Tischner, Ryan K.: *See—*
Comstock, Roger D.; Tischner, Ryan K.; and Pearce, Wayne E., 5,183,182, Cl. 222-129.000.

Titterington, Donald R.: *See—*
MacLane, Donald B.; Deur, Ted E.; Anderson, Jeffrey J.; Titterington, Donald R.; Oswald, James C.; and Meissner, Richard S., 5,184,147, Cl. 346-1.100.

Toberg, Lloyd H. Stripper for wood incisor. 5,183,088, Cl. 144-2.00J.

Toda, Harumi: *See—*
Takamura, Susumu; Nakamura, Takashi; Okawauchi, Makoto; Toda, Harumi; Kanki, Ichiro; Yoshida, Minoru; Imoto, Toshiyuki; Negayama, Naomi; and Oka, Koichi, 5,183,045, Cl. 128-653.200.

Todokoro, Masatoshi, to Staff Co., Ltd. Toy facsimile machine. 5,183,431, Cl. 446-142.000.

Toffano, Gino: *See—*
della Valle, Francesco; and Toffano, Gino, 5,183,807, Cl. 514-25.000.

Togano, Takeshi: *See—*
Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Iwaki, Takashi; Mori, Shosei; and Shinjo, Kenji, 5,183,586, Cl. 252-299.610.

Tohoku Ricoh Co., Ltd.: *See—*
Tazawa, Shigeru; and Shibata, Yutaka, 5,183,343, Cl. 400-103.000.

Toja, Emilio; Bonetti, Carla; Barzaghi, Fernando; and Galliani, Giulio, to Roussel Uclaf. Derivatives of 1,2,5,6-tetrahydropyridin-3-carboxaldehyde oxime. 5,183,896, Cl. 546-326.000.

Toja, Emilio: *See—*
Galliani, Giulio; Barzaghi, Fernando; Bonetti, Carla; and Toja, Emilio, 5,183,893, Cl. 546-133.000.

Tokai Kogyo Kabushiki Kaisha: *See—*
Arima, Hidetoshi, 5,183,522, Cl. 156-244.130.
Suita, Yoshihiro; and Ito, Tosikazu, 5,183,612, Cl. 264-145.000.

Tokai Rubber Industries, Ltd.: *See—*
Matsumoto, Nobuo, 5,183,243, Cl. 267-140.130.

Toko Kabushiki Kaisha: *See—*
Endo, Kunihisa, 5,184,105, Cl. 336-192.000.

Tokura, Seiichi: *See—*
Saiki, Ikuo; Nishi, Norio; Azuma, Ichiro; and Tokura, Seiichi, 5,183,804, Cl. 514-12.000.

Tokushu Kika Kogyo Co., Ltd.: *See—*
Goto, Yoshiaki; and Arai, Kozo, 5,183,650, Cl. 423-710.000.

Tokutake, Toshinori, to Showa Aluminum Kabushiki Kaisha. Heat exchanger. 5,183,103, Cl. 165-167.000.

Tokyo Automatic Machinery Works, Ltd.: *See—*
Kondo, Fumio, 5,183,148, Cl. 198-674.000.

Tokyo Electric Co., Ltd.: *See—*
Kurimoto, Yukuo; Fujii, Nobuhiko; Kohno, Mitunori; and Umebara, Takao, 5,183,135, Cl. 186-61.000.
Murakami, Kazunori; Ikumi, Tomonori; Matsumoto, Yasuo; and Iwafune, Yasuo, 5,184,245, Cl. 359-196.000.

Tokyo Electron Sagami Limited: *See—*
Asano, Takanobu; and Ishii, Katsumi, 5,183,378, Cl. 414-757.000.

Tokyo Kikai Seisakusho, Ltd.: *See—*
Shiba, Noriyuki; and Hayashi, Mamoru, 5,182,993, Cl. 101-365.000.

Tolton, Robert J. Process for forming fiberglass articles. 5,183,619, Cl. 264-257.000.

Tomaru, Mikio: *See—*
Komatsu, Kazunori; and Tomaru, Mikio, 5,183,686, Cl. 427-549.000.

Tomida, Yoshinori: *See—*
Yuasa, Satoshi; and Tomida, Yoshinori, 5,183,879, Cl. 528-503.000.

Tomita, Nobuaki; and Suzuki, Kunio, to Yamaha Corporation. Process for producing a diaphragm for acoustic appliances. 5,182,846, Cl. 29-527.200.

Tomiyasu, Hiroshi: *See—*
Fukakusa, Masaharu; and Tomiyasu, Hiroshi, 5,184,263, Cl. 360-103.000.

Tomoda, Akihiro: *See—*
Ono, Takeshi; Yoshida, Takehiro; Wada, Satoshi; Takeda, Tomoyuki; Kondo, Masaya; Kobayashi, Makoto; Kato, Takahiro; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Yamada, Masakatsu, 5,184,151, Cl. 346-76.0PH.

Tone, Hiroshi: *See—*
Tanaka, Hiroshi; Kominato, Kaichiro; Yoshioka, Takeo; Iguchi, Hiroshi; Hirano, Shin-ichi; Okajima, Yasuo; Yamamoto, Reijko; Shirai, Masataka; Nishida, Hiroshi; Tone, Hiroshi; and Okamoto, Rokuro, 5,183,883, Cl. 563-6.400.

Tonoki, Satoshi: *See—*
Masuhra, Shohei; Tonoki, Satoshi; Shibukawa, Toshiya; and Sugawara, Hirsohi, 5,183,695, Cl. 428-151.000.

Topfer, Claus: *See—*
Claar, Klaus; Deischl, Hans; Lindmayer, Martin; Moczygemba, Jurgen; Schrader, Jergen; Schumacher, Josef; Topfer, Claus; and Robitschko, Peter, 5,184,022, Cl. 307-10.200.

Torisawa, Nobuyuki, to Fuji Photo Film Co., Ltd. Sheet feeding device for inverting a sheet. 5,183,241, Cl. 271-12.000.

Toriu, Mamoru; and Kitamura, Mitsuru, to Omron Tateisi Electronics Co.; and ITO Co., Ltd. Transcutaneous electric nerve stimulator. 5,183,041, Cl. 128-421.000.

Tosoh Corporation: *See—*
Tsutsumi, Yoshitaka; Uemura, Teruhisa; and Hasegawa, Masazumi, 5,183,722, Cl. 430-169.000.

Totoki, Toshio; Shigemi, Hirotake; and Yasukawa, Yoshio, to Kurita Water Industries Ltd. Apparatus for coagulating treatment. 5,183,562, Cl. 210-85.000.

Townley Foundry & Machine Co., Inc.: *See—*
Radon, Roman, 5,183,518, Cl. 148-324.000.

Townsend Engineering Company: *See—*
Townsend, Ray T.; and Basile, Vincent L., II, 5,183,433, Cl. 452-51.000.

Townsend, Harold E.: *See—*
Challberg, Roy C.; and Townsend, Harold E., 5,183,627, Cl. 376-352.000.

Townsend, Ray T.; and Basile, Vincent L., II, to Townsend Engineering Company. Sausage encasing machine having an improved looper horn. 5,183,433, Cl. 452-51.000.

Toyo Boseki Kabushiki Kaisha: *See—*
Nakamura, Masanori; Hirakouchi, Hiroshi; Yatsuka, Takeshi; Kadowaki, Nobuo; and Endoh, Hiroshi, 5,183,863, Cl. 525-438.000.

Toyo Ink Mfg. Co., Ltd.: *See—*
Ishida, Roh, 5,184,213, Cl. 358-75.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Ohta, Norio; Oda, Yukio; Naya, Toshiaki; and Kasuga, Tomoyuki, 5,183,026, Cl. 125-11.160.

Toyosawa, Shinichi; Nakajima, Tadashi; Suzuki, Kinya; Kawagoe, Takahiro; Miyazaki, Tadaaki; Kitamura, Takashi; Fuse, Tadashi; Ogawa, Masao; Masuda, Yoshitomo; Daifuku, Hideharu; and Fujio, Ryota, to Bridgestone Corporation. Polyanilines, process for the preparation thereof and cells using them. 5,183,543, Cl. 204-242.000.

Toyoshi, Hideyuki: *See—*
Nishino, Hiromi; Tarui, Keiji; Toyoshi, Hideyuki; and Morita, Tatsuo, 5,183,725, Cl. 430-313.000.

Traeger, Joseph P.; Traeuger, Mark A.; and Traeger, Randolph J. Burning apparatus with pellet fuel burner. 5,183,028, Cl. 126-73.000.

Traeger, Randolph J.: *See—*
Traeger, Joseph P.; Traeuger, Mark A.; and Traeger, Randolph J., 5,183,028, Cl. 126-73.000.

Traeuger, Mark A.: *See—*
Traeger, Joseph P.; Traeuger, Mark A.; and Traeger, Randolph J., 5,183,028, Cl. 126-73.000.

Trageser, Martin: *See—*
Werle, Peter; Trageser, Martin; and Piana, Hermann, 5,183,944, Cl. 568-465.000.

Traverse, Eugene F.: *See—*
Chien, Sze-Foo; and Traverse, Eugene F., 5,182,939, Cl. 73-29.010.

Treat, Russell L.; Gee, Glendon W.; and Whyatt, Greg A., to Battelle Memorial Institute. Method of draining water through a solid waste site without leaching. 5,183,355, Cl. 405-128.000.

Trent, Lane; and Shau, Gua-Ming. Self contained vivarium. 5,183,004, Cl. 119-5.000.

Triangle Engineered Products Co.: *See—*
Kuc, Victor D., 5,183,134, Cl. 184-6.160.

Tribotech: *See—*
Cain, Earl S., 5,184,207, Cl. 257-668.000.

Trico Products Corporation: *See—*
Carpenter, Peter J., 5,183,352, Cl. 403-79.000.
Knight, Stephen D., 5,182,831, Cl. 15-250.420.

Triple/S Dynamics, Inc.: *See—*
Sullivan, James F., Jr., 5,183,143, Cl. 198-370.000.

Triplett, Eric W., to Wisconsin Alumni Research Foundation. Recombinant Rhizobium bacteria inoculants. 5,183,759, Cl. 435-252.200.

Trudeau, Allen E., to United Technologies Corporation. Bi-functional transfer foot. 5,183,670, Cl. 425-126.100.

True Food Service Equipment, Inc.: *See—*
Trulaske, Robert J., Sr., 5,182,923, Cl. 62-249.000.
Trulaske, Robert J., Sr., 5,182,924, Cl. 62-255.000.

Trulaske, Robert J., Sr., to True Food Service Equipment, Inc. Refrigerator unit for food products. 5,182,923, Cl. 62-249.000.

Trulaske, Robert J., Sr., to True Food Service Equipment, Inc. Refrigerator unit for food products. 5,182,924, Cl. 62-255.000.

Trumbly, Joe H. Foldable propeller assembly. 5,183,384, Cl. 416-87.000.

Trussell, R. Rhodes: *See—*
Lang, John S.; Trussell, R. Rhodes; and Kawamura, Susumu, 5,183,335, Cl. 366-174.000.

Tsao, Sherman H., to Texas Instruments Incorporated. ISAR imaging radar system. 5,184,133, Cl. 342-25.000.

Tso, Chung C.; and Wynn, Robert L., to Phillips Petroleum Company. Benzylic oxidation and catalyst therefor. 5,183,931, Cl. 560-241.000.

Tsuchida, Hirofumi; and Aoki, Norihiko, to Olympus Optical Co., Ltd. Vari-focal lens system. 5,184,251, Cl. 359-654.000.

Tsuchiya, Keiji, to Canon Kabushiki Kaisha. Information recording-reproducing head driving circuit. 5,184,339, Cl. 369-44.280.

Tsuchiya, Shuichi: *See—*
Hori, Kimihiko; Sakaguchi, Akira; Ishida, Koichi; Nomura, Tomoko; Suzuki, Keiko; and Tsuchiya, Shuichi, 5,183,824, Cl. 514-383.000.

Tsuchiya, Yasuyu: *See—*
Kishi, Hiroyuki; Kimura, Hitoshi; Yamamoto, Katsuya; Tamura, Yoshinobu; Sakauchi, Tsuneo; Nagaoka, ;Masahide; and Tsuchiya, Yasuyu, 5,183,836, Cl. 523-404.000.

Tsukahara, Jiro: *See—*
Naito, Hideki; Yokoyama, Shigeki; and Tsukahara, Jiro, 5,183,729, Cl. 430-385.000.

Tsukude, Masaki: *See—*
Matsuda, Yoshio; Arimoto, Kazutami; Ooishi, Tsukasa; Tsukude, Masaki; and Fujishima, Kazuyasu, 5,184,327, Cl. 365-201.000.

Tsuru, Hiroyuki: *See—*
Iida, Yoshikazu; Kosaka, Toru; Tsuru, Hiroyuki; Higaki, Riichi; and Katayama, Akira, 5,184,167, Cl. 354-403.000.

Tsurumi, Kazunori: *See—*
Dalla Betta, Ralph A.; Ezawa, Nobuyasu; Tsurumi, Kazunori; Schlatter, James C.; and Nickolas, Sarento G., 5,183,401, Cl. 431-7.000.

Tsutsui, Takashi: *See—*
Sano, Kazuyoshi; Fujimura, Koh; Suzuki, Takumi; and Tsutsui, Takashi, 5,184,239, Cl. 359-80.000.

Tsutsumi, Michinari; Endo, Atsushi; and Yada, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Method for etching chromium film formed on substrate. 5,183,533, Cl. 156-656.000.

Tsutsumi, Yoshitaka; Uemura, Teruhisa; and Hasegawa, Masazumi, to Tosoh Corporation. Positive photosensitive composition for forming lenses containing 1,2-naphthoquinone diazide sulfonate photosensitizer, alkali-soluble resin and thermosetting agent and process for producing the composition. 5,183,722, Cl. 430-169.000.

Tucker, Robert E.: *See—*
Servido, John L.; Tucker, Robert E.; and Murphy, James, 5,183,483, Cl. 55-26.000.

Tung, Fu-Ching; Chen, Chi-Tsun; and Lieu, Sheng-Feng, to Industrial Technology Research Institute. Bagging specification adjustment and automatic inward-contraction and outward-expansion mechanism for bagging machine. 5,182,898, Cl. 53-570.000.

Tuot, James: *See—*
Carns, Lawrence G.; and Tuot, James, 5,182,926, Cl. 62-352.000.

Tury, Edward L.; Kaste, Keith; Johnson, Ross E.; and Danielson, David O., to Sensors, Inc. Method and apparatus for detecting a component gas in a sample. 5,184,017, Cl. 250-343.000.

Twickler, Carl: *See—*
Taylor, Jeffrey L.; Luckenbach, Roy; Coco, Michael; and Twickler, Carl, 5,183,702, Cl. 428-266.000.

Twigg, Ray G.; Klug, Mark W.; Marrone, Santino; and Hawkes, Malcolm V., to Symtek Systems, Inc. Electronic device test handler. 5,184,068, Cl. 324-158.00F.

Tyler, Thomas L. Flip-flop bird feeder. 5,183,005, Cl. 119-52.200.

Tyvela, Einar J. Universal chuck stop. 5,183,272, Cl. 279-156.000.

Tzukerman, Maty: *See—*
Pfahl, Magnus; and Tzukerman, Maty, 5,183,736, Cl. 435-6.000.

U-SUS Distributors, Inc.: *See—*
Gerbino, Anthony J., 5,183,710, Cl. 428-405.000.

Ube Cycon, Ltd.: *See—*
Akahoshi, Sumihisa; Akimura, Hitoshi; Nakabayashi, Isao; Ishii, Masami; Ohi, Tamio; and Yoshida, Makoto, 5,183,591, Cl. 252-503.000.
Yamaguchi, Soichiro; Matsuda, Koichi; and Goto, Hideo, 5,183,849, Cl. 525-68.000.

Ube Industries, Ltd.: *See—*
Koyama, Toshiya; Matsumoto, Yukio; Yoshimoto, Hataaki; and Ito, Katsuhiro, 5,183,585, Cl. 252-299.010.

Uchibori, Katsuyuki: *See—*
Abe, Tsuyoshi; Umezawa, Nobumasa; Fukuzumi, Tatsuo; Uchibori, Katsuyuki; Ozaki, Junji; and Motomura, Hiroharu, 5,183,634, Cl. 420-110.000.

Uchida, Hirofumi: *See—*
Wada, Norio; Fukase, Katsuya; and Uchida, Hirofumi, 5,183,711, Cl. 428-596.000.

Uchida, Kazuyuki: *See—*
Saitoh, Kouji; and Uchida, Kaznyuki, 5,184,162, Cl. 324-158.00R.

Uchida, Kenko: *See—*
Kawamura, Yoshio; Tanaka, Shinji; Sato, Kazuo; Uchida, Kenko; and Kohida, Hiroyuki, 5,183,744, Cl. 435-30.000.

Uchida, Makio, to Hitachi, Ltd. Semiconductor integrated circuit device. 5,184,202, Cl. 257-390.000.

Uchida, Manabu: *See—*
Kitano, Kisei; Ushioda, Makoto; Uchida, Manabu; and Suzuki, Toshiharu, 5,183,587, Cl. 252-299.630.

Uchida, Naoshi: *See—*
Oyama, Jun; and Uchida, Naoshi, 5,184,100, Cl. 335-16.000.

Ueda, Hideaki, to Minolta Camera Kabushiki Kaisha. Photosensitive member comprising specific distyryl compound. 5,183,718, Cl. 430-59.000.

Ueda, Shuji; and Mochida, Shoro, to Matsushita Electric Industrial Co., Ltd. Optical code reader. 5,184,004, Cl. 235-462.000.

Ueda, Toshio; Sato, Yuichi; Senda, Masayasu; Isoyama, Seiji; and Hisano, Seiichi, to Dowa Mining Co., Ltd. Process for production of permanent magnet alloy having improved resistence to oxidation. 5,183,630, Cl. 419-31.000.

Uemura, Teruhisa: *See—*
Tsutsumi, Yoshitaka; Uemura, Teruhisa; and Hasegawa, Masazumi, 5,183,722, Cl. 430-169.000.

Uenishi, Akio, to Mitsubishi Denki Kabushiki Kaisha. Electronic flash device. 5,184,171, Cl. 354-416.000.

Ueno, Isamu, to Canon Kabushiki Kaisha. Photoelectric conversion apparatus having clock signals of different frequencies. 5,184,006, Cl. 250-208.100.

Ueno, Shuji; Hagiwara, Michiaki; Mishima, Ryoji; and Isoishi, Kiyoshi, to Unitika Ltd.; and Mitsubishi Kasei Corporation. Fibrous anisotropic permanent magnet and production process thereof. 5,183,515, Cl. 148-101.000.

Uesaka, Kazuo; Okita, Kazumasa; and Arai, Tsutomu, to Mitsubishi Denki Kabushiki Kaisha; and Okitsumo Incorporated. Deodorant and product in which the deodorant is used. 5,183,656, Cl. 424-76.100.

Ukai, Naoki; and Mori, Koji, to Nippondenso Co. Ltd. Non-decoded type bar code reading apparatus. 5,184,005, Cl. 235-472.000.

Ullmann, Agnes: *See—*
Danchin, Antoine; Glaser, Philippe; Krin, Evelyne; Barzu, Octavien; Ladant, Daniel; and Ullmann, Agnes, 5,183,745, Cl. 435-69.100.

Ulrich, Peter R.: *See—*
Holler, Roger A.; and Ulrich, Peter R., 5,183,217, Cl. 242-47.000.

Umebara, Takao: *See—*
Kurimoto, Yukuo; Fujii, Nobuhiko; Kohno, Mitunori; and Umebara, Takao, 5,183,135, Cl. 186-61.000.

Umeda, Shinichiro: *See—*
Kuwajima, Teruaki; Umeda, Shinichiro; and Konishi, Sakuichi, 5,183,504, Cl. 106-404.000.

Umeda, Tomoshige: *See—*
Nishide, Tsutomu; Yasumura, Daisuke; Nakajima, Yoshinobu; Onodera, Akiko; Yasukawa, Takuji; Kokumai, Hirokazu; Umeda, Tomoshige; Nomura, Seiji; and Mori, Hideki, 5,183,750, Cl. 435-134.000.

Umetsu, Sachio; and Miura, Toshihiko, to Canon Kabushiki Kaisha. Method for assembling objects by reversing up and down an attitude of the assembly. 5,182,843, Cl. 29-445.000.

Umetsu, Takao: *See—*
Shiina, Michihiro; Tanaka, Yasuhiko; Iwai, Fumio; Noguchi, Yukio; Umetsu, Takao; Saito, Tatsuo; Onozuka, Haruo; Saitoh, Muneyoshi; and Koda, Takao, 5,184,166, Cl. 354-400.000.

Umezawa, Nobumasa: *See—*
Abe, Tsuyoshi; Umezawa, Nobumasa; Fukuzumi, Tatsuo; Uchibori, Katsuyuki; Ozaki, Junji; and Motomura, Hiroharu, 5,183,634, Cl. 420-110.000.

Umlauft, Helmut; and Wager, Karl-Heinz, to Head Sportgerate Gesellschaft m.b.H. & Co. OHG. Racquets, in particular tennis racquets. 5,183,265, Cl. 273-73.00C.

Ungar, Israel S.: *See—*
Scher, Herbert I.; Ungar, Israel S.; and Baehr, Richard R., Jr., 5,183,600, Cl. 264-26.000.

Union Carbide Chemicals & Plastics Technology Corporation: *See—*
Bryant, David R.; Babin, James E.; Nicholson, James C.; and Weintritt, Donald J., Jr., 5,183,943, Cl. 568-454.000.
Etzkorn, William G.; and Harkreader, Gordon G., 5,183,936, Cl. 562-532.000.

United Container Machinery Group, Inc.: *See—*
Thomas, Charles E., 5,183,525, Cl. 156-470.000.

United Foam Plastics: *See—*
Hojnacki, Robert J.; Pearson, Daniel C.; Brucker, Gerard K.; Gober, Michael J.; and Shaw, Daniel J., Jr., 5,183,159, Cl. 206-583.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Kerry, Stephen; Restall, James E., deceased; and Wood, Michael I., 5,183,635, Cl. 420-420.000.
Sidky, Paulette S.; and Hocking, Michael G., 5,183,985, Cl. 219-10.61R.

United States of America
Agriculture: *See—*
Carr, Merle E.; Doane, William M.; Wing, Robert E.; and Bagley, Edward B., 5,183,690, Cl. 427-213.310.
Air Force: *See—*
Terry, James W.; and Rasmussen, John P., 5,184,138, Cl. 342-195.000.
America: *See—*
Kraus, Matthias H.; and Aaronson, Stuart A., 5,183,884, Cl. 536-23.500.
Energy: *See—*
Hawsey, Robert A.; and Scudiere, Matthew B., 5,184,189, Cl. 356-218.000.
MacArthur, Duncan W.; Wolf, Michael A.; McAtee, James L.; Unruh, Wesley P.; Cucchiara, Alfred L.; and Huchton, Roger L., 5,184,019, Cl. 250-380.000.
Health and Human Services: *See—*
Kindt, Thomas J.; Kulaga, Henrietta; and Folks, Thomas M., 5,183,949, Cl. 800-2.000.
Schlom, Jeffrey, 5,183,756, Cl. 435-240.270.
National Aeronautics & Space Admininstration: *See—*
Schwemmer, Geary K., 5,184,241, Cl. 359-161.000.
Navy: *See—*
Holler, Roger A.; and Ulrich, Peter R., 5,183,217, Cl. 242-47.000.
Ligler, Frances S.; Gaber Bruce P.; Kusterbeck, Anne W.; and Wemhoff, Gregory A., 5,183,740, Cl. 435-7.320.
Sitzmann, Michael E., 5,183,938, Cl. 564-151.000.
Sullivan, Michael J.; and Dussault, Douglas G., 5,184,331, Cl. 367-135.000.
Tadayon, Bijan; and Tadayon, Saied, 5,183,779, Cl. 437-165.000.

VOL 1147 ISS 1 FE 2 1993 UMI

U.S. Philips Corporation: *See—*
Conrads, Norbert; Schiebel, Ulrich; and Wieczorek, Herfried, 5,184,018, Cl. 250-370.090.
de Vaan, Adrianus J. S. M.; and van den Brandt, Adrianus H. J., 5,184,248, Cl. 359-483.000.
Hazan, Jean-Pierre; Polaert, Remy; and Delmas, Gilles, 5,183,996, Cl. 219-452.000.
Kinghorn, John R.; and Stevens, Jeremy R., 5,184,220, Cl. 358-147.000.
Miyazaki, Akihiko, 5,184,172, Cl. 354-432.000.
Muller, Johannes C. A.; and Vollmann, Norbert C., 5,184,259, Cl. 360-85.000.
Simon, Pal, 5,182,857, Cl. 30-34.050.
Van Gorsel, Jan, 5,184,089, Cl. 330-254.000.

United Technologies Automotive, Inc.: *See—*
Dewar, John H., 5,183,419, Cl. 439-765.000.

United Technologies Corporation: *See—*
Trudeau, Allen E., 5,183,670, Cl. 425-126.100.

Unitika Ltd.: *See—*
Ueno, Shuji; Hagiwara, Michiaki; Mishima, Ryoji; and Isoishi, Kiyoshi, 5,183,515, Cl. 148-101.000.

University of Arkansas, The Board of Trustees of the: *See—*
Crawford, Jack T.; Eisenach, Kathleen D.; Cave, M. Donald; and Bates, Joseph H., 5,183,737, Cl. 435-6.000.

University of California, The Regents of the: *See—*
Arakawa, Mitsuaki; and Hawryszko, Christine, 5,184,074, Cl. 324-309.000.
Wattenburg, Willard H., 5,183,119, Cl. 171-105.000.

University of Minnesota, Regents of the: *See—*
Erdman, Arthur G.; Rekow, Elizabeth D.; Riley, Donald R.; Klamecki, Barney; Zhu, Yang; and Ahn, Jeong-Ho, 5,184,306, Cl. 364-474.050.

University of Nebraska, Board of Regents of the: *See—*
Markwell, John P.; Versaw, Wayne K.; Osterman, John C.; and Kelley, Philip M., 5,183,752, Cl. 435-196.000.

University of Pennsylvania, The Trustees of the: *See—*
Hoffman, Eric A.; Hanson, C. William, III; and Ward, Charles F., III, 5,183,038, Cl. 128-204.210.

University of Pennsylvania/Childrens Hospital Corporation, The Trustees of the: *See—*
Weisz, Paul B.; Shing, Yuen W.; and Folkman, Judah, 5,183,809, Cl. 514-58.000.

University of Virginia Alumni Patents Foundation: *See—*
Kennington, Alison S.; and Larner, Joseph, 5,183,764, Cl. 436-131.000.

University of Washington, Board of Regents of the: *See—*
Beach, Kirk W.; Phillips, David J.; and Kansky, John, 5,183,046, Cl. 128-661.070.

Unno, Keisuke: *See—*
Kobayashi, Toshiharu; and Unno, Keisuke, 5,184,228, Cl. 358-310.000.

Unno, Yasuyuki; Orii, Seiji; and Yonekawa, Masami, to Canon Kabushiki Kaisha. Projection exposure apparatus with an aberration compensation device of a projection lens. 5,184,176, Cl. 355-52.000.

Uno, Masaru: *See—*
Yamaguchi, Akira; Uno, Masaru; Sekikawa, Norio; Arai, Fumio; and Matsuzaki, Kenji, 5,183,484, Cl. 55-34.000.

Uno, Nayomon; and Mutaguchi, Masao, to Ishikawajima-Harima Heavy Industries Co., Ltd. Vibration damping system. 5,182,887, Cl. 52-167.00R.

Unruh, Wesley P.: *See—*
MacArthur, Duncan W.; Wolf, Michael A.; McAtee, James L.; Unruh, Wesley P.; Cucchiara, Alfred L.; and Huchton, Roger L., 5,184,019, Cl. 250-380.000.

Urasaki, Shuji: *See—*
Itoh, Kenji; Iida, Akio; and Urasaki, Shuji, 5,184,093, Cl. 331-25.000.

Urda, Paul, to Ingersoll-Rand Company. Belt sander tensioner. 5,183,441, Cl. 474-138.000.

Ushijima, Kunio: *See—*
Hamada, Yasunori; Oizumi, Junichi; Noda, Kousuke; and Ushijima, Kunio, 5,184,000, Cl. 235-379.000.

Ushioda, Makoto: *See—*
Kitano, Kisei; Ushioda, Makoto; Uchida, Manabu; and Suzuki, Toshiharu, 5,183,587, Cl. 252-299.630.

Usui, Osami: *See—*
Tada, Takemi; Tanaka, Hirosi; and Usui, Osami, 5,183,400, Cl. 417-572.000.

Utsunomiya, Atsushi; Nakamura, Mitsuo; Kuwatsuka, Toshiaki; and Tanaka, Yoshinori, to Mitsui Toatsu Chemicals Incorporated. Process for the preparation of iodoalkynyl carbamates. 5,183,927, Cl. 560-115.000.

Valenta, Harry L., Jr.: *See—*
Nappholz, Tibor A.; Koestner, Ken; and Valenta, Harry L., Jr., 5,183,040, Cl. 128-419.0PG.

Valeo Thermique Moteur: *See—*
Le Gauyer, Philippe, 5,183,107, Cl. 165-176.000.

Valyocsik, Ernest W.: *See—*
Chitnis, Girish K.; Herbst, Joseph A.; and Valyocsik, Ernest W., 5,183,790, Cl. 502-67.000.

van den Brandt, Adrianus H. J.: *See—*
de Vaan, Adrianus J. S. M.; and van den Brandt, Adrianus H. J., 5,184,248, Cl. 359-483.000.

Vanderlinde, William: *See—*
Jakse, Frank P.; Morris, Donald E.; and Vanderlinde, William, 5,183,918, Cl. 558-271.000.

Vandome, Jacques: *See—*
Erpelding, Michel; and Vandome, Jacques, 5,183,840, Cl. 524-228.000.

Van Gorsel, Jan, to U.S. Philips Corporation. Differential amplifier having output current limiting. 5,184,089, Cl. 330-254.000.

VanSweden, Harry, to General Dynamics Land Systems, Inc. Suspension system for road wheel of a track laying vehicle. 5,183,287, Cl. 280-705.000.

van't Riet, Bartholomeus; Elford, Howard L.; and Wampler, Galen L. Polyhydroxybenzoic acid derivatives. 5,183,828, Cl. 514-508.000.

Van Wijngaarden, Ineke; Hamminga, Derk; and Wouters, Wouter, to Duphar International Research B.V. Substituted 3,4-annelated benzimidazol-2(1H)-ones. 5,183,822, Cl. 514-305.000.

Vartuli, James C.: *See—*
Kresge, Charles T.; Leonowicz, Michael E.; Roth, Wieslaw J.; Vartuli, James C.; Keville, Kathleen M.; Shih, Stuart S.; Degnan, Thomas F.; Dwyer, Francis G.; and Landis, Michael E., 5,183,561, Cl. 208-251.00R.

Vasconcellos, Stephen R.; Boyce, P. Douglas; and Smith, Larry P., to Betz Laboratories, Inc. Methods for the flocculation of coal fines and insoluble metals in coal mine waters. 5,183,575, Cl. 210-724.000.

Vasconcellos, Stephen R.: *See—*
Wood, Michael R.; Bair, Keith A.; Chen, Fu; and Vasconcellos, Stephen R., 5,183,576, Cl. 210-734.000.

Vavra, Paul P. Packaging system for a toilet water tank and cover. 5,183,155, Cl. 206-320.000.

Veitch, Ronald J.: *See—*
Schwab, Ekkehard; Veitch, Ronald J.; and Auweter, Helmut, 5,183,709, Cl. 428-404.000.

Veith, Cary A., to Technical Development Associates. Polyorganosiloxane-polyamide block copolymers. 5,183,874, Cl. 528-16.000.

Venepalli, Bhaskar R.: *See—*
Mattes, Kenneth C.; and Venepalli, Bhaskar R., 5,183,813, Cl. 514-150.000.

Venter, Jeremia J.; and McDade, Christine, to Rohm and Haas Company. Transesterification catalyst. 5,183,930, Cl. 560-217.000.

Vepex Contractor Ltd.: *See—*
Simoncsits, Andras; Kalman, Miklos; Kari, Csaba; and Cserpan, Imre, 5,183,748, Cl. 455-91.000.

Vering, Anthony W.: *See—*
Black, David D.; and Vering, Anthony W., 5,183,269, Cl. 277-37.000.

Verne O. Powell Flutes, Inc.: *See—*
Wasser, Steven A., 5,183,954, Cl. 84-385.00P.

Verosol USA Inc.: *See—*
Jelic, Ralph, 5,183,092, Cl. 160-84.100.

Versaw, Wayne K.: *See—*
Markwell, John P.; Versaw, Wayne K.; Osterman, John C.; and Kelley, Philip M., 5,183,752, Cl. 435-196.000.

VG Instruments Group Limited: *See—*
Ronan, Gerard A.; and Cole, Alistair, 5,184,016, Cl. 250-288.000.

Viaud, Jean, to Deere & Company. Round baler with tracking control for traction means used to move crop for baling. 5,182,987, Cl. 100-87.000.

Vickers, Incorporated: *See—*
Hansen, Lowell D., 5,183,392, Cl. 417-203.000.

Vicknair, Bruce A.; and Baten, Robert A., to Stewart & Stevenson Services, Inc. Encapsulated meter with optical programmer. 5,184,064, Cl. 324-156.000.

Victor Company of Japan, Ltd.: *See—*
Kaneko, Masahiro; Takemura, Masashi; and Yamashita, Kohei, 5,184,254, Cl. 360-10.200.
Nishi, Yuji; Ito, Shigehiro; Kuguchi, Tatsushi; and Ebihara, Kazuyuki, 5,184,221, Cl. 358-167.000.
Sugiyama, Kenji, 5,184,316, Cl. 364-715.020.

Vidano, Paul: *See—*
Stancliffe, A. Colin; Vidano, Paul; and Pogue, Bill P., 5,183,106, Cl. 165-166.000.

Vieau, David P.: *See—*
Durand, David; Vieau, David P.; Wei, Tai S.; and Chu, Ang-Ling, 5,183,593, Cl. 252-514.000.

Viebahn, Renate: *See—*
Washuttl, Josef; and Viebahn, Renate, 5,183,911, Cl. 554-181.000.

Viksne, George J., to Wacker Silicones Corporation. Room temperature stable organopolysiloxane compositions. 5,183,873, Cl. 528-16.000.

Villalta, Josue J.; and Passemard, Jean R. Medical retractor device. 5,183,032, Cl. 128-20.000.

Villwock, Thomas: *See—*
Kaneda, Takashi; and Villwock, Thomas, 5,184,282, Cl. 361-395.000.

Vilter Manufacturing Corporation: *See—*
Langouet, Luc, 5,183,395, Cl. 417-310.000.

Vincent, John. Motorcycle safety harness. 5,183,007, Cl. 119-96.000.

Viola, John. Truck mounted pavement sweeping brush. 5,182,830, Cl. 15-78.000.

Viratec Thin Films, Inc.: *See—*
Austin, R. Russell, 5,183,700, Cl. 428-216.000.

Virga, Kathleen L.: *See—*
Hanz, Curtis L.; Gulick, Jon J.; Virga, Kathleen L.; and Podell, Allen, 5,184,095, Cl. 333-33.000.

Virginia Tech Intellectual Properties, Inc.: *See—*
Riffle, Judy S.; Sinai-Zingde, Gurudus D.; and Brink, Andrew E., 5,183,861, Cl. 525-413.000.

Virkar, Anil V.; and Fung, Kuan-Zong, to Gas Research Institute. Stabilized bismuth oxide. 5,183,801, Cl. 501-152.000.

Visani, Francesco; Tavazzani, Carlo; Ajroldi, Giuseppe; and Castiglioni, Giovanni, to ELF Atochem Italia S.r.l. Low haze transparent compositions and processes for preparing them. 5,183,851, Cl. 525-85.000.

Vitagliano, Vincenzo M.: *See—*
Guerra, Gaetano; Vitagliano, Vincenzo M.; Corradini, Paolo; and Albizzati, Enrico, 5,183,853, Cl. 525-132.000.

Vito, Emanuel T. Mechanized animal litter apparatus and method of operating. 5,183,009, Cl. 119-165.000.

Vittorio, David A.; and Reedy, Steven W., to Cummins Engine Co., Inc. Master cylinder with two-piece master piston. 5,183,018, Cl. 123-321.000.

Vivascan Corporation: *See—*
Harjunmaa, Hannu; Mendelson, Yitzhak; and Wang, Yi, 5,183,042, Cl. 128-633.000.

Vives, Van C., to Phillips Petroleum Company. Poly(arylene sulfide) composition and method using silica to reduce drool. 5,183,844, Cl. 524-423.000.

Voest-Alpine Industrienlagenbau Gesellschaft m.b.H.: *See—*
Wizani, Wolfgang; Esterbauer, Hermann; Steiner, Walter; and Gomes, Joseph, 5,183,753, Cl. 435-201.000.

Vogt, Karl-Heinz: *See—*
Karius, Klaus D.; Eskam, Armin; and Vogt, Karl-Heinz, 5,183,962, Cl. 102-489.000.

Vollert, Alfred, to Fabrique Ebel SA. Sealed control arrangement for a timepiece. 5,184,334, Cl. 368-319.000.

Vollmann, Norbert C.: *See—*
Muller, Johannes C. A.; and Vollmann, Norbert C., 5,184,259, Cl. 360-85.000.

von Kaler, Roland L.; and Havens, Dale I., to Tecumseh Products Company. Control mechanism for a hydrostatic transaxle. 5,182,966, Cl. 74-606.00R.

Vorgitch, Tom J.: *See—*
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,184,307, Cl. 364-474.240.

Voss, Karl D., to CMI International, Inc. Method for metallurgically bonding pressed-in cylinder liners to a cylinder block. 5,182,854, Cl. 29-888.061.

Vought Aircraft Company: *See—*
Connolly, Jerome J.; Barrick, Michael D.; D'Agostino, William L.; Thomas, Gerald F.; and Williams, Thomas W., 5,184,141, Cl. 343-705.000.

W. Haking Enterprises Limited: *See—*
Wagerer, Helmut, 5,184,163, Cl. 354-266.000.

W. R. Grace & Co.-Conn.: *See—*
Bekele, Solomon, 5,183,706, Cl. 428-349.000.
Carter, Charles G.; Jovancicevic, Vladimir; Hartman, Judith A.; and Kreh, Robert P., 5,183,590, Cl. 252-392.000.
Hwa, Chih M.; Kelly, John A.; Tai, Wun T.; Fan, Lai-Duien G.; Kreh, Robert P.; and Greaves, Brian, 5,183,574, Cl. 210-701.000.
Kreh, Robert P.; and Henry, Wayne L., 5,183,573, Cl. 210-697.000.
Samuel, David N.; and Williams, Richard S., 5,183,848, Cl. 525-57.000.

W. Schlafhorst AG & Co.: *See—*
Gronenberg, Reinhard, 5,184,305, Cl. 364-470.000.
Horak, Dieter; and Schafer, Hans-Heinz, 5,182,900, Cl. 57-22.000.

Wack, Helmut. Demolishing apparatus. 5,183,216, Cl. 241-101.700.

Wacker Silicones Corporation: *See—*
Viksne, George J., 5,183,873, Cl. 528-16.000.

Wada, Kouji: *See—*
Iida, Tadasato; Takahashi, Fusakichi; Wada, Kouji; and Nigo, Toshiro, 5,182,915, Cl. 62-89.000.

Wada, Masayuki: *See—*
Suda, Koichi; Matsuzaki, Hitoshi; Wada, Masayuki; and Ozeki, Shoichi, 5,184,272, Cl. 361-87.000.

Wada, Norio; Fukase, Katsuya; and Uchida, Hirofumi, to Shinko Electric Industries Co., Ltd. Automatic bonding tape used in semiconductor device. 5,183,711, Cl. 428-596.000.

Wada, Noriyuki; and Nishigaki, Takayuki, to NOK Corporation. Sealing device and manufacturing method of the same. 5,183,271, Cl. 277-152.000.

Wada, Satoshi: *See—*
Ono, Takeshi; Yoshida, Takehiro; Wada, Satoshi; Takeda, Tomoyuki; Kondo, Masaya; Kobayashi, Makoto; Kato, Takahiro; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Yamada, Masakatsu, 5,184,151, Cl. 346-76.0PH.

Wada, Yukio: *See—*
Sasao, Nobuyuki; and Wada, Yukio, 5,183,652, Cl. 423-579.000.

Wade, Merle W., Jr. Recycling trash can. 5,183,278, Cl. 280-47.350.

Wager, Karl-Heinz: *See—*
Umlauft, Helmut; and Wager, Karl-Heinz, 5,183,265, Cl. 273-73.00C.

Wagerer, Helmut, to W. Haking Enterprises Limited. Remote trigger method and apparatus for a camera shutter. 5,184,163, Cl. 354-266.000.

Wagner International AG: *See—*
Simon, Georg, 5,184,276, Cl. 361-228.000.

Wagner, Klaus; Hanssler, Gerd; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Pesticidal nitro-substituted benzothiazolones. 5,183,898, Cl. 548-178.000.

Wagner, Richard C., to Hollymatic Corporation. Automated citrus fruit juice press. 5,182,984, Cl. 99-509.000.

Wagner Spray Tech Corporation: *See—*
Steinberg, Timothy D.; and Gunderson, Richard W., 5,183,207, Cl. 239-526.000.

Wakatake, Koichi, to Kabushiki Kaisha Nittec; and Mitsui Pharmaceuticals, Inc. Automatic immunity analysis apparatus with magnetic particle separation. 5,183,638, Cl. 422-64.000.

Wakino, Kikuo; Hishikawa, Toshio; Ishikawa, Youhei; Takehara, Koichi; and Tanizaki, Toru, to Murata Manufacturing Co., Ltd. Parallel connection multi-stage band-pass filter comprising resonators with impedance matching means capacitively coupled to input and output terminals. 5,184,096, Cl. 333-175.000.

Walker, Grant A.: *See—*
Walker, Wayne E.; and Walker, Grant A., 5,183,230, Cl. 248-118.000.

Walker, Roger C.: *See—*
Gilchrist, Alan R.; Sullivan, Thomas J.; and Walker, Roger C., 5,182,906, Cl. 60-226.100.

Walker, Wayne E.; and Walker, Grant A., to Fox Bay Industries, Inc. Computer keyboard support with padded wrist support. 5,183,230, Cl. 248-118.000.

Wall Colmonoy Corporation: *See—*
DuBois, Samuel C., 5,183,636, Cl. 420-442.000.

Walsh, Thomas F.: *See—*
Greenlee, William J.; Patchett, Arthur A.; Hangauer, David; Walsh, Thomas F.; Fitch, Kenneth J.; Rivero, Ralph A.; and Dhanoa, Daljit S., 5,183,810, Cl. 514-63.000.

Walt Disney Company, The: *See—*
Burkat, Alexander, 5,182,836, Cl. 24-633.000.

Walter, George E., to Moore Business Forms, Inc. Repair sealer accessory. 5,183,526, Cl. 156-556.000.

Walter Kidde Aerospace, Inc.: *See—*
Fleming, William T., 5,183,116, Cl. 169-43.000.

Walther, Bernd: *See—*
Bohmer, Rainer; Bruhn, Rainer; Rienhardt, Hans-Peter; and Walther, Bernd, 5,182,957, Cl. 74-42.000.

Wampler, Galen L.: *See—*
van't Riet, Bartholomeus; Elford, Howard L.; and Wampler, Galen L., 5,183,828, Cl. 514-508.000.

Wang, Leao, to Greenmaster Industrial Corp. Foot training machine. 5,183,448, Cl. 482-52.000.

Wang, Li; and Mitsche, Roy T., to Allied-Signal Inc. Catalyst for making polyethylene. 5,183,792, Cl. 502-242.000.

Wang, Yi: *See—*
Harjunmaa, Hannu; Mendelson, Yitzhak; and Wang, Yi, 5,183,042, Cl. 128-633.000.

Wanger, Mark E.; Methlie, Jennifer L.; Stavely, Donald J.; and Oliver, Thomas C., to Hewlett-Packard Company. Mechanical assembly for alternately producing displacement of a carriage and rotation of a carriage mounted gear. 5,184,336, Cl. 369-34.000.

Wanninger, Paul; Wild, Richard; Kleinschmidt, Ernst; and Spath, Helmut, to Messerschmitt-Bolkow-Blohm GmbH. Explosive charge. 5,183,520, Cl. 149-19.910.

Ward, Charles F., III: *See—*
Hoffman, Eric A.; Hanson, C. William, III; and Ward, Charles F., III, 5,183,038, Cl. 128-204.210.

Warner, John L. Guide for portable power saw. 5,182,975, Cl. 83-745.000.

Warner-Lambert Company: *See—*
Chen, Evan N., 5,182,858, Cl. 30-85.000.

Warren, Bobby G., Jr.; and Davis, James D. Access and support apparatus for loading and unloading gondola cars. 5,183,369, Cl. 414-339.000.

Warwel, Siegfried; Jagers, Hans-Gerd; and Deckers, Andreas, to Huels Aktiengesellschaft. Catalysts for the metathesis of olefins and functionalized olefins. 5,183,791, Cl. 502-102.000.

Washburn, Robert D.; Wedeen, Robert S.; McClanahan, Robert F.; Council, William J.; and Lusher, David M., to Hughes Aircraft Company. High frequency poly-phase rectifier for converting AC power signal to DC. 5,184,288, Cl. 363-4.000.

Washuttl, Josef; and Viebahn, Renate, to Dr. J. Hansler GmbH. Process for the production of stable ozonized oils from unsaturated vegetable oils. 5,183,911, Cl. 554-181.000.

Wasser, Steven A., to Verne O. Powell Flutes, Inc. Cushion for a tone hole pad. 5,183,954, Cl. 84-385.00P.

Wasson, Robert C.: *See—*
O'Neil, Robert M.; Phillips, Emyr; and Wasson, Robert C., 5,183,842, Cl. 524-288.000.

Wasyliw, Basil: *See—*
El-Hefnawi, Sobhy; Shah, Shailesh C.; and Wasyliw, Basil, 5,183,847, Cl. 525-54.440.

Watai, Hiroo: *See—*
Nagai, Masahiko; Watai, Hiroo; Nagumo, Takaharu; and Moriwaki, Kaoru, 5,184,308, Cl. 364-489.000.

Watanabe, Hayataro, to Y.M. Golf Course Equipment Co., Ltd. Lawn cutting apparatus. 5,183,120, Cl. 172-21.000.

Watanabe, Hisanori; and Ito, Shinji, to Sony Corporation. Dual motor mode switching mechanism for a recording and/or reproducing apparatus. 5,184,262, Cl. 360-96.200.

Watanabe, Mikio: *See—*
Saito, Osamu; Ito, Kenji; Moronaga, Kenji; and Watanabe, Mikio, 5,184,229, Cl. 358-427.000.

Watanabe, Tamio: *See—*
Yamanashi, Makoto; Jinno, Keishi; Watanabe, Tamio; Endo, Takayoshi; and Yagi, Sakai, 5,183,418, Cl. 439-752.000.

VOL 1147 ISS 1 FE 2 1993 UMI

Waterman, Craig S.: *See*—
McEachern, Alexander; Nicholson, Jamie; and Waterman, Craig S., 5,184,066, Cl. 324-158.00R.
Watson, John, to British Technology Group Limited. Underwater inspection apparatus and method. 5,184,230, Cl. 359-9.000.
Watt, Darrel J.: *See*—
Robbins, E. Stanley; Robbins, Rodney W.; Watt, Darrel J.; and Wilson, Wendell G., 5,182,948, Cl. 73-429.000.
Wattenburg, Willard H., to University of California, Regents of the. Anti-snag plowing system. 5,183,119, Cl. 171-105.000.
WavePhore, Inc.: *See*—
Gerdes, Richard C., 5,184,218, Cl. 358-133.000.
Wavin B.V.: *See*—
Menheere, Johannes C. J., 5,182,954, Cl. 73-864.450.
Waynert, Joseph A.: *See*—
Barclay, John A.; Waynert, Joseph A.; DeGregoria, Anthony J.; Johnson, Joseph W.; and Claybaker, Peter J., 5,182,914, Cl. 62-3.100.
Webb, Michael G. Inhibiting corrosion in reinforced concrete. 5,183,694, Cl. 428-67.000.
Weber AG: *See*—
Ineichen, Kurt; Ruedi, Peter; and Wirth, Herbert, 5,184,101, Cl. 335-78.000.
Weber, Joseph R.; and Bilak, Ronald E., to Xerox Corporation. Apparatus for electrowinning of metal from a waste metal material. 5,183,544, Cl. 204-252.000.
Weber, Sharon W.: *See*—
Sarraf, Sanwal P.; Weber, Sharon W.; Gilmour, Hugh S. A.; and Ficcaglia, Linda I., 5,183,798, Cl. 503-227.000.
Wechselberger, Emmerich E.; and Frost, Ralph S., to Chemetron-Railway Products, Inc. Method for quenching railway rail heads. 5,183,519, Cl. 148-582.000.
Wecke, Liliane: *See*—
Dalen, Bjoern; Nilsson, Kenth-Ake-Sune; Hoegnelid, Kurt; and Wecke, Liliane, 5,183,056, Cl. 128-782.000.
Weckerle, Gunter: *See*—
Peter, Julius; and Weckerle, Gunter, 5,183,640, Cl. 422-135.000.
Wedeen, Robert S.: *See*—
Washburn, Robert D.; Wedeen, Robert S.; McClanahan, Robert F.; Council, William J.; and Lusher, David M., 5,184,288, Cl. 363-4.000.
Wehking, Timothy J.: *See*—
Bailey, Kenneth M.; Mitchener, Rex L.; Wehking, Timothy J.; and Reith, Craig P., 5,182,940, Cl. 73-36.000.
Wei, Tai S.: *See*—
Durand, David; Vieau, David P.; Wei, Tai S.; and Chu, Ang-Ling, 5,183,593, Cl. 252-514.000.
Weidemeier, Klaus: *See*—
Gross, Lutz-Werner; Poth, Ulrich; Hille, Dieter; and Weidemeier, Klaus, 5,183,835, Cl. 523-402.000.
Weider, Richard; and Scholl, Thomas, to Bayer Aktiengesellschaft. Process for the preparation of aromatic dicarboxylic acids and aromatic hydrocarbons. 5,183,926, Cl. 560-76.000.
Weigel, Leland O., to Eli Lilly and Company. Process and intermediates for chiral epoxides. 5,183,910, Cl. 549-539.000.
Weintritt, Donald J., Jr.: *See*—
Bryant, David R.; Babin, James E.; Nicholson, James C.; and Weintritt, Donald J., Jr., 5,183,943, Cl. 568-454.000.
Weir, Roy A. Oral hygiene device. 5,183,035, Cl. 128-66.000.
Weiss, John W., to Minnesota Mining and Manufacturing Company. Adjustable, elastic static control wristband. 5,184,274, Cl. 361-220.000.
Weissman, Bernard. Dental bonding arrangement and method. 5,183,397, Cl. 433-215.000.
Weisz, Paul B.; Shing, Yuen W.; and Folkman, Judah, to University of Pennsylvania/Childrens Hospital Corporation, The Trustees of the. Cyclodextrin polymers and cyclodextrins immobilized on a solid surface. 5,183,809, Cl. 514-58.000.
Welborn, Howard C., Jr., to Exxon Chemical Patents Inc. Polymerization process using a new supported polymerization catalyst. 5,183,867, Cl. 526-114.000.
Welch Allyn, Inc.: *See*—
Thomas, Brian J., 5,184,044, Cl. 313-638.000.
Weldon, William F.; Woodson, Herbert H.; and Long, Glen C., to Board of Regents, The University of Texas System. Method and construction for control of current distribution in railgun armatures. 5,183,957, Cl. 89-8.000.
Welstead, William J., Jr.; and Lo, Young S., to A. H. Robins Company, Incorporated. Urea fusion process for the synthesis of 3-phenoxy-1-azetidinecarboxamides. 5,183,903, Cl. 548-952.000.
Welter, Thomas R.: *See*—
Schleigh, William R.; and Welter, Thomas R., 5,183,894, Cl. 546-273.000.
Wemhoff, Gregory A.: *See*—
Ligler, Frances S.; Gaber Bruce P.; Kusterbeck, Anne W.; and Wemhoff, Gregory A., 5,183,740, Cl. 435-7.320.
Weng, Lih-Jyh, to Digital Equipment Corporation. Data encoding and demodulation system. 5,184,125, Cl. 341-59.000.
Werle, Peter; Trageser, Martin; and Piana, Hermann, to Degussa AG. Method of doping aqueous solutions with acrolein in biocidally effective concentration. 5,183,944, Cl. 568-465.000.
Werner, Ross: *See*—
Molpus, J. Lane; Levinthal, Adam; and Werner, Ross, 5,184,124, Cl. 341-50.000.
Werthmann, Wilfried, to Standex International GmbH. Method for making a continous metal band having surface impressions. 5,183,551, Cl. 205-70.000.
Westbrook, Scott R., to Digital Equipment Corporation. Structure for controlling impedance and cross-talk in a printed circuit substrate. 5,184,210, Cl. 257-664.000.
Western Atlas International, Inc.: *See*—
Hurtado, Larry; Curto, Rick A.; and Martin, Dallas, 5,183,966, Cl. 474-20.000.
Minette, Daniel C., 5,182,955, Cl. 73-865.600.
Western Rock Bit Company Limited: *See*—
White, Kenneth M., 5,183,123, Cl. 175-228.000.
Westfalia Becorit Industrietechnik GmbH: *See*—
Collet, Erwin; Rathgeber, Roland; and Jerxsen, Udo, 5,182,869, Cl. 34-20.000.
Westinghouse Electric Corp.: *See*—
Amos, Dennis R., 5,183,390, Cl. 416-224.000.
Jackovitz, John F.; Kunkle, Richard P.; and Peterson, Steven H., 5,183,542, Cl. 204-180.100.
Snyder, Thomas S.; Gass, William R.; Worcester, Samuel A.; Ayers, Laura J.; and Boris, Gregory F., 5,183,541, Cl. 204-105.00R.
Snyder, Thomas S.; Jackovitz, John F.; and Ferrari, Harry M., 5,183,548, Cl. 204-299.00R.
Weston, John: *See*—
Phillips, Joseph; Prough, J. Robert; Bilodeau, Victor L.; Greenwood, Brian; Bain, Ronald; and Weston, John, 5,183,536, Cl. 162-57.000.
Wet 'N Wild, Inc.: *See*—
Millay, George D.; and Powell, John D., 5,183,437, Cl. 472-117.000.
Wettermann, Peter H., to International Medical, Inc. Laparoscopic cholangiogram catheter and method of using same. 5,183,470, Cl. 604-281.000.
Weyerhaeuser Company: *See*—
Norlander, Norman E.; and Thompson, Ralph A., 5,183,089, Cl. 144-231.000.
Wheeler, Dale K., to Black & Decker Inc. Method for assembling a stator subassembly. 5,182,848, Cl. 29-596.000.
White Consolidated Industries, Inc.: *See*—
Wright, William R.; and Lehman, Dexter, 5,182,834, Cl. 15-330.000.
White, Kenneth M., to Western Rock Bit Company Limited. Indicating means for a rock bit lubricating system. 5,183,123, Cl. 175-228.000.
Whyatt, Greg A.: *See*—
Treat, Russell L.; Gee, Glendon W.; and Whyatt, Greg A., 5,183,355, Cl. 405-128.000.
Wickersheim, Kenneth A.; and Adams, Bruce E., to Luxtron Corporation. Temperature measurement with combined photo-luminescent and black body sensing techniques. 5,183,338, Cl. 374-131.000.
Wieczorek, Herfried: *See*—
Conrads, Norbert; Schiebel, Ulrich; and Wieczorek, Herfried, 5,184,018, Cl. 250-370.090.
Wiegand, Karl E.; and Hu, Patrick C., to Ethyl Corporation. Silicon compounds in bone treatment. 5,183,061, Cl. 128-897.000.
Wiegel, Dave C.; Bradshaw, Dan A.; and Petravicius, Stasys, to Hughes Aircraft Company. Heel grounding device. 5,184,275, Cl. 361-223.000.
Wierman, Michael J.; and Olsson, Lennart F., to Frigoscandia Food Process Systems AB. Belt conveyor system. 5,183,149, Cl. 198-778.000.
Wiesel, Martin: *See*—
Bruckner, Raimund; Hintzen, Ullrich; Lee, Steve; Schuler, Andreas; and Wiesel, Martin, 5,183,624, Cl. 266-236.000.
Wilcox, Robert. Revolving peanut roasting apparatus. 5,182,981, Cl. 99-333.000.
Wild, Richard: *See*—
Wanninger, Paul; Wild, Richard; Kleinschmidt, Ernst; and Spath, Helmut, 5,183,520, Cl. 149-19.910.
Wiley, Bernard A.: *See*—
Robar, Sheldon C.; Fraser, David W.; and Wiley, Bernard A., 5,182,913, Cl. 60-671.000.
Wilhelm, Richard D.; and Adonakis, Nikolaos A., to General Motors Corporation. Gas pulsation attenuator for automotive air conditioning compressor. 5,183,974, Cl. 181-0.500.
Wilhite, Gerald D., to Jokari/US., Inc. Self-closing bag holder. 5,183,227, Cl. 248-99.000.
Wilk, Peter J. Surgical instrument assembly and apparatus and surgical method. 5,183,033, Cl. 128-20.000.
Wilk, Peter J. Laparoscopic cannula. 5,183,471, Cl. 604-284.000.
Williams, David J.: *See*—
Schildkraut, Jay S.; Young, Ralph H.; Williams, David J.; and Scozzafava, Michael, 5,184,323, Cl. 365-124.000.
Williams, David S., to Boart International, Limited. Button sharpening. 5,182,971, Cl. 76-5.100.
Williams, Fred E., Jr.: *See*—
Ranalletta, Joseph V.; Williams, Fred E., Jr.; and Kanner, Rowland W., 5,183,184, Cl, 222-189.000.
Williams, Richard A.: *See*—
Kline, John F.; Pensavecchia, Frank G.; LaPonsey, Stephen M.; and Williams, Richard A., 5,182,990, Cl. 101-211.000.
Williams, Richard S.: *See*—
Samuel, David N.; and Williams, Richard S., 5,183,848, Cl. 525-57.000.
Williams, Robert; Sirvet, Enn; and Gabel, Richard A., to Sequa Corporation. Apparatus and method for automatically positioning valve

means controlling the application of pressurized air to mandrels on a rotating carrier. 5,183,145, Cl. 198-441.000.
Williams, Thomas W.: *See*—
Connolly, Jerome J.; Barrick, Michael D.; D'Agostino, William L.; Thomas, Gerald F.; and Williams, Thomas W., 5,184,141, Cl. 343-705.000.
Williams, Willard J. Bag and adjustable bag opener frame. 5,183,339, Cl. 383-33.000.
Wilson, James J.: *See*—
Alvarez, Robert J.; Bredesen, Scott E.; Wilson, James J.; Flim, Duane D.; Kniffen, Todd E.; and Schahrer, Clinton O., 5,182,925, Cl. 62-347.000.
Wilson, Wendell G.: *See*—
Robbins, E. Stanley; Robbins, Rodney W.; Watt, Darrel J.; and Wilson, Wendell G., 5,182,948, Cl. 73-429.000.
Windmoller & Holscher: *See*—
Rogge, Dieter, 5,182,992, Cl. 101-363.000.
Wing, Robert E.: *See*—
Carr, Merle E.; Doane, William M.; Wing, Robert E.; and Bagley, Edward B., 5,183,690, Cl. 427-213.310.
Winkel, Jens: *See*—
Asmussen, Erik; Munksgaard, Erik C.; Muller, Michael; Podszun, Wolfgang; and Winkel, Jens, 5,183,832, Cl. 522-84.000.
Winner, James E.: *See*—
Carlo, Louis D.; and Adkins, Joey B., 5,184,023, Cl. 307-10.300.
Winslow, Peter S.: *See*—
Burchill, Gary W.; Gillett, Frank E.; Ramaswamy, Rajan; and Winslow, Peter S., 5,182,877, Cl. 43-54.100.
Winternitz, Paul: *See*—
Suchy, Milos; Winternitz, Paul; and Zeller, Martin, 5,183,492, Cl. 504-243.000.
Winzen International, Inc.: *See*—
Rai, Kula R.; Lew, Thomas M.; and Sinclair, Robert B., 5,184,190, Cl. 356-239.000.
Wirth, Herbert: *See*—
Ineichen, Kurt; Ruedi, Peter; and Wirth, Herbert, 5,184,101, Cl. 335-78.000.
Wisconsin Alumni Research Foundation: *See*—
Triplett, Eric W., 5,183,759, Cl. 435-252.200.
Wiseman, Michael A.: *See*—
Anthony, James R.; and Wiseman, Michael A., 5,182,837, Cl. 24-642.000.
Wishneski, Todd W.; and Margitich, Donald E., to BASF Corporation. Catalysts for extending the shelf life of formulations for producing rigid polyurethane foams. 5,183,583, Cl. 252-182.240.
Wittkopp, Connell A., to Peerless Saw Company, The. Spring beamed shock absorbing circular saw blade body. 5,182,976, Cl. 83-835.000.
Wizani, Wolfgang; Esterbauer, Hermann; Steiner, Walter; and Gomes, Joseph, to Voest-Alpine Industrienlagenbau Gesellschaft m.b.H. Preparation of xylanase by cultivating *Thermomyces lanuginosus* DSM 5826 in a medium containing corn cobs. 5,183,753, Cl. 435-201.000.
Wolber, Jack; Lord, Steve; and Froehling, Dieter, to Eastman Kodak Company. Vaccum drum for different sized media. 5,183,252, Cl. 271-276.000.
Wolf, Michael A.: *See*—
MacArthur, Duncan W.; Wolf, Michael A.; McAtee, James L.; Unruh, Wesley P.; Cucchiara, Alfred L.; and Huchton, Roger L., 5,184,019, Cl. 250-380.000.
Wolf, Robert L.: *See*—
Jordan, Scott C.; Wolf, Robert L.; Fleege, Dennis W.; and Sharp, Jeffrey O., 5,184,278, Cl. 361-346.000.
Wolfe, John R., Jr.: *See*—
Frank, Jimmy L.; Wolfe, John R., Jr.; and Douglas, James R., 5,182,862, Cl. 33-199.00R.
Wolfert, Anthony J., to Shell Research Limited. Process for preparing magnesia having reduced hydration tendency, hydration resistant magnesia, dry mixture for preparing magnesia based castables and magnesia based castable. 5,183,648, Cl. 423-267.000.
Womersley, Christopher: *See*—
Popiel, Irene; Holtemann, Karen D.; Glazer, Itamar; and Womersley, Christopher, 5,183,950, Cl. 800-2.000.
Wong, Henry; Quates, Ronald D.; and Chen, Lien-Yan, to FMC Corporation. Metal-to-metal wellhead seal for rough casing. 5,183,268, Cl. 277-27.000.
Wood, Michael I.: *See*—
Kerry, Stephen; Restall, James E., deceased; and Wood, Michael I., 5,183,635, Cl. 420-420.000.
Wood, Michael R.; Bair, Keith A.; Chen, Fu; and Vasconcellos, Stephen R., to Betz Laboratories, Inc. Cationic polymers for sludge dewatering. 5,183,576, Cl. 210-734.000.
Woodall, Bobbie L.; Nichols, Charles R.; and Nichols, Thelma E. Protective boot. 5,182,956, Cl. 74-18.200.
Woodson, Herbert H.: *See*—
Weldon, William F.; Woodson, Herbert H.; and Long, Glen C., 5,183,957, Cl. 89-8.000.
Woodward, Keile J. Hearth comforter. 5,183,030, Cl. 126-500.000.
Wooster Brush Company, The: *See*—
Jacobs, William A.; and Camp, William P., Jr., 5,182,840, Cl. 492-24.000.
Worcester, Samuel A.: *See*—
Snyder, Thomas S.; Gass, William R.; Worcester, Samuel A.; Ayers, Laura J.; and Boris, Gregory F., 5,183,541, Cl. 204-105.00R.
Worthington, Norman A., III: *See*—
Monte, Charles; Worthington, Norman A., III; Mandel, Jonathan; and Davenport, Gary F., 5,183,398, Cl. 434-227.000.
Worthington, Thomas K.: *See*—
Gallagher, William J.; and Worthington, Thomas K., 5,183,970, Cl. 174-125.100.
Wouters, Wouter: *See*—
Van Wijngaarden, Ineke; Hamminga, Derk; and Wouters, Wouter, 5,183,822, Cl. 514-305.000.
Wright, Graham L., to Thorn Emi plc. Apparatus for projecting light onto a surface having reflector means for improving the brightness of the image. 5,184,238, Cl. 359-70.000.
Wright, Raymond E.: *See*—
Wright, Scott M.; and Wright, Raymond E., 5,184,009, Cl. 250-227.110.
Wright, Roger G.; Lindbloom, Leon J.; and Midlam, Lewis C., to SCM Consultants, Inc. Process for in situ recycling of electrical power distribution switchyard aggregate surfacing. 5,183,354, Cl. 404-81.000.
Wright, Scott M.; and Wright, Raymond E. Optical attenuator movement detection system. 5,184,009, Cl. 250-227.110.
Wright, William R.; and Lehman, Dexter, to White Consolidated Industries, Inc. Vacuum pump-out control valve for wet/dry vacuum cleaner. 5,182,834, Cl. 15-330.000.
Wu, Ching-Hsong: *See*—
Potter, Timothy J.; Tamor, Michael A.; and Wu, Ching-Hsong, 5,183,529, Cl. 156-613.000.
Wu, William: *See*—
Landry, Christian C.; Kuo, Jause; Chen, Ching-Shi; and Wu, William, 5,183,321, Cl. 312-250.000.
Wuertz, Kenneth L.: *See*—
Huggett, Colin E.; and Wuertz, Kenneth L., 5,183,387, Cl. 416-147.000.
Wynn, Robert L.: *See*—
Tso, Chung C.; and Wynn, Robert L., 5,183,931, Cl. 560-241.000.
Xanthakos, Dimitrios; and Sevastakis, Gus. Apparatus for supporting and moving needles and trocars for penetrating the abdomen. 5,183,465, Cl. 604-108.000.
Xerox Corporation: *See*—
Ciancioni, Michael S., 5,184,226, Cl. 358-296.000.
Hubble, Fred F., III; Mitchell, John M., Jr.; and Martin, James P., 5,184,011, Cl. 250-231.140.
Rasmussen, David L.; Farrell, Michael E.; and Ortiz, Pedro R., 5,184,185, Cl. 355-308.000.
Weber, Joseph R.; and Bilak, Ronald E., 5,183,544, Cl. 204-252.000.
Xoma Corporation: *See*—
Carroll, Stephen F.; and Goff, Dane A., 5,183,904, Cl. 549-68.000.
Y.M. Golf Course Equipment Co., Ltd.: *See*—
Watanabe, Hayataro, 5,183,120, Cl. 172-21.000.
Yada, Toshio: *See*—
Tsutsumi, Michinari; Endo, Atsushi; and Yada, Toshio, 5,183,533, Cl. 156-656.000.
Yagi, Noboru: *See*—
Hara, Toshiro; Sato, Yoshimasa; and Yagi, Noboru, 5,184,300, Cl. 364-431.100.
Yagi, Sakai: *See*—
Yamanashi, Makoto; Jinno, Keishi; Watanabe, Tamio; Endo, Takayoshi; and Yagi, Sakai, 5,183,418, Cl. 439-752.000.
Yagi, Shigeru; Fukuda, Yuzuru; Higashi, Taketoshi; and Yokoi, Masaki, to Fuji Xerox Co., Ltd. Electrophotographic material having an amorphous silicon photoconductive layer, an intermediate layer and a surface layer. 5,183,719, Cl. 430-66.000.
Yagi, Toshihiko, to Konica Corporation. Silver halide photographic light-sensitive material improved in gradation, processing stability and other properties. 5,183,730, Cl. 430-503.000.
Yagyu, Masayoshi: *See*—
Masuda, Noboru; Kamikawai, Ryotaro; Yagyu, Masayoshi; Yamamoto, Masakazu; Itoh, Hiroyuki; and Saito, Tatsuya, 5,184,027, Cl. 307-269.000.
Yamada, Hironori: *See*—
Yoshida, Makoto; Yamada, Hironori; Takahashi, Nobuo; and Fujimoto, Kazushi, 5,183,708, Cl. 428-373.000.
Yamada, Kenzo: *See*—
Ariyama, Tatsuro; Isozaki, Shinichi; Yamada, Kenzo; Matsuo, Masahiro; and Kanatani, Genji, 5,183,495, Cl. 75-379.000.
Yamada, Kiichi: *See*—
Ito, Masayoshi; Yamada, Kiichi; Otake, Katsunori; Miyata, Yasunobu; Narita, Tomohiro; and Nishikawa, Susumu, 5,183,128, Cl. 180-197.000.
Yamada, Masakatsu: *See*—
Ono, Takeshi; Yoshida, Takehiro; Wada, Satoshi; Takeda, Tomoyuki; Kondo, Masaya; Kobayashi, Makoto; Kato, Takahiro; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Yamada, Masakatsu, 5,184,151, Cl. 346-76.0PH.
Yamada, Minoru: *See*—
Kose, Junichi; Sugiyama, Akira; Yamada, Minoru; and Nozaki, Ryoei, 5,184,164, Cl. 354-298.000.
Sasaki, Ichiro; Oshima, Junji; and Yamada, Minoru, 5,183,858, Cl. 525-308.000.
Sasaki, Ichiro; Oshima, Junji; and Yamada, Minoru, 5,183,859, Cl. 525-309.000.
Yamada, Yoshihiko: *See*—
Morita, Shoji; Yamada, Yoshihiko; and Hara, Seinosuke, 5,183,015, Cl. 123-90.160.

VOL 1147 ISS 1 FE 2 1993 UMI

Yamadai, Tsutomu: *See*—
Onishi, Shigeo; Yamadai, Tsutomu; and Ishihara, Kazuya, 5,183,782, Cl. 437-192.000.

Yamaguchi, Akira; Uno, Masaru; Sekikawa, Norio; Arai, Fumio; and Matsuzaki, Kenji, to Sumitomo Seika Chemicals Co., Ltd. Process for removal of water in raw material mixed gas. 5,183,484, Cl. 55-34.000.

Yamaguchi, Seiji; Moro, Masaru; Kajikawa, Saburou; Kimura, Masahiro; Okubo, Hideo; Matsuyo, Tadashi; and Kawakami, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Vacuum cleaner. 5,182,833, Cl. 15-319.000.

Yamaguchi, Soichiro; Matsuda, Koichi; and Goto, Hideo, to Ube Cycon, Ltd. Polyphenylene ether composition. 5,183,849, Cl. 525-68.000.

Yamaguchi, Toshiaki: *See*—
Harada, Isao; Hokonohara, Hisashi; and Yamaguchi, Toshiaki, 5,183,647, Cl. 423-239.000.
Matsuoka, Fumio; Negoro, Kouichi; Sugimoto, Takeshi; Yamaguchi, Toshiaki; and Yamashita, Tetsuya, 5,182,920, Cl. 62-206.000.

Yamaha Corporation: *See*—
Tomita, Nobuaki; and Suzuki, Kunio, 5,182,846, Cl. 29-527.200.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Ito, Hideaki; and Miyamoto, Masanori, 5,183,013, Cl. 123-48.00R.
Suhara, Hidenori, 5,183,019, Cl. 123-339.000.

Yamamoto, Katsuya: *See*—
Kishi, Hiroyuki; Kimura, Hitoshi; Yamamoto, Katsuya; Tamura, Yoshinobu; Sakauchi, Tsuneo; Nagaoka, ;Masahide; and Tsuchiya, Yasuyu, 5,183,836, Cl. 523-404.000.

Yamamoto, Kazumi; and Sugasawa, Masayuki, to Ikegami Tsushinki Co., Ltd. Circuit for producing brightness signal from output signal of solid state image pick-up apparatus using spatial pixel shift. 5,184,212, Cl. 358-39.000.

Yamamoto, Koichi: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Yamamoto, Koichi; and Kato, Tohru, 5,183,637, Cl. 420-479.000.

Yamamoto, Masahiro: *See*—
Magara, Takuji; and Yamamoto, Masahiro, 5,183,986, Cl. 219-69.120.

Yamamoto, Masakazu: *See*—
Masuda, Noboru; Kamikawai, Ryotaro; Yagyu, Masayoshi; Yamamoto, Masakazu; Itoh, Hiroyuki; and Saito, Tatsuya, 5,184,027, Cl. 307-269.000.

Yamamoto, Masao: *See*—
Masaki, Mitsuo; Takeda, Hiromitsu; Kamishiro, Toshiro; and Yamamoto, Masao, 5,183,811, Cl. 514-79.000.

Yamamoto, Mitsunori, to Olympus Optical Co., Ltd. Optical scanning apparatus with axis deviation correction. 5,184,012, Cl. 250-234.000.

Yamamoto, Reijko: *See*—
Tanaka, Hiroshi; Kominato, Kaichiro; Yoshioka, Takeo; Iguchi, Hiroshi; Hirano, Shin-ichi; Okajima, Yasuo; Yamamoto, Reijko; Shirai, Masataka; Nishida, Hiroshi; Tone, Hiroshi; and Okamoto, Rokuro, 5,183,883, Cl. 563-6.400.

Yamanashi, Makoto; Jinno, Keishi; Watanabe, Tamio; Endo, Takayoshi; and Yagi, Sakai, to Yazaki Corporation. Connector. 5,183,418, Cl. 439-752.000.

Yamanobe, Masato, to Canon Kabushiki Kaisha. Thin film semiconductor device with particular grain size. 5,184,200, Cl. 257-53.000.

Yamasa Shoyu Co., Ltd.: *See*—
Sakata, Shinji; Miyashita, Takanori; Kondo, Kazuhiko; Sakai, Atsushi; Shibata, Toshiyuki; and Ogawa, Takayuki, 5,183,882, Cl. 514-49.000.

Yamasaki, Haruki: *See*—
Kitajima, Eiji; Oyama, Takashi; Maruden, Eiji; Teraoka, Hirokazu; Yamasaki, Haruki; and Shimizu, Susumu, 5,183,603, Cl. 264-29.200.

Yamasaki, Komei; and Keisuke, Funaki, to Idemitsu Kosan Co., Ltd. Styrene polymer molding material and process for preparing same. 5,183,871, Cl. 526-347.200.

Yamasaki, Yoshikiyo; and Fujimoto, Shinichiro, to Kabushiki Kaisha Japan Health; and Kabushiki Kaisha Fuji Iryoki. Portable vibration finger pressure massager. 5,183,034, Cl. 128-36.000.

Yamashiro, Patsy K. Unidirectional fluid flow resisted exercise device with inertial and elastic mechanical loading. 5,183,453, Cl. 482-112.000.

Yamashita, Kohei: *See*—
Kaneko, Masahiro; Takemura, Masashi; and Yamashita, Kohei, 5,184,254, Cl. 360-10.200.

Yamashita, Masataka: *See*—
Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Iwaki, Takashi; Mori, Shosei; and Shinjo, Kenji, 5,183,586, Cl. 252-299.610.

Yamashita, Ryuzo. Apparatus for measuring car frame. 5,182,864, Cl. 33-288.000.

Yamashita, Shuji, to NEC Corporation. Supervisory circuit for optical repeater. 5,184,242, Cl. 359-177.000.

Yamashita, Tetsuya: *See*—
Matsuoka, Fumio; Negoro, Kouichi; Sugimoto, Takeshi; Yamaguchi, Toshiaki; and Yamashita, Tetsuya, 5,182,920, Cl. 62-206.000.

Yamazaki, Fumio: *See*—
Shiratori, Tetsuya; Yamazaki, Fumio; and Taniguchi, Seiichi, 5,183,425, Cl. 445-29.000.

Yamazaki, Iwao: *See*—
Notoya, Kohei; Yoshida, Keiji; and Yamazaki, Iwao, 5,183,570, Cl. 210-641.000.

Yamazaki, Katsunori, to Seiko Epson Corporation. Liquid crystal display apparatus and method of driving same. 5,184,118, Cl. 340-784.000.

Yamazaki Mazak Corporation: *See*—
Sato, Takeshi; Tashiro, Minoru; and Miyakawa, Naoomi, 5,183,993, Cl. 219-121.820.

Yamazaki, Mitsuo: *See*—
Ichimura, Nobuo; Miyamoto, Yauso; and Yamazaki, Mitsuo, 5,183,592, Cl. 252-512.000.

Yamazaki, Shumpei, to Semiconductor Energy Laboratory Co., Ltd. Diamond film deposition by ECR CVD using a catalyst gas. 5,183,685, Cl. 427-571.000.

Yamazaki, Shunpei; Hayashi, Shigenori; Inujima, Takashi; and Hirose, Naoki, to Semiconductor Energy Laboratory Co., Ltd. Photo CVD apparatus with a glow discharge system. 5,183,511, Cl. 118-723.000.

Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Method of manufacturing diamond thermistors. 5,183,530, Cl. 156-643.000.

Yan, Wen-Jyh, to Industrial Technology Research Institute. Solar dehumidifier. 5,182,921, Cl. 62-235.100.

Yanagida, Masato: *See*—
Hayashi, Keisuke; Ishigaki, Kouji; Nakahara, Kazuyuki; Yanagida, Masato; and Kishi, Fumio, 5,184,184, Cl. 355-296.000.

Yanagisawa, Leiichi: *See*—
Hayakawa, Shigeyuki; and Yanagisawa, Leiichi, 5,184,031, Cl. 307-296.300.

Yanagisawa, Ryogo, to Matsushita Electric Industrial Co., Ltd. Wipe generator having start position and width controller. 5,184,222, Cl. 358-183.000.

Yao, Kenji: *See*—
Mihara, Teruyoshi; Matsushita, Tsutomu; Yao, Kenji; Hoshi, Masakatsu; Enokido, Yutaka; and Hirota, Yukitsugu, 5,184,204, Cl. 357-629.000.

Yarbrough, Roy L.: *See*—
Ohannes, James R.; Clukey, Stephen W.; Haacke, Ernest D.; and Yarbrough, Roy L., 5,184,034, Cl. 307-473.000.

Yasukawa, Takuji: *See*—
Nishide, Tsutomu; Yasumura, Daisuke; Nakajima, Yoshinobu; Onodera, Akiko; Yasukawa, Takuji; Kokumai, Hirokazu; Umeda, Tomoshige; Nomura, Seiji; and Mori, Hideki, 5,183,750, Cl. 435-134.000.

Yasukawa, Yoshio: *See*—
Totoki, Toshio; Shigemi, Hirotake; and Yasukawa, Yoshio, 5,183,562, Cl. 210-85.000.

Yasumatsuya, Noboru: *See*—
Mitani, Katsuaki; Matsumura, Toshiaki; and Yasumatsuya, Noboru, 5,184,224, Cl. 358-231.000.

Yasumura, Daisuke: *See*—
Nishide, Tsutomu; Yasumura, Daisuke; Nakajima, Yoshinobu; Onodera, Akiko; Yasukawa, Takuji; Kokumai, Hirokazu; Umeda, Tomoshige; Nomura, Seiji; and Mori, Hideki, 5,183,750, Cl. 435-134.000.

Yasumura, Takaaki; Kiyomiya, Teruo; Mizuno, Yasutoshi; and Matsui, Kazuo, to Fuji Electrochemical Co., Ltd. Permanent magnet composition. 5,183,517, Cl. 148-303.000.

Yatsuka, Takeshi: *See*—
Nakamura, Masanori; Hirakouchi, Hiroshi; Yatsuka, Takeshi; Kadowaki, Nobuo; and Endoh, Hiroshi, 5,183,863, Cl. 525-438.000.

Yazaki Corporation: *See*—
Hatagishi, Yuji, 5,183,408, Cl. 439-147.000.
Inaba, Shigemitsu; and Matsumoto, Mitsuhiro, 5,183,410, Cl. 439-489.000.
Yamanashi, Makoto; Jinno, Keishi; Watanabe, Tamio; Endo, Takayoshi; and Yagi, Sakai, 5,183,418, Cl. 439-752.000.

Yeh, Charles R.; and Huldin, Donald H., to Acuderm, Inc. Elliptical biopsy punch. 5,183,053, Cl. 128-754.000.

Yeh, Li-Tain; Kenney, Malcolm E.; Bokerman, Gary N.; Cannady, John P.; and Marko, Ollie W., to Dow Corning Corporation; and Case Western Reserve University. Alkoxysilanes and oligomeric alkoxysiloxanes by a silicate-acid route. 5,183,914, Cl. 556-467.000.

Yin, Mercury, to Foxconn International, Inc. Connector contact and method of manufacture. 5,183,421, Cl. 439-857.000.

Yoda, Kaneo: *See*—
Koga, Yoshiro; Gomi, Akihiro; Miyasaka, Takashi; Miyazawa, Yasunaga; Endo, Kenichi; Shinozaki, Junichiro; Yoda, Kaneo; Ichikawa, Takashi; Miyasaka, Hitoshi; and Kaburagi, Chiharu, 5,184,257, Cl. 360-77.050.

Yoda, Shinji: *See*—
Aso, Toshiyuki; and Yoda, Shinji, 5,183,987, Cl. 219-69.120.

Yokoi, Masaki: *See*—
Yagi, Shigeru; Fukuda, Yuzuru; Higashi, Taketoshi; and Yokoi, Masaki, 5,183,719, Cl. 430-66 000.

Yokoyama, Minoru: *See*—
Ono, Takeshi; Yoshida, Takehiro; Wada, Satoshi; Takeda, Tomoyuki; Kondo, Masaya; Kobayashi, Makoto; Kato, Takahiro; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Yamada, Masakatsu, 5,184,151, Cl. 346-76.0PH.

Yokoyama, Shigeki: *See*—
Naito, Hideki; Yokoyama, Shigeki; and Tsukahara, Jiro, 5,183,729, Cl. 430-385.000.

Yonekawa, Masami: *See*—
Unno, Yasuyuki; Orii, Seiji; and Yonekawa, Masami, 5,184,176, Cl. 355-52.000.

Yonekubo, Shuji; Kitahara, Tsuyoshi; Furuta, Tatsuo; Katakura, Takahiro; and Serizawa, Naomi, to Seiko Epson Corporation. Ink jet print head. 5,184,155, Cl. 346-140.00R.

Yoshida, Haruo: *See*—
Maruyama, Satoshi; Minorikawa, Naoki; Arakawa, Tautomu; Yoshida, Haruo; Tagoshi, Hirotaka; and Abe, Kazuto, 5,183,917, Cl. 558-251.000.

Yoshida, Hideyuki: *See*—
Yoshinaka, Minoru; Asakura, Eizo; Oku, Mitsumasa; Kitano, Motoi; Nakatani, Yoshio; Yoshida, Hideyuki; Hatta, Toshiya; and Nakatani, Seiichi, 5,183,594, Cl. 252-518.000.

Yoshida, Keiji: *See*—
Notoya, Kohei; Yoshida, Keiji; and Yamazaki, Iwao, 5,183,570, Cl. 210-641.000.

Yoshida, Makoto; Yamada, Hironori; Takahashi, Nobuo; and Fujimoto, Kazushi, to Teijin Limited. Cushion structure and process for producing the same. 5,183,708, Cl. 428-373.000.

Yoshida, Makoto: *See*—
Akahoshi, Sumihisa; Akimura, Hitoshi; Nakabayashi, Isao; Ishii, Masami; Ohi, Tamio; and Yoshida, Makoto, 5,183,591, Cl. 252-503.000.

Yoshida, Minoru: *See*—
Takamura, Susumu; Nakamura, Takashi; Okawauchi, Makoto; Toda, Harumi; Kanki, Ichiro; Yoshida, Minoru; Imoto, Toshiyuki; Negayama, Naomi; and Oka, Koichi, 5,183,045, Cl. 128-653.200.

Yoshida, Takehiro: *See*—
Ono, Takeshi; Yoshida, Takehiro; Wada, Satoshi; Takeda, Tomoyuki; Kondo, Masaya; Kobayashi, Makoto; Kato, Takahiro; Awai, Takashi; Ishida, Yasushi; Tomoda, Akihiro; Yokoyama, Minoru; and Yamada, Masakatsu, 5,184,151, Cl. 346-76.0PH.

Yoshii, Shinichi: *See*—
Miyauchi, Yuji; Yoshii, Shinichi; and Kanamori, Tatsuru, 5,184,252, Cl. 359-715.000.

Yoshiki Industrial Co., Ltd.: *See*—
Yoshizawa, Yasuo; and Kato, Mitsuo, 5,182,967, Cl. 74-834.000.

Yoshimori, Naoki, to Canare Electric Co., Ltd. Cable stripper. 5,182,859, Cl. 30-90.600.

Yoshimoto, Hataaki: *See*—
Koyama, Toshiya; Matsumoto, Yukio; Yoshimoto, Hataaki; and Ito, Katsuhiro, 5,183,585, Cl. 252-299.010.

Yoshimoto, Kyosuke: *See*—
Shimoda, Kyouzi; and Yoshimoto, Kyosuke, 5,184,338, Cl. 369-44.250.

Yoshinaga, Takashi, to Murata Manufacturing Co., Ltd. Piezoelectric resonator. 5,184,043, Cl. 310-320.000.

Yoshinaka, Minoru; Asakura, Eizo; Oku, Mitsumasa; Kitano, Motoi; Nakatani, Yoshio; Yoshida, Hideyuki; Hatta, Toshiya; and Nakatani, Seiichi, to Matsushita Electric Industrial Co., Ltd. Conductive resin composition containing zinc oxide whiskers having a tetrapod structure. 5,183,594, Cl. 252-518.000.

Yoshioka, Nobuo: *See*—
Harada, Naoto; Sekine, Shuji; Furuya, Takeo; and Yoshioka, Nobuo, 5,184,050, Cl. 318-467.000.

Yoshioka, Takeo: *See*—
Tanaka, Hiroshi; Kominato, Kaichiro; Yoshioka, Takeo; Iguchi, Hiroshi; Hirano, Shin-ichi; Okajima, Yasuo; Yamamoto, Reijko; Shirai, Masataka; Nishida, Hiroshi; Tone, Hiroshi; and Okamoto, Rokuro, 5,183,883, Cl. 563-6.400.

Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Sakata, Shinji; Miyashita, Takanori; Kondo, Kazuhiko; Sakai, Atsushi; Shibata, Toshiyuki; and Ogawa, Takayuki, 5,183,882, Cl. 514-49.000.

Yoshizawa, Yasuo; and Kato, Mitsuo, to Yoshiki Industrial Co., Ltd. Lever apparatus having a freely movable fulcrum and mechanical apparatus using the same. 5,182,967, Cl. 74-834.000.

Yosomiya, Ryutoku; Hirata, Mistutoshi; Morimoto, Kiyotaka; Takenishi, Soichiro; and Marutsuka, Toshinori, to Nisshinbo Industries, Inc. Method of producing polymer article having metallized surface. 5,183,611, Cl. 264-129.000.

Young, Margaret B. Athletic pants. 5,182,815, Cl. 2-406.000.

Young, Ralph H.: *See*—
Schildkraut, Jay S.; Young, Ralph H.; Williams, David J.; and Scozzafava, Michael, 5,184,323, Cl. 365-124.000.

Yu, Jackson. Storage box for assortment of articles. 5,183,177, Cl. 220-523.000.

Yu, Jason, to J. A. L. Taiwan Ltd. Coaxial cable. 5,183,411, Cl. 439-578.000.

Yuasa, Satoshi; and Tomida, Yoshinori, to Canon Kabushiki Kaisha. Polymer gel manufacturing methods. 5,183,879, Cl. 528-503.000.

Yukihiro, Makoto; and Katagiri, Mamoru, to Japan Steel Works, Ltd., The; and Matsushita Electric Industrial Co., Ltd. Method of both single and double injection molding. 5,183,621, Cl. 264-297.200.

Yukiwa Seiko Kabushikikaisya: *See*—
Sakamaki, Kazuo, 5,183,274, Cl. 279-62.000.

Yumoto, Toshiyuki; Ohsono, Kouhei; Kanda, Masahiro; and Matsuda, Takahiro, to Honda Giken Kogyo Kabushiki Kaisha. Control system for continuously variable transmission. 5,183,439, Cl. 474-28.000.

Yun, Ki-bo, to Samsung Electronics Co., Ltd. Double band frequency converting system. 5,184,084, Cl. 328-15.000.

Yuyama, Junpei; Geng, Qiquan; Chihara, Kazunori; Minami, Hirofumi; and Goto, Eiichi, to Research Development Corporation; Yuyama, Junpei; and Geng, Qiquan, a part interest. Apparatus for measuring weak static magnetic field using superconduction strips and a SQUID magnetometer. 5,184,072, Cl. 324-248.000.

Yves Saint Laurent Parfums: *See*—
Salerno, Martine S.; Mounier, Remy; and Breda, Bernard, 5,183,588, Cl. 252-312.000.

Zahir, Abdul-Cader: *See*—
Kramer, Andreas; Brunner, Rudolf; and Zahir, Abdul-Cader, 5,183,869, Cl. 526-262.000.

Zahn, Markus: *See*—
Zakheim, Howard; Clinton, Peter M.; Goldschneider, James D.; Kasmer, Christopher A.; Zahn, Markus; and Hoffmeyer, Charles L., 5,183,214, Cl. 241-30.000.

Zak, James L.; and Smith, Richard E., to National Gypsum Company. Humectants in joint compound containers. 5,183,152, Cl. 206-524.400.

Zakaryan, Ara H.; Newallis, Peter E.; and Tice, Mark A., to Miles Inc. Process for producing tri-N-butylphosphorotrithioite. 5,183,916, Cl. 558-95.000.

Zakheim, Howard; Clinton, Peter M.; Goldschneider, James D.; Kasmer, Christopher A.; Zahn, Markus; and Hoffmeyer, Charles L., to Du Pont de Nemours, E. I., and Company. Process of magnetic media milling. 5,183,214, Cl. 241-30.000.

Zambon Group S.p.A.: *See*—
Giordano, Claudio; and Paiocchi, Maurizio, 5,183,935, Cl. 562-469.000.

Zeller, Gregor; and Randelzhofer, Konrad, to Petri, A.G. Housing for protective air bar retaining systems of automotive vehicles. 5,183,289, Cl. 280-743.000.

Zeller, Martin: *See*—
Suchy, Milos; Winternitz, Paul; and Zeller, Martin, 5,183,492, Cl. 504-243.000.

Zellmer, Volker: *See*—
Mohring, Volker; and Zellmer, Volker, 5,183,830, Cl. 521-107.000.

Zenith Data Systems Corporation: *See*—
Gauthier, Lloyd W., 5,184,117, Cl. 340-784.000.

Zenith Electronics Corporation: *See*—
Srivastava, Gopal K., 5,184,091, Cl. 331-10.000.

Zhang, Qiyao: *See*—
Jacobson, Allan J.; Lai, Wen-Yih F.; Matturro, Michael G.; Deckman, Harry W.; McHenry, James A.; Reynolds, Robert P.; and Zhang, Qiyao, 5,183,788, Cl. 502-4.000.

Zhang, Zhong M. Modified flux composition for cement. 5,183,506, Cl. 106-739.000.

Zhu, Yang: *See*—
Erdman, Arthur G.; Rekow, Elizabeth D.; Riley, Donald R.; Klamecki, Barney; Zhu, Yang; and Ahn, Jeong-Ho, 5,184,306, Cl. 364-474.050.

Zilley, Eric L.: *See*—
Duane, Diana C.; Zilley, Eric L.; and Jordan, Robert C., 5,183,972, Cl. 174-251.000.

Zimmermann, Heinz; and Manteuffel, Hans J. M. Apparatus and process for treating water. 5,183,565, Cl. 210-269.000.

Zimpro Passavant Environmental Systems, Inc.: *See*—
Lehmann, Richard W., 5,183,577, Cl. 210-761.000.

Zink, Deborah L.: *See*—
Bills, Gerald F.; Hensens, Otto D.; Koupal, Lawrence; Lingham, Russell B.; Ondeyka, John G.; and Zink, Deborah L., 5,183,826, Cl. 514-411.000.

Zobel, Don W., to Motorola, Inc. Current compensating charge pump circuit. 5,184,028, Cl. 307-270.000.

Zoller, Robert A., to Standard Products Company, The. Decorative trim attaching method. 5,183,303, Cl. 293-120.000.

Zuccaro, Dante C.: *See*—
Pelachyk, Richard; Satterlee, Lowell W.; Zuccaro, Dante C.; and Farris, Timothy M., 5,183,302, Cl. 292-336.300.

Zuckerman, Andrew M., to Different Dimensions, Inc. Foldable garment display hanger. 5,183,190, Cl. 223-96.000.

Zushi, Takayasu, to Takata Corporation. Molding method of air bag cover. 5,183,615, Cl. 264-219.000.

3D Systems, Inc.: *See*—
Hull, Charles W.; Spence, Stuart T.; Albert, David J.; Smalley, Dennis R.; Harlow, Richard A.; Stinebaugh, Phil; Tarnoff, Harry L.; Nguyen, Hop D.; Lewis, Charles W.; Vorgitch, Tom J.; and Remba, David Z., 5,184,307, Cl. 364-474.240.

VOL
1147
ISS
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 2ND DAY OF FEBRUARY, 1993

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Beardsley, Duane: *See—*
Romick, Jerome M.; and Beardsley, Duane, Re. 34,171, Cl. 312-257.100.

Gwinn, J. S.; and Miller, Michael J., to Phillips Petroleum Company. Continuous mixer. Re. 34,172, Cl. 366-85.000.

Kerber, Susan M., to Midwest Research Technologies, Inc. Multi-layer wear resistant coatings. Re. 34,173, Cl. 428-610.000.

Midwest Research Technologies, Inc.: *See—*
Kerber, Susan M., Re. 34,173, Cl. 428-610.000.

Miller, Michael J.: *See—*
Gwinn, J. S.; and Miller, Michael J., Re. 34,172, Cl. 366-85.000.

Phillips Petroleum Company: *See—*
Gwinn, J. S.; and Miller, Michael J., Re. 34,172, Cl. 366-85.000.

Romick, Jerome M.; and Beardsley, Duane. Medication carts and cassettes. Re. 34,171, Cl. 312-257.100.

Stahlecker, Fritz; and Stahlecker, Hans. Spinning unit piecing process for producing feed spools. Re. 34,170, Cl. 57-261.000.

Stahlecker, Hans: *See—*
Stahlecker, Fritz; and Stahlecker, Hans, Re. 34,170, Cl. 57-261.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Braun Aktiengesellschaft: *See—*
Kamprath, Karl-Heinz, B1 4,922,464, Cl. 366-349.000.

Fujitsu Limited: *See—*
Iino, Hideyuki; and Hida, Hidenori, B1 4,904,883, Cl. 307-272.300.

Fujitsu Microcomputer Systems Limited: *See—*
Iino, Hideyuki; and Hida, Hidenori, B1 4,904,883, Cl. 307-272.300.

Hida, Hidenori: *See—*
Iino, Hideyuki; and Hida, Hidenori, B1 4,904,883, Cl. 307-272.300.

Iino, Hideyuki; and Hida, Hidenori, to Fujitsu Limited; and Fujitsu Microcomputer Systems Limited. Semiconductor integrated circuit having a DC test function. B1 4,904,883, 2-2-93, Cl. 307-272.300.

Jarrett, Charles C., to Nutri-Fruit, Inc. Beverage dispensing system. B1 5,056,686, 2-2-93, Cl. 222-129.200.

Kamprath, Karl-Heinz, to Braun Aktiengesellschaft. Portable mixer for processing food. B1 4,922,464, 2-2-93, Cl. 366-349.000.

Le, Quynh-Giao X.: *See—*
Sanwo, Ikuo J.; Milby, Gregory H.; and Le, Quynh-Giao X., B1 5,030,857, Cl. 307-475.000.

Milby, Gregory H.: *See—*
Sanwo, Ikuo J.; Milby, Gregory H.; and Le, Quynh-Giao X., B1 5,030,857, Cl. 307-475.000.

NCR Corporation: *See—*
Sanwo, Ikuo J.; Milby, Gregory H.; and Le, Quynh-Giao X., B1 5,030,857, Cl. 307-475.000.

Nutri-Fruit, Inc.: *See—*
Jarrett, Charles C., B1 5,056,686, Cl. 222-129.200.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Shibata, Yasuhiko, B1 5,036,804, Cl. 123-41.740.

Sanwo, Ikuo J.; Milby, Gregory H.; and Le, Quynh-Giao X., to NCR Corporation. High speed digital computer data transfer system having reduced bus state transition time. B1 5,030,857, 2-2-93, Cl. 307-475.000.

Shibata, Yasuhiko, to Sanshin Kogyo Kabushiki Kaisha. Cooling system for four stroke outboard motor. B1 5,036,804, 2-2-93, Cl. 123-41.740.

LIST OF PLANT PATENTEES

California Florida Plant Co., L.P.: *See—*
Jessel, Walter H., Jr., 8,122, Cl. 70.500.
Jessel, Walter H., Jr., 8,123, Cl. 72.100.

Fell, David. Spathiphyllum 'Leprechaun' . 8,130, 2-2-93, Cl. 88.100.

Fides Beheer B.V.: *See—*
van der Knapp, Jacques C. M., 8,124, Cl. 82.400.

Fruehwirth, Franz, to Paul Ecke Ranch, Inc. Poinsettia plant named 268 White. 8,125, 2-2-93, Cl. 86.200.

Fruehwirth, Franz, to Paul Ecke Ranch, Inc. Poinsettia plant named C-27 White. 8,126, 2-2-93, Cl. 86.200.

Geo. 1. Ball, Inc.: *See—*
Trees, Scott C., 8,128, Cl. 87.120.

Georgusis, James J., to Oglesby Plant Laboratories, Inc. Anthurium plant 'Georgusis White Number 1'. 8,129, 2-2-93, Cl. 88.100.

Georgusis, James J., to Oglesby Plant Laboratories Inc. Anthurium 'Georgusis Pink Number 1'. 8,131, 2-2-93, Cl. 88.100.

Holtkamp, Reinhold, Sr. African violet plant named Vienna. 8,120, 2-2-93, Cl. 69.200.

Holtkamp, Reinhold, Sr. African violet plant named Little Azurite. 8,121, 2-2-93, Cl. 69.200.

Jessel, Walter H., Jr., to California Florida Plant Co., L.P. Carnation plant named CFPC Amethyst. 8,122, 2-2-93, Cl. 70.500.

Jessel, Walter H., Jr., to California Florida Plant Co., L.P. Carnation plant named CFPC Cherie. 8,123, 2-2-93, Cl. 72.100.

Man, Jan. Poinsettia plant 'Goldfinger'. 8,127, 2-2-93, Cl. 86.400.

Oglesby Plant Laboratories, Inc.: *See—*
Georgusis, James J., 8,129, Cl. 88.100.
Georgusis, James J., 8,131, Cl. 88.100.

Paul Ecke Ranch, Inc.: *See—*
Fruehwirth, Franz, 8,125, Cl. 86.200.
Fruehwirth, Franz, 8,126, Cl. 86.200.

Trees, Scott C., to Geo. 1. Ball, Inc. Variety of Geranium named Hot Pink Satisfaction. 8,128, 2-2-93, Cl. 87.120.

van der Knapp, Jacques C. M., to Fides Beheer B.V. Chrysanthemum plant — Bayfrank cultivar. 8,124, 2-2-93, Cl. 82.400.

LIST OF STATUTORY INVENTION REGISTRATIONS

APPLICANTS TO WHOM

STATUTORY INVENTION REGISTRATIONS WERE ISSUED ON THE 2ND DAY OF FEBRUARY, 1993

Adkins, James Y.: *See—*
Bridges, William P.; Adkins, James Y.; and Leas, Steven W., H1133, Cl. 244-110.00C.

American Telephone and Telegraph Company: *See—*
Easter, William G.; and Shanaman, Richard H., III, H1137, Cl. 437-62.000.

Berggren, Mark A.: *See—*
Gelles, Richard; and Berggren, Mark A., H1141, Cl. 524-68.000.

Bloom, Ira D.; Poeppel, Roger B.; and Flandermeyer, Brian K., to United States of America, Energy. Processing method for superconducting ceramics. H1138, 2-2-93, Cl. 505-1.000.

Bridges, William P.; Adkins, James Y.; and Leas, Steven W., to United States of America, Air Force. Aircraft arresting system and method. H1133, 2-2-93, Cl. 244-110.00C.

Caldwell, Gordon A.: *See—*
Greenwood, Stewart H.; and Caldwell, Gordon A., H1140, Cl. 523-180.000.

Crusco, Vincent J.: *See—*
Meadows, Donald H.; and Crusco, Vincent J., H1134, Cl. 434-226.000.

E. R. Squibb & Sons, Inc.: *See—*
Grover, Gary J., H1139, Cl. 514-211.000.

Easter, William G.; and Shanaman, Richard H., III, to American Telephone and Telegraph Company. Wafer bonding technique for dielectric isolation processing. H1137, 2-2-93, Cl. 437-62.000.

Flandermeyer, Brian K.: *See—*
Bloom, Ira D.; Poeppel, Roger B.; and Flandermeyer, Brian K., H1138, Cl. 505-1.000.

Gelles, Richard; and Berggren, Mark A., to Shell Oil Company. Asphalt-block copolymer roofing composition. H1141, 2-2-93, Cl. 524-68.000.

Greenwood, Stewart H.; and Caldwell, Gordon A. Asbestos free adhesive insulation. H1140, 2-2-93, Cl. 523-180.000.

Grover, Gary J., to E. R. Squibb & Sons, Inc. Combination of a calcium channel blocker and thromboxane A_2 receptor antagonist or synthetase inhibitor and method for treating ischemia employing such combination. H1139, 2-2-93, Cl. 514-211.000.

Janikowski, Stuart K., to United States of America, Air Force. Electrolytic deposition and recovery of silver. H1136, 2-2-93, Cl. 205-263.000.

Johnson, Thomas H., to Shell Oil Company. Reduction of residual organic chlorine in hydrocarbyl amines. H1143, 2-2-93, Cl. 564-498.000.

Leas, Steven W.: *See—*
Bridges, William P.; Adkins, James Y.; and Leas, Steven W., H1133, Cl. 244-110.00C.

Meadows, Donald H.; and Crusco, Vincent J., to United States of America, Navy. Aircraft fire-fighting training apparatus. H1134, 2-2-93, Cl. 434-226.000.

Poeppel, Roger B.: *See—*
Bloom, Ira D.; Poeppel, Roger B.; and Flandermeyer, Brian K., H1138, Cl. 505-1.000.

Schwartz, Vernon R. Toner application and circulation apparatus. H1135, 2-2-93, Cl. 118-689.000.

Shanaman, Richard H., III: *See—*
Easter, William G.; and Shanaman, Richard H., III, H1137, Cl. 437-62.000.

Shell Oil Company: *See—*
Gelles, Richard; and Berggren, Mark A., H1141, Cl. 524-68.000.
Johnson, Thomas H., H1143, Cl. 564-498.000.

Slusarchyk, William A.; and Zahler, Robert. Optically active cyclobutyl pyrimidine. H1142, 2-2-93, Cl. 544-314.000.

United States of America
Air Force: *See—*
Bridges, William P.; Adkins, James Y.; and Leas, Steven W., H1133, Cl. 244-110.00C.
Janikowski, Stuart K., H1136, Cl. 205-263.000.
Energy: *See—*
Bloom, Ira D.; Poeppel, Roger B.; and Flandermeyer, Brian K., H1138, Cl. 505-1.000.
Navy: *See—*
Meadows, Donald H.; and Crusco, Vincent J., H1134, Cl. 434-226.000.

Zahler, Robert: *See—*
Slusarchyk, William A.; and Zahler, Robert, H1142, Cl. 544-314.000.

VOL 1147 ISS 1 FEB 2 1993 UMI

CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 2, 1993

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

79	5,182,812
104	5,182,813
161 A	5,182,814
406	5,182,815
424	5,182,816
439	5,182,817

CLASS 4

235	5,182,818
393	5,182,819
541.4	5,182,820
592	5,182,821
625	5,182,822
661	5,182,823

CLASS 5

2.1	5,182,824
451	5,182,825
453	5,182,826
498	5,182,827
631	5,182,828

CLASS 7

166	5,182,829

CLASS 8

110	5,183,473
471	5,183,474

CLASS 15

78	5,182,830
250.42	5,182,831
304	5,182,832
319	5,182,833
330	5,182,834

CLASS 19

296	5,182,835

CLASS 24

633	5,182,836
642	5,182,837
712.7	5,182,838

CLASS 28

283	5,182,839

CLASS 29

229	5,182,841
240	5,182,842
445	5,182,843
469	5,182,844
	5,182,845
527.2	5,182,846
527.7	5,182,847
596	5,182,848
600	5,182,849
784	5,182,850
827	5,182,851
840	5,182,852
841	5,182,853
888.061	5,182,854
889.22	5,182,855
890.039	5,182,856

CLASS 30

34.05	5,182,857
85	5,182,858
90.6	5,182,859
323	5,182,860

CLASS 33

18.1	5,182,861
199 R	5,182,862
227	5,182,863
288	5,182,864
550	5,182,865
645	5,182,866
702	5,182,867

CLASS 34

18	5,182,868
20	5,182,869
26	5,182,870
54	5,182,871

CLASS 40

152	5,182,872

CLASS 42

1.01	5,183,951
71.02	5,183,952
96	5,183,953

CLASS 43

17	5,182,873
25	5,182,874
42.24	5,182,875
42.39	5,182,876
54.1	5,182,877
57.1	5,182,878
131	5,182,879

CLASS 44

343	5,183,475
445	5,183,476

CLASS 47

58	5,183,477

CLASS 48

197 R	5,183,478

CLASS 49

504	5,182,880

CLASS 51

7	5,182,881
293	5,183,479
317	5,182,882

CLASS 52

73	5,182,883
79.14	5,182,884
98	5,182,885
125.6	5,182,886
167 DF	5,182,888
167 R	5,182,887
298	5,182,889
410	5,182,890
480	5,182,891
539	5,182,892
745.05	5,182,893

CLASS 53

399	5,182,894
469	5,182,895
478	5,182,896
520	5,182,897
570	5,182,898

CLASS 55

12	5,183,480
15	5,183,481
16	5,183,482
26	5,183,483
34	5,183,484
159	5,183,486
289	5,183,487
320	5,183,488

CLASS 56

400.17	5,182,899

CLASS 57

22	5,182,900
135	5,182,901
261	Re.34,170
279	5,182,902
301	5,182,903

CLASS 60

39.161	5,182,904
204	5,182,905
226.1	5,182,906
276	5,182,907
420	5,182,908
426	5,182,909
529	5,182,910
533	5,182,911
641.8	5,182,912
671	5,182,913

CLASS 62

3.1	5,182,914
89	5,182,915
135	5,182,916
137	5,182,917
149	5,182,918
193	5,182,919
206	5,182,920
235.1	5,182,921
239	5,182,922
249	5,182,923
255	5,182,924
347	5,182,925
352	5,182,926

CLASS 65

4.2	5,183,489
144	5,183,490
351	5,183,491

CLASS 66

54	5,182,927

CLASS 70

232	5,182,928
337	5,182,929

CLASS 72

138	5,182,930
183	5,182,931
217	5,182,932
335	5,182,933
405	5,182,934
417	5,182,935
420	5,182,936
469	5,182,937

CLASS 73

19.05	5,182,938
29.01	5,182,939
36	5,182,940
40	5,182,941
61.46	5,182,942
116	5,182,943
117.1	5,182,944
118.1	5,182,945
151	5,182,946
304 C	5,182,947
429	5,182,948
517 B	5,182,949
811	5,182,950
861	5,182,951
861.79	5,182,952
862.335	5,182,953
864.45	5,182,954
865.6	5,182,955

CLASS 74

18.2	5,182,956
42	5,182,957
84 R	5,182,958
411.5	5,182,959
417	5,182,960
471 XY	5,182,961
473 R	5,182,962
512	5,182,963
523	5,182,964
543	5,182,965
606 R	5,182,966
834	5,182,967
856	5,182,968
866	5,182,969
	5,182,970

CLASS 75

335	5,183,493
349	5,183,494
379	5,183,495
702	5,183,496
	5,183,497
709	5,183,498
742	5,183,499

CLASS 76

5.1	5,182,971

CLASS 81

44	5,182,972
429	5,182,973

CLASS 82

124	5,182,974

CLASS 83

745	5,182,975
835	5,182,976

CLASS 84

385 P	5,183,954
437	5,183,955

CLASS 89

8	5,183,956
	5,183,957
16	5,183,958
148	5,183,959

CLASS 91

197	5,182,977
499	5,182,978

CLASS 92

5 R	5,182,979
5.00 R	5,182,980

CLASS 99

333	5,182,981
404	5,182,982
486	5,182,983
509	5,182,984

CLASS 100

35	5,182,985
41	5,182,986
87	5,182,987
98 R	5,182,988

CLASS 101

148	5,182,989
211	5,182,990
216	5,182,991
363	5,182,992
365	5,182,993
415.1	5,182,994

CLASS 102

348	5,183,960
439	5,183,961
489	5,183,962
515	5,183,963

CLASS 104

2	5,182,995

CLASS 106

1.22	5,183,500
22 D	5,183,501
22 K	5,183,502
38.51	5,183,503
	5,183,504
672	5,183,505
739	5,183,506

CLASS 108

64	5,182,996

CLASS 112

80.73	5,182,997
117	5,182,998
178	5,182,999

CLASS 114

222	5,183,000
266	5,183,001
353	5,183,002

CLASS 116

26	5,183,003

CLASS 118

18	5,183,507
653	5,183,964
683	5,183,508
696	5,183,509
719	5,183,510
723	5,183,511

CLASS 119

5	5,183,004
52.2	5,183,005
85	5,183,006
96	5,183,007
155	5,183,008
165	5,183,009
172	5,183,010

CLASS 123

1 A	5,183,011
41.08	5,183,012
41.74	B1 5,036,804
48 R	5,183,013
59 AC	5,183,014
90.16	5,183,015
90.55	5,183,016
198 D	5,183,017
321	5,183,018
339	5,183,019
406	5,183,020
478	5,183,021
520	5,183,022
	5,183,023
598	5,183,024
669	5,183,025

CLASS 125

11.16	5,183,026

CLASS 126

25 R	5,183,027
73	5,183,028
362	5,183,029
500	5,183,030

CLASS 128

3	5,183,464
6	5,183,031
20	5,183,032
	5,183,033
36	5,183,034
66	5,183,035
204.18	5,183,037
204.21	5,183,038
400	5,183,039
419 PG	5,183,040
421	5,183,041
633	5,183,042
642	5,183,043
648	5,183,044
653.2	5,183,045
661.07	5,183,046
661.09	5,183,047
662.06	5,183,048
663.01	5,183,049
687	5,183,050
	5,183,051
753	5,183,052
754	5,183,053
	5,183,054
774	5,183,055
782	5,183,056
845	5,183,057
847	5,183,058
858	5,183,059
882	5,183,060
897	5,183,061

CLASS 131

194	5,183,062

CLASS 132

321	5,183,063
323	5,183,064
	5,183,065

CLASS 134

1	5,183,512
22.12	5,183,513
38	5,183,514
54	5,183,066
61	5,183,067

CLASS 137

1	5,183,068
15	5,183,069
75	5,183,070
106	5,183,071
113	5,183,072
385	5,183,073
488	5,183,074
493.6	5,183,075
513.7	5,183,076
625.47	5,183,077
883	5 183,078

CLASS 138

110	5,183,079

CLASS 139

55.1	5,183,080
59	5,183,081
92	5,183,082
449	5,183,083
	5,183,084

CLASS 140

89	5,183,085

CLASS 141

10	5,183,086
59	5,183,087

CLASS 144

2 3	5,183,088
231	5,183,089
350	5,183,090
360	5,183,091

CLASS 148

101	5,183,515
302	5,183,516
303	5,183,517
324	5,183,518
582	5,183,519

CLASS 149

19.91	5,183,520

CLASS 156

142	5,183,521
244.13	5,183,522
367	5,183,523
423	5,183,524
470	5,183,525
555	5,183,527
556	5,183,526
601	5,183,528
613	5,183,529
643	5,183,530
	5,183,531
656	5,183,533
668	5,183,534

CLASS 160

84.1	5,183,092
	5,183,093
370.2	5,183,094

CLASS 162

19	5,183,535
57	5,183,536
216	5,183,537

CLASS 164

34	5,183,095
97	5,183,096
306	5,183,097

CLASS 165

8	5,183,098
41	5,183,099
45	5,183,100
47	5,183,101
48.1	5,183,102
104.33	5,183,104
140	5,183,105
166	5,183,106
167	5,183,103
176	5,183,107

CLASS 166

187	5,183,108
250	5,183,109
278	5,183,110
298	5,183,111
312	5,183,112
316	5,183,113
319	5,183,114
	5,183,115

CLASS 169

43	5,183,116
46	5,183,117

CLASS 171

16	5,183,118
105	5,183,119

CLASS 172

21	5,183,120

CLASS 173

206	5,183,121

CLASS 174

15.5	5,183,965
52.1	5,183,967
88 R	5,183,969
125.1	5,183,970
138 F	5,183,971
251	5,183,972
254	5,183,973

CLASS 175

52	5,183,122
228	5,183,123

CLASS 177

210 FP	5,183,124
211	5,183,125
	5,183,126

CLASS 180

197	5,183,127

	5,183,128
208	5,183,129
219	5,183,130
233	5,183,131
247	5,183,132
252	5,183,133

CLASS 181

0.5	5,183,974
202	5,183,975
264	5,183,976
266	5,183,977

CLASS 184

6.16	5,183,134

CLASS 186

61	5,183,135

CLASS 187

105	5,183,978
108	5,183,979
112	5,183,980
128	5,183,981

CLASS 188

73.44	5,183,136
381	5,183,137

CLASS 192

4 C	5,183,138
45	5,183,139
56 R	5,183,140
91 A	5,183,141

CLASS 194

206	5,183,142

CLASS 198

370	5,183,143
382	5,183,144
441	5,183,145
444	5,183,146
524	5,183,147
674	5,183,148
778	5,183,149
782	5,183,150
803.01	5,183,151

CLASS 200

61.85	5,183,982
81.9 M	5,183,983

CLASS 203

28	5,183,538
38	5,183,539
41	5,183,540

CLASS 204

105 R	5,183,541
180.1	5,183,542
242	5,183,543
252	5,183,544
	5,183,545
290 R	5,183,546
298.25	5,183,547
299 R	5,183,548
415	5,183,549
	5,183,550

CLASS 205

70	5,183,551
158	5,183,552
162	5,183,553

CLASS 206

232	5,183,153
315.9	5,183,154
320	5,183,155
366	5,183,156
390	5,183,157
524.4	5,183,152
554	5,183,158
583	5,183,159

CLASS 208

48 AA	5,183,554
	5,183,555
57	5,183,556
111	5,183,557
113	5,183,558
119	5,183,559
236	5,183,560
251 R	5,183,561

CLASS 209

234	5,183,160
467	5,183,161

CLASS 210

85	5,183,562
180	5,183,563
232	5,183,564
269	5,183,565
321.75	5,183,567
321.8	5,183,566
360.1	5,183,568
636	5,183,569
641	5,183,570
649	5,183,571
650	5,183,572
697	5,183,573
701	5,183,574
724	5,183,575
734	5,183,576
761	5,183,577
773	5,183,578
776	5,183,579

CLASS 211

1.57	5,183,162
43	5,183,163
70.5	5,183,164
77	5,183,165
149	5,183,166
187	5,183,167

CLASS 212

232	5,183,168

CLASS 215

100 A	5,183,169

CLASS 219

10.55 M	5,183,984
10.61 R	5,183,985
69.12	5,183,986
	5,183,987
69.17	5,183,988
121.14	5,183,989
121.54	5,183,990
121.64	5,183,991
	5,183,992
121.82	5,183,993
387	5,183,994
433	5,183,995
452	5,183,996
464	5,183,997
492	5,183,998

CLASS 220

86.2	5,183,170
256	5,183,171
270	5,183,172
367	5,183,173
404	5,183,174
408	5,183,175
470	5,183,176
523	5,183,177
650	5,183,178
694	5,183,179
908	5,183,180

CLASS 221

155	5,183,181

CLASS 222

129	5,183,182
129.2	B1 5,056,686
175	5,183,183
189	5,183,184
209	5,183,185
211	5,183,186
287	5,183,187
383	5,183,188
397	5,183,189

CLASS 223

96	5,183,190
	5,183,191

CLASS 224

42.21	5,183,192
219	5,183,193
224	5,183,194

CLASS 227

29	5,183,195
63	5,183,196

CLASS 228

160	5,183,197
186	5,183,198

CLASS 229

23 A	5,183,199
23 R	5,183,200
117.12	5,183,201
123	5,183,202
300	5,183,203

CLASS 235

379	5,183,999
	5,184,000
449	5,184,001
454	5,184,002
	5,184,003
462	5,184,004
472	5,184,005

CLASS 236

94	5,183,204

CLASS 239

222.13	5,183,205
317	5,183,206
394	5,183,322
526	5,183,207
542	5,183,208
585.1	5,183,209
703	5,183,210

CLASS 241

16	5,183,211
17	5,183,212
24	5,183,213
30	5,183,214
62	5,183,215
101.7	5,183,216

CLASS 242

47	5,183,217
54.00 R	5,183,218
68.1	5,183,219
85.1	5,183,220
310	5,183,221

CLASS 244

53 R	5,183,222
54	5,183,223
155 R	5,183,224
168	5,183,225

CLASS 248

97	5,183,226
99	5,183,227
100	5,183,228
102	5,183,229
118	5,183,230
156	5,183,231
220.2	5,183,232
343	5,183,233
430	5,183,234

CLASS 250

208.1	5,184,006
	5,184,007
214 VT	5,184,008
227.11	5,184,009
227.21	5,184,010
231.14	5,184,011
234	5,184,012
236	5,184,013
237 G	5,184,014
282	5,184,015
288	5,184,016
343	5,184,017
370.09	5,184,018
380	5,184,019
455.11	5,184,020
560	5,184,021

CLASS 252

8.552	5,183,581
8.6	5,183,580
182.2	5,183,582
182.24	5,183,583
186.38	5,183,584
299.01	5,183,585
299.61	5,183,586
299.63	5,183,587
308	5,183,589
312	5,183,588
392	5,183,590
503	5,183,591
512	5,183,592
514	5,183,593
518	5,183,594
524	5,183,601
587	5,183,602

CLASS 254

8 B	5,183,235
95	5,183,236
134.4	5,183,237
209	5,183,238

CLASS 257

53	5,184,200
77	5,184,199
266	5,184,201
370	5,184,203
390	5,184,202
471	5,184,198
664	5,184,210
666	5,184,208
668	5,184,207
679	5,184,209
706	5,184,211
762	5,184,206
765	5,184,205

CLASS 261

64.3	5,183,595
93	5,183,596

CLASS 264

1.4	5,183,597
22	5,183,598
	5,183,599
26	5,183,600
29.2	5,183,603
40.1	5,183,604
	5,183,606
40.5	5,183,605
41	5,183,607
44	5,183,608
	5,183,609
56	5,183,610
129	5,183,611
145	5,183,612
171	5,183,613
184	5,183,614
219	5,183,615
	5,183,616
249	5,183,617
257	5,183,618
	5,183,619
290.7	5,183,620
297.2	5,183,621
320	5,183,622
544	5,183,623

CLASS 266

236	5,183,624

CLASS 267

140.13	5,183,243

CLASS 269

43	5,183,244
254 R	5,183,245

CLASS 270

45	5,183,246
95	5,183,247

CLASS 271

3.1	5,183,239
	5,183,240
12	5,183,241
14	5,183,242
127	5,183,248
186	5,183,249
222	5,183,250
276	5,183,251
	5,183,252

CLASS 273

1.5 A	5,183,253
14	5,183,254
38	5,183,261
51	5,183,262
65 EG	5,183,263
67 A	5,183,264
73 C	5,183,265
73 J	5,183,260
88	5,183,266
167 G	5,183,255
241	5,183,256
243	5,183,257
252	5,183,258
418	5,183,259

CLASS 277

12	5,183,267
27	5,183,268
37	5,183,269
81 R	5,183,270
152	5,183,271
170	5,183,273

CLASS 279

62	5,183,274
156	5,183,272

CLASS 280

11.2	5,183,275
11.22	5,183,276
11.28	5,183,277
47.35	5,183,278
63	5,183,279
79.5	5,183,280
279	5,183,281
414.1	5,183,282
426	5,183,283
430	5,183,293
508	5,183,284
670	5,183,285
688	5,183,286
705	5,183,287
732	5,183,288
743	5,183,289
802	5,183,290
804	5,183,291
825	5,183,292

CLASS 281

23	5,183,294
29	5,183,295
46	5,183,296

CLASS 283

67	5,183,297

CLASS 285

12	5,183,298
47	5,183,299

CLASS 292

216	5,183,300
318	5,183,301
336.3	5,183,302

CLASS 293

120	5,183,303

CLASS 294

10	5,183,304
81.2	5,183,305

CLASS 295

11	5,183,306

CLASS 296

24.1	5,183,307
75	5,183,308
100	5,183,309
106	5,183,310

CLASS 297

151	5,183,311
250	5,183,312
344	5,183,313
440	5,183,314
488	5,183,315

CLASS 299

69	5,183,316

CLASS 303

113.2	5,183,317

CLASS 305

39	5,183,318

CLASS 307

10.2	5,184,022
10.3	5,184,023
10.8	5,184,024
66	5,184,025
139	5,184,026
269	5,184,027
270	5,184,028
	5,184,029
272.3	B1 4,904,883
296.01	5,184,030
296.3	5,184,031
443	5,184,032
446	5,184,033
473	5,184,034
475	B1 5,030,857
482	5,184,035
540	5,184,036

CLASS 310

26	5,184,037
42	5,184,038
89	5,184,039
114	5,184,040
239	5,184,041
313 A	5,184,042
320	5,184,043

CLASS 312

196	5,183,319
	5,183,320
250	5,183,321
257.1	Re.34,171

CLASS 313

638	5,184,044

CLASS 315

39.51	5,184,045
111.21	5,184,046

CLASS 318

280	5,184,048
362	5,184,049
467	5,184,050
568	5,184,051
569	5,184,052
571	5,184,053
586	5,184,054
615	5,184,055
799	5,184,056
803	5,184,057

CLASS 320

4	5,184,058
15	5,184,059

CLASS 322

99	5,184,060

CLASS 323

265	5,184,061

CLASS 324

74	5,184,062
86	5,184,063
156	5,184,064
158 F	5,184,068
158 P	5,184,065
158 R	5,184,066
	5,184,067
	5,184,162
207.22	5,184,069
225	5,184,070
238	5,184,071
248	5,184,072
309	5,184,073
	5,184,074
	5,184,075
318	5,184,076
321	5,184,078
339	5,184,079
392	5,184,080
533	5,184,081
537	5,184,082
559	5,184,083
693	5,184,077

CLASS 328

15	5,184,084
65	5,184,085

CLASS 330

252	5,184,086
253	5,184,087
254	5,184,088
	5,184,089
294	5,184,090

CLASS 331

10	5,184,091
16	5,184,092
25	5,184,093
158	5,184,094

CLASS 333

33	5,184,095
175	5,184,096
202	5,184,097
208	5,184,098

CLASS 335

16	5,184,099
	5,184,100
78	5,184,101
202	5,184,102

CLASS 336

84 C	5,184,103
100	5,184,104
192	5,184,105

CLASS 338

32 R	5,184,106
42	5,184,107
195	5,184,108

CLASS 340

455	5,184,109
571	5,184,110
572	5,184,111
573	5,184,112
635	5,184,113
701	5,184,114
708	5,184,115
764	5,184,116
784	5,184,117
	5,184,118
825.60	5,184,119
870.11	5,184,121
870.16	5,184,122
870.38	5,184,120
995	5,184,123

CLASS 341

50	5,184,124
59	5,184,125
67	5,184,126
122	5,184,127
128	5,184,128
144	5,184,129
156	5,184,130
165	5,184,131
176	5,184,132

CLASS 342

25	5,184,133
	5,184,134
149	5,184,135
153	5,184,136
174	5,184,137
195	5,184,138
354	5,184,139
372	5,184,140

CLASS 343

705	5,184,141
715	5,184,142
749	5,184,143
781 R	5,184,144
840	5,184,145

CLASS 346

1.1	5,184,146
	5,184,147
	5,184,148
74.2	5,184,149
76 PH	5,184,150
	5,184,151
	5,184,152
108	5,184,153
110 R	5,184,154
140 R	5,184,155

VOL 1147 ISS 1 FEB 2 1993 UMI

CLASS 351

158 5,184,156
208 5,184,157

CLASS 352

226 5,184,158

CLASS 354

62 5,184,159
76 5,184,160
105 5,184,161
266 5,184,163
298 5,184,164
324 5,184,165
400 5,184,166
403 5,184,167
5,184,168
412 5,184,169
413 5,184,170
416 5,184,171
432 5,184,172
471 5,184,173
480 5,184,174

CLASS 355

32 5,184,175
52 5,184,176
200 5,184,177
202 5,184,178
206 5,184,179
219 5,184,180
260 5,184,181
5,184,182
266 5,184,183
296 5,184,184
297 5,184,194
308 5,184,185
321 5,184,186
326 5,184,187

CLASS 356

39 5,184,188
218 5,184,189
239 5,184,190
244 5,184,191
246 5,184,192
325 5,184,193
350 5,184,195
401 5,184,196
426 5,184,197

CLASS 357

629 5,184,204

CLASS 358

39 5,184,212
75 5,184,213
5,184,214
93 5,184,215
105 5,184,216
106 5,184,217
133 5,184,218
141 5,184,219
147 5,184,220
167 5,184,221
183 5,184,222
209 5,184,223
231 5,184,224
243 5,184,225
296 5,184,226
302 5,184,227
310 5,184,228
427 5,184,229

CLASS 359

9 5,184,230
13 5,184,231
32 5,184,232
46 5,184,233
53 5,184,234
60 5,184,235
63 5,184,236
5,184,237
70 5,184,238
80 5,184,239
135 5,184,240
161 5,184,241
177 5,184,242
181 5,184,243
187 5,184,244
196 5,184,245
216 5,184,246
344 5,184,247
483 5,184,248
616 5,184,249
631 5,184,250
654 5,184,251
715 5,184,252
889 5,184,253

CLASS 360

10.2 5,184,254
60 5,184,255
65 5,184,256
77.05 5,184,257
85 5,184,258
5,184,259
92 5,184,260
94 5,184,261
96.2 5,184,262
103 5,184,263
105 5,184,264
106 5,184,265
120 5,184,266
126 5,184,267
132 5,184,268

CLASS 361

24 5,184,269
35 5,184,270
49 5,184,271
87 5,184,272
120 5,184,273
220 5,184,274
223 5,184,275
228 5,184,276
321 5,184,277
346 5,184,278
356 5,184,279
361 5,184,280
386 5,184,281
395 5,184,282
5,184,283
400 5,184,284
421 5,184,285
529 5,184,286
540 5,184,287

CLASS 362

32 5,183,323
103 5,183,324
109 5,183,325
191 5,183,326
219 5,183,327
294 5,183,328
352 5,183,329
372 5,183,330
426 5,183,331

CLASS 363

4 5,184,288
20 5,184,289
21 5,184,290
37 5,184,291

CLASS 364

162 5,184,292
167.01 5,184,293
191 5,184,294
410 5,184,295
419 5,184,296
424.05 5,184,297
5,184,298
426.02 5,184,299
431.07 5,184,301
431.1 5,184,300
431.11 5,184,302
449 5,184,303
453 5,184,304
470 5,184,305
474.05 5,184,306
474.24 5,184,307
489 5,184,308
510 5,184,309
550 5,184,310
551.01 5,184,312
554.01 5,184,311
561 5,184,313
709.01 5,184,314
709.16 5,184,315
715.02 5,184,316
735 5,184,317
754 5,184,318
806 5,184,319

CLASS 365

49 5,184,320
51 5,184,321
122 5,184,322
124 5,184,323
149 5,184,324
189.07 5,184,325
201 5,184,326
5,184,327

CLASS 366

2 5,183,332
85 Re.34,172
129 5,183,334
174 5,183,335
273 5,183,336
349 B1 4,922,464

CLASS 367

4 5,184,328
23 5,184,329
111 5,184,330
135 5,184,331
162 5,184,332

CLASS 368

28 5,184,333
319 5,184,334

CLASS 369

13 5,184,335
34 5,184,336
44.25 5,184,337
5,184,338
44.280 5,184,339
44.37 5,184,340
54 5,184,341
100 5,184,342
116 5,184,343
126 5,184,344

CLASS 370

54 5,184,345
60 5,184,346
94.1 5,184,347
95.1 5,184,348
95.3 5,184,349
105.3 5,184,350

CLASS 374

2 5,183,337
131 5,183,338

CLASS 376

260 5,183,625
327 5,183,626
352 5,183,627
353 5,183,628
439 5,183,629

CLASS 383

33 5,183,339

CLASS 384

420 5,183,340
446 5,183,341
475 5,183,342

CLASS 400

103 5,183,343
160 5,183,344
211 5,183,345
490 5,183,346
583.3 5,183,347
605 5,183,333
616.2 5,183,348

CLASS 401

88 5,183,349

CLASS 403

4 5,183,350
50 5,183,351
79 5,183,352

CLASS 404

69 5,183,353
81 5,183,354

CLASS 405

128 5,183,355
146 5,183,356

CLASS 407

118 5,183,362

CLASS 408

59 5,183,363
67 5,183,364
80 5,183,365

CLASS 409

179 5,183,373
286 5,183,374

CLASS 410

35 5,183,375

CLASS 411

29 5,183,357
59 5,183,358
188 5,183,359
400 5,183,360

CLASS 412

16 5,183,361

CLASS 414

22.52 5,183,366
222 5,183,368
339 5,183,369
416 5,183,370
477 5,183,371
538 5,183,372
592 5,183,376
751 5,183,377
757 5,183,378
795.8 5,183,380

CLASS 415

150 5,183,381
173.6 5,183,382

CLASS 416

9 5,183,383
87 5,183,384
97 R 5,183,385
119 5,183,386
147 5,183,387
193 A 5,183,389
224 5,183,390

CLASS 417

118 5,183,391
203 5,183,392
218 5,183,393
269 5,183,394
310 5,183,395
534 5,183,396
572 5,183,400

CLASS 419

10 5,183,631
31 5,183,630
48 5,183,632

CLASS 420

92 5,183,633
110 5,183,634
420 5,183,635
442 5,183,636
479 5,183,637

CLASS 422

64 5,183,638
135 5,183,640
143 5,183,641
213 5,183,642
297 5,183,643
304 5,183,644

CLASS 423

8 5,183,645
210 5,183,646
239 5,183,647
267 5,183,648
300 5,183,649
334 5,183,651
579 5,183,652
710 5,183,650

CLASS 424

1.1 5,183,653
5 5,183,654
76.1 5,183,656
76.6 5,183,655
78.34 5,183,687
85.8 5,183,657
89 5,183,658
92 5,183,659
94.3 5,183,660
405 5,183,661
426 5,183,662
443 5,183,663
445 5,183,664
449 5,183,665
464 5,183,666
474 5,183,667

CLASS 425

84 5,183,668
113 5,183,669
126.1 5,183,670
190 5,183,671
304 5,183,672
522 5,183,673

CLASS 426

2 5,183,674
33 5,183,675
434 5,183,676
436 5,183,677
448 5,183,678
479 5,183,679
611 5,183,680
634 5,183,681
636 5,183,682
641 5,183,683

CLASS 427

164 5,183,688
5,183,689
213.31 5,183,690
286 5,183,691
304 5,183,692
549 5,183,686
571 5,183,685
574 5,183,684

CLASS 428

34.1 5,183,693
67 5,183,694
151 5,183,695
194 5,183,696
195 5,183,697
209 5,183,698
214 5,183,699
216 5,183,700
229 5,183,701
266 5,183,702
292 5,183,703
305.5 5,183,704
343 5,183,705
349 5,183,706
364 5,183,707
373 5,183,708
404 5,183,709
405 5,183,710
596 5,183,711
610 Re.34,173

CLASS 429

9 5,183,712
44 5,183,713
123 5,183,714
192 5,183,715
5,183,716

CLASS 430

59 5,183,718
66 5,183,719
96 5,183,720
5,183,721
97 5,183,717
160 5,183,723
169 5,183,722
312 5,183,724
313 5,183,725
342 5,183,726
372 5,183,727
385 5,183,729
386 5,183,728
503 5,183,730
551 5,183,731
569 5,183,732
583 5,183,733

CLASS 431

7 5,183,401

CLASS 432

5 5,183,402

CLASS 433

9 5,183,403
19 5,183,388
76 5,183,414
80 5,183,415
215 5,183,397

CLASS 434

227 5,183,398
322 5,183,399

CLASS 435

5 5,183,734
6 5,183,735
5,183,736
5,183,737
7.1 5,183,738
7.21 5,183,739
7.32 5,183,740
14 5,183,741
5,183,742
18 5,183,743
30 5,183,744
69.1 5,183,745
69.51 5,183,746
91 5,183,747
119 5,183,749
134 5,183,750
188 5,183,751
196 5,183,752
201 5,183,753
226 5,183,754
240.27 5,183,755
5,183,756
240.49 5,183,757
252.1 5,183,758
252.2 5,183,759
285 5,183,760

CLASS 436

8 5,183,761
97 5,183,762
106 5,183,763
131 5,183,764
180 5,183,765
533 5,183,766

CLASS 437

11 5,183,767
26 5,183,768
31 5,183,769
41 5,183,770
44 5,183,771
52 5,183,772
5,183,773
5,183,774
60 5,183,775
110 5,183,776
132 5,183,778
160 5,183,777
165 5,183,779
173 5,183,780
191 5,183,781
192 5,183,782
225 5,183,783
230 5,183,795

CLASS 439

55 5,183,404
108 5,183,405
120 5,183,406
135 5,183,407
147 5,183,408
291 5,183,409
457 5,183,420
489 5,183,410
578 5,183,411
5,183,412
589 5,183,413
610 5,183,417
752 5,183,418
765 5,183,419
857 5,183,421

CLASS 440

26 5,183,422
53 5,183,423

CLASS 441

64 5,183,424
79 5,183,367

CLASS 445

29 5,183,425
68 5,183,426

CLASS 446

4 5,183,427
15 5,183,428
73 5,183,429
104 5,183,430
142 5,183,431
220 5,183,432

CLASS 452

51 5,183,433
131 5,183,434

CLASS 454

18 5,183,435

CLASS 455

91 5,183,748

CLASS 462

6 5,183,436

CLASS 472

92 5,183,438
117 5,183,437

CLASS 474

20 5,183,966
28 5,183,439
101 5,183,440
138 5,183,441
239 5,183,442

CLASS 475

168 5,183,443
210 5,183,444
230 5,183,445
236 5,183,446
341 5,183,447

CLASS 482

52 5,183,448
53 5,183,449
83 5,183,450
86 5,183,451
97 5,183,452
112 5,183,453

CLASS 492

24 5,182,840

CLASS 493

459 5,183,454

CLASS 501

19 5,183,784
127 5,183,785
134 5,183,786
143 5,183,787
152 5,183,801

CLASS 502

4 5,183,788
52 5,183,789
67 5,183,790
102 5,183,791
242 5,183,792
5,183,794
338 5,183,793
340 5,183,796
355 5,183,797

CLASS 503

227 5,183,798

CLASS 504

243 5,183,492

CLASS 505

1 5,183,799
5,183,800

CLASS 514

2 5,183,802

12 5,183,804
13 5,183,805
23 5,183,806
25 5,183,807
33 5,183,808
49 5,183,882
58 5,183,809
63 5,183,810
79 5,183,811
120 5,183,812
150 5,183,813
171 5,183,814
172 5,183,815
224.2 5,183,816
231.5 5,183,818
255 5,183,819
256 5,183,817
292 5,183,820
296 5,183,821
305 5,183,822
358 5,183,823
383 5,183,824
404 5,183,825
411 5,183,826
444 5,183,827
508 5,183,828
570 5,183,829

CLASS 521

107 5,183,830

CLASS 522

33 5,183,831
84 5,183,832
182 5,183,833

CLASS 523

105 5,183,834
402 5,183,835
404 5,183,836

CLASS 524

13 5,183,837
109 5,183,838
113 5,183,839
228 5,183,840
272 5,183,841
288 5,183,842
318 5,183,843
423 5,183,844
726 5,183,845
865 5,183,846

CLASS 525

54.44 5,183,847
57 5,183,848
68 5,183,849
73 5,183,850
85 5,183,851
101 5,183,852
132 5,183,853
193 5,183,855
282 5,183,856
285 5,183,857
308 5,183,858
309 5,183,859
398 5,183,860
413 5,183,861
437 5,183,862
438 5,183,863
452 5,183,864
530 5,183,865

CLASS 526

88 5,183,866
114 5,183,867
155 5,183,868
262 5,183,869
273 5,183,870
347.2 5,183,871

CLASS 527

300 5,183,872

CLASS 528

16 5,183,873
5,183,874
33 5,183,875
59 5,183,876
64 5,183,877
193 5,183,878
503 5,183,879

CLASS 534

732 5,183,881

CLASS 536

23.5 5,183,884
25.41 5,183,885

CLASS 540

141 5,183,886
364 5,183,887

CLASS 544

153 5,183,888
174 5,183,889
235 5,183,891

CLASS 546

76 5,183,892
133 5,183,893
273 5,183,894
304 5,183,895
326 5,183,896
330 5,183,897

CLASS 548

178 5,183,898
253 5,183,899
495 5,183,900
543 5,183,901
950 5,183,902
952 5,183,903

CLASS 549

68 5,183,904
218 5,183,905
5,183,906
310 5,183,907
322 5,183,908
463 5,183,909
539 5,183,910

CLASS 554

181 5,183,911

CLASS 556

425 5,183,912
446 5,183,913
467 5,183,914

CLASS 558

95 5,183,916
251 5,183,917
271 5,183,918
274 5,183,919
277 5,183,920
301 5,183,921
341 5,183,915

CLASS 560

7 5,183,922
26 5,183,923
56 5,183,924
61 5,183,925
76 5,183,926
115 5,183,927
144 5,183,928
178 5,183,929
217 5,183,930
241 5,183,931
330 5,183,932

CLASS 562

414 5,183,933
423 5,183,934
469 5,183,935
532 5,183,936
608 5,183,937

CLASS 563

6.4 5,183,883

CLASS 564

151 5,183,938
302 5,183,939
370 5,183,940
390 5,183,941

CLASS 568

375 5,183,942
454 5,183,943
465 5,183,944
574 5,183,945
670 5,183,946
698 5,183,947

CLASS 600

7 5,183,455
9 5,183,456
21 5,183,457

CLASS 602

10 5,183,036
22 5,183,458
52 5,183,459
79 5,183,460

CLASS 604

49 5,183,461
51 5,183,462
98 5,183,463
108 5,183,465
110 5,183,466
149 5,183,467
164 5,183,468
192 5,183,469
281 5,183,470
284 5,183,471
5,183,472

CLASS 800

2 5,183,949
5,183,950

VOL
1147
ISS
1
FE
2
1993
UMI

P.—	69.2	8,120 8,121		70.5 72.1	8,122 8,123		82.4 86.2	8,124 8,125		86.4	8,126 8,127		87.12 88.1	8,128 8,129			8,130 8,131					

STATUTORY INVENTION REGISTRATIONS

118—	689	H1135	244—	110 C	H1133	437—	62	H1137	514—	211	H1139	524—	68	H1141	564—	498	H1143					
205—	263	H1136	434—	226	H1134	505—	1	H1138	523—	180	H1140	544—	314	H1142								

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	5,182,948		5,183,235		5,184,074		5,182,858		5,184,143		5,183,937
	5,183,118		5,183,244		5,184,092		5,182,952		5,184,295		5,183,994
	5,183,184		5,183,257		5,184,095		5,182,955	13 :	5,183,062		5,184,078
	5,183,201		5,183,264		5,184,098		5,182,972		5,183,070		5,184,080
	5,183,260		5,183,307		5,184,124		5,182,975		5,183,275		5,184,091
	5,183,976		5,183,316		5,184,127		5,183,159		5,183,280		5,184,107
	5,184,330		5,183,325		5,184,128		5,183,186		5,183,483		5,184,113
04 :	5,182,956		5,183,335		5,184,129		5,183,204		5,183,687		5,184,142
	5,182,973		5,183,338		5,184,132		5,183,246		5,183,737		5,184,163
	5,183,087		5,183,339		5,184,134		5,183,250		5,183,845		5,184,291
	5,183,095		5,183,387		5,184,152		5,183,420		5,184,099		5,184,303
	5,183,181		5,183,398		5,184,156		5,183,470		5,184,270		5,184,349
	5,183,270		5,183,401		5,184,188		5,183,512	15 :	5,183,117	18 :	5,182,827
	5,183,281		5,183,429		5,184,193		5,183,583		5,183,229		5,182,834
	5,183,292		5,183,437		5,184,195		5,183,670	16 :	5,183,081		5,182,837
	5,183,450		5,183,457		5,184,198		5,183,671		5,184,265		5,182,996
	5,183,458		5,183,459		5,184,207		5,183,673	17 :	5,182,812		5,183,005
	5,183,499		5,183,460		5,184,210		5,183,713		5,182,908		5,183,018
	5,183,769		5,183,461		5,184,217		5,183,900		5,182,929		5,183,030
	5,184,028		5,183,464		5,184,232		5,183,941		5,182,934		5,183,032
	5,184,218		5,183,478		5,184,233		5,183,952		5,182,980		5,183,091
05 :	5,183,000		5,183,486		5,184,246		5,183,959		5,182,984		5,183,110
06 :	5,182,832		5,183,498		5,184,258		5,183,978		5,182,988		5,183,147
	5,182,836		5,183,549		5,184,275		5,183,979		5,182,991		5,183,169
	5,182,842		5,183,627		5,184,288		5,183,981		5,183,134		5,183,202
	5,182,849		5,183,646		5,184,293		5,184,309		5,183,139		5,183,259
	5,182,863		5,183,655		5,184,304		5,184,331		5,183,171		5,183,360
	5,182,875		5,183,665		5,184,307	10 :	5,183,545		5,183,173		5,183,743
	5,182,879		5,183,679		5,184,317		5,183,614		5,183,199		5,183,760
	5,182,884		5,183,698		5,184,319		5,183,862		5,183,211		5,183,895
	5,182,928		5,183,700		5,184,322	11 :	5,183,466		5,183,220		5,183,910
	5,182,941		5,183,724		5,184,343	12 :	5,182,815		5,183,242		5,183,983
	5,182,960		5,183,734		5,030,857		5,182,822		5,183,254		5,184,036
	5,182,977		5,183,736	08 :	5,182,813		5,182,825		5,183,267		5,184,108
	5,182,979		5,183,746		5,182,838		5,182,912		5,183,269		5,184,301
	5,182,983		5,183,775		5,182,841		5,182,961		5,183,318	19 :	5,183,154
	5,183,014		5,183,784		5,182,873		5,182,981		5,183,322		5,183,433
	5,183,027		5,183,795		5,182,925		5,183,002		5,183,324		5,184,003
	5,183,036		5,183,812		5,183,040		5,183,053		5,183,359	20 :	5,182,860
	5,183,039		5,183,827		5,183,185		5,183,094		5,183,364		5,183,916
	5,183,048		5,183,841		5,183,224		5,183,175		5,183,382	21 :	5,183,373
	5,183,052		5,183,885		5,183,261		5,183,197		5,183,430		5,184,278
	5,183,063		5,183,891		5,183,326		5,183,226		5,183,487	22 :	5,182,870
	5,183,065		5,183,904		5,183,610		5,183,255		5,183,507		5,182,944
	5,183,066		5,183,906		5,183,735		5,183,262		5,183,519		5,183,061
	5,183,101		5,183,942		5,183,785		5,183,346		5,183,534		5,183,086
	5,183,106		5,183,950		5,183,995		5,183,503		5,183,537		5,183,111
	5,183,119		5,183,973		5,184,029		5,183,518		5,183,574		5,183,228
	5,183,150		5,184,020		5,184,154		5,183,579		5,183,690		5,183,369
	5,183,183		5,184,021		5,184,260		5,183,761		5,183,692		5,183,455
	5,183,192		5,184,046		5,184,336		5,184,059		5,183,792		5,183,467
	5,183,223		5,184,066		5,184,347		5,184,120		5,183,818		5,183,566
	5,183,225		5,184,068	09 :	5,182,830		5,184,126		5,183,933		5,183,789

VOL
1147
ISS
1
FE
2
1993
UMI

5,183,797
5,183,817
5,184,315
5,184,328
23 : 5,182,892
5,184,034
24 : 5,182,848
5,182,896
5,183,055
5,183,142
5,183,174
5,183,251
5,183,272
5,183,525
5,183,573
5,183,590
5,183,600
5,183,740
5,183,756
5,183,764
5,183,779
5,183,884
5,183,938
5,183,949
5,184,241
25 : 5,182,823
5,182,855
5,182,877
5,182,937
5,183,006
5,183,042
5,183,104
5,183,124
5,183,276
5,183,321
5,183,327
5,183,337
5,183,462
5,183,508
5,183,572
5,183,599
5,183,660
5,183,689
5,183,765
5,183,852
5,183,954
5,184,077
5,184,125
5,184,130
5,184,136
5,184,137
5,184,144
5,184,160
5,184,191
5,184,192
5,184,211
5,184,255
5,184,267
5,184,281
5,184,332
26 : 5,182,854
5,182,885
5,182,922
5,182,966
5,182,974
5,182,985
5,183,023
5,183,090
5,183,138
5,183,191
5,183,231
5,183,287
5,183,302
5,183,319
5,183,351
5,183,363
5,183,372
5,183,414
5,183,419
5,183,456
5,183,513
5,183,529
5,183,582
5,183,604
5,183,636
5,183,684

5,183,688
5,183,831
5,183,833
5,183,864
5,183,865
5,183,919
5,183,920
5,183,958
5,183,992
5,184,017
5,184,069
5,184,106
5,184,117
5,184,182
5,184,283
5,184,297
5,184,299
27 : 5,182,880
5,182,883
5,183,153
5,183,207
5,183,232
5,183,297
5,183,299
5,183,396
5,183,415
5,183,596
5,183,597
5,183,705
5,183,787
5,183,877
5,184,274
5,184,279
5,184,284
5,184,306
28 : 5,183,392
29 : 5,182,876
5,182,923
5,182,924
5,182,963
5,183,010
5,183,054
5,183,434
5,183,473
5,183,584
5,183,616
5,183,918
5,184,026
30 : 5,183,102
31 : 5,182,821
5,183,334
5,183,391
5,183,452
5,183,752
32 : 5,183,059
33 : 5,182,845
5,182,990
5,183,146
5,183,252
5,183,449
5,183,693
5,183,951
34 : 5,182,818
5,182,878
5,182,891
5,183,072
5,183,145
5,183,156
5,183,258
5,183,279
5,183,296
5,183,301
5,183,305
5,183,336
5,183,349
5,183,358
5,183,409
5,183,469
5,183,475
5,183,481
5,183,540
5,183,556
5,183,557
5,183,558
5,183,559

5,183,653
5,183,661
5,183,723
5,183,758
5,183,810
5,183,825
5,183,826
5,183,839
5,183,887
5,183,901
5,183,945
5,183,946
5,183,961
5,184,088
5,184,116
5,184,135
5,184,311
5,184,345
35 : 5,184,019
5,184,082
36 : 5,182,882
5,182,927
5,182,968
5,183,004
5,183,031
5,183,033
5,183,057
5,183,069
5,183,152
5,183,158
5,183,165
5,183,190
5,183,193
5,183,253
5,183,344
5,183,350
5,183,397
5,183,444
5,183,471
5,183,482
5,183,496
5,183,497
5,183,526
5,183,527
5,183,536
5,183,544
5,183,580
5,183,602
5,183,607
5,183,608
5,183,659
5,183,710
5,183,712
5,183,717
5,183,727
5,183,728
5,183,732
5,183,739
5,183,798
5,183,813
5,183,847
5,183,894
5,183,905
5,183,955
5,183,964
5,183,970
5,183,974
5,184,011
5,184,013
5,184,044
5,184,058
5,184,063
5,184,112
5,184,153
5,184,165
5,184,174
5,184,175
5,184,179
5,184,183
5,184,185
5,184,194
5,184,206
5,184,215
5,184,226
5,184,227

5,184,234
5,184,271
5,184,323
37 : 5,182,829
5,183,116
5,183,180
5,183,328
5,183,868
5,183,999
38 : 5,183,007
39 : Re.34,171
5,182,840
5,182,881
5,182,890
5,182,893
5,182,905
5,182,906
5,182,911
5,182,918
5,182,926
5,182,935
5,182,938
5,182,976
5,183,098
5,183,105
5,183,187
5,183,203
5,183,206
5,183,212
5,183,263
5,183,295
5,183,303
5,183,311
5,183,342
5,183,385
5,183,389
5,183,393
5,183,417
5,183,465
5,183,509
5,183,605
5,183,613
5,183,702
5,183,793
5,183,908
5,183,914
5,183,965
5,183,975
5,183,982
5,183,989
5,183,990
5,183,998
5,184,009
5,184,023
40 : Re.34,172
5,182,946
5,183,068
5,183,109
5,183,160
5,183,256
5,183,538
5,183,672
5,183,844
5,183,866
5,183,931
5,184,350
41 : 5,183,028
5,183,085
5,183,088
5,183,213
5,183,310
5,184,025
5,184,048
5,184,147
42 : 5,182,824
5,183,009
5,183,038
5,183,051
5,183,077
5,183,092
5,183,096
5,183,100
5,183,137
5,183,205
5,183,214

5,183,217
5,183,237
5,183,266
5,183,278
5,183,330
5,183,386
5,183,405
5,183,441
5,183,480
5,183,505
5,183,541
5,183,542
5,183,548
5,183,561
5,183,568
5,183,575
5,183,576
5,183,663
5,183,682
5,183,704
5,183,790
5,183,806
5,183,809
5,183,815
5,183,819
5,183,829
5,183,915
5,183,930
5,184,041
5,184,094
5,184,335
44 : 5,182,839
5,183,593
5,183,669
5,184,285
45 : 5,182,826
5,183,282
5,183,390
5,183,706
47 : 5,183,179
5,183,707
5,184,015
5,184,189
5,184,249
5,184,286
48 : 5,182,817
5,182,819
5,182,828
5,182,851
5,182,862
5,182,865
5,182,874
5,182,939
5,182,940
5,183,058
5,183,078
5,183,108
5,183,112
5,183,114
5,183,115
5,183,129
5,183,143
5,183,162
5,183,163
5,183,166
5,183,222
5,183,227
5,183,233
5,183,245
5,183,268
5,183,291
5,183,309
5,183,340
5,183,353
5,183,371
5,183,435
5,183,514
5,183,554
5,183,555
5,183,560
5,183,563
5,183,643
5,183,763
5,183,776
5,183,788

5,183,805
5,183,867
5,183,923
5,183,947
5,183,957
5,183,966
5,183,972
5,184,032
5,184,033
5,184,064
5,184,079
5,184,083
5,184,133
5,184,138
5,184,141
5,184,190
5,184,280
5,184,318
5,184,320
5,184,325
49 : 5,182,814
5,183,182
5,183,238
5,183,293
5,183,304
5,183,404
5,183,427
5,183,619
5,183,801
5,184,114
5,184,115
50 : 5,182,953
51 : 5,183,003
5,183,025
5,183,151
5,183,157
5,183,298
5,183,323
5,183,331
5,183,463
5,183,523
5,183,620
5,183,828
5,183,861
5,183,874
5,183,902
5,183,903
5,183,960
5,184,314
53 : 5,182,889
5,182,895
5,182,897
5,182,949
5,183,046
5,183,074
5,183,089
5,183,194
5,183,230
5,183,354
5,183,355
5,183,384
5,183,413
5,183,436
5,183,453
5,183,468
5,183,953
5,184,065
5,184,312
5,056,686
54 : 5,183,936
5,183,943
55 : Re.34,173
5,182,914
5,183,008
5,183,073
5,183,155
5,183,314
5,183,375
5,183,395
5,183,451
5,183,488
5,183,577
5,183,759
5,184,062
5,184,122

06 : 8,122
8,123
8,125
8,126
8,128
15 : 8,129
8,130
8,131

STATUTORY INVENTION REGISTRATIONS

16 : H1136
17 : H1138
24 : H1133
34 : H1139
42 : H1142
H1134
48 : H1137
H1141
49 : H1143
H1140
53 : H1135

VOL
1147
ISS
1
FE
2
1993
UMI

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VOL
1147

ISS
1

FE
2

1993

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1147

ISS
1

FE
2

1993

UMI

VOL
1147

ISS
1

FE
2

1993

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UMI

VOL
1147

ISS
2

FE
9

1993

UMI

Vol. 1147 Number 2

OFFICIAL GAZETTE

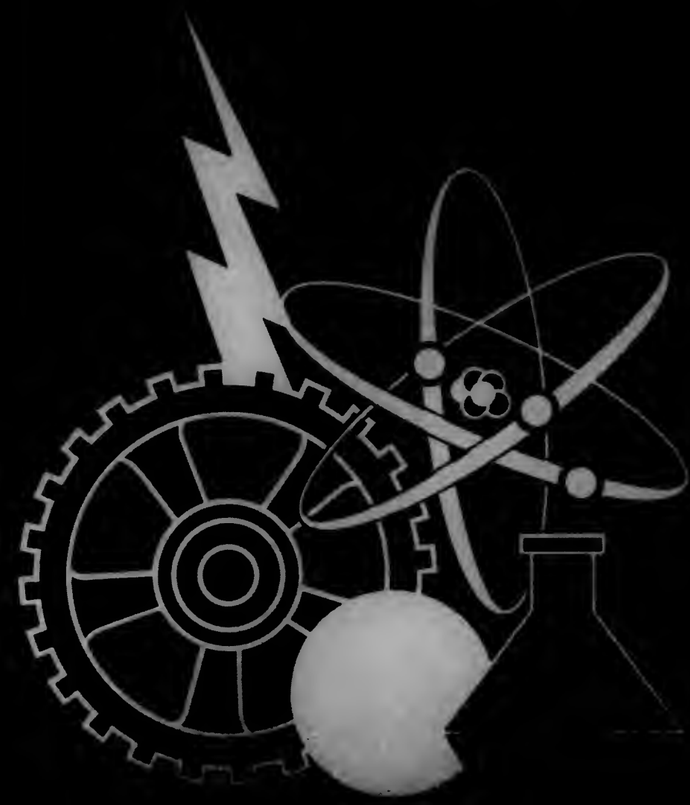
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Route to:

PATENTS

February 9, 1993



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VOL
1147
ISS
2
FE
9
1993
UMI

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
February 9, 1993 Volume 1147 Number 2

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1147 OG 20
Notice of Maintenance Fees Payable	1147 OG 20
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees	1147 OG 21
Reissue Applications Filed	1147 OG 26
Requests for Reexaminations Filed	1147 OG 26
Notice of Expiration of Trademark Registrations Due to Failure to Renew	1147 OG 27
Patents Available for License or Sale	1147 OG 28
Erratum	1147 OG 29
Final Rule	1147 OG 29
Certificates of Correction	1147 OG 41
Special Boxes for Mail	1147 OG 42
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1147 OG 43
Patent Examining Corps	45
Reexaminations	545
Reissue Patents Granted (34,174)	547
Plant Patents Granted (8,132)	549
Patents Granted	
General and Mechanical (5,184,351)	551
Chemical (5,185,012)	779
Electrical (5,185,489)	921
Design Patents Granted (333,030)	1061
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patents	PI 68
Classification of	
Patents (Including Reissues and Reexaminations)	PI 75
Designs, and Plants Applications	PI 79
Geographical Index of Residence of Inventors	
Patents (Including Reissues and Reexaminations)	PI 81
Designs and Plant Applications	PI 83
Change of Address Form	PI 85
Subscription Order Form	PI 87

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VOL
1147
ISS
2
FE
9
1993
UMI

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1142 O.G. 66, on Sept. 29, 1992.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1992, due to changes both in the amount of the international search fee charged by the European Patent Office and in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1142 O.G. 20, on Sept. 8, 1992.

International fees, effective on Dec. 1, 1992, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, were announced in the *Official Gazette* at 1143 O.G. 62, on Oct. 27, 1992.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Oct. 1, 1992 and were announced in the *Official Gazette* at 1141 O.G. 68 on Aug. 25, 1992.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1635.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	450.00
—Additional examination fee, per additional invention	140.00
—ISA not the USPTO	670.00
—Additional examination fee, per additional invention	230.00
International fees	
Basic fee	593.00
Basic Supplemental fee (for each page over 30)	12.00
Designation fee per country or region for the first 10 national or regional offices	144.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	181.00

U.S. National Stage fees	Small Entity	Regular
USPTO was IPEA	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA	475.00	950.00
Filing with an EPO or JPO search report	415.00	830.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Nov. 8, 1992

DOUGLAS B. COMER,
Acting Assistant Secretary and Acting Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on February 6, 1990 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,897,885 through 4,899,394
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 4, 1986 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,567,611 through 4,569,085
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months and eleven years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9f) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9f) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9f) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED NOVEMBER 29, 1992 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,484,360	06/541,430	11/27/84
4,484,361	06/541,703	11/27/84
4,484,363	06/554,966	11/27/84
4,484,366	06/476,488	11/27/84
4,484,367	06/483,846	11/27/84
4,484,368	06/423,824	11/27/84
4,484,374	06/358,704	11/27/84
4,484,375	06/282,023	11/27/84
4,484,376	06/335,210	11/27/84
4,484,377	06/342,989	11/27/84
4,484,378	06/476,189	11/27/84
4,484,379	06/439,469	11/27/84
4,484,380	06/545,233	11/27/84
4,484,390	06/424,552	11/27/84
4,484,392	06/297,342	11/27/84
4,484,394	06/439,911	11/27/84
4,484,395	06/515,396	11/27/84
4,484,397	06/506,340	11/27/84
4,484,398	06/515,610	11/27/84
4,484,402	06/481,985	11/27/84
4,484,408	06/403,147	11/27/84
4,484,409	06/363,321	11/27/84
4,484,410	06/430,345	11/27/84
4,484,411	06/386,923	11/27/84
4,484,414	06/386,716	11/27/84
4,484,418	06/497,275	11/27/84
4,484,421	06/427,518	11/27/84
4,484,426	06/313,387	11/27/84
4,484,427	06/370,175	11/27/84
4,484,428	06/358,894	11/27/84
4,484,429	06/289,855	11/27/84
4,484,433	06/447,102	11/27/84
4,484,434	06/409,171	11/27/84
4,484,435	06/361,911	11/27/84
4,484,438	06/459,459	11/27/84
4,484,441	06/510,242	11/27/84
4,484,446	06/470,446	11/27/84
4,484,447	06/468,649	11/27/84
4,484,449	06/466,461	11/27/84
4,484,453	06/433,543	11/27/84
4,484,456	06/544,173	11/27/84
4,484,457	06/461,505	11/27/84
4,484,461	06/554,000	11/27/84
4,484,465	06/435,647	11/27/84
4,484,468	06/412,341	11/27/84
4,484,471	06/419,532	11/27/84
4,484,472	06/467,180	11/27/84
4,484,473	06/565,518	11/27/84
4,484,477	06/427,693	11/27/84
4,484,480	06/507,960	11/27/84
4,484,485	06/310,292	11/27/84
4,484,486	06/327,156	11/27/84
4,484,488	06/370,303	11/27/84
4,484,489	06/408,119	11/27/84
4,484,490	06/315,458	11/27/84
4,484,491	06/388,637	11/27/84
4,484,492	06/354,201	11/27/84
4,484,493	06/343,277	11/27/84
4,484,495	06/370,447	11/27/84
4,484,496	06/420,315	11/27/84
4,484,499	06/394,339	11/27/84
4,484,501	06/418,091	11/27/84
4,484,502	06/475,514	11/27/84
4,484,503	06/513,550	11/27/84
4,484,505	06/457,966	11/27/84
4,484,512	06/301,032	11/27/84
4,484,514	06/471,032	11/27/84
4,484,517	06/354,625	11/27/84
4,484,523	06/479,424	11/27/84
4,484,525	06/395,508	11/27/84
4,484,527	06/401,190	11/27/84
4,484,529	06/469,919	11/27/84
4,484,530	06/501,738	11/27/84
4,484,531	06/579,562	11/27/84
4,484,534	06/476,293	11/27/84
4,484,535	06/477,232	11/27/84
4,484,536	06/355,084	11/27/84
4,484,537	06/570,820	11/27/84
4,484,538	06/552,455	11/27/84
4,484,541	06/461,918	11/27/84
4,484,542	06/370,121	11/27/84
4,484,544	06/528,530	11/27/84
4,484,546	06/351,178	11/27/84
4,484,547	06/575,483	11/27/84
4,484,550	06/355,752	11/27/84
4,484,555	06/463,809	11/27/84

VOL
1147
ISS
2
FE
9
1993
UMI

Patent Number	Serial Number	Issue Date
4,484,557	06/381,900	11/27/84
4,484,558	06/492,015	11/27/84
4,484,562	06/492,373	11/27/84
4,484,564	06/402,605	11/27/84
4,484,566	06/355,369	11/27/84
4,484,567	06/354,676	11/27/84
4,484,572	06/468,353	11/27/84
4,484,573	06/400,816	11/27/84
4,484,574	06/573,854	11/27/84
4,484,580	06/335,599	11/27/84
4,484,582	06/301,165	11/27/84
4,484,583	06/267,046	11/27/84
4,484,589	06/392,776	11/27/84
4,484,590	06/344,836	11/27/84
4,484,593	06/394,619	11/27/84
4,484,598	06/385,878	11/27/84
4,484,599	06/535,356	11/27/84
4,484,603	06/463,022	11/27/84
4,484,604	06/529,264	11/27/84
4,484,605	06/405,362	11/27/84
4,484,607	06/415,714	11/27/84
4,484,608	06/435,759	11/27/84
4,484,609	06/476,899	11/27/84
4,484,612	06/509,590	11/27/84
4,484,613	06/501,192	11/27/84
4,484,615	06/530,615	11/27/84
4,484,616	06/342,307	11/27/84
4,484,618	06/377,876	11/27/84
4,484,621	06/363,767	11/27/84
4,484,623	06/482,968	11/27/84
4,484,624	06/390,807	11/27/84
4,484,626	06/486,266	11/27/84
4,484,627	06/509,839	11/27/84
4,484,629	06/426,170	11/27/84
4,484,630	06/473,398	11/27/84
4,484,635	06/400,077	11/27/84
4,484,636	06/297,255	11/27/84
4,484,640	06/397,438	11/27/84
4,484,643	06/507,862	11/27/84
4,484,646	06/440,361	11/27/84
4,484,647	06/376,522	11/27/84
4,484,649	06/526,157	11/27/84
4,484,651	06/443,602	11/27/84
4,484,656	06/392,090	11/27/84
4,484,668	06/503,531	11/27/84
4,484,671	06/391,626	11/27/84
4,484,672	06/263,319	11/27/84
4,484,673	06/429,465	11/27/84
4,484,677	06/383,548	11/27/84
4,484,678	06/482,360	11/27/84
4,484,679	06/331,404	11/27/84
4,484,680	06/599,479	11/27/84
4,484,683	06/349,956	11/27/84
4,484,685	06/349,115	11/27/84
4,484,686	06/371,133	11/27/84
4,484,689	06/521,307	11/27/84
4,484,690	06/356,180	11/27/84
4,484,692	06/543,409	11/27/84
4,484,696	06/422,476	11/27/84
4,484,698	06/304,384	11/27/84
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4,484,701	06/554,891	11/27/84
4,484,702	06/478,950	11/27/84
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4,484,718	06/455,478	11/27/84
4,484,719	06/436,532	11/27/84
4,484,721	06/457,336	11/27/84
4,484,722	06/393,834	11/27/84
4,484,723	06/344,627	11/27/84
4,484,727	06/439,816	11/27/84
4,484,730	06/431,114	11/27/84
4,484,732	06/383,419	11/27/84
4,484,735	06/375,312	11/27/84
4,484,738	06/382,346	11/27/84
4,484,739	06/475,452	11/27/84
4,484,741	06/515,129	11/27/84
4,484,742	06/443,396	11/27/84
4,484,743	06/475,191	11/27/84
4,484,744	06/460,231	11/27/84
4,484,745	06/501,631	11/27/84
4,484,747	06/424,354	11/27/84
4,484,750	06/548,542	11/27/84
4,484,754	06/575,709	11/27/84
4,484,759	06/428,385	11/27/84
4,484,760	06/434,313	11/27/84
4,484,764	06/384,362	11/27/84
4,484,765	06/334,696	11/27/84
4,484,766	06/461,355	11/27/84
4,484,767	06/361,534	11/27/84
4,484,768	06/537,503	11/27/84
4,484,771	06/332,314	11/27/84
4,484,773	06/417,134	11/27/84
4,484,774	06/376,676	11/27/84
4,484,775	06/410,214	11/27/84
4,484,780	06/311,237	11/27/84
4,484,782	06/340,590	11/27/84
4,484,784	06/410,799	11/27/84
4,484,790	06/480,190	11/27/84
4,484,794	06/298,593	11/27/84
4,484,795	06/394,250	11/27/84
4,484,796	06/319,986	11/27/84
4,484,798	06/371,092	11/27/84
4,484,799	06/330,781	11/27/84
4,484,801	06/420,451	11/27/84
4,484,802	06/410,998	11/27/84
4,484,805	06/504,669	11/27/84
4,484,808	06/438,019	11/27/84
4,484,817	06/395,630	11/27/84
4,484,818	06/354,996	11/27/84
4,484,819	06/388,863	11/27/84
4,484,823	06/416,132	11/27/84
4,484,829	06/434,926	11/27/84
4,484,830	06/387,727	11/27/84
4,484,832	06/412,250	11/27/84
4,484,833	06/307,190	11/27/84
4,484,835	06/415,803	11/27/84
4,484,836	06/401,948	11/27/84
4,484,842	06/453,908	11/27/84
4,484,843	06/401,965	11/27/84
4,484,845	06/448,968	11/27/84
4,484,847	06/392,545	11/27/84
4,484,848	06/381,784	11/27/84
4,484,849	06/232,692	11/27/84
4,484,853	06/330,081	11/27/84
4,484,857	06/420,625	11/27/84
4,484,859	06/449,530	11/27/84
4,484,860	06/379,256	11/27/84
4,484,861	06/351,102	11/27/84
4,484,862	06/362,650	11/27/84
4,484,870	06/336,373	11/27/84
4,484,872	06/457,216	11/27/84
4,484,874	06/433,523	11/27/84
4,484,877	06/444,388	11/27/84
4,484,878	06/551,921	11/27/84
4,484,879	06/477,395	11/27/84
4,484,882	06/473,291	11/27/84
4,484,884	06/460,828	11/27/84
4,484,887	06/568,935	11/27/84
4,484,889	06/470,983	11/27/84
4,484,895	06/538,491	11/27/84
4,484,897	06/367,899	11/27/84
4,484,900	06/524,692	11/27/84
4,484,902	06/356,489	11/27/84
4,484,904	06/454,682	11/27/84
4,484,905	06/328,588	11/27/84
4,484,910	06/563,767	11/27/84
4,484,911	06/428,138	11/27/84
4,484,913	06/424,002	11/27/84
4,484,915	06/479,720	11/27/84

Patent Number	Serial Number	Issue Date
4,484,916	06/340,899	11/27/84
4,484,917	06/531,160	11/27/84
4,484,918	06/516,927	11/27/84
4,484,919	06/436,192	11/27/84
4,484,924	06/505,782	11/27/84
4,484,925	06/493,727	11/27/84
4,484,926	06/561,983	11/27/84
4,484,927	06/573,648	11/27/84
4,484,929	06/432,963	11/27/84
4,484,930	06/410,075	11/27/84
4,484,931	06/487,281	11/27/84
4,484,934	06/574,311	11/27/84
4,484,937	06/363,685	11/27/84
4,484,938	06/458,462	11/27/84
4,484,939	06/551,004	11/27/84
4,484,942	06/518,771	11/27/84
4,484,943	06/471,003	11/27/84
4,484,944	06/545,849	11/27/84
4,484,945	06/588,604	11/27/84
4,484,947	06/487,463	11/27/84
4,484,950	06/491,611	11/27/84
4,484,958	06/465,661	11/27/84
4,484,961	06/314,701	11/27/84
4,484,965	06/529,172	11/27/84
4,484,966	06/438,461	11/27/84
4,484,971	06/529,998	11/27/84
4,484,972	06/407,352	11/27/84
4,484,973	06/560,005	11/27/84
4,484,974	06/507,987	11/27/84
4,484,979	06/600,524	11/27/84
4,484,982	06/501,242	11/27/84
4,484,983	06/497,373	11/27/84
4,484,985	06/497,475	11/27/84
4,484,986	06/497,476	11/27/84
4,484,988	06/328,913	11/27/84
4,484,989	06/478,929	11/27/84
4,484,991	06/463,332	11/27/84
4,484,992	06/342,615	11/27/84
4,484,993	06/416,493	11/27/84
4,484,995	06/577,752	11/27/84
4,484,996	06/476,185	11/27/84
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4,485,334	06/396,943	11/27/84

VOL 1147 ISS 2 FE 9 1993 UMI

Patent Number	Serial Number	Issue Date
4,485,338	06/442,424	11/27/84
4,485,342	06/402,373	11/27/84
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Patent Number	Serial Number	Issue Date
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4,788,102	07/018,210	11/29/88
4,788,108	07/053,131	11/29/88
4,788,111	07/062,029	11/29/88
4,788,112	07/088,314	11/29/88
4,788,115	07/086,300	11/29/88
4,788,124	06/940,047	11/29/88
4,788,125	07/086,853	11/29/88
4,788,126	07/046,380	11/29/88
4,788,127	07/052,638	11/29/88
4,788,129	06/931,495	11/29/88
4,788,141	06/935,999	11/29/88
4,788,143	07/078,009	11/29/88
4,788,148	06/605,321	11/29/88
4,788,149	06/664,435	11/29/88
4,788,164	06/696,856	11/29/88
4,788,177	07/007,548	11/29/88
4,788,182	07/077,806	11/29/88
4,788,183	07/113,359	11/29/88
4,788,187	07/126,441	11/29/88
	07/160,855	11/29/88

VOL 1147 ISS 2 FEB 9 1993 UMI

Patent Number	Serial Number	Issue Date
4,788,194	07/095,952	11/29/88
4,788,199	07/167,126	11/29/88
4,788,204	06/867,555	11/29/88
4,788,210	06/808,962	11/29/88
4,788,226	07/159,583	11/29/88
4,788,230	06/781,866	11/29/88
4,788,235	07/123,794	11/29/88
4,788,245	07/112,041	11/29/88
4,788,260	06/471,738	11/29/88
4,788,261	07/077,865	11/29/88
4,788,263	07/133,855	11/29/88
4,788,281	06/568,124	11/29/88
4,788,292	06/892,219	11/29/88
4,788,294	07/170,702	11/29/88
4,788,299	07/063,044	11/29/88
4,788,318	07/089,129	11/29/88
4,788,328	06/882,330	11/29/88
4,788,337	07/149,657	11/29/88
4,788,338	07/061,105	11/29/88
4,788,342	07/085,353	11/29/88
4,788,343	07/085,186	11/29/88
4,788,346	07/054,852	11/29/88
4,788,348	07/084,199	11/29/88
4,788,349	07/052,969	11/29/88
4,788,357	07/074,137	11/29/88
4,788,359	07/078,372	11/29/88
4,788,379	06/432,214	11/29/88
4,788,382	07/051,664	11/29/88
4,788,386	07/028,495	11/29/88
4,788,388	06/922,283	11/29/88
4,788,391	07/174,089	11/29/88
4,788,405	07/054,583	11/29/88
4,788,407	07/113,492	11/29/88
4,788,409	07/084,555	11/29/88
4,788,414	07/042,428	11/29/88
4,788,417	07/013,984	11/29/88
4,788,429	06/854,149	11/29/88
4,788,430	07/000,352	11/29/88
4,788,433	07/002,389	11/29/88
4,788,442	07/075,747	11/29/88
4,788,448	06/678,848	11/29/88
4,788,450	07/099,433	11/29/88
4,788,451	07/094,332	11/29/88
4,788,456	07/077,746	11/29/88
4,788,461	07/001,590	11/29/88
4,788,463	07/064,080	11/29/88
4,788,477	06/886,697	11/29/88
4,788,483	07/062,125	11/29/88
4,788,487	07/007,261	11/29/88
4,788,490	07/068,690	11/29/88
4,788,492	07/019,366	11/29/88
4,788,494	06/670,757	11/29/88
4,788,505	07/096,140	11/29/88
4,788,506	06/785,696	11/29/88
4,788,517	07/106,189	11/29/88
4,788,522	06/759,508	11/29/88
4,788,529	07/043,398	11/29/88
4,788,532	07/060,173	11/29/88
4,788,534	06/871,290	11/29/88
4,788,544	07/001,286	11/29/88
4,788,554	06/717,500	11/29/88
4,788,555	06/760,076	11/29/88
4,788,566	07/055,136	11/29/88
4,788,579	06/906,925	11/29/88
4,788,581	06/717,703	11/29/88
4,788,586	07/100,801	11/29/88
4,788,595	07/120,541	11/29/88
4,788,620	07/118,574	11/29/88
4,788,622	07/078,679	11/29/88
4,788,626	07/014,272	11/29/88
4,788,627	06/872,058	11/29/88
4,788,633	07/088,582	11/29/88
4,788,634	07/065,016	11/29/88
4,788,638	06/940,621	11/29/88
4,788,647	06/911,488	11/29/88
4,788,649	06/693,117	11/29/88
4,788,650	06/909,331	11/29/88
4,788,656	06/614,226	11/29/88
4,788,670	07/086,428	11/29/88
4,788,686	07/104,762	11/29/88
4,788,691	06/847,174	11/29/88
4,788,700	06/928,657	11/29/88
4,788,702	06/894,655	11/29/88
4,788,706	07/134,311	11/29/88

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,728,185, Re. S.N. 07/988,373, Filed Dec. 7, 1992, Cl. 353, IMAGING SYSTEM, David A. Thomas, Owner of Record: *Inventor*, Attorney or Agent: Julie L. Reed, Ex. Gp.: 2406

4,651,312, Re. S.N. 07/985,348, Filed Dec. 1, 1992, Cl. 369, PORTABLE TAPE PLAYER WITH RADIO IN LID, Hideo Honma, et. al., Owner of Record: *Sony Corp., Tokyo, Japan*, Attorney or Agent: Jay H. Maioli, Ex. Gp.: 2313

4,942,452, Re. S.N. 07/914,465, Filed July 17, 1992, Cl. 357/68, LEAD FRAME AND SEMICONDUCTOR DEVICE, Makoto Kitano, et. al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan*, Attorney or Agent: Stanley A. Wal, Ex. Gp.: 2303

4,978,336, Re. S.N. 07/992,920, Filed Dec. 18, 1992, Cl. 404/6, FLUID CHARGED ROADWAY BARRIER, John M. White, Owner of Record: *Inventor*, Attorney or Agent: None, Ex. Gp.: 3506

4,980,836, Re. S.N. 07/993,093, Filed Dec. 18, 1992, Cl. 364/483, APPARATUS FOR REDUCING COMPUTER SYSTEM POWER CONSUMPTION, Robert R. Carter, et. al., Owner of Record: *Compaq Computer Corp., Houston, Tex.*, Attorney or Agent: Keith Lutsch, Ex. Gp.: 2304

5,030,365, Re. S.N. 07/993,290, Filed Dec. 18, 1992, Cl. 507/107, WATER-WETTABLE DRILLING MUD ADDITIVES CONTAINING VINTAITE, K. Klark Christensen, et. al., Owner of Record: *American Gilsonite Co., Salt Lake City, Utah*, Attorney or Agent: Vern Norviel, Ex. Gp.: 2203

5,035,946, Re. S.N. 07/849,277, Filed Mar. 10, 1992, Cl. 428/327, OVERPRINT AQUEOUS VARNISH, Timothy S. Baker, Owner of Record: *Petrolite Corp., St. Louis, Mo.*, Attorney or Agent: John Wilson Jones, Ex. Gp.: 1509

5,048,751, Re. S.N. 07/991,846, Filed Dec. 16, 1992, Cl. 236/92, PRESSURE AND TEMPERATURE RELIEF VALVE AND DIAPHRAGM VALVE, Chester G. Dubois, Owner of Record: *Outboard Marine Corp., Waukegan, Ill.*, Attorney or Agent: Roger E. Clemency, Ex. Gp.: 3404

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,016,750, Reexam. No. 90/002,917, Requested Dec. 16, 1992, Cl. 073/629, ULTRASONIC IMAGING METHOD AND APPARATUS, Phillip S. Green, Owner of Record: *Stanford Research Institute International, Menlo Park, Calif.*, Attorney or Agent: Victor R. Beckman, Los Altos, Calif., Ex. Gp.: 2605, Requester: Acoustic Imaging Technologies Corp., Phoenix, Ariz.

4,483,723, Reexam. No. 90/002,922, Requested Dec. 30, 1992, Cl. 148/320, STEEL WITH ANTIMONY ADDITION, Grigory Lyudkovsky, Owner of Record: *Inland Steel Co., Chicago, Ill.*, Attorney or Agent: Marshall, O'Toole, Gerstein, Murray & Bicknell, Chicago, Ill., Ex. Gp.: 1101, Requester: USX Corp., Pittsburgh, Pa.

4,957,094, Reexam. No. 90/002,923, Requested Dec. 31, 1992, Cl. 124/24.1, COMPOUND ARCHERY BOW WITH NON-STRETCH BOWSTRING AND ECCENTRICS FOR SECURING SAME, James A. Pickering, et. al., Owner of Record: *Hoyt USA, Inc., Salt Lake City, Utah*, Attorney or Agent: Robert A. Mallinckrodt, Mallinckrodt & Mallinckrodt, Salt Lake City, Utah, Ex. Gp.: 3501, Requester: Owner

5,066,367, Reexam. No. 90/002,924, Requested Jan. 4, 1993, Cl. 205/254, LIMITING TIN SLUDGE FORMATION IN TIN OR TIN/LEAD ELECTROPLATING SOLUTIONS, Fred I. Nobel, et. al., Owner of Record: *Fred I. Nobel, Sands Point, N.Y.; Barnet D. Ostrow, Roslyn, N.Y.*, Attorney or Agent: Pennie & Edmonds, New York, N.Y., Ex. Gp.: 1102, Requester: Technic Inc., Cranston, R.I.

5,094,726, Reexam. No. 90/002,925, Requested Jan. 4, 1993, Cl. 205/254, LIMITING TIN SLUDGE FORMATION IN TIN OR TIN/LEAD ELECTROPLATING SOLUTIONS, Fred I. Nobel, et. al., Owner of Record: *Fred I. Nobel, Sands Point, N.Y.; Barnet D. Ostrow, Roslyn, N.Y.; David N. Schram, Freeport, N.Y.*, Attorney or Agent: Pennie & Edmonds, New York, N.Y., Ex. Gp.: 1102, Requester: Technic Inc., Cranston, R.I.

Notice of Expiration of Trademark Registrations Due to Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the proscribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED JANUARY 11, 1993 DUE TO FAILURE TO RENEW

Reg. No.	Serial Number	Reg. Date
38,075	70/038,075	4/08/1902
86,025	71/060,282	4/09/1912
292,974	71/320,943	4/05/1932
292,990	71/321,525	4/05/1932
292,991	71/321,531	4/05/1932
292,996	71/321,672	4/05/1932
292,997	71/321,693	4/05/1932
293,000	71/308,187	4/05/1932
293,016	71/321,498	4/05/1932
293,021	71/321,818	4/05/1932
293,022	71/320,454	4/05/1932
293,047	71/318,627	4/05/1932
293,060	71/317,446	4/05/1932
557,100	71/508,886	4/08/1952
557,101	71/515,125	4/05/1952
557,103	71/516,626	4/08/1952
557,104	71/519,480	4/08/1952
557,106	71/521,261	4/08/1952
557,114	71/536,675	4/08/1952
557,117	71/537,359	4/08/1952
557,119	71/540,627	4/08/1952
557,125	71/545,993	4/08/1952
557,128	71/550,889	4/08/1952
557,132	71/555,290	4/08/1952
557,157	71/576,157	4/08/1952
557,159	71/576,975	4/08/1952
557,163	71/578,028	4/08/1952
557,165	71/578,608	4/08/1952
557,167	71/578,787	4/08/1952
557,168	71/579,218	4/08/1952
557,183	71/587,264	4/08/1952
557,187	71/587,742	4/08/1952
557,188	71/588,080	4/08/1952
557,189	71/588,623	4/08/1952
557,193	71/589,240	4/08/1952
557,197	71/589,707	4/08/1952
557,208	71/592,166	4/08/1952
557,219	71/594,716	4/08/1952
557,220	71/595,207	4/08/1952
557,225	71/596,434	4/08/1952
557,226	71/596,459	4/08/1952
557,237	71/599,043	4/08/1952
557,240	71/599,588	4/08/1952
557,242	71/599,889	4/08/1952
557,243	71/600,065	4/08/1952
557,250	71/600,972	4/08/1952
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557,270	71/603,583	4/08/1952
557,272	71/603,975	4/08/1952
557,273	71/603,977	4/08/1952
557,281	71/604,409	4/08/1952
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557,284	71/604,551	4/08/1952
557,287	71/604,703	4/08/1952
557,290	71/605,307	4/08/1952
557,291	71/605,312	4/08/1952
557,296	71/605,773	4/08/1952
557,297	71/605,776	4/08/1952
557,302	71/606,234	4/08/1952
557,308	71/606,628	4/08/1952
557,314	71/607,425	4/08/1952
557,315	71/607,443	4/08/1952
557,321	71/608,916	4/08/1952
557,326	71/609,676	4/08/1952
557,329	71/609,806	4/08/1952
557,341	71/610,956	4/08/1952
557,342	71/610,967	4/08/1952
557,343	71/610,975	4/08/1952
557,349	71/611,543	4/08/1952
557,350	71/611,560	4/08/1952
557,354	71/611,698	4/08/1952
557,356	71/611,927	4/08/1952
557,361	71/612,090	4/08/1952
557,364	71/612,332	4/08/1952
557,369	71/612,464	4/08/1952
557,374	71/612,573	4/08/1952
557,387	71/613,428	4/08/1952
557,391	71/613,895	4/08/1952
557,394	71/613,965	4/08/1952
557,418	71/615,935	4/08/1952
557,425	71/608,590	4/08/1952
557,426	71/609,884	4/08/1952
557,437	71/603,857	4/08/1952
931,573	71/366,371	4/04/1972
931,576	72/377,942	4/04/1972
931,584	72/372,171	4/04/1972
931,588	72/382,854	4/04/1972
931,591	72/364,013	4/04/1972
931,596	72/367,506	4/04/1972
931,598	72/372,986	4/04/1972
931,599	72/372,978	4/04/1972
931,601	72/375,588	4/04/1972
931,602	72/375,681	4/04/1972
931,603	72/375,710	4/04/1972
931,605	72/376,078	4/04/1972
931,608	72/376,480	4/04/1972
931,612	72/379,458	4/04/1972
931,613	72/379,564	4/04/1972
931,614	72/381,849	4/04/1972
931,615	72/382,485	4/04/1972
931,616	72/384,586	4/04/1972
931,621	72/372,062	4/04/1972
931,625	72/360,400	4/04/1972
931,626	72/363,792	4/04/1972
931,628	72/371,727	4/04/1972

VOL 1147 ISS 2 FE 9 1993 UMI

Reg. No.	Serial Number	Reg. Date
931,631	72/316,549	4/04/1972
931,633	72/374,650	4/04/1972
931,639	72/371,263	4/04/1972
931,640	72/378,459	4/04/1972
931,641	72/378,641	4/04/1972
931,642	72/244,064	4/04/1972
931,643	72/393,147	4/04/1972
931,644	72/393,118	4/04/1972
931,647	72/361,787	4/04/1972
931,656	72/377,526	4/04/1972
931,657	72/377,550	4/04/1972
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931,659	72/379,409	4/04/1972
931,664	72/398,272	4/04/1972
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931,675	72/349,510	4/04/1972
931,678	72/363,371	4/04/1972
931,679	72/364,527	4/04/1972
931,680	72/367,670	4/04/1972
931,683	72/382,186	4/04/1972
931,684	72/386,656	4/04/1972
931,687	72/346,261	4/04/1972
931,692	72/377,951	4/04/1972
931,701	72/385,840	4/04/1972
931,703	72/386,810	4/04/1972
931,704	72/386,812	4/04/1972
931,705	72/386,829	4/04/1972
931,708	72/296,991	4/04/1972
931,716	72/370,523	4/04/1972
931,718	72/381,694	4/04/1972
931,719	72/381,735	4/04/1972
931,720	72/381,919	4/04/1972
931,721	72/382,128	4/04/1972
931,726	72/315,514	4/04/1972
931,729	72/355,023	4/04/1972
931,737	72/378,373	4/04/1972
931,739	72/378,638	4/04/1972
931,740	72/379,268	4/04/1972
931,746	72/387,681	4/04/1972
931,752	72/386,354	4/04/1972
931,756	72/374,186	4/04/1972
931,757	72/374,187	4/04/1972
931,761	72/346,472	4/04/1972
931,763	72/378,398	4/04/1972
931,768	72/350,751	4/04/1972
931,774	72/374,188	4/04/1972
931,776	72/378,986	4/04/1972
931,778	72/384,503	4/04/1972
931,782	72/386,954	4/04/1972
931,783	72/386,959	4/04/1972
931,784	72/394,962	4/04/1972
931,785	72/332,941	4/04/1972
931,787	72/361,853	4/04/1972
931,789	72/365,318	4/04/1972
931,790	72/380,790	4/04/1972
931,791	72/382,213	4/04/1972
931,792	72/382,698	4/04/1972
931,801	72/359,541	4/04/1972
931,807	72/375,272	4/04/1972
931,813	72/380,475	4/04/1972
931,817	72/381,653	4/04/1972
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931,826	72/382,296	4/04/1972
931,828	72/382,762	4/04/1972
931,831	72/384,508	4/04/1972
931,835	72/387,988	4/04/1972
931,836	72/394,194	4/04/1972
931,841	72/357,658	4/04/1972
931,842	72/374,689	4/04/1972
931,845	72/381,558	4/04/1972
931,859	72/383,332	4/04/1972
931,862	72/365,386	4/04/1972
931,863	72/367,636	4/04/1972
931,864	72/369,997	4/04/1972
931,866	72/384,065	4/04/1972
931,867	72/384,287	4/04/1972
931,868	72/384,734	4/04/1972
931,871	72/392,736	4/04/1972
931,876	72/337,059	4/04/1972
931,880	72/350,925	4/04/1972
931,881	72/351,786	4/04/1972
931,882	72/351,787	4/04/1972
931,888	72/368,774	4/04/1972
931,889	72/369,931	4/04/1972
931,892	72/374,110	4/04/1972
931,896	72/378,993	4/04/1972
931,899	72/380,975	4/04/1972
931,900	72/381,197	4/04/1972
931,907	72/383,709	4/04/1972
931,910	72/383,816	4/04/1972
931,915	72/385,568	4/04/1972
931,916	72/392,587	4/04/1972
931,918	72/394,274	4/04/1972
931,921	72/395,554	4/04/1972
931,923	72/361,884	4/04/1972
931,929	72/381,641	4/04/1972
931,930	72/382,350	4/04/1972
931,933	72/360,686	4/04/1972
931,936	72/380,010	4/04/1972
931,939	72/386,340	4/04/1972
931,940	72/393,890	4/04/1972
931,941	72/396,676	4/04/1972
931,944	72/359,363	4/04/1972
931,947	72/371,583	4/04/1972
931,948	72/371,609	4/04/1972
931,949	72/372,527	4/04/1972
931,950	72/373,567	4/04/1972
931,951	72/373,713	4/04/1972
931,953	72/373,798	4/04/1972
931,954	72/373,800	4/04/1972
931,959	72/375,359	4/04/1972
931,962	72/386,296	4/04/1972
931,974	72/380,201	4/04/1972
931,976	72/381,357	4/04/1972
931,982	72/392,412	4/04/1972
931,983	72/395,492	4/04/1972
931,987	72/364,830	4/04/1972
931,988	72/365,220	4/04/1972
931,994	72/381,999	4/04/1972
931,998	72/340,562	4/04/1972
932,002	72/373,619	4/04/1972
932,004	72/375,826	4/04/1972
932,005	72/376,367	4/04/1972
932,009	72/385,461	4/04/1972
932,010	72/385,462	4/04/1972
932,012	72/389,759	4/04/1972
932,018	72/367,955	4/04/1972
932,022	72/376,440	4/04/1972
932,027	72/367,760	4/04/1972
932,029	72/381,294	4/04/1972
932,034	72/378,193	4/04/1972
932,035	72/333,015	4/04/1972
932,037	72/382,103	4/04/1972
932,039	72/377,288	4/04/1972
932,047	72/362,107	4/04/1972
932,049	72/371,251	4/04/1972
932,050	72/334,616	4/04/1972
932,051	72/337,828	4/04/1972
932,052	72/382,459	4/04/1972
932,053	72/383,806	4/04/1972
932,055	72/373,542	4/04/1972
932,058	72/374,148	4/04/1972

Patents Available for License or Sale

5,127,775 FAIL SAFE STOP FOR A DRILL PRESS CONTROL DEVICE, James M. Broadment, et. al., Steven N. Fox, Chapin, Neal & Dempsey, 1331 Main St., Springfield, Mass. 01103

5,143,343 AUTOMOBILE RADIO SECURITY SYSTEM, Daniel P. Katz, Robert F. Zielinski, Ballard Spahr Andrews & Ingersoll, 1735 Market St., 51st Fl., Philadelphia, Pa. 19103-7599

5,152,065 TOOL HEAD HAVING AN EASILY REPLACEABLE HANDLE ATTACHED THERETO, Alfred F. Harding, Alfred F. Harding, P.O. Box 7, Orleans, Calif. 95556

5,165,682 REFLEX SKILL PRACTICE DEVICE AND METHOD, James S. McGuckin, John C. Jeffrey, Dennison Associates, 133 Richmond St. W., Ste. 301, Toronto, Ontario, Canada M5H 2L7

Erratum

All reference to Patent No. B1. 4,899,563 (1667th) to Frank J. Martin, Seattle, Wash. for RE-KEYABLE PIN TUMBLER DRAWER LO9CK AND PIN TUMBLER CABINET DOOR LOCK appearing in the *Official Gazette* of Mar. 24, 1992 should be deleted since no patent was granted."

Department of Commerce
Patent and Trademark Office
37 CFR Parts 1 and 10
[Docket No. 920539-2313]
RIN: 0651-AA51

Revision of Patent Cooperation Treaty Provisions

Agency: Patent and Trademark Office, Commerce
Action: Final Rule
Summary: The Patent and Trademark Office (Office) is amending the rules of practice relating to applications filed under the Patent Cooperation Treaty (PCT): (1) to amend the rules in accordance with revised regulations under the PCT; (2) to bring the rules regarding applications entering the national stage under 35 U.S.C. 371 more in line with existing regulations applicable to national applications filed under 35 U.S.C. 111; and (3) to clarify existing practice under the PCT. The changes will result in more streamlined and simplified procedures for filing and prosecuting international and national stage applications under the PCT.
Effective Date: May 1, 1993.
For Further Information Contact: Vincent Turner by telephone at (703) 305-9384 or by mail addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 and marked to the attention of Vincent Turner (Crystal Park 2, room 919).
Supplementary Information: The Office published a notice of proposed rulemaking relating to revision of the Patent Cooperation Treaty provisions, in the *Federal Register*, 57 Fed. Reg. 29248 (July 1, 1992) and in the *Official Gazette*, 1140 Off. Gaz. Pat. Office 27 (July 14, 1992). No oral hearing was held. Eight individuals or organizations submitted written comments in response to the notice of proposed rulemaking. The eight written comments are available for public inspection in the Office of the Assistant Commissioner for Patents, room 919,Crystal Park II, 2121 Crystal Drive, Arlington, VA.

Familiarity with the notice of proposed rulemaking is assumed. Changes in the text of the rules published for comment in the notice of proposed rulemaking are discussed. Comments received in writing in response to the notice of proposed rulemaking are discussed.

This rule change will improve filing and processing procedures for applicants both in the filing of international applications and in the filing of national stage applications under 35 U.S.C. 371.

Background

During the first 14 years under the PCT, the annual volume of international patent applications filed in the U.S Receiving Office has increased from just under 100 to almost 10,000 in fiscal year 1991. The volume of U.S. national stage applications has shown similar growth to the point that the U.S. is now designated more than 10,000 times each year by applicants filing international applications under the PCT. Historically, approximately 60% of those applicants that designate the U.S. enter the national stage in the United States.

On July 8 to 12, 1991, representatives of the patent offices of the member countries, in a series of meetings held in Geneva, Switzerland, agreed upon several changes to the PCT regulations which are designed to make the PCT more user-friendly. These adopted changes require corresponding changes in Title 37, CFR.

The practice under the revised PCT regulations will permit an applicant to provide, in addition to at least one specified designation, a precautionary designation of all other PCT member countries and regions so that any intended designation which may have been overlooked on filing can be corrected within 15 months of the priority date byconfirmation of the designation. Applicants are cautioned, however, that in order for the confirmation of a designation of the U.S. to be valid, the inventor must have been named in the application papers as filed, 37 CFR 1.421(b).

International applications are searched and published prior to the 20-month deadline for entry into the national stage. If a demand for preliminary examination is filed before expiration of 19 months from the priority date the time for entry into the national stage is extended to 30 months from the priority date and the international application will be subject to preliminary examination under Chapter II of the PCT. The practice under the revised PCT regulations permits an applicant to indicate in the demand that preliminary examination is to be based on an accompanying PCT Article 34 amendment and, if the amendment is not received with the demand, the applicant will be notified and given a time period within which to file the missing amendment. This new procedure will ensure that examination will go forward based on the desired PCT Article 34 amendment.

Also, the Office is aware that certain applicants have had difficulty in properly filing national stage applications due to the different requirements in the rules for PCT and U.S. national applications. Some differences cannot be avoided due to different procedures required under the PCT from U.S. national practice. It is desirable, however, to minimize these differences and to simplify national stage filing procedures.

International applications have become abandoned for failure to timely provide an oath or declaration, a filing fee and/or an accurate translation. In national practice under 35 U.S.C. 111, if any of these items was not presented at the time of filing, a notice would be mailed to the applicant setting a period of time to provide the missing item(s) and to pay a fee. The amendments to the rules governing entering the national stage will establish a greater degree of uniformity of practice and requirements for filing an application under 35 U.S.C. 111 and entering the national stage in an international application under 35 U.S.C. 371.

Amending sections 1.494 and 1.495 results in regulations much like the present section 1.53. The major exception is that a notification of any missing parts in sections 1.494 and 1.495 will only be mailed in those instances where the applicant has paid the basic national fee within 20 or 30 months from the priority date depending on whether election of the U.S. under Chapter II of the PCT has been made prior to 19 months. Applicants can no longer pay the basic national fee with a surcharge after the 20/30 months deadline. Failure to pay the basic national fee within 20/30 months from the priority date will result in abandonment of the application. Paying the fee gives a clear indication to the Office that the applicant desires to enter the national stage. If the required oath, declaration or translation has not been filed within 20/30 months from the priority date, as appropriate, the Office will send applicant a notice and provide a period of time to supply the deficiency. Upon paying the basic national fee within 20/30 months from the priority date, the applicant will have the opportunity to inform the Office of a U.S. correspondence address, if any. Thus, the Office will avoid unnecessary handling of approximately 40% of those applications that designate the U.S. but do not enter the national stage, and will be able to send a notice to a U.S. correspondence address in most cases.

Often at 20 or 30 months from the priority date, the only communication which has been received by the Office is a copy of the international application from the International Bureau with the address of the foreign attorney or agent who represented

VOL
1147
ISS
2
FE
9
1993
UMI

the applicant in the international stage. The foreign attorney or agent may not be conversant in English or knowledgeable about U.S. practice, factors which often contribute to complicating the processing of applications. Thus, the new practice, which requires payment of the basic national fee on or before 20 or 30 months from the priority date, has several advantages: (1) it will enable the applicant to identify the U.S. attorney or agent for correspondence from the Office; (2) the Office, after a check of the national stage papers at 20 or 30 months, will mail a notice identifying any deficiencies and affording applicant a period for correction of those deficiencies; and (3) as in national practice under section 1.53, it will enable applicants to extend the period of time under section 1.136 for submission of a proper oath, declaration or translation.

The changes to sections 1.494 and 1.495 address the problems which have been most frequently encountered in entering the national stage in the United States. The new practice of notifying applicants of the omission of a proper oath, declaration or translation and setting an extendable period of time for correction will allow applicants greater flexibility in the time for submission of these documents, thus avoiding the consequence of abandonment and potential loss of rights in the United States.

Implementation

The rule changes which reflect corresponding amendments in the PCT regulations were implemented on 01 July 1992 when the amendments became effective. The remaining rule changes will be effective on 01 May 1993. Setting a date for the rules to take effect several months in the future will allow time for applicants to change their procedures to conform to these rules.

Those international applications entering the national stage under section 1.494 where 20 months from the priority date expires on, or before, 30 April 1993 are under the old rule (section 1.494 effective 01 July 1987) and those international applications entering the national stage under section 1.495 where 30 months from the priority date expires on, or before, 30 April 1993 are under the old rule (section 1.495 effective 01 July 1987). Those international applications entering the national stage under section 1.494 where 20 months from the priority date expires on, or after, 01 May 1993 are under the new rule (section 1.494 effective 01 May 1993) and those international applications entering the national stage under section 1.495 where 30 months from the priority date expires on, or after, 01 May 1993 are under the new rule (section 1.495 effective 01 May 1993). For example:

1) If a copy of an international application (which designates the U.S.) that has a priority date of 30 August 1991 is filed in the Office by 30 April 1993 (within 20 months from the priority date), applicant may enter the national stage under 37 CFR 1.494 by submitting any required English translation, the basic national fee and the oath or declaration not later than 30 June 1993. Of course, the payment of the surcharge and processing fee (37 CFR 1.492(e) and (f)) would also be due.

2) If a copy of an international application (which elected the U.S. before expiration of 19 months from the priority date) that has a priority date of 30 October 1990 is filed in the Office by 30 April 1993 (within 30 months from the priority date), applicant may enter the national stage by submitting any required English translation, the basic national fee and the oath or declaration not later than 30 June 1993. Of course, the payment of the surcharge and processing fee (37 CFR 1.492(e) and (f)) would also be due.

3) If a copy of an international application (which designates the U.S.) that has a priority date of 01 September 1991 is filed in the Office by 03 May 1993 (within 20 months from the priority date - 01-02 May 1993 being a Saturday and Sunday, respectively), then applicant must pay the basic national fee by 03 May 1993 to avoid abandonment of the application. If the basic national fee is timely paid, a notice will then be sent to applicant giving a time period within which to file the oath or declaration and any required translation (new section 1.494(c)).

4) Any international application having a priority date of 01 September 1991, or later, is under the new rule. Thus, if applicant files papers for the national stage indicated to be under the procedure of the old rule (section 1.494) in the Office before 01 May 1993 (i.e., before expiration of 20 months from the priority date) but omits the basic national fee, *the application will, nonetheless, become abandoned at midnight* on 03 May 1993 (after 20 months from the priority date - 01-02 May 1993 being a Saturday and Sunday, respectively) because applications where the 20-month deadline expires on or after 01 May 1993 come under the new practice. In accordance with new section 1.494 (i) a copy of the international application must be furnished to the Office, and (ii) the basic national fee must be paid before expiration of 20 months from the priority date.

Response to Comments on the Rules

Eight written comments were received in response to the notice of proposed rulemaking. All of the comments were considered in adopting the changes set forth herein. The comments and responses to the comments follow.

Comment 1. One comment stated that "The proposed addition to section 1.431(b)(1) of `and the papers filed at the time of receipt of the international application [so] indicate' goes beyond the requirements set forth in the PCT and is contrary to PCT Administrative Instructions, Section 329." Two other similar comments were received and urged, in effect, that section 1.431(b)(1) be revised to adopt the procedure set forth in Section 329 of the PCT Administrative Instructions.

Response: The suggestion has not been adopted. The provisions adopted in section 1.431(b)(1) are consistent with, and required by, Article 11 of the PCT as interpreted by the Office. Section 329 of the PCT Administrative Instructions was issued by the International Bureau after the Bureau was advised that the Office believed new section 329 to be inconsistent with requirements of Article 11 of the Treaty and inconsistent with over 13 years of practice in the United States. In the opinion of the Office, PCT Administrative Instruction 329 is inconsistent with PCT Article 11 and Rule 20.4(a), which require the Office to promptly determine whether the applicant does not obviously lack, by reasons of residence or nationality, the right to file an international application. In accordance with PCT Rule 89.1(b), "The Administrative Instructions shall not be in conflict with the provisions of the Treaty, these regulations, ..." The United States will not follow Administrative Instruction 329.

Comment 2. One comment stated that in section 1.431(c), the reference to "PCT Rule 15.2" should be to "PCT Rule 15" because PCT Rule 15.1 is also relevant, and the reference to section 1.445" should be changed to refer to "PCT Rules 14 and 16.1" because section 1.445 does not cover the European Patent Office (EPO) search fee which is also paid to the USPTO."

Response: The suggestion has not been adopted. The references to Rule 15.2 and section 1.445 are considered proper in the context in which they are used. The references to Rule 15.2 and section 1.445 are not new and have worked well in directing applicants regarding international application requirements. The EPO search fee is not mentioned in section 1.431, but is published in each issue of the *Official Gazette* for applicant's information.

Comment 3. One comment stated that in section 1.431(d), the words "one designation fee" should be deleted since this is covered by section 1.432(b) and that "timely made" in line 5 be changed to "paid within the one-month period" for clarity.

Response: The first suggestion in the comment is not adopted. The reference to "one designation fee" in section 1.431(d) is repeated in section 1.432(b) to add clarity on this important point. The second suggestion in the comment is not adopted since it would introduce error into section 1.431(d). Indeed, all the fees must be paid timely, and need not be paid within the one-month period set pursuant to section 1.431(c), e.g., some fee(s) may be paid prior to the one-month period. Presumably the one-month period mentioned in the comment refers to a period set pursuant to section 1.431(c) which may not need to be set in every case.

Comment 4. One comment indicated that (in the fourth paragraph of the Supplementary Information section) the discussion of new section 1.432 includes a reference to a "generic" designation of all countries which, instead, should refer to a precautionary designation of all countries except the required specified designation(s).

Response: The appropriate change has been made to the discussion of section 1.432 to clarify that an applicant may provide, in addition to at least one specified designation, a precautionary designation of all other PCT member countries and regions so that any intended designation which may have been overlooked on filing can be corrected within 15 months of the priority date.

Comment 5. One comment stated that in section 1.432(a) and (b) the word "request" should be capitalized in view of section 1.401(d). A corresponding comment was made with respect to section 1.451(a).

Response: This suggestion is adopted since PCT Rule 4.10 requires the designations to appear on the Request (form RO/101) and section 1.432 continues to require that the designation(s) be indicated in the Request on filing. Similarly, with respect to section 1.451(a), the suggestion is adopted.

Comment 6. One comment stated that in section 1.432(a) "or regions" should be changed to "for the purpose of obtaining national or regional patents."

Response: The suggestion is adopted to the extent that section 1.432(a) has been changed by replacing "or regions"with "including an indication that applicant wishes to obtain a regional patent, where applicable." The adopted wording is preferable since it is the same as the wording of PCT Rule 4.9(a)(ii).

Comment 7. One comment objected to the requirement contained in section 1.432(a) that designations in the international application shall be stated as provided in PCT Rule 4.9(a) and Section 115 of the Administrative Instructions Under the PCT. Also, the comment urged that the PCT Administrative Instructions should be reproduced in sections 1.432 and 1.451 so that applicants have access to them.

Response: Section 115 of the PCT Administrative Instructions makes reference to the names and abbreviations of all countries. Inclusion of such a long list would unnecessarily encumber section 1.432(a). The Administrative Instructions are readily available, and a list of countries is provided in the Manual of Patent Examining Procedure (Chapter 200). Applicants using a current Request form will inherently comply with PCT Rule 4.9(a) and Sections 110 and 115 of the PCT Administrative Instructions.

Comment 8. One comment asked "If an applicant does not pay the fee(s) set out in section 1.432(c)(2) or (3), will he/she be given an additional month to pay the fees described in section 1.432(b)(1) and (2)? "

Response: No extension of time is available to the 15-month deadline of section 1.432(c). The time period set under section 1.432(b) doesnot apply to section 1.432(c). If payment for the designations to be confirmed under section 1.432(c) is not received by 15 months from the priority date, those precautionary designations are considered to be withdrawn, PCT Rule 4.9(b).

Comment 9. One comment suggested adding references to PCT Rule 4.9(a) and (b) in various locations in section 1.432.

Response: The suggestion is adopted by adding appropriate references to PCT Rule 4.9(a) and (b).

Comment 10. One comment suggested that the last sentence in section 1.432(b) be moved to become the second sentence of section 1.432(b) and the third sentence be moved to become the last sentence of section 1.432(b).

Response: These suggestions are not adopted since they would not constitute an improvement to section 1.432(b).

Comment 11. One comment suggested that, in section 1.432(c)(3) unconfirmed designations indicated to be "considered withdrawn" should be changed to "regarded as withdrawn by the applicant.

Response: This suggestion has not been adopted because it does not further clarify section 1.432(c)(3). Unconfirmed designations are considered to be withdrawn by the applicant under PCT Rule 4.9(b)(ii) and are also considered to be withdrawn by the Office.

Comment 12. One comment suggested that section 1.446(d) should be expanded to indicate that a refund of the search fee will be given even after the search copy has been transmitted just so long as the withdrawal is effective before start of the international search.

Response: This suggestion has not been adopted since refunds may or may not be appropriate in the noted instance. For example, if the EPO acting as an international searching authority begins the search after withdrawal but before receipt of the withdrawal from the U.S. receiving office, a refund may not be made.

Comment 13. One comment suggested that in section 1.446(e) "demand" should be capitalized in view of section 1.401(g).

Response: This suggestion is adopted.

Comment 14. One comment suggested that the reference in section 1.451(a) to Section "201" of the Administrative Instructions should be changed to"115."

Response: This suggestion is adopted since Section "201" of the Administrative Instructions has been changed effective July 1, 1992, and is now Section "115.

Comment 15. One comment noted that the proposed change in section 1.455(a) does not reflect that a common representative need not be "appointed."

Response: A new sentence has been inserted into section 1.455(a) to address the situation where no common representative or agent has been appointed. Where no common representative or agent has been appointed, the first mentioned applicant who is entitled to file in the U.S receiving office is considered to be the common representative, PCT Rules 2.2bis and 90.2(b).

Comment 16. One comment noted that the proposed change in section 1.455(a) does not reflect that if a new common representative is appointed, the previous common representative is automatically revoked.

Response: The last sentence of section 1.455(a) has been changed to reflect that the later appointment of an attorney, agent or common representative revokes any earlier appointment unless otherwise indicated.

Comment 17. One comment suggested that "In sections 1.475(a), 1.488(a) and 1.499(e) reference should be added to PCT Rule 13, Administrative Instructions, Section 206, and possibly to Annex B of the Administrative Instructions."

Response: The suggestion is not adopted because it gives no reasons for the proposed change and it is not evident that the change is needed.

Comment 18. One comment stated that in the Supplementary Information discussion of section 1.475(b), the explanation of "specially adapted" was different from the explanation in Annex B, Part I of the Administrative Instructions.

Response: The discussion of section 1.475(b) has been revised to conform to Annex B, Part I of the Administrative Instructions.

Comment 19. One comment stated that in section 1.484(b) no need is seen for adding the last two sentences because "The provision relates only to International Searching Authority practice and is set forth in more detail by the PCT Rules."

Response: Section 1.484(b) is directed to conduct of the International Preliminary Examining Authority rather than the International Searching Authority. The explanation in section 1.484(b) is retained because, although it parallels PCT Rule 69.1(e), it informs applicants that delay in submission of an amendment will delay the start of examination. Applicants should be aware that, since the time for issuance of the final report is fixed by PCT Rule 69.2 and may not change, any delay in the start of examination may work to applicants' disadvantage. For example, the minimum time may have to be set for response to any opinions, there may be time for only one opinion and/or there may be less time for interviews.

Comment 20. One comment suggested that section 1.485 should be amended to take into account that amendments are permitted under PCT Rule 66.4bis even after the time period set by the International Preliminary Examining Authority.

Response: This suggestion is not adopted. Section 1.485 sets forth when an amendment may be filed so that it will be considered. Amendments filed at other times may not be considered.

Comment 21. One comment suggested that the beginning of section 1.492 should be changed to reflect that, in view of H.R. 3531, the national stage fees are under 35 U.S.C. 41(a) rather than under 35 U.S.C. 376.

Response: H.R. 3531 was enacted into law (Public Law 102-204). Accordingly, the suggestion in the comment has been adopted by revising the introductory language in section 1.492 to remove the reference to 35 U.S.C. 376.

Comment 22. One comment urged that in the Discussion of Specific Rules for sections 1.494(b) and 1.495(b), the discussion

VOL
1147
ISS
2
FE
9
1993
UMI

should be modified to clarify that the applicant need only check "his or her" files to be sure that the Bureau's notice regarding transmittal of a copy of the international application has been received.

Response: The language has been revised to eliminate any ambiguity.

Comment 23. One comment suggested that "as filed" in section 1.494(c) should be set off by commas as in section 1.495(c).

Response: Section 1.494(c) has been changed as suggested.

Comment 24. One comment questioned the phrases "accurate translation" and "proper translation" as used in the Supplementary Information discussion and stated that these phrases do not further explain the word "translation" as used in the statute. Another comment suggested that the rule should provide for correction of errors in the translation without penalty of abandonment or surcharge.

Response: The statute (35 U.S.C. 371(c)(2)) requires that applicant file a translation of the international application to avoid abandonment (35 U.S.C. 371(d)). The Office has received purported translations which include amendments to the text of the international application and other inconsistencies with the text of the non-English language document. It is helpful to explain that a translation must be accurate and a proper translation. The Office does not inspect a purported translation for all errors, it only inspects for errors which are apparent on the face of the document. For example, where the non-English language international application has 6 claims and the purported translation has 8 claims, obviously the requirement for a proper translation has not been met. Submission of inaccurate translations require additional processing by the Office, thus the requirement for a processing fee is appropriate.

Comment 25. One comment stated that in the Supplementary Information discussion of sections 1.494 and 1.495 the reference to the U.S. correspondence address should be modified to add "if any" since none is required.

Response: The suggestion has been adopted.

Comment 26. One comment stated that in the preamble of section 1.495(e) there appears to be a contradiction in that the first sentence suggests a translation of the annex may be filed within the time period set under 1.495(c) whereas the second sentence suggests the translation of the annex must be filed by 30 months or "be considered cancelled."

Response: The sentences are compatible. The first sentence applies to the case where the translation, oath or declaration have not been submitted by 30 months. In such case, they (and any annex) may be submitted within the time period of paragraph (c). The second sentence applies to the case where the translation and oath or declaration have been submitted by 30 months, whereupon no additional time is set under paragraph (c). Thus, in the first instance, if applicants are given additional time to submit the translation or oath or declaration, they may also submit the annex in that same additional time. But where the translation and oath or declaration have been submitted by 30 months, an additional time period will not be provided simply for submitting a translation of the annex. Of course, applicant may submit a preliminary amendment under 37 CFR 1.121 including the subject matter of the annex.

Comment 27. One comment suggested that sections 1.494(b)(3) and 1.495(b)(3) should be amended to permit an extension of time for the basic national fee so that it may be submitted, like the declaration and translation, after 20 and 30 months.

Response: The suggestion is not adopted. Submission of the basic national fee gives the Office a clear indication that applicant intends to enter the national stage. This helps the Office to avoid processing of those 40% of the international applications which designate the U.S. but do not enter the national stage. Also, filing of the basic national fee by 20 or 30 months will ordinarily provide the Office with the correspondence address of the person prosecuting the national stage application. Without this correspondence address, the Office would send any notice of missing parts to the correspondence address in the international application (e.g., the person who prosecuted the international stage and who may not be qualified to prosecute the U.S. national stage). The rules as amended address the greatest hurdle for entry into the national stage which has been submission of the oath or declaration by the 22 or 32-month deadline.

Comment 28. One comment suggested that sections 1.494(d) and 1.495(d) should indicate that the PCT Article 19 amendments (which have not been received) are not only considered to be cancelled, but are also "disregarded under PCT Rule 49.5(c-bis)."

Response: The suggestion is not adopted because this additional reference to PCT Rule 49.5(c-bis) is not helpful. The indication that the PCT Article 19 amendments are cancelled is in accordance with 35 U.S.C. 371(d). It is standard practice in the examination of a patent application in the United States to disregard amendments that have been cancelled.

Comment 29. One comment suggested that, with respect to section 1.494, "The proposed rules do not make clear the relationship between paragraphs (c) and (g) as to the time period set for later furnishing of the translation into English."

Response: Paragraph (c) provides that applicant will be provided a period of time to file the translation (if the requirements of paragraph (b) have been met) and paragraph (g) provides that the application becomes abandoned if any required translation is not filed within the time period set in paragraph (c). Thus, where the other requirements have been met but the translation has not been provided, paragraph (c) provides a time period for submission of the translation and paragraph (g) provides the sanction (abandonment) for failing to comply within the set period

Comment 30. One comment questioned whether the time period for translation of any PCT Article 19 amendments should be extendable with any extension for translation of the international application. A corresponding comment was made with respect to section 1.495.

Response: An extension of time for submission of the translation of any PCT Article 19 amendment is not possible in view of the provisions of 35 U.S.C. 371(d)

Comment 31. One comment suggested that sections 1.494(g) and 1.495(h) should be modified by replacing "the translation" with "any required translation."

Response: The suggestion is adopted. Translations are not required where the international application was filed in English.

Comment 32. One comment suggested that at the beginning of section 1.495(c) after "paragraph (b)" the word "of" should be added.

Response: The suggestion is adopted.

Comment 33. One comment suggested that section 1.495(d) could be deleted since under PCT Rules 70.16 and 74.1 relevant amendments under PCT Article 19 must be annexed to the international preliminary examining report and therefore must be translated under section 1.495(e). It was further noted that superseded PCT Article 19 amendments need not be translated.

Response: The suggestion is not adopted. Section 1.495(d) covers the situation where the PCT Article 19 amendment is not annexed. For example, where applicant enters the national stage in the U.S. and withdraws the international application before issuance of the final report. In this instance, translation of the PCT Article 19 amendments would have to be submitted by the date of commencement of the national stage (which cannot be later than 30 months) or be considered cancelled.

Comment 34. One comment observed that under section 1.495(e) if there is no time period to be set for submission of the translation of the international application and/or the oath or declaration, there is no possibility for extra time (after the 30-month deadline) for submission of translation of the annex. It was suggested that section 1.495(e) be reworded to permit extra time (after the 30-month deadline) for submission of a translation of the annex even where the translation of the international application and/or the oath or declaration had been submitted by 30 months.

Response: The suggestion is not adopted. Where the translation of the international application and/or the oath or declaration have been submitted by 30 months, it is appropriate to promptly forward the application for examination rather than delay examination for a translation of the annex (especially since often it appears that applicant does not wish to proceed on the basis of the annex). Some applicants prefer to submit preliminary amendments under section 1.121 (which may be done even after 30 months) rather than to submit a translation of the annex.

Comment 35. One comment urged that section 1.495(e) is inconsistent in that it states that the 30-month time limit may not be extended, and then states that if the translation of the international application is not filed within 30 months from the priority date additional time may be set under paragraph (c) of this section.

Response: The two statements are not contradictory. The time period for submission of the translation and oath or declaration is a new time period and is not a extension of the 30-month time limit. The fixed time limit for submission of the basic national fee is 30 months from the priority date. If the basic national fee is not paid by this 30-month deadline, the application is abandoned. If, on the other hand, the basic national fee is paid by 30 months from the priority date, the pendency of the international application continues past 30 months. If the translation or oath or declaration have not been filed by the 30-month deadline (but the basic national fee has been paid), the application is not abandoned and a time period is set for submission of the missing translation and oath or declaration.

Comment 36. One comment asked "Is it the intention of the Patent and Trademark Office to affect, in any way, the current practice of assigning a date on which the Section 371(c)(4) requirement (oath or declaration) will be deemed to have been met, if an applicant submits an oath or declaration in response to a Notice of Missing Parts, thereby ultimately affecting the Section 102(e) date to which the eventually granted U.S. patent will b entitled ?"

Response: Nothing in the new rule will affect the 35 U.S.C. 102(e) date which will continue to be the date that the last of the 35 U.S.C. 371(c)(1), (2) and (4) requirements are fulfilled.

Comment 37. One comment suggested that section 1.821 be clarified to reflect that the notice requiring compliance with paragraphs (b) through (f) is sent by the international searching authority.

Response: The suggestion is not adopted. Section 1.821 does not specify who will send the notice and there is no need to do so in the rule.

Comment 38. One comment questioned as to section 10.9 whether a pro se applicant from Brazil, who is either an individual or a company, would have the right to practice before the U.S. as an international searching or international preliminary examining authority.

Response: Section 10.9 has been amended to clarify that it is not directed to pro se applicants.

Discussion of Specific Rules

The following is a table correlating PCT Rule changes with the new 37 CFR changes. Sections 1.431(b)(1), 1.431(b)(3)(ii), 1.451(a), 1.482(a)(2)(i), 1.492(e), 1.494 and 1.495, which are also amended, are not shown in the table because they are changes that are not required by PCT Rule changes.

Rule Correlation Table

37 CFR Change	PCT Rule Change
1.431(c)-(e)	16bis, 27.1
1.432(a)	4.1(b)(iv), 4.9
1.432(b)	5.5, 16bis
1.432(c)	15.5
1.434(a)	3.1
1.445(a)(4)	15.5
1.446(d)	15.6, 16.2
1.446(e)	57.6
1.455(a)	90, 2.2bis
1.475	13
1.476(a)	13
1.480(b)	53.1
1.482(b)	57.5
1.484(b)	60.1(g), 66, 69.1
1.485	60.1(g)
1.487	13
1.488(a)	13
1.499	13
1.821(h)	13ter.1(c)
10.9(c)	90

Section 1.431(b)(1) is amended to clarify that an international filing date will be accorded to an International application filed in the United States where at least one applicant is indicated to be a resident or national of the United States in the papers as filed. If the papers, as filed, indicate a residence or nationality for at least one applicant, the United States Receiving Office can promptly determine whether, as required by PCT Article 11, "the applicant does not obviously lack" the requisite residence or nationality to file an international application in the United States Patent and Trademark Office.

Section 1.431(b)(3)(ii) is amended to add a cross-reference to section 1.432 which sets forth the requirements regarding designations.

Section 1.431(c) is amended to reflect that the United States Receiving Office, rather than the International Bureau, will be responsible for collecting fees not paid in full at the time of filing the international application or within one month thereafter. The change reflects the procedural change under the new PCT Regulations that the Receiving Office, rather than the International Bureau, will be responsible for communicating deficiency notices to the applicant and collecting the necessary fees. Under the procedure in paragraph (c), a notice of any fee deficiency will be mailed by the Receiving Office setting a time period of one month for payment of the fee deficiency and a late payment fee equal to the greater of (1) 50% of the amount of the deficient fees up to a maximum amount equal to the basic fee, or (2) an amount equal to the transmittal fee. The time period of one month for response to this notice cannot be extended.

Section 1.431(d) is eliminated as unnecessary since the United States Receiving Office will take over the responsibility for collecting fees in place of the International Bureau.

Section 1.431(e) is redesignated as 1.431(d) and clarifies that the failure to timely pay the fees pursuant to paragraph (c) will result in the withdrawal of the international application.

Section 1.432(a) is amended to clarify that the applicant must specify, on filing, at least one national or regional designation in order to be granted a filing date for the international application. This specific designation is required whether or not all designations are indicated pursuant to paragraph (c) of this section. The reference to Section 201 of the Administrative Instructions has been changed to Section 115 to correspond to the change in the Administrative Instructions.

Section 1.432(b) is amended to establish a procedure for the late payment of fees for designations that were specified on filing an international application, and a procedure, pursuant to PCT Rule 16bis.1(c), in accordance with section 321 of the PCT Administrative Instructions for allocating fees, where the amount paid is insufficient to cover all the fees. The payment of the designation fees with a late payment fee (previously termed a "surcharge") is not new. Under the revised PCT regulations, however, the Receiving Office, rather than the International Bureau, will be responsible for communicating deficiency notices to the applicant. The designation fees may be paid, without necessity for a late payment fee, within one year from the priority date or within one month from the date of receipt of the international application if that month expires after the expiration of one year from the priority date. The applicant will be notified and given one month within which to pay any deficient designation fees plus a late payment fee. The amount of the late payment fee is equal to 50% of the deficient fees, but will not be less than the amount of the transmittal fee (currently $200) and will not exceed the amount of the basic fee (currently $525). The one-month time limit for payment of the deficient designation fees and late payment fee may not be extended. If, after expiration of the one-month time period, at least one designation fee has not been paid (with any late payment fee which is due), the international application will be withdrawn. If, after expiration of the one-month time period, at least one designation fee has been paid (with any late payment fee which is due) but the amount paid is not sufficient to cover the late payment fee and all the designation fees, the amount paid will be allocated, pursuant to PCT Rule 16bis.1(c), in accordance with section 321 of the Administrative Instructions. Section 321 of the Administrative Instructions provides that the amount will be allocated in accordance with any instructions received from the applicant or, if no instructions have been received, in the order in which the designations appear in the request part of the international application. Designations for which no designation fee is timely filed will be withdrawn. In section 1.432(b), the reference to parenthetical numbers (1) and (2) used to describe the late payment fee as proposed has been deleted in the final rule to improve clarity.

New section 1.432(c) establishes a procedure wherein, in addition to the designation(s) under paragraph (a), the applicant could indicate, on filing, all designations permitted under the

VOL
1147
ISS
2
FE
9
1993
UMI

Treaty and confirm desired designations of countries or regions up to 15 months from the priority date. Section 1.432(c) as promulgated requires that applicant's indication of all designations permitted under the Treaty in addition to the designation(s) under paragraph (a) be made in the Request in accordance with PCT Rule 4.9(b). The confirmation must include both a written notice of the countries or regions being confirmed, the appropriate designation fees and a confirmation fee based on the number of countries or regions being confirmed. If the amount of the fees is insufficient, the Receiving Office will allocate the amount paid in accordance with any priority of designations specified by the applicant or, if no priority is specified, in accordance with section 321 of the Administrative Instructions. A notice reminding applicant of the 15-month deadline will not be provided. Unconfirmed designations will be considered withdrawn.

Section 1.434 is amended to allow applicants to develop their own computer-generated Request form so long as the forms comply with the requirements of sections 102(h) and (i) of the Administrative Instructions. Printed Request form will continue to be available from the United States Patent and Trademark Office.

New section 1.445(a)(4) defines the amount of the confirmation fee required for the designations confirmed under section 1.432(c). The confirmation fee is equal to 50% of the sum of the designation fees for the designations being confirmed. For example, a confirmation of four additional designations (at $127 per designation, or $508) would require a $254 confirmation fee. The total amount of the fees due would be $762, which is the sum of $508 and $254.

Section 1.446(d) is amended to clarify that the international (basic and designation, PCT Rule 15.1) and search fees may be refunded under certain circumstances linked to whether the record copy or search copy has been transmitted to the International Bureau or International Searching Authority, respectively. The transmittal fee and any late payment fees will not be refunded, but will be retained to cover Office processing costs. If the record copy or search copy has been transmitted, the Receiving Office cannot refund or authorize the refund of the international or search fees. Any request for a refund filed after the record copy or search copy has been transmitted should be directed to the International Bureau (for the international fee) or the International Searching Authority (for the international search fee) for consideration of whether a refund should be made.

New section 1.446(e) indicates that a refund of the handling fee by the International Preliminary Examining Authority is permitted only in the situations where the demand is considered not to have been submitted or upon withdrawal of the demand before the demand has been sent to the International Bureau. If the demand has been sent to the International Bureau, requests for refund of the handling fee should be directed to the International Bureau.

Section 1.451(a) is amended to clarify that the applicant must specify, on filing, the priority of a previously filed application in order to be granted priority in the international application. The right to priority is not necessarily lost if the claim is not on the Request form, but will be lost if the claim does not appear in the papers presented on filing of the application.

Section 1.455(a) is amended to clarify that the term "common representative" means an applicant appointed by the other applicants or considered to be the representative of the other applicants. Further, since attorneys and agents are registered to practice before the Office rather than licensed, section 1.455(a) has been amended by replacing the word "licensed" with "registered." The paragraph also clarifies who can represent applicants in an international application before the U.S. International Searching Authority or the U.S. International Preliminary Examining Authority, e.g., (1) an attorney or agent registered to practice before the Office, and (2) an attorney or agent not registered to practice before the Office, but authorized to practice before the national office with which the international application was filed and for which the United States is an International Searching Authority or International Preliminary Examining Authority. In the latter case, representation is restricted to practicing before the U.S. International Searching Authority and/or the U.S. International Preliminary Examining Authority. For example, if an international application is filed in the Brazilian Patent Office, an agent authorized to practice before the Brazilian Patent Office may prosecute that application before the U.S. International Searching Authority or the U.S. International Preliminary Examining Authority. Paragraph (a) also provides that, unless otherwise indicated, the appointment of an attorney, agent or common representative revokes any earlier appointment as specified in PCT Rule 90.6(b).

Section 1.475 is amended to adopt the unity of invention principles of PCT Rule 13, as amended. Section 1.475 is further amended to reflect that the same unity of invention principles are applied by the international searching and preliminary examining authorities and during the national stage. Duplicative provisions in sections 1.487 and 1.499 are deleted.

The principles of unity of invention are used to determine the types of claimed subject matter and the combinations of claims to different categories of invention that are permitted to be included in a single international or national stage patent application. The basic principle is that an application should relate to only one invention or, if there is more than one invention, that applicant would have a right to include in a single application only those inventions which are so linked as to form a single general inventive concept.

Section 1.475(a) is amended to contain both the definition of the requirement for unity of invention, and the unity of invention criteria that must be satisfied, where a group of inventions is claimed, in order to have a right to include multiple inventions in a single application. A group of inventions is linked to form a single general inventive concept where there is a technical relationship among the inventions that involves at least one common or corresponding special technical feature. The expression "special technical features" is defined as meaning those technical features that define the contribution which each claimed invention, considered as a whole, makes over the prior art. For example, a compound is the common technical feature in an application claiming (1) the compound per se, (2) a method of making the compound and (3) a method of using the compound. A corresponding technical feature is exemplified by a key defined by certain claimed structural characteristics which correspond to the claimed features of a lock to be used with the claimed key.

Section 1.475(b) is amended to define several combinations of different categories of claims which always fulfill the unity of invention requirements of section 1.475(a) where the same or corresponding special technical feature is claimed. There may be other combinations of different categories of claims which fulfill the requirement for unity of invention, but the determination of unity must be made under section 1.475(a), not section 1.475(b).

In section 1.475(b), a process is "specially adapted" for the manufacture of a product if the claimed process inherently produces the claimed product with the technical relationship defined in section 1.475(a) being present between the claimed process and the claimed product. The expression "specially adapted" as used in this section does not imply that the product could not also be manufactured by a different process.

In section 1.475(b), an apparatus or means is "specifically designed" for carrying out the process when the apparatus or means is suitable for carrying out the process with the technical relationship defined in section 1.475(a) being present between the claimed apparatus or means and the claimed process. The expression "specifically designed" does not imply that the apparatus or means could not be used for carrying out another process, nor does it imply that the process could not be carried out using an alternative apparatus or means.

Section 1.475(c) is amended to require that unity of invention might not be present if a combination of categories of invention different from those described in section 1.475(b) are presented in an application. The requirements of section 1.475(a) are always met by the combinations described in section 1.475(b) where the same or corresponding special technical feature is claimed. All other combinations must be tested against the unity of invention standard of section 1.475(a).

Section 1.475(d) is amended by deleting reference to the different combinations of categories of invention that always meet the unity of invention standard (now set forth in section 1.475(b)), and to make reference to the determination of the main invention where multiple products, processes of manufacture or uses are claimed. The significance of determining the main invention is set forth in section 1.476(c).

Section 1.475(e) is amended to require that the determination regarding unity of invention be made without regard to whether a group of inventions is claimed in separate claims or as alternatives within a single claim. The basic criteria for unity of invention are the same, regardless of the manner in which applicant chooses to draft a claim or claims.

Section 1.475(f) is deleted since PCT Rule 13 has been amended and the basic principles of unity of invention are incorporated into other portions of section 1.475.

Section 1.476(a) is amended to delete the reference to section 1.475(f) (which is deleted) and PCT Rule 13.

Section 1.480(b) is amended to allow applicants to develop their own computer-generated Demand form so long as the limitations in sections 102(h) and (i) of the Administrative Instructions are met. Printed Demand forms will continue to be available from the Office.

Section 1.482(a)(2)(i) is amended to clarify that an additional preliminary examination fee may be charged for lack of unity in Chapter II irrespective of whether there was a similar charge in Chapter I. Normally there will be a charge for lack of unity both in Chapter I and in Chapter II. In some instances, although a charge for the search of an additional invention is justified in Chapter I, the examiner chooses to proceed without charging for the search of the additional invention(s). However, circumstances may change (e.g., an amendment submitted with the Demand expanding the claims to the additional invention(s)) in Chapter II so as to warrant the examiner's requirement for an additional fee for examination of the additional invention(s).

Section 1.482(b) is amended to remove the reference to the supplement to the handling fee which had been collected for the benefit of the International Bureau and which has been deleted from the PCT regulations. At present, applicants must pay as many supplements to the handling fee as there are languages into which the elected Offices require translations of the international preliminary examination report. Under the new PCT regulations, all countries will accept an English translation of the international preliminary examination report, thus limiting the International Bureau's translation costs. Accordingly only one handling fee will need to be paid by the applicant, without any supplement, irrespective of the need for a translation of the report.

Section 1.484(b) is amended to permit an applicant to indicate in the demand that international preliminary examination is to begin based on the application as amended rather than on the application as filed. If a PCT Article 19 amendment is not received by the Office by 20 months from the priority date, preliminary examination will proceed. Where the demand indicates examination is to be based on an accompanying PCT Article 34 amendment, but the PCT Article 34 amendment has not been provided to the Office with the demand, the applicant will be notified and given a time period to submit the amendment. Thus, if the applicant wishes preliminary examination based on an amended version of the international application, the demand must so indicate and the amendment (PCT Article 19 or 34) must (1) accompany the demand; or (2) in the case of a PCT Article 19 amendment, be received by 20 months from the priority date; or (3) in the case of a PCT Article 34 amendment, be submitted within the nonextendable time period set by the Office.

Section 1.485 is amended to be consistent with section 1.484 and provides for amendments to be filed with the demand or within a time period set by the International Preliminary Examining Authority.

Section 1.487 is removed as unnecessary because the amendments to section 1.475 address the unity of invention principles to be applied by the International Preliminary Examining Authority.

Section 1.488(a) is amended to replace the reference to section 1.487, which is removed, with a reference to section 1.475.

Section 1.492 is amended to revise the introductory clause to eliminate the reference to 35 U.S.C. 376.

Section 1.492(e) is amended to eliminate the surcharge for filing the basic national fee after 20 or 30 months from the priority date. In accordance with the new practice under sections 1.494 and 1.495, the basic national fee must be filed no later than 20 months, or 30 months if a timely election was filed, from the priority date in order to avoid abandonment of the application.

Sections 1.494 and 1.495 is amended to modify the practice for entering the national stage as a designated or elected office by more closely aligning it with national application practice under section 1.53.

Section 1.494(a) is amended to clarify that absence of a Demand form is no longer the controlling event, but rather failure to elect the United States within 19 months of the priority date will trigger the time periods set forth in paragraphs (b) and (c) of this section.

Section 1.494(b) is amended to require that the basic national fee and a copy of the international application must be filed with the Office by 20 months from the priority date to avoid abandonment. The 22-month period for filing th basic national fee with a surcharge in previous rule 1.494(c) has been eliminated. The International Bureau normally provides the copy of the international application to the Office in accordance with PCT Article 20. At the same time, the International Bureau notifies the applicant of the communication to the Office. In accordance with PCT Rule 47.1, that notice shall be accepted by all designated offices as conclusive evidence that the communication has duly taken place. Thus, if the applicant desires to enter the national stage and applicant has received the notice from the International Bureau, applicant need only pay the basic national fee by 20 months from the priority date. The 20-month time limit for submission of the basic national fee and a copy of the international application is not extendable.

Section 1.494(c) is amended to provide that applicants who have provided the basic national fee and a copy of the international application by 20 months from the priority date but who omit a proper translation, oath or declaration will receive a notification setting a time period for submission of the omitted requirements. The time period set in the notice can be extended pursuant to section 1.136. Filing of the oath or declaration later than 20 months will require the payment of the surcharge set forth in section 1.492(e). Filing of the translation later than 20 months will require the payment of the processing fee set forth in section 1.492(f).

Section 1.494(d) is amended to clarify the existing practice that PCT Article 19 amendments must be submitted by 20 months from the priority date, which time may not be extended. Of course, the failure to do so does not result in loss of the subject matter of the PCT Article 19 amendments. The applicant may submit that subject matter in a preliminary amendment filed under section 1.121. In many cases, filing an amendment under section 1.121 is preferable since grammatical or idiomatic errors may be corrected.

Section 1.494(g) is removed in view of the amendments to sections (b), (c) and (d).

Section 1.494(h) is redesignated as 1.494(g) and is amended to specify when an application that fails to enter the national stage becomes abandoned. Abandonment occurs at 20 months from the priority date if the basic national fee and a copy of the international application have not been provided to the Office. If they have been provided to the Office within 20 months and the translation and/or oath or declaration are not filed timely, abandonment occurs upon expiration of the time limit set in the notification pursuant to paragraph (c). Thus, in the latter situation, abandonment would occur at the expiration of the time period set in the notice to file the missing translation, and/or oath or declaration. The phrase "where the United States has been designated but not elected *prior to* 19 months from the priority date" (emphasis added) has been changed to "where the United States has been designated but not elected *by the expiration of* 19 months from the priority date" (emphasis added) for clarity. A corresponding change has been made in section 1.495(h).

Section 1.495(a) is amended to clarify that the election of the U.S. need not be made in the Demand, but can be made subsequently if filed before expiration of 19 months from the priority date to start the time periods set forth in paragraphs (b) and (c) of this section.

Section 1.495(b) is amended to require that the basic national fee and a copy of the international application must be filed with the Office by 30 months from the priority date to avoid abandonment. The 32-month period for filing the basic national fee with a surcharge in previous rule 1.495(c) has been eliminated. The International Bureau normally provides the copy of the international application to the Office in accordance with PCT Article 20. At the same time the International Bureau notifies applicant of the communication to the Office. In accordance with PCT Rule 47.1, that notice shall be accepted by all designated offices

VOL
1147
ISS
2
FE
9
1993
UMI

as conclusive evidence that the communication has duly taken place. Thus, if the applicant desires to enter the national stage, the applicant normally need only check to be sure the notice from the International Bureau has been received and then pay the basic national fee by 30 months from the priority date. The 30-month time limit for submission of the basic national fee and a cop of the international application is not extendable.

Section 1.495(c) is amended to provide that applicants who have provided the basic national fee and a copy of the international application by 30 months from the priority date, but who omit a proper translation, oath or declaration, will receive a notification setting a time period for submission of the omitted requirements. The time period set in the notice can be extended pursuant to section 1.136. Filing of the oath or declaration later than 30 months will require the payment of the surcharge set forth in section 1.492(e). Filing of the translation later than 30 months will require the payment of the processing fee set forth in section 1.492(f).

Section 1.495(d) is amended to clarify the existing and continuing practice that the PCT Article 19 amendments must be submitted by 30 months from the priority date. The deadline for submitting PCT Article 19 amendments may not be extended. The failure to do so will not result in loss of the subject matter of the PCT Article 19 amendments. Applicant may submit that subject matter in a preliminary amendment filed under section 1.121. In many cases, filing an amendment under section 1.121 is preferable since grammatical or idiomatic errors may be corrected.

Section 1.495(e) is amended to specify that a translation into English of any annexes to the international preliminary examining report which are not received by 30 months from the priority date may only be submitted within the time period set in paragraph (c) for submission of any omitted translation of the international application, or oath or declaration. If any required translation of the international application and oath or declaration have been provided to the Office by 30 months, a notice under paragraph (c) will not be sent, and if the translation of annexes is not submitted within 30 months, the annexes will be considered cancelled.

Section 1.495(h) is removed in view of the amendments to sections (b), (c), (d) and (e).

Section 1.495(i) is redesignated as 1.495(h) and specifies when an application that fails to enter the national stage becomes abandoned if the United States was elected prior to 19 months from the priority date. Abandonment occurs at 30 months from the priority date if the basic national fee and a copy of the international application have not been provide to the Office. If they have been provided to the Office within 30 months and the translation and/or oath or declaration are not filed timely, abandonment occurs upon expiration of the time limit set in the notification pursuant to paragraph (c). Thus, in the latter situation, abandonment would occur at the expiration of the time period set in the notice to file the missing translation, and/or oath or declaration.

Section 1.499 is amended by removing paragraphs (a) through (e) because the amendments to section 1.475 address the unity of invention principles to be applied in the national stage. The reference to the official action being called a requirement for restriction has been eliminated as unnecessary.

Section 1.821(h) is amended to provide that if applicant fails to timely provide the required computer-readable form, the United States International Searching Authority shall search only to the extent that a meaningful search can be carried out.

Section 10.9 is amended to add a new paragraph (c) to be consistent with section 1.455, clarifying that an attorney or agent having the right to act before the national office with which the international application is filed may represent the applicant before the U.S International Searching Authority or the U.S. International Preliminary Examining Authority. An individual who has the right to practice before the national office with which an international application is filed, and who is not registered under section 10.6, may not prosecute patent applications in the national stage in the Office.

Other Considerations:

The rule changes are in conformity with the requirements of the Regulatory Flexibility Act, 5 U.S.C. 601, *et seq.*, Executive Orders 12291 and 12612, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501, *et seq.*

The General Counsel of the Department of Commerce has certified to the Chief Counsel for Advocacy, Small Business Administration, that the rule changes will not have a significant economic impact on a substantial number of small entities (Regulatory Flexibility Act, 5 U.S.C. 605(b)), because the rules provide more streamlined and simplified procedures for filing and prosecuting international and national stage applications under the PCT.

The Patent and Trademark Office has determined that these rule changes are not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers; individual industries; Federal, state or local government agencies; or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

The Patent and Trademark Office has also determined that this notice has no federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

These rule changes will not impose any additional burden under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501, *et seq.* The paperwork burden imposed by adherence to the PCT is currently approved by the Office of Management and Budget under control number 0651-0021.

Notice is hereby given that pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, the Patent and Trademark Office amends Title 37 of the Code of Federal Regulations as set forth below.

List of Subjects
37 CFR Part 1

Administrative practice and procedure, Courts, Freedom of Information, Inventions and patents, Reporting and record keeping requirements, Small businesses.

37 CFR Part 10

Administrative practice and procedure, Inventions and patents, Lawyers, Reporting and record keeping requirements, Trademarks.

For the reasons set forth in the preamble, 37 CFR Parts 1 and 10 are amended as follows:

Part 1 - Rules of Practice in Patent Cases

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6 unless otherwise noted.

2. Section 1.431 is amended by removing paragraph (e) and revising paragraphs (b)(1) through (b)(3)(ii), (c) and (d) to read as follows:

§ 1.431 International application requirements

* * * * *

(b) An international filing date will be accorded by the United States Receiving Office, at the time of receipt of the international application, provided that:

(1) At least one applicant (§ 1.421) is a United States resident or national and the paper filed at the time of receipt of the international application so indicate (35 U.S.C. 361(a), PCT Art. 11(1)(i)).

(2) The international application is in the English language (35 U.S.C. 361(c), PCT Art. 11(1)(ii)).

(3) The international application contains at least the following elements (PCT Art. 11(1)(iii)):

(i) An indication that it is intended as an international application (PCT Rule 4.2);

(ii) The designation of at least one Contracting State of the International Patent Cooperation Union (§ 1.432);

* * * * *

(c) Payment of the basic portion of the international fee (PCT Rule 15.2) and the transmittal and search fees (§ 1.445) may be made in full at the time the international application papers required by paragraph (b) of this section are deposited or within one month thereafter. If the basic, transmittal and search fees are not pa-id within one month from the date of receipt of the international application, applicant will be notified and given one month within which to pay the deficient fees plus a late payment fee equal to the greater of (1) 50% of the amount of the defficient fees up to a maximum amount equal to the basic fee, or (2) an amount equal to the transmittal fee (PCT Rule 16bis). The one-month time limit set in the notice to pay deficient fees may not be extended.

(d) If the payment needed to cover the transmittal fee, the basic fee, the search fee, one designation fee and the late payment fee pursuant to paragraph (c) of this section is not timely made, the Receiving Office will declare the international application withdrawn under PCT Article 14(3)(a).

Section 1.432 is revised to read as follows:

§ 1.432 Designation of States and payment of designation fees.

(a) The designation of States including an indication that applicant wishes to obtain a regional patent, where applicable, shall appear in the Request upon filing and must be indicated as set forth in PCT Rule 4.9 and Section 115 of the Administrative Instructions. Applicant must specify at least one national or regional designation on filing of the international application for a filing date to be granted.

(b) If the fees necessary to cover all the national and regional designations specified in the Request are not paid by the applicant within one year from the priority date or within one month from the date of receipt of the international application if that month expires after the expiration of one year from the priority date, applicant will be notified and given one month within which to pay the deficient designation fees plus a late payment fee equal to the greater of 50% of the amount of the deficient fees up to a maximum amount equal to the basic fee, or an amount equal to the transmittal fee (PCT Rule 16bis). The one-month time limit set in the notification of deficient designation fees may not be extended. Failure to timely pay at least one designation fee will result in the withdrawal of the international application. The one designation fee may be paid:

(1) within one year from the priority date,

(2) within one month from the date of receipt of the international application if that month expires after the expiration of one year from the priority date, or

(3) with the late payment fee defined in this paragraph within the time set in the notification of the deficient designation fees. If after notification of deficient designation fees the applicant makes timely payment, but the amount paid is not sufficient to cover the late payment fee and all designation fees, the Receiving Office will, after allocating payment for the basic, search, transmittal and late payment fees, allocate the amount paid in accordance with PCT Rule 16bis.1(c) and withdraw the unpaid designations. The notification of deficient designation fees pursuant to this paragraph may be made simultaneously with any notification pursuant to § 1.431(c).

(c) On filing the international application, in addition to specifying at least one national or regional designation under PCT Rule 4.9(a), applicant may also indicate under PCT Rule 4.9(b) that all other designations permitted under the Treaty are made. The latter indication under PCT Rule 4.9(b) must be made in a statement on the Request that any designation made under this paragraph is subject to confirmation (PCT Rule 4.9(c)) not later than the expiration of 15 months from the priority date by:

(1) filing a written notice with the United States Receiving Office specifying the national and/or regional designations being confirmed;

(2) paying the designation fee for each designation being confirmed; and

(3) paying the confirmation fee specified in § 1.445(a)(4). Unconfirmed designations will be considered withdrawn. If the amount submitted is not sufficient to cover the designation fee and the confirmation fee for each designation being confirmed, the Receiving Office will allocate the amount paid in accordance with any priority of designations specified by applicant. If applicant does not specify any priority of designations, the allocation of the amount paid will be made in accordance with PCT Rule 16bis.1(c).

4. Section 1.434 is amended by revising paragraph (a) to read as follows:

§ 1.434 The request.

(a) The request shall be made on a standardized form (PCT Rules 3 and 4). Copies of printed Request forms are available from the Patent and Trademark Office. Letters requesting printed forms should be marked "Box PCT."

* * * * *

5. Section 1.445 is amended by adding new paragraph (a)(4) to read as follows:

§ 1.445 International application filing, processing and search fees.

(a) * * *

(4) A confirmation fee (PCT Rule 96) equal to 50% of the sum of designation fees for the national and regional designations being confirmed (§ 1.432(c)).

* * * * *

6. Section 1.446 is amended by revising paragraph (d) and adding paragraph (e) to read as follows:

§ 1.446 Refund of international application filing and processing fees.

* * * * *

(d) The international and search fees will be refunded if no international filing date is accorded or if the application is withdrawn before transmittal of the record copy to the International Bureau (PCT Rules 15.6 and 16.2). The search fee will be refunded if the application is withdrawn before transmittal of the search copy to the International Searching Authority. The transmittal fee will not be refunded.

(e) The handling fee (§ 1.482(b)) will be refunded (PCT Rule 57.6) only if:

(1) the Demand is withdrawn before the Demand has been sent by the International Preliminary Examining Authority to the International Bureau, or

(2) the Demand is considered not to have been submitted (PCT Rule 54.4(a)).

7. Section 1.451 is amended by revising paragraph (a) to read as follows:

§ 1.451 The priority claim and priority document in an international application.

(a) The claim for priority must be made on the Request (PCT Rule 4.10) in a manner complying with Sections 110 and 115 of the Administrative Instructions.

* * * * *

8. Section 1.455 is amended by revising paragraph (a) to read as follows:

§ 1.455 Representation in international applications.

(a) Applicants of international applications may be represented by attorneys or agents registered to practice before the

VOL
1147
ISS
2
FE
9
1993
UMI

Patent and Trademark Office or by an applicant appointed as a common representative (PCT Art. 49, Rules 4.8 and 90 and § 10.10). If applicants have not appointed an attorney or agent or one of the applicants to represent them, and there is more than one applicant, the applicant first named in the request and who is entitled to file in the U.S. Receiving Office shall be considered to be the common representative of all the applicants. An attorney or agent having the right to practice before a national office with which an international application is filed and for which the United States is an International Searching Authority or International Preliminary Examining Authority may be appointed to represent the applicants in the international application before that authority. An attorney or agent may appoint an associate attorney or agent who shall also then be of record (PCT Rule 90.1(d)). The appointment of an attorney or agent, or of a common representative, revokes any earlier appointment unless otherwise indicated (PCT Rule 90.6(b) and (c)).

9. Section 1.475 is revised to read as follows:

§ 1.475 Unity of invention before the International Searching Authority, the International Preliminary Examining Authority and during the national stage.

(a) An international and a national stage application shall relate to one invention only or to a group of inventions so linked as to form a single general inventive concept ("requirement of unity of invention"). Where a group of inventions is claimed in an application, the requirement of unity of invention shall be fulfilled only when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression "special technical features" shall mean those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art.

(b) An international or a national stage application containing claims to different categories of invention will be considered to have unity of invention if the claims are drawn only to one of the following combinations of categories:

(1) a product and a process specially adapted for the manufacture of said product; or

(2) a product and a process of use of said product; or

(3) a product, a process specially adapted for the manufacture of the said product, and a use of the said product; or

(4) a process and an apparatus or means specifically designed for carrying out the said process or

(5) a product, a process specially adapted for the manufacture of the said product, and an apparatus or means specifically designed for carrying out the said process.

(c) If an application contains claims to more or less than one of the combinations of categories of invention set forth in paragraph (b) of this section, unity of invention might not be present.

(d) If multiple products, processes of manufacture or uses are claimed, the first invention of the category first mentioned in the claims of the application and the first recited invention of each of the other categories relate thereto will be considered as the main invention in the claims, see PCT Article 17(3)(a) and § 1.476(c).

(e) The determination whether a group of inventions is so linked as to form a single general inventive concept shall be made without regard to whether the inventions are claimed in separate claims or as alternatives within a single claim.

10. Section 1.476 is amended by revising paragraph (a) to read as follows:

§ 1.476 Determination of unity of invention before the International Searching Authority.

(a) Before establishing the international search report, the International Searching Authority will determine whether the international application complies with the requirement of unity of invention as set forth in § 1.475.

* * * * *

11. Section 1.480 is amended by revising paragraph (b) to read as follows:

§ 1.480 Demand for international preliminary examination.

* * * * *

(b) The Demand shall be made on a standardized form. Copies of printed Demand forms are available from the Patent and Trademark Office. Letters requesting printed Demand forms should be marked "Box PCT".

* * * * *

12. Section 1.482 is amended by revising paragraphs (a)(2)(i) and (b) to read as follows:

§ 1.482 International preliminary examination fees.

(a) * * *

(2) An additional preliminary examination fee when required, per additional invention:

(i) Where the International Searching Authority for the international application was the United States Patent and Trademark Office $140.00

* * * * *

(b) The handling fee is due on filing the Demand.

13. Section 1.484 is amended by revising paragraph (b) to read as follows:

§ 1.484 Conduct of international preliminary examination.

* * * * *

(b) International preliminary examination will begin promptly upon receipt of a Demand which requests examination based on the application as filed, or as amended by an amendment which has been received by the United States International Preliminary Examining Authority. Where a Demand requests examination based on a PCT Article 19 amendment which has not been received, examination may begin at 20 months without receipt of a PCT Article 19 amendment. Where a Demand requests examination based on a PCT Article 34 amendment which has not been received, applicant will be notified and given a time period within which to submit the amendment. Examination will begin after the earliest of:

(1) receipt of the amendment;

(2) receipt of applicant's statement that no amendment will be made; or

(3) expiration of the time period set in the notification.

No international preliminary examination report will be established prior to issuance of an international search report.

* * * * *

14. Section 1.485 is revised to read a follows:

§ 1.485 Amendments by applicant during international preliminary examination.

(a) The applicant may make amendments at the time of filing of the Demand and within the time limit set by the International Preliminary Examining Authority for response to any notification under § 1.484(b) or to any written opinion. Any such amendments must:

(1) Be made by submitting a replacement sheet for every sheet of the application which differs from the sheet it replaces unless an entire sheet is cancelled, and

(2) Include a description of how the replacement sheet differs from the replaced sheet.

(b) If an amendment cancels an entire sheet of the international application, that amendment shall be communicated in a letter.

15. Section 1.487 is removed.

§ 1.487 [Removed]

16. Section 1.488 is amended by revising paragraph (a) to read as follows:

§ 1.488 Determination of unity of invention before the International Preliminary Examining Authority.

(a) Before establishing any written opinion or the international preliminary examination report, the International Preliminary Examining Authority will determine whether the international application complies with the requirement of unity of invention as set forth in § 1.475.

* * * * *

17. Section 1.492 is amended by revising the introductory clause and paragraph (e) to read as follows:

§ 1.492 National stage fees.

The following fees and charges are established for international applications entering the national stage under 35 U.S.C. 371:

* * * * *

(e) Surcharge for filing the oath or declaration later than 20 months from the priority date pursuant to § 1.494(c) or later than 30 months from the priority date pursuant to § 1.495(c):

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

* * * * *

18. Section 1.494 amended by removing paragraph (h) and by revising paragraphs (a), (b), (c), (d) and (g) to read as follows:

§ 1.494 Entering the national stage in the United States of America as a Designated Office.

(a) Where the United States of America has not been elected by the expiration of 19 months from the priority date (see § 1.495), the applicant must fulfill the requirements of PCT Article 22 and 35 U.S.C. 371 within the time periods set forth in paragraphs (b) and (c) of this section in order to prevent the abandonment of the international application as to the United States of America. International applications for which those requirements are timely fulfilled will enter the national stage and obtain an examination as to the patentability of the invention in the United States of America.

(b) To avoid abandonment of the application, the applicant shall furnish to the United States Patent and Trademark Office not later than the expiration of 20 months from the priority date:

(1) a copy of the international application, unless it has been previously communicated by the International Bureau or unless it was originally filed in the United States Patent and Trademark Office; and

(2) the basic national fee (see § 1.492(a)).

The 20-month time limit may not be extended.

(c) If applicant complies with paragraph (b) of this section before expiration of 20 months from the priority date but omits (1) a translation of the international application, as filed, into the English language, if it was originally filed in another language (35 U.S.C. 371(c)(2)) and/or (2) the oath or declaration of the inventor (35 U.S.C. 371(c)(4); see § 1.497), applicant will be so notified and given a period of time within which to file the translation and/or oath or declaration in order to prevent abandonment of the application. The payment of the processing fee set forth in § 1.492(f) is required for acceptance of an English translation later than the expiration of 20 months after the priority date. The payment of the surcharge set forth in § 1.492(e) is required for acceptance of the oath or declaration of the inventor later than the expiration of 20 months after the priority date. A copy of the notification mailed to applicant should accompany any response thereto submitted to the Office.

(d) A copy of any amendments to the claims made under PCT Article 19, and a translation of those amendments into English, if they were made in another language, must be furnished not later than the expiration of 20 months from the priority date. Amendments under PCT Article 19 which are not received by the expiration of 20 months from the priority date will be considered to be cancelled. The 20-month time limit may not be extended.

* * * * *

(g) An international application becomes abandoned as to the United States 20 months from the priority date if the requirements of paragraph (b) of this section have not been complied with within 20 months from the priority date where the United States has been designated but not elected by the expiration of 19 months from the priority date. If the requirements of paragraph (b) of this section are complied with within 20 months from the priority date but any required translation of the international application as filed and/or the oath or declaration are not timely filed, an international application will become abandoned as to the United States upon expiration of the time period set pursuant to paragraph (c) of this section.

19. Section 1.495 is amended by removing paragraph (i) and by revising paragraphs (a), (b), (c), (d), (e) and (h) to read as follows:

§ 1.495 Entering the national stage in the United States of America as an Elected Office.

(a) Where the United States of America has been elected by the expiration of 19 months from the priority date, the applicant must fulfill the requirements of 35 U.S.C. 371 within the time periods set forth in paragraphs (b) and (c) of this section in order to prevent the abandonment of the international application as to the United States of America. International applications for which those requirements are timely fulfilled will enter the national stage and obtain an examination as to the patentability of the invention in the United States of America.

(b) To avoid abandonment of the application the applicant shall furnish to the United States Patent and Trademark Office not later than the expiration of 30 months from the priority date:

(1) a copy of the international application, unless it has been previously communicated by the International Bureau or unless it was originally filed in the United States Patent and Trademark Office; and

(2) the basic national fee (see § 1.492(a)).

The 30-month time limit may not be extended.

(c) If applicant complies with paragraph (b) of this section before expiration of 30 months from the priority date but omits:

(1) a translation of the international application, as filed, into the English language, if it was originally filed language (35 U.S.C. 371(c)(2)) and/or

(2) the oath in another or declaration of the inventor (35 U.S.C. 371(c)(4); see § 1.497), applicant will be so notified and given a period of time within which to file the translation and/or oath or declaration in order to prevent abandonment of the application. The payment of the processing fee set forth in § 1.492(f) is required for acceptance of an English translation later than the expiration of 30 months after the priority date. The payment of the surcharge set forth in § 1.492(e) is required for acceptance of the oath or declaration of the inventor later than the expiration of 30 months after the priority date. A copy of the notification mailed to applicant should accompany any response thereto submitted to the Office.

(d) A copy of any amendments to the claims made under PCT Article 19, and a translation of those amendments into English, if they were made in another language, must be furnished not later than the expiration of 30 months from the priority date. Amendments under PCT Article 19 which are not received by the expiration of 30 months from the priority date will be considered to be cancelled. The 30-month time limit may not be extended.

(e) A translation into English of any annexes to the international preliminary examination report, if the annexes were made in another language, must be furnished not later than the expiration of 30 months from the priority date. Translations of the annexes which are not received by the expiration of 30 months from the priority date may be submitted within any period set pursuant to paragraph (c) of this section accompanied by the processing fee set forth in § 1.492(f). Annexes for which translations are not timely received will be considered cancelled. The 30-month time limit may not be extended.

VOL
1147
ISS
2
FE
9
1993
UMI

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(h) An international application becomes abandoned as to the United States 30 months from the priority date if the requirements of paragraph (b) of this section have not been complied with within 30 months from the priority date and the United States has been elected by the expiration of 19 months from the priority date. If the requirements of paragraph (b) of this section are complied with within 30 months from the priority date but any required translation of the international application as filed and/or the oath or declaration are not timely filed, an international application will become abandoned as to the United States upon expiration of the time period set pursuant to paragraph (c) of this section.

20. Section 1.499 is revised to read as follows:

§ 1.499 Unity of invention during the national stage.

If the examiner finds that a national stage application lacks unity of invention under § 1.475, the examiner may in an Office action require the applicant in the response to that action to elect the invention to which the claims shall be restricted. Such requirement may be made before any action on the merits but may be made at any time before the final action at the discretion of the examiner. Review of any such requirement is provided under § § 1.143 and 1.144.

21. Section 1.821 is amended by revising paragraph (h) to read as follows:

§ 1.821 Nucleotide and/or amino acid sequence disclosures in patent applications.

* * * * *

(h) If any of the requirements of paragraphs (b) through (f) of this section are not satisfied at the time of filing, in the United States Receiving Office, an international application under the Patent Cooperation Treaty (PCT), applicant has one month from the date of a notice which will be sent requiring compliance with the requirements, or such other time as may be set by the Commissioner, in which to comply. Any submission in response to a requirement under this paragraph must be accompanied by a statement that the submission does not include new matter or go beyond the disclosure in the international application as filed. Such a statement must be a verified statement if made by a person not registered to practice before the Office. If applicant fails to timely provide the required computer readable form, the United States International Searching Authority shall search only to the extent that a meaningful search can be performed.

* * * * *

22. The authority citation for 37 CFR Part 10 will continue to read as follows:

Authority: 5 U.S.C. 500; 15 U.S.C. 1123; 35 U.S.C. 6, 31, 32, 41.

23. Section 10.9 is amended by adding new paragraph (c) to read as follows:

§ 10.9 Limited recognition in patent cases.

* * * * *

(c) An individual not registered under § 10.6 may, if appointed by applicant to do so, prosecute an international application only before the U.S. International Searching Authority and the U.S. International Preliminary Examining Authority, provided: the individual has the right to practice before the national office with which the international application is filed (PCT Art. 49, Rule 90 and § 1.455).

Jan. 7, 1993

DOUGLAS B. COMER
Acting Assistant Secretary and Acting Commissioner of Patent and Trademarks

PATENT NOTICES

Certificates of Correction For Week of February 9, 1993

Des. 314,494	4,983,256	5,023,901	5,041,300
Des. 318,707	4,985,542	5,024,290	5,041,407
Des. 319,077	4,987,180	5,024,369	5,041,489
Des. 320,690	4,987,213	5,024,464	5,041,522
Des. 320,693	4,990,726	5,024,865	5,041,641
P. 7,675	4,990,974	5,024,870	5,042,520
Re. 33,323	4,991,156	5,026,002	5,042,948
Re. 33,665	4,991,503	5,026,572	5,043,717
4,148,061	4,992,350	5,027,475	5,044,145
4,643,989	4,992,886	5,027,582	5,044,245
4,656,140	4,993,729	5,027,620	5,044,511
4,657,541	4,994,433	5,027,745	5,044,705
4,664,592	4,994,962	5,028,052	5,044,984
4,731,750	4,995,059	5,028,269	5,045,633
4,774,265	4,996,010	5,028,840	5,046,421
4,806,537	4,996,708	5,029,484	5,046,609
4,810,571	4,998,183	5,029,887	5,046,731
4,811,744	4,998,746	5,029,990	5,047,027
4,833,187	5,001,734	5,030,091	5,047,124
4,839,040	5,001,768	5,030,295	5,047,334
4,867,850	5,003,317	5,030,518	5,047,767
4,870,160	5,003,532	5,030,723	5,048,628
4,872,329	5,003,601	5,030,775	5,048,912
4,872,828	5,003,686	5,030,823	5,049,054
4,873,313	5,004,258	5,031,437	5,049,191
4,877,610	5,004,872	5,031,698	5,049,418
4,884,901	5,004,915	5,031,790	5,049,443
4,884,902	5,005,067	5,032,060	5,050,646
4,889,520	5,005,069	5,032,695	5,051,184
4,894,777	5,005,970	5,033,080	5,051,249
4,897,340	5,006,998	5,033,505	5,051,269
4,909,626	5,007,203	5,033,514	5,051,674
4,910,523	5,007,317	5,033,882	5,052,228
4,916,448	5,008,183	5,034,023	5,052,282
4,919,145	5,008,243	5,034,099	5,052,283
4,925,707	5,008,346	5,034,191	5,052,647
4,930,429	5,008,574	5,034,381	5,052,661
4,935,328	5,009,676	5,034,456	5,053,169
4,937,691	5,009,906	5,034,674	5,053,365
4,939,520	5,010,080	5,034,830	5,053,558
4,940,751	5,010,228	5,035,015	5,053,675
4,947,724	5,011,529	5,035,379	5,053,913
4,950,609	5,011,541	5,035,942	5,054,267
4,951,009	5,011,834	5,036,782	5,054,431
4,951,109	5,011,962	5,036,814	5,054,562
4,953,194	5,011,969	5,037,129	5,054,630
4,957,387	5,012,107	5,037,222	5,054,936
4,958,752	5,012,828	5,037,356	5,055,459
4,959,492	5,013,494	5,037,778	5,055,620
4,960,784	5,013,507	5,037,846	5,056,594
4,961,985	5,013,697	5,037,852	5,056,651
4,966,059	5,013,732	5,038,019	5,057,944
4,966,167	5,015,324	5,038,057	5,058,050
4,966,660	5,016,610	5,038,138	5,058,150
4,967,014	5,017,254	5,038,317	5,058,341
4,967,026	5,017,562	5,038,485	5,059,712
4,968,738	5,017,812	5,038,665	5,060,080
4,968,788	5,019,201	5,039,330	5,061,328
4,970,508	5,020,356	5,039,510	5,083,887
4,970,721	5,021,114	5,039,523	5,084,521
4,971,256	5,021,728	5,039,579	5,100,300
4,975,314	5,021,827	5,039,639	5,104,604
4,976,934	5,021,876	5,039,643	5,118,416
4,978,811	5,022,296	5,039,765	5,126,965
4,979,328	5,023,318	5,039,897	5,143,322
4,981,973	5,023,483	5,040,495	5,153,538
4,982,129	5,023,816	5,040,559	5,155,184

VOL
1147
ISS
2
FE
9
1993
UMI

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Box DD	Mail related to Disclosure Documents.
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Box FWC	Requests for File Wrapper Continuation Applications (under 37 CFR 1.62)
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Box Issue Fee	All Communications following the receipt of a PTOL-85. "Notice of Allowance and Issue Fee Due," and prior to the issuance of a patent should be addressed to Box Issue Fee, unless advised to the contrary. Assignments should be submitted in a separate envelope and not be sent to Box Issue Fee.
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Box M. Fee	Correspondence related to a patent that is subject to the payment of a maintenance fee.
Box Non-Fee-Amendment	Non-fee amendments to patent applications. (Use Box AF for responses after final rejection).
Box OED	Mail for the Office of Enrollment and Discipline
Box PATENT APPLICATION	New patent application and associated papers and fees.
Box TRADEMARK	New trademark application and associated papers and APPLICATION fees.
Box Pat. Ext.	Applications for patent term extension.
Box PCT	Mail related to applications filed under the Patent Cooperation Treaty.
Box Reexam	Requests for Reexamination for *original* request papers *only*.
Box Sequence	Submission of diskette for biotechnical application.
Box SN	For fee and petitions under 37 CFR 1.182 to obtain date received and/or serial number for patent applications *prior* to the Office's standard notification (return postcard or the official "Filing Receipt," "Notice to File Missing Parts," or "Notice of Incomplete Application").
Box Reconstruction	Correspondence pertaining to the reconstruction of lost patent files.

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Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles City Library	(213) 612-3273
	Sacramento: California State Library	(916) 654-0069
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Colorado	Denver Public Library	(303) 640-8847
Connecticut	New Haven: Science Park Library	(203) 786-5447
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	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa: Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette: Siegesmund Engineering Library, Purdue University	(317) 494-2873
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 689-3155
Kentucky	Louisville Free Public Library	(502) 561-8617
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Library, University of Michigan	(313) 764-5298
	Big Rapids: Abigail S. Timme Library, Ferris State University	(616) 592-3602
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library and Information Center	(612) 372-6570
Mississippi	Jackson: Mississippi Library Commission	Not Yet Operational
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
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New Jersey	Newark Public Library	(201) 733-7782
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	Buffalo and Erie County Public Library	(716) 858-7101
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D.H. Hill Library, North Carolina State University	(919) 515-3280

VOL
1147
ISS
2
FE
9
1993
UMI

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State	*Name of Library*	*Telephone Contact*
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Ohio	Cincinnati and Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
Oklahoma	Stillwater: Oklahoma State University Center for International Trade Development	(405) 744-7086
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Philadelphia, The Free Library of	(215) 686-5331
	Pittsburgh, Carnegie Library of	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 455-8027
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
	Clemson University Libraries	Not Yet Operational
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library,Vanderbilt University	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext.2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 367-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-4510
Wisconsin	Madison: Kurt F. Wendt Library, University of Wisconsin Madison	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

PATENT EXAMINING CORPS

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — D. E. TALBERT, Director	308-0661	2/20/92
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	5/14/92
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 — DONALD CZAJA, Acting Director	308-0651	4/24/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	4/24/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Acting Director	308-0196	7/11/91
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100 — D. G. KELLY, Director	308-1782	7/23/91
SPECIAL LAWS ADMINISTRATION, GROUP 2200 — ROBERT E. GARRETT, Director	308-0511	7/06/91
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 2300 — GERALD GOLDBERG, Director	308-0754	10/10/90
PACKAGES, CLEANING, TEXTILES AND GEOMETRICAL INSTRUMENTS GROUP 2400 — CARLTON CROYLE, Director	308-0771	1/24/92
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	8/20/91
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	6/29/91
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	9/23/90
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100 — F. R. SCHMIDT, Director	308-1113	12/21/91
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	4/14/92
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	4/07/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	4/17/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	1/21/92

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during January 1993 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 3,930,271 to 3,935,595 inclusive
Plant Patents ..... 3,824 to 3,827

VOL
1147
ISS
2
FE
9
1993
UMI

REEXAMINATIONS

FEBRUARY 9, 1993

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,251,331 (1923rd)
BATHS AND ADDITIVES FOR THE ELECTROPLATING OF BRIGHT ZINC
William E. Rosenberg, Strongsville, Ohio, assignor to Columbia Chemical Corporation, Cleveland, Ohio
Reexamination Request No. 90/002,518, Nov. 25, 1991.
Reexamination Certificate for Patent No. 4,251,331, issued Feb. 17, 1981, Ser. No. 113,120, Jan. 17, 1980.
Int. Cl.[5] C25D *3/22*
U.S. Cl. 205—314

AS A RESULT OF REEXAMINATION IT HAS BEEN DETERMINED THAT:

Claims **1–3** and **12–15** are cancelled.

Claims **4** and **16** are determined to be patentable as amended.

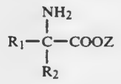
Claims **5–11** and **17–25**, dependent on an amended claim, are determined to be patentable.

New claims **26–73** are added and determined to be patentable.

4. A zinc [brightener additive according to claim **3** wherein] *brightening agent for addition to zinc electroplating baths, comprising:*

from about 1 to about 98 percent by weight of a zinc brightener selected from the group consisting of alpha-aminoaliphatic carboxylic acids, salts of alpha-aminoaliphatic carboxylic acids, and combinations thereof;

said zinc brightener having the formula:

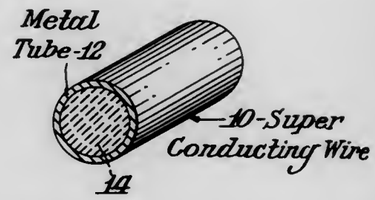


where R_1 and R_2 are hydrogen, alkyl, alicyclic, alkyl aryl, or aryl groups, having from 1 to 12 carbon atoms and where Z is a bath compatible cation selected from the group consisting of hydrogen, sodium, potassium, zinc, calcium, and lithium; and

from about 1 to 98 percent by weight of a nonionic surface active compound containing at least 6 moles of condensed ethylene oxide per mole of said nonionic surface active compound, said nonionic surface active compound being at least one compound selected from the group consisting of (a) homopolymers of ethylene oxide; (b) propylene oxide-ethylene oxide block copolymers of a molecular weight of 500 or more, prepared by the sequential addition of propylene oxide and ethylene oxide in either order to a residue of any organic compound containing a plurality of active hydrogen atoms; (c) the products obtained upon condensing from 6 to about 50 moles of ethylene oxide with a mole of a reactant selected from the group consisting of naphthol, and a long chain compound, said long chain compound having from about 6 to about 30 carbon atoms and selected from the group consisting of a long chain fatty acid, a long chain fatty alcohol, a long chain fatty amine, and a long chain alkyl phenol, and

from about 1 to about 20 percent by weight of a carbonyl compound, said carbonyl compound [is] *being* at least one compound selected from the group consisting of benzylidene acetone, cinnamic aldehyde, o-chlorobenzaldehyde, 2,4-dichlorobenzaldehyde, 2,6-dichlorobenzaldehyde, 2-hydroxyl-1-naphthaldehyde, and furfuryl acetone.

B1 4,980,964 (1924th)
SUPERCONDUCTING WIRE
Jan Boeke, P.O. Box 2327, Chapel Hill, N.C. 27514
Reexamination Request No. 90/002,350, May 22, 1991.
Reexamination Certificate for Patent No. 4,980,964, issued Jan. 1, 1991, Ser. No. 234,271, Aug. 19, 1988.
Int. Cl.[5] H01B *12/00*
U.S. Cl. 29—599



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **2** is cancelled.

Claims **1**, **3**, **8** and **9** are determined to be patentable as amended.

Claims **4–7** and **10–13**, dependent on an amended claim, are determined to be patentable.

New claim **14** is added and determined to be patentable.

1. A method for producing a protected wire of crystalline superconducting material which comprises:

(a) providing a metal tube with a lining of protective [material] *glass powder* which is substantially inert to both the metal tube and the superconductive material with which the tube is to be filled,

(b) sealing the tube at one end with an electrically conductive metal, filling the tube with a superconductive material, and sealing the other end of the tube with an electrically conductive metal,

(c) drawing at least a portion of the filled tube through at least one size-reducing die whereby the diameter of the tube and its contents is reduced to a wire size, and

(d) heat treating the drawn wire to provide crystallinity in the superconductive material.

B1 5,028,667 (1925th)
YTTRIUM AND RARE EARTH COMPOUNDS CATALYZED LACTONE POLYMERIZATION
Stephan J. McLain, Hockessin, and Neville E. Drysdale, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Reexamination Request No. 90/002,484, Oct. 21, 1991.
Reexamination Certificate for Patent No. 5,028,667, issued Jul. 2, 1991, Ser. No. 414,964, Sep. 29, 1989.
Int. Cl.[5] C08G *63/84, 63/91*
U.S. Cl. 525—415

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–42** is confirmed.

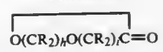
VOL
1147
ISS
2
FE
9
1993
UMI

New claims **43–45** and **46–50** are added and determined to be patentable.

1. A process for the ring opening polymerization of lactones comprising contacting under polymerizing conditions a lactone or lactide selected from the group consisting of:



-continued



wherein n is 4 or 5, h, i, k and m are independently one or two; each R is independently selected from H or hydrocarbyl containing up to 12 carbon atoms or substituted hydrocarbyl containing up to 12 carbon atoms; with a catalyst of the structure MZ_3 where M represents trivalent yttrium or a rare earth metal and each Z is independently selected from $—OCR^1{}_3$, $—NR^1{}_2$, $—CR^1{}_3$ and highly coordinating ligands, wherein each R^1 is selected from hydrogen, hydrocarbyl and substituted hydrocarbyl, provided that Z is selected so that at least one of the groups bonded to M is not a highly coordinating ligand, and further provided that when Z is $CR^1{}_3$, one or two of R^1 may be covalent bonds to carbon.

REISSUES

FEBRUARY 9, 1993

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,174

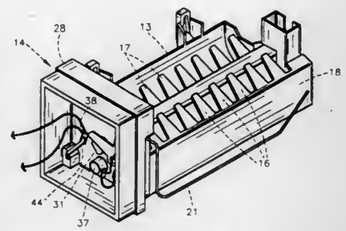
ICE MAKER WITH THERMAL PROTECTION

Ralph W. Brown, Orleans; Sammie C. Beach, Gowen, and Gary R. Peter, Rockford, all of Mich., assignors to White Consolidated Industries, Inc., Cleveland, Ohio

Original No. 5,010,738, dated Apr. 30, 1991, Ser. No. 498,204, Mar. 23, 1990. Application for reissue Aug. 22, 1991, Ser. No. 748,791

Int. Cl.[5] **F25C** *1/24*

U.S. Cl. 62—135 **16 Claims**



11. An ice maker for mounting in the freezer compartment of refrigerators comprising an elongated mold formed of thermally conductive material, said mold having a cavity in which water is held and frozen when exposed to subfreezing environment, a heater in heat exchange relationship to said mold operable to melt ice along its interface with said cavity to release the bond therebetween and allow removal of the ice from said cavity, power means connected to eject said ice from said cavity when said heater releases said bond between said cavity and said ice, said mold providing laterally extending mounting legs at spaced locations along the length of said mold for mounting said ice maker on the wall of said freezer compartment, each of said mounting legs providing a face portion having a slot therein open at one end, said face portion being spaced from the adjacent side of said mold and connected to said adjacent side by a pair of substantially parallel wall portions extending between said face portion and said adjacent edges of said mold with one wall portion located on each side of the associated slot, said ice maker being installable on headed fasteners threaded partially into said wall of said freezer compartment by positioning said face portion against said wall and moving said legs along said wall causing said fasteners to move through the associated opening into the associated slot, said fastener heads passing between the adjacent wall portions.

Re. 34,175

FLOAT SWITCH ASSEMBLY

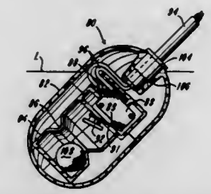
Richard V. Grimes, P.O. Box 304, and John W. Good, 10010 N. 25 A, both of Piqua, Ohio 45356

Original No. 4,644,117, dated Feb. 17, 1987, Ser. No. 780,320, Sep. 26, 1985. Application for reissue Nov. 15, 1991, Ser. No. 793,072

Int. Cl.[5] **H01H** *35/18*

U.S. Cl. 200—84 R **18 Claims**

14. A float switch assembly adapted to float on a liquid surface and to sense changes in the level of the surface for controlling a pump, said assembly comprising a housing defining a generally cylindrical chamber, means connected to said housing and forming a generally annular barrier projecting into said chamber, a set of electrical conductors extending to said housing, switch means within said housing and connected to said conductors, means for actuating said switch means between a closed position connecting said conductors and an open position disconnecting said conductors, a ball member disposed within said chamber and movable over said barrier to operate said actuating means in response to tilting movement of said housing and independent of the rotational position of said housing, means for floating said housing on the liquid surface, a flexible power cord including said electrical conductors and supporting said floating means for said tilting and rotational movement of said housing [and], said ball member having a diameter substantially smaller than the diameter of said generally cylindrical chamber, *and said barrier urges said ball member against said actuating means in one of said positions.*



Re. 34,176

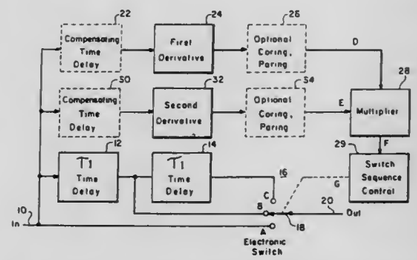
METHOD AND APPARATUS FOR IMPROVING THE RISE AND FALL TIME OF A VIDEO SIGNAL

Kenneth R. Skinner, Jefferson City, and James E. Hitchcock, Knoxville, both of Tenn., assignors to North American Philips Corporation, New York, N.Y.

Original No. 4,758,891, dated Jul. 19, 1988, Ser. No. 921,935, Oct. 20, 1986. Application for reissue Jul. 17, 1990, Ser. No. 554,640

Int. Cl.[5] **H04N** *5/14*

U.S. Cl. 358—166 **11 Claims**



11. Apparatus for generating an output signal having decreased transition times in response to a received video signal having varying rates of change, comprising:

first means for receiving said video signal and generating a second derivative signal therefrom;

second means connected to said first means, for generating a control signal varying at least in part, in response thereto;

time delay means connected to receive said video signal, for generating a time delayed signal corresponding to said video signal; and

output means coupled to receive said video signal and said time delayed signal, said output means having a control input connected to receive said control signal and a signal output for furnishing said output signal.

VOL
1147
ISS
2
FE
9
1993
UMI

Re. 34,177

OVEN FOR BLOW MOLDING MACHINE

Bruce Coxhead, Bond Head; Gary Hughes, Bolton, and John R. Murchie, Everett, all of Canada, assignors to Husky Injection Molding Systems Ltd., Bolton, Canada

Original No. 4,923,395, dated May 8, 1990, Ser. No. 271,719, Nov. 16, 1988. Application for reissue Jul. 9, 1991, Ser. No. 727,833

Int. Cl.[5] **F27D** *5/00*

U.S. Cl. 432—5 **10 Claims**

10. In a blow molding machine having an oven for heating preforms or parisons which are mounted for rotation and for linear transportation through the oven including means for establishing a temperature profile for heating the body of each parison to establish in each parison a preferred temperature gradient extending throughout the body of each parison,

a method of establishing a reproducible temperature profile comprising the steps of:

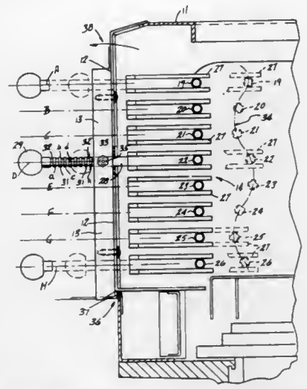
placing a battery of individually moveable heating elements within said oven in a vertical array,

providing heating element adjustment means exterior of said oven,

manually adjusting the position of each heating element relative to the body of a parison to a desired position,

establishing a readable indicia for marking the position of each heating element relative to a given parison,

utilizing the indicia to identify the location of a desired position of each heating element, and



storing the indicia corresponding to an identified location to facilitate reproduction of a preferred temperature profile by resetting the location of each heating element.

PLANT PATENTS

GRANTED FEBRUARY 9, 1993

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,132

CHERRY TREE ROOTSTOCK 'BROOKS-60'

Lyle A. Brooks, deceased, late of Forest Grove, Oreg., and Wallace E. Heuser, legal representative, Hartford, Mich., assignors to Inter-Plant Patent Marketing, Inc., Niagara-On-The-Lake, Canada

Continuation of Ser. No. 371,676, Jun. 19, 1989, abandoned, which is a continuation of Ser. No. 162,670, Mar. 1, 1988, abandoned. This application Sep. 30, 1991, Ser. No. 768,119

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—37 **1 Claim**

1. A cherry tree rootstock plant substantially as herein described and illustrated.

8,133

AFRICAN VIOLET PLANT NAMED CATHY

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 736,218

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—69.1 **1 Claim**

1. A new and distinct cultivar of African violet named Cathy, as described and illustrated, and particularly characterized by its single violet-shaped, light pink flowers with purplish pink in the center radiating irregularly into the two small petals; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; medium green, oval to heart-shaped leaves; profuse flowering, vigorous and compact growth habit, flowering 10–11 weeks after potting, and its long lasting and non-dropping flowers.

8,134

AFRICAN VIOLET PLANT NAMED HELSINKI

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 736,612

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—69.1 **1 Claim**

1. A new and distinct cultivar of African violet named Helsinki, as described and illustrated, and particularly characterized by its extra large growth habit (35–45 cm in diameter); two-tone pink, semi-double to double flowers with slightly wavy edges; strong stems which curve toward the center to form a bouquet above the leaves; profuse flowering; large, dark green, oval to spear-shaped leaves; flowering 12–13 weeks after planting of unrooted shoot, and by its long lasting and non-dropping flowers.

8,135

AFRICAN VIOLET PLANT NAMED LITTLE SHOSHONE GIRL

Reinhold Holtkamp, Sr., Blumenstrasse 28, D4242 Rees-Haffen, Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 736,638

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—69.1 **1 Claim**

1. A new and distinct cultivar of African violet named Little Shoshone Girl, as described and illustrated, and particularly characterized by its mid-size growth habit (13–15 cm in diameter); single violet-shaped, light pink flowers with darker center; strong stems which curve toward the center to form a compact bouquet above the leaves; profuse flowering; dark green, heart-shaped; flowering 10–11 weeks after planting of unrooted shoot, and by its long lasting and non-dropping flowers.

8,136

AFRICAN VIOLET PLANT NAMED BERLIN

Reinhold Holtkamp, Sr., Blumenstrasse 28, D4242 Rees-Haffen, Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 736,217

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—69.2 **1 Claim**

1. A new and distinct cultivar of African violet named Berlin, as described and illustrated, and particularly characterized by its extra large growth habit (30–40 cm in diameter); blue, star-shaped, semi-double flowers with frilled white edges; strong stems which curve toward the center to form a bouquet above the leaves; profuse flowering; large, medium green, wavy leaves; flowering 12–13 weeks after planting of unrooted shoot, and by its long lasting and non-dropping flowers.

8,137

AFRICAN VIOLET PLANT NAMED ROME

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 736,504

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—69.2 **1 Claim**

1. A new and distinct cultivar of African violet named Rome, as described and illustrated, and particularly characterized by its extra large growth habit (35–40 cm in diameter); small, single violet-shaped, burgundy flowers; strong stems which curve toward the center to form a bouquet above the leaves; profuse flowering; medium green, spear-shaped leaves; flowering 12–13 weeks after planting of unrooted shoot, and by its long lasting and non-dropping flowers.

8,138

AFRICAN VIOLET PLANT NAMED STOCKHOLM

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 736,574

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—69.2 **1 Claim**

1. A new and distinct cultivar of African violet named Stockholm, as described and illustrated, and particularly characterized by its extra large growth habit (30–40 cm in diameter); light blue, star-shaped flowers; strong stems which curve toward the center to form a bouquet above the leaves; profuse flowering; large, bright green, spear- to heart-shaped leaves; flowering 12–13 weeks after planting of unrooted shoot, and by its long lasting and non-dropping flowers.

8,139

CHRYSANTHEMUM PLANT NAMED EARLY VERO

Matthew G. Coward, Punta Gorda, Fla., assignor to Burdette Coward & Co., Inc., Punta Gorda, Fla.

Filed Feb. 12, 1991, Ser. No. 654,036

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—82.1 **1 Claim**

1. A new and distinct Chrysanthemum plant named Early Vero, as described and illustrated.

8,140

DAYLILY PLANT NAMED FRAGRANT TREASURE

Darrel A. Apps, Chadds Ford, Pa., and Ronald C. Iverson, Barrington, Ill., assignors to Iverson Perennial Gardens, Inc., Long Grove, Ill.

Filed Aug. 13, 1991, Ser. No. 744,391

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—87.4 **1 Claim**

1. As new and distinct cultivar of daylily plant named Fragrant Treasure, as illustrated and described.

VOL
1147
ISS
2
FE
9
1993
UMI

PATENTS

GRANTED February 9, 1993

ERRATA

For CLASS	See PATENT NO.
226-190	5,184,383
101-040	5,184,546
175-050	5,184,692
256-012	5,184,800
256-034	5,184,801
267-103	5,184,802
267-140	5,184,803
296-198	5,184,832
252-299	5,184,847
359-668	5,184,880
362-001	5,184,881
362-032	5,184,882
362-032	5,184,883
362-072	5,184,884
403-171	5,184,920
483-028	5,184,985
504-117	5,185,023
504-116	5,185,024
504-282	5,185,025
504-225	5,185,026
504-219	5,185,027
504-284	5,185,028
504-320	5,185,029
427-523	5,185,067
427-246	5,185,169
526-264	5,185,170
422-028	5,185,371
546-259	5,185,455
257-390	5,185,646
257-017	5,185,647
257-189	5,185,648
257-508	5,185,650
257-734	5,185,651
257-758	5,185,652

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ERRATA—Continued

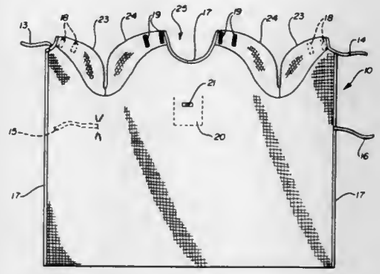
257-729	5,185,653
257-659	5,185,654
395-425	5,185,694
358-224	5,185,712
369-034	5,185,727
385-024	5,185,814

PATENTS

GRANTED FEBRUARY 9, 1993

GENERAL AND MECHANICAL

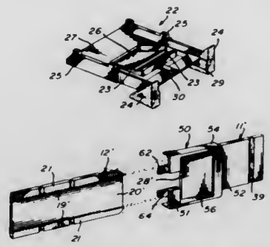
5,184,351
VERSATILE PATIENT GOWN
Gerald M. Benstock, Bellair Beach, Fla., assignor to Superior Surgical Mfg. Co., Inc., Seminole, Fla.
Continuation-in-part of Ser. No. 562,144, Aug. 2, 1990. This application Feb. 7, 1991, Ser. No. 652,102
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—114 **8 Claims**



1. A patent gown for providing access to the patient's torso without necessitating removal of the gown comprising:
a front panel having a neck portion formed therein for covering the front of the patient;
two back panels, each of said back panels being formed adjacent to said front panel on the patient;
first fastening means attached to said back panels for opening and closing said back panels;
two openable sleeves each formed of a first part attached to said front and a second part attached to respective ones of said back panels and having top edges;
said first and second parts each having curvilinear end portions at their respective top edges for substantially the entire length of said end portions;
second fastening means attached to said first and second parts in proximity to said curvilinear end portions for opening and closing said first and second parts;
pocket means formed on said front panel for holding patient monitoring equipment herein and an aperture in said front panel formed adjacent to said pocket means for permitting passage of medical apparatus therethrough.

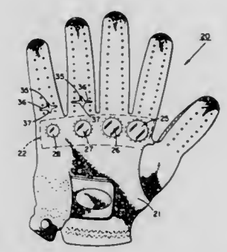
5,184,352
MOLDED PLASTIC BELT WITH INTEGRAL LOCKING MECHANISM
Claude Maufette, Montreal, Canada, assignor to Les Produits Pinso LTEE, Montreal, Canada
Filed Sep. 27, 1991, Ser. No. 766,343
Claims priority, application Canada, Oct. 16, 1990, 2027720
Int. Cl.[5] A44B *11/00*
U.S. Cl. 24—585 **31 Claims**

1. A locking mechanism for interconnecting two flexible flat band end portions together, one of said band end portions having a lock mechanism at a free end thereof, said locking mechanism having a lock housing with a guide passageway for receiving and guiding the other of said band end portions through said lock housing, said other of said band end portions having incremental engageable means constituted by toothed means formed in an inner face of said other of said band end portion, said lock housing having a separating locking insert element retained captive in said lock housing, said locking insert element having a flexible member provided with arresting means to engage with said incremental engageable means to prevent said other band end portion to be retracted from said guide passageway of said lock housing, and finger actuable release means being connected to said flexible member to disengage said arresting means from said engageable means to cause said flexible member to flex to move said arresting means



out of engagement with said incremental engageable means to permit retraction of said other band portion from said lock housing.

5,184,353
GOLF GLOVE CONSTRUCTION
David Goldwitz, 91 Country La., Milford, Conn. 06460
Filed Aug. 30, 1991, Ser. No. 753,314
Int. Cl.[5] A41D *19/00*
U.S. Cl. 2—161 A **20 Claims**



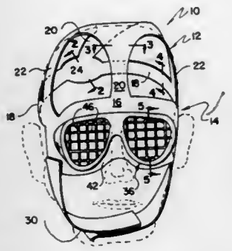
15. A golf glove for assisting golfers in holding the shaft of a golf club in the precisely desired position for attaining a desired shot, said golf glove comprising
A. a generally conventional glove construction for peripherally surrounding and covering the hand of the golfer, said glove incorporating
a. a front surface for substantially covering the palm and coextensive finger surfaces of the hand of the user, and
b. a rear surface interconnected to the front surface and constructed for covering the back surface of the hand of the user;
B. a plurality of independent knuckle indicating means, each being
a. positioned on the rear surface of the glove in overlying association with the position of one of the knuckles of the user when the glove is being worn and when the glove is in secure holding engagement with the shaft of a golf club,
b. visually distinguishable from each other for enabling the user to immediately determine the position of each knuckle relative to the shaft of the golf club; and
c. formed on the rear surface of the glove, substantially co-extensive therewith, preventing any substantial protrusion or depression thereof from the surface,
C. a plurality of elongated indicia each indicia

VOL 1147 ISS 2 FEB 9 1993 UMI

a. being formed on the front surface of the glove
b. extending across the surface of the glove covering at least one selected from the group consisting of at least three of the user's fingers and the combination of at least two of the user's fingers and the user's palm
c. establishing a substantially continuous visual designation for identifying the preferred placement position for the shaft of the golf club; and

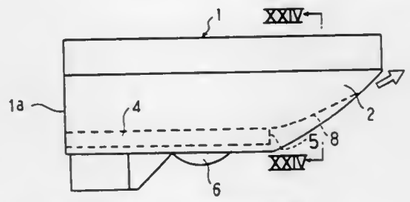
D. at least one relief zone
a. formed in the rear surface of the glove at the proximal end of a finger receiving pocket, and
b. constructed for expanding to receive a ring mounted on the finger for allowing the ring to be retained on the finger with comfort.

5,184,354
PROTECTIVE HEAD AND EYE GEAR
Daniel V. Alfaro, and Cecilio V. Jimenez, Jr., both of Corpus Christi, Tex., assignors to AlJim Corporation, Corpus Christi, Tex.
Filed May 24, 1991, Ser. No. 705,347
Int. Cl.[5] A61F *9/02*
U.S. Cl. 2—425 **11 Claims**



1. A combination head and eye protective headgear, comprising:
a head encircling strap assembly including
a bodily flexible forehead band of unpadded material for extending horizontally above the eyebrows of the user,
a bodily flexible head encircling strap of padded material connected to the forehead band for extending horizontally around the user's head near its maximum periphery,
a bodily flexible top strap of unpadded material connected tot he forehead band for extending vertically over the top of the user's head and connected to the head encircling strap near its rearmost extremity,
a bodily flexible chin strap and means connecting the chin strap to the head encircling strap assembly for extending below the chin of the user;
and
an eye protective assembly connected to the forehead band and to the chin strap and terminating above the end of the user's nose, the eye protective assembly including
a bodily flexible unpadded band for extending across the user's nose,
a padded eye encircling rim having an annular relatively rigid frame and padding material encapsulating the annular frame.

5,184,355
WATER CLOSET BLOWING WARM AIR AND WATER CLOSET UNIT ATTACHABLE TO TOILET ROOM
Yasuhisa Taguchi; Makoto Endo; Ryuichi Kawamoto; Shiro Saito, all of Tokoname; Reigi Zaizen; Hiroshi Komachi, both of Anjyo; Naomasa Narita, Toyota, and Kenichi Fujiwara, Kariya, all of Japan, assignors to Inax Corporation & Nippondenso Co., Ltd., Aichi, Japan
Division of Ser. No. 342,031, Apr. 24, 1989, Pat. No. 5,058,217. This application Aug. 28, 1990, Ser. No. 573,081
Claims priority, application Japan, Apr. 22, 1988, 63-100945; Apr. 28, 1988, 63-107235; Apr. 29, 1988, 63-108064; May 10, 1988, 63-60609; May 10, 1988, 63-60610; May 10, 1988, 63-60612; May 10, 1988, 63-60618
Int. Cl.[5] E03D *11/00*
U.S. Cl. 4—420 **7 Claims**

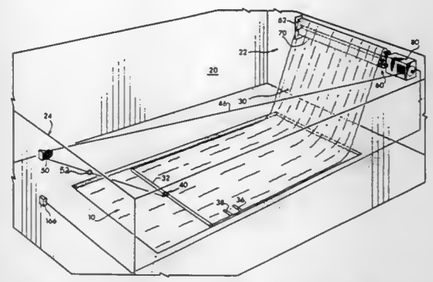


1. A sitting type water closet, comprising
a toilet bowl having a first end, a second end, an inner side and an outer side,
a warm air duct for conveying warm air formed on a first lower portion of said outer side of said toilet bowl and extending from said first end to a point located between said first and second ends whereby said duct is integrally formed as one piece therewith,
said warm air duct terminating at a warm air outlet for releasing warm air conveyed by said warm air duct, and
a warm air guiding groove for guiding the warm air away from said bowl, said guiding groove extending from said warm outlet towards said second end of said toilet bowl, said warm air guiding groove being formed on a second lower portion of said outer side of said toilet bowl whereby said guiding groove is integrally formed as one piece therewith.

5,184,356
SYSTEM FOR AUTOMATICALLY COVERING SWIMMING POOLS AND METHOD THEREFOR
George O. G. Löf, 6 Parkway Dr., Englewood, Colo. 80110, and Larry O. D. Löf, 2089 S. Logan, Denver, Colo. 80210
Filed Feb. 12, 1991, Ser. No. 654,357
Int. Cl.[5] E04H *4/00*
U.S. Cl. 4—502 **34 Claims**

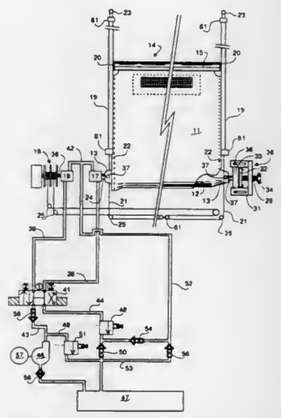
12. A system for deploying and retrieving a cover for a swimming pool, said system comprising:
a cover adapted to cover a swimming pool;
a reel mounted for rotation near a first end of said pool, said cover having one end attached to said reel;
a tow rope having one end attached to a free edge of said cover and a second end attached to a rotatable spool;
drive means operatively connected to said reel and to said spool for rotating said reel and spool;
in a first direction to unwind said cover from said reel to deploy said cover over said pool and wind said tow rope onto said spool to guide said cover over said pool; and
in a second direction to wind said cover onto said reel to remove said cover from said pool;
means for obstructing said tow rope when said cover reaches one end of said pool to stop said tow rope from further pulling said cover while said cover continues to be unwound from said reel;

transparent windows formed at predetermined points in said cover; and



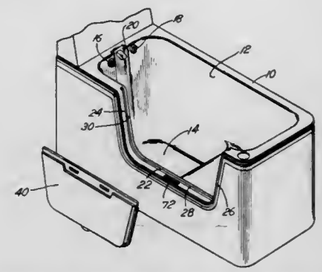
photoelectric sensors operatively connected to said drive means and positioned to transmit through said windows when said cover is in the proper position on said pool and when said cover is off said pool to stop said drive means.

5,184,357
AUTOMATIC SWIMMING POOL COVER WITH A DUAL HYDRAULIC DRIVE SYSTEM
Harry J. Last, 1246 Birchwood Dr., Sunnyvale, Calif. 94089
PCT No. PCT/US90/04157, § 371 Date Nov. 28, 1991, § 102(e) Date Nov. 28, 1991
Continuation-in-part of Ser. No. 494,564, Mar. 16, 1990, Pat. No. 5,067,184, which is a continuation-in-part of Ser. No. 258,000, Oct. 17, 1988, Pat. No. 4,939,798. This PCT application Jul. 24, 1990, Ser. No. 741,480
Int. Cl.[5] E04H *4/10*
U.S. Cl. 4—502 **6 Claims**



1. A hydraulic drive system for extending and retracting swimming pool covers comprising, in combination,
a first reversible hydraulic motor mechanically coupled for rotating at least one cable reel around which a pair of cables, extending from side edges of the pool cover, wind and unwind,
a second reversible hydraulic motor mechanically coupled for rotating a cover drum around which the pool cover winds and unwinds,
means coupling between the respective cables for equalizing tension in the respective cables and for compensating for any differential in rates at which the respective cables wind and unwind from around the cable reel,
a source of hydraulic power,
a control means hydraulically coupling the respective motors and the source of hydraulic power for:
(i) providing a driving torque, via the first motor, for rotating the cable reel to wind the cables around the reel while simultaneously providing a resistive torque, via the second motor, for resisting unwinding rotation of the cover drum as the cover unwinds and is drawn across covering the pool; and
(ii) providing a driving torque, via the second motor for rotating the cover drum to wind the cover around the cover drum, while simultaneously providing a resistive torque, via the first motor, for resisting unwinding rotation of the cable reels to tension the cables and cover as the cover retracts uncovering the pool.

5,184,358
BATHING TUB CONSTRUCTION WITH REMOVABLE SIDE WALL
James A. Gruidel; Reinhold A. Haase, both of Hastings, and Thomas G. Johnson, Blue Hil!, all of Nebr., assignors to Dutton-Lainson Company, Hastings, Nebr.
Filed Sep. 24, 1991, Ser. No. 765,362
Int. Cl.[5] A47K *3/14*
U.S. Cl. 4—555 **7 Claims**



1. An improved bathing tub assembly having a removable side wall comprising in combination:
a tub having a bottom wall and an integral peripheral side wall defining a partial tub enclosure, a defined opening in the side wall having a lateral slot along the edge of the opening;
a removable tub enclosure panel compatibly sized to fit in and close the opening by fitting into the slot to hereby define the removable side wall, said slot having spaced, converging side surfaces, defining a generally U-shaped cross-section;
said opening also generally U-shaped with the sides of the U converging toward the base of the U;
said panel having an edge with a cross-sectional shape of the slot where by the edge is slidable into the slot;
said edge being surrounded by a sealing member which also has a U-shaped cross-section and fits over the edge side surfaces to seal against the slot side surfaces when the panel is in the slot;
said sea! being retained on the edge by a band member extending against the seal along the outside of the base;
said band member being fastened at its opposite ends to the edge of the panel; and
releasable means for retaining the panel in the slot.

VOL 1147 ISS 2 FE 9 1993 UMI

5,184,359

STOOL-TYPE APPARATUS FOR SAMPLING AND ASSAY OF URINE WITH SWINGABLE CARRIAGE

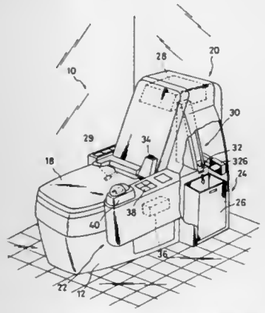
Naoki Tsukamura; Kiyoshi Alyfuku; Yuzuru Nakamura; Yoshiki Hiruta, and Hiroshi Tsuboi, all of Fukuoka, Japan, assignors to Toto Ltd., Kita-kyushu, Japan

Filed Aug. 22, 1991, Ser. No. 748,211

Claims priority, application Japan, Aug. 24, 1990, 2-223324; Sep. 4, 1990, 2-233740; Sep. 4, 1990, 2-233741; Sep. 4, 1990, 2-233742; Oct. 23, 1990, 2-285367; Oct. 23, 1990, 2-285368; Oct. 25, 1990, 2-287624; Oct. 26, 1990, 2-290304; Nov. 22, 1990, 2-318834; Nov. 22, 1990, 2-318835; Nov. 22, 1990, 2-318836; Nov. 26, 1990, 2-324668; Nov. 26, 1990, 2-324670; Nov. 26, 1990, 2-324671; Nov. 26, 1990, 2-324672; Nov. 26, 1990, 2-324673; Nov. 26, 1990, 2-324674; Nov. 26, 1990, 2-324675; Nov. 26, 1990, 2-324676; Nov. 26, 1990, 2-324677

Int. Cl.[5] E03D *11/00*; **A61B** *5/00*

U.S. Cl. 4—661 **51 Claims**



1. An apparatus for the assay of biological excrement comprising:

a base defining an open cavity for receiving biological excrement released from a user of said apparatus seated on said base;

a frame mounted on said base;

an excrement analyzer having an analyzer station positioned on said frame, said analyzer being adapted to quantitatively analyze at least one biological substance contained in the excrement, which substance may be of the health condition of the user, by examining at said analyzer station a testing sheet incorporating a reagent which is reactive with said substance; and,

sheet transfer means supported on said frame for transferring said testing sheet, past said analyzer station, between a first position in which said reagent is allowed to be brought into contact with the excrement in said cavity and a second position which is spaced away from said cavity and in which the used testing sheet is discarded for disposal.

5,184,360

CHILD'S PLAYHOUSE WITH BED ON TOP

Marta Gonzalez, 4430 NW. 207th Dr., Miami, Fla. 33055

Filed Nov. 25, 1991, Ser. No. 797,173

Int. Cl.[5] A47D *7/00*; **A47C** *19/22*

U.S. Cl. 5—2.1 **8 Claims**

1. For use by a child, a platform bed assembly comprising:

a lower base structure,

said lower base structure being structured and disposed to function as a play area and resemble a large scale version of a toy article.

said base structure including an interior compartment therein,

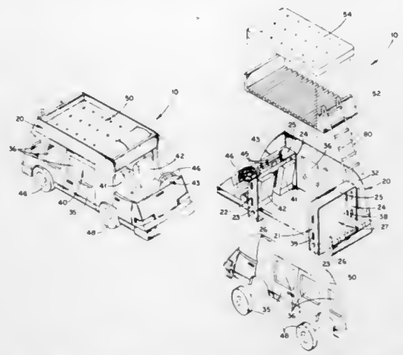
a mattress support platform,

said mattress support platform being supportably positioned and secured to said base structure by platform support means,

a mattress positioned in overlying position on said mattress support platform,

said platform support means including a pair of large, generally square support brackets positioned in spaced apart relation as part of said base structure,

said base structure further including an elongate, generally rectangular floor portion passing through an open central portion of said support brackets and being secured at opposite longitudinal edges thereof to a lower portion of



said pair of support brackets in a generally elevated position from a lower side of said support brackets,

a pair of oppositely disposed elongate side walls secured to respective vertical sides of said pair of support brackets,

a ladder secured to said base structure and positioned so as to allow facilitated access to said mattress and a sunken sleeping area defined by said mattress,

a plurality of toy accessory components positioned within said interior compartment and corresponding to said toy article, and

said base structure being formed of a relatively lightweight, rigid, sturdy plastic or like material.

5,184,361

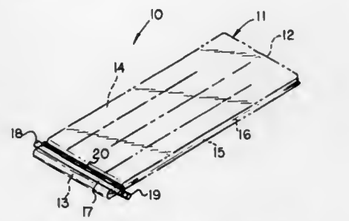
SLEEPING BAG STORAGE APPARATUS

Marylee Canter, and Wilma Hulquist, both of P.O. Box 1647, Newport, Wash. 99156-1647

Filed Apr. 27, 1992, Ser. No. 874,437

Int. Cl.[5] A47G *9/08*

U.S. Cl. 5—413 **4 Claims**



1. A sleeping bag storage apparatus, comprising,

an elongate sleeping bag, the elongate sleeping bag including a sleeping bag first end spaced from a sleeping bag second end, and a sleeping bag first side spaced from a sleeping bag second side, and

a rigid tubular member mounted to the sleeping bag adjacent the sleeping bag second end parallel to the sleeping bag second end, with the rigid tube member including a first end cap mounted to a first end of the tube member, and a second end cap mounted to the second end of the tube member, and

an elastomeric strap extending from the first end cap to the second end cap, and the sleeping bag received between the elastomeric strap and the tube member.

5,184,362

PILLOW CASE WITH THREE DIMENSIONAL DESIGN

Pamela S. Yager, Farmington Hills, and Nancy A. Pisha, Redford, both of Mich., assignors to Saint Geeks, Inc., Farmington Hills, Mich.

Filed Jan. 21, 1992, Ser. No. 823,288

Int. Cl.[5] A47C *9/00*

U.S. Cl. 5—490 **9 Claims**



1. A decorative pillow case comprising:

an envelope, said envelope including a first sheet and a second sheet, said first sheet and said second sheet each including an inner surface and an outer surface, wherein the first sheet is joined to the second sheet to define a pillow cavity between the inner surface of the first sheet and the inner surface of the second sheet, said pillow cavity operable for receiving a pillow;

a three-dimensional figure wholly contained within the perimeter of one of said sheets, said three-dimensional figure includes a one piece soft three-dimensional shell of a soft three-dimensional plush figure, said shell having a three-dimensional inner surface and a soft three-dimensional plush outer surface; and

stuffing, said stuffing operable to be located between the outer surface of the first sheet and the inner surface of the shell, wherein said stuffing maintains the soft three-dimensional plush outer surface contour of the shell, and wherein said shell is affixed to a portion of the outer surface of the first sheet by sewn stitches with the stuffing therebetween, wherein the three-dimensional figure decorates the envelope without substantially altering the overall shape of the envelope.

5,184,363

SUPPORT BED WITH DROP-OUT SECTIONS FOR MEDICAL ANALYSIS

Michael G. Falbo, Sr., Gladstone, Mo., assignor to American Echo, Inc., Kansas City, Mo.

Filed May 15, 1992, Ser. No. 883,566

Int. Cl.[5] A61C *7/00*

U.S. Cl. 5—601 **9 Claims**

1. A diagnostic patient support bed, comprising:

an elongated, generally horizontally disposed bed presenting an uppermost bed surface, a pair of elongated, laterally spaced apart first and second side margins, and a pair of axially spaced, transversely extending end margins;

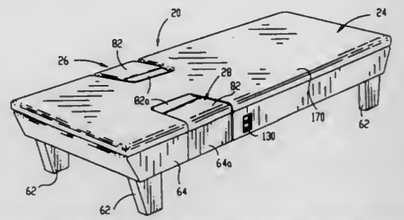
structure defining opposed, first and second openings in said bed surface and respectively adjacent a corresponding side margin,

said first opening being located and sized for permitting sonographic diagnosis of a patient lying on said bed surface,

said second opening being located and sized for accommodating the legs of a person performing said sonographic diagnosis;

a first bed filler section sized to substantially fill said first opening; and

means mounting said first bed filler section to said bed for movement of the first bed filler section between an upper position where the first bed filler section presents, with said bed surface, a substantially uninterrupted patient-supporting area along the length of the bed surface adjacent said first side margin, and a lowered position wherein the



first bed filler section is disposed at least partially below said bed surface in order to create an access opening facilitating sonographic diagnosis of a patient lying on said area,

said diagnostic patient support bed including a second bed filler section sized to fit within said second opening, there being means mounting said second bed filler section for selective lowering thereof below the bed surface in order to create a region for accommodating the legs of a person performing the sonographic diagnosis.

5,184,364

Patent Not Issued For This Number

5,184,365

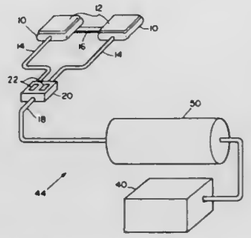
METHOD AND APPARATUS OF A POSITIONING SYSTEM FOR AIRWAY MANAGEMENT

Timothy J. Stafford, Boston, Mass., assignor to Trustees of Boston University, Boston, Mass.

Filed Dec. 7, 1990, Ser. No. 626,583

Int. Cl.[5] A61G *7/06*

U.S. Cl. 5—632 **41 Claims**



13. A positioning system for airway management of a supine subject comprising:

a number of inflatable bags to be placed under the head and lower neck/upper shoulder area of the subject;

a strap of adjustable functional length upon which each bag is attached for providing a fixed separation between the bags for placement of the bags under the head and lower neck/upper shoulder area of the subject;

a pressurized fluid source for supplying fluid to the bags, the pressurized fluid source comprising a pump capable of

VOL 1147 ISS 2 FEB 9 1993 UMI

delivering continuous pressurized fluid and a plenum chamber into which the pump delivers pressurized fluid for providing a fully pressurized preserve volume; and

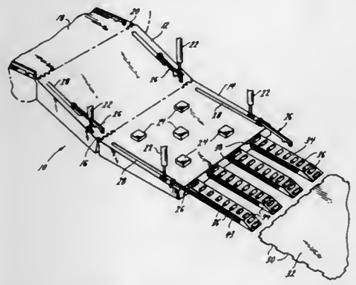
a controller for controlling the pressure in the bags and which comprises a number of mechanical switches corresponding to the number of bags and a number of mechanical valve assemblies wherein each valve assembly is mechanically linked to a mechanical switch and wherein each valve assembly controls coupling from a bag to the pressurized fluid source for pressurization of the bag and wherein each valve assembly also has a venting port for controlling depressurization of the bag.

5,184,366

AIRCRAFT CARGO HANDLING SYSTEM

Blaine K. Rawdon, Rancho Palos Verdes, and Myles A. Rohrlick, Oceanside, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jan. 31, 1991, Ser. No. 648,280
Int. Cl.[5] B64D *9/00*
U.S. Cl. 14—71.5 **14 Claims**



1. A cargo handling system for conveying cargo between two surfaces, said cargo handling system comprising:

a cargo ramp including at least one ramp section, a first end of said cargo ramp being adapted to abut a first of said two surfaces and a second end of said cargo ramp being adapted to abut a second of said two surfaces, said cargo ramp thereby bridging a space between said two surfaces;

a plurality of roller tines, said roller tines being mounted within said cargo ramp;

roller tine actuation means for extending and retracting said roller tines, the roller tines being extended toward and across said second surface;

said roller tines each having a tapered end for assisting in loading cargo onto said tines, said tapered end enbaling said tines to be pushed under said cargo;

said roller tines each further having a plurality of rollers extending above a top surface thereof, said top rollers enabling cargo to be easily moved across said tines;

said cargo ramp having at least one pallet retainer thereon, said pallet retainer comprising a pallet retainer arm, the arm being adapted for interengagement with said cargo, said arm further being mounted at its other end to an actuator which is in turn mounted to said cargo ramp, said actuator permitting said arm to move lengthwise along said ramp and to swing inwardly or outwardly with respect to said ramp, so that the retainer arm may be aligned for interengaging with said cargo;

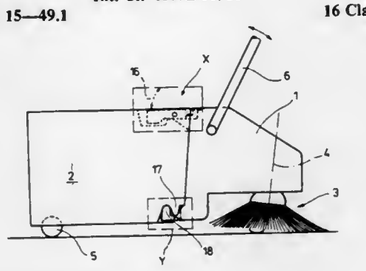
whereby when it is desired to load cargo from said second surface to said first surface, said retainer arm is engaged with said cargo to retain the cargo in position, so that said roller tines may be extended across said second surface and beneath said cargo, after which said cargo is moved onto said cargo ramp and said roller tines are retracted back into said cargo ramp.

5,184,367

SWEEPING MACHINE HAVING A HOUSING WHICH COMPRISES TWO SEPARABLE HOUSING PARTS

Hermann Haaga, Kirchheim/Teck-Ötlingen, Fed. Rep. of Germany, assignor to Ing. Haaga Kunststofftechnik GmbH, Fed. Rep. of Germany

Filed Jan. 15, 1992, Ser. No. 820,935
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1991, 4101889
Int. Cl.[5] A47L *11/22*
U.S. Cl. 15—49.1 **16 Claims**



1. A sweeping machine comprising,

a first housing part for housing a plurality of circular rotatable sweeping brooms operable to sweep a floor surface,

a second housing part for housing a receptacle for sweepings from the brooms,

locking apparatus for detachably locking the first and second housing parts to one another and,

centering apparatus for centering the first and second housing parts with respect to one another when the housing parts are locked to one another,

wherein the centering apparatus includes an inserting aid by means of which one housing part can be joined to the other housing part with one of the housing parts in a tilted inoperative position resting on a floor surface, and

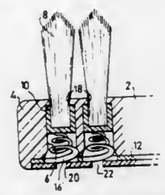
wherein the locking apparatus includes a locking element which is pivotally connected to one of the housing parts and is operable to pull the two housing parts together into their operative position upon pivotal locking movement of the locking element.

5,184,368

TOOTHBRUSHES

Neta Holland, Herzliya, Israel, assignor to Ohad Paz, Tel Aviv, Israel

Filed Dec. 13, 1990, Ser. No. 627,098
Claims priority, application Israel, Nov. 20, 1990, 96413
Int. Cl.[5] A46B *3/00*
U.S. Cl. 15—167.1 **10 Claims**



1. A brush including a handle at one end and a brush head at the opposite end, said brush head including a plurality of bristle holders and spring means normally urging at least some of the bristle holders outwardly but permitting their inward movement during use of the brush head; characterized in that said spring means comprises: a planar strip of elastic material

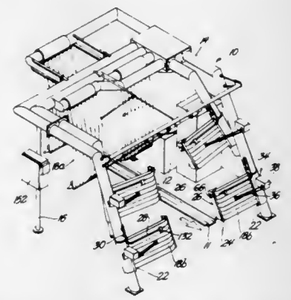
formed with a plurality of spirally-extending slits at spaced locations of the planar strip underlying each of said bristle holders, to define a spirally-extending element integrally formed with said strip at each of said locations and in the same plane as said strip; each of said spirally-extending elements being pressed out of the plane of said strip to produce a helically extending spring element underlying each of said bristle holders and decreasing in diameter from said strip to the bristle holder.

5,184,369

NON-CONTACTING AUTOMOTIVE DRYER CONTROL CIRCUIT

Lucian G. McElroy, 3315 Brocker Rd., Metamora, Mich. 48455; Alvin S. Raby, 3681 Hawthorne, Clarkston, Mich. 48348, and Alexander B. Faytlin, 25469 Lincoln Ter. #201, Oak Park, Mich. 48237

Filed Nov. 14, 1991, Ser. No. 792,226
Int. Cl.[5] F26B *19/00*; **B60S** *3/06*
U.S. Cl. 15—316.1 **17 Claims**



1. An apparatus for stripping fluid from the surface of an object as the object is conveyed relatively to the apparatus along a path comprising:

an air distributor (**14**);

at least one air directing member (**18**) having first and second ends, said first end supported by said air distributor (**14**) about the path of the surface for receiving air under pressure from said air distributor, said second end including a nozzle (**26**) for directing the air toward the surface to strip fluid from the surface;

actuator means (**34**) operatively connected between said air distributor (**14**) and said air directing member (**18**) for moving said second end of said air directing member (**18**) toward and away from the surface;

control means (**40**) operatively connected to said actuator means for receiving a single control signal and for controlling said actuator means (**34**);

said apparatus characterized by said control means (**40**) including a plurality of sensor means (**66**) connected to said air directing member (**18**) for sensing the distance to the surface and for separately producing a sensed signal; and

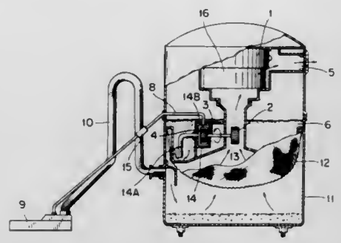
combining means (**146**) for receiving and combining said sensed signals from said plurality of sensor means (**66**) for a single air directing member and for producing said single control signal for said control means (**40**).

5,184,370

DETERGENT INJECTION TYPE VACUUM CLEANER

Taik K. Jung, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suweon, Rep. of Korea

Filed May 9, 1991, Ser. No. 697,407
Claims priority, application Rep. of Korea, May 16, 1990, 90-6551[U]
Int. Cl.[5] A47L *7/00*
U.S. Cl. 15—321 **4 Claims**



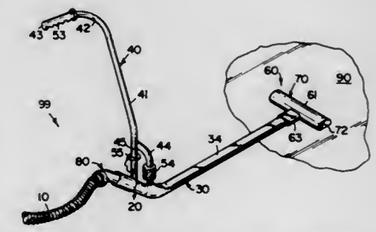
1. A vacuum cleaner comprising housing means containing liquid for delivery to an implement connected to said housing, suction means for drawing air into the implement and through said housing, a pump disposed in said housing and arranged to be driven by said air, said pump arranged to circulate the liquid from said housing to said implement, said pump including a rotary member arranged within a path of the air to be driven thereby, a rotary pump impeller arranged in communication with said liquid and said implement, said rotary member and said pump impeller being interconnected so that the former rotates the latter.

5,184,371

VACUUM CLEANER ACCESSORY

Jerry W. Rands, Forest Lake, Minn., assignor to North Country Products, Inc., Forest Lake, Minn.

Filed Mar. 29, 1991, Ser. No. 677,167
Int. Cl.[5] A47L *9/02, 9/32*
U.S. Cl. 15—325 **10 Claims**



1. A vacuum cleaner accessory, of a type that attached to a vacuum cleaner by means of a vacuum cleaner hose, comprising:

(a) an elongate lower tube member having first and second ends, wherein said first end defines an intake opening, said intake opening of said lower tube member being cut at an angle of between 30° and 70° relative to said lower tube member's longitudinal axis, and said intake opening has a concave profile;

(b) an upper tube member having lower and upper ends, wherein said lower end of said second end of said lower tube member, and said upper end is in fluid communication with the vacuum cleaner hose, wherein said lower tube member and said upper tube member define a first operative configuration in which the vacuum cleaner

VOL 1147 ISS 2 FEB 9 1993 UMI

accessory is designed for cleaning spaces that are accessible from a desired direction;

(c) a handle member releasably secured at one end to said upper tube member and extending in a first direction substantially perpendicular to said lower tube member, wherein said handle member has a distal end for gripping by hand; and

(d) a sweeper member releasably secured to and in fluid communication with said first end of said lower tube member, wherein said sweeper member includes a housing having a leading edge, a trailing edge, and opposite side edges, defining a downwardly facing intake opening therebetween, wherein said lower tube member, said upper tube member, said handle member, and said sweeper member define a second operative configuration in which the vacuum cleaner accessory is designed primarily for cleaning floor level, horizontally accessible spaces.

5,184,372

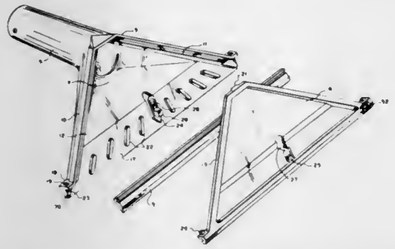
VACUUM ASSISTED SQUEEGEE ATTACHMENT

Gerhard R. Mache, 284 Ascot La., Streamwood, Ill. 60107

Filed Jan. 7, 1991, Ser. No. 638,433

Int. Cl.[5] A47L *9/06*

U.S. Cl. 15—401 **21 Claims**



1. A vacuum assisted squeegee attachment tool for use with a wet/dry vacuum cleaner for the removal of both liquids and foreign debris from typically planar surfaces and comprising:

(a) a main body containing a hollow handle connectable to a vacuum source having a handle exit port and an intake port throat at opposite ends thereof,

(b) an enclosed vacuum chamber within said main body assisting in the distribution of suction pressure interposed between the intake port throat and the handle exit port to a vacuum cleaner,

(c) an oblong suction head at one end of said main body, said oblong suction head with said intake port throat in said head being perpendicular to a normal direction of use and connectively attached to the vacuum chamber such that the intake port throat has direct communication with a vacuum source provided by the vacuum cleaner,

(d) a cover mounted on said main body in sealed engagement therewith, an inside cover wall comprising part of said vacuum chamber,

(e) releasable attachment means joining the cover in removable assembly with said main body and

(f) a squeegee blade held in place between the cover and the main body and having a blade tip positioned exteriorly of said oblong suction head for engaging a surface to be wiped by the squeegee blade.

5,184,373

CASTER WITH CONDUCTORS BETWEEN THE TIRE OF ITS WHEEL AND THE CARRIER OF ITS WHEEL FRAME

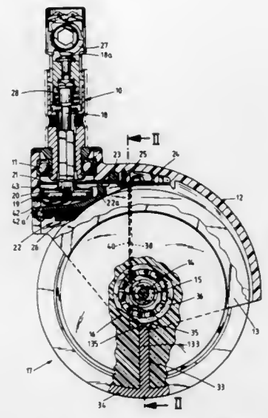
Hans-Willi Lange, Wermelskirchen, Fed. Rep. of Germany, assignor to Albert Schulte Söhne GmbH & Co., Wermelskirchen, Fed. Rep. of Germany

Filed Dec. 23, 1991, Ser. No. 812,620

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1990, 4041512

Int. Cl.[5] B62C *7/02;* **B60B** *33/00*

U.S. Cl. 16—35 R **20 Claims**



1. A caster comprising a conductive carrier; an insulating frame mounted on said carrier for rotation about a first axis; a wheel mounted in said frame for rotation about a second axis which is inclined with reference to said first axis, said wheel having a conductive rim; a braking device actuatable to oppose rotation of said wheel about said second axis; a blocking device actuatable to prevent rotation of said frame about said first axis; means for actuating said devices; and means for electrically connecting said carrier with said rim.

5,184,374

DRAFTING UNIT WITH AT LEAST ONE CLEANING BELT

Norbert Barauke, Donzdorf, and Kurt Lang, Lauterstein, both of Fed. Rep. of Germany, assignors to Spindelfabrik Sussen, Schurr, Stahlecker & Grill GmbH, Fed. Rep. of Germany

Filed Oct. 7, 1991, Ser. No. 772,096

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1990, 4031769

Int. Cl.[5] D01H *5/60*

U.S. Cl. 19—262 **19 Claims**

1. A drafting unit for a spinning machine comprising:

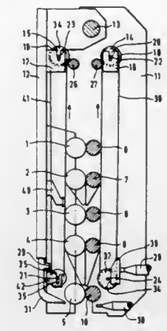
a plurality of top drafting rollers,

a plurality of bottom drafting rollers disposed opposite respective top drafting rollers to define a sliver path therebetween,

a continuous cleaning belt being guided to travel around respective top and bottom deflecting rollers,

and a belt guide for guiding the cleaning belt to engage against a plurality of said drafting rollers to effect cleaning thereof,

wherein the bottom deflecting roller is floatingly supported vertically below the top deflecting roller by means of the cleaning belt travelling around said bottom deflecting



roller with the weight of said bottom deflecting roller serving to tension the cleaning belt.

5,184,375

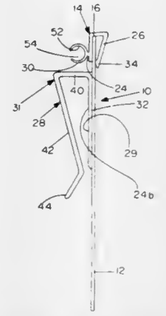
SCORE CARD HOLDER

David Hoyt, 1136 West 135th St., Gardena, Calif. 90247

Filed Feb. 10, 1992, Ser. No. 832,943

Int. Cl.[5] A45F *5/00*

U.S. Cl. 24—3 L **6 Claims**



1. A device for holding a card, including

a rigid, planar support member having an edge portion, an inside surface, and an outside surface, and

a clip member secured along the edge portion of the support member, and having

a mounting section which abuts and is secured to the inside surface of the support member adjacent said edge portion of the support member,

a finger element extending outwardly in a first direction from the mounting section and overlapping said edge portion to extend outward from the outside surface,

said finger element having a downward extending tip section which is spaced from the mounting section to provide a narrow gap into which the edge portion of the support member fits so the tip section overlaps the support member along said edge portion,

said tip section being biased to act like a spring which bears against the outside surface of the support member and, upon inserting an edge of the card between the tip section and the outside surface of the support member, is adapted to hold the card snugly between said tip section and said outside surface,

said tip section extending along substantially the entire length of the edge portion of the support member, and

a pencil holder extending outwardly from the mounting member in a second direction which is generally opposite to said first direction, said pencil holder being on the side of the support member opposite that of the finger element, and being between the hook member and the tip section,

a hook member extending outwardly from the inside surface in a second direction which is generally opposite to said first direction, said hook member being adapted to slip over and grasp an edge of a container.

5,184,376

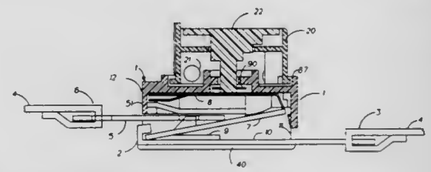
CHILD-RESISTANT SAFETY BELT BUCKLE

Robert M. Hunter, and Mary M. Hunter, both of 320 S. Willson Ave., Bozeman, Mont. 59715

Filed Apr. 18, 1990, Ser. No. 510,621

Int. Cl.[5] A44B *17/00*

U.S. Cl. 24—633 **10 Claims**



1. A child-resistant buckle comprising

a body,

a tongue insertable into said body,

a latch member attached to said body capable of holding said tongue in said body,

an actuator button mounted above said latch member for releasing said tongue from said body by movement of said latch member, said actuator button having a vertical axis,

a top cover for said body,

means for blocking the movement of said actuator button and said latch member when said buckles is in the locked, child-resistant condition, said means for blocking being mounted on a buckle element other than said body and said means for blocking being rotatable about the vertical axis of said actuator button, and

means for returning said means for blocking to the locked child-resistant condition after said buckle is unlocked and said tongue is released from said body.

5,184,377

SWIMMING POOL ANCHOR AND REMOVAL TOOL

Kelly J. Ragsdale, Salt Lake City, and Cory Brady, West Jordan, both of Utah, assignors to Cover-Pools, Inc., Salt Lake City, Utah

Continuation of Ser. No. 577,944, Sep. 4, 1990, Pat. No. 5,067,213, which is a continuation-in-part of Ser. No. 377,235, Jul. 7, 1989, Pat. No. 4,953,269. This application Nov. 26, 1991, Ser. No. 798,692

Int. Cl.[5] F16B *21/00;* **B25B** *13/06*

U.S. Cl. 24—704.1 **4 Claims**

1. A fastener for use in securing a first member defining an aperture therethrough and a second member defining a receiving aperture therethrough, said fastener comprising:

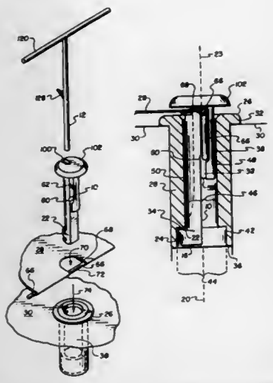
a first shaft having two longitudinally-extending legs, said legs being positioned spatially apart from one another to define a laterally-extending first channel therebetween; a first said leg having a lip on a free end thereof; said first shaft defining a pair of longitudinally-extending open second channels configured in an exterior sidewall of said first shaft, said second channels communicating with said first channel to form an upright "U"-shaped channel in an

VOL 1147 ISS 2 FEB 9 1993 UMI

exterior surface of said first shaft, said first channel and said second channels being dimensioned to receive a cord mounted on said first member proximate said aperture in said first member and form said cord in an upright "U"-shaped configuration about said exterior surface of said first shaft;

a head mounted on said first shaft, said head defining a slot herein, wherein said first shaft defines a longitudinal open third channel in said exterior sidewall; said first shaft further defining an open, laterally-extending fourth channel in said exterior sidewall, said fourth channel being at an interface of said head and said first shaft; said fourth channel communicating with said slot and said third channel;

wherein said fastener is adapted to engage said first member cord in said first and second channels and be inserted through said aperture of said first member and said receiving aperture of said second member, said lip being engageable with said second member to retain said fastener and cord within said second member receiving aperture.

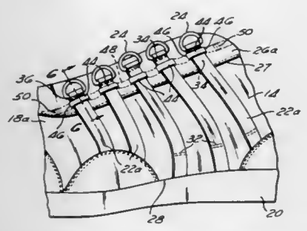


5,184,378

LACING SYSTEM FOR SHOES

Vijay K. Batra, Nashua, N.H., assignor to K-Swiss Inc., Pacoima, Calif.

Filed Nov. 18, 1991, Ser. No. 793,560
Int. Cl.[5] A43B *11/00*
U.S. Cl. 24—714.6 **12 Claims**



1. A lacing system for a shoe having an upper with a vamp, a quarter on each side of the shoe, a counter, and a sole, comprising:

a plurality of elongate strips, each strip having a lower portion, an upper portion, and a middle portion, said lower strip portion being rigidly attached near the quarter of the shoe in the vicinity of the sole of the shoe;

a plurality of lacing eye members at least equal in number to said number of said plurality of strips, one of said lacing eye members being fixed at said upper portion of each of said strips; and

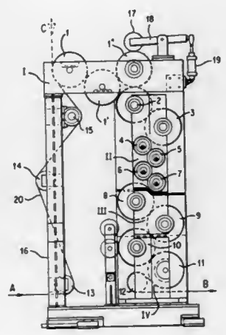
a plurality of loop means equal in number to said number of said strips, said plurality of loop means comprising a plurality of pairs of spaced apart parallel slits made either through a loop member piece positioned along the medial longitudinal axis of the shoe, or directly through the quarter of the shoe lying along the medial longitudinal axis of the shoe, said pairs of slits running in a direction approximately parallel to said elongate strips, and a lanyard, said lanyard being looped through said plurality of paris of slits, said plurality of loops being defined by the portion of said lanyard lying on top of said loop member piece between said parallel slits or between said parallel slits made directly through the quarter of the shoe, wherein each said strip is movably retained at its upper portion by one loop means and at least said middle portion of said strips lies unattached on the quarter of the shoe.

5,184,379

FOIL STRETCHING PLANT

Johann Bloo, Seewalchen; Ewald Romauer, Vöcklabruck, and Alois Hollerwöger, Lenzing, all of Austria, assignors to Lenzing Aktiengesellschaft, Lenzing, Austria

Filed Feb. 11, 1991, Ser. No. 653,256
Claims priority, application Austria, Feb. 15, 1990, A 347/90
Int. Cl.[5] D06C *3/00*
U.S. Cl. 26—72 **9 Claims**



1. Foil stretching plant for processing films or foils comprising a plurality of zones arranged successively in series in the direction of foil production wherein at least one zone is a preheating zone, one zone is a stretching zone, one zone is a stabilizing zone and one zone is a cooling zone; each of the aforesaid zones comprising a plurality of rollers parallel to one another of varying diameter in the different zones over which the said foil passes; at least some of the said zones being designed as releasable and interchangeable modules, which are arranged one above the other.

5,184,380

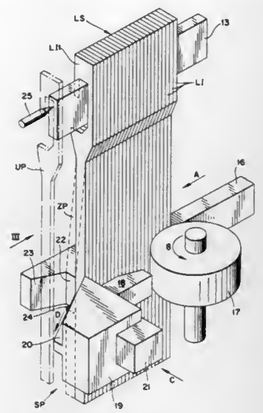
METHOD AND APPARATUS FOR SINGULARIZING HEALDS FOR WARP THREAD DRAWING-IN MACHINE

Rico Benz, Buchs, and Janos Magdika, Trübbach, both of Switzerland, assignors to Zellweger Uster AG, Uster, Switzerland

Filed Mar. 6, 1991, Ser. No. 665,155
Claims priority, application Switzerland, Mar. 6, 1990, 00706/90
Int. Cl.[5] D03J *1/14*
U.S. Cl. 28—205 **28 Claims**

1. Apparatus for singularizing healds for warp-thread drawing-in machines, having a selecting member for the healds fed in the form of a stack, which selecting member separates the

healds from the stack and makes them available for the drawing-in of the warp threads, wherein the selecting member (21) is formed by a piston which can perform a stroke essentially transversely to the heald stack (LS), said piston being positioned so that during the working stroke (arrow C) of the piston, the heald (L11) adjacent to the piston is transported transversely from the heald stack in positive-locking manner into an intermediate position (ZP).

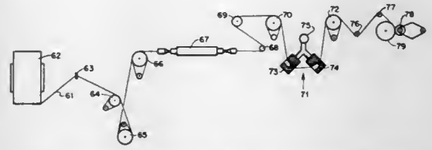


5,184,381

APPARATUS FOR PRODUCING SOFT NODE AIR ENTANGLED YARN

Andrew M. Coons, III; Willis M. King; Joe B. Dickerson, and Melvin R. Thompson, all of Anderson, S.C., assignors to BASF Corporation, Parsippany, N.J.

Filed Nov. 28, 1990, Ser. No. 619,377
Int. Cl.[5] D02G *1/16*
U.S. Cl. 28—271 **4 Claims**



3. An apparatus for preparing regular soft nodes in mulifilamentary yarns composed of synthetic polymeric filaments comprising:

a first interlacer for forming yarn nodes having a first yarn passageway which defines a first longitudinal axis therethrough; and

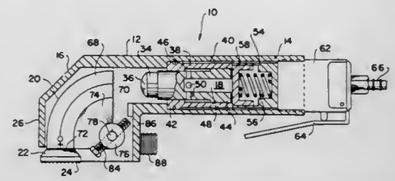
a next interlacer for forming yarn nodes having a next yarn passageway which defines a next longitudinal axis therethrough, said first longitudinal axis forming an approximately 90° to 120° angle with said next longitudinal axis.

5,184,382

PNEUMATICALLY DRIVEN DESCALING TOOL

James E. Ward, Glendora, Calif., and Leo Swan, Jefferson, Md., assignors to Equipment Development Company, Inc., Frederick, Md.

Filed Aug. 21, 1991, Ser. No. 747,968
Int. Cl.[5] B21C *43/00*
U.S. Cl. 29—81.15 **16 Claims**



1. A hand-held impact type descaling tool, comprising:

a tool housing having a relatively longer rear handle section and a relatively shorter forward head section angulated with respect to said handle section and having a forwardly tapered nose portion for fitting into a corner of a workspace;

a pneumatically driven hammer assembly located said handle section and including a reciprocating type piston member mounted in an outer cylinder member affixed to an inner surface of the handle section;

an anvil member, having a rear end and a front end, pivotally mounted in the head section of the housing, said rear end facing said piston member and being struck thereby when actuated; and

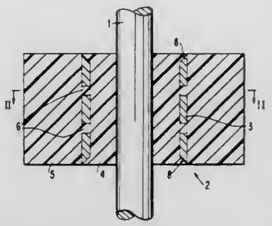
an abrasive type of descaling head attached to the front end of the anvil member for removing material from a work surface and providing a scored profile thereon.

5,184,383

PRECISION TRANSPORT ROLLER

Johannes C. Delhaes, Heerlen, Netherlands, assignor to Rubber-En Kunststoffabriek, Netherlands

Division of Ser. No. 368,903, Jun. 21, 1989, Pat. No. 4,910,845, which is a continuation of Ser. No. 307,769, Feb. 7, 1989, abandoned, which is a continuation of Ser. No. 144,952, Jan. 19, 1988, abandoned. This application Jan. 2, 1990, Ser. No. 459,457
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1987, 3702251
Int. Cl.[5] B21B *31/08*
U.S. Cl. 226—190 **5 Claims**



1. A precision drive assembly for the transport of paper webs comprising a cylindrical shaft, a roller member mounted on said shaft, said roller member comprising an elastomeric body member and a rigid tubular cylindrical bushing having inner and outer peripheries, said body member being comprised of an integral elastomeric mass formed in situ over and in encompassing relation of said bushing and being of substantially uniform elasticity throughout in the unstressed condition thereof, said mass defining an inner elastomeric cylindrical tube disposed within and having an outer peripheral portion

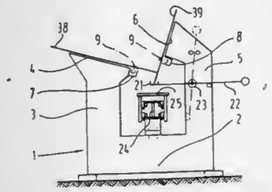
VOL
1147
ISS
2
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9
1993
UMI

engaging said inner periphery of said bushing and an outer elastomeric cylindrical tube disposed externally of and having an inner periphery engaging said outer periphery of said bushing, said inner and outer cylindrical tubes being in co-axial alignment with the longitudinal axis of said cylindrical bushing and being of equal length therewith, the outer diameter of said shaft being greater than the inner diameter of said inner tube in the unstressed condition of said inner tube, said bushing including throughgoing apertures substantially uniformly distributed thereabout, said inner and outer cylindrical tubes being linked by increments of said mass extending through said apertures of said bushing, said inner cylindrical tube being sleeved over, axially slidable relative to, and in torque transmitting frictional driving engagement with said shaft.

5,184,384
FOLDING MACHINE

Xaver Lipp, Ellwangen, Fed. Rep. of Germany, assignor to Reinhardt Maschinenbau GmbH, Sindelfingen, Fed. Rep. of Germany

PCT No. PCT/EP90/00522, § 371 Date Jan. 8, 1992, § 102(e) Date Jan. 8, 1992, PCT Pub. No. WO90/14180, PCT Pub. Date Nov. 29, 1990
PCT Filed Apr. 3, 1990, Ser. No. 776,359
Claims priority, application Fed. Rep. of Germany, May 20, 1989, 3916445
Int. Cl.[5] B23P *11/00*
U.S. Cl. 29—243.5 **15 Claims**

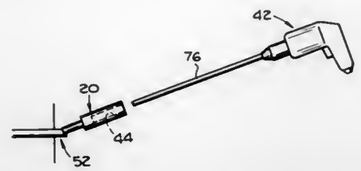


1. Folding machine for joining the edges of two metal sheets **(38, 39)** forming an angle of 90 degrees between them, comprising a machine frame **(1)** having two supporting surfaces **(4, 6)** for the metal sheets to be joined and likewise forming an angle of 90 degrees between them, holding devices **(9, 10)** for holding the metal sheets on the supporting surfaces and a carriage **(25)** driven by a drive device along a guide means of the machine frame comprising a guide rail **(24)**, said carriage bearing at least one folding roller **(32)** for bending a metal sheet edge, characterized in that the machine frame **(1)** has a U-shaped cross-sectional profile and each of the two supporting surfaces **(4, 6)** for the metal sheets **(38, 39)** to be joined is provided in the region of an upper end of one of the two upwardly printing U-shaped arms **(3, 5)** of the machine frame with one of said supporting surfaces extending generally in the vertical direction, that the guide rail **(24)** of the carriage **(25)** is arranged in the region between the arms on a yoke portion **(2)** connecting the two U-shaped arms **(3, 5)** with one another at the bottom, that the carriage **(25)** bears a plurality of pairs of folding rollers **(32)** bending the sheet metal edges step by step, and that a pivoting device comprising at least one pivot arm **(22)** is provided, said pivot arm being mounted on the machine frame **(1)** for pivoting movement about an axis **(23)** parallel to the direction of travel of the carriage **(25)** and bearing a stop rail **(21)** parallel to and spaced from this axis **(23)**, the stop rail for its part being located in a lockable operative position of the pivot arm **(22)**, with the rail at a distance beneath the lower end of the one supporting surface **(6)** extending generally in the vertical direction.

5,184,385
RETAINER PIN REMOVER

Michael L. Valesh, 621 S. Yale, Villa Park, Ill. 60181

Filed Jul. 3, 1990, Ser. No. 548,506
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—254 **3 Claims**



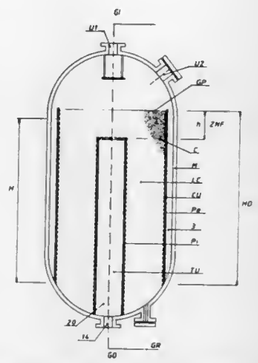
1. A retainer pin remover tool for use in conjunction with a brake assembly wherein,
the brake assembly includes a spindle and a caliper as separate members and has interengaging surfaces with grooves therein together forming a hole of predetermined effective size between those elements,
a retainer pin is removably positioned in the hole and operable for retaining those members in predetermined position relative to each other,
the retainer pin is of predetermined size and elements at an end having a normal outer expanded position in which they are included in said predetermined size and compressible into an inner position of smaller size,
the surfaces of said members and the retainer pin having cooperating projections that, in the outer position of said elements of the pin, interengage and retain the retainer pin in the hole, and in the inner position of those elements are released and prevented from interengagement and thereby enabling the retainer pin to be driven from the hole,
the retainer pin remover tool comprising,
a hand starter including a lead element having a V-notch in a leading end thereof and having an opposite rear end,
said lead element being capable of having its leading end applied endwise to an end of the retainer pin with said end elements of the retainer pin received in the V-notch, and operable, in response to impact on its rear end, for compressing said elements to their said inner position and thereby releasing said cooperating projections and thereby enabling the retainer pin to be driven from the hole,
the tool also including a power starter,
said lead element is cylindrical in shape,
the power starter including a rear enlargement on which said shoulder is formed,
the enlargement having a cylindrical bore extending inwardly from its rear end, of substantially the same diameter as said lead element, and
the tool also includes a hand driver, the hand driver being cylindrical in shape and of effectively the same diameter as said lead element.

5,184,386
METHOD FOR RETROFITTING CARBON MONOXIDE CONVERSION REACTORS

Umberto Zardi, Via Lucino 57, CH-6932 Breganzona, and Giorgio Pagani, Lugano, both of Switzerland, assignors to Ammonia Casale S.A. and Umberto Zardi, Switzerland

Continuation of Ser. No. 447,719, Dec. 8, 1989, abandoned. This application Mar. 26, 1991, Ser. No. 676,455
Claims priority, application Switzerland, Dec. 9, 1988, 04550/88
Int. Cl.[5] B21K *21/16*; A01C *1/00*
U.S. Cl. 29—401.1 **8 Claims**

1. A method for retrofitting a pre-existing axial flow carbon monoxide conversion reactor with internals to the convert the reactor to a substantially radial or axial-radial flow reactor, the reactor comprising a pressure-resisting shell containing a catalyst bed comprising tablets for catalyzing conversion of carbon monoxide to carbon dioxide, the method comprising the steps of:
(a) inserting a first perforated, cylindrical wall into the reactor and positioning the first perforated, cylindrical wall within the reactor at a position near the shell to form a perforated, cylindrical, external wall for the catalyst bed, the external wall having a diameter smaller than that of the shell;

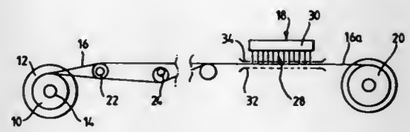


(b) inserting a second perforated, cylindrical wall into the reactor and positioning the second perforated, cylindrical wall within the reactor to form a perforated, cylindrical internal wall for the catalyst bed, the internal wall having a smaller diameter than that of the external wall, the external wall, the internal wall and a portion of the pressure-resisting shell defining a space for containing the catalyst bed; and
(c) containing the carbon monoxide conversion catalyst tablets in the catalyst bed-containing space.

5,184,387
PRODUCTION OF A SHAPED FILAMENTARY STRUCTURE

Peter G. Lawton, Halifax, and Norman Smith, Rugby, both of England, assignors to Aerospace Preforms Limited, Halifax, England

Continuation of Ser. No. 573,552, Aug. 24, 1990, Pat. No. 5,113,568, which is a division of Ser. No. 6,899, Jan. 27, 1987, Pat. No. 4,955,123. This application Nov. 21, 1991, Ser. No. 795,685
Claims priority, application United Kingdom, Jan. 28, 1986, 8602003
Int. Cl.[5] B22D *19/14*
U.S. Cl. 29—419.1 **7 Claims**

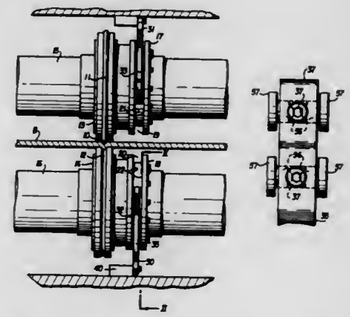


1. A method of producing a multilayer filamentary structure comprising the steps of: laying at least three filamentary layers **(36, 38)** one on top of another and needle punching the assembly of layers in a manner such that the entire assembly is cross linked by filaments displaced from the filamentary layers and extending in a direction generally perpendicular to the faces of the layers without needling completely through the assembly of layers;
in which the assembly is needle punched after the addition of a layer to one or more already laid layers and superimposing on the punching motion a relative movement between the assembly and the needles (in the same sense as the punching action), so that the bottom limit of the punching action is moved upwards relatively to the assembly during the formation of the assembly;
in which the superimposed motion is achieved by lowering a support **(40)** on which the assembly is resting during the punching operation; and
in which the support has a structure which permits needle penetration but the degree and density of the penetration is limited to ensure that the needled assembled filamentary layers can be separated from the support without damaging the shape and stability of the needled assembled layers.

5,184,388
METHOD OF ADJUSTING BOX MACHINE ROTATIONAL CLEARANCE

Zigmunt Nieradka, Burbank, and Robert W. Young, Hinsdale, both of Ill., assignors to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 732,120, Jul. 18, 1991, Pat. No. 5,123,891. This application Mar. 16, 1992, Ser. No. 851,322
Int. Cl.[5] B23P *19/00*
U.S. Cl. 29—434 **1 Claim**



1. A method of adjusting the operating clearance between thrust surfaces respective to a box machine forming tool stabilizing assembly, such assembly including a head wheel secured to a rotary tool carrier for rotation therewith, said head wheel having a groove with parallel side walls to receive therebetween the structural finger projections of a frame mounted yoke plate, said yoke plate finger projections having opposite side face substantially parallel with said head wheel groove side walls separated by substantially normal external edge surfaces, providing a threaded bore penetrating respective yoke finger projections from respective external edge surfaces thereof and substantially normally intersecting a smooth down bore formed through said yoke finger projections between said opposite said faces, a pair of dowel pins, each having a tapered free end and an axially opposite structural end, said structural end being secured to a thrust bearing surface structure, a threaded rod having axially opposite ends including a tapered end and a tool end, said pair of dowel pins being axially inserted within said dowel bore from respectively opposite side faces whereby said tapered free ends are axially aligned and on opposite sides of said threaded bore intersection with said dowel bore, said threaded rod being threaded into said threaded bore, said method of adjusting comprising the steps of:

advancing said threaded rod into said threaded bore to

VOL
1147
ISS
2
FE
9
1993
UMI

simultaneously engage both dowel pin tapered ends by the tapered end of said threaded rod; and

axially displacing said dowel pins in opposite directions along said dowel bore by advancement of said threaded rod tapered end against said dowel pin tapered ends until respective thrust bearing surface structures engage respective parallel side walls.

5,184,389

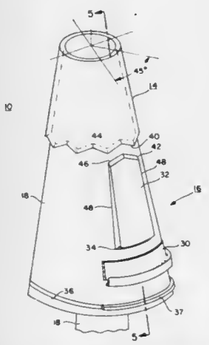
GYRATORY MANTLE LINER ASSEMBLY

Lance Dean, Elko, Nev., assignor to Newmont Gold Company, Carlin, Nev.

Continuation-in-part of Ser. No. 579,557, Sep. 11, 1990, Pat. No. 5,080,294. This application Aug. 30, 1991, Ser. No. 754,274

Int. Cl.[5] B32Q *3/00*

U.S. Cl. 29—467 **3 Claims**



1. A method of assembly of a mantle liner for a gyratory crusher comprising:

arranging circumferentially a plurality of lower mantle liner segments in an annular support connected to a mainshaft, each having a top end and a bottom end, the top end being narrower in width than the bottom end;

lowering a frusto-conical upper mantle liner over the mainshaft so that a lower edge of said frustro-conical upper mantle liner interlocks with the upper edge created by the arrangement of the lower mantle liner segments; and

applying constant force downward on the upper mantle liner so as to create an equal and opposite force in the annular support.

5,184,390

METHOD OF SHAPING AND HOLDING A SHEET OF MATERIAL ABOUT A FLOWER POT WITH A COLLAR

Donald E. Weder, Highland, Ill., assignor to Highland Supply Corporation, Highland, Ill.

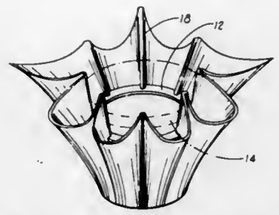
Continuation of Ser. No. 405,410, Sep. 11, 1989, Pat. No. 5,129,182, which is a continuation of Ser. No. 327,996, Mar. 21, 1989, Pat. No. 4,901,423, which is a continuation of Ser. No. 232,541, Aug. 11, 1988, Pat. No. 4,835,834, which is a continuation of Ser. No. 204,963, Jun. 6, 1988, abandoned, which is a continuation of Ser. No. 876,405, Jun. 20, 1986, abandoned. This application May 27, 1992, Ser. No. 890,499

Int. Cl.[5] B23P *19/02*

U.S. Cl. 29—525 **1 Claim**

1. A method for shaping a sheet of material about the outer peripheral surface of a flower pot having an upper end and a lower end comprising:

providing a collar having an opening formed therethrough, the opening being shaped and adapted to receive the flower pot so the flower pot extends through the opening formed in the collar and so the collar extends generally about the outer peripheral surface of the flower pot with the collar being positioned generally between the upper and the lower ends of the flower pot, the collar having an outer peripheral surface and a plurality of pinch rings being formed in the outer peripheral surface of the collar and spaced generally circumferentially about the collar, each of the pinch rings being adapted so that a portion of a sheet of material may be disposed in the pinch rings for securing the sheet of material to the collar with the sheet of material extending generally about the outer peripheral surface of the flower pot for forming a decorative flower pot cover;



positioning and securing said collar on the outer periphery of said flower pot between said upper and lower ends;

placing the bottom of the flower pot on said sheet of material; and

shaping said sheet of material generally about the bottom and outer peripheral surface of the flower pot and generally about the outer periphery of the collar with portions of the sheet of material being disposed in the pinch rings for securing the sheet of material positioned generally about the outer peripheral surface of the flower pot.

5,184,391

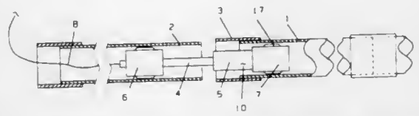
PROCESS OF PRESS FITTING PIPE SECTIONS TOGETHER TO FORM A PIPELINE

Allan T. Fisk, Needham, and David I. Freed, Weston, both of Mass., assignors to Etectric Power Research Institute, Inc., Palo Alto, Calif.

Division of Ser. No. 566,022, Sep. 20, 1990, Pat. No. 5,079,816. This application Oct. 15, 1991, Ser. No. 778,044

Int. Cl.[5] B23P *19/02*

U.S. Cl. 29—525 **11 Claims**



1. A process of building a pipeline from sections of pipe and couplings containing apertures having an internal diameter slightly smaller than the external diameter of said sections of pipe for receiving the ends of said sections in a press fit comprising the steps of:

placing said coupling between two said sections of pipe;

placing a pipe coupling apparatus having two grippers on opposite ends thereof within said pipe sections and said coupling such that said grippers extend into the interior of said pipe sections;

expanding said grippers to frictionally engage the interior surfaces of said pipe sections; and

drawing said grippers toward one another thereby causing the exterior surfaces of said pipe sections to engage the interior surfaces of said coupling apertures with sufficient force to effect a press fit between said pipe sections and said apertures in said coupling to join said pipe sections.

5,184,392

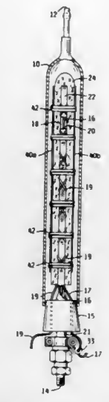
OXYGEN SENSOR

William N. Mayer, White Bear Lake, Minn., assignor to Modern Controls, Inc., Minneapolis, Minn.

Division of Ser. No. 731,875, Jul. 18, 1991, Pat. No. 5,139,638. This application Jun. 2, 1992, Ser. No. 892,223

Int. Cl.[5] H01B *4/00*

U.S. Cl. 29—592.1 **7 Claims**



1. A method of constructing an oxygen sensor in a layered construction, comprising the steps of:

a) overlaying a flat metallic blade with a sheet of anodic material against each flat surface of said blade, with said anodic sheets being narrower than said blade;

b) wrapping a first wire about said sheets and said blade, contacting the respective edges of said blade with each wrap;

c) overlaying said wrapped sheets and blade with a porous insulator material, and wrapping a second wire about said insulator;

d) overlaying said porous insulator with a porous cathode material;

e) applying an elongated strut against said porous cathode material on each of two sides in approximate alignment with the center of said flat metallic blade; and

f) applying a plurality of elastic bands about said elongated struts and said porous cathode material, whereby a uniform inwardly-directed force is applied along the elongate length of said cathode material.

5,184,393

METHOD OF MANUFACTURING FLYING MAGNETIC HEAD

Kazuhiro Saito, and Nobuo Imazeki, both of Saitama, Japan, assignors to Nippon Mining Company, Limited, Tokyo, Japan

Filed Oct. 17, 1991, Ser. No. 781,478

Claims priority, application Japan, Nov. 30, 1990, 2-336572; Mar. 26, 1991, 3-84441

Int. Cl.[5] G11B *5/42*

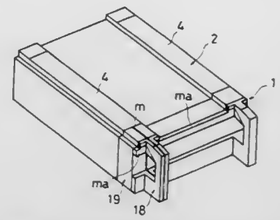
U.S. Cl. 29—603 **11 Claims**

1. A method of manufacturing a flying magnetic head, comprising at least the steps of:

(a) preparing a pair of core blocks each formed by depositing magnetic thin films on a substrate;

(b) machining one side surface of one of said pair of core blocks and one end surface of a slider in such a manner that these surfaces are in conformity with each other substantially over their entire area;

(c) bonding said pair of core blocks and said slider integrally with each other at the same time by heating under pressure through the intermediation of high-melting-point glass layers, forming said pair of core blocks into a head core; and



(d) performing grooving on said head core and said slider to form ABSs and mating a magnetic thin film of said head core with at least one of the ABSs on said slider.

5,184,394

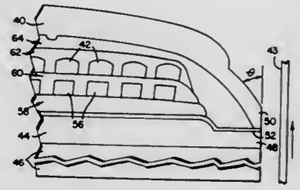
METHOD OF MAKING A THIN FILM HEAD ON FERRITE SUBSTRATE WITH INCLINED TOP POLE

Wei C. Hsie, Eden Prairie; Timothy A. Masaden, Bloomington, and Nathan Curland, St. Louis Park, all of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Division of Ser. No. 734,058, Jul. 22, 1991, Pat. No. 5,130,877, which is a continuation of Ser. No. 514,746, Apr. 26, 1990, abandoned. This application Jun. 1, 1992, Ser. No. 891,946

Int. Cl.[5] G11B *5/42*

U.S. Cl. 29—603 **11 Claims**



1. A method of fabricating a thin film magnetic transducer comprising:

obtaining a magnetic substrate;

forming a bottom pole piece upon the magnetic substrate having a bottom pole tip;

forming a gap layer on the bottom pole piece;

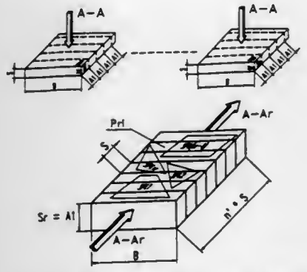
forming an insulating layer on most of the gap layer over the bottom pole piece;

forming a top pole piece over the bottom pole piece having a top pole tip, wherein only the gap layer separates the bottom pole tip from the top pole tip and said gap layer is sandwiched between the top pole tip and the bottom pole tip, and the insulating layer separates a portion of the top pole piece from a portion of the bottom pole piece, the top therefore with bottom pole pieces defining a high permeability magnetic flux path and a magnetic flux gap between the top pole tip and the bottom pole tip, the magnetic flux gap being defined by the top and bottom pole tips and the gap layer whereby the magnetic flux gap if formed only across the gap layer; and

forming a plurality of conductors between the top pole piece and the bottom pole piece which are embedded in the insulating layer whereby the conductors are separated from the bottom pole piece and the top pole piece by the insulating layer and completely surrounded by the insulating layer.

VOL
1147
ISS
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FE
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1993
UMI

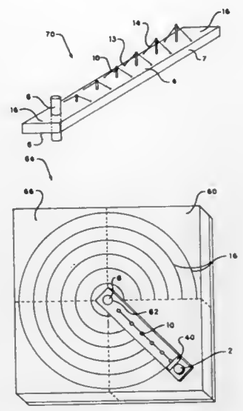
5,184,395
SYSTEM FOR MANUFACTURING PERMANENT MAGNETIC FIELD GENERATORS AND RELEVANT MAGNET GEOMETRIES THEREFOR
Antonio Pan; Paolo Pan, both of Crema, and Franco Bertora, Genoa, all of Italy, assignors to Comec S.R.L., Italy
Filed Jun. 28, 1990, Ser. No. 545,368
Claims priority, application Italy, Jnl. 3, 1989, 21079 A/89
Int. Cl.[5] H01F *7/06*
U.S. Cl. 29—609 **9 Claims**



1. A process for manufacturing magnetic field generators, comprising the steps of:
(a) marking at least one conventional tile of magnetic material;
(b) cutting the marked tile or tiles into strips;
(c) rotating the strips;
(d) selecting the rotated strips from symmetrical positions of the conventional tiles and rearranging said rotated strips to place them, upon assembly in step (e), in symmetrical positions of new tiles whereby a compensation of the magnetic variations in the conventional tiles is obtained;
(e) assembling the rotated strips to form said new tiles;
(f) cutting the assembled tiles into sections;
(g) magnetizing said sections;
(h) assembling said sections into magnet forming elements; and
(i) assembling the magnet forming elements to obtain magnets.

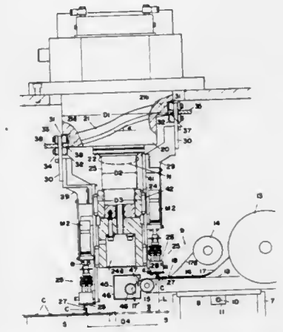
5,184,396
APPARATUS FOR MAKING A NOVEL SOLAR COLLECTOR
James P. Claypool, 1044 E. Cook Ave., St. Paul, Minn. 55106
Filed Jun. 18, 1991, Ser. No. 718,334
Int. Cl.[5] B23P *15/26*; B26D *7/10*
U.S. Cl. 29—726 **14 Claims**

1. A radial cutter for making a circular solar collector base comprising:
a. a support means, said support means having a first surface and a second surface, said support means additionally having a first end and a second end, said support means additionally having a circular aperture near the first end of the support;
b. a pivoting means capable of being inserted through the circular aperture of the support means;
c. a plurality of spaced pins extending perpendicularly from the support with graduated heights on the first surface of the support means, wherein the pins graduate in height from a shortest pin adjacent to the pivot means at the first end to a longest pin at the second end of the first surface of the support means; and
d. an electrical cutting means which is configured through the support means and the pins, the cutting means being capable of manually being repositioned from a first wrapping pattern in which a series of concentric rings are produced in the base, to a second wrapping pattern in



which a series of beveled cuts are produced interfacing with the first series of concentric rings in the base.

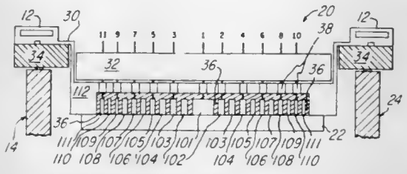
5,184,397
ELECTRICAL COMPONENT PLACING APPARATUS
Wataru Hidese, Chikushino, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jul. 31, 1991, Ser. No. 738,622
Claims priority, application Japan, Aug. 9, 1990, 2-212563
Int. Cl.[5] H05K *3/30*
U.S. Cl. 29—740 **3 Claims**



1. An apparatus for handling electronic component assembly on a substrate, comprising:
a substrate support bed movable in dual orthogonal directions;
means for feeding electronic components to a pick up point;
a fixed cylindrical guide having a curved peripheral groove formed therein;
a rotary head assembly having
a first rotary section coaxially mounted in free rotational relationship to a transverse surface of the guide;
a second rotary section coaxially mounted to a free transverse end of the first rotary section;
a bracket extending in parallel relationship to the second rotary section and longitudinally, slidingly connected therewith;

roller means connected to the bracket and received in the groove for facilitating rotation of the bracket about an axis of the rotary sections;
means mounted to the bracket for picking up a component at the pick up point;
means for rotating the rotary head assembly and the pick up means mounted thereto between a component pick up position and an assembly position on the substrate, the positions being axially and angularly displaced relative to one another;
means mounted on the bracket and connected to the pick up means for securing the component to the pick up means at the pick up point and discharging the component on the substrate at the assembly point;
means connected to the support bed for moving the substrate to preselected sequential assembly positions;
the diameter of the first and second rotary sections being less than that of the stationary cylindrical guide; and
the diameter of a projected arc of rotation between the pick up and assembly points being less than the diameter of the cylindrical guide.

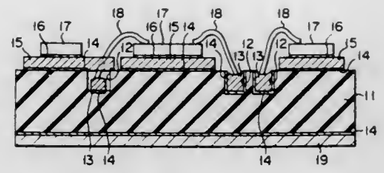
5,184,398
IN-SITU REAL-TIME SHEET RESISTANCE MEASUREMENT METHOD
Mehrdad M. Moslehi, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 30, 1991, Ser. No. 752,742
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—825 **20 Claims**



1. A method of fabricating an electrostatic chuck comprising the steps of:
forming a series of grooves in the surface of a boron nitride disk;
forming an insulating material on the surface of each of said grooves;
forming a plurality of electrically conducting electrodes, the shape of each electrode corresponding to the shape of one of said grooves, such that each electrode will fit in one of said insulated grooves;
attaching each of said electrodes into said corresponding insulated groove; and
providing means to electrically couple at least two of said electrodes to an external signal processing and excitation circuit.

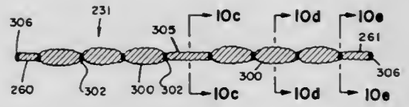
5,184,399
METHOD OF MANUFACTURING CIRCUIT BOARD
Fumio Ueno, Yokohama; Mitsuo Kasori, Kawasaki; Yoshiko Goto, Tokyo, and Akihiro Horiguchi, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jun. 28, 1991, Ser. No. 723,184
Claims priority, application Japan, Jun. 29, 1990, 2-169918
Int. Cl.[5] H05K *3/00*
U.S. Cl. 29—846 **16 Claims**

1. A method of manufacturing a circuit board, comprising the steps of:
forming an insulating substrate, a surface of which is provided with a groove shaped like a conductor pattern to be formed later; and
forming a conductor pattern in said groove, said conductor pattern containing as a main component an electrically conductive metal selected from the group consisting of copper, silver and gold and either fine particle shaving a



thermal expansion coefficient smaller than that of said electrically conductive metal or cells.

5,184,400
METHOD FOR MANUFACTURING A TWISTED WIRE JUMPER ELECTRICAL INTERCONNECTOR
Seymour R. Cray, and Nicholas J. Krajewski, both of Chippewa Falls, Wis., assignors to Cray Computer Corporation, Colorado Springs, Colo.
Division of Ser. No. 657,653, Feb. 15, 1991, Pat. No. 5,112,232, which is a division of Ser. No. 347,507, May 4, 1989, Pat. No. 5,014,419, which is a continuation-in-part of Ser. No. 53,142, May 21, 1987, Pat. No. 5,054,192. This application Jan. 17, 1992, Ser. No. 822,628
Int. Cl.[5] H01R *43/02*
U.S. Cl. 29—879 **14 Claims**



1. A method of manufacturing an elongated twisted wire jumper from a segment of an elongated wire having a plurality of exterior helically wound strands, comprising the steps of:
forming a blunt nose at a first predetermined location on the segment by fusing the strands integrally together at the first predetermined location;
gripping the segment at a second and a third predetermined spaced apart locations;
rotating said wire at one of the second or third locations in an antihelical direction with respect to the other one of the second or third locations to expand the strands between the second and third locations and form a bulged cage section between the second and third locations.

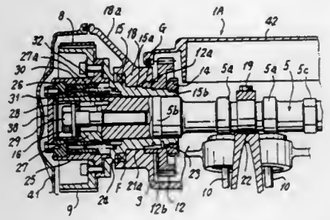
5,184,401
METHOD OF ASSEMBLING VALVE DRIVE MECHANISM TO ENGINE
Ichiro Hirose; Masahiro Choshi, and Kouichi Hatamura, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Nov. 26, 1991, Ser. No. 798,248
Claims priority, application Japan, Nov. 30, 1990, 2-339570; Nov. 30, 1990, 2-339575
Int. Cl.[5] F01L *1/34*
U.S. Cl. 29—888.01 **4 Claims**

1. A method of assembling a valve driving mechanism to a double overhead camshaft engine having camshafts which are rotatably connected to each other by a gear train having at least two camshaft gears, said valve driving mechanism having a variable valve timing unit incorporated in a cylindrical mounting base which is rotatably mounted on one of said camshafts, said method comprising the steps of:
mounting, on said one of said camshafts, one of said at least

VOL
1147
ISS
2
FE
9
1993
UMI

two camshaft gears, the one of said at least two camshaft gears being maintained at a predetermined angular position relative to the other of said at least two camshaft gears, and a lock nut;

adjusting, while mounting said variable valve timing unit on said one of said camshafts, an angular position of said cylindrical mounting base relative to said one of said at



least two camshaft gears and then an angular position of said variable valve timing unit relative to said one of said camshafts; and

fastening said one of said at least two camshaft gears to said cylindrical mounting base with said lock nut and, simultaneously, said variable valve timing unit to said one of said camshafts.

5,184,402

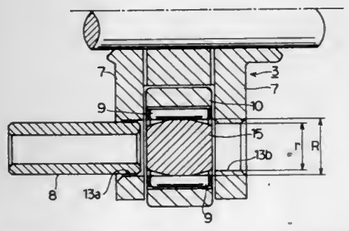
METHOD OF INSTALLING ROLLER BEARING

Satoshi Kadokawa, Fujisawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 577,542, Sep. 5, 1990, Pat. No. 5,059,040. This application Aug. 1, 1991, Ser. No. 738,813

Int. Cl.[5] F16C *43/00*

U.S. Cl. 29—898.07 **5 Claims**



1. A method of installing a roller bearing comprising the steps of:

providing a roller bearing comprising an outer ring and a plurality of rollers provided in said outer ring to define a space;

providing first and second support wall sections with a gap therebetween, said first support wall section having a first through-hole with an inner diameter therethrough and said second support wall section having a second through-hole with an inner diameter therethrough;

providing a shaft which is to be inserted into said first through-hole and extended through said space and said second through-hole to support said roller bearing, said shaft having a leading end in a direction in which said shaft is to be inserted;

providing a spacer of a predetermined length and shape and being made of an elastic material of a predetermined hardness,

said shape being such that said spacer has at least a leading section with a leading end in a direction in which said shaft is to be inserted, said leading section having a peripheral guide surface having an outer diameter which is progressively reduced to said leading end of said leading section and smaller than said inner diameter of the second through-hole, said spacer having a middle section in which a contact support section is provided in at least two separated positions and has a maximum outer diameter of said spacer, said middle section having a length of 1/6 to 166 **of said length of said spacer;**

inserting said spacer into said space defined by said rollers for supporting said rollers in said roller bearing so that the shape of said spacer is maintained when the spacer is inserted in said space;

positioning said roller bearing in said gap between said first and second wall sections;

inserting said shaft from outside into said first through-hole formed in said first support wall section;

passing said leading end of said shaft through said space defined by said rollers, so that said spacer is pressed out of said second support wall section through said second through-hole; and

inserting said leading end of said shaft into said second through-hole in said second support wall section.

5,184,403

MOTOR-DRIVEN CHAIN SAW HAVING A LUBRICATING OIL PUMP

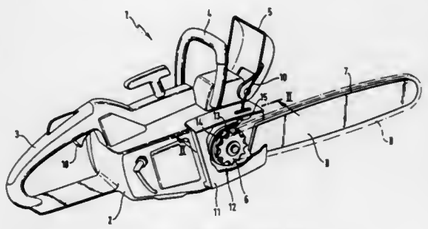
Harald Schliemann, Waiblingen, Fed. Rep. of Germany, assignor to Andreas Stihl, Waiblingen, Fed. Rep. of Germany

Filed Mar. 5, 1992, Ser. No. 846,132

Claims priority, application Fed. Rep. of Germany, Mar. 6, 1991, 4107110

Int. Cl.[5] B23D *59/04, 57/02;* B26D *7/08*

U.S. Cl. 30—123.4 **11 Claims**



1. A motor-driven chain saw comprising:

a motor;

a housing for accommodating said motor therein;

a cutter bar mounted on said housing and defining a peripheral guide groove;

a saw chain mounted in said guide groove;

sprocket means operatively connected to said motor for driving the saw chain around said cutter bar;

a device for bringing the saw chain to standstill and including a trigger element displaceable between a stop position wherein said saw chain is at standstill and a go position wherein said saw chain moves along said guide groove;

a lubricating oil system including:

a supply tank for storing lubricating oil;

said guide bar having an outlet opening formed therein for discharging the lubricating oil into the guide groove;

a feed line connecting said supply tank to said outlet opening;

an oil pump connected into said feed line between said supply tank and said outlet opening;

said oil pump having an intake connection for taking in the lubricating oil flowing from said supply tank and a discharge opening for discharging the lubricating oil toward said outlet opening;

drive means connecting said oil pump to said motor for driving said oil pump continuously while the motor operates;

a blocking valve unit having a valve member movably mounted in said feed line for movement between a block position wherein the flow of lubricating oil through said feed line is blocked and a pass position wherein said valve member is withdrawn to allow the lubricating oil to flow through said feed line to said outlet opening; and,

connecting means for connecting said valve member to said trigger element so as to cause said valve member to be in said block position when said trigger element is in said stop position thereby preventing lubricating oil from being discharged through said outlet opening and into said guide groove when said saw chain is brought to standstill by said device and so as to cause said valve member to be in said pass position when said trigger element is in said go position.

5,184,404

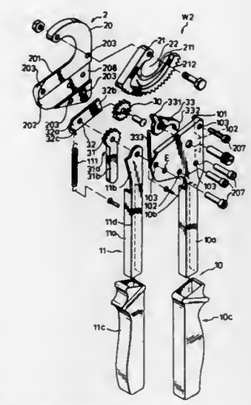
WIRE CUTTER

Ching-Jen Chen, No. 33-1, Luh-Tyi St., Panchiao City, Taipei Hsien, Taiwan

Filed Jun. 1, 1992, Ser. No. 891,831

Int. Cl.[5] B26B *13/00*

U.S. Cl. 30—250 **3 Claims**



1. A wire cutter comprising:

a fixed handle having an enlarged top end;

a movable handle having a top end pivoted to said enlarged top end of said fixed handle, said top end being provided with a gear means which is stationary relative to said movable handle;

an elongated plate having a first end and a second end, said gear means being pivoted to said plate adjacent to said first end;

a gear member pivoted to said plate adjacent to said second end and meshing with said gear means;

a fixed cutting member including a lower mounting portion fixed to said enlarged top end of said fixed handle and an upper curved cutting portion;

a curved movable cutting member pivoted to said cutting portion of said fixed cutting member to form a variable hole therebetween for receiving a wire therein, said movable cutting member having one side formed with a cutting section and another side formed with a toothed section;

an extension spring having one end connected to said first end of said plate and another end connected to said movable handle, said extension spring biasing said plate so that said plate inclines upwardly to permit engagement between said toothed section of said movable cutting member and said gear member; and

a pawl member resiliently pivoted to said enlarged top end of said fixed handle adjacent to one side of said gear member opposite to said gear means, said pawl member normally engaging said toothed section and permitting movement of said movable cutting member in a first direction wherein said movable cutting member moves toward said cutting portion of said fixed cutting member;

said gear means rotatably driving said gear member when said movable handle is pressed toward said fixed handle from a normal position to a compressed position so as to cause said movable cutting member to pivot in said first direction and thereby decrease the size of said variable hole;

said pawl member resisting movement of said movable cutting member away from said cutting portion of said fixed cutting member to cause said gear means to urge said gear member and said plate to incline downwardly when said movable handle is released from said compressed position to said normal position so as to permit disengagement between said toothed section of said movable cutting member and said gear member.

5,184,405

METHOD AND DEVICE FOR FITTING TORIC CONTACT LENSES

Jonathan Cress, 145 Bayona Dr., Santa Cruz, Calif. 95060

Filed Dec. 18, 1991, Ser. No. 809,744

Int. Cl.[5] G01B *5/24;* A61B *3/00*

U.S. Cl. 33—1 SD **14 Claims**



1. A toric axis calculator comprising:

a card having a front face, a rear face, and a window therethrough;

a first circular dial rotatably mounted on the rear face of the card, said first dial having a protractor scale with markings from 0° to 180° disposed along its periphery so that they can be observed through the window as the dial is rotated; and

a transparent circular dial rotatably mounted on the front face of the card, said transparent dial being coaxial with the first circular dial, whereby the circular dial and the transparent dial may be rotated separately or together, and said transparent dial including at least one reference symbol for alignment with the position of an orientation mark on a test toric lens, whereby the protractor markings remain visible through the window.

5,184,406

PROJECTED LIGHT PLUMB DEVICE

Thomas Swierski, 2 Woodstock La., Middleton, N.Y. 10940

Filed Jun. 18, 1991, Ser. No. 716,997

Int. Cl.[5] G01C *15/02, 15/08*

U.S. Cl. 33—227 **11 Claims**

1. A projected light plumb device comprising:

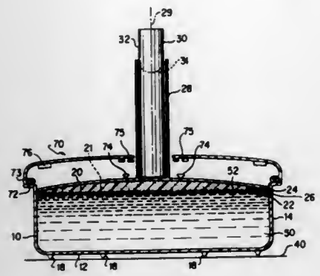
a container,

a float platform buoyantly supported within said container by a fluid suspension means,

a light projecting device, and

VOL
1147
ISS
2
FE
9
1993
UMI

a support means for securing said light projecting device to said float platform at a predetermined angular orientation, wherein said container includes aligning means such that the light projecting device will transmit a beam of light to align a first position designated by said aligning means and a second position designated by said light projecting device.



5,184,407

COMBINATION TOOL AND TAPE FOR MEASURING CIRCUMFERENCE OF FLEXIBLE TUBING

Philip J. Watrous, Ledyard, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 11, 1992, Ser. No. 897,147
Int. Cl.[5] G01B *3/10*
U.S. Cl. 33—555.4 **4 Claims**



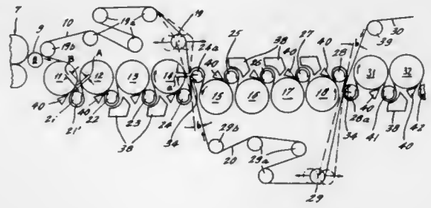
1. A measuring device for tubing comprising in combination;
a tool having pivotally attached jaws having handle portions which when pressed toward each other cause the jaws to move toward each other in a scissors-like action;
resilient means carried by said tool normally urging said jaws in an outward direction;
a flexible measuring tape having an offset intermediate its length, means pivotally connecting one of said jaws to a point adjacent one end of said tape; and
cooperating means on said other jaw and on said tape near the other end of the latter for permitting releasable engagement between said other jaw and said tape other end, whereby when the tape is wrapped around the tubing to be measured, said offset permits the tape to engage the tubing without overlapping and with portions of the tape in side-by-side relation, and so that when said other jaw is caused to make engagement with said tape other end and pressure on said handle portions is released, said resilient means causes said jaws to move outwardly to cause said tape to snugly encircle the tubing, and indicia means on the side-by-side portions of said tape, which when aligned signify that the tubing is of the proper desired diameter.

5,184,408

DRYER SECTION

Gerhard Kotitschke, Steinheim, and Georg Kugler, Heidenheim, both of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Jan. 19, 1990, Ser. No. 467,788
Int. Cl.[5] F26B *13/16*
U.S. Cl. 34—117 **1 Claim**



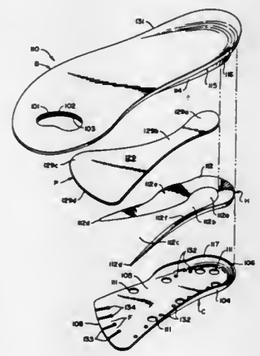
1. A dryer section of a machine for manufacturing fiber webs, wherein:
(a) the dryer section comprises a plurality of heatable drying cylinders arranged to form at least a first dryer group and a second dryer group, and arranged in horizontal cylinder rows, and including at least one suction roll allocated to each drying cylinder;
(b) a first and a second endless support belt, each dryer group has a respective one of the first and second endless support belt for supporting the fiber web, with the support belt and the fiber web traveling alternately over the drying cylinders and over the suction rolls so that the fiber web comes into direct contact with the drying cylinders and the support belt comes into direct contact with the suction rolls;
(c) in the first dryer group a first side of the web contacts the drying cylinders, and a second side of the web contacts the support belt;
(d) in the second dryer group, following the first dryer group, the second side of the web contacts the drying cylinders, and the first side of the web contacts the support belt;
(e) within each said second dryer group, at an upstream end thereof, one of the suction rolls is arranged to assume the function of a pick-up roll for transferring the fiber web from the first to the second dryer group such that the second support belt is capable of contacting the first support belt only at a portion comprising an arc angle "a" of the periphery of said pick-up roll, the first and second support belts extending to converge toward each other and to form a wedge-like gap at said pick-up roll of a predetermined angle; and
(f) adjusting means for adjusting the size of the arc angle "a" between zero and 20°, said adjusting means comprising a belt roll, leading the first support belt and position downstream of said pick-up roll, said belt roll being shiftable to adjust the size of the arc angle "a", said pick-up roll having a prolonged suction zone or a separate pre-suction zone at the side where the associated support belt is received to suction off air layers carried into said wedge-like gap by said belts.

5,184,409

ORTHOTIC INSERT AND METHOD OF MAKING OF THE SAME

Dennis N. Brown, Blaine, Wash., assignor to Northwest Podiatric Laboratory, Inc., Blaine, Wash.

Continuation of Ser. No. 636,573, Jan. 2, 1991, abandoned, which is a continuation of Ser. No. 565,887, Aug. 8, 1990, abandoned, which is a continuation of Ser. No. 450,610, Dec. 13, 1989, abandoned, which is a continuation of Ser. No. 326,288, Mar. 20, 1989, abandoned, which is a continuation of Ser. No. 196,147, May 19, 1988, abandoned, which is a continuation of Ser. No. 88,127, Aug. 21, 1988, abandoned, which is a continuation of Ser. No. 870,123, Jun. 3, 1986, abandoned, which is a division of Ser. No. 766,049, Aug. 15, 1985, abandoned, which is a continuation-in-part of Ser. No. 643,823, Aug. 24, 1984, abandoned. This application Jun. 14, 1991, Ser. No. 714,983
Int. Cl.[5] A43B *13/38, 13/40*
U.S. Cl. 36—44 **15 Claims**



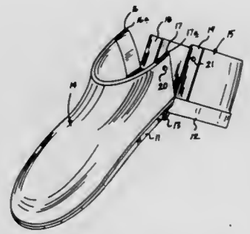
1. A substantially unitary orthotic adapted to be placed in an article of footwear for use with a foot as said foot goes through a gait cycle, said orthotic having a longitudinal center axis parallel to a lengthwise portion of said foot, a front portion, a rear portion, and two side portions, said orthotic comprising:
a. an upper blank portion configured to extend laterally across a plantar area of said foot and to extend longitudinally from a heel portion of said foot to at least a metatarsal head area of said foot;
b. said blank portion having a longitudinally extending zone of disparate resiliency relative to first and second side areas of said blank which are adjacent to first and second sides of said zone of disparate resiliency, said zone of disparate resiliency extending longitudinally from a rearward end configured to be located beneath said heel portion of said foot to a forward end configured to be located approximately beneath said metatarsal head area of said foot;
b. said longitudinally extending zone of disparate resiliency being configured to deform under said foot to a greater extent than said first and second side areas as said foot begins to bear weight following heel strike, so that as said foot transitions from heel strike to mid-gait and a center of pressure under said foot transitions from said heel portion of said foot to said metatarsal head area, said zone of disparate resiliency deforms downwardly relative to said side areas so that said orthotic flexes about said longitudinal axis, and said side areas cradle said foot generally along said longitudinal axis and urge said foot into a predetermined neutral position so as to assist said foot in progressing from a mobile adaptor to a rigid lever for a subsequent propulsion phase of said gait cycle.

5,184,410

PIVOTING SHOE CONSTRUCTION

Paul R. Hamilton, 34722 Hillside La., Piedmont, Ohio 43983

Filed Jun. 13, 1991, Ser. No. 714,505
Int. Cl.[5] A43B *21/00, 11/00*
U.S. Cl. 36—105 **1 Claim**



1. A pivoting shoe construction, comprising,
a shoe sole, the shoe sole including a shoe heel, the shoe sole and the shoe heel intersecting at an intersection line, wherein the intersection line includes a pivot hinge coextensive with the intersection lines to permit pivotment of the shoe sole relative to the shoe heel, and
an upper shoe forward section mounted to the shoe sole, and an upper shoe rear section mounted to the shoe heel, wherein the upper shoe forward section and the upper shoe rear section includes latching means to secure the upper shoe forward section relative to the upper shoe rear section, and
the upper shoe forward section includes a forward section

VOL
1147
ISS
2
FE
9
1993
UMI

bifurcated first rear edge spaced from and parallel a bifurcated forward section second rear edge spaced apart a predetermined spacing, wherein the first rear edge and the second rear edge define a respective first slot and second slot, and the upper shoe rear section includes a rear section first flange and a first section second flange, wherein the first flange is receivable within a first slot and the second flange is receivable within a second slot, and the latching means includes a latch button mounted within the first flange and a further latch button mounted within the second flange, and the forward section bifurcated first year edge includes a first opening receiving the release button therewithin, and the forward edge bifurcated second edge includes a further opening to receive the further release button therewithin, and

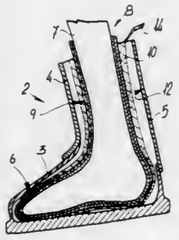
the first slot includes a first slot rear wall, and the second slot includes a second slot rear wall, and the first slot includes a first elongate cavity extending rearwardly of the first slot rear wall, and the second sot includes a second elongate cavity extending rearwardly of the second slot rear wall, wherein each slot receives an elongate dispensing packet therewithin, and

the first slot and the second slot each are defined by a predetermined internal configuration, and each elongate dispensing packet is defined by a predetermined external configuration complementary configured to the predetermined internal configuration of each slot, and

each dispensing packet includes a central portion defining an enclosed fluid-filled cavity, the fluid-filled cavity including a viscose fluid contained therewithin, and the central portion includes a plurality of apertures directed through the central portion, with each opening including an opening channel in fluid communication with the fluid-filled cavity, and the upper shoe forward section including a permeable shoe liner to direct the fluid from the fluid-filled cavity through the permeable liner interiorly of the upper shoe forward section, and

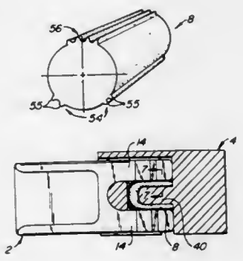
the dispensing packet includes a plurality of wings extending coextensively of the central portion, wherein the wings are coplanar relative to one another, and each wing includes a reinforcing rod directed therethrough, wherein each of the rods are arranged at a parallel relationship to maintain geometric integrity of each dispensing packet.

5,184,411
INNERBOOT WITH IMPROVED FIT
Cesare Corletto, Via Monte Piana 12, 31033 Castelfranco Veneto (Prov. of Treviso), Italy
Filed Jul. 1, 1991, Ser. No. 724,034
Claims priority, application Italy, Jul. 10, 1990, 82600 A/90
Int. Cl.[5] A43B *5/04, 7/14*
U.S. Cl. 36—117 **16 Claims**



1. Inner shoe particularly for ski boots comprising an inner lining, a first layer of elastically deformable material connected to said inner lining, a second layer bonded to a surface of said first layer, said second layer comprising a hermetically sealed sack connected to said first layer, a vacuum-compacted open-cell material contained within said hermetically sealed sack, said vacuum-compacted open-cell material being saturated with a catalyst, valve means provided in said hermetically sealed sack for introducing therein a fluid which reacts with said catalyst, whereby to permit expansion of said second layer while wearing said inner boot with anatomical adaptation of said inner shoe to the shape of a wearer's foot.

5,184,412
AUGER TOOTH LOCKING MECHANISM
Martin W. Kopinski, Tracy, and George J. Bogdanich, San Jose, both of Calif., assignors to Pengo Corporation, Union City, Calif.
Filed Jun. 10, 1992, Ser. No. 896,278
Int. Cl.[5] E02F *9/28*
U.S. Cl. 37—142 A **14 Claims**



10. An excavating tooth assembly comprising:

a tooth holder having channels formed therein;

a tooth having a distal portion and a proximal portion, said proximal portion including laterally spaced prongs having inner walls bounded by upper and lower edges, said prongs being positioned in said channels; and

a resilient elongated member having a first and second group of ribs that extend substantially longitudinally along the outer surface of said elongated member, said elongated member being positioned between at least a portion of each prong and said tooth holder with said first group of ribs compressed against at least a portion of the upper edges of said prongs and said second group of ribs compressed against at least a portion of the lower edges of said prongs.

5,184,413

Patent Not Issued For This Number

5,184,414
FLOATING FISHING LIGHT AND TRANSDUCER
James Downs, P.O. Box 983, Whitney, Tex. 76692
Filed Feb. 7, 1991, Ser. No. 651,806
Int. Cl.[5] A01K *97/12*
U.S. Cl. 43—17.5 **10 Claims**

1. A floating fishing apparatus including:

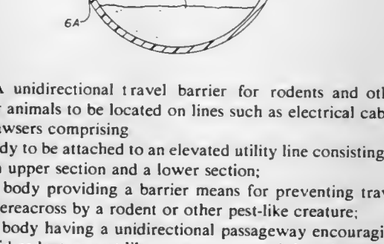
a housing;

means for emitting light therefrom mounting in an upper portion of the housing for lighting up an area of water around the fishing apparatus and for attracting fish to the area;

a buoyant member coupled around a lower portion of the housing for floating and maintaining the housing on top of water;

signal emitting means coupled to the buoyant member so that portions thereof extends into the water when the buoyant member is floating on top of the water;

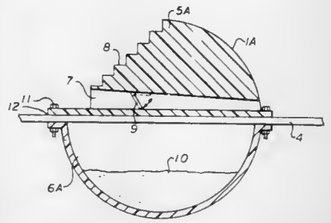
a power source located remotely from the housing for activating the light emitting means and the signal emitting means;



means for electrically coupling the light emitting means and signal emitting means to the power source so that the light emitting means and signal emitting means can be activated; and

an extendable pole having one portion thereof coupable to the housing and another portion thereof coupable to a boat in the water for maintaining the housing in a designated area adjacent the boat.

5,184,415
UNIDIRECTIONAL TRAVEL REGULATOR FOR RODENTS AND OTHER SMALL ANIMALS
Timothy Hattenbach, 1015 Harvard, Houston, Tex. 77008, and Matthew Hahn, 2404 North Blvd., Houston, Tex. 77098
Filed Apr. 9, 1992, Ser. No. 865,877
Int. Cl.[5] A01M *1/10*
U.S. Cl. 43—58 **6 Claims**



1. A unidirectional travel barrier for rodents and other similar animals to be located on lines such as electrical cables and hawsers comprising

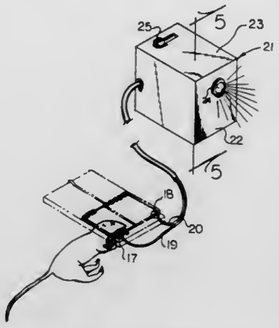
a body to be attached to an elevated utility line consisting of an upper section and a lower section;

said body providing a barrier means for preventing travel thereacross by a rodent or other pest-like creature;

said body having a unidirectional passageway encouraging said rodent or pest-like creature to travel therethrough in a first direction but preventing travel therethrough in the opposite direction; and

said body further having a ladder means enabling exit by said rodent or pest-like creature in a said first direction but preventing travel in said opposite direction.

5,184,416
SIGNAL MOUSETRAP APPARATUS
Darryl C. Brewer, P.O. Box 200, Blacksville, W. Va. 26521
Filed Dec. 2, 1991, Ser. No. 800,993
Int. Cl.[5] A01M *23/30*
U.S. Cl. 43—81 **4 Claims**



1. A mousetrap apparatus, comprising in combination,

a mousetrap assembly, the mousetrap assembly including a base plate with the base plate forward edge and a "U" shaped bail pivotally mounted medially of the base plate, the "U" shaped bail mounted about a axle, with the axle fixedly mounted to the base plate, and

an axle spring biasing the "U" shaped bail to a first position, with the "U" shaped bail including a base leg, and the base leg oriented adjacent the forward edge in the first position, and

a first contact boss and a second contact boss mounted relative to the base plate adjacent the forward edge, and the first contact boss and the second contact boss spaced from the axle a predetermined length, and the axle spaced from the base leg a further predetermined length, wherein the further predetermined length is equal to the predetermined length, and

a signal housing, the signal housing including at least one battery contained therewithin, and a visual signal light mounted to the housing projecting exteriorly thereof, and

a first electrical transmission line and a second electrical transmission line mounted to the respective first and second contact boss in electrical communication with the at least one battery, whereupon actuation of the "U" shaped bail to the first position in contiguous communication with the first and second contact bosses effects illumination of the signal light.

5,184,417
FLEA TRAP APPARATUS
Cheryl D. Weldon, 7351 Westchester Dr., Indianapolis, Ind. 46226
Filed Jul. 2, 1992, Ser. No. 907,582
Int. Cl.[5] A01M *1/02, 1/20*
U.S. Cl. 43—107 **6 Claims**

1. A flea trap apparatus, comprising,

a cylindrical housing, the cylindrical housing symmetrically oriented about a housing axis, with the cylindrical housing having a roof, and the roof including a plurality of vent apertures directed therethrough, and

the housing having an annular lower edge, and

a housing base, the housing base including an annular upper edge, with the annular lower edge arranged for contiguous communication with the annular upper edge, and

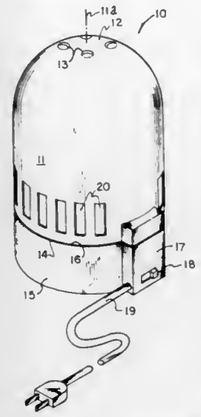
a switch housing mounted to the housing base, the switch housing having an on/off switch mounted therein, and

an electrical power supply line in electrical communication

VOL 1147 ISS 2 FE 9 1993 UMI

with the on/off switch directed into the switch housing, and

a plurality of housing slots arranged in an annular array through the cylindrical housing adjacent the housing annular lower edge, and



electrical resistance heating means mounted within the housing for heating of ambient air within the housing, and

blower means mounted within the housing above the heating means for directing air past the heating means and exteriorly of the housing through the slots.

5,184,418

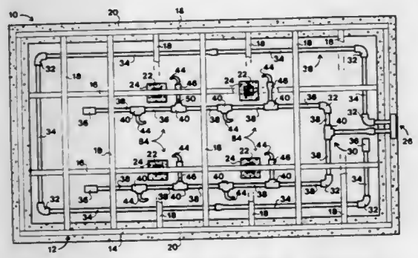
PERMANENT TERMITE PROTECTION SYSTEM

Robert A. Fletscher, 23760 Alamitos Rd., San Jose, Calif. 95120

Filed Mar. 19, 1991, Ser. No. 672,096

Int. Cl.[5] A01M *7/00*

U.S. Cl. 43—124 **8 Claims**



1. A spraying system for spraying fluids, comprising:

a plurality of fluid carrying tubes and a plurality of connectors for connecting said tubes together;

a plurality of hanger brackets for hanging said fluid carrying tubes from a plurality of structural members of a building;

a fluid introduction means through which the fluids are put into the fluid carrying tubes; and

a plurality of sprayer means, connected to said carrying tubes, for spraying the fluids onto a foundation portion of said building, wherein;

at least some of the sprayer means are nozzle passages through a raised external ridge portion of at least some of said fluid carrying tubes.

5,184,419

METHOD AND APPARATUS FOR EXTERMINATING STRUCTURE INFESTATIONS

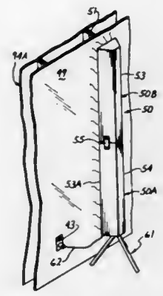
Joseph C. Tallon, 5702 Pioneer Dr., Bakersfield, Calif. 93306

Continuation of Ser. No. 356,001, May 22, 1989, Pat. No. 5,058,313, which is a continuation-in-part of Ser. No. 1,871, Jan. 9, 1987, abandoned. This application Apr. 24, 1991, Ser. No. 690,724

The portion of the term of this patent subsequent to Oct. 22, 2008, has been disclaimed.

Int. Cl.[5] A01M *1/20*

U.S. Cl. 43—132.1 **21 Claims**



1. A system for exterminating insects in a structural wooden member of a wall, comprising:

a heating assembly for supplying heat producing energy, said assembly including a housing having an open front mouth;

said mouth being rectangular and elongated in shape and configured to the shape and size of the insect infested structural wooden member;

said mouth being wider than the wooden member and having a planar configuration for engaging flat against a large outer surface of the wall opposite the wooden member therebehind along a continuous line of engagement with the outer surface for confining the heat producing energy at said outer surface to heat the infested wooden member for infestation treating purposes;

electrical heat producing means mounted to said housing for directing heat producing energy in a pattern generally similar to the size and shape of the wooden member, toward the insect infested structural wooden member to inhibit heat producing energy from escaping from said housing; and

said housing being generally boxlike in configuration and having a rear wall for supporting said heat producing means, said mouth being disposed directly opposite to said rear wall to guide said heat producing energy from said heat producing means directly through said mouth and onto said large surface;

means for nonmanually supporting said housing entirely from below in a stationary manner to position said mouth in a vertical plane to enable the housing to engage the wall.

5,184,420

COMPUTERIZED FERTILIZER INJECTION SYSTEM

Athanasios P. Papadopoulos, Windsor; Eric M. Labbate, Leamington, and Nicola Liburdi, Windsor, all of Canada, assignors to Labbate Climate Control System Inc., Leamington, Canada

Filed Dec. 14, 1988, Ser. No. 284,439

Int. Cl.[5] A01G *31/00*

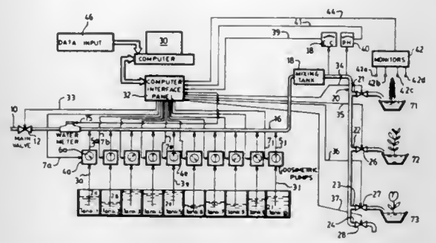
U.S. Cl. 47—62 **18 Claims**

1. A feed system for selective automated delivery to a crop bed of a water stream with nutrients therein in controlled, variable proportions and concentrations, comprising:

a plurality of nutrient tank means each supplying concentrated liquid fertilizer containing one or more nutrients in known concentrations,

a dosing pump means associated with each tank means to inject into the water stream a pre-set volumetric dose of the liquid fertilizer on each pulse of the pump means,

control means monitoring the volumetric flow of said water stream and selectively pulsing each of said dosing pump



means to inject quantities of the liquid fertilizer to achieve desired proportions and concentrations of said nutrients in the water stream,

said control means including means to vary the proportions and concentrations of the liquid nutrients in the water stream by varying the relative number and timing of pulses of the pump means for each nutrient tank means without changing the pre-set volumetric dose for said pump means.

5,184,421

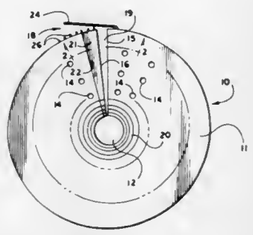
LOCKING COVER FOR POTS

Stephen W. Meharg, 9869 Curries Crossing, Jonesboro, Ga. 30236

Continuation-in-part of Ser. No. 443,154, Nov. 30, 1989. This application Feb. 27, 1991, Ser. No. 661,120

Int. Cl.[5] A45B *3/00*

U.S. Cl. 47—66 **7 Claims**



1. A pot over for a flower pot, said flower pot including a circumferential wall, said pot cover comprising a cover portion having a size and shape to substantially cover said pot and defining an open sector between a first radius and a second radius, said over portion having a perimeter and a skirt portion carried by said cover portion at said perimeter, said skirt portion having a perimeter substantially equal to said perimeter of said cover potion, and locking means for closing said open sector for locking said skirt to said pot, said cover portion being normally flat, said cover portion becoming conical as said first radius is moved towards said second radius to close said open sector, said cover portion defining a central opening therein for extension of a plant therethrough, said locking means including a strap fixed to said skirt on one side of said sectors id strap defining at least one hole therein, and at least one stud fixed to said skirt on the opposite side of said sector, said at least one stud being receivable in said at least one hole in said strap.

5,184,422

SWING AWAY MANWAY ASSEMBLY

William W. Wade, Overland Park, Kans., and Vincent W. Eshnaur, Kansas City, Mo., assignors to American Ingredients Company, Kansas City, Mo.

Filed Dec. 10, 1991, Ser. No. 805,467

Int. Cl.[5] E05D *7/06*; **E05F** *1/04*

U.S. Cl. 49—239 **5 Claims**



1. A swing away manway assembly for use in covering a hole defined by a circumferential edge that is disposed within a first plane, the assembly comprising:

a manway opening cover disposed in a second plane parallel to said first plane;

said cover including circumferential sealing means adapted for continuous sealing of said manway opening;

latch means for alternatively engaging and releasing said cover circumferential sealing means;

swing away means secured to said cover and lying in a plane perpendicular to said first and second planes;

said swing away means adapted to facilitate swinging movement of said cover upon release of said circumferential sealing means;

said swing away means including biasing means cooperating with said latch means to facilitate continuous sealing of said manway opening with said cover circumferential sealing means; and

said swing away means further including cam means for moving the cover vertically during swinging movement thereof.

5,184,423

INSULATING INDUSTRIAL DOOR AND DOOR MANUFACTURING METHOD

Lon H. McCarty, Estacada, Oreg., assignor to Econo Max Manufacturing, Gresham, Oreg.

Filed Jan. 8, 1991, Ser. No. 638,843

Int. Cl.[5] E06B *3/00*

U.S. Cl. 49—501 **17 Claims**

1. A door comprising:

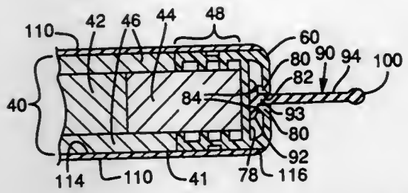
a core having a central panel portion of an insulating material, an edge margin and first and second opposed major surfaces;

an elongated edge rail having a base and first and second spaced-apart elongated core engaging flanges projecting outwardly from the base in a first direction, the flanges having respective opposed interior and exterior surfaces with the interior surfaces of the first and second flanges defining a core receiving channel therebetween, the core being inserted between the first and second flanges; and

first and second face panels mounted to the respective first and second opposed major surfaces of the core, the first

VOL 1147 ISS 2 FEB 9 1993 UMI

face panel overlaying at least a portion of the exterior surface of the first core engaging flange and the second panel overlaying at least a portion of the exterior surface



of the second core engaging flange, whereby the edge rail is laminated into the door structure by the overlaying portions of the face panels.

5,184,424

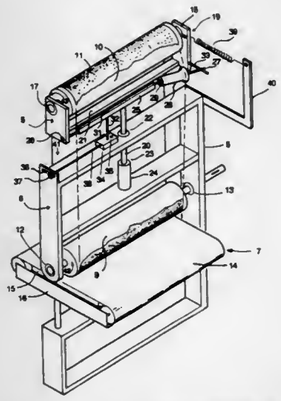
SELF CORRECTING BELT TRACKING APPARATUS FOR WIDEBELT ABRASIVE GRINDING MACHINE

Todd L. Miller, 1110 E. Quilcene Rd., Quilcene, Wash. 98376

Filed Oct. 22, 1991, Ser. No. 781,119

Int. Cl.[5] B24B *21/12, 21/20*

U.S. Cl. 51—135 BT **5 Claims**



5. An abrasive grinding machine consisting of an abrasive head that utilizes a system for driving an endless abrasive belt along a predetermined path, said abrasive head consisting of at least two spaced rotating rollers the full width of said endless belt over which the belt is trained, a means for driving one of said rollers and a tracking means for said endless belt, mounted on a suitable frame means, said tracking means consists of a steerable cradle means for carrying one of the rollers for pivotal rotation around an axis perpendicular to the rollers rotational axis, said pivotable rotation is accomplished in one direction by a force means attached to said frame means and in the other direction by a belt position lever means that pivots on a shaft mounted on said frame means, whose axis is at a substantial right angle to the axis of one of said rollers and substantially parallel to the plane containing the rotational axis of both of said rollers, said lever movement is contained within a plane of motion that is substantially orthagonal to the plane that contains the axis of said rollers, one end of said lever means is attached to said cradle, the other end is engagable with an area of the back surface of one edge of said belt so as said lever means protrudes out of the belt flight plane that said belt describes while traveling between said rollers and said lever means is reponsive to pressure from said belt as said belt travels a longer flight path on said edge to overcome the force from said force means, said abrasive head is used with a workfeeding means that is adjustable with relation to said abrading head to accomodate varying sized workpieces.

5,184,425

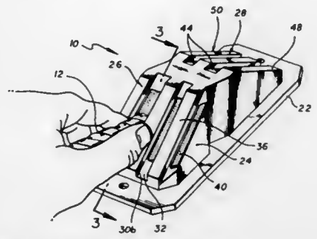
DRILL BIT SHARPENER

Steven P. Anderson, 6660 Reseda Blvd., Suite 112, Reseda, Calif. 91335

Continuation-in-part of Ser. No. 869,637, Apr. 16, 1992. This application Apr. 30, 1992, Ser. No. 876,587

Int. Cl.[5] B24B *3/24*

U.S. Cl. 51—149 **18 Claims**



7. A drill bit sharpener, comprising:

a base plate for supporting the drill bit sharpener over a planar surface;

a superstructure extending upwardly from the base plate and having a first surface generally inclining upwardly from the base plate, said first surface including a plurality of generally parallel U-shaped channel means extending from and inclined upwardly with respect to the base plate; and

means fixed to the first surface for grinding the cutting edge of a drill bit, said means comprising a diamond-coated plate adhered to a bottom surface of each of said U-shaped channel means to provide a grinding means for sharpening a face of the cutting edge of the drill bit.

5,184,426

GRINDING WHEEL FORM DEFINING DEVICE

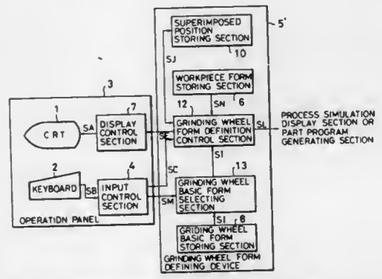
Toshiyuki Minatani, Niwa, Japan, assignor to OKUMA Corporatioo, Aichi, Japan

Filed May 30, 1991, Ser. No. 707,802

Claims priority, application Japan, May 31, 1990, 2-142832

Int. Cl.[5] B24B *51/00*

U.S. Cl. 51—165.71 **4 Claims**



1. An apparatus for defining a cross-sectional form of a grinding wheel for grinding a workpiece, the cross-sectional form including a grindstone axis, said apparatus comprising:

first storage means for storing a plurality of basic grinding wheel forms;

means, responsive to an input command, for selecting a basic grinding wheel form from among the plurality of basic grinding wheel forms stored in said first storage means;

second storage means for storing at least one workpiece cross-sectional form;

definition control means for receiving the basic grinding wheel form selected by said selecting means, for retrieving a workpiece cross-sectional form from said second storage means, for superimposing the received basic grinding wheel form and the retrieved workpiece cross-sectional form to obtain a resultant superimposed form, and for defining as the grinding wheel cross-sectional form a form obtained by removing the superimposed form from the grinding wheel basic form.

5,184,427

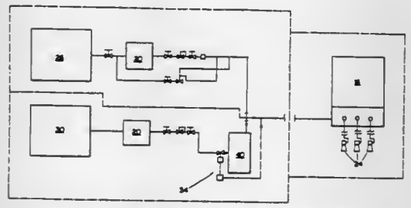
BLAST CLEANING SYSTEM

Jay Armstrong, Westlake, Ohio, assignor to James R. Becker, No. Ridgeville, Ohio, a part interest

Filed Sep. 27, 1990, Ser. No. 589,042

Int. Cl.[5] B24B *49/00*

U.S. Cl. 51—165.73 **3 Claims**



1. A system for blast cleaning a surface with solid pellets of carbon dioxide, comprising:

means for storing a cryogenic supply of a liquified gas;

means for creating a high pressure gas from said liquified gas and for delivering a stream of said high pressure gas at temperatures between ambient and −200° degrees F.

means for storing solid pellets of carbon dioxide;

means for mixing said solid pellets of carbon dioxide into said stream of high pressure gas; and

means for propelling the mixture of solid pellets and high pressure gas towards the surface to be cleaned.

5,184,428

DEVICE FOR ADJUSTING A CNC-CONTROLLED GRINDER

Wolfgang Feldt, Grundau, and Dieter Laese, Wiesbaden, both of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Mar. 26, 1992, Ser. No. 858,011

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1991, 4110209

Int. Cl.[5] B24B *49/12*

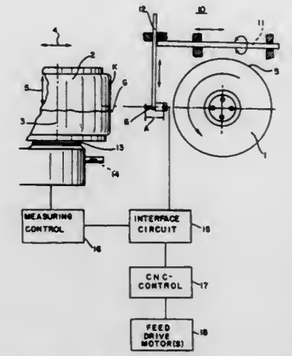
U.S. Cl. 51—165.75 **8 Claims**

1. A device for establishing the relative position of a tool and a workpiece, the device comprising:

a sensing device positioned between the workpiece and tool and having a passive contact sensing element rigidly secured to an active sensing element at a known distance such that the passive contact sensing element mechanically contacts the workpiece;

means for providing relative movement of the workpiece and the sensing device toward the tool and along a main feed axis until the active sensing element detects the position of the tool; and

control means responsive to the active sensing element for determining the relative distance between the tool and the



workpiece based on the known distance between the active and passive contact sensing elements.

5,184,429

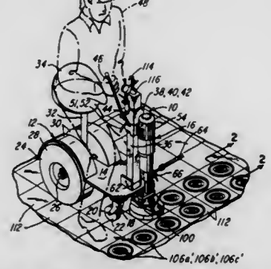
SURFACE GROOVING MACHINE

Keith A. Parsons, 2611 South Tecumseh Rd., Springfield, Ohio 45502

Filed Feb. 5, 1991, Ser. No. 650,586

Int. Cl.[5] B24B *7/18*

U.S. Cl. 51—177 **8 Claims**



1. A movable machine with a texturing tool for grooving or scoring the surface of monolithic blocks of a floor to a predetermined depth regardless of floor planarity, which comprises:

a vehicle having a pair of rotatable and turnable front wheels and a pair of rotatable rear wheels, a pedestal mounted operator seat, and a gear rack mast all affixed to the framework of the vehicle;

a modified core driller slidably mounted to the gear rack mast, said core driller having rotatable driving means and having cooling and lubricating means;

an assembly of flexible couplings to compensate for misalignment of the core driller with respect to the plurality of nonplanar monolithic blocks and to provide the torsional flexiblity required to evenly groove or score the surface of a plurality of nonplanar monolithic blocks, said assembly being rotatably drivable by the driving means of the modified core driller;

a rotatable texturing tool or grooving disk having a plurality of concentric grooves, said texturing tool or grooving disk being rotatably drivable by the assembly of flexible couplings and being communicably connected to the cooling and lubricating means;

VOL 1147 ISS 2 FEB 9 1993 UMI

a plurality of replaceable abrasive arcuate segments periodically disposed in the concentric grooves of the rotatable texturing tool or grooving disk with the exposed surface of the abrasive arcuate segments projecting beyond the shoulders of the concentric grooves; and

a sensor assembly for controlling the depth of grooving or scoring produceable by the abrasive arcuate segments of the texturing tool or grooving disk.

5,184,430

MACHINE FOR MACHINING EDGES, PARTICULARLY OF GLASS PLATES

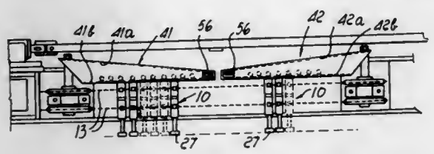
Franco Bavelloni, Appiano Gentile, Italy, assignor to Z. Bavelloni S.p.A., Bregnano, Italy

Filed Oct. 15, 1991, Ser. No. 776,036

Claims priority, application Italy, Oct. 22, 1990, 21815 A/90

Int. Cl.[5] B24B *47/20*

U.S. Cl. 51—215 E **10 Claims**



1. A machine for machining edge of a plate, particularly of a glass plate, comprising a conveyor means for supporting and conveying the plate, said conveyor means comprising at least one chain element formed at least in part by a plurality of mutually interconnected sliding blocks, said conveyor means further comprising a supporting means arranged facing said chain element for supporting said plates between said chain element and said supporting means, each one of said sliding blocks of said chain element comprising an elongated supporting body upon which a covering is provided, said covering being provided on an exterior surface thereof with gripping blocks for gripping the plate to be machined, said each one of said sliding blocks comprising internally thereof means for slidingly retaining and guiding a rod element to which a pad for engaging the plate is connected at a first end thereof, said pad being arrangeable at a presettable distance from said gripping blocks depending upon a positioning of said rod element.

5,184,431

APPARATUS FOR THE GRINDING OF WORKPIECES, ESPECIALLY TOOLS

Zbigniew Combrowski, Kreuzstr. 66, and Armin Hamma, Schaffhauser Str. 13, both of D-7200 Tuttlingen, Fed. Rep. of Germany

PCT No. PCT/DE90/00033, § 371 Date Jul. 18, 1991, § 102(e) Date Jul. 18, 1991, PCT Pub. No. WO90/08011, PCT Pub. Date Jul. 26, 1990

PCT Filed Jan. 22, 1990, Ser. No. 721,602

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1989, 8900586[U]

Int. Cl.[5] B24B *3/26*

U.S. Cl. 51—219 R **20 Claims**

1. Apparatus for grinding workpieces, comprising:

a grinding device arranged on a basic stand, said basic stand having a first guide;

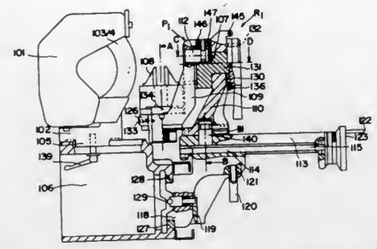
a first carriage, mounted on said first guide, said first carriage having a second guide;

a second carriage mounted on said second guide;

a rocker holder mounted on said second carriage through a guide bolt and having a first axis of rotation, said first axis of rotation forming a central axis of said guide bolt;

a rocker passing through said rocker holder so as to form a second axis of rotation between said rocker and said rocker holder, said second axis of rotation extending approximately perpendicularly to said first axis of rotation; and

a receiver for said workpiece arranged on said rocker so as to form a third axis of rotation between said receiver and



said rocker, said third axis of rotation extending approximately parallel and radially offset in relation to said second axis of rotation, and said receiver being supported in relation to said rocker by a ball catch so as to provide quick and accurate positioning of the receiver.

5,184,432

TOOL FOR SHARPENING TUNGSTEN ELECTRODES

John W. Wilson, Coffman Estates, Box 49, Elkmont, Ala. 46320

Filed Sep. 13, 1991, Ser. No. 759,875

Int. Cl.[5] B25B *5/00*; **B24B** *7/00, 41/06*

U.S. Cl. 51—236 **9 Claims**



1. A one-piece tool for supporting a welding electrode in position for being sharpened on an abrasive wheel comprising:

an elongated body having a longitudinal axis;

a cylindrical-shaped bore defined along said axis in at least one end of said body;

said bore extending partially through said body and terminated by a solid portion of said body extending entirely across the body and integral with a side wall defining the bore; and

said bore having a diameter such as to enable the bore to receive a welding electrode therein and allow the electrode to be rotated by said abrasive wheel.

5,184,433

FIBER OPTIC POLISHER

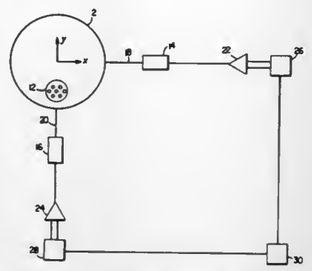
David R. Maack, Mendon, Mass., assignor to Aster Corporation, Milford, Mass.

Filed Mar. 16, 1990, Ser. No. 494,965

Int. Cl.[5] B24B *13/00*

U.S. Cl. 51—283 R **32 Claims**

1. A method of polishing the end of an optical fiber comprising producing relative lateral movement between the end of the fiber and an abrasive surface disposed in a generally perpendicular relationship to the axis of the fiber, said relative lateral movement being produced in a continuous, curved pattern in the manner that the direction of said relative movement between the end of the optical fiber and the abrasive



surface continuously changes at a rate greater than about 10,000 arc degrees per second.

5,184,434

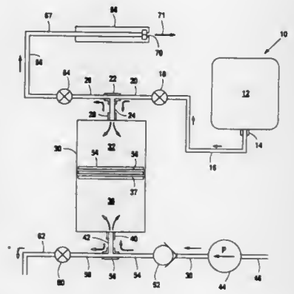
PROCESS FOR CUTTING WITH COHERENT ABRASIVE SUSPENSION JETS

Richard H. Hollinger, and William D. Perry, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Aug. 29, 1990, Ser. No. 574,665

Int. Cl.[5] B24C *1/00*

U.S. Cl. 51—317 **10 Claims**



1. A process for producing and utilizing an abrasive suspension jet stream, said process comprising the steps of:

forming a coherent abrasive suspension jet fluid comprising in combination water, abrasive particles, and a water soluble material which increases the viscosity of said coherent abrasive suspension jet fluid to a level sufficient to prevent the settling of said abrasive particles present within said suspension;

pressurizing said coherent abrasive suspension jet fluid containing said abrasive particles;

allowing said pressurized coherent abrasive suspension jet fluid containing said abrasive particles to expand through a single orifice so as to produce a single, coherent, high velocity, jet stream; and

directing said coherent jet stream at a target, said jet stream abrasively impinging upon said target;

wherein said water soluble material which increases the viscosity of said coherent abrasive suspension jet fluid serves to maintain said abrasive particles in suspension, maintain the coherency of said jet stream, and reduce fluid drag.

5,184,435

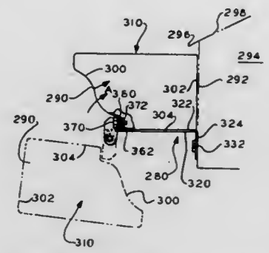
READILY CLEANABLE GUTTER AND GUTTER CONVERSION METHOD

Bernard Sherman, Paramus, N.J., assignor to Ventive, Inc., Paramus, N.J.

Filed Nov. 26, 1990, Ser. No. 617,811

Int. Cl.[5] E04D *13/06*

U.S. Cl. 52—12 **29 Claims**



1. A gutter system; comprising:

(a) gutter assembly means including a front gutter wall spaced from a rear gutter wall with a bottom gutter wall connecting said front gutter wall and said rear gutter wall in spaced relationship and into a predetermined cross-sectional configuration with a gutter water receiving channel formed between said spaced front and rear walls and above said bottom wall; and

(b) gutter mounting means connected to said gutter assembly means and connectable to a building proximate the roof thereof to position said water receiving channel to receive water from the building roof;

(c) said gutter mounting means including pivot means permitting rotation of a first portion of said gutter mounting means with respect to a second portion of said gutter mounting means, said first portion of said gutter mounting means being connected to said gutter assembly means and said second portion of said gutter mounting means being connectable to the building to mount said gutter assembly means so that an outer surface of the rear gutter wall may be disposed against a predetermined wall of the building, and for selective movement between a water receiving position and an overturned disposition enabling debris which might be in said water receiving channel to be dumped therefrom.

5,184,436

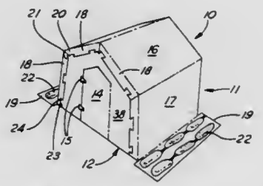
PORTABLE UTILITY STRUCTURE

Ted Sadler, 575 N. Main St., Imlay City, Mich. 48444

Filed Nov. 12, 1991, Ser. No. 789,996

Int. Cl.[5] B04H *6/02*

U.S. Cl. 52—79.1 **17 Claims**



1. A portable utility structure comprising:

at least two sidewall panels and at least one roof panel defining an enclosed space, wherein said panels include interlocking means for detachably securing said panels with

VOL 1147 ISS 2 FEB 9 1993 UMI

adjacent panels to selectively maintain said portable utility structure in an erect state; and

one or more of said sidewall panels include an opening, said opening is a door, which may be selectively opened or closed relative to said one sidewall panel, one edge of said door being integrally hinged with respect to said sidewall panel, and another edge has a clasp designed to selectively engage said sidewall panel, said clasp consisting of two parallel generally planar surfaces connected by at least two members extending perpendicularly to said surfaces, said clasp being movable within a channel formed in said door, said channel having an inner and outer edge such that when one of said members of said clasp contacts said outer edge of said channel, said clasp engages said sidewall panel, while said clasp does not engage said sidewall panel when one of said members contacts said inner edges of said channel.

5,184,437

DAMP-PROOF CONSTRUCTION

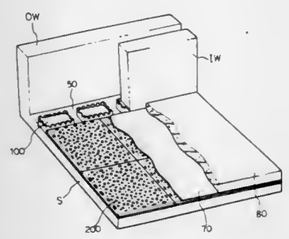
Choi J. Woong, 551-33 Banpo-dong, Seocho-gu, and Chai S. Park, 213-22 Jun nong-dong, Dongdaemun-gu, both of Seoul, Rep. of Korea

Filed Aug. 27, 1991, Ser. No. 750,359

Claims priority, application Rep. of Korea, Aug. 29, 1990, 90-13399

Int. Cl.[5] E04B *1/64*

U.S. Cl. 52—169.5 **8 Claims**



1. A damp-proof construction for buildings and subways comprising:

a) a plurality of plastic bricks arranged adjacent an outer wall of a structure and on an underground surface of said structure, adjacent said plastic bricks spaced apart to form a drainage space therebetween;

b) an inner wall adjacent said outer wall and disposed on top of said plastic bricks;

c) a plurality of plastic palettes disposed on said underground surface of said structure;

d) a non-woven fabric layer covering each of said plastic palettes; and

e) a layer selected from the group consisting of mortar and concrete covering said non-woven fabric layer.

5,184,438

INTERIOR PANEL UNIT FOR PERMITTING ARRANGEMENT OF CABLES AND DEVICES ON ROOM FLOOR

Fumio Takeda, Hachiooji; Yoshio Kojima, Yokohama; Tsuneo Kaneko, Narashino; Yutaka Ishibashi, Tokyo; Naoto Sasaki, Yokohama, and Isako Tsushima, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

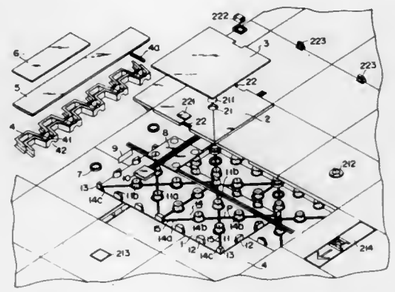
Division of Ser. No. 429,552, Oct. 31, 1989, Pat. No. 5,090,169.

This application Oct. 11, 1991, Ser. No. 774,995

Claims priority, application Japan, Oct. 31, 1988, 63-142055[U]; Oct. 31, 1988, 63-275609; Oct. 31, 1988, 63-275610; Oct. 31, 1988, 63-275614; Oct. 31, 1988, 63-275617; Oct. 31, 1988, 63-275618; Oct. 31, 1988, 63-275619; Oct. 31, 1988, 63-275620

Int. Cl.[5] E04B *5/48*

U.S. Cl. 52—221 **3 Claims**



1. An interior panel unit for permitting an arrangement of cables and devices on the floor of a room, for installation on a foundation floor of the room, said panel unit comprising:

floor base member to be installed on a foundation floor of the room;

a plurality of fundamental support members fixed to an upper surface of each of said floor base member, and having upper surfaces located at the same height from said upper surface of each floor base member;

a plurality of connecting support members fixed to peripheral portions of each floor base member, and having upper surfaces located the same height as those of said fundamental support members;

vertical grooves formed on a side surface of each of said plurality of fundamental support members in a direction perpendicular to said floor base member; and

a plate-like vertical separator member, both ends of which are fitted in and supported by said vertical grooves to partition a horizontal base on said surface of said floor space member.

5,184,439

PRESTRESSED LIGTHWEIGHT PANEL

Philip T. Ward, Leawood, Kans., assignor to Western Forms, Inc., Kansas City, Mo.

Filed Jan. 18, 1990, Ser. No. 466,786

Int. Cl.[5] E04C *3/10*

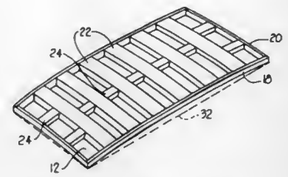
U.S. Cl. 52—223 R **17 Claims**

1. A panel comprising:

a) a rectangular face sheet having two opposed parallel long edges and two opposed parallel short edges, and a longitudinal y-axis comprising a centerline, said sheet under tension in a longitudinal direction, said face sheet having a face side and a rear side;

b) two side rails mounted on and fixed to said rear side of said face sheet with one said side rail adjacent to each said long edge of said face sheet;

c) brace means for maintaining tension in said face sheet; and



d) said brace means comprising a plurality of reinforcing members lying between and fixed to adjacent cross-ribs.

5,184,440

METAL FRAMED FACADE PANEL AND FACADE COVERED WITH SUCH A PANEL

André Felix, Route de Berne 25, CH - 1010 Lausanne, and Laurent Felix, Chemin des Combes 45, CH - 1082 Corseaux, both of Switzerland

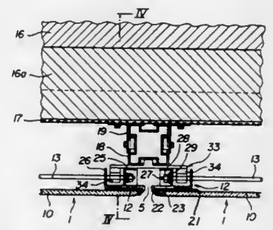
PCT No. PCT/CH90/00206, § 371 Date May 2, 1991, § 102(e) Date May 2, 1991, PCT Pub. No. WO91/03617, PCT Pub. Date Mar. 21, 1991

PCT Filed Sep. 4, 1990, Ser. No. 675,897

Claims priority, application France, Sep. 4, 1989, 89 11686; Sep. 4, 1989, 89 11687

Int. Cl.[5] E04B *2/00*

U.S. Cl. 52—235 **20 Claims**



1. Facing or window panel designed to form a prefabricated element of the exterior facade surface of a building and comprising at least one rectangular exterior plate (**10, 70, 100**), especially made of glass, stone, fibro-cement, synthetic material or the like, and a metal frame (**11, 71, 121, 151**) supporting the said exterior plate and provided with means to attach it to a facade structure or to a window, said frame comprising at least one pair of support elements having metal rims hooked onto at least two opposing edges of the exterior plate to hold said exterior plate, and traction elements extending between the two support elements of each pair behind said exterior plate and connecting said two support elements so as to pull them forward each other and grip the exterior plate between said rims said traction elements being capable of varying the spacing between the two support elements of each pair, and at least one of the remaining edges is substantially free of any visible exterior support.

5,184,441

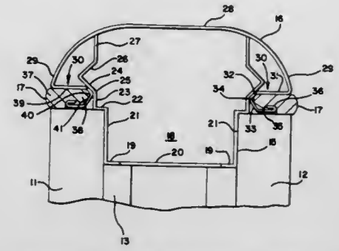
TOP CAP WITH SNAP-IN ACCENT STRIP FOR WALL PANELS

Glenn F. Balfanz, Jr., Oswego, Ill., assignor to Allsteel Inc., Aurora, Ill.

Filed May 14, 1991, Ser. No. 699,886

Int. Cl.[5] E04C *1/39*

U.S. Cl. 52—241 **5 Claims**



2. A detachable top cap assembly for concealing a channel means located along the top of a wall system, the top cap assembly comprising:

an elongate shell-like cap having inwardly turned horizontal flanges spaced from outwardly turned horizontal legs forming outwardly open grooves therebetween, said flanges and said legs being joined by bent leg portions integral therewith forming opposing means for detachable engagement, said outwardly turned legs including snap-over engageable means;

a channel means having a bottom wall and side wall means, the side wall means being detachably engaged along said opposing means for detachable engagement of said top cap, and being arranged within said shell-like cap for concealment, said side wall means including an outwardly angled wall portion and an inwardly angled wall portion; and,

accent strip means removably snap-engaged at said grooves and extending outwardly therefrom.

5,184,442

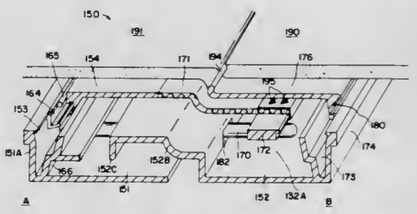
EXPANSION JOINT FOR USE WITH DIRECT GLUE-DOWN CARPET

Joseph A. Maxwell, Jr., 100 Phillips Knob, Burnsville, N.C. 28714, and Stephen P. Maxwell, 22 Green Mountain, Apt. B., Burnsville, N.C. 28714

Continuation-in-part of Ser. No. 240,962, Sep. 6, 1988. This application Jul. 11, 1990, Ser. No. 551,541

Int. Cl.[5] E04F *15/14*

U.S. Cl. 52—573 **6 Claims**



1. An expansion joint for joining first and second adjacent segments of direct glue down carpet mounted on respective underlying adjacent first and second floor segments, and comprising:

(a) a first subchannel for being mounted in said first floor

VOL
1147
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segment along a joint line of the adjacent first and second carpet segments;

(b) a second subchannel for being mounted in said second floor segment along the joint line of the adjacent first and second carpet segments in parallel relative moveable relation to said first subchannel;

(c) a first cover for supporting the first of the carpet segments on the first subchannel;

(d) a second cover for supporting the other of the adjacent carpet segments on the second subchannel;

(e) tension means for being positioned in said second subchannel for movement to and rom said first subchannel, said tension means including carpet edge grippers for gripping and holding the free edge of the first carpet segment under tension during relative movement between said first and second subchannels thereby allowing expansion and contraction of the adjacent first and second floor segments without stretching or buckling of the overlying direct glue down carpet segments; and

(f) actuating means carried in said second subchannel and engaging said first and second subchannels and said tension means for moving said first and second segments of carpet in response to relative movement between said first and second subchannels, said actuating means including an actuating pin fixedly secured to said tension means and engaging said first subchannel, said actuating pin adapted for movement by any contracting movement of the first and second subchannels to move the tension means secured thereto and thereby maintain tension on said first carpet segment.

5,184,443

Patent Not Issued For This Number

5,184,444

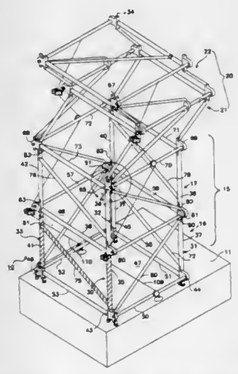
SURVIVABLE DEPLOYABLE/RETRACTABLE MAST

Robert M. Warden, Santa Barbara, Calif., assignor to AEC-Able Engineering Co., Inc., Goleta, Calif.

Filed Aug. 9, 1991, Ser. No. 743,522

Int. Cl.[5] E04H *12/18*

U.S. Cl. 52—646 **9 Claims**



1. A mast which is deployable and retractable, said mast when deployed having an axis, and whose structural elements are rigid, said mast comprising:

four longerons, each said longeron comprising a first and a second longeron element, said elements being pivotally joined together, and said longerons being pivotally mounted, so that pivoting movement can occur only in one pair of parallel spaced apart faces partially framed by two different pairs of said longerons;

a first square frame member comprising an assembly of four rigid square frame elements joined to one end of the first longeron element of each longeron at each intersection of two of said square frame members;

a second square frame member comprising an assembly of four rigid square frame elements joined at one end of each of the first and second longeron elements at their joinder, at each intersection of two of said square frame elements;

a third square frame member comprising an assembly of four rigid square frame elements joined at one end of each of said second longeron elements at each intersection of two of said square frame elements;

a rigid N frame member interconnecting the upper and lower ends of adjacent said first longeron elements and the upper and lower ends of said second longeron elements, in faces normal to the plane in which said longeron elements can pivot;

a slider slidable on each square frame element in said second square frame which lies parallel to the faces in which said longeron elements can pivot;

a first and a second rigid diagonal element pivotally connected to each of said sliders, and to one of said longerons, whereby said slider can move along said square frame element to enable said diagonal element to pivot in its respective said face;

latch means so disposed and arranged as to restrain said sliders from movement along the respective square frame element when the mast is in its deployed configuration, said latch means comprising a catch and a release member to retract said catch; and

lanyard means to actuate said release member to release the catch to enable the mast to be pulled toward its retracted configuration.

5,184,445

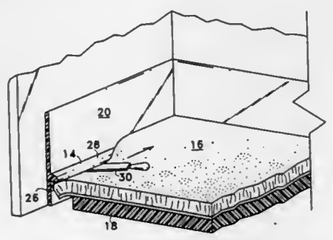
METHOD FOR INSTALLING FLEXIBLE CARPET BASE

Merle R. Hoopengardner, Lafayette, Calif., assignor to Step Loc Corporation, Lafayette, Calif.

Filed Dec. 17, 1990, Ser. No. 628,443

Int. Cl.[5] E04F *19/02*

U.S. Cl. 52—741.1 **5 Claims**



1. A method for installing a wall-to-wall carpet such that the edge of the carpet is engaged by and covered by a pre-installed wall base, comprising,

securing to the wall at the floor a carpet wall base, said carpet wall base having a vertical, generally planar section having a flat back surface for lying flatly against and adhering to a wall, a flange member protruding generally horizontally outwardly from the flat planar member, outwardly from the wall, and having a generally sloping upper surface and a generally flat bottom surface projecting outwardly in a generally horizontal direction, the flange tapering in cross section from a first relatively heavy thickness at the flat planar member down to a point of zero thickness at an outer extremity and having a cross sectional shape making the flange substantially rigid, the flat planar member having a flat tail extension below the bottom of the flange, having a bottom edge adapted to engage against a floor, so that the carpet-engaging flange is space above the floor on installation of the wall base, and the wall base with the flat planar member and flange being integrally extruded of a generally rubbery plastic material as a one-piece integral cross-section,

after a carpet has been installed and fixed to the floor, trimming the carpet such that the edge of the carpet extends up onto the upper surface of the flange of the wall base, and

tucking the carpet edge under the flange using a blade type tool engaged between the top surface of the carpet and the outer extremity of the protruding flange, and sliding the tool longitudinally with the tool engaged against the flange, to thereby progressively draw the carpet edge down under the flange along the length of a wall, whereby the carpet is engaged by the base flange and its edge is covered.

5,184,446

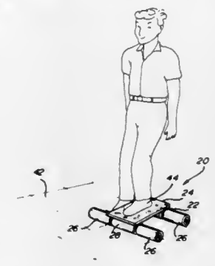
ROLLER PLATFORM FOR INSTALLING PLANAR FLOORING

Willard Gustavsen, 12142 Rangeline, Berrien Springs, Mich. 49103

Filed Aug. 30, 1991, Ser. No. 753,398

Int. Cl.[5] E04B *1/00*

U.S. Cl. 52—746 **5 Claims**



1. A method of installing a planar flooring comprising the steps of:

1) forming a wheeled platform having a first wheel set rotatable about a forward axis and a second wheel set rotatable about a rear axis spaced from the forward axis, and placing the wheeled platform on a top face such that the wheel sets extend upwardly from said platform;

2) resting a coil of planar flooring on the wheel sets, such that the flooring may be removed from the coil with the wheel sets rolling to support the coil and allow such removal; and

3) removing the coil from the wheel sets, turning the platform over such that the wheel sets now rest on the planar flooring, and the platform extends vertically above the wheel sets, applying a force to the platform and rolling it over the planar flooring.

5,184,447

BAG CLOSING MACHINE

Ole Johnsen, Campbellville, Canada, assignor to Johnsen Machine Company Limited, Burlington, Canada

Filed Mar. 23, 1992, Ser. No. 855,825

Int. Cl.[5] B65B *51/20, 51/18, 7/06*

U.S. Cl. 53—373.9 **7 Claims**

1. A bag closing machine comprising:

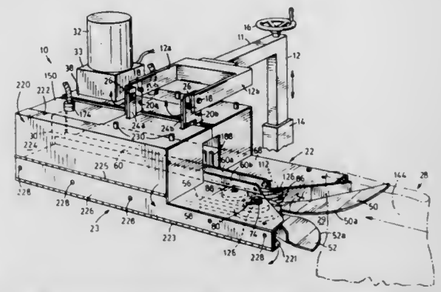
a housing,

a pair of endless belts mounted in said housing and having adjacent runs extending along a passage in said housing,

means for driving said belts to cause bags to be conveyed successively between said runs along said passage, said bags having heat sealable material extending over a sealing area on open end portions of the bags,

a heating station adjacent said passage and operable to heat the sealing areas of said bags to active said heat sealable material in a bag closing manner,

said heating station having at least one pair of nozzles, one nozzle of each pair being on one side of said passage and directed towards the sealing area of a bag passing the heating station and the other nozzle of each pair being on the opposite side of said passage and directed towards the sealing area of a bag passing the heating station,



means for supplying hot air to said nozzles to cause hot air to be emitted from the nozzles and impinge on the sealing area of a bag to activate said heat sealable material in a bag closing manner, and

means adjacent each nozzle for removing hot air emitted from the opposite nozzle when no bag is passing the heating station to a location remote from said drive belts.

5,184,448

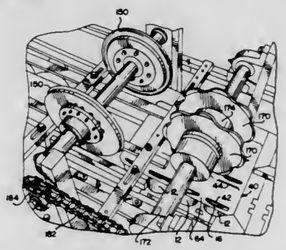
MACHINE AND METHOD FOR CLIPPING GENERALLY PLANAR SHEETS ONTO RECTANGULARLY ARRAYED CANS HAVING CHIMES

Algimantas K. Kazlauskas, Orland Park, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Feb. 6, 1992, Ser. No. 832,007

Int. Cl.[5] B65B *5/06, 21/06, 21/24*

U.S. Cl. 53—398 **8 Claims**



1. A machine for clipping a succession of generally planar sheets onto a succession of rectangular arrays of cans of a type having an end with a chime, wherein each sheet has multiple pairs of substantially parallel slits extending longitudinally in longitudinal rows and transverse ranks, at least one line of can-stabilizing strips disposed respectively between the pairs of slits and wherein the pairs of slits of successive sheets are similarly spaced in a longitudinal direction along each sheet and from each sheet to the successive sheet, the machine comprising

(a) means for registering successive arrays of cans in such

VOL 1147 ISS 2 FE 9 1993 UMI

manner that successive cans are spaced regularly in a longitudinal direction and for conveying the registered arrays of cans in the longitudinal direction with the ends with the chimes facing upwardly and with one such sheet overlying the chimes of the cans of each array in such manner that the chime of each can is disposed in a centered position relative to the slits of one respective pair,

(b) means for clipping the overlying sheet onto the cans of each array as such array is conveyed in the longitudinal direction, the clipping means comprising at least one lobar wheel provided with peripherally arrayed lobes and rotatable in such manner that successive lobes engage successive strips of successive sheets to clip successive strips beneath the chimes of successive cans as successive arrays are conveyed, and

(c) means for rotating the lobar wheel in a manner coordinated with operation of the registering and conveying means to ensure that successive lobes engage successive strips of successive sheets.

5,184,449

METHOD OF AND APPARATUS FOR THE WRAPPING OF PALLETIZED UNITS

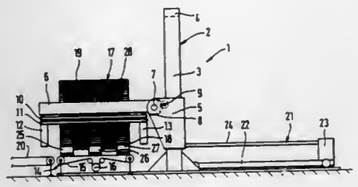
Reiner W. Hannen, Pfalzdorf, Fed. Rep. of Germany, assignor to Develog, Reiner Hannen & Cie, Courtelary, Switzerland

Filed Aug. 9, 1991, Ser. No. 743,046

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1990, 4025201

Int. Cl.[5] B65B *11/58, 13/12*

U.S. Cl. 53—399 **15 Claims**



1. A method of packaging a stack of articles on a pallet forming a palletized unit, said palletized unit comprising a top formed by said stack, vertical sides formed by said stack, and a bottom adapted to support said unit, said pallet having skids along said bottom extending parallel to a first pair of said sides and being accessible to a fork for lifting and moving said unit at a second pair of said sides, said method comprising the steps of:

(a) lowering circumferentially around said stack from above said top of said stack a wrapping device having a vertical axis and supporting a foil band source and wrapping said unit substantially horizontally by winding a foil band from said source in a plurality of generally horizontal turns around said sides, and swinging said wrapping device into a position having a horizontal axis perpendicular to said vertical axis; and

(b) passing said horizontally wrapped stack through said wrapping device and wrapping said unit substantially vertically by winding a foil band from said source around said unit including underneath said pallet between at least a pair of said skids in a plurality of generally vertical turns from said top to said bottom and along one of said pairs of said sides.

5,184,450

METHOD OF PACKAGING FREEZE DRIED VACCINES IN SYRINGES AND PLUG FOR IMPLEMENTING THE METHOD

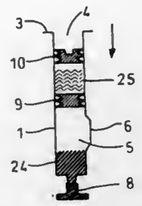
Michel G. H. Galy, Pontchara-sur-Turdine, and Alain Gomez, Lyons, both of France, assignors to Pasteur Merieux Serums et Vaccins, France

Filed Feb. 18, 1992, Ser. No. 836,615

Claims priority, application France, Feb. 15, 1991, 91 01802

Int. Cl.[5] B65B *31/04, 7/28;* **B67C** *3/00;* **A61M** *5/19*

U.S. Cl. 53—440 **9 Claims**



1. Method of packaging freeze dried vaccine in a bypass syringe in which sterilized syringes are disposed in rows in an aseptic dispensing machine, doses of a solution or suspension to be freeze dried are introduced into said syringes, a temporary plug is inserted in the same machine into the mouth of said syringe body in a position allowing communication between the interior of said syringe body and the exterior. said syringes are introduced into a freeze drying machine, the vaccine is freeze dried, at the end of the freeze drying cycle said temporary plug is depressed in a controlled atmosphere in said freeze drying machine into a hermetic sealing position, said syringes are transferred into an aseptic dispensing machine, said temporary plug is removed, an intermediate piston-plug is fitted, the dose of solvent is introduced and an end terminal piston-plug is fitted.

5,184,451

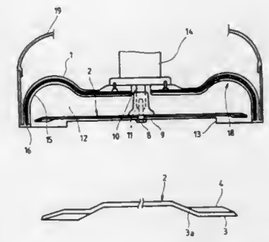
LAWN MOWER

Raimo Savipakka; Eero Poussu, and Markku Poussu, all of Riihimäki, Finland, assignors to Raimo Savipakka and Eero Poussu, both of Riihimäki, Finland

Filed Sep. 30, 1991, Ser. No. 767,826

Int. Cl.[5] A01D *34/68, 34/73, 34/82, 67/00*

U.S. Cl. 56—17.5 **2 Claims**



1. An electrically powered lawnmower, comprising:

a body portion (1) having a laminated structure, said laminated structure being defined by a sound absorption layer (16) disposed between an outer layer and an inner thin film layer (15), said inner thin film layer (15) being disposed on an interior surface of a cutting chamber (12) defined by said body portion (1), said inner thin film layer (15) being formed of a material composition having a low friction coefficient selected from the group consisting of polyethylene, Teflon, and Nylon, said thin film layer (15) being resiliently coupled to said sound absorption layer (16), whereby said thin film layer is free to vibrate and thereby facilitate displacement of grass debris therefrom;

an electric motor (14) fixedly coupled to said body portion (1) and having a driving shaft (10) extending vertically into said cutting chamber (12), said electric motor (14) being adapted for selective electrical coupling to a battery-type power source;

a cutting blade (2) secured to said driving shaft (10) within said cutting chamber (12) for rotation therewith, said cutting blade (2) having a predetermined contour for reducing cutting friction defined by: (a) a central substantially flat portion establishing a first horizontal plane, and (b) a pair of opposing end portions offset from said first horizontal plane to establish a second horizontal plane, said second horizontal plane being disposed below said first horizontal plane, each of said pair of opposing end portions being contoured by a sharpened leading edge (3) disposed below a trailing edge (4) of said cutting blade (2) to thereby cut grass with only said end portions of said cutting blade (2), whereby reduced friction of said inner thin film layer (15) and reduced cutting friction of said cutting blade (2) combine to reduce energy consumption of said electric motor (14).

5,184,452

METHOD AND APPARATUS FOR DRIVING AN OPEN-END SPINNING MACHINE WITH A TANGENTIAL BELT DURING PIECING

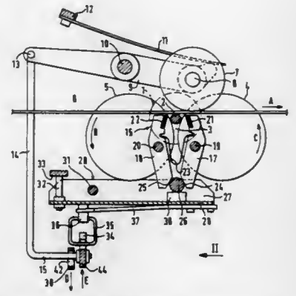
Fritz Stahlecker, Josef-Neidhart-Strasse 29, 7347 Bad Überkingen, and Dieter Götz, Geislingen/Steige, both of Fed. Rep. of Germany, assignors to Fritz Stahlecker and Hans Stahlecker, both of, Fed. Rep. of Germany

Continuation of Ser. No. 626,431, Dec. 12, 1990, abandoned. This application Mar. 2, 1992, Ser. No. 841,786

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1989, 3942402

Int. Cl.[5] D01H *13/00, 15/00*

U.S. Cl. 57—105 **20 Claims**



1. Open-end spinning apparatus comprising:

a tangential belt for driving a plurality of spinning rotor shafts,

a pressure applying device for pressing the tangential belt with a pressure force against the respective rotor shafts during normal spinning operations,

a rotor shaft brake for applying braking forces to respective ones of the rotor shafts,

a brake actuating device for actuating the brake to apply braking forces to a respective rotor shaft while decreasing the pressure force applied by the pressure applying device on the tangential belt against the respective rotor shaft during braking of the respective rotor shaft to accommodate a subsequent piecing operation,

and a supplementary actuating device, in addition to the pressure applying device for temporarily increasing the pressure force applied by the pressure applying device on the tangential belt to a level above the pressure force applied to the respective rotor shaft during normal spinning operations so as to provide for acceleration of the respective rotor shaft during piecing operations.

5,184,453

ROBOT FOR A DOUBLE TWISTER

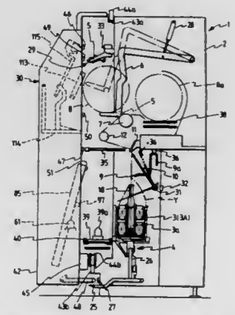
Hiroshi Mima, Joyo, and Tadashi Suzuki, Uji, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Continuation of Ser. No. 588,082, Sep. 25, 1990, abandoned. This application Mar. 27, 1992, Ser. No. 860,243

Claims priority, application Japan, Oct. 28, 1989, 1-257593; Nov. 29, 1989, 1-307761; Feb. 28, 1990, 2-45904

Int. Cl.[5] D01H *9/10, 7/86*

U.S. Cl. 57—270 **9 Claims**



1. An apparatus for conducting a doffing operation in a double twister, comprising:

yarn supply means for supplying yarn from a bobbin to a package,

winding means for winding the yarn onto the package,

package full signal means for providing a package full signal when the package wound by the winding means is full, and

work means for doffing a full package and for changing the bobbin, the work means including remaining yarn detection means for detecting a predetermined amount of yarn remaining on the bobbin, the work means being responsive to the package full signal and the amount of yarn remaining on the yarn supply bobbin,

wherein the work means doffs the package and does not change the bobbin when the amount of yarn remaining on the bobbin exceeds the predetermined amount,

wherein the work means doffs the package and changes the bobbin when the amount of yarn remaining on the bobbin does not exceed the predetermined amount, and

wherein the predetermined amount corresponding to the amount of yarn required to wind a full package.

5,184,454

CABLE CARRIER CHAIN

Ernst Klein, Düsseldorf, and Hartmut Loss, Wuppertal, both of Fed. Rep. of Germany, assignors to A&A Manufacturing Co., Inc., New Berlin, Wis.

Filed May 6, 1992, Ser. No. 879,050

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1991, 4121433

Int. Cl.[5] F16G *13/16*

U.S. Cl. 59—78.1 **19 Claims**

1. A cable carrier chain to support flexible energy carrier lines, comprising:

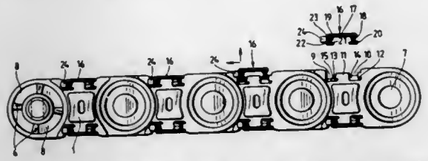
two parallel side chains of sidebars, each said side chain including a series of sidebars joined one with another in a

VOL 1147 ISS 2 FE 9 1993 UMI

pivotable connection, each said side chain longitudinal direction and being spaced apart from the other said side chain in a lateral direction;

at least two parallel laterally extending crosslinks having ends which join respectively two parallel sidebars, said crosslinks and said sidebars bounding a space on two opposed sides with said sidebars and on two opposed sides with said crosslinks;

notches at opposite side edges of the sidebars to receive corresponding ends of the crosslinks, each said notch having an undercut at a distance from a corresponding edge of the sidebar, said undercut being sized and positioned to engage a corresponding end of a cross-link;



protrusions in the area of the notches, each said protrusion extending in the longitudinal direction;

said ends of said crosslinks each having an aperture to receive a corresponding protrusion in a longitudinal sliding fit so that said crosslink is slideable on said sidebar in the longitudinal direction to an engaged position in which said end engages under a corresponding undercut; and

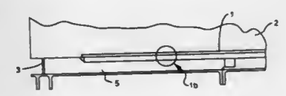
releasable locks between said ends and corresponding sidebars for resisting retrograde sliding in the longitudinal direction of said ends relative to said sidebars out of said engaged positions.

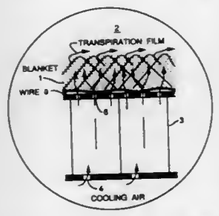
5,184,455

CERAMIC BLANKET AUGMENTOR LINER

Joseph H. Ewing, Lake Pk., and John H. E. Baker, II, Palm Beach Gardens, both of Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 9, 1991, Ser. No. 727,726
Int. Cl.[5] F02C *1/00*; F02G *3/00*
U.S. Cl. 60—39.02 **15 Claims**





1. A method of restricting cooling air flow through a cooling liner of a combustion chamber while at the same time absorbing sonic screech energy generated within said combustion chamber comprising the steps of:

(a) mounting a coolant panel liner comprising a porous blanket woven from flexible refractory ceramic fibers, said blanket being bonded to a support structure positioned within said combustion chamber, said blanket being exposed to hot gases within said combustion chamber enabling said blanket to absorb said sonic screech energy generated within said combustion chamber; and

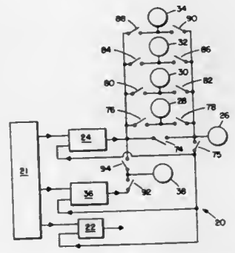
(b) passing cooling air through said blanket in a direction toward said combustion chamber for producing transpiration cooling of said blanket.

5,184,456

GAS TURBINE MOTOR DRIVE

Kimball J. Rumford, Fairfield, Conn., and George Hudson, Great Barrington, Mass., assignors to Avco Corporation, Providence, R.I.

Continuation-in-part of Ser. No. 682,595, Apr. 8, 1991. This application Apr. 9, 1991, Ser. No. 682,749
Int. Cl.[5] F02G *3/00*; F02C *7/06*
U.S. Cl. 60—39.02 **9 Claims**



1. A method of starting a gas turbine engine powering a vehicle which has an alternating electric power supply, the gas turbine engine including a starter/generator mechanically coupled thereto and an electric oil pump motor for driving an oil pump for providing a continuous and uninterrupted supply of lubricating oil to the moving components of the engine, the method comprising the steps of:

(a) electrically coupling a motor controller to the oil pump motor to initiate operation thereof;

(b) accelerating the oil pump motor to a speed substantially synchronous with the output of the vehicle power supply;

(c) electrically uncoupling the motor controller from the oil pump motor after the oil pump motor has reached a speed substantially synchronous with the vehicle power supply;

(d) substantially simultaneously with step (c), electrically coupling the oil pump motor to the vehicle power supply for continued operation thereof at a speed substantially synchronous with the vehicle power supply;

(e) electrically coupling the motor controller to the starter/-generator to initiate operation of the starter/generator for starting the gas turbine engine;

(f) accelerating the starter/generator and the gas turbine engine until at least a speed has been attained at which continued input from the motor controller is no longer required for continued operation of the gas turbine engine; and

(g) after the starter/generator and the gas turbine engine reach the speed at which continued input from the motor controller is no longer required for continued operation of the gas turbine engine, electrically uncoupling the motor controller from the starter/generator;

(h) electrically uncoupling the oil pump motor from the vehicle power supply;

(i) substantially simultaneously with steps (g) and (h), again coupling the motor controller with the oil pump motor; and

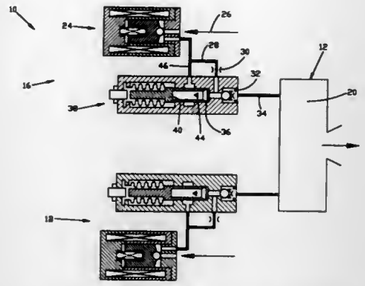
(j) accelerating the oil pump motor at a controller rate until it attains idle speed.

5,184,457

VALVE ASSEMBLY AND METHOD

Bill Hseu, Laguna Niguel; Jim Jessee, Northridge, and William Wang, Marina Del Rey, all of Calif., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 11, 1991, Ser. No. 683,873
Int. Cl.[5] F02C *7/26*
U.S. Cl. 60—39.141 **21 Claims**



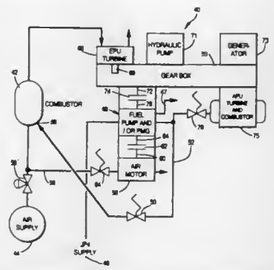
1. A valve assembly for use in starting an engine with a minimal amount of electrical power, said valve assembly comprising first means for establishing a flow of fuel to the engine at a first flow rate to enable continuous combustion to be established in the engine, and second means operable under the influence of fluid pressure induced in the flow of fuel to the engine by the combustion of fuel in the engine to increase the rate of flow of fuel to the engine from the first rate to a rate which is greater than the first rate.

5,184,458

POWER UNIT FUEL PRESSURIZATION SYSTEM

Steven W. Lampe, 4860 Lorraine Dr., San Diego, Calif. 92115, and Malcolm J. McArthur, 13821 Davenport Ave., San Diego, Calif. 92129

Filed Nov. 21, 1989, Ser. No. 439,684
Int. Cl.[5] F02C *7/26*
U.S. Cl. 60—39.142 **32 Claims**



1. A power generating unit for use in an airframe for supplying at least emergency power to a load comprising:

a pressurized gas source storing pressurized gas containing oxygen to be used in combusting a fuel;

a combustor for providing pressurized gas produced by combustion of a mixture of the pressurized gas provided to the combustor by the pressurized gas source and fuel provided to the combustor by a fuel supply;

a first turbine driven by pressurized gas produced by the combustor;

a gear box driven by the turbine having an output shaft;

a pair of input shafts directly connected to a fuel pump comprising the load disposed within the fuel supply for providing pressurized fuel to the combustor in response to rotation of either of the input shafts;

a motor coupled to the pressurized gas source having a drive shaft which rotates in response to pressurized gas applied from the gas source; and

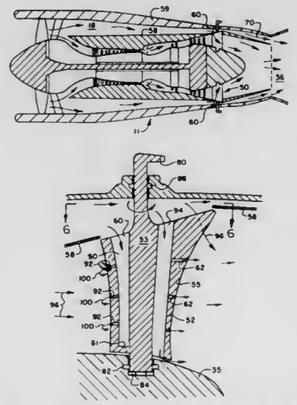
means, coupled to the output and drive shafts, for applying driving torque to the fuel pump during application of pressurized gas to the combustor from the output or drive shaft, whichever is rotating at a higher velocity.

5,184,459

VARIABLE VANE VALVE IN A GAS TURBINE

Glenn McAndrews, Lebanon, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 531,665, May 29, 1990, abandoned. This application Dec. 17, 1991, Ser. No. 809,568
Int. Cl.[5] F02K *3/02*
U.S. Cl. 60—226.3 **16 Claims**



1. In a gas turbine engine having an inlet for air flow to an annular core duct and an outer annular duct for bypassing a portion of the inlet air flow around said core duct, the improvement comprising, a plurality of pivotable outlet guide vanes mounted in the rear of said engine on a core support body proximate to an upstream of the outlet nozzle thereof, each vane being mounted fully in the path of the core gas flow so as to divide said flow therearound, said vanes being mounted to pivot on axes extending outwardly from said support body and transversely to the core gas flow and means to pivot said vanes on their axes so as to direct or apply adjustable swirl correction to the flow of said gas through said nozzle.

5,184,460

MULTI-HEAT ADDITION TURBINE ENGINE

Leo C. Franciscus, Lakewood, and Theodore A. Brabbs, Cleveland, both of Ohio, assignors to The United States of America as represented by the Administrator, National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 30, 1991, Ser. No. 647,902
Int. Cl.[5] F02K *3/04, 3/08*
U.S. Cl. 60—226.1 **2 Claims**

1. A multi-heat addition turbine engine (MHATE) having reduced turbine air requirements and lower NO_x levels comprising

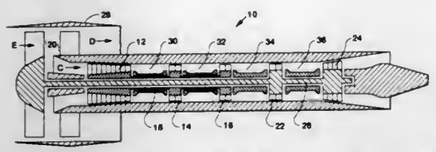
a fan for compressing engine air,

a first shaft for mounting said fan for rotation,

a compressor for receiving a portion of the compressed air from said fan and further compressing the same,

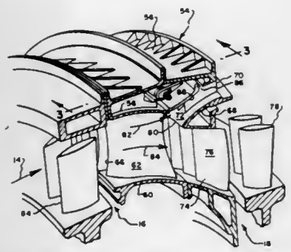
VOL 1147 ISS 2 FE 9 1993 UMI

a second shaft for mounting said compressor for rotation,
at least ne first combustor for transferring energy to said compressed air from said compressor by heating the same thereby raising the temperature of said compressed air,
a first turbine adjacent to said first combustor and in constant communication therewith for converting energy from said heated compressed air to work in turning said second shaft thereby driving said compressor whereby the temperature of said compressed air is decreased,
at least one second combustor adjacent to said first turbine and in constant communication therewith for transferring



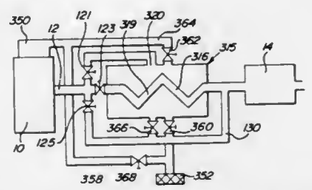
energy to said energy extracted air from said first turbine for transferring energy to said energy extracted air by heating the same thereby raising the temperature of said energy extracted air, and
a second turbine adjacent to said second combustor and in constant communication therewith for converting energy from said heated air from said second combustor to work in turning said first shaft thereby driving said fan whereby the temperature of said heated air is decreased thereby lowering the NO_x levels of the air discharged from said turbine.

5,184,461
METHOD AND APPARATUS FOR AUTOMATIC BYPASS OPERATION
Larry W. Stransky, West Chester; Valentine R. Boehm, Jr., Cincinnati, and Michael A. Phillips, Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio
Filed May 11, 1990, Ser. No. 522,024
Int. Cl.[5] F02K *3/04*
U.S. Cl. 60—226.3 **8 Claims**



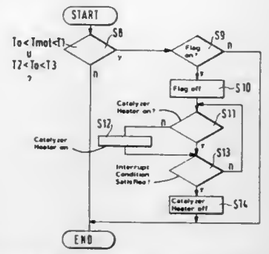
1. A bypass valve assembly for controlling fluid flow in a gas turbine engine comprising:
an annular frame including an outer casing, an inner casing spaced from said outer casing to define a first channel for channeling fluid flow, said outer casing including an annular opening therein, and a flow splitter disposed between said outer and inner casings to define a second channel and a third channel, spaced from said second channel by said splitter, said second and third channels being in flow communication with said first channel, said outer casing annular opening facing said splitter; a plurality of circumferentially juxtaposed bypass valve doors disposed in said annular opening, each of said valve doors having an inner surface for facing said fluid flowable in said second channel, an outer surface, an upstream first end pivotally connected to said frame, and a downstream second end, said doors being positionable in a first, open position generally parallel to said outer casing for allowing fluid flow from said first channel to said second channel and in a second, closed position inclined relative to said outer casing for substantially blocking fluid flow from said first channel to said second channel, said fluid flow flowable against said door inner surface being effective for generating a fluid force on said door; and
means for positioning said doors in said first and second positions including positioning hinge supporting said door to pivot between said first and second positions in response to differential fluid pressure applied to and across said door;
whereby said positioning means is effective for providing a positive differential pressure across said door in said second channel for generating a positive value of said fluid force for opening said door, and a negative differential pressure across said door in said second channel for generating a negative value of said fluid force for closing said door.

5,184,462
METHOD AND AN APPARATUS FOR THE TREATMENT OF EXHAUST GAS FROM AN IC ENGINE
Oskar Schatz, Waldpromenade 16, DW-8035 Gauting, Fed. Rep. of Germany
Filed Mar. 19, 1991, Ser. No. 671,501
Int. Cl.[5] B01D *53/34*
U.S. Cl. 60—274 **28 Claims**



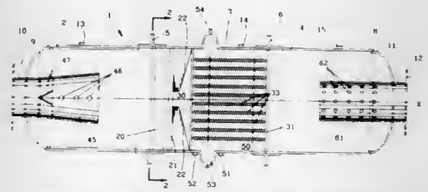
1. A method for the treatment of the exhaust gas of internal combustion engines comprising the steps of:
providing an exhaust gas means for exhausting gas from the engine outlet to a converter, an emission buffer is coupled with the exhaust gases means, a heat exchanger having two distinct flow paths coupled with said exhaust gas means and said emission buffer positioned in one of said flow paths, and valve means for directing exhaust flow through the exhaust means;
directing substantially all of the exhaust flow, via said valve means, from the engine into the heat exchanger flow path including said emission buffer at start up of the engine;
storing noxious emissions, temporarily, in the emission buffer during start up of the engine as exhaust flow passes into said emission buffer;
heating said emission buffer to a desired temperature with the exhaust gas flow passed into said heat exchanger;
releasing said noxious emissions from said emission buffer, after heating of said emission buffer, and passing said released noxious emissions into said converter;
directly bypassing said emission buffer with the exhaust gases flow, via said valve means, upon reaching a desired temperature; and
passing said exhaust gas flow from said engine directly to said converter.

5,184,463
METHOD OF REDUCING THE EMISSION OF TOXIC EXHAUST GAS COMPONENTS IN AN INTERNAL COMBUSTION ENGINE
Ruediger Becker, Murr; Siegfried Boettcher, Remseck, and Andreas Franz, Kornwestheim, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Sep. 20, 1991, Ser. No. 763,186
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1990, 4029811
Int. Cl.[5] F01N *3/20*
U.S. Cl. 60—284 **20 Claims**



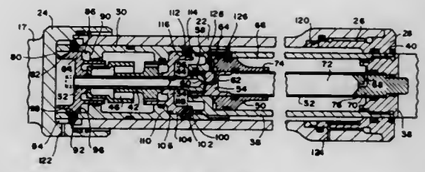
1. A method for reducing the emission of toxic exhaust-gas components in an internal combustion engine equipped with a catalyzer and wherein measures can be taken for heating the catalyzer, the method comprising the steps of:
checking to determine if a condition characteristic of a warm engine is satisfied when the engine is started; and,
if said condition is satisfied, then initiating said measures for accelerating the heating of the catalyzer.

5,184,464
NOISE AND EMMISSION CONTROL APPARATUS
Harold L. Harris, Houston, Tex., assignor to Harris International Sales Corporation, Houston, Tex.
Filed Apr. 22, 1991, Ser. No. 688,674
Int. Cl.[5] F01N *3/28*
U.S. Cl. 60—299 **10 Claims**



1. Improved noise and emission control apparatus for use with an internal combustion engine comprising:
an enclosed cylindrical housing having an inlet at one end thereof for connection with the exhaust of said engine and having an outlet at the opposite end thereof;
noise reduction means mounted in said housing for reducing noise emitted from said engine, said noise reduction means comprising at least two tubular members the walls of which are perforated and whose axes are coaxially aligned with the axis of said cylindrical housing, one of said tubular members being connected to said housing inlet and the other of said tubular members being connected to said housing outlet;
converter means mounted in said housing downstream of said first tubular member and upstream of said second tubular member for reducing noxious components of exhaust gases emitted from said engine; and
heat exchange means mounted in said housing immediately downstream of said converter means for transferring heat from said exhaust gases to a fluid which passes through said housing, said exhaust gases passing through said heat exchange means prior to exiting through said second tubular member and said outlet.

5,184,465
LANDING GEAR DRAG STRUT ACTUATOR HAVING SELF-CONTAINED PRESSURE CHARGE FOR EMERGENCY USE
Douglas A. Howard, Media, and Keith C. Walker, Broomall, both of Pa., assignors to The Boeing Company, Seattle, Wash.
Filed Sep. 28, 1990, Ser. No. 589,660
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—403 **22 Claims**



11. An extendable and retractable actuator automatically retractable by operation of a self-contained pressure source, comprising:
a first pressure source;
a second pressure source forming said self-contained pressure source;
means responsive to communication with the first pressure source for extending a portion of the actuator and releasably holding high pressure in said second pressure source, wherein the extended portion of the actuator contains said second pressure source and at least part of said first pressure source;
means for manually releasing the second pressure source; and
means responsive to release of the second pressure source for retracting the actuator.

5,184,466
CONTROL AND REGULATING DEVICE FOR A HYDROSTATIC TRANSMISSION
Reinhold Schniederjan, D-Neu-Ulm, and Ludwig Wagenseil, Vohringen, both of Fed. Rep. of Germany, assignors to Hydromatik GmbH, Fed. Rep. of Germany
Filed Aug. 15, 1991, Ser. No. 746,125
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1990, 4029548
Int. Cl.[5] F16D *31/02, 39/00*
U.S. Cl. 60—448 **13 Claims**

1. A control and regulating device for a hydrostatic transmission, comprising:
a variable volume hydraulic pump for pressurizing a hydraulic fluid, and having a first mode for discharging pressurized hydraulic fluid in a first direction, and a second mode for discharging pressurized hydraulic fluid in a second direction;
means to connect the hydraulic pump to a driving motor to drive the hydraulic pump, the driving motor having a speed of rotation;
at least one hydraulic motor;
first and second working fluid lines for conducting pressurized hydraulic fluid between the hydraulic pump and the hydraulic motor to drive the hydraulic motor, the first

VOL 1147 ISS 2 FE 9 1993 UMI

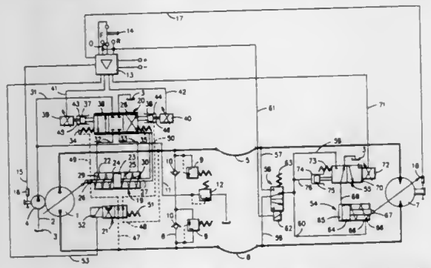
working line receiving the pressurized hydraulic fluid from the hydraulic pump when the pup is in the first mode, and the second working line receiving the pressurized hydraulic fluid from the hydraulic pump when the pump is in the second mode;

adjusting means connected to the hydraulic pump to control the mode of the pump and the volume thereof;

means for applying an adjusting pressure to the adjusting means, and including a control valve for controlling and regulating the adjusting pressure applied to the adjusting means, the control valve having first and second control positions;

switching means connected to the control valve to change the control valve between the first and second positions thereof;

means to generate a control signal proportional to the speed of rotation of the driving motor, and to selectively conduct the control signal to the switching means;



means to generate a working pressure signal proportional to the pressure of the hydraulic fluid in the one of the working fluid lines conducting pressurized fluid from the hydraulic pump to the hydraulic motor, and including first and second pressure lines connecting the switching means to the first and second working fluid lines respectively;

wherein the switching means applies the working pressure signal to the control valve in one of two opposite directions; and

wherein the switching means has first and second positions, and when the control signal is not conducted to the switching means, the switching means changes from one of the positions thereof to the other of the positions thereof to conduct the working pressure signal to the control valve to change the control valve form one of the positions thereof to the other of the positions thereof.

5,184,467

Patent Not Issued For This Number

5,184,468

BRAKE POWER BOOSTER AND MASTER CYLINDER ASSEMBLY WITH RETURN SPRING PLATE

Juergen Schonlau, Steingartenweg 9, 6229 Walluf; Alfred Birkenbach, Kriemhildring 13a, 6234 Hattersheim 2, and Ralf Harth, Schellbachstrasse 5, 6370 Oberursel/Ts, all of Fed. Rep. of Germany

PCT No. PCT/EP90/00134, § 371 Date Nov. 13, 1990, § 102(e) Date Nov. 13, 1990, PCT Pub. No. WO90/11215, PCT Pub. Date Oct. 4, 1990

PCT Filed Jan. 25, 1990, Ser. No. 623,374

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1989, 3908805

Int. Cl.[5] B60T *13/52, 13/57*

U.S. Cl. 60—547.1 **46 Claims**

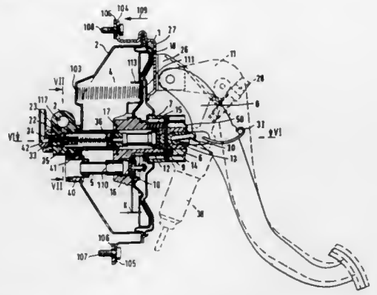
1. A pneumatic brake power booster for an automotive vehicle having an engine compartment, said booster comprising:

a booster housing;

a pneumatic pressure chamber unit within said booster housing;

a master cylinder within said booster housing;

a pneumatic control valve within said booster housing positioned adjacent said master cylinder and disposed parallel to said master cylinder, said pneumatic control valve having a diaphragm retainer with a plurality of return springs and a component abutting said diaphragm retainer and positioning said return spring; and



means for supplying ambient air at atmospheric pressure from the engine compartment of the vehicle to said pneumatic pressure chamber unit.

5,184,469

KINETIC ENERGY RECOVERY DEVICE OF LIQUID AND GAS

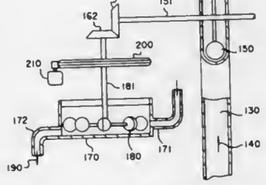
Yutaka Saitou, 24-25, 1-chome, Kikui, Nishi-ku, Nagoya-shi, Aichi-ken, Japan

Continuation of Ser. No. 561,636, Aug. 2, 1990, abandoned, which is a division of Ser. No. 406,397, Sep. 12, 1989, abandoned.

This application Jun. 11, 1991, Ser. No. 713,609

Int. Cl.[5] F01B *21/04;* **F02B** *73/00*

U.S. Cl. 60—716 **3 Claims**



1. A kinetic energy recovery device comprising:

(a) a vertically oriented gas guide member;

(b) a liquid vessel connecting a first liquid guide member for liquid input from an upper region and a second liquid guide member for liquid exhaust to a lower region;

(c) a first vane wheel arranged rotatable within said liquid vessel on a first rotary shaft;

(d) a second vane wheel arranged rotatably on a second rotary shaft extending in the lateral direction shifted with position of a wide portion in said gas guide member;

(e) a bevel gear interlocking the first rotary shaft and the second rotary shaft;

(f) a flywheel fixed to the first rotary shaft;

(g) a generator interlocked through a frictional wheel to said flywheel and rotated and driven; and

(h) a liquid pumping means connected to said liquid storage member for pumping in liquid to said liquid storage member through the first liquid guide member for liquid feeding-in from an upper region.

5,184,470

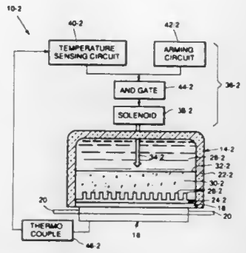
ENDOTHERMIC COOLER FOR ELECTRONIC COMPONENTS

Thomas P. Moser, Redondo Beach, and Robin W. Rosser, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Nov. 18, 1991, Ser. No. 793,887

Int. Cl.[5] F25D *5/00*

U.S. Cl. 62—4 **3 Claims**



1. An endothermic cooler for electronic components comprising:

an enclosure having a thermally conductive coupling to an electronic component;

a source of water;

a composition of matter disposed in said enclosure and capable of providing an endothermic reaction when mixed in solution with the water;

means for effecting the solution comprising:

a) a compartment containing said composition of matter within said enclosure;

b) means for segregating the water from said composition of matter; and

c) means for rendering said segregating means ineffective comprising: a solenoid, an AND gate coupled to said solenoid, a thermocouple thermally coupled to said electronic component, an arming circuit, and a temperature sensing circuit coupled to said thermocouple, said temperature sensing circuit being coupled in parallel with said arming circuit to said AND gate, thereby to enable mixing of the water and the composition of matter.

5,184,471

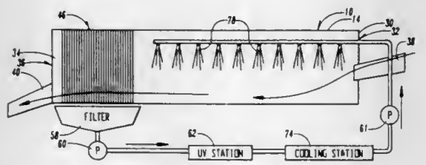
FOOD PRODUCTS CHILLER AND METHOD OF USING THE SAME

Donald L. Losacco, Algonquin, and Donald L. Catton, Darien, both of Ill., assignors to OCS Industries, Inc., Omaha, Nebr.

Filed Jul. 8, 1991, Ser. No. 726,856

Int. Cl.[5] F25D *13/06*

U.S. Cl. 62—63 **36 Claims**



1. A method of chilling products, comprising:

introducing warm products into an elongated drum;

introducing liquid coolant from a coolant source into the drum so as to expose the products to the coolant whereby heat is transferred form the products to the coolant thereby chilling the products to minimize spoilage thereof;

removing the chilled products from the drum;

draining the coolant from the drum;

disinfecting the coolant by exposure to ultraviolet radiation so as to kill substantially all microbial contaminants in the coolant;

adjusting the flow rate of coolant through the ultraviolet radiation so as to achieve a desired reduction of microbial contaminants;

recirculating the coolant to the coolant source for recooling; and

recirculating the re-cooled coolant to the drum for chilling additional products.

5,184,472

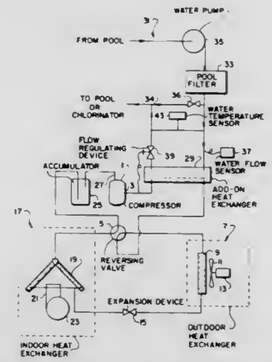
ADD ON HEAT PUMP SWIMMING POOL HEATER CONTROL

Pierre Guilbault, 1781 Carolyn, St. Bruno, Quebec, Canada J3V 2W1 , and Pierre Pilon, 61-A 3rd Ave Nord, Boisbriand, Quebec, Canada J7G 1E4

Continuation-in-part of Ser. No. 638,763, Jan. 8, 1991, abandoned. This application Nov. 4, 1991, Ser. No. 787,598

Int. Cl.[5] F25B *13/00*

U.S. Cl. 62—160 **3 Claims**



1. In a heat pump for use to heat and cool a dwelling,

said heat pump comprising a refrigerant circuit including, in the following order, a compressor having a refrigerant inlet and a refrigerant outlet, a reversing valve, an outdoor heat exchanger with an outdoor fan, an expansion device, an indoor heat exchanger with an indoor fan, and, again, said reversing valve,

said heat pump also comprising a heat pump control device generating a demand signal, a cooling signal or both as a function of signals received from an indoor thermostat, said demand signal controlling actuation of the compressor and of the indoor and outdoor fans, said cooling signal causing reversal of said reversing valve, the improvement wherein:

said refrigerant circuit further includes an add-on heat exchanger for use to heat water from a pool that is located nearby or inside said dwelling and is provided with a water filtration system including at least one filter through which said water from said pool is circulated by a pump,

said add-on heat exchanger is part of said refrigerant circuit and is connected thereto in series between the outlet of the compressor and the reversing valve,

said add-on heat exchanger is also part of said water filtration system and is mounted in diversion loop thereof downstream the water filter, to allow heat exchange between the refrigerant circulating through said refrigerant

VOL 1147 ISS 2 FE 9 1993 UMI

circuit and said water circulating through said water filtration system and thereby heating of said water by said refrigerant leaving the compressor,

said diversion loop includes a pressure-activated water flow regulating device, responsive to the pressure of the refrigerant at the outlet of the compressor, said diversion loop also including a water flow sensor and a water temperature sensor that are operatively connected to a pool heater control device, said pool heater control device receiving said demand and cooling signals wherever present from said heat pump control device together with a water flow signal from said water flow sensor and a water temperature signal from said water temperature sensor and being operatively connected to means for controlling said indoor and outdoor fans respectively, in such a manner that:

(a) when the pool heater control device receives a demand signal but no cooling signal, whatever be the water flow and water temperature signals, the compressor and the indoor and outdoor fans are activated, whereby the heat pump is operating to heat the dwelling;

(b) when the pool heater control device receives a demand signal, a cooling signal but no water temperature signal whatever be the water flow signal, the compressor and the indoor and outdoor fans are activated and the reversing valve is reversed, whereby the heat pump is operating to cool the dwelling;

(c) when the pool heater control device receives a demand signal, a cooling signal, a water flow signal and a water temperature signal, the compressor and indoor fan are activated, the reversing valve is reversed and the outdoor fan is switched off by said outdoor fan controlling means, whereby the heat pump is operating to cool the dwelling and simultaneously heat the swimming pool water;

(d) when the pool heater control device receives a demand signal, a cooling signal, a water temperature signal but no water flow signal, as may occur in the cases of a pool shut-down or of a pool filter backwash, the compressor and the indoor and outdoor fans are activated and the reversing valve is reversed, whereby the heat pump is operating to cool the dwelling; and

(e) when the pool heater control device receives a water flow signal, a water temperature signal but no demand signal whatever be the cooling signal the compressor and outdoor fan are activated and the indoor fan is switched off by said indoor fan controlling means, whereby the heat pump is operating to heat the swimming pool water exclusively.

5,184,473

PRESSURE CONTROLLED SWITCHING VALVE FOR REFRIGERATION SYSTEM

James Day, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

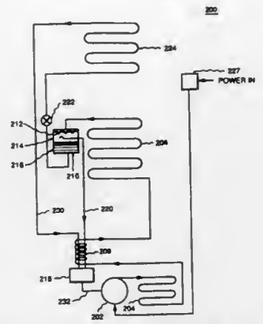
Filed Feb. 10, 1992, Ser. No. 833,269
Int. Cl.[5] F25B *5/00*
U.S. Cl. 62—199 **21 Claims**

1. A refrigerant flow switching device for alternately conveying refrigerant from either high pressure or low pressure evaporator means to compressor means of a refrigeration system, said device comprising:

a first flow controller positioned in a refrigerant flow relationship between said high pressure evaporator means and said compressor means, and comprising expandable enclosure means responsive to pressure from said high pressure evaporator means for compelling said expandable enclosure means to move from a first position to a second position against a force provided by a first biased means,

gate member means for preventing flow of refrigerant from said high pressure evaporator means to said compressor means when said expandable enclosure means is at said first position and for allowing flow of refrigerant from said high pressure evaporator means to said compressor means when said expandable enclosure means is at said second position,

second biased means connected to said expandable enclosure means, and having roller means mounted thereon for snapping said gate member means alternately between said first position and said second position; and



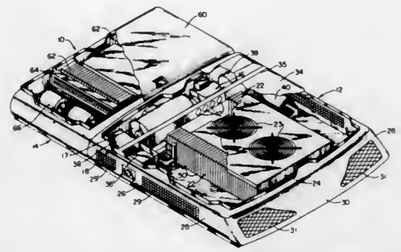
a second flow controller positioned in a refrigerant flow relationship between said low pressure evaporator means and said compressor means for allowing flow of refrigerant from said low pressure evaporator means to said compressor means only when said first flow controller prevents flow of refrigerant from said high pressure evaporator means to said compressor means.

5,184,474

ROOF-MOUNTED AIR CONDITIONING SYSTEM WITH BUILT-IN COMPRESSOR

Houshang Ferdows, Boulder, Colo., assignor to Suetrak Air Conditioning Sales Corp., Commerce City, Colo.

Filed Nov. 15, 1991, Ser. No. 792,965
Int. Cl.[5] F25D *17/06*
U.S. Cl. 62—244 **16 Claims**



1. In an air conditioning system for mounting on a roof of a vehicle wherein a condensor section includes a housing mounted on said roof, at least one condensor coil mounted in said housing, air circulating means including fans for drawing air from the outside through an intake opening in said housing across said condensor coil, an evaporator section, and means for conducting a refrigerant between said condensor and said evaporator sections, the improvement comprising:

a compressor mounted in a separate compartment on said roof adjacent to said condensor section;

means for directing outside air through said compressor compartment;

air flow control means for establishing communication between said compressor compartment and said condensor section, said air circulating means inducing the flow of outside air from said compressor compartment through said air flow control means to mix with the air drawn through the intake opening across said condensor coil; and

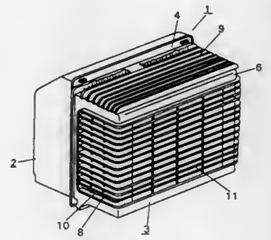
means for directing the flow of air from said compressor compartment and said intake opening across said condensor coil in said condensor section.

5,184,475

SELF-CONTAINED AIR CONDITIONER

Hideki Matsumi, Shiga, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 645,755, Jan. 25, 1991, abandoned. This application Mar. 20, 1992, Ser. No. 855,142
Claims priority, application Japan, Jan. 26, 1990, 2-6939
Int. Cl.[5] F25D *23/12*
U.S. Cl. 62—262 **4 Claims**



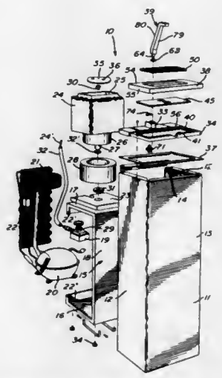
1. A self-contained air conditioner comprising a body including an outer casing having sides, a back and a louver area, the outer casing and the louver area which covers the sides and back of the outer casing being molded from resin in one piece so as to strengthen the outer casing, the louver area comprising a plurality of wedge-shaped slats, each slat being continuous along each side and the back of the outer casing, each slat having thick base portion, the base portion of the slats of the sides being located downstream of air flowing through the slats and the base portion of the slats of the back being located upstream of air flowing through the slats.

5,184,476

COUNTER-HEIGHT WATER DISPENSER

André Desrosiers, and Gary Savage, both of Montreal, Canada, assignors to Addico Products Inc., Quebec, Canada

Filed Aug. 19, 1991, Ser. No. 746,613
Int. Cl.[5] B67D *5/62*
U.S. Cl. 62—389 **10 Claims**



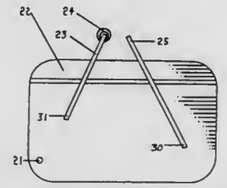
1. A counter-height water dispenser comprising a housing having a top wall disposed at substantially counter-height, a water reservoir supported in a top part of said housing, said reservoir having an open-top end section and a bottom cooling well section, said top wall being formed as a cover removably secured over an open area of said housing for access to an opening in said open-top end section of said reservoir, a compressor and condensor coil mounted below said reservoir, a cooling coil associated with said compressor and condensor coil, said cooling coil being disposed about said well section of said reservoir, insulation means associated with said cooling coil, an outlet port in said well section, and being connected to a low-pressure electric pump, said pump having an outlet tube connected to a dispensing faucet removably secured on said top wall of said housing adjacent said open area, said faucet having a low-pressure sealing coupling in its connection with said outlet tube, said cover having a drip tray in a top surface thereof, a switch associated with said top wall for actuating said pump to dispense water from said reservoir through said faucet at low pressure so that water in said faucet will flow back in said outlet tube and reservoir when said pump is deactuated whereby said low-pressure joints are not subject to pressure when water is not dispensed.

5,184,477

PORTABLE CART A COOLER

J. Edward Brown, 4297 Minmore Dr., Cincinnati, Ohio 45217, and Jenny Ciaccio, 9 Burnham Woods La., Amelia, Ohio 45102

Filed Sep. 30, 1991, Ser. No. 767,875
Int. Cl.[5] F25D *3/08*
U.S. Cl. 62—457.7 **1 Claim**



1. A portable wheeled cooler apparatus comprising:

a cooler chest including a body having a generally rectangular bottom member, four upright side walls, a top, and a lid covering said top, defining an enclosure;

a roller handle having a first end connected to said cooler chest at a first pair of pivot points located on respective opposing ones of said side walls defining a roller handle axis of rotation;

a tow handle having a first end connected to said cooler chest at a second pair pivot points located on said respective opposing side walls of said chest defining a tow handle axis of rotation;

said roller handle has a roller which covers and is rotatable about a section, located at a second end of said roller handle, parallel to the roller handle axis of rotation;

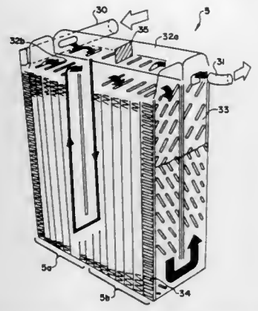
said roller handle is rotatable about said roller handle axis of rotation from an upper carrying position to a lower wheeled towing position;

said tow handle is rotatable about said tow handle axis of rotation from an upper carrying position, in which a second end of said tow handle is brought together with the second end of the roller handle in its upper carrying position, to an extended towing position; and

a lock assembly, located on said opposing side walls, is operable to support the roller handle in its lower position and thereby supporting said wheeled cooler apparatus allowing it to be pivoted about said second end of said roller handle by raising the tow handle.

VOL 1147 ISS 2 FEB 9 1993 UMI

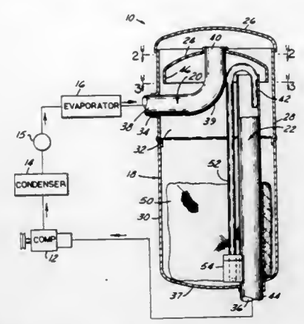
5,184,478
REFRIGERANT APPARATUS
Kiyoharu Kutsuna, Anjo, and Yoshimitsu Inoue, Toyoake, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Aug. 26, 1991, Ser. No. 749,442
Claims priority, application Japan, Aug. 27, 1990, 2-222402
Int. Cl.[5] F25B *43/02*; F28F *19/02*
U.S. Cl. 62—468 6 Claims



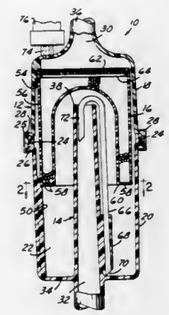
1. A refrigerant apparatus having a refrigerant passage through which refrigerant circulates, comprising:
a compressor sucking, compressing and discharging refrigerant;
a condenser connected to an outlet of said compressor and condensing the refrigerant discharged from said compressor;
an expansion means connected to an outlet of said condenser for reducing the pressure of the refrigerant;
an evaporator desposed between an outlet of said expansion means and an inlet of said compressor for evaporating the refrigerant; and
oil repellent coat coating at least a part of an inside of a low pressure refrigerant passage between downstream of said outlet of said expansion valve means and upstream of said inlet of said compressor.

5,184,479
ACCUMULATOR FOR VEHICLE AIR CONDITIONING SYSTEM
Manfred Koberstein, Warren; James H. Balcom, Garden City, and Stephen M. Kolpacke, Canton, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 23, 1991, Ser. No. 812,649
Int. Cl.[5] F25B *43/00*
U.S. Cl. 62—503 12 Claims

1. An accumulator for use in an air conditioning system, the accumulator comprising:
a housing having a first end portion, a body portion, and a second end portion which together define an interior chamber, the housing also having an inlet opening through which refrigerant may enter the inlet chamber and an outlet opening through which refrigerant may exit the interior chamber;
an inlet tube extending from the inlet opening into the interior chamber and adapted to direct the incoming flow of refrigerant against the first end portion of the housing;
an outlet tube extending from the outlet opening into the interior chamber and terminating in a free end; and
an outlet tube shield mounted within the interior chamber between the first end portion of the housing and the free end of the outlet tube to prevent the direct passage of refrigerant between the inlet tube and the free end of the outlet tube.

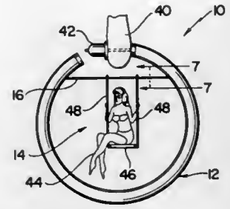


5,184,480
ACCUMULATOR FOR VEHICLE AIR CONDITIONING SYSTEM
Stephen M. Kolpacke, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 23, 1991, Ser. No. 812,169
Int. Cl.[5] F25B *43/00*
U.S. Cl. 62—503 15 Claims



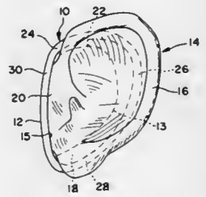
1. An accumulator for use in an air conditioning system, the accumulator comprising:
a housing including a first section and a second section which together define an interior chamber, the housing having an inlet opening through which refrigerant may enter the interior chamber and an outlet opening through which refrigerant may exit the interior chamber;
an outlet tube extending from the outlet opening into the interior chamber and terminating in a free end; and
a desiccant container mounted in the interior chamber between the housing and the free end of the outlet tube to define a first path between the housing and the desiccant container through which incoming refrigerant may flow, the desiccant container also having a second path therethrough through which incoming refrigerant may flow.

5,184,481
HOOP JEWELRY HAVING ORNAMENTAL MEMBER SUSPENDED WITHIN THE HOOP, AND METHOD OF MAKING SAME
Lawrence Joseph, Boca Raton, Fla., and Frank C. Fuoroli, Coventry, R.I., assignors to Jewelry Corporation of America, Inc., Boca Raton, Fla.
Filed Jun. 24, 1992, Ser. No. 903,161
Int. Cl.[5] A44C *7/00*
U.S. Cl. 63—12 13 Claims



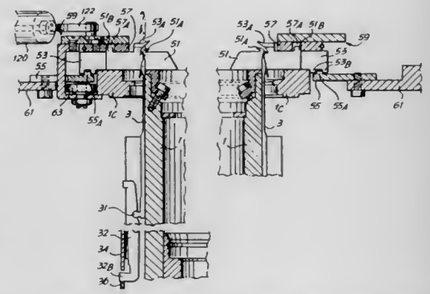
1. An article of jewelry comprising:
a generally circular hoop member;
a thin filament which extends across the hoop member; and
a decorative ornament secured to said filament so that the ornament is suspended within said hoop member; said hoop member having first and second ends which are disposed in closely spaced relation; said hoop member comprising a hollow tube having a seam along the inside peripheral edge thereof, said first and second ends being open, said hoop member further having a pair of holes formed along said seam at predetermined distances from said open ends, said seam being spread apart above said holes, said filament including a pair of balls crimped at opposing ends thereof, said filament being assembled with said hollow hoop such that one of said balls is located in one of said open ends and the other ball is located in the other open end, said filament resting in said holes and stretching tautly across said hoop, said balls being secured within said hoop member.

5,184,482
EAR ORNAMENT
Shirley F. Cloud, 402 Clearview, San Antonio, Tex. 78228
Filed Apr. 18, 1991, Ser. No. 687,235
Int. Cl.[5] A44C *7/00*
U.S. Cl. 63—14.1 14 Claims



1. An ear ornament encircling the ear comprising:
an integral and rigid continuous member completely extending around the ear and conforming substantially to the back of the ear, said continuous member having a rigid upper engaging portion resting on the bridge of the ear; a rigid rear portion passing through the channel defined by the pinna of the ear, a rigid lower non-engaging portion extending adjacent the earlobe, and a rigid front portion which is bowed and extends in front of the ear.

5,184,483
DEVICE WITH A DOUBLE SERIES OF SINKERS AND DOUBLE SINKERS HOUSING FOR MAKING TERRY FABRIC ON RECIPROCATING CIRCULAR MACHINES
Paolo Conti, Florence, Italy, assignor to Conti Florentia S.r.l., Firenze, Italy
Filed Aug. 16, 1991, Ser. No. 746,421
Claims priority, application Italy, Aug. 23, 1990, 9473 A/90
Int. Cl.[5] D04B *9/42*
U.S. Cl. 66—93 5 Claims



1. A device for forming, terry knit with a terry yarn of cotton fiber or other fiber for eyelets or loops of the terry fabric and a base yarn of synthetic fiber or other fiber for the base fabric, comprising:
a needle cylinder including a plurality of needles, said needles cylinder being driven for reciprocating motion;
a plurality of sinkers with a high nose for the terry yarn;
a plurality of sinkers with a low nose for the base yarn;
at least one high yarn guide for the terry yarn, said lower yarn guide being provided at a high yarn guide level;
at least one lower yarn guide for the base yarn, said lower yarn guide being provided at a lower level than a level of a surface of said high-nosed sinkers;
a fixed annular sinkers housing including a cam profile to control radial movement of said high-nosed sinkers, said cam profile having an area of centrifugal retraction substantially symmetrical with respect to a feeding position of said at least one high yarn guide and said at least one lower yarn guide; and
an angularly mobile annular sinkers housing for controlling radial movement of said low-nosed sinkers, said angularly mobile annular sinkers housing including a cam fixed with respect to said angularly mobile annular sinkers housing and having an apex pointing outwardly with respect to said needle cylinder, said angularly mobile annular sinkers housing alternating with each reversal of motion of said needle cylinder, such that the fixed cam moves with the annular sinkers housing between a first position and a second position, said first position and said second position being substantially symmetrical, with respect to a contour of said cam, on opposite sides with respect to feeding positions of said at least one high yarn guide and said at least on lower yarn guide for centrifugally retracting low-nosed sinkers in proximity to a stitch forming area, after said feeding position of said at least one high yarn guide and said at least one lower yarn guide, upon each reversal of motion of said needle cylinder.

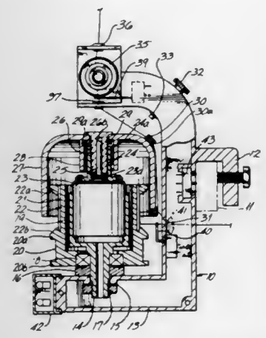
VOL 1147 ISS 2 FEB 9 1993 UMI

5,184,484

YARN FEEDING APPARATUS HAVING YARN BREAK PROTECTION

Jae Poong Yoo, 76-42 Dong-A Villa B02Ho, Cheolsan 2-Dong, Kwangmyung, Kyungki-Do, 423-032, Rep. of Korea

PCT No. PCT/KR90/00006, § 371 Date Feb. 5, 1991, § 102(e) Date Feb. 5, 1991, PCT Pub. No. WO90/15891, PCT Pub. Date Dec. 27, 1990
PCT Filed Jun. 18, 1990, Ser. No. 640,370
Claims priority, application Rep. of Korea, Jun. 17, 1989, 8360
Int. Cl.[5] D04B *15/48*
U.S. Cl. 66—132 R 13 Claims



1. A yarn feeding apparatus for a knitting machine, comprising:

a holder having a clamper for fixing to a support ring of the knitting machine and first and second yarn-inducing holes at a front end portion of the holder;

a hollow shaft fixed to a base portion of said holder;

a driving wheel rotatably mounted to said hollow shaft and driven by a driving belt;

a storage drum on which pins are arranged at predetermined intervals on its external circumferential surface and having upper and lower conical surfaces, said storage drum being mounted to said driving wheel for rotation therewith;

a motor located within the interior of said storage drum and fixed by a fixing member attached to a front end portion of said hollow shaft, and having a rotary shaft protruding therefrom;

a hollow threaded tube fixed to said motor around said rotary shaft;

a movable threaded tube mounted to the rotary shaft of said motor for rotational movement with the rotary shaft and threaded to said hollow threaded tube;

a rotary cap fixed to a front end portion of said movable threaded tube and having a semispherical surface at an upper portion, said rotary cap being movable between lower and upper positions in response to rotation of said rotary shaft;

a protrusion provided on the semispherical surface of said rotary cap and having a third yarn-inducing hole formed in said protrusion;

a push button switch provided at a neck portion of said holder in a position corresponding to a position of the protrusion at the upper position of said rotary cap;

a fourth yarn-inducing hole arranged at a bottom side portion of said protrusion; and

a fifth yarn inducing hole arranged at a vertical portion of the holder,

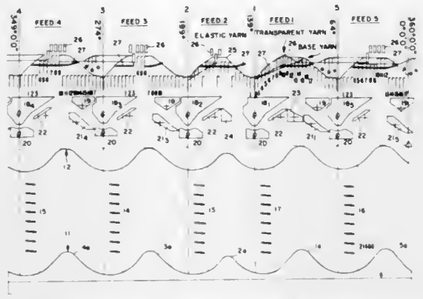
wherein upper and lower conical surfaces of said storage drum are formed by bending upper and lower end portions of the pins.

5,184,485

CIRCULAR KNITTING MACHINE FOR PRODUCING SPORTS HOSIERY OF FLOATED PATTERN

Franco Bini, Florence, Italy, assignor to Savio S.p.A., Pordenone, Italy

Filed Apr. 4, 1991, Ser. No. 680,396
Claims priority, application Italy, Apr. 6, 1990, 19969 A/90
Int. Cl.[5] D04B *9/36, 15/68*
U.S. Cl. 66—222 9 Claims



1. A circular knitting machine having a plurality of feed stations and a plurality of needles for forming stitch loops, comprising:

a) knitting cams operatively associated with the machine for lowering the needles to a minimum lower position, wherein said knitting cams are radially moveable with respect to the machine for dissassociating from needle engagement;

b) counter-cams operatively associated with the machine for preventing the needles lowered by said knitting cams from lowering below said minimum lower position;

c) fixed cams operatively associated with the machine for guiding the needles to a predetermined intermediate position; and

d) raising cams operatively associated with the machine for raising the needles to a predetermined upper position, wherein said raising cams are radially moveable with respect to the machine for dissociating from needle engagement.

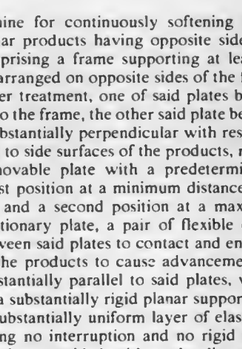
5,184,486

APPARATUS FOR TREATING CLOTH IN FLOWING LIQUID

Naobumi Murai, Fukui, and Tadashi Kurokawa, Osaka, both of Japan, assignors to Tomen America Inc., New York, N.Y.

Filed Dec. 23, 1991, Ser. No. 812,664
Int. Cl.[5] D06B *3/24*
U.S. Cl. 68—175 2 Claims

1. In an apparatus for treating a cloth in a flowing liquid comprising a pool having a bottom portion curved in a cross sectional shape of an alphabetic letter U to present a downwardly extending spiral around a vertical axis, said bottom being formed to lower gradually along the spiral from an upper end to a lower end thereof, a conveying passage continues from the upper end of the pool to a lower end of the conveying passage, a pull-up reel arranged above the pool, wherein a cloth is circulated with the flowing liquid in such a state that the cloth is wound on the pull-up reel endlessly and directed along the conveying passage and through the pool, said apparatus characterized in that:



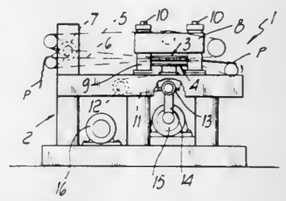
the bottom portion of the pool is constructed to have a concave surface forming a shape of said alphabetic letter U in section.

5,184,487

MACHINE FOR SOFTENING AND STRETCHING LAMINAR PRODUCTS, PARTICULARLY TANNED HIDES

Antonio Corner, Thiene, Italy, assignor to Officine di Cartigliano S.p.A., Italy

Filed Oct. 10, 1990, Ser. No. 595,306
Claims priority, application Italy, Oct. 13, 1989, 85662 A/89
Int. Cl.[5] C14B *1/26*
U.S. Cl. 69—19.1 12 Claims



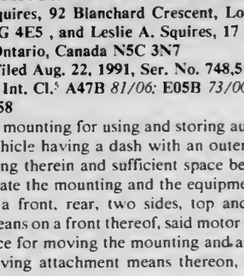
1. A machine for continuously softening and stretching flexible laminar products having opposite side surfaces, said machine comprising a frame supporting at least one pair of facing plates arranged on opposite sides of the flexible laminar products under treatment, one of said plates being stationary with respect to the frame, the other said plate being movable in a direction substantially perpendicular with respect to the one said plate and to side surfaces of the products, means for oscillating said movable plate with a predetermined frequency between a first position at a minimum distance from said stationary plate and a second position at a maximum distance from said stationary plate, a pair of flexible conveyor belts arranged between said plates to contact and engage the opposite sides of the products to cause advancement thereof in a direction substantially parallel to said plates, wherein one of said plates is a substantially rigid planar support which is covered with a substantially uniform layer of elastically yielding material having no interruption and no rigid projection, the other plate being provided with a plurality of substantially rigid protruding elements adapted to interact with said uniform layer of the one said plate, said uniform layer having a thickness at least equal to the distance between said first and second positions so as to permit full penetration of said protruding elements to a certain depth of penetration, said protruding elements having a substantially curved shape with a radius of curvature greater than said depth of penetration, so that the products under treatment are subject to a substantially uniform stretching action with no concentration of stress, thus reducing the risk of marking and permitting safe increases in depth of penetration and frequency of oscillation of said plates.

5,184,488

MARINE OUTDRIVE LOCKING SYSTEM

William H. Sandlin, Gretna, La., assignor to Anthony Cilbilich, Gretna, La., a part interest

Filed Sep. 9, 1991, Ser. No. 756,469
Int. Cl.[5] B63H *23/34;* F16B *41/00*
U.S. Cl. 70—14 7 Claims



1. An anti-theft device for deterring unauthorized removal of a trailer and boat having an outboard motor with a propeller having a plurality of blades, a cylindrical hub with a cylindrical outside surface, the hub terminating at a rear annular surface, and the hub having a hollowed interior area communicating with the hub annular surface, the motor having port and starboard sides, comprising:

a) a yoke that has port and starboard side portions extendable respectively around the port and starboard sides of the outboard motor and including a portion that extends to a position adjacent the propeller hub;

b) lock means for forming a removable connection between the yoke and the outboard motor so that the yoke can be attached to the outboard motor in a locked operative position, and removed therefrom in an unlocked position; and

c) a propeller locking arm extending rearwardly from and attached between the side portions along the entire length of the cylindrical hub and on the outside surface thereof, engaging the rear annular surface of the propeller and extending into the hollowed area of the hub in the locked operative position, so that removal of the propeller is disabled by preventing the propeller from being separated from the outboard motor when the yoke is in a locked operative position.

5,184,489

DEVICE FOR SECURELY MOUNTING AUDIO EQUIPMENT IN A MOTOR VEHICLE

Carlton G. Squires, 92 Blanchard Crescent, London, Ontario, Canada N6G 4E5 , and Leslie A. Squires, 17 Glenwood Rd., Ingersoll, Ontario, Canada N5C 3N7

Filed Aug. 22, 1991, Ser. No. 748,516
Int. Cl.[5] A47B *81/06;* E05B *73/00*
U.S. Cl. 70—58 14 Claims

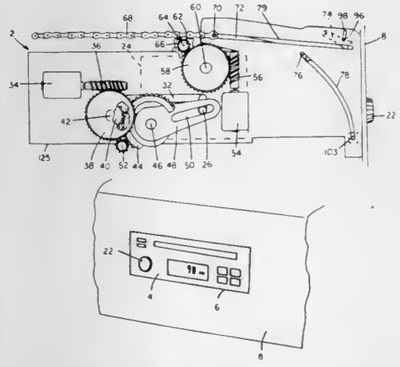
1. A secure mounting for using and storing audio equipment in a motor vehicle having a dash with an outer surface and a suitable opening therein and sufficient space behind said dash to accommodate the mounting and the equipment, said equipment having a front, rear, two sides, top and bottom with adjustment means on a front thereof, said motor vehicle having a power source for moving the mounting and an ignition, said equipment having attachment means thereon, said mounting comprising:

(a) a movable housing affixed to attachment means on said

VOL 1147 ISS 2 FEB 9 1993 UMI

equipment, a front portion of said equipment extending beyond said housing, said housing and said equipment being immovable relative to one another;

(b) said movable housing having two projections thereon, there being one projection on each side thereof to extend outward therefrom, two guide means one on each side of said equipment, each guide means being sized and located to receive one projection, each guide means being supported independently of each projection, each projection being mounted to move vertically a predetermined distance relative to said equipment, each projection movable within each guide means, mechanical means for moving each projection forward and rearward within said guide means as desired, thereby moving said equipment forward and rearward;



(c) power means connected between said power source and said mechanical means to move said housing and said equipment between a rearward rest position and a forward operating position, said equipment being immovable relative to said housing;

(d) in said forward position, at least said front of said equipment extends into said opening, said rear and said housing remaining behind said opening, and in said rearward position, said front of said equipment being located behind said opening;

(e) said movable housing being larger than said opening so that if said projections are severed, said equipment and said housing are too large to be pulled through said openings.

5,184,490

KEY SWITCH ASSEMBLY

Hiroyuki Takahashi, Tokyo, Japan, assignor to Takigen Manufacturing Co., Ltd., Tokyo, Japan

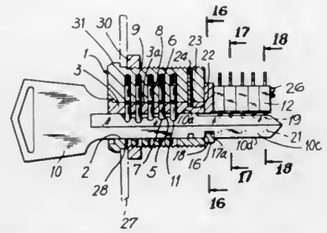
Filed Jun. 29, 1992, Ser. No. 905,803

Claims priority, application Japan, Feb. 13, 1992, 4-013897[U]

Int. Cl.[5] H01H *27/08*

U.S. Cl. 70—277 **3 Claims**

1. A key switch assembly comprising a lock body having a lock cylinder reception bore, a lock cylinder received in said lock cylinder reception bore and having an axial key groove and a plurality of first radial pin reception bores, said lock body having second radial pin reception bores each in communication with each of said first radial pin reception bores, driven and drive pins received in said first and second radial pin reception bores, compression coil springs biasing said driven and drive pins toward said key groove, a key having one edge formed with a pin operation section for displacing the point of contact between each driven pin and each drive pin to a position corresponding to the outer periphery of said lock cylinder, a plurality of switches secured as an axial juxtaposition to a rear face of said lock body, a guide projecting rearward of said lock cylinder and parallel to said switch juxtaposition, said guide having one side in frictional contact with a side of said key aligned to form an extension of a surface of said key groove, said side of said guide having an axial positioning ridge engaged in an axial positioning groove formed in said side of said key, a guide disk secured to a rear face of said lock body, said guide disk having a restricting front face in contact with said rear face of said lock body, said guide disk having a restricting notch with an arcuate edge having a radius of curva-



ture smaller than the radius of rotation of said key, said key having another edge formed with an escapement groove engaged by said arcuate edge of said guide disk when said key inserted to a predetermined depth is turned, said guide having a stem portion with the outer periphery thereof formed with a second escapement groove engaged by said arcuate edge, said key having another side formed in an end portion thereof with operation sections for depressing actuator pins of said switches and non-operation sections for escapement therein of said actuator pins.

5,184,491

COMBINATION LOCK WITH MOTOR-DRIVEN TUMBLERS

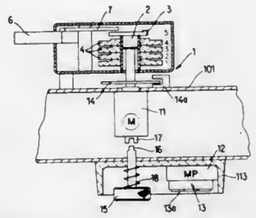
Rudolf Schittenhelm, Freiburg, Fed. Rep. of Germany, assignor to Theodor Kromer GmbH & Co. KG Spezialfabrik Für Sicherheitsschlösser, Umkirch, Fed. Rep. of Germany

Filed Jul. 19, 1990, Ser. No. 555,166

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1989, 3924227

Int. Cl.[5] E05B *49/00, 17/00*

U.S. Cl. 70—278 **33 Claims**



1. A combination lock comprising a plurality of tumblers movable with reference to each other to and from predetermined positions; a locking bolt movable between extended and retracted positions in the predetermined positions of said tumblers; a motor forming part of the combination lock, connected with said tumblers and operable to move said tumblers to said predetermined positions; and programmable means for operating said motor, said programmable means comprising a processor having at least one signal-transmitting output connected with said motor and at least one data-receiving input, and means for supplying to said input a plurality of sets of data including a predetermined set of non-storable data known to the operator of the combination lock and serving to initiate the transmission of at least one signal by way of said at least one output to operate said motor and to thereby move said tumblers to said predetermined positions.

5,184,492

PLATE STRAIGHTENING MACHINE

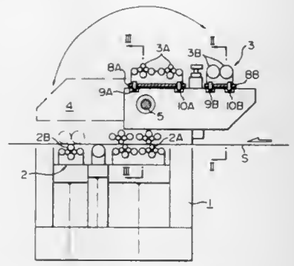
Yoshihiro Ushigami, Saijo, Japan, assignor to Sumitomo Heavy Industries, Inc., Tokyo, Japan

Filed Nov. 25, 1991, Ser. No. 797,018

Claims priority, application Japan, Nov. 30, 1990, 2-128283[U]

Int. Cl.[5] B21D *1/02*; B21B *31/10*

U.S. Cl. 72—160 **3 Claims**



1. A plate straightening machine comprising:

lower rolls;

upper rolls provided in a rotatable upper frame;

wherein an operating position is defined when said upper rolls face downward and said lower rolls face upward so that a cooperating relationship is provided for straightening bends in a work piece, and a non-operating position is defined when said upper frame is rotated along an arcuate path to a position where the upper rolls face upward;

said upper rolls being installed on a mounting plate which is detachably attached to the upper frame so that the mounting plate can be moved toward a side perpendicular to said path when in the non-operating position; and

wherein at least one upper roll replacing stand is disposed on a side of the upper frame in the non-operating position so that the upper roll replacing stand is flush with the upper frame for enabling the mounting plate to be moved between a first position on the upper frame and a second position on the upper roll replacing stand.

5,184,493

SUPPORT FOR ROLLING RINGS ON ROLLING STANDS HAVING ROLLS SUPPORTED AS CANTILEVERS

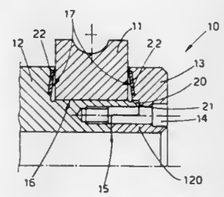
Geremia Nonini, Buttrio, Italy, assignor to Danieli & C. Officine Meccaniche Spa, Buttrio, Italy

Filed Nov. 25, 1991, Ser. No. 797,024

Claims priority, application Italy, Nov. 27, 1990, 60459/90[U]

Int. Cl.[5] B21B *31/00, 31/08*

U.S. Cl. 72—237 **1 Claim**



1. Support for rolling rings on rolling stands having rolls supported as cantilevers, comprising a shaft including a first portion with a first flange and a second portion with a second flange, a rolling ring having substantially parallel lateral walls being interposed between said first and second flanges, the second flange opposed to and being movable towards the first flange by means of the action of threaded clamping bolts, the first and second flanges including undercuts, wherein the first portion of the shaft has a first toric protrusion contacting an inner circumferential surface of said rolling ring and extending axially from one of said parallel lateral walls past the other of said parallel lateral walls; the second portion of the shaft comprises a toric hollow which mates with the first toric protrusion and is coupled thereto, and comprises also a second toric protrusion extending within the first toric protrusion and mating therewith,

and wherein the undercuts of the first and second flanges include rings made of an antifriction material.

5,184,494

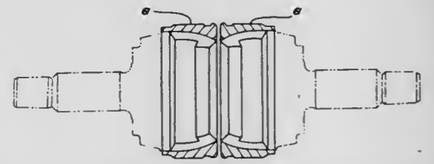
METHOD OF FORMING UNIVERSAL JOINT HOUSINGS

Werner Krude, Neunkirchen, Fed. Rep. of Germany, assignor to GKN Automotive, Inc., Auburn Hills, Mich.

Filed Jul. 25, 1991, Ser. No. 735,449

Int. Cl.[5] B21K *1/26*

U.S. Cl. 72—254 **6 Claims**



1. A method of manufacturing an extrusion comprising the steps of:

providing a slug having a predetermined mass;

forming a housing having a cylindrical outer wall with first and second open ends;

forming an inner wall surface in said housing defining a first cavity at said first open end and a second cavity at said second open end wherein said cavities are simultaneously formed by backward extrusion;

forming a web in said housing between said first and second open ends said web defining the other end of each of said cavities; and

forming a plurality of circumferentially spaced ball grooves during said backward extrusion in each of said cavities radially extending into said inner wall surface such that said outer wall has a non-uniform radial thickness, said ball grooves longitudinally extending from said open end to said other end of each of said cavities and severing said part at said web to form two parts.

5,184,495

METHOD OF INTERNALLY AND EXTERNALLY UPSETTING THE END OF A METAL TUBE

William G. Chunn, Willis, and Ralph T. Moore, Houston, both of Tex., assignors to Prideco, Inc., Houston, Tex.

Filed Dec. 3, 1991, Ser. No. 801,969

Int. Cl.[5] B21D *41/02*

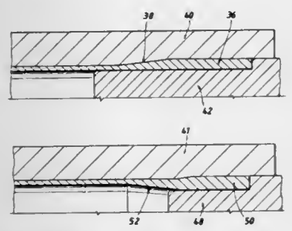
U.S. Cl. 72—318 **3 Claims**

1. A method of internally and externally upsetting the end of a metal tube comprising heating the section of the tube to be upset to forging temperature, upsetting the end of the metal tube to provide the end with an increased wall thickness and outside diameter using a first die having a first cylindrical section having an inside diameter substantially equal to the outside diameter of the tube, a second cylindrical section having an inside diameter equal to the increased diameter of the end of the tube and a tapered section connecting the two

VOL 1147 ISS 2 FE 9 1993 UMI

cylindrical sections and a first mandrel having a first cylindrical section with a diameter substantially equal to the inside diameter of the tube, a second cylindrical section having an outside diameter substantially equal to the inside diameter of the second cylindrical section of the die, and a shoulder between the two sections of the mandrel to engage the end of the tube and force the metal adjacent the end of the tube into engagement with the die,

further upsetting the end of the metal tube to provide the end with an increased wall thickness and outside diameter using a second die having a first cylindrical section having an inside diameter substantially equal to the outside diameter of the tube, a second cylindrical section equal to the further increased diameter of the end of the tube and a tapered section connecting the two cylindrical sections and a second mandrel having a first cylindrical section with a diameter substantially equal to the inside diameter of the tube, a second cylindrical section with an outside diameter substantially equal to the inside diameter of the second cylindrical section of the second die, and a shoulder connecting the first and second sections to engage the end of the tube and force the metal adjacent the end of the tube into engagement with the internal surface of the second die,



reheating the end of the tube to forging temperature,

radially pressing the upset end of the tube inwardly with the first die to reduce the outside diameter of the end and form a taper on the inner surface of the tube, and

upsetting the end to thicken the wall thickness and increase the length of the inside taper while reducing the outside diameter using a third die and a third mandrel having a first cylindrical section of reduced diameter to allow the thickness of the tube to be increased and the inside taper lengthened without increasing the outside diameter of the upset, a second cylindrical section having a diameter equal to the diameter of the second cylindrical section of the third die, and a shoulder connecting the two sections for shortening the length of the upset, increasing the wall thickness, and lengthening the inside taper as the mandrel is moved against the end surface of the upset end of the tube.

5,184,496

PRESSING DIE

Takaoki Namba, and Teruo Kamada, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 376,392, Jul. 6, 1989, Pat. No. 5,072,782. This application Sep. 18, 1991, Ser. No. 761,659

Claims priority, application Japan, Jul. 8, 1988, 63-170094; Jul. 8, 1988, 63-170095

Int. Cl.[5] B21D *24/02*

U.S. Cl. 72—350 **11 Claims**

1. A pressing die comprising:

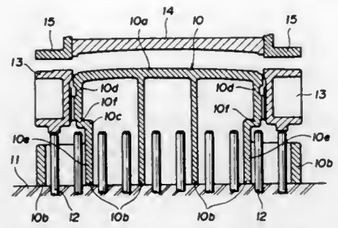
a shaping panel for being pressed against a blank;

a first rib extending from said shaping panel;

an attachment panel adapted to be mounted on a press machine frame;

a second rib extending from said attachment panel;

an intermediate portion extending between said shaping panel and said attachment panel and joining said first and second ribs to each other;



said attachment panel having an opening defined therethrough for accommodating cushioning means extending from said press machine frame; and

said first rib being disposed directly above said opening.

5,184,497

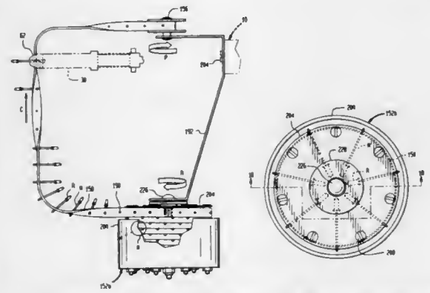
MAGAZINE FOR AUTOMATIC FEED BLIND RIVET SETTING TOOL

Daniel Hanlon; Stuart J. Sandhaus, both of Pittsburgh, Pa., and James L. Hopkins, Venice, Fla., assignors to S.A.R.G. Research Associates, Ltd., Sarasota, Fla.

Continuation-in-part of Ser. No. 792,011, Nov. 13, 1991, Pat. No. 5,136,873. This application Jul. 27, 1992, Ser. No. 920,037

Int. Cl.[5] B21J *15/32*

U.S. Cl. 72—391.6 **10 Claims**



1. A magazine for holding a quantity of blind rivets ready for use in an automatic rivet setting tool, said quantity of rivets connected in spaced relation along the length of an elongated strip of thin flexible material by having a distal portion of each rivet inserted therethrough said magazine comprising:

a cover having a bottom and a continuous cylindrical side wall extending from said bottom to define a generally circular open end of said cover;

a plurality of parallel elongated spacer sleeves connected in evenly spaced arrangement between a pair of spaced parallel end plates forming a spool;

said spool removably connected concentrically within said cover and having a first end plate of said pair of end plates positioned immediately adjacent said bottom and a second end plate of said pair of end plates positioned beyond said opening forming a gap between said second end plate and said opening, said gap having a width generally at least equal to the width of said flexible strip;

said quantity of rivets carried on said flexible strip being generally radially positioned within said cover with each rivet mandrel of each rivet of said quantity of rivets between two adjacent spacer sleeves of said plurality of spacer sleeves, the head of each rivet being positioned inwardly toward and adjacent a central axis of said spool when said flexible strip is wound in spiral fashion around said plurality of spacer sleeves;

a free end of said flexible strip extending outwardly through said gap from around said plurality of spacer tubes for engagement with the rivet setting tool.

5,184,498

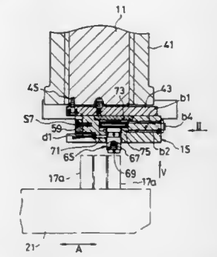
TURRET PUNCH PRESS

Tetsuji Hayashi, La Mirada, Calif., assignor to Amada Mfg. America, Inc., La Mirada, Calif. and Amada Company, Ltd., Kanagawa, Japan

Filed Feb. 21, 1992, Ser. No. 838,867

Int. Cl.[5] B26F *1/04;* **B26D** *5/08*

U.S. Cl. 72—442 **3 Claims**



2. A turret punch press for punching and forming, comprising:

an upper turret to which an upper die for punching and an upper die for forming are detachably mounted;

a lower turret on which lower dies for cooperating with the upper punching and forming dies are detachably mounted;

a ram for causing the upper and lower dies to work together at an operating position;

a means for mechanically moving the ram vertically;

a hydraulic cylinder having a piston rod for striking the upper dies, the cylinder being provided on a lower end of the ram, and the piston rod being vertically movable with respect to the ram and positioned at its bottom dead center for punching and at its top dead center initially and then lowered to the bottom dead center when the ram is lowered.

5,184,499

TESTING DEVICE WITH ACCELERATION TUBE

Erich Oppliger, Heimberg, and Martin Monkewitz, Lucerne, both of Switzerland, assignors to Schweizerische Eidgenossenschaft vertreten durch die Eidg. Munitionsfabrik Thun der Gruppe fur Rustungsdienste, Thun, Switzerland

Filed Jan. 29, 1991, Ser. No. 647,269

Claims priority, application Switzerland, Jan. 31, 1990, 00309/90

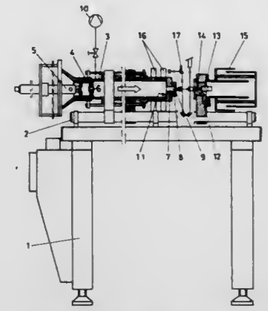
Int. Cl.[5] G01N *3/30;* **F41A** *21/46*

U.S. Cl. 73—11.01 **9 Claims**

1. A testing device with an impact body pneumatically acceleratable in an acceleration tube and adapted to be moved out of an exit aperture of the acceleration tube comprising:

a shutter provided at the exit aperture of the acceleration tube which opens upon the impact of the impact body wherein, in the initial position, the impact body is sealingly retained at the side of the acceleration tube which is located opposite to the exit aperture, and wherein the space in the acceleration tube between the impact body and the exit aperture is operatively connected with a source of negative pressure;

wherein the impact body is releasably held within a bore extending through an acceleration piston, said acceleration piston being slidable within the acceleration tube in the direction of the exit aperture against an abutment surface of the acceleration tube; and



wherein the impact body has a shearable flange which can be made to abut a contact surface of the acceleration piston, said contact surface being located at that side of the bore that is facing away from the exit aperture.

5,184,500

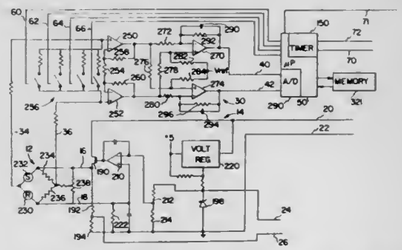
GAS DETECTOR

Jan Krcma, Elk Grove Village, and Terry A. Batt, Elmhurst, both of Ill., assignors to J and N Associates, Inc., Valparasio, Ind.

Filed Mar. 20, 1990, Ser. No. 496,333

Int. Cl.[5] G01N *27/00*

U.S. Cl. 73—23.2 **23 Claims**



1. A gas detector for sensing the presence of a gas and generating a signal relating to the concentration of the gas sensed, comprising:

a gas sensor responsive t the presence of a gas;

an amplifier circuit coupled to said gas sensor, said amplifier circuit generating a pair of signals having magnitudes which are related to the concentration of the gas sensed by said gas sensor;

an A/D converter circuit coupled to said amplifier circuit to receive said signals, said A/D converter circuit generating a pair of binary counts based upon the magnitudes of said signals; and

a difference circuit coupled to said A/D converter circuit that generates a signal relating to the concentration of the gas sensed based upon the difference between said pair of binary counts.

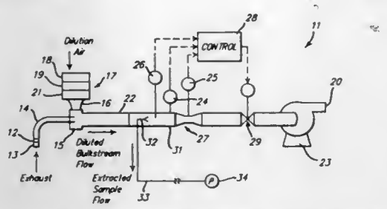
VOL 1147 ISS 2 FE 9 1993 UMI

5,184,501

EXHAUST SAMPLER AND CONTROL MEANS

Gary W. Lewis, Fountain Valley, and Max J. Moore, Walnut, both of Calif., assignors to Horiba Instruments Incorporated, Irvine, Calif.

Filed May 3, 1991, Ser. No. 695,606
Int. Cl.[5] G01N *1/22*
U.S. Cl. 73—23.31 **32 Claims**



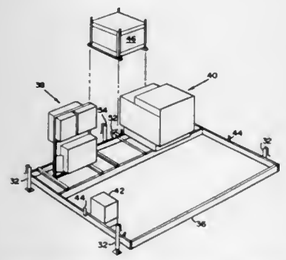
1. An apparatus for sampling the emission content of exhaust from an exhaust source comprising an exhaust inlet adapted for connection with the exhaust source, a dilution air inlet adapted for connection with said exhaust inlet to provide a mixture of exhaust and dilution air, means for defining a flow confining path for said mixture, means coupled with said flow confining path for establishing a flow of said mixture in said flow confining path, means for measuring the flow rate of said mixture comprising a subsonic venturi restriction, means for measuring the pressure and temperature of said mixture upstream of said subsonic venturi, means for measuring the pressure of said mixture in said subsonic venturi and a control unit for computing the flow rate of said mixture based on signals received from said upstream measuring means and said subsonic venturi measuring means, said sampling apparatus further comprising means for controlling the flow rate of said mixture in response to the computed flow rate of said mixture, means for extracting a sample of said mixture and means for controlling the flow rate of the extracted sample so as to maintain a preselected constant mass flow rate of said extracted sample.

5,184,502

HELICOPTER INSTALLABLE, SELF-POWERED, MODULAR, REMOTE, TELEMETRY PACKAGE

George W. Adams, Newtown, Conn., and Michael J. McGoey, Fort Collins, Colo., assignors to Remote Power, Inc., Fort Collins, Colo.

Filed Jun. 17, 1991, Ser. No. 716,130
Int. Cl.[5] G01N *1/22;* **H02N** *6/00*
U.S. Cl. 73—31.01 **10 Claims**



1. A helicopter installable, self-powered, modular, remote, instrumentation package comprising:

A. an instrument skid comprising:

a. a generally, horizontally disposed frame;

b. instruments and control elements mounted on said frame;

c. at least three jacks adapted to engage the ground mounted to said frame for leveling said frame;

B. a battery skid comprising:

a. batteries adapted to be field mounted to said instrument skid; and,

C. a solar array skid comprising:

a. a lean-to like structure comprising a sloped roof comprising an array of solar cells, said solar array skid being adapted for field mounting to said instrument skid;

said battery skid and said solar array skid being adapted to be lowered onto said instrument skid in that order.

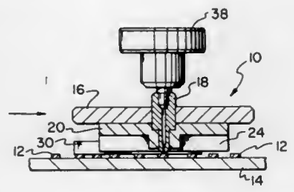
9. An instrumentation package as defined in claim 1 wherein said instruments comprise a gas analyzer.

5,184,503

DEVICE FOR MEASURING CHANGE IN PROFILE HEIGHT OF ARTICLES

Stephen H. Hancock, Tequesta, Fla., assignor to Northern Telecom Limited, Montreal, Canada

Filed May 21, 1991, Ser. No. 703,758
Int. Cl.[5] G01B *5/20*
U.S. Cl. 73—37.5 **4 Claims**



1. A device for determining change in profile height of a surface of an article comprising a body, a body support means extending from one side of the body and which allows for movement of the body over the article while the support means remains stationary upon the article, and gas flow nozzle means within the body and providing a gas outlet orifice disposed to deliver a flow of gas outwardly from the one side of the body and beyond the support means to direct the gas at said surface, the support means including two slides slidably movable relative to the body and opposed one on each side of the outlet orifice, and the nozzle means provided for connection to a gas flow source and to means for sensing and indicating a change in a characteristic of the air flowing through the outlet orifice, the characteristic being dependent upon the distance of the outlet orifice from the surface.

5,184,504

LEAK DETECTION

G. Everett Spring, P.O. Box 1479, Makawao, Maui, Hi. 96768-1479

Filed May 30, 1990, Ser. No. 530,613
Int. Cl.[5] G01M *3/32*
U.S. Cl. 73—49.2 **36 Claims**

1. A method of measuring the leakage from a primary containment means which comprises the steps of:

so arranging a vessel and an essentially fluidtight envelope as to provide primary and secondary containment means and a space of controlled volume between said containment means;

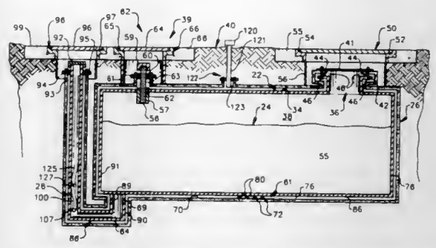
predicting the rate at which a substance released from the primary containment means will collect in said space in the absence of a leak in the primary containment means;

employing a high vacuum system to withdraw from said space the contained substance collected therein;

comparing the amount of the substance removed from said space with the amount of the substance predicted to have been collected in said space in the absence of a leak;

generating an advisory warning of a possible leak in the primary containment means if the amount actually removed exceeds to a determined extent the amount predicted to have been collected; and

employing a second low vacuum system to maintain in the space between the primary and secondary containment



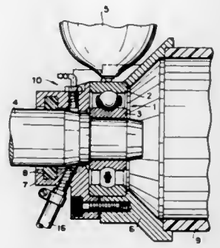
means a negative pressure which is of sufficient magnitude to keep the primary and secondary containment means in firm contact, thereby keeping the controlled volume space constant and making possible the accurate detection of very small leaks.

5,184,505

METHOD AND DEVICE FOR DETERMINING THE QUALITY OF A SPECIFIC LUBRICANT FOR APPLICATION IN ROLLING BEARINGS OF A SPECIFIC TYPE

Antonie van den Berg, Montfoort, Netherlands, assignor to SKF Industrial Trading & Development Co. B.V., Nieuwegein, Netherlands

Filed May 28, 1991, Ser. No. 706,228
Claims priority, application Netherlands, Jun. 14, 1990, 9001353
Int. Cl.[5] G01N *33/30, 29/02*
U.S. Cl. 73—53.05 **8 Claims**



1. A method for determining the quality of a lubricant used in roller bearing applications by measuring the extend to which noise occurs in the rotating roller bearing having an inner and outer race, said method comprising the steps of:

(1) applying an amount of lubricant to a roller bearing;

(2) rotating the inner race of a roller bearing using a rotatable rod inserted in the inner race of the roller bearing until the rod reacts with the bearing;

(3) recording the vibrations occurring in the bearing using a vibration recorder in contact with the immobile outer race of the bearing and determining a peak value;

(4) removing the lubricant entirely from the bearing using gas pressure,

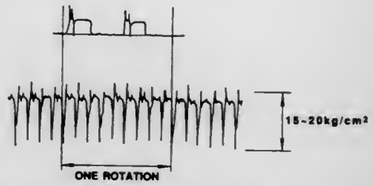
(5) repeating steps (1)-(4) several times.

5,184,506

TRANSMISSION INPUT SHAFT SPEED DETECTING APPARATUS UTILIZING OIL PUMP PRESSURE

Michio Asada, Shizuoka, Japan, assignor to Jatco Corporation, Japan

Filed Jun. 28, 1991, Ser. No. 723,220
Claims priority, application Japan, Jul. 6, 1990, 2-180189
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—118.1 **4 Claims**



1. An apparatus for use with a transmission including an input shaft, and an oil pump including a rotor having a number of vanes rotatable in synchronism with the input shaft to detect a speed of rotation of the input shaft, the apparatus comprising:

first means sensitive to an oil pressure discharged from the oil pump for producing an electrical signal having pulses caused by variations in a sensed oil pressure; and

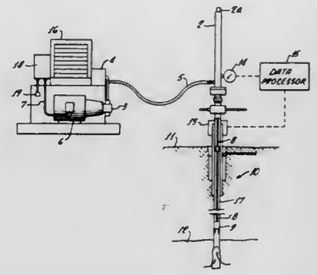
second means for calculating the input shaft rotation speed based upon the electrical signal.

5,184,507

SURFACE HYDRAULIC PUMP/WELL PERFORMANCE ANALYSIS METHOD

Charles L. Drake, Bakersfield, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 21, 1990, Ser. No. 633,243
Int. Cl.[5] E21B *47/00*
U.S. Cl. 73—151 **23 Claims**



1. A method for determining a performance characteristic of a well producing a resource fluid and extending from at or near a ground surface to a subsurface depth wherein a pump is located within said well and said pump is attached to a rod driven by a hydraulic actuator located at or near said ground surface, said method comprising:

supplying pressurized actuating fluid to said actuator;

actuating said hydraulic actuator wherein said actuating causes a cyclic motion of said rod and a pumping of said resource fluid;

measuring said actuating fluid pressure during at least one cyclic motion; and

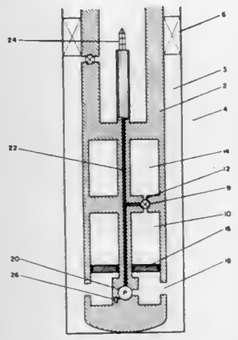
calculating said performance characteristic based at least in part upon said measured actuating fluid pressure in the absence of a resource fluid pressure measurement and a rod force measurement.

VOL 1147 ISS 2 FEB 9 1993 UMI

5,184,508
METHOD FOR DETERMINING FORMATION PRESSURE

Robert Desbrandes, Baton Rouge, La., assignor to Louisiana State University and Agricultural and Mechanical College, Baton Rouge, La.

Continuation-in-part of Ser. No. 538,825, Jun. 15, 1990, Pat. No. 5,095,745. This application Apr. 15, 1991, Ser. No. 685,137
Int. Cl.[5] E21B *49/08*
U.S. Cl. 73—152 **16 Claims**



1. A method for testing subsurface formations from a borehole containing compressed drilling fluid, which method comprises:

(a) positioning a drillstem down hole test tool down a borehole adjacent to the formation to be tested, said test tool containing: (i) an entry port, (ii) a chamber of known volume, (iii) a means for controlling the flow rate of the drilling fluid into the test tool, and (iv) a pressure measuring means;

(b) utilizing at least one packer to isolate an interval of borehole by expanding the packer and sealing the annular space between the test tool and the bore- hole;

(c) effectively controlling the flow rate of drilling fluid into the chamber of the test tool so that substantial instantaneous decompression of the drilling fluid does not occur;

(d) measuring chamber pressure at constant time intervals between about 0.1 and 10 seconds;

(e) stopping the flow rate of drilling mud into the chamber of the test tool when the pressure drops below the formation pressure;

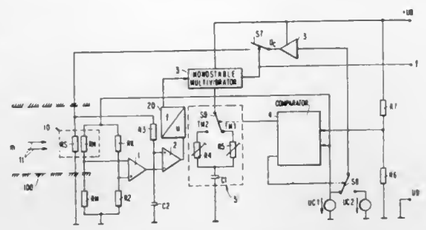
(f) letting the pressure stabilize, which stabilized pressure will be an indication of the formation pressure.

5,184,509
METHOD AND APPARATUS FOR MEASURING THE AIR FLOW IN THE AIR INTAKE PASSAGE OF AN INTERNAL COMBUSTION ENGINE

Wolfgang Kienzle, Hemmingen, and Josef Kleinhans, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 150,662, Dec. 10, 1987. This application Jan. 16, 1991, Ser. No. 641,689
Claims priority, application Fed. Rep. of Germany, May 9, 1986, 3615628
Int. Cl.[5] G01F *1/68*
U.S. Cl. 73—204.14 **4 Claims**

1. Method for measuring the air flow in the air intake passage of an internal combustion engine having an electric power supply, comprising the steps of directing the air flow against an electrically heated flow measuring member which is insensitive to direction of flow; thermally coupling said flow measuring member to a temperature-dependent branch of a resistance measuring bridge circuit; converting the unbalance voltage of said bridge circuit into an alternating signal having a frequency which is proportional to said unbalance voltage; periodically connecting at said frequency one of two sources of different constant voltages to said flow measuring member; sensing

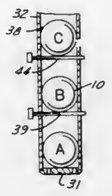


voltage level of said electric power supply; periodically connecting at said frequency the other source of constant voltage to said flow measuring member in response to a change of the sensed voltage level; and adjusting the duration of said periodic connections in dependency on said change of the sensed voltage level.

5,184,510
LIQUID LEVEL SENSOR

Michael D. Rossman, Canton, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 23, 1991, Ser. No. 812,326
Int. Cl.[5] G01F *23/28*; G01C *25/00*
U.S. Cl. 73—290 V **17 Claims**



1. A system for measuring the level of a liquid contained within a storage tank, comprising in combination:

a target for being buoyantly supported by the liquid within the tank;

guide means for coupling to and guiding the movement of said target as it is displaced by any change in level of the liquid, said guide means including a first end thereof for being inserted into the liquid and a second end spaced therefrom so as to be outside of the liquid;

position calibration means coupled to said guide means and comprising a first stop means adjacent said first end and a second stop means spaced adjacent said second end so as to define calibrated limits of travel for said target as it moves along said guide means;

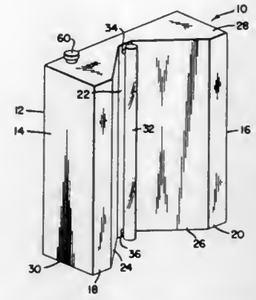
said guide means is removably coupled with the tank for allowing gravitational displacement and calibration of said target against said first stop means and against said second stop means; and

sensing means coupled to said guide means an in a known spatial relationship with the tank for acoustically sensing the distance to said target as it moves between said first and said second stop means, and thereby measuring the level of the liquid therein.

5,184,511
MEASURING TANK SIGHT GLASS

Peter S. Barrows, Yardley, Pa., and James A. Willis, Waverly Hall, Ga., assignors to FMC Corporation, Chicago, Ill.

Filed Oct. 18, 1991, Ser. No. 779,224
Int. Cl.[5] G01F *23/02*
U.S. Cl. 73—323 **4 Claims**



1. A tank capable of providing a consistent indication of liquid contained therein even when in an askew orientation; comprising:

a rear wall;

left and right side walls extending from said rear wall;

a front wall extending between said side walls and having a generally concave shape;

a sight glass affixed to said front wall adjacent the nearest approach thereof to said rear wall and communicating with the interior of said tank, said sight glass having a longitudinal centerline;

the volume of said tank to the left of a first plane passing through said centerline perpendicular to said rear wall being equal to the volume of the said tank to the right of said first plane; and

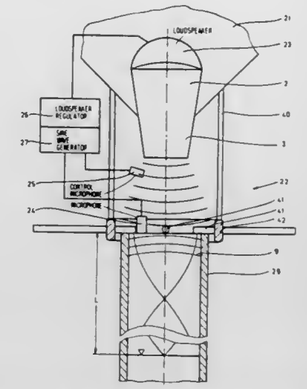
the volume of the tank to the rear of a second plane passing through said centerline parallel to said rear wall being equal to the volume of the tank to the front of said second plane, whereby the level of the liquid in said sight glass for a given volume of liquid in said tank will be the same even though the tank is canted.

5,184,512
MEASURING THE LENGTH OF A COLUMN OF FLUID IN A TUBE

Armin W. Hrdlicka, Anzengruberstrasse 34/4, A-9020 Klagenfurt; Wolfgang Pribyl, Schiesstattgasse 14b, A-8010 Graz; Hermann Schuster, Hochleitenweg, A-8061 St. Radegund; Klaus Loibner, Brunnbodensiedlung 4, A-8101 Gratkorn, and Harald Koffler, Strassgangerstrasse 15, A-8020 Graz, all of Austria

Division of Ser. No. 462,032, Jan. 8, 1990, Pat. No. 5,099,691. This application Dec. 3, 1991, Ser. No. 801,892
Claims priority, application Austria, Jan. 16, 1989, 68/89; Oct. 16, 1989, 2375/89
Int. Cl.[5] G01N *9/24*
U.S. Cl. 73—584 **7 Claims**

1. Apparatus for measuring the length of a column of fluid in a tube, comprising a resonance chamber, a loudspeaker mounted in the resonance chamber, the resonance chamber having a constricted tubular acoustic exit aperture, a spacer adapted to rest against an open end of said tube and to position said resonance chamber relative to said tube such that said constricted acoustic exit aperture of said resonance chamber is spaced a substantial distance from said open end of said tube and is directed towards said open end of said tube, and a microphone carried by said spacer in a position such that when said spacer rests against said open end of said tube, said microphone is at said open end of said tube and said loudspeaker is spaced from said open end of said tube a distance greater than said substantial distance, the loudspeaker generating in the tube a

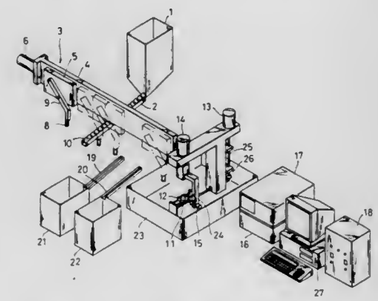


standing wave having nodes and antinodes and the microphone measuring said nodes or antinodes to determine said length.

5,184,513
AUTOMATIC ULTRASONIC TESTING APPARATUS FOR DETECTING FLAWS OF STRUCTURAL BALLS

Shigeo Nishioka, Nagoya, and Koji Fushimi, Gifu, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Sep. 27, 1990, Ser. No. 588,878
Claims priority, application Japan, Sep. 29, 1989, 1-254421
Int. Cl.[5] G01M *13/04*; B25J *15/08*
U.S. Cl. 73—593 **5 Claims**



1. An immersion type automatic ultrasonic testing apparatus for detecting flaws of a structural ball which comprises:

a tank for containing a liquid medium capable of transmitting an ultrasonic wave,

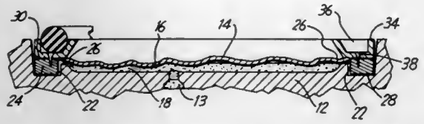
a ball rotating means for rotating a ball to be tested,

an ultrasonic flaw detection means for detecting flaws in the ball while swiveling a probe around the ball rotated by the ball rotating means or rotating the ball spirally by the ball rotating means with or without swiveling the probe, and

a feeding and removing means for feeding the ball to the position of the ball rotating means and removing the tested ball from the ball rotating means to a predetermined position, the feeding and removing means comprising a holding means having an air cylinder and a tip with a pair of holder claws and a pair of side support claws, wherein said air cylinder actuates said pair of holder claws for holding the ball.

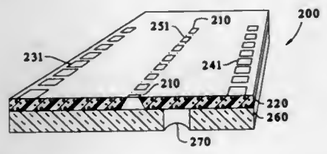
VOL 1147 ISS 2 FEB 9 1993 UMI

5,184,514
CORROSION RESISTANT ISOLATOR
Gerald R. Cucci, Minneapolis, and Steven M. Lemire, Chaska, both of Minn., assignors to Rosemount Inc., Minn.
Filed Jul. 12, 1991, Ser. No. 729,489
Int. Cl.[5] G01L *7/08, 13/02*
U.S. Cl. 73—706 **10 Claims**



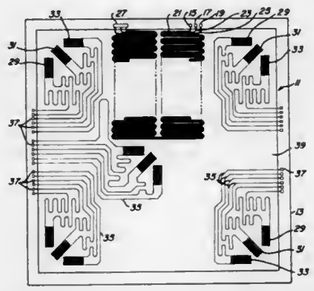
1. A pressure isolator comprising a body made of a first metallic material, a thin flexible diaphragm made of a second metallic material not compatible with direct welding to the first metallic material, a support ring made of the same material as the diaphragm mounted on said body surrounding an isolator opening, an annular peripheral weld sealing and joining the support ring and the diaphragm together around the periphery of the diaphragm to provide a sealed cavity relative to the body and the isolator opening, and an annular weld ring forming an annular cavity overlying the diaphragm, the weld ring defining a recess to receive an annular compressible seal for a process fluid connection, the weld ring being made of the same material as the diaphragm and the support ring, said weld ring having a base wall through which the annular peripheral weld passes, and said weld also passing through the diaphragm and into the support ring.

5,184,515
SINGLE DIAPHRAGM TRANSDUCER WITH MULTIPLE SENSING ELEMENTS
Stephen C. Terry, and John H. Jerman, both of Palo Alto, Calif., assignors to IC Sensors, Inc., Milpitas, Calif.
Continuation of Ser. No. 662,823, Mar. 1, 1991, abandoned, which is a continuation of Ser. No. 369,899, Jun. 22, 1989, Pat. No. 5,058,435. This application Jun. 29, 1992, Ser. No. 905,219
Int. Cl.[5] G01L *7/08, 9/06*
U.S. Cl. 73—727 **13 Claims**



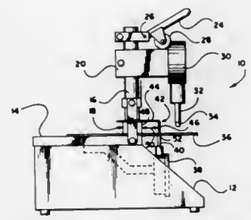
11. A transducer comprising:
a body having a first surface and a second surface opposed to the first surface;
an elongate cavity in the first surface and forming, in conjunction with the second surface, an elongate diaphragm, said diaphragm having an aspect ratio greater than 5;
at least three pressure sensors, each sensor comprising four pressure sensing elements, spaced along the length of the diaphragm, each sensor having an output means for providing a signal responsive to the local deflection of the diaphragm in the location of the sensing element, the output means for each pressure sensor on the diaphragm being electrically and mechanically isolated and independent of the other output means of the other pressure sensors on the diaphragm;
wherein said pressure sensors are disposed such that each of the pressure sensors is spaced from adjacent pressure sensors a predetermined distance so as to control measurement interference among said sensors, said pressure sensing elements of each said sensor being mechanically coupled via a location of said pressure sensing elements on the diaphragm.

5,184,516
CONFORMAL CIRCUIT FOR STRUCTURAL HEALTH MONITORING AND ASSESSMENT
Ernest S. Blazic, Hawthorne; Robert A. Bueker, Anaheim Hills; Lynn O. Waters, Hermosa Beach; William D. Farwell, Thousand Oaks, and Joseph P. Smalanskas, Westchester, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jul. 31, 1991, Ser. No. 738,389
Int. Cl.[5] G01N *19/08*
U.S. Cl. 73—799 **20 Claims**



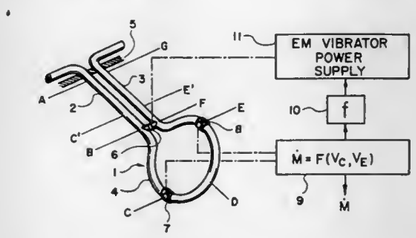
1. A structural monitoring system for detecting strain and cracks in a surface comprising:
at least a first length of planar serpentine trace;
support means, affixable to a surface, for supporting said at least a first planar serpentine trace and for transmitting strain and crack forces from said surface to said at least a first planar serpentine trace;
circuit means, connected to said at least a first planar serpentine trace, for measuring resistance changes in said at least a first planar serpentine trace; and,
protection layer means, affixed to said support means and said at least a first planar serpentine trace, for protecting said at least a first length of serpentine trace and for supporting said circuit means.

5,184,517
PRINTED CIRCUIT BOARD TEST FIXTURE AND METHOD
Robert Kelzer, 2111 E. Pinetree Blvd., Thomasville, Ga. 31792
Filed Nov. 1, 1991, Ser. No. 786,303
Int. Cl.[5] G01N *3/20*
U.S. Cl. 73—851 **2 Claims**



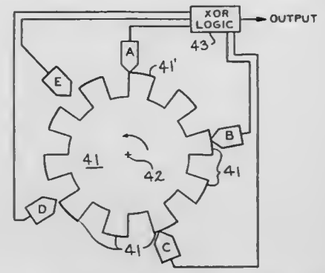
1. A printed circuit board test fixture for determining the breaking force for and deflection of a printed circuit board when the printed circuit board is broken along pre-existing score lines, the test fixture comprising:
a. frame means;
b. means for clamping the printed circuit board under test to the frame in an initial position;
c. target means attached to the frame for locating the score line on the printed circuit board with respect to the clamp means;
d. force exerting means attached to the frame and operable to exert a force on the circuit board to produce a deflection of the circuit board from the initial position to a final position at which final position the printed circuit board breaks at the score line;
e. force measuring means associated with the force exerting means for measuring the deflecting force exerted on the printed circuit board; and
f. deflection measuring means that measures the deflection of the printed board from its initial position to its final position.

5,184,518
METHOD FOR MEASURING MASS FLOW RATE
Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005
Continuation-in-part of Ser. No. 643,420, Jan. 22, 1991. This application Jan. 30, 1991, Ser. No. 648,121
Int. Cl.[5] G01F *1/84*
U.S. Cl. 73—861.38 **5 Claims**



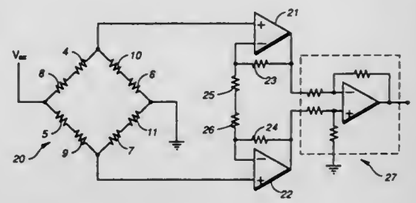
1. A method for measuring mass flow rate of media moving through a conduit with two extremities restrained from experiencing lateral displacement, comprising in combination:
a) generating a primary flexural vibration of the conduit in one of a symmetric and an antisymmetric mode with respect to a midsection of the conduit by exerting a force laterally thereto, said primary flexural vibration of the conduit creating a secondary flexural vibration of the conduit out of phase relative to the primary flexural vibration of the conduit as a result of dynamic interaction between the primary flexural vibration of the conduit and motion of media moving through the conduit;
b) detecting resultant flexural vibration of the conduit at a first section thereof by using a first motion sensor providing a first alternating electrical signal generated by the resultant flexural vibration of the conduit at said first section thereof, and resultant flexural vibration of the conduit at a second section thereof by using a second motion sensor providing a second alternating electrical signal generated by the resultant flexural vibration of the conduit at said second section thereof;
c) taking a first numerical value of said first alternating electrical signal at an instant when numerical value of said second alternating electrical signal is equal to zero;
d) taking a second numerical value of said first alternating electrical signal at another instant when numerical value of said second alternating signal reaches a peak value; and
e) determining mass flow rate of media moving through the conduit as a function of ratio between said first and second numerical values of the first alternating electrical signal.

5,184,519
HIGH RESOLUTION FLOW METER
Gary J. Ciarelli, Westland, and J. Allan Lunk, Howell, both of Mich., assignors to Illinois Tool Works, Inc., Glenview, Ill.
Filed Oct. 18, 1990, Ser. No. 599,650
Int. Cl.[5] G01F *3/10*
U.S. Cl. 73—861.77 **8 Claims**



1. In a positive displacement liquid flow meter having two gears mounted to rotate in overlapping cylinders, said gears having teeth which mesh in the region where said cylinders overlap, input and output chambers located on opposite sides of said meshed gear teeth, means for delivering liquid to said input chamber and means for receiving liquid from said output chamber, and means for sensing movement of said gear teeth for measuring the flow of liquid through said flow meter, the improvement wherein said sensing means includes a plurality of sensor spaced for detecting movement of said gear teeth, said sensors having angular spacings around at least one of said gears from a predetermined reference location for sequentially sensing different ones of said teeth as said gears rotate through an increment equal to 360° n where n= the number of teeth on each gear.

5,184,520
LOAD SENSOR
Kazufumi Naito, Shiga, Japan, assignor to Ishida Scales Mfg. Co., Ltd., Shiga, Japan
Filed Oct. 11, 1990, Ser. No. 595,430
Claims priority, application Japan, Oct. 18, 1989, 1-272285
Int. Cl.[5] G01D *3/04*
U.S. Cl. 73—862.623 **19 Claims**

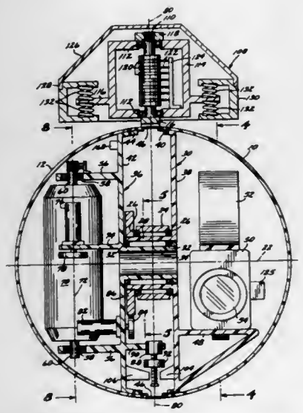


7. A load sensor comprising
a load-sensitive element having a surface,
a bridge circuit with strain gauges formed on said surface of said load-sensitive element, said bridge circuit having signal output terminals, and
a high input impedance amplifier circuit connected to said output terminals of said bridge circuit, said high input impedance amplifier circuit including a temperature-sensitive element such that the first-order temperature dependence and the second-order temperature dependence of signals outputted from said bridge circuit are respectively cancelled by the first-order temperature dependence and

VOL 1147 ISS 2 FEB 9 1993 UMI

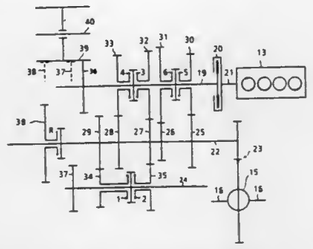
the second-order temperature dependence of said high input impedance amplifier circuit, said temperature dependence being all measured from a specified reference temperature level.

5,184,521
GYROSCOPICALLY STABILIZED APPARATUS
Nelson Tyler, 15801 Royal Oak Rd., Encino, Calif. 91436
Filed Nov. 18, 1991, Ser. No. 794,000
Int. Cl.[5] G01C *19/26, 19/30;* G03B *17/00*
U.S. Cl. 74—5.34 **31 Claims**



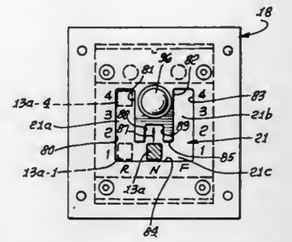
1. A gyroscopically stabilized apparatus for aiming an instrument at a target object, the apparatus comprising:
hub shaft means including a pair of hub shafts disposed along a first axis and having opposite extremities, respectively;
an instrument platform for supporting an instrument;
a hub assembly including first bearing means defining the first axis and supporting the hub assembly upon the hub shaft means for rotation of the hub assembly about the first axis, the hub assembly including second bearing means defining a second axis perpendicular to the first axis and supporting the instrument platform upon the hub assembly for rotation of the instrument platform along a rotational path extending about the second axis;
a gyro platform including a plurality of gyroscopes tending in operation to stabilize the gyro platform in space;
third bearing means supporting the gyro platform upon the instrument platform for rotation of the gyro platform along a rotational path extending about the second axis;
yoke means coupled to the hub shaft means and comprising a yoke having a half circle configuration, a midportion and opposite extremities, and coupled at its midportion to the support means, and coupled at its opposite extremities to the opposite extremities of the pair of hub shafts, and located outwardly of the rotational paths of the instrument platform and the gyro platform whereby the instrument platform and the gyro platform are rotatable about the first and second axes without engaging the yoke means; and
support means coupled to the yoke means for supporting the hub assembly for rotation of the hub assembly about a third axis perpendicular to the first and second axes.

5,184,522
GEARBOX FOR MOTOR VEHICLE
Kjell Nordkvist, Södertälje, Sweden, assignor to Saab Automobile Aktiebolag, Sweden
PCT No. PCT/SE91/00130, § 371 Date Oct. 17, 1991, § 102(e) Date Oct. 17, 1991, PCT Pub. No. WO89/03946, PCT Pub. Date May 5, 1989
PCT Filed Feb. 21, 1991, Ser. No. 768,605
Claims priority, application Sweden, Feb. 22, 1990, 9000628
Int. Cl.[5] F16H *3/08*
U.S. Cl. 74—359 **18 Claims**



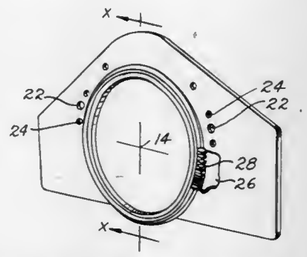
1. A gearbox for a motor vehicle comprising:
first and second parallel main shafts, one of which constitutes an input shaft and the other of which constitutes an output shaft;
a first plurality of rotatable gears mounted on the first shaft and a second plurality of rotatable gears mounted on the second shaft; each gear of said first plurality being in operative engagement with an individual gear of the second plurality, with an individual gear of said first plurality and the gear of the second plurality in operative engagement therewith constituting an individual gear wheel pair;
first coupling means for selectively coupling and uncoupling each of said gear wheel pairs between the first and second shafts for transmitting rotation of the input shaft to the output shaft through engaged gears of the first and second pluralities;
a first side shaft, at least one side gear mounted on the first side shaft to normally be rotatable with respect thereto, each said side gear being in operative engagement with a different second gear of the second plurality for coordinated rotation therewith;
second coupling means for selectively coupling and uncoupling each of said side gear and its operatively engaged gear of said second plurality to the first side shaft and the second shaft for transmitting rotation of the first side shaft to the second shaft through the side gear and the gear of the second plurality in operative engagement therewith;
a first gear mounted on and rotatable in unison with the first shaft; a second gear operatively coupled with the first gear for coordinated rotation therewith; said second gear mounted on and rotatable in unison with the first side shaft;
a second side shaft; a rotatable fourth gear mounted on the second side shaft; the first and second gears being in operative engagement with the fourth gear, whereby the first gear on the first shaft transmits rotation to the fourth gear and the lattern gear transmits rotation to the second gear on the first side shaft;
selective operation of the second coupling means drivingly couple a selected said side gear to said first side shaft to form a drive gear train between the first and second main shafts, which drive gear train includes a series arrangement of said first gear, said fourth gear, said second gear, the selected side gear, and the gear of said second plurality that is in operative engagement with said selected side gear.

5,184,523
TRANSMISSION CONTROL EMPLOYING BI-DIRECTIONALLY GUIDED HANDLE, WITH LOCKING
Mark Nyzedatny, Temple City, Calif., assignor to Adams Rite Manufacturing Company, City of Industry, Calif.
Filed Mar. 18, 1992, Ser. No. 853,418
Int. Cl.[5] G05G *9/00;* B60K *20/00*
U.S. Cl. 74—471 XY **20 Claims**



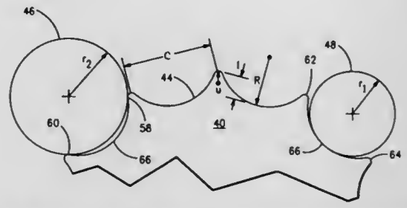
1. In a control mechanism to control endwise displacement of first and second output member in response to variable positioning of an input member, the combination comprising:
a) a frame,
b) a first pivotal part carried by the frame to pivot about a first axis, the first output member connected to the first part,
c) a second pivotal part carried by the first part to pivot about a second axis, the second output member connected to the second part,
d) a control handle connected to the second pivotal part to pivot with said parts and to control pivoting thereof,
e) guide means on the frame to guide said pivoting of at least one of said handle and parts,
f) and lock means on the frame to releasably lock said one of the handle and parts in a lock position to which it is pivotally movable by the handle in response to guiding by said guide means.

5,184,524
AUTOMATIC TRANSMISSION FLEXPLATE SHIELD
Michael D. Senia, Debary, Fla., assignor to Star Remanufacturing, Inc., Cocoa, Fla.
Filed Mar. 11, 1992, Ser. No. 849,498
Int. Cl.[5] F16P *1/00*
U.S. Cl. 74—609 **6 Claims**



1. A safety shield for an engine-transmission assembly formed from material having sufficient ductility to absorb the energy of flexplate wheel and starter ring fragments without breaking, said safety shield comprising a base portion of substantially trapezoidal form, a circular cup-shaped depression in a generally central location on said base portion, said depression generating a generally cylindrical wall configured to overly said flexplate wheel and its components and terminating in a flange portion generally perpendicular to an engine shaft, and formed around an opening for passing an engine shaft and operating to absorb and disburse the energy of high-speed fragments.

5,184,525
MECHANISM FOR POSITIONING A CARRIER
Charles A. Brantingham, St. Paul, and Timothy P. Sheridan, St. Louis Park, both of Minn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.
Filed Apr. 15, 1992, Ser. No. 869,561
Int. Cl.[5] B23Q *17/00*
U.S. Cl. 74—820 **7 Claims**



1. A mechanism for precise positioning of a mobile carrier in an apparatus including a support structure, the mechanism comprising:
a positioning element affixed to a mobile carrier disposed in a support structure, the positioning element having a rotation axis and a plurality of seating sections located at a constant radium with arcuate spacing about the rotation axis;
a pair of bearing elements consisting of a larger bearing element and a small bearing element with relative spacing therebetween, the bearing elements being mounted on the support structure in a plane the same as that of the positioning element, and the larger bearing element having a larger diameter relative to the smaller bearing element having a smaller diameter; and
urging means for urging the positioning element into a seating position against the bearing elements while allowing sufficient rotation of the positioning element to effect seating in the seating position at a selected rotational orientation of the carrier, the arcuate spacing and the relative spacing being selected cooperatively so that, in the seating position, the positioning element is being urged simultaneously against the larger bearing element and the smaller bearing element;
each seating section including a pair of seats substantially at a fixed radius from the rotation axis, the seats each having a convex surface facing outwardly from the rotation axis, and further having a chordal separation chosen so that, with the positioning element being urged against the larger bearing element in the seating position, both seats bear against the larger bearing element;
each seating section further having an intermediate surface located centrally between the seats, the intermediate surface facing outwardly form the rotation axis at a location radially inward of the seats by a radial increment sufficiently large so that, with both seats bearing against the larger bearing element in the seating position, there is no contact between the intermediate surface and the larger bearing element; and
the smaller diameter, the chordal separation and the radial increment being selected cooperatively so that, with a further seating section of the positioning element being urged against the smaller bearing element in the seating position, an intermediate surface bears against the small bearing element, whereby the carrier is positioned by a three point contact of the positioning element.

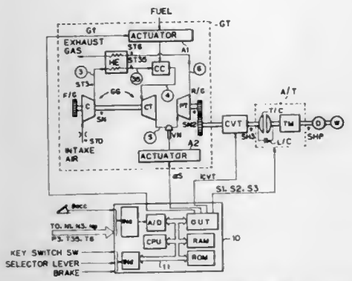
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5,184,526

AUTOMATIC SPEED CHANGING SYSTEM FOR TWO-SHAFT TYPE GAS TURBINE ENGINE

Atsushi Watanabe, Sunto, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 5, 1991, Ser. No. 710,697
Claims priority, application Japan, Jun. 7, 1990, 2-147301
Int. Cl.[5] F16H *59/00*
U.S. Cl. 74—861 **2 Claims**



1. An automatic speed changing system for a two-shaft type gas turbine engine having a gas generator including a compressor and a compressor turbine arranged coaxially on a first shaft with sid copressor, a combustion chamber, a variable nozzle, and a power turbine rotatable about a turbine shaft independently of the first shaft of said compressor and said compressor turbine, said system comprising:

an automatic speed change mechanism disposed between an output shaft of said power turbine and an input shaft of a power transmission device, said automatic speed change mechanism including a reduction gear connected to said output shaft of said power tube and a continuously variable transmission connected to an output shaft of said reduction gear, a reduction ratio of said automatic speed change mechanism being variable depending upon the engine driving condition and wherein sid continuously variable transmission has an input shaft and an output shaft an input pulley provided at an input shaft side and having a variable spacing between a pair of flanges, an output pulley provided at an output shaft side and having a variable spacing between a pair of flanges, and a V-shaped belt extending over said input and output pulleys, said spacings of said pairs of flanges in said input and output pulleys being adjusted to thereby vary effective diameters of said input and output pulleys to adjust a speed change ratio when transferring a rotation from said input shaft to sid output shaft.

5,184,527

ENGINE CONTROL SYSTEM FOR AN AUTOMOTIVE POWER TRAIN INCLUDING A TORQUE CONVERTER

Hideo Nakamura, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 6, 1991, Ser. No. 710,177
Claims priority, application Japan, Jun. 6, 1990, 2-146088
Int. Cl.[5] B60K *17/34*
U.S. Cl. 74—866 **12 Claims**

1. In a vehicle having an engine and a transmission which is operatively connected to the engine by way of a torque converter, an engine control system comprising:

means for sensing accelerator pedal depression;

means for sensing torque converter output shaft rotational speed;

means for sensing transmission gear ratio;

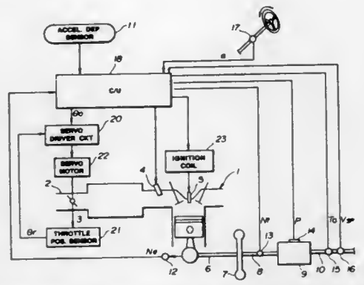
means for sensing vehicle drive shaft torque;

means responsive to the accelerator depression sensing means for determining a target vehicle drive shaft torque;

means responsive to an engine control amount and a predetermined control schedule which represents the operation of the engine and the transmission, for determining an expected vehicle drive shaft torque;

means for determining a difference between the vehicle drive shaft torque and the expected vehicle drive shaft torque;

means for correcting the target vehicle drive shaft torque based on the difference between the vehicle drive shaft torque and the expected vehicle drive shaft torque and producing a corrected target drive shaft torque value; and



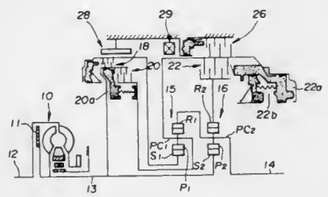
means which is responsive to the corrected target vehicle drive shaft torque value, the transmission gear ratio and the torque converter output shaft rotational speed, for selecting pre-memorized data from a memory on the basis of predetermined vehicular operating parameters, and using the pre-memorized data to determine the engine control amount which is required to bring the vehicle drive shaft torque and the target vehicle drive shaft torque value, into agreement.

5,184,528

SHIFT TIMING CONTROL FOR AUTOMATIC TRANSMISSION

Tatsufumi Mochizuki, Shizuoka, Japan, assignor to Jatco Corporation, Japan

Filed Oct. 8, 1991, Ser. No. 772,861
Claims priority, application Japan, Oct. 9, 1990, 2-271659; Oct. 9, 1990, 2-271660
Int. Cl.[5] B60K *41/06*
U.S. Cl. 74—869 **8 Claims**



1. In an automatic transmission:

a first frictional engagement element having a first hydraulic chamber, said first hydraulic chamber being arranged to engage said first frictional engagement element when said first hydraulic chamber undergoes hydraulic pressure;

a second frictional engagement element having a second hydraulic chamber and a third hydraulic chamber, said second hydraulic chamber being arranged to engage said second frictional engagement element when said second hydraulic chamber undergoes hydraulic pressure and when said third hydraulic chamber fails to undergo hydraulic pressure, said third hydraulic chamber being arranged to release said second frictional engagement element regardless of a working state of hydraulic pressure within said second hydraulic chamber when said third hydraulic chamber undergoes hydraulic pressure;

a third frictional engagement element having a fourth hydraulic chamber, a fifth hydraulic chamber and a sixth hydraulic chamber; said fourth hydraulic chamber being arranged to engage said third frictional engagement element when said fourth hydraulic chamber undergoes hydraulic pressure and when said fifth hydraulic chamber fails to undergo hydraulic pressure, said fifth hydraulic chamber being arranged to release said third frictional engagement element regardless of a working state of hydraulic pressure within said fourth hydraulic chamber when said fifth hydraulic chamber undergoes hydraulic pressure and when said sixth hydraulic chamber fails to undergo hydraulic pressure, said sixth hydraulic chamber being arranged to engage said third frictional engagement element when said sixth hydraulic chamber undergoes hydraulic pressure;

means for defining a first drain port;

a first valve having a second drain port; and

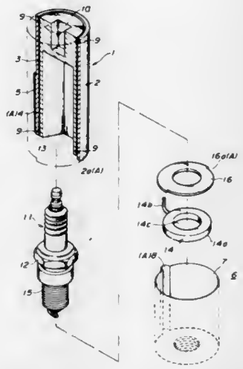
a second valve disposed between said third hydraulic chamber and said first drain port defining means, said second valve selectively connecting said first hydraulic chamber with said third hydraulic chamber so as to drain off hydraulic fluid within said first and third hydraulic chambers from said first drain port, said second valve selectively connecting said third hydraulic chamber with said sixth hydraulic chamber so as to drain off hydraulic fluid within said third and sixth hydraulic chambers from said second drain port.

5,184,529

TOOL FOR LOOSENING OR TIGHTENING SPARK PLUG

Yoshiaki Matsubara; Kouzou Amano, and Takao Kojima, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Feb. 12, 1992, Ser. No. 834,040
Claims priority, application Japan, Feb. 14, 1991, 3-043009
Int. Cl.[5] B25B *13/06*
U.S. Cl. 81—125 **12 Claims**



1. A tool for loosening or tightening a spark plug while interposing a pressure sensor between the spark plug and a cylinder head, comprising:

concentric, relatively rotatable inner and outer cylinders;

said inner cylinder having engaging means for engaging the spark plug and thereby rotating together therewith for loosening or tightening the spark plug; and

said outer cylinder having preventing means for preventing the pressure sensor from rotating relative tot eh cylinder head when the spark plug is loosened or tightened;

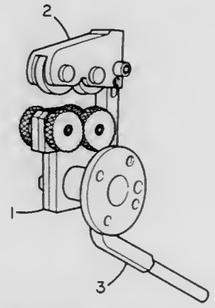
wherein said preventing means comprises fist locking means for lockingly engaging said outer cylinder with the cylinder had and second locking means for lockingly engaging said outer cylinder with a gasket which is interposed between the spark plug and the pressure sensor.

5,184,530

OFFSET GEARED NUTRUNNER ATTACHMENT

Donald E. Galat, 29716 Oakgrove, St. Clair Shores, Mich. 48082

Filed Mar. 4, 1991, Ser. No. 656,757
Int. Cl.[5] B25B *17/00*
U.S. Cl. 81—57.21 **3 Claims**



1. A power operated tool for use in adjusting vehicle tie rods comprising:

a gear box frame having left and right portions, each portion having two cavities on an inner surface thereof adjacent to one end of the portions, a second cavity positioned below and in communication with each of said two cavities, a third cavity adjacent another end of the portions and in communication with the second cavity;

a set of driven gears secured to appropriate gear shafts and mounted in the two cavities, one in each of the cavities, an idler gear mounted in the second cavity for engagement with each of the driven gears, a driving gear mounted in the third cavity and in engagement with the idler gear for providing driving torque to the idler gear and to the driven gears; the driving gear extending through one of the frame portions for attachment to a power source;

a knurled wheel mounted to each driven gear shaft, one on each end of the shaft;

a handle assembly having an elongated handle member and a pair of clevis members, an aperture in each of the clevis members;

the gear box frame having opposing apertures in each frame portion that are aligned with the apertures in each of the clevis members, a retaining means to pivotally mount the gear box frame to the handle assembly; said retaining means fitting into the apertures in the clevis members and the apertures in the frame portions;

an upper idler assembly mounted on an end of the handle in opposition to the gear box frame, a pair of wheels mounted on the upper idler assembly in a position opposite to the knurled wheels;

biasing means on the gear box frame to secure the gear box frame in either a working or disengaged position.

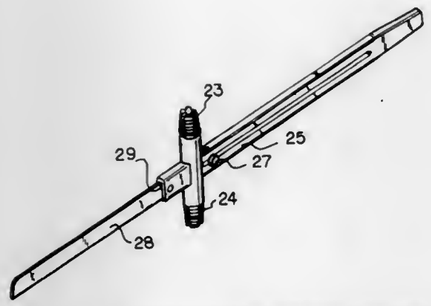
VOL 1147 ISS 2 FE 9 1993 UMI

5,184,531

SPRINKLER BROKEN TUBE REMOVAL APPARATUS

Leonard Q. Wickson, and Dianne M. Wickson, both of 1437 Cottonwood St., Ontario, Calif. 91761

Filed Mar. 26, 1992, Ser. No. 858,043
Int. Cl.[5] B25F *1/00*
U.S. Cl. 81—441 2 Claims



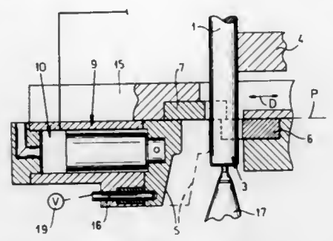
1. A sprinkle broken tube removal apparatus, comprising,
an elongate plate housing, the plate housing including a lower distal end spaced from an upper distal end, the plate housing including a first upper side spaced from, parallel to, and coextensive with a second upper side, wherein the first upper side and the second upper side extend along the plate housing terminating in a spaced relationship relative to the lower distal end, with the first upper side and the second upper side orthogonally oriented relative to the lower distal end,
and
a handle member orthogonally and fixedly directed through the first upper side and the second upper side,
and
the plate housing further including a first canted side directed from the first upper side to the lower distal end, and a second canted side directed from the second upper side to the lower distal end, wherein the first canted side and the second canted side define an acute angle therebetween,
and
the handle member includes a first threaded tap end of a first size and a second threaded tap end of a second size on opposed handle ends of the handle,
and
the plate housing includes a housing top wall between the first upper side and the second upper side, and a top wall slot longitudinally directed through the plate housing between the first upper side and the second upper side, with the housing including a housing cavity directed coextensively through the plate housing from the upper distal end to the first canted side and the second canted side, with the housing cavity in communication with the top wall slot, and a slider member slidably mounted within the top wall slot, and a saw blade slidably mounted within the housing cavity, with the slider member fixedly mounted to the saw blade adjacent a rear distal end of the saw blade, and the upper distal end including an upper end opening permitting projection of the saw blade exteriorly of the housing upon projection of the slider member along the top wall slot.

5,184,532

SHEAR SYSTEM FOR CUTTING PROFILE STEEL RODS

Kurt Wengenroth, Wuppertal, Fed. Rep. of Germany, assignor to Rolf Peddinghaus, Ennepetal, Fed. Rep. of Germany

Filed Jan. 17, 1992, Ser. No. 822,466
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1991, 4101643
Int. Cl.[5] B23D *15/04*
U.S. Cl. 83—23 10 Claims



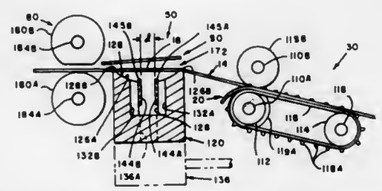
1. In a method of operating a shear where
a workpiece is pressed by a holddown against a stationary blade so as to leave a piece to be cut off projecting past the blade,
a movable blade is displaced in a forward cutting direction past the stationary blade to cut off the piece,
a cut-off holder is pressed in a second direction opposite to the forward cutting direction against the piece by a fluid-powered holding cylinder and moves back in the forward cutting direction as the piece is cut off, the improvement comprising the step of:
substantially completely relieving pressure in the cylinder as soon as the movable blade starts to cut through the workpiece, whereby the cut-off holder does not substantially resist forward movement in the forward cutting direction.

5,184,533

METHODS AND APPARATUS FOR CUTTING SHEETS FROM A WEB

Roman M. Golicz, Clinton, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 4, 1990, Ser. No. 576,766
Int. Cl.[5] B26D *7/18, 1/46*
U.S. Cl. 83—24 30 Claims



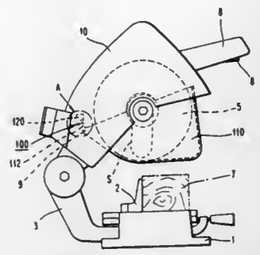
21. A method of processing an elongate web, comprising:
(a) continuously feeding said web in a path of travel;
(b) stopping a portion of said web from being fed in and deflecting said web out of said path of travel; and
(c) providing a band blade cutter including parallel spaced blade runs; and
(d) causing said blade runs to cut a transversely-extending section and thus a sheet from said web while said web is stopped and deflected.

5,184,534

OPERATION SAFETY DEVICE FOR A PORTABLE POWER TOOL

Sang H. Lee, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Japan

Filed Nov. 15, 1991, Ser. No. 792,380
Claims priority, application Rep. of Korea, Nov. 16, 1990, 90-18586; Nov. 16, 1990, 90-18588
Int. Cl.[5] B27G *19/02*
U.S. Cl. 83—397 6 Claims



1. A cutting instrument comprising a power-driven blade; and a movable blade carrier for moving said blade along an advancement stroke in order to approach and cut through a workpiece; said blade carrier comprising a first portion having a first guard disposed around said blade, and a second portion having a second guard for said blade; said second portion being mounted for movement relative to said first portion during said advancement stroke; and an electrical safety switch means having a safety position for preventing said blade from rotating at its cutting speed, and an operating position permitting said blade to rotate at its cutting speed; said safety switch means being normally disposed in its safety position when said blade is out of contact with a workpiece during said advancement stroke, said safety switch means arranged to be moved to its operating position in response to movement of said second portion relative to said first portion during said advancement stroke, said safety switch means including first and second switch parts connected to said first and second portions, respectively, said second switch part being fixedly joined to said second portion for movement therewith relative to said first switch part in a first direction into said operating position and in a second direction into said safety position, wherein said second switch part moves along a travel path relative to said first switch part and makes electrical contact with said first switch part during only a portion of said travel path.

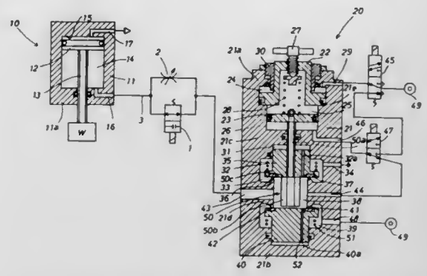
5,184,535

SPEED CONTROL DEVICE FOR A PNEUMATIC CYLINDER

Takashi Kimura, 84-7, Mizukiri-cho 5-chome, Kita-ku, Nagoya-shi, Aichi-ken, Japan

Filed Jun. 24, 1991, Ser. No. 719,759
Claims priority, application Japan, Jul. 13, 1990, 2-185908; May 13, 1991, 3-033145[U]
Int. Cl.[5] F15B *11/08*
U.S. Cl. 91—443 10 Claims

1. In a speed controlling apparatus for a pneumatic cylinder, including a pneumatic piston and a piston rod, having a pneumatic path comprising an air supply passage thereto and an air exhaust passage therefrom and including a high relief type pressure reducing valve having a first pressure chamber being connected with an air pressure supply, a second pressure chamber communicating with a first port of the pneumatic cylinder, and an exhaust chamber being connected to the environment, the improvement comprising:
a) control valve means for connecting and disconnecting the second pressure chamber to one of the first pressure chamber and the exhaust chamber, the second pressure chamber being connectable to a plurality of pressure level sources, and said control valve means varying a flow connection between the second pressure chamber and one of the first pressure chamber and the exhaust chamber when a slide resistance of the piston rod changes during the piston stroke due to an external force acting on the



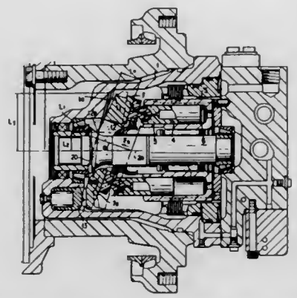
piston rod thereby to improve the speed control of the piston rod; and
b) speed controlling means disposed in the pneumatic path for selectively changing a mode of operation therethrough from an air pressure to an air mass flow.

5,184,536

SWASH PLATE TYPE PISTON PUMP/MOTOR

Mitsuru Arai, Kawasaki, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusbo, Japan

PCT No. PCT/JP90/01523, § 371 Date Jul. 12, 1991, § 102(e) Date Jul. 12, 1991, PCT Pub. No. WO91/07590, PCT Pub. Date May 30, 1991
PCT Filed Nov. 21, 1990, Ser. No. 721,556
Claims priority, application Japan, Nov. 22, 1989, 1-301822
Int. Cl.[5] F01B *13/04;* F04B *1/26*
U.S. Cl. 91—505 5 Claims

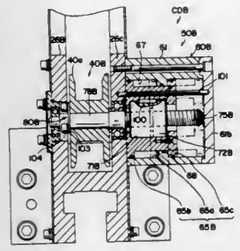


1. A swash plate type piston pump/motor comprising: a housing having a swash plate receiving surface; a rotating shaft having an axis; a cylinder block mounted within the housing so as to rotate freely together with the rotating shaft; a plurality of pistons slidably inserted in a plurality of cylinder holes formed in the cylinder block in parallel with said rotating shaft so as to define a plurality of cylinder chambers; and a swash plate for holding respective base ends of the pistons in such a way as to allow the base ends to slidably move freely along a slanting surface formed in a front surface of said swash plate, the swash plate having a first contact surface and a second contact surface formed on a rear surface of said swash plate so as to intersect with each other at a predetermined angle, said swash plate being held within said housing so as to swing freely through an intermediary of at least one ball provided between the corner defined by the boundary between the first and

VOL 1147 ISS 2 FE 9 1993 UMI

second contact surfaces and said swash plate receiving surface, characterized in that said swash plate receiving surface is inclined by a predetermined oblique angle relative to the axis of said rotating shaft.

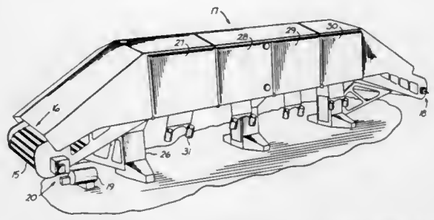
5,184,537
CLAMP DEVICE DRIVE APPARATUS
Seiji Kimura, Toyono, and Kouji Wada, Itami, both of Japan, assignors to AIOI Seiki, Inc., Japan
Division of Ser. No. 673,536, Mar. 22, 1991. This application Mar. 27, 1992, Ser. No. 858,603
Claims priority, application Japan, Mar. 24, 1990, 2-30024; Nov. 30, 1990, 2-130486
Int. Cl.[5] F01B *3/06, 7/04;* **F16H** *25/22*
U.S. Cl. 92—33 **3 Claims**



1. A cylinder type drive motor for converting driving force of a pressurized fluid cylinder means into torque for rotation, comprising:
a double acting type pressurized fluid cylinder including a piston member movable reciprocatively, wherein the piston member has a piston main body portion of smaller diameter than the inside diameter of a cylinder body of the cylinder, first and second piston portions formed at opposite ends of the piston member, respectively, and the cylinder body has a partition wall contacting slidably with a surface of the piston main body portion between the first and second piston portions, and inside the cylinder body a first fluid chamber is formed between the first piston portion and the partition wall and a second fluid chamber is formed between a second piston portion and the partition wall;
a rod member, extending slidably through the piston member and fixed at the opposite ends thereof, for restraining rotation of the piston member;
a ball screw nut fixed inside the piston member in parallel with the axis thereof, disposed coaxially with the pressurized fluid cylinder;
a ball screw shaft extending through and engaged with the screw nut, and driven by the piston member to rotate through the screw nut, disposed coaxially with the cylinder means; and
an output shaft fixed to one end of the screw shaft and formed integrally or separately therewith.

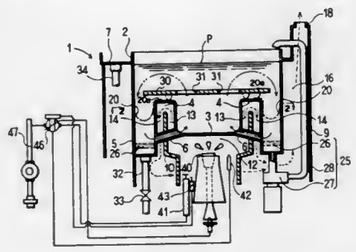
5,184,538
HIGH EFFICIENCY STEAM COOKER
Brent A. Ledet, Metairie, La., assignor to The Laitram Corporation, New Orleans, La.
Filed May 26, 1992, Ser. No. 887,832
Int. Cl.[5] A23L *3/00;* **A23N** *12/00;* **A47J** *27/16*
U.S. Cl. 99—331 **19 Claims**

1. A food cooker system, comprising in combination:
a conveyor belt for conveying a product to be cooked;
a substantially open-ended, product-carrying cooking chamber compartment with a belt entrance port at a first end, a belt exit port at an opposite end, and a cooking region therebetween defining top portion sidewalls of predetermined height adapted to receive, entrap and retain an upper layer of saturated steam to the exclusion of air, said entrance port and exit port being disposed below the layer of saturated steam;
transport means disposed for passing the conveyor belt with said product over a path passing upwardly into the chamber through the entrance port, through the top portion of said cooking region, and downwardly out of said chamber through the exit port;
pressure control means comprising said entrance and exit ports for maintaining substantially atmospheric pressure inside the cooking chamber;
energy supply means for supplying uncontaminated saturated steam directly into the cooking region at a flow rate



providing cooking energy expended in cooking said product and for maintaining saturated steam at 212 degrees F. in said top portion to the exclusion of air and condensation in the top portion, and
a fluid control system within the cooking chamber to control the cooking region atmosphere and maintain a flow pattern substantially consisting of downward gravity movement for discharge of any gathered condensation and product residue, while restraining exit of saturated steam and entrance of any other significant air or fluid flow patterns into the cooking region, thereby to approach a static atmosphere of saturated steam at 212 degrees F. in the cooking region with product transported therethrough.

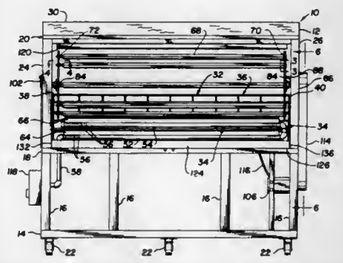
5,184,539
FRYER
Masatoshi Oiwa, Nagoya, Japan, assignor to Meito Corporation, Nagoya, Japan
Filed Dec. 2, 1991, Ser. No. 801,566
Int. Cl.[5] A47J *37/12*
U.S. Cl. 99—408 **7 Claims**



1. Apparatus for frying food in heated oil, for removing fried scum from the oil and for recirculating substantially scum-free oil, said apparatus comprising:
an oil tank for containing frying oil and comprising an upper portion in which frying is carried out and a lower portion comprising a bottom inner tank forming a central, circular bottom portion of the tank, and a lower bottom outer tank portion surrounding said bottom inner tank and forming a

flue means between said bottom outer tank portion and said bottom inner tank;
a fuel burner under said bottom inner tank and connected to a source of fuel;
a combustion cylinder surrounding said burner and extending upwardly partially into said flue means and dividing said flue means into an inner flue chamber and an outer flue chamber for passage therethrough of hot combustion gas to heat oil in adjacent portions of the tank;
tube means interconnecting said bottom inner tank and said lower bottom outer tank portion at a position above a bottom wall thereof;
oil circulating means to circulate oil from said lower bottom outer tank portion to said upper portion of said tank;
a primary filtering means disposed in a space between said outer flue chamber and an outer wall of said lower bottom outer tank portion to filter large particles of fried scum from the recirculating oil; and
a secondary filtering means disposed in said lower bottom outer tank portion at a position above the bottom wall thereof and below said tube means for filtering smaller particles of fried scum from the recirculating oil.

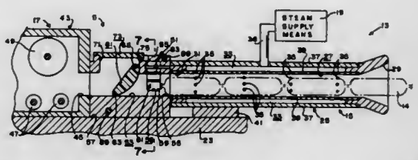
5,184,540
COOKING APPARATUS WITH ROTISSERIE AND RECLAMATION TRAP
Renato Riccio, 11320 Pagemill, Dallas, Tex. 75243
Filed Apr. 12, 1991, Ser. No. 684,576
Int. Cl.[5] A47J *37/04*
U.S. Cl. 99—421 H **20 Claims**



1. Cooking apparatus, comprising: a housing including a fireplace to support a fire for cooking food; a spit for supporting food rotatably connected to the housing and disposed to receive heat generated from the fire in the fireplace, said spit including at least three driven shoulders disposed substantially equidistant from one another around the periphery of the spit; and driving means connected to the housing for rotating the spit and having a drive member rotatably connected to said housing, the drive member including at least four driving shoulders disposed substantially equidistant from one another to engage the driven shoulders on the spit so that the spit rotates more than one revolution for every revolution of the drive member.

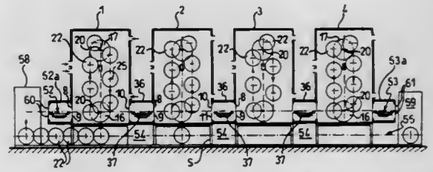
5,184,541
STEAM EVACUATION UNIT FOR A PEELER
Thomas A. Klyce, Memphis, Tenn., assignor to Ranger Tool Co., Bartlett, Tenn.
Filed May 26, 1992, Ser. No. 888,163
Int. Cl.[5] A22C *11/00, 13/00*
U.S. Cl. 99—472 **16 Claims**

1. A steam evacuation unit for use with an inlet conveyor having an outlet port, a steam source coupled to the inlet conveyor, an outlet conveyor having an inlet port, and a vacuum source, said steam evacuation unit comprising: a body having a passageway; said passageway having an inlet end for being coupled to the outlet port of an inlet conveyor and having an outlet end for being coupled to the inlet port of an outlet conveyor; said body having a vacuum port communicating with said passageway for being coupled to a vacuum source for allowing steam to be sucked from said passageway



therethrough; and closing means for substantially closing off as much of the cross-sectional area of said passageway of said body as possible.

5,184,542
DRIER FOR PASTA
Pier C. Bottino; Fausto Bertozzi; Renzo Oddi, and Eros Rolli, all of Parma, Italy, assignors to Barilla G. e R. F.lli-Societa per Azioni, Parma, Italy
Filed Apr. 23, 1992, Ser. No. 872,328
Claims priority, application Italy, Apr. 23, 1991, 001114 A/91
Int. Cl.[5] A23L *1/16;* **F26B** *11/18, 13/02, 13/10*
U.S. Cl. 99—483 **12 Claims**



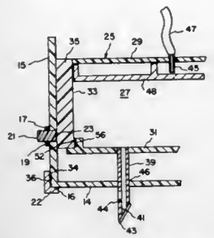
1. A drier for pasta, comprising a plurality of structurally independent drying chambers, each of which has its own conventional means for independently creating, regulating and controlling respective predetermined ambient climatic conditions, each chamber having a pasta-inlet port and a pasta-outlet port, characterised in that it includes:
means for hermetically closing and opening the ports,
an endless pasta conveyor extending in each drying chamber, in a position such that it is accessible through the pasta-inlet and outlet ports,
a plurality of removable pasta-holders on the conveyor,
a plurality of tunnels connecting the drying chambers, each tunnel connecting two successive, adjacent chambers and extending from the pasta-outlet port of one chamber to the pasta-inlet port of the other chamber, and
a transfer device installed in each tunnel for removing the pasta-holder from the conveyor of one drying chamber and placing it on the conveyor of the next, adjacent chamber.

5,184,543
MOTORIZED AIR PRESSURE SEASONER
Richard F. Victory, P.O. Box 450248, Kissimmee, Fla. 34745
Filed Apr. 23, 1991, Ser. No. 689,637
Int. Cl.[5] A23B *4/02;* **A23L** *1/31, 3/34*
U.S. Cl. 99—533 **5 Claims**

1. An improved seasoning device, comprising:
a) a container having an internal chamber and a plurality of outlets connected to hollow prongs;
b) means for pressurizing said chamber to force a substance within said chamber out through said prongs;
c) said container being removably mounted in a housing; and

VOL 1147 ISS 2 FE 9 1993 UMI

d) means for adjusting a position of said container within said housing comprising an outer wall of said container being threaded complimentary to an internally threaded ring on said housing whereby rotations of said ring in a



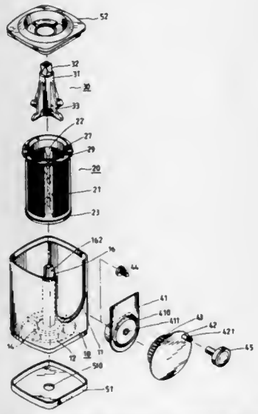
first direction result in retraction of said container within said housing, and rotations of said ring in a second opposite direction result in extension of said container from said housing.

5,184,544

DEVICE FOR CLEANING VEGETABLE, RICE AND THE LIKE

Lin H. Ling, Tainan, Taiwan, assignor to Chien-Jen Wang, Tainan, Taiwan

Filed May 5, 1992, Ser. No. 878,752
Int. Cl.[5] A47J *43/04;* B01D *33/00;* B08B *3/04;* F26B *17/24*
U.S. Cl. 99—536 **4 Claims**



1. A device for cleaning rice or vegetable such as beans comprising:

a tank having side walls and perforated bottom;

a bearing pin integrally projecting upwardly from a central portion of the perforated bottom of the tank and having an upper portion of square in configuration;

a substantially cylindrical removable basket having net side walls and a perforated bottom including a central opening positioned in the tank;

filter screen means mountable to the perforated bottom of basket in exception to the central opening thereof;

a sleeve in the basket surrounding the central opening in the perforated bottom of the basket and projecting upwardly into the basket to rotatably surround the bearing pin in the tank;

a circumferential rack sleeved around an upper portion of the basket with teeth thereof facing downwardly;

a bearing ring member surrounding the central opening of the basket and located under the perforated bottom and slidably resting on the perforated bottom of the tank;

a plurality of baffle members extending radially inwardly from the net side walls of the basket and divergent axially downwardly;

an agitation member having a cylindrical member with an open bottom for rotatably surrounding the sleeve in the basket and a hollow upper portion having a passageway extending therethrough for fitting receiving the square upper portion of the bearing pin in the tank;

blades members extending radially outwardly from the cylindrical member of the agitation member;

a cover member covering the tank and having a central opening communicating an interior of the tank; and

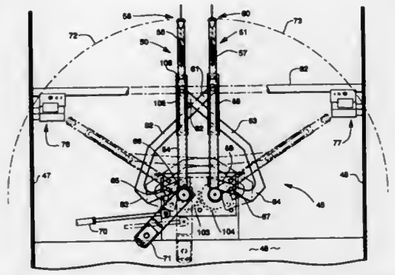
a driving means mounted to one of the side walls of the tank and having a pinion with teeth thereof engageable to the teeth of the circumferential rack for manually operating to drive the basket to rotate with respect to the tank and agitation member.

5,184,545

ROUND BALER TWINE WRAPPING APPARATUS

Richard E. Jennings, Manheim, and Stephen C. Schlotterbeck, Leola, botb of Pa., assignors to Ford New Holland, Inc., New Holland, Pa.

Filed Mar. 9, 1992, Ser. No. 848,488
Int. Cl.[5] B65B *13/18;* A01D *39/00*
U.S. Cl. 100—5 **8 Claims**



1. Improved twine wrapping apparatus for a round baler comprising a bale forming chamber, a generally transverse crop infeed opening in said chamber, a pair of sidewalls, a twine handling assembly mounted between said sidewalls and forwardly of said opening, said twine handling assembly including a pair of twine arms each having a twine dispensing end from which twine is dispensed in the vicinity of the opening and fed therethrough for wrapping bales formed in the forming chamber, said twine handling assembly further including means for controllably moving said twine arms to dispense twine across said opening from said twine dispensing ends, and a pair of twine guide assemblies mounted on said side walls for guiding the twine during a portion of the time it is being dispensed, the improvement wherein

each said twine arm comprises first and second members, said second members operative to reciprocate relative to said first members between extended and retracted positions,

said twine dispensing ends each disposed on said second members at the outward ends thereof,

said means for controllably moving includes drive means for moving said twine arms, and

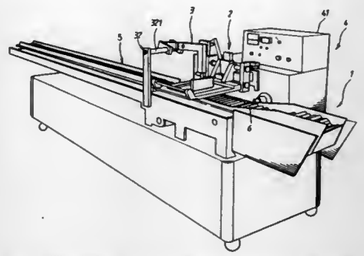
means for coupling said twine arms for reciprocating in concert said second members between extended and retracted positions to guide said twine dispensing ends along separate predetermined curved paths that are initially adjacent the middle of said opening when said second members are in said extended position.

5,184,546

FULLY AUTOMATIC CURVED SURFACE PRINTING MACHINE

Liao Ming-Sun, No. 22, Alley 106, Lane 411, Sec. 1, Ney-Hwu Rd., Taipei, Taiwan

Filed Feb. 7, 1992, Ser. No. 832,333
Int. Cl.[5] B41F *17/20*
U.S. Cl. 101—40.1 **3 Claims**



1. A fully automatic curved-surface printing machine which has a feeding mechanism, a screen block reciprocating mechanism, an elevation printing mechanism, a transmission system and a circulatory conveyor belt, in which the feeding mechanism and the conveyor belt jointly form a processing line, while the transmission system is set inside a control box which is located at a lateral side of the processing line comprising:

a) the transmission system, which comprises: a motor which provides a dynamic force; a main drive gear on a main shaft driven by the motor; a geneva gear mechanism; a transmission gear; a driven gear; a cam gear unit; and a chain drivingly connecting these elements; wherein the geneva gear mechanism also comprises an octant wheel and a turning wheel such that upon the revolving of the turning wheel the said octant wheel moves in an intermittent revolving fashion, and wherein the cam gear unit comprises a cam and a gear which are set on the same shaft with one in a front and the other at a rear, having a wheel surface on the cam; the transmission system further comprising a rolling wheel at one end of a movable rod in contact with the wheel surface to enable the rod to move in accord with the cam, so as to control in a synchronized manner a elevating position movement of the elevation printing mechanism;

b) the screen block reciprocating mechanism and the circulatory conveyor belt, driven by the main shaft of said transmission system comprising an eccentric wheel driven by the main shaft and having a, wheel surface; a pivoting triangular block having a rolling wheel bearing against the wheel surface, a first connecting rod having one end pivotally connected to the triangular block, while the other end of the first connecting rod is pivotally connected with a downwardly extending rod of a reciprocating seat; a spring extending between the downwardly extending rod and a machine table, such that when the eccentric wheel rotates it will drive the reciprocating seat; a screen block frame having a screen block pivotally attached to said reciprocating seat; a transmitting rod operatively connecting the octant wheel with the circulatory conveyor so as to produce an intermittent circulatory motion;

c) the feeding mechanism is formed in a tub shape at a front position of a conveying direction of the circulatory conveyor belt, and comprises four tooth face plates of which the tooth face plates at two lateral sides are fixed, while the other two tooth face plates in its central section are movable, the tooth faces of said tooth face plates are set in a two-by-two interlocking manner, the movable tooth face plates moved by a second connecting rod having one end eccentrically attached to a main shaft in the geneva gear unit which extends out of the turning wheel, while another end of said second connecting rod is pivotally connected with a pivoting vertical block, which is also pivotally connected to a third connecting rod which is operatively connected to the feeding mechanism such that pivoting motion of the vertical block caused by motion of the second connecting rod is converted into the third connecting rod's horizontal straight line motion which further drives the movable tooth face plates; and,

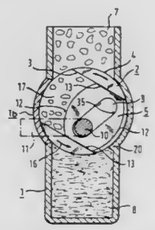
d) the elevation printing mechanism comprising a second transmission system is formed by several cam gear units bearing against a pivoting rod which is driven by the cam of said cam gear unit; a horizontal shaft which is attached to a hanging frame of the circulatory conveyor, the said horizontal shaft also being able to revolve in a central part of said horizontal shaft, a printing brush rod is mounted having a horizontally extended brush plate which can exactly extend to squeeze against a screen block surface of the screen block frame; wherein the second transmission system has two cams, which separately push upward against two hanging arms, so that the hanging arms which are pivotally attached at one end will conduct an upward and downward positioning; while the other end of said hanging arms have a curved-surface tube seat protrusively attached thereto extending in an upward direction such that, at the same time of the elevation of the hanging arm, a concave part of the curved-surface tube seat will raise a curved-surface tube and squeeze it upwardly against a bottom side of the screen block in the screen block frame, and will then be further connected with the brush plate which has moved downward.

5,184,547

EQUIPMENT FOR COMPACTING COMPRESSIBLE WASTES

Heinz Bergmann, Im Runderdiek 1, 4474 Lathen, Fed. Rep. of Germany

Filed Apr. 25, 1991, Ser. No. 691,303
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1990, 4013134
Int. Cl.[5] B30B *15/14, 5/00*
U.S. Cl. 100—50 **24 Claims**



1. A device for compacting compressible waste, such as paperboard, cardboard, wood wastes, or household trash and the like, comprising:

a housing comprised of an intake duct, a discharge duct, and an intermediate section located between said intake and said discharge duct, said intermediate section having intermediate walls;

a longitudinal direction extending from said intake duct to said discharge duct,

a cylindrical drum mounted for rotation about a central axis within said intermediate section;

a means for rotating said drum;

a passageway provided through said drum, said passageway adapted to align with said intake duct and said discharge duct;

a compaction plunger adapted for movement within said passageway and having an elongated slot guide, said slot

VOL 1147 ISS 2 FEB 9 1993 UMI

guide having two opposite flat surfaces and said slot guide is at a slant with respect to said passageway,

a stationary pin being eccentrically located relative to the central axis of said drum and positioned to pass within said elongated slot guide and having an axis transverse to said longitudinal direction;

wherein during rotation of said drum, said passageway receives waste from said inlet duct, said plunger compacts said wastes in said passageway against said intermediate walls, and forces said waste out of said passageway as said passageway is rotatably positioned in alignment with said discharge duct.

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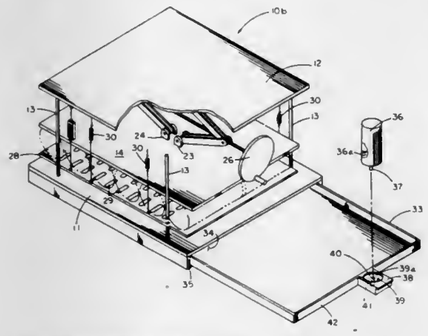
CAN CRUSHING APPARATUS EMPLOYING A COOPERATIVE PLATE AND ANVIL ASSEMBLY

Scott R. Figi, 313 S. 2nds St. Apt. 1D, Oregon, Ill. 61061

Filed Jan. 8, 1992, Ser. No. 818,136

Int. Cl.[5] B30B *9/02, 9/32*

U.S. Cl. 100—73 **3 Claims**



1. A can crushing apparatus, comprising,

a base plate, the base plate spaced from and parallel to a top plate, with the top plate positioned above the base plate to include a plurality of frame posts orthogonally mounted to the base plate and top plate to fixedly space the base plate relative to the top plate, and

a press plate reciprocatably mounted between the top plate and the base plate, and

drive means positioned between the top plate and the press plate for effecting selective reciprocation of the press plate relative to the base plate. and

a matrix of drain aperture directed through the base plate to permit drainage of fluid from can members positioned between the base plate and the press plate, and

the drive means includes a first boss pair and a second boss pair mounted to a bottom surface of the top plate, and first link arms pivotally mounted to the first boss pair, and second link arms pivotally mounted to the second boss pair, and a third boss pair mounted to a top surface of the press plate, and a fourth boss pair mounted to a top surface of the press plate, and third link arms pivotally mounted to the third boss pair, and fourth link arms pivotally mounted to the fourth boss pair, and the first link arms and the third link arms pivotally mounted together, and the second link arms and the fourth link arms pivotally mounted together, and a first pivot coupling pivotally mounting the first link arms to the third link arms, and a second pivot coupling pivotally mounting the second link arms to the fourth link arms, and an externally threaded actuator rod directed threadedly through the first pivot coupling and the second pivot coupling, wherein the first pivot coupling and the second pivot coupling include reversely threaded bores directed therethrough to receive the externally threaded actuator rod therethrough, and an actuator rod handle fixedly and orthogonally mounted to a distal end of the actuator rod to effect selective reciprocation of the actuator rod, and

a capture plate positioned between the press plate and the base plate, and the capture plate including a plurality of capture plate apertures directed through the capture plate, wherein the capture plate apertures cooperate with the base plate apertures to direct fluid therethrough, and a plurality of springs mounted between the capture plate and the top plate to bias the capture plate towards the press plate, and a deflection scale mounted to the top plate, wherein the deflection scale includes a deflection rod mounted to the capture plate to indicate deflection of the capture plate relative to the top plate.

5,184,549

STAMP DEVICE WITH A PRINTING ELEMENT, MOVABLE INK SUPPLYING DEVICE, AND PLATE MAKING DEVICE EMPLOYING AN ELONGATE HEAT SENSITIVE STENCIL PAPER

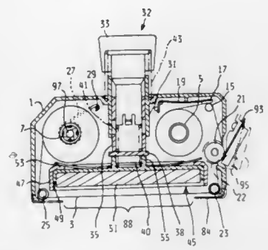
Teruo Imamaki, Kasugai; Tetsuji Fuwa, Hashima, and Takashi Miki, Nagoya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 23, 1991, Ser. No. 812,107

Claims priority, application Japan, Dec. 29, 1990, 2-417189; Mar. 4, 1991, 3-10942[U]; Mar. 6, 1991, 3-11779[U]

Int. Cl.[5] B41K *1/32*

U.S. Cl. 101—121 **24 Claims**



1. A stamp device employing a heat sensitive stencil paper which has a pattern of pores formed by application of heat, comprising:

a printing element comprising,

a housing; first and second rollers rotatably mounted int he housing;

an elongated heat sensitive stencil paper having an end wound around said first roller and a lead end for winding around said second roller;

an ink supplying means for supplying an ink to the pattern of pores of the heat sensitive stencil paper, said ink supplying means being provided in a feeding path of the heat sensitive stencil paper between the first roller and the second roller; and

moving means for moving said ink supplying means between a first position where the ink supplying means is separated from the heat sensitive stencil paper and a second position where the ink supplying means is in close contact with the pattern of pores of the heat sensitive stencil paper; and

a plate making device having stencil paper feeding means for drawing the heat sensitive stencil paper from the first roller and feeding the heat sensitive stencil paper to the second roller, said stencil paper feeding means for feeding the pattern of pores of the heat sensitive stencil paper to a position between the first and second rollers.

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DEVICE FOR CONTROLLING WETTING BEHAVIOR OF METAL SURFACES BY APPLICATION OF ELECTROLYTE UNDER CONTROLLED VOLTAGE

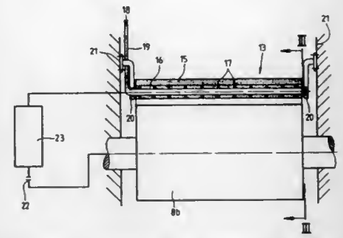
Hans-Jürgen Beck, Baar, and Gabriele Nowara, Mauer, both of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen Ag, Heidelberg, Fed. Rep. of Germany

Filed Mar. 1, 1991, Ser. No. 663,396

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1990, 4006363

Int. Cl.[5] B41F *7/20, 7/24*

U.S. Cl. 101—142 **16 Claims**



1. Device for controlling wetting behavior of the surface of a cylinder formed of passivatable metal, comprising a wetting roller, for applying an electrolyte to the surface of the cylinder, and a control device for establishing a voltage between the electrolyte and the cylinder having a value which is a function of a pH value of the electrolyte and a function of the respective metal forming the surface of said cylinder so that the surface of the cylinder is placed in a given passivated state.

16. In combination with a printing machine having a plate cylinder with a surface formed of passivatable metal and a dampening unit having a dampening-medium applicator roller, a device for controlling wetting behavior of the surface of the plate cylinder, comprising means for having the dampening-medium applicator roller serve as a wetting roller engageable with the plate cylinder for applying an electrolyte to the surface of the plate cylinder, and control means for establishing a voltage between the electrolyte and the plate cylinder having a value which is a function of the respective metal forming the surface of the plate cylinder and a pH value of the electrolyte so that the surface of the plate cylinder is placed in selective passivated states wherein it is oleophilic or oleophobic.

5,184,551

PRINTING PRESS

Wilfried Wallmann, Lengerich; Günter Rogge, and Wolfgang Knapheide, both of Lienen, all of Fed. Rep. of Germany, assignors to Windmöller & Hölscher, Lengerich, Fed. Rep. of Germany

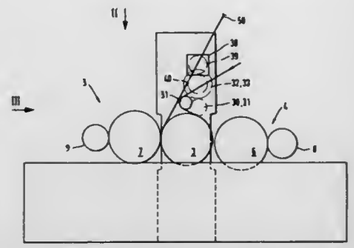
Filed May 14, 1991, Ser. No. 699,659

Claims priority, application Fed. Rep. of Germany, May 28, 1990, 4017159

Int. Cl.[5] B41F *5/04*

U.S. Cl. 101—219 **5 Claims**

1. A printing press comprising a printing stand, an impression cylinder rotatably mounted on the stand, first and second plate cylinders rotatably mounted on the stand for selective contact with the impression cylinder, a main drive for rotating the impression cylinder, a first engageable/disengageable drive connection between the main drive and one of said plate cylinders, a second engageable/disengageable drive connection between the main drive and the other of said plate cylinders, a servo motor, a first drive train means between the servo motor and said one of the plate cylinders for accelerating the plate cylinder up to a speed synchronous with a rotation speed of the impression cylinder produced by the main drive, a first engageable/disengageable clutch means in the first drive train means, for selectively engaging and disengaging the servo motor to and from said one of the plate cylinders, a second drive train means between the servo motor and the other of said plate cylinders for accelerating the other of said plate cylinders up to the synchronous speed, and a second engageable/disengageable clutch means in the second drive train means for selectively engaging and disengaging the servo



motor to and from the other of the plate cylinders whereby the respective plate cylinders are either driven from the servo motor through the respective drive train means by engagement of the respective clutch means or are driven from the main drive by engagement of the respective drive connections.

5,184,552

INK ROLLER FOR ROTARY PRESS

Yuji Ijichi, Saitama, Japan, assignor to Rockwell International Corporation, El Segundo, Calif.

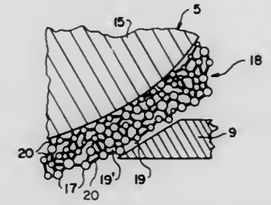
Continuation of Ser. No. 229,385, Aug. 8, 1988, Pat. No. 4,882,990. This application Oct. 17, 1989, Ser. No. 422,937

Claims priority, application Japan, Aug. 18, 1987, 62-126228[U]; Jan. 26, 1988, 63-7647[U]

The portion of the term of this patent subsequent to Nov. 28, 2096, has been disclaimed.

Int. Cl.[5] B41F *1/46;* **B21H** *1/14*

U.S. Cl. 101—348 **13 Claims**



1. An ink metering roller for use in a printing press in conjunction with a doctor blade that contacts the surface of the roller to remove excess ink therefrom, comprising:

(a) a core of preselected strength and dimensions; and

(b) means providing a surface on said core having recesses to hold ink, said means including an outer ink metering layer having a thickness and covering said core, said outer layer including

(i) an outer layer of matrix material having oleophilic and hydrophobic properties, which material is worn away during contact with the doctor blade, and

(ii) a quantity of relatively wear resistant elements dispersed through at least a portion of the thickness of said outer layer of matrix material to cause relatively greater wear of said matrix material by the doctor blade to leave some of said relatively wear resistant elements protruding outwardly beyond the outer surface of said matrix material, said outwardly protruding relatively wear resistant particles defining recesses to hold quantities of ink and supporting the doctor blade at different

VOL 1147 ISS 2 FEB 9 1993 UMI

depths of said roller as the outer layer of matrix material is worn away by the doctor blade.

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SUCTION TRANSFER ACTUATION SYSTEM FOR A MULTI-COLOR SHEET-FED ROTARY PRINTING PRESS

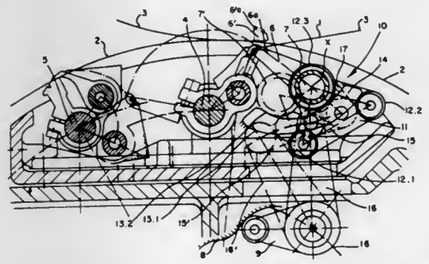
Ingo Kobler, Anhausen, and Joseph Mathes, Offenbach am Main, both of Fed. Rep. of Germany, assignors to MAN Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Apr. 19, 1991, Ser. No. 688,042

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1990, 4012498

Int. Cl.[5] **B41F** *21/06;* **B65H** *5/12*

U.S. Cl. 101—409 **3 Claims**



1. A suction transfer actuation system for a multi-color sheet-fed rotary printing press having a press frame, first and second printing units and a sheet transfer drum including first and second gripper means disposed thereon for rocking movement toward and away from one another for receiving successive sheets from the first printing unit and, after rear-edge turning, delivering the sheets to the second printing unit, said suction transfer actuation system comprising, in combination,

a plurality of hollow suction arms disposed on said transfer drum ahead of said first gripper means, said suction arms having proximate and distal ends and being of a substantially non-extensible rigid structure with relatively non-movable internal portions,

means including a hollow suction rocker shaft disposed on said transfer drum for rigidly supporting the proximate ends of said hollow suction arms and for rocking the distal ends of said suction arms toward and away from the first printing unit and for causing engagement between the distal ends of said suction arms and a sheet of printing material carried by said first printing unit, said engagement being effected through the rocking motion of said hollow suction rocker shaft and without relative movement of said internal portions of said hollow suction arms, said rocking means further comprising:

at least one actuating lever rigidly connected at one end to said hollow rocker shaft,

a guide rail defining a curved guide cam surface mounted on the transfer drum,

guide roller means mounted on the other end of said actuating lever for rolling engagement with said guide cam surface,

a drive cam rigidly mounted on the press frame,

and drive means dispose don the transfer drum for rocking said hollow suction shaft and said hollow suction arms under the influence of said guide cam and guide roller means,

said drive means including a drive shaft mounted for rotation on the transfer drum,

a drive lever rigidly connected at one end to said drive shaft,

a drive arm rigidly connected at one end to said hollow rocker shaft,

a drive link pivotally connected at its opposite ends, respectively, to the other ends of said drive lever and said drive arm,

a cam follower lever rigidly connected at one end to said drive shaft,

and a cam follower roller rotatably mounted on the other end of said cam follower lever and engageable with said drive cam for oscillating said drive shaft and drive lever so as to rock said distal ends of said hollow suction arms toward and away from the first printing unit under the guiding influence of said guide cam and guide roller means.

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QUICK-ACTION CLAMPING DEVICE

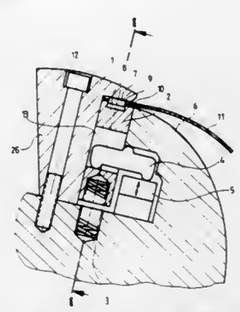
Gerd Merkel, Dielheim; Georg Glaunsinger, Meckesheim; Wilfried Vogt, Walldorf; Peter Stadler; Claus-Peter Zander, both of Heidelberg; Gernot Schmitt; Jürgen Maass, both of Wiesloch; Thomas Necker, Sandhausen; Willi Becker, Bammental, and Walter Weber, Heidelberg, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Dec. 23, 1991, Ser. No. 812,714

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1990, 4041452; Sep. 7, 1991, 4129831

Int. Cl.[5] **B41F** *1/28*

U.S. Cl. 101—415.1 **14 Claims**



1. Quick-action clamping device for fastening a printing plate on a plate cylinder in a printing machine having a radially outer fixed clamping bar and a radially inner, reciprocatingly movable clamping bar relatively movable into a clamping position and a plate-changing position, respectively, comprising register pins for precisely mounting and positioning the printing plate being carried by one of the clamping bars, the other of the clamping bars being formed with recesses located opposite said register pins, spring means for resiliently pressing the radially inner, reciprocatingly movable clamping bar into the clamping position with a holding force for clamping a printing plate between the radially inner, reciprocatingly movable clamping bar and the radially outer, fixed clamping bar, and re-setting means including at least one re-set element for removing said reciprocatingly movable clamping bar from said fixed clamping bar and returning the reciprocatingly movable clamping bar to the plate-changing position against said holding force, said resetting means being rigid with said radially inner, reciprocatingly movable clamping bar and being braced against an inner surface of the plate cylinder, and at least one piston/cylinder adjustment device carried within the plate cylinder and engageable with said re-set element for adjusting said radially inner, reciprocatingly movable clamping bar.

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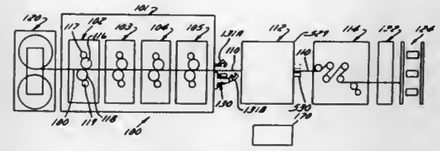
APPARATUS FOR REDUCING CHILL ROLL CONDENSATION

H. Richard Quadracci, New York, N.Y.; Karl R. Voss, Wauwatosa, and Jeffrey W. Sainio, Hartland, both of Wis., assignors to Quad/Tech, Inc., Pewaukee, Wis.

Continuation-in-part of Ser. No. 503,711, Apr. 3, 1990, Pat. No. 5,056,431, which is a continuation-in-part of Ser. No. 340,498, Apr. 19, 1989, Pat. No. 4,913,049. This application Sep. 13, 1991, Ser. No. 759,392

Int. Cl.[5] **B41F** *35/00*

U.S. Cl. 101—417 **12 Claims**



1. An apparatus for dispersing contaminant gases in a web processing system, said web processing system including a web processing structure, said web processing structure being in an environment having an ambient first pressure, said web approaching said web processing structure in a processing direction at a first velocity, said web being substantially planar and presenting a first surface and a second surface bounded by two edges, said first surface engaging said web processing structure before said second surface as said web moves in said processing direction, said contaminant gases being proximate to at least said first surface, the apparatus comprising:

a housing defining a cavity; said cavity containing a fluid, said fluid being at a second pressure, said second pressure being greater than said first pressure, and

a fluid exhaust means for exhausting said fluid from said cavity, said fluid exhaust means being disposed generally proximate to said first surface in spaced relation with respect to said first surface, said fluid exhaust means being in fluid communication with said cavity, said fluid exhaust means being configured to effect said exhausting in a manner establishing a stream of said fluid, said spaced relation being appropriate to effect direction of said stream against said first surface at a second velocity, said second velocity creating a zone of reduced static pressure adjacent said first surface and said fluid exhaust means, said reduced static pressure urging said web toward said fluid exhaust means, said second velocity having a velocity component substantially parallel with said first velocity, said second velocity being vectorally appropriate so that the vector sum of said first velocity and said velocity component yields a resulting velocity with respect to said web, said resulting velocity and said zone of reduced static pressure cooperating to disperse at least those of said contaminant gases proximate said first surface.

5,184,556

PRINTING APPARATUS AND METHOD

Edwin K. Schaeuble, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Feb. 18, 1992, Ser. No. 837,823

Int. Cl.[5] **B41M** *1/00;* **B41F** *31/02*

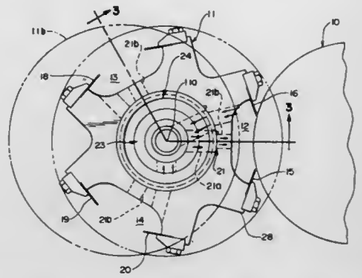
U.S. Cl. 101—483 **5 Claims**

4. A method of operating a printing press or the like having a frame rotatably supporting a fluid transfer roll,

providing a turret indexably, translatably mounted on said frame and having an indexing axis and with a plurality of circumferentially related sealed, fountain and doctor blade assemblies for supplying fluid to said roll, said doctor blades being spaced from said axis to sequentially engage said roll upon turret indexing,

introducing a first coating fluid into a first assembly and completing a first application run using said first coating fluid,

introducing a cleansing fluid into said first assembly to remove said first coating fluid therefrom, and from said fluid transfer roll,



translating said turret out of fluid transfer relation with said roll and indexing said turret to position a second assembly in alignment with said roll,

translating said second assembly into fluid transfer relation with said roll and delivering a second coating fluid to said roll to develop a second application run.

5,184,557

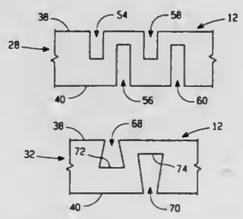
EXPANSION JOINT FOR GUIDEWAY FOR MAGNETIC LEVITATION TRANSPORTATION SYSTEM

Thomas D. Rossing, DeKalb, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 10, 1991, Ser. No. 804,555

Int. Cl.[5] **B60L** *13/00*

U.S. Cl. 104—286 **10 Claims**



6. A expansion joint for a guideway for a magnetic levitation transportation system in which said guideway has an upper surface over which a magnetic levitation vehicle travels and an opposed lower surface, said expansion joint comprising:

at least a first recess extending from said upper surface partially towards said lower surface, and having a first depth;

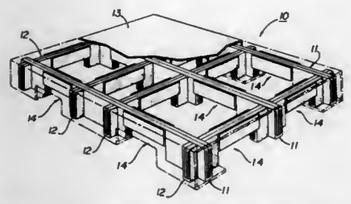
at least a first recess extending from said upper surface partially towards said lower surface, and having a first depth;

at least a second recess extending from said lower surface partially towards said upper surface having a second depth greater than said first depth and said second recess being spaced from said first recess; and

wherein the sum of said first and second depths is greater than the distance between said upper and lower surfaces of said guideway such that said first and second recesses are in overlapping relationship to each other.

VOL 1147 ISS 2 FEB 9 1993 UMI

5,184,558
PALLET AND METHOD AND APPARATUS FOR MAKING SAME
Roger M. Wozniacki, Cumming, Ga., assignor to Gaylord Container Corporation, Deerfield, Ill.
Filed Nov. 27, 1991, Ser. No. 799,042
Int. Cl.[5] B65D *19/00*
U.S. Cl. 108—51.3 **13 Claims**



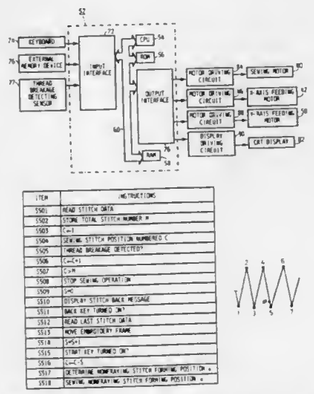
1. A pallet of corrugated material comprising:
a plurality of spaced, parallel and longitudinally extending stringers;
a plurality of spaced, parallel and laterally extending stringers interconnecting said longitudinally extending stringers at spaced intervals;
the stringers of at least one of said pluralities of longitudinally and laterally extending stringers including cutouts therein to provide fork lift tine channels axially aligned therewith for lifting said pallet;
said stringers which include cutouts including an uncut surface of corrugated material defining the lifting surface against which the tines inserted in said cutouts can act for lifting said pallet;
wherein said longitudinally extending stringers and laterally extending stringers comprise a plurality of inner adjacent vertical panels each connected to an adjacent top horizontal panel, said top horizontal panels connected to an adjacent outer vertical panel, said outer panels each being disposed adjacent an inner vertical panel, with said outer vertical panels connected to a common bottom horizontal panel; and
wherein said cutouts are formed by removing portions from said outer vertical panels and folding portions from said inner vertical panels through said removed portions of said outer vertical panels for forming a solid surface upon which the fork lift tines can act for lifting said pallet.

5,184,559
SEED DISTRIBUTION DEVICE
Craig K. Swanson, R.R. 2, Box 140, New Richmond, Wis. 54017
Filed May 13, 1991, Ser. No. 699,355
Int. Cl.[5] A01C *7/16*
U.S. Cl. 111—11 **6 Claims**



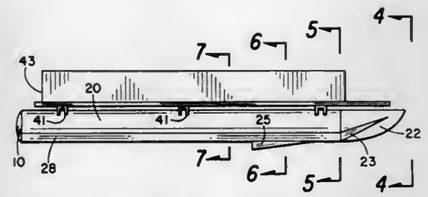
1. A distribution device for attachment to a seeder adjacent the exit of a seeding mechanism delivering a measured quantity of small seeds, the device comprising:
a rectangular member with a length greater than a width;
means for fastening said member to the seeder such that the member is positioned adjacent the seeding mechanism for receiving seeds therefrom;
said member having a first portion inclined downwardly from said fastening means, said first portion formed by bending the rectangular member to form outwardly angled sides of a trough for containing seeds as they exit the seeding mechanism; and
a second portion of said rectangular member downstream of the flow of seeds in said first portion formed as a truncated pyramid with truncated sides of the pyramid coextensive with and forming a bend-line with the lowermost ends of the outwardly angled sides of the trough, and the apex of the pyramid aligned with the center of the trough.

5,184,560
AUTOMATIC SEWING MACHINE CAPABLE OF EXECUTING STITCH BACK OPERATION
Fumiaki Asano, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Mar. 16, 1992, Ser. No. 852,287
Claims priority, application Japan, May 31, 1991, 3-157814
Int. Cl.[5] D05B *21/00, 69/18, 69/36*
U.S. Cl. 112—121.12 **15 Claims**



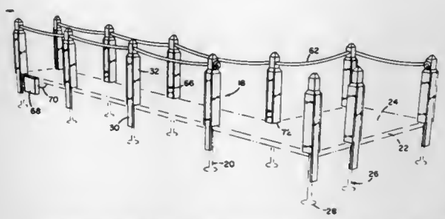
1. An automatic sewing machine capable of executing a stitch back operation, comprising:
a needlebar reciprocably provided in a vertical direction and holding a needle at a lower end thereof;
needlebar driving means for reciprocating said needlebar;
workpiece holding means for holding a workpiece;
workpiece moving means for moving said workpiece holing means relative to said needlebar in a plane perpendicular to the vertical direction;
stitch data storing means for storing stitch data representing stitch positions at which stitches of a stitch pattern are to be formed;
control means for controlling said needlebar driving means and said workpiece moving means for executing a sewing operation based on the stitch data stored in said stitch data storing means to form the stitch pattern on the workpiece;
thread breakage detecting means for detecting a breakage of a thread;
stopping means for stopping the sewing operation of said control means upon a detection of the breakage of the thread by said thread breakage detecting means;
stitch back position setting means for setting a stitch back position corresponding to a stitch position of the last complete stitch formed before the breakage of the thread is detected by said thread breakage detecting means;
nonfraying stitch forming position setting means for setting a nonfraying stitch forming position at a distance from the stitch back position set by said stitch back position setting means;
nonfraying stitch forming means for executing a nonfraying stitch forming operation at the nonfraying stitch forming position set by said nonfraying stitch forming position setting means by controlling said needlebar driving means and said workpiece moving means; and
sewing operation resuming means for resuming the sewing operation executed by said control means at the stitch back position set by said stitch back position setting means.

5,184,561
PLANING PONTOON BOAT
William F. Nickell, Jr., Beachcomber Boats, Inc. Rte. 1, Box 18045, Porum, Okla. 74455
Filed Jul. 30, 1991, Ser. No. 738,258
Int. Cl.[5] B63B *35/44*
U.S. Cl. 114—61 **6 Claims**



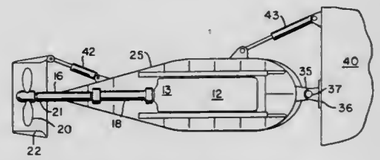
1. A planing pontoon boat comprising in combination;
a plurality of elongated water-tight flotation units each having a bottom configuration of circular cross-section and each having a rigid exterior hull;
an elevated deck structure rigidly secured to said flotation units including means for positioning and maintaining said flotation units in parallel spaced-apart relation;
a plurality of elongated planing fins each having a rectangular shaped lifting surface on the underside thereof, and
means for rigidly securing repective ones of said planing fins to the inboard and the outboard side of each flotation unit near the bottom portion thereof and below the water line, with said planing fins extending longitudinally of the flotation units and extending laterally and downwardly therefrom with the lifting surface of each planing fin in continuous contact with the water.

5,184,562
LAKE DOCK POLE ACCESSORY SYSTEM
Mark P. Hallin, 1305 Elmwood Ave., Mound, Minn. 55364
Filed Apr. 10, 1992, Ser. No. 867,174
Int. Cl.[5] B63B *59/02*
U.S. Cl. 114—219 **33 Claims**



1. A bumper accessory for use with a lake dock pole when the pole is installed with a lake dock, the pole when installed having an upper portion which protrudes above the top surface of the lake dock, the pole further having a boat-mooring surface against which a boat could be moored, the bumper accessory comprising:
a. a bumper member for covering a predetermined length of the boat-mooring side of the pole;
b. a housing portion which defines an inner cavity for concealing the upper portion of the pole, the housing portion being attached to the bumper member, the housing portion having a lower surface which mates with the top surface of the lake dock; and
c. means for securing at least one of the bumper member and the housing portion to the pole.

5,184,563
MARINE PROPULSION APPARATUS
Douglas G. Hislop, 170 Hiods Street, West End, 4179, Qld., Australia
PCT No. PCT/AU89/00327, § 371 Date Feb. 11, 1991, § 102(e) Date Feb. 11, 1991, PCT Pub. No. WO90/01444, PCT Pub. Date Feb. 22, 1990
PCT Filed Aug. 2, 1989, Ser. No. 654,640
Claims priority, application Australia, Aug. 11, 1988, P19780
Int. Cl.[5] B63B *21/56*
U.S. Cl. 114—251 **9 Claims**



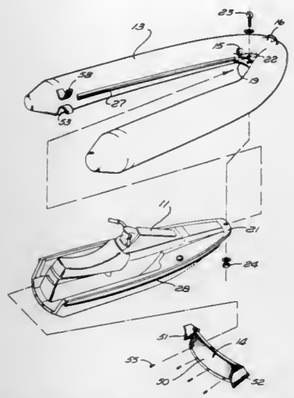
1. Buoyant marine propulsion apparatus of the type which may be self-propelled or floated towards a vessel for outboard connection thereto and comprising a buoyant enclosure, propulsion means including a prime mover within the buoyant enclosure and associated propelling means external of the buoyant enclosure, connection means for connecting the buoyant enclosure to the vessel, and remote control means for remotely controlling the apparatus, wherein:
(a) said buoyant enclosure is narrow in an athwartships direction relative to a height and a length thereof, and is stabilized by ballast;
(b) said propelling means includes a propeller, and a thrust directing means associated with said propeller;
(c) said connection means includes a pivotal connection including a pivot pin assembly associated with said enclosure and adapted to engage pivotal mountings on the vessel for pivotal transverse movement of said enclosure about a fixed pivot axis defined by said pivotal mountings whereby the vessel may be steered by pivoting the enclosure about said fixed pivot axis; and
(d) said remote control means includes a steering control for controlling pivotal movement of the buoyant enclosure about said fixed pivot axis.

5,184,564
BOAT FOR PERSONAL WATERCRAFT
Warren H. Robbins, Fountain Valley, and Lawrence C. Smith, Montecito, both of Calif., assignors to Team Scarab, Inc., Ventura, Calif.
Filed Mar. 25, 1992, Ser. No. 857,646
Int. Cl.[5] B63D *35/00*
U.S. Cl. 114—270 **15 Claims**

1. A boat for use with a small-sized, independently powered and driveable watercraft vehicle, said vehicle having a self-sustaining flotation hull with bow, side walls and stern, for conversion between a first useable state comprising said vehicles and a second useable state comprising said vehicle and boat combined, said boat including in combination:

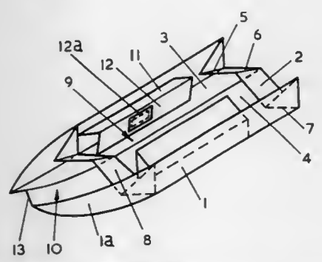
VOL 1147 ISS 2 FE 9 1993 UMI

U-shaped inflatable pontoon means for flotation, with a closed forward end and spaced sides defining an open central section, with said spaced sides having rear ends; connection means for engaging said independently powered



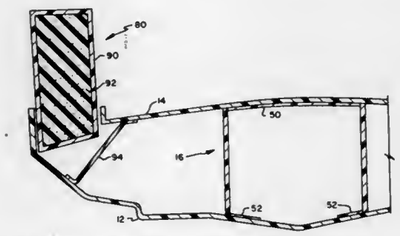
vehicle for inserting of said independently powered vehicle into said pontoon means and removal of said independently powered vehicle from said pontoon means; and
a transom for interconnecting said rear ends of said pontoon means.

5,184,565
COLLAPSIBLE BOAT
Keith R. Matthews, 49 Seamons Close, Dunstable, Beds., England LU6 3EQ
PCT No. PCT/GB89/01185, § 371 Date Apr. 8, 1991, § 102(e) Date Apr. 8, 1991, PCT Pub. No. WO90/03914, PCT Pub. Date Apr. 19, 1990
PCT Filed Oct. 6, 1989, Ser. No. 674,353
Claims priority, application United Kingdom, Oct. 7, 1988, 8823586
Int. Cl.[5] B63B *7/00*
U.S. Cl. 114—354 **22 Claims**



1. A collapsible boat comprising:
at least one pair of base segments having longitudinal edges along which they are hingedly interconnected;
a pair of side segments having longitudinal edges, each side segment being hingedly interconnected along one of its longitudinal edges to a respective outer longitudinal edges of the base segments;
the hinged interconnections of the side and base segments being such that the side and base segments hinge open to erect the boat and to collapse the boat alternate hinged interconnections rotate in opposite senses so that the base segments fold inwardly of the side segments, the side and base segments being substantially flat when the boat is collapsed and having flexible portions at one end which, when the boat is erected, form a curved bow; and
the side segments are provided, inwardly of the boat, with longitudinally disposed sealable vented compartments which admit and retain air when the boat is erected to constitute buoyancy tanks and seats.

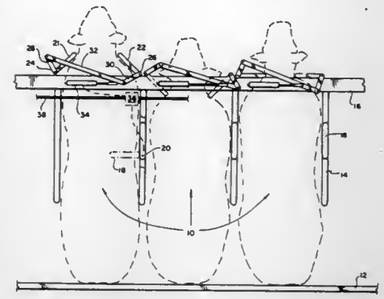
5,184,566
BUOYANT BOAT WITH GIRDER BOX
William H. Cochran, P.O. Box 252, Exeter, R.I. 02822
Filed Jun. 21, 1990, Ser. No. 541,811
The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.
Int. Cl.[5] B63B *7/00*
U.S. Cl. 114—355 **26 Claims**



1. A boat having a hull and comprising:
a hull part disposed generally at and below the water level of the hull;
a deck part extending longitudinally at least a substantial portion of the length of the hull part and transversely at least a substantial portion of the width of the hull part;
a girder box means provided along the longitudinal axis of the boat and mounted between said deck part and said hull part, said girder box means having first and second longitudinally extending side walls, said side walls extending longitudinally along at least a substantial portion of the length of the hull portion, said side walls being laterally spaced from an outer peripheral edge of said hull part and from an outer peripheral edge of said deck part; and
a topside part disposed generally at and above the water level of the hull, said topside part defining ar relatively resilient buoyancy part for minimizing fluid entry into said boat;
a peripheral edge of said deck part being laterally spaced from a peripheral edge of said hull part to define a gap therebetween along at least a substantial portion of said peripheral edges, said buoyancy part being disposed in said gap between said hull and deck parts and being at least one of mechanically and adhesively secured to each of said hull and deck parts.

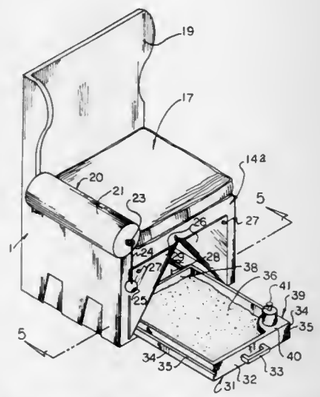
5,184,567
AUTOMATIC INDIVIDUAL INDEXING APPARATUS FOR DAIRY PARLOR
Steven N. Peacock, P.O. Drawer 1410, Anthony, N. Mex. 88021
Filed Feb. 10, 1992, Ser. No. 832,850
Int. Cl.[5] A01J *5/00*
U.S. Cl. 119—14.03 **6 Claims**

1. A dairy stall comprising
a pair of lateral barriers for confining a cow laterally,
a butt plate for preventing the cow from backing out of the stall, and
a front barrier comprising a pair of pivoted gates movable between a closed position engaging the shoulders of the cow, and a second position releasing the cow, and
a closing mechanism for automatically moving both gates toward said closed position when a cow enters the stall,
a flap pivotally mounted on one of said lateral barriers, said flap being biased toward a position protruding into said stall, and being deflectable upon contact with a cow to a



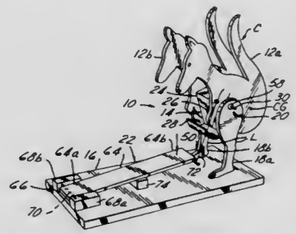
deflected position, and means for actuating said closing mechanism when said flap is deflected to said deflected position.

5,184,568
CAT SCRATCHING HOUSING AND BED APPARATUS
James M. Healey, 113 Joseph Ave., Westfield, Mass. 01085
Filed Jun. 19, 1992, Ser. No. 900,669
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—19 **8 Claims**



1. A cat scratching housing and bed apparatus, comprising,
spaced side walls, the side walls each including a rigid side wall frame having a fabric outer layer mounted coextensively relative to the side wall frame, and
a front wall, a rear wall mounted to the side walls, with a top wall, and
a housing cavity defined within the side walls, rear wall, front wall, and top wall, and
a cushion member mounted coextensively to the top wall, with the cushion member including a polymeric foam cushion member core having a fabric outer layer mounted coextensively about the core, and
the rear wall having a rigid rear wall extension coplanar with the rear wall extending orthogonally and upwardly relative to the side walls including a cylindrical cushion bolster having a cushion bolster central section, with the cushion bolster central section formed of a polymeric foam and a fabric bolster outer layer mounted to the cushion bolster central section coextensively there about, and the bolster including a rigid bolster front wall extending beyond the housing side walls, and the front wall including a support loop, the support loop including a tether line secured thereto, the tether line including a tether line forward distal end spaced from the support loop, and a catnip ball mounted to the tether line forward distal end.

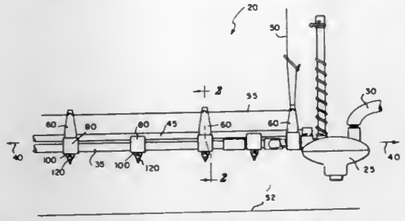
5,184,569
ANIMATED WILD ANIMAL FEEDER
Clayton J. Collins, 2305 Sandalwood Cir. #204C, Ann Arbor, Mich. 48105
Filed Aug. 14, 1992, Ser. No. 930,261
Int. Cl.[5] A01K *5/00*
U.S. Cl. 119—55 **20 Claims**



1. A wild animal feeder, comprising:
an aligned pair of sidewalls comprised of a first sidewall and a second sidewall, said pair of sidewalls having a generally forward end and a generally rear end;
a feeder component situated between said first and second sidewalls and connected with respect thereto, said feeder component comprising:
a feed holder for holding a quantity of feed, said feed holder having an access door for providing selective access to the feed holder in order to periodically replenish the feed, said feed holder having a front wall, a rear wall and a bottom each of which at least substantially connecting with said first and second sidewalls, said front wall being provided with a dispensing opening; and
feed dispensing means located substantially adjacent said generally forward end of said pair of sidewalls for dispensing the feed from said feed holder, at least a portion of the feed passing through said dispensing opening, so as to be accessible for being eaten by one or more adjacent wild animals;
axle means connected with said aligned pair of sidewalls for providing a pivot for said pair of sidewalls and said feed holder component;
a base;
a pair of legs connected with said base and substantially perpendicularly oriented with respect thereto; one leg of said pair of legs connecting with said axle means adjacent said first sidewall, the other leg of said pair of legs connecting with said axle means adjacent said second sidewall;
actuator means connected with at least one said pair of sidewalls and said feeder component for causing said pair of sidewalls and said feeder component to pivot on said axle means in response to actuation thereof; and
bias means for urging said pair of sidewalls and said feeder component to assume a first orientation, defined by said actuator means, in which feed is not dispensed from said feed holder to said feed dispenser in response to gravity; wherein further, actuation of the actuator means causes said pair of sidewalls and said feeder component to pivot on said axle means to a second orientation in which feed is dispensed from said feed holder to said feed dispenser in response to gravity.

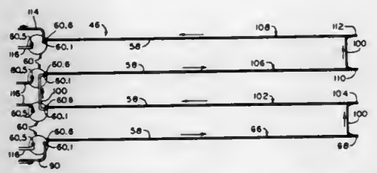
VOL 1147 ISS 2 FE 9 1993 UMI

5,184,570
COMPONENT WATERING SYSTEM
Eldon Hostetler, Middlebury, Ind., assignor to Ziggity Systems, Inc, Middlebury, Ind.
Filed Jan. 22, 1992, Ser. No. 824,008
Int. Cl.[5] A01K *7/00*
U.S. Cl. 119—72 **11 Claims**



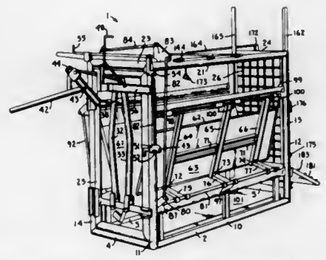
1. A watering system for poultry and small animals comprising:
at least one fluid conduit,
at least one longitudinally extending support element, and
bracket means for releasably locating said fluid conduit and said support element in spaced apart, parallel relation,
said bracket means including first and second bracket elements,
said first bracket element being formed so as to surround at least a portion of the exterior surface of said support element,
said second bracket element being formed so as to surround at least a portion of the exterior surface of said fluid conduit,
said first bracket element including a first connecting member,
said second bracket element including a second connector member, and
said first and second connecting members being formed with respect to each other such that interengagement of said first and second connecting members permits releasable engagement of said first and second bracket elements via a snap-fit connection to fixedly locate said fluid conduit and said support element relative to each other.

5,184,571
AUTOMATICALLY SELF-CLEANING WATERING SYSTEM
Robert D. Hostetler, Elkhart, Ind., and Philippe Plouzen, Sibiril, France, assignors to Avtron, Inc., Elkhart, Ind.
Filed Oct. 22, 1991, Ser. No. 781,802
Int. Cl.[5] A01K *7/06, 39/02*
U.S. Cl. 119—72 **46 Claims**



1. A watering system for fowl and small animals, said watering system adapted to be connected to a source of a first fluid and a source of a second fluid, said watering system comprising:
a conduit for fluid transmission, said conduit including an inlet, an outlet, and a plurality of drinker valves;
means for supplying the first fluid to said conduit;
means for supplying the second fluid to said conduit; and
control means for fluidly coupling said conduit inlet alternatively to said first fluid supplying means and to said second fluid supplying means, said control means including regulator means for providing the first fluid from said first fluid supplying means to said conduit at a predetermined, relatively low pressure, said control means also including activating means for automatically activating said second fluid supplying means, whereby when said second fluid supplying means is not activated said regulator means provides the first fluid to said conduit at said low pressure, and upon activation of said second fluid supplying means by said activating means, said second fluid supplying means provides the second fluid to said conduit at a relatively high pressure for flushing said conduit.

5,184,572
ANIMAL CONTROL CHUTE
Roch Meier, R.R. 32A, Menlo, Kans. 67746
Filed Nov. 12, 1991, Ser. No. 791,104
Int. Cl.[5] A01K *1/06, 15/04*
U.S. Cl. 119—99 **18 Claims**



1. An animal restraining apparatus comprising:
(a) a frame forming a chute with an entrance and an exit opening;
(b) a remotely operated entrance gate located at said entrance opening;
(c) a remotely operated exit gate located at said exit opening;
(d) a plurality of remote operating devices for said entrance gate and said exit gate being operable from a single location in close proximity to said apparatus to permit manipulation of said gates by a single operator from said location;
(e) said entrance gate being vertically operably positionable between open and closed positions thereof along tracks mounted on said frame;
(f) said remote operating device for said entrance gate comprising a cable and pulley system with a cable handle attached thereto; and
(g) said entrance gate includes a latch which is releasable via said cable and pulley system, said latch being operable to secure said entrance gate alternatively in both of said open and closed positions.

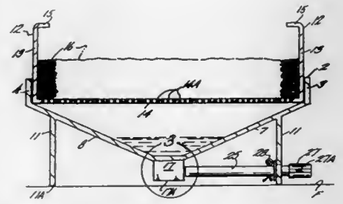
5,184,573
ANIMAL COLLAR
John L. Stevens, Jr., 115 N. State St., Dover, Del. 19901
Filed Feb. 21, 1992, Ser. No. 838,847
Int. Cl.[5] A01K *27/00*
U.S. Cl. 119—106 **15 Claims**



1. An animal collar comprising:

an elongate hollow member having a plurality of openings, at least one of said openings having a first size and shape in a relaxed condition and being deformable from said first size and shape upon the application of a force and returnable to said first size and shape;
a pesticide member positioned within said hollow member, said pesticide member carrying a pesticide to ward off pests and having ends, each of said ends having a size and shape unable to pass through said at least one opening when said opening has said first size and shape and able to pass through said opening when said opening is deformed form said first size and shape.

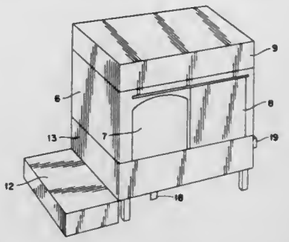
5,184,574
CAT LITTER BOX
Robert C. Kirk, and Stacey R. Kirk, both of 3000 SW. Scenic Dr. Ct., Portland, Oreg. 97225
Continuation-in-part of Ser. No. 631,350, Dec. 20, 1990, abandoned. This application Dec. 18, 1991, Ser. No. 810,709
Int. Cl.[5] A01K *29/00, 1/015*
U.S. Cl. 119—162 **5 Claims**



1. A pet litter box, comprising:
(a) a tray, including an upstanding wall and perforate bottom means for supporting a quantity of litter, said bottom means defining a plurality of openings through which liquid waste is free to pass;
(b) a base supporting said tray, said base including an upstanding support wall and means for supporting said litter box temporarily in a stable upright position on a toilet bowl with said tray supported on said base;
(c) sump means, located within said base, for collecting all of said liquid waste which passes through said openings in said bottom means, said sump means having an outlet;
(d) valve means, associated with said outlet of said sump means, for regulating liquid discharge from said sump means and said base into said toilet bowl; and
(e) control means, spaced apart from said valve means, for remotely operating said valve means, said control means being located adjacent said means for supporting said base in a position which is accessible when said base is supporting said litter box on said toilet bowl.

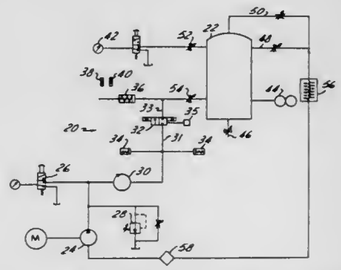
5,184,575
SANITARY FACILITY FOR CATS
Johann O. Reinartz, Herrenlaudstr. 32, D-4057 Brüggen 1, Fed. Rep. of Germany
PCT No. PCT/DE90/00120, § 371 Date Mar. 29, 1991, § 102(e) Date Mar. 29, 1991, PCT Pub. No. WO90/14759, PCT Pub. Date Dec. 13, 1990
PCT Filed Feb. 22, 1990, Ser. No. 671,883
Claims priority, application Fed. Rep. of Germany, Jun. 2, 1989, 3918121
Int. Cl.[5] A01K *1/01*
U.S. Cl. 119—163 **15 Claims**

1. Sanitary facility for domestic animals comprising:
a bottom portion;
said bottom portion having an opening on a first side thereof;
a waste container located adjacent the opening on the first side of the bottom portion;
said waste container including a lid that closes both the waste container and the opening on the first side of the bottom portion;
a floor for said bottom portion, said bottom portion including a movable slide that can be moved so as to dump debris from the floor into the waste container;



a center portion set upon said bottom portion, said center portion having an opening equipped with a door;
a top portion set upon said center portion; and
said top portion including a feeder to deposit cat litter onto the floor of said bottom portion.

5,184,576
HEAT EXCHANGE SYSTEM UTILIZING CAVITATING FLUID
Ronald Sajewski, Rochester, Mich., assignor to Applied Hydro Dynamics, Inc., Rochester, Mich.
Filed May 10, 1991, Ser. No. 698,545
Int. Cl.[5] F22B *3/06*
U.S. Cl. 122—26 **12 Claims**



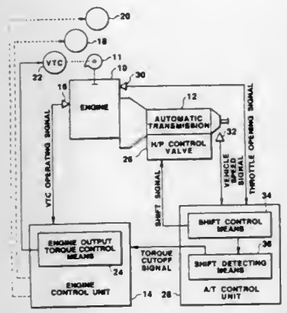
8. A method of generating heat comprising the steps of:
(1) pulsing a pressurized fluid into a vessel, the pulsating fluid generating heat within the vessel, the fluid pulses being cyclically controlled by controlling opening and closing of a valve upstream of the vessel, the opening and closing of a valve having a cycling time greater than one cycle per minute; and
(2) directing the fluid out of that vessel, and using that heated fluid as a source of heat.

5,184,577
RUNNING STATE CONTROL SYSTEM FOR MOTOR VEHICLE
Yuji Kato, Tokyo, and Kunifumi Sawamoto, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Japan
Filed Oct. 1, 1990, Ser. No. 591,170
Claims priority, application Japan, Oct. 3, 1989, 1-258288
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.15 **2 Claims**

1. A running state control system for a motor vehicle, the motor vehicle having an engine, driving wheels and intake valves, the system comprising:

VOL 1147 ISS 2 FEB 9 1993 UMI

means for generating a torque-cutoff signal indicative of a reduced torque demand on the engine, said means including a traction control system, said traction control system generating as said torque-cutoff signal a traction control ON indicative signal when said traction control system is operating to control traction;



means for controlling a braking torque on the driving wheels in response to said torque-cutoff signal said braking torque controlling means comprising a brake unit; and

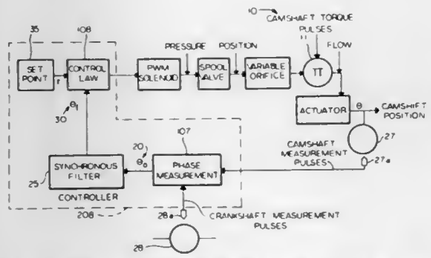
valve timing control means or regulating an opening timeing of the intake valves in a direction such as to decrease an output torque of the engine in response to said torque-cutoff signal.

5,184,578

VCT SYSTEM HAVING ROBUST CLOSED LOOP CONTROL EMPLOYING DUAL LOOP APPROACH HAVING HYDRAULIC PILOT STAGE WITH A PWM SOLENOID

Stanley B. Quinn, Jr.; Alan L. Miller, and Edward C. Siemon, all of Ithaca, N.Y., assignors to Borg-Warner Automotive Transmission & Engine Components Corporation, Sterling Heights, Mich.

Filed Mar. 5, 1992, Ser. No. 847,577
Int. Cl.[5] F01L *1/34*
U.S. Cl. 123—90.17 **26 Claims**



1. In an internal combustion engine having a rotatable crankshaft and a rotatable camshaft, the camshaft being position variable relative to the crankshaft, being subject to torque reversals during the rotation thereof, having a vane with at least one lobe secured to the camshaft for rotation therewith, and having a housing mounted on the camshaft for rotation with the camshaft and for oscillation with respect to the camshaft, the housing having at least one recess receiving the at least one lobe of the vane and permitting oscillation of the at least one lobe within the at least one recess as the housing oscillates with respect to the camshaft, a method comprising:

providing means for transmitting rotational movement from the crankshaft to the housing;

providing means for varying the position of the housing relative to the camshaft in reaction to torque reversals in the camshaft, said means delivering hydraulic fluid to said vane;

providing check valve means functionally positioned between said housing and said means for varying the position of the housing to eliminate the need for blocking a backflow of hydraulic fluid by the operation of said means for varying the position of said housing;

providing actuating means for supplying hydraulic fluid to said means for varying the position of the housing;

providing processing means for controlling the on-off pulses of said actuating means by generating a PWM duty cycle to said actuating means; and

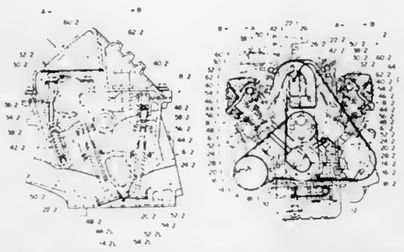
providing sensing means for determining a phase angle between the crankshaft and the camshaft and issuing a feedback signal to said processing means.

5,184,579

CYLINDER HEAD STRUCTURE OF INTERNAL COMBUSTION ENGINE

Hideo Fujiwara, Shizuoka, Japan, assignor to Suzuki Motor Corporation, Shizuoka, Japan

Filed Feb. 12, 1992, Ser. No. 835,128
Claims priority, application Japan, Feb. 22, 1991, 3-50760
Int. Cl.[5] F01L *1/26*
U.S. Cl. 123—90.23 **1 Claim**



1. A V-type internal combustion engine comprising an elongated cylinder block having a pair of cylinder banks arranged in a substantially V-shape with a central space defined therebetween, each of said pair of cylinder banks defining a plurality of cylinder bores, each bore having a longitudinal axis; a pair of cylinder head assemblies affixed to said cylinder banks, respectively, each of said cylinder head assemblies having a plurality of combustion chambers, each chamber opening into one of said cylinder bores of its associated cylinder bank, intake and exhaust ports communicating with each of said combustion chambers, said intake port being located on one side of said longitudinal axis of its associated cylinder bore closer to said central space and said exhaust port being located on the opposite side of said longitudinal axis remote from said central space, intake and exhaust poppet valves for opening and closing said intake and exhaust ports, respectively, said intake and exhaust valves each having an upwardly projecting, elongated stem, a spark plug located between said intake and exhaust valves and having a lower end communicating with said combustion chamber, a valve mechanism chamber in said cylinder head assembly above said combustion chambers, valve operating mechanism disposed in said valve mechanism chamber, said valve stems projecting upwardly into said valve mechanism chamber and being connected to said valve operating mechanism for operation thereby, said valve operating mechanism comprising an elongated, rotatable camshaft disposed in the upper portion of said valve mechanism chamber for rotation about an axis extending lengthwise of said cylinder block, the axis of rotation of said camshaft being offset laterally from

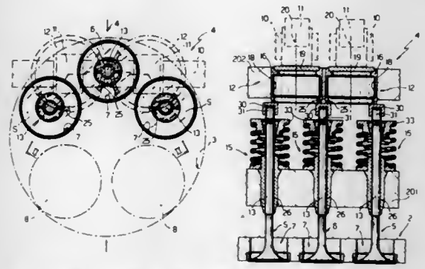
the longitudinal axis of said stem of said intake valve in a direction toward said central space of said cylinder block, first and second cams mounted on and rotatable with said cam shaft, an exhaust valve rocker shaft disposed in said valve mechanism chamber substantially between the upper ends of said stems of said intake and exhaust valves, said exhaust valve rocker shaft extending generally parallel with said cam shaft, a first rocker mounted at an intermediate part thereof on said exhaust valve rocker shaft, said first rocker having a first arm which projects in a direction toward said central space, said first arm having a free end slidably engaged with said first cam, said first rocker having a second arm which projects in a direction away from said central space and toward said stem of said exhaust valve, said second arm having a free end drivingly coupled to the upper end of said stem of said exhaust valve so that rotation of said camshaft will open and close said exhaust valve, an intake valve adjuster disposed in said cylinder head assembly at a location offset laterally from the longitudinal axis of said stem of said intake valve in a direction toward said central space, a second rocker having a single arm which is pivotally supported at one end thereof on said intake valve adjuster and is drivingly coupled at the other end thereof to the upper end of said stem of said intake valve, said second cam being maintained in sliding engagement with said second rocker between said ends of said arm thereof so that rotation of said camshaft will open and close said intake valve, said exhaust valve and said spark plug being arranged to extend almost parallel to the longitudinal axis of their associated cylinder.

5,184,580

TIMING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Ennio Ascari, Formigine, Italy, assignor to Ferrari S.p.A., Modena, Italy

Filed Oct. 30, 1991, Ser. No. 784,180
Claims priority, application Italy, Oct. 30, 1990, 67840 A/90
Int. Cl.[5] F01L *1/26*
U.S. Cl. 123—90.27 **6 Claims**



1. A timing system, in particular for an internal combustion engine, comprising;

a) a number of identical service valves carrying out the same function in serving a respective same cylinder,

b) elastic contrast means for said service valves,

c) a single camshaft controlling all of said service valves carrying out the same function by means of its respective cams; and,

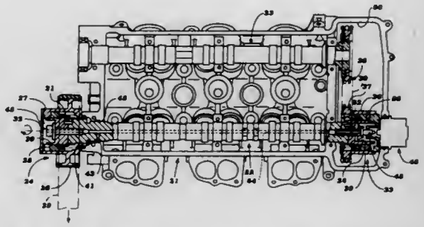
d) a number of respective tappets slidably guided in first seats provided in a cylinder head and interposed between said cams and respective stems of said service valves, said respective stems guided in second seats provided in said cylinder head and parallel to said first seats; wherein the number of said service valves is greater than the number of said respective tappets, each of said tappets directly cooperates with a corresponding one of said cams of said camshaft, and wherein said stems of said service valves carrying out the same function are positioned parallel to each other and to the axes of said tappets and radially eccentric therewith by an amount such that said stems are disposed peripherally with respect to said tappets and adjacent to respective side walls of said tappets; the timing system being characterized in that said tappets act onto said stems of said service valves independently of each other and against said respective said side walls of said tappets, each of said tappets acting in direct control of any two adjacent stems of said respective stems corresponding to said service valves having the same function and at least one of said valves having the same function has two adjacent tappets of said tappets acting simultaneously thereon and in a manner independent of each other and onto said stem of said at least one of said valve.

5,184,581

VALVE TIMING RETARDING SYSTEM

Tateo Aoyama; Kenichi Sakurai, and Shigeo Yamamoto, all of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 21, 1990, Ser. No. 587,999
Claims priority, application Japan, Sep. 21, 1989, 1-245671
Int. Cl.[5] F01L *1/02*
U.S. Cl. 123—90.31 **30 Claims**



1. A camshaft arrangement for an internal combustion engine comprising a first camshaft journaled for rotation about a first axis and operating at least one intake valve of a cylinder of said engine, a second camshaft journaled for rotation about a second axis and operating at least one exhaust valve of said cylinder of said engine, a first drive element carried by said first camshaft at one end therefore, first positive drive means for driving said first drive element in timed relation from an output shaft of said engine, first variable timing means for driving said first camshaft from said first drive element and changing the timing relationship between said output shaft and said first camshaft, a second drive element carried at a point spaced from said one end of said first camshaft, second variable timing means for driving said second drive element from said first camshaft and for varying the timing of said second drive element relative to said first camshaft, and second positive drive means for driving said second camshaft in timed relation to said second drive element.

5,184,582

ENGINE UNIT FOR VEHICLE

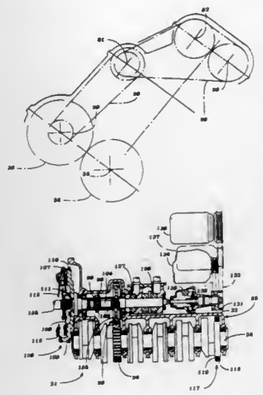
Kaoru Okui, and Manabu Kobayashi, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Division of Ser. No. 628,485, Dec. 17, 1990, Pat. No. 5,099,945, which is a division of Ser. No. 270,357, Nov. 14, 1988, Pat. No. 5,024,287. This application Jan. 10, 1992, Ser. No. 818,839
Claims priority, application Japan, Dec. 1, 1987, 62-301542; Dec. 1, 1987, 301543; Mar. 31, 1988, 63-078535
Int. Cl.[5] F01L *1/02*
U.S. Cl. 123—90.31 **6 Claims**

1. A camshaft drive for a multi-cylinder engine having an inclined cylinder bank and of the type where the valves are

VOL 1147 ISS 2 FEB 9 1993 UMI

actuated by two camshafts respectively which are assigned to said cylinder bank, said camshafts being disposed overhead and being driven by a crankshaft by way of an intermediate timing gear wherein the camshaft drive is arranged close to an engine



flywheel at an output end of the crankshaft, and wherein the intermediate timing gear has a gear wheel mating with a crankshaft gear wheel as well as a sprocket wheel, by means of which, in each case, the two camshaft of the cylinder bank are driven by means of a chain.

5,184,583

LIGHT METAL TAPPET WITH WEAR-RESISTANT ARMOURING MADE OF A STEEL WITH AN AUSTENITIC MATRIX

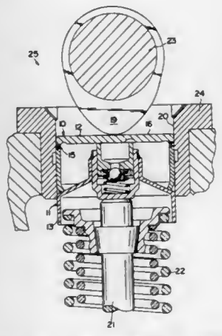
Karl-Ludwig Grell, Aurachtal, Fed. Rep. of Germany, assignor to INA Walzlager Schaeffler KG, Fed. Rep. of Germany

Filed Jan. 22, 1992, Ser. No. 824,017

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1991, 4102988

Int. Cl.[5] B23P *11/02*; F01L *1/24, 1/14, 1/16*

U.S. Cl. 123—90.51 **20 Claims**



1. A light metal tappet particularly for the timing gear of an internal combustion engine, comprising a tappet base body (**11**) and a steel plate anchored at the contact face for the control cams of the timing gear and having a hardened surface, characterized in that the steel plate (**12**) is made of an austenitic base material which is carbon dispersion hardened, has the same coefficient of thermal expansion as aluminium and comprises a nitrided surface (**16**).

5,184,584

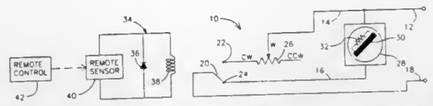
REMOTE STARTER FOR ALARM SYSTEM EQUIPPED VEHICLES

Harold S. Cantrell, Knoxville, Tenn., assignor to C & A Control Systems, Inc., Knoxville, Tenn.

Filed Dec. 16, 1991, Ser. No. 807,723

Int. Cl.[5] F02N *11/08*

U.S. Cl. 123—179.2 **7 Claims**



1. An electrical control system for remotely starting an engine of a vehicle where said vehicle has an engine starting circuit including an ignition switch operated by a key, a power source, an engine starter, electrical connections between said power source and said engine starter and an anti-theft security system including an anti-theft security element associated with said ignition switch and key, said electrical control system comprising:

a bypass circuit for said ignition switch, said bypass circuit including a switch means and a simulated security element in series with said switch means, said simulated security element emulating operation of said anti-theft security element;

a remote operator means for use by a user of said control system; and

a remote sensor means energized by said remote operator means including means for operation of said switch means whereby said control system is energized by said remote operator means to activate said starting system of said vehicle engine without energizing an alarm associated with said anti-theft security element.

5,184,585

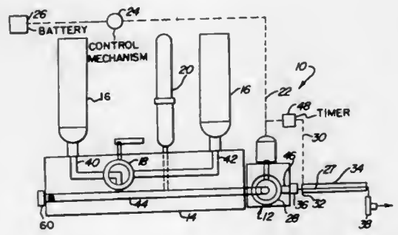
APPARATUS AND METHOD FOR ADDING FLUID TO A FUEL IN AN ENGINE TO ENHANCE IGNITION

Richard F. Wilson, Calgary, Canada, assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 5, 1991, Ser. No. 650,915

Int. Cl.[5] F02N *17/08*

U.S. Cl. 123—179.8 **19 Claims**



1. An apparatus for adding a highly flammable and volatile fluid to a fuel in an engine to enhance ignition of the engine, said apparatus comprising: fluid discharge means for discharging a predetermined quantity of said fluid from a source thereof; fluid delivery means operatively connected between said discharge means and the engine for delivering said fluid at a controlled flow rate to said engine; and means operatively connected to said delivery means and responsive to initiation of cranking of the engine for heating said delivery means, volatilizing the fluid flowing therethrough, and delivering the volatized fluid to the engine.

5,184,586

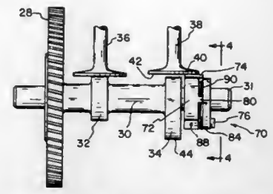
MECHANICAL COMPRESSION RELEASE FOR AN INTERNAL COMBUSTION ENGINE

Brian S. Buchholz, Malone, Wis., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed Feb. 10, 1992, Ser. No. 833,348

Int. Cl.[5] F01L *13/08*

U.S. Cl. 123—182.1 **13 Claims**



13. An internal combustion engine, comprising:

a combustion chamber;

an intake valve and an exhaust valve, each operable to respectively control the flow of a fuel/air mixture into the combustion chamber and the exhaust of gases therefrom, said intake and exhaust valves including respective intake and exhaust valve lifters;

a rotatable camshaft having a camshaft gear affixed thereon;

inboard and outboard camshaft lobes fixed on said camshaft, said inboard lobe being positioned axially on said camshaft between said camshaft gear and said outboard lobe, said camshaft lobes being operable to engage respective valve lifters to actuate said intake and exhaust valves;

a centrifugally activated movable member disposed on said camshaft adjacent said outboard lobe and being revolvable with said camshaft, said movable member including one of a slot and a protruding element, said movable member further including a lifting surface that extends above said outboard lobe to engage one of said valve lifters when said movable member is rotated to a first position below a threshold speed, said lifting surface being below said outboard lobe when said movable member is rotated to a second position above said threshold speed; and

a retainer for axially retaining said moveable member on said camshaft, one of said retainer and said outboard lobe including the other of said slot and said protruding element, wherein said protruding element is engageable in said slot for guiding said movable member between said first and second positions.

5,184,587

OIL PASSAGE STRUCTURE OF A CYLINDER HEAD

Hisashi Ozeki, Shizuoka, Japan, assignor to Suzuki Motor Corporation, Shizuoka, Japan

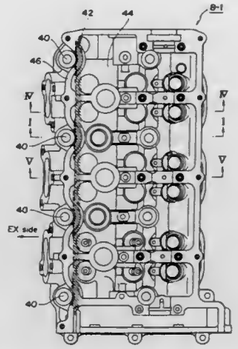
Filed Mar. 3, 1992, Ser. No. 845,228

Claims priority, application Japan, Mar. 20, 1991, 3-81753

Int. Cl.[5] F02F *1/00*

U.S. Cl. 123—193.5 **3 Claims**

1. An internal combustion engine, comprising: an elongated cylinder block having one lateral side defining an exhaust side; an elongated cylinder head detachably affixed to said cylinder block by a plurality of bolts which are located at spaced intervals along said exhaust side of said cylinder block, said cylinder head having an internal cam chamber in the upper portion of said cylinder head and located between the lateral sides of said cylinder head, said cylinder head having a bolt-mounting portion for each of said bolts, said bolt-mounting portions extending laterally outwardly and being disposed along said exhaust side of said cylinder block so that said bolts are externally accessible from said exhaust side, each bolt-mounting portion having a through bore and a bearing surface at the upper end thereof so that a bolt head can bear thereagainst, said cylinder head having an upstanding side wall located between said cam chamber and said bolt-mounting portions and isolating said cam chamber from said bolts, said side wall having a lower portion which extends below and is disposed substantially underneath said bearing surfaces of said bolt-



mounting portions, the lower portion of said side wall and said cam chamber defining an oil passage which extends the entire longitudinal extent of said cylinder head along the lower portion of said side wall on the exhaust side of said cylinder head and is isolated from said bolts.

5,184,588

ENGINE CONTROL APPARATUS

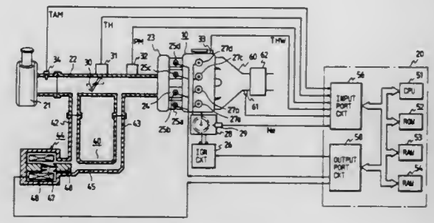
Tatsunori Kato, Nagoya; Katsuhiko Kawai, and Shigenori Isomura, both of Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 6, 1992, Ser. No. 846,333

Claims priority, application Japan, Mar. 7, 1991, 3-42080

Int. Cl.[5] F02M *3/00*

U.S. Cl. 123—339 **9 Claims**



1. An engine control apparatus comprising:

(a) actual control condition detection means for detecting an actual control condition of an engine;

(b) adjusting means for adjusting said actual control condition of said engine; and

(c) control means for controlling said adjusting means such that said actual control condition of said engine is controlled to a target control condition using state variable amount and a feedback constant determined on the basis of a dynamic model of said engine, wherein said control means has:

predicated control condition operation means for operating a predicted control condition on the basis of said dynamic model of said engine;

deviation operation means for operating a deviation of said predicated control condition from said target control condition; and

changing means for changing control of said control means

VOL 1147 ISS 2 FEB 9 1993 UMI

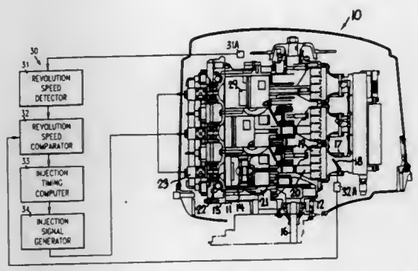
such that fluctuations of said control condition become small in accordance with a judgement made such that an error of said dynamic model exceeds a tolerance when said deviation exceeds a predetermined value.

5,184,589

FUEL INJECTION CONTROL SYSTEM

Kimihiro Nonaka, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Nov. 13, 1991, Ser. No. 791,208
Claims priority, application Japan, Nov. 13, 1990, 2-303835
Int. Cl.[5] F02D *31/00*
U.S. Cl. 123—352 **15 Claims**



1. An apparatus for controlling the speed of a direct fuel injected, scavenged two stroke engine having a throttle comprising:
- a first sensor for sensing the degree to which the throttle is open;
- means for sensing the speed of the engine;
- means for determining a desired engine speed based on the degree to which the throttle is open;
- means for producing a signal corresponding to the difference between the engine speed sensed by said engine speed sensing means and said predetermined engine speed; and
- a control device for adjusting at least one engine running parameter based on said difference to reduce said difference, wherein said control device adjusts a fuel injection timing to reduce said difference.

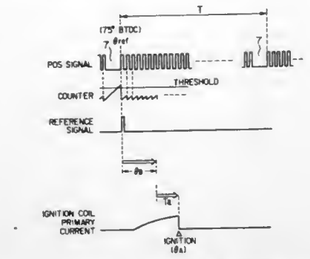
5,184,590

ENGINE TIMING CONTROL APPARATUS

Atsuko Hashimoto; Toshio Iwata, and Wataru Fukui, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 10, 1992, Ser. No. 832,839
Claims priority, application Japan, Feb. 12, 1991, 3-038903; Feb. 13, 1991, 3-040481; Feb. 13, 1991, 3-040482; Feb. 15, 1991, 3-022198
Int. Cl.[5] F02P *5/15, 7/067*
U.S. Cl. 123—414 **7 Claims**

1. A timing control apparatus for an internal combustion engine comprising:
- first signal generating means for sensing rotation of an engine and generating a first position signal having discontinuous portions at regular intervals, each discontinuous portion corresponding to a first reference position of a crankshaft of the engine;
- reference position sensing means responsive to the first position signal for sensing the occurrence of the first reference position; and
- ignition control means responsive to the reference position sensing means for controlling ignition of the engine based



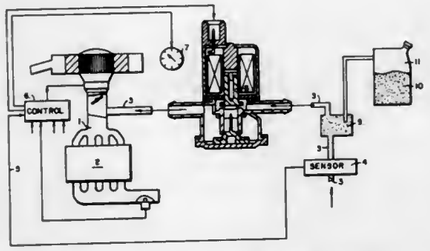
on the first reference position in a manner such that ignition does not occur during the discontinuous portions.

5,184,591

DEVICE FOR TEMPORARILY STORING VOLATILE FUEL CONSTITUENTS AND SUPPLYING THEM AT A CONTROLLED RATE TO THE INTAKE PIPE OF AN INTERNAL COMBUSTION ENGINE

Andreas Sausner, Frankfurt am Main, and Sebastian Zabeck, Hemsbach, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Nov. 6, 1991, Ser. No. 788,643
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1990, 4035158
Int. Cl.[5] F02M *33/02*
U.S. Cl. 123—520 **3 Claims**



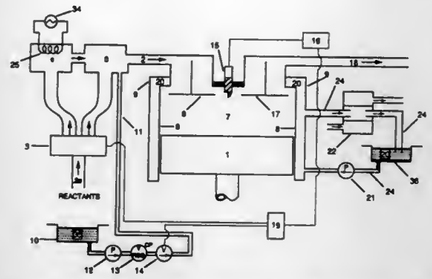
1. In an apparatus for temporarily storing volatile fuel constituents and supplying them at a controlled rate to the intake pipe of an internal combustion engine, said device comprising a volatile fuel constituent absorber, a gas line extending through the absorber to the intake pipe of the engine and a shut-off valve arranged in the gas line, the improvement comprising sensor means arranged in the gas line for producing a first signal representing the volatile constituent mass flow; an auxiliary component, responsive to said first signal, for controlling the position of the shut-off valve and producing a second signal representing the position of the shut-off valve, the auxiliary component including means for comparing the first and second signals; and at least one accessory means for displaying deviations of the first signal with respect to the second signal which exceed an arbitrarily prescribed threshold.

5,184,592

METHOD AND APPARATUS FOR FORCE OR TORQUE CONTROL OF A COMBUSTION ENGINE

Enoch J. Durbin, 246 Western Way, and Paul D. Ronney, 58 Stanworth La., both of Princeton, N.J. 08540

Filed Jan. 28, 1991, Ser. No. 646,396
Int. Cl.[5] F02M *31/00*
U.S. Cl. 123—543 **8 Claims**



1. An apparatus for controlling the output torque of an internal combustion engine comprising:
- an internal combustion engine having at least one combustion chamber;
- an intake manifold attached to said engine and in communication with said combustion chamber;
- a mixing chamber connected to and in communication with said intake manifold;
- a heat exchanger coupled to and in communication with said mixing chamber which allows for unrestricted flow of fresh air to said intake manifold such that the total volume of air delivered to the combustion chamber is generally constant;
- a heat source that provides heat to said heat exchanger;
- means for controlling the rate of heat exchange between said heat source and the fresh air flowing therethrough thereby manipulating the density of the air delivered to said combustion chamber and thus controlling the output torque of the engine making unnecessary the use of a throttle restriction to control the quantity of combustible mixture supplied to said engine; and
- means for delivering fuel to said mixing chamber.

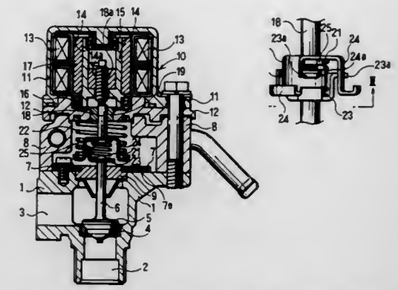
5,184,593

FLOW CONTROL VALVE

Masahiro Kobayashi, Obu, Japan, assignor to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Dec. 12, 1991, Ser. No. 805,767
Claims priority, application Japan, Dec. 28, 1990, 2-408683
Int. Cl.[5] F02M *25/07*
U.S. Cl. 123—571 **15 Claims**

1. A flow control valve comprising:
- (a) a valve housing having inlet and outlet ports and a valve seat in a passage therebetween;
- (b) a lift type valve member for seating on said valve seat in said valve housing and having a valve stem;
- (c) a joint cover fixed on said valve housing;
- (d) a linear motor fixed on said joint cover and including a projecting output shaft having an external thread and a rotor fitted in said motor, said rotor having an internal thread engaging with the external thread of said output shaft so that said output shaft is axially moved by the rotation of said rotor;
- (e) a first retainer attached to the leading end of said output shaft projecting into said joint cover; and a second retainer fixed to the leading end of said valve stem and connected to said first retainer such that it can move within a predetermined range in the axial direction of said valve stem;
- (f) a first coil spring sandwiched between said first retainer and a front cover of said motor for urging said output shaft in a projecting direction; and
- (g) a valve closing coil spring arranged between said first retainer and said second retainer for urging said valve stem in a valve closing direction, said first coil spring having a spring force set weaker than that of said valve closing coil spring.

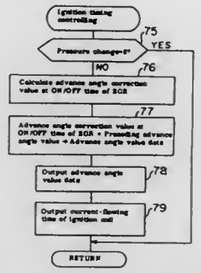


5,184,594

FAILURE DIAGNOSIS DEVICE OF AN EGR CONTROL DEVICE

Mamoru Saitoh, and Shinya Fujimoto, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

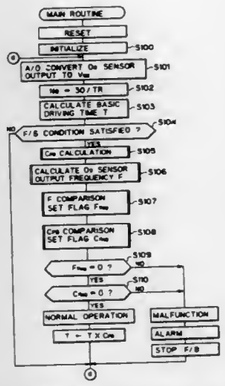
Filed Apr. 14, 1992, Ser. No. 868,244
Claims priority, application Japan, Apr. 15, 1991, 3-082247
Int. Cl.[5] F02M *25/07*; F02P *5/15*
U.S. Cl. 123—571 **1 Claim**



1. A failure diagnosis device of an EGR control device provided with an exhaust gas recirculating passage for recirculating exhaust gas of an engine to an intake side of the engine and a recirculating valve for controlling to open and close the exhaust gas recirculating passage, which controls to open and close the recirculating valve comprising:
- a running condition detecting means for detecting a running condition of the engine;
- a failure diagnosis means for performing a failure diagnosis of the EGR control device by determining whether a difference between the first running condition when the recirculating valve is open and the second running condition when the recirculating valve is closed, is a predetermined value or more; and
- an ignition timing controlling means for performing an ignition timing controlling in accordance with a change of the running condition when the recirculating valve is switched from an open state to a closed state and from the closed state to the open state.

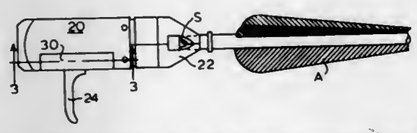
VOL
1147
ISS
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1993
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5,184,595
DISORDER DIAGNOSIS DEVICE FOR FUEL INJECTION APPARATUS
Mie Maeda, and Hirofumi Ohuchi, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 5, 1992, Ser. No. 831,454
Claims priority, application Japan, Feb. 26, 1991, 3-30607
Int. Cl.[5] F02D *41/14*
U.S. Cl. 123—690 **5 Claims**



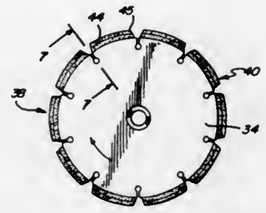
1. A disorder diagnosis device for a combustion engine having a fuel injector for each cylinder and a fuel system for supplying fuel to the injector, comprising:
a first means provided at an exhaust tube of said combustion engine for providing an air-fuel ratio signal indicative of an air-fuel ratio;
a second means responsive to said first means for calculating a first value by comparing said air-fuel ratio signal with a present value and for calculating a second value by comparing a signal corresponding to said air-fuel ratio signal with a predetermined value; and
a third means responsive to said second means for deciding if said fuel system is in disorder on the basis of a combination of said first and second values.

5,184,596
BOWSTRING RELEASE SAFETY MECHANISM
James H. Green, Rte. 1, Box 315, North Wilkesboro, N.C. 28659, and John F. Green, Jr., Rte. 2, Box 300, Boone, N.C. 28607
Filed Feb. 5, 1992, Ser. No. 831,156
Int. Cl.[5] F41B *5/00*
U.S. Cl. 124—35.2 **6 Claims**



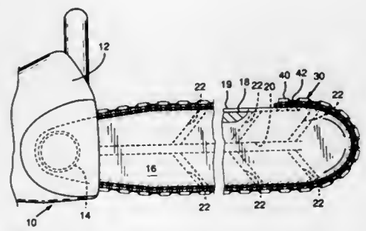
1. A safety mechanism to prevent the accidental discharge of a bowstring release device having a movable trigger, said safety mechanism comprising:
(a) trigger motion blocking means assembled to said bowstring release device and being linearly moveable between a position of interference with the movement of said trigger and a position out of such interference and being biased out of said interference position; and
(b) a blocking means cam mounted on said bowstring release device being movable in a plane substantially perpendicular to the direction of linear motion of said trigger motion blocking means and operable to place said trigger motion blocking means in position to interfere with the movement of said trigger.

5,184,597
APPARATUS AND METHOD FOR CUTTING UNHARDENED CONCRETE
Edward Chiuminatta, and Alan R. Chiuminatta, both of 6677 Columbus St., Riverside, Calif. 92504
Filed Apr. 27, 1990, Ser. No. 516,060
Int. Cl.[5] B28D *1/04*
U.S. Cl. 125—15 **20 Claims**



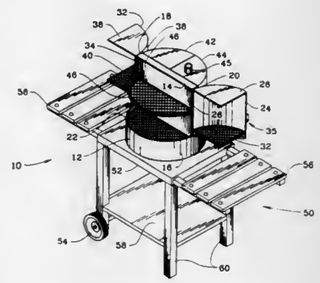
1. A circular concrete saw blade comprising:
a support disc;
a plurality of circumferentially spaced concrete cutting segments supported about the periphery of the support disc, the cutting segments including a group of central cutting segments located axially between and extending radially outward from two adjacent groups of side cutting segments with the side cutting segments contacting the central cutting segments, wherein the cutting segments have circumferentially leading and trailing ends forming a wedge shape in which the axial width of the leading end is smaller than the axial width of the trailing end.

5,184,598
SAW CHAIN FOR AGGREGATE MATERIALS
Don A. Bell, Portland, Oreg., assignor to Blount, Inc., Portland, Oreg.
Filed Jul. 15, 1991, Ser. No. 730,192
Int. Cl.[5] B28D *1/08*
U.S. Cl. 125—21 **8 Claims**



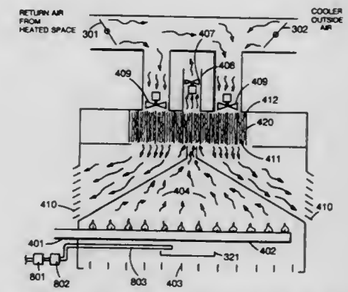
1. A saw chain adapted to be driven in a circuitous path around a guide bar for cutting aggregate material comprising:
pivotally interconnected links forming a sequence of links having bearing surfaces at the areas of pivotal interconnection and at areas where the saw chain is supported on the guide bar, abrasive cutting blocks mounted on certain of said links and forming cutting links, non-cutting links separating said cutting links, and a guard portion provided on one of said non-cutting links between the cutting links, said abrasive cutting blocks extended to a common height and said guard portions co-extended to substantially the same height for protecting the leading edge of a following abrasive cutting block when driven around the guide bar;
said guard portion on said one of said non-cutting links configured in side view so as to converge to a peak that is positioned immediately preceding the abrasive cutting block, said abrasive cutting block and guard portions having wear factors determined by the rate of height reduction resulting from abrading contact with an aggregate material being cut, and said guard portions having a wear factor that is at least as great as the wear factor of the cutting block.

5,184,599
MULTIPLE DOOR/TRAY COOKER, SMOKER AND GRILL
Clifford H. Stuart, P.O. Box 65, Canal Point, Fla. 33438
Filed Jun. 12, 1992, Ser. No. 897,894
Int. Cl.[5] A47J *37/00*
U.S. Cl. 126—25 R **16 Claims**



1. A self contained solid fuel cooker and grill comprising:
a housing means comprised of a top closure panel and a bottom substantially circular closure panel placed in horizontally parallel planes connected to a first curved side wall and a second curved wall placed opposite to said first side wall;
a lower removable grate means positioned above said bottom closure panel defining a lower interior chamber, said lower grate providing a means for support of solid fuel;
quadrilateral side wall closure doors defined by a first door connected to a first side edge of said first side wall and adapted to swing on a substantially vertical axis between a closed position and an open position, a second door connected to a first side edge of said second side wall and adapted to swing on a substantially vertical axis between a closed position and an open position, said first door operatively associated with said second door forming a continuous side wall between said first side edge of said first side wall and said first side edge of said second side wall, a third door connected to a second side edge of said first side wall and adapted to swing on a substantially vertical axis between a closed position and an open position and a fourth door connected to a second side edge of said second side wall and adapted to swing on a substantially vertical axis between a closed position and an open position, said third door operatively associated with said fourth door forming a continuous side wall between said second side edge of said first side wall and said second side edge of said second side wall; and
a door grate means attached to each of said quadrilateral doors, each said door grate coupled to an inner surface of said door adapted to provide a horizonal support surface for moving food items over said lower grate in response to movement of said respective door;
whereby closure of said doors provides an enclosed interior with four distinct and separate cooking surfaces commonly heated by a single source and each cooking surface independently accessible in response to movement of said respective door.

5,184,600
REGULATING THE HUMIDITY OF A HEATED SPACE BY VARYING THE AMOUNT OF MOISTURE TRANSFERRED FROM THE COMBUSTION GASES
William B. Astle, Jr., 146 Old Farm Rd., Leominster, Mass. 01453
Continuation-in-part of Ser. No. 364,614, Jun. 8, 1989, Pat. No. 5,005,556. This application Nov. 13, 1990, Ser. No. 612,552
Int. Cl.[5] F24F *3/14*
U.S. Cl. 126—113 **20 Claims**



1. Space heating and humidifying apparatus in which fuel gas is burned and heat and moisture are transferred from the resulting combustion gases to a reclaim air stream to produce heated and humidified air for an interior space, the apparatus comprising:
a porous heat sink member,
ducting for delivering the combustion gases to the heat sink member, the gases being delivered along a combustion-gas path,
a blower and ducting for directing reclaim air along a reclaim-air path to the heat sink member,
means for passing the combustion gases and reclaim air through the porous heat sink member so that portions of the member alternately pass through the combustion-gas path and the reclaim-air path, to transfer heat and moisture from the combustion gases to the reclaim air, said apparatus having a plurality of operating parameters and means for varying each operating parameter,
circuitry means for receiving a signal specifying a level of desired humidity, and
circuitry means for using the humidity-level signal to control a means for varying a parameter of the apparatus to raise or lower the rate at which moisture is transferred from the combustion gases to the reclaim air.

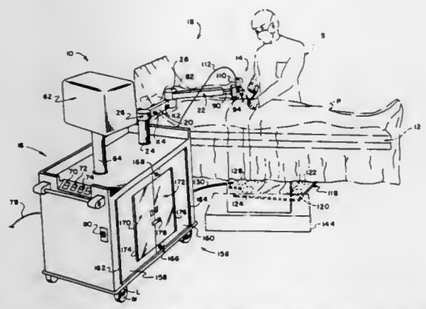
2. A method for regulating the humidity of a heated interior space, comprising the steps of:
burning a fuel gas to produce combustion gases;
moving a porous heat sink member through the path of the combustion gases to absorb heat and condense moisture from the combustion gases;
directing a reclaim air stream through the porous heat sink member to extract heat and moisture therefrom;
moving the heat sink member through the combustion gases and reclaim air stream so that portions of the heat sink member alternately pass through the combustion-gas path and the reclaim-air path,
receiving a signal specifying a level of desired humidity, and
using the humidity-level signal to control at least one parameter of the apparatus to raise or lower the rate at which moisture is transferred from the combustion gases to the reclaim air.

VOL 1147 ISS 2 FEB 9 1993 UMI

5,184,601
ENDOSCOPE STABILIZER

John M. Putman, 3707 Gaston Ave., Suite 410, Dallas, Tex. 75246

Filed Aug. 5, 1991, Ser. No. 740,413
Int. Cl.[5] A61B *1/00*
U.S. Cl. 128—4 10 Claims

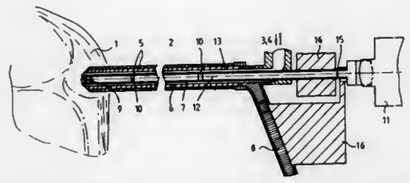


1. Freestanding surgical instrument support apparatus for use adjacent to a surgical operating table comprising, in combination:
- a portable console having wheels for permitting rolling movement of the console from one station to another;
- an upright support shaft movably mounted on said console for extension and retraction in elevation relative to said console;
- a support arm coupled to the upright support shaft for rotation about the longitudinal axis of the upright support shaft;
- a first extension arm movably mounted on said support arm for extension and retraction along the longitudinal axis of said support arm;
- a second extension arm movably mounted on said first extension arm for extension and retraction along an axis transverse with respect to the longitudinal axis of said first extension arm;
- an instrument coupler movably mounted on said second extension arm for rotation about a fourth axis transverse with respect to the longitudinal axis of said second extension arm;
- electromechanical control means coupled to said upright support shaft, said support arm and said extension arms for controlling the rotational position of the support arm and the extension and retraction of the first and second extension arms; and,
- a floor switch control circuit coupled to said electromechanical control means for controlling the extension and retraction of said instrument coupler along the longitudinal axis of said support arm, and for controlling the extension and retraction of said instrument coupler in elevation with respect to support arm, said floor switch control circuit having electrical switches which may be actuated by foot pressure applied by a surgeon while said surgeon is performing a surgical procedure on a patient lying on the operating table.

5,184,602
ENDOSCOPE, IN PARTICULAR AN ARTHROSCOPE

Emmanuel Anapliotis, Berlin, and Gisbert Schich, Ansbach, both of Fed. Rep. of Germany, assignors to Effner Biomet GmbH, Berlin, Fed. Rep. of Germany

PCT No. PCT/DE89/00728, § 371 Date Nov. 21, 1990, § 102(e) Date Nov. 21, 1990, PCT Pub. No. WO90/05479, PCT Pub. Date May 31, 1990
PCT Filed Nov. 19, 1989, Ser. No. 602,298
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1988, 8814573[U]; Mar. 29, 1989, 8904011[U]
Int. Cl.[5] A61B *1/06*
U.S. Cl. 128—6 26 Claims

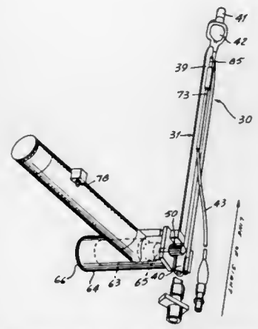


1. An endoscope, in particular an arthroscope, having an open front end, comprising:
- an essentially cylindrical shaft containing an optical means for conveying optical images and optical fibers, an optical axis of the optical means coinciding with a longitudinal axis of the shaft, the optical fibers being arranged concentrically about the optical means;
- wherein the optical fibers include a connecting piece disposed radially relative to the longitudinal axis of the shaft and by which the optical fibers are connected to a fiber-optic cable which leads to a light source, a direction of viewing at an end nearer an object being viewed is inclined to the longitudinal axis, and
- wherein at least an end of the optical means nearer the object is arranged to rotate with respect to the connecting piece, the connecting piece not rotating when the optical means is rotated.

5,184,603
AUTOMATIC INTUBATING LARYNGOSCOPE

J. Gilbert Stone, 25 Bank St., New York, N.Y. 10014

Filed Feb. 15, 1991, Ser. No. 656,961
Int. Cl.[5] A61B *1/06*
U.S. Cl. 128—11 9 Claims

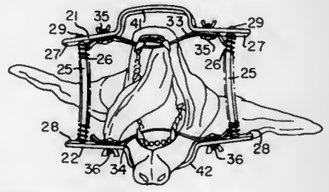


8. A compact intubating instrument comprising:
(a) a laryngoscopic blade means;
(b) endotracheal tube retaining means associated with said blade means and adapted to retain and to guide a tube with respect to said blade means;
(c) a handle housing means adapted to be grasped and manipulated in one hand and to support said blade means;
(d) tube driving means disposed within said support handle housing means and adapted to engage external proximal surfaces of an endotracheal tube;
(e) activating means for driving means disposed on said handle housing means and adapted to be selectively engaged by a finger of the same hand which holds said handle housing means;
(f) whereby said tube may be driven through external proximal surfaces thereof along said blade means by an operator utilizing one hand leaving the other hand free for other manipulation of the anatomy of a patient being intubated.

5,184,604
ANIMAL MOUTH RETRACTOR

Jose C. Brillante, 2147 O Street, NW., Apt. 300, Washington, D.C. 20037

Filed Oct. 29, 1991, Ser. No. 784,522
Int. Cl.[5] A61D *1/00*
U.S. Cl. 128—14 22 Claims



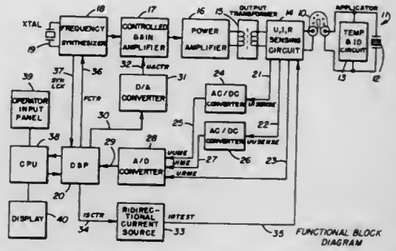
1. An animal mouth retractor comprising:
- a pair of spaced retainer means, each of said retainer means including first and second end portions adapted to be positioned at opposite sides of a jaw of an animal, each of said retainer means including an intermediate portion joining said first and second end portions and being adapted to span a jaw of an animal;
- jaw engaging means connected between the first and second end portions of each of said retainer means and spaced from the associated intermediate portion to receive a jaw between each jaw engaging means and the associated intermediate portion;
- guide means outboard of said jaw engaging means of said retainer means and engaging end portions of the retainer means for guiding movement of said retainer means relative to one another; and
- spring biasing means for automatically and continuously urging said retainer means away from one another without any manual manipulation to provide an infinite number of separation distances between the pair of jaw retainers.

5,184,605
THERAPEUTIC ULTRASOUND GENERATOR WITH RADIATION DOSE CONTROL

Miroslaw Grzeszykowski, Mississauga, Canada, assignor to Excel Tech Ltd., Mississauga, Canada

Filed Jan. 31, 1991, Ser. No. 648,596
Int. Cl.[5] A61H *1/00*
U.S. Cl. 128—24 AA 37 Claims

1. An apparatus for controlling an ultrasonic transducer, comprising:
- a connector adapted to be connected to the transducer connected to the connector for radiating ultrasonic power to a treatment site in response to electric power;
- means, coupled to the connector, for supplying a controllable amount of electric power to the transducer connected to the connector;
- means, coupled to the connector, for sensing an actual amount of power radiated by the transducer connected to the connector under conditions of varying coupling efficiency during use; and



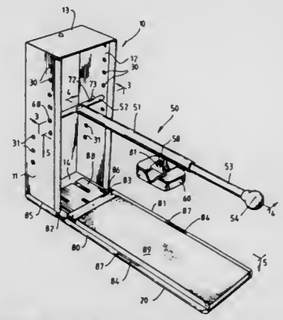
FUNCTIONAL BLOCK DIAGRAM

- means, coupled to the means for sensing and the means for supplying, for controlling the means for supplying in response to the amount of power radiated and a preset radiation power.

5,184,606
DEVICE FOR CARDIAC MASSAGE

George Csorba, Box 4, River Road,, Murrabit, Victoria 3579, Australia

Filed Aug. 26, 1991, Ser. No. 750,074
Int. Cl.[5] A61H *31/00*
U.S. Cl. 128—28 6 Claims



1. A portable device for cardiac massage of a patient comprising:
- a portable elongate case including
  - an opening,
  - a lid,
  - a mounting means for mounting said lid to said case in a closed position in which said lid closes said opening of said case, and
  - a locking means for locking said lid in an opened position in which said lid extends away from said opening of said case and in which said lid is locked to a remainder of said case against relative movement of said lid in a plane;
- a lever which is receivable in said case when said lid is in the closed position, said lever having
  - a first end,
  - a free end, and
  - a remainder between said first end and said free end;
- a positioning means for detachably mounting said first end of said lever at a variety of positions in said case when said lid is in the opened position so that said remainder of said

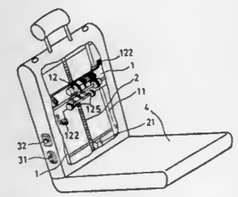
VOL 1147 ISS 2 FEB 9 1993 UMI

lever extends out of said opening of said case and for pivotally mounting said first end of said lever so that said remainder of said lever is pivotable about said first end and in the plane toward and away from said lid; and

a contact pad attached to said remainder of said lever and projecting toward said lid when said first end of said lever is mounted in said case;

such that is use with said lid locked in the opened position a back of the patient is positioned against said lid and said first end of said lever is positioned so that said contact pad is positioned over a sternum of the patient, and whereby cardiac massage is applied to the patient by repeatedly pressing on said free end of said lever to repeatedly engage said contact pad with the sternum of the patient.

5,184,607
AUTOMOBILE MASSAGING DEVICE
Haw C. Hwang, No. 3, Lane 21, Hsing Der Rd., Taipei, Taiwan
Filed Jan. 27, 1992, Ser. No. 827,701
Int. Cl.[5] A61H *7/00*
U.S. Cl. 128—52 **6 Claims**



1. An automobile massaging device comprising:

a support frame having first and second end portions;

a pair of spaced, substantially parallel guide rails fixedly mounted between the first and second end portions of said support frame;

a guide screw rod rotatably mounted to said support frame, said guide screw rod being located between said pair of spaced guide rails and being substantially parallel thereto;

a first reversible motor secured to said support frame, said first reversible motor including an output shaft;

means for drivingly connecting said first reversible motor to said guide screw rod such that activation of said first reversible motor causes rotation of said guide screw rod;

a slide base linearly, movably supported upon said pair of spaced guide rails and connected to said guide screw rod such that rotation of said guide screw rod in alternating directions by said first reversible motor causes said slide base to reciprocate relative to said support frame upon said pair of spaced guide rails;

first switch means carried by said support frame and said slide base for automatically triggering the reversal of the direction of rotation of the output shaft of said first reversible motor upon movement of said slide base, upon said pair of spaced guide rails, a predetermined distance relative to said support frame;

a second reversible motor secured to said slide base, said second reversible motor including an output shaft;

a first gear carried by the output shaft of said second reversible motor, said first gear including a pair of recesses formed at spaced intervals about the periphery thereof;

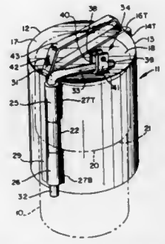
a second gear meshingly engaged and adapted to be driven by said first gear;

an axle member rotatably mounted upon said slide base, said axle member carrying said second gear;

a pendulum massaging unit carried by said axle member such that rotation of said axle member by said second reversible motor, through said first and second gears, causes said pendulum massaging unit to swing; and

second switch means for automatically triggering said second reversible motor to reverse the rotational direction of said first gear and the swinging direction of said pendulum massaging unit, said second switch means including a contact member that is adapted to alternately project within said pair of recesses formed in said first gear to trigger the reversal of said second reversible motor.

5,184,608
WELL PIPE TOP CAP
Ernest E. Hale, III, 54 The Downs, Tuscaloosa, Ala. 35401
Filed Mar. 27, 1991, Ser. No. 675,872
Int. Cl.[5] F16L *55/10*
U.S. Cl. 138—89 **13 Claims**



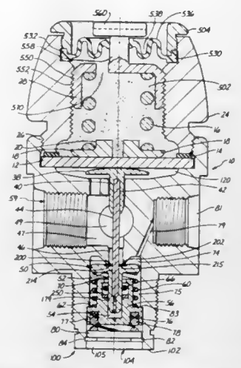
1. A well pipe cap for well pipe tops having an enlarged top end annular boss comprising: a pipe cap having first and second half cylindrical concave halves; pivotal means interconnecting said first and second half cylindrical concave halves with the halves pivotal from an open state to a closed state enclosing a well pipe top end annular boss; said first and second half cylindrical concave halves including inwardly extended projection means at the bottom that comes into upward motion limiting engagement with the bottom of the well pipe top end annular boss as said well pipe cap is being lifted; lock means for locking said first and second half cylindrical concave halves in the closed state; wherein said inwardly extended projection means at the bottom include a plurality of inwardly extended projections fastened to the bottom of the inner walls of said first and secodn half cylindrical halves; said first and second half cylinder concave halves are each provided with a half circle enclosure top; and wherein a side edge of one of said first and second half cylinder concave halves is behind a vertically extended overlay strap welded to one of said first and second half cylinder concave halves.

5,184,609
DIVERS FIRST STAGE ADJUSTABLE REGULATOR
Dennis L. Hart, Newport Beach, Calif., assignor to U.S. Divers Co., Inc., Santa Ana, Calif.
Filed Sep. 3, 1991, Ser. No. 753,836
Int. Cl.[5] A62B *9/02*
U.S. Cl. 128—205.24 **20 Claims**

8. A combination of a regulator having a spring block with a first spring which operatively biases a movable valve seat formed with a surface for sealing against an orifice for valving high pressure gas to a lower intermediate pressure and a pin type linkage for driving said movable valve seat away from said orifice when said pin type linkage is moved in response to a main operative diaphragm which is actuated by an imbalance between ambient pressure on one side thereof and intermediate pressure on the other side and wherein said main operative diaphragm is overlain by a cavity having a second diaphragm overlying said cavity for retention of a coupling fluid within said cavity and a coil spring within said cavity which is biased against said main operative diaphragm and said second diaphragm wherein the improvement comprises:

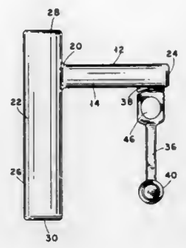
threaded adjustment means having a threaded end against which said coil spring is seated which is threaded into the sidewalls of said cavity; and

means extending from the threaded adjustment means through said second diaphragm having an exterior portion



thereof which can be used to rotate said adjustment means to adjust the compression of said coil spring without disassembly of the regulator.

5,184,610
TRACHEAL CANNULAS AND STENTS
Lewis H. Marten, Quincy, and Charles Lane, Duxbury, both of Mass., assignors to Hood Laboratories, Pembroke, Mass.
Division of Ser. No. 527,032, May 22, 1990, Pat. No. 5,054,483, which is a division of Ser. No. 319,534, Mar. 6, 1989, Pat. No. 5,017,188. This application May 30, 1991, Ser. No. 707,442
Int. Cl.[5] A61M *16/00, 25/00, 29/00;* **A61F** *2/20*
U.S. Cl. 128—207.14 **7 Claims**



1. T-shaped stent for insertion through a tracheotomy orifice into a trachea having a cervical portion and a trachea wall including a margin and adjacent margins thereof when incised following surgical reconstruction of the cervical portion thereof, and surgical correction of tracheal and subglottic stenosis, said stent comprising;

an intraluminal tubular portion having a interior lumen open at both ends, a length and an outside diameter sized to provide a snugly fitting internal support for a reconstructed or corrected trachea;

an integral tracheotomy tubular portion of a diameter less than that of the intraluminal portion and disposed at an angle thereto intermediate the ends thereof and in communication with the interior lumen of said intraluminal portion, said tracheotomy portion being of a length to project outwardly through a tracheotomy orifice after the insertion of the intraluminal portion within a trachea through said orifice;

said tracheotomy tubular portion having an external open end disposed away from said intraluminal tubular portion and a smooth outer surface;

said intraluminal portion and said tracheotomy portion being joined to each other at a point of junction;

the junction being ovate with a long axis aligned along the length of the intraluminal portion and providing external flared shoulders of both intraluminal and tracheotomy portions such as to provide, when the stent is in place, molding surfaces for entry into the tracheotomy orifice in molding support of the margin or adjacent margins of the tracheal wall and operable to overcorrect said margins, thereby to avoid a protrusion of any resulting scar tissue into the trachea; and

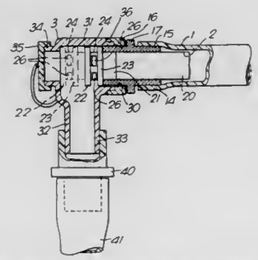
a closure means configured to close and form a fluid seal with said external open end,

said closure means being integrally formed with said tracheotomy and intraluminal tubular portions and having

a severable portion severably connecting said closure means to said tracheotomy tubular portion adjacent to said external open end and

attached handle means for gripping said closure means, said handle means being a perforate member with a perforation being configured to receive therein said tracheotomy tubular portion after said closure means is severed therefrom.

5,184,611
TRACHEAL TUBE ASSEMBLIES AND LINERS
Christopher S. Turnbull, Kent, England, assignor to Smiths Industries Public Limited Company, London, England
Filed Dec. 20, 1991, Ser. No. 811,040
Claims priority, application United Kingdom, Jan. 4, 1991, 9100147
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—207.14 **8 Claims**



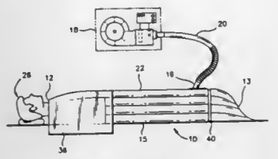
1. A tracheal tube assembly including a tracheal tube having a patient end and a machine end, an angled connector having a side port and being mounted on the machine end of the tube, and a removable liner extending within the tracheal tube, the liner having an open machine end which is located within the angle connector so that gas can normally flow into the liner through the open machine end, the liner additionally having at least one lateral aperture located in the angled connector close to the machine end of the liner through which gas can flow if the machine end of the liner is blocked.

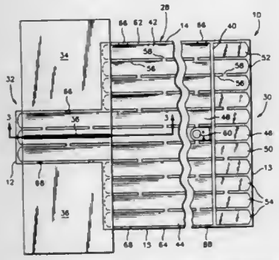
VOL 1147 ISS 2 FEB 9 1993 UMI

5,184,612
THERMAL BLANKET WITH TRANSPARENT UPPER BODY DRAPE

Scott D. Augustine, Bloomington, Minn., assignor to Augustine Medical, Inc., Eden Prairie, Minn.

Continuation-in-part of Ser. No. 703,592, May 20, 1991, which is a continuation-in-part of Ser. No. 227,189, Aug. 2, 1988, abandoned, which is a continuation-in-part of Ser. No. 104,682, Oct. 5, 1987, abandoned. This application May 28, 1992, Ser. No. 890,554
Int. Cl.[5] A61F 7/00
U.S. Cl. 128—400 20 Claims





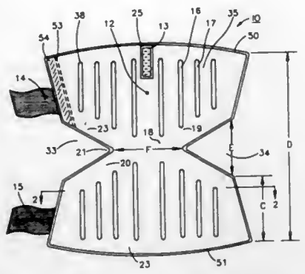
1. A thermal blanket for covering and bathing a person in a thermally-controlled inflating medium, comprising:
a flexible base sheet having top and bottom surfaces, a head end, a foot end, two side edges, and a plurality of apertures therethrough;
an overlaying material top sheet of thin flexible film attached to a first surface of said base sheet by a plurality of spaced apart discontinuous seams which form said overlaying material sheet into a plurality of communicating, inflatable chambers, said apertures opening through said base sheet into said chambers;
said base sheet and said top sheet forming an inflatable generally rectangular lower main body section of a first width and an inflatable generally rectangular upper central body section forming a chest cover extension at said head end having a second width less than said first width; and
a non-inflatable transparent chest drape formed by lateral extensions of a film sheet extending laterally from said central body section.

5,184,613
THERMAL PACK HEEL WARMING APPARATUS FOR A NEONATE OR INFANT

Michael D. Mintz, Edison, N.J., assignor to International Technidyne Corporation, Edison, N.J.

Filed Jun. 17, 1991, Ser. No. 716,077
Int. Cl.[5] A01F 7/00
U.S. Cl. 128—402 16 Claims

1. A thermal pack comprising:
a first and second wall, joined along a common periphery in a fluid impermeable manner, forming a flexible fluid containing pouch, said pouch being substantially symmetrically formed on either side of a narrowed central region forming a substantially hour-glass shaped configuration, said first and second walls being joined along a plurality of substantially parallel seams in a fluid impervious manner, dividing said pouch into a series of fluid containing compartments, said seams not extending to the edges of said pouch, allowing said fluid containing compartments to interconnect along the peripheral regions of said pouch; and

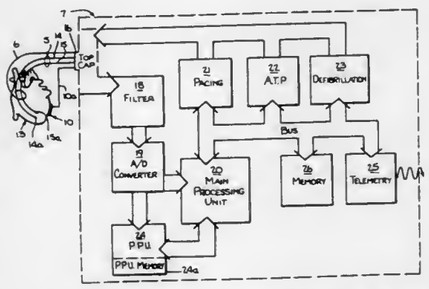


a securing means associated with said pouch on both sides of said central region enabling said pouch, on either side of said central region to assume a substantially cylindrical configuration of a variable diameter.

5,184,614
IMPLANTABLE HAEMODYNAMICALLY RESPONSIVE CARDIOVERTING/DEFIBRILLATING PACEMAKER

Kenneth A. Collins, Neutral Bay; Philip J. Maker, North Ryde, and Matthew S. Walker, Cronulla, all of Australia, assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Oct. 19, 1990, Ser. No. 600,419
Int. Cl.[5] A61N 1/365
U.S. Cl. 128—419 PG 31 Claims

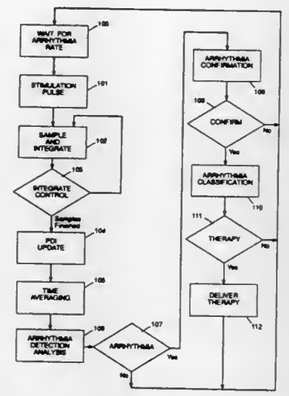


1. An implantable device for the treatment of tachyarrhythmia malfunctions of a patient's heart, said device including a first sensing means for sensing an electrical function in the patient's heart and providing a first signal representative of said electrical function, a second sensing means for sensing an haemodynamic function in the patient's heart and providing a second signal representative of said haemodynamic function, said second signal comprising either a ventricular filtered-peak-to-peak pressure amplitude, "VFPPA", or a ventricular peak pressure function, "VPPF", analyzing means primarily responsive to the signal from one of said sensing means for analyzing the state of the heart's function and providing any required electrical shock therapy to the heart, detecting means for detecting uncertainty in regard to the therapy to be provided to the heart by said analyzing means, and controlling means responsive to said uncertainty and operative to change the primary responsiveness of said analyzing means to the signal provided by the other of said sensing means for controlling the therapy that is to be provided to the heart.

5,184,615
APPARATUS AND METHOD FOR DETECTING ABNORMAL CARDIAC RHYTHMS USING EVOKED POTENTIAL MEASUREMENTS IN AN ARRHYTHMIA CONTROL SYSTEM

Tibor A. Nappholz, Englewood; Albert K. Dawson, Denver; Richard M. T. Lu, Aurora, and Bruce M. Steinhaus, Parker, all of Colo., assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Mar. 8, 1991, Ser. No. 667,316
Int. Cl.[5] A61N 1/368
U.S. Cl. 128—419 PG 31 Claims



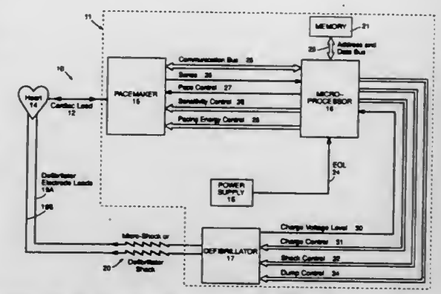
1. An arrhythmia detection and antiarrhythmia pacing device adapted to be implanted in a patient for the reversion of tachycardias, comprising:
means for generating heart stimulation pulses,
means for measuring an evoked potential of the patient's heart that is responsive to said stimulation pulses,
means based upon the sensing of an evoked potential for periodically ascertaining the value of a measured arrhythmia detection control parameter,
means for detecting changes over time in said measured arrhythmia detection control parameter, and
means responsive to said detecting means for classifying a cardiac rhythm as a pathological tachycardia when said arrhythmia detection control parameter changes in a first predetermined direction and magnitude within a predetermined number of cardiac cycles, and for classifying a cardiac rhythm as a benign physiological tachycardia when said arrhythmia detection control parameter changes in a second predetermined direction and magnitude within a predetermined number of cardiac cycles.

5,184,616
APPARATUS AND METHOD FOR GENERATION OF VARYING WAVEFORMS IN ARRHYTHMIA CONTROL SYSTEM

Steven M. Weiss, West Pymble, Australia, assignor to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Oct. 21, 1991, Ser. No. 780,757
Int. Cl.[5] A61N 1/39
U.S. Cl. 128—419 50 Claims

1. An implantable device for providing therapy to a patient's inadequately functioning heart, comprising a defibrillation electrode lead system, means for detecting fibrillation of the heart, circuit means including charge storing means for applying electrical therapy to the heart via said electrode lead system, means responsive to the detection of a fibrillation condition for charging said charge storing means to an appropriate energy level for delivering defibrillation therapy to the patient's heart, and means coupled to said circuit means for selectively providing to said defibrillation electrode lead system

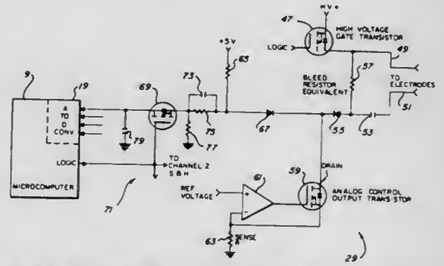


pulses having at least one of a plurality of different defibrillation waveforms.

5,184,617
OUTPUT PULSE COMPENSATION FOR THERAPEUTIC-TYPE ELECTRONIC DEVICES

Frank W. Harris, Boulder, and Alan R. Owens, Longmont, both of Colo., assignors to Staodyn, Inc., Longmont, Colo.

Filed Jun. 5, 1990, Ser. No. 533,293
Int. Cl.[5] A61N 1/08
U.S. Cl. 128—423 R 27 Claims



1. An electronic device for providing output pulses for therapeutic purposes, said device comprising:
electronic controller means providing control pulses;
voltage supply means providing a voltage output;
pulse output means including transistor means for receiving said control pulses and said voltage output and, responsive thereto, providing output pulses for therapeutic purposes having an intensity and pulse width subject to change due to the occurrence of predetermined condition variations; and
said electronic controller means including sensing means connected with said transistor means for sensing saturation of said transistor means indicative of the occurrence of a predetermined condition variation capable of causing user discomfort while said output pulses are being provided, and, responsive thereto, said electronic controller means causing intensity compensation of said output pulses by causing the intensity of said output pulses to be quickly reduced to a predetermined intensity level and then, upon completion of said reduction, causing the intensity level of said output pulses to be gradually increased toward the intensity level of said output pulse existing immediately prior to sensing of the occurrence of said predetermined condition variation.

VOL 1147 ISS 2 FEB 9 1993 UMI

5,184,618

BLOOD GAS PARAMETER MEASURING SYSTEM

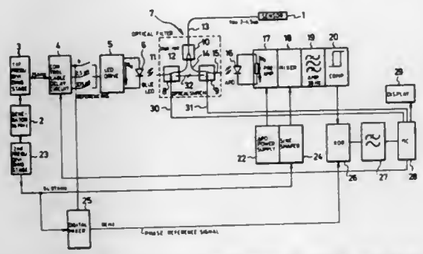
Bernhard Wider, Oberjesingen; Michael Blank, Boeblingen, and Joachim Vester, Aidlingen, all of Fed. Rep. of Germany, assignors to Hewlett Packard Company, Palo Alto, Calif.

Filed Jan. 23, 1991, Ser. No. 645,595

Claims priority, application European Pat. Off., Apr. 25, 1990, 90107850.1

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—634 14 Claims



1. A system for invasive measurement of blood gas parameters, including pH, pO_2 or pCO_2, or for measuring other parameters influencing the time constant of an excited state of a fluorescent dye, comprising:

(a) a light generation device including

(a1) a generator having an outer signal (2),

(a2) a controllable delay device (4) having at least two delay states and

(a3) a light source means (6) coupled to said generator (2) via said delay device (4) for producing excitation light of a first wavelength;

(b) a fluorescent measuring probe (1) provided with

(b1) a fluorescent dye that is positionable in ion exchange connection with blood;

(b2) said fluorescent dye adapted to be brought to an excited state by means of light of a first wavelength and returning, while emitting light of a second wavelength, from the excited state to a ground state with a time constant depending on the blood gas parameter to be measured,

(c) a light reception device (16) for converting light of said first and second wavelengths into a received signal;

(d) a switchable light guide means (7)

(d1) having at least two states and optically coupled between said light source (6); said light reception means (16) and said fluorescent measuring probe (1), for coupling, in a first switched state, light of the first wavelength from the light source (6) to the fluorescent measuring probe (1) and light of the second wavelength from the fluorescent measuring probe (1) to the light reception means (16), and

(d2) for guiding light of the first wavelength from the light source means (6) to the light reception means (16) in a second switched state;

(e) a phase metering means (17 to 20, 23 to 27), coupled to said generator (2) and said light reception means (16)

(e1) for producing a phase reference signal phaselocked to the output signal of the generator (2) and responsive to the received signal from the light reception means (16),

(e2) to produce a phase metering signal indicative of the phase difference between said output and receive signals;

(f) an evaluation means (28) connected to said phase metering means,

(f1) and responsive to phase metering signals in the at least two delay states of said controllable delay device (4), when said switchable light guide means (7) is

(f2) in the second switched state, for determining the transfer characteristic of the blood gas parameter measuring system, and

(f3) which, in the first switched state of the light guide device (7), determines a value of the blood gas parameter on the basis of the transfer characteristic, the phase metering signal and a correlation between the respective values of the blood gas parameter and dependent values of said time constant, said correlation being predetermined for the fluorescent measuring probe (1).

5,184,619

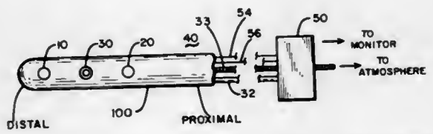
INTRAUTERINE PRESSURE AND FETAL HEART RATE SENSOR

Sandor Austin, Edina, Minn., assignor to Peritronics Medical, Inc., Brea, Calif.

Continuation-in-part of Ser. No. 929,639, Nov. 10, 1986, abandoned. This application Oct. 2, 1987, Ser. No. 103,651

Int. Cl.[5] A61B *5/04*

U.S. Cl. 128—639 32 Claims



1. An apparatus for monitoring intrauterine pressure pulses and fetal heart rate, comprising:

a pressure transducer diaphragm with first and second sides, said first side being in communication with said intrauterine pressure pulses;

cable means for providing a plurality of electrical conductors, at least two of said plurality of conductors being connected to said pressure transducer;

vent means for introducing atmospheric pressure to said second side of said diaphragm;

means for connecting the plurality of electrical conductors to a monitoring device; and

a pair of electrode means for independently receiving electrical signals through amniotic fluid generated by the heart of a fetus, each said electrode means being located on outside surface of said cable means so as to be in electrical contact with said amniotic fluid and being positioned at a leading end of said cable means adjacent said transducer such that when said leading end is inserted into the uterus of a patient, each said electrode means senses fetal heart rate through amniotic fluid within the uterus, each said electrode means being connected to at least one of the plurality of electrical conductors such that the fetal heart rate and the intrauterine pressure may be displayed by said monitoring device.

5,184,620

METHOD OF USING A MULTIPLE ELECTRODE PAD ASSEMBLY

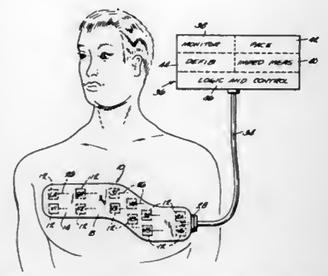
Michael J. Cudahy, Milwaukee, Wis., and Robert A. Stratbucker, Omaha, Nebr., assignors to Marquette Electronics, Inc., Milwaukee, Wis.

Filed Dec. 26, 1991, Ser. No. 813,473

Int. Cl.[5] A61B *5/0402*

U.S. Cl. 128—639 15 Claims

1. A method of monitoring and providing therapeutic electrical impulses to a patient's heart, comprising the steps of placing on the patient's chest an electrode assembly having a plurality of electrodes arranged such that at least a first electrode is disposed adjacent the patient's right arm, at least a second electrode is disposed adjacent the patient's left arm, and a third group of electrodes are disposed therebetween and located on the patient's chest, measuring voltage differences between pairs of said electrodes for providing electrode lead pair ECG signals, monitoring said ECG signals, said pairs defining a first electrode array, determining whether cardiac pacing is required, providing a pace signal and a return path for the pace signal through a second plurality of said electrodes defining a second electrode array if a pace signal is required, determining from said ECG signals whether defibrillation is required, providing a defibrillation current through a third plurality of said electrodes defining a third electrode array if defibrillation is required and coupling a fourth plurality of said



electrodes in a fourth array to provide a return path for the defibrillation current, each of said first, second, third and fourth electrode arrays including at least some electrodes in common in another one of said arrays, but all of said arrays not including the same electrodes whereby each array of electrodes may be optimally chosen for performing its specific function from the plurality of electrodes.

5,184,621

STEERABLE GUIDEWIRE HAVING ELECTRODES FOR MEASURING VESSEL CROSS-SECTION AND BLOOD FLOW

Robert A. Vogel, Lutherville, Md.; William A. Berthiaume, Hudson, and Carol A. Bertrand, Cambridge, both of Mass., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed May 29, 1991, Ser. No. 706,776

Int. Cl.[5] A61B *5/04, 5/026*

U.S. Cl. 128—642 29 Claims



1. A steerable guidewire comprising:

an elongated shaft having a distal end and a proximal end, said shaft being sufficiently torsionally rigid along its length for controllably transmitting to the distal end substantially all of the rotation applied to the proximal end, said shaft including a first electrical conductor and a second electrical conductor insulated from said first electrical conductor, said electrical conductors extending from the distal end to the proximal end of said shaft; and

a tip attached to the distal end of said shaft, said tip adapted to be bent to a desired curve, said tip being sufficiently flexible so as to adapt to and follow the contours of a blood vessel, said tip including a distal electrode electrically connected to one of said conductors and a proximal electrode electrically connected to the other of said conductors, said electrodes being axially spaced apart on said tip by a predetermined distance, said distal electrode comprising a distal, conductive, helically-wound spring and said proximal electrode comprising a conductive electrode tube, said tip including a tapered distal region of said second conductor passing through said proximal electrode and at least a portion of said distal spring and electrically connected to said distal spring, said conductive electrode tube minimizing an induced voltage in said second conductor when an electrical current passes through said proximal electrode so that an electrical current between said proximal electrode and said distal electrode can be measured accurately.

5,184,622

ULTRASONIC DIAGNOSING APPARATUS

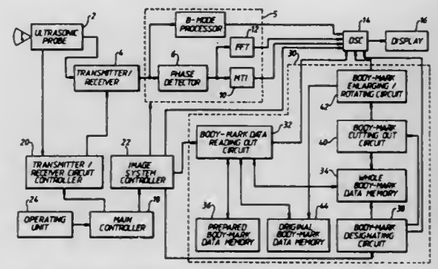
Hidesuke Tomura, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 24, 1991, Ser. No. 645,397

Claims priority, application Japan, Jan. 24, 1990, 2-12475

Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—660.07 14 Claims



1. An ultrasonic diagnosing apparatus comprising:

ultrasonic transducer means for transmitting an ultrasonic beam to a subject and converting echoes from the subject to echo signals;

transmitter/receiver means coupled to said ultrasonic transducer means for driving said ultrasonic transducer means;

image processing means for signal processing said echo signals output from said ultrasonic transducer means to output an ultrasonic image signal representative of a portion of said subject;

memory means for storing predetermined body-mark pattern data indicating a first body-mark pattern;

body-mark processing means for processing said body-mark pattern data so that a part of said body-mark pattern is designated as a second body-mark pattern corresponding to said portion of said subject;

display means for displaying said ultrasonic image signal from said image processing means and said second body-mark pattern corresponding to said portion of said subject from said body-mark processing means on a monitor.

5,184,623

METHOD OF AND APPARATUS FOR THE EXAMINATION OF OBJECTS BY ULTRASONIC ECHOGRAPHY

Raoul Mallart, Paris, France, assignor to U.S. Philips Corp., New York, N.Y.

Filed May 31, 1991, Ser. No. 708,942

Claims priority, application France, Jun. 1, 1990, 90 06852; Jan. 18, 1991, 91 00558

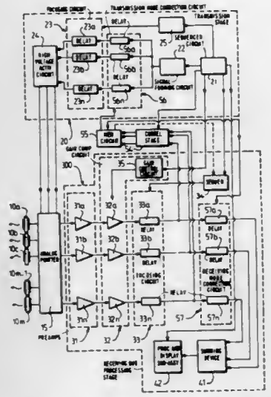
Int. Cl.[5] A61B *8/00*

U.S. Cl. 128—661.01 15 Claims

1. A method of examining an object by ultrasonic echography utilizing successively shifted ultrasonic apertures for acquiring echographic data for respective successive lines in an echograph of the object, comprising, for acquisition of each line, a transmitting step of transmitting ultrasonic signals from an array of m ultrasonic transducer elements to the object to be examined, and a receiving and processing step of receiving and processing echographic signals returned to said transducer elements by the object being examined, said transmitting step and said receiving and processing step comprising respective focusing by application of focusing delays to n channels associ-

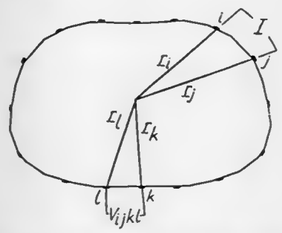
VOL 1147 ISS 2 FEB 9 1993 UMI

ated with n of the transducer elements constituting a current ultrasonic aperture in accordance with a delay rule, said receiving and processing step further comprising a step, after said focusing, of correlating (n−1) different pairs of signals from the n channels in order to determine (n−1) focusing delay correction values, and said transmitting step including a shifting of the ultrasonic aperture by a number of p transducer elements, less than the number n, from a last ultrasonic aperture to the current ultrasonic aperture, wherein at least one of



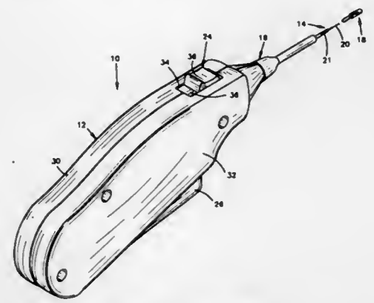
the transmitting step and the receiving and processing step include a step of correcting the focussing delays with said focussing delay values as constants applicable throughout acquisition of the data for a line corresponding to a current aperture, said step of correcting being of the focusing delays in only (n−p) of the n channels by applying only (n−p) of the (n−1) focusing delay correction values determined during the acquisition of data for the line corresponding to the last aperture to only the (n−p) channels common to the last and current ultrasonic apertures.

5,184,624
ELECTRICAL IMPEDANCE TOMOGRAPHY
Brian H. Brown, and David C. Barber, both of Sheffield, England, assignors to The University of Sheffield, Sheffield, England
Continuation of Ser. No. 623,759, Dec. 12, 1990, abandoned.
This application Mar. 11, 1992, Ser. No. 850,242
Claims priority, application United Kingdom, Apr. 15, 1988, 8808969
Int. Cl.[5] A61B *5/05*
U.S. Cl. 128—734 **5 Claims**



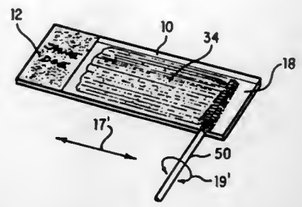
1. A method of determining the external shape of a body comprising placing a plurality of surface electrodes at spaced intervals around the body, causing currents of known value to flow in the body by applying an electrical current between pairs of electrodes in sequence, in each case measuring potentials between other pairs of electrodes, using the measured potentials to calculate estimated distances between the corresponding points of current introduction and of potential measurement, and determining estimated electrode positions consistent with these distances, which estimated electrode positions define the external shape of the body.

5,184,625
BIOPSY FORCEPS DEVICE HAVING IMPROVED HANDLE
Robert J. Cottone, Jr., Fort Lauderdale, Fla.; Joseph J. Kopp, Jr., Atlanta, and David S. Rowley, Smyrna, both of Ga., assignors to Cordis Corporation, Miami, Fla.
Filed Apr. 16, 1992, Ser. No. 869,393
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—751 **10 Claims**



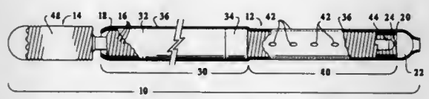
1. A biopsy forceps device comprising:
a handle;
an elongated flexible hollow-body portion having a lumen extending therethrough, and having a proximal end and a distal end;
a forceps assembly coupled to the distal end of said body portion, and including a pair of forceps;
control wire means having proximal and distal ends, and extending through the lumen in said body portion and coupled at its proximal end to said handle and at its distal end to said forceps assembly;
trigger means mounted to said handle for slidable movement relative thereto between a proximal position and a distal position;
gripping means for gripping the proximal end of said control wire means and movable between first and second positions for respectively moving said control wire means between a forceps open condition and a forceps closed condition;
first means for resiliently biasing said gripping means toward its first position corresponding with said forceps open condition;
actuatable lever arm means for engaging and moving said gripping means from its said first position to its said second position against the resilient biasing action of said first means; and
releasable locking means carried by said trigger means and said lever means for locking said gripping means in said second position corresponding with said forceps closed condition so long as said trigger means is in its distal position.

5,184,626
BRUSH OVERLAY PAP SMEAR
William J. Hicken, 2205 Eastlake Rd., Timonium, Md. 21093
Filed May 21, 1991, Ser. No. 703,732
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—756 **7 Claims**



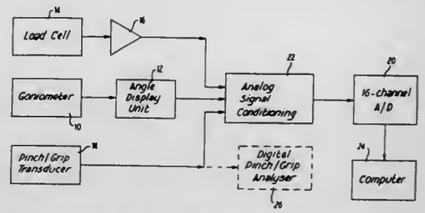
1. A method for preparing a cytological smear, comprising the steps of:
a. applying an exocervical cytological sample with a spatula to a portion of a slide adjacent a first end thereof;
b. applying a endocervical cytological sample from a substantially cylindrically shaped sampling brush to said slide portion slide, said final sample being applied in overlaying relationship with said exocervical sample;
c. rotatively displacing said sampling brush in a first direction from said slide portion adjacent said first end to a second end of said slide followed by rotatively displacing said brush in a second direction, said second direction being opposite said first direction for distributing said cytological samples thereon, said rotative displacement being substantially simultaneous with application of a predetermined pressure between said sampling brush and said slide as said brush is rotatively displaced;
d. repeating step c. until a uniform cytological sample distribution is obtained; and,
e. applying a cytofixative to said uniform cytological distribution on said slide.

5,184,627
INFUSION GUIDEWIRE INCLUDING PROXIMAL STIFFENING SHEATH
Fernando A. de Toledo, Concord, Mass., assignor to Boston Scientific Corporation, Watertown, Mass.
Filed Jan. 18, 1991, Ser. No. 644,156
The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—772 **19 Claims**



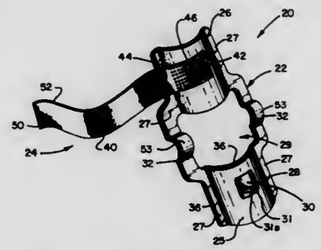
1. A flexible elongated medical infusion guidewire having proximal and distal portions, adapted for delivering pressurized fluid medicaments to a site within a body vessel, comprising:
a flexible elongated helically arranged coil of round wire having a proximal portion and a distal portion, and defining a central lumen therethrough having a distalmost end blocked by a ball weld thereon;
a first sheath stiffening means comprised of a single flexible layer or polyimide film in a tubular configuration disposed immediately about and co-extensive with substantially all of just said proximal portion of just said helically arranged coil;
a second sheath enclosure means disposed immediately about said first sheath means and being co-extensive therewith and with all of said distal portion of said helically arranged coil; and
a plurality of dispersion means arranged within said distal portion of said second sheath.

5,184,628
GRIP SINCERITY ASSESSMENT SYSTEM AND METHOD
Khalid M. Shah, Block 1C, Gilman Heights, Apt. 12-24, Singapore 0104, Singapore, and James C. Semple, 59 Hamilton Dr., Glasgow G12, Scotland
Filed Apr. 5, 1991, Ser. No. 681,145
Claims priority, application United Kingdom, Apr. 6, 1990, 9007903
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—774 **8 Claims**



1. A method of assessing the sincerity of a subject's grip, comprising the steps of: causing the subject to apply and hold a grip, measuring the force produced by said grip as a function of time, deriving from said force measurement a force-vs-time characteristic having a load slope followed by a fatigue slope, and comparing parameters of the force-vs-time characteristic representative of the shape thereof with like parameters of predetermined characteristics to derive a measure of deviation indicative of sincerity.

5,184,629
MALE URINARY ANTI-INCONTINENCE DEVICE AND METHOD
Richard A. Erickson, St. Paul, and Gerald W. Timm, Deephaven, both of Minn., assignors to Dacomed Corporation, Minneapolis, Minn.
Continuation of Ser. No. 325,599, Mar. 20, 1989, abandoned.
This application Apr. 25, 1991, Ser. No. 692,818
Int. Cl.[5] A61F *5/48, 2/00*
U.S. Cl. 128—885 **13 Claims**



1. An external male anti-incontinence device, comprising:
a) a cradle member including a dorsal arm member having a curvilinear surface and a ventral arm member having a curvilinear surface, the dorsal and ventral arm members being in axial alignment with each other, an aperture being

VOL 1147 ISS 2 FE 9 1993 UMI

defined intermediate of the dorsal and ventral arm members, the ventral arm member including an integral pressure pad, the cradle member further including integral hinges interconnecting the dorsal and ventral arm members, the cradle member being hinged about an axis perpendicular to the axial alignment of the dorsal and ventral arm members whereby the cradle member can be folded over into a folded state so that the curvilinear surfaces of the dorsal and ventral arm members are facing one another with the pressure pad projecting from the ventral arm member into a cavity formed between the facing curvilinear surfaces of the dorsal and ventral arm members, said pressure pad having a substantially smaller surface area than the inner surface area of the ventral arm member to block urine leakage through the urethra; and

b) strap assembly means for releasably retaining the cradle member in the folded state.

5,184,630

HAIR DEODORIZING COMPOSITIONS AND PROCESS FOR USING

Mary L. Jung, Millwood, N.Y., assignor to UOP, Des Plains, Ill.

Filed Apr. 6, 1992, Ser. No. 864,245
Int. Cl.[5] A61K *7/06, 7/08*
U.S. Cl. 132—202 **5 Claims**

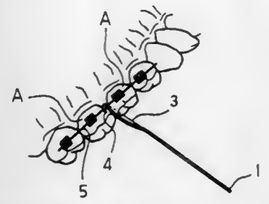
1. Composition suitable for use in eliminating the odor from human or animal hair due to the presence of a thioglycolic acid compound which comprises an aqueous suspension of particles of a crystalline zeolitic molecular sieve and a colloidal magnesium silicate having the structure of smectite, said zeolitic molecular sieve having SiO_2 tetrahedra as at least 90 percent of its framework tetrahedral oxide units, pore diameters of at least 5.5 Angstroms, and a capacity for adsorbed water not greater than 10 weight percent when measured at 25° C. and a water vapor pressure of 4.6 torr.

5,184,631

DEVICE FOR CLEANING BETWEEN THE TEETH OF ORTHODONTIC PATIENTS

Noriko Ikeda, 23-go, 33-banchi, 2-chome, Nishikatae, Jyonan-ku, Fukuoka-city, 812, Japan

Filed May 13, 1991, Ser. No. 699,087
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—323 **8 Claims**



1. The combination comprising:

(a) orthodontic braces for use on teeth of an orthodontic patient;

(b) said orthodontic braces comprising an orthodontic wire which extends between the teeth of an orthodontic patient wearing said orthodontic braces;

(c) cleaning means for cleaning the teeth of said orthodontic patient; said cleaning means comprising:

(c-1) an elongated member having an end portion formed with filament support means for supporting a filament;

(c-2) an orthodontic wire-engaging means on said filament support means;

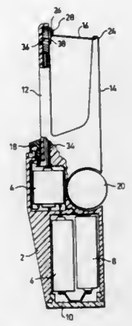
(d) said orthodontic wire-engaging means comprising a hook hookable onto said orthodontic wire while said elongated member is manually manipulated to cause said filament to clean the teeth of said orthodontic patient.

5,184,632

DENTAL FLOSSING DEVICE

Joseph Gross, Moshav Mazor, and Shlomo Zucker, Mihmoret, both of Israel, assignors to Product Development (Z.G.S.) Ltd., Petach Tikva, Israel

Continuation-in-part of Ser. No. 759,007, Sep. 12, 1991. This application Nov. 25, 1991, Ser. No. 797,655
Claims priority, application Israel, Nov. 27, 1990, 96490; May 5, 1991, 98062
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—326 **19 Claims**



1. A dental flossing device, comprising:

a housing manually grippable by a user;

a pair of spaced arms projecting from one end of the housing and including floss-engaging means for engaging the opposite ends of a length of dental floss to be tautly secured along a dental floss axis between said arms;

and a drive within said housing for displacing the length of dental floss when secured between said arms;

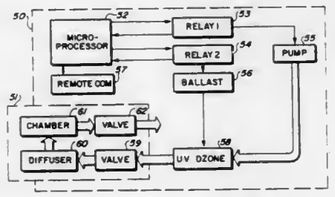
characterized in that said drive displaces at least one end of the length of dental floss, when secured between the arms, through a unidirectional, curved, closed-loop planar path defined by the two axes substantially perpendicular to each other and to said dental floss axis.

5,184,633

CLEANSING AND STERILIZATION MECHANISM SUITABLE FOR CONTACT LENSES AND THE LIKE

Terrence R. Langford, Tucson, Ariz., assignor to KEW Import-/Export Inc., Tucson, Ariz.

Continuation-in-part of Ser. No. 556,570, Jul. 20, 1990, abandoned. This application Oct. 8, 1991, Ser. No. 774,047
Int. Cl.[5] B08B *3/10*
U.S. Cl. 134—57 R **41 Claims**



14. A contact lense cleaning system having:

a) a housing;

b) an ozone generator for producing ozone, said ozone generator located within said housing;

c) a contact lense container being insertable into said housing and in communication with said ozone generator via a valve; and,

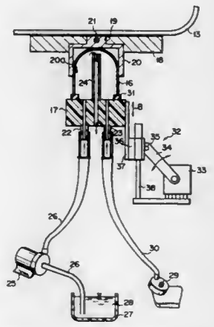
d) a pump for transferring ozone from said ozone generator to said contact lense container, said pump being located in said housing.

5,184,634

CUP CLEANING APPARATUS

Masaichi Kitajima, Akigawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 15, 1991, Ser. No. 746,247
Claims priority, application Japan, Aug. 24, 1990, 2-223615
Int. Cl.[5] B08B *9/08*
U.S. Cl. 134—95.1 **5 Claims**



1. An apparatus for cleaning a dilution cup used in a body fluid analyzer with which is performed an immunological examination such as an examination of infectious disease and determination of blood groups using urine, blood serum, blood cells and blood plasma, comprising:

a nozzle body hermetically mounted to seal an opening of said dilution cup using a packing, said nozzle body being detachable from said opening of said dilution cup;

a cleaning water supply nozzle on said nozzle body for supplying cleaning water into the interior of said dilution cup;

an air supply nozzle on said nozzle body for supplying air into the interior of said dilution cup by jetting the air into cleaning water in the dilution cup; and

a discharging nozzle on said nozzle body for discharging cleaning water and air from the interior of said dilution cup.

5,184,635

FLUID HANDLING SYSTEM FOR A DISHWASHER

Jon D. Tromblee, Hagar Township, Berrien County; Vincent P. Gurubatham, St. Joseph, and Edward C. Peterson, St. Joseph Township, Berrien County, all of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 28, 1990, Ser. No. 635,488
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—111 **20 Claims**

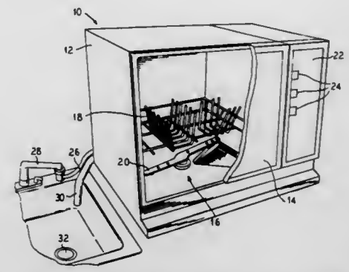
1. In a dishwasher having a wall defining a wash cavity, spray means for distributing wash liquid within said wash cavity, and drain means located within said wash cavity for draining wash liquid from said wash cavity, a wash system comprising:

first sump means for collecting at least a portion of said wash liquid,

a first slightly downwardly sloped solid bottom walled channel with substantially vertical side walls leading from said drain means to said first sump means,

first pump means for providing pressurized wash liquid to said spray means from said first sump means,

second sump means for collecting the remaining portion of said wash liquid,



a second slightly downwardly sloped solid bottom walled channel with substantially vertical side walls leading from said drain means to said second sump means, and

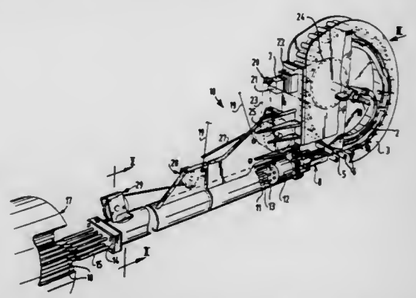
second pump means for pumping wash liquid from said second sump means outside of said dishwasher.

5,184,636

CLEANING LANCE DEVICE FOR CLEANING PIPE BUNDLES OF HEAT EXCHANGERS

Meino Jan van der Woude, No. 2, Oude Slingeweg, NL-9204 WS Drachten, Netherlands

Filed Aug. 26, 1991, Ser. No. 749,902
Claims priority, application Netherlands, Aug. 31, 1990, 9001926
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—167 C **6 Claims**

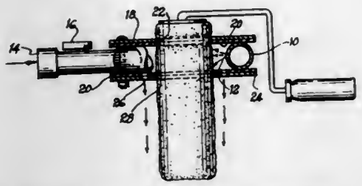


1. Cleaning lance device for cleaning pipe bundles of heat exchangers comprising a frame, an elongate guiding carried by the frame, a hose drum rotatably mounted on the frame close to a rear end of the guiding, a high pressure hose which is connected at one end to the hose drum and which carries at its other end a coupling element co-acting with the guiding and movable therealong, a bundle of spray lances which are connected to the coupling element in the line of the hose and which carry spray heads at their free end, and drive means for driving the hose drum in the unwinding and winding sense, for unwinding the hose from the hose drum and winding it thereon respectively and for driving the coupling element synchronously therewith along the guiding at least during unwinding, such that therein the portion of the hose extending between the coupling element and the hose drum is substantially free of tensile and pressure loads in lengthwise direction.

VOL
1147
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1993
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5,184,637
PAINT BRUSH AND ROLLER CLEANER
Kenneth L. Kowis, 3709 Ashurst St., Twenty-Nine Palms, Calif. 92278

Filed Aug. 27, 1990, Ser. No. 573,331
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—182 **6 Claims**

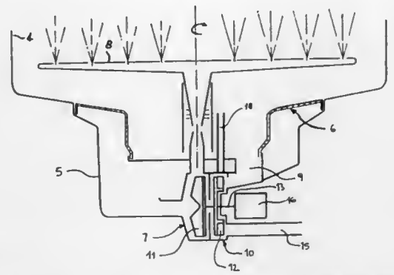


1. A paint implement flushing device comprising
(a) an irrigation tube loop having a plurality of inwardly directed irrigation ports, said loop being of greater internal diameter than the diameter of the paint-carrying portion of the implement to be flushed, and having a flushing fluid inlet;
(b) a removable pair of top plates each having a first opening therein large enough to pass at least the paint-carrying portion of an implement to be flushed therethrough;
(c) a removable pair of bottom plates each having a second opening similar to and aligned with the first opening in the respective one of said top plates;
(d) means compressing said plates together on the respective top and bottom of said loop to define a flushing chamber therebetween, such that a painting implement having its paint carrying portion disposed in said chamber is flushed by fluid introduced into said chamber from said flushing fluid inlet; and,
(e) one of said top plates and the corresponding respective bottom plate being characterized by said respective first and second openings being circular to accommodate a paint roller, and the other of said top plates and its corresponding respective bottom plate being characterized by said first and second openings being slots to accommodate the bristle portion of a paint brush, such that said top plates and bottom plates define two interchangeable plate sets which can be interchanged on said flushing device to selectably flush either a paint roller or a paint brush.

5,184,638
DISHWASHER WITH REVERSIBLE MOTOR PUMPING SYSTEM
Claudio Milocco, and Gianni Santarossa, both of Pordenone, Italy, assignors to Zanussi Elettrodomestici S.p.A., Pordenone, Italy

Filed Nov. 15, 1991, Ser. No. 792,596
Claims priority, application Italy, Nov. 15, 1990, 34085/90[U]
Int. Cl.[5] A47L *15/08*
U.S. Cl. 134—186 **1 Claim**

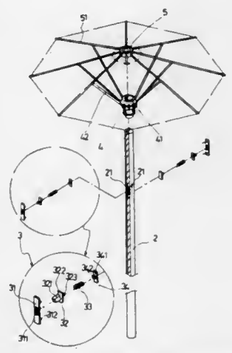
1. In a dishwasher having a hydraulic washing circuit through which fluid is forced to wash objects in the dishwasher and a hydraulic discharge circuit through which the fluid is discharged from the dishwasher after having washed objects in the dishwasher, a pump system comprising: a reversible motor having a drag shaft rotatable in opposite first and second directions of rotation; a circulation pump provided in the hydraulic washing circuit so as to force fluid through the washing circuit, said circulation pump including an impeller fixed to the drag shaft of said motor so as to force fluid through the hydraulic washing circuit when said motor is rotating in the first direction of rotation; and a peripheral downflow type of discharge pump provided in the hydraulic discharge circuit so as to force fluid from the dishwasher through the discharge circuit, said discharge pump including an impeller fixed to the drag shaft of said motor so as to force fluid through the hydraulic discharge circuit when said motor is rotating in the second direction of rotation, a lateral wall defining a chamber of a substantially circular section in which the impeller of the discharge pump is housed, an aspiration inlet open to said chamber and communicating with the interior of the dishwasher, a delivery outlet open to said chamber at a location spaced from said aspiration inlet along said lateral wall such



that a portion of said lateral wall extends between said aspiration inlet and said discharge outlet, said portion of the lateral wall constituting a tooth of the discharge pump having a smaller inner diameter than the remaining portion of the discharge pump, and at least one air intake open to said chamber at said tooth of the discharge pump and extending upwardly in the dishwasher therefrom, said air intake being in communication with the outside atmosphere.

5,184,639
OPENING LOCK FOR A SUNSHADE
Chorng-Cheng Lee, No. 272, Lane 365, Fung Nan Road, Chiayi City, Taiwan

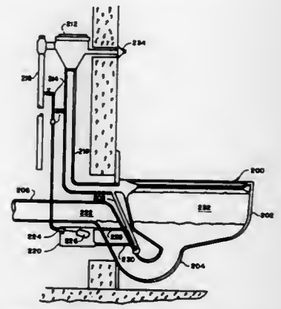
Filed May 22, 1992, Ser. No. 886,897
Int. Cl.[5] A45B *25/06*
U.S. Cl. 135—28 **4 Claims**



1. An improved opening lock particularly for a sunshade of a parasol, comprising:
a solid shaft having a pair of symmetric T shaped cavities disposed on two sides near the top thereof;
a cover plate having a central opening and a number of securing means disposed on one side thereof so as to firmly associated with the wall of said T shaped cavity;
a stop block having a protrusion head which is provided with a smoothly curved guide bottom and a stop flange disposed between said protrusion head and a cylindrical protrusion extended from said protrusion head;
a spring disposed in abutment against said stop block with one end of thereof in association with said cylindrical protrusion and the other with a round protrusion disposed on a fixing element so that said stop block can be retractably actuated;
said fixing element being disposed in the end portion of said T shaped cavity;
said protrusion head being disposed through said central opening of said cover plate and being in abutment with the upward pushed runner slidably disposed on said shaft in the opening process of said sunshade with said smoothly curved guide bottom of said protrusion head in urging contact with said runner and the upward push of said runner leading to the sliding of said stop block into said T shaped cavity so as to permit said runner to pass said opening lock and said pressed stop block being able to pop out of said central opening of said cover plate and support said runner in place.

5,184,640
BACK WATER TRAP
Harry J. Molligan, New Orleans, La., assignor to Lois L. Molligan, New Orleans, La.

Division of Ser. No. 608,341, Nov. 2, 1990. This application Dec. 23, 1991, Ser. No. 812,003
Int. Cl.[5] F16K *13/10*
U.S. Cl. 137—247.25 **5 Claims**

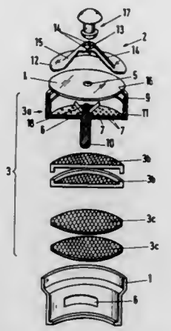


1. A water seal device for use with a sewer pipe system having a primary waste conduit and a secondary jet conduit in fluid communication with the primary waste conduit, both primary and secondary conduits being connected to a water source means, said device comprising:
an independent water conduit connected to said water source means upstream from said primary and secondary conduits;
a reservoir for retaining a discreet amount of water delivered by said independent conduit; and
a fluid line means connecting said reservoir with said secondary jet conduit upstream from an outlet point of said secondary conduit into the primary waste conduit.

5,184,641
FLOW REGULATOR
Dieter Kuhn, Krauskopfallee 39, D-6229 Georgenborn, Fed. Rep. of Germany

Filed Sep. 11, 1991, Ser. No. 757,682
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1990, 4029183
Int. Cl.[5] G05D *7/01*
U.S. Cl. 137—504 **18 Claims**

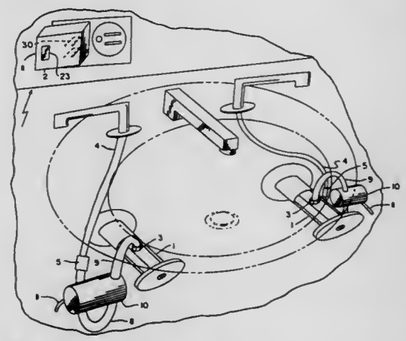
1. A flow regulator for gaseous or liquid media, comprising a housing, a regulating unit which changes its free-flow area, depending on the flow pressure of the medium, and further comprising a distributor unit behind the regulating unit in the direction of the flow, characterized in that a perforated disc containing at least one hole is provided between the regulating



unit and the distributor unit and can be moved to a limited extent in an axial direction at least in the region of the hole.

5,184,642
AUTOMATIC WATER FAUCET OR WATER FAUCET CONTROLLER
Jay H. Powell, 1369 W. Greenleaf Apt. #201, Chicago, Ill. 60626

Filed May 22, 1991, Ser. No. 703,904
Int. Cl.[5] F16K *11/24*
U.S. Cl. 137—607 **9 Claims**



1. A water faucet comprising:
a hot water supply riser, a cold water supply riser, at least one manually operated water flow control valve, and an effluent spout for supplying a stream of effluent water mixed from said hot and cold water supplies;
a control panel for operation by a user for approximately selecting a plurality of effluent temperatures and a plurality of effluent flow rates; said control panel having a plurality of button means requiring minimal pressure by a user for activation; said control panel producing a signal of visible or invisible light indicative of said desired effluent temperature and/or flow rate;
a hot water supply pipe;
a cold water supply pipe;
an electrically operated hot water control valve interposed between said hot water supply riser and said hot water supply pipe;
an electrically operated cold water control valve interposed between said cold water supply riser and said cold water supply pipe;

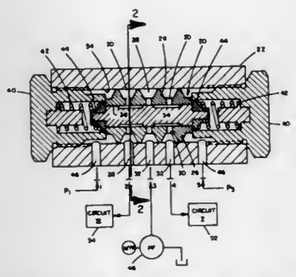
VOL 1147 ISS 2 FEB 9 1993 UMI

a control device responsive to said light signal produced by said control panel and each of said button means, said control device being electrically connected to said electrically operated hot and cold water control valves for generating electrical signals suitable for controlling said valves;

said electrically operated hot water control valve having a hot water flow rate control member, an electrically operated solenoid responsive to said control device for controlling the position of said hot water flow rate control member, a hot water input port, a hot water output port, a substantially U-shaped input tube attached to said hot water output port; a substantially U-shaped hot water output tube attached to said hot water output port; said hot water input tube and hot water output tube being disposed in opposition to one another; said hot water output tube having means for attachment to said hot water supply pipe; said hot water output tube having means for attachment to said hot water supply riser; and

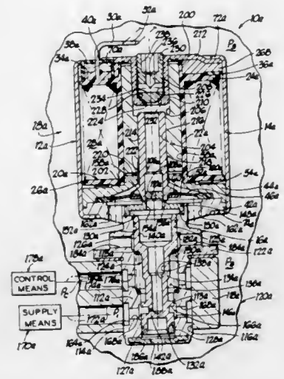
said electrically operated cold water control valve having a cold water flow control member, an electrically operated solenoid responsive to said control device for controlling the position of said cold water flow rate control member, a cold water input port, a cold water output port, a substantially U-shaped input tube attached to said cold water input port; a substantially U-shaped cold water output tube attached to said cold water output port; said cold water input tube and said cold water output tube being disposed in opposition to one another; said cold water input tube having means for attachment to said cold water supply pipe; said cold water output tube having means for attachment to said cold water supply riser.

5,184,643
VALVE SLEEVE ASSEMBLY
Robert E. Raymond, 495 Military Rd., Zanesville, Ohio 43701
Filed Jan. 21, 1992, Ser. No. 822,716
Int. Cl.[5] F16K *11/07*
U.S. Cl. 137—625.48 **6 Claims**



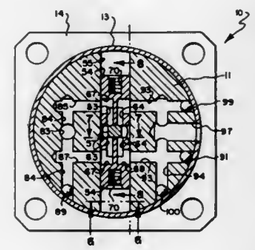
1. An improved spool valve assembly of the type having an outer housing of a first metal material and a cylindrical sleeve of a second different metal material shrunk fit within an annular opening in said housing and provided with a cylindrical bore adapted to closely fit with a spool valve element slideably mounted in said bore, said assembly including selected valve ports radially extending into said housing and said sleeve for communication of the flow of fluid through said ports dependent upon the axial position of said valve element in said bore, the improvement comprising a plurality of annular recesses formed on the outer surface of said sleeve aligned to annularly communicate fluid between certain of said ports in said sleeve with certain of said outer ports in said housing, said recesses forming radially extending annular lands spaced from one another; each of said lands having a cross-sectional configuration when viewed along a radial plane parallel to the axis of said cylindrical bore defining vertically extending side walls extending between a bottom surface of an adjacently disposed recess which defines a width of the base portion of said land and an outer surface portion engaging said housing, the ratio of the width of said base portion to the width of said outer surface portion engaging said housing being at least 2 to 1.

5,184,644
SOLENOID OPERATED PRESSURE REGULATING VALVE
Richard A. Wade, Royal Oak, Mich., assignor to Coltec Industries Inc., New York, N.Y.
Filed May 30, 1991, Ser. No. 707,657
Int. Cl.[5] F15B *13/043*
U.S. Cl. 137—625.64 **9 Claims**



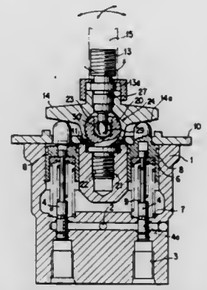
1. A pressure regulating assembly for regulating the pressure of a flowing fluid medium, comprising housing means, said housing means comprising a first housing portion and housing a second housing portion, electrical field coil means carried by said first housing portion, pole piece means situated generally within said field coil means, a valve seat, fluid-flow passage means formed as to be generally circumscribed by said valve seat, said pole piece means comprising a pole piece end face portion, armature means at least partly situated generally within said field coil means, said armature means comprising an armature end face portion, wherein said armature means is situated with respect to said pole piece means as to thereby cause said armature end face portion to be juxtaposed to said pole piece end face portion, wherein said second housing portion comprises a generally cylindrical inner chamber, spool valve means situated in said cylindrical inner chamber and movable with respect to said cylindrical inner chamber and relatively movable with respect to said armature means, said spool valve means comprising at least first and second axially aligned cylindrical valving portions, said spool valve means further comprising generally axially extending body means situated between and operatively interconnecting said first and second cylindrical valving portions, said generally axially extending body means being relatively small in transverse cross-section as to thereby define an annular chamber circumferentially between said axially extending body means and said cylindrical inner chamber and axially confined between said first and second generally cylindrical valving portions, first fluid inlet passage means formed in said second housing portion as to be generally juxtaposed to said first generally cylindrical valving portion for general control by said first valving portion, second fluid outlet passage means formed in said second housing portion as to communicate with said annular chamber, third fluid outlet passage means formed in said second housing portion as to be generally juxtaposed to said second generally cylindrical valving portion for general control by said second valving portion, fourth fluid passage means communicating between said first fluid inlet passage means and said fluid-flow passage means, wherein when said armature means is moved as to most restrict flow of said fluid medium out of said fluid-flow passage means the pressure of said fluid medium causes said spool valve means to move in a direction whereby said second valving portion at least further restricts flow of said fluid medium from said annular chamber and through said third fluid outlet passage means toward sump and said first valving portion reduces its restrictive effect to flow of said fluid medium through said first fluid inlet passage means and into said annular chamber and out of said second fluid outlet passage means to associated structure to be acted upon by said fluid medium, wherein the diametrical dimension of said first cylindrical valving portion is substantially different from the diametrical dimension of said second cylindrical valving portion, and resilient means normally resiliently urging said spool valve means in a direction generally toward further increasing communication between said annular chamber and said third fluid outlet passage means, wherein said diametrical dimension of said second cylindrical valving portion is substantially larger than said diametrical dimension of said first cylindrical valving portion, wherein said resilient means comprises mechanical spring means, and wherein said spring means is situated generally within said annular chamber.

5,184,645
SHEAR ORIFICE VALVE
Timothy J. Boerschig, Amherst, N.Y., assignor to HSC Controls Inc., Buffalo, N.Y.
Filed Nov. 18, 1991, Ser. No. 793,812
Int. Cl.[5] F16K *11/074*
U.S. Cl. 137—625.65 **9 Claims**



1. A valve comprising a valve body, a torque motor mounted on said valve body, first and second fluid duct means in said valve body, a plurality of first opposed metering orifice means in said valve body in communication with said first fluid duct means, a plurality of second opposed metering orifice means in said valve body in communication with said second fluid duct means, an armature in said torque motor, a metering arm having first and second faces on opposite sides thereof coupled to said armature with said first and second faces located between said first opposed metering orifices and between said second opposed metering orifices, and third fluid duct means in said valve body for either receiving fluid simultaneously from said first orifice means in response to movement of said metering arm in a first direction or for conducting fluid simultaneously to said second orifice means in response to movement of said metering arm in a second direction.

5,184,646
PILOT VALVE
Shuji Hori; Tadao Karakama, and Jun Maruyama, all of Kawasaki, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
PCT No. PCT/JP90/00541, § 371 Date Dec. 17, 1990, § 102(e) Date Dec. 17, 1990, PCT Pub. No. WO90/13766, PCT Pub. Date Nov. 15, 1990
PCT Filed Apr. 25, 1990, Ser. No. 628,401
Int. Cl.[5] F15B *13/06*
U.S. Cl. 137—636.2 **5 Claims**



1. A pilot valve comprising a valve body, four spools slidably disposed within said valve body so as to interrupt/establish communication between an inlet port and four outlet ports formed at portions in said valve body which correspond to said four spools, respectively, four pistons slidably mounted within said valve body so as to slidably move these spools, a disk mounted to the lower portion of a lever mounting shaft and having a lower surface in contact with a top of each of said pistons, said disk and any one of said pistons being moved to cause one of said spools which corresponds to the piston moved to establish communication between the inlet port and andy one of the outlet ports when a lever is pivoted in any one of forward, rearward, leftward and rightward directions, wherein said disk includes a spherical recess formed centrally in its lower portion and having a downwardly direct opening, wherein said valve body includes a spherical projection formed centrally at its upper portion and extending upwards, said spherical projection being pivotably received in said spherical recess to provide a ball joint, and wherein said lever mounting shaft has at its one end rotation resistance means cooperative with the spherical projection to prevent said lever mounting shaft from rotating about its own axis when the lever is operated.

5,184,647
VALVE BATTERY FOR GASEOUS FLUIDS
Wolf-Dieter Goedecke, Unterkirnach, and Victor Cohanciuc, Villingen, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiegesellschaft, Dusseldorf, Fed. Rep. of Germany
Filed Apr. 9, 1992, Ser. No. 866,022
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1991, 4111890
Int. Cl.[5] F16K *11/00*
U.S. Cl. 137—884 **8 Claims**

1. A valve battery, comprising:

a plurality of base plates, each having a generally polygonal outer contour comprising a top side, a bottom side, and two elongated sides, a window-shaped recess, means for closing said window-shaped recess, a thickness, a first face a second face, said first face of one of said plates corresponding to said second face of an adjacent base plate so as to sealingly engage when placed together, said plurality of plates having end surfaces;

a plurality of electrically actuatable valves, at least one of

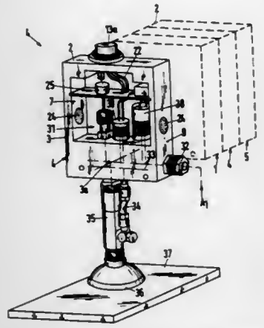
VOL 1147 ISS 2 FEB 9 1993 UMI

said valves being provided in association with each of said base plates, having an inlet port and an outlet port, and an electrical connection, said valves being shaped having an outer dimension which is smaller than said thickness of said base plates so that said valves do not protrude beyond said first and second faces of said associated base plate when mounted therein;

at least one of said base plates (**4**) having an associated vacuum valve device (**31**) and a compressed air connection (**32**) on one of said end surfaces, being interconnected for control by another of said base plates (**1**) having a continuous valve (**14**);

a pressure-fluid inlet connection associated with each of said base plates, provided on one of said elongated sides;

a pressure-fluid outlet connection (**35,A1,A2**) associated



with each of said valves, in fluid communication with said outlet port of said associated valve, provided on said lower side of said base plate associated with said associated valve;

a channel provided in said base plates, extending generally parallel to said faces of said base plates, in fluid communication with said pressure-fluid outlet connection of one of said base plates and said inlet port of each of said valves associated with said base plate;

a vacuum sensor (**40**) located in said window-shaped recess, being provided in fluid communication with said pressure fluid outlet connection of said vacuum valve device (**31**);

said electrical connection of each of said valves of said associated base plate being brought together in said window-shaped recess and extended out of it through a multiple pole central signal connection.

5,184,648

SOLENOID-OPERATED VALVE FOR MOUNTING IN SERIATIM HAVING AUTOMATIC WIREWAY DEVICE

Thomas R. Walter, Nicholasville, and Roger T. Cox, Lawrenceburg, both of Ky., assignors to The Rexroth Corporation, Lexington, Ky.

Filed Apr. 27, 1992, Ser. No. 874,597
Int. Cl.[5] F16K *11/00*
U.S. Cl. 137—884 **53 Claims**

1. A solenoid operated valve suitable for mounting in seriatim arrangement with other valves, said valve comprising:

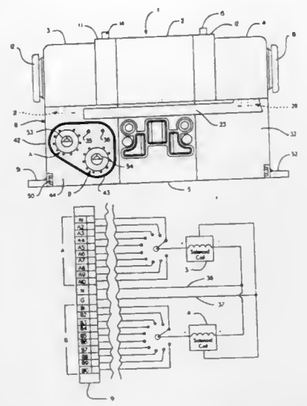
a valve body having valve means therein for controlling the passage of a fluid;

at least one solenoid unit having a solenoid therein, each of said solenoid units mounted on said valve body and electrically operable to control said valve means;

a wireway segment electrically connected to each said solenoid to provide automatic interconnection of said solenoid to at least one selected one of a plurality of electrical channel conductors;

said wireway segment having at least one bore having mounted therein a longitudinally and rotatably movable elongated indexing plunger, each said plunger having a first end section and an opposite second end section, said first end section having an indexing tip, said second end section defining an indexing receptacle angularly displaced from said tip by a predetermined angle;

said wireway segment having a plurality of channel contacts displaced about each said plunger and electrically connected to respective channel conductors, each said



plunger further having thereon a contact means selectively engageable with at least one of said plurality of channel contacts upon rotation of said plunger;

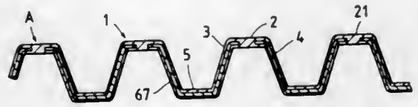
whereby engagement of respective plungers of adjacent wireway segments of similar solenoid operated valves mounted in seriatim rotates said respective plungers to automatically provide selective electrical interconnection between respective solenoids of said similar solenoid operated valves and selected electrical channels.

5,184,649

PRESSURE-RESISTANT HELICAL CORRUGATED PIPE

Shiro Kanao, No. 9-18, Nanpeidai 4-chome, Takatsuki-shi, Osaka, Japan

Division of Ser. No. 440,066, Nov. 22, 1989, abandoned. This application May 8, 1991, Ser. No. 697,051
Claims priority, application Japan, Nov. 26, 1988, 63-299337
Int. Cl.[5] F16L *11/11*
U.S. Cl. 138—122 **2 Claims**



1. A pressure-resistant helically corrugated pipe, comprising:

an integral, synthetic resin pipe wall corrugation helically wound to form a pipe, said corrugation having a trough portion disposed close to an axis of said pipe and outwardly projecting flange portions on opposing sides of said trough portion, adjacent flange portions being connected together to form said pipe having a helical outwardly projecting portion adjacent said trough portion, said outwardly projecting portion defining a hollow space thereunder; and

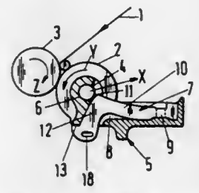
a metal belt plate reinforcing member disposed within said trough portion of said helically disposed corrugation, said metal belt plate being generally U-shaped in cross-section so as to define a base, legs and free ends and opening toward the exterior of said pipe, said metal belt plate further being completely embedded in said synthetic resin pipe wall so as to be completely surrounded by said synthetic resin pipe wall, wherein said free ends of said metal belt plate project laterally within said outwardly projecting portion in a longitudinal direction of said pipe; further comprising a connective belt region of said synthetic resin pipe wall extending between adjacent free ends of said metal belt plate in said outwardly projecting portion of said pipe.

5,184,650

LOOM HAVING A RESILIENT LOCKING ELEMENT FOR THE CLOTH BEAM BEARING

Christopher Somm, Dietlikon, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

PCT No. PCT/CH90/00043, § 371 Date Oct. 10, 1990, § 102(e) Date Oct. 10, 1990, PCT Pub. No. WO90/10742, PCT Pub. Date Sep. 20, 1990
PCT Filed Feb. 26, 1990, Ser. No. 598,684
Claims priority, application Switzerland, Mar. 10, 1990, 00909/89
Int. Cl.[5] D03D *49/20, 49/00*
U.S. Cl. 139—308 **22 Claims**



1. A loom having a cloth beam for winding on a woven cloth, the cloth beam having journals received by bearing shells, wherein each bearing shell is rigidly coupled to a stationary bearing table of the loom and wherein each journal is secured in a respective shell by a locking element, wherein the locking element comprises a tongue and a spring for disengaging the locking element and wherein the tongue has two arms, the tongue being mounted at the end of a first arm in a recess, the first arm merging from a nosing into a second arm below the table, and wherein the second arm engages the table from below by way of a support surface.

5,184,651

WIRE WINDING APPARATUS

Tomohiro Gawa; Mamoru Inoue, both of Hirakata; Tokuhito Hamane, Nara, and Fujio Kataoka, Takefu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

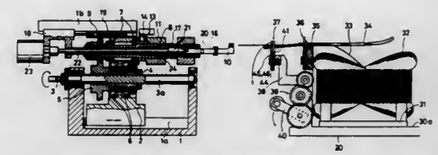
Continuation of Ser. No. 602,159, Oct. 24, 1990, abandoned. This application May 20, 1992, Ser. No. 885,015
Int. Cl.[5] B21P *15/04*
U.S. Cl. 140—115 **8 Claims**

5. A wire winding unit for winding a first wire around a second wire comprising:

a first wire clamping means for clamping an end of said first wire;

winding means for clamping, with a force less than a predetermined value, an end of said second wire, and for winding said second wire around said first wire;

moving means for moving said winding means towards said end of said first wire so that said second wire is wound



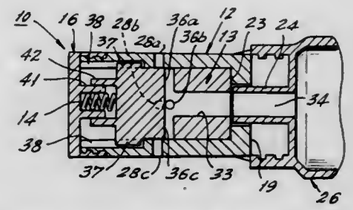
from a predetermined distance from said end of said first wire towards said end of said first wire.

5,184,652

UNIVERSAL MEDICATION PORT

Chin-Fu Fan, 112 E. 83rd St., Apt. 6A, New York, N.Y. 10028

Filed Jul. 2, 1991, Ser. No. 724,756
Int. Cl.[5] A61M *39/00*; F16K *3/00*
U.S. Cl. 141—21 **11 Claims**



1. A universal medication port for use with a syringe having a body portion and a projection with an orifice for receiving and expressing a fluid, the port comprising:

a cylindrical member having an outer circumferential surface, first and second opposed ends, and internal bore extending axially within the cylindrical member from the first end to the second end and at least one fluid passageway extending radially from the internal bore of the cylindrical member to the outer circumferential surface thereof;

a plunger disposed within the internal bore of the cylindrical member such as to be axially movable therein, the plunger having an outer circumferential surface, first and second opposite ends, an internal bore extending axially within the plunger from the first end toward the second end thereof and at least one passageway extending radially from the internal bore of the plunger to the outer circumferential surface thereof;

the bore in the cylindrical member being dimensioned so as to receive the projection of the syringe at the first end of the cylindrical member with the orifice thereof in a fluid communicating relationship with the internal bore of the plunger, and the cylindrical member being structured and arranged for engagement with the body portion of the syringe to releasably secure the body portion of the cylindrical member, the plunger being movable in response to insertion of the projection of the syringe into the internal bore of the cylindrical member and engagement of the projection with the plunger, the plunger being movable from a first position in which the passageway of the cylindrical member and the passageway of the plunger are not in a fluid communicating relationship to a second position in which such passageways are in a fluid communicating relationship, whereby fluid may be transferred between the orifice of the syringe and the passageway of the cylindrical member;

means for returning the plunger to the first position upon

VOL 1147 ISS 2 FEB 9 1993 UMI

removal of the syringe from engagement with the plunger; and

a first cap connected to the second end of the cylindrical member and wherein the returning means comprise a spring positioned intermediate the cap and the second end of the plunger.

5,184,653

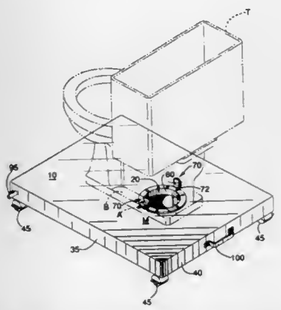
TOILET DOLLY

Danny Lacy, 9210 Harrogate Way, Elk Grove, Calif. 95758

Filed Jul. 12, 1991, Ser. No. 730,263

Int. Cl.[5] B65D *25/28*

U.S. Cl. 141—98 **4 Claims**



1. A device for transporting and draining a toilet fixture having a pedestal base with a floor mounting surface having a flush water port exiting through said floor mounting surface and at least one floor bolt receiving aperture piercing said base, comprising:

a) a generally hollow body surrounding a water reservoir, wherein said body has a top panel with upper and lower surfaces completely penetrated by a water reservoir entrance, a bottom panel with upper and lower surfaces, and a perimeter side wall, wherein said perimeter side wall spans and connects said top and said bottom panels;

b) a plurality of locking casters, wherein each said locking caster is secured to said bottom panel lower surface;

c) a toilet mount for contacting said pedestal base floor mounting surface, wherein said toilet mount is fastened to said body top panel with said toilet mount comprising a perimeter flange having upper and lower surfaces joined to an open centered ring, wherein said ring is fitted within said top panel water reservoir entrance with said lower flange surface contacting said top panel upper surface; and

d) means for securing said pedestal base to said toilet mount, whereby when said pedestal base mounting surface contacts said flange upper surface said flush water port aligns with said water reservoir entrance, wherein said securing means comprises an anchor member and an anchor member receiver secured within said body, wherein said anchor member passes through said pedestal base floor bolt receiving aperture and through a passage in said flange and said top panel to engage said anchor member receiver to secure said base to said body.

5,184,654

VAPOR RECOVERY SEALING DEVICES

Bruce M. Benzing, Cincinnati, Ohio, assignor to Dover Corporation, New York, N.Y.

Filed Jun. 18, 1991, Ser. No. 716,935

Int. Cl.[5] B65B *1/28*

U.S. Cl. 141—287 **18 Claims**

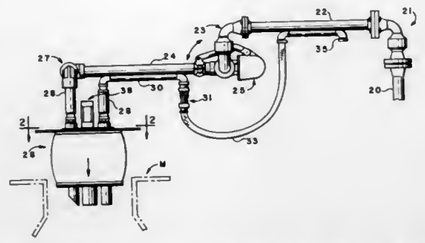
1. A vapor recovery sealing device for use in discharging liquid into a tank through an opening defined by an inner diameter,

said device comprising

a top plate having a liquid inlet passage and a vapor outlet passage,

sleeve means depending from said top plate and having its upper end sealingly connected thereto, and

means for exerting an axial, compressive loading on said sleeve means to bring it to a sealing position,



said sleeve means being characterized in that it is a thin walled tube generally circular in cross section and the walled tube deflects outwardly to sealingly engage the inner diameter of the tank opening, in response to a compressive axial loading thereon,

whereby the outer surface of the sleeve means circumferentially engages the inner diameter of the tank opening to form a circumferential seal therewith.

5,184,655

MESSAGE DISPLAY BOOT FOR FUEL DISPENSING NOZZLE

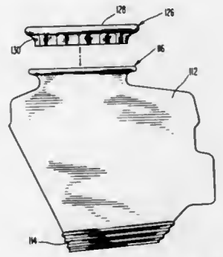
Michael J. Fell, Bryn Mawr, Pa., assignor to M & M Displays, Inc., Philadelphia, Pa.

Continuation-in-part of Ser. No. 514,866, Apr. 26, 1990, Pat. No. 5,058,637, which is a continuation-in-part of Ser. No. 397,774, Aug. 23, 1989, abandoned. This application Jul. 16, 1991, Ser. No. 730,497

The portion of the term of this patent subsequent to Jul. 2, 2008, has been disclaimed.

Int. Cl.[5] B67D *5/00*

U.S. Cl. 141—392 **12 Claims**



1. A message display device for a fuel dispensing nozzle, comprising:

(a) a flexible boot adapted for close conforming fit over at least a front portion of the nozzle;

(b) a substantially flat message display platform mounted on a top surface of the boot;

(c) a message placard resting upon the platform, and;

(d) an optically clear cover of flexible material conforming to the contour of the platform and having a skirted edge depending in close conformal fit along and under the sides of the platform, said skirted edge having expansion folds such that the cover will hold the placard on the platform

but may be pried away from the platform to allow the placard to be changed.

5,184,656

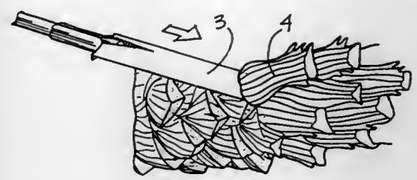
METHOD OF CUTTING FROND STUBS FROM A DATE PALM

Darl E. Young, 82849 Lexington Ave., Indio, Calif. 92201

Filed Nov. 19, 1991, Ser. No. 794,572

Int. Cl.[5] B27B *1/00*; A01G *23/00*

U.S. Cl. 144—363 **7 Claims**



1. A method of cutting frond stubs from a date palm having a palm bark surface to reduce the possibility of pathogen infestation and damage therefrom comprising:

providing a cutting tool with a sharp cutting edge;

engaging each frond stub to be severed with the cutting edge of said cutting tool with sufficient force in a direction toward the palm to sever said frond stub without leaving a pocket in which water can collect and remain and without penetrating the vascular tissue beneath the fibrous exterior of the palm and repeating said engagement as necessary, following the circumference of the tree, to completely sever the frond stub.

5,184,657

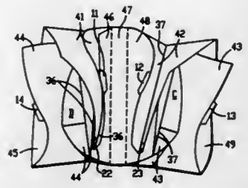
MULTI-COMPARTMENTED WALLET AND METHOD OF CONSTRUCTION

Robert M. Hatchman, 1507 S. Claremont St., San Mateo, Calif. 94402

Filed Nov. 26, 1990, Ser. No. 618,220

Int. Cl.[5] A45C *1/06*

U.S. Cl. 150—132 **10 Claims**



7. A foldable wallet constructed from a single piece of flexible material by cutting folding, and interlaying formed gathers to form a plurality of storage compartments in each of two wallet sections accessible from a single plane when the wallet is unfolded, each wallet section comprising:

two generally rectangular pockets accessible from a long pocket edge;

a tab means for dividing each of the two rectangular pockets to form two storage compartments in each rectangular pocket;

two paper currency storage compartments each defining a section of the material folded to form a generally diagonal edge, the currency folding around the diagonal edges for storage; and

one storage compartment between the material sections with the diagonal edges; and

a connecting section of material between the two wallet sections for shielding all of the compartments in each section when the wallet is folded and for unfolding the wallet for access to all of the compartments in each wallet section.

5,184,658

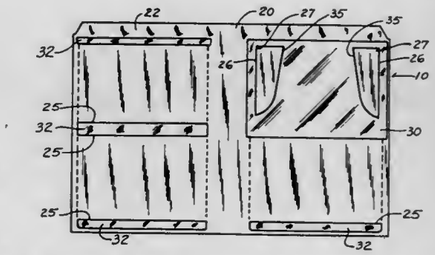
CARDHOLDER AND METHOD OF CARDHOLDER CONSTRUCTION AND POCKET CONSTRUCTION

Thomas A. Bauman, West Bend, Wis., assignor to Enger-Kress Company, West Bend, Wis.

Filed Feb. 25, 1991, Ser. No. 660,200

Int. Cl.[5] A45C *1/00, 1/14, 11/18*

U.S. Cl. 150—147 **3 Claims**



1. A pocket assembly for holding cards consisting of: a first rectangular sheet having a predetermined width, a front side of nylon material, and an integral back side of a vinyl plastic material and a second rectangular sheet of plastic material, also having a predetermined width; said first sheet having a first plurality of slits; at least one first portion of said second sheet passing through said first plurality of slits over said front side of said first sheet and at least one second portion of said second sheet passing through said first plurality of slits and under said back side of said first sheet; said second portion being fused to said back side of said first sheet; said first portion forming at least one pocket on said front side of said first sheet; said first plurality of slits being angularly related to each other so that when said second portion is fused to said back side of said first sheet said first portion forms at least one pocket on said front side of said first sheet.

5,184,659

SUN RESISTANT, FOLDABLE WINDOW SHADE

Hector Alcocer, 207 Greenwich, San Antonio, Tex. 78209

Filed Nov. 21, 1991, Ser. No. 795,464

Int. Cl.[5] A47H *5/00*

U.S. Cl. 160—84.1 **3 Claims**

1. A sun shade for a generally rectangular aircraft window having a width and height dimension, comprising, in combination:

a generally rectangular sheet of woven plastic material having a width slightly greater than the width of the aircraft window, and a height exceeding the height of the aircraft window;

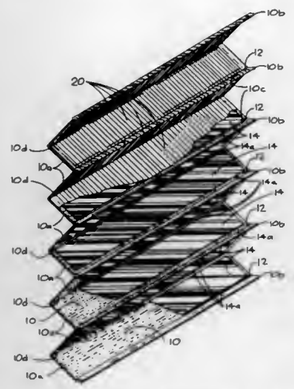
said sheet being horizontally reversely folded to form a plurality of integrally connected pleats disposable in abutting relation above the aircraft window in the inoperative position of the shade, and being vertically expandable by downward movement of the pleats to form an angular relationship between adjacent pleats to cover all or a selected portion of the aircraft window;

each pleat having two outer faces disposed in juxtaposition to the aircraft window and two inner faces facing away from the aircraft window; and

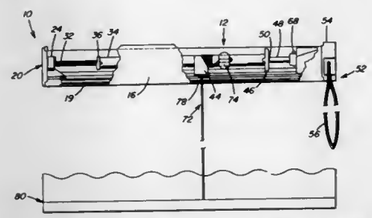
a metallic expansion control strip having a thickness of at least 0.002 inches adhesively secured to substantially all

VOL 1147 ISS 2 FEB 9 1993 UMI

portions of one of a group comprising all outer faces and all inner faces, whereby thermal expansion and contraction of each said pleat is determined by the respective metallic control strip.

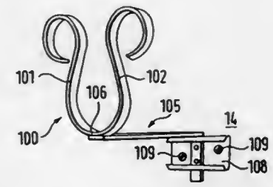


5,184,660
WINDOW BLIND ACTIVATOR
Ralph Jelic, Valencia, Pa., assignor to Verosol USA Inc., Pittsburgh, Pa.
Filed Nov. 1, 1991, Ser. No. 786,282
Int. Cl.[5] E06B *9/30*
U.S. Cl. 160—171 16 Claims



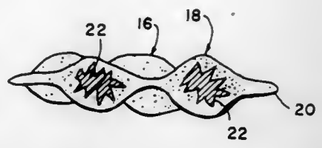
1. A device for raising and lowering window blind fabric comprising,
an elongated headrail;
at least one elongated take-up tube rotatably fixed to said headrail;
at least one elongated cord, each of said at least one elongated cord being fixed at one end to one of said at least one take-up tube and having an opposite end connectable to such window blind fabric; and
a drive core rotatably disposed within a bi-directional friction brake, said drive core being connected to said take-up tube, said bi-directional friction brake being fixed to said headrail.

5,184,661
ASSEMBLY FOR DRAPING CURTAINS
Christer Hannerstig, Hollviksnas, Sweden, assignor to AB A. Svensson & Co., Malmö, Sweden
Continuation of Ser. No. 672,684, Mar. 20, 1991, abandoned, which is a continuation of Ser. No. 554,454, Jul. 19, 1990, abandoned, which is a continuation of Ser. No. 370,340, Jun. 22, 1989, Pat. No. 4,958,646, which is a continuation of Ser. No. 114,655, Oct. 28, 1987, abandoned. This application Sep. 23, 1992, Ser. No. 949,371
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1986, 36845; European Pat. Off., Oct. 12, 1987, 87114878.9
Int. Cl.[5] A47H *13/14*
U.S. Cl. 160—348 13 Claims



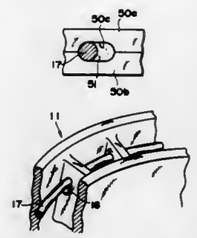
1. A drapery holder adapted to be secured to a wall surface for retaining drapery material adjacent to a window or wall opening comprising:
a support member having a first end and a second end, said support member being of a predetermined length and including an upper surface adapted for supporting drapery material thereon;
a wall engaging member secured adjacent to said first end of said support member, said wall engaging member being disposed in a first plane substantially orthogonally positioned relative to said support member;
a first prong including a first end and a second end, said first end of said first prong being secured adjacent to said second end of said support member and said second end of said first prong projecting outwardly therefrom;
a second prong including a first end and a second end, said first end of said second prong being secured adjacent to said second end of said support member and said second end of said second prong projecting outwardly therefrom;
said first and second prongs being aligned relative to each other in a second plane substantially orthogonally positioned relative to said support member and defining an opening between said first and second prongs for accommodating drapery material therebetween, said opening being disposed through said second plane in a direction substantially parallel with said support member and said first and second planes being disposed substantially parallel with respect to each other;
a curved surface being formed adjacent to each of said second ends of said first and second prongs projecting outwardly from the second end of said support member, each of the second ends of said first and second prongs being bent to form said curved surface with each of said second ends being positioned exteriorly of said opening formed between said first and second prongs and an interior portion of said first and second prongs being formed to provide a substantially smooth continuous interior surface extending within said opening;
said first and second prongs are constructed of a resilient material for enabling said first and second prongs to be repeatedly manually opened and closed to first spread apart the first and second prongs relative to each other for permitting drapery material to be positioned therebetween and thereafter returning the first and second prongs to a normal position for retaining drapery therebetween during use.

5,184,662
METHOD FOR CLAD-COATING CERAMIC PARTICLES
Nathaniel R. Quick, 44 Center Grove Rd., H 15, Randolph, N.J. 07869, and James C. Kenney, 5846 Carvel Ave., Indianapolis, Ind. 46220
Division of Ser. No. 468,250, Jan. 22, 1990, Pat. No. 5,070,591. This application Aug. 6, 1991, Ser. No. 740,964
Int. Cl.[5] B22D *19/00, 19/14*
U.S. Cl. 164—97 6 Claims



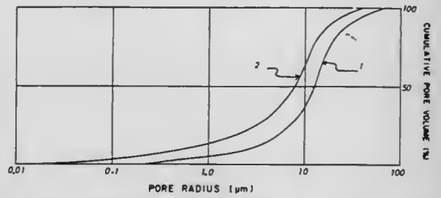
1. A metal of making micron size particles clad-coated with metal, said method comprising the steps of:
a. forming a sponge-like lightly sintered skeletal body of consolidated micron size core-ceramic particles between 0.5 microns to 50 microns and having a jagged surface configuration, by applying heat and/or pressure in an inert or reducing atmosphere to said particles in a container used to hold said core-ceramic particles during the formation of said skeletal body, to thereby form voids within said body;
b. infiltrating said voids of said skeletal body with molten metal or metal alloy by means of pressure and liquid phase sintering or pressure and infiltration in the presence of said inert or reducing atmosphere, to thereby form a billet of densely compacted and consolidated-micron size particles of core-ceramic wherein each of said micron size particles is coated with a layer of said metal or metal alloy to form an interlocking mechanical bond with said jagged surface thereof;
c. reducing said billet to fine chips by machine turning or milling; and
d. further reducing said fine chips to micron size particles by means of attritor, ball or horizontal milling.

5,184,663
VENTILATED DISK AND PROCESS FOR MAKING SAME
Toshio Oono, and Hiroki Uemura, both of Aichi, Japan, assignors to Aisin Takaoka Co., Ltd., Toyota, Japan
Division of Ser. No. 422,896, Oct. 18, 1989, Pat. No. 5,004,078. This application Jan. 15, 1991, Ser. No. 641,546
Claims priority, application Japan, Nov. 9, 1988, 63-146219; Nov. 9, 1988, 63-146220; Nov. 9, 1988, 63-146221
Int. Cl.[5] B22D *19/00*
U.S. Cl. 164—98 1 Claim



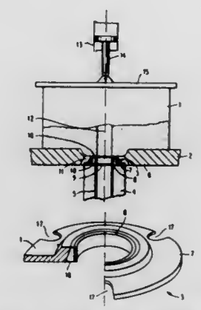
1. A process for producing a ventilated disk comprising:
providing a mold with a cavity and a sand core,
setting within the mold at least one annular damping member adjacent a core portion of the sand core,
pouring a molten metal into the mold cavity,
removing said sand core and leaving a ventilated disk having a pair of disk portions, a plurality of ribs extending substantially in a radial direction connecting the disk portions, a plurality of holes provided in the ribs, and a hub portion, wherein said holes contain a space for vibration while maintaining contact between an inner wall of the holes and the annular damping member.

5,184,664
MOLD FOR LEAD CASTING
Yuji Hayashi; Masahiro Ito, both of Takatsuki; Hiroyoshi Yoshida, and Hiroyoshi Shibata, both of Himeji, all of Japan, assignors to Yuasa Battery Co., Ltd., Osaka and Kobe Cast Iron Works, Ltd., Kobe, both of, Japan
Filed Jun. 28, 1991, Ser. No. 723,076
Claims priority, application Japan, Jul. 2, 1990, 2-175670
Int. Cl.[5] B22D *25/04*
U.S. Cl. 164—271 1 Claim



1. A mold for lead casting comprising a porous metal material which does not form an alloy with molten lead and has a thermal conductivity ranging from 3 kcal/(m·hr·°C.) to 15 kcal/(m·hr·°C.), and having a pore diameter distribution wherein pores having a pore radius of 40 microns or more make up 7% or less of the total pore volume, and having a permeable rate of 0.2 ml/sec·cm^2 or more at a material thickness of 10 mm and ambient pressure of 0.02 kg/cm^2.

5,184,665
INTERCONNECTING DEVICE FOR CASTING MOLDED PARTS
Daniel Boudot, Saint Remy, France, assignor to Pont-A-Mousson S.A., Nancy, France
Filed Aug. 27, 1991, Ser. No. 750,352
Claims priority, application France, Aug. 27, 1990, 90 10798
Int. Cl.[5] B22D *18/04*
U.S. Cl. 164—306 5 Claims



1. In combination with a casting apparatus, a replaceable, interconnecting device for implementing the casting of molded parts from a metal alloy having a high melting point, such as cast-iron, steel, or a superalloy, from a melting furnace or

VOL 1147 ISS 2 FE 9 1993 UMI

pouring ladle into a sand mold, by feeding the mold from the bottom upwardly, wherein said device (3) is a wear device, an upper surface thereof is positioned in contact with a bottom section of said mold (1), the device is centered under a feed shaft (12) opening into the bottom of the mold, and a lower surface of the device is disposed in contact with an upper end of a vertically oriented casting nose (4), and wherein said device comprises a collar (7) having a flat base on a bottom side thereof and a hollow cylindrical interior which opens at a level of said upper and lower surfaces, and a cylindrical sleeve (8) made of a heat-resistant material, an exterior casing of said sleeve fitting into the hollow interior of the collar via an interposed annulus of compressed concrete (18), upper and lower surfaces of the sleeve being positioned at the level of the upper and lower surfaces of the collar.

5,184,666

PROCESS AND DEVICE FOR CONTROLLING THE CONTINUOUS-CASTING THICKNESS OF A THIN STRIP OF ELECTRICALLY CONDUCTIVE MATERIAL

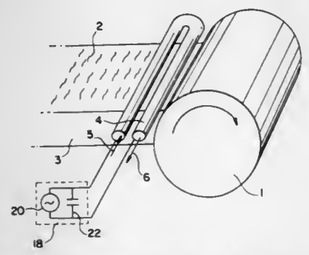
Pascale Gillon, Grenoble, and Pascal Rivat, Haroué, both of France, assignors to Institut de Recherches de la Siderurgie Francaise-IRSID, Puteaux and Pechiney Recherche, Courbevoie, both of, France

Filed Jun. 25, 1991, Ser. No. 720,707

Claims priority, application France, Jul. 16, 1990, 90 09708

Int. Cl.[5] B22D *27/02*

U.S. Cl. 164—466 **11 Claims**



1. Process for continuous casting of a thin strip of electrically conductive material comprising:

supplying said material in the liquid state having a height L, a magnetic permeability μ and electrical conductivity σ by means of an injector to a cooled lateral wall of a rotating roll on which said material solidifies to form a thin strip, an end of said injector opening along the generatrix of the roll such that free surface of said material touches said wall, and

controlling the thickness of said thin strip by subjecting the surface of said material in said injector of said height L to the action of an alternating magnetic field of pulsation w generated by a single phase electric current.

7. Apparatus for continuous casting of a thin strip of electrically conductive material, comprising:

a cooled rotating roll;

an injector for carrying the material in molten form with a height L, said injector having an end which opens along the generatrix of said roll; and

an electrical circuit comprising a single phase alternating current generator, at least one capacitor, and at least one inductor electrically connected so as to produce an oscillating current, said inductor comprising at least one cooled hollow metallic element placed above said injector and elongated in a direction parallel to the generatrix of the roll, and over at least the entire length of the roll.

5,184,667

PROCESS AND INSTALLATION FOR THE ELECTROMAGNETIC CASTING OF ROLLED BARS FROM AN ALUMINUM ALLOY HAVING A RIPPLEFREE SURFACE

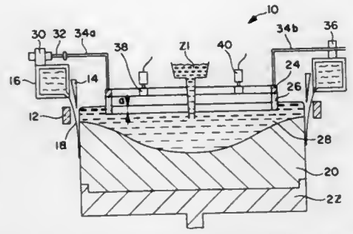
Bertrand Carrupt, Sierre; Maurice Constantin, Sion, and Michel Ebener, Bramois, all of Switzerland, assignors to Alusuisse-Lonza Services Ltd., Zurich, Switzerland

Filed Oct. 28, 1991, Ser. No. 783,766

Claims priority, application Switzerland, Nov. 6, 1990, 3522/90

Int. Cl.[5] B22D *27/02*

U.S. Cl. 164—467 **17 Claims**



1. Process for preventing the ripple formation and oxide deposition on the rolled surfaces of a rolled bar from an aluminum alloy during vertical electromagnetic continuous casting, which comprises: providing an essentially rectangular inductor and an oxide barrier dipping into an aluminum alloy melt head; extending the oxide barrier at least over longitudinal sides of the inductor; arranging the oxide barrier approximately parallel to and at a distance from said longitudinal sides; and moving the oxide barrier backwards and forwards horizontally in the longitudinal direction of the oxide barrier.

13. Installation for preventing the ripple formation and oxide deposition on the rolled surfaces of a rolled bar from an aluminum alloy during vertical electromagnetic continuous casting, which comprises: an essentially rectangular inductor; an essentially rectangular oxide barrier adapted to dip into a metal head of an aluminum alloy melt; a support frame wherein the oxide barrier is fixed to the support frame, said support frame having one end coupled to a pneumatic cylinder in fixed position in relation to the inductor and the other end guided in a guide in fixed position in relation to the inductor.

5,184,668

STRIP CASTING

Hisahiko Fukase, Wollongong, Australia; Heiji Kato, Yokosuka, and Akihiro Nomura, North Wollongong, Australia, assignors to Ishikawajima-Harima Heavy Industries Company Limited, Tokyo, Japan and John Lysaght (Australia) Limited, Sydney, Australia

Filed Apr. 4, 1991, Ser. No. 679,664

Claims priority, application Australia, Apr. 4, 1990, PJ9458

Int. Cl.[5] B22D *11/06, 27/04*

U.S. Cl. 164—480 **16 Claims**

1. A method of initiating a process for casting metal strip wherein molten metal is poured between a pair of parallel casting rollers via a tundish and a metal delivery nozzle, and the molten metal is passed between the rollers to form a strip, said method comprising, at the commencement of a casting operation, locating a source of said molten metal in operative relation to a casting station, preheating the metal delivery nozzle and the tundish at locations spaced from the rollers, thereafter, at a location remote from said casting station, moving the preheated delivery nozzle and tundish into an assembly with the casting rollers in a position above the nip between the rollers, thereafter moving the assembly of the rollers, delivery nozzle and tundish to said casting station, and at the casting station

pouring molten metal into the tundish to flow via the delivery nozzle into a casting pool above the nip between the casting rollers.

10. A method of initiating a process for casting metal strip comprising:

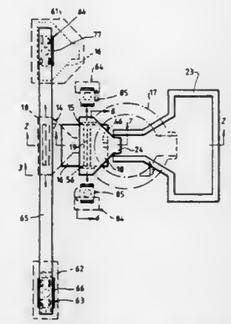
introducing molten metal between a pair of cooled parallel casting rollers via a tundish and a metal delivery nozzle;

containing the molten metal so introduced above a nip of said rolls as a casting pool by providing refractory side closures at both sides of the nip;

cooling metal from said casting pool under conditions sufficient to form a strip of solid metal; and

passing said cooled metal through said nip;

said method of initiating said process comprising, at the commencement of a casting operation:



preheating, to a temperature of at least about 1000° C., the metal delivery nozzle, the tundish and said side closures at respective preheating locations spaced from the rollers,

moving the preheated delivery nozzle and tundish into operative positions above said casting rollers and moving the preheated end closures into operative positions engaging said casting rollers at both sides, respectively, of the nip; and

thereafter pouring molten metal into the tundish to flow and flowing such through the delivery nozzle and thence into said casting pool, the time interval between the initiation of the first of the movements of any one of said preheated delivery nozzle, said preheated tundish and said preheated side closures from their respective preheating locations to the initiation of pouring said molten metal being no more than three minutes.

5,184,669

HEAT ACCUMULATOR WITH CHEMICAL SOLID MATTER/GAS STORAGE REACTIONS

Rainer Tamme, Ostfildern, and Herbert Kanwischer, Stuttgart, both of Fed. Rep. of Germany, assignors to Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.V., Fed. Rep. of Germany

PCT No. PCT/EP90/00205, § 371 Date Oct. 18, 1990, § 102(e) Date Oct. 18, 1990, PCT Pub. No. WO90/10181, PCT Pub. Date Sep. 7, 1990

PCT Filed Feb. 9, 1990, Ser. No. 598,600

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1989, 3905346

Int. Cl.[5] F28D *20/00*

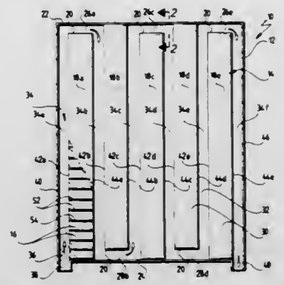
U.S. Cl. 165—10 **19 Claims**

1. Heat accumulator operating with chemical solid state/gas storage reactions with a reaction component comprising:

a container;

a solid state/gas reaction storage material arranged in said container, said solid state/gas reaction storage material being chargeable by absorbing heat from a heat carrier gas and releasing said reaction component into said heat carrier gas and dischargeable by incorporating at least a portion of said reaction component introduced into said container and releasing heat into said heat carrier gas;

a support structure within said container, said support structure comprising separate compartments that are open towards said heat carrier gas;



said storage material being permanently arranged in said separate components and divided by into portions within said compartments; and

said heat carrier gas flowing directly around said portions of said storage material for releasing said reaction component into and having said reaction component incorporated from the space through which said heat carrier gas flows.

5,184,670

HEAT EXCHANGER

Peter J. Stewart, Maddington, Australia, assignor to Seaford Nominees Pty. Ltd., Australia

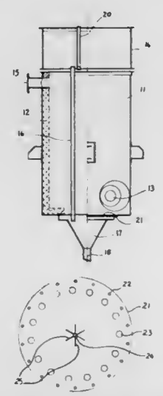
PCT No. PCT/AU91/00124, § 371 Date Nov. 22, 1991, § 102(e) Date Nov. 22, 1991, PCT Pub. No. WO91/15726, PCT Pub. Date Oct. 17, 1991

PCT Filed Apr. 3, 1991, Ser. No. 776,364

Claims priority, application Australia, Apr. 3, 1990, PJ453

Int. Cl.[5] F28F *7/00;* **F26B** *17/12*

U.S. Cl. 165—82 **7 Claims**



1. A heat exchanger for heating fluid particulate material comprising a heating chamber, heating means associated with the heating chamber, a receptacle mounted above the heating chamber, a delivery chamber located below the heating chamber, a set of flow passageways extending through the heating chamber between the receptacle and the delivery chamber, the

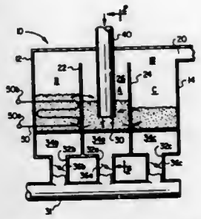
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delivery chamber having an outlet at its lower portion wherein the delivery chamber is provided with at least one restricted passageway opening into the heating chamber for the relief of gaseous pressure developed in the delivery chamber and further wherein the at least one restricted passageway is adapted to increase the degree of opening between the delivery chamber and the heating chamber with an increase in temperature.

5,184,671
FLUIDIZED BED HEAT EXCHANGER AND METHOD OF OPERATING SAME

Michael G. Alliston, Denville, and Walter R. Campbell, Jr., Union, both of N.J., assignors to Foster Wheeler Energy Corporation, Clinton, N.J.

Division of Ser. No. 414,645, Sep. 27, 1989, Pat. No. 5,108,712, which is a continuation of Ser. No. 138,814, Dec. 24, 1987, abandoned. This application Dec. 9, 1991, Ser. No. 805,732
Int. Cl.[5] F28D *13/00*; **F27B** *15/08, 15/09, 15/16*
U.S. Cl. 165—104.16 **4 Claims**

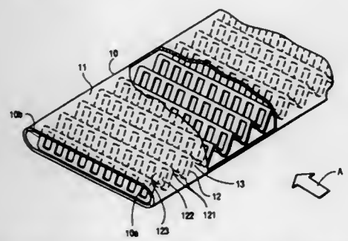


1. A method for operating a fluidized bed heat exchanger comprising the steps of providing a fluidized bed heat exchanger having an inlet chamber, an outlet chamber and two additional chambers, introducing particulate material through said inlet chamber; permitting said material to flow simultaneously from said inlet chamber to both of said two additional chambers; removing heat from said material in at least one of said two additional chambers; permitting said material to flow from said two additional chambers to said outlet chamber; introducing air to at least one of said inlet and two additional chambers to fluidize the material therein; and discharging said material from said outlet chamber.

5,184,672
HEAT EXCHANGER

Hisao Aoki, Gunma, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Dec. 4, 1991, Ser. No. 802,239
Claims priority, application Japan, Dec. 4, 1990, 2-400079[U]
Int. Cl.[5] F28F *13/12*
U.S. Cl. 165—109.1 **7 Claims**



1. In a heat exchanger including pipe means for directing a first fluid to flow therethrough, the improvement comprising dispersing means for dispersing the flow of the first fluid when the first fluid flows through said pipe means,

wherein said pipe means includes at least one flat tube member over the exterior of which a second fluid laterally flows, and

wherein said dispersing means includes a corrugated fin which is disposed in an interior hollow portion of said at least one flat tube member, said corrugated fin including a plurality of ridges which extend laterally in said interior hollow portion of said flat tube member and a plurality of surfaces defined between each pair of adjacent ridges, said adjacent ridges being fixedly connected to upper and lower inner surfaces of said flat tube member so as to define a plurality of lateral hollow regions in said interior hollow portion of said flat tube member, a plurality of openings being formed in each of said surfaces defined between said adjacent ridges to facilitate flow of the first fluid through said at least one tube member.

6. A heat exchanger comprising at least one tubular member having an inner surface and an outer surface, said inner surface defining a flow path through which a first fluid is passed to achieve a heat exchange between said first fluid in said tubular member and a second fluid which passes over said outer surface of said tubular member, said tubular member further defining an internal structure for dispersing portions of said first fluid laterally in said tubular member when said first fluid flows therethrough,

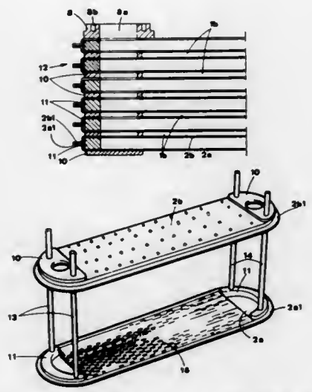
wherein said internal structure includes a plurality of laterally arranged barriers within said tubular member, wherein each said barrier defines a plurality of openings to permit said first fluid to flow therethrough, and

wherein each said opening is laterally aligned with the other openings defined in the same barrier and is longitudinally offset with the openings defined in each of the barriers adjacent thereto.

5,184,673
PLATE HEAT EXCHANGER AND METHOD FOR ITS MANUFACTURE

Erik Hedman, Linköping, and Rolf Hedman, Motala, both of Sweden, assignors to Torell AB, Linkoping, Sweden

PCT No. PCT/SE90/00144, § 371 Date Sep. 20, 1991, § 102(e) Date Sep. 20, 1991, PCT Pub. No. WO90/13394, PCT Pub. Date Nov. 15, 1990
PCT Filed Mar. 7, 1990, Ser. No. 761,816
Int. Cl.[5] F28D *1/03*
U.S. Cl. 165—153 **11 Claims**



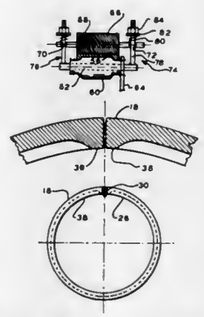
1. Method for the manufacture of a plate heat exchanger/-cooler, which, in its finished state, exhibits a number of passageways communicating in parallel via collectors and intended for a fluid which is to be cooled, each and every one of which passageways consists of a pair of preferably rounded, rectangular plates executed with projecting and outward-folded edges and facing one another, with openings arranged on the ends, which, in the finished heat exchanger/cooler, constitute the aforementioned collectors, in conjunction with which, on the one hand, spacer washers which define flow openings for a cooling medium are present between pairs of plates situated adjacent to one another and, on the other hand, a distance piece is present between each pair of plates in an area on the respective end, whereby the spacer washers and the plates and the pairs of plates are joined together at least along their outward-folded edges by a furnace brazing process, characterized in that the spacer washers and the distance pieces are positioned in the same area, in that the aforementioned plates and spacer washers/distance pieces are caused by the furnace brazing process to form a solid body on each end of the heat exchanger/cooler, and in that before or after the furnace brazing process at least one transcurrent channel running across the plates and through these and the spacer washers/distance pieces is produced in the aforementioned area, which channel is intended to be utilized in conjunction with the installation of the heat exchanger/cooler.

6. Arrangement for a plate heat exchanger/cooler produced by furnace brazing, which has a number of passageways arranged adjacent to one another and at a certain distance from one another, with inlet and outlet connection couplings for a fluid which is to be cooled and communicating in parallel, between which a cooling fluid is intended to flow, each of which passageways consists of two preferably rounded rectangular trough-shaped plates, which are connected to one another in an airtight fashion, characterized in that distance pieces and spacer washers are present in an area on the respective ends of the passageways between the plates in each passage and between them, which distance pieces and spacer washers are caused during the furnace brazing operation to form a solid body together with the plates and the connection couplings, and in that there are present at each end two channels arranged preferably symmetrically relative to the opening of the coupling, situated perpendicular to the plane of the plates and passing through the aforementioned body, for the purpose of clamping the plate heat exchanger/cooler securely in position.

5,184,674
INNER RIBBED TUBE AND METHOD

John M. Keyes, Roseland, Fla., assignor to High Performance Tube, Inc., Union, N.J.

Filed Dec. 26, 1990, Ser. No. 634,066
Int. Cl.[5] F38F *1/40*
U.S. Cl. 165—184 **4 Claims**



1. A seam welded tube for use in making a refrigerator condenser or a refrigerator evaporator comprising:

an annular wall having an inner surface and an elongate axis;

said inner surface having a series of axially spaced inner spiral rib loops;

said inner spiral rib loops each having a spiral angle formed by a tangent to a point on the rib loop and a longitudinal line through the point and parallel to the elongate axis of the tube;

said spiral angle having a size in the range between zero degrees and 90 degrees;

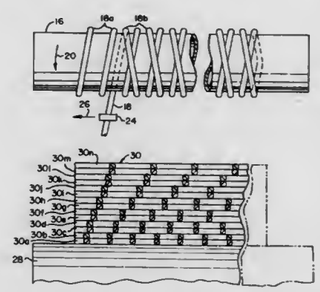
said tube annular wall having adjacent elongate wall portions extending substantially parallel to the elongate axis, and said elongate wall portions having an elongate seam weld therebetween; and

said loops being discontinuous at the seam weld.

5,184,675
THERMAL ENERGY TRANSFER APPARATUS AND METHOD OF MAKING SAME

Ernest A. Gardner, 142-1/2 Canal Ave., NW, Canal Fulton, Ohio 44614

Filed Oct. 15, 1991, Ser. No. 775,349
Int. Cl.[5] F28F *1/36*
U.S. Cl. 165—184 **19 Claims**



1. A thermal energy transfer apparatus comprising:

(A) a hollow elongated fluid conducting member having:

(1) an inlet end,

(2) an outlet end, and

(3) an outer surface surrounding the member,

(B) thermal energy transfer means, surrounding at least a substantial portion of the outer surface of the fluid conducting member, for transferring thermal energy with respect to the fluid conducting member comprising;

(1) at least three layers of spaced apart thermally conductive metal strands surrounding the fluid conducting member,

(2) the strands of a first of said layers being in intimate contact with the outer surface of the fluid conducting member, and

(3) the strands of each of the successive layers being in intimate contact with the strands in any adjacent layer on either side thereof at points of intersection with the strands of such adjacent layers,

(4) the strands being arranged in such relative orientation with respect to each other as to form open passageways for the flow of fluid through the layers between the outer surface of the fluid conducting member and the ambient atmosphere around the thermal energy transfer apparatus;

(5) the strands in each layer being permanently bonded to the strands in each adjacent layer at the areas of contact between the strands.

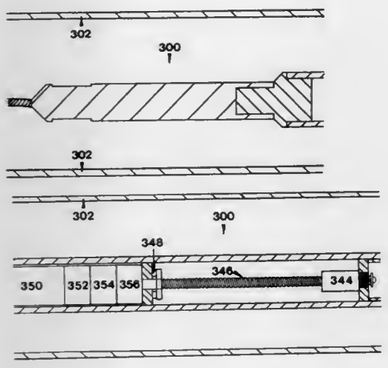
VOL 1147 ISS 2 FEB 9 1993 UMI

5,184,676

SELF-PROPELLED APPARATUS

Gordon A. Graham, 28 Tuscan Street, Rossmoyne W.A. 6155; William V. Pasznicki, 5 Pavetta Crescent, Forrestfield W.A. 6058; William F. Connell, Lot 186 Old Northam Road, Chidlow W.A. 6556, and Kenneth V. Pratley, P.O. Box 5, Chidlow W.A. 6556, all of Australia

Filed Feb. 26, 1991, Ser. No. 660,896
Claims priority, application Australia, Feb. 26, 1990, PJ 8810
Int. Cl.[5] E21B *23/00*
U.S. Cl. 166—66.4 12 Claims



1. A self-propelled apparatus, driven by a power, for travelling along a tubular member or shaft comprising:

driven wheels for propelling said apparatus in a direction of travel, the driven wheels being powered by the power;

means for biasing said wheels into a driving position in contact with an inner surface of said tubular member or shaft whereby drive can be imparted by said wheels against said inner surface to propel the apparatus in the direction of travel, said biasing means being powered by the power, said biasing means including:

first and second support arms, each support arm having a first end pivotably connected to a common slidable pivot pin;

first and second gear arms, each gear arm having a first end pivotably connected to a second end of a respective support arm by means of an axle, second ends of a respective support arm by means of an axle, second ends of each gear arm being pivotably connected to coaxial stationary pivot pins, wherein each wheel is rotatably mounted on respective axles and each gear arm is provided with at least one gear for transmitting torque to a corresponding one of said wheels and each of said at least one gear is driven by a common transmission gear; and

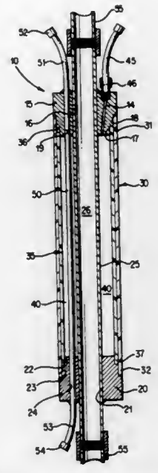
means for retracting said wheels from said driving position whereby said apparatus can be withdrawn from said tubular member or shaft in a direction opposite the direction of travel, said retracting means further arranged so as to automatically retract said wheels from said driving position when the power to the apparatus is cut-off.

5,184,677

PASS-THROUGH ZONE ISOLATION PACKER AND PROCESS FOR ISOLATING ZONES IN A MULTIPLE-ZONE WELL

Francis X. Dobscha, Birmingham; Stephen W. Lambert, Northport, Jerrald L. Saulsberry, Hoover, all of Ala., assignors to Gas Research Institute, Chicago, Ill.

Filed May 10, 1991, Ser. No. 698,020
Int. Cl.[5] E21B *33/127*
U.S. Cl. 166—187 15 Claims



1. A pass-through zone isolation packer for isolating zones in a multiple-zone well, the pass-through zone isolation packer comprising:

an upper packer sub having an upper sub through hole, a lower packer sub having a lower sub through hole, an elongated packer mandrel having a mandrel through bore, said packer mandrel positioned through said upper sub through hole and said lower sub through hole, said upper packer sub and said lower packer sub secured to said packer mandrel;

a packer element having an upper element end portion and a lower element end portion, said packer element positioned between and secured to said upper packer sub and said lower packer sub, a packer bladder positioned between said upper packer sub and said lower packer sub, said packer bladder having an upper end portion hermetically sealed about a bladder upper peripheral surface of said upper packer sub and an opposite lower end portion hermetically sealed about a bladder lower peripheral surface of said lower packer sub forming a gas-tight annular chamber;

said upper element end portion of said packer element vulcanized to an element upper peripheral surface of said upper packer sub, said lower element end portion of said packer element vulcanized to an element lower peripheral surface of said lower packer sub, said upper end portion of said packer bladder vulcanized to said bladder upper peripheral surface and said opposite lower end portion of said packer bladder vulcanized to said bladder lower peripheral surface;

inlet means for introducing a gas into said annular chamber; and

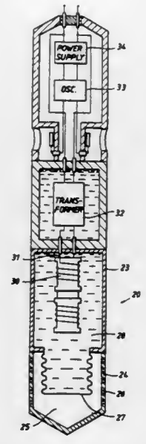
pass-through means for passing a pass-through conduit through said upper packer sub, within said annular chamber and through said lower packer sub.

5,184,678

ACOUSTIC FLOW STIMULATION METHOD AND APPARATUS

Andrey A. Pechkov; Oleg L. Kouznetsov, and Veniamin V. Drjaguin, all of Moscow, U.S.S.R., assignors to Halliburton Logging Services, Inc., Houston, Tex.

Filed Jan. 31, 1991, Ser. No. 648,062
Claims priority, application U.S.S.R., Feb. 14, 1990, 4788664; Jun. 5, 1990, 4826680; Jun. 5, 1990, 4826681
Int. Cl.[5] E21B *43/24, 43/25*
U.S. Cl. 166—249 14 Claims



1. A method for well treatment for stimulating fluid production in a producing well without stopping production from the well, comprising the steps of:

(a) running into a producing well on an electric wireline a well stimulating tool sized and adapted for passage through production tubing and placing said stimulating tool at a depth opposite perforations in a producing zone in the well;

(b) irradiating the area of the perforations with pulses of acoustic energy said acoustic energy having a frequency in the range from 5 kilohertz to 30 kilohertz and said pulses being repeated for a predetermined length of time;

(c) moving the stimulating tool to a different depth of perforations by raising or lowering said tool on said wireline and repeating step (b) at said different depths; and

(d) wherein said acoustic irradiating steps move fines and decrease the well fluid viscosity in the vicinity of the perforations by agitation, thereby increasing fluid production from the well.

11. An apparatus for stimulating fluid production in a well, comprising:

(a) an elongate sealed tool housing for running in a cased and perforated well borehole, said housing a liquid therein to couple and enable acoustic transmission through said housing into well fluids surrounding said housing;

(b) acoustic transducer means in said housing for forming a continuous wave acoustic energy pulse said acoustic energy having a frequency in the range from 5 kHz to 30 kHz for impinging on a formation to loosen fines for removal with formation fluid flow; and

(c) said transducer means further acting on formation fluid flow by agitation thereof to reduce the viscosity thereof to enable enhanced flow from the formation into the perforations in the well.

5,184,679

GRAVEL PACKING PROCESS

Hon C. Lau, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Nov. 27, 1991, Ser. No. 800,175
Int. Cl.[5] E21B *43/04*
U.S. Cl. 166—278 17 Claims

1. A process to gravel pack a portion of a wellbore within a formation comprising:

preparing a slurry comprising sand, water, and amount of succinoglycan biopolymer effective to maintain the sand in a stable suspension in the water, and an amount of a breaker effective to result in 80 percent settlement of sand from the slurry within one to three hours at a temperature that is about 20° F. less than the temperature of the formation;

inserting a gravel packing tool into the wellbore suspended from a drill pipe;

circulating the slurry through the drill pipe and the gravel packing tool to the portion of the wellbore to be gravel packed; and

allowing the sand to separate from the slurry in the portion of the wellbore to be gravel packed to form a gravel pack as the breaker breaks the succinoglycan biopolymer.

5,184,680

HIGH TEMPERATURE WELL CEMENT COMPOSITIONS AND METHODS

Patty L. Totten, Duncan; Donald W. Lindsey, Marlow, and Bobby J. King, Duncan, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Sep. 27, 1991, Ser. No. 767,299
Int. Cl.[5] E21B *33/138, 33/14*
U.S. Cl. 166—293 12 Claims

1. In a method of cementing a subterranean zone penetrated by a well bore with a retarded cement composition which is substantially non-thinning at high temperatures comprised of hydraulic cement, sufficient water to form a pumpable slurry, a set retarder and a delayed viscosifying agent which yields viscosity at high temperatures comprised of a treated galactomannan gum, and said cement composition is formed on the surface, pumped into the subterranean zone by way of the well bore and allowed to set therein, the improvement which comprises utilizing as the delayed viscosifying agent a galactomannan gum which has been depolymerized and treated with a complexing agent whereby the hydration rate of said depolymerized gum is retarded at temperatures below about 120° F. to 140° F. and at pH levels above about 10, but the hydration rate increases at temperatures above about 120° F. to 140° F., said treated depolymerized gum being present in said composition in an amount sufficient to offset the thinning of said composition at temperatures above about 120° F. to 140° F. by the hydration of said gum.

5,184,681

TELESCOPING RISER JOINT AND IMPROVED PACKER THEREFOR

William L. Fontenot, Houston, Tex., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Sep. 3, 1991, Ser. No. 754,444
Int. Cl.[5] E21B *33/035, 17/01*
U.S. Cl. 166—367 4 Claims

1. A riser joint comprising

a riser tubular mandrel having an upper end,

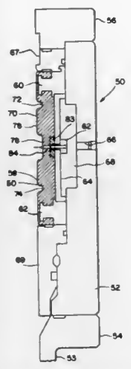
a telescoping mandrel positioned for axial movement within the upper end of said riser tubular mandrel,

a resilient annular packer carried on the interior of the riser mandrel,

means for delivering a fluid under substantial pressure against the exterior of said annular packer to cause it to seal against the exterior of said telescoping mandrel, and

VOL 1147 ISS 2 FE 9 1993 UMI

means for conducting a predetermined small amount of the fluid under pressure to the interior of said packer to provide lubrication for the movement of said telescoping mandrel thereagainst.

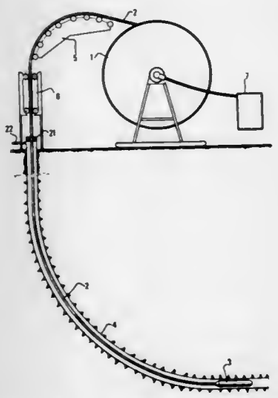


5,184,682

DEVICE ALLOWING MEASUREMENTS OR INTERVENTIONS TO BE CARRIED OUT IN A WELL, METHOD USING THE DEVICE AND APPLICATIONS OF THE DEVICE

Jacques Delacour, 18, rue Pierre Guerin, 75016 Paris; Francois Dawans, 1, rue Pasteure, and Michel Huvey, 2, avenue des Pinson, both of 78380 Bougival, all of France

Filed May 22, 1989, Ser. No. 354,876
Claims priority, application France, May 20, 1988, 88 06828
Int. Cl.[5] E21B *23/10*
U.S. Cl. 166—385 **19 Claims**



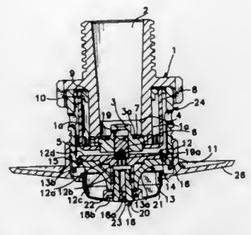
1. Device for carrying out at least one of measurements and interventions in a drilled well, the device comprising:
   a flexurally elastic and compressively rigid rod made of one of a composite and polymer non-composite material, said rod being adapted to be pushed into the drilled well and to be wound onto at least one reel;
   an instrument for at least one of measuring and intervention disposed at a lower end of said rod; and
   at least one line means for carrying at least one of energy and information embedded in said rod.

5,184,683

SPRINKLER HEAD

Hattori Takamasa, 218-315 Ogaito Oaza Kumatori-cho Sennan-gun, Osaka-fu, Japan

Filed Jun. 21, 1991, Ser. No. 719,155
Claims priority, application Japan, Mar. 6, 1991, 3-39278[U]; Mar. 6, 1991, 3-39279[U]
Int. Cl.[5] A62C *37/08*
U.S. Cl. 169—37 **6 Claims**



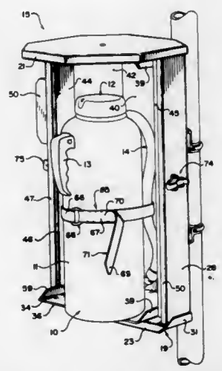
1. A sprinkler head wherein a ring-shaped or partially cut-away ring-shaped expandable and contractible locking member is held in an expanded condition between collar portions of a pair of holder members, upper and lower, and an inwardly raised portion formed on a lower inner peripheral edge of a frame disposed in a body of the sprinkler head so that an outlet port of the sprinkler head body is closed by means of a plug member; and when a heat-meltiple member is melted or softened with heat, the locking member is contracted to permit the holder members to slip off the frame so as to release the plug member from the outlet port; the sprinkler head characterized in that said inwardly raised portion comprises a spherically concave portion formed on an inner surface thereof for engagement by said locking member, and a locking protrusion formed at one end of said spherically concave portion prevents disengagement of said locking member from said spherically concave portion.

5,184,684

CONTAINER FOR A FIRE EXTINGUISHER

Daniel M. Kohlman, Box 471, Macklin, Saskatchewan, Canada S0L 2C0

Filed Jul. 29, 1991, Ser. No. 737,434
Int. Cl.[5] A62C *13/78*
U.S. Cl. 169—51 **16 Claims**



1. A container for a fire extinguisher comprising an outer housing having a top substantially horizontal panel, a bottom substantially horizontal panel, and a rear generally vertical panel interconnecting the top and bottom panels; attachment means for mounting the outer housing on a support member with a front open face of the outer housing exposed, an inner housing comprising a top substantially horizontal panel, a bottom substantially horizontal panel and a substantialy vertical panel interconnecting the top and bottom panels of the inner housing; means for mounting the fire extinguisher in the inner housing; and pivot means mounting the bottom panel of the inner housing on a top of the bottom panel of the outer housing and mounting the top panel of the inner housing underneath the top panel of the outer housing for pivotal movement of the inner housing relative to the outer housing about a common substantially vertical axis from a first position in which the vertical panel of the inner housing faces forwardly and cooperates with the rear panel of the outer housing to substantially enclose a hollow interior for receiving the fire extinguisher to a second position in which the vertical panel of the inner housing lies adjacent the rear panel of the outer housing with the fire extinguisher exposed forwardly of the vertical panel of the inner housing; said attachment means comprising a bracket member mounted upon a rear face of the vertical panel of the outer housing, the bracket member having connector means for attachment to said support member such that the outer housing is presented forwardly from the support member.

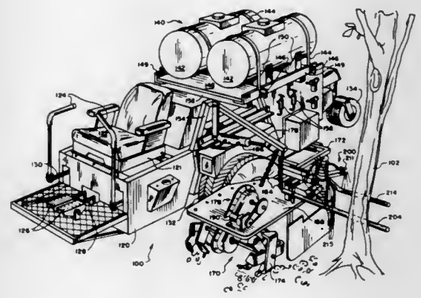
permit said cultivator assembly to be balanced on said tractor;
e. a tank mounting means provides a connecting means for said tank assembly to said zero turning radius tractor;
f. said spray directing arm extends laterally and outwardly behind said spray switch from said zero turning radius tractor;
g. said seat assembly includes a seat frame, a hand control and a foot control for controlling operation of said zero turning radius tractor;
h. said zero turning radius tractor includes turning wheels at a rear end thereof and seat wheels at a front end thereof; and
i. said seat assembly is adjacent to said seat wheels.

5,184,685

SELF-CONTAINED NURSERY CULTIVATOR

Thomas A. Meyer, 1609 Hobe Rd., Woodstock, Ill. 60098

Filed Jul. 10, 1991, Ser. No. 727,902
Int. Cl.[5] A01B *33/02*; A01C *23/00*
U.S. Cl. 172—114 **10 Claims**



1. A self-contained cultivating assembly for use in a nursery, said cultivating assembly being capable of applying a fertilizer, a pesticide, a herbicide, a nutrient, or a combination thereof during a cultivation process, wherein:
   a. said cultivating assembly includes a zero turning radius tractor for carrying and transporting a cultivating device, a spraying assembly, and a tank assembly which are connected to permit working together thereof;
   b. said spraying assembly includes means for removing contents of said tank assembly and applying said contents to a desired area, a spray switch for operating said means for removing contents and a spray directing arm to aim said spraying assembly to said desired area;
   c. said zero turning radius tractor includes a seat assembly;
   d. said seat assembly provides a means for mounting a seat for an operator of said tractor forward on said tractor to

5,184,686

METHOD FOR OFFSHORE DRILLING UTILIZING A TWO-RISER SYSTEM

Romulo Gonzalez, Slidell, La., assignor to Shell Offshore Inc., Houston, Tex.

Filed May 3, 1991, Ser. No. 695,652
Int. Cl.[5] E21B *7/12, 19/09, 43/013*
U.S. Cl. 175—5 **15 Claims**



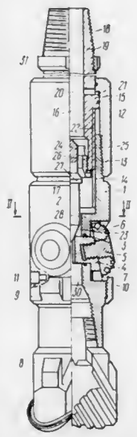
1. A method for offshore drilling in deepwater, comprising:
drilling a surface interval through a light duty first riser attached to a subsea wellhead;
setting surface casing through the first riser;
retrieving the first riser;
setting a high pressure housing in sealing engagement with the top of the surface casing;
securing a heavy duty second riser to the subsea wellhead in sealed communication with the high pressure housing; and
conducting further drilling operations through the second riser.

VOL 1147 ISS 2 FEB 9 1993 UMI

5,184,687
WELL REAMER

Gabdrashit S. Abdrakhmanov, ulitsa Gogolya, 66, kv. 71; Albert G. Zainullin, ulitsa Saidasheva, 1, kv. 117; Konstantin V. Meling, ulitsa Gafiatullina, 27, kv. 20; Rauf N. Rakhmanov, ulitsa Gafiatullina, 27, kv. 8., all of Bugulma; Alexandr P. Balandin, Krasnokamsk pereulok Pala/tinsky, 3a, kv. 90, Permskaya oblast; Alexandr A. Puzanov, ulitsa Kalinina, 67, kv. 60, Bugulma; Ilyas A. Urazgildin, ulitsa Gafiatullina, 16, kv. 70, Bugulma; Almaz A. Mukhametshin, ulitsa Gafiatullina, 26, kv. 51, Bugulma; Almas K. Khakimov, ulitsa Gafiatullina, 44, kv. 117, Bugulma; Antanas A. Yasas, ulitsa P. Tsvirkos, 15, kv. 46, Litovskaya SSR, Gargzhdai; Lutsia M. Naryshkina, ulitsa Tukhachevskogo, 6, kv. 32, Bugulma; Albert M. Akhunov, late of Bugulma; by Tanzilya K. Akhunova, administrator, ulitsa Ya. Gasheka, 7, kv. 10, Bugulma; by Flera A. Akhunova,administrator, ulitsa Ya. Gasheka, 7, kv. 10, Bugulma, and by Farid A. Akhunov, administrator, ulitsa Baumana, 1, kv. 5, Bugulma, all of U.S.S.R.

PCT No. PCT/SU88/00236, § 371 Date Jul. 23, 1990, § 102(e) Date Jul. 23, 1990, PCT Pub. No. WO90/05829, PCT Pub. Date May 31, 1990
PCT Filed Nov. 22, 1988, Ser. No. 543,800
Int. Cl.[5] E21B *7/28*
U.S. Cl. 175—267 1 Claim

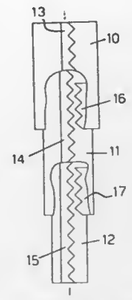


1. A well reamer comprising a sub for attaching it to the drive means, a hollow housing with a central channel and radial openings made through its side wall, projectable rolling cutters with shanks, mounted in the radial openings of the housing, and a mechanism for projecting the rolling cutters from the radial openings of the housing, including an annular piston and a member for locking the rolling cutters, characterized in that the piston is connected with the housing for joint rotation therewith and is rigidly connected with the sub, the wall of the piston having radial passages made therethrough, establishing communication of its central channel with an annular space defined between the wall of the housing, the member for locking the rolling cutters being accommodated with a clearance in the central channels of the piston and of the housing, respectively, and having an annular shoulder, the central channel of the piston defining a seat for engagement with this annular shoulder of the locking member, the annular shoulder of the locking member and the internal surface of the housing having matching longitudinal passages made therein in the area of interaction of the locking member with the rolling cutters, for communicating the central channel of the piston with the internal space of the lower part of the housing.

5,184,688
TELESCOPIC BAR OF DRILL RIG

Gian Luigi Trevisnani, Cesna, Italy, assignor to International Foundations Constructions Ltd., Hong Kong, Hong Kong

Filed Apr. 1, 1991, Ser. No. 678,104
Int. Cl.[5] F21B *4/00*
U.S. Cl. 175—321 2 Claims

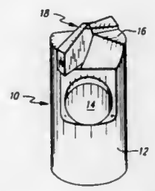


1. Telescopic bar of drill ring for drilling in general, comprising telescopic sections forming the bar, each of the telescopic sections being concentric, substantially cylindrical pipes equipped with inner and outer longitudinal toothed ribs; the inner and outer longitudinal toothed ribs having a plurality of individual teeth with wholly triangular cross-sections in the longitudinal direction; the outer longitudinal toothed rib of each pipe being engaged with the inner longitudinal toothed rib of an external pipe to lock the telescopic sections when the bar is rotated in a first direction; the telescopic sections being released when the bar is rotated in a direction opposite the first direction, in order to lift and withdraw the bar.

5,184,689
RADIAL CUT DRILL BIT INSERT

Daniel C. Sheirer; Gerald L. Woods, both of Bedford, and Robert H. Montgomery, Jr., Everett, all of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Mar. 6, 1991, Ser. No. 665,501
Int. Cl.[5] E21B *10/44*
U.S. Cl. 175—420.1 22 Claims

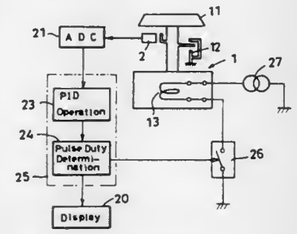


1. A rotary drill bit insert rotatable about a central axis comprising:
an elongated body having a first top surface, a second top surface, a bottom surface opposite said first and second top surface, a first leading face extending between forwardly facing edges of said first top surface and said bottom surface, a second leading face extending between forwardly facing edges of said second top surface and said bottom surface, a first trailing face opposite said first leading face and extending between rearwardly facing edges of said first top surface and said bottom surface, a second trailing face opposite said second leading face and extending between rearwardly facing edges of said second top surface and said bottom surface, first leading and first trailing face, a second end surface extending between outwardly facing edges of said second top surface, bottom surface, second leading face and second trailing face;
a top edge defined by the intersection of said first top surface and said second top surface;
a first cutting edge defined by the intersection of said first top surface and said first leading face and a second cutting edge defined by the intersection of said first top surface and said first leading face second cutting edge defined by the intersection of said first top surface and said first leading face and a second cutting edge defined by the intersection of said second top surface and said second leading face; and
wherein oblique angles are formed on a plane normal to the central axis by the intersection of a plane containing said first leading face and a plane containing said first trailing face and by the intersection of a plane containing said second leading face and a plane containing said second trailing face, wherein said first cutting edge is linearly aligned with said second cutting edge and said first and second trailing face are parallel and staggered.

5,184,690
ELECTRONIC BALANCE

Akira Komoto, Otsu, Japan, assignor to Shimadzu Corporation, Kyoto, Japan

Filed Feb. 27, 1991, Ser. No. 661,955
Claims priority, application Japan, Feb. 28, 1990, 2-50229
Int. Cl.[5] G01G *7/00*
U.S. Cl. 177—212 3 Claims

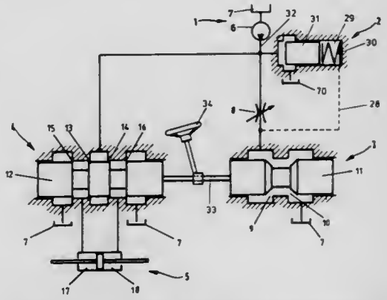


1. An electronic balance comprising:
a weighing pan for receiving thereon a weight to be weighed;
a displacement detector for detecting the displacement of said weighing pan and for outputting a displacement signal reflecting the displacement of said weighing pan;
an electromagnetic force transducer essentially made up of a static-magnetic circuit and a movable force coil movably kept in a magnetic gap provided in said static-magnetic circuit and mechanically connected with said weighing pan;
a switching means for supplying a pulse current to said movable force coil by switching a constant DC current supplied by a constant DC current source;
a digital PID operation circuit for outputting a digitalized PID control signal in accordance with said displacement signal;
a duty factor determining circuit for determining the duty factor of said pulse current so that said pulse current has its effective magnitude made to correspond to said PID control signal, said duty factor determing circuit outputting, in accordance with said PID control signal, a series of switching signals to operate said switching means;
a pan stopper for restricting the displacement of said weighing pan so that said weighing pan can not go down over a predetermined lowest position; and
an electronic means for outputting, while said weighing pan rests at said predetermined lowest position, a PID operation modifying signal which causes an increase in a coefficient multiplying at least an integral term contained in mathematical operations carried by said digital PID operation circuit.

5,184,691
AUXILIARY POWER STEERING SYSTEM

Wilfried Leutner, Schwäbisch Gmünd, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen, Fed. Rep. of Germany

PCT No. PCT/EP89/01002, § 371 Date Jan. 29, 1991, § 102(e) Date Jan. 29, 1991, PCT Pub. No. WO90/02070, PCT Pub. Date Mar. 8, 1990
PCT Filed Aug. 25, 1989, Ser. No. 640,360
Claims priority, application Fed. Rep. of Germany, Aug. 26, 1988, 3828946
Int. Cl.[5] B62D *5/06*
U.S. Cl. 180—132 16 Claims



1. Auxiliary power steering system for motor vehicles comprising a pump (**6**) for pressurizing a servomotor (**5**); a distribution valve (**4**) for directional control of said servmotor;
wherein the improvement comprises:
pressure flow regulating means (**2, 8**) connected for pressure control of said pump and including a pressure control valve (**3**) connected to be operable by a steering wheel (**34**) and said control valve being connected downstream of said pressure flow regulating means.

5,184,692
RETRIEVABLE RADIATION SOURCE CARRIER

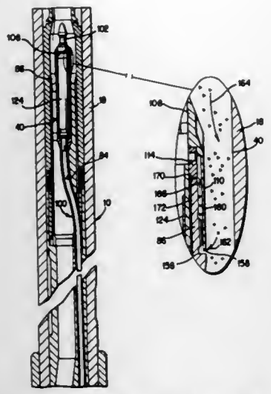
Keith A. Moriarty, Houston, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Mar. 18, 1991, Ser. No. 670,850
Int. Cl.[5] E21B *49/00*
U.S. Cl. 175—50 10 Claims

1. A logging while drilling tool including a radiation source carrier assembly inserted lengthwise therein, said assembly further comprising:
a) upper and lower nuclear radiation sources contained

VOL 1147 ISS 2 FE 9 1993 UMI

within respective upper and lower radiation source housings; and



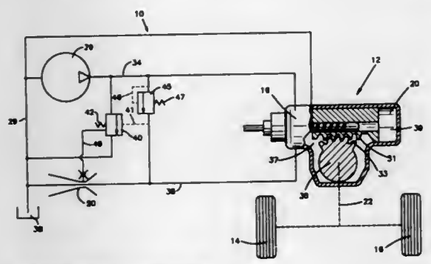
b) a substantially rigid rod distinct from said tool interconnected between said upper nuclear radiation source housing and said lower nuclear radiation source housing.

5,184,693

VEHICLE HYDRAULIC POWER STEERING SYSTEM

Laurence L. Miller, West Lafayette, Ind., assignor to TRW Inc., Lyndhurst, Ohio

Filed Mar. 12, 1991, Ser. No. 667,978
Int. Cl.[5] B62D *5/08*
U.S. Cl. 180—143 **14 Claims**



1. An apparatus comprising:

a power steering motor operatively connectable with steerable vehicle wheels for, when connected with the vehicle wheels, steering the vehicle wheels;

a fluid reservoir;

a pump having an inlet port in communication with said reservoir and an outlet port;

an actuatable power steering valve having a neutral position in which fluid flows through said steering valve to said reservoir and an actuated position in which fluid flows through said steering valve to said steering motor and to said reservoir;

main conduit means for conducting fluid from the outlet port of said pump to said steering valve;

return conduit means for conducting fluid from said steering valve to said reservoir when said steering valve is in its neutral position and in its actuated position;

a bypass valve for bypassing fluid from said main conduit means to said reservoir;

an orifice located in said return conduit means; and

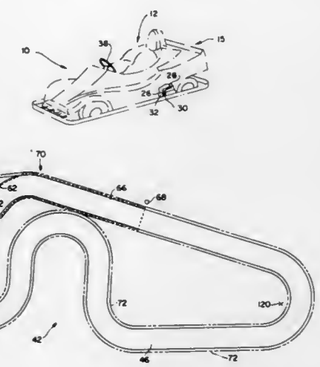
means for controlling said bypass valve in response to a pressure drop across said orifice located in said return conduit means.

5,184,694

REMOTE CONTROL SYSTEM FOR GO KART TRACK AND GO KART CONVERSION KIT

Earl K. Magrath, Jr., Chattanooga, Tenn., and Billy K. Foster, Winter Park, Fla., assignors to Pacer Manufacturing Co., Inc., Chattanooga, Tenn. and Micro Firm, Inc., Winter Park, Fla.

Filed May 8, 1991, Ser. No. 697,246
Int. Cl.[5] B60T *7/16*
U.S. Cl. 180—167 **29 Claims**



1. A system for controlling at least one go kart in an operation area, the at least one go kart having an engine and the operation area including a track and a pit area, the system comprising:

a general transmitter for sending a general signal to the entire operation area;

an area transmitter for sending an area signal to one portion of the operation area, the one portion being less than the entire area of the operation area;

at least one receiver unit on each of the at least one go kart, the receiver unit receiving the general signal and the area signal;

means on each of the at least one go kart operatively connected to the at least one receiver unit for idling the engine of the go kart when the at least one receiver receives one of the general signal and area signal, the means for idling being mounted on each of the at least one go kart; and

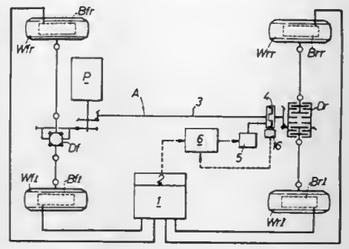
control means for selectively activating and deactivating the general transmitter and the area transmitter, the control means being operatively connected to both the general transmitter and the area transmitter, the control means comprises a first control unit and a second control unit, the first control unit being generally located in the pit area, both the first and second control units having a first switch and a second switch, each of the first switches being operatively connected to first means for activating the general transmitter and each of the second switches being connected to second means for deactivating at least a portion of the area transmitter, the first control unit further having timer means for counting time and determining when a predetermined period of time has elapsed, the predetermined period of time corresponding to one ride cycle and the timer means issuing a signal to the area transmitter when the predetermined period has elapsed thereby idling the at least one go kart when the at least one go kart is in the one portion of the operation area.

5,184,695

METHOD FOR CONTROLLING A CHANGE-OVER BETWEEN TWO AND FOUR-WHEEL DRIVE MODES FOR A VEHICLE

Shohei Matsuda; Tadatoshi Haga; Kougyoku Go, and Hiroshi Ikegami, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki, Tokyo, Japan

Continuation of Ser. No. 672,133, Mar. 19, 1991, abandoned, which is a continuation of Ser. No. 364,401, May 26, 1989, abandoned. This application Aug. 30, 1991, Ser. No. 752,939
Claims priority, application Japan, Jun. 10, 1988, 63-143867
Int. Cl.[5] B60K *17/34*
U.S. Cl. 180—233 **5 Claims**



1. A method for controlling the change-over between two-wheel and four-wheel drive modes of a vehicle comprising the steps of:

changing a four-wheel drive mode to a two-wheel drive mode when at least one wheel produces a locking tendency during braking;

changing the two-wheel drive mode to the four-wheel drive mode when the driving wheels in the two-wheel drive mode having no locking tendency; and

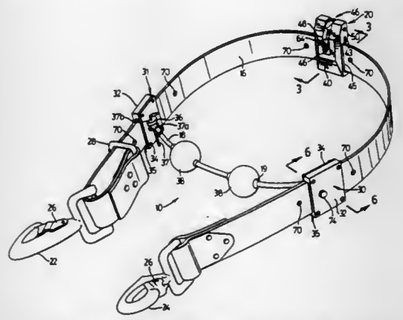
maintaining the two-wheel drive mode until a first predetermined time has elapsed after the change-over from the four-wheel drive mode to the two-wheel drive mode when a driven wheel tends to be locked even if the driving wheels in the two-wheel drive mode have no locking tendency.

5,184,696

FALL ARREST BELT ASSEMBLY

Myles Meed, P.O. Box 7, Bristol, New Brunswick, Canada E0J 1G0 , and Paul Porter, P.O. Box 5050, Grand Falls, New Brunswick, Canada E0J 1M0

Filed Mar. 6, 1992, Ser. No. 847,407
Int. Cl.[5] A62B *35/00*
U.S. Cl. 182—9 **13 Claims**



1. A belt assembly for use with a body belt worn by a climber for climbing a utility pole or the like, said belt assembly comprising:

(a) an outer strap adapted to fit around said utility pole, said outer strap having a pair of ends adapted to be attached to said body belt,

(b) a cross-over strap having a pair of ends connected to said outer strap at locations spaced from the ends of said outer strap, said cross-over strap being adapted to define and maintain, with a portion of said outer strap extending between the ends of said cross-over strap, a closed snug loop around said pole,

(c) a safety device connected to said portion of said outer strap,

(d) said safety device having a tooth, and means mounting said tooth for movement between an open position and a closed position,

(e) said safety device further including latching means coupled to said tooth and normally retaining said tooth in said closed position,

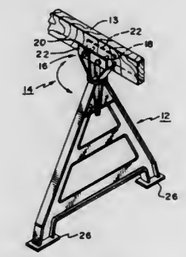
(f) said safety device including tooth deployment means responsive to said climber falling, for releasing said tooth from said latching means and for moving said tooth into said open position so that said tooth will penetrate into said pole, said deployment means including activation means for contacting said pole if said climber falls, for initiating operation of said deployment means.

5,184,697

LOCKING SWIVEL FOR ROTATABLY CONNECTING TWO COMPONENTS

F. Coates Crewe, 1331 Hagood Ave., Colnmbia, S.C. 29205, and James E. Thomas, Lexington, N.C., assignors to F. Coates Crewe, Columbia, S.C.

Continuation of Ser. No. 742,766, Aug. 9, 1991. This application Sep. 17, 1991, Ser. No. 760,914
Int. Cl.[5] B27B *21/00;* **B25H** *1/06*
U.S. Cl. 182—153 **23 Claims**



1. A leg apparatus for connection to a beam to support a workpiece, said leg apparatus comprising:

leg means for extending downward and diverging from the beam to support the beam both horizontally and vertically on an underlying supporting surface when said leg means is connected to said beam and is in a support position transverse to said beam;

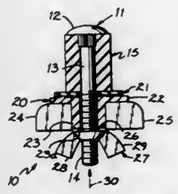
swivel means for rotatably connecting said leg means to said beam and comprising a first member, means for connecting said first member to said beam, and a second member connected to said leg means, said swivel means providing pivotal movement of said leg means between said support position where said leg means is transverse to said beam, and a folded position where the transverse extent of said leg means relative to said beam is substantially reduced; and,

locking means for locking said leg means in at lest said support position, said locking means comprising biasing means for biasing said two members toward each other and into an interlocking position, said two members being nested one in the other, one of said members having at

VOL
1147
ISS
2
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9
1993
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least one recess and the other having at least one projection which is received in said recess when said two members are in said interlocking position, and said biasing means permitting said two members to be drawn away from each other to retract said projection out of said recess for said pivotal movement.

5,184,698
EXPANDABLE PLUG
Norman D. Coffenberry, Florence, Ky., assignor to SDI Operating Partners, L.P.
Filed Jun. 21, 1991, Ser. No. 719,143
Int. Cl.[5] F16N *33/00*
U.S. Cl. 184—1.5 **2 Claims**



1. An expandable plug for plugging a throughbore in a workpiece against liquid flow therethrough, said plug comprising

a threaded bolt having a head at one end,

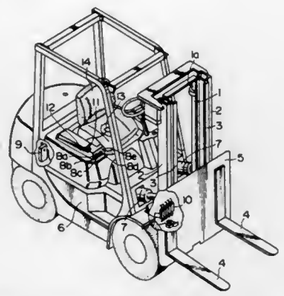
a resiliently deformable section of tubing assembled in slip-fit relation with said bolt, said tubing section being of cylindrical internal and cylindrical external configuration, said tubing section being open at both ends thereof with one end of said tubing section being seated against said bolt head, said tubing section being axially compressible and radially expandable, said tubing section having a length at least about equal to the length of said throughbore, and said bolt head and said tubing section being sized to extend through said throughbore before said plug is assembled with said workpiece,

a compression plate assembled with said bolt, said tubing section being positioned on said bolt between said bolt head and said compression plate, said compression plate comprising a compression ring, a compression collar coaxial and integral with said compression ring, and a pair of handle wings integral with said compression ring and said compression collar,

a compression nut assembled with said bolt and adapted to bear against said compression collar, said compression nut including a pair of wings, tightening of said compression nut on said bolt causing said tubing section to bulge outwardly relative to said bolt into liquid sealing relation with said throughbore, and also to bulge inwardly relative to said bolt into liquid sealing relation with said bolt, thereby plugging said throughbore against liquid flow therethrough, and

interference structure partially carried by said compression plate and partially carried by said compression nut, said interference structure comprising a pair of notches defined by said compression collar and respective handle wings, said notches sized to receive said compression nut as said nut bears against said compression plate, said handle wings presenting interference corners adjacent said notches which engage said wings of said compression nut when said nut is tightened on said bolt, said interference structure functioning to prevent loosening of said compression nut on said bolt after said sealing relationship has been achieved such as might otherwise occur in response to vibration of the assembled plug and workpiece.

5,184,699
CONTROL DEVICE FOR FORKLIFT
Kanji Aoki; Yukio Uchiyama, and Toshiyuki Midorikawa, all of Sagamihara, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo and MHI Sagami High Technology & Control, Kanagawa, both of, Japan
Filed Feb. 5, 1992, Ser. No. 830,570
Claims priority, application Japan, Feb. 5, 1991, 3-10419[U]
Int. Cl.[5] B66B *9/20*
U.S. Cl. 187—9 R **4 Claims**



1. A control device for forklift having:

(*a*) a work machine lever for sending a lever manipulation signal which is an electrical signal corresponding to a manipulated variable,

(*b*) a controller for forming and sending a flow control signal, in accordance with said lever manipulation signal, which is an electrical signal whose change is relatively small in relation to the manipulated variable in an inching zone where said manipulated variable is relatively small, and whose change is relatively large in a normal zone which is adjacent to this inching zone and where said manipulated variable is relatively large, and

(c) an electromagnetic proportional control valve which regulates the rate of flow of pressure oil flowing in an oil pipe line for controlling the action of hydraulic cylinders by regulating the degree of opening in accordance with said flow control signal,

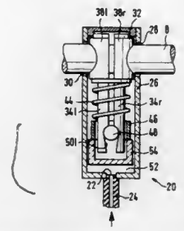
in which said control device for forklift comprises,

(d) oil pressure detecting means which is disposed in said oil pipe line for supplying pressure oil for hydraulic cylinders for raising/lowering and detects a pressure of oil flowing in said oil pipe line to send an oil pressure signal which is an electric signal representing this pressure, and

(e) said controller sends a flow control signal of higher predetermined value when the load is heavy even if the manipulated variable is equal, in accordance with the load for the hydraulic cylinders for raising/lowering detected on the basis of the oil pressure signal in the inching zone.

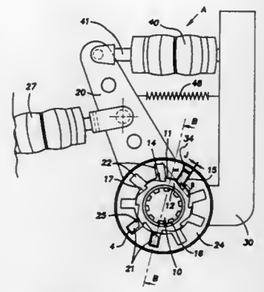
5,184,700
LOCKING DEVICE FOR A LINEAR MOVEMENT UNIT
Gianfranco Mainardi, Vordere Kirchstrasse 2, CH-9444 Diepoldsau, Switzerland
Filed Apr. 16, 1991, Ser. No. 686,140
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1990, 4012524
Int. Cl.[5] B23Q *1/28*
U.S. Cl. 188—67 **9 Claims**

1. A locking device for a linear movement unit which includes a carriage movable along at least one guide rod by means of a drive, and on which carriage said locking device is supported, said locking device including clamping members having said guide rod extending therethrough, said clamping members being adjustable in one direction to a first position so as to frictionally engage said guide rod to lock said carriage against movement on said guide rod, and said clamping members being adjustable in a direction opposite to said one direction to a second position wherein said carriage is loosely slidable on said guide rod; an automated actuator slidably mounted on said clamping members for reciprocal rectilinear movement on a path of travel which is perpendicular to the direction of movement of said carriage, said clamping members being operable, when said actuator is at one end of said path of travel, to set in said first position, and said clamping members being operable, when said actuator is at an opposite end of said path of travel, to set in said second position; and means for



selectively moving said actuator between said ends of said path of travel said clamping members comprising two identical mirror image components combining to form a symmetrical clamp assembly, each of said components including: a first end part having a through bore for receiving said guide rod and an elongated shank adjoining said first end part; and said actuator comprising a sleeve slidably mounted over an end of said shank remote from said first end part; and a spreader interposed between said mirror image components for selectively pivoting said components to a guide rd-clamping position when said sleeve is moved over said shank to one of said ends of said path of travel.

5,184,701
DEVICE FOR COMPENSATING THE CONTROLLED CLEARANCE ON BRAKE DRUMS OF LORRIES AND SEMI-TRAILERS
Gaby Mamery, F-51300 Blacy, France
PCT No. PCT/FR90/00133, § 371 Date Oct. 22, 1990, § 102(e) Date Oct. 22, 1990, PCT Pub. No. WO90/10163, PCT Pub. Date Sep. 7, 1990
PCT Filed Feb. 26, 1990, Ser. No. 598,664
Claims priority, application France, Feb. 27, 1989, 89 02636
Int. Cl.[5] F16D *65/60*
U.S. Cl. 188—79.55 **7 Claims**



1. A brake clearance adjuster, comprising:

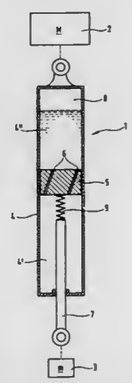
a brake actuating camshaft;

an intermediary ring in splined engagement with said camshaft, said ring having a periphery and a plurality of teeth on said periphery, each tooth having an undercut wall;

a first hub having a brake operating lever attached thereto and a circular bore concentrically disposed about said camshaft, said bore having a plurality of radially extending rectangular receptacles around its circumference, each receptacle having a width in the circumferential direction of said bore; and

a plurality of generally rectangular ratchets, each located in one of said receptacles and having a tapered tooth having an undercut wall adapted to mate with one of the undercut walls in said intermediary ring and having a width in the circumferential direction of said bore less than said width of the receptacles by an amount in proportion to a desired brake clearance, said undercut walls permitting said ratchet to fully release into engagement with said intermediary ring and providing a clearance for partial rotation of said first hub, said first hub being freely rotatable in one direction about said camshaft but engaging said camshaft to turn with said first hub in the opposite direction when one of said ratchet teeth mates with one of said intermediary ring teeth.

5,184,702
HYDRAULIC DAMPER
Detlef Schulze, Backnang, and Klaus Schwarz, Stuttgart, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany
Filed Nov. 21, 1990, Ser. No. 618,180
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1989, 3939650
Int. Cl.[5] F16F *9/50*
U.S. Cl. 188—282 **10 Claims**



1. A hydraulic damper with a hydraulic positive-displacement unit insertable between an element to be danmped in terms of its movement and a relatively stationary element, comprising a cylinder housing, a piston movably arranged in the cylinder housing so as to define only two fluid chambers in the housing, said chambers being connected to one another, via at least one throttle effect channel in the piston, between which hydraulic medium is exchanged via the at least one channel during movement of the piston, one of the piston and the housing is a part vibrationally connected, via an elastic spring mounting arranged in series and axially therewith, to the damped element, the spring constant of the spring mounting, the mass of the part vibrationally connected to the spring mounting, the mass of the hydraulic medium moved during the relative axial movements between the piston and the cylinder housing, and the ratio between the cross-section of the at least one channel and the effective cross-section of the piston being sized such that the resonant frequency of vibrations of the masses in relation to the stationary part if near the frequency range of undesirable vibrations of the damped element, and the

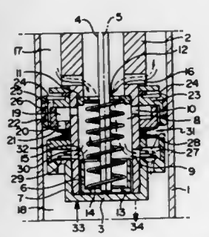
VOL 1147 ISS 2 FE 9 1993 UMI

at least one channel has a throttle resistance increasing sharply with the flow velocity to provide high energy dissipation and thereby extract a substantial amount of kinetic energy from the element to be damped.

5,184,703
SHOCK ABSORBER WITH PISTON VALVE FOR ADJUSTABLE DAMPING

Wilhelm A. Van Zeggeren, Bleiswijk, Netherlands, assignor to ITT Corporation, New York, N.Y.

PCT No. PCT/NL89/00017, § 371 Date Sep. 25, 1990, § 102(e) Date Sep. 25, 1990, PCT Pub. No. WO89/09892, PCT Pub. Date Oct. 19, 1989
PCT Filed Apr. 3, 1989, Ser. No. 474,846
Claims priority, application Netherlands, Apr. 12, 1988, 8800945
Int. Cl.[5] F16F *9/34*
U.S. Cl. 188—319 **17 Claims**



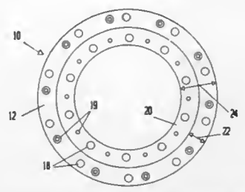
1. A shock absorber, comprising a cylinder containing damping fluid, a piston rod displaceable in the cylinder and a piston attached to said piston rod closing an axially extending central aperture within the cylinder, said central aperture being closed at an end opposed from the piston rod, the piston including at least two duct systems having different damping characteristics, said duct systems interconnected by at least one aperture to the central aperture, such that damping fluid can flow through the central aperture to spaces in the cylinder on axially opposed sides of the piston, said shock absorber further comprising a sleeve which is axially displaceable within the central aperture for controlling the fluid flow therethrough by opening and closing said at least one aperture, wherein the sleeve is displaceable in one direction in response to activation of at least one wire-type element of memory metal and in another, opposite, direction by at least one further element acting upon the sleeve, said shock absorber further comprising at least two bar-type fixing elements disposed diametrically, crosswise in the sleeve, said at least one wire-type element of memory metal extending in lengthwise direction of the piston rod into the central aperture of the piston and operatively engageing said at least two fixing elements at an attachment point formed thereby for the displacement of the sleeve.

5,184,704
CLUTCH DESIGN AND MANUFACTURE

Bill J. Hays, 15114 Adams St., Midway City, Calif. 92655

Filed Aug. 12, 1991, Ser. No. 743,756
Int. Cl.[5] F16D *13/64*
U.S. Cl. 192—70.14 **14 Claims**

1. In an automotive clutch wherein a clutch disc having first and second, organic composite, non-metallic, frictional linings, one each on opposite sides thereof, is carried on a drive shaft and is located between a pressure ring and a flywheel, and including means to apply a compressive clamp load of a predetermined maximum value to clamp said disc between said ring and flywheel; the improvement thereof which comprises at least one of said first and second frictional linings having an organic composite, non-metallic, frictional facing with an area which is limited to no more than 59 percent of the available area of said disc, sufficient to provide a unit pressure, with the

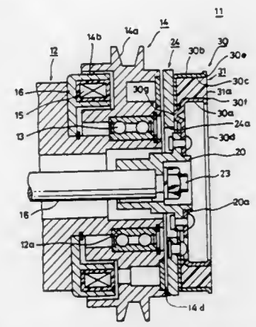


predetermined maximum clamp load on said facing, which is at least 35 psi.

5,184,705
ELECTROMAGNETIC CLUTCH

Yuzo Sekiguchi, deceased, late of Kiryu by Nabuko Sekiguchi,a-executrix , and Hirokazu Murayama, Kiryu, all of Japan, assignors to Ogura Corporation, Japan

Filed Jul. 15, 1991, Ser. No. 729,925
Claims priority, application Japan, Jul. 16, 1990, 2-74362[U]; Jul. 17, 1990, 2-75265[U]
Int. Cl.[5] F16D *27/10*
U.S. Cl. 192—84 C **7 Claims**

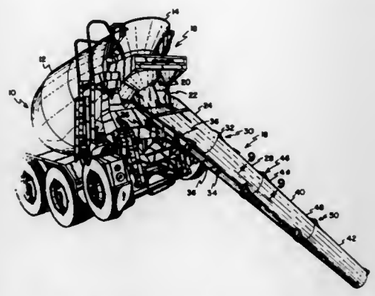


1. An electromagnetic clutch for transmitting torque between a first torque transmission member and a second torque transmission member that rotates about a fixed axis including a rotor assembly with an attraction surface; a field coil assembly with an electromagnetic coil and an electromagnetic coil support which supports the field coil adjacent to the rotor assembly; and an armature assembly including an armature hub attached to the second torque transmission member, a stopper plate rigidly secured to the armature hub, an armature positioned between the stopper plate and the attraction surface on the rotor assembly and a damper connecting the armature to the stopper plate characterized by the damper assembly including a rubber damper supported by a damper cover with an open side that includes bevelled edge surfaces adjacent to the open side that increases the space for the rubber damper, reduces stress concentrations in the end of the rubber damper and eliminates cracking of the rubber damper.

5,184,706
POLYMERIC COMPOSITE DISCHARGE CHUTES FOR CONCRETE HAVING A WEAR RESISTANT LINER

Ronald E. Christenson, Kasson, Minn., assignor to McNeilus Truck & Manufacturing, Inc., Dodge Center, Minn.

Continuation of Ser. No. 775,451, Oct. 15, 1991, abandoned, which is a continuation-in-part of Ser. No. 470,915, Jan. 26, 1990, Pat. No. 5,056,641. This application Jun. 23, 1992, Ser. No. 902,756
Int. Cl.[5] B65G *11/00*
U.S. Cl. 193—2 R **28 Claims**

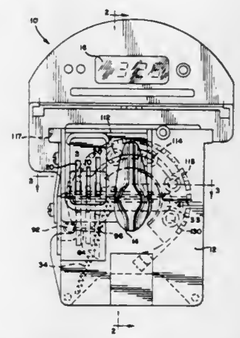


1. A discharge chute for guiding concrete dispensed from a mixing drum comprising:
(a) a structural frame constructed from a composite of about 55 to 65 wt % polyurethane and about 35 to 45 wt % fiberglass wherein the structural frame defines a longitudinally elongated channel, and
(b) a wear resistant liner laminated over that surface of the structural frame defining the flow-channel and having a paddle test wear resistance of at least 50% of abrasion resistant steel.

5,184,707
COIN OPERATED TIMING MECHANISM

John W. Van Horn, Harrison, Ark., and Ralph H. Carmen, Lebanon, N.J., assignors to Duncan Industries Parking Control Systems Corp., Harrison, Ak.

Continuation of Ser. No. 384,781, Jul. 24, 1989, Pat. No. 5,109,972. This application Feb. 5, 1992, Ser. No. 831,423
Int. Cl.[5] G07F *17/24*
U.S. Cl. 194—204 **4 Claims**

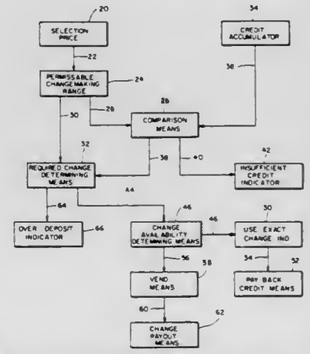


1. A method of operating a coin-operated mechanism for purchasing time, the mechanism being equipped with a plurality of separate switch-actuator pairs, each of said pairs comprising a switch and an actuator for actuating said switch, a coin carrier movable adjacent each said actuator, each said actuator being successively engageable by said coin carrier, and means for recording the time purchased, the method including the steps of inserting a coin in the carrier, moving the carrier to engage said actuators, collecting the coin, and recording the time purchased, and further including the step of rendering said recording means inoperative when more than one of said switches are actuated substantially simultaneously by their respective actuators.

5,184,708
VEND TRANSACTION CONTROL MEANS

Joseph L. Levasseur, St. Louis County, Mo., assignor to Coin Acceptors, Inc., St. Louis, Mo.

Filed Feb. 27, 1992, Ser. No. 842,248
Int. Cl.[5] G07D *1/06*
U.S. Cl. 194—217 **18 Claims**



11. Means to provide change making in a vending machine when a selection has been made and a vend price established, means to produce a list of possible amounts of change that are permissible to be paid back for change making, means to add the vend price selectively to each of the permissible payback amounts to produce sums thereof, means to compare each of said sums to the amount of credit entered into the vending machine by the customer including means to identify each of said sums that is equal to the credit deposited by the customer.

5,184,709
COIN SELECTOR

Kenji Nishiumi, Sakado; Kenji Nakajima, Saitama; Mitsugu Mikami, Kawagoe; Takeshi Ishida, Sakado, and Yukio Ito, Niiza, all of Japan, assignors to Kabushiki Kaisha Nippon Conlux, Tokyo, Japan

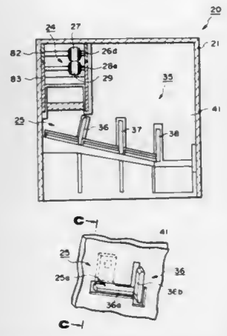
Filed Aug. 8, 1991, Ser. No. 741,901
Claims priority, application Japan, Aug. 14, 1990, 2-214819; Aug. 30, 1990, 2-229255
Int. Cl.[5] G07D *3/00*
U.S. Cl. 194—318 **38 Claims**

1. A coin selector comprising:
a first inclined coin passage including coin discriminating means for discriminating whether an inserted coin is a true coin or a false coin and further discriminating denominations of coins being discriminated as true coins:
a second inclined coin passage for guiding the true coins transferred from the first coin passage; and
coin distributing means including a lever having a substantially L-shaped contour as seen in a plan view and arranged to be movable from one side wall of the second coin arranged to be movable from one side wall of the second coin passage to the other side wall of the second coin passage, the L-shaped lever having an inclined surface portion which constitutes a part of a bottom surface

VOL
1147
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of the second coin passage and a gate portion which intercepts the second coin passage,

wherein, at a normal position, the gate portion of the lever is moved away from the one side wall of the second coin passage to allow coins to travel further along the second coin passage while the inclined surface portion of the lever is moved into the second coin passage to form part of the bottom surface of the second coin passage and, when coins discriminated as true coins by the coin discriminating means are transferred into the second coin passage, the L-shaped lever is moved toward the one side wall of the second coin passage so that the gate portion of the lever prevents coins from travelling further along the second coin passage while the inclined surface portion of the lever is moved out of the second coin passage to release the bottom surface of the second con passage, whereby the coins are dropped downward from the bottom surface of the second coin passage to different positions depending on the denominations of the true coins.



5,184,710

ESCALATOR APPARATUS

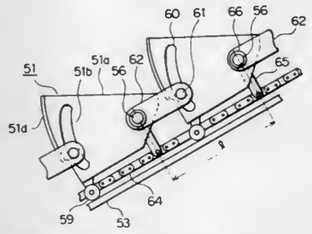
Hiroshi Nakatani, Inazawa, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1991, Ser. No. 641,552

Claims priority, application Japan, Jan. 16, 1990, 2-4538

Int. Cl.[5] B66B *21/00*

U.S. Cl. 198—328 **44 Claims**



1. An escalator apparatus including a plurality of links disposed on side portions of each step to bridgingly connect the steps, one end of each link being connected to a rotatable step axle disposed at a side surface of the step, and the other end of each link being slidably connected to a slot formed in an edge portion of a neighboring step and extending along an edge portion of the neighboring step.

5,184,711

APPARATUS FOR THE TRANSFER OF PASTA NESTS INTO PACKAGING CONTAINERS

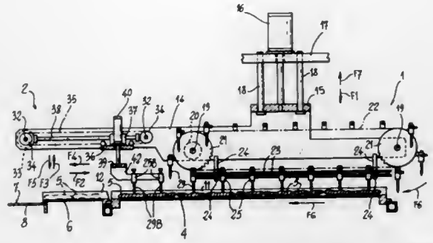
Gabriele Zambelli, Forli, Italy, assignor to G.A.P. Technica S.R.L., Forli, Italy

Filed Sep. 27, 1991, Ser. No. 766,844

Claims priority, application Italy, Sep. 27, 1990, 3665 A/90

Int. Cl.[5] B65G *47/26*

U.S. Cl. 198—419.2 **8 Claims**



1. An apparatus for transferring pasta nests or skeins from drying frames into packaging containers comprising:

a first suspended translator means for transferring a number of said nests (**5**) comprising at least one first structural shape (**25**) a plurality of consecutively adjoining and vertically and horizontally moveable parallel rows of nails (**29**) mounted on said structural shape (**25**), said nails (**29**) being independently, vertically and freely slidable within said structural shape (**25**);

a second suspended translator means for transferring a number of said nests (**5**) from said first translator means comprising a second structural shape (**25B**), at least one row of horizontally and vertically moveable and parallel nails (**29B**) and mounted on said structural shape (**25B**) as to be independently, vertically and freely slidable within said structural shape (**25B**), said at least one row of nails (**25B**) being parallel and adjacent to said rows of nails (**25**) of said first translator means; and

a third translator means for transferring a number of said nests (**5**) from said second translator means comprising, at least one checking side (**57**) parallel and adjacent to said row of nails (**29B**) of said second translator means, and said checking side (**57**) being horizontally and vertically moveable.

5,184,712

DEVICE FOR TRANSPORTING ARTICLES TO A CONVEYOR APPARATUS OF A PACKAGING MACHINE

Helmut Leypold, Ditzingen, and Guenther-Eberhard Lade, Berglen-Bretzenacker, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 10, 1992, Ser. No. 867,303

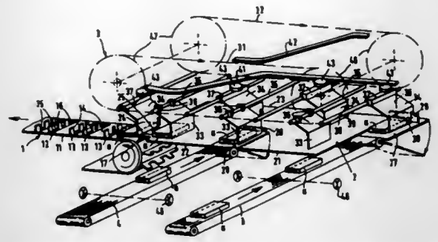
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1991, 4111899

Int. Cl.[5] B65G *47/12*

U.S. Cl. 198—449 **9 Claims**

1. A device for transporting articles from a plurality of dispenser machines to uniformly spaced-apart receptacles of a continuously running conveyor apparatus of a packaging machine, having a plurality of delivery devices guiding the articles from the dispenser machines to separate furnishing places, an endless transfer device that transfers the articles from the separate furnishing places to the receptacles of the conveyor apparatus by means of drivers, said furnishing places (**26, 27**) are disposed on a common flat surface (**21**), extending in front of the conveyor apparatus (**1**), offset beside one another in the longitudinal direction of the flat surface, and that at least some of the drivers (**33, 34**) of the transfer device (**3**), which is aligned longitudinally of the flat surface (**21**), are displaceable

transversely to the direction of travel of the transfer device and are guided in a plurality of paths beside one another in a region



of the furnishing places (**26, 27**) and in a common path in front of the conveyor apparatus (**1**).

5,184,713

TAKE-UP TUBE TRANSPORTING APPARATUS

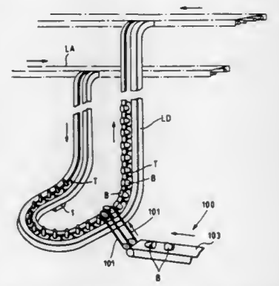
Osamu Nakagawa, Kyoto, Japan, assignor to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Filed Nov. 12, 1991, Ser. No. 791,493

Claims priority, application Japan, Nov. 16, 1990, 2-119898[U]; Nov. 16, 1990, 2-310927

Int. Cl.[5] B65G *29/00*

U.S. Cl. 198—465.1 **5 Claims**



1. A take-up tube transporting apparatus comprising: tray transporting lines which circulate endlesswise in two upper and lower stages between a winder and a preparation machine for replacing conical take-up tubes ejected from a textile machine with spinning bobbins to send the latter to said textile machine, a take-up tube mounting device for supplying the conical take-up tubes ejected from the preparation machine to empty trays which circulate along the tray transporting lines, and a take-up tube supplying device for removing the conical take-up tubes from the take-up tube mounting trays delivered from the take-up tube supplying device to the tray transporting lines to supply said conical take-up tubes toward a winder.

5,184,714

CENTRIFUGAL THROWER APPARATUS

Allan G. Tapp, Marmora, Canada, assignor to Svedala Industries Canada, Inc., Belleville, Canada

Filed Feb. 27, 1992, Ser. No. 843,890

Int. Cl.[5] B65G *31/00*

U.S. Cl. 198—641 **20 Claims**

1. Centrifugal thrower apparatus for delivering loose material, said centrifugal thrower apparatus including frame means and chute means mounted on said frame means, said centrifugal thrower apparatus comprising:

first pulley means being rotatably mounted on said frame means;

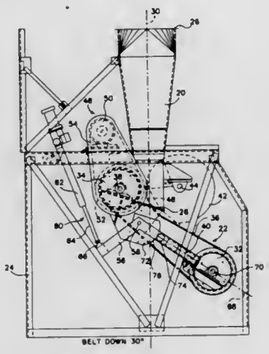
second pulley means;

means for supporting said second pulley means, said second pulley means being rotatably mounted on said means for supporting said second pulley means;

said means for supporting said second pulley means being displaceably mounted on said frame means;

means for solely displacing said means for supporting said second pulley means;

belt means being mounted between said first pulley means and said second pulley means;



means for driving said belt means;

said belt means for receiving material from said chute means and discharging the material in the vicinity of said second pulley means;

said means for supporting said second pulley means being displaceable to discharge the delivered material from said belt means at a plurality of angles; and

means for maintaining constant tension on said belt means over a plurality of angles of discharge.

5,184,715

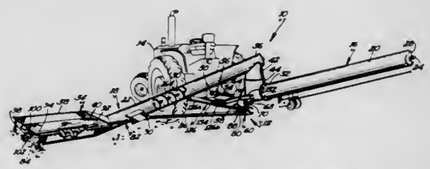
MECHANICAL DRIVE FOR DUAL CONVEYOR SYSTEM

Leon G. Feterl, Salem, S. Dak., assignor to Core Industries, Inc., Bloomfield Hills, Mich.

Filed May 9, 1991, Ser. No. 698,492

Int. Cl.[5] B65G *33/32*

U.S. Cl. 198—667 **31 Claims**



1. A mechanical drive system for driving first and second screw conveyors from a single power source, said second conveyor provided for delivering product to said first conveyor, each of said conveyors including an auger shaft supporting an auger, each of said conveyors having input and output ends, wherein the output end of said second conveyor is pivotally attached to the input end of said first conveyor for supplying product to said first conveyor, said system comprising:

a primary drive means for providing power to said first conveyor, said primary drive means being connected to provide driving power between said auger shaft of said first conveyor at its product input end and the power source; and

VOL 1147 ISS 2 FE 9 1993 UMI

a secondary drive means for supplying power to the auger shaft of said second conveyor, said secondary drive means being connected to receive driving power from said primary drive means and comprising:

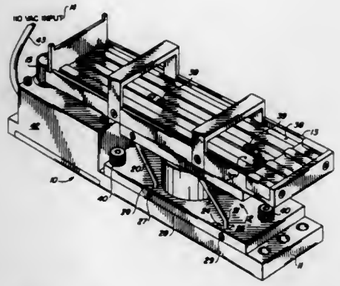
a first gearbox having an input shaft and a first output shaft, said input shaft being connected to said primary drive means;

a second gearbox having input and output shafts and being rotatable with respect to said first gearbox;

power transmission means for transmitting power to said input shaft of said second gearbox from said first output shaft of said first gearbox; and

third drive means for providing power to said auger shaft of said second conveyor, said third drive means extending externally of the auger shaft containing portion of said second conveyor between said output shaft of said second gearbox and said auger shaft of said second conveyor to drive said second conveyor from its product input end.

5,184,716
VIBRATORY FEEDER
Jefferson J. Gaines, Tucson, Ariz., assignor to Arizona Gear and Manufacturing, Tucson, Ariz.
Filed Jan. 27, 1991, Ser. No. 722,300
Int. Cl.[5] B65G *27/08*
U.S. Cl. 198—763 **9 Claims**



1. A vibratory feeder for delivering small parts in-line comprising: a base member; a vibratory sub-assembly mounted upon said base member; an upper-deck member mounted upon said sub-assembly and responsive thereto, said upper-deck member being adapted to support a plurality of small parts thereon; cylindrical spring means operatively interposed between said base member and said upper-deck member to support said upper-deck member, each said cylindrical spring means having an elongated cylindrical body portion, a head portion and a foot portion, said body portion defining an interior angle with said foot portion of from about 5° to about 85°, said head portion extending generally normal to said upper deck member for attachment to said vibrator sub-assembly; and power means operatively associated with said vibrator sub-assembly and selectively actuable to impart forward motion to each of said small parts disposed upon said upper-deck member through said cylindrical spring means.

5,184,717
CIRCUIT BREAKER WITH WELDED CONTACTS
Yu W. Chou, Coraopolis, and Henry K. Pruszynski, Wilkinsburg, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed May 29, 1991, Ser. No. 706,714
Int. Cl.[5] H01H *5/23*
U.S. Cl. 200—401 **7 Claims**

1. An electrical circuit breaker, comprising:

a housing;

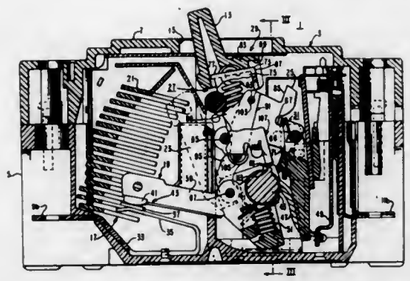
a fixed contact mounted in said housing;

a movable contact mounted in said housing and closable upon said fixed contact;

a movable contact arm structure including a cross-bar having a recess mounted for rotation about a longitudinal axis and a movable contact arm carrying said movable contact and mounted on said cross-bar for rotation between open and closed positions to open and close said contacts;

a spring powered operating mechanism including a pivoted operating member carrying a handle, said operating mechanism connected to said movable contact arm structure for rotating said movable contact arm structure between an on position of said handle in which said movable contact arm structure is in the closed position to close said contacts and on off position of said handle in which said movable contact arm structure is in the off position to open said contacts;

a trip device responsive to predetermined current overload



conditions in the circuit breaker connected to said spring powered operating mechanism for causing said spring powered operating mechanism to rotate said movable contact arm structure to the open position and to place the handle in a trip position between said on and said off positions;

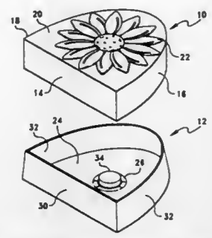
said trip device being reset by moving said handle past said off position; and

interlock means comprising a radially extending projection seated in said recess of said cross-bar and extending radially outward therefrom having a generally radially outward facing abutment surface, and a generally radially facing engagement surface on said pivoted operating member, said abutment surface on said radial extending projection being engaged by the engagement surface on said pivoted operating member to prevent movement of said handle to the off position when said movable contact arm structure is prevented from rotating with the contacts welded closed.

5,184,718
DISPOSABLE DENTURE CONTAINER
Harvey Albert, 34 Pond Dr., Walpole, Mass. 02081
Filed Oct. 21, 1991, Ser. No. 780,026
Int. Cl.[5] A61B *19/02*
U.S. Cl. 206—63.5 **8 Claims**

1. A holder for cleaning and storing dentures and having a denture contained therein, comprising,

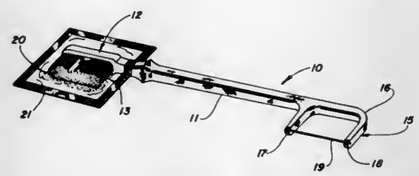
a disposable container for storing and cleaning a denture comprising superposed bottom and top members of the general configuration of a denture and which are adapted to receive for storage therebetween a full set of dentures, the bottom member having a base element and vertical wall means defining the periphery of the bottom member, the vertical wall means of the bottom member extending from the base element and being secured to the base element, the top member having a cover element and vertical wall means defining the periphery of the top member, the wall means of the top member extending from the cover element and being secured thereto, the superposed top and bottom members forming a closed chamber in which a denture can be stored and cleaned, the base element of the bottom member having a well disposed therein for retaining a water-soluble dentifrice in solid form;



a denture seated on the base element of the bottom member over the well; and

an aqueous medium filling the well and at least part of the rest of the bottom member to dissolve a dentifrice contained therein to form a dentifrice solution submerging the denture seated on the base element of the bottom member.

5,184,719
TAMPER RESISTANT, DISPOSABLE TOOTHBRUSH AND FLOSSING DEVICE
Chester D. Gordon, 19023 Galway Ave., Carson, Calif. 90746
Filed Jun. 30, 1992, Ser. No. 906,434
Int. Cl.[5] B65D *81/20*
U.S. Cl. 206—209.1 **8 Claims**



1. A three-component tamper resistant disposable toothbrush comprising:

a. a handle portion;

b. a bristle portion defining an attachment surface, and a free surface, the attachment surface being imbedded within the handle portion, the bristle portion being coated with a dentifrice paste;

c. a flossing element portion; and,

d. a vacuum sealed plastic cover surrounding the bristle portion, thereby maintaining the dentifrice moist and inhibiting bacteria buildup.

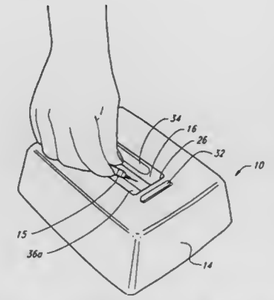
8. A tamper resistant, disposable toothbrush, comprising:

a. a handle portion;

b. a bristle portion being attached to the handle portion, and a free gripping surface forming a part of the handle portion, the bristle portion bearing a dentifrice which is dry or wet, or a paste; and,

c. a vacuum sealed plastic cover surrounding the bristle portion, thereby maintaining the dentrifice, or the paste in its original condition and free from extraneous material, and inhibiting bacteria buildup.

5,184,720
SHARPS COLLECTOR
Gilbert Packer, Carlsbad; Rex O. Bare, Lake Forest, and Richard Shillington, Leucadia, all of Calif., assignors to Med-Safe Systems, Inc., Carlsbad, Calif.
Filed Nov. 8, 1991, Ser. No. 789,739
Int. Cl.[5] B65D *83/02, 83/10*
U.S. Cl. 206—366 **30 Claims**



1. A collector for holding and disposing of syringes comprising

a disposable receptacle generally resembling a rectangular box, wherein said receptacle includes an upper receptacle body resembling a box with an open bottom and a lower receptacle closure for connection with said upper receptacle body closing said open bottom of the upper receptacle body to form said disposable receptacle, said disposable receptacle having two substantially parallel elongated apertures, said apertures providing access to a pair of chutes,

a pair of chutes mounted onto the disposable receptacle and extending into the receptacle, said chutes being aligned with the elongated apertures of said disposable receptacle, said chutes providing means for guiding and introducing syringes into said disposable receptacle and obstructing contained syringes from protruding or re-emerging from said disposable receptacle,

a decorative reusable cover generally resembling a box with an open bottom, said cover being configured to fit over, attach to, and cover said disposable receptacle and be detachable therefrom, said cover being proportioned to conceal the elongated apertures of said receptacle, said cover including an elongated opening for providing access to a double shuttle attached to said cover, and

a double shuttle attached to the reusable cover, said double shuttle being movable and providing means by which syringes are discarded into the disposable receptacle through the apertures and chutes of said disposable receptacle when said cover is in place on the receptacle.

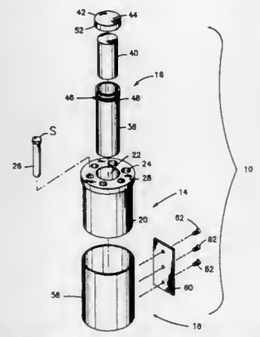
5,184,721
HYPODERMIC NEEDLE/SYRINGE RECEPTACLE WITH POROUS ELEMENT
Mark D. Wengyn, 1543 Highcrest Cir., and Charles F. Brown, 2201 Cherokee Trail, both of Valrico, Hillsborough County, Fla. 33594
Filed Jan. 10, 1992, Ser. No. 819,057
Int. Cl.[5] A61L *2/16*
U.S. Cl. 206—366 **17 Claims**

1. A receptacle to support and retain a plurality of used hypodermic needle and syringe combinations and a plurality of hollow tubes, said receptacle comprising an outer receptacle support including a centrally-disposed canister recess housing a hollow inner canister having a porous element disposed therein and a plurality of peripherally-disposed tube recesses

VOL
1147
ISS
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housing a corresponding plurality of hollow tubes such that body fluids drawn from a patient by a hypodermic needle and syringe combination are injected into one or more of the hollow tubes for storage and transport, and wherein used hypodermic needle and syringe combinations are mounted on said receptacle by imbedding the needles of the used hypodermic needle and syringe combinations into said porous element to securely retain the used hypodermic and needle combination on said receptacle.

10. A receptacle to support and retain a plurality of used hypodermic needle and syringe combinations, said receptacle

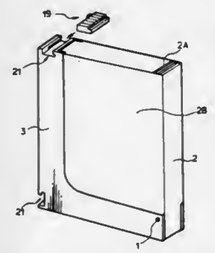


comprising an outer receptacle comprising an outer receptacle support including a centrally-disposed canister recess housing a hollow inner canister, the canister having a cap mounted thereon and the cap including a penetrable membrane to receive used hypodermic needles therethrough and a porous element disposed in the canister such that used hypodermic needle and syringe combinations are mounted on said receptacle by imbedding the needles of the used hypodermic needle and syringe combinations into said porous element to securely retain the used hypodermic and needle combinations on said receptacle.

5,184,722
KEEPING CASE FOR THE CASSETTE TAPE AND OTHERS

Han-Jin Shin, 93-23, Jungkog-Dong, Seongdong-Gu, Seoul, and Joong-Ki Kim, 264-12 Imun 2-Dong, Tongdaemun-Gu, Seoul, both of Rep. of Korea

Filed Sep. 24, 1991, Ser. No. 764,709
Int. Cl.[5] B65D *85/672*
U.S. Cl. 206—387 **2 Claims**



1. A keeping case for keeping a generally planar article, comprising:

an outer case having spaced apart parallel first and second side walls and a plurality of end walls connected to and extending between the side walls, the end walls having a plurality of connecting recesses therein extending between the side walls, each said connecting recess including opposed first and second edge walls extending between the side walls, the first edge wall of each said recess having an undercut extending from the first side wall to the second side wall, the second edge wall of each said recess having an undercut terminating intermediate the side walls to define a step in said recess;

an inner case dimensioned to receive the planar article therein and being dimensioned to be at least partly received within the outer case;

pivoting means connecting the inner and outer cases for enabling rotation of the inner case relative to the outer case in the plane of the article in the inner case; and

a connecting body for each of said connecting recesses, each said connecting body being substantially planar with opposed top and bottom surfaces, opposed first and second sides and opposed first and second ends, each said connecting body being slidably engaged in one said connecting recess, the first side of each said connecting body defining a rail slidably engaged in the undercut of the first edge wall of the respective connecting recess, the second side of each said connecting body defining a prominance adjacent the first end and engaged in the under cut of the second edge wall of the respective connecting recess, each said connecting body defining a length between the opposed first and second ends thereof approximately equal to the spacing between the first and second side walls of the outer case, each said connecting body being disposed in the respective connecting recess such that in a first portion the ends of the connecting body are aligned with the respective side walls, and such that in a second position the first end of the connecting body is disposed intermediate the first and second side walls of the outer case with the prominence engaging the step, and such that the second end thereof projects beyond the second side wall of the outer case, the top surface of each said connecting body having ribs extending between the first and second sides thereof for facilitating slidable advancement of each said connecting body in the respective connecting recess between the first and second positions, each said connecting body enabling connection of the keeping case to another substantially identical keeping case, such that the respective planar articles therein are disposed in substantially parallel side-by-side relationship to one another.

5,184,723
SINGLE WAFER ROBOTIC PACKAGE

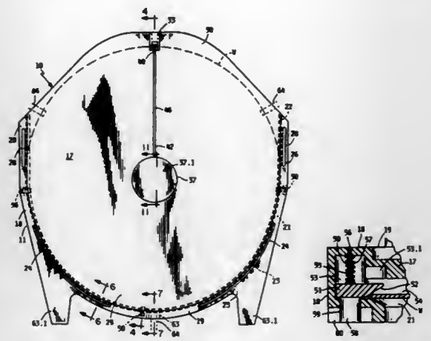
Randy L. Karl, Chanhassen, and Dale A. Maenke, Chaska, both of Minn., assignors to Fluoroware, Inc., Chaska, Minn.

Filed May 14, 1991, Ser. No. 699,753
Int. Cl.[5] B65D *85/48*
U.S. Cl. 206—454 **8 Claims**

2. A wafer storing package for storing a single silicon wafer, comprising

an enclosure means comprising a U-shaped frame portion comprising a semicircular side portion and substantially parallel end portions, the enclosure means also comprising a top panel portion traversing the side and end portions of the frame portion and being affixed thereto, the frame portion and top panel portion defining and embracing a wafer compartment having an open bottom portion opposite to said top panel portion and also having a closed side portion adjacent the semicircular side portion of the frame portion and an open side portion adjacent the end portions of the frame portion, the frame portion also comprising a wafer supporting ledge portion extending around said semicircular side portion of the frame portion and confronting the top panel portion in spaced relation, the ledge portion being inclined to minimize the area of engagement between the wafer and the ledge portion, the spacing between the top panel portion and the ledge portion being greater than the thickness of the wafer to permit limited movement of the wafer in the compartment, the wafer

compartment corresponding to the shape of the wafer and having a width between the closed and open side portions to confine substantially the entire width of the wafer, the enclosure means comprising a wafer clamping portion on

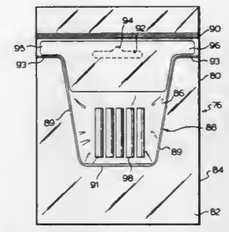


the frame portion and opposite the ledge portion to engage and restrict movement of the wafer, the clamping portion being retractable away from the ledge portion to release the wafer.

5,184,724
FLEXIBLE PACKAGE FOR SMALL ITEMS

Edward C. Mayled, 3131 Merritt Avenue, Malton, Ontario, Canada L4T 1P4

Continuation-in-part of Ser. No. 101,590, Sep. 28, 1987, abandoned. This application Jan. 18, 1989, Ser. No. 298,632
Int. Cl.[5] B65D *30/10, 73/00*
U.S. Cl. 206—466 **8 Claims**



1. A package assembly comprising a package for housing and displaying small, discrete items at a point of purchase, whereby a purchaser can view and check the small items prior to purchase, comprising:

a flexible pouch having a pouch opening and a closed end remote from said pouch opening, said pouch opening communicating with a pouch cavity;

opposed portions of said opposed flexible walls of said pouch being sealed together to form an empty compartment within said pouch cavity, said compartment being disposed centrally of said pouch cavity intermediate and spaced apart form said pouch opening and said closed end;

said compartment having an entry port communicating with said pouch opening for free-fall entry of small times through said pouch opening into said empty compartment and having a closed compartment inner end in opposed relationship with said pouch opening and spaced from said closed end such that a discrete, small item housed in said compartment is disposed generally centrally within said pouch cavity, said compartment being bounded by a non-sealed outer zone of said pouch, said non-sealed outer zone extending between said closed compartment inner end and said closed end of said pouch and a mounting card member, said mounting card member having a pair of opposed card panel members and at least said pouch opening being housed between said card panel members to close said pouch opening during housing and displaying of the small discrete times at the point of purchase.

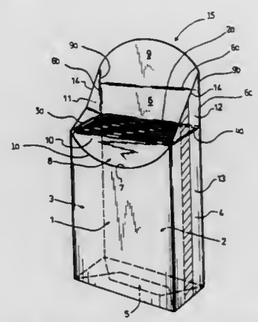
said opposed card panel members extending form a common fold towards outer opposed ends and being adhered together intermediate said fold and said opposed ends to define an inner abutment between said panel members, with a pair of panel flaps extending from said abutment, said pouch opening being disposed adjacent said abutment and said panel flaps being secured together with at least a portion of said pouch therebetween, and wherein said opposed card panel members have opposed slots therethrough, said slots defining a window for viewing a portion of said package disposed between said card panel members, said package further including a closure for said access opening comprising an elongate channel in said first wall member adjacent said access opening and an elongate rib in said second wall member adjacent said access opening, said rib being matingly receivable in, and removable from, said channel, said closure being disposed in said portion so as to be viewed at said window.

Please insert in the application claims **25** to **31** set out hereinafter:

5,184,725
RECLOSABLE PACKAGE FOR CELLULOSE TISSUES

Horst Reinheimer, Heroldsberg, and Christof Stary, Eckental, both of Fed. Rep. of Germany, assignors to VP-Schickedanz AG, Nuremberg, Fed. Rep. of Germany

Filed Mar. 20, 1992, Ser. No. 854,692
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1991, 9103648[U]; Aug. 8, 1991, 9109814[U]
Int. Cl.[5] B65D *73/00*
U.S. Cl. 206—494 **5 Claims**



1. A reclosable package for containing a stack of cellulose tissues, comprising:

a block-shaped package which is made from a single sheet of material cut into a one-piece pattern and folded, which block-shaped package includes:

a front side having an upper end in which is defined a cutout having opposed ends to provide an enlarged removal area through which the cellulose tissues may be removed in use,

a rear side having an upper end,

right and left sides each having an upper end,

a bottom,

a top cover extending from the upper end of the rear side and having a pair of sides and an upper end,

a closing flap having an upper edge with opposed ends extending from the upper end of the top cover, and

VOL 1147 ISS 2 FE 9 1993 UMI

left and right lateral closing folds for increasing resistance to tearing extending from the upper ends of respective sides and from the respective sides of the top cover, and each having a free edge,

wherein the block-shaped package has a closed state in which the closing flap and top cover are folded downwardly over the cellulose tissues in use, and the closing flap extends beyond the cutout in the front side, and

wherein the block-shaped package has an open state in which the closing flap, top cover and lateral closing folds are folded upwardly to expose the cellulose tissues in use and in which the free edge of each lateral closing fold extends in a straight line from a respective opposed end of the upper edge of the closing flap to an adjacent end of the cutout.

5,184,726

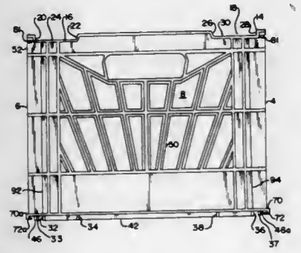
FILE BOX COLUMN

Thomas Box, Sbrewsbury, N.J., assignor to Spectrum International, Inc., Shrewsbury, N.J.

Continuation-in-part of Ser. No. 552,758, Jul. 16, 1990. This application Feb. 12, 1991, Ser. No. 654,343

Int. Cl.[5] B65D *21/00*

U.S. Cl. 206—509 **18 Claims**



1. A storage box comprising:

a. two longitudinal sides;

b. two lateral sides;

c. bearing means for facilitating sliding of said box;

d. guide means on said box;

e. stop means for limiting the distance that the box can travel when mounted on a similarly configured box;

f. means for slidably retaining said storage box to a similarly configured box comprising a plurality of strategically located clips extending outwardly from the bottom of the box which engage edge means on the top of an adjacent box;

g. a first and second rib extending outwardly from the bottom of each longitudinal side respectively; and

h. four vertical ribs on each longitudinal side having slots at the top of each said vertical rib with the clips for retaining the storage box to a similarly configured box each located in vertical alignment with a said vertical rib.

5,184,727

MODULAR INFLATED SUPPORTING STRUCTURE

Robert G. Dickie, Newmarket, and Brian J. Walters, Sunderland, both of Canada, assignors to Intepac Technoligies Inc., King City, Canada

Filed Dec. 2, 1991, Ser. No. 801,366

Int. Cl.[5] B65D *81/02*

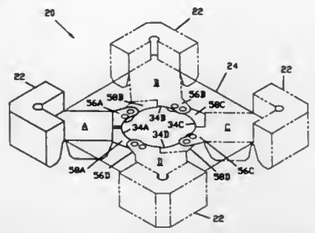
U.S. Cl. 206—522 **17 Claims**

1. A modular supporting structure for positioning and supporting a product within an outer packing container, wherein said product to be supported has predetermined external dimensions, and said outer packing container forms a chamber of predetermined internal dimensions; and wherein said supporting structure is such that, at least when in use in combination with said product and said outer packing container, said supporting structure comprises:

a plurality of modules interconnected one to another, each module in turn comprising an at least partially inflated bladder, and a connecting portion that is attached to said bladder of each respective module;

wherein each of said bladders has a first compartment for receiving and retaining an inflating gas;

wherein each module has an exterior surface that is generally shaped and sized so as to correspond to a portion of said predetermined internal dimensions of a said outer packing container;



wherein each of said modules has an inwardly directed receiving surface that is generally shaped and sized so as to correspond to a portion of said predetermined external dimensions of a said product;

said plurality of modules being separably connected one to another by way of said connecting portions so as to form said modular supporting structure, said modular supporting structure having a predetermined shape product-receiving socket defined by said inwardly directed surfaces of said plurality of modules; and wherein said modules are maintained physically separated from each other by said connecting portions being interconnected, whereby said modules act independently of each other in terms of the load supported by each.

5,184,728

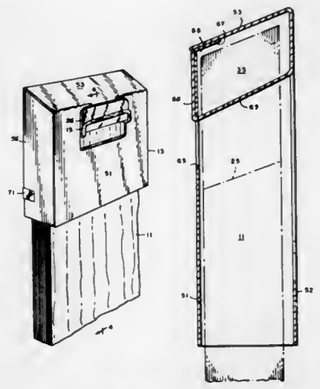
BAG DISPENSING SYSTEM

Richard M. Wile, Medfield, Mass., assignor to BPI Environmental, Inc., Taunton, Mass.

Filed Dec. 20, 1991, Ser. No. 811,692

Int. Cl.[5] B65D *73/00*

U.S. Cl. 206—554 **9 Claims**



1. A cartridge for holding a stack of plastic film bags of the type having loop handles extending upwards on either side of the mouth of the bag, the handles being linked at their upper ends by a tearaway strip extending between them, said cartridge comprising:

a stiff web member which is folded to provide front and back parallel panels bridged at their upper ends by a top panel, the handle portions of said bags extending upwards between said front and back panels, said back panel having a cutout tongue which is folded forward under said tearaway strips to retain them as individual bags are torn downwardly from the pack and which passes through an aperture in said front panel and, after passing through said aperture, extends upwardly parallel to said front panel and terminates in a tab extending through a slot in said front panel.

5,184,729

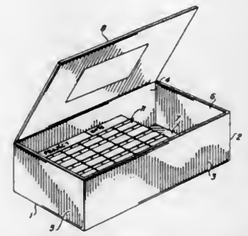
NEEDLEWORK THREADHOLDER AND ORGANIZER

Roberta M. Zalenski, 13630 Runney Meade Dr., Sugar Land, Tex. 77478

Filed Apr. 27, 1992, Ser. No. 873,808

Int. Cl.[5] B65D *69/00*; **A41H** *31/00*

U.S. Cl. 206—574 **10 Claims**



1. A storage case and needlework organizing insert for needlecraft materials and accessories comprising:

a generally box-shaped storage container;

an organizing insert removably inserted in the said storage container;

the said organizing insert being constructed of a material readily impregnable by the point of a sewing needle;

the said organizing insert being imprinted on at least one surface with subdivided sections.

5,184,730

METHOD AND APPARATUS USING FEED CONVEYING FLUID BLENDING THE FEED AND/OR SEPARATING DEBRIS FROM THE FEED

Kermit D. Paul, Bethlehem, Pa., assignor to Fuller Company, Bethlehem, Pa.

Division of Ser. No. 402,552, Sep. 5, 1989, Pat. No. 5,018,869. This application Mar. 14, 1991, Ser. No. 669,353

Int. Cl.[5] B07B *7/00*

U.S. Cl. 209—142 **19 Claims**

1. A method for separating debris from a conveyed material which is transported by a fluid flow, said method comprising the steps of:

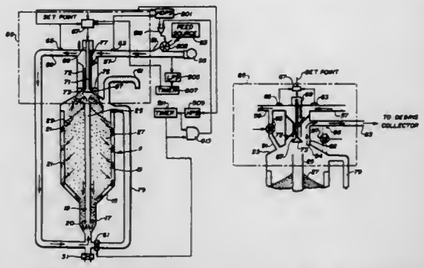
receiving said fluid flow including said conveyed material;

separating said conveyed material from said fluid flow to produce a separated material and a separated fluid flow;

passing said separated material into an upper open end of a first chamber for containing an inventory of separated material;

passing said separated fluid flow into a lower portion and through said first chamber to convey a portion of the separated material within said first chamber upwardly and out of said first chamber; and,

defining a flow path for said separated fluid flow after it exits said first chamber which allows said portion of material conveyed from said first chamber to be redeposited by gravity back into said first chamber through said open end thereof and which causes said fluid flow passing through said first chamber to also pass through separated material



which passes to said open end of said first chamber, whereby said fluid flow passing through said first chamber removes and carries debris from said conveyed portion of material and from said material passing into said chamber.

5,184,731

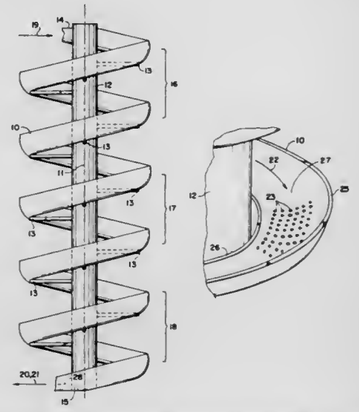
SPIRAL SEPARATOR WITH IMPROVED SEPARATION SURFACE

Michael D. Robertson, Jacksonville Beach, and Robert M. Carver, Starke, both of Fla., assignors to Carpco, Inc., Jacksonville, Fla.

Filed Dec. 21, 1990, Ser. No. 631,656

Int. Cl.[5] B03B *5/52*

U.S. Cl. 209—459 **18 Claims**



1. A vertical axis spiral trough separator having 3–10 revolutions about said axis, a feed end at the top of said separator and a discharge end at the bottom of said separator, said trough having an internal concave surface adapted to direct the flow of a slurry of solid particles in a liquid medium in a downward helical path, said surface containing a plurality of upwardly projecting and spaced protuberances at selected locations between said feed end and said discharge end, said separator having an upper portion, a middle portion, and a lower portion, said middle portion including about 1–6 revolutions of said trough wherein said internal concave surface contains said protuberances, and said upper and lower portions each include about 1–2 revolutions of said trough in which said internal concave surface is smooth and free of any said protuberances.

VOL
1147
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5,184,732
SHAPE SORTING

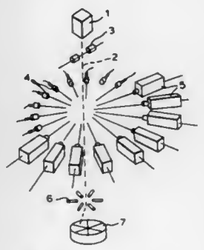
Robert W. Ditchburn, deceased, late of Oxfordshire by Doreen May Ditchburn, executrix; Martin P. Gouch, Hertfordshire; Nigel R. Cook, Maidenhead; Timothy J. Osgood, Basingstoke; Stephen P. Holloway, Berkshire, and Ian W. Bowler, Durham, all of Great Britain, assignors to Gersan Establishment, Vaduz, Liechtenstein

Continuation-in-part of Ser. No. 214,465, Jul. 1, 1988, Pat. No. 4,946,045, which is a continuation of Ser. No. 943,128, Dec. 18, 1986, abandoned. This application Jul. 16, 1990, Ser. No. 552,993

Claims priority, application United Kingdom, Dec. 20, 1985, 8531396; Jun. 25, 1990, 9014122

Int. Cl.[5] **B07C** *5/342*

U.S. Cl. 209—576 **18 Claims**



1. A method of ascertaining the shape class of an object, comprising:

deriving a set of primary shape parameters representative of the shape of the object,

taking a combination of n of the primary shape parameters to provide coordinates for deriving from a previously established table a decision value for said combination, n being a fixed integer which is two or more, the table having decision values corresponding to said combination;

repeating the process of deriving a decision value for all remaining possible different combinations of n primary shape parameters, using previously established tables having decision values, each table corresponding to a combination of n primary shape parameters; and

ascertaining from the resulting set of decision values the shape class of the object.

5,184,733
APPARATUS AND METHOD FOR DETERMINING THE VOLUME, FORM AND WEIGHT OF OBJECTS

Hördur Arnarson, Reykjavik, Iceland, and Louis F. Pau, Valbonne Cedex, France, assignors to Marel H.F., Reykjavik, Iceland

Filed Feb. 19, 1992, Ser. No. 837,318

Claims priority, application Iceland, Feb. 19, 1991, 3676

Int. Cl.[5] **B07C** *5/00*

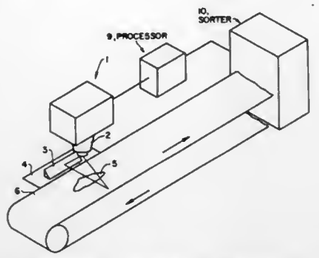
U.S. Cl. 209—585 **26 Claims**

1. An apparatus for assessing an object comprising:

a camera positioned above and aimed at a surface of a conveyor belt to receive a direct image of the object;

a mirror positioned along side and parallel with the conveyor belt at an angle to project a profile image of an object on the conveyor belt under the camera into a lens of the camera;

means, connected to the camera, for determining at least one of the volume, form and weight of the object by combining the direct image of the object received by the camera and the profile image.



5,184,734
SHEET DELIVERING MECHANISM

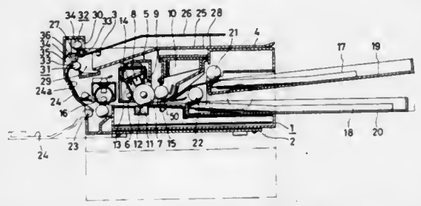
Yasuyoshi Yamaguchi, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1991, Ser. No. 651,996

Claims priority, application Japan, Feb. 7, 1990, 2-27449

Int. Cl.[5] **B07B** *5/36;* **B65H** *5/22*

U.S. Cl. 209—657 **5 Claims**



1. A sheet delivering mechanism comprising:

a main housing comprising electrographic printing means;

a plurality of sheet feed units mounted on the main housing and respectively containing sheets of different sizes;

a sheet guide passage extending from the sheet feed units through the electrographic printing means;

a plurality of sheet receiving trays of different sizes disposed in layers with intervals therebetween, the smaller sheet receiving trays being disposed above the larger sheet receiving trays, each of said plurality of sheet receiving trays having an input end, said sheet guide passage extending to and ending at said input ends of said plurality of sheet receiving trays;

guide fingers arranged between the input ends of the sheet receiving trays and the end of the sheet guide passage and supported for turning about an axis extending along the direction of the widths of the sheet receiving trays; and

a driving unit for turning the guide fingers;

wherein a plurality of sheet delivering units each consisting of a top delivery roller and a bottom delivery roller are disposed between the respective input ends of the sheet receiving trays and the end of the sheet guide passage, the axis of the bottom delivery roller of the upper sheet delivering unit is offset toward the sheet receiving trays relative to the axis of the upper delivery roller of the lower sheet delivering unit.

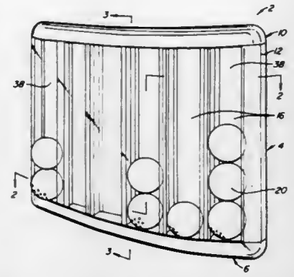
5,184,735
GOLF BALL DISPLAY RACK

Danny O. Black, San Francisco, Calif., assignor to Advanced Medical Nutrition, Inc., Hayward, Calif.

Filed Sep. 25, 1991, Ser. No. 765,603

Int. Cl.[5] **A47F** *7/00*

U.S. Cl. 211—14 **9 Claims**



1. A display rack, for use with golf balls, comprising:

a generally vertically oriented body having a generally flat back and a bottom;

a base at the bottom of the body;

a plurality of generally vertically oriented dividers mounted to the body to define a plurality of generally vertically oriented golf ball slots, the plurality of golf ball slots being arranged in an outwardly bowed configuration relative to the generally flat back providing enhanced viewing of the golf balls, each of said golf ball slots sized to support a plurality of the golf balls on said base in a vertical column one on top of the other;

said golf ball slots each having an open outer side being generally smaller than the golf balls so the golf balls cannot pass through the open outer side, the open outer side permitting viewing of the golf balls situated within the golf ball slots; and

a top secured to the body and overlying the golf ball slots.

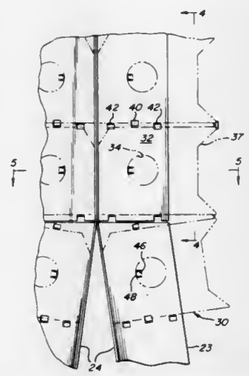
5,184,736
TAPE RACK MOUNTING DEVICE

Harold J. Banker, Glassboro, N.J., assignor to Ner Data Products Inc., Stamford, Conn.

Filed Mar. 9, 1992, Ser. No. 848,905

Int. Cl.[5] **A47F** *5/00*

U.S. Cl. 211—41 **13 Claims**



1. A storage rack mounting device for releasably storing a plurality of tape storage compartments therein, each of the compartments comprising two sidewalls having an opening therethrough and a peripheral edge thereabout, the storage rack mounting device comprising:

(a) a frame to hold a plurality of tape compartments therein, the frame comprising at least two opposed sidewalls, each having an interior surface, the sidewalls being spaced apart to receive each of the tape storage compartments therebetween;

(b) means for supporting the tape storage compartment within the frame and for permitting the tape storage compartment to be introduced and removed from the frame comprising at least one flange extending outwardly from the interior surface of each of the side walls; and

(c) means for releasably locking each of the storage compartments within the frame comprising at least one locking flange secured to the interior surface of at least one of the sidewalls and extending angularly therefrom to engage the peripheral edge.

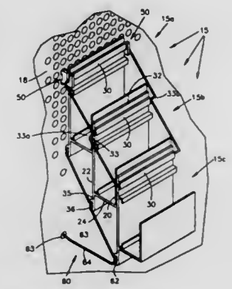
5,184,737
DISPLAY SYSTEM HAVING SUSPENDED CHANNELS AND METHOD OF ASSEMBLY

Stephen N. Hardy, Copley, Ohio, assignor to American Greetings Corporation, Cleveland, Ohio

Filed Jun. 21, 1991, Ser. No. 719,194

Int. Cl.[5] **A47F** *5/00*

U.S. Cl. 211—55 **28 Claims**



1. A display system, comprising:

a support member attached to a vertical structure,

a pair of laterally extending channels adapted to be supported in adjacent, side-by-side relation, each of said channels designed to support products in an upright orientation, each of said channels also including a first attachment structure and a second attachment structure separate from said first attachment structure,

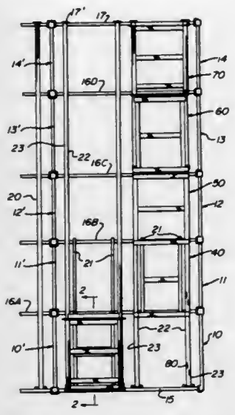
a first clip having a pair of prongs interconnected by a cross member, one of said prongs of said first clip adapted for attachment to said first attachment structure on one channel, and the other of said prongs of said first clip adapted for attachment to said first attachment structure of the other channel, and

a second clip also having a pair of prongs interconnected by a cross member, one of said prongs on said second clip adapted for attachment to said second attachment structure on one channel, and the other of said prongs adapted for attachment to said second attachment structure on the other channel,

said one prong on said first clip further adapted for attachment to said support member to support said pair of adjacent channels on said vertical structure.

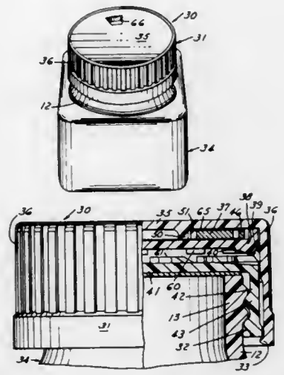
VOL
1147
ISS
2
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1993
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5,184,738
STORAGE RACK SYSTEMS
Donald R. Allen, Frenchtown, N.J., assignor to Frazier Industrial Company, Long Valley, N.J.
Filed Jun. 7, 1991, Ser. No. 709,664
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—151 **16 Claims**



1. In a storage rack for supporting pallet loads multiple pallets deep having a framework providing a plurality of storage bays each of which is defined by a plurality of vertical uprights and horizontal shelf beams, each of said storage bays comprising:
a plurality of carts,
track means extending along the depth of said storage bay for supporting said carts for movement along said tracks from forward positions to back positions thereof, said track means comprising:
a first pair of parallel tracks having cart supporting portions extending over a distance including only part of the depth of the storage bay and being spaced apart across the width of the storage bay,
a second pair of parallel tracks extending from front to back along the depth of said storage bay and being spaced apart across the width of the storage bay,
said first pair of tracks being located inwardly of said second pair of tracks, and
a third pair of parallel tracks extending from the front to the back along the depth of said storage bay and being spaced apart across the width of the storage bay, said third pair of tracks being located outwardly of said second pair of tracks,
said plurality of carts including,
a first cart including a frame providing support for a pallet load, front and rear wheel assemblies on each side of said first cart frame, and means for supporting each of said first cart wheel assemblies to make rolling contact with one of said tracks of said track means as said first cart moves along the depth of the storage bay between a forward position and a back position,
a second cart including a frame providing support for a loaded pallet, front and rear wheel assemblies on each side of said second cart frame, and means for supporting each of said second cart wheel assemblies to make rolling contact with one of said track means as said second cart moves along the depth of the storage bay between a forward and a back position,
the front wheel assemblies of said first cart being constructed and arranged to make rolling contact with said second tracks and the rear wheel assemblies of said first cart being constructed and arranged to make rolling contact with said first tracks,
the front and rear wheel assemblies of said second cart being adapted to make rolling contact with said second tracks,
and a third cart including a frame providing support for a pallet load, front and rear wheel assemblies on each side of said third cart frame, and means for supporting each of said third cart wheel assemblies to make rolling contact with one of said tracks of said track means as said third cart moves along the depth of the storage bay between a forward and a back position,
said track means being mounted on the storage bay framework so as to be inclined toward the entry end of said storage bay, whereby said carts are supported so that they tend to roll along said track means toward the entry end of said storage bay.

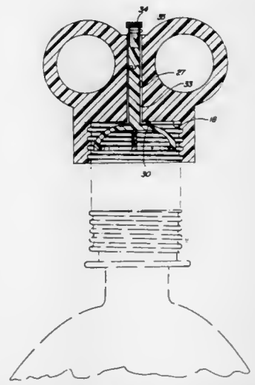
5,184,739
CHILD RESISTANT REMINDER CLOSURE
Maximillian Kusz, Waterville, Ohio, assignor to Owens-Illinois Closure Inc., Toledo, Ohio
Filed May 5, 1992, Ser. No. 878,647
Int. Cl.[5] B65D 55/02
U.S. Cl. 215—220 **9 Claims**



1. A child resistant reminder closure comprising
an outer closure member having a base wall and a peripheral skirt,
an inner closure member having a base wall and a peripheral skirt,
interengaging means between the outer closure member and inner closure member to retain the inner closure member against axially outward movement relative to the outer closure member,
said outer closure member and said inner closure member having limited axial movement to one another,
an assembly of a day disk and an indexing disk being rotatably mounted on said outer closure member,
said day disk being provided adjacent the inner surface of the base wall of the outer closure member,
said indexing disk being provided adjacent said day disk,
said day disk having an opening and a first set, of flexible radial ratcheting means extending radially inwardly into the opening from said day disk and a second set of flexible radial ratcheting means extending radially from the day disk in the same direction as the first set,
said outer closure member having a set of lugs adapted to engage said first set of flexible ratcheting means,
said outer closure member having another set of lugs adapted to engage said second set of flexible ratcheting means,

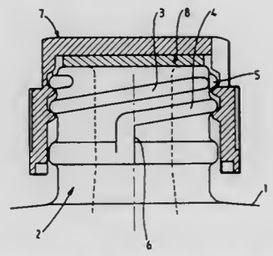
said indexing disk having means thereon engageable by said first set of ratcheting means on said day disk,
a first set of axially interengageable means between said outer closure member and said indexing disk,
a second set of axially interengageable means between said indexing disk and said inner closure member,
said day disk having circumferentially spaced indicia thereon,
said base wall of said outer closure member having an opening adapted to be selectively aligned with said indicia,
interengaging means on the inner closure member adapted to engage means on a container by relative rotation of said inner closure member and a container,
such that when the outer closure member is moved axially to engage the inner closure member, the closure can be removed from a container and said day disk can be rotated relative to said outer closure member during either said application or said removal of said disk to bring different indicia into view through said opening.

5,184,740
CONTAINER CAP
Gerald W. Mandrell, II, 2564 Lumpkin Rd. Apt. E-34, Augusta, Ga. 30906; Eddie J. Humphres, P.O. Box 452, Red Bay, Ala. 35582; Floyd W. Flanigan, 3866 Old Savannah Rd. #287, Augusta, Ga. 30906, and Bradley W. Pittman, 198 Crystal Creek La., Westminster, S.C. 29693
Filed Feb. 14, 1992, Ser. No. 839,570
Int. Cl.[5] B65D 51/16
U.S. Cl. 215—315 **1 Claim**



1. A container cap arranged for securement to a beverage container, the beverage container including an externally threaded spout and the spout including an upper rim, the container cap including a closure member, the closure member including a cylindrical side wall formed about predetermined axis and including an internally threaded interior surface arranged for inter-engagement with the externally threaded spout, and
a top wall fixedly mounted to an upper distal end of the cylindrical side wall orthogonally oriented relative to the axis, the top wall including a top wall bottom surface and a top wall top surface, and
the top wall top surface including a rigid central boss fixedly and orthogonally mounted coaxially aligned with the predetermined axis, the central boss including spaced side walls, the side walls each including spaced parallel ribs to enhance manual grasping of the central boss, and
a first ring member and a second ring member fixedly mounted to opposed sides of the central boss, with the first ring member and the second ring member integrally mounted to the top wall top surface and projecting laterally beyond the top wall, and
the first ring member including a first bore directed therethrough, the second ring member including a second bore directed therethrough, wherein the first bore and the second bore project beyond the cylindrical side wall, and
the central boss includes a boss bore coaxially aligned with the predetermined axis directed coextensively through the central boss and through the top wall, and the central boss slidably mounting a valve member assembly thereto, and
the valve member assembly includes a valve member top wall arranged parallel relative to the top wall bottom surface, with the top wall including a torroidal sealing ring concentrically positioned about the boss bore directed through the top wall, with the valve member top wall including a rigid valve member rod fixedly and orthogonally mounted to the valve member top wall and the valve member rod directed into the boss bore, the valve member rod including a plunger rod extending from the valve member rod through the boss bore, and the plunger rod terminating in a plunger head, and a spring member captured between the plunger head and the boss, and an arcuate flexible side wall extending downwardly of the valve member top wall canted towards the cylindrical side wall interior surface, the arcuate flexible side wall including a plurality of window openings directed therethrough to permit gaseous flow through the window openings, and the valve member rod and the plunger rod are spaced from a cylindrical boss interior wall to permit gaseous flow between the valve member rod, the plunger rod, and the cylindrical boss bore interior wall.

5,184,741
RECEPTACLE WITH ORIENTABLE SCREW-THREADED CAP
Alain Chevassus, Sceaux, and Patrick Fraillon, Gonesse, both of France, assignors to Techpack International, TPI Societe Anonyme, Parigne L'Eveque, France
Filed Aug. 9, 1991, Ser. No. 743,249
Claims priority, application France, Aug. 17, 1990, 90 10413
Int. Cl.[5] B65D 41/04, 55/02
U.S. Cl. 215—331 **2 Claims**



1. A receptacle with an open mouth and having a screwthreaded cap for closing said mouth and for orientation relative to said receptacle, said receptacle having a screw neck (2) which comprises externally two symmetrical screw threads (3, 4) each screw thread being provided with an interruption (5) adjacent said first end of the thread (3, 4) and with a substantially axial abutment (6) adjacent said second end of the thread (3, 4), the cap having a top surface having internally two symmetrical screw threads, each screw thread comprising a end and a second end, said first end being closer to said mouth, comprising a single catch (11) at said first end of the thread adapted to be received in said interruption and a substantially axial thread end (12) at said second end of the thread adapted to contact said axial abutment (6) to effect a locking of the cap on said receptacle by a simultaneous abutment of the substantially axial thread end (12) with said axial abutment (6) and an

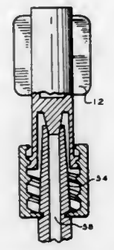
VOL 1147 ISS 2 FEB 9 1993 UMI

elastic locking of the interruption (5) with the non-return catch (11).

5,184,742
DEADENDER CAP FOR LUER FITTING

Michael J. DeCaprio, Camarillo, and Stephen E. Rados, Oak View, both of Calif., assignors to BOC Health Care, Inc., New Providence, N.J.

Filed Jun. 18, 1990, Ser. No. 539,641
Int. Cl.[5] B65D *39/08*
U.S. Cl. 215—356 1 Claim

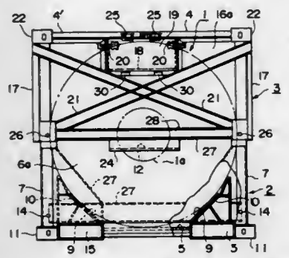


1. In combination, a standard male Luer fitting having internal threads and an internal cylindrical passageway, and a deadender cap affixed to said standard male Luer fitting, said deadender cap having an intermediate wall, a cylindrical hub extending from said intermediate wall a predetermined distance and having an open end, said cylindrical hub having external threads engaging said internal threads of said standard male Luer fitting, a projection integrally molded to said intermediate wall and extending outwardly therefrom within said cylindrical hub, said projection being tapered inwardly along its length extending outwardly from said intermediate wall to enter and close said cylindrical passageway of said standard male Luer fitting.

5,184,743
CONTAINER FOR HOUSING COIL

Takashi Suzuki, Yokohama, and Kohei Fukui, Tokyo, both of Japan, assignors to Nissin Technos Corporation, Kanagawa Pref. and Cotra System Kabushiki Kaisha, Tokyo, both of, Japan

Filed Jul. 31, 1992, Ser. No. 923,852
Claims priority, application Japan, Aug. 21, 1991, 3-234160
Int. Cl.[5] B65D *85/04*
U.S. Cl. 220—1.5 2 Claims

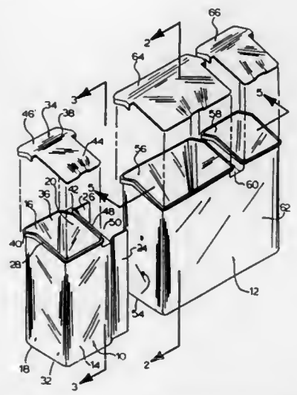


1. A container for housing a coil, which comprises:
a lower box (2) made of steel for housing a coil with the axis thereof directed horizontally and covering a lower half portion thereof, said lower box (2) comprising a rectangular bottom wall (5), four lower side walls (6*a*, 6*b*, 6*c*, 6*d*), an open upper end, and four lower props (7), having an L-shaped cross section, each fixed vertically to each of four corners of said bottom wall (5), and said four lower side walls (6*a*, 6*b*, 6*c*, 6*d*) and said four lower props (7) having a height slightly larger than a half that of said coil;
an upper box (3) made of steel having a rectangular cross section, inserted outside said lower box (2) so as to be vertically movable along said four lower props (7) of said lower box (2), for covering an upper half portion of said coil, said upper box (3) comprising four upper side walls (16*a*, 16*b*, 16*c*, 16*d*), an open lower end, four upper props (17), having an L-shaped cross section, each fixed vertically to each of four corners of said upper box (3), and an upper end which is openable and closeable by means of a pair of cover plates (4, 4'), each of said pair of cover plates (4, 4') being attached, so as to be openable and closeable by means of at least one hinge (29), to an upper end of each of said two opposing upper side walls (16*c*, 16*d*) of said upper box (3), which are parallel to the axis of said coil housed with the axis thereof directed horizontally in said lower box (2), and said four upper side walls (16*a*, 16*b*, 16*c*, 16*d*) and said four upper props (17) having a height slightly larger than a half that of said coil, whereby, when said upper box (3) is at the uppermost position thereof, a lower end portion of said upper box (3) overlaps an upper end portion of said lower box (2); and
a fixing mechanism for securing said upper box (3) at the uppermost position thereof onto said lower box (2), said fixing mechanism comprising four upper pinning holes (13) each provided in an upper end portion of each of said four lower props (7) of said lower box (2), another four pinning holes (23) each provided in a lower portion of each of said four upper props (17) of said upper box (3) and cooperating with each of said four upper pinning holes (13), and four pins (26) each to be releasably inserted into each cooperating set of said upper pinning hole (13) and said another pinning hole (23).

5,184,744
ADD-ON COMPARTMENT FOR TRASH RECEPTACLE

James H. Paulison, 9535 Tomahawk Blvd., Omaha, Nebr. 68134

Filed Sep. 4, 1990, Ser. No. 576,855
Int. Cl.[5] B65D *21/02*
U.S. Cl. 220—23.4 10 Claims

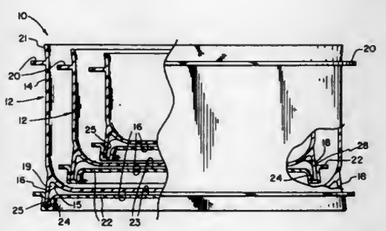


1. An add-on compartment for an open-topped trash receptacle, comprising,
four walls including a front wall, back wall, and two transversely spaced apart opposite side walls and bottom integrally connected together to define a unitary open topped material receiving compartment having a top edge,
spaced apart front and back panels protruding generally transversely outwardly from one side wall of said unitary compartment for receiving the trash receptacle between said panels,
at least said front panel having a transverse extent sufficient to overlie the front of the trash receptacle, over at least a substantial portion of the height of said front wall, whereby said front panel conceals the space between said unitary compartment and the trash receptacle received between said panels.

5,184,745
STORAGE CONTAINER SET

Petrina L. Havens, 39053 Polo Club 104, Farmington Hills, Mich. 48335, and Jeffrey L. Havens, Farmington Hills, Mich., assignors to Petrina L. Havens, Farmington Hills, Mich.

Continuation-in-part of Ser. No. 636,481, Dec. 31, 1990, abandoned. This application Jul. 16, 1991, Ser. No. 731,748
Int. Cl.[5] B65D *21/00*
U.S. Cl. 220—23.83 6 Claims



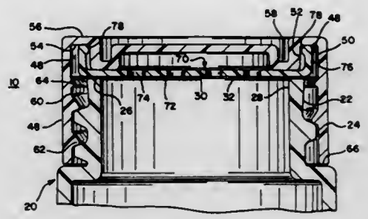
1. A storage container set comprising:
a plurality of open topped storage containers, said containers being sized and configured to be nestable one within the other during storage of the container set, each of said containers having a generally cylindrical body and a generally circumferential bottom portion axially opposite said open top, said bottom portion having a lower annular rim depending from an underside thereof and flaring outwardly therefrom, said lower annular rim having a plurality of generally vertical slots formed therein, wherein said slots extend upwardly from a lowermost edge of said rim, each of said containers further having an upper annular rim flaring outwardly from an upper edge of said container, wherein said upper and lower annular rims have substantially the same outward flare; and
a plurality of lids respectively sized and configured to be engageable with each of said containers, each of said lids having an annular groove disposed in the inner face of said lid, said annular groove having an outward flare and being sized and dimensioned for selectively receiving either said annular upper rim for sealing said container or said annular lower rim for removably affixing the lid to a respective underside of the bottom portion of a container during nested storage of the container set, said outward flare of the annular groove corresponding to said outward flare of the annular rims, said slots having a vertical dimension that exceeds the vertical extension of the corresponding lid when said lid is removably affixed to the underside of the respective container bottom portion.

5,184,746
CLOSURE CAP AND FITMENT ASSEMBLY

David N. Moore, Plainfield, and Jeffrey F. Ullrich, Western Springs, both of Ill., assignors to Phoenix Closures, Inc., Naperville, Ill.

Filed Feb. 26, 1992, Ser. No. 841,986
Int. Cl.[5] B65D *47/06, 51/18*
U.S. Cl. 220—256 20 Claims

1. A closure cap and fitment assembly configured for use with a container for holding a desired contents and having a neck with an annular lip at an uppermost end of the neck defining a mouth, said closure cap and fitment assembly comprising:
a fitment having a dispensing surface dimensioned to span the mouth of the container; and

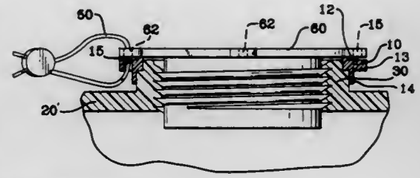


a cap having a top panel, an annular skirt depending peripherally from said top panel and means for releasable engagement onto the neck of the container, said cap defining fitment retaining means for retaining said fitment within said cap; and
said fitment retaining means being adapted to store said fitment within said cap in an inverted orientation.

5,184,747
SEAL ENGAGING RING

Paul A. Nolte, Memphis, Tenn., assignor to Ingersoll-Dresser Pump Company, Liberty Corner, N.J.

Filed Dec. 20, 1991, Ser. No. 811,135
Int. Cl.[5] B65D *45/32*
U.S. Cl. 220—319 11 Claims



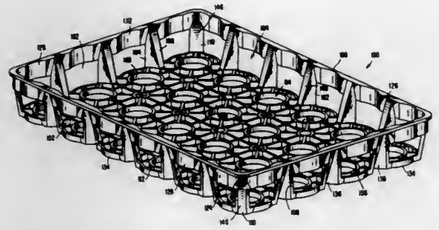
1. In combination:
a plastic container having a raised outlet including an outer surface and an interior surface, the raised outlet outer surface being disposed with two series of ratchet teeth and the raised outlet interior surface being threaded;
an externally threaded valve fitting threadedly engageable with the interior surface of the container raised outlet, the externally threaded valve fitting having at least one seal engaging aperture;
a separate annular ring having an upper portion, a lower portion, the upper portion of the annular ring having a section which extends outward of the lower portion of the annular ring, at least one seal engaging aperture being located in said section, the annular ring having a plurality of ratchet teeth engaging apertures in its lower portion; and
a tamper indicating seal for connecting said at least one seal engaging aperture of said valve fitting with said at least one seal engaging aperture of said annular ring thereby securing the valve fitting and the annular ring together.

VOL 1147 ISS 2 FEB 9 1993 UMI

5,184,748
LOW-DEPTH NESTABLE TRAY FOR FLUID CONTAINERS

William P. Apps, Anaheim, Calif., assignor to Rehrig Pacific Company, Inc., Los Angeles, Calif.

Continuation of Ser. No. 739,721, Jul. 30, 1991, abandoned, which is a continuation of Ser. No. 369,598, Jun. 21, 1989, abandoned. This application May 22, 1992, Ser. No. 888,479
Int. Cl.[5] B65D *21/00*
U.S. Cl. 220—519 **59 Claims**



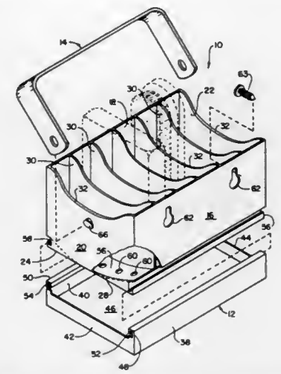
1. A low depth, nestable tray comprising:
a tray floor having a top surface with an array of fluid container support areas thereon, each said support area being configured for vertically upright supporting a separate fluid container having a right circular cylindrical vertical side wall, said floor having a bottom surface with an array of receiving areas for receiving thereon the tops of similar fluid containers in at least one similar tray beneath said floor;
a low-depth tray rail spaced above and generally parallel to said floor, said rail being positioned relative to said floor such that the tops of the fluid containers supported on said support areas extend a distance above a top surface of said rail and thereby in a low-depth arrangement;
wherein said rail has an inboard rail surface, disposed inboard relative to said floor;
wherein said inboard rail surface has thereon a plurality of vertically upright, right circular cylindrical surfaces, each conforming to the shape of the cylindrical side walls of the fluid containers supported vertically upright on adjacent said support areas, to thereby provide lateral support along the lengths of said cylindrical surfaces for the adjacent fluid containers against their cylindrical side walls; and
a plurality of nesting columns extending down from said rail and angling downwardly and inwardly to and connecting with said floor, said columns being spaced around an outer perimeter of said floor and defining open through-spaces between adjacent said columns.

5,184,749
PORTABLE DRAIN RECEPTACLE

Gladys A. Attenasio, 341 Eagle Dr., Jupiter, Fla. 33477

Filed Jun. 12, 1992, Ser. No. 897,906
Int. Cl.[5] B65D *21/02*
U.S. Cl. 220—572 **3 Claims**

1. A hand held apparatus for holding, storing and collecting liquid draining from cleansing utensils comprising a first open ended container having opposing parallel front and back walls, a pair of opposing side walls, a bottom wall and a plurality of axially spaced vertical wall members extending from said side walls and between said front and back walls and said bottom wall defining a plurality of subcompartments for holding the cleansing utensils adapted for household cleaning, a slidably mounted removable basin for collecting and storing the liquid comprising a second open ended container being contiguous relative to said first container and having opposing parallel front and back walls, a pair of side walls, and a bottom wall, means for slidably mounting said first container relative to said second container including opposing complementary rails mounted on the face of the front and back walls of said first container and said second container to removably hold said first container and said second container in contiguous position relative to each other, spaced holes in said bottom wall in each of said subcompartments communicating with said second container through said opened end thereof for collecting the

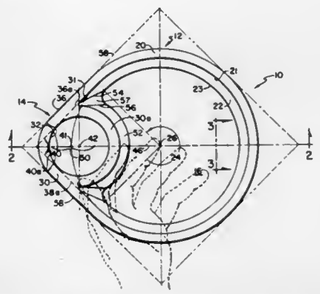


liquid from said utensils in said second container, said means for slidably mounting said first container to said second container includes an elongated slot fitting including an elongated slot formed in the bottom edge of said front wall and said back wall of one of said containers which locks with a complementary projection extending from the top edge of said front wall and said back wall of said other one of said containers.

5,184,750
PARTY DISH

B. Weems Moller, P.O. Box 688, Kerrville, Tex. 78029

Filed Aug. 16, 1991, Ser. No. 745,770
Int. Cl.[5] B65D *21/02, 1/36*
U.S. Cl. 220—575 **9 Claims**



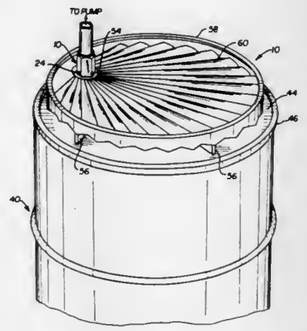
1. A party dish capable of being held by one hand of a user, comprising
a body having a food receiving section generally circular for a first predetermined arc about a center axis and having a first outer diameter, a second inner diameter providing a second circular arc circumscribing the food receiving section, and a cup receiving section comprising an extension on one side of the food receiving section, the cup receiving section providing first and second sides generally tangential to the food receiving section and defining therebetween an angle in the range of 60–120°;

the food receiving section providing a bottom wall, a first upper flange generally parallel to the bottom wall defining the second circular arc in the range of about 180–290° and an inclined side wall connecting the bottom wall and the first upper flange and defining upper and lower arcuate transition edges providing the second circular arc and a third circular arc;
the cup receiving section having a second upper annular flange providing a generally circular opening therethrough for receiving a cup and having a center and a radius, the first and second flanges merging on opposite sides of the cup receiving section; and
an imaginary centerline of the dish extending through the center of the food receiving section and the center of the cup receiving opening;
a circle of the second diameter having a center at the center axis, the circle of the second diameter extending through the cup receiving opening and intersecting the centerline;
the center of the cup opening lying in a zone between
a first point on the centerline spaced about three fourths of the radius of the cup opening from the second diameter circle-centerline intersection, toward the food section, and
a second point spaced less than about three fourths of the radius of the cup opening from the second diameter circle-centerline intersection away from the food receiving section;
the food receiving section provides a bottom wall and the cup receiving section and the food receiving section meet in a corner defining an acute angle and further comprising a first transition wall merging between the first upper flange and the bottom wall, a second transition wall merging between the second upper flange and the bottom wall, the first and second transition walls meeting in the corner in an inclined valley extending from adjacent the first upper flange to the bottom wall, the inclined valley tapering from a narrow upper end adjacent the first upper flange to a wide lower end adjacent the bottom wall.

5,184,751
DRUM PUMP ADAPTER

Dennis G. Middleton, Tyrone, Pa., assignor to New Pig Corporation, Tipton, Pa.

Filed Jun. 29, 1992, Ser. No. 905,775
Int. Cl.[5] B65D *25/40*
U.S. Cl. 220—694 **20 Claims**

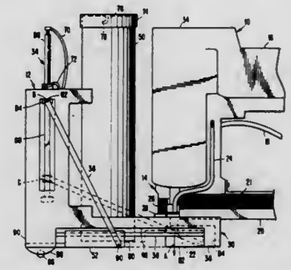


1. A drum pump adapter comprising:
a hollow body having a substantially cylindrical interior with an inlet opening and an outlet opening, a lower portion of said body having a threaded exterior adjacent said inlet opening, an upper portion of said body having a threaded interior adjacent said outlet opening with an inner diameter substantially equal to said lower portion's outer diameter; and
at least one fluid return hole positioned at a lower end of said upper portion, wherein each said fluid return hole extends through said body into said body interior.

5,184,752
METHOD AND APPARATUS FOR FEEDING TABS OR DISCS TO AN AUTOMATIC STAPLE OR NAIL GUN

Karl H. Zylka, Ft. Lauderdale, and Augustus M. Buckley, Jr., West Palm Beach, both of Fla., assignors to Quick-Tab Fasteners, Inc., Pompano Beach, Fla.

Division of Ser. No. 429,148, Oct. 30, 1989, Pat. No. 5,067,865. This application Nov. 25, 1991, Ser. No. 797,782
Int. Cl.[5] B65G *59/06*; B65H *5/04*
U.S. Cl. 221—1 **11 Claims**

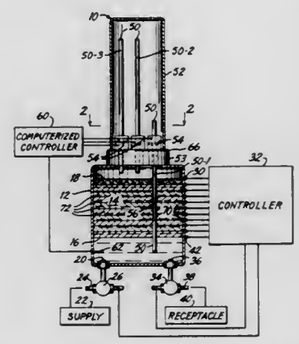


1. A method of feeding discs to a pneumatically or electrically driven staple or nail gun capable of expelling staples or nails through an expulsion path to an underlying surface, said method comprising the steps of:
providing a plurality of discs stacked atop each other;
shuttling a first disc from said stack to a position separated from said stack and normal to said expulsion path; and
suspending said first disc in said position above an open space to said underlying surface such that said staple or nail penetrates said disc during expulsion from said gun and drives said disc to said underlying surface.

5,184,753
VOLUMETRIC COMPENSATION IN GRAVIMETRIC LIQUID MEASUREMENT

Vladimir Horak, 394 Taylor Ave., Hackensack, N.J. 07601

Filed Sep. 20, 1991, Ser. No. 764,149
Int. Cl.[5] B67B *7/00*
U.S. Cl. 222—I **20 Claims**



1. An improvement in a liquid metering apparatus in which

VOL 1147 ISS 2 FE 9 1993 UMI

a desired amount by weight of a liquid is measured by the placement of a corresponding volume of liquid in a metering chamber between a first location and a second location in the metering chamber, the liquid metering apparatus including compensating means for compensating for variations in the density of the liquid within the metering camber resulting from variations in the temperature of the liquid within the metering chamber, within a range of temperatures, by varying the volumetric capacity of the metering chamber between the first location and the second location, the improvement comprising:

volumetric capacity modifying means including a plurality of incremental volumetric elements of predetermined volume arranged for selective operation to establish changes in the volumetric capacity of the metering chamber by corresponding increments of volume, each one of which increments of volume extends from the first location to the second location and corresponds to the predetermined volume of each respective one of the incremental volumetric elements; and

actuating means for selectively operating one or more of the incremental volumetric elements of the volumetric capacity modifying means to effect a change in the volumetric capacity of the metering chamber by one or more increments of volume, each one of the increments of volume extending from the first location to the second location and corresponding to the predetermined volume of each respective one of the volumetric elements selectively operated by the actuating means, in accordance with the temperature of the liquid placed within the metering chamber;

whereby the volumetric capacity of the metering chamber between the first location and the second location is made to correspond to the volume of liquid in the desired amount by weight of the liquid at the temperature of the liquid within the metering chamber.

16. An improvement in the liquid metering method in which a desired amount by weight of a liquid is measured by the placement of a corresponding volume of liquid in a metering chamber between a first location and a second location in the metering chamber, the liquid metering method including compensating for variations in the density of the liquid within the metering chamber resulting from variations in the temperature of the liquid within the metering chamber, within a range of temperatures, by varying the volumetric capacity of the metering chamber between the first location and the second location, the improvement comprising:

providing a plurality of incremental volumetric elements of predetermined volume arranged to establish changes in the volumetric capacity of the metering chamber by corresponding increments of volume, each one of which increments of volume extends from the first location to the second location and corresponds to the predetermined volume of each respective one of the incremental volumetric elements; and

selectively operating one or more of the incremental volumetric elements to effect a change in the volumetric capacity of the metering chamber by one or more increments of volume, each one of the increments of volume extending from the first location to the second location and corresponding to the predetermined volume of each respective one of the selectively operated volumetric elements, in accordance with the temperature of the liquid placed within the metering chamber;

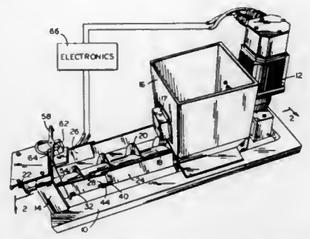
whereby the volumetric capacity of the metering chamber between the first location and the second location is made to correspond to the volume of liquid in the desired amount by weight of the liquid at the temperature of the liquid within the metering chamber.

5,184,754

WEIGHT-CONTROLLED PARTICULATE MATTER FEED SYSTEM

Thomas N. Hansen, 1067 Southlake Rd., Middlesex, N.Y. 14507

Filed Oct. 18, 1990, Ser. No. 599,433
Int. Cl.[5] B67D *5/08*
U.S. Cl. 222—55 **18 Claims**



1. A gravimetric feed system for delivering particulate material from a supply thereof to a discharge location at a desired rate in terms of weight per unit of time, said system comprising:

a) a substantially horizontally disposed trough including first and second sections, aligned along a linear axis, said first section being fixedly supported with a first end receiving said material from said supply and second end discharging said material into a first end of said second section, said material being discharged from a second end of said second section at said desired rate;

b) auger means disposed within said trough and extending along both of said first and second sections, said auger means being rotatable to move said material through said trough from said first section first end to said second section second end;

c) first support means for supporting said first trough section independently of said second trough section;

d) transducer means responsive to weight applied thereto for generating an electrical signal having a value commensurate with said weight;

e) second support means for supporting said second trough section with essentially frictionless engagement between said second support means and said second trough section;

f) means connecting said second support means with said transducer means to apply at least a portion of the weight of said second trough section and the contents thereof to said transducer means; and

g) variable speed rotary drive means for said auger means, said drive means having a speed responsive to said electrical signal value and so related thereto that the speed of rotation of said auger means, and thus the rate of delivery of said material to said discharge location in terms of weight per unit of time, corresponds essentially to said desired rate.

5,184,755

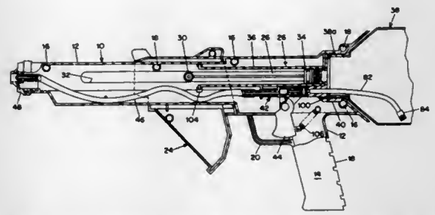
TOY WATER GUN UTILIZING AN AIR PRESSURE PUMP

Virginio Brovelli, Taino, Italy, assignor to Lanard Toys Limited, Kowloon, Hong Kong

Filed Dec. 11, 1991, Ser. No. 805,475
Int. Cl.[5] A63H *3/18*
U.S. Cl. 222—79 **7 Claims**

1. In a toy water gun including a hollow elongated case having a hand grip portion for grasping by a user, a water reservoir that has a neck and is attached to the case at the neck, an air pump having a cylinder member forming a chamber, a piston and piston rod received in the cylinder member, and a one-way valve on the piston, the air pump being mounted in the case and communicating through a one-way valve in an outlet end of the cylinder member with the water reservoir

such that air under pressure can be pumped into the reservoir by operation of the air pump, a flexible discharge tube leading to a nozzle mounted on the case, and a normally closed discharge control valve interposed between the water reservoir and the discharge tube, the discharge control valve being operable to enable water to flow from the reservoir to and out of the nozzle, the improvements comprising a flange plate affixed to the outlet end of the cylinder member, an integral



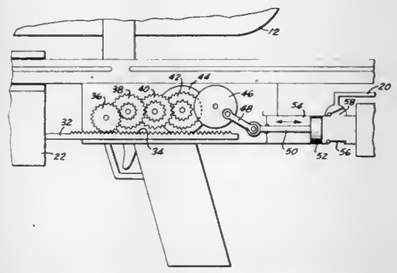
tubular boss extending from the flange plate externally of the cylinder member outlet end, the boss being a valve body of the discharge control valve, and an annular gasket on the perimeter of the flange plate laterally outwardly of the cylinder member and tubular boss forming a seal with the neck of the water reservoir, whereby the air pump outlet to the water reservoir through the one way valve and the inlet to the discharge control valve communicate directly with the reservoir.

5,184,756

FLYWHEEL WATER GUN

Alan B. Amron, Syosset, N.Y., assignor to Talk To Me Products, Inc., Syosset, N.Y.

Filed Jul. 18, 1991, Ser. No. 732,213
Int. Cl.[5] A63H *3/17*
U.S. Cl. 222—79 **4 Claims**



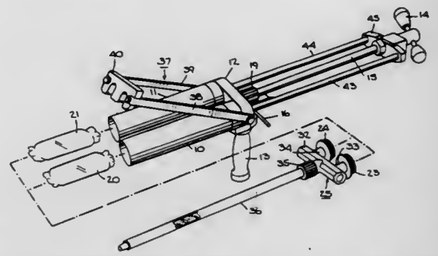
1. A water gun having a water reservoir adapted to receive water, a pump having a piston adapted to be reciprocated in a piston chamber, an outlet conduit connecting an outlet of said piston chamber to said water reservoir, a hand-operated member adapted to be actuated by an operator to a first position, means including a flywheel connected between said member and the piston of said piston pump for reciprocating said piston within said piston chamber upon actuation of said member to said first position and to maintain momentum to continue to reciprocate said piston upon return of said member from said first position.

5,184,757

DOUBLE-BARRELED EPOXY INJECTION GUN

Anthony C. Giannuzzi, 59 Dingletown Rd., Greenwich, Conn. 06830

Continuation-in-part of Ser. No. 674,463, Mar. 25, 1991. This application Jun. 10, 1991, Ser. No. 712,590
The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.
Int. Cl.[5] B67D *5/52*
U.S. Cl. 222—82 **9 Claims**



1. A double-barreled gun adapted to eject a two-component chemical agent whose viscous components are stored in separate sealed foil packs, said gun comprising:

(a) a pair of coextensive barrels having leading ends to receive the respective foil packs;

(b) a removable manifold provided with end caps each having a port therein and a foil-opening element, said caps fitting the lading ends of the barrels, the ports in said caps being couplable to a common outlet;

(c) a piston slidable in each barrel behind the pack therein; and

(d) an operating mechanism coupled to the pistons to effect concurrent advance thereof to an extent determined by the operating mode of the gun, said gun being operable in an injection mode in which the operating mechanism causes the pistons to advance to force the packs against the foil-opening elements to create an opening in the packs and then to extrude the components from the packs into the ports, the pistons in this mode advancing to where the packs are then in a crushed state, said gun being thereafter operable in an ejection mode in which the manifold is removed to expose the crushed packs, and the pistons are then further advanced to eject the crushed packs from the barrels.

5,184,758

PRESSURE MEDIUM-DRIVEN DISPENSING APPLIANCE FOR OPERATING DOUBLE CARTRIDGE CASES

Wilhelm A. Keller, Riedstrasse 1, CH-6330 Cham, Switzerland

Continuation of Ser. No. 147,798, Jan. 25, 1988, Pat. No. 4,911,328. This application Jan. 30, 1990, Ser. No. 472,034
Claims priority, application Switzerland, Jan. 26, 1987, 00252/87
Int. Cl.[5] B67D *5/46;* **B05C** *17/015*
U.S. Cl. 222—137 **4 Claims**

1. In a dual component pneumatically operated caulking gun utilizing a pneumatic cylinder assembly having a pneumatic cylinder including a forward bulkhead, a rear bulkhead, a piston movable axially within the cylinder and dual piston rods carried by the piston extending through the forward bulkhead and terminating in ejector rams and a dual component cartridge assembly carried by the forward bulkhead assembly for supporting a pair of component cartridges in operable position with respect to the ejector rams, an improvement in the cylinder assembly permitting ease of piston movement and bidirectional power movement thereof comprising:

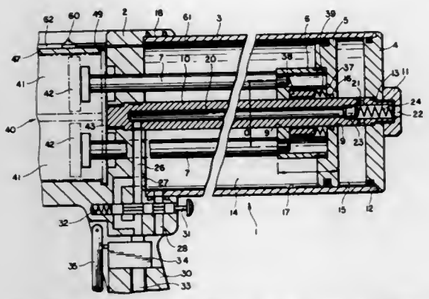
a hollow air transfer and piston guide tube having first and

VOL 1147 ISS 2 FE 9 1993 UMI

second ends disposed within the cylinder concentrically thereof extending through an aperture within the piston and secured at its first end by the forward bulkhead and at its second end by the rear bulkhead;

first air passage means communicating with the first end of the guide tube;

second air passage means communicating between the second end of the guide tube and the cylinder adjacent the rear bulkhead;



third air passage means communicating with the cylinder adjacent the forward bulkhead; and

air valve means to selectively port a source of air pressure to the first and third air passage means to selectively move the piston and associated piston rods and ejector rams axially upon the piston guide tube in eject and retract directions.

5,184,759

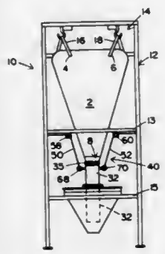
APPARATUS FOR ELONGATING A BULK BAG AND A BULK BAG UNLOADING STATION INCORPORATING THE SAME

David R. Gill, Phillipsburg, N.J.; Larry J. Duca, Bethlehem, Pa.; Robert M. Badway, Easton, Pa.; Michael W. Walsh, Easton, Pa., and John F. Simonof, Easton, Pa., assignors to Flexicon Corporation, Phillipsburg, N.J.

Filed May 3, 1991, Ser. No. 695,700

Int. Cl.[5] B67D *5/06*

U.S. Cl. 222—181 **19 Claims**



1. An improved bag dispensing station of the type having a vertically oriented supporting frame that includes spaced apart bag supporting, discharging and dispensing sections, the bag supporting section including means for suspending a bulk bag with an outlet portion of said bag depending downwardly toward the discharging section, said discharging section including a spout for attachment to the outlet of said bag, said dispensing section including a hopper for receiving material dispensed from the bag, the improvement being:

said spout being a movable, rigid dispensing spout which is movably positioned in the discharge section and depends from the outlet portion of the bag; the entire dispensing spout movable toward the hopper to causes bag elongation during material discharge.

5,184,760

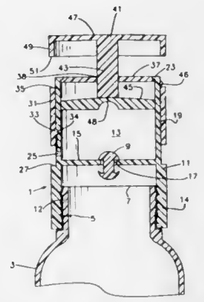
METERED SIDE DISPENSING CAP FOR TUBES

Jack Weinstein, Manchester Township, Ocean County, and Kenneth P. Glynn, Rariton Township, Hunterdon County, both of N.J., assignors to Primary Delivery Systems, Inc., Easton, Pa.

Filed Oct. 11, 1991, Ser. No. 775,036

Int. Cl.[5] B65D *37/00*

U.S. Cl. 222—207 **20 Claims**



1. A metered side dispensing cap system for attaching to squeezable containers, which comprises:

(a) a chamber unit having an inside and an outside, a bottom, sidewalls and a top and having an inlet opening in said bottom for flow of a material from a squeezable container into said chamber, having an outlet opening on a sidewall located near said bottom for dispensing material from the chamber in a metered amount, having an opening at said top for receiving a piston rod and having means for attachment of said chamber unit to an open neck of a squeezable container;

(b) a one-way valve located in said inlet opening on the bottom of said chamber unit, permitting flow of material from a squeezable container through said opening and preventing backflow of material back into said container;

(c) a gate located on the outside of said chamber unit near said outlet opening movably attached thereto so as to be movable vertically to an upward position and to a downward position whereby, in said upward position, said outlet opening remains open and, in said downward position, said gate closes off said outlet opening; and,

(d) a piston mechanism having a wide top, a piston rod and a piston head, said piston head being movably located within said chamber unit and having a cross-sectional area which is the same as the inside of said chamber unit, said piston rod running from said piston head through the opening in the top of said chamber unit top, said piston mechanism being capable of upward movement by material entering the chamber unit when a squeezable container is squeezed and material enters said chamber unit through said inlet opening, and capable of downward movement when its wide top is pushed downward, so as to dispense material through said sidewall outlet opening, said piston mechanism having its wide top extend downward on the outside of said chamber unit so as to contact said gate and move said gate from its upward position to its downward position when said wide top is pushed downward.

5,184,761

DISPENSING APPARATUS

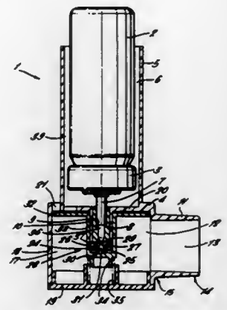
Graham S. Lee, Norfolk, United Kingdom, assignor to Bespak plc, King's Lynn, United Kingdom

Filed Sep. 17, 1991, Ser. No. 760,448

Claims priority, application United Kingdom, Sep. 20, 1990, 9020555

Int. Cl.[5] B65D *83/00*

U.S. Cl. 222—402.2 **9 Claims**



1. Dispensing apparatus comprising a housing defining a socket receiving in use a pressurised dispensing container of the type having a tubular valve stem biassed into an extended position and having first valve means operable to dispense fluid through the stem when the stem is depressed, the housing defining an airway extending from an inlet means open to the atmosphere to an outlet defined by a mouthpiece whereby inhalation of a user results in an air flow through the airway, the apparatus further comprising an actuator in which the stem is sealingly received in use such that the actuator and the stem together define a first chamber into which fluid is dispensable by operation of the first valve means, a second valve means normally closing the first chamber and actuatable to release fluid from the first chamber to flow into the airway, the second valve means comprising a valve member located externally of the first chamber and cooperable with a valve seat of the actuator, and a flow sensor arranged in the airway and operable to actuate the second valve means in response to a flow of air being sensed in the airway, wherein the flow sensor comprises a piston which is axially movable in response to the flow of air in a bore defined by the housing between first and second positions corresponding to closed and open conditions of the second valve means respectively, the piston being connected directly to the valve member and provided with biassing means urging the piston into the first position in which the valve member is biassed into sealing contact with the valve seat.

5,184,762

HARNESS FOR CARRYING CONTAINERS

Bryant D. Nevitt, 22 Vista del Ponto, San Clemente, Calif. 92672

Filed Jan. 27, 1992, Ser. No. 826,484

Int. Cl.[5] A45F *5/00*

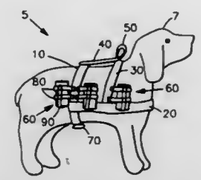
U.S. Cl. 224—148 **5 Claims**

I. An apparatus enabling an animal to carry beverage containers, comprising:

a harness for mounting on the animal, the harness having at least one vertically disposed, adjustable, trunk strap for tightly encircling the body of the animal;

a plurality of means for supporting a cylindrical container, each of the supporting means having a pair of horizontally disposed ring shaped straps aligned one above the other and held in place by a vertical U-shaped strap interconnecting the two rings, the combination forming a support frame for the container to be placed such that the ring shaped straps encircle the container and the U-shaped strap prevents the container from falling out of the ring shaped straps, the container being easily placed into the upper ring shaped strap and then moved vertically into position against the U-shaped strap for carrying;

each of the ring shaped straps having an attachment tab for connecting the supporting means to the harness, the tabs



of each of the ring shaped straps being oriented one above the other whereby inertial forces generated by movement of the animal are transferred to the container, the container then urging the ring shaped straps to ellipsate, thereby increasing the holding forces of the ring shaped straps on the container.

5,184,763

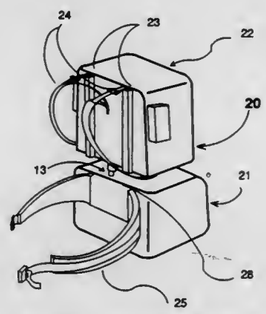
MODULAR, FREE MOVEMENT BACKPACK SYSTEM

Richard W. Blaisdell, 3012 Fairmount Ave., San Diego, Calif. 92105; David A. Baer, 4251 Felton St., San Diego, Calif. 92104, and Shiy P. Singh, 2275 Bratton Valley Rd., Jamal, Calif. 92035

Filed Oct. 16, 1991, Ser. No. 776,995

Int. Cl.[5] A45F *3/08*

U.S. Cl. 224—211 **5 Claims**

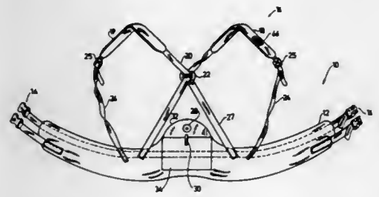


1. A backpack system comprising: an upper module and a lower module wherein said modules are detachably connected by a three axes ball joint assembly which permits independent movement of said upper and lower modules, said upper module having an upper frame and an upper container, said upper frame including two substantially parallel upper vertical support members connected at one end by an upper horizontal member, wherein said upper horizontal member provides an upper means for mounting a portion of said ball joint assembly, said upper container including a backpack shoulder harness connected to an upper bag having two upper backpack parallel padded pockets for receiving and retaining said vertical support members of said upper frame, said lower module having a lower frame and a lower container, said lower frame including two substantially parallel lower vertical support members connected at one end by a lower horizontal member, wherein said lower horizontal member provides a lower means for mounting another portion of said ball joint assembly, and said lower container comprising a backpack waist belt attached to a lower bag, having two lower backpack parallel padded pock-

VOL 1147 ISS 2 FEB 9 1993 UMI

ets for receiving and retaining said vertical support members of said lower frame, wherein said ball joint assembly provides a means for detachably connecting said upper and said lower modules such that said upper and lower modules can be independently worn by a user.

5,184,764
LOAD SUPPORT
Ziv Orovan, and Yitzchak Orovan, both of 23 Moshav Talmei Yehiel, Mobile Post North Lachish 79 810, Israel
Filed Jul. 11, 1989, Ser. No. 378,272
Claims priority, application Israel, Jul. 11, 1988, 87073
Int. Cl.[5] A45F *3/04*
U.S. Cl. 224—215 **6 Claims**

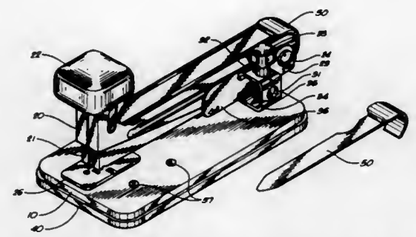




4. A load support comprising:
a central body mounting assembly;
a shoulder mounting assembly;
a load support member supported on the central body mounting assembly and on the shoulder mounting assembly; and
stretchable resilient means interconnecting the shoulder mounting assembly and the central body mounting assembly in order to accommodate variations in the distance between the shoulders and the waist depending on the body orientation of the user for generally maintaining a desired distribution of a load on the load support member between the central body mounting assembly and the shoulder mounting assembly notwithstanding changes in the relative orientations thereof.

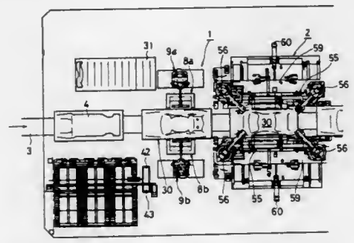
5,184,765
PERFORATOR COUPLED WITH STAPLER AND STAPLE REMOVER AND THEIR EMBODIMENTS
Hector M. Orozco, Av. Prolongacion Constitucion 57, Colonia Santiago Tepetlacalco Delegacion Xochimilco, Mexico D.F., 16200, Mexico
Filed Jan. 13, 1992, Ser. No. 819,951
Int. Cl.[5] B25C *7/00*
U.S. Cl. 227—27 **4 Claims**

1. A stapling and perforating apparatus comprising:
a rectangular-shaped base having downwardly bent edges, said edges defining a box area below said base;
a support plate affixed to said base and extending upwardly therefrom, said support plate having a flat vertical surface extending from said base;
a stapler pivotally interconnected to and above said base;
a single punch interconnected to said base generally adjacent to said support plate, said punch mounted on a structure, said punch having an impact button on one end, said punch having a spring for maintaining said impact button in a position above said structure;
a plurality of cylindricallyshaped protuberances extending upwardly from said base a desired distance form said punch, said protuberances being in linear alignment, said protuberances being offset form a plane of said support plate;



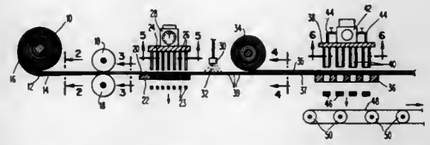
a tray removably fastened to said box area below said base, said tray for receiving waste particles formed from a perforation by said punch; and
a generally flat lancet having hewn edges slidably received within a slot formed in said stapler.

5,184,766
ASSEMBLY LINE CONSTRUCTION AND METHOD FOR ASSEMBLING AUTOMOTIVE VEHICLE BODIES
Sakae Takahashi; Mamoru Maezima, and Yuji Takahashi, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Mar. 29, 1991, Ser. No. 677,563
Claims priority, application Japan, Mar. 31, 1990, 2-85805
Int. Cl.[5] B23K *37/04, 37/047*
U.S. Cl. 228—4.1 **30 Claims**



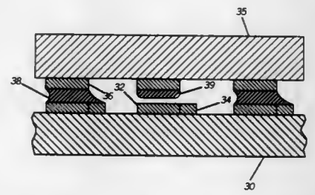
1. An assembly line for assembling an automotive vehicle body, comprising:
a welding station disposed in a vehicle body assembly line for welding a first member and a second member, each being a structural element of the automotive vehicle body; and
an assembling station disposed in the vehicle body assembly line immediately upstream from the welding station for aligning the first member with the second member and for temporarily assembling the first member with the second member to form a temporarily assembled body;
wherein the assembling station has a presetting unit for aligning the first member with the second member and an assembling unit for temporarily assembling the first member with the second member;
wherein at least one of the first member and the second member is provided with plural paw sections; and
wherein the assembling unit assembles the first member temporarily with the second member by folding the plural paw section provided on at least one of the first member and the second member.

5,184,767
NON-WICKING SOLDER PREFORM
Howard S. Estes, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.
Filed Dec. 31, 1991, Ser. No. 816,134
Int. Cl.[5] B23K *35/14*
U.S. Cl. 228—56.3 **29 Claims**



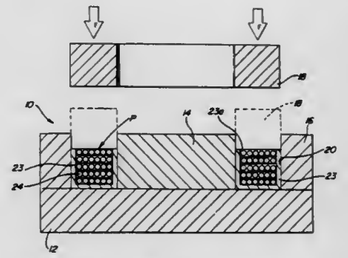
1. A wicking-resistant solder preform, suitable for mounting a lead to a printed circuit board comprising:
a solder layer for electrically mounting said lead to said printed circuit board upon heating said solder above its flow temperature said solder layer comprising an aperture therein for receiving said lead;
a flux layer disposed in contact with said solder layer;
a wicking barrier disposed on a component-facing side of said solder layer and disposed for minimizing solder wicking along said lead.

5,184,768
SOLDER INTERCONNECTION VERIFICATION
Robert S. Hall, Barrington Hills, Ill.; Glenn F. Urbish, Coral Springs, and William B. Mullen, III, Boca Raton, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 29, 1990, Ser. No. 619,944
Int. Cl.[5] H05K *3/34*
U.S. Cl. 228—104 **28 Claims**



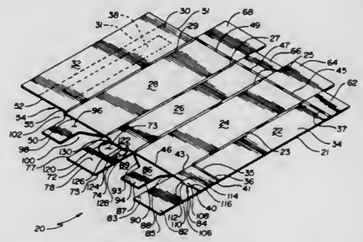
1. A solder interconnection verification system, comprising:
a component having solder pads;
solder material applied to the component solder pads;
a substrate having solder pads substantially corresponding to the component solder pads, substantially all of said corresponding substrate solder pads having a solderable portion extending from the solder pads;
the component being positioned on the substrate such that the component solder pads are substantially aligned with the substrate solder pads;
heating means for melting the solder material such that the component solder pads are soldered to the substrate solder pads; and
inspection means for verifying the wetting of the solder material to the substrate solder pads, by inspecting the substrate solder pads after melting the solder material.

5,184,769
TOOLING AND METHOD FOR CONSOLIDATING A FILAMENTARY REINFORCED METAL MATRIX COMPOSITE
Donald J. Moracz, Garfield Heights, and Gordon S. Doble, Shaker Heights, both of Ohio, assignors to Avco Corporation, Providence, R.I.
Continuation of Ser. No. 661,543, Feb. 26, 1991, abandoned, which is a continuation of Ser. No. 385,737, Jul. 26, 1989, abandoned. This application Nov. 13, 1991, Ser. No. 793,267
Int. Cl.[5] B23K *20/02*
U.S. Cl. 228—121 **7 Claims**



1. A method for forming a filamentary reinforced metal matrix composite, comprising:
(a) positioning a preform of said composite in an annulus that is made of said metal matrix, said annulus disposed in an annular chamber formed between a central die member and an outer die member, said central die member having a coefficient of thermal expansion greater than that of said outer die member and said composite to be formed in said chamber,
(b) positioning an annular punch in said chamber,
(c) pressing said punch against the preform in said chamber at an elevated temperature to consolidate said preform and said annulus into said composite, said central die member and outer die member having dimensions selected in conjunction with their coefficients of thermal expansion to apply a transverse compression on the preform during hot pressing to substantially prevent transverse bulging of the preform, and
(d) removing said composite from said chamber at a temperature lower than said elevated temperature.

5,184,770
SLIDE TOP DISPENSING CARTON AND BLANK THEREFOR
Raymond A. Cote, Taylorsville, N.C., assignor to Waldorf Corporation, St. Paul, Minn.
Filed Jan. 3, 1992, Ser. No. 816,680
Int. Cl.[5] B65D *43/20*
U.S. Cl. 229—20 **14 Claims**



1. A slide top dispensing carton comprising:

VOL
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opposed generally rectangular front and rear walls disposed in spaced parallel relationship;

first and second opposed side walls disposed in spaced parallel relationship and extending between and connecting the front and rear walls, the first side wall including inner and outer panels in contacting relationship, the outer panel of the first side wall including a base portion adhered to the inner panel and a hinged portion rotatable about the base portion toward and away from the inner panel;

a bottom end closure comprising a plurality of bottom flaps, at least one foldably connected to each of the front wall, rear wall, first side wall and second side wall; and

a top wall having multiple layers and comprising a top support panel foldably connected to the second side wall at a fold line and defining the innermost layer of the top wall, the top support panel extending substantially the entire distance between the front and rear walls and the entire distance between the first and second side walls of said carton, whereby said inner panel of the first side wall supports the top support panel in a plane generally orthogonal to the front, rear, first side and second side walls of the carton, the top support panel including an aperture extending therethrough, the aperture adjacent the fold line between the top support panel and the second side wall, a slide panel foldably connected to the hinged portion of the outer panel of the first side wall, the slide panel being disposed in contact with the top support panel, and an inner and an outer top closure flap foldably connected respectively to the rear and front panel and folded over the slide panel, the inner and outer top closure flaps being substantially identical and including at least one relieved area in register with the aperture in the top support panel, whereby rotation of the hinged portion of the first side wall moves the slide panel between the top support panel and the inner top closure flap and relative to the aperture in the top support panel.

5,184,771

PACKAGING FOR PIECE GOODS

Wilfried Jud, Obergrafendorf; Franz Reiterer, Neustift-Innermanz, and Andreas Neiderer, St. Pölten-Wagram, all of Austria, assignors to Teich Aktiengesellschaft, Austria

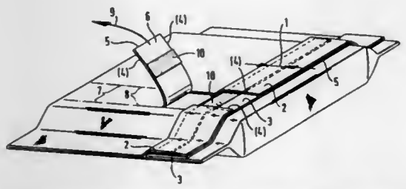
PCT No. PCT/AT90/00105, § 371 Date Jun. 26, 1991, § 102(e) Date Jun. 26, 1991, PCT Pub. No. WO91/06488, PCT Pub. Date May 16, 1991

PCT Filed Oct. 29, 1990, Ser. No. 691,009

Claims priority, application Austria, Oct. 27, 1989, 2478/89

Int. Cl.[5] B65D *75/20*

U.S. Cl. 229—87.05 **29 Claims**



1. A package for piece goods comprising a foldable, multilayer wrap material having two strip-like edge zones which are joined together in a connection area and cold sealed to form an envelope, said envelope including a strip-like tear open area starting from one of the two strip-like edge zones and extending essentially perpendicularly to this edge zone, wherein the wrap material is comprised of one of more layers of material selected from the group consisting of paper, unstretched polyolefin, aluminum foil, biaxially stretched polypropylene, biaxially stretched polyamide and biaxially stretched polyethyleneterephthalate and a sub-assembly of two or three layers of these materials, wherein the bonding between the layers of the sub-assembly is substantially stronger than the bonding between the sub-assembly and the remaining layers of the wrap material and wherein said cold seal exhibits a peel strength inside the tear-open area which is less than in other parts of the connection area.

5,184,772

MATERIAL CARTON WITH IMPROVED CLOSURE

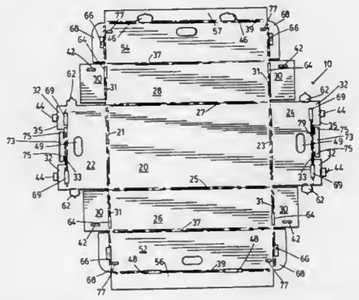
Stephen E. McGrath, R.R. 2, Lakefield, Ontario, Canada

Filed Dec. 4, 1991, Ser. No. 802,292

Claims priority, application Canada, Apr. 29, 1991, 2041426

Int. Cl.[5] B65D *5/66, 5/30*

U.S. Cl. 229—143 **4 Claims**



1. A carton formed of plastics material comprising:

a carton body having a rectangular base with a longitudinal axis and a transverse axis; two transverse walls folded up from the base at 90 degrees, oriented parallel to the transverse axis of said base and located remotely one from the other at opposite ends of said base; two longitudinal walls folded up from the base at 90 degrees, parallel to the longitudinal axis of said base and located remotely one from the other at opposite sides of said base, each of said longitudinal walls having extension panels folded in from opposed ends thereof at 90 degrees to be flush with, and inside, the transverse walls; each of said transverse walls having two top edge end panels folded at 180 degrees to be flush with and inside said extension panels, and a top edge elongate mid panel attached to its respective wall over a portion of one longitudinal edge of said elongate mid panel and having free end portions;

a lid movable between open and closed position with respect to a carton the lid comprising a pair of rectangular lid panels each having a first edge corresponding in length to a top edge of one of said longitudinal walls, and joined thereto through a hingable fold lien, and a second long edge opposed to said first edge, an edging panel of each of said lid panels being joined to the lid at 90 degrees through a hingable fold line at said second edge, the lid panels being configured such that said second long edges and said edging panels abut in a closed position of the lid;

releasably inter-engaging tabs and slots being provided between said lid panels, and between each of said top edge panels with respective ones of said extension panels, whereby on release of the tabs and slots, the carton is foldable into a flat carton blank; and in which each of said mid panels is foldable at 90 degrees to its respective wall portion to overlie both lid panels in the closed position of the lid and, when overlying said lid panels each of said free ends of the mid panel is engagable in a latching slot of respective ones of said lid panels, the latching slots being located for this purpose.

5,184,773

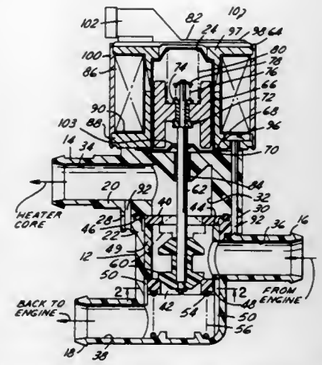
PRESSURE REGULATING HEATER CONTROL VALVE

Gary M. Everingham, Chatham, Canada, assignor to Siemens Automotive Limited, Chatham, Canada

Filed Jun. 24, 1992, Ser. No. 903,645

Int. Cl.[5] F01P *7/14*

U.S. Cl. 237—12.3 B **22 Claims**



1. In an automotive vehicle having a passenger compartment and a heating system for the passenger compartment that comprises a heat exchanger through which heat delivering liquid is pumped by a pumping means to the extent allowed by a heater control valve, the improvement wherein said heater control valve comprises first, second and third ports via which it is fluid connected with said pumping means and said heat exchanger, said valve comprising a body having a straight bore, said ports having communication with said bore at spaced apart locations along the length of said bore, a first valve seat circumscribing said bore between the location at which said first port has communication with said bore and the location at which said second port has communication with said bore, a second valve seat circumscribing said bore between the location at which said second port has communication with said bore and the location at which said third port has communication with said bore, said second valve seat having an annular shape, a valve element disposed within said bore for selective positioning within said bore between said valve seats for respective coaction with said valve seats to selectively 1) seat on an annular seating zone of said second seat and thereby allow fluid communication between said first and second ports while disallowing said third port to fluid communicate with said first and second ports through said second valve seat, 2) seat on neither of said seats and thereby allow fluid communication between all three ports, and 3) seat on said first seat and thereby allow fluid communication between said second and third ports while disallowing said first port to fluid communicate with said second and third ports, said bore comprising a shoulder that faces away from the location at which said second port communicates with said bore and toward the location at which said third port communicates with said bore, and means acting on said second valve seat for selectively positioning same within said bore comprising means resiliently biasing said second valve seat toward said shoulder and means exposing selected surface areas of said second valve seat that are to either side of said seating zone to fluid pressure differential acting on said surface areas such that when there is less than a certain pressure differential acting on said selected surface areas, said second valve seat is seated on said shoulder, and when there is greater than a certain selected pressure differential acting on said surface areas, said second valve seat is unseated from said shoulder.

5,184,774

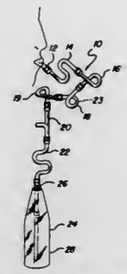
DRINKING STRAW ASSEMBLY KIT

Eric Lipson, 213 S. Bonsall St., Philadelphia, Pa. 19103

Filed May 13, 1991, Ser. No. 699,191

Int. Cl.[5] A47G *21/18*

U.S. Cl. 239—33 **7 Claims**



1. A drinking kit for assembly and reassembly into a variety of configurations, said kit comprising:

a plurality of tubular drinking straws having first and second ends, at least some of said plurality of straws being nonlinear in configuration;

connecting means for connecting the first end of one of said plurality of straws to the second end of any other of said

a tubular mouthpiece having a first end for removable connection to said connecting means and a second end free of any connection means for insertion into a user's mouth, so that said plurality of straws and mouthpiece can be assembled to form a drinking passage configuration selected by said user and reassembled to form a different drinking passage configuration as desired.

5,184,775

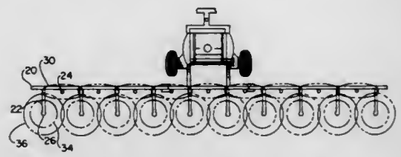
FIELD CROP SPRAYER

Philip S. Kerber, Rte. 2, Box 36, Baudette, Minn. 56623

Filed Apr. 19, 1991, Ser. No. 687,839

Int. Cl.[5] A01C *23/04*

U.S. Cl. 239—163 **8 Claims**



1. A field crop sprayer assembly comprising:

a main boom carrying a plurality of flat fan tip nozzles arranged for downward spraying, each nozzle tip being a predetermined distance apart on the main boom, and

a trailing boom carrying a plurality of round tip nozzles arranged for downward spraying, each nozzle being a predetermined distance apart on the trailing boom, the trailing boom being spaced a predetermined distance behind the main boom.

5,184,776

PNEUMATIC ATOMIZER

Jacques Minier, Talant, France, assignor to Commissariat a l'Energie Atomique, France

Filed Sep. 11, 1991, Ser. No. 757,812

Claims priority, application France, Sep. 27, 1990, 90 11932

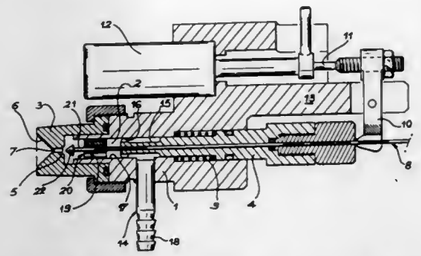
Int. Cl.[5] B05B *7/02, 12/10*

U.S. Cl. 239—417 **6 Claims**

1. Atomizer comprising a capillary in which liquid to be

VOL
1147
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atomized flows, the capillary having a conical end, the conical end being lodged in a chamber in which atomizing gas flows, the chamber being connected to a narrowed outlet bore through a conical cavity, the conical end and the conical cavity being coaxial to an axis, having a same aperture and tapering towards the outlet bore, the liquid flowing out of the capillary directly past the conical end and into the chamber or the conical cavity and the capillary being fixed to a part moving along the axis.



5,184,777
SHOWER WITH MANIPULABLE HEAD AND SELECTIVE OUTFLOWS

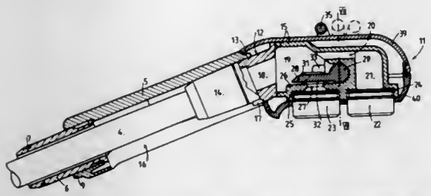
Alain Magnenat, Annemasse; Daniel Meylan, Versoix, and Jean-Jacques Rodriguez, Douvaine, all of France, assignors to Kugler, Fonderie et Robinetterie S.A., Geneva, Switzerland

Division of Ser. No. 642,215, Jan. 16, 1991. This application Jul. 1, 1992, Ser. No. 907,031

Claims priority, application Switzerland, Jan. 26, 1990, 262/90

Int. Cl.[5] B05B *1/16, 1/12*

U.S. Cl. 239—447 **6 Claims**



1. A sanitary shower comprising a head having a water inlet and two outlets each communicating with a chamber within the head for dispensing water through the two outlets, and an obturating member in the head that has a pivotally mounted end and one free end that swings about an axis that passes through said pivotally mounted end and that is perpendicular to said outlets, said member in one position closing one said outlet and leaving the other said outlet open and in another position leaving said one outlet open and closing said other outlet against the flow of water from said inlet, said obturating member comprising a flap which in said one position comes into sealing contact with a seat surrounding an opening communicating with said one outlet and in said other position comes into sealing contact with a seat surrounding the upstream end of a passage communicating with said other outlet at locations on opposite sides of said flap between said axis and said one free end.

5,184,778
ELECTROSTATIC SPRAYING APPARATUS

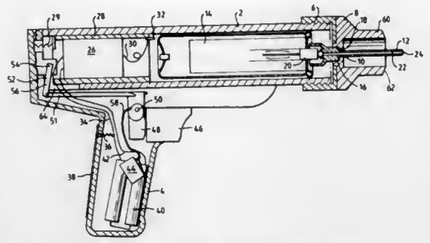
Timothy J. Noakes, Pantymwyn, United Kingdom, assignor to Imperial Chemical Industries PLC, London, United Kingdom

Filed Mar. 11, 1992, Ser. No. 849,351

Claims priority, application United Kingdom, Mar. 13, 1991, 9105327

Int. Cl.[5] B05B *5/00*

U.S. Cl. 239—691 **14 Claims**



1. An electrostatic spraying device comprising:

a nozzle;

means for supplying to the nozzle liquid having a suitable resistivity for electrostatic spraying;

high voltage generator means producing a pulsed output which is applied to the liquid so that liquid discharged from the nozzle is formed into a spray under the influence of electrostatic forces;

means for providing an earth return path from the input side of the generator means through part of the device such that, during handling of the device, the path to earth is completed through the user;

first high resistance means associated with the nozzle whereby the energy which can be drawn to earth, in normal use, from the nozzle in any one discharge is no greater than 0.2 milli Joules; and

second high resistance means provided between said part and the input side of the generator means for smoothing the voltage pulses arising at the input side of the generator means in the event of the nozzle being contacted with a low potential such as an earthed object.

5,184,779
METHOD OF PRODUCING GRANULATED MATERIAL COMPOSED OF ZINC OXIDE AND SILICA, RESULTING PRODUCT AND ITS USE

Siegfried Wolff, Bornheim-Merten, and Karl Meier, Alfter, both of Fed. Rep. of Germany, assignors to Degussa Akiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

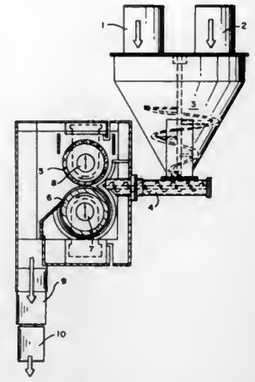
Filed Sep. 10, 1991, Ser. No. 756,201

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1990, 4029158

Int. Cl.[5] B02C *23/08*

U.S. Cl. 241—3 **14 Claims**

1. A method for the production of readily dispersible granulated material of zinc oxide and precipitated silica, comprising forming a homogeneous mixture of 5 to 95% by weight zinc oxide and 95 to 5% by weight precipitated silica, transporting said mixture by conveying means to rolling pressure means, compacting said mixture, then subjecting the resulting compacted mixture to a cake breaker to form granulated material of a desired maximum particle size and a remaining dustlike component, and separating said granulated material of a desired maximum particle size from said dustlike component.



5,184,780
SOLID WASTE DISPOSAL

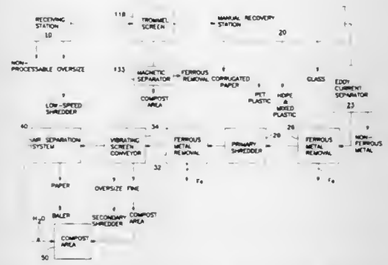
Thomas J. Wiens, Englewood, Colo., assignor to First Dominion Holdings, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 416,711, Oct. 3, 1989, Pat. No. 5,071,075, which is a continuation-in-part of Ser. No. 220,791, Jul. 18, 1982, Pat. No. 4,874,134. This application Mar. 12, 1991, Ser. No. 668,243

The portion of the term of this patent subsequent to Oct. 17, 2006, has been disclaimed.

Int. Cl.[5] B02C *21/00*

U.S. Cl. 241—19 **19 Claims**



1. A process for treating solid waste materials and forming a compost from biodegradable waste material fractions, said process comprising:

receiving untreated solid waste material at a receiving station;

manually removing bulky valuables and non-processable materials from said untreated waste material;

separating said waste material into a first fine fraction, and at least one other fraction;

conveying said first fine fraction to a composting station;

separating redeemable materials including a non-ferrous metal fraction and a first ferrous metal fraction from said at least one other fraction of waste material;

said separating redeemable materials step including passing said at least one other waste material fraction through an eddy current separator for removing said non-ferrous metal fraction and then through a magnetic separator to remove said first ferrous metal fraction;

comminuting said at least one other fraction after separating out said first ferrous metal fraction;

pneumatically separating a paper fraction from said comminuted waste material leaving a substantially biodegradable fraction; and

forming a compost from said substantially biodegradable fraction and said first fine fraction.

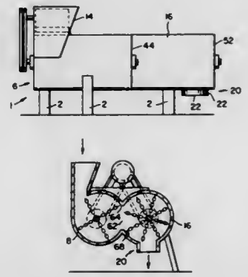
5,184,781
GLASS PULVERIZER

James Andela, R.D. #3, Box 246, Richfield Springs, N.Y. 13439

Filed Jan. 14, 1992, Ser. No. 766,832

Int. Cl.[5] B02C *13/10*

U.S. Cl. 241—62 **13 Claims**



1. An improved glass pulverizer of the type having a first hollow housing, an inlet means leading to the interior of the first housing, an outlet means operatively located in said first housing, a first rotatable chain-type flail assembly located within said first housing wherein said flail assembly comprises a first rotatable shaft means and a first plurality of multi-link chain flails that are mounted at one end to said first shaft means, a rotator means connected to said first shaft means to rotate said first shaft means and wherein the improvement comprises:

a second hollow housing operatively connected to the first housing and having a second rotatable chain-type flail assembly located within its interior, said second flail assembly comprising a second rotatably shaft means with a second flail assembly of multi-link chain flails attached to said second shaft means and wherein the rotator means is connected to said second shaft means to rotate said second shaft means;

wherein the outlet means of said first housing is a side opening, said second housing also having a side opening and wherein said side openings are connected to each other in a manner that allows material to travel back and forth between said housings via the side openings; and

wherein the first and second housings have an elongated cylindrical shape and wherein said second housing is longer than said first housing and therefore has a portion that extends past an end of the first housing and wherein an outlet means of the pulverizer is located on said extending portion proximate an end of said extending portion.

VOL 1147 ISS 2 FEB 9 1993 UMI

5,184,782

TUBLAR MILL

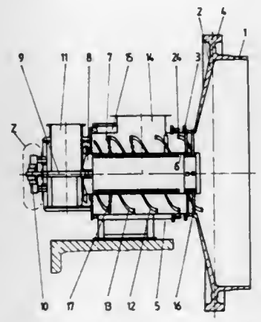
Johannes Kerstges, and Hubert Brosdetzko, both of Oberhausen, Fed. Rep. of Germany, assignors to Deutsche Babcock Energie- und Umwelttechnik AG, Oberhausen, Fed. Rep. of Germany

Filed Oct. 8, 1991, Ser. No. 774,530

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1990, 4031928

Int. Cl.[5] B02C *17/00*

U.S. Cl. 241—171 7 Claims



1. A tube mill comprising: a cylindrical jacket with two ends; a conical wall at each of said ends; a neck portion merging into said conical wall; a stationary intake-and-outlet housing connected to said neck portion; a tube radially spaced within said intake-and-outlet housing; a feed screw surrounding said tube and having threads loosely attached to said tube; a shaft connected to said feed screw; bearing means outside said mill and mounting said shaft; bearing housing with a circumference for holding said bearing means; a continuous ring surrounding said bearing housing at a spaced distance therefrom; and a plurality of tensioned springs between said continuous ring and said bearing housing, said springs being uniformly distributed around the circumference of said bearing housing.

5,184,783

BASKET MEDIA MILL AND METHOD

Herman H. Hockmeyer, Saddle River, and John A. Paterson, Point Pleasant, both of N.J., assignors to Hockmeyer Equipment Corp., Harrison, N.J.

Filed Dec. 3, 1991, Ser. No. 802,137

Int. Cl.[5] B02C *17/00*

U.S. Cl. 241—172 20 Claims

1. A media basket mill for dispersing a selected constituent into a liquid vehicle to produce a mixture of the constituent and the liquid vehicle within a mixing vessel, the media basket mill comprising:

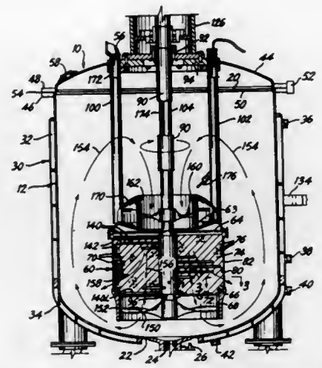
a basket having an interior and a basket wall including an inner surface and an outer surface, the basket extending axially between a first end and a second end and including an entrance at the second end;

a multiplicity of openings in the basket wall, the openings extending from the inner surface to the outer surface of the basket wall;

a media bed in the interior of the basket, the media bed including discrete media elements, the relative dimensions of the media elements and the openings in the basket wall being such that the media bed is retained within the interior of the basket;

first impeller means for establishing a first pressure differential adjacent the first end of the basket for moving the mixture along a circuit through the basket, and through the media bed in the basket, when the basket is immersed in the mixture in the vessel; and

second impeller means for establishing a second pressure differential adjacent the second end of the basket for assisting in the movement of the mixture along the circuit



into the entrance to the basket and through the basket, and through the media bed in the basket, to increase the throughput of the mixture through the basket and the media bed in the basket, while deterring escape of media elements from the basket through the entrance at the second end of the basket.

5,184,784

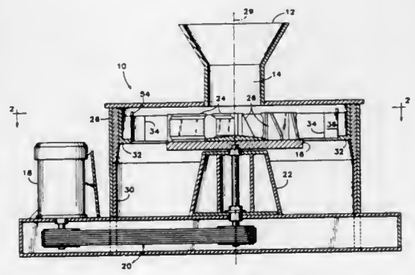
ANVIL FOR USE IN A CENTRIFUGAL IMPACT CRUSHER

Neil M. Rose, Vancouver, Wash.; Stephen B. Ackers, Portland, Oreg.; William F. Burr, Ridgefield, and Brett M. Rose, Vancouver, both of Wash., assignors to Canica Crushers, Inc., Vancouver, Wash.

Continuation-in-part of Ser. No. 567,640, Aug. 15, 1990, abandoned. This application Apr. 17, 1991, Ser. No. 686,506

Int. Cl.[5] B02C *19/00*

U.S. Cl. 241—275 2 Claims



1. An anvil system for a centrigual impact crusher with a housing having a circular cylindrical inner wall with a predetermined radius from a central axis, said anvil system having material impacted there against in order to shatter the material into smaller pieces, said anvil system comprising:

(a) a plurality of anvils each having a cylindrical radially outward surface that has the same radius as the inner wall of the housing, a radially inward surface defining an impact element, and opposed planar side surfaces, aligned generally radially, and defining a pair of vertical planes that pass through the housing central axis when said outward surface is in contact with the housing inner wall;

(b) a shelf that extends radially inward from the housing inner wall and supports said anvils against vertical displacement with the outward surface of said anvils being in direct contact with the housing inner wall, and the side surfaces of each anvil being in direct contact with the side surface of an anvil on each side thereof; and said shelf, the side walls of the anvils being in contact with one another and the inner wall of the housing in combination being the sole means for preventing displacement of said anvils from said shelf.

5,184,785

DOUBLE-SIDED TEXTILE MACHINE HAVING A PLURALITY OF WINDING UNITS FOR PRODUCING CROSS-WOUND PACKAGES

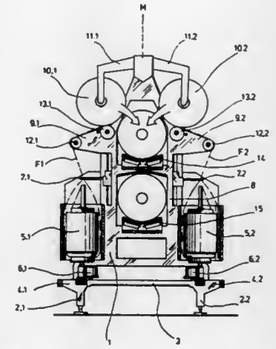
Siegfried Inger, Krefeld, and Heinz Stenmans, Grefrath, both of Fed. Rep. of Germany, assignors to Palitex Project Company GmbH, Krefeld, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 739,788, Jul. 31, 1991, abandoned, which is a continuation of Ser. No. 466,940, Jan. 18, 1990, abandoned. This application Feb. 24, 1992, Ser. No. 840,397

Claims priority, application European Pat. Off., Jan. 21, 1989, 89101042.3

Int. Cl.[5] B65H *67/06*

U.S. Cl. 242—35.50 A 6 Claims



1. In a textile yarn processing machine, such as a two-for-one twister, having a plurality of spindle assemblies for processing yarn and forming wound packages of processed yarn and arranged on said machine in two longitudinally-extending rows on opposite sides of said machine and in spaced side-by-side relationship, and a yarn package transporting mechanism extending longitudinally through said yarn processing machine between said rows of spindle assemblies for receiving wound packages of yarn doffed from said spindle assemblies on each side of said machine and transporting the packages out of said machine; the improvement of:

said yarn transporting mechanism including two conveying means arranged in at least two planes one directly on top of the other for receiving doffed wound yarn packages from each side of the machine, in the upper of said two planes and for storing doffed wound yarn packages in the lower of said two planes.

5,184,786

METHOD AND APPARATUS FOR CONTROLLING THE YARN TENSION OF YARN BEING CROSS-WOUND ONTO A BOBBIN ON A TEXTILE WINDING MACHINE

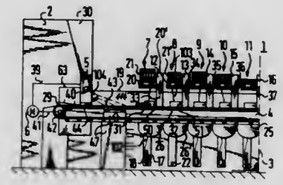
Karl-Josef Brockmanns, Willich; Josef Derichs, Monchengladbach; Edmund Wey, Nettetal; Hans Grecksch, Monchengladbach; Leo Tholen, Heinsberg, and Manfred Lassmann, Nettetal, all of Fed. Rep. of Germany, assignors to W. Schlafhorst AG & Co., Moenchengladbach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 507,104, Apr. 9, 1990, abandoned, which is a continuation of Ser. No. 253,975, Oct. 5, 1988, abandoned. This application Dec. 3, 1991, Ser. No. 803,690

Claims priority, application Fed. Rep. of Germany, Oct. 5, 1987, 3733597; Oct. 10, 1987, 3734395; Apr. 8, 1989, 3911532

Int. Cl.[5] B65H *59/38*

U.S. Cl. 242—45 15 Claims



1. A method for controlling the tension of yarn being wound on a textile winding machine, the yarn being wound at a winding speed onto a package supported on the textile winding machine, comprising:

determining the initial amount of yarn on a supply package prior to unwinding yarn therefrom; and

controlling the winding speed of the package being wound to continuously conform the winding speed to a predetermined sequence of winding speeds, said predetermined sequence of winding speeds including an initial winding speed corresponding to said determined initial amount of yarn followed by a succession of increasingly reduced winding speeds.

5,184,787

WINDING MACHINE FOR WINDING UP A TRAVELLING WEB

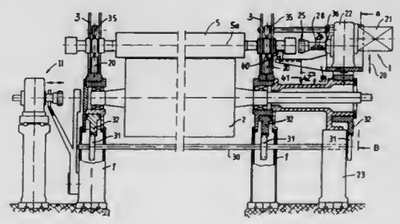
Dieter Holzinger, Herbrechtingen; Hans-Peter Sollinger, Heidenheim, and Rudolf Beisswanger, Steinheim, all of Fed. Rep. of Germany, assignors to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Mar. 8, 1991, Ser. No. 666,388

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1990, 4007329

Int. Cl.[5] B65H *18/16*

U.S. Cl. 242—65 13 Claims



1. A winding machine for winding a traveling web, comprising:

a carrying drum extending across the web;

a first pair of primary swing levers parallel and connected to swing together, each primary lever having one end in-

VOL
1147
ISS
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cluding first means for receiving a cylinder on which the web is to be wound, the first receiving means being generally radially outward of the carrying drum; each primary swing lever having an other end portion away from the first receiving means, and the other end portion being in the region of the axis of the carrying drum; the primary levers being so placed that the receiving means swings the cylinder out of a first position above the carrying drum and around a primary path in the direction of travel of the web around the carrying drum to a second position, the first receiving means and the cylinder thereon being so placed with respect to the carrying drum that the end of the web is started to be wound around the cylinder while the cylinder is at the carrying drum and before the cylinder has been moved by the first receiving means to the second position;

second means for moving the cylinder over a substantially horizontal secondary guide path from the second position to a third position away from the second position;

a center drive having a coupling element which is placed for engaging the cylinder while it is in the first receiving means for introducing a moment of rotation of the cylinder around the cylinder axis while the cylinder is moving over the primary path around the carrying drum; the center drive being connected with one of the primary levers for passing along the primary path together with the primary lever;

a sensor positioned and adapted to detect any possible distance between the axis of the cylinder and the axis of the coupling element at least in the primary path; a center drive setting device connected for receiving a signal from the sensor and adaptable for aligning the cylinder axis and the axis of the coupling for compensating for forces other than the moment of rotation, which forces would act from the center drive onto the cylinder.

5,184,788

APPARATUS FOR GUIDING AND MORE PARTICULARLY COILING WEBS OF MATERIAL

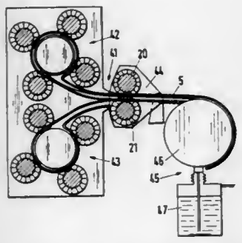
Horst Schenk, Dortmund, and Herbert Gellenbeck, Hemer, both of Fed. Rep. of Germany, assignors to Sundwiger Eisenhutte Maschinenfabrik Grah & Co., Hemer-Sundwig, Fed. Rep. of Germany

Filed Jan. 22, 1991, Ser. No. 644,172

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1990, 4003067

Int. Cl.[5] B65H *18/00, 20/00*

U.S. Cl. 242—66 **10 Claims**



1. An apparatus for coiling webs of material (5) arriving from a casting wheel (46) of a ribbon casting machine (45), comprising at least one brush roller (2, 3, 20 23-26, 29–32) and a further roller (1, 4, 15, 16, 21, 28) which forces the web of material (5) against the brush roller (2, 3, 20, 23–26, 29–32), the brush roller (2, 3, 20, 23-26) being provided with a plurality of axially spaced-out annular disc-shaped brush elements (1*b*–4*b*), and a guide cage including a plurality of stationary guide elements (12, 13, 14, 27, 37–40) which extend in the direction in which the web of material (5) runs, the guide elements extending respectively into the spaces between adjacent brush elements.

5,184,789

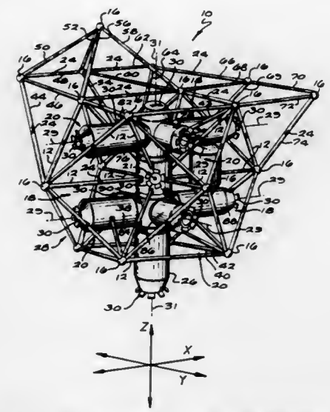
SPACE STATION FACILITY

Buzz Aldrin, 233 Emerald Bay, Laguna Beach, Calif. 92651

Filed Feb. 12, 1991, Ser. No. 654,742

Int. Cl.[5] B64G *1/10*

U.S. Cl. 244—159 **16 Claims**



1. A space station facility for use in outer space, comprising:

a pressurized module having berthing ports; and

a cuboctahedral-shaped structure connected to said pressurized module and surrounding said pressurized module so that said module is substantially centrally located within said structure, said cuboctahedral-shaped structure including a plurality of elongated members connected together to form a cuboctahedral shape, and to provide access to said berthing ports, said elongated members being of equal length and said cuboctahedral-shaped structure comprising six pyramidal-shaped modules formed by said elongated members which are connected to eight tetrahedral-shaped modules formed by said elongated members, each of said pyramidal-shaped modules having a square base and four equilateral triangular sides with a vertex thereof connected to said pressurized module near a center of said cuboctahedral-shaped structure.

5,184,790

TWO-AXIS ATTITUDE CORRECTION FOR ORBIT INCLINATION

Richard A. Fowell, Culver City, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 22, 1991, Ser. No. 733,783

Int. Cl.[5] B64G *1/28*

U.S. Cl. 244—165 **19 Claims**

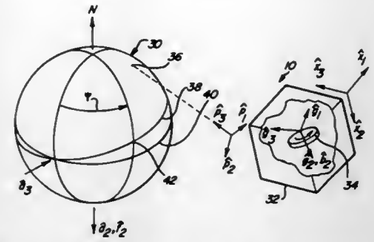
13. A method of orienting a payload of a momentum biased spacecraft in an orbit perturbed in inclination from its nominal orbit in order to maintain payload pointing with respect to an orbited body close to that obtained in a nominal orbit, said method comprising the steps of:

determining the inclination and phasing of the spacecraft orbit;

determining a desired payload orientation time history over the orbit;

calculating a coning motion in inertial space traced out by a pitch axis defined by the spacecraft payload as the payload is maintaining a desirable pointing profile throughout the orbit;

orienting the spacecraft bias momentum at substantially the center of the cone traced out by the pitch axis by applying external torque to the spacecraft to optimize the spacecraft's ability to implement the desired payload orientation time history; and



offsetting the payload axes from the bias momentum to the desired payload orientation based on the determined time history by means of offset corrections calculated from the steps of determining the inclination and phasing wherein the offsets include time-varying corrections in the yaw direction.

5,184,791

FROG TIP THAT CAN BE SHIFTED RELATIVE TO THE WING RAILS

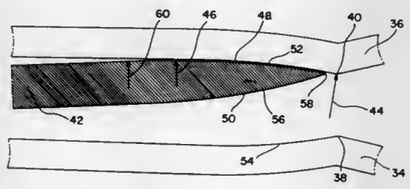
Alfred Kais, Lich-Eberstadt; Erich Nuding, Aalen, and Sebastian Benenowski, Butzbach, all of Fed. Rep. of Germany, assignors to BWG Butzbacher Weichenbau GMBA, Butzbach, Fed. Rep. of Germany

Filed May 2, 1991, Ser. No. 694,543

Claims priority, application Fed. Rep. of Germany, May 4, 1990, 4014346

Int. Cl.[5] E01B *7/14*

U.S. Cl. 246—468 **13 Claims**



10. A frog assembly, comprising:

a first wing rail having an interior edge which includes a straight section, a bent section and a curved portion between said straight and bent sections, and said curved portion being curved lengthwise along said first wing rail;

a frog tip having a first running edge which includes a front end, a curved portion extending from said front end and a straight section extending from the curved portion of said frog tip, the curved portion of said first running edge being curved in a lengthwise direction and positioned adjacent the curved portion of the interior edge of said first wing rail and adapted for contact therewith such that, upon contact, the curved portion of said first running edge and the curved portion of said first wing rail are placed in a nested arrangement;

a second wing rail having an interior edge which includes a straight section, a bent section and a curved portion between said straight and bent section, and said curved portion of said second wing rail being curved in a lengthwise direction,

said frog tip including a second running edge which includes a curved portion extending from the front end of said frog tip and a straight section extending rearwardly off of the curved portion of said second running edge, the curved portion of the second running edge being positioned adjacent the curved portion of the interior edge of said second wing rail and adapted for contact therewith, the curved portion of the second running edge being curved in a lengthwise direction such that upon contact between said second running edge and said second wing rail the curved portion of said second running edge and said second wing rail are placed in a nested relationship.

5,184,792

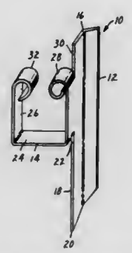
SUPPORT CLIP FOR ELECTRICAL CABLES

James C. Bernhard, Austin; Thomas P. Johnson, Jonestown, and Garth V. Antila, Austin, all of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 15, 1991, Ser. No. 776,985

Int. Cl.[5] F16B *15/00*

U.S. Cl. 248—71 **7 Claims**



1. A support for electrical cable adapted to be driven into a structural member, the support comprising a sheet of metal formed to include a body having a pointed end for penetration of the structural member and a generally U-shaped bracket including a base extending from the approximate midpoint of said body and substantially perpendicular to said body, a first leg extending from one end of said base and defined by an extension of said body opposite said pointed end and a second leg extending from the other end of said base in the direction away from said pointed end and substantially parallel to and substantially equisdistant with said first leg, said body including a logitudinal bend to provide strength and resist bending of said body when said body is driven into the structural member.

5,184,793

CABLE FEED-THROUGH DEVICE

Heinrich Heidt, Neckarsteinach, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelburg, Fed. Rep. of Germany

Filed Dec. 17, 1991, Ser. No. 808,901

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1990, 4040379

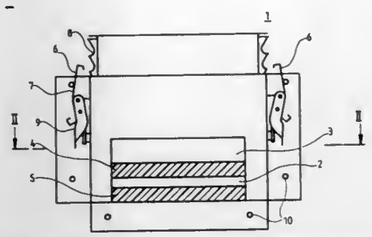
Int. Cl.[5] F16L *5/00*

U.S. Cl. 248—56 **8 Claims**

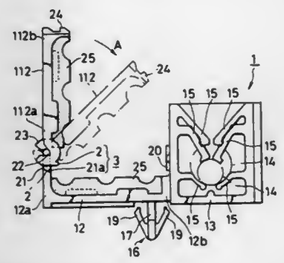
1. Device for feeding a flat cable having a plug attached to an end thereof through a wall formed with an opening, comprising a lockable slide member slideable from one location to other locations across the opening for variably reducing the size thereof, and a pair of lips formed of elastic material and located at respective opposite sides of the opening, at least one

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of said lips being in contact with said slide member and, at least in said one location of said slide member, being spaced a distance greater than the thickness of the plug from the other of said lips.

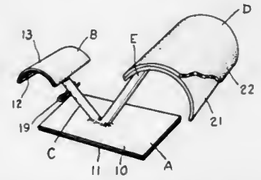


5,184,794
ROD HOLDER
Kazuo Saito, Yokohama, Japan, assignor to Nifco, Inc., Yokohama, Japan
Filed Feb. 12, 1992, Ser. No. 834,088
Claims priority, application Japan, Feb. 14, 1991, 3-12602
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—68.1 **13 Claims**



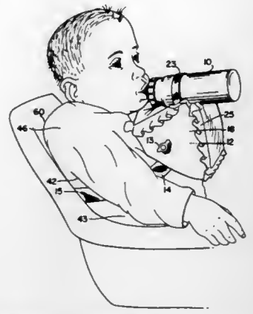
1. A rod holder, comprising:
a pair of clamping members rotatably hinged at respective first end portions thereof, and lockably engageable with each other at respective second end portions thereof for clamping and retaining a rod member therebetween;
a first one of said pair of clamping members having hinge shaft means provided upon said first end portion thereof for rotatably supporting a hinge mechanism of a second one of said pair of clamping members, and said hinge mechanism of said second one of said pair of clamping members comprising substantially cylindrical hinge means provided upon said first end portion thereof for substantially enveloping said hinge shaft means of said first one of said pair of clamping members so as to be rotatably supported upon said hinge shaft means of said first one of said pair of clamping members in order to hingedly mount said second one of said pair of clamping members upon said first one of said pair of clamping members; and
stopper means comprising projection means extending tangentially outwardly from a peripheral portion of said substantially cylindrical hinge means of said second one of said pair of clamping members for engaging a portion of said first end portion of said first one of said pair of clamping members and thereby preventing rotation of said second one of said pair of clamping members beyond a predetermined angle relative to said first one of said pair of clamping members under the influence of a first predetermined force which tends to move said second one of said pair of clamping members from a first, open, nonclamping position toward a second, closed, clamping position with respect to said first one of said pair of clamping members, said projecting means being deformable, under the influence of a second predetermined force which tends to move said second one of said pair of clamping members from a position defined by means of said predetermined angle with respect to said first one of said pair of clamping members toward said second, closed, clamping position and wherein said second predetermined force is greater than said first predetermined force, for permitting further rotation of said second one of said clamping members from said position defined by means of said predetermined angle with respect to said first one of said pair of clamping members toward said second, closed clamping position with respect to said first one of said pair of clamping members so as to lockably engage said first one of said pair of clamping members in order to clamp and retain a rod member therebetween.

5,184,795
MANICURE STAND
P. Wayne Sexton, 306 Rockvale Dr., Piedmont, S.C. 29673
Filed Sep. 26, 1991, Ser. No. 765,882
Int. Cl.[5] B68G *5/00*
U.S. Cl. 248—118 **2 Claims**



1. An arm support and finger positioning stand for use by a manicurist in manicuring the fingernails of a customer comprising:
a flat base member movably positionable upon a table for carrying the arm and hand of a customer with fingers in forwardly extended position toward the manicurist;
a first transverse arch positioned above and carried by said flat basemember at a level for supporting the hand by engaging the arm just below the wrist to serve as an arm rest;
a first centrally disposed positioning link fixedly secured to said first transverse arch on one end and to said flat base member on the other end;
a second transverse arch positioned above and forwardly of said first transverse arcuate surface carried by said flat base member at a level for receiving the palm of the customer's hand with the fingers extending forwardly and curved downwardly generally following a forward portion of said second transverse arch in position for being individually raised for manicuring a respective fingernail with the remaining fingers resting upon said forward portion of said second transverse arch; and
a second centrally disposed positioning link fixedly secured to said second transverse arch on one end and to said flat base member on the other end;
whereby the fingernails are readily accessible to the manicurist while the hand is comfortably positioned for an extended period of time for the manicure.

5,184,796
BABY BOTTLE HOLDER
Hatholynd C. Maher, 10917 Citreon Ct., North Potomac, Md. 20878
Filed May 22, 1991, Ser. No. 696,866
Int. Cl.[5] A61J *9/00*
U.S. Cl. 248—104 **7 Claims**

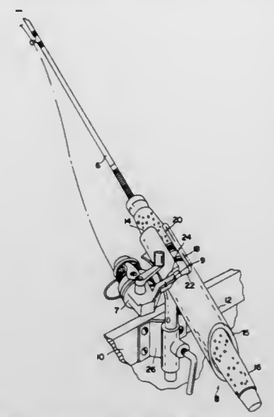


4. A bottle holder, comprising:
a bottle support consisting of an inflatable hollow body and having an air port means for inflating and deflating the body support, said bottle support having first and second surfaces,
holding means that extends around a human body under the arms, for holding one of said surfaces against a human chest,
positioning means for positioning an elongated bottle adjacent another one of said surfaces, and
said bottle support, when inflated, extending outwardly and upwardly away from said holding means to permit an elongated bottle to be positioned at a level higher than the mouth of a human body when that body is in a sitting position, and being sufficiently flexible to permit a nipple on the elongated bottle to slant downwardly into the mouth of a human body in any of various positions of the human body from a prone position to a sitting position,

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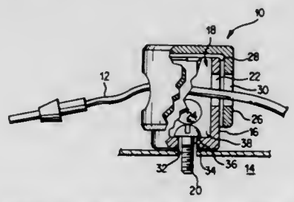
5,184,797
FISHING ROD HOLDER
Erwin E. Hurner, 920 Belsly Blvd. South, Moorhead, Minn. 56560
Continuation of Ser. No. 664,321, Mar. 4, 1991, abandoned. This application May 13, 1992, Ser. No. 884,474
Int. Cl.[5] A01K *97/10*
U.S. Cl. 248—538 **2 Claims**

1. A fishing rod holder comprising:
a tubular rod holder having an open top and an open bottom for receiving a handle portion of a fishing rod therethrough, said fishing rod having an open face reel thereon;
a first slot defined by said tubular rod holder;
said first slot having an upper portion and a bottom portion and said first slot extending a predetermined distance along the longitudinal axis of said tubular rod holder;
said upper portion of said first slot being inwardly tapered and communicating with said open top;
a second slot defined by said tubular rod holder;
said second slot communicating transversely from said bottom portion of said first slot in a position transverse to the longitudinal axis of said tubular rod holder;
said first and second slots of said tubular rod holder being adapted to slidably receive said open face reel associated with said fishing rod;



said tubular rod holder fixedly attached to an attachment arm, said attachment arm adapted to attach to a foundation.

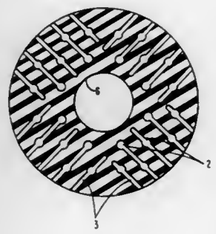
5,184,798
CABLE LOCK
Edwin P. Wilson, Allison Park, Pa., assignor to Minatronics Corporation, Pittsburgh, Pa.
Continuation of Ser. No. 489,049, Mar. 6, 1990, Pat. No. 5,082,232. This application Oct. 25, 1991, Ser. No. 782,497
The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—551 **6 Claims**



1. An apparatus for linking a fiber optic cable to an object without causing any bends to the cable comprising:
a first element having a first channel passing therethrough which receives a connector that fixedly links the first element to the object, said first element also having a second channel passing therethrough which intersects the first channel and through which the cable loosely and slidably extends without experiencing any bends; and
a blocker disposed in the first channel between the cable and the connector for preventing access to the connector so the connector cannot be removed, said cable in contact with said blocker such that the blocker cannot fall out of the first channel.

VOL 1147 ISS 2 FEB 9 1993 UMI

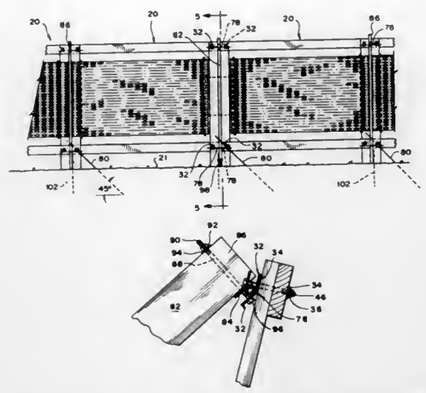
5,184,799
SURFACE BEARING AND METHOD FOR ITS PRODUCTION
Franz J. Wolf, and Hubert Pletsch, both of Bad Soden-Salmünster, Fed. Rep. of Germany, assignors to WOCO Franz-Josef Wolf & Co., Bad Soden-Salmunster, Fed. Rep. of Germany
Division of Ser. No. 462,399, Jan. 8, 1990. This application Mar. 13, 1992, Ser. No. 850,603
Claims priority, application Fed. Rep. of Germany, Jan. 23, 1989, 3901898
Int. Cl.[5] F16F *9/10*
U.S. Cl. 248—634 **5 Claims**



1. A surface bearing, comprising a plate made of resilient elastomer material interspersed with a plurality of hollow channels and cavities intersected by said channels, all of said hollow channels and cavities in said plate lying in a single plane extending at least essentially parallel to a principal load bearing surface of the plate or complementary in shape to the principal surface, each said cavity intersected by only one of said hollow channels, wherein none of the hollow channels intersect each other and said hollow channels are open at least at one end thereof, wherein a plurality of groups of said hollow channels are aligned so as to extend in each group parallel to one another in the elastomer matrix, wherein the imaginary extensions of the central axes of said hollow channels of different groups intersect one another without the hollow channels themselves intersecting.

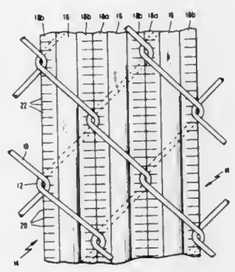
5,184,800
PORTABLE SNOW FENCE SYSTEM
Ronald D. Tabler, Longmont, Colo., assignor to The Tensar Corporation, Morrow, Ga.
Filed Jan. 22, 1991, Ser. No. 643,900
Int. Cl.[5] E01F *7/02*
U.S. Cl. 256—12.5 **24 Claims**

7. A fence system comprising
a plurality of fence panel members,
connector means for releasably securing a pair of panel members to each other,
each connector means including at least one clip means rotatably carried by each panel member,
an elongated connector member, said connector member having portions releasably secured to said clip means on each of two panel members, and



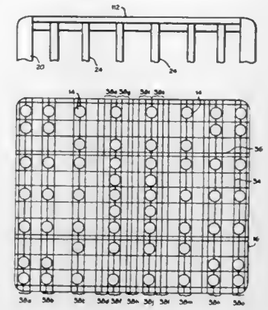
at least one brace means, said brace means carrying a clip means, and said connector member also having a portion releasably secured to said clip means on said brace means.

5,184,801
WINGED FENCE SLAT CONSTRUCTION
Harvey Finkelstein, Washington Township, Bergen County, N.J., assignor to Tri-Seal International, Inc., Blauvelt, N.Y.
Filed Jun. 5, 1992, Ser. No. 894,577
Int. Cl.[5] B21F *2/700*
U.S. Cl. 256—34 **14 Claims**



1. Slat apparatus for use with a fence of the type having linking wires which form knuckles and define a plurality of slat receiving channels therebetween, comprising a plurality of slat members for positioning in said slat receiving channels, respectively, each of said slat members including an elongated body member and a pair of flexible and resilient wing portions of substantially the same width positioned on opposite sides of said body member, wherein the combined width of said wing portions is at least approximately equal to the width of said body member, and the outer ends of said wing portions are sufficiently thin so as to enable said wing portions to flex around the fence knuckles and extend beyond said slat receiving channels such that substantially no space remains between the wing portions of adjacent slat members when positioned in the slat receiving channels of the fence.

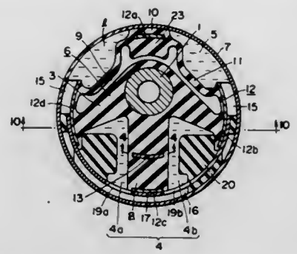
5,184,802
WIRE GRID FOR BOX SPRING BEDDING ASSEMBLY
Michael Galumbeck, Columbia, Md., assignor to Hickory Springs Manufacturing Company, Hickory, N.C.
Filed Dec. 13, 1990, Ser. No. 627,030
Int. Cl.[5] F16F *3/00*
U.S. Cl. 267—103 **7 Claims**



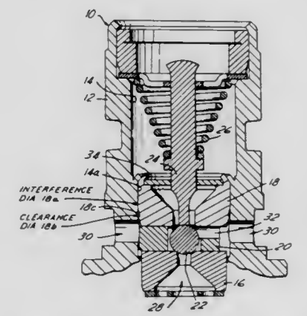
1. A wire grid for connecting an array of coil springs supported in a box spring bedding assembly on a plurality of transverse slats arranged in spaced parallel relation longitudinally along the box spring bedding assembly to form a base frame thereof, said wire grid being characterized by the capability of being selectively alternatively used for connecting at least two differing arrays of differing numbers of coil springs in at least two respective differing box spring assemblies having differing numbers of transverse slats at differing longitudinal spacings from one another without requiring structural modification of said wire grid, said grid comprising a plurality of relatively rigid longitudinal wires arranged in spaced parallel relation to one another and a plurality of relatively rigid transverse wires arranged in spaced parallel relation to one another and rigidly connected to said longitudinal wires in substantially perpendicular relation thereto, said longitudinal and transverse wires collectively forming said grid in an overall rectangular configuration, said transverse wires being arranged at selected spacings from one another forming a plurality of groupings of said transverse wires immediately adjacent one another and the respective transverse wires of each said grouping being cooperative with one another for connection thereto of a plurality of coil springs laterally spaced across the width of said grid, said groupings being of a number and being arranged at differing longitudinal spacings relative to one another in correspondence to the collective number and spacings of the respective transverse slats of said two box spring assemblies to be capable of selective alternative use in either of said two differing box spring assemblies for connecting either of said at least two differing arrays of coil springs without structural modifications of said wire grid, selected ones of said transverse wires being arranged to form a part of two different adjacent groupings thereof.

5,184,803
FLUID DAMPED ELASTOMERIC BUSHING
Mamoru Tanabe, Okayama; Motoyuki Yokota, Okayama; Sohei Fujiki, and Masaru Sui, both of Kurashiki, all of Japan, assignors to Marugo Rubber Industries, Ltd., Kurashiki, Japan
Filed May 15, 1991, Ser. No. 700,463
Claims priority, application Japan, May 22, 1990, 2-133578
Int. Cl.[5] F16F *3/08;* **B60G** *13/00*
U.S. Cl. 267—140.12 **5 Claims**

1. A fluid damped elastomeric bushing comprising:
an inner sleeve and an outer sleeve disposed outwardly of said inner sleeve;
two sidewalls extending between said inner sleeve and said outer sleeve, and a partition wall extending between said sidewalls and outwardly from said inner sleeve and a diaphragm extending between said sidewalls and spaced diametrically from said partition wall to thereby form a pair of fluid compartments, said fluid compartments consisting of a pressure receiving chamber and an equilibrium chamber in communication with said pressure receiving chamber,
an elastic support member in said pressure receiving chamber extending radially outwardly from said inner sleeve toward said outer sleeve between said sidewalls to thereby form a first pressure receiving chamber part and a second pressure receiving part, and
orifice means disposed circumferentially along a part of said outer sleeve for communicating the first pressure receiving chamber part with said second pressure receiving chamber part for causing fluid in one or the other of said first and second pressure receiving chamber parts to be forcibly fed to the other one of the first and second pressure receiving chamber parts when a load is applied to the bushing.



5,184,804
CONTAMINATION CONTAINMENT DEVICE
Stephen F. Shea, Newport News, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.
Filed May 12, 1992, Ser. No. 881,576
Int. Cl.[5] F16K *51/00*
U.S. Cl. 251—365 **3 Claims**



1. A hydraulic valve comprising a valve body having a bore into which a seat member is pressed, said seat member comprising an interference diameter portion that displaces material from the bore and advances such displaced material as the seat member is pressed into the bore, characterized by the inclusion in said seat member of a groove in advance of said interference diameter portion and of a clearance diameter portion in advance of said groove, said clearance diameter portion having a diameter just slightly less than that of said bore so as to provide a small clearance to said bore such that said clearance diameter is in non-interference with said bore during pressing of the seat

VOL 1147 ISS 2 FE 9 1993 UMI

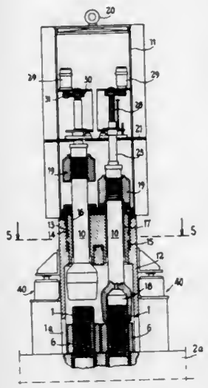
member into the bore, said clearance being exposed to hydraulic fluid flow through the valve, said groove and a surrounding portion of said bore forming a confinement space for displaced material that has been advanced by the pressing of said interference diameter portion into the bore.

5,184,805

DEVICE FOR THE OPTIMUM POSITIONING OF AN EXTENSION PIECE ON A THREADED CONNECTION ELEMENT

Alain Frizot, Mont Cenis, France, assignor to Framatome, Courbevoie, France

Filed Oct. 15, 1991, Ser. No. 775,762
Claims priority, application France, Oct. 16, 1990, 90 12754
Int. Cl.[5] E21B *19/00*
U.S. Cl. 254—29 A **12 Claims**



1. Device for optimum positioning of at least one extension piece (**10**) on at least one threaded connection element (**1**) for fastening a component (**2**) to an appliance (**3**), said extension piece (**10**) being intended to be screwed onto one threaded connection element (**1**), said device comprising a module (**11, 12**) for supporting said extension piece and comprising means (**28** to **31**) for driving said extension piece in rotation for screwing onto or unscrewing from a corresponding threaded connection element (**1**), and means (**14,15**) for tensioning said threaded connection element by means of said corresponding extension piece, said device further comprising:

(a) means (**40**) for centering said module on said threaded connection element (**1**);

(b) means (**53**) for supporting said module relative to said component (**2**); and

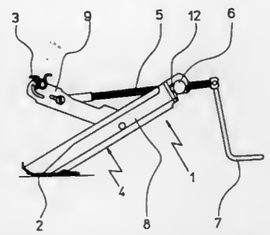
(c) mans (**60, 61**) for sliding said extension piece in a horizontal plane relative to an axis of said corresponding threaded connection element (**1**) at the time of screwing of said extension piece.

5,184,806

JACK

Willie Erschens, Waldweiler; Franz J. Mencher, Mandern; Peter Brosius, Ayl; Klaus Grave, Ennepetal; Bernhard Zender, Waldweiler; Peter Schardt, Neunkirchen; Gerd Hessek, Wadern-Lockweiler, and Ferdinand Alten, Mandern, all of Fed. Rep. of Germany, assignors to August Bilstein GmbH & Co. KG, Ennepetal, Fed. Rep. of Germany

Filed Mar. 27, 1992, Ser. No. 859,098
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1991, 4114129
Int. Cl.[5] B66F *3/12*
U.S. Cl. 254—126 **11 Claims**



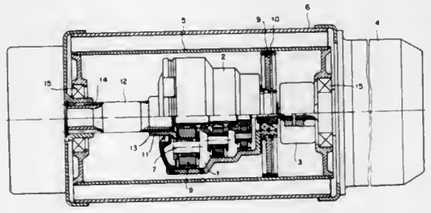
1. A jack with a base element and a support head; lever means connecting said base element and said support head; a threaded shaft and nut connected to said lever means for actuating said lever means; said nut having two half parts lying together at a connecting interface plane, said threaded shaft having a longitudinal axis; a gudgeon on each of two sides of said nut and having a common axis extending across the axis of said threaded shaft; said interface plane lying parallel to said common axis of the gudgeons and said axis of said shaft; said lever means holding said nut and surrounding said interface plane during operation of said jack to a maximum load carrying position so that said parts of said nut are pressed together at said interface plane with a force that increases with increase in load carried by the jack for holding said two parts securely and tightly together when said jack carries a load.

5,184,807

ELECTRIC HOIST INCLUDING A PLANETARY REDUCTION GEAR HOUSING DISPOSED WITHIN A HOIST DRUM

Nikolay N. Nikolov, Sofia; Nikolay T. Tzanev, and Pavlin S. Pavlov, both of Gabrovo, all of Bulgaria, assignors to DF Podem, Gabrovo, Bulgaria

Continuation of Ser. No. 467,089, Jan. 18, 1990, abandoned. This application Oct. 22, 1991, Ser. No. 780,448
Int. Cl.[5] B66D *1/22*
U.S. Cl. 254—344 **2 Claims**



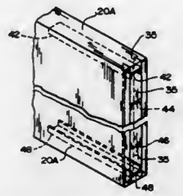
1. An electric hoist comprising a drum mounted inside a carrying frame; an electric motor mounted on said carrying frame, a planetary reduction gear coaxially mounted in said drum; said motor having a drive shaft and clutch which are coaxially connected to said planetary gear; said planetary gear being mounted in a housing; said housing having a pair oppositely axially projecting stems; a first one of said pair of stems forming a hub of said planetary gear and being connected to said carrying frame by means of a connecting shaft and a pair of spline joints; said second one of said pair of stems forming a support for a gear diaphragm; a gear ring forming an integral part of said drum; and said gear diaphragm and gear ring drivingly connecting said planetary gear to said drum.

5,184,808

FENCE WALL CONSTRUCTION

Dale E. Vesper, 4701 Hazel Ave., Holiday, Fla. 33856

Filed Apr. 6, 1988, Ser. No. 178,261
Int. Cl.[5] E04H *17/16*
U.S. Cl. 256—31 **8 Claims**



6. An improved lightweight wall panel having two mutually parallel outer vertical faces of given height, given width, and given thickness, bounded along their perimeter by a pair of vertical side edges and interconnecting horizontal top and bottom edges,

each side edge having therein a pair of parallel slots to a given depth, being spaced apart from one another by less than the panel edge thickness and substantially equidistant from the centerline of such edge,

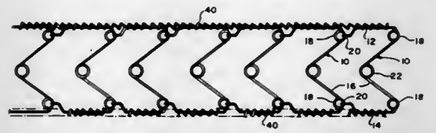
the respective pairs of vertical side edge slots being adapted to receive therein and to conceal from the exterior a pair of flanges of upright posts adapted to support such panel.

5,184,809

SPRING ASSEMBLY FOR SEATING AND BEDDING

John E. Miller, Tupelo, Miss., assignor to Parma Corporation, Denton, N.C.

Filed Jul. 15, 1991, Ser. No. 729,734
Int. Cl.[5] F16F *3/02*
U.S. Cl. 267—80 **12 Claims**



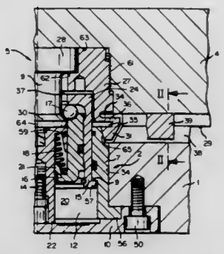
1. In a spring assembly for a body support used in seating or bedding units, the assembly comprising in combination a plurality of rows of springs interconnected in chain-like fashion, each spring including upper and lower runs and an intermediate run interconnecting the upper and lower runs, the upper and lower runs each including a generally vertically extending coil on one end and a hook on the opposite end hooked about a coil of an adjacent spring, a plurality of runner wires extending transversely of the upper runs of said springs; the improvement comprising a plurality of helical wires respectively received about the upper rows of each of the rows of springs while also being received about the runner wires to connect the runner wires to the upper runs of the springs, and wherein said runner wires have offset portions extending along the upper runs, said helical wires being coiled about said offset portions of the runner wires to secure the runner wires to said upper rows, said offset portions being formed as loops and the helical wires being threaded through said loops.

5,184,810

CENTERING AND CLAMPING DEVICE

Horst Lebrecht, Blönrieder Strasse 3/1, 7963 Altshausen, Fed. Rep. of Germany

Filed Mar. 28, 1991, Ser. No. 680,110
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1990, 4010653
Int. Cl.[5] B23Q *3/02*
U.S. Cl. 269—309 **21 Claims**



1. Centering clamping device for clamping a support member on a base member comprising:

a first contact surface on said base member;

a second contact surface on said support member engageable with said first content surface in a clamping position;

a passing coupling unit in said support member;

an active coupling unit in said base member having an actuating part movably mounted for actuating movement projecting through said first contact surface and cooperating with said passive coupling unit for clamping said support member to said base member in said clamping position;

retracting means engaging said actuating part of said active coupling unit for retracting and retaining said actuating part of said active coupling unit within said base member;

actuating means for actuating said actuating part of said active coupling unit into said clamping position for grasping said passive coupling unit during clamping;

a first centering means at least partly on said active coupling unit; and

a resilient second centering means on said passive coupling unit for cooperating engagement with said first centering means during clamping, said second centering means yielding elastically at least in the clamping direction.

5,184,811

METHOD AND APPARATUS FOR FEEDING SHEETS

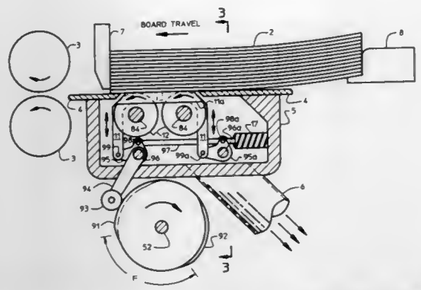
Louis M. Sardella, Cockeysville, Md., and John B. West, Virginia Beach, Va., assignors to Sun Automation, Inc., Baltimore, Md.

Filed Oct. 13, 1988, Ser. No. 257,063
Int. Cl.[5] B65H *3/08*
U.S. Cl. 271—10 **38 Claims**

1. A method of feeding a sheet to nip rolls of a box-finishing machine wherein the nip rolls are rotating in opposite directions at a predetermined surface velocity, the steps comprising frictionally engaging a feed member with the sheet to positively drive the sheet to and between the nip rolls, driving the feed member with a surface velocity matching said surface velocity of the nip rolls to positively engage and drive a substantial length greater than one half the length of the sheet through the nip rolls and maintaining the surface velocity of the feed member constant and equal to said surface velocity of

VOL 1147 ISS 2 FE 9 1993 UMI

the nip rolls over a substantial length greater than one half the length of the sheet as the sheet is driven through the nip rolls



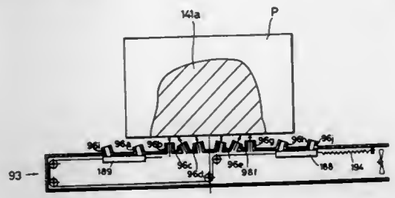
and wherein the feed member is driven with a first variable velocity input drive and a second constant velocity input drive.

5,184,812

SHEET FEEDING APPARATUS CAPABLE OF FEEDING SHEETS OF PLURAL SIZES

Toyoaki Namba, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 8, 1991, Ser. No. 697,329
Claims priority, application Japan, May 9, 1990, 2-120965
Int. Cl.[5] B65H *3/08*
U.S. Cl. 271—98 **6 Claims**



1. A sheet feeding apparatus capable of feeding sheets of plural sizes comprising:

a laying plate having a centerline in a feeding direction for receiving a stack of a plurality of sheets;

sheet feeding means providing a feeding surface for vacuum feeding a sheet to be fed from the stack in a feeding direction, the feeding belt located adjacent the position of the sheet to be fed;

air flow forming means disposed downstream of the laying plate in the feeding direction for jetting a plurality of air flows across the laying plate and directed between the sheets in directions that are directed outwardly from the centerline of the laying plate in the feeding direction and in directions that are directed -arallel to the feeding direction, the air flow forming means comprising a hollow nozzle member extending in a direction transverse to the centerline of the laying plate in the feeding direction and having a plurality of nozzles arranged along the length of the nozzle member; and

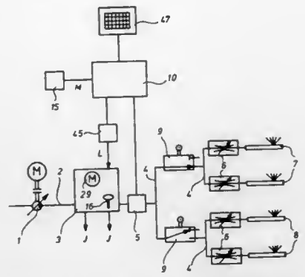
air flow control means comprising movable valve bodies contained in the nozzle member for selectively controlling the rate of air flow of from one or more of nozzles that are at end portions of the nozzle member whereby the nozzles are opened and closed by the movement of the valve bodies.

5,184,813

SEPARATING JET BLAST AIR CONTROL ASSEMBLY

Volkmar R. Schwitzky, Oberdurrbach, and Jurgen A. Stiel, Ostheim, both of Fed. Rep. of Germany, assignors to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

Filed Mar. 9, 1992, Ser. No. 848,366
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1991, 4108002; Feb. 1, 1992, 4202861
Int. Cl.[5] B65H *3/48*
U.S. Cl. 271—98 **9 Claims**



1. A separating jet blast air control assembly useable to control a blast air requirement of separating air jets in a sheet feeder of a sheet fed rotary press, said separating jet blast air control assembly comprising:

a blast air generator for providing compressed air;

at least a first blast air consumer for receiving said compressed air from said blast air generator and for consuming said compressed air in a sheet feeder.

a regulating valve assembly positioned intermediate, and in fluid communication with, said blast air generator and said at least first blast air consumer;

means for sensing a pressure level of said compressed air intermediate said regulating valve assembly and said at least first blast air consumer;

means for sensing a speed of operation of the sheet feeder; and

means for controlling said regulating valve assembly in accordance with said sensed pressure level and said sensed speed of operation of said sheet feeder and in accordance with characteristic curves for a kind of sheet being fed in the sheet feeder to control said pressure level of said compressed air passing through said regulating valve assembly and supplied to said at least first blast air consumer.

5,184,814

BASKETBALL TRAINING DEVICE

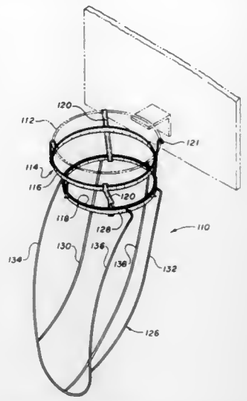
Gary Manning, P.O. Box 715, Delancey, N.Y. 13752

Continuation-in-part of Ser. No. 817,070, Jan. 6, 1992. This application Jul. 23, 1992, Ser. No. 917,416
Int. Cl.[5] A63B *69/00*
U.S. Cl. 273—1.5 A **1 Claim**

1. A basketball training device comprising:

a first upper member including first and second circumferential rings connected with respect to each other in a parallel spaced relationship by a plurality of mounting straps, said mounting straps at one end thereof terminating in a U-shaped configuration for engagement with a basketball hoop, said mounting straps at another end thereof, terminating in a L-configuration, and including a non-movable bar positioned upwardly from said L-configuration,

a said lower member including a circumferential ring member at one end thereof, said ring member having a diameter such that said ring member and said second ring member of said upper member are superimposed with respect to each other, said circumferential ring member held in place about said second ring member of said upper member by said non-moveable bar, in combination with the L-configuration, said lower member having a rotation of 360 degrees with respect to said first upper member,



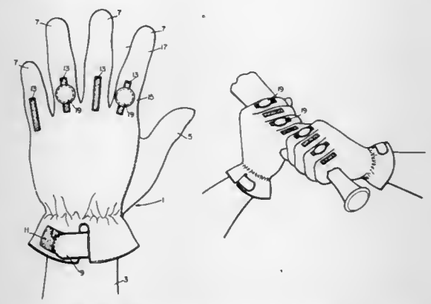
a plurality of laterally disposed risers connected to said ring member, said laterally disposed risers directing the travel of a basketball passing through said basketball training device.

5,184,815

BASEBALL BAT GRIP TRAINING AID AND METHOD FOR USING SAME

Garry L. Maddox, Penn Valley, Pa., assignor to World Wide Concessions, Inc., Philadelphia, Pa.

Filed Jan. 21, 1992, Ser. No. 822,953
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—26 C **13 Claims**



1. A diagnostic and training aid for an athlete, comprising:

a) a glove, the glove having a thumb portion and a plurality of finger portions, each of the finger portions having a longitudinal axis,

b) at least two of the finger portions of the glove having elongated, strips of material disposed along the longitudinal axis of the finger portions, each strip having two surfaces, each strip being attached to one of said finger portions along one surface, each strip of material also including fastening means on its other surface, the fastening means extending along the length of the strip, and

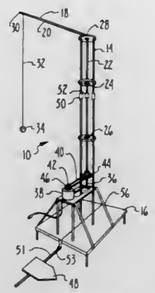
c) a plurality of buttons, each button having means for engaging the fastening means, at least two of the buttons being affixed to the strips.

5,184,816

HITTING PRACTICE DEVICE

T. J. Lunsford, 1215 Pioneer Way, El Cajon, Calif. 92020

Filed Feb. 18, 1992, Ser. No. 837,164
Int. Cl.[5] A63B *69/40*
U.S. Cl. 273—26 E **5 Claims**



1. An adjustable hitting practice device for use by a hitter, comprising:

a frame member having means for adjusting the length of said frame member;

a base member removably connected to said frame member for supporting said frame member in a vertical position;

a vertically extending, adjustable length shaft rotatably attached to said frame member;

an adjustable length, laterally extending arm member having one of its ends attached to the upper end of said shaft and a tethered ball attached to its other end;

means to permit adjustment of the length of said shaft and arm member;

driving means connected to and for rotating said shaft and for rotating said lateral arm about said frame member at an angular velocity to repeatedly propel said tethered ball past a hitter, said driving means including a pulley attached to said shaft and a motor, a removable elastic belt connecting said motor and said pulley; and

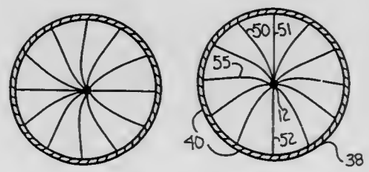
the length of said shaft and said frame member being adjustable to vary the height of said frame member and lateral arm.

5,184,817

GOLF PUTTING AID

Kanelos J. Kanelous, Palm Harbor, Fla., assignor to Greenreader Inc., Clearwater, Fla.

Filed Jul. 31, 1991, Ser. No. 738,687
Int. Cl.[5] A63B *69/36, 57/00*
U.S. Cl. 273—32 H **6 Claims**



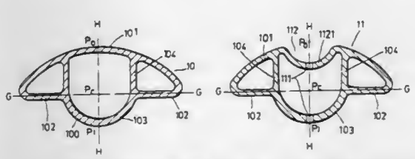
1. A visual aid for use in the game of golf to assist a player in estimating the effects of gravity on a rolling path of a putted ball, said aid comprising a sheet whereon is printed a plurality of schematic graphic views of a golfing green, said green having a front, a back, a right side and a left side, wherein

a close curve on a said graphic view denotes a plurality of initial possible positions of said ball,

VOL 1147 ISS 2 FE 9 1993 UMI

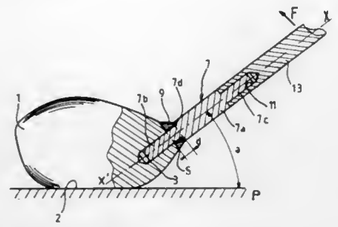
an indicium on a said graphic view denotes a cup,
a trajectory-denoting curve on a said graphic view extends from a said closed curve to said indicium and denotes a path that said ball, stroked from a said initial position, could follow to said cup, and wherein
a first 2(*g*) of said views schematically represents a first green sloping upward from said front to said back and being relatively flat along a line from said right side to said left side,
a second 2(*b*) of said views schematically represents a second green sloping upward from said right side to said left side and being relatively flat along a line from said front to said back,
a third 2(*c*) of said views schematically represents a third green sloping upward from said left side of said right side and being relatively flat along a line from said front to said back,
a fourth 2(*h*) of said views schematically represents a fourth green sloping upward from said right side to said left side and sloping upward from said front to said back,
a fifth 2(*i*) of said views schematically represents a fifth green sloping upward from said left said to said right side and sloping upward from said front to said back.

5,184,818
METAL RACKET
Kun-Nan Lo, No. 33, Hsiang-Ho Rd., Li-Lin Tsun, Tan-Tzu Hsiang, Taichung Hsien, Taiwan
Filed Nov. 14, 1991, Ser. No. 792,117
Int. Cl.[5] A63B *49/12*
U.S. Cl. 273—73 H **2 Claims**



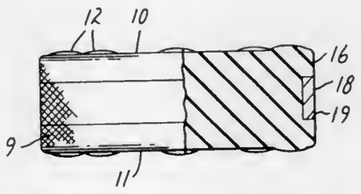
1. A metal racket including a hollow looped head portion and a string web held by said looped head portion, characterized by:
said looped head portion having a cross-section lying on a plane perpendicular to said string web; said cross-section including a convex outer periphery with two terminating ends disposed on opposite sides of said string web, a first axis perpendicular to said string web and passing through said terminating ends of said outer periphery, and an inner periphery defining a ball striking area, said inner periphery being opposite to said outer periphery and having two flat portions, each of said flat portions extending inwardly from a respective one of said terminating ends of said outer periphery and being disposed along said first axis; said inner periphery further having an inner convex portion disposed between and interconnecting said flat portions; said cross-section having an axis of symmetry extending along said string web and perpendicular to said first axis; said axis of symmetry passing through a first point on said inner convex portion; said outer periphery having a central portion divided by said axis of symmetry at a second point; said central portion being indented to form an outer peripheral concave groove aligned with said inner convex portion; said second point being a point on said central portion before said central portion was indented; the distance of said first point from said first axis being shorter than that of said second point from said first axis; and said inner convex portion of said inner periphery and said central portion of said outer periphery being formed with a plurality of string holes to hold said string web.

5,184,819
GOLF CLUB
Jacques Desbiolles, 20, rue des Jardins, 74000 Annecy, France
Filed Oct. 31, 1990, Ser. No. 606,776
Claims priority, application France, Nov. 14, 1989, 89 14923
Int. Cl.[5] A63B *53/02*
U.S. Cl. 273—80.2 **7 Claims**



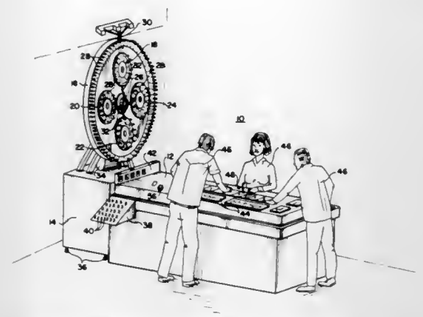
1. Golf club comprising:
(a) a head having a socket therein;
(b) a cylindrical neck non-unitary with said head and attached to said head; and
(c) a shaft attached to said neck;
(d) said neck comprising an upper end part engaged coaxially with a lower part of said shaft and a lower end part partially engaged in said socket in said head, so as to leave a remainder portion of said lower end part between a base of said upper end part and a base of said head, said neck being substantially straight longitudinally between said upper end part and said lower end part said remainder portion having a diameter smaller than a diameter of said upper end part;
(e) a distinct intermediate ring having an internal diameter equal to an external diameter of said lower end part of said neck surrounding said remainder portion and located between said base of said head and a shoulder formed adjacent said base of said upper end part of said neck.

5,184,820
HOCKEY PUCK
Michael D. Keating, Oakdale, and Robert W. Norris, Minneapolis, both of Minn.
Continuation of Ser. No. 33,011, Mar. 31, 1987, abandoned. This application Nov. 30, 1988, Ser. No. 277,957
Int. Cl.[5] A63B *71/00*
U.S. Cl. 273—128 R **11 Claims**



1. A hockey puck having a body of a circular shape and thickness of a conventional hockey puck, said body having oppositely projecting spaced ends, characterized in that each end has at least three symmetrically circumferentially spaced projections formed integrally with said body on said ends and extending therefrom and terminating in an arcuate shape.

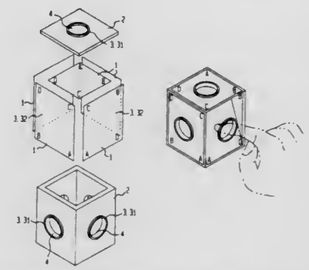
5,184,821
GAME APPARATUS FOR POKER AND SIMILAR CARD GAMES
Raymond E. Korenek, Rte. 2, Box 23, McGregor, Tex. 76657
Filed Jan. 7, 1992, Ser. No. 817,645
Int. Cl.[5] A63F *5/00, 9/24*
U.S. Cl. 273—138 A **18 Claims**



1. A game apparatus for poker and similar card games comprising:
a playing table having a plurality of marked areas indicative of betting options;
an indicator board located at one end of said playing table for indicating selected cards to players around said playing table;
a switchboard having a plurality of switch means thereon for activating said indicator board and for selectively illuminating portion of said marked areas indicative of winning bets, said switchboard being operated by a dealer;
a large rotatable wheel mounted on a movable stand, said movable stand being suitably connected to said playing table, said large rotatable wheel having randomly arranged indicia around the periphery of a front surface thereof indicative of a complete first deck of cards and Joker;
a plurality of smaller rotatable wheels pivotally mounted on said front surface of said large rotatable wheel for rotation relative to said large rotatable wheel, each of said smaller rotatable wheels carrying randomly arranged indica on a respective front surface indicative of a portion of a complete second deck of cards;
and means for simultaneously driving said large rotatable wheel and said plurality of smaller rotatable wheels at respectively different rates of speed for a time period controlled by said dealer; whereby
poker and other games of chance may be played by said players by identifying selected card images on said large and smaller rotatable wheels.

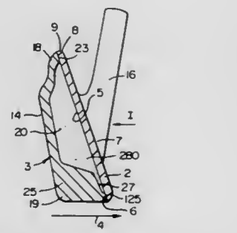
5,184,822
THREE-DIMENSIONAL PUZZLE
Jozsef Bognar, Feny u. 2.III.4., H-1024, and Erno Rubik, Viragarok u. 11., H-1026 both of Budapest, Hungary
PCT No. PCT/HU90/00017, § 371 Date Dec. 28, 1990, § 102(e) Date Dec. 28, 1990, PCT Pub. No. WO90/10481, PCT Pub. Date Sep. 20, 1990
PCT Filed Mar. 9, 1990, Ser. No. 613,863
Claims priority, application Hungary, Mar. 10, 1989, 1190/89
Int. Cl.[5] A63F *9/08*
U.S. Cl. 273—153 R **5 Claims**

1. A three-dimensional puzzle comprising:
a container-like casing, said casing having an interior and being a substantially closed, shape-retentive hollow body having the shape of a geometric solid bound by lateral faces, at least 3 said lateral faces being identical to each other in size and shape;
a number of flat plate-like game pieces that are freely movably relative to each other within the interior defined by said casing, said game pieces being distinguishable from each other, the interior of said casing serving as a game space for said number of game pieces, and said game pieces being of a shape that is substantially identical to that of said at least four lateral faces of said casing and being of a size that is approximately that of said at least four lateral faces, though said game pieces are sized slightly smaller so that said game pieces are permitted free movement within said game space defined by said casing; and



a retaining means for releasably holding with a gripping force any one of said game pieces to any one of said at least four lateral faces of said casing, said retaining means provided for at least one of each of said at least four lateral faces of said casing and said game pieces; and wherein,
for handling the puzzle, each of said at least four lateral faces is further provided with an actuating means for releasing said gripping force by which any one of said game pieces is temporarily and releasably held to any one of said lateral faces of said casing, and
said actuating means comprises an access opening in each of said at least four lateral faces of said casing which permits direct manual handling of the puzzle.

5,184,823
GOLF CLUB AND GOLF CLUB HEAD
Jack Desboilles, Annecy, and Claude Viste, Gruffy, both of France, assignors to Taylor Made Golf Company, Inc., Carlsbad, Calif.
Filed Nov. 23, 1990, Ser. No. 617,202
Claims priority, application France, Nov. 22, 1989, 89 15318
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 F **25 Claims**

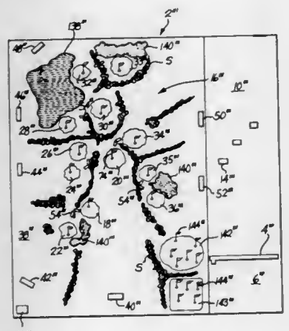


1. A golf club head comprising:
an assembly of walls surrounding an internal cavity;
a striking wall having an inner face facing said internal cavity, said inner face of said striking wall having a peripheral edge having a width, said peripheral edge being connected to a plurality of said assembly of walls; and

VOL
1147
ISS
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at least one of said plurality of walls including a ballasting weight being disposed proximate to said inner face of said striking wall, but being separated from said inner face of said striking wall by an interstitial space communicating with said cavity, said interstitial space having a width smaller than said width of said peripheral edge.

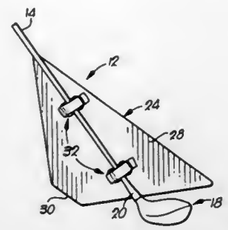
5,184,824
GOLF FACILITY AND METHOD
Thomas R. Riedinger, 7860 Island Crest Way, Mercer Island, Wash. 98040
Continuation-in-part of Ser. No. 547,822, Jul. 3, 1990, abandoned. This application Jun. 28, 1991, Ser. No. 723,469
Int. Cl.[5] A63B *69/36, 67/02*
U.S. Cl. 273—176 A **18 Claims**



1. A course for playing a golf-like game and practicing iron shots, comprising:
a central green area including a plurality of separate greens;
a peripheral area around said central green area;
a plurality of separate, spaced apart teeing locations in said peripheral area; each said teeing location being positioned to provide iron shots with predetermined trajectories onto at least one of said greens corresponding to the teeing location; and
screening in said central green area and said peripheral area;
said central green area and said peripheral area having varying terrain, and said teeing locations being positioned, to provide iron shots of varying length and difficulty onto said greens; and said greens and said teeing locations being arranged to provide space between said teeing locations and separate players at any one of said teeing locations from players at the other teeing locations, and said screening being spaced from said teeing locations in said peripheral area, being positioned between said greens in said central green area, and extending substantially parallel to trajectories which are adjacent to inhibit shots from any one of said teeing locations crossing said trajectories corresponding to another of said teeing locations, to minimize disturbance of players at any of said teeing locations by players at the other teeing locations, and to simulate playing conditions on a full size course.

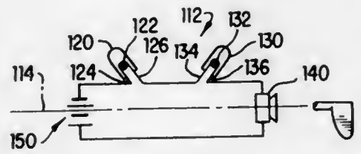
5,184,825
GOLF CLUB PRACTICE APPARATUS
Terry W. Ruth, 13805 NW. 73rd St., Kansas City, Mo. 64195
Filed Nov. 19, 1991, Ser. No. 794,020
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.2 **9 Claims**

1. A golf club practice apparatus for use with a golf club having a shaft defining a longitudinal axis and a club head connected to one end of the shaft, the club head including an impact surface provided with a leading edge extending outward from the shaft, the apparatus comprising:
a sail having a surface defining a central axis that divides the surface into side-by-side halves of substantially equal area; and
attachment means positioned along the central axis of the sail for attaching the sail to the golf club with one of the



halves of the sail surface overlying the club head with the central axis of the sail extending in a direction substantially parallel with the longitudinal axis of the shaft, and with the surface of the sail disposed within a plane which is parallel to the leading edge of the impact surface,
the attachment means including gripping means for gripping the golf club when the sail is attached to the golf club to prevent the sail from twisting on the shaft.

5,184,826
GOLF SWING TRAINING DEVICE
Carroll L. Hall, Jr., 413 Church St., Baltimore, Md. 21225
Filed May 7, 1992, Ser. No. 879,312
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—186.2 **20 Claims**

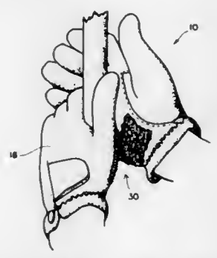


1. A golf swing training device for aiding a golfer to develop a proper backswing when hitting a golf ball from a base surface with a golf club, comprising:
a golf club having a longitudinal axis;
a housing releasably coupled to said golf club; and
circuit means disposed within said housing for providing an audio signal responsive to the longitudinal axis of said golf club being positioned substantially parallel to said base surface.

5,184,827
AUDIBLE GOLF GLOVES
Keith H. Suttle, P.O. Box 4171, Wilmington, N.C. 28406, and William J. McGraw, P.O. Box 5209, Wrightsville Beach, N.C. 28480
Filed Jan. 24, 1992, Ser. No. 825,061
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—187.2 **6 Claims**

1. A signal generating pair of golf gloves for emitting a sound signal in response to the golfer improperly breaking his grip about a golf club consisting essentially of:
a) a control-hand glove and a power-hand glove with each glove having a palm side with a central palm area and a little finger palm side area, a back side, a thumb area, and a plurality of fingers;

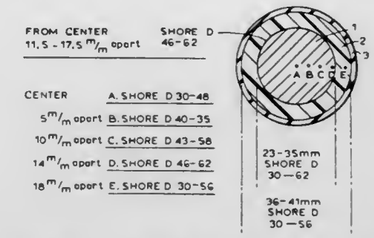
b) a signal emitter formed on the gloves for emitting an audible signal only in response to the golfer breaking his grip during the course of a swing;
c) the signal emitter consisting essentially of attaching loop and hook strips formed across the respective palms of the control-hand glove and power-hand glove, wherein when a proper grip is assumed the loop and hook strips mate and attach to each other but the force associated with a break in grip is sufficient to separate the strips such that when the golfer improperly breaks his grip a tear-away effect occurs as the loop strip tears away from the hook strip and an audible signal indicating the break of the grip results;
d) the signal producing loop and hook strips being strategically located about the palm sides of the control-hand glove and the power-hand glove to assure the integrity and reliability of the gloves as golf grip teaching aids, one



of the loop and hook strips being secured to the control-hand glove about the palm side of the control-hand glove adjacent the thumb area leaving the finger tips and the base area of the palm devoid of any hook and loop strips;
e) the other of the hook and loop strips being secured to the palm side of the power-hand glove and spaced from the thumb area but extending transversely across the lower base area of the palm towards the little finger side of the palm leaving the upper central area of the palm and finger tips devoid of any hook and loop strips; and
f) wherein the signal emitting gloves are effective to only emit a signal where there is a grip break between the hook and loop strips that is peculiarly related to the presence or absence of a proper golf grip, and wherein grip breaks between cooperating fingers or other palm areas fail to produce a signal since such is not paramount in teaching the maintenance of a proper grip throughout a swing.

5,184,828
SOLID THREE-PIECE GOLF BALL
Moon K. Kim, and In H. Hwang, both of Seoul, Rep. of Korea, assignors to Ilya Co. Ltd., Seoul, Rep. of Korea
Filed May 14, 1991, Ser. No. 699,933
Claims priority, application Rep. of Korea, Jun. 1, 1990, 90-8095
Int. Cl.[5] A63B *37/06*
U.S. Cl. 273—228 **5 Claims**

1. A solid three-piece golf ball comprising a core assembly provided by an inner core **1** and an outer layer **2** and a cover **3** characterized by the following features:
a) the inner core **1** has a diameter in the range 23–35 mm and hardness (Shore D) in the range 30–62;
b) the outer layer **2** has a diameter in the range 36–41 mm and hardness (Shore D) in the range 30–56;
c) the golf ball has a maximum hardness (Shore D) in the range of 46–62 at the outer site of the inner core which is located at the interface between the inner core **1** and the



outer layer **2** of the golf ball and the hardness then decreases both inwardly and outwardly.

5,184,829
GAME APPARATUS AND METHOD
Dim Njaka, 7300 France Ave. South, Suite 450, Edina, Minn. 55435
Filed Oct. 11, 1991, Ser. No. 775,280
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—242 **16 Claims**

15. A method for playing a game for two or more players in combination with a game apparatus, the combination comprising:
a) the game apparatus comprising:
1) a base having an endless path;
2) a plurality of game pieces for being distributed along the endless path;
3) a plurality of retainment means on the endless path for retaining the game pieces, the game pieces being readily visible when retained by the retainment means; and
4) a plurality of identification means for identifying ownership of each of the retainment means, each of the identification means being removably engageable with each of the retainment means, each of the players owning a respective set of possession identification means;
b) the method of playing the game comprising:
1) setting up the game by engaging each of the retainment means with one possession identification means and by placing a given number of game pieces within each of the retainment means;
2) then one of the players choosing a chosen retainment means identified by one of his or her identification means and then beginning to distribute the game pieces of the chosen retainment means one by one into retainment with successive retainment means along the endless path;
3) then distributing the last game piece from the chosen

VOL 1147 ISS 2 FEB 9 1993 UMI

retainment means into retainment with a last successive retainment means and then:

i) capturing the game pieces from the last successive retainment means if the last successive retainment means includes the given number of game pieces and thereby the player distributing the game pieces completing his or her turn; or

ii) forming a set of one game piece on the last successive retainment means and thereby the player distributing the game pieces completing his or her turn; or

iii) forming a set of two or more game pieces, except the given number of game pieces, on the last successive retainment means and thereby requiring the player distributing the last game piece to continue his or her turn by further distributing the game pieces from the last successive retainment means until the set of one game piece is formed or until the given number of game pieces is formed in the last successive retainment means in which case the game pieces are captured therefrom;

4) capturing the game pieces from one of the possession retainment means by the given number being formed by a retainment of any of the game pieces, other than the last game piece being distributed, with one of the possession retainment means, the game pieces of which are then captured by the player owning the possession retainment means; and

c) winning a round of the game by capturing more game pieces than any of the other players, the game being completed when the game pieces from the next-to-last noncaptured retainment means are captured, the game pieces from the last remaining retainment means being captured by a predetermined capture agreement.

5,184,830

COMPACT HAND-HELD VIDEO GAME SYSTEM

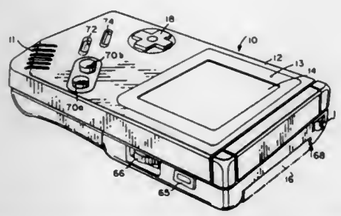
Satoru Okada, and Shin Kojo, both of Kyoto, Japan, assignors to Nintendo Company Limited, Kyoto, Japan

Continuation of Ser. No. 462,400, Jan. 8, 1990, abandoned. This application Jun. 15, 1992, Ser. No. 899,179

Claims priority, application Japan, Apr. 20, 1989, 1-101028; Oct. 1, 1989, 1-4452

Int. Cl.[5] A63F *9/22*

U.S. Cl. 273—433 **21 Claims**



1. A hand-held electronic game machine, comprising:

a case of a size which may be held by hand and having a subsonically rectangularly shape defined by a front surface, a rear surface, two latitudinal side surfaces, a lower side surface and an upper side surface, each of said two longitudinal side surfaces being of greater length than each of said lower side surface and said upper side surface, said case being sandwiched by both hands during game play, said front surface having an upper front surface portion bounded by an upper portion of each of said longitudinal side surfaces and a lower front surfaced portion bounded by a lower portion of each of said longitudinal side surfaces;

a first operation switch disposed on a right portion of said lower front surface portion of said case such that during game play it can be operated by a thumb of a player's right hand sandwiching said case;

a second operation switch disposed on a left portion of said lower front surface portion of said case such that during game play it can be operated by a thumb of a player's left hand sandwiching said case;

a dot-matrix liquid crystal display panel including a display screen defining a matrix of rows and columns of dots disposed on said upper front surface portion such that in use said display shown is positioned above said first operation switch and said second operation switch;

an insertion portion formed on said upper side surface of said case and extending, in use, behind said dot-matrix liquid crystal display panel in said case;

an external memory attachably and detachably insertable into said insertion portion from said upper side surface of said case for storing a game program and background character data and moving object character data with which images for a game are displayed on said display screen;

game processing means housed in said case for reading said game program and said background character data and moving object character data from said external memory and controlling the display of moving objects on said display screen in response to the actuation of said first operation switch and said second operation switch and for controlling the display of background characters on said display screen;

a connector housed in said case for connecting said external memory being inserted in said insertion portion to said game processing means;

a memory housed in said case and associated with said game processing means for storing said background character data and said moving object character data read from said external memory by said game processing means and transferred through said connector;

display signal generating means housed in said case for generating display signals for displaying background characters and moving objects on the basis of said background character data and said moving object character data stored in said memory;

a driver for driving said dot-matrix liquid crystal display panel in response to said display signals generated by said display signal generating means to display said background characters and said moving objects on said display screen, said driver including a first driver for driving said dot-matrix liquid crystal display panel in columns and a second driver for driving said liquid crystal display panel in rows.

5,184,831

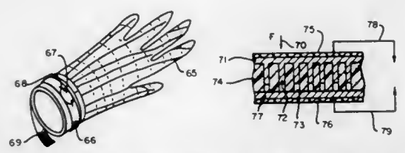
KARATE SCORING APPARATUS

Lee Garner, 272 A Harding Rd., Freehold, N.J. 07728

Filed Oct. 17, 1991, Ser. No. 779,359

Int. Cl.[5] A63B *69/00*

U.S. Cl. 273—455 **16 Claims**



1. An adjustable pressure sensitive means employed to indicate valid strikes scored in a karate match between first and second contestants engaged in combat according to the martial art of karate, said pressure sensitive means comprising:

first and second conductive elements with a slotted compressible insulation material located between said conductive elements, said first conductive element having projecting fingers located in said slots of said insulation material and extending part way through said slots of said insulation material, said insulation material being adjustable to compress in response to sufficient pressure being applied to said first element, and output means coupled to said first and second conductive elements for providing an output frequency, whereby upon sufficient pressure being applied to said first conductive element said insulation material compresses allowing said fingers to make electrical contact with said second conductive element such that said output frequency is provided.

5,184,832

AERODYNAMIC MOTORCAR

Tsutomn Miwa, 3010-8, Sayamagaoka 1-chome, Tokorozawa-shi Saitama 359, Japan

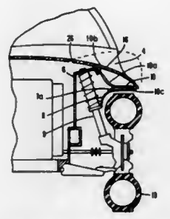
Continuation of Ser. No. 569,483, Aug. 20, 1990, Pat. No. 5,054,844, which is a continuation of Ser. No. 440,450, Nov. 22, 1989, abandoned, which is a continuation of Ser. No. 162,305, Feb. 29, 1988, abandoned, which is a division of Ser. No. 926,412, Oct. 7, 1986, abandoned. This application Oct. 8, 1991, Ser. No. 772,805

Claims priority, application Japan, Dec. 7, 1984, 59-257479

The portion of the term of this patent subsequent to Oct. 8, 2008, has been disclaimed.

Int. Cl.[5] B62D *35/00*

U.S. Cl. 296—198 **24 Claims**



1. In a vehicle having a plurality of front and rear wheels supporting a vehicle body frame to which is mounted a body shell defining a vehicle exterior, each wheel being disposed within a wheel housing defined between the vehicle body frame and the body shell, the improvement comprising:

a wheel cover means extending within at least one of the housings above the corresponding wheel therein,

wherein said wheel cover means defines an air passage established in part by an upper surface of the wheel cover means and extending in a longitudinal direction of the vehicle directly above the wheel, said air passage including an air inlet and an air outlet respectively disposed forwardly and rearwardly of the associated wheel,

said wheel cover means comprising a thin sheet of a flexible and resilient material secured at one portion thereof to the wheel housing and mounted at another portion on an element supported by a spring support means capable of at least upward movement related to upward movement of a corresponding said wheel which is rotatably connected to said spring support means,

said air passage thereby having an inlet and an outlet and a cross-section that varies with at least the upward movement of the corresponding wheel, transmitted via said spring support means and element, which causes a deformation of the flexible and resilient sheet.

5,184,833

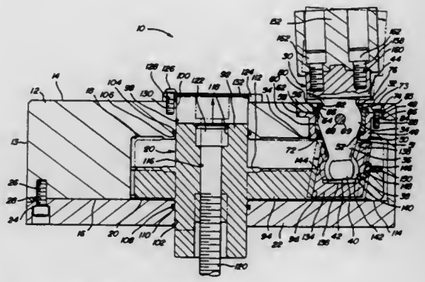
POWER CHUCK

Kenneth Cross, 53793 Sherwood La., Utica, Mich. 48087, and Ralph J. Gonnocci, 1130 Cobridge Dr., Rochester Hills, Mich. 48306, assignors to Kenneth Cross, Utica and Ralph J. Gonnocci, Rochester Hills, both of, Mich.

Filed Jan. 2, 1992, Ser. No. 816,175

Int. Cl.[5] B23B *31/175*

U.S. Cl. 279—106 **20 Claims**



1. A power chuck, comprising:

a body;

a plurality of work engaging jaws;

a plurality of rocker arms carrying said jaws, said rocker arms extending axially along an axis, said rocker arms having a mounting portion at one axial end for said jaws and an end portion at the other axial end;

a plurality of swivel mountings connecting said rocker arms to said body;

a plurality of slide members receiving said end portions of said rocker arms; and

a reciprocable actuator disposed centrally of said rocker arms and operatively cooperating with said slide members;

whereby reciprocatory movement of the actuator along the slide members rocks the rocker arms in the swivel mountings and moves the jaws radially relative to each other.

5,184,834

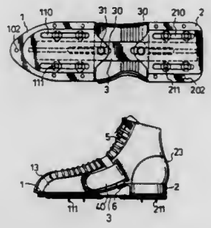
SKATE SHOE HAVING AN ADJUSTABLE PLATE MOUNTED THERETO

Chung-Hsiung Yu, 2F, No. 94, Chung-Yuan St., Taipei City, Taiwan

Filed Oct. 1, 1991, Ser. No. 770,985

Int. Cl.[5] A63C *17/18, 1/22*

U.S. Cl. 280—7.13 **9 Claims**



9. A shoe comprising:

a front part and a rear pair movably connected to one another so as to be adjustable in size, said front part having a toe sole and an anterior shoe part fixed to said toe sole, sand said rear part having a heel sole and a posterior shoe part fixed to said heel sole;

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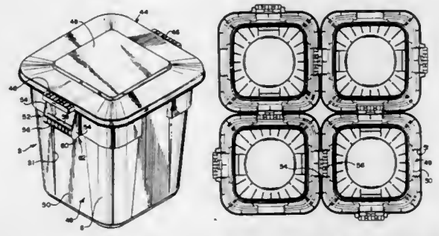
a pleated sole part, disposed between said integrally connected to said toe sole and said heel sole, to enable extension and retraction of said toe sole and said heel sole from one another;
an instep gusset sheet extending from said anterior shoe part to said posterior shoe part
strap means releasably interconnecting said front and rear part; and
an adjustable mounting means for mounting said shoe on a skate means, said mounting means including a front plate fixed to said toe sole, a rear plate fixed to said heel sole, a connecting plate provided between sand slidably connected to said front and rear plates, and fastener means on said front and rear plates to attach said shoe to said skate means.

5,184,835
HANDLE HEIGHT ADJUSTER FOR BABY CARRIAGE
Mien-Cheog Huang, Tainan, Taiwan, assignor to Taiwan Charwell Enterprise Co., Ltd., Tainan, Taiwan
Filed Apr. 21, 1992, Ser. No. 871,717
Int. Cl.[5] B62B *9/20*
U.S. Cl. 280—47.371 **1 Claim**



1. A handle height adjuster for a baby carriage having its upper portion combined with an angle adjuster and its lower portion combined with a main rod of a baby carriage, comprising:
a connecting rod having an inner lengthwise passageway for the main rod to movably fitting therein, a round hole and a square hole respectively bored in two opposite side walls, and a top end connected with the angle adjuster;
a U-shaped plate fixed on the side wall bored with the square hole in the connecting rod, said U-shaped plate having an inner partition wherein an L-shaped push block fits;
said L-shaped push block having a rectangular opening in its vertical wall and two curved edges on two opposite sides;
an insert block having a square cross-section, a horizontal through hole and two projecting pins extending-out sidewise from two opposite sides;
an actuating plate shaped nearly as P, having a projection on the top surface for securing the bottom end of a coil spring, a through hole in the front vertical wall and an inner cavity for said push block to fit therein and two curved edges on two opposite side walls defining the inner cavity;
a lid to cover said actuating plate, keeping said push block, said insert block and the actuating plate secured in the inner partition in said U-shaped plate with said pins on said insert block bearing between said curved edges of the l-shaped push block and the curved edges of said actuating plate and having a through hole for a securing pin to pass through, said pin also passing through the through hole in said actuating plate, the through hole in said insert block, the opening in said push block, the square hole in the connecting rod and two slots in two opposite walls of a main rod;
said main rod of a baby carriage having a hollow square cross-section, an elongate slot on one side and an elongate slot with a plurality of engaging square holes spaced apart on the slot on the opposite side, movably inserted in the inner passageway in said connecting rod; and,
said actuating plate being manually pushed up and down in the partition of said U-shaped plate moving horizontally forward and backward said insert block inserting in one of the engaging square holes in said main rod and in the square hole in the connecting rod, said insert block leaving one of the square holes in said main rod and inserting in any of said square holes in the main rod to firmly secure the main rod with the connecting rod after the main rod is pulled up or down in adjusting the height of the height adjuster.

5,184,836
REFUSE CONTAINER HAVING STACKING AND NESTING HANDLES
Howard W. Andrews, Jr.; Paul E. Delmerico, and Greg P. Terek, all of Winchester, Va., assignors to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Oct. 26, 1990, Ser. No. 605,109
Int. Cl.[5] B62B *11/00*
U.S. Cl. 280—79.5 **17 Claims**

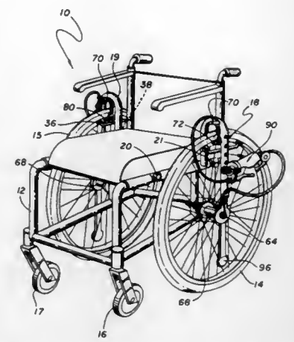


1. A quadrilateral first container comprising a bottom and four sidewalls extending upwardly therefrom and terminating at an upper rim; and said container further comprising a handle extending outward from at least one side of the container, the handle having two parallel spaced-apart sideplates connected at an inward end to said container one side, and a handle gripping segment connecting outward ends of said sideplates;
said container further comprising a recess formed within a second widewall, and having a position and configuration for receiving a handle of a second container when said first and second containers are placed in adjacent relationship, whereby sides of said first and second containers are in close opposing abutment.

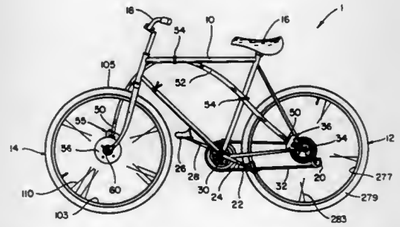
5,184,837
WHEELCHAIR
Tracey S. Alexander, 5450 N. Cumberland Dr., Tucson, Ariz. 85704
Continuation of Ser. No. 151,003, Feb. 1, 1988, abandoned. This application Aug. 13, 1990, Ser. No. 566,507
Int. Cl.[5] B62M *1/14, 1/16*
U.S. Cl. 280—250.1 **11 Claims**

1. An improved wheelchair comprising:
wheel means for providing rolling ability for said wheelchair, said wheel means having at least one wheel;
support means connected to said wheel means for supporting the occupant of said wheelchair; and
means for applying rotational force to said wheel means including handle means for receiving an application of force causing rotational movement to said wheel means,

said handle means including a handle connected to a lever, and said lever including counterbalance means for returning said lever to a predetermined position when no force is applied thereto.

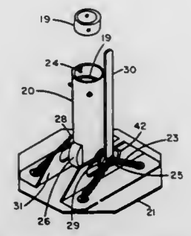


5,184,838
DUAL WHEEL DRIVEN BICYCLE
Billie J. Becoat, 914 Hampton, Altoo, Ill. 62002
Continuation of Ser. No. 647,590, Jan. 29, 1991, Pat. No. 5,116,070, which is a continuation-in-part of Ser. No. 404,695, Sep. 8, 1989, Pat. No. 5,004,258, which is a continuation of Ser. No. 98,498, Sep. 18, 1987, Pat. No. 4,895,385. This application Apr. 17, 1992, Ser. No. 870,320
Int. Cl.[5] B62M *1/02*
U.S. Cl. 280—259 **10 Claims**



1. A dual wheel driven bicycle, including a frame, a front wheel, a rear wheel and means for driving the rear wheel, comprising:
(a) an elongate flexible shaft for transmitting rotational movement to the front wheel, said elongate flexible shaft having a first end and a second end;
(b) drive means connected to said first end of said elongate flexible shaft, said drive means including gears mounted on the frame and the rear wheel, said gears imparting continuous rotation to said elongate shaft when the rear wheel is rotating;
(c) motive means connected to said second end of said elongate flexible shaft receiving rotational movement from said elongate flexible shaft and transferring this rotational movement to the front wheel; and
(d) said elongate flexible shaft supported by the frame and held in fixed arcuate position relative to the frame permitting continuous rotational movement of said shaft when the rear wheel rotates.

5,184,839
SPEEDY HITCH KIT
Harry R. Guedry, 3913 Augusta St., Metairie, La. 70001
Filed Apr. 24, 1991, Ser. No. 690,307
Int. Cl.[5] B60D *1/06*
U.S. Cl. 280—475 **1 Claim**



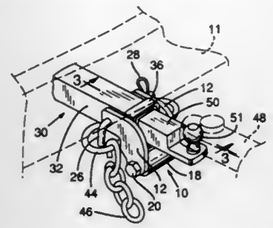
1. A detachable base-plate assembly providing a means for support to the tongue of a towed vehicle of a tongue-loaded, weight-transfer type during standing, coupling, and uncoupling operations, said base-plate assembly comprising:
a base plate defining a generally flat ground-contactable undersurface and an upper surface;
a pair of rail-like projections disposed directionally parallel each to the other across and normal the base plate upper surface, said pair providing a pathway across the base plate upper surface for a rotatable wheel mounted on an axle of a wheel-axle unit, the paired rail-like projections extending normally from the base plate upper surface and each rail-like projection including a longitudinal slot for limiting movement of one of the two ends of said axle;
an elongated member for bridging a space intervening the base plate upper surface and a tongue jack of the towed vehicle, the axle unit being yoke-linked via said axle to said elongated member, the lower end of said elongated member being proximal the upper surface of the base plate, the upper end of the elongated member being distal to the base plate upper surface such that said upper end can be selectively positioned to detachably mate with the towed vehicle tongue jack;
elastic travel restraints for the wheel-axle unit, comprising two matched pairs of juxtaposed counteracting elastic members, each elastic member secured at one end to the wheel-axle unit, the other end of each elastic member secured to the upper surface of the base plate, the pairs balanced tensionally to maintain a normally central position for the wheel-axle unit and elongated member on the upper surface of the base plate;
and a lever proximal the wheel-axle unit providing a means for manually rotating the wheel and axle unit.

5,184,840
HITCH PROTECTOR
Jerry A. Edwards, 140 SE. 99th, Portland, Oreg. 97216
Filed Jun. 12, 1992, Ser. No. 897,421
Int. Cl.[5] B60D *1/60*
U.S. Cl. 280—507 **9 Claims**

1. A device for protecting the end of a receiver-type hitch from engagement with an obstacle, a socket of said hitch having an opening for receiving a hitch adapter and aligned bores for receiving a retention pin, said device comprising:
a pair of side plates each having retention pin receiving apertures near one end;
a stop block affixed to and between said side plate pair, said side plates and said stop block defining a frame;
a roller rotatably mounted to said frame and positioned between said side plates at an end opposite said pin receiving apertures;
said frame end mountable on an end of said socket with said

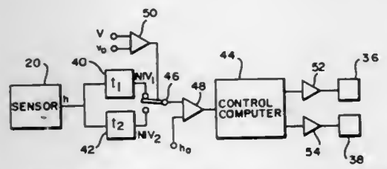
VOL
1147
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pin receiving apertures aligned with said aligned bores and said roller juxtaposed below the end of said socket;
a retention pin insertable in the aligned apertures and bores for retaining said frame to said socket; and,



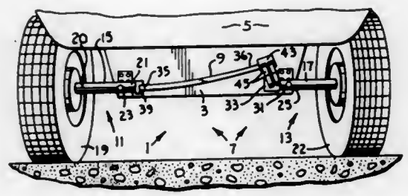
whereby said roller of said frame protects the end of said socket from engagement with an obstacle.

5,184,841
HEIGHT REGULATING SYSTEM FOR A VEHICLE WITH AIR SUSPENSION
Jürgen Pischke, Weissach, and Engelbert Tillhon, Lauffen, both of Fed. Rep. of Germany, assignors to Robert Bosch CmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/EP88/00316, § 371 Date Oct. 15, 1989, § 102(e) Date Oct. 15, 1989, PCT Pub. No. WO89/09704, PCT Pub. Date Oct. 19, 1989
PCT Filed Apr. 14, 1988, Ser. No. 585,164
Int. Cl.[5] B60G *17/015*
U.S. Cl. 280—707 **3 Claims**



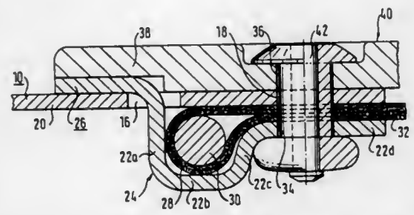
1. A height regulating system for a vehicle travelling at a road velocity (v), the vehicle having a vehicle body and an air spring suspension, the system comprising:
sensor means for measuring the actual height (h) of the vehicle body and producing a first height signal indicative of said actual height (h), said sensor means being disposed between the vehicle body and an axle of the vehicle;
first filter means having a first time constant (t_1) for filtering said first height signal to produce a first smoothed signal;
second filter means for filtering said first height signal to produce a second smoothed signal, said second filter means having a time constant (t_2) greater than said first time constant (t_1);
first comparison means for comparing said actual road velocity (v) to a threshold road velocity (v_0) and for issuing a switching signal when said road velocity exceeds or drops below said threshold road velocity (v_0);
second comparison means for comparing said first smoothed signal with a second height signal indicative of a desired height (h_0) of the vehicle body to produce a first correction signal and for comparing said second smoothed signal with said second height signal to produce a second correction signal;
control means for controlling the admission and release of air to and from the air spring suspension in correspondence to one of said corrective signals; and,
switch means operable in response to said switching signal for applying one of said corrective signals to said control means in dependence upon said road velocity (v) of the vehicle.

5,184,842
VEHICLE SUSPENSION MECHANISM
Jeffrey M. Stockton, 1109 W. Oak, Arkansas City, Kans. 67005
Filed Aug. 22, 1991, Ser. No. 748,469
Int. Cl.[5] B60G *11/02*
U.S. Cl. 280—719 **19 Claims**



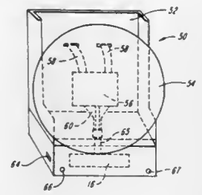
1. An axle and suspension system for a vehicle including a pair of wheels and having a direction of travel, which comprises:
(a) axle means having opposite first and second ends each mounting one of said wheels;
(b) first and second rotational mounting means for rotatably mounting said axle means on said vehicle at first and second rotational axes, each such rotational axis extending generally parallel to said vehicle direction of travel; and
(c) spring moment transfer means for transferring a moment with respect to one of said rotational axes such that a similar but counter moment is created with respect to the other one of said rotational axes; said spring moment transfer means connected to said rotational mounting means on sides of said rotational axes opposite the wheels.

5,184,843
GAS BAG ASSEMBLY
Jürgen Berger, Mutlangen, and Norbert Lang, Mulfingen, both of Fed. Rep. of Germany, assignors to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany
Filed Oct. 22, 1991, Ser. No. 780,148
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1990, 9014749[U]
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 **5 Claims**



1. A gas bag assembly for a gas bag restraint system for a vehicle, said gas bag assembly comprising:
an accommodating housing including a wall portion having openings, said wall portion having an inside and an outside;
a gas bag accommodated in said housing, said gas bag having an edge defining a substantially rectangular inflation opening;
at least one profile element for fixing said edge of said gas bag to said wall portion of said housing, said profile element including a flat, longitudinally extending main section and a plurality of tab sections spaced along said main section, each tab section having an opening and including a groove-shaped engaging portion, said tab section openings being aligned with said wall portion openings for passing rivets therethrough; and
a sewn-in reinforcing element provided along said edge of said gas bag and forming a bead, said main section of said profile element extending along the outside of said wall portion and said engaging portions of said tab sections of said profile element engaging said bead with an interference fit on the inside of said wall portion when rivets are passed through said tab section openings and said wall portion openings.

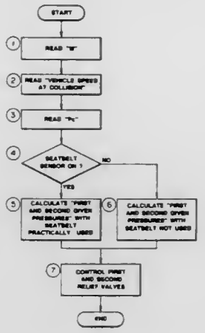
5,184,844
INTEGRAL INFLATABLE OCCUPANT RESTRAINT SYSTEM
Dan Goor, Colorado Springs, Colo., assignor to Goor Associates, Inc., Colorado Springs, Colo.
Continuation-in-part of Ser. No. 618,397, Nov. 27, 1990, Pat. No. 5,100,169. This application Jan. 17, 1992, Ser. No. 822,272
Int. Cl.[5] B60R *21/18*
U.S. Cl. 280—733 **29 Claims**



1. A child safety seat incorporating an inflatable restraint system for protecting an occupant of said child safety seat in a moving vehicle upon rapid deceleration thereof, comprising:
a child seat, wherein said child seat is adapted for use in said moving vehicle;
at least one restraint module mounted on said child seat adjustably disposed adjacent to said occupant, said at least one restraint module comprising:
an inflatable bag for deployment from said at least one restraint module in a direction away from said occupant;
a high pressure gas generator for inflating said inflatable bag and for exerting a reactionary force against said occupant in a direction opposite the direction of inflation of said inflatable bag;
at least one sensor means, coupled to said high pressure gas generator for providing an output signal to trigger said inflation upon detection of a predetermined event.

5,184,845
AIR-BAG SYSTEM
Hideo Omura, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Continuation of Ser. No. 354,164, May 19, 1989, abandoned. This application Feb. 8, 1991, Ser. No. 652,488
Claims priority, application Japan, May 20, 1988, 63-65845[U]; Feb. 17, 1989, 1-38040
Int. Cl.[5] B60R *21/28*
U.S. Cl. 280—735 **10 Claims**

1. An air-bag system in a motor vehicle, comprising:
a container;
an expandable air-bag proper contained in said container, said container being broken upon inflation of said air-bag proper;
inflator means for inflating said air-bag proper upon electric energization thereof in response to an application of an abnormal shock to the vehicle, wherein upon inflation of said air-bag proper by said inflator means, the pressure in said air-bag proper being immediately reduced due to the force of inertia of the expanding air-bag proper; and
pressure control means for controlling the pressure in said air-bag proper after the sudden pressure reduction to retain the pressure in said air-bag proper at a predetermined level to control the pressure in the air-bag proper after sudden increase of the pressure in the air-bag proper caused by an occupant colliding said air-bag proper to reduce impact to said occupant,
wherein said pressure control means includes:
a first relief valve for communicating the interior of said air-bag proper with the atmosphere when the internal pressure of said air-bag proper reaches a first given pressure;
a second relief valve for communicating the interior of said air-bag proper with the atmosphere when the internal pressure of said air-bag proper reaches a second given pressure, said second given pressure being higher than said first given pressure;
sensor means for issuing information signals representative of the condition of the vehicle at the time when a vehicle collision occurs; and
a control unit for controlling the characteristics of said first and second relief valves in accordance with the information signal from said sensor means.

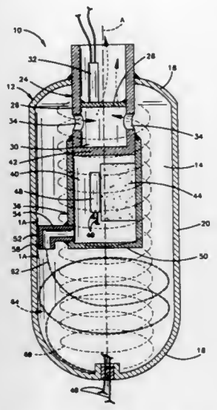


5,184,846
INFLATOR ASSEMBLY
George W. Goetz, Rochester Hills, Mich., assignor to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Nov. 1, 1991, Ser. No. 786,276
Int. Cl.[5] B60R *21/26*
U.S. Cl. 280—736 **16 Claims**

1. An apparatus for inflating a vehicle occupant restraint, said apparatus comprising:
container means having a chamber for storing gas;
a body of ignitable material;
means for igniting the body of ignitable material to form combustion products including gaseous and other materials; and

VOL 1147 ISS 2 FEB 9 1993 UMI

means for causing the combustion products to flow along a generally helical path in said chamber to at least partially



separate the other materials from the gaseous materials while heating the gas in said chamber.

5,184,847

LIQUID CRYSTAL COMPOUNDS

Yoshiichi Suzuki; Hiroyuki Mogamiya, and Ichiro Kawamura, all of Tokyo, Japan, assignors to Showa Shell Sekiyu Kabushiki Kaisha, Tokyo, Japan

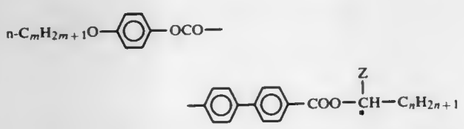
Continuation of Ser. No. 533,813, Jun. 6, 1990, abandoned. This application Nov. 4, 1991, Ser. No. 785,877

Claims priority, application Japan, Jun. 6, 1989, 1-143472

Int. Cl.[5] C09K *19/12, 19/20;* **C07C** *69/76*

U.S. Cl. 252—299.65 **4 Claims**

1. Liquid crystal compound of the formula



wherein Z is a fluorine-containing alkyl group, m is an integer of 5 to 14, n is an integer of 4 to 12, and * designates a chiral carbon atom, which exhibits S*(3) phase where the liquid crystal compound shows optically tristable states when electric voltage is applied.

5,184,848

HOLOGRAM CALENDAR

Masakazu Itoh, and Satoshi Yamazaki, both of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP90/01101, § 371 Date Jun. 13, 1991, § 102(e) Date Jun. 13, 1991, PCT Pub. No. WO91/03380, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 30, 1990, Ser. No. 678,329

Claims priority, application Japan, Aug. 31, 1989, 1-101861

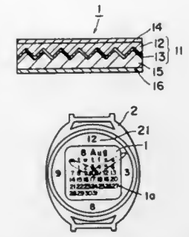
Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—2 **10 Claims**

1. A transparent hologram calendar to be bonded onto the surface of an article and peeled after the passage of a predetermined period, comprising:

a transparent or translucent hologram formation layer formed by recording calendar information as a hologram image capable of reproducing a visible image by white light or reflected diffraction light; and

a tackifier layer formed on one of the surfaces of said hologram formation layer and having both bonding characteristics sufficient to bond said calendar onto the surface of said article and re-peel characteristics sufficient to peel said calendar easily therefrom after the passage of a predetermined period from bonding, wherein the bonding power of said tackifier layer is in the range of from 200 to 1,300 g/25 mm and its tack is 10 or below so as to provide both bonding power sufficient to bond said calendar onto said article surface and re-peel characteristics sufficient to peel said calendar easily from said article surface after the passage of a predetermined period.



5,184,849

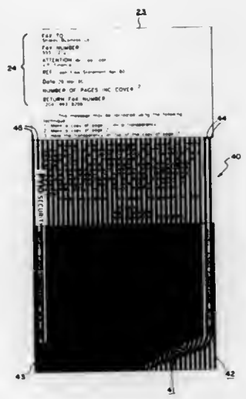
SECURITY SYSTEM METHOD AND ARTICLE FOR PHOTOCOPIERS AND TELEFAX MACHINES

Geoffrey L. Taylor, 211 Oak Street, Winnipeg, Manitoba, Canada R3M 3P7

Filed May 7, 1991, Ser. No. 696,736

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—67 **27 Claims**



1. A method for rendering information contained in a document unreadable to a casual observer comprising:

a. performing a first masking of said document by covering said document with a mask having alternating transparent and opaque regions, said opaque regions obscuring sufficient information on said document to make said document unreadable,

b. forming an image of said first masked document, said image being referred to as a first coded half-image,

c. performing a second masking of said document by covering said document with a mask having alternating transparent and opaque regions, said opaque regions obscuring those portions of said information on said document which were not obscured in said first masking operation, and

d. forming an image of said second masked document, said image being referred to as a second half-image, whereby superimposing said first and second half-images produces a readable reproduction of said document.

5,184,850

METHOD OF CONNECTING PIPES OF PLASTICS MATERIAL OF A DOUBLE PIPE SYSTEM AND A PIPE CONNECTION MADE BY THE METHOD

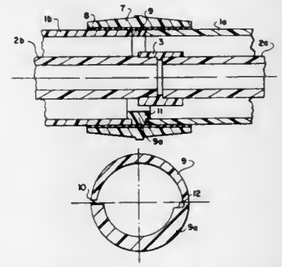
Jörg Wermelinger, Schaffhausen, Switzerland, assignor to Georg Fischer AG, Schaffhausen, Switzerland

Division of Ser. No. 549,361, Jul. 6, 1990, Pat. No. 5,087,308. This application Oct. 25, 1991, Ser. No. 784,473

Claims priority, application Switzerland, Jul. 7, 1990, 02538/89

Int. Cl.[5] F16L *47/00*

U.S. Cl. 285—21 **3 Claims**



1. In a pipe connection of a double pipe system having inner and outer pipes, wherein the inner pipes are rigidly connected by means of a sleeve member welded or glued to the inner pipes and the outer pipes are rigidly connected by means of a welding sleeve, the improvement comprising:

means for holding the ends of the outer pipes to be connected concentrically relative to each other and at a predetermined distance from each other; and said means includes

an expandable intermediate ring mounted between the ends of the outer pipes, the intermediate ring being provided with a radial slot and hinge means for expanding said ring, wherein the welding sleeve is an electric welding sleeve and is mounted on the outer circumference of the ends of the outer pipes and of the intermediate ring so as to bridge the axial distance between the outer pipes

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5,184,851

COUPLING WITH AUXILIARY LATCH AND RELEASE MECHANISM

Fred Sparling, 122 Waterford Bridge Road, St. John's, Newfoundland, Canada A1E 1C9 , and Wilfred Maloney, 25 Cotton Street, Gander, Newfoundland, Canada A1V 1E3

Filed Sep. 25, 1991, Ser. No. 765,090

Int. Cl.[5] F16L *33/00*

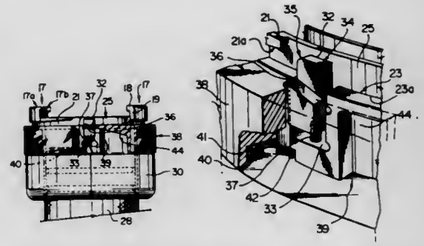
U.S. Cl. 285—79 **13 Claims**

12. A coupling half designed to mate with an identical coupling half to form a coupling for interconnecting sections of hose or the like, said coupling half comprising:

a tubular body having at one end a projecting tooth structure and a complementary socket arrangement constituted by a plurality of uniformly spaced arcuate connector teeth axially outstanding from the tubular body and terminating in a radially inwardly directed arcuate protrusion, a plurality of radially outwardly directed arcuate ribs circumferentially aligned with said teeth, and a plurality of tooth entrance ways located circumferentially between each of said ribs and each of said teeth;

detent locking means associated with said socket arrangement being mounted in said body to be movable towards and away from an advanced position and means for moving said detent locking means toward the advanced position;

detent unlocking means comprising an annular ring supported on said body to be angularly rotatable thereon, said ring being resiliently biased in one direction of rotation to an inoperative position and being angularly movable in the opposite direction to an active position wherein it



engages the detent locking means to retract it away from said advanced position;

the arrangement being such that said coupling half is connectable to an identical opposed coupling half by interengagement between the complementary tooth structures and socket arrangements to form the coupling with each of said locking detent means automatically moving to its advanced position to block disengagement from the socket arrangement of the tooth structure of the opposed coupling half; disengagement of said coupling half from an identical opposed coupling half requiring angular rotation of each of said annular rings in opposite directions.

5,184,852

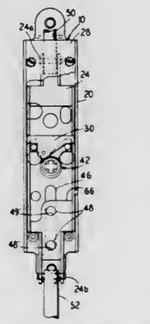
ROD AND CASE ASSEMBLY

James O'Brien, Burbank, Calif., assignor to Thomas Industries Inc., Builders Brass Works Division, Los Angeles, Calif.

Filed Jul. 23, 1991, Ser. No. 734,566

Int. Cl.[5] E05C *15/02*

U.S. Cl. 292—40 **29 Claims**



1. A casing assembly for mounting into a door stile of a door fitted into a door frame, the assembly operable by a user for disengaging at least one latch protruding from the door stile from the door frame, the assembly comprising:

a chassis mounted to the door stile;

an actuator means for retracting the latch from the door

VOL
1147
ISS
2
FE
9
1993
UMI

frame, said actuator means mechanically connected to said latch, said actuator means slidably mounted to said chassis for vertical movement with respect to said chassis, said actuator means having a trailing portion thereon;

a delatch means mounted to said chassis but having at least one degree of freedom for movement, said delatch means movable to underlie said trailing portion for dogging said actuator means in a vertically raised position;

a lock/unlock means mounted to said chassis having at least one degree of freedom for movement and having an abutment portion engageable with the trailing portion of said actuator means for imparting an upward thrust on said actuator means when said lock/unlock means is selectively moved; and

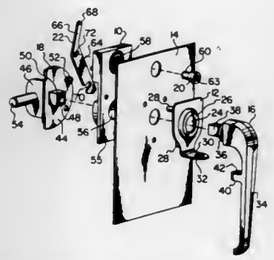
a rotation means, mounted to said chassis, for receiving a selective rotation force from the user and for selectively moving said lock/unlock means and said delatch means.

5,184,853

TOOL OPERABLE DOOR LOCK MECHANISM

Richard F. Whatley, Suwanee, Ga., assignor to Northern Telecom Limited, Montreal, Canada

Filed Jul. 1, 1992, Ser. No. 907,020
Int. Cl.[5] E05C *3/04*
U.S. Cl. 292—205 **12 Claims**



1. A door lock mechanism, comprising:

base means for fixedly attaching the door lock mechanism to a door panel;

latch means abutting the base means and pivotal between first and second positions, the first position corresponding to a latched state of the door lock mechanism;

handle means abutting the base means and engaging the latch means for operation thereof;

tool operable means rotatively coupled to the base means and adapted to receive a predetermined tool;

pawl means coupled to the tool operable means, operable between first and second positions; and

means for biassing the pawl toward one of the first and second positions, the first position corresponding to a locked state in which the pawl means engages the latch means in its first position, whereby biassing toward the first position enables the use of the tool operable means for disengaging the pawl means from the latch means and whereby biassing towards the second position prevents the pawl means from engaging the latch means thereby disabling the tool operable means.

5,184,854

ELECTROMAGNETIC LOCK

Mavis Chen, No. 396 Ke-Nan St., Taipei, Taiwan

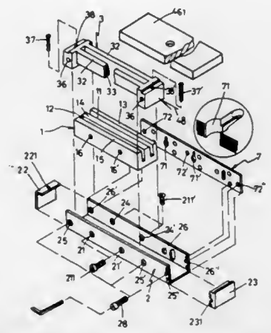
Filed Feb. 3, 1992, Ser. No. 829,255
Int. Cl.[5] E05C *19/16*
U.S. Cl. 292—251.5 **8 Claims**

1. An electromagnetic lock comprising:

an electromagnetic core, said electromagnetic core being integratedly made from a conductive magnetic material in a unitary piece and an elongated shape and having elongated grooves thereon;

a coil unit, said coil unit comprised of an electromagnetic coil and being fastened in said elongated grooves on said electromagnetic core;

a U-shaped casing having a base member and a pair of opposing side walls for insert of said electromagnetic core, said casing being formed from a channel plate having two opposite ends thereof secured respectively to two end plates, said two end plates being to firmly secure said electromagnetic core in said casing, at least one of said two end plates having at least one end secured to either of said side walls of said casing by a mounting screw and



fastened thereto by a locking screw inserted through a top surface thereof positionally located perpendicular to said mounting screw for positionally locking said mounting screw and preventing displacement thereof;

an armature plate fastened to a door panel, said armature plate being made from a conductive magnetic material; and,

a control circuit;

wherein said control circuit is controlled to connect a power supply to energize said electromagnetic coil causing said electromagnetic core and said armature plate to be secured to each other, or disconnect said power supply from said electromagnetic coil causing said electromagnetic core and said armature plate to be released.

5,184,855

ELECTROMAGNETIC DOOR LOCK ASSEMBLY

Kevin P. Waltz; William P. Dye, and Donald D. Baker, all of Indianapolis, Ind., assignors to Von Duprin, Inc., Indianapolis, Ind.

Filed Dec. 23, 1991, Ser. No. 812,713
Int. Cl.[5] H01H *47/00*; E05C *17/56*
U.S. Cl. 292—251.5 **33 Claims**

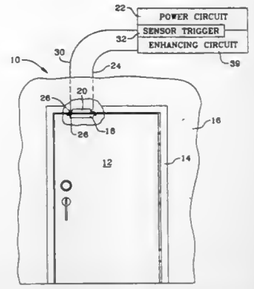
1. An electromagnetic door lock assembly comprising:

an electromagnet positioned in a frame adjacent to a door;

an adjustable armature assembly positioned in the door for interaction with the electromagnet, the armature assembly including an armature plate and biasing means for biasing the armature plate away from the electromagnet;

a backing plate situated adjacent to a back surface of the armature plate, coupling means for coupling the backing plate to the armature plate, said biasing means biasing the backing plate and armature plate toward each other; and

power means for providing power to the electromagnet sufficient to hold the armature plate in contact with the electromagnet, the power means including enhancing means for developing an initial enhanced current through the electromagnet to assure armature plate attraction to



the electromagnet against the added force provided by the biasing means.

5,184,856

DOOR LOCK ARMATURE ASSEMBLY

Kevin P. Waltz, Indianapolis, Ind., assignor to Von Duprin, Inc., Indianapolis, Ind.

Filed Jul. 30, 1992, Ser. No. 921,777
Int. Cl.[5] E05C *17/56*
U.S. Cl. 292—251.5 **20 Claims**

1. An electromagnetic door lock assembly comprising:

an electromagnet;

means for mounting the electromagnet in a frame adjacent to a door, the mounting means including shoulder means for interacting with an associated armature means to enhance resistance to shearing movement between the electromagnet and armature;

the armature means provided for positioning in the door for interaction with the electromagnet, the armature means including an armature plate, a backing plate, and biasing means for biasing the armature plate away from the electromagnet; and

first and second shear elements replaceably affixed to the armature plate to confront the shoulder means.

5,184,857

REMOVABLE SIDE MOLDING TO PROTECT THE SIDE OF A VEHICLE

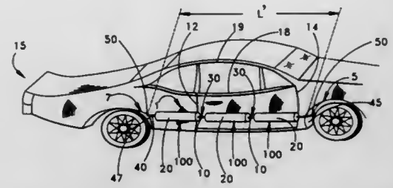
Michael J. Hawkins, 2346 Jeffrey Rd., Camarillo, Calif. 93012

Filed May 7, 1992, Ser. No. 879,294
Int. Cl.[5] B60R *19/42*
U.S. Cl. 293—128 **26 Claims**

1. A removable vehicle molding, secured between the two wheel wells at the side of the vehicle, to protect the vehicle from scratches and dents inflicted by nearby vehicles, comprising:

a. a plurality of cushioning segments which are comprised of an inner hollow core tubing member which conformably fits inside and concentric to a foam outer tube member;

b. an interconnection of the cushioning segments by means of a slip fit between each adjacent inner core tubing member of each adjacent cushioning segment to form a rigid length of cushioning segments extending the length of the combined segments;



c. a flexible stretch cord connecting means which passes through the hollow center of the core tubing member of the cushioning segments and has two ends with an anchoring hook attached at each respective end to enable the movable vehicle molding to be anchored to the two respective wells at the side of the vehicle;

d. a spacing between the cushioning segments, where the inner core tubing members can be disconnected at the location of the slip fit and folded for storage; and

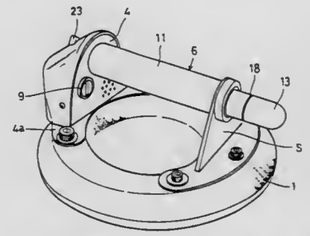
e. at least one hose handle located in said spacing area between said cushioning segments to grip the apparatus during installation or removal.

5,184,858

SUCKER FOR PLATE GLASS

Toshimitsu Arai, Sakai, Japan, assignor to Toyo Sangyo Co., Ltd., Osaka, Japan

Filed Sep. 17, 1991, Ser. No. 761,245
Int. Cl.[5] B25J *15/06*; B66C *1/02*; G01L *19/12*
U.S. Cl. 294—64.1 **2 Claims**



1. A sucker comprising: a sucker body having a suction surface and defining a suction hole at said suction surface; a pair of support plates disposed on said sucker body; a manually operatable vacuum pump extending between said support plates, said vacuum pump defining a suction hole therein through which air is evacuated when the pump is manually operated; a suction channel placing the suction hole of said vacuum pump in communication with the suction hole of said sucker body; a sensor communicating with said suction channel, said sensor including a piston lever which moves in proportion to the degree of vacuum in said channel; a switch operatively connected to said piston lever so as to be closed by said piston lever when the degree of vacuum sensed by said sensor reaches a predetermined value; a power source; and a sound generator in circuit with said power source via said switch, said sound generator gererating sound when power is supplied thereto, and said sound generator being operatively

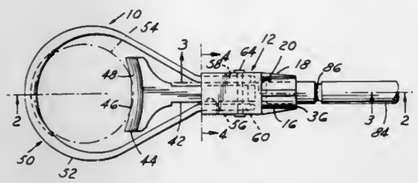
VOL 1147 ISS 2 FE 9 1993 UMI

electrically connected to said power source when said switch is closed so as to receive power therefrom and generate sound.

5,184,859
GOLF BALL RETRIEVER

Thomas E. Nihra, and Joseph A. Nihra, both of Hazel Park, Mich.

Continuation-in-part of Ser. No. 792,666, Nov. 15, 1991, abandoned. This application Apr. 20, 1992, Ser. No. 871,003
Int. Cl.[5] A63B *47/02*
U.S. Cl. 294—19.2 **12 Claims**

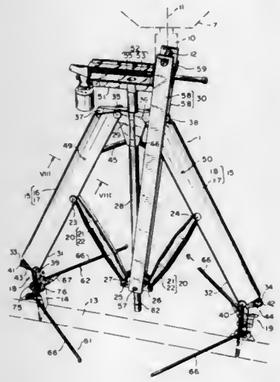


1. A golf ball retriever comprising a molded body having two outer and a middle opening formed in one end thereof, the middle opening having oppositely disposed tapered sides formed thereon, a molded flipper pivotally mounted in said middle opening between said tapered sides, a molded partial ring-like member having two legs formed thereon and mounted in said two outer openings and a spherical pocket formed in the inner surface thereof opposite said two legs, and a single pin mounted through aligned openings formed in said molded body, said legs and said molded flipper.

5,184,860
MOTORIZED REMOTE-CONTROLLED LOAD GRIPPING DEVICE

Hubert Bouillon, and Claude Dessaux, both of La Clayette, France, assignors to Potain (Societe Anonyme), Ecully, France

Filed Mar. 12, 1991, Ser. No. 667,904
Claims priority, application France, Mar. 12, 1990, 90 03841
Int. Cl.[5] B66C *1/66*
U.S. Cl. 294—67.31 **11 Claims**

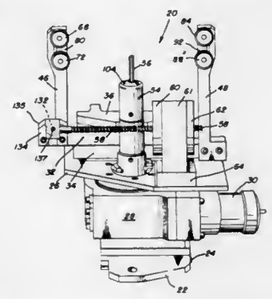


1. A motorized remote-controlled load gripping device for cable lifting mechanisms such as a turret slewing crane (2) having a distributing boom (3), said device being a flat hinged structure having a vertical axis of symmetry constituting a deformable quadrilateral, said device comprising:
- a gripper (15) having two arms (16, 17), said arms having an on-loading mechanism (18, 19) at a first end of each of said arms;
- a unit (20) having two connecting rods (21, 22) creating a deformable diamond shape with an upper part of said gripper (15);
- a substantially-vertical guide column (28) connected to a shoulder (27),
- lower ends of said two connecting rods (21, 22) rotatably connected to said shoulder,
- a slide connector (29) slidably engaged to said guide column (28),
- a second end of each of said arms rotatably connected to said slide connector (29);
- a connector arm (30) linking said shoulder (27) and said guide column (28) to a grappling rope (10),
- said grappling rope turning around a vertical axis (11),
- first, second and third motorized control link means respectively located between said guide column and said arms, between said connector and said gripper, and on said on-loading mechanism (45, 46, 52, 65, 68, 74, 77), for respectively opening and closing of said gripper (15), positioning of said connector arm (30) by pivoting, and centering and locking of said on-loading mechanism (18, 19), and
- electricity supply, monitoring and control means, for said motorized control link means.

5,184,861
SPLIT RAIL GRIPPER ASSEMBLY AND TOOL DRIVER THEREFOR

George M. Voellmer, Takoma Park, Md., assignor to The United States of America as represented by the Administrator, National Aeronautics & Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 656,924, Feb. 15, 1991, abandoned. This application Sep. 2, 1992, Ser. No. 938,577
Int. Cl.[5] B25J *15/08*
U.S. Cl. 294—119.1 **19 Claims**

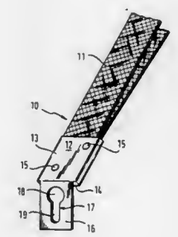


1. Split-rail robotic gripper apparatus, comprising:
- a base;
- a first and a second elongated rail located on said base and being movable in mutually opposite directions and supported by four crossed-roller bearings;
- housing means for holding said rails against said bearings;
- two of said bearings being located in parallel between the rails, the other two of said bearings being located between said housing means and said first and second rails, respectively, whereby each said rail is supported by three of said bearings in a triangular configuration;
- respective outwardly extending gripper finger means attached to said first and second rails for grasping and holding an object to be gripped;
- rack and pinion gear means coupling said rails together for providing simultaneous linear movement in mutually opposite directions when driven; and
- drive motor means coupled to said first elongated rail for driving said rails and gripper finger means in and out of engagement with said object to be gripped.

5,184,862
CARRIER DEVICE

Thomas Theobald, Heilbronn-Bockingen, Fed. Rep. of Germany, assignor to ITW-Ateco GmbH, Norderstedt, Fed. Rep. of Germany

Filed May 21, 1990, Ser. No. 525,822
Claims priority, application Fed. Rep. of Germany, May 19, 1989, 8906204
Int. Cl.[5] B65G *7/12*
U.S. Cl. 294—145 **13 Claims**

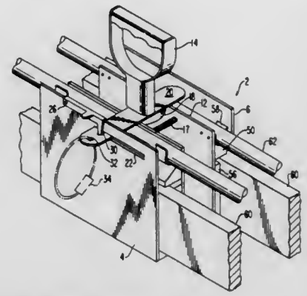


10. A detachable carrier device for transporting articles, comprising:
- a handling portion by means of which said articles can be handled once said detachable carrier device is attached to one of said articles;
- a coupling portion comprising an elongated aperture having a large diameter portion at one end thereof for initially permitting said coupling portion to pass over a head portion of a screw, threadedly engaged within one of said articles to be transported, under non-load conditions when said elongated aperture is disposed at a first position relative to said head portion of said screw, and a small diameter portion at an opposite end thereof for disposition behind said head portion of said screw threaded into said one of said articles when said coupling portion is moved to a second position relative to said head portion of said screw under load conditions;
- a support portion integrally connected to said coupling portion at one end portion of said support portion for transmitting a load to said coupling portion, and comprising pocket means defined within a second end portion of said support portion, said pocket means being open at said second end portion of said support portion so as to completely encompass an end portion of said handling portion; and
- fastening means fixedly mounted within said support portion and passing through said pocket means of said support portion and said end portion of said handling portion completely encompassed within said pocket means of said support portion for fixedly securing said end portion of said handling portion within said pocket means of said support portion.

5,184,863
SKI CARRIER

James K. Hurson, R.R. #3, Shelburne, Ontario, Canada L0N150

Continuation-in-part of Ser. No. 648,488, Feb. 1, 1991, abandoned. This application Jan. 29, 1992, Ser. No. 827,278
Int. Cl.[5] A63C *11/02*; B65D *69/00*
U.S. Cl. 294—147 **36 Claims**

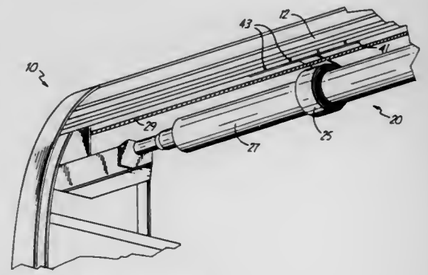


1. A carrier for skis comprising:
- (A) a rigid base member;
- (B) a handle projecting upwardly from a central portion of said base member;
- (C) a pair of jaws, each jaw comprising
  - an outer side member which extends from a lateral side portion of said base member, and
  - an inner side member which is disposed between said outer side member and said handle and which extends from said base member in parallel with said outer side member; and
- (D) actuating means for selectively driving at least an upper portion of at least one of said inner and outer side members of each of said jaws laterally with respect to said base member towards the other of said inner and outer side members.

5,184,864
COUNTER-BALANCE DEVICE WITH STRAP FOR ARTICULATED DOORS

Jerry T. Teigen, New Richmond, Wis., and Paul A. Villella, St. Paul, Minn., assignors to Dorso Trailer Sales Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 675,657, Mar. 27, 1991. This application Sep. 25, 1991, Ser. No. 766,368
Int. Cl.[5] B60P *3/00*; B60J *5/06*
U.S. Cl. 296—24.1 **12 Claims**

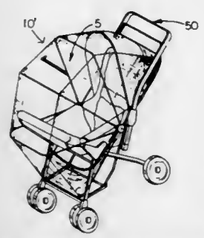


6. A truck body comprising:
- a floor;
- a roof;

VOL
1147
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9
1993
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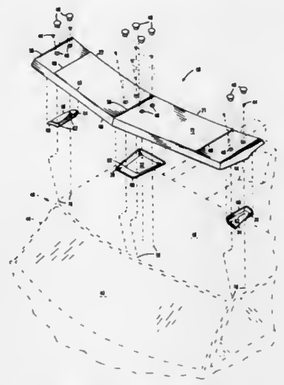
a plurality of exterior walls intermediate to the floor and the roof;
a door opening in one of the exterior walls, the door opening having a top, a left side, and a right side;
a left channel having a section positioned along the left side of the door opening connected by a curved section to a section positioned along the roof;
a right channel having a section positioned along the right side of the door opening connected by a curved section to a section positioned along the roof, wherein the left channel and the right channel form a door guiding track;
an articulated door slidably positioned in the door guiding track, movable between an open position and a closed position and having a bottom edge, the articulated door comprising:
a plurality of panel sections connected together such that a hinge is formed between adjacent panel sections, the hinge allowing the adjacent panel sections to be positioned at varying angles with respect to each other, each panel section having a left end extending into and guided by the left channel and a right end extending into and guided by the right channel; and
a counter-balance comprising:
mounting means for mounting the counter-balance proximate the top of the door opening;
a drum rotatably coupled to the mounting mean, the drum having a center positioned between the right and left sides of the door opening; and
a strap having a first end attached to the center of the drum and a second end attached proximate the bottom edge of the articulated door in a position which allows the door to be pulled straight up by the drum, wherein the strap is of sufficient width to enable the strap to roll up upon itself as the door is moved from the closed position to the open position.

5,184,865
INSECT NETTING FOR BABY STROLLER
Mani Mohtasham, 10665 SW.76th Ter., and Hamid Gharagozloo, 7896 SW. 106 Cir., both of Miami, Fla. 33173
Filed Dec. 13, 1991, Ser. No. 808,171
Int. Cl.[5] B60J *7/12*
U.S. Cl. 296—77.1 **7 Claims**



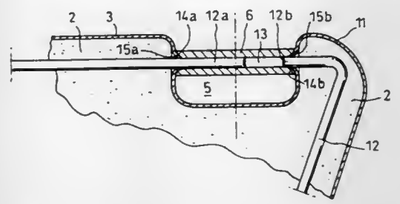
1. To be used in combination with a baby stroller; a portable insect netting assembly comprising:
a collapsible arched enclosure,
said arched enclosure including a top panel, a pair side panels, and an open bottom,
said side panels being generally semicircular in shape and including an arched peripheral edge and a bottom edge,
said top panel being attached to said arched peripheral edge of said pair of side panels at opposite elongate edges of said top panel,
said top panel and said pair of side panels being made of an open weave fabric,
collapsible frame means structured and disposed to define said arched enclosure,
said frame means including a pair of oppositely disposed rib bearing units, each centrally disposed along said bottom edges of said side panels,
said frame means further including a plurality of U-shaped ribs, all of which are attached, in generally spaced apart relation to one another, at opposite distal ends thereof, to said pair of oppositely disposed rib bearing units, thereby forming a radial support array about said bearing units,
said ribs including a pair of outermost ribs and a plurality of middle ribs, each of said ribs being foldable toward an adjacently positioned one of said ribs, thereby collapsing the arched enclosure,
each of said bearing units including two interlocking disks, each of said disks having an elongate arm wherein a distal end of a correspondingly positioned one of said outermost ribs is secured,
one of said disks including a concentrically disposed protruding portion adapted to be lockingly engaged with a second one of said disks,
each of said middle ribs including a pair of looped distal ends, each of said looped distal ends being structured and disposed for secure positioning over said protruding portion of one of said disks such that when said disks are interlocked with one another said ribs will remain in a substantially constant orientation unless purposefully collapsed, and
locking means structured and disposed to interlockingly attach said disks, said locking means including an axially extending spring connected at opposite distal ends thereof to each of said interlocking disks, thereby maintaining said disks in substantially tight interlocking relation.

5,184,866
MOTOR VEHICLE WINDSHIELD VISOR
William L. Dresen, Baraboo; Karl A. Niemi, Madison; Phillip L. Emery, Portage, and David G. Grunow, Oconto, all of Wis., assignors to Penda Corporation, Portage, Wis.
Filed Mar. 6, 1992, Ser. No. 847,706
Int. Cl.[5] B60J *3/00*
U.S. Cl. 296—95.1 **12 Claims**



1. A visor for a vehicle comprising:
a) a laterally extending upper member, defining a visor upper forward shading position adapted to extend frontwardly over and shade a vehicle windshield and a rear attachment portion adapted to extend rearwardly over the vehicle cab;
b) a plurality of visor attachment pods fixed to the visor upper member rear attachment portion and extending downwardly therefrom, wherein each attachment pod has an attachment floor for engagement against the surface of a vehicle cab rearward of the vehicle windshield, and a pod sidewall which extends upwardly from the pod floor and engages with and is fixed to the visor upper member, the pods serving to space the upper member attachment portion a fixed distance from the vehicle cab surface to provide passages for oncoming air beneath the visor upper member; and
c) portions of the visor upper member defining access holes above each pod floor, the access holes being adapted to provide access to the pod floors for the insertion and removal of fasteners to connect the pods to the vehicle cab surface.

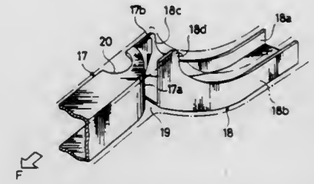
5,184,867
SUN-VISOR WITH COVERING AND SUPPORTING ARM
Charles B. Prillard, Rupt, France, assignor to Rockwell Automotive Body Systems-France, Paris la Defense, France
Filed Jan. 29, 1992, Ser. No. 827,614
Claims priority, application France, Jan. 31, 1991, 91 01118
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.9 **4 Claims**



1. Sun-visor for motor vehicles comprising:
a sun-visor body made of foam and having an edge with an indentation therein, a supporting arm transversing said indentation and a covering which covers said sun-visor body;
a rod made of a flexible material in said body and having two end portions extending in opposite directions in said indentation and coaxially to said supporting arm;
said supporting arm comprising an unsplit tube having two end faces and a bore into which said end portions of said rod are fitted;
said covering having parts surrounding said end portions of said rod which are gripped between said end faces and said sun-visor body;
said end portions being structured so that said supporting arm is mounted on said end portions of said rod, after covering said sun-visor body by said covering, by first bending one of said end portions and fitting said one end portion into said bore, and then by deforming the sun-visor body and introducing the second of said end portions into said bore.

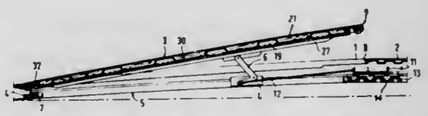
5,184,868
FRONT BODY STRUCTURE OF AN AUTOMOTIVE VEHICLE
Atsushi Nishiyama, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan
Filed Nov. 26, 1991, Ser. No. 798,154
Claims priority, application Japan, Nov. 29, 1990, 2-127893[U]; Oct. 11, 1991, 3-082758[U]
Int. Cl.[5] B62D *21/15*
U.S. Cl. 296—189 **5 Claims**

1. A front body structure of an automotive vehicle comprising:
a pair of support members disposed on opposite sides of a section between a front body and a passenger compartment of the automotive vehicle, the support members having high rigidity; and
a pair of front side frames disposed in a lengthwise direction of the vehicle, each of the front side frames comprising:
a front portion having a first wall and a second wall opposed to each other;
a rear portion connected to one of the support members; and
an intensive deformable means for allowing intensive compressive deformation of an intermediate portion before the rear portion of the front side frame when the vehicle encounters a head-on collision, comprising:
a first intensive deformable portion formed on the first wall, and
a second intensive deformable portion formed on the second wall, wherein
each first intensive deformable portion and each second intensive deformable portion are offset from each other in the lengthwise direction of the vehicle;



and wherein:
the front portion of each front side frame is provided with a front reinforcement member therein;
the rear portion of each front side frame is provided with a rear reinforcement member therein;
each first intensive deformable portion is formed by arranging the corresponding front reinforcement member and the corresponding rear reinforcement member so as to provide a space between a front end of said corresponding rear reinforcement member and a rear end of said corresponding front reinforcement member for locally reducing rigidity of the corresponding first wall; and
each second intensive deformable portion is formed by cutting away a portion of the corresponding front reinforcement member so as to provide a space for locally reducing rigidity of the corresponding second wall.

5,184,869
ELEVATABLE SLIDING ROOF OF FLAT DESIGN
Kurt Bauer, Eberstadt, Fed. Rep. of Germany, assignor to Karosseriewerke Weinsberg GmbH, Fed. Rep. of Germany
Continuation of Ser. No. 739,731, Jul. 30, 1991, abandoned, which is a continuation of Ser. No. 616,729, Nov. 21, 1990, abandoned, which is a continuation of Ser. No. 340,254, Apr. 19, 1989, abandoned. This application May 13, 1992, Ser. No. 882,296
Claims priority, application Fed. Rep. of Germany, Apr. 19, 1988, 3812955
Int. Cl.[5] B60J *7/05, 7/04*
U.S. Cl. 296—213 **9 Claims**



1. An elevatable sliding roof of a flat design, for a roof opening in a motor vehicle roof which has an arched contour toward a front of a motor vehicle, comprising:
a rigid roof cover;
a sliding roof cassette, said sliding roof cassette being arched in accordance with the arched contour of the vehicle roof;

VOL
1147
ISS
2
FE
9
1993
UMI

guide rails located in said sliding roof cassette, said guide rails being arched in accordance with the arched contour of the vehicle roof;

means for slidably supporting said roof cover, said supporting means including sliding pads provided on said guide rails;

elevating and lowering means for moving said roof cover from a closed position in which said roof cover lies in the contour of the motor vehicle roof into one of a raised ventilating position and a lowered sliding position;

a headliner cover associated with said roof cover and being pivotable relative to said roof cover;

a gutter provided so as to extend underneath a gap between a rear section of the vehicle roof and a rear edge of the roof cover, said gutter being shiftable at least jointly with the roof cover, said rigid roof cover being formed by two joined half shells, including an inner half shell, and with a fastening profile for a roof cover seal located along a peripheral edge of the roof cover;

a pusher rod connected at one end to said shiftable gutter and at another end to said elevating and lowering means so that when said roof cover is in the lowered sliding position thereof said gutter is shifted rearward so that said gutter no longer extends underneath the rear edge of the roof cover; and

a mating joint provided so as to fasten the two half shells to each other so that local hollow spaces exist between the two half shells, said roof cover including first stiffening means including a foam filling provided in the local hollow spaces between the two half shells, and second stiffening means including a reinforcement of the inner shell, said reinforcement being located along straight sections of the peripheral edge.

5,184,870

RAISABLE-SLIDING ROOF OF SHALLOW CONSTRUCTION FOR MOTOR VEHICLES

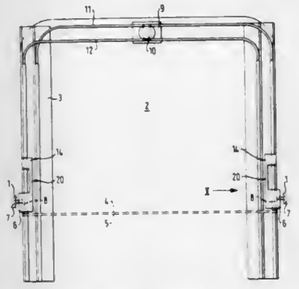
Karl Bauhof, Weinsberg, Fed. Rep. of Germany, assignor to Karosseriewerke Weinsberg GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 746,792, Aug. 12, 1991, abandoned, which is a continuation of Ser. No. 622,333, Nov. 27, 1990, abandoned, which is a continuation of Ser. No. 326,092, Mar. 21, 1989, abandoned. This application May 7, 1992, Ser. No. 879,814

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1988, 3809458

Int. Cl.[5] B60J *7/057*

U.S. Cl. 296—223 **8 Claims**



5. A mechanism for moving a sliding-raisable roof top for motor vehicles between at least two positions, said mechanism comprising,

a sliding roof case disposed beneath said roof top;

displacement means for said sliding roof case, said displacement means including guide rails;

a single drive motor;

two compression-resistant threaded cables connected with said motor so as to be driven synchronously in opposite directions so as to drive said roof top and displace said sliding roof case, each said threaded cable having one end with entrainment means coacting with said displacement means of said sliding roof case and another end extending rearwardly for co-acting with said roof top.

5,184,871

DETACHABLE CHAIR BACK

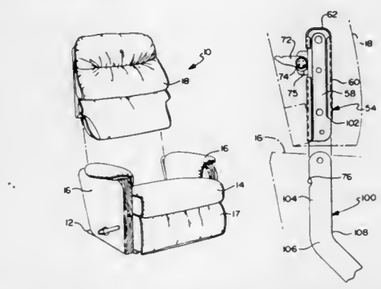
Larry P. LaPointe, Temperance, and Edwin J. Shoemaker, Monroe, both of Mich., assignors tu La-Z-Boy Chair Co., Monroe, Mich.

Continuation of Ser. No. 621,239, Nov. 30, 1990, abandoned.

This application Jan. 2, 1992, Ser. No. 816,849

Int. Cl.[5] A47C *7/00*

U.S. Cl. 297—444 **13 Claims**



1. A chair having a base assembly, a chair frame supported on said base assembly, a seat member supported on said chair frame, a pair of upstanding links secured to opposite inner side surfaces of said chair frame, a detachable seat back having a pair of slide brackets with longitudinal edge channels and an upper transverse edge portion secured to opposite outer side surfaces thereof and which are adapted to slidingly receive said upstanding links therein for supporting said seat back on said chair frame in a predetermined orientation relative to said seat member, and a locking mechanism for releaseably locking said seat back to said upstanding links, said locking mechanism including a locking arm supported from each of said slide brackets and which is pivotably moveable from a first position for locking said seat back to said upstanding links to a second position for permitting movement of said seat back relative to said upstanding links, an improvement wherein said locking arms having an arcuate offset cam surface adapted to matingly engage an arcuate notch formed on said upstanding links when said locking arms are moved to said first position for defining a substantially continuous line of contact therebetween, said locking mechanism further including transverse interference engagement means for augmenting the locking action of said arcuate cam surface within said arcuate notch, whereby said transverse interference engagement means is operable upon moving said locking arms to said first position such that said slide brackets are urged to move downwardly relative to said upstanding links so as to cause a transverse interference engagement between a lower end of one of said edge channels of said slide brackets and a generally transversely extending edge surface of said upstanding links such that said transverse interference engagement limits downward movement of said slide brackets on said link members and prevents said upper transverse edge portion of said slide brackets from contacting said link members.

5,184,872

DUMPING SEMI-TRAILER

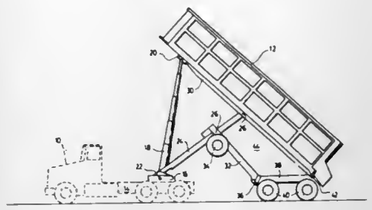
Bernard Larochelle, Sillery, and Robert Dupont, Québec, both of Canada, assignors to Phil Larochelle Equipments Inc., Quebec, Canada

Filed Jun. 11, 1991, Ser. No. 714,006

Claims priority, application Canada, Jun. 7, 1991, 2044127

Int. Cl.[5] B60P *1/16*

U.S. Cl. 298—22 AE **13 Claims**



1. A dumping semi-trailer for use with a tractor, the dumping semi-trailer comprising:

a dump body having a bottom frame with a front portion, a middle portion and a rear portion;

a hitch member for engaging with a complementary turntable hitch member of the tractor;

a front beam member pivotally connected at a front end to the hitch member and at a rear end to the middle portion of the bottom frame of the dump body;

a hydraulic cylinder extending between and pivotally connected to both the hitch member and the front portion of the bottom frame of the dump body;

a rear support frame member for supporting at least one axle bearing wheels, the rear support frame member being pivotally connected to the dump body at the rear portion of the bottom frame and including an upper support surface for supporting said rear portion of the dump body; and

a middle support frame member supporting a middle axle bearing wheels, the middle support frame member having a rear end pivotally connected to a front of the rear support frame member and a front end pivotally connected to the front beam member, the middle support frame member including an upper support surface for supporting the middle portion of the bottom frame of the dump body, whereby, when the cylinder is retracted, the bottom frame rests on the middle and the rear support frame members, and when the cylinder is extended, the rear support frame member remains substantially horizontal, such that a part of a load carried by the dump body may be substantially uniformly distributed between the at least one axle bearing wheels of the rear support frame member, the middle axle bearing wheels of the middle support frame member, and the front hitch member.

5,184,873

GUIDES FOR MINERAL WINNING MACHINES

Heinz-Otto Fiesel, Lunen, Fed. Rep. of Germany, assignor to Gewerkschaft Eisenhutte Westfalia GmbH, Lunen, Fed. Rep. of Germany

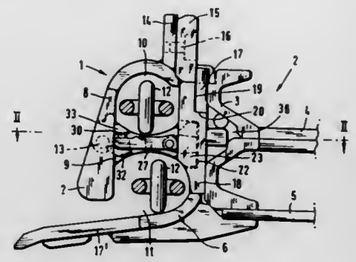
Filed Aug. 13, 1991, Ser. No. 744,369

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1990, 4025858

Int. Cl.[5] B65G *19/28;* **E21C** *35/12*

U.S. Cl. 299—43 **16 Claims**

1. In a guide for a mineral winning plough composed of guide sections attached to working faces of runs of channelling of a scraper chain conveyor, chain guide channels for a plough drive chain which are situated above one another and which are separated by spacers, covers for covering over the chain guide channels and toggle connections at abutting ends of at least one of the guide sections and the runs of channelling, the toggle connections comprising toggle connectors which fit into shaped conmpartments open towards the inside of the guide, each toggle connector having a securing element which serves as a handle and which in the coupled position extends from the compartment into a pocket of the guide and is held against the latter; the improvement comprising the compartments for the toggle connectors are positioned on rear parts of the plough guide sections which rests against the working face sides of the runs of channelling and the receiving pockets for the securing elements are situated in the plane of the spacers between the abutting ends of the guide sections.



5,184,874

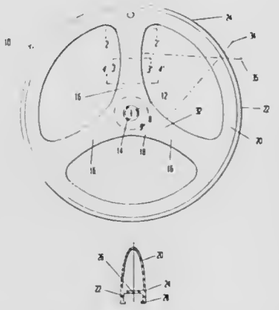
INJECTION MOLDED PLASTIC BICYCLE WHEEL

Paul D. Olson, 700 W. Walnut #98, Orange, Calif. 92668, and Kirk G. Jones, 1805 Via Allena, Oceanside, Calif. 92056

Continuation-in-part of Ser. No. 506,715, Apr. 10, 1990, abandoned. This application May 17, 1991, Ser. No. 702,046

Int. Cl.[5] B60B *5/02*

U.S. Cl. 301—64.7 **23 Claims**



1. A single-piece, hollow-form bicycle wheel having a central hub, and a hollow-form annular rim formed with integral rim sidewalls and an integral rim base wall enclosing an annular cavity and joined to said central hub with hollow-form spokes, and said wheel formed entirely by injection molding of a fiber-reinforced plastic.

VOL 1147 ISS 2 FEB 9 1993 UMI

5,184,875

METHOD FOR OPERATING THE BRAKE SYSTEM OF A COMMERCIAL VEHICLE

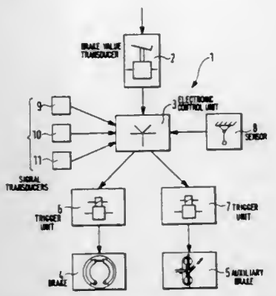
Juergen Wrede, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 2, 1991, Ser. No. 694,614

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1990, 4024078

Int. Cl.[5] B60T *10/00, 17/18;* H02P *15/00;* G01L *5/28*

U.S. Cl. 303—3 8 Claims



1. A method for operating a brake system (**1**) of a commercial vehicle having a friction-affected service brake (**4**) and a wear-free auxiliary brake (**5**), which comprises actuating a brake value transducer (**2**) by a driver to produce a brake output value signal for deceleration of the vehicle; directing said brake output value signal to an electronic control unit (**3**), directing different brake value signals from different signal transducers (**9–11**) and directing signals from a deceleration sensor (**8**) to said control unit (**3**), operating said control unit (**3**) which receives the brake output value signal from said brake value transducer, said brake value signals from the different signal transducers and said deceleration sensor to produce a control signal; directing the control signal from said control unit to a first trigger unit (**7**) to trigger the wear-free auxiliary brake (**5**); detecting and evaluating the braking action of said wear-free auxiliary brake and upon a request for further braking, controlling the control unit (**3**) to trigger a second trigger unit (**6**) thereby switching on the service brake (**4**); detecting the number, intensity, and duration of braking events by the service brake (**4**); deactivating the wear-free auxiliary brake and subsequently as a function of the number of braking events, their intensity and duration, to trigger the service brake (**4**) exclusively to avoid glazing.

5,184,876

ANTI LOCK BRAKING SYSTEM

Claus Beyer, Schwieberdingen; Peter Dominke, Bietigheim-Bissingen, and Eberhard Sonntag, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/EP89/01352, § 371 Date Jun. 14, 1991, § 102(e) Date Jun. 14, 1991, PCT Pub. No. WO90/06874, PCT Pub. Date Jun. 28, 1990

PCT Filed Nov. 11, 1989, Ser. No. 689,861

Claims priority, application Fed. Rep. of Germany, Dec. 14, 1988, 3841957

Int. Cl.[5] B60T *8/66*

U.S. Cl. 303—106 16 Claims

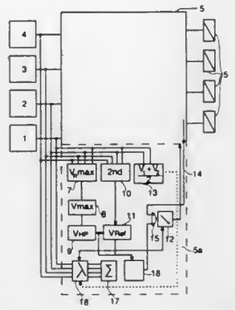
1. Antilocking control system for preventing locking of the wheels of a vehicle during braking, said vehicle having two driven and two non-driven wheels, said system being of the type comprising wheel speed sensors which generate wheel speed signals for the respective wheels, brake pressure control devices assigned to the vehicle wheels, and an evaluation circuit which receives wheel speed signals from said sensors, generates a reference speed, and produces control signals for said brake pressure control devices to prevent the wheels from locking, said evaluation circuit comprising

means for generating an auxiliary reference value from the speed of the fastest turning wheel,

means for determining the slope of the auxiliary reference value,

means for generating a first reference speed from the speed of the second fastest turning wheel and, in case of a sudden drop in the speed of the second fastest wheel, from the slope of said auxiliary reference value,

means for generating a second reference speed from one of the speed of the slowest non-driven wheel, the speed of



the fastest non-driven wheel, and the average speed of the non-driven wheels.

means for generating the slip of each wheel from the wheel speeds and one of the first reference speed and the second reference speed,

means for forming the sum of the slips of all the wheels,

means for comparing said sum to a threshold value, and

means for selecting the first reference speed for producing said control signals when said sum exceeds said threshold value as well as when said control signals are being produced, and for selecting said second reference speed when said sum does not exceed said threshold value and said control signals are not being produced.

5,184,877

HYDRAULIC BRAKING PRESSURE CONTROL DEVICE

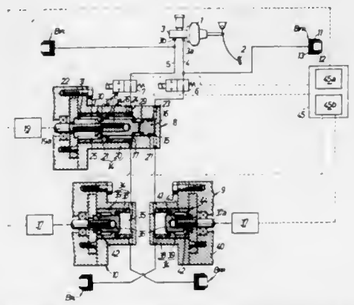
Yoshitaka Miyakawa, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1991, Ser. No. 769,701

Claims priority, application Japan, Oct. 9, 1990, 2-271227

Int. Cl.[5] B60T *8/32, 8/46*

U.S. Cl. 303—113.2 20 Claims



1. A hydraulic braking pressure control device for a vehicle having first and second wheels disposed on one axle, first and second brake devices for the wheels, and a tandem type master cylinder provided with first and second output ports,

said hydraulic braking pressure control device comprising:

a cylinder body of a bottomed cylindrical shape;

a free piston slidably received in said cylinder body to define a first control chamber between said free piston and a closed end of said cylinder body;

a control piston slidably received in said cylinder body to define a second control chamber between said control piston and said free piston; and

a positioning control means for controlling an axial position of said control piston,

wherein said first and second control chambers are independently interposed in first and second hydraulic braking pressure supply systems, respectively, which feed pressurized hydraulic fluid generated from the output ports of the master cylinder for operating the brake devices, and

wherein cut-off valves are also interposed in the respective hydraulic braking pressure supply systems and are each operable to be switched-over between a connection state and a disconnection state.

5,184,878

AIR BRAKE SYSTEM HAVING AN ANTI-SKID ASSEMBLY

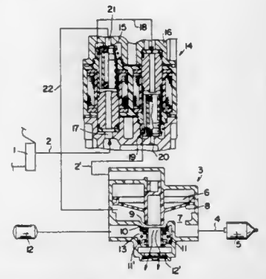
Dieter Woerner, Pleidelsheim, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 16, 1990, Ser. No. 523,788

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1989, 3921078

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—118.1 20 Claims



1. An air brake system having an anti-skid assembly, including a brake control valve (**1**),a magnet valve assembly (**14**), wheel brake cylinders (**5**), wheel detectors (**31**), an electronic signal processing means (**32**) and a relay valve (**3**), said magnet valve assembly effects a pressure change and pressure maintenance in said relay valve and along with said relay valve forms a fluid switch unit (**3/14**), said magnet valve assembly receives switching pulses from said electronic signal processing means of the anti-skid assembly to control fluid pressure applied to said wheel brake cylinder, and the system includes a connecting line (**22, 23**) in a vicinity of the switch unit (**3/14**) for direct communication between a brake pressure control chamber (**7**) of said relay valve (**3**) controlled by said brake control valve and a brake pressure determined for actuation of the wheel cylinders (**5**).

5,184,879

AIR CONDITIONING OR COOLING DEVICE FOR A CONTROL CABINET

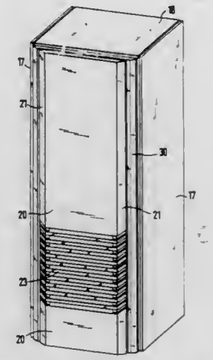
Ansgar Brossardt, Krailling; Manfred Immel, Mittenaar-Bicken, and Heinrich Styppa, Giessen, all of Fed. Rep. of Germany, assignors to Rittal-Werk Rudolf Loh GmbH & Co. KG, Fed. Rep. of Germany

Filed Apr. 25, 1991, Ser. No. 691,311

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 4013372

Int. Cl.[5] H02B *1/32;* H05K *7/20*

U.S. Cl. 312—236 25 Claims



1. In an air conditioning device for a control cabinet having a door, a plurality of wall panels, and a spacer frame, the spacer frame being constructed of horizontal frame sections and vertical frame sections, each of the horizontal frame sections and the vertical frame sections having a plurality of fastening bores which are closed by the wall panels and the door, the control cabinet being in a shape of a box, the air conditioning device being constructed with two exterior dimensions being equal to or less than two corresponding clearances between the vertical frame sections and the horizontal frame sections of one side of the spacer frame, and the air conditioning device being installed in the one side of the spacer frame, the improvement comprising:

a fastening edge (**21**) on each of a plurality of vertical sides of the air conditioning device, each of the fastening edges (**21**) being connected to a vertical frame section (**11**) of the spacer frame (**10**), the spacer frame (**10**) having an inner contour (**16**), the air conditioning device extending into an interior of the control cabinet when connected directly to said facing vertical frame section and terminating flush with said inner contour (**16**) when connected with a plurality of spacing elements (**30**).

5,184,880

ANAMORPHIC ATTACHMENT FOR PURPOSE OF FILMING AND REPRODUCTION TO BE USED TOGETHER WITH A BASIC LENS

Antal Lisziewicz, Göttingen, Fed. Rep. of Germany, assignor to Isco Optic GmbH, Fed. Rep. of Germany

Filed Mar. 22, 1990, Ser. No. 497,177

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1989, 3909203

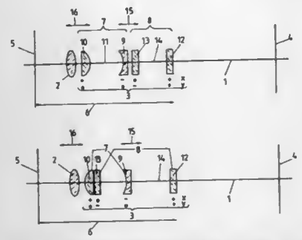
Int. Cl.[5] G02B *13/08*

U.S. Cl. 359—668 12 Claims

1. An anamorphic lens attachment (**3**) for purposes of filming and reproduction to be used in conjunction with the basic lens (**2**) of a camera or projection system, said attachment comprising a first lens subsystem (**8**) configured for enlargement (V1) in a first direction and a second lens subsystem (**7**) configured

VOL 1147 ISS 2 FEB 9 1993 UMI

for enlargement (V2) in a second direction substantially perpendicular to the first direction, said first subsystem (8) including a positive front lens group (12) and a negative rear lens group (13) and said second subsystem (7) including a negative front lens group (9) and a positive rear lens group (10), said second subsystem (7) being disposed between said first subsystem (8) and the basic lens (2) of a camera or projection system,



said lens groups of said attachment being configured and positioned such that when the focal length of the basic lens (2) is Fg, and the attachment object distance is set to "infinite", and the total focal length in the first direction is V1×Fg, and the total focal length in the second direction is V2×Fg, the following condition is met: $(V1/V2)^2 \times 0.85 \leqq V1 < V2 \leqq 1.15 \times (V2/V1)^2$.

5,184,881

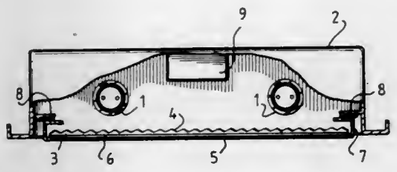
DEVICE FOR FULL SPECTRUM POLARIZED LIGHTING SYSTEM

Daniel N. Karpen, 3 Harbor Hill Dr., Huntington, N.Y. 11743

Continuation-in-part of Ser. No. 489,494, Mar. 7, 1990, abandoned. This application Oct. 24, 1991, Ser. No. 781,844

Int. Cl.[5] F21V *9/02, 9/14*

U.S. Cl. 362—1 **5 Claims**



1. A full spectrum polarized fluorescent lighting system which produces artificial light that is of the spectral energy distribution and light polarization characteristics of natural daylight comprising in combination:

a ceiling mounted fluorescent fixture;

a flat multi-layer polarized diffuser mounted in a door of said fixture; said flat multi-layer polarized diffuser is mounted in said door with a top prism side towards one or more full spectrum lamps and a smooth bottom side facing towards objects being illuminated; said fixture includes a means for providing light which is glare free and preferentially vertically polarized; said means comprises said multi-layer polarized diffuser; and

said full spectrum fluorescent lamps mounted inside said fixture; said full spectrum fluorescent lamps comprise a means for providing light of excellent color rendition matching the spectral energy distribution of natural daylight; said full spectrum fluorescent lamps being full spectrum fluorescent lamps with a color rendition index of 90 or above and a correlated color temperature of 5,000 degrees Kelvin or above; and

a gasket mounted on a door frame of said fluorescent fixture between said door and said door frame; said gasket comprises a means to keep dirt and dust out of said fixture and from collecting on the said top prism surface facing towards said full spectrum fluorescent lamps of said multi-layer polarized diffuser; said gasketing materials are ultraviolet resistant; and

a fixture housing free of ventilation holes; said fluorescent fixture to be sealed for dust and light leaks; and

a solid state electronic ballast; said ballast comprises a means of providing flicker free lighting; said means including said solid state ballast.

5,184,882

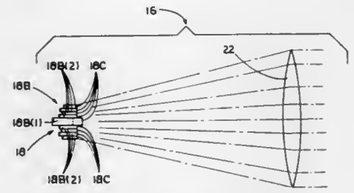
PROJECTION HEADLAMP LIGHTING SYSTEM USING DIFFERENT DIAMETER OPTICAL LIGHT CONDUCTORS

John M. Davenport, Lyndhurst; Richard L. Hansler, Pepper Pike, and Lee E. Barnes, Jr., Willowick, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 9, 1991, Ser. No. 756,663

Int. Cl.[5] F21V *7/04*

U.S. Cl. 362—32 **21 Claims**



1. A projection lighting system, comprising:

(a) means for generating light;

(b) means for receiving the light from said generating means and for distributing the light to a preselected lighting position, said light distributing means including a plurality of elongated optical light conductors being of different diameter sizes and having respective input and output ends;

(c) second means for receiving the light at said preselected lighting position from said light distributing means and for projecting the light from said output ends of said optical light conductors in a desired light pattern;

(d) wherein at least one of said optical light conductors has a diameter size larger than the diameter sizes of the remainder of said conductors;

(e) wherein said output end of said one conductor is disposed in a manner so as to have a group of said remainder of conductors arranged on at least one side thereof; and

(f) wherein said light projecting means includes means for receiving and focussing the light in said desired light pattern.

5,184,983

AUTOMOBILE LIGHTING SYSTEM THAT INCLUDES AN EXTERIOR INDICATING DEVICE

William W. Finch, Ann Arbor, Mich.; John M. Davenport, Lyndhurst, and Richard L. Hansler, Pepper Pike, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

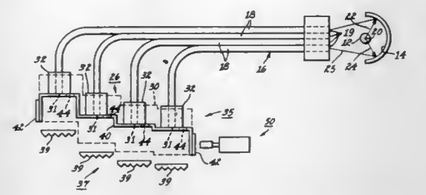
Filed May 1, 1992, Ser. No. 877,493

Int. Cl.[5] F21V *7/04*

U.S. Cl. 362—32 **8 Claims**

1. In a lighting system for an automobile that comprises: (i) a light source that develops light when in an "on" state., (ii) an elongated light guide that has an input end for receiving light from said source and an output end to which the received light is transmitted by said light guide, (iii) an indicating device at said output end for controlling the passage of light from said output end to a location exterior to the automobile, and (iv) a lens located between said indicating device and said exterior location for receiving light passing through said indicating device from said light guide output end, said indicating device comprising:

(a) a shutter having a substantially opaque portion, a light-blocking position in which said substantially opaque portion blocks the passage of light from said output end to



said lens, and a non-blocking position in which light is allowed to pass through said indicating device to said lens, and

(b) shutter-actuating means for shifting said shutter between said light-blocking position and said non-blocking position while said light source remains in said "on" state.

5,184,884

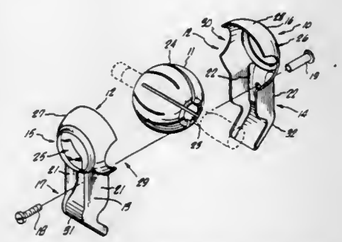
FLASHLIGHT HOLDER CLAMP ASSEMBLY

Anthony Maglica, Ontario; Armis L. Lewis, Cucamonga, and Fred R. McAlister, Chino, all of Calif., assignors to Mag Instruments, Inc., Ontario, Calif.

Continuation of Ser. No. 764,148, Sep. 20, 1991, Pat. No. 5,128,841, which is a continuation of Ser. No. 537,447, Jun. 13, 1990, Pat. No. 5,062,026, which is a continuation-in-part of Ser. No. 285,734, Dec. 16, 1988, Pat. No. 4,980,805. This application May 15, 1992, Ser. No. 884,731

Int. Cl.[5] F21L *15/14*

U.S. Cl. 362—72 **16 Claims**



1. A flashlight holder clamp assembly comprising

a gripper having a resilient body, an outer surface of circular cross section as taken substantially perpendicular to a first diameter of said gripper, a length in a direction or said first diameter, a centrally disposed, elongated hole extending from a first end at said outer surface to a second end at said outer surface along said first diameter, and slots spaced one from another extending radially inwardly from said outer surface to a second diameter of said gripper and through more than half and less than completely through the length of said resilient body in the direction of said first diameter, said slots alternately extending from said first end at said outer surface and from said second end at said outer surface;

a housing for containing said gripper including a split shell positioned over said gripper, said split shell being split substantially parallel to said first diameter, and a mounting clamp displaced from said gripper; and

means for drawing said split shell together.

5,184,885

CLOTH TOWEL DISPENSER WITH TWO ADJOINING UNITS

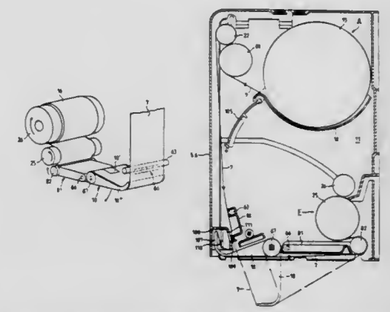
Sandro Arabian, Vaduz/Liechtenstein, and Manfred Baumann, Diepoldsau, both of Switzerland, assignors to CWS International AG, Baar, Switzerland

Continuation of Ser. No. 598,683, Nov. 26, 1990, abandoned. This application May 12, 1992, Ser. No. 884,478

Claims priority, application Switzerland, Feb. 14, 1989, 505/89-0

Int. Cl.[5] B65H *19/00*

U.S. Cl. 312—34.11 **5 Claims**



1. A cloth towel dispenser having at least two towel units within said dispenser, each capable of simultaneously dispensing a cloth towel on demand, each towel unit comprising:

delivery means for delivery on demand of clean towel portions from a clean towel roll;

roller means for drawing in used towel portions after use;

determining means for determining when the clean towel roll is empty; and

indicator means for indicating that one towel unit is ready for use when another towel unit is empty, the indicator means of the one towel unit cooperating with the indicator means of said another towel unit to provide the indication of readiness for use of the one towel unit.

5,184,886

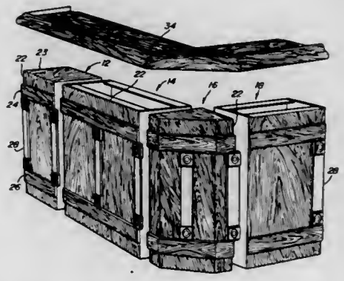
MODULAR BAR SYSTEM

David J. Handley, 3285 Landview Dr., Rochester, Mich. 48306, and Patrick G. Costigan, 3019 W. 13 Mile Rd., Apt. N, Royal Oak, Mich. 48073

Filed Mar. 22, 1991, Ser. No. 673,964

Int. Cl.[5] A47B *87/00*

U.S. Cl. 312—107 **18 Claims**



1. A modular cabinet system comprising:

a plurality of cabinet modules each having a substantially planar face surface and at least one adjoining surface, said

VOL
1147
ISS
2
FE
9
1993
UMI

adjoining surfaces of adjacent said cabinet modules being configured to engage said substantially planar face surfaces of said adjacent modules being configured to align into a single, substantially continuous, substantially planar surface, at least one of said cabinet modules having a trim piece on said face surface extending along the intersection of said face surface and said adjoining surface and extending normal to said intersection such that said trim piece at least partially covers the joint formed when one of said cabinet modules are engaged with another of said cabinet modules.

5,184,887

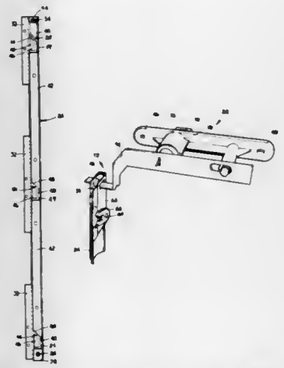
DRAWER INTERLOCK SYSTEM

Lawrence J. O'Keefe, Grand Rapids, and Michael J. Veihl, Spring Lake, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Continuation of Ser. No. 604,126, Oct. 26, 1990, abandoned. This application Mar. 17, 1992, Ser. No. 852,888

Int. Cl.[5] E05C *7/06*

U.S. Cl. 312—221 **13 Claims**



1. In a cabinet including a housing having at least two drawers, means mounting the drawers to the housing for glided movement into and out of the housing, and an interlock mechanism for preventing more than one drawer from opening at one time, the interlock mechanism comprising:

an elongated channel mounted to a side wall of the cabinet and having ends with stops to fix the lengths thereof;

at least one block slidably mounted in the channel, the at least one block having at least one end surface at an acute angle relative to a bottom wall of the channel;

wedge members stacked within the channel in vertical alignment with the at least one block and individually mounted for lateral translational movement within the channel relative to said stack of wedge members as one of the drawers is opened and closed respectively, the size of the at least one block and the wedges being such that the elongate channel is filled when one of the wedges moves laterally within the elongate channel as a drawer is opened to prevent another drawer from opening when the one drawer is opened, and such that a predetermined gap is present in the elongate channel when the drawers are closed;

the improvement which comprises:

a movable locking block mounted in the elongate channel for vertical movement; and,

a lock having a locking bar with a flange having a first and second surface, said first surface being vertically spaced from said second surface, said surfaces selectively forming one of the stops in the elongate channel, said locking bar being laterally movable so that the first surface provides a predetermined gap for movement of the locking block in an unlocked position of the locking bar and the second surface occupies the predetermined gap in a locked position of the locking bar to prevent movement of the locking block whereby the locking bar selectively prevents movement of the wedge members laterally within the elongate channel to selectively lock all of the drawers in the housing.

5,184,888

ILLUMINATING PORTION OF VANITY MIRROR

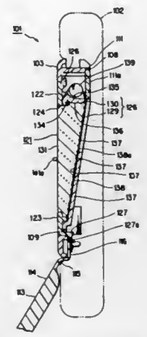
Toranosuke Sakuma, and Minoru Obata, both of Shimizu, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Oct. 31, 1990, Ser. No. 607,449

Claims priority, application Japan, Jan. 23, 1990, 2-12962; Jun. 29, 1990, 2-171681

Int. Cl.[5] F21V *33/00*; B60J *3/00*

U.S. Cl. 362—136 **2 Claims**



1. An illuminating portion of a vanity mirror device comprising:

a recessed portion formed at one side of a mirror in a body of the device,

a light conducting plate formed of a transparent material being fitted in the recessed portion with the front surface of the light conducting plate being located flush with the front surface of said body, said light conducting plate being formed of a light receiving portion and a light emitting portion secured firmly to the light receiving portion in face to face relationship, and the light receiving portion is formed of a thermoplastic synthetic resin material of a high degree of heat resistance and the light emitting portion is formed of a thermoplastic synthetic resin material of high degree of transparency and good moldability,

an electric bulb being located to oppose one of end surfaces of the light conducting plate,

a decorative panel having therein a large opening and being detachably mounted on said body so as to be located at said recessed portion, and

said light conducting plate being retained in said opening at said decorative panel and supported therein such that said front surface of said light conducting plate is exposed to the outside.

5,184,889

EARTHQUAKE INDICATOR LIGHT APPARATUS

Richard Vasquez, 238 5th St. Apt 1, Montebello, Calif. 90640

Filed Feb. 27, 1992, Ser. No. 842,543

Int. Cl.[5] F21V *33/00*

U.S. Cl. 362—276 **2 Claims**

1. An earthquake indicator light apparatus, comprising, a housing, the housing including a

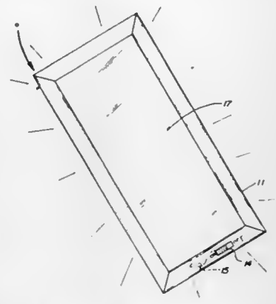
central lens mounted within the housing, and

at least one illumination bulb mounted within the housing rearwardly of the central lens, and

the housing including a first switch, and battery means for providing electrical energy, and second switch means for directing electrical energy from the battery means through the first switch to the illumination bulb upon displacement of the housing from a first vertical orientation to a second angular orientation relative to the first orientation, and

the second switch means includes a mercury filled vial in electrical communication between the first switch, the battery means, and the illumination bulb, and

the first switch includes a first switch slot, and a first switch slide slidably mounted within the first switch slot, the slot includes a first end and a second end, and the slide displaceable from the first end to the second end for permitting opening and closing of the first switch, and the slide including a top wall spaced from a bottom wall, the top wall including a plurality of top wall resilient fins, the



bottom wall including a plurality of bottom wall resilient fins to orient the slide in a predetermined orientation within the slot, and

the housing includes a housing rear wall, a housing right side wall, and a housing left side wall, the housing rear wall includes a first pin orthogonally and fixedly mounted to the housing rear wall adjacent the right side wall, and a second pin reciprocatably mounted relative to the housing projecting through the housing rear wall adjacent the left side wall, the second pin reciprocatably mounted within a rear wall bore directed through the rear wall, and the housing including a housing cavity positioned within the housing rearwardly of the second pin, and the second pin including a second pin base positioned within the cavity, the base including a reset pin fixedly mounted to the base, with the reset pin orthogonally oriented relative to the second pin, and the left side wall including a left side wall slot, with the reset pin projecting through the left side wall slot permitting reciprocation of the second pin relative to the housing.

5,184,890

LAMP ASSEMBLY

Jen H. Chen, No. 15, Lane 167, Tung Nan Street; Jeou N. Tzeng, No. 52-1, Alley 100, Lane 311, Nan Yea Street, and Jeng-Shyong Wu, Fl. 4, No. 5, Hsing Shyue Road, all of Hsin-Chu City, Taiwan

Filed Jan. 10, 1991, Ser. No. 639,686

Int. Cl.[5] F21V *11/00*

U.S. Cl. 362—353 **14 Claims**

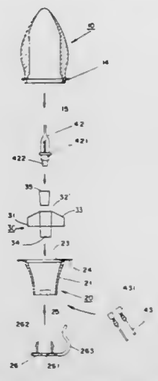
1. A lamp assembly comprising:

a shield;

a hood supporting said shield;

an inter-connector positioned inside said shield and supported by said hood, said inter-connector having an outer wall and an inner wall, and a plurality of spoke partitions joining said inner wall to said outer wall;

a lamp bulb positioned in said inter-connector; and



a pair of conductor wires passing through said hood and connecting to said lamp bulb.

5,184,891

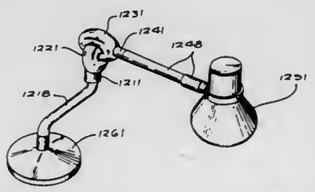
CONNECTIVE JOINT WITH INTERLOCKING RING STRUCTURES, FORMING A LAMP OR PORTIONS THEREOF

Vladimir Shpigel, Brooklyn, N.Y., assignor to Amrus Corporation, New York, N.Y.

Division of Ser. No. 373,997, Jun. 29, 1989, Pat. No. 4,976,468, and Ser. No. 59,966, Jun. 19, 1987, Pat. No. 4,845,603. This application Dec. 10, 1990, Ser. No. 626,569

Int. Cl.[5] F21S *1/02*

U.S. Cl. 362—419 **27 Claims**



1. In combination, a connective joint incorporated integrally in a lamp, said joint providing a rotational component of relative motion of a lamp base in relation to a lightbulb fixture, about an axis having any arbitrarily selectable orientation; said combination comprising:

a substantially stationary article;

an article that is substantially unrestrained, except by said joint, and that is in the form of a lightbulb fixture;

wherein the substantially stationary article is in the form of a lamp support; and

a connective joint comprising:

two interlocking toroids, each having a substantially circular minor cross-section and each having a substantially circular central aperture,

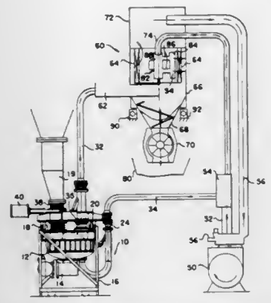
the minor cross-section of each toroid being sized to substantially just fit through the central aperture of the other toroid,

first connection means on one of the toroids for securing that toroid to the lamp support, and

second connection means on the other of the toroids for securing that toroid to the lightbulb fixture.

VOL
1147
ISS
2
FE
9
1993
UMI

5,184,892
SYSTEM AND METHOD FOR CONTINUOUS GRAVIMETRIC METERING, PNEUMATIC CONVEYING AND/OR MIXING OF POURABLE MATERIALS
Hans W. Häfner, Aichach-Walchshofen, Fed. Rep. of Germany, assignor to Pfister GmbH, Augsburg, Fed. Rep. of Germany
Filed Jul. 23, 1991, Ser. No. 734,650
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1990, 4023948
Int. Cl.[5] B01F *5/10*
U.S. Cl. 366—10 **19 Claims**

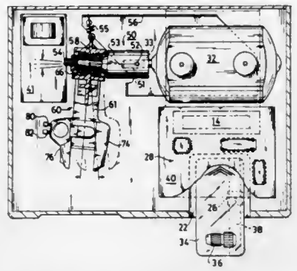


1. A system for continuous pneumatic gravimetric metering of pourable materials comprising:

a gravimetric metering apparatus including a housing having arranged therein a rotatable rotor having pockets, a charging aperture provided in said housing for charging material into the pockets, a discharging aperture provided in said housing offset in direction of rotation of said rotor in respect of said charging aperture for discharging material from the pockets, and means for supplying a pressurized gas to discharge material from said pockets and convey said material; a pourable material charging means arranged at said charging aperture of said housing; pourable material discharging means arranged at said discharging aperture; a closed loop pneumatic conveying path for said pressurized gas including separating means for separating said gas from said metered and conveyed pourable material, said separating means further comprises a metered pourable material collecting means arranged at the output said of said separating means, and control means settable according to a desired conveyed mass of pourable material per time unit and responsive to a metered quantity for controlling mass through-put through said system.

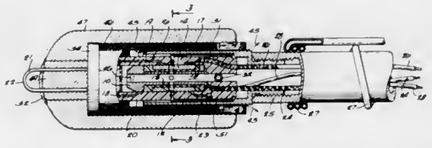
5,184,893
AUTOMATIC CAPSULE MIXING DEVICE
Charles E. Steele; Mark R. Anderson, both of Canton, and James C. Hamilton, Ann Arbor, all of Mich., assignors to Kerr Manufacturing Company, Romulus, Mich.
Filed Mar. 25, 1991, Ser. No. 691,489
Int. Cl.[5] B01F *11/00*
U.S. Cl. 366—209 **13 Claims**

1. A dental mixing machine in which mixing speed and time are controlled by stored data system, the machine comprising a motor, a mechanism for receiving a dental capsule to be agitated, and control means, the motor being controlled by the control means to cause the mechanism to agitate a dental capsule received therein, wherein the control means is responsive to specific agitation parameters for the dental capsule, the machine having entry means for receiving a card having a record of the specific agitation parameters, the entry means being connected to the control means for entering the agitation



parameters into the control means thus controlling mixing based on the record.

5,184,894
METHOD OF USING AN IMMERSIBLE AIR COOLED THERMOCOUPLE
Richard A. Falk, Hillsboro Beach, Fla., and James A. Behring, Waukesha, Wis., assignors to Midwest Instrument Co., Inc., Hartland, Wis.
Division of Ser. No. 654,817, Feb. 13, 1991, Pat. No. 5,104,234.
This application Dec. 17, 1991, Ser. No. 809,578
Int. Cl.[5] G01K *1/12, 7/04*
U.S. Cl. 374—140 **4 Claims**



1. A method of using an immersible thermocouple to extend the life and accuracy thereof comprising:

a. providing a thermocoupled, a connector attached thereto having a fluid flow passage therethrough and wires leading therefrom mounted within a heat-resistant housing supported on a hollow lance pole within which electrical wires leading from the thermocouple to a temperature monitoring circuit means are contained,

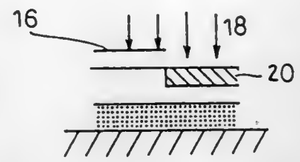
b. providing a supply of cooling gas at a pressure less than approximately 10 PSI to the interior of said lance pole,

c. immersing the hot junction end of said thermocouple in a bath of molten metal to measure the temperature thereof,

d. causing a stream of said cooling gas to flow through the interior of said hollow lance pole to the interior of the connector and therefrom through a radially extending opening passing through said connector to the exterior thereof, said opening being in communication with at least one opening which permits flow of said gases around the thermocouple cold junction, and

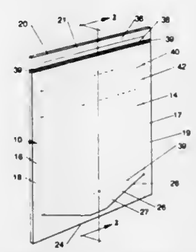
e. then venting said stream through a channel surrounding said connector to the atmosphere.

5,184,895
OPTICAL SENSOR AND THERMAL SENSOR
Masaaki Yokoyama, Toyonaka, and Mikio Kakui, Minoo, both of Japan, assignors to MITA Industrial Co., Ltd., Osaka, Japan
Filed Sep. 4, 1991, Ser. No. 754,536
Claims priority, application Japan, Sep. 10, 1990, 2-240338
Int. Cl.[5] G01K *11/16*
U.S. Cl. 374—162 **23 Claims**



1. An optical sensor whose photosensitive portion comprises a first layer including an oxo metallic phthalocyanine pigment and a second layer consisting of organic polysilane, said optical sensor indicating sensing of light by a decoloring reaction of said oxo metallic phthalocyanine pigment and said organic polysilane.

5,184,896
SELF-EXPANDING FLEXIBLE POUCH INCLUDING IMPROVED EXTENSIBLE STAY TO MAXIMIZE OPENING
Edward P. Hammond; Daniel J. Kinne, both of Cincinnati, and George L. Roseberry, Fairfield, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 11, 1991, Ser. No. 774,672
Int. Cl.[5] B65D *33/00*
U.S. Cl. 385—33 **20 Claims**



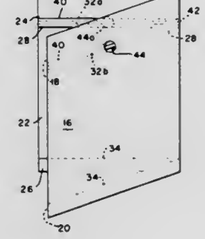
1. In a sealed, self-expanding, flexible pouch having front and back sidewall panels superimposed upon one another and having their innermost surfaces sealed together along the centrally located portion of their side peripheral edges to form a body portion of said pouch, their innermost surfaces sealed together along their top peripheral edge and along the uppermost portion of their side peripheral edges to form a top portion of said pouch, and their innermost surfaces secured in sealed relation to one another along their bottom peripheral edges and along the lowermost portion of their side peripheral edges to form a bottom portion of said pouch, said pouch having a throat area located subjacent said top portion of said pouch, said pouch further including a continuous, one-piece extensible stay secured in fixed relation to said innermost surfaces of said front and back sidewall panels in said throat area of said pouch, said continuous, one-piece extensible having a relaxed, expanded configuration and a stressed, collapsed configuration, said stay initially being held in said stressed, collapsed configuration by said top portion of said pouch prior to removal of said top portion of said pouch, whereby said stay expands to its said relaxed, expanded configuration when said top portion of said pouch is removed, thereby automatically expanding said throat area of said pouch to an open configuration, the improvement wherein said continuous one-piece extensible stay comprises:

(a) a continuous, resilient extensible loop having a pair of opposed flexible hinges, said hinges being thinner in thickness than the remaining portions of said loop and aligned with the side peripheral edges of said pouch;

(b) a pair of opposed flexible thick-walled sections located between said opposed hinges, said opposed thick-walled sections and the resiliency of the loop provide an automatic opening force for said pouch, one of said thick-walled sections being substantially aligned with said front sidewall panel of said pouch and the other of said thick-walled sections being substantially aligned with said back sidewall panel of said pouch; and

(c) a flexible thin-walled transition section connecting the opposing ends of each of said thick-walled sections to one of said hinges in said extensible loop, said thin-walled transition section having a maximum thickness which is less than the thickness of said thick-walled sections; said hinges, said thin-walled transition section, and said thick-walled sections cooperating to permit said stay to expand to a nearly circular configuration upon removal of said top portion of said pouch.

5,184,897
GIFT BAG
Martin Gozdenovich, 275 W. Mountain Rd.; Martin A. Gozdenovich, 37 Signal Hill Trail; David Gozdenovich, 275 W. Mountain Rd.; Guy Zimmermann, 38 Meredith Ave., and Glenn Pierson, 541 W. Mountain Rd., all of Sparta, N.J. 07871
Filed Jun. 13, 1991, Ser. No. 714,514
Int. Cl.[5] B65D *33/28*
U.S. Cl. 383—75 **10 Claims**



1. A gift bag, comprising:

a bag formed of two, overlying, rectangular sheets of flexible, compliant material sealed together along three, common edges thereof, namely: bottom edges and both sides edges, to define said bag with only an open top; wherein

each of said sheets has a prescribed, overall length, and a prescribed, overall width which is from approximately thirty-three percent to approximately sixty-five percent of said length;

said sheets comprise front and rear, overlying panels having the aforesaid prescribed width, and a given length which is from approximately sixty-five percent to approximately eighty percent of said prescribed length;

an upper portion of said bag, extending from said open top thereof, having only dual thicknesses of said material for each sheet;

end portions of said sheets are folded back upon themselves only once, and are disposed in mutually confronting relationship, and terminal edges of said end portions are sealed to their respective sheets and thereacross;

said end portions form a hem in said upper portion of said bag;

VOL 1147 ISS 2 FE 9 1993 UMI

said end portions, further, are sealed to their own, respective sheets, along a seal line which is parallel to said sealed terminal edges, to define, together with said sealed edges, a channel within said hem; and further including

only a single tie wholly and slidably confined within said channel; and wherein

one of said sheets is devoid of openings; and

the other of said sheets has only one opening formed therein; wherein

said opening comprises an aperture which opens onto said channel and exposes said tie.

5,184,898

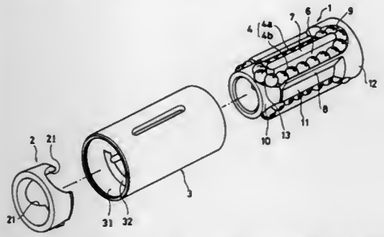
BALL RETAINER FOR LINEAR BEARINGS

Fusao Kito, Yamanashi, Japan, assignor to THK Co., Ltd., Tokyo, Japan

Filed May 18, 1992, Ser. No. 884,345

Int. Cl.[5] F16C *29/06*

U.S. Cl. 384—43 **2 Claims**



1. A ball retainer fitted in the hollow portion of a bearing outer cylinder, which can move linearly around a bearing shaft, for retaining and arraying balls held between said bearing outer cylinder and said bearing shaft, comprising:

a retainer body including: a smaller-diameter portion adapted to be fitted in a loaded ball region of said bearing outer cylinder, which is formed with a plurality of axially extending ridges for holding said balls together with said bearing shaft; a larger-diameter portion formed at one end of said smaller-diameter portion and so fitted in a ball scoop region of said bearing outer cylinder adjacent to said loaded ball region that it is axially retained by said ridges; and a leading end portion formed at the other end of said smaller-diameter portion to have a diameter equal to or smaller than that of said smaller-diameter portion for forming a clearance with the inner circumference of said bearing outer cylinder in another ball scoop region of said bearing outer cylinder, said smaller-diameter portion being formed in its outer circumference with loaded ball guide races and unloaded ball guide races corresponding to loaded ball rolling faces and unloaded ball races, which are formed in the inner circumference of said bearing outer cylinder, said larger-diameter portion and said leading end portion being formed in its outer circumference with ball turning races for connecting said loaded ball guide races and said unloaded ball guide races in communication; and

an annular piece formed with semicircular cut portions corresponding to said ball turning races and fixed on the outer circumference of the leading end portion of said retainer body for occupying the clearance between said leading end portion and the inner circumference of said bearing outer cylinder.

5,184,899

NEEDLE ROLLER BEARING HAVING TWO-PIECE ROLLER RETAINER

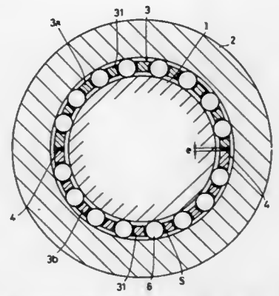
Kazuyoshi Harimoto, Iwata, Japan, assignor to NTN Corporation, Osaka, Japan

Filed Jun. 24, 1992, Ser. No. 903,330

Claims priority, application Japan, Jun. 28, 1991, 3-58244; Mar. 30, 1992, 4-27068

Int. Cl.[5] F16C *41/04*

U.S. Cl. 384—560 **5 Claims**



1. A needle roller bearing adapted to be interposed between first and second elements rotatable relative to each other, said bearing comprising a generally cylindrical roller retainer disposed within an annular space defined between the first and second elements and carrying a plurality of needle rollers, said roller retainer being comprised of circumferentially separated retainer segments each having first and second side edges opposite to each other, at least said first side edges of the respective retainer segments defining a circumferential gap therebetween, said gap being filled up by a bond deposit having a bondability that is lowered when heated to an elevated temperature.

5,184,900

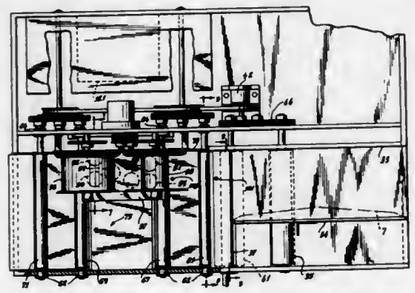
ENVELOPE ADDRESSING SYSTEM ADAPTED TO SIMULTANEOUSLY PRINT ADDRESSES AND BAR CODES

Lawrence F. Eisner, Cheshire, and Bruce E. Hurd, Monroe, both of Conn., assignors to Bryce Office Systems, Inc., Oxford, Conn.

Division of Ser. No. 582,012, Sep. 4, 1990, which is a continuation of Ser. No. 234,259, Aug. 19, 1988, abandoned, which is a continuation-in-part of Ser. No. 918,122, Oct. 14, 1986, abandoned. This application Oct. 21, 1991, Ser. No. 779,876

Int. Cl.[5] B41J *2/485*

U.S. Cl. 400—82 **16 Claims**



1. Apparatus for printing a plurality of elongated address lines, each address line elongated in a first direction, and the address lines from top to bottom comprising, consecutively, at least first, second, third and fourth lines spaced from each other in a second direction, perpendicular to said first direction; said apparatus comprising:

a plurality of print heads, one for printing each address line, comprising at least first, second, third and fourth print heads associated with said first, second, third and fourth consecutive lines, respectively, associated with a stationary substantially flat platen; and

means for mounting said print heads so that at least two of said print heads overlap each other in said first direction, the print heads which overlap not being consecutive address line printing print heads, so that the positioning of the print heads in said first direction is not in sequence with the numbers of the line printed thereby, and so that the print heads are grouped together in association with said stationary platen.

5,184,901

DISPLACEMENT MAGNIFYING MECHANISM FOR A PRINT ELEMENT

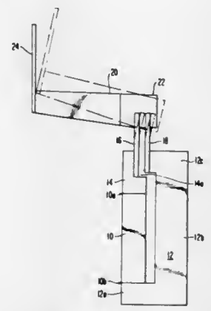
Shinzo Tanaka, and Syuichi Yamaki, both of Kawasaki, Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Filed Jul. 10, 1990, Ser. No. 550,545

Claims priority, application Japan, Jul. 20, 1989, 1-186074; Aug. 15, 1989, 1-209693; Aug. 15, 1989, 1-209694

Int. Cl.[5] B41J *2/26*

U.S. Cl. 400—124 **34 Claims**



1. A displacement magnifying mechanism comprising:

(a) a base member;

(b) an electro actuator having a free end, a base end connected to the base member, and an actuator axis defined as passing through the free end and the base end, the electro actuator having a rest state and an actuated state of extending and contracting along the actuator axis;

(c) an arm having a first end and a second end;

(d) a first resilient member having a first end connected to the free end of the electro actuator and a second end connected to the second end of the arm;

(e) a second resilient member having a first end connected to the base member and a second end connected to the second end of the arm, the second resilient member being substantially parallel and substantially overlapping with the first resilient member, and a distance between the first resilient member and second resilient member being less than a width of the electro actuator at a direction perpendicular to the actuator axis; and

(f) a junction member at the free end of the actuator with an "L" shaped notch formed therein, wherein the notch has a side surface which is parallel to the actuator axis, the junction member is positioned such that the side surface of the notch faces a top position of a side section of the base member, and the top position of the side section of the base member extends to the notch of the junction member, and wherein the first resilient member is connected to the side surface of the notch of the junction member, and the second resilient member is connected to a surface of the top position of the side section of the base member such that the second resilient member faces in parallel the first resilient member connected in the notch of the junction member.

5,184,902

RECORDING APPARATUS HAVING A SINGLE DRIVE SOURCE FOR CONVEYING RECORDING MEANS AND FEEDING RECORDING MEDIUM

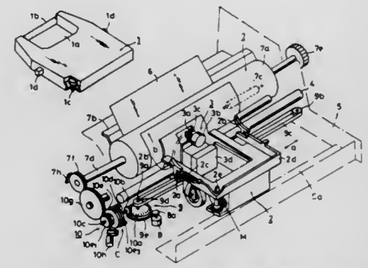
Tsutomu Harada, and Takashi Amari, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 630,851, Dec. 20, 1990, abandoned. This application May 13, 1992, Ser. No. 884,475

Claims priority, application Japan, Nov. 26, 1989, 2-317746; Dec. 26, 1989, 1-334714; Dec. 26, 1989, 1-334715

Int. Cl.[5] B41J *23/02*

U.S. Cl. 400—185 **16 Claims**



1. A recording apparatus for recording data on a recording medium, said apparatus comprising:

a conveyance passage through which a recording medium passes;

recording means capable of moving along said conveyance passage through which the recording medium passes and recording data on the recording medium;

conveyance means for conveying the recording medium through said conveyance passage;

moving means for moving said recording means along said conveyance passage;

a driving source for generating driving power;

first transmission means for transmitting the power from said driving source to said conveyance means;

second transmission means for transmitting the power from said driving source to said moving means;

shifting means for selectively connecting and disconnecting said first transmission means and said driving source while maintaining a connection between said driving source and said second transmission means; and

control means for controlling both a medium conveyance process in which the recording medium is conveyed by transmitting the power from said driving source to said medium conveyance means via said shifting means and a recording means movement process in which said shifting means does not transmit the power to said medium conveyance means and said driving source is operated so as to correct the amount of the movement of said recording means which has been moved as a result of the medium conveyance process.

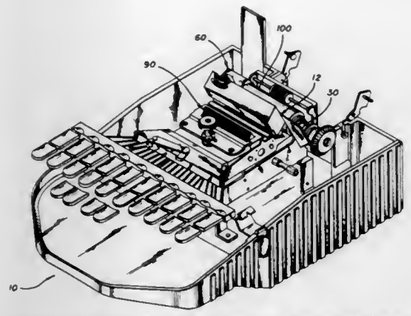
VOL 1147 ISS 2 FEB 9 1993 UMI

5,184,903

STENOGRAPHIC MACHINE INCLUDING A DISPOSABLE RIBBON CARTRIDGE

Gordon W. Smith, San Marcos, Calif., assignor to Xscribe Corporation, San Diego, Calif.

Filed Jul. 26, 1991, Ser. No. 736,462
Int. Cl.[5] B41J *33/10*
U.S. Cl. 400—196.1 **15 Claims**



1. A stenographic machine of the type having a character trunnion, a paper platen and an inked-ribbon, comprising:

self-inking ribbon cartridge means including a housing having a chamber for circulating an endless ribbon between said trunnion and said platen in an alignment generally perpendicular to a first generally horizontal plane which bisects the paper platen, and means for containing the remainder of said endless ribbon in said chamber of said housing with said ribbon aligned generally perpendicular to a second generally horizontal plane, said first and second horizontal planes being spaced apart vertically; and

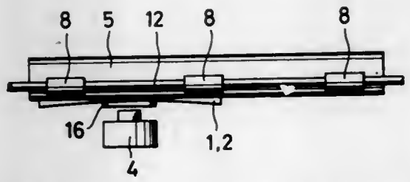
first and second guide means affixed to and integral with said cartridge means, said first guide means extending between said first and second generally horizontal planes for guiding and directing said endless ribbon vertically from said chamber of said housing to said position between said trunnion and said platen, and said second guide means extending between said first and second generally horizontal planes for guiding and returning said ribbon to said chamber.

5,184,904

PAPER FEEDER

Kozo Hara; Tsuyoshi Sanada; Yoshiaki Tanaka, and Kiyotaka Nihashi, all of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Nov. 27, 1991, Ser. No. 799,289
Claims priority, application Japan, Nov. 27, 1990, 2-327836
Int. Cl.[5] B41J *25/304*
U.S. Cl. 400—320 **2 Claims**



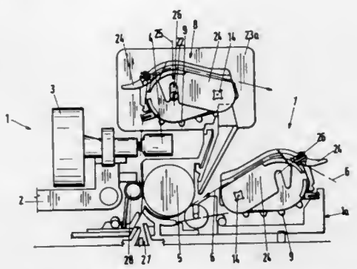
1. A paper feeder comprising: a housing; a carrier reciprocatably supported on said housing; a printing head fixedly mounted on said carrier; a platen rotatably supported to said housing; a paper feeding motor connected to said platen; a paper bail roller rotatably provided at a position downstream of said printing head with respect to the paper feeding direction and adapted to be brought into contact with or separation from an outer circumference of said platen; means for setting a paper width of a sheet of paper to be used; centering means for moving said carrier to a transverse center of said paper; a paper bail switch for detecting separation of said paper bail roller from the outer circumference of said platen; means for commanding paper feeding; a detection circuit for distinguishing a detection signal A output from said paper bail switch from a command signal B output from said commanding means; and control means having an input connected to said detection circuit and said paper width setting means and having an output connected to said paper feeding motor; wherein said control means comprises, when the detection signal A is input into said control means, means for producing a drive signal to drive said paper feeding motor until a fore end of the paper reaches said paper bail roller, and when the command signal B is input into said control means and the paper width set by said paper width setting means is less than a predetermined value, means for producing a centering signal to drive said centering means and thereby move said carrier to the transverse center area of the paper and means for producing a drive signal to drive said paper feeding motor until the fore end of the paper reaches a position opposed to said printing head, and when the command input B is input into said control means and the paper width set by said paper width setting means is greater than a predetermined value, means for inhibiting producing a drive signal to drive said paper feeding motor so that a paper feeding operation is not carried out.

5,184,905

DEVICE FOR THE TRANSPORT OF PAPER IN PRINTERS, PARTICULARLY DOT MATRIX PRINTERS

Ulrich Buschmann, Elchingen; Günter Gomoll, Neisingen/Leibi; Wolfgang Hauslaib, Langenau, and Kurt Röhrer, Niederstotzingen, all of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 25, 1990, Ser. No. 588,081
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1989, 3933033
Int. Cl.[5] B41J *11/00*
U.S. Cl. 400—616.1 **9 Claims**



1. An apparatus for alternate use in push-type and pull-type feeding of a continuous web in a feed direction in a printer, comprising;

a printer frame, a drive shaft supported by said printer frame, a pair of transversely displaceable tractors mounted on said fame for alternative use as one of means for push feeding said web and means for pull feeding said web, the tractors having pin belts driven by at least one driven tractor wheel, wherein

when used as means for push feeding said continuous web, said tractors being mounted on said drive shaft and having a projection having a pair of arms, said projection extending from a side proximate said printer frame and opposite said drive shaft for mounting said tractors on said printer frame; and

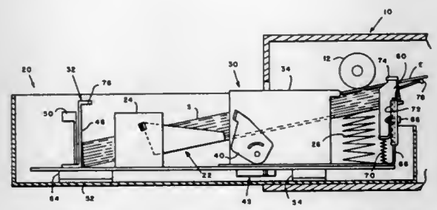
when used as means for pull feeding said continuous web, additionally comprising a round bar, two lateral bearing plates for supporting said round bar, and a swingable tractor flap on each of said tractors, said tractor flap having a hole and said drive shaft being positioned through said hole and said tractors, said drive shaft and said round bar being fastened to said bearing plates and forming a removable structural unit therewith; and each of said tractors being clamped to said round bar by said swingable tractor flap.

5,184,906

ADJUSTABLE ENVELOPE CASSETTE

Roman Czernik, Trumbull, Conn., and Francesco Porco, Bronx, N.Y., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 1, 1991, Ser. No. 769,901
Int. Cl.[5] B41J *11/58*
U.S. Cl. 400—629 **20 Claims**



1. A cassette for selective engagement and disengagement with a printer, said printer including a mechanism for successively feeding items from said cassettes, comprising:

a. tray;

b. elevator means mounted within said tray for supporting a stack of items for input to said printer and for maintaining the top item of said stack in contact with the bottom of said mechanism as said items are successively fed from said stack; and

c. a pair of guides for maintaining lateral alignment of said items as they are fed from said cassette, said guides being mounted within said tray outboard of and proximate to said stack and at a position which is forward of said mechanism when said cassette is engaged with said printer, the tops of said guides being above the bottom of said mechanism; said guides further comprising;

d. resilient mounting means for providing said guides with a capability for downward displacement, whereby said guides are deflected downwards to pass beneath said mechanism as said cassette is engaged and disengaged with said printer.

5,184,907

PORTABLE PRINTER FOR PRINTING ON A FLAT SHEET

Akira Hamada, Osaka; Yasuji Obuchi, and Hirokatsu Akiyama, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 315,251, Feb. 21, 1989, abandoned, which is a continuation of Ser. No. 115,267, Oct. 30, 1987, abandoned. This application Apr. 30, 1991, Ser. No. 694,010
Claims priority, application Japan, Nov. 6, 1986, 61-265145
Int. Cl.[5] B41J *13/08*
U.S. Cl. 400—635 **2 Claims**

1. A portable printer, consisting essentially of:

a printing means for printing on a sheet, a sheet transporting means for advancing the sheet along a straight path without bending or flexing the sheet, and a housing;

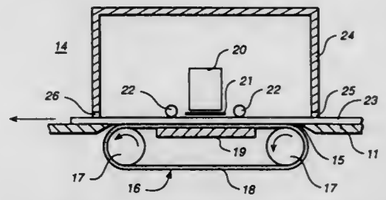
said printing means consisting essentially of a printer head and a ribbon;

said sheet transporting means consisting essentially of:

two belt-supporting rollers,

a single endless belt conveyer stretched between said two belt-supporting rollers, disposed opposite said printer head and directly contacting said printing sheet to thereby advance said printing sheet past said printer head,

a supporting plate which is disposed opposite said printer head and positioned in a manner so as to support a portion of said endless belt conveyer, and



two paper-pressing rollers disposed adjacent said printer head and opposite said supporting plate, the two paper-pressing rollers sandwiching said printer head therebetween and providing a biasing force so as to press said printing paper onto said endless belt conveyor; and

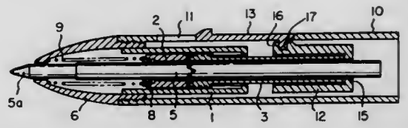
said housing having an upper surface, said upper surface having an opening which is elongated perpendicularly in the direction of said straight path, the distance between said two belt-supporting rollers being approximately equal to the width of said opening, said supporting plate maintaining a portion of an external surface of said endless belt to be substantially flush with said upper surface.

5,184,908

WRITING IMPLEMENT WITH SIDE ACTUATOR

Tadashi Yamamoto; Shubei Kageyama, and Takahiko Suzuki, all of Kawagoeshi, Japan, assignors to Kotobuki & Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 618,499, Nov. 17, 1990, abandoned. This application Jun. 23, 1992, Ser. No. 902,973
Int. Cl.[5] B43K *27/00, 27/12, 24/04*
U.S. Cl. 401—29 **7 Claims**



1. A writing tool comprising; an outer sleeve; a head member detachably connected to one end of said outer sleeve; writing refill means axially inserted in said head member and said outer sleeve; return spring means between bearing stops on said writing refill means and a bearing surface on interior of said head member; cam mechanism means for projecting or retracting the tip of said writing refill means from the end of said head member, said cam mechanism means comprising; a cam body attached to the end of said head member opposite said tip, rotatable cam means inside said cam body surrounding said writing refill means and abutting said bearing stops on said writing refill means, rotation cam bar means for rotating said rotatable cam means surrounding said writing refill means, said rotation cam bar means having a short portion inside said cam body engaging said rotatable cam means, and an elongate cylindrical sleeve portion extending beyond the end of said

VOL
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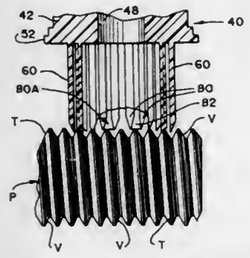
cam body; said rotatable cam means and said rotation cam bar means being retained in said cam body by a shoulder on one end of said cam body and said bearing stops on said writing refill means; an elongate axial hole in the side of said outer sleeve near said head member and adjacent said cam body; cam bar actuating means slidably mounted in said elongate axial hole; connecting means connecting said cam bar actuating means to said elongate cylindrical sleeve portion of said rotation cam bar means for actuating said rotation cam bar means to extend or retract the tip of said writing refill means; whereby said cam mechanism means is built into said head member so that a writing tool may be short in length.

5,184,909

DISPENSER FOR SEALANTS WITH SPECIFIC BRISTLE ARRANGEMENT

William L. Schaefer, Wilmette, Ill., assignor to Fel-Pro Incorporated, Skokie, Ill.

Filed Jan. 30, 1992, Ser. No. 828,787
Int. Cl.[5] A46B *11/00, 11/02*
U.S. Cl. 401—268 **6 Claims**



1. A dispenser assembly including a deformable container having a neck through which the contents of the container may be expressed, and an applicator/spreader secured to the neck, said application/spreader defining a passageway and having a body defining an opening through which the container contents may pass outwardly, said body having a bristle assembly integrally formed therewith, said bristle assembly surrounding, and being in flow communication with, said opening, said bristle assembly comprising at least two closely spaced rows of upstanding bristles, one row surrounding the other row, each row of bristles comprising a plurality of tapering bristles each of which is wider at its base and zone of formation with said body than at its outer tip, the bristles in one row being in staggered array with the bristles in the next adjacent rows to resist the flow of the container contents laterally outwardly of the bristle assembly adjacent the bases of the bristles and wherein the bristles of one row are effectively wider adjacent their outer tips than are the bristles of the other rows to prevent the outer tips of the other rows from descending into spaces between thread peaks, so that when the dispenser assembly is applying its contents to pipe threads, the contents are spread between the threads and are not wiped out therefrom.

5,184,910

METHOD AND MATERIAL FOR WRITING CHECKS BY APPLYING PRESSURE ON A PREPRINTED OVERLAY

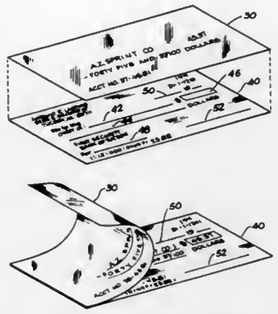
Katherine B. Betsill, 5002 N. Via Condesa, Tucson, Ariz. 85718

Filed Sep. 16, 1991, Ser. No. 760,589
Int. Cl.[5] B42D *15/00*
U.S. Cl. 462—8 **20 Claims**

1. A preprinted check overlay combined with a written statement of account sheet periodically furnished by a business entity to a customer for use in filling out a blank check in payment thereof, comprising:

(a) a written statement of account sheet containing entries corresponding to the name of the business entity and the amount owed by the customer, and

(b) a transparent check overlay having a top side and a bottom side; said bottom side containing printed matter in transferrable mirror-image comprising the name of the business entity positioned so as to match the blank space in the check for recording the payee, comprising the amount owed in alphabetical form and positioned so as to match



the blank space in the check for recording in alphabetical form the amount paid, and comprising the amount owed in numerical form and positioned so as to match the blank space in the check for recording in numerical form the amount paid;

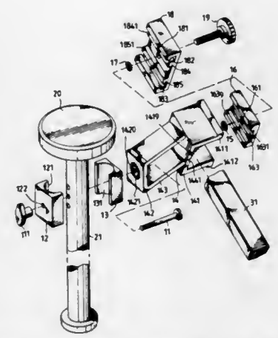
wherein said mirror-image printed matter on the bottom side of said overlay is transferrable by applying pressure on the top side of said overlay.

5,184,911

SADDLE MOUNTING STRUCTURE FOR A GOLF CART

Ching-Chang Wu, No. 35-1, Jih Hsin Street, Tu Cheng Hsiang Taipei Hsien, Taiwan

Filed Aug. 23, 1991, Ser. No. 749,353
Int. Cl.[5] F16B *7/04*
U.S. Cl. 403—385 **4 Claims**



1. For securing the pillar of a saddle to a golf cart's main frame, a saddle mounting structure comprising:

a connector for connecting a saddle to a golf cart's main frame, said connector comprised of a first connecting block secured to a second connecting block, said second connecting block having a vertical end wall, said vertical end wall having a through-hole at the center, said first connecting block being made in a substantially U-shaped structure having two hooked terminal ends and a V-

groove on the inner wall surface thereof at the middle in longitudinal direction;

a first locating block and a second locating block for securing said connector to a saddle's pillar, said first and second locating blocks being symmetrical and each defining therein a groove in longitudinal direction and a through-hole at the center, said second locating block having a plurality of radial grooves radially made on the outer wall surface around the through-hole thereof;

a first fastening plate and a second fastening plate for securing said connector to a golf cart's main frame, said first fastening plate having a channel longitudinally disposed at one side, a bolt hole at the center, said second fastening plate having a bolt hole at the center, two elongated retaining grooves longitudinally disposed at one side at two opposite locations, and two rails longitudinally disposed within said two elongated retaining grooves and spaced from each other;

a first screw and a lock nut for securing said connector and said first and second locating block to a saddle's pillar;

a second screw for securing said connector and said first and second fastening plate to a golf cart's main frame; and

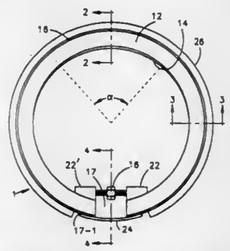
wherein said first screw is inserted through the through-hole on said vertical end wall, the through-hole on said second locating block, a through-hole on a saddle's pillar and the through-hole on said first locating block and tightly fastened up with said lock nut to firmly secure said connector to said saddle's pillar; said first connecting block of said connector and said first fastening plate are respectively attached to a golf cart's main frame at two opposite sides with said first fastening plate received inside said first connecting block of said connector and, said second fastening plate is attached to said connector and firmly secured in position by said second screw, permitting said to hooked terminal ends to be respectively retained in said two retaining grooves.

5,184,912

SPLIT-RING MANHOLE COVER SUPPORT

Harold M. Bowman, 18867 N. Valley Dr., Fairview Park, Ohio 44126, and George T. Fuller, Chagrin Falls, Ohio, assignors to Harold M. Bowman, Westlake, Ohio

Continuation-in-part of Ser. No. 366,177, Jun. 13, 1989, Pat. No. 4,969,771, and a continuation-in-part of Ser. No. 362,257, Jun. 6, 1989, Pat. No. 4,963,053, and a continuation-in-part of Ser. No. 362,216, Jun. 6, 1989, Pat. No. 4,966,489, and a continuation-in-part of Ser. No. 536,691, Jun. 12, 1990, abandoned. This application Oct. 12, 1990, Ser. No. 596,255
Int. Cl.[5] E02D *29/14*
U.S. Cl. 404—26 **29 Claims**



1. In a split ring manhole cover support adapted to raise the grade of a manhole cover from a position of retention by the cover seat element and the collar element of an existing manhole cover-supporting structure to a new and higher grade and there retaining it, the split ring manhole cover support comprising a base ring that is adapted to fit into and be expanded against the collar element of the existing cover-supporting structure, said base ring, having a top that is essentially in one plane for support of the cover, a bottom therebelow that is in another plane, a spreadable interruption in its essentially circular continuity, spreader means for widening said interruption and thereby forcing said base ring against the restraint of the collar element of said existing cover-supporting structure, and a cover keeper that is connected to and extends upwardly from the outer periphery of the base ring, the improvement for increasing the grip of said collar element on said base ring which comprises:

stiffener means for selectively stiffening a sector of the base ring generally opposite to said spreadable interruption relative to the stiffness of the rest of said base ring,

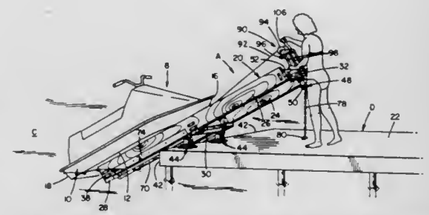
said sector being prone, except for said stiffener means, to lose base ring pressure against said collar element when said interruption in the base ring is spread by said spreader means.

5,184,913

WATERCRAFT LAUNCHING AND LIFT ASSEMBLY AND KIT THEREFOR

Jon D. Meriwether, Follansbee, W. Va., assignor to The Louis Berkman Company, Steubenville, Ohio

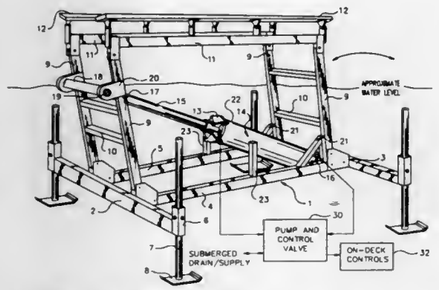
Filed Feb. 3, 1992, Ser. No. 829,323
Int. Cl.[5] B63C *3/00*
U.S. Cl. 405—1 **18 Claims**



1. A launch and lift assembly for small watercraft adapted for mounting on a dock with a launching edge overlying a body of water, said assembly comprising an elongated approximately rectangular skid cradle having a pair of parallel side rail members spaced apart for engaging and slidably supporting the hull of said watercraft in a stable seated relation thereon for longitudinal sliding movement forwardly thereof and off the forward end of said skid cradle, support means normally supporting said skid cradle in a horizontal position on said dock for longitudinal rolling movement thereon, said support means comprising a depending caster mounted on the rearward end of said skid cradle for rolling engagement with the dock and a pair of support rollers rotatably mounted in spaced apart relation on the dock adjacent said launching edge and supporting the forward end portions of said side rail members for longitudinal sliding movement thereon, said support rollers having coincident axes of rotation extending approximately parallel to said launching edge of said dock, said skid cradle being rollable longitudinally forward on said dock on said support caster and said support rollers a sufficient distance to locate the center of gravity of the skid cradle and seated watercraft at a point forwardly of said support rollers to thereby cause the forward end of the skid cradle to tilt downwardly over said launching edge of the dock to a sufficient angle to cause the watercraft to slide forwardly of and down off the forward end of the tilted skid cradle by its own weight to effect launching of the watercraft.

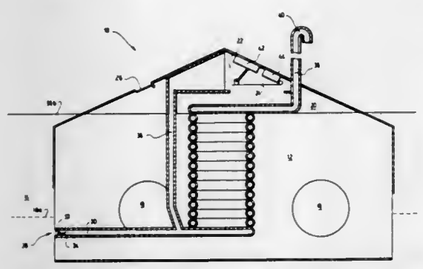
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5,184,914
LIFT FOR WATERCRAFT
Samuel T. Basta, 2457 137th Ave. SE., Bellevue, Wash. 98005
Filed Feb. 21, 1992, Ser. No. 839,813
Int. Cl.[5] B63C *3/06*
U.S. Cl. 405—3 **4 Claims**



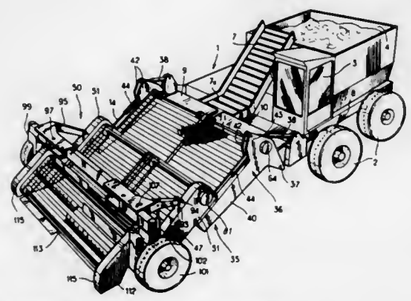
1. A lift for watercraft comprising:
a substantially rectangular base having front and rear transverse beams and longitudinal parallel beams secured to said front and rear transverse beams;
pivoting booms attached to said base adjacent the points of connection of said front and rear transverse beams and said longitudinal parallel beams;
watercraft support means pivotally connected to said pivoting booms;
boom stop means secured to said longitudinal parallel beams adjacent said rear transverse beam; and
actuator means connected to said rear transverse beam and to said pivoting booms adjacent said front transverse beam, said actuator means operable for forcing said pivoting booms from a lowered position to an over center raised position relative to said base to raise said watercraft support means, said pivoting booms being braced in the raised position over center by said boom stop means, and said actuating means operable to retracting said pivoting booms from the raised, braced position back over center to the lowered position to lower said watercraft support means.

5,184,915
APPARATUS FOR LIFTING UP WATER USING THE OCEAN TIDE ENERGY TO DO SO
John Marino, 6070 Languedoc, Montreal, Quebec, Canada H1M 3C9
Filed Mar. 23, 1992, Ser. No. 855,926
Int. Cl.[5] E02B *9/08*
U.S. Cl. 405—76 **6 Claims**



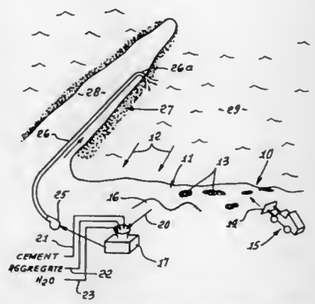
1. An apparatus using the inexhaustible non-polluting source of energy of the ocean tides for lifting up water to a predetermined level higher than the level of the high tide, comprising, in combination:
a water chamber in water communication with the ocean so as to be filled with water following a rise in tide, this water chamber having an upper portion that is air tight and define the pressurized air chamber when water is filling up the water chamber as the tide rises;
an unidirectional water intake consisting of a first, substantially horizontal pipe in water communication with the ocean at the bottom of the water chamber, so as to be filled up with water when the tide is rising;
a second, substantially vertical pipe extending upwardly from the first pipe up to the air chamber, this second pipe having a top end closable with a pressure release valve;
an unidirectional flow valve mounted in the first pipe upstream of the second pipe so as to prevent water from flowing backwards;
a water outlet consisting of a third pipe extending upwardly from the first pipe up to the predetermined level, the third pipe being positioned downstream the unidirectional flow valve of the first pipe; and
a suction-actuated valve positioned and adapted to allow communication between the upper portion of the water chamber and external air for allowing air to enter the water chamber and water to get out of this chamber when the tide is lowering,
whereby, in use, when the water chamber is almost filled up with water as the tide rises and the pressure in the air chamber reaches a given level, the pressure release valve is actuated to open the second vertical pipe, this in turn allowing the pressure built up in the air chamber to push the water down in the second vertical pipe and then up to the predetermined level in the third pipe.

5,184,916
BEACH CLEANING MACHINE
Jean C. Thoer, 90 avenue de Verdun, 92390 Villeneuve la Garenne, France
Filed Feb. 4, 1992, Ser. No. 830,901
Claims priority, application France, Feb. 5, 1991, 91 01275
Int. Cl.[5] C09L *17/00;* **B09B** *1/00*
U.S. Cl. 405—128 **17 Claims**



1. Beach cleaning machine comprising:
a self-propelled vehicle carrying a tippable skip, a front-mounted apron in having an upper apron part and a lower apron part each comprising a respective portion of a two-part motor-driven first grid conveyor, and a blade at a lower forward end of said lower apron part adapted to dig into sand;
said lower apron part having an upper rear and overlying said upper apron part with said lower apron part being slidably mounted;
displacement means for moving said lower apron part relative to said upper apron part between an operative position in which said lower apron part and said upper apron part are disposed one substantially in front of the other, and a transport position in which said lower apron part and said upper apron part are substantially stacked one on top of the other;
a conveyor belt discharging into said skip and onto which said first grid conveyor discharges; and
a second grid conveyor above and adapted to be driven in an opposite direction to said first grid conveyor, paddles on said second grid conveyor, links pivoted at one end to said second grid conveyor and at the other end to said front-mounted apron, rams adapted to displace said links and rams operative between said front-mounted apron and a lower end of said second grid conveyor.

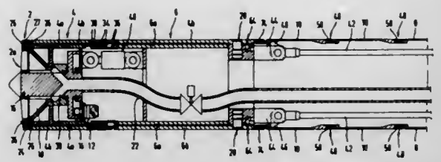
5,184,917
METHOD OF HYDROCARBON DECONTAMINATION
Donald H. Rez, Anaheim, Calif., assignor to Polar Marine, Inc., Anaheim, Calif.
Continuation-in-part of Ser. No. 552,942, Jul. 16, 1990, Pat. No. 5,106,424. This application Apr. 13, 1992, Ser. No. 867,488
The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.
Int. Cl.[5] B09B *3/00;* **B28B** *1/14;* **E01C** *3/00*
U.S. Cl. 405—128 **21 Claims**



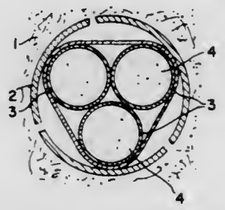
1. The method of treating a liquid or solid, waste hydrocarbon consisting essentially of petroleum or derivative thereof contaminating sand or soil, to reduce risk of environmental contamination by said waste hydrocarbon, that includes:
a) forming a flowable calcareous cementitious aqueous paste,
b) then introducing said hydrocarbon contaminated sand or soil into paste and distributing in said paste said hydrocarbon contaminated sand or soil, to form a curable mix,
c) forming said mix into a shape for curing, and
d) allowing said formed mix to cure so as to encapsulate said hydrocarbon in said cured concrete mix.

5,184,918
RECOVERABLE TUNNELLING MACHINE
Martin Herrenknecht, Schwanau; Werner Suhm, Gengenbach, and Rainer Griesbaum, Meissenheim, all of Fed. Rep. of Germany, assignors to Herrenknecht GmbH, Schwanau, Fed. Rep. of Germany
Filed Sep. 24, 1991, Ser. No. 764,545
Claims priority, application Switzerland, Feb. 25, 1991, 564/91
Int. Cl.[5] E21D *9/06*
U.S. Cl. 405—138 **16 Claims**

1. Controllable tunnelling machine for driving tunnels, in particular, for inaccessible tunnel cross-sections, by pressing forward via product tubes having an inside diameter and an outside diameter, comprising a machine tube, a control head connected to the machine tube in an articulated manner, control devices for deflecting the control head relative to the machine tube, and an extracting tool on the control head, the extracting tool being divided into an inner area, having an outside diameter which is at most as large as the inside diameter of the product tubes, and an annular outer area connected to the inner area by first connecting elements, the control head including a control-head housing, having an inside diameter and an outside diameter, and a control-head double casing surrounding the control-head housing and having an inside diameter and an outside diameter, the machine tube having a machine-tube housing, having an inside diameter and an outside diameter, and a machine-tube double casing surrounding the machine-tube housing and having an inside diameter and an outside diameter, the inside diameter and outside diameter of both the control-head double casing and the machine-tube double casing matching the inside diameter and the outside diameter, respectively, of the product tubes, the outside diameter of the control-head housing and the outside diameter of the machine-tube housing being at most as large as the inside diameter of the product tubes, the control-head double casing being connected to the control-head housing by second connecting elements, the machine-tube double casing being attached to the machine-tube housing by releasable restraining devices, the control head being movable by means of the control devices towards the machine tube such that the control-head double casing contacts the machine-tube double casing, while restraining devices hold the machine-tube double casing in place on the machine-tube housing, and such that the first and second connecting elements can be broken, and the machine tube housing including withdrawal means insertable into a tube line formed by the product tubes for withdrawing the tunnelling machine through the tube line after the restraining devices are released.



5,184,919
METHOD FOR WIDENING A HOLE OR A PIPE IN THE GROUND
Marc J. M. Smet, Mol, Belgium, assignor to Corstjens Helena Michel, Mol, Belgium
Filed Jun. 19, 1990, Ser. No. 540,495
Claims priority, application Belgium, Jun. 22, 1989, 8900687
Int. Cl.[5] F16L *1/00*
U.S. Cl. 405—154 **10 Claims**



1. A method for widening a hole in the ground, comprising the steps of:
a) inserting into the hole at least one high pressure hose having at least two layers of elastic material and an intermediate fabric layer of non-elastic threads which are weaved so that the threads form bundles of threads at an

VOL 1147 ISS 2 FE 9 1993 UMI

oblique angle with the axis of the hose and wherein the hose has a maximum radial expansion due to the fabric layer;

b) pumping high pressure fluid into the hole to radially expand the two layers of elastic material so that the hose radially expands and engages with the hole thereby widening the hole;

c) allowing the non-elastic threads to freely rotate in response to the radial expansion of the two layers of elastic material; and

d) utilizing the non-elastic threads to prevent the hose from radially expanding beyond the maximum radial expansion.

5,184,920

CONNECTION ELEMENT FOR A ROD

Marcel Strässle, Kirchberg, Switzerland, assignor to Syma Intercontinental AG, Switzerland

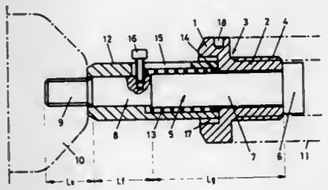
PCT No. PCT/CH91/00039, § 371 Date Sep. 23, 1991, § 102(e) Date Sep. 23, 1991, PCT Pub. No. WO91/12383, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 13, 1991, Ser. No. 761,784

Claims priority, application Switzerland, Feb. 16, 1990, 506/90

Int. Cl.[5] F16D *1/00*

U.S. Cl. 403—171 **14 Claims**



1. A connection element for a rod (**11**) of a threedimensional framework having a junction portion (**10**), the connection element comprising:

a bolt (**5**) having a guide portion (**8**), a long portion (**7**), and a front end portion (**9**), the front end portion being adapted to be fastened to the junction portion (**10**) of the three-dimensional framework;

a sleeve insert (**3**), said bolt being rotatably fastened to an end of the rod by said sleeve insert;

a guide sleeve (**12**) having an axial through-bore, said bolt being partially inserted in the through-bore such that the front end portion of said bolt projects from the through-bore; and

a spring (**13**) positioned in the through-bore so as to urge said front end portion of said bolt out of said guide sleeve;

wherein a first portion of the through-bore has a circumference which is substantially equal to a circumference of the guide portion (**8**) of said bolt so that the guide portion of said bolt can be inserted therein and so that a rotary movement of said guide sleeve can be transmitted to said bolt, and wherein a second portion of the through-bore has a circumference which is larger than a circumference of the long portion (**7**) of said bolt so that a gap is formed therebetween.

5,184,921

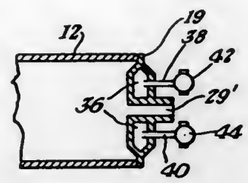
APPARATUS FOR BULKHEAD BUOYANCY AND PIPE DIFFERENTIAL PRESSURE

Dane R. Hancock, 516 Bontana Ave., Fort Lauderdale, Fla. 33301

Continuation of Ser. No. 581,186, Sep. 10, 1990, abandoned, which is a continuation of Ser. No. 115,060, Oct. 29, 1987, abandoned, which is a continuation of Ser. No. 353,009, Mar. 1, 1982, abandoned, which is a division of Ser. No. 128,278, Mar. 7, 1980, Pat. No.

Int. Cl.[5] G01M *3/28*

U.S. Cl. 405—171 **3 Claims**



1. A pipeline test bulkhead that can be neutrally buoyant under water for ease of transport under water, said pipeline test bulkhead being employed for sealably closing the open end of an underwater pipe representing the termination of an underwater pipeline, said bulkhead being manually transportable under water without a crane regardless of the dry weight of the bulkhead out of the water and necessary for ease of transport under water in order to test each section of the pipe as it is attached during the construction of the pipeline under water comprising:

a rigid water impervious barrier, said barrier including an annular area for flush engagement with the open end of a pipe in a pipeline, said water impervious barrier having a first wall and a second substantially parallel wall spaced apart, with a sealed chamber formed between said first wall and said second wall;

first conduit means disposed through said first wall from outside said bulkhead terminating in said sealed chamber inside said bulkhead, said first conduit for adding or removing a buoyancy changing liquid such as water from said sealed chamber;

first valve means attached to said first conduit means for controlling the flow of buoyancy liquid through said first conduit means;

second conduit means disposed through said first wall from outside said bulkhead to said sealed chamber inside said bulkhead for adding a gas such as air to said chamber, said second conduit means being capable of being connected to a gas supply;

second valve means operably coupled to said second conduit for controlling the supply of gas through said second conduit means into said sealed chamber in said bulkhead,

whereby said first valve means can be actuated to add or remove the buoyancy liquid into or from said sealed chamber in conjunction with the operation of said second valve means for supplying gas such as air to said sealed chamber such that the underwater buoyancy of said bulkhead can be adjustably selected to be neutrally buoyant to permit manual movement of said bulkhead under water without a crane.

5,184,922

ROOF BOLT ANCHOR

Russell Blackwell, 2109 Arcadia Rd., Birmingham, Ala. 35214

Filed Dec. 16, 1991, Ser. No. 807,716

Int. Cl.[5] E21D *21/00*

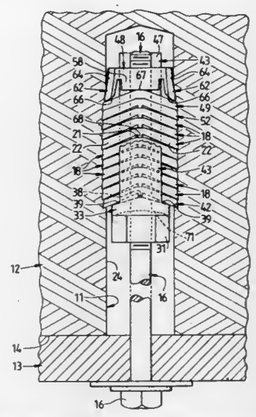
U.S. Cl. 405—259.1 **20 Claims**

1. An improvement in roof bolt anchors for securing a mine roof bolt within a preformed hole, comprising:

(a) a stacked plurality of leaves each defining an aperture therethrough through which said roof bolt is received and each being bent transversely to form a crest proximal to said aperture and defining a pair of outer edges on opposite sides of said crest;

(b) support means mounted to said roof bolt subjacent said plurality of leaves for supporting said plurality of leaves in stacked, parallel relation thereon;

(c) an expansion nut threadably connected to said roof bolt for vertical movement thereon responsive to the rotation thereof, wherein said expansion nut will move downwardly in non-rotating relation to said plurality of leaves, responsive to the rotation of said roof bolt, to urge said stacked plurality of leaves toward a flattened condition



such that said edges are urged in pressed abutment with a defining face of said hole; and

(d) a pair of expansion flanges integrally connected to said expansion nut and depending downwardly therefrom such that the downward movement of said compression nut will move said leaves toward a flattened condition and move said expansion flanges into contact with an upper leaf of said plurality of leaves proximal said opposite sides thereof to bias said outer edges downwardly as said leaves are compressed by said downwardly descending compression nut, wherein said expansion flanges are bendable and when urged against said upper leave move outwardly from said roof bolt and along said upper leaf to contact and grip said defining face of said hole.

5,184,923

EXPANSION SHELL ASSEMBLY

Frank Calandra, Jr., Pittsburgh; John C. Stankus, Canonsburg, and Paul A. Yacisin, Patton, all of Pa., assignors to Jennmar Corporation, Pittsburgh, Pa.

Filed Nov. 8, 1991, Ser. No. 790,242

Int. Cl.[5] E21D *20/02*

U.S. Cl. 405—259.4 **20 Claims**

1. Apparatus for supporting a rock formation comprising,

an elongated bolt positioned in a bore hole of a rock formation,

said bolt having a threaded first end portion and a second end portion,

said bolt first end portion being positioned adjacent to the end of the bore hole,

said bolt second end portion extending out of the bore hole,

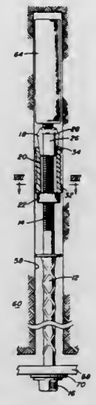
an expansion shell positioned on the bolt first end portion,

means positioned on the bolt second threaded end portion for bearing against the rock formation of the open end portion of the bore hole,

said expansion shell having a support ring and a plurality of longitudinally extending fingers spaced from one another forming elongated slots therebetween,

said fingers each integrally formed at one end portion with the support ring and extending upwardly therefrom to form a free end portion for outward expansion of the fingers,

camming means threadedly engaged to the bolt threaded end portion within the expansion shell for expanding the fingers outwardly into contact with the wall of the bore hole upon rotation of said bolt as said camming means moves axially on said bolt relative to said expansion shell,



said expansion shell support ring having an external surface positioned adjacent to the wall of the bore hole and an internal surface forming a bore in said expansion shell for receiving the bolt first end portion, and

said support ring external surface and said internal surface forming a wall extending around said support ring and ranging in thickness between a maximum thickness and a minimum thickness to facilitate the unobstructed insertion and movement of said expansion shell upwardly into the bore hole to anchor said bolt in a fixed position in the bore hole.

5,184,924

METHOD AND EQUIPMENT FOR TRANSFERRING CONCRETE SLABS

Pasi Takalo, Temmes; Pekka Kinnari; Mikko Henriksson, both of Tampere; Tapani Nikku, Pirkkala, and Hannu Myllymäki, Kalajoki, all of Finland, assignors to Partek Concrete Oy Ab, Helsinki, Finland

Filed May 3, 1991, Ser. No. 695,407

Claims priority, application Finland, May 4, 1990, 902243

Int. Cl.[5] B65G *57/03*; B65H *29/18*

U.S. Cl. 408—67 **12 Claims**

1. A method for lifting concrete slabs from a prestressing bed and forming a pile of slabs for transfer to a stockyard comprising the steps of:

lifting a slab from said prestressing bed with a transfer device, said transfer device disposed on a transport track formed of a pair of rails extending on both sides of said prestressing bed;

moving said slab along said transport track and then lowering said slab onto a support structure;

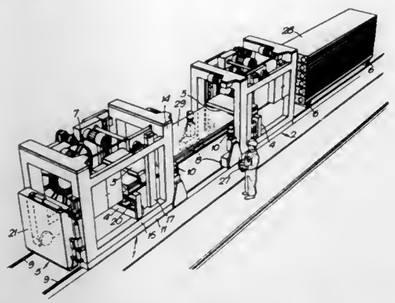
repeating said lifting, moving and lowering steps so as to form a pile of slabs on said support structure; and

lifting said support structure having said pile of slabs and moving said support structure having said pile of slabs along said transport track to said stockyard.

VOL 1147 ISS 2 FEB 9 1993 UMI

3. An apparatus for lifting and transferring concrete slabs from a prestressing bed comprising:

first and second lifting units movably mounted on a pair of rails;



said first and second lifting units each including means for lifting and moving a slab from said prestressing bed to a support structure;

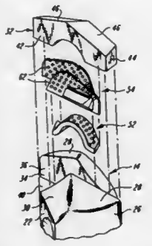
said first and second lifting units each including means for lifting and moving said support structure having at least one slab.

5,184,925

INSERT AND INSERT SUPPORT BAR

Gerald L. Woods, Bedford, and Steven D. Shirk, New Enterprise, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed Jan. 10, 1992, Ser. No. 819,427
Int. Cl.[5] E21B *10/58*; B23B *51/00*
U.S. Cl. 408—144 **6 Claims**



1. A center vacuum rotary drill bit comprising:

a rotary drill bit body having a top working surface including a slot extending transversely across said top working surface, said slot including a first sidewall, an opposite second sidewall and a generally horizontal bottom surface extending between said first sidewall and said second sidewall;

an insert positioned within a shim within said slot, said insert including a pair of oppositely facing generally parallel side surfaces, a pair of opposite facing generally parallel end surfaces extending between and interconnecting said side surfaces, a pair of oppositely inclined top surfaces extending between and interconnecting said side and end pairs of surfaces, and a bottom surface having a concave depression formed therein, said bottom surface extending transversely to and interconnecting the side and end pairs of surfaces, and

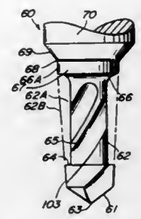
a support bar including a convex top surface, said support bar disposed within said slot between said insert bottom surface and said slot such that said convex top surface supports said concave depression, wherein the modulus of elasticity of said support bar is greater than the modulus of elasticity of said shim.

5,184,926

ROOT-STRENGTH DRILL BIT AND METHOD OF MAKING

David T. Hemmings, Orange, Calif., assignor to Megatool, Inc., Calif.

Filed Nov. 5, 1990, Ser. No. 609,429
Int. Cl.[5] B23B *51/02*
U.S. Cl. 408—226 **16 Claims**



1. A fluted twist drill bit of the type having a generally cylindrical shank adapted to be clamped in a rotatable chuck, and a coaxial cutting body extending forward from said shank, said drill having improved resistance to breakage in the vicinity of the junction between said shank and said body, said drill bit comprising;

a. a fluted cutting point at the distal end of said body,

b. an intermediate section of smaller diameter than said cutting point extending rearward therefrom, at least a rear portion of said intermediate section being unfluted, and

c. a longitudinally elongated, unfluted root section of larger diameter than said intermediate section extending rearward therefrom, said root section have a front-tapered front annular wall surface contiguous with the outer wall surface of said intermediate section, and

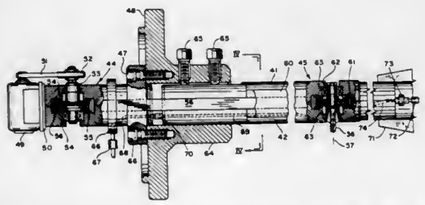
d. A front tapered transition section joining said root section to said shank.

5,184,927

CUTTER HEAD WITH INTERNAL DRIVE FOR MACHINING WORKPIECES

Raymond A. Judy, Box 24, Lucinda, Pa. 16235

Filed Dec. 4, 1991, Ser. No. 802,312
Int. Cl.[5] B23C *3/28*
U.S. Cl. 409—143 **15 Claims**



1. An apparatus to machine a workpiece including the combination of:

means to support a workpiece;

a support head;

an elongated cutter bar supported by said support head to define an outwardly projecting cantilever end portion;

an outboard support including a collet chuck for engaging and supporting the projected end portion of said cutter bar;

a cutter tool supported for rotary movement about an axis transverse to the extended length of the cutter bar;

means extending along said cutter bar for imparting of rotary movement to said cutter tool; and

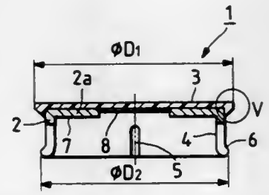
means for imparting relative movement between the cutter tool during rotary movement thereof and the workpiece.

5,184,928

CAP FOR RAIL MOUNTING HOLE OF LINEAR GUIDE DEVICE

Toru Tsukada, Gunma, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed Mar. 27, 1992, Ser. No. 858,851
Claims priority, application Japan, Apr. 5, 1991, 3-22023[U]
Int. Cl.[5] F16B *43/00*
U.S. Cl. 411—371 **18 Claims**



1. A rail mounting hole cap for closing a rail mounting hole formed in an upper surface of a guide rail of a linear guide device, said cap comprising:

a cap body (2) including a cylindrical barrel portion (4) having axial slits (5), a projection (6) formed on an outer periphery of said barrel portion at a lower end thereof, and a cap lid portion (2*a*) having a portion (8) reduced in thickness; and

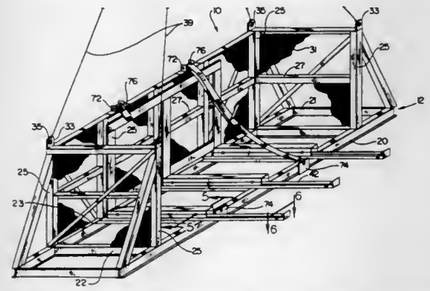
an elastic covering member (3) covering said lid portion (2*a*) of said cap body (2), said covering member (3) being greater in outer diameter than said cap body (2).

5,184,929

MATERIAL HANDLING APPARATUS FOR TRANSFERRING AND UNLOADING A LOAD OF MATERIAL

Jay G. Reynolds, Rte. 4, Box 711, Gaffney, S.C. 29340

Filed Jul. 10, 1990, Ser. No. 550,696
Int. Cl.[5] B66F *9/00*
U.S. Cl. 414—10 **2 Claims**



1. A material handling apparatus for lifting a load of material to an elevated position above ground level as in the construction of a multi-storied building and for facilitating the unloading of the lifted material in a safe manner, said apparatus comprising

a substantially rectangular platform having opposing ends and a front and rear side,

means carried by said platform for receiving a shackle or other cable attachment for raising or lowering the platform,

extension means fixedly connected to and overlying said platform and extending laterally across said platform and laterally outwardly beyond said front side a predetermined fixed distance, said extension means having outer ends,

removable stop means mounted on the outer ends of said extension means, and

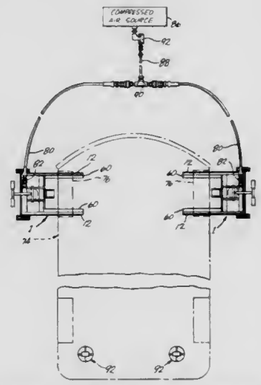
material transfer means for supporting a load of material movably mounted on said extension means and being moveable from a position overlying said platform outwardly beyond said front side to an extended unloading position while on the extension means or movable off the extension means by selective removal of said stop means for thereby permitting the unloading of material from the material transfer means without the necessity of entering onto said platform.

5,184,930

VEHICLE LIFTING SYSTEM AND METHOD

Charles J. Kuhn, 10520 Plainview Ave., Tujunga, Calif. 91042

Filed Oct. 5, 1990, Ser. No. 593,681
Int. Cl.[5] B66F *5/00*
U.S. Cl. 414—427 **9 Claims**



1. A system for lifting a vehicle, the vehicle having opposite sides with corresponding lifting points at essentially a same level on an underside of the vehicle, the system comprising:

two jacks, each jack comprising a cylinder having a movable piston and a piston rod connected to the piston and adapted for vertical linear travel from the cylinder in response to fluid pressure applied to the piston inside the cylinder;

a carriage to follow travel of the piston rod on each jack;

lifting means connected to each carriage for releasably engaging a corresponding one of the lifting points on the underside of the vehicle; and

a fluid pressure supply system adapted for connection to a fluid pressure source and having a fluid pressure distributing T-joint with an inlet for connection to a fluid pressure supply line from the fluid pressure source, and a pair of fluid pressure distribution lines connected to outlets of the T-joint for simultaneously uniformly distributing fluid pressure from the pressure source directly to the cylinders of the two jacks so the pistons and piston rods thereof are

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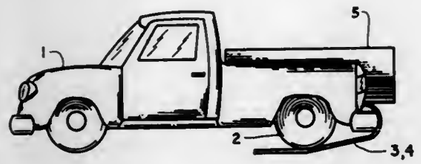
uniformly lifted to equally and simultaneously raise the carriages and their corresponding lifting means, thereby equally raising the vehicle from the lifting points thereon.

5,184,931

TRUCK CARGO REMOVER

John A. Safko, Box 233, Clarksville, Pa. 15322

Filed Aug. 16, 1991, Ser. No. 745,696
Int. Cl.[5] B60P *1/00*
U.S. Cl. 414—522 **5 Claims**



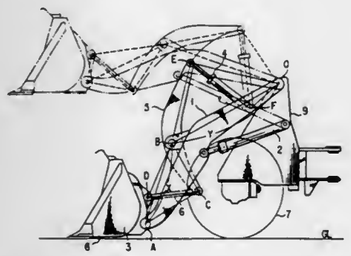
1. In combination with a truck body unit having a floor, sides, rear and a pair of wheels, a pair of belts slidably lying on sides of the floor of said truck body unit and having end extensions for projecting beyond said rear of said truck body unit, a cargo supporting unit supported on and attached to said pair of belts, said end extensions of said pair of belts being projectable underneath said pair of wheels so that when the truck is driven rearwardly, said wheels will ride on said extensions and thereby pull said cargo supporting unit towards and beyond the rear of said truck body unit.

5,184,932

LINKAGE MECHANISM OF A WORK IMPLEMENT

Kenji Misuda, and Norihito Bando, both of Kawagoe, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho and Komatsu Mec Corp., both of Tokyo, Japan

Continuation of Ser. No. 490,594, Jul. 16, 1990, abandoned. This application Nov. 21, 1991, Ser. No. 794,850
Claims priority, application Japan, Sep. 19, 1988, 63-232641
Int. Cl.[5] E02F *3/28*
U.S. Cl. 414—685 **2 Claims**



1. A linkage mechanism of a work implement in a loading vehicle comprising:

a lift arm having a support end pivotably supported from a vehicle body and a front end extending forward and rotatable up and down in a vertical direction about a first pivotal support point on the support end;

a bucket pivotally supported on a second pivotal support point located at a lower portion of a rear surface of said bucket and the front end portion of said lift arm;

a bellcrank pivotably supported from said lift arm on a third pivotal support point located at a middle portion along a longitudinal direction of said bellcrank;

a tilt rod pivotably connected at a fourth pivotal support point located at a forward end portion of said bellcrank and at a fifth pivotal support point located on an upper portion of the rear surface of said bucket; and

a tilt cylinder pivotably connected at a sixth pivotal support point at the vehicle body and at a seventh pivotal support point on a rear end portion of said bellcrank to be operated for tilting said bucket wherein

a distance from the second pivotable support point between said bucket and said lift arm to the third pivotable support point between said lift arm and said bellcrank is represented by X, and a distance from the third pivotable support point between said lift arm and said bellcrank to the first pivotable support point between said lift arm and the vehicle body is represented by Y, a ratio between the distances X and Y is set at α ($Y/X=\alpha$), and further wherein

a first triangle is defined between the first pivotable support, the third pivotable support point and the seventh pivotable support point,

a second triangle is defined between the second pivotable support point, the third pivotal support point and the fourth pivotable support point,

a third triangle is defined between the first pivotable support point, the seventh pivotable support point and the sixth pivotable support point, and

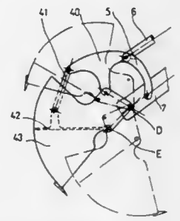
a fourth triangle is defined between the second pivotable support point, the fourth pivotable support point and the fifth pivotable support point such that the first and third triangles are in similar figure ratio relationships with the second and fourth triangles, respectively.

5,184,933

MINI-SIZE UNIVERSAL HYDRAULIC EXCAVATOR

Zhong Pei-qian, Tianjin; Zheng Wen-kang; Xu Xi-tian, both of Yulin; Liang Jian-he, Nanning; Zhou Dong-shen, Yulin, and Yang Jun-zhi, Lanzhou, all of China, assignors to Yulin Diesel Engine General Works, Yulin, China

Filed Feb. 27, 1991, Ser. No. 661,985
Claims priority, application China, Apr. 4, 1990, 90204307.2
Int. Cl.[5] B66C *3/02*
U.S. Cl. 414—725 **2 Claims**



1. An excavator comprising:

a chassis assembly including traveling devices and a vehicle frame;

an earth-moving means pivotally coupled to said chassis assembly;

a swivel supporting means fixedly connected to said chassis assembly;

an upper carriage assembly provided with a main hydraulic system, supporting frame for multi-way valves, a driver's shed or cabin, a driver's seat, an engine, control mechanism and electric system, and fixedly mounted on the swivel supporting means;

an excavating arm pivotally coupled to the upper carriage assembly and including a joint holder, a boom, a bucket arm and driving oil cylinders; and

excavating means mounted on the excavating arm, characterized in that said excavating means include a backhoe device comprising a six bar linkage mechanism including a scraper, a bucket including a bucket body, the scraper being pivotally coupled to the bucket body such that is acts as a movable wall of the bucket, a connecting rod, a connecting plate, a swing bar, and the bucket arm, wherein the connecting rod is pivotally coupled to the connecting plate and to the scraper, the connecting plate is pivotaly coupled to the swing bar and to the bucket body, the bucket arm is pivotally coupled to the swing bar and to the bucket body, and one of the driving oil cylinders is pivotally coupled to a pivot between the swing bar and the connecting plate, such that the backhoe device is driven by the driving oil cylinder, and such that the scraper moves during a loading process to enlarge the effective capacity of the bucket and moves during an unloading process to remove a volume of material from the bucket collected during the loading process whereby the bucket body and the scraper revolve in the same direction, with a rule that the bucket body moves quicker, while the scraper moves slower.

5,184,935

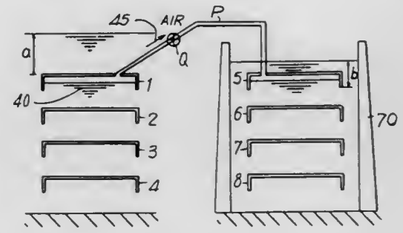
Patent Not Issued For This Number

5,184,936

MULTIPLE-GAS-PHASE TIDAL POWER GENERATION APPARATUS AND METHOD

Hisatake Nojima, Kagoshima, Japan, assignor to Yugen Kaisha Parasight, Chiba, Japan

PCT No. PCT/JP89/00946, § 371 Date Dec. 7, 1990, § 102(e) Date Dec. 7, 1990, PCT Pub. No. WO90/03516, PCT Pub. Date Apr. 5, 1990
PCT Filed Sep. 19, 1989, Ser. No. 623,448
Claims priority, application Japan, Sep. 21, 1988, 63-236962
Int. Cl.[5] F03B *13/12*
U.S. Cl. 415—003.1 **3 Claims**



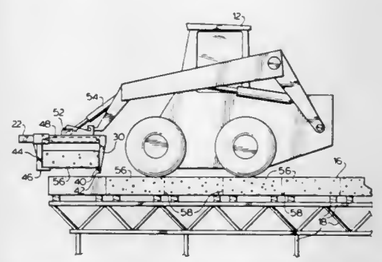
1. A multiple-gas phase tidal power generation apparatus comprising a first plurality of containers fixed in plural piles in natural sea water having a tidal difference in height of sea level, said first plurality of containers being arranged one above the other in spaced parallel relation at fixed intervals, each container of said first plurality of containers having an open lower side such that each of said first plurality of containers is operable to hold air therein, tideless water container means containing tideless water, a second plurality of containers fixed in plural piles in said tideless water container means, said second plurality of containers being arranged one above the other in spaced parallel relation at fixed intervals, each container of said second plurality of containers having an open lower side such that each of said second plurality of containers is operable to hold air therein, and a plurality of hollow air pipe means connected and providing communication between each of the respective containers of said first plurality of containers in the natural sea and each of the respective containers of said second plurality of containers within said tideless water container means, said first plurality of containers comprising an uppermost container and an underlying second uppermost container, said uppermost container and said underlying second uppermost container being disposed below the sea water level during high tide, said uppermost container being disposed above the sea water level during low tide, said underlying second uppermost container being disposed below the sea level during low tide, said second plurality of containers comprising a top container, said plurality of hollow air pipe means comprising a first air pipe between said of hollow air pipe means comprising a first air pipe between said uppermost container and said top container, first valve means in said first air pipe to control the flow of air from said uppermost container to said top container via said first air pipe during a rising tide, said plurality of air pipe means comprising a second air pipe extending between said top container and said second uppermost container, and second valve means in said second air pipe to control the flow of air from said top container to said second uppermost container via said second air pipe during low tide.

5,184,934

GRIPPING DEVICE AND METHOD OF USE

Antonio Gallo, R.R. #5, Caledon East, Ontario, Canada L0N 1E0

Filed Jul. 10, 1991, Ser. No. 727,868
Int. Cl.[5] B66C *3/04*
U.S. Cl. 414—740 **7 Claims**



1. A gripping device for use in combination with a front-end loader in gripping and lifting a heavy object, said device comprising:

a supporting frame;

slot-entering jaw means connected to said supporting frame;

second jaw means adjustable relative to said slot-entering jaw means;

second jaw adjusting means to effect movement of said second jaw means away from or towards said slot-entering jaw means; and

loader cooperation means by which said device is adapted to cooperate with said loader,

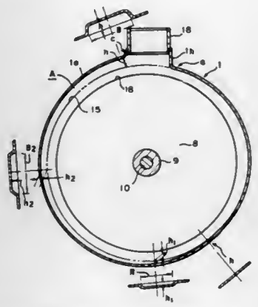
wherein said slot-entering jaw means comprises a pair of spaced and parallel elongated rectangular slot-entering jaw members extending perpendicularly from a first portion of said supporting frame,

wherein each of said slot-entering jaw members is substantially wedge-shaped such that said jaw member is of less thickness at its end remote from said frame than adjacent said frame, and

wherein each of said slot entering jaw members has an upstanding retaining tooth extending therefrom, proximate to, but not at, said end remote from said frame, to provide a free slot-engaging leading edge.

VOL 1147 ISS 2 FE 9 1993 UMI

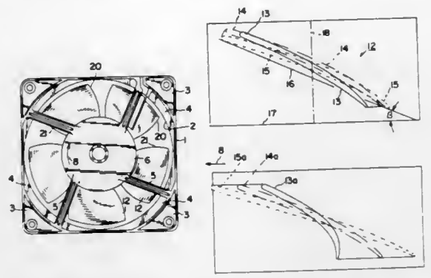
5,184,937
CENTRIFUGAL PUMP CASING
Shinichiro Arakawa, Chigasaki, and Isamu Ichiki, Yokohama, both of Japan, assignors to Ebara Corporation, Tokyo, Japan
Filed Jul. 2, 1990, Ser. No. 546,804
Claims priority, application Japan, Jul. 5, 1989, 1-173194; Jun. 14, 1990, 2-156762
Int. Cl.[5] F04D *29/42*
U.S. Cl. 415—206 **19 Claims**



1. A centrifugal pump casing of a centrifugal pump, comprising:
a casing shell accommodating a rotary impeller therein and having as a basic circle an inner peripheral circle having a diameter greater than a diameter of an outer peripheral circle of said impeller, wherein
a bulged portion bulged radially outwardly is integrally formed on an outer peripheral wall of said casing shell, said bulged portion extends from a starting point remote from a winding starting point of said casing shell in a circumferential direction to an end point while gradually increasing the bulge height in a direction from said starting point to said end point, thereby forming a volute room, and
a pipe-like discharge nozzle connected to the casing shell so that said nozzle extends between said end point where the bulged portion is highest and said winding starting point where no bulged portion is formed, wherein said discharge nozzle extends upright substantially above a center of said basic circle of said casing shell, and is substantially perpendicular to a circumference of said casing shell.

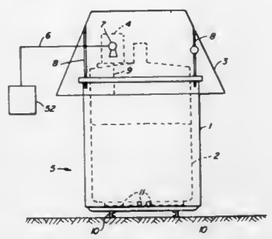
5,184,938
AXIAL FAN WITH A CYLINDRICAL OUTER HOUSING
Siegfried Harmsen, Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren GmbH & Co., KG, St. Georgen, Fed. Rep. of Germany
Filed May 30, 1991, Ser. No. 708,132
Claims priority, application Fed. Rep. of Germany, May 31, 1990, 9006174
Int. Cl.[5] B63H *1/26*
U.S. Cl. 416—223 R **19 Claims**

1. An electric axial cooling fan for drawing air into a receiving side of the fan and for expelling air out of a delivery side of the fan, comprising:
an outer housing having a substantially cylindrical aperture;
a central plate in the substantially cylindrical aperture;
a plurality of webs on the delivery side of the fan, each web connecting the central plate to the outer housing;
a hub rotatable connected to the central plate; and
a plurality of vanes connected to the hub so as to rotate with the hub;
each vane having a forward curvature with a camber changing from the hub cross-section to the outer cross-section;
each vane having means, relatively near the hub, for generating a relatively low flow per unit volume and a relatively small pressure increase, and having means, relatively away from the hub, for generating a relatively high value of flow per unit volume and a relatively large pressure increase, the cross-sectional design of each vane changing continuously, each vane having a relatively



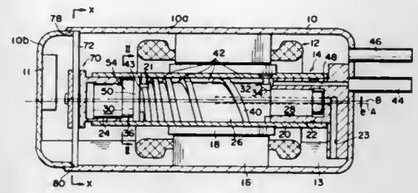
slight change of camber, and each vane being only slightly twisted; and
the leading edge of each vane extending radially relatively near the hub and the leading edge of each vane curving opposite to the direction of rotation relatively away from the hub.

5,184,939
ABOVE-GROUND STORAGE SYSTEM
Stuart G. Solomon, 4763 Calle De Tosca, San Jose, Calif. 95118, and David C. Whitman, 297 Grandville Ct., San Jose, Calif. 95139
Continuation of Ser. No. 414,828, Sep. 29, 1989, Pat. No. 4,948,340, which is a continuation of Ser. No. 233,314, Aug. 17, 1988, Pat. No. 4,890,983. This application May 21, 1990, Ser. No. 526,214
Int. Cl.[5] F04B *49/00*
U.S. Cl. 417—41 **1 Claim**



1. A waste oil storage system for storing motor oil received from a temporary storage tank and preventing entry of said waste oil into the environment comprising:
a) an inner tank;
b) an outer tank, said inner tank contained within said outer tank, said outer tank having a volume greater than a volume of said inner tank, said inner and outer tanks forming a space therebetween; and
c) an air-operated pump having a liquid inlet, a liquid outlet, and an air supply line, said liquid outlet discharging into said inner tank through a tank liquid inlet, said tank liquid inlet having a connection which can be connected to a portable waste oil storage tank, said air operated pump mounted adjacent said inner tank whereby oil escaping from said air operated pump will drain into said space between said inner and outer tank.

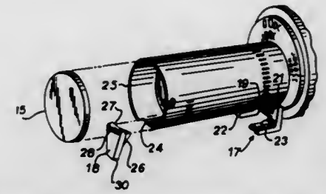
5,184,940
FLUID COMPRESSOR
Takayoshi Fujiwara, Kawasaki; Hisanori Honma, and Yoshinori Sone, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jun. 28, 1991, Ser. No. 723,326
Claims priority, application Japan, Jun. 29, 1990, 2-170268; Jun. 29, 1990, 2-170269
Int. Cl.[5] F04C *18/16*
U.S. Cl. 417—356 **12 Claims**



1. A fluid compressor comprising:
a closed case having a case body provided with an open end and a cover for closing the open end of the case body to house drive and compressor sections therein, said compressor section including a cylinder having an axial line and first and second ends and being rotated by the drive section, a rotating body having an axial line offset relative to the axial line of the cylinder and a spiral groove opening at the outer surface thereof having a pitch that decrease at a predetermined rate and arranged to contact a part of the outer surface thereof with the inner surface of the cylinder, a spiral blade made of elastic material arranged in the groove of the rotating body to freely slide in the radial direction of the rotating body and provided with an outer surface closely contacting the inner surface of the cylinder to partition a space between the cylinder and the rotating body into plural operating chambers, and a rotation force transmitting system for connecting the cylinder and the rotating body to drive them;
a pair of fixing bearings, one of which is fixed to the closed case, serving to support the cylinder and the rotating body rotatable in relation to the closed case and close the first and second ends of the cylinder;
support means, having engaging means attached to the other of the paired bearings, for supporting the other bearing movable in relation to the closed case at least in a certain range on a plane perpendicular to axial center lines of the cylinder and the rotating body; and
positioning means, formed at least at one of the case body and the cover, for positioning the engaging means relative to the closed case, said support means having a support plate for supporting the engaging means movable relative to the closed case in a certain range and said positioning means having means for positioning the support plate in the axial direction of the case body and a means for positioning the support plate in the circumferential direction of the cover.

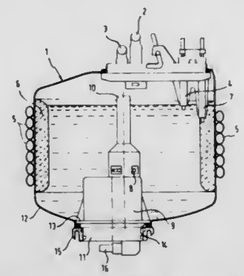
5,184,941
MOUNTING SUPPORT FOR MOTOR-PUMP UNIT
James L. King, and Richard E. Peters, both of Troy, Ohio, assignors to A. O. Smith Corporation, Wilmington, Del.
Filed Apr. 10, 1991, Ser. No. 683,225
Int. Cl.[5] F04B *35/04*
U.S. Cl. 417—360 **16 Claims**

1. A motor-pump unit comprising a cylindrical motor unit having an outer main motor frame of an essentially constant diameter, a pump unit secured to one end of said frame, a first mount secured to the motor-pump unit at the interconnection between the motor unit and the pump unit, said mount including a depending support for firmly supporting the motor-pump unit resting on a support surface, and a separate mount spaced from said first mount and secured to the outer cantilevered end of said motor, said separate mount with said first mount defining spaced supports of said motor-pump unit on said support



surface, and a releasable connection between said motor frame and said separate mount for selectively mounting said motor as a multiple supported unit or as a cantilevered motor unit.

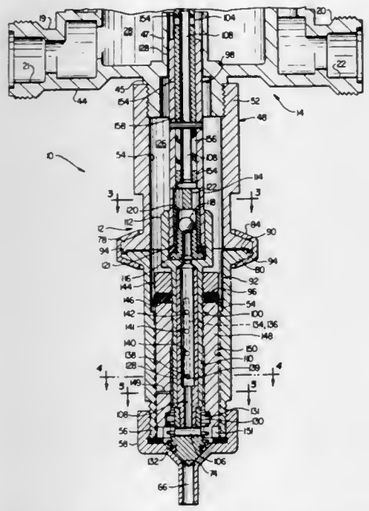
5,184,942
STORAGE CONTAINER WITH AN ELECTRICALLY OPERABLE CIRCULATING PUMP
Anton Deininger, Bachhagel; Karlheinz Farber, Giengen; Heinz-Werner Giefer, Sontheim, and Egon Galler-Benker, Offingen, all of Fed. Rep. of Germany, assignors to The Coca Cola Company, Atlanta, Ga. and Bosch-Siemens Hausgerate GmbH, Munich, Fed. Rep. of Germany
Filed Jul. 12, 1991, Ser. No. 729,197
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1990, 4025986
Int. Cl.[5] F04B *17/00, 35/04*
U.S. Cl. 417—360 **7 Claims**



1. A post-mix beverage dispensing apparatus, comprising:
a storage container including an electrically operable circulating pump for the storing, carbonating and cooling of water which can be dispensed as desired through a drain opening in the base of the storage container,
said circulating pump being further comprised of,
a drive motor including a stationary electromagnetic coil and a rotating armature,
a shaft connected to the rotating armature, and
a pump rotor connected to the shaft for rotation therewith,
said stationary electromagnetic coil being disposed asymmetrically to one side of a longitudinal axis of the shaft
a flow-through channel for the water to be dispensed integrated into a housing of the circulating pump, said housing being mounted through a wall in the base of the storage container;
said flow-through channel being a longitudinal axial channel in liquid communication with said shaft and rotating armature and extending below said shaft through the pump housing to the exterior of the storage container, and
means for fastening and sealing the housing in the wall.

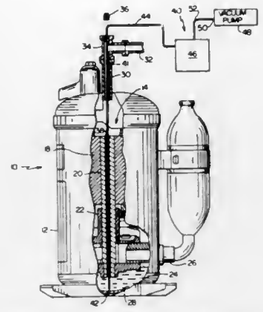
VOL 1147 ISS 2 FEB 9 1993 UMI

5,184,943
ROLLING DIAPHRAGM INJECTION PUMP
Frank Walton, Argyle, Tex., assignor to Frank and Robyn Walton 1990 Family Trust, Lewisville, Tex.
Filed Mar. 3, 1991, Ser. No. 666,583
Int. Cl.[5] F04B *17/00*
U.S. Cl. 417—401 29 Claims



1. A rolling diaphragm pump apparatus for supplying a predetermined quantity of secondary fluid to an outlet located in the primary fluid of a housing, comprising:
a cylinder having opposite first and second ends and a bore between the ends, the first end being adapted for connection to a housing having a primary fluid and a reciprocating motor, the second end being closed except for having a fluid inlet connectable to a source of secondary fluid;
a reciprocable assembly positioned for reciprocation in the bore without depending upon a sliding seal between the reciprocable assembly and the bore, the reciprocable assembly having an outlet in a first end portion and an inlet in an opposite second end portion and an internal passage means between said first and second end portions for transmitting secondary fluid from the inlet to the outlet, with the second end portion having a valve means for opening and closing the secondary fluid inlet at said second end of the cylinder;
a rolling diaphragm sealingly connecting the cylinder and reciprocating assembly to form a secondary fluid chamber in the bore below and movable with the reciprocating assembly between an up stroke away from the closed end of the cylinder and a down stroke towards the closed end of the cylinder, to draw secondary fluid into the volume below the diaphragm through the secondary fluid into inlet during the up stroke and to compress the secondary fluid below the diaphragm after the valve means closes the secondary fluid inlet during the down stroke, to force secondary fluid into the inlet of the reciprocable assembly, through the internal passage and outlet whereby a predetermined quantity of secondary fluid is injected into primary fluid on each reciprocation of said assembly when the first end of the cylinder is attached to a housing filled with primary fluid, secondary fluid is supplied at the inlet and the assembly is reciprocated in the cylinder.

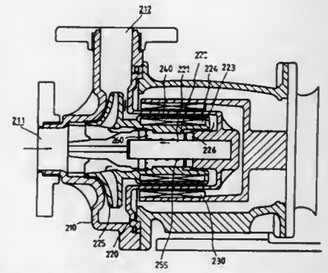
5,184,944
METHOD AND APPARATUS FOR CHANGING LUBRICATING OIL IN A ROTARY COMPRESSOR
Thomas F. Scarfone, E. Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Nov. 13, 1990, Ser. No. 612,640
Int. Cl.[5] F04B *17/00, 35/04*
U.S. Cl. 417—410 3 Claims

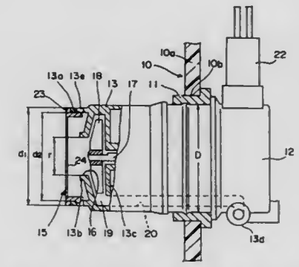


1. A Method of changing lubricating oil in a refrigeration compressor of the rotary type wherein the compressor has a casing having an upper end and an oil sump containing lubricating oil at the lower end thereof, a drive shaft having an opening there through communicating the oil sump of the compressor with the upper end of the casing;
the method comprising:
providing an openable and closeable access opening in the upper end of the casing in axial alignment with the opening in the shaft;
opening the access opening;
inserting a tube into the access opening and through the opening in the shaft, one end of the tube extending into the oil sump and the other end extending exterior of the compressor to thereby establish a fluid path between the sump and the exterior of the compressor;
applying a partial vacuum to the other end of the tube which is exterior of the compressor, the vacuum being sufficient to withdraw the lubricating oil from the compressor sump;
collecting the oil withdrawn from the compressor sump through the tube;
removing the partial vacuum to the other end of the tube when substantially all of the oil has been removed from the compressor sump;
adding a fresh charge of lubricating oil to the compressor through the access opening; and
closing the access opening.

5,184,945
BUSHING STRUCTURE FOR USING IN MAGNETICALLY DRIVING CENTRIFUGAL PUMPS
Shi Chi-Wei, Tao Yuan Hsien, Taiwan, assignor to Assoma, Inc., Taiwan
Filed Dec. 24, 1991, Ser. No. 813,008
Int. Cl.[5] F04B *39/06*
U.S. Cl. 417—420 10 Claims

1. A bushing for use in a centrifugal pump wherein said centrifugal pump comprises a housing with one open end closed by a rear cover and a front cover, overlapping each other, with an interior defined between the rear and the front covers, said front cover defining an inlet eye for drawing in fluid to be pumped and an outlet for discharging pumped fluid, said rear cover further defining a recess extending into said housing to receive therein a fixed central shaft disposed along a central rotation axis of said centrifugal pump and a first magnet means disposed concentrically around said fixed shaft and rotatable with respect thereto, said centrifugal pump further comprising a second driving means disposed around said recess and concentric with and opposite to said first magnet means so as to have the first magnet means rotated therewith, said first magnet means being enclosed by an enclosure formed with an extension of an impeller means disposed within said interior defined by the rear and front covers, said bushing which is concentrically disposed between said fixed shaft and said first magnet means and maintained in position by retainers comprising a hollow cylindrical bushing body having an inside surface with internal helical cooling grooves formed thereon and an outside surface with a number of external straight cooling grooves generally parallel with the central axis of said centrifugal pump formed thereon, said bushing further comprising a cylindrical jacket concentrically disposed between the bushing body and the first magnet means, said jacket comprising a number of internal slots which are straight and generally parallel with the central axis of said centrifugal pump to cooperate with the external grooves of said bushing to define channels for fluid to flow therethrough, said bushing body further defining an expanded end close to the impeller means to retain said jacket in position, a conducting passage being formed between the outlet of the front cover and first ends of both the internal cooling grooves of the bushing body and said channels defined by the external grooves of the bushing body and the internal slots of the jacket to conduct part of the pumped fluid to both the internal cooling passage of the bushing body and the channels defined by the external cooling grooves of the bushing body and the internal slots of the jacket to cool the bushing and a returning passage being formed between said impeller means and second ends of both the internal cooling grooves of the bushing body and the channel defined by the external cooling grooves and the internal slots of the jacket to circulate the pumped fluid used to cool said bushing back to said impeller means.



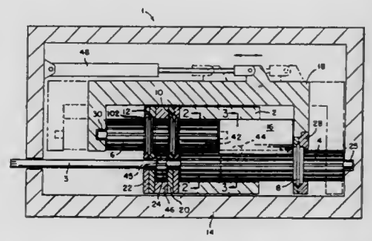


therein, said casing also having a partition wall extending radially inwardly from the inner peripheral surface thereof and positioned on one side of the annular end wall close to the first end thereof thereby to define a pump chamber between the annular end wall and the partition wall, said impeller being operatively accommodated within the pump chamber;
passage means communicating the pump chamber and the fluid outlet for discharging fluid medium under pressure during a rotation of the impeller;
a filter member having a perforated region of a diameter greater than the bore size of the fluid inlet in the annular end wall, said filter member being positioned exteriorly of the second end of the casing with the perforated region aligned with the fluid inlet; and
holder means for detachably securing the filter member to the second end of the casing, said holder means comprising a generally cylindrical filter holder protuding a distance axially outwardly from the second end of the casing in coaxial relation therewith, and a generally ring-shaped filter mount carrying the filter member and having a plurality of detent pawls, said filter holder having defined therein detent holes equal in number to the number of the detent pawls and spaced from each other in a direction circumferentially thereof, said detent pawls being engageable in the associated detent holes by a snap action when the filter mount carrying the filter member is fitted to the filter holder.

5,184,946
WINDSHIELD WASHER PUMP ASSEMBLY
Toshihiro Sato, Toyohashi, Japan, assignor to Asmo Co., Ltd., Shizuoka, Japan
Filed Nov. 7, 1991, Ser. No. 788,930
Claims priority, application Japan, Nov. 8, 1990, 2-117870[U]
Int. Cl.[5] F04B *35/04*
U.S. Cl. 417—423.9 6 Claims

1. A washer pump assembly which comprises:
a fluid tank for accommodating a quantity of a fluid medium to be jetted and having a side wall and a bottom wall;
a washer pump means comprising a rotatably supported impeller and a generally cylindrical casing having first and second ends opposite to each other and also having a fluid outlet defined at the first end thereof, said washer pump means being secured to the side wall of the fluid tank with the second end of the casing protruding into the fluid tank, said casing having an annular end wall extending radially inwardly from an inner peripheral surface thereof and having a fluid inlet of a predetermined bore size defined

5,184,947
FULLY VARIABLE OUTPUT HYDRAULIC GEAR PUMP HAVING AN AXIALLY TRANSLATABLE GEAR
Dwight Coombe, 40 S. Hill Rd., Grahamsville, N.Y. 12740
Filed May 21, 1991, Ser. No. 703,364
Int. Cl.[5] F04C *2/18, 11/00, 15/04*
U.S. Cl. 418—20 16 Claims



1. A fully variable output hydraulic pump comprising:
a main casing having openings at axially opposite ends of the main casing and an interior fluid pumping chamber extending axially therethrough, one or more input ports extending radially through the casing into the fluid pump-

VOL 1147 ISS 2 FEB 9 1993 UMI

ing chamber and one or more output ports extending radially through the casing into the fluid pumping chamber, said fluid pumping chamber being cylindrically shaped to receive a pair of meshed cylindrically shaped gears inserted axially therein;

a first cylindrically shaped elongate rotatable gear;

a second cylindrically shaped elongate rotatable gear, said first and second rotatable gears being meshed and inserted within the fluid pumping chamber wherein the main casing surrounds the meshed first and second gears;

means for rotatably supporting said first gear;

means for axially translating and rotatably supporting said second gear within the main casing, said means for axially translating and rotatably supporting said second gear being axially translatable relative to the means for supporting said first gear; and

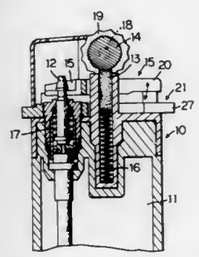
means for sealing the area between each of said gears and the main casing thereby effectively sealing fluid within the fluid pumping chamber.

5,184,948

SAFETY MECHANISM FOR A LIGHTER

Masayuki Iwahori, 15-19, Nakada Honmachi Shizuoka-shi, Shizuoka-ken, Japan

Filed May 8, 1992, Ser. No. 879,994
Claims priority, application Japan, Oct. 17, 1991, 3-298466
Int. Cl.[5] F23D *11/36*
U.S. Cl. 431—153 **1 Claim**



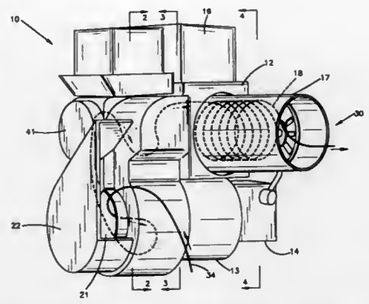
1. A safety mechanism for a lighter comprising a safety member disposed under a rear portion of a gas lever, said safety member being made of an elastic material in one body, said safety member comprising a frame discontinuous at a rear portion thereof, the discontinuity of the rear portion of said frame being formed by a first movable end and a second movable end, said frame being provided on the inside near said first movable end with an engagement projection, said second movable end normally being positioned just at the back of said engagement projection on the inside of said frame, said frame being provided on the outside near said second movable end with an operation projection protruding backward, said second movable end being adapted to engage with said engagement projection when said operation projection is pushed substantially forward, said gas lever having a projection protruding downward, said projection of the gas lever being positioned over said second movable end of said safety member when said second movable end is positioned just at the back of said engagement projection on the inside of said frame, said gas lever being provided on a lower portion thereof with an inclined portion, said inclined portion pushing said first movable end away from said second movable end when the rear portion of said gas lever is pushed downward.

5,184,949

OIL BURNER AND METHOD

Dennis J. O'Brien, Litchfield, Ohio, assignor to R. W. Beckett Corporation, North Ridgeville, Ohio

Filed Sep. 7, 1990, Ser. No. 579,853
Int. Cl.[5] F23C *5/06*
U.S. Cl. 431—189 **27 Claims**



1. In an oil burner including an air tube defining an elongate air flow path extending from an inlet to an outlet, a housing, a motor driven blower connected to said housing near the inlet end of said air tube, said housing defining an air flow passage between an outlet of said blower and the inlet of said air tube, a burner nozzle near the outlet of said air tube, and oil supply means for said nozzle, the improvement comprising:

a) said air flow passage being of serpentine form and maintaining a component of air flow forwardly from the blower outlet toward the outlet of said air tube, whereby the velocity of air flow in said passage is decreased while maintaining static pressure;

b) an adjustable air gate mounted in said housing for controlling the amount of air which flows along the air flow passage; and

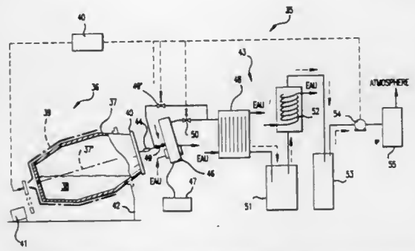
c) said inlet of said air tube being located such that air from said flow passage enters said air tube and then moves through said tube in a generally helical pattern toward said outlet of said tube.

5,184,950

PROCESS AND DEVICES FOR THE DECONTAMINATION OF SOLID PRODUCTS

Guy Fraysse, Amberieu en Bugey, and Jacques Thauront, Ermont, both of France, assignors to PEC Engineering, Paris, France

Filed Oct. 12, 1990, Ser. No. 597,711
Claims priority, application France, Oct. 12, 1989, 89 13364
Int. Cl.[5] F27B *14/00*
U.S. Cl. 432—13 **20 Claims**



1. A discontinuous process for the decontamination of a solid product polluted by at least one contaminant which can be vaporized by heating under vacuum, comprising the steps of:

a) introducing the product into a heating and evacuating enclosure;

b) heating said product, substantially in bulk, within a given temperature range, a vacuum being created in said enclosure which is below about 0.5 bar absolute and sufficient to reduce the pressure of the enclosure below the vaporization threshold of the contaminant within said temperature range;

c) maintaining said temperature and reduced pressure conditions in the enclosure for a sufficient time to vaporize substantially all the contaminant contained in said product;

d) extracting the vaporized contaminant of step c) by sucking the atmosphere out of the enclosure;

e) condensing said contaminant which has been sucked out in step d); and

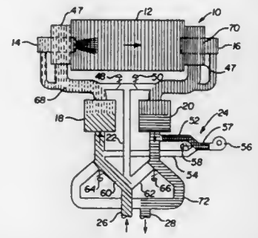
f) sweeping the interior of the enclosure at least once with an inert gas, for a given time, when the vaporized contaminant is extracted, in order to entrain any residual traces of vaporized contaminant stagnating in said enclosure.

5,184,951

REGENERATIVE THERMAL OXIDIZER

Peter B. Nutcher, Bridgeville, and Peter J. Waldern, Bethel Park, both of Pa., assignors to Process Combustion Corporation, Pittsburgh, Pa.

Division of Ser. No. 703,509, May 21, 1991. This application Jul. 31, 1992, Ser. No. 923,060
Int. Cl.[5] F27D *7/00*
U.S. Cl. 432—28 **7 Claims**



1. A method for oxidizing fumes in an incineration chamber, said method having a first cycle followed by a purge cycle and a second cycle, comprising the steps of:

(1) introducing unburnt fumes to an inlet;

(2) directing the unburnt fumes to a first regenerator in said first cycle wherein said unburnt fumes are preheated;

(3) oxidizing the preheated unburnt fumes in the incineration chamber;

(4) directing the oxidized fumes to a second regenerator, wherein heat is extracted from said oxidized fumes;

(5) after the second regenerator reaches a predetermined temperature, diverting the unburnt fumes in step (1) into a bypass to initiate said purge cycle, thereby placing the unburnt fumes downstream of the first regenerator without passing them through said first regenerator;

(6) introducing a purge gas to said first regenerator to purge the unburnt fumes therefrom and to preheat the purge gas;

(7) mixing the preheated purge gas with the unburnt fumes from said bypass downstream of said first regenerator and upstream of the incineration chamber;

(8) introducing said mixture to the incineration chamber to oxidize the unburnt fumes;

(9) after the unburnt fumes are completely purged from said first regenerator, diverting the unburnt fumes of step (5) from said bypass to said second regenerator to initiate said second cycle and preheat the unburnt fumes;

(10) oxidizing the preheated unburnt fumes of step (9) in the incineration chamber; and

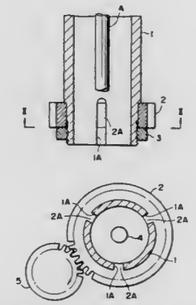
(11) directing the oxidized fumes of step (10) to said first regenerator wherein heat is extracted from the oxidized fumes.

5,184,952

HEAT ROLL FIXING UNIT

Tomoyuki Nishikawa, Matsudo, and Ikuo Negoro, Sakado, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 515,435, Apr. 27, 1990, abandoned. This application Jun. 19, 1991, Ser. No. 723,717
Claims priority, application Japan, Apr. 28, 1989, 1-51541
Int. Cl.[5] F27B *9/28*
U.S. Cl. 432—60 **12 Claims**



1. A heat roll fixing unit for fusing a toner image on a recording sheet in an image recording device, comprising:

a heat roller;

a backup roller oppositely arranged to said heat roller, the recording sheet bearing an unfixed toner image being fed between said backup roller and said heat roller;

means for pressing said backup roller against said heat roller;

at least one gear member having a hole defining an inner periphery in which one end of one of said heat roller and said backup roller is fitted, and an outer circumference, wherein said inner periphery of said gear member and the outer periphery of said one of said rollers have a plurality of predetermined engagement portions arranged in the rotational direction of said one of said rollers such that the rotation of said gear member is transmitted to said one of said rollers, said predetermined engagement portions comprise a plurality of slits and a plurality of protrusions engaged with each other;

driving means for driving said gear member to rotate said backup roller as well as said heat roller; and

whereby deformation of said gear member due to the force applied to said engagement portions is at least minimized or made substantially uniform about the outer circumference of said gear member.

5,184,953

WATER COOLING PIPE CORRECTION TO VERTICALLY UNSYMMETRICAL HEATING OF BLOOMS IN WALKING-BEAM REHEAT FURNACE

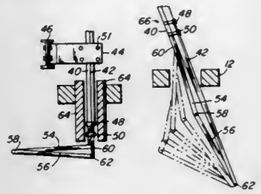
John F. McDermott, Monroeville Boro, Pa., assignor to USX Corporation, Pittsburgh, Pa.

Filed Nov. 5, 1991, Ser. No. 787,987
Int. Cl.[5] F27B *9/14*
U.S. Cl. 432—123 **8 Claims**

7. An apparatus for insertion through an opening in a furnace for decreasing temperature differentials in rectangular metal blooms to be heated in said furnace, said apparatus comprising:

VOL 1147 ISS 2 FE 9 1993 UMI

a pair of elongated inlet and outlet sections aligned in parallel adjacent relationship adapted to extend downwardly through an opening in an upper surface of the furnace chamber, said inlet and outlet sections being slidably movable longitudinally with respect to each other, a pair of elongated scissors sections connected end to end each other and to the inlet and outlet sections, said scissors sections being movable in a vertical plane by slidably moving the inlet and outlet sections with respect to each



other, said scissors sections being movable back and forth from a position with their longitudinal axes axially aligned generally parallel to the axes of the inlet and outlet sections for insertion into the chamber and withdrawal therefrom to a position with their longitudinal axes substantially transverse to the axes of the inlet and outlet sections, said scissors sections extending in the latter position within the chamber and substantially parallel to the upper surfaces of the blooms.

5,184,954

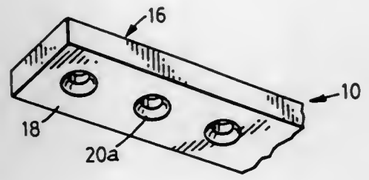
ELASTOMERIC ORTHODONTIC TRACTION RIBBON SPRINGS

G. Herbert Hanson, Hamilton, Canada, assignor to Hamilton Ortho Inc., Hamilton, Canada

Continuation-in-part of Ser. No. 661,969, Feb. 28, 1991, abandoned. This application Nov. 20, 1991, Ser. No. 795,139

Int. Cl.[5] A61C *3/00*

U.S. Cl. 433—18 **26 Claims**



1. An elastomeric traction ribbon spring for connection between two spaced orthodontic devices attached to respective teeth in a patient's mouth and resultant application of tension between the two devices, the spring comprising:

a ribbon of elastomeric material of substantially uniform width and thickness along the length of its spring operative portion, the maximum width of the spring operative portion being 1.5 mm and the maximum thickness of the spring operative portion being 0.6 mm, the ribbon having along the length of the spring operative portion a single row of longitudinally spaced holes, the holes being of diameter in the range from 0.13 mm to 0.5 mm, and being spaced longitudinally centre to centre from 0.4 mm to 1.5 mm with a minimum edge to edge hole spacing of 0.2 mm.

5,184,955

DEVICE FOR TEMPORARY DENTAL SPLINTING

Hans Baer, Bolleystrasse 12, and Eduard Hirsbrunner, Clausiusstrasse 67, both of CH-8006 Zürich, Switzerland

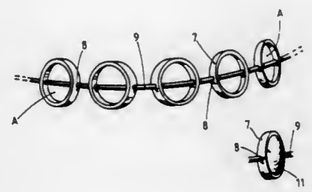
PCT No. PCT/CH90/00202, § 371 Date Apr. 25, 1991, § 102(e) Date Apr. 25, 1991, PCT Pub. No. WO91/03212, PCT Pub. Date Mar. 21, 1991

PCT Filed Aug. 28, 1990, Ser. No. 675,893

Claims priority, application Switzerland, Aug. 29, 1989, 03131/89

Int. Cl.[5] A61C *5/00, 3/00*

U.S. Cl. 433—215 **11 Claims**



1. A device for the temporary fixation of teeth, teeth rows or jaw parts, as for example in the case of tooth dislocation or in the case of surgical interventions on jaws, comprising:

a wire-shaped connecting link, said link adapted to be anchored on at least one of external and internal tooth surfaces of each of a number of neighboring teeth, and

a row of annular composite carriers arranged movably on said connecting link, said composite carriers made from a flexible synthetic material, each said composite carrier bounding a recess which is adapted to receive and limit spreading of a composite material to be applied to each tooth surface, each said composite carrier having walls which lie opposite one another and adapted for said connecting link to pass therethrough,

wherein said device is affixed to said teeth by application of a composite material to each tooth surface and wherein further, after application of said composite material, said connecting link lies at a distance from said tooth surfaces and is surrounded on all sides by said composite material.

5,184,956

METHOD AND DEVICE FOR TRAINING IN THE DRIVING OF VEHICLES

Bernard Langlais, Thiais, and Christian Saunier, Ermont, both of France, assignors to Codes Rousseau, Les Sables D'Olonne, France

Filed Feb. 19, 1991, Ser. No. 657,046

Claims priority, application France, Feb. 20, 1990, 90 02006

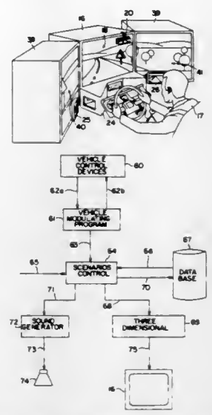
Int. Cl.[5] G09B *9/05*

U.S. Cl. 434—69 **13 Claims**

1. A driver training method comprising the steps of:

displaying on a front screen placed opposite to a driving station both a front main image corresponding to a front view of the driver and at least one rear vision secondary image corresponding to a view provided by adjustable rear-view means,

moving said images in reply to control operations initiated form said driving station, and



collecting and directing optically said rear vision secondary image from said screen to an adjustable rear-view means provided in said driving station.

5,184,957

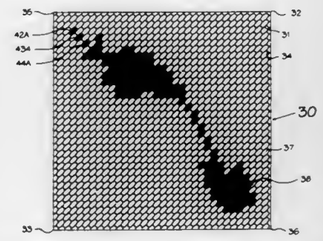
NEEDLEPOINT GRAPH

Nancy A. Claytor, 217 E. Liberty St., York, S.C. 29745

Filed Jun. 24, 1991, Ser. No. 719,390

Int. Cl.[5] G09B *19/20*

U.S. Cl. 434—95 **4 Claims**



1. A needlepoint kit to be used for stitching a needlepoint design on a needlepoint canvas, said kit including a needlepoint graph for making a pattern of the design to be stitched on the needlepoint canvas with traditional continental needlepoint stitches extending diagonally on the needlepoint canvas, said needlepoint graph comprising adjoining rows of ellipses extending diagonally at least throughout the portion of the graph to contain the pattern, whereby a pattern of design may be made by marking selected ellipses and whereby the marked ellipses simulate the location and appearance of needlepoint stitches to be made on the canvas.

5,184,958

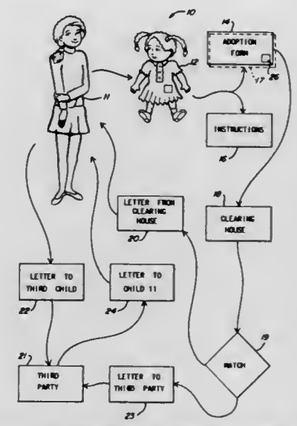
EDUCATIONAL DOLL

Richard Ward, 9271 Irish Rd., Mt. Morris, Mich. 48458, and John Lemek, 2014 Fox Hill Dr., Apt. 1, Grand Blanc, Mich. 48439

Filed Apr. 23, 1992, Ser. No. 872,479

Int. Cl.[5] G09B *19/00*

U.S. Cl. 434—162 **21 Claims**



1. A method of matching at least two persons possessing dolls of similar characteristics for the purpose of having the parties communicate with each other about said dolls, comprising the steps of:

(a) a first child selecting a first doll from a multiple of said dolls;

(b) a second child selecting a second doll from the remaining said multiple of said dolls;

(c) each said doll having an adoption form associated with said doll, said child completing said adoption form with pertinent information about said child;

(d) each said child sending said completed adoption form to a clearing house;

(e) said clearing house matching said first child with said second child according to a predetermined criteria; and

(f) said clearing house sending a letter to each said child about the other said child said letter including said pertinent information contained in each said completed adoption form.

5,184,959

PROGRAMMABLE TOOTHBRUSH ALARM UNIT

Harry W. Oryhon, and Jeremy Oryhon, both of 13627 Kickapoo Trail, Lockport, Ill. 60441

Filed Sep. 30, 1991, Ser. No. 769,058

Int. Cl.[5] A46B *9/00*

U.S. Cl. 434—263 **20 Claims**

1. A programmable device for storing one or more toothbrushes and having an alarm associated with each toothbrush, the device indicating the time for brushing, comprising:

a housing,

alarm means disposed in said housing for indicating to a toothbrush user one or more preselected times for using a toothbrush, clock means for supplying a variable time signal to the alarm means,

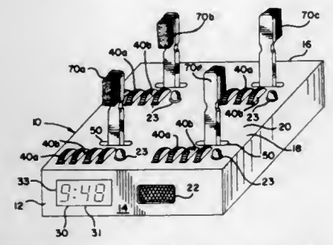
a plurality of slot means disposed in said housing, each of the slot means being adapted to receive a handle of a toothbrush therein,

means for designating at least one preselected time for each of said slot means, the designating means supplying a set time signal to the alarm means,

VOL 1147 ISS 2 FE 9 1993 UMI

means for comparing the clock means variable time signal to said designating means set time signal,

switch means associated with each of said slot means and activated in response to movement of a toothbrush therein, said switch means including a pressure-sensitive switch having a switch member which is partially disposed in said slot means, whereby, when said clock means



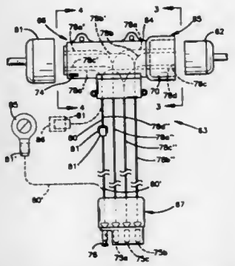
variable time signal and said designating means set time signal are equal, the comparison means trigger said alarm means to thereby indicate time for brushing with a toothbrush disposed in a designated recess and whereby removal of said toothbrush trips said pressure-sensitive switch to shut off said alarm means and reset said alarm means.

5,184,960

TRAILER LIGHT CONNECTION SYSTEM

Evan L. Hopkins; Wesley E. Bowden, and Evan L. Hopkins, all of Emporia, Kans., assignors to Hopkins Manufacturing Corporation, Emporia, Kans.

Filed Apr. 6, 1992, Ser. No. 863,860
Int. Cl.[5] H01R *33/00*
U.S. Cl. 439—35 **8 Claims**



1. A trailer light connection system selectively to provide electrical signals from a vehicle to a towed trailer, comprising:

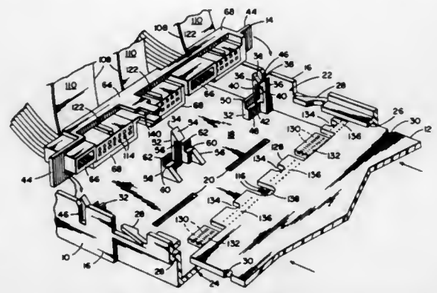
a T-shaped connector having a body with three terminals, the first terminal being adapted for connection to a first vehicle wiring plug, the second terminal being adapted for connection to a second vehicle wiring plug to complete the vehicle wiring circuit, and the third terminal being electrically connected to the first and second terminals at least in part by four exposed insulated conductors, the third terminal constituting a tap plug adapted to provide electrical signals from the vehicle to the trailer lighting system, one of said exposed insulated conductors having a removable plug thereon which can be disconnected from the first and second terminals and coupled to a grounded connection on the vehicle to provide a grounded connection from the trailer through the tap plug to the vehicle.

5,184,961

MODULAR CONNECTOR FRAME

Fernando J. Ramirez, Fountain Valley, Calif.; Rocco J. Noschese, Wilton, Conn.; Barry A. Holmes, San Mateo, and Thomas L. Hannigan, Los Gatos, both of Calif., assignors to Burndy Corporation, Norwalk, Conn.

Filed Jun. 20, 1991, Ser. No. 718,130
Int. Cl.[5] H01R *23/70*
U.S. Cl. 439—59 **14 Claims**



1. A combined electrical connector and connector nesting housing comprising:

a frame having a first section, a second section, and means for connecting the frame to an electrical component chassis;

means for connecting electrical contacts to the frame at the first section;

means for connecting a first connector of a flexible circuit assembly to the frame at the second section, the means for connecting the first connector comprising the frame having a receiving hole with side ribs adapted to be received in side notches of the first connector and a cantilevered spring latch adapted to project behind a portion of the first connector; and

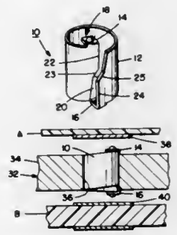
means for connecting a first end of a printed circuit board to the electrical contacts in the first section and to the first connector of the flexible circuit assembly and the second section such that the contacts and connector can be connected to the frame after the frame is connected to the electrical component chassis, but the first end of the printed circuit board can be substantially simultaneously connected to both the contacts and the connector as the card is inserted into the electrical component.

5,184,962

ELECTRICAL SPRING CONTACT

Rocco J. Noschese, Wilton, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Dec. 5, 1991, Ser. No. 803,002
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—66 **16 Claims**



1. An electrical contact comprising:

a main body section having a general ring shape with a general diagonally shaped open area extending from a top of the main body section to a bottom of the main body section, the main body section being substantially uniformly solid except for its center and the general diagonally shaped open area;

a top contact section extending from the top of the main body section proximate the general diagonally shaped open area; and

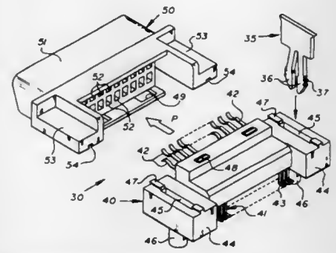
a bottom contact section extending from the bottom of the main body section proximate the general diagonally shaped open area, the top and bottom contact sections being adapted to electrically interconnect conductive regions of a pair of opposed circuit members.

5,184,963

ELECTRICAL CONNECTOR WITH CONTACTS ON DIESTAMPING CENTERS

Shigeru Ishikawa, Hachioji, Japan, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 2, 1991, Ser. No. 771,075
Claims priority, application Japan, Oct. 26, 1990, 2-287136
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—79 **8 Claims**



1. An electrical connector, comprising:

a base housing having electrical contacts secured therein at a specified pitch, said contacts including contact sections extending outwardly from a front surface of said base housing and termination sections extending outwardly from another surface of said base housing;

a post extending outwardly from a bottom surface of said base housing, said base housing having a slot extending therethrough and into said post;

a fastener secured in said slot and having resilient legs disposed in said post and including barbs extending outwardly from said post;

a face housing having contact-receiving cavities in which said contact sections are disposed upon said face housing being assembled to said base housing; and

means to secure said base housing to said face housing.

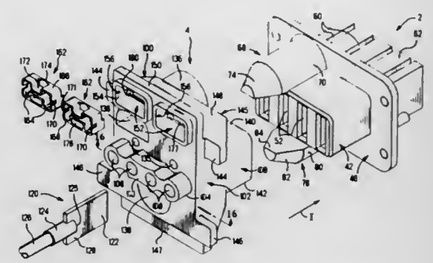
5,184,964

PANEL LOCK FOR A FLOAT MOUNT CONNECTOR

George H. Douty, Mifflintown, and John M. Landis, Camp Hill, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 28, 1992, Ser. No. 843,789
Int. Cl.[5] H01R *13/629*
U.S. Cl. 439—247 **18 Claims**

8. A panel lock member for use in means for arresting the movement of an electrical connector housing float mounted in a cut out in a mounting panel, in the direction of an edge of the cut out, the panel lock member comprising a pair of opposed side walls, connected by an upper wall and a lower wall, each of said walls having a front edge and a rear edge, each side wall having a rectilinear slot extending forwardly thereof and opening into the rear edge thereof, the top wall being formed with a latch comprising a first part parallel with but below the upper surface of the top wall and a second part constituting a latch bar and projecting upwardly from the forward end of said first part, the bottom wall being formed with a hollow, rectangular



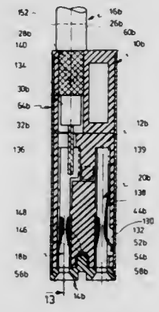
latch bolt having an upper wall parallel with the first part of the latch, the panel lock projecting forwardly of the second part of the latch.

5,184,965

CONNECTOR FOR COAXIAL CABLES

Dieter Myschik, Hamburg, and Paul Weidenhaupt, Gummersbach, both of Fed. Rep. of Germany, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 4, 1992, Ser. No. 878,360
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—578 **20 Claims**



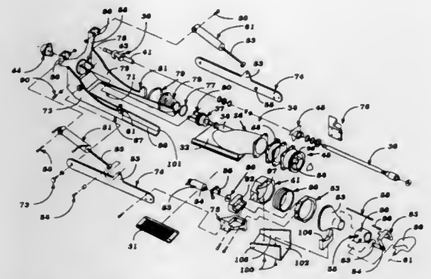
1. A connector for coaxial cables, in particular coaxial cable having a small diameter, and a conductor and shield, said connector comprising a tubular housing of electrically conductive material having inner walls defining an opening and first and second opposed open ends, a signal contact mounted in said housing and connected to the conductor of said cable, said signal contact being electrically insulated relative to said housing, and a ground contact also mounted in said housing, characterized in that an inner housing is provided comprised of two parts of insulating material which are adapted to be inserted into said tubular housing from at least one said open end thereof, with the outer dimensions of said inner housing corresponding to the inner dimensions of said tubular housing, and said inner housing having inner spaces to receive said signal contact and said ground contact in fixed relative spaced positions.

VOL 1147 ISS 2 FEB 9 1993 UMI

5,184,966
ADJUSTABLE JET PROPULSION UNIT FOR WATERCRAFT

Noboru Kobayashi, and Yoshiki Futaki, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jul. 23, 1991, Ser. No. 734,491
Claims priority, application Japan, Jul. 23, 1990, 2-195408
Int. Cl.[5] B63H *11/01, 11/11, 11/113*
U.S. Cl. 440—38 19 Claims

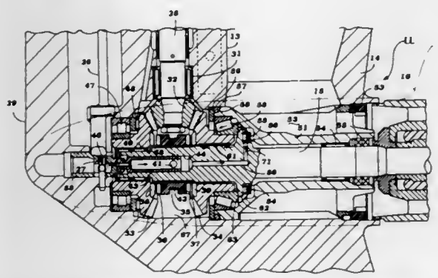


1. A jet propelled watercraft comprised of a hull, a jet propulsion unit mounted by said hull for pivotal movement about a horizontally extending transverse pivot axis disposed at the forward end of said jet propulsion unit, a trim plate rigidly affixed to the underside of the rear of said jet propulsion unit and moveable about said transverse pivot axis with said jet propulsion unit, said trim plate extending into the body of water in which the watercraft is operating for adjusting the trim of said watercraft upon pivotal movement of said jet propulsion unit.

5,184,967
THRUST FLANGE LUBRICATING STRUCTURE OF MARINE PROPULSION UNIT

Akihiro Onoue, and Ryoji Nakahama, both of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jul. 9, 1991, Ser. No. 727,831
Claims priority, application Japan, May 17, 1990, 2-125402
Int. Cl.[5] B63H *21/28*
U.S. Cl. 440—75 20 Claims

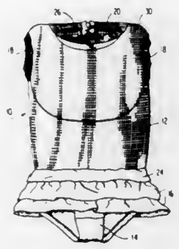


1. A lower unit for a marine outboard drive comprising a lower unit housing, a propeller shaft journaled for rotation in said lower unit housing, transmission means at a forward end of said lower unit housing for driving said propeller shaft, a thrust flange on said propeller shaft rearwardly of said transmission means for transferring driving thrusts in at least one direction between said propeller shaft and said lower unit housing, a gear lubricant cavity formed forwardly of said thrust flange, and means including pumping means for circulating lubricant under pressure between said gear lubricant cavity and the rear side of said thrust flange.

5,184,968
FLOATATION SWIMWEAR

Marise M. Michalochick, 1100 Las Cruces Dr.; Colleen M. Damweber, and Robert G. Michalochick, all of 1100 Las Cruces Dr., Virginia Beach, Va. 23454

Filed Dec. 27, 1991, Ser. No. 813,777
Int. Cl.[5] B63C *9/10*
U.S. Cl. 441—116 6 Claims



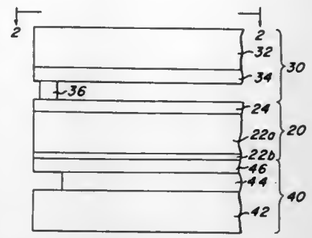
1. A one-piece swimsuit having a floatation member incorporated therein comprising a lower pants component and a two-ply upper component having neck and arm openings and a rear opening having detachable closure means, said two-ply upper portion having peripheral edges secured to each other and to said lower portion to define a closed compartment between the plies and a one-piece floatation member disposed in said compartment which extends only over the upper chest, shoulders and upper back of a wearer, said one piece floatation member having a U-shaped configuration with front and rear portions extending downwardly to an equal extent from shoulder portions and extending laterally to the same extent and having a uniform thickness, with a division in the middle of the back portion of the floatation member thereby providing greater buoyancy in the front than in the rear such that the wearer cannot remain in a prone or face down position.

5,184,969
ELECTROLUMINESCENT LAMP AND METHOD FOR PRODUCING THE SAME

Edward N. Sharpless, Somerville, N.J., and Eugene W. McManus, Downingtown, Pa., assignors to Electroluminscent Technologies Corporation, Horsham, Pa.

PCT No. PCT/US89/02335, § 371 Date Nov. 1, 1990, § 102(e) Date Nov. 1, 1990, PCT Pub. No. WO89/12376, PCT Pub. Date Dec. 14, 1989
Continuation-in-part of Ser. No. 200,616, May 31, 1988, abandoned. This PCT application May 30, 1989, Ser. No. 601,827
Int. Cl.[5] H01J *9/02*
U.S. Cl. 445—24 15 Claims

7. A substantially continuous method for simultaneously producing a plurality of flexible electroluminescent lamp assemblies of indefinite length comprising the steps of:
providing a first film comprising a electroluminescent material disposed between a dielectric layer and a first light-transmissive layer;
applying to said first light-transmissive layer a second film which includes a busbar layer arranged on a second light-transmissive layer;
providing a back electrode layer;
providing a third film which includes a third plastic layer; and
laminating said first, second and third films together with said busbar layer contacting said first light-transmissive layer of said first film and said back electrode layer con-

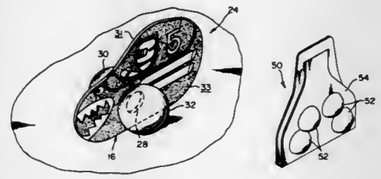


tacting both the dielectric layer of said first film and said third plastic layer.

5,184,970
ACTION TOY USING MAGNETIC MARBLES

Dennis E. Binkley, 10706 12th Ave. NW., Seattle, Wash. 98177

Filed Feb. 13, 1992, Ser. No. 835,209
Int. Cl.[5] A63H *33/26*
U.S. Cl. 446—132 9 Claims



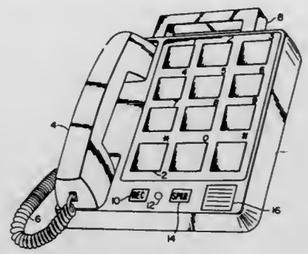
1. A toy using magnetic marbles, comprising:
a design member having an image thereon, with an opening therethrough;
at least one set of two magnetic marbles, positioned on both sides of the design member and in contact with each other through the opening, wherein the opening is positioned so that the marbles, when in contact with a support surface such as a table, maintain the design member in a selected position, and wherein the marbles are free to rotate relative to each other and the design member, about a magnetic axis, so that the toy may be propelled easily in various directions.

5,184,971
TOY TELEPHONE RECORDER WITH PICTURE ACTUATED RECORDING AND PLAYBACK

Susan A. Williams, 120 N. Riverside Dr., Edgewater, Fla. 32132

Filed Mar. 8, 1991, Ser. No. 666,707
Int. Cl.[5] A63H *33/30, 3/28;* H04M *1/64;* G09F *3/00*
U.S. Cl. 446—142 15 Claims

1. A toy telephone recorder comprising:
memory means defining a plurality of message storage locations adapted to store verbal audio messages,
a handset comprising microphone and speaker in communication with said memory means, storingly received at a handset receiving location on a casing containing said memory means,
microphone means at said handset receiving location in communication with said memory means,
a plurality of push-button assemblies capable of housing illustrations,
each of said push-button assemblies being electrically connected to one of said plurality of message storage locations,
and each said assembly including means for receiving a removable illustration,
means for recording verbal audio messages in said message storage locations, in response to actuation of a push-button assembly,
means for electrically connecting said message storage locations to said recording means,

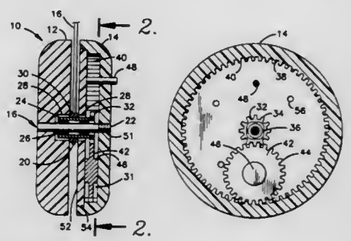


audio output means for playing back recorded audio messages in response to actuation of a push-button assembly, and
said memory means, said plurality of push-button assemblies, and recording means, said electrical connecting means, and said audio output means comprising a stand alone self-contained toy telephone recorder.

5,184,972
SELECTIVE FREE ROTATION YO-YO

Rand K. Tomberlin, 4017 N. Bennington, Apt. 104, Kansas City, Mo. 64117

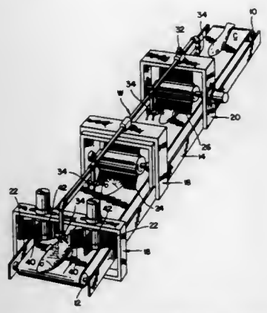
Filed Sep. 19, 1991, Ser. No. 762,929
Int. Cl.[5] A63H *1/30*
U.S. Cl. 446—250 20 Claims



1. A yo-yo, comprising:
first and second rotation bodies each having an axis of rotation;
shaft means having a longitudinal axis substantially coincident with said axes of rotation, said shaft means being connected to said rotation bodies with said rotation bodies being in spaced relation;
a length of at least substantially flexible line, said line having a first end connected to a portion of said shaft means; and
means allowing said shaft means to be fixed against rotation relative to said rotation bodies about said longitudinal axis in a first direction, yet permitting free rotation of said portion of said shaft means relative to said rotation bodies about said longitudinal axis in a second direction opposite to said first direction for a predetermined number of rotations, after which said shaft means is fixed against rotation relative to said rotation bodies about said longitudinal axis in said second direction.

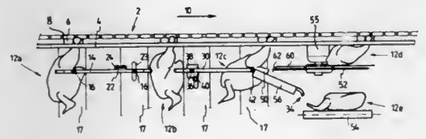
VOL
1147
ISS
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5,184,973
FISH SKINNER
Franklin P. Orlando, and Thomas Franco, both of Morgan Hill, Calif., assignors to Star Kist Foods, Inc., Long Beach, Calif.
Filed Feb. 20, 1990, Ser. No. 481,198
Int. Cl.[5] A22C *25/17*
U.S. Cl. 452—125 **19 Claims**



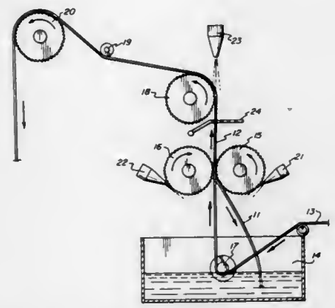
1. A process for skinning tuna fish and the like comprising:
precooking the fish,
cooling said precooked fish until the backbone temperature thereof falls within the range of 70° F. to 100° F.,
placing said precooked and cooled fish in a conveying means moving toward a series of rotating brush assemblies, each of said brush assemblies including a plurality of flexible brushes,
passing said fish between the conveying means and said rotating brush assemblies so that sides of the flexible brushes contact and conform to the fish and remove skin from the side, belly and back of each said fish without tearing the belly meat of each said fish,
spraying water at the fish-brush interface to wash away loosened skin,
and thereafter recovering the clean fish.

5,184,974
METHOD AND DEVICE FOR DIVIDING A SLAUGHTERED BIRD INTO A FRONT HALF AND A BACK HALF
Albertus T. J. J. Cornelissen, Cuyk, and Adrianus J. van den Nieuwelaar, Gemert, both of Netherlands, assignors to Stork PMT B.V., Boxmeer, Netherlands
Filed Nov. 5, 1991, Ser. No. 787,834
Claims priority, application Netherlands, Nov. 9, 1990, 9002458
Int. Cl.[5] A22C *21/00*
U.S. Cl. 452—160 **10 Claims**



1. A method for the transverse dividing of a slaughtered bird into a back half including the legs and a part of the back, and a front half in which the ribs are situated, including the breast and the remainder of the back, in which the carcass of the bird is hanging by the legs from a conveyor and is moved along with the breast forwardly directed in the direction of conveyance, comprising the steps of:
prior to the transverse dividing thereof, placing the bird in an oblique position relative to the conveyance direction in such a way that the legs are in front of the rest of the carcass, viewed in the conveyance direction;
prior to the transverse dividing thereof, bringing down the chest relative to the legs by exerting an essentially downward directed force on both sides thereof by moving the bird past positioning means having a spacing less than the transverse dimension of the chest of the bird for forcing the chest downward relative to the legs, so that the plane in which the transverse dividing operation takes place lies below the thighs and above the chest; and
dividing the bird into a back half hanging from the conveyor and a front half.

5,184,975
SEROSA PEELING MACHINE
Leonard E. Farmer, Gladesville; Jeffrey B. Stewart, Gymea, and Ralph Turner, Arncliffe, all of Australia, assignors to American Cyanamid Company, Stamford, Conn.
Filed May 22, 1991, Ser. No. 703,949
Int. Cl.[5] A22C *17/16*
U.S. Cl. 452—198 **11 Claims**

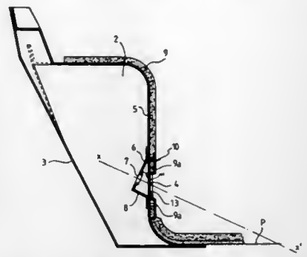


1. A machine for separating serosa from mucosa comprising two axially aligned and synchronized peeling rollers, each of the two peeling rollers having an external surface and each of the external surfaces having a Shore A durometer hardness from about 20 to 100, and the separation between the two peeling rollers being about equal to or less than the thickness of a harvested intestine ribbon, said separation having a proximal and a distal end; first means for rotating said two peeling rollers at a first speed; a pull roller adjacent to the distal end of said separation; and second means for rotating the pull roller at a second speed.

5,184,976
AIR CONDITIONING APPARATUS, PARTICULARLY FOR RAIL VEHICLES
James Babin, Sartrouville, France, assignor to Faiveley Transport, Saint Ouen, France
Filed Jan. 7, 1991, Ser. No. 638,457
Claims priority, application France, Jan. 5, 1990, 90 00081
Int. Cl.[5] B61D *27/00*
U.S. Cl. 454—108 **9 Claims**

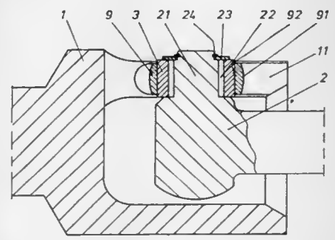
1. Air conditioning apparatus for vehicles, comprising at least one ventilator (1) blowing cold or reheated air through a conduit (2) extending along a lower portion of an interior lateral surface (3) of the vehicle, said conduit (2) opening into distribution means for the air toward the interior of the vehicle, said distribution means comprising at least one opening (4) provided on a lateral surface (5) of said conduit (2) adjacent the interior of the vehicle, said opening (4) being disposed in a plane which coincides with said lateral surface (5) of the conduit (2), and wherein the interior of the conduit (2) has, facing

said opening (4), a wall (6) forming an acute angle α with said lateral surface (5) of the conduit (2) and connected thereto at a point located above said opening (4), said wall (6) comprising



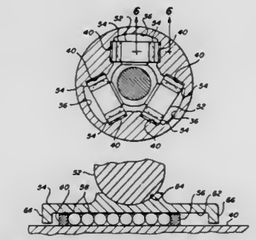
at least one orifice (7) facing said opening (4), whereby an axis (x—x') passing through the centers of said orifice (7) and said opening (4) points obliquely both toward the interior and toward the floor (P) of the vehicle.

5,184,977
CONSTANT VELOCITY TRIPOD JOINT WITH SLIDABLY ENGAGED ROLLERS AND GUIDE RINGS
Sobby L. Girguis, Magdalenenstrasse 19, D-5210 Troisdorf-Oberlar, Fed. Rep. of Germany
Continuation of Ser. No. 454,192, Dec. 21, 1989, abandoned, which is a division of Ser. No. 253,369, Sep. 30, 1988, Pat. No. 4,932,922, which is a continuation of Ser. No. 47,530, May 4, 1987, abandoned, which is a continuation of Ser. No. 779,238, Sep. 23, 1985, abandoned. This application Dec. 21, 1990, Ser. No. 632,588
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1984, 3437782
Int. Cl.[5] F16D *3/205*
U.S. Cl. 464—111 **15 Claims**



1. A constant velocity joint comprising a hollow outer part having three equally spaced longitudinal grooves, each providing two opposite groove walls, an inner part having three outwardly projecting trunnions, each defining an axis, placed within said grooves, the axes of said trunnions lying in one plane, each of said trunnions having a roller with an inner surface circumscribing and non-pivotably rotating thereabout, each said roller being axially retained on said trunnion, and guide means interposed between said rollers and said groove walls to accommodate transmission of tangential forces between said inner and said outer parts,
wherein said guide means is a ring (9), circumscribing each trunnion having an interior surface substantially directly and slidably engaging an exterior surface of each of said rollers (3) except for the presence of any lubricant herebetween, the substantially direct and slidable engagement between each said ring and each said roller allowing said ring and said roller to rotate together around said trunnion and allowing displacement of said rings relative to said rollers along their mating surfaces.

5,184,978
TELESCOPIC TRIPLAN UNIVERSAL JOINT
Francis L. Fillmore, Birmingham, and Michael J. Schmidt, Grosse Pointe Park, both of Mich., assignors to GKN Automotive, Inc., Auburn Hills, Mich.
Continuation of Ser. No. 509,147, Apr. 16, 1990, abandoned. This application Aug. 9, 1991, Ser. No. 744,672
Int. Cl.[5] F16D *3/26*
U.S. Cl. 464—111 **10 Claims**



1. A telescopic triplan universal joint comprising:
an outer joint member having at least three symmetrically disposed chambers extending longitudinally therein, each chamber having a pair of spatially separated opposing longitudinal walls, each wall of said pair of opposing longitudinal walls of each chamber having a longitudinal guideway;
an inner joint member disposed within said outer joint member, said inner joint member having at least three radially extending trunnions, each radially extending trunnion extending into a respective one chamber of said at least three chambers between said longitudinal guideways provided therein, each of said trunnions having at least a spherical surface facing each of said longitudinal guideways provided in said respective one chamber into which it extends;
a plurality of planar roller bearing assemblies having an overall rectangular shape, each planar roller bearing of said plurality of roller bearing assemblies having a first bearing surface rollingly engaged with a respective one of said longitudinal guideways and an opposite bearing surface; and
a plurality of movable races, one associated with a respective one of said plurality of planar roller bearing assemblies, each movable race of said plurality of movable races having a first substantially flat surface, and a second surface opposing said first surface, said first flat surface rollingly engaging said opposite surface of said respective planar roller bearings of said one planar roller bearing assembly and having a length substantially greater than the length of said rectangular planar roller bearing assembly, said second surface including an extending partially cylindrical trunnion seat engaging said spherical surface of said trunnion which faces said longitudinal guideway engaged by said planar roller bearing such that longitudinal movement of said trunnion generates longitudinal movement of said movable race, and a transverse stop abutment disposed at each end of said movable race, each said movable race first flat surface having a desired longitudinal length and being continuous between said transverse stops to provide substantial movement of said movable race and said respective planar roller bearing assembly with respect to one another between said transverse stops such that when an angle between said inner and outer joint members is less than a predetermined angle, said planar roller bearing assembly will not be engaged by said stop abutment as said races reciprocate with the

VOL 1147 ISS 2 FEB 9 1993 UMI

rotation of the universal joint, and said transverse stop abutments extending from said first flat surface towards said longitudinal guideway and limiting the longitudinal displacement of said respective one roller bearing assembly relative to each said movable race.

5,184,979

QUICK DISCONNECT CONSTANT VELOCITY UNIVERSAL JOINT

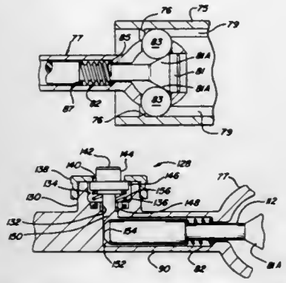
Daniel W. Hazebrook, Detroit, and Steven C. Hahn, Rochester, both of Mich., assignors to GKN Automotive, Inc., Auburn Hills, Mich.

Continuation-in-part of Ser. No. 552,260, Jul. 13, 1990, abandoned, which is a continuation of Ser. No. 170,944, Mar. 21, 1988, Pat. No. 4,941,862, which is a division of Ser. No. 945,183, Dec. 23, 1986, Pat. No. 4,753,626. This application Feb. 5, 1991, Ser. No. 650,485

The portion of the term of this patent subsequent to Jul. 17, 2007, has been disclaimed.

Int. Cl.[5] F16D *3/221*

U.S. Cl. 464—141 **11 Claims**



1. A quick disconnect constant velocity universal joint comprising:

a hollow inner joint member having an axis of rotation, said hollow inner joint member having an external spherical surface and a plurality of radial apertures, said plurality of radial apertures being provided through the wall of said hollow inner joint member along a common plane transverse to said axis of rotation;

a plurality of roller balls, one disposed in each of said radial apertures, said roller balls being free to move in said radial apertures in a radial direction between a predetermined innermost position to a predetermined outermost position;

an outer joint member having a cylindrical portion for receiving said external spherical surface of said hollow inner joint member therein, the inner surface of said cylindrical portion having a plurality of rectilinear grooves provided therein, one rectilinear groove for each of said plurality of roller balls;

plunger means for radially displacing said plurality of roller balls between said predetermined innermost position and said predetermined outermost position, said plunger means being disposed in said hollow inner joint member and having a plunger and resilient means for biasing said plunger from an extended position towards a retracted position, said plunger having a straight tapered portion near one end thereof, said straight tapered portion of said plunger radially displacing said plurality of roller balls from said predetermined innermost position to said predetermined outermost position in response to said displacement of said plunger from said extended portion towards said retracted position by said resilient means, said plurality of roller balls in said predetermined innermost position permitting said hollow inner joint member to be inserted into and separated from said outer joint member in said predetermined outermost position, said plurality of roller balls extending into said rectilinear grooves operatively connecting said hollow inner joint member to said outer joint member, said resilient means biasing said plunger towards said retracted position to maintain said straight tapered portion of said plunger in contact with said plurality of roller balls to produce a radial force on said plurality of roller balls, maintaining said plurality of roller balls in intimate contact with said plurality of rectilinear grooves of said outer joint member; and

plunger actuator means coupled to said hollow inner joint member for displacing said plunger from said retracted position to said extended position against the force of said resilient means in response to a manual actuation.

5,184,980

SPORTS APPARATUS

Kevin S. Ferris, 111 Charles St., Townsville Queensland, Australia 4814

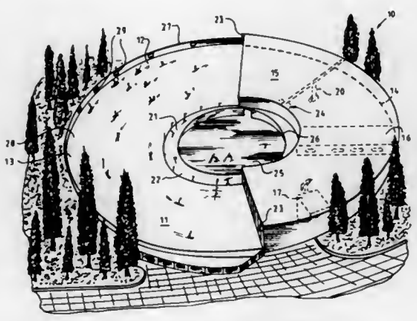
PCT No. PCT/AU88/00373, § 371 Date May 16, 1990, § 102(e) Date May 16, 1990, PCT Pub. No. WO89/02771, PCT Pub. Date Apr. 6, 1989

PCT Filed Sep. 22, 1988, Ser. No. 499,293

Claims priority, application Australia, Sep. 22, 1987, PI4498; Feb. 8, 1988, PI6647

Int. Cl.[5] A63C *19/10*

U.S. Cl. 472—91 **14 Claims**



1. An artificial ski slope assembly, comprising:

a skiing surface;

substantially annular form conveying means which is inclined and covered with said skiing surface and being rotatable so as to convey said skiing surface through a skiing zone disposed at an ascending side of said conveying means;

drive means for rotating said conveying means;

support means for rotatably supporting said conveying means with said supporting means supporting said conveying means so that said skiing surface is non-planar in said skiing zone whereby stationary horizontal ski positions relative to said skiing surface and within at least a lower portion of said ski zone are maintained substantially horizontal as those stationary ski positions are elevated through the lower portion of said ski zone by said conveying means.

5,184,981

CAM LOADED CONTINUOUSLY VARIABLE TRANSMISSION

Ernest C. Wittke, 585 Bloomfield Ave., West Caldwell, N.J. 07006

Filed Jan. 7, 1991, Ser. No. 638,206

Int. Cl.[5] F16H *9/12*

U.S. Cl. 474—19 **12 Claims**

1. A continuously variable transmission comprising:

a first rotatable shaft;

a second rotatable shaft, one of said shafts being a driver and the other being a driven shaft;

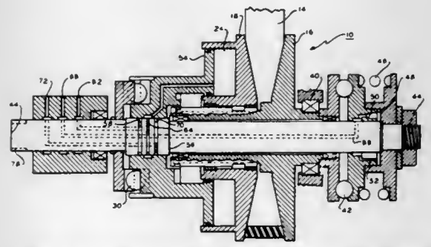
a loading pulley secured to said first shaft, aid loading pulley including a first fixed flange rotatable with said first shaft and axially movable flange rotatable with said first shaft and axially movable along said shaft within a given spacing with respect to said fixed flange;

torsional loading means secured to and rotatable with said first shaft, said loading means providing an axial force proportional to torque applied by said first shaft;

a first hydraulic actuator coupled between said torsional loading means and said first movable flange and axially movable by said torsional loading means for transmitting said axial force to said first movable flange;

a hydraulic valve secured directly on and rotatable with said first shaft for supplying and removing hydraulic fluid to and from said first hydraulic actuator and movable in response to movement of said loading means to maintain said loading means within a given operating range at all transmission ratios;

a control pulley secured to said second shaft, said control pulley including a second fixed flange rotatable with said second shaft and a second movable flange rotatable with said second shaft and axially movable along said second shaft within a given spacing with respect to said second fixed flange, said loading pulley and control pulley flanges



having inner faces sloping outwardly from respective said shafts;

a second hydraulic actuator coupled to said second movable flange for applying an axial force thereto, said second hydraulic actuator being capable of applying a greater force to said second movable flange than that applied to said first movable flange to control the position of said second movable flange;

hydraulic fluid means for applying hydraulic fluid to said second hydraulic actuator to move said second movable flange axially to a position determined by an external command;

a source of hydraulic fluid and control means supplying said fluid to said first and second hydraulic actuators and valve and to said hydraulic fluid means; and

a V-belt having a fixed length and width connected between and engaging said inner faces of said loading and control pulleys and slidable along said faces for transmitting power and changing the transmission ratio between said shafts, said first hydraulic actuator and first movable flange applying a force to said belt in proportion to said force applied by said loading means, said hydraulic fluid means controlling the position and movement of said second movable fluid into engagement with said belt for controlling the power transmission ratio of said belt between said shafts.

5,184,982

TENSIONER DEVICE FOR CHAINS AND THE LIKE

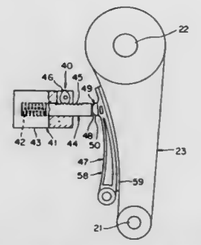
Kazubiko Shimaya, Hidaka; Masaki Miyaji, Hanno, and Kozo Inoue, Nagoya, all of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Apr. 13, 1992, Ser. No. 867,859

Claims priority, application Japan, Apr. 11, 1991, 3-32353

Int. Cl.[5] F16H *7/00*

U.S. Cl. 474—101 **1 Claim**



1. A device for applying tension to an endless power transmission in the form of a chain, belt or the like, comprising:

(a) a tensioner having plunger means movable along an axis for exerting a tensioning force to said endless power transmission through a lever, said plunger having a substantially planar face disposed in substantially perpendicular relationship to the axis of movement of said plunger; and

(b) a lever adapted to engage said endless power transmission, said lever carrying a pad having a convex face arranged to contact said substantially planar face of said plunger, the tensioning force exerted by said plunger being transmitted to said lever through contact of said substantially planar face with said convex face of said pad;

whereby any vibrational forces exerted by said lever on said tensioner are substantially parallel to said axis.

5,184,983

FLOATING PREVENTIVE STRUCTURE FOR SHOE OF TENSIONER LEVER

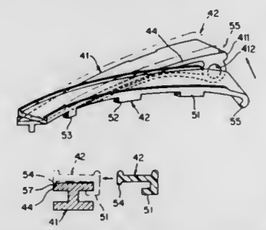
Kazuhiko Shimaya, Hidaka, and Masaki Miyaji, Hanno, both of Japan, assignors to Tsubakimoto Chain Co., Osaka, Japan

Filed Apr. 13, 1992, Ser. No. 867,861

Claims priority, application Japan, Apr. 11, 1991, 3-32352

Int. Cl.[5] F16H *7/00*

U.S. Cl. 474—111 **1 Claim**



1. A tensioner lever for applying tension to an endless power transmission in the form of a chain, belt or the like, comprising:

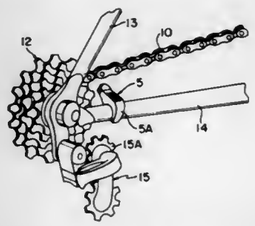
(a) an elongated arm having a front face and a back face, both extending from a first end toward a second end, said first and second ends being positioned so that said endless power transmission passes adjacent to said front face in a direction from said first end toward said second end, and first and second side edges extending longitudinally along said elongated arm; and

VOL
1147
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(b) shoe means positioned on said front face of said elongated arm and providing a surface against which said endless power transmission is slidable, said shoe having at least one L-shaped element engaging both said back face and one of said side edges of said arm, at least one projection engaging the opposite side of said arm, and a U-shaped end hook engaging said first end of said arm;

whereby said shoe is held in position with respect to said arm against movement in the direction of movement of said endless power transmission by said U-shaped end hook, held against movement in direction lateral to movement of said endless power transmission by said projection and L-shaped element, and held against movement in a direction away from said front face of said elongated arm by said L-shaped element.

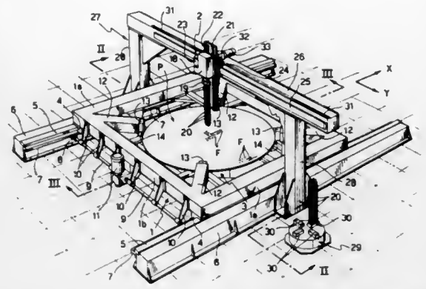
5,184,984
CHAIN CATCHER FOR BICYCLES
John P. Murphy, and Richard J. Murphy, both of 2609 Riverbend Ct., Fort Collins, Colo. 80525
Filed Oct. 2, 1991, Ser. No. 770,321
Int. Cl.[5] F16H *7/00*
U.S. Cl. 474—140 **13 Claims**



1. A chain hanger device for attachment to the horizontal chainstay tube of a bicycle, said device comprising a horizontally disposed ledge portion and attachment means for attaching said device to said tube, wherein said ledge portion includes an outer end, and further comprising a lip member projecting upwardly from said outer end.

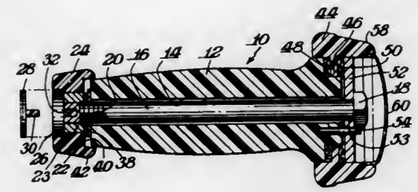
5,184,985
VERTICAL BROACHING MACHINE WITH MULTIPLE BROACHES
Antonio Varinelli; Marco Varinelli, both of Milan, and Oreste Bianco, Caselette, all of Italy, assignors to Officine Meccaniche Varinelli SpA, Milan, Italy
Filed Jun. 25, 1992, Ser. No. 904,133
Claims priority, application European Pat. Off., Jun. 25, 1991, 91830281.1
Int. Cl.[5] B23Q *3/155*; B23D *41/00*
U.S. Cl. 483—28 **5 Claims**

1. A vertical broaching machine with multiple broaches particularly for forming tube plates for steam generators, including a support for supporting a perforated plate in a horizontal position, a broach-holder disposed above the support for the plate and movable vertically relative thereto, a pulling unit for the broaches which is disposed below the support and movable vertically relative thereto in alignment with the broach-holder, and means for causing relative movements of the plate and the broaches along two mutually perpendicular horizontal axes in order to align the broaches vertically with successive holes in the plate, wherein the support for the plate is movable along only one horizontal axis and the broach-



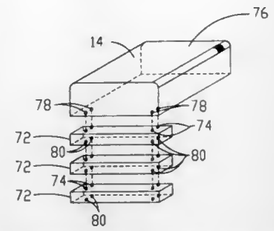
holder and the pulling unit are movable along the other horizontal axis.

5,184,986
WRIST EXERCISE DEVICE
William T. Wilkinson, Crownsville, Md., and John J. Nelson, Bristol, Pa., assignors to What-Not, Inc., Cleveland, Ohio
Filed Jun. 5, 1992, Ser. No. 894,537
Int. Cl.[5] A63B *23/14*
U.S. Cl. 482—46 **17 Claims**



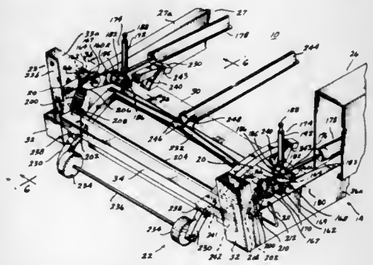
1. A wrist exercise device comprising a handle having an axial opening extending completely therethrough, said handle having a first end and a second end, a shaft extending completely through said axial opening at said first end and said second end of said handle, spring means mounted outside of said handle around an end of said shaft at said first end of said handle, an adjustment ring mounted to said shaft spaced from said first end of said handle, said spring means being mounted in the space between said handle and said adjustment ring, said adjustment ring being longitudinally mounted on said shaft and having a bearing surface which is disposed against said spring means to adjust the extent of compression of said spring means upon longitudinal movement of said adjustment ring toward and away from said handle, at least one clutch disc mounted against said handle at said second end of said handle, an abutment member mounted against said clutch disc, and a knob mounted around said abutment member and said clutch disc and said second end of said handle in rotational relationship with respect to said handle whereby said knob and said handle may be rotated with respect to each other against the force applied by said clutch disc which is adjusted in accordance with the compression of said spring means.

5,184,987
AEROBIC CLIMBING STEP/BENCH
William T. Wilkinson, P.O. Box 378, Chesapeake City, Md. 21915
Filed May 10, 1991, Ser. No. 698,382
Int. Cl.[5] A63B *71/00*
U.S. Cl. 482—52 **12 Claims**



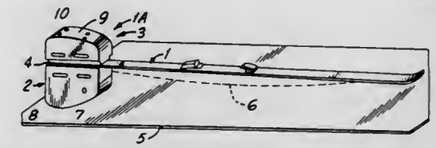
1. An aerobic climbing step/bench device comprising a base, said base consisting of the horizontal platform having a periphery formed by opposite ends and intermediate sides and said base having downwardly extending sides and a bottom surface, mounting members formed in said bottom surface at two spaced locations of said base, a first set of legs for each of said locations, each of said legs having a lower surface for resting on a support surface, each of aid first set of legs having complementary mounting members for detachable engagement with said mounting members of said base whereby said platform is provided with at least two levels of height adjustability wherein said device is capable of one height level when no leg is mounted to said base and said base is placed directly on a support surface and there are other height levels in accordance with sad legs being coplanar and being parallel to said horizontal platform when said legs are mounted to said base.

5,184,988
EXERCISE TREADMILL
Paul T. Dunham, Everett, Wash., assignor to Precor Incorporated, Bothell, Wash.
Continuation of Ser. No. 468,100, Jan. 10, 1990, Pat. No. 4,974,831. This application Dec. 4, 1990, Ser. No. 621,632
The portion of the term of this patent subsequent to Dec. 4, 2007, has been disclaimed.
Int. Cl.[5] A63B *23/06*
U.S. Cl. 482—54 **27 Claims**



1. An exercise apparatus, comprising:
a frame;
a support platform pivotally mounted on the frame about a first pivot axis to pivot between a nominal position and a displaced position;
linear resistance means for resisting pivoting of the support platform from the nominal position; and
connecting means for connecting the linear resistance means to the support platform so that the length of the linear resistance means increases as the support platform is pivoted from its normal position, the length of the linear resistance means changing at a rate that increases as the support platform pivots, wherein the linear resistance means generates a resistance force that increases in proportion to the rate of change in the length of the linear resistance means as the support platform is pivoted from its nominal position.

5,184,989
PHYSICAL EXERCISE SYSTEM USING SKIS
George Stanec, 15 Secor Rd., Scarsdale, N.Y. 10583-7111
Filed Nov. 13, 1991, Ser. No. 791,457
Int. Cl.[5] A63B *22/00, 69/18*
U.S. Cl. 482—71 **14 Claims**

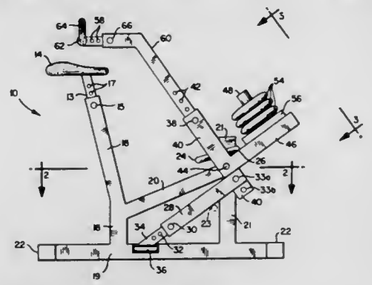


1. A physical exercise system comprising a left ski holder and a right ski holder, each ski holder adapted to removably hold one ski of a pair of skis proximate an end of said one ski, the other end of said ski supported on a floor; each ski holder including:
(a) a top member adapted to be positioned on top of the held ski;
(b) a bottom member having a top face and an arcuate bottom face and adapted to be positioned under the held ski;
(c) attachment means to bring the top member removably connected to the bottom member with the ski clamped therebetween and on the top face of the bottom member; and
(d) sliding means on said bottom face adapted to permit the ski holder to slide on a floor.

5,184,990

Patent Not Issued For This Number

5,184,991
EXERCISE MACHINE
John Brangi, 73 Hillside Ave., New Haven, Conn. 06512
Filed Jan. 24, 1992, Ser. No. 825,028
Int. Cl.[5] A63B *21/06*
U.S. Cl. 482—97 **10 Claims**



1. An exercise device comprising:
a frame having a seat mounted thereon;
a pair of handlebars extending upwardly from and pivotally attached to said frame at a point forward of said seat, each of said handlebars being individually moveable back and forth by the arms of a user of said device;

VOL 1147 ISS 2 FEB 9 1993 UMI

a foot pedal rigidly attached to and extending rearwardly from each of said handlebars, each foot pedal being individually moveable down and up by the legs of a user of said device; and

a weight platform rigidly attached to each of said handlebars for supporting individual weights, said weight platform being raised and lowered in an arc around said pivot point upon back and forth movement of said handlebars;

whereby said user seated on said seat may exercise his individual arms and/or legs against resistance of raising and lowering selected weights on said weight platform by respective movement of the individual handlebars in a back and forth direction and individual foot pedals in an down and up direction.

5,184,992

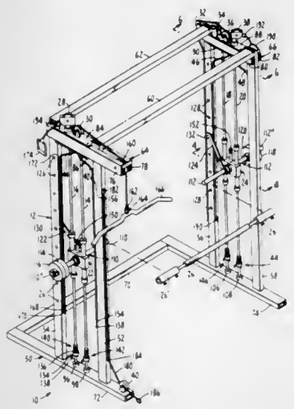
MULTI-STATION PHYSICAL EXERCISE APPARATUS

Gary S. Banks, 529 Bonita Ct., Vallejo, Calif. 94591

Continuation of Ser. No. 667,595, Mar. 5, 1991, abandoned. This application May 27, 1992, Ser. No. 892,682

Int. Cl.[5] A63B *21/06*

U.S. Cl. 482—104 **9 Claims**



1. Physical exercise apparatus, comprising:

a rigid frame;

a first plurality of vertical rails mounted on said frame;

a second plurality of vertical rails mounted on said frame;

a first carriage independently slidably mounted on said first plurality of rails;

a second carriage independently slidably mounted on said second plurality of rails;

first exercise weight carrying means mounted in said first carriage and having an inner cantilever portion located within said frame and an outer cantilever portion;

second exercise weight carrying means mounted in said second carriage and having an inner cantilever portion located within said frame and an outer cantilever portion;

a lift bar adapted to be secured to both of said inner cantilever portions for joint vertical movement of said carriages, the length of said lift bar being less than the distance between said carriages so that said lift bar can be secured to said inner cantilever portions after the mounting of at least one exercise weight thereupon; and

a plurality of discate exercise weights each having a central mounting hole of such diameter as to close-fittingly receive any one of said cantilever portions.

5,184,993

AQUATIC EXERCISE ASSEMBLY

M. Richard Dowdeswell, 356 Pimlico Rd., Greenville, S.C. 29607

Continuation of Ser. No. 664,324, Mar. 4, 1991, abandoned. This application May 20, 1992, Ser. No. 887,593

Int. Cl.[5] A63B *21/06*

U.S. Cl. 482—106 **3 Claims**



1. A process of performing aquatic exercises comprising the following steps:

supplying a flotation apparatus, said apparatus comprising a rod, said rod supporting a float at either end of said rod, said floats retained on said rod by an attachable end cap at either end of said rod;

exercising in a body of water using said floatation apparatus;

removing said end cap from said rod;

removing further said floats from said rod;

sliding a disc-shaped weight member formed from foam rubber onto said rod, said disc-shaped member being water absorbent and increasing in weight to a predetermined amount when fully saturated, said disc-shaped member defining a circular opening in the central region thereof so as to mount slidably onto said rod;

replacing said end cap on said rod to retain said disc-shaped member;

exercising with said weight on said bar.

5,184,994

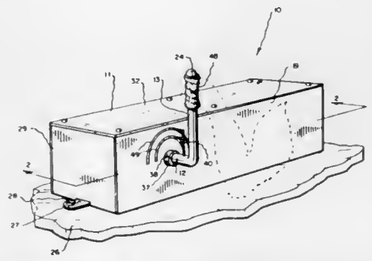
ARM WRESTLING SIMULATING DEVICE

Monte G. Morris, 3768 Brinker Ave., and Andrew Ajtaji, 639 23rd St., Apt. West, both of Ogden, Utah 84401

Filed Dec. 10, 1991, Ser. No. 805,188

Int. Cl.[5] A63B *21/04*

U.S. Cl. 482—129 **7 Claims**



1. An arm wrestling simulating device comprising:

an elongate frame comprising a pair of upstanding side structures joined in horizontally spaced apart relationship;

a horizontal shaft pivotally supported within and across the frame;

a wrestler's arm simulating lever rigidly joined to the shaft upstanding vertically therefrom;

at least one horizontal, rigid, spring attaching member directly affixed rigidly to the shaft extending radially therefrom;

an extension spring disposed in line with the spring attaching

member, secured at one end thereto distantly from the shaft and at its opposite end to the frame; wherein

the frame is constructed to provide clearance to permit rotation of the arm simulating lever from the vertical direction in both clockwise and counterclockwise directions against the resistance of the extension spring.

5,184,995

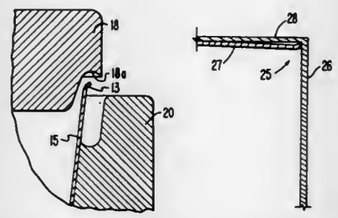
CONTAINERS AND BLANKS WITH A CURLED EDGE AND METHOD OF MAKING SAME

Morris W. Kuchenbecker, Neenah, Wis., assignor to James River Corporation of Virginia, Richmond, Va.

Continuation of Ser. No. 636,149, Dec. 31, 1990, abandoned. This application Feb. 21, 1992, Ser. No. 839,674

Int. Cl.[5] B31B *3/14*

U.S. Cl. 493—79 **12 Claims**



1. A method of forming an unclosed container with an opening defined by an edge having a brim curl, comprising the steps of:

cutting from stock material a blank for the container in a manner so as to create a precurled portion along at least one edge thereof which will define the container opening;

forming the container from said blank to cause said precurl to be directed radially outwardly from said container opening; and

performing a final curling operation on said precurled portion of the unclosed container to form a brim curl on said at least one edge along the container opening in a manner to leave the opening unclosed when the final curling operation is complete thereby forming the unclosed container.

11. A method of making a blank for a closable paperboard carton having an opening, a closable lid and a flared edge formed on the closable lid, comprising the steps of:

cutting stock material to form a blank including a closable lid, said cutting step creating the flared edge along at least one edge portion of the blank; and

forming fold lines in the blank for allowing the blank to be folded in such a manner to create the closable paperboard carton wherein said flared edge of said edge portion is integral with one edge of said closable lid and extends outwardly away from the carton interior when said closable lid is closed.

5,184,996

CARTON ASSEMBLY MACHINE FOR ASSEMBLING A BASE AND A COVER

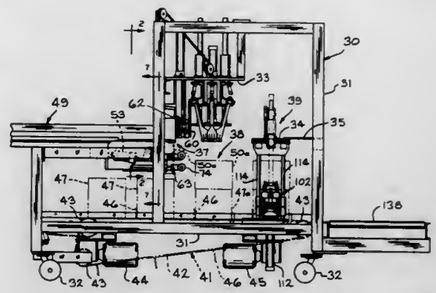
Chris Rode, Delphos, and Steve Reigle, Pandora, both of Ohio, assignors to Gasdorf Tool & Machine Co., Inc., Lima, Ohio

Filed Aug. 26, 1991, Ser. No. 749,670

Int. Cl.[5] B31B *17/90, 15/90*

U.S. Cl. 493—84 **21 Claims**

1. An assembly machine for a carton having a rectangular base and a cover, said machine including a frame, a first conveyor means for transporting a plurality of rectangular bases, a second conveyor means for transporting a plurality of folded covers, a first cover means for opening a cover and positioning said cover vertically adjacent one of said rectangular bases, a second cover means for grasping said cover and moving said cover downwardly into an overlying relationship with said rectangular base, said second cover means including a plurality of hand assemblies being vertically movable to a first down position within an open cover, selected ones of said plurality of hand assemblies being energized to move said selected ones



into an engaging relationship with said open cover, and means for moving said selected ones vertically downwardly to said first position and to a second down position wherein said open cover overlies said prepositioned rectangular base and a taping means for applying tape to connect said cover to said rectangular base.

5,184,997

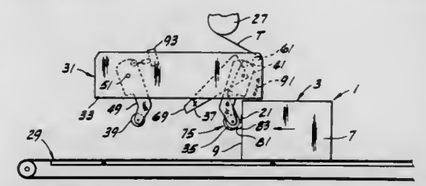
EASY-OPEN CASE TAPING METHOD AND APPARATUS

Robert C. James, Sheboygan, Wis., and Richard J. Pederson, Richfield, Minn., assignors to Curwood, Inc., Oshkosh, Wis.

Continuation of Ser. No. 876,848, Jun. 20, 1986, abandoned. This application Jan. 13, 1988, Ser. No. 143,815

Int. Cl.[5] B65D *5/42*

U.S. Cl. 493—117 **5 Claims**



1. The method of taping a case made of paper-board or the like having sides, ends and top and bottom closures, at least one of said closures comprising two flaps folded over from the sides of the case, said flaps being generally coplanar and having adjoining edges extending generally parallel to one another endwise of the case, said method comprising pressing a strip of tape having pressure-sensitive adhesive on one face thereof to extend from end-to-end of the case throughout the length of the said flaps over the margins of said flaps along said adjoining edges, and adhering the tape by said adhesive to said margins to seal the case along said adjoining edges, providing portions of the tape extending around on the outside of the ends of the case and part way between the top and bottom of the case, folding back an integral end portion of at least one of said portions on the adhesive face of the tape, pressing said portions of the tape against the ends of the case to cause them to become adhered to the ends of the case except for said folded-back end portion, the latter being adhered in its folded-back relation to the tape by said adhesive and lying between said one portion of the tape and the respective end of the case to form a tab at the end of said one portion of the tape which tab is unadhered to the respective end of the case, the adhesive peelably securing the tape to the margins of the flaps and the ends of the case, said tab being free to be grasped and pulled to peel the tape

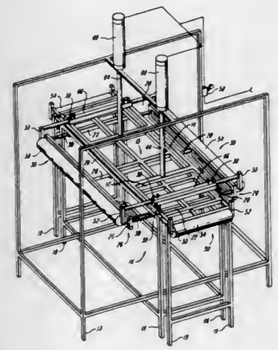
VOL
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away from said respective end of the case and then lengthwise completely away from the margins of said flaps to free the flaps for opening the case, wherein the tape is applied from one end of the case to the other and the folding back of said integral end portion of the tape is completed as the tape is applied.

5,184,998
CORRUGATED CARDBOARD OR CHIPBOARD CARTON FORMING MACHINE

Kenneth H. Volk; Douglas A. Volk, both of Portland; Paul Voccia, Kennebunkport, and William D. Lewis, Cape Elizabeth, all of Me., assignors to Volk Packaging Corporation, Biddeford, Me.

Filed Apr. 8, 1991, Ser. No. 682,427
Int. Cl.[5] B31B *1/44, 1/52*
U.S. Cl. 493—176 **3 Claims**



1. A triple wall corrugated cardboard carton forming machine comprising:

a first portion comprising a plurality of corner defining members, each member having a corner forming surface;

a second portion comprising a plurality of fold generating cylinders, said fold generating cylinders positionable to pass adjacent to said corner defining surface of said corner defining members at a distance sufficient to permit a thickness of triple wall corrugated cardboard to fit between each said fold generating cylinder and its respective corner defining member; and

energizing means for moving said second portion and said first portion relative to each other between a first position wherein said fold generating cylinders are located outside a plane defined by said corner defining members and a second position wherein said fold generating cylinders are located adjacent to said corner forming surface of said corner defining members,

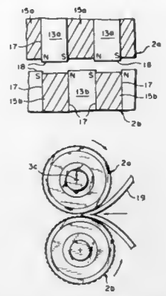
said relative movement of said first portion and said second portion causing a triple wall corrugated cardboard blank placed on said first portion to be folded over said corner defining members.

5,184,999
DEVICE AND PROCESS FOR THE PRESSING OF SHEETS DURING FOLDING

Vittorio Vigano', Verdellino, Italy, assignor to Coly S.A.R.L., Brignais, France

Filed Aug. 1, 1991, Ser. No. 738,967
Claims priority, application Italy, Aug. 3, 1990, 21191 A/90
Int. Cl.[5] B65H *45/16*
U.S. Cl. 493—435 **8 Claims**

1. Device for the pressing of sheets during folding, comprising: at least two rollers (**2**), placed opposite each other and including a first roller (**2*a***) and a second roller (**2*b***) both rotating and having rotation axes (**3*a***, **3*b***) with the length of each said rotation axes parallel to each other, said device further comprising, in said at least two rollers (**2**), permanent magnets (**13**) having first permanent magnets (**13*a***) engaged to said first roller (**2*a***) and second permanent magnets (**13*b***) engaged to said second roller (**2*b***), said first permanent magnets (**13*a***) and



said second permanent magnets (**13*b***) having opposite polarities facing each other, said first permanent magnets (**13*a***) and said second permanent magnets (**13*b***) delineating magnetic zones (**14*a***, **14*b***) which alternate with spacing zones (**15*a***, **15*b***) along said length of each of said rotation axes (**3*a***, **3*b***).

5,185,000
ANKLE JOINT BANDAGE

Dieter Brandt, Düsseldorf; Ingeborg Szlema, Kempen, both of Fed. Rep. of Germany, and Hans H. Wetz, Uerikon, Switzerland, assignors to Beiersdorf AG, Hamburg, Fed. Rep. of Germany

Filed Jan. 16, 1992, Ser. No. 822,161
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1991, 4104930
Int. Cl.[5] A61F *13/00*
U.S. Cl. 602—63 **36 Claims**

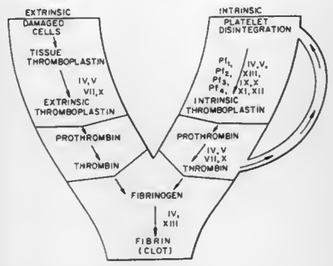


1. Ankle joint bandage for application to an ankle joint, made of elastic bandaging material of tubular configuration, characterized in that the bandage (**10**) comprises an anatomically configured tubular body (**11**) of a woven fabric or a knitted fabric which is provided with a lower section (**16**) forming an outside (**16*a***) and which, in an applied state, embraces the foot in sections and extends to the calf and which is provided with two anatomically asymmetrically constructed pressure pads (**20,20'**) lying above the paraachillory soft tissue and which, at the medical and lateral malleolus, cover the region above Bisgaard's link, each pressure pad (**20,20'**) being constructed as a shaped member (**21**) with a lateral, rounded-off indentation (**27**) for accommodating the body prominence of the ankle, which consists of a soft or soft-elastic material, while the shaped member (**21**), a rod-shaped friction core (**30**) of a hard, incompressible material is disposed and, within the material of the shaped member (**21**), is fixed in its position.

5,185,001
METHOD OF PREPARING AUTOLOGOUS PLASMA FIBRIN AND APPLICATION APPARATUS THEREFOR

Dennis K. Galanakis, Stony Brook, N.Y., assignor to The Research Foundation of State University of New York, Albany, N.Y.

Filed Jan. 18, 1990, Ser. No. 467,143
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—5 **25 Claims**



1. A method of treating with autologous mammalian plasma fibrin to affect hemostasis, comprising the steps of:

(a) obtaining a sample of blood from said mammal;

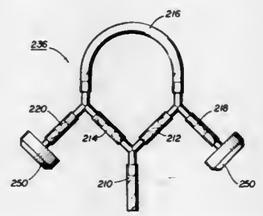
(b) substantially immediately separating the whole plasma from said blood obtained in step (a); and

(c) contacting said whole plasma resulting from step (b) with thrombin in a physiologically acceptable solution at a rate and in a volume at the site of treatment to provide fibrin coagulation at said site.

5,185,002
TRANSDUCER APPARATUS HAVING WATER HAMMER DAMPENING MEANS

Claudio Venturini, Corona Del Mar, Calif., assignor to Alcon Surgical, Inc., Fort Worth, Tex.

Filed Jun. 28, 1991, Ser. No. 722,982
Int. Cl.[5] A61B *17/20*
U.S. Cl. 604—30 **3 Claims**



1. A pressure sensing apparatus for use in combination with a surgical irrigation and aspiration system, comprising:

a) at least a first pressure sensor and a second pressure sensor;

b) a first fluid line in fluid communication with the first pressure sensor;

c) a second fluid line in fluid communication with the second pressure sensor;

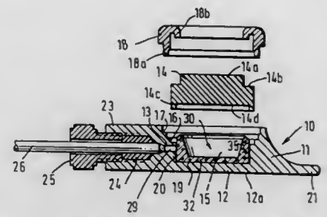
d) a fluid connector in fluid communication with the first fluid line and the second fluid line; and

e) a means for diverting transient fluid pressure away from the first pressure sensor and the second pressure sensor connected between the first fluid line and the second fluid line and in fluid communication with the fluid connector through the first fluid line and the second fluid line.

5,185,003
PORT FOR INJECTING MEDICAMENTS

Ullrich Brethauer, Koerle, Fed. Rep. of Germany, assignor to B. Braun Melsungen AG, Melsungen, Fed. Rep. of Germany

Continuation of Ser. No. 497,419, Mar. 22, 1990, abandoned.
This application Feb. 11, 1992, Ser. No. 833,601
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1989, 8904527[U]
Iot. Cl.[5] A61M *11/00*
U.S. Cl. 604—93 **16 Claims**



1. A port for injecting medicaments through an implanted catheter, comprising:

a capsule having a bottom, a circumferential wall and a pierceable upper wall and defining a cavity,

the circumferential wall having an outlet opening defining a cross section and being adapted for connection with the catheter, and

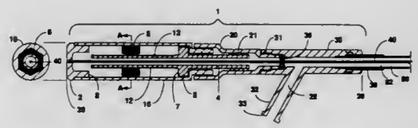
a circumferentially shaped porous filter member ring of sintered material applied to and substantially covering the cross section of the outlet opening in the circumferential wall for shielding the outlet opening,

whereby the filter member lies substantially against the cross section of the outlet opening in the circumferential wall of the capsule.

5,185,004
TURN-LIMITING PROXIMAL ADAPTOR FOR STEERABLE CATHETER SYSTEMS

Robert Lashinski, Elk River, Minn., assignor to Danforth Biomedical, Inc., Menlo Park, Calif.

Filed Jun. 3, 1991, Ser. No. 709,572
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—95 **10 Claims**



1. A proximal adaptor for steerable catheter systems containing a catheter shaft and a guidewire, said proximal adapter comprising:

a stationary portion coupled to said catheter shaft;

a rotator portion rotationally coupled to said stationary portion in a coaxial configuration, said rotator portion rotatable relative to said stationary portion without translation, said guidewire torsionally connected to said rotator portion; and

a threaded element, coupled to said stationary portion, including threads along its outer surface,

first and second stops positioned at opposite ends of said threaded element limiting travel along said threaded element; and

a translational element engaged in a threaded manner with the outer surface of said threaded element between said first and second stops, said translational element further

VOL 1147 ISS 2 FEB 9 1993 UMI

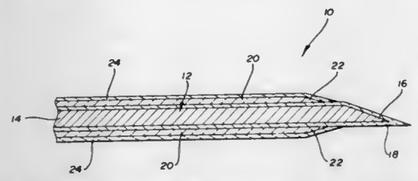
engaged with said rotator portion in a manner such that rotation of said rotator portion causes longitudinal movement of said translational element along said threaded element, said longitudinal movement limited by said first and second stops.

5,185,005
METHOD AND APPARATUS FOR SECURING A NASOGASTRIC TUBE
Alando J. Ballantyne, Houston, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.
Filed Jun. 4, 1991, Ser. No. 710,060
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—174 **17 Claims**



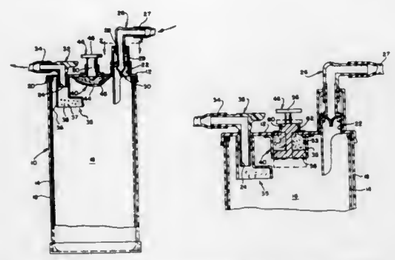
1. An apparatus for anchoring a nasogastric tube, comprising:
an elongated flexible bridle having first and second ends, the bridle adapted to by inserted around a patient's nasal septum with one of said first and second ends extending outwardly from each of the patient's nostrils;
first means adapted to releasably couple to the first end of the bridle for inserting the first end of the bridle into a patient's first nostril to a point beyond the nasal septum; and
second means insertable through a patient's second nostril adapted to engage the first end of the bridle and for pulling the first end of the bridle exterior to the patient's second nostril.

5,185,006
LUBRICATED METAL ARTICLES AND ASSEMBLY CONTAINING SAME
Victor A. Williamitis, Dayton, and David E. Spielvogel, Springboro, both of Ohio, assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Dec. 17, 1990, Ser. No. 628,139
The portion of the term of this patent subsequent to Feb. 27, 2007, has been disclaimed.
Int. Cl.[5] A61M *5/32, 25/00*
U.S. Cl. 604—265 **15 Claims**



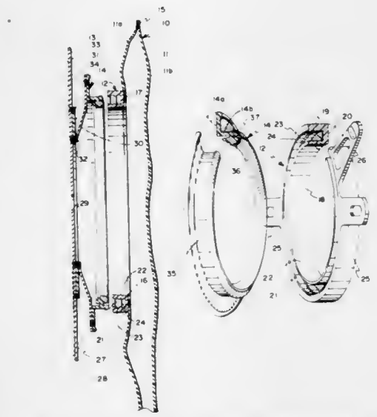
1. An article comprising a metal surface having thereon a coating of a noncuring polysiloxane lubricant substituted with an aminoalkyl group, said polysiloxane lubricant having a viscosity of about 300 to 25,000 centistokes.

5,185,007
SUCTION DRAINAGE INFECTION CONTROL SYSTEM
James F. Middaugh, Deerfield; Peter L. Bryant, Lake Forest; Richard W. Grabenkort, Barrington; Timothy J. Oswald, Lincolnshire, and Edward S. Tripp, Park City, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Continuation of Ser. No. 457,468, Dec. 27, 1989, abandoned, which is a continuation-in-part of Ser. No. 330,552, Mar. 30, 1989, abandoned. This application Jun. 26, 1992, Ser. No. 906,049
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—320 **10 Claims**



1. A suction system for draining waste from a source, said suction system comprising:
a sealed chamber that includes a flexible liner which is sealed at its upper end to a flat rigid cover, said cover including inlet and outlet means;
a normally closed reservoir carried by said cover for storing a predetermined amount of waste-treating material therewithin; and
an externally operated actuator provided on said cover for controlling release of waste-treating material from said reservoir means into said sealed chamber.

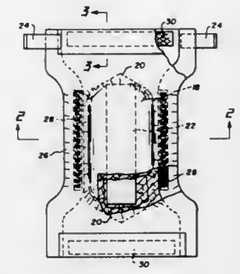
5,185,008
TWO-PIECE OSTOMY APPLIANCE AND COUPLING THEREFOR WITH ROCKING WEDGE LOCK
Michael R. Lavender, Round Lake Beach, Ill., assignor to Hollister Incorporated, Libertyville, Ill.
Filed Jun. 21, 1991, Ser. No. 719,157
Int. Cl.[5] A61F *5/44*
U.S. Cl. 604—338 **21 Claims**



1. A two-piece ostomy appliance comprising a collection

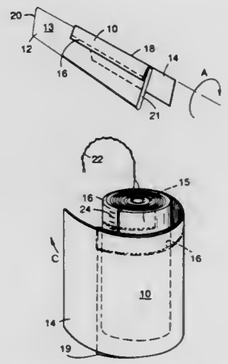
pouch and adhesive faceplate means for peristomal attachment to a patient; said pouch having a stoma-receiving opening and a first coupling ring secured thereto about said opening; said first coupling ring having a pair of spaced concentric side walls and a connecting wall capable of being flexed to define an expandable annular channel facing axially away from said pouch; and a second coupling ring having annular insert means receivable in said expandable channel for sealing and locking engagement with said first ring; wherein the improvement comprises
said annular insert means being substantially non-compressible and frictionally engagable with both of said side walls; said insert means including an axially-extending annular collar, a bulbous non-deformable body of toroidal shape, and an annular radially-extending pivot stem connecting said non-deformable body and annular collar in concentric relation; said body including a front portion projecting forwardly beyond said stem toward said pouch and a rear portion extending rearwardly beyond said stem away from said pouch, with both said front and rear portions being spaced radially from said collar; said stem supporting said body for limited forward and rearward rocking movement about a pivot axis at said stem; said front portion of said body having a rearwardly curved bearing surface of progressively increasing distance from said pivot axis; whereby, the width of said non-compressible insert means decreases as said non-deformable body rocks rearwardly and increases as said body rocks forwardly about said pivot axis, in response to frictional engagement with a wall of said channel, when coupling and uncoupling forces, respectively, are applied to said rings.

5,185,009
BIODEGRADABLE DIAPER
Elmo Sitnam, 1465 Charlotte Street, North Vancouver, British Columbia, Canada V7J 1H1
Continuation of Ser. No. 377,350, Jul. 10, 1989, abandoned. This application Oct. 28, 1991, Ser. No. 782,739
Int. Cl.[5] A61F *13/15, 13/20*
U.S. Cl. 604—364 **13 Claims**



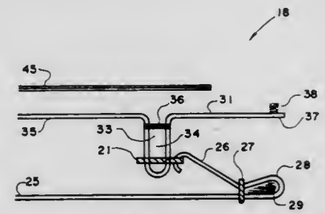
1. A biodegradable diaper comprising:
á) an outer sheet having a periphery of biodegradable material able to resist water absorption;
b) an inner sheet of biodegradable material able to allow passage of water therethrough and attached to the periphery of said outer sheet by a biodegradable adhesive to form an envelope having walls and defining a space therein;
c) said envelope having a waist portion and leg portions formed therein;
d) a biodegradable super absorbent core disposed within said envelope comprising a uniform material and substantially occupying all of said space within said envelope;
e) a water resistant film of biodegradable material having a peripheral edge surface, said film positioned within said core for assisting in fluid distribution into said core, said film edge surface substantially spaced from said envelope walls and extending substantially parallel to said inner and outer sheet of said envelope; and
f) strips of resilient biodegradable polyurethane polyester foam attached at said waist portion to allow said diaper to gather about a user's waist.

5,185,010
SPIRALLY WOUND TAMPON WITH OVERWRAP
Robert W. Brown, Jr., Hampden, Mass., assignor to Tambrands Inc., White Plains, N.Y.
Filed Jan. 31, 1992, Ser. No. 828,756
Int. Cl.[5] A61F *13/22, 13/48*
U.S. Cl. 604—379 **29 Claims**



1. A tampon adapted for insertion into a body cavity, comprising a length of absorbent material wound in a spiral configuration and compressed, the outermost winding of the spiral having a liquid permeable overwrap material disposed thereon, a portion of said overwrap being folded over an edge of the outer layer of the spirally wound material and adhered to the inside surface of said outermost winding.

5,185,011
REUSABLE DIAPER GARMENT
Stephanie A. Strasser, 7715 Burthe St., New Orleans, La. 70118
Filed Jun. 28, 1991, Ser. No. 722,683
Int. Cl.[5] A61F *13/15*
U.S. Cl. 604—385.1 **1 Claim**

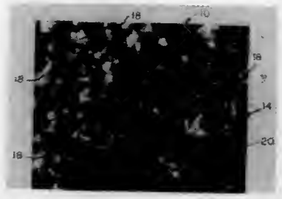


1. A reusable multiple-layered waterproof diaper garment comprising:
(a) a first, innermost layer comprising absorbent, launderable, machine-dryable material;
(b) a second, middle layer comprising waterproof, non-wicking, launderable, machine-dryable material attached to the first, inner layer;
(c) a third, outer layer comprising launderable, machine-dryable garment cloth;

VOL
1147
ISS
2
FE
9
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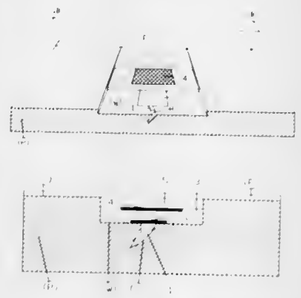
(d) fastening means for fastening the diaper garment on a child;
(e) contact-preventing means for preventing physical contact of the absorbent material of the first layer and the third layer when the diaper garment is worn by a child;
(f) wicking-preventing means for substantially preventing liquid from wicking from the first layer to the third layer through stitch-line induced moisture movement, when the diaper garment is worn by the child and the first layer is wet by excrement from the child; and
(g) at least said second and third layers each having two leg openings, wherein:
(i) the second layer has an outer surface;
(ii) the second layer, at predetermined locations including at least adjacent said leg spacing is seamed to its own surface generating a crimp of moisture-protected material on the outer surface of the second layer and that the crimp of moisture-protected material is of sufficient width to accommodate a stitching line, the moisture-protected material forming part of the wicking-preventing means; and
(iii) the third layer at each leg opening, is stitched to the corresponding crimp of moisture-protected material on the outer surface of the second layer adjacent the leg openings.

5,185,012
COATED ABRASIVE MATERIAL CONTAINING ABRASIVE FILAMENTS
Robert G. Kelly, Latham, N.Y., assignor to Norton Company, Worcester, Mass.
Continuation-in-part of Ser. No. 344,700, Apr. 28, 1989, Pat. No. 5,103,598. This application May 2, 1990, Ser. No. 517,920
The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.
Int. Cl.[5] B24D *11/00*
U.S. Cl. 51—295 **35 Claims**



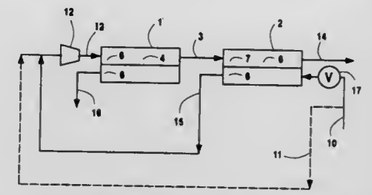
1. Coated abrasive material comprising:
a. a backing member; and
b. a layer of coated abrasive comprising:
1.) a maker coat; and
2.) a layer of a plurality of preshaped filamentary abrasive particles having a substantially uniform cross-sectional shape adhered to said backing member by said maker coat, said abrasive particles each being of a substantially uniform cross-section with an aspect ratio of at least 1:1 and comprising sintered alpha alumina crystals.

5,185,013
SYSTEM OF CRACK REPAIR FOR BUILDING AND PAVING MATERIAL
Robert A. Martin, 220 Nedra Dr., Barboursville, W. Va. 25504
Filed Sep. 16, 1991, Ser. No. 760,337
Int. Cl.[5] B32B *3/26*
U.S. Cl. 52—514 **2 Claims**



1. The method of crack repair for building and paving material, comprising the steps of:
a. lowering the original surface in the area surrounding the crack to a depth sufficient to effect repair of the surface without changing the elevation or attitude of the original surface, and
b cleaning and filling said crack with a crack filling material, and
c. applying a flexible fabric bridging material containing an adhesive which adheres to said crack filling material and said existing building or paving material and which has a glazed upper surface with a low coeffecient of friction which discourages bonding with additional repair materials which will be placed above said bridging material, and
d. application of an initial overlay material over said bridging materail, and
e. embedment of a reinforcement material within said initial overlay material, and
f. application of a second layer of overlay material over said initial overlay natural in an amount sufficient to bring the new surface flush with said original surrounding surface.

5,185,014
MEMBRANE OXYGEN PROCESS AND SYSTEM
Ravi Prasad, East Amherst, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.
Filed Nov. 5, 1991, Ser. No. 787,953
Int. Cl.[5] B01D *53/22, 63/04*
U.S. Cl. 55—16 **18 Claims**



1. An improved membrane process for the production of oxygen from air comprising:
(a) introducing all or a portion of feed air to a discharge end of a second stage of a two stage membrane system as purge gas on a permeate side thereof;
(b) passing purge gas and permeate gas removed from the permeate side of said second stage to a feed end of the first stage of the two stage membrane system as feed gas therefor;
(c) passing said feed gas through the first stage of the membrane system on a feed side thereof;
(d) recovering oxygen product gas from a permeate side of said first stage;
(e) introducing retentate gas from the first stage to the second stage of the membrane system for passage therethrough in a countercurrent flow pattern with respect to the flow of purge gas and permeate gas on the permeate side of said second stage, the flow ratio of the first stage permeate flow to the feed air flow to the membrane system being in the range of from about 0.5 to about 30%; and
(f) discharging retentate gas from the permeate side of the second stage at a discharge end thereof; whereby the use of feed air as purge gas for the second stage of the membrane system increases the amount of oxygen permeating the second stage, thereby enhancing the oxygen enrichment of the feed to the first stage and the energy efficiency of the overall air separation process.

5,185,015
FILTER APPARATUS
Bruce R. Searle, 7814 Amity Rd., Amity, Oreg. 97101-2410
Filed Mar. 18, 1991, Ser. No. 671,127
Int. Cl.[5] B03C *3/38*
U.S. Cl. 55—102 **1 Claim**

1. Filter apparatus for removing contaminants from air, comprising:
a housing wall that is generally annular in section and has first and second opposite ends, said housing wall bounding a filter chamber and being formed with an inlet opening at said first end thereof,
a cover attached to the housing wall at said second end thereof and formed with an outlet opening.

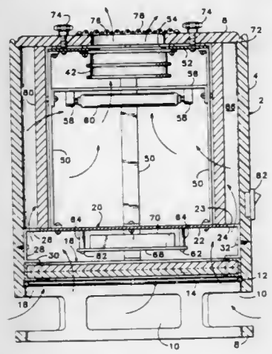
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impeller means for maintaining a flow of air through the filter chamber from the inlet opening to the outlet opening,

a generally circular porous filter pad located inside the filter chamber so that air flowing along the axis of the housing wall from said one end of the housing wall to said opposite end thereof passes through the filter pad, whereby particles greater than a predetermined size are removed from air entering the filter chamber by way of the inlet opening, the filter pad being made of electrically insulating material such that when air passes through the pad, friction between the air and the insulating material generates a strong electrostatic charge that attracts and retains airborne particles,

a drum filter support plate mounted in the filter chamber between the porous filter pad and the cover,

a drum filter mounted in the filter chamber coaxially therewith and engaging the cover and the drum filter support plate, an annular space being defined between the drum



filter and the internal surface of the housing wall and the drum filter defining a second chamber that is in communication with the outlet opening so that air flowing from the inlet opening to the outlet opening passes through the porous filter pad to said annular space and passes from said annular space to said second chamber through the drum filter, the drum filter comprising first, second and third porous webs through which air flowing from the inlet opening to the outlet opening passes sequentially, the first and third webs being impregnated with activated charcoal and the second web being impregnated with molecular sieve material, whereby the drum filter removes selected molecular species from air that has passed through the porous filter pad in the direction from the inlet opening to the outlet opening,

a lamp located in said second chamber, said lamp, when energized, emitting light at a wavelength within the range from about 253 nm to about 257 nm, whereby air in said second chamber is irradiated with ultraviolet light, and

a power supply circuit for energizing the lamp.

5,185,016
WASTE GAS SCRUBBER

William J. Carr, San Jose, Calif., assignor to Ecoloteck, Inc., San Jose, Calif.

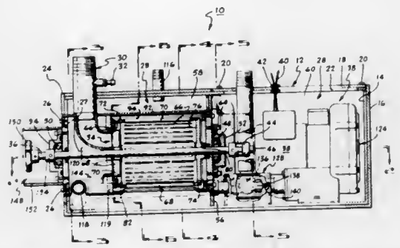
Filed Oct. 16, 1991, Ser. No. 778,466
Int. Cl.[5] B01D *47/16*
U.S. Cl. 55—230 **17 Claims**

1. A waste gas scrubber utilizing a liquid body comprising:

a. an enclosure forming a chamber therewithin, said chamber containing the body of liquid; said chamber including a waste gas inlet,

b. a rotatable member rotating within said chamber, said rotatable member including means for creating turbulent gas flow about the periphery of said rotatable member,

c. a stator at least partially surrounding said rotatable member and forming a channel therebetween, said stator channel including a first opening communicating with the body of liquid, said channel first opening further permitting liquid to pass into contact with said periphery of said rotatable member at said channel between said stator and



said rotatable member, said channel further including a second opening to said chamber; and

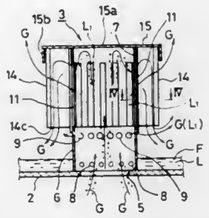
d. means for delivering the waste gas to said means for creating gas flow about the rotatable member within said channel for contact with said liquid and for forming a liquid and gas fluid thereat,

e. a gas outlet from said chamber, said outlet receiving gas exiting said channel through said second opening.

5,185,017
GAS-LIQUID CONTACT APPARATUS

Shogo Tanigawa; Takeshi Yokoyama, both of Tamano, and Yoshikazu Izawa, Tokyo, all of Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Filed Apr. 8, 1992, Ser. No. 864,718
Claims priority, application Japan, Apr. 15, 1991, 3-082407
Int. Cl.[5] B01F *5/00*
U.S. Cl. 55—257.2 **1 Claim**

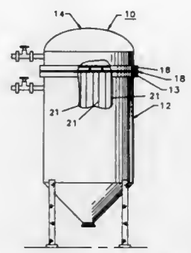


1. A gas-liquid contact apparatus of the type wherein perforated trays are disposed in the form of column plates inside a column, the hole portion of each of said trays is covered with a cap having a cover but not a bottom and equipped with a large number of openings at the side portion, a large number of guide blades are disposed radially outside the side portion of said cap, a liquid pocket is defined at the tip of each of said guide blades and a large number of outflow ports positioned below the liquid surface of the liquid held on said tray are disposed at the side portion of said cap, characterized in that a large number of side holes positioned between the lower end of said guide blades and the liquid surface on said trays are disposed at the side portion of said cap.

5,185,018
STRUCTURAL FIBROSICS

Elizabeth S. Zievers, and James F. Zievers, both of 1240 Carriage La., Lagrange, Ill. 60525

Filed Nov. 4, 1991, Ser. No. 787,243
Int. Cl.[5] B01D *46/24;* **C04B** *41/50*
U.S. Cl. 55—341.1 **2 Claims**



1. A filter element for removing entrained particulates from a high temperature gas, comprising in combination

a plurality of thin porous members formed of ceramic fibers bonded together into an integral member,

a first plurality of tubular structural members disposed against one side of one of said thin porous members and bonded thereto,

said tubular structural members being rectilinear and extending in mutually parallel relationship,

a second plurality of tubular structural members disposed against the other side of said one of said thin porous members and bonded thereto,

said second plurality of tubular members being in mutual parallel relationship and extending orthogonally with respect to said first plurality of tubular structural members,

said tubular structural members being formed by vacuum forming a skeletal base of randomly oriented ceramic fibers and a liquid ceramic binder,

heat drying said base to bond said fibers together,

then immersing said base in a liquid ceramic bath,

removing said base from said bath,

then heat treating said base to provide a substantially rigid member, and

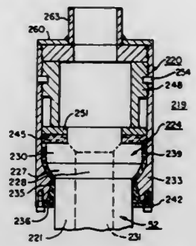
then depositing on an external surface of said rigid member a coating of ceramic material in a chemical deposition process.

5,185,019
FILTERING APPARATUS

Gaurang B. Haldipur, Monroeville, and William J. Dilmore, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 600,953, Oct. 22, 1990, Pat. No. 5,143,530.
This application Apr. 9, 1992, Ser. No. 865,545
Int. Cl.[5] B01D *46/00*
U.S. Cl. 55—378 **5 Claims**

1. A filter tube assembly for filtering apparatus for separating particulate from a gas stream, the gas from said gas stream being under high temperature and also under high pressure; said filter tube assembly including: a filter tube having an annular elongated section terminating in a laterally expanded annular head having an outer surface tapering outwardly from said elongated section and terminating in a cylindrical surface; a housing for said head; gasket means in said housing enclosing said head and at least in part interposed between the outer surface of said head and said housing for compressing said gasket means; said gasket means accommodating said filter tube to the conditions existing in said gas; said gasket means being structured and shaped to match the outer surface of said

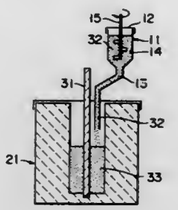


head of said filter tube and the inner surface of said housing being shaped to match the outer surface of said gasket means.

5,185,020
METHOD FOR MANUFACTURING A SILICA-BASE MATERIAL FOR OPTICAL FIBER

Tsuguo Satoh; Takayuki Morikawa; Hiroshi Hihara; Takeshi Yagi, and Kazuaki Yoshida, all of Tokyo, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1991, Ser. No. 749,900
Claims priority, application Japan, Aug. 27, 1990, 2-224732; Apr. 23, 1991, 3-92028; Apr. 25, 1991, 3-122695; Apr. 25, 1991, 3-122752
Int. Cl.[5] C03B *37/01, 19/06*
U.S. Cl. 65—3.11 **8 Claims**



1. A slip casting method for manufacturing a silica-base material for optical fibers, comprising the steps of:

inserting a silica-based rod into a hollow molding space of a mold having one of a water absorbing property and a dehydrating property;

said silica-based rod forming one of:

(a) a core of an optical fiber to be formed; and

(b) a core and a partial cladding of an optical fiber to be formed;

pouring a slurry, obtained by dispersing a silica glass powder material in a quantity of pure water, into the hollow molding space of the mold between the silica-based rod as the inner surface of the hollow molding space of the mold, and forming a porous glass body around the silica-based rod as the water in the slurry is removed by one of the water absorbing and the dehydrating property of the mold.

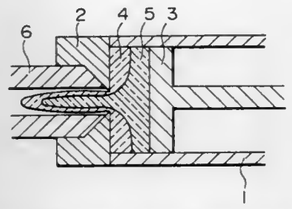
VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,021

METHOD OF MANUFACTURING PREFORM FOR NONOXIDE GLASS FIBER

Kiyotaka Miura, Asa, and Toshiharu Yamashita, Hachioji, both of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Sep. 24, 1990, Ser. No. 587,946
Claims priority, application Japan, Sep. 29, 1989, 1-254846
Int. Cl.[5] C03B *37/023*
U.S. Cl. 65—3.11 **29 Claims**



1. A method of manufacturing a preform for a nonoxide glass fiber, comprising the steps of:

preparing an extrusion apparatus comprising a cylinder, a molding section mounted to a forward end of said cylinder, said molding section having a molding nozzle, an extrusion punch inserted in said cylinder for sliding movement, and a liner connected to said molding nozzle in said molding section;

preparing a cladding glass preform having end faces extending substantially in parallel relation to each other, and at least one of said end faces being polished to such an extent that it is in optical contact with a core glass preform;

preparing the core glass preform having end faces extending substantially in parallel relation to each other, and at least one of said end faces of said core glass material being polished to such an extent that it is in optical contact with the cladding glass preform;

placing said cladding glass preform and said core glass preform in said cylinder of said extrusion apparatus such that the polished end face of said cladding glass preform and the polished end face of said core glass material preform are in contact with each other and such that said cladding glass preform is located adjacent said molding section of said extrusion apparatus;

heating said cladding glass preform and said core glass preform to a temperature between a high sag temperature and a low crystalline start temperature of respective preforms;

pushing said extrusion punch to extrude said cladding glass preform and said core glass preform through said molding nozzle in said molding section while said cladding glass preform and said core glass preform are in fusible contact with each other, thereby forming said preform with a core and cladding structure; and

cooling said preform gradually within said liner connected to said molding section.

5,185,022

MOULD ASSEMBLY FOR BENDING DIFFICULT BENDING SHAPES IN A GLASS SHEET

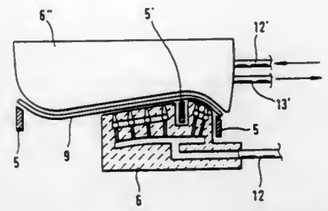
Esko O. Lehto, Kangasala, and Jukka H. Vehmas, Tampere, both of Finland, assignors to Tamglass Engineering OY, Tampere, Finland

Division of Ser. No. 572,012, Aug. 24, 1990, Pat. No. 5,078,770.
This application Nov. 8, 1991, Ser. No. 789,334
Claims priority, application Finland, Mar. 30, 1990, 901603
The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.
Int. Cl.[5] C03B *23/023*
U.S. Cl. 65—182.200 **11 Claims**

1. A bending mould assembly for bending a glass sheet into a shape having at least one bending line comprising:

an outline mould frame for supporting said glass sheet, said outline mould frame having a contour which is complementary to a final bending shape of said glass sheet;

a non-engaging lower partial surface mould positioned below said glass sheet, said lower partial surface mould having a shaping surface complementary to said final bending shape of said glass sheet, said lower partial surface mould having a surface area no more than 50% of the total surface area of said glass sheet;



said lower partial surface mould including blasting means for heating and supporting at least a portion of said glass sheet with hot gas, said blasting means including a plurality of blasting orifices connected to each other through an intramould distribution manifold.

5,185,023

PROCESS FOR THE PRODUCTION OF MELLEIN AND 4-HYDROXYMELLEIN

Roger S. Webb, Rte. 1, Box 281-38, Micanopy, Fla. 32667

Filed May 10, 1991, Ser. No. 698,517
Int. Cl.[5] A01N *63/04*
U.S. Cl. 504—117 **8 Claims**

1. A process for controlling Melaleuca trees, said process comprising administering a lethal amount of a composition comprising a phytotoxin-producing fungus of the genus Botryosphaeria to said Melaleuca.

5,185,024

APPLICATION OF AGRICULTURAL POLYAMMONIUM ACRYLATE OR POLYACRYLAMIDE HYDROGELS

Sidney R. Siemer, Fresno, Calif.; Louis L. Wood, Rockville, and Gary J. Calton, Elkridge, both of Md., assignors to Aqua Source Inc., Elkridge, Md.

Filed Oct. 24, 1991, Ser. No. 782,330
Int. Cl.[5] A01N *25/04;* **C05G** *3/04*
U.S. Cl. 504—116 **5 Claims**

1. The method of applying poly(ammonium acrylate) or polyacrylamide hydrogels to agricultural soils or crops comprising the steps:

1. forming a water-insoluble rigid hydrogel by cross-linking a polymer comprising poly(ammonium acrylate) or polyacrylamide,
2. reducing the rigid hydrogel particle size to about 1 mm to about 2 cm in diameter,
3. hydrating the hydrogel particles to about 85–99% by weight water, and
4. applying the hydrated hydrogel particles by spraying.

5,185,025

SUBSTITUTED PYRAZOLES AND THEIR USE AS HERBICIDES

Kurt Moedritzer, Webster Groves, and Michael D. Rogers, Maryland Heights, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 273,534, Nov. 21, 1988, abandoned. This application Oct. 13, 1989, Ser. No. 418,791
Int. Cl.[5] C07D *231/20;* **A01N** *43/56*
U.S. Cl. 504—282 **3 Claims**

1. A 3-phenoxypyrazole or agronomically acceptable salt

thereof wherein: the phenyl ring has a para halo or cyano substituent and has a meta substituent having a molecular weight of less than 300 and selected from alkoxy, haloalkoxy, di(alkoxy), alkoxycarbonyl, alkoxycarbonylalkoxy, aminocarbonylalkoxy, alkylsulfonylaminocarbonylalkoxy, alkylamino, hydroxyalkylamino, alkoxyamino, alkoxyalkylamino, hydroxycarbonylalkylamino, and alkoxycarbonylalkoxyimino; and the pyrazole ring has a methyl, ethyl, halomethyl or haloethyl substituent in the 1-position; a halo or methyl substituent in the 4-position; and a chloro, cyano, halomethyl, haloethyl, methylthio, ethylthio, methylsulfinyl, ethylsulfinyl, methylsulfonyl, ethylsulfonyl or methoxymethyl substituent in the 5-position.

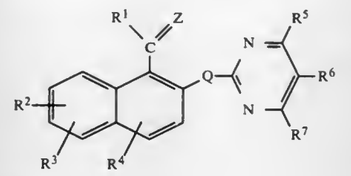
5,185,026

HERBICIDAL NAPHTHALENE DERIVATIVES

Mark W. Drewes, Langenfeld; Michael Haug; Klaus Lürssen, both of Bergisch Gladbach; Hans-Joachim Santel, Leverkusen, and Robert R. Schmidt, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 4, 1991, Ser. No. 680,495
Claims priority, application Fed. Rep. of Germany, Apr. 11, 1990, 4011696; Oct. 24, 1990, 4033808
Int. Cl.[5] A01N *43/54;* **C07D** *239/60, 405/06, 239/28*
U.S. Cl. 504—225 **9 Claims**

1. A naphthalene derivative of the formula



in which

Q represents oxygen,

R^1 represents hydrogen,

R^2, R^3 and R^4 represent hydrogen, halogen or methoxy,

R^5 represents hydrogen, chlorine, methyl, ethyl, trifluoromethyl, methoxymethyl, methoxy, ethoxy, difluoromethoxy, methylthio, methylamino, ethylamino or dimethylamino,

R^6 represents hydrogen, chlorine, methyl or methoxy,

R^7 represents hydrogen, chlorine, methyl, ethyl, trifluoromethyl, methoxy, ethoxy, difluoromethoxy, methylthio, methylamino, ethylamino or dimethylamino,

Z represents N—R^8 or t,0480

R^8 represents hydrogen, amino or carbamoylamino, or represents methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, sec-butyl, tert-butyl, allyl, propargyl, methylamino, ethylamino, n-propylamino, isopropylamino, n-butylamino, isobutylamino, sec-butylamino, tert-butylamino, dimethylamino, acetylamino, propionylamino, methoxycarbonylamino, ethoxycarbonylamino, methylsulphonylamino or ethylsulphonylamino, or represents phenyl, benzyl, phenylamino, diphenylamino, benzylamino, N-methyl-N-phenylamino, pyridylamino, pyrimidylamino, quinolylamino, pyridylcarbonylamino, phenylcarbonylamino, furylcarbonylamino, thienylcarbonylamino or phenylsulphonylamino each of which is optionally substituted by nitro, hydroxyl, cyano, carboxyl, fluorine, chlorine, bromine, methyl, trifluoromethyl, methoxy, trifluoromethoxy, methylthio or trifluoromethylthio,

R^9 represents hydrogen, fluorine, chlorine, cyano, carboxyl, C_1–C_4-alkoxycarbonyl or C_1–C_4-alkylcarbonylamino, and

R^{10} represents formyl, cyano, carboxyl or hydroxymethyl, or

R^{10} together with R^9 represents —CO—O—CH_2CH_2—.

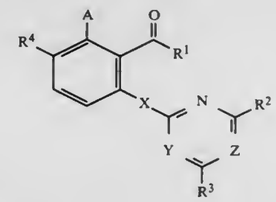
5,185,027

SALICYLALDEHYDE DERIVATIVES AND SALICYCLIC ACID DERIVATIVES AND THEIR SULFUR ANALOGS, AND THEIR USE AS HERBICIDES AND BIOREGULATORS

Uwe J. Vogelbacher, Ludwigshafen; Karl Eicken, Wachenheim; Joachim Rheinheimer, Ludwigshafen; Norbert Goetz, Worms; Albrecht Harreus; Gerhard Paul, both of Ludwigshafen; Karl-Otto Westphalen, Speyer, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 537,129, Jun. 13, 1990, Pat. No. 5,085,686.
This application Nov. 7, 1991, Ser. No. 788,859
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1989, 3919435
Int. Cl.[5] C07D *251/26, 251/20;* **A01N** *43/66*
U.S. Cl. 504—219 **15 Claims**

1. A compound of the formula I



I

where

R^1 is hydrogen;

succinyliminooxy;

a 5-membered heteroaromatic radical selected from the group consisting of pyrrolyl, pyrazolyl, imidazolyl and triazolyl which may carry from one to four halogen atoms and/or one or two of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and-/or C_1–C_4-alkylthio;

a radical —OR^5 or a radical ON—CR^6R^7, where

R^5 is hydrogen, an alkali metal cation, one equivalent of an alkaline earth metal cation or an organic ammonium ion;

C_3–C_{12}-cycloalkyl which may carry from one to three C_1–C_4-alkyl radicals;

C_1–C_{10}-alkyl which may carry from one to five halogen atoms and carries one of the following radicals: a 5-membered heteroaromatic radical selected from the group consisting of pyrrolyl, pyrazolyl, imidazolyl and triazolyl which may carry from one to four halogen atoms and/or one or two of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and/or C_1–C_4-alkylthio; C_2–C_6-alkyl which carries one of the following radicals in the 2-position: C_1–C_6-alkoxyimino, C_3–C_6-alkenyloxyimino, C_3–C_6-haloalkenyloxyimino or benzyloxyimino, C_3–C_6-alkenyl or C_3–C_6-alkynyl, where these groups may in turn carry from one to five halogen atoms; phenyl which is unsubstituted or monosubstituted to trisubstituted by C_1–C_4-alkyl or by C_1–C_4-alkoxy or monosubstituted to pentasubstituted by halogen; R^6 and R^7 are each C_1–C_{20}-alkyl which may carry phenyl, C_1–C_4-alkoxy and/or C_1–C_4-alkylthio, or are each phenyl or together form a C_3–C_{12}-alkylene chain which may carry from one to three C_1–C_3-alkyl groups;

R^2 and R^3 are each C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy and/or C_1–C_4-alkylthio;

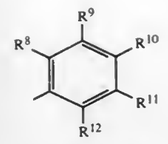
X is oxygen or sulfur;

Y and Z are each nitrogen;

R^4 is hydrogen, halogen, C_1–C_4-alkyl, cyano or C_1–C_4-haloalkyl;

A is an unsubstituted or monosubstituted to trisubstituted, or with halogen as substituent, monosubstituted to pentasubstituted phenyl radical

VOL
1147
ISS
2
FE
9
1993
UMI



where R^8 ro R^{12} are each hydrogen, halogen, cyano or nitro;

C_3–C_6-alkenyl, C_3–C_6-alkenyloxy, C_3–C_6-alkynyloxy or C_3–C_6-alkynyl, where these groups may in turn carry from one to five halogen atoms;

di-C_1–C_4-alkylamino or C_3–C_8-cycloalkyl which may carry from one to three C_1–C_4-alkyl radicals;

C_1–C_{10}-alkoxycarbonyl or C_1–C_4-alkylthio; phenoxy, where the aromatic radical may carry from one to five halogen atoms and/or from one to three of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl; C_1–C_4-haloalkoxy, C_1–C_4-alkoxy or C_1–C_4-alkylthio; and C_1–C_{10}-alkyl or alkoxy which may carry from one to five halogen atoms and/or one of the following radicals: C_1–C_4-alkoxy, C_1–C_4-alkylthio, phenyl or phenoxy, where the aromatic radicals may in turn carry from one to five halogen atoms and/or from one to three of the following radicals: C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy or C_1–C_4-alkylthio;

or A is a 5-membered heteroaromatic radical selected from the group consisting of pyrazol-1-yl, 4-methylpyrazol-1-yl, 3,5-dimethylpyrazol-1-yl, 3,4,5-trimethylpyrazol-1-yl, 4-chloropyrazol-1-yl, 4-phenylpyrazol-1-yl, 4-isopropylpyrazol-1-yl, 4-nitropyrazol-1-yl, imidazol-1-yl, 4,5-dimethylimidazolyl, 2-methyl-4,5-dichloroimidazolyl, 4(5)-nitroimidazol-1-yl, [1,2,4]-triazol-1-yl, 3(5)-methyl-[1,2,4]-triazol-1-yl [1,2,3]-triazol-1-yl, 4,5-dimethyl-[1,2,3]-triazol-1-yl, [1,2,3,4]-tetrazol-1-yl, 1-methylpyrazol-4-yl, 1-phenylpyrazol-4-yl, 1,3,5-trimethylpyrazol-4-yl, 1-methylpyrazol-5-yl, 1-phenylpyrazol-5-yl, 1-methylpyrazol-3-yl, 1-phenylpyrazol-3-yl, 1-methylimidazol-2-yl, 1-methylimidazol-5-yl, 1-phenylimidazol-5-yl, 1-phenyl[1,2,3]-triazol-4-yl, isoxazol-5-yl, isoxazol-4-yl, 3-methylisoxazol-5-yl, 3-isopropyl-isoxazol-5-yl, 3-phenylisoxazol-5-yl, oxazol-2-yl, 2-methyloxazol-4-yl, thiazol-4-yl, 2-benzthiazol-4-yl, 4-methylthiazol-2-yl, 4-methylthiazol-5-yl, 4-phenylthiazol-2-yl and phenylthiazol-5-yl; thienyl which may carry from one to three halogen atoms and/or from one to three of the following radicals:

C_1–C_4-alkyl, C_1- or C_2-haloalkyl or nitro; pyridyl which may carry from one to three halogen atoms and/or from one to three of the following radicals:

C_1–C_4-alkyl, C_1- or C_2-haloalkyl or nitro; a naphthyl, quinolyl, indazolyl or benzotriazolyl radical, each of which may carry from one to three halogen atoms and/or from one to three of the following radicals:

C_1–C_4-alkyl or C_1- or C_2-haloalkyl,

and environmentally compatible salts of the compounds I.

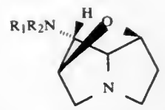
5,185,028

N-ACYL LOLINE DERIVATIVES AS INSECTICIDES AND HERBICIDES

Richard G. Powell, and Richard J. Petroski, both of Peoria, Ill., assignors to The United States of America, as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 19, 1991, Ser. No. 747,220
Int. Cl.[5] C07D *491/18;* A01N *43/90*
U.S. Cl. 504—284 **32 Claims**

1. Compounds of the formula



wherein R_1 is a C_6 to C_{20} aliphatic, aromatic, or alicyclic hydrocarbon optionally substituted with oxygen, and R_2 is H, or an aliphatic, aromatic, or alicyclic hydrocarbon optionally substituted with oxygen.

5,185,029

METHOD FOR INDUCING RESISTANCE IN PLANTS USING ENVIRONMENTALLY SAFE ANTIOXIDANTS

Dale M. Norris, 101 S. Rock Rd., Madison, Wis. 53705

Continuation of Ser. No. 205,157, Jun. 10, 1988, Pat. No. 5,004,493. This application Apr. 1, 1991, Ser. No. 678,074
Int. Cl.[5] A01N *37/44*
U.S. Cl. 504—320 **2 Claims**

1. A method for increasing the resistance of a plant to pests or pathogens comprising the step of administering to the surface of said plant an amount of one or more environmentally safe antioxidants effective to induce said resistance, said environmentally safe antioxidants being reduced glutathiones and cysteines.

5,185,030

METHOD FOR PRODUCING EXTRAFINE PURE METAL POWDER

Michael J. Miller; James N. Christini, both of Towanda, and Eric F. Husted, Ulster, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Dec. 20, 1991, Ser. No. 811,274
Int. Cl.[5] B22F *1/00*
U.S. Cl. 75—359 **6 Claims**

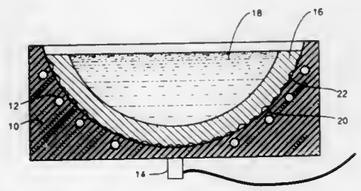
1. A method of producing extrafine pure elemental metal powder from a starting material consisting of a highly malleable pure elemental metal powder, comprising the steps of: oxidizing said highly malieable pure elemental metal powder, grinding the resulting oxide, reducing the ground oxide in a reducing atmosphere to obtain a pure elemental metal powder, the steps of oxidizing, grinding and reducing having the effect of decreasing the average particle size while increasing the particle size distribution of said pure elemental metal powder, and sieving said pure elemental metal powder to obtain the desired fraction of said extrafine pure elemental metal powder.

5,185,031

DEVICE AND METHOD FOR SKULL-MELTING DEPTH MEASUREMENT

Robert J. Lauf, and Richard L. Heestand, both of Oak Ridge, Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Dec. 31, 1991, Ser. No. 815,465
Int. Cl.[5] C22B *4/00*
U.S. Cl. 75—375 **26 Claims**



22. A method of skull-melting comprising the steps of:

a. providing a vessel adapted for a skull-melting process, said vessel having an interior, said vessel having an underside, said vessel having an orifice in communication with said interior and said underside;

b. disposing a waveguide in said orifice so that said waveguide protrudes sufficiently into said interior to interact with said skull-melting process;

c. providing a signal energy transducer in signal communication with said waveguide;

d. introducing into said vessel a molten working material;

e. carrying out said skull-melting process so that a solidified skull of said working material is formed, said skull and said vessel having an interface therebetween, said skull becoming fused to said waveguide so that signal energy can be transmitted through said waveguide and said skull without interference from said interface;

f. activating said signal energy transducer so that a signal is propagated through said waveguide; and,

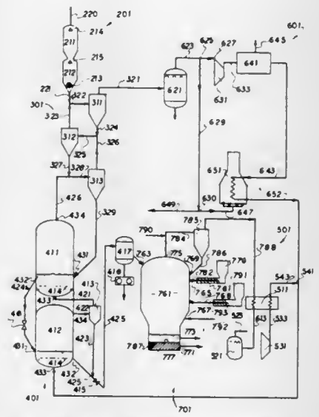
g. controlling at least one variable of said skull-melting process utilizing feedback information derived from said propagated signal energy.

5,185,032

PROCESS FOR FLUIDIZED BED DIRECT STEELMAKING

Roy H. Whipp, Miami, Fla., assignor to Fior de Venezuela, Pto. Ordaz, Venezuela

Filed May 26, 1992, Ser. No. 887,830
Int. Cl.[5] C21B *1/10*
U.S. Cl. 75—436 **7 Claims**



1. A process for direct steelmaking from raw iron ore fines under ¼" diameter in a steelmaking plant including an ore feed assembly, a multi-stage fluid bed reactor assembly including a preheat assembly, a gasifier/smelter assembly, a reducing gas preparation assembly, and a recycle gas assembly, comprising:

a) continuously charging raw iron ore fines at a pre-determined ore feed rate into said preheat assembly by cycling pressurized lockhoppers in said ore feed assembly;

b) heating said fines in said preheat assembly by sensible heat of hot reducing offgas exiting said reactor assembly;

c) maintaining said reactor assembly in a pressurized state of at least 5 atmospheres;

d) fluidizing said fines in said reactor assembly and producing a 90% minimum metallized product by

i) developing a pair of stacked, pressurized beds of iron ore by utilizing gravity to pour iron ore fines downward into an upper vessel creating an upper bed and passing overflow iron ore fines to a lower vessel creating a lower bed; and,

ii) fluidizing said beds by passing a product reducing gas upward through each of said beds from said lower bed to said upper bed; and

iii) removing oxygen from said fines by continuously passing said preheated ore charge by overflow through each of said beds from said upper bed to said lower bed gravimetrically;

e) directing reduced iron ore fines by pneumatic transport to a surge drum for feeding into a smelter and a briquetting machine for compacting into briquettes, either separately or concurrently;

f) charging part of the hot, reduced ore from the surge drum into the top of the gasifier/smelter vessel;

g) further reducing and heating said hot, reduced ore as the ore fall through exiting gases flowing upward through the upper part of the gasifier/smelter vessel where heat and reducing gas are produced from the partial oxidation of coal and the reduction of the remaining oxides in the ore;

h) charging coal and fluxes to the gasifier by screw feeders and blowing oxygen in through tuyeres around the periphery of the gasifier/smelter vessel;

i) dropping the melted, reduced ore into the bath of the smelter where impurities contained in the ore float to the metal surface forming a slag layer;

j) intermittently or continuously discharging the hot metal and slag through tapping points in the vessel;

k) separating the hot metal from the slag and transferring the hot metal to a refining assembly for final treatment.

l) compacting part of the reduced iron ore fines to a product which is passive and easy to store and transport.

5,185,033

GEL-FREE PAINT CONTAINING COPPER PYRITHIONE OR PYRITHIONE DISULFIDE PLUS CUPROUS OXIDE

Rahim Hani, Cheshire; Craig Waldron, Waterbury, and Douglas A. Farmer, Jr., Madison, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Sep. 1, 1992, Ser. No. 938,962
Int. Cl.[5] C09D *5/14*
U.S. Cl. 106—18.33 **10 Claims**

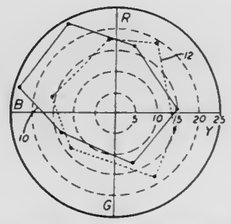
1. A paint or paint base composition characterized by enhanced biocidal efficacy and gellation resistance wherein the paint or paint base contains a biocide consisting essentially of cuprous oxide and copper pyrithione or pyrithione disulfide, or a combination thereof.

5,185,034

INK-JET INKS WITH IMPROVED COLORS AND PLAIN PAPER CAPACITY

Steven L. Webb, Temecula, Calif., and William D. Kappele, Loveland, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 749,740, Aug. 26, 1991, Pat. No. 5,143,547. This application May 1, 1992, Ser. No. 877,640
Int. Cl.[5] C09D *11/02*
U.S. Cl. 106—22 R **5 Claims**



4. A set of inks containing yellow, magenta, cyan, and black

VOL
1147
ISS
2
FE
9
1993
UMI

dyes for thermal ink-jet printers having at least 300 dpi print capability, said yellow ink having the formula

Acid Yellow 23	about 0.5 to 5.0 wt %
diethylene glycol	about 5 to 15 wt %
buffer	about 0.01 to 0.5 wt %
bactericide	about 0.1 to 1.0 wt %
water	balance,

the pH of said yellow ink being adjusted to a value within the range of about 5.5 to 8.5, said magenta ink having the formula

Direct Red 227	about 0.5 to 5.0 wt %
diethylene glycol	about 5 to 15 wt %
bactericide	about 0.1 to 1.0 wt %
water	balance,

said cyan ink having the formula

Acid Blue 9	about 0.5 to 5.0 wt %
diethylene glycol	about 5 to 15 wt %
bactericide	about 0.1 to 1.0 wt %
water	balance, and

said black ink having the formula

Food Black 2	about 0.5 to 5.0 wt %
diethylene glycol	about 5 to 15 wt %
buffer	about 0.01 to 0.5 wt %
bactericide	about 0.05 to 1.0 wt %
water	balance.

5,185,035

TRANSPARENT HOT MELT JET INK

Edward A. Brown, Kent; John P. N. Haxell, Bath, and Michael A. Cockett, Kent, all of Great Britain, assignors to Coates Electrographics Limited, United Kingdom

Continuation of Ser. No. 528,104, May 23, 1990, abandoned. This application Jul. 29, 1991, Ser. No. 737,928

Int. Cl.[5] C09D *11/12, 11/08, 11/06*

U.S. Cl. 106—31 R **14 Claims**

1. A transparent hot melt jet ink having a viscosity in the range from about 5 centipoise to about 100 centipoise in the temperature range from about 100° C. to about 130° C. comprising a coloring agent and thermoplastic vehicle for the coloring agent, a viscosity modifier which is different from the thermoplastic vehicle and which is normally nontransparent when solidified, and a transparentizing agent which is different from the vehicle and the viscosity modifier and is selected from a group consisting of a glycol ester of C_{18-35} fatty acids, glycerol esters of C_{18-36} fatty acids plus metal soaps, polyethylene waxes, synthetic paraffin waxes, long chain linear alcohols, microrystalline waxes and modified microcrystalline waxes and mixtures thereof wherein the transparentizing agent is present in an amount sufficient to provide a transparent film of reduced crystallinity when the ink is solidified.

5,185,036

SOLUBLE TELLURIUM COMPOSITIONS

Herbert J. Kaiser, St. Louis, Mo., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Jun. 27, 1991, Ser. No. 722,740

Int. Cl.[5] C08L *5/16*

U.S. Cl. 106—208 **10 Claims**

1. A composition comprising:

a) water;

b) at least about 0.00001%, by weight, based on the weight of a), of tellurium ions; and

c) an effective amount for the purpose of solubilizing and/or stabilizing tellurium ions of a cyclodextrin; wherein the molar ratio of said cyclodextrin to said tellurium ions is at least 10:1.

10. A composition comprising:

a) water;

b) at least about 0.00001%, by weight, based on the weight of a), of tellurium ions provided by a tellurium ion source selected from the group consisting of oxides of tellurium, telluric acid, tellurous acid, salts of telluric acid and salts of tellurous acid; and

c) an effective amount for the purpose of solubilizing and/or stabilizing said tellurium ions of a cyclodextrin.

5,185,037

PROCESS FOR THE PRODUCTION OF ORGANOSILICA SOL AND SURFACE TREATING AGENT CONTAINING SAME

Akira Kaijou, Sodegaura, Japan, assignor to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Aug. 30, 1990, Ser. No. 575,294

Claims priority, application Japan, Aug. 2, 1990, 2-205730

Int. Cl.[5] C09K *3/00*

U.S. Cl. 106—287.12 **9 Claims**

1. A process for the production of an organosilica sol, which comprises

(a) acidifying a silica sol;

(b) adding an organic solvent to the silica sol from (a) and subjecting the resultant mixture to an azeotropic dehydration;

(c) adding a higher alcohol to the silica sol to subject the resultant mixture from (b) to an esterification reaction, thereby to obtain an organosilica sol whose pH is in an acidic region and the silica surface of which is imparted with a hydrophobic nature; and

(d) treating the organosilica sol whose pH is in an acidic region with an alkali to increase the pH.

5,185,038

PASTELS CONTAINING FLUORESCENT PIGMENTS AND METHOD FOR PRODUCING THE SAME

Manabu Kamegawa, Osaka, Japan, assignor to Nouvel Laboratory, Ltd., Osaka, Japan

Filed Sep. 5, 1991, Ser. No. 754,999

Claims priority, application Japan, Sep. 5, 1990, 2-236118

Int. Cl.[5] C04B *14/00*

U.S. Cl. 106—416 **14 Claims**

1. A pastel which comprises a fluorescent pigment in an amount of 20–60% by weight, montmorillonite group minerals or clay mainly composed of montmorillonite group minerals as a first extender in an amount of 5–17% by weight, a second extender other than the first in an amount of 35–70% by weight, and a wetting agent in an amount of 0–6% by weight.

5,185,039

HYDRAULIC COMPOSITION

Tetsuo Hamaguchi, Chigasaki; Tsunehisa Ueda, Zushi, and Tadao Natsuume, Yokosuka, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Division of Ser. No. 249,248, Sep. 26, 1988, Pat. No. 4,883,535, which is a continuation of Ser. No. 50,338, May 18, 1987, abandoned. This application Jul. 20, 1989, Ser. No. 382,772

Claims priority, application Japan, May 20, 1986, 61-115635; Jul. 31, 1986, 61-181140; Jul. 31, 1986, 61-181141; Aug. 15, 1986, 61-191528; Sep. 30, 1986, 61-232779; Sep. 30, 1986, 61-232780

Int. Cl.[5] C04B *7/00*

U.S. Cl. 106—728 **7 Claims**

1. A process for producing a hardened product comprising: mixing

a hydraulic component,

an organic hydrogel holding 5 to 1000 times its own weight of water, and

optionally, aggregate, a reinforcing material selected from the group consisting of pulp fibers, glass fibers, rockwool, resin fibers, carbon fibers and metallic fibers, and other additives selected from the group consisting of binders, air-entraining agents, cement wetting dispersants, expanding agents, water-proofing agents, strength increasing agents, setting accelerators, setting retarders and thickeners together to form a hydraulic composition;

molding said hydraulic composition by pressurization under a pressure of at least 5 kg/cm^2 for at least 30 seconds, vibration or application of a centrifugal force; and

hardening said molded hydraulic composition.

5,185,040

APPARATUS FOR FORMING ELECTRODE ON ELECTRONIC COMPONENT

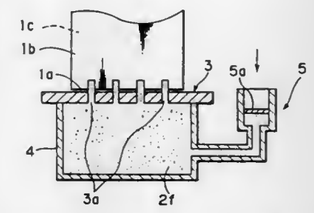
Norio Sakai; Kenji Minowa, and Shinji Morihiro, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Division of Ser. No. 452,755, Dec. 19, 1989, Pat. No. 5,091,212. This application Nov. 15, 1991, Ser. No. 792,941

Claims priority, application Japan, Dec. 19, 1988, 63-321629

Int. Cl.[5] B05C *5/02*

U.S. Cl. 118—406 **13 Claims**



1. An apparatus for forming an electrode having a given shape on an electronic component, comprising:

a container having an upper opening and providing a reservoir for storing electrode paste for forming an electrode having a given shape on an electronic component;

a slit plate provided with a through slit, said through slit having a shape corresponding to the given shape of the electrode to be formed, said slit plate being arranged to cover said upper opening of said container;

means for supplying electrode paste to said container through an inlet at a portion of said container away from said upper opening;

means for causing the pressure in the interior of said container to be higher than the pressure outside said container, thereby causing electrode paste to rise up through said through slit and out of said container causing electrode paste to be formed into an extruded paste body corresponding in shape to the given shape of the electrode to be formed; and

means for arranging an electronic component above said slit plate and extending across said through slit, thereby causing said extruded paste body to form an electrode having the given shape on the electronic component.

5,185,041

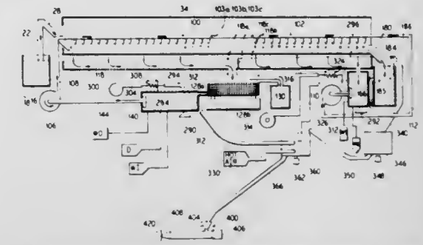
MACHINE FOR WASHING PLASTIC FRAGMENTS TO PREPARE THEM FOR RECYCLING

Robert M. Anderson, P.O. Box 174, Rover, Ark. 72860; John E. Vining, Sr., P.O. Box 158, Sondheimer, La. 71276, and Lloyd L. Patton, Sr., 100 Willow Glen Dr., Vicksburg, Miss. 39180

Division of Ser. No. 633,795, Dec. 26, 1990, abandoned. This application Dec. 19, 1991, Ser. No. 791,349

Int. Cl.[5] B08B *3/00, 3/04, 3/14*

U.S. Cl. 134—25.1 **9 Claims**



1. A method for washing paper and residue from a stream of fragments comprising the following steps:

providing a defined pathway having an inlet and outlet on opposite sides of its axis;

continuously loading fragments into said inlet;

revolving said pathway axially;

turning over said fragments residing in said pathway by said revolving, causing said fragments to rub against each other during turning over;

spraying wash water onto said fragments along a first distance within said pathway;

spraying rinse water directed at said fragments along a second distance within said pathway; and

removing washed fragments from said outlet.

5,185,042

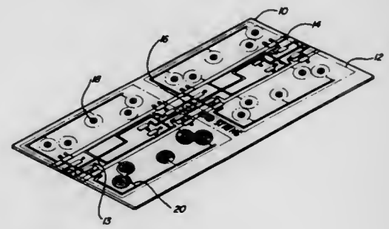
GENERIC SOLAR CELL ARRAY USING A PRINTED CIRCUIT SUBSTRATE

David L. Ferguson, Manhattan Beach, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Aug. 1, 1991, Ser. No. 739,594

Int. Cl.[5] H01L *31/05*

U.S. Cl. 136—244 **20 Claims**



1. A solar panel comprising:

a substrate;

a plurality of solar cells;

circuit means including a series of electrically conductive paths formed on the substrate for electrically connecting the solar cells together to form a solar electric power supply network; and

means for resiliently connecting the solar cells along one surface therof to the circuit means, said means for resiliently connecting including a multiplicity of electrically

VOL
1147
ISS
2
FE
9
1993
UMI

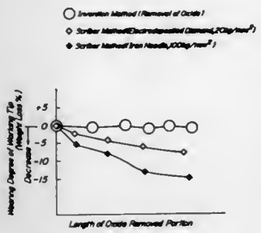
conductive interconnect pads being resiliently responsive to expansion and contraction of the substrate to maintain the integrity of the solar cell to circuit means connection.

5,185,043

METHOD FOR PRODUCING LOW IRON LOSS GRAIN ORIENTED SILICON STEEL SHEETS

Ujihiro Nishike; Shigeko Sujita, and Tsuneo Nagamine, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Japan

Continuation of Ser. No. 287,857, Dec. 21, 1988, abandoned.
This application Oct. 31, 1990, Ser. No. 609,007
Claims priority, application Japan, Dec. 26, 1987, 62-328420
Int. Cl.[5] H01F *1/04*
U.S. Cl. 148—111 **8 Claims**



1. A method of producing a low iron loss grain oriented silicon steel sheet from a silicon steel sheet having an oxide layer after secondary recrystallization annealing without substantial degradation of properties of said sheet when subjected to strain relief annealing, comprising the steps of:
(a) applying ultrasonic vibrations to a surface of said grain oriented silicon steel sheet after said secondary recrystallization annealing under conditions of limited pressure of not more than 40 kg/mm^2,
(b) controlling the application of said ultrasonic vibrations to locally remove portions of said oxide layer having a width of 10–1000 um in the form of lines of dots or linear forms parallel to each other at a spacing of 1–30 mm from the surface of the sheet without substantially forming newly recrystallized grain groups on said surface; and
(c) providing said ultrasonic vibration with a vibrating component effective in a direction perpendicular to said surface of the sheet,
said ultrasonic vibration having a frequency of not less than 20 kHz and an amplitude of not more than 50 um.

5,185,044

METHOD OF MAKING "DAMASCUS" BLADES

John D. Verhoeven, 2111 Graeber, Ames, Iowa 50010, and Alfred H. Pendray, Rte. 2, Box 1950, Williston, Fla. 32696

Filed Jan. 29, 1992, Ser. No. 827,401
Int. Cl.[5] C21D *9/42, 8/00*
U.S. Cl. 148—546 **13 Claims**



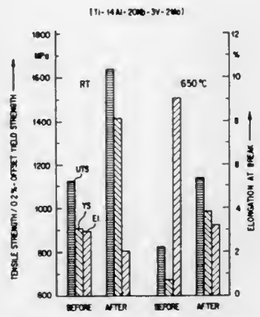
13. A method of making a steel article having a "Damascus" surface pattern and an internal "Damascus" microstructure, comprising the steps of:
a) solidifying a steel melt comprising about 1.0 to about 2.0 weight % carbon, about 0.02 to about 0.4 weight % Mn, about 0.02 to about 0.3 weight % Si, about 0.01 to about 0.04 weight % S and about 0.03 to about 0.15 weight % P, to form an ingot,
b) heating the ingot between about 1100° to about 1200° C. for a time at temperature of about 5 to about 12 hours in an oxidizing environment to form a decarburized malleable surface case on the ingot,
c) forging the ingot with said surface case thereon initially at an ingot temperature above the $A_{r\text{-}gr}$ temperature but below the liquidus temperature and then at an ingot temperature below the A_{cm} temperature, and
d) removing the surface case from the shaped ingot.

5,185,045

THERMOMECHANICAL PROCESS FOR TREATING TITANIUM ALUMINIDES BASED ON Ti_3AL

Manfred Peters, Bad Honnef; Karl-Josef Grundhoff, Troisdorf; Hartmut Schurmann, Neunkirchen Seelscheid, all of Fed. Rep. of Germany, and Yong-Tai Lee, Changwon, Rep. of Korea, assignors to Deutsche Forschungsanstalt für Luftund Raumfahrt e.V. Linder Höhe, Köln, Fed. Rep. of Germany

Filed Jul. 25, 1991, Ser. No. 735,958
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1990, 4023816
Int. Cl.[5] C22C *14/00*
U.S. Cl. 148—671 **9 Claims**



1. A process for thermomechanically treating Ti_3Al-based alloys comprising, in addition to titanium and aluminum as α phase-stabilizing element, niobium and further elements stabilizing the β phase in an amount of from 20 to 30% by weight, wherein the further elements stabilizing the β phase are present in an amount of at least 4% by weight to obtain an $(\alpha_2+\beta)$-titanium alloy having a tensile strength greater than about 1100 MPa, said process comprising
(a) preparing the alloys by melting or via the powder-metallurgical route,
(b) deforming at a temperature within the $(\alpha_2+\beta)$-phase area by more than 60% in one or more steps with stress-relief annealing without complete recrystallization effected between these steps,
(c) solution annealing the formed part for from 5 minutes to 120 minutes below the β-transus temperature of the alloy then,
(d) quenching, and
(e) subsequent ageing/stress-relief annealing at temperatures within the range of from 500° to 750° C. for from 0.5 to 24 hours.

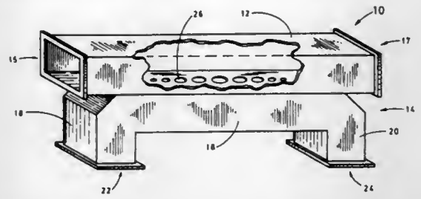
5,185,046

METHOD FOR NON-DESTRUCTIVE ESTIMATION OF WAVEGUIDE DIRECTIONAL COUPLER DIMENSIONS

Raul M. Perez, Pomona, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 22, 1991, Ser. No. 781,521
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—64 **13 Claims**

1. A method for estimating the size and location of couplings in a waveguide directional coupler, said method comprising the steps of:
placing an adhesive against the couplings; and



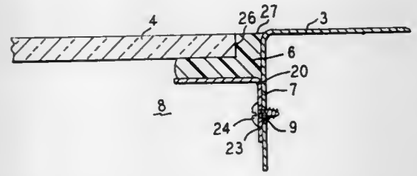
pouring a fine particulate substance into the waveguide coupler for adhering to the adhesive within the couplings.

5,185,047

FRAMELESS GLASS-CERAMIC COOKTOP MOUNTING ASSEMBLY

Keith Ray, Delaware Township, Delaware County, Ohio, assignor to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 444,719, Dec. 1, 1989, Pat. No. 5,036,831.
This application Jul. 1, 1991, Ser. No. 709,263
Int. Cl.[5] B32B *31/28;* **F24C** *15/10*
U.S. Cl. 156—242 **6 Claims**



1. A method for assembling a planar cooktop panel into a generally planar cooktop surface comprising the steps of:
applying a sealing material to a first surface of a unitary support ring;
placing the planar cooktop panel in contact with said sealing material;
placing said planar cooktop panel, unitary support ring and sealing material in a mold, allowing said sealing material to cure,
securing a second surface of said unitary support ring to a down-turning flange located about a periphery of an opening in a cooktop;
thereby securing said planar cooktop panel in said opening in said cooktop.

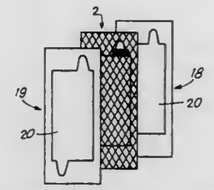
5,185,048

METHOD OF MANUFACTURING A SEPARATOR FRAME FOR A STACK IN AN EXCHANGER DEVICE

Gérard Guerif, Boissy Sous Saint Yon, France, assignor to Eurodia S.A., France

Filed May 10, 1991, Ser. No. 698,729
Claims priority, application France, May 15, 1990, 90 06594
Int. Cl.[5] B32B *3/00*
U.S. Cl. 156—256 **5 Claims**

1. A method of manufacturing a separator frame for stacking in an exchanger device, said frame including an impermeable seal frame having a central opening fluid flow orifices, two diffusers connecting the central opening to said orifices and peripheral seal planes, and at least one expanded structure occupying the central opening and the diffusers; said method comprising the steps of:
crushing a first expanded structure made of a thermoplastic material by applying hot compression to its entire area except a portion for said central opening;
forming cut-outs in the first expanded structure partially crushed, said cut-outs corresponding to the diffusers and lateral extension zones of the diffusers;
placing pieces of a second expanded structure in the location of the cut-outs thereby occupying the same, said pieces



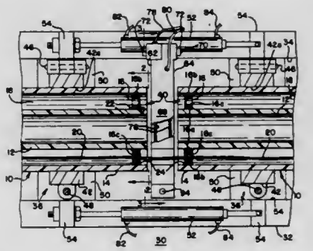
having crushed lateral tabs for occupying the lateral extension zones of the diffusers; and
assembling thermoplastic films having the shape of the seal plane with the first expanded structure being interposed therebetween;
wherein other cut-outs corresponding to the fluid flow orifices are formed either together with the diffuser cut-outs or after the assembling step.

5,185,049

APPARATUS FOR WELDING TOGETHER DUAL CONTAINMENT PIPE SECTIONS

Robert H. Bacon, Timonium, Md., assignor to Midwesco, Inc., Niles, Ill.

Filed May 23, 1991, Ser. No. 704,409
Int. Cl.[5] B29C *65/20*
U.S. Cl. 156—304.2 **10 Claims**



1. Apparatus for joining together abutting end faces of a pair of adjacent pipe sections end to end in a fluid containment system, each pipe section comprising an outer safety containment conduit mounted in outwardly surrounding, spaced apart concentric relation around an inner carrier conduit for containing any fluid leakage therefrom, at least one spacer extending between said inner carrier conduit and said outer containment conduit to define an annular containment space around said inner carrier conduit, said inner and outer conduits of each pipe section having coplanar end faces at opposite ends of said pipe section, and an elongated cable element in said containment pace, said cable elements in each of said adjacent pipe sections adapted to be interconnected together when said adjacent pair of pipe sections are joined together end to end to provide a continuous cable element extending along a string of end to end welded together pipe sections, said continuous cable element adapted for detecting the presence of leakage fluid from said inner carrier conduit in said containment space along said string of pipe sections, said apparatus comprising:
clamping means for securing each one of said pair of said adjacent pipe sections with coplanar end faces of both said

VOL 1147 ISS 2 FEB 9 1993 UMI

inner and outer conduits of each pipe section in coaxial alignment with the other ready for linear movement along a common axis toward and away from one another; and

heater means having a pair of oppositely facing parallel heating surfaces for simultaneously heating said end faces of said inner and outer conduits of each of said respective adjacent pipe sections to a welding temperature;

each of said oppositely facing heating surfaces formed by a pair of heating members pivotally interconnected at a point spaced away from said common axis and pivotal to open and close together into a heating position extending transversely of said pair of adjacent pipe sections between said end faces of said inner and outer conduits of each pipe section, said closed together heating members forming a pair of oppositely facing continuous planar parallel heating surfaces for contact heating of both of said pipe sections, said heating members pivotable, to move apart out of said heating position to a retracted position clear of said pair of adjacent pipe sections for permitting said clamping means to relatively move said adjacent pipe sections toward one another to weld said heated end faces together; and

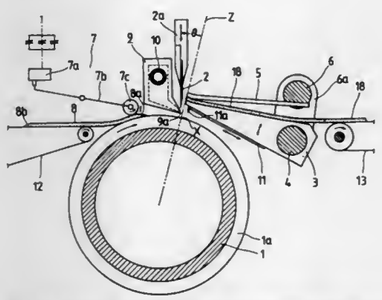
each of said heating members having a joint edge confronting a joint edge of the other member when said members are closed together in said heating position forming said continuous planar heating surface, at least one of said joint edges having an opening formed radially outwardly of said common axis of said pair of adjacent pipe sections and facing an opening in the joint edge in the other heating member when said heating members are closed together in said heating position, said joint edge openings positioned to be aligned in communication with the containment space of each of said pairs of adjacent pipe sections forming a passage through said closed together heating members for passing said cable element of at least one of said pair of adjacent pipe sections between said opposed heating surfaces abutting said end faces of said inner and outer conduits of said pair of adjacent pipe sections while said heating and welding thereof takes place.

5,185,050

APPARATUS FOR CUTTING OPPOSED IRREGULARLY SHAPED ENDS OF VENEERS AND BONDING THE VENEERS TOGETHER AT INCLINED END FACES THEREOF FORMED BY THE CUTTING OF THE OPPOSED IRREGULARLY SHAPED ENDS

Shinichi Sakamoto, Obbu; Kenichi Hiraiwa, Nagoya; Masaru Koike, Icbinomiya, and Yoshioki Nozawa, Nishio, all of Japan, assignors to Meinan Machinery Works, Inc., Obbu, Japan

Filed Nov. 21, 1991, Ser. No. 795,525
Claims priority, application Japan, Nov. 28, 1990, 2-331791
Int. Cl.[5] B29C *65/00*
U.S. Cl. 156—304.5 **6 Claims**



1. An apparatus for cutting opposed irregularly shaped ends of veneers to produce opposed inclined end faces thereof and for bonding the veneers together at the inclined end faces thereof, which comprises

(a) conveying means (**12**) for conveying a veneer (**8**) onto a first support means in such an orientation that the fibers of the veneer (**8**) extend in a direction perpendicular to a direction of conveyance thereof,

(b) a first support means for supporting the veneer (**8**) for a required period of time, including a time during which its front irregularly shaped end (**8***a*) is cut and the veneer (**8**) is bonded to a preceding veneer (**18**),

said first support means having a portion with which a cutter (**2**) engages when the cutter (**2**) has cut into the veneer (**8**),

(c) detecting means (**7**) for determining when a first predetermined portion of the veneer at which its front irregularly shaped end (**8***a*) is to be cut has come to a predetermined position upstream of a fixed position (X) on said first support means and for determining when a second predetermined portion of the veneer at which its rear irregularly shaped end (**8***b*) is to be cut has come to said predetermined position upstream of said fixed position (X),

(d) means for stopping the veneer when said first predetermined portion of the veneer has reached said fixed position (X) and for stopping the veneer when said second predetermined portion of the veneer has reached said fixed position (X),

(e) a cutter (**2**) for cutting the opposed irregularly shaped ends (**8***a*, **8***b*) of the veneer (**8**) when the veneer (**8**) is being supported on said first support means, thereby producing opposed inclined end faces of the veneer,

said cutter (**2**) being movable between a first position and a second position including said fixed position (X),

said cutter (**2**) being moved to said second position when said first predetermined portion of the veneer is in said fixed position (X) and when said second predetermined portion of the veneer is in said fixed position (X), thereby cutting the irregularly shaped ends (**8***a*, **8***b*) of the veneer,

(f) a second support means (**3**) for supporting the veneer (**8**) after its front irregularly shaped end (**8***a*) has been cut to form an inclined front end face (**19**) and this front end face (**19**) has been bonded to an inclined rear end face (**24**) of a preceding veneer (**18**) on said second support means,

said second support means (**3**) pivotable to bring the inclined rear end face (**24**) of the veneer (**18**) on said second support means (**3**) into contact with the inclined front end face (**19**) of the veneer (**8**) on said first support means,

(g) a veneer holder (**5**) provided in conjunction with said second support means (**3**) for pressing a rear end portion of the veneer (**18**) on said second support means (**3**) to hold and support the veneer (**18**) together with said second support means (**3**), and

(h) at least one fixed adhesive-material supply means (**9**) with plural outlets (**9***a*) from which is projected a sufficient amount of adhesive material (**20**) to bond together the inclined rear end face (**18**) of the veneer (**18**) on said second support means (**3**) and the inclined front end face (**19**) of the veneer (**8**) on said first support means,

said outlets (**9***a*) being spaced apart from each other in a direction perpendicular to the direction of conveyance of veneer (**8**),

wherein,

(i) said cutter (**2**) produces an end face of a veneer inclining from an upper edge (**21**) to a lower edge (**22**) a little ahead of said upper edge (**21**), and

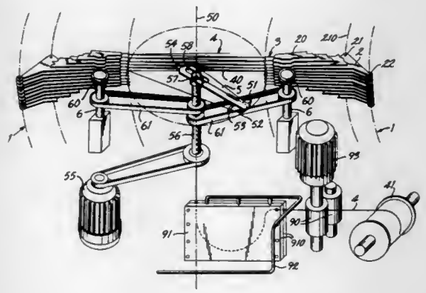
(ii) and outlets (**9***a*) are located substantially directly aove, and in immediate proximity to, said fixed position (X) so that, when said second support means (**3**) makes a pivotal movement, the inclined rear end face (**24**) of the veneer (**18**) thereon picks off the adhesive material (**20**) projected from said outlets (**9***a*) immediately before coming into contact with the front end face (**19**) of the veneer (**8**) on said first support means.

5,185,051

HOOK FOR USE IN AN APPARATUS FOR MAKING A TIRE REINFORCEMENT

Daniel Laurent, Meylan, and Jean C. Mayet, Clermont-Ferrand, both of France, assignors to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand Cedex, France

Continuation of Ser. No. 574,512, Aug. 28, 1990, abandoned, which is a continuation of Ser. No. 464,617, Jan. 3, 1990, abandoned, which is a continuation of Ser. No. 148,488, Jan. 26, 1988, abandoned, which is a division of Ser. No. 40,360, Apr. 20, 1987, Pat. No. 4,801,344. This application Oct. 16, 1991, Ser. No. 776,893
Claims priority, application France, Apr. 25, 1986, 86 06159
Int. Cl.[5] B29C *31/00*
U.S. Cl. 156—397 **6 Claims**



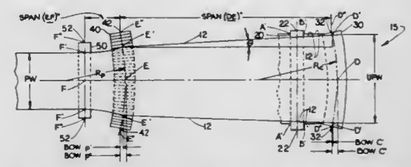
1. A cord retention arm for use in an apparatus for making a tire reinforcement from a continuous cord and applying the reinforcement to a tire core, said apparatus including means for applying the cord on the cord retention arm in a cord receiving positon adjacent said tire core and a remote support for the cord retention arm spaced a substantial distance away from the cord receiving position, the cord retention arm having a length which spans the distance separating the cord receiving position adjacent said tire core and the remote arm support, said cord retention arm comprising a bent end terminating in a tip for receiving and supporting a loop of the cord and an extended mounting support spanning said distance and terminating in an opposite mounting end spaced by said distance from said bent end for mounting the cord retention arm and positioning the bent end relative to the extended mounting support, said extended mounting support having at least two portions spanning said distance, one of which portions is bent with respect to the other portion at an obtuse angle to define a plane, one of the portions being spaced more remotely from the bent end and serving to anchor the arm to said remote arm support, and the other portion being intermediate the more remote portion and the bent end and serving to position said bent end relative to the extended mounting support, said bent end being connected to the intermediate portion at one end of the spanned distance and opposite the mounting end, the bent and mounting ends being the furthest spaced apart points on the cord retention arm measured in a rectilinear direction, the distance between the tip of the bent end and its connection to the intermediate portion being small in relation to the distance spanned by the extended mounting support, said bent end extending laterally of and diagonally to the plane.

5,185,052

HIGH SPEED PLEATING APPARATUS

Charles W. Chappell, West Chester, and John J. Angstadt, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 6, 1990, Ser. No. 534,055
Int. Cl.[5] B31F *1/22*
U.S. Cl. 156—462 **7 Claims**



1. An apparatus for pleating a lamina having two edges and a centerline, said apparatus comprising in series:

a means for supplying a lamina;

a first straight axis roll;

a first curved axis roll having ends, a generally stationary axis of curvature, and a first radius of curvature;

a second curved axis roll having ends, a generally stationary axis of curvature, an axially rotatable sleeve having a plurality of circumferentially oriented grooves therein, and a second radius of curvature, said second radius of curvature being selected based on the final pleated width of the lamina;

a second straight axis roll; and

the ends of said first curved axis roll being arranged relative to the ends of said second curved axis roll to form a distance span, said distance span and said first radius of curvature being adjusted relative to said second radius of curvature such that the aggregate of the paths of travel of an edge of the lamina from said first straight axis roll to said second straight axis roll is substantially equal the aggregate of the paths of travel of the centerline of the lamina from said first straight axis roll to said second axis roll.

5,185,053

BRUSHING STATION FOR A LABELLING MACHINE FOR LABELLING BOTTLES AND THE LIKE

Josef Tomashauser, Willich, and Rudolf Zodrow, Düsseldorf, both of Fed. Rep. of Germany, assignors to ETI-TEC Maschinenbau GmbH, Erkrath, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 311,609, Feb. 15, 1989, Pat. No. 4,976,803. This application Oct. 10, 1990, Ser. No. 595,453
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1989, 3933804
Int. Cl.[5] B65C *9/00*
U.S. Cl. 156—487 **20 Claims**

1. A brushing station for a bottle labelling system for labelling bottles and the like, said brushing station comprising:

bottle conveying means for moving bottles along a portion of a generally circular path of travel;

a guide body for being generally positioned within and for being rotatable within said generally circular path of travel;

said guide body having an exterior surface with a pivot bearing disposed thereabout;

said guide body having a plurality of axial bearings being disposed within said guide body;

means for supporting brush means, which brush means is for being in intermittent contact with exterior surfaces of bottles being conveyed along the portion of said generally circular path of travel;

said brush means supporting means comprising a ring for being disposed on said pivot bearing;

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said guide body being configured for rotation within said brush means supporting means;

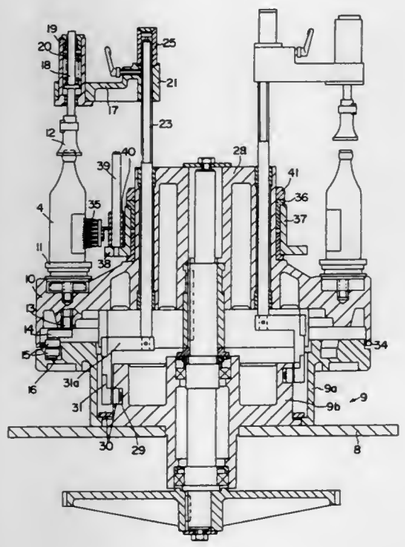
said brush means supporting means being positioned within said generally circular path of travel;

said brush means supporting means for being positioned adjacent to said bottle conveying means and the exterior surfaces of bottles moving along the portion of said generally circular path;

means for retaining said brush means supporting means in a fixed, non-rotating position about said guide body;

a plurality of guide column means for being disposed within said plurality of axial bearings in said guide body, each of said plurality of guide column means having a first end for extending above said guide body, and a second end for extending below said guide body;

a plurality of centering head means for being disposed on said first end of said plurality of guide columns, each of said plurality of centering head means being removably engagable with tops of bottles;



each of said plurality of centering head means being movable along said generally circular path of travel;

said centering head means being axially movable at least through a portion of its travel toward and away from tops of bottles;

said guide body for axially guiding said plurality of guide columns;

a substructure for rotatably supporting at least one of: said bottle conveying means and said guide body, said substructure comprising a first cam means;

first cam follower means disposed on said second end of each of said plurality of guide columns, said first cam follower means being for following said first cam means to axially move said guide columns to move said centering head means toward and away from tops of bottles; and

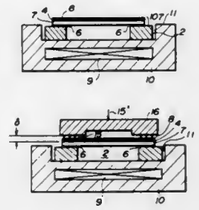
said guide body for positioning said brush means supporting means adjacent to said bottle conveying means and exterior surfaces of bottles moving along the portion of said generally circular path of travel.

5,185,054

METHOD FOR FABRICATING AN EXPOSURE MASK INCLUDING A STEP FOR ADHERING MASK BODY SUBSTRATE TO A SUPPORTING BLOCK

Kazuaki Kondo, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 10, 1991, Ser. No. 757,284
Claims priority, application Japan, Sep. 10, 1990, 2-239624
Int. Cl.[5] H01L *21/306;* **B44C** *1/22;* **C23F** *1/00*
U.S. Cl. 156—630 **14 Claims**



1. A method for fabricating an exposure mask comprising the following steps (a) through (d) of:

(a) forming a layered body comprising a substrate having upper and lower major surfaces, a membrane transparent to an X-ray and provided on the upper major surface of said substrate, and an X-ray absorbing film provided on an upper major surface of said membrane;

(b) adhering a support ring on the lower major surface of said substrate, said supporting ring having ring-shaped upper and lower major surfaces connected with each other by a side wall, said step (b) comprising steps of:

(b-1) placing an adhesive layer between the lower major surface of said substrate and the upper major surface of said support ring; and

(b-2) adhering said support ring to said layered body by applying a gas pressure on an upper major surface of said layered body so that said layered body is pressed via said adhesive layer against said support ring and adhered thereto by said adhesive layer;

(c) carrying out etching on an area on the lower major surface of said substrate until a lower major surface of said membrane is exposed, the area corresponding to an inside of said support ring; and

(d) patterning said X-ray absorbing film into a desired semiconductor pattern.

5,185,055

METHOD OF FORMING A PATTERN ON A SURFACE

Stephen Temple, Cambridge, and Stuart Speakman, Essex, both of United Kingdom, assignors to Xaar Limited, Cambridge, United Kingdom

Filed May 11, 1990, Ser. No. 522,293
Claims priority, application United Kingdom, May 12, 1989, 8910961
Int. Cl.[5] B44C *1/22*
U.S. Cl. 156—630 **29 Claims**

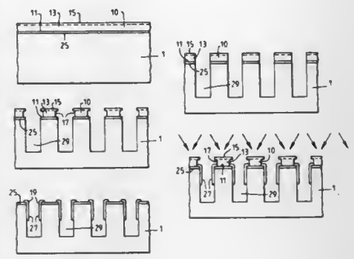
1. The method of forming a pattern on a substrate, characterized by the steps of:

(a) applying a film of thermoplastic material under pressure to a substrate;

(b) applying energy to heat said film at a surface thereof facing said substrate thereby to bond said film to said substrate;

(c) selectively dry etching areas of said film to form a predetermined pattern on said substrate;

(d) depositing on said substrate in the areas where said film has been etched a layer of patterning material; and



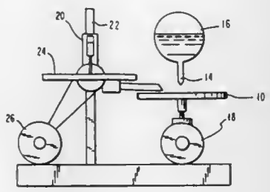
(e) effecting dry removal from said substrate of said film remaining thereon.

5,185,056

METHOD AND APPARATUS FOR ETCHING SEMICONDUCTOR WAFERS AND DEVELOPING RESISTS

Ricardo I. Fuentes, Hopewell Junction, and Inna V. Babich, Chappaqua, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 13, 1991, Ser. No. 759,277
Int. Cl.[5] H01L *21/306;* **B44C** *1/22*
U.S. Cl. 156—639 **13 Claims**



8. A method of modifying selected surface areas of a wafer comprising the steps of:

Step 1, rotating a wafer having a surface to be modified about a vertical axis of rotation,

Step 2, directing a stream of modifying fluid onto the surface of said rotating wafer such that said modifying fluid moves on said wafer surface away from said axis of rotation by centrifugal force, and

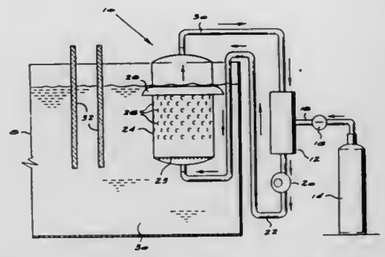
Step 3, and removing said modifying fluid from said surface of said wafer at at least one predetermined location as said modifying fluid moves to said predetermined location.

5,185,057

METAL ETCHING PROCESS AND COMPOSITION

Terence S. Playdon, Transvaal, South Africa, assignor to Jutland Development CC, Transvaal, South Africa

Filed Mar. 15, 1991, Ser. No. 669,431
Claims priority, application South Africa, Mar. 15, 1990, 90/1988
Int. Cl.[5] B44C *1/22;* **C23F** *1/00*
U.S. Cl. 156—642 **21 Claims**



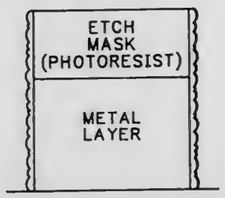
1. A process for etching a metal surface including the step of applying, to the metal surface, a solution of ferric chloride at an effective concentration, the solution containing from about 1–2%, by volume, of a phosphorus acid.

5,185,058

PROCESS FOR ETCHING SEMICONDUCTOR DEVICES

David A. Cathey, Jr., Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jan. 29, 1991, Ser. No. 647,262
The portion of the term of this patent subsequent to Mar. 31, 2009, has been disclaimed.
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—656 **6 Claims**



1. A process for etching a semiconductor device to form a predetermined etched pattern therein, comprising:

providing a semiconductor device having a plurality of layers, at least one of said layers of said semiconductor device comprising a metal-containing material having a metal content of at least about 80% by weight; and

etching said semiconductor device with an etchant material to form a predetermined pattern therein including the formation of horizontal and upright sidewalls in etched layers comprising said metal-containing material, each of said upright sidewalls having a profile which is either substantially vertical or substantially positively sloped;

said etchant material comprising a chemical etchant composition and a coating composition comprising carbon dioxide, and $SiBr_4$, said chemical etchant composition and said coating composition being in a substantially gas phase during said etching of said semiconductor device, said chemical etchant composition when employed by itself to etch said metal-containing layers forming upright sidewall profiles which are substantially negatively sloped.

VOL 1147 ISS 2 FE 9 1993 UMI

5,185,059

PROCESS FOR PRODUCING ELECTRODE PLATE STRUCTURE FOR LIQUID CRYSTAL COLOR DISPLAY DEVICE

Naoya Nishida, Hadano; Masaaki Suzuki, Yokohama, and Toshifumi Yoshioka, Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 11, 1991, Ser. No. 728,707
Claims priority, application Japan, Jul. 18, 1990, 2-187936
Int. Cl.[5] B44C *1/22*; C23F *1/00*
U.S. Cl. 156—659.1 **3 Claims**



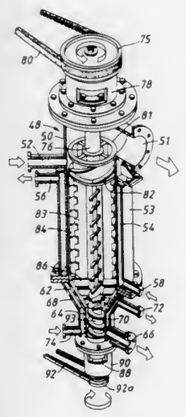
1. A process for producing an electrode plate structure for a liquid crystal color display, comprising the steps of:
forming on a substrate a color filter layer comprising a photosensitive polyamide resin containing a colorant dispersed therein,
coating the color filter layer with a protective layer comprising a photosensitive polyamide resin,
coating the protective layer with an ITO (indium-tin-oxide) film,
heat-treating the ITO film, and
selectively etching the ITO film patternwise with an etchant comprising hydroiodic acid or a hydroiodic acid-ferric chloride aqueous solution mixture to leave an ITO electrode pattern.

5,185,060

FILM EVAPORATOR

Tadashige Yamasaki, Osaka, and Hirotoshi Handa, Kakogawa, both of Japan, assignors to Shinko Pantec Co., Ltd., Japan

Filed Mar. 26, 1990, Ser. No. 499,037
Claims priority, application Japan, Jul. 26, 1989, 1-194529
Int. Cl.[5] B01D *1/24*
U.S. Cl. 159—13.1 **4 Claims**



1. A film evaporator comprising:
a sealed vessel (**48**) for decompression and including communicating coaxially dispersed upper and lower cylindrical sections, said upper section (**50**) having a feed inlet (**52**) adjacent its upper end for material containing volatile components and said lower section (**64**) having a residue outlet (**66**) adjacent its lower end;
an upper shaft (**76**) and a lower shaft (**88**) both extending coaxially within said vessel and journalled by it, said shafts being separately rotatable;
said upper shaft including first rotary means and said lower shaft including second rotary means, said first and second rotary means being separately rotatable;
film forming means (**83**) attached to said upper shaft substantially within said upper section and having a plurality of agitating blades (**84**) which extend radially and are inclined to the horizontal to spread the material as a film on the inner peripheral wall of said vessel and move the material downwardly;
heating means (**53**, **54**) provided around said vessel to heat said wall for evaporation of the volatile components;
a screw (**93**) attached coaxially to said lower shaft substantially inside said lower section to move the material downwardly; and
bearing means (**100**) provided between said shafts for supporting one of said shafts directly on the other of said shafts and not on said vessel, said vessel further including an inverted frusto-conical section (**62**) intermediate said upper and lower cylindrical sections (**50** and **64**) and a plurality of scraping blades (**86**) extending radially from said upper shaft (**76**) within said frusto-conical section, said scraping blades being inclined to the horizontal so as to move the material downwardly.

4. A film evaporator comprising:
a sealed vessel (**48**) for decompression and including communicating coaxially dispersed upper and lower cylindrical sections, said upper section (**50**) having a feed inlet (**52**) adjacent its upper end for material containing volatile components and said lower section (**64**) having a residue outlet (**66**) adjacent its lower end;
an upper shaft (**76**) and a lower shaft (**88**) both extending coaxially within said vessel and journalled by it, said shafts being separately rotatable;
said upper shaft including first rotary means and said lower shaft including second rotary means, said first and second rotary means being separately rotatable;
film forming means (**83**) attached to said upper shaft substantially within said upper section and having a plurality of agitating blades (**84**) which extend radially and are inclined to the horizontal to spread the material as a film on the inner peripheral wall of said vessel and move the material downwardly;
heating means (**53**, **54**) provided around said vessel to heat said wall for evaporation of the volatile components;
a screw (**93**) attached coaxially to said lower shaft substantially inside said lower section to move the material downwardly; and
bearing means (**100**) provided between said shafts for supporting one of said shafts directly on the other of said shafts and not on said vessel, said bearing means (**100**) comprising a needle bearing, said screw (**93**) forming a spiral groove (**95**) which is deeper adjacent the upper end of the screw, said screw having a helical blade (**94**) inclined to the horizontal oppositely to that of said agitating blades (**84**) and wherein said shafts are rotatable in opposite directions, said vessel further including an inverted frusto-conical section (**62**) intermediate said upper and lower cylindrical sections (**50** and **64**) and a plurality of scraping blades (**86**) extending radially from said upper shaft (**76**) within said frusto-conical section, said scraping blades being inclined to the horizontal so as to move the material downwardly.

5,185,061

PROCESSES FOR THE PRODUCTION OF PAPER AND PAPER BOARD

Peter Lowry, Suffolk, Va., and David Farrar, Bradford, England, assignors to Allied Colloids Limited, England

Continuation of Ser. No. 460,862, Feb. 1, 1990, abandoned. This application Jun. 5, 1991, Ser. No. 711,370
Int. Cl.[5] D21H *17/45*
Claims priority, application United Kingdom, Apr. 22, 1988, 8809588
U.S. Cl. 162—168.3 **12 Claims**

1. In a process or making paper or paper board comprising
providing a solution of a water soluble cationic polymeric retention aid formed from 10 to 95% by weight acrylamide and 90 to 5% dialkyl aminoalkyl(meth)acrylate or dialkyl aminoalkyl(meth)acrylamide as acid addition or quaternary ammonium salt,
mixing said solution into an aqueous cellulosic suspension to provide an amount of said polymeric retention aid of from 100 to 1,000 grams dry weight polymer per ton dry weight of suspension, and then
draining said aqueous cellulosic suspension through a traveling screen and thereby forming paper or paper board,
the improvement which comprises
making the speed of the traveling screen above 850 meters per minute,
providing the said cationic polymeric retention aid as a powder,
using as the said cationic polymeric retention aid a linear polymer that has a solubility in water of less than 25 lumps per gram polymer and that has intrinsic viscosity of at least 12 dl/g,
providing the said solution by mixing said powder with water and thereby forming a solution that is free of undissolved polymer particles that will leave polymer deposits on the paper or paper board,
whereby the retention and formation are maintained relative to the retention and formation obtained when the said polymer is replaced by a larger amount of polymer formed from the same monomer or monomer blend but having intrinsic viscosity in the range 7 to 10 dl/g.

5,185,062

PAPERMAKING PROCESS WITH IMPROVED RETENTION AND DRAINAGE

Arthur J. Begala, Naperville, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

Continuation-in-part of Ser. No. 645,797, Jan. 25, 1991, Pat. No. 5,098,520. This application Mar. 17, 1992, Ser. No. 852,957
Int. Cl.[5] D21H *17/33*
U.S. Cl. 162—168.1 **20 Claims**

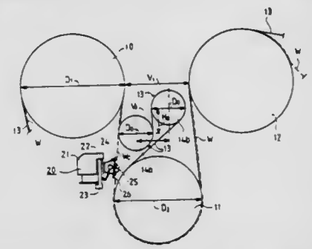
1. A process in which paper or paperboard is made by forming an aqueous cellulosic papermaking slurry, subjecting said slurry to one or more shear stages, adding to said slurry a mineral filler prior to at least one of said shear stages, adding to said slurry after said addition of said mineral filler and prior to at least one of said shear stages a high molecular weight cationic polymer, draining said slurry to form a sheet, and drying said sheet, characterized in that
said high molecular weight cationic polymer is a cationic (meth)acrylamide polymer having a molecular weight above 1,000,000 and having a cationic charge density of at least about 0.2;
after said addition of said high molecular weight cationic polymer and at least one shear stage subsequent thereto, a medium molecular weight anionic polymer is added to said slurry,
wherein said medium molecular weight anionic polymer has a molecular weight of no more than 5,000,000, and has at least 20 mole percent of ionizable anionic mer units, wherein said ionizable anionic mer units include at least 10 mole percent sulfonate-containing mer units;
wherein said high molecular weight cationic polymer and said medium molecular weight anionic polymer are added to said slurry in amount sufficient to together improve the retention and/or drainage of said process, and
wherein said improvement in said retention and/or drainage of said process is provided by a combination consisting essentially of said high molecular weight cationic polymer and said medium molecular weight anionic polymer.

5,185,063

METHOD OF AND APPARATUS FOR CUTTING A LEAD-IN STRIP OF A PAPER WEB

Jouko Aula, Muurame; Allan Liedes, Palokka, and Auvo Saari, Jyväskylä, all of Finland, assignors to Valmet Paper Machinery Inc., Helsinki, Finland

Filed Feb. 20, 1991, Ser. No. 658,033
Claims priority, application Finland, Feb. 22, 1990, 900902
Int. Cl.[5] D21F *5/04*
U.S. Cl. 162—193 **10 Claims**



1. A method of cutting a paper web in a group of drying cylinders provided with a single-wire draw (**13**) in a paper machine or a finishing machine, comprising:
(a) separating said wire (**13**) from said web (W) by extending said wire (**13**) around first and second guide rolls (**14***a*, **14***b*) comprising a guide means and thereby creating a single open draw (W_0) for said web (W);
(b) arranging said first guide roll (**14***a*) so that said wire (**13**) is supporting said web onto the surface of said guide roll (**14***a*), said open draw (W_0) of the web following said first guide roll;
(c) arranging said second guide roll (**14***b*) following said first guide roll in the path of said wire (**13**) so that the direction of said wire (**13**) is reversed and said wire is returned to said one of said leading and drying cylinders (**11**);
(d) rejoining said wire (**13**) and said web (W) on the surface of said one of said leading and drying cylinders after said open draw (W_0); and
(e) performing said cutting of said paper web (W) within said open draw (W_0) of said web.

5,185,064

MEANS FOR CONTROLLING WIRES IN A PAPER MACHINE OR CARDBOARD MACHINE

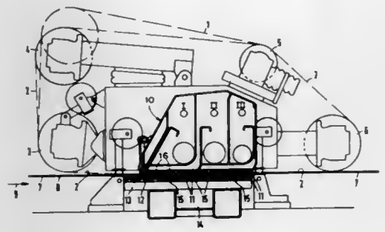
Tapani Nyman, Karhula, Finland, assignor to Valmet-Ahlstrom Inc., Karhula, Finland

Continuation of Ser. No. 241,938, Sep. 6, 1988, abandoned. This application Aug. 26, 1991, Ser. No. 758,264
Claims priority, application Sweden, Sep. 7, 1987, 8703468
Int. Cl.[5] D21F *1/36*
U.S. Cl. 162—301 **19 Claims**

1. A twin-wire section for a paper or cardboard machine, comprising:
a dewatering box,
a back-up member fixedly mounted relative to the dewatering box,
first and second wires running between the dewatering box and the back-up member for dewatering stock that is present between the wires, the first wire being positioned between the second wire and the back-up member, and

VOL
1147
ISS
2
FE
9
1993
UMI

a plurality of pressing devices disposed between the back-up member and the wires, the pressing devices being disposed side-by-side and each comprising an elongate pressing strip extending substantially in the cross machine direction and having a forward edge and a rear edge, the pressing strips of the respective pressing devices being spaced from each other in the longitudinal direction of the twin-wire section, and each pressing device further comprising a first pressure member effective between the back-up mem-



ber and the forward edge of the pressing strip and a second pressure member effective between the back-up member and the rear edge of the pressing strip, the pressure members being individually controllable so that both the pressure of each strip against the first wire and the orientation of each strip relative to the first wire can be adjusted, and the pressing strip of each pressing device being movable by the pressure members of that pressing device independently of the pressing strips of the other pressing devices.

5,185,065

LOW TEMPERATURE CORING CATHODIC ELECTROCOATING COMPOSITION

Ding Y. Chung, Rochester Hills; Allisa Gam, Troy, and Robert A. Tessmer, Mt. Clemens, all of Mich., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 1, 1991, Ser. No. 739,298

Int. Cl.[5] C25D *13/04*

U.S. Cl. 204—181.4 **14 Claims**

1. An aqueous cationic electrocating composition comprising an epoxy amine adduct which is the reaction product of a polyepoxide resin and an amine and having a weight average molecular weight of about 500–10,000, an acrylic amine resin which contains amine groups having a weight average molecular weight of about 1,000–20,000 and a blocked polyisocyanate crosslinking agent;

wherein the composition is prepared by blending a first emulsion of the epoxy amid adduct nd the blocked polyisocyanate crosslinking agent with a second emulsion of the acrylic amine resin and blocked polyisocyanate crosslinking agent; where the first and second emulsion are each individually formed by blending the adduct or resin with the blocked polyisocyanate crosslinking agent and then adding an organic acid to form a salt which forms a stable aqueous emulsion; and

wherein the molecular weights are determined by gel permeation chromatography using polystyrene as the standard.

5,185,066

IMMUNOFIXATION ELECTROPHORESIS CONTROL SYSTEM

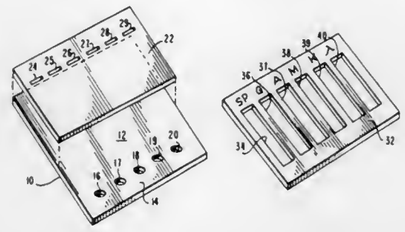
Tipton L. Golias, Beaumont, Tex., assignor to Helena Laboratories Corporation, Beaumont, Tex.

Continuation of Ser. No. 231,032, Aug. 11, 1988, Pat. No. 5,137,614. This application Feb. 18, 1992, Ser. No. 836,387

The portion of the term of this patent subsequent to Aug. 11, 2009, has been disclaimed.

Int. Cl.[5] G01N *27/26*; B01D *57/02*

U.S. Cl. 204—182.8 **31 Claims**



1. In a method for immunofixation electrophoresis where at least one specimen is obtained and is applied to at least open application area of an electrophoretic gel, the specimens are thereafter electrophoresed to obtain an electrophoresis protein separation pattern of the specimen, an antiserum capable of reacting with a protein is applied to the electrophoresed specimens, and said electrophoresed specimens with the antiserum applied is to be incubated, the improvement comprising:

defining a control area on said electrophoretic gel for verifying the lability of antisera, said control area associated with but discrete from said application area, said control area having at least one control site;

applying control serum to said control site;

applying antiserum to the same control site, said control serum and antiserum being in contact with each other at said control site, and thereafter incubating said gel;

said control serum and said antiserum for providing an antibody-antigen reaction if the control serum and antiserum having retained their liability.

5,185,067

PROCESS FOR MANUFACTURING DIAMOND-LIKE THIN FILM

Masanori Shibahara; Masatoshi Nakayama, and Kunihiro Ueda, all of Saku, Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Jun. 29, 1990, Ser. No. 547,736

Claims priority, application Japan, Jul. 10, 1989, 1-175646; Jul. 12, 1989, 1-178089; Jul. 13, 1989, 1-179008; Jul. 14, 1989, 1-180391; Aug. 23, 1989, 1-214914

Int. Cl.[5] C23C *16/50*

U.S. Cl. 427—523 **2 Claims**

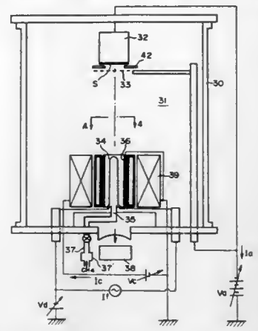
1. A process for producing a diamond-like thin film, said process comprises:

(a) feeding into a vacuum chamber a lower hydrocarbon or a feed gas capable of affording a lower hydrocarbon upon deposition or reaction, said lower hydrocarbon being selected from the group consisting of methane, ethane, propane, ethylene, propylene, acetylene, methyl alcohol, ethyl alcohol, acetone, and a mixed gas of carbon monoxide and hydrogen,

(b) ionizing the feed gas by an ionizing means composed of hot cathode filaments and an anode disposed around the filaments to form a hydrocarbon ion beam, and

(c) accelerating the ion beam with a grid at a lower potential

than the anode against the substrate surface for a film-forming reaction thereon, said grid being repeatedly



moved relative to the substrate in a direction which is at a right angle to the principal axis of the ion beam.

5,185,068

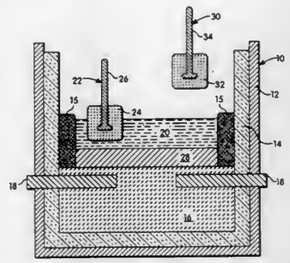
ELECTROLYTIC PRODUCTION OF METALS USING CONSUMABLE ANODES

Donald R. Sadoway, Belmont, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 9, 1991, Ser. No. 697,793

Int. Cl.[5] C25C *3/12, 3/00*

U.S. Cl. 204—245 **34 Claims**



1. An electrolytic cell for the production of metals, the cell adapted to contain an electrolyte and comprising an anode fabricated of a metal-containing compound that directly dissolves under the operating conditions of the cell to form a dissolution product, wherein the dissolution product comprises a feed material for the cell, and further wherein the anode compound, under the operating conditions of the cell, is electronically conductive as a solid and can provide an ironically conductive medium when molten or dissolved in a liquid.

5,185,069

LIQUID METAL CATHODE ELECTROCHEMICAL CELL AND CATHODE FRAME

James M. Ford; David W. Cawlfield, and Kenneth E. Woodard, Jr., all of Cleveland, Tenn., assignors to Olin Corporation, Cheshire, Conn.

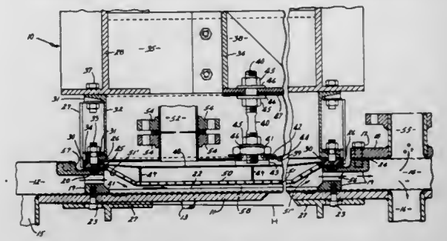
Filed Oct. 15, 1991, Ser. No. 776,016

Int. Cl.[5] C25B *9/00, 15/08*

U.S. Cl. 204—251 **35 Claims**

18. A horizontal electrolytic cell having a liquid metal cathode in a catholyte compartment, an anode, a separator, a catholyte inlet and catholyte outlet for the flow of catholyte into and out of the catholyte compartment in the cell comprising:

at least two electrode frame each having a pair of opposing ends having a first generally uniform height and a pair of opposing sides meeting the opposing ends at a plurality of corners, each opposing side having an obliquely angled portion extending from each corner at the first generally uniform height slopingly to an extended portion at a different lower level, each frame having a continuous interior intermediate surface against which lies the membrane such that each interior intermediate surface is substantially



coplanar with the membrane and the extended portion lies substantially coplanar with the major portion of the separator positioned in the extended plane, the obliquely and slopingly angled portion supporting the membrane in an obliquely angled relationship adjacent a gap between the anode and the cathode and being positioned only immediately adjacent each of the plurality of corners formed by the pair of opposing ends and pair of opposing sides.

5,185,070

Patent Not Issued For This Number

5,185,071

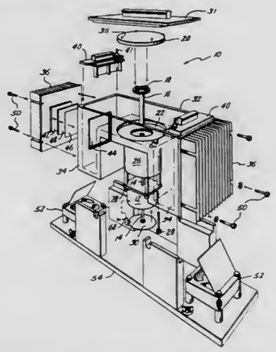
PROGRAMMABLE ELECTROPHORESIS WITH INTEGRATED AND MULTIPLEXED CONTROL

Philip Serwer, and Frederick J. Dunn, both of San Antonio, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Oct. 30, 1990, Ser. No. 605,796

Int. Cl.[5] G01N *27/26*; B01D *57/02*

U.S. Cl. 204—299 R **15 Claims**



1. An apparatus for programmably controlling an electrophoretic device, comprising:

a planar rotatable disk for supporting a horizontal gel containing at least on DNA particle;

programmable rotating means connected to said disk for rotating said disk;

at least two buffer holding tanks horizontally displaced from said rotatable gel bed, said tanks open at the top to provide electrically conductive buffer solution between said tanks and over said gel;

programmable controlling means connected to said holding

VOL
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tanks for controlling the magnitude and polarity of the electric field placed between said tanks; and

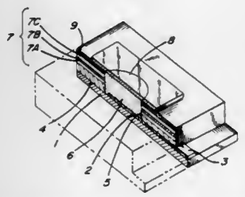
programmable Peltier means connected to said holding tanks for regulating the temperature of said buffer solution within said tanks and over said gel.

5,185,072

ION-SELECTIVE ELECTRODE AND METHOD OF PRODUCING THE SAME

Junji Kojima, Kyoto, Japan, assignor to Horiba, Ltd., Kyoto, Japan

Filed Jul. 5, 1991, Ser. No. 725,973
Claims priority, application Japan, Jul. 7, 1990, 2-180247
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—416 **12 Claims**



1. An improved ion-selective electrode comprising:

a substrate of an insulating material;

a polyethylene terephthalate film layer on the substrate having an aperture;

an electrically conductive layer positioned on the aperture and extending across the substrate beneath the film layer;

a series of adhering layers which can be applied above the film layer and around the aperture to form a cavity above the conductive layer, the layer farthest from the substrate being a deoximization silicone room temperature vulcanizing adhesive;

a gelatinized internal liquid position in the cavity, and

an ion-responsive glass sheet adhering to the deoximization silicone adhesive and extending over and in contact with the internal liquid.

5,185,073

METHOD OF FABRICATING NENDRITIC MATERIALS

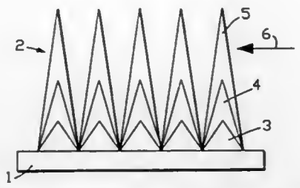
Perminder S. Bindra, South Salem; Jerome J. Cuomo, Lincoindale; Thomas P. Gall, Endwell; Anthony P. Ingraham, Endicott; Sung K. Kang; Jungihl Kim, both of Chappaqua; Paul Lauro, Pomona, all of N.Y.; David N. Light, Friendsville, Pa.; Voya R. Markovich, Endwell, N.Y.; Ekkehard F. Miersch, Schoenaich, Fed. Rep. of Germany; Jaynal A. Molla; Douglas O. Powell, both of Endicott, N.Y.; John J. Ritsko, Mount Kisco, N.Y.; George J. Saxenmeyer, Jr., Apalachin, N.Y.; Jack A. Varcoe, Endwell, N.Y., and George F. Walker, New York, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 606,007, Oct. 30, 1990, Pat. No. 5,137,461, which is a continuation-in-part of Ser. No. 415,435, Sep. 28, 1989, abandoned, which is a continuation of Ser. No. 209,667, Jun. 21, 1988, abandoned. This application Apr. 29, 1991, Ser. No. 692,606
Int. Cl.[5] C25D *5/18*
U.S. Cl. 205—104 **4 Claims**

1. The method on forming dendritic material comprising in combination the steps of:

plating a layer of palladium on a nickel substrate in a 150 millimolar palladium tetra ammine chloride bath at a pH of 9.0 at constant current for 30 minutes with mild solution agitation, and thereafter,

pulse plating palladium at 800 mA per square cm peak current, at a 10% duty cycle of 1 millisecond pulse on time 9 millisecond pulse off time, in a solution of 15 millimolar palladium ammine chloride at a pH of 9.0 with an ammonium chloride concentration of approximately 5.0 molar



for 40 minutes with intermittent ultrasonic agitation to deposit dendritic palladium.

5,185,074

PROCESS FOR PRODUCING COLOR FILTER

Seiichiro Yokoyama, and Hideaki Kurata, both of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 564,707, Aug. 7, 1990, abandoned, which is a continuation of Ser. No. 384,259, Jul. 21, 1989, abandoned. This application Jan. 30, 1991, Ser. No. 647,846

Claims priority, application Japan, Aug. 15, 1988, 63-201907; Dec. 26, 1988, 63-326089; Dec. 26, 1988, 63-326090; Apr. 11, 1989, 1-089768; Jun. 1, 1989, 1-137542; Jun. 5, 1989, 1-140981; Sep. 14, 1990, 2-242670

The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.

Int. Cl.[5] C25D *13/04, 13/12;* G02B *5/20*
U.S. Cl. 205—162 **20 Claims**

1. A process for producing an electroconductive color filter, which comprises (a) dispersing or dissolving a pigment or a dye having spectral properties in three primary colors of red, green, and blue and a structure reinforcing resin in an amount of up to 0.5 part by weight per part by weight of the pigment or dye, in an aqueous medium in the presence of a surfactant comprising a ferrocene compound to prepare micelle solutions or dispersions in each of said colors; (b) dipping a patterned transparent electroconductive substrate successively into the micelle solutions or dispersions in each of said colors, to be subjected to electrolytic treatment at a voltage of 0.1 to 1.5V in every said color; and thereby forming an electroconductive color-separated filter on said substrate.

5,185,075

SURFACE TREATED TITANIUM/TITANIUM ALLOY ARTICLES AND PROCESS FOR PRODUCING

Harry W. Rosenberg, Pittsburgh, Pa., and Brian Melody, Bowling Green, Ky., assignors to The Alta Group, Fombell, Pa.

Filed Oct. 25, 1990, Ser. No. 603,287
Int. Cl.[5] C25D *11/26*
U.S. Cl. 205—234 **31 Claims**

1. A process for producing an article of titanium, comprising the steps of:

arranging a base metal body formed in any desired shape from titanium of 99.997% purity in all metalics and of less than 500 ppm total gases, as an anode in electrolytic communication with a cathode in a substantially non-aqueous solution of a mineral acid and an organic solvent, the solution characterized as being a poor donor of hydrogen ions and a provider of oxygen; and

electorlyzing at a leakage current of between about 1.0 and 5.0 milliamps per square centimeter to form an anodized film on the surface of said base metal body.

5,185,076

BATH AND METHOD FOR ELECTRODEPOSITING TIN, LEAD AND TIN-LEAD ALLOY

Isamu Yanada; Tooru Murakami, and Kiyoshi Asakawa, all of Hirakata, Japan, assignors to C. Uyemura & Co., Ltd., Osaka, Japan

Filed Apr. 12, 1991, Ser. No. 684,321
Claims priority, application Japan, May 7, 1990, 2-117078
Int. Cl.[5] C25D *3/60*
U.S. Cl. 205—252 **4 Claims**

1. A bath for electrodepositing tin-lead alloy comprising:

tin and lead ions in concentrations of 1 to 100 grams/liter and 1 to 80 grams/liter, respectively,

a sulfate ion in a concentration of 10 to 200 grams/liter, and

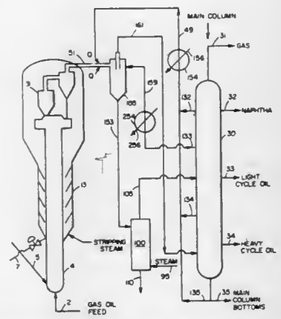
a condensed phosphate ion selected from the group consisting of pyrophosphoric acid, tripolyphosphoric acid, tetrapolyphosphoric acid, polyphosphoric acid, metaphosphoric acid, hexametaphosphoric acid, ultraphosphoric acid and salts thereof in a concentration of 5 to 400 grams/liter, the bath being adjusted to pH 1 to 4.

5,185,077

TRANSFER LINE QUENCHING WITH CYCLONE SEPARATION

Hartley Owen, Belle Mead, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Mar. 25, 1991, Ser. No. 674,242
Int. Cl.[5] C10G *65/12, 91/16, 57/00*
U.S. Cl. 208—61 **19 Claims**



10. A fluidized catalytic cracking process wherein a heavy hydrocarbon feed comprising at least 10 wt % hydrocarbons having a boiling point above about 1000 F. is catalytically cracked to cracked products comprising the steps of:

a. catalytically cracking said feed i a riser catalytic cracking zone operating at catalytic cracking conditions including a catalyst/oil ratio of about 0.5:1 to 15:1, a catalyst contact time of about 0.5 to 50 seconds, and a riser top temperature of about 900 F. to 1200 F. by contacting said feed in a riser reactor with a source of hot regenerated cracking catalyst to produce a riser reactor cracking zone effluent mixture having an effluent temperature above 950 F. and comprising cracked products and spent cracking catalyst containing coke and strippable hydrocarbons;

b. separating said riser reactor effluent mixture into a hot cracked product vapor phase having a temperature above 950 F. and a spent catalyst rich phase;

c. stripping and regenerating said spent catalyst to produce regenerated catalyst which is recycled to crack heavy feed;

d. transferring, via a transfer line having an upstream portion near said riser cracking zone and a downstream portion near a main fractionator, said hot cracked product vapor to said main fractionator at a transfer line temperature above 950 F. and sufficient to cause at least one of coking and thermal cracking in said transfer line:

e. fractionating in said main fractionator said hot cracked vapor to produce liquid product fractions comprising naphtha, cycle oils and a bottoms fraction boiling above about 750 F.;

f. quenching said hot cracked product vapor with a quench liquid in a cyclone quench means located in said upstream portion of said transfer line by injecting into said cyclone quench means, or into the transfer line upstream of said quench means, quench liquid in an amount and at a temperature sufficient to condense a majority of said cracked product vapor boiling above about 750 F. to produce a two phase mixture comprising quenched vapor and condensed liquid and/or quench liquid comprising at least some droplets having a particle diameter of at least 100 microns and

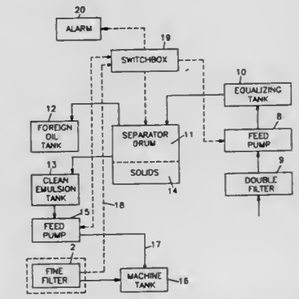
g. cyclonically separating said two phase mixture in said cyclone quench means to produce a quenched vapor phase, from which at least 98% of said 100 micron and larger droplets have been removed, which is charged to said main fractionator and a separate condensed liquid phase.

5,185,078

SEPARATOR APPARATUS AND METHOD FOR REGENERATING EMULSIONS WITH DOWNSTREAM MONITORING FILTER

Bernhard Koczy, Mettmann, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

PCT No. PCT/EP90/00599, § 371 Date Oct. 23, 1991, § 102(e) Date Oct. 23, 1991, PCT Pub. No. WO90/12635, PCT Pub. Date Nov. 1, 1990
PCT Filed Apr. 17, 1990, Ser. No. 768,872
Claims priority, applicatioo Fed. Rep. of Germany, Apr. 24, 1989, 3913386
Int. Cl.[5] B01D *37/04*
U.S. Cl. 240—741 **11 Claims**



7. In a separator having means for separating an emulsion from accumulated foreign oil and sludge of a liquid mixture, and further including an outlet pipe arranged to direct separated clean emulsion from said separator for reuse, and a filter arranged in said outlet pipe for retaining residual solids, a method for monitoring the effectiveness of the separator, comprising the steps of:

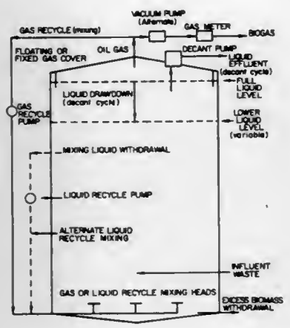
measuring the pressure difference between an entrance port and an exit port of said filter;

generating a signal if a predetermined pressure difference is exceeded, for indicating a deterioration in the effectiveness of said separator; and

turning on an alarm upon the generating of said signal.

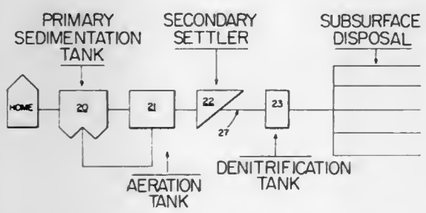
VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,079
ANAEROBIC SEQUENCING BATCH REACTOR
Richard R. Dague, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa
Filed May 16, 1991, Ser. No. 701,045
Int. Cl.[5] C02F *3/28*
U.S. Cl. 210—603 **18 Claims**



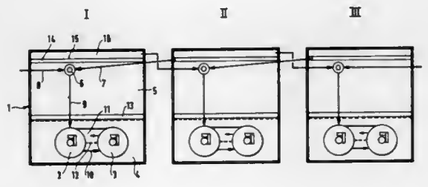
1. A method of producing biogas from waste containing organic biomass, comprising the steps of:
feeding the waste into a vessel until a predetermined full liquid level is reached;
maintaining anaerobic reaction conditions of the waste including mixing in the vessel to produce biogas;
discontinuing the mixing to allow the biomass to settle in the vessel resulting in the formation of a low suspended solid supernatant;
decanting the supernatant from the vessel until a predetermined lower liquid level is reached; and
repeating in sequence the feeding step, reacting step, settling step, and decanting step.

5,185,080
PROCESS FOR THE ON-SITE REMOVAL OF NITRATES FROM WASTEWATER
Gregory Boyle, 113 Winesap Rd., Cherry Hill, N.J. 08003
Continuation of Ser. No. 532,790, Jun. 4, 1990, abandoned. This application Dec. 11, 1991, Ser. No. 809,101
Int. Cl.[5] C02F *3/34*
U.S. Cl. 210—611 **8 Claims**



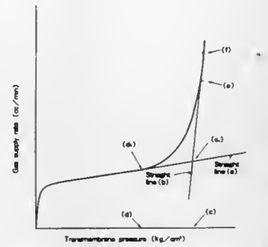
1. An underground process for the treatment of wastewater from home or commercial sources in which said waste-water is subjected to primary settling, aeration and secondary settling treatments underground to product nitrate-containing wastewater, which further comprises:
introducing said nitrate-containing wastewater from said underground secondary settling treatment to an underground treatment chamber and further treating said nitrate-containing wastewater by the periodic addition to said chamber of a material comprising denitrifying bacteria and a source of carbon to support said bacteria,
said treatment chamber being maintained year-round by the temperature of the surrounding ground at a temperature at which said bacteria are active,
whereby
said bacteria convert the nitrate in said wastewater to nitrogen gas.

5,185,081
METHOD AND APPARATUS FOR MIXING AND SEPARATING TWO LIQUID PHASES WHILE PREVENTING AERATION AND EMULSIONS USING A MIXER-SETTLER
Bror G. Nyman, Ulvila; Stig-Erik Hultholm, Pori; Launo L. Lilja, Pori, and Valto J. Mäkitalo, Pori, all of Finland, assignors to Outokumpu Oy, Espoo, Finland
Filed Mar. 26, 1991, Ser. No. 675,443
Claims priority, application Finland, Apr. 4, 1990, 901691
Int. Cl.[5] B01D *11/04*; B01F *7/24*
U.S. Cl. 210—634 **10 Claims**



8. A method for mixing two different solution phases in liquid-liquid extraction in a controlled fashion for creating a dispersion to cause material transfer between the phases and for separating the phases after material transfer has taken place therebetween while preventing the creation of emulsions and aeration of the dispersion, comprising: mixing together the two phases to be dispersed to form a mixture; feeding the mixture into a bottom part of a mixer; setting the mixture into vertical circulation by rotating a stirrer in the mixer at a low circumferential speed for preventing aeration and preventing the formation of an emulsion and thereby causing the mixture to flow upward near a periphery of the mixer, causing the mixed phases to flow smoothly toward the interior of the mixer after flowing upward and then causing the mixture to flow downward near the center of the mixer; dividing the mixture flow after the mixture has flowed downward towards the bottom of the mixer and then causing the mixture to flow towards the periphery of the mixer; preventing horizontal circulation of the mixture by means of baffles; creating a dispersion of well mixed phases by means of said vertical circulation; continuously discharging the dispersion of well mixed phases as overflow from the mixer into a presettler space surrounding the mixer; causing a flow rate of the dispersion in the presettler space to vary and thus causing small droplets in the dispersion to collide and coalesce into larger drops resulting in partial clarification of the dispersion in the presettler; discharging the partially clarified dispersion from the presettler space as a wide flow to a settler which settler is no longer than it is wide so that the dispersion is clarified by the production of two thin layers of different clear solutions.

5,185,082
METHOD FOR EVALUATING THE VIRUS-REMOVING CAPABILITY OF A POROUS POLYMERIC MEMBRANE MODULE FOR REMOVING VIRUSES
Hiroo Nakano, Nobeoka, and Seiichi Manabe, Kyoto, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Jun. 5, 1992, Ser. No. 894,544
Claims priority, application Japan, Jun. 6, 1991, 3-135069
Int. Cl.[5] B01D *63/02*
U.S. Cl. 210—639 **9 Claims**

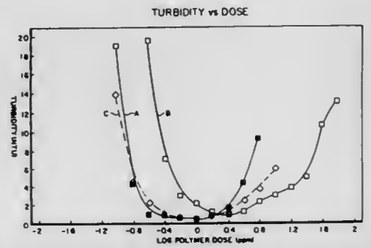


1. A method for evaluating the virus-removing capability of a porous polymeric membrane module for removing viruses from a virus-containing fluid by filtration, said module comprising a casing having an inlet for a virus-containing fluid and an outlet for a filtrate, and a porous polymeric membrane disposed in said casing to partition the interior of said casing into a space communicates with one of said inlet or said outlet and a second space on the other side of said membrane which second space communicates with the remaining one of said inlet or outlet, which method comprises subjecting said porous polymeric membrane module to testing I,
said testing I comprising the steps of:
(1) filling the first space on one side of said membrane with a liquid, chemically inert to said membrane,
(2) supplying the second space on the other side of said membrane with a gas, chemically inert to said membrane,
(3) terminating the supply of said gas when the transmembrane pressure on said membrane reaches predetermined value Ph, said value Ph satisfying the following formula:

$$d<Ph<c$$

wherein d and c are respectively the transmembrane pressures at points (d) and (c) in FIG. 1 hereof,
(4) allowing the module to stand, thereby causing the transmembrane pressure on said membrane to be lowered, and
(5) measuring the transmembrane pressure lowering from value Ph a predetermined period of time after the termination of the supply of the gas,
wherein FIG. 1 is a graph containing a curve showing the relationship between the transmembrane pressure and the gas supply rate of a model porous polymeric membrane module, said model module being substantially the same as said module to be subjected to testing I, containing a porous polymeric membrane having an average pore diameter and a maximum pore diameter which are, respectively, within ranges which are predetermined in accordance with the size of viruses to be removed, said relationship between the transmembrane pressure and the gas supply rate being obtained by filling the first space on one side of the membrane of said model module with a liquid chemically inert to the membrane and supplying the second space on the other side of the membrane of said model module with a gas chemically inert to the membrane while measuring the transmembrane pressure and the gas supply rate, and
wherein:
a straight line obtained by extending the straight line portion first occurring in the curve of FIG. 1 is defined as straight line (a), said first occurring straight line portion of the curve representing the increase in gas supply rate in proportion to the increase in transmembrane pressure,
a transmembrane pressure at point (d) corresponding to point (d_1) on the curve at which point (d_1) said curve starts to diverge from said straight line (a), is defined as transmembrane pressure d,
a straight line obtained by connecting points (e) and (f) on the curve at which points (e) and (f) the gas supply rates are, respectively, 2.5 times and 3.0 times the gas supply rate at point (d_1), is defined as straight line (b), and
a transmembrane pressure at point (c) corresponding to point (c_1) at which straight line (a) intersects with straight line (b), is defined as transmembrane pressure c.

5,185,083
SEPARATION OF SOLIDS FROM AQUEOUS SUSPENSIONS USING MODIFIED AMINE FUNCTIONAL POLYMERS
John G. Smigo; Thomas P. McAndrew, both of Macungie; Robert K. Pinschmidt, Jr., Allentown, and Andrew F. Nordquist, Whitehall, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.
Continuation-in-part of Ser. No. 252,377, May 17, 1990, Pat. No. 5,086,111. This application Dec. 5, 1991, Ser. No. 803,256
Int. Cl.[5] C02F *1/56*
U.S. Cl. 210—735 **14 Claims**



1. In a process for separating solids from an aqueous suspension, the improvement comprising adding to said suspension as a separating agent an amine functional polyvinylaminal which is the reaction product of monoaldehyde and poly(vinylamine).

5,185,084
METHOD AND APPARATUS FOR CONTROL OF FLOW THROUGH A FILTER CHAMBER BY MEASURED CHAMBER EQUILIBRATION PRESSURE
Stanley N. Lapidus; Dean Kamen; Richard R. Villeneuve, all of Bedford, N.H., and Lewis T. Polk, Jr., Bedford, Mass., assignors to Cytyc Corporation, Marlborough, Mass.
Division of Ser. No. 487,637, Mar. 2, 1990, abandoned. This application Jun. 18, 1991, Ser. No. 717,090
Int. Cl.[5] B01D *17/12*
U.S. Cl. 210—741 **7 Claims**

6. Apparatus for measuring the occlusion of a filter device by particles contained in a fluid flowing through the filter device, said apparatus comprising
A. means forming a filter chamber having a filter device forming a chamber wall thereof and having a porosity for blocking particles of selected size, said filter chamber being arranged for fluid to flow into the interior thereof through said filter device,
B. pressure source means arranged with valve means for selectively applying a flow-producing pressure differential across said filter device, said flow-producing pressure differential being different from a first pressure differential across said filter device and producing a flow of fluid

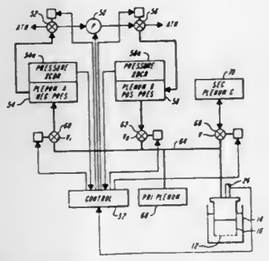
VOL 1147 ISS 2 FEB 9 1993 UMI

greater than any flow occurring during presence of said first pressure differential, and

C. control means arranged for sensing a pressure differential across said filter device and connected with said valve means, said control means being arranged for executing a cycle of successive operations including

(i) a first step of opening said valve means for applying said flow-producing pressure differential across said filter device for producing a selective fluid flow through said filter device,

(ii) a second step of closing said valve means for allowing a flow of fluid through said filter device for equilibrating the pressure differential in a direction from said flow-producing pressure differential toward said first pressure differential,



(iii) a third step of measuring an equilibration time in which said pressure differential equilibrates from said flow-producing pressure differential to an equilibration pressure differential intermediate said first pressure differential and said equilibration pressure differential, and

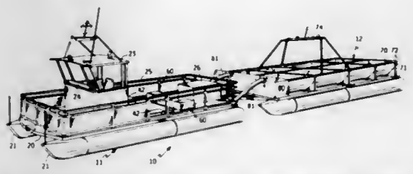
(iv) repeating said first and second and third steps only in response to an equilibration time, as measured in said third step, less than a predetermined time value.

5,185,085

WATER CRAFT AND METHOD FOR TREATING A BODY OF WATER

Peter M. Borgren, 825 Partridge St., #106, Duluth, Minn. 55811

Filed Jun. 12, 1991, Ser. No. 713,880
Int. Cl.[5] C02F *7/00*
U.S. Cl. 210—747 **3 Claims**



1. A method for treating a body of water with a boat, comprising:

(a) traversing the surface of the body of water with the boat, the boat comprising at least one scoop positioned at least partially immediately below the surface to scoop water from the surface, the scoop having a lower panel, an upper panel, an outer panel, an inner panel, and an oblique panel extending integrally, rearwardly and outwardly from the inner panel to funnel and convey the scooped water, the scope including an inner surface portion against which the water being scooped flows, the inner surface portion of the scoop being curved to increase the velocity of the water being scooped from the surface relative to the velocity of the boat, the boat having hydraulic means for raising and lowering the scoop relative to the surface of the water such that the scoop may be drawn completely to of the water,

(b) continuously scooping oxygen rich surface water from the surface of said body of water with the scoop as the boat traverses the surface,

(c) pumping the water rearwardly away from the scoop after the water has been scooped to increase the velocity of such water, the scooped water being continually conveyed rearwardly from the scope to where it is pumped, and

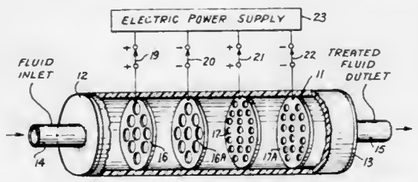
(d) conveying the water which has been scooped from the surface back to the body of water to a depth more than 15 feet below the surface of the body of water such that oxygen rich water scooped from the surface is conveyed to oxygen depleted depths in the body of water to treat the depths by adding oxygen thereto.

5,185,086

METHOD AND SYSTEM FOR TREATMENT OF BLOOD AND/OR OTHER BODY FLUIDS AND/OR SYNTHETIC FLUIDS USING COMBINED FILTER ELEMENTS AND ELECTRIC FIELD FORCES

Steven Kaali, 88 Ashford Ave., Dobbs Ferry, N.Y. 10522, and Peter M. Schwolsky, 20 Haslet Ave., Princeton, N.J. 08540

Filed Jul. 16, 1991, Ser. No. 730,690
Int. Cl.[5] B01D *35/06, 37/00;* **A61K** *41/00*
U.S. Cl. 210—748 **19 Claims**



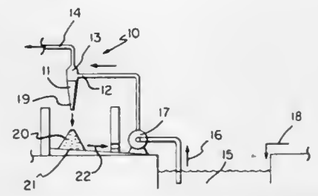
1. The method of treating blood and/or other body fluids of mammals as well as synthetic fluids which comprises subjecting a fluid to be treated to filtering for elimination of any particles contained therein which exceed 0.2 microns in size and subjecting the fluid while being filtered to electric field forces between spaced-apart electrodes in the microwatt/milliwatt region induced by a relatively low voltage of about 0.2 to 12 volts and low current density of about 1 microampere per square millimeter to about 2 milliamperes per square millimeter of electrode area which does not exceed a value that impairs the biological characteristics of the blood or other fluid being treated.

5,185,087

METHOD OF CONCENTRATING AND DEODORIZING RUMINANT WASTE

Roy D. Lister, 457 Pine Tree Cir., Keller, Tex. 76248, and Sabino Cortez, 1135 W. Elm, Stephville, Tex. 76401

Filed Apr. 19, 1991, Ser. No. 687,556
Int. Cl.[5] B01D *21/26*
U.S. Cl. 210—787 **7 Claims**



1. A method of concentrating ruminant waste effluent, said effluent comprising ruminant waste and water, comprising the steps of:

collecting said effluent;

subjecting said collected effluent to cyclonic action so as to separate a major portion of the water from said effluent thereby concentrating the ruminant waste products.

5,185,088

GRANULAR FABRIC SOFTENER COMPOSITIONS WHICH FORM AQUEOUS EMULSION CONCENTRATES

Frederick A. Hartman; Donald R. Brown; John R. Rusche, all of Cincinnati, and Lucille F. Taylor, West Chester, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 22, 1991, Ser. No. 689,406
Int. Cl.[5] D06M *10/08*
U.S. Cl. 252—86 **18 Claims**

1. Solid granular fabric softener composition which forms a finely divided dispersion within about thirty minutes when added to water having a temperature of no more than about 80° with minimal agitation, said composition comprising homogeneous particles containing:

A. from about 20% to about 95% of nonionic fabric softener material, wherein said nonionic fabric softener material is selected from the group consisting of:

i. Fatty acid ester of polyhydroxy alcohol, or anhydride thereof, said alcohol containing from 2 to about 18 carbon atoms and said fatty acid contains from about 12 to about 30 carbon atoms;

ii. Ion pair of anionic detergent surfactants and fatty amines, or quaternary ammonium derivatives thereof, said ion pair being essentially nonionic and containing at least two long hydrophobic chains;

iii. Fatty alcohols, fatty acids, or lower alkoxylates or esters thereof wherein the fatty moiety contains from about 16 to about 30 carbon atoms; and

iv. Mixtures thereof; and

B. from about 5% to about 50% of a material that is cationic under conditions of use at dilute concentrations of said composition, said cationic material having a single long alkyl chain containing from about 12 to about 30 carbon atoms.

5,185,089

LUBRICANTS USEFUL WITH 1,1-DICHLORO-2,2,2-TRIFLUOROETHANE

Raymond H. P. Thomas; Ruth H. Chen, both of Amherst; Hang T. Pham, North Tonawanda, and David P. Wilson, East Amherst, all of N.Y., assignors to Allied-Signal Inc., Morristownship, Moms County, N.J.

Division of Ser. No. 780,562, Oct. 18, 1991, Pat. No. 5,108,632, which is a continuation of Ser. No. 521,794, May 10, 1990, abandoned. This application Jan. 28, 1992, Ser. No. 826,694
Int. Cl.[5] C10M *155/02, 107/38*
U.S. Cl. 252—37.7 **20 Claims**

1. A composition for use in compression refrigeration and air-conditioning comprising:

(a) 1,1-dichloro-2,2,2-trifluoroethane; and

(b) a sufficient amount of a lubricant therefor wherein said lubricant is an aliphatic hydrogen-containing compound having greater than about 80 percent exterior primary hydrogens, has a viscosity of about 5 to about 150 centistokes at 37° C., and is miscible in combination with said 1,1-dichloro-2,2,2-trifuloroethane in the range of about 0° C. to at least +20° C. wherein said lubricant substantially reduces the formation of 1-chloro-2,2,2-trifluoroethane.

5,185,090

LOW PRESSURE DERIVED MIXED PHOSPHOROUS- AND SULFUR-CONTAINING REACTION PRODUCTS USEFUL IN POWER TRANSMITTING COMPOSITIONS AND PROCESS FOR PREPARING SAME

Jack Ryer, East Brunswick; Antonio Gutierrez, Mercerville; James S. Puckace, Freehold; Raymond F. Watts, Long Valley; Craig W. Gleason, Scotch Plains; Daniel R. Mills, Somerville, all of N.J., and Edmund H. Braun, II, Orangeburg, N.Y., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Continuation-in-part of Ser. No. 370,315, Jun. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 210,831, Jun. 24, 1988, abandoned, and a continuation-in-part of Ser. No. 559,385, Jul. 25, 1990, abandoned, which is a continuation of Ser. No. 210,831, Jun. 24, 1988, abandoned. This application Jul. 31, 1990, Ser. No. 560,675
Int. Cl.[5] C10M *137/00, 137/04*
U.S. Cl. 252—46.6 **66 Claims**

1. A composition comprising reaction product of a reaction mixture comprising:

(i) at least one beta-hydroxy thioether reactant represented by the formula:

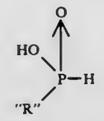
$$R-(SCH_2CH_2OH)_x \qquad I$$

wherein R represents an unsubstituted or substituted hydrocarbyl group and wherein x is a number from 1 to 2 and which identifies the number of —SCH_2CH_2OH groups attached to R; and

(ii) an amount of phosphorous-containing reactant selected from the group consisting of monohydrocarbyl dihydrogen phosphite dihydrocarbyl hydrogen phosphite, trihydrocarbyl phosphite, and mixtures thereof, sufficient to provide at least about ten mole percent of phosphorous containing reactant based on the total moles of reactants in said reaction mixture;

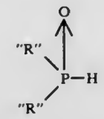
wherein said reaction mixture is admixed in a manner and under conditions sufficient:

(A) to form hydrocarbyl phosphorous-containing product comprising at least 80 mole % of a mixture of hydrocarbyl phosphites, wherein at least one phosphite of said mixture is represented by the formula XI:



XI

and at least one phosphite of said mixture is represented by formula XII:



XII

wherein each "R", independently represents the same or different residue from (i) beta-hydroxy thioether reactant, and (ii) hydrocarbyl oxy residue from said phosphorous-containing reactant, provided that at least some of "R" constitutes beta-hydroxy thioether residue, and wherein said hydrocarbyl phosphorous-containing product comprises at least 25 mole % of said composition, and

(B) to limit the formation of thioether-containing species which can form during said reaction to less than about 45 mole % of said composition.

VOL
1147
ISS
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1993
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5,185,091

GREASY OIL AND FAT COMPOSITION FOR FOOD PROCESSING MACHINES

Ryoji Ogake, Yachimata; Mitsuo Okada, Yokohama; Hiroyuki Takashima, Yamato; Teruo Shimizu, Omiya; Narihito Yamamoto, Saitama, and Hiroyuki Uenoyama, Tokyo, all of Japan, assignors to Nippon Oil Company Limited, Tokyo, Japan

Filed Nov. 8, 1991, Ser. No. 789,721

Claims priority, application Japan, Apr. 12, 1991, 3-108371

Int. Cl.[5] C10M *105/14*

U.S. Cl. 252—56.5 **16 Claims**

1. A greasy oil and fat composition for food processing machines wherein the greasy oil and fat composition is prepared by mixing 25 to 43 weight percent of the fatty acid ester of polyglycerol, 3 to 25 weight percent of oil and fat for food and 40 to 67 weight percent of glycerol, melting the mixture by heating and kneading the mixture.

5,185,092

LUBRICATING OIL FOR REFRIGERATOR

Masaaki Fukuda; Hirotaka Tomizawa; Mitsuo Ohta; Hideki Osaka; Satoshi Ogano; Takehisa Satoh; Kenji Ashibe, and Takeshi Nomura, all of Ohi, Japan, assignors to Tonen Corporation, Tokyo, Japan

Filed Jan. 31, 1991, Ser. No. 648,805

Claims priority, application Japan, Jan. 31, 1990, 2-22689; Feb. 20, 1990, 2-39506; Feb. 28, 1990, 2-50745; Feb. 28, 1990, 2-50746; Oct. 8, 1990, 2-270274; Nov. 9, 1990, 2-305733; Nov. 9, 1990, 2-305734

Int. Cl.[5] C09K *5/00;* **C10M** *105/32*

U.S. Cl. 252—56 S **20 Claims**

1. A lubricating oil for a refrigerator using a hydrofluorocarbon refrigerant, the oil comprising an ester of dipentareythritol or tripentaerythritol with an aliphatic monobasic acid having 3 to 7 carbon atoms, or mixtures thereof, the oil having a viscosity at 100° C. in the range of 7 to 30 mm^2/s.

5,185,093

PROCESS FOR PRODUCING MAGNETIC METAL POWDER AND COATING FOR MAGNETIC RECORDING MEDIUM

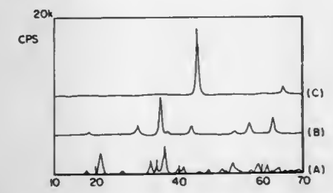
Hiroaki Ichikawa; Yasuo Kadono; Katsuo Kojima; Hiroyuki Nakamura, and Yoshio Aoki, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Mar. 26, 1991, Ser. No. 674,910

Claims priority, application Japan, Apr. 6, 1990, 2-91723

Int. Cl.[5] H01F *1/06*

U.S. Cl. 252—62.51 **14 Claims**



1. A process for producing a magnetic metal powder, which is comprised mainly of iron and having on the surface thereof a layer containing a nonferrous transition metal element comprising:
- forming on an acicular goethite containing powder, at least one silicon or aluminum compound layer;
- reducing said acicular goethite to magnetite;
- forming thereon a nonferrous transition metal compound layer;
- further forming thereon a silicon or aluminum compound layer; and
- reducing said coated magnetite to form a magnetic metal powder, wherein during the formation of the at least one silicon or aluminum compound layer on the acicular goethite, or, the formation of the nonferrous transition metal layer on the magnetite, the formation is conducted while dispersing by means of disperser having a P/V valve of at least 1×10^4 KW/m^3; wherein P is the agitating powder of an agitator, or a disperser, and

V is the amount of liquid in the vessel in the case of agitation, and the amount of hold-up in the case of a dispersion.

5,185,094

CONSTANT BOILING COMPOSITIONS OF PENTAFLUOROETHANE, DIFLUOROMETHANE, AND TETRAFLUOROETHANE

Mark B. Shiflett, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 628,000, Dec. 17, 1990, abandoned. This application Feb. 1, 1991, Ser. No. 649,356

Int. Cl.[5] C09K *5/04*

U.S. Cl. 252—67 **2 Claims**

1. A substantially constant boiling mixture consisting essentially of a ternary mixture of 5–59 weight percent pentafluoroethane, 5–59 weight percent difluoromethane and 5–35 weight percent 1,1,1,2-tetrafluoroethane having a vapor pressure of about 169 to about 207 psia. at 23.8° C. and wherein the vapor pressure changes less than about 10% after leakage of 50% of the initial mixture.

5,185,095

PHOSPHONITRILEESTER LUBRICANT FOR HYDROGEN-CONTAINING CHLORO-FLUORO CARBON AND HYDROGEN-CONTAINING FLUORO CARBON REFRIGERANTS

Takateru Dekura, No. 1-3, Sasame-cho, Kamakura-shi, Kanagawa-ken, Japan 248

Continuation of Ser. No. 662,846, Mar. 1, 1991, abandoned. This application Nov. 14, 1991, Ser. No. 792,159

Claims priority, application Japan, Nov. 30, 1990, 2-337861

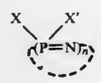
Int. Cl.[5] C09K *5/04;* **C10M** *105/56, 105/74*

U.S. Cl. 252—68 **4 Claims**

1. A refrigerant composition, comprising:

a refrigerant selected from the group consisting of hydrogen-containing chloro-fluoro carbons and hydrogen-containing fluorocarbons; and

a lubricant compound including a cyclic phosphonitrileester having the formula:



wherein n is 3 to 4

X and X' are same or different and each represented by the formula: R_1—$(OR_2)_l$—O—,

wherein R_1 is selected from the group consisting of an alkyl group of 1 to 12 carbon atoms and an aryl group of 6 to 18 carbon atoms,

R_2 is selected from the group consisting of a straight and a branched alkylene group of 2 to 4 carbon atoms, and the chain OR_2 group represents homogeneous or random or block combination, and l is an integer from 2 to 35.

5,185,096

AQUEOUS LIQUID AUTOMATIC DISHWASHING DETERGENT COMPOSITION COMPRISING HYPOCHLORITE BLEACH AND BLEACH STABILIZER

Fahim U. Ahmed, Dayton, N.J., assignor to Colgate-Palmolive Co., Piscataway, N.J.

Filed Mar. 20, 1991, Ser. No. 675,551

Int. Cl.[5] C11D *3/04, 3/395*

U.S. Cl. 252—99 **5 Claims**

1. An aqueous liquid bleach composition having improved bleach stability comprising approximately by weight:
- (a) 5 to 25% alkali metal carbonate;
- (b) chlorine bleach compound selected from the group of alkali metal hypochlorites in an amount sufficient to provide about 1 to 5% of available chlorine;
- (c) a water soluble alkali metal iodate bleach stabilizer compounds in a sufficient amount to provide a mole ratio of alkali metal iodate to available chlorine of 0.20 to 1.0;
- (d) 1 to 10% of sodium hydroxide; and
- (e) balance water.

5,185,097

POLYMERIC LIQUID-CRYSTALLINE COMPOUND, LIQUID-CRYSTAL COMPOSITION CONTAINING IT, AND LIQUID-CRYSTAL DRIVE

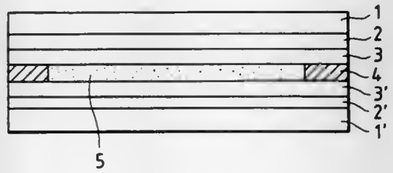
Yomishi Toshida, Yokobama; Kazuo Yoshinaga, Tokyo, and Koichi Sato, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1990, Ser. No. 631,899

Claims priority, application Japan, Dec. 29, 1989, 1-343106; Oct. 19, 1990, 2-280691

Int. Cl.[5] C09K *19/52, 19/06;* **C08G** *63/00;* **G02F** *1/13*

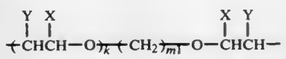
U.S. Cl. 252—299.01 **52 Claims**



1. A polymeric liquid-crystalline compound having in its repeating unit a moiety represented by the following formula (M)

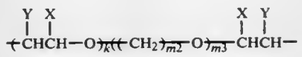
$$X_1—A—X_2—B \qquad (M)$$

wherein A represents a bicyclic mesogen; B represents a flexible group represented by the formula



wherein X represents a hydrogen atom or a methyl group and Y represents a hydrogen atom or a methyl group, provided that X is not the same as Y, k is 0 or 1, and m1 is 1 to 18,

or



wherein X represents a hydrogen atom or a methyl group and Y represents a hydrogen atom or a methyl group, provided that X is not the same as Y, k is 0 or 1, m2 is 2 to 10 and m3 is 2 to 5; and

X_1 and X_2 each represent a group containing any one of an ester bond, an ether bond and a carbonate bond, and may be the same or different from each other.

5,185,098

LIQUID CRYSTALLINE MIXTURES CONTAINING 3,4-DIFLUOROPHENYL-SUBSTITUTED BICYCLOHEXYLS

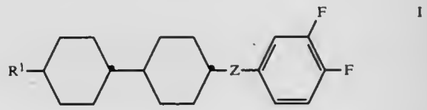
Richard Buchecker, Zürich; Martin Schadt, Seltisberg, and Alois Villiger, Basel, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 5, 1990, Ser. No. 505,197

Int. Cl.[5] C09K *19/30;* **C07C** *19/08*

U.S. Cl. 252—299.63 **14 Claims**

5. A liquid crystalline mixture having at least 2 components, wherein at least one component is a compound of formula



wherein Z is a single covalent bond or —CH_2CH_2—, and R^1 is 1E-alkenyl with 2–12 carbon atoms.

5,185,099

VISCO-ELASTIC, ISOTROPIC MATERIALS BASED ON WATER, FLUORINATE SUFACTANTS AND FLUORINATED OILS, PROCESS FOR THEIR PREPARATION, AND THEIR USE IN VARIOUS FIELDS, SUCH AS OPTICS, PHARMACOLOGY AND ELECTRODYNAMICS

Jean-Jacques Delpuech, Laxou; Louis Matos, Vandoeuvre; El Mostafa Moumni, Villers; Jean-Claude Ravey, Messein; Claude Selve, Villers les Nancy; Guy Serratrice, Crolles; Marie-José Stébé, Vandoeuvre les Nancy; Aimé Cambon, Nice, and Gérard Thiollet, Cerny, all of France, assignors to Institut National de Recherche Chimique Appliquee, Paris, France

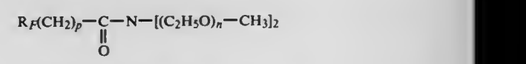
Continuation of Ser. No. 340,621, Apr. 19, 1989, abandoned. This application Nov. 14, 1991, Ser. No. 794,375

Claims priority, application France, Apr. 20, 1988, 88 05229

Int. Cl.[5] B01J *13/00*

U.S. Cl. 252—315.1 **7 Claims**

1. Viscoelastic materials having the apperance and consistency of gels comprising fluorinated surfactants, fluorinated oils, and a solvent composition selected from the group consisting of water and mixtures of water and a water-miscible solvent, said materials containing from 60 to 98% by weight of water;
- wherein a continuous phase of said materials comprises a mixture of said fluorinated surfactants and said fluorinated oils;
- wherein said surfactant is a nonionic surfactant selected from the group consisting of
  - (1) compounds of the formula $R_F(CH_2)_PR(OH)$ wherein p is less than 3, R_F is a perfluorinated carbon chain, and R represents a chain of (OC_2H_4) units, in which at least one oxygen atom is optionally replaced by a sulfur atom; and
  - (2) compound of the formula



wherein p is less than 3; and

(3) surfactants having an HLB, according to the Griffin

VOL 1147 ISS 2 FE 9 1993 UMI

formula, of less than 8, comprising a hydrophilic group containing $O(C_2H_4)_n$ groups wherein $n>2$ and a fluorinated hydrophobic group RF containing (C_xF2_x) groups wherein $4<x<12$.

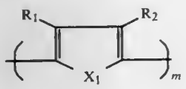
5,185,100

CONDUCTIVE POLYMERS FORMED FROM CONJUGATED BACKBONE POLYMERS DOPED WITH NON-OXIDIZING PROTONIC ACIDS

Chien-Chung Han, Madison, and Ronald L. Elsenbaumer, Morris Township, Morris County, both of N.J., assignors to Allied-Signal Inc, Morristown, N.J.

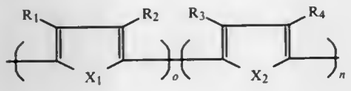
Filed Mar. 29, 1990, Ser. No. 501,066
Int. Cl.[5] H01B *1/20*
U.S. Cl. 252—500 **46 Claims**

1. An electrically conductive polymer other than polyaniline comprised of a conjugated backbone polymer doped with one or more non-oxidizing protonic acids other than hydrofluoric acid wherein said electrically conductive polymer has a conductivity greater than about 10^{-3} S/cm and wherein at least one of said acids has an aqueous or non-aqueous pKa equal to or less than about 4 and the polymer has an oxidation potential less thanabout 4 volts vs Li/LI^+ reference electrode, wherein said conjugated backbone polymer is a homopolymer or copolymer having at least one type of recurring unit of the following formulae I to XIV:

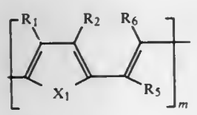


(I)

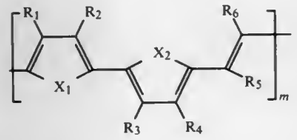
or



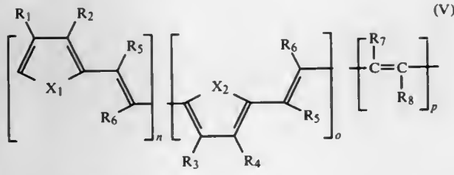
(II)



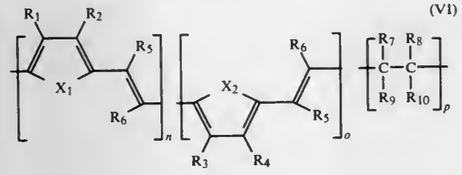
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(IV)

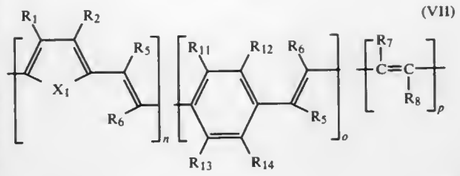


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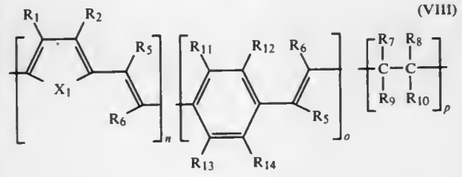


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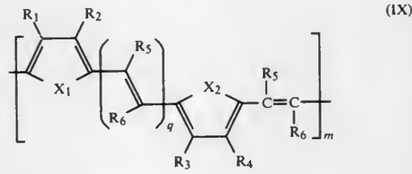
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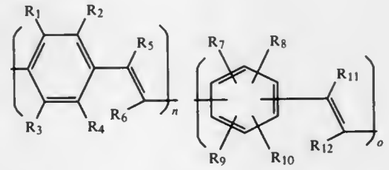
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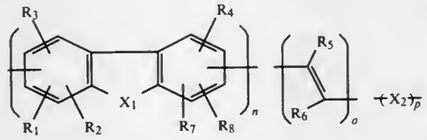
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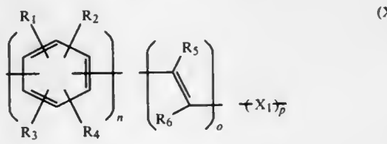
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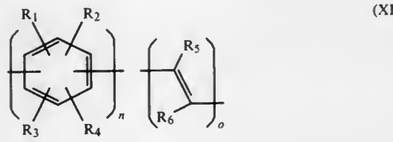
(X)



(XI)

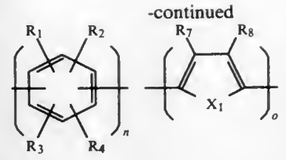


(XII)



(XIII)

-continued



(XIV)

wherein:

m is an integer equal to or greater than about 20;

n, o and p are the same or different at each occurrence and are 0 or an integer equal to or greater than 1, with the proviso that the sum of n, o and p is equal to or greater than about 20, and with the further proviso that at least one of n or o is greater than zero;

q is an integer from 0 to about 4;

R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, R_9, R_{10}, R_{11}, R_{12}, R_{13}, and R_{14} are the same or different at each occurrence and are hydrogen, isotopes of hydrogen, hydroxyl, alkyl, alkenyl, aryl, alkoxy, cycloalkyl, cycloalkenyl, alkanoyl, alkylthio, aryloxy, alkylthioalkyl, alkynyl, alkylaryl, arylalkyl, amido, alkylsulfinyl, alkoxyalkyl, alkylsulfonyl, arylamino, diarylamino, alkylamino, dialkylamino, phosphoric acid and derivatives thereof, alkylarylamino, arylthio, heterocycle, arylsulfinyl, alkoxycarbonyl, arylsulfonyl, carboxylic acids and derivatives thereof, halo, nitro, cyano, or sulfonic acid and derivatives thereof, or alkyl or phenyl substituted with one or more sulfonic acid and derivatives thereof, phosphoric acid and derivatives thereof, carboxylic acid and derivatives thereof, halo, amino, nitro, cyano, hydroxyl, or epoxy moieties, or a moiety of the formula:

$$-(OR_{15})_rOR_{16}$$

wherein:

R_{15} is a divalent alkylene moiety having from 1 to about 7 carbon atoms;

R_{16} is alkyl having from 1 to about 20 carbon atoms; and r is an integer from about 1 to 50; or

R_1 and R_2, or R_3 and R_4, or R_5 and R_6, or R_7 and R_8, or R_9 and R_{10}, or R_{11}, and R_{12}, or R_{13} and R_{14} substituents taken together are an alkylene, alkynylene or alkenylene group completing a 3, 4, 5, 6, 7, 8, 9, or 10 member aromatic, or saturated or unsaturated cyclic ring, which ring may optionally include one or more heteroatoms of nitrogen, sulfur, phosphorus, selenium, sulfinyl, sulfonyl or oxygen; and

X_1 and X_2 are the same or different and are S, O, Se, NR_{17}, or PR_{17}, where R_{17} is hydrogen, alkylaryl, arylalkyl, alkyl or aryl.

5,185,101

COMPOSITIONS CONTAINING SALTS OF ACYLOXYALKANESULFONATES

Eugene A. Weipert, Kenosha, Wis., assignor to Dr. Gene, Inc., Kenosha, Wis.

Filed Aug. 15, 1991, Ser. No. 745,144
Int. Cl.[5] C11D *1/28, 1/72, 1/68, 1/831*
U.S. Cl. 252—554 **9 Claims**

1. A composition consisting essentially of (a) between about 50 and about 80 weight percent of an acyloxyalkanesulfonate salt represented by the graphic formula:

$$RCOO(CH_2)_nSO_3M$$

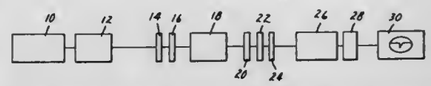
where R is an aliphatic radical having from 7 to 17 carbon atoms, n is an integer from 2 to 4 inclusive, and M is sodium, potassium or ammonium and (b) from about 20 to about 50 weight percent of a mixture of saturated aliphatic alcohols having 12 to 18 saturated aliphatic carbon atoms.

5,185,102

POLYMERIC CHARGE TRANSFER COMPLEXES FOR NONLINEAR OPTICAL APPLICATIONS

Roberta E. Harelstad, Bloomington; Cecil V. Francis, Woodbury, and Kenneth M. White, Oakdale, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 8, 1989, Ser. No. 364,329
Int. Cl.[5] C09K *29/52;* **G02F** *1/35;* **B02B** *1/04;* **C08F** *70/00*
U.S. Cl. 252—582 **28 Claims**



1. An optical medium which exhibits a third order nonlinear optical response, said optical medium comprising a polymeric complex comprising a polymer having pendant groups with delocalized pi-electron character ad dopant molecules forming charge transfer complexes with the pendant groups of the polymer, said optical medium being electrically non-conductive, wherein said polymeric complex comprises recurrent monomeric units having the formula



wherein

M is a recurring unit in the backbone of a polymer which is provided by polymerization of an ethylenically unsaturated monomer or monomers capable of undergoing condensation polymerization,

P is a pendant group having delocalized pi-electron character with electron-donating or electron-accepting properties, and

D is a dopant molecule with electron-accepting or electron-donating properties, respectively, which is capable of forming a charge transfer complex with P.

5,185,103

INTUMESCENT FLAME RETARDANT COMPOSITION

Seetha Eswarakrishnan, Allison Park; Carol L. Knox, Monroeville, and Suresh B. Damle, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 23, 1991, Ser. No. 812,778
Int. Cl.[5] C09K *21/04, 21/14*
U.S. Cl. 252—606 **21 Claims**

1. A composition comprising organic polymer, ammonium polyphosphate, and polyol (alkyl carbonate).

5,185,104

METHOD OF TREATMENT OF HIGH-LEVEL RADIOACTIVE WASTE

Misato Horie, Mito, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Continuation of Ser. No. 467,519, Jan. 18, 1990, abandoned. This application Nov. 8, 1991, Ser. No. 789,528
Claims priority, application Japan, Jan. 28, 1989, 1-19224
Int. Cl.[5] G21F *9/08, 9/14*
U.S. Cl. 252—632 **7 Claims**

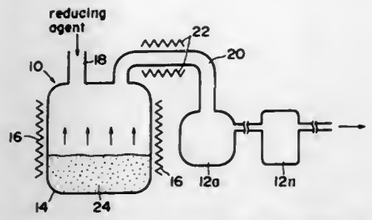
1. A method of treatment of a high-level radioactive waste of a nitric acid solution obtained as an extraction residue in reprocessing of spent nuclear fuels, said method consisting essentially of:

calcining the nitric acid solution to evaporate moisture and nitric acid in the solution to thereby obtain a calcined radioactive waste;

heating the calcined radioactive waste to a temperature

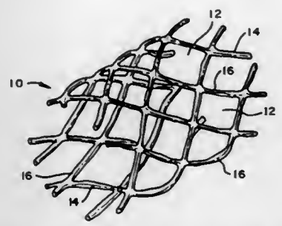
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ranging from about 500° to about 3,000° C. to vaporize a portion of the elements contained in the radioactive waste, the respective elements being vaporized in the form of metal or oxide thereof; and



obtaining as a residue, a volume-reduced high-level radioactive solid.

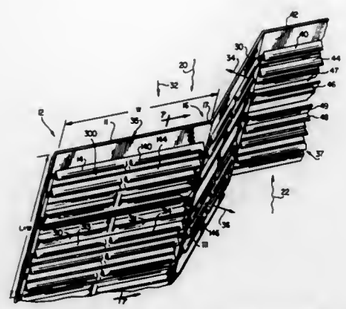
5,185,105
SPLASH BAR CONSTRUCTION FOR A COOLING TOWER
Charles A. Peterson, 2201 Lord Ashley Dr., Sanford, N.C. 27330
Filed Apr. 1, 1992, Ser. No. 861,582
Int. Cl.[5] B01F *5/00*
U.S. Cl. 261—111 **10 Claims**



1. A cooling tower having water descending therethrough and having an array of spaced-apart support bars horizontally supporting and fixing splash bars, said splash bars comprising a strand material having an irregular surface and forming a network of similarly-shaped interstices, said network of interstices defining the peripheral region of said splash bars, whereby said splash bars create a maximum splash effect and concomitantly prevents the formation of a water film thereon.

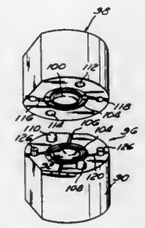
5,185,106
TOWER PACKING WITH SMALL LOUVERS AND MIXING METHOD
Gilbert K. Chen, Farmers Branch; Robert McKelvy; Jorge A. Bonilla, both of Dallas; Don Glaspie, Dallas, and George De Bruyn, Irving, all of Tex., assignors to Glitsch, Inc., Dallas, Tex.
Continuation-in-part of Ser. No. 618,724, Nov. 27, 1990, Pat. No. 5,057,250, and a continuation-in-part of Ser. No. 618,725, Nov. 27, 1990, Pat. No. 5,080,836. This application Aug. 19, 1991, Ser. No. 747,286
The portion of the term of this patent subsequent to Oct. 12, 2008, has been disclaimed.
Int. Cl.[5] B01F *5/00, 3/04*
U.S. Cl. 261—112.1 **38 Claims**

1. A tower packing for contacting a first mobile phase in a first stream with a second mobile phase in a second stream comprising a plurality of vertically oriented corrugated sheets in face-to-face contact with opposed corrugations inclined oppositely to one another, each of said sheets having fold lines therein establishing ridges and valleys separated by flat areas, said ridges, valleys, and flat areas defining said corrugated configuration of said sheets, each of said flat areas being provided with a plurality of laterally extending louvers thereon, some of said louvers having upwardly facing edges and some



having downwardly facing edges and substantially all of said louvers terminating adjacent, but short of, said fold lines.

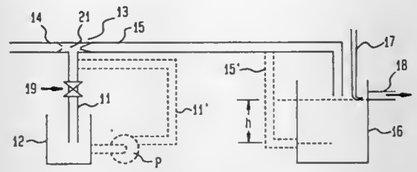
5,185,107
FABRICATION OF AN INTRAOCULAR LENS
Larry W. Blake, Irvine, Calif., assignor to Iovision, Inc., Irvine, Calif.
Division of Ser. No. 262,985, Oct. 26, 1988, Pat. No. 5,104,590. This application May 28, 1991, Ser. No. 705,771
Int. Cl.[5] B29D *11/00*; A61F *2/16*
U.S. Cl. 264—2.5 **8 Claims**



1. A method of forming a lens, comprising the steps of:
providing a die having the inverse shape of a desired optical power surface;
providing a non-softened solid blank;
subjecting said blank to high pressure within said die such that said blank flows plastically to take on the shape of said desired optical power surface defined by said die; and
molding a lens in a mold using said optical power surface.

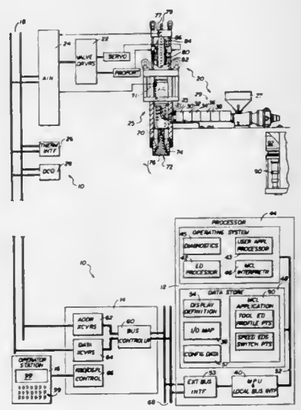
5,185,108
METHOD FOR PRODUCING WAX MICROSPHERES
Donald J. Shimandle, Streetsboro, Ohio, assignor to The B. F. Goodrich Company, Brecksville, Ohio
Filed Jul. 10, 1991, Ser. No. 727,746
Int. Cl.[5] B29B *9/10*
U.S. Cl. 264—11 **7 Claims**

1. A process for producing wax microspheres from molten wax, comprising,
(a) flowing a hot motive liquid in which molten wax is immiscible, said motive liquid being flowed at a temperature at least 10° C above the final melting point of the wax, and under pressure in the range from about 300 Kpa to about 2000 Kpa, through an orifice zone into which molten wax is drawn to form a dispersion of molten wax, said pressure being sufficient to generate a pressure drop in said zone to form a dispersion of the molten wax in the hot motive liquid;
(b) supplying said molten wax to said orifice zone in an amount such that wax is the disperse phase and the hot motive liquid is the continuous phase in the dispersion formed;
(c) discharging the dispersion into a solidification liquid in which the wax is immiscible, the solidification liquid being



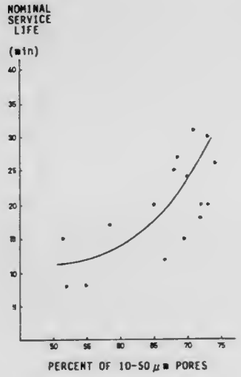
maintained at a controlled temperature below the initial melting point of the wax;
(d) recovering a mass of essentially spherical wax microspheres having a two-tier weight distribution in which more than 50% of the cumulative weight percent of microspheres is attributable to those having a diameter greater than a predetermined diameter; and,
(e) drying the mass to recover a free-flowing mass of individual wax microspheres.

5,185,109
EXTRUSION BLOW-MOLDING MACHINE CONTROL
Thomas F. Habig, Batavia, and Wayne D. Beninghaus, Milford, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Sep. 12, 1991, Ser. No. 758,663
Int. Cl.[5] B29C *49/04, 49/78*
U.S. Cl. 264—40.5 **6 Claims**



1. In a method for programmed control of extrusion blow molding wherein for each article to be blow molded a predetermined quantity of plasticized material is loaded into an accumulator and purged therefrom through a variable annular gap to form a tubular parison, the purge being controlled according to a program of parison profile set point data defining desired parison wall thicknesses associated with locations along the length of the parison to be formed, the locations being equally spaced one from another along the parison length, the improvement comprising the steps of:
a. storing programmed stroke length data defining a portion of an available stroke length effective to purge the accumulator of the predetermined quantity of material;
b. storing desired purge speed data defining desired rates of purge associated with locations along the parison length;
c. calculating position values in response to the stored stroke length data, the available stroke length, and the parison profile set point data, the position values defining locations along the stroke length corresponding to the locations associated with the parison profile set point data;
d. storing the position values;
e. measuring a position representing progress of purge of the predetermined quantity of material from the accumulator;
f. producing parison profile set point signals and purge velocity set point signals in response to the parison profile set point data, the stored desired purge speed data, the stored position values and the measured position;
g. controlling the rate of purge of material from the accumulator in response to the purge velocity set point signals; and
h. varying the magnitude of the annular gap during purge of the accumulator in response to the parison profile set point signals.

5,185,110
METHOD OF PRODUCING POROUS CERAMIC FILTER, USING CORDIERITE COMPOSITION INCLUDING TALC AND SILICA POWDERS
Kunikazu Hamaguchi; Kazuhiko Kumazawa, both of Nagoya, and Seiichi Asami, Okazaki, all of Japan, assignors to NGK Insulators, Ltd., Japan
Filed Mar. 27, 1991, Ser. No. 675,805
Claims priority, application Japan, Mar. 30, 1990, 2-86787
Int. Cl.[5] B29C *65/00*; C04B *35/64*
U.S. Cl. 264—44 **8 Claims**



1. A method of producing a porous cordierite ceramic honeycomb filter, comprising the steps of:
preparing a starting composition including a talc powder component and a silica powder component, such that particles of said talc powder component and said silica powder component whose size is at least 150 μm constitute not greater than 3% by weight of said starting composition, while particles of said talc and silica powder components whose size is not greater than 45 μm constitute not greater than 25% by weight of said starting composition, said talc powder component having an average parti-

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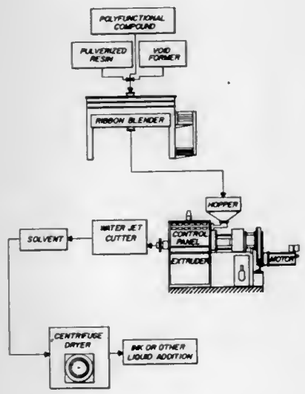
cle size of not greater than 80 μm, and said silica powder component having an average particle size of 30–50 μm; forming a green body in the shape of said porous ceramic honeycomb filter by using said starting composition; and firing said green body to react said starting composition to form cordierite and produce said porous cordierite ceramic honeycomb filter.

5,185,111

METHOD OF PRODUCING ELASTOMERIC OPEN CELL STRUCTURES

Warren G. Lazar, Tucson, Ariz., assignor to Polypore, Inc., Tucson, Ariz.

Filed Feb. 13, 1991, Ser. No. 654,935
Int. Cl.[5] B29C *67/20*
U.S. Cl. 264—49 **15 Claims**



1. A method of making a fluid dispensing microporous material, comprising the steps of:

a) preparing a mixture of a void former, a polymeric material having a predetermined melt point and a polyhydroxy alcohol compound, said polymeric material being selected from the group consisting of a polyurethane, a plasticised polyvinyl chloride, a copolymer of vinyl chloride and vinylidene chloride or vinyl acetate, a butadiene-styrene copolymer, a polyester, a polyamide, a polyesteramide, a polyvinyl formal, a polyvinyl alcohol, a polyacrylate, and a polystyrene, and said polyhydroxy alcohol compound being selected from the group consisting of polyethylene glycol, polypropylene glycol, ethylene glycol, 1,3-propanediol, glycerol, 1,2-butanediol, triethylene glycol, diethylene glycol, triethanolamine, and diethanolamine;

b) said polymeric material being provided in a ratio by weight of 18:1 to 1:3 with respect to said polyhydroxy alcohol compound;

c) shaping said mixture into a predetermined profile structure via molding at a temperature below said melt point of said polymeric material;

d) cooling said profile structure to a predetermined temperature below said molding temperature; and

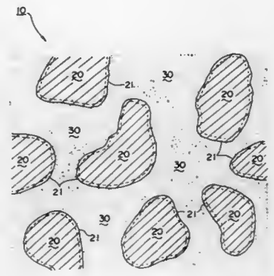
e) extracting the void former from said profile structure with a solvent.

5,185,112

TITANIUM BORIDE CERAMIC MATERIAL

Hajime Saito, 1088-193 Aza-Hirako, Oaza-Fujieda, Nisshin-cho, Aichi-gun, Aichi-ken; Hideo Nagashima, Ebina; Junichi Matsushita, and Shinsuke Hayashi, both of Nagoya, all of Japan, assignors to Hajime Saito; STK Ceramics Laboratory Corporation and Toshiba Ceramics Co., Ltd., all of, Japan

Filed Dec. 16, 1988, Ser. No. 285,571
Claims priority, application Japan, Dec. 25, 1987, 62-328627; Dec. 25, 1987, 62-328628; Apr. 29, 1988, 63-108869
Int. Cl.[5] C04B *35/58*
U.S. Cl. 264—63 **3 Claims**



1. A method for producing a sintered titanium boride ceramic body comprising the steps of:

(a) mixing 75–99 wt. % TiB_2 particles with 1–25 wt. % in total of Cr powder and C powder, together with a binder, to make a mixture wherein the weight ratio of Cr powder/C powder is from 7:0.1 to 7:10;

(b) applying a pressure of 100–800 kg/cm^2 to the mixture in a mold to make a green compact;

(c) applying further a pressure of 800–3500 kg/cm^2 to the green compact by cold isostatic pressing to shape a ceramic body; and

(d) pressureless sintering the shaped ceramic body in non-oxidizing atmosphere at a temperature of 1500°–2000° C. to form the sintered titanium boride ceramic body consisting essentially of a matrix having a three-dimensional net-work structure, TiB_2 particles dispersed in the matrix, and a solid solution layer formed around the periphery of each of the TiB_2 particles, the solid solution layer being mixed crystals and solid solutions of TiB_2 and Cr boride.

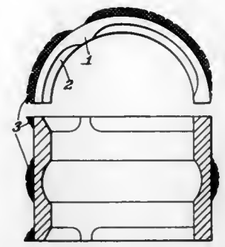
5,185,113

SLIP-CAST CERAMIC COMPONENT AND A PROCESS FOR ITS PRODUCTION

Johannes Seyer, Roedental, and Bernhard Freudenberg, Coburg, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Division of Ser. No. 670,904, Mar. 18, 1991, abandoned. This application Jun. 19, 1992, Ser. No. 902,456
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1990, 4010092
Int. Cl.[5] C04B *41/91*
U.S. Cl. 264—67 **5 Claims**

1. Process for the production of a slip-cast ceramic component with an internal chamfer which is optionally interrupted, which comprises slip-casting a ceramic blank having a uniform thickness, a desired internal configuration and an outwardly disposed volume having an external configuration, then cutting or machining the external configuration only to remove the outwardly disposed volume corresponding to the internal configuration thereby providing a smooth external surface.

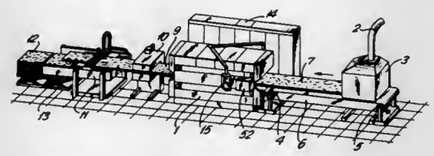


5,185,114

METHOD FOR PRODUCING PROCESSED WOOD MATERIAL PANELS

Kurt Held, Alte Str. 1, D-7218 Trossingen 2, Fed. Rep. of Germany

Continuation of Ser. No. 307,300, Feb. 6, 1989, abandoned, which is a division of Ser. No. 120,355, Nov. 13, 1987, Pat. No. 4,802,837. This application Sep. 10, 1990, Ser. No. 580,355
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1986, 3639061
Int. Cl.[5] B29C *43/48, 43/56, 45/57*
U.S. Cl. 264—83 **2 Claims**



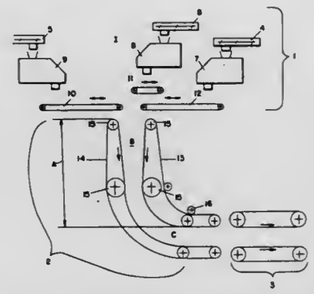
1. Method of discontinuously producing processed wood material board or panels including chipboard, fiberboard, OSB panels, and MDF panels including the steps of coating wood material particles with a binder free of any hardener, spreading the wood material particles to form a chip cake, dividing the chip cake into chip cake sections, and conveying the chip cake sections in a cyclically-timed manner into a discontinuously operable platen press formed of a pair of pressure plates, closing the pressure plates for compressing the chip cake section between the plates, at the start of the closing of the plates in the compressing step supplying one of an acid hardener or a basic hardener in one of a gaseous phase or a binary phase with a gaseous carrier agent into the chip cake section between the pressure plates, introducing the hardener through surfaces of the pressure plates in contact with the chip cake section so that the hardener penetrates into the chip cake section for triggering the curing reaction of the binder, terminating the compressing step when the chip cake section reaches a predetermined density, terminating the supply of the hardener at the termination of the compressing step, and after terminating the supply of the hardener, applying retaining pressure to the compacted chip cake section until the binder has hardened.

5,185,115

FLAT EXTRUSION METHOD FOR MANUFACTURING INORGANICALLY OR ORGANICALLY BONDED WOODED MATERIALS, ESPECIALLY MULTILAYER PANELS

Volker Thole, Braunschweig, Fed. Rep. of Germany, assignor to Fraunhofer-Gesellschaft zur Forderung der Angewandten Forschung e.V., Munich, Fed. Rep. of Germany

PCT No. PCT/DE90/00709, § 371 Date Jun. 13, 1991, § 102(e) Date Jun. 13, 1991, PCT Pub. No. WO91/04142, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 15, 1990, Ser. No. 679,036
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1989, 3930840
Int. Cl.[5] B32B *21/02*; D04H *1/70*
U.S. Cl. 264—113 **18 Claims**



1. A flat extrusion method for manufacturing panels made with a mixture of inorganically or organically bonded wooden materials comprising the steps of:

a) simultaneously feeding the mixtures through mixing and spreading devices (1) into a perpendicular conically tapered shaft (A, B) formed by circulating compression belts (13, 14) said spreading and mixing device including at least one dispensing device that oscillates substantially around the midline of the conical shaft when the mixture is poured into the conical shaft, said dispensing device adding a component to the mixture;

b) compressing the mixture by the conical design of shaft (B) and the subsequent travel through a section (C) in which the compression belts are arranged parallel to one another and are at a distance from one another that corresponds to the thickness of a finished panel strand; and

c) curing the mixture in a downstream calibration section (3).

5,185,116

PREPARING SHAPED STRUCTURE OF POLYARYLATE COPOLYMERS HAVING HIGH TENSILE ELONGATION AT BREAK

Charles W. Stewart, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

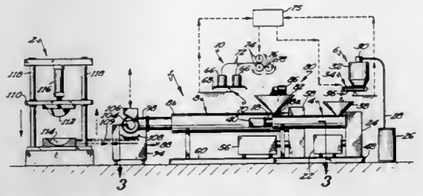
Division of Ser. No. 414,412, Sep. 29, 1989, Pat. No. 5,064,704. This application Jun. 14, 1991, Ser. No. 715,599
Int. Cl.[5] B29C *47/90*
U.S. Cl. 264—178 F **9 Claims**

1. Process of extruding and drawing a polymer so as to form a drawn shaped structure having a tensile elongation at break in the drawn direction of greater than 80% at 25° C., the process comprising extruding into an extrudate an amorphous polyarylate copolymer of an aromatic dicarboxylic acid and a diphenol wherein no more than one chain carbon atom per repeat unit is an aliphatic carbon atom, said copolymer having a number average molecular weight greater than 10,000, said process further comprising drawing the extrudate at a temperature at least 100° C. above the glass transition temperature of

VOL
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the polyarylate copolymer, and thereafter cooling the drawn extrudate and recovering an amorphous shaped and drawn structure having a tensile elongation at break in the drawn direction of greater than 80% at 25° C.

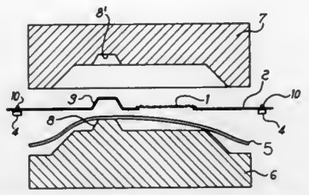
5,185,117
PROCESS FOR COMPOUNDING THERMOPLASTIC RESIN AND FIBERS
Ronald C. Hawley, Winona, Minn., assignor to Composite Products, Inc., Winona, Minn.
Division of Ser. No. 402,237, Sep. 5, 1989, abandoned. This application Jul. 10, 1991, Ser. No. 728,158
Int. Cl.[5] B29B *11/16*
U.S. Cl. 264—211.12 **4 Claims**



1. A process for compounding reinforcing fibers with a thermoplastic resin in an apparatus comprising a resin extruder having a rotatable extruding screw extending therein and a compounding extruder having a single, continuous straight barrel defining an inlet end and a discharge end of said compounding extruder and an elongated power screw extending within said barrel between said inlet end and said discharge end thereof, said process comprising:
rotatably driving said extruding screw and said power screw at predetermined speeds;
introducing discrete lengths of reinforcing fibers into said compounding extruder at a first inlet port on said inlet end of said barrel and mechanically working and heating said fibers while continuously confined within said inlet end of said barrel by said power screw;
directing thermoplastic resin material into said resin extruder and heating and melting said resin material by the rotating action of said extruding screw to form a fluid, molten mass of thermoplastic resin; and
feeding said molten thermoplastic resin in a pressurized state from said resin extruder into said compounding extruder at a second inlet port on said inlet end of said barrel downstream from said first inlet port between said first inlet port and said discharge end of said barrel and moving the mechanically worked and heated fibers by said power screw past said second inlet port, and thereby forming a homogeneous mixture of thermoplastic resin and discrete lengths of reinforcing fibers in said compounds extruder by the rotating action of said power screw; and
discharging said homogeneous mixture from said discharge end of said compounding extruder.

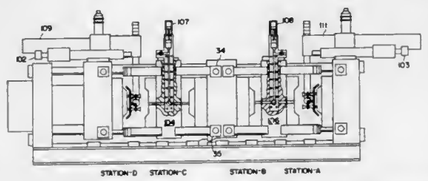
5,185,118
PROCESS AND DEVICE FOR THE PRODUCTION OF PANELS
Dante Siano, Cologno Monzese, Italy, assignor to Commer S.p.A., Milan, Italy
Filed Jun. 8, 1990, Ser. No. 534,910
Claims priority, application Italy, Jun. 9, 1989, 20839 A/89
Int. Cl.[5] B29C *67/14*
U.S. Cl. 264—257 **7 Claims**

1. A process for the manufacture of shaped and lined panels, wherein a covering sheet having opposite edges made at least partly of deformable material is stretched on a positioning frame and the material is coupled by molding with a preheated plate of thermoplastic material; comprising the steps of:
providing on said covering sheet proximate opposite edges thereof, before its positioning on said frame, a first plurality of reference and adjusting means;
determining the actual arrangement of said first plurality of



reference means over said frame in a shaped and correctly lined panel;
providing a second plurality of reference and adjusting means positioned on said frame according to said actual arrangement of said first plurality of reference means; and
stretching the covering sheet on said frame with said first and second pluralities of reference means.

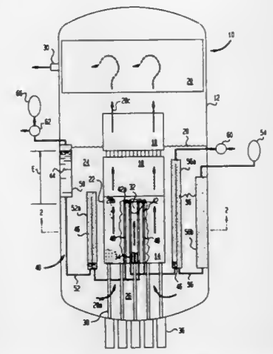
5,185,119
INJECTION MOLDING PROCESS
Robert D. Schad, Toronto, Canada, and Paul Brown, Sunny Isle, V.I., assignors to Husky Injection Molding Systems Ltd., Bolton, Canada
Continuation of Ser. No. 398,255, Aug. 24, 1989, Pat. No. 5,112,558, which is a continuation-in-part of Ser. No. 150,157, Jan. 29, 1988. This application Oct. 23, 1991, Ser. No. 781,367
The portion of the term of this patent subsequent to May 12, 2009, has been disclaimed.
Int. Cl.[5] B29C *45/12, 45/42*
U.S. Cl. 264—297.2 **7 Claims**



1. A process for molding plastic parts utilizing an injection molding machine having injection means and at least one first mold located at a first molding station and at least one second mold located at a second molding station, said molds comprising cooperating mold halves supported by fixed and movable platens, said platens being arranged in tandem, comprising the steps of:
providing molten plastic distributor means operable to communicate selectively with one of said first and second molds;
injecting molten plastic into said molds through said molten plastic distributor means to form plastic parts in said first and second molds, wherein the first and second molds open and close sequentially so that one of said molds is open while a second of said molds is closed;
providing a robot fixed to a stationary platen, said robot having a robot head including at least one plastic part pick up unit oriented to pick up the plastic parts in said first mold;
removing the plastic part from the first mold with the plastic part pick up unit;
subsequently removing the plastic part from the second mold with the plastic part pick up unit, wherein the robot

head moves sequentially from the first mold to the second mold and the plastic part pick up unit picks up plastic parts from an open mold while the other of said molds is closed; and
wherein said sequential movements include sequentially moving a first leg of said robot along a longitudinal axis of said machine followed by moving a second leg of said robot along a second axis of said machine to move said robot head into register with said part, and wherein said sequential movement of said legs operated in sequence with the sequential opening and closing of the molds; and
wherein said robot operates on rectilinear coordinates to move from molding station to molding station along said longitudinal axis and into and out of an open mold along said second axis.

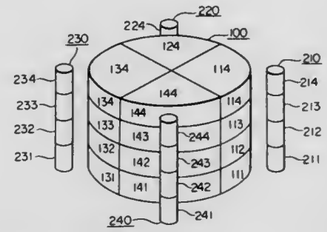
5,185,120
LIQUID AFFECTED SPECTRAL SHIFT REACTOR
Larry E. Fennern, San Jose, Calif., assignor to General Electric Company, San Jose, Calif.
Filed Oct. 10, 1991, Ser. No. 774,445
Int. Cl.[5] G21C *7/00*
U.S. Cl. 376—219 **21 Claims**



1. In a nuclear reactor core having fuel bundles and hollow control blades, a method for affecting neutron spectral shift during a core fuel cycle including beginning and end intervals comprising:
providing a liquid poison in said blades for reducing nuclear reactivity in said core;
displacing said liquid poison in at least a first one of said blades with a first fluid having a first moderating ratio for obtaining a hard neutron spectra adjacent to said first blade during said cycle beginning interval for converting fertile fuel in said fuel bundles to fissile fuel; and
increasing moderating ratio of said first blade using a second fluid for obtaining a soft neutron spectra adjacent to said first blade during said cycle end interval for burning said fissile fuel.

5,185,121
REACTOR POWER MEASURING METHOD
Minoru Oda, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 595,745, Oct. 10, 1990, abandoned, which is a continuation of Ser. No. 355,808, May 22, 1989, abandoned, which is a continuation of Ser. No. 765, Jan. 6, 1987, abandoned. This application Jan. 16, 1992, Ser. No. 821,871
Claims priority, application Japan, Jan. 29, 1986, 61-15883
Int. Cl.[5] G21C *17/00*
U.S. Cl. 376—254 **4 Claims**

1. In a nuclear reactor wherein a plurality of neutron detectors are arranged vertically and at equal azimuth angles around a core of the nuclear reactor, each of the neutron detectors having a length substantially equal to the height of the core and including therein a plurality of partial detectors having lengths equal to one another, a method for measuring a vertical power profile of sectors of the reactor core comprising:
dividing said core into a m sectoral columns, where m is greater than two, the sectoral columns forming respective azimuth angles, each sectoral column facing a respective neutron detector k;
dividing each sectoral column m into j azimuthal parts, each azimuthal part facing a respective partial detector;
calculating a vertical reactor power profile a_{mj} for each sectoral column m including establishing a transformation matrix in accordance with



$$[D_{mk}]=[Q_{mkj}][f_{mj}]$$

wherein D_{mk} are the outputs of the partial detectors of the detector k and f_{mj} are the integrated power outputs of the azimuthal parts j of the sectoral column m facing said detector k;
calculating the Fourier coefficients C_{mj} for each azimuthal part j of each sectoral column m of said core from

$$[C_{mj}]=[A_{mk}][Q_{mkj}]^{-1}[D_{mk}];\text{ and}$$

calculating the reactor power profiles f_{mz} of each sectoral column m from

$$f_{mz}=\sum_{j=1}^{j_{max}} C_{mj}\sin(j\,\pi\,Z_j/Z_{max})$$

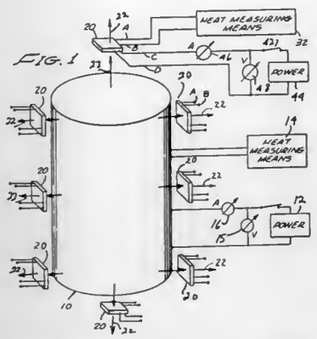
where Z_j is the thickness of the Jth azimuthal part and Z_{max} is the total axial thickness of said core to measure the vertical reactor power profile of each of the sectoral columns of said core.

5,185,122
GAMMA RAY FLUX MEASUREMENT SYSTEM
Heinz F. Poppendiek, La Jolla, Calif., and John A. Lundin, Vienna, Va., assignors to Geoscience Ltd., Solana Beach, Calif.
Filed Dec. 18, 1990, Ser. No. 629,687
Int. Cl.[5] G21F *5/06*
U.S. Cl. 376—272 **6 Claims**

1. In a system for storing radioactive material in a storage vessel, a method for monitoring radiation absorbed by said vessel and gamma radiation leaving the surface of said vessel comprising the steps of providing said vessel for storage of radioactive material with a heat flux measuring system, said heat flux measuring system producing an output representative of the quantity of heat flow throughout said vessel due to radiation absorbed by said radiation absorbing material of said vessel, spacing slabs of gamma radiation absorbing material away from said storage vessel for absorbing gamma radiation not absorbed by said vessel and producing gamma radiation heat therefrom, measuring said gamma radiation heat and using said gamma radiation heat measurement for comparison, to-

VOL 1147 ISS 2 FEB 9 1993 UMI

gether with said output representative of said heat flow throughout said vessel, with expected heat quantity from anticipated energy release due to radiation from said stored radioactive material or comparison with previous measurements of



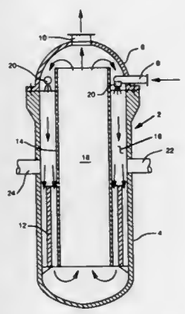
heat flow throughout said vessel and of said gamma radiation heat produced in said slabs, thereby determining deviations from the anticipated heat release indicative of radioactive material loss through leakage or removal.

5,185,123

APPARATUS FOR ANNEALING WALLS OF NUCLEAR REACTORS

Jan S. Porowski; Edward J. Hampton; Manohar L. Badlani, and William J. O'Donnell, all of 241 Curry Hollow Rd., Pittsburgh, Pa. 15236

Filed Apr. 10, 1992, Ser. No. 866,412
Int. Cl.[5] G21C *19/00*
U.S. Cl. 376—277 **10 Claims**



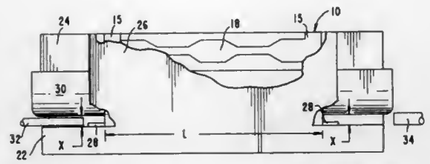
1. Apparatus suitable for annealing the interior walls of a nuclear reactor, which comprises a nuclear reactor shell, a cap securely attached thereto, said cap having at least one high-energy gas inlet extending inwardly therein and a low-energy gas outlet extending outwardly therefrom, means defining an annular space adjacent vertical walls of said reactor through which gas can flow and means for directing a portion of low-energy gas to said low-energy gas outlet.

5,185,124

DIMENSIONAL GAUGING APPARATUS FOR NUCLEAR FUEL ROD SPACER CELLS

Eric B. Johansson, Wrightsville Beach, and David G. Smith, Leland, both of N.C., assignors to General Electric Company, San Jose, Calif.

Filed Feb. 18, 1992, Ser. No. 836,684
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—439 **7 Claims**



1. Apparatus for gauging the dimensional characteristics of cells incorporated in spacers utilized in nuclear fuel bundles to establish critical spacings between fuel rods, said apparatus comprising, in combination:

A. a fixture having a base and a pair of sidewalls separated by a distance equal to a nominal width dimension of the cells, whereby said sidewalls provide a width dimension gauge when a cell is placed in a gauging position resting on said base between said sidewalls;

B. a pin for insertion through a cell in said gauging position to rest on a pair of stops formed in the cell, said pin having a diameter equal to the nominal diameter of a fuel rod; and

C. at least one feeler gauge for insertion through gaps between said pin and each of said base and at least one of said sidewalls to determine whether the dimensional characteristics of the cell will establish the critical fuel rod spacing when incorporated in a spacer.

5,185,125

DENTAL ALLOY AND AMALGAM THEREOF

Susan L. Smith, Saline, and Richard W. Fountain, Pinckney, both of Mich., assignors to Special Metals Corporation, New Hartford, N.Y.

Filed Dec. 2, 1991, Ser. No. 801,290
Int. Cl.[5] C22C *5/06, 5/00*
U.S. Cl. 420—503 **14 Claims**

1. An amalgamable dental alloy consisting essentially of, by weight, 48.75 to 50.75% silver, 20.25 to 21.75% copper, 28.25 to 29.25% tin, 0.05 to 0.8% palladium and up to 2.7% of elements selected from the group consisting of zinc, indium, manganese, cadmium, aluminum, gallium, ruthenium and mercury; said amalgamable dental alloy having a condense time of from 2.5 to 3 minutes and a carve time of from 4 to 5.5 minutes upon amalgamation.

5,185,126

INFECTIOUS WASTE DISPOSAL UNIT

Joseph R. Adamski, Sudbury; Robert F. Bowen, Burlington; Robin C. Hossfield, Medway; Thomas P. Schregardus, Somerville, and John S. Sklenak, Sudbury, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jul. 10, 1991, Ser. No. 727,719
Int. Cl.[5] A61L *2/00*; G05D *23/00*; F27B *14/06*; G01F *23/00*
U.S. Cl. 422—38 **18 Claims**

12. Apparatus for sterilizing waste materials comprising:

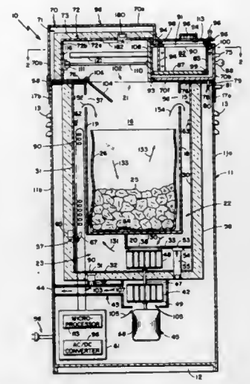
a cabinet;

a melting chamber disposed within said cabinet, said melting chamber having an aperture through which waste material is deposited to a predetermined height;

an air circulation system comprising a heating element and blower means, said blower means directing air past said heating element and into said melting chamber:

a cover disposed over said aperture;

sonic means disposed over said melting chamber and in



alignment with said aperture for providing a control signal corresponding to said predetermined height of the waste material deposited in said chamber; and

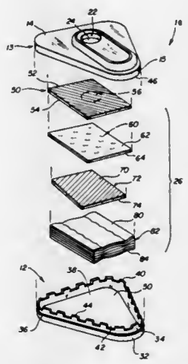
means responsive to said control signal for deactivating said heating element.

5,185,127

TEST DEVICE INCLUDING FLOW CONTROL MEANS

Glenn P. Vonk, Fuquay-Varina, N.C., assignor to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 410,372, Sep. 21, 1989, abandoned. This application Mar. 24, 1992, Ser. No. 856,885
Int. Cl.[5] G01N *33/546*
U.S. Cl. 422—56 **20 Claims**



1. A device for assay of an analyte comprising an enclosure and a filter stack therein, said filter stack comprising:

a) a porous hydrophilic membrane having a first surface and a second surface, said hydrophilic membrane having thereon a binder for an analyte;

b) a porous hydrophobic membrane having a first surface and a second surface, said first surface being in contact with said second surface of said hydrophilic membrane, said hydrophobic membrane being impermeable to an aqueous fluid and permeable to a solution of a wetting agent and an aqueous fluid; and

c) an absorbent material in contact with said second surface of said hydrophobic membrane such that said hydrophilic membrane, said hydrophobic membrane and said absorbent material are in fluid communication when said hydrophobic membrane is permeable.

said enclosure including an opening providing access to the first surface of said hydrophilic membrane.

5,185,128

TEST KIT CONTAINING LABELED RECEPTOR AND WASH SOLUTION FOR DETERMINATION OF AN IMMUNOLOGICAL LIGAND

Gregory J. McClune, Portage, Mich., and Margaret J. Smith-Lewis, Pittsford, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 155,670, Feb. 12, 1988, Pat. No. 5,017,474. This application Nov. 1, 1990, Ser. No. 607,957
The portion of the term of this patent subsequent to May 21, 2008, has been disclaimed.
Int. Cl.[5] G01N *33/53, 33/58*
U.S. Cl. 422—61 **11 Claims**

1. A test kit for the determination of an immunological ligand comprising, individually packaged:

(a) one or more receptors for an immunological ligand, at least one of which is labeled for detection,

(b) an aqueous wash solution buffered to a pH of from about 5 to about 9 and comprising at least about 0.01 weight percent of a compound comprising a dodecyl sulfate anion and an alkali metal or ammonium cation, and

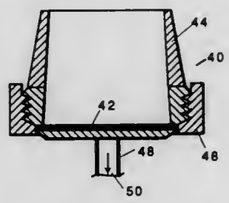
(c) a test device comprising a water-insoluble polymeric substrate having a multiplicity of test wells, and having a microporous membrane in each of said test wells, and having immobilized within at least one of said test wells, a receptor for said immunological ligand.

5,185,129

OZONE MONITORS

Petros Koutrakis, Cambridge, and Jack M. Wolfson, Jamaica Plain, both of Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Filed Feb. 28, 1991, Ser. No. 662,164
Int. Cl.[5] G01N *31/22*
U.S. Cl. 422—88 **17 Claims**



1. An ozone monitor comprising:

an ozone reactive surface having a chemical coating comprising nitrite ions, a basic compound, and a hygroscopic component, said surface being constructed so as to specifically react with ozone, said surface also being constructed so as to fail to react with nitrogen dioxide in an amount which affects ozone quantitation by more than 20% when said nitrogen dioxide is provided at a concentration of 76 ppb and ozone is provided at a concentration of 30 ppb within a test gas; wherein said nitrite ions are reactive with ozone to form nitrate ions, wherein the quantity of said nitrate ions is indicative of the quantity of ozone monitored;

said surface being held within a container.

VOL 1147 ISS 2 FE 9 1993 UMI

5,185,130

SOLID-STATE SENSOR FOR DETERMINING HYDROGEN AND/OR NO_x CONCENTRATION AND THE METHOD FOR ITS PREPARATION

Alberto Camanzi, Tor Lupara, and Giorgio Sberveglieri, Cavriago, both of Italy, assignors to Eniricerche S.p.A., Milan, Italy

Filed Dec. 8, 1989, Ser. No. 447,855
Claims priority, application Italy, Dec. 23, 1988, 23090 A/88
Int. Cl.[5] B05D *3/02;* **G01N** *27/12*
U.S. Cl. 422—90 **4 Claims**

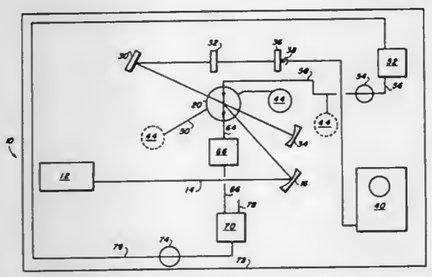
1. A solid-state sensor for determining the concentration of a gas selected from the group consisting of hydrogen and NO_x, comprising a support on which a thin film, of thickness between 80 and 200 nm, is deposited, said thin film consisting of tin oxide and bismuth oxide, wherein the molar ratio of bismuth to tin is from 5:95 to 7:93.

5,185,131

LASING DYE SENSOR FOR CHEMICAL VAPORS

Terence W. Barrett, Bethesda, and John F. Giuliani, Kensington, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 245,421, Sep. 16, 1988, Pat. No. 5,108,931. This application Dec. 6, 1991, Ser. No. 802,926
Int. Cl.[5] G01N *21/27*
U.S. Cl. 422—91 **14 Claims**



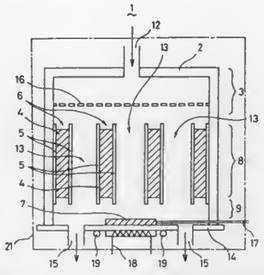
1. An external lasing dye system for detecting a chemical vapors having a basic pH in an air sample having:
(a) a chamber;
(b) a means for generating and projecting a laser beam into the chamber;
(c) a means for introducing a free-flowing jet stream of lasing dye into the chamber so that the lasing dye jet stream intersects the laser beam; and
(d) a means for detecting and analyzing the lasing emission spectra of the lasing dye jet stream;
wherein the improvement comprises:
a) a means connected to the lasing dye system for conveying an air sample potentially containing contaminants having a basic pH into the chamber so that the air sample contacts a dye stream introduced into the chamber, said dye stream being chemically reactive with the contaminants, and the contact between the air sample and the dye stream occurring not later than the dye streams intersection with the laser beam, whereby chemical reaction between the dye stream and the contaminants change the spectra emitted by said lasing dye; and
b) a collecting means in flow concentration with said chamber for recovering the lasing dye after intersection with the laser beam.

5,185,132

ATOMSPHERIC PLASMA REACTION METHOD AND APPARATUS THEREFOR

Yasuhiro Horiike, Hiroshima; Satiko Okazaki, Tokyo, and Masuhiro Kogoma, Saitama, all of Japan, assignors to Research Development Corporation of Japan, Tokyo, Japan

Filed Dec. 7, 1990, Ser. No. 623,613
Claims priority, application Japan, Dec. 7, 1989, 1-318260
Int. Cl.[5] B01J *19/08, 19/12;* **C23C** *14/22, 14/28*
U.S. Cl. 422—186.05 **4 Claims**



1. An atmospheric plasma reaction method comprising
introducing a mixed gas of rare gas and reactive gas into a reaction vessel having dielectric-coated electrodes wherein the surface of two or more electrodes located parallel with each other are provided with solid dielectric, and wherein a substrate is provided downstream of said electrodes,
exciting said mixed gas with plasma at atmospheric pressure to produce an active species, and
treating the surface of said substrate with said active species.

5,185,133

METHOD FOR PRODUCING FINE SIZE YELLOW MOLYBDENUM TRIOXIDE POWDER

Judy L. Scheftic, South Waverly; Robert G. Mendenhall, Sayre, and Michael J. Chereslowsky, Towanda, all of Pa., assignors to GTE Products Corporation, Danvers, Mass.

Filed Aug. 23, 1988, Ser. No. 235,081
Int. Cl.[5] C01G *39/00, 39/02*
U.S. Cl. 423—53 **2 Claims**

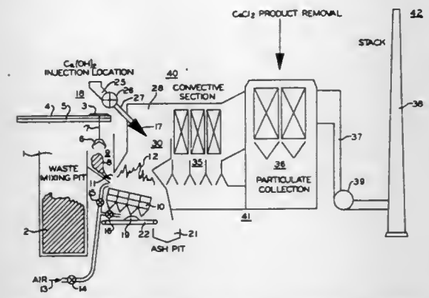
1. A method for producing yellow molybdenum trioxide powder, said method comprising:
a) heating ammonium dimolybdate at a temperature of from about 455° C. to about 465° C. for a time of from about 5 hours to about 6 hours to produce a first molybdenum trioxide;
b) granulating said first molybdenum trioxide to about −10 mesh;
c) heating said −10 mesh first molybdenum trioxide in a furnace wherein there are three heating zones, wherein said first molybdenum trioxide is heated in the first heating zone at a temperature of from about 550° C., and thereafter is heated in the second heating zone at a temperature of from about 580° C. to about 610° C., and thereafter is heated in the third heating zone at a temperature of from about 580° C. to about 625° C., the feed rate of said first molybdenum trioxide through the three zones in said furnace being from about 1.5 to about 3.0 kg/hr to produce a yellow molybdenum trioxide; and
d) cooling said yellow molybdenum trioxide; and
e) granulating the resulting cooled molybdenum trioxide to about −40 mesh to produce yellow molybdenum trioxide having a particle size of from about 2.0 to about 10.0 micrometers in diameter as measured by "Fisher Subsieve Sizer" and a surface area of from about 0.1 to about 1.5 m^2/g.

5,185,134

REDUCTION OF CHLORINATED ORGANICS IN THE INCINERATION OF WASTES

Brian K. Gullett, Durham, N.C., assignor to The United States of America as represented by the U.S. Environmental Protection Agency, Washington, D.C.

Continuation-in-part of Ser. No. 287,495, Dec. 21, 1988, Pat. No. 5,021,229. This application Mar. 20, 1991, Ser. No. 672,689
The portion of the term of this patent subsequent to Jun. 4, 2008, has been disclaimed.
Int. Cl.[5] B01D *53/14, 53/34*
U.S. Cl. 423—240 R **13 Claims**



10. For use In a waste incinerator including a combustion chamber and a stack through which the flue gas produced by the combustion of waste material in the combustion chamber passes for emission into the atmosphere, an improved method of reducing the emissions into the atmosphere of halogenated pollutants of flue gases, including the reduction of chlorinated dioxins and furans produced as by-products of the combustion of water material such as municipal waste, comprising the steps of:
injecting a calcium-based sorbent into said flue gas in said waste incinerator to be carried with said flue gas from the injection region toward said stack and through decreasing temperatures of the temperature profile of said wasted incinerator;
said flue gas and said sorbent sequentially passing through the hither temperatures of said injection region and then through the lower temperature of a reactive region in said waste incinerator;
said sorbent reacting in said reactive region with HCl in said flue gas to form one or more calcium-chlorine compounds thereby modifying said flue gas by removing HCl from said flue gas;
the location of the injection of said sorbent in the temperature profile of said waste incinerator being selected such that the movement of said sorbent through said injection region is sufficiently rapid that said sorbent does not melt and the effectiveness of said sorbent is not significantly degraded notwithstanding any temperature in said injection region being above the melting point of said compounds;
the temperature of said reactive region being in the approximate range of 300° C.–900° C.; and
passing said modified flue gas toward said stack and into said atmosphere with diminished HCl thereby diminishing the amount of said halogenated pollutants which would otherwise have been formed;
reducing the temperature to condense and absorb residual chlorinated organic pollutants on said sorbent after said sorbent passes through said reactive region toward said stack at a temperature less than about 300° C. in said modified flue gas;
whereby said sorbent is exposed to said flue gas over substantially the full length of said waste incinerator to maximize the contact time of said sorbent and said flue gas to aid in the effectiveness of said method.

5,185,135

METHOD OF DEWATERING A WET PROCESS PHOSPHORIC ACID SLURRY

Krishnan J. Pillai, Aurora; Lawrence J. Connelly, Oak Lawn, both of Ill., and William K. Gustafson, Sandy, Utah, assignors to Nalco Chemical Company, Naperville, Ill.

Filed Aug. 12, 1991, Ser. No. 743,922
Int. Cl.[5] C01B *25/16;* **B01D** *21/01;* **B03D** *3/00;* **C02F** *1/00*
U.S. Cl. 423—320 **17 Claims**

1. A process for the dewatering of a digested slurry from a wet process phosphoric acid production digestion process comprising, in sequence:
subjecting an aqueous solution of polymeric filtration aid to sufficient high shear mixing to enhance the performance of said polymeric filtration aid,
wherein said polymeric filtration aid is comprised of at least one polymer having a Reduced Specific Viscosity value within the range of from about 1 to 50 prior to said high shear mixing and being comprised of from about 50 to about 100 mole percent of nonionic polar mer units and from about 0 to about 50 mole percent of ionic mer units, and
wherein said aqueous solution has a concentration of said polymer filtration aid of from about 0.05 to about 5.0 weight percent;
then adding said aqueous solution of polymeric filtration aid of said digested slurry in an amount sufficient to enhance a subsequent vacuum filtration of said digested slurry; and
then subjecting said digested slurry disposed with said polymeric filtration aid to said gravity-assisted vacuum filtration,
wherein the temperature of said digested slurry at all times from the time said aqueous solution of polymeric filtration aid is added to said digested slurry through the time of said gravity-assisted vacuum filtration is within the range of from about 63° C. to about 135° C., and
wherein said gravity-assisted vacuum filtration enhancement is an increase of the ratio of filtrate volume per gravity-assisted vacuum filtration time.

5,185,136

TRIVALENT TRANSITION-METAL-ALUMINOSILICATE HYDROCARBON CONVERSION CATALYSTS HAVING MAZZITE-LIKE STRUCTURES, ECR-23-T (C-2491)

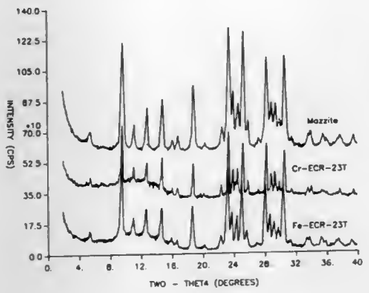
David E. W. Vaughan, Flemington, and Karl G. Strohmaier, Port Murray, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 554,629, Jul. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 281,863, Dec. 5, 1988, abandoned, which is a continuation of Ser. No. 14,204, Feb. 4, 1987, abandoned, which is a continuation of Ser. No. 763,651, Aug. 8, 1985, abandoned. This application Aug. 15, 1991, Ser. No. 746,265
Int. Cl.[5] C01B *33/34*
U.S. Cl. 423—702 **32 Claims**

1. A crystalline microporous transition-metal-aluminosili-

VOL
1147
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cate having a mazzite-like structure and wherein at least one trivalent transition-metal selected from the group of Fe, Cr and



mixtures thereof, is in the tetrahedral position of the transition-metal-aluminosilicate.

5,185,137

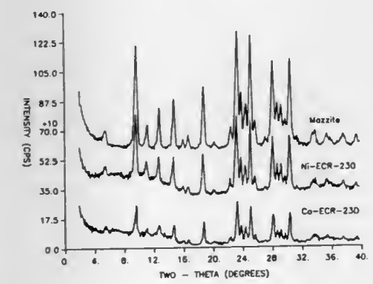
DIVALENT TRANSITION-METAL-ALUMINOSILICATE HYDROCARBON CONVERSION CATALYSTS HAVING MAZZITE-LIKE STRUCTURES, ECR-23-D (C-2494)

David E. W. Vaughan, Flemington, and Karl G. Strohmaier, Port Murray, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 554,628, Jul. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 283,037, Dec. 5, 1988, abandoned, which is a continuation of Ser. No. 14,203, Feb. 4, 1987, abandoned, which is a continuation of Ser. No. 763,652, Aug. 8, 1985, Pat. No. 4,799,949. This application Aug. 15, 1991, Ser. No. 746,264

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—702 **17 Claims**



1. A crystalline microporous transition-metal-aluminosilicate having a mazzite-like structure and wherein a substantial portion of zinc is in the tetrahedral position of the transition-metal-aluminosilicate.

5,185,138

TRANSISTION-METAL-ALUMINOSILICATE HYDROCARBON CONVERSION CATALYSTS HAVING AN L TYPE STRUCTURE, ECR-22-D

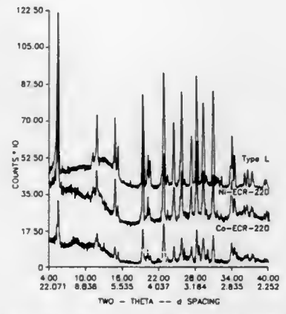
David E. W. Vaughan, Flemington, and Karl G. Strohmaier, Port Murray, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 554,627, Jul. 18, 1990, abandoned, which is a continuation-in-part of Ser. No. 281,862, Dec. 5, 1988, abandoned, which is a continuation of Ser. No. 14,206, Feb. 4, 1987, abandoned, which is a continuation of Ser. No. 763,650, Aug. 8, 1985, abandoned. This application Aug. 15, 1991, Ser. No. 746,263

The portion of the term of this patent subsequent to Jan. 16, 2007, has been disclaimed.

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—710 **17 Claims**



1. A crystalline microporous transition-metal-aluminosilicate having a structure substantially isostructural with L type aluminosilicate zeolite and wherein a substantial portion of Zn is in the tetrahedral position of the transition-metal-aluminosilicate.

5,185,139

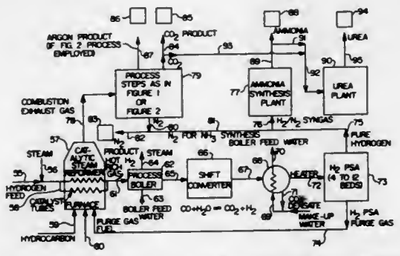
CARBON DIOXIDE PRODUCTION FROM COMBUSTION EXHAUST GASES WITH NITROGEN AND ARGON BY-PRODUCT RECOVERY

Ramachandran Krishnamurthy, Piscataway, and Mark J. Andrecovich, Somerville, both of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Division of Ser. No. 560,625, Jul. 31, 1990, Pat. No. 5,100,635. This application Mar. 13, 1992, Ser. No. 850,535

Int. Cl.[5] C01C *1/04*; C07C *273/04*

U.S. Cl. 423—359 **4 Claims**



1. An improved method for the production of ammonia which comprises the steps of:

(a) steam reforming a hydrocarbon feed gas to produce a hydrogen-rich synthesis gas;

(b) purifying the hydrogen-rich synthesis gas to remove contaminants to produce high purity hydrogen;

(c) burning a hydrocarbon fuel to supply heat for the steam reforming reaction of step (a) wherein the hydrocarbon burning produces a combustion exhaust gas containing less than about 10% oxygen, by weight;

(d) treating the exhaust gas to remove particulate matter;

(e) compressing the exhaust gas to a pressure in the range from about 25 psia to about 200 psia;

(f) purifying the exhaust gas to remove trace contaminants;

(g) separating the exhaust gas to produce a carbon dioxide rich fraction and a nitrogen rich fraction;

(h) liquefying the carbon dioxide rich fraction and distilling off components that are more volatile than carbon dioxide;

(i) purifying the nitrogen rich fraction to remove carbon dioxide;

(j) cryogenically fractionally distilling the nitrogen rich fraction to remove oxygen and argon therefrom; and

(k) passing the nitrogen product from step (j) and the high purity hydrogen from step (b) into an ammonia plant synthesis reactor to produce ammonia.

5,185,140

PROCESS FOR REMOVING SULPHUR COMPOUNDS FROM A RESIDUAL GAS

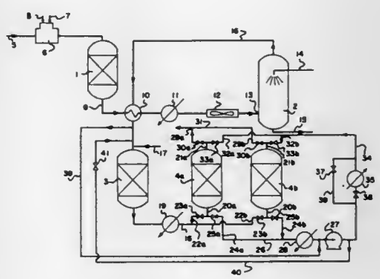
Georges Kvasnikoff, Monein; Jean Nougayrede, Pau, and André Philippe, Orthez, all of France, assignors to Elf Aquitaine Production, Paris, France

Continuation of Ser. No. 384,885, Jul. 24, 1989, abandoned, which is a continuation of Ser. No. 75,745, Jun. 25, 1981, abandoned. This application Mar. 25, 1991, Ser. No. 675,125

Claims priority, application France, Oct. 25, 1985, 8515905

Int. Cl.[5] C01B *17/04*

U.S. Cl. 423—574 R **39 Claims**



1. A process for removing sulphur-containing compounds from a cooled residual gas issued from a sulphur plant containing less than 10% water vapor and H_2S as substantially the sole sulphur-containing compound with recovery of said compounds as sulphur, in which two alternating catalytic CLAUS converters are used and a CLAUS reaction is performed in one converter while regeneration and cooling is performed in the other converter, which process comprises:

a) partially oxidizing the H_2S gas by oxidizing fully one-third in an H_2S atmosphere thereof by contacting the H_2S gas with a limited quantity of a free oxygen-containing gas, just sufficient for completely oxidizing one-third of the H_2S, leaving two-thirds of the H_2S gas non-oxidized, with an oxidation catalyst while operating at a temperature above 150° C., forming a gas mixture containing vaporized elemental sulphur and SO_2 in an H_2S atmosphere with an H_2S to SO_2 molar ratio of 2:1;

b) cooling said mixture to a temperature below 160° C., concurrently condensing and separating from said mixture substantially all the vaporized elemental sulphur while maintaining the 2:1 molar ratio of H_2S to SO_2, thereby forming a sulphur-free gas of two-thirds of H_2S and one-third of SO_2,

c) directing all of said partially oxidized, sulphur-free gas to said CLAUS converter,

d) feeding and contacting the partially oxidized, sulphur-free gas with a CLAUS catalyst in said CLAUS converter at a sufficiently low temperature so that H_2S reacts with SO_2 to form sulphur, which is deposited on said catalyst to produce a purified residual gas, and

e) regenerating the sulphur-laden CLAUS catalyst by sweeping said catalyst with the residual gas issued from a sulphur plant containing less than 10% water vapor and H_2S as substantially the sole sulphur-containing compound at a temperature between about 200° C. and 500° C. and recovering said sweeping gas after regeneration of the catalyst.

5,185,141

PROCESS FOR THE PRODUCTION OF IRON OXIDE YELLOW PIGMENTS

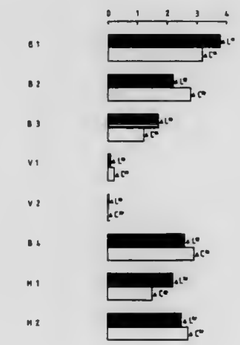
Bernd Kröckert, Wesel; Helmut Printzen, Krefeld; Hans-Peter Biermann, Krefeld, and Hans-Ulrich Höfs, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 26, 1990, Ser. No. 484,525

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1989, 3907917

Int. Cl.[5] C01G *45/02*

U.S. Cl. 423—632 **7 Claims**



1. An improved three-step process for the production of low-silking iron oxide yellow pigments in which 1) nucleation of acicular α-FeOOH yellow pigments is carried out in the presence of compounds of the elements B, Al, Ga, Si, Ge, Sn or Pb in quantities of 0.05 to 10% by weight, expressed as 3- or 4- valent oxides and based on the α-FeOOH precipitated during nucleation, 2) an iron oxide yellow pigments is grown on the yellow nucleus by precipitation to achieve a multiplication factor of 2.5 to 7, and 3)carrying out pigment growth by the Penniman process.

VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,142
ANTIGEN-SPECIFIC COMPOSITION AND IN VIVO METHODS FOR DETECTING AND LOCALIZING AN ANTIGENIC SITE AND FOR RADIOTHERAPY

Steven M. Larson, Washington, D.C.; Ronald Finn, Bethesda, Md.; Jorge A. Carrasquillo; James C. Reynolds, both of Rockville, Md.; Ronald D. Neumann, Potomac, Md.; Martin C. Graham, Larchmont, and Keith S. Pentlow, Forest Hills, both of N.Y., assignors to The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

Filed Jul. 28, 1989, Ser. No. 386,095
Int. Cl.[5] A61K *49/02;* **C07K** *15/00*
U.S. Cl. 424—1.1 **7 Claims**

1. An in situ method of radiotherapy directed to a tumor associated antigenic site in a subject in need of such therapy, comprising

detecting and localizing said tumor-associated antigenic site by an in vivo method for detecting and localizing a tumor-associated antigenic site in a subject in need of such detection, comprising

administering to the subject an amount of an antigen-specific composition comprising a tumor-associated antigen-specific antibody or tumor-associated antigen-binding fragment thereof labeled with Iodine-124 at a site other than, and which does not significantly interfere with, the antibody-antigen binding site effective to localize the antigen antibody binding site;

scanning the subject body with an I-124 detector to attain the localization of the site; and thereafter

in situ delivering a positron-emitting labeled antibody chelate to a subject, said chelate being capable of binding to either the I-124 tumor-associated antigen-binded labeled antibody or tumor-associated antigen-binding fragment thereof, or to the tumor associated antigen at an antigen site other than the antibody-antigen binding site.

5,185,143
TERPOLYMER HAIR FIXATIVE RESINS PREPARED BY SOLUTION POLYMERIZATION OF MALEIC ANHYDRIDE, VINYL ACETATE AND ISOBORNYL ACRYLATE

Jeffrey M. Cohen, Fanwood, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Filed Jan. 13, 1992, Ser. No. 820,173
Int. Cl.[5] A61K *7/11;* **C08F** *222/06, 218/08, 222/14*
U.S. Cl. 424—47 **6 Claims**

1. A solution polymerization process for the preparation of terpolymers consisting essentially of maleic anhydride, vinyl acetate and isobornyl acrylate or methacrylate wherein said monomers are present in a molar ratio of about 0.35–1:1:0.05–0.25, respectively, which comprises polymerizing said monomers in said proportions in acetone solution.

5,185,144
GASTROPROTECTANT COMPOSITIONS AND USE THEREOF

Randy Koslo, Cranbury, and Alison Lukacsko, Robinsville, both of N.J., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Filed Oct. 26, 1990, Ser. No. 603,496
Int. Cl.[5] A61K *7/34, 7/38*
U.S. Cl. 424—66 **13 Claims**

1. A method for protecting the gastric mucosa against injury caused by a gastric irritant, comprising administering with or before administration of the gastric irritant, a gastro protective amount of a gastroprotectant selected from the group consisting of ZAG, ACH and a mixture thereof.

5,185,145
DISINFECTANT CONCENTRATE AND ITS USE AS A MYCOBACTERICIDE AND VIRICIDE

Heinz Eggensperger, Hamburg; Karl-Heinz Diehl, Norderstedt; Helmut Nolte, Tangstedt; Helmut Rackur, Bebensee; Ute Eggers-Maass, Hamburg; Michael Mohr, Kaltenkirchen; Lower Bernd, and Wolfgang Beilfuss, both of Hamburg, all of Fed. Rep. of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 21, 1991, Ser. No. 658,921
Claims priority, application Fed. Rep. of Germany, Feb. 23, 1990, 4005784
Int. Cl.[5] A01N *39/00, 47/44*
U.S. Cl. 424—78.08 **12 Claims**

1. An aqueous disinfectant concentrate having a pH of from 7.8 to 11 with a content of phenoxyalcohol, a cationic compound and non-ionic surfactants, which contains

a) 10 to 60% by weight of phenoxyethanol or a phenoxypropanol mixture of 2-phenoxy-1-propanol and 1-phenoxy-2-propanol, in a ratio by weight of from 1:4 to 1:20,

b) 0.1 to 50% by weight of a cationic compound, selected from the group of the guanidinium compounds, quaternary ammonium compounds or their mixtures,

c) 3 to 25% by weight of non-ionic surfactants and

d) 0.1 to 10% by weight of tetrakis-(2-hydroxypropyl)-N,N,N′, N′-ethylenediamine.

5,185,146
RECOMBINANT MVA VACCINIA VIRUS

Werner Altenburger, Riehen, Switzerland, assignor to Hoffmann-LaRoche Inc., Nutley, N.J.

Filed Jan. 4, 1989, Ser. No. 293,738
Claims priority, application Switzerland, Jan. 12, 1988, 85/88
Int. Cl.[5] A61K *39/12;* **C12N** *15/00*
U.S. Cl. 424—89 **5 Claims**

1. A modified vaccinia virus Ankara useful in vaccine formulations, said virus comprising a DNA sequence which codes for a foreign antigen without impairing the viability of the MVA, which foreign antigen causes infection or disease.

5,185,147
SHORT POLYPEPTIDE SEQUENCES USEFUL IN THE PRODUCTION AND DETECTION OF ANTIBODIES AGAINST HUMAN IMMUNODEFICIENCY VIRUS

Lawrence D. Papsidero, Orchard Park, N.Y., assignor to Cellular Products, Inc., Buffalo, N.Y.

Filed Aug. 19, 1988, Ser. No. 234,381
Int. Cl.[5] A61K *39/12, 39/21;* **C07K** *7/00*
U.S. Cl. 424—89 **52 Claims**

1. A protein that consists of at least one polypeptide selected from the group consisting of

Glu-Leu-Asp-Arg-Trp-Glu-Lys-Ile, defined in the sequence listing as SEQ ID NO:1,

Glu-Leu-Asp-Arg-Trp-Glu, defined in the sequence listing as SEQ ID NO:2,

Leu-Asp-Arg-Trp-Glu-Lys, defined in the sequence listing as SEQ ID NO:3,

Asp-Arg-Trp-Glu-Lys-Ile, defined in the sequence listing as SEQ ID NO:4,

Glu-Lys-Ile-Arg-Leu-Arg, defined in the sequence listing as SEQ ID NO:5, and

Glu-Leu-Asp-Arg-Trp-Glu-Lys-Ile-Arg-Leu-Arg, defined in the sequence listing as SEQ ID NO:6,

provided that said protein is not one found in a naturally occurring human immunodeficiency virus or other animal virus.

5,185,148
PROCESS FOR CONTROLLING SCARAB PESTS WITH *BACILLUS THURINGIENSIS* ISOLATES

Tracy E. Michaels, Escondido, Calif., assignor to Mycogen Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 808,316, Dec. 16, 1991, abandoned. This application Jan. 30, 1992, Ser. No. 828,430
The portion of the term of this patent subsequent to Oct. 30, 2007, has been disclaimed.
Int. Cl.[5] A01N *63/00*
U.S. Cl. 424—93 L **12 Claims**

1. A process for controlling Scarab pests which comprises contacting said pests, or the environment of said pest, with a Scarab-controlling effective amount of a *Bacillus thuringiensis* isolate "having all of the identifying characteristics of an isolate" selected from the group consisting of *Bacillus thuringiensis* PS86B1, *Bacillus thuringiensis* PS43F, and *Bacillus thuringiensis* PS50C, spores or toxin crystals, thereof or Scarab active mutants thereof "which retain the parent microbe activity against scarab pests".

5,185,149
METHODS FOR THROMBOLYTIC THERAPY

John J. Baldwin, Gwynedd Valley; Paul A. Friedman, Rosemont, and Andrew M. Stern, Gwywedd Valley, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 32,123, Mar. 27, 1987, abandoned. This application Apr. 2, 1990, Ser. No. 503,028
Int. Cl.[5] A61K *37/547, 31/335;* **C07D** *303/38*
U.S. Cl. 424—94.63 **11 Claims**

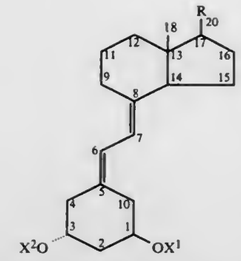
1. A method for lysing clots in thrombotic patients which comprises intravenously administering a therapeutically effective amount of a composition comprising a Factor XIIIa inhibitor compound wherein the Factor XIIIa inhibitor compound is an acyloxiranecarboxylic acid compound represented by the formula



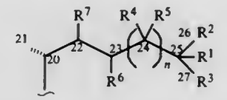
and its pharmaceutically acceptable salt wherein

R is alkyl, alkenyl or aralkyl;

X is —NHR′ or —OR″ wherein R′ and R″ independently are hydrogen or lower alkyl.



where X^1 and X^2 are each selected from the group consisting of hydrogen, acyl, alkylsilyl and alkoxyalkyl, where acyl is selected from the group consisting of an aliphatic acyl of 1 to 6 carbons and an aromatic acyl, and where R is selected from the group consisting of alkyl, hydrogen, hydroxyalkyl, fluoroalkyl and a side chain of the formula



wherein R^1 represents hydrogen, hydroxy or O-acyl, R^2 and R^3 are each selected from the group consisting of alkyl, hydroxyalkyl and fluoroalkyl, or, when taken together represent the group $—(CH_2)_m—$ where m is an integer having a value of from 2 to 5, R^4 is selected from the group consisting of hydrogen, hydroxy, fluorine, O-acyl, alkyl, hydroxyalkyl and fluoroalkyl, R^5 is selected from the group consisting of hydrogen, fluorine, alkyl, hydroxyalkyl and fluoroalkyl, or, R^4 and R^5 taken together represent double-bonded oxygen or double-bonded carbon, R^6 and R^7 are each selected from the group consisting of hydrogen, hydroxy, O-acyl, fluorine and alkyl, or, R^6 and R^7 taken together form a carbon-carbon double bond or a carbon-carbon triple bond, and wherein n at the carbon 24 position in the side chain is an integer having a value of from 1 to 5 and wherein the carbon at any one of positions 20, 22, or 23 in the side chain may be replaced by an O, S, or N atom, and a suitable carrier.

5,185,150
COSMETIC COMPOSITIONS CONTAINING 19-NOR-VITAMIN D COMPOUNDS

Hector F. DeLuca, Deerfield, and Connie M. Smith, Madison, both of Wis., assignors to Wisconsin Alumni Research Fdn., Madison, Wis.

Filed Aug. 24, 1990, Ser. No. 573,634
Int. Cl.[5] A61K *31/59, 31/70, 31/695*
U.S. Cl. 424—195.1 **33 Claims**

1. A cosmetic composition for use in treatment of skin conditions selected from skin slackness, wrinkles, dry skin and insufficient sebum secretion, which comprises an effective amount of between about 0.001 μg to about 10.0 μg per gram of the composition of a compound of the formula:

5,185,151
PESTICIDAL COMPOSITIONS AND METHODS FOR CONTROLLING PESTS

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation of Ser. No. 688,689, Jan. 3, 1985, Pat. No. 4,831,056, and a continuation-in-part of Ser. No. 453,496, Dec. 27, 1983, Pat. No. 4,910,179. This application Apr. 25, 1989, Ser. No. 343,489
The portion of the term of this patent subsequent to May 16, 2006, has been disclaimed.
Int. Cl.[5] A61K *31/10*
U.S. Cl. 424—400 **34 Claims**

1. A pesticidal composition comprising a pesticidally effective amount of the monourea adduct of sulfuric acid and a hydrocarbon oil.

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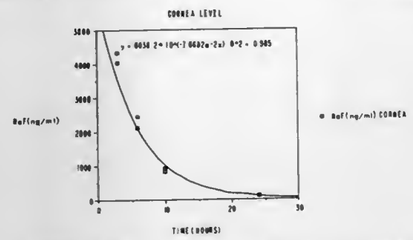
METHOD AND APPARATUS FOR CONTROLLED RELEASE DRUG DELIVERY TO THE CORNEA AND ANTERIOR CHAMBER OF THE EYE

Gholam A. Peyman, 123 Walnut St., New Orleans, La. 70118

Continuation of Ser. No. 462,485, Jan. 10, 1990, abandoned. This application Aug. 13, 1991, Ser. No. 747,432

Int. Cl.[5] A61F *2/00*

U.S. Cl. 424—427 **15 Claims**



1. A method for delivering a drug directly to a cornea and anterior chamber of an eye comprising the steps of:

entrapping a drug in microspheres made of a bioerodible polymer selected from the group consisting of poly(iactic acid), poly(glycolic acid), a copolymer of lactic acid an glycolic acid, and poly)ethylene-vinyl acetate), or a mixture of poly(lactic acid) and poly(glycolic acid),

thereafter combining the microspheres with a hydrophilic polymer and forming a corneal shield for placement directly over the cornea, and

thereafter placing the hydrophilic polymer corneal shield in contact with a cornea of an eye, whereby, as the microspheres dissolve, the drug is delivered directly to the cornea and anterior chamber of the eye.

5,185,153

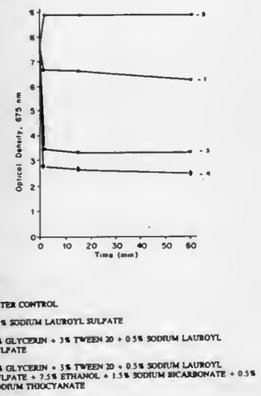
AGENTS EFFECTING THE LYSIS OF ORAL BACTERIA

Jerry J. Pollock, Nesconset, N.Y., assignor to The Research Foundation of the State University of New York, Albany, N.Y.

Filed Oct. 4, 1990, Ser. No. 592,552

Int. Cl.[5] A61K *9/28*

U.S. Cl. 424—440 **12 Claims**



1. An oral rinse formulation comprising humectant in a concentration from approximately 20% to about 80%, bicarbonate ion from about 0.5% to about 2%, anionic surfactant detergent in a concentration of 0.05% to about 1% and nonionic surfactant detergent in a concentration from about 0.01% to about 3%.

5,185,154

METHOD FOR INSTANT PREPARATION OF A DRUG CONTAINING LARGE UNILAMELLAR VESICLES

Danilo D. Lasic, and Andrej Belic, both of Sunnyvale, Calif., assignors to Liposome Technology, Inc., Menlo Park, Calif.

Division of Ser. No. 305,348, Feb. 2, 1989, abandoned. This application Feb. 28, 1990, Ser. No. 486,131

Int. Cl.[5] A61K *37/22*

U.S. Cl. 424—450 **16 Claims**

1. A method of forming a homogeneous population of large unilamellar vesicles comprising:

preparing a phospholipid composition comprising charged phospholipids, or a mixture of neutral phospholipids and charged phospholipids, or a mixture of neutral phospholipids and a surfactant, with a solvent effective to dissolve the phospholipids;

depositing the composition onto a micropatterned template support surface to form a film;

drying the film; and

adding an aqueous medium to form large unilamellar vesicles of substantially uniform size.

5,185,155

ENCAPSULATING METHOD AND PRODUCTS CONTAINING ENCAPSULATED MATERIAL

John M. Behan, Ashford; Jeremy N. Ness, Canterbury, and Keith D. Perring, Ashford, all of Great Britain, assignors to Unilever Patent Holdings B.V., Rotterdam, Netherlands

Filed Sep. 27, 1991, Ser. No. 766,780

Claims priority, application United Kingdom, Sep. 27, 1990, 9021061

Int. Cl.[5] A61K *9/48*

U.S. Cl. 424—451 **11 Claims**

1. A process for encapsulating a hydrophobic material to form capsules containing the hydrophobic material, comprising the steps of:

producing an aqueous dispersion of silica the silica being in the form of particles substantially all of said particles having a particle size not greater than 100 nm;

forming an emulsion of said dispersion and said hydrophobic material to be encapsulated by mixing, said dispersion and said hydrophobic material under high shear conditions; and

stabilizing said emulsion containing the hydrophobic material by the addition of a gelling agent such that gelation occurs and capsules may be formed.

5,185,156

Patent Not Issued For This Number

5,185,157

TREATMENT OF REFRACTORY EOSINOPHILIA-MYALGIA SYNDROME WITH L-TRYPTOPHAN COMPOSITION

John C. Caston, 108 Cinder Ter., Spartanburg, S.C. 29302

Filed May 2, 1990, Ser. No. 518,499

Int. Cl.[5] A61K *47/42, 9/20, 31/40;* **C07K** *3/04*

U.S. Cl. 424—456 **10 Claims**

1. A pharmaceutical composition in unit dosage form, which consists essentially of:

(a) one or more pharmaceutically acceptable formulations, comprising a minor amount of solid or liquid carrier selected from one or more of lactose, terra alba, sucrose, gelatin talc, gelatin, agar, pectin, acacia, magnesium stearate, stearic acid, ascorbyl palmitate, sugar syrup, peanut oil, olive oil, and water; and

(b) a major amount of the amino acid, pharmaceutical grade L-Tryptophan, or a pharmaceutically acceptable organic or inorganic, acid addition salt thereof, which is effective to treat refractory Eosinophilia-Myalgia Syndrome in a patient to whom one or more unit dosages of the formulated amino acid is to be administered; and

(c) as to said solid carriers said liquid carriers and said pharmaceutically acceptable salts, such adjuvants are selected to exclude the zinc, magnesium, and calcium containing salts.

5,185,158

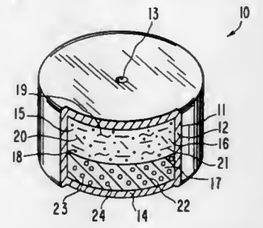
DOSAGE FORM COMPRISING SUCCINIMIDE DRUG FOR TREATING DEPRESSIVE DISORDERS AND COMPOSITION COMPRISING SAME

Atul Ayer, Palo Alto, and Dana Ridzon, San Francisco, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Filed Feb. 27, 1992, Ser. No. 842,682

Int. Cl.[5] A61K *9/24*

U.S. Cl. 424—473 **9 Claims**



7. An osmotic dosage form for administering tandospirone to a patient in need of tandospirone therapy, wherein the dosage form comprises:

(a) a wall comprising a member selected from the group consisting of cellulose acylate, cellulose diacylate and cellulose triacylate, which wall surrounds:

(b) an internal compartment;

(c) at least one exit passageway in the wall that connects the exterior of the dosage form with the compartment;

(d) a push composition in the compartment comprising an osmopolymer that, in the presence of fluid that enters the compartment increases in dimensions and thereby occupies space in the compartment; and wherein the osmotic dosage form is characterized by:

(e) a drug composition comprising 1 mg to 750 mg of tandospirone, a poly(ethylene oxide) comprising a molecular weight of $2>10^5$, and a poly(ethylene oxide) comprising molecular weight of 3×10^5, which composition delivers the tandospirone from the dosage form to the patient at a substantially zero order rate of release over a period of 24 hours.

5,185,159

PHARMACEUTICAL COMPOSITION BASED ON VALPROIC ACID AND A PROCESS FOR PREPARING IT

Daniel Aubert, Plaisance du Touch; Francis Blanc, Lattes; Henri Desmolin, Merignac; Michel Morre, Toulouse, and Lucette Sindely, St. Andre de Cubzac, all of France, assignors to Sanofi, Paris, France

Division of Ser. No. 313,304, Jan. 21, 1989, Pat. No. 5,017,613, which is a continuation of Ser. No. 4,303, Jan. 8, 1987, abandoned, which is a continuation of Ser. No. 631,602, Jul. 17, 1984, abandoned. This application Feb. 12, 1991, Ser. No. 654,027

Claims priority, application France, Jul. 20, 1983, 83 12375; Jul. 20, 1983, 83 12376

Int. Cl.[5] A61K *9/14*

U.S. Cl. 424—489 **6 Claims**

1. An orally administrable controlled release tablet pharmaceutical composition comprising a ratio of about one mole of valproic acid to about two moles of sodium valproate and a carrier for controlled release, wherein said tablet is produced without the addition of binder or granulating solvent.

5,185,160

PLATELET MEMBRANE MICROVESICLES

Francis C. Chao, Newton, Mass., assignor to PRP, Inc., Watertown, Mass.

Continuation-in-part of Ser. No. 73,102, Jul. 14, 1987, abandoned, which is a continuation-in-part of Ser. No. 623,074, Jun. 21, 1984, abandoned. This application Apr. 14, 1989, Ser. No. 337,916

Int. Cl.[5] A61K *35/14;* **C12N** *7/04*

U.S. Cl. 424—532 **44 Claims**

1. A method for preparing a platelet membrane fraction for transfusion comprising

heating platelets or a membrane fraction thereof to at least 60° C. and

isolating the heat-treated membrane fraction.

5,185,161

DISINFECTION METHOD AND COMPOSITION THEREFOR

Eugene A. Davidson, Hummlestown, Pa., and Robert D. Kross, Bellemore, N.Y., assignors to Alcide Corporation, Norwalk, Conn.

Continuation of Ser. No. 420,651, Oct. 11, 1989, Pat. No. 4,986,990, which is a continuation of Ser. No. 850,009, Apr. 10, 1986, abandoned, which is a continuation-in-part of Ser. No. 790,436, Oct. 23, 1985, abandoned, which is a continuation of Ser. No. 591,787, Mar. 21, 1984, abandoned. This application Nov. 27, 1990, Ser. No. 618,729

The portion of the term of this patent subsequent to Jan. 22, 2008, has been disclaimed.

Int. Cl.[5] A61K *33/14*

U.S. Cl. 424—665 **32 Claims**

1. A process for disinfecting a substrate comprising contacting said substrate with an aqueous solution consisting essentially of from about 0.01% to about 6% by weight of an organic acid, wherein the pK of the organic acid is from about 2.8 to about 4.2, and wherein the organic acid is not lactic acid, and from about 0.0001% to about 0.45% by weight based upon the total weight of said composition of a metal chlorite, such that the chlorite ion concentration in the form of chlorous acid is not more than about 15% by weight of the total amount of chlorite ion concentration.

5,185,162

CORROSION AND WEAR RESISTANT BIMETALLIC CYLINDER

Schiao F. Chou, Pulaski, Va., assignor to Xaloy, Incorporated, Va.

Filed Jun. 17, 1991, Ser. No. 714,895

Int. Cl.[5] B29B *7/80;* **B28B** *7/36*

U.S. Cl. 425—183 **2 Claims**

1. A cylinder for an injection molding or extrusion machine, said cylinder being formed of a steel having a corrosion and wear resistant iron-based alloy inlay comprising the following ingredients in about the proportions set forth below:

Ingredient	Weight Percent
Carbon	0.92
Chromium	7.62
Boron	1.92
Silicon	2.49
Nickel	4.75
Molybdenum	1.25
Copper	1.29
Iron	balance.

VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,163

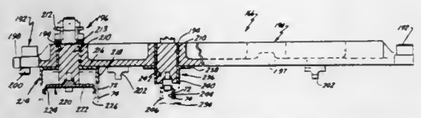
REHEAT BLOW MOLDING MACHINE FOR FORMING ARTICLES FROM PREFORMS

James G. Wiatt, Cincinnati, Ohio; Kevin J. Swiderski, Lowell, Mich.; Samuel L. Belcher, and Roger D. Smith, both of Cincinnati, Ohio, assignors to Paul E. Geddes, Grand Rapids, Mich.

Division of Ser. No. 561,184, Aug. 1, 1990, Pat. No. 5,121,828, which is a division of Ser. No. 352,846, May 15, 1989, Pat. No. 4,963,086. This application Dec. 27, 1991, Ser. No. 816,292

Int. Cl.[5] B29C *49/42*

U.S. Cl. 425—534 **4 Claims**



1. A pallet assembly for use in an oven of a reheat blow mold machine, said assembly comprising:

a shuttle defining a front, a back, ends an da plurality of spaced collet bores extending between upper and lower surfaces; and

a plurality of coupling means disposed within said collet bores for releasably engaging an open upper end of a preform, each of said coupling means including a resilient nose cup having a base and a peripheral sidewall, said peripheral sidewall being dimensioned to be inserted into said preform to retain the preform on the nose cup, and a stripper cup on the lower surface of said shuttle concentric with said collet bore and said nose cup, said stripper cup dimensioned to engage a top end of the preform retained on said nose cup, said coupling means further comprising:

a spindle disposed within said bore for rotational and vertical movement, said nose cup being carried by said spindle whereby vertical movement of said spindle causes said stripper cup to strip the preform from said nose cup; and

a sprocket non-rotatably secured to said spindle.

5,185,164

BAIT WHICH CONTAIN AMINO ACIDS FOR CATCHING ICTALURID CATFISH

Tine B. Valentincic, Slovenija, Yugoslavia, and John T. Caprio, Baton Rouge, La., assignors to Board of Supervisors, Louisiana State University, Baton Rouge, La.

Continuation-in-part of Ser. No. 742,361, Aug. 8, 1991, which is a continuation-in-part of Ser. No. 575,993, Aug. 31, 1990, abandoned. This application Nov. 22, 1991, Ser. No. 796,029

Int. Cl.[5] A23K *1/18*

U.S. Cl. 426—1 **4 Claims**

1. An improved ictalurid catfish bait to catch ictalurid catfish, which bait contains an effective amount of: (a) one or more of the free amino acids selected from the group consisting of L-alanine, L-arginine, L-proline, or mixtures thereof; wherein said effective amount is an amount which will release the snapping and biting response of said fish.

5,185,165

FERMENTATION SYSTEM

Charles C. Lynn, North Ridgeville, Ohio, assignor to Superior Fermitech Liquidating Trust, North Ridgeville, Ohio

Filed Jan. 23, 1989, Ser. No. 300,270

Int. Cl.[5] A21D *2/08*

U.S. Cl. 426—61 **25 Claims**

1. A precursor base for an active ferment concentrate wherein said precursor base consists essentially of by weight percent, based on the total weight of the precursor base, approximately:

acidic concentrate	1.2–2.0 wt. %;
sugar	5.0–20.0 wt. %;
inactive yeast	0.5–1.5 wt. %;
flour	65.0–85.0 wt. %;
non-fat dry milk	4.0–8.0 wt. %; and
lactic bacteria	approximately 5^5 to 15^5 organisms/gram.

3. An active ferment concentrate comprising:

(1) a precursor base consisting essentially of an acidic concentrate, at least one type of sugar, inactive yeast, at least one type of flour, non-fat dry milk, and at least one type of lactic acid producing bacteria by weight percent, based on the total weight of the precursor base, approximately:

acidic concentrate	1.2–2.0 wt. %;
sugar	5.0–20.0 wt. %;
inactive yeast	0.5–1.5 wt. %;
flour	65.0–85.0 wt. %;
non-fat dry milk	4.0–8.0 wt. %; and
lactic bacteria	approximately 5^5 to 15^5 organisms/gram;

(2) catalytic-acting yeast, and

(3) water.

5,185,166

PROCESS FOR THE PRODUCTION OF MILK MINERAL CONCENTRATE AND DRINK CONTAINING MINERALS

Takahiro Nakagawa, Toyonaka, and Shiro Tanaka, Higashikurume, both of Japan, assignors to San-Ei Chemical Industries, Ltd., Osaka and Chugai Seiyaku Kabushiki Kaisha, Tokyo, both of, Japan

PCT No. PCT/JP89/01218, § 371 Date Jul. 25, 1990, § 102(e) Date Jul. 25, 1990, PCT Pub. No. WO90/06060, PCT Pub. Date Jun. 14, 1990

PCT Filed Dec. 5, 1989, Ser. No. 548,888

Claims priority, application Japan, Dec. 7, 1988, 63-309152; Dec. 7, 1988, 63-309153

The portion of the term of this patent subsequent to Oct. 16, 2007, has been disclaimed.

Int. Cl.[5] A23C *9/142*

U.S. Cl. 426—74 **5 Claims**

1. A process for the production of a milk mineral concentrate free from any turbidity or precipitation, which consists essentially of filtering whey at a pH value of from 4 to 6 through an ultrafiltration membrane of a cut-off molecular weight of 40,000 or below; concentrating the filtrate until the concentration of lactose reaches approximately 50%; allowing the concentrate to stand; and removing the lactose thus precipitated to produce a product having an ash content of 20–35% which product is transparent.

5,185,167

METHOD OF MAKING A STUFFED PRETZEL DOUGH PRODUCT AND COMPLETED STUFFED PRETZEL PRODUCT

Janet Schwartz, 4353 Frankford Ave., Philadelphia, Pa. 19124

Filed Apr. 6, 1990, Ser. No. 505,798

Int. Cl.[5] A21D *13/00*; A23P *1/08*

U.S. Cl. 426—94 **11 Claims**

1. A method of making a soft pretzel dough product from pretzel dough having an edible filling material therein, said method comprising the steps of:

(a) mixing ingredients to form said pretzel dough;

(b) forming said pretzel dough in a generally continuous sheet;

(c) cutting said generally continuous sheet into a piece substantially rectangular in shape and having substantially parallel top and bottom ends and two substantially parallel sides;

(d) placing edible filling material substantially in the center of said piece;

(e) folding said bottom end of said piece over said edible filling material so that said top end of said piece forms a flap and said edible filling material is substantially enclosed by said piece;

(f) pressing said bottom end of said piece of dough to secure said bottom end to said piece;



(g) trimming away any excess of said flap which extends beyond the point where said bottom end is secured to said piece;

(h) securing each of said two ends of said piece to enclose said edible filling material within said piece and to form the shape of said pretzel;

(i), refrigerating said pretzel for a time period in the range of 4 to 24 hours at a temperature in the range of 35° F. to 40° F.;

(j) dipping said pretzel in a caustic soda solution; and

(k) baking said pretzel at a temperature of approximately 550° F. for a time period in the range of 8 to 10 minutes.

5,185,168

METHOD FOR OPERATING A REDUCED-PRESSURE MULTI-FRYER SYSTEM

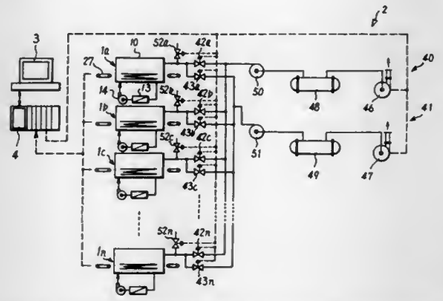
Kazuo Takahashi, No. 38-22, Kitazawa 5-chome, Setagaya-ku, Tokyo, Japan, assignor to Kazuo Takahashi, Tokyo; Mitsubishi Corporation, Tokyo and Mutsu Seika Co., Ltd., Hirosaki, all of, Japan, part interest to each

Filed Aug. 8, 1991, Ser. No. 742,020

Claims priority, application Japan, Apr. 2, 1991, 3-096196

Int. Cl.[5] A23L *1/00*

U.S. Cl. 426—233 **5 Claims**



1. A method of operating a plural number of reduced-pressure fryer units each having a frying bath for immersing and frying food material in heated oil, the method including:

connecting said fryer units, through a switch means, with vacuum pump lines including an initial vacuum pump line serving to reduce the frying bath pressure of one of said fryer units in the stage of an initial frying treatment and a finish vacuum pump line serving to maintain the frying baths of a plural number of said frying units simultaneously in reduced pressure condition in the stage of a finish frying treatment;

while holding the respective vacuum pump lines in operation, switching said vacuum pump lines to connect said initial vacuum pump line with a selected fryer unit to reduce the pressure of the frying bath thereof for the initial frying treatment;

switching the vacuum pump lines to connect said selected fryer unit with said finish vacuum pump line for the finish frying treatment upon completion of the initial frying treatment;

switching said vacuum pump lines to disconnect said selected fryer unit from the vacuum pump lines upon completion of said finish frying treatment; and

repeating the switching operation sequentially and cyclically for each one of the fryer units in a predetermined timing to operate a plural number of fryer units by the use of a smaller number of vacuum pump lines.

5,185,169

DEODORANT POROUS POLYMER AND A DEODORANT FIBROUS MATERIAL USING THE SAME

Tohru Yamamoto, c/o Nakato Laboratoy, Inc. 6, Ohshinohara, Yasu-cho, Yasu-gun, Shiga-ken, Japan

Filed Sep. 11, 1990, Ser. No. 581,331

Claims priority, application Japan, Sep. 11, 1989, 1-235377

Int. Cl.[5] B05D *5/00*

U.S. Cl. 427—246 **5 Claims**

1. A method for producing a deodorant fibrous material which comprises a fibrous substance and a deodorant porous polymer in the shape of substantially uniform particles or an aggregate thereof, said porous polymer being combined with said fibrous substance in at least one of the physically-combined state and chemically-combined states, said method comprising the steps of preparing a composition consisting essentially of inorganic alkoxides, a silane coupling agent, a catalyst for a sol-gel method, and a solvent;

impregnating a fibrous substrate with said composition in a sol state; and

converting said composition into a gel state to form a porous polymer.

5,185,170

COPOLYMER OF VINYL PYRROLIDONE AND A C30 ALPHA-OLEFIN IN FLAKE OR POWDER FORM, PROCESS FOR MAKING SAME, AND PERSONNAL CARE COMPOSITIONS THEREWITH

Stephen L. Kopolow, Plainsboro, N.J., assignor to ISP Investments Inc., Wilmington, Del.

Division of Ser. No. 749,755, Aug. 26, 1991. This application Jul. 10, 1992, Ser. No. 911,588

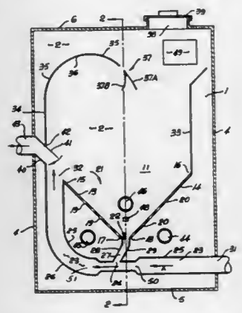
Int. Cl.[5] C08F *26/08*

U.S. Cl. 526—264 **4 Claims**

1. A copolymer of vinyl pyrrolidone and an olefinic fraction containing predominately a C_{30} alpha-olefin in flake or powder form having a melting point of at least about 50° C.

VOL 1147 ISS 2 FE 9 1993 UMI

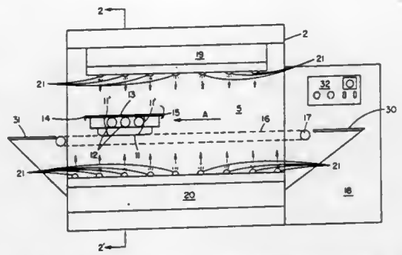
5,185,171
APPARATUS AND METHOD FOR ROASTING FOOD PRODUCTS
Ian J. Bersten, 105 Roseville Avenue, Roseville, New South Wales, 2069, Australia
PCT No. PCT/AU89/00536, § 371 Date Jun. 12, 1991, § 102(e) Date Jun. 12, 1991, PCT Pub. No. WO90/06694, PCT Pub. Date Jun. 28, 1990
PCT Filed Dec. 14, 1989, Ser. No. 688,630
Claims priority, application Australia, Dec. 22, 1988, PJ2078
Int. Cl.[5] A23F *5/00*; A23N *12/00*
U.S. Cl. 426—467 **30 Claims**



16. A method for roasting coffee beans, said method comprising the steps of:
a) providing a stream of roasting air;
b) admitting the beans from a containing means into the roasting air stream at an air stream entrance location for roasting the beans;
c) directing the flow of the air stream with the admitted beans away from the containing means in a generally curvilinear path to an altitude above that of the entrance location and then allowing the beans to return to the entrance location; and
d) the containing means being a vessel which controls, by means of a constriction, the rate of admission of beans into the air stream.

5,185,172
METHOD FOR SIMULATING OPEN FLAME BROILED MEAT PRODUCTS
Keith D. Barkhau, LaGrange; John D. Beltz, Louisville; Donald R. Kupski, LaGrange, all of Ky.; Mitchell C. Henke, Fort Wayne, Ind., and Soldon A. Svensson, Cincinnati, Ohio, assignors to KFC Corporation, Louisville, Ky.
Continuation-in-part of Ser. No. 377,177, Jul. 10, 1989, Pat. No. 4,991,497. This application Jan. 15, 1991, Ser. No. 642,203
The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.
Int. Cl.[5] A23L *1/01*
U.S. Cl. 426—523 **15 Claims**

1. A method for rapidly cooking poultry meat products to simulate open flame broiling, the method comprising:
(a) coating a grill means with a caramelizing layer;
(b) clamping a poultry meat product between the coated grill means and a pan having an alternating series of crows and reservoirs to provide a uniform meat thickness between an upper portion of the crows and coating side of the grill;
(c) transporting the clamped poultry product past a plurality of heated air jets located above and below said clamped poultry product to uniformly cook the poultry product by simultaneously:
(i) impinging the plurality of heated air jets against the poultry product;
(ii) heating the crows to transfer heat to the poultry product by conduction;
(d) collecting expressed juices and fat in a plurality of reservoirs formed in the pan; and



(e) charring and transferring the caramelized layer to the meat product to emulate burn marks from open flame grilling.

5,185,173
BREAD IMPROVER COMPOSITIONS
Rölf Bethke, Stuhr, and Jochen Bode, Delmenhorst, both of Fed. Rep. of Germany, assignors to Van den Bergh Foods Co., Division of Conopco, Inc., New York, N.Y.
Filed Oct. 3, 1990, Ser. No. 592,084
Claims priority, application United Kingdom, Oct. 6, 1989, 8922592
Int. Cl.[5] A21D *10/04*; A23D *7/00*
U.S. Cl. 426—549 **12 Claims**

1. A pumpable bread improver composition free from sedimentation, the composition comprising a dispersion of solid particles in a liquid glyceride oil wherein the solid particles include solid fat particles and solid bread improver ingredients including sugar and wherein the amount of total solid particles in the composition is greater than 18 wt. %.

5,185,174
METHOD OF MAKING NON-HYGROSCOPIC SUGAR AND PROTEIN SOLIDS
J. W. Sawhill, Canoga Park, Calif., assignor to Pacific Kenyon Corporation, Long Beach, Calif.
Continuation-in-part of Ser. No. 428,971, Oct. 30, 1989, abandoned. This application Apr. 5, 1991, Ser. No. 680,914
The portion of the term of this patent subsequent to Jan. 24, 2006, has been disclaimed.
Int. Cl.[5] A23K *1/00*
U.S. Cl. 426—583 **28 Claims**

1. A method for the preparation of a dry and non-hygroscopic solid food which comprises:
a) the step of mixing an aqueous food solution containing at least 40 weight percent solids comprising sugar, protein or mixtures thereof with:
(i) an alkaline additive selected from the group consisting of calcium and magnesium oxides and hydroxides in an amount from 0.05 to about 3.0 weight percent calculated as the oxide; and
(ii) an acid selected from the group consisting of phosphoric, sulfuric, hydrochloric and acetic acids in an amount from 0.03 to about 2.0 weight percent to prepare a mixture; and
b) the step of evaporating water from said mixture to reduce its water content to less than twelve weight percent and form said non-hygroscopic solid.

5,185,175
PROCESS FOR MAKING A MICROMILLED COCOA COMPOSITION AND A MICROMILLED COCOA COMPOSITION
Jimbay Loh, Peekskill; Jerome Trumbetas, Tarrytown; David H. Palmer, Selden, and Mark D. Fitch, Stonybrook, all of N.Y., assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Aug. 20, 1991, Ser. No. 747,815
Int. Cl.[5] A23G *3/00*
U.S. Cl. 426—631 **24 Claims**

1. A micromilled cocoa paste composition processing improved food modifying properties for chocolate products which comprises hydrated microparticles of cocoa having a particle size of about 0.1 to about 20 microns, said microparticles of cocoa being dispersed in an aqueous sugar solution wherein said cocoa is present from about 10 to about 30 weight percent, sugar from about 15 to about 75 weight percent and water from about 20 to about 55 weight percent.

5,185,176
FOOD PRODUCTS CONTAINING MODIFIED STARCH EMULSIFIER
Chung-Wai Chiu, Westfield, N.J., assignor to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.
Division of Ser. No. 234,070, Aug. 18, 1988, Pat. No. 4,977,252, which is a continuation-in-part of Ser. No. 167,051, Mar. 11, 1988, abandoned. This application May 10, 1990, Ser. No. 522,005
Int. Cl.[5] A23L *1/222*
U.S. Cl. 426—651 **5 Claims**

1. A food product, comprising an emulsion characterized by improved stability and resistance to oiling and gelling during storage, wherein the emulsion is prepared employing a starch derivative containing a hydrophobic group or both a hydrophilic group and a hydrophobic group, of which up to 70%, by weight, has been degraded to maltose by reaction with an exo-enzyme capable of cleaving 1,4-alpha-D-glucosidic linkages from non-reducing ends of starch but incapable of cleaving 1,6-alpha-D-glucosidic linkages of starch.

5,185,177
PRODUCING A CERAMIC IMPLANT BY COATING A POWDER MIXTURE OF ZIRCONIA AND EITHER TRICALCIUM PHOSPHATE OR HYDROXYAPATITE ON A MOLDED UNSINTERED BODY OF PARTIALLY STABILIZED ZIRCONIA AND THEN SINTERING THE ARTICLE
Naoto Kijima, Yokohama, and Yasuo Oguri, Tokyo, both of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan
Division of Ser. No. 307,640, Feb. 8, 1989, Pat. No. 4,983,182. This application Oct. 15, 1990, Ser. No. 596,954
Claims priority, application Japan, Feb. 8, 1988, 63-27027; Feb. 8, 1988, 63-27029; Feb. 8, 1988, 63-27031
Int. Cl.[5] A01N *1/02*; A61F *2/28*
U.S. Cl. 427—2 **8 Claims**

3. A process for producing a ceramic implant, which comprises coating a powder mixture comprising zirconia and a member of the group consisting of hydroxyapatite and α-tricalcium phosphate in a weight ratio of 0.05 to 20 on the surface of a molded unsintered produce of wet pulverized partially stabilized zirconia wherein partially stabilized zirconia powder having a BET specific surface area of from 5 to 10 m^2/g has been subjected to wet pulverization treatment in the presence of water and a dispersant so that the BET specific surface area of the partially stabilized zirconia powder has increased from 1.05 to 2.0 times relative to the starting material, followed by sintering at 1200° to 1550° C.

5,185,178
METHOD OF FORMING AN ARRAY OF DENSELY PACKED DISCRETE METAL MICROSPHERES
David C. Koskenmaki, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Division of Ser. No. 500,225, Mar. 27, 1990, Pat. No. 5,026,599, which is a continuation of Ser. No. 237,998, Aug. 29, 1988, abandoned. This application May 29, 1991, Ser. No. 706,793
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—585 **7 Claims**



1. A method for forming on a substrate a discontinuous metal coating comprising an array of densely-packed, discrete metal microspheres, said method comprising the steps of:
(a) providing a substrate having a depositing surface in a chamber;
(b) providing a vacuum of at least about 1×10^{-4} torr in said chamber,
(c) forming a metal vapor in said chamber,
(d) depositing said metal vapor in liquid droplets on said depositing surface, said depositing surface having an effective temperature of at least the melting point of said metal at the of at least the melting point of said metal at the time when said metal is deposited thereon causing the metal vapor to condense on said depositing surface in the form of said liquid droplets,
wherein an array of densely-packed discrete metal microspheres is formed on said depositing surface.

5,185,179
PLASMA PROCESSING METHOD AND PRODUCTS THEREOF
Shunpei Yamazaki, Tokyo; Shigenori Hayashi, Atsugi; Noriya Ishida, Atsugi; Mari Sasaki, Atsugi; Junichi Takeyama, Atsugi; Kenji Itou, Zama; Masahiro Kojima, and Masaya Kadono, both of Atsugi, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan
Filed Oct. 5, 1989, Ser. No. 417,311
Claims priority, application Japan, Oct. 11, 1988, 63-255491; Mar. 31, 1989, 1-82015
Int. Cl.[5] B05D *3/12*; C23C *16/00*
U.S. Cl. 427—601 **10 Claims**

1. A method of selectively forming a diamond film on a substrate comprising the steps of:
coating a mask on said substrate;
scratching the surface of said substrate except the portion that has been covered with said mask;
removing said mask; and
disposing said substrate in a reaction chamber;
growing a diamond film on the scratched surface of said substrate through chemical vapor reaction in said reaction chamber.

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5,185,180

METHOD OF IMPROVING THE MAINTENANCE OF A FLUORESCENT LAMP CONTAINING EUROPIUM-ACTIVATED BARIUM MAGNESIUM SILICATE PHOSPHOR

Anthony F. Kasenga, Towanda, and Tuan A. Dang, Sayre, both of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Continuation of Ser. No. 614,465, Nov. 13, 1990, which is a continuation-in-part of Ser. No. 386,757, Jul. 31, 1989, abandoned. This application Apr. 2, 1992, Ser. No. 862,121

Int. Cl.[5] C09K *11/59*

U.S. Cl. 427—67 **21 Claims**

1. A process for improving the initial power output and maintenance of a fluorescent lamp containing europium-activated barium magnesium silicate phosphor having the general formulation $BaMg_2Si_2O_7$:Eu and an atomic concentration of component elements at its particle surfaces of 2.3% barium, 1.4% europium, 25% magnesium, 15% silicon and the balance oxygen, comprising the steps of:

a) combining said europium-activated barium magnesium silicate phosphor with a flux selected from the group consisting of barium fluoride, barium silicofluoride, magnesium silicofluoride, ammonium silicofluoride, ammonium fluoride, magnesium fluoride, calcium fluoride, and strontium fluoride, said flux being in an amount of between about 0.06% and 0.25% by weight of the phosphor/flux mixture to form a uniform mixture;

b) firing said mixture in a reducing atmosphere at a temperature of about 1150° C. to about 1300° C. for about 2 to 6 hours;

c) washing said fired mixture in an aqueous solution of potassium hydroxide;

d) removing said potassium hydroxide solution from said fired mixture and washing the resulting potassium hydroxide-washed mixture with deionized water;

e) filtering, drying and screening the resulting washed mixture to obtain a treated europium-activated barium magnesium silicate phosphor; and

f) coating the interior of a fluorescent lamp envelope with said treated phosphor.

5,185,181

PROCESS FOR PREPARING AN ELECTROLUMINESCENT THIN FILM

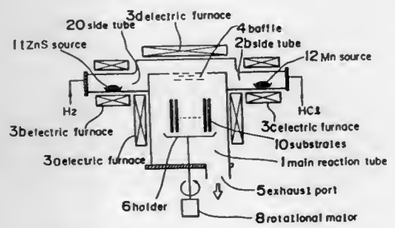
Akiyoshi Mikami, Yamatotakada; Kousuke Terada, Tenri; Katsushi Okibayashi, Sakurai; Koichi Tanaka, Nara; Masaru Yoshida, Nara, and Shigeo Nakajima, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 26, 1991, Ser. No. 721,711

Claims priority, application Japan, Jun. 26, 1990, 2-169508

Int. Cl.[5] B05D *5/12*

U.S. Cl. 427—69 **5 Claims**



1. A process for preparing an electroluminescent ZnS thin film comprising the steps of:

(i) vaporizing zinc sulfide or zinc and sulfur as a basic material and halide of an element as a fluorescence center of the thin film, said basic material and said halide being present in plural heated side tubes connected to upper parts of a main reaction tube wherein plural substrates are arranged opposite to each other at a constant distance in said main reaction tube under a reduced pressure of less than 0.1 Torr;

(ii) transporting the vaporized basic material and said halide from the upper parts of said main reaction tube into said main reaction tube by means of a carrier gas;

(iii) producing the thin film on the plural substrates by chemical vapor deposition; and

(iv) exhausting residual vaporized materials by exhausting means arranged at a lower part of said main reaction tube.

5,185,182

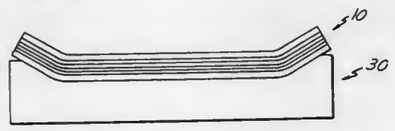
METHOD FOR INHIBITING SIGNIFICANT OXIDATION OF A FILM ON A SUBSTANCE DURING HEATING

Franklin I. Brown, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 10, 1990, Ser. No. 624,823

Int. Cl.[5] B05D *5/12;* **C03C** *17/23*

U.S. Cl. 427—126.2 **15 Claims**



1. A process for making an electrochromic device, comprising the steps of:

A) providing a glass substrate, including an electrochromic layer thereon;

B) placing a powder on the electrochromic layer, the powder capable of releasing a gas which substantially prevents oxidation of the electrochromic layer upon heating; and

C) heating and bending the glass substrate and associated electrochromic layer;

the powder being effective to substantially prevent oxidation of the electrochromic layer.

5,185,183

APPARATUS AND METHOD FOR BLASTING AND METAL SPRAYING A CYLINDRICAL SURFACE

John K. Gonda, Birmingham, Ala.; Benny C. Bachman, Spokane, Wash.; Mike Boyer, Hayden Lake, Id.; Jerry L. Bly, Deer Park, and Donald Gilliland, Spokane, both of Wash., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 10, 1992, Ser. No. 819,416

Int. Cl.[5] B05D *7/22*

U.S. Cl. 427—236 **15 Claims**

1. A method of automatically blasting and metal spraying a cylindrical surface of a vessel comprising the steps of:

providing a pair of parallel guide rails disposed generally parallel to said cylindrical surface;

providing a pair of radially oriented arms so disposed that each arm extends generally normal to one of said guide rails with a distal end of each arm oriented toward said cylindrical surface;

slidably attaching each of said arms to its respective guide rail;

installing a grit blasting nozzle on a distal end of each arm;

orienting said nozzle to grit blast the cylindrical surface;

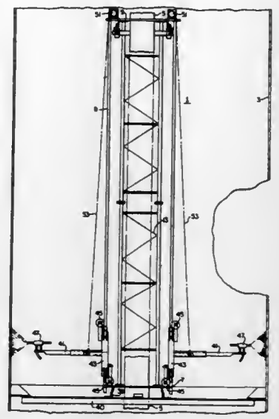
rotating said rails in unison about the axis of said vessel about 180° to grit blast a circumferential band around said cylindrical surface and then reversing the direction of rotation;

moving said arms incrementally along said rails upon completion of each 180° of rotation to grit blast a desired portion of the cylindrical surface with a desired number of passes along said desired portion;

installing on the distal end of each arm means for spraying molten metal;

orienting the metal spraying means to spray said cylindrical surface with a thin coat of molten metal;

rotating said rails in unison about the axis of said vessel about 180° to deposit a circumferential band of a thin layer of metal on said cylinder and then reversing the direction of rotation;



moving said arms incrementally along said rail upon completion of each 180° of rotation to deposit a circumferential band of a thin layer of metal; and

continuing to rotate said rails and moving said arms until numerous thin layers of metal have been sprayed on said cylindrical surface, whereby the cylindrical surface is coated with a uniformly thick layer of metal.

5,185,184

PROCESS FOR PREPARING A SUBSTRATE SURFACE FOR BONDING WITH ACTIVATABLE ADHESIVES BY APPLYING AN ACTIVATOR-CONTAINING LAYER ONTO THE SUBSTRATE SURFACE

Peter Koran, Weilheim; Oswald Gasser, Seefeld, and Rainer Guggenberger, Herrsching, all of Fed. Rep. of Germany, assignors to THERA Patent GmbH & Co., KG, Seefeld, Fed. Rep. of Germany

Filed Mar. 1, 1991, Ser. No. 662,702

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1990, 4006442

Int. Cl.[5] B05D *3/00*

U.S. Cl. 427—299 **25 Claims**

1. In a process for preparing a substrate surface for the bonding thereto of a plastic material, in which process an adhesion-promoting layer is applied to the substrate surface by sandblasting the substrate surface with a sandblasting material, the improvement comprising:

adding an activator to the sandblasting material, which activator can catalyze or accelerate the hardening of an activatable adhesive.

5,185,185

PROCESS OF PRETREATMENT OF METAL-PLATING RESIN MOLDED ARTICLES

Chiharu Nishizawa, Matsudo; Yoshiharu Kondo, and Masaru Ohto, both of Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Dec. 24, 1990, Ser. No. 632,484

Claims priority, application Japan, Dec. 26, 1989, 1-335171

Int. Cl.[5] C23C *26/00*

U.S. Cl. 427—304 **7 Claims**

1. A process of pretreating a metal plated resin molded article prior to metal plating it, said resin molded article being molded from a resin composition containing as main components a polyphenylene sulfide resin, a glass-reinforcing agent and optionally one or more other thermoplastic resins, which pretreatment comprises:

(1) treating said resin molded article by immersion in nitric acid or a mixed liquid of hydrogen peroxide and sulfuric acid (A treatment),

(2) treating the resulting resin molded article by immersion in an organic polar solvent-containing liquid (B treatment), and then

(3) (as a C treatment), treating the resulting resin molded article by immersion in sulfuric acid alone (C-1 treatment) and then immersion in an aqueous alkali solution alone (C-2 treatment).

5,185,186

MASK FOR PLATE MAKING

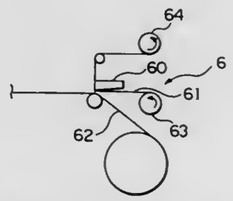
Sota Kawakami, Shiroyama, and Miyuki Hosoi, Hachioji, both of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Aug. 13, 1991, Ser. No. 744,105

Claims priority, application Japan, Aug. 17, 1990, 2-216637

Int. Cl.[5] B05D *3/04*

U.S. Cl. 427—332 **6 Claims**



1. A mask for plate-making prepared by

contacting an ink receiving material with an ink layer transfer material having an ink layer on a substrate,

applying heat in a mask pattern to the contacted material, and

transferring the ink layer to the ink-layer-receiving material, wherein the transmission density of the ink layer is not lower than 2 for light having a wavelength not longer than 500 nm and not higher than 2 for at least a part of light having a wavelength longer than 500 nm.

5,185,187

METHOD AND APPARATUS FOR DIP COATING A HOLLOW CYLINDRICAL BODY

Yuichi Yashiki; Hiroaki Moriyama, and Kazuaki Aoki, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 272,284, Nov. 17, 1988, abandoned. This application Jul. 2, 1991, Ser. No. 726,168

Claims priority, application Japan, Jun. 2, 1987, 62-137784; Aug. 27, 1987, 62-211324

Int. Cl.[5] B05D *1/18;* **B05C** *3/02, 11/11*

U.S. Cl. 427—430.1 **9 Claims**

1. A dip coating method for forming a coating layer on the exterior of a hollow cylindrical body, wherein the hollow cylindrical body has an interior portion and includes a closed upper end and an open lower end which is vertically dipped into a liquid having a surface located in a coating tank, said method comprising:

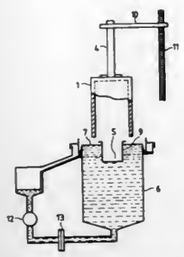
forming a float;

floating said float on the surface of the liquid; and

dipping the hollow cylindrical body vertically into the liquid

VOL
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so that the float enters entirely into the interior portion of the hollow cylindrical body and a limited amount of the



liquid enters the interior portion of the lower end of the hollow cylindrical body.

5,185,188

METHOD FOR SURFACE TREATING AND COATING RESIN COMPOSITION MOLDED ARTICLES

Hiroomi Abe; Hideo Shinonaga; Kiyoshi Mitsui, and Satoru Sogabe, all of Chiba, Japan, assignors to Sumitomo Chemical Co., Ltd., Osaka, Japan

Filed Nov. 21, 1990, Ser. No. 616,969
Claims priority, application Japan, Nov. 21, 1989, 1-304216
Int. Cl.[5] B05D *3/06*
U.S. Cl. 427—533 **65 Claims**

8. A method for coating a resin composition molded article, which comprises irradiating a molded article with ultraviolet light having an irradiation wavelength in the region of 300 nm or less for 20 seconds to 10 minutes and coating the irradiated surface with .a coating, said molded article being obtained from a resin composition comprising (I) 100 parts by weight of a resin composition comprising (A) from 5 to 99.5% by weight of a polypropylene resin selected from the group consisting of polypropylene, modified polypropylene, and a modified polypropylene/polypropylene composition and (B) from 0.5 to 95% by weight of a polyamide resin; (II) from 0 to 30 parts by weight of an epoxy-containing copolymer; and (III) from 0 to 50 parts by weight of an inorganic filler and/or glass fiber.

5,185,189

MULTILAYERED TUBULAR PACKAGING CASING

Karl Stenger, Ruedesheim, and Marliese Saal, Heidesheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 28, 1991, Ser. No. 706,362
Claims priority, application Fed. Rep. of Germany, May 26, 1990, 4017046
Int. Cl.[5] F16L *11/00;* **B65D** *81/34*
U.S. Cl. 428—34.8 **32 Claims**

1. A multilayered, tubular packaging casing for pasty materials having an outer layer, an intermediate layer and an inner layer wherein:

said outer layer comprises a polymer selected from the group consisting of an aliphatic polyamide, an aliphatic copolyamide and a polymer blend containing at least one aliphatic polyamide or aliphatic copolyamides;

said intermediate layer comprises a polyolefin and an adhesion promoting agent, said intermediate layer having a thickness of at least about 2 microns; and

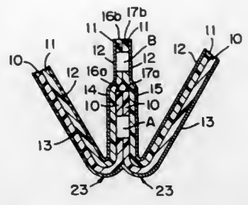
said inner layer comprises a polymer selected from the group consisting of an aliphatic polyamide, a partially aromatic polyamide, an aliphatic copolyamide, a partially aromatic copolyamide and a polymer blend containing at least one aliphatic polyamide, partially aromatic polyamide, aliphatic copolyamide, or partially aromatic copolyamide.

5,185,190

CYLINDRICAL FILTERS AND THEIR MANUFACTURE

Michael Grimes, Hampshire, England, assignor to Pall Corporation, Glen Cove, N.Y.

Filed Jan. 17, 1991, Ser. No. 642,652
Claims priority, application United Kingdom, Jan. 18, 1990, 9001141
Int. Cl.[5] B01D *29/07*
U.S. Cl. 428—36.91 **18 Claims**



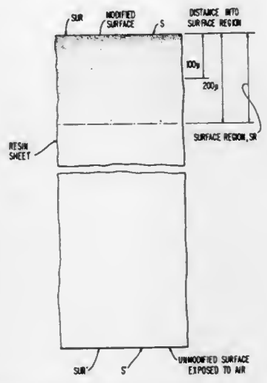
1. A pleated cylindrical filter comprising a sheet of filter material including at least first and second layers of filter media, each having first and second edges, wherein a portion of the first layer near the first edge and a portion of the first layer near the second edge are sealed by a first seal spaced inwardly of and extending along the length of the edges, and a portion of the second layer near the first edge and a portion of the second layer near the second edge are sealed by a second seal spaced inwardly of and extending along the length of the edges and spaced from the first, whereby the sheet of the filter material is formed into a cylinder.

5,185,191

SURFACE MODIFIED, U.V. STABILIZED, POLYVINYL CHLORIDE ARTICLE

Joseph Silbermann, Old Bridge, and Michael T. Burchill, Cranbury, both of N.J., assignors to Elf Atochem North America, Inc., Philadelphia, Pa.

Continuation of Ser. No. 298,529, Jan. 18, 1989, Pat. No. 4,978,576, which is a continuation of Ser. No. 76,629, Jul. 23, 1987, Pat. No. 4,865,880, which is a continuation-in-part of Ser. No. 945,595, Dec. 23, 1986, Pat. No. 4,770,905, and a continuation-in-part of Ser. No. 945,757, Dec. 23, 1986, abandoned. This application Oct. 9, 1990, Ser. No. 593,991
The portion of the term of this patent subsequent to Dec. 18, 2007, has been disclaimed.
Int. Cl.[5] B32B *27/00, 27/16*
U.S. Cl. 428—409 **9 Claims**



1. A surface modified article comprising:

a polymeric resinous sheet containing about 0.5 to about 8 phr of a white pigment therein;

the surface region of only one side of the sheet being modified in decreasing concentration with a stabilizing amount of an ultraviolet light stabilizer;

at least 70% of the stabilizing amount being present in the first 100 microns of the surface region; and

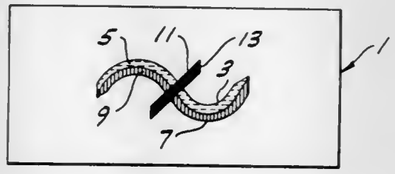
the side other than the side containing the stabilizer being substantially free of stabilizer material.

5,185,192

ORNAMENTAL PRE-CAST TERRAZZO PANELS WITH INTEGRAL INLAY DESIGN

Christopher T. Banus, Fairfield, Iowa, assignor to The Granitech Corporation, Fairfield, Iowa

Division of Ser. No. 345,480, May 5, 1989, Pat. No. 5,047,187. This application Sep. 9, 1991, Ser. No. 756,964
Int. Cl.[5] B28B *1/08;* **B29C** *39/12;* **B32B** *3/14;* **B44C** *3/10*
U.S. Cl. 428—49 **3 Claims**



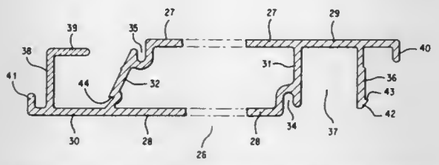
2. A pre-cast terrazzo panel having detailed, multicolor designs therein constituted by background and inlay designs of different colors, said inlay design comprising aggregate and binder in a cut-out pattern or design through a complete thickness of said panel, said inlay design and panel having two opposite faces, a forming face and a finished face, orientations of pg,**15** said inlay design and panel being such that said aggregate and binder of said inlay design are fully flush with, and settled against, said finished face of said inlay design co-planar with, and forming part of, said finished face of said panel, and wherein said inlay and background designs are integral with no surface difference between said inlay and background designs and without said different designs being separated from each other by divider strips.

5,185,193

INTERLOCKABLE STRUCTURAL MEMBERS AND FOLDABLE DOUBLE WALL CONTAINERS ASSEMBLED THEREFROM

Ronald W. Phenicie, and Peter E. Dahlquist, both of Warrenton, Va., assignors to Case Designers Corporation, Warrenton, Va.

Continuation-in-part of Ser. No. 637,542, Jan. 4, 1991. This application Apr. 22, 1991, Ser. No. 688,255
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—57 **14 Claims**



1. A end to end interlockable structural member for assembling a double wall comprising:

a pair of spaced apart parallel panels, the panels being staggered in a longitudinal direction so that an extension end section of each panel extends in the longitudinal direction beyond a non-extension end of the other panel, each panel being formed with a channel extending in a widthwise direction across the panel;

a first and a second connecting wall, each connecting wall joining the non-extension end of a panel to the other panel, the first connecting wall having a notch therein;

a flange wall extending at an angle from the extension end section of one panel so as to define an open flange receiving cavity between the second connecting wall, said extension end section and the flange wall, said flange wall having a head which is engageable with the notch of another identical structural member;

a flange belonging to the extension end section which extends beyond the first connecting wall, the flange comprising a side wall originating at an angle from said extension end section to a terminal point;

a first lip, originating at an angle from the extension end section to which the side wall belongs at a point along said extension end section which is more distant from the first connecting wall than the side wall is, said first lip being snugly receivable in a channel of another identical structural member; and

a second lip, originating at an angle from the extension end section to which the flange wall belongs at a point along said extension end section which is more distant from the second connecting wall than the flange wall is, said second lip being snugly receivable in a channel of another identical structural member;

said flange receiving cavity, flange wall, head, flange, notch, channels, first lip and second lip being of dimensions and being adapted such that: the flange receiving cavity is capable of completely receiving the flange of another identical structural member; the second lip is capable of being snugly received within a channel of said another identical structural member; a channel is capable of snugly receiving the first lip of said another identical structural member; and the head of the flange wall is capable of engaging and cooperating with the notch of said another identical structural member, so as to resist separation of the structural member from said another identical structural member.

5,185,194

HEAT-MODE RECORDING MEDIUM

Ryohei Miyake, Tokyo, and Kyoji Tsutsui, Mishima, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 28, 1990, Ser. No. 500,584
Claims priority, application Japan, Mar. 31, 1989, 1-82331; May 29, 1989, 1-135576
Int. Cl.[5] B32B *3/00*
U.S. Cl. 428—64 **27 Claims**



1. A heat-mode recording medium comprising:

(a) a substrate and

(b) a recording layer formed thereon comprising a thin film of an organic material having a regularly oriented crystallization direction which can be thermally and reversibly controlled, wherein said organic material is a fatty acid or fatty acid derivative having 10 or more carbon atoms.

VOL
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5,185,195
CONSTRUCTIONS HAVING IMPROVED PENETRATION RESISTANCE
Gary A. Harpell; Dusan C. Prevorsek, both of Morris, N.J., and David V. Cunningham, Chesterfield, Va., assignors to Allied-Signal Inc., Morristown, N.J.
Filed Nov. 19, 1990, Ser. No. 615,673
Int. Cl.[5] B32B *3/06*
U.S. Cl. 428—102 47 Claims



1. An improved penetration resistant article of the type comprising a plurality of flexible fibrous layers, at least two of which are secured together by a securing means, the improvement comprising a securing means which extends along at least two adjacent paths wherein the distance between said paths is less than ⅛ in (0.3175 cm).

5,185,196
METHOD FOR ASSEMBLY OF LAMINATE ARTICLE
Gary V. Grosclaude, Winsted, Conn., assignor to Dymax Corporation, Torrington, Conn.
Filed Nov. 15, 1990, Ser. No. 612,961
Int. Cl.[5] B32B *23/02, 31/00*
U.S. Cl. 428—194 14 Claims

1. In a method for the production of a laminate article fabricated from a multiplicity of metal plates, said plates being assembled as a stack and having marginal portions with outer edges lying on at least one common plane providing one face of said stack, the improvement wherein said method comprises the steps of:

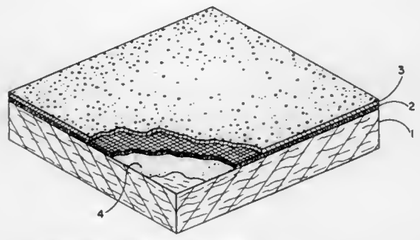
applying to said plates an activated oil formulation comprised primarily of an oil ingredient that is suitable for lubricating said plates, and in admixture with said oil ingredient, an effective amount of a chemical cure initiator, said formulation providing a surface layer upon said one face of said stack and extending, to at least a significant depth, between confronting marginal portions of said outer edges of said plates;

applying over said oil formulation layer a polymerizable liquid adhesive composition compatible with said oil ingredient and formulated to cure to a solid coating, and to bond to said plates, by reaction induced chemically by said initiator and also by photo-induced reaction; and

thereafter exposing said face of said stack to radiation of appropriate wavelength value to effect said photo-induced reaction, full curing of said composition to produce a solid coating on said face and bonding of said plates being achieved through said chemically induced and photo-induced reactions.

13. An article of manufacture produced by the method of claim 1.

5,185,197
MULTICOLOR TEXTURED FINISHED FIBERGLASS/MINERAL FIBER ACOUSTICAL WALL AND CEILING PANELS
Michael T. Nixon, 2810 Urbandale La., Plymouth, Minn. 55447
Filed May 8, 1989, Ser. No. 342,902
Int. Cl.[5] D04H *1/08*
U.S. Cl. 428—246 4 Claims



1. A decorative panel comprising:

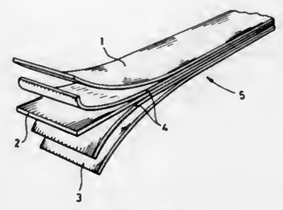
(a) a core made of a fibrous glass with a phenolformaldehyde base resin and having a density of 1.5 to 4 pounds per cubic foot having at least one irregular surface;

(b) a mat made of a fibrous glass with a ureaformaldehyde cured resin binder;

(c) means for securing said mat to at least one irregular surface of said core said means being a sprayed copolymer emulsion adhesive, said mat serving to bridge said irregular surface of said core; and

(d) a flaked textured paint finish including visibly unnoticeable uncovered areas which permit sound to pass through the finish.

5,185,198
BENT STRUCTURE COMPRISING OUTER METAL SHEETS IN A SOFT W CONDITION BONDED BY AN ADHESIVE LAYER
Paul Lefeber, Lisse; Rene Botterman, Culemborg; Cornelis Van Tilborgh, Zwanenburg, and Loek Van Veggel, Maarsen, all of Netherlands, assignors to Fokker Aircraft B.V., Schiphol-oost, Netherlands
Filed Sep. 5, 1990, Ser. No. 577,784
Int. Cl.[5] B32B *15/04, 15/08, 27/00, 7/00*
U.S. Cl. 428—251 9 Claims



1. A hybrid laminate comprising:

(a) at least two sheets of a solution heat-treated and quenched non-ferrous metal alloy which alloy is in a soft condition being a W condition and is capable of being hardened at an elevated hardening temperature to a final temper, said soft W condition being closer in temper to that of the quenched alloy than to said final temper; and

(b) an adhesive layer bonding said metal sheets together, the adhesive of said layer being selected to be curable under conditions that are not effective to harden said soft metal alloy;

wherein said non-ferrous metal alloy is selected so that said

hardening temperature does not deleteriously affect said adhesive layer; whereby said laminate can be formed by bending and is substantially more bendable than when hardened to said final temper.

5,185,199
MALEIC ANHYDRIDE-GRAFTED POLYOLEFIN FIBERS
Lawrence H. Sawyer, Sewell, N.J.; Marvin A. White, Clute, and George W. Knight, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 785,358, Oct. 30, 1991, Pat. No. 5,126,199, which is a division of Ser. No. 266,455, Nov. 2, 1988, Pat. No. 5,082,899. This application Apr. 1, 1992, Ser. No. 861,661
Int. Cl.[5] D01H *1/58*
U.S. Cl. 428—288 15 Claims

1. A fabric, comprising:

performance fibers and melt-spun binder fibers bonded thereto wherein the binder fibers consist essentially of a biconstituent blend of LLDPE and HDPE which has been grafted with maleic acid or anhydride to obtain succinic acid or anhydride groups along the HDPE polymer chain.

5,185,200
AQUEOUS POLYISOCYANATE DISPERSIONS WITH REDUCED ISOCYANATE CONTENTS AND THEIR USE FOR THE PRODUCTION OF FIBERGLASS MATS
Robin E. Tirpak, Wheeling, W. Va.; Peter H. Markusch, McMurray, Pa., and Ashok M. Sarpeshkar, New Martinsville, W. Va., assignors to Miles Inc., Pittsburgh, Pa.
Filed Mar. 28, 1991, Ser. No. 676,670
Int. Cl.[5] C03C *25/02;* C08G *18/08, 18/32;* C08L *75/02, 75/04*
U.S. Cl. 428—288 25 Claims

1. An aqueous polyisocyanate dispersion which has an isocyanate content of at least 0.5% by weight, based on the weight of the polyisocyanate, and is prepared by a process which comprises

a) dispersing in water a polyisocyanate which has an isocyanate content of at least 12% by weight and

b) reacting the dispersed polyisocyanate with

i) a primary or secondary monoamine containing at least one hydroxyl group in an amount sufficient to provide an equivalent ratio of amino groups to isocyanate groups of 0.1:1.0 to 0.7:1.0 and

ii) a polyamine having primary and/or secondary amino groups and a molecular weight of 400 or less in an amount sufficient to provide an equivalent ratio of amino groups to isocyanate groups of 0.1:1.0 to 0.4:1.0,

wherein component i) is mixed with the dispersed polyisocyanate either before or during the mixing of component ii) and provided that the equivalent ratio of amino groups from both components i) and ii) to isocyanate groups does not exceed 0.95:1.0.

8. A process for the preparation of a fibrous mat which comprises

a) dispersing in water a polyisocyanate which has an isocyanate content of at least 12% by weight,

b) reacting the dispersed polyisocyanate with

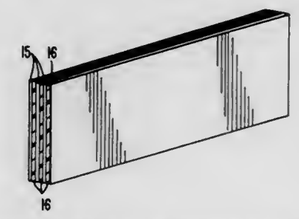
i) a primary or secondary monoamine containing at least one hydroxyl group in an amount sufficient to provide an equivalent ratio of amino groups to isocyanate groups of 0.1:1.0 to 0.7:1.0 and

ii) a polyamine having primary and/or secondary amino groups and a molecular weight of 400 or less in an amount sufficient to provide an equivalent ratio of amino groups to isocyanate groups of 0.1:1.0 to 0.4:1.0,

wherein component i) is mixed with the dispersed polyisocyanate either before or during the mixing of component ii) and provided that the equivalent ratio of amino groups from both components i) and ii) to isocyanate groups does not exceed 0.95:1.0 and

c) subsequently treating fibers with said dispersed polyisocyanate before the isocyanate content of said dispersed polyisocyanate is less than 0.5% by weight, based on the weight of the polyisocyanate.

5,185,201
LAMINATES FOR PROTECTING INCOMPLETELY DRY SURFACES
Peter W. Wendt, Franklin, Wis., assignor to Georgia-Pacific Corporation, Atlanta, Ga.
Filed Jul. 31, 1990, Ser. No. 560,119
Int. Cl.[5] B32B *3/30;* D04H *1/58, 1/04*
U.S. Cl. 428—296 2 Claims



1. A reusable separator for separating a first planar article from a second planar article during packing and shipping, said first planar article having a first side exhibiting a solvent-based overcoating containing a residual amount of solvent, said separator comprising:

a first layer comprising a semi-rigid backing ply of a solvent absorbent material selected from the group consisting of chipboard, corrugated boxboard, groundwood papers, bogus board and Kraft papers, said first layer exhibiting a planar shape having a first side and a second side; and

a second layer comprising a solvent permeable ply, wherein said solvent permeable ply comprises a material selected from the group consisting of spunbounded polypropylene and spunbounded polyesters, said second layer exhibiting a planar shape having a first surface and a second surface, wherein said first surface is laminated to said first side of said first layer and said second surface is an exposed surface for contacting said overcoating during packing and shipping, wherein said exposed surface does not damage or adhere to said overcoating when in contact with said overcoating during packing and shipping, and wherein said solvent escapes from said overcoating through said solvent permeable ply during packing and shipping.

5,185,202
PHOTOGRAPHIC PRINTING PAPER SUPPORT
Shinichiro Serizawa, and Shigehisa Tamagawa, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Sep. 23, 1991, Ser. No. 763,705
Claims priority, application Japan, Sep. 25, 1990, 2-252016
Int. Cl.[5] B32B *27/38;* G03C *1/78*
U.S. Cl. 428—335 11 Claims

1. A photographic printing paper support which comprises raw paper having both sides coated with a polyolefin resin, wherein said raw paper contains a cationic polyacrylamide having a molecular weight of from 500,000 to 1,500,000 and a cationic value of from 1.5 to 5.0 (ml/g) resulting from copolymerizing acrylamide and a cationic monomer.

VOL 1147 ISS 2 FE 9 1993 UMI

5,185,203

HEAT-SEALABLE CROSSLINKED ORIENTED POLYETHYLENE FILM AND PRODUCTION THEREOF

Yasushi Itaba; Minoru Izawa; Keichiro Saito, and Takayoshi Kondo, all of Kawasaki, Japan, assignors to Tonen Sekiyukagaku K.K., Tokyo, Japan

Filed Nov. 14, 1989, Ser. No. 436,541
Claims priority, application Japan, Nov. 15, 1988, 63-288124
Int. Cl.[5] C09J 7/02
U.S. Cl. 428—349 2 Claims

1. A heat-sealable crosslinked oriented polyethylene film comprising a crosslinked, biaxially oriented high density polyethylene film in which the degree of crosslinking inwardly decreases across the thickness of said film,

a first heat sealing layer placed on at least one surface of said crosslinked, biaxially oriented high density polyethylene film, said first heat sealing layer consisting essentially of a tackifier and an ethylene-vinyl acetate copolymer containing an antiblocking agent, said first heat sealing layer having a thickness, and

a second heat sealing layer consisting essentially of a tackifier and an ethylene-vinyl acetate copolymer free from an antiblocking agent is further placed between said crosslinked, biaxially oriented high density polyethylene film and said first heat sealing layer consisting essentially of the tackifier and the ethylene-vinyl acetate copolymer containing the antiblocking agent, said second heat sealing layer having a thickness,

wherein the ration of the thickness of said first heat sealing layer containing the antiblocking agent to the thickness of said second heat sealing layer free from the antiblocking agent is about 1:1–10.

5,185,204

AGGLOMERATE OF WHISKERS OR SHORT FIBERS

Tadao Shimizu, Tokyo; Yoshio Aso, and Hidefumi Konnai, both of Chiba, all of Japan, assignors to Kawatetsu Minig Co., Ltd., Tokyo, Japan

Filed Jun. 18, 1990, Ser. No. 539,626
Claims priority, application Japan, Dec. 19, 1988, 63-318532
Int. Cl.[5] B32B 5/16
U.S. Cl. 428—402 5 Claims

1. A pelletized agglomerate for reinforcement consisting essentially of whiskers or short fibers having a diameter of 0.1–10 μm and a length of 50–200 μm, said agglomerate having a diameter of 0.1–10 mm and a bulk density of 0.2–1.0 kg/liter.

5,185,205

Patent Not Issued For This Number

5,185,206

POLYSILICATE MICROGELS AS RETENTION/DRAINAGE AIDS IN PAPERMAKING

John D. Rushmere, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 388,967, Aug. 7, 1989, Pat. No. 4,954,220, which is a continuation-in-part of Ser. No. 245,184, Sep. 16, 1988, abandoned. This application Jun. 20, 1990, Ser. No. 540,913
Int. Cl.[5] B35B 5/16
U.S. Cl. 428—403 3 Claims

1. An improved drainage and retention aid for papermaking which is added to an aqueous paper furnish containing pulp and which comprises a silicated cationic starch composition which is a dry solid which contains from about 1 to 25 wt % silica and consists essentially of granules of a cationized starch having the silica in the form of a water soluble polysilicate microgel deposited on the surfaces thereof and, optionally, the



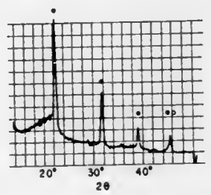
composition further containing discreet agglomerates of silica microgels in admixture with the silicated starch granules.

5,185,207

PHOSPHOR FOR CATHODE RAY TUBE AND SURFACE TREATMENT METHOD FOR THE PHOSPHOR

Misa Furuoka; Shoichi Bando, and Akio Fujii, all of Anan, Japan, assignors to Nichia Kagaku Kogyo K.K., Tokushima, Japan

Filed Dec. 27, 1991, Ser. No. 813,668
Claims priority, application Japan, Aug. 12, 1990, 2-212944; Mar. 6, 1991, 3-67942
Int. Cl.[5] B32B 5/16
U.S. Cl. 428—404 6 Claims



1. A phosphor for a cathode-ray tube comprising:

phosphor particles; and

a surface treatment composition adhered on the surfaces of said phosphor particles containing, per 100 parts by weight of said phosphor, 0.01 to 3 parts by weight of SiO_2 and 0.0005 to 1.0 part by weight, per 100 parts by weight of said phosphor, of at least one element selected from the group consisting of indium zirconium, and antimon.

5,185,208

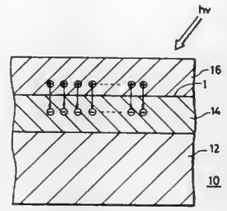
FUNCTIONAL DEVICES COMPRISING A CHARGE TRANSFER COMPLEX LAYER

Akio Yamashita, Kanagawa; Susumu Yoshimura, Yokohama, and Sohji Tsuchiya, Kanagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 170,025, Mar. 4, 1988, Pat. No. 5,009,958. This application Oct. 29, 1990, Ser. No. 604,534
Claims priority, application Japan, Mar. 6, 1987, 62-52537; Mar. 6, 1987, 62-52538; May 14, 1987, 62-117353
Int. Cl.[5] B32B 9/04
U.S. Cl. 428—411.1 10 Claims

1. A functional device which comprises a substrate, and at

least one layer of a charge transfer complex formed on one side of said substrate by a vacuum deposition process, wherein said charge transfer complex is polarized in one direction and capable of producing an electric charge which is induced by polarization and increased by application of light or internal energy



applied thereto and said at least one layer is made of an acceptor sub-layer and a donor sub-layer superposed one on another and said charge transfer complex is formed and polarized at an interface between said acceptor sub-layer and said donor sub-layer which extends in a direction substantially vertical to the direction of the superposition.

5,185,209

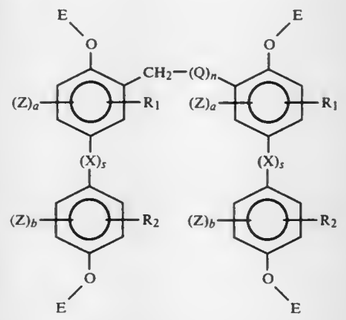
PHOTODEFINABLE INTERLEVEL DIELECTRICS

Joseph J. Zupancic, Bensenville, Ill., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

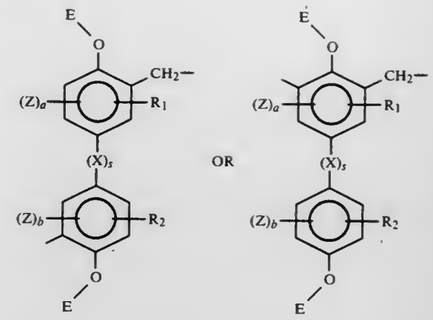
Filed Mar. 28, 1991, Ser. No. 676,675
Int. Cl.[5] B32B 27/42
U.S. Cl. 428—457 2 Claims

1. An electronic interconnect structure comprising electrical and dielectric levels wherein a cured polymer is the dielectric level, said polymer being produced by the method comprising:

(a) coating a substrate with a prepolymer which is an ether of the oligomeric condensation product of a dihydric phenol and formaldehyde having the formula



where the recurring unit Q has the structure,



and n is an integer from 1 to 10;

s is 0 or 1;

each X is independently selected from the group consisting of CH_2, $C(CH_3)_2$, O, S, SO_2, CO, and OC_6H_4O;

each R_1 and R_2 is independently selected from the group consisting of hydrogen, alkyl and alkoxy moieties containing 1 to 10 carbon atoms, phenyl and phenoxy;

a and b are independently 0 or integers from 1 to 4;

Z is Cl or Br;

E is selected from the group consisting of the vinylbenzyl moiety, alkyl moieties containing 1 to 10 carbon atoms, or benzyl, subject to the constraint that at least 50% of all E's are the vinylbenzyl moiety;

(b) irradiating the coated prepolymer of (a) through a masking pattern to selectively crosslink the portion of said coating being irradiated;

(c) selectively dissolving the non-irradiated part of the prepolymer coating of (a); and

(d) curing the crosslinked portion of the prepolymer coating by heating at a temperature in the range of 100° C. to 300° C. for a time sufficient to further crosslink said crosslinked coating and to transform the prepolymer to an infusible glassy solid.

5,185,210

PHOTODEFINABLE INTERLEVEL DIELECTRICS

Joseph J. Zupancic, Bensenville, Ill., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.

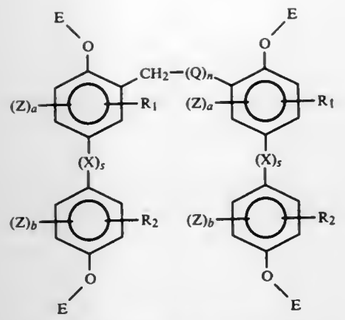
Filed Mar. 28, 1991, Ser. No. 676,667
Int. Cl.[5] B32B 27/42
U.S. Cl. 428—457 2 Claims

1. An electronic interconnect structure comprising electrical and dielectric levels wherein a cured polymer is the dielectric level, said polymer being produced by the method comprising:

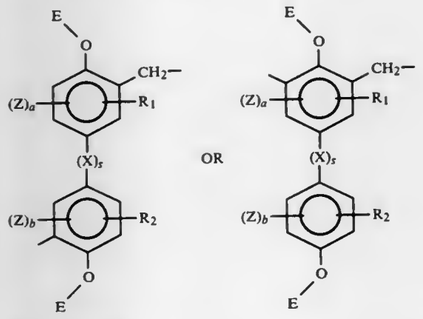
a. coating a substrate with a mixture of prepolymers which comprises

(1) an ether of the oligomeric condensation product of a dihydric phenol and formaldehyde having the formula

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where the recurring unit Q has the structure,

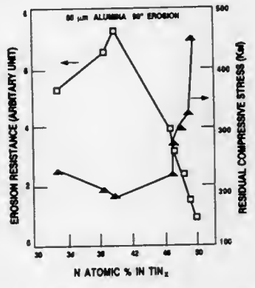


and n is an integer from 1 to 10;
s is 0 or 1;
each X is independently selected from the group consisting of CH_2, $C(CH_3)_2$, O, S, SO_2, CO, and OC_6H_4O;
each R_1 and R_2 is independently selected from the group consisting of hydrogen, alkyl and alkoxy moieties containing 1 to 10 carbon atoms, phenyl and phenoxy;
a and b are independently 0 or integers from 1 to 4;
Z is Cl or Br;
E is selected from the group consisting of the vinylbenzyl moiety, alkyl moieties containing 1 to 10 carbon atoms, or benzyl, subject to the constraint that at least 50% of all E's are the vinylbenzyl moiety; and
(2) an ether of the oligomeric condensation product of
(a) 1 molar proportion of a dialdehyde and
(b) from about 3 to about 4 molar proportions of a phenol; when the dialdehyde is selected from the group consisting of $OHC(CH_2)_mCHO$, where m=0 or an integer from 1 to 6, cyclopentanedialdehyde, phthalaldehyde, isophthalaldehyde, terephthalaldehyde, hexahydrophthalaldehyde, cycloheptanedialdehyde, hexahydroisophthalaldehyde, hexahydroterephthalaldehyde, and cyclooctanedialdehyde;
where the phenol has the structure $R_3C_6H_4$ and R_3 is hydrogen or an alkyl group containing from 1 to about 10 carbon atoms; and where the phenol residue of said oligomeric condensation product is etherified with one or more substituents to afford ether moieties randomly selected from the group consisting of vinylbenzyl, alkyl moieties containing from 1 to 10 carbon atoms, cycloalkyl moieties from 5 to 10 carbon atoms, and benzyl, with the ratio of vinylbenzyl to other moieties being from 1:1 to about 6:1;
c. irradiating the coated prepolymer of (a) through a masking pattern to selectively crosslink the portion of said coating being irradiated;
d. selectively dissolving the non-irradiated part of the prepolymer coating of (a); and
e. curing the crosslinked portion of the prepolymer coating by heating at a temperature in the range of 100° C. to 300° C. for a time sufficient to further crosslink said crosslinked coating and to transform the prepolymer to an infusible glassy solid.

5,185,211
NON-STOICHIOMETRIC TITANIUM NITRIDE COATING

Jiinjen A. Sue, Carmel, and Harden H. Troue, Plainfield, both of Ind., assignors to Praxair S.T. Technology, Inc., Danbury, Conn.

Filed Jul. 11, 1991, Ser. No. 728,339
Int. Cl.[5] B22D *25/00*; B32B *15/04*
U.S. Cl. 428—472 **11 Claims**



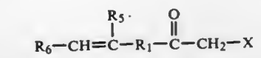
1. A non-stoichiometric titanium nitride coating for substyrates having good wear and corrosion resistance in which the substrate has a non-nitrogen, titanium-containing outer surface and on which a substantially homogeneous titanium nitride coating having a crystallize size, measured in the direction perpendicular to (111) diffraction plane of less than 55 nm, containing from 32.5 to 47 atomic percent nitrogen is disposed over said titanium-containing outer surface exhibiting increased resistance to solid particle impact.

5,185,212
ACETOACETOXY-ALKYL ACRYLATE-CONTAINING PRESSURE SENSITIVE ADHESIVES MANUFACTURED ARTICLES

Lonnie T. Spada, Walnut, and Joseph J. Wilczynski, Yorba Linda, both of Calif., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 859,057, May 2, 1986, abandoned. This application Aug. 30, 1990, Ser. No. 574,715
The portion of the term of this patent subsequent to Jul. 26, 2005, has been disclaimed.
Int. Cl.[5] B32B *27/06, 27/36*
U.S. Cl. 428—483 **11 Claims**

1. A normally tacky, pressure-sensitive adhesive article comprising a substrate coated on at least a portion of one surface thereof with a normally tacky and pressure-sensitive adhesive composition comprising a polymer having a T_g of about 0° C. or less and containing at least about 40 weight percent olefinically unsaturated carboxylic acid ester monomers and at least one polymerizable functional monomer of the formula:



in which R_1 is a divalent organic radical at least 3 atoms in length, R_5 and R_6 are independently selected from hydrogen, hydroxy, halo, amino or monovalent organic radicals, X is —CO—R_4 or —CN wherein R_4 is hydrogen or a monovalent organic radical, and said polymer (a) comprising about 0.1 to about 5 weight percent of said functional monomer and (b) is substantially free of (i) polyvalent metals, compounds, and complexes and (ii) cross-linking agents.

5,185,213
INK JET RECORDING SHEET

Seigoro Fujita, Nishinomiya, and Yoichi Fukuzawa, Amagasaki, both of Japan, assignors to Kanzaki Papper Manufacturing Co., Ltd., Tokyo, Japan

Filed Jun. 20, 1991, Ser. No. 717,997
Claims priority, application Japan, Jun. 23, 1990, 2-165015
Int. Cl.[5] B41M *5/00*
U.S. Cl. 428—500 **9 Claims**

1. An ink jet recording sheet in which a coating layer containing a pigment component and a binder component is formed on a film substrate, characterized in that 20 to 70 weight % of said pigment component is prismatic aragonite calcium carbonate having an oil absorption of 30 to 55 ml/100 g, said binder component comprises an epoxy resin and a thermoplastic resin, the amount of said binder component is not more than 50 parts by weight based on 100 parts by weight of said pigment component.

5,185,214
ONE STEP PROCESS FOR IMPARTING DECAY RESISTANCE AND FIRE RETARDANCY TO WOOD PRODUCTS

Susan L. LeVan, 716 Glenview Dr., Madison, Wis. 53716, and Rodney C. DeGroot, 1408 Arrowood Dr., Madison, Wis. 53704

Filed Jun. 12, 1991, Ser. No. 714,402
Int. Cl.[5] B27K *3/50*
U.S. Cl. 428—541 **19 Claims**

1. A one step process for imparting both fire retardance and decay resistance to a product composed of cellulosic material comprising:
combining a first ingredient consisting of a methylolated amino resin present in a range of about 5% to about 40% by weight of the final solids content with a second ingredient selected from the group consisting of tertiary and quaternary ammonium compounds present in a range of about 0.1% to about 10% by weight of the final solids content to produce a water-soluble mixture, and
impregnating said product with said mixture.

5,185,215
ZIRCONIA TOUGHENING OF GLASS-CERAMIC MATERIALS

Richard W. Adams, Jr., Marlboro, Mass.; David R. Clarke, Katonah, N.Y.; Sarah H. Knickerbocker, Hopewell Junction, N.Y.; Linda L. Rapp, Poughkeepsie, N.Y., and Bernard Schwartz, Hartsdale, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

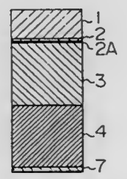
Continuation of Ser. No. 348,980, May 9, 1989, Pat. No. 5,045,402, which is a continuation-in-part of Ser. No. 146,455, Jan. 21, 1988, abandoned, which is a continuation of Ser. No. 892,687, Aug. 1, 1986, abandoned. This application Feb. 26, 1991, Ser. No. 626,370
The portion of the term of this patent subsequent to Sep. 3, 2008, has been disclaimed.
Int. Cl.[5] C04B *10/00, 14/00*
U.S. Cl. 428—545 **14 Claims**

1. An article comprising:
a ceramic body;
said ceramic body comprises about 75 volume percent of a dielectric material which is an aggregate of randomly oriented crystallite having intersticies therebetween optionally containing uncrystalized material and the remainder being substantially a material selected from the group consisting of ZrO_2, HfO_2 and a mixture thereof in the form of particles having a size between about 0.5 to about 8.0 microns, said particles having a tetragonal crystalline structure and being sufficiently dispersed within said ceramic body to increase the toughness of said ceramic body;
said particles further containing an oxide compound selected from the group consisting of MgO, CaO, Y_2O_3, TiO_2 and rare earth oxides, there being at least enough of said oxide to increase the amount of said tetragonal structure of said material of said particles; and
an electrical conductor pattern within said ceramic body said conductor pattern having a melting temperature greater than the crystallization temperature of said dielectric material.

5,185,216
COMPOSITE PLATING FILM FOR SLIDING MEMBER

Tadashi Tanaka, Konan; Masaaki Sakamoto, Nagoya; Motomu Wada, Owariasahi; Hideo Ishikawa, Komaki; Sowjun Matsumura, Hirakata; Tadashi Chiba, Hirakata; Kiyoshi Asakawa, Hirakata, and Syoichi Oobora, Nagoya, all of Japan, assignors to Daido Metal Company Ltd., Nagoya and C. Uyemura & Company, Ltd., Osaka, both of, Japan

Filed Aug. 29, 1990, Ser. No. 574,701
Claims priority, application Japan, Nov. 20, 1989, 1-301469; Feb. 28, 1990, 2-049132
Int. Cl.[5] F16C *33/12*
U.S. Cl. 428—614 **6 Claims**



1. A composite electroplating film for sliding members, containing at least one alloy element selected from tin, indium, antimony, and copper; inorganic particles selected from the nitride, carbide, fluoride and sulfide; and lead, wherein the composition of said composite electroplating film consisting essentially of:
a) at least one of the alloy elements selected from tin, indium, antimony, and copper in amounts of from 2 to 30 weight % in total;
b) amounts of said inorganic particles in amounts of from 0.3 to 25 volume %; and
c) a balance of lead.

5,185,217
RELATIVELY DISPLACING APPARATUS

Noritaka Miyamoto, Toyota, and Takashi Tomoda, Nagoya, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Sep. 7, 1990, Ser. No. 578,650
Claims priority, application Japan, Sep. 8, 1989, 1-233845; Nov. 10, 1989, 1-293077
Int. Cl.[5] B32B *15/04*; F01D *11/08*
U.S. Cl. 428—627 **12 Claims**

1. A relatively displacing apparatus comprising:
a movable member; and
a stationary member;
said movable member and said stationary member disposed adjacent to each other and displacing relatively at a high temperature;
said stationary member having a coating layer disposed

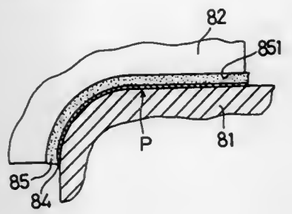
VOL 1147 ISS 2 FE 9 1993 UMI

adjacent to said movable member, said coating layer being formed by flame spray coating, including hexagonal system boron nitride and having a surface generated by machining with said movable member.

8. A relatively displacing apparatus comprising:

a movable member; and

a stationary member;



said movable member and said stationary member disposed adjacent to each other and displacing relatively at a high temperature;

said stationary member having a coating layer disposed adjacent to said movable member, said coating layer being formed by flame spray coating, including ceric oxide and having a surface generated by machining with said movable member.

5,185,218

ELECTRODES FOR METAL/AIR BATTERIES AND FUEL CELLS AND METAL/AIR BATTERIES INCORPORATING THE SAME

Avner Brokman, and Jonathan Goldstein, both of Jerusalem, Israel, assignors to Luz Electric Fuel Israel Ltd, Jerusalem, Israel

Filed Dec. 31, 1990, Ser. No. 633,519

Int. Cl.[5] H01M *8/06*

U.S. Cl. 429—27 **12 Claims**

1. An air cathode in combination with an oxygen-rich electrolyte-immiscible organic fluid for supplying oxygen thereto.

5,185,219

SOLID OXIDE FUEL CELLS

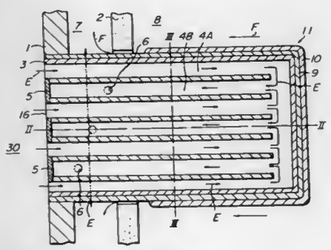
Takeshi Ishibara, and Hidenobu Misawa, both of Toyoake, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Feb. 4, 1991, Ser. No. 649,988

Claims priority, application Japan, Feb. 15, 1990, 2-32381; Mar. 27, 1990, 2-75606

Int. Cl.[5] H01M *8/10*

U.S. Cl. 429—31 **3 Claims**



1. A solid oxide fuel cell comprising:

at least one fuel cell unit, each fuel cell unit comprising:

(i) a plate electrode body of porous ceramic having a plurality of gas flowing passages therein;

(ii) a dense interconnector formed on at least one main surface of the plate electrode body;

(iii) a dense solid electrolyte film formed on at least an other main surface of he plate electrode body; and

(iv) an electrode film formed on the dense solid electrolyte film and having a polarity opposite to a polarity of the plate electrode body;

a gas supply chamber for supplying an oxidizing gas or a fuel gas to the gas flowing passages;

a dense partition member holding an end portion of each fuel cell unit at a side of the gas supply chamber;

an exhaust gas combustion chamber arranged adjacent to the gas supply chamber through the dense partition member; and

a partition member separating the exhaust gas combustion chamber from a power generation chamber, said exhaust gas combustion chamber communicating with said power generation chamber through a gap formed between said partition member and an outer surface of each fuel cell unit;

wherein in said power generation chamber the oxidizing gas or fuel gas supplied from the gas supply chamber to the gas flowing passages is turned around an end portion of the fuel cell unit at the side of the power generation chamber and transferred toward the gas supply chamber and then discharged to the exhaust gas combustion chamber through a gas discharge port formed in the respective gas flowing passage.

5,185,220

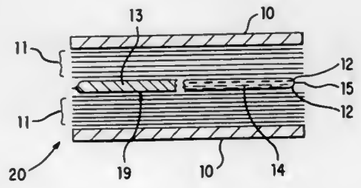
FUEL CELL CLAMPING FORCE EQUALIZER

Frank C. Schora, Palatine, Ill., assignor to M-C Power Corporation, Burr Ridge, Ill.

Filed Oct. 25, 1991, Ser. No. 782,502

Int. Cl.[5] H01M *2/08*

U.S. Cl. 429—35 **20 Claims**



1. In a generally rectangular fuel cell stack comprising a plurality of fuel cell units, each said fuel cell unit comprising an anode and a cathode, an electrolyte in contact with one side of said anode and with an opposite facing side of said cathode, and a separator plate separating said fuel cell unit between said anode and said cathode forming an anode chamber between one side of said separator plate and said anode and a cathode chamber between the opposite side of said separator plate and said cathode, said fuel cell units disposed between two endplates, the improvement comprising:

two flexible metal sheets, sealed together at their edges and disposed between said endplates, said flexible metal sheets having a length and a width equivalent to a horizontal plane length and a horizontal plane width of a horizontal plane of said fuel cell stack; and

an electrically conductive material selected from the group consisting of metals, metal alloys and mixtures thereof disposed between said flexible metal sheets, said electrically conductive material being in a liquid state at a fuel cell operating temperature.

5,185,221

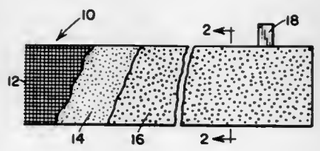
METAL HYDRIDE ELECTRODE AND ELECTROCHEMICAL CELL

Guy G. Rampel, Gainesville, Fla., assignor to Gates Energy Products, Inc., Gainesville, Fla.

Filed Feb. 6, 1992, Ser. No. 832,108

Int. Cl.[5] H01M *10/34*

U.S. Cl. 429—59 **12 Claims**



1. A metal hydride negative electrode plate for use in an alkaline electrochemical cell, including a conductive substrate carrier, and a layer of electrochemically active hydrogen storage alloy material capable of reversibly storing hydrogen attached to the carrier, the improvement comprising the presence of a layer of carbon particles affixed to the outer surface of the active material layer.

5,185,222

Patent Not Issued For This Number

5,185,223

NICKEL-CADMIUM STORAGE BATTERY WITH IMPROVED ELECTRICAL PROPERTIES

Gerhard Berger, Ebersbach, and Gabor Benczür-Ürmössy, D-Stuttgart, both of Fed. Rep. of Germany, assignors to Deutsche Automobilgesellschaft mbH, Fed. Rep. of Germany

Filed Apr. 26, 1991, Ser. No. 691,732

Claims priority, application Fed. Rep. of Germany, May 15, 1990, 4015494

Int. Cl.[5] H01M *4/60*

U.S. Cl. 429—215 **3 Claims**

1. Nickel-cadmium storage battery with improved electrical properties, in which one of: an active material with which a negative electrode of said storage battery is filled, and an electrolyte in the storage battery, contains polyvinyl-pyrrolidone as an expander, wherein said polyvinyl-pyrrolidone has a mean molecular weight of between 5,000 and 35,000 g/mol, and its proportion is 0.1 to 0.8% by weight, based on active cadmium material.

5,185,224

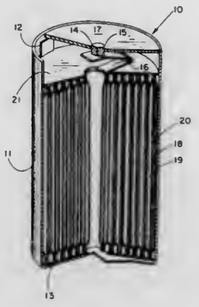
SOLID INTERSPERSED EXPANDED COLLECTOR GRID

Robert A. Barnabei, Harleysville, and James R. Picozzi, Hatfield, both of Pa., assignors to Alliant Techsystems Inc., Edina, Minn.

Filed Dec. 20, 1990, Ser. No. 631,170

Int. Cl.[5] H01M *4/58*

U.S. Cl. 429—218 **9 Claims**



1. A thin composite anode system for use in high discharge rate, non-aqueous active metal electrochemical cells comprising:

a thin continuous one-piece section forming a central metal current collector grid member having at least one major area of expanded metal and at least one integral minor area of solid unexpanded metal;

an electrode lead fixed to one such integral minor area of solid metal; and

an amount of an active metal anode material pressed into the opposite surfaces of the expanded metal of the collector grid member.

5,185,225

LETTERPRESS FOR TRANSFERRING AND METHOD OF TRANSFERRING BY USE OF THE LETTERPRESS FOR TRANSFERRING

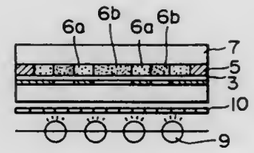
Kuninobu Kurumisawa, No. 741-1, Washisu, Oaza, Sugito-cho, Kitakatushika-gun, Saitama-ken, Japan

Filed Oct. 30, 1990, Ser. No. 605,376

Claims priority, application Japan, May 29, 1990, 2-139055; Jul. 5, 1990, 2-178627

Int. Cl.[5] G03C *3/00*

U.S. Cl. 430—18 **13 Claims**



1. A letterpress for transferring an image to a surface produced by a process comprising the steps of:

placing a manuscript film on a top side of a light exposure glass;

VOL 1147 ISS 2 FE 9 1993 UMI

placing a non-adhesive film on the manuscript film on a side opposite to the light exposure glass;
forming banks on an outer periphery of the non-adhesive film;
pouring a fluid photosensitive nylon resin between the banks;
coating a supporting substrate with an adhesive;
placing the supporting substrate in contact with the resin such that the adhesive is between the substrate and the resin;
applying light through a parallel light correction means to an underside of the glass;
exposing the resin to the light through the manuscript film to harden the resin in areas exposed to the light;
removing the non-adhesive film, manuscript film and glass; and
rinsing the resin to remove non-hardened areas of the resin.

5,185,226

ELECTROSTATIC METHOD FOR MULTICOLOR IMAGING FROM A SINGLE TONER BATH COMPRISING DOUBLE-ENCAPSULATED TONER PARTICLES

Paul V. Grosso, West Hartford; Feagin A. Wing, Jr., Farmington; Michael J. Morgan, Northford; Renate C. Stegmeier, Bethany, all of Conn.; Roger W. Day, Louisville, Ky., and Willard F. Burt, Bristol, Conn., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 453,551, Dec. 20, 1989, Pat. No. 5,064,736, which is a continuation-in-part of Ser. No. 274,542, Nov. 21, 1988, abandoned, which is a continuation-in-part of Ser. No. 171,614, Mar. 23, 1988, Pat. No. 4,869,981. This application Jun. 28, 1991, Ser. No. 723,351

The portion of the term of this patent subsequent to Sep. 26, 2006, has been disclaimed.

Int. Cl.[5] G03G *13/01*

U.S. Cl. 430—47 **22 Claims**

1. A color imaging method which comprises the steps of:
(a) forming a latent image on a photoconductive or dielectric substrate,
(b) electrostatically depositing a blended toner composition onto a charged or uncharged surface of said substrate to form a toned image which is a positive or reverse image as compared to said latent image, said blended toner composition comprising at least two different toners, each of said toners comprising a color precursor contained in photosensitive double-encapsulated toner particles,
(c) selectively photohardening or photosoftening at least a portion of said toner particles by imagewise exposure to appropriate wavelengths of radiation to provide harder toner particles and softer, rupturable toner particles,
(d) transferring said harder toner particles and said rupturable toner particles to a copy surface,
(e) rupturing at least a portion of said toner particles on said copy surface to release color precursor(s) from said rupturable toner particles, and
(f) contacting said released color precursor(s) on said copy surface with a developer to form a color image on said copy surface,

said double-encapsulated toner particles being fabricated by carrying out the steps of:
(1) forming a first, inner microcapsule by encapsulating a solution of color precursor in a spreading oil; (2) encapsulating said first, inner microcapsule in a second, outer microcapsule and enclosing at least a radiation-sensitive composition in an annular region between an outside wall of said inner microcapsule and an inside wall of said outer microcapsule.

5,185,227

ELECTROPHOTOGRAPHIC LITHOGRAPH PRINTING PLATE MATERIAL

Masahiro Yamana, Tokyo, and Koji Sato, Kodaira, both of Japan, assignors to Oji Paper Co., Ltd., Tokyo, Japan

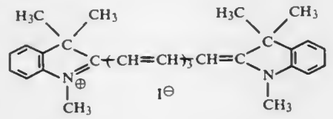
Filed Aug. 27, 1991, Ser. No. 750,371

Claims priority, application Japan, Aug. 28, 1990, 2-224290

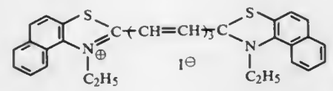
Int. Cl.[5] G03G *5/09, 13/26*

U.S. Cl. 430—49 **10 Claims**

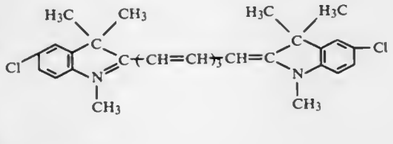
1. An electrophotographic lithograph printing plate material comprising:
(A) an electroconductive and water-resistant support; and
(B) an electrophotographic layer formed on a surface of the support and comprising at least finely divided photoconductive zinc oxide, a binder resin and a sensitizing dye material comprising:
(a) 30 to 99% by weight of a sensitizing dye consisting of at least one member selected from the group consisting of the compounds of the formulae (I), (II), and (V) to (VII):



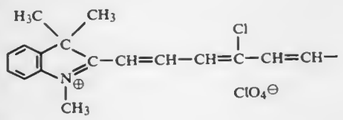
(I)



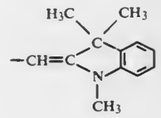
(II)



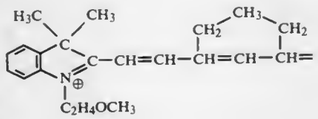
(V)



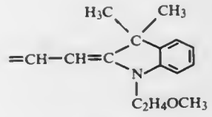
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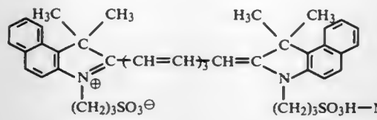
and



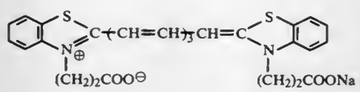
(VII)



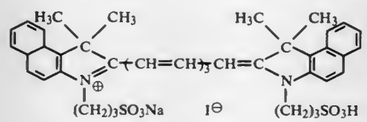
and capable of being adsorbed by the zinc oxide at an adsorption rate of less than 90%, and
(b) 1 to 70% by weight of another sensitizing dye consisting of at least one member selected from the group consisting of the compounds of the formulae (III), (IV) and (VIII) to (X):



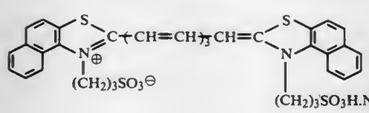
(III)



(IV)

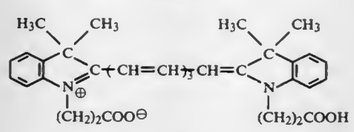


(VIII)



(IX)

and



(X)

and capable of being adsorbed by the zinc oxide at an adsorption rate of 90% or more, said adsorption being determined in such a manner that a dye solution having a total weight of 50 g and a concentration of methyl alcohol of 15% by weight is prepared from a sensitizing dye in an absolute weight of 1 mg and a mixed solvent consisting of toluene and methyl alcohol, 2 g of finely divided zinc oxide are dispersed in the dye solution, the resultant dispersion is stirred and then left to stand at a temperature of 25° C. for one hour, to allow the resultant dye-adsorbed zinc oxide to be precipitated to provide a clear supernatant dye solution, a spectral absorption of the original dye solution and the resultant clear supernatant dye solution are measured at a wave length at which the dye exhibits a highest absorption, and the adsorption of the sensitizing dye by the finely divided zinc oxide is calculated in accordance with the equation:

$$\text{Adsorption rate (\%)} = \frac{A - B}{A} \times 100$$

wherein A represents a maximum spectral absorption of the original dye solution at the above-mentioned wave length and B represents a maximum spectral absorption of the supernatant dye solution at the same wave length as mentioned above.

5,185,228

ELECTROPHOTOSENSITIVE MATERIAL CONTAINING P-BENZYLBIPHENYL

Tatsuo Maeda, Kobe; Masato Katsukawa, Ibaraki; Hiroaki Iwasaki, Hirakata, and Yasufumi Mizuta, Kishiwada, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Aug. 14, 1990, Ser. No. 567,057

Claims priority, application Japan, Aug. 17, 1989, 1-212444; Aug. 17, 1989, 1-212445; Aug. 17, 1989, 1-212446; Aug. 17, 1989, 1-212447; Aug. 18, 1989, 1-213197

Int. Cl.[5] G03G *5/09*

U.S. Cl. 430—59 **12 Claims**

1. An electrophotosensitive material comprising: a layer containing a binding resin, a charge transferring material and a p-benzylbiphenyl.

5,185,229

DRY TONER FOR HIGH SPEED ELECTROPHOTOGRAPHY

Haruhiko Sato, Kyoto; Katsuaki Kida, and Akio Kashihara, both of Osaka, all of Japan, assignors to Nippon Paint Co., Limited, Osaka, Japan

Filed Jan. 22, 1991, Ser. No. 643,935

Claims priority, application Japan, Jan. 19, 1990, 2-10920

Int. Cl.[5] G03G *9/08*

U.S. Cl. 430—110 **5 Claims**

1. A dry toner for electrophotography in the formed of colored particles, each particle being composed of a colored core portion having an average diameter of 5 to 20 μm and comprising as main ingredients, a coloring material and heat-meltable resin having a flow initiation temperature of 120° C. to 160° C., and a covering shell portion of a vinyl resin mixture of a comparatively low molecular weight component and a high molecular weight component, each having a maximum value in the molecular weight distribution curve obtained by gel-permeation chromatography of 8×10^3 to 3×10^4 and 8×10^4 to 5×10^5, respectively, in the ratio of Mw/Mn=5.0 or more; the weight ratio of said vinyl resins to the total weight of said core and shell portions being 8 to 25% by weight, and wherein the shell portion is a continuous covering layer on the core portion, prepared by adhering on said core resin, microparticles having an average diameter of 0.001 to 0.3 μm and composed of the abovementioned vinyl resin mixture, softening the microparticles by thermal energy and forming the film.

5,185,230

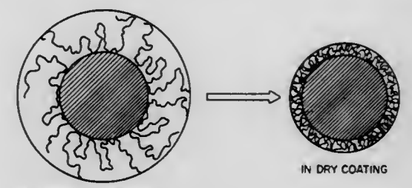
OXYGEN BARRIER COATED PHOTOGRAPHIC COUPLER DISPERSION PARTICLES FOR ENHANCED DYE-STABILITY

Pranab Bagchi, Webster; James L. Edwards, Rochester; Wendell F. Smith, Jr., Fairport, and Brian Thomas, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 3, 1991, Ser. No. 753,527

Int. Cl.[5] G03C *1/733*

U.S. Cl. 430—138 **12 Claims**



1. A composition comprising photographically active particles surrounded by a polyvinyl alcohol polymer layer, and a gelatin layer.

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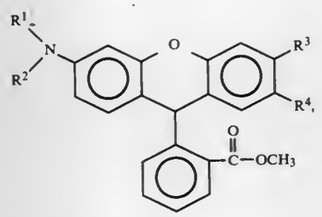
5,185,231

DRY SILVER SYSTEMS WITH FLUORAN LEUCO DYES

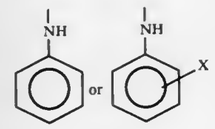
David C. Weigel, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Aug. 26, 1991, Ser. No. 749,573
Int. Cl.[5] G03C *5/54, 7/26*
U.S. Cl. 430—203 **23 Claims**

1. A heat-developable photographic material containing a negative-forming image comprising: (a) a light insensitive silver source material; (b) a light sensitive silver halide; (c) a fluoran dye of the formula:



wherein:
R^1 represents methyl or n-butyl;
R^2 represents n-butyl or cyclohexyl;
R^3 represents hydrogen, methyl, or methoxy; and
R^4 represents



where X represents halogen; and
(d) a binder.

4. A heat-developable photographic material according to claim **1** wherein said light sensitive silver halide is present in an amount of from about 0.75–15 weight percent.

5,185,232

METHOD OF IMAGE FORMATION

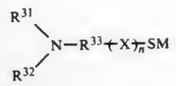
Senzo Sasaoka, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 16, 1990, Ser. No. 614,422
Claims priority, application Japan, Nov. 24, 1989, 1-306033
Int. Cl.[5] G03C *1/06*
U.S. Cl. 430—264 **8 Claims**

1. A method of image information using a silver halide photographic photosensitive material comprising a support having provided on the frontside thereof a plurality of hydrophilic colloid layers, at least two layers of which are silver halide emulsion layers, at least one of said hydrophilic colloid layers contains a hydrazine compound, said photosensitive material further containing at least one compound represented by formulae (II) and (III):

$$Y—((X)_n—A—B]_n \qquad (II)$$

wherein Y represents a group which is adsorbed on silver halide; X represents a divalent linking group comprising an atom or group of atoms including hydrogen, carbon, nitrogen oxygen and sulfur atoms; A represents a divalent linking group; B represents an amino group, an ammonium group, or a nitrogen-containing heterocyclic group, and the amino group may be a substituted amino group; m represents 1, 2 or 3; and n represents 0 or 1;



(III)

wherein R^{31} and R^{32} each represents a hydrogen atoms or an aliphatic group, or R^{31} and R^{32} may combine and form a ring; R^{33} represents a divalent aliphatic group; X represents a divalent nitrogen-, oxygen- or sulfur-containing heterocyclic group; n represents 0 or 1; and M represents a hydrogen atom, an alkali metal, an alkaline earth metal, a quaternary ammonium salt, a quaternary phosphonium salt, or an amidino group, the photographic speed of the emulsion layer on the side furthest from the support of said at least two silver halide emulsion layers is higher by 0.1 to 0.4 logE than the photographic speed of the emulsion layer which is closest to the support, comprising the steps of imagewise exposing through the backside of said support and developing said imagewise exposed photosensitive material, whereby a high contrast negative image having a gamma of at least 8 is obtained.

5,185,233

METHOD OF OPTICAL RECORDING EMPLOYING FREE RADICALS

Tsuyoshi Santo, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 368,142, Jun. 13, 1989, abandoned, which is a continuation of Ser. No. 36,460, Apr. 9, 1987, abandoned. This application Apr. 30, 1991, Ser. No. 693,038
Claims priority, application Japan, Apr. 11, 1986, 61-082272; Apr. 11, 1986, 61-082273
Int. Cl.[5] G03C *1/76, 1/00*
U.S. Cl. 430—270 **9 Claims**

1. An optical recording method which comprises projecting a recording light onto an optical recording medium, provided with a recording layer containing
(a) a dye compound capable of absorbing said recording light and
(b) a free radical generating compound capable of generating free radicals through decomposition by heat generated by the absorption of the recording light by the dye compound, wherein said radical generating compound is a compound selected from the group consisting of azo compounds, diacryl peroxides, dialkyl peroxides, hydroperoxides, sulfur compounds, carbonyl compounds, halogen compounds, reducing dyes, organometallic compounds and persulfates;
thereby causing the free radicals generated by said free radical generating compound to fade the color of said dye compound and thus recording information.

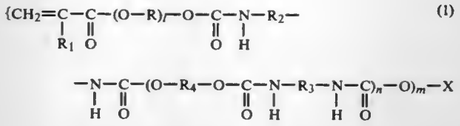
5,185,234

PHOTOSENSITIVE FLEXOGRAPHIC PRINTING PLATE COMPOSITION

Sadayoshi Nakatsukasa; Toshihiro Fujii; Ban Tanaka, and Kosaku Yamada, all of Fukuyama City, Japan, assignors to Hayakawa Rubber Co., Ltd. and Nippon Paint Co., Ltd., both of, Japan

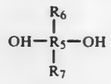
Filed Jul. 26, 1991, Ser. No. 736,562
Claims priority, applicatioo Japan, Aug. 8, 1990, 2-208131
Int. Cl.[5] G03F *7/033, 7/035*
U.S. Cl. 430—284 **4 Claims**

1. A photosensitive flexographic printing plate composition comprising
(A) 5–50 wt % of a photopolymerizable prepolymer consisting essentially of a component having the general formula



(1)

where R is an alkylene group or polyoxyalkylene group having 2–8 carbons, R_1 is an H or CH_3 group, R_2 and R_3 are residues of diisocyanate compounds excluding the isocyanate groups, R_4 is a residue excluding the hydroxyl group(s) of a dihydric alcohol of molecular weight of less than 2000 and the general formula



(2)

where R_5 is an alkylene group having 2–8 carbons, R_6 and R_7 are an H, CH_3, acryloyloxy, methacryloyloxy, or allyloxy group, X is a residue excluding hydroxyl group(s) of a dienic liquid rubber containing hydroxyl group(s), l is an integer of 1–4, m is $1<m<4$, and n is an integer of 1–16,
(B) 35–65 wt % of a random copolymer of styrene-butadiene rubber containing 20–30 wt % of styrene,
(C) 25–55 wt % of a block copolymer selected from the group consisting of a styrene-butadiene block copolymer and styrene-isoprene block copolymer containing 11–37 wt % of styrene,
(D) 0–15 wt % of a dienic liquid rubber selected from the group consisting of polybutadiene having 1000–5500 molecular weight, a butadiene-styrene copolymer and an acrylonitrile-butadiene copolymer having a hydroxyl group in the molecule,
(E) 3–50 wt % of a photopolymerizable monomer having at least one photopolymerizable ethylenically unsaturated group, and
(F) 0.5–30 wt % of a photopolymerization initiator.

5,185,235

REMOVER SOLUTION FOR PHOTORESIST

Hiromitsu Sato, Chigasaki; Kenji Tazawa, Samukawa, and Toshimi Aoyama, Fujisawa, all of Japan, assignors to Tokyo Ohka Kogyo Co., Ltd., Kawasaki, Japan

Continuation-in-part of Ser. No. 236,479, Aug. 25, 1988, abandoned. This application Mar. 30, 1990, Ser. No. 504,070
Claims priority, application Japan, Sep. 9, 1987, 62-224109; Mar. 10, 1988, 63-54896
Int. Cl.[5] G03C *5/00;* **B08B** *7/00;* **B44C** *1/22;* **C11D** *3/43*
U.S. Cl. 430—331 **8 Claims**

1. A remover solution for photoresist which consists essentially of, in admixture:
(A) an aliphatic alcoholic solvent selected from the group consisting of methyl alcohol, ethyl alcohol, propyl alcohol, 3-methyl-3-methoxy butyl alcohol, ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol monobutyl ether, diethylene glycol monomethyl ether, diethylene glycol monoethyl ether, propylene glycol monomethyl ether and dipropylene glycol monomethyl ether in a weight fraction in the range from 35% to 80%;
(B) an organic solvent selected from the group consisting of halogenated hydrocarbon solvents, unhydroxylated ether solvents selected from the group consisting of dioxane, tetrahydrofuran, diethylene glycol dimethyl ether, triethylene glycol dimethyl ether, tetraethylene glycol dimethyl ether, ethylene glycol diethyl ether, diethylene glycol diethyl ether and diethylene glycol dibutyl ether, and unhalogenated aromatic solvents in a weight fraction in the range from 10% to 40%; and
(C) a quaternary ammonium salt in a weight fraction in the range from 0.1% to 25%.

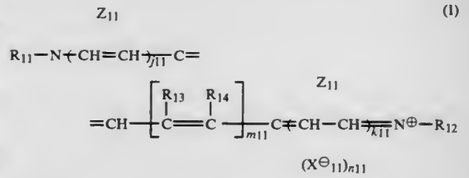
5,185,236

FULL COLOR RECORDING MATERIALS AND A METHOD OF FORMING COLORED IMAGES

Keisuke Shiba; Kiyoshi Kawai; Masaki Okazaki, and Yoshiharu Okino, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 448,176, Dec. 8, 1989, abandoned. This application Jul. 15, 1991, Ser. No. 729,910
Claims priority, application Japan, Dec. 9, 1988, 63-310211
Int. Cl.[5] G03C *7/00*
U.S. Cl. 430—505 **4 Claims**

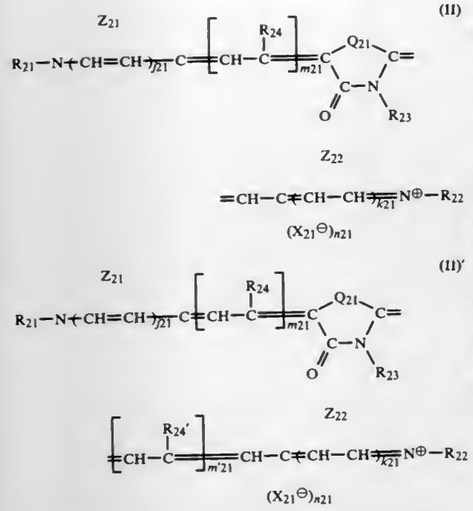
1. A full color recording material which has, on a support, at least one light-insensitive hydrophilic colloid layer and at least three silver halide photosensitive emulsion layers which have different color sensitivities and which contain a yellow coupler, magenta coupler and cyan coupler, respectively, and in which at least two of these layers are selectively spectrally sensitized to match semiconductor laser light beams of wavelengths greater than 670 nm, wherein said at least three silver halide photosensitive layers which have different color sensitivities each contains silver chlorobromide grains with a layer average silver chloride content of from 96 to 99.9 mol %, and said silver chlorobromide grains have a silver bromide local phase of which the silver bromide content is higher than that of the surroundings thereof, wherein
said silver chlorobromide grains having a silver bromide local phase are contained in an amount of at least 50 mol % based on the silver halide contained in the emulsion containing the silver chlorobromide grains;
the silver bromide content in the silver bromide local phase is from 20 to 60%;
at least one of said spectrally sensitized silver halide photosensitive layers is spectrally sensitized selectively using at least one of a sensitizing dye selected from the group consisting of compounds represented by the general formulae (I), (II), (II)′ and (III) to match the wavelength of a semiconductor laser light beam in any of the wavelength regions 660 to 690 nm, 740 to 790 nm, 800 to 850 nm and 850 to 900 nm:



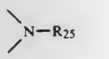
(I)

wherein Z_{11} and Z_{12} each represents a group of atoms which forms a heterocyclic ring of five or six members and contains at least one of a nitrogen atom, a sulfur atom, an oxygen atom, a selenium atom and a tellurium atom as a hetero-atom, said ring may be a condensed ring, and may be substituted with at least one substituent, R_{11} and R_{12} each represents an alkyl group, an alkenyl group, an alkynyl group or an aralkyl group, m_{11} represents a positive integer of 2 or 3, R_{13} represents a hydrogen atom, and R_{14} represents a hydrogen atom, a lower alkyl group or an aralkyl group, or R_{14} may be joined with R_{12} to form a five or six membered ring, and when R_{14} represents a hydrogen atom, R_{13} may be joined with another R_{13} group to form a hydrocarbonyl or heterocyclic ring, j_{11} and k_{11} each represents 0 to I, $X\ominus_{11}$ represents an acid anion, and n_{11}, represents 0 or 1:

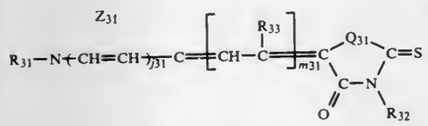
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wherein Z_{21} and Z_{22} are the same as Z_{11} and Z_{12} in general formula (I), respectively, R_{21} and R_{22} are the same as R_{11} and R_{12} in general formula (I), respectively, and R_{23} represents an alkyl group, an alkenyl group, an alkynyl group or an aryl group, m_{21} represents an integer of 2 or 3, R_{24} represents a hydrogen atom, a lower alkyl group or an aryl group, or R_{24} may be joined with another R_{24} group to form a hydrocarbonyl or heterocyclic ring, Q_{21} represents a sulfur atom, an oxygen atom, a selenium atom or an



group, and R_{25} is the same as R_{23}, j_{2t}, k_{21}, $X\ominus_{21}$, and n_{21} are the same as j_{11}, k_{11}, $X\ominus_{11}$ and n_{11} in general formula (I), respectively, R'_{24} and m'_{21} are the same as R_{24} and m_{21}, respectively:



wherein Z_{31} represents a group of atoms which forms a heterocyclic ring, Q_{31} is the same as Q_{21}, in general formula (II), R_{31} is the same as R_{11} or R_{12} in general formula (I), R_{32} is the same as R_{23} in general formula (II), m_{31} represents an integer of 2 or 3, R_{33} is the same as R_{24} in general formula (II) or R_{24} may be joined with an R_{33} group to form a hydrocarbonyl or heterocyclic ring, and j_{31} is the same as j_{11} in general formula (I); and

the silver bromide local phase is located on the surface of the silver halide grains.

5,185,237

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL AND PROCESS FOR THE FORMATION OF COLOR IMAGES THEREON

Kiyoshi Kawai, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 538,358, Jun. 13, 1990, Pat. No. 5,154,995. This application Mar. 30, 1992, Ser. No. 859,900
Claims priority, application Japan, Jun. 13, 1989, 1-150308
The portion of the term of this patent subsequent to Oct. 13, 2009, has been disclaimed.
Int. Cl.[5] G03C *7/18, 7/20*
U.S. Cl. 430—505 **6 Claims**

1. A silver halide color photographic material which comprises a reflective support having coated thereon at least three silver halide emulsion layers having maximum spectral sensitivities in at least three sensitive wavelength ranges of 400 nm to 500 nm, 500 nm to 570 nm and 650 nm to 730 nm and is sensitive to said three sensitive wavelength ranges to form yellow, magenta and cyan dye images, respectively, characterized in that said silver halide color photographic material has additionally at least one function to provide a maximum spectral sensitivity in wavelength range other than said three sensitive wavelength ranges and to form any of yellow, magenta or cyan dye image by an exposure to the light of said other wavelength range.

5,185,238

PHOTOGRAPHIC FILM ELEMENT

Toru Oikawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 15, 1991, Ser. No. 729,966
Claims priority, application Japan, Jul. 16, 1990, 2-187800
Int. Cl.[5] G03C *1/76*
U.S. Cl. 430—523 **15 Claims**

1. A photographic element comprising

(A): a photographic patrone, having one end of a photographic film wound around a spool rotatably provided within the main body of the patrone, said film being delivered through the film outlet of the main body of the patrone to the outside by rotating said spool in the direction of film delivery and

(B): a photographic film wherein at least one protective coat layer is provided on a support of said photographic film and said protective coat layer comprises a composition containing

(I) at least one urethane acrylate wherein the urethane acrylate is prepared by reacting

(a) a diisocyanate selected from the group consisting of hexamethylene diisocyanate, methylenebis(4-cyclohexyl isocyanate), trimethylhexamethylene diisocyanate, hexamethylene diisocyanate, methylenebis(4-cyclohexyl isocyanate), and trimethyl hexamethylene diisocyanate with

(b) a polyol and further reacting the reaction product with

(c) a hydroxyacrylate or hydroxymethacrylate and

(II) at least one polyfunctional acrylate selected from the group consisting of pentaerythritol triacrylate and pentaerythritol tetraacrylate and

said protective coated layer is provided on the side of the support opposite the side containing photosensitive layers, said protective coat layer is cured by radiation before the photographic sensitive layers are coated.

5,185,239

PROCESS FOR THE PREPARATION OF HIGH CHLORIDE TABULAR GRAIN EMULSIONS (IV)

Joe E. Maskasky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 763,382, Sep. 20, 1991, abandoned. This application Jan. 13, 1992, Ser. No. 819,712
Int. Cl.[5] G03C *1/035, 1/07*
U.S. Cl. 430—569 **14 Claims**



1. A process of preparing a radiation sensitive high aspect ratio tabular grain emulsion, wherein tabular grains of less than 0.3 μm in thickness and an average aspect ratio of greater than 8:1 account for greater than 50 percent of the total grain projected area, said tabular grains containing at least 50 mole percent chloride, based on silver, comprising

introducing silver ion into a gelatino-peptizer dispersing medium containing

a stoichiometric excess of chloride ions with respect to the silver ions further characterized by a chloride ion concentration of less than 0.5 molar,

a pH of from 4.6 to 9.0, and

a triaminopyrimidine grain growth modifier containing mutually independent 4, 5 and 6 ring position amino substituents, the 4 and 6 ring position substituents being hydroamino substituents.

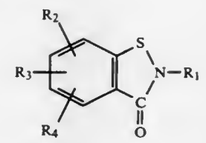
5,185,240

SILVER HALIDE PHOTOGRAPHIC MATERIAL

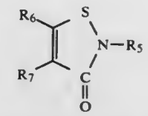
Junji Miyata; Satoshi Kanetake; Yasufumi Morimoto, and Kenji Hanayama, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 10, 1990, Ser. No. 565,083
Claims priority, application Japan, Aug. 11, 1989, 1-209317; Sep. 14, 1989, 1-239279; Sep. 26, 1989, 1-250006
Int. Cl.[5] G03C *1/485, 1/34*
U.S. Cl. 430—596 **8 Claims**

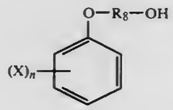
1. An autopositive silver halide photographic material which comprises at least one silver halide emulsion layer wherein said emulsion layer or at least one other hydrophilic colloid layer contains at least one member selected from the group consisting of the compounds represented by the following general formulas (1), (2) and (3):



wherein R_1 represents hydrogen atom or an alkyl group; and R_2, R_3 and R_4 each represents hydrogen atom, a halogen atom, an alkyl group or an alkoxy group;



wherein R_5 represents hydrogen atom or an alkyl group; and R_6 and R_7 each represents hydrogen atom, an alkyl group, a halogen atom or an aryl group;



wherein R_8 represents a lower alkylene group; X represents a halogen atom, nitro group, hydroxy group, a cyano group, a lower alkyl group, a lower alkoxy group, $-COR_{12}$,



or $-SO_3M$; R_{12} represents hydrogen atom, —OM, a lower alkyl group, a lower alkoxy group or



R_{13} and R_{14} may be the same or different groups and each represents hydrogen atom, a lower alkyl group, $-COR_{17}$ or $-SO_2R_{17}$; R_{15} and R_{16} may be the same or different groups and each represents hydrogen atom or a lower alkyl group; R_{17} represents a lower alkyl group; M represents hydrogen atom, an alkali metal or an atomic group required for forming a monovalent cation; and n represents 0 or an integer of 1 to 5.

5,185,241

DIRECT POSITIVE PHOTOGRAPHIC MATERIAL

Noriyuki Inoue, Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 11, 1991, Ser. No. 640,447
Claims priority, application Japan, Jan. 12, 1990, 2-4914
The portion of the term of this patent subsequent to Apr. 14, 2009, has been disclaimed.
Int. Cl.[5] G03C *1/78*
U.S. Cl. 430—598 **10 Claims**

1. A direct positive photographic material comprising a support having thereon at least one photographic emulsion layer containing previously non-fogged internal latent image-type silver halide grains, wherein the photographic emulsion layer contains at least one compound of general formula (I), (II) or (III):

$$M_2SO_3 \quad \text{(I)}$$

$$MHSO_3 \quad \text{(II)}$$

$$M_2S_2O_5 \quad \text{(III)}$$

wherein M represents a hydrogen atom or a cation, and

VOL 1147 ISS 2 FE 9 1993 UMI

wherein the internal latent image-type silver halide grains are silver bromide, silver chloride, silver iodobromide, silver chlorobromide or silver chloroiodobromide grains and contain at least one metal selected from the group consisting of manganese, copper, zinc, cadmium, rhenium, lead, bismuth, indium, thallium, zirconium, lanthanum, chromium, mercury and metals of Group VIII of the Periodic Table.

5,185,242

METHOD FOR LYSING MYCOBACTERIA USING ACHROMOPEPTIDASE

William E. Keating, Durham, and Jillian A. Robson, Pittsboro, both of N.C., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Jun. 24, 1991, Ser. No. 720,076
Int. Cl.[5] C12Q *1/68;* C12N *9/52;* C12P *19/34;* C07H *21/00*
U.S. Cl. 435—6 **42 Claims**

1. A method for lysing Mycobacteria which consists essentially of exposing the Mycobacteria to a lysis effective amount of the enzyme achromopeptidase for a time and under conditions for lysis.

5,185,243

METHOD FOR DETECTION OF SPECIFIC NUCLEIC ACID SEQUENCES

Edwin F. Ullman, Atherton; Thomas C. Goodman, Mountain View, and Paul D. Stull, Mountain View, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Aug. 25, 1988, Ser. No. 236,967
Int. Cl.[5] C12Q *1/68;* C12P *19/34;* G01N *33/566;* C01H *15/12*
U.S. Cl. 435—6 **59 Claims**

1. A method for detecting the presence of a target nucleotide sequence, which comprises:

hydridizing a first nucleotide sequence and a second nucleotide sequence to non-contiguous portions of a target nucleotide sequence,

covalently attaching said first and second sequences when hybridized to said target sequence, and

determining the presence of covalently attached first and second sequences, the presence thereof confirming the presence of said target nucleotide sequence.

5,185,244

GENETIC TEST FOR HEREDITARY NEUROMUSCULAR DISEASE

Douglas C. Wallace, Atlanta, Ga., assignor to Emory University, Atlanta, Ga.

Filed Dec. 8, 1989, Ser. No. 447,679
Int. Cl.[5] C12Q *1/68;* C12P *19/34;* G01N *33/48;* C07H *15/12*
U.S. Cl. 435—6 **36 Claims**

1. A method of detecting neuromuscular disease that is associated with a point mutation at mitochondrial DNA nucleotide position 11778 in a patient comprising the steps of:

a) obtaining mitochondrial DNA from a biological sample from said patient; and

b) ascertaining the presence of said point mutation at said nucleotide position 11778 of said mitochondrial DNA to detect neuromuscular disease that is associated with said point mutation, wherein the presence of said point mutation is ascertained by a method selected from the group consisting of a restriction endonuclease method a hybridization method and an amplification method.

5,185,245

IMMUMOASSAYS AND KIT FOR DETECTION OF PROTEOGLYCANS

Ralph Heimer, Philadelphia, Pa., assignor to Thomas Jefferson University, Philadelphia, Pa.

Filed Feb. 24, 1989, Ser. No. 315,733
Int. Cl.[5] G01N *33/53, 33/543;* C07K *17/00*
U.S. Cl. 435—7.1 **13 Claims**

13. A kit for detecting proteoglycans in body fluids comprising:

(a) antibody specific for a first glycosaminoglycan component of proteoglycan bound to solid supports;

(b) antibody specific of a second glycosaminoglycan component of proteoglycan bound to solid supports;

(c) a reagent comprising antibody specific for said first glycosaminoglycan component of proteoglycan having detectable label bound thereon;

(d) a reagent comprising antibody specific for said second glycosaminoglycan component of proteoglycan having detectable able bound thereon;

(e) at least one reagent comprising means for detecting said detectable label; and

(f) a proteoglycan standard chart for determination of the amount of proteoglycan present in said sample of body fluid.

5,185,246

METHOD FOR SEMEN ANALYSIS EMPLOYING MEMBRANE SEPARATION

Alice Deutsch, 889 Broadway, New York, N.Y. 10003

Continuation-in-part of Ser. No. 339,505, Apr. 17, 1989, Pat. No. 5,028,526. This application Apr. 15, 1991, Ser. No. 685,439
Int. Cl.[5] C12Q *1/02*
U.S. Cl. 435—7.21 **7 Claims**

1. In an assay for antisperm antibodies the method of separating seminal plasma from semen which comprises applying semen to a membrane having an average pore diameter of 0.15–3.0 μm which only allows the seminal plasma to pass through the membrane surface while retaining particulates on said membrane.

5,185,247

STABILIZATION OF OXIDASE ENZYME-BASED TEST STRIPS

Ibrahim A. Ismail, South Bend, and Wen H. Wu, Elkhart, both of Ind., assignors to Miles Inc., Elkhart, Ind.

Division of Ser. No. 321,724, Mar. 10, 1989, Pat. No. 5,116,729. This application Feb. 25, 1992, Ser. No. 841,073
Int. Cl.[5] C12Q *1/26, 1/54, 1/00;* C12N *9/96*
U.S. Cl. 435—14 **3 Claims**

1. A method of determining the presence or concentration of an analyte from the group consisting of glucose, cholesterol, uric acid and lower alcohols in a liquid sample to show the presence or concentration of the analyte being determined, said method comprising:

(a) contacting the liquid sample with a reagent composition comprising an oxidase enzyme for the analyte being determined;

an oxidizable chromogen;

peroxidase;

a buffer capable of buffering the reagent composition to a pH in the range of from about 4 to about 7; and

a hydrazine selected from the group consisting of (carboxymethyl)trimethylammonium chloride hydrazine, 1-(carboxymethyl)pyridinium chloride hydrazine, 2-hydrazine-2-imidazoline-hydrobromide, 2-furonic acid hydrazine, hydrazine monohydrate and combinations thereof; and

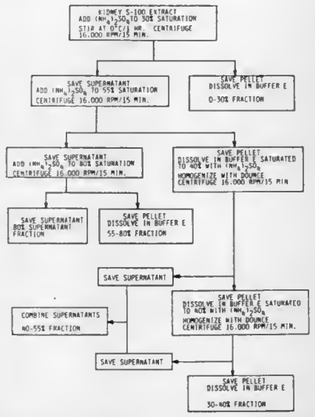
(b) determining the presence of concentration of the analyte in the liquid sample from the color change of the reagent composition.

5,185,248

FARNESYL-PROTEIN TRANSFERASE ASSAY FOR IDENTIFYING COMPOUNDS THAT BLOCK NEOPLASTIC TRANSFORMATION

Mariano Barbacid, Lawrenceville, N.J., and Veeraswamy Manne, Philadelphia, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 8, 1990, Ser. No. 520,570
Int. Cl.[5] C12Q *1/48;* C12N *9/10*
U.S. Cl. 435—15 **19 Claims**



1. An assay for identifying compounds that inhibit ras oncogene activity, comprising:

(a) reacting a protein or peptide substrate having a CAAX motif with farnesyl pyrophosphate and farnesyl-protein transferase in the presence of a test substance; and

(b) detecting whether the farnesyl residue is incorporated into the protein or peptide substrate, in which the ability of the test substance to inhibit ras oncogene activity is indicated by a decrease in the incorporation of the farnesyl residue into the protein or peptide substrate as compared to the amount of the farnesyl residue incorporated into the protein or peptide substrate in the absence of the test substance.

5,185,249

DRY ANALYTICAL ELEMENT FOR ASSAYING SALICYLATE

Thomas C. Arter; Bonny A. Harris, both of Rochester, and James R. Schaeffer, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 4, 1990, Ser. No. 504,204
Int. Cl.[5] C12Q *1/26, 1/32, 1/28*
U.S. Cl. 435—25 **8 Claims**

1. A multilayer analytical element comprising a support coated in the following order, top down to the support:

a) a spreading layer,

b) a dye layer comprising tyrosinase and a hydrazone coupling agent,

c) a reagent layer comprising salicylate hydroxylase and nicotinamide adenine dinucleotide (NADH),

characterized in that

d) the dye layer has a pH greater than 6.5;

e) the dye layer and reagent layer are separated by a barrier layer that prevents passage of molecules having a molecular weight in excess of 5,000, and

f) the hydrazone coupling agent is water insoluble at a pH above 6.5.

5,185,250

HUMAN γ, δT CELL ANTIGEN RECEPTOR POLYPEPTIDES AND NUCLEIC ACIDS

Michael B. Brenner, Sherborn; Jonathan Seidman, Milton; Jack L. Strominger, Lexington; Stephen H. Ip, Sudbury, all of Mass.; Michael S. Krangel, Chapel Hill, N.C., and Hamid Band, Boston, Mass., assignors to T Cell Sciences, Inc., Cambridge; Dana Farber Cancer Institute and President & Fellows of Harvard College, both of Boston, all of, Mass.

Continuation-in-part of Ser. No. 187,698, Apr. 29, 1988, which is a continuation-in-part of Ser. No. 115,256, Oct. 29, 1987, Pat. No. 5,024,940, which is a continuation-in-part of Ser. No. 16,252, Feb. 19, 1987, which is a continuation-in-part of Ser. No. 882,100, Jul. 3, 1986, abandoned. This application Jan. 13, 1989, Ser. No. 297,661
Int. Cl.[5] C12P *21/06;* C12N *5/02;* A61K *35/14;* C07H *15/12*
U.S. Cl. 435—69.3 **25 Claims**



1. A method for expressing a γ,δ T cell antigen receptor heterodimer, which comprises culturing a transfected cell capable of expressing a nucleic acid encoding a gamma T cell antigen receptor polypeptide and capable of expressing a nucleic acid encoding a delta T cell antigen receptor polypeptide, under conditions such that both the encoded gamma T cell antigen receptor polypeptide and the encoded delta T cell antigen receptor polypeptide are expressed by the cell.

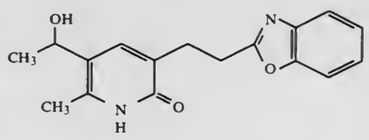
5,185,251

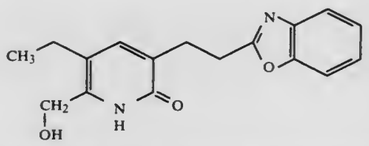
MICROBIAL TRANSFORMATION OF A SUBSTITUTED PYRIDINONE USING ACTINOPLANACETE SP. MA 6559

Shieh-Shung T. Chen, Morganville, and George Doss, Westfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 7, 1991, Ser. No. 711,784
Int. Cl.[5] C12P *17/16*
U.S. Cl. 435—118 **3 Claims**

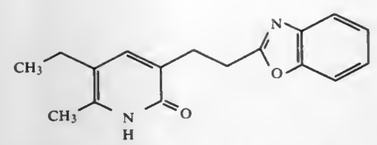
1. A process for the preparation of a compound represented by formula (I) or (II)


(I)


(II)

comprising the steps of culturing a microorganism Actinoplanacete sp. (MA 6559) (ATCC 53771) in a nutrient medium containing assimilable sources of nitrogen and carbon and substrate compound (III)

VOL
1147
ISS
2
FE
9
1993
UMI



(III)

under aerobic conditions until a substantial amount of the compounds are produced and isolating the compounds so produced.

5,185,252
ENZYMIC OXIDATION OF FATTY ACIDS ON A POROUS BED SOLID SUPPORT

Anthony M. Humphrey, Chorleywood; Bridget A. Skill, Leigh-On-Sea, and Judith L. Kinderlerer, Sheffield; all of England, assignors to Union Camp Corporation, Wayne, N.J.

Filed Aug. 31, 1990, Ser. No. 576,633
Claims priority, application United Kingdom, Aug. 31, 1989, 8919671
Int. Cl.[5] C12P 7/64; C12N 11/04, 9/02
U.S. Cl. 435—134 6 Claims

1. An improved process for enzymic oxidation of a fatty acid in the presence of water and oxygen wherein the improvement comprises substantially uniformly distributing the fatty acid, water and enzyme for the oxidation throughout a porous bed of solid support material in the substantial absence of a continuous liquid phase; passing oxygen through the bed without fluidizing or stirring the bed; and recovering the oxidation product from the bed.

5,185,253
VIRUS RESISTANT PLANTS

Nilgun E. Tumer, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 302,498, Jan. 27, 1989, Pat. No. 4,970,168. This application Oct. 31, 1990, Ser. No. 606,641
Int. Cl.[5] C12N 15/82, 5/14
U.S. Cl. 435—172.3 10 Claims

1. A method for producing genetically transformed plants which are resistant to infection by Potato Virus X and Potato Virus Y comprising the steps of:
(a) inserting into the genome of a plant cell of a plant susceptible to Potato Virus X and Potato Virus Y a double-stranded DNA construct which encodes the coat proteins of Potato Virus X and Potato Virus Y;
(b) obtaining transformed plant cells; and
(c) regenerating from the transformed plant cell genetically transformed plants which express the coat proteins of potato virus X and potato virus Y encoded by said construct.

5,185,254
GENE FAMILY OF TUMOR-ASSOCIATED ANTIGENS

Alban Linnenbach, Philadelphia, Pa., assignor to The Wistar Institute, Philadelphia, Pa.

Filed Dec. 29, 1988, Ser. No. 291,583
Int. Cl.[5] C12N 15/00; C12P 21/06; C07K 13/00; C07H 21/00
U.S. Cl. 435—172.3 4 Claims

1. An isolated segment of DNA which codes for a protein having the amino acid sequence of the GA733-1 antigen.

5,185,255
CELL CULTURE METHOD

Isao Endo, Kokubunji; Teruyuki Nagamune, Kamifukuoka; Minoru Nishimura, Narashino, and Tetsuo Kobayashi, Kobe, all of Japan, assignors to Rikagaku Kenkyusho, Saitama, Japan

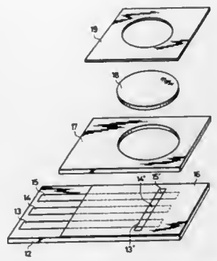
Continuation of Ser. No. 46,253, May 5, 1987, abandoned. This application Apr. 4, 1990, Ser. No. 504,694
Claims priority, application Japan, May 9, 1986, 61-106393
Int. Cl.[5] C12N 11/00, 11/02, 11/08, 11/14
U.S. Cl. 435—174 5 Claims

1. A cell culture method comprising the steps of:
(a) impregnating a plurality of pieces of porous material with a liquid nutrient medium, said liquid medium being impregnated in an amount of from 15 cm^3 to 60 cm^3 per 100 cm^3 of porous material;
(b) inoculating cells of fungi or Actinomycetes on the impregnated porous material; and
(c) incubating the inoculated porous material without adding additional medium, wherein the pieces of porous material are agitated relative to one another during incubation such that air supply to the surface of the pieces of porous material is maintained.

5,185,256
METHOD FOR MAKING A BIOSENSOR

Shiro Nankai; Mariko Kawaguri, and Takashi Iijima, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 428,680, Oct. 30, 1989, abandoned, which is a division of Ser. No. 27,204, Feb. 20, 1987, Pat. No. 4,897,173. This application Oct. 15, 1991, Ser. No. 774,129
Claims priority, application Japan, Jun. 21, 1985, 60-136423; Nov. 7, 1985, 60-249203; Nov. 7, 1985, 60-249204; Dec. 11, 1985, 60-278202; Apr. 2, 1986, 61-75728
Int. Cl.[5] C12N 11/00; C12M 1/40
U.S. Cl. 435—174 3 Claims



1. A method for making a biosensor which comprises providing an insulating base, applying a carbon paste onto said base in a pattern form to form an electrode system including at least a measuring electrode and a counter electrode, polishing, after drying of the carbon paste, the surfaces of the electrode system, making the electrodes stable for electrochemical activity by subjecting the polished electrode system to a thermal treatment at a temperature of from 60° to 170° C. for 1 to 8 hours, covering the electrode system with a perforated body having an oxidoreductase and electron acceptor therein, and integrally combining said perforated body with said electrode system and said insulating base.

5,185,257
THERMOSTABLE XANTHINE OXIDASE FROM *ARTHROBACTER LUTEUS*

Naoko Tanigaki; Kayoko Furukawa; Yukihiro Sogabe, and Shigenori Emi, all of Tsuruga, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Apr. 16, 1991, Ser. No. 686,237
Claims priority, application Japan, Apr. 18, 1990, 2-104054
Int. Cl.[5] C12N 9/06, 1/00
U.S. Cl. 435—191 11 Claims

1. An isolated thermostable xanthine oxidase which shows substrate specificity to at least hypoxanthine and xanthine and which catalyzes the reaction wherein hypoxanthine is oxidized into xanthine which is further oxidized into uric acid to form hydrogen peroxide in the presence of oxygen as the electron recipient, characterized by retention of at least 70% residual activity after treatment at 60° C. for 30 minutes, has a molecular weight of about 160,000 daltons as determined by gel filtration, a pH range for stability between 6.0 and 9.0 and an optimum pH of about 7.5.

5,185,258
SUBTILISIN MUTANTS

Robert M. Caldwell, San Carlos; David A. Estell, San Mateo, and Thomas P. Graycar, Pacifica, all of Calif., assignors to Genencor International, Inc., So. San Francisco, Calif.

Continuation-in-part of Ser. No. 429,882, Oct. 31, 1989, abandoned, and a continuation-in-part of Ser. No. 84,589, Aug. 12, 1987, abandoned, and a continuation-in-part of Ser. No. 294,340, Jan. 6, 1989, Pat. No. 5,155,033, and a continuation-in-part of Ser. No. 86,869, Aug. 21, 1987, abandoned, and a continuation-in-part of Ser. No. 92,976, Sep. 3, 1987, abandoned, and a continuation-in-part of Ser. No. 294,340, Jun. 14, 1990, Pat. No. 5,155,033, which is a continuation-in-part of Ser. No. 35,652, Apr. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 858,594, Apr. 4, 1986, abandoned, which is a continuation of Ser. No. 614,612, May 29, 1984, Pat. No. 4,760,025, and a continuation of Ser. No. 614,615, May 19, 1984, abandoned, and a continuation of Ser. No. 614,617, May 29, 1984, abandoned, and a continuation of Ser. No. 614,491, May 29, 1984, abandoned. This application Oct. 19, 1990, Ser. No. 600,430
Int. Cl.[5] C12N 9/52, 9/54, 15/57; C07H 21/04
U.S. Cl. 435—220 9 Claims

1. A subtilisin mutant having a non-naturally occurring amino acid sequence which is derived from a precursor subtilisin bu substituting a different amino acid for the amino acid residue at a position in said precursor subtilisin equivalent to position +123 or +274 on *Bacillus amylaliquefaciens* subtilisin as shown in FIG. 1.

5,185,259
TRUNCATED HUMAN TISSUE PLASMINOGEN ACTIVATOR

David V. Goeddel, Hillsborough; William J. Kohr, San Mateo; Diane Pennica, Foster City, and Gordon A. Vehar, San Carlos, all of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

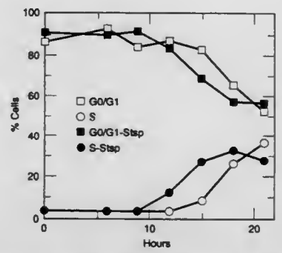
Continuation of Ser. No. 12,694, Feb. 9, 1987, abandoned, which is a division of Ser. No. 483,052, Apr. 7, 1983, Pat. No. 4,766,075, which is a continuation-in-part of Ser. No. 398,003, Jul. 14, 1982, abandoned, and a continuation-in-part of Ser. No. 374,860, May 5, 1982, abandoned. This application Mar. 2, 1990, Ser. No. 489,855
Int. Cl.[5] C12N 9/64, 15/58
U.S. Cl. 435—226 1 Claim

1. A recombinant human tissue plasminogen activator consisting essentially of the amino acid sequence 69-527 set forth in FIGS. 5*a*, 5*b* and 5*c*.

5,185,260
METHOD FOR DISTINGUISHING NORMAL AND TRANSFORMED CELLS USING G1 KINASE INHIBITORS

Harry A. Crissman; Donna M. Gadbois; Robert A. Tobey, all of Los Alamos, and E. Morton Bradbury, Santa Fe, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 29, 1991, Ser. No. 751,855
Int. Cl.[5] C12N 1/38
U.S. Cl. 435—244 7 Claims

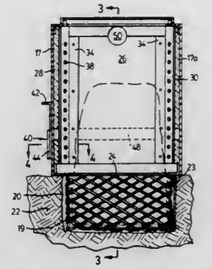


1. A method for distinguishing between normal and transformed mammalian cells, comprising the step of;
subjecting said normal and transformed cells to low concentrations of a G_1 kinase inhibitor effective to arrest said normal cells in G_1 without arresting said transformed cells.

5,185,261
TWIN-UNIT COMPOSTING APPARATUS

Jack E. Warrington, 36 Alder Road, Toronto, Ontario, Canada M4B 2Y4

Filed Jul. 8, 1991, Ser. No. 726,698
Int. Cl.[5] B09B 00/00; C12M 1/04, 1/08
U.S. Cl. 435—313 10 Claims



1. A household scale composting apparatus comprising first and second structurally interconnectable units adapted for mutually interactive and cooperative use in reducing organic wastes to compost, the units being essentially similar to one another and each said first and second structurally interconnectable unit having an enclosure for organic wastes, an exhaust duct for said enclosure, and a lower portion protruding downwardly from said enclosure;
each said enclosure comprising:
at least one flat vertical sidewall of similar shape and dimensions to a corresponding sidewall of the other structurally interconnectable unit;
other upstanding sidewalls provided with heat insulation means over a major portion of the area thereof;
a top wall equipped with a hinged, radiation-transmissive lid;

VOL 1147 ISS 2 FE 9 1993 UMI

at least one air conduit formed in part by a sidewall of the enclosure and extending upwardly through a major part of the vertical height of the enclosure;
air access means through a sidewall of the enclosure providing for air to be drawn into said at least one air conduit from outside the enclosure;
and vent means providing air communication between said at least one air conduit and the interior of the enclosure;
the exhaust duct being connected to said at least one conduit and including a drawing means adapted to draw air out of the enclosure via the exhaust duct;
and said lower portion comprising a top wall, which also acts as the bottom wall of said enclosure, constituted by a soil permeable mesh and a bottom wall constituted by a soil permeable mesh for soil microbe contact with the material therein, without any interfering barrier between said soil permeable mesh of said bottom wall and the soil.

5,185,262

DNA FRAGMENT CONTAINING GENE WHICH ENCODES THE FUNCTION OF STABILIZING PLASMID IN HOST MICROORGANISM

Keiko Kohama; Miki Kobayashi; Yasurou Kurusu; Hideaki Yukawa, and Makiko Fukushima, all of Ami, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 385,414, Jul. 26, 1989, abandoned. This application Feb. 1, 1990, Ser. No. 473,396
Claims priority, application Japan, Jul. 27, 1988, 63-185428; Sep. 8, 1988, 63-223399; Jan. 19, 1989, 1-8577; Jan. 25, 1989, 63-14098
Int. Cl.[5] C12N *15/77*
U.S. Cl. 435—320.1 **11 Claims**

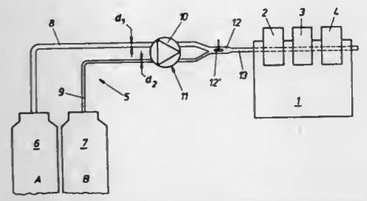
1. A plasmid vector which replicates and proliferates in Coryneform bacteria, which has been stabilized by the insertion of a DNA fragment which stabilizes the plasmid in Coryneform bacteria grown without genetic selection as compared to the stabilization under identical conditions of the plasmid without the DNA fragment, and which is obtained from plasmid pBY503 isolated from *Brevibacterium stationis* IFO 12144.

5,185,263

METHOD FOR CALIBRATION OF A MEASUREMENT APPARATUS

Herbert Kroneis, Graz; Hermann Marsoner, Steinberg, and Taghi Noormofidi, Graz, all of Austria, assignors to AVL Medical Instruments AG, Schaffhausen, Switzerland

Continuation of Ser. No. 259,747, Oct. 19, 1988, abandoned. This application Nov. 4, 1991, Ser. No. 785,878
Claims priority, application Austria, Oct. 23, 1987, 2816/87
Int. Cl.[5] G01N *31/00*
U.S. Cl. 436—8 **17 Claims**



1. A method of calibrating a measurement apparatus that contains measuring electrodes and can be used to determine the pH and pCO_2 values of aqueous sample media, said method comprising the steps of providing two aqueous base solutions A and B which will react with one another when mixed but which will remain stable with respect to CO_2 content when exposed to ambient air, storing said two aqueous base solutions A and B in separate storage containers, mixing said base solutions A and B at a predetermined ratio such that they will react and form a calibration liquid having predetermined pH and pCO_2 values, immediately passing said calibration liquid to said measurement apparatus so as to contact said measuring electrodes, and taking calibration readings from said measuring electrodes, wherein said base solution A contains an acid component of a pH buffer system and said base solution B contains carbonate and bicarbonate, wherein a pCO_2 value resulting from the bicarbonate/carbonate ratio is obtained in said base solution B, which corresponds to a mean pCO_2 value of ambient air.

5,185,264

DILUENT BUFFER AND METHOD FOR DILUTING AN ASSAY COMPONENT

Randal M. Makela, Barrington, Ill., assignor to Abbott Laboratories, Abbott Park, Ill.

Filed Nov. 9, 1990, Ser. No. 611,222
Int. Cl.[5] G01N *31/00*
U.S. Cl. 436—18 **49 Claims**

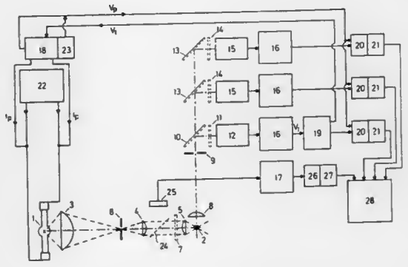
1. A buffer composition comprising:
a phosphate buffer at an effective concentration;
a high molecular weight polymer, selected from the group consisting of polyvinylpyrrolidone, dextrans, polyethylene glycols, polyvinyl alcohol, polybrene (hexadimethrine bromide), methylcelluloses, gum acacia, protamine sulfate, merquat, celquat, and magna floc at an effective concentration;
a non-ionic selected from the group consisting of polyoxyethylene sorbitan monolaurate (Tween® 20), polyoxyethylene sorbitan monooleate (Tween® 80), polyoxyethylene ethers (Triton®, Brij®) and octylphenol ethylene oxide surfactant at an effect concentration;
an anionic surfactant caprylic acid, cholic acid, dexocholic acid, glycocholic acid and sodium dodecyl sulfate at an effective concentration;
bovine serum albumin at an effective concentration; and
sodium chloride at an effective concentration; such that the pH of the buffer composition is in the range of from about pH 5 to about pH 9.

5,185,265

PULSE MODULATION OF THE EXCITATION LIGHT SOURCE OF FLOW CYTOMETERS

Harald B. Steen, and Otto Sorensen, both of Oslo, Norway, assignors to Skatron A/S, Tranby, Norway

Filed Nov. 21, 1990, Ser. No. 616,938
Claims priority, application Norway, Nov. 24, 1989, 894680
Int. Cl.[5] G01N *21/17*
U.S. Cl. 436—63 **6 Claims**



1. A method for increasing the excitation intensity of a flow cytometer, said cytometer having an excitation light source

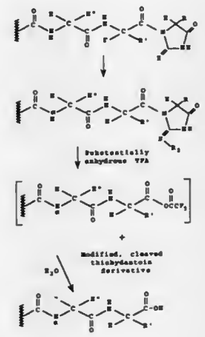
focus, comprising: receiving a signal produced by a cell entering said focus of said flow cytometer excitation light source, and triggering a pulse of electrical power from a secondary power source to said excitation light source in response to said receiving of said signal to transiently increase the excitation intensity during the time said cell passes through said focus, and thereby produce an increase of measuring sensitivity of said flow cytometer.

5,185,266

CLEAVAGE METHOD FOR ACYL THIOHYDANTOINS AND USE OF THE METHOD IN C-TERMINAL PEPTIDE SEQUENCING

Victoria L. Boyd, and Gerald Zon, both of San Carlos, Calif., assignors to Applied Biosystems, Inc., Foster City, Calif.

Filed Oct. 15, 1991, Ser. No. 775,771
Int. Cl.[5] G01N *33/68*
U.S. Cl. 436—89 **11 Claims**



8. A method for C-terminal amino acid sequencing of a polypeptide which method comprises the steps:
(a) converting the C-terminal amino acid of the polypeptide to an acyl-thiohydantoin which is joined to the penultimate C-terminal amino acid through an acyl-thiohydantoin bond;
(b) contacting the C-terminal peptidyl acyl-thiohydantoin of (a) with an alkylating agent under conditions effective to form an adduct on the thiohydantoin by alkylation;
(c) reacting the adduct-containing acyl-thiohydantoin from (b) above with a cleaving agent under substantially anhydrous, acidic conditions to cause cleavage of the acylthiohydantoin bond, with release of an adduct-containing thiohydantoin from the remaining, shortened polypeptide;
(d) converting the C-terminal of the shortened polypeptide to an acyl-thiohydantoin which is joined to the penultimate C-terminal amino acid of the shortened polypeptide through an acyl-thiohydantoin bond;
(e) separating the released thiohydantoin from the remaining, shortened polypeptide and identifying the amino acid residue in the released product; and
(f) repeating steps (b)–(e) with each successively shortened polypeptide.

5,185,267

METHOD FOR DETECTING MATERNALLY TRANSFERRED DRUG METABOLITES IN NEWBORN INFANTS

Enrique M. Ostrea, Jr., Farmington Hills, Mich., assignor to The Board of Governors of Wayne State University, Detroit, Mich.

Continuation-in-part of Ser. No. 264,131, Oct. 28, 1988, Pat. No. 5,015,589. This application Apr. 26, 1991, Ser. No. 691,994
The portion of the term of this patent subsequent to May 14, 2008, has been disclaimed.
Int. Cl.[5] G01N *33/00*
U.S. Cl. 436—92 **18 Claims**

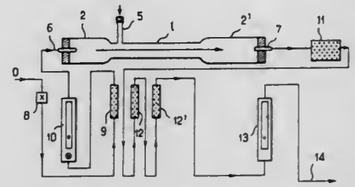
1. A method for detecting maternally transferred drug metabolites in a newborn infant which comprises:
(a) isolating meconium from the newborn infant
(b) extracting any drug metabolites present from the meconium in an aqueous solution containing methanol in an amount of less than about 30% by volume with a buffered pH between about 6 and 7; and
(c) assaying the solution for the drug metabolites.

5,185,268

METHOD FOR THE DETERMINATION OF TOTAL NITROGEN INCLUDING ADDING AN ALKALI METAL HALIDE OR AN ALKALINE EARTH METAL HALIDE TO THE SAMPLE

Bonometti; Roland Olivier, both of Orthez, and Jacques Maurice, Pau, all of France, assignors to Societe Nationale Elf Aquitaine, France

Filed Jan. 14, 1991, Ser. No. 640,961
Claims priority, application France, Jan. 12, 1990, 90 00312
Int. Cl.[5] G01N *21/76*
U.S. Cl. 436—114 **17 Claims**



1. A method of determining total combined nitrogen in nitrogenous materials which comprises contacting a volatilized admixture of a volatilized sample of a material to be analyzed which contains a halide of an alkali metal or alkaline earth metal when it is volatilized and an oxygen containing gas with a metallic oxidation catalyst at a temperature sufficient to convert all nitrogenous material in the sample into NO, and determining the amount of NO thus formed, whereby the amount of total combined nitrogen can be calculated from the determined amount of NO thus formed.

5,185,269

IMMUNOBEAD ASPIRATOR AND METHOD OF USE

John R. Wells, Culver City, Calif., assignor to Source Scientific Systems, Inc., Garden Grove, Calif.

Filed Feb. 13, 1990, Ser. No. 479,766
Int. Cl.[5] G01N *1/14*
U.S. Cl. 436—180 **5 Claims**

1. In a device for aspirating liquid from a vessel containing an immunobead by means of a vacuum source, the device including:
an inverted bowl defining a vacuum port and
a hollow neck connected to the vacuum port of said inverted bowl and connectable to the vacuum source for providing passage for liquid and air through the vacuum port and into the vacuum source,

VOL
1147
ISS
2
FE
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1993
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said neck for connecting to the vacuum source and extending said inverted bowl into the vessel for aspirating liquid therefrom and for capturing and lifting the immunobead therefrom into said inverted bowl during such liquid aspiration process,

the improvement comprising:

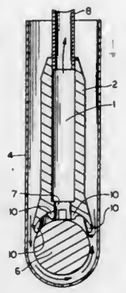
an array of protuberances arising from within said inverted bowl exclusive of the vacuum port for contacting the immunobead and for providing a gap between the immunobead and said inverted bowl for aspirating liquid and drawing air from the vessel into the vacuum source while the immunobead is captured within said inverted bowl during the liquid aspiration process,

said array of protuberances defining a hollow greater in size than the immunobead such that the immunobead cannot contact all of the protuberances simultaneously and must lack contact with at least one protuberance at any given time,

whereby the use of said array of protuberances facilitates the aspiration of liquid from the vessel and reduces the amount of liquid which may be trapped between the immunobead and said inverted bowl during the liquid aspiration process.

5. In a method of aspirating liquid from a vessel containing an immunobead, the method including the steps:

Step 1: providing a vacuum source, an aspiration device having an inverted bowl, and a vessel containing an immunobead,



Step 2: lowering the aspiration device into the vessel; while,

Step 3: activating the vacuum source for drawing a vacuum through the aspiration device; then

Step 4: aspirating liquid from the vessel above the immunobead by means of the aspiration device; then

Step 5: lifting and capturing the immunobead by means of the vacuum into the inverted bowl within the aspiration device; then

Step 6: aspirating liquid from the vessel below the immunobead; then

Step 7: deactivating the vacuum source and allowing the immunobead to drop from the aspiration device back into the vessel; and then

Step 8: raising the aspiration device out of the vessel; wherein the improvement comprises:

in said Step 5, the captured immunobead making contact with an array of protuberances arising from the inverted bowl exclusive of the vacuum port, each of the protuberances being contactable with the captured immunobead but collectively forming a hollow greater in size than the immunobead such that the immunobead cannot contact all of the protuberances simultaneously and must lack contact with at least one protuberance at any given time,

in said Step 6: aspirating liquid from the vessel including liquid which lies between the immunobead and one or more protuberances with which the immunobead is not in contact.

5,185,270

FETAL FIBRONECTIN PREGNANCY TEST

Andrew E. Senyei, Santa Ana, and Nelson N. H. Teng, Hillsborough, both of Calif., assignors to Adeza Biomedical Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 121,900, Nov. 17, 1987, abandoned. This application Dec. 12, 1988, Ser. No. 282,426

Int. Cl.[5] G01N *33/53, 33/48*

U.S. Cl. 436—510 **10 Claims**

1. A method for determining normal intrauterine pregnancy during the first 20 weeks of pregnancy comprising

a) obtaining a test sample from the vaginal cavity; and

b) determining the presence of fetal fibronectin in the sample, the presence of fetal fibronectin indicating the presence of intrauterine pregnancy.

5,185,271

METHOD OF MANUFACTURING A BURIED-CHANNEL CHARGE-COUPLED IMAGE SENSOR

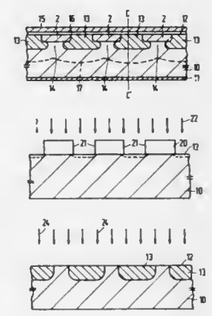
Jacobus G. C. Bakker, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Mar. 25, 1991, Ser. No. 674,491

Claims priority, application Netherlands, Apr. 3, 1990, 9000776

Int. Cl.[5] H01L *21/266*

U.S. Cl. 437—3 **2 Claims**



1. A method of manufacturing a charge-coupled image sensor arrangement of the buried-channel type in which a region of a semiconductor body of a first conductivity type adjoining a surface is provided with a number of adjacent surface zones of the first conductivity type which form the buried channels of the charge-coupled device, and with channel-bounding surface zones of a second, opposite conductivity type situated between the surface zones of the first conductivity type and extending from the surface to a greater depth than the surface zones of the first conductivity type into the semiconductor body to below these latter surface zones, and separating them at least partly from adjoining and underlying portions of the semiconductor body of the first conductivity type, characterized in that the channel-bounding zones are first formed using a mask having windows which leave free those surface portions of the region which are situated between the buried channels to be formed, and in that the buried channels are then formed by means of a doping step which is carried out uniformly over the entire region in a doping concentration which is lower than the doping concentration of the channel-bounding zones.

5,185,272

METHOD OF PRODUCING SEMICONDUCTOR DEVICE HAVING LIGHT RECEIVING ELEMENT WITH CAPACITANCE

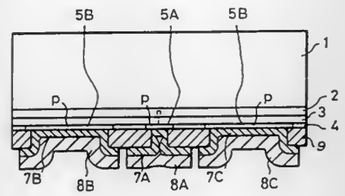
Masao Makiuchi, and Hisashi Hamaguchi, both of Kanagawa, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 684,394, Apr. 12, 1991, Pat. No. 5,107,318. This application Nov. 18, 1991, Ser. No. 793,998

Claims priority, application Japan, Apr. 16, 1990, 2-097489; Jul. 2, 1990, 2-172661; Nov. 30, 1990, 2-340151

Int. Cl.[5] H01L *31/18*

U.S. Cl. 437—5 **15 Claims**



1. A method of producing a semiconductor device comprising the steps of:

successively forming first, second and third layers on a substrate, said first layer being made of a semiconductor of a first conductive type, said second layer functioning as a photoabsorption layer, and said third layer being made of a semiconductor of the first conductive type;

forming a mask layer on the third layer;

forming a plurality of openings in the mask layer by etching the mask layer;

implanting impurities into the third layer via the openings of the mask layer to form a plurality of regions made of a semiconductor of a second conductive type opposite to the first conductive type and thereby forming a plurality of pin diodes, each of said regions at least reaching the second layer;

removing the mask layer;

forming a plurality of electrodes respectively on the plurality of regions, said electrodes being made of the same electrode material; and

selecting a first electrode of the plurality of electrodes for receiving a first bias voltage which produces reverse biasing of the respective pin diode and causes same to operate as a pin photodiode and selecting a second electrode of the plurality of electrodes for receiving a second bias voltage which produces forward biasing of the respective pin diode.

5,185,273

METHOD FOR MEASURING IONS IMPLANTED INTO A SEMICONDUCTOR SUBSTRATE

Craig L. Jasper, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 30, 1991, Ser. No. 767,756

Int. Cl.[5] H01L *21/66*

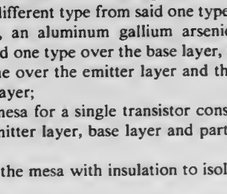
U.S. Cl. 437—8 **5 Claims**

1. A method for correlating ion implantation from a silicon wafer to a gallium arsenide wafer comprising:

implanting a dose of a predetermined amount of ions into a silicon wafer;

measuring the dose of implanted ions in the silicon wafer by a measuring system that monitors a modulated reflected signal from the silicon wafer that quantifies the signal to a number of ions implanted into the silicon wafer;

using the measured quantity of the implanted ions in the silicon wafer to determine when a desired amount of ions have been implanted into the silicon wafer; and



implanting a dose of the same predetermined amount of ions into a gallium arsenide wafer.

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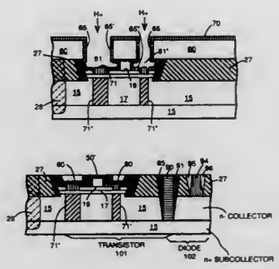
SELF-ALIGNED, SELF-PASSIVATED ADVANCED DUAL LIFT-OFF HETEROJUNCTION BIPOLAR TRANSISTOR METHOD

Mau C. F. Chang, Thousand Oaks, and Peter M. Asbeck, San Diego, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.

Filed Aug. 15, 1991, Ser. No. 746,259

Int. Cl.[5] H01L *21/265, 29/70*

U.S. Cl. 437—22 **6 Claims**



1. A self-aligned and self-passivated heterojunction bipolar transistor process, comprising the steps of:

forming a semiconductor wafer including an undoped substrate, an N+ gallium arsenide subcollector layer over the substrate, a gallium arsenide collector layer doped one type over the subcollector, a gallium arsenide base layer doped a different type from said one type over the collector layer, an aluminum gallium arsenide emitter layer doped said one type over the base layer, and a pair of cap layers, one over the emitter layer and the other over the one cap layer;

forming a mesa for a single transistor consisting of the cap layers, emitter layer, base layer and part of the collector layer;

planarizing the mesa with insulation to isolate a single transistor;

depositing a layer of photoresist at least over the mesa;

forming a photoresist mask out of the photoresist, characterized by an emitter region pedestal surrounded by an emitter peripheral region and a base contact region, by etching the photoresist through the cap layers to stop at the emitter layer;

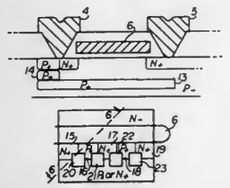
depositing a thin photo CVD layer of silicon nitride over the etched photoresist to cover the sidewalls of the pedestal, the sidewalls of the base contact region and the emitter peripheral region and base contact region;

removing the silicon nitride from the top of the photoresist and the base contact region by using low pressure carbon

VOL
1147
ISS
2
FE
9
1993
UMI

tetrafluoride oxygen plasma anisotropic reactive ion etching to preserve the sidewall silicon nitride;
selectively wet etching the base contact region to the base layer and depleting the emitter peripheral region aluminum gallium arsenide under the silicon nitride to passivate the emitter peripheral region;
proton damaging the collector region beneath the base contact region;
depositing base metal on the photoresist and in the base contact region;
removing the photoresist and photoresist top of the pedestal along with the silicon nitride affixed thereto and the base metal not used for the base contact; and
finishing a contact to the subcollector and a contact to the emitter.

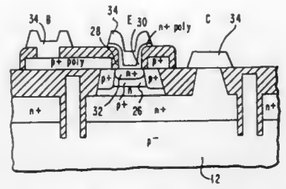
5,185,275
SNAP-BACK PREVENTING METHOD FOR HIGH VOLTAGE MOSFET
Kirk Prall, Boise, Id., assignor to Micron Technology, Inc., Biose, Id.
Filed Mar. 30, 1992, Ser. No. 860,619
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—30 **4 Claims**



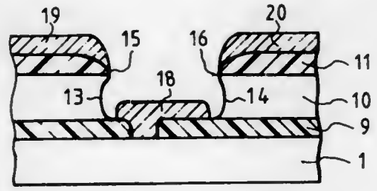
1. In the fabrication of metal oxide field effect N-channel circuit having a source, channel and drain diffused over a bulk substrate, said source being in contact with a metal lead, a process for suppressing parasitic snap-back behavior of the circuit and for improving high voltage performance, said process comprising the steps of:
placing a first P-region in contact with the source, wherein said P-region is more heavily doped than the bulk substrate by diffusing said P-region adjacently to said source and in contact with said metal lead, and
placing a P layer, more heavily doped than said bulk substrate under the source, channel and drain;
said layer being spaced-apart from said source, channel and drain; and
placing a P-type plug above said layer and in contact with said layer and first P-region.

5,185,276
METHOD FOR IMPROVING LOW TEMPERATURE CURRENT GAIN OF BIPOLAR TRANSISTORS
Tze-Chiang Chen, Yorktown Heights, N.Y., and John D. Cressler, Fairfield, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 472,688, Jan. 31, 1990, abandoned. This application Apr. 23, 1991, Ser. No. 689,673
Int. Cl.[5] H01L *21/328, 21/265*
U.S. Cl. 437—31 **18 Claims**

1. A method of improving the gain at a temperature of below about 80K of a bipolar transistor having an emitter region and a collector region of a first conductivity type and a base region of a second conductivity type opposite to said first type sandwiched between said emitter and collector regions, said base region having an intrinsic and an extrinsic region, comprising the step of:
introducing a first and second impurity of said second conductivity type into said intrinsic base region, said second impurity having an ionization energy of at least approximately 0.010 eV greater than said first impurity such that the base region has an activation energy at said low temperature at least approximately equal to the activation energy of the base region doped with only the first impurity.

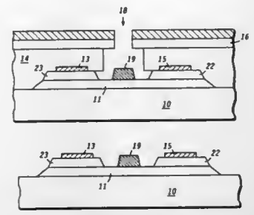


5,185,277
METHOD FOR THE MAKING OF A TRANSISTOR GATE
Pham N. Tung, Paris, and Martine Chapuis, Yerres, both of France, assignors to Thomson Composants Microondes, Puteaux, France
Filed Jun. 12, 1991, Ser. No. 714,230
Claims priority, application France, Jun. 12, 1990, 90 07280
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—39 **3 Claims**



1. A method for making a mushroom gate having a base and an apron which is wider than the base, comprising the steps of:
depositing first, and second layers on a substrate, said first and second layers comprising first and second materials, respectively, which are dissolvable by first and second solvents, respectively, wherein the first solvent is not a solvent of the second layer and the second solvent is not a solvent of the first layer;
depositing a third layer above the second layer, wherein said third layer is dissolvable by a third solvent which is not a solvent of said second layer;
irradiating an area of the third layer which is equal to an area of said apron, with an electron irradiation, wherein the radiation is limited to act essentially only upon the third layer;
irradiating an area of the first layer, which is equal to an area of the base, with electron irradiation; then
dissolving the irradiated portion of the third layer with said third solvent, thereby opening a window in the third layer;
dissolving a portion of said second layer with said second solvent, thereby undercutting the window formed by the third layer;
dissolving the irradiated area of the first layer with the first solvent.

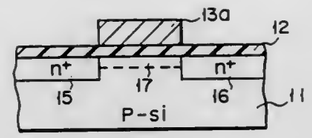
5,185,278
METHOD OF MAKING SELF-ALIGNED GATE PROVIDING IMPROVED BREAKDOWN VOLTAGE
Dean W. Barker, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 22, 1990, Ser. No. 601,087
Int. Cl.[5] H01L *21/265, 21/465*
U.S. Cl. 437—39 **16 Claims**



1. A method for forming MESFET transistors having high breakdown voltage which comprises:
providing a III-V compound substrate having a plurality of mesas used for implementing MESFETs with each mesa having an active layer in contact with the substrate, a contact layer covering the active layer, and a plurality of contacts on the contact layer for forming source and drain contacts;
covering the substrate and the mesas with a layer of polyimide;
covering the polyimide with a layer of silicon nitride;
covering the silicon nitride with a photoresist mask having openings centered between the source and drain contacts;
etching openings in the silicon nitride using the openings in the photoresist mask to define the etched openings in the silicon nitride;
etching in one step an opening through the polyimide wherein the etching undercuts the silicon nitride and forms walls substantially perpendicular to the silicon nitride and wherein the etching is performed through the openings in the silicon nitride and in the photoresist mask;
etching the contact layer which exposes a portion of the surface of the active layer wherein the etching is performed through the opening in the polyimide;
depositing gate material through the opening in the silicon nitride layer onto the surface of the active layer; and
lifting off the polyimide, and the silicon nitride by immersing the substrate and structures on the substrate in a solvent.

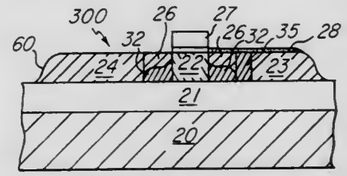
5,185,279
METHOD OF MANUFACTURING INSULATED-GATE TYPE FIELD EFFECT TRANSISTOR
Yukihiro Ushiku, Yokobama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Division of Ser. No. 395,356, Aug. 17, 1989, Pat. No. 5,028,552, which is a continuation-in-part of Ser. No. 175,305, Mar. 30, 1988, abandoned. This application Mar. 22, 1991, Ser. No. 673,669
Claims priority, application Japan, Mar. 31, 1987, 62-78512
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—41 **3 Claims**

1. A method of manufacturing an insulated-gate type field effect transistor, comprising the steps of:
forming an insulating film, on a semiconductor substrate;
forming a first polycrystalline silicon layer on said insulating film;
forming a natural oxide film on said first polycrystalline layer;
forming a second polycrystalline silicon layer on said natural oxide film;
patterning said first polycrystailine silicon layers, said natural oxide film, and said second polycrystalline silicon layers to form a gate electrode and a masking layer;
doping an impurity of a first conductivity type in said semiconductor substrate using said gate electrode and said masking layer as masks, thereby forming a source region and a drain region;
starting etching said masking layer;



detecting said natural oxide film on said gate electrode;
stopping the etching; and
ion-implanting an impurity of a second conductivity type in a region of said semiconductor substrate under said gate electrode through said gate electrode, thereby forming a channel-doped region.

5,185,280
METHOD OF FABRICATING A SOI TRANSISTOR WITH POCKET IMPLANT AND BODY-TO-SOURCE (BTS) CONTACT
Theodore W. Houston, and Gordon P. Pollack, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Jan. 29, 1991, Ser. No. 647,111
Int. Cl.[5] H01L *2/336*
U.S. Cl. 437—44 **2 Claims**



1. A method of fabricating an integrated circuit comprising a field effect transistor having source and drain regions in a semiconductor layer overlying an insulting film, comprising the steps of:
patterning and etching of a mesa on an SOI wafer; depositing of a gate oxide layer over the mesa; depositing, patterning and etching to form a gate electrode having sidewalls;
lightly doping said source and drain regions with a dopant of a first conductivity type to form lightly-doped regions;
heavily doping said source and drain regions with a dopant of a second conductivity type;
depositing and etching oxide to form conformal sidewall spacers;
adjacent the sidewalls of the gate electrode;
doping source and drain regions with heavy concentrations of a dopant of the first conductivity type to form heavily-doped regions;
heavily doping an area in the source region spaced from the gate electrode with a dopant of the second conductivity type in the source region, said area dispositioned between a lightly-doped region on one side and a heavily-doped region on another side; and
depositing of metallization contacts.

VOL
1147
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1993
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METHOD OF MANUFACTURING DRAM CELL HAVING A CUP SHAPED POLYSILICON STORAGE ELECTRODE

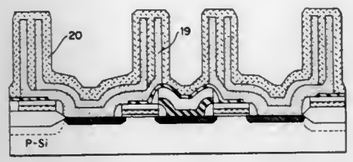
Jin H. Lee; Cheon S. Kim; Kyu H. Lee, and Dae Y. Kim, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Chungnam, Rep. of Korea

Filed Oct. 24, 1990, Ser. No. 602,807

Claims priority, application Rep. of Korea, Nov. 23, 1989, 89-17060; Nov. 23, 1989, 89-17061

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—47 **2 Claims**



1. A method for forming a DRAM cell stacked structure having a polysilicon storage electrode of a cup shape comprising the steps of:

defining an active region on a p-type silicon substrate;

forming a transistor and a polysilicide layer for a bit line;

depositing a silicon nitride film of the thickness of about 50–100 nm as an etch stop layer;

defining a contacting portion between a storage electrode and a source of said transistor and forming a first oxide film on said silicon nitride film to form a cup-shaped portion of a charge storing electrode;

depositing a first charge storing polysilicon electrode of the thickness of 50–100 nm as said charge storing electrode and depositing a second oxide film to form oxide film side wall spacers on both side walls of said first charge storing polysilicon electrode;

depositing a second polysilicon electrode, depositing a photo resist of liquid phase on said second polysilicon electrode, and etching back said second polysilicon electrode to form a double polysilicon electrode; and

injecting ions of an N+ impurity to said first and second polysilicon electrodes, a capacitor dielectric film, and then defining a plate electrode.

5,185,283

METHOD OF MAKING MASTER SLICE TYPE INTEGRATED CIRCUIT DEVICE

Yuko Fukui, Otsu; Katsuhiro Ohtani; Hiroyuki Miyamoto, both of Kyoto; Masao Nishiura, Takatsuki, and Moriyuki Chimura, Kyoto, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Division of Ser. No. 259,521, Oct. 13, 1988, abandoned. This application Mar. 4, 1991, Ser. No. 666,452

Claims priority, application Japan, Oct. 22, 1987, 62-267065; Oct. 22, 1987, 62-267066; Oct. 22, 1987, 62-267067; Oct. 30, 1987, 62-276214; Jun. 13, 1988, 62-145156

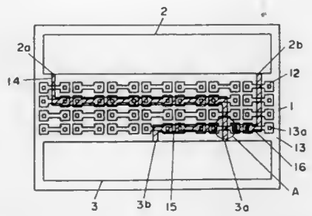
Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—51 **5 Claims**

1. A method of manufacturing a master slice type integrated circuit device comprising:

a first step of fabricating a master slice by forming specified diffusion regions for transistor elements at specified positions in a semiconductor substrate, each of said transistor elements having a gate electrode, forming a first insulation layer with plural through holes on said semiconductor substrate, forming plural first layer wiring pieces all extending in a same direction which is orthogonal to a longitudinal direction of said gate electrodes of said transistor elements at specified intervals on said first insulation layer, connecting said plural first layer wiring pieces to said diffusion regions using through holes selected from among said plural through holes on said plural first layer wiring pieces, and

a second step of forming second layer wirings on said second insulation layer and connecting said second layer wirings



to said first layer wiring pieces using contact holes selected from among said plural contact holes so that said diffusion regions are mutually connected by said through holes, said first layer wiring pieces, said contact holes and said second layer wirings.

5,185,284

METHOD OF MAKING A SEMICONDUCTOR MEMORY DEVICE

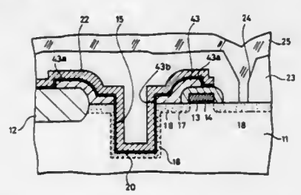
Kaoru Motonami, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 680,010, Apr. 2, 1991, Pat. No. 5,089,868, which is a continuation of Ser. No. 410,200, Sep. 21, 1989, abandoned. This application Sep. 12, 1991, Ser. No. 758,146

Claims priority, application Japan, May 22, 1989, 64-129252

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—52 **10 Claims**



1. A method for producing a semiconductor memory device for storing the information as a function of the presence or absence of electrical charges stored in a groove capacitor, comprising the steps of:

forming a gate electrode (**14**) for a transistor on a main surface of a semiconductor substrate (**11**),

forming a first impurity-diffusion layer (**28**) on both sides of said gate electrode (**14**) on the main surface of said semiconductor substrate (**11**),

after formation of said first impurity-diffusion layer (**28**), forming an electrically conductive member (**43**) on the main surface of said semiconductor substrate (**11**),

patterning said electrically conductive member (**43**) for forming an opening of a predetermined shape thereby defining a region for forming said groove capacitor,

forming a groove (**15**) of said groove capacitor by selectively etching a portion of the main surface of said semiconductor substrate (**11**) exposed by the formation of said opening,

forming a second impurity-diffusion layer (**31**) on at least a sidewall of said groove (**15**),

forming a capacitor insulating film (**20**) on the main surface of said semiconductor substrate (**11**) for covering an exposed surface of said electrically conductive member (**43**) and an inner surface of said groove (**15**), and

forming a cell plate electrode (**22**) on said capacitor insulating film (**20**).

5,185,285

METHOD OF PRODUCING POLYCRYSTALLINE SILICON RESISTOR

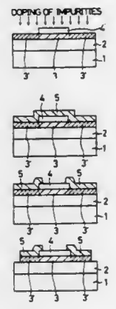
Takashi Hasaka, Tokyo, Japan, assignor to Seiko Instruments, Inc., Tokyo, Japan

Filed May 30, 1991, Ser. No. 731,170

Claims priority, application Japan, May 30, 1990, 2-143027

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—60 **1 Claim**



1. A method of producing semiconductor device element including a polycrystalline silicon film resistor, comprising the steps of:

forming a first insulating film on a semiconductor substrate;

forming a polycrystalline silicon film on the first insulating film, the polycrystalline silicon film having a selected region containing a resistor-forming part and a conductor lead-forming part contiguous with the resistor-forming part;

doping the selected region of the polycrystalline silicon film with impurities in an amount to cause the selected region to have a high electrical resistivity;

covering the doped selected region with a second insulating film;

pattern in the second insulating film by removing a part of the second insulating film which covers the conductor lead-forming part;

heavily doping parts of the selected region of the polycrystalline silicon film which are not covered by the patterned second insulating film with impurities selected to cause those film parts to have an electrical resistively which is substantially lower than that of the part of the selected region which is covered with the patterned second insulating film;

forming a metal film on the heavily doped polycrystalline silicon polysilicon film parts and on the patterned second insulating film;

selectively removing a part of the metal film from above a part of the patterned second insulating film; and

selectively patterning parts of the polycrystalline silicon film, the metal film and the second insulating film.

5,185,286

PROCESS FOR PRODUCING LAMINATED SEMICONDUCTOR SUBSTRATE

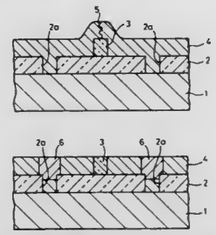
Kouhei Eguchi, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Sep. 26, 1991, Ser. No. 765,933

Claims priority, application Japan, Sep. 28, 1990, 2-260667

Int. Cl.[5] H01L *21/86*

U.S. Cl. 437—84 **13 Claims**



1. A process for producing a laminated semiconductor comprising the steps of:

rovviding a structure comprising a first insulating film on a single crystal semiconductor substrate, said first insulating film having a plurality of openings, for exposing a part of said single crystal semiconductor substrate, and a second insulating film having a width on a perpendicular bisector of a line connecting adjacent openings of said plurality of openings;

growing a single crystal semiconductor layer on said first and second insulating layers through the use of said single crystal semiconductor substrate exposed on said openings as a seed crystal; and

subjecting said single crystal semiconductor layer to etching back or polishing parallel to the surface of said single crystal semiconductor substrate to expose said second simulating layer.

5,185,287

METHOD FOR PRODUCING A QUANTUM WELL STRUCTURE

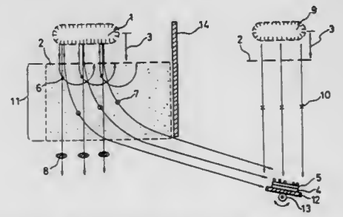
Toshitaka Aoyagi, and Kimio Shigihara, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1991, Ser. No. 641,268

Claims priority, application Japan, Feb. 22, 1990, 2-43090

Int. Cl.[5] H01L *21/203*

U.S. Cl. 437—105 **10 Claims**



1. A method for producing a box type quantum well structure comprising:

placing a substrate on a substrate stage; and

attaching cluster ions generated by a cluster ion source to the surface of said substrate to produce a box type quantum well structure including:

linearly accelerating ion clusters generated and ionized by said cluster ion source with an electric field;

VOL
1147
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passing said accelerated cluster ions through a second field to apply a force perpendicular to the linear acceleration to cause the respective cluster ions to follow different ion orbits in accordance with the number of atoms of the respective cluster ions;

arranging said substrate to intersect the orbit of cluster ions having a predetermined number of atoms; and

intercepting said cluster ions having a predetermined number of atoms with said substrate so that said cluster ions attach to said substrate.

5,185,288

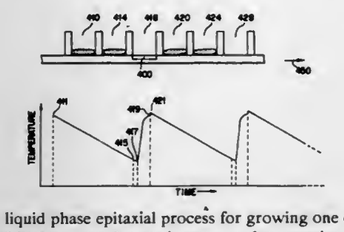
EPITAXIAL GROWTH METHOD

Louis W. Cook, Santa Clara, and Michael D. Camras, Sunnyvale, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 237,797, Aug. 26, 1988, Pat. No. 4,912,532. This application Jan. 12, 1990, Ser. No. 464,275

Int. Cl.[5] H01L *21/208*

U.S. Cl. 437—122 **4 Claims**



1. A liquid phase epitaxial process for growing one or more epitaxial layers on a substrate in an oven that contains oxygen, the process comprising the steps of:

a. selecting one or more cap materials;

b. selecting one or more epitaxial materials that are III-V compounds including Aluminum;

c1. heating the oven to at least a first growth temperature whereby at least one of the epitaxial materials melts to form a first melt and at least one of the cap materials melts to form a cap melt;

c2. bringing the substrate in contact with the first melt;

c3. cooling the oven to grow onto the substrate an epitaxial layer;

c4. separating the epitaxial layer from the first melt;

d1. bringing the epitaxial layer in contact with the cap melt;

d2. cooling the oven to grow the cap layer onto the epitaxial layer such that oxidation of the epitaxial layer may be avoided;

d3. separating the cap layer from the cap melt;

e1. heating the oven to at least a second growth temperature whereby at least one of the epitaxial materials melts to form a second melt and at least one of the cap materials melts to form a cap melt;

e2. bringing the cap layer in contact with the second melt;

e3. heating the oven above the second growth temperature so that the second melt removes the cap layer;

f1. retaining the epitaxial layer in the second melt;

f2. cooling the oven to grow onto the epitaxial layer a second epitaxial layer, the second epitaxial layer becoming part of the epitaxial layer;

f3. separating the epitaxial layer from the second melt;

f4. bringing the epitaxial layer in contact with a cap melt;

f5. cooling the oven to grow a cap layer onto the epitaxial layer; and

f6. separating the cap layer grown in step (f5) from the cap melt in step (f4).

5,185,289

PROCESS FOR THE SELECTIVE GROWTH OF GAAS

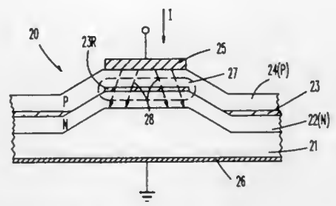
Heinz P. Meier, Thalwil, Switzerland; Edward A. Van Gieson, Santa Rosa, Calif., and Willi Walter, Adliswil, Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 617,445, Nov. 21, 1990, abandoned, which is a division of Ser. No. 310,427, Feb. 13, 1989, abandoned. This application Jun. 25, 1991, Ser. No. 720,965

Claims priority, application European Pat. Off., Jun. 28, 1988, 110302

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—129 **18 Claims**



1. A process for the selective growth of GaAs on a patterned substrate comprising the steps of:

a) patterning the upper surface of a substrate to provide at least one ridge structure, said ridge having a top surface and side wall facets, such that said side wall facets have a lower Ga incorporation rate than said top surface,

b) growing at least a lower layer of a first conductivity type over said upper surface of said substrate,

c) forming at least a GaAs layer over said lower layer of first conductivity type,

d) interrupting said GaAs layer formation until said GaAs layer completely desorbs from said side wall facets, and

e) growing at least an upper layer of a second conductivity type engulfing said GaAs layer.

5,185,290

METHOD OF COATING FACET OF SEMICONDUCTOR OPTICAL ELEMENT

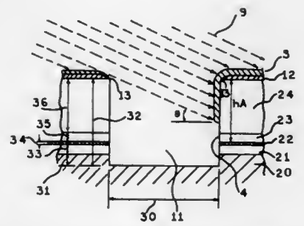
Toshitaka Aoyagi, and Kimio Shigihara, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1990, Ser. No. 561,720

Claims priority, application Japan, Aug. 17, 1989, 1-212743

Int. Cl.[5] H01L *21/20*

U.S. Cl. 437—129 **19 Claims**



1. A method of selectively coating one of at least two spaced apart facets of respective light-emitting regions disposed on the same surface of a semiconductor device formed in a semiconductor wafer comprising:

preparing a plurality of layers in and adjacent a front surface of a semiconductor wafer for forming a plurality of light-emitting semiconductor devices from the wafer, each light-emitting device including first and second spaced apart light-emitting regions, each region having a facet through which light is emitted, the facets being disposed on a common surface;

forming at least one groove in the semiconductor wafer extending to a first depth from the front surface;

forming a second groove in the semiconductor wafer transverse to and intersecting the first groove and extending from the front surface deeper into the semiconductor wafer than the first groove to expose first and second side wall surfaces of the second groove generally transverse to the front surface, the first side wall surface including the facets of the first and second light-emitting regions, the first groove being aligned with the first light-emitting region facet opposite the first side wall surface, the second side wall surface intersecting the front surface to define a first edge intersecting the first groove; and

directing a stream of an evaporated coating material across the first edge at such an angle with respect to the front surface so that the first edge shadows the second light-emitting region facet on the first side wall surface and prevents the coating material from reaching and coating the facet of the second light-emitting region while the coating material flows past the first groove at the first edge and reaches and coats the facet of the first light-emitting region on the first side wall surface.

5,185,291

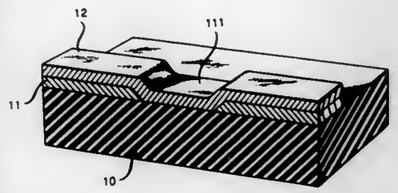
METHOD OF MAKING SEVERABLE CONDUCTIVE PATH IN AN INTEGRATED-CIRCUIT DEVICE

Frederick H. Fischer; Kuo-hua Lee, both of Lower Macungie Township, Lehigh County; William J. Nagy, Bethlehem, and Nur Selamoglu, Philadelphia, all of Pa., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 569,755, Aug. 20, 1990, Pat. No. 5,066,998, which is a continuation of Ser. No. 374,423, Jun. 30, 1989, abandoned. This application Sep. 6, 1991, Ser. No. 755,702

Int. Cl.[5] H01L *21/26*

U.S. Cl. 437—173 **5 Claims**



1. In the manufacture of integrated circuit devices, a method for making a dielectric-supported conductive path comprising a programmable link, said method comprising the steps of

blanket depositing a first conductor layer on said dielectric,

etching to locally reduce the thickness of said first conductor layer,

depositing a second conductor layer on said first conductor layer,

and then etching to define said conductive path,

whereby said conductive path has locally reduced thickness as adapted for programming.

5,185,292

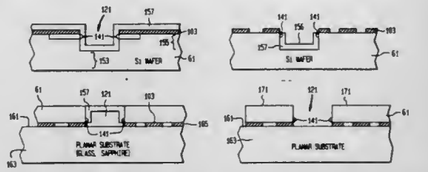
PROCESS FOR FORMING EXTREMELY THIN EDGE-CONNECTABLE INTEGRATED CIRCUIT STRUCTURE

Nicolaas W. VanVonno, and Dyer A. Matlock, both of Melbourne, Fla., assignors to Harris Corporation, Melbourne, Fla.

Continuation-in-part of Ser. No. 382,388, Jul. 20, 1989, Pat. No. 5,081,063, and a continuation-in-part of Ser. No. 613,091, Nov. 5, 1990, Pat. No. 5,071,792. This application Dec. 6, 1991, Ser. No. 802,882

Int. Cl.[5] H01L *21/44, 21/48*

U.S. Cl. 437—180 **30 Claims**



1. A method of forming an edge connector to a semiconductor substrate having comprising the steps of:

(a) forming, in said semiconductor substrate, a region of material capable of being bonded with conductive material;

(b) forming a trench pattern in a first surface of said semiconductor substrate so as to expose a sidewall portion of said region;

(c) bonding conductive material to said sidewall portion of said region;

(d) forming a layer of a prescribed material in said trench pattern;

(e) mounting said semiconductor substrate on a support member such that the first surface of said semiconductor substrate faces said support member;

(f) removing material from a second surface of said semiconductor substrate, opposite to said first surface thereof, so as to effect a thinning of said substrate down to a level which exposes said prescribed material in said trench pattern;

(g) removing said prescribed material from said trench pattern, thereby leaving a plurality of spaced apart semiconductor dice that are supported by way of said support member; and

(h) removing said plurality of dice from said support member.

5,185,293

METHOD OF FORMING AND ALIGNING PATTERNS IN DEPOSTED OVERLAYING ON GAAS

Hans G. Franke, Hilton, and Eric T. Prince, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 10, 1992, Ser. No. 866,716

Int. Cl.[5] H01L *21/283, 21/31*

U.S. Cl. 437—184 **7 Claims**



1. A method of forming patterns in deposited overlayers on GaAs and aligning said patterns with etch features comprising the steps of:

(a) applying a patternable layer on GaAs for use as a mask;

VOL 1147 ISS 2 FEB 9 1993 UMI

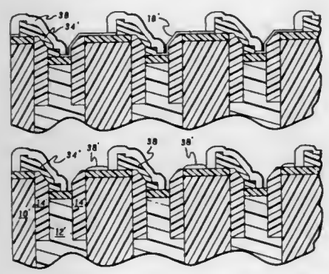
(b) patterning said layer for use in lift-off processing to provide a mask having a first set of spaced openings;
(c) depositing a first layer on top of this patterned mask and in the first set of spaced openings;
(d) depositing a second layer on top of the first layer wherein the second layer is a durable, process integrable mask of hydrogenated amorphous carbon;
(e) removing the lift-off mask to provide a second set of opening offset in space from the first;
(f) dry etching the GaAs substrate through such second set of openings; and
(g) removing the second deposited layer of hydrogenated amorphous carbon.

5,185,294

BORON OUT-DIFFUSED SURFACE STRAP PROCESS

Chung H. Lam, Williston; Jerome B. Lasky, Essex Junction; Craig M. Hill, Burlington; James S. Nakos, Essex; Steven J. Holmes, Burlington; Stephen F. Geissler, Underhill, and David K. Lord, Colchester, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 22, 1991, Ser. No. 797,506
Int. Cl.[5] H01L *21/44*
U.S. Cl. 437—193 **22 Claims**



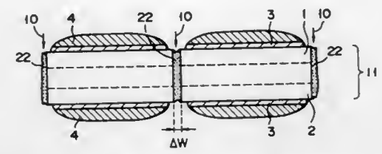
1. A method for electrically connecting a first silicon area to a second silicon area, said first and said second silicon areas each having an exposed surface and being separated by a dielectric, said dielectric also having an exposed surface, which method comprises the steps of:
(a) doping said exposed surface of said first silicon area and said exposed surface of said second silicon area;
(b) depositing a continuous diffusion barrier layer over said surface of said first silicon area, said surface of said second silicon area, and said surface of said dielectric;
(c) etching said diffusion barrier layer so as to selectively remove portions of said diffusion barrier layer and thereby expose underlying surfaces;
(d) depositing a continuous layer of polysilicon over said diffusion barrier layer and also over said exposed underlying surfaces;
(e) diffusing said dopant from said first silicon area and said second silicon area into said continuous layer of polysilicon, wherein unremoved portions of said diffusion barrier layer prevent diffusion of said dopant into said continuous layer of polysilicon overlying said unremoved portions of said diffusion barrier layer;
(f) etching the resulting structure so as to selectively remove said continuous layer of polysilicon containing no diffused dopant, thereby leaving said continuous layer of polysilicon deposited over said exposed underlying surfaces; and
(g) etching the then-resulting structure so as to remove any remaining diffusion barrier layer, a remaining portion of said continuous layer of polysilicon forming said electrical connection between said first silicon region and said second silicon region.

5,185,295

METHOD FOR DICING SEMICONDUCTOR SUBSTRATES USING A LASER SCRIBING AND DUAL ETCH PROCESS

Haruyuki Goto, Yokosuka, and Katsuhiko Kubota, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 15, 1991, Ser. No. 700,413
Claims priority, application Japan, May 16, 1990, 2-125710
Int. Cl.[5] H01L *21/80*
U.S. Cl. 437—226 **7 Claims**



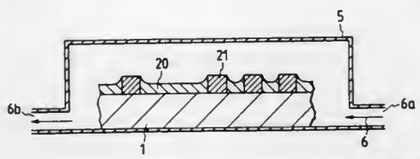
1. A method for dicing semiconductor substrates, comprising the steps of:
scribing a silicon substrate containing mesa semiconductor elements by using a laser;
separating said silicon substrate into a plurality of pellets by etching away, using alkali hydroxide solution, resolidified silicon that failed to vaporize during laser scribing; and
smoothing the cut surfaces of said pellets by chemical etching with a mixed acid containing hydrofluoric acid and nitric acid.

5,185,296

METHOD FOR FORMING A DIELECTRIC THIN FILM OR ITS PATTERN OF HIGH ACCURACY ON A SUBSTRATE

Kiyoyuki Morita, and Takeshi Ishihara, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 384,593, Jul. 25, 1989, abandoned. This application Apr. 24, 1991, Ser. No. 689,730
Claims priority, application Japan, Jul. 26, 1988, 63-184627; Oct. 24, 1988, 63-266187
Int. Cl.[5] H01L *21/312*
U.S. Cl. 437—229 **8 Claims**



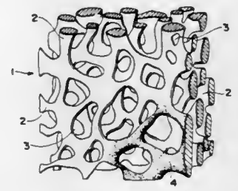
1. A method for forming a dielectric film of a desired pattern with a high dimensional accuracy, the method comprising:
providing a substrate with or without a desired circuit pattern on one side thereof;
forming on the one side of the substrate a thin film of a radiation sensitive organic material whose molecular weight is changed by irradiation of a radiation;
irradiating the thin film with a radiation in a desired pattern; and
contacting the substrate with a super critical fluid or liquified gas to dissolve and thereby remove regions of the thin film which are made of a material having a lower molecular, while retaining a dielectric film of a desired pattern of the radiation sensitive organic material with a higher molecular weight.

5,185,297

CERAMIC FOAMS

Eugene S. Park, Hockessin, Del., and Steven D. Poste, Kingston, Canada, assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 494,124, Mar. 15, 1990, Pat. No. 5,061,660, which is a continuation of Ser. No. 278,207, Nov. 30, 1988, abandoned, which is a continuation of Ser. No. 89,376, Aug. 26, 1987, Pat. No. 4,808,558, which is a continuation-in-part of Ser. No. 908,116, Sep. 16, 1986, abandoned. This application Oct. 28, 1991, Ser. No. 783,284
The portion of the term of this patent subsequent to Feb. 28, 2006, has been disclaimed.
Int. Cl.[5] C04B *38/00*
U.S. Cl. 501—80 **20 Claims**



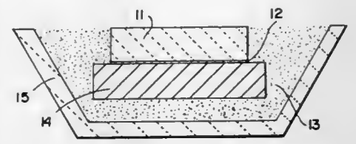
1. A rigid ceramic foam structure containing therein a shaped cavity, said ceramic foam structure comprising a reticulated body defining interlacing substantially hollow ligaments derived from precursor metal ligaments, said hollow ligaments interconnected randomly in three dimensions, the external surfaces of said ligaments defining open channels interconnected randomly in three dimensions, and said hollow ligaments comprising an interconnected polycrystalline oxidation reaction product of said precursor metal.

5,185,298

METHOD OF MAKING CERAMIC COMPOSITE BODIES INCORPORATING FILLER MATERIAL AND BODIES PRODUCED THEREBY

Jack A. Kuszyk, Newark, Del., assignor to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 566,807, Aug. 10, 1990, Pat. No. 5,100,837, which is a continuation of Ser. No. 358,106, May 30, 1989, abandoned. This application Mar. 30, 1992, Ser. No. 860,375
Int. Cl.[5] C04B *35/52, 35/56, 35/58, 35/10*
U.S. Cl. 501—87 **16 Claims**



1. A self-supporting ceramic composite exhibiting enhanced wear resistance comprising a ceramic matrix having at least one mass of filler material comprising about 50–60 volume percent of about 54 grit filler material, about 15–25 volume percent of about 90 grit filler material, about 10–20 volume percent of about 180 grit filler material and about 5–15 volume percent of about 500 grit filler incorporated therein, said matrix comprising an essentially single-phase, polycrystalline oxidation reaction product formed upon oxidation of a molten metal precursor, said composite comprising a minor portion by volume of at least one of non-oxidized metal and voids, and having a predominance of substantially arcuate interface boundaries between crystallites and nonoxidized metal, or between crystallites and voids, or both.

5,185,299

MICROCRYSTALLINE ALUMINA-BASED CERAMIC ARTICLES

Thomas E. Wood, Maplewood; David M. Wilson, Roseville, and Harold G. Sowman, Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 318,450, Mar. 1, 1989, Pat. No. 4,954,462, which is a continuation of Ser. No. 58,564, Jun. 5, 1987, abandoned. This application Jul. 9, 1990, Ser. No. 549,733
Claims priority, application Canada, May 13. 1988, 566751; Japan, Jun. 2, 1988, 63-136616; European Pat. Off., Jun. 3, 1988, 88.305061.9; Fed. Rep. of Germany, Jun. 3, 1988, 88.305061.9; France, Jun. 3, 1988, 88.305061.9; Italy, Jun. 3, 1988, 88.305061.9; Spain, Jun. 3, 1988, 88.305061.9; Switzerland, Jun. 3, 1988, 88.305061.9; United Kingdom, Jun. 3, 1988, 88.305061.9; Rep. of Korea, Jun. 4, 1988, 88-6774
The portion of the term of this patent subsequent to Sep. 4, 2007, has been disclaimed.
Int. Cl.[5] C04B *35/10*
U.S. Cl. 501—95 **20 Claims**

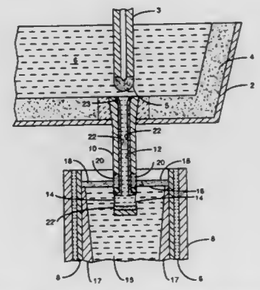
1. A solid, fired refractory article comprising in the range of 0.1 to 7.0 percent by weight iron equivalence and at least 60% alumina by weight in which at least 99 percent of the alumina is in the alpha phase having a uniform grain structure comprising alpha alumina crystallites wherein the average crystallite diameter is less than 0.5 micrometer and no grains are larger than 0.5 micrometer in diameter, the density of the article is greater than 90% of theoretical density, and the surface roughness height of said article is less than 100 nm.

5,185,300

EROSION, THERMAL SHOCK AND OXIDATION RESISTANT REFRACTORY COMPOSITIONS

Dale B. Hoggard, and Quentin K. Robinson, both of Allegheny County, Pa., assignors to Vesuvius Crucible Company, Pittsburgh, Pa.

Filed Mar. 11, 1991, Ser. No. 667,483
Int. Cl.[5] C04B *35/58*
U.S. Cl. 501—99 **10 Claims**



1. A refractory composition consisting essentially of, by weight:
(a) carbon supplied predominately from a graphite source in an amount of from about 4% to about 50%;
(b) zirconium di-boride in an amount of from about 20% to about 80%; and
(c) zirconia in an amount of from about 10% to about 75%.

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SINTER REACTIVE LANTHANUM CHROMITE AND PROCESS FOR MAKING IT

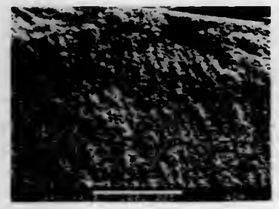
Beili Li, Morristown; Stephen Haig, Highland Park, and Jean Yamanis, Morristown, all of N.J., assignors to Allied-Signal Inc., Morristownship, N.J.

Continuation of Ser. No. 511,708, Apr. 20, 1990, abandoned. This application Jan. 21, 1992, Ser. No. 826,194

The portion of the term of this patent subsequent to Dec. 8, 2009, has been disclaimed.

Int. Cl.[5] C04B *35/04, 35/51, 35/42;* **C01G** *39/00*

U.S. Cl. 501—117 **5 Claims**



1. A process for the preparation of sinter-reactive lanthanum chromite doped with divalent metals and having the formula $LaCr_{1-x}M_xO_3$ where M is the divalent metal and x ranges from about 0.03 to 0.3, comprising the steps of:

i. preparing a lanthanum chromite precursor powder having the empirical formula $LaCr_{1-x}M_xO_3$ (Adsorbate) where M is magnesium or calcium, x ranges from about 0.03 to 0.3, and the Adsorbate is volatile matter, which is adsorbed on the powder and is present up to about 35 weight % based on total precursor weight, said precursor being prepared by:

a. reacting a solution containing a lanthanum compound and a chromium compound in an atomic ratio of La:Cr of 1:1-x with a stoichiometric excess of ammonium hydroxide to precipitate an intermediate hydroxide in the form of a slurry;

b. washing the precipitated intermediate hydroxide with a wash liquid comprising deionized (DI) water and DI water/alcohol mixtures to remove most of the anions from the lanthanum and chromium compounds used in step (a) and to yield a slurry in a water/alcohol liquid;

c. adding to the hydroxide slurry obtained in step (b) a solution of an M compound taken in such quantity as to yield an atomic ratio of La:Cr:M of 1:1-x:x where M is a divalent metal and is operative as a dopant;

d. separating the powder from the water/alcohol liquid at supercritical conditions, wherein temperature and pressure are equal to or greater than the critical point of the water/alcohol liquid, in a batch or continuous process to obtain precursor lanthanum chromite powder with empirical formula $LaCr_{1-x}M_xO_3$ (Adsorbate); and

ii. calcining the lanthanum chromite precursor having the empirical formula $LaCr_{1-x}M_xO_3$ (Adsorbate) at a temperature ranging from about 650 to 1100° C. for a time ranging from about 0.5 to 4 hours followed by deagglomeration to obtain a sinter-reaction ceramic powder having a chemical formula $LaCr_{1-x}M_xO_3$.

5,185,302

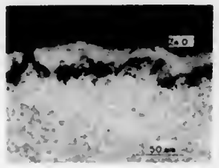
DENSE SKIN CERAMIC STRUCTURE AND METHOD OF MAKING THE SAME

Stanley J. Luszcz, Hockessin, Del., and Harry R. Zwicker, Elkton, Md., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 587,593, Sep. 24, 1990, abandoned, which is a continuation of Ser. No. 308,889, Feb. 9, 1989, abandoned, which is a continuation of Ser. No. 908,117, Sep. 16, 1986, Pat. No. 4,837,232. This application Oct. 17, 1991, Ser. No. 777,476

Int. Cl.[5] C04B *55/10;* **B32B** *18/00*

U.S. Cl. 501—127 **9 Claims**



1. A self-supporting structure comprising a first region substrate surmounted by a terminal region stratum which is integral with said first region substrate, said first region substrate comprising a ceramic matrix comprising interconnected polycrystalline oxidation reaction product of a parent metal and said terminal region stratum comprising a ceramic matrix comprising interconnected polycrystalline oxidation reaction product of said parent metal wherein the ceramic matrix of said first region substrate differs from the ceramic matrix of said terminal region stratum in at least one characteristic selected from the group consisting of composition and microstructure, and further wherein at least one of said first region substrate and said terminal region stratum comprise at least one filler material embedded by said ceramic matrix.

5,185,303

CERAMIC ARTICLES WITH TAILORED METALLIC COMPONENT

Robert C. Kantner; Michael A. Rocazella; Jerry G. Weinstein, all of Newark, Del., and Danny R. White, Elkton, Md., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 568,618, Aug. 16, 1990, Pat. No. 5,066,618, which is a continuation of Ser. No. 269,152, Nov. 9, 1988, abandoned, which is a continuation of Ser. No. 269,152, Nov. 9, 1988, abandoned, which is a continuation of Ser. No. 152,518, Feb. 5, 1988, Pat. No. 4,818,734, which is a continuation-in-part of Ser. No. 908,454, Sep. 17, 1986, abandoned. This application Nov. 14, 1991, Ser. No. 793,933

The portion of the term of this patent subsequent to Nov. 19, 2008, has been disclaimed.

Int. Cl.[5] C04B *35/65*

U.S. Cl. 501—127 **20 Claims**

1. A self-supporting ceramic composite body having a Rockwell A hardness of at least about 89 comprising:

(a) an interconnected ceramic matrix comprising about 60–99% by volume of a polycrystalline oxidation reaction product consisting essentially of alumina and the remainder by volume of said ceramic matrix consisting essentially of a metallic constituent contained within said interconnected ceramic matrix, said metallic constituent comprising at least one metallic phase, said at least one metallic phase comprising nonoxidized precursor metal and at least one second metal; and

(b) at least one filler material embedded by said interconnected ceramic matrix, said at least one filler material being substantially non-reactive with said precursor metal, whereby said ceramic composite body has at least one property modified by the presence of said second metal.

5,185,304

DIELECTRIC CERAMIC COMPOSITION OF BAO, TiO_2, ND_2O_3, SM_2O_3 AND BI_2O_3

Takami Hirai, Aichi; Shinsuke Yano, and Masahiro Abe, both of Nagoya, all of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Aug. 15, 1991, Ser. No. 745,180

Claims priority, application Japan, Aug. 20, 1990, 2-219716; Mar. 22, 1991, 3-83570

Int. Cl.[5] C04B *35/46*

U.S. Cl. 501—139 **13 Claims**

1. A dielectric ceramic composition consisting essentially of barium oxide, titanium oxide, neodymium oxide, samarium oxide and bismuth oxide, which are represented by $xBaO—yTiO_2—z[(1—a—b)Nd_2O_3—aSm_2O_3—bBi_2O_3]$, where $0.10 \leqq x \leqq 0.20$, $0.60 \leqq y \leqq 0.75$, $0.10 \leqq z \leqq 0.24$, $x+y+z=1$, $0<a \leqq 0.25$ and $0<b \leqq 0.30$.

5,185,305

CATALYST SYSTEM FOR TREATING THE EXHAUST FROM A LEAN-BURN GASOLINE-FUELED ENGINE

Somasundaram Subramanian, Melvindale, and Mohinder S. Chattha, Northville, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Nov. 8, 1991, Ser. No. 789,706

Int. Cl.[5] B01J *29/30*

U.S. Cl. 502—65 **9 Claims**

1. A catalyst system for converting NO_x, CO, and HC contained in the exhaust gas from a gasoline-fueled engine controlled to operate under lean-burn conditions such that the ratio of NO_x to HC in the exhaust is in the range of $\frac{1}{3}$ to 3/1, the system comprising:

(a) a first stage catalyst comprising a transition metal-containing zeolite for treating lean-burn exhaust gases; and

(b) a three-way catalyst for treating, in series only, the effluent from said first stage catalyst comprising a high surface area alumina support impregnated with an intimate mixture of 0.5–20% lanthana and 0.2–30% palladium.

5,185,306

PREVENTION OF NOBLE METAL MIGRATION IN BOUND ZEOLITES DURING THERMAL OXIDATION

Michelle J. Cohn, Mt. Prospect; R. Joe Lawson, Palatine, and Mark D. Moser, Elk Grove Village, all of Ill., assignors to UOP, Des Plaines, Ill.

Filed Jul. 24, 1991, Ser. No. 735,213

Int. Cl.[5] B01J *29/04, 37/00*

U.S. Cl. 502—66 **9 Claims**

1. A method of inhibiting the migration of a Group VIII metal from a molecular sieve particle to a binder particle in a carbonaceous deposit-free molecular sieve agglomerate comprising molecular sieve particles dispersed in a binder, said molecular sieve particles having deposited thereon at least one Group VIII zerovalent metal, where said migration occurs in a non-reducing atmosphere at a temperature greater than about 350° C. up to about 650° C. comprising adding to said atmosphere an effective amount of an anti-migratory agent which is chlorine, hydrogen chloride, or a chlorine-containing precursor of either chlorine or hydrogen chloride, or any combination of them.

2. The method of claim 1 where the molecular sieve particles are selected from the group consisting of silicalite, aluminophosphates, silica-aluminophosphates, transition metal-containing silica-aluminophosphates, zeolite X, zeolite Y, LZ-210, zeolite A, zeolite F, zeolite L, zeolite P, zeolite Q, zeolite W, clinoptilolite, mordenite, chabazite, errionite, ZSM-type zeolites, NU-type zeolites, faujasite, and phillipsite.

4. The method of claim 1 where the binder is selected from the group consisting of silicas, aluminas, silica-aluminas, titania, silica-zirconia, silica-magnesia, alumina-bona, alumina-titania, clay, and mixtures thereof or any combination thereof.

5,185,307

METHOD FOR PRODUCING A CELLULAR BODY

Ulf Hakansson, van Dürens Väg 22, S-222 30 Lund, and Lars Fälth, Videvägen 50, S-275 31 Sjöbo, both of Sweden

PCT No. PCT/SE90/00088, § 371 Date Aug. 9, 1991, § 102(e) Date Aug. 9, 1991, PCT Pub. No. WO90/09235, PCT Pub. Date Aug. 23, 1990

PCT Filed Feb. 9, 1990, Ser. No. 741,512

Claims priority, application Sweden, Feb. 10, 1989, 8900469

Int. Cl.[5] B01J *20/18*

U.S. Cl. 502—68 **8 Claims**

1. A method of producing a cellular body for absorption of organic substances wherein the cellular body includes spaced layers of inorganic fibers comprising the steps of:

A. forming a sludge of a hydrophobic zeolite and an inorganic binder;

B. Impregnating the inorganic fiber layers of the cellular body with the sludge; and

C. Thereafter heating the cellular body to a temperature at which sintering of the impregnated fibers occurs to form a stiff porous structure.

3. The method of claim 1 in which the sludge is an aqueous sludge and wherein the inorganic binder includes a clay.

5,185,308

CATALYSTS AND PROCESSES FOR THE MANUFACTURE OF VINYL ACETATE

William J. Bartley, Charleston, W. Va.; Simon Jobson, Hull, England; Gordon G. Harkreader, Charleston, W. Va.; Melanie Kitson, Buckinghamshire, England, and Michael F. Lemanski, Cleveland, Ohio, assignors to BP Chemicals Limited, London, England

Filed May 6, 1991, Ser. No. 696,215

Int. Cl.[5] B01J *31/28*

U.S. Cl. 502—170 **12 Claims**

1. A shell impregnated catalyst for use in the production of vinyl acetate from ethylene, acetic acid and an oxygen containing gas, said catalyst having a productivity of greater than 661 grams of vinyl acetate per hour per liter of catalyst at 150° C. and consisting essentially of:

(1) a catalyst support having a particle diameter from about 3 to about 7 mm and a pore volume of 0.2 to 1.5 ml per gram

(2) palladium and gold distributed in the outermost 1.0 mm thick layer of the catalyst support particles, and

(3) from about 3.5 to about 9.5% by weight of potassium acetate wherein the gold to palladium weight ratio in said catalyst is in the range 0.60 to 1.25.

5,185,309

FLUID CATALYST FOR USE IN GAS PHASE OXIDATION OF AROMATIC HYDROCARBONS

Toshinao Aono, Chiba; Yukio Asami; Noboru Hirooka, both of Tokyo; Yusaku Arima, Onga, and Susumu Fujii, Kitakyushu, all of Japan, assignors to Kawasaki Steel Corp., Hyogo, Japan

Filed Mar. 22, 1991, Ser. No. 673,962

Claims priority, application Japan, Mar. 27, 1990, 2-77233

Int. Cl.[5] B01J *21/02, 21/06;* **C07D** *307/89*

U.S. Cl. 502—202 **8 Claims**

1. A fluid catalyst for use in gas phase oxidation of an aromatic hydrocarbon consisting essentially of;

50 to 95% by weight, calculated as $TiO_2+SiO_2+B_2O_3$, of component (A) which comprises titanium oxide, silicon dioxide and boron oxide and

5 to 50% by weight calculated as $V_2O_5+M_2O$, wherein M is an alkali metal $+SO_3$ of component (B) comprising vanadium oxide, an alkali metal oxide and sulfuric anhydride, wherein the weight ratios of B_2O_3 to TiO_2 and SiO_2 to TiO_2 in component (A) are in the range of 0.02 to 0.5 and 0.25 to 1.0, respectively, and wherein the weight ratios of SO_3 to M_2O and M_2O to V_2O_5 in component (B) are in the range of 0.1 to 6.0 and 0.1 to 5.0, respectively,

VOL 1147 ISS 2 FE 9 1993 UMI

wherein said V_2O_5 in the catalyst is in the range of 1 to 30% by weight,
and wherein said catalyst is prepared using a titanium oxide source capable of forming titanium oxide having a crystallite diameter of not more than 30 nm when dried at a temperature of about 300° C.,
and wherein said catalyst is prepared by a process which comprises the steps of
(a) mixing compounds as respective sources of titanium oxide, silicon dioxide, boron oxide, vanadium oxide, alkali metal oxide, and sulfuric anhydride,
(b) spray drying the mixture of step (a) and
(c) calcinating the spray dried powder of step (b).

5,185,310
ACTIVATING SILICOALUMINOPHOSPHATE COMPOSITIONS

Thomas F. Degnan, Morrestown, N.J.; Sharon B. McCullen, Newtown, Pa.; Kirk D. Schmitt, Pennington, and George H. Hatzikos, Mantua, both of N.J., assignors to Mobil Oil Corp., Fairfax, Va.

Filed Jan. 31, 1992, Ser. No. 829,149
Int. Cl.[5] B01J *29/02, 27/18*
U.S. Cl. 502—214 **19 Claims**

19. A crystalline silicoaluminophosphate catalyst composite consisting essentially of a mixture of a crystalline silicoaluminophosphate having $Si(OSi)_4$ type silicon and about 10 to 90 weight percent of aluminum oxyhydroxide, said composite being treated by exposure to elevated temperatures of at least 450° C. in the presence of nitrogen and then air, in order to substantially increase the catalytic activity of said mixture.

5,185,311
CATALYTIC COMPOSITE FOR PURIFYING EXHAUST GASES AND A METHOD FOR PREPARING THE SAME

Kenji Tabata; Ikuo Matsumoto, both of Ikoma, and Hiroshi Fukuda, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 15, 1991, Ser. No. 700,685
Int. Cl.[5] B01J *23/10, 23/44*
U.S. Cl. 502—304 **7 Claims**

1. A catalytic composite for purifying exhaust gases, comprising: a heat resistant carrier made of an inorganic oxide selected from the group consisting of cordierite and mullite; at least one compound of the formula RMO_3, where R is La or a combination of La and Ce, and M is Co, Mn or a combination thereof; cerium dioxide; alumina sol; iron; and palladium, the compound RMO_3, the cerium dioxide, the alumina sol, the iron and the palladium all being supported on the heat resistant carrier.

5. A method for preparing a catalytic composite for purifying exhaust gases, comprising the steps of: (a) supporting at least one compound of the formula RMO_3, where R is La or a combination of La and Ce, and M is Co, Mn or a combination thereof, cerium dioxide, and alumina sol on a heat resistant carrier made of an inorganic oxide selected from the group consisting of cordierite or mullite; and (b) supporting iron and palladium on the carrier obtained in the step (a).

5,185,312
METHOD OF PRODUCING A CATALYST FOR THE DECOMPOSITION OF HYDRAZINE

Fujio Mizukami; Tsuneji Sano, both of Tsukuba, and Koji Masuda, Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd. and Agency of Industrial Science & Technology, both of, Japan

Filed Feb. 14, 1992, Ser. No. 834,962
Claims priority, application Japan, Feb. 15, 1991, 3-42276
Int. Cl.[5] B01J *21/04, 23/46, 37/02*
U.S. Cl. 502—332 **3 Claims**

1. A method of producing a catalyst for the decomposition of hydrazine by impregnating alumina with a solution of an iridium (Ir) salt in a solvent and then drying and firing it, characterized in that ethyl alcohol is used as the solvent dissolving the iridium salt and said alumina is obtained by adding aluminum alkoxide to hexylene glycol (2-methyl-2,4-pentane diol), heating it at a temperature of 101° C. to 200° C. to form a sol, hydrolying the resulting sol to prepare a gel, drying the resulting gel and finally firing it at a temperature of not lower than 750° C.

5,185,313
ADSORBENT FOR METAL IONS, PROTEINS AND OTHER INORGANIC AND ORGANIC SUBSTANCES

Jerker O. Porath, Lidingö, Sweden, assignor to Exploaterings AB T.B.F., Upsala, Sweden

PCT No. PCT/SE89/00510, § 371 Date Jun. 17, 1991, § 102(e) Date Jun. 17, 1991, PCT Pub. No. WO90/07376, PCT Pub. Date Jul. 12, 1990
PCT Filed Sep. 21, 1989, Ser. No. 690,900
Claims priority, application Sweden, Dec. 30, 1988, 8804701
Int. Cl.[5] B01J *20/26*
U.S. Cl. 502—402 **17 Claims**

1. Adsorbing agent for metal ions and proteins having a structure P-D-L, wherein P is a polymer, D is a crosslinking bridge connecting P with a ligand L comprising one or more heteroaromatic ring systems with at least one ring nitrogen N^1, which together with a proximal ring atom C^2 forms a terminal N^1 - C^2 - in an atom sequence A: N^1 -C^2 -C^3n - N^{n+3}-, wherein n is 1 or 2, and wherein the other terminal of which, -C^3n-N^{n+3}-(i) is an integral part of a heteroaromatic ring system with one or more heteroatoms and through D is attached to P, (ii) is included in at least one exocyclic side group to the heterocyclic ring and through D attached to the polymer P, (iii) is included in both a heteroaromatic ring system and at least one exocyclic side group, or (iv) is joined to two exocyclic side groups through a common nitrogen atom of said -$c^3{}_n$-N^{n+3}-.

5,185,314
HEAT TRANSFER SHEET

Hideo H. F. Fujimura; Noritaka N. E. Egashira; Tamami T. I. Iwata, and Naoto N. S. Satake, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Continuation of Ser. No. 455,968, Dec. 13, 1989, abandoned. This application Feb. 7, 1992, Ser. No. 832,480
Claims priority, application Japan, Dec. 13, 1988, 63-312878; Dec. 16, 1988, 63-316323
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 **9 Claims**

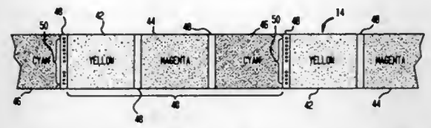
1. A heat transfer sheet comprising:
a substrate film comprising a first surface and an opposed second surface, said substrate film comprising an annealed polyethylene naphthalate film;
a heat migratable dye layer formed on said first surface of said substrate film, said heat migratable dye layer comprising a dye and a binder; and
a heat-resistant layer formed on said second surface of said substrate film.

5,185,315
MAKING ENCODED DYE-DONOR FILMS FOR THERMAL PRINTERS

Steven J. Sparer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 21, 1991, Ser. No. 658,736
Int. Cl.[5] B41M *5/035, 5/26*
U.S. Cl. 503—227 **4 Claims**

1. A method of making a dye-donor film for thermal printing comprising the steps of:
coating one side of a clear web with successive sets of colored patches of dyes in a gravuring process leaving clear spaces between the successive sets of patches; and
subsequently printing a color balancing and film length code marking in the clear spaces between each set of dye patches after all the successive sets of dye patches are coated onto the web, said color balancing and film length

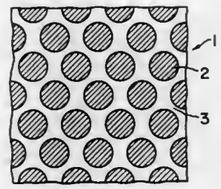


code markings for each set of associated dye patches containing color balancing information and frame count information for said set of associated dye patches.

5,185,316
HEAT TRANSFER IMAGE-RECEIVING SHEETS

Noritaka Egashira; Yoshinori Nakamura, and Ryohei Takiguchi, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

Filed Nov. 6, 1990, Ser. No. 609,640
Claims priority, application Japan, Nov. 7, 1989, 1-287963; Dec. 29, 1989, 1-342975
Int. Cl.[5] B41M *5/035, 5/38*
U.S. Cl. 503—227 **5 Claims**



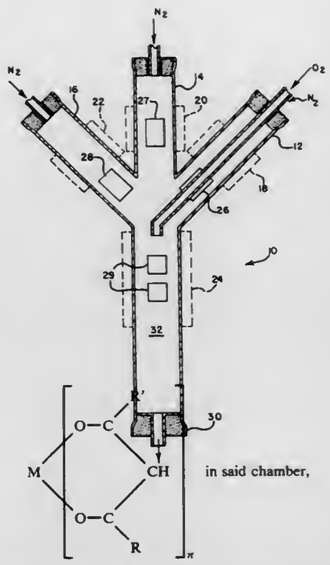
1. A heat transfer image-receiving sheet comprising a substrate sheet and a dye-receiving layer formed on at least one surface of said substrate sheet, said dye-receiving layer comprising at least two microscopically separated phase regions of resins differing in dyeability, said phase regions comprising (i) a dispersion phase of a lipophilic resin having improved dyeability and (ii) a dispersion medium phase of a hydrophilic resin, wherein lipophilic additives for improving color development and light resistance are incorporated substantially in said dispersion phase alone.

5,185,317
METHOD OF FORMING SUPERCONDUCTING TL-BA-CA-CU-O FILMS

Bruce W. Wessels, Wilmette; Tobin J. Marks; Darrin S. Richeson, both of Evanston, all of Ill.; Lauren M. Tonge, Sanford, Mich., and Jiming Zhang, Chicago, Ill., assignors to Northwestern University, Evanston, Ill.

Continuation of Ser. No. 436,078, Nov. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 158,322, Feb. 19, 1988. This application Apr. 25, 1991, Ser. No. 691,477
Int. Cl.[5] B05D *5/12;* **C23C** *16/00*
U.S. Cl. 505—1 **10 Claims**

1. A method for the preparation of a superconducting ceramic film by chemical vapor deposition comprising the steps of:
(a) flushing at least one vaporization chamber with an inert gas;
(b) placing at least three metal organic compounds of the formula



in said chamber,
where R and R' are selected from the group consisting of alkyls, alkoxides, and fluorinated alkyls, the first metal organic compound having M=Ba, the second metal organic compound having M=Cu, and the third metal organic compound having M=Ca;
(c) heating each metal organic compound to its vaporizing temperature to cause a source flow comprising vapors of each metal organic compound in said chamber;
(d) transporting said vapors into a deposition chamber;
(e) heat a substrate to a temperature of 400°–800° C;
(f) initiating a flow of oxygen into said deposition chamber;
(g) depositing a film from said vapors onto said substrate in said deposition chamber;
(h) terminating said source flow;
(i) adjusting the temperature of said substrate to the range of 600°–950° C. to thereby anneal said film; and
(j) heat said annealed film in the range of 600°–950° C. under air in a closed circular vesel with $TlBa_2Ca2Cu_3O_z$ and cool to form said superconducing ceramic film of $TlO_mBa_2Ca_{n-1}Cu_nO_{2n+2}$; wherein m=1,2; n=1,2,3.

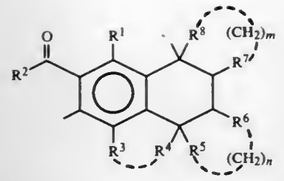
5,185,318
AROMATIC COMPOUNDS, A PROCESS FOR PREPARATION THEREOF AND USE OF SAME AS PERFUMING INGREDIENTS

Charles Fehr, Versoix, and José Galindo, Les Avanchets, both of Switzerland, assignors to Firmenich S.A., Geneva, Switzerland

Division of Ser. No. 544,285, Jun. 26, 1990. This application Jan. 6, 1992, Ser. No. 817,223
Claims priority, application Switzerland, Jun. 30, 1989, 2454/89
Int. Cl.[5] A61K *7/46*
U.S. Cl. 512—16 **8 Claims**

1. A method to improve, enhance or modify the odor properties of a perfuming composition or perfumed article, which method comprises adding to said composition or article an odor effective amount of a compound of formula

VOL
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(I)

wherein

a) indexes m and n are identical and stand each for an integer number equal to zero, symbols R^1 and R^2 are identical and represent each a hydrogen atom, or are different and represent each a hydrogen atom or a methyl radical, symbols R^5 and R^8 stand each for a methyl radical, symbols R^6 and R^7 can be identical or different and designate each a hydrogen atom or a methyl radical and, either symbol R^4 represents a methyl radical and symbol R^3 stands for a hydrogen atom or a methyl radical, or symbols R^3 and R^4 represent each a methylene radical belonging to a ring such as indicated by the dotted line, with the proviso that the following combinations are excluded:
1. $R^1=R^2=R^3=R^6=R^7=H$, or
2. $R^1=R^2=R^3=H$ and R^6 or $R^7=CH_3$, or
3. $R^2=CH_3$ and $R^3=R^6=R^7=H$, or
4. $R^2=CH_3$ and $R^3=H$ and R^6 or $R^7=CH_3$, or
5. $R^1=R^3=CH_3$, or
6. $R^3=R^4=CH_2$ and R^6 or $R^7=CH_3$;

or wherein

b) indexes m and n are different and define each an integer number equal to 0 or 1, symbol R^2 stands for a hydrogen atom or a methyl radical, symbols R^1 and R^3 designate each a hydrogen atom, symbol R^4 represents a methyl radical and, either symbols R^5 and R^6 are identical (n=1) and represent each a methylene radical belonging to a ring such as indicated by the dotted line, R^7 representing a hydrogen atom and R^8 a methyl radical, or symbol R^5 stands for a methyl radical and symbol R^6 for a hydrogen atom, R^7 and R^8 being then identical (m=1) and designating each a methylene radical belonging to a ring such as indicated by the dotted line;

or any mixture of two or more structural isomers of formula (I).

5,185,319

STABILIZATION OF ORGANIC COMPOUNDS

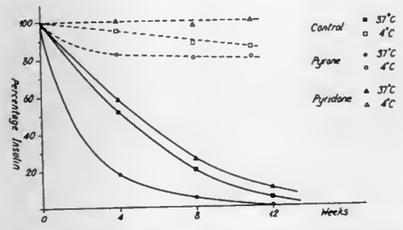
Robert C. Hider, Clacton, and Michael A. Stockham, Saffron Waldon, both of England, assignors to National Research Development Corporation, London, England

Filed May 3, 1990, Ser. No. 520,203

Claims priority, application United Kingdom, May 8, 1989, 8910521

Int. Cl.[5] **A61K** *37/26;* **C07K** *5/00*

U.S. Cl. 514—3 **13 Claims**



1. A mixture of an insulin and a 3-hydroxypyrid-4-one in which the hydrogen atom attached to the nitrogen atom is substituted by an aliphatic acyl group, by an aliphatic hydrocarbon group, or by an aliphatic hydrocarbon group substituted by one or more substituents selected from the group consisting of aliphatic acyl, alkoxy, cycloalkoxy, aliphatic amide, aliphatic ester, halogen and hydroxy groups and in which the carbon atoms of the ring of the 3-hydroxypyrid-4-one each separately are either unsubstituted or substituted by an aliphatic acyl, alkoxy, cycloalkoxy, aliphatic amide, aliphatic ester, halogen or hydroxy group, by an aliphatic hydrocarbon group, or by an aliphatic hydrocarbon group substituted by an alkoxy, cycloalkoxy, aliphatic ester, halogen or hydroxy group, or a salt thereof, but excluding any occurrence of the mixture in vivo.

5,185,320

O^{56}-ALKYL DERIVATIVES OF AGLYCONE AND PSEUDO AGLYCONES OF TEICOPLANIN

Aldo Trani, Milan; Pierfausto Seneci, Brescia; Pietro Ferrari, Ferriere, and Romeo Ciabatti, Novate Milanese, all of Italy, assignors to Gruppo Lepetit S.p.A., Milan, Italy

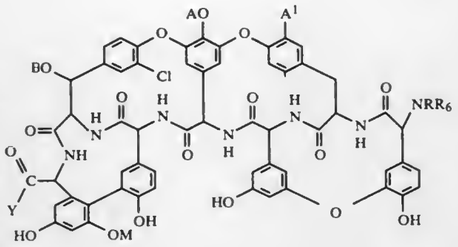
Division of Ser. No. 499,221, Mar. 26, 1990, abandoned. This application May 22, 1991, Ser. No. 707,247

Claims priority, application European Pat. Off., Apr. 3, 1989, 89105822.4

Int. Cl.[5] **C07K** *7/50, 9/00;* **A61K** *37/02*

U.S. Cl. 514—8 **6 Claims**

1. A teicoplanin derivative of formula I:



wherein

A represents (C_1-C_6)alkyl, (C_5-C_6)cycloalkyl, (C_5-C_6)cycloalkyl(C_1-C_4)alkyl, (C_1-C_4)alkoxy-(C_1-C_4)alkyl, hydroxy(C_1-C_6)alkyl, epoxy-(C_3-C_6)alkyl, 4–7 membered saturated or unsaturated cyclic lactone moieties selected from the group consisting of dihydrooxofuryl, tetrahydrooxofuryl, perhydrooxopyranyl, oxooxepyl and the tautomers thereof, halo(C_1-C_6)alkyl, cyano(C_1-C_6)alkyl, phenyl(C_1-C_4)alkyl wherein the phenyl ring is further substituted with substituent selected from chloro, bromo, iodo, (C_1-C_3)alkyl, (C_1-C_3)alkoxy, cyano, amino, and hydroxy; a group of formula $(CH_2)_2$ $(CO)_r$—R^{13} wherein one of the hydrogen atoms of a CH_2 unit is replaced by a hydroxy-(C_1-C_4)alkyl group, s represents an integer from 1 to 6, t represents zero of 1, and R^{13} represents hydroxy, (C_1-C_4) alkoxy or a 5–10 membered saturated, partially unsaturated or aromatic heterocyclic ring containing from 1 to 3 heteroatoms independently selected from nitrogen and oxygen, which are further optionally substituted on the ring carbons with 1 to 3 groups independently selected from oxo, chloro, bromo, and (C_1-C_3)alkyl, said ring selected from the group consisting of pyridinyl, pyrimidinyl, pyrazinyl, pyrrolidinyl, piperidinyl, piperazinyl, oxazolyl, oxazolinyl, oxazolidinyl, pyrazolinyl, pyrazolidinyl, thiazolidinyl, morpholinyl, thiomorpholinyl, pyrrolyl, pyrrolinyl, imidazolyl, imidazolidinyl, thiadiazolyl, oxadiazolyl, tetrazolyl, benzofuryl, benzopyranyl, benzopyrazolyl, purinyl, indazolyl, indolyl, 1,3-dihydro-1,3-dioxo-2H-isoindol-2-yl, isoindolyl, indolizinyl, quinolinyl, isoquinolinyl, quinozolinyl, and phtheridinyl; or a group of formula

$$[(CH_2)_s\,(CO)_t\,NR^{14}]_u\,R^{15}$$

wherein one of the hydrogen atoms of a CH_2 unit is replaced by a hydroxy(C_1-C_4)alkyl group, s and t are defined as above, u represents an integer from 1 to 6, R^{14} represents a group selected from hydrogen, (C_1-C_3)alkyl, $(CH_2)_sNH_2$, $(CH_2)_sNH$ (C_1-C_2)alkyl, and $(CH_2)_s$ $N[(C_1$-$C_2)alkyl]_2$, wherein s is defined as above, and R^{15} represents hydrogen, (C_1-C_4)alkyl, $(CH_2)_s$ — COO(C_1-C_4)alkyl or (C_5-C_6)cycloalkyl;

A^1 represents chloro or hydrogen;

R represents hydrogen, (C_1-C_2)alkyl, (C_4-C_7)cycloalky, cyano (C_1-C_3)alkyl, —$(CH_2)_q$—OOC—(C_1-C_6)alkyl, wherein q is an integer selected from 1, 2, 3 and 4, substituted in the position ortho, meta and/or para with 1 to 3 groups selected from (C_1-C_4)alkyl, nitro, bromo, chloro, iodo, (C_1-C_4)alkoxy, and phenyl;

R^6 represents hydrogen, C_1-C_{12}alkyl, (C_4-C_7)cycloalkyl, cyano (C_1-C_3)alkyl, —$(CH_2)_r$—OOC— (C_1-C_6)alkyl, wherein r is an integer selected from 1, 2, 3 and 4, or phenyl (C_1-C_4)alkyl wherein the phenyl group is optimally substituted in the position ortho, meta and/or para with 1 to 3 groups selected from (C_1-C_4)alkyl, nitro, bromo, chloro, iodo, (C_1-C_4)alkoxy, and phenyl; or

R^6 represents a group $[CHR^7\,(CR^9\,R^9)_m X]_n$—$R^{10}$ wherein

R^7 and R^8 independently represent H or a (C_1-C_6)alkyl;

R^9 represents H, a (C_1-C_6)alkyl or OH;

R^{10} represents H, a (C_1-C_3)alkyl, $COOR^{11}$, OR^{11}, SR^{11}, $NR^{11}R^{12}$ or halogen;

R^{11} and R^{12} independently represent H or a (C_1-C_3)alkyl; m is zero or 1, n is an integer between zero and 6;

X is , NH or a bond with the proviso that when X is O or NH, then n is different from zero and R^9 is different from OH; with the proviso that when one between R and R^6 represents $(CH_2)_n$—OOC—(C_1-C_6)alkyl the other must represent hydrogen;

Y represents OR^{16} wherein R^{16} represents hydrogen, halo(C_1-C_4)alkyl, hydroxy(C_1-C_4)alkyl, (C_1-C_4)alkyl or phenyl(C_1-C_4)alkyl, wherein the phenyl ring is optionally substituted with 1 to 3 groups selected from (C_1-C_3)alkyl, (C_1-C_3)alkoxy, chloro, bromo and iodo; a group

$$(CH_2)_s(CO)_t—R^{13}\text{ or}$$

$$—[(CH_2)_s(CO)_tNR^{14}]_uR^{15}$$

wherein these groups are as defined above for the substituent A, or Y represents a group —NR^1R^2 wherein R^1 represents hydrogen, (C_1-C_6)alkyl, hydroxy-(C_2-C_4)alkyl, halogen(C_2-C_4)alkyl, (C_1-C_4)alkoxy-(C_2-C_4)alkyl, amino(C_2-C_4)alkyl, (C_1-C_4)alkylamino-(C_2-C_4)alkyl or di(C_1-C_4)alkylamino(C_2-C_4)alkyl;

R^2 represents hydrogen, (C_1-C_6)alkyl, hydroxy-(C_2-C_4)alkyl, halo(C_2-C_4)alkyl, (C_1-C_4)alkoxy(C_2-C_4)alkyl or a nitrogen containing 5–6 membered heterocyclic ring which is unsaturated, partially saturated or wholly saturated and optionally contains 1 to 3 further heteroatoms selected from N, S and O, said ring selected from the group consisting of pyridinyl, pyrimidinyl, pyrazinyl, pyrrolidinyl, piperidinyl, piperazinyl, oxazolyl, oxazolinyl, oxazolidinyl, pyrazolinyl, pyrazolidinyl, thiazolidinyl, morpholinyl, thiomorpholinyl, pyrrolyl, pyrrolinyl, imidazolyl, imidazolidinyl, thiadiazolyl, oxadiazolyl, tetrazolyl, 1-azabicyclo[2.2.2]octane, 1,4-diazabicyclo[3.2.2-]nonane, 1-azabicyclo[2.2.1]heptane, 1-azabicyclo[3.2.-1]octane, 8-azabicyclo[3.2.1]octane, 3-azabicyclo[3.2.-1]octane, 1-azabicyclo[3.3.1]nonane, 9-azabicyclo[3.3.1-]nonane, 3,8-diazabicyclo[3.2.1]octane, 2-azabicyclo[2.2.1]heptane, 2-azabicyclo[2.2.2]octane and 3-azabicyclo[3.2.2]nonane, wherein 1 to 3 of the ring carbons optionally bears (C_1-C_4)alkyl substituents and one of the nitrogen rings optionally bears a substituent R^5 selected from (C_1-C_4)alkyl, (C_4-C_7)cycloalkyl, phenyl optionally substituted with halogen or (C_1-C_4)alkyl, phenyl (C_1-C_4)alkyl, pyridyl and (C_1-C_4)alkylpyridinio, and when the ring is wholly saturated two of the ring members are optionally bridged by an alkylene chain of 1 to 3 carbon atoms wherein one of the methylene groups is optionally replaced by —NH— or —N[(C_1-C_4)alkyl]; a group —alk—W wherein "alk" represents a linear alkylene chain of 1 to 8 carbon atoms which is optionally substituted with a substituent selected from (C_1-C_4)alkyl, hydroxy (C_1-C_4)alkyl, hydroxy, carboxy aminocarbonyl, (C_1-C_4)alkylaminocarbonyl, di(C_1-C_4)alkylaminocarbonyl, (C_1-C_4)alkylcarbonyl, phenyl (C_1-C_4)alkoxycarbonyl, and (C_1-C_4) alkoxycarbonyl; and W represents a carboxy, (C_1-C_4)alkoxycarbonyl, and phenyl (C_1-C_4)alkoxycarbonyl, aminocarbonyl, (C_1-C_4)alkylaminocarbonyl, di(C_1-C_4)alkylaminocarbonyl, ureido, guanidino, a nitrogen containing 5–6 membered heterocyclic ring defined as above, a group of the formula —NR^3R^4 wherein R^3 and R^4 each independently represent hydrogen, (C_1-C_6)alkyl, hydroxy(C_2-C_4)alkyl or halo(C_2-C_4)alkyl or R^4 represents phenylmethyloxycarbonyl and R^3 represents hydrogen; or R^1 and R^2 taken together with the adjacent nitrogen atom represent a saturated 5–7 membered heterocyclic ring which optionally bears one to two (C_1-C_4)alkyl substituents on the ring carbons and optionally contains a further hetero group selected from —O—, —S—, and —NR^5— wherein R^5 is defined as above, said ring selected from the group consisting of morpholinyl, piperidinyl, piperazinyl, thiomorpholinyl, pyrazolidinyl, 1,3-oxazolidinyl, 1,3-thiazolidinyl and hexahydroazepinyl;

B represents hydrogen or N-acetyl-beta-D-2-deoxy-2-aminoglucopyranosyl;

M represents hydrogen or alpha-D-mannopyranosyl; with the proviso that when W represents a group —NR^3 R^4, ureido, guanidino or a nitrogen containing 5–6 membered heterocyclic ring as defined above directly connected with the "alk" moiety through a bond with a ring nitrogen atom, the linear alkylene "alk" moiety must be of at least two carbon atoms; or a pharmaceutically acceptable addition salt thereof.

6. A method of treating bacterial infections comprising administering to a patient in need thereof an antibacterially effective amount of a compound of claim **1**.

5,185,321

PROCESS FOR PRODUCING IMMUNOSTIMULANTS

Harriet Link, Vevey, and Jean-Jacques Pahud, Mont-Pelerin, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Nov. 27, 1990, Ser. No. 619,119

Claims priority, application Switzerland, Dec. 13, 1989, 4484/89

Int. Cl.[5] **A61K** *37/18;* **C07K** *1/12;* **C12P** *21/06;* **A23C** *21/08*

U.S. Cl. 514—8 **32 Claims**

1. A process for preparing an immunostimulant milk-based product comprising:

adding a lysozyme to a culture of *L. bulgaricus* at a pH of from 4 to 8, incubating the culture to hydrolyze peptidoglycans of cell walls of the *L. bulgaricus,* and then collecting a suspension containing the lysozyme-treated *L. bulgaricus;*

centrifuging the suspension to obtain a supernatant and collecting the supernatant; and

adding the supernatant to a whey product or a fermented milk to obtain an immunostimulant milk-based product.

5,185,322

HUMAN GROWTH HORMONE INDUCED IMPROVEMENT IN DEPRESSED T4/T8 RATIO

Kenneth A. Kudsk, Memphis, Tenn., assignor to The University of Tennessee Research Corporation, Knoxville, Tenn.

Filed Oct. 4, 1991, Ser. No. 770,919

Int. Cl.[5] **A61K** *37/36*

U.S. Cl. 514—12 **27 Claims**

1. A method for increasing the T4/T8 ratio in a human with

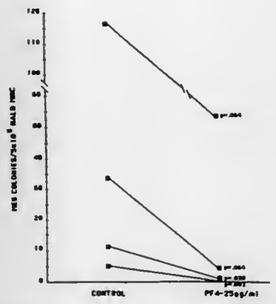
VOL 1147 ISS 2 FEB 9 1993 UMI

a depressed T4/T8 ratio comprising administering an amount of human growth hormone effective to increase the ratio to a level normal for said human.

5,185,323
SUPPRESSION OF MEGAKARYOCYTOPOIESIS EMPLOYING PLATELET FACTOR 4 ANTIMATURATION FACTOR

Alan M. Gewirtz, Philadelphia, Pa., assignor to Temple University, Philadelphia, Pa.

Filed Mar. 31, 1988, Ser. No. 175,552
Int. Cl.[5] C07K *15/06*
U.S. Cl. 514—12 **27 Claims**



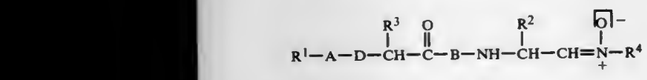
1. A method for reducing the number of circulating platelets in the bloodstream of a mammal, comprising administering to the mammal a sufficient amount of Antimaturation factor to effect said reduction.

5,185,324
ENZYME-INHIBITING AMINO ACID DERIVATIVES, A PROCESS FOR THE PREPARATION THEREOF, AGENTS CONTAINING THESE, AND THE USE THEREOF

Wolfgang Rüger; Hansjörg Urbach; Dieter Ruppert, and Bernward Schölkens, all of Taunus, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 12, 1989, Ser. No. 448,903
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1988, 3842067
Int. Cl.[5] A61K *37/00*; C07K *5/00*
U.S. Cl. 514—18 **3 Claims**

1. A compound of the formula I



(I)

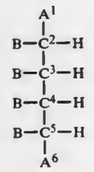
in which
R^1=C_1–C_6-alkyl, C_1–C_6-alkoxy, C_1–C_6-alkyl-amino,
R^2=C_5–C_7-alkyl-C_1–C_2-alkyl,
R^3=phenyl-C_1–C_2-alkyl,
R^4=C_1–C_6-alkyl, C_1–C_4-alkoxycarbonyl-C_1–C_6-alkyl, or C_5–C_7-cycloalkyl-C_1–C_2-aikyl;
A=CO
V=norvaline or histidine; and
D=NH
or physiologically tolerated salts thereof.

5,185,325
COSMETIC COMPOSITION

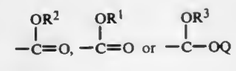
Peter R. Brawn, Bedford, and Walter T. Gibson, Wellingborough, both of England, assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Continuation of Ser. No. 368,745, Jun. 20, 1989, abandoned. This application Nov. 20, 1991, Ser. No. 798,273
Claims priority, application United Kingdom, Jun. 23, 1988, 8814982; Dec. 22, 1988, 8830018
The portion of the term of this patent subsequent to May 14, 2008, has been disclaimed.
Int. Cl.[5] A61K *7/06, 7/48*
U.S. Cl. 514—23 **10 Claims**

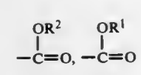
1. A composition suitable for topical application to mammalian skin or hair for inducing, maintaining or increasing hair growth which comprises:
(i) an effective amount of a glycosaminoglycanase inhibitor selected from:
(a) aldonomonolactone or alduronomonolactone derivatives having the structure:



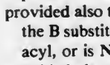
where
A^1 is



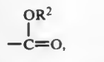
A^6 is



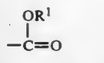
or $—CH_2OR^3$
B is $—OR^3$, $—NHR^3$, $—NHR^4$, or a lactone linkage to position 1 or 6, and/or an ether linkage to Q;
said substituents B being the same or different, and being in either configuration, with respect to the backbone of the above structure, on positions C^2 to C^5 not involved in a lactone ring;
and where
R^1 is —H, C_1 to C_{20} alkyl, a metal cation, NH^4+ or an alkanolamine cation;
R^2 is the remainder of the molecule joined through another C atom at positions 2 to 5 to form a lactone,
R^3 is —H, $—CH_3$, benzyl or C_2 to C_6 acyl;
R^4 is —H, $—CH_3$, benzyl or C_3 to C_6 acyl;
Q is the remainder of the molecule joined through an ether ring selected from pyranose with linkage to C^4 and furanose with linkage to C^5;



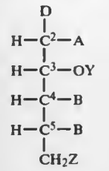
provided that either A^1 or A^6 is —C═O;
provided also that, when A^6 is CH_2OH, then one or more of the B substituents is OR^3 in which R^3 is $—CH_3$ or C_2 to C_4 acyl, or is NHR^3;
provided also that when A^1 is



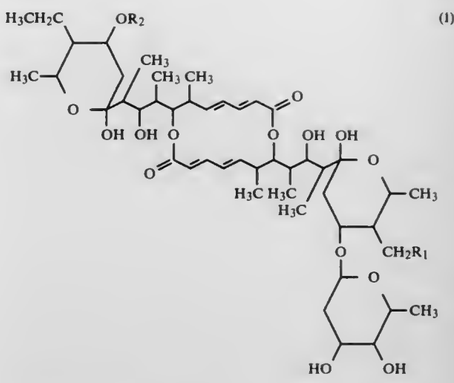
and all B substituents are —OH, then
A^6 is



or $—CH_2OR^3$, and R^1 is C_1 or C_9 to C_{20} alkyl;
(b) acylated monosaccharides having the structure:

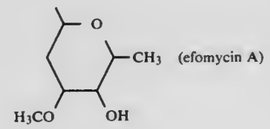


where A or —OY or $—NHR^5$
B is —OY, or an ether linkage to D,
D is —CHOY, where X is an ether



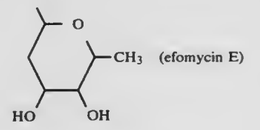
(I)

in which
R^1 represents methyl and
R^2 represents a radical of the formula



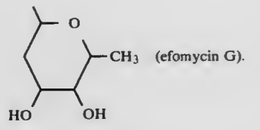
(efomycin A)

or
R^1 represents methyl and
R^2 represents a radical of the formula



(efomycin E)

or
R^1 represents hydrogen and
R^2 represents a radical of the formula



(efomycin G).

ring selected from pyranose with linkage to C^4 and furanose with linkage to C^5;
Y is —H, $—SO_3M$, C_2 to C_4 acyl or C_1 to C_{18} alkyl;
said substituents A, B & OY being the same or different, and being in either configuration, with respect to the backbone of the structure;
and where
Z is —H or —OY
R^5 is —H, $—SO_3M$ or C_3 or C_4 acyl,
M is —H, a metal cation, NH_4+ or an alkanolamine cation, provided that, when R^5 is —H, or when A is OY, then 1 or more of Y is chosen from $—SO_3M$ or C_2 to C_4 acyl; and mixtures thereof; and
(ii) a cosmetically acceptable vehicle for the inhibitor;
the effective amount of the inhibitor present in the composition being sufficient to increase hair growth in the rat, when said composition is applied topically thereto over a period of no more than 3 months, by at least 10% more than that obtainable using a control composition from which the said inhibitor has been omitted, in accordance with the Rat Hair Growth Test.

5,185,326
EFOMYCINS A, E AND G AS ANTIINFLAMMATORY AGENTS

Hartwig Müller, Velbert; Erwin Bischoff, Wuppertal; Burkhard Fugmann, Wuelfrath; Karlheinz Weber; Klaus Frobel, both of Wuppertal; Bruno Rosen, Wuelfrath; Rudi Grützmann, Solingen, all of Fed. Rep. of Germany; Guenther Karmann, West Haven, Conn., and Christian Kohlsdorfer, Erftstadt, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 3, 1991, Ser. No. 709,902
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1990, 4019024
Int. Cl.[5] A61K *31/70, 31/71*
U.S. Cl. 514—23 **4 Claims**

1. A method of inhibiting the adhesion of leukocytes to vascular endothelial cells which comprises treating such cells with an effective amount therefore of a compound of the formula

VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,327

GLUCAN DERIVATIVES HAVING TUMORICIDAL ACTIVITY

Kei Matsuzaki, Tokyo; Iwao Yamamoto, Ueda; Akira Misaki, Kobe, and Yoshiaki Sone, Izumisano, all of Japan, assignors to Ajinomoto Company, Inc., Tokyo, Japan

Continuation of Ser. No. 16,883, Feb. 20, 1987, Pat. No. 4,973,581. This application Aug. 24, 1990, Ser. No. 572,231
The portion of the term of this patent subsequent to Nov. 27, 2007, has been disclaimed.
Int. Cl.[5] A61K *31/715;* C07H *1/00, 3/00*
U.S. Cl. 514—54 6 Claims

5. A pharmaceutical composition comprising:

(i) a glucan derivative made up of a β-1,3-glucan main chain having a degree of branching between 5% and 60% wherein branching side chains are selected from the group consisting of galactopyranose, L-arabinofuranose, oligomers of galactopyranose, oligomers of L-arabinofuranose, acylated derivatives thereof, mixed oligomers thereof; and mixtures thereof; and

(ii) a pharmaceutically acceptable carrier or diluent.

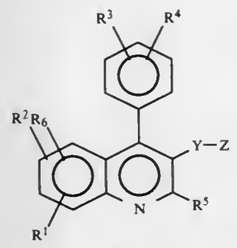
5,185,328

QUINOLINE TYPE MEVALONOLACTONES USEFUL FOR TREATING HYPERLIPIDEMIA, HYPERLIPOPROTEINEMIA OR ATHEROSCLEROSIS

Yoshihiro Fukikawa; Mikio Suzuki; Hirosbi Iwasaki, all of Funabasbi; Mitsuaki Sakashita, and Masaki Kitahara, both of Shiraoka, all of Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

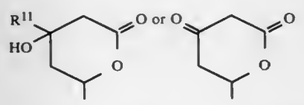
Division of Ser. No. 233,752, Aug. 19, 1988. This application Feb. 23, 1990, Ser. No. 483,829
Claims priority, application Japan, Aug. 20, 1987, 62-207224; Jan. 26, 1988, 63-15585
Int. Cl.[5] A61K *31/675;* C07F *7/02;* C07D *215/14, 215/38*
U.S. Cl. 514—63 14 Claims

1. A compound of the formula:



(I)

wherein R^1, R^2, R^3, R^4 and R^6 are independently hydrogen C_{1-6} alkyl, C_{1-3} alkoxy, n-butoxy, i-butoxy, sec-butoxy, R^7R^8N— (wherein R^7 and R^8 are independently hydrogen or C_{1-3} alkyl), trifluoromethyl, trifluoromethoxy, difluoromethoxy, fluoro, chloro, bromo, phenyl, phenoxy, benzyloxy, hydroxy, trimethylsilyloxy diphenyl-t-butylsilyloxy, hydroxymethyl or $—O(CH_2)_lOR^{19}$ (wherein R^{19} is hydrogen or C_{1-3} alkyl, and l is 1, 2 or; Y is $—CH_2—$, $—CH_2CH_2—$, —CH=CH—, $—CH_2—CH=CH—$ or $—CH=CH—CH_2—$; and Z is



(wherein Q is —C(O)—, $—C(OR^{13})_2—$ or —CH(OH)—; W is —C(O)—, $—C(OR^{13})_2—$ or $—C(R^{11})(OH)—$; R^{11} is hydrogen or C_{1-3} alkyl; R^{12} is hydrogen or R^{14} (wherein R^{14} is physiologically hydrolyzable alkyl or M (wherein M is NH_4, sodium, potassium, ½ calcium or a hydrate of lower alkylamine, di-lower alkylamine or tri-lower alkylamine)); two R^{13} are independently primary or secondary C_{1-6} alkyl; or two R^{13} together form $—(CH_2)_2—$ or $—(CH_2)_3—$; R^{17} and R^{18} are independently hydrogen or C_{1-3} alkyl; and R^5 is hydrogen, C_{1-6} alkyl, C_{2-3} alkenyl, C_{3-6} cycloalkyl,

(wherein R^9 is hydrogen, C_{1-4} alkyl, C_{1-3} alkoxy, fluoro, chloro, bromo or trifluoromethyl), phenyl-$(CH_2)_m—$ (wherein m is 1, 2 or 3), $—(CH_2)_nCH(CH_3)$-phenyl or phenyl-$(CH_2)_nCH(CH_3)—$ (wherein n provided that at least one of R^1, R^2 and R^6 is trimethylsilyloxy or diphenyl-t-butylsilyloxy.

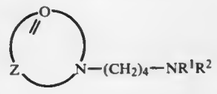
5,185,329

METHOD FOR TREATMENT OF SUBSTANCE ADDICTION

Frank H. Gawin; Robert Byck, both of New Haven, Conn.; Marc Alderdice, and Jeffrey Schwimmer, both of Evansville, Ind., assignors to Bristol-Myers Squibb Company, New York, N.Y.

Division of Ser. No. 367,823, Jun. 16, 1989, which is a continuation-in-part of Ser. No. 238,440, Aug. 30, 1988. This application Nov. 14, 1991, Ser. No. 791,714
Int. Cl.[5] A61K *31/50, 31/495, 31/505*
U.S. Cl. 514—159 22 Claims

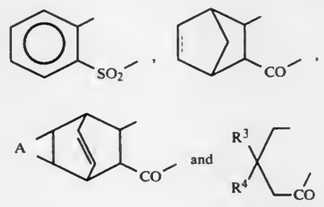
1. A method for the effective treatment of substance addiction, the substance addition comprising over-eating, eating disorders, marijuana, cocaine, opiates, methadone, amphetamines, and methyl phenidate; the method comprising administration of a therapeutically effective regimen of a Formula I azapirone compound or a pharmaceutically effective acid addition salt thereof to a patient in need of such treatment;



I

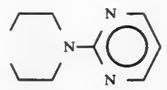
wherein

Z is a member selected from the group consisting of

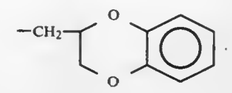


with the dotted and solid line representing either a single or a double chemical bond; A being selected from the group consisting of O, CH_2, CH_2CH_2 and CH=CH;

R^3 and R^4 being independently selected from hydrogen and C_{1-4} alkyl or R^3 and R^4 can be taken together as a butanediyl or pentanediyl chain; and R^1 and R^2 are either taken together as



or R^1 is hydrogen and R^2 is



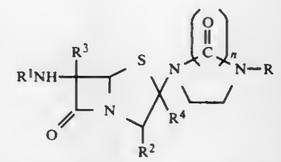
5,185,330

PENAM DERIVATIVES AND SALTS THEREOF, AND ANTIBACTERIAL AGENT COMPRISING THE SAME

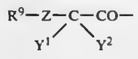
Hirokazu Ochiai; Yasuo Watanabe; Yoshiharu Murotani; Hirohiko Fukuda; Osamu Yoshino; Shinzaburo Minami, all of Toyama; Toshio Hayashi, Takaoka, and Kaishu Momonoi, Shinminato, all of Japan, assignors to Toyama Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 20, 1990, Ser. No. 540,697
Claims priority, application Japan, Jun. 22, 1989, 1-159899
Int. Cl.[5] A61K *31/425;* C07D *499/00*
U.S. Cl. 514—142 51 Claims

1. A penam derivative represented by the following formula or a pharmaceutically acceptable salt thereof:



wherein R^1 represents a hydrogen atom, a formyl, 2,6-dimethyloxyphenylphenyl-carbonyl or 5-methyl-3-phenylisoxazol-4-ylcarbonyl group or an acyl group represented by the formula:



wherein R^9 represents an unsubstituted or substituted lower alkyl, lower alkenyl, aryl or heterocyclic group; Z represents an oxygen or sulfur atom or a linkage; Y^1 represents a hydrogen atom; Y^2 represents a hydrogen atom, halogen atom, a hydroxyl group, a carboxyl group, a sulfo group, a sulfoamino group, a amino group or a group of the formula, $R^{10}CONH—$ in which R^{10} is an unsubstituted or substituted aryl, arylcarbonylamino, heterocyclicamino or heterocyclic group; and Y^1 and Y^2 may form, when taken together, an unsubstituted or substituted lower alkoxyimino, cycloalkyloxyimino, aralkyloxyimino, lower alkylidene, lower alkenylidene, lower alkoxymethylene, halomethylene or heterocyclic-oxyimino group; R^2 represents a hydrogen atom or a lower alkyl group; R^3 represents a hydrogen atom, a lower alkoxy group, a lower alkylthio group or a formamido group; R^4 represents a protected or unprotected carboxyl group or a carboxylato group; R represents a group of the formula, $—NHR^5$ or NR^5R^6 (in which R^5 and R^6, may be the same or different, represent hydroxyl groups, cyano groups, sulfo groups or unsubstituted or substituted lower alkyl, aryl, acyl, carbamoyl, sulfamoyl, lower alkylsulfonyl or heterocyclic groups), or a group of the formula, $—N=CR^5R^6$ (in which R^7 and R^8, which may be the same or different, represent hydrogen atoms or carboxyl groups, cyano groups or substituted or unsubstituted lower alkyl, lower alkenyl, lower alkynyl, aryl, amino, acyl, acyloxy, carbamoyl, carbamoyloxy, sulfamoyl, lower alkylthio, ureido or heterocyclic groups, or R^7 and R^8 may form a cycloalkene or heterocyclic ring with the carbon atom to which R^7 and R^8 are attached); and n represents 1 or 2; each of the substituted lower alkyl, lower alkenyl, aryl, and heterocyclic groups in the definition of R^9 having at least one substituent selected from the group consisting of halogen atoms, hydroxyl group, amino group, amino-lower alkyl groups, carboxyl group, lower alkoxy groups, ureido group, acylamino groups, cyano group, sulfo group, carbamoyloxy group, sulfamoyl group, nitro group, oxo group and heterocyclic groups; each of the substituted aryl, arylcarbonylamino, heterocyclicamino and heterocyclic groups in the definition of R^{10} having at least one substituent selected from the group consisting of halogen atoms, hydroxyl group, oxo group, lower alkyl groups, halo-lower alkyl groups, hydroxyl-lower alkyl groups, lower alkylthio groups, lower alkylthio-lower alkyl groups, aryl groups, haloaryl groups, cycloalkyl groups, arylamino groups, lower alkylsulfonyl groups and sulfamoylarylamino groups; each of the substituted lower alkoxyimino, cycloalkyloxyimino, aralkyloxyimino, lower alkylidene, lower alkenylidene, lower alkoxymethylene, halomethylene and heterocyclic-oxyimino group in the definition of the group which Y^1 and Y^2 may form having at least one substituent selected from the group consisting of halogen atoms, acyloxy groups and carboxyl groups, each of the substituted lower alkyl, lower alkenyl, lower alkynyl, aryl, amino, acyl, acyloxy, carbamoyl, carbamoyloxy, sulfamoyl, lower alkylsulfonyl or heterocyclic groups in the definition of R^5 and R^6 having at least one substituent selected from the group consisting of halogen atoms, halo-lower alkyl groups, lower alkyl groups, lower alkoxy groups, carboxyl-lower alkoxy groups, lower alkylthio groups, carboxyl-lower alkylthio groups, lower alkanoyloxy groups, lower alkoxycarbonyl groups, diphenylmethoxycarbonyl group, aryloxycarbonyl groups, hydroxyl-lower alkoxy groups, lower alkoxyimino groups, imino group, amino-lower alkyl groups, carboxyl-lower alkyl groups, lower alkoxycarbonyl-lower alkyl groups, lower alkoxycarbonylamino groups, nitrobenzyloxycarbonylamino group, cyano-lower alkylamino-lower alkyl groups, N,N-di-lower alkylamino groups, lower alkylsulfonyl groups, sulfamoyl-lower alkyl groups, aryl groups, aralkyl groups, carbamoyl group, sulfo group acyl groups, oxo group, carbonyl group, nitro group, cyano group, amino group, hydroxyl group, ureido group, aralkyloxy groups, sulfamoyl group, thioxo group, methylenedioxy group, heterocyclic groups and heterocyclicthio groups; each of the substituted lower alkyl, aryl, acyl, carbamoyl, sulfamoyl, lower alkylthio, ureido and heterocyclic groups in the definition of R^7 and R^8 and each of the cycloalkene and heterocyclic ring in the definition of the group which R^7 and R^8 may form having at least one substituent selected from the group consisting of halogen atoms, halo-lower alkyl groups, lower alkyl groups, lower alkoxy groups, carboxyl-lower alkoxy groups, lower alkylthio groups, carboxyl-lower alkylthio groups, lower alkanoyloxy groups, lower alkoxycarbonyl groups, diphenylmethoxycarbonyl group, aryloxycarbonyl groups, hydroxyl-lower alkyl groups, lower alkoxyimino groups, imino group, amino-lower alkyl groups, carboxyl-lower alkyl groups, carboxyl-lower alkyl groups, lower alkoxycarbonyl-lower alkyl groups, lower alkoxycarbonylamino groups, nitrobenzyloxycarbonylamino groups, cyano-lower alkylamino-lower alkyl groups, N,N-di-lower alkylamino groups, lower alkylsulfonyl groups, sulfamoyl-lower alkyl groups, aryl groups, aralkyl groups, carbamoyl group, sulfo group, acyl groups, oxo group, carboxyl group, nitro group, cyano group, amino group, hydroxyl group, ureido group, aralkyloxy groups, sulfamoyl group, thioxo group, methylenedioxy group, heterocyclic groups and heterocyclicthio groups; wherein the substituent for each of R^5, R^6, R^7 and R^8 may have at least one substituent selected from the group consisting of lower alkyl groups, amino group, oxo group, hydroxyl group, carbamoyl group, hydroxyl-lower alkyl groups, protected or

VOL 1147 ISS 2 FE 9 1993 UMI

unprotected carboxyl-lower alkyl groups, N,N-di-lower alkylamino groups, acylamino groups, heterocyclic groups, ureido group, trimethylammonioacetyl group, and guanidino group; wherein the term "acyl" in "acyl group", "acyloxy group" and "acylamino group" means formyl, C_{2-5}alkanoyl, C_{3-5}alkenoyl, benzoyl, naphthoyl, thenoyl, furoyl, isonicotinoyl, nicotinoyl, 1,4-dihydropyridin-2-ylcarbonyl or 4-ethyl-2,3-dioxopiperazin-1-ylcarbonyl; the term "aryl" in "aryl group", "N,N'-dilower alkylaminoaryl group", "arylamino group", "arylcarbonylamino group", "sulfamoylarylamino group", "aryloxycarbonyl group" and "haloaryl group" means phenyl, naphthyl or indanyl; the term "aralkyl" in "aralkyl group", "aralkyloxy group" and "aralkyloxyimino group" means benzyl, phenethyl, 4-methylbenzyl and naphthylmethyl; the term "heterocyclic" in "heterocyclic group", "heterocyclic amino group", "heterocyclic-oxyimino group" or "heterocyclicthio group" means azetidinyl, thienyl, furyl, pyrrolyl, 1,2,4-triazolyl, 1,2,3-triazolyl, oxazolyl, thiazolyl, tetrazolyl, 1,3-dithiolanyl, pyridinyl, 1-hydroxyl-4-oxo-1,4-dihydropyridyl, 1,4-dihydropyridiyl, thiazolidinyl, thiazolidinyl, oxazolidinyl, imidazolidinyl, pyrazolinyl, pyrrolidinyl, 2-oxazolinyl, imidazolinyl, furazanyl, isothiazolyl, 4,5-dihydrothiazolyl, 2,3-dihydrofuryl, 2,5-dihydrofuryl, tetrahydrofuryl, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,3,4-thiadiazolyl, 1,2,5-thiadiazolyl, imidazolyl, pyrazolyl, 3-pyrrolinyl, 4,5-dihydropyrazolyl, isoxazolyl, isoxazolidinyl, 1,2,3-oxadiazolyl, 1,3,4-oxadiazolyl, 1,2,4-oxadiazolyl, piperidinyl, piperazinyl, tetrahydropyrazinyl, morpholinyl, pyrimidinyl, pyrazinyl, 1,2,4-triazinyl, 1,3,5-triazinyl, 2H-3,4-dihydropyranyl, 2H-5,6-dihydropyranyl, 1,4-oxazinyl, pyridazinyl, 2H-thiazinyl, perhydrooxazinyl, dihydrooxazinyl, chromenyl, benzothienyl, benzoisothiazolidinyl, imidazo[1,2-b][1,2,4]triazinyl, thieno[3,2-b]thienyl, benzotriazolyl, 1,2,3-benzothiadiazolyl, tetrazolo[5,1-b]pyridazinyl, 2,1,3-benzoxadiazolyl, imidazo[1,2-a]pyridyl, imidazo[1,2-a]pyrimidinyl, imidazo[1,2-b][1,3]thiazolyl, 5,6,7,8-tetrahydroimidazo[1,2-a]pyridyl, imidazo[1,2-a]pyrazinyl, 1,4-benzomorpholinyl, benzothiazolyl, isoinodlinyl, benzofuranyl, 1,4-benzothiomorpholinyl, 1,3-benzoxazolidinyl, triazolo[1,5-a]pyrimidinyl, indolinyl, indazolyl, benzoxazolyl, henzoisoxazyolyl, purinyl, isoquinolyl, quinolyl, 1,8-naphthyridinyl, 1,5-naphthyridinyl, 1,1-dioxo-1,2-benzoisothiazolidinyl, 1,2-dihydro-4H-3,1-benzoxazinyl, 1,2-benzoxazinyl, quinoxalinyl, quinazolinyl, cinnolinyl, indolyl, quinuclidinyl, perhydroazaepinyl, or 3-pyrrolin-2-yl, and said heterocyclic group, when containing a nitrogen atom as the heteratom, may be quaternized; and the term "heterocyclic ring" means azetidine, 1,3-dithiolane, 1,4-dihydropyridine, thiazolidine, oxazolidine, imidazolidine, pyrazoline, pyrrolidine, 2-oxazoline, imidazoline, 4,5-dihydrothiazole, 2,3-dihydrofuran, 2,5-dihydrofuran, tetrahydrofuran, 3-pyrroline, 4,5-dihydropyrazole, isoxazolidine, piperidine, piperazine, tetrahydropyrazine, morpholine, tetrahydro-pyrimidine, 2H-3,4-dihydropyran, 2H-5,6-dihydropyran, 2H-thiazine, dihydrooxazine, chromene, benzoisothiazolidine, 5,6,7,8-tetrahydroimidazo[1,2-a]pyridine, 1,4-benzomorpholine, isoindoline, 1,4-benzothiomorpholine, 1,3-benzoxazolidine, indoline, 1,1-dioxo-1,2-benzoisothiazolidine, 1,2-dihydro-4H-3,1-benzoxazine or quinuclidine.

51. A method of treating bacterial infection comprising administering an antibacterially effective amount of a penam derivative or a pharmaceutically acceptable salt thereof as defined in claim **1** to a patient in need thereof.

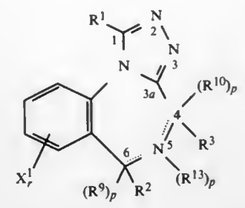
5,185,331

TRIAZOLOBENZODIAZEPINES

Roger M. Freidinger, Lansdale; Mark G. Bock, Hatfield, and Ben E. Evans, Lansdale, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 14, 1991, Ser. No. 699,850
Int. Cl.[5] A61K *31/55*
U.S. Cl. 514—220 **6 Claims**

1. A method of treating panic disorder or anxiety disorder in a mammal which comprises administering to said mammal a therapeutically effective amount of a compound of the formula:



I

wherein

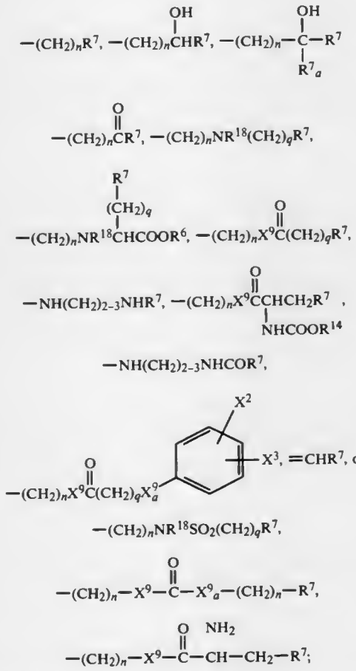
R^1 is H, OH, loweralkyl, cycloloweralkyl, loweralkenyl, substituted or unsubstituted phenyl(wherein the substituents are 1 or 2 of halo, loweralkyl, loweralkoxy, or hydroxy), $-(CH_2)_mNR^4R^5$, CX^{10}_3, or $-(CH_2)_nCOOR^6$;

R^2 is H, loweralkyl, substituted or unsubstituted phenyl (wherein the substitutents are 1 or 2 of halo, loweralkyl, loweralkoxy, loweralkylthio, carboxyl, carboxyloweralkyl, nitro, $-CF_3$,



or hydroxy), or $-(CH_2)_mCOOR^6$;

R^3 is



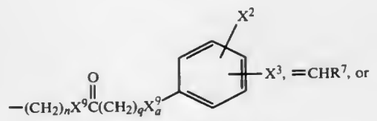
$-(CH_2)_nR^7$, $-(CH_2)_nCHR^7$, $-(CH_2)_n-C(OH)(R^7)-R^7_a$,

$-(CH_2)_nCR^7$, $-(CH_2)_nNR^{18}(CH_2)_qR^7$,

$-(CH_2)_nNR^{18}CH(CH_2)_qCOOR^6$, $-(CH_2)_nX^9C(CH_2)_qR^7$,

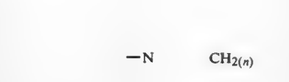
$-NH(CH_2)_{2-3}NHR^7$, $-(CH_2)_nX^9CCHCH_2R^7$ (NHCOOR^{14}),

$-NH(CH_2)_{2-3}NHCOR^7$,



$-(CH_2)_nNR^{18}SO_2(CH_2)_qR^7$,

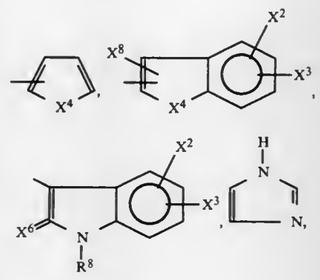
R^4 and R^5 are independently H, loweralkyl, or cycloloweralkyl or are connected to form a hetero ring

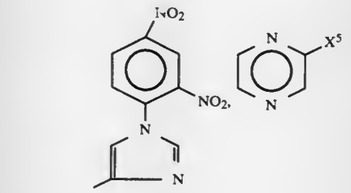


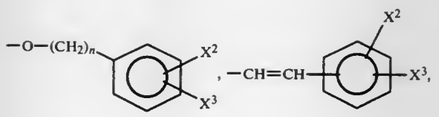
wherein n is 2–6;

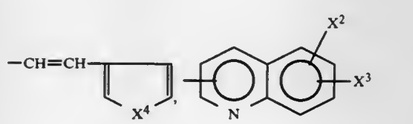
R^6 is H, loweralkyl, cycloloweralkyl, substituted or unsubstituted phenyl (wherein the substituents are 1 or 2 of halo, loweralkyl, loweralkoxy, nitro, or CF_3), or substituted or unsubstituted phenylloweralkyl (wherein the substituents may be 1 or 2 of halo, loweralkyl, loweralkoxy, nitro, or CF_3);

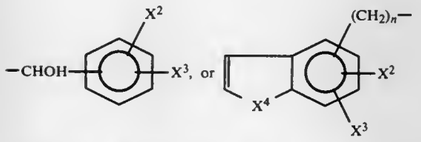
R^7 and R^7_a are independently α- or β-naphtyl, substituted or unsubstituted phenyl (wherein the substituents are 1 to 2 of halo, $-NO_2$, $-OH$, $-NR^4R^5$, lower alkyl, cyano, phenyl, trifluoromethyl, acetylamino, acetyloxy, loweralkylthio, SCF_3, $-C{\equiv}CH$, CH_2SCF_3, $OCHF_2$, SH, S-phenyl, PO_3H, or loweralkoxy),



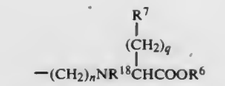




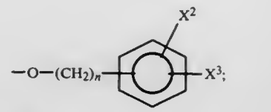




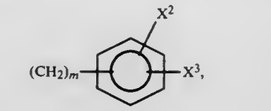
(with the proviso that q is not 0 or 1 in $-(CH_2)_nNH(CH_2)_qR^7$ and that q is not 0 in

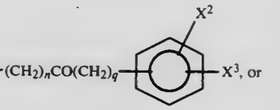


when R^7 or R^7_a is



R^8 is H, loweralkyl, cycloloweralkyl, $-(CH_2)_mCONH_2$, $-(CH_2)_mCOOR^6$, $-(CH_2)_n$-cycloloweralkyl, $-(CH_2)_mNR4R5$,





$-(CH_2)_nCO(CH_2)_q$-, X^3, or $-COCHNHCOOR^{11}$; CH_2R^{12}

R^9 and R^{10} are independently H, —OH, or $—CH_3$;

R^{11} and R^{12} are independently loweralkyl or cycloloweralkyl;

R^{13} is H, loweralkyl, acyl, O, or cycloloweralkyl;

R^{14} is loweralkyl or phenylloweralkyl;

R^{18} is H, loweralkyl, or acyl;

m is 1–4;

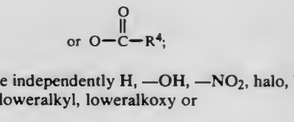
n is 0–4;

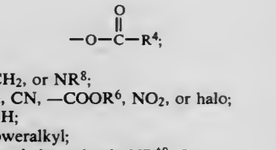
p is 0 when its adjacent is unsaturated or when R^3 is $=CHR^7$, and it is 1 when its adjacent is saturated, except that when R^{13} is O, p=1 and is unsaturated;

q is 0–4;

r is 1 or 2;

X^1 is H, $—NO_2$, CF_3 CN, OH, loweralkyl, halo, loweralkylthio, loweralkoxy, $-(CH_2)_nCOOR^6$, $—NR^4R^5$,





R^4 is S, O, CH_2, or NR^8;

X^5 is H, CF_3, CN, $—COOR^6$, NO_2, or halo;

X^6 is O or HH;

X^8 is H or loweralkyl;

X^9 and X^9_a are independently NR^{18}, O;

X^{10} is F, Cl, Br;

is a saturated or unsaturated bond, such that both

VOL 1147 ISS 2 FE 9 1993 UMI

bonds in the 7-membered ring of Formula I may be saturated (single bonds but both may not be unsaturated double bonds);

or a pharmaceutically acccptable salt thereof, and a pharmaceutically acceptable carrier.

5,185,332

THIADIAZINES AND PHARMACEUTICAL COMPOSITIONS THEREOF AS WELL AS METHOD OF USE

Heimo O. Haikala, Espoo; Erkki J. Honkanen, Vantaa; Kari K. Lönberg, Routio; Pentti T. Nore, Helsinki; Jarmo J. Pystynen, Espoo; Anne M. Luiro, Helsinki, and Aino K. Pippuri, Espoo, all of Finland, assignors to Orion-yhtyma Oy, Espoo, Finland

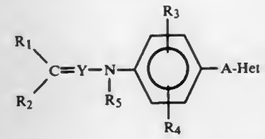
Division of Ser. No. 477,530, Feb. 9, 1990, Pat. No. 5,019,575. This application Mar. 15, 1991, Ser. No. 669,867

Claims priority, application United Kingdom, Feb. 11, 1989, 8903130.6

Int. Cl.[5] A61K *31/54;* **C07D** *285/16*

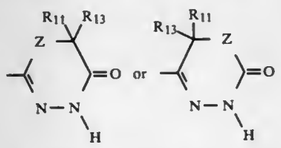
U.S. Cl. 514—222.5 **11 Claims**

1. A heterocyclic compound of formula I

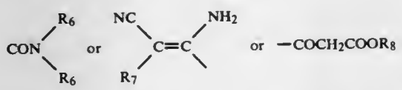


I

wherein Het represents one of the following groups;



wherein R_{11}, R_{13} and R_{14} represent independently hydrogen or lower alkyl group, Z represents S; A represents a valency bond, —CH=CH— or —CH_2—CH_2— group; R_1 and R_2 independently represent nitro, cyano, halogen, amino, carboxamido, phenyl, benzoyl, pyridyl, alkoxycarbonyl, alkanoyl or one of the following groups;



wherein R_6 represents hydrogen or lower alkyl group, R_8 represents lower alkyl, R_7 represents cyano or $COOR_{10}$, wherein R_{10} represents hydrogen or lower alkyl, or R_1 and R_2 together form a 5 or 6 membered ring which is unsubstituted or substituted with a lower alkyl group and which may have 1 or 2 heteroatom N; R_3, R_4, and R_5 represent independently hydrogen, hydroxy or lower alkyl group; Y represents N or CH or a pharmaceutically acceptable salt thereof.

5,185,333

BENZAZINE COMPOUNDS AND PHARMACEUTICAL USES THEREOF

Takeshi Kawakita; Takanobu Kuroita, both of Oita; Takemi Fukuda, Hyogo, and Ryuhei Iezawa, Oita, all of Japan, assignors to Yoshitomi Pharmaceutical Industries, Ltd., Osaka, Japan

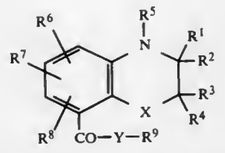
Continuation-in-part of Ser. No. 547,551, Jul. 3, 1990, abandoned. This application Jun. 26, 1991, Ser. No. 721,011

Claims priority, application Japan, Jul. 3, 1989, 1-171549; Mar. 12, 1990, 2-60663

Int. Cl.[5] A61K *31/54, 31/535;* **C07D** *279/16, 265/36*

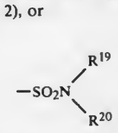
U.S. Cl. 514—224.2 **11 Claims**

1. A benzazine compound, a geometrical isomer of said benzazine compound, an optical isomer of said benzazine compound, and a pharmaceutically acceptable salt of said benzazine compound, said benzazine compound being represented by formula (I):



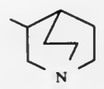
(I)

wherein both R^1 and R^2 represent hydrogen; R^3 and R^4 are the same or different and each represents hydrogen, an alkyl, phenyl or a phenylalkyl, provided that one of R^3 and R^4 represents hydrogen, an alkyl, phenyl or a phenylalkyl and the another represents an alkyl, phenyl or a phenylalkyl when R^9 represents a group of formula (a) or (c) as defined below; R^5 represents hydrogen, an alkyl, or a phenylalkyl; R^6 represents hydrogen, a halogen, an alkoxy, amino, nitro, —$S(O)_iR^{18}$ (wherein R^{18} represents an alkyl, phenyl or a substituted phenyl and i is 0, 1 or 2), or

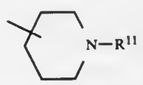


(wherein R^{19} and R^{20} are the same or different and each represents hydrogen or an alkyl); both R^7 and R^8 represent hydrogen; X represents oxygen or sulfur; Y represents —NH—; and R^9 represents a group of the formula:

(a)

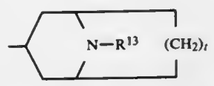


(b)

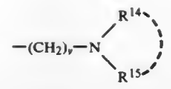


wherein R^{11} represents an alkyl, a phenylalkyl, or a substituted phenylalkyl,

(c)



wherein t is 0 or 1 and R^{13} represents an alkyl, a phenylalkyl, or a substituted phenylalkyl,



(d)

wherein R^{14} and R^{15} are bonded to each other to be a group which forms a heterocyclic ring in cooperation with the adjacent nitrogen atom, and v is an integer of 1 to 8, or



(f)

wherein ring A represents 2-pyrrolidine or 4-morpholine and R^{16} represents hydrogen, an alkyl, an alkenyl, an alkynyl, a phenylalkyl, a substituted phenylalkyl, amino, a mono- or dialkyl-substituted amino, or an acylamino.

5,185,334

2,2-DISUBSTITUTED GLYCEROL AND GLYCEROL-LIKE COMPOUNDS, COMPOSITIONS AND METHODS OF USE

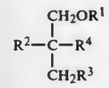
Daniel Solomon, Edison; James J. Kaminski, Long Valley, both of N.J.; Steven K. White, Leawood, Kans.; Laura S. Lehman de Gaeta, La Jolla, Calif., and Ashit K. Ganguly, Upper Montclair, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Continuation of Ser. No. 389,668, Jul. 31, 1989, abandoned. This application Sep. 6, 1991, Ser. No. 758,448

Int. Cl.[5] A61K *31/38, 31/395;* **C07D** *265/30, 295/18, 295/22*

U.S. Cl. 514—236.2 **15 Claims**

1. A compound represented by structural formula I



I

or a pharmaceutically acceptable salt or solvate thereof wherein:

R^1 is alkyl containing 6 to 22 carbon atoms, —C(O)—D or —C(S)—D wherein

D is NR^5R^6;

R^5 is hydrogen, alkyl containing x carbon atoms, wherein x is an integer from 1 to 22, aryl, heteroaryl, heteroalkyl, arylalkyl, or cycloalkyl, wherein said alkyl, aryl, heteroaryl, heteroalkyl, arylalkyl or cycloalkyl groups may be substituted;

R^6 is alkyl containing y carbon atoms, wherein y is an integer from 1 to 22, aryl, heteroaryl, heteroalkyl, arylalkyl or cycloalkyl, wherein said alkyl, aryl, heteroaryl, heteroalkyl, arylalkyl and cycloalkyl groups may be substituted, with the proviso that the sum of x and y, when at least one of R^5 or R^6 is alkyl, is an integer of from 1 to 22; or

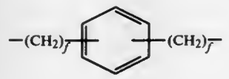
R^5 or R^6 together with the nitrogen to which they are attached may form a heterocycloalkyl group which may be substituted with alkyl or arylalkyl;

R^2 is lower alkyl, trifluoromethyl, arylalkyl or aryl, wherein said aryl and said arylalkyl groups may be substituted;

R^3 is T-U-V, wherein

T represents —OPO_3—, O—C(O)—O—, —O—, —S—, —NR^a—, —NR^aSO_2—, —O—C(O)—NR^a— or —NR^a—C(O)—O— wherein R^a is H, lower alkyl or acyl;

U is —$(CH_2)_e$— wherein e is an integer of from 2 to 10 or



where each f is independently 1, 2 or 3;

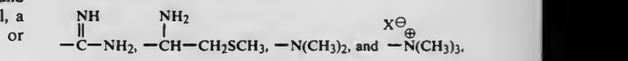
V is A-B, wherein A is a direct bond between U and B, —O—, —S—, —O—$(CH_2)_n$— where n is 1, 2 or 3, —O—C(O)— or —$N(R^a)$— where R^a is as previously defined;

B is morpholino, or substituted morpholino, and

R^4 represents —X—C_bH_{2b+1} where b is an integer of from 1 to 6 and X is methylene, O, $S(O)_c$ where c is 0, 1 or 2 or —$N(R^a)$— where R^a is as previously defined; wherein;

said heteroaryl is selected from the group consisting of: thiazolyl, thiazolium, imidazolyl, imidazolium, pyridinyl, pyridinium, triazolyl and thiadiazolyl;

said heteroalkyl is selected from the group consisting of:



wherein $X^\ominus$ represents a negatively charged ion;

said heterocycloalkyl represents a saturated ring containing from three to seven carbon atoms and 1 to 3 hetero groups selected from O, S, SO, SO_2 or N;

for said alkyl, cycloalkyl and heteroalkyl the substituents for each substitutable carbon atom, when substituted, are selected from the group consisting of: alkyl, =NR^a, —$N(R^a)_2$, —SR^a, —OR^a and —CO_2R^a, wherein R^a is as defined above, and the substituents for each substitutable heteroatom, when substituted, are selected from the group consisting of: —$N(R^a)_2$, —OR^a, —SR^a and —CO_2R^a;

for said aryl and heteroaryl the substituents for each substitutable carbon atom, when substituted, are selected from the group consisting of: halo, alkyl, =NR^a, —$N(R^a)_2$, —SR^a, —OR^a and —CO_2R^a, wherein R^a is as previously defined, and the substituents for each substitutable heteroatom, when substituted, are selected from the group consisting of: alkyl, —$N(R^a)_2$, —SR^a, —OR^a and —CO_2R^a, wherein R^a is as previously defined; and

with the proviso that when R^1 is alkyl, T cannot be —OPO_3.

5,185,335

N-(4-PIPERODINYL)(DIHYDROBENZOFURAN OR DIHYDRO-2H-BENZOPYRAN) CARBOXAMIDE DERIVATIVES

Georges H. P. Van Daele, Turnhout; Jean-Paul R. M. A. Bosmans, Kortrijk-Marke, and Michel A. J. De Cleyn, Merksplas, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

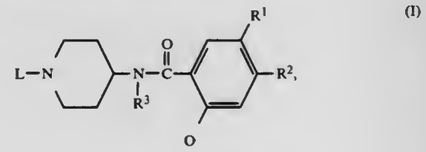
Filed Feb. 4, 1991, Ser. No. 650,328

Claims priority, application United Kingdom, Mar. 6, 1990, 9005014

Int. Cl.[5] A61K *31/53, 31/54, 43/58, 43/60, 31/495, 31/47, 31/445;* **C07D** *513/00, 487/00, 403/00, 241/36, 405/00, 215/00, 490/00, 401/00, 217/00*

U.S. Cl. 514—243 **13 Claims**

1. A compound of the formula:



(I)

A

an N-oxide form, a salt or a stereochemically isomeric form thereof, wherein:

A is a radical of the formula:

—CH_2—CH_2—, (a-1)

VOL 1147 ISS 2 FEB 9 1993 UMI

-continued

$-CH_2-CH_2-CH_2-$, or (a-2)

$-CH_2-CH_2-CH_2-CH_2-$, (a-3)

wherein one or two hydrogen atoms in said radicals (a-1) to (a-3) may be replaced by a C_{1-6}alkyl radical;

R^1 is hydrogen or halo;

R^2 is hydrogen, amino, mono- or di(C_{1-6}alkyl)amino or C_{1-6}alkylcarbonylamino;

R^3 is hydrogen or C_{1-6}alkyl;

L is a radical of the formula:

$-Alk-R^4$ (b-1),

wherein Alk is C_{1-6}alkanediyl; and

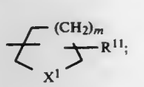
R^4 is hydrogen, cyano, C_{1-6}alkylsulfonylamino, C_{3-6}cycloalkyl, C_{5-6}cycloalkanone, aryl or Het;

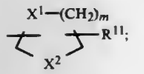
wherein:

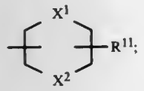
aryl represents unsubstituted phenyl or phenyl substituted with 1, 2 or 3 substituents each independently selected from halo, hydroxy, C_{1-6}alkyl, C_{1-6}alkyloxy, aminosulfonyl, C_{1-6}alkylcarbonyl, nitro, trifluoromethyl, amino or aminocarbonyl; and

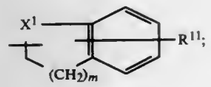
wherein

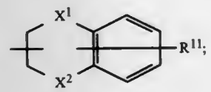
(I) Het represents a group of the formula:

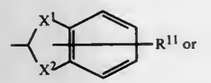
 (c-1)

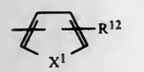
 (c-2)

 (c-3)

 (c-4)

 (c-5)

 (c-6)

 (c-7)

wherein:

each X^1 and X^2 independently represents O or S;

M is 1 or 2;

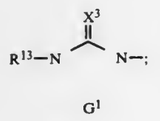
each R^{11} represents hydrogen, C_{1-4}alkyl, C_{1-4}alkyloxyC_{1-4}alkyl or hydroxyC_{1-4}alkyl; and

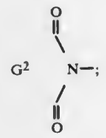
R^{12} represents hydrogen, halo or C_{1-4}alkyl, or

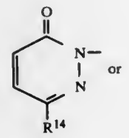
(II) Het represents a cyclic ether selected from the group consisting of 1,3-dioxolanyl optionally substituted with C_{1-4}alkyl; 1,3-dioxanyl optionally substituted with C_{1-4}alkyl; tetrahydrofuranyl optionally substituted with C_{1-4}alkyl; tetrahydropyranyl optionally substituted with C_{1-4}alkyl; 2,3-dihydro-1,4-benzodioxinyl; 2,3-dihydrobenzofuran and 3,4-dihydro-1(2H)-benzopyranyl; or

(III) Het represents a member selected from the group consisting of pyrrolidinyl; piperidinyl; pyridinyl which is optionally substituted with one or two substituents each independently selected from halo, hydroxy, cyano, C_{1-6}alkyl, trifluoromethyl, C_{1-6}alkyloxy, aminocarbonyl, mono and di(C_{1-6}alkyl)aminocarbonyl, amino, mono and di(C_{1-6}alkyl)amino and C_{1-6}alkyl-oxycarbonyl; pyrimidinyl which is optionally substituted with one or two substituents each independently selected from halo, hydroxy, cyano, C_{1-6}alkyl, C_{1-6}alkyloxy, amino and mono and di(C_{1-6}alkyl)amino; pyridazinyl which is optionally substituted with C_{1-6}alkyl or halo; pyrazinyl which is optionally substituted with one or two substituents each independently selected from halo, hydroxy, cyano, C_{1-6}alkyl, C_{1-6}alkyloxy, amino, mono- and di(C_{1-6}alkyl)amino and C_{1-6}alkyloxy-carbonyl; pyrrolyl which is optionally substituted with C_{1-6}alkyl; pyrazolyl which is optionally substituted with C_{1-6}alkyl; imidazolyl which is optionally substituted with C_{1-6}alkyl; triazolyl which is optionally substituted with C_{1-6}alkyl; quinolinyl optionally substituted with up to two substituents each independently selected from halo, hydroxy, cyano, C_{1-6}alkyl, C_{1-6}alkyloxy, amino, mono and di(C_{1-6}alkyl)amino and trifluoromethyl; isoquinolinyl optionally substituted with up to two substituents each independently selected from halo, hydroxy, cyano, C_{1-6}alkyl, C_{1-6}alkyloxy, amino, mono and di(C_{1-6}alkyl)amino and trifluoromethyl; quinoxalinyl optionally substituted with up to two substituents each independently selected from C_{1-6}alkyl, hydroxy, halo, cyano and C_{1-6}alkyloxy; quinazolinyl optionally substituted with C_{1-6}alkyl; benzimidazolyl optionally substituted with C_{1-6}alkyl; indolyl optionally substituted with C_{1-6}alkyl; 5,6,7,8-tetrahydroquinolinyl optionally substituted with up to two substituents each independently selected from halo, hydroxy, cyano, C_{1-6}alkyl, C_{1-6}alkyloxy, amino, mono- and di(C_{1-6}alkyl)amino and trifluoromethyl; 5,6,7,8-tetrahydroquinoxalinyl optionally substituted with up to two substituents each independently selected from C_{1-6}alkyl, hydroxy, halo, cyano and C_{1-6}alkyloxy; thiazolyl optionally substituted with C_{1-6}alkyl; oxazolyl optionally substituted with C_{1-6}alkyl; benzoxazolyl optionally substituted with C_{1-6}alkyl; and benzothiazolyl optionally substituted with C_{1-6}alkyl; or

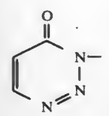
(IV) Het represents a group of the formula:

 (4-1)

 (d-2)

 (d-3)

-continued

 (d-4)

X^3 is O or S;

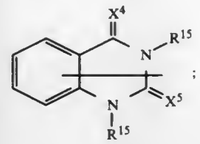
R^{13} is hydrogen, C_{1-6}alkyl or arylC_{1-6}alkyl;

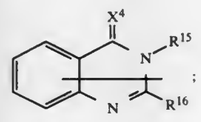
R^{14} is hydrogen, halo, C_{1-6}alkyl or aryl;

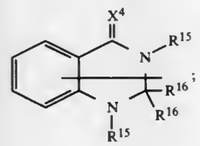
G^1 is $-CH_2-CH_2-$, $-CH=CH-$, $-N=N-$, $-C(=O)-CH_2-$ or $-CH_2-CH_2-CH_2-$, wherein one or two hydrogen atoms each independently may be replaced by C_{1-6}alkyl; and

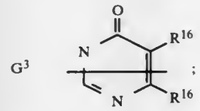
G^2 is $-CH_2-CH_2-$, $-CH_2-N(R^{13})-$ or $-CH_2-CH_2-CH_2-$, wherein one or two hydrogen atoms each independently may be replaced by C_{1-6}alkyl; or

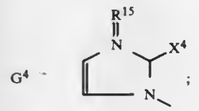
(V) Het represents a group of the formula:

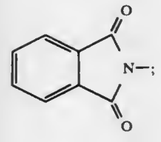
 (d-5)

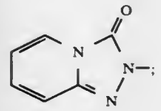
 (d-6)

 (d-7)

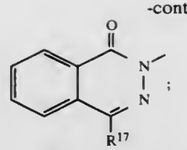
 (d-8)

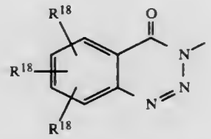
 (d-9)

 (d-10)

 (d-11)

-continued

 (d-12)

 (d-13)

wherein X^4 and X^5 each independently are O or S;

each R^{15} independently is hydrogen, C_{1-6}alkyl or arylC_{1-6}alkyl;

each R^{16} independently is hydrogen, halo, C_{1-6}alkyl or C_{1-6}alkyloxy;

R^{17} is hydrogen, halo, C_{1-6}alkyl or aryl; and

each R^{18} independently is hydrogen, C_{1-6}alkyloxy or C_{1-6}alkyl,

G^3 is $-CH=CH-CH=CH-$, $-(CH_2)_4-$, $-S-(CH_2)_2-$, $-S-(CH_2)_3-$, $-S-CH=CH-$, $-CH=CH-O-$, $-NH-(CH_2)_2-$, $-NH-(CH_2)_3-$, $-NH-CH=CH-$, $-NH-N=CH-CH_2-$, $-NH-CH=N-$ or $-NH-N=CH-$; and

G^4 is $-CH=CH-CH=CH-$, $-CH=CCl-CH=CH-$, $-CCl=CH-CH=CH-$, $-N=CH-CH=CH-$, $-CH=N-CH=CH-$, $-CH=CH-N=CH-$, $-CH=CH-CH=N-$, $-N=CH-N=CH-$ or $-CH=N-CH=N-$,

wherein the radicals (d-5), (d-6), (d-7) and (d-8) may be connected to Alk by replacing either a hydrogen or a radical R^{15} or R^{16} by a free bond.

5,185,336

METHOD FOR PRODUCING SUBSTANTIALLY PURE VITAMIN POWDERS

Gerold Caviezel, Münchenstein; Frank Mertin, Magden, both of Switzerland, and Jean-Claude Tritsch, St. Louis, France, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 21, 1992, Ser. No. 823,214

Claims priority, application Switzerland, Jan. 28, 1991, 250/91; Nov. 20, 1991, 3402/91

Int. Cl.[5] **A61K** *31/525, 31/51, 31/44, 31/34*

U.S. Cl. 514—251 **15 Claims**

1. A process for producing a free-flowing powder comprising at least 99.5% by weight of a compound selected from the group consisting of vitamin B_1, vitamin B_2, vitamin B_6, vitamin C, sodium ascorbate, calcium ascorbate, and the pharmaceutically acceptable salts thereof; said process comprising preparing an aqueous solution or suspension consisting essentially of water and approximately 5% to 25% by weight of said compound, and spray drying said solution or suspension to produce said free-flowing powder.

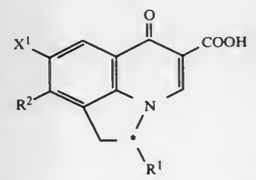
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5,185,337
PYRROLOQUINOLINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS FOR ANTIMICROBIAL USE

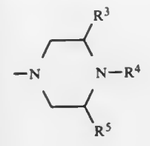
Setsuro Fujii, deceased, late of Kyoto by Keiko Fujii, Shinichiro Fujii, legal heirs; Kaoruko Takada, legal heir, Ehime; Hiroshi Ishikawa; Hidetsugu Tsubouchi, both of Shiga, and Koichiro Jitsukawa, Hyogo, all of Japan, assignors to Otsuka Pharmaceutical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 500,355, Mar. 28, 1990, abandoned. This application Apr. 25, 1991, Ser. No. 691,282
Claims priority, application Japan, Mar. 29, 1989, 1-78786; Sep. 28, 1990, 2-262906
Int. Cl.[5] A61K *31/495;* **C07D** *403/04*
U.S. Cl. 514—254 **36 Claims**

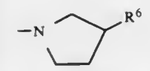
1. A pyrroloquinoline compound or salt thereof having the formula:



wherein R^1 is a C_1–C_6 alkyl group; R^2 is a group:



or a group:



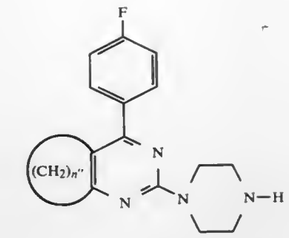
wherein R^3, R^4 and R^5 are the same or different, a hydrogen atom or a C_1–C_6 alkyl group, and R^6 is an amino group or a C_1–C_6 alkylamino-C_1–C_6 alkyl group, X^1 is a halogen atom and * denotes an asymmetric atom, wherein said asymmetric carbon atom of pyrroloquinoline ring has S-configuration.

5,185,338
MEDICAMENT FOR TREATING CEREBRAL INSUFFICIENCY DISEASES, NOVEL 2-(1-PIPERAZINYL)-4-PHENYLCYCLOALKANOPYRIMIDINE DERIVATIVES, AND PROCESS FOR THE PRODUCTION THEREOF

Katsuhiko Hino, Nara; Naoki Kai, Amagasaki; Masato Sakamoto, Toyonaka; Tatsuya Kon, Ashiya; Makoto Oka, Ibaraki; Kiyoshi Furukawa, Shiga, and Yoshiaki Ochi, Toyonaka, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 473,414, Feb. 1, 1990, Pat. No. 5,041,443. This application Jun. 7, 1991, Ser. No. 711,894
Claims priority, applicatioo Japan, Feb. 21, 1989, 1-40729
Int. Cl.[5] A61K *31/505;* **C07D** *239/95, 51/46*
U.S. Cl. 514—254 **8 Claims**

1. A compound of the formula:



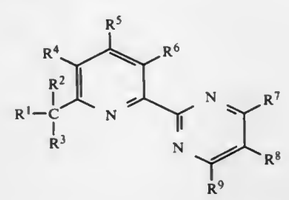
wherein n'' is 3, 5 or 6, or an acid addition salt thereof.

5,185,339
FUNGICIDAL COMPOUNDS

Brian L. Pilkington, and Paul A. Worthington, Maidenhead, both of England, assignors to Imperial Chemical Industries PLC, London, England

Filed May 16, 1991, Ser. No. 701,386
Claims priority, application United Kingdom, May 30, 1990, 9012017
Int. Cl.[5] A61K *31/505;* **C07D** *239/20, 239/72*
U.S. Cl. 514—256 **7 Claims**

1. A compound of general formula (I):



(I)

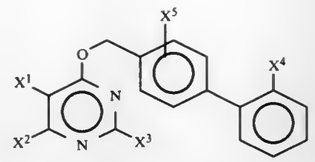
wherein R^1 is phenyl or phenyl group substituted with halogen, C_{1-4} alkyl, C_{1-4} alkoxy, C_{1-4} haloalkoxy, C_{2-4} alkenyl, C_{2-4} alkynyl, C_{1-4} haloalkyl, phenyl, benzyl, phenoxy or benzyloxy, wherein phenoxy, benzyl and benzyloxy are optionally substituted with halogen, C_{1-4} alkyl, C_{1-4} haloalkyl, C_{1-4} alkoxy or C_{1-4} haloalkoxy; R^2 and R^3, which are the same or different, are hydrogen or C_{1-4} alkyl; R^4, R^5 and R^6, which are the same or different, are hydrogen, C_{1-4} haloalkyl, C_{1-4} alkyl or C_{1-4} alkoxy; R^7, R^8 and R^9, which are same or different, are hydrogen, C_{1-4} alkyl, C_{1-4} haloalkyl, C_{1-4} alkoxy or halogen, or R^7 and R^8 together form a polymethylene group of the formula $-(CH_2)_m-$ in which m is 3 or 4; and, acid addition salts or metal complexes thereof.

5,185,340
PYRIMIDINYL ARYLALKYL ETHERS WITH ANTIHYPERTENSIVE ACTIVITY

Dimitrios Sarantakis, Newtown, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Aug. 4, 1992, Ser. No. 925,713
Int. Cl.[5] C07D *239/34;* **A61K** *31/505*
U.S. Cl. 514—269 **11 Claims**

1. A compound according to the formula:



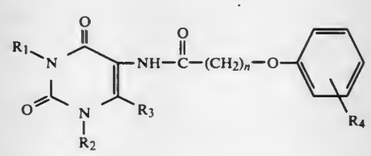
wherein:
X^1 is H, lower alkyl, phenyl, or naphthyl
X^2 is H, lower alkyl, phenyl, naphthyl, perfluoroalkyl or halogen,
or
X^1 and X^2 together are $-(CH_2)_n-$where n is 3–6;
X^3 is H, lower alkyl, perfluoroalkyl, perchloroalkyl or halogen,
X^4 is 5-tetrazolyl, carboxy or cyano;
X^5 is H, lower alkoxy or halogen;
or a pharmaceutically acceptable salt thereof.

5,185,341
SUBSTITUTED 5-(PHENOXYALKANOYLAMINO)-URACIL COMPOUNDS, METHODS FOR MAKING SAME AND PHARMACEUTICAL COMPOSITIONS BASED ON SAME

Wolfgang Sauer, Dresden; Hans-Joachim Jänsch, Radebeul; Angelika Rostock, Dresden; Gottfried Faust, Radebeul; Christine Siegemund, Weinböhla; Dieter Lohmann, Radebeul, and Reni Bartsch, Dresden, all of Fed. Rep. of Germany, assignors to Arzneimittelwerk Dresden GMBH, Radebeul, Fed. Rep. of Germany

Filed Nov. 4, 1991, Ser. No. 787,064
Claims priority, application Fed. Rep. of Germany, Nov. 6, 1990, 4035599
Int. Cl.[5] A61K *31/505;* **C07D** *239/02*
U.S. Cl. 514—269 **9 Claims**

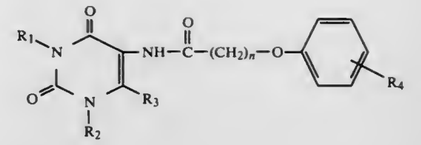
1. A substituted 5-(phenoxyalkanoylamino)uracil compound having the following formula I:



I

wherein R_1 and R_2 are each independently selected from the group consisting of hydrogen; branched and linear, unsubstituted, oxo-substituted and hydroxy-substituted alkyl groups having 1 to 6 carbon atoms; branched and straight chain, unsubstituted, oxo-substituted and hydroxy-substituted alkenyl and alkynyl groups having 1 to 6 carbons atoms; cycloalkyl groups having from 3 to 7 carbon atoms and cycloalkylmethyl groups having a cycloalkyl residue having from 3 to 7 carbon atoms; and phenylalkyl groups, each of said phenylalkyl groups having an alkyl residue having from 1 to 3 carbon atoms and a phenyl residue, the phenyl residue being unsubstituted or having a substituent selected from the group consisting of halogen, methoxy, methyl and trifluoromethyl groups;
R_3 is selected from the group consisting of hydrogen, methyl and amino groups;
R_4 is selected from the group consisting of halogen, methoxy and methyl groups, and
n is 1 or 2.

9. A substituted 5-(phenoxyalkanoylamino)-uracil compound having the following formula I:



I

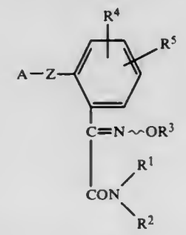
wherein
R_1 and R_2 are each independently selected from the group consisting of hydrogen; branched and linear alkyl groups having 1 to 6 carbon atoms; branched and straight chain alkenyl and alkynyl groups having 1 to 6 carbons atoms; cycloalkyl groups having from 3 to 7 carbon atoms and cycloalkylmethyl groups having from 3 to 7 carbon atoms; and phenylalkyl groups, each of said phenylalkyl groups having an alkyl residue having from 1 to 3 carbon atoms and a phenyl residue, the phenyl residue being unsubstituted or having a substituent selected from the group consisting of halogen, methoxy, methyl and trifluoromethyl groups;
R_3 is selected from the group consisting of hydrogen, methyl and amino groups;
R_4 is selected from the group consisting of halogen, methoxy and methyl groups, and
n is 1 or 2.

5,185,342
ALKOXYIMINOACETAMIDE DERIVATIVES AND THEIR USE AS FUNGICIDES

Yoshio Hayase, Kameyama, Japan; Takahiro Kataoka, Clayton, Mo.; Hideyuki Takenaka, Shiga, Japan; Mitsuhiro Ichinari, Shiga, Japan; Michio Masuko, Koga, Japan; Toshio Takahashi, Nishinomiya, Japan, and Norihiko Tanimoto, Shiga, Japan, assignors to Shionogi Seiyaku Kabushiki Kaisha, Osaka, Japan

Filed May 16, 1990, Ser. No. 524,056
Claims priority, application Japan, May 17, 1989, 1-124059; Dec. 29, 1989, 1-341175
Int. Cl.[5] A61K *31/505, 31/34;* **A01N** *37/18, 43/16;* **C07D** *239/02, 401/02, 277/02;* **C07C** *321/00*
U.S. Cl. 514—274 **20 Claims**

1. A compound of the formula:

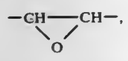


(I)

wherein R^1 and R^2 are each hydrogen, lower alkyl or cyclo(lower) alkyl; R^3 is lower alkyl or cyclo(lower)alkyl; R^4 and R^5 are each hydrogen, lower alkyl, lower alkoxy, halogen-substituted lower alkyl, lower alkyl-substituted silyl, halogen or nitro; A represents a C_2–C_{12} alkenyl group, a C_2–C_{12} alkadienyl group, a halogen-substituted C_2–C_{12} alkenyl group, a halogen-substituted C_2–C_{12} alkadienyl group, a phenyl group or a heterocyclic group selected from the group consisting of pyridyl, pyrimidinyl and pyridazinyl, among which the phenyl group and the heterocyclic group being optionally substituted with not more than three substituents selected from the group consisting of lower alkyl, lower alkanoyl, lower alkyl-substituted silyl, halogen-substituted alkyl, di(lower)alkylamino,

VOL
1147
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phenyl, phenyl(lower)alkyl, phenyl(lower)alkenyl, furyl(lower)alkyl, furyl(lower)alkenyl, halogen, nitro, cyano, —OR^6 (in which R^6 is hydrogen, lower alkyl, lower alkenyl, lower alkynyl, lower alkanoyl, phenyl, lower alkoxyphenyl, nitrophenyl, phenyl(lower)alkyl, cyanophenyl(lower)alkyl, benzoyl, tetrahydropyranyl, pyridyl, trifluoromethylpyridyl, pyrimidinyl, benzothiazolyl, quinolyl, benzoyl(lower)alkyl, benzenesulfonyl or lower alkylbenzenesulfonyl) and —CH_2—Z'—R^7 (in which Z' is —O—, —S—, —SO— or —NR— (R being hydrogen or lower alkyl) and R^7 is phenyl, halophenyl, lower alkoxyphenyl, pyridyl or pyrimidinyl); and Z is —CH_2—, —CH(OH)—, —CO—, —O—, —S—, —SO—, —NR— (R being hydrogen or lower alkyl), —CH_2CH_2—, —CH=CH—,



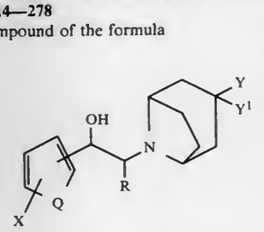
—CH_2O—, —CH_2S—, —CH_2SO—, —OCH_2—, —SCH_2— or —$SOCH_2$—.

5,185,343
NORTROPYL-1-ALKANOL DERIVATIVES AS ANTIISCHEMIC AGENTS

Bertrand L. Chenard, Waterford, Conn., assignor to Pfizer Inc., New York, N.Y.

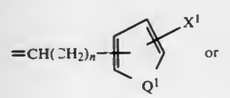
PCT No. PCT/US90/00292, § 371 Date Oct. 23, 1991, § 102(e) Date Oct. 23, 1991, PCT Pub. No. US89/02176, PCT Pub. Date May 17, 1989
PCT Filed Jan. 16, 1990, Ser. No. 784,446
Int. Cl.[5] A61K *31/46;* **C07D** *451/02, 451/06*
U.S. Cl. 514—278 **10 Claims**

1. A compound of the formula

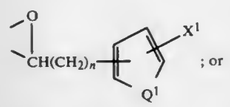


(I)

wherein
R is H, (C_1–C_6)alkyl, (C_2–C_6)alkenyl or (C_2–C_6)alkynyl;
Q is S or CH=CH;
X is hydrogen(C_1–C_3)alkyl, halo, OR^1, CO_2R^1, SR^1, NHR^1, $NHCOR^1$, $CONH_2$ or CN;
R^1 is hydrogen or (C_1–C_3)alkyl;
Y and Y^1 are taken together and are

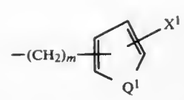


or



; or

Y and Y^1 are taken separately and Y is hydrogen or OH, and Y^1 is



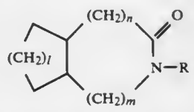
n is 0, 1, 2 or 3:
m is 0, 1, 2, 3 or 4:
Q^1 is independently a value of Q as defined above; and
X^1 is independently a value of X as defined above; or
a pharmaceutically acceptable acid addition salt thereof.

5,185,344
PHARMACEUTICALLY USEFUL BICYCLOLACTAM DERIVATIVE

Akihiro Kawaguchi; Atsushi Satoh, both of Hannou; Makoto Kajitani, Saitama; Mitsugi Yasumoto, Honjo, and Junji Yamamoto, Tokushima, all of Japan, assignors to Taiho Pharmaceutical Company, Ltd., Tokyo, Japan

PCT No. PCT/JP91/00116, § 371 Date Oct. 1, 1991, § 102(e) Date Oct. 1, 1991, PCT Pub. No. WO91/11434, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 30, 1991, Ser. No. 768,074
Claims priority, application Japan, Feb. 2, 1990, 2-24754
Int. Cl.[5] A61K *31/435;* **C07D** *22/04*
U.S. Cl. 514—299 **5 Claims**

1. A bicyclolactam derivative represented by the formula



(1)

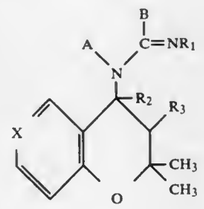
wherein R is benzoyl group which may be substituted with halogen atom, lower alkyl group, lower alkoxyl group, nitro group, cyano or amino group; l is 1; m is 0; and n is 1 or 2.

5,185,345
4-AMIDINO PYRANO (3,2-C) PYRIDINE DERIVATIVES, AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Georges Garcia, Saint-Gely-du-Fesc; Patrick Gautier, Cournonterral; Dino Nisato, Saint-Georges d'Orques, and Richard Roux, Vailhauques, all of France, assignors to Sanofi, Paris, France

Division of Ser. No. 606,864, Oct. 31, 1990, Pat. No. 5,116,849. This application Mar. 12, 1992, Ser. No. 850,994
Claims priority, application France, Nov. 6, 1989, 89 14518; Feb. 2, 1990, 90 01258
Int. Cl.[5] A61K *31/44;* **C07D** *491/04*
U.S. Cl. 514—302 **6 Claims**

1. A compound of formula (I):



(I)

in which:
A and B are linked together between N and C=NR_1 and represent —CH=CR_4-CR_5=CH—, wherein one of the substituents R_4 or R_5 denotes hydrogen and the other

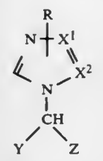
substituent is selected from the group consisting of hydrogen, halogen, nitro and C_1–C_4 alkyl;
X represents a nitrogen atom or a N-oxide group;
R_1 represents hydrogen, cyano, nitro, C_1–C_4 alkyl, hydroxyl, C_1–C_4 alkoxy, trifluoroacetyl, methanesulfonyl, benzenesulfonyl, benzenesulfonyl unsubstituted or substituted on the phenyl by methyl, halogen or trifluoromethyl;
R_2 represents hydrogen; and
R_3 represents hydroxyl or acetyloxy or R_2 and R_3 together form a bond.

5,185,346
(1H-AZOL-1-YLMETHYL)SUBSTITUTED QUINOLINE DERIVATIVES

Gerard C. Sanz, Garges les Gonesse; Marc G. Venet, Paris, both of France; Eddy J. E. Freyne, Rumst, and Alfons H. M. Raeymaekers, Beerse, both of Belgium, assignors to Janssen Pharmaceutica, Beerse, Belgium

Continuation-in-part of Ser. No. 434,205, Nov. 13, 1989, abandoned. This application May 23, 1991, Ser. No. 704,746
Claims priority, application United Kingdom, Nov. 29, 1988, 8827821
Int. Cl.[5] C07D *401/06;* **A61K** *31/47*
U.S. Cl. 514—312 **18 Claims**

1. A compound of the formula:



(I)

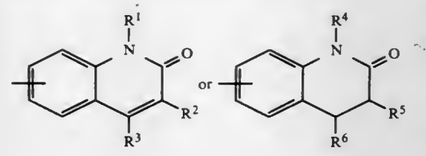
a pharmaceutically acccptable acid addition salt thereof or a stereochemically isomeric form thereof, wherein:
—X^1=X^2— represents a bivalent radical of formula

—CH=CH— (x),

—CH=N— (y), or

—N=CH— (z);

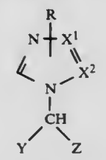
R represents hydrogen or C_1-$_6$alkyl;
Y represents hydrogen, C_1-$_{10}$alkyl, C_3-$_7$cycloalkyl, Ar^1, Ar^2—C_1-$_6$alkyl, C_2-$_6$alkenyl or C_2-$_6$alkynyl; and
Z represents a radical of the formula:



(a-1) (a-2)

wherein:
R^1 and R^4 each independently represent hydrogen, C_1-$_6$alkyl or Ar^2C_1-$_6$alkyl;
R^2 and R^5 each independently represent hydrogen, C_1-$_6$alkyl or Ar^2; and
R^3 and R^6 each independently represent hydrogen or C_1-$_6$alkyl, and
wherein in the foregoing:
Ar^1 represents phenyl, substituted phenyl, naphthalenyl, pyridinyl, imidazolyl, triazolyl, thienyl, furanyl or thiazolyl, and
Ar^2 represents phenyl or substituted phenyl,
wherein said substituted phenyl in Ar^1 or Ar^2 represents phenyl substituted with 1, 2 or 3 substituents each independently selected from the group consisting of halo, hydroxy, trifluoromethyl, C_1-$_6$alkyl, C_1-$_6$alkyloxy, cyano, amino, mono- and di(C_1-$_6$alkyl)amino, nitro, carboxyl, formyl and C_1-$_6$alkyloxycarbonyl,
provided that:
when (1) —X^1=X^2— represents a bivalent radical of formula —CH=CH—, (2) R represents hydrogen, and (3) R^1, R^2, R^3, R^4, R^5 and R^6 all represent hydrogen, then Y is other than hydrogen, C_1-$_{10}$alkyl, Ar^1 or Ar^2C_1-$_6$alkyl.

10. A composition comprising an inert carrier and, if desired, other additives, and as active ingredient an effective amount of a compound of the formula:



(I)

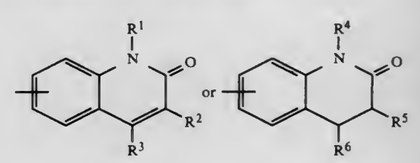
a pharmaceutically acceptable acid addition salt thereof or a stereochemically isomeric form thereof, wherein:
—X^1=X^2— represents a bivalent radical of formula

—CH=CH— (x),

—CH=N— (y), or

—N=CH— (z);

R represents hydrogen or C_1-$_6$alkyl;
Y represents hydrogen, C_1-$_{10}$alkyl, C_3-$_7$cycloalkyl, Ar^1, Ar^2—C_1-$_6$alkyl, C_2-$_6$alkenyl or C_2-$_6$alkynyl; and
Z represents a radical of the formula:



(a-1) (a-2)

wherein:
R^1 and R^4 each independently represent hydrogen, C_1-$_6$alkyl or Ar^2C_1-$_6$alkyl;
R^2 and R^5 each independently represent hydrogen, C_1-$_6$alkyl or Ar^2; and
R^3 and R^5 independently represent hydrogen or C_1-$_6$alkyl, and
wherein in the foregoing:
Ar^1 represents phenyl, substituted phenyl, naphthalenyl, pyridinyl, imidazolyl, triazolyl, thienyl, furanyl or thiazolyl, and
Ar^2 represents phenyl or substituted phenyl,
wherein said substituted phenyl in Ar^1 or Ar^2 represents phenyl substituted with 1, 2 or 3 substituents each independently selected from the group consisting of halo, hydroxy, trifluoromethyl, C_1-$_6$alkyl, C_1-$_6$alkyloxy, cyano, amino, mono- and di(C_1-$_6$alkyl)amino, nitro, carboxyl, formyl and C_1-$_6$alkyloxycarbonyl,
provided that:
when (1) —X^1=X^2— represents a bivalent radical of formula —CH=CH—, (2) R represents hydrogen, and (3) R^1, R^2, R^3, R^4, R^5 and R^6 all represent hydrogen, then Y is other than hydrogen, C_1-$_{10}$alkyl, Ar^1or Ar^2C_1-$_6$alkyl.

VOL 1147 ISS 2 FE 9 1993 UMI

5,185,347

PIPERIDINE COMPOUNDS AND ANTIULCER COMPOSITION CONTAINING THE SAME

Kiyoaki Katano; Tamako Tomomoto; Hiroko Ogino; Fumiya Hirano; Yasukatsu Yuda; Fukio Konno; Tomoya Machinami; Takashi Tsuruoka, and Shigeharu Inoye, all of Kanagawa, Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

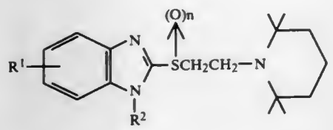
Filed May 16, 1991, Ser. No. 700,985

Claims priority, application Japan, May 16, 1990, 2-124148

Int. Cl.[5] C07D *401/12;* **A61K** *31/445*

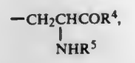
U.S. Cl. 514—322 **10 Claims**

1. A piperidine compound represented by formula (I):



(I)

wherein R^1 represents a hydrogen atom, a lower alkyl group having from 1 to 4 carbon atoms, a lower alkoxy group having from 1 to 4 carbon atoms, a hydroxymethyl group, $-CO_2R^3$, or



wherein R^3 represents a hydrogen atom or a lower alkyl group having from 1 to 4 carbon atoms; R^4 represents a hydroxyl group, a lower alkoxy group having from 1 to 4 carbon atoms or $-NR^6R^7$ (wherein R^6 and R^7, which may be the same or different, each represent a hydrogen atom or a lower alkyl group having from 1 to 4 carbon atoms); and R^5 represents a hydrogen atom, a lower alkanoyl group having from 1 to 4 carbon atoms, or a chlorobenzoyl group; R^2 represents a hydrogen atom, an alkyl group having from 1 to 4 carbon atoms, a benzyl group, or a (2,2,6,6-tetramethylpiperidin-1-yl)ethyl group; and n represents 0 or an integer of 1 or 2.

5,185,348

PHENYLSULPHONAMIDE SUBSTITUTED PYRIDINEALKENE- AND -AMINOOXYALKANECARBOXYLIC ACID DERIVATIVES

Ulrich Niewöhner, Wermelskirchen; Ulrich E. Müller, Wuppertal; Elisabeth Perzborn, Wuppertal; Erwin Bischoff, Wuppertal, and Hans-Georg Dellweg, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

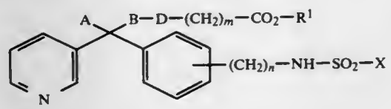
Division of Ser. No. 739,747, Aug. 2, 1991. This application May 21, 1992, Ser. No. 887,208

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1990, 4025818

Int. Cl.[5] C07D *213/55, 213/71, 213/89*

U.S. Cl. 514—335 **8 Claims**

1. A phenylsulphonamide substituted pyridinealkene- and alkanecarboxylic acid derivative of the formula



(I)

in which

A—represents hydrogen,

B—represents the $-CH_2-$ group,

or

A and B together represent a radical of the formula =CN— or =N—,

D—represents the $-CH_2-$ group or in the case in which B denotes the radical of the formula =N—, represents oxygen,

m—represents a number, 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10,

R^1—represents hydrogen or straight-chain or branched alkyl having up to 8 carbon atoms, or phenyl,

n—represents a number 0 to 4,

X—represents pyridyl which is optionally monosubstituted to trisubstituted by identical or different substituents from the series comprising halogen, cyano, phenoxy, trifluoromethoxy and straight-chain or branched alkyl having up to 8 carbon atoms, which, in turn, can be monosubstituted to trisubstituted by identical or different halogen substituents

or a salt thereof.

5,185,349

SUBSTITUTED AMIDE ACAT INHIBITORS LACTONE DERIVATIVES

Corinne E. Augelli-Szafran, Ypsilanti, Mich., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 8, 1991, Ser. No. 666,300

Int. Cl.[5] A01N *43/40;* **C07D** *309/06*

U.S. Cl. 514—336 **10 Claims**

1. A compound of Formula I or Formula II

Formula I



Formula II

wherein n is an integer of from 1 to 3; wherein Y is oxygen or sulfur; wherein X is oxygen or N-R_3; wherein R_1 is selected from

(a) hydrogen;

(b) a straight or branched saturated hydrocarbon chain having from 1 to 20 carbon atoms;

(c) A cycloalkyl group having from 3 to 6 carbon atoms;

(d) the group

wherein t is zero to 4; p is zero to 4 with the proviso that the sum of t and p is not greater than 5; R_4 and R_5 are independently selected from hydrogen or alkyl having from 1 to 6 carbon atoms, or when R_4 is hydrogen, R_5 can be selected from the groups defined for R_6 and R_6 is phenyl or phenyl substituted with from 1 to 3 substituents selected from straight or branched alkyl having from 1 to 6 carbon atoms, straight or branched alkoxy having from 1 to 6 carbon atoms, straight or branched thioalkoxy having from 1 to 6 carbon atoms, phenoxy, hydroxy, nitro, trifluoromethyl, or NR_7R_8 wherein R_7 and R_8 are the same or different and are hydrogen or alkyl of from 1 to 4 carbon atoms;

(e) phenyl or phenyl substituted with from 1 to 3 substituents selected from straight or branched alkyl having from 1 to

3 substituents selected from straight or branched alkyl having from 1 to 6 carbon atoms, straight or branched alkoxy having from 1 to 6 carbon atoms, straight or branched thioalkoxy having from 1 to 4 carbon atoms, phenoxy, hydroxy, nitro, trifluoromethyl, or NR_7R_8 wherein R_7 and R_8 have the meanings defined above;

(f) 2-, 3-, or 4-pyridyl;

wherein R_3 is selected from

(a) hydrogen;

(b) a straight or branched hydrocarbon chain having from 1 to 20 carbon atoms and which is saturated or contains from 1 to 3 double bonds; or

(c) phenyl or phenyl substituted with from 1 to 3 substituents selected from straight or branched alkyl having from 1 to 6 carbon atoms, straight or branched alkoxy having from 1 to 6 carbon atoms, straight or branched thioalkoxy having from 1 to 6 carbon atoms, phenoxy, hydroxy, nitro, trifluoromethyl, or NR_7R_8 wherein R_7 and R_8 have the meanings defined above;

wherein R_2 is hydrogen, a straight or branched alkyl group having from 1 to 6 carbon atoms, $-(CH_2)_m-Ph$ wherein m is an integer of from 1 to 3 and Ph is phenyl optionally substituted with from 1 to 3 substituents selected from straight or branched alkyl having from 1 to 4 carbon atoms, straight or branched alkoxy having from 1 to 4 carbon atoms;

wherein Ar is selected from:

(a) phenyl which is unsubstituted or is substituted with from 1 to 3 substituents selected from

alkyl having from 1 to 6 carbon atoms and which is straight or branched,

alkoxy having from 1 to 6 carbon atoms and which is straight or branched,

phenoxy,

hydroxy,

fluorine,

chlorine,

bromine,

nitro,

trifluoromethyl,

—COOH,

—COOalkyl wherein alkyl has from 1 to 4 carbon atoms, or

—NR_7R_8 wherein R_7 and R_8 have the meanings defined above;

wherein M+ is an alkali metal cation and pharmaceutically acceptable salts thereof.

5,185,350

SUBSTITUTED PYRIDINYLAMINO-1H-INDOLES,1H-INDAZOLES,2H-INDAZOLES, BENZO (B)THIOPHENES AND 1,2-BENZISOTHIAZOLES

Richard C. Effland; Joseph T. Klein, both of Bridgewater, and Lawrence L. Martin, Lebanon, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Incorporated, Somerville, N.J.

Filed Sep. 23, 1991, Ser. No. 764,031

Int. Cl.[5] C07D *401/02;* **A61K** *31/44*

U.S. Cl. 514—339 **11 Claims**

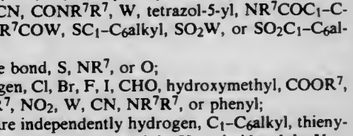
1. A compound of the formula

wherein

Q is N or NR_2;

Y is CH;

R_1 is hydrogen, loweralkyl, loweralkynyl, loweralkenyl, arylloweralkyl, loweralkoxycarbonylaminoloweralkylcarbonyl, arylloweralkoxycarbonylaminoloweralkylcarbonyl, aminoloweralkylcarbonyl, loweralkoxycarbonyl or acyl; the term "aryl" in each occurrence signifying a phenyl group substituted with 0, 1 or 2 substituents each of which being independently loweralkyl, loweralkoxy, halogen or trifluoromethyl; the term "acyl" in each occurrence signifying a substitutent of the formula



R_2 is hydrogen or loweralkyl;

R_3 is hydrogen or loweralkyl;

X is hydrogen, loweralkyl or halogen, and n is 0 or 1; or a pharmaceutically acceptable acid addition salt thereof.

5,185,351

IMIDAZOLYL-ALKENOIC ACIDS USEFUL AS ANGIOTENSIN II RECEPTOR ANTAGONISTS

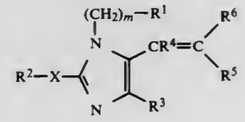
Joseph A. Finkelstein, Philadelphia; Richard M. Keenan, Malvern, and Joseph Weinstock, Phoenixville, all of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 629,123, Dec. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 506,412, Apr. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 366,079, Jun. 14, 1989, abandoned. This application Aug. 14, 1991, Ser. No. 746,262

Int. Cl.[5] C07D *401/06, 409/06;* **A61K** *31/415, 31/44*

U.S. Cl. 514—341 **42 Claims**

1. A compound of the formula:



in which:

R^1 is adamantyl, phenyl, biphenyl, or naphthyl, with each aryl group being unsubstituted or substituted by one to three substituents selected from Cl, Br, F, I, C_1–C_6alkyl, nitro, A—CO_2R^7, tetrazol-5-yl, C_1–C_6alkoxy, hydroxy, SC_1–C_6alkyl, SO_2NHR^7, $NHSO_2R^7$, SO_3H, $CONR^7R^7$, CN, SO_2C_1–C_6alkyl, $NHSO_2R^7$, $PO(OR^7)_2$, NR^7R^7, NR^7COH, NR^7COC_1–C_6-alkyl, $NR^7CON(R^7)_2$, NR^7COW, W, SO_2W;

m is 0–4;

R^2 is C_2–C_{10}alkyl, C_3–C_{10}alkenyl, C_3–C_{10}alkynyl, C_3–C_6cycloalkyl, or $(CH_2)_{0-8}$phenyl unsubstituted or substituted by one to three substituents selected from C_1–C_6alkyl, nitro, Cl, Br, F, I, hydroxy, C_1–C_6alkoxy, NR^7R^7, CO_2R^7, CN, $CONR^7R^7$, W, tetrazol-5-yl, NR^7COC_1–C_6alkyl, NR^7COW, SC_1–C_6alkyl, SO_2W, or SO_2C_1–C_6alkyl;

X is a single bond, S, NR^7, or O;

R^3 is hydrogen, Cl, Br, F, I, CHO, hydroxymethyl, $COOR^7$, $CONR^7R^7$, NO_2, W, CN, NR^7R^7, or phenyl;

R^4 and R^5 are independently hydrogen, C_1–C_6alkyl, thienyl—Y—, furyl—Y—, pyrazolyl—Y—, imidazolyl—Y—, pyrrolyl—Y—, triazolyl—Y—, oxazolyl—Y—, isoxazolyl—Y—, thiazolyl—Y—, pyridyl—Y—, or tetrazolyl—Y—, except that R^4 and R^5 are not both selected from hydrogen and C_1–C_6alkyl and each heterocyclic

VOL 1147 ISS 2 FE 9 1993 UMI

ring is unsubstituted or substituted by C_1-C_6alkyl, C_1-C_6alkoxy, Cl, Br, F, I, NR^7R^7, CO_2R^7, SO_2NHR^7, SO_3H, or $CONR^7R^7$, OH, NO_2, W, SO_2W, SC_1-C_6alkyl, SO_2C_1-C_6alkyl, NR^7COH, NR^7COW, or NR^7COC_1-C_6alkyl;

Y is a single bond, O, S, or C_1-C_6alkyl which is straight or branched or optionally substituted by phenyl or benzyl, wherein each of the aryl groups is unsubstituted or substituted by halo, NO_2, CF_3, C_1-C_6alkyl, C_1-C_6alkoxy, CN, or CO_2R^7;

R^6 is —Z—$COOR^8$ or —Z—$CONR^7R^7$;

Z is a single bond, vinyl, $—CH_2—O—CH_2—$, methylene optionally substituted by C_1-C_6alkyl, one or two benzyl groups, thienylmethyl, or furylmethyl, or —C(O)NHCH-R^9—, wherein R^9 is H, C_1-C_6alkyl, phenyl, benzyl, thienylmethyl, or furylmethyl;

W is C_nF_{2n+1}, wherein n is 1-3;

A is $—(CH_2)_m—$, —CH=CH—, $—O(CH_2)_n—$, or $—S(CH_2)_n—$;

each R^7 independently is hydrogen, C_1-C_6alkyl, or $(CH_2)_m$phenyl; and

R^8 is hydrogen, C_1-C_6alkyl, or 2-di(C_1-C_6alkyl)-amino-2-oxoethyl; or a pharmaceutically acceptable salt thereof.

5,185,352

ALKOXY-4(1H)-PYRIDONE DERIVATIVES, PROCESSES FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Julian Aranda, Vörstetten; Johannes Hartenstein, Stegen-Wittental; Reinhard Reck, Sexau; Christopher Schächtele, Freiburg; Claus Rudolph, Vörstetten; Hartmut Osswald, Emmendingen, and Günter Weinheimer, Denzlingen, all of Fed. Rep. of Germany, assignors to Goedecke Aktiengesellschaft, Berlin, Fed. Rep. of Germany

PCT No. PCT/EP89/00927, § 371 Date Jan. 28, 1991, § 102(e) Date Jan. 28, 1991, PCT Pub. No. WO90/01477, PCT Pub. Date Feb. 22, 1990

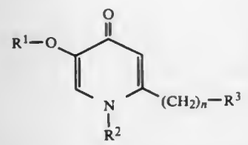
PCT Filed Aug. 4, 1989, Ser. No. 640,407

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1988, 3826846

Int. Cl.[5] **C07D** *213/69, 401/06, 309/30;* **A61K** *31/44*

U.S. Cl. 514—348 **12 Claims**

1. A compound of formula



I

or a pharmaceutically acceptable salt thereof wherein

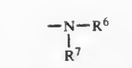
R^1 is straight or branched, saturated or unsaturated alkyl of from 10 to 22 carbon atoms or adamantylalkyl of from 1 to 22 carbon atoms;

R^2 is a straight or branched, saturated or unsaturated alkyl of from 1 to 5 carbon atoms, a cycloalkylmethyl radical having 5 to 7 carbon atoms in the cycloalkyl ring, phenyl, phenylalkyl with 1 to 5 carbon atoms in the straight or branched alkyl chain which phenyl ring is unsubstituted or substituted by halogen, hydroxyl, alkyl of from 1 to 5 carbon atoms, alkoxy of from 1 to 5 carbon atoms, dialkylamino having of from 1 to 5 carbon atoms, benzyloxy;

n is an integer of from 1 to 5; and

R^3 is selected from

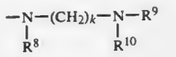
a) halogen, hydroxyl, cyano, carboxamido, alkoxycarbonyl having 1 to 5 carbon atoms in the alkyl moiety or amino of formula



III

wherein R^6 and R^7, which are each independently hydrogen, alkyl or omegahydroxyalkyl of from 1 to 5 carbon atoms, phenyl, phenylalkyl with from 1 to up to 5 carbon atoms in the straight or branched alkyl which phenyl ring is unsubstituted or substituted by halogen, hydroxyl, alkyl of from 1 to 5 carbon atoms, alkoxy of from 1 to 5 carbon atoms, dialkylamino of from 1 to 5 carbon atoms, or benzyloxy;

b)

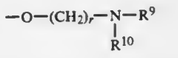


IV

wherein R^8 is hydrogen or alkyl of from 1 to 5 carbon atoms, R^9 and R^{10} are each independently hydrogen, alkyl of from 1 to 5 carbon atoms, phenyl, phenylalkyl with from 1 to 5 carbon atoms in the straight or branched alkyl chain such phenyl ring is unsubstituted or substituted by halogen, hydroxyl, alkyl of from 1 to 5 carbon atoms, alkoxy of from 1 to 5 carbon atoms, dialkylamino of from 1 to 5 carbon atoms, benzyloxy; and k is an integer of from 2 to 5;

and

c)



VIII

wherein R^9 and R^{10} have the above-given meanings and r is an integer of from 2 to 5.

5,185,353

1,2 OXAZOLES USED FOR CONTROLLING NEMATODE PESTS

Michael D. Turnbull, Reading; Robert W. Parsons, Wokingham, and Andrew D. S. Watkins, Crewe, all of England, assignors to Imperial Chemical Industries PLC, London, England

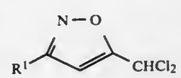
Filed Nov. 8, 1990, Ser. No. 610,891

Claims priority, application United Kingdom, Nov. 14, 1989, 8925739

Int. Cl.[5] **A01N** *43/82, 43/76, 43/80;* **C07D** *261/06, 263/34, 271/12*

U.S. Cl. 514—364 **10 Claims**

1. A method for killing or controlling nematode pests which comprises applying to the locus of the pests or to a plant susceptible to attack by the pest an effective amount of a compound of formula (I):



(I)

wherein R^1 is selected from the group, phenyl, substituted phenyl, furyl, substituted furyl, pyrryl, substituted pyrryl, benzfur-2-yl, substituted benzfur-2-yl, naphth-1-yl, substituted naphth-1-yl, furan-2-yl, substituted furan-2-yl, furan-3-yl, substituted furan-3-yl, thiophen-2-yl, substituted thiophen-2-yl, thiophen-3-yl, substituted thiophen-3-yl, oxazol-2-yl, substituted oxazol-2-yl, 4,5dihyro-oxazol-2-yl, substituted 4,5dihydro-oxazol-2-yl, oxadiazol-5-yl and substituted oxadiazol-5-yl wherein the substituents of R^1 are one or more substituents selected from the group halo, hydroxy, C_1-C_6 alkyl, C_1-C_6 alkylthio, C_1-C_6 alkoxy, cyano, acetoxy, C_1-C_6 haloalkyl, C_1-C_6 alkylcarbonyloxy, C_1-C_6 alkylsulphonyl and C_1-C_6 alkylcarbonylamino wherein the C_1-C_6 alkylcarbonylamino can be substituted with halogen.

5,185,354

PYRAZOLECARBOXAMIDE, INSECTICIDAL AND MITICIDAL COMPOSITION, AND FUNGICIDAL COMPOSITION FOR USE IN AGRICULTURE AND HORTICULTURE

Bunji Natsume, Yokohama; Nobuo Kyomura, Sagamihara; Kazuhiko Kikutake, Yokohama, and Toshiki Fukuchi, Machida, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

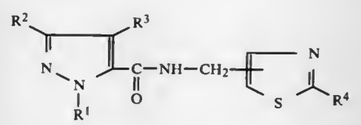
Filed Jun. 17, 1991, Ser. No. 716,109

Claims priority, application Japan, Jun. 18, 1990, 2-158991

Int. Cl.[5] **C07D** *417/12;* **A01N** *43/78*

U.S. Cl. 514—369 **9 Claims**

1. A pyrazolecarboxamide derivative represented by the following formula (I):



(I)

wherein R^1 represents a C_1-C_3 alkyl group, R^2 represents a C_1-C_3 alkyl group, R^3 represents a hydrogen atom or halogen atom, R^2 and R^3 may combine to form a C_3-C_4 alkylene group which may be substituted by a C_1-C_3 alkyl group, and R^4 represents a C_1-C_6 alkyl group, benzyl group which may be substituted by at least one substituent selected from the group consisting of halogen atom, C_1-C_4 alkyl group, C_1-C_4 haloalkyl group, C_3-C_6 cycloalkyl group, hydroxyl group, C_1-C_4 alkoxy group, C_1-C_4 haloalkyoxy group, mercapto group, C_1-C_4 alkylthio group, C_1-C_4 alkylsulfinyl group, C_1-C_4 alkylsulfonyl group, carboxyl group, C_2-C_5 alkoxycarbonyl group, cyano group, C_1-C_5 acyl group, hydroxymethyl group, C_2-C_5 alkoxyalkyl group, nitro group, amino group, C_1-C_4 alkylamino group, and C_2-C_6 dialkylamino group; or a group represented by $—XR^5$ wherein X represents an oxygen atom, sulfur atom, sulfinyl group or sulfonyl group, and R^5 represents a C_1-C_8 alkyl group, C_2-C_6 alkenyl group, C_3-C_7 cycloalkyl group which may be substituted by a C_1-C_3 alkyl group, C_1-C_5 haloalkyl group or phenyl group which may be substituted by at least one substituent selected from the group consisting of halogen atom, C_1-C_4 alkyl group, C_1-C_4 haloalkyl group, C_3-C_6 cycloalkyl group, hydroxyl group, C_1-C_4 alkoxy group, C_1-C_4 haloalkoxy group, C_1-C_4 alkylsulfonyl group, carboxyl group, C_2-C_5 alkoxycarbonyl group, cyano group, C_1-C_5 acyl group, hydroxymethyl group, C_2-C_5 alkoxyalkyl group, nitro group, amino group, C_1-C_4 alkylamino group, and C_2-C_6 dialkylamino group.

5,185,355

BIOCIDAL COMBINATIONS CONTAINING 4,5-DICHLORO-2-CYCLOHEXYL-3-ISOTHIAZOLONE AND CERTAIN COMMERCIAL BIOCIDES

Jemin C. Hsu, Fort Washington, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 625,281, Dec. 10, 1990, Pat. No. 5,157,045. This application Mar. 2, 1992, Ser. No. 844,254

Int. Cl.[5] **A01N** *37/02, 43/76, 43/80*

U.S. Cl. 514—372 **8 Claims**

1. A microbicidal composition comprising a synergistic mixture the first component of which is 4,5-dichloro-2-cyclohexyl-3-isothiazolone and the second component of which is selected from one, two or three of the following: a mixture of 4,4-dimethyloxazoline and 4,4-dimethyl-N-methyloxazoline, 5-polyhydroxymethyleneoxy-methyl-1-aza-3,7-dioxabicyclo(3,3,0)octane, and benzylbromoacetate, wherein the synergistic weight ratio of first component to second component is in the range of from about 1:1 to about 1:4000.

5,185,356

THREE COMPONENT BIOCIDAL ISOTHIAZOLINONE COMPOSITION

Bryan S. Backhouse, Leefdaal, Belgium, and William A. Fern, Rochdale, England, assignors to Imperial Chemical Industries PLC, Millbank, United Kingdom

Filed Jun. 11, 1990, Ser. No. 536,132

Claims priority, application United Kingdom, Jun. 13, 1989, 8913513

Int. Cl.[5] **A61K** *31/425;* **C07D** *275/04, 275/02*

U.S. Cl. 514—372 **16 Claims**

1. A particulate solid comprising (a) from 10 to 45 weight percent of an isothiazolinone or an isothiazolothione derivative, or a salt or complex thereof, (b) from 10 to 50 weight percent of a water-soluble inorganic salt which does not form a water insoluble salt or water insoluble complex with the said isothiazolinone or isothiazolothione or salt or complex thereof; and (c) from 10 to 45 percent of absorbed water.

5,185,357

INDUSTRIAL ANTIFUNGAL COMPOSITION

Keiichiro Inui, Matsubara, Japan, assignor to Shinto Paint Co., Ltd., Amagasaki, Japan

Filed Feb. 21, 1991, Ser. No. 657,788

Claims priority, application Japan, Feb. 26, 1990, 2-46672

Int. Cl.[5] **A01N** *43/52, 43/80*

U.S. Cl. 514—372 **1 Claim**

1. An industrial antifungal composition which comprises a synergistic mixture of 10–90% by weight of methyl 2-benzimidazole carbamate, based on the total weight of effective ingredients, and 4,5-dichloro-2-octylisothiazoline-3-one.

5,185,358

3-HETEROATOM CONTAINING UREA AND THIOUREA ACAT INHIBITORS

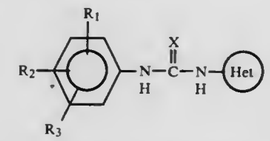
Mark W. Creswell, Chelsea, and Andrew D. White, Lakeland, both of Mich., assignors to Warner-Lambert Co., Morris Plains, N.J.

Filed Jun. 24, 1991, Ser. No. 719,907

Int. Cl.[5] **A61K** *31/41;* **C07D** *249/12, 249/08, 403/14*

U.S. Cl. 514—383 **7 Claims**

1. A compound of the formula



wherein X is oxygen or sulfur; wherein each of R^1, R^2, and R^3 is the same or different and is selected from

hydrogen,

fluorine,

chlorine,

bromine,

a straight or branched alkyl group having from one to six carbon atoms,

a straight or branched alkoxy group having from one to six carbon atoms,

benzoyl which is unsubstituted or is substituted on the aromatic ring with from one to three substituents selected from fluorine, chlorine, bromine, iodine, a straight or branched alkyl group having from one to six carbon atoms or a straight or branched alkoxy group having from one to six carbon atoms,

benzyl which is unsubstituted or is substituted on the aro-

VOL 1147 ISS 2 FEB 9 1993 UMI

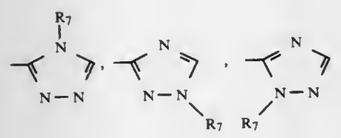
matic ring with from one to three substituents selected from fluorine, chlorine, bromine, iodine, a straight or branched alkyl group having from one to six carbon atoms, or a straight or branched alkoxy group having from one to six carbon atoms,

phenyl which is unsubstituted or is substituted with from one to three substituents selected from fluorine, chlorine, bromine, iodine, a straight or branched alkyl group having from one to six carbon atoms, or a straight or branched alkoxy group having from one to six carbon atoms;

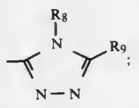
$-NR_4R_5$ wherein each of R_4 and R_5 is the same or different and is hydrogen, a straight or branched alkyl group having from one to four carbon atoms, or $-NR_4R_5$ taken together form a monocyclic heterocyclic group selected from pyrrolidino, piperidino, piperazino, or piperazino substituted on the 4-position with a straight or branched alkyl group having from one to four carbon atoms;

$-COR_6$ wherein R_6 is hydroxy, a straight or branched alkoxy group having from one to six carbon atoms, benzyloxy which is unsubstituted or is substituted on the aromatic ring with from one to three substituents selected from fluorine, chlorine, bromine, iodine, a straight or branched alkyl group having from one to six carbon atoms, or a straight or branched alkoxy group having from one to six carbon atoms, or R_6 is $-NR_4R_5$ wherein R_4 and R_5 have the meanings defined above;

wherein Het is selected from:

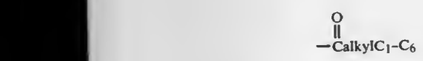


or



wherein R_7 is a straight or branched alkyl group having from 1 to 16 carbon atoms;

wherein R_8 is hydrogen or



wherein the alkyl moiety is straight or branched;

wherein R_9 is a straight or branched alkyl group having from 1 to 16 carbon atoms or $-S(O)_p$-alkyl wherein the alkyl moiety is straight or branched and has from 1 to 16 carbon atoms and p is zero, one or two;

or a pharmaceutically acceptable salt thereof.

5,185,359

N-PHENOXPHENYLOXYMETHYL SUBSTITUTED AZOLES AND METHOD FOR CONTROLLING PESTS THEREWITH

Rainer Buerstinghaus, Telgte; Hans-Juergen Neubauer, Mannheim; Peter Hofmeister, Neustadt; Christoph Kuenast, Otterstadt; Joachim Leyendecker, Mannheim, and Uwe Kardorff, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

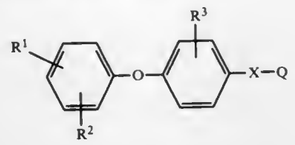
Division of Ser. No. 516,925, Apr. 30, 1990, Pat. No. 5,116,860, which is a division of Ser. No. 184,804, Apr. 22, 1988, Pat. No. 4,943,585. This application Mar. 11, 1992, Ser. No. 850,953

Claims priority, application Fed. Rep. of Germany, May 2, 1987, 3714709; Jan. 23, 1988, 3801919

Int. Cl.[5] **A01N** *43/56;* **C07D** *231/36, 231/34, 231/18*

U.S. Cl. 514—407 **4 Claims**

1. N-substituted azole of the formula I

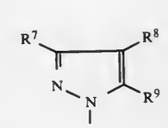


(I)

where

R^1, R^2, R^3 are each hydrogen, halogen, C_1–C_8-alkyl, C_1–C_8-alkoxy, C_1–C_4-haloalkyl, C_1–C_4-haloalkoxy, C_3–C_{10}-cycloalkyl, nitro or cyano,

Q is an unsubstituted or substituted azole group of the formulae



(IIb)

R^7 to R^9 denoting hydrogen, halogen, C_1–C_8-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_3–C_{10}-cycloalkyl or phenyl or naphthyl which is unsubstituted or mono-, di- or trisubstituted by halogen, C_1–C_8-alkyl, C_1–C_8-alkoxy, C_1–C_4-haloalkyl or C_1–C_4-haloalkoxy, and

X is $-OCH_2-$.

5,185,360

DIHYDROINDENOINDOLE COMPOUNDS AND METHODS FOR USING THE SAME

Malcolm Sainsbury, Bristol, United Kingdom, and Howard G. Shertzer, Cincinnati, Ohio, assignors to University of Bath, Bath, England and University of Cincinnati, Cincinnati, Ohio

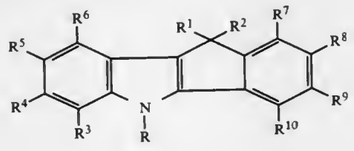
Continuation of Ser. No. 542,312, Jun. 22, 1990, abandoned. This application Jun. 3, 1991, Ser. No. 709,656

Claims priority, application Sweden, Jun. 22, 1989, 8902273

Int. Cl.[5] **C07D** *209/94, 209/70;* **A61K** *31/40*

U.S. Cl. 514—410 **23 Claims**

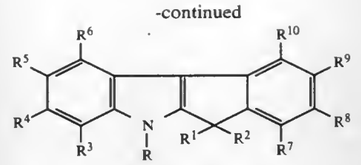
1. A compound of the formula IA or IB



IA

or

-continued



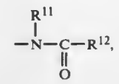
IB

or a pharmaceutically acceptable salt thereof wherein R is hydrogen or an alkyl group containing 1–6 carbon atoms,

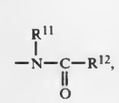
R^1 and R^2 are independently selected from hydrogen or an alkyl group containing 1–6 carbon atoms,

R^3, R^4 and R^6 are independently selected from hydrogen, halogen or an alkyl group containing 1–6 carbon atoms,

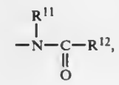
R^5 is hydrogen, hydroxy, halogen, an alkyl group containing 1–6 carbon atoms, an alkoxy group containing 1–6 carbon atoms, a mono- or di-alkylamino group containing 1–4 carbon atoms in each alkyl part, NH_2 or



R^7, R^9 and R^{10} are independently selected from hydrogen, hydroxy, an alkyl group containing 1–6 carbon atoms, an alkoxy group containing 1–6 carbon atoms, a mono- or di-alkylamino group containing 1–4 carbon atoms in each alkyl part, NH_2 or



R^8 is a mono- or dialkylamino group containing 1–4 carbon atoms in each alkyl part of



R^{11} is hydrogen or an alkyl group containing 1–6 carbon atoms, and

R^{12} is an alkyl group containing 1–6 carbon atoms.

5,185,361

PHARMACEUTICAL COMPOUNDS

Jeremy Gilmore, Frimley, Great Britain, assignor to Lilly Industries Limited, Besingstoke, United Kingdom

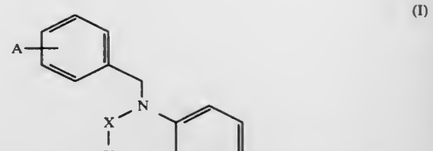
Filed Sep. 18, 1991, Ser. No. 761,587

Claims priority, application United Kingdom, Sep. 18, 1990, 9020338.1

Int. Cl.[5] **A61K** *31/405;* **C07D** *209/10*

U.S. Cl. 514—415 **7 Claims**

1. A compound of the formula



(I)

in which A is selected from $-NHCOR^1$, $-NHCOOR^1$, $-NHCONHR^1$, $-NHCSNHR^1$, $-CONHR^1$, where R^1 is optionally halo-substituted C_{1-10} alkyl, C_{2-10} alkenyl, C_{3-7} cycloalkyl-C_{1-4} alkyl or phenyl-C_{1-4} alkyl, B is optionally substituted phenyl, and $-X-Y-$ is $-CH=CH-$ or $-CH_2-CH_2-$; or a salt thereof.

5,185,362

DIPHENYLAMINE CARDIOVASCULAR AGENTS, COMPOSITIONS AND USE

Philip P. Grous, Philadelphia, and Richard J. Mohrbacher, Maple Glen, both of Pa., assignors to McNeilab, Inc., Spring House, Pa.

Continuation of Ser. No. 532,137, May 31, 1990, abandoned, which is a continuation of Ser. No. 244,772, Sep. 14, 1988, abandoned. This application Jul. 8, 1991, Ser. No. 728,791

Int. Cl.[5] **A61K** *31/40;* **C07D** *295/088*

U.S. Cl. 514—428 **10 Claims**

1. A propylamine compound selected from the group consisting of:

N-(2,6-dichlorophenyl)-beta-[[1-methylcyclohexyl)methoxy]-methyl]-N-phenyl-1-pyrrolidineethanamine;

N-(2,6-dimethyphenyl)-beta-[[(1-methylcyclohexyl)-methoxy]-methyl]-N-(phenyl)-1-pyrrolidineethanamine;

and a pharmaceutically acceptable acid addition salt thereof.

5,185,363

UREA BASED LIPOXYGENASE INHIBITING COMPOUNDS

Dee W. Brooks, Libertyville; Daniel J. Kerkman, Lake Villa; Jonathan G. Martin, Waukegan; Andrew O. Stewart, Wildwood, and James B. Summers, Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

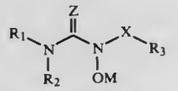
PCT No. PCT/US90/01488, § 371 Date Sep. 30, 1991, § 102(e) Date Sep. 30, 1991, PCT Pub. No. WO90/12008, PCT Pub. Date Oct. 18, 1990

Continuation-in-part of Ser. No. 331,566, Mar. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 42,491, Apr. 24, 1987, abandoned, which is a continuation-in-part of Ser. No. 856,725, Apr. 25, 1986, abandoned. This PCT application Mar. 20, 1991, Ser. No. 768,621

Int. Cl.[5] **A61K** *31/38, 333/32, 333/22*

U.S. Cl. 514—438 **5 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof, wherein

Z is oxygen or sulfur,

X is selected from the group consisting of

alkylene of from one to six carbon atoms;

alkenylene of from two to six carbon atoms;

alkylene of from one to six carbon atoms substituted by a group selected from

hydroxy,

VOL 1147 ISS 2 FEB 9 1993 UMI

halo,
cyano,
alkoxy,
aminocarbonyl,
alkylaminocarbonyl,
dialkylaminocarbonyl,
carboxyl, and
alkoxycarbonyl;
alkenylene of from two to six carbon atoms substituted by a group selected from
hydroxy,
halo,
cyano,
alkoxy,
aminocarbonyl,
alkylaminocarbonyl,
dialkylaminocarbonyl,
carboxyl, and
alkoxycarbonyl;
R^1 and R^2 are independently selected from the group consisting of
hydrogen;
hydroxy;
alkyl of from one to six carbon atoms;
alkyl of from one to six carbon atoms substituted with a group selected from
hydroxy;
halo;
cyano;
alkoxy;
alkylthio;
aminocarbonyl;
alkylaminocarbonyl;
dialkylaminocarbonyl;
carboxy;
alkoxycarbonyl;
aryl; and
aryl substituted with a substituent selected from the group consisting of
hydroxy,
halo,
cyano,
alkoxy,
alkylthio,
amino,
alkylamino,
dialkylamino,
aminocarbonyl,
alkylaminocarbonyl,
dialkylaminocarbonyl,
carboxyl, and
alkoxycarbonyl;
R^3 is selected from the group consisting of
thienyl; and
thienyl substituted by
alkyl of from one to six carbon atoms,
alkenyl of from two to six carbon atoms,
cycloalkyl of from three to ten carbon atoms,
alkoxy of from one to six carbon atoms,
alkylthio of from one to six carbon atoms,
halo,
nitro,
hydroxy;
substituted or unsubstituted aryl,
substituted or unsubstituted aryloxy,
substituted or unsubstituted aroyl,
substituted or unsubstituted arylalkyl wherein the alkyl portion contains from one to six carbon atoms,
substituted or unsubstituted arylalkenyl wherein the alkenyl portion contains from two to six carbon atoms,
substituted or unsubstituted arylalkynyl wherein the alkynyl portion contains from two to six carbon atoms,
substituted or unsubstituted arylalkoxy wherein the alkoxy portion contains from one to six carbon atoms,
substituted or unsubstituted arylalkylthio wherein the alkylthio portion contains from one to six carbon atoms,
wherein said substituted aryl groups are optionally substituted by one, two, or three groups independently selected from the group consisting of halo, nitro, cyano, alkyl, alkoxy, and halosubstituted alkyl;
M is selected from the group consisting of
hydrogen,
a pharmaceutically acceptable cation,
a metabolically cleavable group,
aroyl,
$-Si(R^5)_3$ wherein R^5 is independently selected at each occurrence from alkyl of from one to six carbon atoms,
$-C(O)R_4$,
$-CH_2OR_4$,
$-C(O)N(R^4)_2$ and
$-C(O)OR^4$
wherein R^4 is alkyl of one to six carbon atoms;
with the proviso that R^1 and R^2 are not simultaneously hydroxy.

5,185,364

AMINOMETHYL-CHROMAN AND -THIOCHROMAN COMPOUNDS

John F. DeBernardis, Lake Villa; David L. Arendsen, Libertyville, and Robert E. Zelle, Grayslake, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

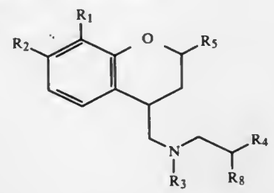
Division of Ser. No. 543,782, Jan. 13, 1989, Pat. No. 5,089,519, which is a continuation-in-part of Ser. No. 144,363, Jan. 15, 1988, abandoned. This application Oct. 31, 1991, Ser. No. 786,150

Claims priority, application World Int. Prop. O., Jan. 13, 1989, PCT/US89/00141

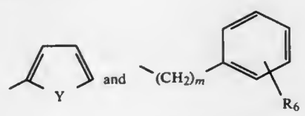
Int. Cl.[5] **A61K** *31/38;* **C07D** *409/06*

U.S. Cl. 514—444 **6 Claims**

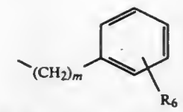
1. A compound of the formula



wherein
R_1 and R_2 are independently selected from the group consisting of hydrogen, hydroxy, halo, loweralkoxy, thioalkoxy, and loweralkyl;
R_3 is loweralkyl;
R_4 is selected from



and
wherein Y is O or S, R_6 is hydrogen, methoxy or halo, and m is 0 or 1;
R_5 is hydrogen, loweralkyl, phenyl, or substituted phenyl wherein the phenyl ring is substituted with one, two or three substituents independently selected from loweralkyl, halo, hydroxyl, loweralkoxy, amino, and thioalkoxy; and
R_8 is hydrogen, or R_3 and R_8 taken together form a pyrrolidine ring; with the proviso that when R_4 is



then R_3 and R_8 taken together form a pyrrolidine ring; or a pharmaceutically acceptable salt thereof.

5,185,365

INSECT DETERRENT AZAMCROLIDES

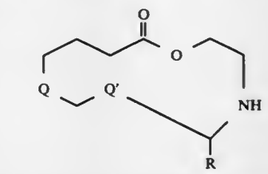
Thomas Eisner; Athula B. Attygalle, and Kevin D. McCormick, all of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Jun. 24, 1992, Ser. No. 903,347

Int. Cl.[5] **A01N** *43/22;* **C07D** *267/00*

U.S. Cl. 514—450 **12 Claims**

1. Substantially pure azamacrolide having the structural formula



wherein Q is CH═CH or CH_2, $(CH_2)_2$, wherein Q' is CH_2, $(CH_2)_3$, $(CH_2)_4$ or CH═CH—CH_2 and R is ethyl or propyl.

5,185,366

METHOD FOR TREATMENT AND PREVENTION OF DISEASES CAUSED BY ENVELOPED VIRUSES, INCLUDING HERPES SIMPLEX VIRUS TYPES 1 AND 2 DISEASES, USING 3,4-DIHYDROXY-2H-BENZOPYRAN-2H-ONE

Donald T. Witiak, Mt. Vernon; John H. Hughes, and Charis T. Mavromoustakis, both of Columbus, all of Ohio, assignors to Ohio State University Research Foundation, Columbus, Ohio

Filed Jul. 31, 1990, Ser. No. 561,015

Int. Cl.[5] **A61K** *31/35*

U.S. Cl. 514—456 **8 Claims**

1. A method for treating infectious viral diseases caused by herpes simplex virus types 1 or 2 comprising administering to a host having the viral diseases a pharmaceutical composition containing as an active ingredient 3,4-dihydroxy-2H-benzopyran-2-one in association with a pharmaceutically acceptable carrier, the active ingredient being present in a therapeutically effective amount to exhibit antiviral activity.

5,185,367

Patent Not Issued For This Number

5,185,368

POLYETHYLENE GLYCOL CARBAMATES

Heinrich Peter, Binningen, and Theophile Moerker, Füllinsdorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

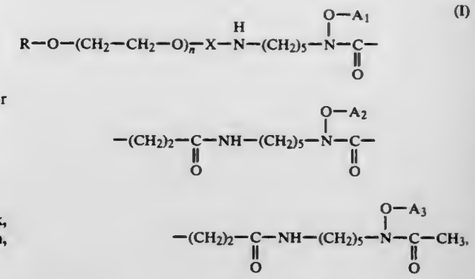
Filed Jul. 20, 1988, Ser. No. 221,860

Claims priority, application Switzerland, Jul. 23, 1987, 2794/87

Int. Cl.[5] **A61K** *31/00*

U.S. Cl. 514—476 **11 Claims**

1. A compound of the formula



in which R is an alkyl having up to 4 carbon atoms, n has an verage value of at least 9, X is a radical of the formula —C(═O)—(NH—SO_2)$_m$— in which m is 0 or 1 and, if m is 1, the carbonyl group may be bonded to the oxygen atom or to the nitrogen atom, and each of the radicals A_1, A_2 and A_3 has the same meaning and is hydrogen, or alkanoyl or alkenoyl each having upto and including 20 carbon atoms, alkoxycarbonyl having up to and including 20 carbon atoms in the alkyl moiety, oxaalkoxycarbonyl having up to and including 20 carbon atoms in the alkyl moiety and wherein up to and including methylene groups are replaced by oxygen atoms and in each case two carbon atoms separate the oxygen atoms from one another, alkylaminocarbonyl having up to and including 20 carbon atoms in the alkyl moiety, or substituted alkylaminocarconyl having up to and including 20 carbon atoms in the alkyl moiety and being substituted bycarboxy, lower alkoxycarbonyl having up to and including 4 carbon atoms in the lower alkyl moiety, carbamoyl and/or amino, hydroxy, mercapto, lower alkylthio having up to and including 4 carbon atoms, phenyl, or by hydroxyphenyl, or a pharmaceutically acceptable salt of a salt forming compound of formula I.

5,185,369

SYNTHETIC HETEROARYL POLYAMINES AS EXCITATORY AMINO ACID NEUROTRANSMITTER ANTAGONISTS

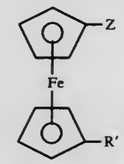
Nicholas A. Saccomano, Ledyard, and Robert A. Volkmann, Mystic, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Aug. 23, 1991, Ser. No. 749,038

Int. Cl.[5] **A61K** *31/295;* **C07F** *17/02*

U.S. Cl. 514—502 **2 Claims**

1. A compound of the formula



or the above substituted on the aromatic ring(s) with one or more substituents independently selected from F, Cl, Br, OH, C1 to C4 alkyl, C1 to C4 alkoxy, CF_3, phenyl, amino, C1 to C4 alkylamino and di(C1 to C4 alkyl)amino, or a pharmaceutically acceptable acid addition salt thereof wherein:
Z is H or R';
R' is $—(CH_2)_mCO[NH(CH_2)_n]_xNH_2$;
m is 0 or 1;
each n is independently 2 to 5; and
x is 1 to 6.

VOL 1147 ISS 2 FE 9 1993 UMI

5,185,370

SUBSTITUTED β-DIKETONES AND THEIR USE

Reijo J. Backström, Helsinki; Erkki J. Honkanen, Vantaa; Jarmo J. Pystynen, Espoo; Anne M. Luiro, Helsinki; Päivi A. Aho, Helsinki; Inge-Britt Y. Linden, Helsinki; Erkki A. O. Nissinen, Espoo, and Pentti Pohto, Helsinki, all of Finland, assignors to Orion-yhtymä Oy, Espoo, Finland

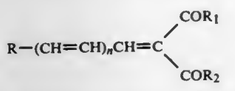
Continuation-in-part of Ser. No. 165, Sep. 1, 1989. This application Jan. 31, 1991, Ser. No. 648,641

Claims priority, application United Kingdom, Sep. 1, 1988, 8820729; Feb. 2, 1990, 9002337

Int. Cl.[5] C07C *255/51, 255/56, 255/54, 31/275*

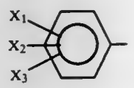
U.S. Cl. 514—520 9 Claims

1. A compound according to formula II



II

wherein n=0 or 1, R_1 is methyl, ethyl or cyclopropyl and R_2 is ethyl or cyclopropyl and R is



wherein X_1 is hydrogen, hydroxy or C_1–C_2 alkoxy which is unsubstituted or substituted by phenyl; X_2 is hydrogen, nitro, cyano, halo, trifluoromethyl, formyl, carboyx, acetamido or;

$R_3S(O)_m$—

wherein m=0, 1 or 2 and R_3 is C_1–C_2 alkyl, phenyl or phenyl-C_1–C_2 alkyl; or carbamoyl which is unsubstituted or substituted by C_1–C_2 alkyl, phenyl or phenyl-C_1–C_2 alkyl and X_3 is cyano, or a pharmaceutically acceptable salt or ester thereof.

5,185,371

METHOD FOR DISINFECTING RED BLOOD CELLS

Alan I. Rubinstein, Los Angeles, Calif., assignor to University of Southern California, Los Angeles, Calif.

Continnation-in-part of Ser. No. 230,839, Aug. 9, 1988, Pat. No. 4,971,760, which is a continuation-in-part of Ser. No. 892,058, Sep. 1, 1986, abandoned, which is a continuation-in-part of Ser. No. 838,253, Mar. 10, 1986, abandoned. This application Mar. 13, 1990, Ser. No. 492,723

Int. Cl.[5] A61K *31/05, 31/055, 31/115, 33/18*

U.S. Cl. 422—28 16 Claims

1. A method for treating red blood cells to inactivate HIV viruses contained therein, said method comprising the steps of:

mixing the red blood cells with a disinfectant composition for a sufficient time to inactivate said HIV viruses, said disinfectant composition comprising at least one disinfectant in an amount sufficiently high to inactivate said viruses and sufficiently low to avoid hemolysis, and said disinfectant selected from the group consisting of ethyl alcohol, isopropyl alcohol, sodium hydroxide, hydrochloric acid, formaldehyde, povidone-iodine, hydrogen peroxide, a combination of o-phenylphenol, o-benzyl-ochlorophenol, ethyl alcohol, xylenol, isopropyl alcohol, and tetrasodium ethylenediamine tetraacetate, and sodium hypochlorite, and a diluent, said diluent consisting essentially of water and a solute which, when the solute is at the proper concentration, the disinfectant composition is substantially isotonic with blood; and

separating the disinfectant from the red blood cells, said red blood cells being substantially viable for diagnostic or therapeutic use.

5,185,372

STABLE AQUEOUS PREPARATION

Kazumichi Ushio, Nishinomiya, and Kenichi Yoshida, Itami, both of Japan, assignors to Senju Pharmaceutical Company, Limited, Osaka, Japan

Filed Aug. 29, 1991, Ser. No. 751,885

Claims priority, application Japan, Aug. 30, 1990, 2-229888

Int. Cl.[5] A61K *31/07*

U.S. Cl. 514—552 2 Claims

1. A storage stable sealed pharmaceutical article of manufacture comprising a sealed first container, substantially impervious to atmospheric oxygen, containing an oxygen scavenger and a second container, formed of polypropylene or polyethylene terephthalate, containing an ophthalmic aqueous mixture adapted for the topical treatment of dry eye syndrome of 500 to 3,000 I.U./ml of retinol palmitate; as a buffering agent, boric acid and/or borax in the range of 1.0 to 2.0%; as a non-ionic surfactant, polysorbate 80 or polyoxyethylene-hydrogenated castor oil in the range of 1.5 to 5 parts by weight per 1 part by weight of the retiol palmitate; as a chelating agent, sodium edetate in the range of 0.001 to 0.1%; as a preservative, benzalkonium chloride; as an isotonizer, glycerol; and having a pH in the range of 5 to 8.

5,185,373

INHIBITION OF THERMAL DEGRADATION OF IBUPROFEN

Solomon Motola, Marlton; Robert G. Blank, Hammonton, and Alan R. Branfman, Cherry Hill, all of N.J., assignors to American Home Products Corporation, New York, N.Y.

Filed Aug. 13, 1991, Ser. No. 744,144

Int. Cl.[5] A61K *31/19*

U.S. Cl. 514—570 4 Claims

1. A pharmaceutical composition contaioing ibuprofen stabilized against thermal degradation at temperatures near or above the melting point of ibuprofen by admixture therewith of a thermal degradation inhibiting amount of a phenolic type antioxidant selected from the group consisting of butylhydroxytoluene, butylhydroxyanisole and propyl gallate.

5,185,374

USE OF 15-KETOPROSTAGLANDIN E OR F COMPOUNDS FOR UTERINE CONTRACTION

Ryuzo Ueno; Ryuji Ueno, and Tomio Oda, all of Hyogo, Japan, assignors to K.K. Ueno Seiyaku Oyo Kenkyujo, Osaka, Japan

Continuation of Ser. No. 349,548, May 9, 1989, abandoned. This application Apr. 22, 1991, Ser. No. 687,790

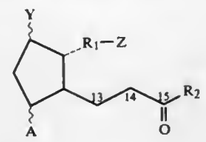
Claims priority, application Japan, May 11, 1988, 63-115408; Jun. 2, 1988, 63-137666

Int. Cl.[5] A61K *31/19, 31/557;* C01C *61/06*

U.S. Cl. 514—570 22 Claims

1. A method of inducing uterine contraction which comprises the step of

administering, to a subject in need of such contraction, a uterine-contractionally effective amount of a prostanoic acid derivative of general formula (I)



(I)

wherein

A is a hydroxy group, a lower alkyl group, or a hydroxy(-lower)-alkyl group;

Y is a hydroxy group or an oxo group;

Z is a —COOH group or a functional derivative of a —COOH group;

R_1 is a straight or branched chain hydrocarbyl group having 1 to 14 carbon atoms; and

R_2 is a straight or branched chain hydrocarbyl group having 1 to 11 carbon atoms substituted with hydroxy, halo, lower alkyl, aryl oxy at the 16-position.

5,185,375

THIOFORMAMIDE DERIVATIVES

David C. Cook, London; Terance W. Hart, Brentwood; Iain M. McLay, Coughton; Malcolm N. Palfreyman, Upminster, and Roger J. A. Walsh, Rayleigh, all of England, assignors to May & Baker Limited, Dagenham, England

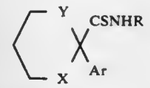
Continuation of Ser. No. 285,114, Dec. 16, 1988, abandoned. This application Mar. 30, 1990, Ser. No. 503,119

Claims priority, application United Kingdom, Dec. 18, 1987, 8729522

Int. Cl.[5] A61K *31/16;* C07C *327/00*

U.S. Cl. 514—599 8 Claims

1. A thioformamide derivative of the formula:



wherein R represents a straight- or branched-chain alkyl radical containing from 1 to 4 carbon atoms, Ar represents an unsubstituted phenyl group, or a phenyl group substituted in the 3- and/or 5-position with an electron-withdrawing group selected from the group consisting of a cyano, nitro, trifluoromethyl, carbamoyl, carboxy, C_{2-5}-alkanoyl, C_{2-5}-alkoxycarbonyl or C_{1-4}-alkylsulphonyl group or a fluorine, chlorine or bromine atom and optionally further substituted with halogen, C_{1-4} alkyl or C_{6-12} aryl or the group Ar is substituted with at least one halogen atom , at least one C_{1-4} alkyl or C_{6-12} aryl group or Ar represents a naphthyl, Y represents an ethylene or methylene radical or a valency bond, and X represents a carbonyl or hydroxymethylene group or a group of the formula: $>C{=}NOR^1$ or $>{=}NN(R^1)_2$ in which the symbols R^1, which may be the same or different, each represents the hydrogen atom or a straight- or branched- chain alkyl radical containing from 1 to 4 carbon atoms which is unsubstituted or substituted by one or more substituents selected from C_{2-4}-alkenyl, carboxy, C_{2-5}-alkoxycarbonyl, hydroxy, C_{1-4}-alkoxy, carbamoyl, unsubstituted or substituted by one or two C_{1-4}-alkyl groups, amino, C_{1-4}-alkylamino and di-C_{1-4}-alkylamino groups or represents a benzyl, phenethyl, 1-naphthyl-methyl or 2-naphthylmethyl radical each of which may be substituted on the ring by at least one halogen atom or hydroxy, C_{1-4}-alkyl, C_{1-4} alkoxy, alkoxy being unsubstituted or substituted as defined for alkyl groups represented by R^1, cyano, nitro, trifluoromethyl, carboxy, C_{1-4}-alkylamino, C_{2-5}-alkanoylamino or C_{2-5}-alkoxycarbonyl groups, or a pharmaceutically acceptable salt thereof.

5,185,376

THERAPEUTIC INHIBITION OF PLATELET AGGREGATION BY NUCLEOPHILE-NITRIC OXIDE COMPLEXES AND DERIVATIVES THEREOF

Jean G. Diodati, and Larry K. Keefer, both of Bethesda, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Sep. 24, 1991, Ser. No. 764,906

Int. Cl.[5] H61K *31/13*

U.S. Cl. 514—611 9 Claims

1. A method of inhibiting platelet aggregation in vivo, in a patient in need thereof, the method comprising:

administering to the patient an effective platelet aggregation inhibiting amount of a physiologically compatible compound containing at least one N-oxo-N-nitrosoamine moiety in a molecule thereof, wherein the physiologically compatible compound releases nitric oxide in vivo in a controllable and sustained fashion.

5,185,377

DIPHENYL COMPOUNDS WHICH INHIBIT ARACHIDONIC ACID METABOLISM, AND THEIR USE IN PHARMACEUTICAL COMPOSITIONS

Tankred Schewe, Berlin; Helmut Luther, Freiburg, and Dentscho Jordanov, Berlin, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

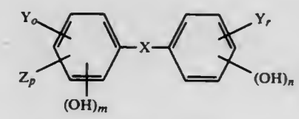
Filed Sep. 4, 1991, Ser. No. 754,788

Claims priority, application Switzerland, Sep. 5, 1990, 2875/90

Int. Cl.[5] A61K *31/075*

U.S. Cl. 514—721 7 Claims

1. A method for the local and/or inhalative treatment of inflammation, allergy, bronchoconstriction, bronchial asthma or diseases with disturbances in cell proliferation in mammals, which comprises applying to a mammal in need thereof a pharmaceutical composition consisting essentially of 0.01 to 15% by weight of a compound of the formula



in which X is oxygen, sulfur of $—CH_2—$, Y is chlorine or bromine, Z is SO_2H, NO_2 or C_1–C_4alkyl, r is a number from 0 to 3, o is a number from 0 to 3, p is one of the numbers 0 or 1, m is one of the numbers 1 or 2 and n is one of the numbers 0 or 1, and a carrier.

5,185,378

IRON-ZINC CATALYSTS FOR THE CONVERSION OF SYNTHESIS GAS TO ALPHA-OLEFINS

Stuart L. Soled; Sabato Miseo, both of Pittstown; Enrique Iglesia, Clinton, and Rocco A. Fiato, Basking Ridge, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Division of Ser. No. 591,304, Oct. 1, 1990, Pat. No. 5,100,856. This application Oct. 30, 1991, Ser. No. 785,118

Int. Cl.[5] C07C *1/04*

U.S. Cl. 518—700 5 Claims

1. A process for preparing a liquid product containing olefins and paraffins wherein the olefin/paraffin ratio is at least about 2.5/1, and the C_{5+}/C_4-ratio is at least about 4.5/1 which comprises reacting in a slurry liquid, at suitable reaction conditions, hydrogen and carbon monoxide in the presence of a catalyst comprising

iron

zinc

copper

an alkali metal selected from the group consisting of potassium, rubidium, cesium, and mixtures thereof, wherein the iron:zinc atomic ratio is at least 5:1, and the alkali:copper atomic ratio is at least 2:1.

5,185,379

METHOD FOR REGENERATING WATER SOFTENER IN A WASHING MACHINE

Claudio Milocco, and Rosa Sist, both of Pordenone, Italy, assignors to Zanussi Elettrodomestici S.p.A., Pordenone, Italy

Filed Dec. 20, 1991, Ser. No. 811,034

Claims priority, application Italy, Jan. 29, 1991, PN91 A 000003

Int. Cl.[5] B01J *39/18, 39/08;* B08B *3/02, 13/00*

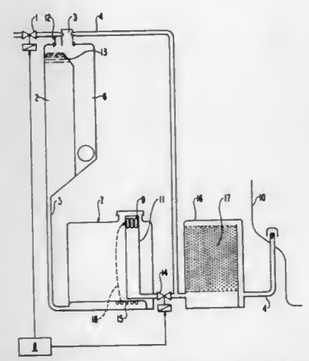
U.S. Cl. 521—26 3 Claims

1. In a washing machine having a water softening device

VOL 1147 ISS 2 FE 9 1993 UMI

containing water softener in the form of a mass of active resin, and which device has a volume equal to the volume of the mass of active resin contained therein plus a free volume, a method for regenerating the water softener comprising the steps of:

supplying brine to the water softening device during a first predetermined period of time, thereby metering the amount of brine supplied to the water softener contained therein;



subsequently supplying fresh water to the water softening device during a second period of time, thereby metering the amount of fresh water supplied; and

regulating the durations of said first and second periods of time such that the sum of the metered volume of brine and the metered volume of fresh water is substantially equal to said free volume of the water softening device.

5,185,380

RECYCLING OF THERMOSETTING POLYURETHANE SOFT FOAM

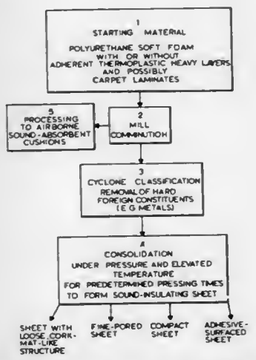
Cornelia Diessel, Wolthausen; Carsten Kliwer, Nienhagen; Gerhard Burak; Ehrenfried Blümel, both of Adelheidsdorf, and Christoph Kittel, Nienhagen, all of Fed. Rep. of Germany, assignors to Stankiewicz GmbH, Fed. Rep. of Germany

Filed Jun. 21, 1991, Ser. No. 719,148

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1990, 4020602

Int. Cl.[5] C08J *11/04, 11/06*

U.S. Cl. 521—49 **17 Claims**



1. A process for recycling waste thermosetting polyurethane soft foam having a density in the range of 15–1000 kgm^{-3} which comprises the steps of comminuting the soft foam to granules, consolidating the comminuted soft foam in a mold under a pressure between 50 and 150 bar and at an elevated temperature between 180° and 210° C. to a final thickness and pressing it, without addition of polymeric binder, for a predetermined pressing time of about 3 to 5 minutes to form a high-strength sheet.

5,185,381

FOAM ABSORBER

John M. Ruffoni, San Diego, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Division of Ser. No. 749,993, Aug. 26, 1991. This application Jun. 29, 1992, Ser. No. 905,665

Int. Cl.[5] C08J *9/40, 9/42*

U.S. Cl. 521—52 **14 Claims**

1. A foam material having electromagnetic energy attenuation characteristics which comprises an open cell reticulated polyurethane foam substrate impregnated with a conductive ink applied to a surface of the foam substrate and gradiently loading said foam substrate from said surface with said ink to provide a dielectric gradient, said ink comprised of an epoxy resin carrier containing a conductive material consisting essentially of a combination of carbon and a metal selected from the group consisting of silver, copper and nickel.

5,185,382

STARCH-BASED, BIODEGRADABLE PACKING FILLER AND METHOD OF PREPARING SAME

Paul E. Neumann, and Paul A. Seib, both of Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Division of Ser. No. 822,885, Jan. 21, 1992. This application Aug. 21, 1992, Ser. No. 932,938

Int. Cl.[5] C08J *3/02, 9/12*

U.S. Cl. 521—84.1 **23 Claims**

1. A starch product adapted for use as a packaging filler or the like, said product comprising an expanded, cellular, compressible and resilient body having a matrix principally comprising starch supplemented with a polyalkylene glycol or derivative thereof.

5,185,383

HYDROXYL CONTAINING COMPONENT FOR USE IN CREATING POLYURETHANE FOAMS

Gerhard Regenauer, Warwick, N.Y., assignor to Urethane Technology, Co., Inc., Newburgh, N.Y.

Filed Dec. 18, 1990, Ser. No. 629,244

Int. Cl.[5] C08G *18/28*

U.S. Cl. 521—155 **20 Claims**

1. A hydroxyl group containing component for use in a sprayable two component system for creating rigid polyurethane foam without the use of fluorinated hydrocarbons consisting essentially of a mixture of at least one member selected from the group consisting of factors (i) and (ii),

i) a condensation product of an aliphatic triol with propanol or ethanol,

ii) a condensation product of a hexose with propane diol or propane triol, and

iii) a polyol selected from the group consisting of an aliphatic aminopolyol, aliphatic polyester polyols and aliphatic polyether polyols,

iv) an aromatic aminopolyol,

v) a polyurethane rapid initiator,

vi) a surfactant,

vii) a catalyst for the hydroxyl/di-isocyanate polymerization reaction, and

viii) water.

5,185,384

METHOD FOR REDUCING HYDROLYZABLE CHLORIDE IN TOLUENE DIISOCYANATE

Rory D. Daussin, Bellaire; Van A. Kent, Lake Jackson, and Steven B. Lowenkron, Houston, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 28, 1991, Ser. No. 647,328

Int. Cl.[5] C08G *18/70*

U.S. Cl. 521—160 **12 Claims**

1. A method for reducing hydrolyzable chloride in crude toluene diisocyanate comprising subjecting crude toluene diisocyanate containing hydrolyzable chloride to (a) a partial reflux, (b) a partial reflux and fractionation, or (c) a complete reflux and fractionation, under conditions sufficient to form a product crude toluene diisocyanate having reduced hydrolyzable chloride.

5,185,385

POLYMERIZATION PROCESS

Ratana Kanluen, Guelph, and Brigitte H. Licht, Burlington, both of Canada, assignors to Texaco Chemical Company, White Plains, N.Y.

Continuation-in-part of Ser. No. 2,975, Jan. 13, 1987. This application Apr. 15, 1991, Ser. No. 685,197

Int. Cl.[5] C08F *2/48*

U.S. Cl. 522—84 **12 Claims**

1. A method of polymerizing at least one vinyl monomer to a particulate, water-soluble, substantially linear polymer or copolymer, which comprises:

forming an aqueous monomer solution mixture having a pH of about 3 to about 7 comprising at least one vinyl monomer polymerizable to said water soluble polymer or copolymer, an ultraviolet-decomposable free radical initiator capable of producing free radicals upon exposure to ultraviolet radiation, and a chemical free radical initiator capable of producing free radicals upon heating above a predetermined temperature,

initiating polymerization of said at least one monomer by irradiating said monomer mixture with long wavelength ultraviolet radiation in the wavelength from about 300 to about 400 nm,

permitting said polymerization to be effected while said monomer mixture increases in temperature to said predetermined temperature, so as to activate said chemical initiator,

discontinuing said irradiation and permitting said polymerization of said at least one monomer to be effected above said predetermined temperature until complete while maintaining the maximum temperature of said monomer mixture in the range of about 60° C. to about 90° C. to obtain the polymer in a yield exceeding 99%, and

particulating the polymer so produced.

5,185,386

DENTAL COMPOSITION

Brett I. Cohen, Nanuet, and Barry Musikant, New York, both of N.Y., assignors to Essential Dental Systems, Inc., So. Hackensack, N.J.

Continuation of Ser. No. 717,886, Jun. 19, 1991, abandoned, which is a continuation-in-part of Ser. No. 669,076, Mar. 14, 1991, abandoned. This application Apr. 1, 1992, Ser. No. 860,279

Int. Cl.[5] A61K *6/00;* **C08K** *5/34*

U.S. Cl. 523—105 **26 Claims**

1. A method for preventing the build-up of plaque and other debris on artificial teeth or a dental implant comprising applying a composition to the artificial teeth or dental implant containing a solvent selected from the group consisting of water, ethanol, methanol, isopropyl alcohol, 3-pentanol, 1-pentanol, 1-hexanol, 2-hexanol, 3-hexanol, isobutyl alcohol, methylethyl ketone, acetone, allylacetone, isopropyl acetone, methylpropyl ketone, 3-pentanone, 3-hexanone and 2-hexanone, an evaporation promoting compound selected from the group consisting of N-methylpyrrolidinone, 2-pyrrolidone, 2-pyrrolidoneacetamide, 1-ethyl-2-pyrrolidinone and 5-methyl-2-pyrrolidinone, diethylether, isopropylether and pentylether in an amount between about 0.5 and 25 weight percent, at least one adduct of a diisocyanate selected from the group consisting of 1,6-hexane diisocyanate, isophorone diisocyanate, 2,4-toluene diisocyanate, 2,6-toluene diisocyanate, methylene bis (p-phenylisocyanate) and 1,5-naphthalene diisocyanate and a polyol selected from the group consisting of polyethylene oxide, polypropylene oxide, polyisobutylene and polytetramethylene oxide in an amount between about 1 and 35 weight percent, and a polyfluorinated hydrocarbon selected from the group consisting of polytetrafluorethylene, polychlorotrifluoroethylene, polyhexafluoropropylene, polyvinylidine fluoride, polyvinyl fluoride, copolymer mixtures of tetrafluoroethylene and ethylene, and mixtures of tetrafluoroethylene, propylene and fluorinated copolymers of ethylene propylene in an amount between about 0.5 and 20 weight percent.

5,185,387

AQUEOUS SYNTHETIC RESIN DISPERSION

Wolfgang Klesse, Mainz; Wilhelm Elser, Griesheim; Theodor Mager, Darmstadt; Juergen Christner, Bickenbach; Hertha Kraus, Pfungstadt; Peter Rossberg, Seeheim-Jugenheim, and Marliese Weber, Roedermark, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 492,612, Mar. 12, 1990, abandoned. This application Sep. 16, 1991, Ser. No. 760,473

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1989, 3908615

Int. Cl.[5] C08F *265/06*

U.S. Cl. 523—201 **25 Claims**

1. An aqueous synthetic resin dispersion having a minimum film forming temperature below 50° c. containing an emulsion polymer with a core/shell structure consisting of

A) 65–90 percent by weigh of a weakly crosslinked core polymer having a glass transition temperature below 0° C. and an extension at break of at least 150 percent, said core polymer comprising

1) at least one monoethylenically unsaturated, free radically polymerizable monomer, the homopolymer of which has a glass transition temperature below 25° C., and

2) 0.1–2.0 percent, by weight of said core polymer, of at least one crosslinking monomer containing at least two no-conjugated ethylenically unsaturated, free radically polymerizable groups, and

B) 10–35 percent by weight of an essentially non-crosslinked shell polymer having a glass transition temperature below 60° C., comprising

1) at least one monoethylenically unsaturated, free radically polymerizable monomer, the homopolymer of which has a glass transition temperature below 25° C., and

2) at least one monoethylenically unsaturated, free radically polymerizable monomer, the homopolymer of which has a glass transition temperature above 25° C.,

the glass transition temperature of said core polymer being at least 10 Centigrade degrees below that of said shell polymer. said shell polymer containing up to 20 percent by weight of monomers selected from the group consisting of acrylic acid, methacrylic acid, hydroxyalkyl esters of acrylic acid, hydroxyalkyl esters of methacrylic acid, acrylamide, methacrylamide, and N-alkyl derivatives thereof.

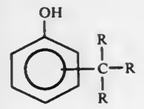
VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,388
EPOXY RESIN ELECTRICAL ENCAPSULATION COMPOSITION

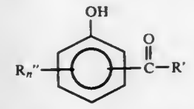
Yasuyuki Murata, 4-5-54-101 Ogoso; Isako Konishi, 4-5-2-6 Ogoso; Ryohei Tanaka, 4-5-56-301 Ogoso, all of Yokkaichi City, Mei Prefecture, and Yoshinori Nakanishi, 6-4-30 Higashiasahigaoka, Suzuka City, Mie Prefecture, all of Japan

Continuation of Ser. No. 660,387, Feb. 25, 1991, abandoned.
This application May 11, 1992, Ser. No. 884,247
Claims priority, application Japan, Feb. 23, 1990, 2-41221
Int. Cl.[5] C08L *63/04, 61/16, 61/14;* C08G *8/36*
U.S. Cl. 523—466 9 Claims

1. An electrical encapsulation composition comprising:
(a) a polyglycidyl ether of a polyhydric phenol which is the condensation reaction product of (i) a phenolic compound which can be represented by the formula



in which each R is selected independently from hydrogen, C_{1-5} alkyl and phenyl and at least two R groups are not hydrogen and (ii) an aromatic aldehyde or aromatic ketone which can be represented by the formula



in which R' is selected from hydrogen, C_{1-5} alkyl and phenyl, and R'' is selected from C_{1-5} alkyl, phenyl, methoxy and halide, and n is an integer from 0 to 4;
(b) a curing agent for the epoxy resin; and
(c) an inorganic filler.

5,185,389
LATEX MODIFIED MORTAR AND CONCRETE

Riley Victor, Toronto, Canada, assignor to GemEng, Ltd., Ontario, Canada

Continuation of Ser. No. 511,835, Apr. 20, 1990, abandoned, which is a continuation of Ser. No. 179,570, Apr. 8, 1988, abandoned, which is a continuation-in-part of Ser. No. 900,396, Aug. 26, 1986, abandoned. This application Jul. 1, 1991, Ser. No. 726,122
The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.
Int. Cl.[5] C08K *3/00*
U.S. Cl. 524—2 3 Claims

1. A patching composition comprising:
up to about 65 wt% sand having an average particle size substantially greater in diameter that 0.05 mm;
about 16 to about 46 wt% inorganic fine fillers having an average particle size substantially less in diameter than 0.15 mm, wherein the combined weight of said sand and said inorganic fine fillers is greater than 50 wt% of the total weight of said patching composition;
about 5 to about 15 wt% cement selected from the group consisting of hydraulic cements;
about 14 to about 39 wt% latex binder selected from the group consisting of polyvinyl acetate, polystyrene, polyvinylchloride, polyacrylates, and copolymers thereof; and
up to about 2 wt% additives, selected from the group consisting of anti-foaming agents, surfactants, and retarders.

5,185,390
WATER STRIPPABLE PHOTOCHROMIC RESIN COMPOSITION

Scott Fischer, Clinton, Ohio, and Cletus N. Welch, Murrysville, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 490,029, Mar. 7, 1990, Pat. No. 5,130,353.
This application Dec. 6, 1991, Ser. No. 802,927
Int. Cl.[5] C08L *1/26*
U.S. Cl. 524—43 10 Claims

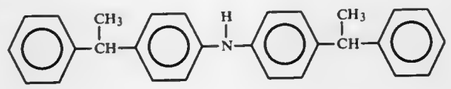
1. A water-strippable organic resin photochromic substance-containing composition consisting essentially of (a) an organic photochromic substance and (b) a blend of from about 5 to about 50 parts of hydroxy (C_2–C_3) alkyl cellulose and from about 95 to about 50 parts of poly(vinyl pyrrolidone).

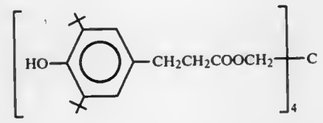
5,185,391
OXIDATION INHIBITED ARYLCYCLOBUTENE POLYMERS

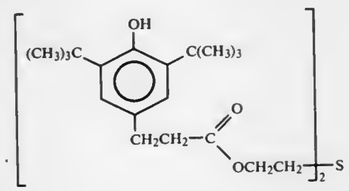
Theodore M. Stokich, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

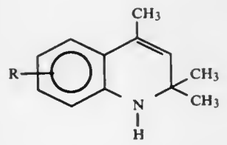
Filed Nov. 27, 1991, Ser. No. 800,787
Int. Cl.[5] C07F *7/08;* C07B *63/04;* C08K *5/3435, 5/3437, 5/36, 5/18, 5/13*
U.S. Cl. 524—87 9 Claims

1. A composition comprising either a compound containing an arylcyclobutene moiety which is capable of polymerizing by side ring opening, a prepolymer or polymer thereof and a stabilizing amount of an antioxidant selecting from the group consisting of formulas:

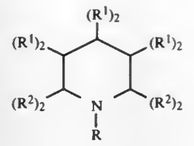
1)


2)


3)


4)


wherein
R is hydrogen, an electron withdrawing or electron donating group; and oligomers thereof; or
5) hindered amines of the formula:



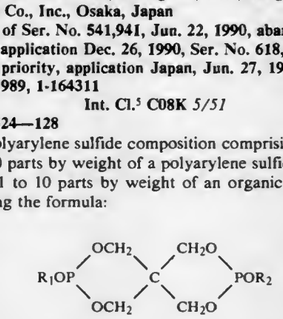
wherein
R is hydrogen, an electron withdrawing group or an electron donating group;
each R^1 is independently, hydrogen, an electron withdrawing group or an electron donating group, with the proviso that two R^1 attached to the same carbon may represent a single moiety joined to said carbon by a double bond;
each R^2 is independently, methyl, ethyl, n-propyl or isopropyl:
said antioxidant being effective to inhibit oxidation of polymer formed by side ring opening of the arylcyclobutene.

5,185,392
POLYARYLENE SULFIDE RESIN COMPOSITION

Toshifumi Nonaka; Toshikatsu Nitoh, both of Shizuoka, Japan, and Andrew Auerbach, Livingston, N.J., assignors to Polyplastics Co., Inc., Osaka, Japan

Division of Ser. No. 541,941, Jun. 22, 1990, abandoned. This application Dec. 26, 1990, Ser. No. 618,895
Claims priority, application Japan, Jun. 27, 1989, 1-164310; Jun. 27, 1989, 1-164311
Int. Cl.[5] C08K *5/51*
U.S. Cl. 524—128 17 Claims

1. A polyarylene sulfide composition comprising:
(A) 100 parts by weight of a polyarylene sulfide;
(B) 0.01 to 10 parts by weight of an organic bisphosphite having the formula:



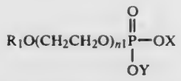
in which R_1 and R_2 are each an alkyl, an alkyl having at least one substituent, an aryl, an aryl having at least one substituent or an alkoxy;
(C) 0 to 400 parts by weight of an inorganic filler; and
(D) 0.01 to 5 parts by weight of at least one alkoxysilane selected from the group consisting of aminoalkoxysilanes, epoxyalkoxysilanes, mercaptoalkoxysilanes and vinylalkoxysilanes.

5,185,393
WATER-IN-OIL EMULSION OF CATIONIC POLYMER

Shoichi Kanda; Takeshi Narita; Masahiro Ushigome, and Masaharu Nagahama, all of Kanagawa, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

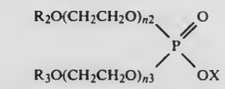
Filed Dec. 28, 1990, Ser. No. 635,026
Claims priority, application Japan, Dec. 28, 1989, 1-338333
Int. Cl.[5] C08K *5/52*
U.S. Cl. 524—140 19 Claims

1. A water-in-oil emulsion of a cationic polymer suitable for inversion, comprising a continuous phase comprising a hydrophobic liquid, a discontinuous phase comprising a water-soluble cationic polymer, and a surface active agent system for inverting said emulsion in water, said system comprising a mixture of at least one alkyl phosphate represented by formula (I) or (II) and at least one other surface active agent compatible with said at least one alkyl phosphate:



(I)

wherein R_1 represents a saturated or unsaturated hydrocarbon group having from 8 to 18 carbon atoms; X and Y, which may be the same or different, each represents a hydrogen atom, an alkali metal, an ammonium group, or an alkanolamino group; and n1 represents 0 or an integer of from 1 to 4;



(II)

wherein R_2 and R_3, which may be the same or different, each represents a saturated or unsaturated hydrocarbon group having from 8 to 18 carbon atoms; X represents a hydrogen atom, an alkali metal, an ammonium group, or an alkanolamino group; and n2 and n3 each represents 0 or an integer of from 1 to 4.

5,185,394
RUBBER-MODIFIED STYRENE TYPE RESIN COMPOSITION EXCELLENT IN SLIDING PROPERTIES

Yuzuru Ishida; Masahiro Mitsuboshi; Haruo Inoue, all of Kanagawa; Ichiro Otsuka, Tokyo, and Keiji Iio, Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Continuation of Ser. No. 352,942, May 17, 1989, abandoned. This application Sep. 19, 1990, Ser. No. 584,603
Claims priority, application Japan, May 23, 1988, 63-123897
The portion of the term of this patent subsequent to Jan. 22, 2008, has been disclaimed.
Int. Cl.[5] C08K *5/54*
U.S. Cl. 524—269 6 Claims

1. A rubber-modified styrene resin composition which comprises 100 parts by weight of a rubber-modified styrene resin and 2.2 to 3.2 parts by weight of dimethyl silicone oil having a viscosity ranging from 5,000 to 15,000 centistokes at 25° C., the styrene resin comprising 3 to 8% by weight, based on the total weight of the resin, of a rubber polymer which is present in the form of microgels having an average particle size ranging from 0.6 to 1.2 micron, and having an intrinsic viscosity of 0.53 to 0.65 and the content of methanol-soluble matter ranging from 0.5 to 1.5% by weight based on the total weight of the resin.

5,185,395
AMPS COPOLYMER EMULSIONS WITH IMPROVED STABILITY

Peter M. Robinson, High Point, N.C., and Nguyen Van-Det, Midland, Ga., assignors to Exxon Chemical Patents Inc., Linden, N.J.

Filed Mar. 27, 1991, Ser. No. 675,787
Int. Cl.[5] C08J *3/02*
U.S. Cl. 524—457 18 Claims

1. In a method of preparing a water-in-oil emulsion which contains a copolymer of (a) about 10 to 30 weight % 2-acrylamido-2-methylpropane sulphonic acid monomer and (b) about 90 to 70 weight % of an anionic comonomer, which comprises the steps of (i) preparing an aqueous solution of the monomers, (ii) emulsifying the aqueous solution in a sufficient quantity of a hydrocarbon oil which contains an emulsion polymerization stabilizer to form a water-in-oil emulsion, and (iii) polymerizing the monomers, the improvement comprising using as the emulsion polymerization stabilizer a mixture in a total amount of about 1 to 3 weight %, based on the weight of the total emulsion, which mixture contains about 25 to 65 weight % sorbitan monooleate and about 75 to 35 weight % of

VOL 1147 ISS 2 FEB 9 1993 UMI

a linear ABA block copolymer of polyester-polyethylene oxidepolyester which is prepared by the reaction of condensed 12-hydroxystearic acid with an alkylene oxide.

5,185,396
WATER-BASED VARNISHES
John Biale, Anaheim, Calif., assignor to Rohm and Haas Company, Philadelphia, Pa.
Continuation-in-part of Ser. No. 396,854, Aug. 21, 1989. This application Aug. 30, 1990, Ser. No. 575,417
Int. Cl.[5] C08L *33/00*
U.S. Cl. 524—820 **15 Claims**

1. A formulation formed by the step comprising combining a polymeric emulsion with a coalescing agent, wherein
(A) the polymeric emulsion comprises (i) a polymer, (ii) water, and (iii) a surfactant-containing locus for polymerization, wherein the emulsion comprises about 0.1 to about 1 weight percent surfactant and the polymer has an average particle size of less than about 150 nm and a calculated T_g of about 25° to about 60° C., and comprises:
(a) about 20 to about 40 weight percent of a soft non-functional monomer whose homopolymer has a T_g of less than about $-^{\circ\circ}$ C.;
(b) about 60 to about 80 weight percent of a hard non-functional monomer whose homopolymer has a T_g of greater than about 30° C., at least one hard monomer being selected from the group consisting of alkenyl aromatic monomers, non-functional methacrylic monomers, and mixtures thereof;
(c) about 1 to about 5 weight percent of an olefinic carboxylic acid monomer; and
(d) about 2 to about 10 weight percent of a cross-linking monomer selected from the group consisting of N-methylol acrylamide, N--methylol methacrylamide, diacrylates, dimethacrylates, triallyl cyanurate, diallyl maleate, and mixtures thereof; and
(B) the formulation is substantially devoid an amine having a boiling point in the range of about 50° C. to about 150° C.

5,185,397
WATER-BASED VARNISHES
John Biale, Anaheim, Calif., assignor to Rohm and Haas Company, Philadelphia, Pa.
Filed Aug. 21, 1989, Ser. No. 396,854
Int. Cl.[5] C08L *33/00*
U.S. Cl. 524—820 **24 Claims**

1. A polymeric emulsion comprising (i) a polymer (ii) water, and (iii) a surfactant-containing locus for polymerization, wherein the emulsion comprises less than about 1 weight percent surfactant and at least about 40 percent total solids, and the polymer has an average particle size of less than about 150 nm and a calculated T_g of about 25° to about 60° C. and comprises:
(a) about 20 to about 40 weight percent ethylhexyl acrylate;
(b) about 60 to about 80 weight percent of a plurality of hard monomers, each of whose homopolymers has a T_g of greater than about 30° C., wherein acrylonitrile and an olefinic carboxylic acid monomer constitute a portion of the hard monomer component of the polymer, the polymer comprising about 5 to about 20 weight percent acrylonitrile and 1 to about 5 weight percent olefinic carboxylic acid monomer; and
(c) about 0.2 to about 5 weight percent of a copolymerizable cross-linking agent selected from the group consisting of N-methylol acrylamide, N-methylol methacrylamide, diacrylates, dimethacrylates, triallyl cyanurate, diallyl maleate, and mixtures thereof.

5,185,398
HOT MELT ADHESIVE AND COATING COMPOSITION
Helmut Kehr, Schermbeck; Adolf Kühnle, Marl, and Matthias Schleinzer, Dorsten, all of, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany
Filed Apr. 18, 1990, Ser. No. 510,760
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1989, 3912949
Int. Cl.[5] C08L *23/20, 51/06;* **C08J** *123/20*
U.S. Cl. 525—74 **10 Claims**

1. A hot-melt adhesive or coating composition comprising:
(a) (96–99.9 parts by weight of an extensively amorphous poly-alpha-olefin having a degree of crystallinity, measured by X-ray diffraction of 25% or less, a softening point of 70°–140° C., a density of <0.90 g/cm^{3}l, and a tensile strength of between 0.5 and 10 N/mm^2, said poly-alpha-olefin being a propene/butene-1/ethene terpolymer, a propene/butene-1 copolymer, a butene-1 homopolymer, or a butene-1-/ethene copolymer; and
(b) 0.1–4 parts by weight of a functionalized graft copolymer of at least one predominantly crystalline propylene homopolymer or copolymer or mixture thereof and an unsaturated carboxylic acid or derivative thereof.

5,185,399
POLYPHENYLENE ETHER TYPE RESIN COMPOSITION
Kazunari Inoue, Utsunomiya City, Japan, assignor to GE Plastics Japan, Ltd., Japan
Filed Oct. 18, 1989, Ser. No. 423,064
Claims priority, application Japan, Oct. 18, 1988, 63-260645
Int. Cl.[5] C08L *51/08, 53/02, 71/12*
U.S. Cl. 525—92 **21 Claims**

1. A resin composition comprising:
(a) 100 parts by weight of a polyphenylene ether resin (a1); or a combination of a polyphenylene ether resin (a1) and a vinyl aromatic resin (a2)
selected from the group consisting of homopolymers of styrene or of a derivative thereof; styrene polymers modified by mixing them with natural or synthetic elastomer materials; and styrene-containing copolymers;
(b) 5 to 15 parts by weight of a vinyl aromatic-based elastomer; and 2 to 6 parts by weight of the total of the following (c) and (d):
(c) 15 to 60% by weight of an ethylene-unsaturated carboxylate copolymer modified with an unsaturated dicarboxylic acid or a derivative thereof, said copolymer having a number-average molecular weight above about 10,000; and
(d) 40 to 85% by weight of an acid-modified or unmodified ethylene-(meth)acrylate copolymer having a number-average molecular weight of 1,5000 to 9,000; the percent by weight of components (c) and (d) being based on the total weight of these components.

5,185,400
REDUCTION OF RESIDUAL VOLATILES IN STYRENE POLYMERS
Ralph C. Farrar, Jr.; David L. Hartsock, and Francis X. Mueller, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Filed Aug. 8, 1990, Ser. No. 564,811
Int. Cl.[5] C08L *9/00*
U.S. Cl. 525—98 **5 Claims**

1. A composition consisting essentially of: (a) styrene polymer chosen from homopolymer and copolymers of styrene with up to about 20 weight percent of a compound chosen from the group consisting of another copolymerizable monovinylaromatic compound, methyl acrylate, methylmethacrylate and acrylonitrile and (b) resinous styrene-butadiene copolymer said copolymer consisting essentially of blocks of styrene homopolymer and blocks of butadiene homopolymer

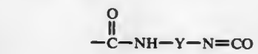
said styrene-butadiene copolymer present in an amount sufficient to facilitate the release of volatile residual compounds from said styrene polymer in the composition when subjected to melting and devolatilization treatment.

5,185,401
MONOFUNCTIONAL POLYMERS OF OLEFINS AND BLOCK COPOLYMERS OBTAINED THEREFROM
Gabriele Rendina, Torino, and Enrico Albizzati, Arona, both of Italy, assignors to Ausimont S.R.L., Milan, Italy; Himint Incorporated, Wilmington, Del. and Montedison S.P.A., Milan, Italy
Continuation of Ser. No. 375,947, Jul. 6, 1989, abandoned. This application Apr. 2, 1992, Ser. No. 863,489
Claims priority, application Italy, Jul. 7, 1988, 21265 A/88
Int. Cl.[5] C08F *8/30*
U.S. Cl. 525—130 **5 Claims**

1. A functional polymer of the formula:

PX

wherein P is a polymeric chain selected from the group consisting of chains of polypropylene or of polyethylene or of a copolymer of propylene wherein the polypropylene sequences have an isotactic structure; X is a group of the formula



wherein Y is an arylene or aralkylene radical containing from 6 to 14 C or an alkylene radical.

5,185,402
FLOCK ADHESIVE
Kenneth E. Fleming, Edinboro, and Jeffrey A. Chapman, Erie, both of Pa., assignors to Lord Corporation, Erie, Pa.
Filed Nov. 26, 1990, Ser. No. 618,120
Int. Cl.[5] C08L *23/28, 75/08;* **C08G** *18/67, 18/28*
U.S. Cl. 525—130 **28 Claims**

1. An adhesive composition comprising a first polyurethane prepolymer, a second polyurethane prepolymer, and a halogenated polyolefin, wherein the first polyurethane prepolymer is derived from at least one poly(alkylene oxide) polyol, and the second polyurethane prepolymer is derived from at least one poly(alkylene oxide) polyol and a dimer acid polyol.

5,185,403
THERMOSETTING ACRYLIC POLYMERS AND COATING COMPOSITIONS CONTAINING SAID ACRYLIC POLYMERS AND FLUOROCARBON RESINS
Ronald J. Lewarchik, Sleepy Hollow, Ill.; Edward J. Holzrichter, Redlands, Calif.; Marc L. Smith, Highland, Calif., and Jack C. Allman, Riverside, Calif., assignors to Morton Coatings, Inc., Chicago, Ill.
Filed Jul. 31, 1991, Ser. No. 740,039
Int. Cl.[5] C08L *27/12*
U.S. Cl. 525—199 **6 Claims**

1. A coating composition comprising between about 40 and about 90 phr of a fluorocarbon resin, between about 10 and about 60 phr of an acrylic binder polymer and between about 1.5 and about 10.0 phr of a cross-linking agent, said acrylic binder polymer being formed from a mixture of acrylic monomers comprising:
(a) between about 85 and about 97 mole percent of a monomer having the formula:

$R^1{}_xC{=}CR^2{-}COOR^3$

wherein The R^1s and R^2 are the same or different and are each selected from —H and C_1–C_3 alkyl and R^3 is C_1–C_6 alkyl,
(b) between about 2 and about 10 mole percent of a monomer having the formula:

wherein the R^1s and R^2 are the same or different and are selected from —H, C_1–C_3 alkyl, and R^4 is the residue of an alcohol having additional —OH or beta-diketone functionality, and,
(c) between about 1 and about 5 mole percent of an acryloxyalkyl-oxazolidine.

5,185,404
FLOW IMPROVEMENT IN THE PROCESSING OF PVC BLENDS TO BE MODIFIED FOR IMPACT STRENGTH
Karl J. Fölsch, Mainz; Klaus Frank, Mühltal, and Karl-August Jung, Ober-Ramstadt, all of Fed. Rep. of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany
Filed Jul. 31, 1991, Ser. No. 738,445
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1990, 4024690
Int. Cl.[5] C08L *33/10, 33/12, 27/06, 25/02*
U.S. Cl. 525—222 **14 Claims**

1. A process for the mechanical processing of incompatible polymer blends containing PVC into plastic blend articles, comprising adding alkyl methacrylate copolymers with molecular weights $\overline{M}w$ in the range of 2,000 to ≦10,000 g/mol to an incompatible polymer blend and mechanically processing said polymer blend.

5,185,405
RESIN COMPOSTIONS FOR ELECTROPHOTOGRAPHIC TONER
Masaharu Nishida, Takatsuki, Japan, assignor to Sanyo Chemical Industries, Ltd., Kyoto, Japan
Filed May 18, 1990, Ser. No. 525,026
Claims priority, application Japan, May 24, 1989, 1-131194
Int. Cl.[5] C08L *33/08, 25/14*
U.S. Cl. 525—228 **25 Claims**

1. A resin composition suitable for electrophotographic toner, which comprises 10–50% by weight of a high molecular weight copolymer having a molecular weight of at least 300,000, obtained by copolymerizing (a) at least one aromatic vinyl monomer and (b) at least one alpha-methylene aliphatic monocarboxylic ester monomer, with or without (c) at least one other monomer, in the presence of at least one polyfunctional polymerization initiator, selected from the group consisting of a polymerization initiator having at least two peroxide groups and a polymerization initiator having at least one peroxide group and at least one polymerizable unsaturated group, and 50–90% by weight of at least one styrene-acrylic ester copolymer of lower molecular weight; said composition having a molecular weight distribution of at least about 20 and a glass transition temperature of about 40° C.–about 80° C.

5,185,406
PROCESS FOR THE PREPARATION OF AN ELASTOMER-CONTAINING VINYL CHLORIDE GRAFT COPOLYMER
Peter Grauer, Burgkirchen, Fed. Rep. of Germany, assignor to Wacker Chemie GmbH, Munich, Fed. Rep. of Germany
PCT No. PCT/EP89/00094, § 371 Date Jul. 27, 1990, § 102(e) Date Jul. 27, 1990, PCT Pub. No. WO89/07115, PCT Pub. Date Aug. 10, 1989
PCT Filed Feb. 19, 1989, Ser. No. 573,030
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1988, 3803036
Int. Cl.[5] C08F *263/04, 2/18*
U.S. Cl. 525—262 **22 Claims**

1. A process for the preparation of a graft copolymer containing a grafting monomer containing vinyl chloride and an elastomeric graft substrate, the elastomeric graft substrate being present in an amount of up to 65% by weight and se-

VOL 1147 ISS 2 FE 9 1993 UMI

lected from the group consisting of vinyl acetate/ethylene copolymers having an ethylene content of from 20 to 70% by weight and homo-and copolymers of acrylic acid esters, said process being conducted by suspension polymerization in the presence of water at a temperature of 50°–80° C. at a pressure of up to the saturation pressure of vinyl chloride at the polymerization temperature, wherein the weight ratio of water to the sum of the graft substrate and the grafting monomer is from 1.6:1 to 1:1, said process comprising:

(a) introducing a dispersion containing the graft substrate, water, a buffer and a polymerization initiator into a reaction vessel;

(b) adding an aqueous solution of a precipitating agent to the reaction vessel;

(c) allowing a precipitate to form in the reaction vessel; and

(d) after the precipitate has formed, adding a protective colloid comprising polyvinyl alcohol having a degree of hydrolysis of equal to or greater than 70% and a viscosity of equal to or greater than 5 co (5×10^{-3}Pa·s), and the grafting monomer to the reaction vessel to form said elastomeric graft copolymer.

5,185,407

POLYMERIC PHENOLIC ESTERS

Pui K. Wong, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 29, 1991, Ser. No. 751,474
Int. Cl.[5] C08F *8/14*
U.S. Cl. 525—328.8 **6 Claims**

1. A polymeric hindered phenolic ester of a poly(vinylphenol) and a 3,5-dialkylhydroxybenzoic acid wherein at least one alkyl group is of sufficient bulk to sterically hinder the hydroxy group substituted on an adjacent ring carbon atoms.

5,185,408

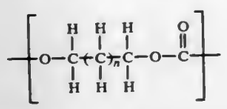
MEDICAL DEVICES FABRICATED TOTALLY OR IN PART FROM COPOLYMERS OF RECURRING UNITS DERIVED FROM CYCLIC CARBONATES AND LACTIDES

Reginald T. Tang, Somerset; Frank Mares; William J. Boyle, Jr., both of Morris; Tin-Ho Chiu, Essex, and Kundan M. Patel, Morris, all of N.J., assignors to Allied-Signal Inc., Morristown, N.J.

Division of Ser. No. 467,067, Jan. 18, 1990, Pat. No. 5,066,772, which is a division of Ser. No. 226,706, Aug. 1, 1988, Pat. No. 4,916,193, which is a continuation-in-part of Ser. No. 134,339, Dec. 17, 1987, Pat. No. 5,120,802, and a continuation-in-part of Ser. No. 134,321, Dec. 17, 1987, Pat. No. 4,891,263. This application Nov. 18, 1991, Ser. No. 793,747
Int. Cl.[5] C08G *63/64, 63/62*
U.S. Cl. 525—415 **27 Claims**

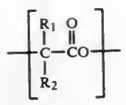
1. A prosthetic tubular graft for surgical implantation in animals comprising a tube which is formed totally or in part of one or more copolymers having at least one type of recurring monomeric unit of the General Structure I:

Structure I



and having at least one type of recurring monomeric unit of the Structure II:

Structure II



wherein:

n is from 1 to about 8; and

R_1 and R_2 are the same or different and are hydrogen, alkyl or phenyl with the proviso that when said copolymers are block copolymers at least one of R_1 and R_2 is other than hydrogen.

5,185,409

PROCESS FOR PREPARING WATER SOLUBLE POLYMER GELS

Edwin T. Sortwell, Wheaton, Ill., assignor to Diatec Environmental, Batavia, Ill.

Filed Aug. 16, 1991, Ser. No. 745,801
Int. Cl.[5] C08F *2/00*
U.S. Cl. 526—62 **27 Claims**

1. A process for preparing a water-soluble polymer gel comprising the steps of:

(a) forming an aqueous solution of one or more vinyl monomers;

(b) mixing said monomer solution with a catalyst system comprising one or both of a redox system and an organic free-radical generating initiator to form a reaction mixture;

(c) introducing said reaction mixture to a reactor comprising a flexible oxygen-impermeable film, said reaction mixture having a depth of less than about twenty inches; and,

(d) allowing the monomer(s) present in said reaction mixture to polymerize to form a water-soluble polymer gel product, each of said steps (b)–(d) being carried out in the substantial absence of molecular oxygen.

5,185,410

OLEFIN POLYMERIZATION CATALYST

Robert C. Job, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Division of Ser. No. 599,539, Oct. 18, 1990. This application Jun. 29, 1992, Ser. No. 905,695
Int. Cl.[5] C08F *4/44*
U.S. Cl. 526—128 **8 Claims**

1. A process of polymerizing lower α-olefins by contacting the α-olefin under polymerization conditions with a catalyst produced by contacting (A) an olefin procatalyst obtained by contacting a tetravalent titanium halide, a halohydrocarbon, an electron donor and a procatalyst precursor obtained by heating a solid magnesium-containing reaction product of a carbonated magnesium ethoxide and a phenolic compound of enhanced acidity of from 1 to 2 aromatic rings and from 1 to 2 electron withdrawing groups as ring carbon atoms substituents, with, (B) a cocatalyst, and (C) a selectivity control agent.

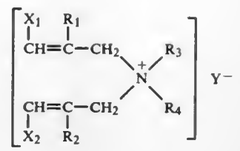
5,185,411

POLYMERIZATION OF WATER-SOLUBLE MONOMERS

Guenter A. Jueptner, Hammah, and Susanne M. Karrasch, Stade, both of Fed. Rep. of Germany, assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 14, 1992, Ser. No. 821,529
Claims priority, application United Kingdom, Jan. 17, 1991, 9101004
Int. Cl.[5] C08F *2/32, 26/04*
U.S. Cl. 526—200 **20 Claims**

1. A process for preparing homopolymers or copolymers of water-soluble monomers of formula I



wherein

R_1 and R_2 independently are hydrogen, a methyl or ethyl group or halogen;

R_3 and R_4 independently are hydrogen, an alkyl, hydroxyalkyl, carboxyalkyl, carboxyamide alkyl or alkoxyalkyl group containing from 1 to 18 carbon atoms in the alkyl moiety, an epoxy group or the group R_3-N-R_4 together represent the unsubstituted pieridine ring, a piperidine ring substituted with one or more $C_{1\text{-}18}$-alkyl groups, the unsubstituted morpholinium ring or a morpholinium ring substituted with one or more $C_{1\text{-}18}$-alkyl groups;

X_1 and X_2 independently are hydrogen, a $C_{1\text{-}6}$-alkyl group or halogen; and

Y− represents an anion,

by preparing a two-phase system containing droplets of an aqueous solution of at least one monomer of formula I in a water-immiscible inert organic liquid and polymerizing said at least one monomer, wherein a polymerization is carried out in the presence of a combination of

i) an emulsifier and

ii) a suspending agent selected from the group consisting of cellulose ethers, starch, partially saponified vinyl acetates, alkali metal salts of polyacrylic or polymethacrylic acids, styrene/vinyl acetate copolymers, saponified ethylene/vinyl acetate copolymers, polyvinyl alcohols and polyethylene imines.

5,185,412

FUNCTIONALLY TERMINATED ACRYLIC ACID TELOMER

Kathleen A. Hughes, and Graham Swift, both of Blue Bell, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 467,073, Jan. 18, 1990. This application Jul. 1, 1991, Ser. No. 724,088
Int. Cl.[5] C08F *2/38*
U.S. Cl. 526—210 **11 Claims**

1. A polyacrylic acid telomer or salt thereof with a degree of polymerization of less than 100 with a functional terminal group derived from a secondary alcohol chain transfer agent selected from the group consisting of:

(a) diols and polyols containing at least one secondary hydroxyl group and at least one primary hydroxyl group; and

(b) secondary alcohols of 6 to 12 carbon atoms where the carbons are present as alkyl, cycloalkyl or aryl groups.

5,185,413

PROCESS FOR PRODUCING HIGHLY WATER-ABSORTIVE POLYMERS

Kenji Yoshinaga; Toshiko Nakamura, and Kiichi Itoh, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Continuation of Ser. No. 523,561, May 15, 1990, abandoned. This application Jan. 22, 1992, Ser. No. 824,870
Claims priority, application Japan, May 16, 1989, 1-121685
Int. Cl.[5] C08F *2/00*
U.S. Cl. 526—233 **10 Claims**

1. In a process for producing a substantially water-insoluble, highly water-absorptive polymer which comprises subjecting an aqueous solution of a monomer comprising as a main component acrylic acid and/or its alkali metal salt to polymerization conditions effective for producing water-insoluble, water-absorptive polymers, the improvement comprising effecting said polymerization in the presence of a hypophosphorous acid compound and from about 0.001 to about 0.5 percent by weight of a crosslinking agent.

5,185,414

DRYING TEMPERATURE INDEPENDENT POLYTETRAFLUOROETHYLENE

Walter G. Mellish, Livingston, N.J., assignor to ICI Americas Inc., Wilmington, Del.

Filed Jan. 18, 1991, Ser. No. 643,409
Int. Cl.[5] C08F *14/18*
U.S. Cl. 526—247 **10 Claims**

1. A coagulated dispersion of an extrudable copolymer of tetrafluoroethylene and from 0.03 to 1.0 weight percent of a comonomer selected from the group consisting of perfluoroalkenes, chlorotrifluoroethylene, dichlorodifluoroethylene, hexafluoropropene, perfluoro(n-propyl vinyl ether), perfluoroalkyl trifluoroethylene of 3 to 10 carbon atoms and oxyperfluoroalky trifluoroethylenes of 3 to 10 carbon atoms, characterized by a green strength wherein said green strength is increased with a corresponding extrusion pressure said extrusion pressure remaining substantially constant as a function of drying temperature between about 150 to 250 degrees centigrade.

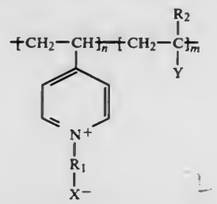
5,185,415

ADSORPTIVE RESIN FOR MICROORGANISMS

Nariyoshi Kawabata, Osaka; Akinori Minami, and Tadahira Yo, both of Koga, all of Japan, assignors to Japane Vilene Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 550,967, Jul. 11, 1990, abandoned. This application Dec. 13, 1991, Ser. No. 809,208
Claims priority, application Japan, Jul. 12, 1989, 1-181576
Int. Cl.[5] C08F *26/06*
U.S. Cl. 526—265 **13 Claims**

1. A resin for adsorbing microorganisms comprising a vinyl copolymer of the following formula



wherein, R_1 is a benzyl group, an alkyl group of 4 to 16 carbon atoms or a pentafluorophenylmethyl group, R_2 is a hydrogen atom or an alkyl group of 1 to 3 carbon atoms, X is a halogen atom, and Y is a hydrogen atom, an alkyl group of 1 to 3 carbon atoms, a benzyl group, an ether group, a carboxyl group, a carboxylic acid ester group or an aryl group, said vinyl copolymer being insoluble in water and soluble in organic solvent.

5,185,416

Patent Not Issued For This Number

VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,417

POLYMERIZABLE COMPOSITIONS AND IN-MOLD CURED PRODUCTS USING SAME

Yuuji Takayama, Kanagawa; Hirokazu Matsueda, Aichi; Masato Sugiura, Aichi; Tatsuhiko Ozaki, Aichi; Hirotaka Wada, Aichi, and Iwao Komiya, Aichi, all of Japan, assignors to Takemoto Yushi, Kabushiki Kaisha, Aichi, Japan

Filed Apr. 9, 1992, Ser. No. 865,977

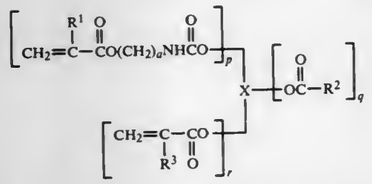
Claims priority, application Japan, Apr. 12, 1991, 3-108944

Int. Cl.[5] C08F *236/22, 236/20*

U.S. Cl. 526—301 **8 Claims**

1. A polymerizable composition comprising unsaturated urethane shown by Formula (1) given below and vinyl monomers at weight ratio of (unsaturated urethane)/(vinyl monomers)=10/90～90/10, said vinyl monomers being copolymerizable with said unsaturated urethane:

Formula (1)



where X is a residual group obtained by removing the hydroxyl groups from a trihydric or tetrahydric polyol; R^1 and R^3 are each H or CH_3; R^2 is higher aliphatic hydrocarbon group with 5 ～21 carbon atoms; p and q are each 1 or 2; r is an integer 0 ～2 such that p+q+r=3 or 4 and p+r=2 or 3; and a is an integer 2～4.

5,185,418

HYDROLYZABLE SILYL GROUP-CONTAINING AZO COMPOUND, PROCESS FOR PRODUCING THE SAME AND SILYL GROUP-CONTAINING VINYL POLYMER PRODUCED BY USING THE SAME

Hisao Furukawa; Katsuhiko Isayama, and Yasushi Kato, all of Hyogo, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

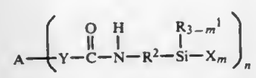
Division of Ser. No. 422,719, Oct. 17, 1989, Pat. No. 5,136,029. This application Apr. 3, 1992, Ser. No. 863,270

Claims priority, application Japan, Oct. 20, 1988, 63-265662

Int. Cl.[5] C08F *2/00*

U.S. Cl. 526—329.2 **2 Claims**

1. A hydrolyzable silyl group-containing vinyl polymer which is produced by polymerizing vinyl monomer(s) using a hydrolyzable silyl group-containing azo compound as a radical polymerization initiator, said compound represented by formula (I):



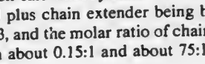
Wherein A represents a group originating from an azo compound having one or more active hydrogen groups selected from the group consisting of primary amino, secondary amino, hydroxyl, carboxyl, thiol and amide groups, and does not contain a phenyl group;

R^1 represents a monovalent organic group selected from the group consisting of alkyl groups having 1 to 10 carbon atoms, phenyl group and aralkyl group having 8 to 14 carbon atoms, and when two or more R^1 groups are present, they are the same or different;

R^2 represents a divalent organic group selected from the group consisting of an alkylene group having 1 to 10 carbon atoms, phenylene group and a divalent aralkyl group having 8 to 14 carbon atoms;

X represents a hydrolyzable group selected from the group consisting of a halogen atom, alkoxy having 1 to 3 carbon atoms, phenoxy group and acyloxy group having 1 to 4 carbon atoms wherein if two or more groups are present the groups are the same or different;

Y represents —O—, —S—,



m is an integer of 1 to 3; and

n is an integer of 2.

5,185,419

POLY(ARYLENEVINYLENESILOXANES) COMPOUNDS

Enno Funk, München; Franz-Heinrich Kreuzer, Martinsried; Cornelia Gramshammer, Pöring, and Willibald Lottner, Tutzing, all of Fed. Rep. of Germany, assignors to Consortium für elektrochemische GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 11, 1991, Ser. No. 653,385

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1990, 4004944

Int. Cl.[5] C08G *77/04*

U.S. Cl. 528—25 **9 Claims**

1. A poly(arylenevinylenesilicon) compound selected from the group consisting of a poly(arylenevinylenesilane), a poly(arylenevinylenesiloxane) and a poly(arylenevinylenesilcarbane).

5,185,420

THERMOPLASTIC POLYURETHANE ELASTOMERS AND POLYUREA ELASTOMERS MADE USING LOW UNSATURATION LEVEL POLYOLS PREPARED WITH DOUBLE METAL CYANIDE CATALYSTS

Curtis P. Smith, Cheshire; Maurice C. Raes, Branford; John W. Reisch, Guilford; Kiran B. Chandalia, Cheshire, and James M. O'Connor, Branford, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Continuation-in-part of Ser. No. 608,517, Nov. 2, 1990, Pat. No. 5,096,993. This application Mar. 16, 1992, Ser. No. 852,430

The portion of the term of this patent subsequent to Mar. 17, 2009, has been disclaimed.

Int. Cl.[5] C08G *18/10*

U.S. Cl. 528—61 **20 Claims**

1. A thermoplastic polyurethane or polyurea elastomer made by reacting in a "one-shot" process a polyether polyol, a diisocyanate, and a difunctional, isocyanato-reactive chain-extender, the polyether polyol being prepared utilizing a double metal cyanide complex catalyst and having a molecular weight of between about 2000 and about 8,000, said polyol having an end group unsaturation level of no greater than 0.02 milliequivalents per gram of polyol, the equivalent ratio of NCO groups on said diisocyanate to active hydrogen groups on said polyol plus chain extender being between about 1:0.7 and about 1:1.3, and the molar ratio of chain extender to polyol being between about 0.15:1 and about 75:1.

5,185,421

FLUORINATED HYDROXY-CONTAINING MACROMONOMERS

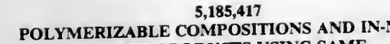
Gordon M. Cohen, Wynnewood, Pa.; William B. Farnham, Hockessin, and Andrew E. Feiring, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 5, 1991, Ser. No. 740,274

Int. Cl.[5] C08G *18/28*

U.S. Cl. 528—70 **86 Claims**

1. A macromonomer of the structure

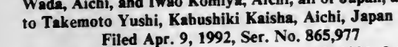


wherein:

z is 2, 3 or 4;

Q is hydrocarbyl or fluorine or ether substituted hydrocarbyl; and

each $[D^1]$ is independently



wherein:

n is 0 to about 30;

R^4 is perfluoroalkylene; and

provided that at least one of said n is one or more.

5,185,422

POLYISOCYANATE SUSPENSIONS IN ISOCYANATE REACTIVE COMPOUNDS AND THEIR USE

Werner Drouvé, Leverkusen; Peter Höhlein, Kempen, and Wolfhart Wieczorrek, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 3, 1992, Ser. No. 862,854

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1991, 4113416

Int. Cl.[5] C08G *18/48*

U.S. Cl. 528—76 **3 Claims**

1. A suspension of a solid polyisocyanate inactivated on the surface by adduct formation in an organic compound having at least two isocyanate reactive groups, as a continuous phase, which suspension is stable in storage at room temperature and heat curable and optionally contains an auxiliary agent and an additive, characterized in that the compound which forms the continuous phase contains at least 10% by weight of an ether group- and ester group-containing polyhydroxyl compound having an (average) hydroxyl functionality of from 0.5 to 3 and an (average) hydroxyl number of from 15 to 150, and comprises the esterification product of (i) a polyether polyol having an (average) hydroxyl functionality of from 3 to 8 and an (average) hydroxyl number of from 200 to 1000 with (ii) from 40 to 90 equivalents percent of an organic monocarboxylic acid, the percentages being based on the hydroxyl groups of component (i) and the carboxyl groups of component (ii).

5,185,423

METHOD OF MAKING SULFONATED HYDROXY-FUNCTIONAL POLYURETHANE BINDER FOR MAGNETIC RECORDING MEDIA

Takatoshi Ohkubo, Atsugi, Japan, and James G. Carlson, Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 429,720, Oct. 31, 1989, Pat. No. 5,071,578, which is a continuation-in-part of Ser. No. 295,046, Jan. 6, 1989, abandoned. This application Jul. 29, 1991, Ser. No. 751,334

Int. Cl.[5] C08G *18/32*

U.S. Cl. 528—85 **4 Claims**

1. A method of preparing a curable, sulfonated, hydroxy-functional polyurethane polymer, comprising the step of reacting a polyol with a sulfonated polyisocyanate having at least two reactive isocyanate groups wherein:

(a) said polyol has at least three reactive hydroxy groups and a hydroxy equivalent weight of at least 60;

(b) said polyol is present in a sufficient amount such that:

(i) there is at least about a 67% excess of reactive hydroxy groups relative to reactive isocyanate groups;

(ii) said polyurethane polymer has a hydroxy equivalent weight of between about 500 and about 10,000; and

(iii) at least about 90% of the hydroxy-functionality in said polyurethane polymer results from said polyol; and

(c) said sulfonated polyisocyanate is present in a sufficient amount such that said polyurethane polymer has a sulfonate equivalent weight of between about 2,000 and about 100,000.

5,185,424

THERMOTROPIC POLYESTERAMIDES

Francesco Casagrande; Marco Foa', and Larry L. Chapoy, all of Novara, Italy, assignors to Himont Italia S.r.l., Milan, Italy

Filed Dec. 3, 1990, Ser. No. 620,786

Claims priority, application Italy, Dec. 6, 1989, 22627 A/89

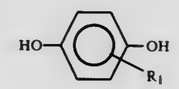
Int. Cl.[5] C08G *63/00, 63/02, 63/18*

U.S. Cl. 528—183 **19 Claims**

1. An aromatic polyesteramide having thermotropic liquid crystal properties, with an inherent viscosity of between 0.2 and 4 dl/g when measured in a 1:1 phenol/1,2,4-trichlorobenzene mixture at 85° C. at a concentration of 2.5 g/l, the macromolecule consisting essentially of:

at least one unit deriving from compounds of formula (I)

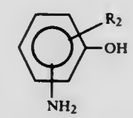
(I)



where R_1 is at least C_5 alkyl, at least C_6 cycloalkyl, at least C_7 aralkyl or C_6–C_{12} aryl;

at least one unit deriving from compounds of formula (II)

(II)



where the amino group is in the meta or para position relative to the hydroxyl and R_2 is chosen from hydrogen, C_1–C_5 alkyl, C_6–C_{12} aryl, at least C_7 aralkyl, halogen or C_1–C_5 alkoxy;

at least one unit deriving from dicarboxylic acids of formula (III)

HOOC—A—COOH (III)

where A is a C_6–C_{12} aryl radical possibly substituted with halogens, C_1–C_4 alkyls or C_1–C_5 alkoxy groups.

5,185,425

HALOGENATED COPOLYCARBONATE END CAPPED WITH TRIHALOPHENOL

Takashi Komatsu, Ichihara, Japan, assignor to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 585,739, Sep. 20, 1990, abandoned. This application Mar. 14, 1991, Ser. No. 670,365

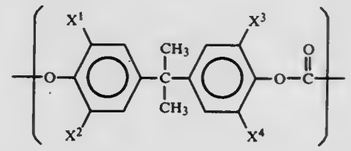
Claims priority, application Japan, Oct. 24, 1989, 1-274788; Mar. 14, 1990, 2-061144

Int. Cl.[5] C08G *64/26*

U.S. Cl. 528—198 **10 Claims**

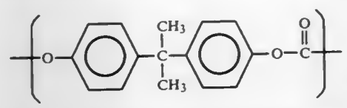
1. A polycarbonate comprising

(1) a main chain comprising a repeating unit (I) represented by the formula:



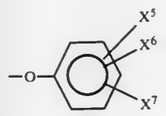
VOL 1147 ISS 2 FEB 9 1993 UMI

wherein X^1 to X^4 are each a halogen atom, and
a repeating unit (II) represented by the formula:



and

(2) a trihalogenophenoxy group represented by the formula:



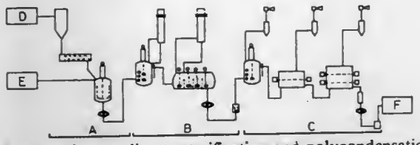
wherein X^5 to X^7 are each a halogen atom, as the end group thereof; and
said polycarbonate having a viscosity average molecular weight of 10,000 to 50,000, and the repeating unit (I) in the main chain is in a proportion of 1 to 10 mol %.

5,185,426

PROCESS FOR THE PRODUCTION OF POLYESTER WITH ENHANCED THERMO-OXIDATIVE STABILITY

Johannes M. Verheijen, Ranst, and August M. Mariën, Westerlo, both of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Feb. 20, 1992, Ser. No. 838,032
Claims priority, application European Pat. Off., Feb. 28, 1991, 91200425.6
Int. Cl.[5] C08G *63/692, 63/695*
U.S. Cl. 528—272 **7 Claims**



1. A continuous direct esterification and polycondensation process for the production of polyester comprising units of ethylene terephthalate as the major repeating units by supplying a slurry of mainly terephthalic acid and ethylene glycol to bis(betahydroxyethyl) terephthalate or its oligomer so as to carry out esterification followed by polycondensation whereby the resulting oligomer is kept under increasingly reduced pressure, characterised in that a stabilising aliphatic diol solution containing diethyl or tributhyl phosphite and a hindered phenolic phosphonate is added to the reaction mixture before the start of the polycondensation.

5,185,427

PROCESS FOR THE PRODUCTION OF COPOLYAMIDES FROM AMINO NITRILE, DIAMINE AND DICARBOXYLIC ACID

David N. Marks, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 20, 1991, Ser. No. 752,942
Int. Cl.[5] C08G *69/00, 69/26*
U.S. Cl. 528—329.1 **5 Claims**

1. A process for the preparation of copolyamide which consists of forming a reaction mixture consisting of an omega-aminonitrile having 6 to 12 carbon atoms and an aqueous solution containing approximately equal molar amounts of a diamine and a dicarboxylic acid, heating the reaction mixture to a temperature in the range of at least 260 degrees C. but less than 310 decrees C. at a pressure of about between 13 and 25 atmospheres while continuously removing water vapor and ammonia for a time period of not more than about 3 hours, and recovering copolyamide having a number average molecular weight of at least 9000, said omega-aminonitrile being present in the reaction mixture in an amount such that at least 1% by weight and not more than 40% by weight of the copolyamide is derived from the omega-aminonitrile.

5,185,428

COPOLYADIPAMIDE CONTAINING PENTAMETHYLENEADIPAMIDE UNITS AND PRODUCTS PREPARED THEREFROM

James A. Hammond, Jr., Chattanooga, Tenn., and David N. Marks, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jun. 21, 1991, Ser. No. 718,940
Int. Cl.[5] C08G *69/26*
U.S. Cl. 528—340 **6 Claims**

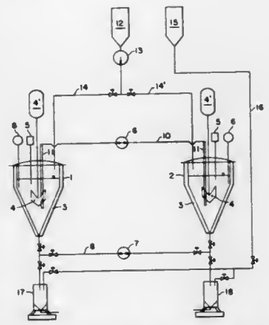
1. A copolyamide consisting essentially of between 60 and 99.5 mole percent hexamethyleneadipamide units and between about 0.5 and 40 mole percent pentamethyleneadipamide units, said copolyamide having a relative viscosity greater than about 25, and a melting point of greater than about 220° C., said relative viscosity being measured at 25° C. in a solution of 8.4% by weight polymer in a solvent of formic acid containing 10% by weight of water.

5,185,429

PROCEDURE FOR THE CONTINUOUS FRACTIONATION OF POLYMERS AND RELATIVE EQUIPMENT

Patrizia Cinquina, Novara; Giangaleazzo Triulzi, Milan, and Fabio Garbassi, Novara, all of Italy, assignors to Istituto Guido Donegani S.p.A., Novara, Italy

Filed Mar. 20, 1991, Ser. No. 671,429
Claims priority, application Italy, Mar. 22, 1990, 19778 A/90
Int. Cl.[5] C08F *6/04*
U.S. Cl. 528—503 **10 Claims**



1. A process for fractionating a solution of a polymer dissolved in a solvent, comprising completing at least one cycle comprising the following steps:
a) precipitating a polymer fraction from the solution inside a reaction vessel by lowering the temperature of the solution to obtain a polymer precipitate and another polymer solution;
b) transferring the polymer solution obtained in step a) without the polymer precipitate obtained in step a) to another reaction vessel;
c) collecting the polymer precipitate from step a);

d) precipitating the polymer fraction from the polymer solution in the reaction vessel of step b) by lowering the temperature of the polymer solution to below the temperature of step a) to obtain a polymer precipitate and another polymer solution;
e) recycling the polymer solution of step d) to the vessel of step a); and
f) collecting the polymer precipitate from step d).

5,185,430

ANTIGEN RECOGNIZED BY NATURAL KILLER AND NON-SPECIFIC CYTOTOXIC CELLS

Donald L. Evans, Athens, Ga., and David T. Harris, Chapel Hill, N.C., assignors to University of Georgia Research Foundation, Inc., Athens, Ga. and University of North Carolina, Chapel Hill, N.C.

Continuation of Ser. No. 109,731, Oct. 16, 1987, abandoned. This application Aug. 9, 1990, Ser. No. 565,157
Int. Cl.[5] C07K *15/00*
U.S. Cl. 530—350 **4 Claims**

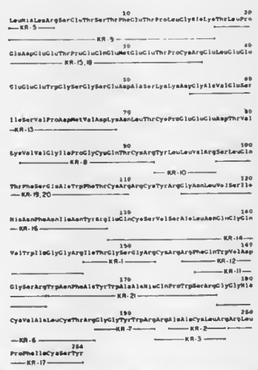
1. A protein isolated from the surface of cells of either mammalian origin or fish origin,
wherein said protein has a molecular weight of between about 78,000 and 86,000 daltons as determined by SDS gel electrophoresis under either reducing or non-reducing conditions, and
wherein said protein is immunoreactive with an antibody that was deposited with the American Type Culture Collection on Oct. 16, 1987 and designated HB9571,
such that the antibody inhibits lysis of the cells bearing said protein when said cells are exposed to non-specific cytotoxic cells of fish origin or natural killer cells of mammalian origin.

5,185,431

RECOMBINANT NATURAL KILLER CELL ACTIVATOR

Kentaro Yoshimatsu; Yukio Ohya; Yasushi Shikata; Isao Tanaka; Yoshikazu Hasegawa; Toshio Seto, all of Ibaraki, and Toshio Osawa, Tokyo, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Aug. 11, 1989, Ser. No. 392,841
Claims priority, application Japan, Aug. 31, 1988, 63-217599
Int. Cl.[5] C07K *13/00;* **A61K** *37/02*
U.S. Cl. 530—351 **6 Claims**



1. An isolated, purified human natural-killer cell activating factor, comprising a glycoprotein having the amino acid sequence as shown in FIG. 6, of molecular weight approximately 35 kilodaltons, as determined by SDS-PAGE, which increases the killing activity of plastic-nonadherent lymphocytes in a standard cytotoxicity assay using a variety of cell targets.

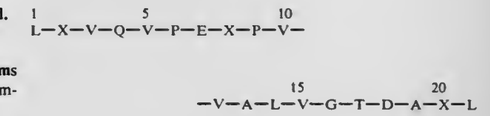
5,185,432

MONOCLONAL ANTIBODIES AND ANTIGEN FOR HUMAN NON-SMALL CELL LUNG CARCINOMA AND OTHER CERTAIN HUMAN CARCINOMAS

Karl E. Hellstrom; Joseph P. Brown; Ingegerd Hellstrom, all of Seattle, and Hans Marquardt, Mercer Island, all of Wash., assignors to Oncogen, Seattle, Wash.

Filed Feb. 26, 1986, Ser. No. 834,172
Int. Cl.[5] C07K *15/28;* **C12P** *21/08;* **C12N** *5/20*
U.S. Cl. 530—388.8 **18 Claims**

1. A monoclonal antibody, the antigen-combining site of which binds to a protein antigen having a molecular weight of about 110,000 daltons and an amino terminal amino acid sequence as follows:



in which X represents an unidentified amino acid, which protein antigen is a cell surface determinant of human non-small cell lung carcinoma.

5,185,433

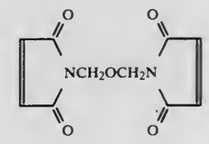
CROSS-LINKING PROTEIN COMPOSITIONS HAVING TWO OR MORE IDENTICAL BINDING SITES

Richard T. Dean, Dowingtown; John Lister-James, Glenmoore, both of Pa., and Raymond H. Boutin, Wilmington, Del., assignors to Centocor, Inc., Malvern, Pa.

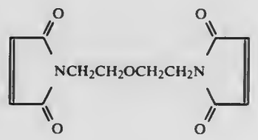
Filed Apr. 9, 1990, Ser. No. 506,122
Int. Cl.[5] C07K *17/06, 15/28;* **A61K** *39/44*
U.S. Cl. 530—391.1 **10 Claims**

1. A cross-linked protein composition comprising at least two proteins specific to a target joined by at least one sulfhydryl-selective cross-linking agent, said sulfhydryl-selective cross-linking agent being bound to sulfhydryl groups on the target specific proteins, wherein said sulfhydryl-selective cross-linking agent is represented by Compound I or Compound II as follows:

Compound I



Compound II



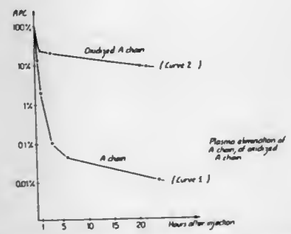
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5,185,434

PROLONGED-ACTION IMMUNOTOXINS CONTAINING A GLYCOPEPTIDE CONSTITUENT WHICH INACTIVATES RIBOSOMES, MODIFIED ON ITS POLYSACCHARIDE UNITS

Franz Jansen, Castries, and Pierre Gros, Montpellier, both of France, assignors to Sanofi, Paris, France

Continuation of Ser. No. 804,438, Dec. 4, 1985, abandoned. This application Mar. 2, 1989, Ser. No. 317,864
Claims priority, application France, Feb. 13, 1985, 85 02068
The portion of the term of this patent subsequent to Mar. 27, 2007, has been disclaimed.
Int. Cl.[5] C07K *15/28, 3/06*
U.S. Cl. 530—391.7 **19 Claims**



1. An immunotoxin having prolonged in vivo activity comprising a conjugate in which an antibody or antibody fragment is coupled by a divalent covalent structure containing a disulfide or thioether group to a glycoprotein which inactivates ribosomes but which is not capable of binding to cells which are the target of the immunotoxin, the glycoprotein also containing carbohydrate units which have been oxidized so that the immunotoxin has prolonged in vivo activity.

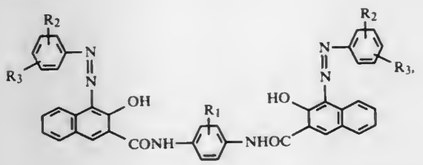
5,185,435

PROCESS FOR THE PREPARATION OF BISAZO PIGMENTS IN HALOGEN-FREE SOLVENTS

Klaus Ruf, Bollschweil, Fed. Rep. of Germany; Bilge Gülec, Basel, Switzerland; Michael Reisinger, Himmelried, Switzerland, and Werner Surber, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

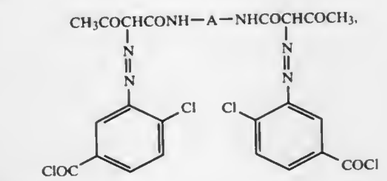
Filed Jan. 30, 1992, Ser. No. 828,334
Claims priority, application Switzerland, Feb. 7, 1991, 383/91; Feb. 7, 1991, 384/91
Int. Cl.[5] C09B *43/124, 43/132, 43/12*
U.S. Cl. 534—591 **19 Claims**

1. A process for the preparation of bisazo pigments of the formula



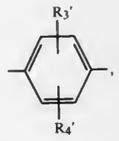
(I)

in which R_1 is hydrogen, chlorine or methyl and R_2 and R_3, independently of one another, are chlorine, methyl or nitro, by reaction (A) of 2 mol of an azocarbonyl chloride of the formula

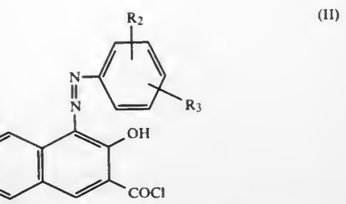


(V)

in which A is as defined above, with 2 mol of an amine of the formula

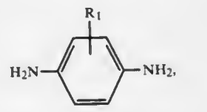


in which R'_1 and R'_2, independently of one another, are chlorine, methyl, trifluoromethyl, unsubstituted or chlorine-, methyl- or methoxy-substituted phenoxy, and R'_3 and R'_4, independently of one another, are chlorine or methyl, by reaction (b) of one mole of a bis(azocarbonyl chloride) of the formula of a bis(azocarbonyl chloride) of the formula



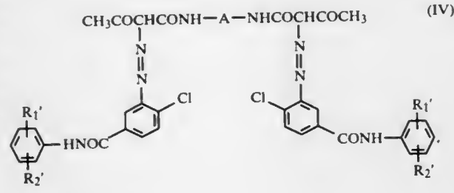
(II)

in which R_2 and R_3 are as defined above, with 1 mol of a diamine of the formula



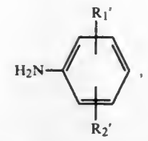
(III)

in which R_1 is as defined above, or of the formula



(IV)

in which A is a group



(VI)

in which R'_1 and R'_2 are as defined above, which comprises carrying out the reactions (a) or (b) in the presence of 1,2,3-trimethylbenzene or anisole as the solvent.

5,185,436

ESTERS OF NORMAL BUTYRIC ACID AND THEIR USE AS PHARMACEUTICALS

Pierre J. Villa; Francois Pieri; Ginolino Ronco, and Emile P. R. Segard, all of Amiens, France, assignors to Association Pour La Recherche Therapeutique Anti-Cancereuse, Paris, France

Filed Mar. 29, 1990, Ser. No. 501,080
Int. Cl.[5] C07H *13/02, 15/04;* **A61K** *31/70*
U.S. Cl. 536—4.1 **4 Claims**

3. A method for administering an n-butyric glucose acid ester of a monosaccharide to a patient in need thereof whereby in vivo it releases butyric acid comprising administering to said patient an effective amount of a compound selected from the group consisting of O-butanoyl-3-di-O-isopropylidene-1,2:5,6-α-D-glucofuranose, O-butanoyl-3-O-isopropylidene-1,2-α-D-glucofuranose, O-butanoyl-6-O-isopropylidene-1,2,αD-glucofuranose, tri-O-butanoyl-3, 5, 6-isopropylidene-1,2 α-D-glucofuranose, O-butanoyl-6-di-O-isopropylidene-1,2,3,4 α-D-galactopyranose, and penta-O-butanoyl-1,2,3,4,6α D-galactopyranose, whereby said ester in vivo releases n-butyric acid.

5,185,437

THERAPEUTIC NUCLEOSIDES

George W. Koszalka, Chapel Hill; Charlene L. Burns, Durham; Thomas A. Krenitsky, Chapel Hill, and Janet L. Rideout, Raleigh, all of N.C., assignors to Burroughs Wellcome Co., Research Triangle Park, N.C.

Division of Ser. No. 417,989, Oct. 6, 1989, Pat. No. 5,068,320, which is a continuation-in-part of Ser. No. 179,435, Apr. 8, 1988, abandoned. This application Aug. 31, 1991, Ser. No. 753,060
Claims priority, application United Kingdom, Apr. 9, 1987, 8708512; May 29, 1987, 8712691; Sep. 30, 1987, 8723013
Int. Cl.[5] C07H *19/173*
U.S. Cl. 536—24 **7 Claims**

1. The compound 6-N-piperidinopurine-9-β-D-2',3'-dideoxyribofuranoside or a pharmaceutically acceptable salt thereof.

7. The compound 2-amino-6-methylaminopurine-9-β-D-2',3'-dideoxyribofuranoside or a pharmaceutically acceptabl salt thereof.

5,185,438

NUCLEIC ACIDS ENCODING HENCATOPORETIC STEM CELL RECEPTOR FLK-2

Ihor R. Lemischka, Princeton, N.J., assignor to The Trustees of Princeton University, Prioceton, N.J.

Continuation-in-part of Ser. No. 793,065, Nov. 15, 1991, which is a continuation-in-part of Ser. No. 728,913, Jun. 28, 1991, abandoned, which is a continuation-in-part of Ser. No. 679,666, Apr. 2, 1991, abandoned. This application Dec. 24, 1991, Ser. No. 813,593
Int. Cl.[5] C07H *21/00*
U.S. Cl. 536—23.2 **4 Claims**

1. A recombinant nucleic acid molecule that is flk-2 having the sequence shown in FIG. 1.

5,185,439

ACRIDINIUM ESTER LABELLING AND PURIFICATION OF NUCLEOTIDE PROBES

Lyle J. Arnold, Jr., and Norman C. Nelson, both of San Diego, Calif., assignors to Gen-Probe Incorporated, San Diego, Calif.

Continuation-in-part of Ser. No. 105,080, Oct. 5, 1987, abandoned. This application Dec. 12, 1988, Ser. No. 332,939
Int. Cl.[5] C07H *17/00;* **C12Q** *1/68*
U.S. Cl. 536—24.3 **17 Claims**

1. A method for labelling a nucleic acid probe having a first conjugation moiety, with an acridinium ester labelling reagent having a second conjugation moiety, including the step of:

combining said labelling reagent and said nucleic acid probe so as to effectuate a labelling reagent concentration of approximately 0.1–50 mM to obtain acridinium ester labelled nucleic acid probes in high yield.

5,185,440

CDNA CLONE CODING FOR VENEZUELAN EQUINE ENCEPHALITIS VIRUS AND ATTENUATING MUTATIONS THEREOF

Nancy L. Davis, Chapel Hill; Loretta V. Willis; Robert E. Johnston, both of Raleigh, all of N.C., and Jonathan F. Smith, Frederick, Md., assignors to North Carolina State University, Raleigh, N.C.

Filed Jun. 20, 1989, Ser. No. 369,023
Int. Cl.[5] C12N *15/40, 7/01, 7/04;* **A61K** *39/193*
U.S. Cl. 536—237.2 **5 Claims**

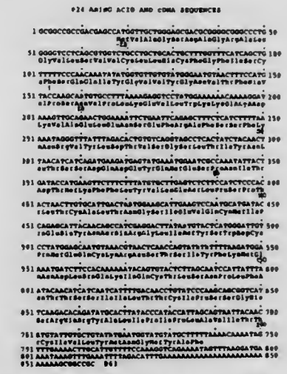
1. A DNA comprising a cDNA clone coding for an infectious Venezuelan Equine Encephalitis (VEE) Virus RNA transcript and a heterologous promoter positioned upstream from said cDNA clone and operatively associated therewith, and further comprising at least one attenuating mutation selected from the group consisting of codons at E2 amino acid position 76 which specify an attenuating amino acid and codons at E2 amino acid position 209 which specify an attenuating amino acid.

5,185,441

DNA SEQUENCES, RECOMBINANT DNA MOLECULES AND PROCESSES FOR PRODUCING PI-LINKED LYMPHOCYTE FUNCTION ASSOCIATED ANTIGEN-3

Barbara P. Wallner, Cambridge, and Catherine Hession, South Weymouth, both of Mass., assignors to Biogen, Inc., Cambridge, Mass.

Filed Aug. 26, 1988, Ser. No. 237,309
Int. Cl.[5] C07H *21/00, 21/04;* **C12Q** *1/68*
U.S. Cl. 536—23.5 **15 Claims**



1. A DNA molecule with a DNA sequence selected from the group consisting of:

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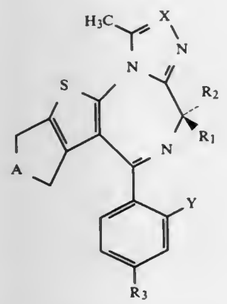
(a) the DNA sequence of the DNA insert carried in phage λP24; and
(b) DNA sequences which are degenerate to the foregoing DNA sequence.

5,185,442
NEW DIAZEPINES SUBSTITUTED IN THE 6-POSITION, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS PHARMACEUTICAL COMPOSITIONS

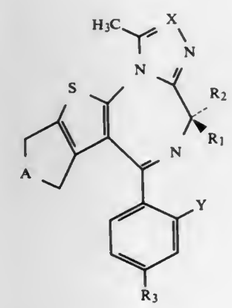
Karl-Heinz Weber; Werner Stransky, both of Gau-Algesheim; Ulrike Kuefner-Muehl, Ingelheim; Hubert Heuer, Schwabenheim; Franz Birke, Ingelheim am Rhein, and Wolf-Dietrich Bechtel, Appenheim, all of Fed. Rep. of Germany, assignors to Boehringer Ingelheim KG, Ingelheim am Rhein, Fed. Rep. of Germany

Filed Jan. 15, 1992, Ser. No. 821,514
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1991, 4101146
Int. Cl.[5] C07D *513/14;* **A61K** *31/55*
U.S. Cl. 540—555 **3 Claims**

1. A diazepine of the formula:



wherein
A represents $—Ch_2—$ or $—CH_2—CH_2—$
X represents nitrogen, C—H or $C—CH_3$;
Y represents hydrogen or halogen;
R_1 represents hydrogen or CH_3;
R_2 represents hydrogen or CH_3;
R_3 represents



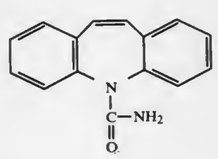
wherein
n=1, 2, 3 or 4—preferably 2—,
m=1, 2 or 3—preferably 1—,
R_4 represents hydrogen, halogen, CF_3, C_{1-4}-alkyl, C_3–C_6 cycloalkyl, methoxy, trifluoromethoxy, CN, k=1, 2 or 3 whilst if k is>1 R_4 may be identical or different,
with the proviso that if Y represents hydrogen, R_1 and R_2 cannot both together represent hydrogen; optionally in the form of their racemates, enantiomers, diastereomers and mixtures thereof.

5,185,443
METHOD FOR PREPARING 5-CARBAMOYL-5H-DIBENZ[B,F]AZEPINE

Peter Palitzsch; Rainer Müller, both of Dresden, and Erhard Richter, Radebeul, all of Fed. Rep. of Germany, assignors to Arzneimittelwerk Dresden GmbH, Radebeul, Fed. Rep. of Germany

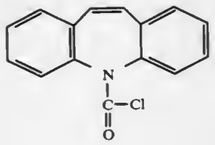
Filed Jul. 1, 1991, Ser. No. 724,108
Claims priority, application German Democratic Rep., Jul. 5, 1990, 342510
Int. Cl.[5] C07D *223/20*
U.S. Cl. 540—589 **12 Claims**

1. A process for producing carbamazepine having the formula



(III)

which comprises (i) optionally purifying a solution of CCDA having the formula



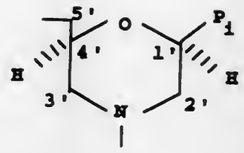
(II)

in an anhydrous, aromatic solvent; (ii) if required distilling off water in the solution; (iii) diluting the water-free solution with a additional amount of the anhydrous, aromatic solvent; (iv) in a reactor aminating the diluted solution at from about 70° C. to about 105° C. with an excess of ammonia to form a mixture of carbamazepine and ammonium chloride; (v) before completion of the amination introducing from about 10% to about 40% wt based on the solution of water into the mixture to obtain a crystal structure which facilitates stirring and thus completion of the amination; (vi) completing the amination by continuing the introduction of ammonia gas until the substantially complete conversion of CCDA to carbamazepine; (vii) separating crystalline carbamazepine/ammonium chloride mixture; (viii) dissolving ammonium chloride in the mixture with water; and (ix) recovering the crystalline carbamazepine which remained solid.

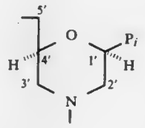
5,185,444
UNCHARGED MORPOLINO-BASED POLYMERS HAVING PHOSPHOROUS CONTAINING CHIRAL INTERSUBUNIT LINKAGES

James E. Summerton, and Dwight D. Weller, both of Corvallis, Oreg., assignors to Anti-Gene Deveopment Group, Corvallis, Oreg.

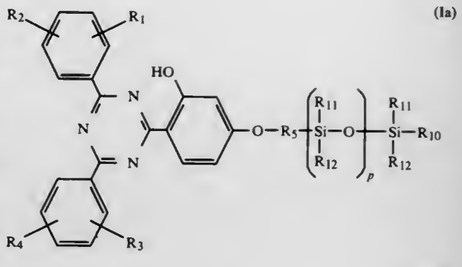
Continuation of Ser. No. 454,057, Dec. 20, 1989, abandoned, which is a continuation-in-part of Ser. No. 100,033, Sep. 23, 1987, Pat. No. 5,142;047, which is a continuation-in-part of Ser. No. 944,707, Dec. 18, 1986, and a continuation-in-part of Ser. No. 911,258, Sep. 24, 1986, abandoned, and a continuation-in-part of Ser. No. 712,396, Mar. 15, 1985, abandoned. This application Nov. 21, 1991, Ser. No. 799,681
The portion of the term of this patent subsequent to Jul. 23, 2008, has been disclaimed.
Int. Cl.[5] C07D *413/12, 413/14;* **C08G** *79/02, 79/04*
U.S. Cl. 544—81 **15 Claims**



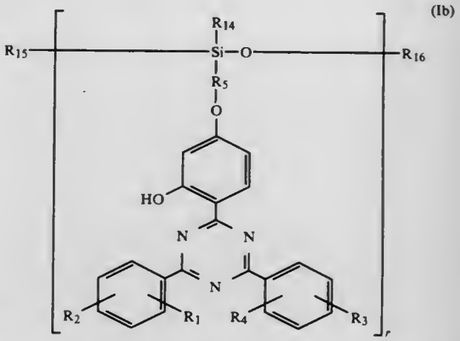
1. A polymer composition comprised of morpholino subunit structures of the form:



where (i) the structures are linked together by uncharged phosphorous-containing, chiral linkages, one to three atoms long, joining the morpholino nitrogen of one subunit to the 5', exocyclic carbon of an adjacent subunit, and (ii) P_i is a purine or pyrimidine base-pairing moiety effective to bind by base-specific hydrogen bonding to a base in a polynucleotide.

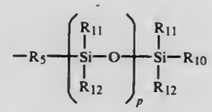


(Ia)



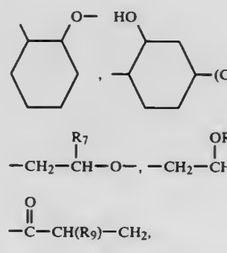
(Ib)

wherein p is 0 or an integer from 1–50, r is an integer from 1–50, R_1 and R_3 are each independently of the other hydrogen, OH, C_1–C_{12}alkyl or cyclohexyl, R_2 and R_4 are each independently of the other hydrogen, OH, C_1–C_{12}alkyl, C_1–C_{18}alkoxy, halogen or a group —O—II,



II

R_5 is a direct bond or a divalent group of one of the following formulae: $—C_mH_{2m}—$, $—(CH_2)_m—O—$, $—(CH_2)_m—O—R_6—$, $—(CH_2)_m—CO—X—(CH_2)_n—$, $—(CH_2)_m—CO—X—(CH_2)_n—O—$,



$—CH_2—CH(OH)—CH_2—Y—(CH_2)_m—$, wherein m and n are each independently of the other 1–4, R_6 is C_1–C_{12}alkylene, cyclohexylene or phenylene, R_7 is C_1–C_{12}alkyl, C_5–C_8cycloalkyl, phenyl, C_2–C_{13}alkoxymethyl, C_6–C_9cycloalkoxymethyl or phenoxymethyl, R_8 is a group of formula II, R_9 is hydrogen or methyl, X is —O— or $—NR_{13}—$, wherein R_{13} is hydrogen,

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5,185,445
SILYLATED 2-(2-HYDROXYPHENYL)-4,6-DIARYL-1,3,5-TRIAZINES

Roger Meuwly, Marly; Mario Slongo, Tafers, both of Switzerland, and Andreas Valet, Eimeldingen, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

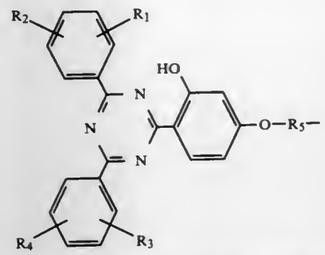
Filed Feb. 27, 1992, Ser. No. 843,118
Claims priority, application Switzerland, Mar. 5, 1991, 655/91
Int. Cl.[5] C07D *251/24*
U.S. Cl. 544—216 **10 Claims**

1. A compound of formula Ia or Ib

VOL 1147 ISS 2 FE 9 1993 UMI

C_1–C_{12}alkyl, phenyl or a group —$(CH_2)_3$—II or —$(CH_2)_3$—O—II, Y is —O— or —NH—, R_{10}, R_{11} and R_{12} are each independently of one another C_1–C_{18}alkyl, cyclohexyl, phenyl or C_1–C_{18}alkoxy, and, if R_2 and R_4 are not a group —O—II, R_{10} and/or R_{11} may also be a group of formula III

III



R_{14} is C_1–C_{12}alkyl, C_5–C_8cycloalkyl or phenyl, and R_{15} is hydroxy or C_1–C_4alkoxy and R_{16} is hydrogen or C_1–C_4alkyl or, if r is greater than 2, R_{15} and R_{16} together may be a direct bond.

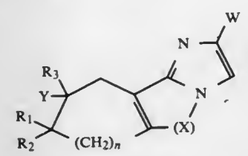
5,185,446

CERTAIN CYCLOALKYL IMIDAZOPYRIMIDINES; A NEW CLASS OF GABA BRAIN RECEPTOR LIGANDS

Kenneth Shaw, Weston, and Alan J. Hutchison, Madison, both of Conn., assignors to Neurogen Corporation, Branford, Conn.

Filed Sep. 4, 1990, Ser. No. 577,203
Int. Cl.[5] C07D *487/04;* A61K *31/505*
U.S. Cl. 544—250 **67 Claims**

1. A compound of the formula:



and pharmaceutically acceptable non-toxic salts thereof wherein:

n is 0, 1 or 2;

R_1, R_2, and R_3 are hydrogen or straight chain or branched lower alkyl having 1–6 carbon atoms;

W is phenyl, thienyl, or pyridyl, unsubstituted or mono or disubstituted with halogen, lower alkyl, or straight or branched chain lower alkoxy having 1–6 carbon atoms;

Y is —R_4, —OR_4, —COR_4, —$CO2R_4$, —$OCOR_4$, —$CONR_4R_5$, —$(CH_2)nNR_4R_5$ where n is 0, 1, or 2 and R_4 and R_5 are the same or different and represent hydrogen, phenyl, straight or branched chain lower alkyl having 1–6 carbon atoms, phenylalkyl wherein the alkyl portion is straight or branched chain lower alkyl having 1–6 carbon atoms, and NR_4R_5 may also represent N-alkyl piperazinyl, morpholinyl, piperidinyl or pyrrolidinyl, or $NR_4CO_2R_6$ where R_4 is hydrogen, phenyl straight or branched chain lower alkyl having 1–6 carbon atoms, phenylalkyl wherein the alkyl portion is straight or branched chain lower alkyl having 1–6 carbon atoms and R_6 is straight or branched chain lower alkyl having 1 to 6 carbon atoms and R_6 is straight or branched chain lower alkyl having 1 to 6 carbon atoms or phenyl, or —C-$(OH)R_7R_8$ where R_7 and R_8 are the same or different and represent hydrogen, branched or straight chain lower alkyl having 1–6 carbon atoms, phenyl or phenylalkyl wherein the alkyl portion is straight or branched chain lower alkyl having 1–6 carbon atoms; and

X is —N=C—R_9 or —NR_{10}—C=T, with the proviso that when X is —NR_{10}=C=T, T is oxygen or sulphur and R_{10} is hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms or COR_{11} where R_{11} is hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms, straight or branched chain lower alkoxy having 1–6 carbon atoms, amino, alkylamino or dialkylamino where each alkyl is a straight or branched chain lower alkyl having 1–6 carbon atoms, and when X is —N=C—R_9, R_9 is hydrogen, halogen, cyano, phenoxy, straight or branched chain lower alkoxy having 1–6 carbon atoms, amino, phenylamino, alkylamino, dialkylamino or arylalkylamino where each alkyl is straight or branched chain lower alkyl having 1–6 carbon atoms, $OCOR_{11}$ where R_{11} is hydrogen, straight or branched chain lower alkyl having 1–6 carbon atoms, straight or branched chain lower alkoxy having 1–6 carbon atoms, amino, alkylamino, dialkyl amino, arylamino, or arylalkylamino where each alkyl is a straight or branched chain lower alkyl having 1–6 carbon atoms, or $CONHR_{12}$ where R_{12} is hydrogen or branched or straight chain lower alkyl having 1–6 carbon atoms.

5,185,447

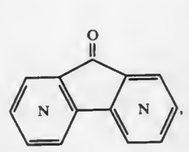
POLYCYCLIC KETONES AND PREPARATIVE METHODS THEREFOR

Edward C. Crapps, New Castle, Del., assignor to Du Pont Merck Pharmaceutical Company, Wilmington, Del.

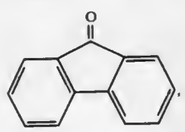
Filed Jan. 29, 1992, Ser. No. 827,429
Int. Cl.[5] C07D *487/04, 221/16;* C07C *45/54, 49/447*
U.S. Cl. 546—86 **16 Claims**

1. A process for preparing a ketone having one of the formulas:

(1)

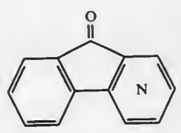


(2)



or

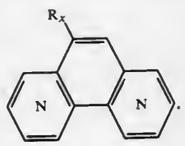
(3)



comprising the steps of:

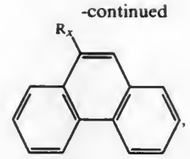
providing a first compound having one of the formulas:

(9)



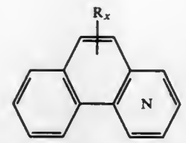
-continued

(10)



or

(11)



wherein R_x is NO_2; and

contacting said first compound with aqueous base for a time and under reaction conditions effective to form said ketone.

5,185,448

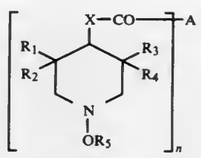
SUBSTITUTED 1-OXY-4-ACYLOXYPIPERIDINE AND 1-OXY-4-ACYLAMINOPIPERIDINE STABILIZERS

Paul A. Odorisio, Edgewater, N.J., and Sai P. Shum, Hawthorne, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 29, 1992, Ser. No. 697,134
Int. Cl.[5] C07D *211/30, 211/32*
U.S. Cl. 546—186 **12 Claims**

1. A compound of formula I

(I)



wherein

R_1, R_2, R_3 and R_4 are independently hydrogen; a linear or branched alkyl of 1 to 30 carbon atoms; said alkyl optionally terminated with —OR_6, —NR_7R_8, —SR_9, —$COOR_{10}$ or —$CONR_{11}R_{12}$, where R_6, R_7, R_8, R_9 and R_{10} are independently alkyl of 1 to 20 carbon atoms or alkenyl of 3 to 18 carbon atoms, and R_{11} and R_{12} are independently hydrogen or the same meaning as R_6; or said alkyl interrupted by one or two —O—, —S—, —SO—, —SO_2—, —CO—, —COO—, —OCO—, —$CONR_{13}$—, —NR_{13}CO— or —NR_{14}— where R_{13} and R_{14} have the same meaning as R_{11}; alkenyl of 3 to 20 carbon atoms; carbocyclic aryl of 6 to 10 carbon atoms; or said aryl substituted by one to three substiteunts selected from the group consisting of alkyl of 1 to 20 carbon atoms, cycloalkyl of 5 to 12 carbon atoms and phenylalkyl of 7 to 15 carbon atoms;

R_5 is hydrogen, alkyl of 1 to 18 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, allyl or benzyl;

X is —O— or —NE—,

E is hydrogen, alkyl of 1 to 18 carbon atoms or cycloalkyl of 5 to 12 carbon atoms,

A is a direct bond; an n-valent linear or branched aliphatic hydrocarbon radical containing 1 to 20 carbon atoms, or said radical interrupted by one or two —O—, —S—, —SO—, —SO_2—, —CO—, —COO—, —OCO—, —$CONR_{15}$—, —NR_{15}CO— or —NR_{16}— where R_{15} and R_{16} have the same meaning as R_{11}; an n-valent aromatic or aromatic-aliphatic hydrocarbon of 6 to 30 carbon atoms, or said radical interrupted by one or two —O—, —S—, —SO—, —SO_2—, —CO—, —COO—, —OCO—, —$CONR_{17}$, —NR_{17}CO— or —NR_{18}— where R_{17} and R_{18} have the same meaning as R_{11}; and

n is an integer of 1 to 4.

5,185,449

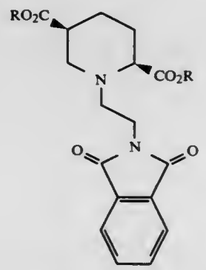
PROCESS AND INTERMEDIATE FOR CERTAIN BIS-AZA-BICYCLIC ANXIOLYTIC AGENTS

Dennis M. Godek, Glastonbury; Charles W. Murtiashaw, North Stonington; Frank J. Urban, Waterford, and Brian C. Vanderplas, Niantic, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Feb. 27, 1991, Ser. No. 661,730
Int. Cl.[5] C07D *227/093, 471/04*
U.S. Cl. 546—272 **2 Claims**

1. A compound of the formula

(II)



wherein R is (C_1–C_3)alkyl.

5,185,450

TETRAZOLIUM COMPOUNDS FOR CELL VIABILITY ASSAYS

Terence C. Owen, Tampa, Fla., assignor to University of South Florida, Tampa, Fla.

Continuation of Ser. No. 657,462, Feb. 19, 1991, abandoned. This application Jun. 12, 1992, Ser. No. 899,155
Int. Cl.[5] C07D *417/04, 251/01*
U.S. Cl. 548—194 **8 Claims**

1. A tetrazolium compound having attached as a side chain to the tetrazolium ring a naphthalene ring having two sulfonate groups thereon.

5,185,451

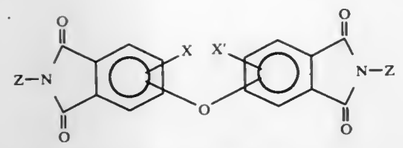
BIS-IMIDES OF DIOXYDIPHTHALIC ACID

Jeffrey S. Stults; Willis T. Schwartz, both of Grand Island, and Frank J. Dinan, Tonawanda, all of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

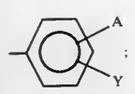
Continuation-in-part of Ser. No. 621,412, Dec. 3, 1990, Pat. No. 5,089,631, which is a division of Ser. No. 492,196, Mar. 13, 1990, Pat. No, 5,003,086, which is a division of Ser. No. 352,070, May 15, 1989, Pat. No. 4,943,642. This application Oct. 4, 1991, Ser. No. 771,600
Int. Cl.[5] C07D *495/22, 209/48*
U.S. Cl. 548—418 **20 Claims**

1. An oxydiphthalic bis-imide compound of the formula

VOL
1147
ISS
2
FE
9
1993
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where Z is H, alkyl of 1–12 carbon atoms, or



Y is H, Cl, F, NO_2, OH, CF_3, alkyl, alkoxy, alkylaryl or aryloxy, wherein the alkyl groups are 1–6 carbon atoms and the aryl groups are 6–14 carbon atoms; alkenyl or alkynyl or 2–6 carbon atoms; or benzoyl; A is H, Cl, F, NO_2, OH, or CF_3; X is F, Cl, Br or I, X′ is H, F, Cl, Br or I, or X and X′ taken together represent an oxygen atom forming a second ether linkage, with the proviso that when X and X′ are taken together to represent an oxygen atom, the other linkage is positioned at ring carbon sites adjacent to the ring carbon sites of the first ether linkage, and with the further proviso that both A and Y cannot be in a position ortho to the carbon-nitrogen bond of the imide.

5,185,452

BENZHETEROCYCLYL SULPHONES

David R. Brittain, Rochdale, and Michael T. Cox, Congleton, both of England, assignors to Imperial Chemical Industries PLC, London, England

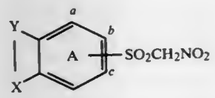
Filed Feb. 5, 1990, Ser. No. 474,940

Claims priority, application United Kingdom, Feb. 3, 1989, 8902407; Feb. 3, 1989, 8902410

Int. Cl.[5] C07D *209/42*

U.S. Cl. 548—492 **6 Claims**

1. A nitromethane derivative of the formula I:



I

wherein ring A may be unsubstituted or may bear one or more substituents independently selected from halogeno, (1–4C)alkyl and fluoro(1–4C)alkyl; X is an oxygen atom, or a group of the formula $—S(O)_n—$ or $—NR^1—$ in which n is zero or the integer 1 or 2, and R^1 is selected from the group consisting of hydrogen, (1–4C)alkyl, (1–6C)alkanoyl, benzoyl and phenyl(1–4C)alkyl, the benzene moiety of which last two groups may be unsubstituted or bear up to 3 substituents independently selected from the group consisting of halogeno, (1–4C)alkyl, (1–4C)alkoxy and fluoro(1–4C)alkyl; Y is a single linking group of the formula $—(CH_2)_m—$, $—CH_2CH=CH—$, $—(CH_2)_2CH=CH—$ or $—CH_2CH=CHCH_2—$, in which m is the integer 2, 3 or 4 and a methylene ($—CH_2—$) group may be replaced by a carbonyl group, and which linking group may optionally bear up to four (1–4C)alkyl substituents and may be attached at either end to the group X; and wherein the group $—SO_2CH_2NO_2$ is located at position a, b or c in ring A; or a non-toxic salt thereof.

5,185,453

CRYSTAL OF FLUORAN COMPOUND

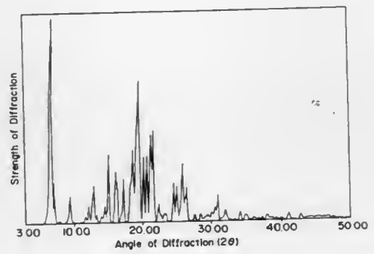
Masakatsu Nakatsuka; Atsuo Otsuji; Kiyoharu Hasegawa; Kazuyoshi Kikkawa, and Akihiro Yamaguchi, all of Kanagawa, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jun. 19, 1991, Ser. No. 717,568

Claims priority, application Japan, Jun. 19, 1990, 2-158763; Oct. 15, 1990, 2-273401

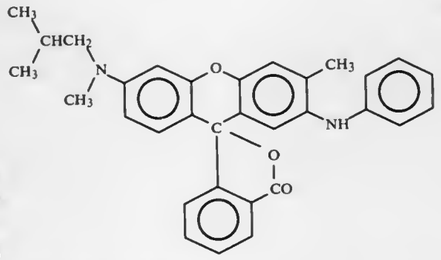
Int. Cl.[5] C07D *311/88*

U.S. Cl. 549—226 **1 Claim**



1. A crystalline form of the fluoran compound represented by the formula (I):

(I)



which has a melting point of from 159° to 161° C. and an X-ray diffraction diagram by Cu-Kα beams which indicates a high peak at a diffraction angle 2θ of 6.9° and a relative high peak at 19.4°.

5,185,454

PROCESS FOR THE PREPARATION OF SYMMETRICAL DIARYLACETYLENES

Axel Bader, Bergisch Gladbach, and Dieter Arlt, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

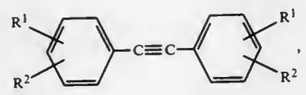
Filed Oct. 2, 1990, Ser. No. 594,265

Claims priority, application Fed. Rep. of Germany, Nov. 1, 1989, 3936297

Int. Cl.[5] C07C *2/00;* **C07D** *307/77*

U.S. Cl. 549—240 **18 Claims**

1. A process for the preparation of symmetrical diarylacetylenes of the formula



in which

R^1 is hydrogen, straight-chain or branched C_1–C_8-alkyl, C_3–C_8-cycloalkyl, phenyl, C_7–C_{10}-aralkyl, straight-chain or branched C_1–C_8-alkoxy, phenoxy, benzyloxy, β-phenyl-ethenyl, phenyl-ethinyl, phenyl-sulphonyl, phenylcarbonyl, hydroxyl in free or protected form, fluorine, chlorine, nitro, cyano, COR^3, NR^4R^5 or $CONR^4R^5$ and

R^2 represents hydrogen, straight-chain or branched C_1–C_8-alkyl, fluorine, chlorine, cyano, COR^3 or $CONR^4R^5$ and

R^1 and R^2, if they are adjacent, may together form a dicarboxylic acid anhydride group,

where

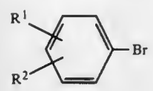
R^3 is hydrogen, hydroxyl, straight-chain or branched C_1–C_8-alkyl, straight-chain or branched C_1–C_8-alkoxy, phenyl or phenoxy and

R^4 and R^5, independently of one another, represent hydrogen or straight-chain or branched C_1–C_8-alkyl and R^4 may also be C_2–C_4-alkoxycarboxyl or C_2–C_4-acyl,

and

it being possible for the benzene rings in the radicals R^1 and R^2 for their part to be substituted by straight-chain or branched C_1–C_8alkyl, straight-chain or branched C_1–C_8-alkoxy, fluorine, chlorine or COR^3,

which comprises reacting an aryl halide with acetylene in the presence of a palladium catalyst and a base, the acetylene being introduced into the liquid reaction mixture using a high intensity gas dispersion means, the aryl halides being aryl bromides of the formula



and the base being a nitrogen containing heterocyclic compound.

5,185,455

METHOD FOR IMPROVING THE PERFORMANCE OF VPO CATALYSTS

Jerry R. Ebner, St. Peters, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 18, 1992, Ser. No. 836,434

Int. Cl.[5] C07D *307/34, 307/36*

U.S. Cl. 549—259 **11 Claims**

1. In a process for the manufacture of maleic anhydride by passing through a tubular reactor a gas initially containing n-butane, oxygen, and trimethyl phosphate, said tubular reactor containing a fixed bed of a catalyst comprising vanadium, phosphorus, and oxygen in which n-butane and oxygen react to produce maleic anhydride in the vapor phase, the improvement which comprises controlling the trimethyl phosphate content of the gas entering said tubular reactor within a range of concentration that is between about (0.9)N and about (1.1)N where N is a normative concentration of trimethyl phosphate in ppm as determined by the following relationship:

$$N=5\times C_4+6\times(H_2O-2.4)+0.75\times\text{-}(CONV-c)+(SV/(25\times P_{in}))$$

where:

C_4=the mole % of n-butane in the gas entering the reactor;

H_2O=the mole % moisture in the gas entering the reactor;

CONV=% butane conversion in the reactor;

SV=gas hourly space velocity of the gas at the inlet of the reactor, reduced to one atmosphere pressure and 60° F.;

P_{in}=the pressure at the inlet of the reactor (psig); and

$c=84\times0.05$ [$(SV\times C_4)/Pin$];

provided, however, that said trimethyl phosphate content is at least about 1 ppm.

5,185,456

MACROLIDE COMPOUNDS

Derek R. Sutherland, Chalfont St Giles; Michael V. J. Ramsay, South Harrow; Edward P. Tiley, Village Way; John B. Ward, Bushey; Neil Porter, Pioner; Hazel M. Noble, Burnham; Richard A. Fletton, Ruislip; David Noble, Burnham, and Brian M. Bain, Tylers Green, all of England, assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 24,762, Mar. 11, 1987, abandoned. This application Mar. 18, 1991, Ser. No. 670,770

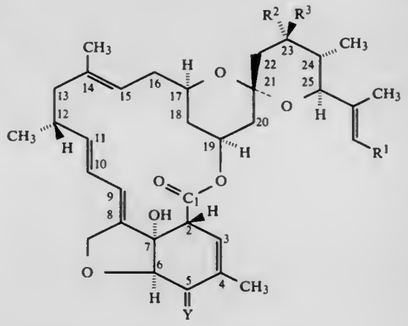
Claims priority, application United Kingdom, Mar. 12, 1986, 8606106; Mar. 12, 1986, 8606109; Oct. 29, 1986, 8625856; Oct. 29, 1986, 8625862

Int. Cl.[5] C07D *313/00*

U.S. Cl. 546—264 **1 Claim**

1. A compound of formula (I)

(I)



wherein

R^1 is a methyl, ethyl or isopropyl group;

R^2 is a hydrogen atom and R^3 is a bromine; and

Y represents an oxygen atom or a group NOR^5 and R^5 is a hydrogen atom, a C_{1-8} alkyl group or a C_{3-8} alkenyl group.

5,185,457

PROCESS FOR THE CONTINUOUS PRODUCTION OF FATTY ACID SOAPS

Franz-Josef Carduck, Haan; Hubert Harth, Duesseldorf, and Harald Liebs, Leverkusen, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

Filed Aug. 29, 1988, Ser. No. 237,796

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1987, 3728811

Int. Cl.[5] C07F *5/00;* **C07C** *51/10, 51/00*

U.S. Cl. 554—71 **3 Claims**

1. A process for the continuous production of fatty acid soap by reaction of at least one fatty acid with at least one metal oxide, metal hydroxide, metal hydrogen carbonate, or metal carbonate of metals selected from the group consisting of alkaline earth metals, lead, aluminum, zinc, cobalt, iron, cadmium and zirconium which comprises:

a) introducing a molten fatty acid, heated to a temperature of about 20 to about 150° C., having a rotational movement in a first direction about an axis of rotation into a reaction zone,

b) introducing the metal compound having a rotational movement in a second direction, opposite to the first direction of rotation of the fatty acid, into the reaction zone in the vicinity of the axis of rotation of the fatty acid to form a mixture,

c) reacting the mixture of fatty acid and metal compound in the reaction zone for about 0.5 to about 50 seconds, the

VOL
1147
ISS
2
FE
9
1993
UMI

mixture being, passed through the reaction zone with rotation in the direction of rotation of the fatty acid, and
d) recovering fatty acid soap from the reaction zone.

5,185,458

PALLADIUM-CONTAINING CATALYST PREPARATION

John Huggins, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 19, 1991, Ser. No. 717,743

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1990, 4020689

Int. Cl.[5] **C07F** *15/00, 7/00*

U.S. Cl. 556—9 **7 Claims**

1. A palladium-containing catalyst preparation produced by the reaction of a palladium (II) compound corresponding to formula I

$$PdX_2 \qquad (I)$$

in which

X=—Cl, —Br or O_2CR_1 and

R_1=alkyl, cycloalkyl, aryl or fluorinated alkyl groups containing 1 to 20 carbon atoms, with a functional siloxane containining on average at least one reactive group per molecule wherein the functional siloxane has a viscosity of 2 to 2,000,000 mPa.s at 25° C. and is made up of cyclic, linear or branched structures and combinations thereof.

5,185,459

BIS PROTECTED (HYDROXYMETHYL)CYCLOBUTANOLS

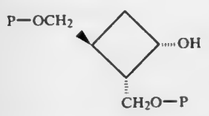
William A. Slusarchyk, Skillman, and Robert Zahler, Pennington, both of N.J., assignors to E. R. Squibb & Sons Inc., Princeton, N.J.

Division of Ser. No. 656,391, Feb. 19, 1991, Pat. No. 5,130,462, which is a division of Ser. No. 322,375, Mar. 13, 1989, which is a continuation-in-part of Ser. No. 175,376, Mar. 30, 1988, abandoned. This application May 26, 1992, Ser. No. 888,062

Int. Cl.[5] **C07F** *7/08;* **C07C** *43/13, 69/34*

U.S. Cl. 556—449 **2 Claims**

1. A compound of the formula



wherein P is a hydroxy protecting group.

5,185,460

AMINOACETONITRILE DERIVATIVES

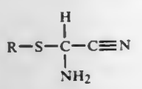
Seiji Tazaki; Nobuhiro Umeda; Nobuo Matsui; Tomio Yagihara, and Katsunori Mikuma, all of Odawara, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 474,775, Mar. 5, 1990, abandoned. This application Apr. 22, 1992, Ser. No. 872,868

Int. Cl.[5] **C07C** *255/25, 255/42*

U.S. Cl. 558—392 **51 Claims**

1. A compound represented by the structural formula (I):



(I)

wherein: R is selected from
(1) C_{1-12} alkyl,
(2) optionally substituted C_{1-12} alkyl in which one or more substituent(s) is selected from
(a) phenyl
(b) optionally substituted phenyl in which one or more substituent(s) is selected from
(i) 1 to 3 halogen atoms, and,
(ii) C_{1-3} alkyl,
(c) C_{1-3} alkoxycarbonyl
(d) hydroxy,
(e) mercapto,
(f) halogen,
(g) naphthyl,
(h) furyl,
(i) phenylcarbamoyl,
(j) substituted phenylcarbamoyl in which the substituent is halogen,
(k) C_{1-12} alkylcarbamoyl, and,
(l) optionally substituted C_{1-12} alkylcarbamoyl in which the substituents are from 1 to 2 phenyl;
(3) phenyl;
(4) optionally substituted phenyl in which one or more substituent(s) is selected from
(a) 1 to 3 halogen atoms,
(b) C_{1-5} alkyl,
(c) substituted C_{1-2} alkyl in which the substituent is halogen,
(d) phenyl,
(e) substituted phenyl in which the substituent is halogen,
(f) C_{1-3} alkylsubstituted phenoxy,
(g) C_{1-3} haloalkylsubstituted phenoxy,
(h) tetrahydronaphthoxy,
(i) C_{1-3} alkoxy,
(j) substituted C_{1-3} alkoxy in which the substituent is halogen,
(k) amino,
(l) nitro, and
(m) hydroxy;
(5) C_{5-7} cycloalkyl;
(6) substituted C_{5-7} cycloalkyl in which the substituent is phenyl;
(7) C_{2-4} alkenyl;
(8) naphthyl;
(9) substituted naphthyl in which the substituent is halogen;
(10) dibenzofuranyl;
(11) C_{1-3} alkylcarbonyl;
(12) thienyl, and,
(13) fluorenyl; or
an acceptable sat thereof.

5,185,461

PROCESS FOR PREPARING 2-AMINOETHYL ESTERS OF METHACRYLIC ACID

Yasumasa Tanaka, Suita; Hideyuki Nishibayashi, Nishinomiya; Kouichi Tsuchitani, Suita, and Hideyuki Tahara, Osaka, all of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Sep. 18, 1991, Ser. No. 761,383

Claims priority, application Japan, Sep. 20, 1990, 2-253138; Sep. 11, 1991, 3-231931

Int. Cl.[5] **C07C** *69/52*

U.S. Cl. 560—222 **9 Claims**

1. A process for preparing 2-aminoethyl esters of methacrylic acid comprising reacting methacrylic acid and an aziridine compound in a reaction solvent medium selected from the group consisting of water and an aqueous solvent at a temperature in the range of from 10° to 100° C.

5,185,462

PRODUCTION OF CARBOXYLIC ACIDS AND ESTERS THEREOF

John Evans, Romsey, and Steven L. Scruton, Boreham Wood, both of England, assignors to BP Chemicals Limited and The University of Southampton, both of London, England

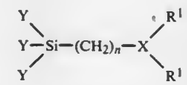
Continuation of Ser. No. 639,323, Jan. 9, 1991, abandoned, which is a continuation of Ser. No. 517,481, Apr. 30, 1990, abandoned, which is a continuation of Ser. No. 141,056, Jan. 5, 1988, abandoned. This application Oct. 4, 1991, Ser. No. 771,789

Claims priority, application United Kingdom, Jan. 8, 1987, 8700402

Int. Cl.[5] **C07C** *51/10*

U.S. Cl. 560—232 **10 Claims**

1. A vapor phase process for preparing a carboxylic acid having n+1 carbon atoms and/or an ester of said acid and an alcohol of n carbon atems which process comprises:
(1) vaporising said alcohol,
(2) contacting the vapor of said alcohol with carbon monoxide at a temperature of at least 50° C. in the presence of (i) a halogen or halogen compound promoter and (ii) a noble metal-containing catalyst comprising a noble metal bonded to an inorganic oxide having surface hydroxyl groups through the intermediacy of a silicon containing component prepared by reacting a silicon containing compound of formula



wherein
(a) the Y groups are independently selected from the group consisting of ester, halide, or —OR groups where R is an alkyl group,
(b) n is a number from 1 to 6,
(c) X is nitrogen, and
(d) the R^1 groups are independently selected from hydrogen or alkyl groups or together in conjunction with X form a 5- or 6-membered heterocyclic ring
with the surface hydroxyl groups of the inorganic oxide.

5,185,463

PROCESS FOR THE PREPARATION OF AN ANTIVIRAL AGENT

Jollie D. Godfrey, Jr., Trenton; Richard H. Mueller, Ringoes; Thomas P. Kissick, and Janak Singh, both of Lawrenceville, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 2, 1991, Ser. No. 770,191

Int. Cl.[5] **C07C** *61/04*

U.S. Cl. 562—506 **1 Claim**

1. The process of recovering racemic (trans)-3-methylene-1,2-cyclopropanedicarboxylic acid from the reaction of (trans)-3-methylene-1,2-cyclopropanedicarboxylic acid with (R)-(+)-α-methylbenzylamine which comprises:
a) reacting (trans)-3-methylene-1,2-cyclopropanedicarboxylic acid with (R)-(+)-αmethylbenzylamine in the presence of isopropanol and water at an elevated temperature;
b) concentrating the mother liquor from the reaction of step (a) to give a semi-solid residue;
c) the semi-solid residue from step (b) is taken up in isopropanol and heated to give a suspension which is extracted with ethyl acetate, filtered and dried to give (1S-trans)-3-methylenecyclopropane-1,2-dicarboxylic acid, (R)-α-methylbenzylamine (1:1) salt;
d) treating the partially resolved salt product from step (c) with aqueous sodium hydroxide and toluene and separating the aqueous and organic phases; and
e) heating the aqueous phase from step (d) to about 100° C. for about 18 hours, cooling to room temperature, adjusting the pH to about 2, extracting with ethyl acetate, and drying the organic fractions to recover racemic (trans)-3-methylene-1,2-cyclopropanedicarboxylic acid.

5,185,464

CRYSTALLINE N-(S-3-METHYLHEPTANOYL)-D-GAMMA-GLUTAMYL-GLYCYL-D-ALANINE, AND PROCESSES AND INTERMEDIATES THEREFOR

Charles W. Murtiashaw, North Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 341,350, Feb. 21, 1989, Pat. No. 5,136,020. This application Mar. 17, 1992, Ser. No. 852,858

Int. Cl.[5] **C07C** *51/16, 51/00*

U.S. Cl. 562—545 **8 Claims**

1. A process for the preparation of S-3-methyl-6-heptenoic acid which comprises the steps of:
(a) reacting S-6-hydroxy-4-methylhexanal or S-6-(silyl protected)hydroxy-4-methylhexanal with methylene triphenylphosphorane in a reaction inert solvent to form S-7-hydroxy-5-methyl-1-heptene or S-7-(silyl protected)-hydroxy-5-methyl-1-heptene;
(b) when the product of step (a) contains a silyl protecting group, hydrolysis of said protecting group in dilute mineral acid to form said S-7-hydroxy-5-methyl-1-heptene, carried out as a separate step, or concurrently with the following step; and
(c) oxidation of said S-7-hydroxy-5-methyl-1heptene with chromic anhydride in dilute mineral acid to form S-3-methyl-6-heptenoic acid.

5,185,465

CARBOXAMIDES OF 2-AMINO-ALPHA-PHENLPHENETHYLAMINES

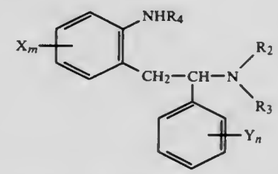
Lawrence L. Martin, Lebanon, N.J.; Manfred Worm, Wiesbaden-Naurod, Fed. Rep. of Germany, and Charles A. Crichlow, Stockton, Calif., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 293,387, Jan. 4, 1989, Pat. No. 4,968,721, which is a continuation-in-part of Ser. No. 412,187, Aug. 27, 1982, Pat. No. 4,822,914, which is a continuation of Ser. No. 300,006, Sep. 8, 1981, abandoned, which is a division of Ser. No. 91,062, Nov. 5, 1979, Pat. No. 4,309,424, which is a continuation-in-part of Ser. No. 948,896, Oct. 5, 1978, abandoned. This application Oct. 16, 1990, Ser. No. 577,233

Int. Cl.[5] **C07C** *237/20*

U.S. Cl. 564—185 **6 Claims**

1. A compound of the formula



in which R_1 is hydrogen, alkyl of from 1 to 5 carbon atoms, cycloalkylalkyl of from 4 to 8 carbon atoms or aralkyl having 1 to 5 carbon atoms in the alkyl moiety; R_2 is hydrogen or alkyl of from 1 to 5 carbon atoms
or a group of the formula



wherein R_3 is hydrogen, alkyl of from 1 to 4 carbon atoms, cycloalkyl of from 3 to 7 carbon atoms or aryl; R_4 is hydrogen or a group of the formula

VOL 1147 ISS 2 FE 9 1993 UMI



wherein R_3 is as above with the proviso that either R_1 or R_4 is a group of the formula



wherein R_3 is as above; X and Y are the same or different and each can be hydrogen, chlorine, bromine, fluorine, methoxy, alkyl of from 1 to 3 carbon atoms, hydroxy or trifluoromethyl; m is the integer 1 or 2 and n is the integer 1, 2 or 3.

5,185,466

HYDROPHILIC AND AMPHIPHATIC MONOMERS, THEIR POLYMERS AND GELS AND HYDROPHOBIC ELECTROPHORESIS

Branko Kozulic, Georg Kempfstrasse 7, 8046 Zurich, and Urs Heimgartner, Hoschgasse 70, 8008 Zurich, both of Switzerland

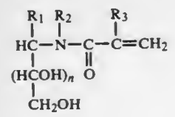
Continuation-in-part of Ser. No. 293,840, Jan. 5, 1989, abandoned. This application Apr. 22, 1991, Ser. No. 688,752

Claims priority, application United Kingdom, Apr. 20, 1990, 9008873

Int. Cl.[5] C07C *233/20*

U.S. Cl. 564—208 **20 Claims**

1. An acrylic monomer of sufficient purity to form reproducible gels suitable for use in electorphoresis of the formula



where

R_1 is H or $(CHOH)_mCH_2OH$, m being 0,1 or 2;

R_2 is monohydroxyalkyl, polyhydroxyalkyl or hydrocarbon radical;

R_3 is H or CH_3; and

n is an integer of 1–4.

5,185,467

PROCESS FOR THE PREPARATION OF 2,2-BIS-(AMINOPHENYL)-PROPANE

Hans-Josef Buysch, Krefeld, and Dieter Arlt, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 8, 1991, Ser. No. 772,815

Claims priority, application Fed. Rep. of Germany, Oct. 18, 1990, 4033099

Int. Cl.[5] C07C *209/36*

U.S. Cl. 564—330 **8 Claims**

1. Process for the preparation of 2,2-bis-(aminophenyl-propane having a content of the 4,4'-isomer of at least 70%, wherein 2,2- diphenyl-propane is nitrated in a solvent selected from the group consisting of aliphatic hydrocarbons and aliphatic halogeno-hydrocarbons to give 2,2-bis-(nitrophenyl)-propane and the latter is reduced in a subsequent step to 2,2-bis-(aminophenyl) -propane.

5,185,468

PROCESS FOR PRODUCING β-CAROTENE, AND INTERMEDIATE COMPOUNDS USEFUL FOR THE PROCESS

Toshiki Mori; Hiroshi Fujii; Takashi Onishi, all of Kurashiki, and Kazuo Yamamoto, Niigata, all of Japan, assignors to Kuraray Company Ltd., Kurashiki, Japan

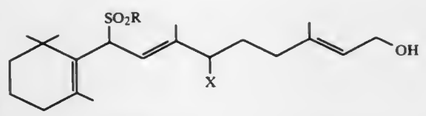
Filed May 28, 1991, Ser. No. 706,209

Claims priority, application Japan, Jun. 14, 1990, 2-156869; Jun. 14, 1990, 2-156870; Sep. 25, 1990, 2-256028

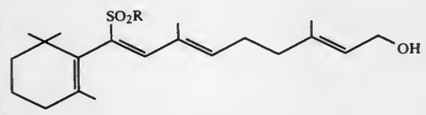
Int. Cl.[5] C07C *315/04, 317/10, 403/04*

U.S. Cl. 568—31 **28 Claims**

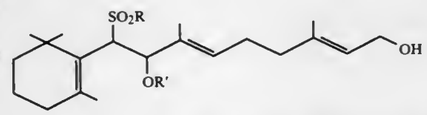
1. A process for producing β-carotene, comprising oxidizing a sulfone alcohol selected from the group consisting of formula (IV), formula (V) and formula (VI):



(IV)



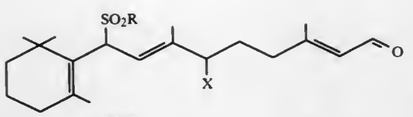
(V)



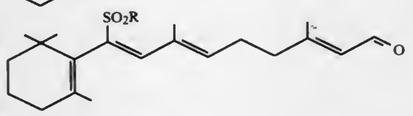
(VI)

wherein R represents a phenyl group or a substituted phenyl group, R' represents an acetal protecting group, and X represents a halogen atom, with manganese dioxide at a temperature of from 10° C. to 50° C. for a length of time of from 30 minutes to 10 hours in a solvent selected from the group consisting of benzene, toluene, halohydrocarbons, ethers and esters to obtain a sulfone aldehyde,

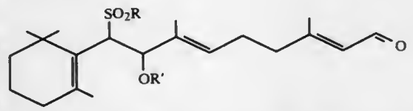
coupling said sulfone aldehyde selected from the group consisting of formula (VII), formula (VIII) and formula (IX) with a phosphonium salt of vitamin A:



(VII)

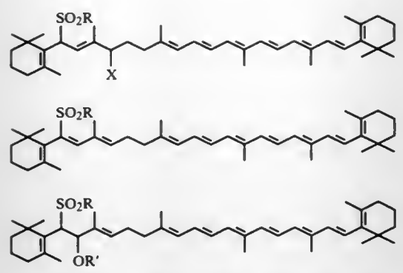


(VIII)



(IX)

wherein R, R' and X are as defined above, to obtain a sulfone compound represented by the group consisting of formula (I), formula (II) and formula (III):



(I)

(II)

(III)

wherein R, R' and X are as defined above, and reacting said sulfone compound with an alkali.

5,185,469

PROCESS FOR ACYLATION OR ALKYLATION OF AROMATIC COMPOUNDS IN HYDROGEN FLUORIDE

Daniel D. Lindley, Portland; Timothy R. Ryan, Corpus Christi, both of Tex.; Thomas A. Curtis, Tega Cay, S.C.; Edward M. De la Garza, Corpus Christi, Tex.; Charles R. Hilton, North Kingstown, R.I., and Thomas M. Kenesson, Corpus Christi, Tex., assignors to Hoechst Celanese Corp., Somerville, N.J.

Continuation-in-part of Ser. No. 593,143, Oct. 5, 1990, Pat. No. 5,068,448, which is a continuation-in-part of Ser. No. 445,055, Dec. 4, 1989, Pat. No. 4,990,681. This application Aug. 23, 1991, Ser. No. 748,171

The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.

Int. Cl.[5] C07C *45/45*

U.S. Cl. 568—319 **6 Claims**

1. A continuous process for the acylation of aromatic compounds in hydrogen fluoride, said process comprising the steps of:

(a) feeding liquid hydrogen fluoride and at least one acylation agent into an extractor-reactor to form a first, hydrogen-rich phase;

(b) feeding an aromatic compound-comprising material into said extractor-reactor to form a second, aromatic compound-rich phase; and

(c) contacting said first, hydrogen fluoride-rich phase with said second, aromatic compound-rich phase in a manner, within said extractor reactor, such that said acylation agent reacts with said aromatic compound to form an acylation product of said aromatic compound which is extracted into said hydrogen fluoride-rich phase wherein said acylation agent is selected from the group consisting of acetyl fluoride, a combination of acetic acid and acetyl fluoride, a combination of acetic anhydride and acetyl fluoride, and a combination of acetic acid, acetic ahyydride and acetyl fluoride, and said aromatic compound is selected from the group consisting of isobutylbenzene, methylisopropylbenzene, chlorobenzene, diphenyl, diphenylmethane, triphenylmethane, naphthalene, 2-methylnapthalene, tetralin, 1,1,3,4,4-6-hexamethyltetralin and phanthrene.

5,185,470

PROCESS FOR PRODUCING IRONE

Goro Asanuma, Kurashiki, and Yoshin Tamai, Shibata, both of Japan, assignors to Kuraray Company, Ltd., Kurashiki, Japan

Filed Feb. 5, 1992, Ser. No. 831,344

Claims priority, application Japan, Feb. 19, 1991, 3-46011

Int. Cl.[5] C07C *45/61*

U.S. Cl. 568—341 **7 Claims**

1. A process for producing irone, which comprises:

conducting ring-closure of pseudoirone in the presence of chlorosulfonic acid in an organic solvent.

5,185,471

METHOD FOR ETHER FORMATION

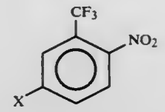
Jeffrey S. Stults, and Robert A. Buchanan, both of Grand Island, N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 669,707, Mar. 15, 1991, abandoned. This application Nov. 25, 1991, Ser. No. 797,584

Int. Cl.[5] C07C *41/01*

U.S. Cl. 568—586 **11 Claims**

1. A process for the preparation of 1,1'-oxy-bis(3-trifluoromethyl-4-nitrobenzene) which comprises reacting in a non-polar solvent or in the absence of a solvent a compound of the formula



where X is F, Cl, Br, or I with up to a stoichiometric amount of an inorganic base selected from the group consisting of alkali metal hydroxides, alkali metal carbonates, and alkali metal bicarbonates, in the presence of a small amount of water, at least about 0.1 mole % of a benzoate catalyst and a phase transfer catalyst when a non-polar solvent is present.

5,185,472

MIXTURES OF BICYCLIC ETHERS, FRAGRANCE COMPOSITIONS CONTAINING SAME AND NOVEL INTERMEDIATE

Georg Fráter, Uster, and Harald Schmidt, Aathal-Seegräben, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Division of Ser. No. 317,881, Mar. 2, 1989, Pat. No. 5,023,232. This application Feb. 28, 1991, Ser. No. 662,081

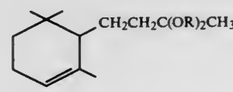
Claims priority, application Switzerland, Mar. 4, 1988, 819/88

Int. Cl.[5] C07C *43/162*

U.S. Cl. 568—591 **1 Claim**

1. A compound of the formula

III



wherein R represents an alkyl group of from one to four carbon atoms.

5,185,473

PROCESS FOR THE PREPARATION OF PERFLUORINATED ETHERS

Matthias Meyer, Frankfurt am Main, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 18, 1992, Ser. No. 900,845

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1991, 4120508

Int. Cl.[5] C07C *41/01, 43/02*

U.S. Cl. 568—615 **5 Claims**

1. A process for the preparation of a perfluorinated ether of the formula (I)

(I)

in which R is the radical $CF_3(CF_2)_2—O—[—CF(CF_3)C-F_2—O]_n—$, in which n is an integer from 0 to 60, by decarbonylation of a perfluoroether-acyl fluoride of the formula $R—CF(CF_3)—COF$, in which R has the meaning given, which

VOL
1147
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comprises carrying out the decarbonylation at 150°–350° C. in the presence of $AlCl_3$ and/or $AlBr_3$.

5,185,474

SYNTHESIS OF FLUORINATED DIMETHYL ETHERS

Gerald J. O'Neill, Arlington, Mass., assignor to W. R. Grace & Co.-Conn., Lexington, Mass.

Continuation of Ser. No. 591,578, Oct. 2, 1990, abandoned. This application Apr. 27, 1992, Ser. No. 875,553

Int. Cl.[5] C07C *41/22*

U.S. Cl. 568—684 **5 Claims**

1. A process for the preparation of fluorinated dimethyl ethers of the formula $CF_2HOCCl_xF_yH_{3-(x+y)}$, wherein x is 0, 1, or 2 and y is 1, 2, or 3 and wherein the total x+y is 1, 2 or 3, said process consisting essentially of:

chlorinating CF_2HOCH_3 in a liquid phase by reacting said CF_2HOCH_3 with chlorine gas n the presence of light to form a chlorinated admixture containing at least one compound of the formula $CF_2HOCH_{3-z}Cl_z$ wherein z is 1, 2 or 3; and

flourinating said at least one compound of the formula $CF_2HOCH_{3-z}Cl_z$ with anhydrous HF in the absence of a catalyst to obtain a fluorinated admixture containing at least one compound of a formula $CF_2HOCl_yF_zH_{3-(y+z)}$ wherein y is 0, 1 or 2 and z is 1, 2 or 3.

5,185,475

PROCESS FOR PREPARING PARACUMYLPHENOL

Gaylord M. Kissinger, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Jun. 1, 1992, Ser. No. 891,025

Int. Cl.[5] C07C *37/14, 39/14*

U.S. Cl. 568—748 **8 Claims**

1. A method for preparing paracumylphenol in a highly selective manner which comprises

a. reacting alpha methylstyrene with a purity greater than about 99.5 wt. % with a molecular excess of phenol having a purity greater than about 99.95 wt. % in the contact presence of a solid organic cation exchange resin at a temperature of from about 40° C. to about 100° C. and obtaining a stream containing paracumylphenol, phenol and small quantities of side reaction products comprising orthocumylphenol and alpha methylstyrene dimers,

b. removing excess phenol and other unwanted materials which are lower boiling than paracumylphenol, thereby leaving a stream which is at least about 98 wt. % paracumylphenol.

5,185,476

LOW PRESSURE CATALYTIC HYDROGENATION OF CARBONYL-CONTAINING COMPOUNDS AND SUPPORTED CATALYSTS THEREFOR

Bruce L. Gustafson, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 478,363, Feb. 12, 1990, abandoned, which is a continuation-in-part of Ser. No. 219,630, Jul. 15, 1988, abandoned. This application Sep. 26, 1991, Ser. No. 765,856

The portion of the term of this patent subsequent to Jun. 6, 2006, has been disclaimed.

Int. Cl.[5] C07C *29/149, 31/08, 31/20, 31/135*

U.S. Cl. 568—831 **6 Claims**

1. Process for hydrogenating an ester of an aliphatic or cycloaliphatic carboxylic acid to obtain the alcohol corresponding to the acid residue of the ester which comprises contacting the ester with hydrogen at a temperature of about 150° to 350° C. and a hydrogen pressure of about 500 to 3500 psig in the presence of a catalyst comprising palladium and zinc on a support wherein the palladium content of the catalyst is about 0.5 to 5.0 weight percent, calculated as the metal and based on the weight of the palladium, zinc and support, and the atomic ratio of palladium to zinc is about 0.2 to 2.0 and wherein the catalyst is obtained by the steps comprising:

(a) providing a catalyst support material on which is deposited zero-valent palladium in a uniformly and highly dispersed form;

(b) contacting the palladium-bearing support material of (a) with zinc or a reducible compound thereof; and

(c) heating the palladium- and zinc-bearing support of (b) at a temperature of about 200° to 400° C. in the presence of an oxygen-containing gas.

2. Process according to claim 1 wherein the ester is dimethyl 1,4-cyclohexanedicarboxylate.

5,185,477

HALOHYDRIN COMMPOUNDS

Carl G. Krespan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 448,651, Dec. 11, 1989, Pat. No. 5,101,058. This application Dec. 6, 1991, Ser. No. 803,441

Int. Cl.[5] C07C *31/34, 41/00*

U.S. Cl. 568—842 **7 Claims**

1. A halohydrin of the formula

$$R^2R^3CHXCH(OH)CFR^2R^3$$

wherein each R^2 and R^3 is independently fluorine, perfluoroalkyl, or ether substituted perfluoroalkyl, and X is chlorine, bromine or iodine.

5,185,478

MANUFACTURE OF NEOPENTYL GLYCOL (11A)

Jeffrey S. Salek, Oakdale Boro, and Joseph Pugach, Monroeville Boro, both of Pa., assignors to Aristech Chemical Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 716,177, Jul. 17, 1991, abandoned. This application Apr. 16, 1992, Ser. No. 868,897

The portion of the term of this patent subsequent to Sep. 1, 2009, has been disclaimed.

Int. Cl.[5] C07C *31/18, 45/00, 69/66*

U.S. Cl. 568—853 **12 Claims**

1. Method of making hydroxypivaldehyde and 3-hydroxy-2,2-dimethyl propyl hydroxypivalate comprising reacting paraformaldehyde with isobutyraldehyde in the presence of a catalyst comprising a tertiary amine and an oxide selected from the group consisting of cadmium oxide and yttrium oxide.

2. Method of making neopentyl glycol comprising reacting paraformaldehyde with isobutyraldehyde in the presence of a catalyst comprising a tertiary amine and an oxide selected from the group consisting of cadmium oxide and yttrium oxide to obtain a reaction product containing hydroxypivaldehyde and at least about 20% 3-hydroxy-2,2-dimethylpropylhydroxypivalate and hydrogenating the reaction product.

5,185,479

PROCESS FOR METHYL ALCOHOL

John E. Stauffer, 6 Pecksland Rd., Greenwich, Conn. 06831

Filed Apr. 21, 1992, Ser. No. 874,956

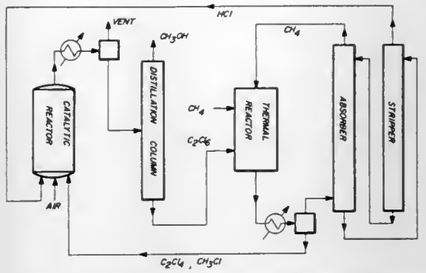
Int. Cl.[5] C07C *29/124, 31/04, 17/04*

U.S. Cl. 568—893 **6 Claims**

1. A process for the production of methyl alcohol from methane comprising the following steps operated in tandem:

first, reacting methyl chloride, hydrogen chloride, perchloroethylene and oxygen in the presence of a catalyst to give reaction products comprising methyl alcohol and hexachloroethane; separating the methyl alcohol product from the hexachloroethane; and

second, reacting the isolated hexachloroethane from the first step with methane to produce methyl chloride, hydrogen chloride and perchloroethylene, which are separated from



any unreacted methane before being recycled to the first step.

5,185,480

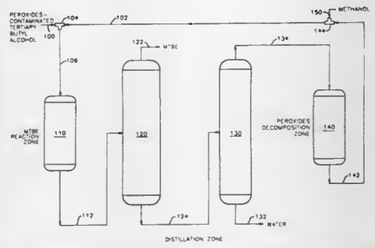
CATALYTIC REMOVAL OF PEROXIDE CONTAMINANTS FROM A METHANOL-TERTIARY BUTYL ALCOHOL RECYCLE STREAM

John R. Sanderson, Leander, and John F. Knifton, Austin, both of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Jul. 28, 1992, Ser. No. 920,742

Int. Cl.[5] C07C *29/88, 27/26*

U.S. Cl. 568—913 **13 Claims**



1. A method for enhancing the quality of a methanol/tertiary butyl alcohol (MeOH/TBA) recycle stream contaminated with peroxides including ditertiary butyl peroxide, tertiary butyl hydroperoxide and allyl tertiary butyl peroxide, which comprises the steps of:

a. continuously contacting said contaminated MeOH/TBA in a peroxide decomposition reaction zone with a peroxide decomposition catalyst at a temperature of about 50° to about 250° C. at a pressure of about 0 to 2,000 psig for a period of time sufficient to substantially decompose said peroxide contaminants, and

b. recovering from the products of said reaction a MeOH/TBA product contaminated with not more than about 300 ppm of peroxide contaminants,

c. said catalyst consisting essentially of a titania supported transition metal.

5,185,481

METHOD FOR THE SEPARATION OF IMPURITIES FROM CRUDE ETHANOL AQUEOUS SOLUTION

Tsunehisa Muto; Futoshi Kanegae, both of Tokuyama; Toru Takatsuka, Yokohama; Seiya Hirohama, Yokohama, and Masazumi Ojiro, Yokohama, all of Japan, assignors to Japan as represented by Ministry of International Trade and Industry, Director-General, Tokyo, Japan

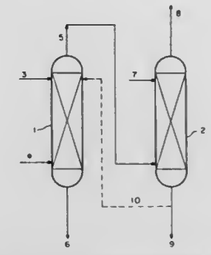
PCT No. PCT/JP91/00321, § 371 Date Nov. 26, 1991, § 102(e) Date Nov. 26, 1991, PCT Pub. No. WO91/16288, PCT Pub. Date Oct. 31, 1991

PCT Filed Mar. 8, 1991, Ser. No. 776,275

Claims priority, application Japan, Apr. 16, 1990, 2-97535

Int. Cl.[5] C07C *29/86, 31/08*

U.S. Cl. 568—918 **7 Claims**



1. A method for the separation of impurities from a crude ethanol aqueous solution, comprising of:

(i) extracting lipophilic impurities within the crude ethanol aqueous solution into an extracting solvent phase by treating the crude ethanol aqueous solution with an extracting solvent comprising carbon dioxide in a liquid state or carbon dioxide in a supercritical state under conditions wherein a ratio of the weight of the extracting solvent to the weight of the crude ethanol aqueous solution (an extracting solvent to crude ethanol aqueous solution ratio by weight) is 2 or higher; and

(ii) recovering ethanol entrained with the extracting solvent or ethanol and methanol entrained with the extracting solvent into an aqueous phase by contacting the extracting solvent phase resulting after extracting the impurities with water in a countercurrent manner under pressures in a ratio of the weight of water to the weight of the extracting solvent phase (a water to extracting solvent ratio by weight) of 0.3 or lower.

5,185,482

MANUFACTURE OF 1,1,1,2-TETRAFLUOROETHANE

Leo E. Manzer, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 563,667, Aug. 3, 1990, abandoned, which is a continuation of Ser. No. 305,697, Feb. 3, 1989, abandoned. This application Jan. 17, 1992, Ser. No. 824,712

Int. Cl.[5] C07C *17/08, 17/20, 19/02*

U.S. Cl. 570—168 **24 Claims**

1. In a process for the manufacture of 1,1,1,2-tetrafluoroethane by the reaction of HF and trichloroethylene in the presence of 2-chloro-1,1,1,-trifluoroethane and a catalyst at elevated temperature to form a mixture comprising 1,1,1,2-tetrafluoroethane, 2-chloro-1,1,1-trifluoroethane and optionally, other organic by-products, the improvement comprising the steps of: recovering as the major product of the process the 1,1,1,2-tetrafluoroethane from the mixture; recyling the 2-chloro-1,1,1,-trifluoroethane from the mixture to the reaction zone along with additional trichloroethylene in a molar amount at least equal to the molar amount of 1,1,1,2-tetrafluoroethane recovered from the mixture and with additional HF in a molar amount from 3 to 30 times the molar amount of trichloroethylene; and conducting the reaction in a single

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reaction zone, at a temperature within the range of 300° C. to 500° C. and at a contact time and in the presence of a catalyst selected to form a mixture comprising 1,1,1,2-tetrafluoroethane and 2-chloro-1,1,1-trifluoroethane, and having less than about 10 percent by weight of said other organic by-products; said catalyst being a catalyst composition comprising at least one metal selected from the group consisting of trivalent chromium, Group VIII, Group IIIB, Group IB and metals having an atomic number from 58 to 71.

5,185,483

PROCESS FOR PREPARING PENTAFLUORODICHLOROPROPANES

Hirokazu Aoyama; Takashi Yasuhara; Satoru Kono; Satoshi Koyama, and Souichi Ueda, all of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Filed Dec. 23, 1991, Ser. No. 812,277
Claims priority, application Japan, Dec. 25, 1990, 2-405697
Int. Cl.[5] C07C *19/08*
U.S. Cl. 570—172 **8 Claims**

1. A process for preparing 1,1,1,2,2-pentafluoro -3,3-dichloropropane and 1,1,2,2,3-pentafluoro-1,3-dichloro-225cb propane, which comprises reacting dichlorofluoromethane and tetrafluoroethylene, or chloroform, difluorochloromethane and tetrafluoroethylene in the presence of a catalyst comprising a halogenated zirconium of the formula:

$$ZrCl_xFy \qquad (I)$$

wherein x and y are numbers which satisfy the relationships $x+y=4$, $0<x\leqq 4$ and $0\leqq y<4$.

5,185,484

DEHYDROCYCLIZATION AND REFORMING CATALYST

Kenneth J. Del Rossi, Mantua; Garry W. Kirker, Washington Township, Bergen County, both of N.J., and Albin Huss, Jr., Chadds Ford, Pa., assignors to Mobil Oil Corp, Fairfax, Va.

Filed Dec. 26, 1989, Ser. No. 457,211
Int. Cl.[5] C07C *2/52*
U.S. Cl. 585—419 **22 Claims**

1. A process for converting a paraffin containing at least six carbon atoms to an aromatic compound, which process exhibits a high aromatic product selectivity, comprising

contacting said paraffin with a catalyst, under dehydrocyclization conditions, wherein the catalyst comprises ultrastable Y having a framework silica:alumina mole ration of greater than 50; a catalitically effective amount of platinum and barium;

wherein the ultrastable Y has cation exchange sites and wherein at least 25% if the available cation exchange sites are exchanged with said barium; and

producing at least one aromatic compound with said selectivity which is defined by the formula

$$\frac{\text{wt \% aromatics}}{\text{wt \% aromatics plus wt \% } C_5 \text{ minus products}} \times 100.$$

5,185,485

PROCESS FOR PREPARING ALKYLBENZENE

David R. Dyroff, and Prakasa R. Anantaneni, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 28, 1991, Ser. No. 722,785
Int. Cl.[5] C07C *2/64*
U.S. Cl. 585—446 **29 Claims**

1. In a process for the preparation of detergent range linear alkylbenzene wherein (1) linear monoolefins are reacted with benzene in the presence of a hydrofluoric acid catalyst, (2) the catalyst is removed to obtain a hydrocarbon mixture, (3) crude alkylbenzene is recovered from said hydrocarbon mixture, and (4) the crude alkylbenzene is then purified to obtain linear alkylbenzene, the improvement which comprises contacting at least a portion of said hydrocarbon mixture comprising crude alkylbenzene with basic alumina under organic fluoride impurities removal conditions, said alumina having a bromine number ratio of not greater than about 1.25 in the alumina selectivity test whereby the formation of darkly colored materials upon SO_3-sulfonation of said detergent range linear alkylbenzene is reduced.

5,185,486

METHOD OF REDUCING THE BENZENE CONTENT OF GASOLINES

Jean-Claude Collin, Marsinval; Bernard Juguin, deceased, late of Rueil Malmaison by Sylve Juguin, executrix; Joseph Larue, Chambourcy, and Alexandre Rojey, Garches, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Aug. 21, 1990, Ser. No. 570,460
Claims priority, application France, Aug. 22, 1989, 89 11199
Int. Cl.[5] C07L *2/64, 7/04, 7/148*
U.S. Cl. 585—448 **17 Claims**

1. A method of reducing the benzene content of hydrocarbon gasolines, comprising the steps of:

a) fractionating at least one hydrocarbon gasoline into a light fraction A with an increased benzene content and a heavy fraction B with a reduced benzene content,

b) placing said light fraction A into contact, at a temperature below room temperature, with a gas containing at least a fraction of olefins in which the number of carbon atoms is from 2 to 5 per molecule, so that at least a fraction of said olefins is absorbed in said light fraction A,

c) at the end of stage (b) separating a residual gas with a reduced olefin content from a liquid fraction C with an increased olefin content,

d) passing the fraction C from stage (c) into an alkylation reactor, so that at least a fraction of the benzene is alkylated by at least a fraction of the olefins,

e) fractionating the mixture emerging from stage (d) so as to produce, firstly, a gas phase chiefly comprising gases which were not converted during stage (d) and, secondly, a liquid phase at least partly containing the non-alkylated benzene and alkylbenzenes,

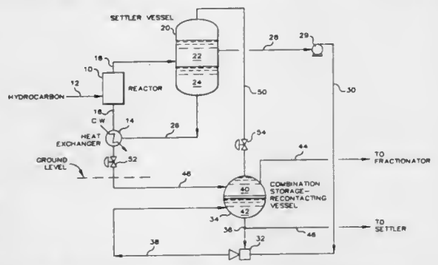
f) mixing the liquid phase from stage (e) with the heavy fraction B from stage (a).

5,185,487

COMBINATION ACID RECONTACTOR-STORAGE VESSEL

Scott D. Love, and Stone P. Washer, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 535,698, Jun. 11, 1990, Pat. No. 5,094,823. This application Nov. 7, 1991, Ser. No. 789,210
Int. Cl.[5] C07C *2/64, 2/56*
U.S. Cl. 585—449 **2 Claims**



1. In an alkylation process comprising the steps of:

settling an admixture of a liquid hydrocarbon and a liquid catalyst to separate said liquid hydrocarbon from said liquid catalyst by settler vessel means;

cooling the thus separated liquid catalyst by heat exchanger means;

mixing the separated liquid catalyst with a hydrocarbon feed;

reacting the mixture of the separated liquid catalyst and the hydrocarbon feed; and

circulating the resultant mixture of separated liquid catalyst and hydrocarbon feed to said settler vessel means;

the improvement comprising the steps of:

(a) transferring said liquid hydrocarbon from settler vessel means to a combination storage-recontacting vessel located at a relative elevation below said heat exchanger means;

(b) withdrawing catalyst from said combination storage-recontacting vessel by an eductor means;

(c) mixing the thus withdrawn catalyst from said combination storage-recontacting vessel with the liquid hydrocarbon transferred from said settler vessel means to form an admixture;

(d) separating said admixture in said combination storage-recontacting vessel into a hydrocarbon phase and a catalyst phase;

(e) removing said hydrocarbon phase and said catalyst phase from said combination storage-recontacting vessel.

(f) transferring said liquid catalyst from said settler vessel means to said combination storage-recontacting vessel when it is desired to store said liquid catalyst used in said alkylation process.

5,185,488

PROCESS FOR THE REDUCTIVE DEHALOGENATION OF POLYHALOAROMATICS WITH SODIUM OR CALCIUM IN A LOWER ALCOHOL

Jalal A. Hawari, Ville St-Laurent, and Réjean Samson, Fabreville Laval, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by the Minister of Natural Resources, Ottawa, Canada

Continuation-in-part of Ser. No. 413,942, Sep. 28, 1989, Pat. No. 4,950,833. This application Jun. 14, 1990, Ser. No. 538,233
Int. Cl.[5] C07C *1/20*; C10G *17/00*
U.S. Cl. 585—469 **10 Claims**

1. A process for the reductive dehalogenation of halogenated aromatics, said process comprising reacting halogenated aromatics with calcium in a solvent selected from the group consisting of methanol, ethanol and isopropanol and mixtures thereof and recovering the products resulting from the reduction of said halogenated aromatics.

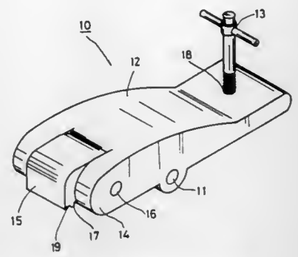
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5,185,489

DRUM HOOP CLAMP STRUCTURE ON DRUM PEDAL

Yoshihiro Hoshino, Nagoya, Japan, assignor to Hoshino Gakki Co., Ltd., Japan

Filed Jul. 16, 1991, Ser. No. 730,693
Claims priority, application Japan, Jan. 31, 1991, 3-009631[U]
Int. Cl.[5] G10D *13/02*
U.S. Cl. 84—422.1 **9 Claims**



1. A drum hoop clamp structure comprising

a base; a clamp body supported to and movable with respect to the base;

a drum hoop clamp jaw pivotably supported to the clamp body, the jaw including a clamping surface for engaging an opposed clampable surface of the drum hoop, the pivotable support of the jaw enabling the jaw to pivot with respect to the clamp body for the clamping surface of the jaw to adjust its seating to a cooperating opposed clampable surface of a drum hoop regardless of shape and orientation of the clampable surface of the hoop and thickness of the hoop; and

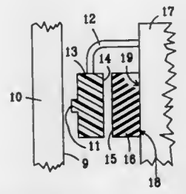
means for moving the clamp body with respect to the base for bringing the clamping surface of the jaw into engagement with the clampable surface of the hoop.

5,185,490

KEY GUIDE

Paul B. Vandervoort, 5223 Norcrest Ave., Carmichael, Calif. 95608

Filed May 30, 1991, Ser. No. 708,468
Int. Cl.[5] G10C *3/12*
U.S. Cl. 84—436 **17 Claims**



1. In a keyboard for a finger-operated device, the keyboard incorporating at least one key which is reciprocative along a key axis of motion and which is subject to side force in two opposite directions along at least one axis, the side force axis being perpendicular to the key axis of motion, the two side force directions comprising a direction of engagement and a direction of disengagement, a key guide comprising:

a track, a chassis, a bumper interposed between the track and the chassis, bushing support means attached to the chassis, a bushing attached to the bushing support means and interposed between the bumper and the track, bumper disengagement means,

a bushing-engaging surface on the track, a track-engaging surface on the bushing, a bumper-engaging surface on the bushing, a bushing-engaging surface on the bumper, a chassis engaging surface on the bumper, a bumper-engaging surface on the chassis.

at least one of the aforementioned bumper surfaces formed of a softer material than the bushing track-engaging surface wherein,

the bushing support means is structured to allow movement of the bushing relative to the chassis in each direction of side force,

at least a portion of the aforementioned softer material bumper surface is disposed to engage one of the bumper-engaging surfaces as a result of side force in the direction of engagement and,

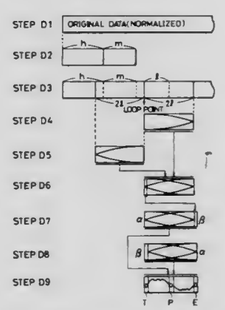
the bumper disengagement means is disposed to disengage at least said portion of said softer material bumper surface as a result of side force in the direction of disengagement.

5,185,491

METHOD FOR PROCESSING A WAVEFORM

Gen Izumisawa, and Yasushi Sato, both of Hamamatsu, Japan, assignors to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Jun. 10, 1991, Ser. No. 713,192
Claims priority, application Japan, Jul. 31, 1990, 2-201356
Int. Cl.[5] G10H *1/057*
U.S. Cl. 84—627 **14 Claims**



1. A method for processing a waveform, comprising the steps of:

storing tone wave data in a wave memory;

extracting a predetermined length of head data from an attack portion of an original musical tone;

acquiring loop data by extracting a predetermined length of a sustaining portion of an original musical tone;

subjecting said extracted loop data to predetermined processing;

acquiring a predetermined length of mix data, said predetermined length of mix data including individual waveform elements of said head data and said loop data;

linking said head data and said loop data;

providing reading means for reading out said tone wave data from said wave memory in a predetermined order;

said predetermined order being said head data, said mix data, and said loop data, said loop data being read out repeatedly; and

tone generating means for generating a musical tone based on the tone wave data read out by said reading means.

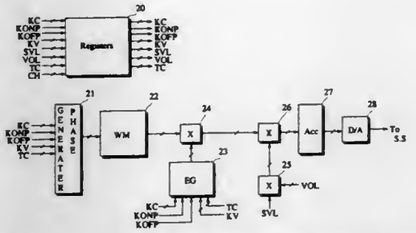
VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,492

ELECTRONIC MUSICAL INSTRUMENT HAVING MULTIVOICE FUNCTION FOR GENERATING MUSICAL TONES OF PLURAL TONE COLORS

Tadahiko Ikeya, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jul. 30, 1991, Ser. No. 738,216
Claims priority, application Japan, Jul. 30, 1990, 2-202784
Int. Cl.[5] G10H *1/06, 1/08, 1/24*
U.S. Cl. 84—633 **19 Claims**



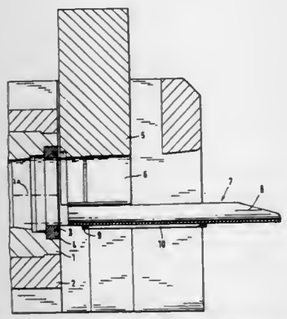
1. An electronic musical instrument having multivoice function comprising:
musical tone generating means for simultaneously generating musical tones having a plurality of tone colors, each of said tone colors having a specified tone color number;
tone color designating means for designating the plurality of tone colors;
tone volume balance table means for storing balance data of tone volume between tones; and
balance decision means for deciding a balance of tone volume, by looking up the tone volume balance table, between the tones of tone colors designated by an tone color designating means, according to the order specified by the tone color designating means.

5,185,493

LOADING APPARATUS FOR MANUAL INSERTION OF AMMUNITION

Helmut Isgen, Willich, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Mar. 30, 1992, Ser. No. 859,978
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1991, 4113341
Int. Cl.[5] F41A *9/52*
U.S. Cl. 89—45 **5 Claims**



1. An apparatus for manually loading ammunition into one end of a gun tube, comprising:
a lift-type breechblock wedge operatively arranged for sealing and unsealing the one end of the gun tube, said breechblock wedge having an underside including at least two lateral guide strips attached thereto, a recess for receiving one end of a locking member, and a pin having an enlarged head projecting from said underside; and
an ammunition loading tray for insertion of ammunition into the one end of the gun tube, said tray having at least two lateral ribs operatively arranged for sliding engagement with said guide strips, one of said lateral ribs including an elongated opening extending in the axial direction of the gun tube, said elongated opening having a first portion, axially adjacent the gun tube, through which said pin head can be pushed and a second portion, axially remote from the gun tube, for receiving said pin, and said one rib further including a displaceable locking member positioned on said one rib for displacement into the recess in said breechblock wedge when said pin abuts an end region of the second portion of said elongated opening.

5,185,494

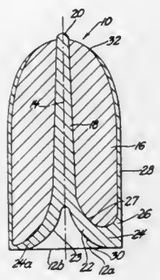
Patent Not Issued For This Number

5,185,495

PROJECTIVE WITH IMPROVED FLOWERING

Robert M. Petrovich, 10748 Bob White, P.O. Box 111, Hamburg, Mich. 48139, and Paul A. Petrovich, 11269 Judd Rd., Fowlerville, Mich. 48836

Filed Apr. 13, 1992, Ser. No. 867,571
Int. Cl.[5] F42B *12/34*
U.S. Cl. 102—510 **10 Claims**



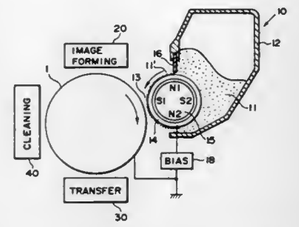
1. A petalling projectile, comprising:
a front end;
a rear end;
a central longitudinal axis;
a core centered on the longitudinal axis;
means for allowing petalling of the core away from the axis during the core's penetration into a target, the allowing means including means for retarding petalling at initial impact of the projectile with the target;
the allowing means further including acceleration means for enhancing subsequent petalling of the core after initial target penetration by the projectile, the acceleration means including a stem extending along the axis from the front end to the rear end, the stem fixed to the core before the initial impace and axially loosening from the core after the initial target penetration, the acceleration means further including a radially inwardly deforming wall at the rear end, said stem and said rear wall formed as a single one-piece element of the same material throughout, said stem having a smooth outer surface over substantially its entire length, said stem and said rear wall being of a harder material than said core.

5,185,496

ELECTROSTATIC LATENT IMAGE DEVICE HAVING A COATING LAYER PROVIDED ON A DEVELOPER CARRYING MEMBER

Katsuhiko Nishimura; Keiji Okano, both of Yokohama; Toshio Miyamoto, Tokyo, and Tatsunori Ishiyama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1991, Ser. No. 664,227
Claims priority, application Japan, Mar. 2, 1990, 2-049526; May 18, 1990, 2-129432
Int. Cl.[5] G03G *15/09*
U.S. Cl. 118—658 **86 Claims**



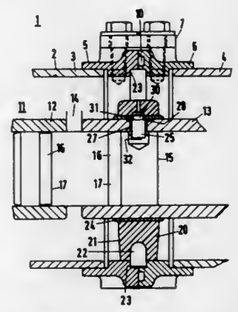
1. A electrostatic latent image developing apparatus, comprising:
a movable developer carrying member for carrying developer to a developing zone where an electrostatic latent image on an image bearing member is developed; and
an outer coating layer on said developer carrying member, in which said coating layer comprises resin in which conductive fine particles are dispersed and which is abraded by abrasive material not containing abrasive grain, and wherein a surface of the coating layer has a cutting depth Cv of not more than 5 microns where a profile bearing length ratio is 5% on a bearing ratio curve.

5,185,497

SINGLE-POLE GAS-INSULATED LINE DUCT

Rainer Poth, Bad Vilbel, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Oct. 29, 1991, Ser. No. 783,852
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1990, 4034733
Int. Cl.[5] H02G *15/24*
U.S. Cl. 174—21 C **5 Claims**



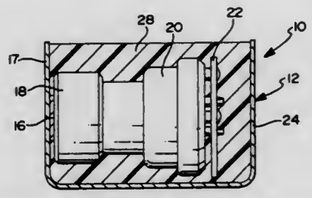
1. A single-pole gas-insulated line duct, comprising:
a) a enclosing tube divided into a plurality of tubular sections, wherein each tubular section has a flange;
b) a support insulator including:
(i) a radially projecting arm with an embedded rounded-off electrode body;
(ii) an inner circumference; and
(iii) a metal sleeve being disposed at said inner circumference,
and having an opening;
c) a tubular inner conductor being held centered in place in said enclosing tube by the support insulator, being divided into a plurality of conductor sections electrically and mechanically connected with each other, and having a locking member attached at the tubular inner conductor and engaging said opening;
d) a slot formed between two abutting flanges of the plurality of tubular sections, wherein the electrode body extends beyond the radially projecting arm and the electrode body is held in said slot; and
e) an additional electrode body for use in an area between flanges of tubular sections disposed approximately flush with a circumferential surface of the radially projecting arm, and having a spring-action projecting contact member.

5,185,498

CIRCUIT ASSEMBLY ENCAPSULATED WITH POLYBUTADIENE URETHANE

Henry M. Sanftleben, Carmel, Ind.; Ralph D. Hermansen, North Ridge, Calif.; Gary R. Shelton, Kokomo, Ind.; Petrina L. Schnabel, Kokomo, Ind.; Dennis T. Baird, Kokomo, Ind., and Douglas C. Smith, Carmel, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind. and Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 11, 1991, Ser. No. 714,148
Int. Cl.[5] H01L *23/28*
U.S. Cl. 174—52.2 **4 Claims**



1. An electrical assembly subject to high thermal stresses comprising:
electrical components;
container means for containing the electrical components; and
encapsulating means in the container means and surrounding the electrical components for environmentally protecting the components comprising polybutadiene urethane having a glass transition temperature below −10° C., and mechanical properties at 25° C. of a hardness of 15 to 90 shore A durometer, an elongation of 50 to 300%, and a tensile strength of 75 to 900 psi, and whereby the encapsulating means maintains its integrity under intense thermal cycling conditions to exclude foreign elements from the components.

5,185,499

RECEPTACLE BOX

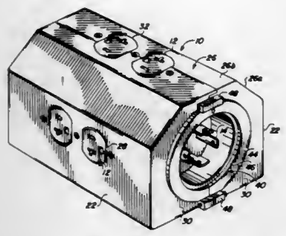
Norman J. Yahraus, 2240 Lindell Rd., Las Vegas, Nev. 89102

Filed Aug. 7, 1990, Ser. No. 563,759
Int. Cl.[5] H05K *5/02*
U.S. Cl. 174—65 R **5 Claims**

1. An electrical receptacle box provided with an electrical apparatus mounted within said box, with said electrical apparatus having a flange about the periphery of one end thereof, said receptacle box being formed of a pair of separable box sections,

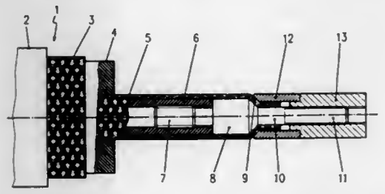
VOL
1147
ISS
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each section having side walls and a pair of opposed end walls, said box sections having edges which mate together to form said box with at least one adjacent wall of each of said box sections provided with an opening extending from an edge of



said box section end wall for a distance into said wall to form a single opening when said box sections are joined together, and a receiving means formed about the periphery of said opening with the flange of said apparatus engaged in said receiving means to anchor said apparatus within said box.

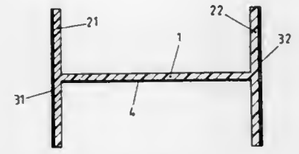
5,185,500
INNER CONDUCTOR CONTACT FOR COAXIAL CABLES WITH BRAIDED INNER CONDUCTOR
Georg Spinner, Am Eichberg 12, 8152 Feldkirchen-Westerham, Fed. Rep. of Germany
Filed Jun. 25, 1991, Ser. No. 720,745
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1990, 4022224
Int. Cl.[5] H02G *15/02*
U.S. Cl. 174—74 R **14 Claims**



1. An inner conductor contact for connecting one end of a braided inner conductor of a coaxial cable with one end of an inner conductor of a coaxial plug, with said inner conductor of the cable enclosing a core which is retracted relative to said end of said inner conductor of the cable, said inner conductor contact comprising:
a generally cylindrical metallic support element insertable in a braided inner conductor of a coaxial cable and having a diameter corresponding to the diameter of a retracted core of the cable enclosed by said conductor of the cable, said support element being extended via a shoulder by a prolongation of smaller diameter, with said inner conductor of the cable surrounding said shoulder and a portion of said prolongation; and
a metal bushing for surrounding said inner conductor of the cable in the area of said shoulder and said prolongation, with an inner conductor of a coaxial plug having a centering collar engageable in said metal bushing, said inner conductor of the plug being threadably engageable with said support element for providing a clamping of said inner conductor of the cable between said shoulder and the respective end face of said metal bushing.

9. A method of connecting one end of a braided inner conductor of a coaxial cable with one end of an inner conductor of a coaxial plug, with the inner conductor of the cable enclosing a core, comprising the steps of:
shortening the core of a coaxial cable relative to the end of an inner conductor of the cable enclosing the core;
inserting a support element in the inner cable conductor and attaching the support element to the core of the cable;
aligning the inner conductor of the cable along the support element and placing a metal bushing over the end of said inner conductor of the cable; and
connecting an inner conductor of a plug with the inner conductor of the cable by centering and engaging said inner conductor of the plug in the metal bushing and threadably engaging the end of the inner conductor of the plug with the support element so as to attain a clamping of the inner conductor of the cable between the support element and the metal bushing.

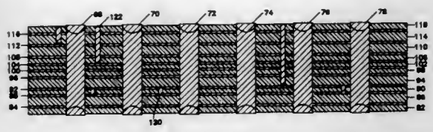
5,185,501
CABLE SHIELD STRIP
Chi-Chih Oha, No. 106, Chien Teh Rd., San Min Dist., Kaohsiung, Taiwan
Filed Mar. 20, 1991, Ser. No. 672,492
Int. Cl.[5] H01B *7/24;* **H02G** *3/04*
U.S. Cl. 174—136 **4 Claims**



1. A cable shield strip comprising;
a central shield strip made of soft thin flexible plastic and having an adhesive layer on its bottom surface;
two fixing strips formed from plastic which is also flexible, but slightly more rigid than the central shield strip, the fixing strips being fused to both sides of the shield strip through an injection molding process to form an H shape, and the fixing strips having an adhesive layer on their attaching surfaces; and wherein
the shield strip may be urged into a flat position and folded near the point that the fixing strips attach to the shield strip so that the fixing strips lie flat on the shield strip for packing, storing, or transporting; and
when in use, the shield strip covers and protects a cable and adheres thereto due to its adhesive bottom surface and the two fixing strips being unfolded and adhering to the surface of a wall where the cable is to be positioned.

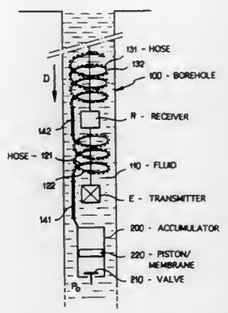
5,185,502
HIGH POWER, HIGH DENSITY INTERCONNECT APPARATUS FOR INTEGRATED CIRCUITS
Lloyd T. Shepherd, Eau Claire; Melvin C. August, Chippewa Falls, and James N. Kruchowski, Eau Claire, all of Wis., assignors to Cray Research, Inc., Eagan, Minn.
Division of Ser. No. 444,747, Dec. 1, 1989. This application Oct. 16, 1990, Ser. No. 598,103
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—262 **2 Claims**

1. A multilayer circuit board apparatus having a plurality of layers with differing interconnect densities to efficiently distribute ground voltage, electrical power and electrical signals throughout said circuit board apparatus to devices located on the surfaces of said circuit board apparatus, said apparatus comprising:
a) a substrate power bus layer having a first interconnect density, said substrate power bus layer further comprising a plurality of substrate copper layers interleaved with a plurality of dielectric layers, said substrate copper and dielectric layers forming a distribution network of ground voltage and electrical power at different voltage levels using selectively placed vias to distribute said ground voltages and electrical power to each of two major surfaces of said substrate power bus layer;
b) at least one low density interconnect substrate having a second interconnect density which is higher than said first interconnect density, each of said low density interconnect substrates being mechanically and electrically connected to each major surface of said substrate power bus layer, each low density interconnect substrate distributing electrical signals, ground voltage and electrical power at different voltage levels using selectively placed vias inter-



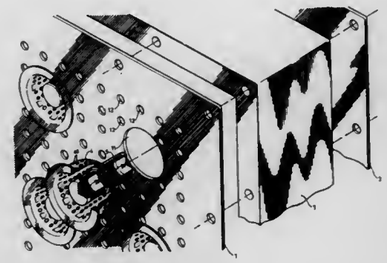
connecting a plurality of low density copper layers interleaved with a plurality of dielectric layers; and
c) at least one high density interconnect substrate having a third interconnect density which is higher than said second interconnect density, each of said high density interconnect substrates being mechanically and electrically connected to each low density interconnect substrate, each high density interconnect substrate further distributing electrical signals, ground voltage and electrical power at different voltage levels using selectively placed vias interconnecting a plurality of conductive layers interleaved with a plurality of dielectric layers, each said high density substrate further having means for attaching integrated circuit die to said high density substrate.

5,185,503
APPARATUS FOR ATTENUATING STONELEY WAVES IN A BOREHOLE
Jean-Pierre Fortin, Paris, France, assignor to Campagnie Generale De Geophysique, France
Filed Nov. 26, 1991, Ser. No. 800,907
Claims priority, application France, Nov. 27, 1990, 90 14795
Int. Cl.[5] G01V *1/40*
U.S. Cl. 181—102 **16 Claims**



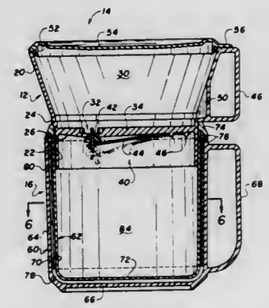
1. Apparatus for attenuating Stoneley waves propagating in a borehole along a given direction, said borehole containing a fluid in which at least one seismic transducer is immersed, wherein said apparatus comprises pressure transmission means firstly for placing in a region of the borehole where the hydrostatic pressure is not less than the hydrostatic pressure at the level of said seismic transducer, and secondly for transmitting pressure to at least one flexible hose containing a gas, said at least one hose being disposed upstream from the seismic transducer relative to the propagation direction of said Stoneley waves and wherein said at least one hose is spiral-wound.

5,185,504
ACOUSTIC BOARD
Wang H. Jen, P.O. Box 82-144, Taipei, Taiwan
Filed Jun. 30, 1992, Ser. No. 906,424
Int. Cl.[5] E04B *1/82*
U.S. Cl. 181—286 **2 Claims**



1. An acoustic board comprising:
a framework;
a front panel formed with a plurality of larger openings and smaller openings and fitted on one side of said framework;
a rear panel fitted on another side of said framework thereby forming a space between said front panel and said rear panel;
a plurality of sound collecting cylinders having an open front end and a closed second end, each of said sound collecting cylinders being provided with a plurality of openings and fitted within respective larger openings of said front panel and having said open end aligned with said larger openings of the front panel; and
a plurality of silencers formed with a plurality of elongated perforations and extended through and supported in an opening provided in said second end of the sound collecting cylinder.

5,185,505
MICROWAVE ICED TEA MAKER
Stanley E. Grzywana, Elyria, Ohio, assignor to Mr. Coffee, inc., Bedford Heights, Ohio
Filed May 29, 1991, Ser. No. 706,752
Int. Cl.[5] H05B *6/80*
U.S. Cl. 219—10.55 F **3 Claims**



1. An appliance for preparing freshly brewed iced tea with microwave energy comprising:

VOL 1147 ISS 2 FE 9 1993 UMI

a generally funnel-shaped reservoir of molded plastic construction having an open upper end, a closed lower end and an aperture near said closed lower end, said reservoir dimensioned to hold a predetermined amount of water and tea simultaneously therein;

valve means operable to control flow of liquid from said reservir through said aperture, said valve means having a normally closed position wherein flow through said aperture is obstructed and being operable to move from said closed position to an open position wherein flow through said aperture is allowed, after said water in said reservoir has been heated by microwave energy to a temperature sufficient to brew said tea;

a receptacle dimensioned to hold said predetermined amount of water in said reservoir after it has been heated, said receptacle being generally cylindrical in shape and comprised of

an outer shell,

an inner lining spaced from said outer shell to form an open space therebetween, and

a flat microwave shielding sheet having planar resiliency disposed within said space, said sheet maintaining its position within said space as a result of the friction generated between said sheet and said outer shell by the sheet's resiliency.

5,185,506

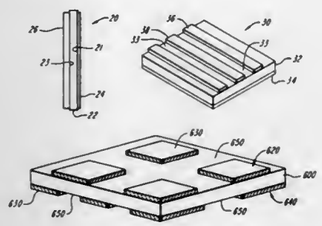
SELECTIVELY MICROWAVE-PERMEABLE MEMBRANE SUSCEPTOR SYSTEMS

Glenn J. Walters, Duxbury, Mass., assignor to Advanced Dielectric Technologies, Inc., Taunton, Mass.

Continuation-in-part of Ser. No. 641,533, Jan. 15, 1991. This application Sep. 5, 1991, Ser. No. 755,629

Int. Cl.[5] H05B *6/80*

U.S. Cl. 219—10.55 E **44 Claims**



1. A microwave susceptor for use in food packaging, the susceptor comprising:

a) at least one substantially microwave-transparent substrate, the substrate having opposed surfaces;

b) at least one microwave-absorptive coating disposed as a pattern upon at least one of said opposed surfaces, said microwave-absorptive coating constructed and arranged to absorb microwave energy and generate heat; and

c) at least one microwave-reflective coating disposed as a pattern proximate to at least one of said opposed surfaces, said microwave-reflective coating constructed and arranged to reflect microwave energy, to thereby reduce the amount of such microwave energy that reaches the microwave-absorptive coating when the susceptor is exposed to a microwave energy field.

5,185,507

WIRE ELECTRIC DISCHARGE MACHINING METHOD FOR MACHINING ENTRANCE LINES AND APPARATUS THEREFOR

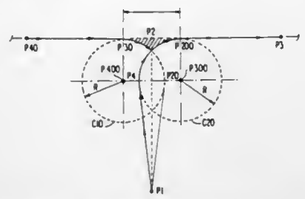
Noriya Yasui, Aichi, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan

Filed Nov. 20, 1991, Ser. No. 794,957

Claims priority, application Japan, Nov. 20, 1990, 2-315074

Int. Cl.[5] B23H *7/06*

U.S. Cl. 219—69.12 **13 Claims**



1. A wire electric discharge machining method for electric discharge-machining a workpiece along a predetermined programmed path comprising a predetermined contour of a product to be produced and an entrance line from a starting position to a predetermined intersection point with said predetermined contour comprising the steps of opposing a wire electrode and the workpiece at a predetermined gap, relatively moving said wire electrode and said workpiece and applying a voltage to said wire electrode and said workpiece, said wire electrode and said workpiece being relatively moved to machine along said predetermined programmed path on said workpiece, the improvement comprising:

modifying at least a portion of said predetermined programmed path to machine a modified entrance line so that a peripheral surface of said electrode intersects said predetermined contour at a modified intersection point that is offset from said predetermined intersection point and said peripheral surface departs from said predetermined contour at a point other than said modified intersection point.

5,185,508

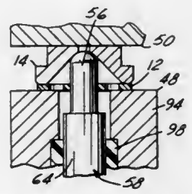
WELDER LOCATOR ALIGNMENT FIXTURE

William O. Perkinson, III, Newport News, Va., assignor to Siemens Automotive L.P., Auburn Hills, Mich.

Filed Mar. 2, 1992, Ser. No. 844,348

Int. Cl.[5] B23K *11/00, 37/053*

U.S. Cl. 219—86.24 **9 Claims**



1. A machine for aligning a valve seat member to a valve guide member, and for uniting the two members after they have been aligned, said valve seat member comprising a frustoconical seating surface adapted for coaction with a spherically contoured tip end of a circular cylindrical valve member in a valve into which the valve seat member and the valve guide member are assembled after they have been united, said valve guide member comprising a circular cylindrical guide hole through which such a circular cylindrical valve member passes in such a valve for the purpose of guiding axial reciprocation of such a valve member toward and away from said seat member, said machine comprising a platen having a fixture thereon, said fixture comprising means defining a planar surface for providing underlying support of said guide member and locator pin means comprising a cylindrical locator pin having a spherically contoured tip and a circular cylindrical gauging surface proximal to its spherically contoured tip and locator pin holder means disposing said locator pin to pass coaxially through such a guide member such that the circular cylindrical guide hole of such a guide member is gauged by said circular cylindrical gauging surface of said locator pin when said guide member is supported on said planar surface, said machine further comprising force-applying means for forcing such a seat member against such a guide member in a direction toward said planar surface and causing the frustoconical seating surface of such a valve seat member to coact with said locator pin's spherically contoured tip so as to effect coaxial alignment of such a seat member with said locator pin and hence also with said guide member, means for conducting a uniting operation to unite such members while they are so aligned by said force-applying means and said locator pin, and an adjustment mechanism for setting the perpendicularity of said locator pin to said planar surface.

5,185,509

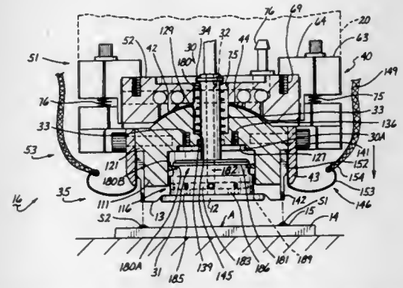
ROBOTIC ARM TOOL MOUNTING APPARATUS

Thomas Todd, and Todd B. Skinner, both of San Diego, Calif., assignors to Toddco General, Inc., San Diego, Calif.

Filed Feb. 19, 1991, Ser. No. 657,564

Int. Cl.[5] B23K *3/03*

U.S. Cl. 219—85.16 **15 Claims**



1. A soldering apparatus for use with a robotic unit, having a holding unit for circuit device placement purposes and a soldering unit for soldering the leads of a circuit device to the pads of a printed circuit board, comprising:

mounting means for securing the soldering unit to the robotic unit;

said soldering unit having at least one elongated hot bar for distributing heat to the pads of the printed circuit board with solder pre-deposited thereon;

spring means for suspending said soldering unit from the underside of said mounting means and for causing said soldering unit to be supported movably relative to said mounting means;

means defining a universal joint partially disposed in said mounting means and partially disposed in said soldering head for helping to facilitate the movement of said soldering unit relative to said mounting means;

said mounting means having air chamber means for receiving fluid under pressure, said air chamber means being in fluid communication with said means defining a universal joint for helping to facilitate the movement of said soldering unit without causing movement of the robotic unit.

5,185,510

INSTALLATION FOR CUTTING A WORKPIECE AND METHOD FOR THE CONTROL THEREOF

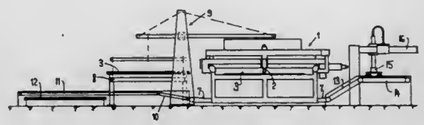
Ernst Zumstein, Burgdorf, Switzerland, assignor to Bystronic Laser AG, Switzerland

Filed Jun. 14, 1991, Ser. No. 715,394

Claims priority, application Switzerland, Jul. 4, 1990, 2226/90-0; European Pat. Off., Oct. 8, 1990, 90810770.9

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.67 **13 Claims**



1. An installation for cutting a workpiece, in particular a flat workpiece, by means of a beam, in particular a laser beam, comprising a grate of supporting elements for said workpiece, said elements being movable from a supporting position to an ineffective position away from said workpiece, wherein a common program control is provided for the displacement of said beam along a cutting line and for the displacement of said supporting elements.

5,185,511

MULTIFUNCTION LASER ASSISTED PROCESSING APPARATUS

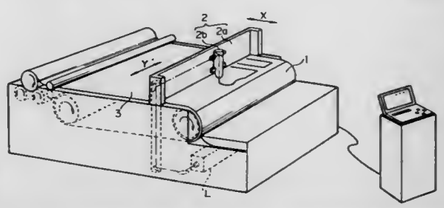
Maasaki Yabu, Chofu, Japan, assignor to Juki Corporation, Tokyo, Japan

Filed Jun. 5, 1991, Ser. No. 710,652

Claims priority, application Japan, Jun. 5, 1990, 2-59435[U]; May 21, 1991, 3-035846[U]

Int. Cl.[5] B23K *26/00*

U.S. Cl. 219—121.78 **2 Claims**



1. A multifunction laser assisted processing apparatus, comprising

a laser beam source for supplying a laser beam;

a work face for supporting a workpiece material;

a X-direction movable arm mounted on said work face;

a Y-direction movable processing head mounted on said X-direction movable arm, said processing head projecting said laser beam on the workpiece material;

an output adjustable mechanism for adjusting amount of the laser beam from said laser beam source;

said adjustable mechanism having a gas control device for keeping pressure of laser medium gas at constant level, and a DC high-voltage power unit capable of adjusting resonance current and supplying it to said laser beam source; and

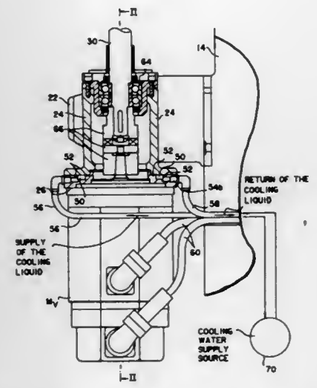
whereby cutting processing, marking processing and drawing processing can be selectively performed to the workpiece material by adjustment of said adjustable mechanism.

VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,512
LASER ROBOT WITH HEAT ELIMINATING MEANS

Nobutoshi Torii, Hachioji; Susumu Ito, Yamanashi; Akihiro Terada, Yamanashi, and Yasno Sasaki, Yamanashi, all of Japan, assignors to Fanuc Ltd., Yamanashi, Japan

PCT No. PCT/JP90/01627, § 371 Date Jul. 15, 1991, § 102(e) Date Jul. 15, 1991, PCT Pub. No. WO91/08858, PCT Pub. Date Jun. 27, 1991
PCT Filed Dec. 12, 1990, Ser. No. 720,821
Claims priority, application Japan, Dec. 12, 1989, 1-320598
Int. Cl.[5] B23K *26/08*
U.S. Cl. 219—121.78 4 Claims



1. A laser robot comprising: a robot base, a robot swivel post arranged upright on the robot base to be turnable about a vertical axis; an axially extendable robot arm joined to the robot swivel post to be swingable up and down in a vertical plane relative to the robot swivel post and provided with laser beam conduit lines formed therein to lead a laser beam toward an extreme end thereof; a laser beam projecting unit attached to the extreme end of the robot arm for projecting the laser beam led thereto; a drive motor for driving a swing motion of the robot arm via a projection transmission mechanism; and a heat eliminating means for absorbing a heat generated by the drive motor by the use of a cooling water supplied from a cooling water source, to thereby prevent the heat from being transmitted from the drive motor to the precision transmission mechanism;

wherein said heat eliminating means comprises:

a bracket means arranged between the precision transmission mechanism and the drive motor, and including a first end in contact with an end surface of the drive motor provided on a side where an output shaft of the drive motor is arranged, a second end thereof in contact with the precision transmission mechanism, and an annularly grooved fluid passage forming a first portion of a cooling water supply circuit, said cooling water supply circuit being disposed to receive said cooling water from said cooling water supply source to apply a cooling effect to said bracket means;

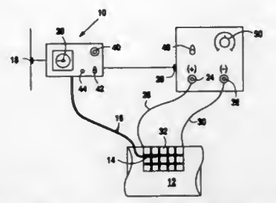
a fluid supply conduit line for providing a fluid connection between the cooling water source and the annular fluid passage of the bracket means, thereby forming a second portion of said cooling water supply circuit; and

a fluid return conduit line for providing a fluid connection between the annular fluid passage of the bracket means and the cooling water source, forming a third portion of said cooling water supply circuit, to thereby permit the cooling water to return from the annular fluid passage to the cooling water source.

5,185,513
HEAT CONTROLLER AND METHOD FOR HEAT TREATMENT OF METAL

Stephen P. Pacileo, Friendswood, Tex., assignor to PR Partners, Pasadena, Tex.

Filed Mar. 22, 1990, Ser. No. 497,436
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—497 20 Claims



1. An apparatus for controlling the heating of metal to a desired temperature comprising:

means for sensing the temperature of the metal to be heated and outputting a signal proportional thereto;

a first connector for receiving input power from an external power source;

means operating on the power received from said first connector and receiving the signal from said temperature sensing means for outputting a signal responsive to the difference between a desired temperature and the temperature sensed by said sensing means to turn an applications power supply that powers a heating element on and off;

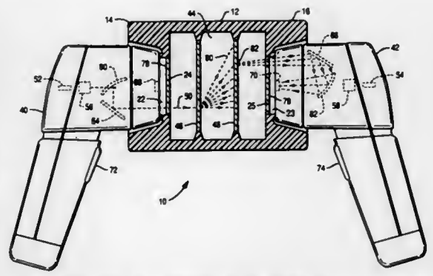
means for limiting the current of the signal from said signal outputting means and outputting a current limited signal proportional to a desired power level of the applications power supply to control the rate of heating of the metal by the heating element; and

a second connector for transmitting the signal of said current limiting means to the applications power supply.

5,185,514
PROGRAMMABLE APPARATUS AND METHOD FOR OPTICAL SCANNERS

Charles K. Wike, Jr., Cambridge, Ohio; Donald A. Collins, Jr., Ithaca, and Craig E. Maddox, Trumansburg, both of N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 19, 1991, Ser. No. 762,702
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—375 29 Claims



1. An apparatus for transferring information form one optical transceiver to another comprising:

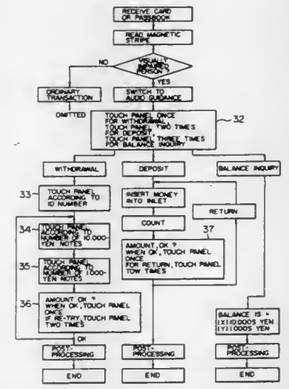
a housing having a center portion and first and second end portions to receive said optical transceivers, the center portion containing a cavity defined by an interior surface of the center portion, the first and second end portions containing apertures therethrough and into the cavity and defined by an interior surface of the end portions;

means within the housing for converting light from said one optical transceiver into a form receivable by the other optical transceiver, regardless of the orientation of the other optical transceiver.

5,185,515
AUTOMATED TELLER MACHINE AND METHOD THEREOF

Kunihiko Nishibe, Tsuchiura, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 24, 1990, Ser. No. 602,859
Claims priority, application Japan, Oct. 26, 1989, 1-279486
Int. Cl.[5] G06K *15/30, 5/00*
U.S. Cl. 235—379 17 Claims



1. An automatic cash transaction method in which transaction mediums having transaction information recorded thereon are used for the transaction, said method comprising the steps of recognizing whether or not a user is a visually impaired person by reading said transaction mediums and, when the user is recognized as a visually impaired person, applying the particulars of the transaction as a transaction input by the user touching any portion of a guidance panel a predetermined number of times according to one of the amount of money and the kind of the transaction.

5,185,516
CARD-TYPE IC-MOUNTING BOARD

Tamio Saito, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

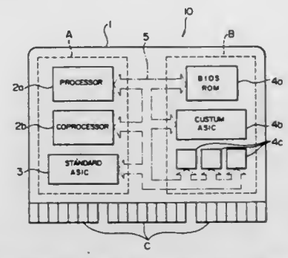
Filed Dec. 28, 1990, Ser. No. 635,239
Claims priority, application Japan, Dec. 29, 1989, 1-341820
Int. Cl.[5] G06K *5/00, 19/06*
U.S. Cl. 235—380 17 Claims

1. A card-type IC-mounting board for being detachably set in a main device and used for controlling predetermined external equipment relating to said main device, said IC-mounting board comprising:

a card-type base plate made of an insulating material of predetermined size;

first and second discrete regions defined on said base plate;

a programmable circuit section formed on said first region for controlling external equipment including said predetermined external equipment; and

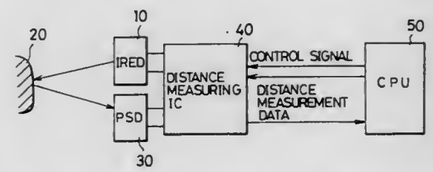


a preprogrammed circuit section formed on said second region for controlling said external equipment in cooperation with said programmable circuit.

5,185,517
SEMICONDUCTOR INTEGRATED CIRCUIT FOR MEASURING DISTANCE FOR AUTOMATIC FOCUSING

Masanori Inamori, Tenri, and Toshihide Miyake, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 5, 1992, Ser. No. 831,441
Claims priority, application Japan, Feb. 7, 1991, 3-39231
Int. Cl.[5] G01J *1/20*
U.S. Cl. 250—201.4 7 Claims



1. An automatic focusing device including a semiconductor integrated circuit for measuring distance having a light-detecting element for receiving light from an object, the distance to the object is to be measured, and outputting a light-detecting signal according to the distance to the object, the semiconductor integrated circuit mounted in one chip and comprising:

distance measurement arithmetic means for forming digital distance measurement data inversely proportional to the distance to the object from the light-detecting signal from the light-detecting element;

memory means for writing therein two items of distance measurement data output from said distance measurement arithmetic means with regard to two known distances in a calibration mode; and

data arithmetic means for computing in a distance measuring mode a control signal of the automatic focusing device from said two items of distance measurement data stored in said memory means and digital distance measurement data output from said distance measurement arithmetic means.

5,185,518

Patent Not Issued For This Number

VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,519

INFRARED MATRIX SENSOR WITH SIGNAL MULTIPLEXING

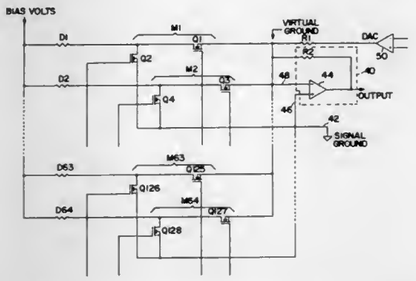
Stanley B. Hayes, Jr., Attleboro, Mass., assignor to Alpha Omega Instruments Corp., Johnson, R.I.

Continuation-in-part of Ser. No. 678,530, Mar. 28, 1991, Pat. No. 5,126,552. This application Apr. 30, 1991, Ser. No. 693,359

The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.

Int. Cl.[5] G01J *5/22;* **H01J** *40/14;* **H01L** *25/00*

U.S. Cl. 250—208.1 **16 Claims**



1. A detection system which comprises:

a plurality of radiation responsive, variable resistive detectors, each detector having a first connector and a second connector, the first connector communicating with a bias voltage source, the second connector communicating with a switching circuit which switching circuit comprises a plurality of paired MOSFET's, each pair associated with a detector, the circuit adapted to switch the output of each detector between a sensor circuit which is configured with a virtual ground and a single ground to turn the detector to OFF;

the sensor circuit including means to amplify the output from the detector; and

means to record the signal sensed.

5,185,520

SHEET OVERLAPPING DETECTING METHOD

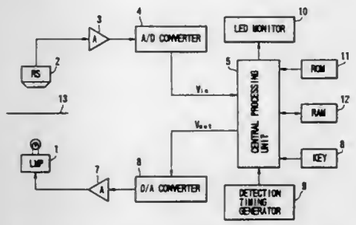
Yoshiaki Kurata, Ibaraki, Japan, assignor to Komori Corporation, Tokyo, Japan

Filed Jun. 13, 1990, Ser. No. 538,023

Claims priority, application Japan, Jun. 19, 1989, 1-154710

Int. Cl.[5] G01N *9/04*

U.S. Cl. 250—223 R **5 Claims**



1. A sheet overlapping detecting method i which light-emitting means is driven in accordance with a light emission signal having a control level V_{out} output from a data processing unit, light emitted from said light-emitting means is radiated in a direction of thickness of a sheet to be fed, light transmitted through the sheet to be fed is received by light-receiving means which generates a light reception signal having an output level V_{in} corresponding to a received light amount of said light-receiving means, the output level V_{in} is input to said data processing unit, and overlapping of sheets to be fed is detected on the basis of the light reception signal, said sheet overlapping detecting method comprising the steps of:

setting a predetermined level value V_{os} as the level of said light emission signal, and calculating, on the basis of said light reception signal having a value V_{ik} obtained in response to said light emission signal having said predetermined level value V_{os}, an optimum value V_{od} corresponding to the input value V_{ik} in accordance with a $V_{ik}-V_{od}$ characteristic table stored beforehand and representing a relationship between the value V_{ik} as paper quality data and said optimum value V_{od} of the light emission signal;

setting the calculated optimum valve V_{od} as said level of said light emission signal to drive said light-emitting device, and calculating, on the basis of a value V_{ik} of a corresponding light reception signal, a change value V_{t-2} corresponding to the input value V_{ik} in accordance with a $V_{ik}-V_{t-2}$ characteristic table stored beforehand and representing a relationship between the value V_{ik} as the paper quality data and a level change value V_{t-2} of said light reception signal caused by overlapping of sheets to be fed when the optimum value V_{od} is set as the level of said light emission signal;

calculating a determination level V_L in accordance with the following equation:

$$V_L = V_1 - [V_{t-2} \cdot \tfrac{1}{2}](V_{t-2})/2$$

where V_1 is the value of a light reception signal obtained when the optimum value V_{od} is set as the level of a light emission signal; and

detecting overlapping of sheets to be fed in accordance with the calculated determination level V_L.

5,185,521

SENSING APPARATUS AND METHOD FOR DETECTING RAMAN EMISSIONS FROM A SPECIES AT THE INTERFACE OF THE SENSING LENGTH OF AN OPTICAL FIBER

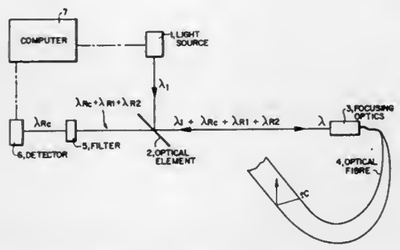
Frank Kvasnik, Hyde, and Andrew McGrath, Manchester, both of Great Britain, assignors to Imperial Chemical Industries PLC, London, United Kingdom

Filed May 24, 1990, Ser. No. 528,709

Claims priority, application United Kingdom, May 26, 1989, 8912219

Int. Cl.[5] H01J *5/16*

U.S. Cl. 250—227.23 **19 Claims**



1. A sensing apparatus comprising:

a light transmissive optical fibre with an elongated sensing length along at least a portion thereof,

a light source means for transmitting pulses of light along the fibre,

a detector for detecting, at the same end of the fibre as the light source, Raman signals resulting from a species of interest at the interface of the sensing length and a medium in which it is located,

means for determining the time difference between the transmission of an excitation pulse and detection of a Raman emission signal caused by that pulse, and

means for determining from said time difference the position along said fibre at which the species is present.

5,185,522

Patent Not Issued For This Number

5,185,523

MASS SPECTROMETER FOR ANALYZING ULTRA TRACE ELEMENT USING PLASMA ION SOURCE

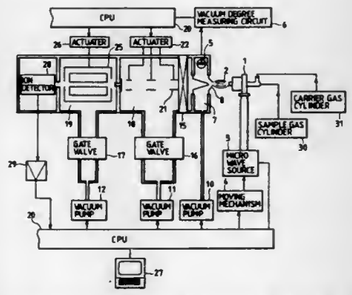
Masatoshi Kitagawa, Mito; Yukio Okamoto, Sagamihara; Takayuki Ono, and Tetuya Shinden, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Instrument Engineering Co., Ltd., Ibaraki, both of, Japan

Filed Mar. 10, 1992, Ser. No. 848,932

Claims priority, application Japan, Mar. 12, 1991, 3-46539

Int. Cl.[5] H01J *49/26*

U.S. Cl. 250—281 **10 Claims**



1. A mass spectrometer for analyzing ultra trace element using plasma ion source comprising;

a plasma generating means for ionizing sampling gas by generating plasma,

a vacuum chamber for taking in ions of the sampling gas from a hole of the vacuum chamber;

an ion lens installed in the vacuum chamber for condensing ions of the sampling gas;

a mass analyzing portion installed in the vacuum chamber for affecting the ions according to masses of the ions; and

an ion detector for detecting the ions which are passed through the ion lens and the mass analyzing portion; wherein further comprising,

a moving mechanism for moving said plasma generating means according to a vacuum degree measured in the vacuum chamber.

5,185,524

CHARGED PARTICLE ENERGY ANALYZERS

Simon C. Page, Hadfield, England, assignor to Kratos Analytical Limited, Manchester, England

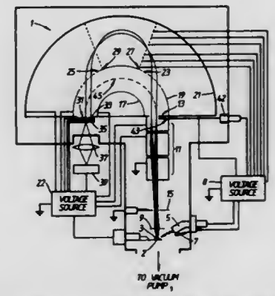
Filed May 14, 1991, Ser. No. 699,669

Claims priority, application United Kingdom, May 22, 1990, 9011380

Int. Cl.[5] H01J *47/00*

U.S. Cl. 250—305 **14 Claims**

1. A charged particle energy analyzer comprising two electrodes, said two electrodes defining a gap therebetween, means for producing a substantially inverse square electric field in said gap between said two electrodes such that the analyzer acts as a spherical mirror analyzer, an object plane of the analyser located in a substantially field free region closer to the center of curvature of the equipotentials of the inverse square electric field than said gap between the two electrodes, and means for producing a charged particle image of a sample on to said object plane, wherein the analyzer includes a baffle means disposed in said gap between the electrodes, such that the baffle means restricts the energies of the charged particles transmitted by the analyzer, at least part of the baffle means being positioned so as to reduce the dependence of the energies of the charged particles transmitted by the baffle means on the position of the particles within the image, and a detector means effective to detect charged particles at least partially transmitted through the analyser.



5,185,525

CHANGER MECHANISM FOR INDIVIDUAL MEASUREMENT OF RADIOACTIVE SAMPLES IN A GAMMA COUNTER

Juhani Aalto, and Seppo Wallenius, both of Turku, Finland, assignors to Wallac OY, Turku, Finland

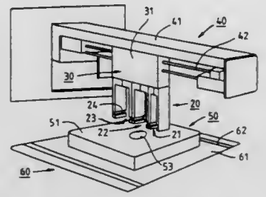
PCT No. PCT/FI90/00070, § 371 Date Sep. 23, 1991, § 102(e) Date Sep. 23, 1991, PCT Pub. No. WO90/11535, PCT Pub. Date Oct. 4, 1990

PCT Filed Mar. 21, 1990, Ser. No. 761,942

Claims priority, application Finland, Mar. 22, 1989, 891351

Int. Cl.[5] G01T *7/08*

U.S. Cl. 250—328 **9 Claims**



1. Changer mechanism for individual measurement of radioactive samples in a gamma counter, the changer mechanism comprising:

an identifying element for identifying different sizes of sample containers;

a device for transferring the sample containers each held within a respective sample container holder to a measuring unit for measuring and back therefrom after measuring, the device for transferring comprising a lifting device having a grip unit for lifting and transferring the sample container holder from a transfer unit to the measuring unit, the grip unit comprising a plurality of grip elements for gripping and transferring sample container holders of different sizes, each of said plurality of grip element corresponding to a different size sample container holder; and

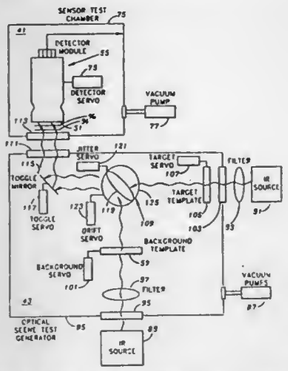
VOL 1147 ISS 2 FEB 9 1993 UMI

means for selecting one of said plurality of grip elements to grip and transfer a corresponding sample container holder based on size information obtained from the identifying element.

5,185,526
OPTICAL SCENE GENERATOR FOR TESTING INFRARED DETECTOR MODULES

William Reitman, and Jeanette Kennedy, both of Santa Ana, Calif., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Oct. 31, 1990, Ser. No. 607,993
The portion of the term of this patent subsequent to Dec. 29, 2009, has been disclaimed.
Int. Cl.[5] G12B *13/00*
U.S. Cl. 250—332 **11 Claims**



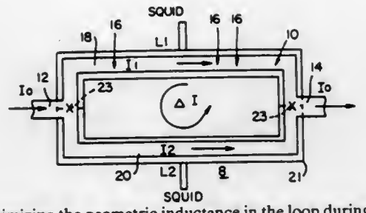
1. An optical scene test generator (OSTG) useful in testing the operation of detector modules designed to be placed in earth orbit, the module having a first surface upon which an image may be formed, the OSTG comprising:
a first source of IR frequency light;
a first template having at least one aperture formed therein through which IR frequency light from the first source of IR frequency light may be transmitted to generate a first IR frequency light signal representative of the earth's surface;
a second source of IR frequency light;
a second template having at least one aperture formed therein through which IR frequency light from the second source of IR frequency light may be transmitted to generate a second IR frequency light signal representative of a target;
an optical image combiner for receiving and combining the first and second IR frequency light signals, and for directing the combined first and second IR frequency light signals to the detector module to be tested; and
template positioning apparatus connected to each of said first and second templates for positioning each of said first and second templates relative to one another and relative to said detector modules such that the independent motions of a target and background may be simulated.

5,185,527
MULTISPECTRAL SUPERCONDUCTIVE QUANTUM DETECTOR

Nathan Bluzer, Rockville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 624,784, Dec. 10, 1990. This application Jan. 16, 1992, Ser. No. 821,366
Int. Cl.[5] H01L *39/22*
U.S. Cl. 250—336.2 **9 Claims**

1. A method for the quantum detection of multispectral radiant energy, comprising:
providing at least one closed loop of superconductive material having spaced first and second legs exposing said first leg to ambient radiant photon flux;
injecting and removing superconducting electrical current from opposite ends of the loop, the current being divided according to geometric and kinetic inductances, the superconducting current in the first and second legs having a predetermined ratio without exposure to photon flux;

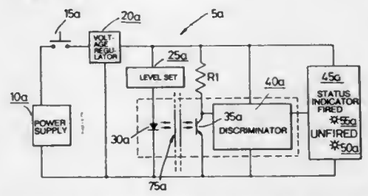


minimizing the geometric inductance in the loop during flow of the superconducting current; and
detecting a photo-induced change in the current product in response to a change in the kinetic inductances in the superconductive loop in accordance with the intensity of radiant photon flux striking the exposed leg.

5,185,528
BLASTING ACCESSORY

Kenneth A. Gordon, Ayr, Scotland, assignor to Imperial Chemical Industries PLC, London, England

Filed Aug. 7, 1991, Ser. No. 741,658
Claims priority, application United Kingdom, Aug. 17, 1990, 9018137
Int. Cl.[5] G01N *21/35*
U.S. Cl. 250—341 **14 Claims**



1. A blasting accessory to test whether a shock/signal tube has been fired comprising: a source of electromagnetic radiation, a detector suitable for detecting the radiation spaced from and facing the source, discrimination circuitry connected to an output of the detector, responsive to the output and, status indication means connected to the output of the detector via the discrimination circuitry, wherein, in use, the shock/signal tube is located between the source and detector such that the amount of radiation emitted by the source passing through the tube in its transverse direction falling on the detector, and therefore the status of the status indication means, is dependent upon whether or not the tube has been fired.

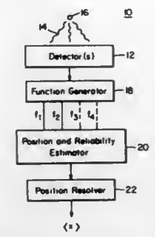
5,185,529
POSITION ANALYSIS SYSTEM AND METHOD

Andrew P. Smith, Medford, and Sebastian Genna, Belmont, both of Mass., assignors to Digital Scintigraphics, Inc., Waltham, Mass.

Filed Jun. 7, 1991, Ser. No. 712,916
Int. Cl.[5] G01T *1/17, 1/164*
U.S. Cl. 250—369 **7 Claims**

1. A position analysis system for determining the position of an event sensed by one or more event detectors, comprising:

detector means including at least one detector for detecting an emission from an event;
means, responsive to said detector means, for generating a number of different functions from the outputs of the one or more detectors;

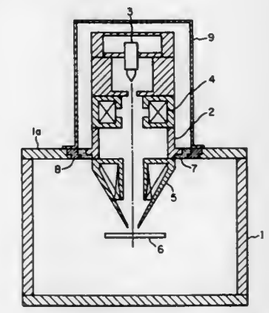


means for determining the estimated position of the event and the reliability of that estimation from each said function; and
means for summing all of the estimated reliabilities and all of the products of the estimated reliabilities and their associated estimated positions and normalizing the latter with the former.

5,185,530
ELECTRON BEAM INSTRUMENT

Setsuo Norioka, and Hiroshi Shimada, both of Tokyo, Japan, assignors to JEOL Ltd., Tokyo, Japan

Filed Nov. 1, 1991, Ser. No. 786,264
Claims priority, application Japan, Nov. 5, 1990, 2-299626; Nov. 5, 1990, 2-321962
Int. Cl.[5] H01J *37/09*
U.S. Cl. 250—398 **5 Claims**

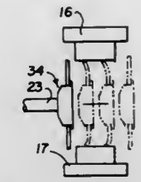


1. An electron beam instrument having an electron beam source, a condenser lens for focusing the electron beam emitted from the electron beam source, a column that houses both beam source and condenser lens, and a specimen chamber having a top wall through which the column is inserted into the specimen chamber, an annular member of a high magnetic permeability that surrounds the column and is located between both the side surfaces of the top wall and the column, and a nonmagnetic member interposed between said annular member of a high magnetic permeability and said side surface of the column.

5,185,531
WINDOW CLEANER FOR INLINE OPTICAL SENSORS

William H. Wynn, Hillsborough, Calif., assignor to Wedgewood Technology, Inc., San Carlos, Calif.

Filed Sep. 26, 1991, Ser. No. 766,858
Int. Cl.[5] G01N *21/15*
U.S. Cl. 250—431 **13 Claims**

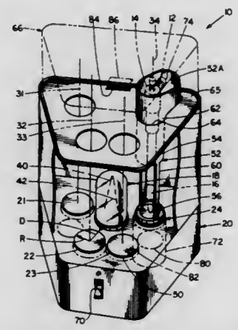


1. In apparatus for monitoring a product stream: an inline optical sensor having a housing with optically transparent generally planar windows on opposite sides thereof, means for continuously passing a fluid product stream through the sensor in contact with sufaces of the windows, means for optically monitoring the entire product stream through the windows to provide data about the product stream, an operator mounted on the housing between the sides on which the windows are located and having an output shaft movable axially between advanced and retracted positions in a direction generally parallel to the window surfaces, and a wiper blade connected to the shaft for wiping engagement with the window surfaces as the shaft moves between the advanced and retracted positions.

5,185,532
DENTAL INSTRUMENT STERILIZER

John M. Zabsky, Santa Ana; Jerome Saitta, Los Angeles, and Edward P. Bryan, Calabasas, all of Calif., assignors to Oral Card Products, Los Angeles, Calif.

Filed May 21, 1991, Ser. No. 703,797
Int. Cl.[5] G01N *23/00*
U.S. Cl. 250—455.11 **8 Claims**



1. Apparatus for sterilizing the forward portion of at least one dental instrument which has a forward portion that enters a patient's mouth and a rearward portion that is held by a dentist in the usual use of the instrument, comprising:
a frame;
a support mounted on said frame, said support being constructed to hold a dental instrument;
an ultraviolet light source mounted on said frame and largely horizontally spaced from said support to illuminate the forward portion of a dental instrument thereon;
said support being rotatable about a vertical axis which is horizontally spaced from said light source, and with the

VOL 1147 ISS 2 FEB 9 1993 UMI

radius of said support being less than the distance between said axis and said light source, so as the support rotates all sides of said dental instrument forward portion are exposed to said light source;

a motor coupled to said support to rotate it about said axis;

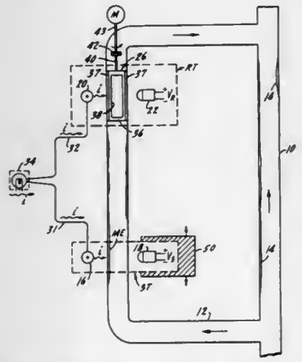
said support having a base of predetermined width which supports the weight of a dental instrument without preventing it from tilting, and said support forming a tube which extends above said base by a distance which is a plurality of times said width to limit tilting of the dental instrument.

5,185,533

MONITORING FILM FOULING IN A PROCESS STREAM WITH A TRANSPARENT SHUNT AND LIGHT DETECTING MEANS

Rodney H. Banks, Naperville, and Robert J. Wetegrove, Winfield, both of Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Sep. 3, 1991, Ser. No. 754,016
Int. Cl.[5] G01N *15/06*
U.S. Cl. 250—575 **9 Claims**



1. Method of determining accumulated film thickness at the inside diameter of a main stream conduit conducting a main stream of a flowing process fluid comprising the steps of:

using a transparent shunt conduit to shunt from the mainstream a sample stream of the process fluid;

locating a reference light emitter and light detector opposed thereto at a reference section of the shunt pipe and removing any appreciable film at the reference section to establish a clean reference section;

locating adjacent the shunt pipe upstream of the reference section a sample light emitter and detector opposed thereto;

connecting each emitter to a common source of light so the respective emitters emit a sample light beam and a reference light beam at the same intensity;

measuring concurrently the voltage analog V_S of light received by the sample detector and the voltage analog V_R of light received by the reference detector at the clean section;

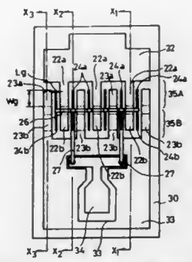
repeatedly determining log V_R—log VS as a measure of the absorbance (Abs) of the film at the sample section until a predetermined value of (Abs) is reached; and upon reaching said predetermined value feeding an anti-filming agent to the main stream at an increased rate to combat film formation.

5,185,534

MONOLITHIC PARALLEL CONNECTED TRANSISTOR STRUCTURE

Sbinichi Sakamoto; Takuji Sonoda, and Nobuyuki Kasai, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1991, Ser. No. 709,161
Claims priority, application Japan, Nov. 2, 1990, 2-298679
Int. Cl.[5] H01L *29/80*
U.S. Cl. 257—276 **6 Claims**



1. A semiconductor structure including a plurality of transistors connected in parallel comprising:

a semiconductor substrate including first and second mutually electrically isolated active regions;

mutually electrically isolated first, second, and control electrode pads disposed on said substrate;

a plurality of first electrodes disposed on said substrate connected to and continuously extending on said substrate from said first electrode pad across and contacting said first and second active regions;

a plurality of second electrodes disposed on said substrate connected to and continuously extending on said substrate from said second electrode pad across and contacting said first and second active regions, each of said second electrodes being disposed between and spaced from a pair of first electrodes, thereby defining a plurality of areas on said substrate between neighboring first and second electrodes;

a plurality of control electrodes disposed on said substrate extending, on said substrate, across and contacting said first and second active regions, said control electrodes being disposed on said substrate spaced from and between respective pairs of neighboring first and second electrodes; and

an airbridge structure crossing over and electrically insulated from said first and second electrodes and electrically connecting said plurality of control electrodes to said control electrode pad.

5,185,535

CONTROL OF BACKGATE BIAS FOR LOW POWER HIGH SPEED CMOS/SOI DEVICES

Joseph E. Farb, Riverside; Mei Li, Mission Veijo; Chen-Chi P. Chang, Newport Beach, and Maw-Rong Chin, Huntington Beach, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 17, 1991, Ser. No. 716,151
Int. Cl.[5] H01L *27/01*
U.S. Cl. 257—351 **13 Claims**

1. A silicon-on-insulator device comprising:

a semiconductor substrate having an oxide insulator layer,

complementary opposite polarity type P channel and N channel transistors on a front side of said oxide layer,

a backgate bias region extending in said substrate along said transistor of said first polarity type, said backgate bias region having a polarity opposite said first polarity and opposite the polarity of said semiconductor substrate, and said backgate bias region having a depth that varies according to the thickness of the overlying layers of said transistor, and



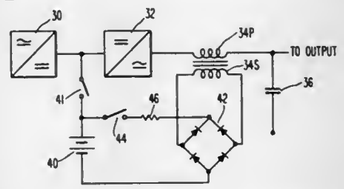
contact means on said backgate bias region for providing backgate bias to said first transistor.

5,185,536

UNINTERRUPTIBLE POWER SUPPLY HAVING IMPROVED BATTERY CHARGER

Robert W. Johnson, Jr., Raleigh, and Joseph C. Paulakonis, Chapel Hill, both of N.C., assignors to Exide Electronics, Raleigh, N.C.

Filed Sep. 27, 1991, Ser. No. 766,762
Int. Cl.[5] H02J *7/02*
U.S. Cl. 307—66 **11 Claims**



1. An uninterrupted power supply for delivering power from a power line to a load, having a back-up battery supply, power processing means for rectifying and inverting the power line signal, filter output means continuously connected to said power processing means for continuously connecting a filtered power output to said load under all power line conditions, and a charging circuit for charging said back-up battery supply, characterized by

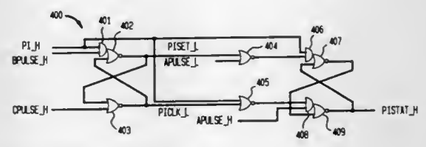
said charging circuit comprising a transformer having a primary winding which is part of said filter output means and a secondary winding for producing a charging signal, and charger rectifier means for rectifying and connecting said charging signal from said secondary winding to said back-up battery supply.

5,185,537

GATE EFFICIENT DIGITAL GLITCH FILTER FOR MULTIPLE INPUT APPLICATIONS

Tadhg Creedon; Eugene G. O'Neill, both of Galway, and Jerome A. Nolan, Newcastle West, all of Ireland, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 30, 1992, Ser. No. 828,244
Int. Cl.[5] H03K *5/22, 5/00*
U.S. Cl. 307—234 **10 Claims**



1. A glitch filter comprising:

a first AND gate for receiving both a signal to be filtered and a second pulse signal;

a first NOR gate having a first input coupled to an output of the first AND gate;

a second NOR gate having a first input coupled to an output of the first NOR gate, a second input for receiving a third pulse signal, and an output coupled to a second input of the first NOR gate;

a third NOR gate having a first input coupled to the output of the first NOR gate;

a fourth NOR gate having a first input for receiving the signal to be filtered, and a second input coupled to the output of the second NOR gate;

a second AND gate having a first input for receiving the signal to be filtered, and a second input coupled to an output of the third NOR gate;

a fifth NOR gate having a first input coupled to an output of the second AND gate;

a third AND gate having a first input coupled to an output of the fourth NOR gate and a second input for receiving a first pulse signal, the third NOR gate having a second input for receiving an inverted first pulse signal;

a sixth NOR gate having a first input coupled an output of the third AND gate, a second input coupled to an output of the fifth NOR gate, and an output coupled to a second input of the fifth NOR gate, the output of the sixth NOR gate being a filtered output signal of the glitch filter;

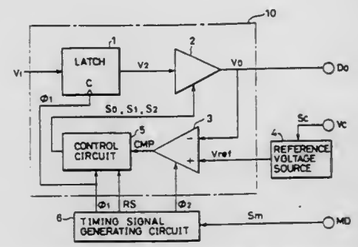
wherein each of the first, second and third pulse signals is in a HIGH state for a preselected portion of the period of the pulse signal.

5,185,538

OUTPUT CIRCUIT FOR SEMICONDUCTOR INTEGRATED CIRCUITS HAVING CONTROLLABLE LOAD DRIVE CAPABILITY AND OPERATING METHOD THEREOF

Harufusa Kondoh, and Shinichi Uramoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1991, Ser. No. 710,477
Claims priority, applicatioo Japan, Jun. 13, 1990, 2-154404
Int. Cl.[5] H03K *3/01, 5/12*
U.S. Cl. 307—270 **13 Claims**



1. An output circuit for a semiconductor integrated circuit, having a controllable drive capability for driving a load connected to an output terminal of said output circuit, comprising:

input means for receiving a data signal to be output;

driving means responsive (i) to the received data signal for supplying an output data signal to the load and (ii) to a control signal for controlling a current of said output data signal;

detecting means responsive to the output data signal from said driving means for detecting a drive capability of said driving means and, in response, providing a drive detecting signal;

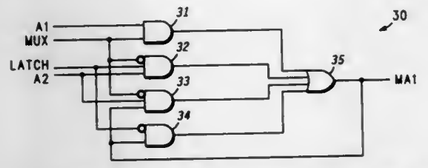
storage means for storing the drive detection signal; and

control means for supplying said control signal in response to the drive detection signal stored in said storage means

VOL 1147 ISS 2 FEB 9 1993 UMI

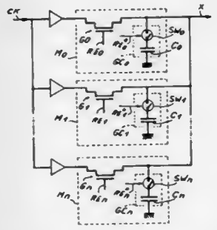
for controlling the current of said output data signal supplied by said driving means.

5,185,539
PROGRAMMABLE LOGIC DEVICE ADDRESS BUFFER/MULTIPLEXER/DRIVER
Janet M. Snyder, and Eugene H. Gruender, Jr., both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Aug. 31, 1990, Ser. No. 576,565
Int. Cl.[5] H03K *17/56, 19/173*
U.S. Cl. 307—465 **3 Claims**



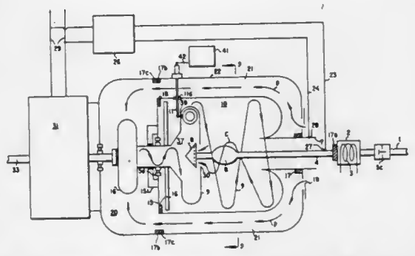
1. A combination buffer and multiplexer device having a first, second, multiplexing, and latch inputs and a device output, said device comprising:
first means for combining said first input and said multiplexing input in a logical AND fashion to provide a first output;
second means for combining said second input, said latch input, and an inverted multiplexing input in a logical AND fashion to provide a second output;
third means for combining said inverted multiplexing input, said second input, and said device output in a logical AND fashion to provide a third output;
fourth means for combining an inverted latch signal and said device output in a logical AND fashion to provide a fourth output; and
fifth means for combining said first, second, third, and fourth outputs in a logical OR fashion to provide said device output.

5,185,540
ADJUSTABLE TIME CONSTANT CIRCUIT WITH CONSTANT CAPACITANCE AND VARIABLE RESISTANCE
Jean-Marie Boudry, Maurepas, France, assignor to Bull S.A., Paris, France
Filed Aug. 14, 1991, Ser. No. 744,951
Claims priority, application France, Aug. 23, 1990, 90 10579
Int. Cl.[5] H03K *5/13, 5/159*
U.S. Cl. 307—603 **11 Claims**



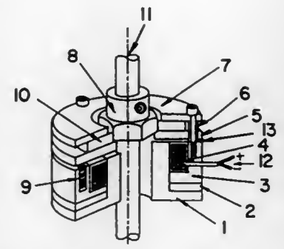
1. An adjustable time constant circuit comprising:
a plurality of transfer gates, each of said transfer gates having an input port and an output port wherein each of said output ports are connected to one another and wherein each of said input ports are coupled to an input signal line with each of said transfer gates being selectively activated by control signals which are a function of an adjusting value, and wherein each transfer gate comprises:
at least one isolated gate field effect transistor whose drain-source lead provides a resistance element of said transfer gate and whose gate receives one of said control signals;
a like plurality of compensating auxiliary circuits with each of said compensating auxiliary circuits coupled to the output port of a corresponding one of said plurality of transfer gates and wherein each of said plurality of compensating auxiliary circuits provides, when activated, a capacitance of the same value as a capacitance between said gate of said field effect transistor and said transfer gate output port when said transfer gate is placed in the conducting state; and
control means coupled to each of said plurality of compensating auxiliary circuits to activate said plurality of compensating auxiliary circuits when the corresponding transfer gate is deactivated, and vice versa.

5,185,541
GAS TURBINE FOR CONVERTING FUEL TO ELECTRICAL AND MECHANICAL ENERGY
Donald Jensen, West Palm Beach, Fla., assignor to 21st Century Power & Light Corporation, Lantana, Fla.
Filed Dec. 2, 1991, Ser. No. 801,480
Int. Cl.[5] H02K *44/00*
U.S. Cl. 310—11 **39 Claims**



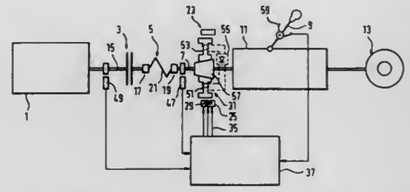
1. An energy converting apparatus for converting liquid or gaseous fuel to at least one of electrical and mechanical energy, comprising an exhaust chamber having an outer wall and an exhaust port connected with an exhaust tube; a gas turbine rotor in said exhaust chamber, having a central air inlet, a fuel inlet, a plurality of tangentially oriented exhaust cones for ejecting exhaust gas; air compressor means for supplying air into said air inlet; fuel delivery means for supplying fuel into said fuel inlet; an inwardly curved end wall in said exhaust chamber for receiving and reflecting exhaust gases ejected from said exhaust gas outlet ports and sustaining a sustained imploding vortex formed by said exhaust gas, said imploding vortex being reflected back to said gas turbine rotor; said sustained imploding vortex forming a gas plasma depositing electric charges on said outer wall and said fuel delivery means; said exhaust gases being ejected from said exhaust cones turning said turbine rotor; part of said exhaust gas exiting via said exhaust tube; and further including electrical take-off means for taking off said electrical charges as electrical energy.

5,185,542
ELECTROMAGNETIC PULSE OPERATED BI-STABLE BRAKE
Edward D. Lazorchak, Ho-Ho-Kus, N.J., assignor to Electroid Company, Springfield, N.J.
Filed Aug. 28, 1991, Ser. No. 750,941
Int. Cl.[5] H02K *49/10*
U.S. Cl. 310—36 **10 Claims**



1. Means for controlling the rotational motion of a shaft of an electromagnetic solenoid comprising:
A. An outer polar cylinder
B. An inner polar cylinder
C. An electromagnetic coil dispersed between said outer cylinder and said inner cylinder.
D. An axially extending shaft rotationally disposed in said inner cylinder and extending through openings at both top and bottom end of inner cylinder.
E. A magnet disposed on bottom base of said inner cylinder, said based formed by said inner cylinder having a greater diameter at its base forming an inverted "T" cylinder around said shaft with base extending to the edge of said outer cylinder.
F. An armature plate in cylinder form disposed about said shaft above said inner and said outer cylinder.
G. A hub consisting of a hexagonal shaped nut attached to the bottom of a circular cylinder or radius slightly larger than said shaft in cylinder from disposed about said shaft above said armature.
H. A friction plate of cylindrical form of a radius less the armature radius disposed and attached to said hub at its hexagonal shaped nut, said friction plate being used to control the rotation or non-rotation of said shaft by its positioning
I. A fixed pressure plate of cylindrical form disposed about said hexagonal nut but of a diameter which leaves space between said hexagonal nut and its inner diameter to permit rotation of said shaft and above said friction plate, said fixed pressure plate being held in a fixed position by three screws imbedded in equidistant positions just inside the outside diameter of said pressure plate, said screws being attached to said armature plate and said outside cylinder just inside the outside diameter of said armature plate and said outside cylinder but just on the outside of said friction plate imbedded with hub, said friction plate and said embedded hub free to rotate with said shaft, leaving an air gap between said armature plate and said outer and inner cylinder.
J. A spring imbedded in said outside cylinder between said electromagnetic coil and the outside diameter of said outside cylinder so disposed as to be in contact with said armature plate so as to be compressed or to push upon in said armature plate as a result of magnetic field of said magnet on said armature plate; and
K. A means for impressing a D.C. pulse of short duration to said electromagnetic coil thereby producing an electromagnetic field and whereby said magnet is caused to attract said armature plate to said outer and inner cylinder decreasing said air gap and creating a second gap between said pressure plate and said friction plate permitting said friction plate with said imbedded hub and said shaft free rotational movement which remains in free rotational movement position magnetically with the D.C. pulse terminated.

5,185,543
MOTOR VEHICLE DRIVE LINE TORSIONAL VIBRATION DAMPER
Gerhard Tebbe, Geldersheim, Fed. Rep. of Germany, assignor to Fichtel & Sachs Ag, Schweinfurt, Fed. Rep. of Germany
Continuation of Ser. No. 657,104, Feb. 15, 1991, abandoned. This application May 11, 1992, Ser. No. 882,759
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1990, 4006075; Jan. 15, 1991, 4100937
Int. Cl.[5] H02K *5/24, 49/00;* **F16F** *15/10;* **F02B** *75/06*
U.S. Cl. 310—51 **13 Claims**



1. An apparatus arranged in a drive line of a motor vehicle for damping torsion vibrations in the drive line, and for transmitting a driving torque of an internal combustion engine, said apparatus, comprising:
a gear box; arranged in the drive line:
a torsion vibration damper with an input part rotatingly driven by the internal combustion engine;
an output part of the torsion vibration damper connected to the gearbox for the rotating drive of the gearbox and connected to the input part in torsionally resilient manner via spring elements;
a control circuit;
an electric motor drive torque buffer located in the drive line between the output part of the torsion vibration damper and said gearbox and connected directly to said gearbox; comprising:
a stator;
a rotor rotationally rigidly connected to an output part of the torsion vibration damper;
control circuit energizing said rotor;
a winding generating a magnetic field which varies in a peripheral direction according to a predetermined number of pairs of poles and is one of stationary and rotatable at a speed proportional to the engine speed, for generating a periodically fluctuating torque acting on the rotor,
wherein at least one of the number of pairs of poles and the proportionality factor of the rotary speed of the magnetic field being so chosen that the torque exerted on the rotor by the magnetic field relative to one revolution of the rotor fluctuates periodically, and wherein
an angle-of-rotation cycle being equal to that at which the fluctuations in driving torque occasioned by firing of the engine and relative to the revolution of the rotor follow one another, and wherein the control circuit so regulating at least one of phasing and amplitude of the periodic torque fluctuations exerted on the rotor by the magnetic field in relation to the torque fluctuations occasioned by the firing process that the torque fluctuations are at least approximately self-compensating.

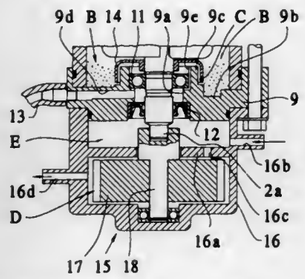
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5,185,544

VENTILATION STRUCTURE IN A VERTICALLY MOUNTED MOTOR

Shigeru Takada, Kiryu, Japan, assignor to Mitsuba Electric Mfg. Co., Ltd., Japan

Filed Mar. 25, 1992, Ser. No. 857,450
Claims priority, application Japan, Mar. 25, 1991, 3-25786[U]
Int. Cl.[5] H02K *9/26, 7/08;* **F16C** *19/50*
U.S. Cl. 310—58 **10 Claims**



1. A vertically mounted motor, comprising:
a cylindrical yoke having at least an open lower end;
a lower case bracket attached to and closing the open lower end of the cylindrical yoke;
a circular opening defined in a center of the lower case bracket by an inner peripheral surface of the lower case bracket;
a rotatable vertical core shaft projecting downwardly through an interior of the cylindrical yoke and through the circular opening of the lower case bracket;
an annular rib provided on an upper surface of the lower case bracket, extending into the cylindrical yoke and encircling the circular opening;
a bearing seat formed in an inner peripheral surface of the annular rib;
a bearing for rotatably supporting the core shaft, positioned in the bearing seat;
a ventilation passage defined in the lower case bracket, extending radially from the inner peripheral surface of the lower case bracket to an outer peripheral surface of the lower case bracket;
a communication groove formed on the bearing seat, extending axially from the circular opening to the interior of the cylindrical yoke; and
a cap member positioned axially above the annular rib for capping and shielding the annular rib and the bearing from falling debris, defining a circumferential gap between the annular rib and the cap
wherein the upper surface of the lower case bracket, an outer peripheral surface of the annular rib, and an inner peripheral surface of the cylindrical yoke define a debris well for collecting and storing falling debris, wherein the ventilation passage, communication groove and the gap define a ventilation path connecting an interior of the motor with an exterior of the motor.

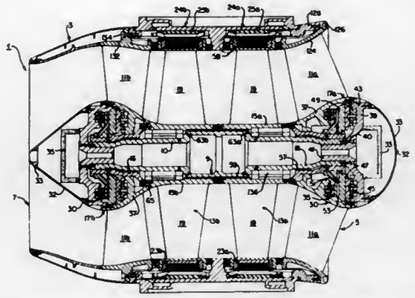
5,185,545

DUAL PROPELLER SHOCK RESISTANT SUBMERSIBLE PROPULSOR UNIT

Luciano Veronesi, O'Hara Township, Allegheny County; Raymond M. Calfo, Murrysville, and James A. Drake, O'Hara Township, Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 23, 1990, Ser. No. 571,942
Int. Cl.[5] H02K *16/00*
U.S. Cl. 310—114 **27 Claims**

1. A submersible propulsor unit, comprising:
a shroud having a water inlet and a water outlet;
a shaft assembly disposed along the axis of rotation of said shroud between said water inlet and outlet;
first and second propellers, each of which includes a separate hub rotatably mounted on said shaft assembly, wherein said second propeller is located downstream of said first propeller;
first and second electric motors for separately rotating said first and second propellers, wherein each motor includes a



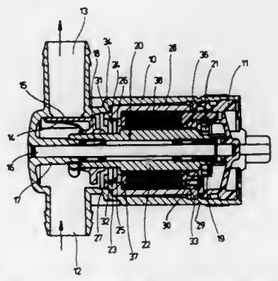
rotor mounted around the outer periphery of one of said propellers, and a stator mounted on said shroud around said rotor, and
first and second bearing assemblies, each of which includes a thrust bearing disposed between the hubs of said first and second propellers and said shaft assembly, wherein the thrust bearings associated with said first and second bearing assemblies are located on opposite ends of the shaft assembly.

5,185,546

ELECTROMAGNETIC ROTATION CONTROL DEVICE

Eugen Kielbas, Asperg, and Erhard Renninger, Markgroeningen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 16, 1991, Ser. No. 760,792
Claims priority, application Fed. Rep. of Germany, Nov. 28, 1990, 4037793
Int. Cl.[5] H02K *1/00*
U.S. Cl. 310—216 **26 Claims**



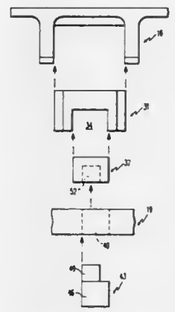
1. An electromagnetic rotation control device, for an idle rotation control device for internal combustion engines, which comprises; a magnet housing, at least two magnetic poles embodied on said magnet housing, a rotatable armature rotatingly seated in the magnet housing, an even number of pole pieces, each pole piece supported on said armature cooperating with a magnetic pole and is coaxially disposed in relation to the at least two magnetic poles, a working air gap is formed between said at least two magnetic poles and said pole pieces, a restoring spring connected to said rotatable armature for restoring said rotatable armature to a desired position, a first pole piece (**24**) having first and second oppositely disposed pole piece sections (**24***a*, **24***b*), a second oppositely disposed pole piece (**25**) having third and fourth oppositely disposed pole piece sections (**25***a*, **25***b*), said first and second and said third and fourth oppositely disposed pole piece sections are placed side by side in an axial direction, said first and third oppositely disposed pole piece sections have first, second, third and fourth differently shaped contour lines (**39***a*, **40***a* or **39***b*, **40***b*) as does said second and fourth oppositely disposed pole piece sections, of which said second and fourth differently shaped contour lines (**39***b*, **40***b*) are in a shape of an arc of a circle and said first and third differently shaped contour lines (**39***a*, **40***a*) increasingly deviate from a shape of the arc of the circle from one end of the first and third pole piece sections to an other end thereof.

5,185,547

DYNAMO-ELECTRIC MACHINE STATOR CORE CONSTRUCTION

Luis E. Carbonell, Deltona, and Lon W. Montgomery, Winter Springs, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 31, 1992, Ser. No. 828,844
Int. Cl.[5] H02K *1/12*
U.S. Cl. 310—259 **4 Claims**



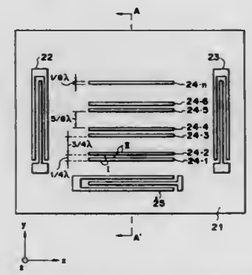
1. A stator for a dynamo-electric machine comprising:
a stator core including a plurality of laminations each having a plurality of holes therethrough, said laminations being stacked so as to form the stator core having opposed ends;
means for securing said laminations together, said securing means including fingerplate for uniformly distributing a clamping force provided by said securing means;
an endplate cooperatively associated with said securing means, the endplate having a different coefficient of thermal, expansion than said securing means; and alignment means for aligning the endplate with said fingerplate, said alignment means being adapted to facilitate relative radial thermal expansion between the endplate and said securing means, and wherein said alignment means comprises: a guide block attached to one of said fingerplates, the guide block having a radial slot; a slider plate adapted to slide in the radial slot, the slider plate having an opening therein; the end plate having a hole therein and located in an area adjacent the guide block; and pin means having one and adapted to engage the slider plate opening.

5,185,548

SURFACE ACOUSTIC WAVE DEVICE WITH REFLECTED WAVE AT SIDE EDGES ON WAVEGUIDE SUPPRESSED AND COMMUNICATION SYSTEM USING THE SAME

Koichi Egara, Tokyo; Kenji Nakamura, Hadano, and Norihiro Mochizuki, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1991, Ser. No. 772,951
Claims priority, application Japan, Oct. 11, 1990, 2-270488; Oct. 11, 1990, 2-270489; Oct. 11, 1990, 2-270490; Nov. 19, 1990, 2-311595
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—313 D **65 Claims**



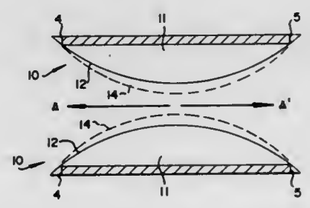
1. A surface acoustic wave device comprising:
a substrate;
a plurality of input transducers formed on said substrate for generating first and second surface acoustic waves propagating in opposite directions to each other;
a plurality of waveguides arranged in a direction orthogonal to the propagating direction of the first and second surface acoustic waves on a region where the first and second surface acoustic waves overlap, each waveguide producing a third surface acoustic wave propagating in a direction where said waveguides are arranged, with the interaction between the first and second surface acoustic waves, and on at least two of said waveguides, third surface acoustic waves reflected at respective side edges canceling each other; and
an output transducer for converting the third surface acoustic waves propagating from said waveguides into an electric signal.

5,185,549

DIPOLE HORN PIEZOELECTRIC ELECTRO-ACOUSTIC TRANSDUCER DESIGN

Steven L. Sullivan, P.O. Box 705, Harpers Ferry, W. Va. 26425, assignor to Steven L. Sullivan, Harpers Ferry, W. Va.

Filed Dec. 21, 1988, Ser. No. 287,345
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—334 **9 Claims**



1. A piezoelectric-type electro-acoustic transducer which comprises:

VOL 1147 ISS 2 FEB 9 1993 UMI

at least two piezoelectric films each having electrodes on both surfaces thereof, said films being so disposed that the outer surfaces of said films face each other and being stretched into opposing concave surfaces by means of a resilient backing material located adjacent the inner surfaces of said films, and each of said films being connected to an electric circuit such that elongation of each of said films as a result of the action of individual electric fields causes said films to oscillate and thereby displace air located between said films.

5,185,550

STRUCTURE FOR SUPPORTING A RESONATOR USING AN ULTRATHIN PIEZOELECTRIC PLATE IN A PACKAGE

Takao Morita; Osamu Ishii, and Takebumi Kurosaki, all of Kanagawa, Japan, assignors to Toyo Communication Equipment Co., Ltd., Kanagawa, Japan

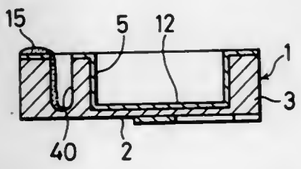
PCT No. PCT/JP90/01527, § 371 Date Oct. 9, 1991, § 102(e) Date Oct. 9, 1991, PCT Pub. No. WO91/12663, PCT Pub. Date Aug. 22, 1991

PCT Filed Nov. 22, 1990, Ser. No. 768,923

Claims priority, application Japan, Feb. 9, 1990, 2-29936; Feb. 21, 1990, 2-40827; May 25, 1990, 2-136136; Sep. 3, 1990, 2-232655

Int. Cl.[5] H01L *41/04, 41/08*

U.S. Cl. 310—344 **6 Claims**



1. A structure for supporting a resonator having an ultrathin piezoelectric plate in a package, said structure comprising:
an ultrathin vibratory portion and a thick rectangular frame-like rib formed integrally with and surrounding said vibratory portion, said vibratory portion and said rib being formed by a cavity made in a substantially central portion of one side of a quartz crystal block; and
means for preventing adhesive from flowing into said cavity from an adhesive coated region of the frame-like rib, said means comprising an excess adhesive receiving groove cut in one marginal portion of said frame-like rib between the adhesive coated region and an inner marginal edge of said cavity.

5,185,551

Patent Not Issued For This Number

5,185,552

VACUUM ULTRAVIOLET LIGHT SOURCE

Setsuo Suzuki, Yokohama; Etsuo Noda, Fujisawa, and Osami Morimiya, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

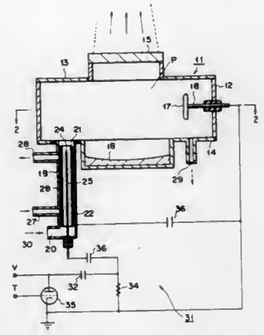
Filed Jun. 21, 1991, Ser. No. 718,978

Claims priority, application Japan, Jun. 22, 1990, 2-162710

Int. Cl.[5] H01J *7/24, 37/26*

U.S. Cl. 313—231.71 **7 Claims**

1. A vacuum ultraviolet light source for generating a pulse discharge in a low pressure gas and extracting ultraviolet light from a plasma created in that discharge, characterized by
a discharge space;
a plate-like anode located in the discharge space;
a plurality of hollow cathodes located in the discharge space in an opposed, spaced-apart relation to the anode;
auxiliary electrodes provided in an inside space of the hollow cathode in a state shielded from the hollow cathode;
gas flowing means which, while maintaining a pressure in the discharge space constant, flows a gas along a route in the discharge space after passing through an inner space in each hollow cathode;
a power supply for supplying an electric power for generating a main discharge across the hollow cathode and the



anode after a pre-discharge is generated across each hollow cathode and the anode; and
ultraviolet light extracting means for extracting ultraviolet light radiated from a plasma which is generated by a discharge in the discharge space.

5,185,553

GREEN EMITTING PHOSPHOR AND CATHODE RAY TUBE USING SAID PHOSPHOR

Jun -mo Yang, Kyunggi, and Woo-chan Kim, Pusan, both of Rep. of Korea, assignors to Samsung Electron Devices Co., Ltd., Kyunggi, Rep. of Korea

Continuation of Ser. No. 383,196, Jul. 20, 1989, abandoned. This application Oct. 15, 1991, Ser. No. 779,111

Claims priority, application Rep. of Korea, Sep. 29, 1988, 88-12624; Sep. 29, 1988, 88-12626; Nov. 22, 1988, 88-15344; Dec. 23, 1988, 88-17344; Dec. 26, 1988, 88-17527

Int. Cl.[5] C09K *11/56*

U.S. Cl. 313—468 **12 Claims**

1. A green emitting phosphor consisting essentially of about 1 gram of host material zinc sulphide and
(a) copper in an amount within the range from about 2×10^{-5} g to 3×10^{-4} g,
(b) gold in an amount with the range from about 5×10^{-5} g to 2.5×10^{-3} g, and
(c) aluminum in an amount within the range from about 3.5×10^{-5} g to 10^{-2} g;
said phosphor having the following general formula:

ZnS:CuAuAlM

wherein M represents at least one element selected from the rare earth group:
(1) terbium (Tb) in an amount greater than 0 to about 6×10^{-5} g,
(2) scandium (Sc) in an amount greater than 0 to about 2×10^{-4} g, and

(3) lanthanum (La) in an amount greater than 0 to about 1.2×10^{-3} g; and
exhibiting a higher emission luminance than said phosphor absent M.

5,185,554

ELECTRON-BEAM GENERATOR AND IMAGE DISPLAY APPARATUS MAKING USE OF IT

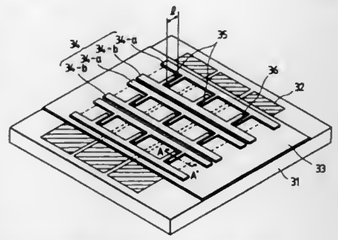
Ichiro Nomura, Atsugi; Toshihiko Takeda, Tokyo; Yoshikazu Banno, Atsugi; Tetsuya Kaneko, Yokohama; Haruhito Ono, Minami-ashigari, and Hidetoshi Suzuki, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1990, Ser. No. 497,072

Claims priority, application Japan, Mar. 23, 1989, 1-069389; Nov. 10, 1989, 1-290979

Int. Cl.[5] H01J *31/15*

U.S. Cl. 313—495 **20 Claims**



1. An electron-beam generator, comprising:
an electron-emitting device;
a modulating electrode capable of modulating an electron beam emitted from said electron-emitting device in response to an information signal; and
an insulating substrate disposed between said modulating electrode and said electron-emitting device, wherein said insulating substrate laminates said modulating electrode.

5,185,555

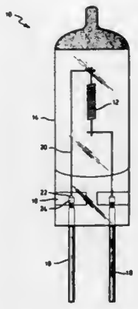
LAMP WITH DOUBLE SWAGED LEAD

Sung M. Lee, Bow, N.H., assignor to GTE Products Corporation, Danvers, Mass.

Filed May 2, 1991, Ser. No. 694,578

Int. Cl.[5] H01J *17/18;* H01K *1/18*

U.S. Cl. 313—632 **16 Claims**



1. A lamp with a swaged lead comprising:
a) an envelope having a light transmissive material, having an internal wall defining an enclosed internal volume, and a press seal,
b) a light source enclosed in the internal volume of the envelope, and
c) a first lead and a second lead each extending through the envelope for electrical connection with the light source, wherein at least the first lead includes
i) an inner lead end formed of a first material and sealed to the envelope, in the press seal, and
ii) an outer lead end formed of a second material, welded to the inner lead end, having an axis, and at least one surface variation extending transverse to the axis, substantially aligned with respect to the pressing direction, and captured in the press seal.

5,185,556

GAS-FILLED DISCHARGE TUBE

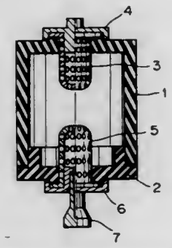
Kiyoshi Yagi, and Seiichi Wakabayashi, both of Gotenba, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jun. 22, 1990, Ser. No. 542,223

Claims priority, application Japan, Jul. 19, 1989, 1-184516

Int. Cl.[5] H01J *17/20*

U.S. Cl. 313—637 **2 Claims**



1. A gas-filled discharge tube comprising:
a tube formed of an electrically insulating material and filled with a pressurized gas; and
a pair of opposite discharge electrodes provided at opposite end of the tube, wherein the discharge electrodes respectively have opposite, substantially flat surfaces, and are formed in a shape having no sharp edges, and wherein the gas which fills the tube is a mixed gas having a nitrogen content of no more than 50% by volume and an argon content of at least 50% by volume.

5,185,557

HIGH-PRESSURE DISCHARGE LAMP

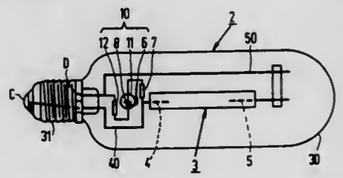
Gerardus M. J. F. Luijks, and Hubertus A. M. Coenen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 22, 1992, Ser. No. 823,927

Claims priority, application European Pat. Off., Jun. 12, 1991, 91201437.0

Int. Cl.[5] H05B *41/04*

U.S. Cl. 315—59 **5 Claims**



1. A high-pressure discharge lamp provided with a discharge vessel, which vessel is enclosed with intervening space by an outer bulb and fitted with a lamp cap, and provided with an ignition circuit comprising a SIDAC, characterized in that the SIDAC is mounted in a gas-filled space in the outer bulb.

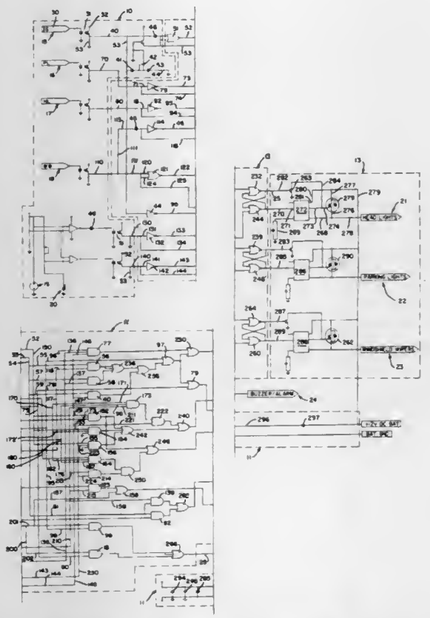
VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,558

VEHICLE LIGHT, WINDSHIELD WIPER CONTROL SYSTEM

Charles E. Benedict, Tallahassee, and Donald M. Stumpf, Panama City, both of Fla., assignors to Benedict Engineering Company, Inc., Tallahassee, Fla.

Continuation-in-part of Ser. No. 578,788, Sep. 7, 1990, which is a continuation-in-part of Ser. No. 409,612, Sep. 15, 1989, Pat. No. 4,056,562. This application Aug. 8, 1991, Ser. No. 742,394
The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.
Int. Cl.[5] B60Q *1/02*; H02G *3/00*
U.S. Cl. 315—80 25 Claims



1. An automatic system in a vehicle having switches for headlights, parking lights and a windshield wiper for controlling the turning ON of vehicle headlights and parking lights, having input switches, when any of the following switch combinations are turned ON:

a) ignition, windshield wiper, light sensor;

b) ignition, and windshield wiper;

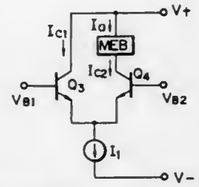
c) ignition and light sensor; and keeping them ON as long as any of such switch combinations are ON, comprising manual ON/OFF switches for the ignition and windshield wiper and a condition responsive switch for the light sensor, a programmable digital logic circuit, an electronic circuit comprising a relay circuit and a relay switch, said relay switch having means for connecting said headlights to power supply means, said relay circuit being alternately connectable to actuating means for said relay switch which governs the connection of said headlights to said power supply means, said power supply means connected to said relay circuit, and control means for the relay circuit, said programmable digital logic circuit connecting the outputs of said ignition, windshield wiper and light sensor switches to the control means for said relay circuit.

5,185,559

SUPPLY CIRCUIT FOR P-N JUNCTION CATHODE

Isamu Shimoda, Zama; Takeo Tsukamoto, Atsugi; Akira Shimizu, Sagamihara; Akira Suzuki, Yokohama; Masao Sugata, Yokohama, and Masahiko Okunuki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 449,384, Dec. 7, 1989, abandoned, which is a continuation of Ser. No. 251,238, Sep. 30, 1988, abandoned, which is a division of Ser. No. 50,028, May 15, 1987, Pat. No. 4,810,934. This application Oct. 9, 1990, Ser. No. 593,561
Claims priority, application Japan, May 20, 1986, 61-113517; May 20, 1986, 61-113518; Nov. 27, 1986, 61-280831
Int. Cl.[5] H01J *29/00*
U.S. Cl. 315—107 2 Claims



1. An electron emission device comprising:

an electron emission element;

current supply means for supplying a drive current to said electron emission element;

current maintaining means for maintaining the drive current at a constant level;

first current control means in series with said electron emission element for controlling a current flowing into said current maintaining means from said current supply means through a first current path including said electron emission element and said first current control means; and

second current control means for controlling a current between said current supply means and said current maintaining means through a second current path, wherein said current maintaining means is in series with a parallel combination of said first and second current paths.

2. An electron emission device comprising:

an electron emission element; and

current maintaining means for maintaining a drive current to drive said electron emission element at a constant level said current maintaining means comprising a first transistor having a collector and a base and a second transistor having a base,

wherein said base and said collector of said first transistor are electrically shorted to each other,

wherein said collector of said first transistor is electrically connected to said base of said second transistor, and

wherein said electron emission element is in series with and responsive to said second transistor.

5,185,560

ELECTRONIC FLUORESCENT LAMP BALLAST

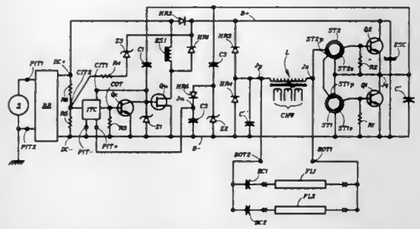
Ole K. Nilssen, Caesar Dr., Barrington, Ill. 60010

Continuation-in-part of Ser. No. 787,692, Oct. 15, 1985, abandoned, which is a continuation of Ser. No. 644,155, Aug. 27, 1984, which is a continuation of Ser. No. 555,426, Nov. 23, 1983, which is a continuation of Ser. No. 178,107, Aug. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 973,741, Dec. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 890,586, Mar. 20, 1978, Pat. No. 4,184,128. This application Mar. 4, 1991, Ser. No. 663,566
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—219 15 Claims

1. An arrangement comprising:

source means providing a DC voltage between a first and a second DC terminal;

inverter means connected with the DC terminals and operative to provide a sinusoidal AC voltage between a first and a second AC terminal; the AC voltage having a fundamental period; the inverter means being operative for a part of each fundamental period to cause the first AC



terminal to be at the same potential as that of the first AC terminal; the part having a duration approximately one quarter that of the fundamental period; and

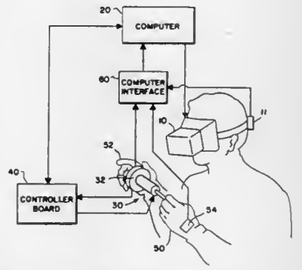
circuit means operative to connect a gas discharge lamp with the AC terminals.

5,185,561

TORQUE MOTOR AS A TACTILE FEEDBACK DEVICE IN A COMPUTER SYSTEM

Michael D. Good, Arlington, Mass., and James B. Munson, Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jul. 23, 1991, Ser. No. 734,479
Int. Cl.[5] H02P *7/00*
U.S. Cl. 318—432 31 Claims



1. A computer input device comprising:

a motor in a hand held housing;

a shaft, extending from the motor to be rotated by hand and to provide torque to a user's hand;

a position indicator for providing an output to a computer indicative of shaft rotational position relative to the motor; and

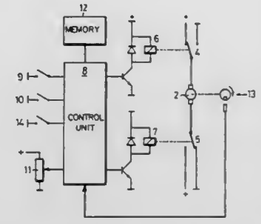
an input to the motor for controlling torque applied to the shaft by the motor from a computer output.

5,185,562

APPARATUS FOR CONTROLLING POSITION AND TILT OF A SLIDING ROOF PANEL OF A MOTOR VEHICLE

Johannes N. Huyer, Velserbroek, Netherlands, assignor to Vermeulen-Hollandia Octrooien II B.V., Ea Haarlem, Netherlands

Filed Oct. 2, 1991, Ser. No. 770,227
Claims priority, application Netherlands, Oct. 10, 1990, 9002198
Int. Cl.[5] H02P *3/00*
U.S. Cl. 318—466 10 Claims



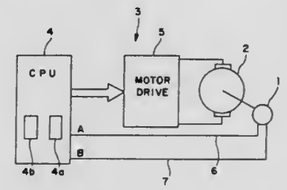
1. Apparatus for operating the roof panel of a sliding roof or a sliding/tilting roof, comprising a motor for moving the roof panel, a control unit for energizing the motor and a setting means for setting a desired position of the roof panel within a range of possible positions of said roof panel, wherein for moving the roof panel to the desired position indicated by the setting means, the control unit computes an energizing period from the expected speed of movement and the position of the roof panel, during which energizing period the motor has to be energized to reach the desired position, whereas a sensor is provided for detecting the closed position of the roof panel as a fixed initial position.

5,185,563

ERROR DETECTING UNIT FOR A ROTATIONAL DETECTOR

Yasumasa Matsuura, 19-1016, 1-ban, 2-chome, Takasu-cho, Nishinomiya-shi, Hyogo; Hiroyuki Harada, 3-36, 2-cho, Shinonomenishi-mati, Sakai-shi, Osaka; Tetsuji Kajitani, 202-8, Aza-Nora, Higashitada, Kawanishi-shi, Hyogo, and Toshihiko Araki, 9-11-24, Suzurandaihigashi-mati, Kita-ku, Kobe-shi, Hyogo, all of Japan

Filed Oct. 23, 1990, Ser. No. 601,505
Claims priority, application Japan, Oct. 24, 1989, 1-277772
Int. Cl.[5] H03K *5/19*
U.S. Cl. 318—602 3 Claims



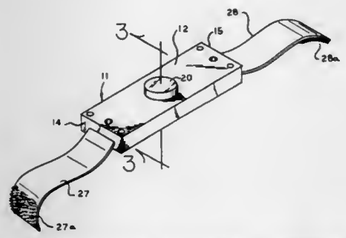
1. An error detecting unit of a rotational detector for outputting two kinds of pulse signals whose frequency according to rotation is equal, having a phase difference, said unit comprising:

two counters responsive to either a rising or falling edge of the two kinds of pulse signals, one of said two counters for counting a number of pulses of one of the two kinds of pulse signals, and another of said two counters for counting a number of pulses of another of the two kinds of pulse signals, said unit characterized in that whenever either

VOL
1147
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said one or said another of said two counters counts a pulse, the respective other of said one or said another of said two encounters is reset to zero, and when the count value of either of the above counters exceeds a value preset in respective counters it is determined that the rotational detector is out of order.

5,185,564
BATTERY DISCHARGE APPARATUS
Michael C. Miller, 4943 Barrie NW., Canton, Ohio 44708
Filed Nov. 12, 1991, Ser. No. 790,498
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—2 **5 Claims**



1. A battery discharge apparatus for securement about an associated battery to effect its discharge, wherein the apparatus comprises,

a central housing, the central housing including a housing top wall spaced from a housing bottom wall, and the housing further including a first end wall spaced from a second end wall at opposed distal ends of the central housing, and

an illumination member fixedly mounted within the top wall projecting exteriorly of the top wall, and

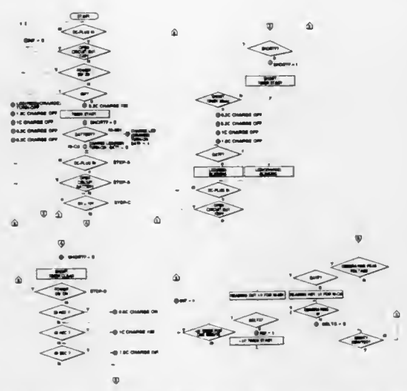
a first electrical contact boss projecting exteriorly of the bottom wall, and a second electrical contact boss extending exteriorly of the bottom wall, wherein the first electrical contact boss and the second electrical contact boss are in a spaced relationship relative to one another, and

wherein the first electrical contact boss and the second electrical contact boss are each in electrical communication with the illumination member, whereupon positioning of the first electrical contact boss and the second electrical contact boss in communication with the respective first and second battery terminal effects discharge of the battery, and

securement means for securement of the central housing to the battery, and

the bottom wall includes a first slot positioned adjacent the first end wall and orthogonally oriented relative to the first end wall, and a second slot positioned adjacent the second end wall and orthogonally oriented relative to the second end wall, wherein the first slot and the second slot are longitudinally aligned relative to one another, and the first electrical contact boss is slidably mounted within the first slot, and the second electrical contact boss is slidably mounted within the second slot, and a first electrically conductive plate mounted within the housing, and a second electrically conductive plate mounted within the housing, wherein the first electrical contact boss is in electrical communication with the first plate, and the second electrical contact boss is in electrical communication with the second plate, and the first plate is in electrical communication with the illumination member and the second plate is in electrical communication with the illumination member.

5,185,565
CHARGE CONTROL APPARATUS FOR USE WITH ELECTRONIC EQUIPMENT
Zenjiro Uchida, Ashikaga, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Sep. 27, 1991, Ser. No. 766,742
Claims priority, application Japan, Oct. 1, 1990, 2-264710; Nov. 14, 1990, 2-309421
Int. Cl.[5] H02J *7/04*
U.S. Cl. 320—39 **9 Claims**



1. A charge control apparatus for use with electronic equipment having a main unit, the charge control apparatus comprising:

(a) a power switch provided on the main unit of the electronic equipment and switchable between an ON state and an OFF state;

(b) a secondary battery producing a voltage and situated in a removable fashion in the main unit of the electronic equipment;

(c) a charging circuit having an output for supplying a charging current for quick charge to the secondary battery by use of an external power source;

(d) first detector means for providing a signal indicating the state of the power switch;

(e) second detector means for providing a signal indicating whether the secondary battery is situated in the main unit;

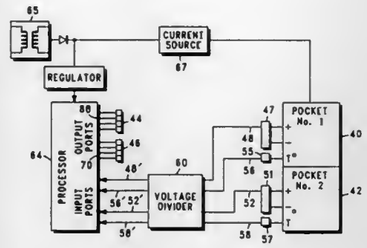
(f) charge completion identifying means for providing a signal indicating that quick charge of the secondary battery has been completed;

(g) flag control means for receiving signals from the second detector means and the charge completion identifying means, and causing a charge inhibition flag to be set when the quick charge is completed and to be reset when the secondary battery is removed;

(h) flag status identifying means for providing a signal indicating whether the charge inhibition flag is set or reset; and

(i) charge control means for controlling the charging circuit dependent on the signals from the first and the second detector means, the charge completion identifying means and the flag status identifying means, and the charge control means controlling the charging circuit in such a manner as to cause the charging circuit to commence the quick charge when the secondary battery is situated in the main unit, the power switch is off, and the charge inhibition flag is reset, and to cause the charging circuit to terminate the quick charge when the charge completion identifying means provides the signal indicating that quick charge of the secondary battery has been completed.

5,185,566
METHOD AND APPARATUS FOR DETECTING THE STATE OF CHARGE OF A BATTERY
Terrance J. Goedken, Schaumburg, Ill., and James F. Goedken, Dubuque, Iowa, assignors to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 519,531, May 4, 1990, abandoned. This application Nov. 18, 1991, Ser. No. 794,632
Int. Cl.[5] H01M *10/44*
U.S. Cl. 320—48 **7 Claims**



1. A battery state of charge detector for a battery charger having at least one charging pocket, the battery charger operative to apply a charging current to a battery when positioned at the charging pocket of the battery charger, said battery state of charge detector comprising:

means, forming a portion of the battery charger, for storing values representative of voltage levels taken across output terminals of a normal battery during application of a charging current, said values, when plotted as a function of time, for forming a normal battery charging curve;

means, connected across the at least one charging pocket of the battery charger, for measuring voltage levels taken across output terminals of the battery when positioned at the charging pocket of the battery charger during application of the charging current to the battery;

means, coupled to receive signals indicative of the voltage levels measured by said means for measuring, for calculating rates of change of the voltage levels measured by said means for measuring;

means, coupled to receive signals indicative of the rates of change calculated by said means for calculating and the signals indicative of the voltage levels measured by said means for measuring for modifying the values representative of the voltage levels of the normal battery which form the normal battery charging curve when plotted as a function of time, said means for modifying operative to form thereby modified values which, when plotted as a function of time, form a modified battery charging curve;

means, coupled to receive the signals indicative of the voltage levels measured by said means for measuring and signals indicative of the modified values formed by said means for modifying, for determining the battery state of charge by correlating a voltage level taken across output terminals of the battery with a point on the modified battery charging curve formed of a plot, taken as a function of time, of the modified values formed by the means for modifying.

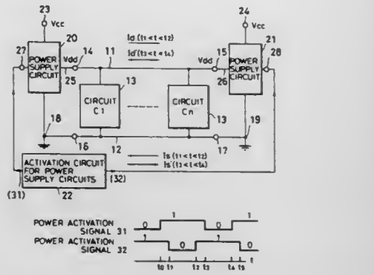
5,185,567
POWER CIRCUIT FOR AN LSI
Yukimasa Uchida, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Jul. 8, 1991, Ser. No. 726,810
Claims priority, application Japan, Jul. 10, 1990, 2-180521
Int. Cl.[5] H02M *3/335;* **G05F** *1/46*
U.S. Cl. 323—267 **10 Claims**

1. A power circuit for an LSI to supply a drive voltage to a plurality of circuits of which said LSI is composed, comprising:

a first power wiring having first and second ends used to supply a first voltage to said plurality of circuits;

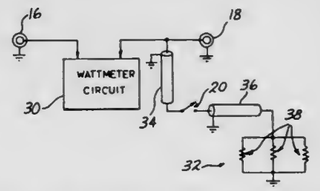
a second power wiring to supply a second voltage to said plurality of circuits;

power supply circuit means to supply said first voltage to said first power wiring; and



means for periodically alternating the direction of current flowing between both ends of said first wiring by receiving said first voltage from said power supply circuit means.

5,185,568
RF TEST LOAD AND METHOD FOR INTERNAL USE THEREOF
James M. Mothersbaugh, Akron, and John E. Keim, Lodi, both of Ohio, assignors to Circle Prime Mfg. Co., Cuyahoga Falls, Ohio
Filed Jan. 22, 1991, Ser. No. 643,832
Int. Cl.[5] G01R *21/06;* **H01C** *1/08;* **H03C** *1/62*
U.S. Cl. 324—95 **12 Claims**



1. An electronic instrument having associated therewith an internal test load adapted to absorb energy from a power source comprising:

a housing for electronic circuit components of said instrument and for said test load,

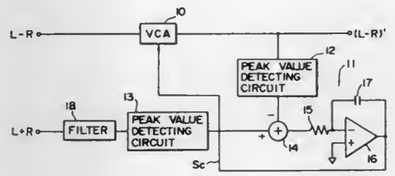
said test load comprising at least one impedance device coupled to said power source, and being matched to the impedance of said power source,

a heat sink on which said at least one impedance device is supported which is adapted to absorb heat generated by said impedance device,

a potting compound positioned within said housing which surrounds and supports said heat sink and said at least one impedance device, wherein said heat sink floats within said potting compound such that heat absorbed by said heat sink or generated by said at least one impedance device is not directly transferred to said housing and is dissipated through said potting compound.

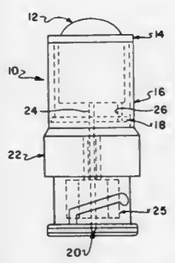
VOL 1147 ISS 2 FE 9 1993 UMI

5,185,569
PEAK VALUE DETECTING CIRCUIT
Masayuki Katakura, and Masaaki Ishihara, both of Kanagawa, Japan, assignors to Sony Corporatioo, Tokyo, Japan
Filed Aug. 13, 1991, Ser. No. 744,242
Claims priority, application Japan, Aug. 14, 1990, 2-214592
Int. Cl.[5] G01R *19/04;* **H04H** *5/00*
U.S. Cl. 324—103 P **6 Claims**



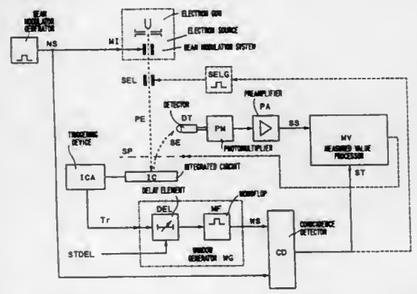
1. A signal level control circuit comprising:
a voltage-controlled amplifier to which a first input signal (L−R) is supplied and for producing an output signal having a level controlled by a control signal;
a filter to which a second input signal (L+R) is supplied and which outputs a signal having a predetermined frequency range;
a first peak value detecting circuit for detecting a peak value of the output signal from said filter and producing a first peak value output signal;
a second peak value detecting circuit for detecting a peak value of the output signal from said voltage control amplifier and producing a second peak value output signal;
an arithmetic circuit for performing an arithmetic operation on the first and second peak value output signals from said first and said second peak value detecting circuits and producing a resultant output signal; and
a voltage-controlled amplifier control circuit having an opposite-phase input terminal, an in-phase input terminal and an output terminal, said opposite-phase input terminal receiving the output signal from said arithmetic circuit, said in-phase input terminal receiving a reference voltage, said output terminal and said opposite-phase input terminal having a capacitor connected therebetween, and said output terminal being feed-back connected as said control signal to said voltage-controlled amplifier for controlling the level of the output signal therefrom.

5,185,570
TELECOMMUNICATIONS SIGNAL DETECTOR
John W. Fitzpatrick, Franklin Square, N.Y., assignor to Helmuth J. Katz, Warwick, N.Y.
Filed Feb. 12, 1990, Ser. No. 478,795
Int. Cl.[5] G01R *19/155*
U.S. Cl. 324—133 **19 Claims**



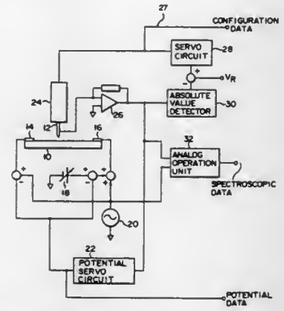
1. An apparatus for testing of telecommunications equipment to determine the presence of electrical signals consisting of:
(a) a detachable electrical connector means;
(b) a light emitting diode having a light emitting surface which forms an external surface of the apparatus for viewing thereof, the diode being connected directly to and in electrical communication with the detachable electrical connector means; and
(c) housing means for supporting and handling the connector means and diode, whereby the light emitting diode may be temporarily in electrical communication with the telecommunications equipment thereby indicating signal presence without interrupting operation.

5,185,571
PROCESS AND SYSTEM FOR THE ASYNCHRONOUS MEASUREMENT OF SIGNAL COURSES
Hans-Detlef Brust, Martin-Luther-Str. 2, D-6602 Dudweiler, Fed. Rep. of Germany
PCT No. PCT/DE89/00570, § 371 Date Jan. 31, 1991, § 102(e) Date Jan. 31, 1991, PCT Pub. No. WO90/02955, PCT Pub. Date Mar. 22, 1990
PCT Filed Sep. 1, 1989, Ser. No. 646,792
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1988, 3829770
Int. Cl.[5] G01R *31/28*
U.S. Cl. 324—158 R **29 Claims**



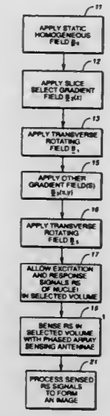
1. A process for measuring the state and/or temporal course of a recurring signal at least at one point in time and at least at one measurement point of a sample, the process comprising the steps of:
providing a trigger signal which stands in a defined temporal relationship to the course of said recurring signal;
impinging a primary beam upon said sample, the primary beam being formed of individual primary beam pulses which are at least one of primary corpuscular and primary radiation pulses, said primary beam pulses being generated asynchronously and independently of the course of said recurring signal and thus the trigger signal;
generating and controlling said primary beam pulses via at least one of a first modulation signal and independently from external control while providing a second modulation signal synchronous to said primary beam pulses wherein at least one of said individual primary beam pulses and said first and second modulation signals consecutively follow one another at random temporal intervals;
deriving a secondary signal having values influenced from an interaction between said primary beam and said sample;
performing at least one of registering and recording of at least a part of the values of said secondary signal resulting from said interaction between said primary beam and said sample;
processing the values of said secondary signal to a measured value including the steps of:
selecting the values for processing in such a manner that only values resulting from said interaction between said primary beam and said sample occurring at points in time having a defined temporal relationship to said trigger signal and to said recurring signal, respectively, contribute to said measured value.

5,185,572
SCANNING TUNNELING POTENTIO-SPECTROSCOPIC MICROSCOPE AND A DATA DETECTING METHOD
Akira Yagi, Sagamihara; Takao Okada, Tokyo; Seizo Morita, Hiroshima, and Nobuo Mikoshiba, Sendai, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Sep. 20, 1990, Ser. No. 585,880
Claims priority, application Japan, Sep. 28, 1989, 1-252587; Dec. 25, 1989, 1-332858
Int. Cl.[5] G01R *11/00;* **H01J** *37/26*
U.S. Cl. 324—158 R **11 Claims**



1. A scanning tunneling potentio-spectroscopic microscope for obtaining surface configuration data, differential conductance data and local potential data of a conductive sample simultaneously, said microscope comprising:
a conductive probe;
means for applying to the sample a bias voltage including a modulated voltage having (a) a predetermined waveform varying with a constant period and (b) an off-set voltage;
means for detecting a tunnel current flowing between the probe and the sample;
means coupled to said detecting means for deriving therefrom an absolute value of the tunnel current;
servo means coupled to said deriving means to generate a servo signal for servo-controlling a distance between the sample and the probe on the basis of the absolute value of the tunnel current outputted by said deriving means, with use of a time constant at least five times greater than the period of the modulated voltage outputted by said applying means;
means for obtaining the surface configuration data of the sample on the basis of said servo signal outputted by said servo means;
means coupled to said detecting means for providing said off-set voltage for the bias voltage so that the tunnel current is feedback-controlled to have an average value of zero in every period of the bias voltage and for providing local potential data of the sample on the basis of the off-set voltage; and
means coupled to said applying means and said detecting means for obtaining differential conductance data by carrying out a real-time analog operation of differential conductance on the basis of the tunnel current and the modulated voltage.

5,185,573
METHOD FOR FOCUSING OF MAGNETIC RESONANCE IMAGES
John D. Larson, III, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Apr. 16, 1991, Ser. No. 685,945
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **19 Claims**



1. A method of medically imaging a selected interrogation volume element of size no larger than 3,000 cm^3 in a tissue of a human or animal with increased signal-to-noise ration, the method comprising the steps of:
(1) applying a temporally static, spatially homogeneous first magnetic field $\underline{B}_0$ that has a magnetic field oriented in a predetermined first or z-direction with associated first position coordinate z to orient the magnetization vector of selected nuclei parallel to the first direction;
(2) applying a plurality of radiofrequency second magnetic fields $\underline{B}_1$ to the tissue, with each such field having a field direction that rotates with a predetermined angular frequency ω in a rotation plane that is approximately perpendicular to the z-direction, where the angular frequency ω is at least 10^5 radians per second and these second magnetic fields $\underline{B}_1$ being applied over a predetermined time interval given by $t_1<t<t_1+\Delta t_1$ to reorient the magnetization vector of the selected nuclei at a predetermined reorientation angle θ relative to the first direction, application of the second magnetic fields $\underline{B}_1$, and with the fields $\underline{B}_1$ being applied to focus the sum of the fields $\underline{B}_1$ in a selected interrogation volume of size no larger than 3,000 cm^3;
(3) applying a third magnetic field $\underline{B}_2(z)$, which is a gradient field, to the tissue over a predetermined time interval given by $t_2<t<t_2+\Delta t_2$ where $t_2 \cong t_1$, the field having a field vector oriented in the z-direction with an amplitude $B_2(z)$ that increases strictly monotonically with change of the position coordinate z;
(4) applying one or more additional gradient magnetic fields, with field vectors oriented in the z-direction and with magnetic field amplitudes changing with position in a plane that is perpendicular to the z-direction, to the tissue to preferentially condition selected voxel volume elements so that nuclei of a selected chemical element within one or more of the selected voxel elements are in magnetic resonance;
(5) allowing the selected nuclei in the selected voxel elements to issue electromagnetic signals in a time interval given by $t_{sig}<t<t_{sig}+\Delta t_{sig}$, in response to excitation of these nuclei;
(6) providing a phased array of at least two sensing antennae, numbered n=1, 2, . . . , N, that sense the direction and

VOL 1147 ISS 2 FEB 9 1993 UMI

amplitude of electromagnetic signals issued by the selected nuclei in the selected voxel elements, where antenna number n in the array is activated to sense these electromagnetic signals over a predetermined time interval given the array of sensing antennae of electromagnetic signals issued by the selected nuclei in the selected voxel elements in the time interval given by $t_{sig}<t<t_{sig}+\Delta t_{sig}$; and

(7) processing these electromagnetic signals received at each of the array of sensing antennae to produce a signal representing a characterizing parameter of the selected nuclei in the selected voxel elements, where this signal processing comprises the steps of:

(7a) providing predetermined first and second phase shifts for a first electromagnetic signal received at sensing antenna number n=1, and forming first and second antenna output signals that are equal to the first electromagnetic signal with a phase shift equal to the first and second predetermined phase shifts, respectively;

(7b) providing predetermined third and fourth phase shifts for a second electromagnetic signal received at sensing antenna number n=2, and forming third and fourth antenna output signals that are equal to the second electromagnetic signal with a phase shift equal to the third and fourth predetermined phase shifts, respectively;

(7c) adding the first and third antenna output signals to form and issue a first sum signal as a function of time that represents a first compensated electromagnetic signal received from the interrogation volume; and

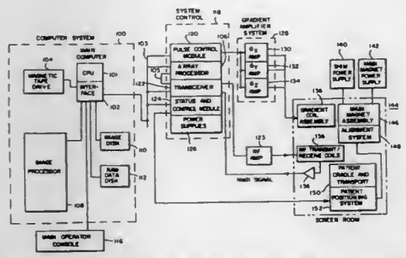
(7d) adding the second and fourth antenna output signals to form and issue a first sum signal as a function of time that represents a second compensated electromagnetic signal received from the interrogation volume.

5,185,574

NMR MEASUREMENTS USING RECURSIVE RF EXCITATION

Richard L. Ehman, and James F. Greenleaf, both of Rochester, Minn., assignors to Mayo Foundation for Medical Education and Research, Rochester, Minn.

Filed Aug. 9, 1991, Ser. No. 342,980
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **13 Claims**



1. In an NMR system for acquiring an NMR echo signal by executing a pulse sequence in which a first RF excitation pulse produces transverse magnetization in spins subject to a polarizing magnetic field and an NMR echo signal is subsequently produced and acquired by a receiver, the improvement comprising:

means for storing the acquired NMR echo signal;

means coupled to the storing means for producing an RF excitation waveform that has a shape which is determined by the acquired NMR echo signal; and

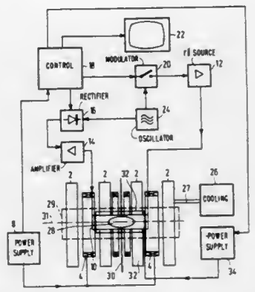
means coupled to the last named means for executing a pulse sequence in which an RF excitation pulse has a waveform determined by the acquired NMR echo signal from a previous pulse sequence.

5,185,575

MAGNETIC RESONANCE IMAGING APPARATUS WITH ARTEFACT REDUCTION

Johannes A. Overweg, Eindhoven, Netherlands, assignor to U.S. Philips Corp., New York, N.Y.

Filed Dec. 4, 1990, Ser. No. 624,716
Claims priority, application Netherlands, Dec. 14, 1989, 8903066
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **29 Claims**



1. In a magnetic resonance imaging apparatus for generating and detecting magnetic resonance signals from a given region of interest within a measuring space, the combination comprising:

a magnet for generating a steady magnetic field, contribution to a total magnetic field in said measuring space;

gradient coil system of a given order including current conductors about the periphery of the measuring space for generating gradient magnetic fields contributions to said total magnetic field in said measuring space; and

means for alleviating a generation of image artefacts caused by aberrations in the total magnetic field in said measuring space relatively near the current conductors of said gradient coil system, said means for alleviating including a multipole system of an order which is higher than said given order for generating a further magnetic field contribution to the total magnetic field in the measuring space which is comparatively strong relatively near the current conducts of said gradient coil system and comparatively weak relatively distant from said current conductors.

5,185,576

LOCAL GRADIENT COIL

Robert M. Vavrek; Daniel J. Schaefer, both of Waukesha; Christopher C. Myers, Milwaukee; Thomas G. McFarland, Hartland, all of Wis., and Robert Turner, Bethesda, Md., assignors to General Electric Company, Milwaukee, Wis. and The United States of America as represented by the Secretary of the Department of Health and Human Services, Washington, D.C.

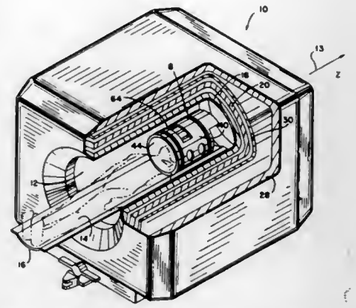
Filed Aug. 12, 1991, Ser. No. 743,550
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **12 Claims**

1. In an MRI system having a polarizing magnet generating a substantially homogeneous magnetic field B_0 along a B_0 axis within a bore for imaging an imaged object held within the bore, a local gradient coil assembly comprising:

a coil form within the bore and defining a local imaging volume immediate to the imaged object;

an alignment means for holding the imaged object in the local imaging volume in a predetermined position with respect to the coil form;

a gradient coil affixed to the coil form for imposing a predetermined magnetic gradient along a first axis with respect to the magnetic field B_0 and within the local imaging volume, wherein the gradient coil is comprised of a Maxwell pair having a first and second solenoid arranged at opposing ends of the coil form and a solenoid axis coaxial with the B0 axis and interconnected with returns such that



the current flow in each solenoid is countervailing and wherein the returns proceed helically around the coil form; and

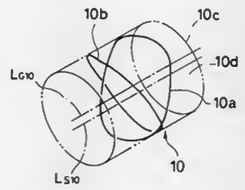
an RF coil affixed to the coil form for generating a radio frequency magnetic field within the local imaging volume.

5,185,577

RECEIVER COIL FOR NUCLEAR MAGNETIC RESONANCE IMAGING APPARATUS

Takashi Minemura, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Nov. 26, 1990, Ser. No. 618,052
Claims priority, application Japan, Nov. 24, 1989, 1-303214; Mar. 20, 1990, 231361
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **18 Claims**



1. A receiver coil for a nuclear magnetic resonance imaging apparatus, comprising:

coil element means for defining an opening section into which a region of interest is to be inserted, and for receiving a nuclear magnetic resonance signal from the region of interest; and

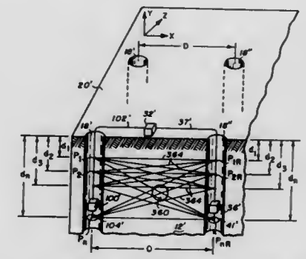
coil support means for supporting the coil element means in a configuration in which a sensitivity central axis of a region of uniform signal reception sensitivity for the coil element means is located away from a central axis of the opening section.

5,185,578

METHOD FOR DETECTING ANOMALOUS GEOLOGICAL ZONES BY TRANSMITTING ELECTROMAGNETIC ENERGY BETWEEN SPACED DRILLHOLES USING DIFFERENT FREQUENCY RANGES

Larry G. Stolarczykz, Raton, N. Mex., assignor to Stolar, Inc., Raton, N. Mex.

Division of Ser. No. 466,494, Jan. 17, 1990, Pat. No. 5,066,917.
This application Jul. 19, 1991, Ser. No. 734,302
Int. Cl.[5] G01V *3/12, 3/30, 3/38*
U.S. Cl. 324—338 **3 Claims**



1. A method for detecting anomalous geological zones in a rock layer that comprises:

a. positioning an LF/MF receiver having a magnetic dipole antenna loop in a first drillhole extending from a terrestrial surface area at a first receiver depth with said loop oriented in a first plane;

b. positioning an LF/MF transmitter having a magnetic dipole loop antenna in a second drillhole extending from said terrestrial surface area at a first transmitter depth with said loop oriented in a second plane substantially normal to said first plane and with an anomalous geological zone positioned between said first drillhole and said second drillhole;

c. activating the LF/MF transmitter and transmitting an LF/MF tomographic scan signal having a frequency in the range of approximately 30 kHz to 3 MHz from said LF/MF transmitter to said LF/MF receiver;

d. activating the LF/MF receiver and receiving said LF/MF tomographic scan signal at said LF/MF receiver as a received LF/MF signal;

e. generating a plurality of received LF/MF signals by changing the position of said LF/MF transmitter and said LF/MF receiver a plurality of times and transmitting said LF/MF tomographic scan signal from said LF/MF transmitter to said LF/MF receiver at each of a plurality of relative positions;

f. sending said received LF/MF signals to a frequency source unit located at a surface location and storing said received LF/MF signals in said frequency source unit for use in calculating a LF/MF parameter value of pixel set;

g. replacing said LF/MF receiver with an HF/VHF receiver positioned at said first receiver depth and replacing said LF/MF transmitter with an HF/VHF transmitter positioned at said first transmitter depth;

h. activating the HF/VHF transmitter and transmitting an HF/VHF tomographic scan signal having a frequency in the range of approximately 3 MHz to 300 MHz from said HF/VHF transmitter to said HF/VHF receiver;

i. activating the HF/VHF receiver and receiving said HF/VHF tomographic scan signal at said HF/VHF receiver as a received HF/VHF signal;

j. generating a plurality of received HF/VHF signals by transmitting said HF/VHF tomographic scan signal from said HF/VHF transmitter to said HF/VHF receiver at each of said positions; and

k. sending said received HF/VHF signals to said frequency

VOL 1147 ISS 2 FE 9 1993 UMI

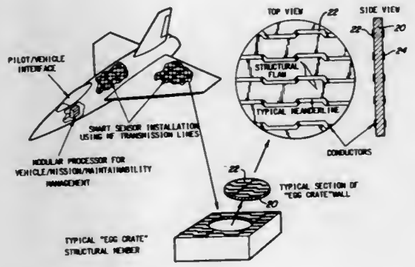
source unit and storing said received HF/VHF signals in said frequency source unit for use in calculating a HF/VHF parameter value of said pixel sets.

5,185,579

DETECTION AND RANGING OF MATERIAL FLAWS USING MICROWAVE TRANSMISSION LINE REFLECTOMETRY

Donald B. Mertens, Thousand Oaks; Louis E. Gates, Jr., Westlake Village; Ronald I. Wolfson, Los Angeles; William W. Milroy, Playa del Rey, and Joseph P. Smalanskas, Westchester, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jul. 31, 1991, Ser. No. 738,388
Int. Cl.[5] G01R *31/11*
U.S. Cl. 324—527 **32 Claims**



1. A defect sensor comprising:

a first dielectric substrate including a first side and a second side; and

a first transmission line positioned on said first side of said dielectric substrate, said first transmission line positioned to accept a microwave signal at one end such that propagation of the microwave signal creates an electric field around the transmission line such that a perturbation in the electric field causes a reflection wave in the microwave signal, wherein the perturbation is representative of a defect; and

a second transmission line positioned on said second side of said dieelectric substrate, said second transmission line also positioned to accept a microwave signal at one end, and wherein the combination of signals through the first and second transmission lines creates an electric field completely traversing and substantially confined within the substrate such that a defect in the substrate creates a perturbation in the electric field.

5,185,580

ELECTRICAL TRANSMISSION CABLE TERMINATION DEVICE HAVING SHORT AND OPEN-CIRCUIT CABLE TEST CAPABILITIES

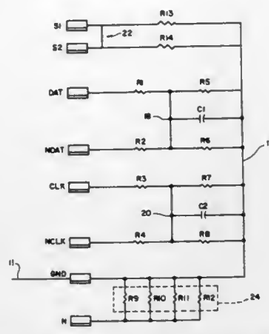
Edward L. Nichols, III, Annapolis, and Gary L. Stirk, Arnold, both of Md., assignors to Smart House, L.P., Upper Marlboro, Md.

Filed Sep. 4, 1991, Ser. No. 754,758
Int. Cl.[5] G01R *31/02*; H03H *7/38*
U.S. Cl. 324—539 **16 Claims**

1. An electrical transmission cable termination device for terminating an electrical transmission cable, said electrical transmission cable including a pair of data wires, a pair of clock wires, a pair of sense wires, a metallic foil shield, a ground wire, a neutral wire, an AC-hot wire, and having a non-terminated end adapted to be fed by signals from a controller, which controller also includes a circuit breaker, comprising:

an impedance matching means for providing load impedances substantially respectively matching a line impedance of said pair of data wires and said pair of clock wires in said transmission cable;

a short circuit detecting means for detecting faulty wiring of said transmission cable, said short circuit detecting means including a load between various wires which transmit electrical signals in said transmission cable and said ground wire, said load creating a circuit breaker triggering current in said circuit breaker of said controller should a faulty wiring condition exist; and



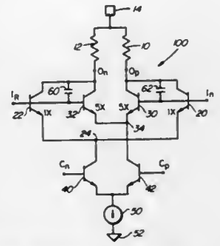
an electrical connecting means for providing an electrical contact between said pair of sense wires in said transmission cable, said connecting means usable to carry out a continuity check to detect breaks in said sense wires of said transmission cable upon application of a continuity check signal from said controller to one of said .

5,185,581

DIFFERENTIAL AMPLIFIER AND HIGH FREQUENCY RESONANT CIRCUITS CONSTRUCTED THEREFROM

Anthony K. D. Brown, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 26, 1992, Ser. No. 858,269
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—254 **15 Claims**



1. A differential amplifier, comprising:

a current source for supplying a substantially constant bias current;

a current dividing circuit for controllably dividing the substantially constant bias current between first and second current paths;

a pair of matched load impedances;

a first pair of matched transistors connected as a differential pair between the matched load impedances and the first current path, each transistor of the first pair having a first emitter area; and

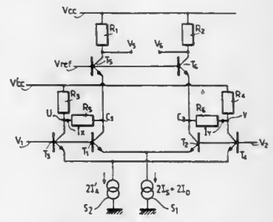
a second pair of matched transistors connected as a differential pair between the matched load impedances and the second current path with differential inputs of the second differential pair connected to corresponding differential inputs of the first differential pair, each transistor of the second pair having a second emitter area different from the first area.

5,185,582

DIFFERENTIAL AMPLIFIER, PARTICULARLY OF THE CASCODE TYPE

Stéphane Barbu, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 24, 1992, Ser. No. 874,256
Claims priority, application France, Apr. 30, 1991, 91 05291
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—261 **6 Claims**



1. An amplifier having a differential stage comprising a main pair of input transistors and an auxiliary pair of input transistors coupled between a supply terminal and a reference terminal, the interconnected emitters of the main pair of input transistors being driven by an emitter current source which is also connected to the reference terminal, and the interconnected emitters of the auxiliary pair of input transistors being driven in a similar way, means connecting bases of the transistors of the main pair to corresponding bases of the transistors of the auxiliary pair, said bases forming input terminals for input voltages whose difference defines a differential input voltage, a part of the collector currents of the transistors of the auxiliary pair being used for a suitable summation with the collector currents of the transistors of the main pair to derive output currents of the differential stage which increase the linearity of said output currents in comparison with the differential input voltage, characterised in that the differential stage comprises a pair of cascode transistors whose collector-emitter paths are arranged as loads in the collectors of the transistors of the main pair, and whose bases are interconnected and connected to a fixed intermediate reference voltage, and said summation is effected by means of two resistive bridges connected between a supply voltage and each of the respective collectors of the transistors of the main pair of input transistors, the collectors of the transistors of the auxiliary pair being connected to respective nodes of respective resistive bridges.

5,185,583

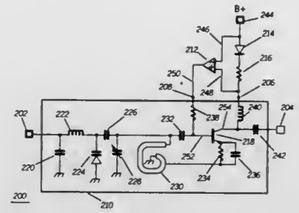
ACTIVELY BIASED OSCILLATOR

Leng H. Ooi, Sunrise, and Stephen B. Einhinder, Plantation, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 24, 1991, Ser. No. 719,448
Int. Cl.[5] H03B *5/12*; H03L *1/00, 7/099*
U.S. Cl. 331—15 **8 Claims**

1. An actively biased oscillator having an amplifier with first and second terminals, comprising:

a current sensing means for sensing the amount of current flowing into the first terminal of the amplifier; and



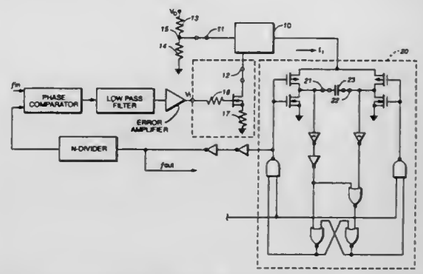
a feedback means responsive to the current sensing means for automatically adjusting the amount of current flowing into the second terminal of the amplifier.

5,185,584

PHASE LOCKED LOOP (PLL) CIRCUIT HAVING ENHANCED FREQUENCY SELECTION RANGE

Kesatoshi Takeuchi, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 420,557, Oct. 11, 1989. This application Nov. 30, 1990, Ser. No. 620,173
The portion of the term of this patent subsequent to Dec. 4, 2007, has been disclaimed.
Int. Cl.[5] H03L *7/00*
U.S. Cl. 331—25 **6 Claims**



1. A phase locked loop circuit of the frequency feedback type having enhanced frequency selection range comprising a phase comparator, a low-pass filter, an error amplifier, and a voltage controlled oscillator, said voltage controlled oscillator circuit including a current mirror circuit section and an oscillator circuit section for providing an oscillating frequency based on the output current of the current mirror circuit coupled as an input to said oscillator circuit section, circuit control means in said current mirror circuit section to control said output current based upon a control voltage applied as its input, the improvement comprising a fixed reference voltage applied to said current mirror circuit section in combination with a follower circuit connected as an input to said circuit control means for varying the output current thereof to said oscillator circuit section, the frequency output of said oscillator circuit section selectively controlled over a wider range of frequencies by selectively controlling the magnitude of said control voltage applied to said follower circuit input.

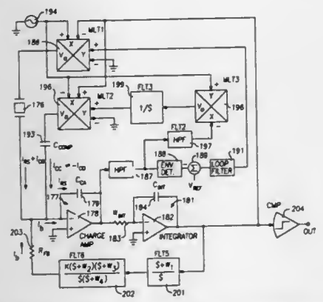
VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,585

CRYSTAL OSCILLATOR AND METHOD WITH AMPLITUDE AND PHASE CONTROL

Gerald R. Newell, Alamo; Michael W. Nootbaar, Benicia; Pradeep Bhardwaj, Concord, and Robert C. Willson, Martinez, all of Calif., assignors to New SD, Inc., San Francisco, Calif.

Continuation-in-part of Ser. No. 530,640, May 30, 1990, Pat. No. 5,047,734. This application Sep. 10, 1991, Ser. No. 756,847
Int. Cl.[5] H03B *1/04, 5/32;* **H04B** *15/00*
U.S. Cl. 331—46 **54 Claims**



17. In an oscillator: a frequency determining element, a charge amplifier, and a circuit providing an odd number of integrations connected in a loop to provide an output signal of predetermined frequency.

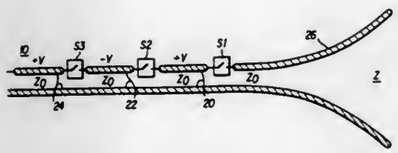
41. In a method of reducing an interfering crosstalk signal coupled from a first crystal oscillator circuit to a second crystal oscillator circuit, the steps of: providing a crosstalk cancellation signal from the first crystal oscillator circuit, said crosstalk cancellation signal being oppositely phased with respect to the interfering crosstalk signal, and coupling the crosstalk cancellation signal into the second crystal oscillator circuit to cancel the interfering signal.

5,185,586

METHOD AND APPARATUS FOR DIGITAL SYNTHESIS OF MICROWAVES

Oved S. F. Zucker, Del Mar, Calif., assignor to Energy Compression Research Corp., San Diego, Calif.

Continuation-in-part of Ser. No. 855,454, Apr. 24, 1986. This application May 3, 1991, Ser. No. 695,383
Int. Cl.[5] H03K *3/42*
U.S. Cl. 331—96 **39 Claims**



1. In combination, a semiconductor switch and a transmission line, said transmission line comprising a pair of conductors separated by a distance d_1, and said switch being disposed adjacent a segment of one of said conductors and separated from said other conductor by a distance d_2, wherein the distances d_1 and d_2 are related as follows:

$$d_1, d_2 \propto \left[\frac{\lambda E_3 \eta_1}{8JZ\sqrt{\epsilon}\ (A\eta_2 + \eta_2^2)} \right]^{\frac{1}{4}}$$

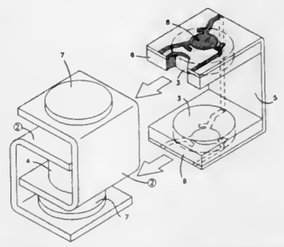
where:
J=switch current density;
$\eta_1 = l_2/l_1$ with l_1 being the length of a transmission line segment and l_2 the length of the switch associated with said transmission line segment;
$\eta_{21} = d_3/d_2$ where d_3 is the thickness of the switch;
λ=wavelength of microwaves being generated in free space;
ϵ=dielectric constant of space between transmission line conductors;
wave impedance of the transmission line;
A=scalar in the range of from about 1.0 to 10.0;
E_3=electric field in the switch.

5,185,587

COMPACT TANDEM NON-RECIPROCAL CIRCUIT

Thampy Kurian, Stow, and Leo Maloratsky, Brookline, both of Mass., assignors to Renaissance Electronics Corp., Stow, Mass.

Filed Jun. 17, 1991, Ser. No. 716,382
Int. Cl.[5] H01P *1/387*
U.S. Cl. 333—1.1 **5 Claims**



1. A compact tandem non-reciprocal circuit, comprising:
a housing,
a pair of junctions each with center conductors,
a pair of ferrites,
a magnetic circuit with a permanent magnet,
wherein said pair of junctions, said pair of ferrites, and said permanent magnet are situated in a stacked manner with common center line within said housing, said magnetic circuit having a pair of C-shaped members each comprising shield, ground plane and return portions, provided that said shield portions are located toward outside of said tandem circuit, said permanent magnet is located in between inner surfaces of said ground plane portions and in contact with them, and said pair of ferrites are located each on an outer surface of said ground plane portion.

5,185,588

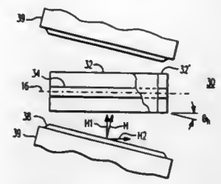
FREQUENCY SELECTIVE LIMITER WITH FLAT LIMITING RESPONSE

William E. McGann, Linthicum; Thomas E. Steigerwald, Columbia, both of Md., and John D. Adam, Murrysville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 21, 1991, Ser. No. 658,498
Int. Cl.[5] H03G *11/00;* **H01P** *1/32, 1/36*
U.S. Cl. 333—17.2 **13 Claims**

1. A frequency selective limiter comprising:
a pair of planar ferrite members having planar surfaces in confronting relationship;

at least one signal carrying conductor supported between the ferrites and being closely coupled thereto; and



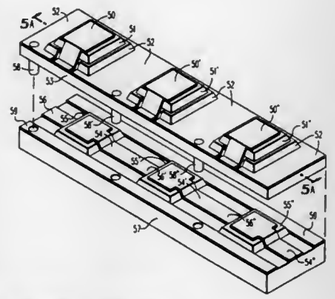
means for establishing a magnetic field having field lines disposed at a non-orthogonal angle relative to the conductor.

5,185,589

MICROWAVE FILM BULK ACOUSTIC RESONATOR AND MANIFOLDED FILTER BANK

S. Visvanathan Krishnaswamy, Monroeville, Pa.; Stuart S. Horwitz, Randallstown, and Robert A. Moore, Arnold, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 17, 1991, Ser. No. 702,647
Int. Cl.[5] H03H *9/70, 9/205, 9/56*
U.S. Cl. 333—133 **12 Claims**



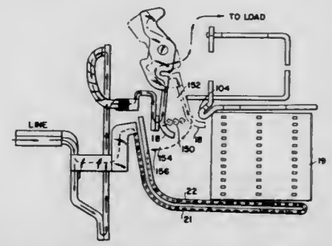
10. A filter bank comprising:
a substrate having a plurality of openings formed therein; and
a plurality of resonators respectively disposed over corresponding ones of said openings, each resonator comprising;
a bottom piezoelectric layer disposed on said substrate and spanning a corresponding one of said openings;
a first transmission line disposed on said substrate and having a section thereof extending under said bottom piezoelectric layer and opposed said corresponding opening;
a second transmission line disposed on said substrate and having a section thereof extending over said bottom piezoelectric layer opposed said corresponding opening;
a first conductive layer disposed on said substrate, said first conducting layer comprising a ground plane coplanar with sections of said first transmission line and said second transmission line disposed on said substrate;
an insulating membrane disposed over said substrate, said first transmission line, said second transmission line, said first piezoelectric layer, and said first conductive layer;
a second conductive layer disposed on said insulating membrane;
a second piezoelectric layer disposed on said second conductive layer opposed said corresponding opening; and
a third transmission line disposed on said insulating membrane and having a section thereof extending over said second piezoelectric layer opposed said corresponding opening, wherein, said second conductive layer comprises a ground plane coplanar with that portion of said third transmission line disposed on said insulating membrane;
wherein said first and second transmission lines of said resonators are operatively connected to realize a series manifold filter circuit.

5,185,590

MAGNETIC BLOW-OUT CIRCUIT BREAKER WITH BOOSTER LOOP/ARC RUNNER

Gregory T. DiVincenzo, Easton, Md., assignor to North American Philips Corporation, New York, N.Y.

Filed Dec. 23, 1991, Ser. No. 814,974
Int. Cl.[5] H01H *9/30*
U.S. Cl. 335—201 **10 Claims**



1. A magnetic blow-out circuit breaker comprising:
a contact set having first and second contacts, forming an electrical switch,
an arc chute having an arc-receiving end,
an electrically conductive arc runner extending from a location adjacent said contact set to a second location adjacent said arc-receiving end,
means for mounting said second contact for movement with respect to said first contact between a closed position and an open position, and
a booster loop conductor for conducting current, at least while an arc has struck to said arc runner as a result of opening of said switch, along a path which accelerates movement of said arc toward the arc-receiving end of the chute,
characterized in that said booster loop conductor and said arc runner each have a respective first end adjacent each other a said arc chute, and a respective second end,
said booster loop conductor and said arc runner extend substantially parallel to each other at least in a region adjacent said first ends, and
said first ends of the booster loop conductor and arc runner are electrically connected to each other, and said second end of said booster loop is electrically connected to one of said contacts, arranged such that in at least said region current flows through said booster loop conductor and said arc runner in opposite directions.

5,185,591

POWER DISTRIBUTION LINE COMMUNICATION SYSTEM FOR AND METHOD OF REDUCING EFFECTS OF SIGNAL CANCELLATION

Kenneth C. Shuey, Raleigh, N.C., assignor to ABB Power T&D Co., Inc., Blue Bell, Pa.

Filed Jul. 12, 1991, Ser. No. 729,072
Int. Cl.[5] H04B *3/00;* **H04L** *27/00*
U.S. Cl. 340—310 A **48 Claims**

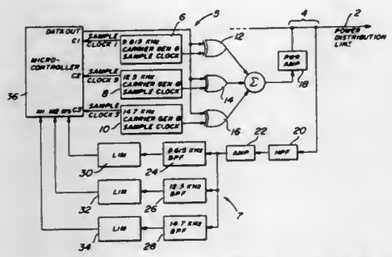
1. A power distribution line communication system for reducing effects of signal cancellation at locations along the distribution line due to standing waves caused by reflections of a carrier signal impressed on the distribution line, wherein the

VOL 1147 ISS 2 FE 9 1993 UMI

locations of the signal cancellation are a function of the frequency of the carrier signal, comprising:

data generating means for generating an outgoing data signal;

carrier signal generation means for generating a plurality of carrier signals, each of the carrier signals having a different frequency, each frequency being selected such that all of the carrier signals will not cancel at a same location on the distribution line;



modulation means operatively coupled to the data generation means and to the carrier signal generation means for modulating each of the carrier signals with the outgoing data signal; and

amplifier means operatively coupled to the modulation means and to the distribution line for simultaneously impressing each of the modulated carrier signals on the power distribution line for transmission to a plurality of remote locations.

5,185,592

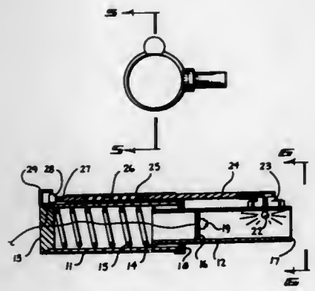
CONTACT ALARM APPARATUS

Kenneth B. Hamilton, 1408 Granville Rd., Westfield, Mass. 01085

Filed Oct. 4, 1991, Ser. No. 771,118

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 340—436 **1 Claim**



1. A contact alarm apparatus fixedly mounted to a vehicular bumper, including a first cylinder mounted to the vehicular bumper and extending beyond the vehicular bumper, with a second cylinder telescopingly received with and coaxially aligned relative to the first cylinder, the first cylinder includes a first cylinder end wall spaced from the second cylinder, and the second cylinder includes a second cylinder rear distal end and a second cylinder forward distal end, a second cylinder flange is mounted to the rear distal end, and includes a first spring captured between the second flange and the first cylinder end wall to maintain the second cylinder in the projected orientation relative to the first cylinder, and

the second cylinder including a first light sensor mounted within the second cylinder operative to detect available light within a predetermined light range and in electrical communication with an alarm light member to effect actuation of the alarm light member upon variance of said available light from the predetermined light range, and

a second sensor mounted to the first cylinder adjacent the first cylinder end wall, the second sensor including a chimney positioned in surrounding relationship relative to the second sensor and extending beyond the second sensor, where the chimney is obliquely oriented relative to the first cylinder and the second cylinder, and an illumination bulb housing mounted adjacent the forward distal end of the second cylinder, with an illumination bulb mounted within the housing, and the illumination bulb projecting into the second cylinder, wherein the second light sensor is arranged for actuation of the illumination bulb upon lessening of available light directed into the chimney.

5,185,593

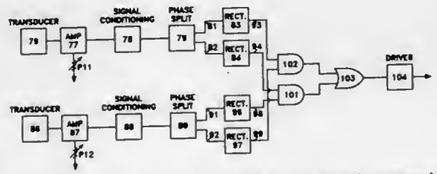
DUAL PRESSURE CHANGE INTRUSION DETECTOR

Elden E. DuRand, III, Crestwood, and William K. Logsdon, Louisville, both of Ky., assignors to Bluegrass Electronics, Inc., LaGrange, Ky.

Continuation-in-part of Ser. No. 359,090, May 30, 1989, abandoned, which is a division of Ser. No. 469,089, Feb. 23, 1983, abandoned. This application Jun. 20, 1991, Ser. No. 719,066

Int. Cl.[5] G08B *13/16*

U.S. Cl. 340—544 **8 Claims**



1. A dual pressure change intrusion detector device comprising:

an area one detector means having a first transducer means to detect infrasonic pressure waves in a selected area to be protected; said area one detector means producing a first signal in response to the detection of an infrasonic pressure wave by said first transducer means in said selected area to be protected;

an area two detector means having a second transducer means to detect infrasonic pressure waves in an area separate from said selected area to be protected, said area two detector means producing a second signal in response to the detection of an infrasonic pressure wave by said second transducer means in said area separate from said selected area to be protected;

comparator means for comparing said first and second signals, said comparator means producing a logic alarm output signal to identify the receipt of said first signal by said comparator means without the receipt of said second signal in coincidence with said first signal; and an alarm means activated by said logic alarm output signal.

5,185,594

TEMPERATURE SENSING CABLE DEVICE AND METHOD OF MAKING SAME

Robert M. DeChurch, Canfield, Ohio, assignor to Furon Company, Aurora, Ohio

Filed May 20, 1991, Ser. No. 703,282

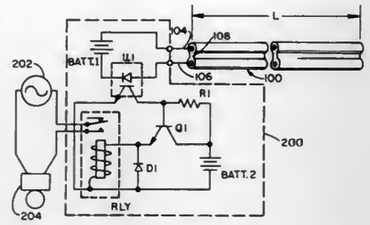
Int. Cl.[5] G08B *17/06*; H01C *3/04*

U.S. Cl. 340—596 **22 Claims**

1. A method of remote overheat detection of an area for use with an elongate temperature sensing cable formed of i) a polymeric composition having a negative temperature coefficient characteristic when above an anomaly temperature and ii) at least two spaced-apart electrical conductors electrically interconnected by means of the composition, the method comprising the steps of:

extending a predefined length of the electrical temperature sensing cable in said area;

applying an electric field to at least a portion of the composition in the area;



detecting tunneling conduction current flow through the composition in a presence of the overheat condition above said anomaly temperature; and,

generating current flow is detected.

5,185,595

ROCKBOLT MONITOR

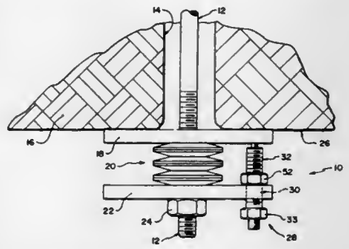
Gordon R. Friesen, Box 331, Balmertown, Ontario, Canada P0V 1C0

Filed Jun. 13, 1991, Ser. No. 714,501

Claims priority, application Canada, Jun. 13, 1990, 2018970

Int. Cl.[5] C08B *21/00*

U.S. Cl. 340—690 **20 Claims**



1. A rockbolt monitor for a rockbolt anchored in rock and having an outer end projecting beyond the surface of the rock, said monitor comprising:

rockbolt plate means having an opening therethrough for receiving the outer end of the rockbolt therethrough and engageable with the surface of the rock;

spring seat means engageable with the outer end of the rockbolt;

spring means engageable between the rockbolt plate means and the spring seat means for biasing the rockbolt plate against the surface of the rock;

first load indicator means moveable with the spring seat means;

second load indicator means adjacent the first load indicator means and moveable with the rockbolt plate means; and

signal means responsive to relative movement of the first and second load indicator means to produce a signal indicating that such movement has taken place.

5,185,596

ELECTRONIC IMAGE MODIFICATION

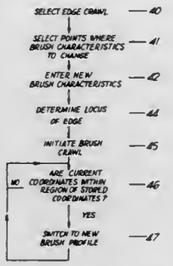
Stephen Freeman, Bedfordshire, England, assignor to Crosfield Electronics Ltd., England

Filed Jan. 23, 1991, Ser. No. 644,657

Claims priority, application United Kingdom, Jan. 23, 1990, 9001517

Int. Cl.[5] G09G *3/02*

U.S. Cl. 340—706 **3 Claims**



1. A method of electronically modifying the appearance of an image stored in the form of digital data defining the colour content of the image, the method comprising the steps of: storing sets of coordinates defining positions around the edge of the image, and for each set of coordinates storing the characteristics of an electronic painting tool, including the profile of the tool, with successive stored characteristics being different; and thereafter displaying the image, guiding the painting tool around the edge of the image, comparing the current position of the tool with the sets of stored coordinates, and when the tool is at or in the region of a set of stored coordinates, changing the tool characteristics to those previously determined for that set of coordinates.

5,185,597

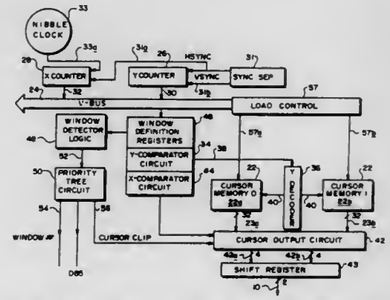
SPRITE CURSOR WITH EDGE EXTENSION AND CLIPPING

James L. Pappas, Leominster; Larry D. Seiler, Boylston, and Robert C. Rose, Hudson, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 213,197, Jun. 29, 1988, abandoned. This application Dec. 18, 1990, Ser. No. 630,384

Int. Cl.[5] G09G *5/08*

U.S. Cl. 340—709 **11 Claims**



1. A circuit for generating a sprite cursor with edge extension to be displayed on a video display on which an image is generated by scanning information onto the display to produce a vertical array of horizontal scan lines comprising a sequence of pixels each of which is identified by a line number of the scan line, Yscan, and its location on the scan line, Xpixel,

VOL 1147 ISS 2 FEB 9 1993 UMI

wherein said sprite cursor is an N×M array of pixels which is generated by selecting a preselected signal to replace an image signal coming from a frame buffer for the appropriate pixels so that the sprite cursor appears at its desired location on the display, Scursor, Ycursor, said circuit comprising:

A. a cursor memory for storing an N×M array of sprite cursor data which determines the appearance of the sprite cursor;

B. a first counter for identifying the Yscan for the pixel to be displayed;

C. first comparison means responsive to the first counter for comparing the Yscan of the pixel to be displayed with the Ycursor for the cursor;

D. a decoder responsive to the first comparison means for generating a first output addressing a row of the cursor memory, wherein said first output addresses (i) the first row when, Yscan is less than Ycursor (ii) the row intersected by Yscan when Yscan is between Ycursor and Ycursor plus (N−1), inclusive, and (iii) the last row when Yscan is greater than Ycursor plus (N−1);

E. a second counter for identifying the Xpixel of the pixel to be displayed;

F. second comparison means responsive to the second counter for comparing the Xpixel of the pixel to be displayed to the Xcursor for the cursor;

G. cursor output means responsive to the second comparison means for generating a cursor signal which controls the selection of the preselected signal, wherein the cursor output means receives the stored contents of the addressed row from the cursor memory and when the scan line is between Ycursor and Ycursor plus (N−1), inclusive, and Xpixel is between Xcursor and Xcursor plus (M−1), inclusive, the cursor output means generates the cursor signal for each pixel from the stored cursor data in the corresponding location of the addressed row of cursor memory;

H. Y-extender means for causing the cursor output means to generate the cursor signal based upon the stored data in a first preselected row of the cursor memory when Yscan is less than Ycursor, and based upon the stored data in a second preselected row of the cursor memory when Yscan is greater than Ycursor plus (N−1); and

I. X-extender means for causing the cursor output means to generate the cursor signal based upon the stored data in a first preselected column of the cursor memory when Xpixel is less than Xcursor, and based upon the stored data in a second preselected column of the cursor memory when Xpixel is greater than Xcursor plus (M−1).

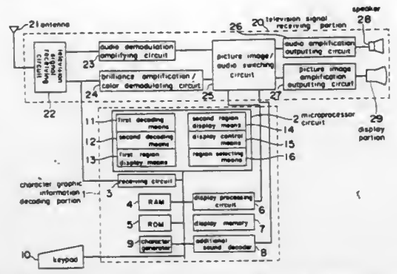
5,185,598

CHARACTER GRAPHIC INFORMATION DISPLAY DEVICE

Ken Sakamoto, Takatsuki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 21, 1990, Ser. No. 640,622
Claims priority, application Japan, Dec. 21, 1989, 1-334432
Int. Cl.[5] G09G *1/06*
U.S. Cl. 340—721 **5 Claims**

1. A character graphic information display device comprising: a receiving circuit for receiving character graphic information including display control information; a display memory for storing character graphic picture images obtained by the decoding of the character graphic information; a first decoding means for decoding the character graphic information into character graphic picture images with a display density different from a display density specified by the display control information, said decoded character graphic information being stored in said display memory; a second decoding means for decoding a portion of the character graphic information into character graphic picture images with a display density specified by the display control information, said decoded portion of the character graphic information being stored in said display memory; and a display processing circuit for displaying on a display portion said character graphic picture images stored in said display memory.

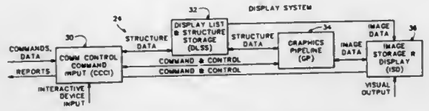


5,185,599

LOCAL DISPLAY BUS ARCHITECTURE AND COMMUNICATIONS METHOD FOR RASTER DISPLAY

Douglas J. Doornink, Portland; David L. Knierim, Wilsonville, and John C. Dalrymple, Portland, all of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 113,927, Oct. 26, 1987. This application Jul. 23, 1990, Ser. No. 555,979
Int. Cl.[5] G09G *5/36*
U.S. Cl. 340—747 **35 Claims**



1. A raster scan image-generating system comprising:

graphic data generating means for generating graphic commands to define images for display;

raster scan display means for visually displaying the graphic data in a series of parallel raster lines, each line including a series of pixels;

processing means for transforming the graphic commands into pixel data including an address and a value of each pixel;

frame buffer means including at least one plane of memory elements corresponding dimensionally to the raster lines and pixels of the display means for storing the pixel data and outputting the pixel values to the display means one raster line at a time and one pixel at a time in each line; and

frame buffer control means connected to receive the pixel data from the processing means for controlling the manner in which the pixel data is stored in the frame buffer;

the processing means including:

means for generating a vector having at least a beginning point and a direction;

means for generating first and second pixel data for said vector including at a first address for a first pixel corresponding to said beginning point and an incremental octal position and pixel value for a second pixel adjacent the beginning point pixel; and

means for sending said first and second pixel data to the control means in a first word and a second word,

the first word comprising said first address and a first bit defining a selected one of the X-axis and the Y-axis as a major axis and a second bit defining a direction along the selected axis from the first address toward the second pixel, and

the second word comprising the pixel value for the second pixel and a minor axis bit defining whether or not the second pixel is positioned at a second address laterally adjacent the major axis on the non-selected, minor axis; and

the control means including

means responsive to the first word for addressing the first address location in the frame buffer in accordance with the first address and setting a direction of incremental movement along the selected major axis in accordance with the first and second bits;

means responsive to the second word for moving incrementally from the first address location along the major axis in accordance with the set direction of incremental movement and along the minor axis in accordance with the minor axis bit to a second address location; and

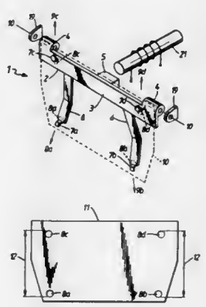
means for writing the second pixel value in the second address location.

5,185,600

DISPLAY DEVICES

Hassan P. A. Salam, Barnes, England, assignor to Unisplay SA, Fribourg, Switzerland

Filed Jun. 21, 1990, Ser. No. 541,543
Claims priority, application United Kingdom, Jun. 23, 1989, 8914521
Int. Cl.[5] G09G *3/16*
U.S. Cl. 340—764 **16 Claims**



1. An electromagnetically-operated display element including a rotatable assembly comprising:

a support member rotatable about an axis and provided with bearing means;

mounting means connected to said rotatable support member;

a sheet whose rotational position determines the optical state of the display element, said sheet including engagement means arranged to engage with said mounting means;

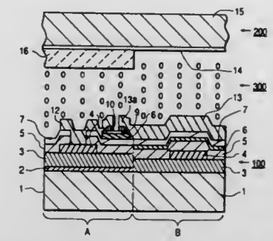
said rotatable support member, said mounting means and said engagement means being arranged so that said sheet is permanently maintained in a tensioned state in directions outwardly from a central area thereof towards peripheral portions thereof by said mounting means.

5,185,601

ACTIVE MATRIX LIQUID CRYSTAL DISPLAY APPARATUS AND METHOD OF PRODUCING THE SAME

Mamoru Takeda, Hirakata; Tatsuhiko Tamura, Neyagawa, and Sadayoshi Hotta, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 8, 1991, Ser. No. 638,537
Claims priority, application Japan, Jan. 11, 1990, 2-4155
Int. Cl.[5] G09G *3/36*
U.S. Cl. 340—784 **6 Claims**



1. A liquid crystal display apparatus comprising:

a transistor array substrate having formed thereon an array of pixel electrodes arranged in a matrix to form pixels, an array of switching thin film transistors arranged in a matrix for driving the pixels, respectively, gate bus lines arranged in rows for applying scanning signals to the switching thin film transistors, and source bus lines arranged in columns for applying display data signals to the switching thin film transistors;

a counter substrate having formed thereon a common counter electrode confronting the pixel electrodes; and

a liquid crystal layer sandwiched between the transistor array substrate and the counter substrate,

wherein the transistor array substrate has formed thereon a common electrode disposed below the pixel electrodes through an insulating layer for constituting an auxiliary capacitor between said common electrode and each of the pixel electrodes through the insulating layer, the common electrode being extended to cover an area above each source bus line or each gate bus line through another insulating layer so as to shield the pixel electrodes from the source bus lines or gate bus lines.

5,185,602

METHOD AND APPARATUS FOR PRODUCING PERCEPTION OF HIGH QUALITY GRAYSCALE SHADING ON DIGITALLY COMMANDED DISPLAYS

Chester F. Bassetti, Jr., Cupertino; Dayakar C. Reddy; Ekaputra Laiman, both of Milpitas, and Bryan M. Richter, Saratoga, all of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Apr. 10, 1989, Ser. No. 335,622
Int. Cl.[5] G09G *3/20*
U.S. Cl. 340—793 **45 Claims**

8. A stippling method comprising the steps of:

defining a plurality of different brightness levels, each being relatively uniformly spaced in brightness level from the other;

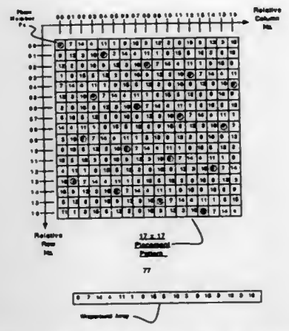
defining a square display area of at lest four pixels;

commanding diagonally adjacent pairs of the pixels to a first brightness level; and

commanding horizontally adjacent pixels to different brightness levels, wherein the different brightness level selected is the next brightness level of the plurality of brightness

VOL 1147 ISS 2 FE 9 1993 UMI

levels which is above or below the first brightness level; and further wherein the pixels are commanded to the first



or different brightness levels by way of brightness setting waveforms, each having the same number of bits.

5,185,603

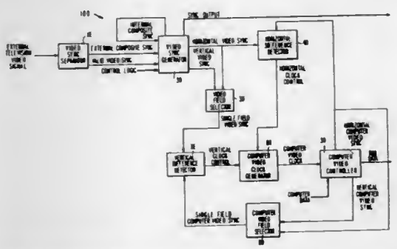
APPARATUS FOR SYNCHRONIZING COMPUTER AND VIDEO IMAGES TO BE SIMULTANEOUSLY DISPLAYED ON A MONITOR AND METHOD FOR PERFORMING SAME

David L. Medin, 16 Putnam St., Greenwich, Conn. 06830

Filed Jul. 13, 1990, Ser. No. 552,024

Int. Cl.[5] G09G *3/00*

U.S. Cl. 340—814 **22 Claims**



1. An apparatus for synchronizing video and computer images comprising:

video sync generator means for generator a horizontal video sync signal and vertical video sync signal; and

computer video controller means including a computer video controller for outputting a horizontal computer video sync signal and a vertical computer video sync signal, a horizontal difference detector for receiving the horizontal computer video sync signal as one input and the horizontal video sync signal as a second input and outputting a horizontal clock control signal, a computer video clock generator for outputting a computer video clock having a first frequency, and increasing the frequency of the computer video clock in response to the horizontal clock control signal, and the computer video controller producing a horizontal computer video sync signal in response to the computer video clock for generating the horizontal computer video sync signals and increasing the number of generated horizontal computer video sync signals in response to said horizontal video sync signal and the vertical sync signal generating at least M horizontal computer video sync signals in the same time period that the video sync generator means generates M−1 horizontal video sync signals.

5,185,604

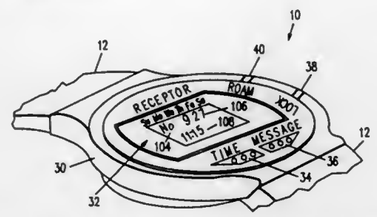
MESSAGE INDICATING ICON MECHANISM

Bruce C. Nepple, Portland; Garold B. Gaskill, Tualatin, and Danial J. Park, Aloha, all of Oreg., assignors to Seiko Corp. and Seiko Epson Corp., Japan

Continuation-in-part of Ser. No. 435,315, Nov. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 352,635, May 12, 1989, Pat. No. 4,897,835, which is a continuation of Ser. No. 121,139, Nov. 16, 1987, abandoned, which is a continuation-in-part of Ser. No. 802,844, Nov. 27, 1985, Pat. No. 4,713,808. This application Jun. 13, 1990, Ser. No. 538,022

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 340—825.44 **12 Claims**



1. In a radio paging system where a data stream is transmitted from a transmitting system to a plurality of radio paging receivers, each of said radio paging receivers having associated therewith a unique identification indicia, said data stream including messages for a plurality of said radio paging receivers, each of said messages being intended for a particular one of said receivers, each of said messages including text and a unique identification indicia indicating the particular receiver for which said messages is intended, said system including,

numbering means in said transmitting system for sequentially assigning message numbering to the messages intended for each particular receiver and for transmitting said numbers with the associated messages in said data stream, whereby said data stream includes messages for a plurality of receivers, and sequential messages in said data stream do not have sequential numbers,

control means in a particular one of said radio paging receivers including:

message signal generating means for generating a message-received signal upon receipt of a message which includes the identification indicia of said particular paging receiver;

message storage means for storing received messages which include the identification indicia of said particular paging receiver, said message storage means storing the text and message number of messages that are stored;

interrogation means for comparing the message numbers and text of sequentially received messages and for generating a missing message signal if the compared message numbers are not sequential; and

icon means for indicating a message condition wherein said icon means displays a predetermined first icon form upon receipt of a message received signal and displays a second icon form upon receipt of said missing message signal.

5,185,605

DIVE PROFILE RECORDER

James W. Roberts, Jr., 2005 Cheltenham Blvd., Greensboro, N.C. 27407, and James P. Hollen, 114 Pine St., Thomasville, N.C. 27360

Filed Nov. 7, 1991, Ser. No. 788,818

Int. Cl.[5] H04B *13/02*

U.S. Cl. 340—850 **12 Claims**

1. A dive profile recorder for monitoring conditions encountered by a diver under water comprising:

a. a plurality of transducers to be carried by a diver for generating analog electrical signals representative of the conditions encountered by the diver;

b. an encoding circuitry electrically connected to said transducers for encoding the analog electrical signals to form a serial data stream, wherein said encoding circuitry converts the generated analog signals to digital signals and converts parallel digital signals to a sequence of bytes including a start-byte, a plurality of bits representative of the digital signals and a checksum byte determined by the previous bits in the sequence, and wherein the sequence of bytes form the serial data stream;

c. a transmitter electrically connected to said encoding circuitry to transmit the serial data stream through the water;

d. a receiver remote from the diver to receive the transmitted serial data stream transmitted from the transmitter;

e. a decoding circuitry electrically connected to said receiver to decode the serial data stream to electrical signals representative of the conditions encountered by the diver, wherein said decoding circuitry;



1. receives a sequence of bytes from said receiver,

2. stacks the received bytes in a register of bytes having as many byte positions as the sequence of bytes,

3. repeatedly evaluates the data in one of the byte positions and when the data in the one byte position of the register evaluates to be the same as the start-byte,

a. examines the data in the previous register bytes and determines a computed checksum byte,

b. compares the computed checksum byte to the received checksum byte, and if they are equal, transfers the data out of the previous register bytes

a display electrically connected to said decoding circuitry to receive the electrical signals to display human-perceptible indicia of the conditions encountered by the driver in response to the received electrical signals.

5,185,606

PRIMARY FLIGHT DISPLAY PRESENTING RESOLUTION ADVISORY INFORMATION PROVIDED BY A TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM

Petrus A. A. Verbaarschot, Alphen A/D Rijn; Michel M. C. Schless, Amsterdam, and Wim J. Hultzer, Noordwijkerhout, all of Netherlands, assignors to Fokker Aircraft B.V., Schiphol-Oost, Netherlands

Filed May 8, 1990, Ser. No. 520,507

Int. Cl.[5] G08G *5/04*

U.S. Cl. 340—961 **7 Claims**

1. A display for presenting symbolically to an aircraft flight crew resolution advisory information developed by a Traffic Collision Avoidance System (TCAS) computer aboard an aircraft said computer providing a vertical speed limit output wherein said display comprises:

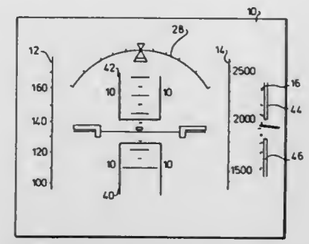
a line symbol representing the artificial horizon,

a pitch scale extending perpendicularly to said line symbol and indicating pitch angles with reference to said line symbol,

an aircraft reference symbol indicating by its position on said pitch scale the instantaneous aircraft pitch attitude, wherein said display further comprises:

a pitch cue symbol having

a first line segment extending parallel to the artificial horizon and across said pitch scale, said first line-segment indicating a limit pitch value processed from said TCAS vertical speed limit output, and



an area indicator extending from said line segment and indicating a range of pitch values bounded by said limit pitch value, which range of pitch values has to be avoided by the aircraft flight crew.

5,185,607

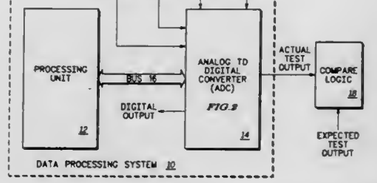
METHOD AND APPARATUS FOR TESTING AN ANALOG TO DIGITAL CONVERTER

Jose A. Lyon, and Jules D. Campbell, Jr., both of Austin, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 31, 1992, Ser. No. 829,113

Int. Cl.[5] H03M *1/10*

U.S. Cl. 341—120 **20 Claims**



1. Test apparatus for testing circuitry in an analog to digital converter (ADC) which has a plurality of resistors connected in series to form a resistor array with a first end and a second end, the test apparatus comprising:

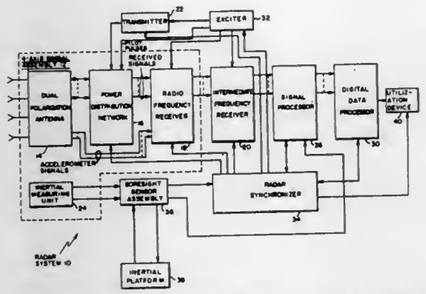
first logic means coupled to the first end of the resistor array, for applying an analog voltage level to the first end of the resistor array when the ADC is not in a special test mode, and for applying a first digital voltage level to the first end of the resistor array when the ADC is in the special test mode;

second logic means coupled to at least two of the plurality of resistors for selectively coupling a portion of the resistor array to an output signal having a second voltage level which is analog when the ADC is not in the special test mode and which is digital when the ADC is in the special test mode; and

third logic means used only in the special test mode, coupled to the second logic means and the first end of the resistor array, for comparing the first voltage level of the first end of the resistor array to the second voltage level of the output signal for producing a comparison result.

VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,608
ALL WEATHER TACTICAL STRIKE SYSTEM (AWISS) AND METHOD OF OPERATION
Jerome H. Pozgay, Needham, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Dec. 29, 1980, Ser. No. 234,035
Int. Cl.[5] G01S 7/36
U.S. Cl. 342—17 **1 Claim**



1. In the operation of a synthetic aperture radar utilizing a phased array antenna having a circular aperture, the antenna elements making up such phase array being interconnected to form: (a) four auxiliary arrays in quadrantal segments of the circular aperture, the phase centers of such auxiliary arrays being equidistant from the center of the circular aperture; (b) four subarrays substantially filling the circular aperture within the quadrantal segments, each one of the subarrays having a square outline so that the phase centers of such subarrays are equidistant from the center of the circular aperture and each one of such phase centers is equidistant from the nearest two phase centers in the quadrantal segments; and (c) four sidelobe cancelling arrays, each one thereof being disposed about a phase center of a respective one of the subarrays so that the phase center of each one of the sidelobe cancelling arrays corresponds with the phase center of a respective one of the subarrays, the width of the main beam of each sidelobe cancelling array, and of the main beam of each auxiliary array, encompassing the main lobe and significant sidelobes of the beam of the corresponding subarray and the gain of each sidelobe cancelling array, and of each auxiliary array, being less than the gain of the main lobe, and greater than the highest significant sidelobe of the corresponding subarray, the method of operating such radar to effect cancellation of signals, when present from a sidelobe jammer, such method comprising the steps of:

(a) receiving radio frequency signals at each one of the subarrays and separately converting each one of such signals to corresponding intermediate frequency signals;

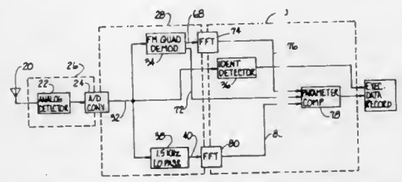
(b) receiving and time multiplexing the radio frequency signals at each one of the sidelobe cancelling arrays periodically to produce a first composite signal having separate parts substantially indicative of any jamming signals from a sidelobe jammer and mainlobe echo signals;

(c) processing the first composite signal to derive first separate cancelling control signals, each one of such signals being indicative of the jamming signals at a corresponding sidelobe cancelling array;

(d) phase shifting and attenuating the radio frequency signals out of each sidelobe cancelling array in accordance with the corresponding cancelling control signal to invert the phase of the jamming signal portion of such radio frequency signals and to equalize the amplitude of each such jamming signal portion of such radio frequency signals and to equalize the amplitude of each such jamming signal portion with the amplitude of the jamming signal portion of the radio frequency signals out of the corresponding subarray to produce corrected radio frequency signals substantially indicative of echo signals received at each subarray in turn to produce corresponding corrected intermediate frequency signals; and

(e) adding the corrected intermediate frequency signals to produce monopulse sum signals.

5,185,609
SIGNAL MONITOR UTILIZING DIGITAL SIGNAL PROCESSING
Claude R. DeBord, Independence, Mo., assignor to Wilcox Electric, Inc., Kansas City, Mo.
Filed Oct. 29, 1991, Ser. No. 784,573
Int. Cl.[5] G01S 7/40
U.S. Cl. 342—173 **26 Claims**



1. A method of extracting predetermined parameters of a VOR signal for evaluation to ensure that the transmitted signal in space remains within tolerance, said method comprising the steps of:

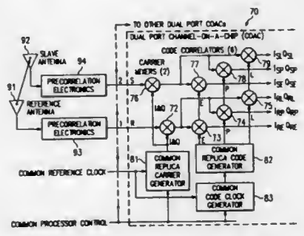
subjecting the VOR signal to detection and presenting the detected signal as digital data,

digitally processing said data in the time domain to derive the amplitude of a subcarrier included in said data, a reference signal applied to said subcarrier as frequency modulation, and a low frequency signal component having an azimuth-dependent phase appearing on said VOR signal as amplitude modulation,

subjecting said reference signal and said signal component to further digital processing to extract amplitude and phase information therefrom, and

computing said parameters from the extracted amplitude and phase information and the amplitude of said subcarrier.

5,185,610
GPS SYSTEM AND METHOD FOR DERIVING POINTING OR ATTITUDE FROM A SINGLE GPS RECEIVER
Phillip W. Ward, Dallas; H. Logan Scott, The Colony, both of Tex.; Jerry D. Holmes, Colorado Springs, Colo., and Leonard J. LaPadula, Carrollton, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 20, 1990, Ser. No. 569,890
Int. Cl.[5] H04B 7/185; G01S 5/02
U.S. Cl. 342—357 **40 Claims**



1. A GPS pointing and attitude measurement system using a single GPS receiver and multiple antennas to derive pointing and attitude measurement using a selected PRN code recovered from GPS navigation signals, wherein azimuth and elevation are determined in pointing application and roll, pitch, and yaw are determined in attitude application, comprising:

a reference and at least one slave antenna mounted to a foundation, such that the separation is significantly less than the correlation interval for the selected PRN code;

reference and, for each slave antenna, slave precorrelation electronics for providing respective digital representations of the GPS signals received by said reference and slave antennas;

at least one replica carrier generator for generating a replica of the GPS carrier signal;

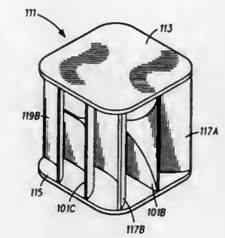
at least one replica code generator for generating a replica of the selected GPS PRN code signal;

reference correlation electronics, including a carrier mixer and a selected number of code correlators, responsive to the reference GPS signal, and to replica carrier and replica code signals, for generating reference I and Q correlation outputs;

for each slave antenna, slave correlation electronics including a carrier mixer and at least one code correlator responsive to the slave GPS signals, and to replica carrier and replica code signals, for generating slave I and Q correlation outputs; and

a GPS processor responsive to the reference I and Q correlation outputs for tracking with the reference antenna, and responsive to the reference and slave I and Q correlation outputs for computing pointing and attitude measurements.

5,185,611
COMPACT ANTENNA ARRAY FOR DIVERSITY APPLICATIONS
Charles R. Bitter, Jr., Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 18, 1991, Ser. No. 732,017
Int. Cl.[5] H01Q 1/24
U.S. Cl. 343—702 **10 Claims**



1. An antenna array comprising:

substantially planar conductive top and bottom covers;

at least M radiating elements disposed between said top and bottom covers, where M is an integer equal to or greater than two, said radiating elements each comprising a tapered notch antenna formed on a metallized dielectric board, each notch antenna having an axis about which the taper is formed;

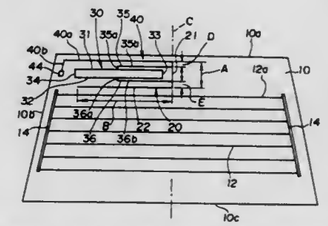
means for separately coupling radio frequency signals to each of said radiating elements;

at least N conductive septums, having first and second edges connected to said top and bottom covers, interleaved with said radiating elements so that each radiating element is separated from adjacent radiating elements by a septum, N being an integer greater than or equal to three, any two adjacent septums forms a conductive enclosure that houses a radiating element;

each of said conductive enclosures being oriented to direct radiated energy from the corresponding radiating element to a different geographic region; and

at least two of said radiating elements each having a curve in a plane perpendicular to said notch antenna axis so that said notch antennas remain equidistant from the top and bottom covers and have distal edges that diverge, said curve being disposed between the notch antenna distal edge and a point where the coupling means couples radio frequency signals to said radiating element.

5,185,612
ANTENNA ON VEHICLE REAR WINDOW GLASS
Tokio Tsukada; Yoji Nagayama, and Junichiro Ieiri, all of Matsusaka, Japan, assignors to Central Glass Company, Ltd., Ube, Japan
Filed Jul. 30, 1991, Ser. No. 737,208
Claims priority, application Japan, Jul. 30, 1990, 2-202291
Int. Cl.[5] H01Q 1/32
U.S. Cl. 343—713 **26 Claims**



1. An antenna attached to a vehicle rear window glass for receiving FM radio broadcast waves and television broadcast waves, the window glass being provided with a set of defogging heater strips so as to leave a space between the heater strips and the upper edge of the window glass, the antenna being arranged in said space and consisting essentially of:

a primary element which is an L-shaped element having a vertical part which is positioned in a widthwise central area of said space and a horizontal part which extends from the lower end of said vertical part;

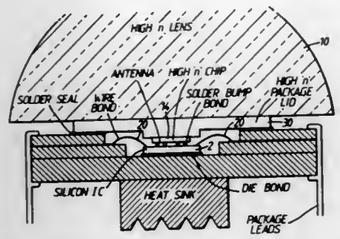
an impedance matching element consisting of two horizontal parts which are parallel to each other and located in an area between said vertical part of said primary element and a side edge of the window glass, at least one and not more than two vertical parts each of which is shorter than each of said two horizontal parts and extends from one of said two horizontal parts to the other in an end portion, which is not longer than 100 mm, of each of said two horizontal parts, a first extension having an end part which extends upward from a point of the upper one of said two horizontal parts and a major part which extends horizontally from the upper end of said end part to said vertical part of said primary element and a second extension having an end part which extends downward from a point of the lower one of said two horizontal parts and a major part which extends horizontally from the lower end of the end part to said vertical part of said primary element;

an auxiliary element comprising a horizontal part which extends above said impedance matching element from said central area to a marginal area contiguous to said side edge of the window glass and is connected at one end thereof to said vertical part of said primary element; and

a feed point located in said marginal area, the antenna being connected to said feed point at the opposite end of said horizontal part of said auxiliary element.

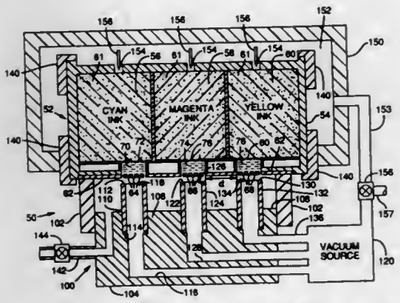
VOL 1147 ISS 2 FE 9 1993 UMI

5,185,613
HYBRID STRUCTURES
Roger W. Whatmore, Milton Keynes, and David J. Pedder, Oxford, both of Great Britain, assignors to GEC-Marconi Limited, Stanmore, England
Filed Sep. 8, 1986, Ser. No. 911,017
Int. Cl.[5] H01Q 15/02, 19/09, 23/00
U.S. Cl. 343—909 9 Claims



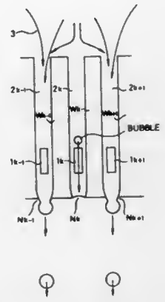
1. A hybrid structure comprising a lens, an antenna array and an integrated circuit wherein the antenna array is formed on a surface of the lens or on a surface of a substrate having substantially the same refractive index as the lens material, means being provided for connecting the lens or substrate to spaced locations on the integrated circuit.

5,185,614
PRIMING APPARATUS AND PROCESS FOR MULTI-COLOR INK-JET PENS
Kenneth J. Courian, San Diego, Calif., and Roger F. Evans, Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Filed Apr. 17, 1991, Ser. No. 686,740
Int. Cl.[5] B41J 2/165, 2/21
U.S. Cl. 346—1.1 17 Claims



13. A method of priming ink through first and second sets of orifices of an orifice plate of a pen that has a first-color ink stored in fluid communication with the first set of orifices and a second-color ink stored in fluid communication with the second set of orifices, the method comprising the steps of:
positioning an end of a first tubular member in closely spaced relation with the first set of orifices;
positioning an end of a second tubular member in closely spaced relation with the second set of orifices;
connecting the first and second tubular members to terminate within a common first chamber; and
applying to the first and second tubular members suction for urging the first-color ink through the first set of orifices toward the end of the first tubular member and for urging the second-color ink through the second set of orifices toward the end of the second tubular member.

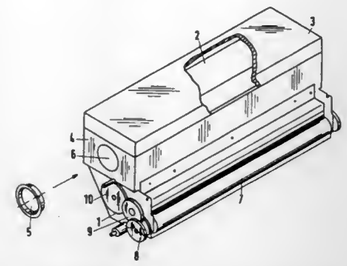
5,185,615
INK JET RECORDING METHOD AND APPARATUS FOR RECOVERING EJECTION AT A PARTICULAR ORIFICE BY EJECTING INK FROM ADJACENT ORIFICES
Noribumi Koitabashi; Hiroshi Tajika; Hiromitsu Hirabayashi, all of Yokohama, and Masami Ikeda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 9, 1991, Ser. No. 682,675
Claims priority, application Japan, Apr. 11, 1990, 95405; Apr. 12, 1990, 97250
Int. Cl.[5] B41J 2/165, 2/05
U.S. Cl. 346—1.1 36 Claims



1. A method for performing an ink ejection recovery at each of a plurality of orifices of a recording head in an ink jet recording apparatus, said recording head comprising a plurality of ejection energy generating elements each of which corresponds to each of said plurality of orifices, wherein said ink jet recording apparatus performs recording by ejecting ink from said plurality of orifices onto a recording medium, the method comprising the steps of:
selecting a particular orifice, at which ink ejection recovery is to be performed, from said plurality of orifices;
selecting ejection orifices, including at least one orifice adjacent to said particular orifice, from the rest of said plurality of orifices; and
driving said ejection energy generating elements corresponding to said ejection orifices so as to eject ink from said ejection orifices, whereby ink ejection recovery at said particular orifice is performed.

5,185,616
DEVELOPER STATION FOR A LASER PRINTER
Gerhard Wilcke, Berlin, Fed. Rep. of Germany, assignor to berolina Schriftbild Wilcke, Wolff, Busch & Partner KG, Berlin, Fed. Rep. of Germany
Filed May 14, 1990, Ser. No. 523,218
Claims priority, applicatioo Fed. Rep. of Germany, May 18, 1989, 3916377
Int. Cl.[5] G01D 15/16
U.S. Cl. 346—1.1 16 Claims

10. A method of retrofitting a developer station for a laser printer of the type including a toner tank having an outlet opening, a shaft adapted to removably receive a toner cartridge therein mounted above said toner tank, and a toner delivery roller mounted in front of said outlet opening in said toner tank; said method adapted to eliminate use of removable toner cartridges and to increase the toner storage capacity of said developer tank; the steps of said method including:
mounting a lid on top of said shaft for precluding insertion of a toner cartridge therein by defining a closed chamber comprising said lid and said shaft, said closed chamber having at least one end wall formed from a downwardly extending end wall of said lid and a upwardly extending end wall of said shaft, and

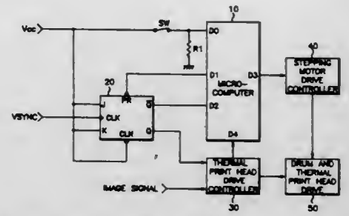


providing a toner refill opening in said chamber end wall through which toner refill is supplied within said closed chamber.

5,185,617
METHOD OF INFORMATION CONVERSION AND APPARATUS THEREOF
Itsuo Takanashi, Kamakura; Shintaro Nakagaki, Miura; Ichiro Negishi, and Tsutou Asakura, both of Yokohama, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan
Filed Dec. 24, 1990, Ser. No. 633,223
Claims priority, application Japan, Dec. 26, 1989, 1-337171
Int. Cl.[5] H04N 1/21
U.S. Cl. 346—108 7 Claims

1. A method of information conversion, comprising the steps of:
composing a recording medium of a photoconductive member and a photo-modulation member both exhibiting a photoelectric effect and a dielectric mirror interposed therebetween, laminated to each other;
radiating an electro-magnetic radiation beam intensity-modulated with a serial information to be converted to the photoconductive member;
deflecting straight the radiated beam along a surface of the photoconductive member to form a charge image composed of electric charges having an electric charge quantity corresponding to the information, as arranged in a straight line in a region on a border between the photoconductive member and dielectric mirror, corresponding to a region of the photoconductive member to which the beam is radiated; and
radiating a two-dimensional bundle of electro-magnetic radiation beams of constant intensity and covering the region on the border to the recording medium at the photo-modulation member side thereof to take out a two-dimensional bundle of electro-magnetic radiation beams exhibiting variation subjected to the charge image due to the photoelectric effect from the recording medium.

5,185,618
METHOD AND CIRCUIT FOR PREVENTING IRREGULARITIES OF COLOR PRINTING POSITION IN A VIDEO COLOR PRINTER
Se-Gab Park, Kyounggi, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed May 3, 1991, Ser. No. 695,334
Claims priority, application Rep. of Korea, May 19, 1990, 1990-7203
Int. Cl.[5] G01D 15/24
U.S. Cl. 346—138 4 Claims



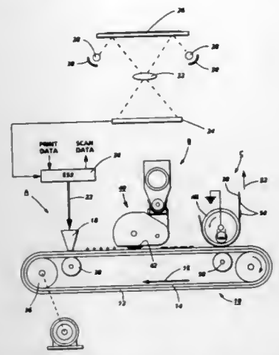
1. A method for preventing color printing position from becoming irregular in a video color printer, comprising the steps of:
generating a printing-control signal in response to a printing switch to enable production of a sequence of a thermal print head drive signal and a stepping motor drive signal in synchronism with a vertical synchronizing signal, said thermal print head drive signal being indicative of a printing period of a video signal on a line-by-line basis and said stepping motor drive signal being indicative of a transferring period for driving a platen drum to transfer a printable medium on said line-by-line basis;
sending one data line of said video signal to a thermal print head in response to said thermal print head drive signal so as to print said one data line in a first selected color onto a printable medium during said printing period;
driving said platen drum in response to said stepping motor drive signal so as to transfer said printable medium by one line during said transferring period in order to position said platen drum onto a next line of said printable medium; and
making a count of each said printing period of said video signal in said first selected color and making a comparison of said count with a predetermined number in order to terminate printing of said video signal in said first selected color on said line-by-line basis and to enable printing of said video signal in a second selected color in dependence upon said comparison.

5,185,619
ELECTROSTATIC PRINTING METHOD AND APPARATUS EMPLOYING A PYROELECTRIC IMAGING MEMBER
Christopher Snelling, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Apr. 26, 1991, Ser. No. 691,774
Int. Cl.[5] G01D 15/06
U.S. Cl. 346—153.1 20 Claims

20. A printing apparatus for producing composite images on output sheets, with the composite images consisting of a plurality of intermediate images, comprising:
an image carrying surface;
means for placing at least one toned intermediate image on said image carrying surface;
a continuous, pyroelectrically responsive surface closely positioned to said image carrying surface;
means for transferring the intermediate images from said image carrying surface to said continuous, pyroelectri-

VOL
1147
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cally responsive surface in registration to form a composite image; and



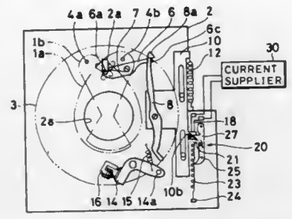
means for transferring the composite image on said continuous, pyroelectrically responsive surfaee to an output sheet.

5,185,620
EYEGLASS SYSTEM
George F. Cooper, 2411 Crofton La., Crofton, Md. 21114
Filed Aug. 22, 1991, Ser. No. 748,415
Int. Cl.[5] G02C *11/02*
U.S. Cl. 351—52 21 Claims



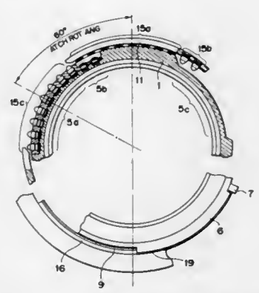
1. An eyeglass system for an eyeglass lens comprising:
(a) an eyeglass frame, said eyeglass frame having a pair of frame lug members extending from opposing sides thereof;
(b) a pair of temple coupled to said eyeglass frame on opposing sides thereof, each of said temples being pivotedly coupled to a respective one of said frame lug members;
(c) at least one aesthetic member removably securable and slidably mountable on one of said frame lug members of said eyeglass frame; and,
(d) means for releasably securing said aesthetic member to said eyeglass frame, said means for releasable securement being mounted within at least one of said temples.

5,185,621
CHARGING DEVICE FOR CAMERA
Takashi Kagechika, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Japan
Filed Apr. 29, 1991, Ser. No. 692,723
Claims priority, application Japan, May 2, 1990, 2-116323
Int. Cl.[5] G03B *9/62*
U.S. Cl. 354—234.1 4 Claims



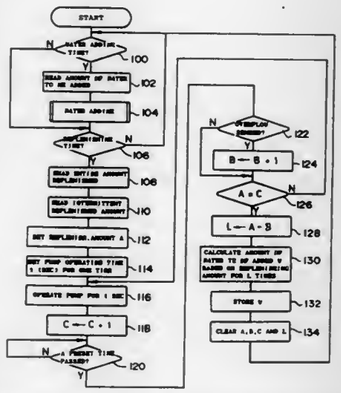
1. A charging device for cameras comprising: a linear actuator for charging a shutter charging mechanism by a first extending and contracting operation thereof and releasing said shutter charging mechanism by a second extending and contracting operation thereof.

5,185,622
ELECTRIC CONNECTING APPARATUS FOR CAMERA SYSTEM
Koushi Yoshibe, Yokohama, and Yoshiro Kodaka, Tokyo, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Jun. 18, 1991, Ser. No. 717,082
Claims priority, application Japan, Jun. 21, 1990, 2-64942
Int. Cl.[5] G03B *17/00*
U.S. Cl. 354—286 15 Claims



11. An electric connecting apparatus for an accessory freely mountable to a camera body by alignment with the camera body at an initial position and movement from the initial position through a predetermined attachment movement angle relative to the camera body, said camera body having contact means thereon including a movable contact unit and a relatively fixed contact unit, the movable contact unit extending circumferentially over an angle that is less than said attachment movement angle, the contact means of said camera body extending circumferentially over a total angle that exceeds said attachment movement angle, comprising:
contact means on said accessory including a movable contact unit and a relatively fixed contact unit;
the movable contact unit of said accessory extending circumferentially over an angle that is less than said attachment movement angle, the contact means of said accessory extending circumferentially over a total angle that exceeds said attachment movement angle, the contact means of said accessory being disposed relative to the contact means of said camera body so that at said initial position the contact means of said camera body is free of interference with said accessory and the contact means of said accessory is free of interference with said camera body, and so that after said attachment movement the movable contact unit of said camera body engages the relatively fixed contact unit of said accessory and the movable contact unit of said accessory engages the relatively fixed contact unit of said camera body.

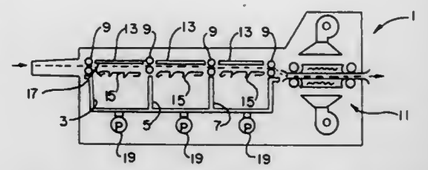
5,185,623
APPARATUS FOR TREATING A PHOTOSENSITIVE MATERIAL AND METHOD OF ADDING WATER FOR USE IN THE SAME
Fumio Mogi, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 2, 1991, Ser. No. 694,736
Claims priority, application Japan, May 8, 1990, 2-117972
Int. Cl.[5] G03D *13/00*
U.S. Cl. 354—299 19 Claims



1. Apparatus for treating a photosensitive material comprising:
a treating solution tank storing a treating solution for treating a photosensitive material; and
a sensor disposed at a position which exhibits a different thermal conductivity depending on whether the treating solution is overflowing out of the treating solution tank or not, for sensing the overflow of the treating solution based on said difference in the thermal conductivity.

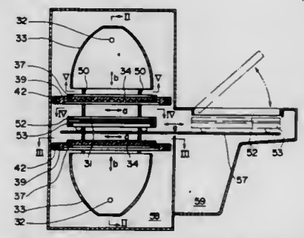
5,185,624
RACK FOR AUTOMATIC FILM PROCESSORS
Warren Fischer, St. Charles, Ill., assignor to Fischer Industries, Inc., Geneva, Ill.
Filed May 28, 1991, Ser. No. 705,935
Int. Cl.[5] G03D *3/08*
U.S. Cl. 354—132 D 10 Claims

1. A rack for use in an automatic developer apparatus of the type having at lest one tank for holding a solution, a roller assembly for conveying film over the tank and a pump for delivering the solution in the tank over the rack, comprising:
a substantially planar member bowed along a first axis to create a basin for retaining solution thereon,
said member further including an inner section and two outer sections integrally connected to said inner section, said inner section having a greater bow formed therein than said outer sections such that at at lest the center of the



rack, the inner section is disposed below the outer sections.

5,185,625
EXPOSURE APPARATUS FOR FORMING PATTERN ON PRINTED-WIRING BOARD
Chiaki Abe, and Minoru Watanuki, both of Tokyo, Japan, assignors to ORC Manufacturing Co., Ltd., Chofu, Japan
Filed Feb. 18, 1992, Ser. No. 836,655
Claims priority, application Japan, May 13, 1991, 3-107430
Int. Cl.[5] G03B *27/32, 27/52*
U.S. Cl. 355—26 1 Claim



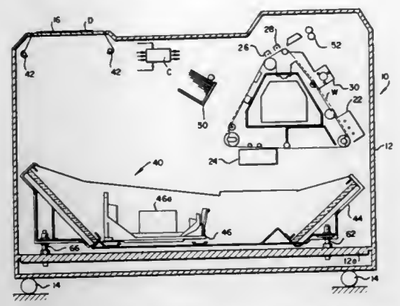
1. In an exposure apparatus in which ultraviolet rays are irradiated through a pattern forming film to a board to induce photochemical reaction to electrodeposited photoresists on the surface of the board and on the inner wall surfaces of through-holes formed in the board, thereby forming a pattern on the surface of the board, said exposure apparatus including:
upper and lower light sources each comprising an electric discharge lamp and a reflection mirror, which are disposed above and below the board so as to be vertically symmetrically disposed with respect to the board; and
upper and lower flat light-transmissible plates each having a sawtooth section, which are disposed spacedly away from each other so as to be vertically symmetrically disposed with respect to the board in a light path of the ultraviolet rays irradiated to the board and horizontally movable.

5,185,626
MOUNTING ASSEMBLY FOR OPTICS TUB IN A REPRODUCTION APPARATUS
David V. Kinney, Hilton; Vincent J. O'Brien, Penfield, both of N.Y., and Daniel G. Van Sice, Tomball, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 10, 1992, Ser. No. 833,255
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—55 9 Claims

1. In a reproduction apparatus having an optical system for projecting a light image of information to be reproduced on to a recording medium, an assembly for adjustably mounting said optical system relative to a frame of said reproduction apparatus, said adjustable mounting assembly comprising:
at least one stud;

VOL 1147 ISS 2 FEB 9 1993 UMI

means for supporting said at least one stud by said frame for selective movement relative thereto; and



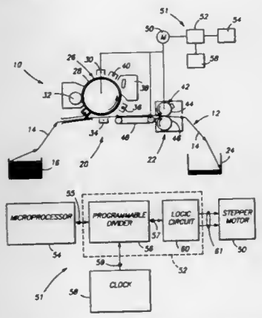
means for clamping said optical system to said at least one stud for movement therewith, said clamping means including an elastomeric member for substantially isolating said optical system from any shock imparted to said frame.

5,185,627

ELECTROPHOTOGRAPHIC PRINTER WITH MEDIA MOTION MOTOR CONTROL

Richard L. Hartman, Spokane, Wash., assignor to Output Technology Corp., Spokane, Wash.

Filed Oct. 1, 1991, Ser. No. 770,095
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—204 **8 Claims**



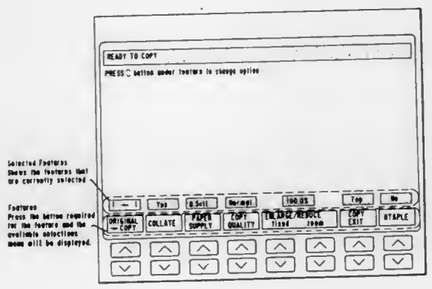
1. An electrophotographic printer comprising:
an image transfer assembly at an image transfer station for transferring an electrophotographic image onto a print media;
a roller-fuser assembly at an image fixing station downstream of the image transfer station for affixing the electrophotographic image to the print media;
a two phase D.C. stepper motor operatively connected to drive the roller-fuser assembly;
a motor speed drive circuit for generating a selected rate of pulses to the stepper motor to drive the stepper motor at a desired rotational speed;
a clock operatively coupled to the motor speed drive circuit for outputting a constant number of clock pulses for sequential predetermined time periods to synchronize the selected rate of pulses; and
a microprocessor operatively coupled to, but separate from, the motor speed drive circuit for outputting a speed change value to change the selected rate of pulses generated by the motor speed drive circuit to change the desired rotational speed of the stepper motor;
the motor speed drive circuit comprising:
a programmable divider coupled to receive the speed change value and the clock pulses, the programmable divider storing the speed change value and dividing the number of clock pulses output per time period by the speed change value, the programmable divider outputting a speed command signal based on a result of the division; and
a logic circuit coupled to receive the speed command signal, the logic circuit outputting multiple drive signals to the stepper motor in response to the speed command signal to drive the stepper motor at the desired speed, the logic circuit comprising two cross-coupled flip-flops which are clocked by the speed command signal, one flip-flop having an output coupled to one phase of the stepper motor and the other flip-flop having an output coupled to the other phase of the stepper motor.

5,185,628

REPRODUCTION APPARATUS WITH IMPROVED OPERATOR INTERACTIVE DISPLAY FOR USE IN JOB SET-UP

James Wilson, Rochester, and Douglas B. Beaudet, Brockport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 18, 1991, Ser. No. 794,085
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—209 **4 Claims**



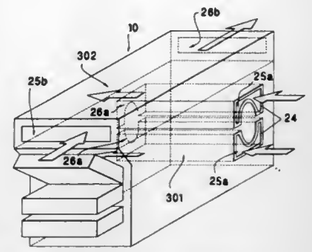
1. A reproduction apparatus for producing copy, said apparatus comprising:
an operator control panel, said panel including means including a display screen for indicating on said screen certain standard selectable features for a copying operation with plural displayable options for each feature, and first means for altering the display on the screen to indicate a displayed selected option for each and generating a first set of signals representing selected options of the standard features;
means for displaying on said display screen, prior to operator selection of a displayed option, the default settings for each of the standard selectable features without simultaneous display on said screen of any additional option associated with each standard selectable feature; and
means responsive to said first set of signals for producing copy in accordance with the options selected from the standard features.

5,185,629

IMAGE FORMING APPARATUS PROVIDED WITH A COOLING ARRANGEMENT AND OZONE FILTER

Shuji Iino, Hirakata, and Kenji Masaki, Ibaraki, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 22, 1990, Ser. No. 600,835
Claims priority, application Japan, Oct. 23, 1989, 1-276769
Int. Cl.[5] G03G *15/00, 21/00*
U.S. Cl. 355—215 **6 Claims**



1. An image forming apparatus comprising:
a housing;
image forming means provided in the housing for forming a toner image onto a sheet;
a fixing station provided in the housing at which the toner image is fixed onto the sheet;
transporting means provided in the housing for transporting the sheet formed with the toner image thereon from the image forming means to the fixing station;
fixing means provided in the fixing station for heating the toner image to be fixed onto the sheet and for transporting the fixed sheet out of the housing, said fixing means extending along a direction perpendicular to the sheet transporting direction by the transporting means;
duct means, separately provided from said fixing means for forming a cooling passageway disposed parallel to and adjacent to the fixing means, said cooling passageway substantially covering the fixing means and having an intake and an outlet provided on an exterior surface of the housing; and
drawing means for drawing air into the cooling passageway from the intake to the outlet and for exhausting the drawn air out of the cooling passageway through the outlet to exchange the air radiated from the fixing means with said air drawn into the cooling passageway.

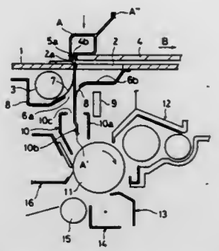
5,185,630

COPYING MACHINE HAVING TOP WALL WITH SLIT FOR CLEANING ACCESS

Tamami Nagasawa, Osaka, and Masayuki Ida, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 356,003, May 23, 1989, abandoned.
This application Jan. 21, 1992, Ser. No. 824,896
Claims priority, application Japan, May 31, 1988, 63-135121; May 31, 1988, 63-135122
Int. Cl.[5] G03G *15/02, 15/04*
U.S. Cl. 355—215 **13 Claims**

1. A copying machine comprising:
a photoreceptor;
a top wall;
a board for setting thereon an original to be copied;
an exposure lamp;
copying means for directing light emitted from said exposure lamp and reflected by an original on said board onto said photoreceptor to form a latent image on said photoreceptor while causing said board to slidingly move over said top wall in a first direction;
said top wall having formed therethrough a slit which is elongated in a second direction transverse to said first direction, a passage being formed under said top wall and a cleaner member inserted therethrough from said slit to a component which requires cleaning and movable in said second direction within said passage;
a main reflector disposed in said passage, said main reflector having formed therethrough an opening which is elongated so as to allow said cleaner member inserted downward through said passage both to pass through said opening and to be moved in said second direction; and



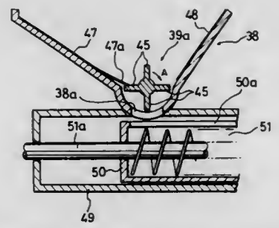
at least one movable sub-reflector normally positioned so as to cover said opening so as to close said passage and to prevent light from passing through said passage to reach said photoreceptor, said sub-reflector being elastic and allowing said cleaner member to be inserted through and be moved inside said opening.

5,185,631

APPARATUS FOR UNIFORMLY SUPPLYING POWDER WITH REDUCED REMNANT POWDER

Kiyotaka Shibata, Takatsuki, Japan, assignor to Mita Industrial Co., Ltd., Osaka, Japan

Filed May 21, 1990, Ser. No. 526,029
Claims priority, application Japan, Jul. 18, 1989, 1-186536; Jul. 18, 1989, 1-186539
Int. Cl.[5] G03G *15/08, 21/00*
U.S. Cl. 355—245 **11 Claims**



1. An apparatus for supplying powder comprising:
a container having sloping inner walls, for containing powder;
a transportation member rotatably placed in a bottom portion of said container, for transporting said powder in a predetermined direction, said transportation member having a plurality of wings; and
a swing plate located on one of said inner walls near a space in which said wings move upward by the rotation of said transportation member, said swing plate having an upper end connected to one of said sloping inner walls of said container and a bottom end having a projection positioned in the locus of said transportation member, said projection touching at least one end of said wings during rotation of said transportation member, wherein there is contact between the bottom end of the swing plate and the trans-

VOL 1147 ISS 2 FEB 9 1993 UMI

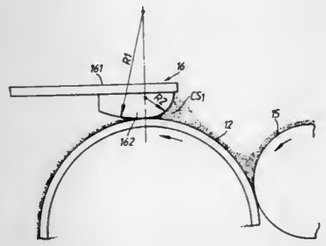
portation member, such that said swing plate is swung by the rotation of said transportation member.

5,185,632

DEVELOPING DEVICE USING DEVELOPER REGULATING BLADE HAVING TWO CURVED PORTIONS

Minoru Yoshida, Tokyo, and Kouji Hirano, Kanagawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 10, 1991, Ser. No. 774,187
Claims priority, application Japan, Oct. 30, 1990, 2-292753
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—261 **13 Claims**



1. A device for developing a latent image on an image carrier in an image forming apparatus, comprising:
roller means for supplying a developing agent to an image carrier; and
means for forming a layer of the developing agent on the roller means, the forming means having a curved portion pressing on the surface of the roller means for controlling the thickness of the developing agent layer and for applying a frictional charge to the devcloping agent on the roller means, the curved portion comprising a first curved surface having a first radius **R1** which contacts the surface of the roller means and a second curved surface having a second radius **R2** provided at the upstream side in the rotational direction of the roller means, the relationship between the first and second radii being **R1 > R2**.

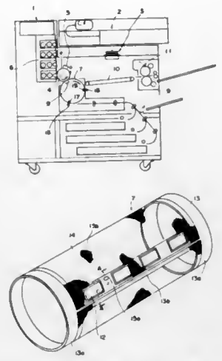
5,185,633

IMAGE FORMING APPARATUS HAVING SINGLE SENSOR FOR DETECTING MISCHUCKING OF TRANSFER PAPER AND WHETHER TRANSFER PAPER IS PLAIN OR TRANSPARENT PAPER

Naotoshi Kawai, and Kazunobu Maekawa, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 24, 1991, Ser. No. 764,805
Claims priority, application Japan, Sep. 26, 1990, 2-257921
Int. Cl.[5] G03G *15/14*
U.S. Cl. 355—271 **11 Claims**

1. An image forming apparatus comprising:
a rotatable transfer drum having chucking means on the surface thereof for chucking a transfer paper on the transfer surface at a chucking position;
a sensor whose change in state is detected provided in the vicinity of the transfer drum; and
control means for controlling the sensor to operate when first and second detecting positions on the transfer drum pass the sensor, said first detecting position being in proximity to the chucking means and said second detecting position being spaced from the first detecting position.

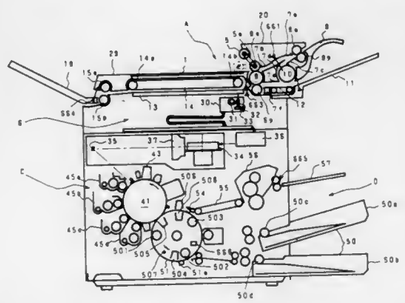


5,185,634

ELECTROPHOTOGRAPHIC COPYING APPARATUS HAVING CAPABILITY OF INTERRUPTING A COPY OPERATION IN MIDST OF MULTI-COLOR TRANSFER PROCESS

Minolta Camera Kabushiki Kaisha, 03, Osaka, Japan

Filed Nov. 9, 1989, Ser. No. 435,204
Claims priority, application Japan, Nov. 11, 1988, 63-286418; Nov. 11, 1988, 63-286419; Nov. 11, 1988, 63-286420
Int. Cl.[5] G03G *15/00, 21/00*
U.S. Cl. 355—314 **20 Claims**



1. A copying apparatus comprising:
a photosensitive drum having a photosensitive member on its surface;
a rotatable transfer drum;
transfer paper holding means for holding a transfer paper on said transfer drum;
image forming means for successively forming a plurality of different color toner images on said photosensitive member and transferring all of said different color toner images onto a single surface of said transfer paper held on the transfer drum every time one of said toner images is formed so as to overlap the toner images with each other and thereby obtain a desired image, the number of said different color toner images being predetermined;
first input means for inputting a start instruction of said image forming means;

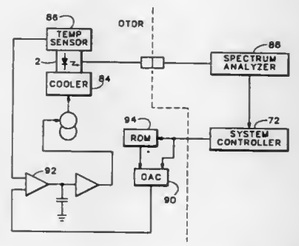
start control means for starting the operation of said image forming means in response to an inputted start instruction;
automatic termination control means for terminating the operation of said image forming means after said image forming means has completed transferring all of predetermined number of the toner images;
second input means for inputting an interrupt instruction to interrupt the operation of said image forming means during the transferring of a particular one of said toner images; and
interrupt control means for interrupting the operation of said image forming means in response to an inputted interrupt instruction, after the completion of the transferring of said particular toner image without forming and transferring remaining ones of said predetermined number of different color toner images.

5,185,635

METHOD OF CALIBRATING AND CONTROLLING THE OPTICAL POWER OUTPUT OF AN OTDR

William A. Trent; Kevin B. McDonald, and Florian G. Bell, all of Bend, Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Division of Ser. No. 514,792, Apr. 25, 1990, abandoned. This application Jul. 29, 1991, Ser. No. 737,112
Int. Cl.[5] G01N *21/88;* H01S *3/13*
U.S. Cl. 356—73.1 **3 Claims**



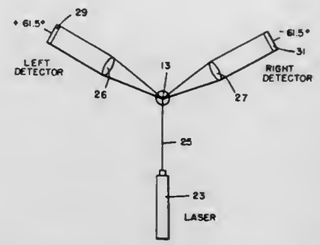
1. A method of calibrating and controlling the optical power output of a laser diode in an optical time domain reflectometer to establish and maintain a desired center wavelength as a function of controlling the operating temperature of the laser diode comprising the steps of:
generating a measured value signal having a magnitude value that is a direct measurement of the operating temperature of the laser diode;
generating an optical power output from the laser diode;
measuring the wavelength distribution of the optical power output from the laser diode for determining the center wavelength of the optical power output;
comparing the center wavelength of the optical power output with a desired center wavelength for the laser diode for generating a desired temperature signal having a magnitude value that is a function of the difference between the measured center wavelength and the desired center wavelength of the optical power output of the laser diode; and
comparing the measured value signal with the desired temperature signal for generating a supply current to a thermoelectric cooler coupled to the laser diode for controlling the operating temperature of the laser diode to establish the laser diode at the temperature at which the center wavelength is equal to the desired center wavelength.

5,185,636

METHOD FOR DETECTING DEFECTS IN FIBERS

Leslie J. Button, Big Flats, N.Y.; Jerald B. Dotson, Los Angeles, Calif.; Bruce W. Reding, Elmira, and Christopher W. Wightman, Corning, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Dec. 31, 1991, Ser. No. 816,883
Int. Cl.[5] G01N *21/88, 21/89*
U.S. Cl. 356—73.1 **26 Claims**



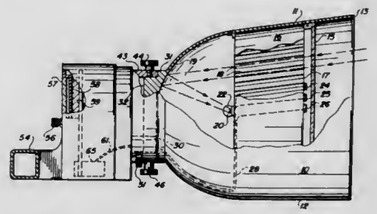
1. A method for detecting a defect in a transparent filament comprising the steps of:
(*a*) directing a beam of radiation at a longitudinal position along the length of the filament so as to produce an interference pattern;
(*b*) detecting said interference pattern at a first angular location;
(c) generating a spatial frequency spectrum for said interference pattern detected at the first angular location;
(d) identifying a first component of said spatial frequency spectrum of step (c), said first component corresponding to the outer diameter of the filament; and
(e) identifying a second component of said spatial frequency spectrum of step (c), said second component having a spatial frequency greater than zero and less than the spatial frequency of the first component identified in step (d), the presence of the second component in the spatial frequency spectrum being indicative of the presence of the defect in the filament at the longitudinal position.

5,185,637

PORTABLE TRAFFIC SIGNAL LIGHT PHOTOMETER

Ian Lewin, and Ladd Howell, both of Scottsdale, Ariz., assignors to Lighting Sciences, Inc., Scottsdale, Ariz.

Filed Jul. 11, 1991, Ser. No. 728,542
Int. Cl.[5] G01J *1/42;* G08G *1/097*
U.S. Cl. 356—218 **19 Claims**



1. A traffic signal photometer for measuring the intensity of light emanating from the lens of a traffic signal light, including in combination:
a housing member having a front opening for engagement with the lens of a traffic signal light to permit light emanating from the traffic signal light to enter said housing member;
directional optical filter means in said housing member for

VOL 1147 ISS 2 FEB 9 1993 UMI

allowing only the passage of light rays emitted from the lens of a traffic signal light at a predetermined angle to pass therethrough;

means for receiving light passing through said directional optical filter means for producing an output signal proportional to the intensity of such received light rays;

output signal utilization means responsive to said output signal; and

orientation switch means on said housing member for enabling said output signal utilization means only when said housing member has a predetermined orientation.

5,185,638

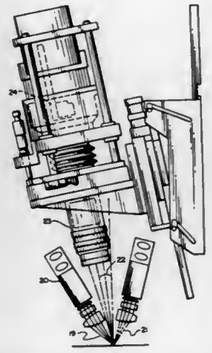
COMPUTER CONTROLLED, MULTIPLE ANGLE ILLUMINATION SYSTEM

Vincent C. Conzola, Endwell; Norman E. Rittenhouse; Jeffrey M. Solomon, both of Endicott, all of N.Y.; Thomas J. Toomey, Denver, Colo., and Peter J. Yablonsky, Apalachin, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 26, 1991, Ser. No. 691,941

Int. Cl.[5] G01N *21/88, 21/47;* **F21V** *8/00, 33/00*

U.S. Cl. 356—237 **4 Claims**



1. An automated optical inspection system comprising:

an illumination system which includes multiple sources of light for impinging at multiple angles incident to the surface of a workpiece;

illumination control electronics for maintaining constant intensity of each of the multiple light sources;

multiple fiber optic line converter for coupling the light from each of the multiple sources into a fiber optic bundle; and

a multiple lens light collection system for focusing light on the surface of a workpiece; and

means for calculating the digital percent voltage value of each lamp in the illumination system;

means for converting the digital percent-voltage values for each lamp of the illumination system to an analog control voltage;

means for supplying a constant DC voltage to each lamp of the illumination system as a variable voltage supply; and

means for using the analog control voltages to control the constant voltage power supply.

5,185,639

FIBER SAMPLE HOLDER

Sergej Toedtli, Wollerau, and Alfred Beeler, Horgen, both of Switzerland, assignors to Siegfried Peyer AG, Wollerau, Switzerland

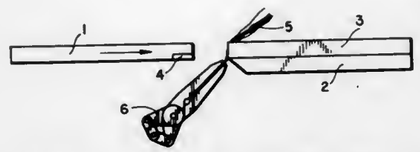
PCT No. PCT/CH90/00128, § 371 Date May 26, 1991, § 102(e) Date May 26, 1991, PCT Pub. No. WO91/00518, PCT Pub. Date Jan. 10, 1991

PCT Filed May 14, 1990, Ser. No. 651,401

Claims priority, application Switzerland, Jun. 30, 1989, 2438/89

Int. Cl.[5] G01N *33/36, 1/28*

U.S. Cl. 356—245 **9 Claims**



1. A method for preparing and fixing fiber samples to be optically analyzed, the fibers having first and second ends, said method comprising the steps of:

(a) securing the first ends of the fiber samples;

(b) placing the second ends on a first optically transparent plate; and,

(c) pressing a second optically transparent plate against said first plate and simultaneously sliding said plates with respect to each other until said second plate substantially covers said first plate so as to longitudinally align the fibers for forming a parallel, fixed fiber sample.

5,185,640

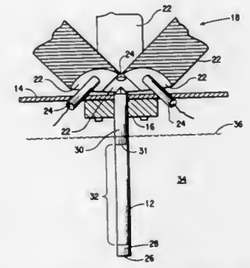
MULTIFACETED PROBES FOR OPTICAL ANALYSIS

Paul A. Wilks, Jr., Darien, and John P. Gaglione, Stratford, both of Conn., assignors to Genral Analysis Corporation, South Norwalk, Conn.

Filed Sep. 13, 1991, Ser. No. 759,452

Int. Cl.[5] G01N *21/35*

U.S. Cl. 356—300 **22 Claims**



1. A probe for optical analysis comprising an elongated rod having at least three facets at one end thereof for the passage of light into or out of said probe.

5,185,641

APPARATUS FOR SIMULTANEOUSLY MEASURING LARGE AND SMALL PARTICLE SIZE DISTRIBUTION

Tatsuo Igushi, and Yoshiaki Togawa, both of Kyoto, Japan, assignors to Horiba, Ltd., Kyoto, Japan

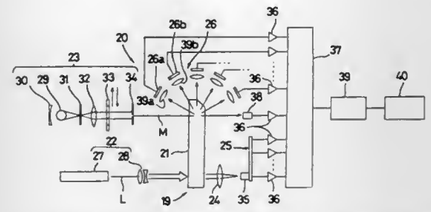
Filed Nov. 1, 1991, Ser. No. 786,553

Claims priority, application Japan, Nov. 3, 1990, 2-297869; Nov. 17, 1990, 2-312251

The portion of the term of this patent subsequent to Nov. 17, 2009, has been disclaimed.

Int. Cl.[5] G01N *15/02*

U.S. Cl. 356—336 **7 Claims**



1. An apparatus for measuring a wide range of particle sizes in a sample fluid comprising:

first means for irradiating the sample fluid with a first light source along a first predetermined optical axis;

second means for irradiating the sample fluid with a second light source having a different wavelength than the first light source along a second predetermined optical axis;

first detector means for measuring the optical intensities of the first light source after interaction with the particles in the sample fluid at predetermined angles off the first optical axis;

second detector means for measuring the optical intensities of the second light source after interaction with the particles in the sample fluid at predetermined angles off the second optical axis;

means for measuring a transmission characteristic of the first light through the sample fluid without particles and providing a representative signal;

means for measuring a transmission characteristic of the second light through the sample fluid without particles and providing a representative signal;

means for adjusting the measured optical intensities of the first detector means in response to the representative signal to provide compensated data of the first light source intensities;

means for adjusting the measured optical intensities of the second detector means in response to the representative signal to provide compensated data of the second light source intensities, and

means for calculating the particle size distribution in the sample fluid from the respective compensated first and second data of the light source intensities.

5,185,642

IMPROVED METHOD AND ARRANGEMENT FOR PROCESSING OUTPUT SIGNALS OF A FIBER RING INTERFEROMETER

Heinz Göckler, Backnang, Fed. Rep. of Germany, assignor to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

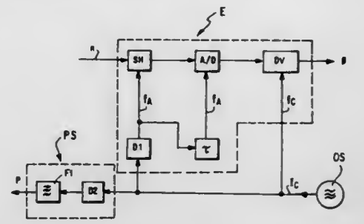
Filed Dec. 19, 1990, Ser. No. 631,102

Claims priority, application Fed. Rep. of Germany, Dec. 20, 1989, 3941991

Int. Cl.[5] G01C *19/72*

U.S. Cl. 356—350 **15 Claims**

1. In a method for determining angular velocities by means of an optical fiber ring interferometer including passing light waves, in opposite directions, through the optical ring interferometer, modulating the passing light waves with a phase modulation frequency f, and combining light waves leaving the optical fiber ring interferometer to produce an output signal, the improvement comprising the steps of:



generating a sampling frequency f_A which satisfies the following equations:

$$f_A = (f \pm f_\Delta)/m$$

$$f_A = \frac{l}{m} f_\Delta$$

wherein the factors m and l are integers and f_Δ is a subharmonic of the phase modulation frequency f;

converting the output signal via an analog/digital converter into a digital signal at the sampling frequency f_A; and

evaluating the resultant said digital signal to determine the angular velocity.

5,185,643

ARRANGEMENT FOR OPERATING A LASER DIODE

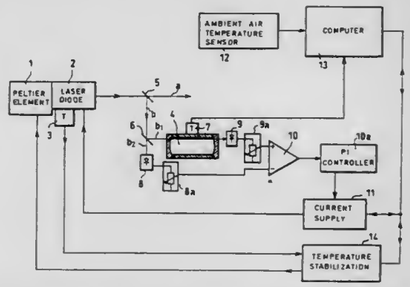
Uwe Vry; Andreas Dorsel, both of Aalen; Berthold Schierle, Bopfingen; Martin Blumentritt, Königsbronn, and Peter Greve, Essingen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany

Filed Dec. 9, 1991, Ser. No. 804,060

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1990, 4039371

Int. Cl.[5] G01B *11/02;* **H01S** *3/133*

U.S. Cl. 356—358 **10 Claims**



1. An arrangement for the operation of a laser diode as a radiation source in an interferometer for measuring distances, the arrangement comprising:

stabilization circuit means for providing desired values of current and temperature for said laser diode during operation;

a Fabry-Perot interferometer having a transmission characteristic from which a reference signal can be derived;

control circuit means including said Fabry-Perot interferometer and being adapted for readjusting the current and temperature of said laser diode in dependence upon a

VOL
1147
ISS
2
FE
9
1993
UMI

reference signal derived from said transmission characteristic;

said Fabry-Perot interferometer having a transmittance maximum defining a spectral spacing much less than the spacing of longitudinal modes emitted by said laser diode;

first sensor means for measuring a first operating parameter of said laser diode and providing a first sensor signal indicative of said first operating parameter;

second sensor means for measuring a second operating parameter of said laser diode and providing a second signal indicative of said second operating parameter;

third sensor means for measuring an environmental parameter and providing a third signal indicative of said environmental parameter;

control computer means connected to said first, second and third sensor means for receiving said first, second and third signals;

said control computer means including memory means for storing coefficients for defining the dependence of the wavelengths emitted by said laser diode upon said parameters; and,

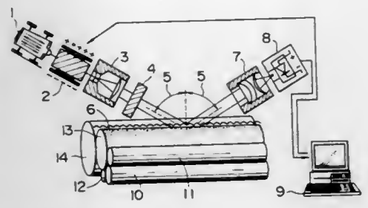
said control computer means being adapted to compute new values of said operating parameters when said arrangement is switched on with said new values being based on the last measured values of said operating parameters while considering said environmental parameter with the wavelength of said laser diode always being matched with said new values to a predetermined transmittance maximum of said Fabry-Perot interferometer.

5,185,644

SENSOR FOR WATER FILM ON A PLATE IN PRINTING MACHINES

Makoto Shimoyama, and Ikuo Ozaki, both of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1991, Ser. No. 731,656
Claims priority, application Japan, Jul. 17, 1990, 2-187214
Int. Cl.[5] G01J *4/00*; G01B *11/06*
U.S. Cl. 356—369 **5 Claims**



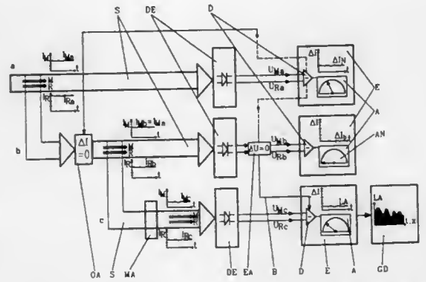
1. A sensor for measuring the thickness of a water film formed on a plate in a printing machine, comprising a narrow-band light source, a photo modulator for alternatively chopping light from the light source into p-polarized and s-polarized beams, a collimator for making rays of the chopped beams parallel to each other with a given cross-sectional area for measurement, a wave-length plate for adjusting wavefront of the collimated parallel rays and directing the parallel rays onto the water film at a selected angle of incidence, and a device for receiving light beams reflected specularly from the plate and for calculating the thickness of a water film formed on the plate.

5,185,645

MEASUREMENT METHOD FOR THE DETERMINATION OF LOW LEVELS OF OPTICAL ABSORPTION

Bernd Sartorius, Berlin, Fed. Rep. of Germany; Alain Reboux, and Bertrand Huet, assignors to Heinrich-Hertz-Institut für Nachrichtentechnik Berlin GmbH, Berlin, Fed. Rep. of Germany

Filed Feb. 21, 1991, Ser. No. 659,008
Claims priority, application Fed. Rep. of Germany, Feb. 22, 1990, 4005864
Int. Cl.[5] G01N *21/00*
U.S. Cl. 356—435 **40 Claims**



1. A measurement method for determining the optical absorption of a test material having an optical absorption spectrum, said measurement method comprising the steps of:

a) providing a light source for generating a light beam having a spectrum which includes at least a substantially monochromatic reference light beam (R) at a reference wavelength (λ_R), said reference wavelength (λ_R) being selected to be substantially outside of the optical absorption spectrum of the test material, and a substantially monochromatic measurement light beam (M) at a measurement wavelength (λ_M), said measurement wavelength (λ_M) being selected to be substantially within the optical absorption spectrum of the test material;

b) providing detector means for detecting the strength of said reference light beam (R) by generating a reference detector signal (U_R) when illuminated by said reference light beam (R) and for detecting the strength of said measurement light beam (M) by generating a measurement detector signal (U_M) when illuminated by said measurement light beam (M), each of said reference and measurement detector signals (U_R and U_M) generated by said detector means being a signal indicative of the intensity of illumination of said detector means by said reference and measurement light beams (R and M), respectively;

c) providing difference registration means for registering a difference between said reference detector signal (U_R) and said measurement detector signal (U_M) generated by said detector means when illuminated by said reference light beam (R) and said measurement light beam (M), respectively;

d) directly illuminating said detector means with said reference light beam (R) to produce a first reference detector signal (U_{Re}), said direct illumination of said detector means by said reference light beam (R) being carried with the test material absent from the path of said reference light beam (R);

e) directly illuminating said detector means with said measurement light beam (M) to produce a first measurement detector signal (U_{Ma}), said direct illumination of said detector means by said measurement light beam (M) being carried out with the test material absent from the path of said measurement light beam (M);

f) registering a difference ($\Delta = U_{Ra} - U_{Ma}$) between said first reference detector signal (U_{Ra}) generated by said detector means when directly illuminated by said inference light beam (R) and a first measurement detector signal (U_{Ma}) generated by said detector means when directly illuminated by said measurement light beam (M);

g) providing attenuation means for tuning to zero said difference (Δ) between said first reference detector signal (U_{Ra}) and said first measurement detector signal (U_{Ma}) by attenuating one of said first reference detector signal (U_{Ra}) and said first measurement detector signal (U_{Ma});

h) actuating said attenuation means to thereby balance said first reference detector signal (U_{Ra}) and said first measurement detector signal (U_{Ma}) to identical values ($U_{Rb} = U_{Mb}$) and thereby tuning to zero said difference (Δ) and maintaining this actuated balanced attenuation status during the following steps:

i) passing said reference light beam (R) through the test material and thereafter illuminating said detector means with said reference light beam (R) to thereby generate a second reference detector signal (U_{Rc});

j) passing said measurement light beam (M) through the test material and thereafter illuminating said detector means with said measurement light beam (M) to thereby generate a second measurement detector signal (U_{Mc}); and

k) measuring the difference (ΔI) between said second reference signal (U_{Rc}) and said second measurement signal (U_{Mc});

whereby said difference (ΔI) is directly indicative of the optical absorption (LA) of the test material;

wherein said detector means comprises:

a single detector means provided for detecting alternatively both of said reference light beam (R) and said measurement light beam (M);

wherein said measurement method additionally comprises the further steps of:

modulating both of said reference light beam (R) and said measurement light beam (M) alternatively at a first frequency (f1); and

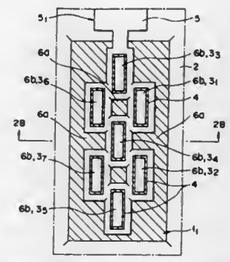
additionally further modulating said reference light beam (R) at a second frequency (f2).

5,185,646

SEMICONDUCTOR DEVICE WITH IMPROVED CURRENT DRIVABILITY

Tomohisa Mizuno, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 23, 1991, Ser. No. 644,510
Claims priority, application Japan, Jan. 24, 1990, 2-14032
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—390 **18 Claims**



1. A semiconductor device with a field effect transistor comprising:

a semiconductor substrate having a plurality of pedestal regions, each pedestal region consisting of a first surface located at the surface of the substrate, a second surface which differs in height from said first surface, and side surfaces connecting said first and second surfaces together, said pedestal regions being arranged in rows, said pedestal regions in each row being arranged at intervals of LD, said rows being arranged at intervals of LE, and said gate electrodes have a thickness of LF, the intervals LD and LE and the thickness LF being related such that $LD \geqq 2LF \geqq LE$;

a first region formed in each first surface of each pedestal region of said semiconductor substrate and abutting each side surface of each pedestal region and second regions formed in said second surfaces, said first region and said second regions serving as source and drain regions and formed of a conductivity type being opposite to a conductivity type of said semiconductor substrate; and

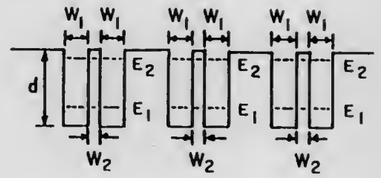
gate electrodes formed on the side surfaces of said pedestal regions, the gate electrodes being connected together.

5,185,647

LONG WAVELENGTH INFRARED DETECTOR

Richard P. Vasquez, Duarte, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 283,443, Dec. 12, 1988, abandoned.
This application Sep. 25, 1990, Ser. No. 562,176
Int. Cl.[5] H01L *27/12, 29/161, 27/14*
U.S. Cl. 257—17 **7 Claims**



1. A devide for infrared detection comprising an even number of quantum wells in a linear array, said quantum wells being paired, each odd numbered quantum well being paired with an adjacent even numbered quantum well, said quantum wells of each pair being coupled by selected spacing between said paired wells, each quantum well comprising a layer of well material bounded on each side by a layer of barrier material with a width and depth of each quantum well selected for a predetermined single energy level such that, when said single energy level is split by coupling between paired quantum wells, an upper and a lower energy level is produced, said selected spacing between paired quantum wells being selected for splitting said single energy level with a difference between said upper and lower energy levels appropriate for detection of infrared radiation of a desired wavelength greater than about 10 μm and up to about 100 μm.

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PLURAL-WAVELENGTH INFRARED DETECTOR DEVICES

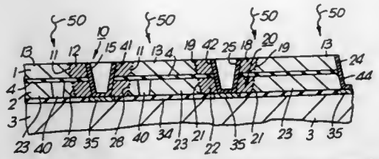
Ian M. Baker, Romsey, and William A. E. Dunn, Nomanshand, both of England, assignors to U.S. Philips Corp., New York, N.Y.

Filed Sep. 10, 1991, Ser. No. 757,380
Claims priority, application United Kingdom, Sep. 12, 1990, 9019897
Int. Cl.[5] H01L *27/14*
U.S. Cl. 257—189 **7 Claims**

1. A plural wavelength infrared detector device including first and second detector elements comprising respective first and second infrared sensitive semiconductor materials, and a substrate carrying the detector elements, the first semiconductor material having a smaller bandgap than the second semi-

VOL
1147
ISS
2
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1993
UMI

conductor material so as to provide each first detector element with a response to a longer infrared wavelength, each detector element comprising a pn junction between opposite conductivity-type regions of the respective semiconductor materials, and electrical connections from the detector-element regions to the substrate, wherein the improvement comprises that the electrical connection between the substrate and one region of



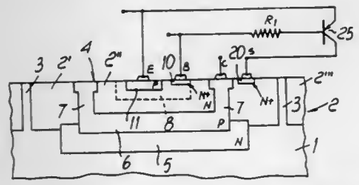
the longer wavelength response detector element extends on a side wall of both the first and second semiconductor materials, and in that the larger bandgap second material comprises a further region which adjoins the side wall and which forms a further pn junction electrically in parallel with the pn junction of the first detector element, the further pn junction having a higher impedance than the pn junction of the first detector element in the smaller bandgap first material.

5,185,649

CIRCUITAL ARRANGEMENT FOR PREVENTING LATCHUP IN TRANSISTORS WITH INSULATED COLLECTORS

Franco Bertotti, Milan, and Paolo Ferrari, Gallarate, both of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Italy

Filed Mar. 26, 1991, Ser. No. 675,558
Claims priority, application Italy, Mar. 29, 1990, 19862 A/90
Int. Cl.[5] H01L *27/02*
U.S. Cl. 357—43 **20 Claims**



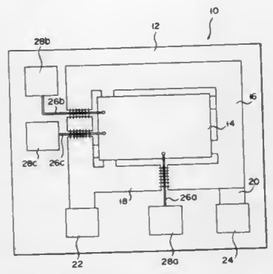
1. Circuital arrangement for preventing latch-up phenomena in vertical PNP transistors with insulated collector, comprising a vertical PNP transistor with insulated collector which has its collector, base and emitter regions connected to respective terminals, said collector region, which is of the P type, being surrounded by an N-type well which forms a junction therewith, said vertical PNP transistor being driven so as to have at least one saturated on state and one off state, said circuital arrangement further comprising switch means which are interposed between said emitter region and said N-type well, said switch means being suitable for connecting said N-type well to said emitter region when said vertical PNP transistor is in the saturated on state and for opening when said vertical PNP transistor is in the off state.

5,185,650

HIGH-SPEED SIGNAL TRANSMISSION LINE PATH STRUCTURE FOR SEMICONDUCTOR INTEGRATED CIRCUIT DEVICES

Hirotsugu Wakimoto; Mitsuo Konno, both of Yokohama, and Kunio Yoshihara, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 483,790, Feb. 23, 1990, abandoned. This application Apr. 1, 1992, Ser. No. 860,272
Claims priority, application Japan, Feb. 28, 1989, 1-47251
Int. Cl.[5] H01L *27/02, 23/48, 29/46, 25/04*
U.S. Cl. 257—508 **16 Claims**



1. A wiring structure for impedance control, comprising:
a substrate;
a signal transmission line insulatively overlying the substrate and extending in a first direction;
first and second capacitance sections arranged on respective sides of the signal transmission line, each of said first and second capacitance sections including first and second conductive layers, one of which is insulatively stacked upon the other; and
impedance adjusting means for electrically connecting the first conductive layers of the first and second capacitance sections together, for connecting the second conductive layers of the first and second capacitance sections together, and for setting an impedance of said signal transmission line to a target value;
said impedance adjusting means including a plurality of spaced-apart first parallel connection portions for connecting the first conductive layers together, and a plurality of spaced-apart second parallel connection portions for connecting the second conductive layers together; and
the first and second parallel connection portions extending in a second direction transverse to the first direction, being adapted to be applied with voltages which are different in potential rom each other, and being alternately arranged on the substrate at certain intervals therebetween, for causing said signal transmission line to be suppressed in a potential variation along the first direction.

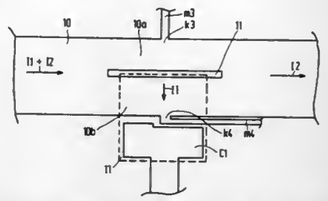
5,185,651

INTEGRATED CIRCUIT WITH CURRENT DETECTION

Hendrik Boezen, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 12, 1990, Ser. No. 552,738
Claims priority, application Netherlands, Jul. 14, 1989, 8901822
Int. Cl.[5] H01C *1/14;* **H01L** *19/00*
U.S. Cl. 257—734 **19 Claims**

1. An integrated circuit comprising:
a current conductor of sufficient width and thickness for supplying current, during operation, to a semiconductor structure via a current path of the semiconductor structure and for supplying current to other parts of the circuit, wherein the current conductor is locally divided into a first and a second parallel partial current conductor in an area where said current path is connected to said current conductor,
a semiconductor structure including said current path and designed to pass a current during operation and with the current path connected to a portion of the first partial



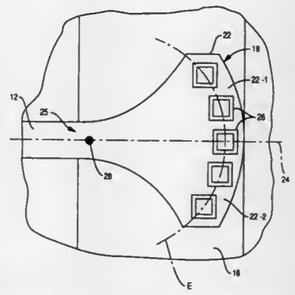
current conductor, and first and second connection contacts connected to said first and second partial current conductors, respectively, and between which first and second connection contacts a voltage drop is developed which is proportional to the current through the semiconductor structure during operation.

5,185,652

ELECTRICAL CONNECTION BETWEEN BUSES ON A SEMICONDUCTOR INTEGRATED CIRCUIT

Robert D. Waldron, and Harold S. Crafts, both of Fort Collins, Colo., assignors to NCR Corporation, Dayton, Ohio

Filed May 28, 1991, Ser. No. 706,428
Int. Cl.[5] H01L *21/60, 23/48*
U.S. Cl. 257—758 **24 Claims**



1. An electrical connection between a first metal bus and a second metal bus separated by an insulator comprising:
a plurality of vias connecting an end of the first bus to the second bus, said plurality of vias being arranged so that current flows substantially evenly through said plurality of vias; each of said vias including conductive material from the first bus which is in contact with the second bus through an aperture in the insulator.

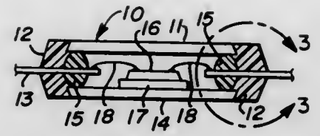
5,185,653

O-RING PACKAGE

Andrew P. Switky, Palo Alto, and Chok J. Chia, Campbell, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 610,640, Nov. 8, 1990, abandoned. This application Feb. 28, 1991, Ser. No. 661,962
Int. Cl.[5] H01L *23/04, 23/10*
U.S. Cl. 257—729 **11 Claims**

1. A semiconductor chip package comprising:
a lead frame having finger portion extensions that terminate inwardly in an array that is to be connected to the bonding pad pattern on a semiconductor chip and that extend outwardly to form a package pin array;
a bead of resilient insulation material located upon said lead frame finger pattern to encompass the ends of the inwardly extending fingers;
upper and lower plates that are flat, substantially rigid and larger in area than the area enclosed by said bead, said plates being pressed against said bead so that said outwardly extending finger portions extend outward beyond the edges of said plates;
a molded insulative ring formed around the edges of said plates whereby said plates are joined together, said ring having an outer dimension that determines the periphery of said package with said outwardly extending fingers protruding through and beyond said molded ring; and
a semiconductor chip having its bonding pads connected to said leadframe finger portion.

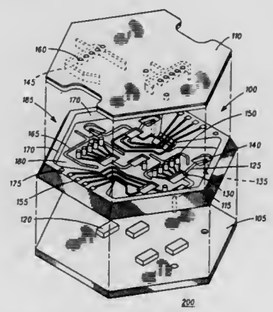


5,185,654

ELECTROSTATIC RF ABSORBANT CIRCUIT CARRIER ASSEMBLY AND METHOD FOR MAKING THE SAME

Mark D. Mosher, Scottsdale; Robert Fraser, Tempe, and Ronald D. Fuller, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 27, 1991, Ser. No. 799,235
Int. Cl.[5] H05B *6/60*
U.S. Cl. 257—659 **14 Claims**



1. A circuit carrier assembly comprising:
a polymeric support structure having a base and surrounding sidewalls which form an internal cavity;
a plurality of conductor paths disposed within said cavity; and
a polymeric cover having a surface integrally fashioned to comprise wall members for making contact with conductor paths when the cavity is sealed by the cover, said cover layered with a surface material comprising:
a thermosetting binder;
a non-conductive RF absorbing filler comprising 25 to 87 percent by weight loading of the binder, such that the surface material absorbs RF energy within a range between 1–60 GHz; and
a conductive filler comprising 1 to 4 percent by weight loading of the binder and the RF absorbing filler, such

VOL 1147 ISS 2 FEB 9 1993 UMI

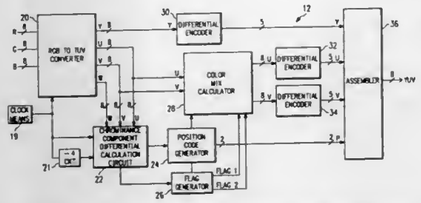
that the surface material has a surface resistivity of 10^5–10^{12} ohms/square.

5,185,655

METHOD AND APPARATUS FOR ENCODING FULL COLOR VIDEO DATA SIGNALS AND PROTOCOL FOR ENCODING SAME

Carl K. Wakeland, Bedford, Tex., assignor to Tandy Corporation, Fort Worth, Tex.

Filed Oct. 2, 1991, Ser. No. 770,544
Int. Cl.[5] H04N *11/06*
U.S. Cl. 358—13 **13 Claims**



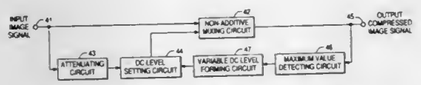
1. A method for encoding full color video data comprised of a series of pixel elements, said method comprising the steps of:
converting said full color video data into luminance and chrominance components;
subsampling said chrominance components by determining average chrominance difference values for every sequence of four pixels of said data;
differentially compressing said subsampled chrominance components;
differentially compressing said luminance components by determining average luminance difference values between successive pixel elements, and compressing said difference values; and
assembling said differentially compressed subsampled chrominance components and said differentially compressed luminance components of said converted full color video data.

5,185,656

CIRCUIT FOR COMPRESSING IMAGE SIGNAL

Kazumi Yamamoto, Tokyo, Japan, assignor to Ikegami Tsushinki Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1991, Ser. No. 773,312
Int. Cl.[5] H04N *9/64*
U.S. Cl. 358—21 R **11 Claims**



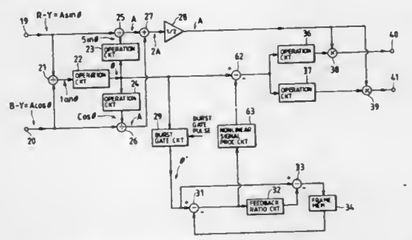
1. A circuit for compressing an image signal comprising:
attenuating means for attenuating an input image signal by an attenuation factor to derive an attenuated image signal;
direct current level setting means for adding a variable direct current potential to the attenuated image signal to derive a composite image signal;
non-additive mixing means for receiving the input image signal and the composite image signal consisting of the attenuated image signal and the variable direct current potential and selecting a smaller image signal as a compressed image signal;
maximum value detecting means for detecting a maximum value of the compressed image signal; and
variable direct current potential forming means for receiving the maximum value of the compressed image signal to generate the variable direct current potential which is supplied to said direct current level setting means such that the maximum value of the compressed image signal derived from said non-additive mixing means does not exceed a predetermined level.

5,185,657

COLOR SIGNAL PROCESSING CIRCUIT WITH RESIDUAL PHASE ERROR CORRECTION

Hidetoshi Ozaki, Chofu, and Akira Goukura, Tokyo, both of Japan, assignors to Victor Company of Japan, Ltd., Japan

Division of Ser. No. 514,487, Apr. 25, 1990. This application Nov. 19, 1991, Ser. No. 794,280
Claims priority, application Japan, Apr. 26, 1989, 1-106676; Apr. 26, 1989, 1-106677; Apr. 26, 1989, 1-106678; Apr. 29, 1989, 1-110063; Apr. 29, 1989, 1-110064
Int. Cl.[5] H04N *9/455*
U.S. Cl. 358—28 **6 Claims**



1. A color signal processing circuit comprising:
a signal conversion means for converting two color difference signals, which are equivalent to two color difference signals to be obtained by performing color demodulation of a color signal by using two color difference axes intersecting perpendicularly to each other, into a color amplitude signal corresponding to the amplitude of the color signal and a color phase signal corresponding to a phase of the color signal;
a difference signal generating means for generating in response to a color synchronizing signal a difference signal representing the difference between a current color signal outputted by said signal conversion means and the average of past color phase signals;
a nonlinear signal processing means for nonlinearly changing an output thereof depending on the magnitude of the difference signal generated by said difference signal generating means and the current color phase signal;
a signal modification means for generating and outputting a modified color phase signal which represents data to be obtained by subtracting a value indicated by the output signal of said nonlinear processing means from a value indicated by the current color phase signal outputted from said signal conversion means; and
a color difference signal generating means for generating two color difference signals on the basis of the color amplitude signal and the modified color phase signal outputted from said signal modification means.

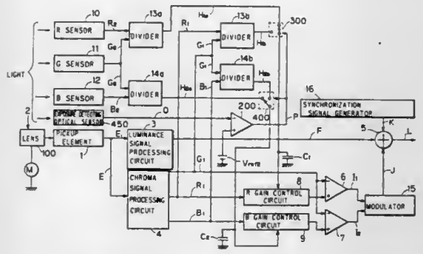
5,185,658

AUTOMATIC WHITE BALANCE REGULATING DEVICE WITH EXPOSURE DETECTING OPTICAL SENSOR

Kohji Shinomiya, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1991, Ser. No. 644,559
Claims priority, application Japan, Feb. 5, 1990, 2-26802
Int. Cl.[5] H04N *9/73*
U.S. Cl. 358—29 **2 Claims**

1. An automatic white balance regulating device built in an image pickup device for shooting an object and provided with a color temperature sensor system and a camera color signal processing system, comprising:
a plurality of color sensors receiving the light around the place where said image pickup device is set in position to output a plurality of first color signals;
image pickup means for shooting said object to output a plurality of second color signals;
first control signal producing means for producing a first white balance control signal of said color temperature sensor system, using said first color signals;
second control signal producing means for producing a second white balance control signal of said camera color signal processing system, using said second color signals;
system selecting means for selecting said first white balance control signal when the brightness around the place where said image pickup device is set in position is equal to or greater than a predetermined level, and for selecting said second white balance control signal when the brightness is less than the predetermined level; and
level regulating means for regulating a level of a predetermined one of said second color signals in response to said first or second white balance control signal selected by said system selecting means,
wherein said system selecting means comprises
an exposure detecting optical sensor for detecting the brightness around said image pickup device,
a comparator for receiving an output of said exposure detecting sensor and a signal equal to said predetermined level to compare magnitudes thereof to output a system changeover signal in accordance with a comparison result, and
a switch for receiving said first and second white balance control signals and said system changeover signal to output said first or second white balance control signal in accordance with said system changeover signal.



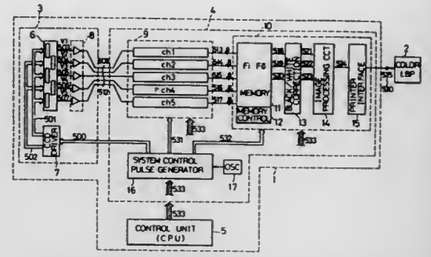
5,185,659

COLOR IMAGE READING APPARATUS HAVING COMMON CIRCUITRY FOR THE COLOR COMPONENT SIGNALS

Hiroshi Itagaki, Tokyo, and Nobuo Matsuoka, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 400,109, Aug. 29, 1989, Pat. No. 5,038,207. This application Jul. 16, 1991, Ser. No. 731,076
Claims priority, application Japan, Aug. 31, 1988, 63-214879; Aug. 31, 1988, 63-214880
Int. Cl.[5] H04N *9/07*
U.S. Cl. 358—44 **11 Claims**

1. A color image reading apparatus comprising:
reading means for reading a color image and dot sequentially outputting a plurality of analog color component signals;
common amplifying means for sequentially amplifying the plurality of analog color component signals which are dot sequentially output from said reading means;
common converting means for sequentially converting the plurality of analog color component signals, which are amplified by said common amplifying means, into a plurality of digital color component signals;
separating means for separating the plurality of digital color component signals, which are converted by said common converting means, into digital color component signals of each color; and
switching means for sequentially switching a gain of said common amplifying means in accordance with a color of the analog color signal to be amplified.

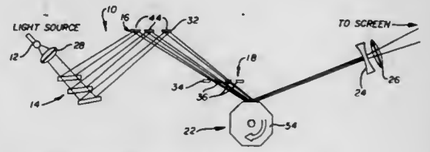


5,185,660

ACTUATED MIRROR OPTICAL INTENSITY MODULATION

Gregory Um, Torrance, Calif., assignor to Aura Systems, Inc., El Segundo, Calif.

Continuation-in-part of Ser. No. 448,748, Dec. 11, 1989, which is a continuation-in-part of Ser. No. 429,987, Nov. 1, 1989. This application Feb. 22, 1990, Ser. No. 483,932
Int. Cl.[5] G02F *1/13*
U.S. Cl. 358—60 **40 Claims**



1. A television display apparatus comprising:
a source for emitting a white light;
means for splitting said white light into a plurality of primary light beams, each of said primary light beams being one of the primary colors;
means for spreading each of said primary light beams into a bell-shaped beam;
means for clipping the profile of each of said bell-shaped beams into a clipped beam;
means for horizontally scanning each of said clipped beams simultaneously;
means for collimating said scanned light into a collimated beam; and
means for projecting said collimated beam onto a screen.

5,185,661

INPUT SCANNER COLOR MAPPING AND INPUT/OUTPUT COLOR GAMUT TRANSFORMATION

Yee S. Ng, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 19, 1991, Ser. No. 762,191
Int. Cl.[5] H04N *9/38*
U.S. Cl. 358—75 **24 Claims**

20. A method for correcting color interpretation errors and for transforming an input color gamut to an output color

VOL
1147
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gamut in a combination scanner and printer system, the method comprising the steps of:

operating an input circuit for correcting color interpretation errors in color separation signals produced with a scanner sensor, the step of operating comprising the steps of:

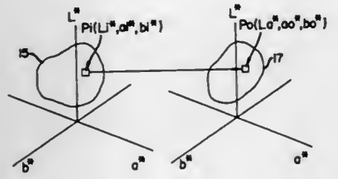
transforming the color separation signals in a matrix transformation circuit into near-uniform color space values;

addressing a tri-linear lookup table with the near-uniform color space values;

obtaining a set of the nearest known datapoints stored in the lookup table for a true uniform color space corresponding to the near-uniform color space values; and

interpolating between said set of datapoints and said near uniform color space values to determine the true uniform color space values for the color separation signals produced with the scanner sensor; and

operating an output circuit for mapping a requested data-



point in an input color space having a number of independent variables to an output datapoint within a printable output color gamut, the step of operating the output circuit comprising the steps of:

inputting the requested datapoint to a color gamut compression circuit;

non-linearly compressing a first of the number of independent variables of the requested datapoint to a first output variable for the output datapoint within the printable output color gamut;

finding a boundary of the output color gamut from the first output variable;

secondly non-linearly compressing the remaining number of independent variables lying in a region near the boundary of the output color gamut to the remaining output variables for the output datapoint; and

outputting the output datapoint from the color gamut compression circuit.

5,185,662

METHOD AND APPARATUS FOR PRODUCING COPY WITH SELECTIVE AREA TREATMENT

Christopher B. Liston, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 28, 1991, Ser. No. 646,124

Int. Cl.[5] H04N *1/40*

U.S. Cl. 358—78 **8 Claims**

1. A method for producing copy said method comprising the steps of:

scanning a document to be edited at a high resolution to generate signals representing image data on the document;

storing, in a high resolution storage memory, the data at a first high resolution;

displaying the data on a display at a second lower resolution;

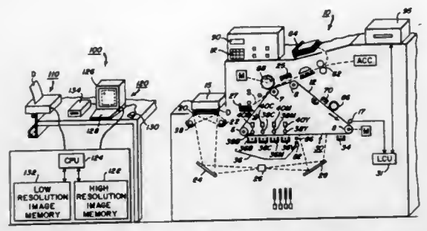
storing the data for display at the lower resolution;

designating an area on the display for selective editing;

in response to a designation of an area, extracting data specific to said area from said high resolution storage memory and modifying said data for viewing on said display at a higher resolution than said second resolution;

adjusting data in said designated area for editing and generating adjusted data;

storing said adjusted data; and



reproducing the document on a copier with editing thereof being in accordance with said adjusted data.

5,185,663

APPARATUS FOR PROCESSING PREDISTORTED FIRST VIDEO SIGNAL AND DATA REDUCED SECOND VIDEO SIGNAL

Andrew Hackett, Obernai, France, assignor to Deutsche Thomson-Brandt GmbH, Fed. Rep. of Germany

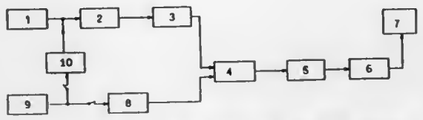
PCT No. PCT/EP89/01327, § 371 Date Jul. 1, 1991, § 102(e) Date Jul. 1, 1991, PCT Pub. No. WO90/06037, PCT Pub. Date May 31, 1990

PCT Filed Nov. 7, 1989, Ser. No. 688,485

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1988, 3838609

Int. Cl.[5] H04N *5/92, 11/04*

U.S. Cl. 358—140 **11 Claims**



1. Apparatus for processing video signals, comprising:

means for providing a first video signal;

means for providing a second video signal with resolution greater than that of said first video signal;

data reduction means responsive to said second video signal for providing a data reduced second video signal;

video signal formatting means responsive to said data reduced second video signal for producing a line interlaced data reduced second video signal;

studio signal processing means responsive to said data reduced interlaced second video signal and to said first video signal;

means for predistorting said first video signal by vertically displacing selected picture elements of said first video signal, prior to processing by said studio signal processing means; and

video signal image enhancement means disposed after said studio signal processing means for processing both said predistorted first video signal and said data reduced interlaced second video signal.

5,185,664

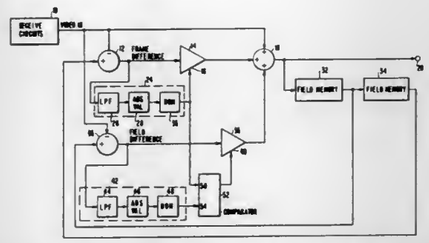
METHOD AND APPARATUS FOR COMBINING FIELD AND FRAME RECURSIVE NOISE REDUCTION FOR VIDEO SIGNALS

Ted A. Darby, Knoxville, Tenn., assignor to North American Philips Corporation, New York, N.Y.

Filed Oct. 31, 1991, Ser. No. 785,678

Int. Cl.[5] H04N *5/21*

U.S. Cl. 358—167 **16 Claims**



1. A method of providing combined field and frame recursive noise reduction for input video signals, said input video signals forming, on display, picture frames including two successive fields of scanning lines, said method comprising the steps:

delaying said input video signals by the duration of a single field forming field delayed video signals;

delaying said input video signals by the duration of a single frame forming frame delayed video signals;

performing a frame recursive noise reduction on said input video signals by subtracting said input video signals from said frame delayed video signals forming a first difference signal and by adding a portion of said difference signal, in dependence on a first motion vector, to said input video signals thereby forming frame recursive noise reduced video signals;

determining said first motion vector from said first difference signal;

performing a field recursive noise reduction on said input video signals by subtracting said input video signals from said field delayed video signals forming a second difference signal and by adding a portion of said second difference signal, in dependence on a second motion vector, to the frame recursive noise reduced video signals; and

determining an intermediate motion vector from said second difference signal; and

determining said second motion vector by combining said intermediate motion vector with said first motion vector.

5,185,665

APPARATUS FOR GENERATING ANIMATED VIDEO INSERTIONS

Yukiko Okura, Tokyo, and Yoshinori Komiya, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 5, 1991, Ser. No. 664,779

Claims priority, application Japan, Mar. 6, 1990, 2-052801

Int. Cl.[5] H04N *5/262, 5/272*

U.S. Cl. 358—183 **7 Claims**

1. A video apparatus for displaying functions by animation, comprising:

an instruction detector means for detecting a type of instruction;

a time counter means for counting a predetermined number of counts;

an output selector means for generating select signals by receiving output signals of said time counter means;

a character generator means for generating character signals based on said select signals and comprising a plurality of



related patterns, which, when output in sequence from the character generator means, provide animation; and

means for displaying said character signals.

5,185,666

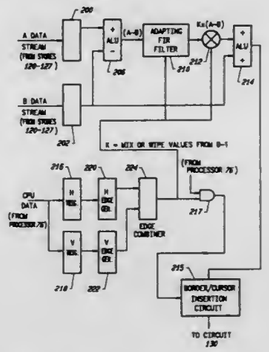
DIGITIZED FILM IMAGE PROCESSING SYSTEM WITH BORDERED SPLIT SCREEN DISPLAY

Patrice J. Capitant, Los Altos; Vinson R. Perry, San Carlos, and David O. Hodgson, San Mateo, all of Calif., assignors to Sony Corporation of America, Park Ridge, N.J.

Filed Aug. 5, 1991, Ser. No. 740,626

Int. Cl.[5] H04N *5/262*

U.S. Cl. 358—183 **20 Claims**



1. A system for generating a bordered composite signal for use in comparing a digitized film image with a reference image, including:

first storage means for storing a first digital signal representing the reference image;

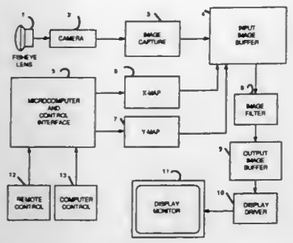
second storage means for storing a second digital signal representing the digitized film image;

means connected to the first storage means and the second storage means, for combining selected portions of the first digital signal and the second digital signal to generate a composite signal, wherein the composite signal includes a first image portion consisting of portions of the first digital signal, a second image portion consisting of portions of the second digital signal, and a transition portion between the first image portion and the second image portion; and

border signal insertion means for combining a border signal with the composite signal by replacing the transition portion with said border signal to generate a bordered composite signal.

VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,667
OMNIVIEW MOTIONLESS CAMERA ORIENTATION SYSTEM
Steven D. Zimmermann, Knoxville, Tenn., assignor to TeleRobotics International, Inc., Knoxville, Tenn.
Filed May 13, 1991, Ser. No. 699,366
Int. Cl.[5] H04N *5/30*
U.S. Cl. 358—209 **11 Claims**

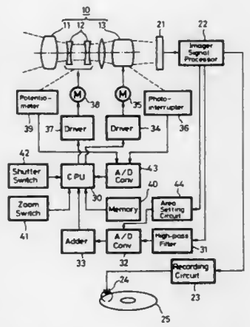


1. A device for providing perspective corrected views of a selected portion of a hemispherical view in a desired format that utilizes no moving parts, which comprises:
a camera imaging system for receiving optical images and for producing output signals corresponding to said optical images;
fisheye lens means attached to said camera imaging system for producing said optical images, throughout said hemispherical field-of-view, for optical conveyance to said camera imaging system;
image capture means for receiving said output signals from said camera imaging system and for digitizing said output signals from said camera imaging system;
input image memory means for receiving said digitized signals;
image transform processor means for processing said digitized signals in said input image memory means according to selected viewing angles and magnification, and for producing output transform calculation signals according to a combination of said digitized signals, said selected viewing angles and said selected magnification;
output image memory means for receiving said output signals from said image transform processor means;
input means for selecting said viewing angles and magnification;
microprocessor means for receiving said selected viewing angles and magnification from said input means and for converting said selected viewing angles and magnification for input to said image transform processor means to control said processing of said transform processor means; and
output means connected to said output image memory means for recording said perspective corrected view according to said selected viewing angles and magnification.

5,185,668
IMAGE READING APPARATUS FOR READING IMAGES FORMED BY A LIGHT TRANSMISSION
Kenichi Ohta, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 9, 1990, Ser. No. 477,513
Claims priority, application Japan, Feb. 10, 1989, 1-30026
Int. Cl.[5] H04N *3/36*
U.S. Cl. 358—214 **26 Claims**

7. An image reading apparatus comprising:
illuminating means for illuminating a film;
reading means for photoelectrically reading an image recorded in the film illuminated by said illuminating means;
amplifying means for amplifying an analog signal outputted from said reading means;
converting means for converting the analog signal outputted from said amplifying means into a digital signal;
transformation means for logarithmically transforming the digital signal outputted from said converting means;
first changing means for changing a logarithmic transformation characteristic of said transformation means in accordance with a density range of the image recorded in the film; and
second changing means for changing a property of said digital signal as it is inputted into said logarithmic transformation means in accordance with a change of the logarithmic transformation characteristic caused by said first changing means, wherein said property is a voltage level.

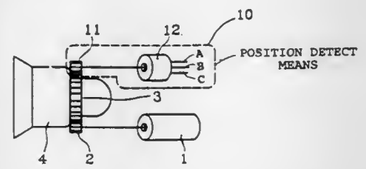
5,185,669
STILL VIDEO CAMERA WITH WHITE BALANCE AND IMAGE PICKUP LENS ADJUSTMENT
Shinichi Kato, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 26, 1991, Ser. No. 765,982
Claims priority, application Japan, Oct. 1, 1990, 1-263582; Nov. 26, 1990, 1-322103; Dec. 7, 1990, 2-407359; Mar. 20, 1991, 1-056986
Int. Cl.[5] H04N *5/232*
U.S. Cl. 358—227 **4 Claims**



1. An electronic still camera comprising:
a zoom lens for magnifying an optical image received at said zoom lens;
a focusing lens for focusing said incident optical image;
a motor for driving said focusing lens;
a photo-electric converting unit for converting said optical image incident thereon through said zoom lens and said focusing lens into an electrical signal;

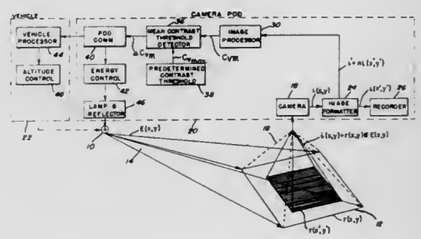
focus detecting means for detecting the focused state of said incident optical image; and
zoom lens state detecting means for detecting the state of said zoom lens, wherein when the movement of said zoom lens is detected by said zoom lens state detecting means, said focusing lens is moved by said motor so as to focus said incident optical image on the basis of the detected result of said focus detecting means;
focusing lens position detecting means for detecting a position of said focusing lens and providing data indicative of the position; and
memory means for storing the data indicative of the position of said focusing lens in which said optical image is focused relative to the position of said zoom lens, wherein said focusing detecting means is composed of a high frequency component detecting circuit for detecting a high frequency component of a video signal obtained from an output signal of said photo-electric converting unit and wherein when a high frequency component of level higher than a predetermined level is detected by said high frequency component detecting circuit and when the movement of said zoom lens from a first position representing a state of long focal length to a second position representing a state of short focal length is detected by said zoom lens state detecting means, data indicative of the focusing lens position corresponding to the zoom lens position detected by said zoom lens state detecting means is derived from said memory means and said focusing lens is moved to said focusing lens position to focus said optical image, while when the high frequency component of level higher than the predetermined level is not detected by said high frequency component detecting circuit and when the movement of said zoom lens is detected by said zoom lens state detecting means, the focusing position is detected on the basis of the video signal obtained from the output signal of said photo-electric converting unit so as to focus said optical image.

5,185,670
ZOOMING POSITION ON-SCREEN DISPLAY DEVICE FOR CAMCORDERS
Chang J. Lee, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Rep. of Korea
Filed Apr. 23, 1991, Ser. No. 689,647
Claims priority, application Rep. of Korea, Apr. 26, 1990, 5249/1990
Int. Cl.[5] H04N *5/232*
U.S. Cl. 358—227 **4 Claims**



1. An on-screen display device for a camcorder comprising a zoom motor, a zoom motor gear, a zoom gear, a zoom lens, a microcomputer adapted for outputting on-screen display data, an on-screen display character signal generator adapted for generating on-screen display character signals in response to the on-screen display data inputted from the microcomputer, and a luminance/color processing circuit for composing the on-screen display character signals inputted from the on-screen display character signal generator with the video signal and for then outputting composite video signals, further comprising:
zooming position detector means for detecting a zooming position as a voltage signal that is proportional to a direction and number of rotations of said zoom gear;
reference voltage variation means for sequentially varying a reference signal in a predetermined manner in response to switching control signals from said microcomputer; and
comparison means for comparing the reference voltage signal from said reference voltage variation means with the voltage signal from said zooming position detector means, and for outputting the on-screen display level setting control signal corresponding to a present value of said reference voltage when said comparison output signal is at a predetermined level.

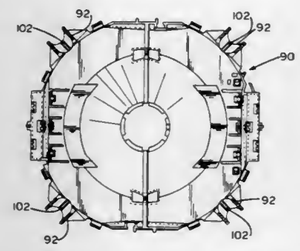
5,185,671
ADAPTIVE CONTROL OF AN ELECTRONIC IMAGING CAMERA
Laurence A. Lieberman, Bowie, and Philip Downes, Baltimore, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jun. 21, 1991, Ser. No. 720,271
Int. Cl.[5] H04N *5/238, 7/18*
U.S. Cl. 358—228 **21 Claims**



1. A method for adaptively adjusting the camera lighting level and distance between a camera and a light reflectance object plane including a reflectance field of view, comprising the steps of:
illuminating a reflectance field of view;
sensing a desired image field within the reflectance field of view;
generating an image signal of said image field;
generating a plurality of image parameter signals from the image signal;
generating a means image parameter signal from said plurality of image parameter signals;
comparing said mean image parameter signal with a predetermined reference signal and generating a difference signal therefrom;
initially reducing the camera lighting when the mean image parameter signal is less than said predetermined reference signal,
reducing said distance between the camera and the light reflectance object plane when the mean image parameter signal is greater than said predetermined reference signal;
thereafter repeating said comparing step; and
again reducing the camera lighting when the mean image parameter signal is less than said predetermined reference signal but increasing the camera lighting to a predetermined previous level set when the mean image parameter signal is greater than said reference signal.

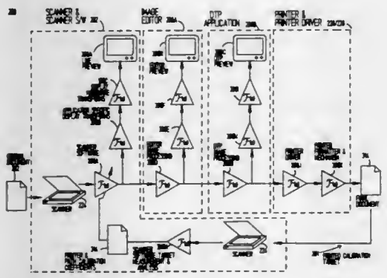
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5,185,672
LINER FOR DEFLECTION YOKE
Jean Rousseau, Auxonne, and Claude Richard, Brazey-en-Plaine, botb of France, assignors to Videocolor S.A., Paris, France
Filed Sep. 10, 1990, Ser. No. 580,427
Claims priority, application European Pat. Off., Dec. 8, 1989, 89403411.5
Int. Cl.[5] H04N *5/657*
U.S. Cl. 358—248 14 Claims



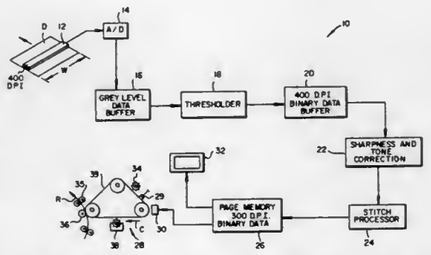
1. A deflection yoke assembly for a cathode ray tube (CRT), comprising:
a liner having a ring-like front bezel for mounting over rear diverging walls and neck of said CRT;
a plurality of threaded internally hollow sleeves that are formed as separate pieces prior to being mounted over an outside surface of said ring-like front bezel of said liner;
means for rigidly mounting said sleeves on said outside surface at corresponding spaced apart locations around a circumference of said front bezel of said liner;
a plurality of threaded bolts adapted to be threadedly received in said plurality of threaded sleeves, respectively, a given one of said bolts, when being threaded in the corresponding sleeve, having a contact head member projecting outside the corresponding bolt receiving sleeve for aligning said liner that carries deflection coils at a predetermined position relative to said CRT to provide alignment of the yoke assembly on said CRT; and
a plurality of studs located at said spaced apart locations, respectively, for mounting therein said threaded sleeves, respectively.

5,185,673
AUTOMATED IMAGE CALIBRATION
Robert E. Sobol, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Jun. 12, 1991, Ser. No. 714,392
Int. Cl.[5] H04N *1/23, 1/46*
U.S. Cl. 358—296 17 Claims



16. A document processing system comprising:
(1) a print path comprising:
(a) image capture means for capturing an image of an original document;
(b) means for controlling said image capture means;
(c) one or more application programs;
(d) printing means for generating a printed document having said image;
(e) means for controlling said printing means;
(2) means for automatically calibrating the print path such that said printed document has a true representation of said image, said means for automatically calibrating comprising:
(a) means for generating calibration coefficients for offsetting distortions caused by said print path; and
(b) means for precompensating said image of said original document by modifying said image according to said calibration coefficients.

5,185,674
BINARY RESOLUTION DECIMATION METHOD AND APPARATUS
Hwai-Tzuu Tai, Greece, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 3, 1992, Ser. No. 862,941
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—457 32 Claims

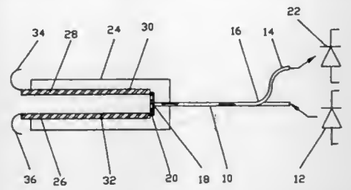


1. A method of compressing binary data representing segments of characters and figures, the binary data being arranged in an n rows by m columns binary data matrix wherein n and m are each integers greater than 2, the method comprising the steps of:
determining rows that are to be stitched together into a second binary data matrix of smaller size wherein predetermined binary data in two selected rows of the nxm matrix are dropped in forming the matrix of smaller size; and
stitching together signals representing binary data from the two rows of the nxm matrix by selecting a data bit from one of the two rows in a first column, selecting a data bit from the other of the one of the two rows in a second column adjacent the first column, selecting a data bit from said one of the two rows in a third column adjacent the second column and dropping from the two rows data bits that are not selected.

5,185,675
ELECTRO OPTIC MODULATOR SYSTEMS FOR FIBER OPTIC INFORMATION TRANSMISSION
Frank J. Banks, Leucada, Calif., assignor to Moog, Inc., East Aurora, N.Y.
Filed Nov. 27, 1989, Ser. No. 441,324
Int. Cl.[5] G02F *1/03*
U.S. Cl. 359—181 7 Claims

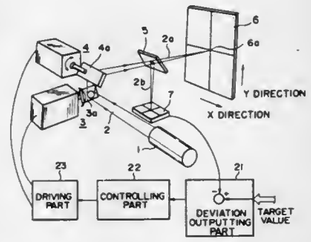
1. An electro optic modulator which comprises:
an elongated piezoelectric member adapted to change length in proportion to a voltage impressed thereon;

a housing surrounding said piezoelectric member and rigidly supporting one end thereof:
optical reflecting means mounted on the second, free, end of said piezoelectric member;
an optical fiber having a first end supported by said housing with said first end spaced from said reflecting means and adapted to pass light to, and receive light from, said reflecting means;
a partially reflecting surface on said first end of said fiber;



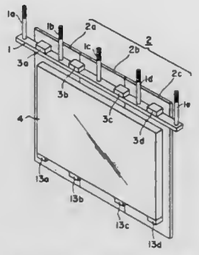
a light emitting diode adapted to direct light into said optical fiber toward said reflecting surface: and
a photodiode adapted to receive light from said optical fiber passing from said reflecting surface;
whereby characteristics of the light received by said photodiode are proportional to the amplitude and equal to the phase of the voltage of said voltage impressed on said piezoelectric member and the voltage output of said photodiode is proportional to the amplitude of the voltage impressed on said piezoelectric member.

5,185,676
BEAM SCANNING APPARATUS AND APPARATUS FOR WRITING IMAGE INFORMATION
Nozomu Nishiberi, Higashikurume, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 588,815, Sep. 27, 1990, abandoned. This application Jul. 14, 1992, Ser. No. 912,673
Claims priority, application Japan, Sep. 27, 1989, 1-251281
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—202 25 Claims



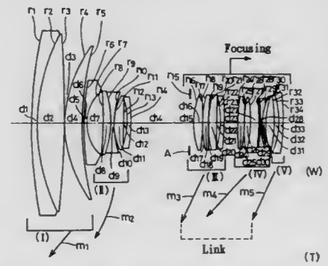
1. A beam scanning apparatus comprising:
optical deflecting means for deflecting a light beam so as to guide it to a predetermined surface;
scanning means for changing at least one of a deflection angle and a deflection position of said optical deflecting means so that the light beam is two-dimensionally scanned on said predetermined surface;
detecting means for detecting a two-dimensional scanning condition of the light beam on said predetermined surface by receiving the light beam from said optical deflecting means; and
controlling means for correcting at least one of said deflection angle and said deflection position of said optical deflecting means on the basis of a detection result of said detecting means.

5,185,677
TRANSMISSION TYPE PROJECTION SCREEN ASSEMBLY
Makoto Honda, and Nobuyuki Mizuno, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan
Filed Feb. 6, 1992, Ser. No. 832,038
Claims priority, application Japan, Feb. 9, 1991, 3-039124
Int. Cl.[5] G03B *21/56*
U.S. Cl. 359—460 15 Claims



1. A transmission type projection screen assembly comprising essentially a transmission type screen and a support frame for the screen, said assembly comprising:
a first set of force receiving members fixed at spaced positions in a horizontal row to said screen along at least one of upper and lower edges of the screen, said force receiving members being made of a material having a coefficient of thermal expansion substantially equal to that of said screen;
a second set of force receiving members provided at horizontally spaced positions and each disposed between adjacent force receiving members of said first set; and
force applying means intervening between adjacent force receiving members of said first and second sets for applying a force to the adjacent members so as to urge the same to separate horizontally from each other to thereby produce a horizontal tension in said sheet..

5,185,678
COMPACT HIGH RATIO ZOOM LENS SYSTEM
Tetsuya Arimoto, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Jul. 10, 1991, Ser. No. 728,207
Claims priority, application Japan, Jul. 11, 1990, 2-184661; Jul. 11, 1990, 2-184662; Jul. 11, 1990, 2-184663
Int. Cl.[5] G02B *15/16*
U.S. Cl. 359—683 21 Claims



1. A zoom lens system, comprising from the object side:
a first lens unit of positive refractive power, and shiftable towards the object side in a zooming operation from a shortest focal length condition to a longest focal length condition;

VOL 1147 ISS 2 FEB 9 1993 UMI

a second lens unit of negative refractive power;
a third lens unit of positive refractive power, and shiftable towards the object side in the zooming operation from the shortest focal length condition to the longest focal length condition;
a fourth lens unit of positive refractive power, and shiftable towards the object side in the zooming operation from the shortest focal length condition to the longest focal length condition; and
a fifth lens unit of negative refractive power; and wherein said zoom lens system fulfills the following conditions:

$$0.4 < |f_2 51 / f_W < 0.5$$

$$1.0 < |f_5| / f_4 < 5.0$$

$$2.5 < e_{3T} / e_{3W} < 4.5$$

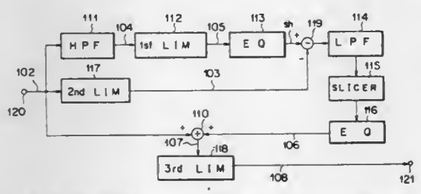
wherein:
f_2 represents a focal length of the second lens unit;
f_4 represents a focal length of the fourth lens unit;
f_5 represents a focal length of the fifth lens unit;
f_W represents a focal length of the whole lens system in the shortest focal length condition;
e_{3T} represents an axial distance between the third lens unit and the fourth lens unit in the longest focal length condition; and
e_{3W} represents an axial distance between the third lens unit and the fourth lens unit in the shortest focal length condition.

5,185,679

INVERSION PHENOMENON PREVENTING CIRCUIT

Hidetoshi Mishima, and Keiji Hatanaka, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 11, 1989, Ser. No. 350,252
Claims priority, application Japan, May 12, 1988, 63-117721; Feb. 2, 1989, 1-26023; Apr. 17, 1989, 1-98137
Int. Cl.[5] G11B *20/06*; H04N *5/178*
U.S. Cl. 360—30 **105 Claims**



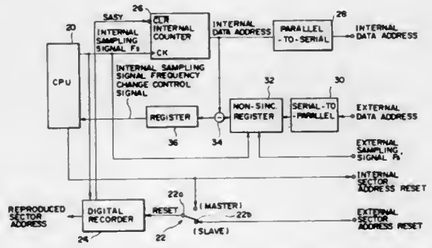
1. An apparatus for preventing inversion phenomenon resulting from drop out of at least one zero crossing point, comprising:
an input terminal for receiving a recovered frequency modulated signal having at least one missing zero crossing point pair;
lower side band attenuator connected to said terminal and producing an output of the recovered frequency modulated signal with an attenuated lower side band;
first polarity discriminating means, connected to the output of said lower side band attenuator, for outputting a signal indicative of each of positive and negative amplitudes of the output of said lower side band attenuator;
second polarity discriminating means connected to said input terminal, said second polarity discriminating means outputting a signal indicative of each of said positive and negative amplitudes of said frequency modulated signal;
pulse extracting means for taking a difference between the output from said first polarity discriminating means and the output of said second polarity discriminating means to produce a difference signal, and for extracting a single discrete signal component of said difference signal, having width greater than a predetermined value, from said difference signal only for each missing zero crossing point pair to produce only a single pulse having pulse width corresponding to said single discrete signal component for each missing zero crossing point pair;
waveform reforming means, responsive to each said single pulse developed by said pulse extraction means and to said recovered frequency modulated signal, for adding only said single pulses to said recovered frequency modulated signal to recover said zero crossing points missing from said frequency modulated signal.

5,185,680

METHOD FOR SYNCHRONIZING RECORDING AND REPRODUCING DEVICES

Yuji Kakubo, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Sep. 28, 1990, Ser. No. 589,985
Claims priority, application Japan, Oct. 3, 1989, 1-258138
Int. Cl.[5] G11B *15/52, 27/22, 27/28*
U.S. Cl. 360—72.2 **2 Claims**



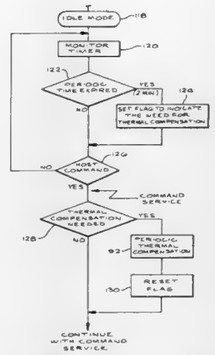
1. A method for synchronizing a recording and reproducing system including a master device and a slave device in which a reference clock frequency of at least the slave device can be changed and a playback speed of the slave device can be controlled in accordance with the reference clock frequency, the master and slave devices each having a reference clock and an internal counter, said method comprising the steps of:
recording position information, which synchronized with the reference clock of the master device and has a larger period of change than the reference clock, in both the master and slave devices; and
recording, simultaneously with the position information recording step, information to be recorded in the master and slave devices;
reproducing the position information from the master device in accordance with the master device reference clock and from the slave device in accordance with the slave device reference clock;
counting up the internal counters in the master and slave devices in accordance with the master and slave reference clocks, respectively;
resetting the master and slave internal counters in accordance with the position information reproduced in the respective master and slave devices;
comparing a reproduced value of the position information and a count value of the internal counter in the master device with a reproduced value of the position information and a count value of the internal counter of the slave device; and
changing a frequency of the reference clock of the slave device so that a difference between the compared values become predetermined values, whereby a recording and reproducing position of the slave device is synchronized with a recording and reproducing position of the master device.

5,185,681

THERMAL OFFSET COMPENSATION FOR HIGH DENSITY DISK DRIVES

Leroy A. Volz, Northridge, and Haim Nissimov, West Hills, both of Calif., assignors to Seagate, Scotts Valley, Calif.

Filed Sep. 28, 1990, Ser. No. 591,037
Int. Cl.[5] G11B *5/596*
U.S. Cl. 360—77.05 **10 Claims**



5. In a disk drive unit, a method of compensating for thermally induced offsets of a plurality of data heads relative to a selected cylinder of data tracks on a plurality of computer disk memory storage surfaces arranged in a stack for rotation about a common axis, the method comprising:
measuring the offset of each data head relative to an inner guard band calibration cylinder;
measuring the offset of each data head relative to an outer guard band calibration cylinder;
determining the average offset of the data heads taken collectively, including the steps of alternately collectively moving the data heads a minimum incremental unit value and then measuring the average offset of the data heads relative to the selected calibration cylinder until the average offset is nulled;
shifting the data heads, collectively, relative to the selected cylinder to null the average offset determined;
periodically measuring the offset of each data head relative to the inner or outer guard band calibration cylinders after the initial average offset of the data heads has been determined; and
alternating measurement updates from either one or the other of the inner and outer guard band calibration cylinders.

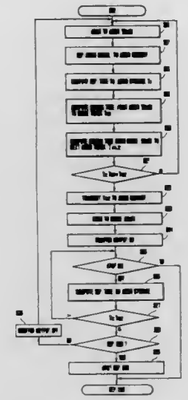
5,185,682

RECORDING AND/OR REPRODUCING APPARATUS

Hirokazu Takahashi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 708,001, May 23, 1991, which is a continuation of Ser. No. 190,596, May 5, 1988, abandoned. This application Feb. 25, 1992, Ser. No. 841,884
Claims priority, application Japan, May 15, 1987, 62-119301; May 16, 1987, 62-119796
Int. Cl.[5] G11B *21/10*
U.S. Cl. 360—78.04 **12 Claims**

1. A reproducing apparatus for reproducing from a recording medium an audio signal which is compressed on time base, divided and recorded on a plurality of positions on said recording medium together with a video signal to which said audio signal corresponds, said apparatus being adapted for uninterrupted reproduction of said audio signal and comprising:
(a) reproducing means for producing said audio signal and said video signal from said recording medium, said reproducing means being movable to change an access position thereof relative to said recording medium;
(b) a memory for temporary storage of the audio signal reproduced by said reproducing means, in order to effect time base change and for readout of said audio signal; and
(c) control means for controlling change of said access position of said reproducing means between positions on said recording medium at which audio signals are recorded and positions at which video signals are recorded, depending upon a time for readout of a remaining amount of the audio signal which has been stored in said memory, a time required for said reproducing means to move from a present audio recording position to a succeeding audio recording position and a time required for said reproducing means to move from said present audio recording position to a video recording position having recording therein said video signal to which said audio signal corresponds.



5,185,683

SUSPENSION ARM MOUNTING ASSEMBLY

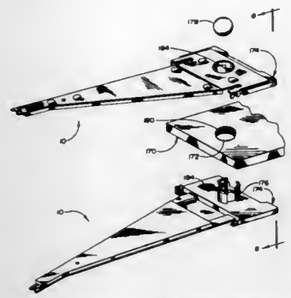
Gary R. Oberg, Darwin, and Ronald J. Holmstadt, Eden Prairie, both of Minn., assignors to Hutchinson Technology, Inc., Hutchinson, Minn.

Division of Ser. No. 135,936, Dec. 21, 1987, Pat. No. 4,991,045. This application Jan. 18, 1991, Ser. No. 643,044
Int. Cl.[5] G11B *5/49*
U.S. Cl. 360—104 **20 Claims**

1. A suspension arm mounting assembly comprising:
a) a single or a pair of suspension arm assemblies, each of which comprises a base plate member, a spring element joined to said base plate and a load beam element joined to said spring element;
b) an actuator arm having first and second spaced surfaces and a mounting hole with an edge surface extending therethrough; and
c) connection means for connecting each of said suspension arm assemblies to said actuator arm adjacent to one of said first and second surfaces, said connection means including a plurality of spaced finger projections extending outwardly from said base plate member and completely through said hole, each of said finger projections including an outer side for engagement with the edge surface of

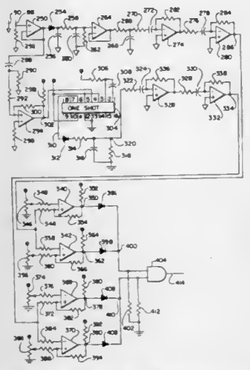
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said hole and an opposite inner surface, said connection means further including securing means on each of said



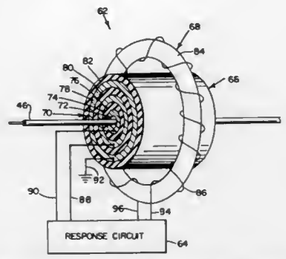
finger projections for securing engagement with a portion of the other of said first and second surfaces.

5,185,684
FREQUENCY SELECTIVE ARC DETECTION
Bruce C. Beihoff, Wauwatosa; Charles J. Tennies, Waukesha; Francis S. Richards, Jr., Germantown, all of, and Walter K. O'Neil, Birmingham, Mich., assignors to Eaton Corporation, Cleveland, Ohio
Filed Mar. 28, 1991, Ser. No. 676,738
Int. Cl.[5] H02H *3/32;* **G01R** *31/08*
U.S. Cl. 361—45 **11 Claims**



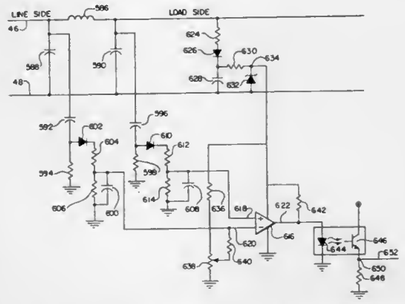
1. An arc detection method for an electric circuit having an electrified conductor connecting a voltage source to a load, said arc detection method comprising sensing an electromagnetic field established about said conductor by the occurrence of an electrical arc in said electric circuit, and generating a field responsive signal in response thereto, discriminatingly responding to a frequency of said field responsive signal and generating an arc indicative signal in response to a given frequency characteristic of said field responsive signal, comb filtering said field responsive signal through a plurality of passbands, generating said arc indicative signal in response to a given frequency signature of said field responsive signal, generating said arc indicative signal in response to field responsive signal frequencies appearing in a given combination of said passbands.

5,185,685
FIELD SENSING ARC DETECTION
Charles J. Tennies, Waukesha; Bruce C. Beihoff, Wauwatosa; Jerome K. Hastings, Sussex; Robert J. Clarey, Brookfield, and Walter K. O'Neil, Birmingham, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio
Filed Mar. 28, 1991, Ser. No. 676,741
Int. Cl.[5] H02H *3/32;* **G01R** *31/08*
U.S. Cl. 361—45 **6 Claims**



1. An arc detection method for an electric circuit having an electrified conductor connecting a voltage source to a load, said arc detection method comprising sensing an E field established about said conductor by the occurrence of an electrical arc in said electric circuit, and generating a field responsive signal in response thereto, discriminatingly responding to said field responsive signal and generating an arc indicative signal in response to a given characteristic of said field responsive signal, wherein said voltage source has a predetermined excitation frequency, and comprising selectively responding to frequencies within a given band, which band excludes said predetermined excitation frequency.

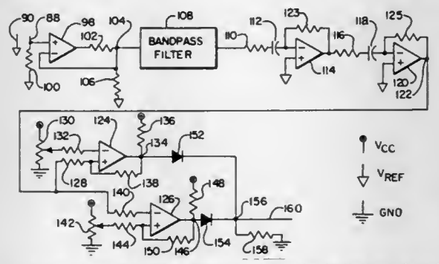
5,185,686
DIRECTION SENSING ARC DETECTION
James E. Hansen, Oak Creek; Bruce C. Beihoff, Wauwatosa; Charles J. Tennies, Waukesha, and Francis S. Richards, Jr., Germantown, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio
Filed Mar. 28, 1991, Ser. No. 676,840
Int. Cl.[5] H02H *3/32;* **G01R** *31/08*
U.S. Cl. 361—45 **18 Claims**



1. An arc detector for an electric circuit including an electrified conductor connecting a voltage source to a load, said conductor having a line side extending from said arc detector to said voltage source, and a load side extending from said arc detector to said load, said arc detector comprising a field sensor sensing an electromagnetic field established about said conductor by the occurrence of an electrical arc in said electric circuit, and generating a field responsive signal in response

thereto, a direction sensing circuit detecting whether said electrical arc is from said load side or said line side and generating a direction indicative signal, an arc discrimination circuit responsive to said field sensor and generating an arc indicative signal in response to a given characteristic of said field responsive signal in combination with a given characteristic of said direction indicative signal, wherein said arc discrimination circuit comprises an AND circuit having a first input coupled to said field sensor, and a second input coupled to said direction sensing circuit, and having an output providing said arc indicative signal only if said arc is from said load side.

5,185,687
CHAOS SENSING ARC DETECTION
Bruce C. Beihoff, Wauwatosa; Charles J. Tennies, Waukesha; Francis S. Richards, Jr., Germantown, all of Wis., and Walter K. O'Neil, Birmingham, Mich., assignors to Eaton Corporation, Cleveland, Ohio
Filed Mar. 28, 1991, Ser. No. 676,739
Int. Cl.[5] H02H *3/32;* **G01R** *31/08*
U.S. Cl. 361—45 **20 Claims**



1. An arc detector for an electric circuit including an electrified conductor connecting a voltage source to a load, said arc detector comprising a field sensor sensing an electromagnetic field established about said conductor by the occurrence of an electrical arc in said electric circuit, and generating a field responsive signal in response thereto, an arc discrimination circuit responsive to said field sensor and generating an arc indicative signal in response to a random chaotic pattern of said field responsive signal, wherein said arc discrimination circuit comprises a dual differentiator circuit differentiating said field responsive signal twice with respect to time to provide a second derivative of said field responsive signal, wherein said arc discrimination circuit further comprises a window comparator circuit comparing said second derivative to first and second reference values, and generating said arc indicative signal when said second derivative positively exceeds said first reference value or negatively exceeds said second reference value.

5,185,688
SPLIT CORE DEGAUSSING COIL LOOP
Joseph V. Krebs, Jr., Gautier, Miss., assignor to Ingalls Shipbuilding, Inc., Pascagoula, Miss.
Filed Apr. 26, 1991, Ser. No. 692,252
Int. Cl.[5] H01F *13/00, 27/24, 27/26*
U.S. Cl. 361—267 **8 Claims**

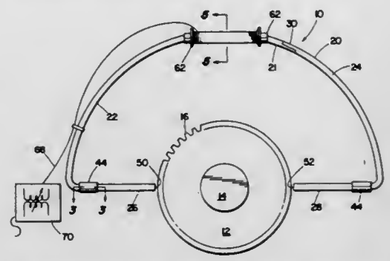
1. In a system having an object that has become magnetized and which is to be demagnetized in situ, a demagnetizing device characterized in that the device is a split core degaussing coil loop comprising:

a) a segmented split core having a main body portion that terminates in a pair of spaced-apart opposing ends with the object positioned therebetween, said split core further having a plurality of removably joined segments which include at least a pair of arcuate segments and a pair of generally straight segments.

b) each of said arcuate segments having a half lap end joined together as a lapped joint, said joined arcuate segments developing an approximate half circle having a bight portion,

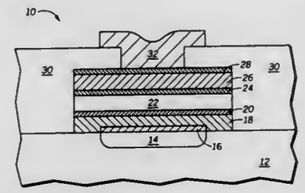
c) an electrically nonconductive core sheath that partially encases said segmented split core, said lapped joint and bight portion are uncased by said sheath,

d) an inductor core positioned with said main body portion at said bight portion, and



e) a variable source of a.c. electrical power connected to said inductor core so that a predetermined demagnetizing force is generated for a selected period of time through the loop defined by said split core and the object which thereby demagnetizes the object.

5,185,689
CAPACITOR HAVING A RUTHENATE ELECTRODE AND METHOD OF FORMATION
Papu D. Maniar, Austin, Tex., assignor to Motorola Inc., Schaumburg, Ill.
Filed Apr. 29, 1992, Ser. No. 875,463
Int. Cl.[5] H01G *4/10, 7/00*
U.S. Cl. 361—313 **29 Claims**



1. A capacitor comprising:

a first electrode having a first portion formed of a material selected from a group consisting of: calcium ruthenate, strontium ruthenate, barium ruthenate, thallium ruthenate, bismuth ruthenate, and lead ruthenate;

a second electrode; and

a dielectric material formed between the first electrode and the second electrode.

5,185,690
HIGH DIELECTRIC CONSTANT SHEET MATERIAL
Mark L. Miller, 2900 W. Highland St., Apt. 266, Chandler, Ariz. 85224
Filed Oct. 16, 1991, Ser. No. 778,683
Int. Cl.[5] H01G *4/10;* **H05K** *1/18;* **H01B** *7/00*
U.S. Cl. 361—321 **47 Claims**

35. A capacitor comprising:

a dielectric spacer sheet having opposed, substantially planar upper and lower surfaces;

a plurality of windows formed through said spacer sheet between said upper and lower surfaces, said plurality of windows being formed in a preselected pattern;

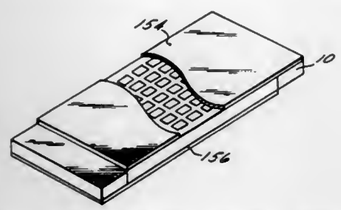
a plurality of high dielectric chips, each of said chips having

VOL 1147 ISS 2 FEB 9 1993 UMI

side, top and bottom surfaces, one each of said chips being disposed in a respective window so that said top and bottom surfaces of said chips are exposed on said respective upper and lower surfaces of said spacer sheet;

said top surfaces of said chips and said upper surface of said spacer sheet together defining an upper planar surface;

said bottom surfaces of said chips and said lower surface of said spacer sheet together defining a lower planar surface;



an upper metallic foil attached to said upper planar surface; and

a lower metallic foil attached to said lower planar surface; and

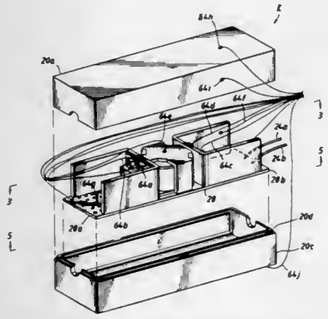
at least a pair of electrically isolated conductive electrodes, each of said electrodes being electrically connected to respective upper and lower metallic foils.

5,185,691

THERMAL PACKAGING FOR NATURAL CONVECTION COOLED ELECTRONICS

George K. Korinsky, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Mar. 15, 1991, Ser. No. 670,347
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—386 **28 Claims**



1. A natural convection cooled electronic device, comprising:

at least one electrical component producing heat;

a heat conductive enclosure comprising an organic polymeric composition, said enclosure having an inner cavity with a resulting inner surface, wherein said enclosure surrounds said electrical component without contacting said electrical component;

at least one heat sink including a member for fastening to said electrical component and at least one heat fin member integrally joined to said fastening member, said heat fin member being aligned close to, parallel with and opposing a portion of said inner surface, said fastening member having an outer edge, said heat fin member joined to said fastening member at a portion of said outer edge, said heat sink being without a heat fin member at other than said outer edge of said fastening member;

means to fasten said electrical component to said heat sink fastening member for providing good thermal contact between said electrical component and said heat sink; and

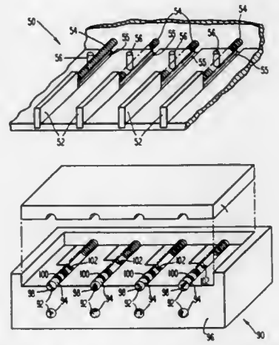
means for mounting said electrical component and said heat sink within said heat conductive enclosure and electrically insulating said heat fin member from said inner surface.

5,185,692

COMPUTER SECURITY DEVICE HAVING CONNECTOR WITH SPRING LOADED CONTACT MEMBERS

James D. Smith, 4420 Rosemont Ave., Drexel Hill, Pa. 19026

Filed May 30, 1991, Ser. No. 707,667
Int. Cl.[5] H05K *7/10;* **H01R** *23/02, 23/70, 33/96*
U.S. Cl. 361—393 **6 Claims**



1. A system for allowing only identified first computer hardware units to be connected to a second computer hardware unit, comprising:

(a) a first connector on each of said identified first computer hardware units, having a plurality of engaging members, each one of said engaging members at a predetermined position a predetermined distance from the front of said first connector, which set of predetermined positions identifies each said first computer hardware unit;

(b) a second connector on said second computer hardware unit, having a plurality of spring-loaded contact members, each of which is located so as be engaged by one of said engaging members, wherein electrical contact between one of said first computer hardware units and said second computer hardware unit is established only when each of said spring-loaded protrusions is moved a predetermined distance by one of said engaging members and is not established when at least one of said spring-loaded contact members is moved in excess of said predetermined distance.

5,185,693

METHOD AND APPARATUS FOR PROVIDING BACKUP PROCESS CONTROL

Donald B. Loftis, and David W. Cawlfield, both of Cleveland, Tenn., assignors to Olin Corporation, Cheshire, Conn.

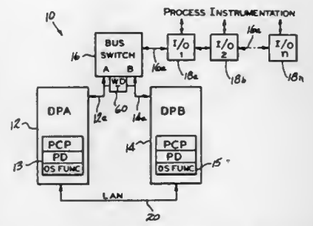
Continuation of Ser. No. 441,147, Nov. 27, 1989, abandoned. This application Jan. 29, 1992, Ser. No. 827,920
Int. Cl.[5] G06F *11/20, 15/46*
U.S. Cl. 364—187 **19 Claims**

1. In a system having a plurality of data processors for controlling a resource, a method of controlling the resource comprising the steps of:

a. communicating with the resource only from a first one of the data processors, the step of communicating including a step of transmitting data and receiving data through an active channel of a switch means, the switch means being

coupled through a first communication path to the resource;

b. periodically monitoring at the same time as the step of communicating with a second one of the data processors an activity of the first one of the data processors to determine if the first one of the data processors has stopped communicating with the resource, the step of monitoring occurring through a local area network second communication path coupled at least between the first one of the data processors and the second one of the data processors, the second one of the data processors being isolated from the resource; and



c. if the step of monitoring indicates that the first one of the data processors has stopped communicating with the resource because of a detected control fault the method includes the further steps of

i. independently having the second one of the data processors activate itself via a signal to the switch means such that the second one of the data processors is coupled to the active channel instead of the first one of the data processors; and

ii. communicating with the resource only from the second one of the data processors, the step of communicating including a step of transmitting data and receiving data via the active channel of the switch means through the first communication path.

5,185,694

DATA PROCESSING SYSTEM UTILIZES BLOCK MOVE INSTRUCTION FOR BURST TRANSFERRING BLOCKS OF DATA ENTRIES WHERE WIDTH OF DATA BLOCKS VARIES

Robin W. Edenfield; Ralph McGarity; Russell Reininger; William B. Ledbetter, Jr., and Van B. Shahan, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

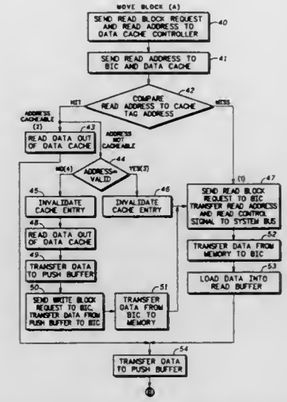
Filed Jun. 26, 1989, Ser. No. 371,343
Int. Cl.[5] G06F *13/28*
U.S. Cl. 395—425 **15 Claims**

1. In a data processing system, having a first memory and a second memory coupled to a system communications bus m bytes wide, where m bytes is a width of a single line of said first memory, a data processor for executing a block move instruction for a predetermined block of data entries, comprising:

instruction execution means, coupled to said first memory, for executing each of a plurality of instructions, for providing a plurality of control signals, and for providing a plurality of operand addresses;

an internal communications bus, coupled to said first memory and said instruction execution means, said internal communications bus being n bytes wide, where n bytes is a width of a largest natural data type of said instruction execution means, and n is an integer smaller than m; and

first means, coupled to said instruction execution means and said system communications bus, for responding to said block move instruction by initiating a burst read transfer to retrieve a block of data entries comprising m bytes, from read address, and by initiating a burst write transfer of said block of data entries to a write address in said second memory, wherein said first means controls the different number of bytes of said block of data entries being burst transferred onto said system communications



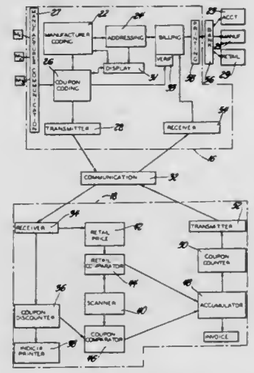
bus in response to said block move instruction being externally provided.

5,185,695

METHOD AND SYSTEM FOR HANDLING DISCOUNT COUPONS BY USING CENTRALLY STORED MANUFACTURER COUPONS IN PLACE OF PAPER COUPONS

Michael A. Pruchnicki, 3625 Twenty-Three Mile Rd., Utica, Mich. 48087

Continuation of Ser. No. 219,563, Jul. 14, 1988, abandoned. This application Feb. 13, 1992, Ser. No. 836,143
Int. Cl.[5] G26F *15/21*
U.S. Cl. 364—401 **20 Claims**



20. A method of creating processing product redemption coupons comprising the steps of: receiving and storing a coupon redemption list of coupon products which qualify for a manufacturer redemption coupon amount for use at a checkout station at a retailer, selecting coupon products from the central list of all coupon products available at a particular retailer, storing the selected coupon products in a retail redemption list at a retailer for use at the checkout station whereby coupon products not available at the retailer are excluded from the

VOL 1147 ISS 2 FE 9 1993 UMI

retail redemption list, moving the coupon product to the checkout station, and comparing the coupon product to the retail redemption list and automatically reducing the coupon amount from the retail price.

5,185,696

FINANCIAL CALCULATOR CAPABLE OF DISPLAYING GRAPHIC REPRESENTATION

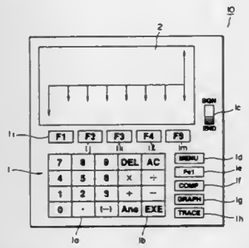
Hiroyuki Yoshino, Fussa, and Yoshinori Tomidokoro, Higashimurayama, both of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 30, 1988, Ser. No. 292,379

Claims priority, application Japan, Jan. 6, 1988, 63-818; Mar. 17, 1988, 63-34462[U]; Mar. 17, 1988, 63-34463[U]

Int. Cl.[5] G06F *15/30*

U.S. Cl. 364—408 **42 Claims**



1. A financial calculator capable of handling a financial transaction having a plurality of financial data items as components thereof with each financial data item being related to a transfer, of at least one type, to or from a party occurring at a particular time, each financial data item including a monetary amount and an indicator representing in which direction said transferred money flow to or from said party, comprising:

keyboard means for generating input signals corresponding to components of said financial transaction;

processing means responsive to said input signals for producing therefrom said plurality of financial data, and including memory means for storing said input signals;

graphic display means for producing a visual image based on a set of orthogonal coordinate axes, one of said coordinate axes having points along it usable for representing, respectively, an occurrence of one of said plurality of financial data items, and the other of said coordinate axes representing values of said monetary amount;

image producing means coupled to said processing means and including means responsive to at least one of (a) a financial item being related to a transfer of said at least one type, (b) said monetary amount, and (c) said direction of flow of said plurality of financial data items for, respectively, generating a plurality of graphic patterns associated with a designated one of said points along the one coordinate axis;

display control means coupled to said image producing means for driving said graphic display means to simultaneously display, in association with designated points of said one coordinate axis, a plurality of said graphic patterns corresponding, respectively, to said plurality of financial data items produced by said processing means; and

wherein each of the plurality of graphic patterns generated by said image producing means is oriented relative to said coordinate axes for representing said direction of flow.

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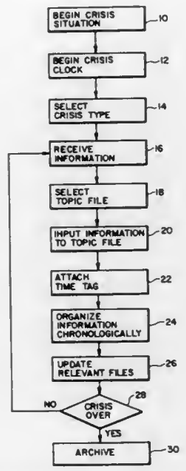
APPARATUS AND METHOD FOR MANAGING CRISIS SITUATIONS

Kendall E. Jacobs, Springfield, and Mary B. Weipert, Falls Church, both of Va., assignors to Electronic Warfare Associates, Inc., Vienna, Va.

Filed Nov. 14, 1989, Ser. No. 435,969

Int. Cl.[5] G06F *15/38*; G06G *7/60*

U.S. Cl. 364—419 **18 Claims**



1. A crisis management system comprising:

means for receiving crisis information concerning a particular crisis;

crisis information storing means, for storing;

1) a list of most usual crisis situation types,

2) for each of said crisis situation types, a list of topic files each of which represents a type of information associated with said each crisis situation type, and

3) for each topic file, a list of other topic files related to said each topic file, and in which related information should be stored;

processing means, responsive to said information from said receiving means, for:

1) determining a beginning of said particular crisis, and beginning a crisis clock at said beginning of said particular crisis,

2) obtaining a particular crisis situation type associated with said particular crisis;

3) accessing said crisis information storing means using said particular crisis situation type and obtaining a list of topic files associated therewith;

4) attaching automatically a time from said crisis clock to each item of said crisis information;

5) determining a selected topic file to which said each crisis information most closely belongs;

6) accessing said crisis information storing means to obtain said list of said other topic files associated with said selected topic file;

7) storing said each crisis information and its associated time in all of said selected topic file, and said other topic files from said list; and

8) organizing said information in the selected file chronologically with respect to said attached time; and

means for exhibiting said information in each said selected file in a predetermined format.

5,185,698

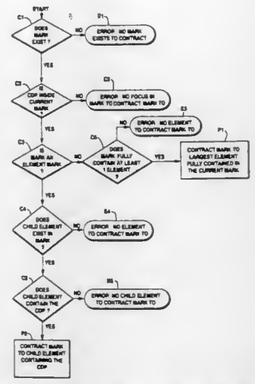
TECHNIQUE FOR CONTRACTING ELEMENT MARKS IN A STRUCTURED DOCUMENT

Eric M. Hesse; Michael Kozol, both of Gaithersburg, and Chan Lim, Potomac, all of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 24, 1989, Ser. No. 315,374

Int. Cl.[5] G06F *7/28*

U.S. Cl. 364—419 **18 Claims**



1. In a document processing system including a central processing unit, a random access memory and a display device, a method for hierarchically contracting a stream mark to an element mark about a reference point in a structured document in said random access memory in a database form, comprising the steps of:

determining whether said reference point is inside said stream mark,

contracting said stream mark to a largest element completely contained in said stream mark which also contains said reference point to produce an element mark; and,

displaying said structured document on said display device emphasizing said element mark.

5,185,699

METHOD AND APPARATUS FOR MAINTAINING PLANT OPERATION PROCEDURES

Roger T. Reiner, Murrysville; David M. Frost, Plum Borough; Johnna M. Chicots, Franklin Park Borough; Diane S. Petras, Penn Twp., Westmoreland County, and Susan V. Fanto, Plum Borough, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 16, 1990, Ser. No. 466,102

Int. Cl.[5] G06F *15/38*

U.S. Cl. 364—419 **24 Claims**

1. A method for maintaining in a machine-readable form a document containing hierarchical levels, comprising the steps of:

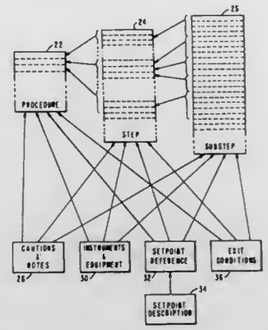
(a) storing a number of records in document files with the records at each hierarchical level in a separate file, at least one record containing at least one reference to another record, including the substeps of;

(a1) storing at least one record, each identifying a procedure, in a procedure file included in the document files;

(a2) storing a plurality of the records in a step file included in the document files, each of the records in the step file referencing one of the records in the procedure file and describing a step in a step sequence of the procedure referenced therein; and

(a3) storing a plurality of the records in a substep file included in the document files, each of the records in the substep file referencing one of the records in the step file and describing a substep in a substep sequence of the step referenced therein;

(b) editing the records stored in step (a); and



(c) resolving all references to other records automatically when said editing includes a change in record sequence.

5,185,700

SOLID STATE EVENT RECORDER

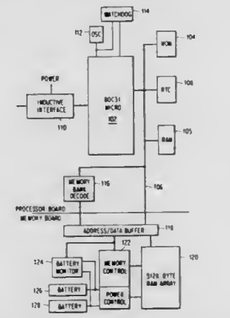
Angel P. Bezos, Montgmery County, Md.; Emilio A. Fernandez, and Joseph I. Field, Jr., both of Fairfax County, Va., assignors to Pulse Electronics, Inc., Rockville, Md.

Continuation of Ser. No. 367,191, Jun. 15, 1989, Pat. No. 5,065,321. This application Aug. 13, 1991, Ser. No. 744,695

The portion of the term of this patent subsequent to Nov. 12, 2008, has been disclaimed.

Int. Cl.[5] G06F *15/74*

U.S. Cl. 364—424.04 **3 Claims**



1. In a vehicle mounted system for monitoring events, said system including a plurality of event inputs for receiving analog and digital data to be recorded, interface means connected to said event inputs for buffering digital inputs and converting analog inputs to digital values, first microprocessor means connected to said interface means for formatting data provided by said interface means, a solid state memory means coupled to said first microprocessor means for receiving and recording formatted data, said solid state memory means being electrically isolated from said vehicle mounted system, the improvement comprising:

an array of solid state memory devices and a second microprocessor means in said solid state memory means, said second microprocessor means receiving data from said first microprocessor means and recording said data in said array of solid state memory devices, said data being di-

VOL 1147 ISS 2 FEB 9 1993 UMI

rectly transmitted between said first and second microprocessor means as digital signals; and

inductive interface means between said solid state memory means and said first microprocessor means for transferring data between said first microprocessor means and said second microprocessor means and for coupling power from said vehicle mounted system to said solid state memory means.

5,185,701

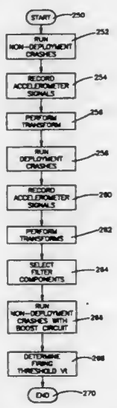
METHOD FOR DETERMINING FREQUENCY COMPONENTS IN A VEHICLE CRASH

Brian K. Blackburn, Rochester Hills, and Scott B. Gentry, Utica, both of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio

Continuation of Ser. No. 432,128, Nov. 3, 1989, abandoned. This application Jun. 12, 1992, Ser. No. 899,153

Int. Cl.[5] G01R *23/00;* **G06K** *9/62*

U.S. Cl. 364—425 **9 Claims**



1. A method for determining frequency components present in a particular type of vehicle crash for which it is desirable to actuate a passenger restraint system in a vehicle of a predetermined class of vehicles, said method comprising the steps of:

(a) mounting a first accelerometer in a first vehicle of the predetermined class, said first accelerometer providing a time domain vibratory electric signal in response to a vehicle crash, said vibratory electric signal having frequency component values functionally related to the type of vehicle crash;

(b) crashing said first vehicle of the predetermined class under a condition in which it is not desirable to actuate the vehicle passenger restraint system;

(c) recording said vibratory electric signal for said vehicle crash of step (b);

(d) mounting a second accelerometer in a second vehicle of the predetermined class, said second accelerometer providing a time domain vibratory electric signal in responsive to a vehicle crash, said vibratory electric signal having frequency component values functionally related to the type of vehicle crash;

(e) crashing said second vehicle of the predetermined class under a condition in which it is desirable to actuate the vehicle passenger restraint system;

(f) recording said vibratory electric signal for said vehicle crash of step (e);

(g) identifying frequency components for said electric signals recorded for the crashes of steps (b) and (e);

(h) comparing said identified frequency components for said crash of step (e) against said identified frequency components for said crash of step (b); and

(h) identifying which frequency components were present for said crash of step (e) and were not present for said crash of step (b).

5,185,702

VEHICLE ANTI-LOCK CONTROL APPARATUS AND METHOD

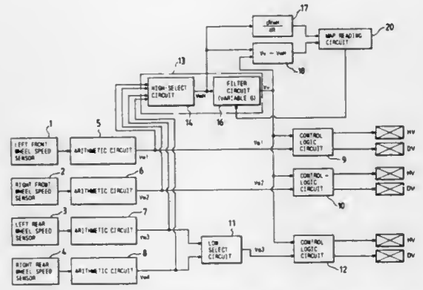
Satomi Okubo, Saitama, Japan, assignor to Akebono Research and Development Centre Ltd., Hanyu and Akebono Brake Co., Ltd., Tokyo, both of, Japan

Continuation of Ser. No. 578,622, Sep. 7, 1990, abandoned. This application Jan. 21, 1992, Ser. No. 825,816

Claims priority, application Japan, Sep. 8, 1989, 1-231720; Sep. 28, 1989, 1-250741; Dec. 27, 1989, 1-336493

Int. Cl.[5] B60T *8/32*

U.S. Cl. 364—426.02 **14 Claims**



1. An anti-lock control method for a vehicle having one or more wheels, each of said wheels having at least on associated brake and an associated wheel number, said method comprising the steps of:

(a) generating, using a wheel velocity sensor, a single for each wheel VwX, where X is the wheel number;

(b) processing each signal VwX so as to be representative of the speed of its associated wheel;

(c) comparing the processed wheel speed signals and generating a single VwH representing the highest wheel speed;

(d) filtering the signal VwH when a threshold signal VT1 has been generated and the signal VwH is less than the threshold signal VT1 using a limiting filter to generate a signal Vv representing an estimated vehicle speed, wherein said filter applies restricted acceleration-side and deceleration-side follow-up limits set to predetermined ranges of acceleration and deceleration;

(e) generating said threshold signal VT1 equivalent to the signal Vv less an offset value equal to a predetermined signal difference; and

(f) controlling the brakes responsive to at least the signal Vv.

5,185,703

ANTI-LOCK CONTROL METHOD FOR AUTOMOTIVE VEHICLES

Satomi Okubo, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo and Akebono Research and Development Centre Ltd., Hanyu, both of, Japan

Filed Dec. 26, 1990, Ser. No. 633,800

Claims priority, application Japan, Dec. 27, 1989, 1-336492

Int. Cl.[5] B60T *8/58*

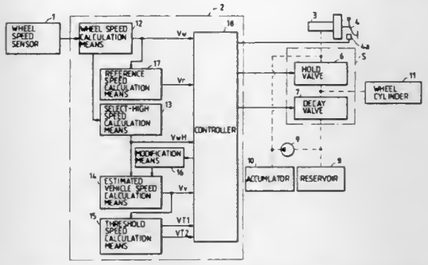
U.S. Cl. 364—426.02 **4 Claims**

4. An anti-lock control apparatus for a vehicle, comprising:

means for sensing respective wheel speeds Vw of wheels of the vehicle;

means for braking the vehicle wheels;

means for controlling said braking means to increase, hold and decrease the brake hydraulic pressure of said brake means by establishing increase, hold and decrease modes, respectively, according to an output of said sensing means, said control means setting a vehicle sped Vv and a threshold speed VT2, said threshold speed corresponding over time to said vehicle sped with a predetermined difference that is constant over said time so as to satisfy a relation Vv>VT2, wherein, said decrease mode to decrease said brake hydraulic pressure ends at a first time point at which said wheel speed Vw becomes higher than said threshold speed VT2 if said wheel speed Vw has dropped to below said threshold speed VT2 in said decrease mode, and said increase mode to increase said hydraulic pressure begins at



a second time point at which said wheel speed Vw, which has become higher than said threshold speed VT2 at said first time point, becomes higher than a speed $Vv-\Delta V_0$ which is lower by a prescribed value ΔV_0 than said vehicle speed Vv; and

means for modifying said vehicle speed Vv to be equal to said wheel speed Vw if said speed Vw is still lower than said threshold speed VT2 and an acceleration dVw/dt of said wheel speed Vw is still negative or zero at a third time point at which a prescribed time ΔT has elapsed from a fourth time point at which said wheel speed Vw has dropped to below said threshold speed VT2 in said decrease mode.

5,185,704

VEHICLE ANTI-LOCK CONTROL METHOD

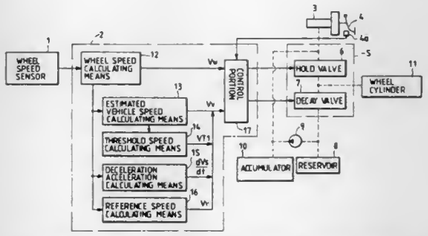
Satomi Okubo, Saitama, Japan, assignor to Akebono Research and Development Centre Ltd., Hanyu and Akebono Brake Co., Ltd., Tokyo, both of, Japan

Filed Aug. 29, 1990, Ser. No. 574,220

Claims priority, application Japan, Aug. 31, 1989, 1-222825

Int. Cl.[5] B60T *8/58*

U.S. Cl. 364—426.02 **2 Claims**



1. In a vehicle anti-lock control method wherein speeds of left and right front wheels represent first and second system speeds, respectively; a lower one out of speeds of left and right rear wheels is used as a third system speed; and brake hydraulic pressure is controlled using said system speeds as wheels speeds to be controlled, thereby effecting a three-channel anti-lock control; the improved method comprising the steps of:

setting an estimated vehicle speed Vv based on the highest one out of the speeds of the four wheels at the time of the braking;

setting a threshold speed VT1 which follows said estimated vehicle speed Vv with a constant speed difference relative thereto in such a manner that the relation of Vv>VT1 is kept;

setting a difference speed Vr, when said system speeds decrease by increasing the brake hydraulic pressure until reaching a predetermined deceleration, which linearly decreases at said predetermined deceleration from a speed which is lower than said system speeds by a predetermined value ΔV; and

starting the decrease of the brake hydraulic pressure of an alpha system when a system speed of said alpha system becomes lower than said reference speed Vr and the decreasing of the brake hydraulic pressure of a beta system when said system speed of said beta system becomes lower than said threshold speed VT1;

wherein:

if said alpha system consists of said front wheels then said beta system consists of said rear wheels; and

if said alpha system consists of said rear wheels then said beta system consists of said front wheels.

5,185,705

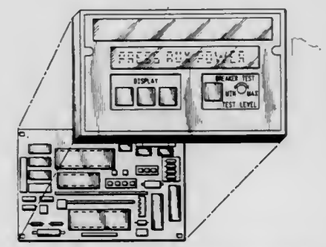
CIRCUIT BREAKER HAVING SERIAL DATA COMMUNICATIONS

Ronald L. Farrington, Cedar Rapids, Iowa, assignor to Square D Company, Palatine, Ill.

Continuation of Ser. No. 587,361, Sep. 24, 1990, abandoned, which is a division of Ser. No. 175,992, Mar. 31, 1988, Pat. No. 4,996,646. This application Feb. 10, 1992, Ser. No. 833,637

Int. Cl.[5] G06F *15/56*

U.S. Cl. 364—483 **38 Claims**



1. An improved circuit breaker system having a circuit breaker for interrupting electric current flow through at least one conductor from a source of electric energy to a load, the system comprising:

means for measuring current flow in said at least one conductor;

microprocessor means, responsive to said means for measuring current flow, for calculating at least one quantity from said measured current flow, and said microprocessor means including means for comparing said at least one quantity with at least one predetermined limit value, and including means for disconnecting said load from said source by tripping the circuit breaker in the event that said at least one quantity differs from said at least one predetermined limit value by at least a predetermined difference

rating plug means for establishing tripping characteristics of said circuit breaker system;

means for said microprocessor means to digitally rad said rating plug means in order to determine said tripping characteristics of said circuit breaker system; and

VOL 1147 ISS 2 FE 9 1993 UMI

an optionally connectable keypad/display unit having coupling means for electrically coupling the keypad/display unit to the microprocessor means, and having at least one key which is manually engaged by an operator and having means, responsive to said at least one key, for displaying at least one of the tripping characteristics of the circuit breaker system.

5,185,706

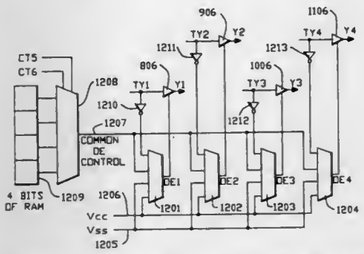
PROGRAMMABLE GATE ARRAY WITH LOGIC CELLS HAVING CONFIGURABLE OUTPUT ENABLE

Om P. Agrawal, San Jose, Calif., and Michael J. Wright, Boulder, Colo., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 442,528, Nov. 27, 1989, which is a division of Ser. No. 394,221, Aug. 15, 1989. This application Apr. 2, 1990, Ser. No. 503,049

Int. Cl.[5] H01L *27/10*

U.S. Cl. 364—489 **23 Claims**



1. An integrated circuit comprising a configuration memory including a plurality of storage elements storing program data specifying a user defined data processing function, an interconnect structure including a conductive line, and a plurality of configurable logic elements coupled to the configuration memory and to the interconnect structure, wherein said conductive line has a normally high state and wherein each member of a subset of the plurality of configurable logic elements comprises:

input means for receiving a set of K input signals from the interconnect structure;

logic means, coupled to the input means and the configuration memory, for generating a set of P signals in response to a first subset of the set of K input signals and the program data in the configuration memory; and

output means, coupled to the logic means and having at least one output connected to the conductive line having a normally high state, for connecting an output signal from the set of P signals to the conductive line in a wired-logic configuration.

5,185,707

FOCUSING APPARATUS AND DIGITAL FILTERS FOR USE THEREWITH

Akihiro Kikuchi, Chiba, and Tokuya Fukuda, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 523,568, May 15, 1990, Pat. No. 5,070,408. This application Jun. 28, 1991, Ser. No. 722,964

Claims priority, application Japan, May 19, 1989, 1-27560; May 29, 1989, 1-35351

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—525 **16 Claims**

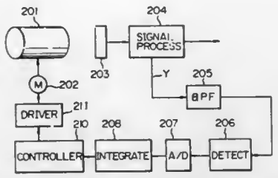
1. A digital video signal filter for filtering a digital input video signal to attenuate low frequency components therein to produce a filtered digital video output signal, said digital input video signal comprising a plurality of samples each corresponding with a respective one of a plurality of sample periods, comprising:

first delay means for delaying the input video signal in time by (2m+1) sample periods, where (m) is an integer;

means for producing a first digital signal proportional to a difference between said input video signal and said input video signal delayed in time by (2m+1) sample periods;

means for integrating said first digital signal to produce a second digital signal;

means for producing a third digital signal proportional to a value of said second digital signal delayed in time by one sample period;



second delay means for delaying the input video signal in time by (m+1) sample periods;

means for producing a fourth digital signal proportional to a value of said input video signal delayed in time by (m+1) sample periods multiplied by a coefficient (2m+1); and

subtracting means for subtracting one of said third digital signal and said fourth digital signal from the other thereof to produce said filtered digital video output signal.

5,185,708

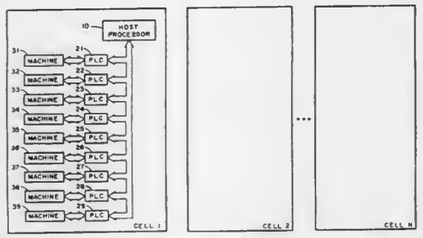
METHOD FOR COLLECTING DATA BY A MANUFACTURING PROCESS MANAGER FROM A PLURALITY OF PROGRAMMABLE LOGIC CONTROLLERS

James F. Hall, Franklin, and John H. Faett, III, Nolensville, both of Tenn., assignors to GE Fanuc Automation North America, Inc., Charlottesville, Va.

Filed Jun. 18, 1990, Ser. No. 539,858

Int. Cl.[5] G06F *15/46*

U.S. Cl. 364—550 **7 Claims**



1. A method for monitoring data comprising the steps of:

providing a computer system having a host processor;

coupling the host processor to a plurality of programmable logic controllers;

coupling said controllers to respective controller devices;

monitoring a plurality of alarm points with each controlled device;

reading, by said controllers, Boolean alarm bits from said alarm points;

providing an alarm bit of alarm information with each alarm point;

storing said alarm bits as trigger groups within said controllers;

including with each trigger group a predetermined number of alarm bits;

storing the alarm bits in a respective trigger register within said controller;

repeatedly scanning, by said host, the trigger registers;

determining when scanning if, from a first scan to a second scan, the value of any trigger register has changed; and

accessing, by said host processor, all alarm bits stored in any trigger register for which a change was determined when scanning, said host processor otherwise not requesting alarm bit information.

5,185,709

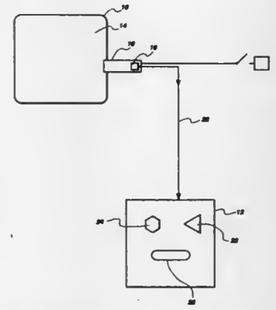
APPARATUS AND METHOD FOR MEASURING PRESSURE CHANGES WITHIN PRESSURE VESSELS

Kenneth A. Johnson, Walworth, and Charles E. Ellis, Jr., Phelps, both of N.Y., assignors to MDT Corporation, Torrance, Calif.

Filed Feb. 1, 1991, Ser. No. 649,480

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—558 **14 Claims**



1. A pressure measurement device for use with a pressure vessel having a chamber, an opening to the chamber, and a door for obstructing the opening comprising:

a transducer for measuring pressure changes within said chamber of said pressure vessel, said transducer being referenced to atmospheric pressure and having structure for providing frequency output generated in response to pressure conditions existing in said chamber; and

computer means in communication with said transducer for receiving said frequency output therefrom and having structure programmed to calculate changes in pressure within said chamber.

5,185,710

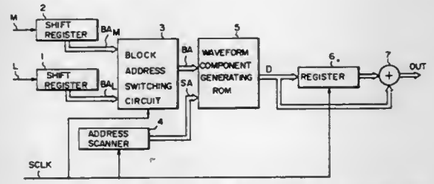
QUATERNARY-LEVEL WAVEFORM GENERATOR

Kenzo Urabe, Sendai, Japan, assignor to Kokusai Electric Co., Ltd., Tokyo, Japan

Filed Dec. 26, 1991, Ser. No. 813,807

Int. Cl.[5] G06F *1/02*

U.S. Cl. 364—718 **2 Claims**



1. A quaternary-level waveform generator for deriving a quaternary-level waveform, shaped by band-restriction as predetermined, from a sequence of quaternary-level square waves with a fixed pitch between any two adjacent levels out of four, comprising:

a circuit including a waveform component generating read-only memory wherein a waveform of a k-th symbol (k being a constraint length due to intersymbol interference caused by predetermined band-restriction) of an arbitrary k-symbol binary square wave sequence is computed as a waveform component out and is stored in a time series in a memory block of said waveform component generating read-only memory specified by a block address composed of k-bit binary sequence corresponding to said k-symbol binary square wave sequence;

said circuit including a block address switching circuit coupled to the read-only memory wherein k-bits binary sequences composed of most significant bits and least significant bits of a binary-coded quaternary number for representing the levels of respective symbols of said quaternary-level square wave sequence prior to band restriction are alternately switched on a time-shared basis and fed to the block address of said waveform component generating read-only memory; and

an adder coupled to the read-only memory wherein two parallel outputs, obtained by switching two waveform component outputs alternately read out of said waveform component generating read-only memory on a time-shared basis, are added in the ratio of 2:1 generate said quaternary-level waveform shaped by band-restriction for output.

5,185,711

APPARATUS FOR DIVIDING ELEMENTS OF A FINITE GALOIS FIELD AND DECODING ERROR CORRECTION CODES

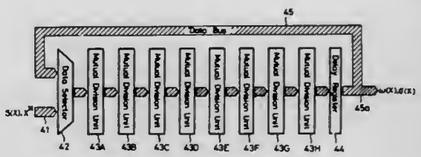
Masayuki Hattori, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 6, 1990, Ser. No. 623,235

Claims priority, application Japan, Dec. 8, 1989, 1-319404; Dec. 11, 1989, 1-321118; Dec. 25, 1989, 1-335883; Dec. 25, 1989, 1-335884

Int. Cl.[5] G06F *7/52*

U.S. Cl. 364—746.1 **10 Claims**



1. A mutual division circuit comprising:

a calculation means: (a) for dividing a polynomial including a first input polynomial $R_{i-1}(x)$ as a factor by a second input polynomial $Q_{i-1}(X)$, thereby to determine a quotient and a remainder $R_i(X)$; (b) for determining an overall quotient $\lambda_i(X)$ from said quotient and a third input polynomial $\lambda_{i-1}(X)$; and (c) for producing said remainder as a first output polynomial $R_i(X)$, said first input polynomial $R_{i-1}(x)$ or said second input polynomial $Q_{i-1}(X)$ as a second output polynomial $Q_i(X)$, and said overall quotient $\lambda_i(X)$ as a third output polynomial;

data selecting means for receiving, at a first input port thereof, respective initial polynomials of said first, second, and third input polynomials and receiving at a second input port thereof said first, second, and third output polynomials from said calculation means, and selectively supplying data to inputs of said calculation means; and

feedback means for supplying said first, second, and third output polynomials from said calculation means to said second input port of said data selecting means, so that said

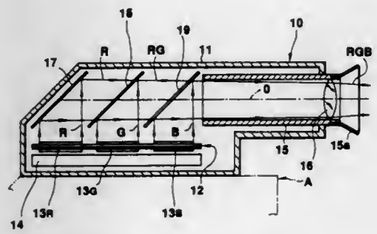
VOL 1147 ISS 2 FE 9 1993 UMI

calculation means is used a plurality of times for carrying out arithmetic operations therein.

5,185,712
VIEWFINDER AND IMAGE DISPLAY/PICKUP APPARATUS USING LIQUID CRYSTAL

Makoto Sato, Fussa; Tatsuo Shimazaki, Tokyo, and Hideki Nakamura, Hamura, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 537,373, Jun. 13, 1990, abandoned. This application Jan. 24, 1992, Ser. No. 825,826
Claims priority, application Japan, Jun. 30, 1989, 1-169434; Jun. 30, 1989, 1-169435; Jun. 30, 1989, 1-169436
Int. Cl.[5] H04N *5/30, 9/31*
U.S. Cl. 358—224 **12 Claims**



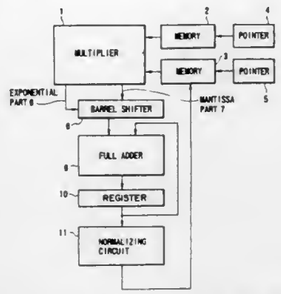
1. A liquid crystal viewfinder, comprising:
a case having an opening portion;
a fluorescent lamp arranged along a bottom surface of said case and in parallel therewith, said fluorescent lamp having a given length;
a liquid crystal display panel substrate arranged substantially in parallel with said fluorescent lamp, said fluorescent lamp radiating light onto said liquid crystal panel substrate, said liquid crystal panel substrate including first, second and third liquid crystal display panels formed thereon;
a first optical member for reflecting a light beam made incident thereon via the first liquid crystal display panel;
a second optical member for reflecting a light beam made incident thereon via the second liquid crystal display panel and for transmitting the light beam reflected by the first optical member;
a third optical member for reflecting a light beam made incident thereon via the third liquid crystal display panel and for transmitting the light beam reflected by the second optical member; and
an eyepiece provided at the opening portion of said case, on which a light beam output from the third optical member is made incident;
said eyepiece being positioned at said opening to be substantially parallel to both said bottom surface of said case and to said fluorescent lamp; and
said liquid crystal display panel substrate having a length which is at least equal to the given length of said fluorescent lamp.

5,185,713
PRODUCT ADDER FOR PERFOMING MULTIPLICATION OF FLOATING POINT DATA AND ADDITION OF FIXED POINT DATA

Hideki Kobunaya, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 9, 1991, Ser. No. 756,922
Claims priority, application Japan, Sep. 19, 1990, 2-251287
Int. Cl.[5] G06F *7/50, 7/52*
U.S. Cl. 364—748 **6 Claims**

1. A product adder comprising:
a data input memory for storing floating-point data;
a multiplier for performing multiplication of the floating-point data stored in said memory;
a shifter for converting the product of said multiplier into fixed-point data;
a full adder for performing cumulative addition of the fixed-point data output from said shifter;

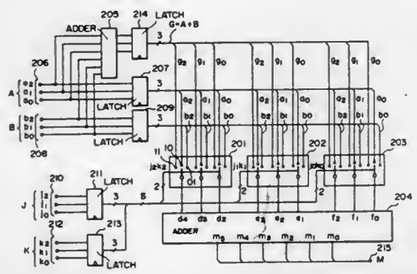


a register for holding output data from said full adder; and
a normalizing circuit for converting the output data from said register into floating-point data and outputting the converted data.

5,185,714
ARITHMETIC OPERATION PROCESSING APPARATUS

Tadayoshi Nakayama, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 583,134, Sep. 17, 1990, abandoned. This application Jun. 16, 1992, Ser. No. 899,137
Claims priority, application Japan, Sep. 19, 1989, 1-243772; Nov. 28, 1989, 1-310000
Int. Cl.[5] G06F *7/00, 7/52*
U.S. Cl. 364—750.5 **15 Claims**



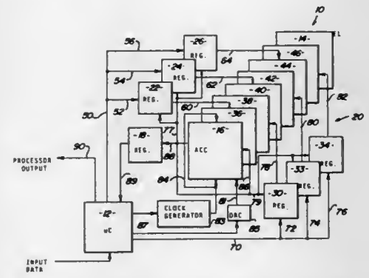
1. An arithmetic operation processing apparatus wherein a plurality of pairs of multipliers and multiplicands, the bit data of both of which are weighted by the same amount, are inputed, and multiplication results of respective pairs are added together and outputted, said arithmetic operation processing apparatus comprising:
control signal generating means for generating a control signal from a plurality of multipliers which are inputted, said control signal corresponding to each bit of the multipliers;
a selector including a plurality of selector circuits controlled by the control signal corresponding to each bit of the multipliers, each of said plurality of selector circuits for selectively outputting one of each multiplicand, an addition result of two or more multiplicands, and 0 value, in accordance with the control signal generated by said control signal generating means; and

an adder for adding together the outputs from said plurality of selector circuits.

5,185,715
DATA PROCESSING SYSTEMS AND METHODS FOR LINEAR PROGRAMMING

Karel Zikan, Seattle, and Thomas P. Caudell, Issaquah, both of Wash., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Mar. 30, 1990, Ser. No. 502,343
Int. Cl.[5] G06G *7/00*
U.S. Cl. 364—807 **15 Claims**

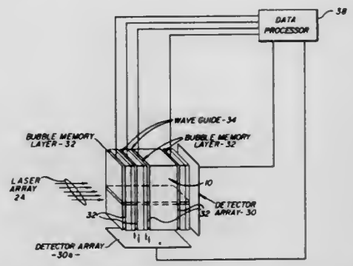


1. Apparatus for optically processing a linear programming problem represented in standard tabular form by a matrix A defined by matrix M, matrix I, row c, column b, and element z, said apparatus comprising:
means for determining a j*th column in matrix A, wherein said i*th column is the column in matrix A containing the largest number currently in row c;
means for determining an i*th row in matrix A, wherein said i*th row is the row in matrix A containing values producing a minimum value of the ratio b_{i^*}/a_{ij^*};
first modulation means for spatially modulating an optical beam in response to signals representing numbers in n elements in the i*th row of said matrix A, and having a first set of modulation areas arranged in n rows;
second modulation means for spatially modulating the optical beam exiting the first modulator means in response to signals representing m elements in the j*th column of matrix A, and having a first set of modulation areas arranged in m columns;
third modulation means for spatially modulating the optical beam exiting the second modulator means in response to a signal representing a number equal to $-1/a_{i^*j^*}$;
light detector means having n×m light detection areas arranged as a matrix array of n rows and m columns, wherein the detection areas provide an array of detector signals in response to light modulated by respective modulation areas of a first, second and third modulation means, each element in the array of detector signals being proportional, respectively, to the product of a respective element in the i*th row, a respective element in the j*th column, and the number $-1/a_{i^*j^*}$;
accumulator means for storing the values of matrix A and for updating the values of matrix A by adding subsequent detector signals to previously stored values;
means for providing the current n elements in the i*th row of matrix A to the first modulation means;
means for providing the current m elements in the j*th column of matrix A to the second modulator means; and
means for providing a signal representing the current number $-1/a_{i^*j^*}$ to the third modulation means.

5,185,716
THREE DIMENSIONAL COMBINED MAGNETO-OPTICAL MEMORY AND LOGIC PROCESSOR

Frank F. Mebdipour, 250 N. Robertston Blvd. Suite 520, Beverly Hills, Calif. 90210

Filed Jul. 22, 1991, Ser. No. 733,693
Int. Cl.[5] G11C *19/08*
U.S. Cl. 365—10 **5 Claims**



1. A three-dimensional magneto-optic combined memory and logic processor comprising: an array of magnetic bubble layers positioned and spaced parallel relationship, which each layer being formed of light-transparent magnetic material capable of producing magnetic bubble domains; an electromagnetic beam source positioned adjacent a first side of a said array of magnetic bubble layers for causing a polarized beam to pass through the array; a first photo-voltaic detector array positioned adjacent a second side of said array of magnetic bubble layers opposite to said first side; a second photo-voltaic detector array positioned adjacent to a third side of said array of magnetic bubble layers perpendicular to said first and second sides; data processor means connected to said array of magnetic bubble layers for controlling patterns of magnetic bubble domains on each of said layers and to cause said magnetic bubble domains to represent memory data and logic functions; and means included in said array of magnetic bubble layers for directing a percentage of said beam incident on each of said bubble memory layers to said second detector array; so that one of said first and second detector arrays produces binary coded electric signals representing memory data stored in said array of magnetic bubble layers and the other of said first and second of detector arrays simultaneously produces binary coded electric signals representing logic functions introduced into said array of magnetic bubble layers.

5,185,717
TAMPER RESISTANT MODULE HAVING LOGICAL ELEMENTS ARRANGED IN MULTIPLE LAYERS ON THE OUTER SURFACE OF A SUBSTRATE TO PROTECT STORED INFORMATION

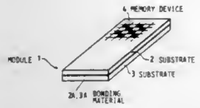
Ryoichi Mori, 24-12, Hakusan 1-cbome, Bunkyo-ku, Tokyo, Japan

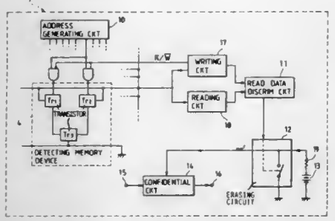
Continuation of Ser. No. 387,845, Jul. 31, 1989, abandoned. This application Mar. 2, 1992, Ser. No. 845,767
Claims priority, application Japan, Aug. 5, 1988, 63-195847
Int. Cl.[5] G11C *5/00;* **G06F** *12/16*
U.S. Cl. 365—52 **7 Claims**

1. A tamper resistant module for safeguarding stored information comprising: substrate means having an inner surface and an outer surface, memory means for storing confidential data, said memory means being confined by said inner surface of said substrate; means for preventing tampering, said tamper preventing means comprising a plurality of logical elements arranged on said outer surface of said substrate, said plurality of logical elements normally operating to provide an indication of a normal tamper-free condition, said plurality of logical elements being arranged in multiple layers on said outer sub-

VOL 1147 ISS 2 FE 9 1993 UMI

strate surface so that at least one logical element of said plurality of logical elements is rendered inoperative when a tampering attempt is applied to said outer surface of said substrate;





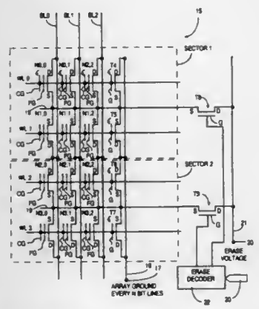
and detecting means for detecting whether at least one of said plurality of logical elements has been rendered inoperative for indicating that a tampering has been applied to the outer surface of said substrate.

5,185,718

MEMORY ARRAY ARCHITECTURE FOR FLASH MEMORY

Darrell D. Rinerson, Cupertino; Steve K. Hsia, Saratoga; Christophe J. Chevallier, Palo Alto, and Chan-Sui Pang, Sunnyvale, all of Calif., assignors to Catalyst Semiconductor Corporation, Santa Clara, Calif.

Filed Feb. 19, 1991, Ser. No. 658,279
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—185 **8 Claims**



1. A circuit comprising:

a region of semiconductor material of first conductivity type;

an array of floating gates organized in rows and columns, each of said floating gates being positioned above and insulated from a surface of said region of semiconductor material; (a plurality of control gate leads, each control gate lead being associated with one of said rows of floating and being insulated from said floating gates;

a plurality of pairs of regions of second conductivity extending to said surface of said region of semiconductor material, said pairs of regions extending in rows beneath said rows of floating gates, with one pair of said rows of regions being associated with each row of floating gates and with one region of said pair being positioned beneath one edge the floating gates of its associated row and with the other region of said pair being positioned beneath another edge of the floating gates of its associated row;

one erase region of second conductivity type extending to said surface of said region of semiconductor material and being positioned adjacent to an edge of said pairs of rows of regions of second conductivity type;

a plurality of erase gates positioned above and insulated from the surface of said semiconductor material, with one erase gate associated with each of said pairs of regions, and said erase gate associated with each pair of regions having one edge positioned above a portion of said one erase region and another edge of said erase gate positioned above a portion of one of said regions of said pair of regions; and

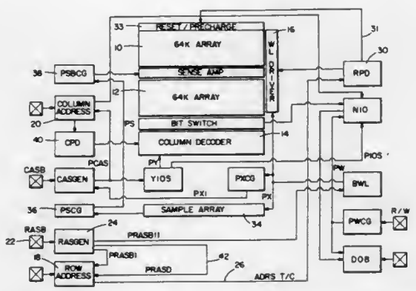
means for applying an erase potential to said erase region and means for selectively applying an erase control signal to said erase gates to thereby provide coupling of said erase potential to the region of second conductivity type associated with said erase gate.

5,185,719

HIGH SPEED DYNAMIC, RANDOM ACCESS MEMORY WITH EXTENDED RESET/PRECHARGE TIME

Sang H. Dhong, Mahopac, and Wei Hwang, Armonk, both of N.Y., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 29, 1990, Ser. No. 545,797
Claims priority, application Japan, Oct. 14, 1989, 1-267140
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—189.01 **5 Claims**



1. In a computer system including a DRAM having a plurality of memory cells arranged in rows and columns, the combination comprising:

row address buffer means;

circuit means for generating a row address strobe signal which exhibits both active and inactive levels during each DRAM memory cycle, and first and second transitions between said levels;

read-in circuit means, for reading in a row address to said row address buffer means;

delay means responsive to a delayed lagging transition of said row address strobe signal to generate an extended duration control signal which delays an output from said row address buffer means; and

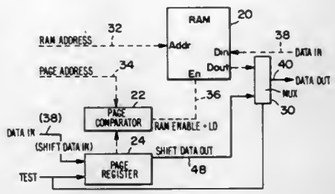
reset circuit means active when said inactive level is manifested by said row address strobe signal and for the extended duration of said control signal, to cause resetting and precharging of said DRAM.

5,185,720

MEMORY MODULE FOR USE IN A LARGE RECONFIGURABLE MEMORY

Steven Vaillancourt, Carson, and Cameron B. Wade, Lakewood, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 7, 1990, Ser. No. 623,829
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—189.02 **4 Claims**



1. A semiconductor memory module for use in a large reconfigurable memory, the memory module comprising:

a random access memory (RAM) having an enable terminal, RAM address terminals, a data input terminal and a data output terminal;

a two-to-one multiplexer having first and second inputs, the first input being connected to the data output terminal of the RAM, and having an output connected to supply output data from the memory module;

a page address register enabled only in a test mode to receive serial page address data over a data input line to the memory module and to simultaneously output serial data over an output line to the second input of the multiplexer; and

a page address comparator used only in an operational mode to compare a page address stored in the page address register and a page address supplied over page address lines to the memory module, and to generate an enable signal to the RAM upon detection of a match;

wherein, in the test mode, page address data are shifted into the page address register from the data input line and simultaneously shifted out of the page address register, through the multiplexer and onto the data output line;

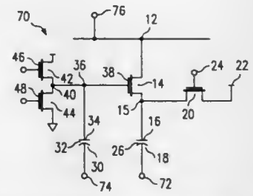
and wherein, in the operational mode, the RAM is enabled when the page address supplied on the address lines is the same as the page address stored in the page address register, and data may be written to the RAM from the data input line or read from the RAM onto the data output line.

5,185,721

CHARGE-RETAINING SIGNAL BOOSTING CIRCUIT AND METHOD

Andrew M. Love, Stafford, Tex., and David V. Kersh, III, Houston, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 265,366, Oct. 31, 1988, abandoned.
This application Dec. 19, 1989, Ser. No. 453,335
Int. Cl.[5] G11C *7/00, 11/413, 5/14*
U.S. Cl. 365—189.06 **36 Claims**



1. Apparatus for preserving a predetermined voltage level near a voltage supply level on a boosting capacitor, comprising:

a transistor having a current path and a gate, said current path operable to couple a first electrode of a boosting capacitor to a signal node;

first circuitry for boosting the node to a boosted level above the voltage supply level;

second circuitry for discharging a second electrode of the boosting capacitor to a first voltage level, such that charge is withdrawn through the transistor to said first electrode and a second voltage level exists on said first electrode, said capacitor storing a predetermined voltage level substantially equivalent to the difference between said first and second voltage levels; and

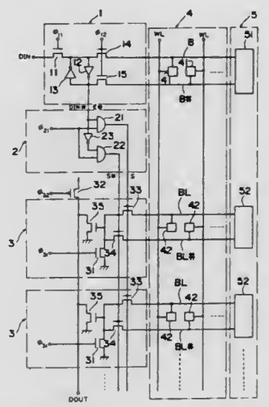
third circuitry for discharging said gate to below a threshold voltage of said transistor, such that said capacitor is isolated from said node and such that said predetermined voltage level is maintained on said capacitor for an extended period of time.

5,185,722

SEMICONDUCTOR MEMORY DEVICE HAVING A MEMORY TEST CIRCUIT

Yoshiji Ota, Nara, and Kazuaki Ochiai, Tenri, both of Japan, assignors to Sharp Kabushiki Kaisha, Japan

Filed Nov. 21, 1990, Ser. No. 616,923
Claims priority, application Japan, Nov. 22, 1989, 1-333739; Nov. 24, 1989, 1-304983; Feb. 13, 1990, 2-31818; Mar. 9, 1990, 2-59515; May 29, 1990, 2-139127; Aug. 6, 1990, 2-208722; Sep. 14, 1990, 2-244564
Int. Cl.[5] G11C *7/00*
U.S. Cl. 365—201 **11 Claims**



1. A semiconductor memory device having a function of testing its own operation through a parallel access to memory cells, comprising:

a plurality of examined memory cells for storing data to be tested in a test mode of the device, said plurality of examined memory cells being arranged in rows and columns;

a plurality of reference memory cells in a column for storing expected data in the test mode;

a plurality of word lines which are connected with the examined memory cells in respective rows and respective ones of said plurality of reference memory cells;

a plurality of pairs of bit lines operating complementarily, connected with the examined memory cells in respective columns;

a pair of bit lines operating complementarily, connected with said plurality of reference memory cells in a single column;

VOL 1147 ISS 2 FEB 9 1993 UMI

a plurality of sense amplifiers connected with respective pairs of bit lines connected with the examined memory cells and the reference memory cells for amplifying data on the bit lines before the data are outputted;

a line data memory circuit for outputting the expected data written to a reference memory cell via the pair of bit lines connected to the reference memory cell;

a bit line select circuit for selecting, in response to the expected data, one of the bit lines for each of the examined memory cells when the expected data is of a low level, and selecting the other of the bit lines when the expected data is of a high level;

a plurality of output evaluation circuits connected with respective ones of the pairs of bit lines for the examined memory cells, each output evaluation circuit detecting via the one bit line selected by the bit line select circuit when the expected data is of a low level, an output signal from the corresponding examined memory cell which expresses data having been written to the examined memory cell in parallel to the reference memory cell and which ought to have a value identical with the expected data; and detecting the output signal via the other bit line selected by the bit line select circuit when the expected data is of a high level; and outputting a signal indicative of coincidence or non-coincidence between the output signal detected and the expected data.

5,185,723

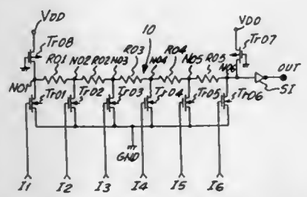
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING LOAD MEANS

Ryuichi Hashisbita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Division of Ser. No. 440,093, Nov. 22, 1989, abandoned. This application Apr. 9, 1992, Ser. No. 865,897

Int. Cl.[5] G11C *13/00*

U.S. Cl. 365—226 **3 Claims**



1. A semiconductor integrated circuit on a substrate comprising:

a first power source terminal and a second power source terminal;

a wiring layer formed on said substrate;

load elements connected in parallel between said wiring layer and said first power source terminal, at least one each of said load elements being disposed at respective ends of said wiring layer;

a plurality of memory cells, each having transistors forming a static random-access memory circuit and transistors forming a comparison circuit, said comparison circuit having a comparison function thereby to compare a digit line information and an information stored in said memory circuit and discharge the charges on said wiring layer to the ground potential in the absence of matching of the informations; and

transfer gate elements provided in said wiring layer, said transfer gate elements separating load elements from said memory cells.

5,185,724

IMAGE MEMORY

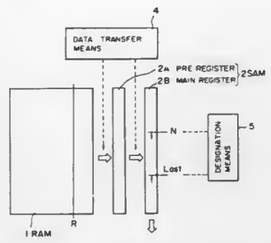
Haruki Toda, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 21, 1990, Ser. No. 586,232

Claims priority, application Japan, Sep. 22, 1989, 1-247570

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—234 **7 Claims**



1. An image memory comprising:

a random access memory accessible at random,

a serial access memory including a main register and a preregister, said main register and preregister holding data and being cyclically and serially accessed,

data transfer means for simultaneously transferring a group of data from said random access memory to said main register of said serial access memory through said preregister, and

designation means for designating an address of a serial access for serial accessing of said serial access memory,

wherein said data transfer means serves to transfer data from said random access memory to said preregister of said serial access memory during implementation of said serial access to said serial access memory on the basis of an address designated by said designation means.

5,185,725

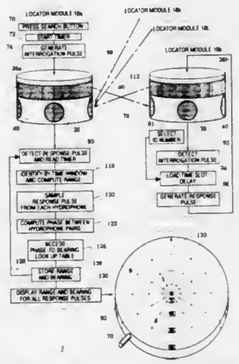
DIVER LOCATOR SYSTEM

Brian P. Kent, Cyprus, and Charles M. Dube, Redondo Beach, both of Calif., assignors to Dynamics Technology, Inc., Torrance, Calif.

Filed Apr. 3, 1992, Ser. No. 863,401

Int. Cl.[5] H04B *1/59*

U.S. Cl. 367—6 **19 Claims**



1. A locator module physically configured to be carried by a first underwater diver for displaying the location relative to

said locator module of each of a plurality of transponders respectively carried by other divers, where each transponder transmits a unique time delay encoded response pulse in response to an interrogation pulse from said locator module, said locator module comprising:

transmitter means for transmitting a substantially omnidirectional interrogation pulse;

a plurality of spaced receiver means for receiving said unique time delay encoded response pulses transmitted by said transponders;

processor means responsive to each response pulse received by said receiver means for identifying the transponder from which the response pulse was transmitted and for determining the range and bearing of the identified transponder relative to said locator module; and

display means for displaying the range and bearing determined for each identified transponder.

5,185,726

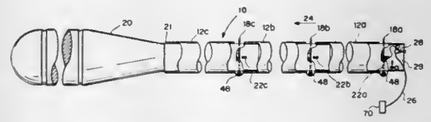
CONTINUOUSLY-FILLED FLOATATION APPARATUS

Rick A. Curto, Friendswood, and Otis A. Johnston, League City, both of Tex., assignors to Western Atlas International, Inc., Houston, Tex.

Filed Aug. 15, 1990, Ser. No. 568,248

Int. Cl.[5] G01V *1/38*

U.S. Cl. 367—18 **8 Claims**



1. A floatation device comprising:

(a) a tubular member which is divided to form in a serial connection a plurality of airtight chambers, the chamber at one end of the tubular member being referred to as the first chamber while the chamber at the other end as the last chamber;

(b) a first one-way fluid check valve installed in the first chamber for passing a fluid therethrough in to the first chamber; and

(c) a separate one-way check valve installed between each pair of adjacent chambers in said plurality of chambers in a manner which will enable the fluid from the first chamber to pass to the last chamber.

5,185,727

COIN OR TOKEN OPERATED MACHINE FOR PLAYING PRE-RECORDED RECORD DISCS

Ian Blakeway, Ridge House, Wall Nook Lane, Huddersfield HD8 8YB, and Frank Holmes, 17 Bank End Road, Barnsley, both of Great Britain

PCT No. PCT/GB89/00495, § 371 Date Dec. 6, 1990, § 102(e) Date Dec. 6, 1990, PCT Pub. No. WO89/11135, PCT Pub. Date Nov. 16, 1989

PCT Filed May 10, 1989, Ser. No. 613,895

Claims priority, application United Kingdom, May 10, 1988, 8811070

Int. Cl.[5] G11B *17/22, 17/08*

U.S. Cl. 369—34 **2 Claims**

1. A coin or token operated machine for playing pre-recorded record discs and which comprises:

a magazine store for holding a plurality of pre-recorded record discs, with each disc having its own distinctive coding extracted;

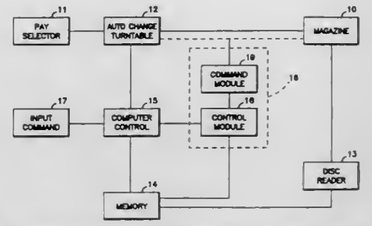
a selector operable to initiate extraction of a selected disc from the store;

an extractor mechanism operable to place a selected disc in a designated position;

a record disc reader operative to extract a code of each selected disc;

a memory connected to the reader and operative to store data concerning the discs which are selected for playing;

a computer control system arranged to control the operation of the machine; and



a disc replacement device connected to the control system and to the memory, and operative upon each inspection of the machine to indicate a least popular record disc since the previous inspection, said disc replacement device further comprising a control module operative to receive data from the memory concerning the least popular disc, and a command module connected to the extractor mechanism and operative to cause the extractor mechanism to extract the least popular disc from the magazine store and place it in a playing device for removal from the machine.

5,185,728

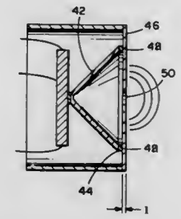
OMNIDIRECTIONAL ULTRASONIC TRANSDUCER

Ian R. Gilchrist, Timonium, Md., assignor to Cyber Scientific, Baltimore, Md.

Continuation of Ser. No. 606,558, Oct. 31, 1990, abandoned. This application Jul. 6, 1992, Ser. No. 908,757

Int. Cl.[5] H04R *17/00;* **G10K** *11/18*

U.S. Cl. 367—163 **3 Claims**



1. An ultrasonic transducer comprising:

an oscillatory element having a center, for generating vibrations at an ultrasonic frequency;

a conical diaphragm having an apex connected to the center of said oscillatory element, said conical diaphragm having a rim which defines a concave opening, said diaphragm responsive to an actuation of said oscillatory element to generate plane waves in the direction of said concave opening; and

a faceplate with a single circular aperture that has a diameter that enables said aperture to exhibit point source characteristics at said ultrasonic frequency, said rim of said conical diaphragm abutting said faceplate, concentrically with said aperture, and bonded to said faceplate by a flexible adhesive that is substantially positionally restricted to an area of contact between said rim and said faceplate, said faceplate having a thickness dimension that, in combina-

VOL 1147 ISS 2 FE 9 1993 UMI

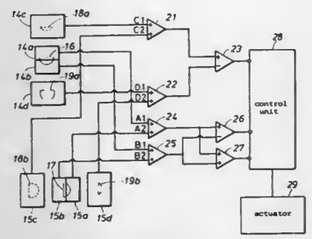
tion with said aperture diameter enables said plane waves to be diffracted and to exit from said aperture with a substantially omnidirecitonal beam pattern.

5,185,729

OPTICAL HEAD WITH IMPROVED TRACKING AND FOCUSING ERROR CAPABILITIES

Kazuo Noda; Eiichi Nakamura, and Hiroaki Nishiguma, all of Kanagawa, Japan, assignors to Kabushiki Kaisha Nippon Conlux and NHK Spring Co., Ltd., Japan

Filed Apr. 1, 1991, Ser. No. 678,478
Claims priority, application Japan, Apr. 4, 1990, 2-89483
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.14 **5 Claims**



1. An optical head, comprising:

a light source;

three beam generating means for producing a 0th-order diffraction light beam and ±1st-order diffraction light beams from a light beam obtained from said light source and projecting said diffraction light beams upon an optical recording medium;

light deflecting means for separating each of said diffraction light beams reflected by a recording surface of said optical recording medium into two light beams oriented in and along a first light path and a second light path, respectively;

first focusing control optical sensor means placed in said first light path a short distance in front of a nominal focal point of said 0th-order diffraction light beam for receiving said 0th-order diffraction light beam;

a pair of first tracking control optical sensor means placed each on either side of said first focusing control optical sensor means for receiving said ±1st-order diffraction light beams, respectively;

second focusing control optical sensor means placed in said second light path a short distance beyond a nominal focal point of said 0th-order diffraction light beam for receiving said 0th-order diffraction light beam;

a pair of second tracking control optical sensor means placed each on either side of said second focusing control optical sensor means for receiving said ±1st-order diffraction light beams, respectively; and

detection means for detecting a focusing error and a tracking error according to outputs from said sensor means and actuating said optical head so as to eliminate said focusing and tracking errors.

5,185,730

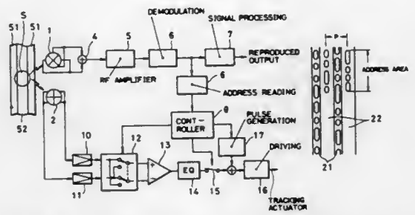
METHOD FOR READING DATA FROM OPTICAL DISK

Toshihiro Komaki; Hideo Kudo; Tomonori Ishizuki, and Shinichi Yokozeki, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 24, 1990, Ser. No. 527,908
Claims priority, application Japan, Jun. 1, 1989, 1-139433; Apr. 11, 1990, 2-95547
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.26 **10 Claims**

1. A method for controlling a position of an optical head relative to an optical disk, said disk containing first and second sets of tracks, wherein one of said first and second sets of tracks is composed of pregroove tracks and the other of said first and second sets of tracks is composed of land tracks, said pregroove tracks and land tracks being alternately distributed on said disk, said disk having prerecorded address information stored only on said first set of tracks, said method comprising the steps of:

generating a control signal for controlling tracking of a beam spot on said optical head while said optical head accesses said disk, wherein said optical head accesses said first set of tracks when said control signal has a first polarity and accesses said second set of tracks when said control signal has a second polarity,



setting said control signal to said first polarity in order for said optical head to access said first set of tracks containing said prerecorded address information,

alternately reading and moving said beam spot between tracks in said first set of tracks,

comparing prerecorded address information read from tracks in said first set with a desired address,

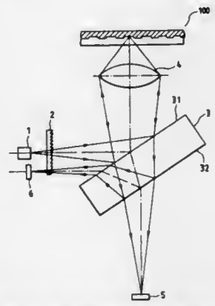
switching said control signal from said first polarity to said second polarity, when said desired address and address information read from a track in said first set match, in order for said beam spot to access a desired track in said second set that corresponds to said desired address.

5,185,731

OPTICAL DATA RECORDING AND REPRODUCING APPARATUS INCLUDING OPTICAL DETECTOR FOR DETECTING LIGHT BEAMS REFLECTED BY A PLANE PARALLEL PLATE AND THEN DIFFRACTED BY A DIFFRACTION GRATING

Shinichi Takahashi, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 27, 1992, Ser. No. 889,057
Claims priority, application Japan, Nov. 18, 1991, 3-301773
Int. Cl.[5] G11B *7/095, 7/12*
U.S. Cl. 369—44.23 **7 Claims**



1. An optical image recording and reproducing apparatus comprising:

a light source for generating a light beam to read data from a recording surface of a recording medium;

a diffraction grating for diffracting said generated light beam into three light beams comprising a main light beam of the 0-th order of diffraction, an auxiliary light beam of the +1st order of diffraction, and an auxiliary light beam of the −1st order of diffraction;

a plane parallel plate having a first surface and a second surface, said first surface for receiving and transmitting said three light beams to said recording surface, and said second surface for receiving and partially reflecting three signal light beams reflected by said recording surface;

a first optical detector for detecting said main light beam of the 0-th order of diffraction of said signal light beams passing through said second surface of said plane parallel plate and for outputting an RF signal and a focus servo control signal in accordance with said detected main light beam; and

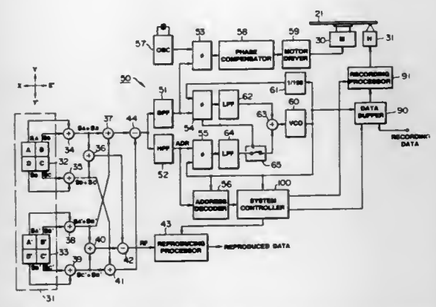
a second optical detector, which receives said three signal light beams reflected by said second surface and diffracted by said diffraction grating, for detecting a first light beam of a −1st order of diffraction of said auxiliary light beam of the +1st order of diffraction and a second light beam of the +1st order of diffraction of said auxiliary light beam of the −1st order of diffraction and for outputting a tracking error signal in accordance therewith.

5,185,732

RECORDING MEDIUM AND RECORDING AND REPRODUCING APPARATUS EMPLOYING THE RECORDING MEDIUM

Hiroshi Ogawa, Kanagawa; Yoichiro Sako, Chiba, and Masanobu Yamamoto, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 19, 1989, Ser. No. 367,770
Claims priority, application Japan, Jun. 20, 1988, 63-149958; Jul. 11, 1988, 63-172226; Feb. 23, 1989, 1-041784
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—47 **20 Claims**



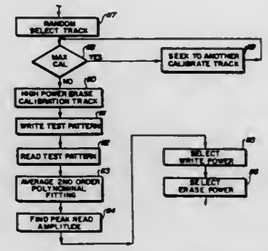
1. A recording medium having a recording track comprising first portions alternating at regular intervals with second portions, wherein the recording track has substantially constant width along each of the first portions, and changing width along each of the second portions, wherein the changing width along each of the second portions determines a set of a predetermined number of control data bits, wherein each said set of said predetermined number of bits determines address data for a different data block.

5,185,733

CALIBRATING LASERS FOR OPTICAL RECORDING USING A MAXIMAL READBACK SIGNAL AMPLITUDE AS A CRITERION

Blair I. Finkelstein; Morovat Tayefeh, both of Tucson, Ariz., and Hideo Ueno, Yamato, Japan, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 1, 1990, Ser. No. 486,840
Int. Cl.[5] G11B *7/125*
U.S. Cl. 369—54 **28 Claims**



1. In an optical disk player, the machine effected method of calibrating a laser for recording signals on an optical disk in the player;

the steps of:

actuating said laser for recording predetermined signals as machine-sensible marks on the disk at diverse laser power levels of operation whereby said machine-sensible marks recorded at respective ones of said diverse laser power levels upon being optically sensed yield read back signals having different signal amplitudes, respectively and wherein at least one of said read back signal amplitudes is a maximum of all of said read back signal amplitudes;

in a reading step, machine sensing the machine-sensible marks to generate a read back signal indicative of said sensed machine-sensible marks, measuring the readback signal amplitudes for each of the diverse laser power levels, identifying the laser power level that resulted in a maximum readback signal amplitude; and

selecting said identified laser power level as a recording power level for said laser to be used in said optical disk player for recording data signals on said optical disk.

5,185,734

CALIBRATING AND POWER-PROTECTING LASER DRIVE CIRCUITS

David E. Call, and Julian Lewkowicz, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 20, 1990, Ser. No. 555,952
Int. Cl.[5] G11B *7/125*
U.S. Cl. 369—116 **7 Claims**

1. In a machine-executed method of operating an optical device for calibrating a digitally settable digital to analog convertor (DAC) for controlling a laser to emit a laser beam at calibrated digitally set power levels, said DAC having a digital input and an analog output connected to the laser for controlling the laser to emit an output laser beam having an intensity indicated by the analog output signal magnitude of the DAC, the machine-executed steps of:

digitally setting an initial input value into the DAC digital input to drive the laser to emit a laser beam having a predetermined minimal laser power value;

sensing the laser beam to measure its emitted power level value;

establishing a digital predetermined reference power value;

comparing said measured emitted power value with said predetermined reference power value, if the sensed laser beam power value is less than said predetermined refer-

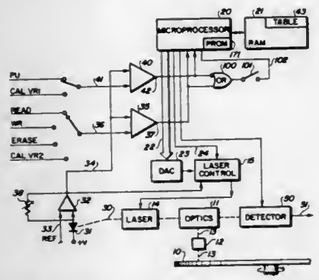
VOL 1147 ISS 2 FEB 9 1993 UMI

ence power value, adding a predetermined digital incremental value to the DAC digital input for digitally increasing the DAC input digital setting, by said predetermined digital incremental DAC input setting to cause the laser to emit a laser beam at a higher power value;

repeating the comparison and setting steps until the measured emitted power value is not less than said predetermined reference power value;

tallying said digitally increases to said DAC input to maintain a total number of all said digital increases from said initial input setting including storing said total number into a digital table;

in a DAC calibration calculation step, subtracting the digital minimum power value from said digital power reference value to obtain a difference power value;



dividing said difference power value by the total number of DAC settings stored in said table to obtain a laser beam output intensity change value for each said increment in the DAC digital input as calibrated DAC value;

digitally indicating a power level value desired for operating the laser;

in a desired DAC setting calculation step, subtracting said predetermined minimum power level value from said desired power level value to obtain a DAC change power level value; dividing said DAC change power level value by said calibrated DAC value to obtain a DAC input digital value; then adding said DAC input digital value to said initial input value to obtain a desired input digital value; and

setting said desired input digital value into said DAC digital input for operating said laser at said desired power level value.

5,185,735

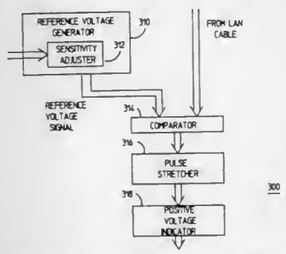
LAN NOISE MONITOR

Stephen Ernst, Colorado Springs, Colo., assignor to Hewlett Packard Company, Palo Alto, Calif.

Filed Jul. 10, 1991, Ser. No. 727,693

Int. Cl.[5] G06F *3/00;* **H04J** *1/16, 3/14*

U.S. Cl. 370—13 **20 Claims**



17. A method for monitoring voltage on a LAN cable on which data is conveyed by negative-going pulses, comprising the steps of:

(1) detecting positive voltage on the LAN cable while ignoring any negative voltage excursions; and

(2) indicating to a LAN sentinel the presence of positive voltage on the LAN cable.

5,185,736

SYNCHRONOUS OPTICAL TRANSMISSION SYSTEM

Raymond E. Tyrrell; O. Lamar Bishop; William E. Powell; Dale L. Krisher; William H. Stephenson; M. Rodney Briscoe, all of Raleigh; Hal A. Thorne, Wendell; Claude M. Hurlocker, Raleigh; V. Paul Runyon, Raleigh; Timothy J. Williams, Raleigh; Joseph E. Sutherland, Raleigh; William B. Weeber, Apex; Michael J. Gingell, Raleigh; Kenneth J. Stoia, Raleigh; William J. Fox, Raleigh; Jeffrey P. Jones, Raleigh; Richard M. Czerwiec, Raleigh; Ertugrul Baydar, Raleigh; Heinrich T. Sonnenberg, Raleigh; Richard Peters, Raleigh; Gus C. Sanders, Raleigh; Richard J. Sanders, Jr., Raleigh; Francis G. Noser, Raleigh; Joseph L. Smith, Raleigh; Jak Yaemsiri, Raleigh; Camille A. Abu-Saba, Clayton; Patrick M. Farrell, Raleigh, all of N.C.; Wenkwei Rou, Phoenix, Ariz.; Victor W. Wilkerson, Durham, N.C.; Mohammad S. Arani, Raleigh, N.C.; Stephen C. Dunning, Cary, N.C.; Keith Bernhardt, Raleigh, N.C., and Dana Merrill, Raleigh, N.C., assignors to Alcatel NA Network Systems Corp., Raleigh, N.C.

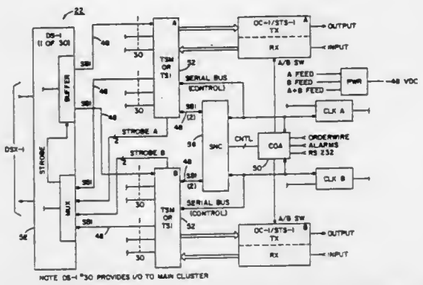
Filed May 12, 1989, Ser. No. 351,861

Int. Cl.[5] H04J *3/00;* **G02F** *1/00*

U.S. Cl. 370—55 **21 Claims**

MICROFICHE APPENDIX INCLUDED

(36 Microfiche, 63 Pages)



1. A synchronous optical transmission system for interfacing with high speed communication channels conforming to the synchronous optical network (SONET) standard so as to convey information to and from said high speed channels operating at different transmission rates, as well as to and from at least one said high speed channel and lower speed channels conforming to other communication standards comprising:

A) a fiber transmission system (FTS) having;

1) means for interfacing to a communication medium operating at a first SONET high speed channel transmission rate;

2) means for interfacing to a second communication medium comprising a plurality of channels, each operating at a lower transmission rate than the first SONET high speed channel; and

3) means for multiplexing said lower transmission rate channels to the first SONET channel as well as for demultiplexing the first SONET channel to the lower channels;

B) a terminal multiplexer (TM) having;

1) a means for interfacing to a SONET high speed channel;

2) a time slot multiplexer (TSM) having a lower speed output, the TSM interconnected to said interfacing means for cross-connecting lower speed channels to and from the SONET high speed channel at the lower speed output of the time slot multiplexer;

3) lower speed channel interfacing means connected to the lower speed output of the TSM for interfacing the lower speed output of the TSM with lower speed channels including means for reformatting the data of the lower speed channel so as to be compatible with the higher speed channel and for converting the formatting of the higher speed channel to the format of the lower speed channel; and

4) means for controlling the cross-connect function of the TSM; and

C) an add/drop multiplexer (ADM) comprising:

1) first means for interfacing to a SONET high speed channel at a first location,

2) a time slot multiplexer (TSM) having a lower speed output, the TSM interconnected to said add/drop multiplexing interfacing means for cross-connecting lower speed channels to and from the SONET high speed channel and a second SONET high speed channel as well as to and from the lower speed output of the TSM;

3) a lower speed channel interfacing means connected to the lower speed output of the TSM for interfacing the lower speed output of the TSM with lower speed channels including means for reformatting the data of the lower speed channel so as to be compatible with the higher speed channel and for converting the formatting of the higher speed channel to the format of the lower speed channel;

4) second means for interfacing to a SONET high speed channel at a second location; and

5) means for controlling the cross-connect function of the TSM.

5,185,737

METHOD AND APPARATUS FOR CYCLIC RESERVATION MULTIPLE ACCESS IN A COMMUNICATIONS SYSTEM

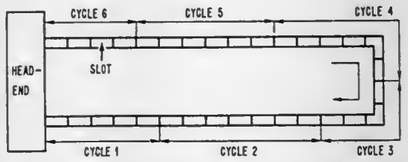
Mehdi M. Nassehi, Adliswil, and Erwin A. Zurfluh, Feldmeilen, both of Switzerland, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 12, 1990, Ser. No. 491,902

Claims priority, application European Pat. Off., Apr. 21, 1989, 89810229

Int. Cl.[5] H04J *3/16*

U.S. Cl. 370—85.8 **24 Claims**



1. Method of regulating access to a communications network, said network comprising two unidirectional counterflowing transmission busses, a plurality of stations each connected to both busses, and at least one headend unit for generating time slots on said busses at regular intervals; said method comprising the following steps:

issuing regularly, for consecutive cycles, reservation commands on said busses, each reservation command comprising a sequential cycle number and initially a zero reservation count;

augmenting, by each station, said reservation count by a request count representing a number of slot requests for data pending transmission in the respective station;

storing, in each station, in a local reservation queue each request count which was used to augment a reservation count and the cycle number of the respective reservation command;

storing, for each reservation command that has passed all stations, in a global reservation queue the cycle number and the associated accumulated reservation count which was contained in that reservation command;

issuing, for each one of said consecutive cycles, a cycle start command containing a respective cycle number, and releasing subsequently a sequence of free slots whose number is equal to the stored accumulated reservation count in the global reservation queue for the respective cycle number; and

in each station, after detecting a start command with its cycle number, accessing r free slots for data transmission, r being the request count stored with the respective cycle number in the local reservation queue of the respective station.

5,185,738

FIBEROPTIC TELEPHONE SYSTEMS

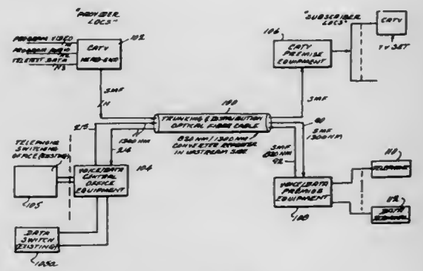
Leroy Kelly, Allen, Tex., assignor to People's Telephone Cooperative, Inc., Quitman, Tex.

Division of Ser. No. 358,634, May 30, 1989, abandoned, which is a division of Ser. No. 117,062, Nov. 5, 1987, Pat. No. 4,860,287.

This application Nov. 28, 1990, Ser. No. 618,590

Int. Cl.[5] H04J *3/16*

U.S. Cl. 370—95.1 **18 Claims**



5. A telephone network, comprising:

a plurality of interfaces to a subscriber telephone;

a plurality of means for detecting an off-hook condition of subscriber telephones connected to said plurality of interfaces;

a plurality of local controller means, each coupled to said plurality of detecting means for:

1) detecting a change in said off-hook condition;

2) detecting which subscriber caused said change; and

3) assembling a message based on said change and an address indicative of said subscriber causing said change and transmitting said message; and

main assigning controlling means, coupled to said local controller means for determining a time slot of operation to be used for further communication after said change.

5,185,739

TIME-ALLOCATION OF RADIO CARRIERS

Stephen L. Spear, Skokie, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1990, Ser. No. 485,420

Int. Cl.[5] H04J *3/16*

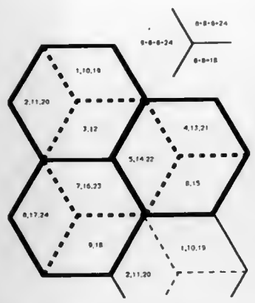
U.S. Cl. 370—95.3 **12 Claims**

1. A method of time-allocation of cellular radio carriers comprising:

deterministically a carrier of radio traffic to one coverage area during one time interval

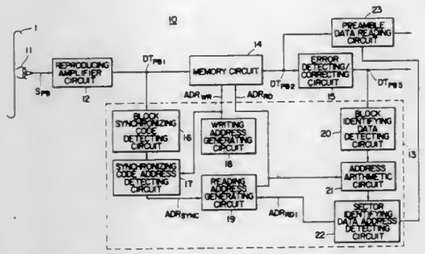
VOL 1147 ISS 2 FEB 9 1993 UMI

and deterministically allocating that same carrier to another coverage area during a substantially non-overlapping time



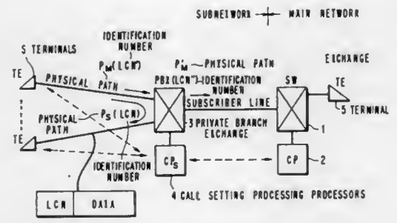
interval, all in time synchronism with any proximal reuse of that carrier.

5,185,740
INFORMATION TRANSMITTING DEVICE
Yoshikazu Kurose; Shinji Aoki, and Hideto Suzuki, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Jul. 23, 1990, Ser. No. 555,769
Claims priority, application Japan, Jul. 26, 1989, 1-194769
Int. Cl.[5] H04J *3/06;* **H04L** *7/06;* **G06F** *11/00*
U.S. Cl. 370—106 **4 Claims**



2. In an information transmitting apparatus for transmitting a plurality of sets of information signals, wherein each of said sets includes a preamble portion and a plurality of data blocks following said preamble portion, said preamble portion containing preamble data at a predetermined position in the preamble portion and each of said data blocks containing at least a block synchronizing code, a block identification code, information data and an error correction code for said block identification code and said information data, a device for locating the position of said preamble data, comprising:
means for detecting said block synchronizing code;
means for locating said block identification code on the basis of a time at which said block synchronizing code was detected;
means for reading said located block identification code;
error correcting means for effecting error correction, according to said error correction code, of the block identification code which is read and outputting a corrected block identification code; and
means for determining the position of said preamble data on the basis of said corrected block identification code and the time at which said block synchronizing code was detected.

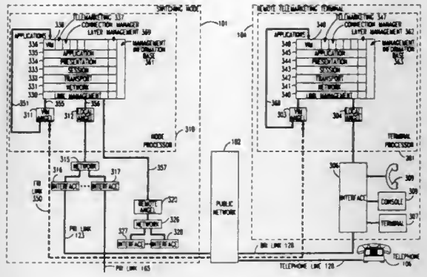
5,185,741
INTER-NETWORK CONNECTING SYSTEM
Kazuo Iguchi, Yokohama; Hiroshi Takeo, Kawasaki; Shigeo Amemiya, Yokohama, and Koji Tezuka, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
PCT No. PCT/JP90/00706, § 371 Date Jan. 30, 1991, § 102(e) Date Jan. 30, 1991, PCT Pub. No. WO90/15510, PCT Pub. Date Dec. 13, 1990
PCT Filed May 30, 1990, Ser. No. 640,437
Claims priority, application Japan, May 30, 1989, 1-134540
Int. Cl.[5] H04J *3/12*
U.S. Cl. 370—110.1 **29 Claims**



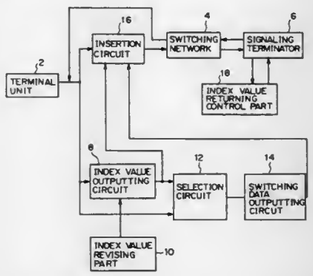
1. An inter-network connecting system, comprising:
a main network having an exchange and a call setting processing processor for controlling said exchange; and
a subnetwork having terminals including a calling terminal which generates a calling number which is provided to said main network and a connection control unit, coupled to said main network and said terminals, including a loopback unit,
said call setting processing processor responding to the calling number by providing said calling terminal with a first special signal to operate the loopback unit in said connection control unit to connect a first physical communication path for an extension line between terminals in said subnetwork when an extension line communication is to be performed in said subnetwork, and by providing said calling terminal with a second special signal to stop the operation of the loopback unit in said connection control unit and to connect a second physical communication path for an outer line between the exchange and the terminal in said subnetwork when an outer line communication is to be performed between said main network and the subnetwork; said call setting processing processor transmitting said first special signal to said calling terminal, said calling terminal adding said first or said second special signal to data to be transmitted; and said connection control unit determining whether the loopback unit should be operated for said data in accordance with said first special signal or said second special signal, to connect a physical communication path for said extension line communication and/or said outer line communication.

5,185,742
TRANSPARENT SIGNALING FOR REMOTE TERMINALS
Bruce M. Bales, Louisville; Robert L. Crumpley, Westminster; Sandra S. North, Golden, and Stephen M. Thieler, Boulder, all of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 31, 1990, Ser. No. 636,522
Int. Cl.[5] H04J *3/12*
U.S. Cl. 370—110.1 **52 Claims**

1. A remote telemarketing terminal for communicating with a telemarketing system over a connecting ISDN link, said ISDN link having a plurality of transport channels and a signaling channel for communication of ISDN signaling information, said remote telemarketing terminal comprising
means for establishing a virtual link between said terminal and said system over said transport channels, said virtual link including a virtual signaling channel established on one of said transport channels, and
means for using ISDN signaling information communicated to said terminal over said virtual signaling channel to control said remote telemarketing terminal to provide telemarketing functions, that ISDN signaling information being distinct from ISDN signaling information communicated to said terminal via said signaling channel of said connecting ISDN link.

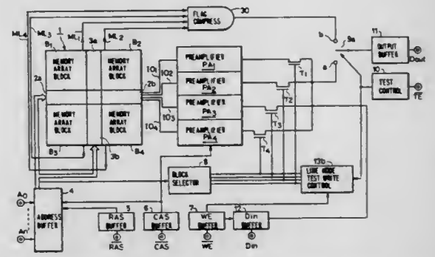


5,185,743
SIGNALING CELL SWITCHING SYSTEM
Masami Murayama, Yokohama; Atsuhisa Takahashi, Kawasaki; Satoshi Kakuma, and Shuji Yoshimura, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Feb. 7, 1991, Ser. No. 651,797
Claims priority, application Japan, Feb. 8, 1990, 2-028918
Int. Cl.[5] H04J *3/12;* **H04L** *12/56*
U.S. Cl. 370—110.1 **9 Claims**



1. A signaling cell switching device in an ATM switch for feeding signaling cells outputted from a terminal unit to a signaling terminator via a path formed in a switching network according to switching data inserted into said signaling cells, said signaling cells containing route selection or route non-selection information, said signaling cell switching device comprising:
an index value outputting means for outputting an index value corresponding to a virtual channel identifier inserted in a first signaling cell containing route non-selection information outputted from the terminal unit;
a switching data outputting means for outputting switching data corresponding to said index value;
an index value selecting means for outputting said index value from said index value outputting means to said switching data outputting means in response to the route non-selection information from said first signaling cell,
a data inserting means for inserting said index value outputted from said index value outputting means and said switching data output from said switching data outputting means into said first signaling cell; and
an index value returning control means for returning the index value of said first signaling cell received at said signaling cell terminator back to said terminal unit that sent said first signaling cell,
whereby said signaling cell switching device inserts said route non-selection information into said first signaling cell outputted from said terminal unit, and inserts said route selection information and said index value returned from said index value returning control means into all signaling cells subsequent to said first signaling cell outputted from said terminal unit.

5,185,744
SEMICONDUCTOR MEMORY DEVICE WITH TEST CIRCUIT
Kazutami Arimoto; Kazuyasu Fujishima; Yoshio Matsuda; Tsukasa Ooishi, and Masaki Tsukude, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 14, 1990, Ser. No. 479,568
Claims priority, application Japan, Aug. 18, 1989, 1-213560
Int. Cl.[5] G11C *29/00*
U.S. Cl. 371—21.2 **40 Claims**



1. A semiconductor memory device comprising:
a memory array comprising a plurality of memory cells arranged in a plurality of rows and columns, and divided into a plurality of blocks;
a plurality of test means provided to correspond respectively to said plurality of blocks, each of said test means testing simultaneously a plurality of memory cells in the corresponding block; and
logic means for performing a predetermined logic operation on a plurality of results of said plurality of test means and outputting the operation result as a test result for all the blocks,
each of said plurality of test means including
(i) information holding means provided in the corresponding block for holding information of one row,
(ii) comparison means provided in the corresponding block for comparing information read out of the memory cells of a selected row with the information held in said information holding means, and
(iii) match lines to which the comparison results of said comparison means are outputted.

5,185,745
SCAN PATH DIAGNOSTIC METHOD
Peter J. Manca, Jr., Southboro, Mass., assignor to Prime Computer, Inc., Bedford, Mass.
Filed May 14, 1990, Ser. No. 523,004
Int. Cl.[5] H04B *17/00*
U.S. Cl. 371—22.3 **12 Claims**

1. A method for testing at least one hardware element for

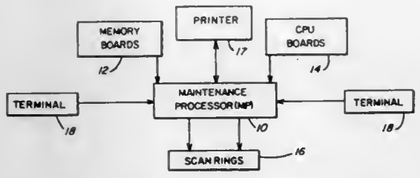
VOL 1147 ISS 2 FE 9 1993 UMI

proper operation, wherein interconnected shift registers are grouped into scan rings, said method comprising the steps of:

creating at least one high-level command for a testing subroutine employing a high-level computer language;

translating said at least one high-level command into low-level machine code;

accessing a scan path to be tested corresponding to the at least one hardware element;



accessing one of said scan rings of said shift registers to be utilized during testing of the at least one hardware element;

loading bits from said scan path into said one scan ring;

performing said low-level machine code to accomplish at least one correcting operation on said loaded bits;

retrieving said corrected bits from said scan ring; and

returning said retrieved bits to said scan path.

5,185,746

OPTICAL RECORDING SYSTEM WITH ERROR CORRECTION AND DATA RECORDING DISTRIBUTED ACROSS MULTIPLE DISK DRIVES

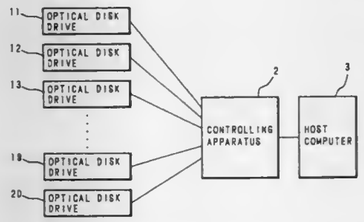
Kunimaro Tanaka; Minoru Ozaki; Yoshihiro Kiyose, and Osamu Ito, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Apr. 13, 1990, Ser. No. 509,635

Claims priority, application Japan, Apr. 14, 1989, 1-95676; May 12, 1989, 1-119206; May 12, 1989, 1-119213

Int. Cl.[5] H03M *13/00*

U.S. Cl. 371—40.1 **28 Claims**



1. An optical recording system comprising:

a plurality of optical disk drives, each for being loaded with an optical disk;

a control apparatus, coupled to said plurality of disk drives, for controlling recording of information on and reproducing information from the optical disks, said control apparatus including;

means for separating data to be recorded into a plurality of data segments and recording each data segment on a separate optical disk;

means for generating a check symbol of an error correction code for the data to be recorded;

means for recording said check symbol on at least one optical disk that differs from the optical disks upon which the data segments are recorded;

means for detecting trouble with the plurality of optical disk drives and for identifying the disk drives that are the source of the trouble; and

means for storing accessing information about data that was to be recorded to the disk drives identified as the source of trouble, said accessing information being stored within either of said control apparatus and the disk drives not identified as having trouble.

5,185,747

DATA SYMBOL ESTIMATION

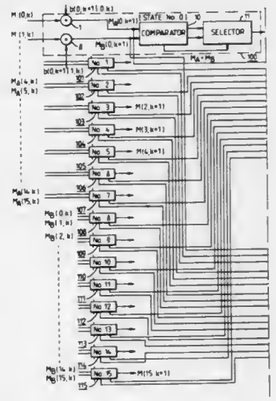
Nader Farahati, Cambridge, England, assignor to Technophone Ltd., Surrey, England

Continuation of Ser. No. 605,981, Oct. 30, 1990, abandoned. This application May 6, 1992, Ser. No. 882,360

Claims priority, application United Kingdom, Nov. 29, 1989, 8927005

Int. Cl.[5] G06F *11/10*

U.S. Cl. 371—43 **10 Claims**



1. A Viterbi detector comprising:

(a) means for receiving a sequence of data symbols transmitted over a communications channel, said data symbols representing input amplitude values susceptible to interference between adjacent symbols, wherein a plurality of different states is associated with the transmission of said data symbols,

(b) a first set of processing means for generating for each state a respective partial path metric in respect of the state transition corresponding to the transmission of a first symbol type,

(c) a second set of processing means for generating for each state a respective partial path metric in respect of the state transition corresponding to the transmission of a second symbol type,

(d) means for comparing the first symbol type partial path metrics and selecting the maximum value thereof,

(d) means for comparing the first symbol type partial path metrics and selecting the maximum value thereof,

(e) means for comparing the second symbol type partial path metrics and selecting the maximum value thereof, and

(f) means for generating an output signal in accordance with the difference between the maximum value of the first symbol type partial path metric and the second symbol type partial path metric, wherein said output signal represents a detected value for the received data symbol i.e. the most likely value for the observed symbol taking into account the possibility of errors due to interference between adjacent symbols.

5,185,748

DUAL DATA CHECK APPARATUS

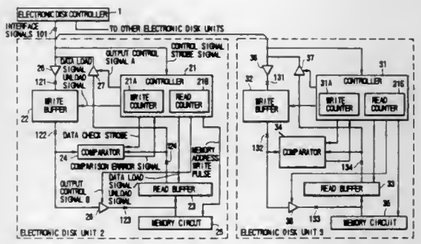
Masanori Fujimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 11, 1990, Ser. No. 522,009

Claims priority, application Japan, May 12, 1989, 1-119536

Int. Cl.[5] G06F *11/16*

U.S. Cl. 371—68.1 **8 Claims**



1. An apparatus for checking data in dual storage devices, said apparatus comprising:

a storage device controller for controlling first and second storage devices;

an interface for coupling said controller to said first and second storage devices and for coupling said first storage device to said second storage device;

said first storage device including at least

a control unit for controlling reading, writing and data check operations within said first storage device;

a write buffer for receiving data to be stored from said storage device controller;

a memory device for storing data held in said write buffer of said first storage device during a data store operation; and

a read buffer for receiving data to be retrieved from said memory device of said first storage device;

said second storage device including at least

a control unit for controlling reading, writing and data check operations within said second storage device;

a write buffer for receiving the data to be stored from said storage device controller during the data store operation and for receiving the data read from said memory device of said first storage device, via said interface and said read buffer of said first storage device, during a data retrieve/check operation;

a memory device for storing data held in said write buffer of said second storage device during the data store operation;

a read buffer for receiving data from said memory device of said second storage device during the data retrieve/check operation; and

a comparator circuit for comparing the data held in said write buffer of said second storage device with the data held in said read buffer of said second storage device during the data retrieve/check operation to produce an error signal if noncoincidence is determined.

5,185,749

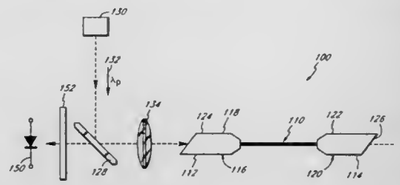
LARGE SIGNAL THREE-LEVEL SUPERFLUORESCENT FIBER SOURCES

Robert F. Kalman, Sunnyvale; Paul F. Wysocki, Stanford, and Michel J. F. Digonnet, Palo Alto, all of Calif., assignors to The Board of Trustee of the Leland Stanford Junior University, Stanford, Calif.

Continuation of Ser. No. 666,264, Mar. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 584,806, Sep. 18, 1990, abandoned. This application Jun. 10, 1992, Ser. No. 897,603

Int. Cl.[5] H01S *3/30*

U.S. Cl. 372—6 **33 Claims**



1. An apparatus comprising a light source coupled to input light to an optical device, said light source comprising an optical waveguide comprised of an active medium responsive to pumping with a pump signal at a pump wavelength to induce in said active medium emission of light, at least a portion of the emitted light propagating in a direction opposite that of the pump signal to provide a backward propagating signal, the length of said waveguide being selected so that the quantum efficiency of said backward signal is greater than 50%, said light source being coupled to input said backward signal to said optical device.

5,185,750

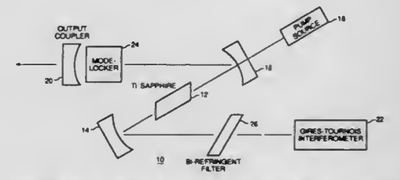
DISPERSION COMPENSATION FOR ULTRASHORT PULSE GENERATION IN TUNEABLE LASERS

James D. Kafka; Thomas M. Baer, both of Mountain View; Mark S. Keirstead, San Jose; Michael L. Watts, Union City, and Horst W. Schaaf, Santa Clara, all of Calif., assignors to Spectra-Physics Lasers Incorporated, Mountain View, Calif.

Division of Ser. No. 697,692, May 9, 1991, which is a continuation-in-part of Ser. No. 518,535, May 2, 1990, abandoned. This application Jun. 19, 1991, Ser. No. 717,367

Int. Cl.[5] H01S *3/098*

U.S. Cl. 372—18 **6 Claims**



1. A tuneable mode-locked laser including a Gires-Tournois interferometer for dispersion compensation, said Gires-Tournois interferometer comprising:

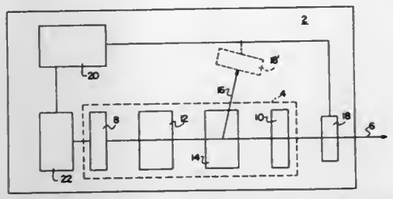
a substrate having a highly-reflective surface thereon;

a partially-reflective surface orientated substantially parallel to and spaced at a distance from said highly-reflective surface;

a piezoelectric transducer mounted so as to render moveable at least one of said partially-reflective and highly-reflective surfaces to vary the spacing therebetween.

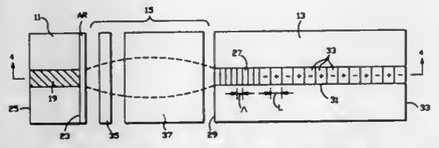
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5,185,751
AUTOMATED SINGLE LONGITUDINAL MODE LOCKING SYSTEM
Michael O. Hale, Bellevue, Wash., assignor to Amoco Corporation, Chicago, Ill.
Filed May 10, 1991, Ser. No. 698,571
Int. Cl.[5] H01S *3/098*
U.S. Cl. 372—18 **10 Claims**



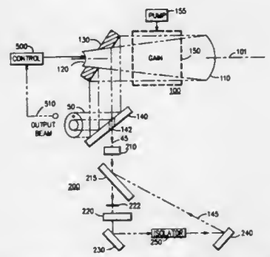
1. A method for shifting a resonant cavity length of a laser cavity for a laser oscillator in response to a change in a pointing direction of a laser beam controlled by a dispersive optical feedback system in the laser oscillator, comprising the steps of:
changing said resonant cavity length to define a series of resonant cavity lengths;
detecting said laser beam pointing direction for each said resonant cavity length in said series of lengths to create a series of pointing direction samples that correspond to said series of resonant cavity lengths;
averaging said series of pointing direction samples to determine an average pointing direction for said laser beam; and
locking said laser beam in a stable single longitudinal mode by controlling said laser beam pointing direction to remain in said average pointing direction.

5,185,752
COUPLING ARRANGEMENTS FOR FREQUENCY-DOUBLED DIODE LASERS
David F. Welch, San Jose, and Robert G. Waarts, Palo Alto, both of Calif., assignors to Spectra Diode Laboratories, Inc., San Jose, Calif.
Filed Feb. 18, 1992, Ser. No. 837,819
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—22 **22 Claims**



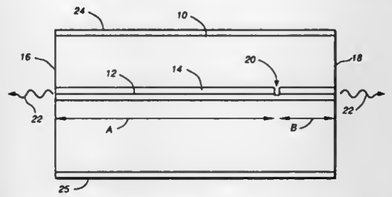
1. A frequency-converted diode laser comprising
a ferroelectric harmonic generator having a electrically polarized waveguide for receiving light of a first frequency at an input end from a single spectral mode laser diode and emitting light of a second frequency at an output end thereof, said second frequency of light being a harmonic of said first frequency of light, said ferroelectric harmonic generator generating said light of said second frequency from said light of said first frequency; said ferroelectric harmonic generator also having a periodic reflector positioned along said waveguide and tuned to partially reflect light of said first frequency back toward and out of said input end, and
a said single spectral mode laser diode optically coupled to said waveguide of said ferroelectric harmonic generator, said laser diode including active gain means for generating light of said first frequency, second cavity reflector associated with a back facet of said laser diode and a low reflection coated light emitting front facet through which light of said first frequency generated by said active gain means is directed toward said ferroelectric-harmonic generator, said periodic reflector in said ferroelectric-harmonic generator and said second cavity reflector associated with said back facet of said laser diode establishing a resonant optical cavity for light of said first frequency whereby feedback provided by said periodic reflector stabilizes the laser output to obtain efficient frequency conversion.

5,185,753
CIRCULAR AND ELLIPTICAL POLARIZATION OF A HIGH POWER LASER BY ADJOINT FEEDBACK
John A. Benda, Amston, and Paul R. Blaszuk, Lebanon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Oct. 23, 1991, Ser. No. 781,428
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—27 **17 Claims**



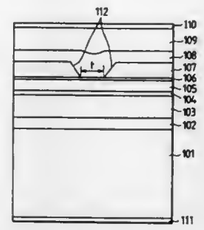
1. A laser system for producing a circularly polarized output beam comprising an unstable parent laser resonator having a gain medium, pump means for producing a population inversion in said gain medium, mirror means disposed along an axis for directing optical radiation through said gain medium in a magnifying output mode and a demagnifying adjoint mode, and output means for directing an output beam out of said unstable resonator, comprising;
adjoint feedback means having at least one feedback aperture disposed to intercept radiation in said magnifying output mode, whereby a portion of said radiation in said magnifying output mode passes through said at least one feedback aperture as an output feedback beam, and for passing through a return feedback aperture of said at least one feedback aperture an adjoint mode feedback beam mode matched to said demagnifying adjoint mode;
said adjoint feedback means including adjoint feedback reflection means for receiving said output feedback beam passed through said feedback aperture and for feeding back through said return feedback aperture said adjoint mode feedback beam having a predetermined amount of feedback power in said demagnifying adjoint mode, whereby radiation in said output mode in said parent resonator is coupled to said adjoint mode in said parent resonator through the passing of said adjoint mode feedback beam through said return feedback aperture, and said laser system comprises a composite resonator including said parent laser resonator and a resonator control leg comprising said adjoint feedback reflection means;
feedback beam polarization means are located intercepting said output feedback beam, for impressing a desired polarization state on said adjoint mode feedback beam, so that said resonator control leg comprises said adjoint feedback reflection means and said feedback beam polarization means and feeds radiation in a desired circular polarization state above a predetermined feedback threshold amount back into said parent laser resonator mode-matched to said adjoint mode so that said resonator control leg controls the polarization of said parent laser resonator.

5,185,754
SPECTRALLY STABLE LASER DIODE WITH INTERNAL REFLECTOR
Richard R. Craig, Palo Alto; David F. Welch, San Jose; Erik P. Zucker, Mountain View; Donald R. Scifres, San Jose, and William J. Gignac, Sunnyvale, all of Calif., assignors to Spectra Diode Laboratories, Inc., San Jose, Calif.
Filed Jul. 29, 1991, Ser. No. 737,194
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **14 Claims**



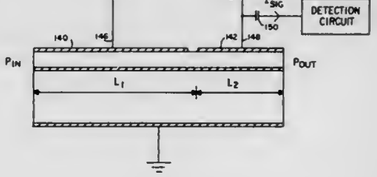
1. A laser diode comprising:
a plurality of contiguous semiconductor layers on a substrate, the layers and substrate forming a semiconductor body, at least one of said layers forming an active region for lightwave generation, at least one layer proximate to said active region forming a lightguiding region together with said active region,
bias means for injecting current into said active region to produce said lightwaves, and
means for obtaining optical feedback of said lightwaves to achieve lasing operation, said feedback means including a pair of end reflectors and at least one light reflector within said semiconductor body located between said pair of end reflectors, wherein said at least one light reflector within said semiconductor body is positioned at least 10% closer to one of said end reflectors than the other of said end reflectors, whereby said feedback means defines multiple resonant cavities in tandem in said semiconductor body between each adjacent pair of reflectors with said active region being present in each said cavity.

5,185,755
SEMICONDUCTOR LASER
Yoshihiro Mori; Masaya Mannoh; Satoshi Kamiyama, and Kiyoshi Ohnaka, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sep. 6, 1991, Ser. No. 756,016
Claims priority, application Japan, Sep. 7, 1990, 2-237523
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 **11 Claims**



1. A semiconductor laser comprising:
an active waveguide comprised of a compound semiconductor comprising a Group V element phosphorus;
a thin-film layer comprised of a first-conductivity type compound semiconductor comprising a Group V element arsenic, formed in contact with a main surface of said active waveguide;
a current blocking layer comprised of a second-conductivity type compound semiconductor comprising a Group V element arsenic, formed on said thin-film layer to have outwards sloping sides, said outward sloping sides forming a groove exposing a portion of said thin-film layer as a strip with a given width; and
an outer cladding layer comprised of a first-conductivity type compound semiconductor comprising a Group V element arsenic and having a larger refractive index than said current blocking layer, formed on said current blocking layer and said thin-film layer.

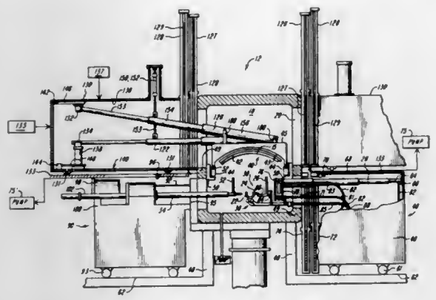
5,185,756
WIDEBAND OPTICAL AMPLIFIER-RECEIVER UTILIZING TWO ELECTRODE OPTICAL AMPLIFIER
Robert Olshansky, Wayland, and Kwang-Tsai Koai, Acton, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.
Filed Jun. 6, 1991, Ser. No. 711,006
Int. Cl.[5] H01S *3/19, 3/096*
U.S. Cl. 372—50 **21 Claims**



1. An optical amplifier-recevier system comprising:
a semiconductor optical amplifier including an active region, a first current injection electrode adjacent to a first section of said active region and defining a first amplifier section, a second current injection electrode adjacent to a second section of said active region and defining a second amplifier section, an optical input for coupling into said active region an optical signal comprising an optical carrier modulated with a modulation signal, and an optical output for coupling an amplifier optical signal from said active region;
current injection means coupled to the first and second current injection electrodes of said optical amplifier for supplying first and second bias currents to said first and second current injection electrodes, respectively, of said optical amplifier; and
detection circuit means coupled to said second current injection electrode for receiving said modulation signal after detection by said optical amplifier;
wherein said optical amplifier has an optical gain G and the second amplifier section has a junction resistance R_j that is greater than the junction resistance of a single electrode optical amplifier of optical gain G.

VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,757
MODULARIZED REPLACEABLE VAPORIZER AND EXTRACTOR APPARATUS
Lester M. Finch, Idaho Falls, Id., assignor to Jersey Nuclear-Avco Isotopes, Inc., Bellevue, Wash.
Division of Ser. No. 450,816, Dec. 14, 1989, Pat. No. 5,085,410.
This application Oct. 8, 1991, Ser. No. 773,152
Int. Cl.[5] H01S *3/22, 3/223*
U.S. Cl. 372—56 **10 Claims**

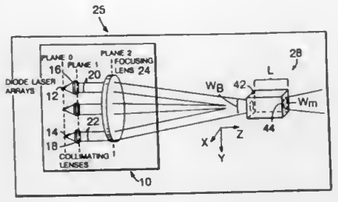


1. In means for laser isotope separation, modularized replaceable vaporizer and extractor apparatus comprising:
an axially elongate enclosure formed of a plurality of interconnected modular units disposed axially adjacent one another and defining an interior vacuum chamber, each of said modular units having a plurality of access ports;
a plurality of vacuum casks, each of said vacuum casks adapted to be associated with one of said access ports of said modular units;
each of said vacuum casks having a port disposed along one side thereof, said vacuum cask port being adapted to mate with an associated modular unit access port to form a sealed opening therebetween;
support means associated with each of said vacuum casks and being extendable therefrom through the opening of said vacuum cask port and said associated access port into the associated modular unit.
a vaporizer assembly associated with a first set of vacuum casks and secured to the support means thereof for selective containment within its associated cask or modular unit;
said vaporizer assembly including means for vaporizing a material within said associated modular unit when in operation; and
an extractor assembly associated with a second set of vacuum casks and secured to the support means thereof for selective containment within the associated cask or modular units, said extractor assembly including means for receiving vaporized material within the associated modular unit when in operation.

5,185,758
MULTIPLE-LASER PUMP OPTICAL SYSTEM
Tso Y. Fan, Cambridge; Antonio Sanchez-Rubio, Lexington; James N. Walpole, Concord; Richard C. Williamson, Sudbury; Ivars Melngailis, Natick; James R. Leger, Groton, and William C. Goltsos, Burlington, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Continuation of Ser. No. 443,110, Nov. 28, 1989, Pat. No. 5,081,637. This application Jan. 7, 1992, Ser. No. 820,317
Int. Cl.[5] H01S *3/091*
U.S. Cl. 372—72 **20 Claims**

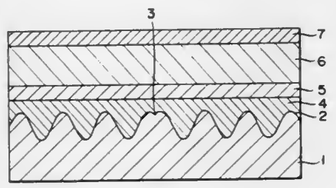
1. A system for coupling light into an optical fiber comprising

a multi-beam laser light source for generating a group of collimated, substantially parallel, non-coaxial output beams, wherein the product of the far field divergence angle of the group of output beams and the radius of the group of output beams is on the order of or less than the product of the radius of the fiber and the acceptance angle of the fiber; and



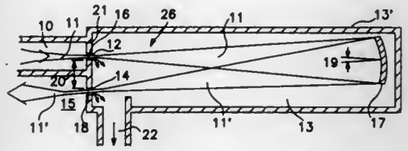
an optical system configured to focus the collimated and parallel output beams into the fiber.

5,185,759
PHASE-SHIFTED DISTRIBUTED FEEDBACK TYPE SEMICONDUCTOR LASER DEVICE
Takayki Matsuyama, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jun. 11, 1991, Ser. No. 713,309
Claims priority, application Japan, Jun. 12, 1990, 2-151539
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—96 **4 Claims**



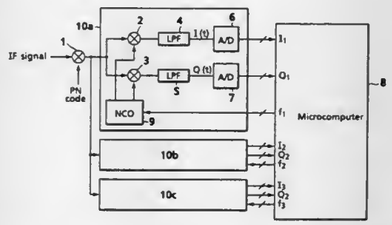
1. A distributed feedback type semiconductor laser device having a periodic structure for distributively feeding back light, an active layer sandwiched between clad layers, a waveguide for guiding the light along said periodic structure, and first and second electrodes for injecting current into said active layer, said laser device comprising:
a structure for shifting the phase of the transmitted light by changing at least one of the width and thickness of the waveguide along the periodic structure; and
a plurality of waveguide regions in which the shifting amount of the phase of the transmitted light caused by the change of at least one of the width and thickness of the waveguide is substantially an integral multiple of π;
wherein the sum of the total phase shift of the transmitted light caused by the change of at least on of the width and thickness of the waveguide is substantially an odd number multiple of $\pi/2$.

5,185,760
AERODYNAMIC WINDOW FOR A GAS LASER
Keming Du; Joachim Franek, and Peter Loosen, all of Aachen, Fed. Rep. of Germany, assignors to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V., Fed. Rep. of Germany
PCT No. PCT/DE89/00432, § 371 Date Feb. 28, 1991, § 102(e) Date Feb. 28, 1991, PCT Pub. No. WO90/00319, PCT Pub. Date Jan. 11, 1990
PCT Filed Jun. 29, 1989, Ser. No. 635,619
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1988, 3821836
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—104 **9 Claims**



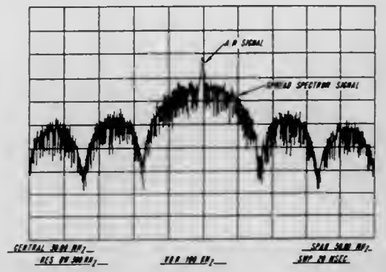
1. An aerodynamic window for a gas laser, which has an active chamber and emits a focussed laser beam and is flow connected by means of a beam passage opening with a window chamber connected to a vacuum pump and which has a beam exit opening in an outer area which is preferably under atmospheric pressure, characterized in that the laser beam (**11**) emitted by the active chamber (**10**) has a first focus (**16**) in the vicinity of the beam passage opening (**12**) and is deflected onto a focussing mirror (**17,31,27**) located in the window chamber (**13**) and from which the laser beam (**11'**) leaving the window chamber (**13**) is given a second focus (**18**) in the vicinity of the beam exit opening (**14**).

5,185,761
GPS RECEIVER
Kenichiro Kawasaki, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Jan. 31, 1991, Ser. No. 648,763
Claims priority, application Japan, Feb. 13, 1990, 2-29489
The portion of the term of this patent subsequent to Oct. 22, 2008, has been disclaimed.
Int. Cl.[5] H04K *1/00*
U.S. Cl. 375—1 **4 Claims**



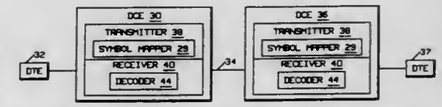
1. A GPS receiver comprising a plurality of demodulators, wherein a satellite transmission search range for receiving a signal having a single predetermined carrier frequency sent by a target satellite is divided into as many frequency ranges as there are demodulators such that each demodulator is assigned to one divided frequency range, wherein a target satellite transmission is searched simultaneously within each of the divided frequency ranges by simultaneously varying respective receiving frequencies in each of the divided ranges.

5,185,762
SPREAD SPECTRUM MICROWAVE OVERLAY WITH NOTCH FILTER
Donald L. Schilling, Sand Point, N.Y., assignor to SCS Mobilecom, Inc., Port Washington, N.Y.
Filed May 15, 1991, Ser. No. 700,788
Int. Cl.[5] H04L *27/30*; H04K *1/00*
U.S. Cl. 375—1 **17 Claims**



1. A spread spectrum CDMA communications system for communicating data, including digitized voice signals, between a plurality of personal-communications network (PCN) units, spread spectrum communications system located within a same geographical region as occupied by a microwave system using a microwave frequency and fixed-service bandwidth, said spread spectrum CDMA communications system comprising:
a plurality of PCN-base stations located within the mobile cellular system for communicating data to the plurality of PCN units, each of said PCN-base stations including,
base means for converting the format of the data for output to communicate over radio waves;
base-product means for spread spectrum processing the data;
base-filter means for notching a spectrum of the spread-spectrum-processed-converted data at the microwave frequency and microwave bandwidth of said microwave system; and
base means for transmitting across the fixed-service bandwidth, the spread-spectrum-processed-converted data from the PCN-base station to a PCN unit;
a plurality of PCN units, each of said PCN units including,
a PCN antenna; and
PCN detection means coupled to said PCN antenna and including PCN-spread-spectrum-processing means, for recovering data communicated from said PCN-base station.

5,185,763
DATA BIT TO CONSTELLATION SYMBOL MAPPER
Vedavalli G. Krishnan, Miami Lakes, Fla., assignor to Racal-Datacom, Inc., Sunrise, Fla.
Filed Apr. 9, 1991, Ser. No. 683,359
Int. Cl.[5] H04L *5/12*
U.S. Cl. 375—39 **17 Claims**



4. In a communication device for transmission of data bits over a transmission medium, comprising:
means for grouping said data bits into a group of a number of said data bits and for defining a mapping period of p

VOL 1147 ISS 2 FEB 9 1993 UMI

symbol intervals, said number of data bits in said group being equal to R*p where said number R is the number of said data bits per each of said symbol intervals of said mapping period;

means for selecting for each said symbol interval of said mapping period a selected symbol from an alphabet of M possible symbols so as to define a unique combination of p said selected symbols for at least each unique said group of R*p data bits, where said M is defined according to the following equation;

$$M \geq 2^R$$

and where said M is the nearest larger integer number to 2^R and said R is a non-integer number greater than one; and

means for transmitting one of said selected symbols during each of said symbol intervals.

5,185,764

RECEIVER FOR TIME-VARYING DISTORTED SIGNALS

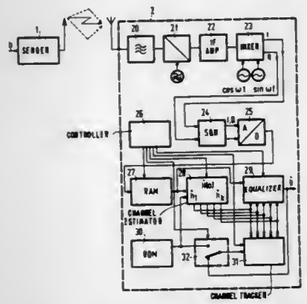
Alfred Baier, Eckental, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 7, 1990, Ser. No. 564,223

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1989, 3926277

Int. Cl.[5] H03H *7/18, 7/30*

U.S. Cl. 375—13 **5 Claims**



1. A receiver for signals, including data signals and a training signal, transmitted over a transmission channel which introduces time-varying distortion of said signals, comprising means for receiving said data and training signals and providing sample values of the received signals; means for determining a channel information signal; and means, utilizing said channel information signal, for equalizing said sample values of said data signals,

said means for determining comprising means for storing a corresponding copy of said training signal in said receiver; a channel estimator for comparing sample values of received copy with said corresponding training signal, to provide said channel information signal; and an arrangement for channel tracking which generates correction values for the channel information signal, with the aid of data equalized by said means for equalizing,

characterized in that at least a part of a complete training signal is applied to the arrangement for channel tracking prior to the data signals to be equalized and detected.

5,185,765

HIGH SPEED DATA COMMUNICATION SYSTEM USING PHASE SHIFT KEY CODING

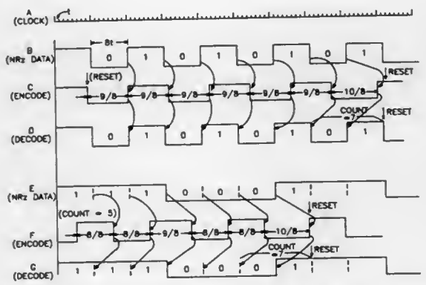
Harold R. Walker, 78 Oliver Ave., Edison, N.J. 08817

Continuation-in-part of Ser. No. 237,655, Aug. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 188,211, Apr. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 861,049, May 8, 1986, Pat. No. 4,742,532. This application Jul. 23, 1990, Ser. No. 557,322

The portion of the term of this patent subsequent to May 3, 2005, has been disclaimed.

Int. Cl.[5] H04L *25/49*

U.S. Cl. 375—22 **22 Claims**



1. An encoder apparatus for use in a high speed data transmission system for transmitting an input NRZ signal over a communications path as a data signal, said NRZ signal representing a series of binary data bits of "1" and "0" polarities clocked at a given clock rate, comprising:

polarity change detecting means responsive to said NRZ signal for detecting whether a current data bit of said NRZ signal has the same or a changed polarity as a previous data bit, wherein each data bit of said NRZ signal has a bit period of M clock periods;

counting means for maintaining a count of the number of polarity changes of the data bits in each encoding cycle defined from a beginning reset point of said NRZ signal;

encoding means for encoding an encoded signal representing said NRZ signal, said encoded signal having a waveform which switches between two opposing polarities with each polarity change of the data bits in each encoding cycle, wherein the polarity of the encoding signal is switched with widths of M/M, M+1/M, and M+2/M bit periods after a previous polarity switch depending upon whether a polarity change is detected by said polarity change detecting means and the count maintained by said counting means, as follows:

(1) a width of M/M when a current data bit is the same as a previous data bit (no polarity change);

(2) a width of M+1/M when a current data bit has a polarity that is changed from that of a previous data bit, the count of said counting means being thereupon indexed by one;

(3) a width of M+2/M when a current data bit has a polarity that is changed from that of a previous data bit and the count of said counting means including the current polarity change is equal to M-1 and a 101 bit pattern is present in the data stream to the encoding means, the count of said counting means being thereupon reset to define the beginning reset point for the next encoding cycle,

wherein, in all of the above said means, M is a positive even integer greater than 3.

5,185,766

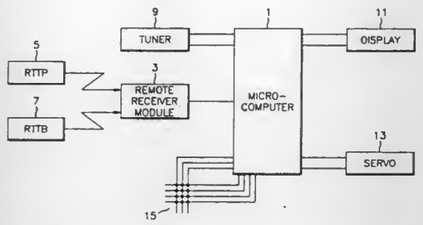
APPARATUS AND METHOD FOR DECODING BIPHASE-CODED DATA

Sung-Won Cho, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Japan

Filed Apr. 24, 1990, Ser. No. 513,678

Int. Cl.[5] H03D *3/22;* **H04L** *27/10*

U.S. Cl. 375—87 **20 Claims**



1. Apparatus for receiving and decoding biphase-code data, comprising:

first means for receiving a bit stream of biphase-coded data;

second means for detecting edges of pulses forming the bit stream received by said first means;

third means for determining time periods between said detected edges; and

fourth means for decoding and determining a logical value for each bit in the bit stream, based on the value of said time periods determined by said third means in combination with the logical value of an immediately preceding bit.

5,185,767

METHOD AND ARRANGEMENT FOR REGENERATING TIMING INFORMATION FROM A PULSE TRAIN OF THE NRZ-TYPE

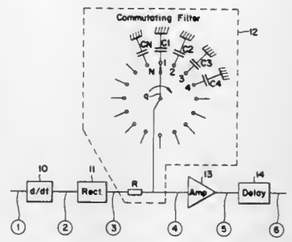
Lars E. Hammarberg, Haninge, and Tomas A. Eriksson, Stockholm, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Dec. 3, 1990, Ser. No. 620,715

Claims priority, application Sweden, Jan. 4, 1990, 9000024

Int. Cl.[5] H04L *7/027*

U.S. Cl. 375—110 **9 Claims**



5. A clock pulse regenerating circuit comprising:

differentiator means for receiving an input pulse train and outputting a differentiated signal;

rectifying means for receiving said differentiated signal and outputting a rectified signal having pulses of only one polarity; and,

commutating filter means, including a plurality of capacitors and connecting means for sequentially connecting the plurality of capacitors to said rectified signal, for receiving said rectified signal and generating a clock signal having clock pulses during clock periods in which no pulses occur in said rectified signal, whereby said clock signal has a clock pulse for each clock period.

5,185,768

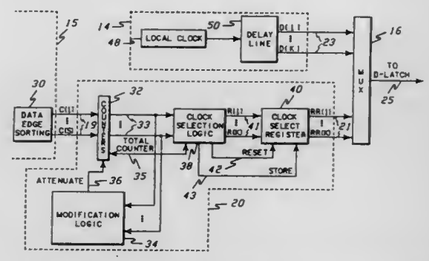
DIGITAL INTEGRATING CLOCK EXTRACTOR

Frank D. Ferraiolo, New Windsor, N.Y.; John E. Gersbach, and Ilya I. Novof, both of Burlington, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 9, 1990, Ser. No. 594,242

Int. Cl.[5] H03D *3/24*

U.S. Cl. 375—119 **22 Claims**



1. A method for selecting a retiming signal for a serial data stream from a plurality of local clock signals of different phase, said method comprising the steps of:

(a) sorting in time a predefined number M of data edge transitions of the serial stream such that M time sorted data edge transitions are collected; and

(b) using said time sorted M data edge transitions to select a retiming signal from the plurality of local clock signals such that said retiming signal occurs in time near a minimum number of said sorted data edge transitions of predefined number M.

5,185,769

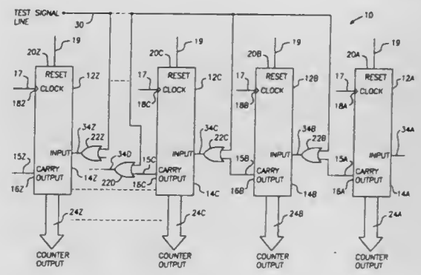
EASILY TESTABLE HIGH SPEED DIGITAL COUNTER

Ling-Ling Wang, Taipei, Taiwan, assignor to Acer Incorporated, Taiwan, Taiwan

Filed Oct. 15, 1991, Ser. No. 777,688

Int. Cl.[5] H03K *21/40*

U.S. Cl. 377—29 **7 Claims**



1. A digital counter comprising:

a first subcounter having an input for receiving an incrementing signal and a carry output for outputting a first carry signal when the first subcounter reaches its counting capacity;

gating means having a first and a second input and an output for gating a test signal, the first input coupled to receive a test signal, and the second input coupled to the carry

VOL 1147 ISS 2 FEB 9 1993 UMI

output of the first subcounter to receive the first carry signal, the gating means performing an OR operation on the test signal and the first carry signal; and

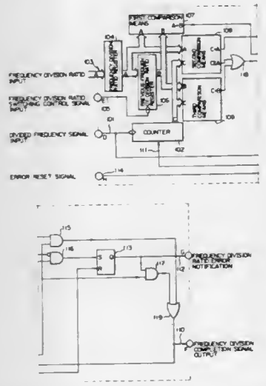
a second subcounter having an input coupled to receive the output of the gating means.

5,185,770

VARIABLE FREQUENCY DIVIDING CIRCUITS

Kikuo Tomozawa, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Nov. 21, 1990, Ser. No. 616,424
Claims priority, application Japan, Nov. 29, 1989, 1-311431
Int. Cl.[5] H03K *21/00*
U.S. Cl. 377—47 **20 Claims**



1. A variable frequency dividing circuit comprising:

a counter coupled to count cycles of an input signal;

a first register for storing a frequency division ratio as a value A each time the frequency division ratio is input and outputting the value A;

a second register coupled to the first register for storing the value A from the first register as a value B and outputting the value B;

a first comparison circuit coupled to the first and second registers for comparing the value A with the value B;

a second comparison circuit coupled to the first register and the counter for comparing a value C output from the counter with the value A;

an error circuit coupled to the first and second comparison circuits for generating an error signal when the compared results of the first comparison circuit and second comparison circuit are $A \neq B$ and $C \cong A$; and

a circuit coupled to the error circuit for outputting a frequency division completion signal as a reset signal to the counter responsive to the error signal.

5,185,771

PUSHBROOM SPECTROGRAPHIC IMAGER

Clifford D. Anger, and Stephen K. Babey, both of Calgary, Canada, assignors to Itres Research Limited, Calgary, Canada

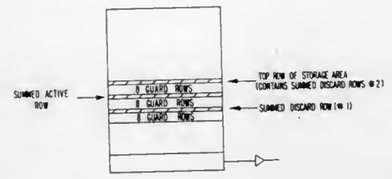
Filed Jul. 13, 1990, Ser. No. 552,195
Int. Cl.[5] G11C *19/28;* **H01L** *29/78*
U.S. Cl. 372—60 **9 Claims**

1. In a method wherein rows of charges are generated, by exposure to light, in an array of pixels forming part of a two dimensional charge transfer sensor which is coupled by a transport register with an output amplifier, and charges are transferred from the sensor by the register to the output amplifier for digitization thereby, the improvement comprising:

dividing the rows of charges, generated in the array by an exposure, into groups, the majority of the groups each having several adjacent rows of charges;

designating some of the groups for digitization and the balance of the groups for clearing without digitization;

summing within the sensor the charges of the rows in each group to be digitized to produce an active summed row of charges for each such group;



sequentially transferring the active summed rows to be digitized to the output amplifier;

individually digitizing the charges of each such transferred active summed row to provide signal values for collection; and

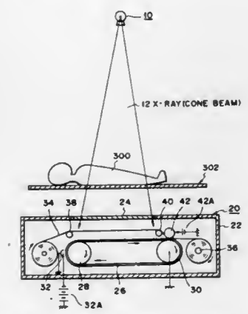
clearing the balance of the rows of charges from the sensor without digitizing them.

5,185,772

RADIATION PICKUP DEVICE, AND RADIATION IMAGING SYSTEM AND METHOD FOR THE SAME

Shunji Shirouzu, Ayase; Tamotsu Hatayama, Yamato, and Shonichi Inoue, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 28, 1991, Ser. No. 751,108
Claims priority, application Japan, Aug. 29, 1990, 2-229218
Int. Cl.[5] G03G *13/044*
U.S. Cl. 378—29 **28 Claims**



1. A radiation pickup device comprising:

a casing having a radiation incident window formed therein;

first and second rollers arranged in said casing on two sides of said radiation incident window, respectively;

an endless belt-like imaging belt comprising a fluorescent layer which is sensitive to a directly received radiation to emit light, a photosensitive layer which is sensitive to light emitted by said fluorescent layer, and a flexible substrate on which said fluorescent layer and said photosensitive layer are formed, wherein said fluorescent layer, said photosensitive layer and said flexible substrate form said imaging belt in a one-piece body structure;

a charger, arranged in the casing on said first roller side, for uniformly charging said photosensitive layer of said imaging belt;

a rolled dielectric recording sheet, removably arranged in said casing, for transcribing the latent image formed on said photosensitive layer of said imaging belt;

a transcript roller which presses an extracted portion of said dielectric recording sheet against said second roller together with said imaging belt, thereby transcribing the latent image formed on said imaging belt onto said dielectric recording sheet; and

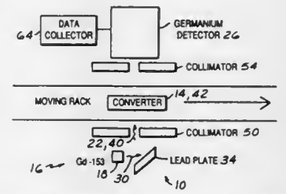
a takeup roller for taking up a portion of said dielectric recording sheet on which the latent image is transcribed by being passed between said transcript roller and said second roller.

5,185,773

METHOD AND APPARATUS FOR NONDESTRUCTIVE SELECTIVE DETERMINATION OF A METAL

Daniel H. Blossfeld, Walled Lake, and Eric W. Schneider, Shelby Township, Macomb County, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Jul. 19, 1991, Ser. No. 732,525
Int. Cl.[5] G01N *23/06*
U.S. Cl. 378—53 **8 Claims**



1. A method for determining a distribution of platinum, dispersed on a carrier providing a catalyst for treating exhaust from a vehicle engine, comprising:

(a) generating essentially simultaneously x-rays of lead consisting of first and second energy components by fluorescence of the lead with a source of radiant energy greater than a K-absorption edge characteristic of the lead, one of the components being above and the other component being below the K-absorption edge characteristic of platinum;

(b) directing the x-rays onto the carrier to cause the x-rays to be incident on the carrier at a first location and at a second location spaced from the first location; and

(c) determining a relative attenuation of the first and second energy components at each one of the first and second locations, and then determining any difference in the relative attenuations between the first and second locations proportional to relative amounts of platinum at the first and second locations.

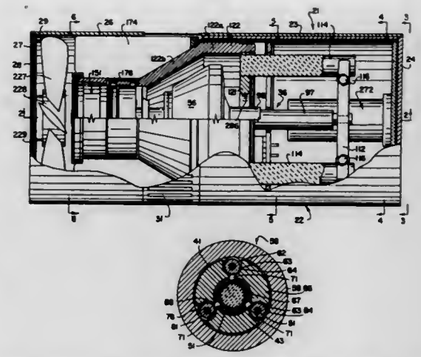
5,185,774

X-RAY TUBE CONSTRUCTION

Heinrich F. Klostermann, Menlo Park, Calif., assignor to PXT Technology, Inc., Palo Alto, Calif.

Filed Nov. 23, 1990, Ser. No. 617,191
Int. Cl.[5] H01J *35/10*
U.S. Cl. 378—125 **26 Claims**

1. In an x-ray tube construction, a housing, a shaft assembly mounted within the housing for rotational movement, an anode target, three-ball mounting means for mounting said anode target on said shaft assembly so that said anode target and said three-ball mounting means rotate with said shaft assembly, a cathode for supplying electrons disposed within the housing in the vicinity of said anode target, voltage means connected to the anode target and to the cathode for accelerating electrons from the cathode to impinge upon the anode target to create x-rays, said three-ball mounting means serving to minimize the transfer of heat from anode target to the shaft assembly, motor drive means coupled to said shaft assembly for rotating the shaft assembly and the anode target carried thereby, a heat cage disposed within the housing and surrounding the anode target, said heat cage having a window therein to permit x-rays to pass therethrough and a vacuum envelope mounted within a housing and serving to provide a vacuum



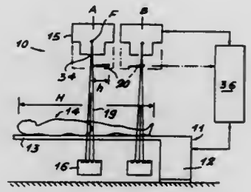
tight enclosure for said anode target and said cathode, said vacuum envelope including window means in registration with the window in the heat cage to permit x-rays to pass therethrough.

5,185,775

X-RAY APPARATUS INCLUDING A HOMOGENIZING FILTER

Pierre Sirvin, Ville d'Avray, France, assignor to General Electric CGR S.A., Issy les Moulineaux, France

Filed Nov. 2, 1990, Ser. No. 608,347
Claims priority, application France, Nov. 24, 1989, 89 15510
Int. Cl.[5] G21K *3/00*
U.S. Cl. 378—156 **10 Claims**



1. A radiological apparatus, used in radiological examination of the lower limbs, the apparatus comprising:

an X-ray source which emits a beam of X-rays towards a patient;

a table on which the patient may be laid out; and

an X-ray receiver disposed on the opposite side of the table to the side on which the source is placed, the table and/or the source-receiver pair being capable of displacement relative to each other so that the X-ray beam is capable at least of scanning the lower limbs of the patient in the longitudinal direction,

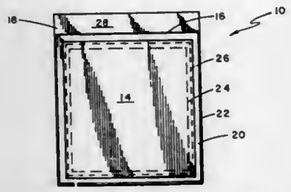
wherein said apparatus further includes a variable X-ray attenuation filter which is disposed between the X-ray source and the receiver, said filter providing attenuation on each X-ray path in the beam such that the total attenuation to which the X-rays are subjected on any of the paths to the receiver is substantially the same for all of the paths in the beam, thereby homogenizing the exposure of the image-forming receiver, and

means for changing the scale factor $K=(a+b)/a$ between the source-patient distance $(a+b)$ and the source-to-filter

VOL 1147 ISS 2 FEB 9 1993 UMI

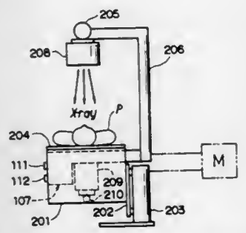
distance a in such a manner as to adapt said filter to the size of the patient.

5,185,776
COVER FOR AN X-RAY CASSETTE
Boyd E. Townsend, 121 Hickory Trace Dr., Apartment 399, Nashville, Tenn. 37211
Filed Aug. 5, 1991, Ser. No. 740,066
Int. Cl.[5] G03B *42/04*
U.S. Cl. 378—167 **12 Claims**



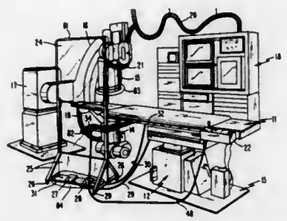
6. A cover for an x-ray cassette comprising:
a. a first sheet of radiolucent material sized to cover said cassette, said first sheet having four edges;
b. a second sheet of radiolucent material having four edges, three of said edges of said second sheet attached to three of said edges of said first sheet, thereby producing a sleeve and a slot; and
c. a pad attached to said second sheet aligned to cover said cassette.

5,185,777
X-RAY RADIOGRAPHING SYSTEM WITH SPOT-FILM DEVICE
Kiyoshi Hasegawa, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Feb. 27, 1991, Ser. No. 661,187
Claims priority, application Japan, Mar. 1, 1990, 2-47316
Int. Cl.[5] G03B *42/02*
U.S. Cl. 378—176 **23 Claims**



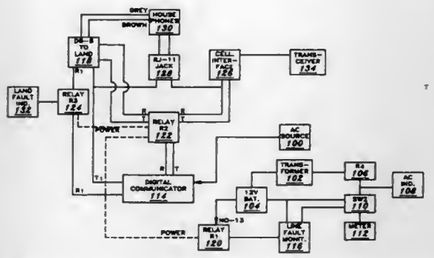
5. An X-ray radiographing system comprising:
a table having a tabletop for positioning a patient along a longitudinal axis and a front disposed a distance from the longitudinal axis along a transverse axis;
X-ray generating means adapted to be movable along the longitudinal axis over the patient for generating X-rays directed at a radiographic area;
a spot-film device within the table and adapted to be synchronously movable along the longitudinal axis with the X-ray generator, including;
a top portion including a fluoroscopic area arranged along the transverse axis and the radiographic area, and
a front portion forming a part of the front of the table, the fluoroscopic area being disposed proximate the front portion and the radiographic area being disposed proximate the longitudinal axis;
film containing means including;
a feed magazine storing unexposed X-ray sheet films and having an opening through which unexposed X-ray sheet films are removed, and
a take-up magazine storing exposed X-ray sheet films,
wherein the feed magazine and take-up magazine are disposed under the fluoroscopic area, and are adapted to be loaded and unloaded through the front of the table;
film carrying means for removing unexposed X-ray sheet films from the feed magazine through the opening and carrying the unexposed X-ray sheet film to the fluoroscopic area, and for carrying exposed X-ray sheet films from the fluoroscopic area to the take-up magazine; and
film conveying means for conveying the unexposed X-ray sheet films to the fluoroscopic area and for conveying the exposed X-ray sheet films to the radiographic area, said film conveying means including;
film holder means for holding unexposed and exposed X-ray sheet films,
a staged rail element having a plurality of rail portions, each rail portion respectively lying on a different vertical level along which the film holder means shuttles between the fluoroscopic area and the radiographic area,
cassette holder means for holding an X-ray film cassette, and
a rail element along which the cassette holder means slides and on which the cassette holder means is positioned at the same level as the film holder means in the radiographic area.

5,185,778
X-RAY SHIELDING APPARATUS
Martin Y. Magram, 3611 Gardenview Rd., Baltimore, Md. 21208
Filed Aug. 13, 1991, Ser. No. 744,169
Int. Cl.[5] H05G *1/02*
U.S. Cl. 378—196 **17 Claims**



16. A method of performing a surgical procedure by an operator on a patient lying on an operating table mounted on a platform fixedly attached to a floor, motor and brake means for enabling the table to be moved relative to the platform in response to imparted forces while a switch is activated by the operator to a second state and for preventing movement of the table while the switch is activated by the operator to a first state, an actuator responsive to the operator for controlling movement of the table, an x-ray shield extending generally parallel to said side being interposed between said side of the table and a site for said actuator, the method comprising:
activating an x-ray source irradiating the patient to a fluoroscopy mode while the operator is standing behind the shield and is performing the procedure on the patient with his hand extending beyond the shield in proximity to the patient and the operator is activating the switch to the first state, and activating the x-ray source irradiating the patient to a cine mode while the operator is standing behind the shield with his hand and arm behind the shield, the operator activating the switch to the second state and activating the actuator to move the table while he stands behind the bar with his hand and arm behind the shield.

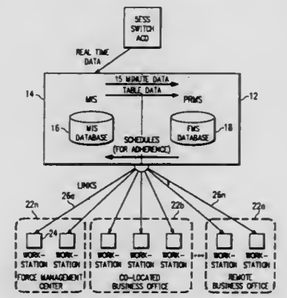
5,185,779
CELLULAR ALARM BACKUP SYSTEM
Dennis B. Dop, Antioch; Michael G. Freitag, Palos Park, both of Ill., and Norbert W. Zawacki, 10740 S. LaCrosse, Oak Lawn, Ill. 60453, assignors to Norbert Zawacki, Oak Lawn, Ill.
Division of Ser. No. 83,496, Aug. 5, 1987, Pat. No. 4,887,290.
This application Oct. 30, 1989, Ser. No. 414,314
Int. Cl.[5] H04M *11/04*; H04Q *7/04*
U.S. Cl. 379—33 **6 Claims**



4. A method of providing a cellular backup alarm transmission for a security alarm system, comprising:
automatically switching over to a cellular transmission system upon the detection of the inoperativeness of a land line system; and
making an outgoing call over the cellular telephone system;
said step of automatically switching over comprising automatically disconnecting an alarm communicator provided at the site from the land line system and connecting the alarm communicator to a cellular transceiver interface unit coupled to a cellular transceiver;
said step of making an outgoing call comprising sending out an alarm call to a central station via the alarm communicator to which the cellular system has been connected;
said step of switching over further comprising coupling a standard land telephone communications-type device to the cellular transceiver interface unit coupled to a cellular transceiver for coupling the standard land telephone communications-type device to the cellular system after said step of detecting the inoperativeness of the land line, said step of coupling a standard land telephone communications-type device to the cellular system being terminated upon the initiation of transmission of a telephone call from the alarm communicator coupled to the cellular system during said step of switching over.

5,185,780
METHOD FOR PREDICTING AGENT REQUIREMENTS IN A FORCE MANAGEMENT SYSTEM
Ernest W. Leggett, Plano, Tex., assignor to TEX Corporation, Plano, Tex.
Filed Oct. 12, 1990, Ser. No. 596,689
Int. Cl.[5] H04M *1/72, 3/36, 3/50*
U.S. Cl. 379—34 **3 Claims**

1. A method for managing personnel in a telephone call center in which there is a varying workload by time of day and by day of week to be staffed with a variable number of agents, comprising the steps of:
(a) generating call handling performance data for the telephone call center, the call handling performance data including average call arrival rate and average handling time per call;
(b) generating a forecast of a call load expected to occur at the telephone call center during a predetermined period in the future;
(c) defining a desired service level for the telephone call center during the predetermined period, the desired service level equal to a percentage of calls answered within a predetermined time "t";
(d) predicting a number of agents required to provide the desired service level during the predetermined period by:
(1) calculating an offered load "a" equal to the average arrival rate of calls for the call center times the average handling time per call;
(2) calculating PWtn using an Erlang C function C(n,a), for n=a+1, where PWtn is a percentage of calls that wait more than "t" seconds if there are "n" agents;
(3) if (100−PWtn) is not greater than or equal to the desired service level, repeating step (2) for PWtn1, where PWtn1 is a percentage of calls that wait more than "t" seconds if there are "n+1" agents;
(4) if (100−PWtn) is greater than or equal to the desired service level, define n as the predicted number of agents;
(5) if (100−PWtn1) is not greater than or equal to the



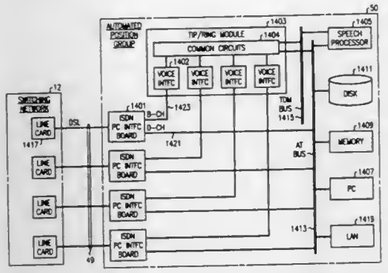
desired level for n=n+1, calculate a drop percentage (PWtn−PWtn1)/PWtn;
(6) set an estimated percentage waiting time ePWt equal to PWtn1;
(7) calculate ePWt=ePWt−(ePWt*drop percentage) to determine how many increments of the drop percentage must be made until (100−ePWt) is greater than or equal to the desired service level;
(8) set a predictor value p equal to the determined number of increments plus (n+1);
(9) calculating Erlang C(n,a) for n=p−1, p and p+1;
(10) repeating steps (3)–(4) for successive values of n=p+1, p and p+1 until a value of n is located such that (100−PWtn) is greater than or equal to the desired service level; and
(e) allocating personnel in the telephone call center according to the predicted number of agents.

5,185,781
AUTOMATION OF TELEPHONE OPERATOR ASSISTANCE CALLS
Douglas C. Dowden; Richard W. Hemmeter, both of Naperville; Diane E. Herr, Warrenville, all of Ill.; William K. McCormick, Chester; Robert Petrelli, East Brunswick, both of N.J.; Richard J. Piereth, Naperville, Ill.; Samuel M. Salchenberger, Elmhurst, Ill.; Chander S. Sehgal, Naperville, Ill., and Mahendra K. Verma, Marlboro, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Continuation-in-part of Ser. No. 596,809, Oct. 12, 1990. This application Mar. 27, 1991, Ser. No. 675,783
Int. Cl.[5] H04M *3/50, 11/00*
U.S. Cl. 379—67 **9 Claims**

1. In a telecommunications system, comprising a switching system having a switching network with a plurality of ports for connection to an operator position and control means for controlling said network, a method of providing voice message service, comprising the steps of:
connecting an incoming call, destined for a called customer, via one of said ports to automated operator position means

VOL 1147 ISS 2 FEB 9 1993 UMI

for processing operator assistance calls, said position means comprising means for recognizing speech and means for interfacing with said switching system via an Integrated Services Digital Network (ISDN) interface, wherein said means for recognizing speech comprises speech processor means, bulk storage means and data processing means each shared among a plurality of position means; and



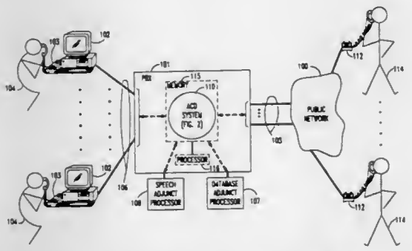
if a prespecified spoken command is detected by said position means, transmitting a connect message to said control means, said connect message being essentially the same as a connect message from an attended operator position, for requesting connection of said call to means for recording a message for subsequent delivery to said called customer.

5,185,782

ACD ARRANGEMENT FOR AUTOMATICALLY RETURNING A CALL AT A TIME SPECIFIED BY THE ORIGINAL CALLER

Thirunarayanan Srinivasan, Denver, Colo., assignor to A&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 8, 1991, Ser. No. 652,811
Int. Cl.[5] H04N *3/50*
U.S. Cl. 379—67 **30 Claims**



17. A method of automatically returning calls in an arrangement for automatically distributing incoming calls to a plurality of agents for answering and handling the incoming calls, the method comprising the steps of:

storing a telephone number relating to an incoming call from a caller;

automatically prompting the caller to indicate a callback time, in an absence of availability of an agent of the plurality of agents to answer the incoming call;

automatically placing an outgoing call having an originating end and a terminating end to the stored telephone number at the callback time, in response to receipt from the caller of an indication of the callback time; and

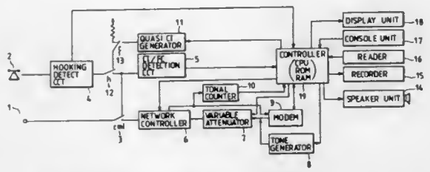
automatically connecting the originating end of the outgoing call to an agent of the plurality of agents to handle the outgoing call, in response to the placing of the outgoing call.

5,185,783

COMMUNICATION APPARATUS FOR DETECTING A CALLING SIGNAL FROM A LINE, FOR DETECTING A DATA COMMUNICATION SIGNAL FROM A CALLING STATION, AND FOR GENERATING A QUASI-CALLING TONE

Taketo Takahashi; Tsunehiro Watanabe, both of Tokyo; Teruyuki Nishii, Yokohama, and Yasuhide Ueno, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 573,684, Aug. 28, 1990, abandoned.
This application Feb. 3, 1992, Ser. No. 829,592
Claims priority, application Japan, Aug. 30, 1989, 1-224105
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—93 **22 Claims**



1. A communication apparatus comprising:

first detection means for detecting a calling signal from a line;

means for generating a quasi-calling tone and sending out the quasi-calling tone to the line, wherein said quasi-calling tone has a predetermined frequency and a period composed of on-time interval t_1, off-time interval t_2, on-time interval t_3, and off-time interval t_4;

second detection means for detecting a signal indicating data communication from a calling station; and

means for effecting the data communication in response to the detection by said second detection means;

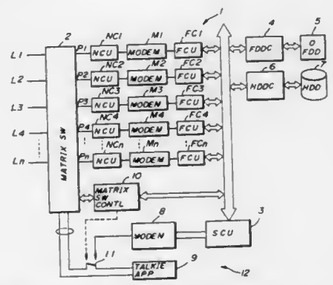
wherein said second detection means detects the signal indicating data communication only during the off-time intervals t_2 and t_4.

5,185,784

LINE SWITCHING APPARATUS

Chuzo Nashimoto, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 466,619, Jan. 17, 1990, abandoned. This application Jan. 21, 1992, Ser. No. 825,780
Claims priority, application Japan, Jan. 18, 1989, 1-10394; Sep. 29, 1989, 1-253939
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—94 **9 Claims**



1. A line switching apparatus adapted for use with a communication apparatus which comprises a plurality of lines which are accommodated according to a key number system, a plural-

ity of ports which are connected via line inputs of communication terminals to said communication terminals, said communication terminals also having control inputs, and a matrix switch which couples the lines and the ports, said line switching apparatus comprising:

an auxiliary apparatus; and

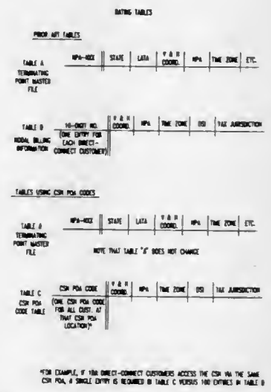
control means including first means for detecting via the control inputs of said communication terminals an arbitrary one of the ports which is down and not capable of making a communication, second means for disconnecting the arbitrary port from one of the lines and connecting the one line which is originally connected tot he arbitrary port to a port which is originally connected to a line of a last key number, and third means for connecting the line of the last key number to said auxiliary apparatus.

5,185,785

METHOD AND APPARATUS FOR RECORDING AND RATING TELECOMMUNICATION TRANSACTIONS MADE OVER A COMMUNICATION NETWORK

Michael W. Funk, Mohntainside; Sue A. Lawson, Eatontown, and David F. McGuigan, Franklin Township, Somerset County, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 31, 1991, Ser. No. 785,855
Int. Cl.[5] H04M *7/00, 15/00*
U.S. Cl. 379—111 **32 Claims**



1. A method of deriving charges for a communications transaction completed over a communications network, comprising the steps of:

storing rating parameters and a unique code for each of a plurality of Carrier Switched Network Point of Attachment (CSN POA) locations of said network,

recording a code of at least one CSN POA location participating in the transaction, and

calculating a charge for said transaction using rating parameters associated with at least one recorded code of said transaction.

5,185,786

AUTOMATIC CALL CENTER OVERFLOW RETRIEVAL SYSTEM

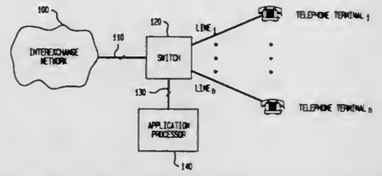
Nicholas Zwick, Denville, N.J., assignor to Dialogic Corporation, Parsippany, N.J.

Filed Nov. 13, 1990, Ser. No. 612,572
Int. Cl.[5] H04M *3/42, 1/56, 3/00*
U.S. Cl. 379—201 **10 Claims**

1. A method for automatically handling in-bound call overflow which comprises the steps of:

acquiring a calling telephone number for an in-bound call to a system, which calling telephone number is provided by the signaling capacity of a network;

providing a signal which causes a busy signal to be sent to the calling party telephone number for an in-bound call that cannot be serviced;



storing the calling telephone number of an in-bound call that cannot be serviced; and

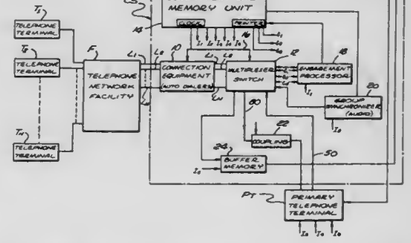
automatically initiating an out-bound call to the calling telephone telephone number at a later time.

5,185,787

MULTIPLE PARTY TELEPHONE CONTROL SYSTEM WITH RANDOM DIALING FOR POLLING

Ronald A. Katz, Los Angeles, Calif., assignor to First Data Resources, Inc., Omaha, Nebr.

Continuation of Ser. No. 642,602, Jan. 17, 1991, Pat. No. 5,091,933, which is a continuation of Ser. No. 470,468, Aug. 26, 1990, Pat. No. 4,987,590, which is a continuation of Ser. No. 371,188, Jun. 26, 1989, Pat. No. 4,939,773. This application Feb. 7, 1992, Ser. No. 832,720
Int. Cl.[5] H04M *3/56, 11/06, 1/26*
U.S. Cl. 379—204 **7 Claims**



1. A multiple-party control system for use with a telephone facility to interface a primary terminal with a multiplicity of remote terminals through said telephone facility, said system comprising:

a random digit dialer unit for providing random dialing signals to said telephone facility to establish communication with a plurality of connected terminals;

preliminary structure to provide vocal information to callers at connected terminals;

gang holding structure for collectively communicating with persons at said connected terminals collectively as a group; and

switch means for initially coupling individual connected terminals to said preliminary structure during an engagement phase of operation, subsequently connecting said connected terminals to said gang holding structure during a pending phase of operation and thereafter connecting said gang holding structure to said primary terminal for collectively receiving unilateral voice communication.

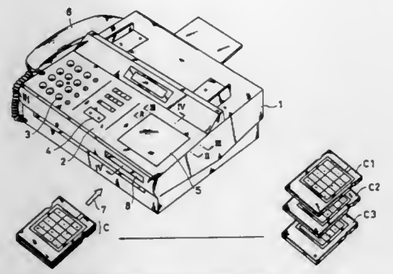
VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,788

DIAL NUMBER GENERATOR

Masafumi Matsumoto, Nara, and Toshihiro Matsuda, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 14, 1990, Ser. No. 567,061
Claims priority, application Japan, Aug. 17, 1989, 1-96496
Int. Cl.[5] H04M *1/274*
U.S. Cl. 379—357 **8 Claims**



1. A dial number generator comprising:
a plurality of plate-like cards for selecting a specific subscriber to be called;
a main body in which said cards are housed, for generating a dial signal of a specific subscriber to be called;
said cards each having, on one side thereof, a subscriber display section in which a number of subscribers are symbolically displayed and a card identifying section for identifying the card;
said main body including:
a housing section for housing said cards with their subscriber display sections facing upward;
a subscriber selecting section provided with a transparent window from which the subscriber display section of one of said cards housed in the housing section is viewed from above, which is further provided with switches on the window at positions corresponding to positions of respective subscribers displayed on the card, said subscriber selecting section outputting a subscriber call signal corresponding to each subscriber when the switch is operated via the window;
a detecting section provided in the housing section for detecting any one of the card identifying sections of the cards and outputting a card signal corresponding thereto;
a storage section for storing a subscriber dial number corresponding to a combination of a subscriber call signal and a card signal;
a dial number read-out section for reading out a subscriber dial number corresponding to a combination of a subscriber call signal and a card signal;
wherein said housing section is formed in a recessed place capable of housing a plurality of cards in a stacked state; and
wherein said subscriber selecting section is made of a transparent electrode type touch panel.

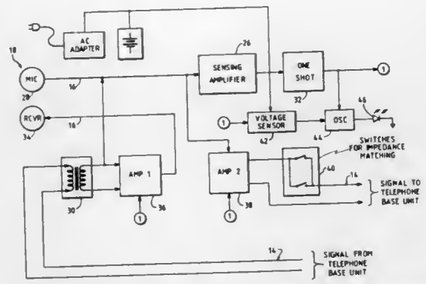
5,185,789

UNIVERSAL TELEPHONE HANDSET INTERFACE

David O. Hanon, and Rickey R. Walker, both of Ringgold, Ga., assignors to Plantronics, Inc., Santa Cruz, Calif.

Filed May 30, 1990, Ser. No. 530,655
Int. Cl.[5] H04M *1/60*
U.S. Cl. 379—395 **18 Claims**

1. An apparatus for interfacing a telephone handset to a telephone network, said telephone handset having one of a variety of different microphones disposed therein, each of said microphones having a different preselected output signal level and said telephone network being adapted for receiving a preselected signal level, said apparatus comprising:
means for receiving electrical signals generated by said microphone in response to receiving audio signals generated by a user of said handset, and delivering an amplified electrical signal corresponding to said received electrical signal; and
means for receiving the amplified electrical signal and



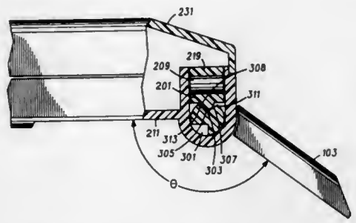
matching the output signal level of the microphone with the input signal level of the telephone network, comprising:
a plurality of switches, each having a first terminal adapted to receive said amplified electrical signal and a second terminal respectively connected to a first terminal of a plurality of resistors, and each of said plurality of resistors having a second terminal connected together.

5,185,790

MULTIPOSITION DETENTING HINGE APPARATUS

Nicholas Miscbneko, Mt. Prospect, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 28, 1991, Ser. No. 677,022
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—433 **14 Claims**



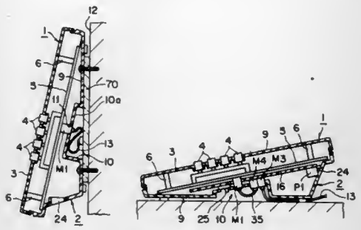
1. A hinge apparatus for a foldable radiotelephone having a body portion and a flip element portion, the hinge apparatus being capable of maintaining the flip portion in at least a first position of rotation relative to the body portion, the hinge apparatus comprising:
a first essentially cylindrical hinge shaft, integrally formed with the flip element portion and at least partially disposed within the body portion, rotatably coupling the flip element portion to the body portion;
a first recess disposed in a surface of the first cylindrical hinge shaft; and
a follower, disposed within the body portion, contacting the first recess when the flip element portion is rotated to the first position to thereby maintain the flip element portion in the first position.

5,185,791

COMBINATION DESK AND WALL TELEPHONE SET

Katsumi Itoyama; Akira Sugiyama, both of Hino, and Koichiro Suda, Fuchu, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 19, 1990, Ser. No. 599,824
Claims priority, application Japan, Oct. 21, 1989, 1-123337[U]
Int. Cl.[5] H04M *1/00*
U.S. Cl. 379—435 **3 Claims**



1. A combination desk and wall telephone set comprising:
a main body formed with a front surface on which a telephone operation panel is arranged and provided with a telephone circuit board;
a base member attached to a surface opposite to the front surface of the main body so as to provide a back surface of the telephone set;
a main telephone cord connector housing portion having an opening for housing a telephone cord connector mounted on the telephone circuit board formed on a back surface of the base member, the back surface being tilted at a predetermined inclination angle with respect to the front surface wherein the telephone cord connector housing portion is located at a center of the back surface, whereby when the joining direction of the base member with the main body is reversed, either one of two inclination angles of the front surface for both a desk telephone and a wall telephone can be selectively obtained;
means to mount at least one optional board having an additional connector inside the base member;
at least one additional connector housing portion having an opening for housing the additional connector formed in the base member;
a recessed cord housing portion for housing surplus telephone cord, formed at a central part of the back surface of the base member, and wherein the main telephone cord connector housing portion is formed inside the recessed cord housing portion;
wherein the optional board further comprises a first additional connector for connecting a telephone cord led from outside, and a second additional connector connected to the main telephone cord connector on the telephone circuit board via a connection cord.

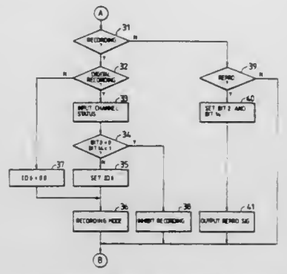
5,185,792

RECORDING AND REPRODUCING APPARATUS WITH LIMITED DIGITAL COPYING

Hiromichi Shimada, Amagasaki, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 633,898, Dec. 26, 1990, which is a division of Ser. No. 307,446, Feb. 8, 1989, Pat. No. 5,057,947. This application Sep. 20, 1991, Ser. No. 762,986
Claims priority, application Japan, Feb. 10, 1988, 63-29241; Mar. 8, 1988, 63-54269; Mar. 11, 1988, 63-58756; Mar. 31, 1988, 63-80844; May 31, 1988, 63-133339; May 31, 1988, 63-133340; Jun. 29, 1988, 63-161744
Int. Cl.[5] H04K *1/00;* **G11B** *15/04*
U.S. Cl. 380—4 **4 Claims**

1. A transmission system comprising:
means for generating first and second generation-information, wherein said generating means updates a generation number of the first generation-information when a copy is made, and wherein, when said generation number reaches a predetermined number, said generating means includes data in the second generation-information for inhibiting making of a copy;



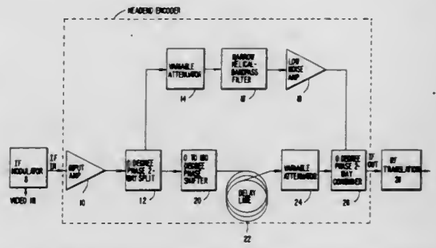
means for representing the generation information by a plurality of bits; and
means for transmitting the generation information.

5,185,793

METHOD AND APPARATUS FOR SECURING TELEVISION SIGNALS USING SIDEBAND INTERDICTION

Dale W. Marland, Erieville, N.Y., and Ted Hartson, Scottsdale, Ariz., assignors to Eagle Comtronics, Inc., Clay, N.Y.

Filed Mar. 15, 1991, Ser. No. 670,193
Int. Cl.[5] H04N *7/167*
U.S. Cl. 380—5 **22 Claims**



1. An apparatus for securing a signal from unauthorized reception, the apparatus comprising:
splitting means for splitting an IF signal generated by a transmitter modulator into first and second signals having identical phase;
sideband enhancement means for processing said first signal in order to generate a sideband enhancement characteristic signal;
compensation means for processing said second signal in order to provide phase and amplitude compensation shifts in said second signal that correspond to phase and amplitude shifts that occur in said first signal during the processing of said first signal by said sideband enhancement means; and
combining means for combining said sideband enhancement characteristic signal generated by said sideband enhancement means and said second signal to form an encoded IF signal after said second signal has been processed by said compensation means.

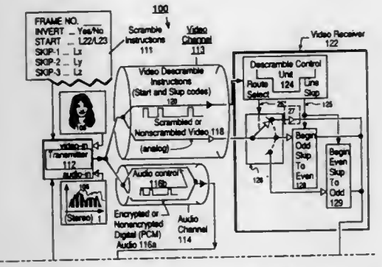
VOL 1147 ISS 2 FE 9 1993 UMI

5,185,794

SYSTEM AND METHOD FOR SCRAMBLING AND/OR DESCRAMBLING A VIDEO SIGNAL

John R. Thompson, La Quinta; C. J. Hunting, Altadena; William L. Phipps, Bermuda Dunes; Steven J. Raynesford, Cathedral City, all of Calif., and Philip H. Rittmueller, St. Charles, Ill., assignors to NEC Home Electronics, Ltd., Osaka, Japan

Division of Ser. No. 563,165, Aug. 6, 1990, Pat. No. 5,091,938.
This application Sep. 20, 1991, Ser. No. 764,568
Int. Cl.[5] H04N *7/167*
U.S. Cl. 380—17 **24 Claims**
MICROFICHE APPENDIX INCLUDED
(25 Microfiche, 5 Pages)



1. A video scrambling and/or descrambling system, comprising:

line inverting means for processing consecutive display lines in a video frame so as to periodically invert the display lines; and

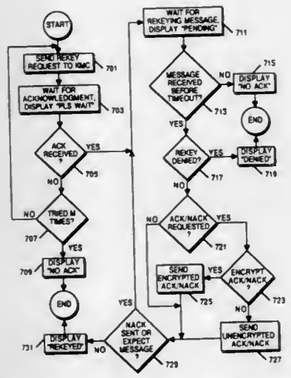
skip means, operatively coupled to the line inverting means, for causing the line inverting means to skip its processing of one or more predetermined display lines in the video frame thereby allowing aperiodic inversion of display lines across the video frame taken as a whole.

5,185,795

AUTHENTICATION OF REKEY MESSAGES IN A COMMUNICATION SYSTEM

Michael W. Bright, Arlington Heights, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 27, 1991, Ser. No. 661,921
Int. Cl.[5] H04L *9/02*
U.S. Cl. 380—21 **16 Claims**



1. A method of authentication of a rekey message by a communication unit in a communication system, comprising the steps of:

receiving a first rekey message with a first message number and a second rekey message with a second message number, wherein no other rekey message is received by the communication unit between receiving said first rekey message and said second rekey message;

storing said first message number as a previous message number;

storing said second message number as a current message number;

comparing said stored current message number to said stored previous message number;

authenticating, responsive to said step of comparing, said second rekey message when said stored current message number is greater than or equal to said stored previous message number; and

acknowledging said second rekey message with an acknowledgment message comprising said first message number, said second message number, an origination address, and a destination address such that tracking is maintained in a database for:

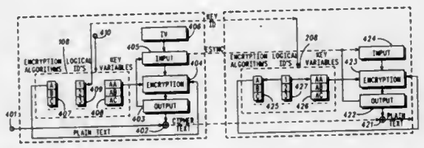
communication unit addresses; a plurality of keys; which communication units have any of said plurality of keys; and which communication units need any of said plurality of keys.

5,185,796

ENCRYPTION SYNCHRONIZATION COMBINED WITH ENCRYPTION KEY IDENTIFICATION

Alan L. Wilson, Hoffman Estates, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 30, 1991, Ser. No. 707,487
Int. Cl.[5] H04L *9/00*
U.S. Cl. 380—21 **18 Claims**



15. A radio, comprising:

A) message processing means for providing a digitized message to be transmitted;

B) first memory means for storing a plurality of encryption keys;

C) second memory means for storing a plurality of key IDs, wherein each one of the key IDs corresponds to a particular one of the plurality of encryption keys;

D) selection means for selecting a particular one of the encryption keys;

E) encryption means operably coupled to the message processing means, the first memory means, and the selection means, for processing the digitized message to be transmitted as a function of the particular encryption key and providing an encrypted message;

F) transmitter means operably coupled to the second memory means and the encryption means for transmitting:

i) the encrypted message; and

ii) the key ID that corresponds to the encryption key then in use;

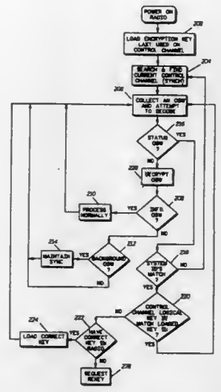
such that the key ID is repetitively transmitted while interleaved with the encrypted message.

5,185,797

ENCRYPTED TRUNKED CONTROL CHANNEL SYSTEM

Steven T. Barrett, Plantation, Fla.; Kevin M. Laird, Haltom City, Tex.; Richard E. Murray, Coral Springs, Fla., and James M. O'Connor, N. Richland Hills, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 27, 1991, Ser. No. 676,019
Int. Cl.[5] H04L *9/02;* **H04K** *1/00, 9/00*
U.S. Cl. 380—21 **12 Claims**



1. A trunked radio communication system comprising:

a plurality of communication devices; and

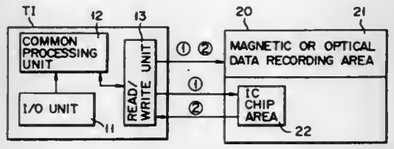
a control resource for controlling the plurality of communication devices in the trunked radio communication system using encrypted control information signals, and unencrypted system information signals with the unencrypted system information signals including an unencrypted encryption identification field which identifies the encryption being used to encrypt the control information signals, the encrypted control information signals and the unencrypted identification signals being transmitted as a data stream from the control resource with the unencrypted identification signals occurring periodically during the transmission of the data stream.

5,185,798

IC CARD SYSTEM HAVING A FUNCTION OF AUTHENTICATING DESTROYED DATA

Hiromi Hamada; Kazuya Hirano, and Young S. Lee, all of Tokyo, Japan, assignors to NTT Data Communications Systems Corporation, Tokyo, Japan

PCT No. PCT/JP90/00785, § 371 Date Mar. 8, 1991, § 102(e) Date Mar. 8, 1991, PCT Pub. No. WO91/01892, PCT Pub. Date Feb. 21, 1991
PCT Filed Jun. 15, 1990, Ser. No. 663,950
Claims priority, application Japan, Jul. 26, 1989, 1-191327
Int. Cl.[5] H04K *1/00, 9/00;* **G06K** *5/00*
U.S. Cl. 380—23 **3 Claims**



1. An IC card system for enabling data, which is stored in an IC card having an IC chip area and an optical data recording area at a predetermined area on the IC card, to be authenticated in cooperation with a predetermined terminal, said IC card system comprising:

first means for enabling data, which data is contained in connection with a final transaction by the IC card, to be subjected to a processing operation with a transaction authentication code generated in accordance with a code function and an authentication individual key specific for the IC card, the processing operation being done through predetermined data processing made between an external terminal including a common processing unit and an external read/write unit, said terminal being an initialization terminal or a transaction terminal, and said first means further including means for storing the resulting processed data in the IC chip area of the IC card;

second means for transferring said resulting processed data to the optical data recording area of the IC card via the read/write unit of the terminal and for recording said resulting processed data on said optical data recording area of the IC card; and

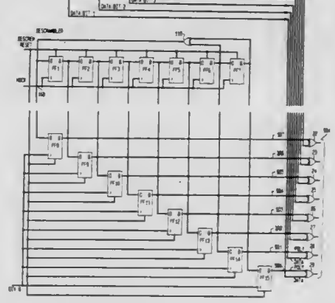
third means for checking said resulting processed data associated with the final transaction which is recorded on said optical data recording area, for truthfullness with the use of a code or decoding function of said rear/write unit and common processing unit, when data in the IC chip area of the IC card is destroyed.

5,185,799

PARALLEL SCRAMBLER USED IN SONET DATA TRANSMISSION

John McNesby, Mesa, Ariz.; Amritpal S. Kalla, Cupertino, Calif., and Angel Rodriguez, Jackson, N.J., assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 619,155, Nov. 28, 1990. This application Feb. 13, 1992, Ser. No. 835,639
Int. Cl.[5] H04K *1/00*
U.S. Cl. 380—28 **5 Claims**



1. A circuit for scrambling data in he form of frames of bytes of serial data wherein each frame of data includes identifying portions which are not data, said circuit comprising:

a first series of seven flip-flops numbered one through seven for generating a scrambler polynomial to be added to data bits;

a second series of eight flip-flops numbered eight through fifteen for generating data bits to be added with scrambler bits;

each of said flip-flops in both series having a clock terminal, a reset terminal, a set terminal, an output terminal and an input data terminal;

VOL
1147
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each of the second through seventh flip-flops in said first series having its input data terminal connected to the output terminal of the preceding flip-flop in said first series;

each of the ninth through fifteenth flip-flops in said second series having its input data terminal connected to the output terminal of the first through seventh flip-flops, respectively, in said first series;

a master exclusive OR gate having two inputs and one output, one input being connected to the interconnected output terminal and input data terminal, respectively, of said sixth and seventh flip-flops and thereby to the input data terminal of the fourteenth flip-flop;

the second input of said master exclusive OR gate being connected to the output terminal of said seventh flip-flop and thereby to the input data terminal of said fifteenth flip-flop;

the output terminal of said master exclusive OR gate being connected to the input data terminals of said first and eighth flip-flops;

a first source of clock signals coupled to the clock terminals of said flip-flops in said first series;

a second source of clock signals coupled to the clock terminals of said flip-flops in said second series;

eight additional exclusive OR gates;

an eight bit serial-to-parallel register coupled to receive the serial data and providing eight outputs;

an eight bit parallel-to-parallel register coupled to the eight outputs of said serial-to-parallel register;

a first data bus comprising eight leads each of which is coupled to a respective output of said parallel-to-parallel register, said first data bus being further connected to a first input of each of said eight additional exclusive OR gates;

an output terminal from each flip-flop in said second series connected to a second input of an associated additional exclusive OR gate;

a second data bus;

the outputs of all of said additional exclusive OR gates connected to said second data bus; and

means for disabling said circuit when said identifying portions of a frame of data are present on said first data bus.

5,185,800

BIT ALLOCATION DEVICE FOR TRANSFORMED DIGITAL AUDIO BROADCASTING SIGNALS WITH ADAPTIVE QUANTIZATION BASED ON PSYCHOAUDITIVE CRITERION

Yannick Mahieux, Begard, France, assignor to Centre National d'Etudes des Telecommunications, Issy les Moulineaux, France

Continuation of Ser. No. 593,983, Oct. 9, 1990. This application Jun. 24, 1992, Ser. No. 902,430

Claims priority, application France, Oct. 13, 1989, 89 13649

Int. Cl.[5] G10L *5/00*

U.S. Cl. 381—29 **19 Claims**

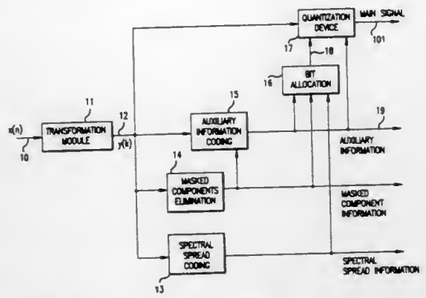
1. A device for the compression of a digital audio signal, designed to be transmitted through a channel with a limited bit rate or to be stored on a medium for storing digital information, comprising:

means for transform coding the digital audio signal into a transformed signal constituted by a plurality of spectral components, said spectral components being distributed among a plurality of adjacent critical bands covering the totality of the frequency spectrum of said transformed signal, said critical bands being representative of the sensibility of the human ear and being susceptible to include at least two spectral components;

means for eliminating inaudible spectral components from said plurality of spectral components, comprising:

means for processing a masking threshold corresponding to the human auditory system, said masking threshold being made of a plurality of threshold values, each threshold value corresponding to one of said spectral components, and

means for eliminating spectral components which are below said masking threshold and for preserving spectral components which are upper said masking threshold:



means for quantizing said preserved spectral components; and

means for allocating, for use by said means for quantizing, a specific number of bits for the quantization of the preserved spectral components within each said critical band, as a function of the number of spectral components preserved in each critical band.

5,185,801

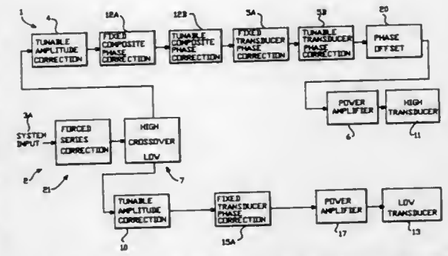
CORRECTION CIRCUIT AND METHOD FOR IMPROVING THE TRANSIENT BEHAVIOR OF A TWO-WAY LOUDSPEAKER SYSTEM

John D. Meyer, Berkeley, and Paul Kohut, Pacheco, both of Calif., assignors to Meyer Sound Laboratories Incorporated, Berkeley, Calif.

Continuation of Ser. No. 505,302, Apr. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 458,301, Dec. 28, 1989, abandoned. This application Jul. 18, 1991, Ser. No. 732,445

Int. Cl.[5] H04R *29/00*

U.S. Cl. 381—59 **6 Claims**



1. A correction circuit for improving the transient response of a loudspeaker system having at least two transducers designated a high frequency transducer and a low frequency transducer, said correction circuit comprising

a high frequency channel and a low frequency channel connectable, respectively, to the high frequency transducer and the low frequency transducer of said loudspeaker system,

cross-over circuit means for dividing the frequency components of an audio input signal between said high frequency channel and low frequency channel for, respectively, driving said high frequency transducer and low frequency transducer, said cross-over circuit means having a generally defined cross-over frequency range over which both said high and low frequency transducers operate in response to an audio input signal,

tunable amplitude correction circuit means for separately adjusting

(i) the amplitude response characteristics of said high frequency transducer to produce a relatively flat amplitude versus frequency response therein over a substantial portion of said transducer's operating frequency range,

(ii) the amplitude response characteristics of said low frequency transducer to produce a relatively flat amplitude versus frequency response over a substantially portion of said transducer's operating frequency range, and

(iii) the amplitude characteristics of the composite amplitude response of the loudspeaker system, including the correction circuit therefor, to further produce a relatively flat amplitude versus frequency response over a substantial portion of the operating frequency range of said loudspeaker system.

tunable phase correction circuit means for separately adjusting

(i) the phase characteristics of said high frequency transducer to produce a phase versus frequency response therein having a relatively linear slope over a substantial portion of the operating range of said high frequency transducer, and

(ii) the phase characteristics of the composite phase response of the loudspeaker system, including said correction circuit, to produce a phase versus frequency response having a relatively linear slope over a substantial portion of the operating frequency range of said loudspeaker system, and

said tunable amplitude correction circuit means being a parallel amplitude correction circuit means composed of a tunable high frequency amplitude correction circuit operatively connected in said high frequency channel, and a tunable low frequency amplitude correction circuit operatively connected in said low frequency channel, each of said tunable high and low frequency amplitude correction circuits being comprised of a plurality of interactively connected tunable bandpass parametric filters,

tunable phase offset circuit means for offsetting the phase of said high frequency transducer relative to the phase of said low frequency transducer over said cross-over frequency range, said tunable phase offset circuit means including means for correcting for deterioration of the composite amplitude versus frequency response of the loudspeaker system resulting from the phase offset introduced by said tunable phase offset circuit means.

5,185,802

MODULAR HEARING AID SYSTEM

Mark F. Stanton, Mundelein, Ill., assignor to Beltone Electronics Corporation, Chicago, Ill.

Continuation of Ser. No. 547,625, Jul. 2, 1990, abandoned, which is a continuation-in-part of Ser. No. 508,775, Apr. 12, 1990, abandoned. This application Apr. 27, 1992, Ser. No. 875,531

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—68.6 **4 Claims**

1. A modular hearing aid system comprising:

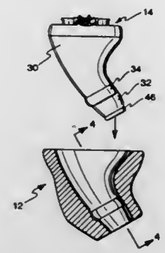
an elongated housing with a first end displaced from a second end; said housing being shaped so as to be usable with a right ear or a left ear;

a latching element, formed as an annular ring, carried on said housing displaced from second end;

an ear specific shell defining a second end receiving region therein with said second end of said housing receivable therein;

a recessed surface, defined on said shell within said receiving region and engageable with said annular ring; and

a vent channel molded in said shell along an interface region between said shell and said housing with said annular ring



and said recessed surface cooperating internally within said shell to releasably latch said housing to said shell.

5,185,803

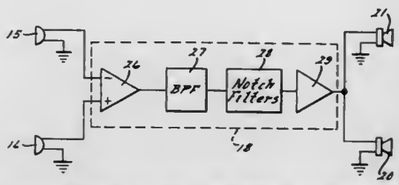
COMMUNICATION SYSTEM FOR PASSENGER VEHICLE

Matthew T. Moyski, Fenton, and Raymond C. Spitz, Canton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 23, 1991, Ser. No. 812,298

Int. Cl.[5] H04B *1/00*

U.S. Cl. 381—86 **12 Claims**



1. Audio apparatus for use in the passenger compartment of a vehicle comprising:

a first microphone generating first microphone signals and located at one end of said passenger compartment;

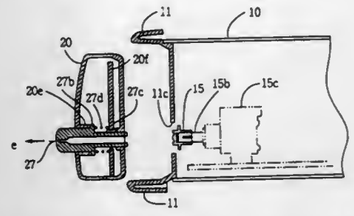
a second microphone generating second microphone signals and located at said one end of said passenger compartment separated from said first microphone by a first distance such that a passenger at said one end of said passenger compartment is located substantially closer to one of said first and second microphones than the other of said first and second microphones;

differential amplifier means having inverting and noninverting inputs receiving said first and second microphone signals, respectively; and

a speaker located at the other end of said passenger compartment and connected to said differential amplifier means to produce sound in response to an output signal from said differential amplifier means, said speaker being separated from said first and second microphones by respective distances greater than said first distance so that sound produced by said speaker arrives at said first and second microphones substantially in phase.

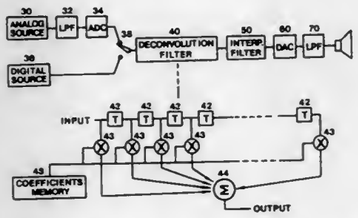
VOL 1147 ISS 2 FE 9 1993 UMI

5,185,804
OPERATING DEVICE OF AN ELECTRONIC EQUIPMENT MOUNTED ON A MOTOR VEHICLE
Masaaki Watanabe, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Oct. 16, 1991, Ser. No. 777,054
Claims priority, application Japan, Apr. 12, 1991, 3-33588[U]
Int. Cl.[5] H04B *1/00*
U.S. Cl. 381—86 **3 Claims**



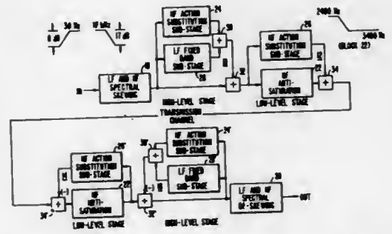
1. An operating device of an electronic equipment mounted on a motor vehicle, the electonric equipment having an equipment body secured to a vehicle body of the motor vehicle, and a grille detachably mounted on a front panel of the equipment body, comprising:
a knob rotatably and axially slidably mounted on the grille;
a spring for outwardly urging the knob;
a manually operated electronic device having a manually rotated operating shaft and provided in the equipment body;
a front end of the manually rotated operating shaft being located slightly inside of an opening formed on the front panel of the equipment body; and
connecting means for connecting a rear end of the knob with the front end of the operating shaft when the knob is depressed against the spring.

5,185,805
TUNED DECONVOLUTION DIGITAL FILTER FOR ELIMINATION OF LOUDSPEAKER OUTPUT BLURRING
David Chiang, 649 Caledonia Rd., Dix Hills, N.Y. 11746
Filed Dec. 17, 1990, Ser. No. 628,635
Int. Cl.[5] H04R *3/00*
U.S. Cl. 381—96 **4 Claims**



1. Method of making a finite impulse response filter for deconvolving audio signals to be converted by a given speaker to sound pressure waves comprising the steps of: providing a digital multiplier-accumulator having digital multiplicand inputs for receiving digitized audio signals, M+1 digital multiplier imputs for receiving filter coefficients (h_i, i=0,1, . . . M) and digital outputs for transmitting digitized deconvolved audio signals; generating the digital band-limited impulse response y_i, i=0,1, . . . N, by driving the said speaker with the signal sin $2\pi f_h t/2\pi f_h t$, wherein the frequency f_h is the upper limit of the hearing range, measuring the acoustic output by a microphone and converting to digital data with sampling rate $1/T \geqq 2f_h$; calculating, from the values y_i, i=0,1, . . . N, the set of coefficients h_i, i=0,1, . . . M; and applying said set of coefficients h_i to said digital multiplier inputs.

5,185,806
AUDIO COMPRESSOR, EXPANDER, AND NOISE REDUCTION CIRCUITS FOR CONSUMER AND SEMI-PROFESSIONAL USE
Ray M. Dolby, 3340 Jackson St., San Francisco, Calif. 94118, and Stanley G. Cossette, 1270 29th Ave., San Francisco, Calif. 94122
Continuation-in-part of Ser. No. 333,431, Apr. 3, 1989, abandoned, and a continuation-in-part of Ser. No. 428,363, Oct. 27, 1989, abandoned. This application Dec. 11, 1990, Ser. No. 613,859
Int. Cl.[5] H03G *7/00*
U.S. Cl. 381—106 **67 Claims**

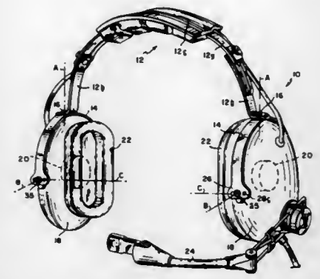


1. A circuit for modifying the dynamic range of an audio signal, namely a compressor or an expander, comprising
means for compressing the audio signal, in the case of a compressor, or for expanding the audio signal, in the case of an expander, by up to about 10 dB in a low-frequency band extending generally from about 200 Hz downward, said means for compressing or expanding the audio signal in a low-frequency band having a fixed-band characteristic, and
means for compressing the audio signal, in the case of a compressor, or for expanding the audio signal, in the case of an expander, by up to about 24 dB in a high-frequency band extending generally from about 400 Hz upward, said means for compressing or expanding the audio signal in a high-frequency band having a fixed-band/sliding-band action-substitution characteristic.

5,185,807
HEADSET WITH MULTI-POSITION STIRRUP ASSEMBLIES
James T. Bergin, Rochdale, and Richard M. Urella, Shrewsbury, both of Mass., assignors to David Clark Company Incorporated, Worcester, Mass.
Filed May 8, 1991, Ser. No. 697,325
Int. Cl.[5] H04R *25/00*
U.S. Cl. 381—183 **5 Claims**

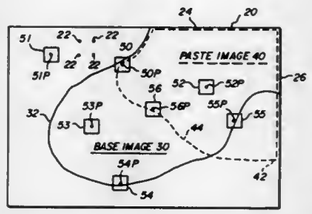
1. A headset comprising:
a resilient arcuate headband;
a pair of mutually spaced resilient arcuate stirrups depending from and mounted to the ends of said headband for pivotal movement about first axes;
a pair of confronting mutually spaced ear domes mounted to the ends of said stirrups for pivotal movement about second axes extending transversally with respect to said first axes;
cylindrical stud assemblies lying on said second axes and protruding from opposite sides of each of said ear domes, each of said stud assemblies having a pivot portion and a recessed shifting portion, the diameters of said shifting portions being smaller than the diameters of said pivot portions;

a plurality of apertures in the ends of said stirrups, said apertures being interconnected by and cooperating with intermediate slots to define elongate openings lying on third axes extending between said stirrups and transversally with respect to said second axes;
said apertures being dimensioned to axially receive and pivotally coact with the pivot portions of respective stud assemblies, the widths of said slots being smaller than the



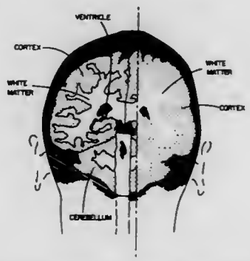
diameters of said pivot portions, said slots being dimensioned to slidably receive the shifting portions of said stud assemblies, said stirrups being configured to resiliently urge selected apertures of said elongate openings into alignment with the pivot portions of respective stud assemblies, said stirrups being resiliently deformable to align said slots with the shifting portions of said stud assemblies in order to permit said stud assemblies to slide along said slots to others of said apertures.

5,185,808
METHOD FOR MERGING IMAGES
David R. Cok, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 6, 1991, Ser. No. 710,873
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—1 **11 Claims**



1. For use with an imagery data base in accordance with which an array of pixels of an image display device is controllably energized to display an image, a method of controllably combining first imagery data, associated with a first, overlap image, with second imagery data, associated with a second, base image, so as to effect a smooth blending of said first image along its border with said second image comprising the steps of:
(a) for a respective pixel location (i,j) of said array, defining the border of a window that encompasses a plurality of pixel locations surrounding said pixel location (i,j);
(b) in response to said respective pixel location (i,j) being contained within said first image and the border of said window, defining a first weighting value F(i,j) in accordance with the distance from the location (i,j) to the nearest pixel in the second image which is not in the first image; and
(c) defining an imagery data value associated with said pixel location (i,j) in accordance with a prescribed combination of said first weighting value and imagery data values contained within said first and second imagery data for said pixel location (i,j).

5,185,809
MORPHOMETRIC ANALYSIS OF ANATOMICAL TOMOGRAPHIC DATA
David N. Kennedy, Boston; Pauline A. Filipek, Brighton, and Verne S. Caviness, Jr., Charlestown, all of Mass., assignors to The General Hospital Corporation, Boston and Massachusetts Institute of Technology, Cambridge, both of, Mass.
Division of Ser. No. 100,996, Sep. 25, 1987, Pat. No. 4,961,425, which is a continuation-in-part of Ser. No. 85,576, Aug. 14, 1987, abandoned. This application Jun. 7, 1990, Ser. No. 511,334
Int. Cl.[5] G06K *9/78*
U.S. Cl. 382—6 **9 Claims**
MICROFICHE APPENDIX INCLUDED
(105 Microfiche, 2 Pages)



1. A method of processing anatomical tomographic data of a patient to identify and map a selected anatomical feature or region and identify within said feature a zone of abnormal inhomogeneity in tissue composition, comprising the steps of
processing said anatomical tomographic data to determine an outline of said selected anatomical feature and saving said outline,
deriving from said tomographic data an intensity of points within said feature,
comparing said intensities to a predetermined variance from the mean of an intensity distribution of a normal population for said feature,
identifying said zone of abnormal inhomogeneity as including points with intensities more than said predetermined variance,
applying a standardized coordinate system to said tomographic data to characterize said zone of abnormal inhomogeneity in terms of its projection within said standardized coordinate system, and
performing quantitative volumetric measurement of said zone of abnormal inhomogeneity.

5,185,810
METHOD FOR OPTICAL TESTING OF SAMPLES
Klaus Freischlad, Aalen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Fed. Rep. of Germany
Filed Apr. 26, 1991, Ser. No. 692,194
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 4013308
Int. Cl.[5] G06K *9/00;* **G01B** *11/24, 9/02*
U.S. Cl. 382—8 **7 Claims**

1. In a method for reducing the effects of noise in the optical testing of samples in which information pertaining to the sample in the form of a pattern of light recorded by a camera is

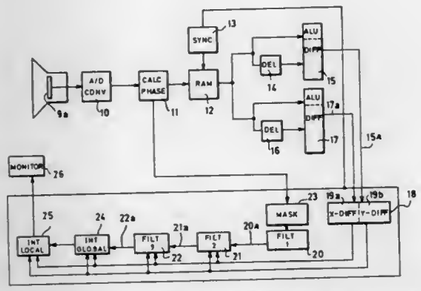
VOL 1147 ISS 2 FEB 9 1993 UMI

evaluated along a two-dimensional raster of image points, said method having the steps of:

using the brightness of the pattern to compute a corresponding phase value, expressed in modulo 2π, for each image point;

calculating the differences, in modulo 2π, between the phase values of adjacent image points in a line and between the phase values of adjacent image points in a column for said entire raster;

computing a first sign-correct sum of said modulo 2π differences along a closed path around each of a plurality of partial fields, each such partial field being delineated by a predetermined set of adjacent image points; and



masking all image points in each partial field for which said sign-correct sum is not zero so that each said masked partial field forms a hole in said image pattern, said holes being omitted from further evaluation of said pattern image;

the improvement comprising the further steps of:

computing a second sign-correct sum of said modulo 2π differences along a closed path delineated by image points positioned around each said hole, and, for those closed paths for which said second sign-correct sum is not zero, masking the image points between said holes to combine said holes until a second sign-correct sum of said modulo 2π differences along a closed path of image points positioned around said combined holes becomes zero.

5,185,811

AUTOMATED VISUAL INSPECTION OF ELECTRONIC COMPONENT LEADS PRIOR TO PLACEMENT

Gregory E. Beers, Austin, Tex.; Myron D. Flickner, San Jose, Calif.; William L. Kelly-Mahaffey; Darryl R. Polk, both of Austin, Tex.; James M. Stafford, Round Rock, and Henry E. Wattenbarger, Pflugerville, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 634,675, Dec. 27, 1990, abandoned. This application Jan. 21, 1992, Ser. No. 825,434

Int. Cl.[5] G06K *9/00, 9/46*

U.S. Cl. 382—8 **4 Claims**

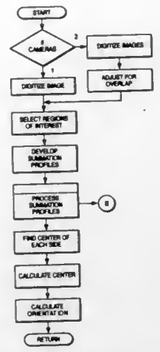
1. Apparatus for inspecting leaded electronic components comprising:

means for acquiring a two dimensional array of grey level image data including two cameras and means for combining images therefrom, said means for combining including:

means for mapping images from said two cameras to a common coordinate system;

means for determining overlap between said images;

means for computing to sub-pixel accuracy a centroid of a component,



means for operating on preselected subarrays of said array of image data for forming a plurality of one dimensional summation profiles; and

vision logic means for operating on said summation profiles.

5,185,812

OPTICAL PATTERN INSPECTION SYSTEM

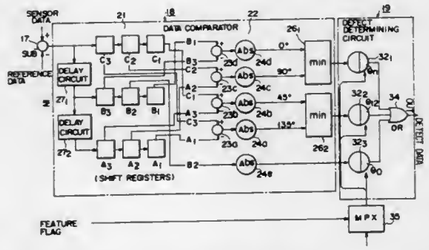
Kyoji Yamashita, Yokohama; Ryoichi Yoshikawa, Kawasaki, and Masakazu Tokita, Fuji, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki and Toshiba Machine Co., Ltd., Tokyo, both of, Japan

Filed Feb. 11, 1991, Ser. No. 653,236

Claims priority, application Japan, Feb. 14, 1990, 2-31485; Feb. 27, 1990, 2-46227; Nov. 30, 1990, 2-340333

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—8 **10 Claims**



1. A pattern inspection system comprising:

first means for inputting a two-dimensional inspected pattern as image data having a multi-valued density distribution;

second means for inputting data on a reference pattern corresponding to said inspected pattern;

density difference obtaining means coupled to said first means and said second means for making a comparison between said image data and said reference data and thereby obtaining the difference in density between said inspected pattern and said reference pattern;

filter means for performing spatial differential on the distribution of the density difference between said inspected pattern and said reference pattern in different directions;

absolute value obtaining means for taking absolute values of computational results by said filter means and obtaining the minimum of the absolute values;

defect detecting means for detecting a defect of said inspected pattern on the basis of a comparison between the minimum obtained by said absolute value obtaining means and a threshold; and

defect data outputting means for outputting defect data output from said defect detecting means;

wherein said defect means detects the feature of said reference pattern data and varies the threshold for the minimum on the basis of the detected feature and determines, when the minimum exceeds its threshold, that there is a defect.

5,185,813

DOCUMENT IMAGE PROCESSING APPARATUS

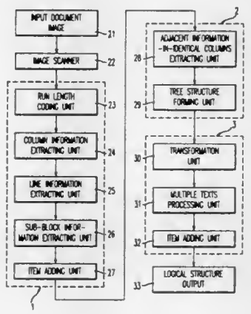
Shuichi Tsujimoto, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 298,986, Jan. 19, 1989, abandoned. This application Jan. 17, 1992, Ser. No. 823,608

Claims priority, application Japan, Jan. 19, 1988, 63-7518

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—9 **6 Claims**



1. A document image processing apparatus comprising:

means for analytically dividing the image of a document into sub-blocks having analogous physical properties;

means for providing each of said sub-blocks with a position indicating code, each code having a prescribed priority and a discriminating code corresponding to a predetermined category of said sub-block;

tree means for grouping any of the position indicating codes of said sub-blocks having the same prescribed priority, the tree means including means for separating the groups of codes into first node groups wherein multiple groups of indicating codes have the next priority in the prescribed priority order, and second node groups wherein only a single group of indicating codes has the next priority in the prescribed priority order; and

means for representing the position indicating codes of said sub-blocks on the same level at the separate nodes on the same level of the tree, said position indicating codes being selected from the position indicating codes of the sub-blocks represented at the nodes of the tree, and representing the position indicating codes of the sub-blocks being controlled by said sub-blocks at the nodes in the lower portion of the tree.

5,185,814

OPTICAL FIBER COMMUNICATIONS NETWORK INCLUDING PLURAL AMPLIFIERS WITH SINGLE PUMP SOURCE

Peter Healey, Suffolk, England, assignor to British Telecommunications public limited company, London, England

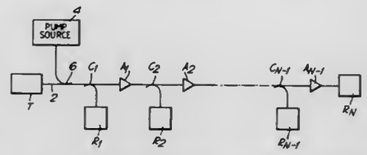
PCT No. PCT/GB90/01076, § 371 Date Feb. 20, 1992, § 102(e) Date Feb. 20, 1992, PCT Pub. No. WO91/01066, PCT Pub. Date Jan. 24, 1991

PCT Filed Jul. 13, 1990, Ser. No. 834,285

Claims priority, application United Kingdom, Jul. 13, 1989, 8916021; Oct. 6, 1989, 8922527

Int. Cl.[5] G02B *6/28;* **H01S** *3/30;* **G02F** *1/00*

U.S. Cl. 385—24 **12 Claims**



1. An optical communications network comprising an optical waveguide (2) for distributing optical signals; an optical tapping means (C_2); and a pair of optically pumpable optical amplifying means (F_1,F_2), the optical tapping means being located between the pair of amplifying means (F_1,F_2), characterised in that the pair of amplifying means (F_1,F_2) are optically pumped by one optical pump means (4), only, coupled to a single point of the waveguide (2).

5,185,815

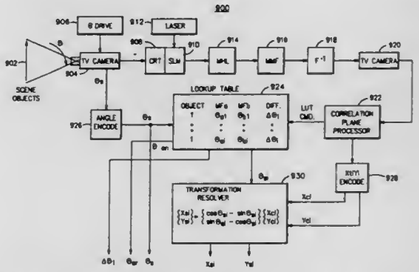
MULTIPLE TARGET CORRELATOR SYSTEM

Robert W. Brandstetter, Levittown, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Nov. 4, 1991, Ser. No. 787,813

Int. Cl.[5] G06K *9/76*

U.S. Cl. 382—31 **32 Claims**



1. A multiple target correlator system comprising:

(a) an imaging means for providing an image of an object or scene of interest;

(b) means for modulating a coherent beam with said image to form an image modulated beam;

(c) means for optically Fourier transforming said image modulated beam into a spatial frequency distribution of said image;

(d) multiple matched filter means disposed in the back focal plane of said means for optically Fourier transforming, and comprising at least one matched filter element having at least two matched filters recorded thereon for said object of interest and wherein said at least two matched filters are recorded at a predetermined unique angular difference, said spatial frequency distribution of said image multiplically interacts with said at least two

VOL 1147 ISS 2 FE 9 1993 UMI

matched filters resulting in first and second product signals;

(e) means for optically inverse Fourier transforming said first and second product signals to produce a pair of optical correlation signals;

(f) a correlation plane detector means, disposed in the back focal plane of said means for optically inverse Fourier transforming, for detecting said pair of optical correlation signals and producing electric output signals representative of said pair of correlation signals; and

(g) means for processing said electric output signals comprising:

storage means having said predetermined unique angular difference of said at least two matched filters stored therein;

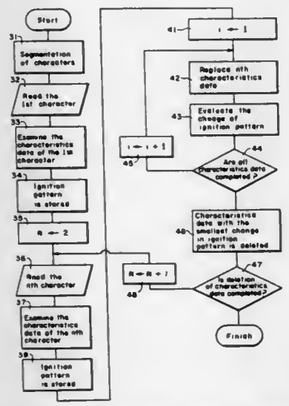
means for receiving said electric outputs signals from said correlation plane detector; and means for calculating the orientation of said particular object of interest and providing said particular object of interest with an identification tag.

5,185,816

METHOD OF SELECTING CHARACETERISTICS DATA FOR A DATA PROCESSING SYSTEM

Sunao Takatori; Ryohei Kumagai; Koji Matsumoto, and Makoto Yamamoto, all of Tokyo, Japan, assignors to Yozan, Inc., Tokyo, Japan

Filed Dec. 13, 1990, Ser. No. 627,208
Claims priority, application Japan, Dec. 25, 1989, 1-335960
Int. Cl.[5] G06K *9/62, 9/40*
U.S. Cl. 382—34 **1 Claim**



1. A method of selecting characteristics data from a group of input data for reducing data volume of each input data of said group, using a data processing system having a neural network structure, where each of said input data includes a plurality of said characteristics data, said method comprising the steps of:

storing an ignition pattern representing neurons corresponding to each of said input data;

selecting one of said characteristics data for a pair of different input data;

exchanging said characteristics data of each input data in said input data pair with each other;

comparing ignition patterns representing neurons corresponding to said input data pair before and after said exchange of said characteristics data; and

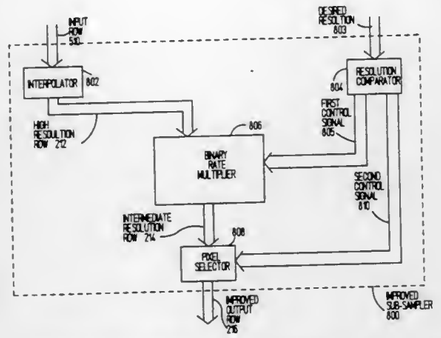
removing said characteristics data from said group of input data when a difference between a result from said comparing step is relatively small.

5,185,817

IMAGE PROCESSOR

Greg A. Degi, Fort Collins, and Dean C. Buck, Loveland, both of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 14, 1991, Ser. No. 700,007
Int. Cl.[5] G06K *9/42*
U.S. Cl. 382—47 **19 Claims**



1. An image processing method for converting a first matrix having a number of first picture elements into a second matrix having a number of second picture elements, in which the number of second picture elements differs from the number of first picture elements, comprising the steps of:

(a) generating a third matrix having a number of third picture elements, in which the number of third picture elements is an integer multiple of the number of said second picture elements by:

(1) partitioning said first matrix in a row by row or column by column manner into a plurality of mutually exclusive subsets, each having a different number of picture elements wherein

(A) a first of said subsets for each row or column comprises every second picture element of said first matrix in said row or column,

(B) a second of said subsets for each row or column comprises every fourth picture element of said first matrix in said row or column relationship, and in general,

(C) an ith of said subsets comprises every $i^{(-2)nd}$ picture element of said first matrix in said row or column, and

(2) setting a first control signal to a binary fraction which represents the ratio of the number of third picture elements to the number of first picture elements, wherein said third matrix comprises a unique combination of said subsets, wherein the number of picture elements in said unique combination equals the number of third picture elements and includes:

(A) said first of said subsets in said unique combination if a most significant bit of said first control signal is indicated,

(B) said second of said subsets in said unique combination if a second-most significant bit of said first control signal is indicated, and

(C) in general, said i^{th} of said subsets in said unique combination if an ith-most significant bit of said first control signal is indicated; and

(b) setting a second control signal to said most significant bit of said first control signal and selecting output picture elements from said third matrix which are separated from each other by a number of pixels indicated by said second control signal and using said output picture elements to generate said second matrix.

5,185,818

METHOD OF SUBSTITUTING FONTS AND DISPLAYING CHARACTERS

John E. Warnock, Los Altos, Calif., assignor to Adobe Systems Incorporated, Mountain View, Calif.

Filed Jun. 5, 1991, Ser. No. 710,603
Int. Cl.[5] G06K *9/40*
U.S. Cl. 382—54 **8 Claims**



1. A method for reconstructing characters in a document, which are expressed in one or more fonts, to convert said characters to a different font designed to closely match characters from a plurality of fonts in an aesthetically pleasing manner, comprising:

selecting a first character from said document determining the width of said first character;

based upon this width determination,

substituting for said first character the same character constructed from said different font and having the same width as said first character, the characters of varying widths within said different font being designed to have aesthetically pleasing relationships between their parts irrespective of width;

continuing the construction and substitution of characters of said different font for each of the characters in said document needing reconstruction in the same manner until all the characters in said document needing reconstruction have been substituted, thereby creating a reconstructed document having aesthetically pleasing relationship among the characters in said document; and

storing said reconstructed document for subsequent display.

5,185,819

VIDEO SIGNAL COMPRESSION APPARATUS FOR INDEPENDENTLY COMPRESSING ODD AND EVEN FIELDS

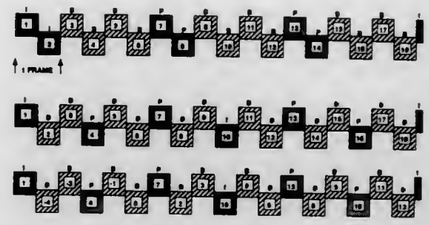
Sheau-Bau Ng, and Rajesh Hingorani, both of Plainsboro, N.J., assignors to General Electric Company, Princeton, N.J.

Filed Apr. 29, 1991, Ser. No. 692,848
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—56 **7 Claims**

1. A system for compressing video data comprising:

a source of video signal for providing a sequence of ordinally numbered fields of video signal, successive pairs of odd and even numbered fields forming frames of video signal;

compression means, responsive to said video signal, for compressing odd numbered fields of said video signal independent of said even fields, and for compressing even numbered fields of said video signal independent of said odd fields, said compression means encoding ones of said odd fields according to an intraframe compression mode and others of said odd fields according to a predictive compression mode, and encoding ones of said even fields according to an intraframe compression mode and others of said even fields according to a predictive compression



mode, and wherein said even fields compressed according to said intrafield compression mode are from different frames than said odd fields compressed according to said intraframe compression mode; and

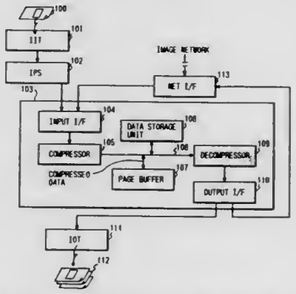
means for transmitting the said compressed fields.

5,185,820

SYSTEM FOR COMPRESSING IMAGE DATA HAVING BLANK LINES

Masahiko Miyata, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1990, Ser. No. 595,222
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—56 **15 Claims**



1. A data compression system for an image processing system comprising:

means for receiving a line of image data;

means, responsive to the receiving means, for storing the line of image data;

means, responsive to the receiving means, for detecting a blank line of image data;

means, responsive to the storing means and to the blank line detecting means, for inserting a special code into the image data each time the detecting means detects a blank line of image data, the inserting means including

selecting means including

a control input coupled to the means for detecting a blank line of image data;

a first data input coupled to the storing means;

a second data input for receiving the special code; and

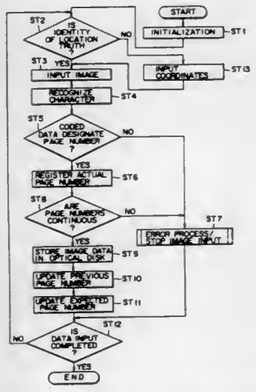
means, responsive to the control input, for generating an output containing the special code and the blank line of image data, each time the means for detecting a blank line detects a blank line; and

compressing means, responsive to the means for inserting, including

VOL 1147 ISS 2 FE 9 1993 UMI

means for detecting the special code,
means for generating a compressed version of the image data, when the special code detecting means does not detect the special code, and
means for transmitting a code representing the special code, when the special code detecting means detects the special code.

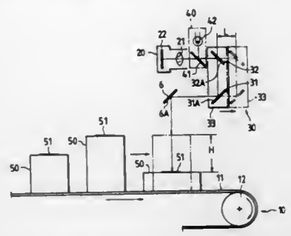
5,185,821
IMAGE FILING APPARATUS FOR SERIALLY STORING INPUT INFORMATION
Nobuhisa Yoda, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Aug. 30, 1991, Ser. No. 753,083
Claims priority, application Japan, Aug. 31, 1990, 2-228005
Int. Cl.[5] G06K *9/20*
U.S. Cl. 382—61 **12 Claims**



1. An image filing apparatus for serially storing information items comprising:
input means for serially inputting information items, each of the information items having page data representing one page of data;
recognition means for recognizing page number values written on the page data of each of the inputted information items;
determination means for determining whether or not the page number values recognized by the recognition means are continuous; and
storage means for storing the inputted information items into a memory medium if it is determined by the determination means that the page number values are continuous.

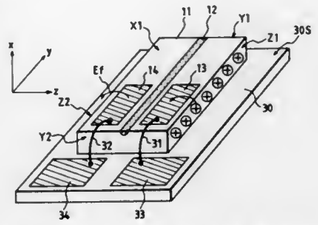
5,185,822
FOCUSING STRUCTURE IN AN INFORMATION READING APPARATUS
Masaaki Miura, Tokyo, Japan, assignor to Asahi Kogaku Kogyo K.K., Tokyo, Japan
Continuation of Ser. No. 367,413, Jun. 16, 1989, abandoned. This application Aug. 23, 1991, Ser. No. 751,667
Claims priority, application Japan, Jun. 16, 1988, 63-148917
Int. Cl.[5] G06K *7/10*
U.S. Cl. 382—65 **11 Claims**

1. An information reading system which reads an upper, information indicating surface of each of a plurality of objects having differing heights and being moved on a conveyor, said information reading system comprising:
a fixed camera section for reading said information indicating surface using rays of light, said information indicating surface being read while said object is being conveyed;
mirror means disposed between said fixed camera section and said information indicating surface including at least one pair of reflector mirrors having reflecting surfaces which face each other at an angle of 90 degrees so that said rays of light are reflected from said fixed camera section, through said mirror means, and to said information indicating surface;
focusing means for focusing said fixed camera section on said information indicating surface by moving said mirror means to equalize an optical path from said fixed camera section to said information reading surface of each of said objects such that an optical path from said information



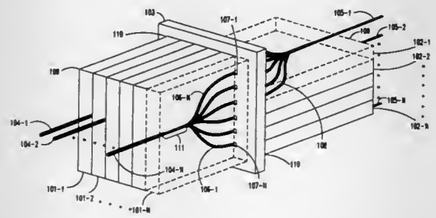
indicating surface of an object to said fixed camera section is substantially unchanged during reading of said information indicating surface of said object; and
means for illuminating said information indicating surface of each of said objects with illuminating light, said illuminating means being positioned in the optical path from said information indicating surface to said fixed camera section,
wherein an optical path of said illuminating light coincides with that of said rays of light used for reading said information indicating surface of each of said objects.

5,185,823
WAVEGUIDE TYPE OPTICAL DEVICE
Ryoji Kaku; Hiroyuki Takahashi, and Eiichi Asami, all of Tokyo, Japan, assignors to Japan Aviation Electronics Industry Limited, Tokyo, Japan
Filed Dec. 9, 1991, Ser. No. 804,062
Claims priority, application Japan, Dec. 13, 1990, 2-401956; Jul. 10, 1991, 3-169819
Int. Cl.[5] G02B *6/10, 5/30*
U.S. Cl. 385—2 **6 Claims**



1. A waveguide type optical device having improved temperature stability, comprising:
a substrate of a ferroelectric crystal having a pyroelectric effect, said crystal substrate having spontaneous polarization, a first surface parallel to the direction of said spontaneous polarization, and second and third surfaces crossing the direction of said spontaneous polarization;
an optical waveguide formed in said first surface of said ferroelectric crystal substrate;
modulation electrode means formed in said first surface of said ferroelectric crystal substrate and extending along said optical waveguide on both sides thereof;
first and second conductive films formed almost all over said second and third surfaces of said ferroelectric crystal substrate crossing the direction of said spontaneous polarization; and
short-circuit means for electrically interconnecting said first and second conductive films, whereby charges caused by the pyroelectric effect of said crystal substrate cancel one another.

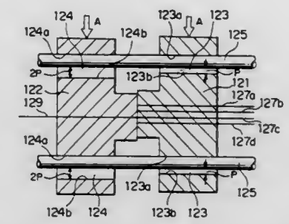
5,185,824
OPTICAL SWITCH INCORPORATING MOLDED OPTICAL WAVEGUIDE ELEMENTS
Gary J. Grimes, and Allen L. Larson, both of Thornton, Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 29, 1991, Ser. No. 784,351
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—19 **18 Claims**



1. An optical device comprising
optical signal splitting means including a plurality of stacked first plates, each first plate molded of a first material so as to define a first cavity extending from a first end to an interior position and a plurality of second cavities extending from said interior position to a second end, each of said first and second cavities filled with a second material which is capable of conducting an optical signal from said first end to said second end;
optical signal combining means including a plurality of stacked second plates, each second plate molded of a first material so as to define a first cavity extending from a first end to an interior position and a plurality of second cavities extending from said interior position to a second end, each of said first and second cavities in said second plates filled with a second material which is capable of conducting an optical signal from said first end to said second end of each second plate; and
an array of optical shutters, disposed between said stacks of first and second plates, each shutter being operable to conduct or block an optical signal from an aligned filled second cavity in one plate to an aligned filled second cavity in one second plate.

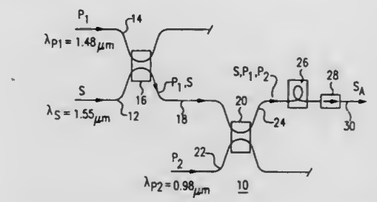
5,185,825
OPTICAL SWITCHING CONNECTOR
Takashi Shigematsu; Seiichi Imamizo; Koichi Takagi; Toshihiko Ohta, and Jun Yamakawa, all of Ichihara, Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan
Filed Sep. 30, 1991, Ser. No. 767,943
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—20 **13 Claims**

1. An optical switching connector comprising a first ferrule and second ferrule disposed with end faces thereof abutting on each other and two reference pins disposed in parallel at a predetermined interval,
the first and second ferrules having two parallel pin holes, respectively, the two reference pins being inserted in the pin holes in each of the first and second ferrules,
one of the first and second ferrules having fixed therein two or more optical fibers at a predetermined fiber pitch, the other ferrule having fixed therein one or more optical fibers at the same fiber pitch,
each of the pin holes of the first ferrule having an elongated sectional shape enabling the reference pins to move laterally by a movement pitch equal to n_1 times the fiber pitch (where n_1 is a positive integer),



each of the pin holes of the second ferrule having an elongated sectional shape enabling the reference pins to move laterally by a movement pitch equal to n_2 times the fiber pitch (where n_2 is a positive integer),
the first and second ferrules being able to be positioned at one position determined by one of the inside surfaces of the pin holes being pressed against the reference pins and another position determined by the other inside surfaces of the pin holes being pressed against the reference pins.

5,185,826
HYBRID PUMPING ARRANGEMENT FOR DOPED FIBER AMPLIFIERS
Jean-Marc P. Delavaux, Wescosville, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Feb. 7, 1992, Ser. No. 832,564
Int. Cl.[5] G02B *6/28;* **H01S** *3/30;* **H04J** *1/00*
U.S. Cl. 385—24 **11 Claims**



1. An optical system for amplifying an optical message signal (S) at a predetermined message wavelength (λ_S), said system comprising
a rare-earth doped optical fiber section;
a plurality of optical pump sources (P) operating at at least two different wavelengths (e.g., λ_{P1}, λ_{P2}), said pump sources capable of providing amplification of said message signal within said doped fiber section; and
means for coupling said optical message signal and said plurality of optical pump sources to said doped fiber section.

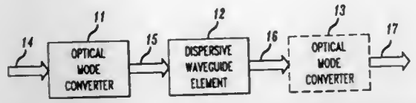
VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,827

APPARATUS FOR COMPENSATING CHROMATIC DISPERSION IN OPTICAL FIBERS

Craig D. Poole, Ocean, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 26, 1991, Ser. No. 766,600
Int. Cl.[5] G02B 5/14
U.S. Cl. 385—28 20 Claims



1. Apparatus for compensating a predetermined amount of chromatic dispersion in a lightwave signal, the apparatus comprising:

first means for converting the lightwave signal from a first spatial mode to a second spatial mode, the second spatial mode being a higher order spatial mode than the first spatial mode; and

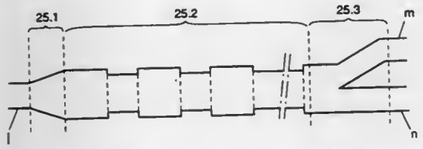
dispersive waveguide means supporting propagation of the lightwave signal substantially in the second spatial mode and connected to an output of the first converting means for compensating dispersion of the lightwave signal by inducing a first amount of chromatic dispersion substantially equal in magnitude, and opposite in sign, to the predetermined amount of chromatic dispersion.

5,185,828

OPTICAL WAVEGUIDE (TE,TM) MODE CONVERTER

Johannes J. G. M. van der Tol, Zoetermeer, Netherlands, assignor to Koninklijke PTT Nederland N.V., Groningen, Netherlands

Filed May 8, 1992, Ser. No. 880,705
Claims priority, application Netherlands, May 16, 1991, 9100852
Int. Cl.[5] G02B 6/10
U.S. Cl. 385—28 27 Claims



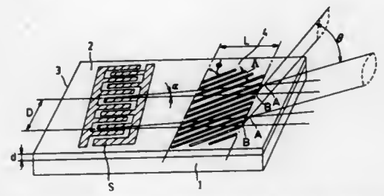
1. Mode converter for the conversion of a fraction of a signal component of an optical signal propagating according to a first guided mode into a signal component propagating according to a second guided mode, comprising a channel-type waveguide in which a periodic coupling between the two guided modes of an optical signal propagating in the waveguide takes place, which waveguide comprises an incoming wave-guiding section, an intermediate wave-guiding section and an outgoing wave-guiding section, characterized in that the intermediate wave-guiding section has a periodic geometrical structure consisting of a periodic sequence of two wave-guiding subsections within a period length, the lengths of the subsections and the number of periods being matched to the desired conversion fraction.

5,185,829

LIGHT BEAM DEFLECTOR FOR DEFLECTING LIGHT FROM OPTICAL WAVEGUIDE BY INCLINED GRATING

Masaya Yamada, and Ryo Enomoto, both of Gifu, Japan, assignors to Ibiden Co., Ltd., Ogaki, Japan

PCT No. PCT/JP90/01038, § 371 Date Apr. 16, 1991, § 102(e) Date Apr. 16, 1991, PCT Pub. No. WO91/03000, PCT Pub. Date Mar. 7, 1991
PCT Filed Aug. 15, 1990, Ser. No. 684,915
Claims priority, application Japan, Aug. 18, 1989, 1-211461
Int. Cl.[5] G02B 5/172, 4/174
U.S. Cl. 385—37 16 Claims



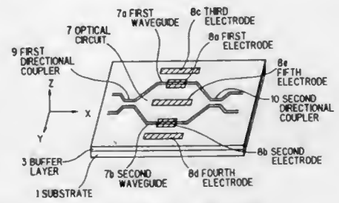
1. A light-beam deflector comprising an optical waveguide for transmitting light; said optical waveguide having two spaced end sections: an input section disposed at one end of said waveguide, and an output section at the other end of said waveguide and having a grating; said optical waveguide comprising means for deflecting light in a plane parallel to said optical waveguide and toward the grating, said grating disposed on the surface or inside said output section at an angle of from 42° to 86° to a line which is perpendicular to the direction of transmission of the light being guided by the optical waveguide, and said grating having a constant period of from 0.01 to 2 μm.

5,185,830

OPTICAL WAVEGUIDE DIRECTIONAL COUPLER INCLUDING CONTROL ELECTRODES

Hiroshi Nishimoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 3, 1991, Ser. No. 753,766
Claims priority, application Japan, Aug. 31, 1990, 2-228047
Int. Cl.[5] G02B 6/10
U.S. Cl. 385—41 13 Claims



1. An optical control device, comprising:

a crystal substrate having an electro-optical effect;

first and second waveguides formed in a part of said substrate in the vicinity of a surface of said substrate, said first and second waveguides being positioned to be proximate said first and second waveguides so as to provide an optical directional coupler;

first and second electrodes formed on said first and second waveguides; a buffer layer formed on said substrate to cover said surface including an area where said first and second waveguides are formed;

third and fourth electrodes formed on said buffer layer respectively located away from said first and second electrodes;

wherein either one of said first and second electrodes is connected with said third and fourth electrodes for generating electric fields between one of said first and second electrodes being not connected to said third and fourth electrodes and one of said third and fourth electrodes to be applied to one of said first and second waveguides so that the refractive index of TE polarized light is changed; and

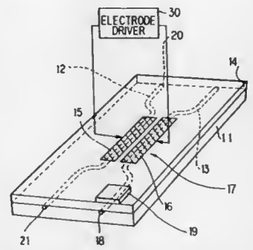
a fifth electrode formed between said first and second electrodes on said buffer layer; wherein said fifth electrode is connected with either one of said first and second electrodes, said either one of said first and second electrodes being not connected with said third and fourth electrodes.

5,185,831

OPTICAL WAVEGUIDE DEVICE

Hisao Kawashima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 30, 1992, Ser. No. 876,022
Claims priority, application Japan, Apr. 30, 1991, 3-099036
Int. Cl.[5] G02B 6/10; G02F 1/025
U.S. Cl. 385—41 4 Claims



1. A waveguide type optical device, comprising:

a plurality of optical waveguides provided on a substrate;

electrodes provided above said optical waveguides;

a buffer layer interposed between said substrate and said electrodes; and

a TE polarization absorption film provided on an output end of at least one of said optical waveguides, said TE polarization absorption film having an equivalent refractive index approximately equal to an equivalent refractive index for TE polarization light propagated through said optical waveguides.

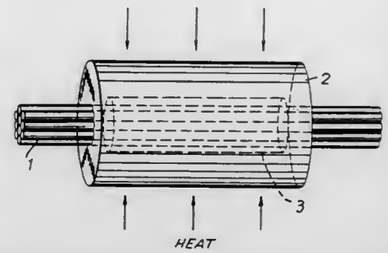
5,185,832

OPTICAL COUPLER FOR POLYMER OPTICAL WAVEGUIDES

Jochen Coutandin, Langenlonsheim; Jürgen Theis, Oberursel; Werner Groh, Lich, and Andreas Brockmeyer, Liederbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 24, 1991, Ser. No. 690,858
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 4013307
Int. Cl.[5] G02B 6/26
U.S. Cl. 385—43 18 Claims

1. A process for producing an optical coupler including polymer optical waveguides by arranging the optical waveguides in the same sense and bundling them by means of a plastic shrink-on sleeve, which process comprises arranging two to 10^5 polymer optical waveguides in the same sense and bundling them, putting a plastic tube over the mixing region, pushing a piece of plastic shrink-on sleeve over the plastic tube



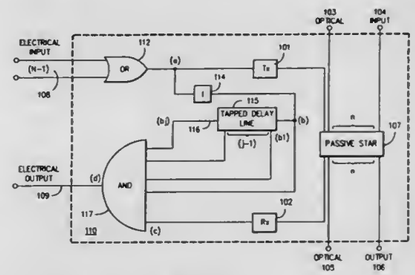
and heating the shrink-on tube to a temperature at which it contracts.

5,185,833

MODULAR ACTIVE FIBER OPTIC COUPLER SYSTEM

Robert Betts, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 654,472, Feb. 13, 1991, Pat. No. 5,131,061. This application Sep. 6, 1991, Ser. No. 755,724
Int. Cl.[5] G02B 6/36
U.S. Cl. 385—46 8 Claims



1. A modular active fiber optic coupler unit comprising:

an optical input port;

an optical output port;

an optical transmitter coupled to said optical output port;

an optical receiver coupled to said optical input port;

interconnection means for interconecting the coupler unit to multiple coupler units including an electrical input port having a plurality of input lines coupled to a logic control means including a selection gate device coupled to said electrical input port; and a single electrical output port for passing a terminal device addressed signal out of said coupler unit; and

said logic control means coupling the said optical transmitter, said optical receiver, said electrical output port and said electrical input port for preventing any electrical input signal on said electrical input port from appearing at the electrical output port, but allowing an electrical input signal to be transmitted as an optical output signal and allowing an optical input signal to become an electrical output.

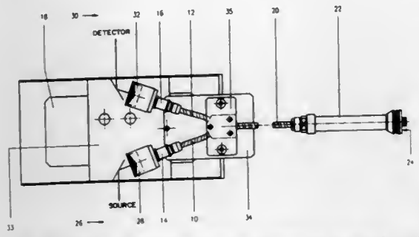
VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,834

OPTICAL FIBER PROBES FOR REMOTE ANALYSIS

Leslie L. Day, Caterham, and Graham Poulter, Orpington, both of England, assignors to Specac Ltd., Kent, England

Filed Mar. 4, 1991, Ser. No. 664,584
Int. Cl.[5] G02B 6/00, 6/36
U.S. Cl. 385—47 32 Claims



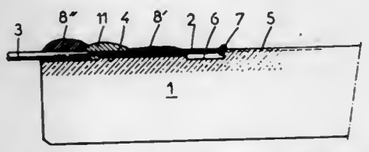
1. An optical fiber probe for remote testing of a sample, said probe including:
a tubular sleeve member;
an input optical fiber extending within and longitudinally of said sleeve member and having an end so aligned that radiation is emitted generally along said axis in a given longitudinal direction;
an output optical fiber extending within and longitudinally of said sleeve member and having an end aligned for collection of radiation propagating generally along said axis in a direction opposite to said given longitudinal direction;
a back reflecting sampling head disposed on said axis having means for receiving radiation emitted from said end of said input optical fiber, means for bringing said radiation into contact with said sample to be tested and means for subsequently focusing said radiation onto said end of said output optical fiber; and
adjustable mounting means for mounting said optical fibers within said sleeve member so that the position of said ends with respect to said sampling head may be adjusted.

5,185,835

FIBER ATTACHMENT MEANS FOR INTEGRATED OPTICAL COMPONENT

Jacques J. Vial, Noisy S/Ecole; Pierre-Jean M. Laroulandie, Avon; David Henry, Saint Michel s/Orge; Thierry L. A. Dannoux, Avon, and Sylvain M. F. Gremetz, Vaux-Le-Penil, all of France, assignors to Corning Incorporated, Corning, N.Y.

Filed Mar. 12, 1992, Ser. No. 850,665
Claims priority, application France, Mar. 14, 1991, 91 03089
Int. Cl.[5] G02B 6/30
U.S. Cl. 385—49 21 Claims



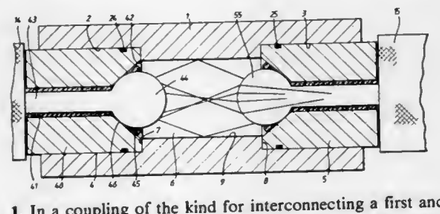
1. An integrated optical component for use in a predetermined temperature range, comprising at least one waveguide integrated in a substrate and having an output coupled to an end of an optical fiber which is attached by a first drop of adhesive to said substrate at said fiber end, and by a second drop of adhesive to said substrate in an area separated from said fiber end, each of said adhesives which form said drops having a glass transition temperature, wherein the glass transition temperature of said adhesive forming said first drop is within said predetermined temperature range, and the glass transition temperature of said adhesive forming said second drop is within a second temperature range, the lower limit of said second temperature range being situated within +/−10° C. of the upper limit of said predetermined temperature range, wherein said fiber includes a stripped portion and a coated portion, and said second drop of adhesive covers only said stripped portion of said optical fiber and not said coated portion of said optical fiber, and further comprising an overlapping drop of an adhesive having a glass transition temperature located in said predetermined temperature range, said overlapping drop reinforcing the attachment established by said second drop between the substrate and the fiber, said overlapping drop covering said second drop and adjacent regions of said stripped and coated portions of said optical fiber.

5,185,836

OPTICAL FIBRE COUPLINGS

Peter D. Baker, Basingstoke, England, assignor to Smiths Industries Public Limited Company, London, England

Filed Jan. 29, 1992, Ser. No. 827,351
Claims priority, application United Kingdom, Feb. 8, 1991, 9102715
Int. Cl.[5] G02B 6/38
U.S. Cl. 385—61 10 Claims



1. In a coupling of the kind for interconnecting a first and second optical fibre, each fibre being providing with an enlarged termination of substantially spherical shape, the improvement wherein the coupling includes a first and second tubular support member, wherein each support member has a bore through which extends a respective one of the optical fibres, wherein the bore of each support member opens into a respective enlarged recess that flares outwardly towards the end of the support member and in which is seated a respective one of the enlarged terminations, wherein each support member has a layer of resilient material intermediate the recess and the termination, wherein the coupling includes a tubular passageway having a reflective surface, and wherein the support members are aligned with one another at opposite ends of the tubular passageway such that the terminations face one another and radiation transmitted from one optical fibre is focussed by its termination into the termination of the other optical fibre.

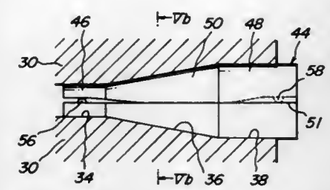
5,185,837

OPTICAL FIBER CONNECTOR INCLUDING FLEXIBLE FIBER HOLDING UNIT

Tokuichi Ayuta; Shigeo Takahashi, and Takao Hirose, all of Tokyo, Japan, assignors to Daiichi Denshi Kogyo Kabushiki Kaisha, Japan

Filed Apr. 20, 1992, Ser. No. 870,895
Claims priority, application Japan, Apr. 23, 1991, 3-037067[U]
Int. Cl.[5] G02B 6/26
U.S. Cl. 385—81 7 Claims

1. An optical connector comprising a generally cylindrical front body having inner surfaces partially tapered, a fiber holding unit made of a flexible material consisting of two parts whose mating surfaces are formed along their centers with grooves for holding an optical fiber and formed at front and rear portions with spacers for partially preventing intimate contact between the mating surfaces in the proximity of the spacers, the two assembled parts of the fiber holding unit forming cylindrical outer surfaces at front and rear ends and a tapered outer surface between the cylindrical outer surfaces so



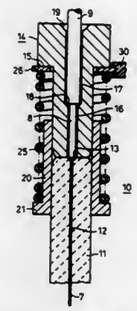
that the two assembled parts with the optical fiber interposed therebetween are able to be fitted in the front body, and a rear body having a front end to be threadedly engaged in the rear part of the inner surface of the front body to urge forwardly the two assembled parts inserted into the front body, thereby clamping the optical fiber between the parts of the fiber holding unit by a wedge effect owing to the tapered surfaces of the front body and the fiber holding unit.

5,185,838

CONNECTOR PIN FOR AN OPTICAL WAVEGUIDE CONNECTOR

Karl-Ernst Lüottgert, and Klaus Schulz, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

PCT No. PCT/DE89/00642, § 371 Date Jun. 24, 1991, § 102(e) Date Jun. 24, 1991, PCT Pub. No. WO90/07136, PCT Pub. Date Jun. 28, 1990
PCT Filed Oct. 5, 1989, Ser. No. 720,448
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1988, 3843733
Int. Cl.[5] G02B 6/36
U.S. Cl. 385—84 2 Claims



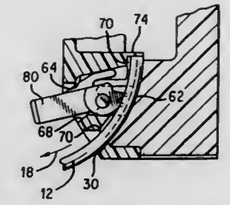
2. A connector for a cylindrical optical waveguide with a surrounding coating and a jacket enveloping the optical waveguide and the surrounding coating, said connector comprising:
a) a ceramic connector pin having a central bore accommodating a bare optical waveguide;
b) a busing and a flange pressed on to the ceramic connector pin;
c) a thrust washer mounted on the abutment;
d) a compression spring having a first end supported on the busing and having a second end supported on the thrust washer; and
e) an abutment forced into the bushing, and having a central bore accommodating the cylindrical optical waveguide, said central bore of the abutment including:
(i) a first section having a diameter terminating on the connector pin and corresponding to a diameter of the cylindrical optical waveguide with the surrounding coating; and
(ii) a second section having a diameter corresponding to the jacket of the cylindrical optical waveguide.

5,185,839

FIBER OPTIC CABLE RECEPTACLE

Edwin R. Newell, Wake Forest, and Jackie C. Sullivan, Wendell, both of N.C., assignors to Square D Company, Palatine, Ill.

Continuation-in-part of Ser. No. 433,940, Nov. 9, 1989, Pat. No. 5,048,920, which is a continuation-in-part of Ser. No. 242,359, Sep. 9, 1988, Pat. No. 4,911,517. This application Dec. 31, 1990, Ser. No. 635,841
Int. Cl.[5] G02B 6/36, 7/20
U.S. Cl. 385—90 34 Claims



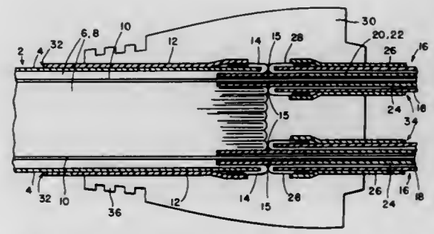
1. A fiber optic cable receptacle comprising:
a cover having a fiber opening through which said fiber optic cable extends; and
one way retention means for allowing the substantially unimpeded insertion of said fiber optic cable and for selectively impeding the withdrawal of said fiber optic cable from said retention means, said retention means although impeding withdrawal of said fiber optic cable not impeding insertion of said fiber optic cable, said retention means operatively associated with said cover.

5,185,840

BRANCHING METHOD FOR A MULTI-FIBER FIBEROPTIC CABLE

Roger Iapicco, Little Ferry, N.J., assignor to Computer Crafts, Inc., Hawthorne, N.J.

Filed May 6, 1991, Ser. No. 696,238
Int. Cl.[5] G02B 6/44
U.S. Cl. 385—100 25 Claims



1. A branching method for a multi-fiber fiberoptic cable, said cable comprised of an outer jacket surrounding a strength member of aramid fibers which in turn surrounds two or more buffered fibers, which comprises:
(A) preparing the multi-fiber fiberoptic cable by
(i) stripping off the cable jacket at a point along the cable,

VOL
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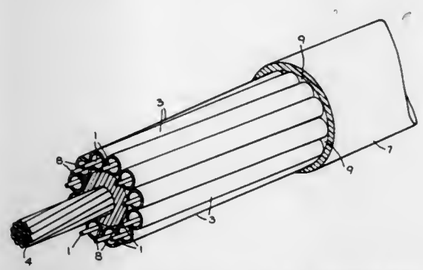
(ii) stripping off the strength member at a point beyond the point where the cable jacket is stripped off,
(iii) folding the remaining strength member back over the cable jacket,
(iv) securing the strength member in place about the cable jacket leaving a length of strength member fibers exposed about the end of the cable jacket,
(B) sliding a section of teflon tubing onto each buffered fiber such that a first portion of the section of teflon tubing extends into the interior of the cable,
(C) preparing a sheathing, said sheathing comprised of an outer jacket surrounding a strength member of aramid fibers which in turn surrounds a tube, for each buffered fiber by
(i) stripping off the sheathing jacket at one end of the sheathing,
(ii) folding the strength member back over the sheathing jacket,
(iii) securing the strength member in place about the sheathing jacket leaving a length of strength member fibers exposed about the end of the sheathing jacket,
(D) sliding a prepared sheathing onto each buffered fiber until a second portion of the section of teflon tubing extends into the interior of the sheathing, and
(E) encapsulating the prepared cable and the prepared sheathing in a PVC mold by means of an injection molding process such that the exposed strength member fibers about the cable and the exposed strength member fibers about each sheathing are captured by the PVC mold as said mold hardens.

5,185,841

OPTICAL FIBRE ELEMENT COMPRISING AN OPTICAL FIBRE HOUSING CONSTITUTED BY A POLYOLEFIN MATERIAL, AND AN H2-ABSORBING BUFFER

Claudio Bosisio, Brembate Sotto, and Antonio Campana, Milan, both of Italy, assignors to Pirelli Cavi S.p.A., Milan, Italy

Filed Nov. 8, 1991, Ser. No. 789,295
Claims priority, application Italy, Nov. 29, 1990, 22236 A/90
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—100 **6 Claims**



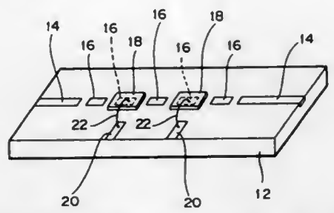
1. Optical fibre element comprising (a) at least one optical fibre housing comprising a polyolefin material having at least one additive which protects said housing against degradation due to at least one of oxidation, heat and the proximity of metals, and (b) at least one H_2-absorbing buffer, said element being characterized in that said additive is selected from the group consisting of anti-oxidants, stabilizers, metal deactivators and combinations thereof which causes a reduction in the hydrogen absorption capacity of less than 30% in said at least one H_2-absorbing buffer when said at least one buffer has been in contact with said polyolefin containing the selected said additive for 30 days at 100° C. in an air atmosphere saturated with water vapour at 150 mbar.

5,185,842

OPTICAL WAVEGUIDE TYPE WAVELENGTH FILTER

Hironao Hakogi, Kawasaki, Japan, assignor to Fujitsu limited, Kawasaki, Japan

Filed Oct. 4, 1991, Ser. No. 771,434
Claims priority, application Japan, Oct. 8, 1990, 2-268322
Int. Cl.[5] H01S *3/19;* **G02B** *6/10*
U.S. Cl. 385—129 **5 Claims**



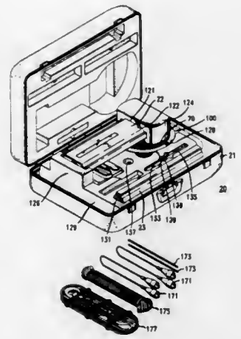
1. An optical waveguide type wavelength filter comprising:
a waveguide substrate;
an optical waveguide having a higher index of refraction than that of said waveguide substrate and being formed on said waveguide substrate;
a plurality of Fabry-Perot resonator means arranged in a row in said optical waveguide along a length thereof, each of said Fabry-Perot resonator means having a length of a predetermined resonator length of propagating light; and
refractive index varying means provided on at least one of said Fabry-Perot resonator means.

5,185,843

RESTORATION KIT FOR COMMUNICATIONS CABLE

James A. Aberson, Atlanta; Eugene Halupke, Marietta, and William A. Vicory, Duluth, all of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jan. 28, 1992, Ser. No. 826,703
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—134 **17 Claims**



1. A restoration kit for providing service around a damage location of a communications cable, said restoration kit comprising:
a carrying case which includes first and second portions adapted to be secured together;
a mounting platform which is disposed within said first portion of said carrying case and which includes a recess therein;
a deployment reel which includes two spaced flanges and a hub extending between said flanges and which is supported on said mounting platform;

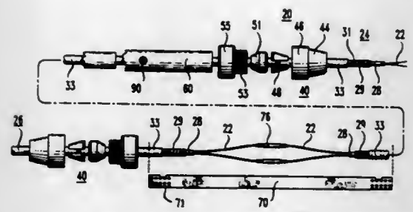
a first closure which includes connective means disposed therein to facilitate connecting of optical fibers of optical fiber cables thereto;
means for holding said first closure secured with respect to one of the flanges of said deployment reel;
a second closure which is supported on said mounting platform and which includes optical fiber connective means to facilitate connections between optical fibers;
a length of restoration optical fiber cable which is wound in convolutions on said hub of said deployment reel, said restoration optical fiber cable having one end portion, the optical fibers of which are adapted to be connected through connective means in said first closure to optical fibers of the damaged cable on one side of a damage location, secured in said first closure and another end portion, the optical fibers of which are adapted to be connected through connective means in said second closure to optical fibers of the damaged cable on an opposite side of the damage location, secured in said second closure; and
a payout spindle which is supported to said mounting platform and which is adapted to have an end portion disposed in said recess in said mounting platform to cause said spindle to be disposed to facilitate the mounting of said deployment reel on said spindle such that said second closure together with the other end portion of said length of restoration optical fiber cable may be moved generally in any radial direction from said spindle in a direction normal to an axis of rotation of said reel to a location along the damaged cable which is remote from the damage location and at which connective arrangements are made within said second closure between optical fibers of said restoration cable and optical fibers of the damaged cable.

5,185,844

CLOSURE FOR OPTICAL FIBER CONNECTIVE ARRANGEMENTS AND METHOD OF PROVIDING SAME

William H. Bensel, III, Lawrenceville, and Gary S. Cobb, Norcross, both of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 29, 1991, Ser. No. 736,850
Int. Cl.[5] G02B *6/26*
U.S. Cl. 385—135 **17 Claims**



1. An optical fiber closure for holding connections between optical fiber of one cable which enters the closure at one end thereof and optical fiber of another cable which enters the closure at an opposite end thereof said closure comprising:
a longitudinally extending member for supporting portions of cables to be connected and connective arrangements therefor;
a tubular member in which is disposed said longitudinally extending member, said tubular member having an internal cross section normal to a longitudinal axis of said closure, the largest dimension of the cross section being less than the product of two and a predetermined minimum radius of a path in which optical fiber may be routed without inducing excessive stress into the fiber;
a cable gripping and sealing assembly disposed at each end of said tubular member and secured thereto for allowing a cable end portion to be extended therethrough into said tubular member to allow optical fiber thereof to become disposed in said longitudinally extending member and for providing a clamping, sealing engagement with the cable end portion which extends therethrough to prevent the ingress of moisture into said closure; and
at least one optical fiber connective means which is supported by said longitudinally extending member and which is adapted to provide a connective arrangement for two optical fibers which have been extended into said tubular member without any optical fiber being disposed in a path which includes at least a semi-circular loop having the predetermined minimum radius.

15. A method of providing an enclosed connective arrangement of fiber of one cable to fiber of another cable, said method including the steps of:
removing outer plastic jacket, metallic shield and core tube from an end portion of each of two optical fiber cables to expose predetermined lengths of fiber, core tube and metallic shield;
moving a cable gripping and sealing assembly onto the jacketed portion of each cable;
moving a tubular member onto the jacketed portion of one cable;
securing the end portion of one cable to an electrical bonding and support member such that the exposed metallic shield thereof is adjacent to and connected electrically to one end of the support member;
securing temporarily the end portion of the other cable to the bonding and support assembly such that the exposed metallic shield thereof is spaced from an end of the support member to cause the exposed fiber thereof to overlap the exposed fiber of the one cable;
causing fiber of the one cable to be connected to fiber of the other cable through a connective arrangement without stressing the fibers;
positioning the connective arrangement within the support member while releasing the end portion of the other cable from the support member;
moving the other cable and portion along the support member in a direction away from the one cable and portion to reposition its metallic shield adjacent to an opposite end of the support member;
securing the end portion of the other cable to the support member and connecting electrically the exposed shield thereof to an end portion of the support member;
moving the tubular member to enclose the support member; and
moving each cable gripping and sealing assembly toward the tubular member and securing the cable gripping and sealing assemblies to the tubular member to complete the closure and to provide a sealing engagement with the cables.

5,185,845

OPTICAL FIBER CLOSURE HAVING ENHANCED STORAGE CAPABILITY

Wesley W. Jones, Lawrenceville, assignor to AT&T Bell Laboratories, Murray Hill, N.J.

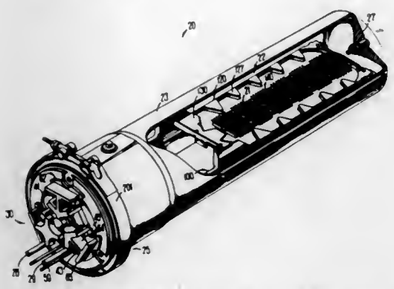
Continuation-in-part of Ser. No. 627,072, Dec. 13, 1990. This application Oct. 15, 1991, Ser. No. 776,720
Int. Cl.[5] G02B *6/36, 7/26*
U.S. Cl. 385—135 **25 Claims**

1. An optical fiber cable closure, said closure comprising:
a cover having a closed end and an open end; and
a cable termination assembly which is adapted to become disposed within said cover, said cable termination assembly including:
cable entry means through which cables to be provided with connective arrangements are routed into said closure;
support means which extends from said cable entry means and which has a free end adapted to be disposed adjacent to said closed end of said cover;
at least one tray which is mounted on said support means

VOL 1147 ISS 2 FE 9 1993 UMI

for holding optically connected portions of optical fibers of cables; and

at least one organizing module which is mounted in said at least one tray, each said module including compliant



means for holding a plurality of optical fiber connective arrangements which may include different kinds of connective arrangements, said tray being capable of holding a plurality of said modules.

5,185,846

OPTICAL FIBER ALIGNMENT APPARATUS INCLUDING GUIDING AND SECURING PLATES

Nagesh R. Basavanhally, Trenton; Richard Borutta, Lawrenceville; Theodore Sizer, II, Little Silver, and James A. Walker, Howell, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 705,229, May 24, 1991, Pat. No. 5,135,590. This application Apr. 1, 1992, Ser. No. 861,694

Int. Cl.[5] G02B *6/04*

U.S. Cl. 385—137 **5 Claims**



1. An optical device comprising:

a bundle of optical fibers;

a planar securing member having therein a first array of first apertures;

a planar guiding member having therein a second array of second apertures;

the securing member and guiding member being substantially parallel with the first and second arrays of apertures being in substantial axial alignment;

each of said first apertures and said securing member having a wider dimension on the side of the securing member facing the guiding member than on the side of the securing member remote from the guiding member;

each optical fiber having a first end portion extending through the guiding member and then into the securing member;

the first end portions of the optical fibers being bonded together and to the guiding member and the securing member by a bonding medium.

5,185,847

OPTICAL AMPLIFIER IN THE 1.26 μM TO 1.34 μM SPECTRUM RANGE

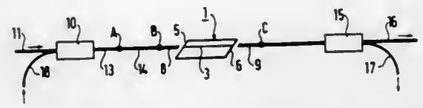
Hervé Fevrier, Massy; Jean-Francois Marceron, Courcouronnes, and Christian Le Sergent, Marcoussis, all of France, assignors to Alcatel N.V., Amsterdam, Netherlands

Filed Apr. 17, 1992, Ser. No. 870,305

Claims priority, application France, Apr. 22, 1991, 91 04929

Int. Cl.[5] G02B *6/00*; H01J *3/30*

U.S. Cl. 385—141 **8 Claims**



1. An optical amplifier in the 1.26 μm to 1.34 μm spectrum range, comprising a solid substrate of fluoride glass doped with praseodymium in which a three-dimensional monomode waveguide is formed having an index difference An relative to the index of the fluoride glass lying in the range 4×10^{-3} and 8×10^{-2}, said waveguide being associated by coupling means with an optical pump having a wavelength equal to 1.02 μm ±0.1 μm.

5,185,848

NOISE REDUCTION SYSTEM USING NEURAL NETWORK

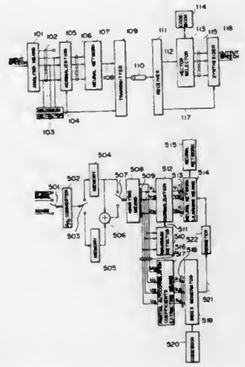
Toshiyuki Aritsuka, Nara; Akio Amano, Higasbimurayama; Nobuo Hataoka, Kanagawa, and Akira Ichikawa, Musashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 12, 1989, Ser. No. 448,949

Claims priority, application Japan, Dec. 14, 1988, 63-313859

Int. Cl.[5] G01L *7/08, 5/06*

U.S. Cl. 395—2 **16 Claims**



1. A noise reduction system for transmitting a noise-suppressed speech signal, comprising:

speech analysis means for a analyzing a noisy speech input signal thereby converting the speech signal into feature vectors;

maximum detector means for detecting a maximum value from among the elements of said feature vectors obtained by said speech analysis means;

normalization means for normalizing values of the elements of said feature vectors on the basis of the maximum value detected by said maximum detector means;

a neural network for receiving said normalized feature vectors and extracting an index of a representative vector

corresponding to a noise-free speech signal equivalent to said noisy speech input signal from a codebook generated by previously clustering a set of feature vectors of the noise-free speech signal and storing representative vectors of said feature vectors of the noise-free speech signal together with corresponding indices of said representative vectors; and

transmitter means for transmitting both the maximum value detected by said maximum detector means from among the elements of said feature vectors and the index extracted from said codebook by said neural network.

5,185,849

DIGITAL FUZZY INFERENCE APPARATUS HAVING TIME DIVISIONAL CONTROL FUNCTION

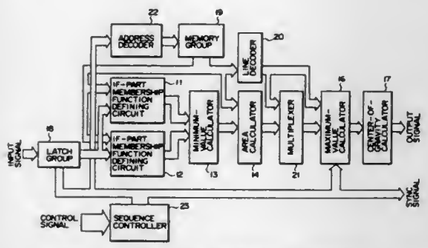
Azuma Miyazawa, Mitaka; Koji Mizobuchi, and Takashi Suzuki, both of Hachiojhi, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 536,444, Jun. 12, 1990, abandoned. This application Aug. 20, 1991, Ser. No. 750,707

Claims priority, application Japan, Jun. 27, 1989, 1-164513; Mar. 19, 1990, 2-68639

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—3 **18 Claims**



1. A digital fuzzy inference apparatus comprising:

latch means for latching a plurality of input signals simultaneously and holding said input signals over one inference period;

parameter storage means for storing parameters as a plurality of sets of parameters for defining membership functions constituting a plurality of fuzzy rules;

parameter switching means for causing said parameter storage means to sequentially and selectively output one of the plurality of sets of parameters in accordance with a clock pulse;

single operation means for receiving each of said plurality of sets of parameters sequentially when the input signal is latched in said latch means, and performs a fuzzy inference operation with respect to the input signal stored in said latch means on a time-divisional basis in accordance with each of said plurality of fuzzy rules and by using said parameters, and outputting a degree to which the input signal meets the rule;

operation result storage means for storing the output from said operation means, as the operation result, at a storage position designated by the parameters;

center-of-gravity calculating means for obtaining a center-of-gravity of values stored in said operation result storage means when all the fuzzy rule operation based on the plurality of sets of parameters are completed; and

repeat control means for causing said latch means to latch a plurality of input signals after said one inference period, and for repeating said fuzzy inference operation.

5,185,850

COLOR TRANSFORMATION METHOD AND APPARATUS FOR TRANSFORMING PHYSICAL TO PSYCHOLOGICAL ATTRIBUTE USING A NEURAL NETWORK

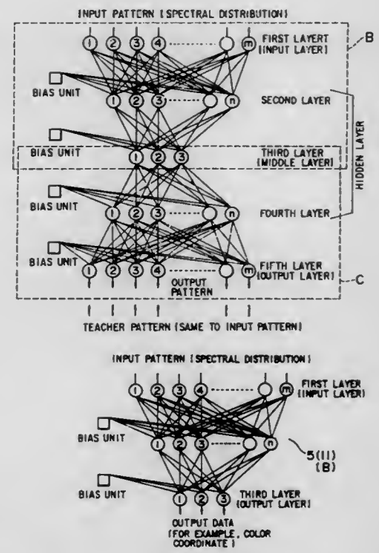
Shiro Usui, 2-1 Higashiura, Kitayama-cho, Toyohashi-City, Aichi-Prefecture, 440; Shigeki Nakauchi, and Masae Nakano, both of Toyohashi, all of Japan, assignors to Toyo Ink Mfg. Co., Ltd., Tokyo and Shiro Usui, Toyohashi, both of, Japan

Filed Nov. 30, 1990, Ser. No. 621,058

Claims priority, application Japan, May 22, 1990, 2-132347

Int. Cl.[5] G06F *15/18*

U.S. Cl. 395—22 **6 Claims**



1. A method of non-linearly transforming from multidimensional physical information to color sensation information sensed by living bodies comprising steps of

transforming data of light in respect to a spectral distribution of light into the form of an electrical signal;

sampling said data of light on a frequency coordinate axis in respect of a spectral intensity of light, said data describing a multidimensional spectral distribution of light;

establishing a neural network by forming an input layer of three or more units, an output layer of three or more units, and three or more hidden layers having a middle hidden layer including three units;

presenting said data on spectral distribution of light in the form of said electrical signal to said neural network as an input pattern as well as a teacher signal;

training said neural network by use of said teacher signal; and

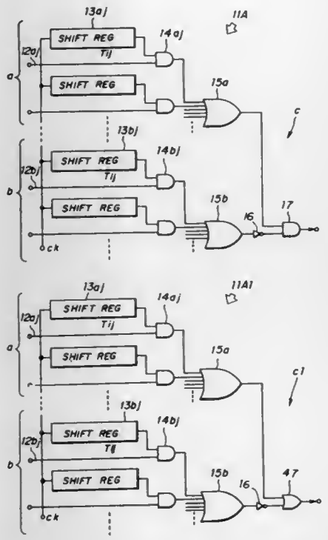
extracting color sensation information from said middle hidden layer of said neural network, said color sensation information having a representation as a set of lightness, value, chroma, and hue in the Munsel color system, or as components in a cylindrical coordinate corresponding to said set of lightness, value, chroma, and hue, or in the form of a component in a three-dimensional rectangular coordinate corresponding to said cylindrical coordinate in a one-to-one relationship.

VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,851
NEURON UNIT AND NEURON UNIT NETWORK

Toshiyuki Furuta; Kiroyuki Horiguchi, and Hirotoshi Eguchi, all of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 550,404, Jul. 10, 1990. This application Mar. 24, 1992, Ser. No. 856,645
Claims priority, application Japan, Jul. 12, 1989, 1-179629; Mar. 12, 1990, 2-60739; Mar. 16, 1990, 2-67937
Int. Cl.[5] G06F *15/18*
U.S. Cl. 395—27 9 Claims



1. A neuron unit for simultaneously processing a plurality of binary input signals and for outputting an output signal which is indicative of a result of the processing, said neuron unit comprising:

a plurality of first input lines for receiving first binary input signals which undergo transitions with time;

a plurality of second input lines for receiving second binary input signals which undergo transitions with time;

first and second memory means for storing weighting coefficients;

first gate means for successively obtaining a logical product of one of said first binary input signals received from said first input lines and a corresponding one of the weighting coefficients read out from said first memory means for each of said first binary input signals;

second gate means for successively obtaining a logical product of one of said second binary input signals received from said second input lines and a corresponding one of the weighting coefficients read out from said second memory means for each of said second binary input signals;

third gate means for obtaining a logical sum of logical products output from said first gate means;

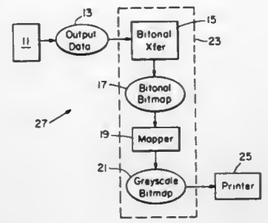
fourth gate means for obtaining a logical sum of logical products output from said second gate means; and

output means including an inverter for inverting the logical sum output from said fourth gate means and a gate for obtaining one of a logical product and a logical sum of the logical sum output from said third gate means and an inverted logical sum output from said inverter, said gate outputting an output signal of said neuron unit.

5,185,852
ANTIALIASING APPARATUS AND METHOD FOR COMPUTER PRINTERS

Christopher M. Mayer, Westford, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed May 31, 1991, Ser. No. 708,482
Int. Cl.[5] G06K *15/00*
U.S. Cl. 395—109 25 Claims



1. In a computer system having a digital processor, a printer, and means for generating a bitonal bitmap to support printer printout of processor output, the bitonal bitmap having a plurality of pixels, each pixel having a value, printer apparatus comprising:

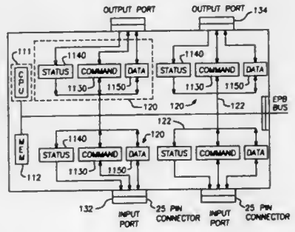
a plurality of predetermined grayscale values derived from a learning pattern, the learning pattern representing typical continuous data; and

a mapping member coupled between means for generating a bitonal bitmap and the printer for forming a grayscale bitmap from the bitonal bitmap, the grayscale bitmap having a plurality of pixels, each pixel of the grayscale bitmap corresponding to a respective pixel of the bitonal bitmap, the mapping member receiving the bitonal bitmap from the generating means and for each pixel of the bitonal bitmap, assigning a predetermined grayscale value to the corresponding pixel in the grayscale bitmap.

5,185,853
EXPANDABLE PRINTER BUFFER SYSTEM

Shih-Tsun Cheng, and Yung-Yen Lee, both of Lungtan Taoyuan, Taiwan, assignors to Acer Incorporated, Hsin Chu, Taiwan

Filed Jan. 3, 1991, Ser. No. 638,834
Int. Cl.[5] G06K *15/00*
U.S. Cl. 395—115 3 Claims



1. An expandable printer buffer system for controlling the flow of data from a plurality of data sources to one or more printers in response to data, status and command signals from the sources, said system comprising:

a plurality of buffers, each buffer having at least one or more input ports and one or more output ports, each input port connected to and receiving signals from a data source, each output port connected to a printer, each of said buffers including a first and a second storage means, the first storage means storing status signals for the printer connected to the output port of such buffer to indicate whether such printer is busy or idle and data signals destined for such printer, the second storage means storing data, status and command signals from the data source;

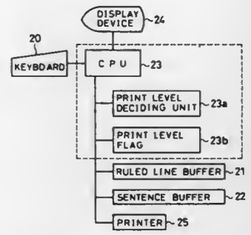
a bus connecting the buffers; and

controller means connected to the bus for interrogating the first and second storage means of the buffers through said bus in order to detect whether the second storage means of any buffer stores any data signals provided by a data source and whether the first storage means stores any status signals indicating that any printer connected to any of the buffers is idle, wherein said controller means causes data signals stored in the second storage means of any of the buffers to be transferred to the first storage means of a buffer when the status signals stored in said first storage means of such buffer indicate that the printer connected to such buffer is idle, so that said data signals are available to such printer for printing.

5,185,854
DOCUMENT PROCESSING APPARATUS HAVING A RULED LINE PRINT CONTROL FUNCTION

Hiroichi Yoshida, Nara, and Hiroko Murai, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 18, 1990, Ser. No. 467,018
Claims priority, application Japan, Jan. 19, 1989, 1-10156
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—117 8 Claims



1. A document processing apparatus having a ruled line print control function, comprising:

input means for inputting character information, ruled line information including data of a straight line in a frame and instructions about printing;

storage means operatively connected to said input means, for storing the character information and the ruled line information;

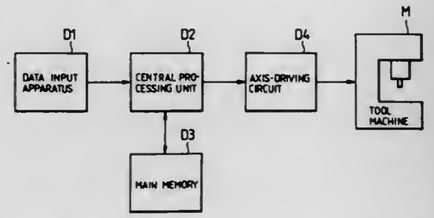
ruled line print control means, operatively connected to said input means and said storage means, for reading the ruled line information existing in a range to be printed from said storage means when instructions to print are applied from said input means and controlling the printing for every ruled line information; and

printing means operatively connected to said ruled line print control means, for printing the character information and the ruled line information, said input means further comprising means for selecting among a plurality of printing modes, said plurality of printing modes comprising a full print mode and a limited print mode.

5,185,855
CURVED SURFACE DESIGNING METHOD

Kiyotaka Kato, and Takashi Okamoto, both of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Continuation of Ser. No. 226,015, Jul. 29, 1988, abandoned. This application Oct. 7, 1991, Ser. No. 770,787
Claims priority, application Japan, Jul. 29, 1987, 62-187833; Nov. 27, 1987, 62-297851
Int. Cl.[5] G06F *15/626*
U.S. Cl. 395—129 18 Claims



1. A method of operating a CAD/CAM system comprising designing a curved surface in accordance with input data and generating control signals for said CAD/CAM system in accordance with the designed curved surface, said method comprising the steps of:

a first step of inputting data identifying a number n of sides of a polygonal curved surface as well as edge shape data for said sides, where n is an integer greater than 3;

a second step of generating a regular n-sided polygon in a two-dimensional parameter space in accordance with the number n of the inputted sides;

a third step of obtaining perpendiculars from an arbitrary point P inside said regular n-sided polygon onto the sides thereof or prolonged lines of said sides in said two-dimensional parameter space in accordance with the number n of the inputted sides;

a fourth step of obtaining the length of said perpendiculars between said point P and respective sides of said polygon as distance parameters;

a fifth step of obtaining blending values which take the value 1 on one of said sides of said n-sided polygon and the value 0 on the other sides, which blending values are interpolated smoothly from the value 0 to the value 1 within said regular n-sides polygon, a partial differential of each blending value with respect to one of said distance parameters having a value of zero at the side associated with said one distance parameter;

a sixth step of mapping said point P onto said sides and obtaining, as boundary parameters, ratios of the portions of said sides which are divided by said mapped points;

a seventh step of generating three-dimensional coordinate values and values of tangent vectors on said sides on the basis of said boundary parameters;

an eighth step of calculating points on said curved surface on the basis of said distance parameters, said blending values, said three-dimensional coordinate values and said tangent vectors; and

a ninth step of generating said control signals for controlling said CAD/CAM system, using said calculated points.

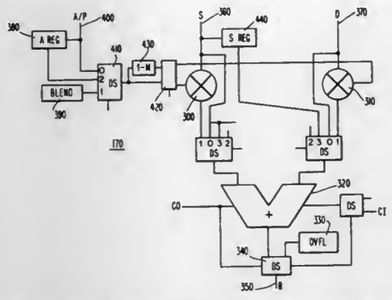
VOL 1147 ISS 2 FEB 9 1993 UMI

5,185,856

ARITHMETIC AND LOGIC PROCESSING UNIT FOR COMPUTER GRAPHICS SYSTEM

Byron A. Alcorn, Fort Collins; Robert W. Cherry, Loveland; Mark D. Coleman, and Brian D. Rauchfuss, both of Fort Collins, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 16, 1990, Ser. No. 495,005
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—130 **11 Claims**



1. A circuit for performing arithmetic operations on raster scan graphics data, comprising:
opcode means for selecting an arithmetic function;
data source means for providing graphics data;
bus means for bussing data from said data source means;
a blend register for storing a blend factor;
an alpha register for storing an alpha value;
a data selector coupled to said blend register and said alpha register and responsive to said opcode means in selecting between said blend factor and said alpha value and outputting the selected data;
complementing means for complementing the output of said data selector;
multiplication means for multiplying an output of said complementing means with graphics data from said data source means in accordance with an arithmetic function selected by said opcode means to obtain transformed pixel value data;
combining means interfaced with the multiplication means for adding transformed pixel value data to other pixel value data from said data source means; and
processing means interfaced with the combining means for storing overflow data from the combining means when said combining means overflows.

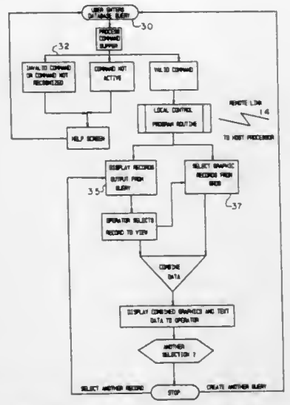
5,185,857

METHOD AND APPARATUS FOR MULTI-OPTIONAL PROCESSING, STORING, TRANSMITTING AND RETRIEVING GRAPHICAL AND TABULAR DATA IN A MOBILE TRANSPORTATION DISTRIBUTABLE AND/OR NETWORKABLE COMMUNICATIONS AND/OR DATA PROCESSING SYSTEM

A. Martin Rozmanith, and Anthony I. Rozmanith, both of 118 W. Riding Dr., Cherry Hill, N.J. 08003

Continuation-in-part of Ser. No. 535,916, Jun. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 521,714, May 7, 1990, which is a continuation-in-part of Ser. No. 494,115, Mar. 14, 1990, which is a continuation-in-part of Ser. No. 450,606, Dec. 13, 1989. This application Jun. 27, 1990, Ser. No. 544,826
The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—148 **26 Claims**

1. A method for controlling the transmission and retrieval of tabular and graphical data in a mobile system as recited in the followed steps;
selecting a presentation option from a station located on the mobile system;
transmitting said selected presentation option to a host processor located on the mobile system;
selecting a graphical and tabular data command using said host processor responsive to said transmitted selected presentation option;



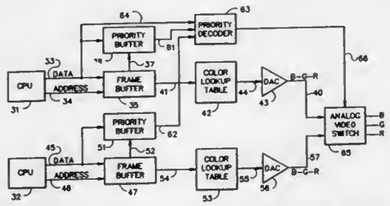
transmitting said responsive graphical and tabular data command from said host processor to said local station on said mobile system;
selecting a graphical presentation from a responsive to said graphical and tabular data command; and
displaying said selected graphical presentation on a display associated with said station located on said mobile system.

5,185,858

IMAGE PRIORITY VIDEO SWITCH

Kevin A. Emery, and Michael J. Bailey, both of San Diego, Calif., assignors to Megatek Corporation, San Diego, Calif.

Filed Dec. 1, 1989, Ser. No. 444,767
Int. Cl.[5] G06F *15/626*
U.S. Cl. 395—158 **11 Claims**



1. In a graphics display system having a display screen, an image priority video signal determination apparatus for determining the video signal to be applied to the display screen, said apparatus comprising:
central processing unit means having at least two outputs for data signals and at least two address outputs;
buffer means coupled to said data outputs and to said address outputs, said buffer means storing the images which are selectively displayed on the screen, each said buffer means having video data outputs and priority outputs coupling a priority level to each data signal;

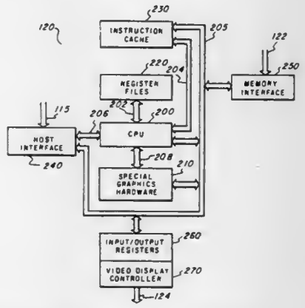
priority decoder means connected to said priority outputs, said priority decoder means comparing the relative priority levels of the priority outputs and providing a select control signal output to control output signals on a pixel-by-pixel basis based on the decoded priority levels; and
analog video switch means connected to the video data outputs and to said select control signal output, said analog video switch means having an output controlling the video signal on the display screen on a pixel-by-pixel basis as controlled by the select control signal.

5,185,859

GRAPHICS PROCESSOR, A GRAPHICS COMPUTER SYSTEM, AND A PROCESS OF MASKING SELECTED BITS

Karl M. Guttag, Missouri City; Michael Asal, Sugar Land, both of Tex.; Richard Simpson, Bedford, England; Thomas Preston, Middlebury, Conn., and John Sharkey, Glasgow, United Kingdom, assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 387,404, Jul. 31, 1989, Pat. No. 5,056,041, which is a continuation of Ser. No. 947,944, Dec. 31, 1986, abandoned, which is a continuation-in-part of Ser. No. 790,299, Oct. 22, 1985, abandoned. This application Aug. 15, 1991, Ser. No. 745,642
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—164 **24 Claims**



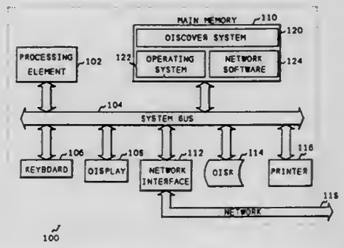
1. A graphics computer system comprising:
a. a host processing system including at least one microprocessor, read only memory, random access memory and assorted peripheral devices for forming a complete computer system, said host processing system furnishing host data determining the content of a visual image to be presented;
b. graphics memory circuits including video random access memory and read only memory, said video random access memory being capable of storing bit mapped display data signals representing said visual image and being capable of storing said host data, said video random access memory and said read only memory both being capable of storing instruction signals used for processing said host data and said display data;
c. video display circuits connected to said video random access memory, said video display circuits being capable of forming said visual image in response to receipt of said display data; and
d. graphics processor circuits including:
i. central processing unit circuits capable of performing general purpose data processing, including a number of arithmetic and logic operations normally included in a general purpose processing unit, by executing said instructions accessed from said graphics memory circuits, said central processing unit circuits processing at least said host data to produce said display data in response to executing said instructions;
ii. general bus leads connected between said central processing unit circuits and said graphics memory circuits, said general bus leads carrying said host data and display data and said instructions as words of parallel data bits between said central processing unit circuits and said graphics memory circuits; and
iii. masking circuits separate from said central processing unit circuits, said masking circuits being connected to said general bus leads and having mask data inputs adapted to receive mask data in the form of parallel bits, said masking circuits masking in parallel individual bits of at least said display data in response to at least said mask data bits.

5,185,860

AUTOMATIC DISCOVERY OF NETWORK ELEMENTS

Jeff C. Wu, Ft. Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 3, 1990, Ser. No. 519,187
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—200 **16 Claims**



1. A computer network node discovery process for determining nodes connected to a computer network, said process comprising the steps of:
(a) obtaining, from one node of a set of known nodes on said computer network, a list of addresses of one or more other nodes with which said one node communicates comprising the steps of
(a1) obtaining from each bridge unit connected to said network a list of addresses of all nodes accessible by said bridge unit,
(a2) obtaining from each route unit connected to said network a list of addresses of all nodes accessible by said router unit,
(a3) obtaining from each gateway unit connected to said network a list of addresses of all nodes accessible by said gateway unit,
(b) repeating step (a) for each of said other nodes obtained; and
(c) storing said list of node addresses in a file;
(d) repeating steps (a) through (c) at regular time intervals; whereby said list of node addresses may be displayed to a user of said computer network.

5,185,861

CACHE AFFINITY SCHEDULER

Andrew J. Valencia, Portland, Oreg., assignor to Sequent Computer Systems, Inc., Beaverton, Oreg.

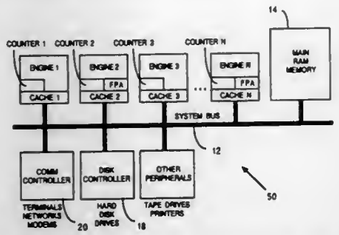
Filed Aug. 19, 1991, Ser. No. 747,658
Int. Cl.[5] G06F *12/00, 15/16*
U.S. Cl. 395—200 **25 Claims**

1. A computing system, comprising:
multiple computing engines that run processes, the multiple computing engines being associated with respective cache memories and respective affinity run queues;

VOL
1147
ISS
2
FE
9
1993
UMI

cache context estimating means for estimating an amount of cache context of a particular one of the cache memories with respect to a particular one of the processes;

enqueuing means for enqueuing certain ones of the processes to the affinity run queues; and



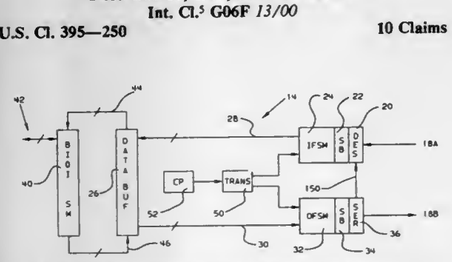
decision means responsive to the estimated amount of cache context for deciding whether to enqueue the particular process to a particular one of the affinity run queues.

5,185,862

APPARATUS FOR CONSTRUCTING DATA FRAMES FOR TRANSMISSION OVER A DATA LINK

Daniel F. Casper, Poughkeepsie; Thomas A. Gregg, Highland; John R. Flanagan, Staatsburg, all of N.Y.; Matthew J. Kalos, Tucson, Ariz., and Bjorn O. Liencres, Palo Alto, Calif., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Oct. 30, 1989, Ser. No. 428,798
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—250 **10 Claims**



1. Apparatus for constructing a frame to be transmitted over a data link, said apparatus comprising:

a data buffer for storing data to be transmitted in the frame;

a header buffer for storing frame header information;

a control register for containing a description of the frame to be generated; and

state machine means for constructing a frame to be transmitted using the contents of said header buffer and said data buffer in accordance with the description in said control register.

5,185,863

BYTE-WIDE ELASTICITY BUFFER

James R. Hamstra, Shorewood, Minn.; Ronald S. Perloff, Poway, and Louise Y. Yeung, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

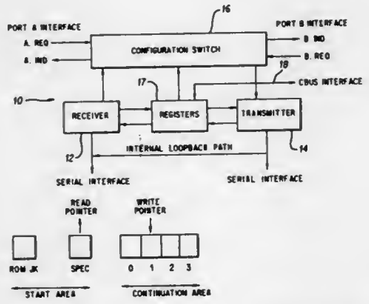
Filed Dec. 1, 1989, Ser. No. 444,619
Int. Cl.[5] H04L *1/00, 25/40;* **G08C** *25/00*
U.S. Cl. 395—250 **10 Claims**

1. An elasticity buffer utilizable in a network station for synchronizing the writing of received information characters to elasticity buffer storage in accordance with the cycles of a receive clock signal recovered from an input signal to the network station, the input signal including the received information characters, and the reading from elasticity buffer storage of stored received information characters in accordance with the cycles of a local clock signal generated at the network station, the elasticity buffer comprising:

(a) a core memory that includes a first section comprising a first plurality of sequentially-arranged storage elements for storing information characters and a second section comprising a second plurality of sequentially-arranged storage elements for storing information characters;

(b) write pointer means responsive to a predetermined write signal provided at a write initiate cycle of the receive clock signal for initiating the sequential writing of information characters to the core memory beginning with a first preselected storage element of the first section and continuing sequentially first through the storage elements of the first section subsequent to the first preselected storage element and then through the sequentially-arranged storage elements of the second section;

(c) read pointer means responsive to a predetermined read-start signal provided at a read initiate cycle of the local clock signal, the read initiate cycle being subsequent to the write initiate cycle, for initiating the reading of information characters from the core memory beginning with a second preselected storage element prior to the first preselected storage element in the sequence of storage element comprising the first section and continuing sequentially through the storage elements of the first section subsequent to the second preselected storage element and then through the sequentially-arranged storage elements of the second section;



(d) recentering means connected to the write pointer means and to the read pointer means and responsive to a first specified characteristic of the sequence of information characters for routing the write pointer means to the first preselected storage element of the first section and the read pointer means to the second preselected storage element of the first section; and

(e) delay-by-one means connected to the recentering means and responsive to a second specified characteristic of the sequence of information characters for delaying the routing of the read pointer means to the second preselected storage element of the first section.

5,185,864

INTERRUPT HANDLING FOR A COMPUTING SYSTEM WITH LOGICAL DEVICES AND INTERRUPT RESET

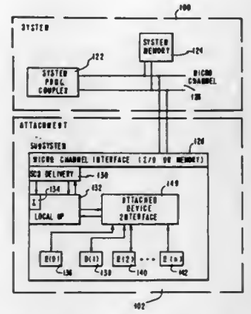
Francis M. Bonevento; Chester A. Heath, both of Boca Raton; Ernest N. Mandese, Boynton Beach, and Richard N. Mendelson, Highland Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 16, 1989, Ser. No. 367,391
Int. Cl.[5] G06F *13/24*
U.S. Cl. 395—275 **33 Claims**

1. In a computing system including a host processor and at least one intelligent subsystem having attached devices, with the one intelligent subsystem and the devices each being viewed by a logical device by said host processor, with each being assigned a device identification number, the combination comprising:

at least one port at said at least one intelligent subsystem for presenting logical interrupts, with said at least one port having a plurality of bit positions, with each bit position being assigned to a different one of said logical devices in accordance with the assigned device identification number, with a given bit position being in a first state when at least one logical interrupt is pending from the logical device assigned to that bit position, and being in a second state when no logical interrupts are pending from the logical device assigned to that bit position;

means for providing a single physical interrupt to a single



port at said host processor in response to the presentation of one or more logical interrupts from any of the logical devices;

means for reading said one port at said at least one intelligent subsystem by said host processor to determine which of said logical devices have logical interrupts presented; and

means for providing a reset signal from said host processor to a given logical device to clear each logical interrupt which has been processed by said host processor relative to said given logical device, with the bit position in said at least one port at said at least one intelligent subsystem which is associated with said given logical device being switched from said first state to said second state only when all presented logical interrupts for said given logical device have been processed by said host processor.

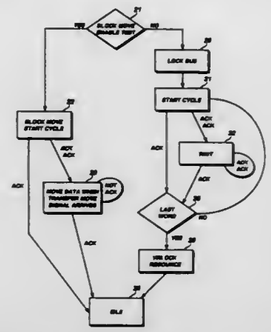
5,185,865

SYSTEM FOR SIMULATING BLOCK TRANSFER WITH SLAVE MODULE INCAPABLE OF BLOCK TRANSFER BY LOCKING BUS FOR MULTIPLE INDIVIDUAL TRANSFERS

Robert Pugh, Los Gatos, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Aug. 4, 1989, Ser. No. 389,759
Int. Cl.[5] G06F *13/32, 13/42*
U.S. Cl. 395—275 **4 Claims**

1. The method of accomplishing a block transfer of information over a NuBus protocol bus having associated therewith a plurality of individual computer modules comprising the steps of testing to determine whether an addressed module is capable of accomplishing a NuBus protocol block transfer; conducting such a transfer if that module is capable of accomplishing a NuBus protocol block transfer; conducting a pseudo-block transfer if that module is not capable of accomplishing a NuBus protocol block transfer comprising the steps of locking the bus, conducting a series of individual data transfer operations without arbitration between the individual operations during the period the bus is locked, terminating the individual operations, and unlocking the bus; and in which the step of conducting a series of individual data transfer operations without arbitration between the individual operations during the period the bus is locked comprises the steps of initiating a start cycle; transferring a word of data and waiting for an acknowledge cycle; testing whether additional words are to be transferred; and



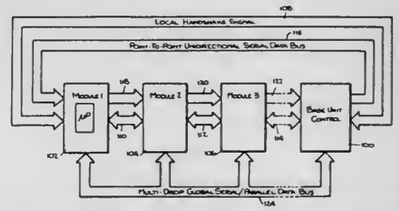
continuing the steps of initiating a start cycle, transferring a word of data, and waiting for an acknowledge cycle until all words of data have been transferred.

5,185,866

DUAL MODE COMMUNICATION AMONG PLURALITY OF PROCESSORS USING THREE DISTINCT DATA CHANNELS EACH HAVING DIFFERENT FUNCTION AND OPERATIONS

Robert Francisco, New Fairfield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 30, 1988, Ser. No. 292,058
Int. Cl.[5] G06F *13/12, 13/38, 13/00*
U.S. Cl. 395—325 **6 Claims**



1. In a material processing system comprising a plurality of material processing stations and means for transporting articles to be processed serially through said material processing stations in a given order, the improvement comprising:

a processing station computer in each of said material processing stations, one of said computers operating as a central processor and the remaining processing station computers operating as peripheral processors;

a first data channel serially interconnecting each of said peripheral processors with said central processor;

a second data channel connecting each of said peripheral processors directly with said central processor; and

a third data channel interconnecting each of said processing station computers with adjacent ones of said processing station computers, said first, second and third data channels each performing a different data processing operation for controlling serial processing of articles transported through said material processing stations, wherein during run mode each of said peripheral processors generates a record of operation and error messages, said peripheral processor passing the record of operation to a successive serially connected one of said peripheral processors along said third data channel, and passing said error messages

VOL
1147
ISS
2
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1993
UMI

along said second data channel, said first data channel being rendered inoperative during said run mode

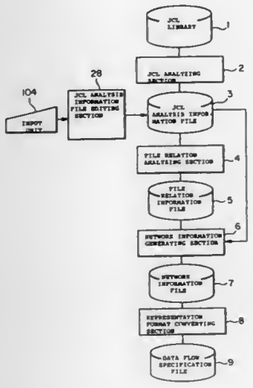
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5,185,867

METHOD AND APPARATUS FOR AUTOMATICALLY GENERATING SOFTWARE SPECIFICATIONS

Kisio Ito, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 15, 1989, Ser. No. 323,662
Claims priority, application Japan, Mar. 18, 1988, 63-63295
Int. Cl.[5] G06F *9/45*
U.S. Cl. 395—375 **21 Claims**



1. A computer-implemented method for generating a high rank software specification, the method comprising computer-implemented steps of:

reading a first software product describing information which is useful for inclusion in the high rank specification;

extracting from the read first software product describing information, first information necessary for said high rank specification;

classifying said first information into common items and other items, each said other item singly existing and referring to at least one of common items;

compiling for each of the common items the other items referring to each of the common items;

connecting the each of the other items on the basis of said first information in a network structure wherein the each of the other items is connected to the common items to which the each of the other items refers;

generating network information which represents relationships among the common items and other items; and,

converting a representation format of the common items and the other items of said network information to generate a high rank specification.

5,185,868

APPARATUS HAVING HIERARCHICALLY ARRANGED DECODERS CONCURRENTLY DECODING INSTRUCTIONS AND SHIFTING INSTRUCTIONS NOT READY FOR EXECUTION TO VACANT DECODERS HIGHER IN THE HIERARCHY

Thang M. Tran, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 16, 1990, Ser. No. 464,918
Int. Cl.[5] G06F *9/30, 9/34, 9/38*
U.S. Cl. 395—375 **5 Claims**

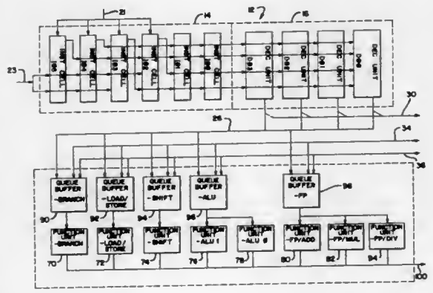
1. An apparatus for facilitating instruction processing in a computing device, said computing device having an instruction storage means for storing a plurality of instructions, a storage register means for temporarily storing information, and an instruction executing means for executing instructions; the apparatus providing decoded instructions for execution by said instruction executing means; the apparatus comprising:

an instruction buffer means, connected to said instruction storage means, for temporarily storing said plurality of instructions received from said instruction storage means in a predetermined sequence as fetched instructions; and

decoding means, connected to said instruction buffer means, said instruction executing means, and said storage register means, for receiving said fetched instructions from said instruction buffer means in said predetermined sequence and providing decoded instructions to said instruction executing means;

said instruction buffer means being configured for first-in-first-out storage of said fetched instructions;

said decoding means comprising a plurality of decoder units for concurrently decoding said fetched instructions from said instruction buffer means, said plurality of decoder units being arranged for inter-unit transfer among said plurality of decoder units, for communication with said storage register means, and for parallel output from each of said plurality of decoder units to said instruction executing means, said plurality of decoder units being hierarchically arranged from a lowest-significance decoder unit



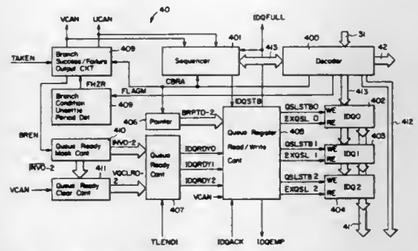
to a highest-significance decoder unit, said highest-significance decoder unit having a higher priority level than said lowest-significance decoder unit; each of said plurality of decoder units concurrently interrogating said storage register means to determine whether certain conditions are satisfied, said certain conditions being source operands necessary for execution of a respective decoded instruction being available for delivery to said instruction execution means and said storage register means being available to receive resultant operands of said respective decoded instruction, each of said plurality of decoder units obtaining source operands when available from said storage register means according to said priority level, when one of said decoder units having the highest priority level determines that said certain conditions are satisfied, providing a corresponding decoded instruction to said instruction executing means, and when said one of said decoder units determines that said certain conditions are not satisfied, shifting said respective decoded instruction to a higher-significance available vacant decoder unit, maintaining said predetermined sequence and providing a corresponding decoded instruction to said instruction executing means from a next lower-significance decoder unit which satisfies said certain conditions.

5,185,869

SYSTEM FOR MASKING EXECUTION READY SIGNAL DURING UNSETTLED PERIOD OF DETERMINING BRANCH CONDITION TO PREVENT READING OUT OF STORED INSTRUCTIONS

Nariko Suzuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 5, 1990, Ser. No. 474,263
Claims priority, application Japan, Feb. 3, 1989, 1-24864
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—375 **14 Claims**



1. An apparatus comprising:

a decoder for decoding an instruction supplied thereto and producing a decoded instruction;

storage means for temporarily storing said decoded instruction;

means for producing an execution ready signal when said decoded instruction stored in said storage means is brought into a ready state for execution;

means responsive to said execution ready signal for reading out said decoded instruction from said storage means as a read-out decoded instruction;

an execution unit for receiving and executing the read-out decoded instruction;

means responsive to decoding of a conditional branch instruction for masking the execution ready signal for at least one instruction which is decoded by said decoder and stored in said storage means during an unsettled period of a branch condition of said conditional branch instruction to thereby prevent a decoded instruction of said at least one instruction from being read out form said storage means to said execution unit; and

means activated after said unsettled period for performing one of (1) removing said masking of the execution ready signal when said branch condition indicates one of branch success and branch failure and (2) changing the execution ready signal to an invalid state when said branch condition indicates the other of said branch success and said branch failure.

5,185,870

SYSTEM TO DETERMINE IF MODIFICATION OF FIRST MACROINSTRUCTION TO EXECUTE IN FEWER CLOCK CYCLES

Daniel E. Lenoski, Mountain View, Calif., assignor to Tandem Computers, Inc., Cupertino, Calif.

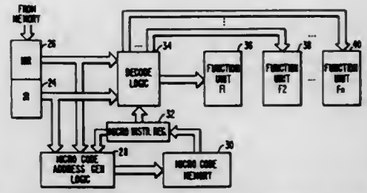
Continuation of Ser. No. 493,030, Mar. 12, 1990, abandoned, which is a division of Ser. No. 36,726, Apr. 10, 1987, Pat. No. 5,005,118. This application Aug. 5, 1992, Ser. No. 926,132
Int. Cl.[5] G06F *9/318*
U.S. Cl. 395—375 **13 Claims**

8. An apparatus for executing instructions in a controller comprising

a first macro-instruction register for holding a first macro-instruction;

a next macro-instruction register, coupled to said first macro-instruction register, for holding next macro-instruction which requires a first number of clock cycles to execute;

decoding means, coupled to said next macro-instruction register, for producing a signal if said next macro-instruction can execute in a fewer number of clock cycles than said first number if at least one operation of said firs macro-instruction is modified to complete at least one operation for said next macro-instruction; and



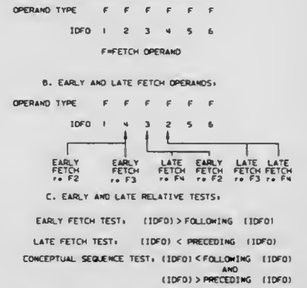
means, responsive to said signal, for modifying at least one operation of a micro-instruction of said first macro-instruction in said first macro-instruction register to enable said next macro-instruction to execute in said fewer number of clock cycles.

5,185,871

COORDINATION OF OUT-OF-SEQUENCE FETCHING BETWEEN MULTIPLE PROCESSORS USING RE-EXECUTION OF INSTRUCTIONS

Bradly G. Frey, Boca Raton, Fla., and Raymond J. Pedersen, Garrison, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1989, Ser. No. 457,222
Int. Cl.[5] G06F *11/00, 11/28*
U.S. Cl. 395—375 **38 Claims**



1. A processor having data and instruction storage, the processor being one of a plurality of processors in a multiprocessor system (MP), the processor comprising:

instruction decoding means, having instruction buffers for storing fetched instructions assigning instructions indentifier (IID) in sequence at least to each decoded stored instruction in the order that instructions are provided by a program executing on the processor, a conceptual sequence for the instructions in each of said plurality of processors being indicated by the sequence of the assigned IIDs in the processor, and the operand of the instruction being assigned the IID of the instruction;

storage means for storing data units most recently used by the processor, said storage means including a private (L1) cache having an L1 directory with an entry for each data unit in the L1 cache;

cross-invalidate (XI) means for invalidating an L1 entry with a storage address equal to a storage address provided with an XI request from another processor;

means for testing for an out-of-sequence (OOS) indication in

VOL 1147 ISS 2 FEB 9 1993 UMI

an OOS condition field associated with an L1 entry accessed for an XI request of another processor;

means for requesting a fetch of data from the storage means for a fetch operand specification of an instruction being decoded by the decoding means without regard to the conceptual sequence of the IIDs assigned to the fetch operands;

means for storing data for storing a store operand specification decoded by the decoding means with regard to the conceptual sequence of the IIDs assigned to the store operands;

means for detecting an out-of-sequence (OOS) condition for a fetch operand of any instruction decoded or completed having an assigned IID of an instruction in violation of the conceptual sequence of the assigned IIDs;

instruction execution means receiving all fetch operands and store operands and completing the execution of each instruction in conceptual sequence without regard for the sequence of fetches returned from said storage means as long as no COS condition is detected by the OOS detecting means; and

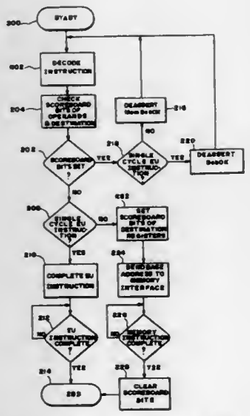
means for initiating the executing means to reexecute the program in the sequence of the program from, or before, any instruction having a fetch operand for which the detecting means detected an OOS condition.

5,185,872

SYSTEM FOR EXECUTING DIFFERENT CYCLE INSTRUCTIONS BY SELECTIVELY BYPASSING SCOREBOARD REGISTER AND CANCELING THE EXECUTION OF CONDITIONALLY ISSUED INSTRUCTION IF NEEDED RESOURCES ARE BUSY

James M. Arnold, Hillsboro; Glenn J. Hinton, Portland, both of Oreg., and Frank S. Smith, Chandler, Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 28, 1990, Ser. No. 486,407
Int. Cl.[5] G06F *9/30, 9/38*
U.S. Cl. 395—375 **6 Claims**



1. In a data processor connected to a main memory and a microinstruction bus for carrying a current microinstruction including an opcode field, said data processor including single cycle coprocessors and multi-cycle processors, a resource scoreboarder comprising:

a register array **(18)** comprised of a plurality of registers;

said array including busy bits associated with each register in said array;

a Scbok line **(102)** connected to said register array and to first ones of said single cycle coprocessors and multi-cycle processors, said scbok line when driven to a first state, indicating that a first particular register of said plurality of registers or a single cycle coprocessor or a multi-cycle processor used by a current register type of microinstruction on said microinstruction bus is available for a register execution operation and, when driven to a second state, indicating that said first particular register or said single cycle coprocessor or said multi-cycle processor used by said current register type of microinstruction on said microinstruction bus is not available for a register execution operation:

said Scbok line being initially driven to said first state;

first means **(204)** connected to said register array for checking said first particular register needed to execute said microinstruction to determine if said first particular register is busy;

second means **(218)** connected to said microinstruction bus for checking said opcode field of said microinstruction to determine if said microinstruction is a single cycle microinstruction, and,

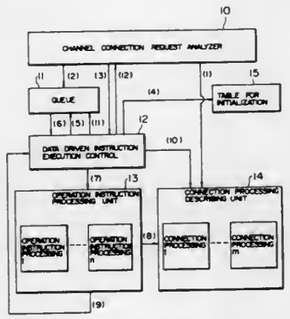
third means **(220)** connected to said first means, said second means, and to said scbok line, for driving said Scbok line to said second state upon the condition that said microinstruction is a single cycle microinstruction and that said first particular register needed by said single cycle microinstruction is busy.

5,185,873

CONTROL SYSTEM WITH FLAG INDICATING TWO OR LESS DATA INPUTS AND COUNTER INDICATING TWO OR MORE CONTROLLING DATA DRIVEN EXECUTION METHOD

Yukihito Maejima, Hachioji; Hirotoshi Shirasu, Yokohama; Taihei Suzuki, Kodaira, and Toshiaki Yamamoto, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 16, 1989, Ser. No. 311,291
Claims priority, application Japan, Feb. 19, 1988, 63-36526; May 20, 1988, 63-121732
Int. Cl.[5] G06F *15/82*
U.S. Cl. 395—375 **23 Claims**



1. A data driven type instruction execution control method for controlling execution of instructions by using memory means in which an input data available source from which input data are available, an output message destination to which the result of operation performed on the input data are to be sent and an input data number counter for indicating availability of the input data are stored in correspondence to each of the instructions, comprising steps of:

storing in said memory means a flag for each instruction indicating that the number of the input data required for execution of said each instruction is one or more, an input data number counter for each instruction requiring two or more input data and an initialization table for setting an initial value of said input data number counter of said each instruction requiring two or more input data, said flag being stored in a read only area of said memory means;

taking out sequentially data from said input data available source corresponding to an instruction to be executed in data driven fashion;

referring to the content of a flag provided in correspondence with said instruction;

deciding that said instruction can be executed when said flag indicates the input data number is one;

decrementing an input data number counter in correspondence with said instruction by one when said flag indicates the input data number is two or more; and

deciding that said instruction can be executed when decrement of said input data counter results in zero, while deciding that the input data is not yet available when decrement of said input data counter results in one or more;

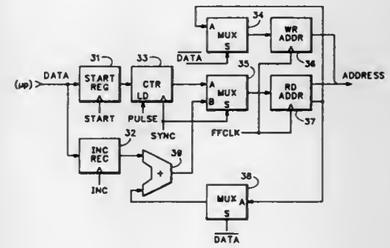
wherein operation is executed starting from the instruction for which the input data are completely available, the result of said operation being messaged to the output message destination.

5,185,874

ADDRESS GENERATOR FOR HIGH SPEED DATA AVERAGER

William A. Trent, Bend, and Mark Marineau, Redmond, both of Oreg., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Oct. 30, 1989, Ser. No. 428,534
Int. Cl.[5] G06F *9/26;* **G01R** *13/00, 23/16*
U.S. Cl. 395—400 **7 Claims**



1. An address generator for an acquisition memory to provide equivalent time sampling comprising:

means for incrementing a start address to provide an initial address starting with the start address for each iteration of a repetitive input signal during an acquisition cycle that includes a predetermined number of iterations of the repetitive input signal to fill the acquisition memory;

means for generating read addresses beginning with the initial address for each sample clock pulse within an acquisition window, the acquisition window occurring for each iteration of the repetitive input signal and each read address being separated from the prior read address by an address increment value;

means for generating write addresses corresponding to the read addresses one sample clock pulse after the corresponding read addresses; and

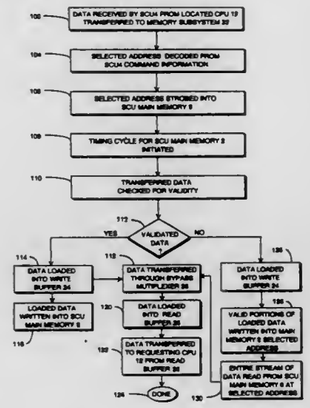
means for outputting the read and write addresses simultaneously onto an address bus for the acquisition memory where the read addresses lead the write addresses by the address increment value during each acquisition window.

5,185,875

METHOD AND APPARATUS FOR REDUCING MEMORY READ LATENCY IN A SHARED MEMORY SYSTEM WITH MULTIPLE PROCESSORS

Kumar Chinnaswamy, Milford; Michael A. Gagliardo, Shrewsbury; John J. Lynch, Wayland, and James E. Tessari, Arlington, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 27, 1989, Ser. No. 302,839
Int. Cl.[5] G06F *15/16, 13/00*
U.S. Cl. 395—425 **6 Claims**



1. For a digital computer system having a system control unit (SCU) with a main memory and a plurality of central processing units (CPU's), each CPU with its own associated writeback cache, a method of transferring requested data to a requesting one of the CPU's from the cache of a selected one of said other CPU's through said SCU and updating said SCU main memory, comprising the steps of:

transmitting said requested data from said cache of said selected CPU to said SCU;

checking said transmitted data to establish that said transmitted data is all valid data or only partially valid data;

if said transmitted data is established as all valid data then

(a) transmitting said valid data to said requesting CPU; and

(b) concurrently wiring said valid data in said SCU main memory at an address; or,

if said transmitted data is established as only partially valid data then

(a) determining the valid portions of said data;

(b) writing said valid portions of said data in said SCU main memory at an address while in the same operation reading data from said SCU main memory at said address; and

(c) transmitting said read data to said requesting CPU.

5,185,876

BUFFERING SYSTEM FOR DYNAMICALLY PROVIDING DATA TO MULTIPLE STORAGE ELEMENTS

Anh Nguyen, Sunnyvale, and Kumar Gajjar, San Jose, both of Calif., assignors to Micro Technology, Inc., Sunnyvale, Calif.

Filed Mar. 14, 1990, Ser. No. 494,039
Int. Cl.[5] G06F *12/00*
U.S. Cl. 395—425 **31 Claims**

1. A system for storing data from an external central processing unit, said system comprising:

a local processor;

a plurality of storage devices;

VOL 1147 ISS 2 FE 9 1993 UMI

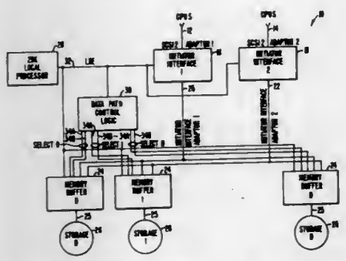
a plurality of memory buffers, each coupled to a separate storage device by a buffer-storage bus;

a memory data bus coupled between said central processing unit and said buffers for allowing the transfer of said data between said central processing unit and said memory buffers, and with said memory data bus having more bit lines than said buffer-storage bus;

a local processor data bus coupled to said local processor; and

a data path control circuit including:

a first sequencing means, having an input coupled to said local processor data bus and a plurality of outputs each coupled to a separate one of said memory buffers, for selectively enabling one or more of said memory buffers



in a first sequenced pattern to allow said data to be selectively written into or read from said memory buffers;

a second sequencing means, having an input coupled to said local processor data bus and a plurality of outputs each coupled to a separate one of said memory buffers, for selectively enabling one or more of said memory buffers in a second sequenced pattern to allow said data to be selectively written into or read from said memory buffers; and

means, coupled to said first and second sequencing means, for preventing said first and second sequencing means from accessing an identical one of said memory buffers at a coincident time.

5,185,877

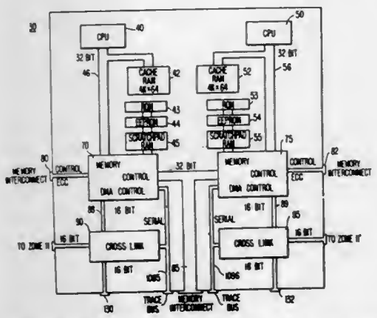
PROTOCOL FOR TRANSFER OF DMA DATA

Thomas D. Bissett, Derry, N.H.; William Bruckert, Northboro, Mass.; Ajai Thirumalai, Marlboro, Mass., and Jay Amirmokri, Lowell, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation-in-part of Ser. No. 93,539, Sep. 4, 1987, Pat. No. 4,916,704. This application Aug. 1, 1989, Ser. No. 388,327

Int. Cl.[5] G06F *13/28, 13/42*

U.S. Cl. 395—425 **31 Claims**



1. A process for transferring data via DMA between components in a computer system, wherein the computer system includes a memory controller, a first system resource bus coupled to a system resource, and a data router, wherein the data router includes switching logic for coupling the memory controller to the first system resource bus, and wherein the process comprises the following steps:

transmitting DMA setup information designating a setup write transaction, from the memory controller to the system resource to indicate an upcoming DMA transfer, via the data router and via the first system resource bus coupled to said system resource, wherein said DMA setup information corresponds to said upcoming DMA transfer, and indicates a direction of the DMA transfer as either an up direction from said system resource to said memory controller or a down direction from said memory controller to said system resource, and indicates whether said DMA transfer will involve said first system resource bus;

decoding said DMA setup information in the data router, to determine the direction of said DMA transfer, and to determine whether said DMA transfer will involve said first system resource bus;

transmitting a start DMA code, from said memory controller to said system resource, via the data router and via said first system resource bus coupled to said system resource;

configuring the switching logic in said data router, in response to transmission of said start DMA code, and in accordance with said DMA setup information decoded by said data router;

wherein said switching logic is configured to forward DMA data, from said first system resource bus to said memory controller, at times when said DMA transfer is in the up direction and said DMA transfer will involve said first system resource bus; and

wherein said switching logic is configured to forward DMA data, from said memory controller to said first system resource bus, at times when said DMA transfer is in the down direction and said DMA transfer will involve said first system resource bus;

transmitting an acknowledge code, from said system resource to said memory controller, via said first system resource bus coupled to said system resource, and via the switching logic in said data router, in response to transmission of said start DMA code;

transmitting DMA data, after transmission of said acknowledge code, at times when said DMA transfer is in the up direction, from said system resource to said memory controller, via said first system resource bus coupled to said system resource, and via the switching logic in said data router;

transmitting DMA data, after transmission of said acknowledge code, at times when said DMA transfer is in the down direction, from said memory controller to said system resource, via the switching logic in said data router, and via said first system resource bus coupled to said system resource; and

transmitting a done code, after transmission of DMA data, from said system resource to said memory controller, via said first system resource bus coupled to said system resource, and via the switching logic in said data router, to indicate successful DMA data transmission.

5,185,878

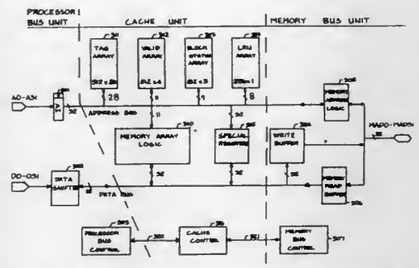
PROGRAMMABLE CACHE MEMORY AS WELL AS SYSTEM INCORPORATING SAME AND METHOD OF OPERATING PROGRAMMABLE CACHE MEMORY

Gigy Baror, Austin, Tex., and William M. Johnson, San Jose, Calif., assignors to Advanced Micro Device, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 146,001, Jan. 20, 1988, abandoned. This application Dec. 12, 1990, Ser. No. 626,239

Int. Cl.[5] G06F *12/08*

U.S. Cl. 395—425 **37 Claims**



1. A cache memory for a multiprocessor system having processor bus means, memory bus means and plural processors, at least one of said processors supplying a program instruction signal to the processor bus means, the cache memory comprising:

a cache memory array, and

special purpose programmable register means coupled to the processor bus means so it responds to the program instruction signal on the processor bus means, the special purpose register means controlling coupling of signals between the memory bus and the cache memory array in response to the program written into it by the program instruction signal, the processor bus being responsive to time multiplexed program instruction and data signals so that the program instruction and the data signals are supplied to the special purpose register means during alternate cycles, the cache memory including means for coupling the program and data signals to the special purpose programmable register means, the means for coupling including means for de-multiplexing the program instruction and data signals to designated addresses in the cache memory array, the processor bus including an address bus segment and a data bus segment both responsive to the program instruction signal so that, during the alternative cycles, the address bus segment is responsive to the program instruction and an indication of an address in the cache memory array where the instruction is to be stored, the means for coupling responding to the program instruction and the address indication for routing the program instruction to the designated address in the cache memory array, as indicated by the address indication.

5,185,879

CACHE SYSTEM AND CONTROL METHOD THEREFOR

Akira Yamada, Mai Shiti 3-703, 1-1, Nakano-Nishi 3-Chome, Itami-shi, Hyogo-ken, and Tatsuo Yamada, 105 ON haim, 389, Onna, Atsugi-shi, Kanagawa-ken, 243, both of Japan

Continuation of Ser. No. 274,522, Nov. 21, 1988, abandoned. This application Jul. 22, 1991, Ser. No. 734,088

Claims priority, application Japan, Jan. 21, 1988, 63-11222; Jan. 21, 1988, 63-11223

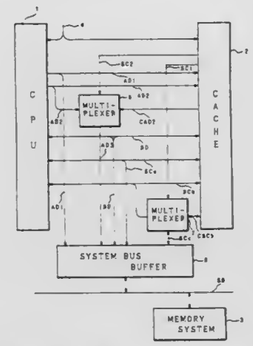
Int. Cl.[5] G06F *13/16*

U.S. Cl. 395—425 **9 Claims**

1. A cache system in which a CPU and a cache, each driven by a common timing clock and operative as a bus master, are connected through a system bus to a memory system, comprising:

a first signal line comprising a first portion connected between said CPU and said cache, and a second portion connected to said system bus, for transmitting and receiving a common signal to and from whichever one of said CPU and said cache is operating as a bus master;

a second signal line comprising a common portion connected to said system bus, a first portion connected to said CPU and a second portion connected to said cache, said



first and second portions intermittently connected to said common portion;

first means for placing said CPU in a standby state and connecting the common portion to the first portion of said second signal line between said system bus and said cache when said cache is operating as a bus master; and

second means for connecting the common portion to the second portion of said second signal line between said system bus and said CPU when said CPU is operating as a bus master.

5,185,880

STORED INSTRUCTIONS EXECUTING TYPE TIMING SIGNAL GENERATING SYSTEM

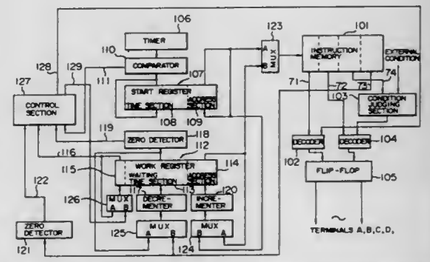
Katsuhiko Ueda, Sakai; Toshikazu Suzuki, Nishinomiya, and Norihito Kinoshita, Akishima, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 30, 1990, Ser. No. 530,303

Claims priority, application Japan, Jun. 5, 1989, 1-142521

Int. Cl.[5] G06F *9/00*

U.S. Cl. 395—550 **3 Claims**



1. A timing signal generating system for generating a plurality of timing signals by the execution of instructions which state timing signal changes, comprising:

a) a plurality of flip-flops;

VOL 1147 ISS 2 FE 9 1993 UMI

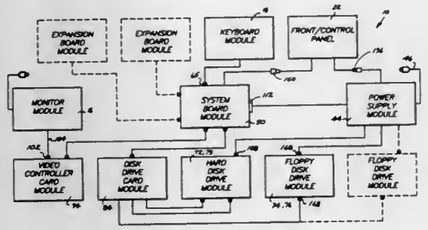
b) an instruction memory for storing a plurality of instructions, each including at least an operation field having timing signal changes stated therein and a waiting time field having stated therein a waiting time from the time when a present invention has been executed until an instruction of a next address is executed;
c) a timer whose content is incremented at a constant time interval T;
d) first instruction execution requesting means for storing a desired value to be compared with an output of said timer, storing a desired address to be output to said instruction memory and outputting the desired address stored therein beforehand to said instruction memory and simultaneously outputting an instruction execution request signal, when the output of said timer becomes equal to the desired value stored therein beforehand;
e) second instruction execution requesting means for calculating an address of an instruction to be executed next time based on an address of an instruction under request for execution, storing the address obtained as a result of the calculation and storing a waiting time field stated in the instruction under the request for execution, when either one of said first instruction execution requesting means and said second instruction execution requesting means has requested execution of the instruction, and thereafter outputting the stored address to said instruction memory and simultaneously outputting the instruction execution request signal, when the content of the stored waiting time field becomes zero as a result of subtraction effected in synchronism with the increment of said timer; and
f) execution means for decoding at least the operation field of the instruction output from said instruction memory and for performing one of the operations of setting and resetting said flip-flops in accordance with a result of the decoding operation, when the instruction execution request signal has been output from one of said first instruction execution requesting means and said second instruction execution requesting means.

5,185,881

USER REPAIRABLE PERSONAL COMPUTER

Charles J. Brooks, and Gary H. Gregg, both of Kennewick, Wash., assignors to Marcraft International Corporation, Kennewick, Wash.

Filed Sep. 12, 1990, Ser. No. 581,563
Int. Cl.[5] G06F *11/00, 11/16*
U.S. Cl. 395—575 **33 Claims**



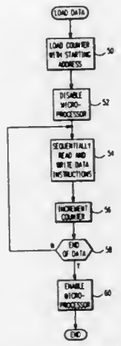
1. In a user repairable personal computer,
a main chassis having a rear panel and a front control and display panel;
a system board module removably mounted within the main chassis in which the system board module has (1) an 8-bit or more microprocessor, (2) a plurality of memory integrated circuit elements, (3) a plurality of input/output circuit elements, and (4) a plurality of adaptor card module edge connector sockets;
a power supply module removably mounted within the main chassis for generating DC operating power signals;
a disc drive module removably mounted within the main chassis for transferring data;
a video monitor adapter card module removably mounted within the main chassis in which the video monitor adapter card module has an edge connector removably inserted into one of the edge connector sockets;
a disc drive adapter card module removably mounted within the main chassis in which the disc drive adapter card module has an edge connector removably inserted into another of the edge connector sockets;
wherein the system board module and the power supply module are disconnectably interconnected electrically by a power supply connector that has a power supply connector component affixed to the system board module and a complementary second power supply connector component operatively connected to the power supply module to enable the user to disconnect and reconnect the system board module from the power supply module;
wherein the system board module has a first set of wires having first ends affixed to the system board module and wherein the front panel has a second set of wires having first ends affixed to the front panel and wherein second ends of the first and second sets of wires are disconnectably interconnected electrically by a front panel status connector;
wherein the front panel status connector has complementary male and female mating plugs with keying means for enabling the user to disconnect and reconnect the system board module to the front panel without incorrectly mating the plugs to facilitate the replacement of a defective system board module.

5,185,882

BIT-SLICE MICROPROCESSOR TEST SYSTEM

Harvey H. White, Jr., Hampstead, Md., and Harry Boler, Shawnee, Kans., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 27, 1990, Ser. No. 515,382
Int. Cl.[5] G06F *11/00*
U.S. Cl. 395—575 **11 Claims**



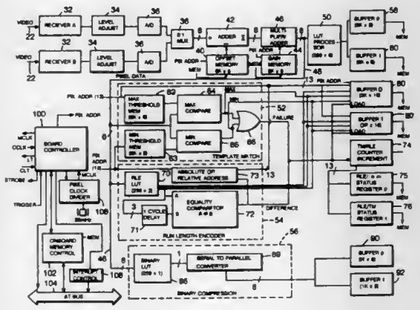
1. A method of providing test data for a processing system, having an arithmetic/logic unit and a sequence control unit, executing a program stored in a read only memory and storing data in a random access memory, said method comprising the steps of:
(a) storing test data as instructions for the arithmetic/logic unit in the program stored in the read only memory;
(b) sequentially reading the instructions stored in step (a) while the arithmetic/logic unit is prevented from acting on the instructions;
(c) sequentially storing the test data in the random access memory as the instructions are read in step (b); and
(d) accessing the test data in the random access memory in place of receiving operational data when the processing system is in a test mode.

5,185,883

SYSTEM FOR LOCATING FAILURE SIGNALS BY COMPARING INPUT DATA WITH STORED THRESHOLD VALUE AND STORING FAILURE ADDRESSES IN ALTERNATING BUFFERS

Suzanne G. Ianni, Natick; John R. Fierke, Southboro, both of Mass., and Stephen A. Connors, Center Barnstead, N.H., assignors to Data Translation, Inc., Marlboro, Mass.

Filed Oct. 26, 1990, Ser. No. 603,791
Int. Cl.[5] G06F *15/64, 3/05, 7/00*
U.S. Cl. 395—575 **6 Claims**



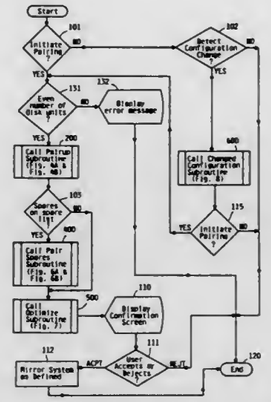
1. A data acquisition circuit for receiving an analog input signal having a magnitude representing light intensity detected by a sequentially accessed, linear array of photocells of a line scan camera and providing digital data signals for use by a computer, said circuit comprising
an input for receiving said analog input signal,
an analog-to-digital converter to convert said analog input signal to a stream of digital intensity signals representing the intensities detected by sequentially accessed photocells of the array,
a threshold memory storing threshold values for respective said photocells at respective pixel addresses,
a comparator connected to receive said digital intensity signals from said converter and said threshold values from said threshold memory and to compare the digital intensity signal for a given photocell with the threshold value for the same photocell,
address means for provide pixel addresses to address said threshold memory to address respective threshold values and provide them to said comparator as the digital intensity signal for a given photocell is presented to said comparator, and
storage means to store the pixel address at which there is a failure of the digital intensity signal to meet a threshold, said storage means comprises two buffers and means to write pixel addresses of failures of one line of intensity valves into one of said buffers as pixel addresses of failures in a preceding line of values is read out of the other said buffer.

5,185,884

COMPUTER CONTROLLED OPTIMIZED PAIRING OF DISK UNITS

Dennis R. Martin, Rochester; Michael J. McDermott, Oronoco; Stuart D. Plumlee, Rochester; Robert H. Satin, Rochester, and Robert L. Wenger, Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 24, 1990, Ser. No. 469,611
Int. Cl.[5] G06F *11/20*
U.S. Cl. 395—575 **26 Claims**



1. A method for optimizing the pairing of a plurality of disk units, comprising the machine-executed steps of:
selecting a first disk unit;
selecting a second disk unit, wherein the first and second disk units are a first potential pair;
calculating a first level of protection for said first potential pair:
selecting a third disk unit, wherein the first and third disk units are a second potential pair;
determining a second level of protection for the second potential pair: and
pairing said first and second disk units together unless said second level of protection exceeds said first level of protection.

5,185,885

OBJECT DATABASE DELETION METHOD FOR CHILD OBJECTS WHEN A CHILD MAY BE LINKED TO MULTIPLE PARENT OBJECTS

John A. Dysart, Santa Clara; Peter S. Showman, Cupertino; William M. Crow, San Jose, all of Calif.; Peter M. Williams, Gloucestershire, United Kingdom; Brian W. McBride, Berkshire, United Kingdom; John R. F. Senior, Thornbury, United Kingdom; Charles H. Whelan, Placerville, Calif., and Brian Murdoch, Berkshire, United Kingdom, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 186,516, Apr. 25, 1988, Pat. No. 4,953,080.
This application May 7, 1990, Ser. No. 520,328
The portion of the term of this patent subsequent to Aug. 28, 2007, has been disclaimed.
Int. Cl.[5] G06F *15/40*
U.S. Cl. 395—600 **3 Claims**

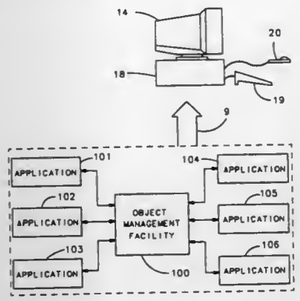
1. In a computer having a file management system, the file management system allowing for linking pairs of objects by recording a link in a link table, for every pair of linked objects, one object in the pair of linked objects serving as a parent object and one object in the pair serving as a child object, a method by which the file management system removes a first

VOL 1147 ISS 2 FE 9 1993 UMI

parent object from the file management system, the method comprising the steps of:

(a) for every object which is linked to the first parent object as a child object, performing the following substeps:

(a1) deleting a link in the link table linking the first parent object to the child object, and



(a2) if the child object is not linked as a child object to any other objects, removing the child object from the file management system; and,

(b) deleting the first parent object.

5,185,886

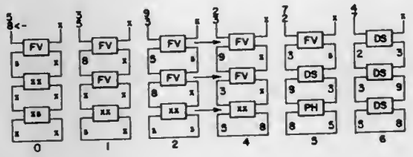
MULTIPLE RECORD GROUP REBOUND SORTER

Brian C. Edem, San Jose, Calif., and Richard P. Helliwell, Colorado Springs, Colo., assignors to Digital Equipment Corporation, Maynard, Mass. and National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 375,035, Jun. 30, 1989, abandoned. This application Sep. 25, 1991, Ser. No. 765,464

Int. Cl.[5] G06F *7/08, 15/417*

U.S. Cl. 395—600 **9 Claims**



1. A method for controlling a sorter in a pipeline control system, said pipeline control system having a sorter for receiving as input records from a plurality of groups of records, each of the plurality of groups of records having N records and for outputting a first group of the plurality of groups of records in sorted order during the inputting of an immediately following group of another one of the plurality of groups of N records and then outputting the immediately following group of N records in sorted order immediately following the first one of the groups of records now in sorted order without mixing records from each of the plurality of groups of records, and a pipeline control means, said sorter having a single input means for receiving records and a single output means for outputting records in sorter order, said sorting means further including a plurality of processing element means for comparing record data, each of said processing element means having input means for receiving record data, said input means having an upper left input and a lower right input and output means for outputting record data, said output means having an upper right output and a lower left output, and processing element control means for controlling said processing element means to operate in a first mode to effect transfers of record data from said upper left input to said lower left output and from said lower right input to said upper right output and to operate in a second mode to transfer record data from said upper left input to said upper right output and from said lower right input to said lower left output, said upper left input of the first one of said processing element means being coupled to said single input means, said upper left input of each of the remaining ones of said processing element means being coupled to said lower left output of a preceding processing element means, said lower left output of the last one of said processing element means being connected to said lower right input thereof, said upper right output of said first processing element means being coupled to said single output means, and said upper right output of each of said remaining processing element means being connected to said lower right input of preceding processing element means, operation of all of said processing element means in said first mode, causes record data to be transferred serially through said processing element means to said last processing element means and to be then transferred serially back through said processing element means to said single output means, the method comprising the steps of:

inputting to said single input means of said sorter, the first record of another group of N records directly after the Nth record of said one group during the output of said remaining N−1 records of said one group;

generating a first signal to indicate that said another group of N records is being input to said sorter;

inputting said first signal to said pipeline control means;

generating a first force vertical signal in response to said first signal;

sending said first force vertical signal to the first one of said processing element means to cause said first processing element means to force the first record of said another group of the next one of said processing element means;

inputting the remaining N−1 records of said another group to said sorter immediately after the first record of said another group and during the output of the remaining records of said one group;

sequentially generating additional force vertical signals, sending one of said additional force vertical signals to each of said processing element means synchronously with the receipt of said first record of said another group, said additional force vertical signals causing said processing element means to force the records of said another group to the next one of said processing element means and preventing the interchange of records of said another group with the records of said one group;

maintaining each of said force vertical signals until said first record of said another group is transferred from said last processing element means and then sequentially removing said force vertical signals from each of said processing element means in reverse order; and

outputting records of said another group to form a succeeding string of records in sorted order immediately following the first sorted string of records.

5,185,887

DATABASE GENERATION MANAGEMENT METHOD AND SYSTEM

Noriyuki Takahashi, Sakai; Kazunori Nishizawa, Yokohama; Rinichi Takashi, Yokohama; Naofumi Sakai, Yokohama; Yukiharu Tanabe, Okayama, and Nobuhiro Yasue, Isehara, all of Japan, assignors to Hitachi, Ltd. and Hitachi Software Engineering Co., Ltd., Tokyo, Japan

Filed Jul. 2, 1990, Ser. No. 547,512

Claims priority, application Japan, Jul. 6, 1989, 1-175200; Sep. 11, 1989, 1-232846

Int. Cl.[5] G06F *15/403*

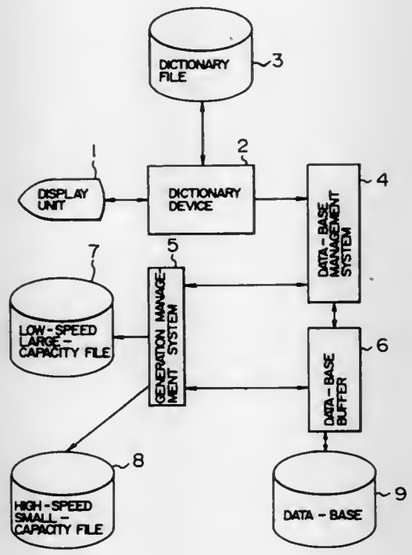
U.S. Cl. 395—600 **9 Claims**

1. In a data-base system comprising a data-base management system, dictionary means for managing definition information and generation management information in a data base, and a dictionary file for storing said generation management information in said definition information, a data-base generation management method comprising the steps of:

providing a generation management system between said data-base management system and a data storage file to acquire data in accordance with the generation management information;

making said dictionary means independent from said data-base management system and connecting said dictionary means to an input/output device, said dictionary file and said data-base management system;

designating the generation management information for each item thereof in said dictionary file through said input-/output device so as to register the designated generation,



management information as new or updated registration in said dictionary file by means of said dictionary means while the timing for acquiring the generation management information is designated at a desired value; and

operating said data-base management system to issue a data-base output request to said generation management system based on the generation management information registered in said dictionary file to thereby make said generation management system read out data from the data base in accordance with the registered generation management information to supply the read-out data to the designated data storage file.

5,185,888

METHOD AND APPARATUS FOR DATA MERGING/SORTING AND SEARCHING USING A PLURALITY OF BIT-SLICED PROCESSING UNITS

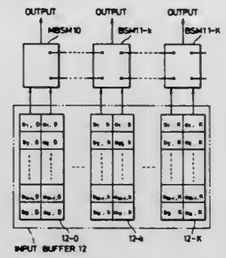
Yuzuru Tanaka, 103, Fukuyama-mansion, 18-6-1, Minami, 17 Jonishi, Chuo-ku, Sapporo-shi, Hokaido; Akira Yamamoto, Yokohama, and Masashi Tsuchida, Shibuya, all of Japan, assignors to Hitachi, Ltd., Tokyo and Yuzuru Tanaka, Sapporo, both of, Japan

Filed Aug. 21, 1985, Ser. No. 767,852

Claims priority, application Japan, Aug. 22, 1984, 59-173309; Aug. 22, 1984, 59-173310

Int. Cl.[5] G06F *7/22*

U.S. Cl. 395—600 **8 Claims**



1. A merging/sorting method in a system having a plurality of input buffers each of which stores two steps of m-bit data provided by bit-slicing each of two sets of input data every m bits and a plurality of serially connected bit-sliced engines each of which merges two sets of bit-sliced input data stored in a corresponding input buffer, wherein each bit sliced engine is connected to a corresponding input buffer comprising the steps of:

executing, in first bit-sliced engine, merge processing based on two sets of m-bit data of an upper digit of an upper most digit stored in a corresponding input buffer;

delivering, in said first bit-sliced engine, control information related to a result of said merge processing to a second bit-sliced engine;

successively executing, in each of second to n-th bit sliced engine, merge processing based on two sets of m-bit data stored in a corresponding input buffer and control information carried from a bit-sliced engine for processing two sets of m-bit data of an immediate upper digit; and

delivering, in said each of second to n-th bit-sliced engines, control information related to a result of merge processing to a bit-sliced engine for processing two sets of m-bit data of an immediate lower digit;

wherein said each bit sliced engine is connected to receive the control information from the bit sliced engine for processing m bits of an immediate upper digit and is connected to deliver the control information to the bit sliced engine for processing m bits of an immediate lower digit; and

wherein said each bit sliced engine includes, two pointers, said two pointers being provided in correspondence with the respective sets of input data wherein said two pointers indicate those addresses of said buffer which store said respective sets of input data, said two pointers are advanced respectively in response to the control information carried from the bit sliced engine for processing m-bits of an immediate upper digit.

VOL
1147
ISS
2
FE
9
1993
UMI

DESIGN PATENTS

GRANTED Febuary 9, 1993

ERRATA

For CLASS	See PATENT NO.
D018- 055	333,153

VOL
1147
ISS
2
FE
9
1993
UMI

DESIGNS

FEBRUARY 9, 1993

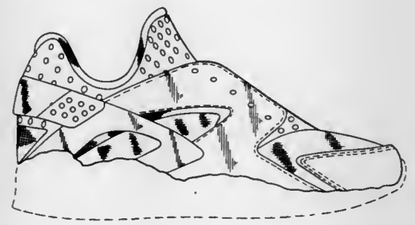
333,030
GARMENT ATTACHABLE PATCH
Ronald D. Wilkes, 19695 154th St., Elk River, Minn. 55330
Filed Apr. 30, 1990, Ser. No. 516,231
Term of patent 14 years
U.S. Cl. D2—25



333,031
ATLETIC SHOE FLAP APPARATUS
Verina Devezin, 6911 Queensway Dr., New Orleans, La. 70128
Filed Jan. 24, 1990, Ser. No. 469,828
Term of patent 14 years
U.S. Cl. D2—314



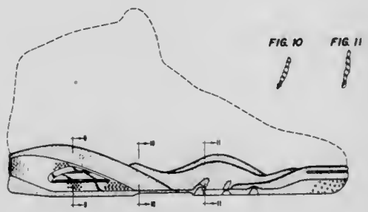
333,032
SHOE UPPER
Tinker L. Hatfield, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jul. 27, 1990, Ser. No. 558,417
Term of patent 14 years
U.S. Cl. D2—314

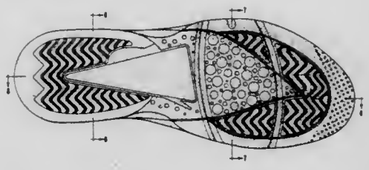


333,033
SHOE UPPER
Catherine M. Bailey, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Aug. 5, 1991, Ser. No. 740,471
Term of patent 14 years
U.S. Cl. D2—314



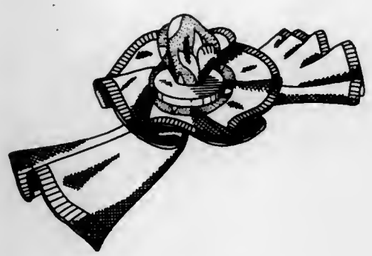
333,034
OUTSOLE AND MIDSOLE OF A SHOE
Steven C. McDonald, Portland, Oreg., assignor to Nikem Inc., Beaverton, Oreg.
Filed Dec. 13, 1991, Ser. No. 806,547
Term of patent 14 years
U.S. Cl. D2—320



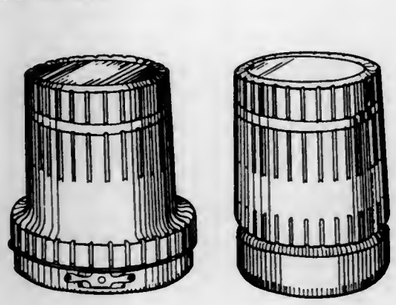


VOL
1147
ISS
2
FE
9
1993
UMI

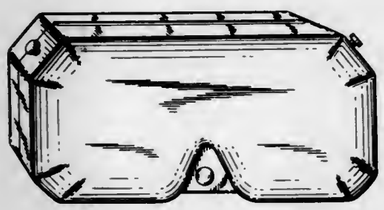
333,035
COMBINED SCARF AND RING
Kathryn J. Lee, and William Fowler, both of 253 E. 77th St. #2-G, New York, N.Y. 10021-2040
Filed Mar. 7, 1990, Ser. No. 489,612
Term of patent 14 years
U.S. Cl. D2—501



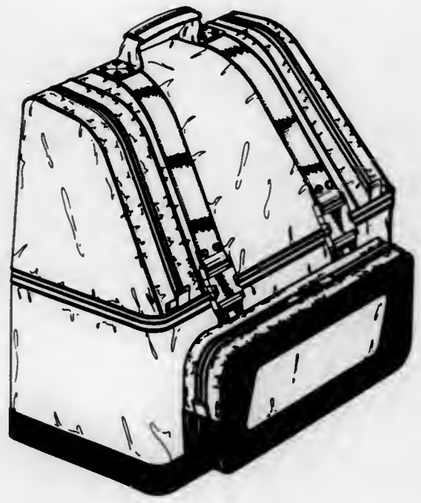
333,036
CONTAINER FOR A SHOE CARE KIT
Albert J. Sgro, 24450 Union Cir., Beachwood, Ohio 44122
Filed Sep. 5, 1991, Ser. No. 755,352
Term of patent 14 years
U.S. Cl. D3—30.5



333,037
EYEGLASS CASE
Jack Dweck, Scarsdale, and Janet A. Ederer, Plainview, both of N.Y., assignors to Colony Corporatioo, Scarsdale, N.Y.
Filed Feb. 3, 1992, Ser. No. 829,888
Term of patent 14 years
U.S. Cl. D3—34



333,038
HOCKEY EQUIPMENT BAG
Greg Collins, Toronto, Canada, assignor to Canstar Sports Group Inc., Quebec, Canada
Filed Dec. 4, 1990, Ser. No. 623,242
Claims priority, application Canada, Jun. 4, 1990, 04069013
Term of patent 14 years
U.S. Cl. D3—36



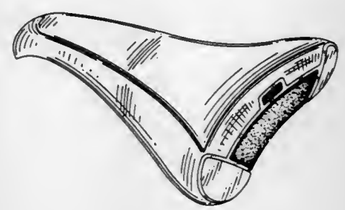
333,039
PETTICOAT BAG
Larry K. Wells, and Deanna K. Wells, both of R.R. 1, Box 123, Greencastle, Ind. 46135
Filed Mar. 16, 1990, Ser. No. 494,513
Term of patent 14 years
U.S. Cl. D3—42



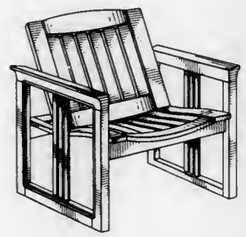
333,040
TOOL POUCH
Michael Dancyger, 811 W. 58th St., Los Angeles, Calif. 90037
Filed Mar. 27, 1991, Ser. No. 676,726
Term of patent 14 years
U.S. Cl. D3—105



333,041
BICYCLE SEAT WITH REAR SAFETY FLASHER LIGHT AND REFLECTOR
Robert S. Choi, Landisville; C. Kwai Kong, Mount Joy, and Oong Choi, Lancaster, all of Pa., assignors to Vistalite, Incorporated, East Petersburg, Pa.
Filed Sep. 18, 1990, Ser. No. 583,974
Term of patent 14 years
U.S. Cl. D6—354



333,042
CHAIR
Neil M. Komai, 5019 Golden West Ave., Temple City, Calif. 91006, and Joseph D. Ricchio, Jr., 7119 Mezzanine Way, Long Beach, Calif. 90808
Filed Jul. 13, 1989, Ser. No. 379,533
The portion of the term of this patent subsequent to Sep. 15, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—370



333,043
CHAIR
Rory S. Rehmert, Charlotte, N.C., assignor to Winston Furniture Company, Inc., Birmingham, Ala.
Filed Dec. 5, 1989, Ser. No. 446,723
Term of patent 14 years
U.S. Cl. D6—370



333,044
CHAIR
Jerome C. Caruso, Lake Forest, Ill., assignor to Shelby Williams Industries, Inc., Chicago, Ill.
Filed Sep. 17, 1990, Ser. No. 583,368
Term of patent 14 years
U.S. Cl. D6—373



333,045
CHAIR
Stephen C. Hess, Birmingham, Ala., and Rory S. Rehmert, Charlotte, N.C., assignors to Winstoo Furniture Company, Inc., Birmingham, Ala.
Filed Dec. 5, 1989, Ser. No. 446,490
Term of patent 14 years
U.S. Cl. D6—376

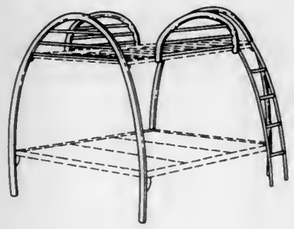


VOL
1147
ISS
2
FE
9
1993
UMI

333,046
CHAIR
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex Sarl, Oyonnax, France
Filed Apr. 5, 1990, Ser. No. 504,896
Claims priority, application Hague, Oct. 9, 1989, DMA/001096
Term of patent 14 years
U.S. Cl. D6—380



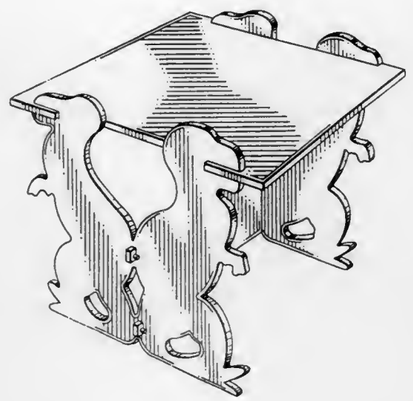
333,047
BED FRAME
Martin deBlois, 279 de Gaspé ouest, St-Jean Port-Joli, Quebec, Canada G0R 3G0
Filed Oct. 31, 1989, Ser. No. 429,335
Term of patent 14 years
U.S. Cl. D6—382



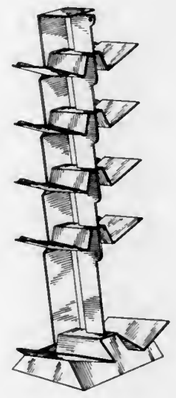
333,048
BUNK BED
Martin deBlois, St-Jean Port-Joli, Canada, assignor to les Industries Amisco LTEE, l'Islet, Canada
Filed Jun. 13, 1990, Ser. No. 537,284
Claims priority, application Canada, Apr. 11, 1990, 11-04-90-2
Term of patent 14 years
U.S. Cl. D6—384



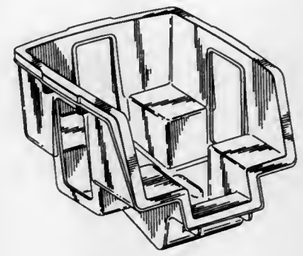
333,049
TABLE
Tom King, 2826 N. Pennington Dr., Chandler, Ariz. 85224
Filed Jan. 24, 1990, Ser. No. 469,251
Term of patent 14 years
U.S. Cl. D6—452



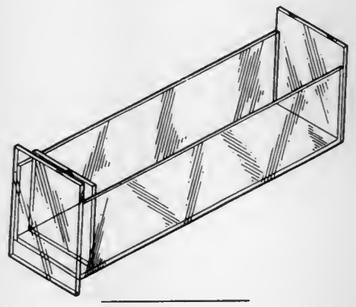
333,050
DISPLAY STAND
Otto Schubert, Vienna, Austria, assignor to Lift Verkaufsgerate Gesellschaft M.B.H., Austria
Filed Dec. 6, 1989, Ser. No. 446,914
Claims priority, application Austria, Jun. 9, 1989, 550.016
Term of patent 14 years
U.S. Cl. D6—473



333,051
NEWSPAPER BUNDLING RACK
Charles W. Craft, Jr., Apple Creek, and Richard R. Lewellen, Wooster, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jul. 31, 1991, Ser. No. 738,492
Term of patent 14 years
U.S. Cl. D6—475



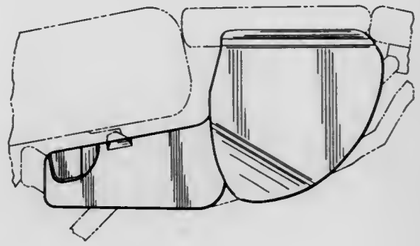
333,052
DISPLAY RACK
Joseph M. Bumb, San Jose, Calif., assignor to Ageless Tangible Assets, Inc., San Jose, Calif.
Filed May 17, 1991, Ser. No. 703,142
Term of patent 14 years
U.S. Cl. D6—476



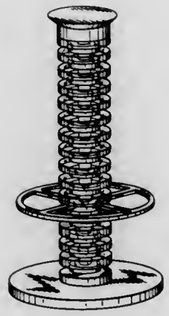
333,053
TABLE
Isao Hosoe, Milan, Italy, assignor to Itoki Co., Ltd., Osaka, Japan
Filed Dec. 21, 1990, Ser. No. 631,794
Claims priority, application Japan, Aug. 29, 1990, 2-28730
Term of patent 14 years
U.S. Cl. D6—482



333,054
FOOTREST MECHANISM SHIELD
Frank M. Re, Holyoke, and James O. Williams, Munson, both of Mass., assignors to The Berkline Corporation, Morristown, Tenn.
Filed Jan. 14, 1991, Ser. No. 641,110
Term of patent 14 years
U.S. Cl. D6—492



333,055
BASE FOR A BARSTOOL
Howard Kaye, Greenwich, Conn., assignor to Designs For Leisure, Ltd., Mount Kisco, N.Y.
Filed Oct. 10, 1989, Ser. No. 418,445
Term of patent 14 years
U.S. Cl. D6—495

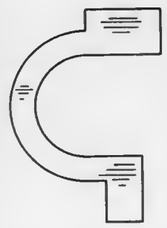


VOL 1147 ISS 2 FE 9 1993 UMI

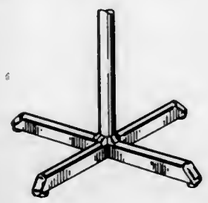
333,056
BASE FOR A BARSTOOL
Howard Kaye, Greenwich, Conn., assignor to Designs For Leisure, Ltd., Mount Kisco, N.Y.
Filed Oct. 10, 1989, Ser. No. 418,477
Term of patent 14 years
U.S. Cl. D6—495



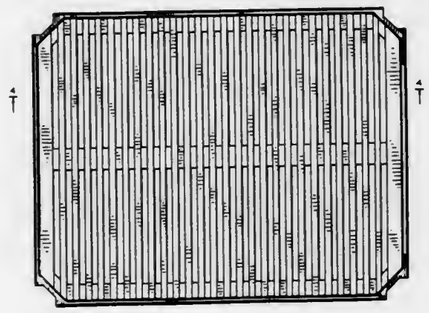
333,057
SUPPORTING LEG FOR A SERVING TRAY
Shraga Shimonovitc, 2960 Forrest La., York, Pa. 17402
Continuation of Ser. No. 437,919, Nov. 17, 1989. This application Apr. 6, 1992, Ser. No. 864,075
Term of patent 14 years
U.S. Cl. D6—495



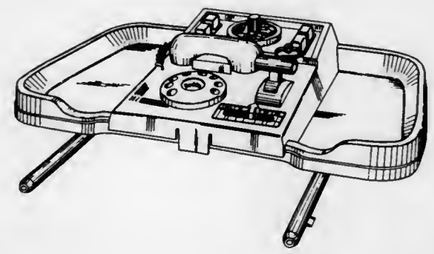
333,058
TABLE PEDESTAL
Niels Diffrient, Ridgefield, Conn., assignor to Howe Furniture Corporation, Trumbull, Conn.
Division of Ser. No. 193,489, May 12, 1988. This application Apr. 29, 1991, Ser. No. 693,317
The portion of the term of this patent subsequent to Feb. 5, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—498



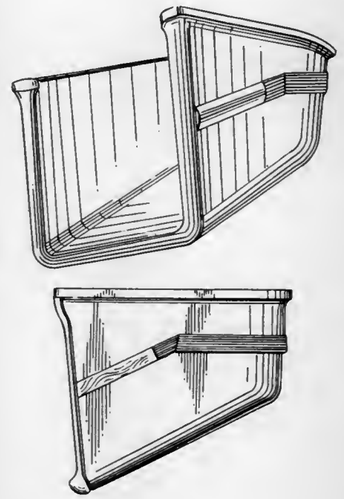
333,059
SHELF
Robert J. Cohn, Dallas, and Albert Kolvites, Mountaintop, both of Pa., assignors to InterMetro Industries Corporation, Wilkes-Barre, Pa.
Filed May 19, 1989, Ser. No. 354,975
Term of patent 14 years
U.S. Cl. D6—511



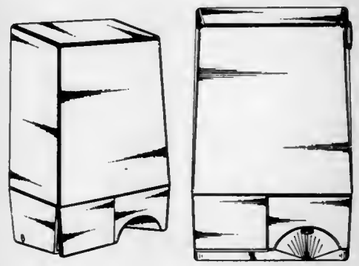
333,060
COMBINED HIGH CHAIR TRAY AND ACTIVITY TOY
Gianluca Perego, Arcore, Italy, assignor to Peg Perego Pines S.p.A., Milan, Italy
Filed Jun. 22, 1989, Ser. No. 374,350
Term of patent 14 years
U.S. Cl. D6—511



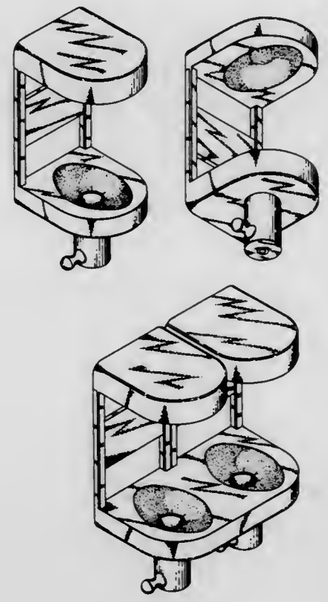
333,061
CEILING OR WALL-MOUNTED TV MONITOR SUPPORT
Marty Sedighzadeh, P.O. Box 36250, Denver, Colo. 80236
Filed Oct. 10, 1991, Ser. No. 774,294
Term of patent 14 years
U.S. Cl. D6—512



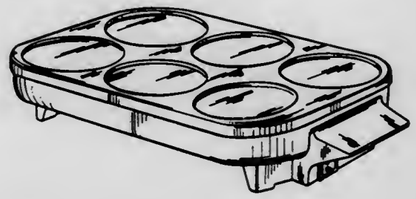
333,062
CLEANSING AGENT DISPENSER
Wouter J. ten Wolde, Bentveld, and Evert Ganzeboom, Aerdenhout, both of Netherlands, assignors to Bentfield B.V., Hillegom, Netherlands
Filed Nov. 30, 1990, Ser. No. 621,562
Claims priority, application Hague, Jun. 8, 1990, DM/016.883
Term of patent 14 years
U.S. Cl. D6—545



333,063
SHOWER DISPENSER FOR SHAMPOO
Sally J. Podesta Burke, 2518 Sheridan Way, Stockton, Calif. 95207
Filed Feb. 8, 1991, Ser. No. 652,748
Term of patent 14 years
U.S. Cl. D6—545

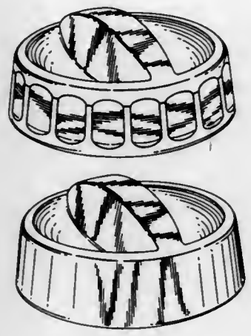


333,064
PANCAKE GRIDDLE
Bruno Sorrel, Sevrier, France, assignor to Tefal S.A., Rumilly, France
Filed Jul. 2, 1990, Ser. No. 546,878
Claims priority, application France, Jan. 5, 1990, 90 0070
Term of patent 14 years
U.S. Cl. D7—364

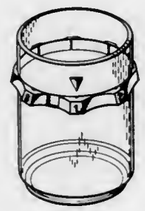


VOL 1147 ISS 2 FEB 9 1993 UMI

333,065
LID FOR STORAGE JAR
Kent W. Murphy, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Dec. 9, 1991, Ser. No. 804,173
Term of patent 14 years
U.S. Cl. D7—391



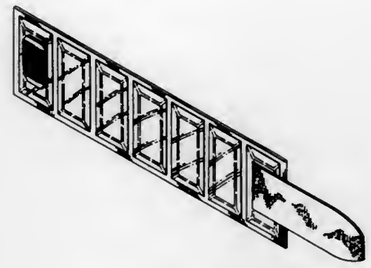
333,066
DRINKING CUP
Rebecca J. Kimpson, Lithonia, Ga., assignor to Concept 8, Inc., Lithonia, Ga.
Filed Sep. 23, 1991, Ser. No. 764,394
Term of patent 14 years
U.S. Cl. D7—509



333,067
MUG
Charles H. Feltman, III, 2569 Marian Way, San Luis Obispo, Calif. 93401
Filed Jun. 29, 1990, Ser. No. 545,972
Term of patent 14 years
U.S. Cl. D7—536



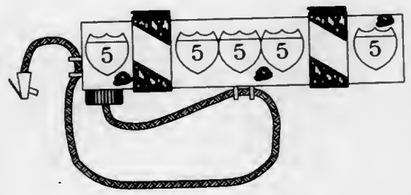
333,068
COOLING WRAP
Brian Williams, Box 361, Westbank, B.C., Canada V0H 2A0
Filed Sep. 4, 1990, Ser. No. 577,581
Claims priority, application Canada, Mar. 1, 1990, 01-03-90-6
Term of patent 14 years
U.S. Cl. D7—607



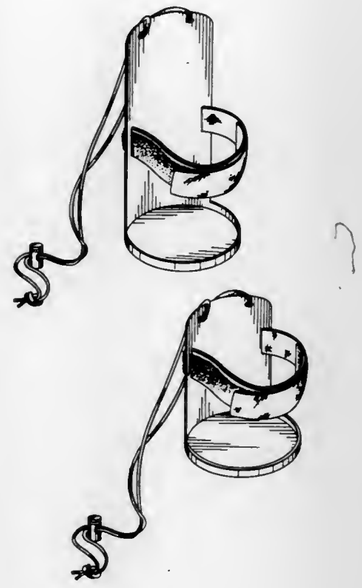
333,069
BOTTLE DRAIN COUPLING
Clint J. Fussner, 7588 Ridgemont, Newburgh, Ind. 47630
Filed Oct. 29, 1990, Ser. No. 604,603
Term of patent 14 years
U.S. Cl. D7—619



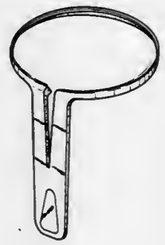
333,070
DRINK DISPENSER FOR VEHICLE
Andrew C. Chinn, 1269 NW. 90th St., Clive, Iowa 50325
Filed Nov. 9, 1990, Ser. No. 611,152
Term of patent 14 years
U.S. Cl. D7—620



333,071
HOLDER FOR BEVERAGE CONTAINERS
Kevin W. Lim, 4041 SW. Barton, Seattle, Wash. 98136
Filed Nov. 25, 1991, Ser. No. 802,446
Term of patent 14 years
U.S. Cl. D7—620



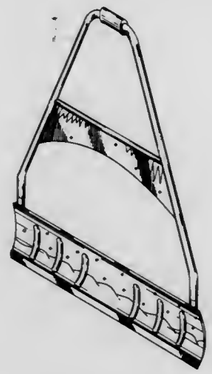
333,072
CONTAINER HOLDER
Ching-Lung Hung, 7Fl-2, No. 1, Lane 24, Mou-Fan Street, Taichung, Taiwan
Filed Jul. 2, 1990, Ser. No. 547,115
Term of patent 14 years
U.S. Cl. D7—622



333,073
WEED PULLER
Joseph C. Linscott, 828 E. 22nd Ave., North Kansas City, Mo. 64116
Filed Dec. 7, 1990, Ser. No. 624,248
Term of patent 14 years
U.S. Cl. D8—4

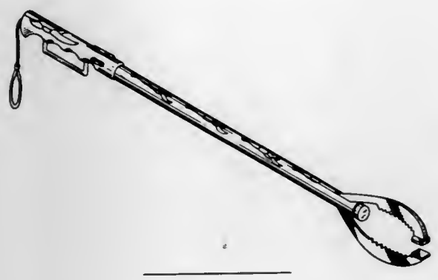


333,074
SHOVEL
Sam M. Ciccarelli, 795 E. Linden Ave., Lake Forest, Ill. 60045
Filed Sep. 19, 1990, Ser. No. 584,885
Term of patent 14 years
U.S. Cl. D8—10

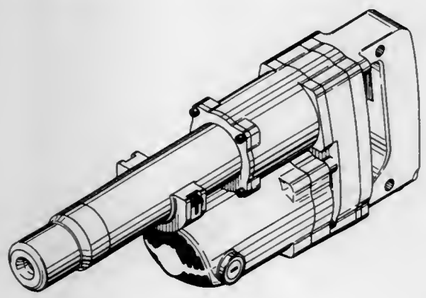


VOL
1147
ISS
2
FE
9
1993
UMI

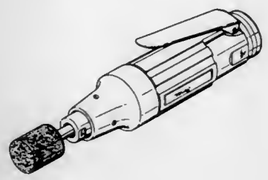
333,075
COMBINED GRIPPING TONGS AND LIGHT
Robert A. Iocantalupo, and William Greenbaum, both of 58-84 Maspeth Ave., Maspeth, N.Y. 11378
Filed Aug. 21, 1990, Ser. No. 570,364
Term of patent 14 years
U.S. Cl. D8—51



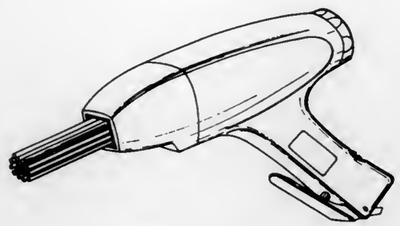
333,076
PORTABLE ELECTRIC WRENCH
Fusao Fushiya, and Shigeki Yamauchi, both of Anjo, Japan, assignors to Makita Electric Works, Ltd., Anjo, Japan
Filed Mar. 7, 1991, Ser. No. 665,717
Claims priority, application Japan, Sep. 13, 1990, 2-31000
Term of patent 14 years
U.S. Cl. D8—61



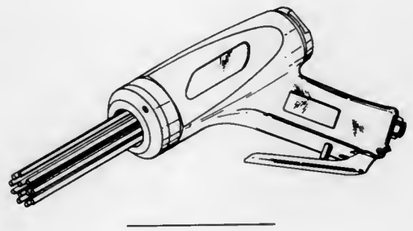
333,077
PORTABLE ROTARY GRINDER
Toshio Mikiya, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan
Filed Dec. 26, 1990, Ser. No. 634,071
Term of patent 14 years
U.S. Cl. D8—62



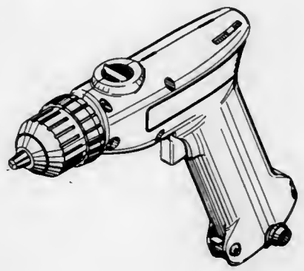
333,078
PORTABLE VIBRATING CHISEL
Toshio Mikiya, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan
Filed Dec. 26, 1990, Ser. No. 632,732
Term of patent 14 years
U.S. Cl. D8—68



333,079
PORTABLE VIBRATING CHISEL
Toshio Mikiya, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan
Filed Dec. 26, 1990, Ser. No. 634,072
Term of patent 14 years
U.S. Cl. D8—68



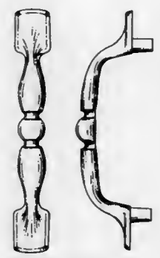
333,080
PORTABLE ELECTRIC DRILL
Fusao Fushiya, and Michio Okumura, both of Anjo, Japan, assignors to Makita Electric Works, Ltd., Anjo, Japan
Filed Feb. 15, 1991, Ser. No. 655,976
Claims priority, application Japan, Aug. 17, 1990, 2-27799
Term of patent 14 years
U.S. Cl. D8—68



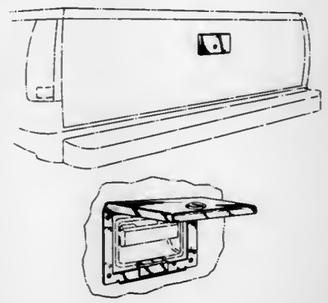
333,081
KNIFE SHARPENER
Louis S. Glesser, 164 Aspen La., Evergreen, Colo. 80439
Filed Oct. 31, 1990, Ser. No. 608,327
Term of patent 14 years
U.S. Cl. D8—91



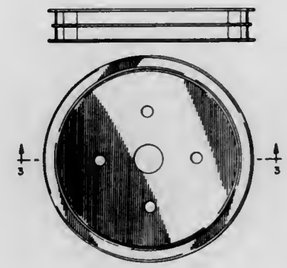
333,082
PULL
Emilorah Bocade, Savannah, Ga.; Doyle Watt, Grand Rapids, Mich.; Carl W. Hendrick, High Point, N.C., and Deborah Mattson, Plainwell, Mich., assignors to Keeler Brass Company, Grand Rapids, Mich.
Filed Mar. 8, 1990, Ser. No. 491,125
Term of patent 14 years
U.S. Cl. D8—317



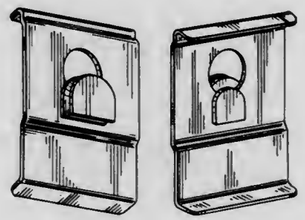
333,083
LOCKING COVER FOR A VEHICLE TAILGATE LATCH
Jesse Stenger, 3323 Rancho El Encino Dr., Covina, Calif. 91724
Filed Jun. 6, 1990, Ser. No. 551,573
Term of patent 14 years
U.S. Cl. D8—346



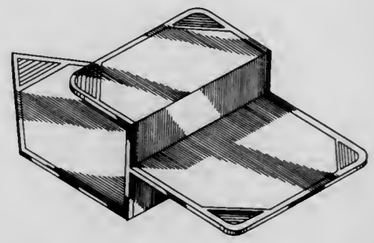
333,084
PULLEY
Toshiaki Kanemitsu, Kobe; Kazuyuki Oda, Hyogo, and Shuji Kanemitsu, Kobe, all of Japan, assignors to Kabushiki Kaisha Kanemitsu, Japan
Filed May 29, 1991, Ser. No. 706,730
Claims priority, application Japan, Dec. 12, 1990, 2-41693; Dec. 19, 1990, 2-42517
Term of patent 14 years
U.S. Cl. D8—360



333,085
MOUNTING BRACKET
Frede L. Thomsen, Norre Port 13, DK-8000 Aarhus C, Denmark
Filed Mar. 25, 1991, Ser. No. 673,894
Claims priority, application Denmark, Sep. 24, 1990, 1130/90
Term of patent 14 years
U.S. Cl. D8—373

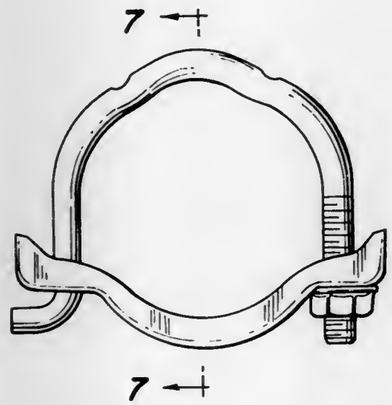


333,086
CEILING CLIP
Jeffrey Karas, and Jeffrey Klein, both of 32 Prince St., Brockton, Mass. 02402-2829
Filed Mar. 6, 1990, Ser. No. 488,842
Term of patent 14 years
U.S. Cl. D8—389

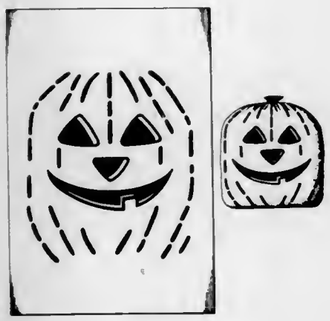


VOL
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ISS
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1993
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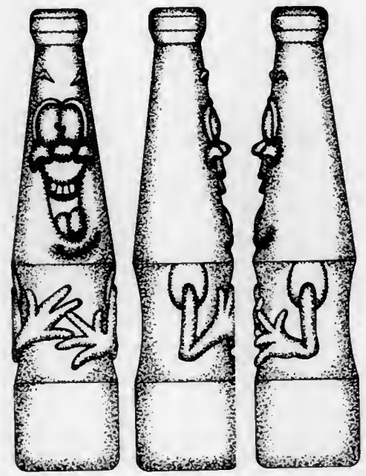
333,087
PIPE CLAMP
Harry Tekirian, 4561 Curtis, Dearborn, Mich. 48126
Filed Jul. 19, 1991, Ser. No. 732,707
Term of patent 14 years
U.S. Cl. D8—394



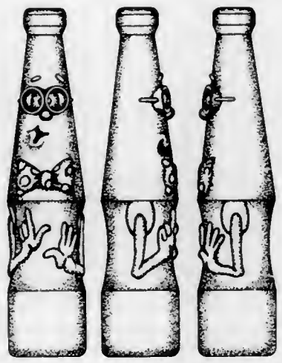
333,088
BAG
B. Joseph Beck, Mason, and Colleen Davis, Cincinnati, both of Ohio, assignors to The Kenley Corporation, Mason, Ohio
Filed Feb. 4, 1991, Ser. No. 649,943
Term of patent 14 years
U.S. Cl. D9—305



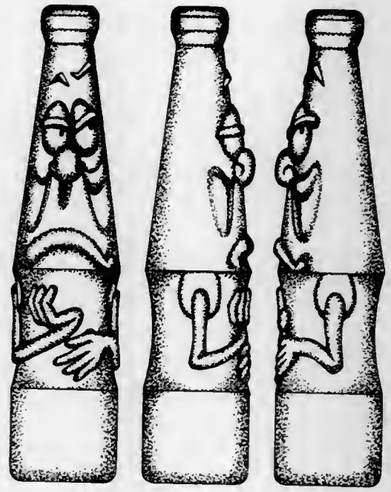
333,089
SIMULATIVE BOTTLE
Arne H. Brauner, Minnetonka; James R. Clancy, Minneapolis; Rod B. Jané, Wayzata; Alden H. Pflager, Minneapolis, and Scott W. Baker, Medina, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Oct. 25, 1991, Ser. No. 782,443
Term of patent 14 years
U.S. Cl. D9—311



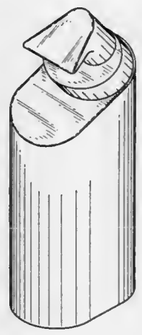
333,090
SIMULATIVE BOTTLE
Arne H. Brauner, Minnetonka; Rod B. Jané, Wayzata; Alden H. Pflager, Minneapolis, and Scott W. Baker, Medina, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Oct. 25, 1991, Ser. No. 782,444
Term of patent 14 years
U.S. Cl. D9—311



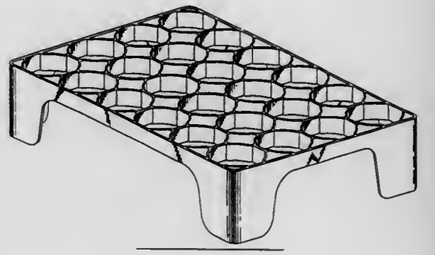
333,091
SIMULATIVE BOTTLE
Arne H. Brauner, Minnetonka; James R. Clancy, Minneapolis; Shawn P. O'Grady, St. Louis Park; Rod B. Jané, Wayzata; Alden H. Pflager, Minneapolis, and Scott W. Baker, Medina, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Oct. 25, 1991, Ser. No. 782,446
Term of patent 14 years
U.S. Cl. D9—311



333,092
COSMETIC DISPENSING CONTAINER
Aviv Moshe, Hod HaSharon, Israel, assignor to Jakov Matzkin, Israel, a part interest
Filed Feb. 25, 1991, Ser. No. 660,597
Claims priority, application Israel, Aug. 27, 1990, 16847
Term of patent 14 years
U.S. Cl. D9—338



333,093
DIVIDER FOR BOTTLES OR THE LIKE
J. B. Rehrig, Rancho Palos Verdes, Calif.; Terry J. Nigrelli, Kiel, Wis., and Arne Lang-Ree, Manhattan Beach, Calif., assignors to Rehrig-Pacific Company, Inc., Los Angeles, Calif.
Filed Sep. 19, 1989, Ser. No. 410,249
Term of patent 14 years
U.S. Cl. D9—341



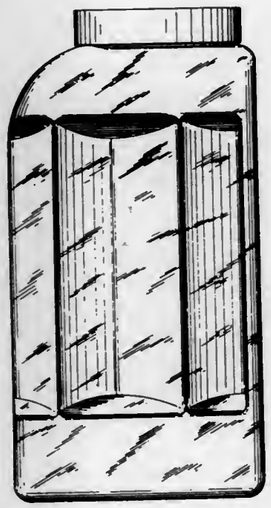
333,094
STACKING CONTAINER
Aaron Zutler, Woodbury, N.Y., assignor to Marketing Congress, Inc., Plainview, N.Y.
Filed Dec. 18, 1990, Ser. No. 629,213
Term of patent 14 years
U.S. Cl. D9—423

333,095
ADJUSTABLE SPRAY CAN HOLDER TOOL FOR SPRAYING AT HIGH POSITIONS
Clarence L. Haubner, Rte. 1, Box 75B, Canaan, Ind. 47224-9514
Filed Nov. 2, 1990, Ser. No. 608,312
Term of patent 14 years
U.S. Cl. D9—434

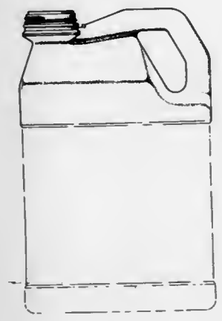


VOL
1147
ISS
2
FE
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1993
UMI

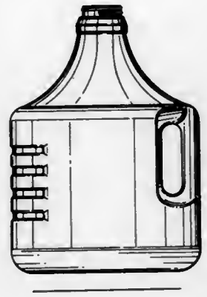
333,096
COMBINED CONTAINER AND CAP
J. Morris Binder, Des Moines, Iowa, assignor to Tone Brothers, Inc., Des Moines, Iowa
Filed Feb. 12, 1991, Ser. No. 654,557
Term of patent 14 years
U.S. Cl. D9—522



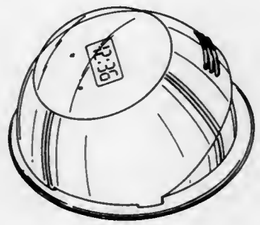
333,097
UPPER PORTION OF A BOTTLE
William A. Levy, Raleigh, and Horace Johnson, Jr., Apex, both of N.C., assignors to Rhone-Poulenc Ag Co., Research Triangle Park, N.C.
Filed Feb. 20, 1990, Ser. No. 482,328
Term of patent 14 years
U.S. Cl. D9—528



333,098
BOTTLE
Borge Hestehave, Alta Loma, and Kjeld Hestehave, Upland, both of Calif., assignors to Bomatic, Inc., Ontario, Calif.
Filed Jan. 19, 1990, Ser. No. 467,574
Term of patent 14 years
U.S. Cl. D9—531



333,099
COMBINED DIGITAL CLOCK AND SPRING CLIP
Junji Hiromori, Tokyo, Japan, assignor to Hiromori Inc., Tokyo, Japan
Filed Oct. 22, 1991, Ser. No. 781,936
Claims priority, application Japan, Jul. 10, 1991, 20625/1991
Term of patent 14 years
U.S. Cl. D10—2



333,100
WRIST WATCH
Takashi Morishima, Akishima, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Aug. 30, 1990, Ser. No. 574,940
Term of patent 14 years
U.S. Cl. D10—38



333,101
WRISTWATCH
Ira Krieger, 407 Lincoln Rd., Ste. 9-G, Miami Beach, Fla. 33138
Filed May 15, 1990, Ser. No. 523,466
Term of patent 14 years
U.S. Cl. D10—39



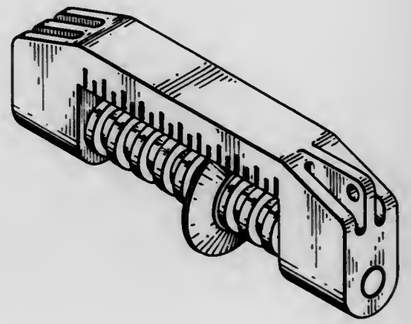
333,102
WATCH
Eddy Burgener, Moutier, Switzerland, assignor to Roventa Hexex SA, Switzerland
Filed Jul. 23, 1990, Ser. No. 555,755
Term of patent 14 years
U.S. Cl. D10—39



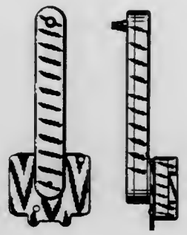
333,103
COMBINATION TAPE MEASURE AND SQUARE
Dennis Douglas, 1615 Ora Dr., Napa, Calif. 94559
Filed May 10, 1991, Ser. No. 699,797
Term of patent 14 years
U.S. Cl. D10—65



333,104
MAP DISTANCE RECORDER
Alan R. Hollander, Needham, Mass., assignor to Rhonda G. Hollander, Needham, Mass.
Filed Jan. 11, 1991, Ser. No. 639,940
Term of patent 14 years
U.S. Cl. D10—70



333,105
CLOCK MOVEMENT
Tsuyoshi Hayakawa, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Feb. 1, 1989, Ser. No. 305,483
Claims priority, application Japan, Aug. 30, 1988, 63-34250
Term of patent 14 years
U.S. Cl. D10—129



VOL 1147 ISS 2 FEB 9 1993 UMI

333,106
JEWELRY CHAIN
Guy S. Benhamou, Beverly Hills, Calif., assignor to OroAmerica, Inc., Burbank, Calif.
Filed Jan. 30, 1990, Ser. No. 472,613
Term of patent 14 years
U.S. Cl. D11—13



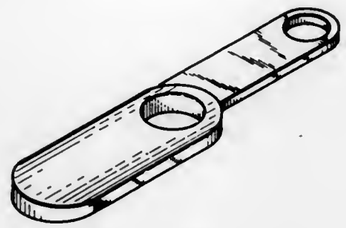
333,107
JEWELRY CHAIN
Kosaburo Nakagawa, Chiba, Japan, assignor to Nakagawa Corporation, Tokyo, Japan
Filed Jan. 7, 1991, Ser. No. 637,879
Term of patent 14 years
U.S. Cl. D11—13



333,108
DIAMOND OR SIMILAR ARTICLE
Nick Akselrod, Boca Raton, Fla., assignor to Harry Winston, Inc., New York, N.Y.
Filed Oct. 17, 1989, Ser. No. 422,451
The portion of the term of this patent subsequent to Jun. 30, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D11—90



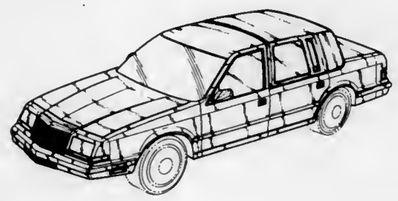
333,109
PULL TAB FOR SLIDE FASTENER
Dana Franklin, Denver, Colo., assignor to Samsonite Corporation, Denver, Colo.
Filed Mar. 15, 1991, Ser. No. 670,147
Term of patent 14 years
U.S. Cl. D11—221



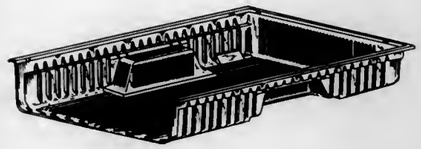
333,110
SNOWMOBILE
Tomonori Mogi, and Munehito Nakamura, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 8, 1990, Ser. No. 564,381
Claims priority, application Japan, Feb. 9, 1990, 2-3867
Term of patent 14 years
U.S. Cl. D12—7



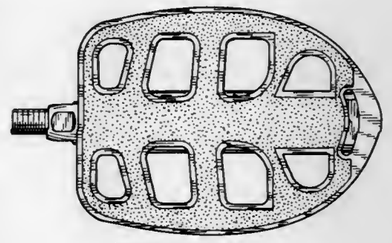
333,111
VEHICLE BODY
Lance R. Wagner, 32080 Grand River, Farmington, Mich. 48024; Allan Kornmiller, 5398 Breeze Hill, Troy, Mich. 48084; Donald M. Wright, 21625 West River Rd., Grosse Ile, Mich. 48138, and Kenneth L. Carlson, 744 Baker, Clawson, Mich. 48017
Filed May 14, 1990, Ser. No. 522,625
Term of patent 14 years
U.S. Cl. D12—92



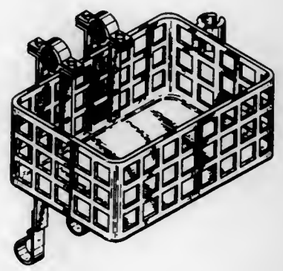
333,112
VEHICLE CARGO BED LINER
Joseph Disco, Cherry Hill, N.J., and Todd R. Kennedy, Hanover, Pa., assignors to York Products, Inc., Hanover, Pa.
Continuation-in-part of Ser. No. 312,571, Feb. 21, 1989, abandoned, and a continuation-in-part of Ser. No. 237,049, Aug. 29, 1988, abandoned. This application Mar. 13, 1990, Ser. No. 493,852
Term of patent 14 years
U.S. Cl. D12—98



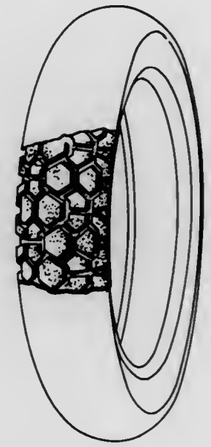
333,113
PEDAL
Thomas C. Nestrud, Barrington, Ill., assignor to Excel International Group, Inc., Rockford, Ill.
Filed Apr. 1, 1991, Ser. No. 677,889
Term of patent 14 years
U.S. Cl. D12—125



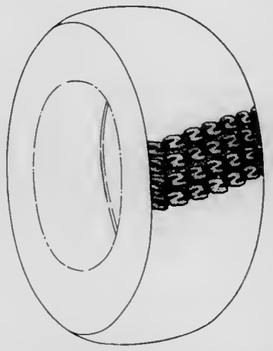
333,114
BASKET FOR USE ON A WALKER
Marie Taylor, Unit 787 2711 N. Halifax Ave., Daytona Beach, Fla. 32118
Filed Mar. 12, 1991, Ser. No. 668,454
Term of patent 14 years
U.S. Cl. D12—133



333,115
TIRE
Guido Trussardi, Basiglio, Italy, assignor to Pirelli Coordinamento Pneumatici S.p.A., Milan, Italy
Filed Sep. 13, 1990, Ser. No. 583,986
Claims priority, application Italy, Mar. 13, 1990, 20798B/90
Term of patent 14 years
U.S. Cl. D12—136

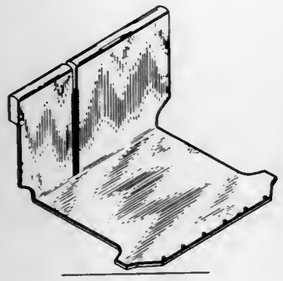


333,116
PENUMATIC TIRE TREAD AND BUTTRESS
Norman G. Amero, Oak Ridge, Tenn., assignor to Dico Tire, Inc., Clinton, Tenn.
Filed Mar. 20, 1990, Ser. No. 495,904
Term of patent 14 years
U.S. Cl. D12—146

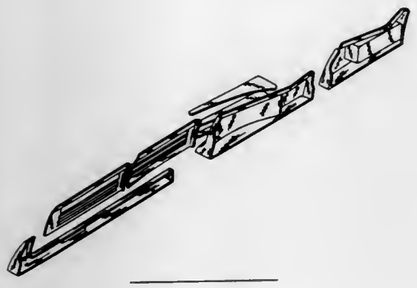


VOL
1147
ISS
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FE
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1993
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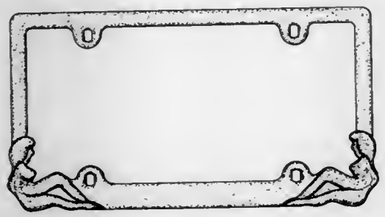
333,117
INTERIOR CARGO COVER FOR MOTOR VEHICLES
Thomas F. Hamilton, 1634 Ixias Ct., San Jose, Calif. 95124, assignor to Thomas F. Hamilton, San Jose, Calif.
Filed Jun. 11, 1991, Ser. No. 728,939
Term of patent 14 years
U.S. Cl. D12—155



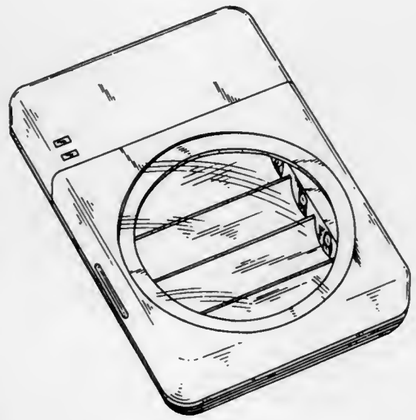
333,118
EXTERIOR BODY PANEL KIT FOR ATTACHMENT TO A TRUCK BODY
George J. Stauffer, 10967 Division St., Blue Mounds, Wis. 53517
Filed Oct. 23, 1990, Ser. No. 601,863
Term of patent 14 years
U.S. Cl. D12—190



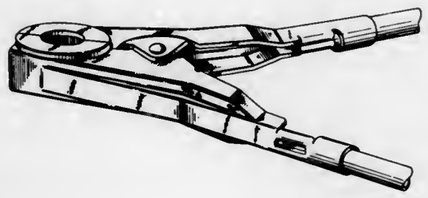
333,119
LICENSE PLATE FRAME
David L. Russell, Rancho Mirage, Calif., assignor to Russell Performance Products, Long Beach, Calif.
Filed Nov. 19, 1991, Ser. No. 795,075
Term of patent 14 years
U.S. Cl. D12—193



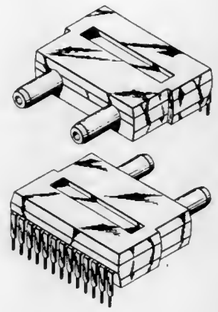
333,120
BATTERY CHARGER
Kuniyuki Shimoo, Hyogo, and Kazuo Takada, Nara, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Apr. 19, 1991, Ser. No. 688,075
Claims priority, application Japan, Oct. 19, 1990, 2-35220
Term of patent 14 years
U.S. Cl. D13—107



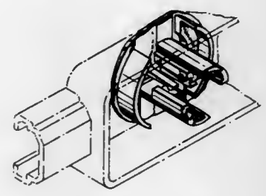
333,121
CONNECTOR CLAMP FOR USE WITH BATTERY TERMINALS OF DIFFERING TYPES
Joseph C. Craveiro, Costa Mesa, Calif., assignor to American Consolidated Enterprises, Inc., Trabuco Canyon, Calif.
Filed May 5, 1989, Ser. No. 348,025
Term of patent 14 years
U.S. Cl. D13—120



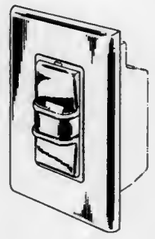
333,122
OPTICAL RECEIVER/TRANSMITER MODULE
Mitsutoshi Kamakura; Hisao Go; Osamu Akita, and Kazuhiro Tanida, all of Yokohama, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Oct. 5, 1990, Ser. No. 593,619
Claims priority, application Japan, Apr. 5, 1990, 2-11582
Term of patent 14 years
U.S. Cl. D13—123



333,123
LAMP-BULB-RECEPTIVE SOCKET PORTION OF A MOLDED-PLASTIC VEHICLE LAMP ASSEMBLY
Bradley C. Van Riper, Kennedy, and Martin P. Van Fossan, Jamestown, both of N.Y., assignors to Truck-Lite Co., Inc., Falconer, N.Y.
Filed Sep. 19, 1990, Ser. No. 584,865
Term of patent 14 years
U.S. Cl. D13—134



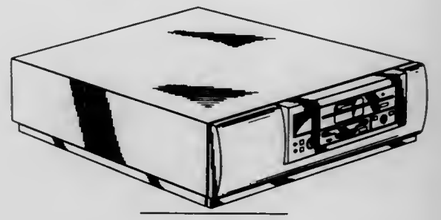
333,124
CONTROL SWITCH
Steven R. Carson, Upper Saddle River, N.J., assignor to The Genlyte Group Incorporated, Secaucus, N.J.
Filed Aug. 1, 1991, Ser. No. 738,948
Term of patent 14 years
U.S. Cl. D13—169



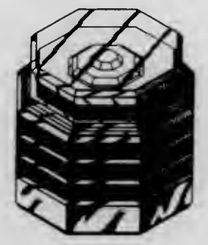
333,125
IMAGE EDITING UNIT FOR DIGITALLY INPUT DATA
Takeshi Komada, Yokohama; Hisakazu Shimizu; Yosuke Ohsawa, both of Tokyo, and Mitsuru Sakurai, Musashino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 24, 1990, Ser. No. 632,753
Claims priority, application Japan, Jul. 19, 1990, 2-24615
Term of patent 14 years
U.S. Cl. D14—100



333,126
PERSONAL COMPUTER
Lawrence M. Kuba, Nashua, N.H., and Thomas A. Tedham, Salem, Mass., assignors to Wang Laboratories, Inc., Lowell, Mass.
Filed Mar. 8, 1991, Ser. No. 667,098
Term of patent 14 years
U.S. Cl. D14—100

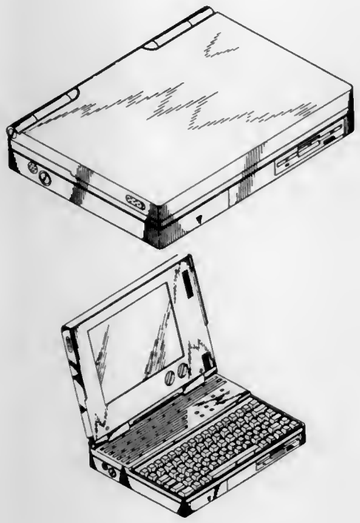


333,127
COMPUTER CABINET
Seymour R. Cray, Colorado Springs, Colo.; Nicholas J. Krajewski, Krajewski; David J. Johnson, Chippewa Falls, both of Wis.; Eugene N. Reshanov, Golden Valley, and Johannes N. Gaston, Minnetonka, both of Minn., assignors to Cray Computer Corporation, Colorado Springs, Colo.
Filed Feb. 15, 1990, Ser. No. 480,580
Term of patent 14 years
U.S. Cl. D14—102

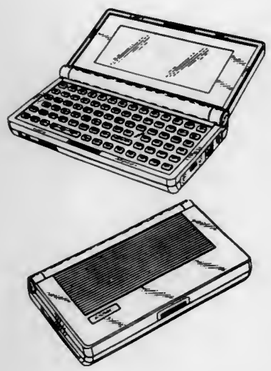


VOL 1147 ISS 2 FEB 9 1993 UMI

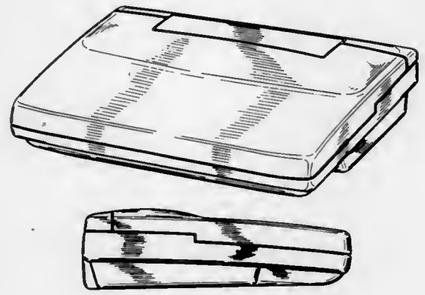
333,128
PORTABLE COMPUTER
Allen S. C. Peng, and Elton H. S. Fang, both of Taipei, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan
Filed Dec. 18, 1990, Ser. No. 629,195
Term of patent 14 years
U.S. Cl. D14—106



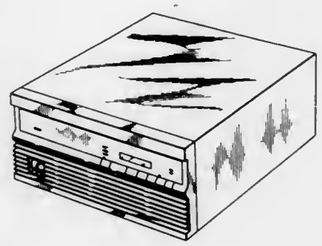
333,129
PALMTOP COMPUTER
Michael D. Derocher, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Feb. 8, 1991, Ser. No. 652,743
Term of patent 14 years
U.S. Cl. D14—106



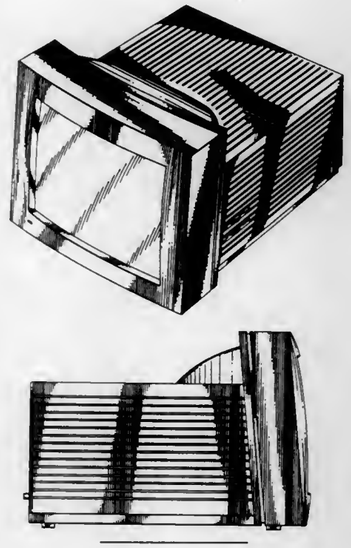
333,130
PORTABLE COMPUTER
John M. Amber, Menlo Park; Michael R. Barry, Palo Alto, and Teck Yong, Mountain View, all of Calif., assignors to Beaver Computer Corporation, San Jose, Calif.
Filed Feb. 25, 1991, Ser. No. 660,599
Term of patent 14 years
U.S. Cl. D14—106



333,131
CONVERTER FOR TRANSMITTING IMAGE AND CHARACTER DATA FROM A COMPUTER TO A PRINTER
Ei Yamamoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 10, 1990, Ser. No. 565,120
Claims priority, application Japan, Feb. 13, 1990, 2-4151
Term of patent 14 years
U.S. Cl. D14—107



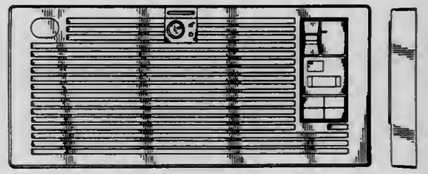
333,132
COMPUTER MONITOR
Lawrence E. Barbera, San Mateo, and Michael J. Nuttall, Palo Alto, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Sep. 20, 1990, Ser. No. 586,049
The portion of the term of this patent subsequent to Apr. 7, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D14—113



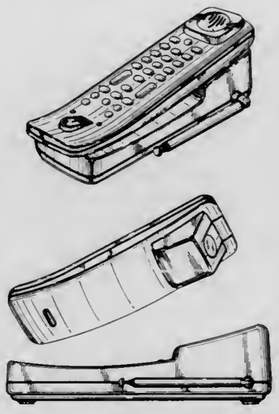
333,133
STYLUS FOR INPUTTING ELECTROMAGNETIC SIGNALS INTO A TABLET
Masuo Hiroca, Saitamaken, Japan, assignor to Kabushiki Kaisha Wacom, Washimiyamachi, Japan
Filed Sep. 6, 1989, Ser. No. 403,503
Claims priority, application Japan, Mar. 6, 1989, 1-8090
Term of patent 14 years
U.S. Cl. D14—114



333,134
FRONT PANEL FOR A MEDIA ENCLOSURE FOR A DATA PROCESSING SYSTEM
Wayne L. Aderman, Zumbro Falls, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 28, 1990, Ser. No. 546,054
Term of patent 14 years
U.S. Cl. D14—115

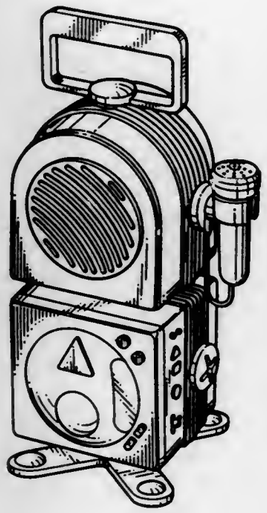


333,135
COMBINED REMOTE CONTROL AND CORDLESS TELEPHONE
David E. Wachob, Elkins Park, Pa., and Charles Curbbun, Huntington Beach, Calif., assignors to General Instrument Corporation, Hatboro, Pa.
Continuation-in-part of Ser. No. 637,747, Jan. 7, 1991. This application Jun. 13, 1991, Ser. No. 712,210
Term of patent 14 years
U.S. Cl. D14—138



VOL 1147 ISS 2 FE 9 1993 UMI

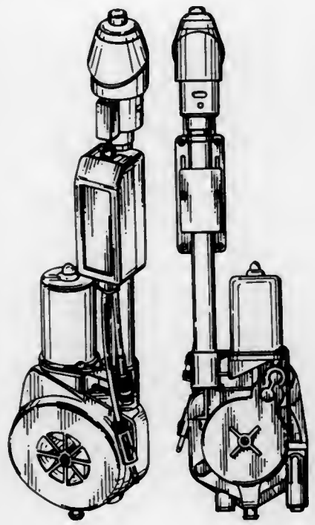
333,136
CASSETTE TAPE RECORDER
Sun I. Yu, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed Apr. 19, 1991, Ser. No. 672,614
Term of patent 14 years
U.S. Cl. D14—165



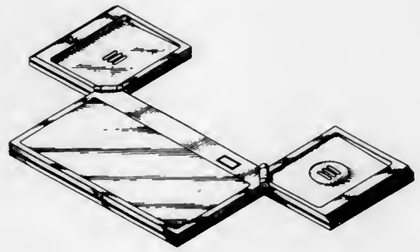
333,137
HEADSET
Jonathan C. Burke, Larkspur, Calif., assignor to Telex Communications, Inc., Minneapolis, Minn.
Filed Apr. 12, 1991, Ser. No. 685,560
Term of patent 14 years
U.S. Cl. D14—206



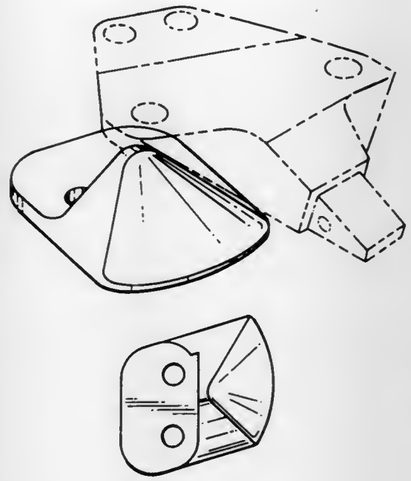
333,138
ANTENNA FOR AUTOMOBILES
Yoshimi Egashira, and Michio Kira, both of Tokyo, Japan, assignors to Harada Industry Co., Ltd., Tokyo, Japan
Filed Nov. 29, 1990, Ser. No. 620,325
Claims priority, application Japan, May 31, 1990, 2-17990
Term of patent 14 years
U.S. Cl. D14—230



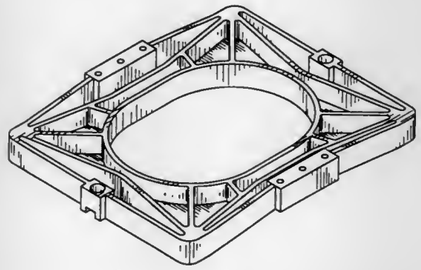
333,139
PORTABLE AUTOMATED TELLER MACHINE
Timothy J. H. Poupore, Toronto, Canada, assignor to National Transaction Network, Inc., Hudson, Mass.
Filed Nov. 30, 1989, Ser. No. 443,970
Term of patent 14 years
U.S. Cl. D14—242



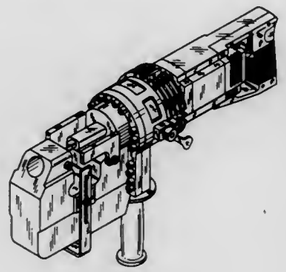
333,140
IMPLEMENT BASE EDGE PROTECTOR
James A. Garman, Eureka, Ill., assignor to Caterpillar Inc., Peoria, Ill.
Filed Sep. 10, 1990, Ser. No. 580,437
Term of patent 14 years
U.S. Cl. D15—28



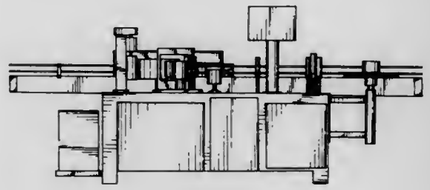
333,141
SUSPENSION INSTRUMENT FOR ROTOR OF GRINDING MACHINE
Lars G. Kilström, Täby, and Sten A. R. Hansen, ÅmÅl, both of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Feb. 7, 1990, Ser. No. 476,279
Claims priority, application Sweden, Aug. 8, 1989, 891802
Term of patent 14 years
U.S. Cl. D15—124



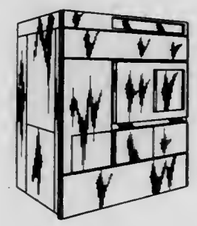
333,142
PORTABLE HYDRAULIC PUNCHING INSTRUMENT
Kiyoshi Kimura, Fujisawa, Japan, assignor to Kabushiki Kaisha Ogura, Japan
Filed Jul. 12, 1989, Ser. No. 379,542
Claims priority, application Japan, Jan. 18, 1989, 1-01280
Term of patent 14 years
U.S. Cl. D15—128



333,143
AUTOMATIC HIGH-SPEED LABELING MACHINE
Michael J. West, and Jimmy D. Williamson, both of 1465 Ellerd Dr., Turlock, Calif. 95380
Filed Oct. 18, 1990, Ser. No. 601,051
Term of patent 14 years
U.S. Cl. D15—145



333,144
CHAMBER FOR SEMICONDUCTOR FABRICATING MACHINE
Hiroyuki Koizumi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 27, 1991, Ser. No. 676,068
Claims priority, application Japan, Oct. 3, 1990, 2-33476
Term of patent 14 years
U.S. Cl. D15—199

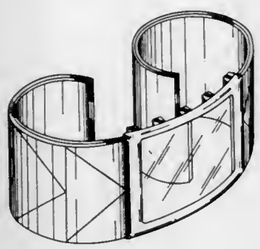


VOL 1147 ISS 2 FE 9 1993 UMI

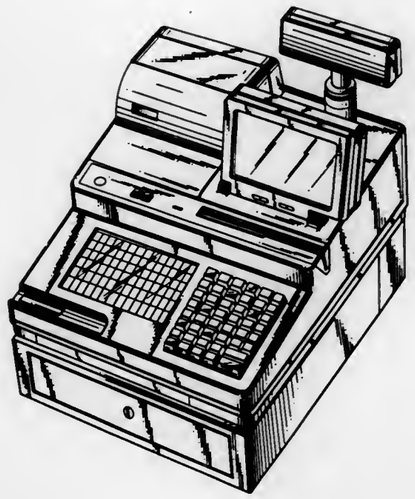
333,145
UNITARY EYEGLASS LENS
James H. Jannard, San Juan Capistrano, Calif., assignor to Oakley, Inc., Irvine, Calif.
Filed Jun. 28, 1990, Ser. No. 545,962
The portion of the term of this patent subsequent to Aug. 4, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D16—101



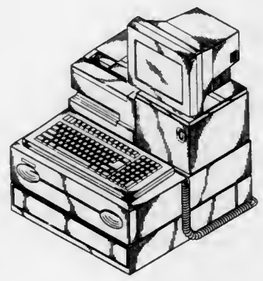
333,146
PRESCRIPTION BOTTLE MAGNIFIER
Timothy E. McDevitt, 64 Fairy Dell Rd., Clinton, Conn. 06413
Filed Apr. 17, 1990, Ser. No. 510,403
Term of patent 14 years
U.S. Cl. D16—135



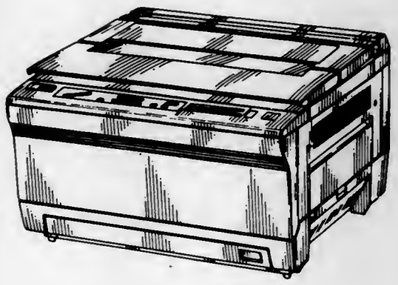
333,147
CASH REGISTER WITH POS SYSTEM
Takao Miyake; Masayoshi Kawaishi; Katsuhiro Ishida, and Yukio Kanaoka, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Nov. 1, 1991, Ser. No. 786,430
Claims priority, application Japan, May 15, 1991, 3-14201
Term of patent 14 years
U.S. Cl. D18—4



333,148
POINT OF SALE TERMINAL
Curtis P. French, Austin, Tex., assignor to Compuadd Corporation, Austin, Tex.
Filed Dec. 31, 1991, Ser. No. 815,372
Term of patent 14 years
U.S. Cl. D18—4



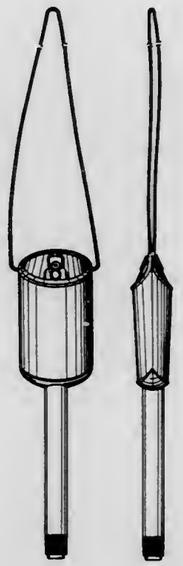
333,149
ELECTRONIC COPYING MACHINE
Maki Kasuo, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 30, 1990, Ser. No. 559,603
Claims priority, application Japan, Jan. 31, 1990, 2-2411
The portion of the term of this patent subsequent to Jun. 11, 2005, has been disclaimed.
Term of patent 14 years
U.S. Cl. D18—39



333,150
BOOKEND
Bernd Brüssing, Ulm, Fed. Rep. of Germany, assignor to Hans F. Hefendehl, Kierspe, Fed. Rep. of Germany
Filed Jan. 8, 1991, Ser. No. 638,974
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1990, 9004652
Term of patent 14 years
U.S. Cl. D19—34.1



333,151
COMBINED PEN AND HOLDER THEREFOR
Stanley Hochfeld, Howard Beach, N.Y., assignor to Chuck Perl, Valley Stream and Leouard Holtz, Oceanside, both of, N.Y., part interest to each
Filed Mar. 20, 1990, Ser. No. 496,505
Term of patent 14 years
U.S. Cl. D19—36

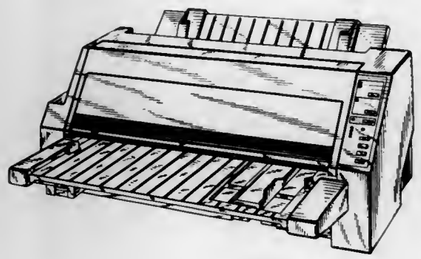


333,152
BALL POINT PEN TIP
Por Anavil, and Julian M. H. Deeley, both of Bangkok, Thailand, assignors to D.T.C. Industries Limited, Thailand
Filed Jan. 19, 1989, Ser. No. 299,735
Term of patent 14 years
U.S. Cl. D19—55

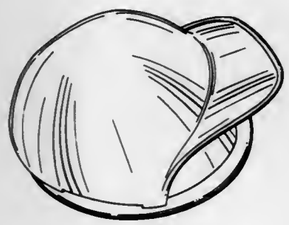


VOL
1147
ISS
2
FE
9
1993
UMI

333,153
DESIGN FOR A PRINTER FOR ELECTRONIC COMPUTER
Noritaka Uchibori, and Yoshiaki Nakayama, both of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan
Filed Nov. 5, 1990, Ser. No. 608,958
Claims priority, application Japan, May 10, 1990, 2-15688
Term of patent 14 years
U.S. Cl. D18—55



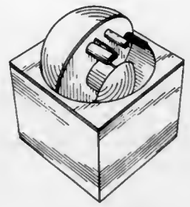
333,154
SPRING CLIP
Junji Hiromori, Tokyo, Japan, assignor to Hiromori Inc., Tokyo, Japan
Filed Oct. 22, 1991, Ser. No. 781,937
Claims priority, application Japan, Jul. 10, 1991, 3-20626
Term of patent 14 years
U.S. Cl. D19—65



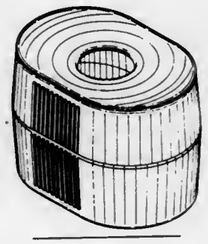
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SPRING CLIP
Junji Hiromori, Tokyo, Japan, assignor to Hiromori Inc., Tokyo, Japan
Filed Oct. 22, 1991, Ser. No. 781,938
Claims priority, application Japan, Jul. 10, 1991, 3-20624
Term of patent 14 years
U.S. Cl. D19—65



333,156
TAPE DISPENSER
Richard F. M. Peersmann, Scheveningen, Netherlands, assignor to Pollyflame International B.V., Netherlands
Filed Apr. 22, 1991, Ser. No. 689,606
Claims priority, application World Int. Prop. O., Dec. 19, 1990, 018391
Term of patent 14 years
U.S. Cl. D19—69



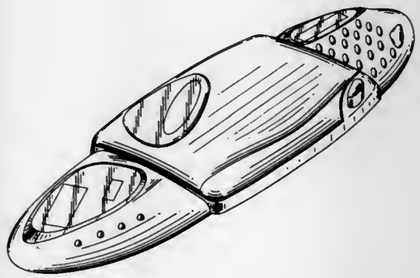
333,157
PAPER CLIP DISPENSER
Balthasar Kirchner, Eferding, Austria, assignor to Ernst Stadelmann Gesellschaft m.b.H, Eferding, Austria
Filed Aug. 17, 1990, Ser. No. 569,662
Claims priority, application Austria, Feb. 22, 1990, 27886; Feb. 22, 1990, 27887; Feb. 22, 1990, 27888; Feb. 22, 1990, 27889; Feb. 22, 1990, 27890; Feb. 22, 1990, 27891; Feb. 22, 1990, 27892
Term of patent 14 years
U.S. Cl. D19—75



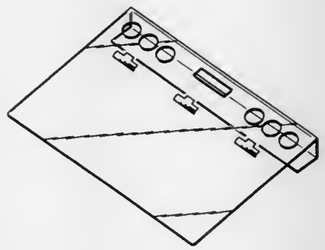
333,158
COMBINED HOLDER FOR A WRITING INSTRUMENT, CLOCK AND CALCULATOR
Richard F. M. Peersmann, Scheveningen, Netherlands, assignor to Pollyflame International B.V., Roelofarendsveen, Netherlands
Filed Jan. 19, 1990, Ser. No. 467,575
Claims priority, application United Kingdom, Jan. 10, 1990, 2003913
Term of patent 14 years
U.S. Cl. D19—77



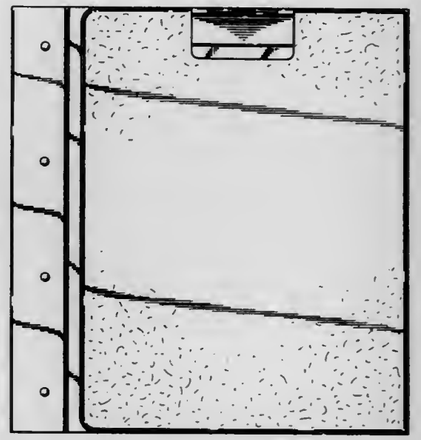
333,159
COMBINED DESK ACCESSORY HOLDER, CLOCK AND CALCULATOR
Richard F. M. Peersmann, ET Scheveningen, Netherlands, assignor to Pollyflame International B.V., Netherlands
Filed Jun. 21, 1990, Ser. No. 541,348
Claims priority, application Int'l Pat. Institute, Jan. 9, 1990, DM/015560
Term of patent 14 years
U.S. Cl. D19—78



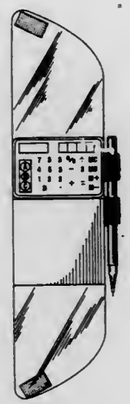
333,160
COMBINED BINGO PAPERS CLIPBOARD AND MARKING INSTRUMENT HOLDER
Sharon K. Collins, 103 E. Burbank, Appleton City, Mo. 64724
Filed Oct. 31, 1989, Ser. No. 429,863
Term of patent 14 years
U.S. Cl. D19—88



333,161
COMBINED CLIPBOARD AND CHECKBOOK HOLDER
Guy A. Hartnett, Lewiston, Me., assignor to One-Right Systems, Inc., Lewiston, Me.
Filed Apr. 26, 1991, Ser. No. 692,065
Term of patent 14 years
U.S. Cl. D19—88

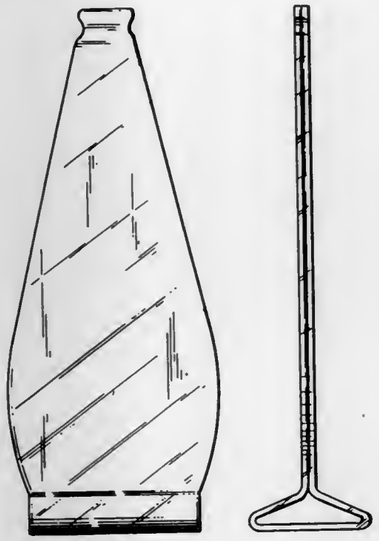


333,162
COMBINED WRITING BOARD, CALCULATOR AND WRITING INSTRUMENT FOR ATTACHMENT TO AN AUTOMOBILE STEERING WHEEL
Franklin W. Baker, 6170 Canterbury Dr., Culver City, Calif. 90230
Filed May 20, 1991, Ser. No. 702,728
Term of patent 14 years
U.S. Cl. D19—88

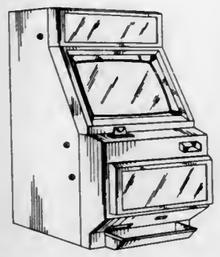


VOL 1147 ISS 2 FE 9 1993 UMI

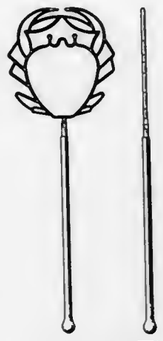
333,163
CARD HOLDER
Joseph H. Mendelsohn, 4208 Inverrary Blvd., Suite 80A, Lauderhill, Fla. 33319
Filed Sep. 17, 1991, Ser. No. 761,612
Term of patent 14 years
U.S. Cl. D20—40



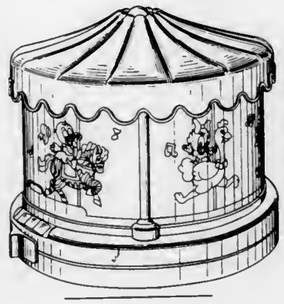
333,164
ELECTRONIC GAME HOUSING
David W. Kraft, and Jess L. Tode, both of Bozeman, Mont., assignors to Video Lottery Consultants, Inc., Bozeman, Mont.
Filed May 30, 1991, Ser. No. 707,406
Term of patent 14 years
U.S. Cl. D21—13



333,165
BUBBLE WAND
Margaret A. B. Neuroth, and Richard L. Neuroth, both of R.R. 1, Box 178-A, Epworth, Iowa 52045
Filed Jul. 30, 1991, Ser. No. 738,276
Term of patent 14 years
U.S. Cl. D21—61



333,166
ELECTRONIC CAROUSEL
Martin Caveza, Redondo Beach, Calif., assignor to Mattel, Inc., El Segundo, Calif.
Filed Oct. 1, 1990, Ser. No. 592,054
Term of patent 14 years
U.S. Cl. D21—64



333,167
STILT HANDLE
Lauren Guenette, 7 Lynnview Court S.E., Calgary, Alberta, Canada T2C 3A4
Filed Jun. 25, 1990, Ser. No. 543,064
Term of patent 14 years
U.S. Cl. D21—72



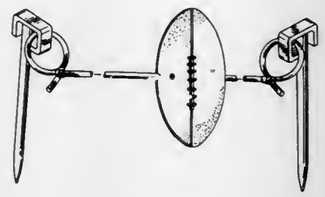
333,168
TOY WHEEL
Ming-Tai Huang, No. 28-1, Napa Lin, Shinhwa Chen, Tainan Shien, Taiwan
Filed Dec. 7, 1990, Ser. No. 624,287
Term of patent 14 years
U.S. Cl. D21—141



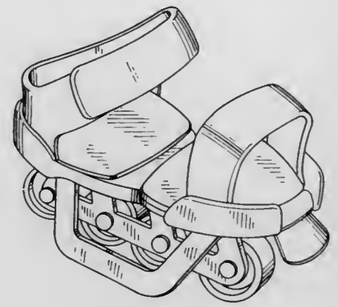
333,169
DOLL
Bonnie D. Romero, 318 Welch St., Mesquite, Tex. 75149
Filed Jun. 22, 1990, Ser. No. 542,407
Term of patent 14 years
U.S. Cl. D21—166



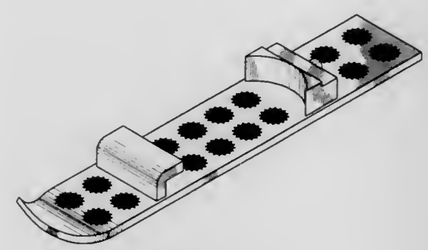
333,170
TETHERED FOOTBALL PRACTICE KICKING AID
John C. Patton, P.O. Box 67, La Pryor, Tex. 78872, assignor to John Clifton Patton, La Pryor and R. E. Peppy Blount, Longview, both of, Tex.
Filed Nov. 29, 1989, Ser. No. 442,684
Term of patent 14 years
U.S. Cl. D21—209



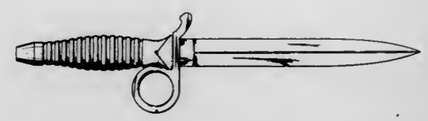
333,171
ROLLER SKATE
Robert Gertler, 23-10A Cpl. Kennedy Ave., Bayside, N.Y. 11360
Filed May 21, 1991, Ser. No. 703,999
Term of patent 14 years
U.S. Cl. D21—226



333,172
SNOW SKATES
Kenneth L. Body, 1022 Westbridge Ave., Danville, Calif. 94526
Filed Oct. 19, 1990, Ser. No. 600,114
Term of patent 14 years
U.S. Cl. D21—229

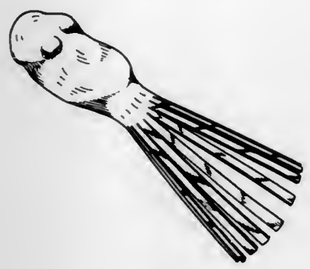


333,173
KNIFE
Kevin G. Pipes, White Pine, Tenn., assignor to United Cutlery Corporation, Sevierville, Tenn.
Filed May 7, 1991, Ser. No. 696,548
Term of patent 14 years
U.S. Cl. D22—118



VOL 1147 ISS 2 FEB 9 1993 UMI

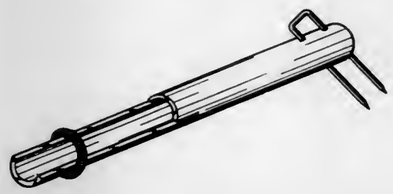
333,174
FISHING LURE
Fred H. Coggins, Brookland, Ark., assignor to Southern Pro Lures, Inc., Brookland, Ark.
Filed Aug. 29, 1990, Ser. No. 574,251
Term of patent 14 years
U.S. Cl. D22—128



333,175
FISHING LURE
William W. Belveal, P.O. Box 1362, and Phillip W. Belveal, 444 S. Madison, both of Pinedale, Wyo. 82941
Filed Apr. 19, 1990, Ser. No. 510,994
Term of patent 14 years
U.S. Cl. D22—133



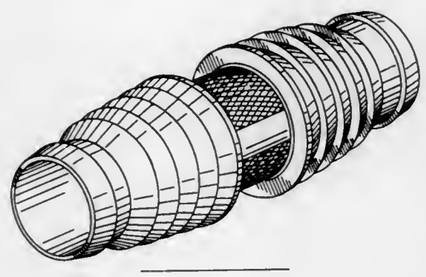
333,176
FISHING POLE HOLDER
Neal W. Millholen, 2220 E. 31st St., and Patrick T. Cassidy, 1631 E. 31st St., both of, Oakland, Calif. 94602
Filed Mar. 15, 1990, Ser. No. 493,677
Term of patent 14 years
U.S. Cl. D22—147



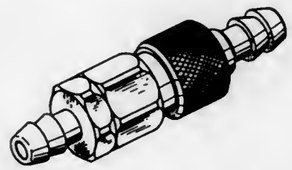
333,177
COMBINED GAS AND OIL CONTAINER
Michel Poirier, Lachenai, Canada, assignor to Union Carbide Canada Limited, Toronto, Canada
Filed May 10, 1991, Ser. No. 698,058
Claims priority, application Canada, Jan. 16, 1991, 16-01-91-2
Term of patent 14 years
U.S. Cl. D23—202



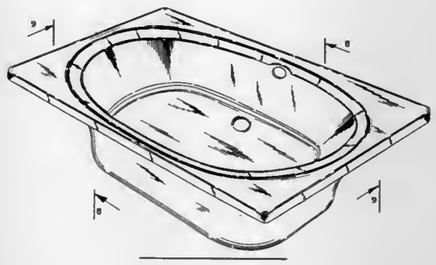
333,178
HOSE COUPLER
George A. Novy, Riverside, Ill., assignor to WirthCo Engineering, Inc., Bloomington, Minn.
Filed May 31, 1990, Ser. No. 530,979
Term of patent 14 years
U.S. Cl. D23—262



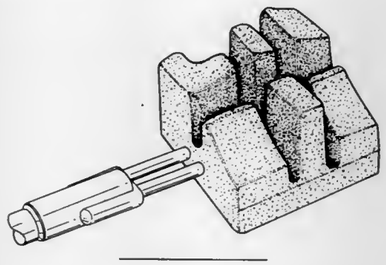
333,179
PIPE COUPLER
Toshio Mikiya, and Reichi Makishima, both of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan
Filed Sep. 18, 1990, Ser. No. 584,574
Claims priority, application Japan, Mar. 20, 1990, 2-9087
Term of patent 14 years
U.S. Cl. D23—262



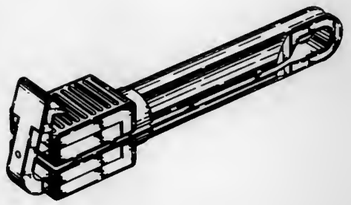
333,180
BATHTUB
Jack N. Kaiser, Danville, Ky., assignor to American Standard Inc., New York, N.Y.
Filed Sep. 11, 1990, Ser. No. 581,644
Term of patent 14 years
U.S. Cl. D23—281



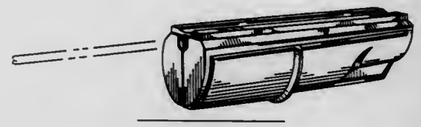
333,181
ELECTRIC ENGINE HEATER
Bengt Ode, Harestad, Sweden, assignor to Aktiebolaget Volvo, Goteborg, Sweden
Filed Jan. 14, 1991, Ser. No. 641,116
Claims priority, application Sweden, Jul. 13, 1990, 90-1536
Term of patent 14 years
U.S. Cl. D23—324



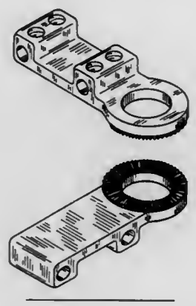
333,182
CATHETER GUIDE WIRE HOLDER
Masashi Yoshikawa, Tokyo, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 22, 1990, Ser. No. 498,020
Claims priority, application Japan, Sep. 26, 1989, 1-34794
Term of patent 14 years
U.S. Cl. D24—133



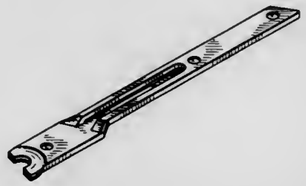
333,183
AUTOMATIC DISPOSABLE BIOPSY SYSTEM
Joseph J. Cerola, Guntersville, Ala., assignor to Ryder International Corporation, Arab, Ala. and Meadox Medicals, Inc., Oakland, N.J., a part interest
Filed Oct. 31, 1990, Ser. No. 606,354
Term of patent 14 years
U.S. Cl. D24—133



333,184
PIN CLAMP FOR USE WITH AN ORTHOPEDIC APPLIANCE
Harold S. Taylor, Memphis, Tenn., assignor to Engineering & Precision Machining, Inc., Memphis, Tenn.
Filed Feb. 23, 1990, Ser. No. 484,193
Term of patent 14 years
U.S. Cl. D24—143

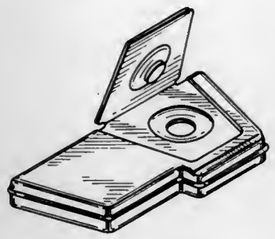


333,185
WAND FOR DETERMINING DRUG TEST RESULT
Mark Andersen, Woodland Hills; John von Buelow, Northridge; Denise C. Garrison, Pomona; Vance C. Mitchell, Costa Mesa; Nelson F. Thune, El Toro, and Leonard Porche, Simi Valley, all of Calif., assignors to Hycor Biomedical, Inc., Garden Grove, Calif.
Filed Aug. 13, 1990, Ser. No. 566,994
Term of patent 14 years
U.S. Cl. D24—223

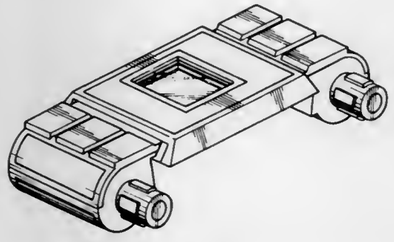


VOL
1147
ISS
2
FE
9
1993
UMI

333,186
DRUG SPECIMEN TEST MODULE
Mark Andersen, Woodland Hills; John von Buelow, Northridge; Denise C. Garrison, Pomona; Richard A. Spindel, Granada Hills, and Nelson F. Thune, El Toro, all of Calif., assignors to Hycor Biomedical, Inc., Garden Grove, Calif.
Filed Aug. 13, 1990, Ser. No. 566,995
Term of patent 14 years
U.S. Cl. D24—223



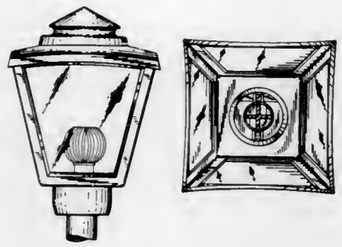
333,187
SPECIMEN HOLDER FOR MICROSCOPE
Shoichi Omi, 1-6-15-915, Harumi, Chou-ku, Tokyo, Japan
Filed Aug. 17, 1990, Ser. No. 569,153
Claims priority, application Japan, Feb. 20, 1990, 2-5339
Term of patent 14 years
U.S. Cl. D24—225



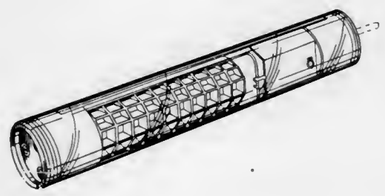
333,188
LAMP
Roger A. Hume; Richard A. Felstead, both of Melton Mowhray, and Luciano Zucchi, London, all of England, assignors to GE Thorn Lamps Limited, Enfield, England
Filed Oct. 31, 1990, Ser. No. 607,067
Claims priority, application United Kingdom, May 1, 1990, 2006502
Term of patent 14 years
U.S. Cl. D26—2



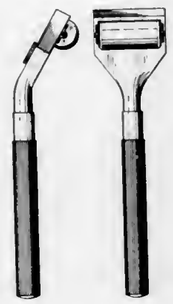
333,189
OUTDOOR LIGHT FIXTURE
Milly S. Hall, Dallas, Tex.; Donald L. Rohrs, Overland Park, Kans., and Kung Chi Hung, New Territories, Hong Kong, assignors to The Brinkmann Corporation, Dallas, Tex.
Filed May 7, 1991, Ser. No. 696,528
Term of patent 14 years
U.S. Cl. D26—67



333,190
SHIELDED FLUORESCENT WORK LIGHT
Herbert Waldmann, Villingen-Schwenningen, Fed. Rep. of Germany, assignor to Firma Waldmann GmbH & Co., Villingen-Schwenningen, Fed. Rep. of Germany
Filed May 15, 1990, Ser. No. 523,646
Claims priority, application Int'l Pat. Institute, Nov. 17, 1989, DM/015 086
Term of patent 14 years
U.S. Cl. D26—75



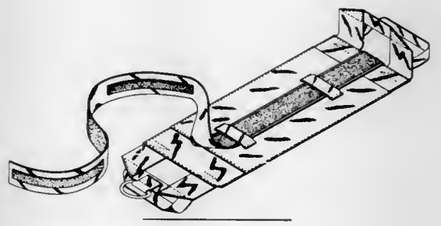
333,191
LOTION APPLICATOR
James H. Rainen, 628 W. 70th St., Kansas City, Mo. 64113
Filed Jul. 5, 1990, Ser. No. 548,748
Term of patent 14 years
U.S. Cl. D28—7



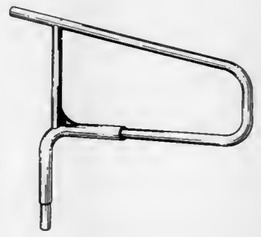
333,192
HAIR DRYER
Lindsey J. Walker, Flat 1, 21 Woodstock Road, NW11 London, England
Filed Aug. 24, 1990, Ser. No. 572,910
Claims priority, application United Kingdom, Feb. 27, 1990, 2005024
Term of patent 14 years
U.S. Cl. D28—13



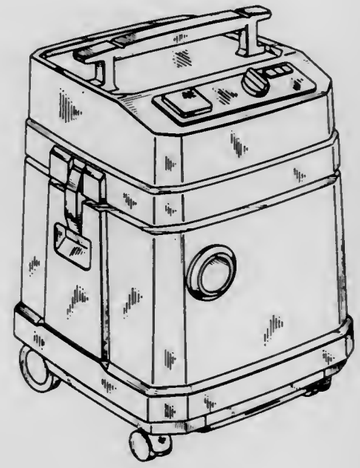
333,193
RESTRAINT DEVICE
Thomas J. Archambault, 154 Archway, Brewster, Mass. 02631
Filed Nov. 8, 1990, Ser. No. 612,274
Term of patent 14 years
U.S. Cl. D29—10



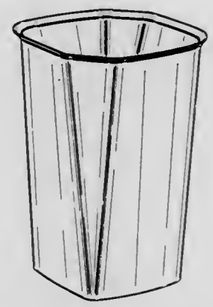
333,194
TIE STALL DIVIDER
Joseph R. Moreau, New Hartford, and John J. Dyer, Westmoreland, both of N.Y., assignors to Norbco, Inc., Westmoreland, N.Y.
Filed Nov. 23, 1990, Ser. No. 617,539
The portion of the term of this patent subsequent to Oct. 27, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D30—119



333,195
VACUUM CLEANER
Rainer Oberdorfer-Bogel, Kirchberg/Iller, Fed. Rep. of Germany, assignor to Wap Reinigungssysteme GmbH & Co., Fed. Rep. of Germany
Filed May 10, 1990, Ser. No. 524,098
Claims priority, application Fed. Rep. of Germany, Oct. 18, 1989, 8997254
Term of patent 14 years
U.S. Cl. D32—23

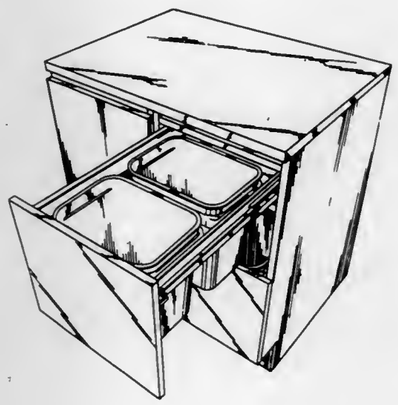


333,196
VANITY BASKET
Mark Dziersk, Simsbury, and Walter Koda, Newtown, both of Conn., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Mar. 22, 1991, Ser. No. 674,027
Term of patent 14 years
U.S. Cl. D34—1

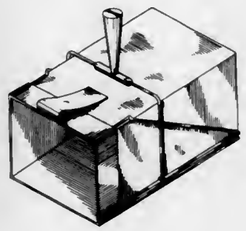


VOL 1147 ISS 2 FE 9 1993 UMI

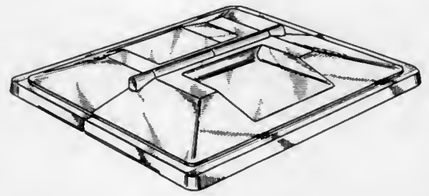
333,197
MULTIPLE-COMPARTMENT WASTE CONTAINER CABINET
Sari Scheinberg; Sverker Alänge, and Per Gyllenspetz, all of Göteborg, Sweden, assignors to Sari Scheinberg med Yes You Can, Gothenburg, Sweden
Filed Apr. 29, 1991, Ser. No. 692,521
Claims priority, application Sweden, Oct. 29, 1990, 902318; Oct. 29, 1990, 902319
Term of patent 14 years
U.S. Cl. D34—1



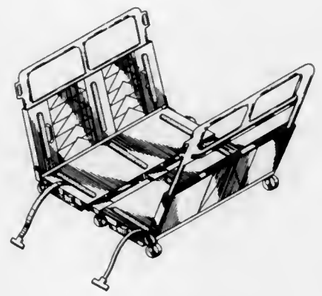
333,198
WASTE COLLECTING RECEPTACLE
John C. Mann, 3111 Pualei Cir. #305, Honolulu, Hi. 96815
Filed Jul. 15, 1991, Ser. No. 730,308
Term of patent 14 years
U.S. Cl. D34—1



333,199
COMPOSTER LID
Richard Long, San Francisco, Calif., assignor to Smith & Hawken, Mill Valley, Calif.
Filed Mar. 22, 1991, Ser. No. 673,575
Term of patent 14 years
U.S. Cl. D34—11



333,200
FURNITURE MOVING DOLLY
Edward J. Berrian, 1231 Sweetpines Dr., Norcross, Ga. 30093
Filed Aug. 9, 1990, Ser. No. 564,547
Term of patent 14 years
U.S. Cl. D34—23



333,201
AIRCRAFT CRANE LIFT
Lloyd Farmer, 419 Crandon Ave., Calumet City, Ill. 60409
Filed Feb. 28, 1991, Ser. No. 661,639
Term of patent 14 years
U.S. Cl. D34—35



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF FEBRUARY, 1993

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A&A Manufacturing Co., Inc.: *See—*
Klein, Ernst; and Loss, Hartmut, 5,184,454, Cl. 59-78.100.

A. O. Smith Corporation: *See—*
King, James L.; and Peters, Richard E., 5,184,941, Cl. 417-360.000.

A&T Bell Laboratories: *See—*
Srinivasan, Thirunarayanan, 5,185,782, Cl. 379-67.000.

Aalto, Juhani; and Wallenius, Seppo, to Wallac OY. Changer mechanism for individual measurement of radioactive samples in a gamma counter. 5,185,525, Cl. 250-328.000.

AB A. Svensson & Co.: *See—*
Hannerstig, Christer, 5,184,661, Cl. 160-348.000.

ABB Power T&D Co., Inc.: *See—*
Shuey, Kenneth C., 5,185,591, Cl. 340-310.00A.

Abbott Laboratories: *See—*
Brooks, Dee W.; Kerkman, Daniel J.; Martin, Jonathan G.; Stewart, Andrew O.; and Summers, James B., 5,185,363, Cl. 514-438.000.
DeBernardis, John F.; Arendsen, David L.; and Zelle, Robert E., 5,185,364, Cl. 514-444.000.
Makela, Randal M., 5,185,264, Cl. 436-18.000.
Middaugh, James F.; Bryant, Peter L.; Grabenkort, Richard W.; Oswald, Timothy J.; and Tripp, Edward S., 5,185,007, Cl. 604-320.000.

Abdrakhmanov, Gabdrashit S.; Zainullin, Albert G.; Meling, Konstantin V.; Rakhmanov, Rauf N.; Balandin, Alexandr P.; Puzanov, Alexandr A.; Urazgildin, Ilyas A.; Mukhametshin, Almaz A.; Khakimov, Almas K.; Yasas, Antanas A.; Naryshkina, Lutsia M.; by Akhunova, Tanzilya K., administrator; by Akhunova, Flera A., dministrator; and by Akhunov, Farid A., administrator. Well reamer. 5,184,687, Cl. 175-267.000.

Abe, Chiaki; and Watanuki, Minoru, to ORC Manufacturing Co., Ltd. Exposure apparatus for forming pattern on printed-wiring board. 5,185,625, Cl. 355-26.000.

Abe, Hiroomi; Shinonaga, Hideo; Mitsui, Kiyoshi; and Sogabe, Satoru, to Sumitomo Chemical Co., Ltd. Method for surface treating and coating resin composition molded articles. 5,185,188, Cl. 427-533.000.

Abe, Masahiro: *See—*
Hirai, Takami; Yano, Shinsuke; and Abe, Masahiro, 5,185,304, Cl. 501-139.000.

Aberson, James A.; Halupke, Eugene; and Vicory, William A., to AT&T Bell Laboratories. Restoration kit for communications cable. 5,185,843, Cl. 385-134.000.

Abu-Saba, Camille A.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Acer Incorporated: *See—*
Cheng, Shih-Tsun; and Lee, Yung-Yen, 5,185,853, Cl. 395-115.000.
Wang, Ling-Ling, 5,185,769, Cl. 377-29.000.

Ackers, Stephen B.: *See—*
Rose, Neil M.; Ackers, Stephen B.; Burr, William F.; and Rose, Brett M., 5,184,784, Cl. 241-275.000.

Adam, John D.: *See—*
McGann, William E.; Steigerwald, Thomas E.; and Adam, John D., 5,185,588, Cl. 333-17.200.

Adams, George W.; and McGoey, Michael J., to Remote Power, Inc. Helicopter installable, self-powered, modular, remote, telemetry package. 5,184,502, Cl. 73-31.010.

Adams, Richard W., Jr.; Clarke, David R.; Knickerbocker, Sarah H.; Rapp, Linda L.; and Schwartz, Bernard, to International Business Machines Corporation. Zirconia toughening of glass-ceramic materials. 5,185,215, Cl. 428-545.000.

Adams Rite Manufacturing Company: *See—*
Nyzedatny, Mark, 5,184,523, Cl. 74-471.0XY.

Adamski, Joseph R.; Bowen, Robert F.; Hossfield, Robin C.; Schregardus, Thomas P.; and Skienak, John S., to Raytheon Company. Infectious waste disposal unit. 5,185,126, Cl. 422-38.000.

Addico Products Inc.: *See—*
Desrosiers, Andre ; and Savage, Gary, 5,184,476, Cl. 62-389.000.

Adeza Biomedical Corporation: *See—*
Senyei, Andrew E.; and Teng, Nelson N. H., 5,185,270, Cl. 436-510.000.

Adobe Systems Incorporated: *See—*
Warnock, John E., 5,185,818, Cl. 382-54.000.

Advanced Dielectric Technologies, Inc.: *See—*
Walters, Glenn J., 5,185,506, Cl. 219-10.55E.

Advanced Medical Nutrition, Inc.: *See—*
Black, Danny O., 5,184,735, Cl. 211-14.000.

Advanced Micro Device, Inc.: *See—*
Baror, Gigy; and Johnson, William M., 5,185,878, Cl. 395-425.000.

Advanced Micro Devices, Inc.: *See—*
Agrawal, Om P.; and Wright, Michael J., 5,185,706, Cl. 364-489.000.
Tran, Thang M., 5,185,868, Cl. 395-375.000.

AEC-Able Engineering Co., Inc.: *See—*
Warden, Robert M., 5,184,444, Cl. 52-646.000.

Aerospace Preforms Limited: *See—*
Lawton, Peter G.; and Smith, Norman, 5,184,387, Cl. 29-419.100.

Agency of Industrial Science & Technology: *See—*
Mizukami, Fujio; Sano, Tsuneji; and Masuda, Koji, 5,185,312, Cl. 502-332.000.

Agfa-Gevaert, N.V.: *See—*
Verheijen, Johannes M.; and Marien, August M., 5,185,426, Cl. 528-272.000.

Agrawal, Om P.; and Wright, Michael J., to Advanced Micro Devices, Inc. Programmable gate array with logic cells having configurable output enable. 5,185,706, Cl. 364-489.000.

Ahmed, Fahim U., to Colgate-Palmolive Co. Aqueous liquid automatic dishwashing detergent composition comprising hypochlorite bleach and bleach stabilizer. 5,185,096, Cl. 252-99.000.

Aho, Paivi A.: *See—*
Backstrom, Reijo J.; Honkanen, Erkki J.; Pystynen, Jarmo J.; Luiro, Anne M.; Aho, Paivi A.; Linden, Inge-Britt Y.; Nissinen, Erkki A. O.; and Pohto, Pentti, 5,185,370, Cl. 514-520.000.

AIOI Seiki, Inc.: *See—*
Kimura, Seiji; and Wada, Kouji, 5,184,537, Cl. 92-33.000.

Air Products and Chemicals, Inc.: *See—*
Smigo, John G.; McAndrew, Thomas P.; Pinschmidt, Robert K., Jr.; and Nordquist, Andrew F., 5,185,083, Cl. 210-735.000.

Aisan Kogyo Kabushiki Kaisha: *See—*
Kobayashi, Masahiro, 5,184,593, Cl. 123-571.000.

Aisin Takaoka Co., Ltd.: *See—*
Oono, Toshio; and Uemura, Hiroki, 5,184,663, Cl. 164-98.000.

Ajinomoto Company, Inc.: *See—*
Matsuzaki, Kei; Yamamoto, Iwao; Misaki, Akira; and Sone, Yoshiaki, 5,185,327, Cl. 514-54.000.

Ajtaji, Andrew: *See—*
Morris, Monte G.; and Ajtaji, Andrew, 5,184,994, Cl. 482-129.000.

Akebono Brake Co., Ltd.: *See—*
Okubo, Satomi, 5,185,702, Cl. 364-426.020.
Okubo, Satomi, 5,185,704, Cl. 364-426.020.

Akebono Brake Industry Co., Ltd.: *See—*
Okubo, Satomi, 5,185,703, Cl. 364-426.020.

Akebono Research and Development Centre Ltd.: *See—*
Okubo, Satomi, 5,185,702, Cl. 364-426.020.
Okubo, Satomi, 5,185,703, Cl. 364-426.020.
Okubo, Satomi, 5,185,704, Cl. 364-426.020.

Akhunov, Albert M.: *See—*
Abdrakhmanov, Gabdrashit S.; Zainullin, Albert G.; Meling, Konstantin V.; Rakhmanov, Rauf N.; Balandin, Alexandr P.; Puzanov, Alexandr A.; Urazgildin, Ilyas A.; Mukhametshin, Almaz A.; Khakimov, Almas K.; Yasas, Antanas A.; Naryshkina, Lutsia M.; Akhunov, Albert M.; Akhunova, Tanzilya K., administrator; Akhunova, Flera A., dministrator; and Akhunov, Farid A., administrator, 5,184,687, Cl. 175-267.000.

Akhunov, Farid A., administrator: *See—*
Abdrakhmanov, Gabdrashit S.; Zainullin, Albert G.; Meling, Konstantin V.; Rakhmanov, Rauf N.; Balandin, Alexandr P.; Puzanov, Alexandr A.; Urazgildin, Ilyas A.; Mukhametshin, Almaz A.; Khakimov, Almas K.; Yasas, Antanas A.; Naryshkina, Lutsia M.; Akhunov, Albert M.; Akhunova, Tanzilya K., administrator; Akhunova, Flera A., dministrator; and Akhunov, Farid A., administrator, 5,184,687, Cl. 175-267.000.

Akhunova, Flera A., dministrator: *See—*
Abdrakhmanov, Gabdrashit S.; Zainullin, Albert G.; Meling, Konstantin V.; Rakhmanov, Rauf N.; Balandin, Alexandr P.; Puzanov, Alexandr A.; Urazgildin, Ilyas A.; Mukhametshin, Almaz A.; Khakimov, Almas K.; Yasas, Antanas A.; Naryshkina, Lutsia M.; Akhunov, Albert M.; Akhunova, Tanzilya K., administrator; Akhunova, Flera A., dministrator; and Akhunov, Farid A., administrator, 5,184,687, Cl. 175-267.000.

Akhunova, Tanzilya K., administrator: *See—*
Abdrakhmanov, Gabdrashit S.; Zainullin, Albert G.; Meling, Konstantin V.; Rakhmanov, Rauf N.; Balandin, Alexandr P.; Puza-

VOL 1147 ISS 2 FE 9 1993 UMI

nov, Alexandr A.; Urazgildin, Ilyas A.; Mukhametshin, Almaz A.; Khakimov, Almas K.; Yasas, Antanas A.; Naryshkina, Lutsia M.; Akhunov, Albert M.; Akhunova, Tanzilya K., administrator; Akhunova, Flera A., dministrator; and Akhunov, Farid A., administrator, 5,184,687, Cl. 175-267.000.

Akiyama, Hirokatsu: *See—*
Hamada, Akira; Obuchi, Yasuji; and Akiyama, Hirokatsu, 5,184,907, Cl. 400-635.000.

Albert, Harvey. Disposable denture container. 5,184,718, Cl. 206-63.500.

Albert Schulte Sohne GmbH & Co.: *See—*
Lange, Hans-Willi, 5,184,373, Cl. 16-35.00R.

Albizzati, Enrico: *See—*
Rendina, Gabriele; and Albizzati, Enrico, 5,185,401, Cl. 525-130.000.

Alcatel NA Network Systems Corp.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Alcatel N.V.: *See—*
Fevrier, Herve ; Marcerou, Jean-Francois; and Le Sergent, Christian, 5,185,847, Cl. 385-141.000.

Alcide Corporation: *See—*
Davidson, Eugene A.; and Kross, Robert D., 5,185,161, Cl. 424-665.000.

Alcocer, Hector. Sun resistant, foldable window shade. 5,184,659, Cl. 160-84.100.

Alcon Surgical, Inc.: *See—*
Venturini, Claudio, 5,185,002, Cl. 604-30.000.

Alcorn, Byron A.; Cherry, Robert W.; Coleman, Mark D.; and Rauchfuss, Brian D., to Hewlett-Packard Company. Arithmetic and logic processing unit for computer graphics system. 5,185,856, Cl. 395-130.000.

Alderdice, Marc: *See—*
Gawin, Frank H.; Byck, Robert; Alderdice, Marc; and Schwimmer, Jeffrey, 5,185,329, Cl. 514-159.000.

Aldrin, Buzz Space station facility. 5,184,789, Cl. 244-159.000.

Alexander, Tracey S. Wheelchair. 5,184,837, Cl. 280-250.100.

Alfaro, Daniel V.; and Jimenes, Cecilio V., Jr., to AlJim Corporation. Protective head and eye gear. 5,184,354, Cl. 2-425.000.

AlJim Corporation: *See—*
Alfaro, Daniel V.; and Jimenes, Cecilio V., Jr., 5,184,354, Cl. 2-425.000.

Allen, Donald R., to Frazier Industrial Company. Storage rack systems. 5,184,738, Cl. 211-151.000.

Alliant Techsystems Inc.: *See—*
Barnabei, Robert A.; and Picozzi, James R., 5,185,224, Cl. 429-218.000.

Allied Colloids Limited: *See—*
Lowry, Peter; and Farrar, David, 5,185,061, Cl. 162-168.300.

Allied-Signal Inc: *See—*
Han, Chien-Chung; and Elsenbaumer, Ronald L., 5,185,100, Cl. 252-500.000.

Allied-Signal Inc.: *See—*
Harpell, Gary A.; Prevorsek, Dusan C.; and Cunningham, David V., 5,185,195, Cl. 428-102.000.
Li, Beili; Haig, Stephen; and Yamanis, Jean, 5,185,301, Cl. 501-117.000.
Tang, Reginald T.; Mares, Frank; Boyle, William J., Jr.; Chiu, Tin-Ho; and Patel, Kundan M., 5,185,408, Cl. 525-415.000.
Thomas, Raymond H. P.; Chen, Ruth H.; Pham, Hang T.; and Wilson, David P., 5,185,089, Cl. 252-37.700.
Zupancic, Joseph J., 5,185,209, Cl. 428-457.000.
Zupancic, Joseph J., 5,185,210, Cl. 428-457.000.

Alliston, Michael G.; and Campbell, Walter R., Jr., to Foster Wheeler Energy Corporation. Fluidized bed heat exchanger and method of operating same. 5,184,671, Cl. 165-104.160.

Allman, Jack C.: *See—*
Lewarchik, Ronald J.; Holzrichter, Edward J.; Smith, Marc L.; and Allman, Jack C., 5,185,403, Cl. 525-199.000.

Allsteel Inc.: *See—*
Balfanz, Glenn F., Jr., 5,184,441, Cl. 52-241.000.

Alpha Omega Instruments Corp.: *See—*
Hayes, Stanley B., Jr., 5,185,519, Cl. 250-208.100.

Alta Group, The: *See—*
Rosenberg, Harry W.; and Melody, Brian, 5,185,075, Cl. 205-234.000.

Alten, Ferdinand: *See—*
Erschens, Willie; Mencher, Franz J.; Brosius, Peter; Grave, Klaus; Zender, Bernhard; Schardt, Peter; Hessek, Gerd; and Alten, Ferdinand, 5,184,806, Cl. 254-126.000.

Altenburger, Werner, to Hoffmann-LaRoche Inc. Recombinant MVA vaccinia virus. 5,185,146, Cl. 424-89.000.

Alusuisse-Lonza Services Ltd.: *See—*
Carrupt, Bertrand; Constantin, Maurice; and Ebener, Michel, 5,184,667, Cl. 164-467.000.

Alyfuku, Kiyoshi: *See—*
Tsukamura, Naoki; Alyfuku, Kiyoshi; Nakamura, Yuzuru; Hiruta, Yoshiki; and Tsuboi, Hiroshi, 5,184,359, Cl. 4-661.000.

ALZA Corporation: *See—*
Ayer, Atul; D.; and Ridzon, Dana, 5,185,158, Cl. 424-473.000.

Amada Company, Ltd.: *See—*
Hayashi, Tetsuji, 5,184,498, Cl. 72-442.000.

Amada Mfg. America, Inc.: *See—*
Hayashi, Tetsuji, 5,184,498, Cl. 72-442.000.

Amano, Akio: *See—*
Aritsuka, Toshiyuki; Amano, Akio; Hataoka, Nobuo; and Ichikawa, Akira, 5,185,848, Cl. 395-2.000.

Amano, Kouzou: *See—*
Matsubara, Yoshiaki; Amano, Kouzou; and Kojima, Takao, 5,184,529, Cl. 81-125.000.

Amari, Takashi: *See—*
Harada, Tsutomu; and Amari, Takashi, 5,184,902, Cl. 400-185.000.

Amemiya, Shigeo: *See—*
Iguchi, Kazuo; Takeo, Hiroshi; Amemiya, Shigeo; and Tezuka, Koji, 5,185,741, Cl. 370-110.100.

American Cyanamid Company: *See—*
Farmer, Leonard E.; Stewart, Jeffrey B.; and Turner, Ralph, 5,184,975, Cl. 452-198.000.
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,185,456, Cl. 546-264.000.

American Echo, Inc.: *See—*
Falbo, Michael G., Sr., 5,184,363, Cl. 5-601.000.

American Greetings Corporation: *See—*
Hardy, Stephen N., 5,184,737, Cl. 211-55.000.

American Home Products Corporation: *See—*
Motola, Solomon; Blank, Robert G.; and Branfman, Alan R., 5,185,373, Cl. 514-570.000.
Sarantakis, Dimitrios, 5,185,340, Cl. 514-269.000.

American Ingredients Company: *See—*
Wade, William W.; and Eshnaur, Vincent W., 5,184,422, Cl. 49-239.000.

Amirmokri, Jay: *See—*
Bissett, Thomas D.; Bruckert, William; Thirumalai, Ajai; and Amirmokri, Jay, 5,185,877, Cl. 395-425.000.

Ammonia Casale S.A.: *See—*
Zardi, Umberto; and Pagani, Giorgio, 5,184,386, Cl. 29-401.100.

Amoco Corporation: *See—*
Hale, Michael O., 5,185,751, Cl. 372-18.000.

AMP Incorporated: *See—*
Douty, George H.; and Landis, John M., 5,184,964, Cl. 439-247.000.
Ishikawa, Shigeru, 5,184,963, Cl. 439-79.000.

Amron, Alan B., to Talk To Me Products, Inc. Flywheel water gun. 5,184,756, Cl. 222-79.000.

Amrus Corporation: *See—*
Shpigel, Vladimir, 5,184,891, Cl. 362-419.000.

Anantaneni, Prakasa R.: *See—*
Dyroff, David R.; and Anantaneni, Prakasa R., 5,185,485, Cl. 585-446.000.

Anapliotis, Emmanuel; and Schich, Gisbert, to Effner Biomet GmbH. Endoscope, in particular an arthroscope. 5,184,602, Cl. 128-6.000.

Andela, James. Glass pulverizer. 5,184,781, Cl. 241-62.000.

Anderson, Mark R.: *See—*
Steele, Charles E.; Anderson, Mark R.; and Hamilton, James C., 5,184,893, Cl. 366-209.000.

Anderson, Robert M.; Vining, John E., Sr.; and Patton, Lloyd L., Sr. Machine for washing plastic fragments to prepare them for recycling. 5,185,041, Cl. 134-25.100.

Anderson, Steven P. Drill bit sharpener. 5,184,425, Cl. 51-149.000.

Andrecovich, Mark J.: *See—*
Krishnamurthy, Ramachandran; and Andrecovich, Mark J., 5,185,139, Cl. 423-359.000.

Andrews, Howard W., Jr.; Delmerico, Paul E.; and Terek, Greg P., to Rubbermaid Commercial Products Inc. Refuse container having stacking and nesting handles. 5,184,836, Cl. 280-79.500.

Anger, Clifford D.; and Babey, Stephen K., to Itres Research Limited. Pushbroom spectrographic imager. 5,185,771, Cl. 372-60.000.

Angstadt, John J.: *See—*
Chappell, Charles W.; and Angstadt, John J., 5,185,052, Cl. 156-462.000.

ANT Nachrichtentechnik GmbH: *See—*
Gockler, Heinz, 5,185,642, Cl. 356-350.000.

Anti-Gene Deveopment Group: *See—*
Summerton, James E.; and Weller, Dwight D., 5,185,444, Cl. 544-81.000.

Antila, Garth V.: *See—*
Bernhard, James C.; Johnson, Thomas P.; and Antila, Garth V., 5,184,792, Cl. 248-71.000.

Aoki, Hisao, to Sanden Corporation. Heat exchanger. 5,184,672, Cl. 165-109.100.

Aoki, Kanji; Uchiyama, Yukio; and Midorikawa, Toshiyuki, to Mitsubishi Jukogyo Kabushiki Kaisha; and MHI Sagami High Technology & Control. Control device for forklift. 5,184,699, Cl. 187-9.00R.

Aoki, Kazuaki: *See—*
Yashiki, Yuichi; Moriyama, Hiroaki; and Aoki, Kazuaki, 5,185,187, Cl. 427-430.100.

Aoki, Shinji: *See—*
Kurose, Yoshikazu; Aoki, Shinji; and Suzuki, Hideto, 5,185,740, Cl. 370-106.000.

Aoki, Yoshio: *See—*
Ichikawa, Hiroaki; Kadono, Yasuo; Kojima, Katsuo; Nakamura, Hiroyuki; and Aoki, Yoshio, 5,185,093, Cl. 252-62.510.

Aono, Toshinao; Asami, Yukio; Hirooka, Noboru; Arima, Yusaku; and Fujii, Susumu, to Kawasaki Steel Corp. Fluid catalyst for use in gas phase oxidation of aromatic hydrocarbons. 5,185,309, Cl. 502-202.000.

Aoyagi, Toshitaka; and Shigihara, Kimio, to Mitsubishi Denki Kabushiki Kaisha. Method for producing a quantum well structure. 5,185,287, Cl. 437-105.000.

Aoyagi, Toshitaka; and Shigihara, Kimio, to Mitsubishi Denki Kabushiki Kaisha. Method of coating facet of semiconductor optical element. 5,185,290, Cl. 437-129.000.

Aoyama, Hirokazu; Yasuhara, Takashi; Kono, Satoru; Koyama, Satoshi; and Ueda, Souichi, to Daikin Industries, Ltd. Process for preparing pentafluorodichloropropanes. 5,185,483, Cl. 570-172.000.

Aoyama, Tateo; Sakurai, Kenichi; and Yamamoto, Shigeo, to Yamaha Hatsudoki Kabushiki Kaisha. Valve timing retarding system. 5,184,581, Cl. 123-90.310.

Aoyama, Toshimi: *See—*
Sato, Hiromitsu; Tazawa, Kenji; and Aoyama, Toshimi, 5,185,235, Cl. 430-331.000.

Apple Computer, Inc.: *See—*
Pugh, Robert, 5,185,865, Cl. 395-275.000.

Applied Biosystems, Inc.: *See—*
Boyd, Victoria L.; and Zon, Gerald, 5,185,266, Cl. 436-89.000.

Applied Hydro Dynamics, Inc.: *See—*
Sajewski, Ronald, 5,184,576, Cl. 122-26.000.

Apps, William P., to Rehrig Pacific Company, Inc. Low-depth nestable tray for fluid containers. 5,184,748, Cl. 220-519.000.

Aqua Source Inc.: *See—*
Siemer, Sidney R.; Wood, Louis L.; and Calton, Gary J., 5,185,024, Cl. 504-116.000.

Arabian, Sandro; and Baumann, Manfred, to CWS International AG. Cloth towel dispenser with two adjoining units. 5,184,885, Cl. 312-34.110.

Arai, Mitsuru, to Kabushiki Kaisha Komatsu Seisakusho. Swash plate type piston pump/motor. 5,184,536, Cl. 91-505.000.

Arai, Toshimitsu, to Toyo Sangyo Co., Ltd. Sucker for plate glass. 5,184,858, Cl. 294-64.100.

Arakawa, Shinichiro; and Ichiki, Isamu, to Ebara Corporation. Centrifugal pump casing. 5,184,937, Cl. 415-206.000.

Araki, Toshihiko: *See—*
Matsuura, Yasumasa; Harada, Hiroyuki; Kajitani, Tetsuji; and Araki, Toshihiko, 5,185,563, Cl. 318-602.000.

Aranda, Julian; Hartenstein, Johannes; Reck, Reinhard; Schachtele, Christopher; Rudolph, Claus; Osswald, Hartmut; and Weinheimer, Gunter, to Goedecke Aktiengesellschaft. Alkoxy-4(1H)-pyridone derivatives, processes for the preparation thereof and pharmaceutical compositions containing them. 5,185,352, Cl. 514-348.000.

Arani, Mohammad S.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Arendsen, David L.: *See—*
DeBernardis, John F.; Arendsen, David L.; and Zelle, Robert E., 5,185,364, Cl. 514-444.000.

Arima, Yusaku: *See—*
Aono, Toshinao; Asami, Yukio; Hirooka, Noboru; Arima, Yusaku; and Fujii, Susumu, 5,185,309, Cl. 502-202.000.

Arimoto, Kazutami; Fujishima, Kazuyasu; Matsuda, Yoshio; Ooishi, Tsukasa; and Tsukude, Masaki, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device with test circuit. 5,185,744, Cl. 371-21.200.

Arimoto, Tetsuya, to Minolta Camera Kabushiki Kaisha. Compact high ratio zoom lens system. 5,185,678, Cl. 359-683.000.

Aristech Chemical Corporation: *See—*
Salek, Jeffrey S.; and Pugach, Joseph, 5,185,478, Cl. 568-853.000.

Aritsuka, Toshiyuki; Amano, Akio; Hataoka, Nobuo; and Ichikawa, Akira, to Hitachi, Ltd. Noise reduction system using neural network. 5,185,848, Cl. 395-2.000.

Arizona Gear and Manufacturing: *See—*
Gaines, Jefferson J., 5,184,716, Cl. 198-763.000.

Arlt, Dieter: *See—*
Bader, Axel; and Arlt, Dieter, 5,185,454, Cl. 549-240.000.
Buysch, Hans-Josef; and Arlt, Dieter, 5,185,467, Cl. 564-330.000.

Armstrong, Jay, to Becker, James R., a part interest. Blast cleaning system. 5,184,427, Cl. 51-165.730.

Arnarson, Hordur; and Pau, Louis F., to Marel H.F. Apparatus and method for determining the volume, form and weight of objects. 5,184,733, Cl. 209-585.000.

Arnold, James M.; Hinton, Glenn J.; and Smith, Frank S., to Intel Corporation. System for executing different cycle instructions by selectively bypassing scoreboard register and canceling the execution of conditionally issued instruction if needed resources are busy. 5,185,872, Cl. 395-375.000.

Arnold, Lyle J., Jr.; and Nelson, Norman C., to Gen-Probe Incorporated. Acridinium ester labelling and purification of nucleotide probes. 5,185,439, Cl. 536-24.300.

Arter, Thomas C.; Harris, Bonny A.; and Schaeffer, James R., to Eastman Kodak Company. Dry analytical element for assaying salicylate. 5,185,249, Cl. 435-25.000.

Arzneimittelwerk Dresden GmbH: *See—*
Palitzsch, Peter; Muller, Rainer; and Richter, Erhard, 5,185,443, Cl. 540-589.000.
Sauer, Wolfgang; Jansch, Hans-Joachim; Rostock, Angelika; Faust, Gottfried; Siegemund, Christine; Lohmann, Dieter; and Bartsch, Reni, 5,185,341, Cl. 514-269.000.

Asada, Michio, to Jatco Corporation. Transmission input shaft speed detecting apparatus utilizing oil pump pressure. 5,184,506, Cl. 73-118.100.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Nakano, Hiroo; and Manabe, Seiichi, 5,185,082, Cl. 210-639.000.

Asahi Kogaku Kogyo K.K.: *See—*
Miura, Masaaki, 5,185,822, Cl. 382-65.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Nishikawa, Tomoyuki; and Negoro, Ikuo, 5,184,952, Cl. 432-60.000.

Asakawa, Kiyoshi: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Ishikawa, Hideo; Matsumura, Sowjun; Chiba, Tadashi; Asakawa, Kiyoshi; and Oohora, Syoichi, 5,185,216, Cl. 428-614.000.
Yanada, Isamu; Murakami, Tooru; and Asakawa, Kiyoshi, 5,185,076, Cl. 205-252.000.

Asakura, Tsutou: *See—*
Takanashi, Itsuo; Nakagaki, Shintaro; Negishi, Ichiro; and Asakura, Tsutou, 5,185,617, Cl. 346-108.000.

Asal, Michael: *See—*
Guttag, Karl M.; Asal, Michael; Simpson, Richard; Preston, Thomas; and Sharkey, John, 5,185,859, Cl. 395-164.000.

Asami, Eiichi: *See—*
Kaku, Ryoji; Takahashi, Hiroyuki; and Asami, Eiichi, 5,185,823, Cl. 385-2.000.

Asami, Seiichi: *See—*
Hamaguchi, Kunikazu; Kumazawa, Kazuhiko; and Asami, Seiichi, 5,185,110, Cl. 264-44.000.

Asami, Yukio: *See—*
Aono, Toshinao; Asami, Yukio; Hirooka, Noboru; Arima, Yusaku; and Fujii, Susumu, 5,185,309, Cl. 502-202.000.

Asano, Fumiaki, to Brother Kogyo Kabushiki Kaisha. Automatic sewing machine capable of executing stitch back operation. 5,184,560, Cl. 112-121.120.

Asanuma, Goro; and Tamai, Yoshin, to Kuraray Company, Ltd. Process for producing irone. 5,185,470, Cl. 568-341.000.

Asbeck, Peter M.: *See—*
Chang, Mau C. F.; and Asbeck, Peter M., 5,185,274, Cl. 437-22.000.

Ascari, Ennio, to Ferrari S.p.A. Timing system for an internal combustion engine. 5,184,580, Cl. 123-90.270.

Ashibe, Kenji: *See—*
Fukuda, Masaaki; Tomizawa, Hirotaka; Ohta, Mitsuo; Osaka, Hideki; Ogano, Satoshi; Satoh, Takehisa; Ashibe, Kenji; and Nomura, Takeshi, 5,185,092, Cl. 252-56.00S.

Asmo Co., Ltd.: *See—*
Sato, Toshihiro, 5,184,946, Cl. 417-423.900.

Aso, Yoshio: *See—*
Shimizu, Tadao; Aso, Yoshio; and Konnai, Hidefumi, 5,185,204, Cl. 428-402.000.

Association Pour La Recherche Therapeutique Anti-Cancereuse: *See—*
Villa, Pierre J.; Pieri, Francois; Ronco, Ginolino; and Segard, Emile P. R., 5,185,436, Cl. 536-4.100.

Assoma, Inc.: *See—*
Chi-Wei, Shi, 5,184,945, Cl. 417-420.000.

Aster Corporation: *See—*
Maack, David R., 5,184,433, Cl. 51-283.00R.

Astle, William B., Jr. Regulating the humidity of a heated space by varying the amount of moisture transferred from the combustion gases. 5,184,600, Cl. 126-113.000.

AT&T Bell Laboratories: *See—*
Aberson, James A.; Halupke, Eugene; and Vicory, William A., 5,185,843, Cl. 385-134.000.
Bales, Bruce M.; Crumpley, Robert L.; North, Sandra S.; and Thieler, Stephen M., 5,185,742, Cl. 370-110.100.
Basavanhally, Nagesh R.; Borutta, Richard; Sizer, Theodore, II; and Walker, James A., 5,185,846, Cl. 385-137.000.
Bensel, William H., III; and Cobb, Gary S., 5,185,844, Cl. 385-135.000.
Delavaux, Jean-Marc P., 5,185,826, Cl. 385-24.000.
Dowden, Douglas C.; Hemmeter, Richard W.; Herr, Diane E.; McCormick, William K.; Petrelli, Robert; Piereth, Richard J.; Salchenberger, Samuel M.; Sehgal, Chander S.; and Verma, Mahendra K., 5,185,781, Cl. 379-67.000.
Fischer, Frederick H.; Lee, Kuo-hua; Nagy, William J.; and Selamoglu, Nur, 5,185,291, Cl. 437-173.000.
Funk, Michael W.; Lawson, Sue A.; and McGuigan, David F., 5,185,785, Cl. 379-111.000.
Grimes, Gary J.; and Larson, Allen L., 5,185,824, Cl. 385-19.000.
Jones, Wesley W., 5,185,845, Cl. 385-135.000.
Poole, Craig D., 5,185,827, Cl. 385-28.000.

Attenasio, Gladys A. Portable drain receptacle. 5,184,749, Cl. 220-572.000.

VOL
1147
ISS
2
FE
9
1993
UMI

Attygalle, Athula B.: *See—*
Eisner, Thomas; Attygalle, Athula B.; and McCormick, Kevin D., 5,185,365, Cl. 514-450.000.

Aubert, Daniel; Blanc, Francis; Desmolin, Henri; Morre, Michel; and Sindely, Lucette, to Sanofi. Pharmaceutical composition based on valproic acid and a process for preparing it. 5,185,159, Cl. 424-489.000.

Auerbach, Andrew: *See—*
Nonaka, Toshifumi; Nitoh, Toshikatsu; and Auerbach, Andrew, 5,185,392, Cl. 524-128.000.

Augelli-Szafran, Corinne E., to Warner-Lambert Company. Substituted amide ACAT inhibitors lactone derivatives. 5,185,349, Cl. 514-336.000.

August Bilstein GmbH & Co. KG: *See—*
Erschens, Willie; Mencher, Franz J.; Brosius, Peter; Grave, Klaus; Zender, Bernhard; Schardt, Peter; Hessek, Gerd; and Alten, Ferdinand, 5,184,806, Cl. 254-126.000.

August, Melvin C.: *See—*
Shepherd, Lloyd T.; August, Melvin C.; and Kruchowski, James N., 5,185,502, Cl. 174-262.000.

Augustine Medical, Inc.: *See—*
Augustine, Scott D., 5,184,612, Cl. 128-400.000.

Augustine, Scott D., to Augustine Medical, Inc. Thermal blanket with transparent upper body drape. 5,184,612, Cl. 128-400.000.

Aula, Jouko; Liedes, Allan; and Saari, Auvo, to Valmet Paper Machinery Inc. Method of and apparatus for cutting a lead-in strip of a paper web. 5,185,063, Cl. 162-193.000.

Aura Systems, Inc.: *See—*
Um, Gregory, 5,185,660, Cl. 358-60.000.

Ausimont S.R.L.: *See—*
Rendina, Gabriele, and Albizzati, Enrico, 5,185,401, Cl. 525-130.000.

Austin, Sandor, to Peritronics Medical, Inc. Intrauterine pressure and fetal heart rate sensor. 5,184,619, Cl. 128-639.000.

Avco Corporation: *See—*
Moracz, Donald J.; and Doble, Gordon S., 5,184,769, Cl. 228-121.000.
Rumford, Kimball J.; and Hudson, George, 5,184,456, Cl. 60-39.020.

AVL Medical Instruments AG: *See—*
Kroneis, Herbert; Marsoner, Hermann; and Noormofidi, Taghi, 5,185,263, Cl. 436-8.000.

Avtron, Inc.: *See—*
Hostetler, Robert D.; and Plouzen, Philippe, 5,184,571, Cl. 119-72.000.

Ayer, Atul; D.; and Ridzon, Dana, to ALZA Corporation. Dosage form comprising succinimide drug for treating depressive disorders and composition comprising same. 5,185,158, Cl. 424-473.000.

Ayuta, Tokuichi; Takahashi, Shigeo; and Hirose, Takao, to Daiichi Denshi Kogyo Kabushiki Kaisha. Optical fiber connector including flexible fiber holding unit. 5,185,837, Cl. 385-81.000.

B. Braun Melsungen AG: *See—*
Brethauer, Ullrich, 5,185,003, Cl. 604-93.000.

B. F. Goodrich Company, The: *See—*
Shimandle, Donald J., 5,185,108, Cl. 264-11.000.

Babey, Stephen K.: *See—*
Anger, Clifford D.; and Babey, Stephen K., 5,185,771, Cl. 372-60.000.

Babich, Inna V.: *See—*
Fuentes, Ricardo I.; and Babich, Inna V., 5,185,056, Cl. 156-639.000.

Babin, James, to Faiveley Transport. Air conditioning apparatus, particularly for rail vehicles. 5,184,976, Cl. 454-108.000.

Bachman, Benny C.: *See—*
Gonda, John K.; Bachman, Benny C.; Boyer, Mike; Bly, Jerry L.; and Gilliland, Donald, 5,185,183, Cl. 427-236.000.

Backhouse, Bryan S.; and Fern, William A., to Imperial Chemical Industries PLC. Three component biocidal isothiazolinone composition. 5,185,356, Cl. 514-372.000.

Backstrom, Reijo J.; Honkanen, Erkki J.; Pystynen, Jarmo J.; Luiro, Anne M.; Aho, Paivi A.; Linden, Inge-Britt Y.; Nissinen, Erkki A. O.; and Pohto, Pentti, to Orion-yhtyma Oy. Substituted β-diketones and their use. 5,185,370, Cl. 514-520.000.

Bacon, Robert H., to Midwesco, Inc. Apparatus for welding together dual containment pipe sections. 5,185,049, Cl. 156-304.200.

Bader, Axel; and Arlt, Dieter, to Bayer Aktiengesellschaft. Process for the preparation of symmetrical diarylacetylenes. 5,185,454, Cl. 549-240.000.

Badlani, Manohar L.: *See—*
Porowski, Jan S.; Hampton, Edward J.; Badlani, Manohar L.; and O'Donnell, William J., 5,185,123, Cl. 376-277.000.

Badway, Robert M.: *See—*
Gill, David R.; Duca, Larry J.; Badway, Robert M.; Walsh, Michael W.; and Simonof, John F., 5,184,759, Cl. 222-181.000.

Baer, David A.: *See—*
Blaisdell, Richard W.; Baer, David A.; and Singh, Shiy P., 5,184,763, Cl. 224-211.000.

Baer, Hans; and Hirsbrunner, Eduard. Device for temporary dental splinting. 5,184,955, Cl. 433-215.000.

Baer, Thomas M.: *See—*
Kafka, James D.; Baer, Thomas M.; Keirstead, Mark S.; Watts, Michael L.; and Schaaf, Horst W., 5,185,750, Cl. 372-18.000.

Bagchi, Pranab; Edwards, James L.; Smith, Wendell F., Jr.; and Thomas, Brian, to Eastman Kodak Company. Oxygen barrier coated photographic coupler dispersion particles for enhanced dye-stability. 5,185,230, Cl. 430-138.000.

Baier, Alfred, to U.S. Philips Corporation. Receiver for time-varying distorted signals. 5,185,764, Cl. 375-13.000.

Bailey, Michael J.: *See—*
Emery, Kevin A.; and Bailey, Michael J., 5,185,858, Cl. 395-158.000.

Bain, Brian M.: *See—*
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,185,456, Cl. 546-264.000.

Baird, Dennis T.: *See—*
Sanftleben, Henry M.; Hermansen, Ralph D.; Shelton, Gary R.; Schnabel, Petrina L.; Baird, Dennis T.; and Smith, Douglas C., 5,185,498, Cl. 174-52.200.

Baker, Donald D.: *See—*
Waltz, Kevin P.; Dye, William P.; and Baker, Donald D., 5,184,855, Cl. 292-251.500.

Baker, Ian M.; and Dunn, William A. E., to U.S. Philips Corp. Plural-wavelength infrared detector devices. 5,185,648, Cl. 257-189.000.

Baker, John H. E., II: *See—*
Ewing, Joseph H.; and Baker, John H. E., II, 5,184,455, Cl. 60-39.020.

Baker, Peter D., to Smiths Industries Public Limited Company. Optical fibre couplings. 5,185,836, Cl. 385-61.000.

Bakker, Jacobus G. C., to U.S. Philips Corp. Method of manufacturing a buried-channel charge-coupled image sensor. 5,185,271, Cl. 437-3.000.

Balandin, Alexandr P.: *See—*
Abdrakhmanov, Gabdrashit S.; Zainullin, Albert G.; Meling, Konstantin V.; Rakhmanov, Rauf N.; Balandin, Alexandr P.; Puzanov, Alexandr A.; Urazgildin, Ilyas A.; Mukhametshin, Almaz A.; Khakimov, Almas K.; Yasas, Antanas A.; Naryshkina, Lutsia M.; Akhunov, Albert M.; Akhunova, Tanzilya K., administrator; Akhunova, Flera A., dministrator; and Akhunov, Farid A., administrator, 5,184,687, Cl. 175-267.000.

Balcom, James H.: *See—*
Koberstein, Manfred; Balcom, James H.; and Kolpacke, Stephen M., 5,184,479, Cl. 62-503.000.

Baldwin, John J.; Friedman, Paul A.; and Stern, Andrew M., to Merck & Co., Inc. Methods for thrombolytic therapy. 5,185,149, Cl. 424-94.630.

Bales, Bruce M.; Crumpley, Robert L.; North, Sandra S.; and Thieler, Stephen M., to AT&T Bell Laboratories. Transparent signaling for remote terminals. 5,185,742, Cl. 370-110.100.

Balfanz, Glenn F., Jr., to Allsteel Inc. Top cap with snap-in accent strip for wall panels. 5,184,441, Cl. 52-241.000.

Ballantyne, Alando J., to Board of Regents, The University of Texas System. Method and apparatus for securing a nasogastric tube. 5,185,005, Cl. 604-174.000.

Band, Hamid: *See—*
Brenner, Michael B.; Seidman, Jonathan; Strominger, Jack L.; Ip, Stephen H.; Krangel, Michael S.; and Band, Hamid, 5,185,250, Cl. 435-69.300.

Bando, Norihito: *See—*
Misuda, Kenji; and Bando, Norihito, 5,184,932, Cl. 414-685.000.

Bando, Shoichi: *See—*
Furuoka, Misa; Bando, Shoichi; and Fujii, Akio, 5,185,207, Cl. 428-404.000.

Banker, Harold J., to Ner Data Products Inc. Tape rack mounting device. 5,184,736, Cl. 211-41.000.

Banks, Frank J., to Moog, Inc. Electro optic modulator systems for fiber optic information transmission. 5,185,675, Cl. 359-181.000.

Banks, Gary S. Multi-station physical exercise apparatus. 5,184,992, Cl. 482-104.000.

Banks, Rodney, H.; and Wetegrove, Robert J., to Nalco Chemical Company. Monitoring film fouling in a process stream with a transparent shunt and light detecting means. 5,185,533, Cl. 250-575.000.

Banno, Yoshikazu: *See—*
Nomura, Ichiro; Takeda, Toshihiko; Banno, Yoshikazu; Kaneko, Tetsuya; Ono, Haruhito; and Suzuki, Hidetoshi, 5,185,554, Cl. 313-495.000.

Banus, Christopher T., to Granitech Corporation, The. Ornamental pre-cast terrazzo panels with integral inlay design. 5,185,192, Cl. 428-49.000.

Barauke, Norbert; and Lang, Kurt, to Spindelfabrik Sussen, Schurr, Stahlecker & Grill GmbH. Drafting unit with at least one cleaning belt. 5,184,374, Cl. 19-262.000.

Barbacid, Mariano; and Manne, Veeraswamy, to E. R. Squibb & Sons, Inc. Farnesyl-protein transferase assay for identifying compounds that block neoplastic transformation. 5,185,248, Cl. 435-15.000.

Barber, David C.: *See—*
Brown, Brian H.; and Barber, David C., 5,184,624, Cl. 128-734.000.

Barbu, Stephane, to U.S. Philips Corporation. Differential amplifier, particularly of the cascode type. 5,185,582, Cl. 330-261.000.

Bare, Rex O.: *See—*
Packer, Gilbert; Bare, Rex O.; and Shillington, Richard, 5,184,720, Cl. 206-366.000.

Barilla G. e R. F.lli-Societa per Azioni: *See—*
Bottino, Pier C.; Bertozzi, Fausto; Oddi, Renzo; and Rolli, Eros, 5,184,542, Cl. 99-483.000.

Barker, Dean W., to Motorola, Inc. Method of making self-aligned gate providing improved breakdown voltage. 5,185,278, Cl. 437-39.000.

Barkhau, Keith D.; Beltz, John D.; Kupski, Donald R.; Henke, Mitchell C.; and Svensson, Soldon A., to KFC Corporation. Method for simulating open flame broiled meat products. 5,185,172, Cl. 426-523.000.

Barnabei, Robert A.; and Picozzi, James R., to Alliant Techsystems Inc. Solid interspersed expanded collector grid. 5,185,224, Cl. 429-218.000.

Barnes, Lee E., Jr.: *See—*
Davenport, John M.; Hansler, Richard L.; and Barnes, Lee E., Jr., 5,184,882, Cl. 362-32.000.

Baror, Gigy; and Johnson, William M., to Advanced Micro Device, Inc. Programmable cache memory as well as system incorporating same and method of operating programmable cache memory. 5,185,878, Cl. 395-425.000.

Barrett, Steven T.; Laird, Kevin M.; Murray, Richard E.; and O'Connor, James M., to Motorola, Inc. Encrypted trunked control channel system. 5,185,797, Cl. 380-21.000.

Barrett, Terence W.; and Giuliani, John F., to United States of America, Navy. Lasing dye sensor for chemical vapors. 5,185,131, Cl. 422-91.000.

Barrows, Peter S.; and Willis, James A., to FMC Corporation. Measuring tank sight glass. 5,184,511, Cl. 73-323.000.

Bartley, William J.; Jobson, Simon; Harkreader, Gordon G.; Kitson, Melanie; and Lemanski, Michael F., to BP Chemicals Limited. Catalysts and processes for the manufacture of vinyl acetate. 5,185,308, Cl. 502-170.000.

Bartsch, Reni: *See—*
Sauer, Wolfgang; Jansch, Hans-Joachim; Rostock, Angelika; Faust, Gottfried; Siegemund, Christine; Lohmann, Dieter; and Bartsch, Reni, 5,185,341, Cl. 514-269.000.

Basavanhally, Nagesh R.; Borutta, Richard; Sizer, Theodore, II; and Walker, James A., to AT&T Bell Laboratories. Optical fiber alignment apparatus including guiding and securing plates. 5,185,846, Cl. 385-137.000.

BASF Aktiengesellschaft: *See—*
Buerstinghaus, Rainer; Neubauer, Hans-Juergen; Hofmeister, Peter; Kuenast, Christoph; Leyendecker, Joachim; and Kardorff, Uwe, 5,185,359, Cl. 514-407.000.
Vogelbacher, Uwe J.; Eicken, Karl; Rheinheimer, Joachim; Goetz, Norbert; Harreus, Albrecht; Paul, Gerhard; Westphalen, Karl-Otto; and Wuerzer, Bruno, 5,185,027, Cl. 504-219.000.

BASF Corporation: *See—*
Coons, Andrew M., III; King, Willis M.; Dickerson, Joe B.; and Thompson, Melvin R., 5,184,381, Cl. 28-271.000.

Bassetti, Chester F., Jr.; Reddy, Dayakar C.; Laiman, Ekaputra; and Richter, Bryan M., to Cirrus Logic, Inc. Method and apparatus for producing perception of high quality grayscale shading on digitally commanded displays. 5,185,602, Cl. 340-793.000.

Basta, Samuel T. Lift for watercraft. 5,184,914, Cl. 405-3.000.

Batra, Vijay K., to K-Swiss Inc. Lacing system for shoes. 5,184,378, Cl. 24-714.600.

Batt, Terry A.: *See—*
Krcma, Jan; and Batt, Terry A., 5,184,500, Cl. 73-23.200.

Bauer, Kurt, to Karosseriewerke Weinsberg GmbH. Elevatable sliding roof of flat design. 5,184,869, Cl. 296-213.000.

Bauhof, Karl, to Karosseriewerke Weinsberg GmbH. Raisable-sliding roof of shallow construction for motor vehicles. 5,184,870, Cl. 296-223.000.

Bauman, Thomas A., to Enger-Kress Company. Cardholder and method of cardholder construction and pocket construction. 5,184,658, Cl. 150-147.000.

Baumann, Manfred: *See—*
Arabian, Sandro; and Baumann, Manfred, 5,184,885, Cl. 312-34.110.

Bavelloni, Franco, to Z. Bavelloni S.p.A. Machine for machining edges, particularly of glass plates. 5,184,430, Cl. 51-215.00E.

Baydar, Ertugrul: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Bayer Aktiengesellschaft: *See—*
Bader, Axel; and Arlt, Dieter, 5,185,454, Cl. 549-240.000.
Buysch, Hans-Josef; and Arlt, Dieter, 5,185,467, Cl. 564-330.000.
Drewes, Mark W.; Haug, Michael; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,185,026, Cl. 504-225.000.
Drouve, Werner; Hohlein, Peter; and Wieczorrek, Wolfhart, 5,185,422, Cl. 528-76.000.
Huggins, John, 5,185,458, Cl. 556-9.000.
Krockert, Bernd; Printzen, Helmut; Biermann, Hans-Peter; and Hofs, Hans-Ulrich, 5,185,141, Cl. 423-632.000.
Muller, Hartwig; Bischoff, Erwin; Fugmann, Burkhard; Weber, Karlheinz; Frobel, Klaus; Rosen, Bruno; Grutzmann, Rudi; Karmann, Guenther; and Kohlsdorfer, Christian, 5,185,326, Cl. 514-23.000.
Niewohner, Ulrich; Muller, Ulrich E.; Perzborn, Elisabeth; Bischoff, Erwin; and Dellweg, Hans-Georg, 5,185,348, Cl. 514-335.000.
Seyer, Johannes; and Freudenberg, Bernhard, 5,185,113, Cl. 264-67.000.

Beaudet, Douglas B.: *See—*
Wilson, James; and Beaudet, Douglas B., 5,185,628, Cl. 355-209.000.

Bechtel, Wolf-Dietrich: *See—*
Weber, Karl-Heinz; Stransky, Werner; Kuefner-Muehl, Ulrike; Heuer, Hubert; Birke, Franz; and Bechtel, Wolf-Dietrich, 5,185,442, Cl. 540-555.000.

Beck, Hans-Jurgen; and Nowara, Gabriele, to Heidelberger Druckmaschinen Ag. Device for controlling wetting behavior of metal surfaces by application of electrolyte under controlled voltage. 5,184,550, Cl. 101-142.000.

Becker, James R.: *See—*
Armstrong, Jay, 5,184,427, Cl. 51-165.730.

Becker, Ruediger; Boettcher, Siegfried; and Franz, Andreas, to Robert Bosch GmbH. Method of reducing the emission of toxic exhaust gas components in an internal combustion engine. 5,184,463, Cl. 60-284.000.

Becker, Willi: *See—*
Merkel, Gerd; Glaunsinger, Georg; Vogt, Wilfried; Stadler, Peter; Zander, Claus-Peter; Schmitt, Gernot; Maass, Jurgen; Necker, Thomas; Becker, Willi; and Weber, Walter, 5,184,554, Cl. 101-415.100.

Becoat, Billie J. Dual wheel driven bicycle. 5,184,838, Cl. 280-259.000.

Becton Dickinson and Company: *See—*
Keating, William E.; and Robson, Jillian A., 5,185,242, Cl. 435-6.000.
Vonk, Glenn P., 5,185,127, Cl. 422-56.000.
Williamitis, Victor A.; and Spielvogel, David E., 5,185,006, Cl. 604-265.000.

Beeler, Alfred: *See—*
Toedtli, Sergej; and Beeler, Alfred, 5,185,639, Cl. 356-245.000.

Beers, Gregory E.; Flickner, Myron D.; Kelly-Mahaffey, William L.; Polk, Darryl R.; Stafford, James M.; and Wattenbarger, Henry E., to International Business Machines Corporation. Automated visual inspection of electronic component leads prior to placement. 5,185,811, Cl. 382-8.000.

Begala, Arthur J., to Nalco Chemical Company. Papermaking process with improved retention and drainage. 5,185,062, Cl. 162-168.100.

Behan, John M.; Ness, Jeremy N.; and Perring, Keith D., to Unilever Patent Holdings B.V. Encapsulating method and products containing encapsulated material. 5,185,155, Cl. 424-451.000.

Behring, James A.: *See—*
Falk, Richard A.; and Behring, James A., 5,184,894, Cl. 374-140.000.

Beiersdorf AG: *See—*
Brandt, Dieter; Szlema, Ingeborg; and Wetz, Hans H., 5,185,000, Cl. 602-63.000.

Beihoff, Bruce C.; Tennies, Charles J.; Richards, Francis S., Jr.; and O'Neil, Walter K., to Eaton Corporation. Frequency selective arc detection. 5,185,684, Cl. 361-45.000.

Beihoff, Bruce C.; Tennies, Charles J.; Richards, Francis S., Jr.; and O'Neil, Walter K., to Eaton Corporation. Chaos sensing arc detection. 5,185,687, Cl. 361-45.000.

Beihoff, Bruce C.: *See—*
Hansen, James E.; Beihoff, Bruce C.; Tennies, Charles J.; and Richards, Francis S., Jr., 5,185,686, Cl. 361-45.000.
Tennies, Charles J.; Beihoff, Bruce C.; Hastings, Jerome K.; Clarey, Robert J.; and O'Neil, Walter K., 5,185,685, Cl. 361-45.000.

BeilfuB, Wolfgang: *See—*
Eggensperger, Heinz; Diehl, Karl-Heinz; Nolte, Helmut; Rackur, Helmut; Eggers-MaaB, Ute; Mohr, Michael; Bernd, Lower; and BeilfuB, Wolfgang, 5,185,145, Cl. 424-78.080.

Beisswanger, Rudolf: *See—*
Holzinger, Dieter; Sollinger, Hans-Peter; and Beisswanger, Rudolf, 5,184,787, Cl. 242-65.000.

Belcher, Samuel L.: *See—*
Wiatt, James G.; Swiderski, Kevin J.; Belcher, Samuel L.; and Smith, Roger D., 5,185,163, Cl. 425-534.000.

Belic, Andrej: *See—*
Lasic, Danilo D.; and Belic, Andrej, 5,185,154, Cl. 424-450.000.

Bell, Don A., to Blount, Inc. Saw chain for aggregate materials. 5,184,598, Cl. 125-21.000.

Bell, Florian G.: *See—*
Trent, William A.; McDonald, Kevin B.; and Bell, Florian G., 5,185,635, Cl. 356-73.100.

Beltone Electronics Corporation: *See—*
Stanton, Mark F., 5,185,802, Cl. 381-68.600.

Beltz, John D.: *See—*
Barkhau, Keith D.; Beltz, John D.; Kupski, Donald R.; Henke, Mitchell C.; and Svensson, Soldon A., 5,185,172, Cl. 426-523.000.

Benczur-Urmossy, Gabor: *See—*
Berger, Gerhard; and Benczur-Urmossy, Gabor, 5,185,223, Cl. 429-215.000.

Benda, John A.; and Blaszuk, Paul R., to United Technologies Corporation. Circular and elliptical polarization of a high power laser by adjoint feedback. 5,185,753, Cl. 372-27.000.

Benedict, Charles E.; and Stumpf, Donald M., to Benedict Engineering Company, Inc. Vehicle light, windshield wiper control system. 5,185,558, Cl. 315-80.000.

Benedict Engineering Company, Inc.: *See—*
Benedict, Charles E.; and Stumpf, Donald M., 5,185,558, Cl. 315-80.000.

Benenowski, Sebastian: *See—*
Kais, Alfred; Nuding, Erich; and Benenowski, Sebastian, 5,184,791, Cl. 246-468.000.

Beninghaus, Wayne D.: *See—*
Habig, Thomas F.; and Beninghaus, Wayne D., 5,185,109, Cl. 264-40.500.

VOL 1147 ISS 2 FE 9 1993 UMI

Bensel, William H., III; and Cobb, Gary S., to AT&T Bell Laboratories. Closure for optical fiber connective arrangements and method of providing same. 5,185,844, Cl. 385-135.000.

Benstock, Gerald M., to Superior Surgical Mfg. Co., Inc. Versatile patient gown. 5,184,351, Cl. 2-114.000.

Benz, Rico; and Magdika, Janos, to Zellweger Uster AG. Method and apparatus for singularizing healds for warp thread drawing-in machine. 5,184,380, Cl. 28-205.000.

Benzing, Bruce M., to Dover Corporation. Vapor recovery sealing devices. 5,184,654, Cl. 141-287.000.

Berger, Gerhard; and Benczur-Urmossy, Gabor, to Deutsche Automobilgesellschaft mbH. Nickel-cadmium storage battery with improved electrical properties. 5,185,223, Cl. 429-215.000.

Berger, Jurgen; and Lang, Norbert, to TRW Repa GmbH. Gas bag assembly. 5,184,843, Cl. 280-728.000.

Bergin, James T.; and Urella, Richard M., to David Clark Company Incorporated. Headset with multi-position stirrup assemblies. 5,185,807, Cl. 381-183.000.

Bergmann, Heinz. Equipment for compacting compressible wastes. 5,184,547, Cl. 100-50.000.

Bernd, Lower: *See*—
Eggensperger, Heinz; Diehl, Karl-Heinz; Nolte, Helmut; Rackur, Helmut; Eggers-MaaB, Ute; Mohr, Michael; Bernd, Lower; and BeilfuB, Wolfgang, 5,185,145, Cl. 424-78.080.

Bernhard, James C.; Johnson, Thomas P.; and Antila, Garth V., to Minnesota Mining and Manufacturing Company. Support clip for electrical cables. 5,184,792, Cl. 248-71.000.

Bernhardt, Keith: *See*—
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

berolina Schriftbild Wilcke, Wolff, Busch & Partner KG: *See*—
Wilcke, Gerhard, 5,185,616, Cl. 346-1.100.

Bersten, Ian J. Apparatus and method for roasting food products. 5,185,171, Cl. 426-467.000.

Berthiaume, William A.: *See*—
Vogel, Robert A.; Berthiaume, William A.; and Bertrand, Carol A., 5,184,621, Cl. 128-642.000.

Bertora, Franco: *See*—
Pan, Antonio; Pan, Paolo; and Bertora, Franco, 5,184,395, Cl. 29-609.000.

Bertotti, Franco; and Ferrari, Paolo, to SGS-Thomson Microelectronics, S.r.l. Circuital arrangement for preventing latchup in transistors with insulated collectors. 5,185,649, Cl. 357-43.000.

Bertozzi, Fausto: *See*—
Bottino, Pier C.; Bertozzi, Fausto; Oddi, Renzo; and Rolli, Eros, 5,184,542, Cl. 99-483.000.

Bertrand, Carol A.: *See*—
Vogel, Robert A.; Berthiaume, William A.; and Bertrand, Carol A., 5,184,621, Cl. 128-642.000.

Bespak plc: *See*—
Lee, Graham S., 5,184,761, Cl. 222-402.200.

Bethke, Rolf; and Bode, Jochen, to Van den Bergh Foods Co., Division of Conopco, Inc. Bread improver compositions. 5,185,173, Cl. 426-549.000.

Betsill, Katherine B. Method and material for writing checks by applying pressure on a preprinted overlay. 5,184,910, Cl. 462-8.000.

Betts, Robert, to International Business Machines Corporation. Modular active fiber optic coupler system. 5,185,833, Cl. 385-46.000.

Beyer, Claus; Dominke, Peter; and Sonntag, Eberhard, to Robert Bosch GmbH. Anti lock braking system. 5,184,876, Cl. 303-106.000.

Bezos, Angel P.; Fernandez, Emilio A.; and Field, Joseph L., Jr., to Pulse Electronics, Inc. Solid state event recorder. 5,185,700, Cl. 364-424.040.

Bhardwaj, Pradeep: *See*—
Newell, Gerald R.; Nootbaar, Michael W.; Bhardwaj, Pradeep; and Willson, Robert C., 5,185,585, Cl. 331-46.000.

Biale, John, to Rohm and Haas Company. Water-based varnishes. 5,185,396, Cl. 524-820.000.

Biale, John, to Rohm and Haas Company. Water-based varnishes. 5,185,397, Cl. 524-820.000.

Bianco, Oreste: *See*—
Varinelli, Antonio; Varinelli, Marco; and Bianco, Oreste, 5,184,985, Cl. 483-28.000.

Biermann, Hans-Peter: *See*—
Krockert, Bernd; Printzen, Helmut; Biermann, Hans-Peter; and Hofs, Hans-Ulrich, 5,185,141, Cl. 423-632.000.

Bindra, Perminder S.; Cuomo, Jerome J.; Gall, Thomas P.; Ingraham, Anthony P.; Kang, Sung K.; Kim, Jungihl; Lauro, Paul; Light, David N.; Markovich, Voya R.; Miersch, Ekkehard F.; Molla, Jaynal A.; Powell, Douglas O.; Ritsko, John J.; Saxenmeyer, George J., Jr.; Varcoe, Jack A.; and Walker, George F., to International Business Machines Corporation. Method of fabricating nendritic materials. 5,185,073, Cl. 205-104.000.

Bini, Franco, to Savio S.p.A. Circular knitting machine for producing sports hosiery of floated pattern. 5,184,485, Cl. 66-222.000.

Binkley, Dennis E. Action toy using magnetic marbles. 5,184,970, Cl. 446-132.000.

Biogen, Inc.: *See*—
Wallner, Barbara P.; and Hession, Catherine, 5,185,441, Cl. 536-23.500.

Birke, Franz: *See*—
Weber, Karl-Heinz; Stransky, Werner; Kuefner-Muehl, Ulrike; Heuer, Hubert; Birke, Franz; and Bechtel, Wolf-Dietrich, 5,185,442, Cl. 540-555.000.

Birkenbach, Alfred: *See*—
Schonlau, Juergen; Birkenbach, Alfred; and Harth, Ralf, 5,184,468, Cl. 60-547.100.

Bischoff, Erwin: *See*—
Muller, Hartwig; Bischoff, Erwin; Fugmann, Burkhard; Weber, Karlheinz; Frobel, Klaus; Rosen, Bruno; Grutzmann, Rudi; Karmann, Guenther; and Kohlsdorfer, Christian, 5,185,326, Cl. 514-23.000.
Niewohner, Ulrich; Muller, Ulrich E.; Perzborn, Elisabeth; Bischoff, Erwin; and Dellweg, Hans-Georg, 5,185,348, Cl. 514-335.000.

Bishop, O. Lamar: *See*—
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Bissett, Thomas D.; Bruckert, William; Thirumalai, Ajai; and Amirmokri, Jay, to Digital Equipment Corporation. Protocol for transfer of DMA data. 5,185,877, Cl. 395-425.000.

Bitter, Charles R., Jr., to Motorola, Inc. Compact antenna array for diversity applications. 5,185,611, Cl. 343-702.000.

Black, Danny O., to Advanced Medical Nutrition, Inc. Golf ball display rack. 5,184,735, Cl. 211-14.000.

Blackburn, Brian K.; and Gentry, Scott B., to TRW Vehicle Safety Systems Inc. Method for determining frequency components in a vehicle crash. 5,185,701, Cl. 364-425.000.

Blackwell, Russell. Roof bolt anchor. 5,184,922, Cl. 405-259.100.

Blaisdell, Richard W.; Baer, David A.; and Singh, Shiy P. Modular, free movement backpack system. 5,184,763, Cl. 224-211.000.

Blake, Larry W., to Iovision, Inc. Fabrication of an intraocular lens. 5,185,107, Cl. 264-2.500.

Blakeway, Ian; and Holmes, Frank. Coin or token operated machine for playing pre-recorded record discs. 5,185,727, Cl. 369-34.000.

Blanc, Francis: *See*—
Aubert, Daniel; Blanc, Francis; Desmolin, Henri; Morre, Michel; and Sindely, Lucette, 5,185,159, Cl. 424-489.000.

Blank, Michael: *See*—
Wider, Bernhard; Blank, Michael; and Vester, Joachim, 5,184,618, Cl. 128-634.000.

Blank, Robert G.: *See*—
Motola, Solomon; Blank, Robert G.; and Branfman, Alan R., 5,185,373, Cl. 514-570.000.

Blaszuk, Paul R.: *See*—
Benda, John A.; and Blaszuk, Paul R., 5,185,753, Cl. 372-27.000.

Blazic, Ernest S.; Bueker, Robert A.; Waters, Lynn O.; Farwell, William D.; and Smalanskas, Joseph P., to Hughes Aircraft Company. Conformal circuit for structural health monitoring and assessment. 5,184,516, Cl. 73-799.000.

Bloo, Johann; Romauer, Ewald; and Hollerwoger, Alois, to Lenzing Aktiengesellschaft. Foil stretching plant. 5,184,379, Cl. 26-72.000.

Blossfeld, Daniel H.; and Schneider, Eric W., to General Motors Corporation. Method and apparatus for nondestructive selective determination of a metal. 5,185,773, Cl. 378-53.000.

Blount, Inc.: *See*—
Bell, Don A., 5,184,598, Cl. 125-21.000.

Bluegrass Electronics, Inc.: *See*—
DuRand, Elden E., III; and Logsdon, William K., 5,185,593, Cl. 340-544.000.

Blumel, Ehrenfried: *See*—
Diessel, Cornelia; Kliwer, Carsten; Burak, Gerhard; Blumel, Ehrenfried; and Kittel, Christoph, 5,185,380, Cl. 521-49.000.

Blumentritt, Martin: *See*—
Vry, Uwe; Dorsel, Andreas; Schierle, Berthold; Blumentritt, Martin; and Greve, Peter, 5,185,643, Cl. 356-358.000.

Bluzer, Nathan, to Westinghouse Electric Corp. Multispectral superconductive quantum detector. 5,185,527, Cl. 250-336.200.

Bly, Jerry L.: *See*—
Gonda, John K.; Bachman, Benny C.; Boyer, Mike; Bly, Jerry L.; and Gilliland, Donald, 5,185,183, Cl. 427-236.000.

Board of Governors of Wayne State University, The: *See*—
Ostrea, Enrique M., Jr., 5,185,267, Cl. 436-92.000.

Board of Regents, The University of Texas System: *See*—
Ballantyne, Alando J., 5,185,005, Cl. 604-174.000.
Serwer, Philip; and Dunn, Frederick J., 5,185,071, Cl. 204-299.00R.

Board of Supervisors, Louisiana State University: *See*—
Valentincic, Tine B.; and Caprio, John T., 5,185,164, Cl. 426-1.000.

Board of Trustee of the Leland Stanford Junior University, The: *See*—
Kalman, Robert F.; Wysocki, Paul F.; and Digonnet, Michel J. F., 5,185,749, Cl. 372-6.000.

BOC Group, Inc., The: *See*—
Krishnamurthy, Ramachandran; and Andrecovich, Mark J., 5,185,139, Cl. 423-359.000.

BOC Health Care, Inc.: *See*—
DeCaprio, Michael J.; and Rados, Stephen E., 5,184,742, Cl. 215-356.000.

Bock, Mark G.: *See*—
Freidinger, Roger M.; Bock, Mark G.; and Evans, Ben E., 5,185,331, Cl. 514-220.000.

Bode, Jochen: *See*—
Bethke, Rolf; and Bode, Jochen, 5,185,173, Cl. 426-549.000.

Boehm, Valentine R., Jr.: *See*—
Stransky, Larry W.; Boehm, Valentine R., Jr.; and Phillips, Michael A., 5,184,461, Cl. 60-226.300.

Boehringer Ingelheim KG: *See*—
Weber, Karl-Heinz; Stransky, Werner; Kuefner-Muehl, Ulrike; Heuer, Hubert; Birke, Franz; and Bechtel, Wolf-Dietrich, 5,185,442, Cl. 540-555.000.

Boeing Company, The: *See*—
Howard, Douglas A.; and Walker, Keith C., 5,184,465, Cl. 60-403.000.

Boerschig, Timothy J., to HSC Controls Inc. Shear orifice valve. 5,184,645, Cl. 137-625.650.

Boettcher, Siegfried: *See*—
Becker, Ruediger; Boettcher, Siegfried; and Franz, Andreas, 5,184,463, Cl. 60-284.000.

Boezen, Hendrik, to U.S. Philips Corporation. Integrated circuit with current detection. 5,185,651, Cl. 257-734.000.

Bogdanich, George J.: *See*—
Kopinski, Martin W.; and Bogdanich, George J., 5,184,412, Cl. 37-142.00A.

Bognar, Jozsef; and Rubik, Erno. Three-dimensional puzzle. 5,184,822, Cl. 273-153.00R.

Boler, Harry: *See*—
White, Harvey H., Jr.; and Boler, Harry, 5,185,882, Cl. 395-575.000.

Bonevento, Francis M.; Heath, Chester A.; Mandese, Ernest N.; and Mendelson, Richard N., to International Business Machines Corporation. Interrupt handling for a computing system with logical devices and interrupt reset. 5,185,864, Cl. 395-275.000.

Bonilla, Jorge A.: *See*—
Chen, Gilbert K.; McKelvy, Robert; Bonilla, Jorge A.; Glaspie, Don; and De Bruyn, George, 5,185,106, Cl. 261-112.100.

Bonometti, ; Guy; Olivier, Roland; and Maurice, Jacques, to Societe Nationale Elf Aquitaine. Method for the determination of total nitrogen including adding an alkali metal halide or an alkaline earth metal halide to the sample. 5,185,268, Cl. 436-114.000.

Borg-Warner Automotive Transmission & Engine Components Corporation: *See*—
Quinn, Stanley B., Jr.; Miller, Alan L.; and Siemon, Edward C., 5,184,578, Cl. 123-90.170.

Borgren, Peter M. Water craft and method for treating a body of water. 5,185,085, Cl. 210-747.000.

Borutta, Richard: *See*—
Basavanhally, Nagesh R.; Borutta, Richard; Sizer, Theodore, II; and Walker, James A., 5,185,846, Cl. 385-137.000.

Bosch-Siemens Hausgerate GmbH: *See*—
Deininger, Anton; Farber, Karlheinz; Giefer, Heinz-Werner; and Galler-Benker, Egon, 5,184,942, Cl. 417-360.000.

Bosisio, Claudio; and Campana, Antonio, to Pirelli Cavi S.p.A. Optical fibre element comprising an optical fibre housing constituted by a polyolefin material, and an H2-absorbing buffer. 5,185,841, Cl. 385-100.000.

Bosmans, Jean-Paul R. M. A.: *See*—
Van Daele, Georges H. P.; Bosmans, Jean-Paul R. M. A.; and De Cleyn, Michel A. J., 5,185,335, Cl. 514-243.000.

Boston Scientific Corporation: *See*—
de Toledo, Fernando A., 5,184,627, Cl. 128-772.000.

Boston University, Trustees of: *See*—
Stafford, Timothy J., 5,184,365, Cl. 5-632.000.

Botterman, Rene: *See*—
Lefeber, Paul; Botterman, Rene; Van Tilborgh, Cornelis; and Van Veggel, Loek, 5,185,198, Cl. 428-251.000.

Bottino, Pier C.; Bertozzi, Fausto; Oddi, Renzo; and Rolli, Eros, to Barilla G. e R. F.lli-Societa per Azioni. Drier for pasta. 5,184,542, Cl. 99-483.000.

Boudot, Daniel, to Pont-A-Mousson S.A. Interconnecting device for casting molded parts. 5,184,665, Cl. 164-306.000.

Boudry, Jean-Marie, to Bull S.A. Adjustable time constant circuit with constant capacitance and variable resistance. 5,185,540, Cl. 307-603.000.

Bouillon, Hubert; and Dessaux, Claude, to Potain (Societe Anonyme). Motorized remote-controlled load gripping device. 5,184,860, Cl. 294-67.310.

Boutin, Raymond H.: *See*—
Dean, Richard T.; Lister-James, John; and Boutin, Raymond H., 5,185,433, Cl. 530-391.100.

Boux, Richard: *See*—
Garcia, Georges; Gautier, Patrick; Nisato, Dino; and Boux, Richard, 5,185,345, Cl. 514-302.000.

Bowden, Wesley E.: *See*—
Hopkins, Evan L.; Bowden, Wesley E.; and Hopkins, Evan L., 5,184,960, Cl. 439-35.000.

Bowen, Robert F.: *See*—
Adamski, Joseph R.; Bowen, Robert F.; Hossfield, Robin C.; Schregardus, Thomas P.; and Skienak, John S., 5,185,126, Cl. 422-38.000.

Bowler, Ian W.: *See*—
Ditchburn, deceased; Robert W.; Gouch, Martin P.; Cook, Nigel R.; Osgood, Timothy J.; Holloway, Stephen P.; and Bowler, Ian W., 5,184,732, Cl. 209-576.000.

Bowman, Harold M.; and Fuller, George T., to Bowman, Harold M. Split-ring manhole cover support. 5,184,912, Cl. 404-26.000.

Box, Thomas, to Spectrum International, Inc. File box column. 5,184,726, Cl. 206-509.000.

Boyd, Victoria L.; and Zon, Gerald, to Applied Biosystems, Inc. Cleavage method for acyl thiohydantoins and use of the method in C-terminal peptide sequencing. 5,185,266, Cl. 436-89.000.

Boyer, Mike: *See*—
Gonda, John K.; Bachman, Benny C.; Boyer, Mike; Bly, Jerry L.; and Gilliland, Donald, 5,185,183, Cl. 427-236.000.

Boyle, Gregory. Process for the on-site removal of nitrates from wastewater. 5,185,080, Cl. 210-611.000.

Boyle, William J., Jr.: *See*—
Tang, Reginald T.; Mares, Frank; Boyle, William J., Jr.; Chiu, Tin-Ho; and Patel, Kundan M., 5,185,408, Cl. 525-415.000.

BP Chemicals Limited: *See*—
Bartley, William J.; Jobson, Simon; Harkreader, Gordon G.; Kitson, Melanie; and Lemanski, Michael F., 5,185,308, Cl. 502-170.000.
Evans, John; and Scruton, Steven L., 5,185,462, Cl. 560-232.000.

BPI Environmental, Inc.: *See*—
Wile, Richard M., 5,184,728, Cl. 206-554.000.

Brabbs, Theodore A.: *See*—
Franciscus, Leo C.; and Brabbs, Theodore A., 5,184,460, Cl. 60-226.100.

Bradbury, E. Morton: *See*—
Crissman, Harry A.; Gadbois, Donna M.; Tobey, Robert A.; and Bradbury, E. Morton, 5,185,260, Cl. 435-244.000.

Brady, Cory: *See*—
Ragsdale, Kelly J.; and Brady, Cory, 5,184,377, Cl. 24-704.100.

Brandstetter, Robert W., to Grumman Aerospace Corporation. Multiple target correlator system. 5,185,815, Cl. 382-31.000.

Brandt, Dieter; Szlema, Ingeborg; and Wetz, Hans H., to Beiersdorf AG. Ankle joint bandage. 5,185,000, Cl. 602-63.000.

Branfman, Alan R.: *See*—
Motola, Solomon; Blank, Robert G.; and Branfman, Alan R., 5,185,373, Cl. 514-570.000.

Brangi, John. Exercise machine. 5,184,991, Cl. 482-97.000.

Brantingham, Charles A.; and Sheridan, Timothy P., to Perkin-Elmer Corporation, The. Mechanism for positioning a carrier. 5,184,525, Cl. 74-820.000.

Braun, Edmund H., II: *See*—
Ryer, Jack; Gutierrez, Antonio; Puckace, James S.; Watts, Raymond F.; Gleason, Craig W.; Mills, Daniel R.; and Braun, Edmund H., II, 5,185,090, Cl. 252-46.600.

Brawn, Peter R.; and Gibson, Walter T., to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Cosmetic composition. 5,185,325, Cl. 514-23.000.

Brenner, Michael B.; Seidman, Jonathan; Strominger, Jack L.; Ip, Stephen H.; Krangel, Michael S.; and Band, Hamid, to T Cell Sciences, Inc.; Dana Farber Cancer Institute; and President & Fellows of Harvard College. Human γ, δT cell antigen receptor polypeptides and nucleic acids. 5,185,250, Cl. 435-69.300.

Brethauer, Ullrich, to B. Braun Melsungen AG. Port for injecting medicaments. 5,185,003, Cl. 604-93.000.

Brewer, Darryl C. Signal mousetrap apparatus. 5,184,416, Cl. 43-81.000.

Bright, Michael W., to Motorola, Inc. Authentication of rekey messages in a communication system. 5,185,795, Cl. 380-21.000.

Brillante, Jose C. Animal mouth retractor. 5,184,604, Cl. 128-14.000.

Briscoe, M. Rodney: *See*—
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Bristol-Myers Squibb Company: *See*—
Gawin, Frank H.; Byck, Robert; Alderdice, Marc; and Schwimmer, Jeffrey, 5,185,329, Cl. 514-159.000.
Koslo, Randy; and Lukacsko, Alison, 5,185,144, Cl. 424-66.000.

British Telecommunications public limited company: *See*—
Healey, Peter, 5,185,814, Cl. 385-24.000.

Brittain, David R.; and Cox, Michael T., to Imperial Chemical Industries PLC. Benzheterocyclyl sulphones. 5,185,452, Cl. 548-492.000.

Brockmanns, Karl-Josef; Derichs, Josef; Wey, Edmund; Grecksch, Hans; Tholen, Leo; and Lassmann, Manfred, to W. Schlafhorst AG & Co. Method and apparatus for controlling the yarn tension of yarn being cross-wound onto a bobbin on a textile winding machine. 5,184,786, Cl. 242-45.000.

Brockmeyer, Andreas: *See*—
Coutandin, Jochen; Theis, Jurgen; Groh, Werner; and Brockmeyer, Andreas, 5,185,832, Cl. 385-43.000.

Brokman, Avner; and Goldstein, Jonathan, to Luz Electric Fuel Israel Ltd. Electrodes for metal/air batteries and fuel cells and metal/air batteries incorporating the same. 5,185,218, Cl. 429-27.000.

VOL 1147 ISS 2 FE 9 1993 UMI

Brooks, Charles J.; and Gregg, Gary H., to Marcraft International Corporation. User repairable personal computer. 5,185,881, Cl. 395-575.000.

Brooks, Dee W.; Kerkman, Daniel J.; Martin, Jonathan G.; Stewart, Andrew O.; and Summers, James B., to Abbott Laboratories. Urea based lipoxygenase inhibiting compounds. 5,185,363, Cl. 514-438.000.

Brosdetzko, Hubert: *See—*
Kerstges, Johannes; and Brosdetzko, Hubert, 5,184,782, Cl. 241-171.000.

Brosius, Peter: *See—*
Erschens, Willie; Mencher, Franz J.; Brosius, Peter; Grave, Klaus; Zender, Bernhard; Schardt, Peter; Hessek, Gerd; and Alten, Ferdinand, 5,184,806, Cl. 254-126.000.

Brossardt, Ansgar; Immel, Manfred; and Styppa, Heinrich, to Rittal-Werk Rudolf Loh GmbH & Co. KG. Air conditioning or cooling device for a control cabinet. 5,184,879, Cl. 312-236.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Asano, Fumiaki, 5,184,560, Cl. 112-121.120.
Imamaki, Teruo; Fuwa, Tetsuji; and Miki, Takashi, 5,184,549, Cl. 101-121.000.

Brovelli, Virginio, to Lanard Toys Limited. Toy water gun utilizing an air pressure pump. 5,184,755, Cl. 222-79.000.

Brown, Anthony K. D., to Northern Telecom Limited. Differential amplifier and high frequency resonant circuits constructed therefrom. 5,185,581, Cl. 330-254.000.

Brown, Brian H.; and Barber, David C., to University of Sheffield, The. Electrical impedance tomography. 5,184,624, Cl. 128-734.000.

Brown, Charles F.: *See—*
Wengyn, Mark D.; and Brown, Charles F., 5,184,721, Cl. 206-366.000.

Brown, Dennis N., to Northwest Podiatric Laboratory, Inc. Orthotic insert and method of making of the same. 5,184,409, Cl. 36-44.000.

Brown, Donald R.: *See—*
Hartman, Frederick A.; Brown, Donald R.; Rusche, John R.; and Taylor, Lucille F., 5,185,088, Cl. 252-86.000.

Brown, Edward A.; Haxell, John P. N.; and Cockett, Michael A., to Coates Electrographics Limited. Transparent hot melt jet ink. 5,185,035, Cl. 106-31.00R.

Brown, Franklin I., to Ford Motor Company. Method for inhibiting significant oxidation of a film on a substance during heating. 5,185,182, Cl. 427-126.200.

Brown, J. Edward; and Ciaccio, Jenny. Portable cart a cooler. 5,184,477, Cl. 62-457.700.

Brown, Joseph P.: *See—*
Hellstrom, Karl E.; Brown, Joseph P.; Hellstrom, Ingegerd; and Marquardt, Hans, 5,185,432, Cl. 530-388.800.

Brown, Paul: *See—*
Schad, Robert D.; and Brown, Paul, 5,185,119, Cl. 264-297.200.

Brown, Robert W., Jr., to Tambrands Inc. Spirally wound tampon with overwrap. 5,185,010, Cl. 604-379.000.

Bruckert, William: *See—*
Bissett, Thomas D.; Bruckert, William; Thirumalai, Ajai; and Amirmokri, Jay, 5,185,877, Cl. 395-425.000.

Brust, Hans-Detlef. Process and system for the asynchronous measurement of signal courses. 5,185,571, Cl. 324-158.00R.

Bryan, Edward P.: *See—*
Zabsky, John M.; Saitta, Jerome; and Bryan, Edward P., 5,185,532, Cl. 250-455.110.

Bryant, Peter L.: *See—*
Middaugh, James F.; Bryant, Peter L.; Grabenkort, Richard W.; Oswald, Timothy J.; and Tripp, Edward S., 5,185,007, Cl. 604-320.000.

Bryce Office Systems, Inc.: *See—*
Eisner, Lawrence F.; and Hurd, Bruce E., 5,184,900, Cl. 400-82.000.

Buchanan, Robert A.: *See—*
Stults, Jeffrey S.; and Buchanan, Robert A., 5,185,471, Cl. 568-586.000.

Buchecker, Richard; Schadt, Martin; and Villiger, Alois, to Hoffmann-La Roche Inc. Liquid crystalline mixtures containing 3,4-difluorophenyl-substituted bicyclohexyls. 5,185,098, Cl. 252-299.630.

Buchholz, Brian S., to Tecumseh Products Company. Mechanical compression release for an internal combustion engine. 5,184,586, Cl. 123-182.100.

Buck, Dean C.: *See—*
Degi, Greg A.; and Buck, Dean C., 5,185,817, Cl. 382-47.000.

Buckley, Augustus M., Jr.: *See—*
Zylka, Karl H.; and Buckley, Augustus M., Jr., 5,184,752, Cl. 221-1.000.

Bueker, Robert A.: *See—*
Blazic, Ernest S.; Bueker, Robert A.; Waters, Lynn O.; Farwell, William D.; and Smalanskas, Joseph P., 5,184,516, Cl. 73-799.000.

Buerstinghaus, Rainer; Neubauer, Hans-Juergen; Hofmeister, Peter; Kuenast, Christoph; Leyendecker, Joachim; and Kardorff, Uwe, to BASF Aktiengesellschaft. N-phenoxphenyloxymethyl substituted azoles and method for controlling pests therewith. 5,185,359, Cl. 514-407.000.

Bull S.A.: *See—*
Boudry, Jean-Marie, 5,185,540, Cl. 307-603.000.

Burak, Gerhard: *See—*
Diessel, Cornelia; Kliwer, Carsten; Burak, Gerhard; Blumel, Ehrenfried; and Kittel, Christoph, 5,185,380, Cl. 521-49.000.

Burchill, Michael T.: *See—*
Silbermann, Joseph; and Burchill, Michael T., 5,185,191, Cl. 428-409.000.

Burndy Corporation: *See—*
Noschese, Rocco J., 5,184,962, Cl. 439-66.000.
Ramirez, Fernando J.; Noschese, Rocco J.; Holmes, Barry A.; and Hannigan, Thomas L., 5,184,961, Cl. 439-59.000.

Burns, Charlene L.: *See—*
Koszalka, George W.; Burns, Charlene L.; Krenitsky, Thomas A.; and Rideout, Janet L., 5,185,437, Cl. 536-24.000.

Burr, William F.: *See—*
Rose, Neil M.; Ackers, Stephen B.; Burr, William F.; and Rose, Brett M., 5,184,784, Cl. 241-275.000.

Burroughs Wellcome Co.: *See—*
Koszalka, George W.; Burns, Charlene L.; Krenitsky, Thomas A.; and Rideout, Janet L., 5,185,437, Cl. 536-24.000.

Burt, Willard F.: *See—*
Grosso, Paul V.; Wing, Feagin A., Jr.; Morgan, Michael J.; Stegmeier, Renate C.; Day, Roger W.; and Burt, Willard F., 5,185,226, Cl. 430-47.000.

Buschmann, Ulrich; Gomoll, Gunter; Hauslaib, Wolfgang; and Rohrer, Kurt, to Mannesmann Aktiengesellschaft. Device for the transport of paper in printers, particularly dot matrix printers. 5,184,905, Cl. 400-616.100.

Button, Leslie J.; Dotson, Jerald B.; Reding, Bruce W.; and Wightman, Christopher W., to Corning Incorporated. Method for detecting defects in fibers. 5,185,636, Cl. 356-73.100.

Buysch, Hans-Josef; and Arlt, Dieter, to Bayer Aktiengesellschaft. Process for the preparation of 2,2-bis-(aminophenyl)-propane. 5,185,467, Cl. 564-330.000.

BWG Butzbacher Weichenbau GMBA: *See—*
Kais, Alfred; Nuding, Erich; and Benenowski, Sebastian, 5,184,791, Cl. 246-468.000.

Byck, Robert: *See—*
Gawin, Frank H.; Byck, Robert; Alderdice, Marc; and Schwimmer, Jeffrey, 5,185,329, Cl. 514-159.000.

Bystronic Laser AG: *See—*
Zumstein, Ernst, 5,185,510, Cl. 219-121.670.

C & A Control Systems, Inc.: *See—*
Cantrell, Harold S., 5,184,584, Cl. 123-179.200.

C. R. Bard, Inc.: *See—*
Vogel, Robert A.; Berthiaume, William A.; and Bertrand, Carol A., 5,184,621, Cl. 128-642.000.

C. Uyemura & Company, Ltd.: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Ishikawa, Hideo; Matsumura, Sowjun; Chiba, Tadashi; Asakawa, Kiyoshi; and Oohora, Syoichi, 5,185,216, Cl. 428-614.000.
Yanada, Isamu; Murakami, Tooru; and Asakawa, Kiyoshi, 5,185,076, Cl. 205-252.000.

Calandra, Frank, Jr.; Stankus, John C.; and Yacisin, Paul A., to Jennmar Corporation. Expansion shell assembly. 5,184,923, Cl. 405-259.400.

Caldwell, Robert M.; Estell, David A.; and Graycar, Thomas P., to Genencor International, Inc. Subtilisin mutants. 5,185,258, Cl. 435-220.000.

Calfo, Raymond M.: *See—*
Veronesi, Luciano; Calfo, Raymond M.; and Drake, James A., 5,185,545, Cl. 310-114.000.

Calgon Corporation: *See—*
Kaiser, Herbert J., 5,185,036, Cl. 106-208.000.

Call, David E.; and Lewkowicz, Julian, to International Business Machines Corporation. Calibrating and power-protecting laser drive circuits. 5,185,734, Cl. 369-116.000.

Calton, Gary J.: *See—*
Siemer, Sidney R.; Wood, Louis L.; and Calton, Gary J., 5,185,024, Cl. 504-116.000.

Camanzi, Alberto; and Sberveglieri, Giorgio, to Eniricerche S.p.A. Solid-state sensor for determining hydrogen and/or NO_x concentration and the method for its preparation. 5,185,130, Cl. 422-90.000.

Cambon, Aime : *See—*
Delpuech, Jean-Jacques; Matos, Louis; Moumni, El Mostafa; Ravey, Jean-Claude; Selve, Claude; Serratrice, Guy; Stebe, Marie-Jose ; Cambon, Aime ; and Thiollet, Gerard, 5,185,099, Cl. 252-315.100.

Campagnie Generale De Geophysique: *See—*
Fortin, Jean-Pierre, 5,185,503, Cl. 181-102.000.

Campana, Antonio: *See—*
Bosisio, Claudio; and Campana, Antonio, 5,185,841, Cl. 385-100.000.

Campbell, Jules D., Jr.: *See—*
Lyon, Jose A.; and Campbell, Jules D., Jr., 5,185,607, Cl. 341-120.000.

Campbell, Walter R., Jr.: *See—*
Alliston, Michael G.; and Campbell, Walter R., Jr., 5,184,671, Cl. 165-104.160.

Camras, Michael D.: *See—*
Cook, Louis W.; and Camras, Michael D., 5,185,288, Cl. 437-122.000.

Canada, Her Majesty the Queen in right of, as represented by the Minister of Natural Resources: *See—*
Hawari, Jalal A.; and Samson, Rejean, 5,185,488, Cl. 585-469.000.

Canica Crushers, Inc.: *See—*
Rose, Neil M.; Ackers, Stephen B.; Burr, William F.; and Rose, Brett M., 5,184,784, Cl. 241-275.000.

Canon Kabushiki Kaisha: *See—*
Egara, Koichi; Nakamura, Kenji; and Mochizuki, Norihiro, 5,185,548, Cl. 310-313.00D.
Harada, Tsutomu; and Amari, Takashi, 5,184,902, Cl. 400-185.000.
Itagaki, Hiroshi; and Matsuoka, Nobuo, 5,185,659, Cl. 358-44.000.

Koitabashi, Noribumi; Tajika, Hiroshi; Hirabayashi, Hiromitsu; and Ikeda, Masami, 5,185,615, Cl. 346-1.100.
Nakayama, Tadayoshi, 5,185,714, Cl. 364-750.500.
Nishiberi, Nozomu, 5,185,676, Cl. 359-202.000.
Nishida, Naoya; Suzuki, Masaaki; and Yoshioka, Toshifumi, 5,185,059, Cl. 156-659.100.
Nishimura, Katsuhiko; Okano, Keiji; Miyamoto, Toshio; and Ishiyama, Tatsunori, 5,185,496, Cl. 118-658.000.
Nomura, Ichiro; Takeda, Toshihiko; Banno, Yoshikazu; Kaneko, Tetsuya; Ono, Haruhito; and Suzuki, Hidetoshi, 5,185,554, Cl. 313-495.000.
Ohta, Kenichi, 5,185,668, Cl. 358-214.000.
Santo, Tsuyoshi, 5,185,233, Cl. 430-270.000.
Shimoda, Isamu; Tsukamoto, Takeo; Shimizu, Akira; Suzuki, Akira; Sugata, Masao; and Okunuki, Masahiko, 5,185,559, Cl. 315-107.000.
Takahashi, Hirokazu, 5,185,682, Cl. 360-78.040.
Takahashi, Taketo; Watanabe, Tsunehiro; Nishii, Teruyuki; and Ueno, Yasuhide, 5,185,783, Cl. 379-93.000.
Toshida, Yomishi; Yoshinaga, Kazuo; and Sato, Koichi, 5,185,097, Cl. 252-299.010.

Canter, Marylee; and Hulquist, Wilma. Sleeping bag storage apparatus. 5,184,361, Cl. 5-413.000.

Cantrell, Harold S., to C & A Control Systems, Inc. Remote starter for alarm system equipped vehicles. 5,184,584, Cl. 123-179.200.

Capitant, Patrice J.; Perry, Vinson R.; and Hodgson, David O., to Sony Corporation of America. Digitized film image processing system with bordered split screen display. 5,185,666, Cl. 358-183.000.

Caprio, John T.: *See—*
Valentincic, Tine B.; and Caprio, John T., 5,185,164, Cl. 426-1.000.

Carbonell, Luis E.; and Montgomery, Lon W., to Westinghouse Electric Corp. Dynamo-electric machine stator core construction. 5,185,547, Cl. 310-259.000.

Carduck, Franz-Josef; Harth, Hubert; and Liebs, Harald, to Henkel Kommanditgesellschaft auf Aktien. Process for the continuous production of fatty acid soaps. 5,185,457, Cl. 554-71.000.

Carl Freudenberg, Firma: *See—*
Sausner, Andreas; and Zabeck, Sebastian, 5,184,591, Cl. 123-520.000.

Carl-Zeiss-Stiftung: *See—*
Freischlad, Klaus, 5,185,810, Cl. 382-8.000.
Vry, Uwe; Dorsel, Andreas; Schierle, Berthold; Blumentritt, Martin; and Greve, Peter, 5,185,643, Cl. 356-358.000.

Carlson, James G.: *See—*
Ohkubo, Takatoshi; and Carlson, James G., 5,185,423, Cl. 528-85.000.

Carmen, Ralph H.: *See—*
Van Horn, John W.; and Carmen, Ralph H., 5,184,707, Cl. 194-204.000.

Carpco, Inc.: *See—*
Robertson, Michael D.; and Carver, Robert M., 5,184,731, Cl. 209-459.000.

Carr, William J., to Ecoloteck, Inc. Waste gas scrubber. 5,185,016, Cl. 55-230.000.

Carrasquillo, Jorge A.: *See—*
Larson, Steven M.; Finn, Ronald; Carrasquillo, Jorge A.; Reynolds, James C.; Neumann, Ronald D.; Graham, Martin C.; and Pentlow, Keith S., 5,185,142, Cl. 424-1.100.

Carrier Corporation: *See—*
Scarfone, Thomas F., 5,184,944, Cl. 417-410.000.

Carrupt, Bertrand; Constantin, Maurice; and Ebener, Michel, to Alusuisse-Lonza Services Ltd. Process and installation for the electromagnetic casting of rolled bars from an aluminum alloy having a ripplefree surface. 5,184,667, Cl. 164-467.000.

Carver, Robert M.: *See—*
Robertson, Michael D.; and Carver, Robert M., 5,184,731, Cl. 209-459.000.

Casagrande, Francesco; Foa', Marco; and Chapoy, Larry L., to Himont Italia S.r.l. Thermotropic polyesteramides. 5,185,424, Cl. 528-183.000.

Case Designers Corporation: *See—*
Phenicie, Ronald W.; and Dahlquist, Peter E., 5,185,193, Cl. 428-57.000.

Casio Computer Co., Ltd.: *See—*
Sato, Makoto; Shimazaki, Tatsuo; and Nakamura, Hideki, 5,185,712, Cl. 358-224.000.
Yoshino, Hiroyuki; and Tomidokoro, Yoshinori, 5,185,696, Cl. 364-408.000.

Casper, Daniel F.; Gregg, Thomas A.; Flanagan, John R.; Kalos, Matthew J.; and Liencres, Bjorn O., to International Business Machines Corp. Apparatus for constructing data frames for transmission over a data link. 5,185,862, Cl. 395-250.000.

Caston, John C. Treatment of refractory Eosinophilia-Myalgia Syndrome with L-tryptophan composition. 5,185,157, Cl. 424-456.000.

Catalyst Semiconductor Corporation: *See—*
Rinerson, Darrell D.; Hsia, Steve K.; Chevallier, Christophe J.; and Pang, Chan-Sui, 5,185,718, Cl. 365-185.000.

Cathey, David A., Jr., to Micron Technology, Inc. Process for etching semiconductor devices. 5,185,058, Cl. 156-656.000.

Catton, Donald L.: *See—*
Losacco, Donald L.; and Catton, Donald L., 5,184,471, Cl. 62-63.000.

Caudell, Thomas P.: *See—*
Zikan, Karel; and Caudell, Thomas P., 5,185,715, Cl. 364-807.000.

Caviezel, Gerold; Mertin, Frank; and Tritsch, Jean-Claude, to Hoffmann-La Roche Inc. Method for producing substantially pure vitamin powders. 5,185,336, Cl. 514-251.000.

Caviness, Verne S., Jr.: *See—*
Kennedy, David N.; Filipek, Pauline A.; and Caviness, Verne S., Jr., 5,185,809, Cl. 382-6.000.

Cawlfield, David W.: *See—*
Ford, James M.; Cawlfield, David W.; and Woodard, Kenneth E., Jr., 5,185,069, Cl. 204-251.000.
Loftis, Donald B.; and Cawlfield, David W., 5,185,693, Cl. 364-187.000.

Cellular Products, Inc.: *See—*
Papsidero, Lawrence D., 5,185,147, Cl. 424-89.000.

Centocor, Inc.: *See—*
Dean, Richard T.; Lister-James, John; and Boutin, Raymond H., 5,185,433, Cl. 530-391.100.

Central Glass Company, Ltd.: *See—*
Tsukada, Tokio; Nagayama, Yoji; and Ieiri, Junichiro, 5,185,612, Cl. 343-713.000.

Centre National d'Etudes des Telecommunications: *See—*
Mahieux, Yannick, 5,185,800, Cl. 381-29.000.

Chandalia, Kiran B.: *See—*
Smith, Curtis P.; Raes, Maurice C.; Reisch, John W.; Chandalia, Kiran B.; and O'Connor, James M., 5,185,420, Cl. 528-61.000.

Chang, Chen-Chi P.: *See—*
Farb, Joseph E.; Li, Mei; Chang, Chen-Chi P.; and Chin, Maw-Rong, 5,185,535, Cl. 257-351.000.

Chang, Mau C. F.; and Asbeck, Peter M., to Rockwell International Corporation. Self-aligned, self-passivated advanced dual lift-off heterojunction bipolar transistor method. 5,185,274, Cl. 437-22.000.

Chao, Francis C., to PRP, Inc. Platelet membrane microvesicles. 5,185,160, Cl. 424-532.000.

Chapman, Jeffrey A.: *See—*
Fleming, Kenneth E.; and Chapman, Jeffrey A., 5,185,402, Cl. 525-130.000.

Chapoy, Larry L.: *See—*
Casagrande, Francesco; Foa', Marco; and Chapoy, Larry L., 5,185,424, Cl. 528-183.000.

Chappell, Charles W.; and Angstadt, John J., to Procter & Gamble Company, The. High speed pleating apparatus. 5,185,052, Cl. 156-462.000.

Chapuis, Martine: *See—*
Tung, Pham N.; and Chapuis, Martine, 5,185,277, Cl. 437-39.000.

Chattha, Mohinder S.: *See—*
Subramanian, Somasundaram; and Chattha, Mohinder S., 5,185,305, Cl. 502-65.000.

Chen, Ching-Jen. Wire cutter. 5,184,404, Cl. 30-250.000.

Chen, Gilbert K.; McKelvy, Robert; Bonilla, Jorge A.; Glaspie, Don; and De Bruyn, George, to Glitsch, Inc. Tower packing with small louvers and mixing method. 5,185,106, Cl. 261-112.100.

Chen, Jen H.; Tzeng, Jeou N.; and Wu, Jeng-Shyong. Lamp assembly. 5,184,890, Cl. 362-353.000.

Chen, Mavis. Electromagnetic lock. 5,184,854, Cl. 292-251.500.

Chen, Ruth H.: *See—*
Thomas, Raymond H. P.; Chen, Ruth H.; Pham, Hang T.; and Wilson, David P., 5,185,089, Cl. 252-37.700.

Chen, Shieh-Shung T.; and Doss, George, to Merck & Co., Inc. Microbial transformation of a substituted pyridinone using actinoplanacete sp. MA 6559. 5,185,251, Cl. 435-118.000.

Chen, Tze-Chiang; and Cressler, John D., to International Business Machines Corporation. Method for improving low temperature current gain of bipolar transistors. 5,185,276, Cl. 437-31.000.

Chenard, Bertrand L., to Pfizer Inc. Nortropyl-1-alkanol derivatives as antiischemic agents. 5,185,343, Cl. 514-278.000.

Cheng, Shih-Tsun; and Lee, Yung-Yen, to Acer Incorporated. Expandable printer buffer system. 5,185,853, Cl. 395-115.000.

Chereslowsky, Michael J.: *See—*
Scheftic, Judy L.; Mendenhall, Robert G.; and Chereslowsky, Michael J., 5,185,133, Cl. 423-53.000.

Cherry, Robert W.: *See—*
Alcorn, Byron A.; Cherry, Robert W.; Coleman, Mark D.; and Rauchfuss, Brian D., 5,185,856, Cl. 395-130.000.

Chesebrough-Pond's USA Co., Division of Conopco, Inc.: *See—*
Brawn, Peter R.; and Gibson, Walter T., 5,185,325, Cl. 514-23.000.

Chevallier, Christophe J.: *See—*
Rinerson, Darrell D.; Hsia, Steve K.; Chevallier, Christophe J.; and Pang, Chan-Sui, 5,185,718, Cl. 365-185.000.

Chevassus, Alain; and Fraillon, Patrick, to Techpack International, TPI Societe Anonyme. Receptacle with orientable screw-threaded cap. 5,184,741, Cl. 215-331.000.

Chi-Wei, Shi, to Assoma, Inc. Bushing structure for using in magnetically driving centrifugal pumps. 5,184,945, Cl. 417-420.000.

Chia, Chok J.: *See—*
Switky, Andrew P.; and Chia, Chok J., 5,185,653, Cl. 257-729.000.

Chiang, David. Tuned deconvolution digital filter for elimination of loudspeaker output blurring. 5,185,805, Cl. 381-96.000.

Chiba, Tadashi: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Ishikawa, Hideo; Matsumura, Sowjun; Chiba, Tadashi; Asakawa, Kiyoshi; and Oohora, Syoichi, 5,185,216, Cl. 428-614.000.

Chicots, Johnna M.: *See—*
Reiner, Roger T.; Frost, David M.; Chicots, Johnna M.; Petras, Diane S.; and Fanto, Susan V., 5,185,699, Cl. 364-419.000.

Chimura, Moriyuki: *See—*
Fukui, Yuko; Ohtani, Katsuhiro; Miyamoto, Hiroyuki; Nishiura, Masao; and Chimura, Moriyuki, 5,185,283, Cl. 437-51.000.

VOL 1147 ISS 2 FE 9 1993 UMI

Chin, Maw-Rong: *See*—
Farb, Joseph E.; Li, Mei; Chang, Chen-Chi P.; and Chin, Maw-Rong, 5,185,535, Cl. 257-351.000.

Chinnaswamy, Kumar; Gagliardo, Michael A.; Lynch, John J.; and Tessari, James E., to Digital Equipment Corporation. Method and apparatus for reducing memory read latency in a shared memory system with multiple processors. 5,185,875, Cl. 395-425.000.

Chiu, Chung-Wai, to National Starch and Chemical Investment Holding Corporation. Food products containing modified starch emulsifier. 5,185,176, Cl. 426-651.000.

Chiu, Tin-Ho: *See*—
Tang, Reginald T.; Mares, Frank; Boyle, William J., Jr.; Chiu, Tin-Ho; and Patel, Kundan M., 5,185,408, Cl. 525-415.000.

Chiuminatta, Alan R.: *See*—
Chiuminatta, Edward; and Chiuminatta, Alan R., 5,184,597, Cl. 125-15.000.

Chiuminatta, Edward; and Chiuminatta, Alan R. Apparatus and method for cutting unhardened concrete. 5,184,597, Cl. 125-15.000.

Cho, Sung-Won, to Samsung Electronics Co., Ltd. Apparatus and method for decoding biphase-coded data. 5,185,766, Cl. 375-87.000.

Choshi, Masahiro: *See*—
Hirose, Ichiro; Choshi, Masahiro; and Hatamura, Kouichi, 5,184,401, Cl. 29-888.010.

Chou, Schiao F., to Xaloy, Incorporated. Corrosion and wear resistant bimetallic cylinder. 5,185,162, Cl. 425-183.000.

Chou, Yu W.; and Pruszynski, Henry K., to Westinghouse Electric Corp. Circuit breaker with welded contacts. 5,184,717, Cl. 200-401.000.

Christenson, Ronald E., to McNeilus Truck & Manufacturing, Inc. Polymeric composite discharge chutes for concrete having a wear resistant liner. 5,184,706, Cl. 193-2.00R.

Christini, James N.: *See*—
Miller, Michael J.; Christini, James N.; and Husted, Eric F., 5,185,030, Cl. 75-359.000.

Christner, Juergen: *See*—
Klesse, Wolfgang; Elser, Wilhelm; Mager, Theodor; Christner, Juergen; Kraus, Hertha; Rossberg, Peter; and Weber, Marliese, 5,185,387, Cl. 523-201.000.

Chugai Seiyaku Kabushiki Kaisha: *See*—
Nakagawa, Takahiro; and Tanaka, Shiro, 5,185,166, Cl. 426-74.000.

Chung, Ding Y.; Gam, Allisa; and Tessmer, Robert A., to Du Pont de Nemours, E. I., and Company. Low temperature coring cathodic electrocoating composition. 5,185,065, Cl. 204-181.400.

Chunn, William G.; and Moore, Ralph T., to Prideco, Inc. Method of internally and externally upsetting the end of a metal tube. 5,184,495, Cl. 72-318.000.

Ciabatti, Romeo: *See*—
Trani, Aldo; Seneci, Pierfausto; Ferrari, Pietro; and Ciabatti, Romeo, 5,185,320, Cl. 514-8.000.

Ciaccio, Jenny: *See*—
Brown, J. Edward; and Ciaccio, Jenny, 5,184,477, Cl. 62-457.700.

Ciarelli, Gary J.; and Lunk, J. Allan, to Illinois Tool Works, Inc. High resolution flow meter. 5,184,519, Cl. 73-861.770.

Ciba-Geigy Corporation: *See*—
Meuwly, Roger; Slongo, Mario; and Valet, Andreas, 5,185,445, Cl. 544-216.000.
Odorisio, Paul A.; and Shum, Sai P., 5,185,448, Cl. 546-186.000.
Peter, Heinrich; and Moerkel, Theophile, 5,185,368, Cl. 514-476.000.
Ruf, Klaus; Gulec, Bilge; Reisinger, Michael; and Surber, Werner, 5,185,435, Cl. 534-591.000.
Schewe, Tankred; Luther, Helmut; and Jordanov, Dentscho, 5,185,377, Cl. 514-721.000.

Cilbilich, Anthony: *See*—
Sandlin, William H., 5,184,488, Cl. 70-14.000.

Cincinnati Milacron Inc.: *See*—
Habig, Thomas F.; and Beninghaus, Wayne D., 5,185,109, Cl. 264-40.500.

Cinquina, Patrizia; Triulzi, Giangaleazzo; and Garbassi, Fabio, to Istituto Guido Donegani S.p.A. Procedure for the continuous fractionation of polymers and relative equipment. 5,185,429, Cl. 528-503.000.

Circle Prime Mfg. Co.: *See*—
Mothersbaugh, James M.; and Keim, John E., 5,185,568, Cl. 324-95.000.

Cirrus Logic, Inc.: *See*—
Bassetti, Chester F., Jr.; Reddy, Dayakar C.; Laiman, Ekaputra; and Richter, Bryan M., 5,185,602, Cl. 340-793.000.

Clarey, Robert J.: *See*—
Tennies, Charles J.; Beihoff, Bruce C.; Hastings, Jerome K.; Clarey, Robert J.; and O'Neil, Walter K., 5,185,685, Cl. 361-45.000.

Clarke, David R.: *See*—
Adams, Richard W., Jr.; Clarke, David R.; Knickerbocker, Sarah H.; Rapp, Linda L.; and Schwartz, Bernard, 5,185,215, Cl. 428-545.000.

Claypool, James P. Apparatus for making a novel solar collector. 5,184,396, Cl. 29-726.000.

Claytor, Nancy A. Needlepoint graph. 5,184,957, Cl. 434-95.000.

Cloud, Shirley F. Ear ornament. 5,184,482, Cl. 63-14.100.

Coates Electrographics Limited: *See*—
Brown, Edward A.; Haxell, John P. N.; and Cockett, Michael A., 5,185,035, Cl. 106-31.00R.

Cobb, Gary S.: *See*—
Bensel, William H., III; and Cobb, Gary S., 5,185,844, Cl. 385-135.000.

Coca Cola Company, The: *See*—
Deininger, Anton; Farber, Karlheinz; Giefer, Heinz-Werner; and Galler-Benker, Egon, 5,184,942, Cl. 417-360.000.

Cochran, William H. Buoyant boat with girder box. 5,184,566, Cl. 114-355.000.

Cockett, Michael A.: *See*—
Brown, Edward A.; Haxell, John P. N.; and Cockett, Michael A., 5,185,035, Cl. 106-31.00R.

Codes Rousseau: *See*—
Langlais, Bernard; and Saunier, Christian, 5,184,956, Cl. 434-69.000.

Coenen, Hubertus A. M.: *See*—
Luijks, Gerardus M. J. F.; and Coenen, Hubertus A. M., 5,185,557, Cl. 315-59.000.

Coffenberry, Norman D., to SDI Operating Partners, L.P. Expandable plug. 5,184,698, Cl. 184-1.500.

Cohanciuc, Victor: *See*—
Goedecke, Wolf-Dieter; and Cohanciuc, Victor, 5,184,647, Cl. 137-884.000.

Cohen, Brett I.; and Musikant, Barry, to Essential Dental Systems, Inc. Dental composition. 5,185,386, Cl. 523-105.000.

Cohen, Gordon M.; Farnham, William B.; and Feiring, Andrew E., to Du Pont de Nemours, E. I., and Company. Fluorinated hydroxy-containing macromonomers. 5,185,421, Cl. 528-70.000.

Cohen, Jeffrey M., to ISP Investments Inc. Terpolymer hair fixative resins prepared by solution polymerization of maleic anhydride, vinyl acetate and isobornyl acrylate. 5,185,143, Cl. 424-47.000.

Cohn, Michelle J.; Lawson, R. Joe; and Moser, Mark D., to UOP. Prevention of noble metal migration in bound zeolites during thermal oxidation. 5,185,306, Cl. 502-66.000.

Coin Acceptors, Inc.: *See*—
Levasseur, Joseph L., 5,184,708, Cl. 194-217.000.

Cok, David R., to Eastman Kodak Company. Method for merging images. 5,185,808, Cl. 382-1.000.

Coleman, Mark D.: *See*—
Alcorn, Byron A.; Cherry, Robert W.; Coleman, Mark D.; and Rauchfuss, Brian D., 5,185,856, Cl. 395-130.000.

Colgate-Palmolive Co.: *See*—
Ahmed, Fahim U., 5,185,096, Cl. 252-99.000.

Collin, Jean-Claude; Juguin, Bernard; Larue, Joseph; and Rojey, Alexandre, to Institut Francais du Petrole. Method of reducing the benzene content of gasolines. 5,185,486, Cl. 585-448.000.

Collins, Clayton J. Animated wild animal feeder. 5,184,569, Cl. 119-55.000.

Collins, Donald A., Jr.: *See*—
Wike, Charles K., Jr.; Collins, Donald A., Jr.; and Maddox, Craig E., 5,185,514, Cl. 235-375.000.

Collins, Kenneth A.; Maker, Philip J.; and Walker, Matthew S., to Telectronics Pacing Systems, Inc. Implantable haemodynamically responsive cardioverting/defibrillating pacemaker. 5,184,614, Cl. 128-419.0PG.

Coltec Industries Inc.: *See*—
Wade, Richard A., 5,184,644, Cl. 137-625.640.

Coly S.A.R.L.: *See*—
Vigano', Vittorio, 5,184,999, Cl. 493-435.000.

Combrowski, Zbigniew; and Hamma, Armin. Apparatus for the grinding of workpieces, especially tools. 5,184,431, Cl. 51-219.00R.

Comec S.R.L.: *See*—
Pan, Antonio; Pan, Paolo; and Bertora, Franco, 5,184,395, Cl. 29-609.000.

Commer S.p.A.: *See*—
Siano, Dante, 5,185,118, Cl. 264-257.000.

Commissariat a l'Energie Atomique: *See*—
Minier, Jacques, 5,184,776, Cl. 239-417.000.

Compagnie Generale des Etablissements Michelin: *See*—
Laurent, Daniel; and Mayet, Jean C., 5,185,051, Cl. 156-397.000.

Compaq Computer Corporation: *See*—
Estes, Howard S., 5,184,767, Cl. 228-56.300.
Korinsky, George K., 5,185,691, Cl. 361-386.000.

Composite Products, Inc.: *See*—
Hawley, Ronald C., 5,185,117, Cl. 264-211.120.

Computer Crafts, Inc.: *See*—
Iapicco, Roger, 5,185,840, Cl. 385-100.000.

Connell, William F.: *See*—
Graham, Gordon A.; Pasznicki, William V.; Connell, William F.; and Pratley, Kenneth V., 5,184,676, Cl. 166-66.400.

Connelly, Lawrence J.: *See*—
Pillai, Krishnan J.; Connelly, Lawrence J.; and Gustafson, William K., 5,185,135, Cl. 423-320.000.

Connors, Stephen A.: *See*—
Ianni, Suzanne G.; Fierke, John R.; and Connors, Stephen A., 5,185,883, Cl. 395-575.000.

Consortium fur elektrochemische GmbH: *See*—
Funk, Enno; Kreuzer, Franz-Heinrich; Gramshammer, Cornelia; and Lottner, Willibald, 5,185,419, Cl. 528-25.000.

Constantin, Maurice: *See*—
Carrupt, Bertrand; Constantin, Maurice; and Ebener, Michel, 5,184,667, Cl. 164-467.000.

Conti Florentia S.r.l.: *See*—
Conti, Paolo, 5,184,483, Cl. 66-93.000.

Conti, Paolo, to Conti Florentia S.r.l. Device with a double series of sinkers and double sinkers housing for making terry fabric on reciprocating circular machines. 5,184,483, Cl. 66-93.000.

Conzola, Vincent C.; Rittenhouse, Norman E.; Solomon, Jeffrey M.; Toomey, Thomas J.; and Yablonsky, Peter J., to International Business Machines Corporation. Computer controlled, multiple angle illumination system. 5,185,638, Cl. 356-237.000.

Cook, David C.; Hart, Terance W.; McLay, Iain M.; Palfreyman, Malcolm N.; and Walsh, Roger J. A., to May & Baker Limited. Thioformamide derivatives. 5,185,375, Cl. 514-599.000.

Cook, Louis W.; and Camras, Michael D., to Hewlett-Packard Company. Epitaxial growth method. 5,185,288, Cl. 437-122.000.

Cook, Nigel R.: *See*—
Ditchburn, deceased; Robert W.; Gouch, Martin P.; Cook, Nigel R.; Osgood, Timothy J.; Holloway, Stephen P.; and Bowler, Ian W., 5,184,732, Cl. 209-576.000.

Coombe, Dwight. Fully variable output hydraulic gear pump having an axially translatable gear. 5,184,947, Cl. 418-20.000.

Coons, Andrew M., III; King, Willis M.; Dickerson, Joe B.; and Thompson, Melvin R., to BASF Corporation. Apparatus for producing soft node air entangled yarn. 5,184,381, Cl. 28-271.000.

Cooper, George F. Eyeglass system. 5,185,620, Cl. 351-52.000.

Cooper Industries, Inc.: *See*—
Fontenot, William L., 5,184,681, Cl. 166-367.000.

Cordis Corporation: *See*—
Cottone, Robert J., Jr.; Kopp, Joseph J., Jr.; and Rowley, David S., 5,184,625, Cl. 128-751.000.

Core Industries, Inc.: *See*—
Feterl, Leon G., 5,184,715, Cl. 198-667.000.

Corletto, Cesare. Innerboot with improved fit. 5,184,411, Cl. 36-117.000.

Cornelissen, Albertus T. J. J.; and van den Nieuwelaar, Adrianus J., to Stork PMT B.V. Method and device for dividing a slaughtered bird into a front half and a back half. 5,184,974, Cl. 452-160.000.

Cornell Research Foundation, Inc.: *See*—
Eisner, Thomas; Attygalle, Athula B.; and McCormick, Kevin D., 5,185,365, Cl. 514-450.000.

Corner, Antonio, to Officine di Cartigliano S.p.A. Machine for softening and stretching laminar products, particularly tanned hides. 5,184,487, Cl. 69-19.100.

Corning Incorporated: *See*—
Button, Leslie J.; Dotson, Jerald B.; Reding, Bruce W.; and Wightman, Christopher W., 5,185,636, Cl. 356-73.100.
Vial, Jacques J.; Laroulandie, Pierre-Jean M.; Henry, David; Dannoux, Thierry L. A.; and Gremetz, Sylvain M. F., 5,185,835, Cl. 385-49.000.

Corstjens Helena Michel: *See*—
Smet, Marc J. M., 5,184,919, Cl. 405-154.000.

Cortez, Sabino: *See*—
Lister, Roy D.; and Cortez, Sabino, 5,185,087, Cl. 210-787.000.

Cossette, Stanley G.: *See*—
Dolby, Ray M.; and Cossette, Stanley G., 5,185,806, Cl. 381-106.000.

Costigan, Patrick G.: *See*—
Handley, David J.; and Costigan, Patrick G., 5,184,886, Cl. 312-107.000.

Cote, Raymond A., to Waldorf Corporation. Slide top dispensing carton and blank therefor. 5,184,770, Cl. 229-20.000.

Cotra System Kabushiki Kaisha: *See*—
Suzuki, Takashi; and Fukui, Kohei, 5,184,743, Cl. 220-1.500.

Cottone, Robert J., Jr.; Kopp, Joseph J., Jr.; and Rowley, David S., to Cordis Corporation. Biopsy forceps device having improved handle. 5,184,625, Cl. 128-751.000.

Courian, Kenneth J.; and Evans, Roger F., to Hewlett-Packard Company. Priming apparatus and process for multi-color ink-jet pens. 5,185,614, Cl. 346-1.100.

Coutandin, Jochen; Theis, Jurgen; Groh, Werner; and Brockmeyer, Andreas, to Hoechst Aktiengesellschaft. Optical coupler for polymer optical waveguides. 5,185,832, Cl. 385-43.000.

Cover-Pools, Inc.: *See*—
Ragsdale, Kelly J.; and Brady, Cory, 5,184,377, Cl. 24-704.100.

Cox, Michael T.: *See*—
Brittain, David R.; and Cox, Michael T., 5,185,452, Cl. 548-492.000.

Cox, Roger T.: *See*—
Walter, Thomas R.; and Cox, Roger T., 5,184,648, Cl. 137-884.000.

Crafts, Harold S.: *See*—
Waldron, Robert D.; and Crafts, Harold S., 5,185,652, Cl. 257-758.000.

Craig, Richard R.; Welch, David F.; Zucker, Erik P.; Scifres, Donald R.; and Gignac, William J., to Spectra Diode Laboratories, Inc. Spectrally stable laser diode with internal reflector. 5,185,754, Cl. 372-45.000.

Crapps, Edward C., to Du Pont Merck Pharmaceutical Company. Polycyclic ketones and preparative methods therefor. 5,185,447, Cl. 546-86.000.

Cray Computer Corporation: *See*—
Cray, Seymour R.; and Krajewski, Nicholas J., 5,184,400, Cl. 29-879.000.

Cray Research, Inc.: *See*—
Shepherd, Lloyd T.; August, Melvin C.; and Kruchowski, James N., 5,185,502, Cl. 174-262.000.

Cray, Seymour R.; and Krajewski, Nicholas J., to Cray Computer Corporation. Method for manufacturing a twisted wire jumper electrical interconnector. 5,184,400, Cl. 29-879.000.

Creedon, Tadhg; O'Neill, Eugene G.; and Nolan, Jerome A., to Digital Equipment Corporation. Gate efficient digital glitch filter for multiple input applications. 5,185,537, Cl. 307-234.000.

Cress, Jonathan. Method and device for fitting toric contact lenses. 5,184,405, Cl. 33-1.0SD.

Cressler, John D.: *See*—
Chen, Tze-Chiang; and Cressler, John D., 5,185,276, Cl. 437-31.000.

Creswell, Mark W.; and White, Andrew D., to Warner-Lambert Co. 3-heteroatom containing urea and thiourea ACAT inhibitors. 5,185,358, Cl. 514-383.000.

Crewe, F. Coates; and Thomas, James E., to Crewe, F. Coates. Locking swivel for rotatably connecting two components. 5,184,697, Cl. 182-153.000.

Crichlow, Charles A.: *See*—
Martin, Lawrence L.; Worm, Manfred; and Crichlow, Charles A., 5,185,465, Cl. 564-185.000.

Crissman, Harry A.; Gadbois, Donna M.; Tobey, Robert A.; and Bradbury, E. Morton, to United States of America, Energy. Method for distinguishing normal and transformed cells using G1 kinase inhibitors. 5,185,260, Cl. 435-244.000.

Crosfield Electronics Ltd.: *See*—
Freeman, Stephen, 5,185,596, Cl. 340-706.000.

Cross, Kenneth; and Gonnocci, Ralph J., to Cross, Kenneth; and Gonnocci, Ralph J. Power chuck. 5,184,833, Cl. 279-106.000.

Crow, William M.: *See*—
Dysart, John A.; Showman, Peter S.; Crow, William M.; Williams, Peter M.; McBride, Brian W.; Senior, John R. F.; Whelan, Charles H.; and Murdoch, Brian, 5,185,885, Cl. 395-600.000.

Crumpley, Robert L.: *See*—
Bales, Bruce M.; Crumpley, Robert L.; North, Sandra S.; and Thieler, Stephen M., 5,185,742, Cl. 370-110.100.

Csorba, George. Device for cardiac massage. 5,184,606, Cl. 128-28.000.

Cucci, Gerald R.; and Lemire, Steven M., to Rosemount Inc. Corrosion resistant isolator. 5,184,514, Cl. 73-706.000.

Cudahy, Michael J.; and Stratbucker, Robert A., to Marquette Electronics, Inc. Method of using a multiple electrode pad assembly. 5,184,620, Cl. 128-639.000.

Cunningham, David V.: *See*—
Harpell, Gary A.; Prevorsek, Dusan C.; and Cunningham, David V., 5,185,195, Cl. 428-102.000.

Cuomo, Jerome J.: *See*—
Bindra, Perminder S.; Cuomo, Jerome J.; Gall, Thomas P.; Ingraham, Anthony P.; Kang, Sung K.; Kim, Jungihl; Lauro, Paul; Light, David N.; Markovich, Voya R.; Miersch, Ekkehard F.; Molla, Jaynal A.; Powell, Douglas O.; Ritsko, John J.; Saxenmeyer, George J., Jr.; Varcoe, Jack A.; and Walker, George F., 5,185,073, Cl. 205-104.000.

Curland, Nathan: *See*—
Hsie, Wei C.; Masaden, Timothy A.; and Curland, Nathan, 5,184,394, Cl. 29-603.000.

Curtis, Thomas A.: *See*—
Lindley, Daniel D.; Ryan, Timothy R.; Curtis, Thomas A.; De la Garza, Edward M.; Hilton, Charles R.; and Kenesson, Thomas M., 5,185,469, Cl. 568-319.000.

Curto, Rick A.; and Johnston, Otis A., to Western Atlas International, Inc. Continuously-filled floatation apparatus. 5,185,726, Cl. 367-18.000.

Curwood, Inc.: *See*—
James, Robert C.; and Pederson, Richard J., 5,184,997, Cl. 493-117.000.

CWS International AG: *See*—
Arabian, Sandro; and Baumann, Manfred, 5,184,885, Cl. 312-34.110.

Cyber Scientific: *See*—
Gilchrist, Ian R., 5,185,728, Cl. 367-163.000.

Cytyc Corporation: *See*—
Lapidus, Stanley N.; Kamen, Dean; Villeneuve, Richard R.; and Polk, Lewis T., Jr., 5,185,084, Cl. 210-741.000.

Czernik, Roman; and Porco, Francesco, to Pitney Bowes Inc. Adjustable envelope cassette. 5,184,906, Cl. 400-629.000.

Czerwiec, Richard M.: *See*—
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Dacomed Corporation: *See*—
Erickson, Richard A.; and Timm, Gerald W., 5,184,629, Cl. 128-885.000.

Dague, Richard R., to Iowa State University Research Foundation, Inc. Anaerobic sequencing batch reactor. 5,185,079, Cl. 210-603.000.

Dahlquist, Peter E.: *See*—
Phenicie, Ronald W.; and Dahlquist, Peter E., 5,185,193, Cl. 428-57.000.

Dai Nippon Insatsu Kabushiki Kaisha: *See*—
Egashira, Noritaka; Nakamura, Yoshinori; and Takiguchi, Ryohei, 5,185,316, Cl. 503-227.000.
Fujimura, Hideo H. F.; Egashira, Noritaka N. E.; Iwata, Tamami T. I.; and Satake, Naoto N. S., 5,185,314, Cl. 503-227.000.
Itoh, Masakazu; and Yamazaki, Satoshi, 5,184,848, Cl. 283-2.000.

Dai Nippon Printing Co., Ltd.: *See*—
Honda, Makoto; and Mizuno, Nobuyuki, 5,185,677, Cl. 359-460.000.

VOL
1147
ISS
2
FE
9
1993
UMI

Daido Metal Company Ltd.: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Ishikawa, Hideo; Matsumura, Sowjun; Chiba, Tadashi; Asakawa, Kiyoshi; and Oohora, Syoichi, 5,185,216, Cl. 428-614.000.

Daiichi Denshi Kogyo Kabushiki Kaisha: *See—*
Ayuta, Tokuichi; Takahashi, Shigeo; and Hirose, Takao, 5,185,837, Cl. 385-81.000.

Daikin Industries, Ltd.: *See—*
Aoyama, Hirokazu; Yasuhara, Takashi; Kono, Satoru; Koyama, Satoshi; and Ueda, Souichi, 5,185,483, Cl. 570-172.000.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Hino, Katsuhiko; Kai, Naoki; Sakamoto, Masato; Kon, Tatsuya; Oka, Makoto; Furukawa, Kiyoshi; and Ochi, Yoshiaki, 5,185,338, Cl. 514-254.000.

Dalrymple, John C.: *See—*
Doornink, Douglas J.; Knierim, David L.; and Dalrymple, John C., 5,185,599, Cl. 340-747.000.

Damle, Suresh B.: *See—*
Eswarakrishnan, Seetha; Knox, Carol L.; and Damle, Suresh B., 5,185,103, Cl. 252-606.000.

Damwber, Colleen M.: *See—*
Michalochick, Marise; Damwber, Colleen M.; and Michalochick, Robert G., 5,184,968, Cl. 441-116.000.

Dana Farber Cancer Institute: *See—*
Brenner, Michael B.; Seidman, Jonathan; Strominger, Jack L.; Ip, Stephen H.; Krangel, Michael S.; and Band, Hamid, 5,185,250, Cl. 435-69.300.

Danforth Biomedical, Inc.: *See—*
Lashinski, Robert, 5,185,004, Cl. 604-95.000.

Dang, Tuan A.: *See—*
Kasenga, Anthony F.; and Dang, Tuan A., 5,185,180, Cl. 427-67.000.

Danieli & C. Officine Meccaniche Spa: *See—*
Nonini, Geremia, 5,184,493, Cl. 72-237.000.

Dannoux, Thierry L. A.: *See—*
Vial, Jacques J.; Laroulandie, Pierre-Jean M.; Henry, David; Dannoux, Thierry L. A.; and Gremetz, Sylvain M. F., 5,185,835, Cl. 385-49.000.

Darby, Ted A., to North American Philips Corporation. Method and apparatus for combining field and frame recursive noise reduction for video signals. 5,185,664, Cl. 358-167.000.

Data Translation, Inc.: *See—*
Ianni, Suzanne G.; Fierke, John R.; and Connors, Stephen A., 5,185,883, Cl. 395-575.000.

Daussin, Rory D.; Kent, Van A.; and Lowenkron, Steven B., to Dow Chemical Company, The. Method for reducing hydrolyzable chloride in toluene diisocyanate. 5,185,384, Cl. 521-160.000.

Davenport, John M.; Hansler, Richard L.; and Barnes, Lee E., Jr., to General Electric Company. Projection headlamp lighting system using different diameter optical light conductors. 5,184,882, Cl. 362-32.000.

Davenport, John M.: *See—*
Finch, William W.; Davenport, John M.; and Hansler, Richard L., 5,184,883, Cl. 362-32.000.

David Clark Company Incorporated: *See—*
Bergin, James T.; and Urella, Richard M., 5,185,807, Cl. 381-183.000.

Davidson, Eugene A.; and Kross, Robert D., to Alcide Corporation. Disinfection method and composition therefor. 5,185,161, Cl. 424-665.000.

Davis, Nancy L.; Willis, Loretta V.; Johnston, Robert E.; and Smith, Jonathan F., to North Carolina State University. cDNA clone coding for Venezuelan equine encephalitis virus and attenuating mutations thereof. 5,185,440, Cl. 536-237.200.

Dawans, Francois: *See—*
Delacour, Jacques; Dawans, Francois; and Huvey, Michel, 5,184,682, Cl. 166-385.000.

Dawson, Albert K.: *See—*
Nappholz, Tibor A.; Dawson, Albert K.; Lu, Richard M. T.; and Steinhaus, Bruce M., 5,184,615, Cl. 128-419.0PG.

Day, James, to General Electric Company. Pressure controlled switching valve for refrigeration system. 5,184,473, Cl. 62-199.000.

Day, Leslie L.; and Poulter, Graham, to Specac Ltd. Optical fiber probes for remote analysis. 5,185,834, Cl. 385-47.000.

Day, Roger W.: *See—*
Grosso, Paul V.; Wing, Feagin A., Jr.; Morgan, Michael J.; Stegmeier, Renate C.; Day, Roger W.; and Burt, Willard F., 5,185,226, Cl. 430-47.000.

De la Garza, Edward M.: *See—*
Lindley, Daniel D.; Ryan, Timothy R.; Curtis, Thomas A.; De la Garza, Edward M.; Hilton, Charles R.; and Kenesson, Thomas M., 5,185,469, Cl. 568-319.000.

Dean, Lance, to Newmont Gold Company. Gyratory mantle liner assembly. 5,184,389, Cl. 29-467.000.

Dean, Richard T.; Lister-James, John; and Boutin, Raymond H., to Centocor, Inc. Cross-linking protein compositions having two or more identical binding sites. 5,185,433, Cl. 530-391.100.

DeBernardis, John F.; Arendsen, David L.; and Zelle, Robert E., to Abbott Laboratories. Aminomethyl-chroman and -thiochroman compounds. 5,185,364, Cl. 514-444.000.

DeBord, Claude R., to Wilcox Electric, Inc. Signal monitor utilizing digital signal processing. 5,185,609, Cl. 342-173.000.

De Bruyn, George: *See—*
Chen, Gilbert K.; McKelvy, Robert; Bonilla, Jorge A.; Glaspie, Don; and De Bruyn, George, 5,185,106, Cl. 261-112.100.

DeCaprio, Michael J.; and Rados, Stephen E., to BOC Health Care, Inc. Deadender cap for Luer fitting. 5,184,742, Cl. 215-356.000.

DeChurch, Robert M., to Furon Company. Temperature sensing cable device and method of making same. 5,185,594, Cl. 340-596.000.

Decker, Steven C.: *See—*
Rehrig, Houston; Decker, Steven C.; Kern, Alan R.; and Dickerson, Lonnie G., 5,184,413, Cl. 40-308.000.

De Cleyn, Michel A. J.: *See—*
Van Daele, Georges H. P.; Bosmans, Jean-Paul R. M. A.; and De Cleyn, Michel A. J., 5,185,335, Cl. 514-243.000.

Degi, Greg A.; and Buck, Dean C., to Hewlett-Packard Company. Image processor. 5,185,817, Ci. 382-47.000.

Degnan, Thomas F.; McCullen, Sharon B.; Schmitt, Kirk D.; and Hatzikos, George H., to Mobil Oil Corp. Activating silicoaluminophosphate compositions. 5,185,310, Cl. 502-214.000.

DeGroot, Rodney C.: *See—*
LeVan, Susan L.; and DeGroot, Rodney C., 5,185,214, Cl. 428-541.000.

Degussa Akiengesellscahft: *See—*
Wolff, Siegfried; and Meier, Karl, 5,184,779, Cl. 241-3.000.

Deininger, Anton; Farber, Karlheinz; Giefer, Heinz-Werner; and Galler-Benker, Egon, to Coca Cola Company, The; and Bosch-Siemens Hausgerate GmbH. Storage container with an electrically operable circulating pump. 5,184,942, Cl. 417-360.000.

Dekura, Takateru. Phosphonitrileester lubricant for hydrogen-contalning chloro-fluoro carbon and hydrogen-containing fluoro carbon refrigerants. 5,185,095, Cl. 252-68.000.

Delacour, Jacques; Dawans, Francois; and Huvey, Michel. Device allowing measurements or interventions to be carried out in a well, method using the device and applications of the device. 5,184,682, Cl. 166-385.000.

Delavaux, Jean-Marc P., to AT&T Bell Laboratories. Hybrid pumping arrangement for doped fiber amplifiers. 5,185,826, Cl. 385-24.000.

Delco Electronics Corporation: *See—*
Sanftleben, Henry M.; Hermansen, Ralph D.; Shelton, Gary R.; Schnabel, Petrina L.; Baird, Dennis T.; and Smith, Douglas C., 5,185,498, Cl. 174-52.200.

Delhaes, Johannes C., to Rubber-En Kunststoffabriek. Precision transport roller. 5,184,383, Cl. 226-190.000.

Dellweg, Hans-Georg: *See—*
Niewohner, Ulrich; Muller, Ulrich E.; Perzborn, Elisabeth; Bischoff, Erwin; and Dellweg, Hans-Georg, 5,185,348, Cl. 514-335.000.

Delmerico, Paul E.: *See—*
Andrews, Howard W., Jr.; Delmerico, Paul E.; and Terek, Greg P., 5,184,836, Cl. 280-79.500.

Delpuech, Jean-Jacques; Matos, Louis; Moumni, El Mostafa; Ravey, Jean-Claude; Selve, Claude; Serratrice, Guy; Stebe, Marie-Jose ; Cambon, Aime ; and Thiollet, Gerard, to Institut National de Recherche Chimique Appliquee. Visco-elastic, isotropic materials based on water, fluorinate sufactants and fluorinated oils, process for their preparation, and their use in various fields, such as optics, pharmacology and electrodynamics. 5,185,099, Cl. 252-315.100.

Del Rossi, Kenneth J.; Kirker, Garry W.; and Huss, Albin, Jr., to Mobil Oil Corp. Dehydrocyclization and reforming catalyst. 5,185,484, Cl. 585-419.000.

DeLuca, Hector F.; and Smith, Connie M., to Wisconsin Alumni Research Fdn. Cosmetic compositions containing 19-nor-vitamin D compounds. 5,185,150, Cl. 424-195.100.

Derichs, Josef: *See—*
Brockmanns, Karl-Josef; Derichs, Josef; Wey, Edmund; Grecksch, Hans; Tholen, Leo; and Lassmann, Manfred, 5,184,786, Cl. 242-45.000.

Desbiolles, Jacques. Golf club. 5,184,819, Cl. 273-80.200.

Desboilles, Jack; and Viste, Claude, to Taylor Made Golf Company, Inc. Golf club and golf club head. 5,184,823, Cl. 273-167.00F.

Desbrandes, Robert, to Louisiana State University and Agricultural and Mechanical College. Method for determining formation pressure. 5,184,508, Cl. 73-152.000.

Desmolin, Henri: *See—*
Aubert, Daniel; Blanc, Francis; Desmolin, Henri; Morre, Michel; and Sindely, Lucette, 5,185,159, Cl. 424-489.000.

Desrosiers, Andre ; and Savage, Gary, to Addico Products Inc. Counter-height water dispenser. 5,184,476, Cl. 62-389.000.

Dessaux, Claude: *See—*
Bouillon, Hubert; and Dessaux, Claude, 5,184,860, Cl. 294-67.310.

de Toledo, Fernando A., to Boston Scientific Corporation. Infusion guidewire including proximal stiffening sheath. 5,184,627, Cl. 128-772.000.

Deutsch, Alice. Method for semen analysis employing membrane separation. 5,185,246, Cl. 435-7.210.

Deutsche Automobilgesellschaft mbH: *See—*
Berger, Gerhard; and Benczur-Urmossy, Gabor, 5,185,223, Cl. 429-215.000.

Deutsche Babcock Energie- und Umwelttechnik AG: *See—*
Kerstges, Johannes; and Brosdetzko, Hubert, 5,184,782, Cl. 241-171.000.

Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.V.: *See—*
Tamme, Rainer; and Kanwischer, Herbert, 5,184,669, Cl. 165-10.000.

Deutsche Forschungsanstalt fur Luftund Raumfahrt e.V. Linder Hohe: *See—*
Peters, Manfred; Grundhoff, Karl-Josef; Schurmann, Hartmut; and Lee, Yong-Tai, 5,185,045, Cl. 148-671.000.

Deutsche Thomson-Brandt GmbH: *See—*
Hackett, Andrew, 5,185,663, Cl. 358-140.000.

Develog, Reiner Hannen & Cie: *See—*
Hannen, Reiner W., 5,184,449, Cl. 53-399.000.

DF Podem: *See—*
Nikolov, Nikolay N.; Tzanev, Nikolay T.; and Pavlov, Pavlin S., 5,184,807, Cl. 254-344.000.

Dhong, Sang H.; and Hwang, Wei, to International Business Machines Corp. High speed dynamic, random access memory with extended reset/precharge time. 5,185,719, Cl. 365-189.010.

Dialogic Corporation: *See—*
Zwick, Nicholas, 5,185,786, Cl. 379-201.000.

Diatec Environmental: *See—*
Sortwell, Edwin T., 5,185,409, Cl. 526-62.000.

Dickerson, Joe B.: *See—*
Coons, Andrew M., III; King, Willis M.; Dickerson, Joe B.; and Thompson, Melvin R., 5,184,381, Cl. 28-271.000.

Dickerson, Lonnie G.: *See—*
Rehrig, Houston; Decker, Steven C.; Kern, Alan R.; and Dickerson, Lonnie G., 5,184,413, Cl. 40-308.000.

Dickie, Robert G.; and Walters, Brian J., to Intepac Technoligies Inc. Modular inflated supporting structure. 5,184,727, Cl. 206-522.000.

Diehl, Karl-Heinz: *See—*
Eggensperger, Heinz; Diehl, Karl-Heinz; Nolte, Helmut; Rackur, Helmut; Eggers-MaaB, Ute; Mohr, Michael; Bernd, Lower; and BeilfuB, Wolfgang, 5,185,145, Cl. 424-78.080.

Diessel, Cornelia; Kliwer, Carsten; Burak, Gerhard; Blumel, Ehrenfried; and Kittel, Christoph, to Stankiewicz GmbH. Recycling of thermosetting polyurethane soft foam. 5,185,380, Cl. 521-49.000.

Digital Equipment Corporation: *See—*
Bissett, Thomas D.; Bruckert, William; Thirumalai, Ajai; and Amirmokri, Jay, 5,185,877, Cl. 395-425.000.
Chinnaswamy, Kumar; Gagliardo, Michael A.; Lynch, John J.; and Tessari, James E., 5,185,875, Cl. 395-425.000.
Creedon, Tadhg; O'Neill, Eugene G.; and Nolan, Jerome A., 5,185,537, Cl. 307-234.000.
Edem, Brian C.; and Helliwell, Richard P., 5,185,886, Cl. 395-600.000.
Good, Michael D.; and Munson, James B., 5,185,561, Cl. 318-432.000.
Mayer, Christopher M., 5,185,852, Cl. 395-109.000.
Pappas, James L.; Seiler, Larry D.; and Rose, Robert C., 5,185,597, Cl. 340-709.000.

Digital Scintigraphics, Inc.: *See—*
Smith, Andrew P.; and Genna, Sebastian, 5,185,529, Cl. 250-369.000.

Digonnet, Michel J. F.: *See—*
Kalman, Robert F.; Wysocki, Paul F.; and Digonnet, Michel J. F., 5,185,749, Cl. 372-6.000.

Dilmore, William J.: *See—*
Haldipur, Gaurang B.; and Dilmore, William J., 5,185,019, Cl. 55-378.000.

Dinan, Frank J.: *See—*
Stults, Jeffrey S.; Schwartz, Willis T.; and Dinan, Frank J., 5,185,451, Cl. 548-418.000.

Diodati, Jean G.; and Keefer, Larry K., to United States of America, Health and Human Services. Therapeutic inhibition of platelet aggregation by nucleophile-nitric oxide complexes and derivatives thereof. 5,185,376, Cl. 514-611.000.

Ditchburn, deceased; Robert W.; Gouch, Martin P.; Cook, Nigel R.; Osgood, Timothy J.; Holloway, Stephen P.; and Bowler, Ian W., to Gersan Establishment. Shape sorting. 5,184,732, Cl. 209-576.000.

DiVincenzo, Gregory T., to North American Philips Corporation. Magnetic blow-out circuit breaker with booster loop/arc runner. 5,185,590, Cl. 335-201.000.

Doble, Gordon S.: *See—*
Moracz, Donald J.; and Doble, Gordon S., 5,184,769, Cl. 228-121.000.

Dobscha, Francis X., to Gas Research Institute. Pass-through zone isolation packer and process for isolating zones in a multiple-zone well. 5,184,677, Cl. 166-187.000.

Dr. Gene, Inc.: *See—*
Weipert, Eugene A., 5,185,101, Cl. 252-554.000.

Dolby, Ray M.; and Cossette, Stanley G. Audio compressor, expander, and noise reduction circuits for consumer and semi-professional use. 5,185,806, Cl. 381-106.000.

Dominke, Peter: *See—*
Beyer, Claus; Dominke, Peter; and Sonntag, Eberhard, 5,184,876, Cl. 303-106.000.

Dong-shen, Zhou: *See—*
Pei-qian, Zhong; Wen-kang, Zheng; Xi-tian, Xu; Jian-he, Liang; Dong-shen, Zhou; and Jun-zhi, Yang, 5,184,933, Cl. 414-725.000.

Doornink, Douglas J.; Knierim, David L.; and Dalrymple, John C., to Tektronix, Inc. Local display bus architecture and communications method for Raster display. 5,185,599, Cl. 340-747.000.

Dop, Dennis B.; Freitag, Michael G.; and Zawacki, Norbert W., to Zawacki, Norbert. Cellular alarm backup system. 5,185,779, Cl. 379-33.000.

Dorsel, Andreas: *See—*
Vry, Uwe; Dorsel, Andreas; Schierle, Berthold; Blumentritt, Martin; and Greve, Peter, 5,185,643, Cl. 356-358.000.

Dorso Trailer Sales Inc.: *See—*
Teigen, Jerry T.; and Villella, Paul A., 5,184,864, Cl. 296-24.100.

Doryokuro Kakunenryo Kaihatsu Jigyodan: *See—*
Horie, Misato, 5,185,104, Cl. 252-632.000.

Doss, George: *See—*
Chen, Shieh-Shung T.; and Doss, George, 5,185,251, Cl. 435-118.000.

Dotson, Jerald B.: *See—*
Button, Leslie J.; Dotson, Jerald B.; Reding, Bruce W.; and Wightman, Christopher W., 5,185,636, Cl. 356-73.100.

Douty, George H.; and Landis, John M., to AMP Incorporated. Panel lock for a float mount connector. 5,184,964, Cl. 439-247.000.

Dover Corporation: *See—*
Benzing, Bruce M., 5,184,654, Cl. 141-287.000.

Dow Chemical Company, The: *See—*
Daussin, Rory D.; Kent, Van A.; and Lowenkron, Steven B., 5,185,384, Cl. 521-160.000.
Jueptner, Guenter A.; and Karrasch, Susanne M., 5,185,411, Cl. 526-200.000.
Sawyer, Lawrence H.; White, Marvin A.; and Knight, George W., 5,185,199, Cl. 428-288.000.
Stokich, Theodore M., Jr., 5,185,391, Cl. 524-87.000.
Wilson, Richard F., 5,184,585, Cl. 123-179.800.

Dowden, Douglas C.; Hemmeter, Richard W.; Herr, Diane E.; McCormick, William K.; Petrelli, Robert; Piereth, Richard J.; Salchenberger, Samuel M.; Sehgal, Chander S.; and Verma, Mahendra K., to AT&T Bell Laboratories. Automation of telephone operator assistance calls. 5,185,781, Cl. 379-67.000.

Dowdeswell, M. Richard. Aquatic exercise assembly. 5,184,993, Cl. 482-106.000.

Downes, Philip: *See—*
Lieberman, Laurence A.; and Downes, Philip, 5,185,671, Cl. 358-228.000.

Downs, James. Floating fishing light and transducer. 5,184,414, Cl. 43-17.500.

Drake, Charles L., to Union Oil Company of California. Surface hydraulic pump/well performance analysis method. 5,184,507, Cl. 73-151.000.

Drake, James A.: *See—*
Veronesi, Luciano; Calfo, Raymond M.; and Drake, James A., 5,185,545, Cl. 310-114.000.

Dresen, William L.; Niemi, Karl A.; Emery, Phillip L.; and Grunow, David G., to Penda Corporation. Motor vehicle windshield visor. 5,184,866, Cl. 296-95.100.

Drewes, Mark W.; Haug, Michael; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Herbicidal naphthalene derivatives. 5,185,026, Cl. 504-225.000.

Drjaguin, Veniamin V.: *See—*
Pechkov, Andrey A.; Kouznetsov, Oleg L.; and Drjaguin, Veniamin V., 5,184,678, Cl. 166-249.000.

Drouve, Werner; Hohlein, Peter; and Wieczorrek, Wolfhart, to Bayer Aktiengesellschaft. Polyisocyanate suspensions in isocyanate reactive compounds and their use. 5,185,422, Cl. 528-76.000.

Du, Keming; Franek, Joachim; and Loosen, Peter, to Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V. Aerodynamic window for a gas laser. 5,185,760, Cl. 372-104.000.

Du Pont Merck Pharmaceutical Company: *See—*
Crapps, Edward C., 5,185,447, Cl. 546-86.000.

Dube, Charles M.: *See—*
Kent, Brian P.; and Dube, Charles M., 5,185,725, Cl. 367-6.000.

Duca, Larry J.: *See—*
Gill, David R.; Duca, Larry J.; Badway, Robert M.; Walsh, Michael W.; and Simonof, John F., 5,184,759, Cl. 222-181.000.

Duncan Industries Parking Control Systems Corp.: *See—*
Van Horn, John W.; and Carmen, Ralph H., 5,184,707, Cl. 194-204.000.

Dunham, Paul T., to Precor Incorporated. Exercise treadmill. 5,184,988, Cl. 482-54.000.

Dunn, Frederick J.: *See—*
Serwer, Philip; and Dunn, Frederick J., 5,185,071, Cl. 204-299.00R.

Dunn, William A. E.: *See—*
Baker, Ian M.; and Dunn, William A. E., 5,185,648, Cl. 257-189.000.

Dunning, Stephen C.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Du Pont de Nemours, E. I., and Company: *See—*
Chung, Ding Y.; Gam, Allisa; and Tessmer, Robert A., 5,185,065, Cl. 204-181.400.
Cohen, Gordon M.; Farnham, William B.; and Feiring, Andrew E., 5,185,421, Cl. 528-70.000.
Hammond, James A., Jr.; and Marks, David N., 5,185,428, Cl. 528-340.000.
Krespan, Carl G., 5,185,477, Cl. 568-842.000.
Manzer, Leo E., 5,185,482, Cl. 570-168.000.
Marks, David N., 5,185,427, Cl. 528-329.100.
Rushmere, John D., 5,185,206, Cl. 428-403.000.
Shiflett, Mark B., 5,185,094, Cl. 252-67.000.
Stewart, Charles W., 5,185,116, Cl. 264-178.00F.

Dupont, Robert: *See—*
Larochelle, Bernard; and Dupont, Robert, 5,184,872, Cl. 298-22.0AE.

VOL 1147 ISS 2 FE 9 1993 UMI

DuRand, Elden E., III; and Logsdon, William K., to Bluegrass Electronics, Inc. Dual pressure change intrusion detector. 5,185,593, Cl. 340-544.000.
Durbin, Enoch J.; and Ronney, Paul D. Method and apparatus for force or torque control of a combustion engine. 5,184,592, Cl. 123-543.000.
Dutton-Lainson Company: *See—*
Gruidel, James A.; Haase, Reinhold A.; and Johnson, Thomas G., 5,184,358, Cl. 4-555.000.
Dye, William P.: *See—*
Waltz, Kevin P.; Dye, William P.; and Baker, Donald D., 5,184,855, Cl. 292-251.500.
Dymax Corporation: *See—*
Grosclaude, Gary V., 5,185,196, Cl. 428-194.000.
Dynamics Technology, Inc.: *See—*
Kent, Brian P.; and Dube, Charles M., 5,185,725, Cl. 367-6.000.
Dyroff, David R.; and Anantaneni, Prakasa R., to Monsanto Company. Process for preparing alkylbenzene. 5,185,485, Cl. 585-446.000.
Dysart, John A.; Showman, Peter S.; Crow, William M.; Williams, Peter M.; McBride, Brian W.; Senior, John R. F.; Whelan, Charles H.; and Murdoch, Brian, to Hewlett-Packard Company. Object database deletion method for child objects when a child may be linked to multiple parent objects. 5,185,885, Cl. 395-600.000.
E. R. Squibb & Sons, Inc.: *See—*
Barbacid, Mariano; and Manne, Veeraswamy, 5,185,248, Cl. 435-15.000.
Godfrey, Jollie D., Jr.; Mueller, Richard H.; Kissick, Thomas P.; and Singh, Janak, 5,185,463, Cl. 562-506.000.
Slusarchyk, William A.; and Zahler, Robert, 5,185,459, Cl. 556-449.000.
Eagle Comtronics, Inc.: *See—*
Marland, Dale W.; and Hartson, Ted, 5,185,793, Cl. 380-5.000.
Easatman Kodak Company: *See—*
Wilson, James; and Beaudet, Douglas B., 5,185,628, Cl. 355-209.000.
Eastman Kodak Company: *See—*
Arter, Thomas C.; Harris, Bonny A.; and Schaeffer, James R., 5,185,249, Cl. 435-25.000.
Bagchi, Pranab; Edwards, James L.; Smith, Wendell F., Jr.; and Thomas, Brian, 5,185,230, Cl. 430-138.000.
Cok, David R., 5,185,808, Cl. 382-1.000.
Eggensperger, Heinz; Diehl, Karl-Heinz; Nolte, Helmut; Rackur, Helmut; Eggers-MaaB, Ute; Mohr, Michael; Bernd, Lower; and BeilfuB, Wolfgang, 5,185,145, Cl. 424-78.080.
Franke, Hans G.; and Prince, Eric T., 5,185,293, Cl. 437-184.000.
Gustafson, Bruce L., 5,185,476, Cl. 568-831.000.
Kinney, David V.; O'Brien, Vincent J.; and Van Sice, Daniel G., 5,185,626, Cl. 355-55.000.
Liston, Christopher B., 5,185,662, Cl. 358-78.000.
Maskasky, Joe E., 5,185,239, Cl. 430-569.000.
McClune, Gregory J.; and Smith-Lewis, Margaret J., 5,185,128, Cl. 422-61.000.
Ng, Yee S., 5,185,661, Cl. 358-75.000.
Sparer, Steven J., 5,185,315, Cl. 503-227.000.
Tai, Hwai-Tzuu, 5,185,674, Cl. 358-457.000.
Eaton Corporation: *See—*
Beihoff, Bruce C.; Tennies, Charles J.; Richards, Francis S., Jr.; and O'Neil, Walter K., 5,185,684, Cl. 361-45.000.
Beihoff, Bruce C.; Tennies, Charles J.; Richards, Francis S., Jr.; and O'Neil, Walter K., 5,185,687, Cl. 361-45.000.
Hansen, James E.; Beihoff, Bruce C.; Tennies, Charles J.; and Richards, Francis S., Jr., 5,185,686, Cl. 361-45.000.
Hseu, Bill; Jessee, Jim; and Wang, William, 5,184,457, Cl. 60-39.141.
Tennies, Charles J.; Beihoff, Bruce C.; Hastings, Jerome K.; Clarey, Robert J.; and O'Neil, Walter K., 5,185,685, Cl. 361-45.000.
Ebara Corporation: *See—*
Arakawa, Shinichiro; and Ichiki, Isamu, 5,184,937, Cl. 415-206.000.
Ebener, Michel: *See—*
Carrupt, Bertrand; Constantin, Maurice; and Ebener, Michel, 5,184,667, Cl. 164-467.000.
Ebner, Jerry R., to Monsanto Company. Method for improving the performance of VPO catalysts. 5,185,455, Cl. 549-259.000.
Ecoloteck, Inc.: *See—*
Carr, William J., 5,185,016, Cl. 55-230.000.
Econo Max Manufacturing: *See—*
McCarty, Lon H., 5,184,423, Cl. 49-501.000.
Edem, Brian C.; and Helliwell, Richard P., to Digital Equipment Corporation; and National Semiconductor Corporation. Multiple record group rebound sorter. 5,185,886, Cl. 395-600.000.
Edenfield, Robin W.; McGarity, Ralph; Reininger, Russell; Ledbetter, William B., Jr.; and Shahan, Van B., to Motorola, Inc. Data processing system utilizes block move instruction for burst transferring blocks of data entries where width of data blocks varies. 5,185,694, Cl. 395-425.000.
Edwards, James L.: *See—*
Bagchi, Pranab; Edwards, James L.; Smith, Wendell F., Jr.; and Thomas, Brian, 5,185,230, Cl. 430-138.000.
Edwards, Jerry A. Hitch protector. 5,184,840, Cl. 280-507.000.
Effland, Richard C.; Klein, Joseph T.; and Martin, Lawrence L., to Hoechst-Roussel Pharmaceuticals Incorporated. Substituted pyridinylamino-1H-indoles,1H-indazoles,2H-indazoles, benzo (B)thiophenes and 1,2-benzisothiazoles. 5,185,350, Cl. 514-339.000.
Effner Biomet GmbH: *See—*
Anapliotis, Emmanuel; and Schich, Gisbert, 5,184,602, Cl. 128-6.000.
Egara, Koichi; Nakamura, Kenji; and Mochizuki, Norihiro, to Canon Kabushiki Kaisha. Surface acoustic wave device with reflected wave at side edges on waveguide suppressed and communication system using the same. 5,185,548, Cl. 310-313.00D.
Egashira, Noritaka; Nakamura, Yoshinori; and Takiguchi, Ryohei, to Dai Nippon Insatsu Kabushiki Kaisha. Heat transfer image-receiving sheets. 5,185,316, Cl. 503-227.000.
Egashira, Noritaka N. E.: *See—*
Fujimura, Hideo H. F.; Egashira, Noritaka N. E.; Iwata, Tamami T. I.; and Satake, Naoto N. S., 5,185,314, Cl. 503-227.000.
Eggensperger, Heinz; Diehl, Karl-Heinz; Nolte, Helmut; Rackur, Helmut; Eggers-MaaB, Ute; Mohr, Michael; Bernd, Lower; and BeilfuB, Wolfgang, to Eastman Kodak Company. Disinfectant concentrate and its use as a mycobactericide and viricide. 5,185,145, Cl. 424-78.080.
Eggers-MaaB, Ute: *See—*
Eggensperger, Heinz; Diehl, Karl-Heinz; Nolte, Helmut; Rackur, Helmut; Eggers-MaaB, Ute; Mohr, Michael; Bernd, Lower; and BeilfuB, Wolfgang, 5,185,145, Cl. 424-78.080.
Eguchi, Hirotoshi: *See—*
Furuta, Toshiyuki; Horiguchi, Kiroyuki; and Eguchi, Hirotoshi, 5,185,851, Cl. 395-27.000.
Eguchi, Kouhei, to Nippon Steel Corporation. Process for producing laminated semiconductor substrate. 5,185,286, Cl. 437-84.000.
Ehman, Richard L.; and Greenleaf, James F., to Mayo Foundation for Medical Education and Research. NMR measurements using recursive RF excitation. 5,185,574, Cl. 324-309.000.
Eicken, Karl: *See—*
Vogelbacher, Uwe J.; Eicken, Karl; Rheinheimer, Joachim; Goetz, Norbert; Harreus, Albrecht; Paul, Gerhard; Westphalen, Karl-Otto; and Wuerzer, Bruno, 5,185,027, Cl. 504-219.000.
Einbinder, Stephen B.: *See—*
Ooi, Leng H.; and Einbinder, Stephen B., 5,185,583, Cl. 331-15.000.
Eisai Co., Ltd.: *See—*
Yoshimatsu, Kentaro; Ohya, Yukio; Shikata, Yasushi; Tanaka, Isao; Hasegawa, Yoshikazu; Seto, Toshio; and Osawa, Toshio, 5,185,431, Cl. 530-351.000.
Eisner, Lawrence F.; and Hurd, Bruce E., to Bryce Office Systems, Inc. Envelope addressing system adapted to simultaneously print addresses and bar codes. 5,184,900, Cl. 400-82.000.
Eisner, Thomas; Attygalle, Athula B.; and McCormick, Kevin D., to Cornell Research Foundation, Inc. Insect deterrent azamerolides. 5,185,365, Cl. 514-450.000.
Electric Power Research Institute, Inc.: *See—*
Fisk, Allan T.; and Freed, David I., 5,184,391, Cl. 29-525.000.
Electroid Company: *See—*
Lazorchak, Edward D., 5,185,542, Cl. 310-36.000.
Electroluminscent Technologies Corporation: *See—*
Sharpless, Edward N.; and McManus, Eugene W., 5,184,969, Cl. 445-24.000.
Electronic Warfare Associates, Inc.: *See—*
Jacobs, Kendall E.; and Weipert, Mary B., 5,185,697, Cl. 364-419.000.
Electronics and Telecommunications Research Institute: *See—*
Lee, Jin H.; Kim, Cheon S.; Lee, Kyu H.; and Kim, Dae Y., 5,185,282, Cl. 437-47.000.
Elf Aquitaine Production: *See—*
Kvasnikoff, Georges; Nougayrede, Jean; and Philippe, Andre , 5,185,140, Cl. 423-574.00R.
Elf Atochem North America, Inc.: *See—*
Silbermann, Joseph; and Burchill, Michael T., 5,185,191, Cl. 428-409.000.
Ellis, Charles E., Jr.: *See—*
Johnson, Kenneth A.; and Ellis, Charles E., Jr., 5,185,709, Cl. 364-558.000.
Elsenbaumer, Ronald L.: *See—*
Han, Chien-Chung; and Elsenbaumer, Ronald L., 5,185,100, Cl. 252-500.000.
Elser, Wilhelm: *See—*
Klesse, Wolfgang; Elser, Wilhelm; Mager, Theodor; Christner, Juergen; Kraus, Hertha; Rossberg, Peter; and Weber, Marliese, 5,185,387, Cl. 523-201.000.
Emery, Kevin A.; and Bailey, Michael J., to Megatek Corporation. Image priority video switch. 5,185,858, Cl. 395-158.000.
Emery, Phillip L.: *See—*
Dresen, William L.; Niemi, Karl A.; Emery, Phillip L.; and Grunow, David G., 5,184,866, Cl. 296-95.100.
Emi, Shigenori: *See—*
Tanigaki, Naoko; Furukawa, Kayoko; Sogabe, Yukihiro; and Emi, Shigenori, 5,185,257, Cl. 435-191.000.
Emory University: *See—*
Wallace, Douglas C., 5,185,244, Cl. 435-6.000.
Endo, Isao; Nagamune, Teruyuki; Nishimura, Minoru; and Kobayashi, Tetsuo, to Rikagaku Kenkyusho. Cell culture method. 5,185,255, Cl. 435-174.000.
Endo, Makoto: *See—*
Taguchi, Yasuhisa; Endo, Makoto; Kawamoto, Ryuichi; Saito, Shiro; Zaizen, Reigi; Komachi, Hiroshi; Narita, Naomasa; and Fujiwara, Kenichi, 5,184,355, Cl. 4-420.000.
Energy Compression Research Corp.: *See—*
Zucker, Oved S. F., 5,185,586, Cl. 331-96.000.
Enger-Kress Company: *See—*
Bauman, Thomas A., 5,184,658, Cl. 150-147.000.
Eniricerche S.p.A.: *See—*
Camanzi, Alberto; and Sberveglieri, Giorgio, 5,185,130, Cl. 422-90.000.
Enomoto, Ryo: *See—*
Yamada, Masaya; and Enomoto, Ryo, 5,185,829, Cl. 385-37.000.

Equipment Development Company, Inc.: *See—*
Ward, James E.; and Swan, Leo, 5,184,382, Cl. 29-81.150.
Erickson, Richard A.; and Timm, Gerald W., to Dacomed Corporation. Male urinary anti-incontinence device and method. 5,184,629, Cl. 128-885.000.
Eriksson, Tomas A.: *See—*
Hammarberg, Lars E.; and Eriksson, Tomas A., 5,185,767, Cl. 375-110.000.
Ernst, Stephen, to Hewlett Packard Company. Lan noise monitor. 5,185,735, Cl. 370-13.000.
Erschens, Willie; Mencher, Franz J.; Brosius, Peter; Grave, Klaus; Zender, Bernhard; Schardt, Peter; Hessek, Gerd; and Alten, Ferdinand, to August Bilstein GmbH & Co. KG. Jack. 5,184,806, Cl. 254-126.000.
Eshnaur, Vincent W.: *See—*
Wade, William W.; and Eshnaur, Vincent W., 5,184,422, Cl. 49-239.000.
Essential Dental Systems, Inc.: *See—*
Cohen, Brett I.; and Musikant, Barry, 5,185,386, Cl. 523-105.000.
Estell, David A.: *See—*
Caldwell, Robert M.; Estell, David A.; and Graycar, Thomas P., 5,185,258, Cl. 435-220.000.
Estes, Howard S., to Compaq Computer Corporation. Non-wicking solder preform. 5,184,767, Cl. 228-56.300.
Eswarakrishnan, Seetha; Knox, Carol L.; and Damle, Suresh B., to PPG Industries, Inc. Intumescent flame retardant composition. 5,185,103, Cl. 252-606.000.
ETI-TEC Maschinenbau GmbH: *See—*
Tomashauser, Josef; and Zodrow, Rudolf, 5,185,053, Cl. 156-487.000.
Eurodia S.A.: *See—*
Guerif, Gerard, 5,185,048, Cl. 156-256.000.
Evans, Ben E.: *See—*
Freidinger, Roger M.; Bock, Mark G.; and Evans, Ben E., 5,185,331, Cl. 514-220.000.
Evans, Donald L.; and Harris, David T., to University of Georgia Research Foundation, Inc.; and University of North Carolina. Antigen recognized by natural killer and non-specific cytotoxic cells. 5,185,430, Cl. 530-350.000.
Evans, John; and Scruton, Steven L., to BP Chemicals Limited; and University of Southampton, The. Production of carboxylic acids and esters thereof. 5,185,462, Cl. 560-232.000.
Evans, Roger F.: *See—*
Courian, Kenneth J.; and Evans, Roger F., 5,185,614, Cl. 346-1.100.
Everingham, Gary M., to Siemens Automotive Limited. Pressure regulating heater control valve. 5,184,773, Cl. 237-12.30B.
Ewing, Joseph H.; and Baker, John H. E., II, to United States of America, Air Force. Ceramic blanket augmentor liner. 5,184,455, Cl. 60-39.020.
Excel Tech Ltd.: *See—*
Grzeszykowski, Miroslaw, 5,184,605, Cl. 128-24.0AA.
Exide Electronics: *See—*
Johnson, Robert W., Jr.; and Paulakonis, Joseph C., 5,185,536, Cl. 307-66.000.
Exploaterings AB T.B.F.: *See—*
Porath, Jerker O., 5,185,313, Cl. 502-402.000.
Exxon Chemical Patents Inc.: *See—*
Robinson, Peter M.; and Van-Det, Nguyen, 5,185,395, Cl. 524-457.000.
Ryer, Jack; Gutierrez, Antonio; Puckace, James S.; Watts, Raymond F.; Gleason, Craig W.; Mills, Daniel R.; and Braun, Edmund H., II, 5,185,090, Cl. 252-46.600.
Exxon Research and Engineering Company: *See—*
Soled, Stuart L.; Miseo, Sabato; Iglesia, Enrique; and Fiato, Rocco A., 5,185,378, Cl. 518-700.000.
Vaughan, David E. W.; and Strohmaier, Karl G., 5,185,136, Cl. 423-702.000.
Vaughan, David E. W.; and Strohmaier, Karl G., 5,185,137, Cl. 423-702.000.
Vaughan, David E. W.; and Strohmaier, Karl G., 5,185,138, Cl. 423-710.000.
Faett, John H., III: *See—*
Hall, James F.; and Faett, John H., III, 5,185,708, Cl. 364-550.000.
Faiveley Transport: *See—*
Babin, James, 5,184,976, Cl. 454-108.000.
Falbo, Michael G., Sr., to American Echo, Inc. Support bed with drop-out sections for medical analysis. 5,184,363, Cl. 5-601.000.
Falk, Richard A.; and Behring, James A., to Midwest Instrument Co., Inc. Method of using an immersible air cooled thermocouple. 5,184,894, Cl. 374-140.000.
Falth, Lars: *See—*
Hakansson, Ulf; and Falth, Lars, 5,185,307, Cl. 502-68.000.
Fan, Chin-Fu. Universal medication port. 5,184,652, Cl. 141-21.000.
Fan, Tso Y.; Sanchez-Rubio, Antonio; Walpole, James N.; Williamson, Richard C.; Melngailis, Ivars; Leger, James R.; and Goltsos, William C., to Massachusetts Institute of Technology. Multiple-laser pump optical system. 5,185,758, Cl. 372-72.000.
Fanto, Susan V.: *See—*
Reiner, Roger T.; Frost, David M.; Chicots, Johnna M.; Petras, Diane S.; and Fanto, Susan V., 5,185,699, Cl. 364-419.000.
Fanuc Ltd.: *See—*
Torii, Nobutoshi; Ito, Susumu; Terada, Akihiro; and Sasaki, Yasuo, 5,185,512, Cl. 219-121.780.
Farahati, Nader, to Technophone Ltd. Data symbol estimation. 5,185,747, Cl. 371-43.000.
Farb, Joseph E.; Li, Mei; Chang, Chen-Chi P.; and Chin, Maw-Rong, to Hughes Aircraft Company. Control of backgate bias for low power high speed CMOS/SOI devices. 5,185,535, Cl. 257-351.000.
Farber, Karlheinz: *See—*
Deininger, Anton; Farber, Karlheinz; Giefer, Heinz-Werner; and Galler-Benker, Egon, 5,184,942, Cl. 417-360.000.
Farmer, Douglas A., Jr.: *See—*
Hani, Rahim; Waldron, Craig; and Farmer, Douglas A., Jr., 5,185,033, Cl. 106-18.330.
Farmer, Leonard E.; Stewart, Jeffrey B.; and Turner, Ralph, to American Cyanamid Company. Serosa peeling machine. 5,184,975, Cl. 452-198.000.
Farnham, William B.: *See—*
Cohen, Gordon M.; Farnham, William B.; and Feiring, Andrew E., 5,185,421, Cl. 528-70.000.
Farrar, David: *See—*
Lowry, Peter; and Farrar, David, 5,185,061, Cl. 162-168.300.
Farrar, Ralph C., Jr.; Hartsock, David L.; and Mueller, Francis X., to Phillips Petroleum Company. Reduction of residual volatiles in styrene polymers. 5,185,400, Cl. 525-98.000.
Farrell, Patrick M.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H., Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.
Farrington, Ronald L., to Square D Company. Circuit breaker having serial data communications. 5,185,705, Cl. 364-483.000.
Farwell, William D.: *See—*
Blazic, Ernest S.; Bueker, Robert A.; Waters, Lynn O.; Farwell, William D.; and Smalanskas, Joseph P., 5,184,516, Cl. 73-799.000.
Faust, Gottfried: *See—*
Sauer, Wolfgang; Jansch, Hans-Joachim; Rostock, Angelika; Faust, Gottfried; Siegemund, Christine; Lohmann, Dieter; and Bartsch, Reni, 5,185,341, Cl. 514-269.000.
Faytlin, Alexander B.: *See—*
McElroy, Lucian G.; Raby, Alvin S.; and Faytlin, Alexander B., 5,184,369, Cl. 15-316.100.
Fehr, Charles; and Galindo, Jose , to Firmenich S.A. Aromatic compounds, a process for preparation thereof and use of same as perfuming ingredients. 5,185,318, Cl. 512-16.000.
Feiring, Andrew E.: *See—*
Cohen, Gordon M.; Farnham, William B.; and Feiring, Andrew E., 5,185,421, Cl. 528-70.000.
Fel-Pro Incorporated: *See—*
Schaefer, William L., 5,184,909, Cl. 401-268.000.
Feldt, Wolfgang; and Laese, Dieter, to MAN Roland Druckmaschinen AG. Device for adjusting a CNC-controlled grinder. 5,184,428, Cl. 51-165.750.
Felix, Andre ; and Felix, Laurent. Metal framed facade panel and facade covered with such a panel. 5,184,440, Cl. 52-235.000.
Felix, Laurent: *See—*
Felix, Andre ; and Felix, Laurent, 5,184,440, Cl. 52-235.000.
Fell, Michael J., to M & M Displays, Inc. Message display boot for fuel dispensing nozzle. 5,184,655, Cl. 141-392.000.
Fennern, Larry E., to General Electric Company. Liquid affected spectral shift reactor. 5,185,120, Cl. 376-219.000.
Ferdows, Houshang, to Suetrak Air Conditioning Sales Corp. Roof-mounted air conditioning system with built-in compressor. 5,184,474, Cl. 62-244.000.
Ferguson, David L., to TRW Inc. Generic solar cell array using a printed circuit substrate. 5,185,042, Cl. 136-244.000.
Fern, William A.: *See—*
Backhouse, Bryan S.; and Fern, William A., 5,185,356, Cl. 514-372.000.
Fernandez, Emilio A.: *See—*
Bezos, Angel P.; Fernandez, Emilio A.; and Field, Joseph I., Jr., 5,185,700, Cl. 364-424.040.
Ferraiolo, Frank D.; Gersbach, John E.; and Novof, Ilya I., to International Business Machines Corporation. Digital integrating clock extractor. 5,185,768, Cl. 375-119.000.
Ferrari, Paolo: *See—*
Bertotti, Franco; and Ferrari, Paolo, 5,185,649, Cl. 357-43.000.
Ferrari, Pietro: *See—*
Trani, Aldo; Seneci, Pierfausto; Ferrari, Pietro; and Ciabatti, Romeo, 5,185,320, Cl. 514-8.000.
Ferrari S.p.A.: *See—*
Ascari, Ennio, 5,184,580, Cl. 123-90.270.
Ferris, Kevin S. Sports apparatus. 5,184,980, Cl. 472-91.000.
Feterl, Leon G., to Core Industries, Inc. Mechanical drive for dual conveyor system. 5,184,715, Cl. 198-667.000.
Fevrier, Herve ; Marcerou, Jean-Francois; and Le Sergent, Christian, to Alcatel N.V. Optical amplifier in the 1.26 μm to 1.34 μm spectrum range. 5,185,847, Cl. 385-141.000.
Fiato, Rocco A.: *See—*
Soled, Stuart L.; Miseo, Sabato; Iglesia, Enrique; and Fiato, Rocco A., 5,185,378, Cl. 518-700.000.
Fichtel & Sachs Ag: *See—*
Tebbe, Gerhard, 5,185,543, Cl. 310-51.000.

VOL
1147
ISS
2
FE
9
1993
UMI

Field, Joseph I., Jr.: *See—*
Bezos, Angel P.; Fernandez, Emilio A.; and Field, Joseph I., Jr., 5,185,700, Cl. 364-424.040.

Fierke, John R.: *See—*
Ianni, Suzanne G.; Fierke, John R.; and Connors, Stephen A., 5,185,883, Cl. 395-575.000.

Fiesel, Heinz-Otto, to Gewerkschaft Eisenhutte Westfalia GmbH. Guides for mineral winning machines. 5,184,873, Cl. 299-43.000.

Figi, Scott R. Can crushing apparatus employing a cooperative plate and anvil assembly. 5,184,548, Cl. 100-73.000.

Filipek, Pauline A.: *See—*
Kennedy, David N.; Filipek, Pauline A.; and Caviness, Verne S., Jr., 5,185,809, Cl. 382-6.000.

Fillmore, Francis L.; and Schmidt, Michael J., to GKN Automotive, Inc. Telescopic triplan universal joint. 5,184,978, Cl. 464-111.000.

Finch, Lester M., to Jersey Nuclear-Avco Isotopes, Inc. Modularized replaceable vaporizer and extractor apparatus. 5,185,757, Cl. 372-56.000.

Finch, William W.; Davenport, John M.; and Hansler, Richard L., to General Electric Company. Automobile lighting system that includes an exterior indicating device. 5,184,883, Cl. 362-32.000.

Finkelstein, Blair I.; Tayefeh, Morovat; and Ueno, Hideo, to International Business Machines Corporation. Calibrating lasers for optical recording using a maximal readback signal amplitude as a criterion. 5,185,733, Cl. 369-54.000.

Finkelstein, Harvey, to Tri-Seal International, Inc. Winged fence slat construction. 5,184,801, Cl. 256-34.000.

Finkelstein, Joseph A.; Keenan, Richard M.; and Weinstock, Joseph, to SmithKline Beecham Corporation. Imidazolyl-alkenoic acids useful as angiotensin II receptor antagonists. 5,185,351, Cl. 514-341.000.

Finn, Ronald: *See—*
Larson, Steven M.; Finn, Ronald; Carrasquillo, Jorge A.; Reynolds, James C.; Neumann, Ronald D.; Graham, Martin C.; and Pentlow, Keith S., 5,185,142, Cl. 424-1.100.

Fior de Venezuela: *See—*
Whipp, Roy H., 5,185,032, Cl. 75-436.000.

Firmenich S.A.: *See—*
Fehr, Charles; and Galindo, Jose , 5,185,318, Cl. 512-16.000.

First Data Resources, Inc.: *See—*
Katz, Ronald A., 5,185,787, Cl. 379-204.000.

First Dominion Holdings, Inc.: *See—*
Wiens, Thomas J., 5,184,780, Cl. 241-19.000.

Fischer, Frederick H.; Lee, Kuo-hua; Nagy, William J.; and Selamoglu, Nur, to AT&T Bell Laboratories. Method of making severable conductive path in an integrated-circuit device. 5,185,291, Cl. 437-173.000.

Fischer Industries, Inc.: *See—*
Fischer, Warren, 5,185,624, Cl. 354-132.00D.

Fischer, Scott; and Welch, Cletus N., to PPG Industries, Inc. Water strippable photochromic resin composition. 5,185,390, Cl. 524-43.000.

Fischer, Warren, to Fischer Industries, Inc. Rack for automatic film processors. 5,185,624, Cl. 354-132.00D.

Fisk, Allan T.; and Freed, David I., to Electric Power Research Institute, Inc. Process of press fitting pipe sections together to form a pipeline. 5,184,391, Cl. 29-525.000.

Fitch, Mark D.: *See—*
Loh, Jimbay; Trumbetas, Jerome; Palmer, David H.; and Fitch, Mark D., 5,185,175, Cl. 426-631.000.

Fitzpatrick, John W., to Katz, Helmuth J. Telecommunications signal detector. 5,185,570, Cl. 324-133.000.

Flanagan, John R.: *See—*
Casper, Daniel F.; Gregg, Thomas A.; Flanagan, John R.; Kalos, Matthew J.; and Liencres, Bjorn O., 5,185,862, Cl. 395-250.000.

Flanigan, Floyd W.: *See—*
Mandrell, Gerald W., II; Humphres, Eddie J.; Flanigan, Floyd W.; and Pittman, Bradley W., 5,184,740, Cl. 215-315.000.

Fleming, Kenneth E.; and Chapman, Jeffrey A., to Lord Corporation. Flock adhesive. 5,185,402, Cl. 525-130.000.

Fletscher, Robert A. Permanent termite protection system. 5,184,418, Cl. 43-124.000.

Fletton, Richard A.: *See—*
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,185,456, Cl. 546-264.000.

Flexicon Corporation: *See—*
Gill, David R.; Duca, Larry J.; Badway, Robert M.; Walsh, Michael W.; and Simonof, John F., 5,184,759, Cl. 222-181.000.

Flickner, Myron D.: *See—*
Beers, Gregory E.; Flickner, Myron D.; Kelly-Mahaffey, William L.; Polk, Darryl R.; Stafford, James M.; and Wattenbarger, Henry E., 5,185,811, Cl. 382-8.000.

Fluoroware, Inc.: *See—*
Karl, Randy L.; and Maenke, Dale A., 5,184,723, Cl. 206-454.000.

FMC Corporation: *See—*
Barrows, Peter S.; and Willis, James A., 5,184,511, Cl. 73-323.000.

Foa', Marco: *See—*
Casagrande, Francesco; Foa', Marco; and Chapoy, Larry L., 5,185,424, Cl. 528-183.000.

Fokker Aircraft B.V.: *See—*
Lefeber, Paul; Botterman, Rene; Van Tilborgh, Cornelis; and Van Veggel, Loek, 5,185,198, Cl. 428-251.000.
Verbaarschot, Petrus A. A.; Schless, Michel M. C.; and Hultzer, Wim J., 5,185,606, Cl. 340-961.000.

Folsch, Karl J.; Frank, Klaus; and Jung, Karl-August, to Rohm GmbH Chemische Fabrik. Flow improvement in the processing of PVC blends to be modified for impact strength. 5,185,404, Cl. 525-222.000.

Fontenot, William L., to Cooper Industries, Inc. Telescoping riser joint and improved packer therefor. 5,184,681, Cl. 166-367.000.

Ford, James M.; Cawlfield, David W.; and Woodard, Kenneth E., Jr., to Olin Corporation. Liquid metal cathode electrochemical cell and cathode frame. 5,185,069, Cl. 204-251.000.

Ford Motor Company: *See—*
Brown, Franklin I., 5,185,182, Cl. 427-126.200.
Koberstein, Manfred; Balcom, James H.; and Kolpacke, Stephen M., 5,184,479, Cl. 62-503.000.
Kolpacke, Stephen M., 5,184,480, Cl. 62-503.000.
Moyski, Matthew T.; and Spitz, Raymond C., 5,185,803, Cl. 381-86.000.
Rossman, Michael D., 5,184,510, Cl. 73-290.00V.
Subramanian, Somasundaram; and Chattha, Mohinder S., 5,185,305, Cl. 502-65.000.

Ford New Holland, Inc.: *See—*
Jennings, Richard E.; and Schlotterbeck, Stephen C., 5,184,545, Cl. 100-5.000.

Fortin, Jean-Pierre, to Campagnie Generale De Geophysique. Apparatus for attenuating Stoneley waves in a borehole. 5,185,503, Cl. 181-102.000.

Foster, Billy K.: *See—*
Magrath, Earl K., Jr.; and Foster, Billy K., 5,184,694, Cl. 180-167.000.

Foster Wheeler Energy Corporation: *See—*
Alliston, Michael G.; and Campbell, Walter R., Jr., 5,184,671, Cl. 165-104.160.

Fountain, Richard W.: *See—*
Smith, Susan L.; and Fountain, Richard W., 5,185,125, Cl. 420-503.000.

Fowell, Richard A., to Hughes Aircraft Company. Two-axis attitude correction for orbit inclination. 5,184,790, Cl. 244-165.000.

Fox, William J.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Fraillon, Patrick: *See—*
Chevassus, Alain; and Fraillon, Patrick, 5,184,741, Cl. 215-331.000.

Framatome: *See—*
Frizot, Alain, 5,184,805, Cl. 254-29.00A.

Francis, Cecil V.: *See—*
Harelstad, Roberta E.; Francis, Cecil V.; and White, Kenneth M., 5,185,102, Cl. 252-582.000.

Francisco, Robert, to Pitney Bowes Inc. Dual mode communication among plurality of processors using three distinct data channels each having different function and operations. 5,185,866, Cl. 395-325.000.

Franciscus, Leo C.; and Brabbs, Theodore A., to United States of America, Administrator, National Aeronautics and Space Administration. Multi-heat addition turbine engine. 5,184,460, Cl. 60-226.100.

Franco, Thomas: *See—*
Orlando, Franklin P.; and Franco, Thomas, 5,184,973, Cl. 452-125.000.

Franek, Joachim: *See—*
Du, Keming; Franek, Joachim; and Loosen, Peter, 5,185,760, Cl. 372-104.000.

Frank, Klaus: *See—*
Folsch, Karl J.; Frank, Klaus; and Jung, Karl-August, 5,185,404, Cl. 525-222.000.

Frank and Robyn Walton 1990 Family Trust: *See—*
Walton, Frank, 5,184,943, Cl. 417-401.000.

Franke, Hans G.; and Prince, Eric T., to Eastman Kodak Company. Method of forming and aligning patterns in deposted overlaying on GaAs. 5,185,293, Cl. 437-184.000.

Franz, Andreas: *See—*
Becker, Ruediger; Boettcher, Siegfried; and Franz, Andreas, 5,184,463, Cl. 60-284.000.

Fraser, Robert: *See—*
Mosher, Mark D.; Fraser, Robert; and Fuller, Ronald D., 5,185,654, Cl. 257-659.000.

Frater, Georg; and Schmidt, Harald, to Givaudan Corporation. Mixtures of bicyclic ethers, fragrance compositions containing same and novel intermediate. 5,185,472, Cl. 568-591.000.

Fraunhofer-Gesellschaft zur Forderung der Angewandten Forschung e.V.: *See—*
Thole, Volker, 5,185,115, Cl. 264-113.000.

Fraunhofer-Gesellschaft zur Forderung der angewandten Forschung e.V.: *See—*
Du, Keming; Franek, Joachim; and Loosen, Peter, 5,185,760, Cl. 372-104.000.

Fraysse, Guy; and Thauront, Jacques, to PEC Engineering. Process and devices for the decontamination of solid products. 5,184,950, Cl. 432-13.000.

Frazier Industrial Company: *See—*
Allen, Donald R., 5,184,738, Cl. 211-151.000.

Freed, David I.: *See—*
Fisk, Allan T.; and Freed, David I., 5,184,391, Cl. 29-525.000.

Freeman, Stephen, to Crosfield Electronics Ltd. Electronic image modification. 5,185,596, Cl. 340-706.000.

Freidinger, Roger M.; Bock, Mark G.; and Evans, Ben E., to Merck & Co., Inc. Triazolobenzodiazepines. 5,185,331, Cl. 514-220.000.

Freischlad, Klaus, to Carl-Zeiss-Stiftung. Method for optical testing of samples. 5,185,810, Cl. 382-8.000.

Freitag, Michael G.: *See—*
Dop, Dennis B.; Freitag, Michael G.; and Zawacki, Norbert W., 5,185,779, Cl. 379-33.000.

Freudenberg, Bernhard: *See—*
Seyer, Johannes; and Freudenberg, Bernhard, 5,185,113, Cl. 264-67.000.

Frey, Bradly G.; and Pedersen, Raymond J., to International Business Machines Corporation. Coordination of out-of-sequence fetching between multiple processors using re-execution of instructions. 5,185,871, Cl. 395-375.000.

Freyne, Eddy J. E.: *See—*
Sanz, Gerard C.; Venet, Marc G.; Freyne, Eddy J. E.; and Raeymaekers, Alfons H. M., 5,185,346, Cl. 514-312.000.

Friedman, Paul A.: *See—*
Baldwin, John J.; Friedman, Paul A.; and Stern, Andrew M., 5,185,149, Cl. 424-94.630.

Friesen, Gordon R. Rockbolt monitor. 5,185,595, Cl. 340-690.000.

Frizot, Alain, to Framatome. Device for the optimum positioning of an extension piece on a threaded connection element. 5,184,805, Cl. 254-29.00A.

Frobel, Klaus: *See—*
Muller, Hartwig; Bischoff, Erwin; Fugmann, Burkhard; Weber, Karlheinz; Frobel, Klaus; Rosen, Bruno; Grutzmann, Rudi; Karmann, Guenther; and Kohlsdorfer, Christian, 5,185,326, Cl. 514-23.000.

Frost, David M.: *See—*
Reiner, Roger T.; Frost, David M.; Chicots, Johnna M.; Petras, Diane S.; and Fanto, Susan V., 5,185,699, Cl. 364-419.000.

Fuentes, Ricardo I.; and Babich, Inna V., to International Business Machines Corporation. Method and apparatus for etching semiconductor wafers and developing resists. 5,185,056, Cl. 156-639.000.

Fugmann, Burkhard: *See—*
Muller, Hartwig; Bischoff, Erwin; Fugmann, Burkhard; Weber, Karlheinz; Frobel, Klaus; Rosen, Bruno; Grutzmann, Rudi; Karmann, Guenther; and Kohlsdorfer, Christian, 5,185,326, Cl. 514-23.000.

Fuji Photo Film Co., Ltd.: *See—*
Inoue, Noriyuki, 5,185,241, Cl. 430-598.000.
Kawai, Kiyoshi, 5,185,237, Cl. 430-505.000.
Miyata, Junji; Kanetake, Satoshi; Morimoto, Yasufumi; and Hanayama, Kenji, 5,185,240, Cl. 430-596.000.
Mogi, Fumio, 5,185,623, Cl. 354-299.000.
Oikawa, Toru, 5,185,238, Cl. 430-523.000.
Sasaoka, Senzo, 5,185,232, Cl. 430-264.000.
Serizawa, Shinichiro; and Tamagawa, Shigehisa, 5,185,202, Cl. 428-335.000.
Shiba, Keisuke; Kawai, Kiyoshi; Okazaki, Masaki; and Okino, Yoshiharu, 5,185,236, Cl. 430-505.000.

Fuji Photo Optical Co., Ltd.: *See—*
Kagechika, Takashi, 5,185,621, Cl. 354-234.100.

Fuji Xerox Co., Ltd.: *See—*
Miyata, Masahiko, 5,185,820, Cl. 382-56.000.
Yashiki, Yuichi; Moriyama, Hiroaki; and Aoki, Kazuaki, 5,185,187, Cl. 427-430.100.

Fujii, Akio: *See—*
Furuoka, Misa; Bando, Shoichi; and Fujii, Akio, 5,185,207, Cl. 428-404.000.

Fujii, Hiroshi: *See—*
Mori, Toshiki; Fujii, Hiroshi; Onishi, Takashi; and Yamamoto, Kazuo, 5,185,468, Cl. 568-31.000.

Fujii, Keiko, Shinichiro Fujii, legal heirs: *See—*
Fujii, Setsuro, deceased; Takada, Kaoruko, legal heir; Ishikawa, Hiroshi; Tsubouchi, Hidetsugu; and Jitsukawa, Koichiro, 5,185,337, Cl. 514-254.000.

Fujii, Setsuro, deceased (by Fujii, Keiko, Shinichiro Fujii, legal heirs); Takada, Kaoruko, legal heir; Ishikawa, Hiroshi; Tsubouchi, Hidetsugu; and Jitsukawa, Koichiro, to Otsuka Pharmaceutical Co., Ltd. Pyrroloquinoline derivatives and pharmaceutical compositions for antimicrobial use. 5,185,337, Cl. 514-254.000.

Fujii, Susumu: *See—*
Aono, Toshinao; Asami, Yukio; Hirooka, Noboru; Arima, Yusaku; and Fujii, Susumu, 5,185,309, Cl. 502-202.000.

Fujii, Toshihiro: *See—*
Nakatsukasa, Sadayoshi; Fujii, Toshihiro; Tanaka, Ban; and Yamada, Kosaku, 5,185,234, Cl. 430-284.000.

Fujiki, Sohei: *See—*
Tanabe, Mamoru; Yokota, Motoyuki; Fujiki, Sohei; and Sui, Masaru, 5,184,803, Cl. 267-140.120.

Fujimoto, Shinya: *See—*
Saitoh, Mamoru; and Fujimoto, Shinya, 5,184,594, Cl. 123-571.000.

Fujimura, Hideo H. F.; Egashira, Noritaka N. E.; Iwata, Tamami T. I.; and Satake, Naoto N. S., to Dai Nippon Insatsu Kabushiki Kaisha. Heat transfer sheet. 5,185,314, Cl. 503-227.000.

Fujimura, Masanori, to NEC Corporation. Dual data check apparatus. 5,185,748, Cl. 371-68.100.

Fujishima, Kazuyasu: *See—*
Arimoto, Kazutami; Fujishima, Kazuyasu; Matsuda, Yoshio; Ooishi, Tsukasa; and Tsukude, Masaki, 5,185,744, Cl. 371-21.200.

Fujita, Seigoro; and Fukuzawa, Yoichi, to Kanzaki Papper Manufacturing Co., Ltd. Ink jet recording sheet. 5,185,213, Cl. 428-500.000.

Fujitsu limited: *See—*
Hakogi, Hironao, 5,185,842, Cl. 385-129.000.
Iguchi, Kazuo; Takeo, Hiroshi; Amemiya, Shigeo; and Tezuka, Koji, 5,185,741, Cl. 370-110.100.
Kondo, Kazuaki, 5,185,054, Cl. 156-630.000.
Makiuchi, Masao; and Hamaguchi, Hisashi, 5,185,272, Cl. 437-5.000.
Murayama, Masami; Takahashi, Atsuhisa; Kakuma, Satoshi; and Yoshimura, Shuji, 5,185,743, Cl. 370-110.100.
Tanaka, Shinzo; and Yamaki, Syuichi. 5,184,901, Cl. 400-124.000.

Fujiwara, Hideo, to Suzuki Motor Corporation. Cylinder head structure of internal combustion engine. 5,184,579, Cl. 123-90.230.

Fujiwara, Kenichi: *See—*
Taguchi, Yasuhisa; Endo, Makoto; Kawamoto, Ryuichi; Saito, Shiro; Zaizen, Reigi; Komachi, Hiroshi; Narita, Naomasa; and Fujiwara, Kenichi, 5,184,355, Cl. 4-420.000.

Fujiwara, Takayoshi; Honma, Hisanori; and Sone, Yoshinori, to Kabushiki Kaisha Toshiba. Fluid compressor. 5,184,940, Cl. 417-356.000.

Fukase, Hisahiko; Kato, Heiji; and Nomura, Akihiro, to Ishikawajima-Harima Heavy Industries Company Limited; and John Lysaght (Australia) Limited. Strip casting. 5,184,668, Cl. 164-480.000.

Fukikawa, Yoshihiro; Suzuki, Mikio; Iwasaki, Hiroshi; Sakashita, Mitsuaki; and Kitahara, Masaki, to Nissan Chemical Industries Ltd. Quinoline type mevalonolactones useful for treating hyperlipidemia, hyperlipoproteinemia or atherosclerosis. 5,185,328, Cl. 514-63.000.

Fukuchi, Toshiki: *See—*
Natsume, Bunji; Kyomura, Nobuo; Kikutake, Kazuhiko; and Fukuchi, Toshiki, 5,185,354, Cl. 514-369.000.

Fukuda, Hirohiko: *See—*
Ochiai, Hirokazu; Watanabe, Yasuo; Murotani, Yoshiharu; Fukuda, Hirohiko; Yoshino, Osamu; Minami, Shinzaburo; Hayashi, Toshio; and Momonoi, Kaishu, 5,185,330, Cl. 514-142.000.

Fukuda, Hiroshi: *See—*
Tabata, Kenji; Matsumoto, Ikuo; and Fukuda, Hiroshi, 5,185,311, Cl. 502-304.000.

Fukuda, Masaaki; Tomizawa, Hirotaka; Ohta, Mitsuo; Osaka, Hideki; Ogano, Satoshi; Satoh, Takehisa; Ashibe, Kenji; and Nomura, Takeshi, to Tonen Corporation. Lubricating oil for refrigerator. 5,185,092, Cl. 252-56.00S.

Fukuda, Takemi: *See—*
Kawakita, Takeshi; Kuroita, Takanobu; Fukuda, Takemi; and Iezawa, Ryuhei, 5,185,333, Cl. 514-224.200.

Fukuda, Tokuya: *See—*
Kikuchi, Akibiro; and Fukuda, Tokuya, 5,185,707, Cl. 364-525.000.

Fukui, Kohei: *See—*
Suzuki, Takashi; and Fukui, Kohei, 5,184,743, Cl. 220-1.500.

Fukui, Wataru: *See—*
Hashimoto, Atsuko; Iwata, Toshio; and Fukui, Wataru, 5,184,590, Cl. 123-414.000.

Fukui, Yuko; Ohtani, Katsuhiro; Miyamoto, Hiroyuki; Nishiura, Masao; and Chimura, Moriyuki, to Matsushita Electronics Corporation. Method of making master slice type integrated circuit device. 5,185,283, Cl. 437-51.000.

Fukushima, Makiko: *See—*
Kohama, Keiko; Kobayashi, Miki; Kurusu, Yasurou; Yukawa, Hideaki; and Fukushima, Makiko, 5,185,262, Cl. 435-320.100.

Fukuzawa, Yoichi: *See—*
Fujita, Seigoro; and Fukuzawa, Yoichi, 5,185,213, Cl. 428-500.000.

Fuller Company: *See—*
Paul, Kermit D., 5,184,730, Cl. 209-142.000.

Fuller, George T.: *See—*
Bowman, Harold M.; and Fuller, George T., 5,184,912, Cl. 404-26.000.

Fuller, Ronald D.: *See—*
Mosher, Mark D.; Fraser, Robert; and Fuller, Ronald D., 5,185,654, Cl. 257-659.000.

Funk, Enno; Kreuzer, Franz-Heinrich; Gramshammer, Cornelia; and Lottner, Willibald, to Consortium fur elektrochemische GmbH. Poly(arylenevinylenesiloxanes) compounds. 5,185,419, Cl. 528-25.000.

Funk, Michael W.; Lawson, Sue A.; and McGuigan, David F., to AT&T Bell Laboratories. Method and apparatus for recording and rating telecommunication transactions made over a communication network. 5,185,785, Cl. 379-111.000.

Fuoroli, Frank C.: *See—*
Joseph, Lawrence; and Fuoroli, Frank C., 5,184,481, Cl. 63-12.000.

Furon Company: *See—*
DeChurch, Robert M., 5,185,594, Cl. 340-596.000.

Furukawa Electric Co., Ltd., The: *See—*
Satoh, Tsuguo; Morikawa, Takayuki; Hihara, Hiroshi; Yagi, Takeshi; and Yoshida, Kazuaki, 5,185,020, Cl. 65-3.110.
Shigematsu, Takashi; Imamizo, Seiichi; Takagi, Koichi; Ohta, Toshihiko; and Yamakawa, Jun, 5,185,825, Cl. 385-20.000.

Furukawa, Hisao; Isayama, Katsuhiko; and Kato, Yasushi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Hydrolyzable silyl group-containing azo compound, process for producing the same and silyl group-containing vinyl polymer produced by using the same. 5,185,418, Cl. 526-329.200.

Furukawa, Kayoko: *See—*
Tanigaki, Naoko; Furukawa, Kayoko; Sogabe, Yukihiro; and Emi, Shigenori, 5,185,257, Cl. 435-191.000.

Furukawa, Kiyoshi: *See—*
Hino, Katsuhiko; Kai, Naoki; Sakamoto, Masato; Kon, Tatsuya; Oka, Makoto; Furukawa, Kiyoshi; and Ochi, Yoshiaki, : '85,338, Cl. 514-254.000.

VOL 1147 ISS 2 FEB 9 1993 UMI

Furuoka, Misa; Bando, Shoichi; and Fujii, Akio, to Nichia Kagaku Kogyo K.K. Phosphor for cathode ray tube and surface treatment method for the phosphor. 5,185,207, Cl. 428-404.000.

Furuta, Toshiyuki; Horiguchi, Kiroyuki; and Eguchi, Hirotoshi, to Ricoh Company, Ltd. Neuron unit and neuron unit network. 5,185.851, Cl. 395-27.000.

Fushimi, Koji: *See—*
Nishioka, Shigeo; and Fushimi, Koji, 5,184,513, Cl. 73-593.000.

Futaki, Yoshiki: *See—*
Kobayashi, Noboru; and Futaki, Yoshiki, 5,184,966, Cl. 440-38.000.

Fuwa, Tetsuji: *See—*
Imamaki, Teruo; Fuwa, Tetsuji; and Miki, Takashi, 5,184,549, Cl. 101-121.000.

G.A.P. Technica S.R.L.: *See—*
Zambelli, Gabriele, 5,184,711, Cl. 198-419.200.

Gadbois, Donna M.: *See—*
Crissman, Harry A.; Gadbois, Donna M.; Tobey, Robert A.; and Bradbury, E. Morton, 5,185,260, Cl. 435-244.000.

Gagliardo, Michael A.: *See—*
Chinnaswamy, Kumar; Gagliardo, Michael A.; Lynch, John J.; and Tessari, James E., 5,185,875, Cl. 395-425.000.

Gaglione, John P.: *See—*
Wilks, Paul A., Jr.; and Gaglione, John P., 5,185,640, Cl. 356-300.000.

Gaines, Jefferson J., to Arizona Gear and Manufacturing. Vibratory feeder. 5,184,716, Cl. 198-763.000.

Gajjar, Kumar: *See—*
Nguyen, Anh; and Gajjar, Kumar, 5,185,876, Cl. 395-425.000.

Galanakis, Dennis K., to Research Foundation of State University of New York, The. Method of preparing autologous plasma fibrin and application apparatus therefor. 5,185,001, Cl. 604-5.000.

Galat, Donald E. Offset geared nutrunner attachment. 5,184,530, Cl. 81-57.210.

Galindo, Jose : *See—*
Fehr, Charles; and Galindo, Jose , 5,185,318, Cl. 512-16.000.

Gall, Thomas P.: *See—*
Bindra, Perminder S.; Cuomo, Jerome J.; Gall, Thomas P.; Ingraham, Anthony P.; Kang, Sung K.; Kim, Jungihl; Lauro, Paul; Light, David N.; Markovich, Voya R.; Miersch, Ekkehard F.; Molla, Jaynal A.; Powell, Douglas O.; Ritsko, John J.; Saxenmeyer, George J., Jr.; Varcoe, Jack A.; and Walker, George F., 5,185,073, Cl. 205-104.000.

Galler-Benker, Egon: *See—*
Deininger, Anton; Farber, Karlheinz; Giefer, Heinz-Werner; and Galler-Benker, Egon, 5,184,942, Cl. 417-360.000.

Gallo, Antonio. Gripping device and method of use. 5,184,934, Cl. 414-740.000.

Galumbeck, Michael, to Hickory Springs Manufacturing Company. Wire grid for box spring bedding assembly. 5,184,802, Cl. 267-103.000.

Galy, Michel G. H.; and Gomez, Alain, to Pasteur Merieux Serums et Vaccins. Method of packaging freeze dried vaccines in syringes and plug for implementing the method. 5,184,450, Cl. 53-440.000.

Gam, Allisa: *See—*
Chung, Ding Y.; Gam, Allisa; and Tessmer, Robert A., 5,185,065, Cl. 204-181.400.

Ganguly, Ashit K.: *See—*
Solomon, Daniel; Kaminski, James J.; White, Steven K.; Lehman de Gaeta, Laura S.; and Ganguly, Ashit K., 5,185,334, Cl. 514-236.200.

Garbassi, Fabio: *See—*
Cinquina, Patrizia; Triulzi, Giangaleazzo; and Garbassi, Fabio, 5,185,429, Cl. 528-503.000.

Garcia, Georges; Gautier, Patrick; Nisato, Dino; and Boux, Richard, to Sanofi. 4-amidino pyrano (3,2-c) pyridine derivatives, and pharmaceutical compositions containing them. 5,185,345, Cl. 514-302.000.

Gardner, Ernest A. Thermal energy transfer apparatus and method of making same. 5,184,675, Cl. 165-184.000.

Garner, Lee. Karate scoring apparatus. 5,184,831, Cl. 273-455.000.

Gas Research Institute: *See—*
Dobscha, Francis X., 5,184,677, Cl. 166-187.000.

Gasdorf Tool & Machine Co., Inc.: *See—*
Rode, Chris; and Reigle, Steve, 5,184,996, Cl. 493-84.000.

Gaskill, Garold B.: *See—*
Nepple, Bruce C.; Gaskill, Garold B.; and Park, Danial J., 5,185,604, Cl. 340-825.440.

Gasser, Oswald: *See—*
Koran, Peter; Gasser, Oswald; and Guggenberger, Rainer, 5,185,184, Cl. 427-299.000.

Gates Energy Products, Inc.: *See—*
Rampel, Guy G., 5,185,221, Cl. 429-59.000.

Gates, Louis E., Jr.: *See—*
Mertens, Donald B.; Gates, Louis E., Jr.; Wolfson, Ronald I.; Milroy, William W.; and Smalanskas, Joseph P., 5,185,579, Cl. 324-527.000.

Gautier, Patrick: *See—*
Garcia, Georges; Gautier, Patrick; Nisato, Dino; and Boux, Richard, 5,185,345, Cl. 514-302.000.

Gawa, Tomohiro; Inoue, Mamoru; Hamane, Tokuhito; and Kataoka, Fujio, to Matsushita Electric Industrial Co., Ltd. Wire winding apparatus. 5,184,651, Cl. 140-115.000.

Gawin, Frank H.; Byck, Robert; Alderdice, Marc; and Schwimmer, Jeffrey, to Bristol-Myers Squibb Company. Method for treatment of substance addiction. 5,185,329, Cl. 514-159.000.

Gaylord Container Corporation: *See—*
Wozniacki, Roger M., 5,184,558, Cl. 108-51.300.

GE Fanuc Automation North America, Inc.: *See—*
Hall, James F.; and Faett, John H., III, 5,185,708, Cl. 364-550.000.

GE Plastics Japan, Ltd.: *See—*
Inoue, Kazunari, 5,185,399, Cl. 525-92.000.

GEC-Marconi Limited: *See—*
Whatmore, Roger W.; and Pedder, David J., 5,185,613, Cl. 343-909.000.

Geddes, Paul E.: *See—*
Wiatt, James G.; Swiderski, Kevin J.; Belcher, Samuel L.; and Smith, Roger D., 5,185,163, Cl. 425-534.000.

Geissler, Stephen F.: *See—*
Lam, Chung H.; Lasky, Jerome B.; Hill, Craig M.; Nakos, James S.; Holmes, Steven J.; Geissler, Stephen F.; and Lord, David K., 5,185,294, Cl. 437-193.000.

Gellenbeck, Herbert: *See—*
Schenk, Horst; and Gellenbeck, Herbert, 5,184,788, Cl. 242-66.000.

GemEng, Ltd.: *See—*
Victor, Riley, 5,185,389, Cl. 524-2.000.

Gen-Probe Incorporated: *See—*
Arnold, Lyle J., Jr.; and Nelson, Norman C., 5,185,439, Cl. 536-24.300.

Genencor International, Inc.: *See—*
Caldwell, Robert M.; Estell, David A.; and Graycar, Thomas P., 5,185,258, Cl. 435-220.000.

Genentech, Inc.: *See—*
Goeddel, David V.; Kohr, William J.; Pennica, Diane; and Vehar, Gordon A., 5,185,259, Cl. 435-226.000.

General Electric CGR S.A.: *See—*
Sirvin, Pierre, 5,185,775, Cl. 378-156.000.

General Electric Company: *See—*
Davenport, John M.; Hansler, Richard L.; and Barnes, Lee E., Jr., 5,184,882, Cl. 362-32.000.
Day, James, 5,184,473, Cl. 62-199.000.
Fennern, Larry E., 5,185,120, Cl. 376-219.000.
Finch, William W.; Davenport, John M.; and Hansler, Richard L., 5,184,883, Cl. 362-32.000.
Johansson, Eric B.; and Smith, David G., 5,185,124, Cl. 376-439.000.
Kissinger, Gaylord M., 5,185,475, Cl. 568-748.000.
Ng, Sheau-Bau; and Hingorani, Rajesh, 5,185,819, Cl. 382-56.000.
Stransky, Larry W.; Boehm, Valentine R., Jr.; and Phillips, Michael A., 5,184,461, Cl. 60-226.300.
Vavrek, Robert M.; Schaefer, Daniel J.; Myers, Christopher C.; McFarland, Thomas G.; and Turner, Robert, 5,185,576, Cl. 324-318.000.

General Hospital Corporation, The: *See—*
Kennedy, David N.; Filipek, Pauline A.; and Caviness, Verne S., Jr., 5,185,809, Cl. 382-6.000.

General Motors Corporation: *See—*
Blossfeld, Daniel H.; and Schneider, Eric W., 5,185,773, Cl. 378-53.000.

Genna, Sebastian: *See—*
Smith, Andrew P.; and Genna, Sebastian, 5,185,529, Cl. 250-369.000.

Genral Analysis Corporation: *See—*
Wilks, Paul A., Jr.; and Gaglione, John P., 5,185,640, Cl. 356-300.000.

Gentry, Scott B.: *See—*
Blackburn, Brian K.; and Gentry, Scott B., 5,185,701, Cl. 364-425.000.

Georg Fischer AG: *See—*
Wermelinger, Jorg, 5,184,850, Cl. 285-21.000.

Georgia-Pacific Corporation: *See—*
Wendt, Peter W., 5,185,201, Cl. 428-296.000.

Geoscience Ltd.: *See—*
Poppendiek, Heinz F.; and Lundin, John A., 5,185,122, Cl. 376-272.000.

Gersan Establishment: *See—*
Ditchburn, deceased; Robert W.; Gouch, Martin P.; Cook, Nigel R.; Osgood, Timothy J.; Holloway, Stephen P.; and Bowler, Ian W., 5,184,732, Cl. 209-576.000.

Gersbach, John E.: *See—*
Ferraiolo, Frank D.; Gersbach, John E.; and Novof, Ilya I., 5,185,768, Cl. 375-119.000.

Gewerkschaft Eisenhutte Westfalia GmbH: *See—*
Fiesel, Heinz-Otto, 5,184,873, Cl. 299-43.000.

Gewirtz, Alan M., to Temple University. Suppression of megakaryocytopoiesis employing platelet factor 4 antimaturation factor. 5,185,323, Cl. 514-12.000.

Gharagozloo, Hamid: *See—*
Mohtasham, Mani; and Gharagozloo, Hamid, 5,184,865, Cl. 296-77.100.

Giannuzzi, Anthony G. Double-barreled epoxy injection gun. 5,184,757, Cl. 222-82.000.

Gibson, Walter T.: *See—*
Brawn, Peter R.; and Gibson, Walter T., 5,185,325, Cl. 514-23.000.

Giefer, Heinz-Werner: *See—*
Deininger, Anton; Farber, Karlheinz; Giefer, Heinz-Werner; and Galler-Benker, Egon, 5,184,942, Cl. 417-360.000.

Gignac, William J.: *See—*
Craig, Richard R.; Welch, David F.; Zucker, Erik P.; Seifres, Donald R.; and Gignac, William J., 5,185,754, Cl. 372-45.000.

Gilchrist, Ian R., to Cyber Scientific. Omnidirectional ultrasonic transducer. 5,185,728, Cl. 367-163.000.

Gill, David R.; Duca, Larry J.; Badway, Robert M.; Walsh, Michael W.; and Simonof, John F., to Flexicon Corporation. Apparatus for elongating a bulk bag and a bulk bag unloading station incorporating the same. 5,184,759, Cl. 222-181.000.

Gilliland, Donald: *See—*
Gonda, John K.; Bachman, Benny C.; Boyer, Mike; Bly, Jerry L.; and Gilliland, Donald, 5,185,183, Cl. 427-236.000.

Gillon, Pascale; and Rivat, Pascal, to Institut de Recherches de la Siderurgie Francaise-IRSID; and Pechiney Recherche. Process and device for controlling the continuous-casting thickness of a thin strip of electrically conductive material. 5,184,666, Cl. 164-466.000.

Gilmore, Jeremy, to Lilly Industries Limited. Pharmaceutical compounds. 5,185,361, Cl. 514-415.000.

Gingell, Michael J.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Girguis, Sobhy L. Constant velocity tripod joint with slidably engaged rollers and guide rings. 5,184,977, Cl. 464-111.000.

Giuliani, John F.: *See—*
Barrett, Terence W.; and Giuliani, John F., 5,185,131, Cl. 422-91.000.

Givaudan Corporation: *See—*
Frater, Georg; and Schmidt, Harald, 5,185,472, Cl. 568-591.000.

GKN Automotive, Inc.: *See—*
Fillmore, Francis L.; and Schmidt, Michael J., 5,184,978, Cl. 464-111.000.
Hazebrook, Daniel W.; and Hahn, Steven C., 5,184,979, Cl. 464-141.000.
Krude, Werner, 5,184,494, Cl. 72-254.000.

Glaspie, Don: *See—*
Chen, Gilbert K.; McKelvy, Robert; Bonilla, Jorge A.; Glaspie, Don; and De Bruyn, George, 5,185,106, Cl. 261-112.100.

Glaunsinger, Georg: *See—*
Merkel, Gerd; Glaunsinger, Georg; Vogt, Wilfried; Stadler, Peter; Zander, Claus-Peter; Schmitt, Gernot; Maass, Jurgen; Necker, Thomas; Becker, Willi; and Weber, Walter, 5,184,554, Cl. 101-415.100.

Gleason, Craig W.: *See—*
Ryer, Jack; Gutierrez, Antonio; Puckace, James S.; Watts, Raymond F.; Gleason, Craig W.; Mills, Daniel R.; and Braun, Edmund H., II, 5,185,090, Cl. 252-46.600.

Glitsch, Inc.: *See—*
Chen, Gilbert K.; McKelvy, Robert; Bonilla, Jorge A.; Glaspie, Don; and De Bruyn, George, 5,185,106, Cl. 261-112.100.

Glynn, Kenneth P.: *See—*
Weinstein, Jack; and Glynn, Kenneth P., 5,184,760, Cl. 222-207.000.

GNB Industrial Battery Co.: *See—*
Cole, Bruce A.; and Melichar, Paul J., 5,185,222, Cl. 429-160.000.

Go, Kougyoku: *See—*
Matsuda, Shohei; Haga, Tadatoshi; Go, Kougyoku; and Ikegami, Hiroshi, 5,184,695, Cl. 180-233.000.

Gockler, Heinz, to ANT Nachrichtentechnik GmbH. Improved method and arrangement for processing output signals of a fiber ring interferometer. 5,185,642, Cl. 356-350.000.

Godek, Dennis M.; Murtiashaw, Charles W.; Urban, Frank J.; and Vanderplas, Brian C., to Pfizer Inc. Process and intermediate for certain bis-aza-bicyclic anxiolytic agents. 5,185,449, Cl. 546-272.000.

Godfrey, Jollie D., Jr.; Mueller, Richard H.; Kissick, Thomas P.; and Singh, Janak, to E. R. Squibb & Sons, Inc. Process for the preparation of an antiviral agent. 5,185,463, Cl. 562-506.000.

Goeddel, David V.; Kohr, William J.; Pennica, Diane; and Vehar, Gordon A., to Genentech, Inc. Truncated human tissue plasminogen activator. 5,185,259, Cl. 435-226.000.

Goedecke Aktiengesellschaft: *See—*
Aranda, Julian; Hartenstein, Johannes; Reck, Reinhard; Schachtele, Christopher; Rudolph, Claus; Osswald, Hartmut; and Weinheimer, Gunter, 5,185,352, Cl. 514-348.000.

Goedecke, Wolf-Dieter; and Cohanciuc, Victor, to Mannesmann Aktiegesellschaft. Valve battery for gaseous fluids. 5,184,647, Cl. 137-884.000.

Goedken, James F.: *See—*
Goedken, Terrance J.; and Goedken, James F., 5,185,566, Cl. 320-48.000.

Goedken, Terrance J.; and Goedken, James F., to Motorola, Inc. Method and apparatus for detecting the state of charge of a battery. 5,185,566, Cl. 320-48.000.

Goetz, George W., to TRW Vehicle Safety Systems Inc. Inflator assembly. 5,184,846, Cl. 280-736.000.

Goetz, Norbert: *See—*
Vogelbacher, Uwe J.; Eicken, Karl; Rheinheimer, Joachim; Goetz, Norbert; Harreus, Albrecht; Paul, Gerhard; Westphalen, Karl-Otto; and Wuerzer, Bruno, 5,185,027, Cl. 504-219.000.

Gold Star Co., Ltd.: *See—*
Lee, Chang J., 5,185,670, Cl. 358-227.000.

Goldstein, Jonathan: *See—*
Brokman, Avner; and Goldstein, Jonathan, 5,185,218, Cl. 429-27.000.

Goldwitz, David. Golf glove construction. 5,184,353, Cl. 2-161.00A.

Golias, Tipton L., to Helena Laboratories Corporation. Immunofixation electrophoresis control system. 5,185,066, Cl. 204-182.800.

Golicz, Roman M., to Pitney Bowes Inc. Methods and apparatus for cutting sheets from a web. 5,184,533, Cl. 83-24.000.

Goltsos, William C.: *See—*
Fan, Tso Y.; Sanchez-Rubio, Antonio; Walpole, James N.; Williamson, Richard C.; Meingailis, Ivars; Leger, James R.; and Goltsos, William C., 5,185,758, Cl. 372-72.000.

Gomez, Alain: *See—*
Galy, Michel G. H.; and Gomez, Alain, 5,184,450, Cl. 53-440.000.

Gomoll, Gunter: *See—*
Buschmann, Ulrich; Gomoll, Gunter; Hauslaib, Wolfgang; and Rohrer, Kurt, 5,184,905, Cl. 400-616.100.

Gonda, John K.; Bachman, Benny C.; Boyer, Mike; Bly, Jerry L.; and Gilliland, Donald, to Westinghouse Electric Corp. Apparatus and method for blasting and metal spraying a cylindrical surface. 5,185,183, Cl. 427-236.000.

Gonnocci, Ralph J.: *See—*
Cross, Kenneth; and Gonnocci, Ralph J., 5,184,833, Cl. 279-106.000.

Gonzalez, Marta. Child's playhouse with bed on top. 5,184,360, Cl. 5-2.100.

Gonzalez, Romulo, to Shell Offshore Inc. Method for offshore drilling utilizing a two-riser system. 5,184,686, Cl. 175-5.000.

Good, Michael D.; and Munson, James B., to Digital Equipment Corporation. Torque motor as a tactile feedback device in a computer system. 5,185,561, Cl. 318-432.000.

Goodman, Thomas C.: *See—*
Ullman, Edwin F.; Goodman, Thomas C.; and Stull, Paul D., 5,185,243, Cl. 435-6.000.

Goor Associates, Inc.: *See—*
Goor, Dan, 5,184,844, Cl. 280-733.000.

Goor, Dan, to Goor Associates, Inc. Integral inflatable occupant restraint system. 5,184,844, Cl. 280-733.000.

Gordon, Chester D. Tamper resistant, disposable toothbrush and flossing device. 5,184,719, Cl. 206-209.100.

Gordon, Kenneth A., to Imperial Chemical Industries PLC. Blasting accessory. 5,185,528, Cl. 250-341.000.

Goto, Haruyuki; and Kubota, Katsuhiko, to Kabushiki Kaisha Toshiba. Method for dicing semiconductor substrates using a laser scribing and dual etch process. 5,185,295, Cl. 437-226.000.

Goto, Yoshiko: *See—*
Ueno, Fumio; Kasori, Mitsuo; Goto, Yoshiko; and Horiguchi, Akihiro, 5,184,399, Cl. 29-846.000.

Gotz, Dieter: *See—*
Stahlecker, Fritz; and Gotz, Dieter, 5,184,452, Cl. 57-105.000.

Gouch, Martin P.: *See—*
Ditchburn, deceased; Robert W.; Gouch, Martin P.; Cook, Nigel R.; Osgood, Timothy J.; Holloway, Stephen P.; and Bowler, Ian W., 5,184,732, Cl. 209-576.000.

Goukura, Akira: *See—*
Ozaki, Hidetoshi; and Goukura, Akira, 5,185,657, Cl. 358-28.000.

Gozdenovich, David: *See—*
Gozdenovich, Martin; Gozdenovich, Martin A.; Gozdenovich, David; Zimmermann, Guy; and Pierson, Glenn, 5,184,897, Cl. 383-75.000.

Gozdenovich, Martin; Gozdenovich, Martin A.; Gozdenovich, David; Zimmermann, Guy; and Pierson, Glenn. Gift bag. 5,184,897, Cl. 383-75.000.

Gozdenovich, Martin A.: *See—*
Gozdenovich, Martin; Gozdenovich, Martin A.; Gozdenovich, David; Zimmermann, Guy; and Pierson, Glenn, 5,184,897, Cl. 383-75.000.

Grabenkort, Richard W.: *See—*
Middaugh, James F.; Bryant, Peter L.; Grabenkort, Richard W.; Oswald, Timothy J.; and Tripp, Edward S., 5,185,007, Cl. 604-320.000.

Graham, Gordon A.; Pasznicki, William V.; Connell, William F.; and Pratley, Kenneth V. Self-propelled apparatus. 5,184,676, Cl. 166-66.400.

Graham, Martin C.: *See—*
Larson, Steven M.; Finn, Ronald; Carrasquillo, Jorge A.; Reynolds, James C.; Neumann, Ronald D.; Graham, Martin C.; and Pentlow, Keith S., 5,185,142, Cl. 424-1.100.

Gramshammer, Cornelia: *See—*
Funk, Enno; Kreuzer, Franz-Heinrich; Gramshammer, Cornelia; and Lottner, Willibald, 5,185,419, Cl. 528-25.000.

Granitech Corporation, The: *See—*
Banus, Christopher T., 5,185,192, Cl. 428-49.000.

Grauer, Peter, to Wacker Chemie GmbH. Process for the preparation of an elastomer-containing vinyl chloride graft copolymer. 5,185,406, Cl. 525-262.000.

Grave, Klaus: *See—*
Erschens, Willie; Mencher, Franz J.; Brosius, Peter; Grave, Klaus; Zender, Bernhard; Schardt, Peter; Hessek, Gerd; and Alten, Ferdinand, 5,184,806, Cl. 254-126.000.

Graycar, Thomas P.: *See—*
Caldwell, Robert M.; Estell, David A.; and Graycar, Thomas P., 5,185,258, Cl. 435-220.000.

Grecksch, Hans: *See—*
Brockmanns, Karl-Josef; Derichs, Josef; Wey, Edmund; Grecksch, Hans; Tholen, Leo; and Lassmann, Manfred, 5,184,786, Cl. 242-45.000.

Green, James H.; and Green, John F., Jr. Bowstring release safety mechanism. 5,184,596, Cl. 124-35.200.

VOL
1147
ISS
2
FE
9
1993
UMI

Green, John F., Jr.: *See—*
Green, James H.; and Green, John F., Jr., 5,184,596, Cl. 124-35.200.

Greenleaf, James F.: *See—*
Ehman, Richard L.; and Greenleaf, James F., 5,185,574, Cl. 324-309.000.

Greenreader Inc.: *See—*
Kanelous, Kanelos J., 5,184,817, Cl. 273-32.00H.

Gregg, Gary H.: *See—*
Brooks, Charles J.; and Gregg, Gary H., 5,185,881, Cl. 395-575.000.

Gregg, Thomas A.: *See—*
Casper, Daniel F.; Gregg, Thomas A.; Flanagan, John R.; Kalos, Matthew J.; and Liencres, Bjorn O., 5,185,862, Cl. 395-250.000.

Grell, Karl-Ludwig, to INA Walzlager Schaeffler KG. Light metal tappet with wear-resistant armouring made of a steel with an austenitic matrix. 5,184,583, Cl. 123-90.510.

Gremetz, Sylvain M. F.: *See—*
Vial, Jacques J.; Laroulandie, Pierre-Jean M.; Henry, David; Dannoux, Thierry L. A.; and Gremetz, Sylvain M. F., 5,185,835, Cl. 385-49.000.

Greve, Peter: *See—*
Vry, Uwe; Dorsel, Andreas; Schierle, Berthold; Blumentritt, Martin; and Greve, Peter, 5,185,643, Cl. 356-358.000.

Griesbaum, Rainer: *See—*
Herrenknecht, Martin; Suhm, Werner; and Griesbaum, Rainer, 5,184,918, Cl. 405-138.000.

Grimes, Gary J.; and Larson, Allen L., to AT&T Bell Laboratories. Optical switch incorporating molded optical waveguide elements. 5,185,824, Cl. 385-19.000.

Grimes, Michael, to Pall Corporation. Cylindrical filters and their manufacture. 5,185,190, Cl. 428-36.910.

Groh, Werner: *See—*
Coutandin, Jochen; Theis, Jurgen; Groh, Werner; and Brockmeyer, Andreas, 5,185,832, Cl. 385-43.000.

Gros, Pierre: *See—*
Jansen, Franz; and Gros, Pierre, 5,185,434, Cl. 530-391.700.

Grosclaude, Gary V., to Dymax Corporation. Method for assembly of laminate article. 5,185,196, Cl. 428-194.000.

Gross, Joseph; and Zucker, Shlomo, to Product Development (Z.G.S.) Ltd. Dental flossing device. 5,184,632, Cl. 132-326.000.

Grosso, Paul V.; Wing, Feagin A., Jr.; Morgan, Michael J.; Stegmeier, Renate C.; Day, Roger W.; and Burt, Willard F., to Olin Corporation. Electrostatic method for multicolor imaging from a single toner bath comprising double-encapsulated toner particles. 5,185,226, Cl. 430-47.000.

Grous, Philip P.; and Mohrbacher, Richard J., to McNeilab, Inc. Diphenylamine cardiovascular agents, compositions and use. 5,185,362, Cl. 514-428.000.

Gruender, Eugene H., Jr.: *See—*
Snyder, Janet M.; and Gruender, Eugene H., Jr., 5,185,539, Cl. 307-465.000.

Gruidel, James A.; Haase, Reinhold A.; and Johnson, Thomas G., to Dutton-Lainson Company. Bathing tub construction with removable side wall. 5,184,358, Cl. 4-555.000.

Grumman Aerospace Corporation: *See—*
Brandstetter, Robert W., 5,185,815, Cl. 382-31.000.
Reitman, William; and Kennedy, Jeanette, 5,185,526, Cl. 250-332.000.

Grundhoff, Karl-Josef: *See—*
Peters, Manfred; Grundhoff, Karl-Josef; Schurmann, Hartmut; and Lee, Yong-Tai, 5,185,045, Cl. 148-671.000.

Grunow, David G.: *See—*
Dresen, William L.; Niemi, Karl A.; Emery, Phillip L.; and Grunow, David G., 5,184,866, Cl. 296-95.100.

Gruppo Lepetit S.p.A.: *See—*
Trani, Aldo; Seneci, Pierfausto; Ferrari, Pietro; and Ciabatti, Romeo, 5,185,320, Cl. 514-8.000.

Grutzmann, Rudi: *See—*
Muller, Hartwig; Bischoff, Erwin; Fugmann, Burkhard; Weber, Karlheinz; Frobel, Klaus; Rosen, Bruno; Grutzmann, Rudi; Karmann, Guenther; and Kohlsdorfer, Christian, 5,185,326, Cl. 514-23.000.

Grzeszykowski, Miroslaw, to Excel Tech Ltd. Therapeutic ultrasound generator with radiation dose control. 5,184,605, Cl. 128-24.0AA.

Grzywana, Stanley E., to Mr. Coffee, inc. Microwave iced tea maker. 5,185,505, Cl. 219-10.55F.

GTE Laboratories Incorporated: *See—*
Olshansky, Robert; and Koai, Kwang-Tsai, 5,185,756, Cl. 372-50.000.

GTE Products Corporation: *See—*
Kasenga, Anthony F.; and Dang, Tuan A., 5,185,180, Cl. 427-67.000.
Lee, Sung M., 5,185,555, Cl. 313-632.000.
Miller, Michael J.; Christini, James N.; and Husted, Eric F., 5,185,030, Cl. 75-359.000.
Scheftic, Judy L.; Mendenhall, Robert G.; and Chereslowsky, Michael J., 5,185,133, Cl. 423-53.000.

Guedry, Harry R. Speedy hitch kit. 5,184,839, Cl. 280-475.000.

Guerif, Gerard, to Eurodia S.A. Method of manufacturing a separator frame for a stack in an exchanger device. 5,185,048, Cl. 156-256.000.

Guggenberger, Rainer: *See—*
Koran, Peter; Gasser, Oswald; and Guggenberger, Rainer, 5,185,184, Cl. 427-299.000.

Guilbault, Pierre; and Pilon, Pierre. Add on heat pump swimming pool heater control. 5,184,472, Cl. 62-160.000.

Gulec, Bilge: *See—*
Ruf, Klaus; Gulec, Bilge; Reisinger, Michael; and Surber, Werner, 5,185,435, Cl. 534-591.000.

Gullett, Brian K., to United States of America, U.S. Environmental Protection Agency. Reduction of chlorinated organics in the incineration of wastes. 5,185,134, Cl. 423-240.00R.

Gurubatham, Vincent P.: *See—*
Tromblee, Jon D.; Gurubatham, Vincent P.; and Peterson, Edward C., 5,184,635, Cl. 134-111.000.

Gustafson, Bruce L., to Eastman Kodak Company. Low pressure catalytic hydrogenation of carbonyl-containing compounds and supported catalysts therefor. 5,185,476, Cl. 568-831.000.

Gustafson, William K.: *See—*
Pillai, Krishnan J.; Connelly, Lawrence J.; and Gustafson, William K., 5,185,135, Cl. 423-320.000.

Gustavsen, Willard. Roller platform for installing planar flooring. 5,184,446, Cl. 52-746.000.

Gutierrez, Antonio: *See—*
Ryer, Jack; Gutierrez, Antonio; Puckace, James S.; Watts, Raymond F.; Gleason, Craig W.; Mills, Daniel R.; and Braun, Edmund H., II, 5,185,090, Cl. 252-46.600.

Guttag, Karl M.; Asal, Michael; Simpson, Richard; Preston, Thomas; and Sharkey, John, to Texas Instruments Incorporated. Graphics processor, a graphics computer system, and a process of masking selected bits. 5,185,859, Cl. 395-164.000.

Haaga, Hermann, to Ing. Haaga Kunststofftechnik GmbH. Sweeping machine having a housing which comprises two separable housing parts. 5,184,367, Cl. 15-49.100.

Haase, Reinhold A.: *See—*
Gruidel, James A.; Haase, Reinhold A.; and Johnson, Thomas G., 5,184,358, Cl. 4-555.000.

Habig, Thomas F.; and Beninghaus, Wayne D., to Cincinnati Milacron Inc. Extrusion blow-molding machine control. 5,185,109, Cl. 264-40.500.

Hackett, Andrew, to Deutsche Thomson-Brandt GmbH. Apparatus for processing predistorted first video signal and data reduced second video signal. 5,185,663, Cl. 358-140.000.

Hafner, Hans W., to Pfister GmbH. System and method for continuous gravimetric metering, pneumatic conveying and/or mixing of pourable materials. 5,184,892, Cl. 366-10.000.

Haga, Tadatoshi: *See—*
Matsuda, Shohei; Haga, Tadatoshi; Go, Kougyoku; and Ikegami, Hiroshi, 5,184,695, Cl. 180-233.000.

Hahn, Matthew: *See—*
Hattenbach, Timothy; and Hahn, Matthew, 5,184,415, Cl. 43-58.000.

Hahn, Steven C.: *See—*
Hazebrook, Daniel W.; and Hahn, Steven C., 5,184,979, Cl. 464-141.000.

Haig, Stephen: *See—*
Li, Beili; Haig, Stephen; and Yamanis, Jean, 5,185,301, Cl. 501-117.000.

Haikala, Heimo O.; Honkanen, Erkki J.; Lonnberg, Kari K.; Nore, Pentti T.; Pystynen, Jarmo J.; Luiro, Anne M.; and Pippuri, Aino K., to Orion-yhtyma Oy. Thiadiazines and pharmaceutical compositions thereof as well as method of use. 5,185,332, Cl. 514-222.500.

Hakansson, Ulf; and Falth, Lars. Method for producing a cellular body. 5,185,307, Cl. 502-68.000.

Hakogi, Hironao, to Fujitsu limited. Optical waveguide type wavelength filter. 5,185,842, Cl. 385-129.000.

Haldipur, Gaurang B.; and Dilmore, William J., to Westinghouse Electric Corp. Filtering apparatus. 5,185,019, Cl. 55-378.000.

Hale, Ernest E., III. Well pipe top cap. 5,184,608, Cl. 138-89.000.

Hale, Michael O., to Amoco Corporation. Automated single longitudinal mode locking system. 5,185,751, Cl. 372-18.000.

Hall, Carroll L., Jr. Golf swing training device. 5,184,826, Cl. 273-186.200.

Hall, James F.; and Faett, John H., III, to GE Fanuc Automation North America, Inc. Method for collecting data by a manufacturing process manager from a plurality of programmable logic controllers. 5,185,708, Cl. 364-550.000.

Hall, Robert S.; Urbish, Glenn F.; and Mullen, William B., III, to Motorola, Inc. Solder interconnection verification. 5,184,768, Cl. 228-104.000.

Halliburton Company: *See—*
Totten, Patty L.; Lindsey, Donald W.; and King, Bobby J., 5,184,680, Cl. 166-293.000.

Halliburton Logging Services, Inc.: *See—*
Pechkov, Andrey A.; Kouznetsov, Oleg L.; and Drjaguin, Veniamin V., 5,184,678, Cl. 166-249.000.

Hallin, Mark P. Lake dock pole accessory system. 5,184,562, Cl. 114-219.000.

Halupke, Eugene: *See—*
Aberson, James A.; Halupke, Eugene; and Vicory, William A., 5,185,843, Cl. 385-134.000.

Hamada, Akira; Obuchi, Yasuji; and Akiyama, Hirokatsu, to Sharp Kabushiki Kaisha. Portable printer for printing on a flat sheet. 5,184,907, Cl. 400-635.000.

Hamada, Hiromi; Hirano, Kazuya; and Lee, Young S., to NTT Data Communications Systems Corporation. IC card system having a function of authenticating destroyed data. 5,185,798, Cl. 380-23.000.

Hamaguchi, Hisashi: *See—*
Makiuchi, Masao; and Hamaguchi, Hisashi, 5,185,272, Cl. 437-5.000.

Hamaguchi, Kunikazu; Kumazawa, Kazuhiko; and Asami, Seiichi, to NGK Insulators, Ltd. Method of producing porous ceramic filter,

using cordierite composition including talc and silica powders. 5,185,110, Cl. 264-44.000.

Hamaguchi, Tetsuo; Ueda, Tsunehisa; and Natsuume, Tadao, to Nippon Zeon Co., Ltd. Hydraulic composition. 5,185,039, Cl. 106-728.000.

Hamane, Tokuhito: *See—*
Gawa, Tomohiro; Inoue, Mamoru; Hamane, Tokuhito; and Kataoka, Fujio, 5,184,651, Cl. 140-115.000.

Hamilton, James C.: *See—*
Steele, Charles E.; Anderson, Mark R.; and Hamilton, James C., 5,184,893, Cl. 366-209.000.

Hamilton, Kenneth B. Contact alarm apparatus. 5,185,592, Cl. 340-436.000.

Hamilton Ortho Inc.: *See—*
Hanson, G. Herbert, 5,184,954, Cl. 433-18.000.

Hamilton, Paul R. Pivoting shoe construction. 5,184,410, Cl. 36-105.000.

Hamma, Armin: *See—*
Combrowski, Zbigniew; and Hamma, Armin, 5,184,431, Cl. 51-219.00R.

Hammarberg, Lars E.; and Eriksson, Tomas A., to Telefonaktiebolaget L M Ericsson. Method and arrangement for regenerating timing information from a pulse train of the NRZ-type. 5,185,767, Cl. 375-110.000.

Hammond, Edward P.; Kinne, Daniel J.; and Roseberry, George L., to Procter & Gamble Company, The. Self-expanding flexible pouch including improved extensible stay to maximize opening. 5,184,896, Cl. 385-33.000.

Hammond, James A., Jr.; and Marks, David N., to Du Pont de Nemours, E. I., and Company. Copolyadipamide containing pentamethyleneadipamide units and products prepared therefrom. 5,185,428, Cl. 528-340.000.

Hampton, Edward J.: *See—*
Porowski, Jan S.; Hampton, Edward J.; Badlani, Manohar L.; and O'Donnell, William J., 5,185,123, Cl. 376-277.000.

Hamstra, James R.; Perloff, Ronald S.; and Yeung, Louise Y., to National Semiconductor Corporation. Byte-wide elasticity buffer. 5,185,863, Cl. 395-250.000.

Han, Chien-Chung; and Elsenbaumer, Ronald L., to Allied-Signal Inc. Conductive polymers formed from conjugated backbone polymers doped with non-oxidizing protonic acids. 5,185,100, Cl. 252-500.000.

Hanayama, Kenji: *See—*
Miyata, Junji; Kanetake, Satoshi; Morimoto, Yasufumi; and Hanayama, Kenji, 5,185,240, Cl. 430-596.000.

Hancock, Dane R. Apparatus for bulkhead buoyancy and pipe differential pressure. 5,184,921, Cl. 405-171.000.

Hancock, Stephen H., to Northern Telecom Limited. Device for measuring change in profile height of articles. 5,184,503, Cl. 73-37.500.

Handa, Hirotoshi: *See—*
Yamasaki, Tadashige; and Handa, Hirotoshi, 5,185,060, Cl. 159-13.100.

Handley, David J.; and Costigan, Patrick G. Modular bar system. 5,184,886, Cl. 312-107.000.

Hani, Rahim; Waldron, Craig; and Farmer, Douglas A., Jr., to Olin Corporation. Gel-free paint containing copper pyrithione or pyrithione disulfide plus cuprous oxide. 5,185,033, Cl. 106-18.330.

Hanlon, Daniel; Sandhaus, Stuart J.; and Hopkins, James L., to S.A.R.G. Research Associates, Ltd. Magazine for automatic feed blind rivet setting tool. 5,184,497, Cl. 72-391.600.

Hannen, Reiner W., to Develog, Reiner Hannen & Cie. Method of and apparatus for the wrapping of palletized units. 5,184,449, Cl. 53-399.000.

Hannerstig, Christer, to AB A. Svensson & Co. Assembly for draping curtains. 5,184,661, Cl. 160-348.000.

Hannigan, Thomas L.: *See—*
Ramirez, Fernando J.; Noschese, Rocco J.; Holmes, Barry A.; and Hannigan, Thomas L., 5,184,961, Cl. 439-59.000.

Hanon, David O.; and Walker, Rickey R., to Plantronics, Inc. Universal telephone handset interface. 5,185,789, Cl. 379-395.000.

Hansen, James E.; Beihoff, Bruce C.; Tennies, Charles J.; and Richards, Francis S., Jr., to Eaton Corporation. Direction sensing arc detection. 5,185,686, Cl. 361-45.000.

Hansen, Thomas N. Weight-controlled particulate matter feed system. 5,184,754, Cl. 222-55.000.

Hansler, Richard L.: *See—*
Davenport, John M.; Hansler, Richard L.; and Barnes, Lee E., Jr., 5,184,882, Cl. 362-32.000.
Finch, William W.; Davenport, John M.; and Hansler, Richard L., 5,184,883, Cl. 362-32.000.

Hanson, G. Herbert, to Hamilton Ortho Inc. Elastomeric orthodontic traction ribbon springs. 5,184,954, Cl. 433-18.000.

Hanssen Pharmaceutica: *See—*
Sanz, Gerard C.; Venet, Marc G.; Freyne, Eddy J. E.; and Raeymaekers, Alfons H. M., 5,185,346, Cl. 514-312.000.

Hara, Kozo; Sanada, Tsuyoshi; Tanaka, Yoshiaki; and Nihashi, Kiyotaka, to Tokyo Electric Co., Ltd. Paper feeder. 5,184,904, Cl. 400-320.000.

Harada, Hiroyuki: *See—*
Matsuura, Yasumasa; Harada, Hiroyuki; Kajitani, Tetsuji; and Araki, Toshihiko, 5,185,563, Cl. 318-602.000.

Harada, Tsutomu; and Amari, Takashi, to Canon Kabushiki Kaisha. Recording apparatus having a single drive source for conveying recording means and feeding recording medium. 5,184,902, Cl. 400-185.000.

Hardy, Stephen N., to American Greetings Corporation. Display system having suspended channels and method of assembly. 5,184,737, Cl. 211-55.000.

Harelstad, Roberta E.; Francis, Cecil V.; and White, Kenneth M., to Minnesota Mining and Manufacturing Company. Polymeric charge transfer complexes for nonlinear optical applications. 5,185,102, Cl. 252-582.000.

Harimoto, Kazuyoshi, to NTN Corporation. Needle roller bearing having two-piece roller retainer. 5,184,899, Cl. 384-560.000.

Harkreader, Gordon G.: *See—*
Bartley, William J.; Jobson, Simon; Harkreader, Gordon G.; Kitson, Melanie; and Lemanski, Michael F., 5,185,308, Cl. 502-170.000.

Harmsen, Siegfried, to Papst-Motoren GmbH & Co., KG. Axial fan with a cylindrical outer housing. 5,184,938, Cl. 416-223.00R.

Harpell, Gary A.; Prevorsek, Dusan C.; and Cunningham, David V., to Allied-Signal Inc. Constructions having improved penetration resistance. 5,185,195, Cl. 428-102.000.

Harreus, Albrecht: *See—*
Vogelbacher, Uwe J.; Eicken, Karl; Rheinheimer, Joachim; Goetz, Norbert; Harreus, Albrecht; Paul, Gerhard; Westphalen, Karl-Otto; and Wuerzer, Bruno, 5,185,027, Cl. 504-219.000.

Harris, Bonny A.: *See—*
Arter, Thomas C.; Harris, Bonny A.; and Schaeffer, James R., 5,185,249, Cl. 435-25.000.

Harris Corporation: *See—*
VanVonno, Nicolaas W.; and Matlock, Dyer A., 5,185,292, Cl. 437-180.000.

Harris, David T.: *See—*
Evans, Donald L.; and Harris, David T., 5,185,430, Cl. 530-350.000.

Harris, Frank W.; and Owens, Alan R., to Staodyn, Inc. Output pulse compensation for therapeutic-type electronic devices. 5,184,617, Cl. 128-423.00R.

Harris, Harold L., to Harris International Sales Corporation. Noise and emmission control apparatus. 5,184,464, Cl. 60-299.000.

Harris International Sales Corporation: *See—*
Harris, Harold L., 5,184,464, Cl. 60-299.000.

Hart, Dennis L., to U.S. Divers Co., Inc. Divers first stage adjustable regulator. 5,184,609, Cl. 128-205.240.

Hart, Terance W.: *See—*
Cook, David C.; Hart, Terance W.; McLay, Iain M.; Palfreyman, Malcolm N.; and Walsh, Roger J. A., 5,185,375, Cl. 514-599.000.

Hartenstein, Johannes: *See—*
Aranda, Julian; Hartenstein, Johannes; Reck, Reinhard; Schachtele, Christopher; Rudolph, Claus; Osswald, Hartmut; and Weinheimer, Gunter, 5,185,352, Cl. 514-348.000.

Harth, Hubert: *See—*
Carduck, Franz-Josef; Harth, Hubert; and Liebs, Harald, 5,185,457, Cl. 554-71.000.

Harth, Ralf: *See—*
Schonlau, Juergen; Birkenbach, Alfred; and Harth, Ralf, 5,184,468, Cl. 60-547.100.

Hartman, Frederick A.; Brown, Donald R.; Rusche, John R.; and Taylor, Lucille F., to Procter & Gamble Company, The. Granular fabric softener compositions which form aqueous emulsion concentrates. 5,185,088, Cl. 252-86.000.

Hartman, Richard L., to Output Technology Corp. Electrophotographic printer with media motion motor control. 5,185,627, Cl. 355-204.000.

Hartsock, David L.: *See—*
Farrar, Ralph C., Jr.; Hartsock, David L.; and Mueller, Francis X., 5,185,400, Cl. 525-98.000.

Hartson, Ted: *See—*
Marland, Dale W.; and Hartson, Ted, 5,185,793, Cl. 380-5.000.

Hasaka, Takashi, to Seiko Instruments, Inc. Method of producing polycrystalline silicon resistor. 5,185,285, Cl. 437-60.000.

Hasegawa, Kiyoharu: *See—*
Nakatsuka, Masakatsu; Otsuji, Atsuo; Hasegawa, Kiyoharu; Kikkawa, Kazuyoshi; and Yamaguchi, Akihiro, 5,185,453, Cl. 549-226.000.

Hasegawa, Kiyoshi, to Kabushiki Kaisha Toshiba. X-ray radiographing system with spot-film device. 5,185,777, Cl. 378-176.000.

Hasegawa, Yoshikazu: *See—*
Yoshimatsu, Kentaro; Ohya, Yukio; Shikata, Yasushi; Tanaka, Isao; Hasegawa, Yoshikazu; Seto, Toshio; and Osawa, Toshio, 5,185,431, Cl. 530-351.000.

Hashimoto, Atsuko; Iwata, Toshio; and Fukui, Wataru, to Mitsubishi Denki Kabushiki Kaisha. Engine timing control apparatus. 5,184,590, Cl. 123-414.000.

Hashishita, Ryuichi, to NEC Corporation. Semiconductor integrated circuit device having load means. 5,185,723, Cl. 365-226.000.

Hastings, Jerome K.: *See—*
Tennies, Charles J.; Beihoff, Bruce C.; Hastings, Jerome K.; Clarey, Robert J.; and O'Neil, Walter K., 5,185,685, Cl. 361-45.000.

Hatamura, Kouichi: *See—*
Hirose, Ichiro; Choshi, Masahiro; and Hatamura, Kouichi, 5,184,401, Cl. 29-888.010.

Hatanaka, Keiji: *See—*
Mishima, Hidetoshi; and Hatanaka, Keiji, 5,185,679, Cl. 360-30.000.

Hataoka, Nobuo: *See—*
Aritsuka, Toshiyuki; Amano, Akio; Hataoka, Nobuo; and Ichikawa, Akira, 5,185,848, Cl. 395-2.000.

Hatayama, Tamotsu: *See—*
Shirouzu, Shunji; Hatayama, Tamotsu; and Inoue, Shouichi, 5,185,772, Cl. 378-29.000.

Hatchman, Robert M. Multi-compartmented wallet and method of construction. 5,184,657, Cl. 150-132.000.

Hattenbach, Timothy; and Hahn, Matthew. Unidirectional travel regulator for rodents and other small animals. 5,184,415, Cl. 43-58.000.

VOL 1147 ISS 2 FE 9 1993 UMI

Hattori, Masayuki, to Sony Corporation. Apparatus for dividing elements of a finite galois field and decoding error correction codes. 5,185,711, Cl. 364-746.100.

Hatzikos, George H.: *See*—
Degnan, Thomas F.; McCullen, Sharon B.; Schmitt, Kirk D.; and Hatzikos, George H., 5,185,310, Cl. 502-214.000.

Haug, Michael: *See*—
Drewes, Mark W.; Haug, Michael; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,185,026, Cl. 504-225.000.

Hauslaib, Wolfgang: *See*—
Buschmann, Ulrich; Gomoll, Gunter; Hauslaib, Wolfgang; and Rohrer, Kurt, 5,184,905, Cl. 400-616.100.

Havens, Jeffrey L.: *See*—
Havens, Petrina L.; and Havens, Jeffrey L., 5,184,745, Cl. 220-23.830.

Havens, Petrina L.; and Havens, Jeffrey L., to Havens, Petrina L. Storage container set. 5,184,745, Cl. 220-23.830.

Hawari, Jalal A.; and Samson, Rejean, to Canada, Her Majesty the Queen in right of, as represented by the Minister of Natural Resources. Process for the reductive dehalogenation of polyhaloaromatics with sodium or calcium in a lower alcohol. 5,185,488, Cl. 585-469.000.

Hawkins, Michael J. Removable side molding to protect the side of a vehicle. 5,184,857, Cl. 293-128.000.

Hawley, Ronald C., to Composite Products, Inc. Process for compounding thermoplastic resin and fibers. 5,185,117, Cl. 264-211.120.

Haxell, John P. N.: *See*—
Brown, Edward A.; Haxell, John P. N.; and Cockett, Michael A., 5,185,035, Cl. 106-31.00R.

Hayakawa Rubber Co., Ltd.: *See*—
Nakatsukasa, Sadayoshi; Fujii, Toshihiro; Tanaka, Ban; and Yamada, Kosaku, 5,185,234, Cl. 430-284.000.

Hayase, Yoshio; Kataoka, Takahiro; Takenaka, Hideyuki; Ichinari, Mitsuhiro; Masuko, Michio; Takahashi, Toshio; and Tanimoto, Norihiko, to Shionogi Seiyaku Kabushiki Kaisha. Alkoxyiminoacetamide derivatives and their use as fungicides. 5,185,342, Cl. 514-274.000.

Hayashi, Shigenori: *See*—
Yamazaki, Shunpei; Hayashi, Shigenori; Ishida, Noriya; Sasaki, Mari; Takeyama, Junichi; Itou, Kenji; Kojima, Masahiro; and Kadono, Masaya, 5,185,179, Cl. 427-601.000.

Hayashi, Shinsuke: *See*—
Saito, Hajime; Nagashima, Hideo; Matsushita, Junichi; and Hayashi, Shinsuke, 5,185,112, Cl. 264-63.000.

Hayashi, Tetsuji, to Amada Mfg. America, Inc.; and Amada Company, Ltd. Turret punch press. 5,184,498, Cl. 72-442.000.

Hayashi, Toshio: *See*—
Ochiai, Hirokazu; Watanabe, Yasuo; Murotani, Yoshiharu; Fukuda, Hirohiko; Yoshino, Osamu; Minami, Shinzaburo; Hayashi, Toshio; and Momonoi, Kaishu, 5,185,330, Cl. 514-142.000.

Hayashi, Yuji; Ito, Masahiro; Yoshida, Hiroyoshi; and Shibata, Hiroyoshi, to Yuasa Battery Co., Ltd.; and Kobe Cast Iron Works, Ltd. Mold for lead casting. 5,184,664, Cl. 164-271.000.

Hayes, Stanley B., Jr., to Alpha Omega Instruments Corp. Infrared matrix sensor with signal multiplexing. 5,185,519, Cl. 250-208.100.

Hays, Bill J. Clutch design and manufacture. 5,184,704, Cl. 192-70.140.

Hazebrook, Daniel W.; and Hahn, Steven C., to GKN Automotive, Inc. Quick disconnect constant velocity universal joint. 5,184,979, Cl. 464-141.000.

Healey, James M. Cat scratching housing and bed apparatus. 5,184,568, Cl. 119-19.000.

Healey, Peter, to British Telecommunications public limited company. Optical fiber communications network including plural amplifiers with single pump source. 5,185,814, Cl. 385-24.000.

Heath, Chester A.: *See*—
Bonevento, Francis M.; Heath, Chester A.; Mandese, Ernest N.; and Mendelson, Richard N., 5,185,864, Cl. 395-275.000.

Hedman, Erik; and Hedman, Rolf, to Torell AB. Plate heat exchanger and method for its manufacture. 5,184,673, Cl. 165-153.000.

Hedman, Rolf: *See*—
Hedman, Erik; and Hedman, Rolf, 5,184,673, Cl. 165-153.000.

Heestand, Richard L.: *See*—
Lauf, Robert J.; and Heestand, Richard L., 5,185,031, Cl. 75-375.000.

Heidelberger Druckmaschinen Ag: *See*—
Beck, Hans-Jurgen; and Nowara, Gabriele, 5,184,550, Cl. 101-142.000.
Heidt, Heinrich, 5,184,793, Cl. 248-56.000.
Merkel, Gerd; Glaunsinger, Georg; Vogt, Wilfried; Stadler, Peter; Zander, Claus-Peter; Schmitt, Gernot; Maass, Jurgen; Necker, Thomas; Becker, Willi; and Weber, Walter, 5,184,554, Cl. 101-415.100.

Heidt, Heinrich, to Heidelberger Druckmaschinen AG. Cable feed-through device. 5,184,793, Cl. 248-56.000.

Heimer, Ralph, to Thomas Jefferson University. Immumoassays and kit for detection of proteoglycans. 5,185,245, Cl. 435-7.100.

Heimgartner, Urs: *See*—
Kozulic, Branko; and Heimgartner, Urs, 5,185,466, Cl. 564-208.000.

Heinrich-Hertz-Institut fur Nachrichtentechnik Berlin GmbH: *See*—
Sartorius, Bernd; Reboux, Alain; and Huet, Bertrand, 5,185,645, Cl. 356-435.000.

Held, Kurt. Method for producing processed wood material panels. 5,185,114, Cl. 264-83.000.

Helena Laboratories Corporation: *See*—
Golias, Tipton L., 5,185,066, Cl. 204-182.800.

Helliwell, Richard P.: *See*—
Edem, Brian C.; and Helliwell, Richard P., 5,185,886, Cl. 395-600.000.

Hellstrom, Ingegerd: *See*—
Hellstrom, Karl E.; Brown, Joseph P.; Hellstrom, Ingegerd; and Marquardt, Hans, 5,185,432, Cl. 530-388.800.

Hellstrom, Karl E.; Brown, Joseph P.; Hellstrom, Ingegerd; and Marquardt, Hans, to Oncogen. Monoclonal antibodies and antigen for human non-small cell lung carcinoma and other certain human carcinomas. 5,185,432, Cl. 530-388.800.

Hemmeter, Richard W.: *See*—
Dowden, Douglas C.; Hemmeter, Richard W.; Herr, Diane E.; McCormick, William K.; Petrelli, Robert; Piereth, Richard J.; Salchenberger, Samuel M.; Sehgal, Chander S.; and Verma, Mahendra K., 5,185,781, Cl. 379-67.000.

Hemmings, David T., to Megatool, Inc. Root-strength drill bit and method of making. 5,184,926, Cl. 408-226.000.

Henke, Mitchell C.: *See*—
Barkhau, Keith D.; Beltz, John D.; Kupski, Donald R.; Henke, Mitchell C.; and Svensson, Soldon A., 5,185,172, Cl. 426-523.000.

Henkel Kommanditgesellschaft auf Aktien: *See*—
Carduck, Franz-Josef; Harth, Hubert; and Liebs, Harald, 5,185,457, Cl. 554-71.000.
Koczy, Bernhard, 5,185,078, Cl. 240-741.000.

Henriksson, Mikko: *See*—
Takalo, Pasi; Kinnari, Pekka; Henriksson, Mikko; Nikku, Tapani; and Myllymaki, Hannu, 5,184,924, Cl. 408-67.000.

Henry, David: *See*—
Vial, Jacques J.; Laroulandie, Pierre-Jean M.; Henry, David; Dannoux, Thierry L. A.; and Gremetz, Sylvain M. F., 5,185,835, Cl. 385-49.000.

Herman Miller, Inc.: *See*—
O'Keefe, Lawrence J.; and Veihl, Michael J., 5,184,887, Cl. 312-221.000.

Hermansen, Ralph D.: *See*—
Sanftleben, Henry M.; Hermansen, Ralph D.; Shelton, Gary R.; Schnabel, Petrina L.; Baird, Dennis T.; and Smith, Douglas C., 5,185,498, Cl. 174-52.200.

Herr, Diane E.: *See*—
Dowden, Douglas C.; Hemmeter, Richard W.; Herr, Diane E.; McCormick, William K.; Petrelli, Robert; Piereth, Richard J.; Salchenberger, Samuel M.; Sehgal, Chander S.; and Verma, Mahendra K., 5,185,781, Cl. 379-67.000.

Herrenknecht GmbH: *See*—
Herrenknecht, Martin; Suhm, Werner; and Griesbaum, Rainer, 5,184,918, Cl. 405-138.000.

Herrenknecht, Martin; Suhm, Werner; and Griesbaum, Rainer, to Herrenknecht GmbH. Recoverable tunnelling machine. 5,184,918, Cl. 405-138.000.

Hesse, Eric M.; Kozol, Michael; and Lim, Chan, to International Business Machines Corporation. Technique for contracting element marks in a structured document. 5,185,698, Cl. 364-419.000.

Hessek, Gerd: *See*—
Erschens, Willie; Mencher, Franz J.; Brosius, Peter; Grave, Klaus; Zender, Bernhard; Schardt, Peter; Hessek, Gerd; and Alten, Ferdinand, 5,184,806, Cl. 254-126.000.

Hession, Catherine: *See*—
Wallner, Barbara P.; and Hession, Catherine, 5,185,441, Cl. 536-23.500.

Heuer, Hubert: *See*—
Weber, Karl-Heinz; Stransky, Werner; Kuefner-Muehl, Ulrike; Heuer, Hubert; Birke, Franz; and Bechtel, Wolf-Dietrich, 5,185,442, Cl. 540-555.000.

Hewlett-Packard Company: *See*—
Alcorn, Byron A.; Cherry, Robert W.; Coleman, Mark D.; and Rauchfuss, Brian D., 5,185,856, Cl. 395-130.000.
Cook, Louis W.; and Camras, Michael D., 5,185,288, Cl. 437-122.000.
Courian, Kenneth J.; and Evans, Roger F., 5,185,614, Cl. 346-1.100.
Degi, Greg A.; and Buck, Dean C., 5,185,817, Cl. 382-47.000.
Dysart, John A.; Showman, Peter S.; Crow, William M.; Williams, Peter M.; McBride, Brian W.; Senior, John R. F.; Whelan, Charles H.; and Murdoch, Brian, 5,185,885, Cl. 395-600.000.
Ernst, Stephen, 5,185,735, Cl. 370-13.000.
Larson, John D., III, 5,185,573, Cl. 324-309.000.
Sobol, Robert E., 5,185,673, Cl. 358-296.000.
Webb, Steven L.; and Kappele, William D., 5,185,034, Cl. 106-22.00R.
Wider, Bernhard; Blank, Michael; and Vester, Joachim, 5,184,618, Cl. 128-634.000.
Wu, Jeff C., 5,185,860, Cl. 395-200.000.

Hicken, William J. Brush overlay Pap smear. 5,184,626, Cl. 128-756.000.

Hickory Springs Manufacturing Company: *See*—
Galumbeck, Michael, 5,184,802, Cl. 267-103.000.

Hider, Robert C.; and Stockham, Michael A., to National Research Development Corporation. Stabilization of organic compounds. 5,185,319, Cl. 514-3.000.

Hidese, Wataru, to Matsushita Electric Industrial Co., Ltd. Electrical component placing apparatus. 5,184,397, Cl. 29-740.000.

High Performance Tube, Inc.: *See*—
Keyes, John M., 5,184,674, Cl. 165-184.000.

Highland Supply Corporation: *See*—
Weder, Donald E., 5,184,390, Cl. 29-525.000.

Hihara, Hiroshi: *See*—
Satoh, Tsuguo; Morikawa, Takayuki; Hihara, Hiroshi; Yagi, Takeshi; and Yoshida, Kazuaki, 5,185,020, Cl. 65-3.110.

Hill, Craig M.: *See*—
Lam, Chung H.; Lasky, Jerome B.; Hill, Craig M.; Nakos, James S.; Holmes, Steven J.; Geissler, Stephen F.; and Lord, David K., 5,185,294, Cl. 437-193.000.

Hilton, Charles R.: *See*—
Lindley, Daniel D.; Ryan, Timothy R.; Curtis, Thomas A.; De la Garza, Edward M.; Hilton, Charles R.; and Kenesson, Thomas M., 5,185,469, Cl. 568-319.000.

Himint Incorporated: *See*—
Rendina, Gabriele; and Albizzati, Enrico, 5,185,401, Cl. 525-130.000.

Himont Italia S.r.l.: *See*—
Casagrande, Francesco; Foa', Marco; and Chapoy, Larry L., 5,185,424, Cl. 528-183.000.

Hingorani, Rajesh: *See*—
Ng, Sheau-Bau; and Hingorani, Rajesh, 5,185,819, Cl. 382-56.000.

Hino, Katsuhiko; Kai, Naoki; Sakamoto, Masato; Kon, Tatsuya; Oka, Makoto; Furukawa, Kiyoshi; and Ochi, Yoshiaki, to Dainippon Pharmaceutical Co., Ltd. Medicament for treating cerebral insufficiency diseases, novel 2-(1-piperazinyl)-4-phenylcycloalkanopyrimidine derivatives, and process for the production thereof. 5,185,338, Cl. 514-254.000.

Hinton, Glenn J.: *See*—
Arnold, James M.; Hinton, Glenn J.; and Smith, Frank S., 5,185,872, Cl. 395-375.000.

Hirabayashi, Hiromitsu: *See*—
Koitabashi, Noribumi; Tajika, Hiroshi; Hirabayashi, Hiromitsu; and Ikeda, Masami, 5,185,615, Cl. 346-1.100.

Hirai, Takami; Yano, Shinsuke; and Abe, Masahiro, to NGK Insulators, Ltd. Dielectric ceramic composition of BaO, TiO_2, Nd_2O_3, Sm_2O_3 and Bi_2O_3. 5,185,304, Cl. 501-139.000.

Hiraiwa, Kenichi: *See*—
Sakamoto, Shinichi; Hiraiwa, Kenichi; Koike, Masaru; and Nozawa, Yoshioki, 5,185,050, Cl. 156-304.500.

Hirano, Fumiya: *See*—
Katano, Kiyoaki; Tomomoto, Tamako; Ogino, Hiroko; Hirano, Fumiya; Yuda, Yasukatsu; Konno, Fukio; Machinami, Tomoya; Tsuruoka, Takashi; and Inoye, Shigeharu, 5,185,347, Cl. 514-322.000.

Hirano, Kazuya: *See*—
Hamada, Hiromi; Hirano, Kazuya; and Lee, Young S., 5,185,798, Cl. 380-23.000.

Hirano, Kouji: *See*—
Yoshida, Minoru; and Hirano, Kouji, 5,185,632, Cl. 355-261.000.

Hirohama, Seiya: *See*—
Muto, Tsunehisa; Kanegae, Futoshi; Takatsuka, Toru; Hirohama, Seiya; and Ojiro, Masazumi, 5,185,481, Cl. 568-918.000.

Hirooka, Noboru: *See*—
Aono, Toshinao; Asami, Yukio; Hirooka, Noboru; Arima, Yusaku; and Fujii, Susumu, 5,185,309, Cl. 502-202.000.

Hirose, Ichiro; Choshi, Masahiro; and Hatamura, Kouichi, to Mazda Motor Corporation. Method of assembling valve drive mechanism to engine. 5,184,401, Cl. 29-888.010.

Hirose, Takao: *See*—
Ayuta, Tokuichi; Takahashi, Shigeo; and Hirose, Takao, 5,185,837, Cl. 385-81.000.

Hirsbrunner, Eduard: *See*—
Baer, Hans; and Hirsbrunner, Eduard, 5,184,955, Cl. 433-215.000.

Hiruta, Yoshiki: *See*—
Tsukamura, Naoki; Alyfuku, Kiyoshi; Nakamura, Yuzuru; Hiruta, Yoshiki; and Tsuboi, Hiroshi, 5,184,359, Cl. 4-661.000.

Hislop, Douglas G. Marine propulsion apparatus. 5,184,563, Cl. 114-251.000.

Hitachi Instrument Engineering Co., Ltd.: *See*—
Kitagawa, Masatoshi; Okamoto, Yukio; Ono, Takayuki; and Shinden, Tetuya, 5,185,523, Cl. 250-281.000.

Hitachi, Ltd.: *See*—
Aritsuka, Toshiyuki; Amano, Akio; Hataoka, Nobuo; and Ichikawa, Akira, 5,185,848, Cl. 395-2.000.
Ito, Kisio, 5,185,867, Cl. 395-375.000.
Kitagawa, Masatoshi; Okamoto, Yukio; Ono, Takayuki; and Shinden, Tetuya, 5,185,523, Cl. 250-281.000.
Maejima, Yukihito; Shirasu, Hirotoshi; Suzuki, Taihei; and Yamamoto, Toshiaki, 5,185,873, Cl. 395-375.000.
Nishibe, Kunihiko, 5,185,515, Cl. 235-379.000.
Takahashi, Noriyuki; Nishizawa, Kazunori; Takashi, Rinichi; Sakai, Naofumi; Tanabe, Yukiharu; and Yasue, Nobuhiro, 5,185,887, Cl. 395-600.000.
Tanaka, Yuzuru; Yamamoto, Akira; and Tsuchida, Masashi, 5,185,888, Cl. 395-600.000.

Hitachi Software Engineering Co., Ltd.: *See*—
Takahashi, Noriyuki; Nishizawa, Kazunori; Takashi, Rinichi; Sakai, Naofumi; Tanabe, Yukiharu; and Yasue, Nobuhiro, 5,185,887, Cl. 395-600.000.

Hockmeyer Equipment Corp.: *See*—
Hockmeyer, Herman H.; and Paterson, John A., 5,184,783, Cl. 241-172.000.

Hockmeyer, Herman H.; and Paterson, John A., to Hockmeyer Equipment Corp. Basket media mill and method. 5,184,783, Cl. 241-172.000.

Hodgson, David O.: *See*—
Capitant, Patrice J.; Perry, Vinson R.; and Hodgson, David O., 5,185,666, Cl. 358-183.000.

Hoechst Aktiengesellschaft: *See*—
Coutandin, Jochen; Theis, Jurgen; Groh, Werner; and Brockmeyer, Andreas, 5,185,832, Cl. 385-43.000.
Meyer, Matthias, 5,185,473, Cl. 568-615.000.
Ruger, Wolfgang; Urbach, Hansjorg; Ruppert, Dieter; and Scholkens, Bernward, 5,185,324, Cl. 514-18.000.
Stenger, Karl; and Saal, Marliese, 5,185,189, Cl. 428-34.800.

Hoechst Celanese Corp.: *See*—
Lindley, Daniel D.; Ryan, Timothy R.; Curtis, Thomas A.; De la Garza, Edward M.; Hilton, Charles R.; and Kenesson, Thomas M., 5,185,469, Cl. 568-319.000.

Hoechst-Roussel Pharmaceuticals Incorporated: *See*—
Effland, Richard C.; Klein, Joseph T.; and Martin, Lawrence L., 5,185,350, Cl. 514-339.000.
Martin, Lawrence L.; Worm, Manfred; and Crichlow, Charles A., 5,185,465, Cl. 564-185.000.

Hoffmann-La Roche Inc.: *See*—
Buchecker, Richard; Schadt, Martin; and Villiger, Alois, 5,185,098, Cl. 252-299.630.
Caviezel, Gerold; Mertin, Frank; and Tritsch, Jean-Claude, 5,185,336, Cl. 514-251.000.

Hoffmann-LaRoche Inc.: *See*—
Altenburger, Werner, 5,185,146, Cl. 424-89.000.

Hofmeister, Peter: *See*—
Buerstinghaus, Rainer; Neubauer, Hans-Juergen; Hofmeister, Peter; Kuenast, Christoph; Leyendecker, Joachim; and Kardorff, Uwe, 5,185,359, Cl. 514-407.000.

Hofs, Hans-Ulrich: *See*—
Krockert, Bernd; Printzen, Helmut; Biermann, Hans-Peter; and Hofs, Hans-Ulrich, 5,185,141, Cl. 423-632.000.

Hoggard, Dale B.; and Robinson, Quentin K., to Vesuvius Crucible Company. Erosion, thermal shock and oxidation resistant refractory compositions. 5,185,300, Cl. 501-99.000.

Hohlein, Peter: *See*—
Drouve, Werner; Hohlein, Peter; and Wieczorrek, Wolfhart, 5,185,422, Cl. 528-76.000.

Holland, Neta, to Paz, Ohad. Toothbrushes. 5,184,368, Cl. 15-167.100.

Hollen, James P.: *See*—
Roberts, James W., Jr.; and Hollen, James P., 5,185,605, Cl. 340-850.000.

Hollerwoger, Alois: *See*—
Bloo, Johann; Romauer, Ewald; and Hollerwoger, Alois, 5,184,379, Cl. 26-72.000.

Hollinger, Richard H.; and Perry, William D., to Southwest Research Institute. Process for cutting with coherent abrasive suspension jets. 5,184,434, Cl. 51-317.000.

Hollister Incorporated: *See*—
Lavender, Michael R., 5,185,008, Cl. 604-338.000.

Holloway, Stephen P.: *See*—
Ditchburn, deceased; Robert W.; Gouch, Martin P.; Cook, Nigel R.; Osgood, Timothy J.; Holloway, Stephen P.; and Bowler, Ian W., 5,184,732, Cl. 209-576.000.

Holmes, Barry A.: *See*—
Ramirez, Fernando J.; Noschese, Rocco J.; Holmes, Barry A.; and Hannigan, Thomas L., 5,184,961, Cl. 439-59.000.

Holmes, Frank: *See*—
Blakeway, Ian; and Holmes, Frank, 5,185,727, Cl. 369-34.000.

Holmes, Jerry D.: *See*—
Ward, Phillip W.; Scott, H. Logan; Holmes, Jerry D.; and LaPadula, Leonard J., 5,185,610, Cl. 342-357.000.

Holmes, Steven J.: *See*—
Lam, Chung H.; Lasky, Jerome B.; Hill, Craig M.; Nakos, James S.; Holmes, Steven J.; Geissler, Stephen F.; and Lord, David K., 5,185,294, Cl. 437-193.000.

Holmstadt, Ronald J.: *See*—
Oberg, Gary R.; and Holmstadt, Ronald J., 5,185,683, Cl. 360-104.000.

Holzinger, Dieter; Sollinger, Hans-Peter; and Beisswanger, Rudolf, to J. M. Voith GmbH. Winding machine for winding up a travelling web. 5,184,787, Cl. 242-65.000.

Holzrichter, Edward J.: *See*—
Lewarchik, Ronald J.; Holzrichter, Edward J.; Smith, Marc L.; and Allman, Jack C., 5,185,403, Cl. 525-199.000.

Honda Giken Kogyo Kabushiki: *See*—
Matsuda, Shohei; Haga, Tadatoshi; Go, Kougyoku; and Ikegami, Hiroshi, 5,184,695, Cl. 180-233.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Miyakawa, Yoshitaka, 5,184,877, Cl. 303-113.200.
Namba, Takaoki; and Kamada, Teruo, 5,184,496, Cl. 72-350.000.

Honda, Makoto; and Mizuno, Nobuyuki, to Dai Nippon Printing Co., Ltd. Transmission type projection screen assembly. 5,185,677, Cl. 359-460.000.

Honkanen, Erkki J.: *See*—
Backstrom, Reijo J.; Honkanen, Erkki J.; Pystynen, Jarmo J.; Luiro, Anne M.; Aho, Paivi A.; Linden, Inge-Britt Y.; Nissinen, Erkki A. O.; and Pohto, Pentti, 5,185,370, Cl. 514-520.000.
Haikala, Heimo O.; Honkanen, Erkki J.; Lonnberg, Kari K.; Nore, Pentti T.; Pystynen, Jarmo J.; Luiro, Anne M.; and Pippuri, Aino K., 5,185,332, Cl. 514-222.500.

Honma, Hisanori: *See*—
Fujiwara, Takayoshi; Honma, Hisanori; and Sone, Yoshinori, 5,184,940, Cl. 417-356.000.

Hood Laboratories: *See*—
Marten, Lewis H.; and Lane, Charles, 5,184,610, Cl. 128-207.140.

Hoopengardner, Merle R., to Step Loc Corporation. Method for installing flexible carpet base. 5,184,445, Cl. 52-741.100.

Hopkins, Evan L.; Bowden, Wesley E.; and Hopkins, Evan L., to Hopkins Manufacturing Corporation. Trailer light connection system. 5,184,960, Cl. 439-35.000.

VOL
1147
ISS
2
FE
9
1993
UMI

Hopkins, Evan L.: *See—*
Hopkins, Evan L.; Bowden, Wesley E.; and Hopkins, Evan L., 5,184,960, Cl. 439-35.000.
Hopkins, James L.: *See—*
Hanlon, Daniel; Sandhaus, Stuart J.; and Hopkins, James L., 5,184,497, Cl. 72-391.600.
Hopkins Manufacturing Corporation: *See—*
Hopkins, Evan L.; Bowden, Wesley E.; and Hopkins, Evan L., 5,184,960, Cl. 439-35.000.
Horak, Vladimir. Volumetric compensation in gravimetric liquid measurement. 5,184,753, Cl. 222-1.000.
Hori, Shuji; Karakama, Tadao; and Maruyama, Jun, to Kabushiki Kaisha Komatsu Seisakusho. Pilot valve. 5,184,646, Cl. 137-636.200.
Horiba Instruments Incorporated: *See—*
Lewis, Gary W.; and Moore, Max J., 5,184,501, Cl. 73-23.310.
Horiba, Ltd.: *See—*
Igushi, Tatsuo; and Togawa, Yoshiaki, 5,185,641, Cl. 356-336.000.
Kojima, Junji, 5,185,072, Cl. 204-416.000.
Horie, Misato, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Method of treatment of high-level radioactive waste. 5,185,104, Cl. 252-632.000.
Horiguchi, Akihiro: *See—*
Ueno, Fumio; Kasori, Mitsuo; Goto, Yoshiko; and Horiguchi, Akihiro, 5,184,399, Cl. 29-846.000.
Horiguchi, Kiroyuki: *See—*
Furuta, Toshiyuki; Horiguchi, Kiroyuki; and Eguchi, Hirotoshi, 5,185,851, Cl. 395-27.000.
Horiike, Yasuhiro; Okazaki, Satiko; and Kogoma, Masuhiro, to Research Development Corporation of Japan. Atomspheric plasma reaction method and apparatus therefor. 5,185,132, Cl. 422-186.050.
Horwitz, Stuart S.: *See—*
Krishnaswamy, S. Visvanathan; Horwitz, Stuart S.; and Moore, Robert A., 5,185,589, Cl. 333-133.000.
Hoshino Gakki Co., Ltd.: *See—*
Hoshino, Yoshihiro, 5,185,489, Cl. 84-422.100.
Hoshino, Yoshihiro, to Hoshino Gakki Co., Ltd. Drum hoop clamp structure on drum pedal. 5,185,489, Cl. 84-422.100.
Hosoi, Miyuki: *See—*
Kawakami, Sota; and Hosoi, Miyuki, 5,185,186, Cl. 427-332.000.
Hossfield, Robin C.: *See—*
Adamski, Joseph R.; Bowen, Robert F.; Hossfield, Robin C.; Schregardus, Thomas P.; and Skienak, John S., 5,185,126, Cl. 422-38.000.
Hostetler, Eldon, to Ziggity Systems, Inc. Component watering system. 5,184,570, Cl. 119-72.000.
Hostetler, Robert D.; and Plouzen, Philippe, to Avtron, Inc. Automatically self-cleaning watering system. 5,184,571, Cl. 119-72.000.
Hotta, Sadayoshi: *See—*
Takeda, Mamoru; Tamura, Tatsuhiko; and Hotta, Sadayoshi, 5,185,601, Cl. 340-784.000.
Houston, Theodore W.; and Pollack, Gordon P., to Texas Instruments Incorporated. Method of fabricating a SOI transistor with pocket implant and body-to-source (BTS) contact. 5,185,280, Cl. 437-44.000.
Howard, Douglas A.; and Walker, Keith C., to Boeing Company, The. Landing gear drag strut actuator having self-contained pressure charge for emergency use. 5,184,465, Cl. 60-403.000.
Howell, Ladd: *See—*
Lewin, Ian; and Howell, Ladd, 5,185,637, Cl. 356-218.000.
Hoya Corporation: *See—*
Miura, Kiyotaka; and Yamashita, Toshiharu, 5,185,021, Cl. 65-3.110.
Hoyt, David. Score card holder. 5,184,375, Cl. 24-3.00L.
Hrdlicka, Armin W.; Pribyl, Wolfgang; Schuster, Hermann; Loibner, Klaus; and Koffler, Harald. Measuring the length of a column of fluid in a tube. 5,184,512, Cl. 73-584.000.
HSC Controls Inc.: *See—*
Boerschig, Timothy J., 5,184,645, Cl. 137-625.650.
Hseu, Bill; Jessee, Jim; and Wang, William, to Eaton Corporation. Valve assembly and method. 5,184,457, Cl. 60-39.141.
Hsia, Steve K.: *See—*
Rinerson, Darrell D.; Hsia, Steve K.; Chevallier, Christophe J.; and Pang, Chan-Sui, 5,185,718, Cl. 365-185.000.
Hsie, Wei C.; Masaden, Timothy A.; and Curland, Nathan, to Seagate Technology, Inc. Method of making a thin film head on ferrite substrate with inclined top pole. 5,184,394, Cl. 29-603.000.
Hsu, Jemin C., to Rohm and Haas Company. Biocidal combinations containing 4,5-dichloro-2-cyclohexyl-3-isothiazolone and certain commercial biocides. 5,185,355, Cl. 514-372.000.
Huang, Mien-Cheng, to Taiwan Charwell Enterprise Co., Ltd. Handle height adjuster for baby carriage. 5,184,835, Cl. 280-47.371.
Hudson, George: *See—*
Rumford, Kimball J.; and Hudson, George, 5,184,456, Cl. 60-39.020.
Huels Aktiengesellschaft: *See—*
Kehr, Helmut; Kuhnle, Adolf; and Schleinzer, Matthias, 5,185,398, Cl. 525-74.000.
Huet, Bertrand: *See—*
Sartorius, Bernd; Reboux, Alain; and Huet, Bertrand, 5,185,645, Cl. 356-435.000.
Huggins, John, to Bayer Aktiengesellschaft. Palladium-containing catalyst preparation. 5,185,458, Cl. 556-9.000.
Hughes Aircraft Company: *See—*
Blazic, Ernest S.; Bueker, Robert A.; Waters, Lynn O.; Farwell, William D.; and Smalanskas, Joseph P., 5,184,516, Cl. 73-799.000.
Farb, Joseph E.; Li, Mei; Chang, Chen-Chi P.; and Chin, Maw-Rong, 5,185,535, Cl. 257-351.000.
Fowell, Richard A., 5,184,790, Cl. 244-165.000.
Mertens, Donald B.; Gates, Louis E., Jr.; Wolfson, Ronald I.; Milroy, William W.; and Smalanskas, Joseph P., 5,185,579, Cl. 324-527.000.
Moser, Thomas P.; and Rosser, Robin W., 5,184,470, Cl. 62-4.000.
Sanftleben, Henry M.; Hermansen, Ralph D.; Shelton, Gary R.; Schnabel, Petrina L.; Baird, Dennis T.; and Smith, Douglas C., 5,185,498, Cl. 174-52.200.
Zikan, Karel; and Caudell, Thomas P., 5,185,715, Cl. 364-807.000.
Hughes, John H.: *See—*
Witiak, Donald T.; Hughes, John H.; and Mavromoustakis, Charis T., 5,185,366, Cl. 514-456.000.
Hughes, Kathleen A.; and Swift, Graham, to Rohm and Haas Company. Functionally terminated acrylic acid telomer. 5,185,412, Cl. 526-210.000.
Hulquist, Wilma: *See—*
Canter, Marylee; and Hulquist, Wilma, 5,184,361, Cl. 5-413.000.
Hultholm, Stig-Erik: *See—*
Nyman, Bror G.; Hultholm, Stig-Erik; Lilja, Launo L.; and Makitalo, Valto J., 5,185,081, Cl. 210-634.000.
Hultzer, Wim J.: *See—*
Verbaarschot, Petrus A. A.; Schless, Michel M. C.; and Hultzer, Wim J., 5,185,606, Cl. 340-961.000.
Humphres, Eddie J.: *See—*
Mandrell, Gerald W., II; Humphres, Eddie J.; Flanigan, Floyd W.; and Pittman, Bradley W., 5,184,740, Cl. 215-315.000.
Humphrey, Anthony M.; Skill, Bridget A.; and Kinderlerer, Judith L., to Union Camp Corporation. Enzymic oxidation of fatty acids on a porous bed solid support. 5,185,252, Cl. 435-134.000.
Hunter, Mary M.: *See—*
Hunter, Robert M.; and Hunter, Mary M., 5,184,376, Cl. 24-633.000.
Hunter, Robert M.; and Hunter, Mary M. Child-resistant safety belt buckle. 5,184,376, Cl. 24-633.000.
Hunting, C. J.: *See—*
Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., 5,185,794, Cl. 380-17.000.
Hurd, Bruce E.: *See—*
Eisner, Lawrence F.; and Hurd, Bruce E., 5,184,900, Cl. 400-82.000.
Hurlocker, Claude M.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.
Hurner, Erwin E. Fishing rod holder. 5,184,797, Cl. 248-538.000.
Hurson, James K. Ski carrier. 5,184,863, Cl. 294-147.000.
Husky Injection Molding Systems Ltd.: *See—*
Schad, Robert D.; and Brown, Paul, 5,185,119, Cl. 264-297.200.
Huss, Albin, Jr.: *See—*
Del Rossi, Kenneth J.; Kirker, Garry W.; and Huss, Albin, Jr., 5,185,484, Cl. 585-419.000.
Husted, Eric F.: *See—*
Miller, Michael J.; Christini, James N.; and Husted, Eric F., 5,185,030, Cl. 75-359.000.
Hutchinson Technology, Inc.: *See—*
Oberg, Gary R.; and Holmstadt, Ronald J., 5,185,683, Cl. 360-104.000.
Hutchison, Alan J.: *See—*
Shaw, Kenneth; and Hutchison, Alan J., 5,185,446, Cl. 544-250.000.
Huvey, Michel: *See—*
Delacour, Jacques; Dawans, Francois; and Huvey, Michel, 5,184,682, Cl. 166-385.000.
Huyer, Johannes N., to Vermeulen-Hollandia Octrooien II B.V. Apparatus for controlling position and tilt of a sliding roof panel of a motor vehicle. 5,185,562, Cl. 318-466.000.
Hwang, Haw C. Automobile massaging device. 5,184,607, Cl. 128-52.000.
Hwang, In H.: *See—*
Kim, Moon K.; and Hwang, In H., 5,184,828, Cl. 273-228.000.
Hwang, Wei: *See—*
Dhong, Sang H.; and Hwang, Wei, 5,185,719, Cl. 365-189.010.
Hydromatik GmbH: *See—*
Schniederjan, Reinhold; and Wagenseil, Ludwig, 5,184,466, Cl. 60-448.000.
Ianni, Suzanne G.; Fierke, John R.; and Connors, Stephen A., to Data Translation, Inc. System for locating failure signals by comparing input data with stored threshold value and storing failure addresses in alternating buffers. 5,185,883, Cl. 395-575.000.
Iapicco, Roger, to Computer Crafts, Inc. Branching method for a multi-fiber fiberoptic cable. 5,185,840, Cl. 385-100.000.
Ibiden Co., Ltd.: *See—*
Yamada, Masaya; and Enomoto, Ryo, 5,185,829, Cl. 385-37.000.
IC Sensors, Inc.: *See—*
Terry, Stephen C.; and Jerman, John H., 5,184,515, Cl. 73-727.000.

Ichikawa, Akira: *See—*
Aritsuka, Toshiyuki; Amano, Akio; Hataoka, Nobuo; and Ichikawa, Akira, 5,185,848, Cl. 395-2.000.
Ichikawa, Hiroaki; Kadono, Yasuo; Kojima, Katsuo; Nakamura, Hiroyuki; and Aoki, Yoshio, to Kao Corporation. Process for producing magnetic metal powder and coating for magnetic recording medium. 5,185,093, Cl. 252-62.510.
Ichiki, Isamu: *See—*
Arakawa, Shinichiro; and Ichiki, Isamu, 5,184,937, Cl. 415-206.000.
Ichinari, Mitsuhiro: *See—*
Hayase, Yoshio; Kataoka, Takahiro; Takenaka, Hideyuki; Ichinari, Mitsuhiro; Masuko, Michio; Takahashi, Toshio; and Tanimoto, Norihiko, 5,185,342, Cl. 514-274.000.
ICI Americas Inc.: *See—*
Mellish, Walter G., 5,185,414, Cl. 526-247.000.
Ida, Masayuki: *See—*
Nagasawa, Tamami; and Ida, Masayuki, 5,185,630, Cl. 355-215.000.
Idemitsu Kosan Company Limited: *See—*
Kaijou, Akira, 5,185,037, Cl. 106-287.120.
Yokoyama, Seiichiro; and Kurata, Hideaki, 5,185,074, Cl. 205-162.000.
Idemitsu Petrochemical Co., Ltd.: *See—*
Komatsu, Takashi, 5,185,425, Cl. 528-198.000.
Ieiri, Junichiro: *See—*
Tsukada, Tokio; Nagayama, Yoji; and Ieiri, Junichiro, 5,185,612, Cl. 343-713.000.
Iezawa, Ryuhei: *See—*
Kawakita, Takeshi; Kuroita, Takanobu; Fukuda, Takemi; and Iezawa, Ryuhei, 5,185,333, Cl. 514-224.200.
Iglesia, Enrique: *See—*
Soled, Stuart L.; Miseo, Sabato; Iglesia, Enrique; and Fiato, Rocco A., 5,185,378, Cl. 518-700.000.
Iguchi, Kazuo; Takeo, Hiroshi; Amemiya, Shigeo; and Tezuka, Koji, to Fujitsu Limited. Inter-network connecting system. 5,185,741, Cl. 370-110.100.
Igushi, Tatsuo; and Togawa, Yoshiaki, to Horiba, Ltd. Apparatus for simultaneously measuring large and small particle size distribution. 5,185,641, Cl. 356-336.000.
Iijima, Takashi: *See—*
Nankai, Shiro; Kawaguri, Mariko; and Iijima, Takashi, 5,185,256, Cl. 435-174.000.
Iino, Shuji; and Masaki, Kenji, to Minolta Camera Kabushiki Kaisha. Image forming apparatus provided with a cooling arrangement and ozone filter. 5,185,629, Cl. 355-215.000.
Iio, Keiji: *See—*
Ishida, Yuzuru; Mitsuboshi, Masahiro; Inoue, Haruo; Otsuka, Ichiro; and Iio, Keiji, 5,185,394, Cl. 524-269.000.
Ijichi, Yuji, to Rockwell International Corporation. Ink roller for rotary press. 5,184,552, Cl. 101-348.000.
Ikeda, Masami: *See—*
Koitabashi, Noribumi; Tajika, Hiroshi; Hirabayashi, Hiromitsu; and Ikeda, Masami, 5,185,615, Cl. 346-1.100.
Ikeda, Noriko. Device for cleaning between the teeth of orthodontic patients. 5,184,631, Cl. 132-323.000.
Ikegami, Hiroshi: *See—*
Matsuda, Shohei; Haga, Tadatoshi; Go, Kougyoku; and Ikegami, Hiroshi, 5,184,695, Cl. 180-233.000.
Ikegami Tsushinki Co., Ltd.: *See—*
Yamamoto, Kazumi, 5,185,656, Cl. 358-21.00R.
Ikeya, Tadahiko, to Yamaha Corporation. Electronic musical instrument having multivoice function for generating musical tones of plural tone colors. 5,185,492, Cl. 84-633.000.
Illinois Tool Works, Inc.: *See—*
Ciarelli, Gary J.; and Lunk, J. Allan, 5,184,519, Cl. 73-861.770.
Kazlauskas, Algimantas K., 5,184,448, Cl. 53-398.000.
Ilya Co. Ltd.: *See—*
Kim, Moon K.; and Hwang, In H., 5,184,828, Cl. 273-228.000.
Imamaki, Teruo; Fuwa, Tetsuji; and Miki, Takashi, to Brother Kogyo Kabushiki Kaisha. Stamp device with a printing element, movable ink supplying device, and plate making device employing an elongate heat sensitive stencil paper. 5,184,549, Cl. 101-121.000.
Imamizo, Seiichi: *See—*
Shigematsu, Takashi; Imamizo, Seiichi; Takagi, Koichi; Ohta, Toshihiko; and Yamakawa, Jun, 5,185,825, Cl. 385-20.000.
Imazeki, Nobuo: *See—*
Saito, Kazuhiro; and Imazeki, Nobuo, 5,184,393, Cl. 29-603.000.
Immel, Manfred: *See—*
Brossardt, Ansgar; Immel, Manfred; and Styppa, Heinrich, 5,184,879, Cl. 312-236.000.
Imperial Chemical Industries PLC: *See—*
Backhouse, Bryan S.; and Fern, William A., 5,185,356, Cl. 514-372.000.
Brittain, David R.; and Cox, Michael T., 5,185,452, Cl. 548-492.000.
Gordon, Kenneth A., 5,185,528, Cl. 250-341.000.
Kvasnik, Frank; and McGrath, Andrew, 5,185,521, Cl. 250-227.230.
Noakes, Timothy J., 5,184,778, Cl. 239-691.000.
Pilkington, Brian L.; and Worthington, Paul A., 5,185,339, Cl. 514-256.000.
Turnbull, Michael D.; Parsons, Robert W.; and Watkins, Andrew D. S., 5,185,353, Cl. 514-364.000.
INA Walzlager Schaeffler KG: *See—*
Grell, Karl-Ludwig, 5,184,583, Cl. 123-90.510.
Inamori, Masanori; and Miyake, Toshihide, to Sharp Kabushiki Kaisha. Semiconductor integrated circuit for measuring distance for automatic focusing. 5,185,517, Cl. 250-201.400.
Inax Corporation & Nippondenso Co., Ltd.: *See—*
Taguchi, Yasuhisa; Endo, Makoto; Kawamoto, Ryuichi; Saito, Shiro; Zaizen, Reigi; Komachi, Hiroshi; Narita, Naomasa; and Fujiwara, Kenichi, 5,184,355, Cl. 4-420.000.
Ing. Haaga Kunststoffiechnik GmbH: *See—*
Haaga, Hermann, 5,184,367, Cl. 15-49.100.
Ingalls Shipbuilding, Inc.: *See—*
Krebs, Joseph V., Jr., 5,185,688, Cl. 361-267.000.
Inger, Siegfried; and Stenmans, Heinz, to Palitex Project Company GmbH. Double-sided textile machine having a plurality of winding units for producing cross-wound packages. 5,184,785, Cl. 242-35.50A.
Ingersoll-Dresser Pump Company: *See—*
Nolte, Paul A., 5,184,747, Cl. 220-319.000.
Ingraham, Anthony P.: *See—*
Bindra, Perminder S.; Cuomo, Jerome J.; Gall, Thomas P.; Ingraham, Anthony P.; Kang, Sung K.; Kim, Jungihl; Lauro, Paul; Light, David N.; Markovich, Voya R.; Miersch, Ekkehard F.; Molla, Jaynal A.; Powell, Douglas O.; Ritsko, John J.; Saxenmeyer, George J., Jr.; Varcoe, Jack A.; and Walker, George F., 5,185,073, Cl. 205-104.000.
Inoue, Haruo: *See—*
Ishida, Yuzuru; Mitsuboshi, Masahiro; Inoue, Haruo; Otsuka, Ichiro; and Iio, Keiji, 5,185,394, Cl. 524-269.000.
Inoue, Kazunari, to GE Plastics Japan, Ltd. Polyphenylene ether type resin composition. 5,185,399, Cl. 525-92.000.
Inoue, Kozo: *See—*
Shimaya, Kazuhiko; Miyaji, Masaki; and Inoue, Kozo, 5,184,982, Cl. 474-101.000.
Inoue, Mamoru: *See—*
Gawa, Tomohiro; Inouz, Mamoru; Hamane, Tokuhito; and Kataoka, Fujio, 5,184,651, Cl. 140-115.000.
Inoue, Noriyuki, to Fuji Photo Film Co., Ltd. Direct positive photographic material. 5,185,241, Cl. 430-598.000.
Inoue, Shouichi: *See—*
Shirouzu, Shunji; Hatayama, Tamotsu; and Inoue, Shouichi, 5,185,772, Cl. 378-29.000.
Inoue, Yoshimitsu: *See—*
Kutsuna, Kiyoharu; and Inoue, Yoshimitsu, 5,184,478, Cl. 62-468.000.
Inoye, Shigeharu: *See—*
Katano, Kiyoaki; Tomomoto, Tamako; Ogino, Hiroko; Hirano, Fumiya; Yuda, Yasukatsu; Konno, Fukio; Machinami, Tomoya; Tsuruoka, Takashi; and Inoye, Shigeharu, 5,185,347, Cl. 514-322.000.
Institut de Recherches de la Siderurgie Francaise-IRSID: *See—*
Gillon, Pascale; and Rivat, Pascal, 5,184,666, Cl. 164-466.000.
Institut Francais du Petrole: *See—*
Collin, Jean-Claude; Juguin, Bernard; Larue, Joseph; and Rojey, Alexandre, 5,185,486, Cl. 585-448.000.
Institut National de Recherche Chimique Appliquee: *See—*
Delpuech, Jean-Jacques; Matos, Louis; Moumni, El Mostafa; Ravey, Jean-Claude; Selve, Claude; Serratrice, Guy; Stebe, Marie-Jose ; Cambon, Aime ; and Thiollet, Gerard, 5,185,099, Cl. 252-315.100.
Intel Corporation: *See—*
Arnold, James M.; Hinton, Glenn J.; and Smith, Frank S., 5,185,872, Cl. 395-375.000.
Intepac Technoligies Inc.: *See—*
Dickie, Robert G.; and Walters, Brian J., 5,184,727, Cl. 206-522.000.
International Business Machines Corporation: *See—*
Adams, Richard W., Jr.; Clarke, David R.; Knickerbocker, Sarah H.; Rapp, Linda L.; and Schwartz, Bernard, 5,185,215, Cl. 428-545.000.
Beers, Gregory E.; Flickner, Myron D.; Kelly-Mahaffey, William L.; Polk, Darryl R.; Stafford, James M.; and Wattenbarger, Henry E., 5,185,811, Cl. 382-8.000.
Betts, Robert, 5,185,833, Cl. 385-46.000.
Bindra, Perminder S.; Cuomo, Jerome J.; Gall, Thomas P.; Ingraham, Anthony P.; Kang, Sung K.; Kim, Jungihl; Lauro, Paul; Light, David N.; Markovich, Voya R.; Miersch, Ekkehard F.; Molla, Jaynal A.; Powell, Douglas O.; Ritsko, John J.; Saxenmeyer, George J., Jr.; Varcoe, Jack A.; and Walker, George F., 5,185,073, Cl. 205-104.000.
Bonevento, Francis M.; Heath, Chester A.; Mandese, Ernest N.; and Mendelson, Richard N., 5,185,864, Cl. 395-275.000.
Call, David E.; and Lewkowicz, Julian, 5,185,734, Cl. 369-116.000.
Casper, Daniel F.; Gregg, Thomas A.; Flanagan, John R.; Kalos, Matthew J.; and Liencres, Bjorn O., 5,185,862, Cl. 395-250.000.
Chen, Tze-Chiang; and Cressler, John D., 5,185,276, Cl. 437-31.000.
Conzola, Vincent C.; Rittenhouse, Norman E.; Solomon, Jeffrey M.; Toomey, Thomas J.; and Yablonsky, Peter J., 5,185,638, Cl. 356-237.000.
Dhong, Sang H.; and Hwang, Wei, 5,185,719, Cl. 365-189.010.
Ferraiolo, Frank D.; Gersbach, John E.; and Novof, Ilya I., 5,185,768, Cl. 375-119.000.
Finkelstein, Blair I.; Tayefeh, Morovat; and Ueno, Hideo, 5,185,733, Cl. 369-54.000.
Frey, Bradly G.; and Pedersen, Raymond J., 5,185,871, Cl. 395-375.000.
Fuentes, Ricardo I.; and Babich, Inna V., 5,185,056, Cl. 156-639.000.
Hesse, Eric M.; Kozol, Michael; and Lim, Chan, 5,185,698, Cl. 364-419.000.

VOL 1147 ISS 2 FE 9 1993 UMI

Lam, Chung H.; Lasky, Jerome B.; Hill, Craig M.; Nakos, James S.; Holmes, Steven J.; Geissler, Stephen F.; and Lord, David K., 5,185,294, Cl. 437-193.000.

Martin, Dennis R.; McDermott, Michael J.; Plumlee, Stuart D.; Satin, Robert H.; and Wenger, Robert L., 5,185,884, Cl. 395-575.000.

Meier, Heinz P.; Van Gieson, Edward A.; and Walter, Willi, 5,185,289, Cl. 437-129.000.

Nassehi, Mehdi M.; and Zurfluh, Erwin A., 5,185,737, Cl. 370-85.800.

International Foundations Constructions Ltd.: *See—*
Trevisnani, Gian Luigi, 5,184,688, Cl. 175-321.000.

International Technidyne Corporation: *See—*
Mintz, Michael D., 5,184,613, Cl. 128-402.000.

Inui, Keiichiro, to Shinto Paint Co., Ltd. Industrial antifungal composition. 5,185,357, Cl. 514-372.000.

Iovision, Inc.: *See—*
Blake, Larry W., 5,185,107, Cl. 264-2.500.

Iowa State University Research Foundation, Inc.: *See—*
Dague, Richard R., 5,185,079, Cl. 210-603.000.

Ip, Stephen H.: *See—*
Brenner, Michael B.; Seidman, Jonathan; Strominger, Jack L.; Ip, Stephen H.; Krangel, Michael S.; and Band, Hamid, 5,185,250, Cl. 435-69.300.

Isayama, Katsuhiko: *See—*
Furukawa, Hisao; Isayama, Katsuhiko; and Kato, Yasushi, 5,185,418, Cl. 526-329.200.

Isco Optic GmbH: *See—*
Lisziewicz, Antal, 5,184,880, Cl. 359-668.000.

Isgen, Helmut, to Rheinmetall GmbH. Loading apparatus for manual insertion of ammunition. 5,185,493, Cl. 89-45.000.

Ishibashi, Yutaka: *See—*
Takeda, Fumio; Kojima, Yoshio; Kaneko, Tsuneo; Ishibashi, Yutaka; Sasaki, Naoto; and Tsushima, Isako, 5,184,438, Cl. 52-221.000.

Ishida, Noriya: *See—*
Yamazaki, Shunpei; Hayashi, Shigenori; Ishida, Noriya; Sasaki, Mari; Takeyama, Junichi; Itou, Kenji; Kojima, Masahiro; and Kadono, Masaya, 5,185,179, Cl. 427-601.000.

Ishida Scales Mfg. Co., Ltd.: *See—*
Naito, Kazufumi, 5,184,520, Cl. 73-862.623.

Ishida, Takeshi: *See—*
Nishiumi, Kenji; Nakajima, Kenji; Mikami, Mitsugu; Ishida, Takeshi; and Ito, Yukio, 5,184,709, Cl. 194-318.000.

Ishida, Yuzuru; Mitsuboshi, Masahiro; Inoue, Haruo; Otsuka, Ichiro; and Iio, Keiji, to Mitsui Toatsu Chemicals, Inc. Rubber-modified styrene type resin composition excellent in sliding properties. 5,185,394, Cl. 524-269.000.

Ishihara, Masaaki: *See—*
Katakura, Masayuki; and Ishihara, Masaaki, 5,185,569, Cl. 324-103.00P.

Ishihara, Takeshi; and Misawa, Hidenobu, to NGK Insulators, Ltd. Solid oxide fuel cells. 5,185,219, Cl. 429-31.000.

Ishihara, Takeshi: *See—*
Morita, Kiyoyuki; and Ishihara, Takeshi, 5,185,296, Cl. 437-229.000.

Ishii, Osamu: *See—*
Morita, Takao; Ishii, Osamu; and Kurosaki, Takebumi, 5,185,550, Cl. 310-344.000.

Ishikawa, Hideo: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Ishikawa, Hideo; Matsumura, Sowjun; Chiba, Tadashi; Asakawa, Kiyoshi; and Oohora, Syoichi, 5,185,216, Cl. 428-614.000.

Ishikawa, Hiroshi: *See—*
Fujii, Setsuro, deceased; Takada, Kaoruko, legal heir; Ishikawa, Hiroshi; Tsubouchi, Hidetsugu; and Jitsukawa, Koichiro, 5,185,337, Cl. 514-254.000.

Ishikawa, Shigeru, to AMP Incorporated. Electrical connector with contacts on diestamping centers. 5,184,963, Cl. 439-79.000.

Ishikawajima-Harima Heavy Industries Company Limited: *See—*
Fukase, Hisahiko; Kato, Heiji; and Nomura, Akihiro, 5,184,668, Cl. 164-480.000.

Ishiyama, Tatsunori: *See—*
Nishimura, Katsuhiko; Okano, Keiji; Miyamoto, Toshio; and Ishiyama, Tatsunori, 5,185,496, Cl. 118-658.000.

Ishizuki, Tomonori: *See—*
Komaki, Toshihiro; Kudo, Hideo; Ishizuki, Tomonori; and Yokozeki, Shinichi, 5,185,730, Cl. 369-44.260.

Ismail, Ibrahim A.; and Wu, Wen H., to Miles Inc. Stabilization of oxidase enzyme-based test strips. 5,185,247, Cl. 435-14.000.

Isomura, Shigenori: *See—*
Kato, Tatsunori; Kawai, Katsuhiko; and Isomura, Shigenori, 5,184,588, Cl. 123-339.000.

ISP Investments Inc.: *See—*
Cohen, Jeffrey M., 5,185,143, Cl. 424-47.000.
Kopolow, Stephen L., 5,185,170, Cl. 526-264.000.

Istituto Guido Donegani S.p.A.: *See—*
Cinquina, Patrizia; Triulzi, Giangaleazzo; and Garbassi, Fabio, 5,185,429, Cl. 528-503.000.

Itaba, Yasushi; Izawa, Minoru; Saito, Keichiro; and Kondo, Takayoshi, to Tonen Sekiyukagaku K.K. Heat-sealable crosslinked oriented polyethylene film and production thereof. 5,185,203, Cl. 428-349.000.

Itagaki, Hiroshi; and Matsuoka, Nobuo, to Canon Kabushiki Kaisha. Color image reading apparatus having common circuitry for the color component signals. 5,185,659, Cl. 358-44.000.

Ito, Kisio, to Hitachi, Ltd. Method and apparatus for automatically generating software specifications. 5,185,867, Cl. 395-375.000.

Ito, Masahiro: *See—*
Hayashi, Yuji; Ito, Masahiro; Yoshida, Hiroyoshi; and Shibata, Hiroyoshi, 5,184,664, Cl. 164-271.000.

Ito, Osamu: *See—*
Tanaka, Kunimaro; Ozaki, Minoru; Kiyose, Yoshihiro; and Ito, Osamu, 5,185,746, Cl. 371-40.100.

Ito, Susumu: *See—*
Torii, Nobutoshi; Ito, Susumu; Terada, Akihiro; and Sasaki, Yasuo, 5,185,512, Cl. 219-121.780.

Ito, Yukio: *See—*
Nishiumi, Kenji; Nakajima, Kenji; Mikami, Mitsugu; Ishida, Takeshi; and Ito, Yukio, 5,184,709, Cl. 194-318.000.

Itoh, Kiichi: *See—*
Yoshinaga, Kenji; Nakamura, Toshiko; and Itoh, Kiichi, 5,185,413, Cl. 526-233.000.

Itoh, Masakazu; and Yamazaki, Satoshi, to Dai Nippon Insatsu Kabushiki Kaisha. Hologram calendar. 5,184,848, Cl. 283-2.000.

Itou, Kenji: *See—*
Yamazaki, Shunpei; Hayashi, Shigenori; Ishida, Noriya; Sasaki, Mari; Takeyama, Junichi; Itou, Kenji; Kojima, Masahiro; and Kadono, Masaya, 5,185,179, Cl. 427-601.000.

Itoyama, Katsumi; Sugiyama, Akira; and Suda, Koichiro, to Kabushiki Kaisha Toshiba. Combination desk and wall telephone set. 5,185,791, Cl. 379-435.000.

Itres Research Limited: *See—*
Anger, Clifford D.; and Babey, Stephen K., 5,185,771, Cl. 372-60.000.

ITT Corporation: *See—*
Van Zeggeren, Wilhelm A., 5,184,703, Cl. 188-319.000.

ITW-Ateco GmbH: *See—*
Theobald, Thomas, 5,184,862, Cl. 294-145.000.

Iwahori, Masayuki. Safety mechanism for a lighter. 5,184,948, Cl. 431-153.000.

Iwasaki, Hiroaki: *See—*
Maeda, Tatsuo; Katsukawa, Masato; Iwasaki, Hiroaki; and Mizuta, Yasufumi, 5,185,228, Cl. 430-59.000.

Iwasaki, Hiroshi: *See—*
Fukikawa, Yoshihiro; Suzuki, Mikio; Iwasaki, Hiroshi; Sakashita, Mitsuaki; and Kitahara, Masaki, 5,185,328, Cl. 514-63.000.

Iwata, Tamami T. I.: *See—*
Fujimura, Hideo H. F.; Egashira, Noritaka N. E.; Iwata, Tamami T. I.; and Satake, Naoto N. S., 5,185,314, Cl. 503-227.000.

Iwata, Toshio: *See—*
Hashimoto, Atsuko; Iwata, Toshio; and Fukui, Wataru, 5,184,590, Cl. 123-414.000.

Izawa, Minoru: *See—*
Itaba, Yasushi; Izawa, Minoru; Saito, Keichiro; and Kondo, Takayoshi, 5,185,203, Cl. 428-349.000.

Izawa, Yoshikazu: *See—*
Tanigawa, Shogo; Yokoyama, Takeshi; and Izawa, Yoshikazu, 5,185,017, Cl. 55-257.200.

Izumisawa, Gen; and Sato, Yasushi, to Kabushiki Kaisha Kawai Gakki Seisakusho. Method for processing a waveform. 5,185,491, Cl. 84-627.000.

J. M. Voith GmbH: *See—*
Holzinger, Dieter; Sollinger, Hans-Peter; and Beisswanger, Rudolf, 5,184,787, Cl. 242-65.000.
Kotitschke, Gerhard; and Kugler, Georg, 5,184,408, Cl. 34-117.000.

J and N Associates, Inc.: *See—*
Krcma, Jan; and Batt, Terry A., 5,184,500, Cl. 73-23.200.

Jacobs, Kendall E.; and Weipert, Mary B., to Electronic Warfare Associates, Inc. Apparatus and method for managing crisis situations. 5,185,697, Cl. 364-419.000.

James River Corporation of Virginia: *See—*
Kuchenbecker, Morris W., 5,184,995, Cl. 493-79.000.

James, Robert C.; and Pederson, Richard J., to Curwood, Inc. Easy-open case taping method and apparatus. 5,184,997, Cl. 493-117.000.

Jansch, Hans-Joachim: *See—*
Sauer, Wolfgang; Jansch, Hans-Joachim; Rostock, Angelika; Faust, Gottfried; Siegemund, Christine; Lohmann, Dieter; and Bartsch, Reni, 5,185,341, Cl. 514-269.000.

Jansen, Franz; and Gros, Pierre, to Sanofi. Prolonged-action immunotoxins containing a glycopeptide constituent which inactivates ribosomes, modified on its polysaccharide units. 5,185,434, Cl. 530-391.700.

Janssen Pharmaceutica N.V.: *See—*
Van Daele, Georges H. P.; Bosmans, Jean-Paul R. M. A.; and De Cleyn, Michel A. J., 5,185,335, Cl. 514-243.000.

Japan as represented by Ministry of International Trade and Industry, Director-General: *See—*
Muto, Tsunehisa; Kanegae, Futoshi; Takatsuka, Toru; Hirohama, Seiya; and Ojiro, Masazumi, 5,185,481, Cl. 568-918.000.

Japan Aviation Electronics Industry Limited: *See—*
Kaku, Ryoji; Takahashi, Hiroyuki; and Asami, Eiichi, 5,185,823, Cl. 385-2.000.

Japane Vilene Co., Ltd.: *See—*
Kawabata, Nariyoshi; Minami, Akinori; and Yo, Tadahira, 5,185,415, Cl. 526-265.000.

Jasper, Craig L., to Motorola, Inc. Method for measuring ions implanted into a semiconductor substrate. 5,185,273, Cl. 437-8.000.

Jatco Corporation: *See—*
Asada, Michio, 5,184,506, Cl. 73-118.100.
Mochizuki, Tatsufumi, 5,184,528, Cl. 74-869.000.

Jelic, Ralph, to Verosol USA Inc. Window blind activator. 5,184,660, Cl. 160-171.000.

Jen, Wang H. Acoustic board. 5,185,504, Cl. 181-286.000.

Jennings, Richard E.; and Schlotterbeck, Stephen C., to Ford New Holland, Inc. Round baler twine wrapping apparatus. 5,184,545, Cl. 100-5.000.

Jennmar Corporation: *See—*
Calandra, Frank, Jr.; Stankus, John C.; and Yacisin, Paul A., 5,184,923, Cl. 405-259.400.

Jensen, Donald, to 21st Century Power & Light Corporation. Gas turbine for converting fuel to electrical and mechanical energy. 5,185,541, Cl. 310-11.000.

JEOL Ltd.: *See—*
Norioka, Setsuo; and Shimada, Hiroshi, 5,185,530, Cl. 250-398.000.

Jerman, John H.: *See—*
Terry, Stephen C.; and Jerman, John H., 5,184,515, Cl. 73-727.000.

Jersey Nuclear-Avco Isotopes, Inc.: *See—*
Finch, Lester M., 5,185,757, Cl. 372-56.000.

Jessee, Jim: *See—*
Hseu, Bill; Jessee, Jim; and Wang, William, 5,184,457, Cl. 60-39.141.

Jewelry Corporation of America, Inc.: *See—*
Joseph, Lawrence; and Fuoroli, Frank C., 5,184,481, Cl. 63-12.000.

Jian-he, Liang: *See—*
Pei-qian, Zhong; Wen-kang, Zheng; Xi-tian, Xu; Jian-he, Liang; Dong-shen, Zhou; and Jun-zhi, Yang, 5,184,933, Cl. 414-725.000.

Jimenes, Cecilio V., Jr.: *See—*
Alfaro, Daniel V.; and Jimenes, Cecilio V., Jr., 5,184,354, Cl. 2-425.000.

Jitsukawa, Koichiro: *See—*
Fujii, Setsuro, deceased; Takada, Kaoruko, legal heir; Ishikawa, Hiroshi; Tsubouchi, Hidetsugu; and Jitsukawa, Koichiro, 5,185,337, Cl. 514-254.000.

Job, Robert C., to Shell Oil Company. Olefin polymerization catalyst. 5,185,410, Cl. 526-128.000.

Jobson, Simon: *See—*
Bartley, William J.; Jobson, Simon; Harkreader, Gordon G.; Kitson, Melanie; and Lemanski, Michael F., 5,185,308, Cl. 502-170.000.

Johansson, Eric B.; and Smith, David G., to General Electric Company. Dimensional gauging apparatus for nuclear fuel rod spacer cells. 5,185,124, Cl. 376-439.000.

John Lysaght (Australia) Limited: *See—*
Fukase, Hisahiko; Kato, Heiji; and Nomura, Akihiro, 5,184,668, Cl. 164-480.000.

Johnsen Machine Company Limited: *See—*
Johnsen, Ole, 5,184,447, Cl. 53-373.900.

Johnsen, Ole, to Johnsen Machine Company Limited. Bag closing machine. 5,184,447, Cl. 53-373.900.

Johnson, Kenneth A.; and Ellis, Charles E., Jr., to MDT Corporation. Apparatus and method for measuring pressure changes within pressure vessels. 5,185,709, Cl. 364-558.000.

Johnson, Robert W., Jr.; and Paulakonis, Joseph C., to Exide Electronics. Uninterruptible power supply having improved battery charger. 5,185,536, Cl. 307-66.000.

Johnson, Thomas G.: *See—*
Gruidel, James A.; Haase, Reinhold A.; and Johnson, Thomas G., 5,184,358, Cl. 4-555.000.

Johnson, Thomas P.: *See—*
Bernhard, James C.; Johnson, Thomas P.; and Antila, Garth V., 5,184,792, Cl. 248-71.000.

Johnson, William M.: *See—*
Baror, Gigy; and Johnson, William M., 5,185,878, Cl. 395-425.000.

Johnston, Otis A.: *See—*
Curto, Rick A.; and Johnston, Otis A., 5,185,726, Cl. 367-18.000.

Johnston, Robert E.: *See—*
Davis, Nancy L.; Willis, Loretta V.; Johnston, Robert E.; and Smith, Jonathan F., 5,185,440, Cl. 536-237.200.

Jones, Jeffrey P.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Jones, Kirk G.: *See—*
Olson, Paul D.; and Jones, Kirk G., 5,184,874, Cl. 301-64.700.

Jones, Wesley W., to AT&T Bell Laboratories. Optical fiber closure having enhanced storage capability. 5,185,845, Cl. 385-135.000.

Jordanov, Dentscho: *See—*
Schewe, Tankred; Luther, Helmut; and Jordanov, Dentscho, 5,185,377, Cl. 514-721.000.

Joseph, Lawrence; and Fuoroli, Frank C., to Jewelry Corporation of America, Inc. Hoop jewelry having ornamental member suspended within the hoop, and method of making same. 5,184,481, Cl. 63-12.000.

Jud, Wilfried; Reiterer, Franz; and Neiderer, Andreas, to Teich Aktiengesellschaft. Packaging for piece goods. 5,184,771, Cl. 229-87.050.

Judy, Raymond A. Cutter head with internal drive for machining workpieces. 5,184,927, Cl. 409-143.000.

Jueptner, Guenter A.; and Karrasch, Susanne M., to Dow Chemical Company, The. Polymerization of water-soluble monomers. 5,185,411, Cl. 526-200.000.

Juguin, Bernard: *See—*
Collin, Jean-Claude; Juguin, Bernard; Larue, Joseph; and Rojey, Alexandre, 5,185,486, Cl. 585-448.000.

Juki Corporation: *See—*
Yabu, Maasaki, 5,185,511, Cl. 219-121.780.

Jun-zhi, Yang: *See—*
Pei-qian, Zhong; Wen-kang, Zheng; Xi-tian, Xu; Jian-he, Liang; Dong-shen, Zhou; and Jun-zhi, Yang, 5,184,933, Cl. 414-725.000.

Jung, Karl-August: *See—*
Folsch, Karl J.; Frank, Klaus; and Jung, Karl-August, 5,185,404, Cl. 525-222.000.

Jung, Mary L., to UOP. Hair deodorizing compositions and process for using. 5,184,630, Cl. 132-202.000.

Jung, Taik K., to Samsung Electronics Co., Ltd. Detergent injection type vacuum cleaner. 5,184,370, Cl. 15-321.000.

Jutland Development CC: *See—*
Playdon, Terence S., 5,185,057, Cl. 156-642.000.

K-Swiss Inc.: *See—*
Batra, Vijay K., 5,184,378, Cl. 24-714.600.

Kaali, Steven; and Schwolsky, Peter M. Method and system for treatment of blood and/or other body fluids and/or synthetic fluids using combined filter elements and electric field forces. 5,185,086, Cl. 210-748.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Izumisawa, Gen; and Sato, Yasushi, 5,185,491, Cl. 84-627.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Arai, Mitsuru, 5,184,536, Cl. 91-505.000.
Hori, Shuji; Karakama, Tadao; and Maruyama, Jun, 5,184,646, Cl. 137-636.200.
Misuda, Kenji; and Bando, Norihito, 5,184,932, Cl. 414-685.000.

Kabushiki Kaisha Nippon Conlux: *See—*
Nishiumi, Kenji; Nakajima, Kenji; Mikami, Mitsugu; Ishida, Takeshi; and Ito, Yukio, 5,184,709, Cl. 194-318.000.
Noda, Kazuo; Nakamura, Eiichi; and Nishiguma, Hiroaki, 5,185,729, Cl. 369-44.140.

Kabushiki Kaisha Toshiba: *See—*
Fujiwara, Takayoshi; Honma, Hisanori; and Sone, Yoshinori, 5,184,940, Cl. 417-356.000.
Goto, Haruyuki; and Kubota, Katsuhiko, 5,185,295, Cl. 437-226.000.
Hasegawa, Kiyoshi, 5,185,777, Cl. 378-176.000.
Itoyama, Katsumi; Sugiyama, Akira; and Suda, Koichiro, 5,185,791, Cl. 379-435.000.
Matsuyama, Takayki, 5,185,759, Cl. 372-96.000.
Minemura, Takashi, 5,185,577, Cl. 324-318.000.
Mizuno, Tomohisa, 5,185,646, Cl. 257-390.000.
Shirouzu, Shunji; Hatayama, Tamotsu; and Inoue, Shouichi, 5,185,772, Cl. 378-29.000.
Suzuki, Setsuo; Noda, Etsuo; and Morimiya, Osami, 5,185,552, Cl. 313-231.710.
Takeda, Fumio; Kojima, Yoshio; Kaneko, Tsuneo; Ishibashi, Yutaka; Sasaki, Naoto; and Tsushima, Isako, 5,184,438, Cl. 52-221.000.
Toda, Haruki, 5,185,724, Cl. 365-234.000.
Tomura, Hidesuke, 5,184,622, Cl. 128-660.070.
Tsujimoto, Shuichi, 5,185,813, Cl. 382-9.000.
Uchida, Yukimasa, 5,185,567, Cl. 323-267.000.
Ueno, Fumio; Kasori, Mitsuo; Goto, Yoshiko; and Horiguchi, Akihiro, 5,184,399, Cl. 29-846.000.
Usiriku, Yukihiro, 5,185,279, Cl. 437-41.000.
Wakimoto, Hirotsugu; Konno, Mitsuo; and Yoshihara, Kunio, 5,185,650, Cl. 257-508.000.
Yamashita, Kyoji; Yoshikawa, Ryoichi; and Tokita, Masakazu, 5,185,812, Cl. 382-8.000.
Yoda, Nobuhisa, 5,185,821, Cl. 382-61.000.
Yoshida, Minoru; and Hirano, Kouji, 5,185,632, Cl. 355-261.000.

K.K. Ueno Seiyaku Oyo Kenkyujo: *See—*
Ueno, Ryuzo; Ueno, Ryuji; and Oda, Tomio, 5,185,374, Cl. 514-570.000.

Kadokawa, Satoshi, to Nippon Seiko Kabushiki Kaisha. Method of installing roller bearing. 5,184,402, Cl. 29-898.070.

Kadono, Masaya: *See—*
Yamazaki, Shunpei; Hayashi, Shigenori; Ishida, Noriya; Sasaki, Mari; Takeyama, Junichi; Itou, Kenji; Kojima, Masahiro; and Kadono, Masaya, 5,185,179, Cl. 427-601.000.

Kadono, Yasuo: *See—*
Ichikawa, Hiroaki; Kadono, Yasuo; Kojima, Katsuo; Nakamura, Hiroyuki; and Aoki, Yoshio, 5,185,093, Cl. 252-62.510.

Kafka, James D.; Baer, Thomas M.; Keirstead, Mark S.; Watts, Michael L.; and Schaaf, Horst W., to Spectra-Physics Lasers Incorporated. Dispersion compensation for ultrashort pulse generation in tuneable lasers. 5,185,750, Cl. 372-18.000.

Kagechika, Takashi, to Fuji Photo Optical Co., Ltd. Charging device for camera. 5,185,621, Cl. 354-234.100.

Kageyama, Shuhei: *See—*
Yamamoto, Tadashi; Kageyama, Shuhei; and Suzuki, Takahiko, 5,184,908, Cl. 401-29.000.

Kai, Naoki: *See—*
Hino, Katsuhiko; Kai, Naoki; Sakamoto, Masato; Kon, Tatsuya; Oka, Makoto; Furukawa, Kiyoshi; and Ochi, Yoshiaki, 5,185,338, Cl. 514-254.000.

VOL 1147 ISS 2 FE 9 1993 UMI

Kaijou, Akira, to Idemitsu Kosan Company Limited. Process for the production of organosilica sol and surface treating agent containing same. 5,185,037, Cl. 106-287.120.

Kais, Alfred; Nuding, Erich; and Benenowski, Sebastian, to BWG Butzbacher Weichenbau GMBA. Frog tip that can be shifted relative to the wing rails. 5,184,791, Cl. 246-468.000.

Kaiser, Herbert J., to Calgon Corporation. Soluble tellurium compositions. 5,185,036, Cl. 106-208.000.

Kajitani, Makoto: *See—*
Kawaguchi, Akihiro; Satoh, Atsushi; Kajitani, Makoto; Yasumoto, Mitsugi; and Yamamoto, Junji, 5,185,344, Cl. 514-299.000.

Kajitani, Tetsuji: *See—*
Matsunra, Yasumasa; Harada, Hiroyuki; Kajitani, Tetsuji; and Araki, Toshihiko, 5,185,563, Cl. 318-602.000.

Kaku, Ryoji; Takahashi, Hiroyuki; and Asami, Eiichi, to Japan Aviation Electronics Industry Limited. Waveguide type optical device. 5,185,823, Cl. 385-2.000.

Kakubo, Yuji, to Yamaha Corporation. Method for synchronizing recording and reproducing devices. 5,185,680, Cl. 360-72.200.

Kakui, Mikio: *See—*
Yokoyama, Masaaki; and Kakui, Mikio, 5,184,895, Cl. 374-162.000.

Kakuma, Satoshi: *See—*
Murayama, Masami; Takahashi, Atsuhisa; Kakuma, Satoshi; and Yoshimura, Shuji, 5,185,743, Cl. 370-110.100.

Kalla, Amritpal S.: *See—*
McNesby, John; Kalla, Amritpal S.; and Rodriguez, Angel, 5,185,799, Cl. 380-28.000.

Kalman, Robert F.; Wysocki, Paul F.; and Digonnet, Michel J. F., to Board of Trustee of the Leland Stanford Junior University, The. Large signal three-level superfluorescent fiber sources. 5,185,749, Cl. 372-6.000.

Kalos, Matthew J.: *See—*
Casper, Daniel F.; Gregg, Thomas A.; Flanagan, John R.; Kalos, Matthew J.; and Liencres, Bjorn O., 5,185,862, Cl. 395-250.000.

Kamada, Teruo: *See—*
Namba, Takaoki; and Kamada, Teruo, 5,184,496, Cl. 72-350.000.

Kamegawa, Manabu, to Nouvel Laboratory, Ltd. Pastels containing fluorescent pigments and method for producing the same. 5,185,038, Cl. 106-416.000.

Kamen, Dean: *See—*
Lapidus, Stanley N.; Kamen, Dean; Villeneuve, Richard R.; and Polk, Lewis T., Jr., 5,185,084, Cl. 210-741.000.

Kaminski, James J.: *See—*
Solomon, Daniel; Kaminski, James J.; White, Steven K.; Lehman de Gaeta, Laura S.; and Ganguly, Ashit K., 5,185,334, Cl. 514-236.200.

Kamiyama, Satoshi: *See—*
Mori, Yoshihiro; Mannoh, Masaya; Kamiyama, Satoshi; and Ohnaka, Kiyoshi, 5,185,755, Cl. 372-46.000.

Kanao, Shiro. Pressure-resistant helical corrugated pipe. 5,184,649, Cl. 138-122.000.

Kanda, Shoichi; Narita, Takeshi; Ushigome, Masahiro; and Nagahama, Masaharu, to Nitto Chemical Industry Co., Ltd. Water-in-oil emulsion of cationic polymer. 5,185,393, Cl. 524-140.000.

Kanegae, Futoshi: *See—*
Muto, Tsunehisa; Kanegae, Futoshi; Takatsuka, Toru; Hirohama, Seiya; and Ojiro, Masazumi, 5,185,481, Cl. 568-918.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See—*
Furukawa, Hisao; Isayama, Katsuhiko; and Kato, Yasushi, 5,185,418, Cl. 526-329.200.

Kaneko, Tetsuya: *See—*
Nomura, Ichiro; Takeda, Toshihiko; Banno, Yoshikazu; Kaneko, Tetsuya; Ono, Haruhito; and Suzuki, Hidetoshi, 5,185,554, Cl. 313-495.000.

Kaneko, Tsuneo: *See—*
Takeda, Fumio; Kojima, Yoshio; Kaneko, Tsuneo; Ishibashi, Yutaka; Sasaki, Naoto; and Tsushima, Isako, 5,184,438, Cl. 52-221.000.

Kanelous, Kanelos J., to Greenreader Inc. Golf putting aid. 5,184,817, Cl. 273-32.00H.

Kanetake, Satoshi: *See—*
Miyata, Junji; Kanetake, Satoshi; Morimoto, Yasufumi; and Hanayama, Kenji, 5,185,240, Cl. 430-596.000.

Kang, Sung K.: *See—*
Bindra, Perminder S.; Cuomo, Jerome J.; Gall, Thomas P.; Ingraham, Anthony P.; Kang, Sung K.; Kim, Jungihl; Lauro, Paul; Light, David N.; Markovich, Voya R.; Miersch, Ekkehard F.; Molla, Jaynal A.; Powell, Douglas O.; Ritsko, John J.; Saxenmeyer, George J., Jr.; Varcoe, Jack A.; and Walker, George F., 5,185,073, Cl. 205-104.000.

Kanluen, Ratana; and Licht, Brigitte H., to Texaco Chemical Company. Polymerization process. 5,185,385, Cl. 522-84.000.

Kansas State University Research Foundation: *See—*
Neumann, Paul E.; and Seib, Paul A., 5,185,382, Cl. 521-84.100.

Kantzer, Robert C.; Rocazella, Michael A.; Weinstein, Jerry G.; and White, Danny R., to Lanxide Technology Company, LP. Ceramic articles with tailored metallic component. 5,185,303, Cl. 501-127.000.

Kanwischer, Herbert: *See—*
Tamme, Rainer; and Kanwischer, Herbert, 5,184,669, Cl. 165-10.000.

Kanzaki Papper Manufacturing Co., Ltd.: *See—*
Fujita, Seigoro; and Fukuzawa, Yoichi, 5,185,213, Cl. 428-500.000.

Kao Corporation: *See—*
Ichikawa, Hiroaki; Kadono, Yasuo; Kojima, Katsuo; Nakamura, Hiroyuki; and Aoki, Yoshio, 5,185,093, Cl. 252-62.510.

Kappele, William D.: *See—*
Webb, Steven L.; and Kappele, William D., 5,185,034, Cl. 106-22.00R.

Karakama, Tadao: *See—*
Hori, Shuji; Karakama, Tadao; and Maruyama, Jun, 5,184,646, Cl. 137-636.200.

Kardorff, Uwe: *See—*
Buerstinghaus, Rainer; Neubauer, Hans-Juergen; Hofmeister, Peter; Kuenast, Christoph; Leyendecker, Joachim; and Kardorff, Uwe, 5,185,359, Cl. 514-407.000.

Karl, Randy L.; and Maenke, Dale A., to Fluoroware, Inc. Single wafer robotic package. 5,184,723, Cl. 206-454.000.

Karmann, Guenther: *See—*
Muller, Hartwig; Bischoff, Erwin; Fugmann, Burkhard; Weber, Karlheinz; Frobel, Klaus; Rosen, Bruno; Grutzmann, Rudi; Karmann, Guenther; and Kohlsdorfer, Christian, 5,185,326, Cl. 514-23.000.

Karosseriewerke Weinsberg GmbH: *See—*
Bauer, Kurt, 5,184,869, Cl. 296-213.000.
Bauhof, Karl, 5,184,870, Cl. 296-223.000.

Karpen, Daniel N. Device for full spectrum polarized lighting system. 5,184,881, Cl. 362-1.000.

Karrasch, Susanne M.: *See—*
Jueptner, Guenter A.; and Karrasch, Susanne M., 5,185,411, Cl. 526-200.000.

Kasai, Nobuyuki: *See—*
Sakamoto, Shinichi; Sonoda, Takuji; and Kasai, Nobuyuki, 5,185,534, Cl. 257-276.000.

Kasenga, Anthony F.; and Dang, Tuan A., to GTE Products Corporation. Method of improving the maintenance of a fluorescent lamp containing europium-activated barium magnesium silicate phosphor. 5,185,180, Cl. 427-67.000.

Kashihara, Akio: *See—*
Sato, Haruhiko; Kida, Katsuaki; and Kashihara, Akio, 5,185,229, Cl. 430-110.000.

Kasori, Mitsuo: *See—*
Ueno, Fumio; Kasori, Mitsuo; Goto, Yoshiko; and Horiguchi, Akihiro, 5,184,399, Cl. 29-846.000.

Katakura, Masayuki; and Ishihara, Masaaki, to Sony Corporation. Peak value detecting circuit. 5,185,569, Cl. 324-103.00P.

Katano, Kiyoaki; Tomomoto, Tamako; Ogino, Hiroko; Hirano, Fumiya; Yuda, Yasukatsu; Konno, Fukio; Machinami, Tomoya; Tsuruoka, Takashi; and Inoye, Shigeharu, to Meiji Seika Kaisha Ltd. Piperidine compounds and antiulcer composition containing the same. 5,185,347, Cl. 514-322.000.

Kataoka, Fujio: *See—*
Gawa, Tomohiro; Inoue, Mamoru; Hamane, Tokuhito; and Kataoka, Fujio, 5,184,651, Cl. 140-115.000.

Kataoka, Takahiro: *See—*
Hayase, Yoshio; Kataoka, Takahiro; Takenaka, Hideyuki; Ichinari, Mitsuhiro; Masuko, Michio; Takahashi, Toshio; and Tanimoto, Norihiko, 5,185,342, Cl. 514-274.000.

Kato, Heiji: *See—*
Fukase, Hisahiko; Kato, Heiji; and Nomura, Akihiro, 5,184,668, Cl. 164-480.000.

Kato, Kiyotaka; and Okamoto, Takashi, to Mitsubishi Denki K.K. Curved surface designing method. 5,185,855, Cl. 395-129.000.

Kato, Shinichi, to Sony Corporation. Still video camera with white balance and image pickup lens adjustment. 5,185,669, Cl. 358-227.000.

Kato, Tatsunori; Kawai, Katsuhiko; and Isomura, Shigenori, to Nippondenso Co., Ltd. Engine control apparatus. 5,184,588, Cl. 123-339.000.

Kato, Yasushi: *See—*
Furukawa, Hisao; Isayama, Katsuhiko; and Kato, Yasushi, 5,185,418, Cl. 526-329.200.

Kato, Yuji; and Sawamoto, Kunifumi, to Nissan Motor Co., Ltd. Running state control system for motor vehicle. 5,184,577, Cl. 123-90.150.

Katsukawa, Masato: *See—*
Maeda, Tatsuo; Katsukawa, Masato; Iwasaki, Hiroaki; and Mizuta, Yasufumi, 5,185,228, Cl. 430-59.000.

Katz, Helmuth J.: *See—*
Fitzpatrick, John W., 5,185,570, Cl. 324-133.000.

Katz, Ronald A., to First Data Resources, Inc. Multiple party telephone control system with random dialing for polling. 5,185,787, Cl. 379-204.000.

Kawabata, Nariyoshi; Minami, Akinori; and Yo, Tadahira, to Japane Vilene Co., Ltd. Adsorptive resin for microorganisms. 5,185,415, Cl. 526-265.000.

Kawaguchi, Akihiro; Satoh, Atsushi; Kajitani, Makoto; Yasumoto, Mitsugi; and Yamamoto, Junji, to Taiho Pharmaceutical Company, Ltd. Pharmaceutically useful bicyclolactam derivative. 5,185,344, Cl. 514-299.000.

Kawaguri, Mariko: *See—*
Nankai, Shiro; Kawaguri, Mariko; and Iijima, Takashi, 5,185,256, Cl. 435-174.000.

Kawai, Katsuhiko: *See—*
Kato, Tatsunori; Kawai, Katsuhiko; and Isomura, Shigenori, 5,184,588, Cl. 123-339.000.

Kawai, Kiyoshi, to Fuji Photo Film Co., Ltd. Silver halide color photographic material and process for the formation of color images thereon. 5,185,237, Cl. 430-505.000.

Kawai, Kiyoshi: *See—*
Shiba, Keisuke; Kawai, Kiyoshi; Okazaki, Masaki; and Okino, Yoshiharu, 5,185,236, Cl. 430-505.000.

Kawai, Naotoshi; and Maekawa, Kazunobu, to Minolta Camera Kabushiki Kaisha. Image forming apparatus having single sensor for detecting mischucking of transfer paper and whether transfer paper is plain or transparent paper. 5,185,633, Cl. 355-271.000.

Kawakami, Sota; and Hosoi, Miyuki, to Konica Corporation. Mask for plate making. 5,185,186, Cl. 427-332.000.

Kawakita, Takeshi; Kuroita, Takanobu; Fukuda, Takemi; and Iezawa, Ryuhei, to Yoshitomi Pharmaceutical Industries, Ltd. Benzazine compounds and pharmaceutical uses thereof. 5,185,333, Cl. 514-224.200.

Kawamoto, Ryuichi: *See—*
Taguchi, Yasuhisa; Endo, Makoto; Kawamoto, Ryuichi; Saito, Shiro; Zaizen, Reigi; Komachi, Hiroshi; Narita, Naomasa; and Fujiwara, Kenichi, 5,184,355, Cl. 4-420.000.

Kawamura, Ichiro: *See—*
Suzuki, Yoshiichi; Mogamiya, Hiroyuki; and Kawamura, Ichiro, 5,184,847, Cl. 252-299.650.

Kawasaki, Kenichiro, to Pioneer Electronic Corporation. GPS receiver. 5,185,761, Cl. 375-1.000.

Kawasaki Steel Corp.: *See—*
Aono, Toshinao; Asami, Yukio; Hirooka, Noboru; Arima, Yusaku; and Fujii, Susumu, 5,185,309, Cl. 502-202.000.
Nishike, Ujihiro; Sujita, Shigeko; and Nagamine, Tsuneo, 5,185,043, Cl. 148-111.000.

Kawashima, Hisao, to NEC Corporation. Optical waveguide device. 5,185,831, Cl. 385-41.000.

Kawatetsu Minig Co., Ltd.: *See—*
Shimizu, Tadao; Aso, Yoshio; and Konnai, Hidefumi, 5,185,204, Cl. 428-402.000.

Kazlauskas, Algimantas K., to Illinois Tool Works Inc. Machine and method for clipping generally planar sheets onto rectangularly arrayed cans having chimes. 5,184,448, Cl. 53-398.000.

Keating, Michael D.; and Norris, Robert W. Hockey puck. 5,184,820, Cl. 273-128.00R.

Keating, William E.; and Robson, Jillian A., to Becton Dickinson and Company. Method for lysing Mycobacteria using achromopeptidase. 5,185,242, Cl. 435-6.000.

Keefer, Larry K.: *See—*
Diodati, Jean G.; and Keefer, Larry K., 5,185,376, Cl. 514-611.000.

Keenan, Richard M.: *See—*
Finkelstein, Joseph A.; Keenan, Richard M.; and Weinstock, Joseph, 5,185,351, Cl. 514-341.000.

Kehr, Helmut; Kuhnle, Adolf; and Schleinzer, Matthias, to Huels Aktiengesellschaft. Hot melt adhesive and coating composition. 5,185,398, Cl. 525-74.000.

Keim, John E.: *See—* ,
Mothersbaugh, James M.; and Keim, John E., 5,185,568, Cl. 324-95.000.

Keirstead, Mark S.: *See—*
Kafka, James D.; Baer, Thomas M.; Keirstead, Mark S.; Watts, Michael L.; and Schaaf, Horst W., 5,185,750, Cl. 372-18.000.

Keller, Wilhelm A. Pressure medium-driven dispensing appliance for operating double cartridge cases. 5,184,758, Cl. 222-137.000.

Kelly, Leroy, to People's Telephone Cooperative, Inc. Fiberoptic telephone systems. 5,185,738, Cl. 370-95.100.

Kelly-Mahaffey, William L.: *See—*
Beers, Gregory E.; Flickner, Myron D.; Kelly-Mahaffey, William L.; Polk, Darryl R.; Stafford, James M.; and Wattenbarger, Henry E., 5,185,811, Cl. 382-8.000.

Kelly, Robert G., to Norton Company. Coated abrasive material containing abrasive filaments. 5,185,012, Cl. 51-295.000.

Kelzer, Robert. Printed circuit board test fixture and method. 5,184,517, Cl. 73-851.000.

Kenesson, Thomas M.: *See—*
Lindley, Daniel D.; Ryan, Timothy R.; Curtis, Thomas A.; De la Garza, Edward M.; Hilton, Charles R.; and Kenesson, Thomas M., 5,185,469, Cl. 568-319.000.

Kennametal Inc.: *See—*
Sheirer, Daniel C.; Woods, Gerald L.; and Montgomery, Robert H., Jr., 5,184,689, Cl. 175-420.100.
Woods, Gerald L.; and Shirk, Steven D., 5,184,925, Cl. 408-144.000.

Kennedy, David N.; Filipek, Pauline A.; and Caviness, Verne S., Jr., to General Hospital Corporation, The; and Massachusetts Institute of Technology. Morphometric analysis of anatomical tomographic data. 5,185,809, Cl. 382-6.000.

Kennedy, Jeanette: *See—*
Reitman, William; and Kennedy, Jeanette, 5,185,526, Cl. 250-332.000.

Kenney, James C.: *See—*
Quick, Nathaniel R.; and Kenney, James C., 5,184,662, Cl. 164-97.000.

Kent, Brian P.; and Dube, Charles M., to Dynamics Technology, Inc. Diver locator system. 5,185,725, Cl. 367-6.000.

Kent, Van A.: *See—*
Daussin, Rory D.; Kent, Van A.; and Lowenkron, Steven B., 5,185,384, Cl. 521-160.000.

Kerber, Philip S. Field crop sprayer. 5,184,775, Cl. 239-163.000.

Kerkman, Daniel J.: *See—*
Brooks, Dee W.; Kerkman, Daniel J.; Martin, Jonathan G.; Stewart, Andrew O.; and Summers, James B., 5,185,363, Cl. 514-438.000.

Kern, Alan R.: *See—*
Rehrig, Houston; Decker, Steven C.; Kern, Alan R.; and Dickerson, Lonnie G., 5,184,413, Cl. 40-308.000.

Kerr Manufacturing Company: *See—*
Steele, Charles E.; Anderson, Mark R.; and Hamilton, James C., 5,184,893, Cl. 366-209.000.

Kersh, David V., III: *See—*
Love, Andrew M.; and Kersh, David V., III, 5,185,721, Cl. 365-189.060.

Kerstges, Johannes; and Brosdetzko, Hubert, to Deutsche Babcock Energie- und Umwelttechnik AG. Tublar mill. 5,184,782, Cl. 241-171.000.

KEW Import/Export Inc.: *See—*
Langford, Terrence R., 5,184,633, Cl. 134-57.00R.

Keyes, John M., to High Performance Tube, Inc. Inner ribbed tube and method. 5,184,674, Cl. 165-184.000.

KFC Corporation: *See—*
Barkhau, Keith D.; Beltz, John D.; Kupski, Donald R.; Henke, Mitchell C.; and Svensson, Soldon A., 5,185,172, Cl. 426-523.000.

Khakimov, Almas K.: *See—*
Abdrakhmanov, Gabdrashit S.; Zainullin, Albert G.; Meling, Konstantin V.; Rakhmanov, Rauf N.; Balandin, Alexandr P.; Puzanov, Alexandr A.; Urazgildin, Ilyas A.; Mukhametshin, Almaz A.; Khakimov, Almas K.; Yasas, Antanas A.; Naryshkina, Lutsia M.; Akhunov, Albert M.; Akhunova, Tanzilya K., administrator; Akhunova, Flera A., dministrator; and Akhunov, Farid A., administrator, 5,184,687, Cl. 175-267.000.

Kida, Katsuaki: *See—*
Sato, Haruhiko; Kida, Katsuaki; and Kashihara, Akio, 5,185,229, Cl. 430-110.000.

Kielbas, Eugen; and Renninger, Erhard, to Robert Bosch GmbH. Electromagnetic rotation control device. 5,185,546, Cl. 310-216.000.

Kienzle, Wolfgang; and Kleinhans, Josef, to Robert Bosch GmbH. Method and apparatus for measuring the air flow in the air intake passage of an internal combustion engine. 5,184,509, Cl. 73-204.140.

Kijima, Naoto; and Oguri, Yasuo, to Mitsubishi Kasei Corporation. Producing a ceramic implant by coating a powder mixture of zirconia and either tricalcium phosphate or hydroxyapatite on a molded unsintered body of partially stabilized zirconia and then sintering the article. 5,185,177, Cl. 427-2.000.

Kikkawa, Kazuyoshi: *See—*
Nakatsuka, Masakatsu; Otsuji, Atsuo; Hasegawa, Kiyoharu; Kikkawa, Kazuyoshi; and Yamaguchi, Akihiro, 5,185,453, Cl. 549-226.000.

Kikuchi, Akihiro; and Fukuda, Tokuya, to Sony Corporation. Focusing apparatus and digital filters for use therewith. 5,185,707, Cl. 364-525.000.

Kikutake, Kazuhiko: *See—*
Natsume, Bunji; Kyomura, Nobuo; Kikutake, Kazuhiko; and Fukuchi, Toshiki, 5,185,354, Cl. 514-369.000.

Kim, Cheon S.: *See—*
Lee, Jin H.; Kim, Cheon S.; Lee, Kyu H.; and Kim, Dae Y., 5,185,282, Cl. 437-47.000.

Kim, Dae Y.: *See—*
Lee, Jin H.; Kim, Cheon S.; Lee, Kyu H.; and Kim, Dae Y., 5,185,282, Cl. 437-47.000.

Kim, Joong-Ki: *See—*
Shin, Han-Jin; and Kim, Joong-Ki, 5,184,722, Cl. 206-387.000.

Kim, Jungihl: *See—*
Bindra, Perminder S.; Cuomo, Jerome J.; Gall, Thomas P.; Ingraham, Anthony P.; Kang, Sung K.; Kim, Jungihl; Lauro, Paul; Light, David N.; Markovich, Voya R.; Miersch, Ekkehard F.; Molla, Jaynal A.; Powell, Douglas O.; Ritsko, John J.; Saxenmeyer, George J., Jr.; Varcoe, Jack A.; and Walker, George F., 5,185,073, Cl. 205-104.000.

Kim, Moon K.; and Hwang, In H., to Ilya Co. Ltd. Solid three-piece golf ball. 5,184,828, Cl. 273-228.000.

Kim, Woo-chan: *See—*
Yang, Jun -mo; and Kim, Woo-chan, 5,185,553, Cl. 313-468.000.

Kimura, Seiji; and Wada, Kouji, to AIOI Seiki, Inc. Clamp device drive apparatus. 5,184,537, Cl. 92-33.000.

Kimura, Takashi. Speed control device for a pneumatic cylinder. 5,184,535, Cl. 91-443.000.

Kinderlerer, Judith L.: *See—*
Humphrey, Anthony M.; Skill, Bridget A.; and Kinderlerer, Judith L., 5,185,252, Cl. 435-134.000.

King, Bobby J.: *See—*
Totten, Patty L.; Lindsey, Donald W.; and King, Bobby J., 5,184,680, Cl. 166-293.000.

King, James L.; and Peters, Richard E., to A. O. Smith Corporation. Mounting support for motor-pump unit. 5,184,941, Cl. 417-360.000.

King, Willis M.: *See—*
Coons, Andrew M., III; King, Willis M.; Dickerson, Joe B.; and Thompson, Melvin R., 5,184,381, Cl. 28-271.000.

Kinnari, Pekka: *See—*
Takalo, Pasi; Kinnari, Pekka; Henriksson, Mikko; Nikku, Tapani; and Myllymaki, Hannu, 5,184,924, Cl. 408-67.000.

Kinne, Daniel J.: *See—*
Hammond, Edward P.; Kinne, Daniel J.; and Roseberry, George L., 5,184,896, Cl. 385-33.000.

Kinney, David V.; O'Brien, Vincent J.; and Van Sice, Daniel G., to Eastman Kodak Company. Mounting assembly for optics tub in a reproduction apparatus. 5,185,626, Cl. 355-55.000.

Kinoshita, Norihito: *See—*
Ueda, Katsuhiko; Suzuki, Toshikazu; and Kinoshita, Norihito, 5,185,880, Cl. 395-550.000.

Kirk, Robert C.; and Kirk, Stacey R. Cat litter box. 5,184,574, Cl. 119-162.000.

Kirk, Stacey R.: *See—*
Kirk, Robert C.; and Kirk, Stacey R., 5,184,574, Cl. 119-162.000.

VOL 1147 ISS 2 FE 9 1993 UMI

Kirker, Garry W.: *See—*
Del Rossi, Kenneth J.; Kirker, Garry W.; and Huss, Albin, Jr., 5,185,484, Cl. 585-419.000.

Kissick, Thomas P.: *See—*
Godfrey, Jollie D., Jr.; Mueller, Richard H.; Kissick, Thomas P.; and Singh, Janak, 5,185,463, Cl. 562-506.000.

Kissinger, Gaylord M., to General Electric Company. Process for preparing paracumylphenol. 5,185,475, Cl. 568-748.000.

Kitagawa, Masatoshi; Okamoto, Yukio; Ono, Takayuki; and Shinden, Tetuya, to Hitachi, Ltd.; and Hitachi Instrument Engineering Co., Ltd. Mass spectrometer for analyzing ultra trace element using plasma ion source. 5,185,523, Cl. 250-281.000.

Kitahara, Masaki: *See—*
Fukikawa, Yoshihiro; Suzuki, Mikio; Iwasaki, Hiroshi; Sakashita, Mitsuaki; and Kitahara, Masaki, 5,185,328, Cl. 514-63.000.

Kitajima, Masaichi, to Olympus Optical Co., Ltd. Cup cleaning apparatus. 5,184,634, Cl. 134-95.100.

Kito, Fusao, to THK Co., Ltd. Ball retainer for linear bearings. 5,184,898, Cl. 384-43.000.

Kitson, Melanie: *See—*
Bartley, William J.; Jobson, Simon; Harkreader, Gordon G.; Kitson, Melanie; and Lemanski, Michael F., 5,185,308, Cl. 502-170.000.

Kittel, Christoph: *See—*
Diessel, Cornelia; Kliwer, Carsten; Burak, Gerhard; Blumel, Ehrenfried; and Kittel, Christoph, 5,185,380, Cl. 521-49.000.

Kiyose, Yoshihiro: *See—*
Tanaka, Kunimaro; Ozaki, Minoru; Kiyose, Yoshihiro; and Ito, Osamu, 5,185,746, Cl. 371-40.100.

Klein, Ernst; and Loss, Hartmut, to A&A Manufacturing Co., Inc. Cable carrier chain. 5,184,454, Cl. 59-78.100.

Klein, Joseph T.: *See—*
Effland, Richard C.; Klein, Joseph T.; and Martin, Lawrence L., 5,185,350, Cl. 514-339.000.

Kleinhans, Josef: *See—*
Kienzle, Wolfgang; and Kleinhans, Josef, 5,184,509, Cl. 73-204.140.

Klesse, Wolfgang; Elser, Wilhelm; Mager, Theodor; Christner, Juergen; Kraus, Hertha; Rossberg, Peter; and Weber, Marliese, to Rohm GmbH. Aqueous synthetic resin dispersion. 5,185,387, Cl. 523-201.000.

Kliwer, Carsten: *See—*
Diessel, Cornelia; Kliwer, Carsten; Burak, Gerhard; Blumel, Ehrenfried; and Kittel, Christoph, 5,185,380, Cl. 521-49.000.

Klostermann, Heinrich F., to PXT Technology, Inc. X-ray tube construction. 5,185,774, Cl. 378-125.000.

Klyce, Thomas A., to Ranger Tool Co. Steam evacuation unit for a peeler. 5,184,541, Cl. 99-472.000.

Knapheide, Wolfgang: *See—*
Wallmann, Wilfried; Rogge, Gunter; and Knapheide, Wolfgang, 5,184,551, Cl. 101-219.000

Knickerbocker, Sarah H.: *See—*
Adams, Richard W., Jr.; Clarke, David R.; Knickerbocker, Sarah H.; Rapp, Linda L.; and Schwartz, Bernard, 5,185,215, Cl. 428-545.000.

Knierim, David L.: *See—*
Doornink, Douglas J.; Knierim, David L.; and Dalrymple, John C., 5,185,599, Cl. 340-747.000.

Knifton, John F.: *See—*
Sanderson, John R.; and Knifton, John F., 5,185,480, Cl. 568-913.000.

Knight, George W.: *See—*
Sawyer, Lawrence H.; White, Marvin A.; and Knight, George W., 5,185,199, Cl. 428-288.000.

Knox, Carol L.: *See—*
Eswarakrishnan, Seetha; Knox, Carol L.; and Damle, Suresh B., 5,185,103, Cl. 252-606.000.

Koai, Kwang-Tsai: *See—*
Olshansky, Robert; and Koai, Kwang-Tsai, 5,185,756, Cl. 372-50.000.

Kobayashi, Manabu: *See—*
Okui, Kaoru; and Kobayashi, Manabu, 5,184,582, Cl. 123-90.310.

Kobayashi, Masahiro, to Aisan Kogyo Kabushiki Kaisha. Flow control valve. 5,184,593, Cl. 123-571.000.

Kobayashi, Miki: *See—*
Kohama, Keiko; Kobayashi, Miki; Kurusu, Yasurou; Yukawa, Hideaki; and Fukushima, Makiko, 5,185,262, Cl. 435-320.100.

Kobayashi, Noboru; and Futaki, Yoshiki, to Yamaha Hatsudoki Kabushiki Kaisha. Adjustable jet propulsion unit for watercraft. 5,184,966, Cl. 440-38.000.

Kobayashi, Tetsuo: *See—*
Endo, Isao; Nagamune, Teruyuki; Nishimura, Minoru; and Kobayashi, Tetsuo, 5,185,255, Cl. 435-174.000.

Kobe Cast Iron Works, Ltd.: *See—*
Hayashi, Yuji; Ito, Masahiro; Yoshida, Hiroyoshi; and Shibata, Hiroyoshi, 5,184,664, Cl. 164-271.000.

Koberstein, Manfred; Balcom, James H.; and Kolpacke, Stephen M., to Ford Motor Company. Accumulator for vehicle air conditioning system. 5,184,479, Cl. 62-503.000.

Kobler, Ingo; and Mathes, Joseph, to MAN Roland Druckmaschinen AG. Suction transfer actuation system for a multi-color sheet-fed rotary printing press. 5,184,553, Cl. 101-409.000.

Kobunaya, Hideki, to NEC Corporation. Product adder for perfoming multiplication of floating point data and addition of fixed point data. 5,185,713, Cl. 364-748.000.

Koczy, Bernhard, to Henkel Kommanditgesellschaft auf Aktien. Separator apparatus and method for regenerating emulsions with downstream monitoring filter. 5,185,078, Cl. 240-741.000.

Kodaka, Yoshiro: *See—*
Yoshibe, Koushi; and Kodaka, Yoshiro, 5,185,622, Cl. 354-286.000.

Koenig & Bauer Aktiengesellschaft: *See—*
Schwitzky, Volkmar R.; and Stiel, Jurgen A., 5,184,813, Cl. 271-98.000.

Koffler, Harald: *See—*
Hrdlicka, Armin W.; Pribyl, Wolfgang; Schuster, Hermann; Loibner, Klaus; and Koffler, Harald, 5,184,512, Cl. 73-584.000.

Kogoma, Masuhiro: *See—*
Horiike, Yasuhiro; Okazaki, Satiko; and Kogoma, Masuhiro, 5,185,132, Cl. 422-186.050.

Kohama, Keiko; Kobayashi, Miki; Kurusu, Yasurou; Yukawa, Hideaki; and Fukushima, Makiko, to Mitsubishi Petrochemical Co., Ltd. DNA fragment containing gene which encodes the function of stabilizing plasmid in host microorganism. 5,185,262, Cl. 435-320.100.

Kohlman, Daniel M. Container for a fire extinguisher. 5,184,684, Cl. 169-51.000.

Kohlsdorfer, Christian: *See—*
Muller, Hartwig; Bischoff, Erwin; Fugmann, Burkhard; Weber, Karlheinz; Frobel, Klaus; Rosen, Bruno; Grutzmann, Rudi; Karmann, Guenther; and Kohlsdorfer, Christian, 5,185,326, Cl. 514-23.000.

Kohr, William J.: *See—*
Goeddel, David V.; Kohr, William J.; Pennica, Diane; and Vehar, Gordon A., 5,185,259, Cl. 435-226.000.

Kohut, Paul: *See—*
Meyer, John D.; and Kohut, Paul, 5,185,801, Cl. 381-59.000.

Koike, Masaru: *See—*
Sakamoto, Shinichi; Hiraiwa, Kenichi; Koike, Masaru; and Nozawa, Yoshioki, 5,185,050, Cl. 156-304.500.

Koitabashi, Noribumi; Tajika, Hiroshi; Hirabayashi, Hiromitsu; and Ikeda, Masami, to Canon Kabushiki Kaisha. Ink jet recording method and apparatus for recovering ejection at a particular orifice by ejecting ink from adjacent orifices. 5,185,615, Cl. 346-1.100.

Koito Manufacturing Co., Ltd.: *See—*
Sakuma, Toranosuke; and Obata, Minoru, 5,184,888, Cl. 362-136.000.

Kojima, Junji, to Horiba, Ltd. Ion-selective electrode and method of producing the same. 5,185,072, Cl. 204-416.000.

Kojima, Katsuo: *See—*
Ichikawa, Hiroaki; Kadono, Yasuo; Kojima, Katsuo; Nakamura, Hiroyuki; and Aoki, Yoshio, 5,185,093, Cl. 252-62.510.

Kojima, Masahiro: *See—*
Yamazaki, Shunpei; Hayashi, Shigenori; Ishida, Noriya; Sasaki, Mari; Takeyama, Junichi; Itou, Kenji; Kojima, Masahiro; and Kadono, Masaya, 5,185,179, Cl. 427-601.000.

Kojima, Takao: *See—*
Matsubara, Yoshiaki; Amano, Kouzou; and Kojima, Takao, 5,184,529, Cl. 81-125.000.

Kojima, Yoshio: *See—*
Takeda, Fumio; Kojima, Yoshio; Kaneko, Tsuneo; Ishibashi, Yutaka; Sasaki, Naoto; and Tsushima, Isako, 5,184,438, Cl. 52-221.000.

Kojo, Shin: *See—*
Okada, Satoru; and Kojo, Shin, 5,184,830, Cl. 273-433.000.

Kokusai Electric Co., Ltd.: *See—*
Urabe, Kenzo, 5,185,710, Cl. 364-718.000.

Kolpacke, Stephen M., to Ford Motor Company. Accumulator for vehicle air conditioning system. 5,184,480, Cl. 62-503.000.

Kolpacke, Stephen M.: *See—*
Koberstein, Manfred; Balcom, James H.; and Kolpacke, Stephen M., 5,184,479, Cl. 62-503.000.

Komachi, Hiroshi: *See—*
Taguchi, Yasuhisa; Endo, Makoto; Kawamoto, Ryuichi; Saito, Shiro; Zaizen, Reigi; Komachi, Hiroshi; Narita, Naomasa; and Fujiwara, Kenichi, 5,184,355, Cl. 4-420.000.

Komaki, Toshihiro; Kudo, Hideo; Ishizuki, Tomonori; and Yokozeki, Shinichi, to Pioneer Electronic Corporation. Method for reading data from optical disk. 5,185,730, Cl. 369-44.260.

Komatsu Mec Corp.: *See—*
Misuda, Kenji; and Bando, Norihito, 5,184,932, Cl. 414-685.000.

Komatsu, Takashi, to Idemitsu Petrochemical Co., Ltd. Halogenated copolycarbonate end capped with trihalophenol. 5,185,425, Cl. 528-198.000.

Komiya, Iwao: *See—*
Takayama, Yuuji; Matsueda, Hirokazu; Sugiura, Masato; Ozaki, Tatsuhiko; Wada, Hirotaka; and Komiya, Iwao, 5,185,417, Cl. 526-301.000.

Komiya, Yoshinori: *See—*
Okura, Yukiko; and Komiya, Yoshinori, 5,185,665, Cl. 358-183.000.

Komori Corporation: *See—*
Kurata, Yoshiaki, 5,185,520, Cl. 250-223.00R.

Komoto, Akira, to Shimadzu Corporation. Electronic balance. 5,184,690, Cl. 177-212.000.

Kon, Tatsuya: *See—*
Hino, Katsuhiko; Kai, Naoki; Sakamoto, Masato; Kon, Tatsuya; Oka, Makoto; Furukawa, Kiyoshi; and Ochi, Yoshiaki, 5,185,338, Cl. 514-254.000.

Kondo, Kazuaki, to Fujitsu Limited. Method for fabricating an exposure mask including a step for adhering mask body substrate to a supporting block. 5,185,054, Cl. 156-630.000.

Kondo, Takayoshi: *See—*
Itaba, Yasushi; Izawa, Minoru; Saito, Keichiro; and Kondo, Takayoshi, 5,185,203, Cl. 428-349.000.

Kondo, Yoshiharu: *See—*
Nishizawa, Chiharu; Kondo, Yoshiharu; and Ohto, Masaru, 5,185,185, Cl. 427-304.000.

Kondoh, Harufusa; and Uramoto, Shinichi, to Mitsubishi Denki Kabushiki Kaisha. Output circuit for semiconductor integrated circuits having controllable load drive capability and operating method thereof. 5,185,538, Cl. 307-270.000.

Konica Corporation: *See—*
Kawakami, Sota; and Hosoi, Miyuki, 5,185,186, Cl. 427-332.000.

Koninklijke PTT Nederland N.V.: *See—*
van der Tol, Johannes J. G. M., 5,185,828, Cl. 385-28.000.

Konishi, Isako: *See—*
Murata, Yasuyuki; Konishi, Isako; Tanaka, Ryohei; and Nakanishi, Yoshinori, 5,185,388, Cl. 523-466.000.

Konnai, Hidefumi: *See—*
Shimizu, Tadao; Aso, Yoshio; and Konnai, Hidefumi, 5,185,204, Cl. 428-402.000.

Konno, Fukio: *See—*
Katano, Kiyoaki; Tomomoto, Tamako; Ogino, Hiroko; Hirano, Fumiya; Yuda, Yasukatsu; Konno, Fukio; Machinami, Tomoya; Tsuruoka, Takashi; and Inoye, Shigeharu, 5,185,347, Cl. 514-322.000.

Konno, Mitsuo: *See—*
Wakimoto, Hirotsugu; Konno, Mitsuo; and Yoshihara, Kunio, 5,185,650, Cl. 257-508.000.

Kono, Satoru: *See—*
Aoyama, Hirokazu; Yasuhara, Takashi; Kono, Satoru; Koyama, Satoshi; and Ueda, Souichi, 5,185,483, Cl. 570-172.000.

Kopinski, Martin W.; and Bogdanich, George J., to Pengo Corporation. Auger tooth locking mechanism. 5,184,412, Cl. 37-142.00A.

Kopolow, Stephen L., to ISP Investments Inc. Copolymer of vinyl pyrrolidone and a C30 alpha-olefin in flake or powder form, process for making same, and personnal care compositions therewith. 5,185,170, Cl. 526-264.000.

Kopp, Joseph J., Jr.: *See—*
Cottone, Robert J., Jr.; Kopp, Joseph J., Jr.; and Rowley, David S., 5,184,625, Cl. 128-751.000.

Koran, Peter; Gasser, Oswald; and Guggenberger, Rainer, to THERA Patent GmbH & Co., KG. Process for preparing a substrate surface for bonding with activatable adhesives by applying an activator-containing layer onto the substrate surface. 5,185,184, Cl. 427-299.000.

Korenek, Raymond E. Game apparatus for poker and similar card games. 5,184,821, Cl. 273-138.00A.

Korinsky, George K., to Compaq Computer Corporation. Thermal packaging for natural convection cooled electronics. 5,185,691, Cl. 361-386.000.

Koskenmaki, David C., to Minnesota Mining and Manufacturing Company. Method of forming an array of densely packed discrete metal microspheres. 5,185,178, Cl. 427-585.000.

Koslo, Randy; and Lukacsko, Alison, to Bristol-Myers Squibb Company. Gastroprotectant compositions and use thereof. 5,185,144, Cl. 424-66.000.

Koszalka, George W.; Burns, Charlene L.; Krenitsky, Thomas A.; and Rideout, Janet L., to Burroughs Wellcome Co. Therapeutic nucleosides. 5,185,437, Cl. 536-24.000.

Kotitschke, Gerhard; and Kugler, Georg, to J. M. Voith GmbH. Dryer section. 5,184,408, Cl. 34-117.000.

Kotobuki & Co., Ltd.: *See—*
Yamamoto, Tadashi; Kageyama, Shuhei; and Suzuki, Takahiko, 5,184,908, Cl. 401-29.000.

Koutrakis, Petros; and Wolfson, Jack M., to President and Fellows of Harvard College. Ozone monitors. 5,185,129, Cl. 422-88.000.

Kouznetsov, Oleg L.: *See—*
Pechkov, Andrey A.; Kouznetsov, Oleg L.; and Drjaguin, Veniamin V., 5,184,678, Cl. 166-249.000.

Kowis, Kenneth L. Paint brush and roller cleaner. 5,184,637, Cl. 134-182.000.

Koyama, Satoshi: *See—*
Aoyama, Hirokazu; Yasuhara, Takashi; Kono, Satoru; Koyama, Satoshi; and Ueda, Souichi, 5,185,483, Cl. 570-172.000.

Kozol, Michael: *See—*
Hesse, Eric M.; Kozol, Michael; and Lim, Chan, 5,185,698, Cl. 364-419.000.

Kozulic, Branko; and Heimgartner, Urs. Hydrophilic and amphiphatic monomers, their polymers and gels and hydrophobic electrophoresis. 5,185,466, Cl. 564-208.000.

Kraft General Foods, Inc.: *See—*
Loh, Jimbay; Trumbetas, Jerome; Palmer, David H.; and Fitch, Mark D., 5,185,175, Cl. 426-631.000.

Krajewski, Nicholas J.: *See—*
Cray, Seymour R.; and Krajewski, Nicholas J., 5,184,400, Cl. 29-879.000.

Krangel, Michael S.: *See—*
Brenner, Michael B.; Seidman, Jonathan; Strominger, Jack L.; Ip, Stephen H.; Krangel, Michael S.; and Band, Hamid, 5,185,250, Cl. 435-69.300.

Kratos Analytical Limited: *See—*
Page, Simon C., 5,185,524, Cl. 250-305.000.

Kraus, Hertha: *See—*
Klesse, Wolfgang; Elser, Wilhelm; Mager, Theodor; Christner, Juergen; Kraus, Hertha; Rossberg, Peter; and Weber, Marliese, 5,185,387, Cl. 523-201.000.

Krcma, Jan; and Batt, Terry A., to J and N Associates, Inc. Gas detector. 5,184,500, Cl. 73-23.200.

Krebs, Joseph V., Jr., to Ingalls Shipbuilding, Inc. Split core degaussing coil loop. 5,185,688, Cl. 361-267.000.

Krenitsky, Thomas A.: *See—*
Koszalka, George W.; Burns, Charlene L.; Krenitsky, Thomas A.; and Rideout, Janet L., 5,185,437, Cl. 536-24.000.

Krespan, Carl G., to Du Pont de Nemours, E. I., and Company. Halohydrin commpounds. 5,185,477, Cl. 568-842.000.

Kreuzer, Franz-Heinrich: *See—*
Funk, Enno; Kreuzer, Franz-Heinrich; Gramshammer, Cornelia; and Lottner, Willibald, 5,185,419, Cl. 528-25.000.

Krisher, Dale L.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Krishnamurthy, Ramachandran; and Andrecovich, Mark J., to BOC Group, Inc., The. Carbon dioxide production from combustion exhaust gases with nitrogen and argon by-product recovery. 5,185,139, Cl. 423-359.000.

Krishnan, Vedavalli G., to Racal-Datacom, Inc. Data bit to constellation symbol mapper. 5,185,763, Cl. 375-39.000.

Krishnaswamy, S. Visvanathan; Horwitz, Stuart S.; and Moore, Robert A., to Westinghouse Electric Corp. Microwave film bulk acoustic resonator and manifolded filter bank. 5,185,589, Cl. 333-133.000.

Krockert. Bernd; Printzen, Helmut; Biermann, Hans-Peter; and Hofs, Hans-Ulrich, to Bayer Aktiengesellschaft. Process for the production of iron oxide yellow pigments. 5,185,141, Cl. 423-632.000.

Kroneis, Herbert; Marsoner, Hermann; and Noormofidi, Taghi, to AVL Medical Instruments AG. Method for calibration of a measurement apparatus. 5,185,263, Cl. 436-8.000.

Kross, Robert D.: *See—*
Davidson, Eugene A.; and Kross, Robert D., 5,185,161, Cl. 424-665.000.

Kruchowski, James N.: *See—*
Shepherd, Lloyd T.; August, Melvin C.; and Kruchowski, James N., 5,185,502, Cl. 174-262.000.

Krude, Werner, to GKN Automotive, Inc. Method of forming universal joint housings. 5,184,494, Cl. 72-254.000.

Kubota, Katsuhiko: *See—*
Goto, Haruyuki; and Kubota, Katsuhiko, 5,185,295, Cl. 437-226.000.

Kuchenbecker, Morris W., to James River Corporation of Virginia. Containers and blanks with a curled edge and method of making same. 5,184,995, Cl. 493-79.000.

Kudo, Hideo: *See—*
Komaki, Toshihiro; Kudo, Hideo; Ishizuki, Tomonori; and Yokozeki, Shinichi, 5,185,730, Cl. 369-44.260.

Kudsk, Kenneth A., to University of Tennessee Research Corporation, The. Human growth hormone induced improvement in depressed T4/T8 ratio. 5,185,322, Cl. 514-12.000.

Kuefner-Muehl, Ulrike: *See—*
Weber, Karl-Heinz; Stransky, Werner; Kuefner-Muehl, Ulrike; Heuer, Hubert; Birke, Franz; and Bechtel, Wolf-Dietrich, 5,185,442, Cl. 540-555.000.

Kuenast, Christoph: *See—*
Buerstinghaus, Rainer; Neubauer, Hans-Juergen; Hofmeister, Peter; Kuenast, Christoph; Leyendecker, Joachim; and Kardorff, Uwe, 5,185,359, Cl. 514-407.000.

Kugler, Fonderie et Robinetterie S.A.: *See—*
Magnenat, Alain; Meylan, Daniel; and Rodriguez, Jean-Jacques, 5,184,777, Cl. 239-447.000.

Kugler, Georg: *See—*
Kotitschke, Gerhard; and Kugler, Georg, 5,184,408, Cl. 34-117.000.

Kuhn, Charles J. Vehicle lifting system and method. 5,184,930. Cl. 414-427.000.

Kuhn, Dieter. Flow regulator. 5,184,641, Cl. 137-504.000.

Kuhnle, Adolf: *See—*
Kehr, Helmut; Kuhnle, Adolf; and Schleinzer, Matthias, 5,185,398, Cl. 525-74.000.

Kumagai, Ryohei: *See—*
Takatori, Sunao; Kumagai, Ryohei; Matsumoto, Koji; and Yamamoto, Makoto, 5,185,816, Cl. 382-34.000.

Kumazawa, Kazuhiko: *See—*
Hamaguchi, Kunikazu; Kumazawa, Kazuhiko; and Asami, Seiichi, 5,185,110, Cl. 264-44.000.

Kupski, Donald R.: *See—*
Barkhau, Keith D.; Beltz, John D.; Kupski, Donald R.; Henke, Mitchell C.; and Svensson, Soldon A., 5,185,172, Cl. 426-523.000.

Kuraray Company, Ltd.: *See—*
Asanuma, Goro; and Tamai, Yoshin, 5,185,470, Cl. 568-341.000.
Mori, Toshiki; Fujii, Hiroshi; Onishi, Takashi; and Yamamoto, Kazuo, 5,185,468, Cl. 568-31.000.

Kurata, Hideaki: *See—*
Yokoyama, Seiichiro; and Kurata, Hideaki, 5,185,074, Cl. 205-162.000.

VOL 1147 ISS 2 FE 9 1993 UMI

Kurata, Yoshiaki, to Komori Corporation. Sheet overlapping detecting method. 5,185,520, Cl. 250-223.00R.

Kurian, Thampy; and Maloratsky, Leo, to Renaissance Electronics Corp. Compact tandem non-reciprocal circuit. 5,185,587, Cl. 333-1.100.

Kuroita, Takanobu: *See—*
Kawakita, Takeshi; Kuroita, Takanobu; Fukuda, Takemi; and Iezawa, Ryuhei, 5,185,333, Cl. 514-224.200.

Kurokawa, Tadashi: *See—*
Murai, Naobumi; and Kurokawa, Tadashi, 5,184,486, Cl. 68-175.000.

Kurosaki, Takebumi: *See—*
Morita, Takao; Ishii, Osamu; and Kurosaki, Takebumi, 5,185,550, Cl. 310-344.000.

Kurose, Yoshikazu; Aoki, Shinji; and Suzuki, Hideto, to Sony Corporation. Information transmitting device. 5,185,740, Cl. 370-106.000.

Kurumisawa, Kuninobu. Letterpress for transferring and method of transferring by use of the letterpress for transferring. 5,185,225, Cl. 430-18.000.

Kurusu, Yasurou: *See—*
Kohama, Keiko; Kobayashi, Miki; Kurusu, Yasurou; Yukawa, Hideaki; and Fukushima, Makiko, 5,185,262, Cl. 435-320.100.

Kusz, Maximillian, to Owens-Illinois Closure Inc. Child resistant reminder closure. 5,184,739, Cl. 215-220.000.

Kuszyk, Jack A., to Lanxide Technology Company, LP. Method of making ceramic composite bodies incorporating filler material and bodies produced thereby. 5,185,298, Cl. 501-87.000.

Kutsuna, Kiyoharu; and Inoue, Yoshimitsu, to Nippondenso Co., Ltd. Refrigerant apparatus. 5,184,478, Cl. 62-468.000.

Kvasnik, Frank; and McGrath, Andrew, to Imperial Chemical Industries PLC. Sensing apparatus and method for detecting Raman emissions from a species at the interface of the sensing length of an optical fiber. 5,185,521, Cl. 250-227.230.

Kvasnikoff, Georges; Nougayrede, Jean; and Philippe, Andre , to Elf Aquitaine Production. Process for removing sulphur compounds from a residual gas. 5,185,140, Cl. 423-574.00R.

Kyomura, Nobuo: *See—*
Natsume, Bunji; Kyomura, Nobuo; Kikutake, Kazuhiko; and Fukuchi, Toshiki, 5,185,354, Cl. 514-369.000.

La-Z-Boy Chair Co.: *See—*
LaPointe, Larry P.; and Shoemaker, Edwin J., 5,184,871, Cl. 297-444.000.

Labbate Climate Control System Inc.: *See—*
Papadopoulos, Athanasios P.; Labbate, Eric M.; and Liburdi, Nicola, 5,184,420, Cl. 47-62.000.

Labbate, Eric M.: *See—*
Papadopoulos, Athanasios P.; Labbate, Eric M.; and Liburdi, Nicola, 5,184,420, Cl. 47-62.000.

Lacy, Danny. Toilet dolly. 5,184,653, Cl. 141-98.000.

Lade, Guenther-Eberhard: *See—*
Leypold, Helmut; and Lade, Guenther-Eberhard, 5,184,712, Cl. 198-449.000.

Laese, Dieter: *See—*
Feldt, Wolfgang; and Laese, Dieter, 5,184,428, Cl. 51-165.750.

Laiman, Ekaputra: *See—*
Bassetti, Chester F., Jr.; Reddy, Dayakar C.; Laiman, Ekaputra; and Richter, Bryan M., 5,185,602, Cl. 340-793.000.

Laird, Kevin M.: *See—*
Barrett, Steven T.; Laird, Kevin M.; Murray, Richard E.; and O'Connor, James M., 5,185,797, Cl. 380-21.000.

Laitram Corporation, The: *See—*
Ledet, Brent A., 5,184,538, Cl. 99-331.000.

Lam, Chung H.; Lasky, Jerome B.; Hill, Craig M.; Nakos, James S.; Holmes, Steven J.; Geissler, Stephen F.; and Lord, David K., to International Business Machines Corporation. Boron out-diffused surface strap process. 5,185,294, Cl. 437-193.000.

Lampe, Steven W.; and McArthur, Malcolm J. Power unit fuel pressurization system. 5,184,458, Cl. 60-39.142.

Lanard Toys Limited: *See—*
Brovelli, Virginio, 5,184,755, Cl. 222-79.000.

Landis, John M.: *See—*
Douty, George H.; and Landis, John M., 5,184,964, Cl. 439-247.000.

Lane, Charles: *See—*
Marten, Lewis H.; and Lane, Charles, 5,184,610, Cl. 128-207.140.

Lang, Kurt: *See—*
Barauke, Norbert; and Lang, Kurt, 5,184,374, Cl. 19-262.000.

Lang, Norbert: *See—*
Berger, Jurgen; and Lang, Norbert, 5,184,843, Cl. 280-728.000.

Lange, Hans-Willi, to Albert Schulte Sohne GmbH & Co. Caster with conductors between the tire of its wheel and the carrier of its wheel frame. 5,184,373, Cl. 16-35.00R.

Langford, Terrence R., to KEW Import/Export Inc. Cleansing and sterilization mechanism suitable for contact lenses and the like. 5,184,633, Cl. 134-57.00R.

Langlais, Bernard; and Saunier, Christian, to Codes Rousseau. Method and device for training in the driving of vehicles. 5,184,956, Cl. 434-69.000.

Lanxide Technology Company, LP: *See—*
Kantzer, Robert C.; Rocazella, Michael A.; Weinstein, Jerry G.; and White, Danny R., 5,185,303, Cl. 501-127.000.
Kuszyk, Jack A., 5,185,298, Cl. 501-87.000.
Luszcz, Stanley J.; and Zwicker, Harry R., 5,185,302, Cl. 501-127.000.
Park, Eugene S.; and Poste, Steven D., 5,185,297, Cl. 501-80.000.

LaPadula, Leonard J.: *See—*
Ward, Phillip W.; Scott, H. Logan; Holmes, Jerry D., and LaPadula, Leonard J., 5,185,610, Cl. 342-357.000.

Lapidus, Stanley N.; Kamen, Dean; Villeneuve, Richard R.; and Polk, Lewis T., Jr., to Cytyc Corporation. Method and apparatus for control of flow through a filter chamber by measured chamber equilibration pressure. 5,185,084, Cl. 210-741.000.

LaPointe, Larry P.; and Shoemaker, Edwin J., to La-Z-Boy Chair Co. Detachable chair back. 5,184,871, Cl. 297-444.000.

Larochelle, Bernard; and Dupont, Robert, to Phil Larochelle Equipments Inc. Dumping semi-trailer. 5,184,872, Cl. 298-22.0AE.

Laroulandie, Pierre-Jean M.: *See—*
Vial, Jacques J.; Laroulandie, Pierre-Jean M.; Henry, David; Dannoux, Thierry L. A.; and Gremetz, Sylvain M. F., 5,185,835, Cl. 385-49.000.

Larson, Allen L.: *See—*
Grimes, Gary J.; and Larson, Allen L., 5,185,824, Cl. 385-19.000.

Larson, John D., III, to Hewlett-Packard Company. Method for focusing of magnetic resonance images. 5,185,573, Cl. 324-309.000.

Larson, Steven M.; Finn, Ronald; Carrasquillo, Jorge A.; Reynolds, James C.; Neumann, Ronald D.; Graham, Martin C.; and Pentlow, Keith S., to United States of America, Health and Human Services. Antigen-specific composition and in vivo methods for detecting and localizing an antigenic site and for radiotherapy. 5,185,142, Cl. 424-1.100.

Larue, Joseph: *See—*
Collin, Jean-Claude; Juguin, Bernard; Larue, Joseph; and Rojey, Alexandre, 5,185,486, Cl. 585-448.000.

Lashinski, Robert, to Danforth Biomedical, Inc. Turn-limiting proximal adaptor for steerable catheter systems. 5,185,004, Cl. 604-95.000.

Lasic, Danilo D.; and Belic, Andrej, to Liposome Technology, Inc. Method for instant preparation of a drug containing large unilamellar vesicles. 5,185,154, Cl. 424-450.000.

Lasky, Jerome B.: *See—*
Lam, Chung H.; Lasky, Jerome B.; Hill, Craig M.; Nakos, James S.; Holmes, Steven J.; Geissler, Stephen F.; and Lord, David K., 5,185,294, Cl. 437-193.000.

Lassmann, Manfred: *See—*
Brockmanns, Karl-Josef; Derichs, Josef; Wey, Edmund; Grecksch, Hans; Tholen, Leo; and Lassmann, Manfred, 5,184,786, Cl. 242-45.000.

Last, Harry J. Automatic swimming pool cover with a dual hydraulic drive system. 5,184,357, Cl. 4-502.000.

Lau, Hon C., to Shell Oil Company. Gravel packing process. 5,184,679, Cl. 166-278.000.

Lauf, Robert J.; and Heestand, Richard L., to Martin Marietta Energy Systems, Inc. Device and method for skull-melting depth measurement. 5,185,031, Cl. 75-375.000.

Laurent, Daniel; and Mayet, Jean C., to Compagnie Generale des Etablissements Michelin. Hook for use in an apparatus for making a tire reinforcement. 5,185,051, Cl. 156-397.000.

Lauro, Paul: *See—*
Bindra, Perminder S.; Cuomo, Jerome J.; Gall, Thomas P.; Ingraham, Anthony P.; Kang, Sung K.; Kim, Jungihl; Lauro, Paul; Light, David N.; Markovich, Voya R.; Miersch, Ekkehard F.; Molla, Jaynal A.; Powell, Douglas O.; Ritsko, John J.; Saxenmeyer, George J., Jr.; Varcoe, Jack A.; and Walker, George F., 5,185,073, Cl. 205-104.000.

Lavender, Michael R., to Hollister Incorporated. Two-piece ostomy appliance and coupling therefor with rocking wedge lock. 5,185,008, Cl. 604-338.000.

Lawson, R. Joe: *See—*
Cohn, Michelle J.; Lawson, R. Joe; and Moser, Mark D., 5,185,306, Cl. 502-66.000.

Lawson, Sue A.: *See—*
Funk, Michael W.; Lawson, Sue A.; and McGuigan, David F., 5,185,785, Cl. 379-111.000.

Lawton, Peter G.; and Smith, Norman, to Aerospace Preforms Limited. Production of a shaped filamentary structure. 5,184,387, Cl. 29-419.100.

Lazar, Warren G., to Polypore, Inc. Method of producing elastomeric open cell structures. 5,185,111, Cl. 264-49.000.

Lazorchak, Edward D., to Electroid Company. Electromagnetic pulse operated bi-stable brake. 5,185,542, Cl. 310-36.000.

Lebrecht, Horst. Centering and clamping device. 5,184,810, Cl. 269-309.000.

Ledbetter, William B., Jr.: *See—*
Edenfield, Robin W.; McGarity, Ralph; Reininger, Russell; Ledbetter, William B., Jr.; and Shahan, Van B., 5,185,694, Cl. 395-425.000.

Ledet, Brent A., to Laitram Corporation, The. High efficiency steam cooker. 5,184,538, Cl. 99-331.000.

Lee, Chang J., to Gold Star Co., Ltd. Zooming position on-screen display device for camcorders. 5,185,670, Cl. 358-227.000.

Lee, Chorng-Cheng. Opening lock for a sunshade. 5,184,639, Cl. 135-28.000.

Lee, Graham S., to Bespak plc. Dispensing apparatus. 5,184,761, Cl. 222-402.200.

Lee, Jin H.; Kim, Cheon S.; Lee, Kyu H.; and Kim, Dae Y., to Electronics and Telecommunications Research Institute. Method of manufacturing DRAM cell having a cup shaped polysilicon storage electrode. 5,185,282, Cl. 437-47.000.

Lee, Kuo-hua: *See—*
Fischer, Frederick H.; Lee, Kuo-hua; Nagy, William J.; and Selamoglu, Nur, 5,185,291, Cl. 437-173.000.

Lee, Kyu H.: *See—*
Lee, Jin H.; Kim, Cheon S.; Lee, Kyu H.; and Kim, Dae Y., 5,185,282, Cl. 437-47.000.

Lee, Sang H., to Samsung Electronics Co., Ltd. Operation safety device for a portable power tool. 5,184,534, Cl. 83-397.000.

Lee, Sung M., to GTE Products Corporation. Lamp with double swaged lead. 5,185,555, Cl. 313-632.000.

Lee, Yong-Tai: *See—*
Peters, Manfred; Grundhoff, Karl-Josef; Schurmann, Hartmut; and Lee, Yong-Tai, 5,185,045, Cl. 148-671.000.

Lee, Young S.: *See—*
Hamada, Hiromi; Hirano, Kazuya; and Lee, Young S., 5,185,798, Cl. 380-23.009.

Lee, Yung-Yen: *See—*
Cheng, Shih-Tsun; and Lee, Yung-Yen, 5,185,853, Cl. 395-115.000.

Lefeber, Paul; Botterman, Rene; Van Tilborgh, Cornelis; and Van Veggel, Loek, to Fokker Aircraft B.V. Bent structure comprising outer metal sheets in a soft W condition bonded by an adhesive layer. 5,185,198, Cl. 428-251.000.

Leger, James R.: *See—*
Pan, Tso Y.; Sanchez-Rubio, Antonio; Walpole, James N.; Williamson, Richard C.; Meingailis, Ivars; Leger, James R.; and Goltsos, William C., 5,185,758, Cl. 372-72.000.

Leggett, Ernest W., to TEX Corporation. Method for predicting agent requirements in a force management system. 5,185,780, Cl. 379-34.000.

Lehman de Gaeta, Laura S.: *See—*
Solomon, Daniel; Kaminski, James J.; White, Steven K.; Lehman de Gaeta, Laura S.; and Ganguly, Ashit K., 5,185,334, Cl. 514-236.200.

Lehto, Esko O.; and Vehmas, Jukka H., to Tamglass Engineering OY. Mould assembly for bending difficult bending shapes in a glass sheet. 5,185,022, Cl. 65-182.200.

Lemanski, Michael F.: *See—*
Bartley, William J.; Jobson, Simon; Harkreader, Gordon G.; Kitson, Melanie; and Lemanski, Michael F., 5,185,308, Cl. 502-170.000.

Lemek, John: *See—*
Ward, Richard; and Lemek, John, 5,184,958, Cl. 434-162.000.

Lemire, Steven M.: *See—*
Cucci, Gerald R.; and Lemire, Steven M., 5,184,514, Cl. 73-706.000.

Lemischka, Ihor R., to Princeton University, The Trustees of. Nucleic acids encoding hencatoporetic stem cell receptor flk-2. 5,185,438, Cl. 536-23.200.

Lenoski, Daniel E., to Tandem Computers, Inc,. System to determine if modification of first macroinstruction to execute in fewer clock cycles. 5,185,870, Cl. 395-375.000.

Lenzing Aktiengesellschaft: *See—*
Bloo, Johann; Romauer, Ewald; and Hollerwoger, Alois, 5,184,379, Cl. 26-72.000.

Les Produits Pinso LTEE: *See—*
Maufette, Claude, 5,184,352, Cl. 24-585.000.

Le Sergent, Christian: *See—*
Fevrier, Herve ; Marcerou, Jean-Francois; and Le Sergent, Christian, 5,185,847, Cl. 385-141.000.

Leutner, Wilfried, to Zahnradfabrik Friedrichshafen, AG. Auxiliary power steering system. 5,184,691, Cl. 180-132.000.

LeVan, Susan L.; and DeGroot, Rodney C. One step process for imparting decay resistance and fire retardancy to wood products. 5,185,214, Cl. 428-541.000.

Levasseur, Joseph L., to Coin Acceptors, Inc. Vend transaction control means. 5,184,708, Cl. 194-217.000.

Lew, Hyok S. Method for measuring mass flow rate. 5,184,518, Cl. 73-861.380.

Lewarchik, Ronald J.; Holzrichter, Edward J.; Smith, Marc L.; and Allman, Jack C., to Morton Coatings, Inc. Thermosetting acrylic polymers and coating compositions containing said acrylic polymers and fluorocarbon resins. 5,185,403, Cl. 525-199.000.

Lewin, Ian; and Howell, Ladd, to Lighting Sciences, Inc. Portable traffic signal light photometer. 5,185,637, Cl. 356-218.000.

Lewis, Armis L.: *See—*
Maglica, Anthony; Lewis, Armis L.; and McAlister, Fred R., 5,184,884, Cl. 362-72.000.

Lewis, Gary W.; and Moore, Max J., to Horiba Instruments Incorporated. Exhaust sampler and control means. 5,184,501, Cl. 73-23.310.

Lewis, William D.: *See—*
Volk, Kenneth H.; Volk, Douglas A.; Voccia, Paul; and Lewis, William D., 5,184,998, Cl. 493-176.000.

Lewkowicz, Julian: *See—*
Call, David E.; and Lewkowicz, Julian, 5,185,734, Cl. 369-116.000.

Leyendecker, Joachim: *See—*
Buerstinghaus, Rainer; Neubauer, Hans-Juergen; Hofmeister, Peter; Kuenast, Christoph; Leyendecker, Joachim; and Kardorff, Uwe, 5,185,359, Cl. 514-407.000.

Leypold, Helmut; and Lade, Guenther-Eberhard, to Robert Bosch GmbH. Device for transporting articles to a conveyor apparatus of a packaging machine. 5,184,712, Cl. 198-449.000.

Li, Beili; Haig, Stephen; and Yamanis, Jean, to Allied-Signal Inc. Sinter reactive lanthanum chromite and process for making it. 5,185,301, Cl. 501-117.000.

Li, Mei: *See—*
Farb, Joseph E.; Li, Mei; Chang, Chen-Chi P.; and Chin, Maw-Rong, 5,185,535, Cl. 257-351.000.

Liburdi, Nicola: *See—*
Papadopoulos, Athanasios P.; Labbate, Eric M.; and Liburdi, Nicola, 5,184,420, Cl. 47-62.000.

Licht, Brigitte H.: *See—*
Kanluen, Ratana; and Licht, Brigitte H., 5,185,385, Cl. 522-84.000.

Lieberman, Laurence A.; and Downes, Philip, to Westinghouse Electric Corp. Adaptive control of an electronic imaging camera. 5,185,671, Cl. 358-228.000.

Liebs, Harald: *See—*
Carduck, Franz-Josef; Harth, Hubert; and Liebs, Harald, 5,185,457, Cl. 554-71.000.

Liedes, Allan: *See—*
Aula, Jouko; Liedes, Allan; and Saari, Auvo, 5,185,063, Cl. 162-193.000.

Liencres, Bjorn O.: *See—*
Casper, Daniel F.; Gregg, Thomas A.; Flanagan, John R.; Kalos, Matthew J.; and Liencres, Bjorn O., 5,185,862, Cl. 395-250.000.

Light, David N.: *See—*
Bindra, Perminder S.; Cuomo, Jerome J.; Gall, Thomas P.; Ingraham, Anthony P.; Kang, Sung K.; Kim, Jungihl; Lauro, Paul; Light, David N.; Markovich, Voya R.; Miersch, Ekkehard F.; Molla, Jaynal A.; Powell, Douglas O.; Ritsko, John J.; Saxenmeyer, George J., Jr.; Varcoe, Jack A.; and Walker, George F., 5,185,073, Cl. 205-104.000.

Lighting Sciences, Inc.: *See—*
Lewin, Ian; and Howell, Ladd, 5,185,637, Cl. 356-218.000.

Lilja, Launo L.: *See—*
Nyman, Bror G.; Hultholm, Stig-Erik; Lilja, Launo L.; and Makitalo, Valto J., 5,185,081, Cl. 210-634.000.

Lilly Industries Limited: *See—*
Gilmore, Jeremy, 5,185,361, Cl. 514-415.000.

Lim, Chan: *See—*
Hesse, Eric M.; Kozol, Michael; and Lim, Chan, 5,185,698, Cl. 364-419.000.

Linden, Inge-Britt Y.: *See—*
Backstrom, Reijo J.; Honkanen, Erkki J.; Pystynen, Jarmo J.; Luiro, Anne M.; Aho, Paivi A.; Linden, Inge-Britt Y.; Nissinen, Erkki A. O.; and Pohto, Pentti, 5,185,370, Cl. 514-520.000.

Lindley, Daniel D.; Ryan, Timothy R.; Curtis, Thomas A.; De la Garza, Edward M.; Hilton, Charles R.; and Kenesson, Thomas M., to Hoechst Celanese Corp. Process for acylation or alkylation of aromatic compounds in hydrogen fluoride. 5,185,469, Cl. 568-319.000.

Lindsey, Donald W.: *See—*
Totten, Patty L.; Lindsey, Donald W.; and King, Bobby J., 5,184,680, Cl. 166-293.000.

Ling, Lin H., to Wang, Chien-Jen. Device for cleaning vegetable, rice and the like. 5,184,544, Cl. 99-536.000.

Link, Harriet; and Pahud, Jean-Jacques, to Nestec S.A. Process for producing immunostimulants. 5,185,321, Cl. 514-8.000.

Linnenbach, Alban, to Wistar Institute, The. Gene family of tumor-associated antigens. 5,185,254, Cl. 435-172.300.

Liposome Technology, Inc.: *See—*
Lasic, Danilo D.; and Belic, Andrej, 5,185,154, Cl. 424-450.000.

Lipp, Xaver, to Reinhardt Maschinenbau GmbH. Folding machine. 5,184,384, Cl. 29-243.500.

Lipson, Eric. Drinking straw assembly kit. 5,184,774, Cl. 239-33.000.

Lister-James, John: *See—*
Dean, Richard T.; Lister-James, John; and Boutin, Raymond H., 5,185,433, Cl. 530-391.100.

Lister, Roy D.; and Cortez, Sabino. Method of concentrating and deodorizing ruminant waste. 5,185,087, Cl. 210-787.000.

Liston, Christopher B., to Eastman Kodak Company. Method and apparatus for producing copy with selective area treatment. 5,185,662, Cl. 358-78.000.

Lisziewicz, Antal, to Isco Optic GmbH. Anamorphic attachment for purpose of filming and reproduction to be used together with a basic lens. 5,184,880, Cl. 359-668.000.

Lo, Kun-Nan. Metal racket. 5,184,818, Cl. 273-73.00H.

Lof, George O. G.; and Lof, Larry O. D. System for automatically covering swimming pools and method therefor. 5,184,356, Cl. 4-502.000.

Lof, Larry O. D.: *See—*
Lof, George O. G.; and Lof, Larry O. D., 5,184,356, Cl. 4-502.000.

Loftis, Donald B.; and Cawlfield, David W., to Olin Corporation. Method and apparatus for providing backup process control. 5,185,693, Cl. 364-187.000.

Logsdon, William K.: *See—*
DuRand, Elden E., III; and Logsdon, William K., 5,185,593, Cl. 340-544.000.

Loh, Jimbay; Trumbetas, Jerome; Palmer, David H.; and Fitch, Mark D., to Kraft General Foods, Inc. Process for making a micromilled cocoa composition and a micromilled cocoa composition. 5,185,175, Cl. 426-631.000.

Lohmann, Dieter: *See—*
Sauer, Wolfgang; Jansch, Hans-Joachim; Rostock, Angelika; Faust, Gottfried; Siegemund, Christine; Lohmann, Dieter; and Bartsch, Reni, 5,185,341, Cl. 514-269.000.

Loibner, Klaus: *See—*
Hrdlicka, Armin W.; Pribyl, Wolfgang; Schuster, Hermann; Loibner, Klaus; and Koffler, Harald, 5,184,512, Cl. 73-584.000.

Lonnberg, Kari K.: *See—*
Haikala, Heimo O.; Honkanen, Erkki J.; Lonnberg, Kari K.; Nore, Pentti T.; Pystynen, Jarmo J.; Luiro, Anne M.; and Pippuri, Aino K., 5,185,332, Cl. 514-222.500.

Loosen, Peter: *See—*
Du, Keming; Franek, Joachim; and Loosen, Peter, 5,185,760, Cl. 372-104.000.

VOL 1147 ISS 2 FE 9 1993 UMI

Lord Corporation: *See—*
Fleming, Kenneth E.; and Chapman, Jeffrey A., 5,185,402, Cl. 525-130.000.

Lord, David K.: *See—*
Lam, Chung H.; Lasky, Jerome B.; Hill, Craig M.; Nakos, James S.; Holmes, Steven J.; Geissler, Stephen F.; and Lord, David K., 5,185,294, Cl. 437-193.000.

Losacco, Donald L.; and Catton, Donald L., to OCS Industries, Inc. Food products chiller and method of using the same. 5,184,471, Cl. 62-63.000.

Loss, Hartmut: *See—*
Klein, Ernst; and Loss, Hartmut, 5,184,454, Cl. 59-78.100.

Lottner, Willibald: *See—*
Funk, Enno; Kreuzer, Franz-Heinrich; Gramshammer, Cornelia; and Lottner, Willibald, 5,185,419, Cl. 528-25.000.

Louis Berkman Company, The: *See—*
Meriwether, Jon D., 5,184,913, Cl. 405-1.000.

Louisiana State University and Agricultural and Mechanical College: *See—*
Desbrandes, Robert, 5,184,508, Cl. 73-152.000.

Love, Andrew M.; and Kersh, David V., III, to Texas Instruments Incorporated. Charge-retaining signal boosting circuit and method. 5,185,721, Cl. 365-189.060.

Love, Scott D.; and Washer, Stone P., to Phillips Petroleum Company. Combination acid recontactor-storage vessel. 5,185,487, Cl. 585-449.000.

Lowenkron, Steven B.: *See—*
Daussin, Rory D.; Kent, Van A.; and Lowenkron, Steven B., 5,185,384, Cl. 521-160.000.

Lowry, Peter; and Farrar, David, to Allied Colloids Limited. Processes for the production of paper and paper board. 5,185,061, Cl. 162-168.300.

Lu, Richard M. T.: *See—*
Nappholz, Tibor A.; Dawson, Albert K.; Lu, Richard M. T.; and Steinhaus, Bruce M., 5,184,615, Cl. 128-419.0PG.

Luijks, Gerardus M. J. F.; and Coenen, Hubertus A. M., to U.S. Philips Corporation. High-pressure discharge lamp. 5,185,557, Cl. 315-59.000.

Luiro, Anne M.: *See—*
Backstrom, Reijo J.; Honkanen, Erkki J.; Pystynen, Jarmo J.; Luiro, Anne M.; Aho, Paivi A.; Linden, Inge-Britt Y.; Nissinen, Erkki A. O.; and Pohto, Pentti, 5,185,370, Cl. 514-520.000.
Haikala, Heimo O.; Honkanen, Erkki J.; Lonnberg, Kari K.; Nore, Pentti T.; Pystynen, Jarmo J.; Luiro, Anne M.; and Pippuri, Aino K., 5,185,332, Cl. 514-222.500.

Lukacsko, Alison: *See—*
Koslo, Randy; and Lukacsko, Alison, 5,185,144, Cl. 424-66.000.

Lundin, John A.: *See—*
Poppendiek, Heinz F.; and Lundin, John A., 5,185,122, Cl. 376-272.000.

Lunk, J. Allan: *See—*
Ciarelli, Gary J.; and Lunk, J. Allan, 5,184,519, Cl. 73-861.770.

Lunsford, T. J. Hitting practice device. 5,184,816, Cl. 273-26.00E.

Luottgert, Karl-Ernst; and Schulz, Klaus, to Siemens Aktiengesellschaft. Connector pin for an optical waveguide connector. 5,185,838, Cl. 385-84.000.

Lurssen, Klaus: *See—*
Drewes, Mark W.; Haug, Michael; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,185,026, Cl. 504-225.000.

Luszcz, Stanley J.; and Zwicker, Harry R., to Lanxide Technology Company, LP. Dense skin ceramic structure and method of making the same. 5,185,302, Cl. 501-127.000.

Luther, Helmut: *See—*
Schewe, Tankred; Luther, Helmut; and Jordanov, Dentscho, 5,185,377, Cl. 514-721.000.

Luz Electric Fuel Israel Ltd: *See—*
Brokman, Avner; and Goldstein, Jonathan, 5,185,218, Cl. 429-27.000.

Lynch, John J.: *See—*
Chinnaswamy, Kumar; Gagliardo, Michael A.; Lynch, John J.; and Tessari, James E., 5,185,875, Cl. 395-425.000.

Lynn, Charles C., to Superior Fermitech Liquidating Trust. Fermentation system. 5,185,165, Cl. 426-61.000.

Lyon, Jose A.; and Campbell, Jules D., Jr., to Motorola, Inc. Method and apparatus for testing an analog to digital converter. 5,185,607, Cl. 341-120.000.

M-C Power Corporation: *See—*
Schora, Frank C., 5,185,220, Cl. 429-35.000.

M & M Displays, Inc.: *See—*
Fell, Michael J., 5,184,655, Cl. 141-392.000.

Maack, David R., to Aster Corporation. Fiber optic polisher. 5,184,433, Cl. 51-283.00R.

Maass, Jurgen: *See—*
Merkel, Gerd; Glaunsinger, Georg; Vogt, Wilfried; Stadler, Peter; Zander, Claus-Peter; Schmitt, Gernot; Maass, Jurgen; Necker, Thomas; Becker, Willi; and Weber, Walter, 5,184,554, Cl. 101-415.100.

Mache, Gerhard R. Vacuum assisted squeegee attachment. 5,184,372, Cl. 15-401.000.

Machinami, Tomoya: *See—*
Katano, Kiyoaki; Tomomoto, Tamako; Ogino, Hiroko; Hirano, Fumiya; Yuda, Yasukatsu; Konno, Fukio; Machinami, Tomoya; Tsuruoka, Takashi; and Inoye, Shigeharu, 5,185,347, Cl. 514-322.000.

Maddox, Craig E.: *See—*
Wike, Charles K., Jr.; Collins, Donald A., Jr.; and Maddox, Craig E., 5,185,514, Cl. 235-375.000.

Maddox, Garry L., to World Wide Concessions, Inc. Baseball bat grip training aid and method for using same. 5,184,815, Cl. 273-26.00C.

Maeda, Mie; and Ohuchi, Hirofumi, to Mitsubishi Denki Kabushiki Kaisha. Disorder diagnosis device for fuel injection apparatus. 5,184,595, Cl. 123-690.000.

Maeda, Tatsuo; Katsukawa, Masato; Iwasaki, Hiroaki; and Mizuta, Yasufumi, to Mita Industrial Co., Ltd. Electrophotosensitive material containing p-benzylbiphenyl. 5,185,228, Cl. 430-59.000.

Maejima, Yukihito; Shirasu, Hirotoshi; Suzuki, Taihei; and Yamamoto, Toshiaki, to Hitachi, Ltd. Control system with flag indicating two or less data inputs and counter indicating two or more controlling data driven execution method. 5,185,873, Cl. 395-375.000.

Maekawa, Kazunobu: *See—*
Kawai, Naotoshi; and Maekawa, Kazunobu, 5,185,633, Cl. 355-271.000.

Maenke, Dale A.: *See—*
Karl, Randy L.; and Maenke, Dale A., 5,184,723, Cl. 206-454.000.

Maezima, Mamoru: *See—*
Takahashi, Sakae; Maezima, Mamoru; and Takahashi, Yuji, 5,184,766, Cl. 228-4.100.

Mag Instruments, Inc.: *See—*
Maglica, Anthony; Lewis, Armis L.; and McAlister, Fred R., 5,184,884, Cl. 362-72.000.

Magdika, Janos: *See—*
Benz, Rico; and Magdika, Janos, 5,184,380, Cl. 28-205.000.

Mager, Theodor: *See—*
Klesse, Wolfgang; Elser, Wilhelm; Mager, Theodor; Christner, Juergen; Kraus, Hertha; Rossberg, Peter; and Weber, Marliese, 5,185,387, Cl. 523-201.000.

Maglica, Anthony; Lewis, Armis L.; and McAlister, Fred R., to Mag Instruments, Inc. Flashlight holder clamp assembly. 5,184,884, Cl. 362-72.000.

Magnenat, Alain; Meylan, Daniel; and Rodriguez, Jean-Jacques, to Kugler, Fonderie et Robinetterie S.A. Shower with manipulable head and selective outflows. 5,184,777, Cl. 239-447.000.

Magram, Martin Y. X-ray shielding apparatus. 5,185,778, Cl. 378-196.000.

Magrath, Earl K., Jr.; and Foster, Billy K., to Pacer Manufacturing Co., Inc.; and Micro Firm, Inc. Remote control system for go kart track and go kart conversion kit. 5,184,694, Cl. 180-167.000.

Maher, Hatholynd C. Baby bottle holder. 5,184,796, Cl. 248-104.000.

Mahieux, Yannick, to Centre National d'Etudes des Telecommunications. Bit allocation device for transformed digital audio broadcasting signals with adaptive quantization based on psychoauditive criterion. 5,185,800, Cl. 381-29.000.

Mainardi, Gianfranco. Locking device for a linear movement unit. 5,184,700, Cl. 188-67.000.

Makela, Randal M., to Abbott Laboratories. Diluent buffer and method for diluting an assay component. 5,185,264, Cl. 436-18.000.

Maker, Philip J.: *See—*
Collins, Kenneth A.; Maker, Philip J.; and Walker, Matthew S., 5,184,614, Cl. 128-419.0PG.

Makitalo, Valto J.: *See—*
Nyman, Bror G.; Hultholm, Stig-Erik; Lilja, Launo L.; and Makitalo, Valto J., 5,185,081, Cl. 210-634.000.

Makiuchi, Masao; and Hamaguchi, Hisashi, to Fujitsu Limited. Method of producing semiconductor device having light receiving element with capacitance. 5,185,272, Cl. 437-5.000.

Mallart, Raoul, to U.S. Philips Corp. Method of and apparatus for the examination of objects by ultrasonic echography. 5,184,623, Cl. 128-661.010.

Maloney, Wilfred: *See—*
Sparling, Fred; and Maloney, Wilfred, 5,184,851, Cl. 285-79.000.

Maloratsky, Leo: *See—*
Kurian, Thampy; and Maloratsky, Leo, 5,185,587, Cl. 333-1.100.

Mamery, Gaby. Device for compensating the controlled clearance on brake drums of lorries and semi-trailers. 5,184,701, Cl. 188-79.550.

MAN Roland Druckmaschinen AG: *See—*
Feldt, Wolfgang; and Laese, Dieter, 5,184,428, Cl. 51-165.750.
Kobler, Ingo; and Mathes, Joseph, 5,184,553, Cl. 101-409.000.

Manabe, Seiichi: *See—*
Nakano, Hiroo; and Manabe, Seiichi, 5,185,082, Cl. 210-639.000.

Manca, Peter J., Jr., to Prime Computer, Inc. Scan path diagnostic method. 5,185,745, Cl. 371-22.300.

Mandese, Ernest N.: *See—*
Bonevento, Francis M.; Heath, Chester A.; Mandese, Ernest N.; and Mendelson, Richard N., 5,185,864, Cl. 395-275.000.

Mandrell, Gerald W., II; Humphres, Eddie J.; Flanigan, Floyd W.; and Pittman, Bradley W. Contianer cap. 5,184,740, Cl. 215-315.000.

Maniar, Papu D., to Motorola Inc. Capacitor having a ruthenate electrode and method of formation. 5,185,689, Cl. 361-313.000.

Manne, Veeraswamy: *See—*
Barbacid, Mariano; and Manne, Veeraswamy, 5,185,248, Cl. 435-15.000.

Mannesmann Aktiegesellschaft: *See—*
Goedecke, Wolf-Dieter; and Cohanciuc, Victor, 5,184,647, Cl. 137-884.000.

Mannesmann Aktiengesellschaft: *See—*
Buschmann, Ulrich; Gomoll, Gunter; Hauslaib, Wolfgang; and Rohrer, Kurt, 5,184,905, Cl. 400-616.100.

Manning, Gary. Basketball training device. 5,184,814, Cl. 273-1.50A.

Mannoh, Masaya: *See—*
Mori, Yoshihiro; Mannoh, Masaya; Kamiyama, Satoshi; and Ohnaka, Kiyoshi, 5,185,755, Cl. 372-46.000.

Manzer, Leo E., to Du Pont de Nemours, E. I., and Company. Manufacture of 1,1,1,2-tetrafluoroethane. 5,185,482, Cl. 570-168.000.

Marcerou, Jean-Francois: *See—*
Fevrier, Herve ; Marcerou, Jean-Francois; and Le Sergent, Christian, 5,185,847, Cl. 385-141.000.

Marcraft International Corporation: *See—*
Brooks, Charles J.; and Gregg, Gary H., 5,185,881, Cl. 395-575.000.

Marel H.F.: *See—*
Arnarson, Hordur; and Pau, Louis F., 5,184,733, Cl. 209-585.000.

Mares, Frank: *See—*
Tang, Reginald T.; Mares, Frank; Boyle, William J., Jr.; Chiu, Tin-Ho; and Patel, Kundan M., 5,185,408, Cl. 525-415.000.

Marien, August M.: *See—*
Verheijen, Johannes M.; and Marien, August M., 5,185,426, Cl. 528-272.000.

Marineau, Mark: *See—*
Trent, William A.; and Marineau, Mark, 5,185,874, Cl. 395-400.000.

Marino, John. Apparatus for lifting up water using the ocean tide energy to do so. 5,184,915, Cl. 405-76.000.

Markovich, Voya R.: *See—*
Bindra, Perminder S.; Cuomo, Jerome J.; Gall, Thomas P.; Ingraham, Anthony P.; Kang, Sung K.; Kim, Jungihl; Lauro, Paul; Light, David N.; Markovich, Voya R.; Miersch, Ekkehard F.; Molla, Jaynal A.; Powell, Douglas O.; Ritsko, John J.; Saxenmeyer, George J., Jr.; Varcoe, Jack A.; and Walker, George F., 5,185,073, Cl. 205-104.000.

Marks, David N., to Du Pont de Nemours, E. I., and Company. Process for the production of copolyamides from amino nitrile, diamine and dicarboxyiic acid. 5,185,427, Cl. 528-329.100.

Marks, David N.: *See—*
Hammond, James A., Jr.; and Marks, David N., 5,185,428, Cl. 528-340.000.

Marks, Tobin J.: *See—*
Wessels, Bruce W.; Marks, Tobin J.; Richeson, Darrin S.; Tonge, Lauren M.; and Zhang, Jiming, 5,185,317, Cl. 505-1.000.

Markusch, Peter H.: *See—*
Tirpak, Robin E.; Markusch, Peter H.; and Sarpeshkar, Ashok M., 5,185,200, Cl. 428-288.000.

Marland, Dale W.; and Hartson, Ted, to Eagle Comtronics, Inc. Method and apparatus for securing television signals using sideband interdiction. 5,185,793, Cl. 380-5.000.

Marquardt, Hans: *See—*
Hellstrom, Karl E.; Brown, Joseph P.; Hellstrom, Ingegerd; and Marquardt, Hans, 5,185,432, Cl. 530-388.800.

Marquette Electronics, Inc.: *See—*
Cudahy, Michael J.; and Stratbucker, Robert A., 5,184,620, Cl. 128-639.000.

Marsoner, Hermann: *See—*
Kroneis, Herbert; Marsoner, Hermann; and Noormofidi, Taghi, 5,185,263, Cl. 436-8.000.

Marten, Lewis H.; and Lane, Charles, to Hood Laboratories. Tracheal cannulas and stents. 5,184,610, Cl. 128-207.140.

Martin, Dennis R.; McDermott, Michael J.; Plumlee, Stuart D.; Satin, Robert H.; and Wenger, Robert L., to International Business Machines Corporation. Computer controlled optimized pairing of disk units. 5,185,884, Cl. 395-575.000.

Martin, Jonathan G.: *See—*
Brooks, Dee W.; Kerkman, Daniel J.; Martin, Jonathan G.; Stewart, Andrew O.; and Summers, James B., 5,185,363, Cl. 514-438.000.

Martin, Lawrence L.; Worm, Manfred; and Crichlow, Charles A., to Hoechst-Roussel Pharmaceuticals Inc. Carboxamides of 2-amino-alpha-phenlphenethylamines. 5,185,465, Cl. 564-185.000.

Martin, Lawrence L.: *See—*
Effland, Richard C.; Klein, Joseph T.; and Martin, Lawrence L., 5,185,350, Cl. 514-339.000.

Martin Marietta Energy Systems, Inc.: *See—*
Lauf, Robert J.; and Heestand, Richard L., 5,185,031, Cl. 75-375.000.

Martin, Robert A. System of crack repair for building and paving material. 5,185,013, Cl. 52-514.000.

Marugo Rubber Industries, Ltd.: *See—*
Tanabe, Mamoru; Yokota, Motoyuki; Fujiki, Sohei; and Sui, Masaru, 5,184,803, Cl. 267-140.120.

Maruyama, Jun: *See—*
Hori, Shuji; Karakama, Tadao; and Maruyama, Jun, 5,184,646, Cl. 137-636.200.

Masaden, Timothy A.: *See—*
Hsie, Wei C.; Masaden, Timothy A.; and Curland, Nathan, 5,184,394, Cl. 29-603.000.

Masaki, Kenji: *See—*
Iino, Shuji; and Masaki, Kenji, 5,185,629, Cl. 355-215.000.

Maskasky, Joe E., to Eastman Kodak Company. Process for the preparation of high chloride tabular grain emulsions (IV). 5,185,239, Cl. 430-569.000.

Massachusetts Institute of Technology: *See—*
Fan, Tso Y.; Sanchez-Rubio, Antonio; Walpole, James N.; Williamson, Richard C.; Melngailis, Ivars; Leger, James R.; and Goltsos, William C., 5,185,758, Cl. 372-72.000.
Kennedy, David N.; Filipek, Pauline A.; and Caviness, Verne S., Jr., 5,185,809, Cl. 382-6.000.
Sadoway, Donald R., 5,185,068, Cl. 204-245.000.

Masuda, Koji: *See—*
Mizukami, Fujio; Sano, Tsuneji; and Masuda, Koji, 5,185,312, Cl. 502-332.000.

Masuko, Michio: *See—*
Hayase, Yoshio; Kataoka, Takahiro; Takenaka, Hideyuki; Ichinari, Mitsuhiro; Masuko, Michio; Takahashi, Toshio; and Tanimoto, Norihiko, 5,185,342, Cl. 514-274.000.

Mathes, Joseph: *See—*
Kobler, Ingo; and Mathes, Joseph, 5,184,553, Cl. 101-409.000.

Matlock, Dyer A.: *See—*
VanVonno, Nicolaas W.; and Matlock, Dyer A., 5,185,292, Cl. 437-180.000.

Matos, Louis: *See—*
Delpuech, Jean-Jacques; Matos, Louis; Moumni, El Mostafa; Ravey, Jean-Claude; Selve, Claude; Serratrice, Guy; Stebe, Marie-Jose ; Cambon, Aime ; and Thiollet, Gerard, 5,185,099, Cl. 252-315.100.

Matsubara, Yoshiaki; Amano, Kouzou; and Kojima, Takao, to NGK Spark Plug Co., Ltd. Tool for loosening or tightening spark plug. 5,184,529, Cl. 81-125.000.

Matsuda, Shohei; Haga, Tadatoshi; Go, Kougyoku; and Ikegami, Hiroshi, to Honda Giken Kogyo Kabushiki. Method for controlling a change-over between two and four-wheel drive modes for a vehicle. 5,184,695, Cl. 180-233.000.

Matsuda, Toshihiro: *See—*
Matsumoto, Masafumi; and Matsuda, Toshihiro, 5,185,788, Cl. 379-357.000.

Matsuda, Yoshio: *See—*
Arimoto, Kazutami; Fujishima, Kazuyasu; Matsuda, Yoshio; Ooishi, Tsukasa; and Tsukude, Masaki, 5,185,744, Cl. 371-21.200.

Matsueda, Hirokazu: *See—*
Takayama, Yuuji; Matsueda, Hirokazu; Sugiura, Masato; Ozaki, Tatsuhiko; Wada, Hirotaka; and Komiya, Iwao, 5,185,417, Cl. 526-301.000.

Matsui, Nobuo: *See—*
Tazaki, Seiji; Umeda, Nobuhiro; Matsui, Nobuo; Yagihara, Tomio; and Mikuma, Katsunori, 5,185,460, Cl. 558-392.000.

Matsumi, Hideki, to Matsushita Electric Industrial Co., Ltd. Self-contained air conditioner. 5,184,475, Cl. 62-262.000.

Matsumoto, Ikuo: *See—*
Tabata, Kenji; Matsumoto, Ikuo; and Fukuda, Hiroshi, 5,185,311, Cl. 502-304.000.

Matsumoto, Koji: *See—*
Takatori, Sunao; Kumagai, Ryohei; Matsumoto, Koji; and Yamamoto, Makoto, 5,185,816, Cl. 382-34.000.

Matsumoto, Masafumi; and Matsuda, Toshihiro, to Sharp Kabushiki Kaisha. Dial number generator. 5,185,788, Cl. 379-357.000.

Matsumura, Sowjun: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Ishikawa, Hideo; Matsumura, Sowjun; Chiba, Tadashi; Asakawa, Kiyoshi; and Oohora, Syoichi, 5,185,216, Cl. 428-614.000.

Matsuoka, Nobuo: *See—*
Itagaki, Hiroshi; and Matsuoka, Nobuo, 5,185,659, Cl. 358-44.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Gawa, Tomohiro; Inoue, Mamoru; Hamane, Tokuhito; and Kataoka, Fujio, 5,184,651, Cl. 140-115.000.
Hidese, Wataru, 5,184,397, Cl. 29-740.000.
Matsumi, Hideki, 5,184,475, Cl. 62-262.000.
Mori, Yoshihiro; Mannoh, Masaya; Kamiyama, Satoshi; and Ohnaka, Kiyoshi, 5,185,755, Cl. 372-46.000.
Morita, Kiyoyuki; and Ishihara, Takeshi, 5,185,296, Cl. 437-229.000.
Nankai, Shiro; Kawaguri, Mariko; and Iijima, Takashi, 5,185,256, Cl. 435-174.000.
Sakamoto, Ken, 5,185,598, Cl. 340-721.000.
Shimada, Hiromichi, 5,185,792, Cl. 380-4.000.
Tabata, Kenji; Matsumoto, Ikuo; and Fukuda, Hiroshi, 5,185,311, Cl. 502-304.000.
Takeda, Mamoru; Tamura, Tatsuhiko; and Hotta, Sadayoshi, 5,185,601, Cl. 340-784.000.
Ueda, Katsuhiko; Suzuki, Toshikazu; and Kinoshita, Norihito, 5,185,880, Cl. 395-550.000.
Yamashita, Akio; Yoshimura, Susumu; and Tsuchiya, Sohji, 5,185,208, Cl. 428-411.100.

Matsushita Electronics Corporation: *See—*
Fukui, Yuko; Ohtani, Katsuhiro; Miyamoto, Hiroyuki; Nishiura, Masao; and Chimura, Moriyuki, 5,185,283, Cl. 437-51.000.

Matsushita, Junichi: *See—*
Saito, Hajime; Nagashima, Hideo; Matsushita, Junichi; and Hayashi, Shinsuke, 5,185,112, Cl. 264-63.000.

Matsuura, Yasumasa; Harada, Hiroyuki; Kajitani, Tetsuji; and Araki, Toshihiko. Error detecting unit for a rotational detector. 5,185,563, Cl. 318-602.000.

Matsuyama, Takayki, to Kabushiki Kaisha Toshiba. Phase-shifted distributed feedback type semiconductor laser device. 5,185,759, Cl. 372-96.000.

Matsuzaki, Kei; Yamamoto, Iwao; Misaki, Akira; and Sone, Yoshiaki, to Ajinomoto Company, Inc. Glucan derivatives having tumoricidal activity. 5,185,327, Cl. 514-54.000.

Matthews, Keith R. Collapsible boat. 5,184,565, Cl. 114-354.000.

Maufette, Claude, to Les Produits Pinso LTEE. Molded plastic belt with integral locking mechanism. 5,184,352, Cl. 24-585.000.

Maurice, Jacques: *See—*
Bonometti, ; Guy; Olivier, Roland; and Maurice, Jacques, 5,185,268, Cl. 436-114.000.

VOL
1147
ISS
2
FE
9
1993
UMI

Mavromoustakis, Charis T.: *See*—
Witiak, Donald T.; Hughes, John H.; and Mavromoustakis, Charis T., 5,185,366, Cl. 514-456.000.
Maxwell, Joseph A., Jr.; and Maxwell, Stephen P. Expansion joint for use with direct glue-down carpet. 5,184,442, Cl. 52-573.000.
Maxwell, Stephen P.: *See*—
Maxwell, Joseph A., Jr.; and Maxwell, Stephen P., 5,184,442, Cl. 52-573.000.
May & Baker Limited: *See*—
Cook, David C.; Hart, Terance W.; McLay, Iain M.; Palfreyman, Malcolm N.; and Walsh, Roger J. A., 5,185,375, Cl. 514-599.000.
Mayer, Christopher M., to Digital Equipment Corporation. Antialiasing apparatus and method for computer printers. 5,185,852, Cl. 395-109.000.
Mayer, William N., to Modern Controls, Inc. Oxygen sensor. 5,184,392, Cl. 29-592.100.
Mayet, Jean C.: *See*—
Laurent, Daniel; and Mayet, Jean C., 5,185,051, Cl. 156-397.000.
Mayled, Edward C. Flexible package for small items. 5,184,724, Cl. 206-466.000.
Mayo Foundation for Medical Education and Research: *See*—
Ehman, Richard L.; and Greenleaf, James F., 5,185,574, Cl. 324-309.000.
Mazda Motor Corporation: *See*—
Hirose, Ichiro; Choshi, Masahiro; and Hatamura, Kouichi, 5,184,401, Cl. 29-888.010.
Nishiyama, Atsushi, 5,184,868, Cl. 296-189.000.
Takahashi, Sakae; Maezima, Mamoru; and Takahashi, Yuji, 5,184,766, Cl. 228-4.100.
McAlister, Fred R.: *See*—
Maglica, Anthony; Lewis, Armis L.; and McAlister, Fred R., 5,184,884, Cl. 362-72.000.
McAndrew, Thomas P.: *See*—
Smigo, John G.; McAndrew, Thomas P.; Pinschmidt, Robert K., Jr.; and Nordquist, Andrew F., 5,185,083, Cl. 210-735.000.
McAndrews, Glenn, to United States of America, Air Force. Variable vane valve in a gas turbine. 5,184,459, Cl. 60-226.300.
McArthur, Malcolm J.: *See*—
Lampe, Steven W.; and McArthur, Malcolm J., 5,184,458, Cl. 60-39.142.
McBride, Brian W.: *See*—
Dysart, John A.; Showman, Peter S.; Crow, William M.; Williams, Peter M.; McBride, Brian W.; Senior, John R. F.; Whelan, Charles H.; and Murdoch, Brian, 5,185,885, Cl. 395-600.000.
McCarty, Lon H., to Econo Max Manufacturing. Insulating industrial door and door manufacturing method. 5,184,423, Cl. 49-501.000.
McClune, Gregory J.; and Smith-Lewis, Margaret J., to Eastman Kodak Company. Test kit containing labeled receptor and wash solution for determination of an immunological ligand. 5,185,128, Cl. 422-61.000.
McCormick, Kevin D.: *See*—
Eisner, Thomas; Attygalle, Athula B.; and McCormick, Kevin D., 5,185,365, Cl. 514-450.000.
McCormick, William K.: *See*—
Dowden, Douglas C.; Hemmeter, Richard W.; Herr, Diane E.; McCormick, William K.; Petrelli, Robert; Piereth, Richard J.; Salchenberger, Samuel M.; Sehgal, Chander S.; and Verma, Mahendra K., 5,185,781, Cl. 379-67.000.
McCullen, Sharon B.: *See*—
Degnan, Thomas F.; McCullen, Sharon B.; Schmitt, Kirk D.; and Hatzikos, George H., 5,185,310, Cl. 502-214.000.
McDermott, John F., to USX Corporation. Water cooling pipe correction to vertically unsymmetrical heating of blooms in walking-beam reheat furnace. 5,184,953, Cl. 432-123.000.
McDermott, Michael J.: *See*—
Martin, Dennis R.; McDermott, Michael J.; Plumlee, Stuart D.; Satin, Robert H.; and Wenger, Robert L., 5,185,884, Cl. 395-575.000.
McDonald, Kevin B.: *See*—
Trent, William A.; McDonald, Kevin B.; and Bell, Florian G., 5,185,635, Cl. 356-73.100.
McDonnell Douglas Corporation: *See*—
Rawdon, Blaine K.; and Rohrlick, Myles A., 5,184,366, Cl. 14-71.500.
Ruffoni, John M., 5,185,381, Cl. 521-52.000.
McElroy, Lucian G.; Raby, Alvin S.; and Faytlin, Alexander B. Noncontacting automotive dryer control circuit. 5,184,369, Cl. 15-316.100.
McFarland, Thomas G.: *See*—
Vavrek, Robert M.; Schaefer, Daniel J.; Myers, Christopher C.; McFarland, Thomas G.; and Turner, Robert, 5,185,576, Cl. 324-318.000.
McGann, William E.; Steigerwald, Thomas E.; and Adam, John D., to Westinghouse Electric Corp. Frequency selective limiter with flat limiting response. 5,185,588, Cl. 333-17.200.
McGarity, Ralph: *See*—
Edenfield, Robin W.; McGarity, Ralph; Reininger, Russell; Ledbetter, William B., Jr.; and Shahan, Van B., 5,185,694, Cl. 395-425.000.
McGoey, Michael J.: *See*—
Adams, George W.; and McGoey, Michael J., 5,184,502, Cl. 73-31.010.
McGrath, Andrew: *See*—
Kvasnik, Frank; and McGrath, Andrew, 5,185,521, Cl. 250-227.230.
McGrath, Stephen E. Material carton with improved closure. 5,184,772, Cl. 229-143.000.
McGraw, William J.: *See*—
Suttle, Keith H.; and McGraw, William J., 5,184,827, C 273-187.200.
McGuigan, David F.: *See*—
Funk, Michael W.; Lawson, Sue A.; and McGuigan, David F 5,185,785, Cl. 379-111.000.
McKelvy, Robert: *See*—
Chen, Gilbert K.; McKelvy, Robert; Bonilla, Jorge A.; Glaspie Don; and De Bruyn, George, 5,185,106, Cl. 261-112.100.
McLay, Iain M.: *See*—
Cook, David C.; Hart, Terance W.; McLay, Iain M.; Palfreyman Malcolm N.; and Walsh, Roger J. A., 5,185,375, Cl. 514-599.000
McManus, Eugene W.: *See*—
Sharpless, Edward N.; and McManus, Eugene W., 5,184,969, Cl 445-24.000.
McNeilab, Inc.: *See*—
Grous, Philip P.; and Mohrbacher, Richard J., 5,185,362, Cl 514-428.000.
McNeilus Truck & Manufacturing, Inc.: *See*—
Christenson, Ronald E., 5,184,706, Cl. 193-2.00R.
McNesby, John; Kalla, Amritpal S.; and Rodriguez, Angel, to Siemens Aktiengesellschaft. Parallel scrambler used in SONET data transmission. 5,185,799, Cl. 380-28.000.
MDT Corporation: *See*—
Johnson, Kenneth A.; and Ellis, Charles E., Jr., 5,185,709, Cl 364-558.000.
Med-Safe Systems, Inc.: *See*—
Packer, Gilbert; Bare, Rex O.; and Shillington, Richard, 5,184,720 Cl. 206-366.000.
Medin, David L. Apparatus for synchronizing computer and video images to be simultaneously displayed on a monitor and method for performing same. 5,185,603, Cl. 340-814.000.
Meed, Myles; and Porter, Paul. Fall arrest belt assembly. 5,184,696, Cl 182-9.000.
Megatek Corporation: *See*—
Emery, Kevin A.; and Bailey, Michael J., 5,185,858, Cl. 395-158.000.
Megatool, Inc.: *See*—
Hemmings, David T., 5,184,926, Cl. 408-226.000.
Meharg, Stephen W. Locking cover for pots. 5,184,421, Cl. 47-66.000.
Mehdipour, Frank F. Three dimensional combined magneto-optical memory and logic processor. 5,185,716, Cl. 365-10.000.
Meier, Heinz P.; Van Gieson, Edward A.; and Walter, Willi, to International Business Machines Corporation. Process for the selective growth of GaAs. 5,185,289, Cl. 437-129.000.
Meier, Karl: *See*—
Wolff, Siegfried; and Meier, Karl, 5,184,779, Cl. 241-3.000.
Meier, Roch. Animal control chute. 5,184,572, Cl. 119-99.000.
Meiji Seika Kaisha Ltd.: *See*—
Katano, Kiyoaki; Tomomoto, Tamako; Ogino, Hiroko; Hirano, Fumiya; Yuda, Yasukatsu; Konno, Fukio; Machinami, Tomoya; Tsuruoka, Takashi; and Inoye, Shigeharu, 5,185,347, Cl. 514-322.000.
Meinan Machinery Works, Inc.: *See*—
Sakamoto, Shinichi; Hiraiwa, Kenichi; Koike, Masaru; and Nozawa, Yoshioki, 5,185,050, Cl. 156-304.500.
Meito Corporation: *See*—
Oiwa, Masatoshi, 5,184,539, Cl. 99-408.000.
Melichar, Paul J.: *See*—
Cole, Bruce A.; and Melichar, Paul J., 5,185,222, Cl. 429-160.000.
Meling, Konstantin V.: *See*—
Abdrakhmanov, Gabdrashit S.; Zainullin, Albert G.; Meling, Konstantin V.; Rakhmanov, Rauf N.; Balandin, Alexandr P.; Puzanov, Alexandr A.; Urazgildin, Ilyas A.; Mukhametshin, Almaz A.; Khakimov, Almas K.; Yasas, Antanas A.; Naryshkina, Lutsia M.; Akhunov, Albert M.; Akhunova, Tanzilya K., administrator; Akhunova, Flera A., dministrator; and Akhunov, Farid A., administrator, 5,184,687, Cl. 175-267.000.
Mellish, Walter G., to ICI Americas Inc. Drying temperature independent polytetrafluoroethylene. 5,185,414, Cl. 526-247.000.
Melngailis, Ivars: *See*—
Fan, Tso Y.; Sanchez-Rubio, Antonio; Walpole, James N.; Williamson, Richard C.; Melngailis, Ivars; Leger, James R.; and Goltsos, William C., 5,185,758, Cl. 372-72.000.
Melody, Brian: *See*—
Rosenberg, Harry W.; and Melody, Brian, 5,185,075, Cl. 205-234.000.
Mencher, Franz J.: *See*—
Erschens, Willie; Mencher, Franz J.; Brosius, Peter; Grave, Klaus; Zender, Bernhard; Schardt, Peter; Hessek, Gerd; and Alten, Ferdinand, 5,184,806, Cl. 254-126.000.
Mendelson, Richard N.: *See*—
Bonevento, Francis M.; Heath, Chester A.; Mandese, Ernest N.; and Mendelson, Richard N., 5,185,864, Cl. 395-275.000.
Mendenhall, Robert G.: *See*—
Scheftic, Judy L.; Mendenhall, Robert G.; and Chereslowsky, Michael J., 5,185,133, Cl. 423-53.000.
Mercedes-Benz AG: *See*—
Schulze, Detlef; and Schwarz, Klaus, 5,184,702, Cl. 188-282.000.
Merck & Co., Inc.: *See*—
Baldwin, John J.; Friedman, Paul A.; and Stern, Andrew M., 5,185,149, Cl. 424-94.630.
Chen, Shieh-Shung T.; and Doss, George, 5,185,251, Cl. 435-118.000.
Freidinger, Roger M.; Bock, Mark G.; and Evans, Ben E., 5,185,331, Cl. 514-220.000.

Meriwether, Jon D., to Louis Berkman Company, The. Watercraft launching and lift assembly and kit therefor. 5,184,913, Cl. 405-1.000.
Merkel, Gerd; Glaunsinger, Georg; Vogt, Wilfried; Stadler, Peter; Zander, Claus-Peter; Schmitt, Gernot; Maass, Jurgen; Necker, Thomas; Becker, Willi; and Weber, Walter, to Heidelberger Druckmaschinen AG. Quick-action clamping device. 5,184,554, Cl. 101-415.100.
Merrill, Dana: *See*—
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.
Mertens, Donald B.; Gates, Louis E., Jr.; Wolfson, Ronald I.; Milroy, William W.; and Smalanskas, Joseph P., to Hughes Aircraft Company. Detection and ranging of material flaws using microwave transmission line reflectometry. 5,185,579, Cl. 324-527.000.
Mertin, Frank: *See*—
Caviezel, Gerold; Mertin, Frank; and Tritsch, Jean-Claude, 5,185,336, Cl. 514-251.000.
Meuwly, Roger; Slongo, Mario; and Valet, Andreas, to Ciba-Geigy Corporation. Silylated 2-(2-hydroxyphenyl)-4,6-diaryl-1,3,5-triazines. 5,185,445, Cl. 544-216.000.
Meyer, John D.; and Kohut, Paul, to Meyer Sound Laboratories Incorporated. Correction circuit and method for improving the transient behavior of a two-way loudspeaker system. 5,185,801, Cl. 381-59.000.
Meyer, Matthias, to Hoechst Aktiengesellschaft. Process for the preparation of perfluorinated ethers. 5,185,473, Cl. 568-615.000.
Meyer Sound Laboratories Incorporated: *See*—
Meyer, John D.; and Kohut, Paul, 5,185,801, Cl. 381-59.000.
Meyer, Thomas A. Self-contained nursery cultivator. 5,184,685, Cl. 172-114.000.
Meylan, Daniel: *See*—
Magnenat, Alain; Meylan, Daniel; and Rodriguez, Jean-Jacques, 5,184,777, Cl. 239-447.000.
MHI Sagami High Technology & Control: *See*—
Aoki, Kanji; Uchiyama, Yukio; and Midorikawa, Toshiyuki, 5,184,699, Cl. 187-9.00R.
Michaels, Tracy E., to Mycogen Corporation. Process for controlling scarab pests with *Bacillus thuringiensis* isolates. 5,185,148, Cl. 424-93.00L.
Michalochick, Marise; Damwber, Colleen M.; and Michalochick, Robert G. Floatation swimwear. 5,184,968, Cl. 441-116.000.
Michalochick, Robert G.: *See*—
Michalochick, Marise; Damwber, Colleen M.; and Michalochick, Robert G., 5,184,968, Cl. 441-116.000.
Micro Firm, Inc.: *See*—
Magrath, Earl K., Jr.; and Foster, Billy K., 5,184,694, Cl. 180-167.000.
Micro Technology, Inc.: *See*—
Nguyen, Anh; and Gajjar, Kumar, 5,185,876, Cl. 395-425.000.
Micron Technology, Inc.: *See*—
Cathey, David A., Jr., 5,185,058, Cl. 156-656.000.
Prall, Kirk, 5,185,275, Cl. 437-30.000.
Middaugh, James F.; Bryant, Peter L.; Grabenkort, Richard W.; Oswald, Timothy J.; and Tripp, Edward S., to Abbott Laboratories. Suction drainage infection control system. 5,185,007, Cl. 604-320.000.
Middleton, Dennis G., to New Pig Corporation. Drum pump adapter. 5,184,751, Cl. 220-694.000.
Midorikawa, Toshiyuki: *See*—
Aoki, Kanji; Uchiyama, Yukio; and Midorikawa, Toshiyuki, 5,184,699, Cl. 187-9.00R.
Midwesco, Inc.: *See*—
Bacon, Robert H., 5,185,049, Cl. 156-304.200.
Midwest Instrument Co., Inc.: *See*—
Falk, Richard A.; and Behring, James A., 5,184,894, Cl. 374-140.000.
Miersch, Ekkehard F.: *See*—
Bindra, Parminder S.; Cuomo, Jerome J.; Gall, Thomas P.; Ingraham, Anthony P.; Kang, Sung K.; Kim, Jungihl; Lauro, Paul; Light, David N.; Markovich, Voya R.; Miersch, Ekkehard F.; Molla, Jaynal A.; Powell, Douglas O.; Ritsko, John J.; Saxenmeyer, George J., Jr.; Varcoe, Jack A.; and Walker, George F., 5,185,073, Cl. 205-104.000.
Mikami, Akiyoshi; Terada, Kousuke; Okibayashi, Katsushi; Tanaka, Koichi; Yoshida, Masaru; and Nakajima, Shigeo, to Sharp Kabushiki Kaisha. Process for preparing an electroluminescent thin film. 5,185,181, Cl. 427-69.000.
Mikami, Mitsugu: *See*—
Nishiumi, Kenji; Nakajima, Kenji; Mikami, Mitsugu; Ishida, Takeshi; and Ito, Yukio, 5,184,709, Cl. 194-318.000.
Miki, Takashi: *See*—
Imamaki, Teruo; Fuwa, Tetsuji; and Miki, Takashi, 5,184,549, Cl. 101-121.000.
Mikoshiba, Nobuo: *See*—
Yagi, Akira; Okada, Takao; Morita, Seizo; and Mikoshiba, Nobuo, 5,185,572, Cl. 324-158.00R.
Mikuma, Katsunori: *See*—
Tazaki, Seiji; Umeda, Nobuhiro; Matsui, Nobuo; Yagihara, Tomio; and Mikuma, Katsunori, 5,185,460, Cl. 558-392.000.
Miles Inc.: *See*—
Ismail, Ibrahim A.; and Wu, Wen H., 5,185,247, Cl. 435-14.000.
Tirpak, Robin E.; Markusch, Peter H.; and Sarpeshkar, Ashok M., 5,185,200, Cl. 428-288.000.
Miller, Alan L.: *See*—
Quinn, Stanley B., Jr.; Miller, Alan L.; and Siemon, Edward C., 5,184,578, Cl. 123-90.170.
Miller, John E., to Parma Corporation. Spring assembly for seating and bedding. 5,184,809, Cl. 267-80.000.
Miller, Laurence L., to TRW Inc. Vehicle hydraulic power steering system. 5,184,693, Cl. 180-143.000.
Miller, Mark L. High dielectric constant sheet material. 5,185,690, Cl. 361-321.000.
Miller, Michael C. Battery discharge apparatus. 5,185,564, Cl. 320-2.000.
Miller, Michael J.; Christini, James N.; and Husted, Eric F., to GTE Products Corporation. Method for producing extrafine pure metal powder. 5,185,030, Cl. 75-359.000.
Miller, Todd L. Self correcting belt tracking apparatus for widebelt abrasive grinding machine. 5,184,424, Cl. 51-135.0BT.
Mills, Daniel R.: *See*—
Ryer, Jack; Gutierrez, Antonio; Puckace, James S.; Watts, Raymond F.; Gleason, Craig W.; Mills, Daniel R.; and Braun, Edmund H., II, 5,185,090, Cl. 252-46.600.
Milocco, Claudio; and Santarossa, Gianni, to Zanussi Elettrodomestici S.p.A. Dishwasher with reversible motor pumping system. 5,184,638, Cl. 134-186.000.
Milocco, Claudio; and Sist, Rosa, to Zanussi Elettrodomestici S.p.A. Method for regenerating water softener in a washing machine. 5,185,379, Cl. 521-26.000.
Milroy, William W.: *See*—
Mertens, Donald B.; Gates, Louis E., Jr.; Wolfson, Ronald I.; Milroy, William W.; and Smalanskas, Joseph P., 5,185,579, Cl. 324-527.000.
Mima, Hiroshi; and Suzuki, Tadashi, to Murata Kikai Kabushiki Kaisha. Robot for a double twister. 5,184,453, Cl. 57-270.000.
Minami, Akinori: *See*—
Kawabata, Nariyoshi; Minami, Akinori; and Yo, Tadahira, 5,185,415, Cl. 526-265.000.
Minami, Shinzaburo: *See*—
Ochiai, Hirokazu; Watanabe, Yasuo; Murotani, Yoshiharu; Fukuda, Hirohiko; Yoshino, Osamu; Minami, Shinzaburo; Hayashi, Toshio; and Momonoi, Kaishu, 5,185,330, Cl. 514-142.000.
Minatani, Toshiyuki, to OKUMA Corporation. Grinding wheel form defining device. 5,184,426, Cl. 51-165.710.
Minatronics Corporation: *See*—
Wilson, Edwin P., 5,184,798, Cl. 248-551.000.
Minemura, Takashi, to Kabushiki Kaisha Toshiba. Receiver coil for nuclear magnetic resonance imaging apparatus. 5,185,577, Cl. 324-318.000.
Ming-Sun, Liao. Fully automatic curved surface printing machine. 5,184,546, Cl. 101-40.100.
Minier, Jacques, to Commissariat a l'Energie Atomique. Pneumatic atomizer. 5,184,776, Cl. 239-417.000.
Minnesota Mining and Manufacturing Company: *See*—
Bernhard, James C.; Johnson, Thomas P.; and Antila, Garth V., 5,184,792, Cl. 248-71.000.
Harelstad, Roberta E.; Francis, Cecil V.; and White, Kenneth M., 5,185,102, Cl. 252-582.000.
Koskenmaki, David C., 5,185,178, Cl. 427-585.000.
Myschik, Dieter; and Weidenhaupt, Paul, 5,184,965, Cl. 439-578.000.
Ohkubo, Takatoshi; and Carlson, James G., 5,185,423, Cl. 528-85.000.
Weigel, David C., 5,185,231, Cl. 430-203.000.
Wood, Thomas E.; Wilson, David M.; and Sowman, Harold G., 5,185,299, Cl. 501-95.000.
Minolta Camera Kabushiki Kaisha. Electrophotographic copying apparatus having capability of interrupting a copy operation in midst of multi-color transfer process. 5,185,634, Cl. 355-314.000.
Minolta Camera Kabushiki Kaisha: *See*—
Arimoto, Tetsuya, 5,185,678, Cl. 359-683.000.
Iino, Shuji; and Masaki, Kenji, 5,185,629, Cl. 355-215.000.
Kawai, Naotoshi; and Maekawa, Kazunobu, 5,185,633, Cl. 355-271.000.
Minowa, Kenji: *See*—
Sakai, Norio; Minowa, Kenji; and Morihiro, Shinji, 5,185,040, Cl. 118-406.000.
Mintz, Michael D., to International Technidyne Corporation. Thermal pack heel warming apparatus for a neonate or infant. 5,184,613, Cl. 128-402.000.
Misaki, Akira: *See*—
Matsuzaki, Kei; Yamamoto, Iwao; Misaki, Akira; and Sone, Yoshiaki, 5,185,327, Cl. 514-54.000.
Misawa, Hidenobu: *See*—
Ishihara, Takeshi; and Misawa, Hidenobu, 5,185,219, Cl. 429-31.000.
Mischneko, Nicholas, to Motorola, Inc. Multiposition detenting hinge apparatus. 5,185,790, Cl. 379-433.000.
Miseo, Sabato: *See*—
Soled, Stuart L.; Miseo, Sabato; Iglesia, Enrique; and Fiato, Rocco A., 5,185,378, Cl. 518-700.000.

VOL 1147 ISS 2 FE 9 1993 UMI

Mishima, Hidetoshi; and Hatanaka, Keiji, to Mitsubishi Denki Kabushiki Kaisha. Inversion phenomenon preventing circuit. 5,185,679, Cl. 360-30.000.

Mr. Coffee, inc.: *See—*
Grzywana, Stanley E., 5,185,505, Cl. 219-10.55F.

Misuda, Kenji; and Bando, Norihito, to Kabushiki Kaisha Komatsu Seisakusho; and Komatsu Mec Corp. Linkage mechanism of a work implement. 5,184,932, Cl. 414-685.000.

Mita Industrial Co., Ltd.: *See—*
Maeda, Tatsuo; Katsukawa, Masato; Iwasaki, Hiroaki; and Mizuta, Yasufumi, 5,185,228, Cl. 430-59.000.
Shibata, Kiyotaka, 5,185,631, Cl. 355-245.000.
Yokoyama, Masaaki; and Kakui, Mikio, 5,184,895, Cl. 374-162.000.

Mitsuba Electric Mfg. Co., Ltd.: *See—*
Takada, Shigeru, 5,185,544, Cl. 310-58.000.

Mitsubishi Corporation: *See—*
Takahashi, Kazuo, 5,185,168, Cl. 426-233.000.

Mitsubishi Denki K.K.: *See—*
Kato, Kiyotaka; and Okamoto, Takashi, 5,185,855, Cl. 395-129.000.
Yasui, Noriya, 5,185,507, Cl. 219-69.120.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Aoyagi, Toshitaka; and Shigihara, Kimio, 5,185,287, Cl. 437-105.000.
Aoyagi, Toshitaka; and Shigihara, Kimio, 5,185,290, Cl. 437-129.000.
Arimoto, Kazutami; Fujishima, Kazuyasu; Matsuda, Yoshio; Ooishi, Tsukasa; and Tsukude, Masaki, 5,185,744, Cl. 371-21.200.
Hashimoto, Atsuko; Iwata, Toshio; and Fukui, Wataru, 5,184,590, Cl. 123-414.000.
Kondoh, Harufusa; and Uramoto, Shinichi, 5,185,538, Cl. 307-270.000.
Maeda, Mie; and Ohuchi, Hirofumi, 5,184,595, Cl. 123-690.000.
Mishima, Hidetoshi; and Hatanaka, Keiji, 5,185,679, Cl. 360-30.000.
Motonami, Kaoru, 5,185,284, Cl. 437-52.000.
Nakatani, Hiroshi, 5,184,710, Cl. 198-328.000.
Oda, Minoru, 5,185,121, Cl. 376-254.000.
Saitoh, Mamoru; and Fujimoto, Shinya, 5,184,594, Cl. 123-571.000.
Sakamoto, Shinichi; Sonoda, Takuji; and Kasai, Nobuyuki, 5,185,534, Cl. 257-276.000.
Shinomiya, Kohji, 5,185,658, Cl. 358-29.000.
Tanaka, Kunimaro; Ozaki, Minoru; Kiyose, Yoshihiro; and Ito, Osamu, 5,185,746, Cl. 371-40.100.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Nishizawa, Chiharu; Kondo, Yoshiharu; and Ohto, Masaru, 5,185,185, Cl. 427-304.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Aoki, Kanji; Uchiyama, Yukio; and Midorikawa, Toshiyuki, 5,184,699, Cl. 187-9.00R.
Shimoyama, Makoto; and Ozaki, Ikuo, 5,185,644, Cl. 356-369.000.

Mitsubishi Kasei Corporation: *See—*
Kijima, Naoto; and Oguri, Yasuo, 5,185,177, Cl. 427-2.000.
Natsume, Bunji; Kyomura, Nobuo; Kikutake, Kazuhiko; and Fukuchi, Toshiki, 5,185,354, Cl. 514-369.000.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Kohama, Keiko; Kobayashi, Miki; Kurusu, Yasurou; Yukawa, Hideaki; and Fukushima, Makiko, 5,185,262, Cl. 435-320.100.
Yoshinaga, Kenji; Nakamura, Toshiko; and Itoh, Kiichi, 5,185,413, Cl. 526-233.000.

Mitsuboshi, Masahiro: *See—*
Ishida, Yuzuru; Mitsuboshi, Masahiro; Inoue, Haruo; Otsuka, Ichiro; and Iio, Keiji, 5,185,394, Cl. 524-269.000.

Mitsui Engineering & Shipbuilding Co., Ltd.: *See—*
Tanigawa, Shogo; Yokoyama, Takeshi; and Izawa, Yoshikazu, 5,185,017, Cl. 55-257.200.

Mitsui, Kiyoshi: *See—*
Abe, Hiroomi; Shinonaga, Hideo; Mitsui, Kiyoshi; and Sogabe, Satoru, 5,185,188, Cl. 427-533.000.

Mitsui Toatsu Chemicals, Inc.: *See—*
Ishida, Yuzuru; Mitsuboshi, Masahiro; Inoue, Haruo; Otsuka, Ichiro; and Iio, Keiji, 5,185,394, Cl. 524-269.000.
Nakatsuka, Masakatsu; Otsuji, Atsuo; Hasegawa, Kiyoharu; Kikkawa, Kazuyoshi; and Yamaguchi, Akihiro, 5,185,453, Cl. 549-226.000.

Miura, Kiyotaka; and Yamashita, Toshiharu, to Hoya Corporation. Method of manufacturing preform for nonoxide glass fiber. 5,185,021, Cl. 65-3.110.

Miura, Masaaki, to Asahi Kogaku Kogyo K.K. Focusing structure in an information reading apparatus. 5,185,822, Cl. 382-65.000.

Miwa, Tsutomu. Aerodynamic motorcar. 5,184,832, Cl. 296-198.000.

Miyaji, Masaki: *See—*
Shimaya, Kazuhiko; Miyaji, Masaki; and Inoue, Kozo, 5,184,982, Cl. 474-101.000.
Shimaya, Kazuhiko; and Miyaji, Masaki, 5,184,983, Cl. 474-111.000.

Miyakawa, Yoshitaka, to Honda Giken Kogyo Kabushiki Kaisha. Hydraulic braking pressure control device. 5,184,877, Cl. 303-113.200.

Miyake, Ryohei; and Tsutsui, Kyoji, to Ricoh Company, Ltd. Heat-mode recording medium. 5,185,194, Cl. 428-64.000.

Miyake, Toshihide: *See—*
Inamori, Masanori; and Miyake, Toshihide, 5,185,517, Cl. 250-201.400.

Miyamoto, Hiroyuki: *See—*
Fukui, Yuko; Ohtani, Katsuhiro; Miyamoto, Hiroyuki; Nishiura, Masao; and Chimura, Moriyuki, 5,185,283, Cl. 437-51.000.

Miyamoto, Noritaka; and Tomoda, Takashi, to Toyota Jidosha Kabushiki Kaisha. Relatively displacing apparatus. 5,185,217, Cl. 428-627.000.

Miyamoto, Toshio: *See—*
Nishimura, Katsuhiko; Okano, Keiji; Miyamoto, Toshio; and Ishiyama, Tatsunori, 5,185,496, Cl. 118-658.000.

Miyata, Junji; Kanetake, Satoshi; Morimoto, Yasufumi; and Hanayama, Kenji, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,185,240, Cl. 430-596.000.

Miyata, Masahiko, to Fuji Xerox Co., Ltd. System for compressing image data having blank lines. 5,185,820, Cl. 382-56.000.

Miyazawa, Azuma; Mizobuchi, Koji; and Suzuki, Takashi, to Olympus Optical Co., Ltd. Digital fuzzy inference apparatus having time divisional control function. 5,185,849, Cl. 395-3.000.

Mizobuchi, Koji: *See—*
Miyazawa, Azuma; Mizobuchi, Koji; and Suzuki, Takashi, 5,185,849, Cl. 395-3.000.

Mizukami, Fujio; Sano, Tsuneji; and Masuda, Koji, to Nissan Motor Co., Ltd.; and Agency of Industrial Science & Technology. Method of producing a catalyst for the decomposition of hydrazine. 5,185,312, Cl. 502-332.000.

Mizuno, Nobuyuki: *See—*
Honda, Makoto; and Mizuno, Nobuyuki, 5,185,677, Cl. 359-460.000.

Mizuno, Tomohisa, to Kabushiki Kaisha Toshiba. Semiconductor device with improved current drivability. 5,185,646, Cl. 257-390.000.

Mizuta, Yasufumi: *See—*
Maeda, Tatsuo; Katsukawa, Masato; Iwasaki, Hiroaki; and Mizuta, Yasufumi, 5,185,228, Cl. 430-59.000.

Mobil Oil Corp: *See—*
Del Rossi, Kenneth J.; Kirker, Garry W.; and Huss, Albin, Jr., 5,185,484, Cl. 585-419.000.

Mobil Oil Corp.: *See—*
Degnan, Thomas F.; McCullen, Sharon B.; Schmitt, Kirk D.; and Hatzikos, George H., 5,185,310, Cl. 502-214.000.
Owen, Hartley, 5,185,077, Cl. 208-61.000.

Mochizuki, Norihiro: *See—*
Egara, Koichi; Nakamura, Kenji; and Mochizuki, Norihiro, 5,185,548, Cl. 310-313.00D.

Mochizuki, Tatsufumi, to Jatco Corporation. Shift timing control for automatic transmission. 5,184,528, Cl. 74-869.000.

Modern Controls, Inc.: *See—*
Mayer, William N., 5,184,392, Cl. 29-592.100.

Moedritzer, Kurt; and Rogers, Michael D., to Monsanto Company. Substituted pyrazoles and their use as herbicides. 5,185,025, Cl. 504-282.000.

Moerkel, Theophile: *See—*
Peter, Heinrich; and Moerkel, Theophile, 5,185,368, Cl. 514-476.000.

Mogamiya, Hiroyuki: *See—*
Suzuki, Yoshiichi; Mogamiya, Hiroyuki; and Kawamura, Ichiro, 5,184,847, Cl. 252-299.650.

Mogi, Fumio, to Fuji Photo Film Co., Ltd. Apparatus for treating a photosensitive material and method of adding water for use in the same. 5,185,623, Cl. 354-299.000.

Mohr, Michael: *See—*
Eggensperger, Heinz; Diehl, Karl-Heinz; Nolte, Helmut; Rackur, Helmut; Eggers-MaaB, Ute; Mohr, Michael; Bernd, Lower; and BeilfuB, Wolfgang, 5,185,145, Cl. 424-78.080.

Mohrbacher, Richard J.: *See—*
Grous, Philip P.; and Mohrbacher, Richard J., 5,185,362, Cl. 514-428.000.

Mohtasham, Mani; and Gharagozloo, Hamid. Insect netting for baby stroller. 5,184,865, Cl. 296-77.100.

Molla, Jaynal A.: *See—*
Bindra, Perminder S.; Cuomo, Jerome J.; Gall, Thomas P.; Ingraham, Anthony P.; Kang, Sung K.; Kim, Jungihl; Lauro, Paul; Light, David N.; Markovich, Voya R.; Miersch, Ekkehard F.; Molla, Jaynal A.; Powell, Douglas O.; Ritsko, John J.; Saxenmeyer, George J., Jr.; Varcoe, Jack A.; and Walker, George F., 5,185,073, Cl. 205-104.000.

Moller, B. Weems. Party dish. 5,184,750, Cl. 220-575.000.

Molligan, Harry J., to Molligan, Lois L. Back water trap. 5,184,640, Cl. 137-247.250.

Molligan, Lois L.: *See—*
Molligan, Harry J., 5,184,640, Cl. 137-247.250.

Momonoi, Kaishu: *See—*
Ochiai, Hirokazu; Watanabe, Yasuo; Murotani, Yoshiharu; Fukuda, Hirohiko; Yoshino, Osamu; Minami, Shinzaburo; Hayashi, Toshio; and Momonoi, Kaishu, 5,185,330, Cl. 514-142.000.

Monkewitz, Martin: *See—*
Oppliger, Erich; and Monkewitz, Martin, 5,184,499, Cl. 73-11.010.

Monsanto Company: *See—*
Dyroff, David R.; and Anantaneni, Prakasa R., 5,185,485, Cl. 585-446.000.
Ebner, Jerry R., 5,185,455, Cl. 549-259.000.
Moedritzer, Kurt; and Rogers, Michael D., 5,185,025, Cl. 504-282.000.
Tumer, Nilgun E., 5,185,253, Cl. 435-172.300.

Montedison S.P.A.: *See—*
Rendina, Gabriele; and Albizzati, Enrico, 5,185,401, Cl. 525-130.000.

Montgomery, Lon W.: *See—*
Carbonell, Luis E.; and Montgomery, Lon W., 5,185,547, Cl. 310-259.000.

Montgomery, Robert H., Jr.: *See—*
Sheirer, Daniel C.; Woods, Gerald L.; and Montgomery, Robert H., Jr., 5,184,689, Cl. 175-420.100.

Moog, Inc.: *See—*
Banks, Frank J., 5,185,675, Cl. 359-181.000.

Moore, David N.; and Ullrich, Jeffrey F., to Phoenix Closures, Inc. Closure cap and fitment assembly. 5,184,746, Cl. 220-256.000.

Moore, Max J.: *See—*
Lewis, Gary W.; and Moore, Max J., 5,184,501, Cl. 73-23.310.

Moore, Ralph T.: *See—*
Chunn, William G.; and Moore, Ralph T., 5,184,495, Cl. 72-318.000.

Moore, Robert A.: *See—*
Krishnaswamy, S. Visvanathan; Horwitz, Stuart S.; and Moore, Robert A., 5,185,589, Cl. 333-133.000.

Moracz, Donald J.; and Doble, Gordon S., to Avco Corporation. Tooling and method for consolidating a filamentary reinforced metal matrix composite. 5,184,769, Cl. 228-121.000.

Morgan, Michael J.: *See—*
Grosso, Paul V.; Wing, Feagin A., Jr.; Morgan, Michael J.; Stegmeier, Renate C.; Day, Roger W.; and Burt, Willard F., 5,185,226, Cl. 430-47.000.

Mori, Ryoichi. Tamper resistant module having logical elements arranged in multiple layers on the outer surface of a substrate to protect stored information. 5,185,717, Cl. 365-52.000.

Mori, Toshiki; Fujii, Hiroshi; Onishi, Takashi; and Yamamoto, Kazuo, to Kuraray Company Ltd. Process for producing β-carotene, and intermediate compounds useful for the process. 5,185,468, Cl. 568-31.000.

Mori, Yoshihiro; Mannoh, Masaya; Kamiyama, Satoshi; and Ohnaka, Kiyoshi, to Matsushita Electric Industrial Co., Ltd. Semiconductor laser. 5,185,755, Cl. 372-46.000.

Moriarty, Keith A., to Schlumberger Technology Corporation. Retrievable radiation source carrier. 5,184,692, Cl. 175-50.000.

Morihiro, Shinji: *See—*
Sakai, Norio; Minowa, Kenji; and Morihiro, Shinji, 5,185,040, Cl. 118-406.000.

Morikawa, Takayuki: *See—*
Satoh, Tsuguo; Morikawa, Takayuki; Hihara, Hiroshi; Yagi, Takeshi; and Yoshida, Kazuaki, 5,185,020, Cl. 65-3.110.

Morimiya, Osami: *See—*
Suzuki, Setsuo; Noda, Etsuo; and Morimiya, Osami, 5,185,552, Cl. 313-231.710.

Morimoto, Yasufumi: *See—*
Miyata, Junji; Kanetake, Satoshi; Morimoto, Yasufumi; and Hanayama, Kenji, 5,185,240, Cl. 430-596.000.

Morita, Kiyoyuki; and Ishihara, Takeshi, to Matsushita Electric Industrial Co., Ltd. Method for forming a dielectric thin film or its pattern of high accuracy on a substrate. 5,185,296, Cl. 437-229.000.

Morita, Seizo: *See—*
Yagi, Akira; Okada, Takao; Morita, Seizo; and Mikoshiba, Nobuo, 5,185,572, Cl. 324-158.00R.

Morita, Takao; Ishii, Osamu; and Kurosaki, Takebumi, to Toyo Communication Equipment Co., Ltd. Structure for supporting a resonator using an ultrathin piezoelectric plate in a package. 5,185,550, Cl. 310-344.000.

Moriyama, Hiroaki: *See—*
Yashiki, Yuichi; Moriyama, Hiroaki; and Aoki, Kazuaki, 5,185,187, Cl. 427-430.100.

Morre, Michel: *See—*
Aubert, Daniel; Blanc, Francis; Desmolin, Henri; Morre, Michel; and Sindely, Lucette, 5,185,159, Cl. 424-489.000.

Morris, Monte G.; and Ajtaji, Andrew. Arm wrestling simulating device. 5,184,994, Cl. 482-129.000.

Morton Coatings, Inc.: *See—*
Lewarchik, Ronald J.; Holzrichter, Edward J.; Smith, Marc L.; and Allman, Jack C., 5,185,403, Cl. 525-199.000.

Moser, Mark D.: *See—*
Cohn, Michelle J.; Lawson, R. Joe; and Moser, Mark D., 5,185,306, Cl. 502-66.000.

Moser, Thomas P.; and Rosser, Robin W., to Hughes Aircraft Company. Endothermic cooler for electronic components. 5,184,470, Cl. 62-4.000.

Mosher, Mark D.; Fraser, Robert; and Fuller, Ronald D., to Motorola, Inc. Electrostatic RF absorbant circuit carrier assembly and method for making the same. 5,185,654, Cl. 257-659.000.

Moslehi, Mehrdad M., to Texas Instruments Incorporated. In-situ real-time sheet resistance measurement method. 5,184,398, Cl. 29-825.000.

Mothersbaugh, James M.; and Keim, John E., to Circle Prime Mfg. Co. RF test load and method for internal use thereof. 5,185,568, Cl. 324-95.000.

Motola, Solomon; Blank, Robert G.; and Branfman, Alan R., to American Home Products Corporation. Inhibition of thermal degradation of ibuprofen. 5,185,373, Cl. 514-570.000.

Motonami, Kaoru, to Mitsubishi Denki Kabushiki Kaisha. Method of making a semiconductor memory device. 5,185,284, Cl. 437-52.000.

Motorola, Inc.: *See—*
Barker, Dean W., 5,185,278, Cl. 437-39.000.
Barrett, Steven T.; Laird, Kevin M.; Murray, Richard E.; and O'Connor, James M., 5,185,797, Cl. 380-21.000.
Bitter, Charles R., Jr., 5,185,611, Cl. 343-702.000.
Bright, Michael W., 5,185,795, Cl. 380-21.000.
Edenfield, Robin W.; McGarity, Ralph; Reininger, Russell; Ledbetter, William B., Jr.; and Shahan, Van B., 5,185,694, Cl. 395-425.000.
Goedken, Terrance J.; and Goedken, James F., 5,185,566, Cl. 320-48.000.
Hall, Robert S.; Urbish, Glenn F.; and Mullen, William B., III, 5,184,768, Cl. 228-104.000.
Jasper, Craig L., 5,185,273, Cl. 437-8.000.
Lyon, Jose A.; and Campbell, Jules D., Jr., 5,185,607, Cl. 341-120.000.
Maniar, Papu D., 5,185,689, Cl. 361-313.000.
Mischneko, Nicholas, 5,185,790, Cl. 379-433.000.
Mosher, Mark D.; Fraser, Robert; and Fuller, Ronald D., 5,185,654, Cl. 257-659.000.
Ooi, Leng H.; and Einbinder, Stephen B., 5,185,583, Cl. 331-15.000.
Snyder, Janet M.; and Gruender, Eugene H., Jr., 5,185,539, Cl. 307-465.000.
Spear, Stephen L., 5,185,739, Cl. 370-95.300.
Wilson, Alan L., 5,185,796, Cl. 380-21.000.

Moumni, El Mostafa: *See—*
Delpuech, Jean-Jacques; Matos, Louis; Moumni, El Mostafa; Ravey, Jean-Claude; Selve, Claude; Serratrice, Guy; Stebe, Marie-Jose; Cambon, Aime; and Thiollet, Gerard, 5,185,099, Cl. 252-315.100.

Moyski, Matthew T.; and Spitz, Raymond C., to Ford Motor Company. Communication system for passenger vehicle. 5,185,803, Cl. 381-86.000.

Mueller, Francis X.: *See—*
Farrar, Ralph C., Jr.; Hartsock, David L.; and Mueller, Francis X., 5,185,400, Cl. 525-98.000.

Mueller, Richard H.: *See—*
Godfrey, Jollie D., Jr.; Mueller, Richard H.; Kissick, Thomas P.; and Singh, Janak, 5,185,463, Cl. 562-506.000.

Mukhametshin, Almaz A.: *See—*
Abdrakhmanov, Gabdrashit S.; Zainullin, Albert G.; Meling, Konstantin V.; Rakhmanov, Rauf N.; Balandin, Alexandr P.; Puzanov, Alexandr A.; Urazgildin, Ilyas A.; Mukhametshin, Almaz A.; Khakimov, Almas K.; Yasas, Antanas A.; Naryshkina, Lutsia M.; Akhunov, Albert M.; Akhunova, Tanzilya K., administrator; Akhunova, Flera A., dministrator; and Akhunov, Farid A., administrator, 5,184,687, Cl. 175-267.000.

Mullen, William B., III: *See—*
Hall, Robert S.; Urbish, Glenn F.; and Mullen, William B., III, 5,184,768, Cl. 228-104.000.

Muller, Hartwig; Bischoff, Erwin; Fugmann, Burkhard; Weber, Karlheinz; Frobel, Klaus; Rosen, Bruno; Grutzmann, Rudi; Karmann, Guenther; and Kohlsdorfer, Christian, to Bayer Aktiengesellschaft. Efomycins A, E and G as antiinflammatory agents. 5,185,326, Cl. 514-23.000.

Muller, Rainer: *See—*
Palitzsch, Peter; Muller, Rainer; and Richter, Erhard, 5,185,443, Cl. 540-589.000.

Muller, Ulrich E.: *See—*
Niewohner, Ulrich; Muller, Ulrich E.; Perzborn, Elisabeth; Bischoff, Erwin; and Dellweg, Hans-Georg, 5,185,348, Cl. 514-335.000.

Munson, James B.: *See—*
Good, Michael D.; and Munson, James B., 5,185,561, Cl. 318-432.000.

Murai, Hiroko: *See—*
Yoshida, Hiroichi; and Murai, Hiroko, 5,185,854, Cl. 395-117.000.

Murai, Naobumi; and Kurokawa, Tadashi, to Tomen America Inc. Apparatus for treating cloth in flowing liquid. 5,184,486, Cl. 68-175.000.

Murakami, Tooru: *See—*
Yanada, Isamu; Murakami, Tooru; and Asakawa, Kiyoshi, 5,185,076, Cl. 205-252.000.

Murata Kikai Kabushiki Kaisha: *See—*
Mima, Hiroshi; and Suzuki, Tadashi, 5,184,453, Cl. 57-270.000.
Nakagawa, Osamu, 5,184,713, Cl. 198-465.100.

Murata Manufacturing Co., Ltd.: *See—*
Sakai, Norio; Minowa, Kenji; and Morihiro, Shinji, 5,185,040, Cl. 118-406.000.

Murata, Yasuyuki; Konishi, Isako; Tanaka, Ryohei; and Nakanishi, Yoshinori. Epoxy resin electrical encapsulation composition. 5,185,388, Cl. 523-466.000.

Murayama, Hirokazu: *See—*
Sekiguchi, Yuzo, deceased; and Murayama, Hirokazu, 5,184,705, Cl. 192-84.00C.

Murayama, Masami; Takahashi, Atsuhisa; Kakuma, Satoshi; and Yoshimura, Shuji, to Fujitsu Limited. Signaling cell switching system. 5,185,743, Cl. 370-110.100.

Murdoch, Brian: *See—*
Dysart, John A.; Showman, Peter S.; Crow, William M.; Williams, Peter M.; McBride, Brian W.; Senior, John R. F.; Whelan, Charles H.; and Murdoch, Brian, 5,185,885, Cl. 395-600.000.

Murotani, Yoshiharu: *See—*
Ochiai, Hirokazu; Watanabe, Yasuo; Murotani, Yoshiharu; Fukuda, Hirohiko; Yoshino, Osamu; Minami, Shinzaburo; Hayashi, Toshio; and Momonoi, Kaishu, 5,185,330, Cl. 514-142.000.

Murphy, John P.; and Murphy, Richard J. Chain catcher for bicycles. 5,184,984, Cl. 474-140.000.

Murphy, Richard J.: *See—*
Murphy, John P.; and Murphy, Richard J., 5,184,984, Cl. 474-140.000.

Murray, Richard E.: *See—*
Barrett, Steven T.; Laird, Kevin M.; Murray, Richard E.; and O'Connor, James M., 5,185,797, Cl. 380-21.000.

VOL 1147 ISS 2 FE 9 1993 UMI

Murtiashaw, Charles W., to Pfizer Inc. Crystalline N-(S-3-methylheptanoyl)-D-gamma-glutamyl-glycyl-D-alanine, and processes and intermediates therefor. 5,185,464, Cl. 562-545.000.
Murtiashaw, Charles W.: *See*—
Godek, Dennis M.; Murtiashaw, Charles W.; Urban, Frank J.; and Vanderplas, Brian C., 5,185,449, Cl. 546-272.000.
Musikant, Barry: *See*—
Cohen, Brett I.; and Musikant, Barry, 5,185,386, Cl. 523-105.000.
Muto, Tsunehisa; Kanegae, Futoshi; Takatsuka, Toru; Hirohama, Seiya; and Ojiro, Masazumi, to Japan as represented by Ministry of International Trade and Industry, Director-General. Method for the separation of impurities from crude ethanol aqueous solution. 5,185,481, Cl. 568-918.000.
Mutsu Seika Co., Ltd.: *See*—
Takahashi, Kazuo, 5,185,168, Cl. 426-233.000.
Mycogen Corporation: *See*—
Michaels, Tracy E., 5,185,148, Cl. 424-93.00L.
Myers, Christopher C.: *See*—
Vavrek, Robert M.; Schaefer, Daniel J.; Myers, Christopher C.; McFarland, Thomas G.; and Turner, Robert, 5,185,576, Cl. 324-318.000.
Myllymaki, Hannu: *See*—
Takalo, Pasi; Kinnari, Pekka; Henriksson, Mikko; Nikku, Tapani; and Myllymaki, Hannu, 5,184,924, Cl. 408-67.000.
Myschik, Dieter; and Weidenhaupt, Paul, to Minnesota Mining and Manufacturing Company. Connector for coaxial cables. 5,184,965, Cl. 439-578.000.
Nagahama, Masaharu: *See*—
Kanda, Shoichi; Narita, Takeshi; Ushigome, Masahiro; and Nagahama, Masaharu, 5,185,393, Cl. 524-140.000.
Nagamine, Tsuneo: *See*—
Nishike, Ujihiro; Sujita, Shigeko; and Nagamine, Tsuneo, 5,185,043, Cl. 148-111.000.
Nagamune, Teruyuki: *See*—
Endo, Isao; Nagamune, Teruyuki; Nishimura, Minoru; and Kobayashi, Tetsuo, 5,185,255, Cl. 435-174.000.
Nagasawa, Tamami; and Ida, Masayuki, to Sharp Kabushiki Kaisha. Copying machine having top wall with slit for cleaning access. 5,185,630, Cl. 355-215.000.
Nagashima, Hideo: *See*—
Saito, Hajime; Nagashima, Hideo; Matsushita, Junichi; and Hayashi, Shinsuke, 5,185,112, Cl. 264-63.000.
Nagayama, Yoji: *See*—
Tsukada, Tokio; Nagayama, Yoji; and Ieiri, Junichiro, 5,185,612, Cl. 343-713.000.
Nagy, William J.: *See*—
Fischer, Frederick H.; Lee, Kuo-hua; Nagy, William J.; and Selamoglu, Nur, 5,185,291, Cl. 437-173.000.
Naito, Kazufumi, to Ishida Scales Mfg. Co., Ltd. Load sensor. 5,184,520, Cl. 73-862.623.
Nakagaki, Shintaro: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Negishi, Ichiro; and Asakura, Tsutou, 5,185,617, Cl. 346-108.000.
Nakagawa, Osamu, to Murata Kikai Kabushiki Kaisha. Take-up tube transporting apparatus. 5,184,713, Cl. 198-465.100.
Nakagawa, Takahiro; and Tanaka, Shiro, to San-Ei Chemical Industries, Ltd.; and Chugai Seiyaku Kabushiki Kaisha. Process for the production of milk mineral concentrate and drink containing minerals. 5,185,166, Cl. 426-74.000.
Nakahama, Ryoji: *See*—
Onoue, Akihiro; and Nakahama, Ryoji, 5,184,967, Cl. 440-75.000.
Nakajima, Kenji: *See*—
Nishiumi, Kenji; Nakajima, Kenji; Mikami, Mitsugu; Ishida, Takeshi; and Ito, Yukio, 5,184,709, Cl. 194-318.000.
Nakajima, Shigeo: *See*—
Mikami, Akiyoshi; Terada, Kousuke; Okibayashi, Katsushi; Tanaka, Koichi; Yoshida, Masaru; and Nakajima, Shigeo, 5,185,181, Cl. 427-69.000.
Nakamura, Eiichi: *See*—
Noda, Kazuo; Nakamura, Eiichi; and Nishiguma, Hiroaki, 5,185,729, Cl. 369-44.140.
Nakamura, Hideki: *See*—
Sato, Makoto; Shimazaki, Tatsuo; and Nakamura, Hideki, 5,185,712, Cl. 358-224.000.
Nakamura, Hideo, to Nissan Motor Co., Ltd. Engine control system for an automotive power train including a torque converter. 5,184,527, Cl. 74-866.000.
Nakamura, Hiroyuki: *See*—
Ichikawa, Hiroaki; Kadono, Yasuo; Kojima, Katsuo; Nakamura, Hiroyuki; and Aoki, Yoshio, 5,185,093, Cl. 252-62.510.
Nakamura, Kenji: *See*—
Egara, Koichi; Nakamura, Kenji; and Mochizuki, Norihiro, 5,185,548, Cl. 310-313.00D.
Nakamura, Toshiko: *See*—
Yoshinaga, Kenji; Nakamura, Toshiko; and Itoh, Küchi, 5,185,413, Cl. 526-233.000.
Nakamura, Yoshinori: *See*—
Egashira, Noritaka; Nakamura, Yoshinori; and Takiguchi, Ryohei, 5,185,316, Cl. 503-227.000.
Nakamura, Yuzuru: *See*—
Tsukamura, Naoki; Alyfuku, Kiyoshi; Nakamura, Yuzuru; Hiruta, Yoshiki; and Tsuboi, Hiroshi, 5,184,359, Cl. 4-661.000.
Nakanishi, Yoshinori: *See*—
Murata, Yasuyuki; Konishi, Isako; Tanaka, Ryohei; and Nakanishi, Yoshinori, 5,185,388, Cl. 523-466.000.
Nakano, Hiroo; and Manabe, Seiichi, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for evaluating the virus-removing capability of a porous polymeric membrane module for removing viruses. 5,185,082, Cl. 210-639.000.
Nakano, Masae: *See*—
Usui, Shiro; Nakauchi, Shigeki; and Nakano, Masae, 5,185,850, Cl. 395-22.000.
Nakatani, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Escalator apparatus. 5,184,710, Cl. 198-328.000.
Nakatsuka, Masakatsu; Otsuji, Atsuo; Hasegawa, Kiyoharu; Kikkawa, Kazuyoshi; and Yamaguchi, Akihiro, to Mitsui Toatsu Chemicals, Inc. Crystal of fluoran compound. 5,185,453, Cl. 549-226.000.
Nakatsukasa, Sadayoshi; Fujii, Toshihiro; Tanaka, Ban; and Yamada, Kosaku, to Hayakawa Rubber Co., Ltd.; and Nippon Paint Co., Ltd. Photosensitive flexographic printing plate composition. 5,185,234, Cl. 430-284.000.
Nakauchi, Shigeki: *See*—
Usui, Shiro; Nakauchi, Shigeki; and Nakano, Masae, 5,185,850, Cl. 395-22.000.
Nakayama, Masatoshi: *See*—
Shibahara, Masanori; Nakayama, Masatoshi; and Ueda, Kunihiro, 5,185,067, Cl. 427-523.000.
Nakayama, Tadayoshi, to Canon Kabushiki Kaisha. Arithmetic operation processing apparatus. 5,185,714, Cl. 364-750.500.
Nakos, James S.: *See*—
Lam, Chung H.; Lasky, Jerome B.; Hill, Craig M.; Nakos, James S.; Holmes, Steven J.; Geissler, Stephen F.; and Lord, David K., 5,185,294, Cl. 437-193.000.
Nalco Chemical Company: *See*—
Banks, Rodney H.; and Wetegrove, Robert J., 5,185,533, Cl. 250-575.000.
Begala, Arthur J., 5,185,062, Cl. 162-168.100.
Pillai, Krishnan J.; Connelly, Lawrence J.; and Gustafson, William K., 5,185,135, Cl. 423-320.000.
Namba, Takaoki; and Kamada, Teruo, to Honda Giken Kogyo Kabushiki Kaisha. Pressing die. 5,184,496, Cl. 72-350.000.
Namba, Toyoaki, to Sharp Kabushiki Kaisha. Sheet feeding apparatus capable of feeding sheets of plural sizes. 5,184,812, Cl. 271-98.000.
Nankai, Shiro; Kawaguri, Mariko; and Iijima, Takashi, to Matsushita Electric Industrial Co., Ltd. Method for making a biosensor. 5,185,256, Cl. 435-174.000.
Nappholz, Tibor A.; Dawson, Albert K.; Lu, Richard M. T.; and Steinhaus, Bruce M., to Telectronics Pacing Systems, Inc. Apparatus and method for detecting abnormal cardiac rhythms using evoked potential measurements in an arrhythmia control system. 5,184,615, Cl. 128-419.0PG.
Narita, Naomasa: *See*—
Taguchi, Yasuhisa; Endo, Makoto; Kawamoto, Ryuichi; Saito, Shiro; Zaizen, Reigi; Komachi, Hiroshi; Narita, Naomasa; and Fujiwara, Kenichi, 5,184,355. Cl. 4-420.000.
Narita, Takeshi: *See*—
Kanda, Shoichi; Narita, Takeshi; Ushigome, Masahiro; and Nagahama, Masaharu, 5,185,393, Cl. 524-140.000.
Naryshkina, Lutsia M.: *See*—
Abdrakhmanov, Gabdrashit S.; Zainullin, Albert G.; Meling, Konstantin V.; Rakhmanov, Rauf N.; Balandin, Alexandr P.; Puzanov, Alexandr A.; Urazgildin, Ilyas A.; Mukhametshin, Almaz A.; Khakimov, Almas K.; Yasas, Antanas A.; Naryshkina, Lutsia M.; Akhunov, Albert M.; Akhunova, Tanzilya K., administrator; Akhunova, Flera A., dministrator; and Akhunov, Farid A., administrator, 5,184,687, Cl. 175-267.000.
Nashimoto, Chuzo, to Ricoh Company, Ltd. Line switching apparatus. 5,185,784, Cl. 379-94.000.
Nassehi, Mehdi M.; and Zurfluh, Erwin A., to International Business Machines Corporation. Method and apparatus for cyclic reservation multiple access in a communications system. 5,185,737, Cl. 370-85.800.
National Research Development Corporation: *See*—
Hider, Robert C.; and Stockham, Michael A., 5,185,319, Cl. 514-3.000.
National Semiconductor Corporation: *See*—
Edem, Brian C.; and Helliwell, Richard P., 5,185,886, Cl. 395-600.000.
Hamstra, James R.; Perloff, Ronald S.; and Yeung, Louise Y., 5,185,863, Cl. 395-250.000.
Switky, Andrew P.; and Chia, Chok J., 5,185,653, Cl. 257-729.000.
National Starch and Chemical Investment Holding Corporation: *See*—
Chiu, Chung-Wai, 5,185,176, Cl. 426-651.000.
Natsume, Bunji; Kyomura, Nobuo; Kikutake, Kazuhiko; and Fukuchi, Toshiki, to Mitsubishi Kasei Corporation. Pyrazolecarboxamide, insecticidal and miticidal composition, and fungicidal composition for use in agriculture and horticulture. 5,185,354, Cl. 514-369.000.
Natsuume, Tadao: *See*—
Hamaguchi, Tetsuo; Ueda, Tsunehisa; and Natsuume, Tadao, 5,185,039, Cl. 106-728.000.
NCR Corporation: *See*—
Waldron, Robert D.; and Crafts, Harold S., 5,185,652, Cl. 257-758.000.
Wike, Charles K., Jr.; Collins, Donald A., Jr.; and Maddox, Craig E., 5,185,514, Cl. 235-375.000.
NEC Corporation: *See*—
Fujimura, Masanori, 5,185,748, Cl. 371-68.100.
Hashishita, Ryuichi, 5,185,723, Cl. 365-226.000.
Kawashima, Hisao, 5,185,831, Cl. 385-41.000.
Kobunaya, Hideki, 5,185,713, Cl. 364-748.000.
Nishimoto, Hiroshi, 5,185,830, Cl. 385-41.000.
Suzuki, Nariko, 5,185,869, Cl. 395-375.000.

NEC Home Electronics, Ltd.: *See*—
Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., 5,185,794, Cl. 380-17.000.
Necker, Thomas: *See*—
Merkel, Gerd; Glaunsinger, Georg; Vogt, Wilfried; Stadler, Peter; Zander, Claus-Peter; Schmitt, Gernot; Maass, Jurgen; Necker, Thomas; Becker, Willi; and Weber, Walter, 5,184,554, Cl. 101-415.100.
Negishi, Ichiro: *See*—
Takanashi, Itsuo; Nakagaki, Shintaro; Negishi, Ichiro; and Asakura, Tsutou, 5,185,617, Cl. 346-108.000.
Negoro, Ikuo: *See*—
Nishikawa, Tomoyuki; and Negoro, Ikuo, 5,184,952, Cl. 432-60.000.
Neiderer, Andreas: *See*—
Jud, Wilfried; Reiterer, Franz; and Neiderer, Andreas, 5,184,771, Cl. 229-87.050.
Nelson, John J.: *See*—
Wilkinson, William T.; and Nelson, John J., 5,184,986, Cl. 482-46.000.
Nelson, Norman C.: *See*—
Arnold, Lyle J., Jr.; and Nelson, Norman C., 5,185,439, Cl. 536-24.300.
Nepple, Bruce C.; Gaskill, Garold B.; and Park, Danial J., to Seiko Corp. and Seiko Epson Corp. Message indicating icon mechanism. 5,185,604, Cl. 340-825.440.
Ner Data Products Inc.: *See*—
Banker, Harold J., 5,184,736, Cl. 211-41.000.
Ness, Jeremy N.: *See*—
Behan, John M.; Ness, Jeremy N.; and Perring, Keith D., 5,185,155, Cl. 424-451.000.
Nestec S.A.: *See*—
Link, Harriet; and Pahud, Jean-Jacques, 5,185,321, Cl. 514-8.000.
Neubauer, Hans-Juergen: *See*—
Buerstinghaus, Rainer; Neubauer, Hans-Juergen; Hofmeister, Peter; Kuenast, Christoph; Leyendecker, Joachim; and Kardorff, Uwe, 5,185,359, Cl. 514-407.000.
Neumann, Paul E.; and Seib, Paul A., to Kansas State University Research Foundation. Starch-based, biodegradable packing filler and method of preparing same. 5,185,382, Cl. 521-84.100.
Neumann, Ronald D.: *See*—
Larson, Steven M.; Finn, Ronald; Carrasquillo, Jorge A.; Reynolds, James C.; Neumann, Ronald D.; Graham, Martin C.; and Pentlow, Keith S., 5,185,142, Cl. 424-1.100.
Neurogen Corporation: *See*—
Shaw, Kenneth; and Hutchison, Alan J., 5,185,446, Cl. 544-250.000.
Nevitt, Bryant D. Harness for carrying containers. 5,184,762, Cl. 224-148.000.
New Pig Corporation: *See*—
Middleton, Dennis G., 5,184,751, Cl. 220-694.000.
New SD, Inc.: *See*—
Newell, Gerald R.; Nootbaar, Michael W.; Bhardwaj, Pradeep; and Willson, Robert C., 5,185,585, Cl. 331-46.000.
Newell, Edwin R.; and Sullivan, Jackie C., to Square D Company. Fiber optic cable receptacle. 5,185,839, Cl. 385-90.000.
Newell, Gerald R.; Nootbaar, Michael W.; Bhardwaj, Pradeep; and Willson, Robert C., to New SD, Inc. Crystal oscillator and method with amplitude and phase control. 5,185,585, Cl. 331-46.000.
Newmont Gold Company: *See*—
Dean, Lance, 5,184,389, Cl. 29-467.000.
Ng, Sheau-Bau; and Hingorani, Rajesh, to General Electric Company. Video signal compression apparatus for independently compressing odd and even fields. 5,185,819, Cl. 382-56.000.
Ng, Yee S., to Eastman Kodak Company. Input scanner color mapping and input/output color gamut transformation. 5,185,661, Cl. 358-75.000.
NGK Insulators, Ltd.: *See*—
Hamaguchi, Kunikazu; Kumazawa, Kazuhiko; and Asami, Seiichi, 5,185,110, Cl. 264-44.000.
Hirai, Takami; Yano, Shinsuke; and Abe, Masahiro, 5,185,304, Cl. 501-139.000.
Ishihara, Takeshi; and Misawa, Hidenobu, 5,185,219, Cl. 429-31.000.
Nishioka, Shigeo; and Fushimi, Koji, 5,184,513, Cl. 73-593.000.
NGK Spark Plug Co., Ltd.: *See*—
Matsubara, Yoshiaki; Amano, Kouzou; and Kojima, Takao, 5,184,529, Cl. 81-125.000.
Nguyen, Anh; and Gajjar, Kumar, to Micro Technology, Inc. Buffering system for dynamically providing data to multiple storage elements. 5,185,876, Cl. 395-425.000.
NHK Spring Co., Ltd.: *See*—
Noda, Kazuo; Nakamura, Eiichi; and Nishiguma, Hiroaki, 5,185,729, Cl. 369-44.140.
Nichia Kagaku Kogyo K.K.: *See*—
Furuoka, Misa; Bando, Shoichi; and Fujii, Akio, 5,185,207, Cl. 428-404.000.
Nichols, Edward L., III; and Stirk, Gary L., to Smart House, L.P. Electrical transmission cable termination device having short and open-circuit cable test capabilities. 5,185,580, Cl. 324-539.000.
Nickell, William F., Jr. Planing pontoon boat. 5,184,561, Cl. 114-61.000.
Niemi, Karl A.: *See*—
Dresen, William L.; Niemi, Karl A.; Emery, Phillip L.; and Grunow, David G., 5,184,866, Cl. 296-95.100.
Nieradka, Zigmunt; and Young, Robert W., to Westvaco Corporation. Method of adjusting box machine rotational clearance. 5,184,388, Cl. 29-434.000.
Niewohner, Ulrich; Muller, Ulrich E.; Perzborn, Elisabeth; Bischoff, Erwin; and Dellweg, Hans-Georg, to Bayer Aktiengesellschaft. Phenylsulphonamide substituted pyridinealkene- and -aminooxyalkanecarboxylic acid derivatives. 5,185,348, Cl. 514-335.000.
Nifco, Inc.: *See*—
Saito, Kazuo, 5,184,794, Cl. 248-68.100.
Nihashi, Kiyotaka: *See*—
Hara, Kozo; Sanada, Tsuyoshi; Tanaka, Yoshiaki; and Nihashi, Kiyotaka, 5,184,904, Cl. 400-320.000.
Nihra, Joseph A.: *See*—
Nihra, Thomas E.; and Nihra, Joseph A., 5,184,859, Cl. 294-19.200.
Nihra, Thomas E.; and Nihra, Joseph A. Golf ball retriever. 5,184,859, Cl. 294-19.200.
Nikku, Tapani: *See*—
Takalo, Pasi; Kinnari, Pekka; Henriksson, Mikko; Nikku, Tapani; and Myllymaki, Hannu, 5,184,924, Cl. 408-67.000.
Nikolov, Nikolay N.; Tzanev, Nikolay T.; and Pavlov, Pavlin S., to DF Podem. Electric hoist including a planetary reduction gear housing disposed within a hoist drum. 5,184,807, Cl. 254-344.000.
Nikon Corporation: *See*—
Yoshibe, Koushi; and Kodaka, Yoshiro, 5,185,622, Cl. 354-286.000.
Nilssen, Ole K. Electronic fluorescent lamp ballast. 5,185,560, Cl. 315-219.000.
Nintendo Company Limited: *See*—
Okada, Satoru; and Kojo, Shin, 5,184,830, Cl. 273-433.000.
Nippon Mining Company, Limited: *See*—
Saito, Kazuhiro; and Imazeki, Nobuo, 5,184,393, Cl. 29-603.000.
Nippon Oil Company Limited: *See*—
Ogake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Shimizu, Teruo; Yamamoto, Narihito; and Uenoyama, Hiroyuki, 5,185,091, Cl. 252-56.500.
Nippon Paint Co., Ltd.: *See*—
Nakatsukasa, Sadayoshi; Fujii, Toshihiro; Tanaka, Ban; and Yamada, Kosaku, 5,185,234, Cl. 430-284.000.
Sato, Haruhiko; Kida, Katsuaki; and Kashihara, Akio, 5,185,229, Cl. 430-110.000.
Nippon Seiko Kabushiki Kaisha: *See*—
Kadokawa, Satoshi, 5,184,402, Cl. 29-898.070.
Nippon Shokubai Co., Ltd.: *See*—
Tanaka, Yasumasa; Nishibayashi, Hideyuki; Tsuchitani, Kouichi; and Tahara, Hideyuki, 5,185,461, Cl. 560-222.000.
Nippon Soda Co., Ltd.: *See*—
Tazaki, Seiji; Umeda, Nobuhiro; Matsui, Nobuo; Yagihara, Tomio; and Mikuma, Katsunori, 5,185,460, Cl. 558-392.000.
Nippon Steel Corporation: *See*—
Eguchi, Kouhei, 5,185,286, Cl. 437-84.000.
Saito, Tamio, 5,185,516, Cl. 235-380.000.
Nippon Zeon Co., Ltd.: *See*—
Hamaguchi, Tetsuo; Ueda, Tsunehisa; and Natsuume, Tadao, 5,185,039, Cl. 106-728.000.
Nippondenso Co., Ltd.: *See*—
Kato, Tatsunori; Kawai, Katsuhiko; and Isomura, Shigenori, 5,184,588, Cl. 123-339.000.
Kutsuna, Kiyoharu; and Inoue, Yoshimitsu, 5,184,478, Cl. 62-468.000.
Nisato, Dino: *See*—
Garcia, Georges; Gautier, Patrick; Nisato, Dino; and Boux, Richard, 5,185,345, Cl. 514-302.000.
Nishibayashi, Hideyuki: *See*—
Tanaka, Yasumasa; Nishibayashi, Hideyuki; Tsuchitani, Kouichi; and Tahara, Hideyuki, 5,185,461, Cl. 560-222.000.
Nishibe, Kunihiko, to Hitachi, Ltd. Automated teller machine and method thereof. 5,185,515, Cl. 235-379.000.
Nishiberi, Nozomu, to Canon Kabushiki Kaisha. Beam scanning apparatus and apparatus for writing image information. 5,185,676, Cl. 359-202.000.
Nishida, Masaharu, to Sanyo Chemical Industries, Ltd. Resin compostions for electrophotographic toner. 5,185,405, Cl. 525-228.000.
Nishida, Naoya; Suzuki, Masaaki; and Yoshioka, Toshifumi, to Canon Kabushiki Kaisha. Process for producing electrode plate structure for liquid crystal color display device. 5,185,059, Cl. 156-659.100.
Nishiguma, Hiroaki: *See*—
Noda, Kazuo; Nakamura, Eiichi; and Nishiguma, Hiroaki, 5,185,729, Cl. 369-44.140.
Nishii, Teruyuki: *See*—
Takahashi, Taketo; Watanabe, Tsunehiro; Nishii, Teruyuki; and Ueno, Yasuhide, 5,185,783, Cl. 379-93.000.
Nishikawa, Tomoyuki; and Negoro, Ikuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Heat roll fixing unit. 5,184,952, Cl. 432-60.000.
Nishike, Ujihiro; Sujita, Shigeko; and Nagamine, Tsuneo, to Kawasaki Steel Corporation. Method for producing low iron loss grain oriented silicon steel sheets. 5,185,043, Cl. 148-111.000.
Nishimoto, Hiroshi, to NEC Corporation. Optical waveguide directional coupler including control electrodes. 5,185,830, Cl. 385-41.000.
Nishimura, Katsuhiko; Okano, Keiji; Miyamoto, Toshio; and Ishiyama, Tatsunori, to Canon Kabushiki Kaisha. Electrostatic latent image device having a coating layer provided on a developer carrying member. 5,185,496, Cl. 118-658.000.
Nishimura, Minoru: *See*—
Endo, Isao; Nagamune, Teruyuki; Nishimura, Minoru; and Kobayashi, Tetsuo, 5,185,255, Cl. 435-174.000.

VOL
1147
ISS
2
FE
9
1993
UMI

Nishioka, Shigeo; and Fushimi, Koji, to NGK Insulators, Ltd. Automatic ultrasonic testing apparatus for detecting flaws of structural balls. 5,184,513, Cl. 73-593.000.

Nishiumi, Kenji; Nakajima, Kenji; Mikami, Mitsugu; Ishida, Takeshi; and Ito, Yukio, to Kabushiki Kaisha Nippon Conlux. Coin selector. 5,184,709, Cl. 194-318.000.

Nishiura, Masao: *See*—
Fukui, Yuko; Ohtani, Katsuhiro; Miyamoto, Hiroyuki; Nishiura, Masao; and Chimura, Moriyuki, 5,185,283, Cl. 437-51.000.

Nishiyama, Atsushi, to Mazda Motor Corporation. Front body structure of an automotive vehicle. 5,184,868, Cl. 296-189.000.

Nishizawa, Chiharu; Kondo, Yoshiharu; and Ohto, Masaru, to Mitsubishi Gas Chemical Company, Inc. Process of pretreatment of metal-plating resin molded articles. 5,185,185, Cl. 427-304.000.

Nishizawa, Kazunori: *See*—
Takahashi, Noriyuki; Nishizawa, Kazunori; Takashi, Rinichi; Sakai, Naofumi; Tanabe, Yukiharu; and Yasue, Nobuhiro, 5,185,887, Cl. 395-600.000.

Nissan Chemical Industries Ltd.: *See*—
Fukikawa, Yoshihiro; Suzuki, Mikio; Iwasaki, Hiroshi; Sakashita, Mitsuaki; and Kitahara, Masaki, 5,185,328, Cl. 514-63.000.

Nissan Motor Co., Ltd.: *See*—
Kato, Yuji; and Sawamoto, Kunifumi, 5,184,577, Cl. 123-90.150.
Mizukami, Fujio; Sano, Tsuneji; and Masuda, Koji, 5,185,312, Cl. 502-332.000.
Nakamura, Hideo, 5,184,527, Cl. 74-866.000.
Omura, Hideo, 5,184,845, Cl. 280-735.000.

Nissimov, Haim: *See*—
Volz, Leroy A.; and Nissimov, Haim, 5,185,681, Cl. 360-77.050.

Nissin Technos Corporation: *See*—
Suzuki, Takashi; and Fukui, Kohei, 5,184,743, Cl. 220-1.500.

Nissinen, Erkki A. O.: *See*—
Backstrom, Reijo J.; Honkanen, Erkki J.; Pystynen, Jarmo J.; Luiro, Anne M.; Aho, Paivi A.; Linden, Inge-Britt Y.; Nissinen, Erkki A. O.; and Pohto, Pentti, 5,185,370, Cl. 514-520.000.

Nitoh, Toshikatsu: *See*—
Nonaka, Toshifumi; Nitoh, Toshikatsu; and Auerbach, Andrew, 5,185,392, Cl. 524-128.000.

Nitto Chemical Industry Co., Ltd.: *See*—
Kanda, Shoichi; Narita, Takeshi; Ushigome, Masahiro; and Nagahama, Masaharu, 5,185,393, Cl. 524-140.000.

Nixon, Michael T. Multicolor textured finished fiberglass/mineral fiber acoustical wall and ceiling panels. 5,185,197, Cl. 428-246.000.

Njaka, Dim. Game apparatus and method. 5,184,829, Cl. 273-242.000.

Noakes, Timothy J., to Imperial Chemical Industries PLC. Electrostatic spraying apparatus. 5,184,778, Cl. 239-691.000.

Noble, David: *See*—
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,185,456, Cl. 546-264.000.

Noble, Hazel M.: *See*—
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,185,456, Cl. 546-264.000.

Noda, Etsuo: *See*—
Suzuki, Setsuo; Noda, Etsuo; and Morimiya, Osami, 5,185,552, Cl. 313-231.710.

Noda, Kazuo; Nakamura, Eiichi; and Nishiguma, Hiroaki, to Kabushiki Kaisha Nippon Conlux; and NHK Spring Co., Ltd. Optical head with improved tracking and focusing error capabilities. 5,185,729, Cl. 369-44.140.

Nojima, Hisatake, to Yugen Kaisha Parasight. Multiple-gas-phase tidal power generation apparatus and method. 5,184,936, Cl. 415-003.100.

Nolan, Jerome A.: *See*—
Creedon, Tadhg; O'Neill, Eugene G.; and Nolan, Jerome A., 5,185,537, Cl. 307-234.000.

Nolte, Helmut: *See*—
Eggensperger, Heinz; Diehl, Karl-Heinz; Nolte, Helmut; Rackur, Helmut; Eggers-MaaB, Ute; Mohr, Michael; Bernd, Lower; and BeilfuB, Wolfgang, 5,185,145, Cl. 424-78.080.

Nolte, Paul A., to Ingersoll-Dresser Pump Company. Seal engaging ring. 5,184,747, Cl. 220-319.000.

Nomura, Akihiro: *See*—
Fukase, Hisahiko; Kato, Heiji; and Nomura, Akihiro, 5,184,668, Cl. 164-480.000.

Nomura, Ichiro; Takeda, Toshihiko; Banno, Yoshikazu; Kaneko, Tetsuya; Ono, Haruhito; and Suzuki, Hidetoshi, to Canon Kabushiki Kaisha. Electron-beam generator and image display apparatus making use of it. 5,185,554, Cl. 313-495.000.

Nomura, Takeshi: *See*—
Fukuda, Masaaki; Tomizawa, Hirotaka; Ohta, Mitsuo; Osaka, Hideki; Ogano, Satoshi; Satoh, Takehisa; Ashibe, Kenji; and Nomura, Takeshi, 5,185,092, Cl. 252-56.00S.

Nonaka, Kimihiro, to Yamaha Hatsudoki Kabushiki Kaisha. Fuel injection control system. 5,184,589, Cl. 123-352.000.

Nonaka, Toshifumi; Nitoh, Toshikatsu; and Auerbach, Andrew, to Polyplastics Co., Inc. Polyarylene sulfide resin composition. 5,185,392, Cl. 524-128.000.

Nonini, Geremia, to Danieli & C. Officine Meccaniche Spa. Support for rolling rings on rolling stands having rolls supported as cantilevers. 5,184,493, Cl. 72-237.000.

Noormofidi, Taghi: *See*—
Kroneis, Herbert; Marsoner, Hermann; and Noormofidi, Taghi, 5,185,263, Cl. 436-8.000.

Nootbaar, Michael W.: *See*—
Newell, Gerald R.; Nootbaar, Michael W.; Bhardwaj, Pradeep; and Willson, Robert C., 5,185,585, Cl. 331-46.000.

Nordkvist, Kjell, to Saab Automobile Aktiebolag. Gearbox for motor vehicle. 5,184,522, Cl. 74-359.000.

Nordquist, Andrew F.: *See*—
Smigo, John G.; McAndrew, Thomas P.; Pinschmidt, Robert K., Jr.; and Nordquist, Andrew F., 5,185,083, Cl. 210-735.000.

Nore, Pentti T.: *See*—
Haikala, Heimo O.; Honkanen, Erkki J.; Lonnberg, Kari K.; Nore, Pentti T.; Pystynen, Jarmo J.; Luiro, Anne M.; and Pippuri, Aino K., 5,185,332, Cl. 514-222.500.

Norioka, Setsuo; and Shimada, Hiroshi, to JEOL Ltd. Electron beam instrument. 5,185,530, Cl. 250-398.000.

Norris, Dale M. Method for inducing resistance in plants using environmentally safe antioxidants. 5,185,029, Cl. 504-320.000.

Norris, Robert W.: *See*—
Keating, Michael D.; and Norris, Robert W., 5,184,820, Cl. 273-128.00R.

North American Philips Corporation: *See*—
Darby, Ted A., 5,185,664, Cl. 358-167.000.
DiVincenzo, Gregory T., 5,185,590, Cl. 335-201.000.

North Carolina State University: *See*—
Davis, Nancy L.; Willis, Loretta V.; Johnston, Robert E.; and Smith, Jonathan F., 5,185,440, Cl. 536-237.200.

North Country Products, Inc.: *See*—
Rands, Jerry W., 5,184,371, Cl. 15-325.000.

North, Sandra S.: *See*—
Bales, Bruce M.; Crumpley, Robert L.; North, Sandra S.; and Thieler, Stephen M., 5,185,742, Cl. 370-110.100.

Northern Telecom Limited: *See*—
Brown, Anthony K. D., 5,185,581, Cl. 330-254.000.
Hancock, Stephen H., 5,184,503, Cl. 73-37.500.
Whatley, Richard F., 5,184,853, Cl. 292-205.000.

Northwest Podiatric Laboratory, Inc.: *See*—
Brown, Dennis N., 5,184,409, Cl. 36-44.000.

Northwestern University: *See*—
Wessels, Bruce W.; Marks, Tobin J.; Richeson, Darrin S.; Tonge, Lauren M.; and Zhang, Jiming, 5,185,317, Cl. 505-1.000.

Norton Company: *See*—
Kelly, Robert G., 5,185,012, Cl. 51-295.000.

Noschese, Rocco J., to Burndy Corporation. Electrical spring contact. 5,184,962, Cl. 439-66.000.

Noschese, Rocco J.: *See*—
Ramirez, Fernando J.; Noschese, Rocco J.; Holmes, Barry A.; and Hannigan, Thomas L., 5,184,961, Cl. 439-59.000.

Noser, Francis G.: *See*—
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Nougayrede, Jean: *See*—
Kvasnikoff, Georges; Nougayrede, Jean; and Philippe, Andre , 5,185,140, Cl. 423-574.00R.

Nouvel Laboratory, Ltd.: *See*—
Kamegawa, Manabu, 5,185,038, Cl. 106-416.000.

Novof, Ilya I.: *See*—
Ferraiolo, Frank D.; Gersbach, John E.; and Novof, Ilya I., 5,185,768, Cl. 375-119.000.

Nowara, Gabriele: *See*—
Beck, Hans-Jurgen; and Nowara, Gabriele, 5,184,550, Cl. 101-142.000.

Nozawa, Yoshioki: *See*—
Sakamoto, Shinichi; Hiraiwa, Kenichi; Koike, Masaru; and Nozawa, Yoshioki, 5,185,050, Cl. 156-304.500.

NSK Ltd.: *See*—
Tsukada, Toru, 5,184,928, Cl. 411-371.000.

NTN Corporation: *See*—
Harimoto, Kazuyoshi, 5,184,899, Cl. 384-560.000.

NTT Data Communications Systems Corporation: *See*—
Hamada, Hiromi; Hirano, Kazuya; and Lee, Young S., 5,185,798, Cl. 380-23.000.

Nuding, Erich: *See*—
Kais, Alfred; Nuding, Erich; and Benenowski, Sebastian, 5,184,791, Cl. 246-468.000.

Nutcher, Peter B.; and Waldern, Peter J., to Process Combustion Corporation. Regenerative thermal oxidizer. 5,184,951, Cl. 432-28.000.

Nyman, Bror G.; Hultholm, Stig-Erik; Lilja, Launo L.; and Makitalo, Valto J., to Outokumpu Oy. Method and apparatus for mixing and separating two liquid phases while preventing aeration and emulsions using a mixer-settler. 5,185,081, Cl. 210-634.000.

Nyman, Tapani, to Valmet-Ahlstrom Inc. Means for controlling wires in a paper machine or cardboard machine. 5,185,064, Cl. 162-301.000.

Nyzedatny, Mark, to Adams Rite Manufacturing Company. Transmission control employing bi-directionally guided handle, with locking. 5,184,523, Cl. 74-471.0XY.

Obata, Minoru: *See*—
Sakuma, Toranosuke; and Obata, Minoru, 5,184,888, Cl. 362-136.000.

Oberg, Gary R.; and Holmstadt, Ronald J., to Hutchinson Technology, Inc. Suspension arm mounting assembly. 5,185,683, Cl. 360-104.000.

O'Brien, Dennis J., to R. W. Beckett Corporation. Oil burner and method. 5,184,949, Cl. 431-189.000.

O'Brien, James, to Thomas Industries Inc., Builders Brass Works Division. Rod and case assembly. 5,184,852, Cl. 292-40.000.

O'Brien, Vincent J.: *See*—
Kinney, David V.; O'Brien, Vincent J.; and Van Sice, Daniel G., 5,185,626, Cl. 355-55.000.

Obuchi, Yasuji: *See*—
Hamada, Akira; Obuchi, Yasuji; and Akiyama, Hirokatsu, 5,184,907, Cl. 400-635.000.

Occidental Chemical Corporation: *See*—
Stults, Jeffrey S.; Schwartz, Willis T.; and Dinan, Frank J., 5,185,451, Cl. 548-418.000.
Stults, Jeffrey S.; and Buchanan, Robert A., 5,185,471, Cl. 568-586.000.

Ochi, Yoshiaki: *See*—
Hino, Katsuhiko; Kai, Naoki; Sakamoto, Masato; Kon, Tatsuya; Oka, Makoto; Furukawa, Kiyoshi; and Ochi, Yoshiaki, 5,185,338, Cl. 514-254.000.

Ochiai, Hirokazu; Watanabe, Yasuo; Murotani, Yoshiharu; Fukuda, Hirohiko; Yoshino, Osamu; Minami, Shinzaburo; Hayashi, Toshio; and Momonoi, Kaishu, to Toyama Chemical Co., Ltd. Penam derivatives and salts thereof, and antibacterial agent comprising the same. 5,185,330, Cl. 514-142.000.

Ochiai, Kazuaki: *See*—
Ota, Yoshiji; and Ochiai, Kazuaki, 5,185,722, Cl. 365-201.000.

O'Connor, James M.: *See*—
Barrett, Steven T.; Laird, Kevin M.; Murray, Richard E.; and O'Connor, James M., 5,185,797, Cl. 380-21.000.
Smith, Curtis P.; Raes, Maurice C.; Reisch, John W.; Chandalia, Kiran B.; and O'Connor, James M., 5,185,420, Cl. 528-61.000.

OCS Industries, Inc.: *See*—
Losacco, Donald L.; and Catton, Donald L., 5,184,471, Cl. 62-63.000.

Oda, Minoru, to Mitsubishi Denki Kabushiki Kaisha. Reactor power measuring method. 5,185,121, Cl. 376-254.000.

Oda, Tomio: *See*—
Ueno, Ryuzo; Ueno, Ryuji; and Oda, Tomio, 5,185,374, Cl. 514-570.000.

Oddi, Renzo: *See*—
Bottino, Pier C.; Bertozzi, Fausto; Oddi, Renzo; and Rolli, Eros, 5,184,542, Cl. 99-483.000.

O'Donnell, William J.: *See*—
Porowski, Jan S.; Hampton, Edward J.; Badlani, Manohar L.; and O'Donnell, William J., 5,185,123, Cl. 376-277.000.

Odorisio, Paul A.; and Shum, Sai P., to Ciba-Geigy Corporation. Substituted 1-oxy-4-acyloxypiperidine and 1-oxy-4-acylaminopiperidine stabilizers. 5,185,448, Cl. 546-186.000.

Officine di Cartigliano S.p.A.: *See*—
Corner, Antonio, 5,184,487, Cl. 69-19.100.

Officine Meccaniche Varinelli SpA: *See*—
Varinelli, Antonio; Varinelli, Marco; and Bianco, Oreste, 5,184,985, Cl. 483-28.000.

Ogake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Shimizu, Teruo; Yamamoto, Narihito; and Uenoyama, Hiroyuki, to Nippon Oil Company Limited. Greasy oil and fat composition for food processing machines. 5,185,091, Cl. 252-56.500.

Ogano, Satoshi: *See*—
Fukuda, Masaaki; Tomizawa, Hirotaka; Ohta, Mitsuo; Osaka, Hideki; Ogano, Satoshi; Satoh, Takehisa; Ashibe, Kenji; and Nomura, Takeshi, 5,185,092, Cl. 252-56.00S.

Ogawa, Hiroshi; Sako, Yoichiro; and Yamamoto, Masanobu, to Sony Corporation. Recording medium and recording and reproducing apparatus employing the recording medium. 5,185,732, Cl. 369-47.000.

Ogino, Hiroko: *See*—
Katano, Kiyoaki; Tomomoto, Tamako; Ogino, Hiroko; Hirano, Fumiya; Yuda, Yasukatsu; Konno, Fukio; Machinami, Tomoya; Tsuruoka, Takashi; and Inoye, Shigeharu, 5,185,347, Cl. 514-322.000.

Ogura Corporation: *See*—
Sekiguchi, Yuzo, deceased; and Murayama, Hirokazu, 5,184,705, Cl. 192-84.00C.

Oguri, Yasuo: *See*—
Kijima, Naoto; and Oguri, Yasuo, 5,185,177, Cl. 427-2.000.

Oha, Chi-Chih. Cable shield strip. 5,185,501, Cl. 174-136.000.

Ohio State University Research Foundation: *See*—
Witiak, Donald T.; Hughes, John H.; and Mavromoustakis, Charis T., 5,185,366, Cl. 514-456.000.

Ohkubo, Takatoshi; and Carlson, James G., to Minnesota Mining and Manufacturing Company. Method of making sulfonated hydroxy-functional polyurethane binder for magnetic recording media. 5,185,423, Cl. 528-85.000.

Ohnaka, Kiyoshi: *See*—
Mori, Yoshihiro; Mannoh, Masaya; Kamiyama, Satoshi; and Ohnaka, Kiyoshi, 5,185,755, Cl. 372-46.000.

Ohta, Kenichi, to Canon Kabushiki Kaisha. Image reading apparatus for reading images formed by a light transmission. 5,185,668, Cl. 358-214.000.

Ohta, Mitsuo: *See*—
Fukuda, Masaaki; Tomizawa, Hirotaka; Ohta, Mitsuo; Osaka, Hideki; Ogano, Satoshi; Satoh, Takehisa; Ashibe, Kenji; and Nomura, Takeshi, 5,185,092, Cl. 252-56.00S.

Ohta, Toshihiko: *See*—
Shigematsu, Takashi; Imamizo, Seiichi; Takagi, Koichi; Ohta, Toshihiko; and Yamakawa, Jun, 5,185,825, Cl. 385-20.000.

Ohtani, Katsuhiro: *See*—
Fukui, Yuko; Ohtani, Katsuhiro; Miyamoto, Hiroyuki; Nishiura, Masao; and Chimura, Moriyuki, 5,185,283, Cl. 437-51.000.

Ohto, Masaru: *See*—
Nishizawa, Chiharu; Kondo, Yoshiharu; and Ohto, Masaru, 5,185,185, Cl. 427-304.000.

Ohuchi, Hirofumi: *See*—
Maeda, Mie; and Ohuchi, Hirofumi, 5,184,595, Cl. 123-690.000.

Ohya, Yukio: *See*—
Yoshimatsu, Kentaro; Ohya, Yukio; Shikata, Yasushi; Tanaka, Isao; Hasegawa, Yoshikazu; Seto, Toshio; and Osawa, Toshio, 5,185,431, Cl. 530-351.000.

Oikawa, Toru, to Fuji Photo Film Co., Ltd. Photographic film element. 5,185,238, Cl. 430-523.000.

Oiwa, Masatoshi, to Meito Corporation. Fryer. 5,184,539, Cl. 99-408.000.

Oji Paper Co., Ltd.: *See*—
Yamana, Masahiro; and Sato, Koji, 5,185,227, Cl. 430-49.000.

Ojiro, Masazumi: *See*—
Muto, Tsunehisa; Kanegae, Futoshi; Takatsuka, Toru; Hirohama, Seiya; and Ojiro, Masazumi, 5,185,481, Cl. 568-918.000.

Oka, Makoto: *See*—
Hino, Katsuhiko; Kai, Naoki; Sakamoto, Masato; Kon, Tatsuya; Oka, Makoto; Furukawa, Kiyoshi; and Ochi, Yoshiaki, 5,185,338, Cl. 514-254.000.

Okada, Mitsuo: *See*—
Ogake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Shimizu, Teruo; Yamamoto, Narihito; and Uenoyama, Hiroyuki, 5,185,091, Cl. 252-56.500.

Okada, Satoru; and Kojo, Shin, to Nintendo Company Limited. Compact hand-held video game system. 5,184,830, Cl. 273-433.000.

Okada, Takao: *See*—
Yagi, Akira; Okada, Takao; Morita, Seizo; and Mikoshiba, Nobuo, 5,185,572, Cl. 324-158.00R.

Okamoto, Takashi: *See*—
Kato, Kiyotaka; and Okamoto, Takashi, 5,185,855, Cl. 395-129.000.

Okamoto, Yukio: *See*—
Kitagawa, Masatoshi; Okamoto, Yukio; Ono, Takayuki; and Shinden, Tetuya, 5,185,523, Cl. 250-281.000.

Okano, Keiji: *See*—
Nishimura, Katsuhiko; Okano, Keiji; Miyamoto, Toshio; and Ishiyama, Tatsunori, 5,185,496, Cl. 118-658.000.

Okazaki, Masaki: *See*—
Shiba, Keisuke; Kawai, Kiyoshi; Okazaki, Masaki; and Okino, Yoshiharu, 5,185,236, Cl. 430-505.000.

Okazaki, Satiko: *See*—
Horiike, Yasuhiro; Okazaki, Satiko; and Kogoma, Masuhiro, 5,185,132, Cl. 422-186.050.

O'Keefe, Lawrence J.; and Veihl, Michael J., to Herman Miller, Inc. Drawer interlock system. 5,184,887, Cl. 312-221.000.

Oki Electric Industry Co., Ltd.: *See*—
Tomozawa, Kikuo, 5,185,770, Cl. 377-47.000.

Okibayashi, Katsushi: *See*—
Mikami, Akiyoshi; Terada, Kousuke; Okibayashi, Katsushi; Tanaka, Koichi; Yoshida, Masaru; and Nakajima, Shigeo, 5,185,181, Cl. 427-69.000.

Okino, Yoshiharu: *See*—
Shiba, Keisuke; Kawai, Kiyoshi; Okazaki, Masaki; and Okino, Yoshiharu, 5,185,236, Cl. 430-505.000.

Okubo, Satomi, to Akebono Research and Development Centre Ltd.; and Akebono Brake Co., Ltd. Vehicle anti-lock control apparatus and method. 5,185,702, Cl. 364-426.020.

Okubo, Satomi, to Akebono Brake Industry Co., Ltd.; and Akebono Research and Development Centre Ltd. Anti-lock control method for automotive vehicles. 5,185,703, Cl. 364-426.020.

Okubo, Satomi, to Akebono Research and Development Centre Ltd.; and Akebono Brake Co., Ltd. Vehicle anti-lock control method. 5,185,704, Cl. 364-426.020.

Okui, Kaoru; and Kobayashi, Manabu, to Yamaha Hatsudoki Kabushiki Kaisha. Engine unit for vehicle. 5,184,582, Cl. 123-90.310.

OKUMA Corporation: *See*—
Minatani, Toshiyuki, 5,184,426, Cl. 51-165.710.

Okunuki, Masahiko: *See*—
Shimoda, Isamu; Tsukamoto, Takeo; Shimizu, Akira; Suzuki, Akira; Sugata, Masao; and Okunuki, Masahiko, 5,185,559, Cl. 315-107.000.

Okura, Yukiko; and Komiya, Yoshinori, to Sony Corporation. Apparatus for generating animated video insertions. 5,185,665, Cl. 358-183.000.

Olin Corporation: *See*—
Ford, James M.; Cawlfield, David W.; and Woodard, Kenneth E., Jr., 5,185,069, Cl. 204-251.000.
Grosso, Paul V.; Wing, Feagin A., Jr.; Morgan, Michael J.; Stegmeier, Renate C.; Day, Roger W.; and Burt, Willard F., 5,185,226, Cl. 430-47.000.
Hani, Rahim; Waldron, Craig; and Farmer, Douglas A., Jr., 5,185,033, Cl. 106-18.330.
Loftis, Donald B.; and Cawlfield, David W., 5,185,693, Cl. 364-187.000.

VOL 1147 ISS 2 FE 9 1993 UMI

Smith, Curtis P.; Raes, Maurice C.; Reisch, John W.; Chandalia, Kiran B.; and O'Connor, James M., 5,185,420, Cl. 528-61.000.

Olivier, Roland: *See*—
Bonometti, ; Guy; Olivier, Roland; and Maurice, Jacques, 5,185,268, Cl. 436-114.000.

Olshansky, Robert; and Koai, Kwang-Tsai, to GTE Laboratories Incorporated. Wideband optical amplifier-receiver utilizing two electrode optical amplifier. 5,185,756, Cl. 372-50.000.

Olson, Paul D.; and Jones, Kirk G. Injection molded plastic bicycle wheel. 5,184,874, Cl. 301-64.700.

Olympus Optical Co., Ltd.: *See*—
Kitajima, Masaichi, 5,184,634, Cl. 134-95.100.
Miyazawa, Azuma; Mizobuchi, Koji; and Suzuki, Takashi, 5,185,849, Cl. 395-3.000.
Yagi, Akira; Okada, Takao; Morita, Seizo; and Mikoshiba, Nobuo, 5,185,572, Cl. 324-158.00R.

Omura, Hideo, to Nissan Motor Co., Ltd. Air-bag system. 5,184,845, Cl. 280-735.000.

Oncogen: *See*—
Hellstrom, Karl E.; Brown, Joseph P.; Hellstrom, Ingegerd; and Marquardt, Hans, 5,185,432, Cl. 530-388.800.

O'Neil, Walter K.: *See*—
Beihoff, Bruce C.; Tennies, Charles J.; Richards, Francis S., Jr.; and O'Neil, Walter K., 5,185,684, Cl. 361-45.000.
Beihoff, Bruce C.; Tennies, Charles J.; Richards, Francis S., Jr.; and O'Neil, Walter K., 5,185,687, Cl. 361-45.000.
Tennies, Charles J.; Beihoff, Bruce C.; Hastings, Jerome K.; Clarey, Robert J.; and O'Neil, Walter K., 5,185,685, Cl. 361-45.000.

O'Neill, Eugene G.: *See*—
Creedon, Tadhg; O'Neill, Eugene G.; and Nolan, Jerome A., 5,185,537, Cl. 307-234.000.

O'Neill, Gerald J., to W. R. Grace & Co.-Conn. Synthesis of fluorinated dimethyl ethers. 5,185,474, Cl. 568-684.000.

Onishi, Takashi: *See*—
Mori, Toshiki; Fujii, Hiroshi; Onishi, Takashi; and Yamamoto, Kazuo, 5,185,468, Cl. 568-31.000.

Ono, Haruhito: *See*—
Nomura, Ichiro; Takeda, Toshihiko; Banno, Yoshikazu; Kaneko, Tetsuya; Ono, Haruhito; and Suzuki, Hidetoshi, 5,185,554, Cl. 313-495.000.

Ono, Takayuki: *See*—
Kitagawa, Masatoshi; Okamoto, Yukio; Ono, Takayuki; and Shinden, Tetuya, 5,185,523, Cl. 250-281.000.

Onoue, Akihiro; and Nakahama, Ryoji, to Sanshin Kogyo Kabushiki Kaisha. Thrust flange lubricating structure of marine propulsion unit. 5,184,967, Cl. 440-75.000.

Oohora, Syoichi: *See*—
Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Ishikawa, Hideo; Matsumura, Sowjun; Chiba, Tadashi; Asakawa, Kiyoshi; and Oohora, Syoichi, 5,185,216, Cl. 428-614.000.

Ooi, Leng H.; and Einbinder, Stephen B., to Motorola, Inc. Actively biased oscillator. 5,185,583, Cl. 331-15.000.

Ooishi, Tsukasa: *See*—
Arimoto, Kazutami; Fujishima, Kazuyasu; Matsuda, Yoshio; Ooishi, Tsukasa; and Tsukude, Masaki, 5,185,744, Cl. 371-21.200.

Oono, Toshio; and Uemura, Hiroki, to Aisin Takaoka Co., Ltd. Ventilated disk and process for making same. 5,184,663, Cl. 164-98.000.

Oppliger, Erich; and Monkewitz, Martin, to Schweizerische Eidgenossenschaft vertreten durch die Eidg. Munitionsfabrik Thun der Gruppe fur Rustungsdienste. Testing device with acceleration tube. 5,184,499, Cl. 73-11.010.

Oral Card Products: *See*—
Zabsky, John M.; Saitta, Jerome; and Bryan, Edward P., 5,185,532, Cl. 250-455.110.

ORC Manufacturing Co., Ltd.: *See*—
Abe, Chiaki; and Watanuki, Minoru, 5,185,625, Cl. 355-26.000.

Orion-yhtyma Oy: *See*—
Backstrom, Reijo J.; Honkanen, Erkki J.; Pystynen, Jarmo J.; Luiro, Anne M.; Aho, Paivi A.; Linden, Inge-Britt Y.; Nissinen, Erkki A. O.; and Pohto, Pentti, 5,185,370, Cl. 514-520.000.
Haikala, Heimo O.; Honkanen, Erkki J.; Lonnberg, Kari K.; Nore, Pentti T.; Pystynen, Jarmo J.; Luiro, Anne M.; and Pippuri, Aino K., 5,185,332, Cl. 514-222.500.

Orlando, Franklin P.; and Franco, Thomas, to Star Kist Foods, Inc. Fish skinner. 5,184,973, Cl. 452-125.000.

Orovan, Yitzchak: *See*—
Orovan, Ziv; and Orovan, Yitzchak, 5,184,764, Cl. 224-215.000.

Orovan, Ziv; and Orovan, Yitzchak. Load support. 5,184,764, Cl. 224-215.000.

Orozco, Hector M. Perforator coupled with stapler and staple remover and their embodiments. 5,184,765, Cl. 227-27.000.

Oryhon, Harry W.; and Oryhon, Jeremy. Programmable toothbrush alarm unit. 5,184,959, Cl. 434-263.000.

Oryhon, Jeremy: *See*—
Oryhon, Harry W.; and Oryhon, Jeremy, 5,184,959, Cl. 434-263.000.

Osaka, Hideki: *See*—
Fukuda, Masaaki; Tomizawa, Hirotaka; Ohta, Mitsuo; Osaka, Hideki; Ogano, Satoshi; Satoh, Takehisa; Ashibe, Kenji; and Nomura, Takeshi, 5,185,092, Cl. 252-56.00S.

Osawa, Toshio: *See*—
Yoshimatsu, Kentaro; Ohya, Yukio; Shikata, Yasushi; Tanaka, Isao; Hasegawa, Yoshikazu; Seto, Toshio; and Osawa, Toshio, 5,185,431, Cl. 530-351.000.

Osgood, Timothy J.: *See*—
Ditchburn, deceased; Robert W.; Gouch, Martin P.; Cook, Nigel R.; Osgood, Timothy J.; Holloway, Stephen P.; and Bowler, Ian W., 5,184,732, Cl. 209-576.000.

Osswald, Hartmut: *See*—
Aranda, Julian; Hartenstein, Johannes; Reck, Reinhard; Schachtele, Christopher; Rudolph, Claus; Osswald, Hartmut; and Weinheimer, Gunter, 5,185,352, Cl. 514-348.000.

Ostrea, Enrique M., Jr., to Board of Governors of Wayne State University, The. Method for detecting maternally transferred drug metabolites in newborn infants. 5,185,267, Cl. 436-92.000.

Oswald, Timothy J.: *See*—
Middaugh, James F.; Bryant, Peter L.; Grabenkort, Richard W.; Oswald, Timothy J.; and Tripp, Edward S., 5,185,007, Cl. 604-320.000.

Ota, Yoshiji; and Ochiai, Kazuaki, to Sharp Kabushiki Kaisha. Semiconductor memory device having a memory test circuit. 5,185,722, Cl. 365-201.000.

Otsuji, Atsuo: *See*—
Nakatsuka, Masakatsu; Otsuji, Atsuo; Hasegawa, Kiyoharu; Kikkawa, Kazuyoshi; and Yamaguchi, Akihiro, 5,185,453, Cl. 549-226.000.

Otsuka, Ichiro: *See*—
Ishida, Yuzuru; Mitsuboshi, Masahiro; Inoue, Haruo; Otsuka, Ichiro; and Iio, Keiji, 5,185,394, Cl. 524-269.000.

Otsuka Pharmaceutical Co., Ltd.: *See*—
Fujii, Setsuro, deceased; Takada, Kaoruko, legal heir; Ishikawa, Hiroshi; Tsubouchi, Hidetsugu; and Jitsukawa, Koichiro, 5,185,337, Cl. 514-254.000.

Outokumpu Oy: *See*—
Nyman, Bror G.; Hultholm, Stig-Erik; Lilja, Launo L.; and Makitalo, Valto J., 5,185,081, Cl. 210-634.000.

Output Technology Corp.: *See*—
Hartman, Richard L., 5,185,627, Cl. 355-204.000.

Overweg, Johannes A., to U.S. Philips Corp. Magnetic resonance imaging apparatus with artefact reduction. 5,185,575, Cl. 324-309.000.

Owen, Hartley, to Mobil Oil Corporation. Transfer line quenching with cyclone separation. 5,185,077, Cl. 208-61.000.

Owen, Terence C., to University of South Florida. Tetrazolium compounds for cell viability assays. 5,185,450, Cl. 548-194.000.

Owens, Alan R.: *See*—
Harris, Frank W.; and Owens, Alan R., 5,184,617, Cl. 128-423.00R.

Owens-Illinois Closure Inc.: *See*—
Kusz, Maximillian, 5,184,739, Cl. 215-220.000.

Ozaki, Hidetoshi; and Goukura, Akira, to Victor Company of Japan, Ltd. Color signal processing circuit with residual phase error correction. 5,185,657, Cl. 358-28.000.

Ozaki, Ikuo: *See*—
Shimoyama, Makoto; and Ozaki, Ikuo, 5,185,644, Cl. 356-369.000.

Ozaki, Minoru: *See*—
Tanaka, Kunimaro; Ozaki, Minoru; Kiyose, Yoshihiro; and Ito, Osamu, 5,185,746, Cl. 371-40.100.

Ozaki, Tatsuhiko: *See*—
Takayama, Yuuji; Matsueda, Hirokazu; Sugiura, Masato; Ozaki, Tatsuhiko; Wada, Hirotaka; and Komiya, Iwao, 5,185,417, Cl. 526-301.000.

Ozeki, Hisashi, to Suzuki Motor Corporation. Oil passage structure of a cylinder head. 5,184,587, Cl. 123-193.500.

Pacer Manufacturing Co., Inc.: *See*—
Magrath, Earl K., Jr.; and Foster, Billy K., 5,184,694, Cl. 180-167.000.

Pacific Kenyon Corporation: *See*—
Sawhill, J. W., 5,185,174, Cl. 426-583.000.

Pacileo, Stephen P., to PR Partners. Heat controller and method for heat treatment of metal. 5,185,513, Cl. 219-497.000.

Packer, Gilbert; Bare, Rex O.; and Shillington, Richard, to Med-Safe Systems, Inc. Sharps collector. 5,184,720, Cl. 206-366.000.

Pagani, Giorgio: *See*—
Zardi, Umberto; and Pagani, Giorgio, 5,184,386, Cl. 29-401.100.

Page, Simon C., to Kratos Analytical Limited. Charged particle energy analyzers. 5,185,524, Cl. 250-305.000.

Pahud, Jean-Jacques: *See*—
Link, Harriet; and Pahud, Jean-Jacques, 5,185,321, Cl. 514-8.000.

Palfreyman, Malcolm N.: *See*—
Cook, David C.; Hart, Terance W.; McLay, Iain M.; Palfreyman, Malcolm N.; and Walsh, Roger J. A., 5,185,375, Cl. 514-599.000.

Palitex Project Company GmbH: *See*—
Inger, Siegfried; and Stenmans, Heinz, 5,184,785, Cl. 242-35.50A.

Palitzsch, Peter; Muller, Rainer; and Richter, Erhard, to Arzneimittelwerk Dresden GmbH. Method for preparing 5-carbamoyl-5H-dibenz[b,f]azepine. 5,185,443, Cl. 540-589.000.

Pall Corporation: *See*—
Grimes, Michael, 5,185,190, Cl. 428-36.910.

Palmer, David H.: *See*—
Loh, Jimbay; Trumbetas, Jerome; Palmer, David H.; and Fitch, Mark D., 5,185,175, Cl. 426-631.000.

Pan, Antonio; Pan, Paolo; and Bertora, Franco, to Comec S.R.L. System for manufacturing permanent magnetic field generators and relevant magnet geometries therefor. 5,184,395, Cl. 29-609.000.

Pan, Paolo: *See*—
Pan, Antonio; Pan, Paolo; and Bertora, Franco, 5,184,395, Cl. 29-609.000.

Pang, Chan-Sui: *See*—
Rinerson, Darrell D.; Hsia, Steve K.; Chevallier, Christophe J.; and Pang, Chan-Sui, 5,185,718, Cl. 365-185.000.

Papadopoulos, Athanasios P.; Labbate, Eric M.; and Liburdi, Nicola, to Labbate Climate Control System Inc. Computerized fertilizer injection system. 5,184,420, Cl. 47-62.000.

Paper Converting Machine Company: *See*—
Schaeuble, Edwin K., 5,184,556, Cl. 101-483.000.

Pappas, James L.; Seiler, Larry D.; and Rose, Robert C., to Digital Equipment Corporation. Sprite cursor with edge extension and clipping. 5,185,597, Cl. 340-709.000.

Papsidero, Lawrence D., to Cellular Products, Inc. Short polypeptide sequences useful in the production and detection of antibodies against human immunodeficiency virus. 5,185,147, Cl. 424-89.000.

Papst-Motoren GmbH & Co., KG: *See*—
Harmsen, Siegfried, 5,184,938, Cl. 416-223.00R.

Park, Danial J.: *See*—
Nepple, Bruce C.; Gaskill, Garold B.; and Park, Danial J., 5,185,604, Cl. 340-825.440.

Park, Eugene S.; and Poste, Steven D., to Lanxide Technology Company, LP. Ceramic foams. 5,185,297, Cl. 501-80.000.

Park, Se-Gab, to Samsung Electronics Co., Ltd. Method and circuit for preventing irregularities of color printing position in a video color printer. 5,185,618, Cl. 346-138.000.

Parma Corporation: *See*—
Miller, John E., 5,184,809, Cl. 267-80.000.

Parsons, Keith A. Surface grooving machine. 5,184,429, Cl. 51-177.000.

Parsons, Robert W.: *See*—
Turnbull, Michael D.; Parsons, Robert W.; and Watkins, Andrew D. S., 5,185,353, Cl. 514-364.000.

Partek Concrete Oy Ab: *See*—
Takalo, Pasi; Kinnari, Pekka; Henriksson, Mikko; Nikku, Tapani; and Myllymaki, Hannu, 5,184,924, Cl. 408-67.000.

Pasteur Merieux Serums et Vaccins: *See*—
Galy, Michel G. H.; and Gomez, Alain, 5,184,450, Cl. 53-440.000.

Pasznicki, William V.: *See*—
Graham, Gordon A.; Pasznicki, William V.; Connell, William F.; and Pratley, Kenneth V., 5,184,676, Cl. 166-66.400.

Patel, Kundan M.: *See*—
Tang, Reginald T.; Mares, Frank; Boyle, William J., Jr.; Chiu, Tin-Ho; and Patel, Kundan M., 5,185,408, Cl. 525-415.000.

Paterson, John A.: *See*—
Hockmeyer, Herman H.; and Paterson, John A., 5,184,783, Cl. 241-172.000.

Patton, Lloyd L., Sr.: *See*—
Anderson, Robert M.; Vining, John E., Sr.; and Patton, Lloyd L., Sr., 5,185,041, Cl. 134-25.100.

Pau, Louis F.: *See*—
Arnarson, Hordur; and Pau, Louis F., 5,184,733, Cl. 209-585.000.

Paul, Gerhard: *See*—
Vogelbacher, Uwe J.; Eicken, Karl; Rheinheimer, Joachim; Goetz, Norbert; Harreus, Albrecht; Paul, Gerhard; Westphalen, Karl-Otto; and Wuerzer, Bruno, 5,185,027, Cl. 504-219.000.

Paul, Kermit D., to Fuller Company. Method and apparatus using feed conveying fluid blending the feed and/or separating debris from the feed. 5,184,730, Cl. 209-142.000.

Paulakonis, Joseph C.: *See*—
Johnson, Robert W., Jr.; and Paulakonis, Joseph C., 5,185,536, Cl. 307-66.000.

Paulison, James H. Add-on compartment for trash receptacle. 5,184,744, Cl. 220-23.400.

Pavlov, Pavlin S.: *See*—
Nikolov, Nikolay N.; Tzanev, Nikolay T.; and Pavlov, Pavlin S., 5,184,807, Cl. 254-344.000.

Paz, Ohad: *See*—
Holland, Neta, 5,184,368, Cl. 15-167.100.

Peacock, Steven N. Automatic individual indexing apparatus for dairy parlor. 5,184,567, Cl. 119-14.030.

PEC Engineering: *See*—
Fraysse, Guy; and Thauront, Jacques, 5,184,950, Cl. 432-13.000.

Pechiney Recherche: *See*—
Gillon, Pascale; and Rivat, Pascal, 5,184,666, Cl. 164-466.000.

Pechkov, Andrey A.; Kouznetsov, Oleg L.; and Drjaguin, Veniamin V., to Halliburton Logging Services, Inc. Acoustic flow stimulation method and apparatus. 5,184,678, Cl. 166-249.000.

Pedder, David J.: *See*—
Whatmore, Roger W.; and Pedder, David J., 5,185,613, Cl. 343-909.000.

Pedersen, Raymond J.: *See*—
Frey, Bradly G.; and Pedersen, Raymond J., 5,185,871, Cl. 395-375.000.

Pederson, Richard J.: *See*—
James, Robert C.; and Pederson, Richard J., 5,184,997, Cl. 493-117.000.

Pei-qian, Zhong; Wen-kang, Zheng; Xi-tian, Xu; Jian-he, Liang; Dongshen, Zhou; and Jun-zhi, Yang, to Yulin Diesel Engine General Works. Mini-size universal hydraulic excavator. 5,184,933, Cl. 414-725.000.

Penda Corporation: *See*—
Dresen, William L.; Niemi, Karl A.; Emery, Phillip L.; and Grunow, David G., 5,184,866, Cl. 296-95.100.

Pendray, Alfred H.: *See*—
Verhoeven, John D.; and Pendray, Alfred H., 5,185,044, Cl. 148-546.000.

Pengo Corporation: *See*—
Kopinski, Martin W.; and Bogdanich, George J., 5,184,412, Cl. 37-142.00A.

Pennica, Diane: *See*—
Goeddel, David V.; Kohr, William J.; Pennica, Diane; and Vehar, Gordon A., 5,185,259, Cl. 435-226.000.

Pentlow, Keith S.: *See*—
Larson, Steven M.; Finn, Ronald; Carrasquillo, Jorge A.; Reynolds, James C.; Neumann, Ronald D.; Graham, Martin C.; and Pentlow, Keith S., 5,185,142, Cl. 424-1.100.

People's Telephone Cooperative, Inc.: *See*—
Kelly, Leroy, 5,185,738, Cl. 370-95.100.

Perez, Raul M., to United States of America, National Aeronautics and Space Administration. Method for non-destructive estimation of waveguide directional coupler dimensions. 5,185,046, Cl. 156-64.000.

Peritronics Medical, Inc.: *See*—
Austin, Sandor, 5,184,619, Cl. 128-639.000.

Perkin-Elmer Corporation, The: *See*—
Brantingham, Charles A.; and Sheridan, Timothy P., 5,184,525, Cl. 74-820.000.

Perkinson, William O., III, to Siemens Automotive L.P. Welder locator alignment fixture. 5,185,508, Cl. 219-86.240.

Perloff, Ronald S.: *See*—
Hamstra, James R.; Perloff, Ronald S.; and Yeung, Louise Y., 5,185,863, Cl. 395-250.000.

Perring, Keith D.: *See*—
Behan, John M.; Ness, Jeremy N.; and Perring, Keith D., 5,185,155, Cl. 424-451.000.

Perry, Vinson R.: *See*—
Capitant, Patrice J.; Perry, Vinson R.; and Hodgson, David O., 5,185,666, Cl. 358-183.000.

Perry, William D.: *See*—
Hollinger, Richard H.; and Perry, William D., 5,184,434, Cl. 51-317.000.

Perzborn, Elisabeth: *See*—
Niewohner, Ulrich; Muller, Ulrich E.; Perzborn, Elisabeth; Bischoff, Erwin; and Dellweg, Hans-Georg, 5,185,348, Cl. 514-335.000.

Peter, Heinrich; and Moerkel, Theophile, to Ciba-Geigy Corporation. Polyethylene glycol carbamates. 5,185,368, Cl. 514-476.000.

Peters, Manfred; Grundhoff, Karl-Josef; Schurmann, Hartmut; and Lee, Yong-Tai, to Deutsche Forschungsanstalt fur Luftund Raumfahrt e.V. Linder Hohe. Thermomechanical process for treating titanium aluminides based on Ti_3Al. 5,185,045, Cl. 148-671.000.

Peters, Richard: *See*—
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Peters, Richard E.: *See*—
King, James L.; and Peters, Richard E., 5,184,941, Cl. 417-360.000.

Peterson, Charles A. Splash bar construction for a cooling tower. 5,185,105, Cl. 261-111.000.

Peterson, Edward C.: *See*—
Tromblee, Jon D.; Gurubatham, Vincent P.; and Peterson, Edward C., 5,184,635, Cl. 134-111.000.

Petras, Diane S.: *See*—
Reiner, Roger T.; Frost, David M.; Chicots, Johnna M.; Petras, Diane S.; and Fanto, Susan V., 5,185,699, Cl. 364-419.000.

Petrelli, Robert: *See*—
Dowden, Douglas C.; Hemmeter, Richard W.; Herr, Diane E.; McCormick, William K.; Petrelli, Robert; Piereth, Richard J.; Salchenberger, Samuel M.; Sehgal, Chander S.; and Verma, Mahendra K., 5,185,781, Cl. 379-67.000.

Petroski, Richard J.: *See*—
Powell, Richard G.; and Petroski, Richard J., 5,185,028, Cl. 504-284.000.

Petrovich, Paul A.: *See*—
Petrovich, Robert M.; and Petrovich, Paul A., 5,185,495, Cl. 102-510.000.

Petrovich, Robert M.; and Petrovich, Paul A. Projective with improved flowering. 5,185,495, Cl. 102-510.000.

Peyman, Gholam A. Method and apparatus for controlled release drug delivery to the cornea and anterior chamber of the eye. 5,185,152, Cl. 424-427.000.

Pfister GmbH: *See*—
Hafner, Hans W., 5,184,892, Cl. 366-10.000.

Pfizer Inc.: *See*—
Chenard, Bertrand L., 5,185,343, Cl. 514-278.000.
Godek, Dennis M.; Murtiashaw, Charles W.; Urban, Frank J.; and Vanderplas, Brian C., 5,185,449, Cl. 546-272.000.
Murtiashaw, Charles W., 5,185,464, Cl. 562-545.000.
Saccomano, Nicholas A.; and Volkmann, Robert A., 5,185,369, Cl. 514-502.000.

Pham, Hang T.: *See*—
Thomas, Raymond H. P.; Chen, Ruth H.; Pham, Hang T.; and Wilson, David P., 5,185,089, Cl. 252-37.700.

Phenicie, Ronald W.; and Dahlquist, Peter E., to Case Designers Corporation. Interlockable structural members and foldable double wall containers assembled therefrom. 5,185,193, Cl. 428-57.000.

VOL 1147 ISS 2 FE 9 1993 UMI

Phil Larochelle Equipments Inc.: *See—*
Larochelle, Bernard; and Dupont, Robert, 5,184,872, Cl. 298-22.0AE.

Philippe, Andre : *See—*
Kvasnikoff, Georges; Nougayrede, Jean; and Philippe, Andre , 5,185,140, Cl. 423-574.00R.

Phillips, Michael A.: *See—*
Stransky, Larry W.; Boehm, Valentine R., Jr.; and Phillips, Michael A., 5,184,461, Cl. 60-226.300.

Phillips Petroleum Company: *See—*
Farrar, Ralph C., Jr.; Hartsock, David L.; and Mueller, Francis X., 5,185,400, Cl. 525-98.000.
Love, Scott D.; and Washer, Stone P., 5,185,487, Cl. 585-449.000.

Phipps, William L.: *See—*
Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., 5,185,794, Cl. 380-17.000.

Phoenix Closures, Inc.: *See—*
Moore, David N.; and Ullrich, Jeffrey F., 5,184,746, Cl. 220-256.000.

Picozzi, James R.: *See—*
Barnabei, Robert A.; and Picozzi, James R., 5,185,224, Cl. 429-218.000.

Piereth, Richard J.: *See—*
Dowden, Douglas C.; Hemmeter, Richard W.; Herr, Diane E.; McCormick, William K.; Petrelli, Robert; Piereth, Richard J.; Salchenberger, Samuel M.; Sehgal, Chander S.; and Verma, Mahendra K., 5,185,781, Cl. 379-67.000.

Pieri, Francois: *See—*
Villa, Pierre J.; Pieri, Francois; Ronco, Ginolino; and Segard, Emile P. R., 5,185,436, Cl. 536-4.100.

Pierson, Glenn: *See—*
Gozdenovich, Martin; Gozdenovich, Martin A.; Gozdenovich, David; Zimmermann, Guy; and Pierson, Glenn, 5,184,897, Cl. 383-75.000.

Pilkington, Brian L.; and Worthington, Paul A., to Imperial Chemical Industries PLC. Fungicidal compounds. 5,185,339, Cl. 514-256.000.

Pillai, Krishnan J.; Connelly, Lawrence J.; and Gustafson, William K., to Nalco Chemical Company. Method of dewatering a wet process phosphoric acid slurry. 5,185,135, Cl. 423-320.000.

Pilon, Pierre: *See—*
Guilbault, Pierre; and Pilon, Pierre, 5,184,472, Cl. 62-160.000.

Pinschmidt, Robert K., Jr.: *See—*
Smigo, John G.; McAndrew, Thomas P.; Pinschmidt, Robert K., Jr.; and Nordquist, Andrew F., 5,185,083, Cl. 210-735.000.

Pioneer Electronic Corporation: *See—*
Kawasaki, Kenichiro, 5,185,761, Cl. 375-1.000.
Komaki, Toshihiro; Kudo, Hideo; Ishizuki, Tomonori; and Yokozeki, Shinichi, 5,185,730, Cl. 369-44.260.
Takahashi, Shinichi, 5,185,731, Cl. 369-44.230.
Watanabe, Masaaki, 5,185,804, Cl. 381-86.000.

Pippuri, Aino K.: *See—*
Haikala, Heimo O.; Honkanen, Erkki J.; Lonnberg, Kari K.; Nore, Pentti T.; Pystynen, Jarmo J.; Luiro, Anne M.; and Pippuri, Aino K., 5,185,332, Cl. 514-222.500.

Pirelli Cavi S.p.A.: *See—*
Bosisio, Claudio; and Campana, Antonio, 5,185,841, Cl. 385-100.000.

Pischke, Jurgen; and Tillhon, Engelbert, to Robert Bosch CmbH. Height regulating system for a vehicle with air suspension. 5,184,841, Cl. 280-707.000.

Pisha, Nancy A.: *See—*
Yager, Pamela S.; and Pisha, Nancy A., 5,184,362, Cl. 5-490.000.

Pitney Bowes Inc.: *See—*
Czernik, Roman; and Porco, Francesco, 5,184,906, Cl. 400-629.000.
Francisco, Robert, 5,185,866, Cl. 395-325.000.
Goliez, Roman M., 5,184,533, Cl. 83-24.000.

Pittman, Bradley W.: *See—*
Mandrell, Gerald W., II; Humphres, Eddie J.; Flanigen, Floyd W.; and Pittman, Bradley W., 5,184,740, Cl. 215-315.000.

Plantronics, Inc.: *See—*
Hanon, David O.; and Walker, Rickey R., 5,185,789, Cl. 379-395.000.

Playdon, Terence S., to Jutland Development CC. Metal etching process and composition. 5,185,057, Cl. 156-642.000.

Pletsch, Hubert: *See—*
Wolf, Franz J.; and Pletsch, Hubert, 5,184,799, Cl. 248-634.000.

Plouzen, Philippe: *See—*
Hostetler, Robert D.; and Plouzen, Philippe, 5,184,571, Cl. 119-72.000.

Plumlee, Stuart D.: *See—*
Martin, Dennis R.; McDermott, Michael J.; Plumlee, Stuart D.; Satin, Robert H.; and Wenger, Robert L., 5,185,884, Cl. 395-575.000.

Pohto, Pentti: *See—*
Backstrom, Reijo J.; Honkanen, Erkki J.; Pystynen, Jarmo J.; Luiro, Anne M.; Aho, Paivi A.; Linden, Inge-Britt Y.; Nissinen, Erkki A O.; and Pohto, Pentti, 5,185,370, Cl. 514-520.000.

Polar Marine, Inc.: *See—*
Rez, Donald H., 5,184,917, Cl. 405-128.000.

Polk, Darryl R.: *See—*
Beers, Gregory E.; Flickner, Myron D.; Kelly-Mahaffey, William L.; Polk, Darryl R.; Stafford, James M.; and Wattenbarger, Henry E., 5,185,811, Cl. 382-8.000.

Polk, Lewis T., Jr.: *See—*
Lapidus, Stanley N.; Kamen, Dean; Villeneuve, Richard R.; and Polk, Lewis T., Jr., 5,185,084, Cl. 210-741.000.

Pollack, Gordon P.: *See—*
Houston, Theodore W.; and Pollack, Gordon P., 5,185,280, Cl. 437-44.000.

Pollock, Jerry J., to Research Foundation of the State University of New York, The. Agents effecting the lysis of oral bacteria. 5,185,153, Cl. 424-440.000.

Polyplastics Co., Inc.: *See—*
Nonaka, Toshifumi; Nitoh, Toshikatsu; and Auerbach, Andrew, 5,185,392, Cl. 524-128.000.

Polypore, Inc.: *See—*
Lazar, Warren G., 5,185,111, Cl. 264-49.000.

Pont-A-Mousson S.A.: *See—*
Boudot, Daniel, 5,184,665, Cl. 164-306.000.

Poole, Craig D., to AT&T Bell Laboratories. Apparatus for compensating chromatic dispersion in optical fibers. 5,185,827, Cl. 385-28.000.

Poppendiek, Heinz F.; and Lundin, John A., to Geoscience Ltd. Gamma ray flux measurement system. 5,185,122, Cl. 376-272.000.

Porath, Jerker O., to Exploaterings AB T.B.F. Adsorbent for metal ions, proteins and other inorganic and organic substances. 5,185,313, Cl. 502-402.000.

Porco, Francesco: *See—*
Czernik, Roman; and Porco, Francesco, 5,184,906, Cl. 400-629.000.

Porowski, Jan S.; Hampton, Edward J.; Badlani, Manohar L.; and O'Donnell, William J. Apparatus for annealing walls of nuclear reactors. 5,185,123, Cl. 376-277.000.

Porter, Neil: *See—*
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,185,456, Cl. 546-264.000.

Porter, Paul: *See—*
Meed, Myles; and Porter, Paul, 5,184,696, Cl. 182-9.000.

Poste, Steven D.: *See—*
Park, Eugene S.; and Poste, Steven D., 5,185,297, Cl. 501-80.000.

Potain (Societe Anonyme): *See—*
Bouillon, Hubert; and Dessaux, Claude, 5,184,860, Cl. 294-67.310.

Poth, Rainer, to Siemens Aktiengesellschaft. Single-pole gas-insulated line duct. 5,185,497, Cl. 174-21.00C.

Poulter, Graham: *See—*
Day, Leslie L.; and Poulter, Graham, 5,185,834, Cl. 385-47.000.

Poussu, Eero: *See—*
Savipakka, Raimo; Poussu, Eero; and Poussu, Markku, 5,184,451, Cl. 56-17.500.

Poussu, Markku: *See—*
Savipakka, Raimo; Poussu, Eero; and Poussu, Markku, 5,184,451, Cl. 56-17.500.

Powell, Douglas O.: *See—*
Bindra, Perminder S.; Cuomo, Jerome J.; Gall, Thomas P.; Ingraham, Anthony P.; Kang, Sung K.; Kim, Jungihl; Lauro, Paul; Light, David N.; Markovich, Voya R.; Miersch, Ekkehard F.; Molla, Jaynal A.; Powell, Douglas O.; Ritsko, John J.; Saxenmeyer, George J., Jr.; Varcoe, Jack A.; and Walker, George F., 5,185,073, Cl. 205-104.000.

Powell, Jay H. Automatic water faucet or water faucet controller. 5,184,642, Cl. 137-607.000.

Powell, Richard G.; and Petroski, Richard J., to United States of America, Agriculture. N-acyl loline derivatives as insecticides and herbicides. 5,185,028, Cl. 504-284.000.

Powell, William E.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Pozgay, Jerome H., to Raytheon Company. All weather tactical strike system (AWISS) and method of operation. 5,185,608, Cl. 342-17.000.

PPG Industries, Inc.: *See—*
Eswarakrishnan, Seetha; Knox, Carol L.; and Damle, Suresh B., 5,185,103, Cl. 252-606.000.
Fischer, Scott; and Welch, Cletus N., 5,185,390, Cl. 524-43.000.

PR Partners: *See—*
Pacileo, Stephen P., 5,185,513, Cl. 219-497.000.

Prall, Kirk, to Micron Technology, Inc. Snap-back preventing method for high voltage MOSFET. 5,185,275, Cl. 437-30.000.

Prasad, Ravi, to Praxair Technology, Inc. Membrane oxygen process and system. 5,185,014, Cl. 55-16.000.

Pratley, Kenneth V.: *See—*
Graham, Gordon A.; Pasznicki, William V.; Connell, William F.; and Pratley, Kenneth V., 5,184,676, Cl. 166-66.400.

Praxair S.T. Technology, Inc.: *See—*
Sue, Jiinjen A.; and Troue, Harden H., 5,185,211, Cl. 428-472.000.

Praxair Technology, Inc.: *See—*
Prasad, Ravi, 5,185,014, Cl. 55-16.000.

Precor Incorporated: *See—*
Dunham, Paul T., 5,184,988, Cl. 482-54.000.

President & Fellows of Harvard College: *See—*
Brenner, Michael B.; Seidman, Jonathan; Strominger, Jack L.; Ip, Stephen H.; Krangel, Michael S.; and Band, Hamid, 5,185,250, Cl. 435-69.300.
Koutrakis, Petros; and Wolfson, Jack M., 5,185,129, Cl. 422-88.000.

Preston, Thomas: *See—*
Guttag, Karl M.; Asal, Michael; Simpson, Richard; Preston, Thomas; and Sharkey, John, 5,185,859, Cl. 395-164.000.

Prevorsek, Dusan C.: *See—*
Harpell, Gary A.; Prevorsek, Dusan C.; and Cunningham, David V., 5,185,195, Cl. 428-102.000.

Pribyl, Wolfgang: *See—*
Hrdlicka, Armin W.; Pribyl, Wolfgang; Schuster, Hermann; Loibner, Klaus; and Koffler, Harald, 5,184,512, Cl. 73-584.000.

Prideco, Inc.: *See—*
Chunn, William G.; and Moore, Ralph T., 5,184,495, Cl. 72-318.000.

Prillard, Charles B., to Rockwell Automotive Body Systems-France. Sun-visor with covering and supporting arm. 5,184,867, Cl. 296-97.900.

Primary Delivery Systems, Inc.: *See—*
Weinstein, Jack; and Glynn, Kenneth P., 5,184,760, Cl. 222-207.000.

Prime Computer, Inc.: *See—*
Manca, Peter J., Jr., 5,185,745, Cl. 371-22.300.

Prince, Eric T.: *See—*
Franke, Hans G.; and Prince, Eric T., 5,185,293, Cl. 437-184.000.

Princeton University, The Trustees of: *See—*
Lemischka, Ihor R., 5,185,438, Cl. 536-23.200.

Printzen, Helmut: *See—*
Krockert, Bernd; Printzen, Helmut; Biermann, Hans-Peter; and Hofs, Hans-Ulrich, 5,185,141, Cl. 423-632.000.

Process Combustion Corporation: *See—*
Nutcher, Peter B.; and Waldern, Peter J., 5,184,951, Cl. 432-28.000.

Procter & Gamble Company, The: *See—*
Chappell, Charles W.; and Angstadt, John J., 5,185,052, Cl. 156-462.000.
Hammond, Edward P.; Kinne, Daniel J.; and Roseberry, George L., 5,184,896, Cl. 385-33.000.
Hartman, Frederick A.; Brown, Donald R.; Rusche, John R.; and Taylor, Lucille F., 5,185,088, Cl. 252-86.000.

Product Development (Z.G.S.) Ltd.: *See—*
Gross, Joseph; and Zucker, Shlomo, 5,184,632, Cl. 132-326.000.

PRP, Inc.: *See—*
Chao, Francis C., 5,185,160, Cl. 424-532.000.

Pruchnicki, Michael A. Method and system for handling discount coupons by using centrally stored manufacturer coupons in place of paper coupons. 5,185,695, Cl. 364-401.000.

Pruszynski, Henry K.: *See—*
Chou, Yu W.; and Pruszynski, Henry K., 5,184,717, Cl. 200-401.000.

Puckace, James S.: *See—*
Ryer, Jack; Gutierrez, Antonio; Puckace, James S.; Watts, Raymond F.; Gleason, Craig W.; Mills, Daniel R.; and Braun, Edmund H., II, 5,185,090, Cl. 252-46.600.

Pugach, Joseph: *See—*
Salek, Jeffrey S.; and Pugach, Joseph, 5,185,478, Cl. 568-853.000.

Pugh, Robert, to Apple Computer, Inc. System for simulating block transfer with slave module incapable of block transfer by locking bus for multiple individual transfers. 5,185,865, Cl. 395-275.000.

Pulse Electronics, Inc.: *See—*
Bezos, Angel P.; Fernandez, Emilio A.; and Field, Joseph I., Jr., 5,185,700, Cl. 364-424.040.

Putman, John M. Endoscope stabilizer. 5,184,601, Cl. 128-4.000.

Puzanov, Alexandr A.: *See—*
Abdrakhmanov, Gabdrashit S.; Zainullin, Albert G.; Meling, Konstantin V.; Rakhmanov, Rauf N.; Balandin, Alexandr P.; Puzanov, Alexandr A.; Urazgildin, Ilyas A.; Mukhametshin, Almaz A.; Khakimov, Almas K.; Yasas, Antanas A.; Naryshkina, Lutsia M.; Akhunov, Albert M.; Akhunova, Tanzilya K., administrator; Akhunova, Flera A., dministrator; and Akhunov, Farid A., administrator, 5,184,687, Cl. 175-267.000.

PXT Technology, Inc.: *See—*
Klostermann, Heinrich F., 5,185,774, Cl. 378-125.000.

Pystynen, Jarmo J.: *See—*
Backstrom, Reijo J.; Honkanen, Erkki J.; Pystynen, Jarmo J.; Luiro, Anne M.; Aho, Paivi A.; Linden, Inge-Britt Y.; Nissinen, Erkki A. O.; and Pohto, Pentti, 5,185,370, Cl. 514-520.000.
Haikala, Heimo O.; Honkanen, Erkki J.; Lonnberg, Kari K.; Nore, Pentti T.; Pystynen, Jarmo J.; Luiro, Anne M.; and Pippuri, Aino K., 5,185,332, Cl. 514-222.500.

Quad/Tech, Inc.: *See—*
Quadracci, H. Richard; Voss, Karl R.; and Sainio, Jeffrey W., 5,184,555, Cl. 101-417.000.

Quadracci, H. Richard; Voss, Karl R.; and Sainio, Jeffrey W., to Quad/-Tech, Inc. Apparatus for reducing chill roll condensation. 5,184,555, Cl. 101-417.000.

Quick, Nathaniel R.; and Kenney, James C. Method for clad-coating ceramic particles. 5,184,662, Cl. 164-97.000.

Quick-Tab Fasteners, Inc.: *See—*
Zylka, Karl H.; and Buckley, Augustus M., Jr., 5,184,752, Cl. 221-1.000.

Quinn, Stanley B., Jr.; Miller, Alan L.; and Siemon, Edward C., to Borg-Warner Automotive Transmission & Engine Components Corporation. VCT system having robust closed loop control employing dual loop approach having hydraulic pilot stage with a PWM solenoid. 5,184,578, Cl. 123-90.170.

R. W. Beckett Corporation: *See—*
O'Brien, Dennis J., 5,184,949, Cl. 431-189.000.

Raby, Alvin S.: *See—*
McElroy, Lucian G.; Raby, Alvin S.; and Faytlin, Alexander B., 5,184,369, Cl. 15-316.100.

Racal-Datacom, Inc.: *See—*
Krishnan, Vedavalli G., 5,185,763, Cl. 375-39.000.

Rackur, Helmut: *See—*
Eggensperger, Heinz; Diehl, Karl-Heinz; Nolte, Helmut; Rackur, Helmut; Eggers-MaaB, Ute; Mohr, Michael; Bernd, Lower; and BeilfuB, Wolfgang, 5,185,145, Cl. 424-78.080.

Rados, Stephen E.: *See—*
DeCaprio, Michael J.; and Rados, Stephen E., 5,184,742, Cl. 215-356.000.

Raes, Maurice C.: *See—*
Smith, Curtis P.; Raes, Maurice C.; Reisch, John W.; Chandalia, Kiran B.; and O'Connor, James M., 5,185,420, Cl. 528-61.000.

Raeymaekers, Alfons H. M.: *See—*
Sanz, Gerard C.; Venet, Marc G.; Freyne, Eddy J. E.; and Raeymaekers, Alfons H. M., 5,185,346, Cl. 514-312.000.

Ragsdale, Kelly J.; and Brady, Cory, to Cover-Pools, Inc. Swimming pool anchor and removal tool. 5,184,377, Cl. 24-704.100.

Rakhmanov, Rauf N.: *See—*
Abdrakhmanov, Gabdrashit S.; Zainullin, Albert G.; Meling, Konstantin V.; Rakhmanov, Rauf N.; Balandin, Alexandr P.; Puzanov, Alexandr A.; Urazgildin, Ilyas A.; Mukhametshin, Almaz A.; Khakimov, Almas K.; Yasas, Antanas A.; Naryshkina, Lutsia M.; Akhunov, Albert M.; Akhunova, Tanzilya K., administrator; Akhunova, Flera A., dministrator; and Akhunov, Farid A., administrator, 5,184,687, Cl. 175-267.000.

Ramirez, Fernando J.; Noschese, Rocco J.; Holmes, Barry A.; and Hannigan, Thomas L., to Burndy Corporation. Modular connector frame. 5,184,961, Cl. 439-59.000.

Rampel, Guy G., to Gates Energy Products, Inc. Metal hydride electrode and electrochemical cell. 5,185,221, Cl. 429-59.000.

Ramsay, Michael V. J.: *See—*
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,185,456, Cl. 546-264.000.

Rands, Jerry W., to North Country Products, Inc. Vacuum cleaner accessory. 5,184,371, Cl. 15-325.000.

Ranger Tool Co.: *See—*
Klyce, Thomas A., 5,184,541, Cl. 99-472.000.

Rapp, Linda L.: *See—*
Adams, Richard W., Jr.; Clarke, David R.; Knickerbocker, Sarah H.; Rapp, Linda L.; and Schwartz, Bernard, 5,185,215, Cl. 428-545.000.

Rauchfuss, Brian D.: *See—*
Alcorn, Byron A.; Cherry, Robert W.; Coleman, Mark D.; and Rauchfuss, Brian D., 5,185,856, Cl. 395-130.000.

Ravey, Jean-Claude: *See—*
Delpuech, Jean-Jacques; Matos, Louis; Moumni, El Mostafa; Ravey, Jean-Claude; Selve, Claude; Serratrice, Guy; Stebe, Marie-Jose ; Cambon, Aime ; and Thiollet, Gerard, 5,185,099, Cl. 252-315.100.

Rawdon, Blaine K.; and Rohrlick, Myles A., to McDonnell Douglas Corporation. Aircraft cargo handling system. 5,184,366, Cl. 14-71.500.

Ray, Keith, to Whirlpool Corporation. Frameless glass-ceramic cooktop mounting assembly. 5,185,047, Cl. 156-242.000.

Raymond, Robert E. Valve sleeve assembly. 5,184,643, Cl. 137-625.480.

Raynesford, Steven J.: *See—*
Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., 5,185,794, Cl. 380-17.000.

Raytheon Company: *See—*
Adamski, Joseph R.; Bowen, Robert F.; Hossfield, Robin C.; Schregardus, Thomas P.; and Skienak, John S., 5,185,126, Cl. 422-38.000.
Pozgay, Jerome H., 5,185,608, Cl. 342-17.000.

Reboux, Alain: *See—*
Sartorius, Bernd; Reboux, Alain; and Huet, Bertrand, 5,185,645, Cl. 356-435.000.

Reck, Reinhard: *See—*
Aranda, Julian; Hartenstein, Johannes; Reck, Reinhard; Schachtele, Christopher; Rudolph, Claus; Osswald, Hartmut; and Weinheimer, Gunter, 5,185,352, Cl. 514-348.000.

Reddy, Dayakar C.: *See—*
Bassetti, Chester F., Jr.; Reddy, Dayakar C.; Laiman, Ekaputra; and Richter, Bryan M., 5,185,602, Cl. 340-793.000.

Reding, Bruce W.: *See—*
Button, Leslie J.; Dotson, Jerald B.; Reding, Bruce W.; and Wightman, Christopher W., 5,185,636, Cl. 356-73.100.

Regenauer, Gerhard, to Urethane Technology, Co., Inc. Hydroxyl containing component for use in creating polyurethane foams. 5,185,383, Cl. 521-155.000.

Rehrig International, Inc.: *See—*
Rehrig, Houston; Decker, Steven C.; Kern, Alan R.; and Dickerson, Lonnie G., 5,184,413, Cl. 40-308.000.

Rehrig Pacific Company, Inc.: *See—*
Apps, William P., 5,184,748, Cl. 220-519.000.

VOL
1147
ISS
2
FE
9
1993
UMI

Reigle, Steve: *See—*
Rode, Chris; and Reigle, Steve, 5,184,996, Cl. 493-84.000.
Reinartz, Johann O. Sanitary facility for cats. 5,184,575, Cl. 119-163.000.
Reiner, Roger T.; Frost, David M.; Chicots, Johnna M.; Petras, Diane S.; and Fanto, Susan V., to Westinghouse Electric Corp. Method and apparatus for maintaining plant operation procedures. 5,185,699, Cl. 364-419.000.
Reinhardt Maschinenbau GmbH: *See—*
Lipp, Xaver, 5,184,384, Cl. 29-243.500.
Reinheimer, Horst; and Stary, Christof, to VP-Schickedanz AG. Reclosable package for cellulose tissues. 5,184,725, Cl. 206-494.000.
Reininger, Russell: *See—*
Edenfield, Robin W.; McGarity, Ralph; Reininger, Russell; Ledbetter, William B., Jr.; and Shahan, Van B., 5,185,694, Cl. 395-425.000.
Reisch, John W.: *See—*
Smith, Curtis P.; Raes, Maurice C.; Reisch, John W.; Chandalia, Kiran B.; and O'Connor, James M., 5,185,420, Cl. 528-61.000.
Reisinger, Michael: *See—*
Ruf, Klaus; Gulec, Bilge; Reisinger, Michael; and Surber, Werner, 5,185,435, Cl. 534-591.000.
Reiterer, Franz: *See—*
Jud, Wilfried; Reiterer, Franz; and Neiderer, Andreas, 5,184,771, Cl. 229-87.050.
Reitman, William; and Kennedy, Jeanette, to Grumman Aerospace Corporation. Optical scene generator for testing infrared detector modules. 5,185,526, Cl. 250-332.000.
Remote Power, Inc.: *See—*
Adams, George W.; and McGoey, Michael J., 5,184,502, Cl. 73-31.010.
Renaissance Electronics Corp.: *See—*
Kurian, Thampy; and Maloratsky, Leo, 5,185,587, Cl. 333-1.100.
Rendina, Gabriele; and Albizzati, Enrico, to Ausimont S.R.L.; Himint Incorporated; and Montedison S.P.A. Monofunctional polymers of olefins and block copolymers obtained therefrom. 5,185,401, Cl. 525-130.000.
Renninger, Erhard: *See—*
Kielbas, Eugen; and Renninger, Erhard, 5,185,546, Cl. 310-216.000.
Research Development Corporation of Japan: *See—*
Horiike, Yasuhiro; Okazaki, Satiko; and Kogoma, Masuhiro, 5,185,132, Cl. 422-186.050.
Research Foundation of State University of New York, The: *See—*
Galanakis, Dennis K., 5,185,001, Cl. 604-5.000.
Research Foundation of the State University of New York, The: *See—*
Pollock, Jerry J., 5,185,153, Cl. 424-440.000.
Rexroth Corporation, The: *See—*
Walter, Thomas R.; and Cox, Roger T., 5,184,648, Cl. 137-884.000.
Reynolds, James C.: *See—*
Larson, Steven M.; Finn, Ronald; Carrasquillo, Jorge A.; Reynolds, James C.; Neumann, Ronald D.; Graham, Martin C.; and Pentlow, Keith S., 5,185,142, Cl. 424-1.100.
Reynolds, Jay G. Material handling apparatus for transferring and unloading a load of material. 5,184,929, Cl. 414-10.000.
Rez, Donald H., to Polar Marine, Inc. Method of hydrocarbon decontamination. 5,184,917, Cl. 405-128.000.
Rheinheimer, Joachim: *See—*
Vogelbacher, Uwe J.; Eicken, Karl; Rheinheimer, Joachim; Goetz, Norbert; Harreus, Albrecht; Paul, Gerhard; Westphalen, Karl-Otto; and Wuerzer, Bruno, 5,185,027, Cl. 504-219.000.
Rheinmetall GmbH: *See—*
Isgen, Helmut, 5,185,493, Cl. 89-45.000.
Riccio, Renato. Cooking apparatus with rotisserie and reclamation trap. 5,184,540, Cl. 99-421.00H.
Richard, Claude: *See—*
Rousseau, Jean; and Richard, Claude, 5,185,672, Cl. 358-248.000.
Richards, Francis S., Jr.: *See—*
Beihoff, Bruce C.; Tennies, Charles J.; Richards, Francis S., Jr.; and O'Neil, Walter K., 5,185,684, Cl. 361-45.000.
Beihoff, Bruce C.; Tennies, Charles J.; Richards, Francis S., Jr.; and O'Neil, Walter K., 5,185,687, Cl. 361-45.000.
Hansen, James E.; Beihoff, Bruce C.; Tennies, Charles J.; and Richards, Francis S., Jr., 5,185,686, Cl. 361-45.000.
Richeson, Darrin S.: *See—*
Wessels, Bruce W.; Marks, Tobin J.; Richeson, Darrin S.; Tonge, Lauren M.; and Zhang, Jiming, 5,185,317, Cl. 505-1.000.
Richter, Bryan M.: *See—*
Bassetti, Chester F., Jr.; Reddy, Dayakar C.; Laiman, Ekaputra; and Richter, Bryan M., 5,185,602, Cl. 340-793.000.
Richter, Erhard: *See—*
Palitzsch, Peter; Muller, Rainer; and Richter, Erhard, 5,185,443, Cl. 540-589.000.
Ricoh Company, Ltd.: *See—*
Furuta, Toshiyuki; Horiguchi, Kiroyuki; and Eguchi, Hirotoshi, 5,185,851, Cl. 395-27.000.
Miyake, Ryohei; and Tsutsui, Kyoji, 5,185,194, Cl. 428-64.000.
Nashimoto, Chuzo, 5,185,784, Cl. 379-94.000.
Rideout, Janet L.: *See—*
Koszalka, George W.; Burns, Charlene L.; Krenitsky, Thomas A.; and Rideout, Janet L., 5,185,437, Cl. 536-24.000.
Ridzon, Dana: *See—*
Ayer, Atul; D.; and Ridzon, Dana, 5,185,158, Cl. 424-473.000.
Riedinger, Thomas R. Golf facility and method. 5,184,824, Cl. 273-176.00A.
Rikagaku Kenkyusho: *See—*
Endo, Isao; Nagamune, Teruyuki; Nishimura, Minoru; and Kobayashi, Tetsuo, 5,185,255, Cl. 435-174.000.
Rinerson, Darrell D.; Hsia, Steve K.; Chevallier, Christophe J.; and Pang, Chan-Sui, to Catalyst Semiconductor Corporation. Memory array architecture for flash memory. 5,185,718, Cl. 365-185.000.
Ritsko, John J.: *See—*
Bindra, Perminder S.; Cuomo, Jerome J.; Gall, Thomas P.; Ingraham, Anthony P.; Kang, Sung K.; Kim, Jungihl; Lauro, Paul; Light, David N.; Markovich, Voya R.; Miersch, Ekkehard F.; Molla, Jaynal A.; Powell, Douglas O.; Ritsko, John J.; Saxenmeyer, George J., Jr.; Varcoe, Jack A.; and Walker, George F., 5,185,073, Cl. 205-104.000.
Rittal-Werk Rudolf Loh GmbH & Co. KG: *See—*
Brossardt, Ansgar; Immel, Manfred; and Styppa, Heinrich, 5,184,879, Cl. 312-236.000.
Rittenhouse, Norman E.: *See—*
Conzola, Vincent C.; Rittenhouse, Norman E.; Solomon, Jeffrey M.; Toomey, Thomas J.; and Yablonsky, Peter J., 5,185,638, Cl. 356-237.000.
Rittmueller, Philip H.: *See—*
Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., 5,185,794, Cl. 380-17.000.
Rivat, Pascal: *See—*
Gillon, Pascale; and Rivat, Pascal, 5,184,666, Cl. 164-466.000.
Robbins, Warren H.; and Smith, Lawrence C., to Team Scarab, Inc. Boat for personal watercraft. 5,184,564, Cl. 114-270.000.
Robert Bosch CmbH: *See—*
Pischke, Jurgen; and Tillhon, Engelbert, 5,184,841, Cl. 280-707.000.
Robert Bosch GmbH: *See—*
Becker, Ruediger; Boettcher, Siegfried; and Franz, Andreas, 5,184,463, Cl. 60-284.000.
Beyer, Claus; Dominke, Peter; and Sonntag, Eberhard, 5,184,876, Cl. 303-106.000.
Kielbas, Eugen; and Renninger, Erhard, 5,185,546, Cl. 310-216.000.
Kienzle, Wolfgang; and Kleinhans, Josef, 5,184,509, Cl. 73-204.140.
Leypold, Helmut; and Lade, Guenther-Eberhard, 5,184,712, Cl. 198-449.000.
Woerner, Dieter, 5,184,878, Cl. 303-118.100.
Wrede, Juergen, 5,184,875, Cl. 303-3.000.
Roberts, James W., Jr.; and Hollen, James P. Dive profile recorder. 5,185,605, Cl. 340-850.000.
Robertson, Michael D.; and Carver, Robert M., to Carpco, Inc. Spiral separator with improved separation surface. 5,184,731, Cl. 209-459.000.
Robinson, Peter M.; and Van-Det, Nguyen, to Exxon Chemical Patents Inc. AMPS copolymer emulsions with improved stability. 5,185,395, Cl. 524-457.000.
Robinson, Quentin K.: *See—*
Hoggard, Dale B.; and Robinson, Quentin K., 5,185,300, Cl. 501-99.000.
Robson, Jillian A.: *See—*
Keating, William E.; and Robson, Jillian A., 5,185,242, Cl. 435-6.000.
Rocazella, Michael A.: *See—*
Kantzer, Robert C.; Rocazella, Michael A.; Weinstein, Jerry G.; and White, Danny R., 5,185,303, Cl. 501-127.000.
Rockwell Automotive Body Systems-France: *See—*
Prillard, Charles B., 5,184,867, Cl. 296-97.900.
Rockwell International Corporation: *See—*
Chang, Mau C. F.; and Asbeck, Peter M., 5,185,274, Cl. 437-22.000.
Ijichi, Yuji, 5,184,552, Cl. 101-348.000.
Rode, Chris; and Reigle, Steve, to Gasdorf Tool & Machine Co., Inc. Carton assembly machine for assembling a base and a cover. 5,184,996, Cl. 493-84.000.
Rodriguez, Angel: *See—*
McNesby, John; Kalla, Amritpal S.; and Rodriguez, Angel, 5,185,799, Cl. 380-28.000.
Rodriguez, Jean-Jacques: *See—*
Magnenat, Alain; Meylan, Daniel; and Rodriguez, Jean-Jacques, 5,184,777, Cl. 239-447.000.
Rogers, Michael D.: *See—*
Moedritzer, Kurt; and Rogers, Michael D., 5,185,025, Cl. 504-282.000.
Rogge, Gunter: *See—*
Wallmann, Wilfried; Rogge, Gunter; and Knapheide, Wolfgang, 5,184,551, Cl. 101-219.000.
Rohm GmbH: *See—*
Klesse, Wolfgang; Elser, Wilhelm; Mager, Theodor; Christner, Juergen; Kraus, Hertha; Rossberg, Peter; and Weber, Marliese, 5,185,387, Cl. 523-201.000.
Rohm GmbH Chemische Fabrik: *See—*
Folsch, Karl J.; Frank, Klaus; and Jung, Karl-August, 5,185,404, Cl. 525-222.000.
Rohm and Haas Company: *See—*
Biale, John, 5,185,396, Cl. 524-820.000.
Biale, John, 5,185,397, Cl. 524-820.000.
Hsu, Jemin C., 5,185,355, Cl. 514-372.000.
Hughes, Kathleen A.; and Swift, Graham, 5,185,412, Cl. 526-210.000.
Spada, Lonnie T.; and Wilczynski, Joseph J., 5,185,212, Cl. 428-483.000.
Rohrer, Kurt: *See—*
Buschmann, Ulrich; Gomoll, Gunter; Hauslaib, Wolfgang; and Rohrer, Kurt, 5,184,905, Cl. 400-616.100.

Rohrlick, Myles A.: *See—*
Rawdon, Blaine K.; and Rohrlick, Myles A., 5,184,366, Cl. 14-71.500.
Rojey, Alexandre: *See—*
Collin, Jean-Claude; Juguin, Bernard; Larue, Joseph; and Rojey, Alexandre, 5,185,486, Cl. 585-448.000.
Rolf Peddinghaus: *See—*
Wengenroth, Kurt, 5,184,532, Cl. 83-23.000.
Rolli, Eros: *See—*
Bottino, Pier C.; Bertozzi, Fausto; Oddi, Renzo; and Rolli, Eros, 5,184,542, Cl. 99-483.000.
Romauer, Ewald: *See—*
Bloo, Johann; Romauer, Ewald; and Hollerwoger, Alois, 5,184,379, Cl. 26-72.000.
Ronco, Ginolino: *See—*
Villa, Pierre J.; Pieri, Francois; Ronco, Ginolino; and Segard, Emile P. R., 5,185,436, Cl. 536-4.100.
Ronney, Paul D.: *See—*
Durbin, Enoch J.; and Ronney, Paul D., 5,184,592, Cl. 123-543.000.
Rose, Brett M.: *See—*
Rose, Neil M.; Ackers, Stephen B.; Burr, William F.; and Rose, Brett M., 5,184,784, Cl. 241-275.000.
Rose, Neil M.; Ackers, Stephen B.; Burr, William F.; and Rose, Brett M., to Canica Crushers, Inc. Anvil for use in a centrifugal impact crusher. 5,184,784, Cl. 241-275.000.
Rose, Robert C.: *See—*
Pappas, James L.; Seiler, Larry D.; and Rose, Robert C., 5,185,597, Cl. 340-709.000.
Roseberry, George L.: *See—*
Hammond, Edward P.; Kinne, Daniel J.; and Roseberry, George L., 5,184,896, Cl. 385-33.000.
Rosemount Inc.: *See—*
Cucci, Gerald R.; and Lemire, Steven M., 5,184,514, Cl. 73-706.000.
Rosen, Bruno: *See—*
Muller, Hartwig; Bischoff, Erwin; Fugmann, Burkhard; Weber, Karlheinz; Frobel, Klaus; Rosen, Bruno; Grutzmann, Rudi; Karmann, Guenther; and Kohlsdorfer, Christian, 5,185,326, Cl. 514-23.000.
Rosenberg, Harry W.; and Melody, Brian, to Alta Group, The. Surface treated titanium/titanium alloy articles and process for producing. 5,185,075, Cl. 205-234.000.
Rossberg, Peter: *See—*
Klesse, Wolfgang; Elser, Wilhelm; Mager, Theodor; Christner, Juergen; Kraus, Hertha; Rossberg, Peter; and Weber, Marliese, 5,185,387, Cl. 523-201.000.
Rosser, Robin W.: *See—*
Moser, Thomas P.; and Rosser, Robin W., 5,184,470, Cl. 62-4.000.
Rossing, Thomas D., to United States of America, Energy. Expansion joint for guideway for magnetic levitation transportation system. 5,184,557, Cl. 104-286.000.
Rossman, Michael D., to Ford Motor Company. Liquid level sensor. 5,184,510, Cl. 73-290.00V.
Rostock, Angelika: *See—*
Sauer, Wolfgang; Jansch, Hans-Joachim; Rostock, Angelika; Faust, Gottfried; Siegemund, Christine; Lohmann, Dieter; and Bartsch, Reni, 5,185,341, Cl. 514-269.000.
Rou, Wenkwei: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.
Rousseau, Jean; and Richard, Claude, to Videocolor S.A. Liner for deflection yoke. 5,185,672, Cl. 358-248.000.
Rowley, David S.: *See—*
Cottone, Robert J., Jr.; Kopp, Joseph J., Jr.; and Rowley, David S., 5,184,625, Cl. 128-751.000.
Rozmanith, A. Martin; and Rozmanith, Anthony I. Method and apparatus for multi-optional processing, storing, transmitting and retrieving graphical and tabular data in a mobile transportation distributable and/or networkable communications and/or data processing system. 5,185,857, Cl. 395-148.000.
Rozmanith, Anthony I.: *See—*
Rozmanith, A. Martin; and Rozmanith, Anthony I., 5,185,857, Cl. 395-148.000.
Rubber-En Kunststoffabriek: *See—*
Delhaes, Johannes C., 5,184,383, Cl. 226-190.000.
Rubbermaid Commercial Products Inc.: *See—*
Andrews, Howard W., Jr.; Delmerico, Paul E.; and Terek, Greg P., 5,184,836, Cl. 280-79.500.
Rubik, Erno: *See—*
Bognar, Jozsef; and Rubik, Erno, 5,184,822, Cl. 273-153.00R.
Rubinstein, Alan I., to University of Southern California. Method for disinfecting red blood cells. 5,185,371, Cl. 422-28.000.
Rudolph, Claus: *See—*
Aranda, Julian; Hartenstein, Johannes; Reck, Reinhard; Schachtele, Christopher; Rudolph, Claus; Osswald, Hartmut; and Weinheimer, Gunter, 5,185,352, Cl. 514-348.000.
Ruf, Klaus; Gulec, Bilge; Reisinger, Michael; and Surber, Werner, to Ciba-Geigy Corporation. Process for the preparation of bisazo pigments in halogen-free solvents. 5,185,435, Cl. 534-591.000.
Ruffoni, John M., to McDonnell Douglas Corporation. Foam absorber. 5,185,381, Cl. 521-52.000.
Ruger, Wolfgang; Urbach, Hansjorg; Ruppert, Dieter; and Scholkens, Bernward, to Hoechst Aktiengesellschaft. Enzyme-inhibiting amino acid derivatives, a process for the preparation thereof, agents containing these, and the use thereof. 5,185,324, Cl. 514-18.000.
Rumford, Kimball J.; and Hudson, George, to Avco Corporation. Gas turbine motor drive. 5,184,456, Cl. 60-39.020.
Runyon, V. Paul: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.
Ruppert, Dieter: *See—*
Ruger, Wolfgang; Urbach, Hansjorg; Ruppert, Dieter; and Scholkens, Bernward, 5,185,324, Cl. 514-18.000.
Rusche, John R.: *See—*
Hartman, Frederick A.; Brown, Donald R.; Rusche, John R.; and Taylor, Lucille F., 5,185,088, Cl. 252-86.000.
Rushmere, John D., to Du Pont de Nemours, E. I., and Company. Polysilicate microgels as retention/drainage aids in papermaking. 5,185,206, Cl. 428-403.000.
Ruth, Terry W. Golf club practice apparatus. 5,184,825, Cl. 273-186.200.
Ryan, Timothy R.: *See—*
Lindley, Daniel D.; Ryan, Timothy R.; Curtis, Thomas A.; De la Garza, Edward M.; Hilton, Charles R.; and Kenesson, Thomas M., 5,185,469, Cl. 568-319.000.
Ryer, Jack; Gutierrez, Antonio; Puckace, James S.; Watts, Raymond F.; Gleason, Craig W.; Mills, Daniel R.; and Braun, Edmund H., II, to Exxon Chemical Patents Inc. Low pressure derived mixed phosphorous- and sulfur-containing reaction products useful in power transmitting compositions and process for preparing same. 5,185,090, Cl. 252-46.600.
S.A.R.G. Research Associates, Ltd.: *See—*
Hanlon, Daniel; Sandhaus, Stuart J.; and Hopkins, James L., 5,184,497, Cl. 72-391.600.
Saab Automobile Aktiebolag: *See—*
Nordkvist, Kjell, 5,184,522, Cl. 74-359.000.
Saal, Marliese: *See—*
Stenger, Karl; and Saal, Marliese, 5,185,189, Cl. 428-34.800.
Saari, Auvo: *See—*
Aula, Jouko; Liedes, Allan; and Saari, Auvo, 5,185,063, Cl. 162-193.000.
Saccomano, Nicholas A.; and Volkmann, Robert A., to Pfizer Inc. Synthetic heteroaryl polyamines as excitatory amino acid neurotransmitter antagonists. 5,185,369, Cl. 514-502.000.
Sadler, Ted. Portable utility structure. 5,184,436, Cl. 52-79.100.
Sadoway, Donald R., to Massachusetts Institute of Technology. Electrolytic production of metals using consumable anodes. 5,185,068, Cl. 204-245.000.
Safko, John A. Truck cargo remover. 5,184,931, Cl. 414-522.000.
Sainio, Jeffrey W.: *See—*
Quadracci, H. Richard; Voss, Karl R.; and Sainio, Jeffrey W., 5,184,555, Cl. 101-417.000.
Sainsbury, Malcolm; and Shertzer, Howard G., to University of Bath; and University of Cincinnati. Dihydroindenoindole compounds and methods for using the same. 5,185,360, Cl. 514-410.000.
Saint Geeks, Inc.: *See—*
Yager, Pamela S.; and Pisha, Nancy A., 5,184,362, Cl. 5-490.000.
Saito, Hajime; Nagashima, Hideo; Matsushita, Junichi; and Hayashi, Shinsuke, to Saito, Hajime; STK Ceramics Laboratory Corporation; and Toshiba Ceramics Co., Ltd. Titanium boride ceramic material. 5,185,112, Cl. 264-63.000.
Saito, Kazuhiro; and Imazeki, Nobuo, to Nippon Mining Company, Limited. Method of manufacturing flying magnetic head. 5,184,393, Cl. 29-603.000.
Saito, Kazuo, to Nifco, Inc. Rod holder. 5,184,794, Cl. 248-68.100.
Saito, Keichiro: *See—*
Itaba, Yasushi; Izawa, Minoru; Saito, Keichiro; and Kondo, Takayoshi, 5,185,203, Cl. 428-349.000.
Saito, Shiro: *See—*
Taguchi, Yasuhisa; Endo, Makoto; Kawamoto, Ryuichi; Saito, Shiro; Zaizen, Reigi; Komachi, Hiroshi; Narita, Naomasa; and Fujiwara, Kenichi, 5,184,355, Cl. 4-420.000.
Saito, Tamio, to Nippon Steel Corporation. Card-type IC-mounting board. 5,185,516, Cl. 235-380.000.
Saitoh, Mamoru; and Fujimoto, Shinya, to Mitsubishi Denki Kabushiki Kaisha. Failure diagnosis device of an EGR control device. 5,184,594, Cl. 123-571.000.
Saitou, Yutaka. Kinetic energy recovery device of liquid and gas. 5,184,469, Cl. 60-716.000.
Saitta, Jerome: *See—*
Zabsky, John M.; Saitta, Jerome; and Bryan, Edward P., 5,185,532, Cl. 250-455.110.

VOL
1147
ISS
2
FE
9
1993
UMI

Sajewski, Ronald, to Applied Hydro Dynamics, Inc. Heat exchange system utilizing cavitating fluid. 5,184,576, Cl. 122-26.000.
Sakai, Naofumi: *See—*
Takahashi, Noriyuki; Nishizawa, Kazunori; Takashi, Rinichi; Sakai, Naofumi; Tanabe, Yukiharu; and Yasue, Nobuhiro, 5,185,887, Cl. 395-600.000.
Sakai, Norio; Minowa, Kenji; and Morihiro, Shinji, to Murata Manufacturing Co., Ltd. Apparatus for forming electrode on electronic component. 5,185,040, Cl. 118-406.000.
Sakamoto, Ken, to Matsushita Electric Industrial Co., Ltd. Character graphic information display device. 5,185,598, Cl. 340-721.000.
Sakamoto, Masaaki: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Ishikawa, Hideo; Matsumura, Sowjun; Chiba, Tadashi; Asakawa, Kiyoshi; and Oohora, Syoichi, 5,185,216, Cl. 428-614.000.
Sakamoto, Masato: *See—*
Hino, Katsuhiko; Kai, Naoki; Sakamoto, Masato; Kon, Tatsuya; Oka, Makoto; Furukawa, Kiyoshi; and Ochi, Yoshiaki, 5,185,338, Cl. 514-254.000.
Sakamoto, Shinichi; Hiraiwa, Kenichi; Koike, Masaru; and Nozawa, Yoshioki, to Meinan Machinery Works, Inc. Apparatus for cutting opposed irregularly shaped ends of veneers and bonding the veneers together at inclined end faces thereof formed by the cutting of the opposed irregularly shaped ends. 5,185,050, Cl. 156-304.500.
Sakamoto, Shinichi; Sonoda, Takuji; and Kasai, Nobuyuki, to Mitsubishi Denki Kabushiki Kaisha. Monolithic parallel connected transistor structure. 5,185,534, Cl. 257-276.000.
Sakashita, Mitsuaki: *See—*
Fukikawa, Yoshihiro; Suzuki, Mikio; Iwasaki, Hiroshi; Sakashita, Mitsuaki; and Kitahara, Masaki, 5,185,328, Cl. 514-63.000.
Sako, Yoichiro: *See—*
Ogawa, Hiroshi; Sako, Yoichiro; and Yamamoto, Masanobu, 5,185,732, Cl. 369-47.000.
Sakuma, Toranosuke; and Obata, Minoru, to Koito Manufacturing Co., Ltd. Illuminating portion of vanity mirror. 5,184,888, Cl. 362-136.000.
Sakurai, Kenichi: *See—*
Aoyama, Tateo; Sakurai, Kenichi; and Yamamoto, Shigeo, 5,184,581, Cl. 123-90.310.
Salam, Hassan P. A., to Unisplay SA. Display devices. 5,185,600, Cl. 340-764.000.
Salchenberger, Samuel M.: *See—*
Dowden, Douglas C.; Hemmeter, Richard W.; Herr, Diane E.; McCormick, William K.; Petrelli, Robert; Piereth, Richard J.; Salchenberger, Samuel M.; Sehgal, Chander S.; and Verma, Mahendra K., 5,185,781, Cl. 379-67.000.
Salek, Jeffrey S.; and Pugach, Joseph, to Aristech Chemical Corporation. Manufacture of neopentyl glycol (IIA). 5,185,478, Cl. 568-853.000.
Sam, Park C.: *See—*
Woong, Choi J.; and Sam, Park C., 5,184,437, Cl. 52-169.500.
Samson, Rejean: *See—*
Hawari, Jalal A.; and Samson, Rejean, 5,185,488, Cl. 585-469.000.
Samsung Electron Devices Co., Ltd.: *See—*
Yang, Jun -mo; and Kim, Woo-chan, 5,185,553, Cl. 313-468.000.
Samsung Electronics Co., Ltd.: *See—*
Cho, Sung-Won, 5,185,766, Cl. 375-87.000.
Jung, Taik K., 5,184,370, Cl. 15-321.000.
Lee, Sang H., 5,184,534, Cl. 83-397.000.
Park, Se-Gab, 5,185,618, Cl. 346-138.000.
San-Ei Chemical Industries, Ltd.: *See—*
Nakagawa, Takahiro; and Tanaka, Shiro, 5,185,166, Cl. 426-74.000.
Sanada, Tsuyoshi: *See—*
Hara, Kozo; Sanada, Tsuyoshi; Tanaka, Yoshiaki; and Nihashi, Kiyotaka, 5,184,904, Cl. 400-320.000.
Sanchez-Rubio, Antonio: *See—*
Fan, Tso Y.; Sanchez-Rubio, Antonio; Walpole, James N.; Williamson, Richard C.; Melngailis, Ivars; Leger, James R.; and Goltsos, William C., 5,185,758, Cl. 372-72.000.
Sanden Corporation: *See—*
Aoki, Hisao, 5,184,672, Cl. 165-109.100.
Sanders, Gus C.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.
Sanders, Richard J., Jr.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.
Sanderson, John R.; and Knifton, John F., to Texaco Chemical Company. Catalytic removal of peroxide contaminants from a methanol-tertiary butyl alcohol recycle stream. 5,185,480, Cl. 568-913.000.
Sandhaus, Stuart J.: *See—*
Hanlon, Daniel; Sandhaus, Stuart J.; and Hopkins, James L., 5,184,497, Cl. 72-391.600.
Sandlin, William H., to Cilbilich, Anthony, a part interest. Marine outdrive locking system. 5,184,488, Cl. 70-14.000.
Sanftleben, Henry M.; Hermansen, Ralph D.; Shelton, Gary R.; Schnabel, Petrina L.; Baird, Dennis T.; and Smith, Douglas C., to Delco Electronics Corporation; and Hughes Aircraft Company. Circuit assembly encapsulated with polybutadiene urethane. 5,185,498, Cl. 174-52.200.
Sano, Tsuneji: *See—*
Mizukami, Fujio; Sano, Tsuneji; and Masuda, Koji, 5,185,312, Cl. 502-332.000.
Sanofi: *See—*
Aubert, Daniel; Blanc, Francis; Desmolin, Henri; Morre, Michel; and Sindely, Lucette, 5,185,159, Cl. 424-489.000.
Garcia, Georges; Gautier, Patrick; Nisato, Dino; and Boux, Richard, 5,185,345, Cl. 514-302.000.
Jansen, Franz; and Gros, Pierre, 5,185,434, Cl. 530-391.700.
Sanshin Kogyo Kabushiki Kaisha: *See—*
Onoue, Akihiro; and Nakahama, Ryoji, 5,184,967, Cl. 440-75.000.
Santarossa, Gianni: *See—*
Milocco, Claudio; and Santarossa, Gianni, 5,184,638, Cl. 134-186.000.
Santel, Hans-Joachim: *See—*
Drewes, Mark W.; Haug, Michael; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,185,026, Cl. 504-225.000.
Santo, Tsuyoshi, to Canon Kabushiki Kaisha. Method of optical recording employing free radicals. 5,185,233, Cl. 430-270.000.
Sanyo Chemical Industries, Ltd.: *See—*
Nishida, Masaharu, 5,185,405, Cl. 525-228.000.
Sanyo Electric Co., Ltd.: *See—*
Uchida, Zenjiro, 5,185,565, Cl. 320-39.000.
Sanz, Gerard C.; Venet, Marc G.; Freyne, Eddy J. E.; and Raeymaekers, Alfons H. M., to Hanssen Pharmaceutica. (1H-azol-1-ylmethyl)-substituted quinoline derivatives. 5,185,346, Cl. 514-312.000.
Sarantakis, Dimitrios, to American Home Products Corporation. Pyrimidinyl arylalkyl ethers with antihypertensive activity. 5,185,340, Cl. 514-269.000.
Sardella, Louis M.; and West, John B., to Sun Automation, Inc. Method and apparatus for feeding sheets. 5,184,811, Cl. 271-10.000.
Sarpeshkar, Ashok M.: *See—*
Tirpak, Robin E.; Markusch, Peter H.; and Sarpeshkar, Ashok M., 5,185,200, Cl. 428-288.000.
Sartorius, Bernd; Reboux, Alain; and Huet, Bertrand, to Heinrich-Hertz-Institut fur Nachrichtentechnik Berlin GmbH. Measurement method for the determination of low levels of optical absorption. 5,185,645, Cl. 356-435.000.
Sasaki, Mari: *See—*
Yamazaki, Shunpei; Hayashi, Shigenori; Ishida, Noriya; Sasaki, Mari; Takeyama, Junichi; Itou, Kenji; Kojima, Masahiro; and Kadono, Masaya, 5,185,179, Cl. 427-601.000.
Sasaki, Naoto: *See—*
Takeda, Fumio; Kojima, Yoshio; Kaneko, Tsuneo; Ishibashi, Yutaka; Sasaki, Naoto; and Tsushima, Isako, 5,184,438, Cl. 52-221.000.
Sasaki, Yasuo: *See—*
Torii, Nobutoshi; Ito, Susumu; Terada, Akihiro; and Sasaki, Yasuo, 5,185,512, Cl. 219-121.780.
Sasaoka, Senzo, to Fuji Photo Film Co., Ltd. Method of image formation. 5,185,232, Cl. 430-264.000.
Satake, Naoto N. S.: *See—*
Fujimura, Hideo H. F.; Egashira, Noritaka N. E.; Iwata, Tamami T. I.; and Satake, Naoto N. S., 5,185,314, Cl. 503-227.000.
Satin, Robert H.: *See—*
Martin, Dennis R.; McDermott, Michael J.; Plumlee, Stuart D.; Satin, Robert H.; and Wenger, Robert L., 5,185,884, Cl. 395-575.000.
Sato, Haruhiko; Kida, Katsuaki; and Kashihara, Akio, to Nippon Paint Co., Limited. Dry toner for high speed electrophotography. 5,185,229, Cl. 430-110.000.
Sato, Hiromitsu; Tazawa, Kenji; and Aoyama, Toshimi, to Tokyo Ohka Kogyo Co., Ltd. Remover solution for photoresist. 5,185,235, Cl. 430-331.000.
Sato, Koichi: *See—*
Toshida, Yomishi; Yoshinaga, Kazuo; and Sato, Koichi, 5,185,097, Cl. 252-299.010.
Sato, Koji: *See—*
Yamana, Masahiro; and Sato, Koji, 5,185,227, Cl. 430-49.000.
Sato, Makoto; Shimazaki, Tatsuo; and Nakamura, Hideki, to Casio Computer Co., Ltd. Viewfinder and image display/pickup apparatus using liquid crystal. 5,185,712, Cl. 358-224.000.
Sato, Toshihiro, to Asmo Co., Ltd. Windshield washer pump assembly. 5,184,946, Cl. 417-423.900.
Sato, Yasushi: *See—*
Izumisawa, Gen; and Sato, Yasushi, 5,185,491, Cl. 84-627.000.
Satoh, Atsushi: *See—*
Kawaguchi, Akihiro; Satoh, Atsushi; Kajitani, Makoto; Yasumoto, Mitsugi; and Yamamoto, Junji, 5,185,344, Cl. 514-299.000.
Satoh, Takehisa: *See—*
Fukuda, Masaaki; Tomizawa, Hirotaka; Ohta, Mitsuo; Osaka, Hideki; Ogano, Satoshi; Satoh, Takehisa; Ashibe, Kenji; and Nomura, Takeshi, 5,185,092, Cl. 252-56.00S.

Satoh, Tsuguo; Morikawa, Takayuki; Hihara, Hiroshi; Yagi, Takeshi; and Yoshida, Kazuaki, to Furukawa Electric Co., Ltd., The. Method for manufacturing a silica-base material for optical fiber. 5,185,020, Cl. 65-3.110.
Sauer, Wolfgang; Jansch, Hans-Joachim; Rostock, Angelika; Faust, Gottfried; Siegemund, Christine; Lohmann, Dieter; and Bartsch, Reni, to Arzneimittelwerk Dresden GMBH. Substituted 5-(phenoxyalkanoylamino)-uracil compounds, methods for making same and pharmaceutical compositions based on same. 5,185,341, Cl. 514-269.000.
Saunier, Christian: *See—*
Langlais, Bernard; and Saunier, Christian, 5,184,956, Cl. 434-69.000.
Sausner, Andreas; and Zabeck, Sebastian, to Carl Freudenberg, Firma. Device for temporarily storing volatile fuel constituents and supplying them at a controlled rate to the intake pipe of an internal combustion engine. 5,184,591, Cl. 123-520.000.
Savage, Gary: *See—*
Desrosiers, Andre ; and Savage, Gary, 5,184,476, Cl. 62-389.000.
Savio S.p.A.: *See—*
Bini, Franco, 5,184,485, Cl. 66-222.000.
Savipakka, Raimo; Poussu, Eero; and Poussu, Markku, to Savipakka, Raimo; and Poussu, Eero. Lawn mower. 5,184,451, Cl. 56-17.500.
Sawamoto, Kunifumi: *See—*
Kato, Yuji; and Sawamoto, Kunifumi, 5,184,577, Cl. 123-90.150.
Sawhill, J. W., to Pacific Kenyon Corporation. Method of making non-hygroscopic sugar and protein solids. 5,185,174, Cl. 426-583.000.
Sawyer, Lawrence H.; White, Marvin A.; and Knight, George W., to Dow Chemical Company, The. Maleic anhydride-grafted polyolefin fibers. 5,185,199, Cl. 428-288.000.
Saxenmeyer, George J., Jr.: *See—*
Bindra, Perminder S.; Cuomo, Jerome J.; Gall, Thomas P.; Ingraham, Anthony P.; Kang, Sung K.; Kim, Jungihl; Lauro, Paul; Light, David N.; Markovich, Voya R.; Miersch, Ekkehard F.; Molla, Jaynal A.; Powell, Douglas O.; Ritsko, John J.; Saxenmeyer, George J., Jr.; Varcoe, Jack A.; and Walker, George F., 5,185,073, Cl. 205-104.000.
Sbervegleri, Giorgio: *See—*
Camanzi, Alberto; and Sbervegleri, Giorgio, 5,185,130, Cl. 422-90.000.
Scarfone, Thomas F., to Carrier Corporation. Method and apparatus for changing lubricating oil in a rotary compressor. 5,184,944, Cl. 417-410.000.
Schaaf, Horst W.: *See—*
Kafka, James D.; Baer, Thomas M.; Keirstead, Mark S.; Watts, Michael L.; and Schaaf, Horst W., 5,185,750, Cl. 372-18.000.
Schachtele, Christopher: *See—*
Aranda, Julian; Hartenstein, Johannes; Reck, Reinhard; Schachtele, Christopher; Rudolph, Claus; Osswald, Hartmut; and Weinheimer, Gunter, 5,185,352, Cl. 514-348.000.
Schad, Robert D.; and Brown, Paul, to Husky Injection Molding Systems Ltd. Injection molding process. 5,185,119, Cl. 264-297.200.
Schadt, Martin: *See—*
Buchecker, Richard; Schadt, Martin; and Villiger, Alois, 5,185,098, Cl. 252-299.630.
Schaefer, Daniel J.: *See—*
Vavrek, Robert M.; Schaefer, Daniel J.; Myers, Christopher C.; McFarland, Thomas G.; and Turner, Robert, 5,185,576, Cl. 324-318.000.
Schaefer, William L., to Fel-Pro Incorporated. Dispenser for sealants with specific bristle arrangement. 5,184,909, Cl. 401-268.000.
Schaeffer, James R.: *See—*
Arter, Thomas C.; Harris, Bonny A.; and Schaeffer, James R., 5,185,249, Cl. 435-25.000.
Schaeuble, Edwin K., to Paper Converting Machine Company: Printing apparatus and method. 5,184,556, Cl. 101-483.000.
Schardt, Peter: *See—*
Erschens, Willie; Mencher, Franz J.; Brosius, Peter; Grave, Klaus; Zender, Bernhard; Schardt, Peter; Hessek, Gerd; and Alten, Ferdinand, 5,184,806, Cl. 254-126.000.
Schatz, Oskar. Method and an apparatus for the treatment of exhaust gas from an IC engine. 5,184,462, Cl. 60-274.000.
Scheftic, Judy L.; Mendenhall, Robert G.; and Chereslowsky, Michael J., to GTE Products Corporation. Method for producing fine size yellow molybdenum trioxide powder. 5,185,133, Cl. 423-53.000.
Schenk, Horst; and Gellenbeck, Herbert, to Sundwiger Eisenhutte Maschinenfabrik Grah & Co. Apparatus for guiding and more particularly coiling webs of material. 5,184,788, Cl. 242-66.000.
Schering Corporation: *See—*
Solomon, Daniel; Kaminski, James J.; White, Steven K.; Lehman de Gaeta, Laura S.; and Ganguly, Ashit K., 5,185,334, Cl. 514-236.200.
Schewe, Tankred; Luther, Helmut; and Jordanov, Dentscho, to Ciba-Geigy Corporation. Diphenyl compounds which inhibit arachidonic acid metabolism, and their use in pharmaceutical compositions. 5,185,377, Cl. 514-721.000.
Schich, Gisbert: *See—*
Anapfiotis, Emmanuel; and Schich, Gisbert, 5,184,602, Cl. 128-6.000.
Schierle, Berthold: *See—*
Vry, Uwe; Dorsel, Andreas; Schierle, Berthold; Blumentritt, Martin; and Greve, Peter, 5,185,643, Cl. 356-358.000.
Schilling, Donald L., to SCS Mobilecom, Inc. Spread spectrum microwave overlay with notch filter. 5,185,762, Cl. 375-1.000.
Schittenhelm, Rudolf, to Theodor Kromer GmbH & Co. KG Spezialfabrik Fur Sicherheitsschlosser. Combination lock with motor-driven tumblers. 5,184,491, Cl. 70-278.000.
Schleinzer, Matthias: *See—*
Kehr, Helmut; Kuhnle, Adolf; and Schleinzer, Matthias, 5,185,398, Cl. 525-74.000.
Schless, Michel M. C.: *See—*
Verbaarschot, Petrus A. A.; Schless, Michel M. C.; and Hultzer, Wim J., 5,185,606, Cl. 340-961.000.
Schliemann, Harald, to Stihl, Andreas. Motor-driven chain saw having a lubricating oil pump. 5,184,403, Cl. 30-123.400.
Schlotterbeck, Stephen C.: *See—*
Jennings, Richard E.; and Schlotterbeck, Stephen C., 5,184,545, Cl. 100-5.000.
Schlumberger Technology Corporation: *See—*
Moriarty, Keith A., 5,184,692, Cl. 175-50.000.
Schmidt, Harald: *See—*
Frater, Georg; and Schmidt, Harald, 5,185,472, Cl. 568-591.000.
Schmidt, Michael J.: *See—*
Fillmore, Francis L.; and Schmidt, Michael J., 5,184,978, Cl. 464-111.000.
Schmidt, Robert R.: *See—*
Drewes, Mark W.; Haug, Michael; Lurssen, Klaus; Santel, Hans-Joachim; and Schmidt, Robert R., 5,185,026, Cl. 504-225.000.
Schmitt, Gernot: *See—*
Merkel, Gerd; Glaunsinger, Georg; Vogt, Wilfried; Stadler, Peter; Zander, Claus-Peter; Schmitt, Gernot; Maass, Jurgen; Necker, Thomas; Becker, Willi; and Weber, Walter, 5,184,554, Cl. 101-415.100.
Schmitt, Kirk D.: *See—*
Degnan, Thomas F.; McCullen, Sharon B.; Schmitt, Kirk D.; and Hatzikos, George H., 5,185,310, Cl. 502-214.000.
Schnabel, Petrina L.: *See—*
Sanftleben, Henry M.; Hermansen, Ralph D.; Shelton, Gary R.; Schnabel, Petrina L.; Baird, Dennis T.; and Smith, Douglas C., 5,185,498, Cl. 174-52.200.
Schneider, Eric W.: *See—*
Blossfeld, Daniel H.; and Schneider, Eric W., 5,185,773, Cl. 378-53.000.
Schniederjan, Reinhold; and Wägenseil, Ludwig, to Hydromatik GmbH. Control and regulating device for a hydrostatic transmission. 5,184,466, Cl. 60-448.000.
Scholkens, Bernward: *See—*
Ruger, Wolfgang; Urbach, Hansjorg; Ruppert, Dieter; and Scholkens, Bernward, 5,185,324, Cl. 514-18.000.
Schonlau, Juergen; Birkenbach, Alfred; and Harth, Ralf. Brake power booster and master cylinder assembly with return spring plate. 5,184,468, Cl. 60-547.100.
Schora, Frank C., to M-C Power Corporation. Fuel cell clamping force equalizer. 5,185,220, Cl. 429-35.000.
Schregardus, Thomas P.: *See—*
Adamski, Joseph R.; Bowen, Robert F.; Hossfield, Robin C.; Schregardus, Thomas P.; and Skienak, John S., 5,185,126, Cl. 422-38.000.
Schulz, Klaus: *See—*
Luottgert, Karl-Ernst; and Schulz, Klaus, 5,185,838, Cl. 385-84.000.
Schulze, Detlef; and Schwarz, Klaus, to Mercedes-Benz AG. Hydraulic damper. 5,184,702, Cl. 188-282.000.
Schurmann, Hartmut: *See—*
Peters, Manfred; Grundhoff, Karl-Josef; Schurmann, Hartmut; and Lee, Yong-Tai, 5,185,045, Cl. 148-671.000.
Schuster, Hermann: *See—*
Hrdlicka, Armin W.; Pribyl, Wolfgang; Schuster, Hermann; Loibner, Klaus; and Koffler, Harald, 5,184,512, Cl. 73-584.000.
Schwartz, Bernard: *See—*
Adams, Richard W., Jr.; Clarke, David R.; Knickerbocker, Sarah H.; Rapp, Linda L.; and Schwartz, Bernard, 5,185,215, Cl. 428-545.000.
Schwartz, Janet. Method of making a stuffed pretzel dough product and completed stuffed pretzel product. 5,185,167, Cl. 426-94.000.
Schwartz, Willis T.: *See—*
Stults, Jeffrey S.; Schwartz, Willis T.; and Dinan, Frank J., 5,185,451, Cl. 548-418.000.
Schwarz, Klaus: *See—*
Schulze, Detlef; and Schwarz, Klaus, 5,184,702, Cl. 188-282.000.
Schweizerische Eidgenossenschaft vertreten durch die Eidg. Munitionsfabrik Thun der Gruppe fur Rustungsdienste: *See—*
Oppliger, Erich; and Monkewitz, Martin, 5,184,499, Cl. 73-11.010.
Schwimmer, Jeffrey: *See—*
Gawin, Frank H.; Byck, Robert; Alderdice, Marc; and Schwimmer, Jeffrey, 5,185,329, Cl. 514-159.000.
Schwitzky, Volkmar R.; and Stiel, Jurgen A., to Koenig & Bauer Aktiengesellschaft. Separating jet blast air control assembly. 5,184,813, Cl. 271-98.000.
Schwolsky, Peter M.: *See—*
Kaali, Steven; and Schwolsky, Peter M., 5,185,086, Cl. 210-748.000.
Scifres, Donald R.: *See—*
Craig, Richard R.; Welch, David F.; Zucker, Erik P.; Scifres, Donald R.; and Gignac, William J., 5,185,754, Cl. 372-45.000.
Scott, H. Logan: *See—*
Ward, Phillip W.; Scott, H. Logan; Holmes, Jerry D.; and LaPadula, Leonard J., 5,185,610, Cl. 342-357.000.
Scruton, Steven L.: *See—*
Evans, John; and Scruton, Steven L., 5,185,462, Cl. 560-232.000.
SCS Mobilecom, Inc.: *See—*
Schilling, Donald L., 5,185,762, Cl. 375-1.000.

VOL 1147 ISS 2 FE 9 1993 UMI

SDI Operating Partners, L.P.: *See—*
Coffenberry, Norman D., 5,184,698, Cl. 184-1.500.
Seaford Nominees Pty. Ltd.: *See—*
Stewart, Peter J., 5,184,670, Cl. 165-82.000.
Seagate: *See—*
Volz, Leroy A.; and Nissimov, Haim, 5,185,681, Cl. 360-77.050.
Seagate Technology, Inc.: *See—*
Hsie, Wei C.; Masaden, Timothy A.; and Curland, Nathan, 5,184,394, Cl. 29-603.000.
Searle, Bruce R. Filter apparatus. 5,185,015, Cl. 55-102.000.
Segard, Emile P. R.: *See—*
Villa, Pierre J.; Pieri, Francois; Ronco, Ginolino; and Segard, Emile P. R., 5,185,436, Cl. 536-4.100.
Sehgal, Chander S.: *See—*
Dowden, Douglas C.; Hemmeter, Richard W.; Herr, Diane E.; McCormick, William K.; Petrelli, Robert; Piereth, Richard J.; Salchenberger, Samuel M.; Sehgal, Chander S.; and Verma, Mahendra K., 5,185,781, Cl. 379-67.000.
Seib, Paul A.: *See—*
Neumann, Paul E.; and Seib, Paul A., 5,185,382, Cl. 521-84.100.
Seidman, Jonathan: *See—*
Brenner, Michael B.; Seidman, Jonathan; Strominger, Jack L.; Ip, Stephen H.; Krangel, Michael S.; and Band, Hamid, 5,185,250, Cl. 435-69.300.
Seiko Corp. and Seiko Epson Corp.: *See—*
Nepple, Bruce C.; Gaskill, Garold B.; and Park, Danial, J., 5,185,604, Cl. 340-825.440.
Seiko Epson Corporation: *See—*
Takeuchi, Kesatoshi, 5,185,584, Cl. 331-25.000.
Seiko Instruments, Inc.: *See—*
Hasaka, Takashi, 5,185,285, Cl. 437-60.000.
Seiler, Larry D.: *See—*
Pappas, James L.; Seiler, Larry D.; and Rose, Robert C., 5,185,597, Cl. 340-709.000.
Sekiguchi, Nabuko, executrix: *See—*
Sekiguchi, Yuzo, deceased; and Murayama, Hirokazu, 5,184,705, Cl. 192-84.00C.
Sekiguchi, Yuzo, deceased (by Sekiguchi, Nabuko, executrix); and Murayama, Hirokazu, to Ogura Corporation. Electromagnetic clutch. 5,184,705, Cl. 192-84.00C.
Selamoglu, Nur: *See—*
Fischer, Frederick H.; Lee, Kuo-hua; Nagy, William J.; and Selamoglu, Nur, 5,185,291, Cl. 437-173.000.
Selve, Claude: *See—*
Delpuech, Jean-Jacques; Matos, Louis; Moumni, El Mostafa; Ravey, Jean-Claude; Selve, Claude; Serratrice, Guy; Stebe, Marie-Jose ; Cambon, Aime ; and Thiollet, Gerard, 5,185,099, Cl. 252-315.100.
Semiconductor Energy Laboratory Co., Ltd.: *See—*
Yamazaki, Shunpei; Hayashi, Shigenori; Ishida, Noriya; Sasaki, Mari; Takeyama, Junichi; Itou, Kenji; Kojima, Masahiro; and Kadono, Masaya, 5,185,179, Cl. 427-601.000.
Semple, James C.: *See—*
Shah, Khalid M.; and Semple, James C., 5,184,628, Cl. 128-774.000.
Seneci, Pierfausto: *See—*
Trani, Aldo; Seneci, Pierfausto; Ferrari, Pietro; and Ciabatti, Romeo, 5,185,320, Cl. 514-8.000.
Senia, Michael D., to Star Remanufacturing, Inc. Automatic transmission flexplate shield. 5,184,524, Cl. 74-609.000.
Senior, John R. F.: *See—*
Dysart, John A.; Showman, Peter S.; Crow, William M.; Williams, Peter M.; McBride, Brian W.; Senior, John R. F.; Whelan, Charles H.; and Murdoch, Brian, 5,185,885, Cl. 395-600.000.
Senju Pharmaceutical Company, Limited: *See—*
Ushio, Kazumichi; and Yoshida, Kenichi, 5,185,372, Cl. 514-552.000.
Senyei, Andrew E.; and Teng, Nelson N. H., to Adeza Biomedical Corporation. Fetal fibronectin pregnancy test. 5,185,270, Cl. 436-510.000.
Sequent Computer Systems, Inc.: *See—*
Valencia, Andrew J., 5,185,861, Cl. 395-200.000.
Serizawa, Shinichiro; and Tamagawa, Shigehisa, to Fuji Photo Film Co., Ltd. Photographic printing paper support. 5,185,202, Cl. 428-335.000.
Serratrice, Guy: *See—*
Delpuech, Jean-Jacques; Matos, Louis; Moumni, El Mostafa; Ravey, Jean-Claude; Selve, Claude; Serratrice, Guy; Stebe, Marie-Jose ; Cambon, Aime ; and Thiollet, Gerard, 5,185,099, Cl. 252-315.100.
Serwer, Philip; and Dunn, Frederick J., to Board of Regents, The University of Texas System. Programmable electrophoresis with integrated and multiplexed control. 5,185,071, Cl. 204-299.00R.
Seto, Toshio: *See—*
Yoshimatsu, Kentaro; Ohya, Yukio; Shikata, Yasushi; Tanaka, Isao; Hasegawa, Yoshikazu; Seto, Toshio; and Osawa, Toshio, 5,185,431, Cl. 530-351.000.
Sexton, P. Wayne. Manicure stand. 5,184,795, Cl. 248-118.000.
Seyer, Johannes; and Freudenberg, Bernhard, to Bayer Aktiengesellschaft. Slip-cast ceramic component and a process for its production. 5,185,113, Cl. 264-67.000.
SGS-Thomson Microelectronics, S.r.l.: *See—*
Bertotti, Franco; and Ferrari, Paolo, 5,185,649, Cl. 357-43.000.
Shah, Khalid M.; and Semple, James C. Grip sincerity assessment system and method. 5,184,628, Cl. 128-774.000.
Shahan, Van B.: *See—*
Edenfield, Robin W.; McGarity, Ralph; Reininger, Russell; Ledbetter, William B., Jr.; and Shahan, Van B., 5,185,694, Cl. 395-425.000.
Sharkey, John: *See—*
Guttag, Karl M.; Asal, Michael; Simpson, Richard; Preston, Thomas; and Sharkey, John, 5,185,859, Cl. 395-164.000.
Sharp Kabushiki Kaisha: *See—*
Hamada, Akira; Obuchi, Yasuji; and Akiyama, Hirokatsu, 5,184,907, Cl. 400-635.000.
Inamori, Masanori; and Miyake, Toshihide, 5,185,517, Cl. 250-201.400.
Matsumoto, Masafumi; and Matsuda, Toshihiro, 5,185,788, Cl. 379-357.000.
Mikami, Akiyoshi; Terada, Kousuke; Okibayashi, Katsushi; Tanaka, Koichi; Yoshida, Masaru; and Nakajima, Shigeo, 5,185,181, Cl. 427-69.000.
Nagasawa, Tamami; and Ida, Masayuki, 5,185,630, Cl. 355-215.000.
Namba, Toyoaki, 5,184,812, Cl. 271-98.000.
Ota, Yoshiji; and Ochiai, Kazuaki, 5,185,722, Cl. 365-201.000.
Yoshida, Hiroichi; and Murai, Hiroko, 5,185,854, Cl. 395-117.000.
Sharpless, Edward N.; and McManus, Eugene W., to Electroluminscent Technologies Corporation. Electroluminescent lamp and method for producing the same. 5,184,969, Cl. 445-24.000.
Shaw, Kenneth; and Hutchison, Alan J., to Neurogen Corporation. Certain cycloalkyl imidazopyrimidines; a new class of gaba brain receptor ligands. 5,185,446, Cl. 544-250.000.
Shea, Stephen F., to Siemens Automotive L.P. Contamination containment device. 5,184,804, Cl. 251-365.000.
Sheirer, Daniel C.; Woods, Gerald L.; and Montgomery, Robert H., Jr., to Kennametal Inc. Radial cut drill bit insert. 5,184,689, Cl. 175-420.100.
Shell Offshore Inc.: *See—*
Gonzalez, Romulo, 5,184,686, Cl. 175-5.000.
Shell Oil Company: *See—*
Job, Robert C., 5,185,410, Cl. 526-128.000.
Lau, Hon C., 5,184,679, Cl. 166-278.000.
Wong, Pui K., 5,185,407, Cl. 525-328.800.
Shelton, Gary R.: *See—*
Sanftleben, Henry M.; Hermansen, Ralph D.; Shelton, Gary R.; Schnabel, Petrina L.; Baird, Dennis T.; and Smith, Douglas C., 5,185,498, Cl. 174-52.200.
Shepherd, Lloyd T.; August, Melvin C.; and Kruchowski, James N., to Cray Research, Inc. High power, high density interconnect apparatus for integrated circuits. 5,185,502, Cl. 174-262.000.
Sheridan, Timothy P.: *See—*
Brantingham, Charles A.; and Sheridan, Timothy P., 5,184,525, Cl. 74-820.000.
Sherman, Bernard, to Ventive, Inc. Readily cleanable gutter and gutter conversion method. 5,184,435, Cl. 52-12.000.
Shertzer, Howard G.: *See—*
Sainsbury, Malcolm; and Shertzer, Howard G., 5,185,360, Cl. 514-410.000.
Shiba, Keisuke; Kawai, Kiyoshi; Okazaki, Masaki; and Okino, Yoshiharu, to Fuji Photo Film Co., Ltd. Full color recording materials and a method of forming colored images. 5,185,236, Cl. 430-505.000.
Shibahara, Masanori; Nakayama, Masatoshi; and Ueda, Kunihiro, to TDK Corporation. Process for manufacturing diamond-like thin film. 5,185,067, Cl. 427-523.000.
Shibata, Hiroyoshi: *See—*
Hayashi, Yuji; Ito, Masahiro; Yoshida, Hiroyoshi; and Shibata, Hiroyoshi, 5,184,664, Cl. 164-271.000.
Shibata, Kiyotaka, to Mita Industrial Co., Ltd. Apparatus for uniformly supplying powder with reduced remnant powder. 5,185,631, Cl. 355-245.000.
Shiflett, Mark B., to Du Pont de Nemours, E. I., and Company. Constant boiling compositions of pentafluoroethane, difluoromethane, and tetrafluoroethane. 5,185,094, Cl. 252-67.000.
Shigematsu, Takashi; Imamizo, Seiichi; Takagi, Koichi; Ohta, Toshihiko; and Yamakawa, Jun, to Furukawa Electric Co., Ltd., The. Optical switching connector. 5,185,825, Cl. 385-20.000.
Shigihara, Kimio: *See—*
Aoyagi, Toshitaka; and Shigihara, Kimio, 5,185,287, Cl. 437-105.000.
Aoyagi, Toshitaka; and Shigihara, Kimio, 5,185,290, Cl. 437-129.000.
Shikata, Yasushi: *See—*
Yoshimatsu, Kentaro; Ohya, Yukio; Shikata, Yasushi; Tanaka, Isao; Hasegawa, Yoshikazu; Seto, Toshio; and Osawa, Toshio, 5,185,431, Cl. 530-351.000.
Shillington, Richard: *See—*
Packer, Gilbert; Bare, Rex O.; and Shillington, Richard, 5,184,720, Cl. 206-366.000.
Shimada, Hiromichi, to Matsushita Electric Industrial Co., Ltd. Recording and reproducing apparatus with limited digital copying. 5,185,792, Cl. 380-4.000.
Shimada, Hiroshi: *See—*
Norioka, Setsuo; and Shimada, Hiroshi, 5,185,530, Cl. 250-398.000.
Shimadzu Corporation: *See—*
Komoto, Akira, 5,184,690, Cl. 177-212.000.
Shimandle, Donald J., to B. F. Goodrich Company, The. Method for producing wax microspheres. 5,185,108, Cl. 264-11.000.
Shimaya, Kazuhiko; Miyaji, Masaki; and Inoue, Kozo, to Tsubakimoto Chain Co. Tensioner device for chains and the like. 5,184,982, Cl. 474-101.000.

Shimaya, Kazuhiko; and Miyaji, Masaki, to Tsubakimoto Chain Co. Floating preventive structure for shoe of tensioner lever. 5,184,983, Cl. 474-111.000.
Shimazaki, Tatsuo: *See—*
Sato, Makoto; Shimazaki, Tatsuo; and Nakamura, Hideki, 5,185,712, Cl. 358-224.000.
Shimizu, Akira: *See—*
Shimoda, Isamu; Tsukamoto, Takeo; Shimizu, Akira; Suzuki, Akira; Sugata, Masao; and Okunuki, Masahiko, 5,185,559, Cl. 315-107.000.
Shimizu, Tadao; Aso, Yoshio; and Konnai, Hidefumi, to Kawatetsu Minig Co., Ltd. Agglomerate of whiskers or short fibers. 5,185,204, Cl. 428-402.000.
Shimizu, Teruo: *See—*
Ogake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Shimizu, Teruo; Yamamoto, Narihito; and Uenoyama, Hiroyuki, 5,185,091, Cl. 252-56.500.
Shimoda, Isamu; Tsukamoto, Takeo; Shimizu, Akira; Suzuki, Akira; Sugata, Masao; and Okunuki, Masahiko, to Canon Kabushiki Kaisha. Supply circuit for P-N junction cathode. 5,185,559, Cl. 315-107.000.
Shimoyama, Makoto; and Ozaki, Ikuo, to Mitsubishi Jukogyo Kabushiki Kaisha. Sensor for water film on a plate in printing machines. 5,185,644, Cl. 356-369.000.
Shin, Han-Jin; and Kim, Joong-Ki. Keeping case for the cassette tape and others. 5,184,722, Cl. 206-387.000.
Shinden, Tetuya: *See—*
Kitagawa, Masatoshi; Okamoto, Yukio; Ono, Takayuki; and Shinden, Tetuya, 5,185,523, Cl. 250-281.000.
Shinko Pantec Co., Ltd.: *See—*
Yamasaki, Tadashige; and Handa, Hirotoshi, 5,185,060, Cl. 159-13.100.
Shinomiya, Kohji, to Mitsubishi Denki Kabushiki Kaisha. Automatic white balance regulating device with exposure detecting optical sensor. 5,185,658, Cl. 358-29.000.
Shinonaga, Hideo: *See—*
Abe, Hiroomi; Shinonaga, Hideo; Mitsui, Kiyoshi; and Sogabe, Satoru, 5,185,188, Cl. 427-533.000.
Shinto Paint Co., Ltd.: *See—*
Inui, Keiichiro, 5,185,357, Cl. 514-372.000.
Shionogi Seiyaku Kabushiki Kaisha: *See—*
Hayase, Yoshio; Kataoka, Takahiro; Takenaka, Hideyuki; Ichinari, Mitsuhiro; Masuko, Michio; Takahashi, Toshio; and Tanimoto, Norihiko, 5,185,342, Cl. 514-274.000.
Shirasu, Hirotoshi: *See—*
Maejima, Yukihito; Shirasu, Hirotoshi; Suzuki, Taihei; and Yamamoto, Toshiaki, 5,185,873, Cl. 395-375.000.
Shirk, Steven D.: *See—*
Woods, Gerald L.; and Shirk, Steven D., 5,184,925, Cl. 408-144.000.
Shirouzu, Shunji; Hatayama, Tamotsu; and Inoue, Shouichi, to Kabushiki Kaisha Toshiba. Radiation pickup device, and radiation imaging system and method for the same. 5,185,772, Cl. 378-29.000.
Shoemaker, Edwin J.: *See—*
LaPointe, Larry P.; and Shoemaker, Edwin J., 5,184,871, Cl. 297-444.000.
Showa Shell Sekiyu Kabushiki Kaisha: *See—*
Suzuki, Yoshiichi; Mogamiya, Hiroyuki; and Kawamura, Ichiro, 5,184,847, Cl. 252-299.650.
Showman, Peter S.: *See—*
Dysart, John A.; Showman, Peter S.; Crow, William M.; Williams, Peter M.; McBride, Brian W.; Senior, John R. F.; Whelan, Charles H.; and Murdoch, Brian, 5,185,885, Cl. 395-600.000.
Shpigel, Vladimir, to Amrus Corporation. Connective joint with interlocking ring structures, forming a lamp or portions thereof. 5,184,891, Cl. 362-419.000.
Shuey, Kenneth C., to ABB Power T&D Co., Inc. Power distribution line communication system for and method of reducing effects of signal cancellation. 5,185,591, Cl. 340-310.00A.
Shum, Sai P.: *See—*
Odorisio, Paul A.; and Shum, Sai P., 5,185,448, Cl. 546-186.000.
Siano, Dante, to Commer S.p.A. Process and device for the production of panels. 5,185,118, Cl. 264-257.000.
Siegemund, Christine: *See—*
Sauer, Wolfgang; Jansch, Hans-Joachim; Rostock, Angelika; Faust, Gottfried; Siegemund, Christine; Lohmann, Dieter; and Bartsch, Reni, 5,185,341, Cl. 514-269.000.
Siegfried Peyer AG: *See—*
Toedtli, Sergej; and Beeler, Alfred, 5,185,639, Cl. 356-245.000.
Siemens Aktiengesellschaft: *See—*
Luottgert, Karl-Ernst; and Schulz, Klaus, 5,185,838, Cl. 385-84.000.
McNesby, John; Kalla, Amritpal S.; and Rodriguez, Angel, 5,185,799, Cl. 380-28.000.
Poth, Rainer, 5,185,497, Cl. 174-21.00C.
Siemens Automotive L.P.: *See—*
Perkinson, William O., III, 5,185,508, Cl. 219-86.240.
Shea, Stephen F., 5,184,804, Cl. 251-365.000.
Siemens Automotive Limited: *See—*
Everingham, Gary M., 5,184,773, Cl. 237-12.30B.
Siemer, Sidney R.; Wood, Louis L.; and Calton, Gary J., to Aqua Source Inc. Application of agricultural polyammonium acrylate or polyacrylamide hydrogels. 5,185,024, Cl. 504-116.000.
Siemon, Edward C.: *See—*
Quinn, Stanley B., Jr.; Miller, Alan L.; and Siemon, Edward C., 5,184,578, Cl. 123-90.170.
Silbermann, Joseph; and Burchill, Michael T., to Elf Atochem North America, Inc. Surface modified, U.V. stabilized, polyvinyl chloride article. 5,185,191, Cl. 428-409.000.
Simonof, John F.: *See—*
Gill, David R.; Duca, Larry J.; Badway, Robert M.; Walsh, Michael W.; and Simonof, John F., 5,184,759, Cl. 222-181.000.
Simpson, Richard: *See—*
Guttag, Karl M.; Asal, Michael; Simpson, Richard; Preston, Thomas; and Sharkey, John, 5,185,859, Cl. 395-164.000.
Sindely, Lucette: *See—*
Aubert, Daniel; Blanc, Francis; Desmolin, Henri; Morre, Michel; and Sindely, Lucette, 5,185,159, Cl. 424-489.000.
Singh, Janak: *See—*
Godfrey, Jollie D., Jr.; Mueller, Richard H.; Kissick, Thomas P.; and Singh, Janak, 5,185,463, Cl. 562-506.000.
Singh, Shiy P.: *See—*
Blaisdell, Richard W.; Baer, David A.; and Singh, Shiy P., 5,184,763, Cl. 224-211.000.
Sirvin, Pierre, to General Electric CGR S.A. X-ray apparatus including a homogenizing filter. 5,185,775, Cl. 378-156.000.
Sist, Rosa: *See—*
Milocco, Claudio; and Sist, Rosa, 5,185,379, Cl. 521-26.000.
Sitnam, Elmo. Biodegradable diaper. 5,185,009, Cl. 604-364.000.
Sizer, Theodore, II: *See—*
Basavanhally, Nagesh R.; Borutta, Richard; Sizer, Theodore, II; and Walker, James A., 5,185,846, Cl. 385-137.000.
Skatron A/S: *See—*
Steen, Harald B.; and Sorensen, Otto, 5,185,265, Cl. 436-63.000.
SKF Industrial Trading & Development Co. B.V.: *See—*
van den Berg, Antonie, 5,184,505, Cl. 73-53.050.
Skienak, John S.: *See—*
Adamski, Joseph R.; Bowen, Robert F.; Hossfield, Robin C.; Schregardus, Thomas P.; and Skienak, John S., 5,185,126, Cl. 422-38.000.
Skill, Bridget A.: *See—*
Humphrey, Anthony M.; Skill, Bridget A.; and Kinderlerer, Judith L., 5,185,252, Cl. 435-134.000.
Skinner, Todd B.: *See—*
Todd, Thomas; and Skinner, Todd B., 5,185,509, Cl. 219-85.160.
Slongo, Mario: *See—*
Meuwly, Roger; Slongo, Mario; and Valet, Andreas, 5,185,445, Cl. 544-216.000.
Slusarchyk, William A.; and Zahler, Robert, to E. R. Squibb & Sons Inc. Bis protected (hydroxymethyl)cyclobutanols. 5,185,459, Cl. 556-449.000.
Smalanskas, Joseph P.: *See—*
Blazic, Ernest S.; Bueker, Robert A.; Waters, Lynn O.; Farwell, William D.; and Smalanskas, Joseph P., 5,184,516, Cl. 73-799.000.
Mertens, Donald B.; Gates, Louis E., Jr.; Wolfson, Ronald I.; Milroy, William W.; and Smalanskas, Joseph P., 5,185,579, Cl. 324-527.000.
Smart House, L.P.: *See—*
Nichols, Edward L., III; and Stirk, Gary L., 5,185,580, Cl. 324-539.000.
Smet, Marc J. M., to Corstjens Helena Michel. Method for widening a hole or a pipe in the ground. 5,184,919, Cl. 405-154.000.
Smigo, John G.; McAndrew, Thomas P.; Pinschmidt, Robert K., Jr.; and Nordquist, Andrew F., to Air Products and Chemicals, Inc. Separation of solids from aqueous suspensions using modified amine functional polymers. 5,185,083, Cl. 210-735.000.
Smith, Andrew P.; and Genna, Sebastian, to Digital Scintigraphics, Inc. Position analysis system and method. 5,185,529, Cl. 250-369.000.
Smith, Connie M.: *See—*
DeLuca, Hector F.; and Smith, Connie M., 5,185,150, Cl. 424-195.100.
Smith, Curtis P.; Raes, Maurice C.; Reisch, John W.; Chandalia, Kiran B.; and O'Connor, James M., to Olin Corporation. Thermoplastic polyurethane elastomers and polyurea elastomers made using low unsaturation level polyols prepared with double metal cyanide catalysts. 5,185,420, Cl. 528-61.000.
Smith, David G.: *See—*
Johansson, Eric B.; and Smith, David G., 5,185,124, Cl. 376-439.000.
Smith, Douglas C.: *See—*
Sanftleben, Henry M.; Hermansen, Ralph D.; Shelton, Gary R.; Schnabel, Petrina L.; Baird, Dennis T.; and Smith, Douglas C., 5,185,498, Cl. 174-52.200.
Smith, Frank S.: *See—*
Arnold, James M.; Hinton, Glenn J.; and Smith, Frank S., 5,185,872, Cl. 395-375.000.
Smith, Gordon W., to Xscribe Corporation. Stenographic machine including a disposable ribbon cartridge. 5,184,903, Cl. 400-196.100.
Smith, James D. Computer security device having connector with spring loaded contact members. 5,185,692, Cl. 361-393.000.
Smith, Jonathan F.: *See—*
Davis, Nancy L.; Willis, Loretta V.; Johnston, Robert E.; and Smith, Jonathan F., 5,185,440, Cl. 536-237.200.
Smith, Joseph L.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri,

VOL
1147
ISS
2
FE
9
1993
UMI

Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Smith, Lawrence C.: *See—*
Robbins, Warren H.; and Smith, Lawrence C., 5,184,564, Cl. 114-270.000.

Smith-Lewis, Margaret J.: *See—*
McClune, Gregory J.; and Smith-Lewis, Margaret J., 5,185,128, Cl. 422-61.000.

Smith, Marc L.: *See—*
Lewarchik, Ronald J.; Holzrichter, Edward J.; Smith, Marc L.; and Allman, Jack C., 5,185,403, Cl. 525-199.000.

Smith, Norman: *See—*
Lawton, Peter G.; and Smith, Norman, 5,184,387, Cl. 29-419.100.

Smith, Roger D.: *See—*
Wiatt, James G.; Swiderski, Kevin J.; Belcher, Samuel L.; and Smith, Roger D., 5,185,163, Cl. 425-534.000.

Smith, Susan L.; and Fountain, Richard W., to Special Metals Corporation. Dental alloy and amalgam thereof. 5,185,125, Cl. 420-503.000.

Smith, Wendell F., Jr.: *See—*
Bagchi, Pranab; Edwards, James L.; Smith, Wendell F., Jr.; and Thomas, Brian, 5,185,230, Cl. 430-138.000.

SmithKline Beecham Corporation: *See—*
Finkelstein, Joseph A.; Keenan, Richard M.; and Weinstock, Joseph, 5,185,351, Cl. 514-341.000.

Smiths Industries Public Limited Company: *See—*
Baker, Peter D., 5,185,836, Cl. 385-61.000.
Turnbull, Christopher S., 5,184,611, Cl. 128-207.140.

Snelling, Christopher, to Xerox Corporation. Electrostatic printing method and apparatus employing a pyroelectric imaging member. 5,185,619, Cl. 346-153.100.

Snyder, Janet M.; and Gruender, Eugene H., Jr., to Motorola, Inc. Programmable logic device address buffer/multiplexer/driver. 5,185,539, Cl. 307-465.000.

Sobol, Robert E., to Hewlett-Packard Company. Automated image calibration. 5,185,673, Cl. 358-296.000.

Societe Nationale Elf Aquitaine: *See—*
Bonometti, ; Guy; Olivier, Roland; and Maurice, Jacques, 5,185,268, Cl. 436-114.000.

Sogabe, Satoru: *See—*
Abe, Hiroomi; Shinonaga, Hideo; Mitsui, Kiyoshi; and Sogabe, Satoru, 5,185,188, Cl. 427-533.000.

Sogabe, Yukihiro: *See—*
Tanigaki, Naoko; Furukawa, Kayoko; Sogabe, Yukihiro; and Emi, Shigenori, 5,185,257, Cl. 435-191.000.

Soled, Stuart L.; Miseo, Sabato; Iglesia, Enrique; and Fiato, Rocco A., to Exxon Research and Engineering Company. Iron-zinc catalysts for the conversion of synthesis gas to alpha-olefins. 5,185,378, Cl. 518-700.000.

Sollinger, Hans-Peter: *See—*
Holzinger, Dieter; Sollinger, Hans-Peter; and Beisswanger, Rudolf, 5,184,787, Cl. 242-65.000.

Solomon, Daniel; Kaminski, James J.; White, Steven K.; Lehman de Gaeta, Laura S.; and Ganguly, Ashit K., to Schering Corporation. 2,2-disubstituted glycerol and glycerol-like compounds, compositions and methods of use. 5,185,334, Cl. 514-236.200.

Solomon, Jeffrey M.: *See—*
Conzola, Vincent C.; Rittenhouse, Norman E.; Solomon, Jeffrey M.; Toomey, Thomas J.; and Yablonsky, Peter J., 5,185,638, Cl. 356-237.000.

Solomon, Stuart G.; and Whitman, David C. Above-ground storage system. 5,184,939, Cl. 417-41.000.

Somm, Christopher, to Sulzer Brothers Limited. Loom having a resilient locking element for the cloth beam bearing. 5,184,650, Cl. 139-308.000.

Sone, Yoshiaki: *See—*
Matsuzaki, Kei; Yamamoto, Iwao; Misaki, Akira; and Sone, Yoshiaki, 5,185,327, Cl. 514-54.000.

Sone, Yoshinori: *See—*
Fujiwara, Takayoshi; Honma, Hisanori; and Sone, Yoshinori, 5,184,940, Cl. 417-356.000.

Sonnenberg, Heinrich T.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Sonntag, Eberhard: *See—*
Beyer, Claus; Dominke, Peter; and Sonntag, Eberhard, 5,184,876, Cl. 303-106.000.

Sonoda, Takuji: *See—*
Sakamoto, Shinichi; Sonoda, Takuji; and Kasai, Nobuyuki, 5,185,534, Cl. 257-276.000.

Sony Corporation: *See—*
Hattori, Masayuki, 5,185,711, Cl. 364-746.100.
Katakura, Masayuki; and Ishihara, Masaaki, 5,185,569, Cl. 324-103.00P.
Kato, Shinichi, 5,185,669, Cl. 358-227.000.
Kikuchi, Akihiro; and Fukuda, Tokuya, 5,185,707, Cl. 364-525.000.
Kurose, Yoshikazu; Aoki, Shinji; and Suzuki, Hideto, 5,185,740, Cl. 370-106.000.
Ogawa, Hiroshi; Sako, Yoichiro; and Yamamoto, Masanobu, 5,185,732, Cl. 369-47.000.
Okura, Yukiko; and Komiya, Yoshinori, 5,185,665, Cl. 358-183.000.

Sony Corporation of America: *See—*
Capitant, Patrice J.; Perry, Vinson R.; and Hodgson, David O., 5,185,666, Cl. 358-183.000.

Sorensen, Otto: *See—*
Steen, Harald B.; and Sorensen, Otto, 5,185,265, Cl. 436-63.000.

Sortwell, Edwin T., to Diatec Environmental. Process for preparing water soluble polymer gels. 5,185,409, Cl. 526-62.000.

Source Scientific Systems, Inc.: *See—*
Wells, John R., 5,185,269, Cl. 436-180.000.

Southwest Research Institute: *See—*
Hollinger, Richard H.; and Perry, William D., 5,184,434, Cl. 51-317.000.

Sowman, Harold G.: *See—*
Wood, Thomas E.; Wilson, David M.; and Sowman, Harold G., 5,185,299, Cl. 501-95.000.

Spada, Lonnie T.; and Wilczynski, Joseph J., to Rohm and Haas Company. Acetoacetoxy-alkyl acrylate-containing pressure sensitive adhesives manufactured articles. 5,185,212, Cl. 428-483.000.

Sparer, Steven J., to Eastman Kodak Company. Making encoded dye-donor films for thermal printers. 5,185,315, Cl. 503-227.000.

Sparling, Fred; and Maloney, Wilfred. Coupling with auxiliary latch and release mechanism. 5,184,851, Cl. 285-79.000.

Speakman, Stuart: *See—*
Temple, Stephen; and Speakman, Stuart, 5,185,055, Cl. 156-630.000.

Spear, Stephen L., to Motorola, Inc. Time-allocation of radio carriers. 5,185,739, Cl. 370-95.300.

Specac Ltd.: *See—*
Day, Leslie L.; and Poulter, Graham, 5,185,834, Cl. 385-47.000.

Special Metals Corporation: *See—*
Smith, Susan L.; and Fountain, Richard W., 5,185,125, Cl. 420-503.000.

Spectra Diode Laboratories, Inc.: *See—*
Craig, Richard R.; Welch, David F.; Zucker, Erik P.; Scifres, Donald R.; and Gignac, William J., 5,185,754, Cl. 372-45.000.
Welch, David F.; and Waarts, Robert G., 5,185,752, Cl. 372-22.000.

Spectra-Physics Lasers Incorporated: *See—*
Kafka, James D.; Baer, Thomas M.; Keirstead, Mark S.; Watts, Michael L.; and Schaaf, Horst W., 5,185,750, Cl. 372-18.000.

Spectrum International, Inc.: *See—*
Box, Thomas, 5,184,726, Cl. 206-509.000.

Spielvogel, David E.: *See—*
Williamitis, Victor A.; and Spielvogel, David E., 5,185,006, Cl. 604-265.000.

Spindelfabrik Sussen, Schurr, Stahlecker & Grill GmbH: *See—*
Barauke, Norbert; and Lang, Kurt, 5,184,374, Cl. 19-262.000.

Spinner, Georg. Inner conductor contact for coaxial cables with braided inner conductor. 5,185,500, Cl. 174-74.00R.

Spitz, Raymond C.: *See—*
Moyski, Matthew T.; and Spitz, Raymond C., 5,185,803, Cl. 381-86.000.

Spring, G. Everett. Leak detection. 5,184,504, Cl. 73-49.200.

Square D Company: *See—*
Farrington, Ronald L., 5,185,705, Cl. 364-483.000.
Newell, Edwin R.; and Sullivan, Jackie C., 5,185,839, Cl. 385-90.000.

Squires, Carlton G.; and Squires, Leslie A. Device for securely mounting audio equipment in a motor vehicle. 5,184,489, Cl. 70-58.000.

Squires, Leslie A.: *See—*
Squires, Carlton G.; and Squires, Leslie A., 5,184,489, Cl. 70-58.000.

Srinivasan, Thirunarayanan, to A&T Bell Laboratories. ACD arrangement for automatically returning a call at a time specified by the original caller. 5,185,782, Cl. 379-67.000.

Stadler, Peter: *See—*
Merkel, Gerd; Glaunsinger, Georg; Vogt, Wilfried; Stadler, Peter; Zander, Claus-Peter; Schmitt, Gernot; Maass, Jurgen; Necker, Thomas; Becker, Willi; and Weber, Walter, 5,184,554, Cl. 101-415.100.

Stafford, James M.: *See—*
Beers, Gregory E.; Flickner, Myron D.; Kelly-Mahaffey, William L.; Polk, Darryl R.; Stafford, James M.; and Wattenbarger, Henry E., 5,185,811, Cl. 382-8.000.

Stafford, Timothy J., to Boston University, Trustees of. Method and apparatus of a positioning system for airway management. 5,184,365, Cl. 5-632.000.

Stahlecker, Fritz; and Gotz, Dieter, to Stahlecker, Fritz; and Stahlecker, Hans. Method and apparatus for driving an open-end spinning machine with a tangential belt during piecing. 5,184,452, Cl. 57-105.000.

Stahlecker, Hans: *See—*
Stahlecker, Fritz; and Gotz, Dieter, 5,184,452, Cl. 57-105.000.

Stanec, George. Physical exercise system using skis. 5,184,989, Cl. 482-71.000.

Stankiewicz GmbH: *See—*
Diessel, Cornelia; Kliwer, Carsten; Burak, Gerhard; Blumel, Ehrenfried; and Kittel, Christoph, 5,185,380, Cl. 521-49.000.

Stankus, John C.: *See—*
Calandra, Frank, Jr.; Stankus, John C.; and Yacisin, Paul A., 5,184,923, Cl. 405-259.400.

Stanton, Mark F., to Beltone Electronics Corporation. Modular hearing aid system. 5,185,802, Cl. 381-68.600.

Staodyn, Inc.: *See—*
Harris, Frank W.; and Owens, Alan R., 5,184,617, Cl. 128-423.00R.

Star Kist Foods, Inc.: *See—*
Orlando, Franklin P.; and Franco, Thomas, 5,184,973, Cl. 452-125.000.

Star Remanufacturing, Inc.: *See—*
Senia, Michael D., 5,184,524, Cl. 74-609.000.

Stary, Christof: *See—*
Reinheimer, Horst; and Stary, Christof, 5,184,725, Cl. 206-494.000.

Stauffer, John E. Process for methyl alcohol. 5,185,479, Cl. 568-893.000.

Stebe, Marie-Jose : *See—*
Delpuech, Jean-Jacques; Matos, Louis; Moumni, El Mostafa; Ravey, Jean-Claude; Selve, Claude; Serratrice, Guy; Stebe, Marie-Jose ; Cambon, Aime ; and Thiollet, Gerard, 5,185,099, Cl. 252-315.100.

Steele, Charles E.; Anderson, Mark R.; and Hamilton, James C., to Kerr Manufacturing Company. Automatic capsule mixing device. 5,184,893, Cl. 366-209.000.

Steen, Harald B.; and Sorensen, Otto, to Skatron A/S. Pulse modulation of the excitation light source of flow cytometers. 5,185,265, Cl. 436-63.000.

Stegmeier, Renate C.: *See—*
Grosso, Paul V.; Wing, Feagin A., Jr.; Morgan, Michael J.; Stegmeier, Renate C.; Day, Roger W.; and Burt, Willard F., 5,185,226, Cl. 430-47.000.

Steigerwald, Thomas E.: *See—*
McGann, William E.; Steigerwald, Thomas E.; and Adam, John D., 5,185,588, Cl. 333-17.200.

Steinhaus, Bruce M.: *See—*
Nappholz, Tibor A.; Dawson, Albert K.; Lu, Richard M. T.; and Steinhaus, Bruce M., 5,184,615, Cl. 128-419.0PG.

Stenger, Karl; and Saal, Marliese, to Hoechst Aktiengesellschaft. Multilayered tubular packaging casing. 5,185,189, Cl. 428-34.800.

Stenmans, Heinz: *See—*
Inger, Siegfried; and Stenmans, Heinz, 5,184,785, Cl. 242-35.50A.

Step Loc Corporation: *See—*
Hoopengardner, Merle R., 5,184,445, Cl. 52-741.100.

Stephenson, William H.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Stern, Andrew M.: *See—*
Baldwin, John J.; Friedman, Paul A.; and Stern, Andrew M., 5,185,149, Cl. 424-94.630.

Stevens, John L., Jr. Animal collar. 5,184,573, Cl. 119-106.000.

Stewart, Andrew O.: *See—*
Brooks, Dee W.; Kerkman, Daniel J.; Martin, Jonathan G.; Stewart, Andrew O.; and Summers, James B., 5,185,363, Cl. 514-438.000.

Stewart, Charles W., to Du Pont de Nemours, E. I., and Company. Preparing shaped structure of polyarylate copolymers having high tensile elongation at break. 5,185,116, Cl. 264-178.00F.

Stewart, Jeffrey B.: *See—*
Farmer, Leonard E.; Stewart, Jeffrey B.; and Turner, Ralph, 5,184,975, Cl. 452-198.000.

Stewart, Peter J., to Seaford Nominees Pty. Ltd. Heat exchanger. 5,184,670, Cl. 165-82.000.

Stiel, Jurgen A.: *See—*
Schwitzky, Volkmar R.; and Stiel, Jurgen A., 5,184,813, Cl. 271-98.000.

Stihl, Andreas: *See—*
Schliemann, Harald, 5,184,403, Cl. 30-123.400.

Stirk, Gary L.: *See—*
Nichols, Edward L., III; and Stirk, Gary L., 5,185,580, Cl. 324-539.000.

STK Ceramics Laboratory Corporation: *See—*
Saito, Hajime; Nagashima, Hideo; Matsushita, Junichi; and Hayashi, Shinsuke, 5,185,112, Cl. 264-63.000.

Stockham, Michael A.: *See—*
Hider, Robert C.; and Stockham, Michael A., 5,185,319, Cl. 514-3.000.

Stockton, Jeffrey M. Vehicle suspension mechanism. 5,184,842, Cl. 280-719.000.

Stoia, Kenneth J.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Stokich, Theodore M., Jr., to Dow Chemical Company, The. Oxidation inhibited arylcyclobutene polymers. 5,185,391, Cl. 524-87.000.

Stolar, Inc.: *See—*
Stolarczykz, Larry G., 5,185,578, Cl. 324-338.000.

Stolarczykz, Larry G., to Stolar, Inc. Method for detecting anomalous geological zones by transmitting electromagnetic energy between spaced drillholes using different frequency ranges. 5,185,578, Cl. 324-338.000.

Stone, J. Gilbert. Automatic intubating laryngoscope. 5,184,603, Cl. 128-11.000.

Stork PMT B.V.: *See—*
Cornelissen, Albertus T. J. J.; and van den Nieuwelaar, Adrianus J., 5,184,974, Cl. 452-160.000.

Stransky, Larry W.; Boehm, Valentine R., Jr.; and Phillips, Michael A., to General Electric Company. Method and apparatus for automatic bypass operation. 5,184,461, Cl. 60-226.300.

Stransky, Werner: *See—*
Weber, Karl-Heinz; Stransky, Werner; Kuefner-Muehl, Ulrike; Heuer, Hubert; Birke, Franz; and Bechtel, Wolf-Dietrich, 5,185,442, Cl. 540-555.000.

Strasser, Stephanie A. Reusable diaper garment. 5,185,011, Cl. 604-385.100.

Strassle, Marcel, to Syma Intercontinental AG. Connection element for a rod. 5,184,920, Cl. 403-171.000.

Stratbucker, Robert A.: *See—*
Cudahy, Michael J.; and Stratbucker, Robert A., 5,184,620, Cl. 128-639.000.

Strohmaier, Karl G.: *See—*
Vaughan, David E. W.; and Strohmaier, Karl G., 5,185,136, Cl. 423-702.000.
Vaughan, David E. W.; and Strohmaier, Karl G., 5,185,137, Cl. 423-702.000.
Vaughan, David E. W.; and Strohmaier, Karl G., 5,185,138, Cl. 423-710.000.

Strominger, Jack L.: *See—*
Brenner, Michael B.; Seidman, Jonathan; Strominger, Jack L.; Ip, Stephen H.; Krangel, Michael S.; and Band, Hamid, 5,185,250, Cl. 435-69.300.

Stuart, Clifford H. Multiple door/tray cooker, smoker and grill. 5,184,599, Cl. 126-25.00R.

Stull, Paul D.: *See—*
Ullman, Edwin F.; Goodman, Thomas C.; and Stull, Paul D., 5,185,243, Cl. 435-6.000.

Stults, Jeffrey S.; Schwartz, Willis T.; and Dinan, Frank J., to Occidental Chemical Corporation. Bis-imides of dioxydiphthalic acid. 5,185,451, Cl. 548-418.000.

Stults, Jeffrey S.; and Buchanan, Robert A., to Occidental Chemical Corporation. Method for ether formation. 5,185,471, Cl. 568-586.000.

Stumpf, Donald M.: *See—*
Benedict, Charles E.; and Stumpf, Donald M., 5,185,558, Cl. 315-80.000.

Styppa, Heinrich: *See—*
Brossardt, Ansgar; Immel, Manfred; and Styppa, Heinrich, 5,184,879, Cl. 312-236.000.

Subramanian, Somasundaram; and Chattha, Mohinder S., to Ford Motor Company. Catalyst system for treating the exhaust from a lean-burn gasoline-fueled engine. 5,185,305, Cl. 502-65.000.

Suda, Koichiro: *See—*
Itoyama, Katsumi; Sugiyama, Akira; and Suda, Koichiro, 5,185,791, Cl. 379-435.000.

Sue, Jiinjen A.; and Troue, Harden H., to Praxair S.T. Technology, Inc. Non-stoichiometric titanium nitride coating. 5,185,211, Cl. 428-472.000.

Suetrak Air Conditioning Sales Corp.: *See—*
Ferdows, Houshang, 5,184,474, Cl. 62-244.000.

Sugata, Masao: *See—*
Shimoda, Isamu; Tsukamoto, Takeo; Shimizu, Akira; Suzuki, Akira; Sugata, Masao; and Okunuki, Masahiko, 5,185,559, Cl. 315-107.000.

Sugiura, Masato: *See—*
Takayama, Yuuji; Matsueda, Hirokazu; Sugiura, Masato; Ozaki, Tatsuhiko; Wada, Hirotaka; and Komiya, Iwao, 5,185,417, Cl. 526-301.000.

Sugiyama, Akira: *See—*
Itoyama, Katsumi; Sugiyama, Akira; and Suda, Koichiro, 5,185,791, Cl. 379-435.000.

Suhm, Werner: *See—*
Herrenknecht, Martin; Suhm, Werner; and Griesbaum, Rainer, 5,184,918, Cl. 405-138.000.

Sui, Masaru: *See—*
Tanabe, Mamoru; Yokota, Motoyuki; Fujiki, Sohei; and Sui, Masaru, 5,184,803, Cl. 267-140.120.

Sujita, Shigeko: *See—*
Nishike, Ujihiro; Sujita, Shigeko; and Nagamine, Tsuneo, 5,185,043, Cl. 148-111.000.

Sullivan, Jackie C.: *See—*
Newell, Edwin R.; and Sullivan, Jackie C., 5,185,839, Cl. 385-90.000.

Sullivan, Steven L., to Sullivan, Steven L. Dipole horn piezoelectric electro-acoustic transducer design. 5,185,549, Cl. 310-334.000.

Sulzer Brothers Limited: *See—*
Somm, Christopher, 5,184,650, Cl. 139-308.000.

Sumitomo Chemical Co., Ltd.: *See—*
Abe, Hiroomi; Shinonaga, Hideo; Mitsui, Kiyoshi; and Sogabe, Satoru, 5,185,188, Cl. 427-533.000.

VOL 1147 ISS 2 FEB 9 1993 UMI

Sumitomo Heavy Industries, Inc.: *See*—
Ushigami, Yoshihiro, 5,184,492, Cl. 72-160.000.

Summers, James B.: *See*—
Brooks, Dee W.; Kerkman, Daniel J.; Martin, Jonathan G.; Stewart, Andrew O.; and Summers, James B., 5,185,363, Cl. 514-438.000.

Summerton, James E.; and Weller, Dwight D., to Anti-Gene Deveopment Group. Uncharged morpolino-based polymers having phosphorous containing chiral intersubunit linkages. 5,185,444, Cl. 544-81.000.

Sun Automation, Inc.: *See*—
Sardella, Louis M.; and West, John B., 5,184,811, Cl. 271-10.000.

Sundwiger Eisenhutte Maschinenfabrik Grah & Co.: *See*—
Schenk, Horst; and Gellenbeck, Herbert, 5,184,788, Cl. 242-66.000.

Superior Fermitech Liquidating Trust: *See*—
Lynn, Charles C., 5,185,165, Cl. 426-61.000.

Superior Surgical Mfg. Co., Inc.: *See*—
Benstock, Gerald M., 5,184,351, Cl. 2-114.000.

Surber, Werner: *See*—
Ruf, Klaus; Gulec, Bilge; Reisinger, Michael; and Surber, Werner, 5,185,435, Cl. 534-591.000.

Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., to American Cyanamid Company. Macrolide compounds. 5,185,456, Cl. 546-264.000.

Sutherland, Joseph E.: *See*—
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Suttle, Keith H.; and McGraw, William J. Audible golf gloves. 5,184,827, Cl. 273-187.200.

Sutton, Michael: *See*—
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Suzuki, Akira: *See*—
Shimoda, Isamu; Tsukamoto, Takeo; Shimizu, Akira; Suzuki, Akira; Sugata, Masao; and Okunuki, Masahiko, 5,185,559, Cl. 315-107.000.

Suzuki, Hideto: *See*—
Kurose, Yoshikazu; Aoki, Shinji; and Suzuki, Hideto, 5,185,740, Cl. 370-106.000.

Suzuki, Hidetoshi: *See*—
Nomura, Ichiro; Takeda, Toshihiko; Banno, Yoshikazu; Kaneko, Tetsuya; Ono, Haruhito; and Suzuki, Hidetoshi, 5,185,554, Cl. 313-495.000.

Suzuki, Masaaki: *See*—
Nishida, Naoya; Suzuki, Masaaki; and Yoshioka, Toshifumi, 5,185,059, Cl. 156-659.100.

Suzuki, Mikio: *See*—
Fukikawa, Yoshihiro; Suzuki, Mikio; Iwasaki, Hiroshi; Sakashita, Mitsuaki; and Kitahara, Masaki, 5,185,328, Cl. 514-63.000.

Suzuki Motor Corporation: *See*—
Fujiwara, Hideo, 5,184,579, Cl. 123-90.230.
Ozeki, Hisashi, 5,184,587, Cl. 123-193.500.

Suzuki, Nariko, to NEC Corporation. System for masking execution ready signal during unsettled period of determining branch condition to prevent reading out of stored instructions. 5,185,869, Cl. 395-375.000.

Suzuki, Setsuo; Noda, Etsuo; and Morimiya, Osami, to Kabushiki Kaisha Toshiba. Vacuum ultraviolet light source. 5,185,552, Cl. 313-231.710.

Suzuki, Tadashi: *See*—
Mima, Hiroshi; and Suzuki, Tadashi, 5,184,453, Cl. 57-270.000.

Suzuki, Taihei: *See*—
Maejima, Yukihito; Shirasu, Hirotoshi; Suzuki, Taihei; and Yamamoto, Toshiaki, 5,185,873, Cl. 395-375.000

Suzuki, Takahiko: *See*—
Yamamoto, Tadashi; Kageyama, Shuhei; and Suzuki, Takahiko, 5,184,908, Cl. 401-29.000.

Suzuki, Takashi; and Fukui, Kohei, to Nissin Technos Corporation; and Cotra System Kabushiki Kaisha. Container for housing coil. 5,184,743, Cl. 220-1.500.

Suzuki, Takashi: *See*—
Miyazawa, Azuma; Mizobuchi, Koji; and Suzuki, Takashi, 5,185,849, Cl. 395-3.000.

Suzuki, Toshikazu: *See*—
Ueda, Katsuhiko; Suzuki, Toshikazu; and Kinoshita, Norihito, 5,185,880, Cl. 395-550.000.

Suzuki, Yoshiichi; Mogamiya, Hiroyuki; and Kawamura, Ichiro, to Showa Shell Sekiyu Kabushiki Kaisha. Liquid crystal compounds. 5,184,847, Cl. 252-299.650.

Svedala Industries Canada, Inc.: *See*—
Tapp, Allan G., 5,184,714, Cl. 198-641.000.

Svensson, Soldon A.: *See*—
Barkhau, Keith D.; Beltz, John D.; Kupski, Donald R.; Henke, Mitchell C.; and Svensson, Soldon A., 5,185,172, Cl. 426-523.000.

Swan, Leo: *See*—
Ward, James E.; and Swan, Leo, 5,184,382, Cl. 29-81.150.

Swanson, Craig K. Seed distribution device. 5,184,559, Cl. 111-11.000.

Swiderski, Kevin J.: *See*—
Wiatt, James G.; Swiderski, Kevin J.; Belcher, Samuel L.; and Smith, Roger D., 5,185,163, Cl. 425-534.000.

Swierski, Thomas. Projected light plumb device. 5,184,406, Cl. 33-227.000.

Swift, Graham: *See*—
Hughes, Kathleen A.; and Swift, Graham, 5,185,412, Cl. 526-210.000.

Switky, Andrew P.; and Chia, Chok J., to National Semiconductor Corporation. O-ring package. 5,185,653, Cl. 257-729.000.

Syma Intercontinental AG: *See*—
Strassle, Marcel, 5,184,920, Cl. 403-171.000.

Syntex (U.S.A.) Inc.: *See*—
Ullman, Edwin F.; Goodman, Thomas C.; and Stull, Paul D., 5,185,243, Cl. 435-6.000.

Szlema, Ingeborg: *See*—
Brandt, Dieter; Szlema, Ingeborg; and Wetz, Hans H., 5,185,000, Cl. 602-63.000.

T Cell Sciences, Inc.: *See*—
Brenner, Michael B.; Seidman, Jonathan; Strominger, Jack L.; Ip, Stephen H.; Krangel, Michael S.; and Band, Hamid, 5,185,250, Cl. 435-69.300.

Tabata, Kenji; Matsumoto, Ikuo; and Fukuda, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Catalytic composite for purifying exhaust gases and a method for preparing the same. 5,185,311, Cl. 502-304.000.

Tabler, Ronald D., to Tensar Corporation, The. Portable snow fence system. 5,184,800, Cl. 256-12.500.

Taguchi, Yasuhisa; Endo, Makoto; Kawamoto, Ryuichi; Saito, Shiro; Zaizen, Reigi; Komachi, Hiroshi; Narita, Naomasa; and Fujiwara, Kenichi, to Inax Corporation & Nippondenso Co., Ltd. Water closet blowing warm air and water closet unit attachable to toilet room. 5,184,355, Cl. 4-420.000.

Tahara, Hideyuki: *See*—
Tanaka, Yasumasa; Nishibayashi, Hideyuki; Tsuchitani, Kouichi; and Tahara, Hideyuki, 5,185,461, Cl. 560-222.000.

Tai, Hwai-Tzuu, to Eastman Kodak Company. Binary resolution decimation method and apparatus. 5,185,674, Cl. 358-457.000.

Taiho Pharmaceutical Company, Ltd.: *See*—
Kawaguchi, Akihiro; Satoh, Atsushi; Kajitani, Makoto; Yasumoto, Mitsugi; and Yamamoto, Junji, 5,185,344, Cl. 514-299.000.

Taiwan Charwell Enterprise Co., Ltd.: *See*—
Huang, Mien-Cheng, 5,184,835, Cl. 280-47.371.

Tajika, Hiroshi: *See*—
Koitabashi, Noribumi; Tajika, Hiroshi; Hirabayashi, Hiromitsu; and Ikeda, Masami, 5,185,615, Cl. 346-1.100.

Takada, Kaoruko, legal heir: *See*—
Fujii, Setsuro, deceased; Takada, Kaoruko, legal heir; Ishikawa, Hiroshi; Tsubouchi, Hidetsugu; and Jitsukawa, Koichiro, 5,185,337, Cl. 514-254.000.

Takada, Shigeru, to Mitsuba Electric Mfg. Co., Ltd. Ventilation structure in a vertically mounted motor. 5,185,544, Cl. 310-58.000.

Takagi, Koichi: *See*—
Shigematsu, Takashi; Imamizo, Seiichi; Takagi, Koichi; Ohta, Toshihiko; and Yamakawa, Jun, 5,185,825, Cl. 385-20.000.

Takahashi, Atsuhisa: *See*—
Murayama, Masami; Takahashi, Atsuhisa; Kakuma, Satoshi; and Yoshimura, Shuji, 5,185,743, Cl. 370-110.100.

Takahashi, Hirokazu, to Canon Kabushiki Kaisha. Recording and/or reproducing apparatus. 5,185,682, Cl. 360-78.040.

Takahashi, Hiroyuki, to Takigen Manufacturing Co., Ltd. Key switch assembly. 5,184,490, Cl. 70-277.000.

Takahashi, Hiroyuki: *See*—
Kaku, Ryoji; Takahashi, Hiroyuki; and Asami, Eiichi, 5,185,823, Cl. 385-2.000.

Takahashi, Kazuo, to Takahashi, Kazuo; Mitsubishi Corporation; and Mutsu Seika Co., Ltd., part interest to each. Method for operating a reduced-pressure multi-fryer system. 5,185,168, Cl. 426-233.000.

Takahashi, Noriyuki; Nishizawa, Kazunori; Takashi, Rinichi; Sakai, Naofumi; Tanabe, Yukiharu; and Yasue, Nobuhiro, to Hitachi, Ltd.; and Hitachi Software Engineering Co., Ltd. Database generation management method and system. 5,185,887, Cl. 395-600.000.

Takahashi, Sakae; Maezima, Mamoru; and Takahashi, Yuji, to Mazda Motor Corporation. Assembly line construction and method for assembling automotive vehicle bodies. 5,184,766, Cl. 228-4.100.

Takahashi, Shigeo: *See*—
Ayuta, Tokuichi; Takahashi, Shigeo; and Hirose, Takao, 5,185,837, Cl. 385-81.000.

Takahashi, Shinichi, to Pioneer Electronic Corporation. Optical data recording and reproducing apparatus including optical detector for detecting light beams reflected by a plane parallel plate and then diffracted by a diffraction grating. 5,185,731, Cl. 369-44.230.

Takahashi, Taketo; Watanabe, Tsunehiro; Nishii, Teruyuki; and Ueno, Yasuhide, to Canon Kabushiki Kaisha. Communication apparatus for detecting a calling signal from a line, for detecting a data communication signal from a calling station, and for generating a quasi-calling tone. 5,185,783, Cl. 379-93.000.

Takahashi, Toshio: *See*—
Hayase, Yoshio; Kataoka, Takahiro; Takenaka, Hideyuki; Ichinari, Mitsuhiro; Masuko, Michio; Takahashi, Toshio; and Tanimoto, Norihiko, 5,185,342, Cl. 514-274.000.

Takahashi, Yuji: *See*—
Takahashi, Sakae; Maezima, Mamoru; and Takahashi, Yuji, 5,184,766, Cl. 228-4.100.

Takalo, Pasi; Kinnari, Pekka; Henriksson, Mikko; Nikku, Tapani; and Myllymaki, Hannu, to Partek Concrete Oy Ab. Method and equipment for transferring concrete slabs. 5,184,924, Cl. 408-67.000.

Takamasa, Hattori. Sprinkler head. 5,184,683, Cl. 169-37.000.

Takanashi, Itsuo; Nakagaki, Shintaro; Negishi, Ichiro; and Asakura, Tsutou, to Victor Company of Japan, Ltd. Method of information conversion and apparatus thereof. 5,185,617, Cl. 346-108.000.

Takashi, Rinichi: *See*—
Takahashi, Noriyuki; Nishizawa, Kazunori; Takashi, Rinichi; Sakai, Naofumi; Tanabe, Yukiharu; and Yasue, Nobuhiro, 5,185,887, Cl. 395-600.000.

Takashima, Hiroyuki: *See*—
Ogake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Shimizu, Teruo; Yamamoto, Narihito; and Uenoyama, Hiroyuki, 5,185,091, Cl. 252-56.500.

Takatori, Sunao; Kumagai, Ryohei; Matsumoto, Koji; and Yamamoto, Makoto, to Yozan, Inc. Method of selecting characeteristics data for a data processing system. 5,185,816, Cl. 382-34.000.

Takatsuka, Toru: *See*—
Muto, Tsunehisa; Kanegae, Futoshi; Takatsuka, Toru; Hirohama, Seiya; and Ojiro, Masazumi, 5,185,481, Cl. 568-918.000.

Takayama, Yuuji; Matsueda, Hirokazu; Sugiura, Masato; Ozaki, Tatsuhiko; Wada, Hirotaka; and Komiya, Iwao, to Takemoto Yushi, Kabushiki Kaisha. Polymerizable compositions and in-mold cured products using same. 5,185,417, Cl. 526-301.000.

Takeda, Fumio; Kojima, Yoshio; Kaneko, Tsuneo; Ishibashi, Yutaka; Sasaki, Naoto; and Tsushima, Isako, to Kabushiki Kaisha Toshiba. Interior panel unit for permitting arrangement of cables and devices on room floor. 5,184,438, Cl. 52-221.000.

Takeda, Mamoru; Tamura, Tatsuhiko; and Hotta, Sadayoshi, to Matsushita Electric Industrial Co., Ltd. Active matrix liquid crystal display apparatus and method of producing the same. 5,185,601, Cl. 340-784.000.

Takeda, Toshihiko: *See*—
Nomura, Ichiro; Takeda, Toshihiko; Banno, Yoshikazu; Kaneko, Tetsuya; Ono, Haruhito; and Suzuki, Hidetoshi, 5,185,554, Cl. 313-495.000.

Takemoto Yushi, Kabushiki Kaisha: *See*—
Takayama, Yuuji; Matsueda, Hirokazu; Sugiura, Masato; Ozaki, Tatsuhiko; Wada, Hirotaka; and Komiya, Iwao, 5,185,417, Cl. 526-301.000.

Takenaka, Hideyuki: *See*—
Hayase, Yoshio; Kataoka, Takahiro; Takenaka, Hideyuki; Ichinari, Mitsuhiro; Masuko, Michio; Takahashi, Toshio; and Tanimoto, Norihiko, 5,185,342, Cl. 514-274.000.

Takeo, Hiroshi: *See*—
Iguchi, Kazuo; Takeo, Hiroshi; Amemiya, Shigeo; and Tezuka, Koji, 5,185,741, Cl. 370-110.100.

Takeuchi, Kesatoshi, to Seiko Epson Corporation. Phase locked loop (PLL) circuit having enhanced frequency selection range. 5,185,584, Cl. 331-25.000.

Takeyama, Junichi: *See*—
Yamazaki, Shunpei; Hayashi, Shigenori; Ishida, Noriya; Sasaki, Mari; Takeyama, Junichi; Itou, Kenji; Kojima, Masahiro; and Kadono, Masaya, 5,185,179, Cl. 427-601.000.

Takigen Manufacturing Co., Ltd.: *See*—
Takahashi, Hiroyuki, 5,184,490, Cl. 70-277.000.

Takiguchi, Ryohei: *See*—
Egashira, Noritaka; Nakamura, Yoshinori; and Takiguchi, Ryohei, 5,185,316, Cl. 503-227.000.

Talk To Me Products, Inc.: *See*—
Amron, Alan B., 5,184,756, Cl. 222-79.000.

Tallon, Joseph C. Method and apparatus for exterminating structure infestations. 5,184,419, Cl. 43-132.100.

Tamagawa, Shigehisa: *See*—
Serizawa, Shinichiro; and Tamagawa, Shigehisa, 5,185,202, Cl. 428-335.000.

Tamai, Yoshin: *See*—
Asanuma, Goro; and Tamai, Yoshin, 5,185,470, Cl. 568-341.000.

Tambrands Inc.: *See*—
Brown, Robert W., Jr., 5,185,010, Cl. 604-379.000.

Tamglass Engineering OY: *See*—
Lehto, Esko O.; and Vehmas, Jukka H., 5,185,022, Cl. 65-182.200.

Tamme, Rainer; and Kanwischer, Herbert, to Deutsche Forschungsanstalt fuer Luft- und Raumfahrt e.V. Heat accumulator with chemical solid matter/gas storage reactions. 5,184,669, Cl. 165-10.000.

Tamura, Tatsuhiko: *See*—
Takeda, Mamoru; Tamura, Tatsuhiko; and Hotta, Sadayoshi, 5,185,601, Cl. 340-784.000.

Tanabe, Mamoru; Yokota, Motoyuki; Fujiki, Sohei; and Sui, Masaru, to Marugo Rubber Industries, Ltd. Fluid damped elastomeric bushing. 5,184,803, Cl. 267-140.120.

Tanabe, Yukiharu: *See*—
Takahashi, Noriyuki; Nishizawa, Kazunori; Takashi, Rinichi; Sakai, Naofumi; Tanabe, Yukiharu; and Yasue, Nobuhiro, 5,185,887, Cl. 395-600.000.

Tanaka, Ban: *See*—
Nakatsukasa, Sadayoshi; Fujii, Toshihiro; Tanaka, Ban; and Yamada, Kosaku, 5,185,234, Cl. 430-284.000.

Tanaka, Isao: *See*—
Yoshimatsu, Kentaro; Ohya, Yukio; Shikata, Yasushi; Tanaka, Isao; Hasegawa, Yoshikazu; Seto, Toshio; and Osawa, Toshio, 5,185,431, Cl. 530-351.000.

Tanaka, Koichi: *See*—
Mikami, Akiyoshi; Terada, Kousuke; Okibayashi, Katsushi; Tanaka, Koichi; Yoshida, Masaru; and Nakajima, Shigeo, 5,185,181, Cl. 427-69.000.

Tanaka, Kunimaro; Ozaki, Minoru; Kiyose, Yoshihiro; and Ito, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Optical recording system with error correction and data recording distributed across multiple disk drives. 5,185,746, Cl. 371-40.100.

Tanaka, Ryohei: *See*—
Murata, Yasuyuki; Konishi, Isako; Tanaka, Ryohei; and Nakanishi, Yoshinori, 5,185,388, Cl. 523-466.000.

Tanaka, Shinzo; and Yamaki, Syuichi, to Fujitsu Ltd. Displacement magnifying mechanism for a print element. 5,184,901, Cl. 400-124.000.

Tanaka, Shiro: *See*—
Nakagawa, Takahiro; and Tanaka, Shiro, 5,185,166, Cl. 426-74.000.

Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Ishikawa, Hideo; Matsumura, Sowjun; Chiba, Tadashi; Asakawa, Kiyoshi; and Oohora, Syoichi, to Daido Metal Company Ltd.; and C. Uyemura & Company, Ltd. Composite plating film for sliding member. 5,185,216, Cl. 428-614.000.

Tanaka, Yasumasa; Nishibayashi, Hideyuki; Tsuchitani, Kouichi; and Tahara, Hideyuki, to Nippon Shokubai Co., Ltd. Process for preparing 2-aminoethyl esters of methacrylic acid. 5,185,461, Cl. 560-222.000.

Tanaka, Yoshiaki: *See*—
Hara, Kozo; Sanada, Tsuyoshi; Tanaka, Yoshiaki; and Nihashi, Kiyotaka, 5,184,904, Cl. 400-320.000.

Tanaka, Yuzuru; Yamamoto, Akira; and Tsuchida, Masashi, to Hitachi, Ltd.; and Tanaka, Yuzuru. Method and apparatus for data merging-/sorting and searching using a plurality of bit-sliced processing units. 5,185,888, Cl. 395-600.000.

Tandem Computers, Inc.: *See*—
Lenoski, Daniel E., 5,185,870, Cl. 395-375.000.

Tandy Corporation: *See*—
Wakeland, Carl K., 5,185,655, Cl. 358-13.000.

Tang, Reginald T.; Mares, Frank; Boyle, William J., Jr.; Chiu, Tin-Ho; and Patel, Kundan M., to Allied-Signal Inc. Medical devices fabricated totally or in part from copolymers of recurring units derived from cyclic carbonates and lactides. 5,185,408, Cl. 525-415.000.

Tanigaki, Naoko; Furukawa, Kayoko; Sogabe, Yukihiro; and Emi, Shigenori, to Toyo Boseki Kabushiki Kaisha. Thermostable xanthine oxidase from *Arthrobacter luteus*. 5,185,257, Cl. 435-191.000.

Tanigawa, Shogo; Yokoyama, Takeshi; and Izawa, Yoshikazu, to Mitsui Engineering & Shipbuilding Co., Ltd. Gas-liquid contact apparatus. 5,185,017, Cl. 55-257.200.

Tanimoto, Norihiko: *See*—
Hayase, Yoshio; Kataoka, Takahiro; Takenaka, Hideyuki; Ichinari, Mitsuhiro; Masuko, Michio; Takahashi, Toshio; and Tanimoto, Norihiko, 5,185,342, Cl. 514-274.000.

Tapp, Allan G., to Svedala Industries Canada, Inc. Centrifugal thrower apparatus. 5,184,714, Cl. 198-641.000.

Tayefeh, Morovat: *See*—
Finkelstein, Blair I.; Tayefeh, Morovat; and Ueno, Hideo, 5,185,733, Cl. 369-54.000.

Taylor, Geoffrey L. Security system method and article for photocopiers and telefax machines. 5,184,849, Cl. 283-67.000.

Taylor, Lucille F.: *See*—
Hartman, Frederick A.; Brown, Donald R.; Rusche, John R.; and Taylor, Lucille F., 5,185,088, Cl. 252-86.000.

Taylor Made Golf Company, Inc.: *See*—
Desboilles, Jack; and Viste, Claude, 5,184,823, Cl. 273-167.00F.

Tazaki, Seiji; Umeda, Nobuhiro; Matsui, Nobuo; Yagihara, Tomio; and Mikuma, Katsunori, to Nippon Soda Co., Ltd. Aminoacetonitrile derivatives. 5,185,460, Cl. 558-392.000.

Tazawa, Kenji: *See*—
Sato, Hiromitsu; Tazawa, Kenji; and Aoyama, Toshimi, 5,185,235, Cl. 430-331.000.

TDK Corporation: *See*—
Shibahara, Masanori; Nakayama, Masatoshi; and Ueda, Kunihiro, 5,185,067, Cl. 427-523.000.

Team Scarab, Inc.: *See*—
Robbins, Warren H.; and Smith, Lawrence C., 5,184,564, Cl. 114-270.000.

Tebbe, Gerhard, to Fichtel & Sachs Ag. Motor vehicle drive line torsional vibration damper. 5,185,543, Cl. 310-51.000.

Technophone Ltd.: *See*—
Farahati, Nader, 5,185,747, Cl. 371-43.000.

Techpack International, TPI Societe Anonyme: *See*—
Chevassus, Alain; and Fraillon, Patrick, 5,184,741, Cl. 215-331.000.

Tecumseh Products Company: *See*—
Buchholz, Brian S., 5,184,586, Cl. 123-182.100.

Teich Aktiengesellschaft: *See*—
Jud, Wilfried; Reiterer, Franz; and Neiderer, Andreas, 5,184,771, Cl. 229-87.050.

Teigen, Jerry T.; and Villella, Paul A., to Dorso Trailer Sales Inc. Counter-balance device with strap for articulated doors. 5,184,864, Cl. 296-24.100.

VOL 1147 ISS 2 FE 9 1993 UMI

Tektronix, Inc.: *See*—
Doornink, Douglas J.; Knierim, David L.; and Dalrymple, John C., 5,185,599, Cl. 340-747.000.
Trent, William A.; McDonald, Kevin B.; and Bell, Florian G., 5,185,635, Cl. 356-73.100.
Trent, William A.; and Marineau, Mark, 5,185,874, Cl. 395-400.000.

Telectronics Pacing Systems, Inc.: *See*—
Collins, Kenneth A.; Maker, Philip J.; and Walker, Matthew S., 5,184,614, Cl. 128-419.0PG.
Nappholz, Tibor A.; Dawson, Albert K.; Lu, Richard M. T.; and Steinhaus, Bruce M., 5,184,615, Cl. 128-419.0PG.
Weiss, Steven M., 5,184,616, Cl. 128-419.000.

Telefonaktiebolaget L M Ericsson: *See*—
Hammarberg, Lars E.; and Eriksson, Tomas A., 5,185,767, Cl. 375-110.000.

TeleRobotics International, Inc.: *See*—
Zimmermann, Steven D., 5,185,667, Cl. 358-209.000.

Temple, Stephen; and Speakman, Stuart, to Xaar Limited. Method of forming a pattern on a surface. 5,185,055, Cl. 156-630.000.

Temple University: *See*—
Gewirtz, Alan M., 5,185,323, Cl. 514-12.000.

Teng, Nelson N. H.: *See*—
Senyei, Andrew E.; and Teng, Nelson N. H., 5,185,270, Cl. 436-510.000.

Tennies, Charles J.; Beihoff, Bruce C.; Hastings, Jerome K.; Clarey, Robert J.; and O'Neil, Walter K., to Eaton Corporation. Field sensing arc detection. 5,185,685, Cl. 361-45.000.

Tennies, Charles J.: *See*—
Beihoff, Bruce C.; Tennies, Charles J.; Richards, Francis S., Jr.; and O'Neil, Walter K., 5,185,684, Cl. 361-45.000.
Beihoff, Bruce C.; Tennies, Charles J.; Richards, Francis S., Jr.; and O'Neil, Walter K., 5,185,687, Cl. 361-45.000.
Hansen, James E.; Beihoff, Bruce C.; Tennies, Charles J.; and Richards, Francis S., Jr., 5,185,686, Cl. 361-45.000.

Tensar Corporation, The: *See*—
Tabler, Ronald D., 5,184,800, Cl. 256-12.500.

Terada, Akihiro: *See*—
Torii, Nobutoshi; Ito, Susumu; Terada, Akihiro; and Sasaki, Yasuo, 5,185,512, Cl. 219-121.780.

Terada, Kousuke: *See*—
Mikami, Akiyoshi; Terada, Kousuke; Okibayashi, Katsushi; Tanaka, Kcichi; Yoshida, Masaru; and Nakajima, Shigeo, 5,185,181, Cl. 427-69.000.

Terek, Greg P.: *See*—
Andrews, Howard W., Jr.; Delmerico, Paul E.; and Terek, Greg P., 5,184,836, Cl. 280-79.500.

Terry, Stephen C.; and Jerman, John H., to IC Sensors, Inc. Single diaphragm transducer with multiple sensing elements. 5,184,515, Cl. 73-727.000.

Tessari, James E.: *See*—
Chinnaswamy, Kumar; Gagliardo, Michael A.; Lynch, John J.; and Tessari, James E., 5,185,875, Cl. 395-425.000.

Tessmer, Robert A.: *See*—
Chung, Ding Y.; Gam, Allisa; and Tessmer, Robert A., 5,185,065, Cl. 204-181.400.

TEX Corporation: *See*—
Leggett, Ernest W., 5,185,780, Cl. 379-34.000.

Texaco Chemical Company: *See*—
Kanluen, Ratana; and Lichi, Brigitte H., 5,185,385, Cl. 522-84.000.
Sanderson, John R.; and Knifton, John F., 5,185,480, Cl. 568-913.000.

Texas Instruments Incorporated: *See*—
Guttag, Karl M.; Asal, Michael; Simpson, Richard; Preston, Thomas; and Sharkey, John, 5,185,859, Cl. 395-164.000.
Houston, Theodore W.; and Pollack, Gordon P., 5,185,280, Cl. 437-44.000.
Love, Andrew M.; and Kersh, David V., III, 5,185,721, Cl. 365-189.060.
Moslehi, Mehrdad M., 5,184,398, Cl. 29-825.000.
Ward, Phillip W.; Scott, H. Logan; Holmes, Jerry D.; and LaPadula, Leonard J., 5,185,610, Cl. 342-357.000.

Tezuka, Koji: *See*—
Iguchi, Kazuo; Takeo, Hiroshi; Amemiya, Shigeo; and Tezuka, Koji, 5,185,741, Cl. 370-110.100.

Thauront, Jacques: *See*—
Frayssc, Guy; and Thauront, Jacques, 5,184,950, Cl. 432-13.000.

Theis, Jurgen: *See*—
Coutandin, Jochen; Theis, Jurgen; Groh, Werner; and Brockmeyer, Andreas, 5,185,832, Cl. 385-43.000.

Theobald, Thomas, to ITW-Ateco GmbH. Carrier device. 5,184,862, Cl. 294-145.000.

Theodor Kromer GmbH & Co. KG Spezialfabrik Fur Sicherheitsschlosser: *See*—
Schittenhelm, Rudolf, 5,184,491, Cl. 70-278.000.

THERA Patent GmbH & Co., KG: *See*—
Koran, Peter; Gasser, Oswald; and Guggenberger, Rainer, 5,185,184, Cl. 427-299.000.

Thieler, Stephen M.: *See*—
Bales, Bruce M.; Crumpley, Robert L.; North, Sandra S.; and Thieler, Stephen M., 5,185,742, Cl. 370-110.100.

Thiollet, Gerard: *See*—
Delpuech, Jean-Jacques; Matos, Louis; Moumni, El Mostafa; Ravey, Jean-Claude; Selve, Claude; Serratrice, Guy; Stebe, Marie-Jose ; Cambon, Aime ; and Thiollet, Gerard, 5,185,099, Cl. 252-315.100.

Thirumalai, Ajai: *See*—
Bissett, Thomas D.; Bruckert, William; Thirumalai, Ajai; and Amirmokri, Jay, 5,185,877, Cl. 395-425.000.

THK Co., Ltd.: *See*—
Kito, Fusao, 5,184,898, Cl. 384-43.000.

Thoer, Jean C. Beach cleaning machine. 5,184,916, Cl. 405-128.000.

Thole, Volker, to Fraunhofer-Gesellschaft zur Forderung der Angewandten Forschung e.V. Flat extrusion method for manufacturing inorganically or organically bonded wooded materials, especially multilayer panels. 5,185,115, Cl. 264-113.000.

Tholen, Leo: *See*—
Brockmanns, Karl-Josef; Derichs, Josef; Wey, Edmund; Grecksch, Hans; Tholen, Leo; and Lassmann, Manfred, 5,184,786, Cl. 242-45.000.

Thomas, Brian: *See*—
Bagchi, Pranab; Edwards, James L.; Smith, Wendell F., Jr.; and Thomas, Brian, 5,185,230, Cl. 430-138.000.

Thomas Industries Inc., Builders Brass Works Division: *See*—
O'Brien, James, 5,184,852, Cl. 292-40.000.

Thomas, James E.: *See*—
Crewe, F. Coates; and Thomas, James E., 5,184,697, Cl. 182-153.000.

Thomas Jefferson University: *See*—
Heimer, Ralph, 5,185,245, Cl. 435-7.100.

Thomas, Raymond H. P.; Chen, Ruth H.; Pham, Hang T.; and Wilson, David P., to Allied-Signal Inc. Lubricants useful with 1,1-dichloro-2,2,2-trifluoroethane. 5,185,089, Cl. 252-37.700.

Thompson, John R.; Hunting, C. J.; Phipps, William L.; Raynesford, Steven J.; and Rittmueller, Philip H., to NEC Home Electronics, Ltd. System and method for scrambling and/or descrambling a video signal. 5,185,794, Cl. 380-17.000.

Thompson, Melvin R.: *See*—
Coons, Andrew M., III; King, Willis M.; Dickerson, Joe B.; and Thompson, Melvin R., 5,184,381, Cl. 28-271.000.

Thomson Composants Microondes: *See*—
Tung, Pham N.; and Chapuis, Martine, 5,185,277, Cl. 437-39.000.

Thorne, Hal A.: *See*—
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Tiley, Edward P.: *See*—
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,185,456, Cl. 546-264.000.

Tillhon, Engelbert: *See*—
Pischke, Jurgen; and Tillhon, Engelbert, 5,184,841, Cl. 280-707.000.

Timm, Gerald W.: *See*—
Erickson, Richard A.; and Timm, Gerald W., 5,184,629, Cl. 128-885.000.

Tirpak, Robin E.; Markusch, Peter H.; and Sarpeshkar, Ashok M., to Miles Inc. Aqueous polyisocyanate dispersions with reduced isocyanate contents and their use for the production of fiberglass mats. 5,185,200, Cl. 428-288.000.

Tobey, Robert A.: *See*—
Crissman, Harry A.; Gadbois, Donna M.; Tobey, Robert A.; and Bradbury, E. Morton, 5,185,260, Cl. 435-244.000.

Toda, Haruki, to Kabushiki Kaisha Toshiba. Image memory. 5,185,724, Cl. 365-234.000.

Todd, Thomas; and Skinner, Todd B., to Toddco General, Inc. Robotic arm tool mounting apparatus. 5,185,509, Cl. 219-85.160.

Toddco General, Inc.: *See*—
Todd, Thomas; and Skinner, Todd B., 5,185,509, Cl. 219-85.160.

Toedtli, Sergej; and Beeler, Alfred, to Siegfried Peyer AG. Fiber sample holder. 5,185,639, Cl. 356-245.000.

Togawa, Yoshiaki: *See*—
Igushi, Tatsuo; and Togawa, Yoshiaki, 5,185,641, Cl. 356-336.000.

Tokita, Masakazu: *See*—
Yamashita, Kyoji; Yoshikawa, Ryoichi; and Tokita, Masakazu, 5,185,812, Cl. 382-8.000.

Tokyo Electric Co., Ltd.: *See*—
Hara, Kozo; Sanada, Tsuyoshi; Tanaka, Yoshiaki; and Nihashi, Kiyotaka, 5,184,904, Cl. 400-320.000.
Yamaguchi, Yasuyoshi, 5,184,734, Cl. 209-657.000.

Tokyo Ohka Kogyo Co., Ltd.: *See*—
Sato, Hiromitsu; Tazawa, Kenji; and Aoyama, Toshimi, 5,185,235, Cl. 430-331.000.

Tomashauser, Josef; and Zodrow, Rudolf, to ETI-TEC Maschinenbau GmbH. Brushing station for a labelling machine for labelling bottles and the like. 5,185,053, Cl. 156-487.000.

Tomberlin, Rand K. Selective free rotation yo-yo. 5,184,972, Cl. 446-250.000.

Tomen America Inc.: *See*—
Murai, Naobumi; and Kurokawa, Tadashi, 5,184,486, Cl. 68-175.000.

Tomidokoro, Yoshinori: *See*—
Yoshino, Hiroyuki; and Tomidokoro, Yoshinori, 5,185,696, Cl. 364-408.000.

Tomizawa, Hirotaka: *See*—
Fukuda, Masaaki; Tomizawa, Hirotaka; Ohta, Mitsuo; Osaka, Hideki; Ogano, Satoshi; Satoh, Takehisa; Ashibe, Kenji; and Nomura, Takeshi, 5,185,092, Cl. 252-56.00S.

Tomoda, Takashi: *See*—
Miyamoto, Noritaka; and Tomoda, Takashi, 5,185,217, Cl. 428-627.000.

Tomomoto, Tamako: *See*—
Katano, Kiyoaki; Tomomoto, Tamako; Ogino, Hiroko; Hirano, Fumiya; Yuda, Yasukatsu; Konno, Fukio; Machinami, Tomoya; Tsuruoka, Takashi; and Inoye, Shigeharu, 5,185,347, Cl. 514-322.000.

Tomozawa, Kikuo, to Oki Electric Industry Co., Ltd. Variable frequency dividing circuits. 5,185,770, Cl. 377-47.000.

Tomura, Hidesuke, to Kabushiki Kaisha Toshiba. Ultrasonic diagnosing apparatus. 5,184,622, Cl. 128-660.070.

Tonen Corporation: *See*—
Fukuda, Masaaki; Tomizawa, Hirotaka; Ohta, Mitsuo; Osaka, Hideki; Ogano, Satoshi; Satoh, Takehisa; Ashibe, Kenji; and Nomura, Takeshi, 5,185,092, Cl. 252-56.00S.

Tonen Sekiyukagaku K.K.: *See*—
Itaba, Yasushi; Izawa, Minoru; Saito, Keichiro; and Kondo, Takayoshi, 5,185,203, Cl. 428-349.000.

Tonge, Lauren M.: *See*—
Wessels, Bruce W.; Marks, Tobin J.; Richeson, Darrin S.; Tonge, Lauren M.; and Zhang, Jiming, 5,185,317, Cl. 505-1.000.

Toomey, Thomas J.: *See*—
Conzola, Vincent C.; Rittenhouse, Norman E.; Solomon, Jeffrey M.; Toomey, Thomas J.; and Yablonsky, Peter J., 5,185,638, Cl. 356-237.000.

Torell AB: *See*—
Hedman, Erik; and Hedman, Rolf, 5,184,673, Cl. 165-153.000.

Torii, Nobutoshi; Ito, Susumu; Terada, Akihiro; and Sasaki, Yasuo, to Fanuc Ltd. Laser robot with heat eliminating means. 5,185,512, Cl. 219-121.780.

Toshiba Ceramics Co., Ltd.: *See*—
Saito, Hajime; Nagashima, Hideo; Matsushita, Junichi; and Hayashi, Shinsuke, 5,185,112, Cl. 264-63.000.

Toshiba Machine Co., Ltd.: *See*—
Yamashita, Kyoji; Yoshikawa, Ryoichi; and Tokita, Masakazu, 5,185,812, Cl. 382-8.000.

Toshida, Yomishi; Yoshinaga, Kazuo; and Sato, Koichi, to Canon Kabushiki Kaisha. Polymeric liquid-crystalline compound, liquid-crystal composition containing it, and liquid-crystal drive. 5,185,097, Cl. 252-299.010.

Toto Ltd.: *See*—
Tsukamura, Naoki; Alyfuku, Kiyoshi; Nakamura, Yuzuru; Hiruta, Yoshiki; and Tsuboi, Hiroshi, 5,184,359, Cl. 4-661.000.

Totten, Patty L.; Lindsey, Donald W.; and King, Bobby J., to Halliburton Company. High temperature well cement compositions and methods. 5,184,680, Cl. 166-293.000.

Townsend, Boyd E. Cover for an x-ray cassette. 5,185,776, Cl. 378-167.000.

Toyama Chemical Co., Ltd.: *See*—
Ochiai, Hirokazu; Watanabe, Yasuo; Murotani, Yoshiharu; Fukuda, Hirohiko; Yoshino, Osamu; Minami, Shinzaburo; Hayashi, Toshio; and Momonoi, Kaishu, 5,185,330, Cl. 514-142.000.

Toyo Boseki Kabushiki Kaisha: *See*—
Tanigaki, Naoko; Furukawa, Kayoko; Sogabe, Yukihiro; and Emi, Shigenori, 5,185,257, Cl. 435-191.000.

Toyo Communication Equipment Co., Ltd.: *See*—
Morita, Takao; Ishii, Osamu; and Kurosaki, Takebumi, 5,185,550, Cl. 310-344.000.

Toyo Ink Mfg. Co., Ltd.: *See*—
Usui, Shiro; Nakauchi, Shigeki; and Nakano, Masae, 5,185,850, Cl. 395-22.000.

Toyo Sangyo Co., Ltd.: *See*—
Arai, Toshimitsu, 5,184,858, Cl. 294-64.100.

Toyota Jidosha Kabushiki Kaisha: *See*—
Miyamoto, Noritaka; and Tomoda, Takashi, 5,185,217, Cl. 428-627.000.
Watanabe, Atsushi, 5,184,526, Cl. 74-861.000.

Tran, Thang M., to Advanced Micro Devices, Inc. Apparatus having hierarchically arranged decoders concurrently decoding instructions and shifting instructions not ready for execution to vacant decoders higher in the hierarchy. 5,185,868, Cl. 395-375.000.

Trani, Aldo; Seneci, Pierfausto; Ferrari, Pietro; and Ciabatti, Romeo, to Gruppo Lepetit S.p.A. O^{56}-alkyl derivatives of aglycone and pseudo aglycones of teicoplanin. 5,185,320, Cl. 514-8.000.

Trent, William A.; McDonald, Kevin B.; and Bell, Florian G., to Tektronix, Inc. Method of calibrating and controlling the optical power output of an OTDR. 5,185,635, Cl. 356-73.100.

Trent, William A.; and Marineau, Mark, to Tektronix, Inc. Address generator for high speed data averager. 5,185,874, Cl. 395-400.000.

Trevisnani, Gian Luigi, to International Foundations Constructions Ltd. Telescopic bar of drill rig. 5,184,688, Cl. 175-321.000.

Tri-Seal International, Inc.: *See*—
Finkelstein, Harvey, 5,184,801, Cl. 256-34.000.

Tripp, Edward S.: *See*—
Middaugh, James F.; Bryant, Peter L.; Grabenkort, Richard W.; Oswald, Timothy J.; and Tripp, Edward S., 5,185,007, Cl. 604-320.000.

Tritsch, Jean-Claude: *See*—
Caviezel, Gerold; Mertin, Frank; and Tritsch, Jean-Claude, 5,185,336, Cl. 514-251.000.

Triulzi, Giangaleazzo: *See*—
Cinquina, Patrizia; Triulzi, Giangaleazzo; and Garbassi, Fabio, 5,185,429, Cl. 528-503.000.

Tromblee, Jon D.; Gurubatham, Vincent P.; and Peterson, Edward C., to Whirlpool Corporation. Fluid handling system for a dishwasher. 5,184,635, Cl. 134-111.000.

Troue, Harden H.: *See*—
Sue, Jiinjen A.; and Troue, Harden H., 5,185,211, Cl. 428-472.000.

Trumbetas, Jerome: *See*—
Loh, Jimbay; Trumbetas, Jerome; Palmer, David H.; and Fitch, Mark D., 5,185,175, Cl. 426-631.000.

TRW Inc.: *See*—
Ferguson, David L., 5,185,042, Cl. 136-244.000.
Miller, Laurence L., 5,184,693, Cl. 180-143.000.
Vaillancourt, Steven; and Wade, Cameron B., 5,185,720, Cl. 365-189.020.

TRW Repa GmbH: *See*—
Berger, Jurgen; and Lang, Norbert, 5,184,843, Cl. 280-728.000.

TRW Vehicle Safety Systems Inc.: *See*—
Blackburn, Brian K.; and Gentry, Scott B., 5,185,701, Cl. 364-425.000.
Goetz, George W., 5,184,846, Cl. 280-736.000.

Tsubakimoto Chain Co.: *See*—
Shimaya, Kazuhiko; Miyaji, Masaki; and Inoue, Kozo, 5,184,982, Cl. 474-101.000.
Shimaya, Kazuhiko; and Miyaji, Masaki, 5,184,983, Cl. 474-111.000.

Tsuboi, Hiroshi: *See*—
Tsukamura, Naoki; Alyfuku, Kiyoshi; Nakamura, Yuzuru; Hiruta, Yoshiki; and Tsuboi, Hiroshi, 5,184,359, Cl. 4-661.000.

Tsubouchi, Hidetsugu: *See*—
Fujii, Setsuro, deceased; Takada, Kaoruko, legal heir; Ishikawa, Hiroshi; Tsubouchi, Hidetsugu; and Jitsukawa, Koichiro, 5,185,337, Cl. 514-254.000.

Tsuchida, Masashi: *See*—
Tanaka, Yuzuru; Yamamoto, Akira; and Tsuchida, Masashi, 5,185,888, Cl. 395-600.000.

Tsuchitani, Kouichi: *See*—
Tanaka, Yasumasa; Nishibayashi, Hideyuki; Tsuchitani, Kouichi; and Tahara, Hideyuki, 5,185,461, Cl. 560-222.000.

Tsuchiya, Sohji: *See*—
Yamashita, Akio; Yoshimura, Susumu; and Tsuchiya, Sohji, 5,185,208, Cl. 428-411.100.

Tsujimoto, Shuichi, to Kabushiki Kaisha Toshiba. Document image processing apparatus. 5,185,813, Cl. 382-9.000.

Tsukada, Tokio; Nagayama, Yoji; and Ieiri, Junichiro, to Central Glass Company, Ltd. Antenna on vehicle rear window glass. 5,185,612, Cl. 343-713.000.

Tsukada, Toru, to NSK Ltd. Cap for rail mounting hole of linear guide device. 5,184,928, Cl. 411-371.000.

Tsukamoto, Takeo: *See*—
Shimoda, Isamu; Tsukamoto, Takeo; Shimizu, Akira; Suzuki, Akira; Sugata, Masao; and Okunuki, Masahiko, 5,185,559, Cl. 315-107.000.

Tsukamura, Naoki; Alyfuku, Kiyoshi; Nakamura, Yuzuru; Hiruta, Yoshiki; and Tsuboi, Hiroshi, to Toto Ltd. Stool-type apparatus for sampling and assay of urine with swingable carriage. 5,184,359, Cl. 4-661.000.

Tsukude, Masaki: *See*—
Arimoto, Kazutami; Fujishima, Kazuyasu; Matsuda, Yoshio; Ooishi, Tsukasa; and Tsukude, Masaki, 5,185,744, Cl. 371-21.200.

Tsuruoka, Takashi: *See*—
Katano, Kiyoaki; Tomomoto, Tamako; Ogino, Hiroko; Hirano, Fumiya; Yuda, Yasukatsu; Konno, Fukio; Machinami, Tomoya; Tsuruoka, Takashi; and Inoye, Shigeharu, 5,185,347, Cl. 514-322.000.

Tsushima, Isako: *See*—
Takeda, Fumio; Kojima, Yoshio; Kaneko, Tsuneo; Ishibashi, Yutaka; Sasaki, Naoto; and Tsushima, Isako, 5,184,438, Cl. 52-221.000.

Tsutsui, Kyoji: *See*—
Miyake, Ryohei; and Tsutsui, Kyoji, 5,185,194, Cl. 428-64.000.

Tumer, Nilgun E., to Monsanto Company. Virus resistant plants. 5,185,253, Cl. 435-172.300.

Tung, Pham N.; and Chapuis, Martine, to Thomson Composants Microondes. Method for the making of a transistor gate. 5,185,277, Cl. 437-39.000.

Turnbull, Christopher S., to Smiths Iodustries Public Limited Company. Tracheal tube assemblies and liners. 5,184,611, Cl. 128-207.140.

Turnbull, Michael D.; Parsons, Robert W.; and Watkins, Andrew D. S., to Imperial Chemical Industries PLC. 1,2 oxazoles used for controlling nematode pests. 5,185,353, Cl. 514-364.000.

Turner, Ralph: *See*—
Farmer, Leonard E.; Stewart, Jeffrey B.; and Turner, Ralph, 5,184,975, Cl. 452-198.000.

Turner, Robert: *See*—
Vavrek, Robert M.; Schaefer, Daniel J.; Myers, Christopher C.; McFarland, Thomas G.; and Turner, Robert, 5,185,576, Cl. 324-318.000.

Tyler, Nelson. Gyroscopically stabilized apparatus. 5,184,521, Cl. 74-5.340.

Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters,

VOL 1147 ISS 2 FE 9 1993 UMI

Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, to Alcatel NA Network Systems Corp. Synchronous optical transmission system. 5,185,736, Cl. 370-55.000.

Tzanev, Nikolay T.: *See—*
Nikolov, Nikolay N.; Tzanev, Nikolay T.; and Pavlov, Pavlin S., 5,184,807, Cl. 254-344.000.

Tzeng, Jeou N.: *See—*
Chen, Jen H.; Tzeng, Jeou N.; and Wu, Jeng-Shyong, 5,184,890, Cl. 362-353.000.

Uchida, Yukimasa, to Kabushiki Kaisha Toshiba. Power circuit for an LSI. 5,185,567, Cl. 323-267.000.

Uchida, Zenjiro, to Sanyo Electric Co., Ltd. Charge control apparatus for use with electronic equipment. 5,185,565, Cl. 320-39.000.

Uchiyama, Yukio: *See—*
Aoki, Kanji; Uchiyama, Yukio; and Midorikawa, Toshiyuki, 5,184,699, Cl. 187-9.00R.

Ueda, Katsuhiko; Suzuki, Toshikazu; and Kinoshita, Norihito, to Matsushita Electric Industrial Co., Ltd. Stored instructions executing type timing signal generating system. 5,185,880, Cl. 395-550.000.

Ueda, Kunihiro: *See—*
Shibahara, Masanori; Nakayama, Masatoshi; and Ueda, Kunihiro, 5,185,067, Cl. 427-523.000.

Ueda, Souichi: *See—*
Aoyama, Hirokazu; Yasuhara, Takashi; Kono, Satoru; Koyama, Satoshi; and Ueda, Souichi, 5,185,483, Cl. 570-172.000.

Ueda, Tsunehisa: *See—*
Hamaguchi, Tetsuo; Ueda, Tsunehisa; and Natsuume, Tadao, 5,185,039, Cl. 106-728.000.

Uemura, Hiroki: *See—*
Oono, Toshio; and Uemura, Hiroki, 5,184,663, Cl. 164-98.000.

Ueno, Fumio; Kasori, Mitsuo; Goto, Yoshiko; and Horiguchi, Akihiro, to Kabushiki Kaisha Toshiba. Method of manufacturing circuit board. 5,184,399, Cl. 29-846.000.

Ueno, Hideo: *See—*
Finkelstein, Blair I.; Tayefeh, Morovat; and Ueno, Hideo, 5,185,733, Cl. 369-54.000.

Ueno, Ryuji: *See—*
Ueno, Ryuzo; Ueno, Ryuji; and Oda, Tomio, 5,185,374, Cl. 514-570.000.

Ueno, Ryuzo; Ueno, Ryuji; and Oda, Tomio, to K.K. Ueno Seiyaku Oyo Kenkyujo. Use of 15-ketoprostaglandin E or F compounds for uterine contraction. 5,185,374, Cl. 514-570.000.

Ueno, Yasuhide: *See—*
Takahashi, Taketo; Watanabe, Tsunehiro; Nishii, Teruyuki; and Ueno, Yasuhide, 5,185,783, Cl. 379-93.000.

Uenoyama, Hiroyuki: *See—*
Ogake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Shimizu, Teruo; Yamamoto, Narihito; and Uenoyama, Hiroyuki, 5,185,091, Cl. 252-56.500.

Ullman, Edwin F.; Goodman, Thomas C.; and Stull, Paul D., to Syntex (U.S.A.) Inc. Method for detection of specific nucleic acid sequences. 5,185,243, Cl. 435-6.000.

Ullrich, Jeffrey F.: *See—*
Moore, David N.; and Ullrich, Jeffrey F., 5,184,746, Cl. 220-256.000.

Um, Gregory, to Aura Systems, Inc. Actuated mirror optical intensity modulation. 5,185,660, Cl. 358-60.000.

Umeda, Nobuhiro: *See—*
Tazaki, Seiji; Umeda, Nobuhiro; Matsui, Nobuo; Yagihara, Tomio; and Mikuma, Katsunori, 5,185,460, Cl. 558-392.000.

Unilever Patent Holdings B.V.: *See—*
Behan, John M.; Ness, Jeremy N.; and Perring, Keith D., 5,185,155, Cl. 424-451.000.

Union Camp Corporation: *See—*
Humphrey, Anthony M.; Skill, Bridget A.; and Kinderlerer, Judith L., 5,185,252, Cl. 435-134.000.

Union Oil Company of California: *See—*
Drake, Charles L., 5,184,507, Cl. 73-151.000.
Young, Donald C., 5,185,151, Cl. 424-400.000.

Unisplay SA: *See—*
Salam, Hassan P. A., 5,185,600, Cl. 340-764.000.

U.S. Divers Co., Inc.: *See—*
Hart, Dennis L., 5,184,609, Cl. 128-205.240.

United States of America
Administrator, National Aeronautics and Space Administration: *See—*
Franciscus, Leo C.; and Brabbs, Theodore A., 5,184,460, Cl. 60-226.100.

Administrator, National Aeronautics & Space Administration: *See—*
Voellmer, George M., 5,184,861, Cl. 294-119.100.

Agriculture: *See—*
Powell, Richard G.; and Petroski, Richard J., 5,185,028, Cl. 504-284.000.

Air Force: *See—*
Ewing, Joseph H.; and Baker, John H. E., II, 5,184,455, Cl. 60-39.020.
McAndrews, Glenn, 5,184,459, Cl. 60-226.300.

Energy: *See—*
Crissman, Harry A.; Gadbois, Donna M.; Tobey, Robert A.; and Bradbury, E. Morton, 5,185,260, Cl. 435-244.000.
Rossing, Thomas D., 5,184,557, Cl. 104-286.000.

Health and Human Services: *See—*
Diodati, Jean G.; and Keefer, Larry K., 5,185,376, Cl. 514-611.000.
Larson, Steven M.; Finn, Ronald; Carrasquillo, Jorge A.; Reynolds, James C.; Neumann, Ronald D.; Graham, Martin C.; and Pentlow, Keith S., 5,185,142, Cl. 424-1.100.
Vavrek, Robert M.; Schaefer, Daniel J.; Myers, Christopher C.; McFarland, Thomas G.; and Turner, Robert, 5,185,576, Cl. 324-318.000.

National Aeronautics and Space Administration: *See—*
Perez, Raul M., 5,185,046, Cl. 156-64.000.
Vasquez, Richard P., 5,185,647, Cl. 257-17.000.

Navy: *See—*
Barrett, Terence W.; and Giuliani, John F., 5,185,131, Cl. 422-91.000.
Watrous, Philip J., 5,184,407, Cl. 33-555.400.

U.S. Environmental Protection Agency: *See—*
Gullett, Brian K., 5,185,134, Cl. 423-240.00R.

U.S. Philips Corporation: *See—*
Baier, Alfred, 5,185,764, Cl. 375-13.000.
Baker, Ian M.; and Dunn, William A. E., 5,185,648, Cl. 257-189.000.
Bakker, Jacobus G. C., 5,185,271, Cl. 437-3.000.
Barbu, Stephane, 5,185,582, Cl. 330-261.000.
Boezen, Hendrik, 5,185,651, Cl. 257-734.000.
Luijks, Gerardus M. J. F.; and Coenen, Hubertus A. M., 5,185,557, Cl. 315-59.000.
Mallart, Raoul, 5,184,623, Cl. 128-661.010.
Overweg, Johannes A., 5,185,575, Cl. 324-309.000.

United Technologies Corporation: *See—*
Benda, John A.; and Blaszuk, Paul R., 5,185,753, Cl. 372-27.000.

University of Bath: *See—*
Sainsbury, Malcolm; and Shertzer, Howard G., 5,185,360, Cl. 514-410.000.

University of Cincinnati: *See—*
Sainsbury, Malcolm; and Shertzer, Howard G., 5,185,360, Cl. 514-410.000.

University of Georgia Research Foundation, Inc.: *See—*
Evans, Donald L.; and Harris, David T., 5,185,430, Cl. 530-350.000.

University of North Carolina: *See—*
Evans, Donald L.; and Harris, David T., 5,185,430, Cl. 530-350.000.

University of Sheffield, The: *See—*
Brown, Brian H.; and Barber, David C., 5,184,624, Cl. 128-734.000.

University of South Florida: *See—*
Owen, Terence C., 5,185,450, Cl. 548-194.000.

University of Southampton, The: *See—*
Evans, John; and Scruton, Steven L., 5,185,462, Cl. 560-232.000.

University of Southern California: *See—*
Rubinstein, Alan I., 5,185,371, Cl. 422-28.000.

University of Tennessee Research Corporation, The: *See—*
Kudsk, Kenneth A., 5,185,322, Cl. 514-12.000.

UOP: *See—*
Cohn, Michelle J.; Lawson, R. Joe; and Moser, Mark D., 5,185,306, Cl. 502-66.000.
Jung, Mary L., 5,184,630, Cl. 132-202.000.

Urabe, Kenzo, to Kokusai Electric Co., Ltd. Quaternary-level waveform generator. 5,185,710, Cl. 364-718.000.

Uramoto, Shinichi: *See—*
Kondoh, Harufusa; and Uramoto, Shinichi, 5,185,538, Cl. 307-270.000.

Urazgildin, Ilyas A.: *See—*
Abdrakhmanov, Gabdrashit S.; Zainullin, Albert G.; Meling, Konstantin V.; Rakhmanov, Rauf N.; Balandin, Alexandr P.; Puzanov, Alexandr A.; Urazgildin, Ilyas A.; Mukhametshin, Almaz A.; Khakimov, Almas K.; Yasas, Antanas A.; Naryshkina, Lutsia M.; Akhunov, Albert M.; Akhunova, Tanzilya K., administrator; Akhunova, Flera A., dministrator; and Akhunov, Farid A., administrator, 5,184,687, Cl. 175-267.000.

Urbach, Hansjorg: *See—*
Ruger, Wolfgang; Urbach, Hansjorg; Ruppert, Dieter; and Scholkens, Bernward, 5,185,324, Cl. 514-18.000.

Urban, Frank J.: *See—*
Godek, Dennis M.; Murtiashaw, Charles W.; Urban, Frank J.; and Vanderplas, Brian C., 5,185,449, Cl. 546-272.000.

Urbish, Glenn F.: *See—*
Hall, Robert S.; Urbish, Glenn F.; and Mullen, William B., III, 5,184,768, Cl. 228-104.000.

Urella, Richard M.: *See—*
Bergin, James T.; and Urella, Richard M., 5,185,807, Cl. 381-183.000.

Urethane Technology, Co., Inc.: *See—*
Regenauer, Gerhard, 5,185,383, Cl. 521-155.000.

Ushigami, Yoshihiro, to Sumitomo Heavy Industries, Inc. Plate straightening machine. 5,184,492, Cl. 72-160.000.

Ushigome, Masahiro: *See—*
Kanda, Shoichi; Narita, Takeshi; Ushigome, Masahiro; and Nagahama, Masaharu, 5,185,393, Cl. 524-140.000.

Ushiku, Yukihiro, to Kabushiki Kaisha Toshiba. Method of manufacturing insulated-gate type field effect transistor. 5,185,279, Cl. 437-41.000.

Ushio, Kazumichi; and Yoshida, Kenichi, to Senju Pharmaceutical Company, Limited. Stable aqueous preparation. 5,185,372, Cl. 514-552.000.

Usui, Shiro; Nakauchi, Shigeki; and Nakano, Masae, to Toyo Ink Mfg. Co., Ltd.; and Usui, Shiro. Color transformation method and apparatus for transforming physical to psychological attribute using a neural network. 5,185,850, Cl. 395-22.000.

USX Corporation: *See—*
McDermott, John F., 5,184,953, Cl. 432-123.000.

Vaillancourt, Steven; and Wade, Cameron B., to TRW Inc. Memory module for use in a large reconfigurable memory. 5,185,720, Cl. 365-189.020.

Valencia, Andrew J., to Sequent Computer Systems, Inc. Cache affinity scheduler. 5,185,861, Cl. 395-200.000.

Valentincic, Tine B.; and Caprio, John T., to Board of Supervisors, Louisiana State University. Bait which contain amino acids for catching ictalurid catfish. 5,185,164, Cl. 426-1.000.

Valesh, Michael L. Retainer pin remover. 5,184,385, Cl. 29-254.000.

Valet, Andreas: *See—*
Meuwly, Roger; Slongo, Mario; and Valet, Andreas, 5,185,445, Cl. 544-216.000.

Valmet-Ahlstrom Inc.: *See—*
Nyman, Tapani, 5,185,064, Cl. 162-301.000.

Valmet Paper Machinery Inc.: *See—*
Aula, Jouko; Liedes, Allan; and Saari, Auvo, 5,185,063, Cl. 162-193.000.

Van den Bergh Foods Co., Division of Conopco, Inc.: *See—*
Bethke, Rolf; and Bode, Jochen, 5,185,173, Cl. 426-549.000.

Van Daele, Georges H. P.; Bosmans, Jean-Paul R. M. A.; and De Cleyn, Michel A. J., to Janssen Pharmaceutica N.V. N-(4-piperodinyl)(dihydrobenzofuran or dihydro-2H-benzopyran) carboxamide derivatives. 5,185,335, Cl. 514-243.000.

van den Berg, Antonie, to SKF Industrial Trading & Development Co. B.V. Method and device for determining the quality of a specific lubricant for application in rolling bearings of a specific type. 5,184,505, Cl. 73-53.050.

van den Nieuwelaar, Adrianus J.: *See—*
Cornelissen, Albertus T. J. J.; and van den Nieuwelaar, Adrianus J., 5,184,974, Cl. 452-160.000.

Vanderplas, Brian C.: *See—*
Godek, Dennis M.; Murtiashaw, Charles W.; Urban, Frank J.; and Vanderplas, Brian C., 5,185,449, Cl. 546-272.000.

van der Tol, Johannes J. G. M., to Koninklijke PTT Nederland N.V. Optical waveguide (TE,TM) mode converter. 5,185,828, Cl. 385-28.000.

Vandervoort, Paul B. Key guide. 5,185,490, Cl. 84-436.000.

van der Woude, Meino Jan. Cleaning lance device for cleaning pipe bundles of heat exchangers. 5,184,636, Cl. 134-167.00C.

Van-Det, Nguyen: *See—*
Robinson, Peter M.; and Van-Det, Nguyen, 5,185,395, Cl. 524-457.000.

Van Gieson, Edward A.: *See—*
Meier, Heinz P.; Van Gieson, Edward A.; and Walter, Willi, 5,185,289, Cl. 437-129.000.

Van Horn, John W.; and Carmen, Ralph H., to Duncan Industries Parking Control Systems Corp. Coin operated timing mechanism. 5,184,707, Cl. 194-204.000.

Van Sice, Daniel G.: *See—*
Kinney, David V.; O'Brien, Vincent J.; and Van Sice, Daniel G., 5,185,626, Cl. 355-55.000.

Van Tilborgh, Cornelis: *See—*
Lefeber, Paul; Botterman, Rene; Van Tilborgh, Cornelis; and Van Veggel, Loek, 5,185,198, Cl. 428-251.000.

Van Veggel, Loek: *See—*
Lefeber, Paul; Botterman, Rene; Van Tilborgh, Cornelis; and Van Veggel, Loek, 5,185,198, Cl. 428-251.000.

VanVonno, Nicolaas W.; and Matlock, Dyer A., to Harris Corporation. Process for forming extremely thin edge-connectable integrated circuit structure. 5,185,292, Cl. 437-180.000.

Van Zeggeren, Wilhelm A., to ITT Corporation. Shock absorber with piston valve for adjustable damping. 5,184,703, Cl. 188-319.000.

Varcoe, Jack A.: *See—*
Bindra, Perminder S.; Cuomo, Jerome J.; Gall, Thomas P.; Ingraham, Anthony P.; Kang, Sung K.; Kim, Jungihl; Lauro, Paul; Light, David N.; Markovich, Voya R.; Miersch, Ekkehard F.; Molla, Jaynal A.; Powell, Douglas O.; Ritsko, John J.; Saxenmeyer, George J., Jr.; Varcoe, Jack A.; and Walker, George F., 5,185,073, Cl. 205-104.000.

Varinelli, Antonio; Varinelli, Marco; and Bianco, Oreste, to Officine Meccaniche Varinelli SpA. Vertical broaching machine with multiple broaches. 5,184,985, Cl. 483-28.000.

Varinelli, Marco: *See—*
Varinelli, Antonio; Varinelli, Marco; and Bianco, Oreste, 5,184,985, Cl. 483-28.000.

Vasquez, Richard. Earthquake indicator light apparatus. 5,184,889, Cl. 362-276.000.

Vasquez, Richard P., to United States of America, National Aeronautics and Space Administration. Long wavelength infrared detector. 5,185,647, Cl. 257-17.000.

Vaughan, David E. W.; and Strohmaier, Karl G., to Exxon Research and Engineering Co. Trivalent transition-metal-aluminosilicate hydrocarbon conversion catalysts having mazzite-like structures, ECR-23-T (C-2491). 5,185,136, Cl. 423-702.000.

Vaughan, David E. W.; and Strohmaier, Karl G., to Exxon Research and Engineering Company. Divalent transition-metal-aluminosilicate hydrocarbon conversion catalysts having mazzite-like structures, ECR-23-D (C-2494). 5,185,137, Cl. 423-702.000.

Vaughan, David E. W.; and Strohmaier, Karl G., to Exxon Research and Engineering Company. Transistion-metal-aluminosilicate hydrocarbon conversion catalysts having an L type structure, ECR-22-D. 5,185,138, Cl. 423-710.000.

Vavrek, Robert M.; Schaefer, Daniel J.; Myers, Christopher C.; McFarland, Thomas G.; and Turner, Robert, to General Electric Company; and United States of America, Health and Human Services. Local gradient coil. 5,185,576, Cl. 324-318.000.

Vehar, Gordon A.: *See—*
Goeddel, David V.; Kohr, William J.; Pennica, Diane; and Vehar, Gordon A., 5,185,259, Cl. 435-226.000.

Vehmas, Jukka H.: *See—*
Lehto, Esko O.; and Vehmas, Jukka H., 5,185,022, Cl. 65-182.200.

Veihl, Michael J.: *See—*
O'Keefe, Lawrence J.; and Veihl, Michael J., 5,184,887, Cl. 312-221.000.

Venet, Marc G.: *See—*
Sanz, Gerard C.; Venet, Marc G.; Freyne, Eddy J. E.; and Raeymaekers, Alfons H. M., 5,185,346, Cl. 514-312.000.

Ventive, Inc.: *See—*
Sherman, Bernard, 5,184,435, Cl. 52-12.000.

Venturini, Claudio, to Alcon Surgical, Inc. Transducer apparatus having water hammer dampening means. 5,185,002, Cl. 604-30.000.

Verbaarschot, Petrus A. A.; Schless, Michel M. C.; and Hultzer, Wim J., to Fokker Aircraft B.V. Primary flight display presenting resolution advisory information provided by a traffic alert and collision avoidance system. 5,185,606, Cl. 340-961.000.

Verheijen, Johannes M.; and Marien, August M., to Agfa-Gevaert, N.V. Process for the production of polyester with enhanced thermo-oxidative stability. 5,185,426, Cl. 528-272.000.

Verhoeven, John D.; and Pendray, Alfred H. Method of making "Damascus" blades. 5,185,044, Cl. 148-546.000.

Verma, Mahendra K.: *See—*
Dowden, Douglas C.; Hemmeter, Richard W.; Herr, Diane E.; McCormick, William K.; Petrelli, Robert; Piereth, Richard J.; Salchenberger, Samuel M.; Sehgal, Chander S.; and Verma, Mahendra K., 5,185,781, Cl. 379-67.000.

Vermeulen-Hollandia Octrooien II B.V.: *See—*
Huyer, Johannes N., 5,185,562, Cl. 318-466.000.

Veronesi, Luciano; Calfo, Raymond M.; and Drake, James A., to Westinghouse Electric Corp. Dual propeller shock resistant submersible propulsor unit. 5,185,545, Cl. 310-114.000.

Verosol USA Inc.: *See—*
Jelic, Ralph, 5,184,660, Cl. 160-171.000.

Vesper, Dale E. Fence wall construction. 5,184,808, Cl. 256-31.000.

Vester, Joachim: *See—*
Wider, Bernhard; Blank, Michael; and Vester, Joachim, 5,184,618, Cl. 128-634.000.

Vesuvius Crucible Company: *See—*
Hoggard, Dale B.; and Robinson, Quentin K., 5,185,300, Cl. 501-99.000.

Vial, Jacques J.; Laroulandie, Pierre-Jean M.; Henry, David; Dannoux, Thierry L. A.; and Gremetz, Sylvain M. F., to Corning Incorporated. Fiber attachment means for integrated optical component. 5,185,835, Cl. 385-49.000.

Vicory, William A.: *See—*
Aberson, James A.; Halupke, Eugene; and Vicory, William A., 5,185,843, Cl. 385-134.000.

Victor Company of Japan, Ltd.: *See—*
Ozaki, Hidetoshi; and Goukura, Akira, 5,185,657, Cl. 358-28.000.
Takanashi, Itsuo; Nakagaki, Shintaro; Negishi, Ichiro; and Asakura, Tsutou, 5,185,617, Cl. 346-108.000.

Victor, Riley, to GemEng, Ltd. Latex modified mortar and concrete. 5,185,389, Cl. 524-2.000.

Victory, Richard F. Motorized air pressure seasoner. 5,184,543, Cl. 99-533.000.

Videocolor S.A.: *See—*
Rousseau, Jean; and Richard, Claude, 5,185,672, Cl. 358-248.000.

Vigano', Vittorio, to Coly S.A.R.L. Device and process for the pressing of sheets during folding. 5,184,999, Cl. 493-435.000.

Villa, Pierre J.; Pieri, Francois; Ronco, Ginolino; and Segard, Emile P. R., to Association Pour La Recherche Therapeutique Anti-Cancereuse. Esters of normal butyric acid and their use as pharmaceuticals. 5,185,436, Cl. 536-4.100.

Villella, Paul A.: *See—*
Teigen, Jerry T.; and Villella, Paul A., 5,184,864, Cl. 296-24.100.

Villeneuve, Richard R.: *See—*
Lapidus, Stanley N.; Kamen, Dean; Villeneuve, Richard R.; and Polk, Lewis T., Jr., 5,185,084, Cl. 210-741.000.

Villiger, Alois: *See—*
Buchecker, Richard; Schadt, Martin; and Villiger, Alois, 5,185,098, Cl. 252-299.630.

Vining, John E., Sr.: *See—*
Anderson, Robert M.; Vining, John E., Sr.; and Patton, Lloyd L., Sr., 5,185,041, Cl. 134-25.100.

Viste, Claude: *See—*
Desboilles, Jack; and Viste, Claude, 5,184,823, Cl. 273-167.00F.

Voccia, Paul: *See—*
Volk, Kenneth H.; Volk, Douglas A.; Voccia, Paul; and Lewis, William D., 5,184,998, Cl. 493-176.000.

Voellmer, George M., to United States of America, Administrator, National Aeronautics & Space Administration. Split rail gripper assembly and tool driver therefor. 5,184,861, Cl. 294-119.100.

Vogel, Robert A.; Berthiaume, William A.; and Bertrand, Carol A., to C. R. Bard, Inc. Steerable guidewire having electrodes for measuring vessel cross-section and blood flow. 5,184,621, Cl. 128-642.000.

Vogelbacher, Uwe J.; Eicken, Karl; Rheinheimer, Joachim; Goetz, Norbert; Harreus, Albrecht; Paul, Gerhard; Westphalen, Karl-Otto; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Salicylaldehyde derivatives and salicyclic acid derivatives and their sulfur analogs, and their use as herbicides and bioregulators. 5,185,027, Cl. 504-219.000.

VOL
1147
ISS
2
FE
9
1993
UMI

Vogt, Wilfried: *See—*
Merkel, Gerd; Glaunsinger, Georg; Vogt, Wilfried; Stadler, Peter; Zander, Claus-Peter; Schmitt, Gernot; Maass, Jurgen; Necker, Thomas; Becker, Willi; and Weber, Walter, 5,184,554, Cl. 101-415.100.

Volk, Douglas A.: *See—*
Volk, Kenneth H.; Volk, Douglas A.; Voccia, Paul; and Lewis, William D., 5,184,998, Cl. 493-176.000.

Volk, Kenneth H.; Volk, Douglas A.; Voccia, Paul; and Lewis, William D., to Volk Packaging Corporation. Corrugated cardboard or chipboard carton forming machine. 5,184,998, Cl. 493-176.000.

Volk Packaging Corporation: *See—*
Volk, Kenneth H.; Volk, Douglas A.; Voccia, Paul; and Lewis, William D., 5,184,998, Cl. 493-176.000.

Volkmann, Robert A.: *See—*
Saccomano, Nicholas A.; and Volkmann, Robert A., 5,185,369, Cl. 514-502.000.

Volz, Leroy A.; and Nissimov, Haim, to Seagate. Thermal offset compensation for high density disk drives. 5,185,681, Cl. 360-77.050.

Von Duprin, Inc.: *See—*
Waltz, Kevin P.; Dye, William P.; and Baker, Donald D., 5,184,855, Cl. 292-251.500.
Waltz, Kevin P., 5,184,856, Cl. 292-251.500.

Vonk, Glenn P., to Becton, Dickinson and Company. Test device including flow control means. 5,185,127, Cl. 422-56.000.

Voss, Karl R.: *See—*
Quadracci, H. Richard; Voss, Karl R.; and Sainio, Jeffrey W., 5,184,555, Cl. 101-417.000.

VP-Schickedanz AG: *See—*
Reinheimer, Horst; and Stary, Christof, 5,184,725, Cl. 206-494.000.

Vry, Uwe; Dorsel, Andreas; Schierle, Berthold; Blumentritt, Martin; and Greve, Peter, to Carl-Zeiss-Stiftung. Arrangement for operating a laser diode. 5,185,643, Cl. 356-358.000.

W. R. Grace & Co.-Conn.: *See—*
O'Neill, Gerald J., 5,185,474, Cl. 568-684.000.

W. Schlafhorst AG & Co.: *See—*
Brockmanns, Karl-Josef; Derichs, Josef; Wey, Edmund; Grecksch, Hans; Tholen, Leo; and Lassmann, Manfred, 5,184,786, Cl. 242-45.000.

Waarts, Robert G.: *See—*
Welch, David F.; and Waarts, Robert G., 5,185,752, Cl. 372-22.000.

Wacker Chemie GmbH: *See—*
Grauer, Peter, 5,185,406, Cl. 525-262.000.

Wada, Hirotaka: *See—*
Takayama, Yuuji; Matsueda, Hirokazu; Sugiura, Masato; Ozaki, Tatsuhiko; Wada, Hirotaka; and Komiya, Iwao, 5,185,417, Cl. 526-301.000.

Wada, Kouji: *See—*
Kimura, Seiji; and Wada, Kouji, 5,184,537, Cl. 92-33.000.

Wada, Motomu: *See—*
Tanaka, Tadashi; Sakamoto, Masaaki; Wada, Motomu; Ishikawa, Hideo; Matsumura, Sowjun; Chiba, Tadashi; Asakawa, Kiyoshi; and Oohora, Syoichi, 5,185,216, Cl. 428-614.000.

Wade, Cameron B.: *See—*
Vaillancourt, Steven; and Wade, Cameron B., 5,185,720, Cl. 365-189.020.

Wade, Richard A., to Coltec Industries Inc. Solenoid operated pressure regulating valve. 5,184,644, Cl. 137-625.640.

Wade, William W.; and Eshnaur, Vincent W., to American Ingredients Company. Swing away manway assembly. 5,184,422, Cl. 49-239.000.

Wagenseil, Ludwig: *See—*
Schniederjan, Reinhold; and Wagenseil, Ludwig, 5,184,466, Cl. 60-448.000.

Wakabayashi, Seiichi: *See—*
Yagi, Kiyoshi; and Wakabayashi, Seiichi, 5,185,556, Cl. 313-637.000.

Wakeland, Carl K., to Tandy Corporation. Method and apparatus for encoding full color video data signals and protocol for encoding same. 5,185,655, Cl. 358-13.000.

Wakimoto, Hirotsugu; Konno, Mitsuo; and Yoshihara, Kunio, to Kabushiki Kaisha Toshiba. High-speed signal transmission line path structure for semiconductor integrated circuit devices. 5,185,650, Cl. 257-508.000.

Waldern, Peter J.: *See—*
Nutcher, Peter B.; and Waldern, Peter J., 5,184,951, Cl. 432-28.000.

Waldorf Corporation: *See—*
Cote, Raymond A., 5,184,770, Cl. 229-20.000.

Waldron, Craig: *See—*
Hani, Rahim; Waldron, Craig; and Farmer, Douglas A., Jr., 5,185,033, Cl. 106-18.330.

Waldron, Robert D.; and Crafts, Harold S., to NCR Corporation. Electrical connection between buses on a semiconductor integrated circuit. 5,185,652, Cl. 257-758.000.

Walker, George F.: *See—*
Bindra, Perminder S.; Cuomo, Jerome J.; Gall, Thomas P.; Ingraham, Anthony P.; Kang, Sung K.; Kim, Jungihl; Lauro, Paul; Light, David N.; Markovich, Voya R.; Miersch, Ekkehard F.; Molla, Jaynal A.; Powell, Douglas O.; Ritsko, John J.; Saxenmeyer, George J., Jr.; Varcoe, Jack A.; and Walker, George F., 5,185,073, Cl. 205-104.000.

Walker, Harold R. High speed data communication system using phase shift key coding. 5,185,765, Cl. 375-22.000.

Walker, James A.: *See—*
Basavanhally, Nagesh R.; Borutta, Richard; Sizer, Theodore, II; and Walker, James A., 5,185,846, Cl. 385-137.000.

Walker, Keith C.: *See—*
Howard, Douglas A.; and Walker, Keith C., 5,184,465, Cl. 60-403.000.

Walker, Matthew S.: *See—*
Collins, Kenneth A.; Maker, Philip J.; and Walker, Matthew S., 5,184,614, Cl. 128-419.0PG.

Walker, Rickey R.: *See—*
Hanon, David O.; and Walker, Rickey R., 5,185,789, Cl. 379-395.000.

Wallac OY: *See—*
Aalto, Juhani; and Wallenius, Seppo, 5,185,525, Cl. 250-328.000.

Wallace, Douglas C., to Emory University. Genetic test for hereditary neuromuscular disease. 5,185,244, Cl. 435-6.000.

Wallenius, Seppo: *See—*
Aalto, Juhani; and Wallenius, Seppo, 5,185,525, Cl. 250-328.000.

Wallmann, Wilfried; Rogge, Gunter; and Knapheide, Wolfgang, to Windmoller & Holscher. Printing press. 5,184,551, Cl. 101-219.000.

Wallner, Barbara P.; and Hession, Catherine, to Biogen, Inc. DNA sequences, recombinant DNA molecules and processes for producing PI-linked lymphocyte function associated antigen-3. 5,185,441, Cl. 536-23.500.

Walpole, James N.: *See—*
Fan, Tso Y.; Sanchez-Rubio, Antonio; Walpole, James N.; Williamson, Richard C.; Melngailis, Ivars; Leger, James R.; and Goltsos, William C., 5,185,758, Cl. 372-72.000.

Walsh, Michael W.: *See—*
Gill, David R.; Duca, Larry J.; Badway, Robert M.; Walsh, Michael W.; and Simonof, John F., 5,184,759, Cl. 222-181.000.

Walsh, Roger J. A.: *See—*
Cook, David C.; Hart, Terance W.; McLay, Iain M.; Palfreyman, Malcolm N.; and Walsh, Roger J. A., 5,185,375, Cl. 514-599.000.

Walter, Thomas R.; and Cox, Roger T., to Rexroth Corporation, The. Solenoid-operated valve for mounting in seriatim having automatic wireway device. 5,184,648, Cl. 137-884.000.

Walter, Willi: *See—*
Meier, Heinz P.; Van Gieson, Edward A.; and Walter, Willi, 5,185,289, Cl. 437-129.000.

Walters, Brian J.: *See—*
Dickie, Robert G.; and Walters, Brian J., 5,184,727, Cl. 206-522.000.

Walters, Glenn J., to Advanced Dielectric Technologies, Inc. Selectively microwave-permeable membrane susceptor systems. 5,185,506, Cl. 219-10.55E.

Walton, Frank, to Frank and Robyn Walton 1990 Family Trust. Rolling diaphragm injection pump. 5,184,943, Cl. 417-401.000.

Waltz, Kevin P.; Dye, William P.; and Baker, Donald D., to Von Duprin, Inc. Electromagnetic door lock assembly. 5,184,855, Cl. 292-251.500.

Waltz, Kevin P., to Von Duprin, Inc. Door lock armature assembly. 5,184,856, Cl. 292-251.500.

Wang, Chien-Jen: *See—*
Ling, Lin H., 5,184,544, Cl. 99-536.000.

Wang, Ling-Ling, to Acer Incorporated. Easily testable high speed digital counter. 5,185,769, Cl. 377-29.000.

Wang, William: *See—*
Hseu, Bill; Jessee, Jim; and Wang, William, 5,184,457, Cl. 60-39.141.

Ward, James E.; and Swan, Leo, to Equipment Development Company, Inc. Pneumatically driven descaling tool. 5,184,382, Cl. 29-81.150.

Ward, John B.: *See—*
Sutherland, Derek R.; Ramsay, Michael V. J.; Tiley, Edward P.; Ward, John B.; Porter, Neil; Noble, Hazel M.; Fletton, Richard A.; Noble, David; and Bain, Brian M., 5,185,456, Cl. 546-264.000.

Ward, Philip T., to Western Forms, Inc. Prestressed ligthweight panel. 5,184,439, Cl. 52-223.00R.

Ward, Phillip W.; Scott, H. Logan; Holmes, Jerry D.; and LaPadula, Leonard J., to Texas Instruments Incorporated. GPS system and method for deriving pointing or attitude from a single GPS receiver. 5,185,610, Cl. 342-357.000.

Ward, Richard; and Lemek, John. Educational doll. 5,184,958, Cl. 434-162.000.

Warden, Robert M., to AEC-Able Engineering Co., Inc. Survivable deployable/retractable mast. 5,184,444, Cl. 52-646.000.

Warner-Lambert Company: *See—*
Augelli-Szafran, Corinne E., 5,185,349, Cl. 514-336.000.
Creswell, Mark W.; and White, Andrew D., 5,185,358, Cl. 514-383.000.

Warnock, John E., to Adobe Systems Incorporated. Method of substituting fonts and displaying characters. 5,185,818, Cl. 382-54.000.

Warrington, Jack E. Twin-unit composting apparatus. 5,185,261, Cl. 435-313.000.

Washer, Stone P.: *See—*
Love, Scott D.; and Washer, Stone P., 5,185,487, Cl. 585-449.000.

Watanabe, Atsushi, to Toyota Jidosha Kabushiki Kaisha. Automatic speed changing system for two-shaft type gas turbine engine. 5,184,526, Cl. 74-861.000.

Watanabe, Masaaki, to Pioneer Electronic Corporation. Operating device of an electronic equipment mounted on a motor vehicle. 5,185,804, Cl. 381-86.000.

Watanabe, Tsunehiro: *See—*
Takahashi, Taketo; Watanabe, Tsunehiro; Nishii, Teruyuki; and Ueno, Yasuhide, 5,185,783, Cl. 379-93.000.

Watanabe, Yasuo: *See—*
Ochiai, Hirokazu; Watanabe, Yasuo; Murotani, Yoshiharu; Fukuda, Hirohiko; Yoshino, Osamu; Minami, Shinzaburo; Hayashi, Toshio; and Momonoi, Kaishu, 5,185,330, Cl. 514-142.000.

Watanuki, Minoru: *See—*
Abe, Chiaki; and Watanuki, Minoru, 5,185,625, Cl. 355-26.000.

Waters, Lynn O.: *See—*
Blazic, Ernest S.; Bueker, Robert A.; Waters, Lynn O.; Farwell, William D.; and Smalanskas, Joseph P., 5,184,516, Cl. 73-799.000.

Watkins, Andrew D. S.: *See—*
Turnbull, Michael D.; Parsons, Robert W.; and Watkins, Andrew D. S., 5,185,353, Cl. 514-364.000.

Watrous, Philip J., to United States of America, Navy. Combination tool and tape for measuring circumference of flexible tubing. 5,184,407, Cl. 33-555.400.

Wattenbarger, Henry E.: *See—*
Beers, Gregory E.; Flickner, Myron D.; Kelly-Mahaffey, William L.; Polk, Darryl R.; Stafford, James M.; and Wattenbarger, Henry E., 5,185,811, Cl. 382-8.000.

Watts, Michael L.: *See—*
Kafka, James D.; Baer, Thomas M.; Keirstead, Mark S.; Watts, Michael L.; and Schaaf, Horst W., 5,185,750, Cl. 372-18.000.

Watts, Raymond F.: *See—*
Ryer, Jack; Gutierrez, Antonio; Puckace, James S.; Watts, Raymond F.; Gleason, Craig W.; Mills, Daniel R.; and Braun, Edmund H., II, 5,185,090, Cl. 252-46.600.

Webb, Roger S. Process for the production of mellein and 4-hydroxymellein. 5,185,023, Cl. 504-117.000.

Webb, Steven L.; and Kappele, William D., to Hewlett-Packard Company. Ink-jet inks with improved colors and plain paper capacity. 5,185,034, Cl. 106-22.00R.

Weber, Karl-Heinz; Stransky, Werner; Kuefner-Muehl, Ulrike; Heuer, Hubert; Birke, Franz; and Bechtel, Wolf-Dietrich, to Boehringer Ingelheim KG. New diazepines substituted in the 6-position, processes for their preparation and their use as pharmaceutical compositions. 5,185,442, Cl. 540-555.000.

Weber, Karlheinz: *See—*
Muller, Hartwig; Bischoff, Erwin; Fugmann, Burkhard; Weber, Karlheinz; Frobel, Klaus; Rosen, Bruno; Grutzmann, Rudi; Karmann, Guenther; and Kohlsdorfer, Christian, 5,185,326, Cl. 514-23.000.

Weber, Marliese: *See—*
Klesse, Wolfgang; Elser, Wilhelm; Mager, Theodor; Christner, Juergen; Kraus, Hertha; Rossberg, Peter; and Weber, Marliese, 5,185,387, Cl. 523-201.000.

Weber, Walter: *See—*
Merkel, Gerd; Glaunsinger, Georg; Vogt, Wilfried; Stadler, Peter; Zander, Claus-Peter; Schmitt, Gernot; Maass, Jurgen; Necker, Thomas; Becker, Willi; and Weber, Walter, 5,184,554, Cl. 101-415.100.

Weder, Donald E., to Highland Supply Corporation. Method of shaping and holding a sheet of material about a flower pot with a collar. 5,184,390, Cl. 29-525.000.

Wedgewood Technology, Inc.: *See—*
Wynn, William H., 5,185,531, Cl. 250-431.000.

Weeber, William B.: *See—*
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.

Weidenhaupt, Paul: *See—*
Myschik, Dieter; and Weidenhaupt, Paul, 5,184,965, Cl. 439-578.000.

Weigel, David C., to Minnesota Mining and Manufacturing Company. Dry silver systems with fluoran leuco dyes. 5,185,231, Cl. 430-203.000.

Weinheimer, Gunter: *See—*
Aranda, Julian; Hartenstein, Johannes; Reck, Reinhard; Schachtele, Christopher; Rudolph, Claus; Osswald, Hartmut; and Weinheimer, Gunter, 5,185,352, Cl. 514-348.000.

Weinstein, Jack; and Glynn, Kenneth P., to Primary Delivery Systems, Inc. Metered side dispensing cap for tubes. 5,184,760, Cl. 222-207.000.

Weinstein, Jerry G.: *See—*
Kantzer, Robert C.; Rocazella, Michael A.; Weinstein, Jerry G.; and White, Danny R., 5,185,303, Cl. 501-127.000.

Weinstock, Joseph: *See—*
Finkelstein, Joseph A.; Keenan, Richard M.; and Weinstock, Joseph, 5,185,351, Cl. 514-341.000.

Weipert, Eugene A., to Dr. Gene, Inc. Compositions containing salts of acyloxyalkanesulfonates. 5,185,101, Cl. 252-554.000.

Weipert, Mary B.: *See—*
Jacobs, Kendall E.; and Weipert, Mary B., 5,185,697, Cl. 364-419.000.

Weiss, Steven M., to Telectronics Pacing Systems, Inc. Apparatus and method for generation of varying waveforms in arrhythmia control system. 5,184,616, Cl. 128-419.000.

Welch, Cletus N.: *See—*
Fischer, Scott; and Welch, Cletus N., 5,185,390, Cl. 524-43.000.

Welch, David F.; and Waarts, Robert G., to Spectra Diode Laboratories, Inc. Coupling arrangements for frequency-doubled diode lasers. 5,185,752, Cl. 372-22.000.

Welch, David F.: *See—*
Craig, Richard R.; Welch, David F.; Zucker, Erik P.; Scifres, Donald R.; and Gignac, William J., 5,185,754, Cl. 372-45.000.

Weldon, Cheryl D. Flea trap apparatus. 5,184,417, Cl. 43-107.000.

Weller, Dwight D.: *See—*
Summerton, James E.; and Weller, Dwight D., 5,185,444, Cl. 544-81.000.

Wells, John R., to Source Scientific Systems, Inc. Immunobead aspirator and method of use. 5,185,269, Cl. 436-180.000.

Wen-kang, Zheng: *See—*
Pei-qian, Zhong; Wen-kang, Zheng; Xi-tian, Xu; Jian-he, Liang; Dong-shen, Zhou; and Jun-zhi, Yang, 5,184,933, Cl. 414-725.000.

Wendt, Peter W., to Georgia-Pacific Corporation. Laminates for protecting incompletely dry surfaces. 5,185,201, Cl. 428-296.000.

Wengenroth, Kurt, to Rolf Peddinghaus. Shear system for cutting profile steel rods. 5,184,532, Cl. 83-23.000.

Wenger, Robert L.: *See—*
Martin, Dennis R.; McDermott, Michael J.; Plumlee, Stuart D.; Satin, Robert H.; and Wenger, Robert L., 5,185,884, Cl. 395-575.000.

Wengyn, Mark D.; and Brown, Charles F. Hypodermic needle/syringe receptacle with porous element. 5,184,721, Cl. 206-366.000.

Wermelinger, Jorg, to Georg Fischer AG. Method of connecting pipes of plastics material of a double pipe system and a pipe connection made by the method. 5,184,850, Cl. 285-21.000.

Wessels, Bruce W.; Marks, Tobin J.; Richeson, Darrin S.; Tonge, Lauren M.; and Zhang, Jiming, to Northwestern University. Method of forming superconducting Tl-Ba-Ca-Cu-O films. 5,185,317, Cl. 505-1.000.

West, John B.: *See—*
Sardella, Louis M.; and West, John B., 5,184,811, Cl. 271-10.000.

Western Atlas International, Inc.: *See—*
Curto, Rick A.; and Johnston, Otis A., 5,185,726, Cl. 367-18.000.

Western Forms, Inc.: *See—*
Ward, Philip T., 5,184,439, Cl. 52-223.00R.

Westinghouse Electric Corp.: *See—*
Bluzer, Nathan, 5,185,527, Cl. 250-336.200.
Carbonell, Luis E.; and Montgomery, Lon W., 5,185,547, Cl. 310-259.000.
Chou, Yu W.; and Pruszynski, Henry K., 5,184,717, Cl. 200-401.000.
Gonda, John K.; Bachman, Benny C.; Boyer, Mike; Bly, Jerry L.; and Gilliland, Donald, 5,185,183, Cl. 427-236.000.
Haldipur, Gaurang B.; and Dilmore, William J., 5,185,019, Cl. 55-378.000.
Krishnaswamy, S. Visvanathan; Horwitz, Stuart S.; and Moore, Robert A., 5,185,589, Cl. 333-133.000.
Lieberman, Laurence A.; and Downes, Philip, 5,185,671, Cl. 358-228.000.
McGann, William E.; Steigerwald, Thomas E.; and Adam, John D., 5,185,588, Cl. 333-17.200.
Reiner, Roger T.; Frost, David M.; Chicots, Johnna M.; Petras, Diane S.; and Fanto, Susan V., 5,185,699, Cl. 364-419.000.
Veronesi, Luciano; Calfo, Raymond M.; and Drake, James A., 5,185,545, Cl. 310-114.000.
White, Harvey H., Jr.; and Boler, Harry, 5,185,882, Cl. 395-575.000.

Westphalen, Karl-Otto: *See—*
Vogelbacher, Uwe J.; Eicken, Karl; Rheinheimer, Joachim; Goetz, Norbert; Harreus, Albrecht; Paul, Gerhard; Westphalen, Karl-Otto; and Wuerzer, Bruno, 5,185,027, Cl. 504-219.000.

Westvaco Corporation: *See—*
Nieradka, Zigmunt; and Young, Robert W., 5,184,388, Cl. 29-434.000.

Wetegrove, Robert J.: *See—*
Banks, Rodney H.; and Wetegrove, Robert J., 5,185,533, Cl. 250-575.000.

Wetz, Hans H.: *See—*
Brandt, Dieter; Szlema, Ingeborg; and Wetz, Hans H., 5,185,000, Cl. 602-63.000.

Wey, Edmund: *See—*
Brockmanns, Karl-Josef; Derichs, Josef; Wey, Edmund; Grecksch, Hans; Tholen, Leo; and Lassmann, Manfred, 5,184,786, Cl. 242-45.000.

What-Not, Inc.: *See—*
Wilkinson, William T.; and Nelson, John J., 5,184,986, Cl. 482-46.000.

Whatley, Richard F., to Northern Telecom Limited. Tool operable door lock mechanism. 5,184,853, Cl. 292-205.000.

Whatmore, Roger W.; and Pedder, David J., to GEC-Marconi Limited. Hybrid structures. 5,185,613, Cl. 343-909.000.

Whelan, Charles H.: *See—*
Dysart, John A.; Showman, Peter S.; Crow, William M.; Williams, Peter M.; McBride, Brian W.; Senior, John R. F.; Whelan, Charles H.; and Murdoch, Brian, 5,185,885, Cl. 395-600.000.

Whipp, Roy H., to Fior de Venezuela. Process for fluidized bed direct steelmaking. 5,185,032, Cl. 75-436.000.

Whirlpool Corporation: *See—*
Ray, Keith, 5,185,047, Cl. 156-242.000.
Tromblee, Jon D.; Gurubatham, Vincent P.; and Peterson, Edward C., 5,184,635, Cl. 134-111.000.

White, Andrew D.: *See—*
Creswell, Mark W.; and White, Andrew D., 5,185,358, Cl. 514-383.000.

White, Danny R.: *See—*
Kantzer, Robert C.; Rocazella, Michael A.; Weinstein, Jerry G.; and White, Danny R., 5,185,303, Cl. 501-127.000.

VOL
1147
ISS
2
FE
9
1993
UMI

White, Harvey H., Jr.; and Boler, Harry, to Westinghouse Electric Corp. Bit-slice microprocessor test system. 5,185,882, Cl. 395-575.000.
White, Kenneth M.: *See*—
Harelstad, Roberta E.; Francis, Cecil V.; and White, Kenneth M., 5,185,102, Cl. 252-582.000.
White, Marvin A.: *See*—
Sawyer, Lawrence H.; White, Marvin A.; and Knight, George W., 5,185,199, Cl. 428-288.000.
White, Steven K.: *See*—
Solomon, Daniel; Kaminski, James J.; White, Steven K.; Lehman de Gaeta, Lanra S.; and Ganguly, Ashit K., 5,185,334, Cl. 514-236.200.
Whitman, David C.: *See*—
Solomon, Stuart G.; and Whitman, David C., 5,184,939, Cl. 417-41.000.
Wiatt, James G.; Swiderski, Kevin J.; Belcher, Samuel L.; and Smith, Roger D., to Geddes, Paul E. Reheat blow molding machine for forming articles from preforms. 5,185,163, Cl. 425-534.000.
Wickson, Dianne M.: *See*—
Wickson, Leonard Q.; and Wickson, Dianne M., 5,184,531, Cl. 81-441.000.
Wickson, Leonard Q.; and Wickson, Dianne M. Sprinkler broken tube removal apparatus. 5,184,531, Cl. 81-441.000.
Wider, Bernhard; Blank, Michael; and Vester, Joachim, to Hewlett Packard Company. Blood gas parameter measuring system. 5,184,618, Cl. 128-634.000.
Wieczorrek, Wolfhart: *See*—
Drouve, Werner; Hohlein, Peter; and Wieczorrek, Wolfhart, 5,185,422, Cl. 528-76.000.
Wiens, Thomas J., to First Dominion Holdings, Inc. Solid waste disposal. 5,184,780, Cl. 241-19.000.
Wightman, Christopher W.: *See*—
Button, Leslie J.; Dotson, Jerald B.; Reding, Bruce W.; and Wightman, Christopher W., 5,185,636, Cl. 356-73.100.
Wike, Charles K., Jr.; Collins, Donald A., Jr.; and Maddox, Craig E., to NCR Corporation. Programmable apparatus and method for optical scanners. 5,185,514, Cl. 235-375.000.
Wilcke, Gerhard, to berolina Schriftbild Wilcke, Wolff, Busch & Partner KG. Developer station for a laser printer. 5,185,616, Cl. 346-1.100.
Wilcox Electric, Inc.: *See*—
DeBord, Claude R., 5,185,609, Cl. 342-173.000.
Wilczynski, Joseph J.: *See*—
Spada, Lonnie T.; and Wilczynski, Joseph J., 5,185,212, Cl. 428-483.000.
Wile, Richard M., to BPI Environmental, Inc. Bag dispensing system. 5,184,728, Cl. 206-554.000.
Wilkerson, Victor W.: *See*—
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.
Wilkinson, William T.; and Nelson, John J., to What-Not, Inc. Wrist exercise device. 5,184,986, Cl. 482-46.000.
Wilkinson, William T. Aerobic climbing step/bench. 5,184,987, Cl. 482-52.000.
Wilks, Paul A., Jr.; and Gaglione, John P., to Genral Analysis Corporation. Multifaceted probes for optical analysis. 5,185,640, Cl. 356-300.000.
Williamitis, Victor A.; and Spielvogel, David E., to Becton, Dickinson and Company. Lubricated metal articles and assembly containing same. 5,185,006, Cl. 604-265.000.
Williams, Peter M.: *See*—
Dysart, John A.; Showman, Peter S.; Crow, William M.; Williams, Peter M.; McBride, Brian W.; Senior, John R. F.; Whelan, Charles H.; and Murdoch, Brian, 5,185,885, Cl. 395-600.000.
Williams, Susan A. Toy telephone recorder with picture actuated recording and playback. 5,184,971, Cl. 446-142.000.
Williams, Timothy J.: *See*—
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.
Williamson, Richard C.: *See*—
Fan, Tso Y.; Sanchez-Rubio, Antonio; Walpole, James N.; Williamson, Richard C.; Melngailis, Ivars; Leger, James R.; and Goltsos, William C., 5,185,758, Cl. 372-72.000.
Willis, James A.: *See*—
Barrows, Peter S.; and Willis, James A., 5,184,511, Cl. 73-323.000.
Willis, Loretta V.: *See*—
Davis, Nancy L.; Willis, Loretta V.; Johnston, Robert E.; and Smith, Jonathan F., 5,185,440, Cl. 536-237.200.
Willson, Robert C.: *See*—
Newell, Gerald R.; Nootbaar, Michael W.; Bhardwaj, Pradeep; and Willson, Robert C., 5,185,585, Cl. 331-46.000.
Wilson, Alan L., to Motorola, Inc. Encryption synchronization combined with encryption key identification. 5,185,796, Cl. 380-21.000.
Wilson, David M.: *See*—
Wood, Thomas E.; Wilson, David M.; and Sowman, Harold G., 5,185,299, Cl. 501-95.000.
Wilson, David P.: *See*—
Thomas, Raymond H. P.; Chen, Ruth H.; Pham, Hang T.; and Wilson, David P., 5,185,089, Cl. 252-37.700.
Wilson, Edwin P., to Minatronics Corporation. Cable lock. 5,184,798, Cl. 248-551.000.
Wilson, James; and Beaudet, Douglas B., to Easatman Kodak Company. Reproduction apparatus with improved operator interactive display for use in job set-up. 5,185,628, Cl. 355-209.000.
Wilson, John W. Tool for sharpening tungsten electrodes. 5,184,432, Cl. 51-236.000.
Wilson, Richard F., to Dow Chemical Company, The. Apparatus and method for adding fluid to a fuel in an engine to enhance ignition. 5,184,585, Cl. 123-179.800.
Windmoller & Holscher: *See*—
Wallmann, Wilfried; Rogge, Gunter; and Knapheide, Wolfgang, 5,184,551, Cl. 101-219.000.
Wing, Feagin A., Jr.: *See*—
Grosso, Paul V.; Wing, Feagin A., Jr.; Morgan, Michael J.; Stegmeier, Renate C.; Day, Roger W.; and Burt, Willard F., 5,185,226, Cl. 430-47.000.
Wisconsin Alumni Research Fdn.: *See*—
DeLuca, Hector F.; and Smith, Connie M., 5,185,150, Cl. 424-195.100.
Wistar Institute, The: *See*—
Linnenbach, Alban, 5,185,254, Cl. 435-172.300.
Witiak, Donald T.; Hughes, John H.; and Mavromoustakis, Charis T., to Ohio State University Research Foundation. Method for treatment and prevention of diseases caused by enveloped viruses, including herpes simplex virus types 1 and 2 diseases, using 3,4-dihydroxy-2H-benzopyran-2H-one. 5,185,366, Cl. 514-456.000.
Wittke, Ernest C. Cam loaded continuously variable transmission. 5,184,981, Cl. 474-19.000.
WOCO Franz-Josef Wolf & Co.: *See*—
Wolf, Franz J.; and Pletsch, Hubert, 5,184,799, Cl. 248-634.000.
Woerner, Dieter, to Robert Bosch GmbH. Air brake system having an anti-skid assembly. 5,184,878, Cl. 303-118.100.
Wolf, Franz J.; and Pletsch, Hubert, to WOCO Franz-Josef Wolf & Co. Surface bearing and method for its production. 5,184,799, Cl. 248-634.000.
Wolff, Siegfried; and Meier, Karl, to Degussa Akiengesellscahft. Method of producing granulated material composed of zinc oxide and silica, resulting product and its use. 5,184,779, Cl. 241-3.000.
Wolfson, Jack M.: *See*—
Koutrakis, Petros; and Wolfson, Jack M., 5,185,129, Cl. 422-88.000.
Wolfson, Ronald I.: *See*—
Mertens, Donald B.; Gates, Louis E., Jr.; Wolfson, Ronald I.; Milroy, William W.; and Smalanskas, Joseph P., 5,185,579, Cl. 324-527.000.
Wong, Pui K., to Shell Oil Company. Polymeric phenolic esters. 5,185,407, Cl. 525-328.800.
Wood, Louis L.: *See*—
Siemer, Sidney R.; Wood, Louis L.; and Calton, Gary J., 5,185,024, Cl. 504-116.000.
Wood, Thomas E.; Wilson, David M.; and Sowman, Harold G., to Minnesota Mining and Manufacturing Company. Microcrystalline alumina-based ceramic articles. 5,185,299, Cl. 501-95.000.
Woodard, Kenneth E., Jr.: *See*—
Ford, James M.; Cawlfield, David W.; and Woodard, Kenneth E., Jr., 5,185,069, Cl. 204-251.000.
Woods, Gerald L.; and Shirk, Steven D., to Kennametal Inc. Insert and insert support bar. 5,184,925, Cl. 408-144.000.
Woods, Gerald L.: *See*—
Sheirer, Daniel C.; Woods, Gerald L.; and Montgomery, Robert H., Jr., 5,184,689, Cl. 175-420.100.
Woong, Choi J.; and Sam, Park C. Damp-proof construction. 5,184,437, Cl. 52-169.500.
World Wide Concessions, Inc.: *See*—
Maddox, Garry L., 5,184,815, Cl. 273-26.00C.
Worm, Manfred: *See*—
Martin, Lawrence L.; Worm, Manfred; and Crichlow, Charles A., 5,185,465, Cl. 564-185.000.
Worthington, Paul A.: *See*—
Pilkington, Brian L.; and Worthington, Paul A., 5,185,339, Cl. 514-256.000.
Wozniacki, Roger M., to Gaylord Container Corporation. Pallet and method and apparatus for making same. 5,184,558, Cl. 108-51.300.
Wrede, Juergen, to Robert Bosch GmbH. Method for operating the brake system of a commercial vehicle. 5,184,875, Cl. 303-3.000.
Wright, Michael J.: *See*—
Agrawal, Om P.; and Wright, Michael J., 5,185,706, Cl. 364-489.000.
Wu, Ching-Chang. Saddle mounting structure for a golf cart. 5,184,911, Cl. 403-385.000.
Wu, Jeff C., to Hewlett-Packard Company. Automatic discovery of network elements. 5,185,860, Cl. 395-200.000.

Wu, Jeng-Shyong: *See*—
Chen, Jen H.; Tzeng, Jeou N.; and Wu, Jeng-Shyong, 5,184,890, Cl. 362-353.000.
Wu, Wen H.: *See*—
Ismail, Ibrahim A.; and Wu, Wen H., 5,185,247, Cl. 435-14.000.
Wuerzer, Bruno: *See*—
Vogelbacher, Uwe J.; Eicken, Karl; Rheinheimer, Joachim; Goetz, Norbert; Harreus, Albrecht; Paul, Gerhard; Westphalen, Karl-Otto; and Wuerzer, Bruno, 5,185,027, Cl. 504-219.000.
Wynn, William H., to Wedgewood Technology, Inc. Window cleaner for inline optical sensors. 5,185,531, Cl. 250-431.000.
Wysocki, Paul F.: *See*—
Kalman, Robert F.; Wysocki, Paul F.; and Digonnet, Michel J. F., 5,185,749, Cl. 372-6.000.
Xaar Limited: *See*—
Temple, Stephen; and Speakman, Stuart, 5,185,055, Cl. 156-630.000.
Xaloy, Incorporated: *See*—
Chou, Schiao F., 5,185,162, Cl. 425-183.000.
Xerox Corporation: *See*—
Snelling, Christopher, 5,185,619, Cl. 346-153.100.
Xi-tian, Xu: *See*—
Pei-qian, Zhong; Wen-kang, Zheng; Xi-tian, Xu; Jian-he, Liang; Dong-shen, Zhou; and Jun-zhi, Yang, 5,184,933, Cl. 414-725.000.
Xscribe Corporation: *See*—
Smith, Gordon W., 5,184,903, Cl. 400-196.100.
Yablonsky, Peter J.: *See*—
Conzola, Vincent C.; Rittenbouse, Norman E.; Solomon, Jeffrey M.; Toomey, Thomas J.; and Yablonsky, Peter J., 5,185,638, Cl. 356-237.000.
Yabu, Maasaki, to Juki Corporation. Multifunction laser assisted processing apparatus. 5,185,511, Cl. 219-121.780.
Yacisin, Paul A.: *See*—
Calandra, Frank, Jr.; Stankus, John C.; and Yacisin, Paul A., 5,184,923, Cl. 405-259.400.
Yaemsiri, Jak: *See*—
Tyrrell, Raymond E.; Bishop, O. Lamar; Powell, William E.; Krisher, Dale L.; Stephenson, William H.; Briscoe, M. Rodney; Thorne, Hal A.; Hurlocker, Claude M.; Runyon, V. Paul; Williams, Timothy J.; Sutherland, Joseph E.; Weeber, William B.; Gingell, Michael J.; Stoia, Kenneth J.; Fox, William J.; Jones, Jeffrey P.; Czerwiec, Richard M.; Baydar, Ertugrul; Sonnenberg, Heinrich T.; Peters, Richard; Sanders, Gus C.; Sanders, Richard J., Jr.; Noser, Francis G.; Smith, Joseph L.; Yaemsiri, Jak; Abu-Saba, Camille A.; Farrell, Patrick M.; Rou, Wenkwei; Wilkerson, Victor W.; Arani, Mohammad S.; Dunning, Stephen C.; Bernhardt, Keith; Merrill, Dana; and Sutton, Michael, 5,185,736, Cl. 370-55.000.
Yager, Pamela S.; and Pisha, Nancy A., to Saint Geeks, Inc. Pillow case with three dimensional design. 5,184,362, Cl. 5-490.000.
Yagi, Akira; Okada, Takao; Morita, Seizo; and Mikoshiba, Nobuo, to Olympus Optical Co., Ltd. Scanning tunneling potentio-spectroscopic microscope and a data detecting method. 5,185,572, Cl. 324-158.00R.
Yagi, Kiyoshi; and Wakabayashi, Seiichi, to Yazaki Corporation. Gas-filled discharge tube. 5,185,556, Cl. 313-637.000.
Yagi, Takeshi: *See*—
Satoh, Tsuguo; Morikawa, Takayuki; Hihara, Hiroshi; Yagi, Takeshi; and Yoshida, Kazuaki, 5,185,020, Cl. 65-3.110.
Yagihara, Tomio: *See*—
Tazaki, Seiji; Umeda, Nobuhiro; Matsui, Nobuo; Yagihara, Tomio; and Mikuma, Katsunori, 5,185,460, Cl. 558-392.000.
Yahraus, Norman J. Receptacle box. 5,185,499, Cl. 174-65.00R.
Yamada, Akira; and Yamada, Tatsuo. Cache system and control method therefor. 5,185,879, Cl. 395-425.000.
Yamada, Kosaku: *See*—
Nakatsukasa, Sadayoshi; Fujii, Toshihiro; Tanaka, Ban; and Yamada, Kosaku, 5,185,234, Cl. 430-284.000.
Yamada, Masaya; and Enomoto, Ryo, to Ibiden Co., Ltd. Light beam deflector for deflecting light from optical waveguide by inclined grating. 5,185,829, Cl. 385-37.000.
Yamada, Tatsuo: *See*—
Yamada, Akira; and Yamada, Tatsuo, 5,185,879, Cl. 395-425.000.
Yamaguchi, Akihiro: *See*—
Nakatsuka, Masakatsu; Otsuji, Atsuo; Hasegawa, Kiyoharu; Kikkawa, Kazuyoshi; and Yamaguchi, Akihiro, 5,185,453, Cl. 549-226.000.
Yamaguchi, Yasuyoshi, to Tokyo Electric Co., Ltd. Sheet delivering mechanism. 5,184,734, Cl. 209-657.000.
Yamaha Corporation: *See*—
Ikeya, Tadahiko, 5,185,492, Cl. 84-633.000.
Kakubo, Yuji, 5,185,680, Cl. 360-72.200.
Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Aoyama, Tateo; Sakurai, Kenichi; and Yamamoto, Shigeo, 5,184,581, Cl. 123-90.310.
Kobayashi, Noboru; and Futaki, Yoshiki, 5,184,966, Cl. 440-38.000.
Nonaka, Kimihiro, 5,184,589, Cl. 123-352.000.
Okui, Kaoru; and Kobayashi, Manabu, 5,184,582, Cl. 123-90.310.
Yamakawa, Jun: *See*—
Shigematsu, Takashi; Imamizo, Seiichi; Takagi, Koichi; Ohta, Toshihiko; and Yamakawa, Jun, 5,185,825, Cl. 385-20.000.
Yamaki, Syuichi: *See*—
Tanaka, Shinzo; and Yamaki, Syuichi, 5,184,901, Cl. 400-124.000.
Yamamoto, Akira: *See*—
Tanaka, Yuzuru; Yamamoto, Akira; and Tsuchida, Masashi, 5,185,888, Cl. 395-600.000.
Yamamoto, Iwao: *See*—
Matsuzaki, Kei; Yamamoto, Iwao; Misaki, Akira; and Sone, Yoshiaki, 5,185,327, Cl. 514-54.000.
Yamamoto, Junji: *See*—
Kawaguchi, Akihiro; Satoh, Atsushi; Kajitani, Makoto; Yasumoto, Mitsugi; and Yamamoto, Junji, 5,185,344, Cl. 514-299.000.
Yamamoto, Kazumi, to Ikegami Tsushinki Co., Ltd. Circuit for compressing image signal. 5,185,656, Cl. 358-21.00R.
Yamamoto, Kazuo: *See*—
Mori, Toshiki; Fujii, Hiroshi; Onishi, Takashi; and Yamamoto, Kazuo, 5,185,468, Cl. 568-31.000.
Yamamoto, Makoto: *See*—
Takatori, Sunao; Kumagai, Ryohei; Matsumoto, Koji; and Yamamoto, Makoto, 5,185,816, Cl. 382-34.000.
Yamamoto, Masanobu: *See*—
Ogawa, Hiroshi; Sako, Yoichiro; and Yamamoto, Masanobu, 5,185,732, Cl. 369-47.000.
Yamamoto, Narihito: *See*—
Ogake, Ryoji; Okada, Mitsuo; Takashima, Hiroyuki; Shimizu, Teruo; Yamamoto, Narihito; and Uenoyama, Hiroyuki, 5,185,091, Cl. 252-56.500.
Yamamoto, Shigeo: *See*—
Aoyama, Tateo; Sakurai, Kenichi; and Yamamoto, Shigeo, 5,184,581, Cl. 123-90.310.
Yamamoto, Tadashi; Kageyama, Shuhei; and Suzuki, Takahiko, to Kotobuki & Co., Ltd. Writing implement with side actuator. 5,184,908, Cl. 401-29.000.
Yamamoto, Tohru. Deodorant porous polymer and a deodorant fibrous material using the same. 5,185,169, Cl. 427-246.000.
Yamamoto, Toshiaki: *See*—
Maejima, Yukihito; Shirasu, Hirotoshi; Suzuki, Taihei; and Yamamoto, Toshiaki, 5,185,873, Cl. 395-375.000.
Yamana, Masahiro; and Sato, Koji, to Oji Paper Co., Ltd. Electrophotographic lithograph printing plate material. 5,185,227, Cl. 430-49.000.
Yamanis, Jean: *See*—
Li, Beili; Haig, Stephen; and Yamanis, Jean, 5,185,301, Cl. 501-117.000.
Yamasaki, Tadashige; and Handa, Hirotoshi, to Shinko Pantec Co., Ltd. Film evaporator. 5,185,060, Cl. 159-13.100.
Yamashita, Akio; Yoshimura, Susumu; and Tsuchiya, Sohji, to Matsushita Electric Industrial Co., Ltd. Functional devices comprising a charge transfer complex layer. 5,185,208, Cl. 428-411.100.
Yamashita, Kyoji; Yoshikawa, Ryoichi; and Tokita, Masakazu, to Kabushiki Kaisha Toshiba; and Toshiba Machine Co., Ltd. Optical pattern inspection system. 5,185,812, Cl. 382-8.000.
Yamashita, Toshiharu: *See*—
Miura, Kiyotaka; and Yamashita, Toshiharu, 5,185,021, Cl. 65-3.110.
Yamazaki, Satoshi: *See*—
Itoh, Masakazu; and Yamazaki, Satoshi, 5,184,848, Cl. 283-2.000.
Yamazaki, Shunpei; Hayashi, Shigenori; Ishida, Noriya; Sasaki, Mari; Takeyama, Junichi; Itou, Kenji; Kojima, Masahiro; and Kadono, Masaya, to Semiconductor Energy Laboratory Co., Ltd. Plasma processing method and products thereof. 5,185,179, Cl. 427-601.000.
Yanada, Isamu; Murakami, Tooru; and Asakawa, Kiyoshi, to C. Uyemura & Co., Ltd. Bath and method for electrodepositing tin, lead and tin-lead alloy. 5,185,076, Cl. 205-252.000.
Yang, Jun -mo; and Kim, Woo-chan, to Samsung Electron Devices Co., Ltd. Green emitting phosphor and cathode ray tube using said phosphor. 5,185,553, Cl. 313-468.000.
Yano, Shinsuke: *See*—
Hirai, Takami; Yano, Shinsuke; and Abe, Masahiro, 5,185,304, Cl. 501-139.000.
Yasas, Antanas A.: *See*—
Abdrakhmanov, Gabdrashit S.; Zainullin, Albert G.; Meling, Konstantin V.; Rakhmanov, Rauf N.; Balandin, Alexandr P.; Puzanov, Alexandr A.; Urazgildin, Ilyas A.; Mukhametshin, Almaz A.; Khakimov, Almas K.; Yasas, Antanas A.; Naryshkina, Lutsia M.; Akhunov, Albert M.; Akhunova, Tanzilya K., administrator; Akhunova, Flera A., dministrator; and Akhunov, Farid A., administrator, 5,184,687, Cl. 175-267.000.
Yashiki, Yuichi; Moriyama, Hiroaki; and Aoki, Kazuaki, to Fuji Xerox Co., Ltd. Method and apparatus for dip coating a hollow cylindrical body. 5,185,187, Cl. 427-430.100.
Yasue, Nobuhiro: *See*—
Takahashi, Noriyuki; Nishizawa, Kazunori; Takashi, Rinichi; Sakai, Naofumi; Tanabe, Yukiharu; and Yasue, Nobuhiro, 5,185,887, Cl. 395-600.000.
Yasuhara, Takashi: *See*—
Aoyama, Hirokazu; Yasuhara, Takashi; Kono, Satoru; Koyama, Satoshi; and Ueda, Souichi, 5,185,483, Cl. 570-172.000.
Yasui, Noriya, to Mitsubishi Denki K.K. Wire electric discharge machining method for machining entrance lines and apparatus therefor. 5,185,507, Cl. 219-69.120.
Yasumoto, Mitsugi: *See*—
Kawaguchi, Akihiro; Satoh, Atsushi; Kajitani, Makoto; Yasumoto, Mitsugi; and Yamamoto, Junji, 5,185,344, Cl. 514-299.000.
Yazaki Corporation: *See*—
Yagi, Kiyoshi; and Wakabayashi, Seiichi, 5,185,556, Cl. 313-637.000.
Yeung, Louise Y.: *See*—
Hamstra, James R.; Perloff, Ronald S.; and Yeung, Louise Y., 5,185,863, Cl. 395-250.000.

VOL 1147 ISS 2 FE 9 1993 UMI

Yo, Tadahira: *See*—
Kawabata, Nariyoshi; Minami, Akinori; and Yo, Tadahira, 5,185,415, Cl. 526-265.000.

Yoda, Nobuhisa, to Kabushiki Kaisha Toshiba. Image filing apparatus for serially storing input information. 5,185,821, Cl. 382-61.000.

Yokota, Motoyuki: *See*—
Tanabe, Mamoru; Yokota, Motoyuki; Fujiki, Sohei; and Sui, Masaru, 5,184,803, Cl. 267-140.120.

Yokoyama, Masaaki; and Kakui, Mikio, to MITA Industrial Co., Ltd. Optical sensor and thermal sensor. 5,184,895, Cl. 374-162.000.

Yokoyama, Seiichiro; and Kurata, Hideaki, to Idemitsu Kosan Co., Ltd. Process for producing color filter. 5,185,074, Cl. 205-162.000.

Yokoyama, Takeshi: *See*—
Tanigawa, Shogo; Yokoyama, Takeshi; and Izawa, Yoshikazu, 5,185,017, Cl. 55-257.200.

Yokozeki, Shinichi: *See*—
Komaki, Toshihiro; Kudo, Hideo; Ishizuki, Tomonori; and Yokozeki, Shinichi, 5,185,730, Cl. 369-44.260.

Yoo, Jae Poong. Yarn feeding apparatus having yarn break protection. 5,184,484, Cl. 66-132.00R.

Yoshibe, Koushi; and Kodaka, Yoshiro, to Nikon Corporation. Electric connecting apparatus for camera system. 5,185,622, Cl. 354-286.000.

Yoshida, Hiroichi; and Murai, Hiroko, to Sharp Kabushiki Kaisha. Document processing apparatus having a ruled line print control function. 5,185,854, Cl. 395-117.000.

Yoshida, Hiroyoshi: *See*—
Hayashi, Yuji; Ito, Masahiro; Yoshida, Hiroyoshi; and Shibata, Hiroyoshi, 5,184,664, Cl. 164-271.000.

Yoshida, Kazuaki: *See*—
Satoh, Tsuguo; Morikawa, Takayuki; Hihara, Hiroshi; Yagi, Takeshi; and Yoshida, Kazuaki, 5,185,020, Cl. 65-3.110.

Yoshida, Kenichi: *See*—
Ushio, Kazumichi; and Yoshida, Kenichi, 5,185,372, Cl. 514-552.000.

Yoshida, Masaru: *See*—
Mikami, Akiyoshi; Terada, Kousuke; Okibayashi, Katsushi; Tanaka, Koichi; Yoshida, Masaru; and Nakajima, Shigeo, 5,185,181, Cl. 427-69.000.

Yoshida, Minoru; and Hirano, Kouji, to Kabushiki Kaisha Toshiba. Developing device using developer regulating blade having two curved portions. 5,185,632, Cl. 355-261.000.

Yoshihara, Kunio: *See*—
Wakimoto, Hirotsugu; Konno, Mitsuo; and Yoshihara, Kunio, 5,185,650, Cl. 257-508.000.

Yoshikawa, Ryoichi: *See*—
Yamashita, Kyoji; Yoshikawa, Ryoichi; and Tokita, Masakazu, 5,185,812, Cl. 382-8.000.

Yoshimatsu, Kentaro; Ohya, Yukio; Shikata, Yasushi; Tanaka, Isao; Hasegawa, Yoshikazu; Seto, Toshio; and Osawa, Toshio, to Eisai Co., Ltd. Recombinant natural killer cell activator. 5,185,431, Cl. 530-351.000.

Yoshimura, Shuji: *See*—
Murayama, Masami; Takahashi, Atsuhisa; Kakuma, Satoshi; and Yoshimura, Shuji, 5,185,743, Cl. 370-110.100.

Yoshimura, Susumu: *See*—
Yamashita, Akio; Yoshimura, Susumu; and Tsuchiya, Sohji, 5,185,208, Cl. 428-411.100.

Yoshinaga, Kazuo: *See*—
Toshida, Yomishi; Yoshinaga, Kazuo; and Sato, Koichi, 5,185,097, Cl. 252-299.010.

Yoshinaga, Kenji; Nakamura, Toshiko; and Itoh, Kiichi, to Mitsubishi Petrochemical Company Limited. Process for producing highly water-absortive polymers. 5,185,413, Cl. 526-233.000.

Yoshino, Hiroyuki; and Tomidokoro, Yoshinori, to Casio Computer Co., Ltd. Financial calculator capable of displaying graphic representation. 5,185,696, Cl. 364-408.000.

Yoshino, Osamu: *See*—
Ochiai, Hirokazu; Watanabe, Yasuo; Murotani, Yoshiharu; Fukuda, Hirohiko; Yoshino, Osamu; Minami, Shinzaburo; Hayashi, Toshio; and Momonoi, Kaishu, 5,185,330, Cl. 514-142.000.

Yoshioka, Toshifumi: *See*—
Nishida, Naoya; Suzuki, Masaaki; and Yoshioka, Toshifumi, 5,185,059, Cl. 156-659.100.

Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Kawakita, Takeshi; Kuroita, Takanobu; Fukuda, Takemi; and Iezawa, Ryuhei, 5,185,333, Cl. 514-224.200.

Young, Darl E. Method of cutting frond stubs from a date palm. 5,184,656, Cl. 144-363.000.

Young, Donald C., to Union Oil Company of California. Pesticidal compositions and methods for controlling pests. 5,185,151, Cl. 424-400.000.

Young, Robert W.: *See*—
Nieradka, Zigmunt; and Young, Robert W., 5,184,388, Cl. 29-434.000.

Yozan, Inc.: *See*—
Takatori, Sunao; Kumagai, Ryohei; Matsumoto, Koji; and Yamamoto, Makoto, 5,185,816, Cl. 382-34.000.

Yu, Chung-Hsiung. Skate shoe having an adjustable plate mounted thereto. 5,184,834, Cl. 280-7.130.

Yuasa Battery Co., Ltd.: *See*—
Hayashi, Yuji; Ito, Masahiro; Yoshida, Hiroyoshi; and Shibata, Hiroyoshi, 5,184,664, Cl. 164-271.000.

Yuda, Yasukatsu: *See*—
Katano, Kiyoaki; Tomomoto, Tamako; Ogino, Hiroko; Hirano, Fumiya; Yuda, Yasukatsu; Konno, Fukio; Machinami, Tomoya; Tsuruoka, Takashi; and Inoye, Shigeharu, 5,185,347, Cl. 514-322.000.

Yugen Kaisha Parasight: *See*—
Nojima, Hisatake, 5,184,936, Cl. 415-003.100.

Yukawa, Hideaki: *See*—
Kohama, Keiko; Kobayashi, Miki; Kurusu, Yasurou; Yukawa, Hideaki; and Fukushima, Makiko, 5,185,262, Cl. 435-320.100.

Yulin Diesel Engine General Works: *See*—
Pei-qian, Zhong; Wen-kang, Zheng; Xi-tian, Xu; Jian-he, Liang; Dong-shen, Zhou; and Jun-zhi, Yang, 5,184,933, Cl. 414-725.000.

Z. Bavelloni S.p.A.: *See*—
Bavelloni, Franco, 5,184,430, Cl. 51-215.00E.

Zabeck, Sebastian: *See*—
Sausner, Andreas; and Zabeck, Sebastian, 5,184,591, Cl. 123-520.000.

Zabsky, John M.; Saitta, Jerome; and Bryan, Edward P., to Oral Card Products. Dental instrument sterilizer. 5,185,532, Cl. 250-455.110.

Zahler, Robert: *See*—
Slusarchyk, William A.; and Zahler, Robert, 5,185,459, Cl. 556-449.000.

Zahnradfabrik Friedrichshafen, AG.: *See*—
Leutner, Wilfried, 5,184,691, Cl. 180-132.000.

Zainullin, Albert G.: *See*—
Abdrakhmanov, Gabdrashit S.; Zainullin, Albert G.; Meling, Konstantin V.; Rakhmanov, Rauf N.; Balandin, Alexandr P.; Puzanov, Alexandr A.; Urazgildin, Ilyas A.; Mukhametshin, Almaz A.; Khakimov, Almas K.; Yasas, Antanas A.; Naryshkina, Lutsia M.; Akhunov, Albert M.; Akhunova, Tanzilya K., administrator; Akhunova, Flera A., dministrator; and Akhunov, Farid A., administrator, 5,184,687, Cl. 175-267.000.

Zaizen, Reigi: *See*—
Taguchi, Yasuhisa; Endo, Makoto; Kawamoto, Ryuichi; Saito, Shiro; Zaizen, Reigi; Komachi, Hiroshi; Narita, Naomasa; and Fujiwara, Kenichi, 5,184,355, Cl. 4-420.000.

Zalenski, Roberta M. Needlework threadholder and organizer. 5,184,729, Cl. 206-574.000.

Zambelli, Gabriele, to G.A.P. Technica S.R.L. Apparatus for the transfer of pasta nests into packaging containers. 5,184,711, Cl. 198-419.200.

Zander, Claus-Peter: *See*—
Merkel, Gerd; Glaunsinger, Georg; Vogt, Wilfried; Stadler, Peter; Zander, Claus-Peter; Schmitt, Gernot; Maass, Jurgen; Necker, Thomas; Becker, Willi; and Weber, Walter, 5,184,554, Cl. 101-415.100.

Zanussi Elettrodomestici S.p.A.: *See*—
Milocco, Claudio; and Santarossa, Gianni, 5,184,638, Cl. 134-186.000.
Milocco, Claudio; and Sist, Rosa, 5,185,379, Cl. 521-26.000.

Zardi, Umberto; and Pagani, Giorgio, to Ammonia Casale S.A.; and Zardi, Umberto. Method for retrofitting carbon monoxide conversion reactors. 5,184,386, Cl. 29-401.100.

Zawacki, Norbert: *See*—
Dop, Dennis B.; Freitag, Michael G.; and Zawacki, Norbert W., 5,185,779, Cl. 379-33.000.

Zawacki, Norbert W.: *See*—
Dop, Dennis B.; Freitag, Michael G.; and Zawacki, Norbert W., 5,185,779, Cl. 379-33.000.

Zelle, Robert E.: *See*—
DeBernardis, John F.; Arendsen, David L.; and Zelle, Robert E., 5,185,364, Cl. 514-444.000.

Zellweger Uster AG: *See*—
Benz, Rico; and Magdika, Janos, 5,184,380, Cl. 28-205.000.

Zender, Bernhard: *See*—
Erschens, Willie; Mencher, Franz J.; Brosius, Peter; Grave, Klaus; Zender, Bernhard; Schardt, Peter; Hessek, Gerd; and Alten, Ferdinand, 5,184,806, Cl. 254-126.000.

Zhang, Jiming: *See*—
Wessels, Bruce W.; Marks, Tobin J.; Richeson, Darrin S.; Tonge, Lauren M.; and Zhang, Jiming, 5,185,317, Cl. 505-1.000.

Zievers, Elizabeth S.; and Zievers, James F. Structural fibrosics. 5,185,018, Cl. 55-341.100.

Zievers, James F.: *See*—
Zievers, Elizabeth S.; and Zievers, James F., 5,185,018, Cl. 55-341.100.

Ziggity Systems, Inc: *See*—
Hostetler, Eldon, 5,184,570, Cl. 119-72.000.

Zikan, Karel; and Caudell, Thomas P., to Hughes Aircraft Company. Data processing systems and methods for linear programming. 5,185,715, Cl. 364-807.000.

Zimmermann, Guy: *See*—
Gozdenovich, Martin; Gozdenovich, Martin A.; Gozdenovich, David; Zimmermann, Guy; and Pierson, Glenn, 5,184,897, Cl. 383-75.000.

Zimmermann, Steven D., to TeleRobotics International, Inc. Omniview motionless camera orientation system. 5,185,667, Cl. 358-209.000.

Zodrow, Rudolf: *See*—
Tomashauser, Josef; and Zodrow, Rudolf, 5,185,053, Cl. 156-487.000.

Zon, Gerald: *See*—
Boyd, Victoria L.; and Zon, Gerald, 5,185,266, Cl. 436-89.000.

Zucker, Erik P.: *See*—
Craig, Richard R.; Welch, David F.; Zucker, Erik P.; Scifres, Donald R.; and Gignac, William J., 5,185,754, Cl. 372-45.000.

Zucker, Oved S. F., to Energy Compression Research Corp. Method and apparatus for digital synthesis of microwaves. 5,185,586, Cl. 331-96.000.

Zucker, Shlomo: *See*—
Gross, Joseph; and Zucker, Shlomo, 5,184,632, Cl. 132-326.000.

Zumstein, Ernst, to Bystronic Laser AG. Installation for cutting a workpiece and method for the control thereof. 5,185,510, Cl. 219-121.670.

Zupancic, Joseph J., to Allied-Signal Inc. Photodefinable interlevel dielectrics. 5,185,209, Cl. 428-457.000.

Zupancic, Joseph J., to Allied-Signal Inc. Photodefinable interlevel dielectrics. 5,185,210, Cl. 428-457.000.

Zurfluh, Erwin A.: *See*—
Nassehi, Mehdi M.; and Zurfluh, Erwin A., 5,185,737, Cl. 370-85.800.

Zwick, Nicholas, to Dialogic Corporation. Automatic call center overflow retrieval system. 5,185,786, Cl. 379-201.000.

Zwicker, Harry R.: *See*—
Luszcz, Stanley J.; and Zwicker, Harry R., 5,185,302, Cl. 501-127.000.

Zylka, Karl H.; and Buckley, Augustus M., Jr., to Quick-Tab Fasteners, Inc. Method and apparatus for feeding tabs or discs to an automatic staple or nail gun. 5,184,752, Cl. 221-1.000.

21st Century Power & Light Corporation: *See*—
Jensen, Donald, 5,185,541, Cl. 310-11.000.

VOL 1147 ISS 2 FEB 9 1993 UMI

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 9TH DAY OF FEBRUARY, 1993

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Beach, Sammie C.: *See*—
Brown, Ralph W.; Beach, Sammie C.; and Peter, Gary R., Re. 34,174, Cl. 62-135.000.

Brown, Ralph W.; Beach, Sammie C.; and Peter, Gary R., to White Consolidated Industries, Inc. Ice maker with thermal protection. Re. 34,174, Cl. 62-135.000.

Coxhead, Bruce; Hughes, Gary; and Murchie, John R., to Husky Injection Molding Systems Ltd. Oven for blow molding machine. Re. 34,177, Cl. 432-5.000.

Good, John W.: *See*—
Grimes, Richard V.; and Good, John W., Re. 34,175, Cl. 200-84.00R.

Grimes, Richard V.; and Good, John W. Float switch assembly. Re. 34,175, Cl. 200-84.00R.

Hitchcock, James E.; and Skinner, Kenneth R., to North American Philips Corporation. Method and apparatus for improving the rise and fall time of a video signal. Re. 34,176, Cl. 358-166.000.

Hughes, Gary: *See*—
Coxhead, Bruce; Hughes, Gary; and Murchie, John R., Re. 34,177, Cl. 432-5.000.

Husky Injection Molding Systems Ltd.: *See*—
Coxhead, Bruce; Hughes, Gary; and Murchie, John R., Re. 34,177, Cl. 432-5.000.

Murchie, John R.: *See*—
Coxhead, Bruce; Hughes, Gary; and Murchie, John R., Re. 34,177, Cl. 432-5.000.

North American Philips Corporation: *See*—
Hitchcock, James E.; and Skinner, Kenneth R., Re. 34,176, Cl. 358-166.000.

Peter, Gary R.: *See*—
Brown, Ralph W.; Beach, Sammie C.; and Peter, Gary R., Re. 34,174, Cl. 62-135.000.

Skinner, Kenneth R.: *See*—
Hitchcock, James E.; and Skinner, Kenneth R., Re. 34,176, Cl. 358-166.000.

White Consolidated Industries, Inc.: *See*—
Brown, Ralph W.; Beach, Sammie C.; and Peter, Gary R., Re. 34,174, Cl. 62-135.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Boeke, Jan. Superconducting wire. B1 4,980,964, 2-9-93, Cl. 29-599.000.

Columbia Chemical Corporation: *See*—
Rosenberg, William E., B1 4,251,331, Cl. 205-314.000.

Drysdale, Neville E.: *See*—
McLain, Stephan J.; and Drysdale, Neville E., B1 5,028,667, Cl. 525-415.000.

Du Pont de Nemours, E. I., and Company: *See*—
McLain, Stephan J.; and Drysdale, Neville E., B1 5,028,667, Cl. 525-415.000.

McLain, Stephan J.; and Drysdale, Neville E., to Du Pont de Nemours, E. I., and Company. Yttrium and rare earth compounds catalyzed lactone polymerization. B1 5,028,667, 2-9-93, Cl. 525-415.000.

Rosenberg, William E., to Columbia Chemical Corporation. Baths and additives for the electroplating of bright zinc. B1 4,251,331, 2-9-93, Cl. 205-314.000.

LIST OF DESIGN PATENTEES

Aderman, Wayne L., to International Business Machines Corporation. Front panel for a media enclosure for a data processing system. 333,134, 2-9-93, Cl. D14-115.000.

Ageless Tangible Assets, Inc.: *See*—
Bumb, Joseph M., 333,052, Cl. D6-476.000.

Akita, Osamu: *See*—
Kamakura, Mitsutoshi; Go, Hisao; Akita, Osamu; and Tanida, Kazuhiro, 333,122, Cl. D13-123.000.

Akselrod, Nick, to Harry Winston, Inc. Diamond or similar article. 333,108, 2-9-93, Cl. D11-90.000.

Aktiebolaget Electrolux: *See*—
Kilstrom, Lars G.; and Hansen, Sten A. R., 333,141, Cl. D15-124.000.

Aktiebolaget Volvo: *See*—
Ode, Bengt, 333,181, Cl. D23-324.000.

Alange, Sverker: *See*—
Scheinberg, Sari; Alange, Sverker; and Gyllenspetz, Per, 333,197, Cl. D34-1.000.

Amber, John M.; Barry, Michael R.; and Yong, Teck, to Beaver Computer Corporation. Portable computer. 333,130, 2-9-93, Cl. D14-106.000.

American Consolidated Enterprises, Inc.: *See*—
Craveiro, Joseph C., 333,121, Cl. D13-120.000.

American Standard Inc.: *See*—
Kaiser, Jack N., 333,180, Cl. D23-281.000.

Amero, Norman G., to Dico Tire, Inc. Penumatic tire tread and buttress. 333,116, 2-9-93, Cl. D12-146.000.

Anavil, Por; and Deeley, Julian M. H., to D.T.C. Industries Limited. Ball point pen tip. 333,152, 2-9-93, Cl. D19-55.000.

Andersen, Mark; von Buelow, John; Garrison, Denise C.; Mitchell, Vance C.; Thune, Nelson F.; and Porche, Leonard, to Hycor Biomedical, Inc. Wand for determining drug test result. 333,185, 2-9-93, Cl. D24-223.000.

Andersen, Mark; von Buelow, John; Garrison, Denise C.; Spindel, Richard A.; and Thune, Nelson F., to Hycor Biomedical, Inc. Drug specimen test module. 333,186, 2-9-93, Cl. D24-223.000.

Apple Computer, Inc.: *See*—
Barbera, Lawrence E.; and Nuttall, Michael J., 333,132, Cl. D14-113.000.

Archambault, Thomas J. Restraint device. 333,193, 2-9-93, Cl. D29-10.000.

Bailey, Catherine M., to Nike, Inc. Shoe upper. 333,033, 2-9-93, Cl. D2-314.000.

Baker, Franklin W. Combined writing board, calculator and writing instrument for attachment to an automobile steering wheel. 333,162, 2-9-93, Cl. D19-88.000.

Baker, Scott W.: *See*—
Brauner, Arne H.; Clancy, James R.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,089, Cl. D9-311.000.
Brauner, Arne H.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,090, Cl. D9-311.000.
Brauner, Arne H.; Clancy, James R.; O'Grady, Shawn P.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,091, Cl. D9-311.000.

Barbera, Lawrence E.; and Nuttall, Michael J., to Apple Computer, Inc. Computer monitor. 333,132, 2-9-93, Cl. D14-113.000.

Barry, Michael R.: *See*—
Amber, John M.; Barry, Michael R.; and Yong, Teck, 333,130, Cl. D14-106.000.

Beaver Computer Corporation: *See*—
Amber, John M.; Barry, Michael R.; and Yong, Teck, 333,130, Cl. D14-106.000.

Beck, B. Joseph; and Davis, Colleen, to Kenley Corporation, The. Bag. 333,088, 2-9-93, Cl. D9-305.000.

Belveal, Phillip W.: *See*—
Belveal, William W.; and Belveal, Phillip W., 333,175, Cl. D22-133.000.

Belveal, William W.; and Belveal, Phillip W. Fishing lure. 333,175, 2-9-93, Cl. D22-133.000.

Benhamou, Guy S., to OroAmerica, Inc. Jewelry chain. 333,106, 2-9-93, Cl. D11-13.000.

Bentfield B.V.: *See*—
ten Wolde, Wouter J.; and Ganzeboom, Evert, 333,062, Cl. D6-545.000.

Berkline Corporation, The: *See*—
Re, Frank M.; and Williams, James O., 333,054, Cl. D6-492.000.

Berrian, Edward J. Furniture moving dolly. 333,200, 2-9-93, Cl. D34-23.000.

Binder, J. Morris, to Tone Brothers, Inc. Combined container and cap. 333,096, 2-9-93, Cl. D9-522.000.

Blount, R. E. Peppy: *See*—
Patton, John C., 333,170, Cl. D21-209.000.

Bocade, Emilorah; Watt, Doyle; Hendrick, Carl W.; and Mattson, Deborah, to Keeler Brass Company. Pull. 333,082, 2-9-93, Cl. D8-317.000.

Body, Kenneth L. Snow skates. 333,172, 2-9-93, Cl. D21-229.000.

Bomatic, Inc.: *See*—
Hestehave, Borge; and Hestehave, Kjeld, 333,098, Cl. D9-531.000.

Brauner, Arne H.; Clancy, James R.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., to General Mills, Inc. Simulative bottle. 333,089, 2-9-93, Cl. D9-311.000.

Brauner, Arne H.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., to General Mills, Inc. Simulative bottle. 333,090, 2-9-93, Cl. D9-311.000.

Brauner, Arne H.; Clancy, James R.; O'Grady, Shawn P.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., to General Mills, Inc. Simulative bottle. 333,091, 2-9-93, Cl. D9-311.000.

Brinkmann Corporation, The: *See*—
Hall, Milly S.; Rohrs, Donald L.; and Hung, Kung Chi, 333,189, Cl. D26-67.000.

Brussing, Bernd, to Hefendehl, Hans F. Bookend. 333,150, 2-9-93, Cl. D19-34.100.

Bumb, Joseph M., to Ageless Tangible Assets, Inc. Display rack. 333,052, 2-9-93, Cl. D6-476.000.

Burgener, Eddy, to Roventa Hexex SA. Watch. 333,102, 2-9-93, Cl. D10-39.000.

Burke, Jonathan C., to Telex Communications, Inc. Headset. 333,137, 2-9-93, Cl. D14-206.000.

Canon Kabushiki Kaisha: *See*—
Koizumi, Hiroyuki, 333,144, Cl. D15-199.000.
Komada, Takeshi; Shimizu, Hisakazu; Ohsawa, Yosuke; and Sakurai, Mitsuru, 333,125, Cl. D14-100.000.
Yamamoto, Ei, 333,131, Cl. D14-107.000.

Canstar Sports Group Inc.: *See*—
Collins, Greg, 333,038, Cl. D3-36.000.

Carlson, Kenneth L.: *See*—
Wagner, Lance R.; Kornmiller, Allan; Wright, Donald M.; and Carlson, Kenneth L., 333,111, Cl. D12-92.000.

Carson, Steven R., to Genlyte Group Incorporated, The. Control switch. 333,124, 2-9-93, Cl. D13-169.000.

Caruso, Jerome C., to Shelby Williams Industries, Inc. Chair. 333,044, 2-9-93, Cl. D6-373.000.

Casio Computer Co., Ltd.: *See*—
Morishima, Takashi, 333,100, Cl. D10-38.000.

Cassidy, Patrick T.: *See*—
Millholen, Neal W.; and Cassidy, Patrick T., 333,176, Cl. D22-147.000.

Caterpillar Inc.: *See*—
Garman, James A., 333,140, Cl. D15-28.000.

Caveza, Martin, to Mattel, Inc. Electronic carousel. 333,166, 2-9-93, Cl. D21-64.000.

Cerola, Joseph J., to Ryder International Corporation; and Meadox Medicals, Inc., a part interest. Automatic disposable biopsy system. 333,183, 2-9-93, Cl. D24-133.000.

Chinn, Andrew C. Drink dispenser for vehicle. 333,070, 2-9-93, Cl. D7-620.000.

Choi, Oong: *See*—
Choi, Robert S.; Kong, C. Kwai; and Choi, Oong, 333,041, Cl. D6-354.000.

Choi, Robert S.; Kong, C. Kwai; and Choi, Oong, to Vistalite, Incorporated. Bicycle seat with rear safety flasher light and reflector. 333,041, 2-9-93, Cl. D6-354.000.

Ciccarelli, Sam M. Shovel. 333,074, 2-9-93, Cl. D8-10.000.

Clancy, James R.: *See*—
Brauner, Arne H.; Clancy, James R.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,089, Cl. D9-311.000.
Brauner, Arne H.; Clancy, James R.; O'Grady, Shawn P.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,091, Cl. D9-311.000.

Coggins, Fred H., to Southern Pro Lures, Inc. Fishing lure. 333,174, 2-9-93, Cl. D22-128.000.

Cohn, Robert J.; and Kolvites, Albert, to InterMetro Industries Corporation. Shelf. 333,059, 2-9-93, Cl. D6-511.000.

Collins, Greg, to Canstar Sports Group Inc. Hockey equipment bag. 333,038, 2-9-93, Cl. D3-36.000.

Collins, Sharon K. Combined bingo papers clipboard and marking instrument holder. 333,160, 2-9-93, Cl. D19-88.000.

Colony Corporation: *See*—
Dweck, Jack; and Ederer, Janet A., 333,037, Cl. D3-34.000.

Compuadd Corporation: *See*—
French, Curtis P., 333,148, Cl. D18-4.000.

Concept 8, Inc.: *See*—
Kimpson, Rebecca J., 333,066, Cl. D7-509.000.

Craft, Charles W., Jr.; and Lewellen, Richard R., to Rubbermaid Incorporated. Newspaper bundling rack. 333,051, 2-9-93, Cl. D6-475.000.

Craveiro, Joseph C., to American Consolidated Enterprises, Inc. Connector clamp for use with battery terminals of differing types. 333,121, 2-9-93, Cl. D13-120.000.

Cray Computer Corporation: *See*—
Cray, Seymour R.; Krajewski, Nicholas J.; Johnson, David J.; Reshanov, Eugene N.; and Gaston, Johannes N., 333,127, Cl. D14-102.000.

Cray, Seymour R.; Krajewski, Nicholas J.; Johnson, David J.; Reshanov, Eugene N.; and Gaston, Johannes N., to Cray Computer Corporation. Computer cabinet. 333,127, 2-9-93, Cl. D14-102.000.

Curbbun, Charles: *See*—
Wachob, David E.; and Curbbun, Charles, 333,135, Cl. D14-138.000.

D.T.C. Industries Limited: *See*—
Anavil, Por; and Deeley, Julian M. H., 333,152, Cl. D19-55.000.

Dancyger, Michael. Tool pouch. 333,040, 2-9-93, Cl. D3-105.000.

Davis, Colleen: *See*—
Beck, B. Joseph; and Davis, Colleen, 333,088, Cl. D9-305.000.

deBlois, Martin. Bed frame. 333,047, 2-9-93, Cl. D6-382.000.

deBlois, Martin, to les Industries Amisco LTEE. Bunk bed. 333,048, 2-9-93, Cl. D6-384.000.

Deeley, Julian M. H.: *See*—
Anavil, Por; and Deeley, Julian M. H., 333,152, Cl. D19-55.000.

Derocher, Michael D., to Hewlett-Packard Company. Palmtop computer. 333,129, 2-9-93, Cl. D14-106.000.

Designs For Leisure, Ltd.: *See*—
Kaye, Howard, 333,055, Cl. D6-495.000.
Kaye, Howard, 333,056, Cl. D6-495.000.

Devezin, Verina. Atletic shoe flap apparatus. 333,031, 2-9-93, Cl. D2-314.000.

Diaco, Joseph; and Kennedy, Todd R., to York Products, Inc. Vehicle cargo bed liner. 333,112, 2-9-93, Cl. D12-98.000.

Dico Tire, Inc.: *See*—
Amero, Norman G., 333,116, Cl. D12-146.000.

Diffrient, Niels, to Howe Furniture Corporation. Table pedestal. 333,058, 2-9-93, Cl. D6-498.000.

Douglas, Dennis. Combination tape measure and square. 333,103, 2-9-93, Cl. D10-65.000.

Dweck, Jack; and Ederer, Janet A., to Colony Corporation. Eyeglass case. 333,037, 2-9-93, Cl. D3-34.000.

Dyer, John J.: *See*—
Moreau, Joseph R.; and Dyer, John J., 333,194, Cl. D30-119.000.

Dziersk, Mark; and Koda, Walter, to Mobil Oil Corporation. Vanity basket. 333,196, 2-9-93, Cl. D34-1.000.

Ederer, Janet A.: *See*—
Dweck, Jack; and Ederer, Janet A., 333,037, Cl. D3-34.000.

Egashira, Yoshimi; and Kira, Michio, to Harada Industry Co., Ltd. Antenna for automobiles. 333,138, 2-9-93, Cl. D14-230.000.

Engineering & Precision Machining, Inc.: *See*—
Taylor, Harold S., 333,184, Cl. D24-143.000.

Ernst Stadelmann Gesellschafl m.b.H: *See*—
Kirchner, Balthasar, 333,157, Cl. D19-75.000.

Excel International Group, Inc.: *See*—
Nestrud, Thomas C., 333,113, Cl. D12-125.000.

Fang, Elton H. S.: *See*—
Peng, Allen S. C.; and Fang, Elton H. S., 333,128, Cl. D14-106.000.

Farmer, Lloyd. Aircrafl crane lift. 333,201, 2-9-93, Cl. D34-35.000.

Felstead, Richard A.: *See*—
Hume, Roger A.; Felstead, Richard A.; and Zucchi, Luciano, 333,188, Cl. D26-2.000.

Feltman, Charles H., III. Mug. 333,067, 2-9-93, Cl. D7-536.000.

Fowler, William: *See*—
Lee, Kathryn J.; and Fowler, William, 333,035, Cl. D2-501.000.

Franklin, Dana, to Samsonite Corporation. Pull tab for slide fastener. 333,109, 2-9-93, Cl. D11-221.000.

French, Curtis P., to Compuadd Corporation. Point of sale terminal. 333,148, 2-9-93, Cl. D18-4.000.

Fushiya, Fusao; and Yamauchi, Shigeki, to Makita Electric Works, Ltd. Portable electric wrench. 333,076, 2-9-93, Cl. D8-61.000.

Fushiya, Fusao; and Okumura, Michio, to Makita Electric Works, Ltd. Portable electric drill. 333,080, 2-9-93, Cl. D8-68.000.

Fussner, Clint J. Bottle drain coupling. 333,069, 2-9-93, Cl. D7-619.000.

Ganzeboom, Evert: *See*—
ten Wolde, Wouter J.; and Ganzeboom, Evert, 333,062, Cl. D6-545.000.

Garman, James A., to Caterpillar Inc. Implement base edge protector. 333,140, 2-9-93, Cl. D15-28.000.

VOL
1147
ISS
2
FE
9
1993
UMI

Garrison, Denise C.: *See—*
Andersen, Mark; von Buelow, John; Garrison, Denise C.; Mitchell, Vance C.; Thune, Nelson F.; and Porche, Leonard, 333,185, Cl. D24-223.000.
Andersen, Mark; von Buelow, John; Garrison, Denise C.; Spindel, Richard A.; and Thune, Nelson F., 333,186, Cl. D24-223.000.
Gaston, Johannes N.: *See—*
Cray, Seymour R.; Krajewski, Nicholas J.; Johnson, David J.; Reshanov, Eugene N.; and Gaston, Johannes N., 333,127, Cl. D14-102.000.
GE Thorn Lamps Limited: *See—*
Hume, Roger A.; Felstead, Richard A.; and Zucchi, Luciano, 333,188, Cl. D26-2.000.
General Instrument Corporation: *See—*
Wachob, David E.; and Curbbun, Charles, 333,135, Cl. D14-138.000.
General Mills, Inc.: *See—*
Brauner, Arne H.; Clancy, James R.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,089, Cl. D9-311.000.
Brauner, Arne H.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,090, Cl. D9-311.000.
Brauner, Arne H.; Clancy, James R.; O'Grady, Shawn P.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,091, Cl. D9-311.000.
Genlyte Group Incorporated, The: *See—*
Carson, Steven R., 333,124, Cl. D13-169.000.
Gertler, Robert. Roller skate. 333,171, 2-9-93, Cl. D21-226.000.
Glesser, Louis S. Knife sharpener. 333,081, 2-9-93, Cl. D8-91.000.
Go, Hisao: *See—*
Kamakura, Mitsutoshi; Go, Hisao; Akita, Osamu; and Tanida, Kazuhiro, 333,122, Cl. D13-123.000.
Goldstar Co., Ltd.: *See—*
Yu, Sun I., 333,136, Cl. D14-165.000.
Greenbaum, William: *See—*
Incantalupo, Robert A.; and Greenbaum, William, 333,075, Cl. D8-51.000.
Grosfillex, Raymond, to Grosfillex Sarl. Chair. 333,046, 2-9-93, Cl. D6-380.000.
Grosfillex Sarl: *See—*
Grosfillex, Raymond, 333,046, Cl. D6-380.000.
Guenette, Lauren. Stilt handle. 333,167, 2-9-93, Cl. D21-72.000.
Gyllenspetz, Per: *See—*
Scheinberg, Sari; Alange, Sverker; and Gyllenspetz, Per, 333,197, Cl. D34-1.000.
Hall, Milly S.; Rohrs, Donald L.; and Hung, Kung Chi, to Brinkmann Corporation, The. Outdoor light fixture. 333,189, 2-9-93, Cl. D26-67.000.
Hamilton, Thomas F., to Hamilton, Thomas F. Interior cargo cover for motor vehicles. 333,117, 2-9-93, Cl. D12-155.000.
Hansen, Sten A. R.: *See—*
Kilstrom, Lars G.; and Hansen, Sten A. R., 333,141, Cl. D15-124.000.
Harada Industry Co., Ltd.: *See—*
Egashira, Yoshimi; and Kira, Michio, 333,138, Cl. D14-230.000.
Harry Winston, Inc.: *See—*
Akselrod, Nick, 333,108, Cl. D11-90.000.
Hartnett, Guy A., to One-Right Systems, Inc. Combined clipboard and checkbook holder. 333,161, 2-9-93, Cl. D19-88.000.
Hatfield, Tinker L., to Nike, Inc. Shoe upper. 333,032, 2-9-93, Cl. D2-314.000.
Haubner, Clarence L. Adjustable spray can holder tool for spraying at high positions. 333,095, 2-9-93, Cl. D9-434.000.
Hayakawa, Tsuyoshi, to Seikosha Co., Ltd. Clock movement. 333,105, 2-9-93, Cl. D10-129.000.
Hefendehl, Hans F.: *See—*
Brussing, Bernd, 333,150, Cl. D19-34.100.
Hendrick, Carl W.: *See—*
Bocade, Emilorah; Watt, Doyle; Hendrick, Carl W.; and Mattson, Deborah, 333,082, Cl. D8-317.000.
Hess, Stephen C.; and Rehmert, Rory S., to Winston Furniture Company, Inc. Chair. 333,045, 2-9-93, Cl. D6-376.000.
Hestehave, Borge; and Hestehave, Kjeld, to Bomatic, Inc. Bottle. 333,098, 2-9-93, Cl. D9-531.000.
Hestehave, Kjeld: *See—*
Hestehave, Borge; and Hestehave, Kjeld, 333,098, Cl. D9-531.000.
Hewlett-Packard Company: *See—*
Derocher, Michael D., 333,129, Cl. D14-106.000.
Hiromori Inc.: *See—*
Hiromori, Junji, 333,099, Cl. D10-2.000.
Hiromori, Junji, 333,154, Cl. D19-65.000.
Hiromori, Junji, 333,155, Cl. D19-65.000.
Hiromori, Junji, to Hiromori Inc. Combined digital clock and spring clip. 333,099, 2-9-93, Cl. D10-2.000.
Hiromori, Junji, to Hiromori Inc. Spring clip. 333,154, 2-9-93, Cl. D19-65.000.
Hiromori, Junji, to Hiromori Inc. Spring clip. 333,155, 2-9-93, Cl. D19-65.000.
Hirota, Masuo, to Kabushiki Kaisha Wacom. Stylus for inputting electromagnetic signals into a tablet. 333,133, 2-9-93, Cl. D14-114.000.
Hochfeld, Stanley, to Perl, Chuck; and Holtz, Leonard, part interest to each. Combined pen and holder therefor. 333,151, 2-9-93, Cl. D19-36.000.
Hollander, Alan R., to Hollander, Rhonda G. Map distance recorder. 333,104, 2-9-93, Cl. D10-70.000.
Hollander, Rhonda G.: *See—*
Hollander, Alan R., 333,104, Cl. D10-70.000.
Holtz, Leonard: *See—*
Hochfeld, Stanley, 333,151, Cl. D19-36.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Mogi, Tomonori; and Nakamura, Munehito, 333,110, Cl. D12-7.000.
Hosoe, Isao, to Itoki Co., Ltd. Table. 333,053, 2-9-93, Cl. D6-482.000.
Howe Furniture Corporation: *See—*
Diffrient, Niels, 333,058, Cl. D6-498.000.
Huang, Ming-Tai. Toy wheel. 333,168, 2-9-93, Cl. D21-141.000.
Hume, Roger A.; Felstead, Richard A.; and Zucchi, Luciano, to GE Thorn Lamps Limited. Lamp. 333,188, 2-9-93, Cl. D26-2.000.
Hung, Ching-Lung. Container holder. 333,072, 2-9-93, Cl. D7-622.000.
Hung, Kung Chi: *See—*
Hall, Milly S.; Rohrs, Donald L.; and Hung, Kung Chi, 333,189, Cl. D26-67.000.
Hycor Biomedical, Inc.: *See—*
Andersen, Mark; von Buelow, John; Garrison, Denise C.; Mitchell, Vance C.; Thune, Nelson F.; and Porche, Leonard, 333,185, Cl. D24-223.000.
Andersen, Mark; von Buelow, John; Garrison, Denise C.; Spindel, Richard A.; and Thune, Nelson F., 333,186, Cl. D24-223.000.
Incantalupo, Robert A.; and Greenbaum, William. Combined gripping tongs and light. 333,075, 2-9-93, Cl. D8-51.000.
Industrial Technology Research Institute: *See—*
Peng, Allen S. C.; and Fang, Elton H. S., 333,128, Cl. D14-106.000.
InterMetro Industries Corporation: *See—*
Cohn, Robert J.; and Kolvites, Albert, 333,059, Cl. D6-511.000.
International Business Machines Corporation: *See—*
Aderman, Wayne L., 333,134, Cl. D14-115.000.
Ishida, Katsuhiro: *See—*
Miyake, Takao; Kawaishi, Masayoshi; Ishida, Katsuhiro; and Kanaoka, Yukio, 333,147, Cl. D18-4.000.
Itoki Co., Ltd.: *See—*
Hosoe, Isao, 333,053, Cl. D6-482.000.
Jane, Rod B.: *See—*
Brauner, Arne H.; Clancy, James R.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,089, Cl. D9-311.000.
Brauner, Arne H.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,090, Cl. D9-311.000.
Brauner, Arne H.; Clancy, James R.; O'Grady, Shawn P.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,091, Cl. D9-311.000.
Jannard, James H., to Oakley, Inc. Unitary eyeglass lens. 333,145, 2-9-93, Cl. D16-101.000.
Johnson, David J.: *See—*
Cray, Seymour R.; Krajewski, Nicholas J.; Johnson, David J.; Reshanov, Eugene N.; and Gaston, Johannes N., 333,127, Cl. D14-102.000.
Johnson, Horace, Jr.: *See—*
Levy, William A.; and Johnson, Horace, Jr., 333,097, Cl. D9-528.000.
Kabushiki Kaisha Kanemitsu: *See—*
Kanemitsu, Toshiaki; Oda, Kazuyuki; and Kanemitsu, Shuji, 333,084, Cl. D8-360.000.
Kabushiki Kaisha Ogura: *See—*
Kimura, Kiyoshi, 333,142, Cl. D15-128.000.
Kabushiki Kaisha Toshiba: *See—*
Kasno, Maki, 333,149, Cl. D18-39.000.
Kabushiki Kaisha Wacom: *See—*
Hirota, Masuo, 333,133, Cl. D14-114.000.
Kaiser, Jack N., to American Standard Inc. Bathtub. 333,180, 2-9-93, Cl. D23-281.000.
Kamakura, Mitsutoshi; Go, Hisao; Akita, Osamu; and Tanida, Kazuhiro, to Sumitomo Electric Industries, Ltd. Optical receiver/-transmiter module. 333,122, 2-9-93, Cl. D13-123.000.
Kanaoka, Yukio: *See—*
Miyake, Takao; Kawaishi, Masayoshi; Ishida, Katsuhiro; and Kanaoka, Yukio, 333,147, Cl. D18-4.000.
Kanemitsu, Shuji: *See—*
Kanemitsu, Toshiaki; Oda, Kazuyuki; and Kanemitsu, Shuji, 333,084, Cl. D8-360.000.
Kanemitsu, Toshiaki; Oda, Kazuyuki; and Kanemitsu, Shuji, to Kabushiki Kaisha Kanemitsu. Pulley. 333,084, 2-9-93, Cl. D8-360.000.
Karas, Jeffrey; and Klein, Jeffrey. Ceiling clip. 333,086, 2-9-93, Cl. D8-389.000.
Kasno, Maki, to Kabushiki Kaisha Toshiba. Electronic copying machine. 333,149, 2-9-93, Cl. D18-39.000.
Kawaishi, Masayoshi: *See—*
Miyake, Takao; Kawaishi, Masayoshi; Ishida, Katsuhiro; and Kanaoka, Yukio, 333,147, Cl. D18-4.000.
Kaye, Howard, to Designs For Leisure, Ltd. Base for a barstool. 333,055, 2-9-93, Cl. D6-495.000.
Kaye, Howard, to Designs For Leisure, Ltd. Base for a barstool. 333,056, 2-9-93, Cl. D6-495.000.
Keeler Brass Company: *See—*
Bocade, Emilorah; Watt, Doyle; Hendrick, Carl W.; and Mattson, Deborah, 333,082, Cl. D8-317.000.
Kenley Corporation, The: *See—*
Beck, B. Joseph; and Davis, Colleen, 333,088, Cl. D9-305.000.
Kennedy, Todd R.: *See—*
Diaco, Joseph; and Kennedy, Todd R., 333,112, Cl. D12-98.000.
Kilstrom, Lars G.; and Hansen, Sten A. R., to Aktiebolaget Electrolux. Suspension instrument for rotor of grinding machine. 333,141, 2-9-93, Cl. D15-124.000.
Kimpson, Rebecca J., to Concept 8, Inc. Drinking cup. 333,066, 2-9-93, Cl. D7-509.000.

Kimura, Kiyoshi, to Kabushiki Kaisha Ogura. Portable hydraulic punching instrument. 333,142, 2-9-93, Cl. D15-128.000.
King, Tom. Table. 333,049, 2-9-93, Cl. D6-452.000.
Kira, Michio: *See—*
Egashira, Yoshimi; and Kira, Michio, 333,138, Cl. D14-230.000.
Kirchner, Balthasar, to Ernst Stadelmann Gesellschaft m.b.H. Paper clip dispenser. 333,157, 2-9-93, Cl. D19-75.000.
Klein, Jeffrey: *See—*
Karas, Jeffrey; and Klein, Jeffrey, 333,086, Cl. D8-389.000.
Koda, Walter: *See—*
Dziersk, Mark; and Koda, Walter, 333,196, Cl. D34-1.000.
Koizumi, Hiroyuki, to Canon Kabushiki Kaisha. Chamber for semiconductor fabricating machine. 333,144, 2-9-93, Cl. D15-199.000.
Kolvites, Albert: *See—*
Cohn, Robert J.; and Kolvites, Albert, 333,059, Cl. D6-511.000.
Komada, Takeshi; Shimizu, Hisakazu; Ohsawa, Yosuke; and Sakurai, Mitsuru, to Canon Kabushiki Kaisha. Image editing unit for digitally input data. 333,125, 2-9-93, Cl. D14-100.000.
Komai, Neil M.; and Ricchio, Joseph D., Jr. Chair. 333,042, 2-9-93, Cl. D6-370.000.
Kong, C. Kwai: *See—*
Choi, Robert S.; Kong, C. Kwai; and Choi, Oong, 333,041, Cl. D6-354.000.
Kornmiller, Allan: *See—*
Wagner, Lance R.; Kornmiller, Allan; Wright, Donald M.; and Carlson, Kenneth L., 333,111, Cl. D12-92.000.
Kraft, David W.; and Tode, Jess L., to Video Lottery Consultants, Inc. Electronic game housing. 333,164, 2-9-93, Cl. D21-13.000.
Krajewski, Nicholas J.: *See—*
Cray, Seymour R.; Krajewski, Nicholas J.; Johnson, David J.; Reshanov, Eugene N.; and Gaston, Johannes N., 333,127, Cl. D14-102.000.
Krieger, Ira. Wristwatch. 333,101, 2-9-93, Cl. D10-39.000.
Kuba, Lawrence M.; and Tedham, Thomas A., to Wang Laboratories, Inc. Personal computer. 333,126, 2-9-93, Cl. D14-100.000.
Lang-Ree, Arne: *See—*
Rehrig, J. B.; Nigrelli, Terry J.; and Lang-Ree, Arne, 333,093, Cl. D9-341.000.
Lee, Kathryn J.; and Fowler, William. Combined scarf and ring. 333,035, 2-9-93, Cl. D2-501.000.
les Industries Amisco LTEE: *See—*
deBlois, Martin, 333,048, Cl. D6-384.000.
Levy, William A.; and Johnson, Horace, Jr., to Rhone-Poulenc Agrochimie. Upper portion of a bottle. 333,097, 2-9-93, Cl. D9-528.000.
Lewellen, Richard R.: *See—*
Craft, Charles W., Jr.; and Lewellen, Richard R., 333,051, Cl. D6-475.000.
Lift Verkaufsgerate Gesellschaft M.B.H.: *See—*
Schubert, Otto, 333,050, Cl. D6-473.000.
Lim, Kevin W. Holder for beverage containers. 333,071, 2-9-93, Cl. D7-620.000.
Linscott, Joseph C. Weed puller. 333,073, 2-9-93, Cl. D8-4.000.
Long, Richard, to Smith & Hawken. Composter lid. 333,199, 2-9-93, Cl. D34-11.000.
Makishima, Reichi: *See—*
Mikiya, Toshio; and Makishima, Reichi, 333,179, Cl. D23-262.000.
Makita Electric Works, Ltd.: *See—*
Fushiya, Fusao; and Yamauchi, Shigeki, 333,076, Cl. D8-61.000.
Fushiya, Fusao; and Okumura, Michio, 333,080, Cl. D8-68.000.
Mann, John C. Waste collecting receptacle. 333,198, 2-9-93, Cl. D34-1.000.
Marketing Congress, Inc.: *See—*
Zutler, Aaron, 333,094, Cl. D9-423.000.
Mattel, Inc.: *See—*
Caveza, Martin, 333,166, Cl. D21-64.000.
Mattson, Deborah: *See—*
Bocade, Emilorah; Watt, Doyle; Hendrick, Carl W.; and Mattson, Deborah, 333,082, Cl. D8-317.000.
Matzkin, Jakov: *See—*
Moshe, Aviv, 333,092, Cl. D9-338.000.
McDevitt, Timothy E. Prescription bottle magnifier. 333,146, 2-9-93, Cl. D16-135.000.
McDonald, Steven C., to Nikem Inc. Outsole and midsole of a shoe. 333,034, 2-9-93, Cl. D2-320.000.
Meadox Medicals, Inc.: *See—*
Cerola, Joseph J., 333,183, Cl. D24-133.000.
Mendelsohn, Joseph H. Card holder. 333,163, 2-9-93, Cl. D20-40.000.
Mikiya, Toshio, to Nitto Kohki Co., Ltd. Portable rotary grinder. 333,077, 2-9-93, Cl. D8-62.000.
Mikiya, Toshio, to Nitto Kohki Co., Ltd. Portable vibrating chisel. 333,078, 2-9-93, Cl. D8-68.000.
Mikiya, Toshio, to Nitto Kohki Co., Ltd. Portable vibrating chisel. 333,079, 2-9-93, Cl. D8-68.000.
Mikiya, Toshio; and Makishima, Reichi, to Nitto Kohki Co., Ltd. Pipe coupler. 333,179, 2-9-93, Cl. D23-262.000.
Millholen, Neal W.; and Cassidy, Patrick T. Fishing pole holder. 333,176, 2-9-93, Cl. D22-147.000.
Mitchell, Vance C.: *See—*
Andersen, Mark; von Buelow, John; Garrison, Denise C.; Mitchell, Vance C.; Thune, Nelson F.; and Porche, Leonard, 333,185, Cl. D24-223.000.
Miyake, Takao; Kawaishi, Masayoshi; Ishida, Katsuhiro; and Kanaoka, Yukio, to Sharp Kabushiki Kaisha. Cash register with POS system. 333,147, 2-9-93, Cl. D18-4.000.
Mobil Oil Corporation: *See—*
Dziersk, Mark; and Koda, Walter, 333,196, Cl. D34-1.000.
Mogi, Tomonori; and Nakamura, Munehito, to Honda Giken Kogyo Kabushiki Kaisha. Snowmobile. 333,110, 2-9-93, Cl. D12-7.000.
Moreau, Joseph R.; and Dyer, John J., to Norbco, Inc. Tie stall divider. 333,194, 2-9-93, Cl. D30-119.000.
Morishima, Takashi, to Casio Computer Co., Ltd. Wrist watch. 333,100, 2-9-93, Cl. D10-38.000.
Moshe, Aviv, to Matzkin, Jakov, a part interest. Cosmetic dispensing container. 333,092, 2-9-93, Cl. D9-338.000.
Murphy, Kent W., to Rubbermaid Incorporated. Lid for storage jar. 333,065, 2-9-93, Cl. D7-391.000.
Nakagawa Corporation: *See—*
Nakagawa, Kosaburo, 333,107, Cl. D11-13.000.
Nakagawa, Kosaburo, to Nakagawa Corporation. Jewelry chain. 333,107, 2-9-93, Cl. D11-13.000.
Nakamura, Munehito: *See—*
Mogi, Tomonori; and Nakamura, Munehito, 333,110, Cl. D12-7.000.
Nakayama, Yoshiaki: *See—*
Uchibori, Noritaka; and Nakayama, Yoshiaki, 333,153, Cl. D18-55.000.
National Transaction Network, Inc.: *See—*
Poupore, Timothy J. H., 333,139, Cl. D14-242.000.
Nestrud, Thomas C., to Excel International Group, Inc. Pedal. 333,113, 2-9-93, Cl. D12-125.000.
Neuroth, Margaret A. B.; and Neuroth, Richard L. Bubble wand. 333,165, 2-9-93, Cl. D21-61.000.
Neuroth, Richard L.: *See—*
Neuroth, Margaret A. B.; and Neuroth, Richard L., 333,165, Cl. D21-61.000.
Nigrelli, Terry J.: *See—*
Rehrig, J. B.; Nigrelli, Terry J.; and Lang-Ree, Arne, 333,093, Cl. D9-341.000.
Nike, Inc.: *See—*
Bailey, Catherine M., 333,033, Cl. D2-314.000.
Hatfield, Tinker L., 333,032, Cl. D2-314.000.
Nikem Inc.: *See—*
McDonald, Steven C., 333,034, Cl. D2-320.000.
Nitto Kohki Co., Ltd.: *See—*
Mikiya, Toshio, 333,077, Cl. D8-62.000.
Mikiya, Toshio, 333,078, Cl. D8-68.000.
Mikiya, Toshio, 333,079, Cl. D8-68.000.
Mikiya, Toshio; and Makishima, Reichi, 333,179, Cl. D23-262.000.
Norbco, Inc.: *See—*
Moreau, Joseph R.; and Dyer, John J., 333,194, Cl. D30-119.000.
Novy, George A., to WirthCo Engineering, Inc. Hose coupler. 333,178, 2-9-93, Cl. D23-262.000.
Nuttall, Michael J.: *See—*
Barbera, Lawrence E.; and Nuttall, Michael J., 333,132, Cl. D14-113.000.
Oakley, Inc.: *See—*
Jannard, James H., 333,145, Cl. D16-101.000.
Oberdorfer-Bogel, Rainer, to Wap Reinigungssysteme GmbH & Co. Vacuum cleaner. 333,195, 2-9-93, Cl. D32-23.000.
Oda, Kazuyuki: *See—*
Kanemitsu, Toshiaki; Oda, Kazuyuki; and Kanemitsu, Shuji, 333,084, Cl. D8-360.000.
Ode, Bengt, to Aktiebolaget Volvo. Electric engine heater. 333,181, 2-9-93, Cl. D23-324.000.
O'Grady, Shawn P.: *See—*
Brauner, Arne H.; Clancy, James R.; O'Grady, Shawn P.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,091, Cl. D9-311.000.
Ohsawa, Yosuke: *See—*
Komada, Takeshi; Shimizu, Hisakazu; Ohsawa, Yosuke; and Sakurai, Mitsuru, 333,125, Cl. D14-100.000.
Okumura, Michio: *See—*
Fushiya, Fusao; and Okumura, Michio, 333,080, Cl. D8-68.000.
Omi, Shoichi. Specimen holder for microscope. 333,187, 2-9-93, Cl. D24-225.000.
One-Right Systems, Inc.: *See—*
Hartnett, Guy A., 333,161, Cl. D19-88.000.
OroAmerica, Inc.: *See—*
Benhamou, Guy S., 333,106, Cl. D11-13.000.
Patton, John C., to Patton, John Clifton; and Blount, R. E. Peppy. Tethered football practice kicking aid. 333,170, 2-9-93, Cl. D21-209.000.
Patton, John Clifton: *See—*
Patton, John C., 333,170, Cl. D21-209.000.
Peersmann, Richard F. M., to Pollyflame International B.V. Tape dispenser. 333,156, 2-9-93, Cl. D19-69.000.
Peersmann, Richard F. M., to Pollyflame International B.V. Combined holder for a writing instrument, clock and calculator. 333,158, 2-9-93, Cl. D19-77.000.
Peersmann, Richard F. M., to Pollyflame International B.V. Combined desk accessory holder, clock and calculator. 333,159, 2-9-93, Cl. D19-78.000.
Peg Perego Pines S.p.A.: *See—*
Perego, Gianluca, 333,060, Cl. D6-511.000.
Peng, Allen S. C.; and Fang, Elton H. S., to Industrial Technology Research Institute. Portable computer. 333,128, 2-9-93, Cl. D14-106.000.
Perego, Gianluca, to Peg Perego Pines S.p.A. Combined high chair tray and activity toy. 333,060, 2-9-93, Cl. D6-511.000.
Perl, Chuck: *See—*
Hochfeld, Stanley, 333,151, Cl. D19-36.000.

VOL 1147 ISS 2 FE 9 1993 UMI

Pflager, Alden H.: *See—*
Brauner, Arne H.; Clancy, James R.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,089, Cl. D9-311.000.
Brauner, Arne H.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,090, Cl. D9-311.000.
Brauner, Arne H.; Clancy, James R.; O'Grady, Shawn P.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,091, Cl. D9-311.000.

Pipes, Kevin G., to United Cutlery Corporation. Knife. 333,173, 2-9-93, Cl. D22-118.000.

Pirelli Coordinamento Pneumatici S.p.A.: *See—*
Trussardi, Guido, 333,115, Cl. D12-136.000.

Podesta Burke, Sally J. Shower dispenser for shampoo. 333,063, 2-9-93, Cl. D6-545.000.

Poirier, Michel, to Union Carbide Canada Limited. Combined gas and oil container. 333,177, 2-9-93, Cl. D23-202.000.

Pollyflame International B.V.: *See—*
Peersmann, Richard F. M., 333,156, Cl. D19-69.000.
Peersmann, Richard F. M., 333,158, Cl. D19-77.000.
Peersmann, Richard F. M., 333,159, Cl. D19-78.000.

Porche, Leonard: *See—*
Andersen, Mark; von Buelow, John; Garrison, Denise C.; Mitchell, Vance C.; Thune, Nelson F.; and Porche, Leonard, 333,185, Cl. D24-223.000.

Poupore, Timothy J. H., to National Transaction Network, Inc. Portable automated teller machine. 333,139, 2-9-93, Cl. D14-242.000.

Rainen, James H. Lotion applicator. 333,191, 2-9-93, Cl. D28-7.000.

Re, Frank M.; and Williams, James O., to Berkline Corporation, The. Footrest mechanism shield. 333,054, 2-9-93, Cl. D6-492.000.

Rehmert, Rory S., to Winston Furniture Company, Inc. Chair. 333,043, 2-9-93, Cl. D6-370.000.

Rehmert, Rory S.: *See—*
Hess, Stephen C.; and Rehmert, Rory S., 333,045, Cl. D6-376.000.

Rehrig, J. B.; Nigrelli, Terry J.; and Lang-Ree, Arne, to Rehrig-Pacific Company, Inc. Divider for bottles or the like. 333,093, 2-9-93, Cl. D9-341.000.

Rehrig-Pacific Company, Inc.: *See—*
Rehrig, J. B.; Nigrelli, Terry J.; and Lang-Ree, Arne, 333,093, Cl. D9-341.000.

Reshanov, Eugene N.: *See—*
Cray, Seymour R.; Krajewski, Nicholas J.; Johnson, David J.; Reshanov, Eugene N.; and Gaston, Johannes N., 333,127, Cl. D14-102.000.

Rhone-Poulenc Agrochimie: *See—*
Levy, William A.; and Johnson, Horace, Jr., 333,097, Cl. D9-528.000.

Ricchio, Joseph D., Jr.: *See—*
Komai, Neil M.; and Ricchio, Joseph D., Jr., 333,042, Cl. D6-370.000.

Rohrs, Donald L.: *See—*
Hall, Milly S.; Rohrs, Donald L.; and Hung, Kung Chi, 333,189, Cl. D26-67.000.

Romero, Bonnie D. Doll. 333,169, 2-9-93, Cl. D21-166.000.

Roventa Hexex SA: *See—*
Burgener, Eddy, 333,102, Cl. D10-39.000.

Rubbermaid Incorporated: *See—*
Craft, Charles W., Jr.; and Lewellen, Richard R., 333,051, Cl. D6-475.000.
Murphy, Kent W., 333,065, Cl. D7-391.000.

Russell, David L., to Russell Performance Products. License plate frame. 333,119, 2-9-93, Cl. D12-193.000.

Russell Performance Products: *See—*
Russell, David L., 333,119, Cl. D12-193.000.

Ryder International Corporation: *See—*
Cerola, Joseph J., 333,183, Cl. D24-133.000.

Sakurai, Mitsuru: *See—*
Komada, Takeshi; Shimizu, Hisakazu; Ohsawa, Yosuke; and Sakurai, Mitsuru, 333,125, Cl. D14-100.000.

Samsonite Corporation: *See—*
Franklin, Dana, 333,109, Cl. D11-221.000.

Sanyo Electric Co., Ltd.: *See—*
Shimoo, Kuniyuki; and Takada, Kazuo, 333,120, Cl. D13-107.000.

Sari Scheinberg med Yes You Can: *See—*
Scheinberg, Sari; Alange, Sverker; and Gyllenspetz, Per, 333,197, Cl. D34-1.000.

Scheinberg, Sari; Alange, Sverker; and Gyllenspetz, Per, to Sari Scheinberg med Yes You Can. Multiple-compartment waste container cabinet. 333,197, 2-9-93, Cl. D34-1.000.

Schubert, Otto, to Lift Verkaufsgerate Gesellschaft M.B.H. Display stand. 333,050, 2-9-93, Cl. D6-473.000.

Sedighzadeh, Marty. Ceiling or wall-mounted TV monitor support. 333,061, 2-9-93, Cl. D6-512.000.

Seiko Epson Corporation: *See—*
Uchibori, Noritaka; and Nakayama, Yoshiaki, 333,153, Cl. D18-55.000.

Seikosha Co., Ltd.: *See—*
Hayakawa, Tsuyoshi, 333,105, Cl. D10-129.000.

Sgro, Albert J. Container for a shoe care kit. 333,036, 2-9-93, Cl. D3-30.500.

Sharp Kabushiki Kaisha: *See—*
Miyake, Takao; Kawaishi, Masayoshi; Ishida, Katsuhiro; and Kanaoka, Yukio, 333,147, Cl. D18-4.000.

Shelby Williams Industries, Inc.: *See—*
Caruso, Jerome C., 333,044, Cl. D6-373.000.

Shimizu, Hisakazu: *See—*
Komada, Takeshi; Shimizu, Hisakazu; Ohsawa, Yosuke; and Sakurai, Mitsuru, 333,125, Cl. D14-100.000.

Shimonovitc, Shraga. Supporting leg for a serving tray. 333,057, 2-9-93, Cl. D6-495.000.

Shimoo, Kuniyuki; and Takada, Kazuo, to Sanyo Electric Co., Ltd. Battery charger. 333,120, 2-9-93, Cl. D13-107.000.

Smith & Hawken: *See—*
Long, Richard, 333,199, Cl. D34-11.000.

Sorrel, Bruno, to Tefal S.A. Pancake griddle. 333,064, 2-9-93, Cl. D7-364.000.

Southern Pro Lures, Inc.: *See—*
Coggins, Fred H., 333,174, Cl. D22-128.000.

Spindel, Richard A.: *See—*
Andersen, Mark; von Buelow, John; Garrison, Denise C.; Spindel, Richard A.; and Thune, Nelson F., 333,186, Cl. D24-223.000.

Stauffer, George J. Exterior body panel kit for attachment to a truck body. 333,118, 2-9-93, Cl. D12-190.000.

Stenger, Jesse. Locking cover for a vehicle tailgate latch. 333,083, 2-9-93, Cl. D8-346.000.

Sumitomo Electric Industries, Ltd.: *See—*
Kamakura, Mitsutoshi; Go, Hisao; Akita, Osamu; and Tanida, Kazuhiro, 333,122, Cl. D13-123.000.

Takada, Kazuo: *See—*
Shimoo, Kuniyuki; and Takada, Kazuo, 333,120, Cl. D13-107.000.

Tanida, Kazuhiro: *See—*
Kamakura, Mitsutoshi; Go, Hisao; Akita, Osamu; and Tanida, Kazuhiro, 333,122, Cl. D13-123.000.

Taylor, Harold S., to Engineering & Precision Machining, Inc. Pin clamp for use with an orthopedic appliance. 333,184, 2-9-93, Cl. D24-143.000.

Taylor, Marie. Basket for use on a walker. 333,114, 2-9-93, Cl. D12-133.000.

Tedham, Thomas A.: *See—*
Kuba, Lawrence M.; and Tedham, Thomas A., 333,126, Cl. D14-100.000.

Tefal S.A.: *See—*
Sorrel, Bruno, 333,064, Cl. D7-364.000.

Tekirian, Harry. Pipe clamp. 333,087, 2-9-93, Cl. D8-394.000.

Telex Communications, Inc.: *See—*
Burke, Jonathan C., 333,137, Cl. D14-206.000.

ten Wolde, Wouter J.; and Ganzeboom, Evert, to Bentfield B.V. Cleansing agent dispenser. 333,062, 2-9-93, Cl. D6-545.000.

Terumo Kabushiki Kaisha: *See—*
Yoshikawa, Masashi, 333,182, Cl. D24-133.000.

Thomsen, Frede L. Mounting bracket. 333,085, 2-9-93, Cl. D8-373.000.

Thune, Nelson F.: *See—*
Andersen, Mark; von Buelow, John; Garrison, Denise C.; Mitchell, Vance C.; Thune, Nelson F.; and Porche, Leonard, 333,185, Cl. D24-223.000.
Andersen, Mark; von Buelow, John; Garrison, Denise C.; Spindel, Richard A.; and Thune, Nelson F., 333,186, Cl. D24-223.000.

Tode, Jess L.: *See—*
Kraft, David W.; and Tode, Jess L., 333,164, Cl. D21-13.000.

Tone Brothers, Inc.: *See—*
Binder, J. Morris, 333,096, Cl. D9-522.000.

Truck-Lite Co., Inc.: *See—*
Van Riper, Bradley C.; and Van Fossan, Martin P., 333,123, Cl. D13-134.000.

Trussardi, Guido, to Pirelli Coordinamento Pneumatici S.p.A. Tire. 333,115, 2-9-93, Cl. D12-136.000.

Uchibori, Noritaka; and Nakayama, Yoshiaki, to Seiko Epson Corporation. Design for a printer for electronic computer. 333,153, 2-9-93, Cl. D18-55.000.

Union Carbide Canada Limited: *See—*
Poirier, Michel, 333,177, Cl. D23-202.000.

United Cutlery Corporation: *See—*
Pipes, Kevin G., 333,173, Cl. D22-118.000.

Van Fossan, Martin P.: *See—*
Van Riper, Bradley C.; and Van Fossan, Martin P., 333,123, Cl. D13-134.000.

Van Riper, Bradley C.; and Van Fossan, Martin P., to Truck-Lite Co., Inc. Lamp-bulb-receptive socket portion of a molded-plastic vehicle lamp assembly. 333,123, 2-9-93, Cl. D13-134.000.

Video Lottery Consultants, Inc.: *See—*
Kraft, David W.; and Tode, Jess L., 333,164, Cl. D21-13.000.

Vistalite, Incorporated: *See—*
Choi, Robert S.; Kong, C. Kwai; and Choi, Oong, 333,041, Cl. D6-354.000.

von Buelow, John: *See—*
Andersen, Mark; von Buelow, John; Garrison, Denise C.; Mitchell, Vance C.; Thune, Nelson F.; and Porche, Leonard, 333,185, Cl. D24-223.000.
Andersen, Mark; von Buelow, John; Garrison, Denise C.; Spindel, Richard A.; and Thune, Nelson F., 333,186, Cl. D24-223.000.

Wachob, David E.; and Curbbun, Charles, to General Instrument Corporation. Combined remote control and cordless telephone. 333,135, 2-9-93, Cl. D14-138.000.

Wagner, Lance R.; Kornmiller, Allan; Wright, Donald M.; and Carlson, Kenneth L. Vehicle body. 333,111, 2-9-93, Cl. D12-92.000.

Waldmann GmbH & Co., Firma: *See—*
Waldmann, Herbert, 333,190, Cl. D26-75.000.

Waldmann, Herbert, to Waldmann GmbH & Co., Firma. Shielded fluorescent work light. 333,190, 2-9-93, Cl. D26-75.000.

Walker, Lindsey J. Hair dryer. 333,192, 2-9-93, Cl. D28-13.000.

Wang Laboratories, Inc.: *See—*
Kuba, Lawrence M.; and Tedham, Thomas A., 333,126, Cl. D14-100.000.

Wap Reinigungssysteme GmbH & Co.: *See—*
Oberdorfer-Bogel, Rainer, 333,195, Cl. D32-23.000.

Watt, Doyle: *See—*
Bocade, Emilorah; Watt, Doyle; Hendrick, Carl W.; and Mattson, Deborah, 333,082, Cl. D8-317.000.

Wells, Deanna K.: *See—*
Wells, Larry K.; and Wells, Deanna K., 333,039, Cl. D3-42.000.

Wells, Larry K.; and Wells, Deanna K. Petticoat bag. 333,039, 2-9-93, Cl. D3-42.000.

West, Michael J.; and Williamson, Jimmy D. Automatic high-speed labeling machine. 333,143, 2-9-93, Cl. D15-145.000.

Wilkes, Ronald D. Garment attachable patch. 333,030, 2-9-93, Cl. D2-25.000.

Williams, Brian. Cooling wrap. 333,068, 2-9-93, Cl. D7-607.000.

Williams, James O.: *See—*
Re, Frank M.; and Williams, James O., 333,054, Cl. D6-492.000.

Williamson, Jimmy D.: *See—*
West, Michael J.; and Williamson, Jimmy D., 333,143, Cl. D15-145.000.

Winston Furniture Company, Inc.: *See—*
Hess, Stephen C.; and Rehmert, Rory S., 333,045, Cl. D6-376.000.
Rehmert, Rory S., 333,043, Cl. D6-370.000.

WirthCo Engineering, Inc.: *See—*
Novy, George A., 333,178, Cl. D23-262.000.

Wright, Donald M.: *See—*
Wagner, Lance R.; Kornmiller, Allan; Wright, Donald M.; and Carlson, Kenneth L., 333,111, Cl. D12-92.000.

Yamamoto, Ei, to Canon Kabushiki Kaisha. Converter for transmitting image and character data from a computer to a printer. 333,131, 2-9-93, Cl. D14-107.000.

Yamauchi, Shigeki: *See—*
Fushiya, Fusao; and Yamauchi, Shigeki, 333,076, Cl. D8-61.000.

Yong, Teck: *See—*
Amber, John M.; Barry, Michael R.; and Yong, Teck, 333,130, Cl. D14-106.000.

York Products, Inc.: *See—*
Diaco, Joseph; and Kennedy, Todd R., 333,112, Cl. D12-98.000.

Yoshikawa, Masashi, to Terumo Kabushiki Kaisha. Catheter guide wire holder. 333,182, 2-9-93, Cl. D24-133.000.

Yu, Sun I., to Goldstar Co., Ltd. Cassette tape recorder. 333,136, 2-9-93, Cl. D14-165.000.

Zucchi, Luciano: *See—*
Hume, Roger A.; Felstead, Richard A.; and Zucchi, Luciano, 333,188, Cl. D26-2.000.

Zutler, Aaron, to Marketing Congress, Inc. Stacking container. 333,094, 2-9-93, Cl. D9-423.000.

VOL
1147
ISS
2
FE
9
1993
UMI

LIST OF PLANT PATENTEES

Apps, Darrel A.; and Iverson, Ronald C., to Iverson Perennial Gardens, Inc. Daylily plant named Fragrant Treasure. 8,140, 2-9-93, Cl. 87.400.

Brooks, Lyle A., deceased; and Heuser, Wallace E., legal representative, to Inter-Plant Patent Marketing, Inc. Cherry tree rootstock 'Brooks-60'. 8,132, 2-9-93, Cl. 37.000.

Burdette Coward & Co., Inc.: *See*—
Coward, Matthew G., 8,139, Cl. 82.100.

Coward, Matthew G., to Burdette Coward & Co., Inc. Chrysanthemum plant named Early Vero. 8,139, 2-9-93, Cl. 82.100.

Heuser, Wallace E., legal representative: *See*—
Brooks, Lyle A., deceased; and Heuser, Wallace E., legal representative, 8,132, Cl. 37.000.

Holtkamp, Reinhold, Sr. African violet plant named Cathy. 8,133, 2-9-93, Cl. 69.100.

Holtkamp, Reinhold, Sr. African violet plant named Helsinki. 8,134, 2-9-93, Cl. 69.100.

Holtkamp, Reinhold, Sr. African violet plant named Little Shoshone Girl. 8,135, 2-9-93, Cl. 69.100.

Holtkamp, Reinhold, Sr. African violet plant named Berlin. 8,136, 2-9-93, Cl. 69.200.

Holtkamp, Reinhold, Sr. African violet plant named Rome. 8,137, 2-9-93, Cl. 69.200.

Holtkamp, Reinhold, Sr. African violet plant named Stockholm. 8,138, 2-9-93, Cl. 69.200.

Inter-Plant Patent Marketing, Inc.: *See*—
Brooks, Lyle A., deceased; and Heuser, Wallace E., legal representative, 8,132, Cl. 37.000.

Iverson Perennial Gardens, Inc.: *See*—
Apps, Darrel A.; and Iverson, Ronald C., 8,140, Cl. 87.400.

Iverson, Ronald C.: *See*—
Apps, Darrel A.; and Iverson, Ronald C., 8,140, Cl. 87.400.

CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 9, 1993

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
114 5,184,351
161 A 5,184,353
425 5,184,354

CLASS 4
420 5,184,355
502 5,184,356
5,184,357
555 5,184,358
661 5,184,359

CLASS 5
2.1 5,184,360
413 5,184,361
490 5,184,362
601 5,184,363
632 5,184,365

CLASS 14
71.5 5,184,366

CLASS 15
49.1 5,184,367
167.1 5,184,368
316.1 5,184,369
321 5,184,370
325 5,184,371
401 5,184,372

CLASS 16
35 R 5,184,373

CLASS 19
262 5,184,374

CLASS 24
3 L 5,184,375
585 5,184,352
633 5,184,376
704.1 5,184,377
714.6 5,184,378

CLASS 26
72 5,184,379

CLASS 28
205 5,184,380
271 5,184,381

CLASS 29
81.15 5,184,382
243.5 5,184,384
254 5,184,385
401.1 5,184,386
419.1 5,184,387
434 5,184,388
467 5,184,389
525 5,184,390
5,184,391
592.1 5,184,392
599 B1 4,980,964
603 5,184,393
5,184,394
609 5,184,395
726 5,184,396
740 5,184,397
825 5,184,398
846 5,184,399
879 5,184,400
888.01 5,184,401
898.07 5,184,402

CLASS 30
123.4 5,184,403
250 5,184,404

CLASS 33
1 SD 5,184,405
227 5,184,406
555.4 5,184,407

CLASS 34
117 5,184,408

CLASS 36
44 5,184,409
105 5,184,410
117 5,184,411

CLASS 37
142 A 5,184,412

CLASS 40
308 5,184,413

CLASS 43
17.5 5,184,414
58 5,184,415
81 5,184,416
107 5,184,417
124 5,184,418
132.1 5,184,419

CLASS 47
62 5,184,420
66 5,184,421

CLASS 49
239 5,184,422
501 5,184,423

CLASS 51
135 BT 5,184,424
149 5,184,425
165.71 5,184,426
165.73 5,184,427
165.75 5,184,428
177 5,184,429
215 E 5,184,430
219 R 5,184,431
236 5,184,432
283 R 5,184,433
295 5,185,012
317 5,184,434

CLASS 52
12 5,184,435
79.1 5,184,436
169.5 5,184,437
221 5,184,438
223 R 5,184,439
235 5,184,440
241 5,184,441
514 5,185,013
573 5,184,442
646 5,184,444
741.1 5,184,445
746 5,184,446

CLASS 53
373.9 5,184,447
398 5,184,448
399 5,184,449
440 5,184,450

CLASS 55
16 5,185,014
102 5,185,015
230 5,185,016
257.2 5,185,017
341.1 5,185,018
378 5,185,019

CLASS 56
17.5 5,184,451

CLASS 57
105 5,184,452
270 5,184,453

CLASS 59
78.1 5,184,454

CLASS 60
39.02 5,184,455
5,184,456
39.141 5,184,457
39.142 5,184,458
226.1 5,184,460
226.3 5,184,459
5,184,461
274 5,184,462
284 5,184,463
299 5,184,464
403 5,184,465
448 5,184,466
547.1 5,184,468
716 5,184,469

CLASS 62
4 5,184,470
63 5,184,471
135 Re.34,174
160 5,184,472
199 5,184,473
244 5,184,474
262 5,184,475
389 5,184,476
457.7 5,184,477
468 5,184,478
503 5,184,479
5,184,480

CLASS 63
12 5,184,481
14.1 5,184,482

CLASS 65
3.11 5,185,020
5,185,021
182.200 5,185,022

CLASS 66
93 5,184,483
132 R 5,184,484
222 5,184,485

CLASS 68
175 5,184,486

CLASS 69
19.1 5,184,487

CLASS 70
14 5,184,488
58 5,184,489
277 5,184,490
278 5,184,491

CLASS 72
160 5,184,492
237 5,184,493
254 5,184,494
318 5,184,495
350 5,184,496
391.6 5,184,497
442 5,184,498

CLASS 73
11.01 5,184,499
23.2 5,184,500
23.31 5,184,501
31.01 5,184,502
37.5 5,184,503
49.2 5,184,504
53.05 5,184,505
118.1 5,184,506
151 5,184,507
152 5,184,508
204.14 5,184,509
290 V 5,184,510
323 5,184,511
584 5,184,512
593 5,184,513
706 5,184,514
727 5,184,515
799 5,184,516
851 5,184,517
861.38 5,184,518
861.77 5,184,519
862.623 5,184,520

CLASS 74
5.34 5,184,521
359 5,184,522
471 XY 5,184,523
609 5,184,524
820 5,184,525
861 5,184,526
866 5,184,527
869 5,184,528

CLASS 75
359 5,185,030
375 5,185,031
436 5,185,032

CLASS 81
57.21 5,184,530
125 5,184,529
441 5,184,531

CLASS 83
23 5,184,532
24 5,184,533
397 5,184,534

CLASS 84
422.1 5,185,489
436 5,185,490
627 5,185,491
633 5,185,492

CLASS 89
45 5,185,493

CLASS 91
443 5,184,535
505 5,184,536

CLASS 92
33 5,184,537

CLASS 99
331 5,184,538
408 5,184,539
421 H 5,184,540
472 5,184,541
483 5,184,542
533 5,184,543
536 5,184,544

CLASS 100
5 5,184,545
50 5,184,547
73 5,184,548

CLASS 101
40.1 5,184,546
121 5,184,549
142 5,184,550
219 5,184,551
348 5,184,552
409 5,184,553
415.1 5,184,554
417 5,184,555
483 5,184,556

CLASS 102
510 5,185,495

CLASS 104
286 5,184,557

CLASS 106
18.33 5,185,033
22 R 5,185,034
31 R 5,185,035
208 5,185,036
287.12 5,185,037
416 5,185,038
728 5,185,039

CLASS 108
51.3 5,184,558

CLASS 111
11 5,184,559

CLASS 112
121.12 5,184,560

CLASS 114
61 5,184,561
219 5,184,562
251 5,184,563
270 5,184,564
354 5,184,565
355 5,184,566

CLASS 118
406 5,185,040
658 5,185,496

CLASS 119
14.03 5,184,567
19 5,184,568
55 5,184,569
72 5,184,570
5,184,571
99 5,184,572
106 5,184,573
162 5,184,574
163 5,184,575

CLASS 122
26 5,184,576

CLASS 123
90.15 5,184,577
90.17 5,184,578
90.23 5,184,579
90.27 5,184,580
90.31 5,184,581
5,184,582
90.51 5,184,583
179.2 5,184,584
179.8 5,184,585
182.1 5,184,586
193.5 5,184,587
339 5,184,588
352 5,184,589
414 5,184,590
520 5,184,591
543 5,184,592
571 5,184,593
5,184,594
690 5,184,595

CLASS 124
35.2 5,184,596

CLASS 125
15 5,184,597
21 5,184,598

CLASS 126
25 R 5,184,599
113 5,184,600

CLASS 128
4 5,184,601
6 5,184,602
11 5,184,603
14 5,184,604
24 AA 5,184,605
28 5,184,606
52 5,184,607
205.24 5,184,609
207.14 5,184,610
5,184,611
400 5,184,612
402 5,184,613
419 5,184,616
419 PG 5,184,614
5,184,615
423 R 5,184,617
634 5,184,618
639 5,184,619
5,184,620
642 5,184,621
660.07 5,184,622
661.01 5,184,623
734 5,184,624
751 5,184,625
756 5,184,626
772 5,184,627
774 5,184,628
885 5,184,629

CLASS 132
202 5,184,630
323 5,184,631
326 5,184,632

CLASS 134
25.1 5,185,041
57 R 5,184,633
95.1 5,184,634
111 5,184,635
167 C 5,184,636
182 5,184,637
186 5,184,638

CLASS 135
28 5,184,639

CLASS 136
244 5,185,042

CLASS 137
247.25 5,184,640
504 5,184,641
607 5,184,642
625.48 5,184,643
625.64 5,184,644
625.65 5,184,645
636.2 5,184,646
884 5,184,647
5,184,648

CLASS 138
89 5,184,608
122 5,184,649

CLASS 139
308 5,184,650

CLASS 140
115 5,184,651

CLASS 141
21 5,184,652
98 5,184,653
267 5,184,654
392 5,184,655

CLASS 144
363 5,184,656

CLASS 148
111 5,185,043
546 5,185,044
671 5,185,045

CLASS 150
132 5,184,657
147 5,184,658

CLASS 156
64 5,185,046
242 5,185,047
256 5,185,048
304.2 5,185,049
304.5 5,185,050
397 5,185,051
462 5,185,052
487 5,185,053
630 5,185,054
5,185,055
639 5,185,056
642 5,185,057
656 5,185,058
659.1 5,185,059

CLASS 159
13.1 5,185,060

CLASS 160
84.1 5,184,659
171 5,184,660
348 5,184,661

CLASS 162
168.1 5,185,062
168.3 5,185,061
193 5,185,063
301 5,185,064

CLASS 164
97 5,184,662
98 5,184,663
271 5,184,664
306 5,184,665
466 5,184,666
467 5,184,667
480 5,184,668

CLASS 165
10 5,184,669
82 5,184,670
104.16 5,184,671
109.1 5,184,672
153 5,184,673
184 5,184,674
5,184,675

CLASS 166
66.4 5,184,676
187 5,184,677
249 5,184,678
278 5,184,679
293 5,184,680
367 5,184,681
385 5,184,682

CLASS 169
37 5,184,683
51 5,184,684

CLASS 172
114 5,184,685

CLASS 174
21 C 5,185,497
52.2 5,185,498
65 R 5,185,499
74 R 5,185,500
136 5,185,501
262 5,185,502

CLASS 175
5 5,184,686
50 5,184,692
267 5,184,687

VOL 1147 ISS 2 FEB 9 1993 UMI

321 5,184,688
420.1 5,184,689

CLASS 177

212 5,184,690

CLASS 180

132 5,184,691
143 5,184,693
167 5,184,694
233 5,184,695

CLASS 181

102 5,185,503
286 5,185,504

CLASS 182

9 5,184,696
153 5,184,697

CLASS 184

1.5 5,184,698

CLASS 187

9 R 5,184,699

CLASS 188

67 5,184,700
79.55 5,184,701
282 5,184,702
319 5,184,703

CLASS 192

70.14 5,184,704
84 C 5,184,705

CLASS 193

2 R 5,184,706

CLASS 194

204 5,184,707
217 5,184,708
318 5,184,709

CLASS 198

328 5,184,710
419.2 5,184,711
449 5,184,712
465.1 5,184,713
641 5,184,714
667 5,184,715
763 5,184,716

CLASS 200

84 R Re.34,175
401 5,184,717

CLASS 204

181.4 5,185,065
182.8 5,185,066
245 5,185,068
251 5,185,069
299 R 5,185,071
416 5,185,072

CLASS 205

104 5,185,073
162 5,185,074
234 5,185,075
252 5,185,076
314 B1 4,251,331

CLASS 206

63.5 5,184,718
209.1 5,184,719
366 5,184,720
5,184,721
387 5,184,722
454 5,184,723
466 5,184,724
494 5,184,725
309 5,184,726
522 5,184,727
554 5,184,728
574 5,184,729

CLASS 208

61 5,185,077

CLASS 209

142 5,184,730
459 5,184,731
576 5,184,732
585 5,184,733
657 5,184,734

CLASS 210

603 5,185,079
611 5,185,080
634 5,185,081
639 5,185,082
735 5,185,083
741 5,185,084
747 5,185,085
748 5,185,086
787 5,185,087

CLASS 211

14 5,184,735
41 5,184,736
55 5,184,737
151 5,184,738

CLASS 215

220 5,184,739
315 5,184,740
331 5,184,741
356 5,184,742

CLASS 219

10.55 E 5,185,506
10.55 F 5,185,505
69.12 5,185,507
86.16 5,185,509
86.24 5,185,508
121.67 5,185,510
121.78 5,185,511
5,185,512
497 5,185,513

CLASS 220

1.5 5,184,743
23.4 5,184,744
23.83 5,184,745
256 5,184,746
319 5,184,747
519 5,184,748
572 5,184,749
575 5,184,750
694 5,184,751

CLASS 221

1 5,184,752

CLASS 222

5,184,753
55 5,184,754
79 5,184,755
5,184,756
82 5,184,757
137 5,184,758
181 5,184,759
207 5,184,760
402.2 5,184,761

CLASS 224

148 5,184,762
211 5,184,763
215 5,184,764

CLASS 226

190 5,184,383

CLASS 227

27 5,184,765

CLASS 228

4.1 5,184,766
56.3 5,184,767
104 5,184,768
171 5,184,769

CLASS 229

20 5,184,770
87.05 5,184,771
143 5,184,772

CLASS 235

375 5,185,514
379 5,185,515
380 5,185,516

CLASS 237

12.3 B 5,184,773

CLASS 239

33 5,184,774
163 5,184,775
417 5,184,776
447 5,184,777
691 5,184,778

CLASS 240

741 5,185,078

CLASS 241

3 5,184,779
19 5,184,780
62 5,184,781
171 5,184,782
172 5,184,783
275 5,184,784

CLASS 242

35.50 A 5,184,785
45 5,184,786
65 5,184,787
66 5,184,788

CLASS 244

159 5,184,789
165 5,184,790

CLASS 246

468 5,184,791

CLASS 248

56 5,184,793
68.1 5,184,794
71 5,184,792
104 5,184,796
118 5,184,795
538 5,184,797
551 5,184,798
634 5,184,799

CLASS 250

201.4 5,185,517
208.1 5,185,519
223 R 5,185,520
227.23 5,185,521
281 5,185,523
305 5,185,524
328 5,185,525
332 5,185,526
336.2 5,185,527
341 5,185,528
369 5,185,529
398 5,185,530
431 5,185,531
455.11 5,185,532
575 5,185,533

CLASS 251

365 5,184,804

CLASS 252

37.7 5,185,089
46.6 5,185,090
56 S 5,185,092
56.5 5,185,091
62.51 5,185,093
67 5,185,094
68 5,185,095
86 5,185,088
99 5,185,096
299.01 5,185,097
299.63 5,185,098
299.65 5,184,847
315.1 5,185,099
500 5,185,100
554 5,185,101
582 5,185,102
606 5,185,103
632 5,185,104

CLASS 254

29 A 5,184,805
126 5,184,806
344 5,184,807

CLASS 256

12.5 5,184,800
31 5,184,808
34 5,184,801

CLASS 257

17 5,185,647
189 5,185,648
276 5,185,534
351 5,185,535
390 5,185,646
508 5,185,650
659 5,185,654
729 5,185,653
734 5,185,651
758 5,185,652

CLASS 261

111 5,185,105
112.1 5,185,106

CLASS 264

2.5 5,185,107
11 5,185,108
40.5 5,185,109
44 5,185,110
49 5,185,111
63 5,185,112
67 5,185,113
83 5,185,114
113 5,185,115
178 F 5,185,116
211.12 5,185,117
257 5,185,118
297.2 5,185,119

CLASS 267

80 5,184,809
103 5,184,802
140.12 5,184,803

CLASS 269

309 5,184,810

CLASS 271

10 5,184,811
98 5,184,812
5,184,813

CLASS 273

1.5 A 5,184,814
26 C 5,184,815
26 E 5,184,816
32 H 5,184,817
73 H 5,184,818
80.2 5,184,819
128 R 5,184,820
138 A 5,184,821
153 R 5,184,822
167 F 5,184,823
176 A 5,184,824
186.2 5,184,825
5,184,826
187.2 5,184,827
228 5,184,828
242 5,184,829
433 5,184,830
455 5,184,831

CLASS 279

106 5,184,833

CLASS 280

7.13 5,184,834
47.371 5,184,835
79.5 5,184,836
250.1 5,184,837
259 5,184,838
475 5,184,839
507 5,184,840
707 5,184,841
719 5,184,842
728 5,184,843
733 5,184,844
735 5,184,845
736 5,184,846

CLASS 283

2 5,184,848
67 5,184,849

CLASS 285

21 5,184,850
79 5,184,851

CLASS 292

40 5,184,852
205 5,184,853
251.5 5,184,854
5,184,855
5,184,856

CLASS 293

128 5,184,857

CLASS 294

19.2 5,184,859
64.1 5,184,858
67.31 5,184,860
119.1 5,184,861
145 5,184,862
147 5,184,863

CLASS 296

24.1 5,184,864
77.1 5,184,865
95.1 5,184,866
97.9 5,184,867
189 5,184,868
198 5,184,832
213 5,184,869
223 5,184,870

CLASS 297

444 5,184,871

CLASS 298

22 AE 5,184,872

CLASS 299

43 5,184,873

CLASS 301

64.7 5,184,874

CLASS 303

3 5,184,875
106 5,184,876
113.2 5,184,877
118.1 5,184,878

CLASS 307

66 5,185,536
234 5,185,537
270 5,185,538
465 5,185,539
603 5,185,540

CLASS 310

11 5,185,541
36 5,185,542
51 5,185,543
58 5,185,544
114 5,185,545
216 5,185,546
259 5,185,547
313 D 5,185,548
334 5,185,549
344 5,185,550

CLASS 312

34.11 5,184,885
107 5,184,886
221 5,184,887
236 5,184,879

CLASS 313

231.71 5,185,552
468 5,185,553
495 5,185,554
632 5,185,555
637 5,185,556

CLASS 315

59 5,185,557
80 5,185,558
107 5,185,559
219 5,185,560

CLASS 318

432 5,185,561
466 5,185,562
602 5,185,563

CLASS 320

2 5,185,564
39 5,185,565
48 5,185,566

CLASS 323

267 5,185,567

CLASS 324

95 5,185,568
103 P 5,185,569
133 5,185,570
158 R 5,185,571
5,185,572
309 5,185,573
5,185,574
5,185,575
318 5,185,576
5,185,577
338 5,185,578
527 5,185,579
539 5,185,580

CLASS 330

254 5,185,581
261 5,185,582

CLASS 331

15 5,185,583
25 5,185,584
46 5,185,585
96 5,185,586

CLASS 333

1.1 5,185,587
17.2 5,185,588
133 5,185,589

CLASS 335

201 5,185,590

CLASS 340

310 A 5,185,591
436 5,185,592
544 5,185,593
596 5,185,594
690 5,185,595
706 5,185,596
709 5,185,597
721 5,185,598
747 5,185,599
764 5,185,600
784 5,185,601
793 5,185,602
814 5,185,603
825.44 5,185,604
850 5,185,605
961 5,185,606

CLASS 341

120 5,185,607

CLASS 342

17 5,185,608
173 5,185,609
357 5,185,610

CLASS 343

702 5,185,611
713 5,185,612
909 5,185,613

CLASS 346

1.1 5,185,614
5,185,615
5,185,616
108 5,185,617
138 5,185,618
153.1 5,185,619

CLASS 351

52 5,185,620

CLASS 354

132 D 5,185,624
234.1 5,185,621
286 5,185,622
299 5,185,623

CLASS 355

26 5,185,625
55 5,185,626
204 5,185,627
209 5,185,628
215 5,185,629
5,185,630
245 5,185,631
261 5,185,632
271 5,185,633
314 5,185,634

CLASS 356

73.1 5,185,635
5,185,636
218 5,185,637
237 5,185,638
245 5,185,639
300 5,185,640
336 5,185,641
350 5,185,642
358 5,185,643
369 5,185,644
435 5,185,645

CLASS 357

43 5,185,649

CLASS 358

13 5,185,655
21 R 5,185,656
28 5,185,657
29 5,185,658
44 5,185,659
60 5,185,660
75 5,185,661
78 5,185,662
140 5,185,663
166 Re.34,176
167 5,185,664
183 5,185,665
5,185,666
209 5,185,667
214 5,185,668
224 5,185,712
227 5,185,669
5,185,670
228 5,185,671
248 5,185,672
296 5,185,673
457 5,185,674

CLASS 359

181 5,185,675
202 5,185,676
460 5,185,677
668 5,184,880
683 5,185,678

CLASS 360

30 5,185,679
72.2 5,185,680
77.05 5,185,681
78.04 5,185,682
104 5,185,683

CLASS 361

45 5,185,684
5,185,685
5,185,686
5,185,687
267 5,185,688
313 5,185,689
321 5,185,690
386 5,185,691
393 5,185,692

CLASS 362

1 5,184,881
32 5,184,882
5,184,883
72 5,184,884
136 5,184,888
276 5,184,889
353 5,184,890
419 5,184,891

CLASS 364

187 5,185,693
401 5,185,695
408 5,185,696
419 5,185,697
5,185,698
5,185,699
424.04 5,185,700
425 5,185,701
426.02 5,185,702
5,185,703
5,185,704
483 5,185,705
489 5,185,706
525 5,185,707
550 5,185,708
558 5,185,709
718 5,185,710
746.1 5,185,711

748 5,185,713
750.5 5,185,714
807 5,185,715

CLASS 365

10 5,185,716
52 5,185,717
185 5,185,718
189.01 5,185,719
189.02 5,185,720
189.06 5,185,721
201 5,185,722
226 5,185,723
234 5,185,724

CLASS 366

10 5,184,892
209 5,184,893

CLASS 367

6 5,185,725
18 5,185,726
163 5,185,728

CLASS 369

34 5,185,727
44.14 5,185,729
44.23 5,185,731
44.26 5,185,730
47 5,185,732
54 5,185,733
116 5,185,734

CLASS 370

13 5,185,735
55 5,185,736
85.8 5,185,737
95.1 5,185,738
95.3 5,185,739
106 5,185,740
110.1 5,185,741
5,185,742
5,185,743

CLASS 371

21.2 5,185,744
22.3 5,185,745
40.1 5,185,746
43 5,185,747
68.1 5,185,748

CLASS 372

6 5,185,749
18 5,185,750
5,185,751
22 5,185,752
27 5,185,753
45 5,185,754
46 5,185,755
50 5,185,756
56 5,185,757
60 5,185,771
72 5,185,758
96 5,185,759
104 5,185,760

CLASS 374

140 5,184,894
162 5,184,895

CLASS 375

1 5,185,761
5,185,762
13 5,185,764
22 5,185,765
39 5,185,763
87 5,185,766
110 5,185,767
119 5,185,768

CLASS 376

219 5,185,120
254 5,185,121
272 5,185,122
277 5,185,123
439 5,185,124

CLASS 377

29 5,185,769
47 5,185,770

CLASS 378

29 5,185,772
53 5,185,773
125 5,185,774
156 5,185,775
167 5,185,776
176 5,185,777
196 5,185,778

CLASS 379

33 5,185,779
34 5,185,780
67 5,185,781
5,185,782
93 5,185,783
94 5,185,784
111 5,185,785
201 5,185,786
204 5,185,787
357 5,185,788
395 5,185,789
433 5,185,790
435 5,185,791

CLASS 380

4 5,185,792
5 5,185,793
17 5,185,794
21 5,185,795
5,185,796
5,185,797
23 5,185,798
28 5,185,799

CLASS 381

29 5,185,800
59 5,185,801
68.6 5,185,802
86 5,185,803
5,185,804
96 5,185,805
106 5,185,806
183 5,185,807

CLASS 382

1 5,185,808
6 5,185,809
8 5,185,810
5,185,811
5,185,812
9 5,185,813
31 5,185,815
34 5,185,816
47 5,185,817
54 5,185,818
56 5,185,819
5,185,820
61 5,185,821
65 5,185,822

CLASS 383

75 5,184,897

CLASS 384

43 5,184,898
560 5,184,899

CLASS 385

2 5,185,823
19 5,185,824
20 5,185,825
24 5,185,814
5,185,826
28 5,185,827
5,185,828
33 5,184,896
37 5,185,829
41 5,185,830
5,185,831
43 5,185,832
46 5,185,833
47 5,185,834
49 5,185,835
61 5,185,836
81 5,185,837
84 5,185,838
90 5,185,839
100 5,185,840
5,185,841
129 5,185,842
134 5,185,843
135 5,185,844
5,185,845
137 5,185,846
141 5,185,847

CLASS 395

2 5,185,848
3 5,185,849
22 5,185,850
27 5,185,851
109 5,185,852
115 5,185,853
117 5,185,854
129 5,185,855
130 5,185,856
148 5,185,857
158 5,185,858
164 5,185,859
200 5,185,860
5,185,861
250 5,185,862
5,185,863
275 5,185,864
5,185,865
325 5,185,866
375 5,185,867
5,185,868
5,185,869
5,185,870
5,185,871
5,185,872
5,185,873
400 5,185,874
425 5,185,694
5,185,875
5,185,876
5,185,877
5,185,878
5,185,879
550 5,185,880
575 5,185,881
5,185,882
5,185,883
5,185,884
600 5,185,885
5,185,886
5,185,887
5,185,888

CLASS 400

82 5,184,900
124 5,184,901
185 5,184,902
196.1 5,184,903
320 5,184,904
616.1 5,184,905
629 5,184,906
635 5,184,907

CLASS 401

29 5,184,908
268 5,184,909

CLASS 403

171 5,184,920
385 5,184,911

CLASS 404

26 5,184,912

CLASS 405

1 5,184,913
3 5,184,914
76 5,184,915
128 5,184,916
5,184,917
138 5,184,918
154 5,184,919
171 5,184,921
259.1 5,184,922
259.4 5,184,923

CLASS 408

67 5,184,924
144 5,184,925
226 5,184,926

CLASS 409

143 5,184,927

CLASS 411

371 5,184,928

CLASS 414

10 5,184,929
427 5,184,930
522 5,184,931
685 5,184,932
725 5,184,933
740 5,184,934

CLASS 415

003.1 5,184,936
206 5,184,937

CLASS 416

223 R 5,184,938

CLASS 417

41 5,184,939
356 5,184,940
360 5,184,941
5,184,942
401 5,184,943
410 5,184,944
420 5,184,945
423.9 5,184,946

CLASS 418

20 5,184,947

CLASS 420

503 5,185,125

CLASS 422

28 5,185,371
38 5,185,126
56 5,185,127
61 5,185,128
88 5,185,129
90 5,185,130
91 5,185,131
186.05 5,185,132

CLASS 423

53 5,185,133
240 R 5,185,134
320 5,185,135
359 5,185,139
574 R 5,185,140
632 5,185,141
702 5,185,136
5,185,137
710 5,185,138

CLASS 424

1.1 5,185,142
47 5,185,143
66 5,185,144
78.08 5,185,145
89 5,185,146
5,185,147
93 L 5,185,148
94.63 5,185,149
195.1 5,185,150
400 5,185,151
427 5,185,152
440 5,185,153
450 5,185,154
451 5,185,155
456 5,185,157
473 5,185,158
489 5,185,159
532 5,185,160
665 5,185,161

CLASS 425

183 5,185,162
534 5,185,163

CLASS 426

1 5,185,164
61 5,185,165
74 5,185,166
94 5,185,167
233 5,185,168
467 5,185,171
523 5,185,172
549 5,185,173
583 5,185,174
631 5,185,175
651 5,185,176

CLASS 427

2 5,185,177
67 5,185,180
69 5,185,181
126.2 5,185,182
236 5,185,183
246 5,185,169
299 5,185,184
304 5,185,185
332 5,185,186
430.1 5,185,187
523 5,185,067
533 5,185,188
585 5,185,178
601 5,185,179

CLASS 428

34.8 5,185,189
36.91 5,185,190
49 5,185,192
57 5,185,193
64 5,185,194
102 5,185,195
194 5,185,196
246 5,185,197
251 5,185,198
288 5,185,199
5,185,200
296 5,185,201
335 5,185,202
349 5,185,203
402 5,185,204
403 5,185,206
404 5,185,207
409 5,185,191
411.1 5,185,208
457 5,185,209
5,185,210
472 5,185,211
483 5,185,212
500 5,185,213
541 5,185,214
545 5,185,215
614 5,185,216
627 5,185,217

CLASS 429

27 5,185,218
31 5,185,219
35 5,185,220
59 5,185,221
160 5,185,222
215 5,185,223
218 5,185,224

CLASS 430

18 5,185,225
47 5,185,226
49 5,185,227
59 5,185,228
110 5,185,229
138 5,185,230
203 5,185,231
264 5,185,232
270 5,185,233
284 5,185,234
331 5,185,235
505 5,185,236
5,185,237
523 5,185,238
569 5,185,239
596 5,185,240
598 5,185,241

CLASS 431

153 5,184,948
189 5,184,949

CLASS 432

5 Re.34,177
13 5,184,950
28 5,184,951
60 5,184,952
123 5,184,953

CLASS 433

18 5,184,954
215 5,184,955

CLASS 434

69 5,184,956
95 5,184,957
162 5,184,958
263 5,184,959

CLASS 435

6 5,185,242
5,185,243
5,185,244
7.1 5,185,245
7.21 5,185,246
14 5,185,247
15 5,185,248
25 5,185,249
69.3 5,185,250
118 5,185,251
134 5,185,252
172.3 5,185,253
5,185,254
174 5,185,255
5,185,256
191 5,185,257
220 5,185,258
226 5,185,259
244 5,185,260
313 5,185,261
320.1 5,185,262

CLASS 436

8 5,185,263
18 5,185,264
63 5,185,265
89 5,185,266
92 5,185,267
114 5,185,268
180 5,185,269
510 5,185,270

CLASS 437

3 5,185,271
5 5,185,272
8 5,185,273
22 5,185,274
30 5,185,275
31 5,185,276
39 5,185,277
5,185,278
41 5,185,279
44 5,185,280
47 5,185,282
51 5,185,283
52 5,185,284
60 5,185,285
84 5,185,286
105 5,185,287
122 5,185,288
129 5,185,289
5,185,290
173 5,185,291
180 5,185,292
184 5,185,293
193 5,185,294
226 5,185,295
229 5,185,296

CLASS 439

35 5,184,960
59 5,184,961
66 5,184,962
79 5,184,963
247 5,184,964
578 5,184,965

CLASS 440

38 5,184,966
75 5,184,967

CLASS 441

116 5,784,968

CLASS 445

24 5,184,969

CLASS 446

132 5,184,970
142 5,184,971
250 5,184,972

CLASS 452

125 5,184,973
160 5,184,974
198 5,184,975

CLASS 454

108 5,184,976

CLASS 462

8 5,184,910

CLASS 464

111 5,184,977
5,184,978
141 5,184,979

CLASS 472

91 5,184,980

CLASS 474

19 5,184,981
101 5,184,982
111 5,184,983
140 5,184,984

CLASS 482

46 5,184,986
52 5,184,987
54 5,184,988
71 5,184,989
97 5,184,991
104 5,184,992
106 5,184,993
129 5,184,994

CLASS 463

28 5,184,985

CLASS 493

79 5,184,995
84 5,184,996
117 5,184,997
176 5,184,998
435 5,184,999

CLASS 501

80 5,185,297
87 5,185,298
95 5,185,299
99 5,185,300
117 5,185,301
127 5,185,302
5,185,303
139 5,185,304

CLASS 502

65 5,185,305
66 5,185,306
68 5,185,307
170 5,185,308
202 5,185,309
214 5,185,310
304 5,185,311
332 5,185,312
402 5,185,313

CLASS 503

227 5,185,314
5,185,315
5,185,316

CLASS 504

116 5,185,024
117 5,185,023
219 5,185,027
225 5,185,026
282 5,185,025
284 5,185,028
320 5,185,029

CLASS 505

1 5,185,317

CLASS 512

16 5,185,318

CLASS 514

3 5,185,319
8 5,185,320
5,185,321
12 5,185,322
5,185,323
18 5,185,324
23 5,185,325
5,185,326
54 5,185,327
63 5,185,328
142 5,185,330
159 5,185,329
220 5,185,331
222.5 5,185,332
224.2 5,185,333
236.2 5,185,334
243 5,185,335

VOL
1147
ISS
2
FE
9
1993
UMI

251	5,185,336		5,185,374	92	5,185,399	503	5,185,429	418	5,185,451	615	5,185,473
254	5,185,337	599	5,185,375	98	5,185,400		CLASS 530	492	5,185,452	684	5,185,474
	5,185,338	611	5,185,376	130	5,185,401				CLASS 549	748	5,185,475
256	5,185,339	721	5,185,377		5,185,402	350	5,185,430			831	5,185,476
269	5,185,340		CLASS 518	199	5,185,403	351	5,185,431	226	5,185,453	842	5,185,477
	5,185,341			222	5,185,404	388.8	5,185,432	240	5,185,454	853	5,185,478
274	5,185,342	700	5,185,378	228	5,185,405	391.1	5,185,433	259	5,185,455	893	5,185,479
278	5,185,343		CLASS 521	262	5,185,406	391.7	5,185,434		CLASS 554	913	5,185,480
299	5,185,344			328.8	5,185,407		CLASS 534	71	5,185,457	918	5,185,481
302	5,185,345	26	5,185,379	415	5,185,408	591	5,185,435		CLASS 556		CLASS 570
312	5,185,346	49	5,185,380		B1 5,028,667		CLASS 536	9	5,185,458	168	5,185,482
322	5,185,347	52	5,185,381		CLASS 526	4.1	5,185,436	449	5,185,459	172	5,185,483
335	5,185,348	84.1	5,185,382	62	5,185,409	23.2	5,185,438		CLASS 558		CLASS 585
336	5,185,349	155	5,185,383	128	5,185,410	23.5	5,185,441	392	5,185,460	419	5,185,484
339	5,185,350	160	5,185,384	200	5,185,411	24	5,185,437		CLASS 560	446	5,185,485
341	5,185,351		CLASS 522	210	5,185,412	24.3	5,185,439			448	5,185,486
348	5,185,352	84	5,185,385	233	5,185,413	237.2	5,185,440			449	5,185,487
364	5,185,353			247	5,185,414		CLASS 540	222	5,185,461	469	5,185,488
369	5,185,354		CLASS 523	264	5,185,170			232	5,185,462		CLASS 602
372	5,185,355	105	5,185,386	265	5,185,415	555	5,185,442		CLASS 562	63	5,185,000
	5,185,356	201	5,185,387	301	5,185,417	589	5,185,443	506	5,185,463		CLASS 604
	5,185,357	466	5,185,388	329.2	5,185,418		CLASS 544	545	5,185,464	5	5,185,001
383	5,185,358		CLASS 524		CLASS 528	81	5,185,444		CLASS 564	30	5,185,002
407	5,185,359			25	5,185,419	216	5,185,445	185	5,185,465	93	5,185,003
410	5,185,360	2	5,185,389	61	5,185,420	250	5,185,446	208	5,185,466	95	5,185,004
415	5,185,361	43	5,185,390	70	5,185,421		CLASS 546	330	5,185,467	174	5,185,005
428	5,185,362	87	5,185,391	76	5,185,422	86	5,185,447		CLASS 568	265	5,185,006
438	5,185,363	128	5,185,392	85	5,185,423	186	5,185,448			320	5,185,007
444	5,185,364	140	5,185,393	183	5,185,424	264	5,185,456	31	5,185,468	338	5,185,008
450	5,185,365	269	5,185,394	198	5,185,425	272	5,185,449	319	5,185,469	364	5,185,009
456	5,185,366	457	5,185,395	272	5,185,426		CLASS 548	341	5,185,470	379	5,185,010
476	5,185,368	820	5,185,396	329.1	5,185,427	194	5,185,450	586	5,185,471	385.1	5,185,011
502	5,185,369		5,185,397	340	5,185,428			591	5,185,472		
520	5,185,370		CLASS 525								
552	5,185,372										
570	5,185,373	74	5,185,398								

D2—	25	333,030		511	333,059	D9—	305	333,088		155	333,117		135	333,146		128	333,174
	314	333,031			333,060		311	333,089	D18—	190	333,118		4	333,147		133	333,175
		333,032		512	333,061			333,090		193	333,119			333,148		147	333,176
		333,033		545	333,062			333,091	D13—	107	333,120		39	333,149	D23—	202	333,177
	320	333,034			333,063		338	333,092		120	333,121		55	333,153		262	333,178
	301	333,035	D7—	364	333,064		341	333,093		123	333,122	D19—	34.1	333,150			333,179
D3—	30.5	333,036		391	333,065		423	333,094		134	333,123		36	333,151		281	333,180
	34	333,037		509	333,066		434	333,095		169	333,124		55	333,152		324	333,181
	36	333,038		536	333,067		522	333,096	D14—	100	333,125		65	333,154	D24—	133	333,182
	42	333,039		607	333,068		528	333,097			333,126			333,155			333,183
	105	333,040		619	333,069		531	333,098		102	333,127		69	333,156		143	333,184
D6—	354	333,041		620	333,070	D10—	2	333,099		106	333,128		75	333,157		223	333,185
	370	333,042			333,071		38	333,100			333,129		77	333,158			333,186
		333,043		622	333,072		39	333,101			333,130		78	333,159		225	333,187
	373	333,044	D8—	4	333,073			333,102		107	333,131		88	333,160	D26—	2	333,188
	376	333,045		10	333,074		65	333,103		113	333,132			333,161		67	333,189
	380	333,046		51	333,075		70	333,104		114	333,133			333,162		75	333,190
	382	333,047		61	333,076		129	333,105		115	333,134				D28—	7	333,191
	384	333,048		62	333,077	D11—	13	333,106		138	333,135	D20—	40	333,163		13	333,192
	452	333,049		68	333,078			333,107		165	333,136	D21—	13	333,164		10	333,193
	473	333,050			333,079		90	333,108		206	333,137		61	333,165	D29—	119	333,194
	475	333,051			333,080		221	333,109		230	333,138		64	333,166	D30—	23	333,195
	476	333,052		91	333,081	D12—	7	333,110		242	333,139		72	333,167	D32—	1	333,196
	482	333,053		317	333,082		92	333,111	D15—	28	333,140		141	333,168	D34—		333,197
	492	333,054		346	333,083		98	333,112		124	333,141		166	333,169			333,198
	495	333,055		360	333,084		125	333,113		128	333,142		209	333,170			333,199
		333,056		373	333,085		133	333,114		145	333,143		226	333,171		11	333,200
		333,057		389	333,086		136	333,115		199	333,144		229	333,172		23	333,201
	498	333,058		394	333,087		146	333,116	D16—	101	333,145	D22—	118	333,173		35	

CLASSIFICATION OF PLANTS

P.—	37	8,132		8,134		69.2	8,136		8,138		82.1	8,139		87.4	8,140		
	69.1	8,133		8,135			8,137										

VOL
1147
ISS
2
FE
9
1993
UMI

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 :	5,184,432	5,184,735	5,185,532	09 :	5,184,353	5,184,752	5,185,008
	5,184,608	5,184,742	5,185,535		5,184,407	5,184,808	5,185,018
	5,184,677	5,184,748	5,185,573		5,184,456	5,184,817	5,185,028
	5,184,922	5,184,762	5,185,579		5,184,502	5,184,865	5,185,062
	5,185,183	5,184,763	5,185,585		5,184,533	5,184,894	5,185,135
04 :	5,184,633	5,184,789	5,185,586		5,184,757	5,184,921	5,185,209
	5,184,716	5,184,790	5,185,602		5,184,900	5,184,971	5,185,210
	5,184,837	5,184,816	5,185,614		5,184,906	5,185,023	5,185,220
	5,184,910	5,184,852	5,185,647		5,184,962	5,185,032	5,185,222
	5,185,111	5,184,857	5,185,653		5,184,991	5,185,221	5,185,264
	5,185,273	5,184,874	5,185,660		5,185,033	5,185,292	5,185,306
	5,185,278	5,184,884	5,185,666		5,185,196	5,185,450	5,185,317
	5,185,611	5,184,889	5,185,675		5,185,226	5,185,541	5,185,363
	5,185,637	5,184,903	5,185,681		5,185,329	5,185,547	5,185,364
	5,185,654	5,184,917	5,185,706		5,185,343	5,185,558	5,185,403
	5,185,690	5,184,926	5,185,716		5,185,369	5,185,583	5,185,409
	5,185,733	5,184,930	5,185,718		5,185,420	5,185,763	5,185,533
	5,185,734	5,184,939	5,185,720		5,185,446	5,185,797	5,185,560
	5,185,799	5,184,961	5,185,725		5,185,449	5,185,864	5,185,566
05 :	5,184,707	5,184,973	5,185,749		5,185,464	5,185,871	5,185,624
	5,185,041	5,184,992	5,185,750		5,185,479	13 : 5,184,421	5,185,739
06 :	5,184,357	5,185,002	5,185,752		5,185,603	5,184,517	5,185,779
	5,184,366	5,185,016	5,185,754		5,185,640	5,184,558	5,185,781
	5,184,375	5,185,024	5,185,774		5,185,753	5,184,740	5,185,790
	5,184,382	5,185,034	5,185,787		5,185,866	5,184,853	5,185,795
	5,184,405	5,185,042	5,185,794	10 :	5,184,573	5,185,244	5,185,796
	5,184,412	5,185,046	5,185,801		5,185,094	5,185,430	5,185,802
	5,184,418	5,185,107	5,185,806		5,185,116	5,185,789	18 : 5,184,417
	5,184,419	5,185,120	5,185,818		5,185,206	5,185,843	5,184,570
	5,184,425	5,185,122	5,185,858		5,185,297	5,185,844	5,184,571
	5,184,444	5,185,148	5,185,865		5,185,298	5,185,845	5,184,693
	5,184,445	5,185,151	5,185,870		5,185,302	15 : 5,184,504	5,184,855
	5,184,457	5,185,154	5,185,876		5,185,303	16 : 5,185,058	5,184,856
	5,184,458	5,185,158	5,185,885		5,185,427	5,185,275	5,185,211
	5,184,470	5,185,174	5,185,886		5,185,447	5,185,757	5,185,247
	5,184,498	5,185,212	08 : 5,184,356		5,185,477	17 : 5,184,372	5,185,475
	5,184,501	5,185,243	5,184,474		5,185,482	5,184,385	5,185,498
	5,184,507	5,185,258	5,184,518		5,028,667	5,184,388	19 : 5,185,044
	5,184,515	5,185,259	5,184,615	11 :	5,184,604	5,184,390	5,185,079
	5,184,516	5,185,266	5,184,617		5,185,142	5,184,441	5,185,192
	5,184,521	5,185,269	5,184,780	12 :	5,184,351	5,184,448	5,185,705
	5,184,523	5,185,270	5,184,800		5,184,360	5,184,471	20 : 5,184,422
	5,184,531	5,185,274	5,184,844		5,184,455	5,184,500	5,184,439
	5,184,564	5,185,288	5,184,984		5,184,481	5,184,548	5,184,572
	5,184,597	5,185,371	5,185,652		5,184,503	5,184,557	5,184,842
	5,184,609	5,185,381	5,185,673		5,184,524	5,184,642	5,184,960
	5,184,637	5,185,396	5,185,735		5,184,543	5,184,685	5,185,382
	5,184,653	5,185,397	5,185,742		5,184,599	5,184,746	21 : 5,184,648
	5,184,656	5,185,439	5,185,782		5,184,625	5,184,768	5,184,698
	5,184,657	5,185,490	5,185,817		5,184,674	5,184,838	5,185,172
	5,184,704	5,185,509	5,185,824		5,184,721	5,184,909	5,185,593
	5,184,719	5,185,526	5,185,856		5,184,731	5,184,959	22 : 5,184,488
	5,184,720	5,185,531	5,185,860		5,184,749	5,185,007	5,184,508

VOL 1147 ISS 2 FE 9 1993 UMI

5,184,538 5,184,640 5,184,686 5,184,839 5,185,011 5,185,152
23 : 5,184,998
24 : 5,184,621 5,184,626 5,184,796 5,184,802 5,184,811 5,184,826 5,184,861 5,184,986 5,184,987 5,185,049 5,185,131
27 : 5,184,371
5,185,376 5,185,527 5,185,580 5,185,588 5,185,590 5,185,620 5,185,671 5,185,698 5,185,700 5,185,728 5,185,778 5,185,882
25 : 5,184,365
5,184,391 5,184,433 5,184,568 5,184,600 5,184,610 5,184,627 5,184,718 5,184,728 5,185,010 5,185,068 5,185,126 5,185,129 5,185,160 5,185,215 5,185,250 5,185,441
28 : 5,185,688
5,185,474
29 : 5,184,363
5,185,506 5,185,519 5,185,529 5,185,561 5,185,587 5,185,592 5,185,597 5,185,608 5,185,745 5,185,756 5,185,758
30 : 5,184,376
31 : 5,184,358
5,185,807 5,185,809 5,185,852 5,185,875 5,185,883
26 : Re.34,174
5,184,362 5,184,369 5,184,436
34 : 5,184,435
5,184,446 5,184,479 5,184,480 5,184,510 5,184,519 5,184,530 5,184,569 5,184,576 5,184,635 5,184,644 5,184,745 5,184,833 5,184,846 5,184,859 5,184,871 5,184,883 5,184,886 5,184,887 5,184,893

5,184,958 5,184,978 5,184,979 5,185,065 5,185,125 5,185,128 5,185,182 5,185,267 5,185,305 5,185,349 5,185,358 5,185,391 5,185,495 5,185,695 5,185,701 5,185,773 5,185,803
27 : 5,184,371
5,184,392 5,184,394 5,184,396 5,184,514 5,184,525 5,184,562 5,184,612 5,184,619 5,184,629 5,184,706 5,184,723 5,184,775 5,184,797 5,184,820 5,184,829 5,185,004 5,185,085 5,185,102 5,185,117 5,185,178
35 : 5,184,567
5,185,197 5,185,231 5,185,299
36 : 5,184,406
5,185,574 5,185,683 5,185,863 5,185,884
28 : 5,184,809
5,185,688
29 : 5,184,363
5,184,708 5,184,825 5,184,972 5,185,025 5,185,036 5,185,253 5,185,455 5,185,485 5,185,609
30 : 5,184,376
31 : 5,184,358
5,184,744
32 : 5,184,389
5,185,499
33 : 5,184,378
5,185,084 5,185,555 5,185,877
34 : 5,184,435
5,184,592 5,184,613 5,184,662 5,184,671 5,184,726 5,184,736 5,184,738 5,184,753 5,184,759 5,184,760 5,184,783 5,184,801 5,184,831 5,184,897 5,184,969 5,184,981 5,185,077 5,185,080 5,185,090

5,185,096 5,185,100 5,185,136 5,185,137 5,185,138 5,185,139 5,185,143 5,185,144 5,185,170 5,185,176 5,185,191 5,185,195 5,185,199 5,185,248
37 : 5,184,442
5,185,251 5,185,301 5,185,310 5,185,334 5,185,350 5,185,373 5,185,378 5,185,408 5,185,414 5,185,438 5,185,448 5,185,459 5,185,463 5,185,465 5,185,484 5,185,542 5,185,765 5,185,785
39 : Re.34,175
5,185,786 5,185,819 5,185,827 5,185,840 5,185,846 5,185,857 5,184,567 5,185,260 5,185,578 5,184,406 5,184,473 5,184,555 5,184,578 5,184,603 5,184,630 5,184,645 5,184,652 5,184,754 5,184,756 5,184,781 5,184,814 5,184,881 5,184,891 5,184,944 5,184,947 5,184,989 5,185,001 5,185,012 5,185,014 5,185,056 5,185,073 5,185,086 5,185,089 5,185,147 5,185,153
40 : 5,184,561
5,185,175 5,185,230 5,185,239 5,185,246 5,185,249
41 : 5,184,423
5,185,276 5,185,293 5,185,315 5,185,365 5,185,383 5,185,386 5,185,451 5,185,471 5,185,570 5,185,619 5,185,626 5,185,628
42 : 5,184,465
5,185,636 5,185,638

5,185,661 5,185,662 5,185,674 5,185,709 5,185,719 5,185,762 5,185,768 5,185,793 5,185,805 5,185,808 5,185,815 5,185,833 5,185,862 5,184,442 5,184,596 5,184,770 5,184,827 5,185,105 5,185,124 5,185,127 5,185,134 5,185,242 5,185,395 5,185,437 5,185,440 5,185,536 5,185,591 5,185,605 5,185,736 5,185,839 4,980,964 Re.34,175 5,184,410 5,184,427 5,184,429 5,184,459 5,184,460 5,184,461 5,184,477 5,184,643 5,184,654 5,184,675 5,184,737 5,184,739 5,184,769 5,184,882 5,184,896 5,184,912 5,184,941 5,184,949 5,184,996 5,185,006 5,185,047 5,185,052 5,185,088 5,185,108 5,185,109 5,185,163 5,185,165 5,185,366 5,185,390 5,185,505 5,185,514 5,185,564 5,185,568 5,185,594 4,251,331 5,184,561 5,184,680 5,185,400 5,185,487 5,184,423 5,184,574 5,184,598 5,184,840 5,185,015 5,185,444 5,185,599 5,185,604 5,185,635 5,185,861 5,185,872 5,185,874 5,184,465 5,184,497 5,184,511

5,184,545 5,184,655 5,184,660 5,184,689 5,184,717 5,184,730 5,184,751 5,184,774 5,184,798 5,184,815 5,184,923 5,184,925 5,184,927 5,184,931 5,184,951 5,184,953 5,184,964 5,185,019 5,185,030 5,185,075 5,185,083 5,185,103 5,185,123 5,185,133 5,185,149 5,185,161 5,185,167 5,185,180 5,185,224 5,185,245 5,185,254 5,185,291 5,185,300 5,185,323 5,185,331 5,185,340 5,185,351 5,185,355 5,185,362 5,185,402 5,185,412 5,185,421 5,185,433 5,185,478 5,185,545 5,185,589 5,185,692 5,185,699 5,185,826
44 : 5,184,566
45 : 5,184,381
5,184,697 5,184,795 5,184,929 5,184,957 5,184,993 5,185,157
46 : 5,184,715
47 : Re.34,176
5,184,541 5,184,584 5,184,694 5,184,747 5,185,031 5,185,069 5,185,322 5,185,428 5,185,476 5,185,664 5,185,667 5,185,693 5,185,708 5,185,776 5,184,354 5,184,398 5,184,414 5,184,415 5,184,434 5,184,464 5,184,482 5,184,495 5,184,540 5,184,601 5,184,659 5,184,679 5,184,681

5,184,692 5,184,729 5,184,750 5,184,767 5,184,792 5,184,821 5,184,943 5,185,005 5,185,066 5,185,071 5,185,087 5,185,106 5,185,280 5,185,384 5,185,407 5,185,410 5,185,469 5,185,480 5,185,513 5,185,539 5,185,607 5,185,610 5,185,655 5,185,689 5,185,691 5,185,694 5,185,721 5,185,726 5,185,738 5,185,780 5,185,811 5,185,859 5,185,868 5,185,878
49 : 5,184,377
50 : 5,185,294
51 : 5,184,413
5,184,804 5,184,836 5,184,968 5,185,061 5,185,162 5,185,193 5,185,508 5,185,697
53 : 5,184,361
5,184,409 5,184,424 5,184,784 5,184,824 5,184,914 5,184,970 5,184,988 5,185,432 5,185,627 5,185,715 5,185,751 5,185,881
54 : 5,184,416
5,184,913 5,185,013 5,185,200 5,185,308 5,185,549
55 : 5,184,400
5,184,556 5,184,559 5,184,586 5,184,620 5,184,658 5,184,864 5,184,866 5,184,995 5,184,997 5,185,029 5,185,101 5,185,150 5,185,201 5,185,214 5,185,502 5,185,576 5,185,684 5,185,685 5,185,686 5,185,687

DESIGN PATENTS

01 : 333,045 333,183
04 : 333,049
05 : 333,174
06 : 333,040 333,042 333,052 333,063 333,067 333,083 333,093 333,098 333,103 333,106 333,117 333,119 333,121 333,130 333,132

333,137 333,143 333,145 333,162 333,166 333,172 333,176 333,185 333,186 333,199
08 : 333,061
333,081 333,109 333,127
09 : 333,055
333,056 333,058 333,146 333,196

12 : 333,101 333,108 333,114 333,163
13 : 333,066 333,082 333,200 333,198
15 : 333,044
17 : 333,074 333,113 333,140 333,178 333,201
18 : 333,039 333,069 333,095 333,096 333,165
19 : 333,180
21 : 333,031
22 : 333,161
23 : 333,054
25 : 333,086 333,104 333,193 333,087
26 : 333,111
27 : 333,030 333,089 333,090 333,091 333,134 333,073 333,160 333,191
30 : 333,164
33 : 333,126
34 : 333,112 333,124
36 : 333,035 333,037 333,075 333,094 333,123 333,151 333,171 333,194 333,043
37 : 333,097
39 : 333,036 333,051 333,065 333,088
41 : 333,032

333,033 333,034 333,129
42 : 333,041 333,057 333,059 333,135 333,116 333,173 333,184 333,148 333,169 333,170 333,189 333,070 333,071 333,118 333,175
48 : 333,148
51 : 333,070
53 : 333,071
55 : 333,118
56 : 333,175

PLANT PATENTS

12 : 8,139
41 : 8,132
42 : 8,140

VOL
1147
ISS
2
FE
9
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VOL
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1147

ISS
2

FE
9

1993

UMI

VOL
1147

ISS
2

FE
9

1993

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VOL
1147

ISS
3

FE
16

1993

UMI

Vol. 1147 Number 3

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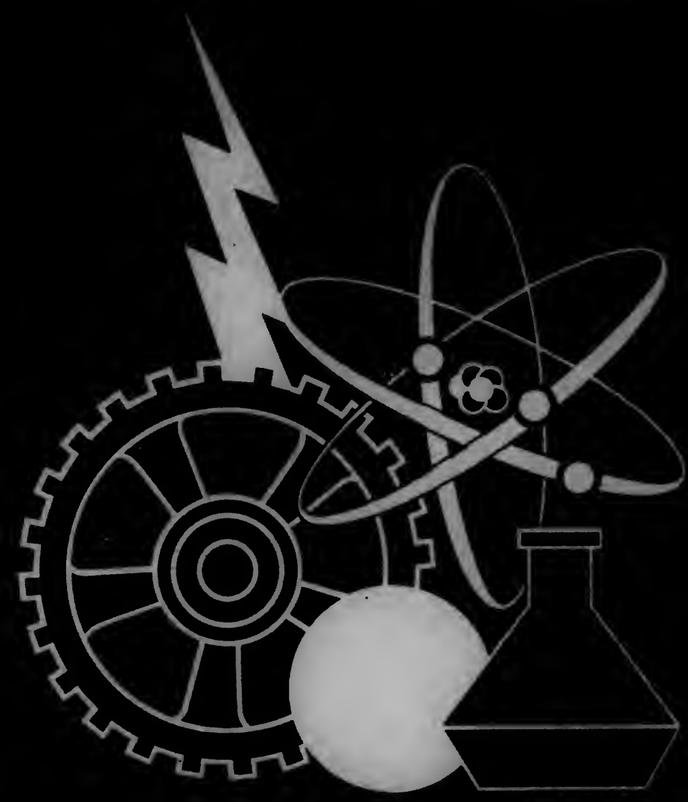
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VOL
1147
ISS
3
FE
16
1993
UMI

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UNITED STATES PATENT AND TRADEMARK OFFICE
February 16, 1993 Volume 1147 Number 3

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1147 OG 48
Notice of Maintenance Fees Payable	1147 OG 48
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees	1147 OG 49
Reissue Applications Filed	1147 OG 54
Requests for Reexaminations Filed	1147 OG 55
Meeting of the Public Advisory Committee for Trademark Affairs	1147 OG 55
Registration to Practice	1147 OG 55
Certificates of Correction	1147 OG 62
Special Boxes for Mail	1147 OG 63
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1147 OG 64
Patent Examining Corps	1147 OG 66
Reexaminations	1095
Reissue Patents Granted (34,178)	1097
Plant Patents Granted (8,141)	1099
Patents Granted	
General and Mechanical (5,185,889)	1101
Chemical (5,186,716)	1387
Electrical (5,187,312)	1573
Design Patents Granted (333,202)	1747
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patents	PI 83
Classification of	
Patents (Including Reissues and Reexaminations)	PI 89
Designs, and Plants Applications	PI 93
Geographical Index of Residence of Inventors	
Patents (Including Reissues and Reexaminations)	PI 95
Designs and Plant Applications	PI 97
Change of Address Form	PI 99
Subscription Order Form	PI 101

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VOL
1147
ISS
3
FE
16
1993
UMI

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1142 O.G. 66, on Sept. 29, 1992.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1992, due to changes both in the amount of the international search fee charged by the European Patent Office and in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1142 O.G. 20, on Sept. 8, 1992.

International fees, effective on Dec. 1, 1992, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, were announced in the *Official Gazette* at 1143 O.G. 62, on Oct. 27, 1992.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Oct. 1, 1992 and were announced in the *Official Gazette* at 1141 O.G. 68 on Aug. 25, 1992.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1635.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	450.00
—Additional examination fee, per additional invention	140.00
—ISA not the USPTO	670.00
—Additional examination fee, per additional invention	230.00
International fees	
Basic fee	593.00
Basic Supplemental fee (for each page over 30)	12.00
Designation fee per country or region for the first 10 national or regional offices	144.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	181.00

U.S. National Stage fees	Small Entity	Regular
USPTO was IPEA	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA	475.00	950.00
Filing with an EPO or JPO search report	415.00	830.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Nov. 8, 1992

DOUGLAS B. COMER,
Acting Assistant Secretary and Acting Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on February 13, 1990 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,899,395 through 4,901,369
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 11, 1986 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,569,086 through 4,570,265
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months and eleven years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9f) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9f) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9f) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment; the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED DECEMBER 8, 1992
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,485,489	06/390,100	12/04/84
4,485,490	06/501,733	12/04/84
4,485,491	06/491,076	12/04/84
4,485,492	06/545,637	12/04/84
4,485,493	06/531,442	12/04/84
4,485,494	06/510,572	12/04/84
4,485,496	06/426,765	12/04/84
4,485,498	06/404,290	12/04/84
4,485,499	06/421,215	12/04/84
4,485,501	06/490,445	12/04/84
4,485,503	06/512,197	12/04/84
4,485,504	06/398,393	12/04/84
4,485,507	06/519,604	12/04/84
4,485,508	06/469,643	12/04/84
4,485,512	06/412,846	12/04/84
4,485,514	06/545,344	12/04/84
4,485,516	06/437,223	12/04/84
4,485,517	06/415,450	12/04/84
4,485,519	06/381,380	12/04/84
4,485,521	06/390,531	12/04/84
4,485,522	06/413,494	12/04/84
4,485,523	06/379,119	12/04/84
4,485,524	06/385,099	12/04/84
4,485,525	06/407,335	12/04/84
4,485,526	06/406,299	12/04/84
4,485,527	06/491,816	12/04/84
4,485,528	06/406,782	12/04/84
4,485,530	06/442,164	12/04/84
4,485,535	06/348,148	12/04/84
4,485,538	06/216,507	12/04/84
4,485,540	06/361,388	12/04/84
4,485,543	06/451,462	12/04/84
4,485,545	06/511,436	12/04/84
4,485,546	06/355,748	12/04/84
4,485,547	06/349,259	12/04/84
4,485,548	06/357,075	12/04/84
4,485,553	06/508,314	12/04/84
4,485,555	06/500,279	12/04/84
4,485,559	06/448,977	12/04/84
4,485,560	06/433,183	12/04/84
4,485,561	06/421,986	12/04/84
4,485,562	06/255,681	12/04/84
4,485,564	06/403,516	12/04/84
4,485,571	06/448,454	12/04/84
4,485,572	06/532,793	12/04/84
4,485,573	06/424,109	12/04/84
4,485,574	06/461,502	12/04/84
4,485,578	06/400,344	12/04/84
4,485,579	06/532,308	12/04/84
4,485,581	06/446,206	12/04/84
4,485,583	06/401,618	12/04/84
4,485,587	06/456,584	12/04/84
4,485,588	06/506,200	12/04/84
4,485,591	06/364,532	12/04/84
4,485,593	06/381,007	12/04/84
4,485,594	06/415,137	12/04/84
4,485,597	06/418,656	12/04/84
4,485,599	06/475,581	12/04/84
4,485,600	06/348,494	12/04/84
4,485,603	06/496,450	12/04/84
4,485,606	06/337,671	12/04/84
4,485,607	06/572,502	12/04/84
4,485,608	06/397,919	12/04/84
4,485,611	06/293,954	12/04/84
4,485,613	06/358,987	12/04/84
4,485,614	06/422,899	12/04/84
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VOL
1147
ISS
3
FE
16
1993
UMI

Patent Number	Serial Number	Issue Date
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Patent Number	Serial Number	Issue Date
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VOL
1147
ISS
3
FE
16
1993
UMI

Patent Number	Serial Number	Issue Date
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4,486,592	06/543,200	12/04/84
4,486,593	06/459,074	12/04/84
4,486,596	06/526,938	12/04/84
4,486,598	06/351,069	12/04/84
4,486,600	06/552,102	12/04/84
4,486,604	06/430,510	12/04/84
4,486,606	06/477,470	12/04/84
4,486,611	06/412,643	12/04/84
4,486,613	06/420,137	12/04/84
4,486,616	06/493,853	12/04/84
4,486,617	06/553,122	12/04/84
4,486,619	06/494,055	12/04/84
4,486,622	06/510,382	12/04/84
4,486,623	06/429,900	12/04/84
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4,486,646	06/364,173	12/04/84
4,486,654	06/302,653	12/04/84
4,486,656	06/360,018	12/04/84
4,486,657	06/382,850	12/04/84
4,486,661	06/390,503	12/04/84
4,486,662	06/453,646	12/04/84
4,486,664	06/401,614	12/04/84
4,486,666	06/418,411	12/04/84
4,486,667	06/314,534	12/04/84
4,486,669	06/319,112	12/04/84
4,486,671	06/362,711	12/04/84
4,486,679	06/546,235	12/04/84
4,486,680	06/472,010	12/04/84
4,486,683	06/315,327	12/04/84
4,486,687	06/261,466	12/04/84
4,486,688	06/349,694	12/04/84
4,486,690	06/579,751	12/04/84
4,486,693	06/395,487	12/04/84
4,486,695	06/460,493	12/04/84
4,486,698	06/290,313	12/04/84
4,486,701	06/342,391	12/04/84
4,486,710	06/415,956	12/04/84
4,486,712	06/305,468	12/04/84
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4,486,727	06/421,674	12/04/84
4,486,729	06/499,142	12/04/84
4,486,730	06/431,625	12/04/84
4,486,732	06/411,855	12/04/84
4,486,733	06/428,503	12/04/84
4,486,735	06/401,734	12/04/84
4,486,736	06/444,371	12/04/84
4,486,737	06/463,912	12/04/84
4,486,740	06/447,492	12/04/84
4,486,742	06/306,830	12/04/84
4,486,751	06/377,315	12/04/84
4,486,767	06/269,767	12/04/84
4,486,768	06/526,796	12/04/84
4,486,771	06/475,216	12/04/84
4,486,775	06/313,009	12/04/84
4,486,777	06/432,408	12/04/84
4,486,778	06/377,085	12/04/84
4,486,779	06/394,542	12/04/84
4,486,781	06/369,395	12/04/84
4,486,787	06/407,622	12/04/84
4,486,790	06/343,998	12/04/84
4,486,800	06/450,444	12/04/84
4,486,802	06/451,480	12/04/84

Patent Number	Serial Number	Issue Date
4,486,805	06/473,175	12/04/84
4,486,808	06/446,564	12/04/84
4,486,809	06/403,914	12/04/84
4,486,810	06/530,611	12/04/84
4,486,812	06/470,750	12/04/84
4,486,816	06/443,661	12/04/84
4,486,817	06/409,514	12/04/84
4,486,823	06/434,981	12/04/84
4,486,824	06/356,923	12/04/84
4,486,825	06/305,627	12/04/84
4,486,832	06/294,986	12/04/84
4,486,835	06/286,538	12/04/84
4,486,842	06/347,080	12/04/84
4,486,843	06/354,314	12/04/84
4,486,847	06/577,121	12/04/84
4,486,853	06/249,830	12/04/84
4,486,854	06/311,742	12/04/84
4,486,855	06/343,140	12/04/84
4,486,862	06/409,670	12/04/84
4,486,867	06/353,447	12/04/84
4,486,868	06/305,358	12/04/84
4,486,869	06/347,767	12/04/84
4,486,870	06/399,862	12/04/84
4,486,872	06/426,009	12/04/84
4,486,874	06/594,068	12/04/84
4,486,875	06/478,935	12/04/84
4,486,876	06/413,469	12/04/84
4,486,879	06/340,391	12/04/84
4,486,882	06/412,066	12/04/84
4,486,886	06/427,975	12/04/84
4,486,888	06/293,731	12/04/84
4,486,889	06/519,096	12/04/84
4,486,890	06/285,389	12/04/84
4,486,891	06/342,922	12/04/84
4,486,894	06/339,512	12/04/84
4,486,897	06/463,813	12/04/84
4,788,725	07/014,698	12/06/88
4,788,726	07/114,337	12/06/88
4,788,728	07/054,876	12/06/88
4,788,733	07/167,689	12/06/88
4,788,739	07/059,447	12/06/88
4,788,741	07/090,010	12/06/88
4,788,746	06/749,250	12/06/88
4,788,750	07/075,812	12/06/88
4,788,757	06/821,167	12/06/88
4,788,764	07/149,037	12/06/88
4,788,765	07/120,626	12/06/88
4,788,770	07/064,247	12/06/88
4,788,776	07/026,474	12/06/88
4,788,777	07/131,603	12/06/88
4,788,780	07/020,584	12/06/88
4,788,784	07/097,611	12/06/88
4,788,785	07/102,226	12/06/88
4,788,786	07/042,931	12/06/88
4,788,789	07/135,275	12/06/88
4,788,794	07/107,009	12/06/88
4,788,798	07/047,749	12/06/88
4,788,802	07/040,745	12/06/88
4,788,813	07/143,471	12/06/88
4,788,821	07/099,645	12/06/88
4,788,826	07/034,427	12/06/88
4,788,830	07/025,665	12/06/88
4,788,831	07/094,131	12/06/88
4,788,834	07/119,066	12/06/88
4,788,835	06/231,560	12/06/88
4,788,844	07/044,766	12/06/88
4,788,850	07/034,549	12/06/88
4,788,855	07/021,225	12/06/88
4,788,857	07/082,081	12/06/88
4,788,859	07/120,066	12/06/88
4,788,863	07/124,205	12/06/88
4,788,865	06/935,013	12/06/88
4,788,872	06/917,965	12/06/88
4,788,874	07/011,525	12/06/88
4,788,887	06/928,099	12/06/88
4,788,900	07/031,238	12/06/88
4,788,901	06/844,162	12/06/88
4,788,905	07/060,768	12/06/88
4,788,906	07/105,863	12/06/88
4,788,909	06/884,209	12/06/88
4,788,911	07/065,906	12/06/88
4,788,916	07/076,913	12/06/88
4,788,918	07/123,561	12/06/88
4,788,926	07/031,066	12/06/88
4,788,928	07/074,361	12/06/88
4,788,935	07/065,027	12/06/88
4,788,936	07/114,309	12/06/88
4,788,938	07/107,777	12/06/88
4,788,941	07/053,028	12/06/88
4,788,944	07/064,955	12/06/88
4,788,945	07/061,433	12/06/88
4,788,947	06/688,211	12/06/88
4,788,948	07/116,993	12/06/88
4,788,953	07/159,522	12/06/88
4,788,955	07/098,729	12/06/88
4,788,961	06/929,251	12/06/88
4,788,968	07/041,145	12/06/88
4,788,969	06/876,934	12/06/88
4,788,970	07/033,410	12/06/88
4,788,978	07/172,947	12/06/88
4,788,984	07/009,206	12/06/88
4,788,986	07/026,201	12/06/88
4,788,987	07/018,427	12/06/88
4,788,988	07/009,230	12/06/88
4,788,990	07/036,063	12/06/88
4,788,991	07/093,774	12/06/88
4,788,993	06/877,243	12/06/88
4,788,995	07/105,333	12/06/88
4,789,003	07/086,095	12/06/88
4,790,005	07/170,704	12/06/88
4,790,006	07/025,454	12/06/88
4,790,007	07/106,408	12/06/88
4,790,011	07/025,354	12/06/88
4,790,015	07/011,543	12/06/88
4,790,017	07/109,735	12/06/88
4,790,023	07/078,820	12/06/88
4,790,027	06/861,609	12/06/88
4,790,030	07/082,454	12/06/88
4,790,036	06/940,588	12/06/88
4,790,037	07/057,796	12/06/88
4,790,043	07/044,231	12/06/88
4,790,047	07/076,331	12/06/88
4,790,050	06/824,118	12/06/88
4,790,054	07/003,067	12/06/88
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4,790,056	07/010,409	12/06/88
4,790,058	07/153,988	12/06/88
4,790,059	07/155,888	12/06/88
4,790,061	07/119,935	12/06/88
4,790,064	07/100,410	12/06/88
4,790,065	07/046,240	12/06/88
4,790,069	07/114,853	12/06/88
4,790,072	07/040,031	12/06/88
4,790,082	06/944,954	12/06/88
4,790,087	07/154,659	12/06/88
4,790,091	07/114,007	12/06/88
4,790,102	07/053,807	12/06/88
4,790,104	06/583,374	12/06/88
4,790,107	07/013,160	12/06/88
4,790,119	07/117,586	12/06/88
4,790,123	07/104,022	12/06/88
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4,790,155	07/090,856	12/06/88
4,790,156	07/100,612	12/06/88
4,790,157	07/118,248	12/06/88
4,790,159	07/084,455	12/06/88
4,790,162	07/054,725	12/06/88
4,790,163	07/060,602	12/06/88
4,790,165	07/121,036	12/06/88
4,790,166	07/095,955	12/06/88
4,790,168	06/940,763	12/06/88
4,790,169	07/079,772	12/06/88
4,790,173	07/132,925	12/06/88

VOL
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Patent Number	Serial Number	Issue Date
4,790,175	07/078,920	12/06/88
4,790,177	06/925,899	12/06/88
4,790,180	07/034,338	12/06/88
4,790,183	07/165,813	12/06/88
4,790,191	06/921,112	12/06/88
4,790,195	07/066,041	12/06/88
4,790,197	07/078,274	12/06/88
4,790,200	07/078,582	12/06/88
4,790,213	07/040,729	12/06/88
4,790,216	06/424,680	12/06/88
4,790,218	07/032,292	12/06/88
4,790,228	07/004,222	12/06/88
4,790,233	07/053,042	12/06/88
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4,790,245	07/149,536	12/06/88
4,790,246	06/319,262	12/06/88
4,790,248	07/174,392	12/06/88
4,790,260	07/084,907	12/06/88
4,790,261	07/033,288	12/06/88
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4,790,282	06/832,991	12/06/88
4,790,284	07/116,954	12/06/88
4,790,285	07/029,536	12/06/88
4,790,286	07/058,673	12/06/88
4,790,291	07/063,171	12/06/88
4,790,300	06/505,065	12/06/88
4,790,307	07/154,223	12/06/88
4,790,310	07/000,631	12/06/88
4,790,311	07/134,003	12/06/88
4,790,313	07/036,099	12/06/88
4,790,321	07/167,904	12/06/88
4,790,326	07/007,462	12/06/88
4,790,335	07/058,159	12/06/88
4,790,336	07/066,694	12/06/88
4,790,339	07/007,141	12/06/88
4,790,341	07/020,573	12/06/88
4,790,343	07/105,040	12/06/88
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4,790,355	07/042,322	12/06/88
4,790,359	07/077,979	12/06/88
4,790,362	07/009,082	12/06/88
4,790,368	07/103,065	12/06/88
4,790,376	06/382,148	12/06/88
4,790,386	06/908,555	12/06/88
4,790,399	06/920,429	12/06/88
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4,790,415	07/012,429	12/06/88
4,790,419	07/034,158	12/06/88
4,790,423	07/045,251	12/06/88
4,790,424	07/131,727	12/06/88
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4,790,429	07/078,180	12/06/88
4,790,433	07/007,909	12/06/88
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4,790,451	06/771,958	12/06/88
4,790,460	07/083,262	12/06/88
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4,790,470	07/086,508	12/06/88
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4,790,508	06/911,080	12/06/88
4,790,511	07/014,765	12/06/88
4,790,515	07/142,431	12/06/88
4,790,517	07/062,876	12/06/88
4,790,522	07/133,832	12/06/88
4,790,538	07/074,736	12/06/88
4,790,539	07/067,608	12/06/88
4,790,551	07/064,602	12/06/88
4,790,562	06/895,486	12/06/88
4,790,564	07/032,377	12/06/88
4,790,573	07/107,003	12/06/88
4,790,574	07/062,249	12/06/88
4,790,575	07/055,629	12/06/88
4,790,579	07/165,923	12/06/88
4,790,580	06/930,351	12/06/88
4,790,587	07/010,438	12/06/88
4,790,591	07/023,976	12/06/88
4,790,593	07/039,812	12/06/88
4,790,594	07/039,003	12/06/88
4,790,603	07/114,573	12/06/88
4,790,609	07/133,592	12/06/88
4,790,628	06/874,541	12/06/88
4,790,638	07/046,385	12/06/88
4,790,642	07/032,810	12/06/88
4,790,650	07/008,204	12/06/88
4,790,657	07/112,051	12/06/88
4,790,665	06/941,604	12/06/88
4,790,668	06/929,292	12/06/88
4,790,680	06/920,623	12/06/88
4,790,697	06/774,003	12/06/88
4,790,702	06/873,681	12/06/88
4,790,703	07/052,944	12/06/88
4,790,715	06/920,084	12/06/88
4,790,725	07/026,517	12/06/88
4,790,728	07/042,989	12/06/88
4,790,735	06/862,919	12/06/88
4,790,743	07/080,083	12/06/88
4,790,744	07/081,518	12/06/88
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4,790,747	06/940,222	12/06/88
4,790,748	06/788,372	12/06/88
4,790,750	07/030,798	12/06/88
4,790,754	06/849,070	12/06/88
4,790,761	07/064,618	12/06/88
4,790,764	07/136,013	12/06/88
4,790,765	07/088,545	12/06/88
4,790,778	07/061,496	12/06/88
4,790,788	07/033,552	12/06/88
4,790,804	06/908,371	12/06/88
4,790,821	07/001,306	12/06/88
4,790,835	07/070,130	12/06/88
4,790,837	07/041,273	12/06/88
4,790,839	06/877,915	12/06/88
4,790,841	06/921,710	12/06/88
4,790,842	07/124,173	12/06/88
4,790,852	07/058,823	12/06/88
4,790,853	07/061,585	12/06/88
4,790,860	06/836,027	12/06/88
4,790,868	06/927,484	12/06/88
4,790,871	07/161,264	12/06/88
4,790,873	06/943,603	12/06/88
4,790,918	06/927,042	12/06/88
4,790,941	06/887,899	12/06/88
4,790,946	06/944,838	12/06/88
4,790,947	06/791,326	12/06/88
4,790,953	06/912,606	12/06/88
4,790,964	06/870,515	12/06/88
4,790,998	07/009,452	12/06/88
4,790,009	06/791,786	12/06/88
4,790,012	06/811,272	12/06/88
4,790,027	06/901,390	12/06/88
4,790,030	06/934,887	12/06/88

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,956,273, Re. S.N. 07/943,070, Filed Sept. 10, 1992, Cl. 435/5, SYNTHETIC PEPTIDES AND METHOD OF USE FOR DIAGNOSIS AND VACCINATION FOR AIDS AND ARC, Ronald C. Kennedy, et. al., Owner of Record: *Inventor*, Attorney or Agent: Paul T. Clark, Ex. Gp.: 1807

4,958,505, Re. S.N. 07/950,625, Filed Sept. 24, 1992, Cl. 62/398, ICE COOLED BEVERAGE DISPENSER AND METHOD OF MAKING SAME, Craig A. Swanson, Owner of Record: *Stainless Ice Tainer Co., San Antonio, Tex.*, Attorney or Agent: Sten Erik Hakanson, Ex. Gp.: 3404

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,686,352, Reexam. No. 90/002,926, Requested Dec. 22, 1992, Cl. 219/250, ELECTRONIC PRESSING IRON, Thomas L. Nawrot, et. al., Owner of Record: *Sunbeam Corp., Providence, R.I.*, Attorney or Agent: Robert J. Fox, Fitch, Even, Tabin & Flannery, Chicago, Ill., Ex. Gp.: 2106, Requester: Black & Decker, Shelton, Conn.

U. S. Department of Commerce
Meeting of the Public Advisory Committee for Trademark Affairs

Agency: Patent and Trademark Office, Commerce.
Action: Notice.
Summary: In accordance with Section 10(a)(2) of the Federal Advisory Committee Act (Public Law 92-463), anouncement is made of the open meeting of the Public Advisory Committee for Trademark Affairs.
Date: The Public Advisory Committee for Trademark Affairs will meet from 10:00 a.m. until 4:00 p.m. on Feb. 23, 1993.
Place: U.S. Patent and Trademark Office, 2121 Crystal Drive, Crystal Park 2, Room 912, Arlington, Va.
Status: The meeting will be open to public observation; seating will be available for the public on a first-come-first-served basis. Members of the public will be permitted to make oral comments of three (3) minutes each. Written comments and suggestions will be accepted before or after the meeting on any of the matters discussed. Copies of the minutes will be available upon request.
Matters to be Considered: The agenda for the meeting is as follows:

(1) Finance
(2) Automation
(3) Strategic Planning
(4) Current Trademark Office Practice Issues
(5) International Trademark Law

Contact Person For More Information: For further information, contact Lynne Beresford, Office of the Assistant Commissioner for Trademarks, Building CPK2, Room 910, Patent and Trademark Office, Washington, D.C. 20231. Telephone: (703) 305-9464.

Jan. 25, 1993

DOUGLAS B. COMER
Acting Assistant Secretary and Acting Commissioner of Patents and Trademarks

Registration to Practice

The results of the examination for registration to practice before the United States Patent and Trademark Office held on Oct. 14, 1992 were mailed to 1,128 candidates. 612 persons successfully passed the examination. The following list contains the names of persons entitled at this time to receive provisional recognition pursuant to 37 CFR § 10.9(a) have been given the same to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. 37 CFR § 10.7(a). Accordingly, any information tending to affect the elegibility of any of the following persons on moral, ethical or other grounds should be furnished to the Director of Enrollment and Discipline on or before Mar. 31, 1993.

Jan. 22, 1993

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VOL
1147
ISS
3
FE
16
1993
UMI

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VOL
1147
ISS
3
FE
16
1993
UMI

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VOL
1147
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3
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16
1993
UMI

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VOL
1147
ISS
3
FE
16
1993
UMI

PATENT NOTICES

Certificates of Correction For Week of February 16, 1993

B1.4,959,120	5,003,356	5,027,769	5,040,935
D 310,784	5,003,506	5,028,113	5,041,227
D 313,336	5,003,543	5,028,408	5,042,069
D 318,472	5,004,543	5,028,421	5,042,122
D 318,980	5,004,669	5,028,483	5,043,072
D 319,487	5,004,928	5,028,804	5,044,717
D 319,818	5,005,556	5,028,935	5,044,875
4,611,088	5,005,632	5,028,948	5,045,033
4,720,117	5,008,170	5,029,010	5,045,362
4,724,543	5,008,278	5,029,023	5,045,454
4,740,283	5,012,389	5,030,089	5,045,493
4,757,109	5,013,610	5,030,280	5,045,554
4,763,317	5,013,647	5,030,372	5,045,661
4,766,135	5,013,813	5,030,848	5,045,781
4,767,220	5,014,039	5,031,009	5,045,788
4,812,203	5,014,176	5,031,049	5,046,847
4,864,483	5,014,220	5,031,179	5,046,926
4,910,052	5,015,097	5,031,589	5,048,333
4,914,225	5,016,823	5,032,689	5,048,916
4,915,004	5,017,110	5,033,077	5,049,011
4,918,559	5,017,969	5,033,096	5,049,786
4,923,901	5,018,308	5,033,221	5,050,294
4,925,713	5,018,426	5,033,276	5,050,720
4,926,020	5,018,783	5,033,554	5,051,064
4,926,110	5,018,903	5,033,990	5,051,357
4,947,655	5,019,562	5,034,040	5,051,891
4,959,308	5,019,783	5,034,227	5,052,072
4,959,913	5,019,845	5,034,404	5,052,543
4,961,425	5,020,399	5,034,647	5,053,599
4,961,592	5,021,669	5,035,152	5,053,656
4,963,286	5,021,809	5,035,443	5,053,972
4,964,276	5,022,139	5,035,741	5,054,933
4,968,496	5,022,726	5,036,236	5,056,246
4,969,172	5,022,939	5,036,321	5,056,486
4,972,616	5,023,110	5,037,305	5,057,597
4,976,333	5,023,198	5,037,757	5,058,584
4,980,673	5,023,253	5,037,825	5,061,081
4,981,884	5,023,611	5,038,379	5,064,637
4,986,021	5,023,929	5,038,537	5,073,603
4,988,803	5,024,240	5,038,717	5,081,264
4,989,827	5,024,672	5,039,025	5,103,756
4,990,197	5,026,117	5,039,530	5,127,829
4,991,028	5,026,460	5,039,535	5,133,428
4,991,532	5,026,534	5,039,609	5,149,312
4,994,352	5,026,985	5,039,714	5,155,424
5,001,517	5,026,990	5,039,721	5,158,849
5,001,970	5,027,114	5,040,035	
5,002,377	5,027,695	5,040,629	

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VOL
1147
ISS
3
FE
16
1993
UMI

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VOL
1147
ISS
3
FE
16
1993
UMI

PATENT EXAMINING CORPS

PATENT EXAMINING GROUPS	Phone Number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 1100 — D. E. TALBERT, Director	308-0661	2/20/92
ORGANIC CHEMISTRY, GROUP 1200 — JOHN F. TERAPANE, JR., Director	308-1235	5/14/92
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300 — DONALD CZAJA, Acting Director	308-0651	4/24/92
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 1500 — J. O. THOMAS, Director	308-2351	4/24/92
BIOTECHNOLOGY, GROUP 1800 — BARRY S. RICHMAN, Acting Director	308-0196	7/11/91
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ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500 — JOSEPH J. ROLLA, Director	308-0956	8/20/91
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 2600 — BOBBY R. GRAY, Director	305-4700	6/29/91
DESIGN, GROUP 2900 — ROBERT E. GARRETT, Director	308-0511	9/23/90
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MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200 — N. GODICI, Director	308-1148	4/14/92
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 3300 — J. J. LOVE, Director	308-0858	4/07/92
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400 — JOHN KITTLE, Director	308-0861	4/17/92
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	1/21/92

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during January 1993 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 3,930,271 to 3,935,595 inclusive
Plant Patents ..... 3,824 to 3,827

REEXAMINATIONS

FEBRUARY 16, 1993

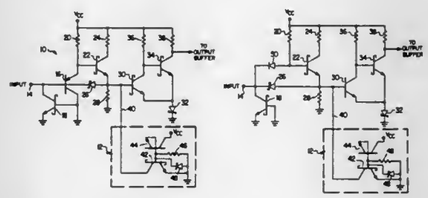
Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,975,603 (1926th)

METHOD AND CIRCUITRY FOR COMPENSATING FOR NEGATIVE INTERNAL GROUND VOLTAGE GLITCHES

Janet L. Wise, and Steven F. Marum, both of Sherman, Tex., assignors to Texas Instruments Incorporated, Dallas

Reexamination Request No. 90/002,587, Feb. 18, 1992.
Reexamination Certificate for Patent No. 4,975,603, issued Dec. 4, 1990, Ser. No. 512,724, Apr. 23, 1990.
Continuation of Ser. No. 881,146, Jul. 2, 1986, Pat. No. 4,920,286
Int. Cl.[5] H03K *19/003, 19/088, 17/16, 17/60*
U.S. Cl. 307—542



AS A RESULT OF REEXAMINATION IT HAS BEEN DETERMINED THAT:

[1. An integrated circuit including compensation circuitry, comprising;

a plurality of devices on a semiconductor layer, said device interconnected;

first and second reference nodes within said plurality and connected to first and second external references, respectively; and

a switch connected between an input of one of said devices and said first reference node, said switch activated by transient increases in the difference of potential between said first and second reference nodes of magnitude that would activate said one device if said device were otherwise inactive in accordance with the potential on said input.]

B1 5,002,746 (1927th)

PROCESS FOR THE PRODUCTION OF CHLORINE DIOXIDE

Maria Norell, Sundsvall, Sweden, assignor to Eka Nobel AB, Surte, Sweden

Reexamination Request No. 90/002,525, Nov. 29, 1991.
Reexamination Certificate for Patent No. 5,002,746, issued Mar. 26, 1991, Ser. No. 372,469, Jun. 28, 1989.
Claims priority, application Sweden, Oct. 20, 1988, 8803761
The portion of the term of this patent subsequent to Sep. 13, 2005, has been disclaimed.
Int. Cl.[5] C01B *11/02*
U.S. Cl. 423—479

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

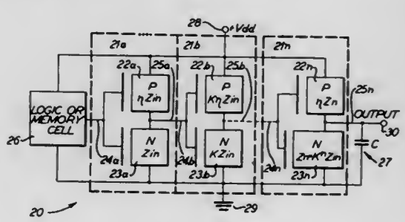
1. A process for production of chlorine dioxide by reacting in a reaction vessel an alkali metal chlorate, a mineral acid and methanol as a reducing agent in proportions to generate chlorine dioxide in a reaction medium maintained at a temperature from about 50° C. to about 100° C. and an acidity within the interval from about 2 to 4.8N and subjected to a subatmospheric pressure sufficient to effect evaporation of water whereby a mixture of chlorine dioxide and water vapor is withdrawn from an evaporation region in the reaction vessel and an alkali metal salt of the mineral acid is precipitated in a crystallization region in the reaction vessel, wherein the reaction is performed in the presence of a catalyst comprising a combination of antimony and molybdenum, antimony and vanadium, or molybdenum and vanadium, said catalyst being added in the form of a solution of soluble salts.

B1 5,030,853 (1928th)

HIGH SPEED LOGIC AND MEMORY FAMILY USING RING SEGMENT BUFFER

Albert W. Vinal, Cary, N.C., assignor to Thunderbird Technologies, Inc., Cary, N.C.

Reexamination Request No. 90/002,593, Feb. 12, 1992.
Reexamination Certificate for Patent No. 5,030,853, issued Jul. 9, 1991, Ser. No. 497,103, Mar. 21, 1990.
Int. Cl.[5] H03K *19/044, 19/017, 23/52*
U.S. Cl. 307—451



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **57–69** and **77** is confirmed.

Claims **10**, **11**, **25**, **26**, **30**, **34**, **40**, **41**, **78**, **79**, **82** and **88** are cancelled.

Claims **1**, **5**, **14**, **19**, **22**, **23**, **27**, **28**, **31–33**, **35–39**, **42–44**, **49**, **51**, **53**, **55**, **70**, **75**, **80**, **83** and **85** are determined to be patentable as amended.

Claims **2–4**, **6–9**, **12**, **13**, **15–18**, **20**, **21**, **24**, **29**, **45–48**, **50**, **52**, **54**, **56**, **71–74**, **76**, **81**, **84**, **86**, **87**, **89** and **90**, dependent on an amended claim, are determined to be patentable.

New claim **91** is added and determined to be patentable.

1. An integrated circuit Ring Segment Buffer for driving a capacitive load, comprising:

a plurality of serially connected complementary field effect transistor inverter stages, each of said complementary field effect transistor inverter stages comprising a serially connected N-channel field effect transistor and P-channel field effect transistor, the N-channel and P-channel field effect transistors having predetermined channel widths and channel lengths, each of said complementary field effect transistor inverter stages having an input and an output, with the output of an immediately preceding inverter stage being connected to the input of an immedi-

VOL
1147
ISS
3
FE
16
1993
UMI

ately succeeding inverter stage, and the output of the last inverter stage being connected to the capacitive load;

the N-channel field effect transistor in each inverter stage having a channel width which is less than a predetermined factor times the width of the N-channel of the immediately preceding inverter stage[,]

the P-channel field effect transistor in each inverter stage having a channel which is wider than the channel of the corresponding N-channel field effect transistor of each inverter stage by η, the ratio of electron mobility in the N-channel field effect transistors to hole mobility in the P-channel field effect transistors;

whereby said Ring Segment Buffer drives said capacitive load at high speed.

REISSUES

FEBRUARY 16, 1993

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

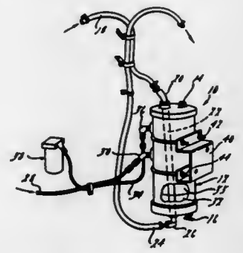
Re. 34,178
FUEL PROCESSOR APPARATUS FOR DIESEL POWERED VEHICLES

Leland L. Davis, San Antonio, Tex., assignor to Davco Manufacturing Corporation, Saline, Mich.

Original No. 4,368,716, dated Jan. 18, 1983, Ser. No. 188,875, Sep. 19, 1980. Application for reissue Oct. 9, 1990, Ser. No. 594,412

Int. Cl.[5] **F02M** *31/00;* **B01D** *23/00*

U.S. Cl. 123—557 **9 Claims**



1. A fuel processor means for use with diesel engines on diesel trucks, automobiles, and the like, and whereby said fuel processor *means* is operative to [preheat] *heat* the diesel fuel and to separate out water-impurities from the diesel fuel, *and for melting wax crystals which form in cold ambient conditions before the fuel is transmitted to a particulate filter and enabling the diesel fuel to be used in cold ambient conditions without the use of fuel additives such as chemicals or lighter grade fuels to improve fuel flowability,* comprising;

a vertically oriented elongated tubular vessel means *which provides for a substantially unconstrained flow path of the diesel fuel therethrough* for separating *the* water-*impurities* out of the fuel, *and collecting the water-impurities at the bottom of said vessel means,*

inlet conduit means near the top of said vessel *means* to introduce hot engine coolant liquid to [the] *said* vessel, *means,*

another conduit means passing through a central portion of said vessel *means and into said bottom of said vessel means* for transmitting the hot coolant liquid therethrough,

outlet conduit means for recirculating the *hot* coolant liquid back through the engine cooling system,

a second inlet conduit means for introducing *the* fuel *into* [to] the interior of [the] *said* vessel *means* near the *vertical* midpoint thereof for flow therethrough *whereby said separation of the water-impurities provided by said fuel processor means begins to occur after the fuel enters from said second inlet conduit means into said vessel means,* [and such that this inlet is above the level of water-impurities being collected in the vessel,]

a second outlet conduit means for the fuel located near the top of [the] *said* vessel *means* for transmitting the water-free fuel to *the particulate filter and* the engine *whereby said second inlet conduit means and said second outlet conduit means cause the fuel to flow through said vessel means in a manner which facilitates the separation of the water-impurities and minimizes remixing of the water-impurities being collected,*

drain means at [the] *said* bottom of [the] *said* vessel *means* for draining out *the* water-impurities which collect therein *to prevent the level of water impurities collected at the bottom of said vessel means from rising to the level of said second inlet conduit means,*

and means near the top of [the] *said* vessel *means* for venting [the] *said* vessel *means* when desired. **20**

* * * * *

The questions raised in reexamination request No. 90/001,643, filed Nov. 22, 1988, have been considered and the results thereof are reflected in this reissue patent which constitutes the reexamination certificate required by 35 U.S.C. 307 as provided in 37 CFR 1.570(3).

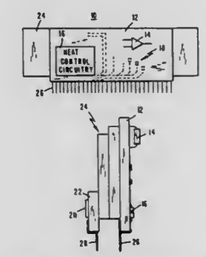
Re. 34,179
TEMPERATURE CONTROLLED HYBRID ASSEMBLY

Larry E. Eccleston, Edmonds, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.

Original No. 4,841,170, dated Jun. 20, 1989, Ser. No. 939,522, Dec. 8, 1986. Application for reissue Jun. 15, 1990, Ser. No. 538,932

Int. Cl.[5] **H01L** *27/00*

U.S. Cl. 307—310 **18 Claims**



5. [An electronic circuit arrangement as recited in claim 1] *A hybrid electronic circuit arrangement comprising:*

a substrate;

an electrical circuit arranged on said substrate, wherein said electrical circuit comprises a plurality of components, at least one component mounted on said substrate and at least one component mounted on a separate substrate, said substrates separated from one another by a spacer, said substrate and said spacer comprising a material common thereto, whereby thermally caused relative displacement between said substrate and said spacer is reduced;

a temperature control means arranged on said substrate; and

heat generating circuit means arranged on said substrate for heating said electrical circuit to operate at predetermined temperature conditions,

said heat generating circuit means connected to and responsive to said temperature control means,

said heat generating circuit means in close thermal conductivity with said electrical circuit for eliminating the requirement of a heat enclosure therefor,

at least one of said electrical circuit, said temperature control means, and said heat generating circuit means comprising an integrated circuit mounted on said substrate and at least one of said electrical circuit, said temperature control means, and said heat generating circuit means comprising a film resistor formed on said substrate.

VOL 1147 ISS 3 FE 16 1993 UMI

Re. 34,180

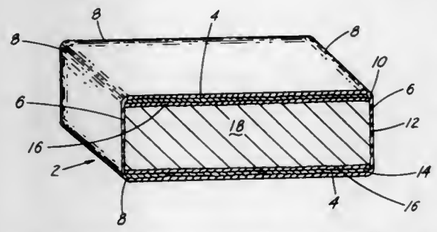
PREFERENTIALLY BINDER ENRICHED CEMENTED CARBIDE BODIES AND METHOD OF MANUFACTURE

Bela J. Nemeth, deceased, late of Greensburg by Nancy A. Nemeth, executrix , and George P. Grab, Greensburg, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Original No. 4,610,931, dated Sep. 9, 1986, Ser. No. 587,584, Mar. 8, 1984. Continuation of Ser. No. 248,465, Mar. 27, 1981, abandoned. Application for reissue Sep. 9, 1988, Ser. No. 243,089

Int. Cl.[5] B22F *3/16, 7/02*

U.S. Cl. 428—547 **107 Claims**



1. A cemented carbide body formed by sintering a substantially homogeneous mixture of constituents comprising: a least 70 weight percent tungsten carbide; a metallic binder; a [metal] *second* carbide selected from the group consisting of the Group IVB and VB transition metal carbides; said metal carbide being present in an amount less than the amount of tungsten carbide; said body having substantially A to B type porosity throughout said body; said metal carbide combined with said tungsten carbide forming a solid solution carbide; a *first* layer of *binder enriched and* at least partially solid solution carbide depleted material [near] *beginning at and extending inwardly from* a peripheral surface of said body, *the content of said binder present in the first layer reaching between about 150 percent and about 300 percent of the average binder content of the cemented carbide body; and a hard dense refractory coating bonded to the peripheral surface of the cemented carbide body.*

Re. 34,181

TREATMENT OF AQUEOUS SUSPENSION OF VINYL CHLORIDE POLYMERS

Peter V. Smallwood, Cheshire, England, assignor to Imperial Chemical Industries PLC, London, England

Original No. 4,604,419, dated Aug. 5, 1986, Ser. No. 716,138, Mar. 26, 1985. Application for reissue Apr. 10, 1991, Ser. No. 683,069

Claims priority, application United Kingdom, Apr. 17, 1984, 8409962; Sep. 26, 1984, 8424353

Int. Cl.[5] C08K *5/10*

U.S. Cl. 524—312 **12 Claims**

1. Method of treating an aqueous suspension of a vinyl chloride polymer, produced by aqueous suspension polymerisation and containing residual vinyl chloride monomer, to inhibit wet-foaming *and dry-foaming* therein, which method comprises adding to said aqueous suspension of a vinyl chloride polymer containing residual vinyl chloride monomer, a glyceride of a saturated or unsaturated carboxylic acid, containing 6 to 20 carbon atoms *to inhibit wet-foaming and a wetting agent to inhibit dry-foaming, and wherein said glyceride is added to the suspension in the form of an oil-in-water emulsion and wherein at least part of the wetting agent used to inhibit dry-foaming is a water-soluble PVA or cellulosic compound which additionally serves as an emulsion stabilizer for the oil-in-water emulsion of the glyceride that is added to the suspension.*

PLANT PATENTS

GRANTED FEBRUARY 16, 1993

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,141

ROSE PLANT—'AUSCAT'

David C. H. Austin, Albrighton, England, assignor to David Austin Roses, Albrighton, England

Filed Dec. 6, 1990, Ser. No. 623,289

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of rose plant of the shrub class, characterized as to novelty by its fully double flowers of white, with abundant and continual blooming and the coloring and shaping of the flower being substantially as shown and described.

8,142

ROSE PLANT—'AUSFIN'

David C. H. Austin, Albrighton, England, assignor to David Austin Roses, Wolverhampton, England

Filed Dec. 6, 1990, Ser. No. 623,307

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of rose plant of the shrub class, characterised as to novelty by its fully double flowers of a pure pink coloring, with abundant and continual blooming and the unusual shaping of the flower being substantially as shown and described.

8,143

ROSE PLANT—'AUSREEF'

David C. H. Austin, Albrighton, England, assignor to David Austin Roses, Wolverhampton, England

Filed Dec. 6, 1990, Ser. No. 623,309

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of rose plant of the shrub class, characterized as to novelty by its fully double flowers of pale pink which fade to pinkish-white with a hint of yellow at base of petals, with abundant and continual blooming and the unusual blend of coloring and shaping of the flower being substantially as shown and described.

8,144

AFRICAN VIOLET PLANT NAMED TOKYO

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 736,220

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—69.1 **1 Claim**

1. A new and distinct cultivar of African violet named Tokyo, as described and illustrated, and particularly characterized by its extra large growth habit (35–40 cm in diameter); single violet-shaped, apple blossom pink flowers with darker center; elongated petals; strong stems which curve toward the center to form a bouquet above the leaves; profuse flowering; large, bright green, oval to spear-shaped leaves; flowering 12–13 weeks after planting of unrooted shoot, and by its long lasting and non-dropping flowers.

8,145

AFRICAN VIOLET PLANTED NAMED LITTLE AZTEC GIRL

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 736,639

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—69.1 **1 Claim**

1. A new and distinct cultivar of African violet named Little Aztec Girl, as described and illustrated, and particularly characterized by its mid-size growth habit (13–15 cm in diameter); purplish red, semi-double to double flowers having 8–12 petals, the ones in the center being much smaller and occasionally covering up the anthers; strong stems which curve toward the center to form a compact bouquet above the leaves; profuse flowering; dark green, spear-shaped, serrated and very hairy leaves; flowering 10–11 weeks after planting of unrooted shoot, and by its long lasting and non-dropping flowers.

8,146

AFRICAN VIOLET PLANT NAMED LITTLE CHEYENNE GIRL

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 736,219

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—69.2 **1 Claim**

1. A new and distinct cultivar of African violet named Little Cheyenne Girl, as described and illustrated, and particularly characterized by its mid-size growth habit (13–15 cm in diameter); blue and white variegated, semi-double flowers having 8–12 petals, the ones in the center being much smaller and occasionally covering up the anthers; strong stems which curve toward the center to form a compact bouquet above the leaves; profuse flowering; bright green, spear-shaped, slightly serrated leaves; flowering 10–11 weeks after planting of unrooted shoot, and by its long lasting and non-dropping flowers.

8,147

AFRICAN VIOLET PLANT NAMED RUMIKO

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 736,502

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—69.2 **1 Claim**

1. A new and distinct cultivar of African violet named Rumiko, as described and illustrated, and particularly characterized by its single violet-shaped, purplish blue flowers; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; medium green, oval leaves; profuse flowering, vigorous and compact growth habit, flowering 10–11 weeks after potting, and its long lasting and non-dropping flowers.

8,148

AFRICAN VIOLET PLANT NAMED CARMEN

Reinhold Holtkamp, Sr., Blumenstrasse 28, D 4242 Rees-Haffen, Fed. Rep. of Germany

Filed Jul. 26, 1991, Ser. No. 736,515

Int. Cl.[5] A01H *5/00*

U.S. Cl. Plt.—69.2 **1 Claim**

1. A new and distinct cultivar of African violet named Carmen, as described and illustrated, and particularly characterized by its large, single violet-shaped, purplish blue flowers with wavy petal tips; strong, upright flower stems that curve slightly toward the center to form a compact bouquet above the leaves; medium green, spear-shaped leaves; profuse flowering, vigorous and compact growth habit, flowering 10–11 weeks after potting, and its long lasting and non-dropping flowers.

VOL 1147 ISS 3 FE 16 1993 UMI

8,149

CHRYSANTHEMUM PLANT — JANNEL CULTIVAR

Jacques C. M. van der Knapp, De Lier, Netherlands, assignor to Fides Beheer B.V., De Lier, Netherlands

Filed Jun. 26, 1991, Ser. No. 721,391
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—77 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Jannel, substantially as herein shown and described, which:

(a) exhibits decorative flowers having an overall diameter of approximately 60 to 70 mm. wherein the ray florets are cream white and the flower center is light green,
(b) bears flowers in a somewhat pyramidal configuration,
(c) exhibits a flower response period of approximately nine weeks,
(d) exhibits a reduced susceptibility to leaf miner,
(e) forms attractive dark green foliage, and
(f) has the ability to produce flowers of commercially acceptable quality throughout the year in a cut mum production program.

8,150

CHRYSANTHEMUM PLANT — TOUCH CULTIVAR

Jacques C. M. van der Knapp, De Lier, Netherlands, assignor to Fides Beheer B.V., De Lier, Netherlands

Filed Jun. 25, 1991, Ser. No. 720,666
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—82.2 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Touch substantially as herein shown and described, which:

(a) exhibits attractive single anemone flowers having an overall diameter of approximately 55 to 65 mm., yellow-ray florets, and disc florets particularly towards the center of the cushion which are orange-brown in coloration,
(b) bears flowers in a generally flat capitulum configuration when mature,
(c) exhibits a flower response period of approximately eight weeks,
(d) forms attractive dark green foliage, and
(e) has the ability to produce flowers of commercially acceptable quality throughout the year in a cut mum production program.

8,151

CHRYSANTHEMUM PLANT — BUTTERCUP CULTIVAR

Jacques C. M. van der Knap, De Lier, Netherlands, assignor to Fides Beheer B.V., De Lier, Netherlands

Filed Jun. 25, 1991, Ser. No. 720,731
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—82.2 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Buttercup, substantially as herein shown and described, which:

(a) exhibits attractive relatively small single flowers having an overall diameter of commonly less than 50 mm. wherein the petals are intense yellow and the disc florets are yellow-green changing to yellow when mature,
(b) bears flowers in a somewhat pyramidal configuration which tends to flatten upon maturity,
(c) exhibits a flower response period of approximately seven and one-half weeks,
(d) exhibits tolerance to both low temperature and high temperature,
(e) forms attractive dark green foliage, and
(f) has the ability to produce flowers of commercially acceptable quality throughout the year in a cut mum production program.

8,152

CHRYSANTHEMUM PLANT — LIERWAY CULTIVAR

Jacques C. M. van der Knapp, De Lier, Netherlands, assignor to Fides Beheer B.V., De Lier, Netherlands

Filed Jun. 25, 1991, Ser. No. 720,934
Int. Cl.[5] A01H *5/00*
U.S. Cl. Plt.—82.2 **1 Claim**

1. A new and distinct cultivar of Chrysanthemum plant named Lierway, substantially as herein shown and described, which:

(a) exhibits attractive yellow flowers having an overall diameter of approximately 60 to 75 mm. wherein the ray florets are yellow and the flower center bears a distinctive anthocyanin dot,
(b) exhibits a flower response period of approximately nine weeks,
(c) forms attractive dark green foliage, and
(d) has the ability to produce flowers of commercially acceptable quality throughout the year in a cut mum production program.

PATENTS

GRANTED FEB. 16, 1993

ERRATA

For CLASS	See PATENT NO.
148-552	5,186,235
296-097	5,186,442
292-216	5,186,504
273-073	5,186,505
294-119	5,186,515
504-195	5,186,733
504-196	5,186,734
504-242	5,186,735
504-225	5,186,736
504-283	5,186,737
504-192	5,186,738
128-654	5,186,922
383-037	5,186,988
425-145	5,187,001
521-075	5,187,203
521-111	5,187,204
521-128	5,187,205
521-129	5,187,206
523-106	5,187,207
523-136	5,187,208
523-205	5,187,209
548-338	5,187,270
548-314	5,187,271
556-016	5,187,281
548-110	5,187,288
548-260	5,187,289
548-338	5,187,290
549-555	5,187,298
552-522	5,187,299
556-012	5,187,300
310-323	5,187,406
257-077	5,187,547
257-308	5,187,548
257-306	5,187,549
257-307	5,187,550
257-347	5,187,551

VOL
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ERRATA—Continued

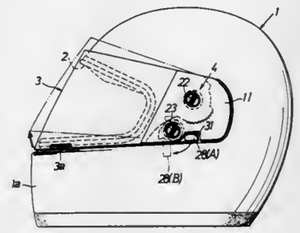
257-408	5,187,552
257-187	5,187,553
257-586	5,187,554
257-202	5,187,555
257-206	5,187,556
257-310	5,187,557
257-538	5,187,558
257-538	5,187,559
257-076	5,187,560
257-771	5,187,561
257-539	5,187,562
257-053	5,187,563
174-260	5,187,564
257-682	5,187,565
257-301	5,187,566
378-105	5,187,737
445-009	5,187,804

PATENTS

GRANTED FEBRUARY 16, 1993

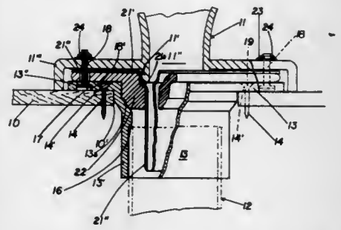
GENERAL AND MECHANICAL

5,185,889
SHIELD SYSTEM FOR HELMET
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kako Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 10, 1991, Ser. No. 727,683
Claims priority, application Japan, Feb. 19, 1991, 3-7077[U]
Int. Cl.[5] A42B *1/08*
U.S. Cl. 2—424 **6 Claims**



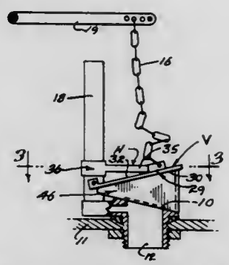
1. A shield system for a helmet, comprising
a shield plate pivotally mounted on a cap body for opening and closing a window opening in a front wall of the cap body; and
a click stop mechanism between said shield plate and said cap body for retaining said shield plate at desired opening degrees in a stepwise fashion, wherein
said shield plate is comprised of a shield body formed of a synthetic resin material having a high transparency and capable of covering said window opening, and an end plate made of a synthetic resin material having a wear resistance higher than that of the shield body, said end plate being coupled to an end of said shield body and being pivotally supported on said cap body, said click stop mechanism being between said end plate and said cap body, and a cover secured to said cap body for covering said end plate.

5,185,890
TOILET BOWL SEALING ASSEMBLY
Gregory W. Dismore, 147 Pine St., and Brian R. Rollins, 33 Spring Pl., both of Portland, Me. 04101
Filed Sep. 23, 1991, Ser. No. 763,579
Int. Cl.[5] E03D *11/16*
U.S. Cl. 4—252.5 **1 Claim**



1. In a toilet bowl assembly, a toilet bowl having a base with bolt holes for securing the bowl to a floor, a sewer drain pipe, a closet floor flange fitted upon a top of the sewer drain pipe and adhered thereto and having a top flange portion adapted to be secured to the floor and a sleeve portion adapted to extend through an opening in the floor for connection with the drain pipe, said top flange portion having bolt head insert openings adapted to be aligned with the bolt holes when the bowl is secured to the floor, fastening bolts extending upwardly from the bolt head openings in the top flange portion, said depending sleeve portion having an internal tapered seat, a sealing ring nested in the floor flange and having external and internal tapered seats with its external tapered seat in sealing engagement with the flange sleeve portion tapered eat, a centering funnel secured to the undersurface of the toilet bowl about its discharge opening and having an external tapered seat in removeable sealing engagement with the internal tapered seat of the sealing ring, and said fastening bolts being releaseably secured with the holes of the toilet bowl base whereby to provide multiple tapered seals between all of the nested parts of the assembly while permitting disengagement of the toilet bowl with its centering funnel from the assembly for inspection of the sealing ring.

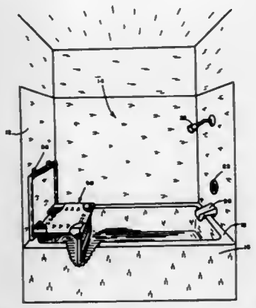
5,185,891
WATER CONSERVING TOILET FLAPPER VALVE CONTROL
Leif Rise, 7748 Westlawn Ave., Los Angeles, Calif. 90045
Continuation-in-part of Ser. No. 493,620, Mar. 15, 1990, Pat. No. 5,031,254. This application May 13, 1991, Ser. No. 699,333
Int. Cl.[5] E03D *1/14*
U.S. Cl. 4—324 **12 Claims**



1. A toilet flush control for toilets having a flush tank with a valve seat normally closed by a bouyant flapper type float valve held shut on the seat by a head of water pressure in the flush tank, said valve having an upper surface and a lower surface having a planar sealing face surrounding a float chamber, said valve being carried by a pivot and coupled to lift means for opening thereof for pivotally bouyant separation of the sealing face from the valve seat and normal continued flushing of water through the valve seat until the flush tank is emptied, said flush control being comprised of a height limiting means having a stop for restricting pivotal separation of the float valve from the seat during normal operation of said lift means, and a removable gage insertable between said sealing face and valve seat and surrounding said float chamber such that with said valve seated on said gage said height limiting means can be moved to a position where said stop will contact said upper surface thereby establishing a restricted angular separation of the float valve with respect to the seat, which with said gage removed is insufficient for bouyant separation of the valve from the valve seat and sufficiently close to the valve seat whereby drag by means of the flushing water passing thereby will cause a servo function that closes the float valve onto the valve seat when the lift means is manually released, the height limiting means having securement means for fixing said stop at said position of contact.

VOL 1147 ISS 3 FE 16 1993 UMI

5,185,892
TUB AND SHOWER SEAT
Randall R. Mitchell, 7407 S. 41st Ave., Bellevue, Nebr. 68147
Filed Nov. 29, 1991, Ser. No. 800,280
Int. Cl.[5] A47K *3/12*
U.S. Cl. 4—578.1 **12 Claims**



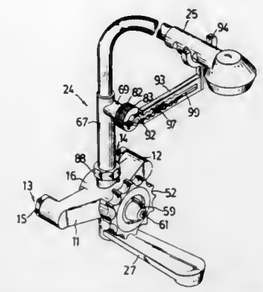
1. A tub and shower seat for mounting on a wall surface in a tube or shower stall, said seat comprising an upright seat back having front and back surfaces, a top cross bar and a bottom cross bar, mounting means for pivotably mounting said seat back on a wall surface about said top cross bar whereby said seat may be pivoted away from said wall for cleaning, a seat member having front and rear portions, first hinge means for pivotally connecting the rear portion of said seat member about a first axis to said bottom cross bar of said seat back for up and down pivotal movement of said seat member with respect to said seat back from a substantially upright storage position to a substantially horizontal use position, seat support means for limiting downward pivotal movement of said seat member to the use position thereof, said mounting means providing a pivotal movement of said seat back about a second axis parallel to said first axis and adjacent said top cross bar of said seat back whereby said back surface and seat member may be pivoted upwardly and outwardly relative to said mounting means away from said wall surface for cleaning and disinfecting the back surface of said seat back and a portion of said wall surface over which said seat back would extend in said use position, said mounting means comprising two brackets generally slideably encircling said upper cross bar in spaced apart relation along said bar such that said brackets are positionable with respect to each other and said bar in a manner so as to be alignable with studs in said wall for attachment thereto and being of such size and shape that the vertical height and transverse width of each bracket are each substantially less than the shorter of the height and width of said upright seat back thereby to minimize the area of surface contact between said brackets and wall surface.

5,185,893
WATER TAP WITH SINGLE KNOB HOT/COLD WATER FLOW CONTROL AND SHOWER SWITCHING CONTROL
Kuang-Hui Lin, No. 270-7, Pien Hsing Lane, Hsueh Tien Rd., Wu Jih Hsiang, Taichung Hsien, Taiwan
Filed Oct. 15, 1991, Ser. No. 775,903
Int. Cl.[5] E03C *1/042;* **F16K** *11/16;* **A47K** *3/22*
U.S. Cl. 4—677 **5 Claims**

1. A water tap, comprising:

a casing having a hot water intake hole at one side, a cold water intake hole at an opposite side, a first water passage at the middle in vertical direction, said first water passage having two opposite ends terminating into a first water outlet hole at the top and a second water outlet hole at the bottom, said second water outlet hole being attached with a water outlet pipe, an opening on the front face thereof at the center in transverse direction connected to said first water passage, a locating flange projecting outwards from the front face thereof, a second water passage and a third water passage spaced from each other and respectively disposed in transverse direction, said second water passage being to guide cold water from said cold water intake hole into said first water passage for discharging through said first or second water outlet hole, said third water passage being to guide hot water from said hot water intake hole into said first water passage for discharging through said first or second water outlet hole;

a water flow rate control fastened in said casing to regulate flow of water from said cold and hot water intake holes, said water flow rate control comprising a second plunger fastened in said second water passage and rotated to close or open the passage between said cold water intake hole and said first water passage, a third plunger fastened in said third water passage and rotated to close or open the passage between said hot water intake hole and said first water passage, and a control knob mounted on said casing and rotated to alternatively move said second and third plungers back and forth, causing said second and third plungers to close or open the passage between said hot or cold water intake hole and said first water passage, said control knob having a raised portion movably stopped against said locating flange on said casing for revolving range control, a first guide track for controlling the movement of said second plunger and a second guide track for



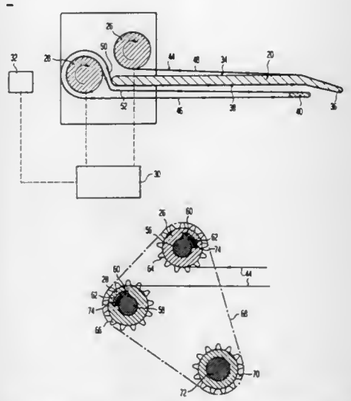
controlling the movement of said third plunger, said second and third plungers each being sleeved with a compression spring and having a tongue at one end releasably inserted in said first or second track, two spaced o-rings at the middle, and a screw rod at an opposite end, said screw rod being attached with a gasket, a locating ring and a lock nut;

a water flow direction control fastened in said casing to alternatively close or open said first and second water outlet holes, said water flow direction control comprising a first plunger inserted in said first water passage, said first plunger having an annular groove at the middle and two O-rings at two opposite ends, a driving rod inserted in said opening on said casing and rotated to alternatively move said first plunger up and down causing said first plunger to block up said first or second water outlet, and a rotary cap mounted on said control knob to drive said driving rod to rotate;

a shower switching control unit fastened in said first water outlet hole to control flow of water to a shower head, said shower switching control unit comprising a tubular casing having one end fastened in said first water outlet hole and an opposite end attached with a shower head, and a shower head holder attached to said tubular casing for holding said shower head, said tubular casing having a side tube at right angle, a valve seat fastened therein, said valve seat having a valve port for the passing therethrough of flow of water from said first water outlet hole, a valve moved to close or open said valve port, an actuating rod fastened in said side tube and forced by a torsional spring to hold said valve in said valve seat; and

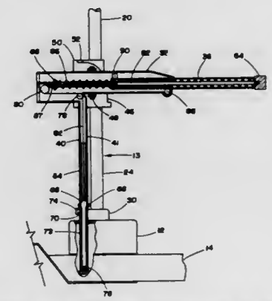
wherein rotating said rotary cap causes said first plunger to close said first or second water outlet hole permitting intake flow of water to flow through said second or first water outlet hole; rotating said control knob causes said second and third plungers to be moved forwards or backwards in proper sequence so as to let intake flow of water from said cold and hot water intake holes pass said second and third water passages for discharging through said first or second water outlet hole; removing said shower head from said shower head holder causes said valve to move away from said valve seat permitting flow of water from said first water outlet hole to discharge through said shower head; hanging said shower head on said shower head holder causes said valve to block up said valve port so as to stop flow of water from flowing toward said shower head.

5,185,894
APPARATUS FOR SHIFTING PATIENTS TO AND FROM A BED
Carl-Christian Bastert, Gaggenau, and Armin Helgert, Oetigheim, both of Fed. Rep. of Germany, assignors to Stierlen-Maquet AG, Rastatt, Fed. Rep. of Germany
Filed Nov. 18, 1991, Ser. No. 793,829
Claims priority, application European Pat. Off., Nov. 22, 1990, 90122343.8; Fed. Rep. of Germany, Dec. 21, 1990, 4041335
Int. Cl.[5] A61G *7/08*
U.S. Cl. 5—81.1 **8 Claims**



1. An apparatus for shifting patients to and from a bed, said apparatus comprising a mobile frame supported on rollers, a platform having an upper side and an underside and arranged in cantilevered fashion on said frame so as to have a free longitudinal edge spaced from said frame, a transport band with two ends, first and second winding rolls supported by said frame onto and from each of which winding rolls portions of said transport band are windable and unwindable, each of said two ends of said band being connected to a respective one of said winding rolls with said band proceeding from said first winding roll over said upper side of the platform and over said free longitudinal edge and from there along said platform underside to said second winding roll, and a drive mechanism for said first and second winding rolls, said drive mechanism including a rotary drive member, and a means for connecting each of said first and second winding rolls to said drive member so that each of said winding rolls is constantly operatively connected with the drive member and so that a limited amount of rotary play is provided between each winding roll and the drive member.

5,185,895
PATIENT LIFT AND TRANSPORT AID
Eugene Gagne, 3891 Arbutus Street, Vancouver, British Columbia, Canada V6J 3Z9 , and Alvin Wolfe, 6205 Balaclava, Vancouver, British Columbia, Canada V6W 1L5
Filed Jan. 30, 1992, Ser. No. 828,776
Int. Cl.[5] A61C *7/10*
U.S. Cl. 5—86.1 **16 Claims**



1. Apparatus for lifting and transporting invalids, patients and the like, comprising:

(a) a base frame;

(b) wheel means affixed to said base frame for transporting the latter over a support surface;

(c) vertically oriented guide posts affixed to said base frame;

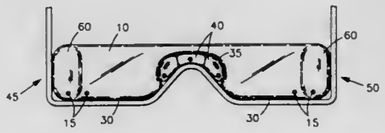
(d) a carriage assembly slidably coupled to said guide posts;

(e) actuator means for moving said carriage along said guide posts in response to operator applied control signals; and

(f) an arm member projecting out from said carriage having a patient support attachment coupled at a distal end thereof; and

(g) means for causing said arm member to telescope reversibly from a retracted position to an extended position.

5,185,896
INFLATABLE MATTRESS
Jacob Z. Bonda, 10 Hazelnut, Irvine, Calif. 92714
Filed May 4, 1992, Ser. No. 878,666
Int. Cl.[5] A47C *27/10*
U.S. Cl. 5—118 **3 Claims**



1. An apparatus for increasing the surface area in an automobile that could be used for a reclining figure comprising:

at least one first inflatable cell of approximately rectangular block shape for fitting between the seats of an automobile, the cell having a horizontal upwardly facing top surface for supporting the reclining figure at about the level of the seats, and a downwardly facing bottom surface for supporting the cell on a floor of the automobile, the bottom surface conforming to the shape of the floor and defining a concave portion for accepting a drive shaft hump extending upwardly from the floor; and

at least one second inflatable cell extending downwardly from the concave portion so that with the first cell and the

VOL 1147 ISS 3 FE 16 1993 UMI

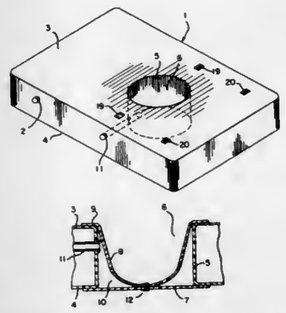
at least one second cell inflated the apparatus is caused to fit conformably to the floor and drive shaft hump.

5,185,897

INFLATABLE MATERNITY MATTRESS

Michael W. Van Laanen, 435 S. St. Bernard St., DePere, Wis. 54115

Filed Jun. 24, 1992, Ser. No. 903,509
Int. Cl.[5] A47C *27/10*
U.S. Cl. 5—455 **14 Claims**



1. An inflatable mattress construction, comprising an inflatable mattress, first inflating means for introducing gas into the mattress to inflate the mattress, said mattress having a central cavity extending through the thickness of the mattress, a bottom panel enclosing the bottom of the cavity, a top panel disposed in the cavity and having a peripheral edge secured to the portion of the mattress bordering the cavity, connecting means for connecting a central point of the top panel to a central point of the bottom panel, and second inflating means for introducing gas into the space between said top and bottom panels to selectively adjust the effective depth of the cavity.

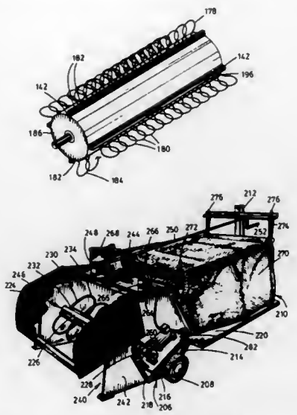
5,185,898

BOTTLE AND CAN PCKER INCLUDING ROTATABLE FLEXIBLE LOOPS

Mark A. Johnson, 16550 County Lind Rd., Newark, Ill. 60541

Continuation-in-part of Ser. No. 762,792, Sep. 19, 1991, abandoned, which is a continuation of Ser. No. 662,397, Feb. 27, 1991, abandoned, which is a continuation of Ser. No. 440,154, Nov. 22, 1989, abandoned, which is a continuation-in-part of Ser. No. 374,887, Jul. 3, 1989, abandoned. This application Jun. 2, 1992, Ser. No. 892,217
Int. Cl.[5] B08B *11/00*
U.S. Cl. 15—3 **24 Claims**

12. An improved assembly for picking up bottles, drink cans and other refuse discarded on the ground that may include undulating terrain comprising: a rotatable member, a carrier frame having said rotatable member mounted for rotation thereon, said carrier frame including support means for supporting the frame for movement over the ground, rotating means for rotating said rotatable member in one direction of rotation, said rotatable member including lateral connecting means extending laterally of said direction of rotation, refuse pick up means extending outwardly from said lateral connecting means, said refuse pick up means comprising a plurality of loop members each comprising a loop portion and an open refuse receiving area encompassed by and within said loop portion, each of said loop members being formed by a length of cable having a portion thereof connected to said lateral connecting means of said rotatable member and a portion extending therefrom to form said loop portion and said open refuse receiving area encompassed by and within said loop portion.

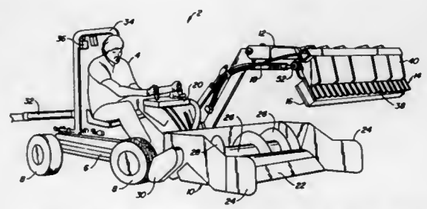


5,185,899

APPARATUS FOR SLUDGE REMOVAL

William G. Urbani, Stockton, Calif., assignor to Industrial Innovations, Inc., Stockton, Calif.

Filed Dec. 20, 1990, Ser. No. 631,710
Int. Cl.[5] B08B *9/08*
U.S. Cl. 15—93.1 **32 Claims**



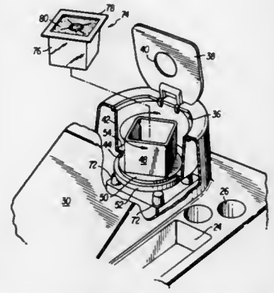
1. A vehicle for the removal of sludge from the interior bottom of liquid storage tanks comprising:
- a chassis having a lead edge;
- means for propelling said chassis over the bottom of an oil storage tank;
- a gathering arm attached to said vehicle at one end and extending away from said vehicle at the opposite end;
- means for scraping mounted to said gathering arm at the end of said arm remote from said chassis;
- means for moving said gathering arm relative to said chassis for positioning said scraper on the bottom of said liquid storage tank remote from said chassis and propelling said scraper toward said chassis whereby the sludge to be gathered between said scraper and chassis is moved to said chassis or said chassis is moved to said sludge;
- a gathering header at the lead edge of said chassis for receiving said sludge, said gathering header having a leading edge exposed to said gathering arm for the receipt of sludge, confining side walls for the confinement of received sludge and a discharge aperture for discharging gathered sludge received and confined in said header;
- auger means mounted within said gathering header for moving sludge received at said leading edge of said header to said discharge aperture of said header;
- a flow conduit attached to said chassis for receiving from said discharge aperture of said header accumulated sludge for removal of said sludge from said chassis to the exterior of said tank;
- a positive displacement pump placed between the discharge aperture of said header and said flow conduit for pumping said sludge from said header to said conduit and preventing back flow of sludge from said conduit to said header, said positive displacement pump having a discharge;
- a cutter stock supply conduit communicated to said flow conduit for supplying cutter stock to the discharge of said positive displacement pump for dissolving and rendering transportable sludge discharged from said positive displacement pump whereby dissolved sludge is removed from said tank.

5,185,900

APPARATUS FOR REMOVING COATINGS FROM FINGERNAILS

Ronald C. Warner, Waleska, and Craig M. Warner, Alpharetta, both of Ga., assignors to Ron Warner Associates, Norcross, Ga.

Filed Jan. 7, 1991, Ser. No. 638,334
Int. Cl.[5] A45D *29/17*
U.S. Cl. 15—97.1 **11 Claims**



1. In an apparatus for removal of a coating from the nails of a user, the apparatus including at least one container element having a recess formed therein and mounted for rotation by means of a powered drive train, and further including a nail-contacting material and a solvent for a given nail coating associated with said material, the material and the solvent acting to remove the coating from the nails of a user, the improvement comprising:
- a cartridge removable from the container element and adapted to be carried within the recess of the container element and having the nail-contacting material and solvent contained within said cartridge, the cartridge having an opening into which a finger of a user can be inserted to contact the material and the solvent when the apparatus is in use; and,
- sealing means fixed to the cartridge for sealing the cartridge.

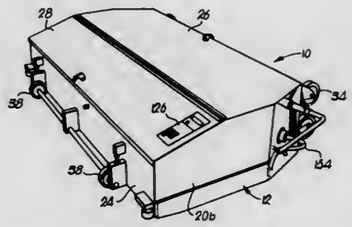
5,185,901

BOWLING LANE MAINTENANCE MACHINE CAPABLE OF SELF-INDEXING FROM LANE-TO-LANE

John M. Davis; Mark E. Davis, and David G. Jennings, all of Sebring, Fla., assignors to The Kegel Company, Inc., Sebring, Fla.

Filed Jun. 11, 1991, Ser. No. 713,725
Int. Cl.[5] A47L *11/14, 11/282*
U.S. Cl. 15—98 **18 Claims**

1. A bowling lane maintenance machine for performing a maintenance operation on the surfaces of a plurality of generally parallel, elongated bowling lanes, each lane having opposed sides defined by respective lane gutters and having a foul line end, and with an approach area spanning the lanes beyond the foul line ends, said machine comprising:
- a selectively activatable, lane maintenance assembly including means for selectively performing a maintenance operation on the bowling lane surfaces;
- propulsion means coupled with said assembly for imparting selective movements thereto including longitudinal movement along a lane, lane-to-lane movement in the approach area spanning the lanes, and transition movement between a lane and the approach area; and



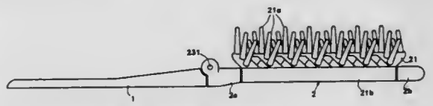
control means coupled with said propulsion means for controlling said movements and coupled with said assembly for selective activation thereof in order to move said machine among a plurality of lanes for performing said maintenance operation thereon, said propulsion means including
- at least a pair of indexing rollers configured for rollably supporting said machine during said lane-to-lane movement, said rollers being spaced apart and configured for extending into respective lane gutters in a non-supporting relationship with said machine during said longitudinal movement.

5,185,902

FOLDING POCKET BRUSH AND SHOEHORN

James C. Fong, 1303 Folsom St., San Francisco, Calif. 94103

Filed Jun. 28, 1991, Ser. No. 723,207
Int. Cl.[5] A46B *7/00, 7/10*
U.S. Cl. 15—105 **5 Claims**



1. A collapsible hair brush comprising:
- a handle means having a flat shape, said handle means having a pivot means at one end;
- a brush means having a central section and a u-shaped bow means having spaced-apart legs with distal ends, said distal ends of its spaced-apart legs fixed in and extending from said central section to form a hollow brush body, said central section also having pivot means formed at its end opposite said u-shaped bow means;
- means connecting said pivot means of said handle means with said pivot means of said brush means operable to allow said handle means to be articulated to a first position to overlap said legs of said u-shaped bow means and to a second position whereby said handle means is substantially aligned with said legs, and
- a flexible, generally rectangular flat bristle membrane means having a plurality of bristles and extending perpendicularly from one of its flat surfaces, said membrane means having cylindrical sleeves along two of its opposite sides, said cylindrical sleeves operably assembled on said legs of

VOL 1147 ISS 3 FEB 16 1993 UMI

said u-shaped bow means which legs are spaced apart with a width less than the width of said membrane between said sleeves whereby said bristles can be closed by pushing said membrane means to one side of said u-shaped means and said handle means can be closed over said bristles when they are closed to form a compact unit when said brush is not in use and said handle means can be opened to form a handle for said brush and said membrane means can be pushed to the other side of said u-shaped bow means to open said bristles.

5,185,903

ELECTRIC VACUUM CLEANER WITH AN OZONIZER

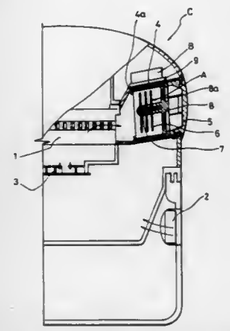
Soo Y. Choi, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suweon, Rep. of Korea

Filed May 9, 1991, Ser. No. 697,405

Claims priority, application Rep. of Korea, May 16, 1990, 90-6546[U]

Int. Cl.[5] A47L *7/04*

U.S. Cl. 15—339 **6 Claims**



1. An electric vacuum cleaner comprising an air inlet port, a suction motor for inducing a flow of air into said vacuum cleaner through said inlet port, an exhaust duct through which the air flow is exhausted from said vacuum cleaner, and an ozonizer arranged at said exhaust duct for generating ozone and mixing the ozone with the exhaust air, said ozonizer including an outer cylindrical housing, a plurality of plates disposed in said housing, said plates spaced apart in the direction of air flow, each plate including a plurality of circumferentially spaced, radially extending projections forming, together with an inner periphery of said housing, a plurality of air passages, said housing and said plates being electrically conductive, an electrical circuit connected to said housing and plates for establishing a first electrical polarity in said housing and an opposite electrical polarity in said plates, said ozonizer further including a base extending across said exhaust duct, a plurality of through-holes formed in said base for conducting exhaust air, and a bolt extending centrally through said plates and attached to said base, said electrical circuit being connected to said bolt.

5,185,904

PLASTIC CARRYING HANDLES

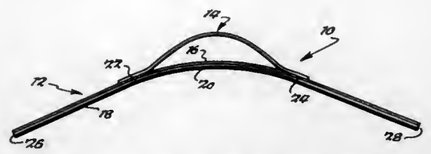
Frances C. Rogers, Kenmore, and William L. Terzian, Williamsville, both of N.Y., assignors to TeeWee, Inc., Williamsville, N.Y.

Filed Nov. 27, 1991, Ser. No. 798,732

Int. Cl.[5] A47B *95/02*; B65D *5/10*

U.S. Cl. 16—125 **19 Claims**

1. A plastic carrying handle, which comprises a continuous base section having first and second terminal ends with opposite top and bottom surfaces, a hand engageable section comprising a central gripping portion extending from said top surface of said base section, said hand engageable section joined with said base at two locations on said top surface spaced from one another and indented inwardly from said first



and second terminal ends, said base and hand engageable sections formed as an integral one-piece article, and an adhesive backing on said bottom surface of said base section.

5,185,905

FIBER PROCESSING ROLL HAVING A HELICAL SAWTOOTH CLOTHING

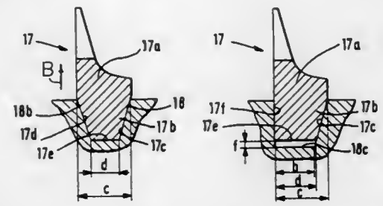
Wilhelm Küppers, and Hermann Trützschler, both of Mönchengladbach, Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany

Filed Jun. 13, 1991, Ser. No. 714,845

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1990, 4019151

Int. Cl.[5] D01G *15/84*

U.S. Cl. 19—114 **3 Claims**



1. A fiber processing roll comprising

(a) a groove provided in a roll surface helically about a longitudinal roll axis; said groove being defined by a first side wall forming a zero angle with a radius of the roll extending to said first side wall and a second side wall being inclined to said radius; said groove having a top opening and a bottom; said top opening and said bottom having a width measured parallel to said axis; the width of said opening being greater than the width of said bottom; and

(b) a sawtooth wire extending helically about said axis and forming a clothing on the roll; said sawtooth wire having a base rib received in said groove; said base rib having first and second side walls and a planar bottom end face; said first side wall of said base rib being at a zero angle to said roll radius and said second side wall of said base rib being inclined to said roll radius; a width of said base rib measured parallel to said axis decreasing toward and being the smallest at said bottom end face of said base rib; said base rib complementally fitting in said groove in a face-to-face engagement with respective side walls of said groove.

5,185,906

BELT CLIP SPRING WITH E-RING FASTENER

Dwight D. Brooks, Boynton Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 27, 1992, Ser. No. 919,796

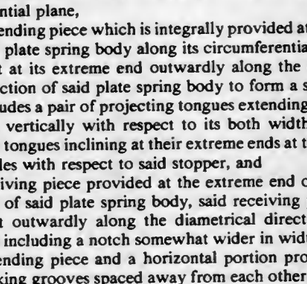
Int. Cl.[5] A44B *21/00*

U.S. Cl. 24—35 **10 Claims**

1. A belt clip assembly for clamping a device onto thin material, the device having a backcover including a first set of ears with a first set of pin holes therein, the belt clip assembly comprising:

a belt clip having a second set of ears with a second set of pin holes therein;

a pin for establishing an axis of rotation, the pin passing through said first set of pin holes and said second set of pin holes; and



a spring formed to apply force to maintain said belt clip in a closed position against said back cover, said spring having a retaining ring formed integrally therewith, the retaining ring coupling to said pin for retaining said pin within said first and second set of pin holes.

5,185,907

HOSE CLAMP ASSEMBLY

Makinori Kawashima, Suwa, and Minoru Nakamura, Sayama, both of Japan, assignors to Kanesan Manufacturing Co., Ltd. and Honda Giken Kogyo Kabushiki Kaisha, both of, Japan

Filed Mar. 9, 1992, Ser. No. 848,145

Claims priority, application Japan, Jun. 5, 1991, 3-72890[U]

Int. Cl.[5] B65D *63/00*

U.S. Cl. 24—20 R **1 Claim**

1. A hose clamp assembly comprising in combination:

a belt form of a plate spring body which is in an annular form having opposite ends and is provided with a grooved notch in which an extending piece to be described just below is inserted in a free state to form the same circumferential plane,

an extending piece which is integrally provided at one end of said plate spring body along its circumferential direction, bent at its extreme end outwardly along the diametrical direction of said plate spring body to form a stopper and includes a pair of projecting tongues extending outwardly and vertically with respect to its both widthwise sides, said tongues inclining at their extreme ends at the required angles with respect to said stopper, and

a receiving piece provided at the extreme end of the other end of said plate spring body, said receiving piece being bent outwardly along the diametrical direction thereof and including a notch somewhat wider in width than said extending piece and a horizontal portion provided with locking grooves spaced away from each other at an interval corresponding to the space between said pair of locking tongues and formed at the required angles increasingly inclined as they go up.

5,185,908

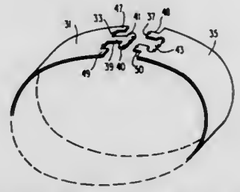
METHOD FOR CONNECTING TWO PARTS ALONG ABUTTING EDGES AND CONNECTION OBTAINED THEREBY

Hans Oetiker, Horgen, Switzerland, assignor to Hans Oetiker AG Maschinen- und Apparatefabrik, Horgen, Switzerland

Filed Nov. 18, 1991, Ser. No. 793,556

Int. Cl.[5] B65D *63/00*

U.S. Cl. 24—20 R **15 Claims**



1. An arrangement for the connection of two areal parts made of weldable materials including galvanized steel along two parts thereof which extend essentially parallel to one another at least along a common section, comprising retaining means projecting from one edge of one part in the direction toward and over the edge of the other part, said retaining means being operable to form-lockingly engage from behind as viewed in the edge direction, in a recess means provided in the other part, and at least one projection means at the one part laterally offset with respect to the retaining means in the direction of the engagement with behind, which form-lockingly abuts at the other part with the recess means to constrain bending movement in the other part in the edge direction which would open the recess means in the presence of tensional forces in the two parts, characterized by laser beam welded additional fastening means along at least one common section of at least one of the retaining means and of the projection means.

5,185,909

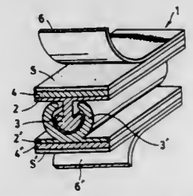
ZIPPER FOR CLOSING THE MOUTH OF A BAG

Hiromichi Inagaki, 1-143, Aza Maedaomote, Inuyama-shi, Aichi-ken, Japan

Filed May 28, 1991, Ser. No. 706,295

Int. Cl.[5] A44B *19/00, 33/00*

U.S. Cl. 24—587 **13 Claims**



1. A zipper arrangement for connection with an element to be closed, comprising: a first tape element formed of resin, said first tape element having a rib formed on an inner face; a second tape element formed of resin, said second tape element having a groove formed on an inner face, said rib and groove being engaged with each other to form a closed zipper arrangement; a first tape backer provided on an outer surface of said first tape element and a second tape backer provided on an outer face of said second tape element; a bonding agent coated on an outer surfaces of said first tape backer and a bonding

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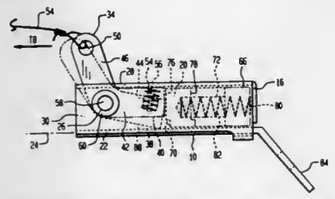
agent coated on an outer face of said second tape backer, said outer surface of said first tape element and said outer surface of said second tape element facing in opposite directions; and parting paper disposed on each of said bonding agent on said outer face of said first tape backer and said bonding agent on said outer face of said second tape backer.

5,185,910

REVERSIBLY RELEASABLE LATCHING APPARATUS

Theodore Ziaylek, Jr., 140 Riverview Dr., and Michael P. Ziaylek, 3 Brook La., both of Yardley, Pa. 19067, assignors to Theodore Ziaylek, Jr. and Michael P. Ziaylek, both of Yardley, Pa.

Filed Feb. 14, 1992, Ser. No. 835,885
Int. Cl.[5] A44B *11/25*
U.S. Cl. 24—650 **19 Claims**



1. A reversibly releasable latching apparatus having a notched ejector member comprising:

A. a base member;

B. a tab member being movable with respect to said base member;

C. a housing means defining a trigger opening therein and including:

(1) side wall means fixedly secured with respect to said base member and extending therefrom, said side wall means further defining a tab channel means therein to facilitate movement therethrough of said tab member to facilitate latching and unlatching thereof with respect to said housing means for operation of said reversibly releasable latching apparatus, said tab channel means defining a tab channel axis extending axially therethrough defining the path of movement of said tab member with respect to said housing means during engaging and disengging thereof with respect thereto: and

(2) a top member extending over said side wall means and in cooperative relationship with respect to said base member and said side wall means defining an internal chamber therebetween;

D. a trigger assembly means including;

(1) a trigger member pivotally mounted with respec to said housing means to be pivotally movably between a releasing position and a securing position;

(a) a trigger main section located within said internal chamber and being pivotally moveable with respect to said housing means to be selectively engageable with respect to said tab means;

(b) a trigger arm section fixedly secured with respect to said trigger main section and pivotally moveable therewith, said trigger arm section extending outwardly from said internal chamber through said trigger opening to facilitate urging of said trigger assembly between the releasing position and the securing position, said trigger arm section being responsive to force exerted theroen in a direction parallel to said tab channel axis and away from said reversibly releasable latching apparatus to release said trigger main section from engagement with respect to said tab member for facilitating release of said tab member with respect to said housing means;

(2) a trigger biasing means in operative abutting relationship with respect to said housing means and said trigger member and being operative to bias said trigger member toward the securing position with said trigger main section being engageable with respect to said tab member extending into said tab channel means defined by said side wall means for facilitating retaining thereof within said tab channel means;

E. an ejector assembly means including;

(1) an ejector member being movably positioned with respect to said housing means within said internal chamber thereof and being in abutment with respect to said tab member when positioned extending through said tab channel means, said ejector member defining an ejector notch therein adapted to engage said tab member to facilitate ejecting thereof responsive to force urged against said ejector member by said ejector biasing means; and

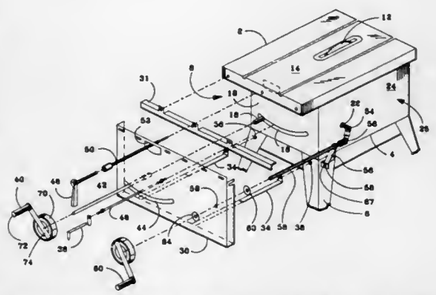
(2) an ejector biasing means operatively in abutting relationship with respect to said housing means and said ejector member for biasing said ejector member toward said tab member when positioned extending through said tab channel means, said ejector biasing means adapted to eject said tab member from said tab channel means responsive to release of engagement of said trigger main section with respect to said tab member responsive to movement of said trigger member to the releasing position.

5,185,911

APPARATUS AND METHOD FOR CONVERTING SIDE OPERATED MACHINE CONTROLS TO BE FRONT OPERATED

Warren S. Upson, 1635 Robinson Ave., San Diego, Calif. 92103

Filed Apr. 27, 1992, Ser. No. 874,376
Int. Cl.[5] B21K *21/16;* **B23P** *19/04;* **B26B** *5/24*
U.S. Cl. 29—401.1 **16 Claims**



1. In a machine having a lateral control linkage with an end that communicates with a side control, an apparatus for making the side control operable from a front of the machine comprising:

(a) means for redirecting the end of the lateral control linkage that communicates with the side control to make the lateral control linkage operable from a frontal direction,

(b) means for translating the redirected end of the lateral control linkage to the front of the machine, and

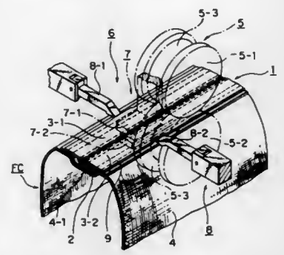
(c) means for holding the redirected and translated end of the lateral control linkage in place.

5,185,912

METHOD AND GUIDE DEVICE FOR SLIDE FASTENER CHAIN WITH CLOTH PIECES ATTACHED

Akio Yunoki, Toyama, Japan, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Aug. 1, 1991, Ser. No. 739,247
Claims priority, application Japan, Aug. 7, 1990, 2-83482
Int. Cl.[5] B21D *53/50*
U.S. Cl. 29—408 **8 Claims**



1. In an apparatus for producing slide fastener chains with cloth pieces attached to opposed fastener tapes of the chain, said apparatus including a discharge unit for discharging the fastener chains attached to cloth pieces from said apparatus, a guide device, positioned upstream of said discharge unit, for guiding the slide fastener chains after said cloth pieces have been attached to said fastener chains, said guide device comprising:

a pair of guide arms extending perpendicularly to a traveling path of said slide fastener chain, said guide arms extending horizontally toward each other; and

restricting means for guiding the chain so as to restrict vertical movement of the chain, said restricting means including upper and lower plates located upwardly and downwardly, respectively, of the chain;

whereby, during operating of said apparatus, said guide arms extend between said fastener tapes and said cloth pieces.

8. In producing slide fastener chains with cloth pieces attached to opposed fastener tapes of the chain, a method of guiding the slide fastener chains after said clothes pieces have been attached to said fastener chains, said method comprising the following steps:

providing a discharge unit for discharging the fastener chains attached to cloth pieces;

causing said fastener chain with said cloth pieces attached thereto to move along a traveling path;

providing a guide device disposed upstream of said discharge unit, said guide device including a pair of guide arms extending perpendicularly to said traveling path of said slide fastener chain, said guide arms extending horizontally toward each other; and

positioning said guide arms between said fastener tapes and said cloth pieces while said fastener chain with said cloth pieces attached is moving along said traveling path.

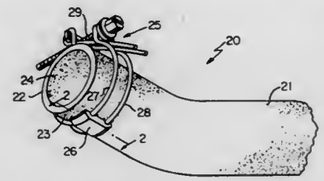
5,185,913

METHOD OF MAKING A FASTENING MEMBER FOR A HOSE CONSTRUCTION

Manuel Campo, Fairfax, Va.; Charles S. Pearson, Waynesville, and Jon H. Synder, Hazelwood, both of N.C., assignors to Dayco Products, Inc., Dayton, Ohio

Filed Oct. 2, 1991, Ser. No. 771,080
Int. Cl.[5] B23P *11/02*
U.S. Cl. 29—453 **10 Claims**

1. In a method of making a hose construction comprising a tubular flexible hose having opposite ends and an outer peripheral surface means, fastening means, and a clamping means fastened to one of said ends of said hose with said fastening means for substantially circumferentially and radially inwardly clamping said one end onto a member that has been inserted into said one end, said fastening means comprising a fastening member having a part thereof engaging and secured to said outer peripheral surface means of said hose and having recess means therein that receives part of said clamping means therein, the improvement comprising the steps of forming said fastening member with means for holding said part of said clamping means in said recess means before said fastening



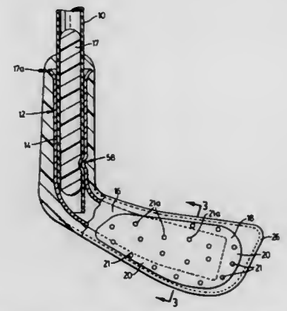
member is secured to said hose, the step of forming said fastening member with means for holding said part of said clamping means in said recess means comprising the step of forming said means for holding as a snap-fit means, and forming said fastening member to have a surface means disposed between opposed ends thereof with said surface means having said recess means therein and with said surface means defining said part of said fastening member that is secured to said hose.

5,185,914

GOLF CLUB AND METHOD OF MAKING SAME

Dom Petruccelli, 6 Norcrest Dr., Toronto, Ontario, Canada M6L 2T1 , and Marc Petruccelli, 271 Ridley Blvd., #702, Toronto, Ontario, Canada M5M 4N1

Filed Jan. 8, 1992, Ser. No. 818,105
Int. Cl.[5] B23P *19/04;* **B21D** *39/00;* **B29C** *67/00;* **A63B** *53/04*
U.S. Cl. 29—460 **8 Claims**



1. A method of making a golf club, comprising the steps:

providing a substantially straight shaft having upper and lower ends,

deforming a length of metallic tubing by flattening one end section and bending the end section so as to leave a first portion of the tubing which is straight and tubular, while defining a second portion which is substantially flattened and bent to define an obtuse angle with said first portion,

securely affixing a flat metallic stiffener plate to one side of said second portion of the metallic tubing,

inserting the lower end of said shaft snugly into said first portion of the metallic tubing,

placing the lower end of the shaft, the tubing and the stiffener plate into a mold cavity into which plastic and a blowing agent can be injected, the mold cavity defining a striking surface,

supporting the shaft, tubing and stiffener plate with respect

VOL 1147 ISS 3 FE 16 1993 UMI

to the mold cavity such that there is left a space of substantially uniform thickness between the stiffener plate and said striking surface of the mold cavity,

closing the mold cavity and

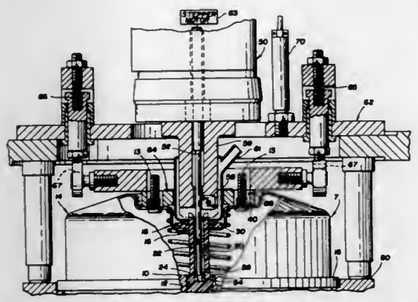
admitting plastic and a blowing agent into the mold cavity and applying heat differentially to the mold so as to produce a substantially flat striking layer of dense, hard, integral-skin plastic in said space of substantially uniform thickness, said striking layer thus being juxtaposed against the stiffener plate remote from said second portion of the metallic tubing, and a back cushion of softer and less dense plastic integrally contacting said striking layer, such that the back cushion and the striking layer between them enclose said stiffener plate and all of said metallic tubing.

5,185,915

PNEUMATIC BOOSTER OUTPUT ROD ADJUSTMENT METHOD

Craig A. Osterday; Douglas L. Osterfeld, both of Dayton; Thomas R. Baumaster, Springboro; Timothy M. Welch, Dayton; Michael P. Trego, Centerville, and Donald M. Flory, Arcanum, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 27, 1992, Ser. No. 874,457
Int. Cl.[5] B23P *19/02*
U.S. Cl. 29—525 **4 Claims**



1. A method of adjusting the length of a vehicle brake booster output rod and assembling the same into a brake booster, the output rod being formed of a thermoplastic or thermoset material that is generally cylindrical in shape with a central longitudinal bore with an axial stop means, and the output rod having an insertable button having a head with an attached stem, the booster having a housing with a central opening surrounding the output rod with a surrounding first formed surface for mounting a master cylinder, the method in combination comprising:

piloting a cutting tool by inserting an elongated member into the bore of the output rod;

orienting the cutting tool by mating a fixture locationally associated with the cutting tool on the first formed surface of the vacuum booster housing;

preloading the output rod with the elongated member by contacting means with the elongated member to simulate a spring load of a master cylinder;

cutting the output rod with the cutting tool to a desired dimension corresponding to dimensions of the booster housing;

removing the elongated member from the output rod bore;

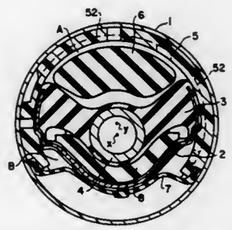
inserting the stem of the button into the output rod with a sheet material juxtaposed between the stem and the bore of the output rod causing an interference fit retaining the button in the output rod bore.

5,185,916

METHOD FOR PRODUCING CYLINDRICAL BUSHING WITH HYDRAULIC DAMPING

Takashi Maeno; Kyouichi Fujinami; Hiroaki Kawahara, and Tetsuo Asano, all of Inazawa, Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai-Gun, Japan

Filed Jul. 18, 1991, Ser. No. 732,416
Claims priority, application Japan, Jul. 27, 1990, 2-200951; Jan. 30, 1991, 3-29434
The portion of the term of this patent subsequent to Apr. 2, 2008, has been disclaimed.
Int. Cl.[5] B23P *19/02*
U.S. Cl. 29—525 **4 Claims**



1. A method for producing a cylindrical bushing with hydraulic damping, comprising the steps of:

preparing an internal ring having an elliptical cross-section including a major axis and a minor axis;

disposing within said internal ring a vibration-damping rubber block through which an inner cylinder coaxially penetrates and which has wall portions for defining a liquid chamber, so that said wall portions extend along said minor axis of said internal ring;

deforming said internal ring so as to have a circular cross-section; and

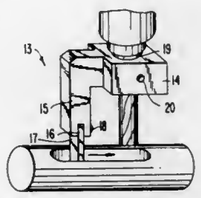
press-fitting the deformed internal ring into an outer cylinder.

5,185,917

METHOD OF MACHINING KEYWAYS IN SHAFTS

Gennady Kremen, 7920 4th Ave. #F 12, Brooklyn, N.Y. 11209

Filed Jul. 22, 1991, Ser. No. 733,681
Int. Cl.[5] B23C *3/30*
U.S. Cl. 29—558 **8 Claims**



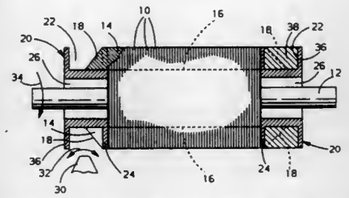
1. A method of machining keyways in shafts comprising the steps of aligning a central line of a spindle of a machine tool with a center line of a shaft to be machined; preliminarily machining a keyway in the shaft with keyway mill arranged on the spindle so as to retain a symmetrical allowance for a finishing machining of the keyway so as to machine walls of the keyway; finishing machining of radiused parts of the keyway at its both ends with a cross-feed of the mill so that a width of radiused parts is greater than a desired with of the keyway; and final machining the keyway with a cutting tool which is self-aligned in the keyway and mounted on the spindle so that it freely turns and is rectilinearly moved along the keyway to finally machine the walls of the keyway.

5,185,918

METHOD OF MANUFACTURING A COPPER BAR INDUCTION ROTOR

George G. Shafer, Jr., Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 25, 1991, Ser. No. 782,682
Int. Cl.[5] H02K *15/08*
U.S. Cl. 29—598 **4 Claims**



1. A method of manufacture of a shorted turn motor rotor having a ferromagnetic core secured on a rotor shaft, the core having axially extending slots in which are received elongate copper conductor bars, the conductor bars having end turn portions which extend out of the respective slots at each axial end of the core, the method comprising the steps of:

positioning a cylindrical element in abutment with each axial end of said core to define at each such end an annular cavity into which said end turn portions of said conductor bars extends, each cavity having a continuous opening in the radial direction for permitting access to end turn portions disposed therein; and

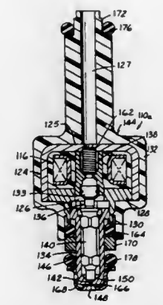
spraying molten copper plasma into each cavity via the respective continuous opening, thereby to form a copper-to-copper electrical bond among the conductor bar end turn portions extending from each end of said core.

5,185,919

METHOD OF MANUFACTURING A MOLDED FUEL INJECTOR

John C. Hickey, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 615,835, Nov. 19, 1990, Pat. No. 5,150,842. This application May 14, 1992, Ser. No. 882,786
Int. Cl.[5] H01F *41/02*
U.S. Cl. 29—602.1 **5 Claims**



1. A method for forming a fuel injector, comprising the steps of:

positioning an electric coil assembly adjacent to a magnetic core which is comprised of a magnetic permeable material for receiving magnetic energy from said coil assembly;

injection molding plastic around both said magnetic core and said coil assembly to totally surround and hermetically seal said coil assembly and permanently position said coil assembly adjacent to said magnetic core, said injection molding step also forming a cavity concentric to said coil assembly;

slidably inserting an armature into said cavity, said armature comprised of a magnetic permeable material for magnetically coupling to said magnetic core; and

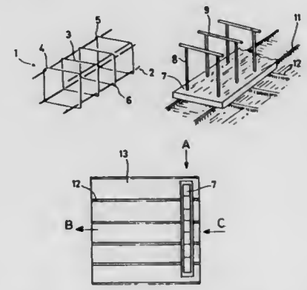
coupling a needle and seat valve to said armature for controlling fuel flow.

5,185,920

INSTALLATION AND METHOD FOR CARRYING OUT METALLIC REINFORCEMENTS

Jasime Aguilo, Maria i Jose St., 07440-Muro (Mallorca), Spain

Continuation of Ser. No. 557,040, Jul. 25, 1990, abandoned. This application Nov. 14, 1991, Ser. No. 794,374
Claims priority, application Spain, Aug. 3, 1989, 8902759
Int. Cl.[5] B23P *19/04*
U.S. Cl. 29—794 **9 Claims**



1. An installation for carrying out the assembly of metallic reinforcements of the type which are used in the preparation of pillars, beams, supports and metallically reinforced construction from pieces of iron which have been cut and bent to a predetermined size and shape, comprising

a rail system and areas through which said rail system passes;

mobile wagons arranged to move on said rail system between and through said areas;

racks mounted on said mobile wagons;

a first one of said areas being a pre-assembly area wherein said mobile wagons have the pieces of iron which have been cut and bent to a predetermined size and shape marked and loaded on said racks;

stationary operator work stations;

a second one of said areas being a binding area wherein said mobile wagons move at a predetermined variable speed past said stationary operator work stations and wherein the pieces of iron have points of intersection fastened together forming the metallic reinforcement, said predetermined variable speed determined by the number of points of intersection fastened together and the number of said operator work stations;

said predetermined variable speed in said second one of said area being predetermined by where there is an increase in work stations there is allowed an increase in the predetermined variable speed, with less work stations necessitating a decrease in said speed, but an increase in number of points of intersection fastened together necessitating a decrease in said predetermined variable speed and a decrease in the number of points of intersection fastened together allowing an increase in said speed;

a third one of said areas being an unloading area to unload the pieces of iron having been fastened together as reinforcements;

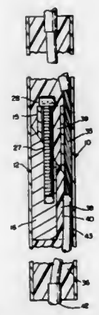
a fourth one of said areas through which said mobile wagons pass on their way back to said pre-assembly area.

VOL 1147 ISS 3 FEB 16 1993 UMI

5,185,921
METHOD OF MAKING A STRING OF CATHODIC PROTECTION ANODES

Mathew A. Pfaller; Kenneth N. Baker, both of Houston, Tex., and Richard E. Say, Spencer, Ohio, assignors to Materials Protection Company, Houston, Tex.

Division of Ser. No. 690,657, Apr. 24, 1991, Pat. No. 5,090,924.
This application Nov. 4, 1991, Ser. No. 787,249
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—825 **9 Claims**

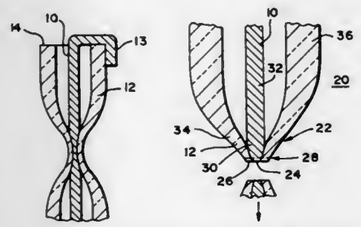


1. A method of forming a string anode comprising a series of anodes, each having an electrical connection to a wire, said method comprising the steps of unspooling insulated wire, threading tubular anodes having an interior wall onto the wire, selecting the location of the connection of each anode along the wire, removing a short portion of insulation at such located connection to provide a short section of bare wire while the respective anode is axially displaced, electrically securing the bare wire to one part of a two-part generally cylindrical connector, threading the respective anode over the connector, and then securing the connector to the interior of the respective anode by driving the two parts of said two-part generally cylindrical connector oppositely transversely against the interior wall of the anode to provide an electrical connection between the wire, two part connector and tubular anode.

5,185,922
METHOD OF MAKING SUBMICROMETER MICROELECTRODES

Bradford D. Pendley, and Hector D. Abruna, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Aug. 17, 1990, Ser. No. 568,852
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—825 **9 Claims**

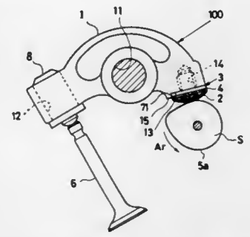


1. A method for fabricating microelectrodes comprising the steps of:
a) selecting a hollow tube of insulating material which becomes ductile at a softening temperature and has an inner diameter and an outer diameter;
b) selecting an electrode wire formed of ductile conductive material having a melting temperature above the softening temperature of said hollow tube, said electrode wire having an outer diameter substantially smaller than the inner diameter of said tube;
c) inserting said electrode wire into said tube;
d) heating said tube to its softening temperature and simultaneously applying tension to said tube to cause it to draw down in diameter into sealing contact with said electrode wire, thereby causing said electrode wire to also be drawn down in diameter; and,
e) continuing to apply tension to said tube until said tube and electrode wire break and thereby form a microelectrode having a tip end at the point where said tube and electrode wire break.

5,185,923
METHOD OF MAKING A FRICTIONALLY SLIDING COMPONENT

Masato Taniguchi, and Haruyoshi Matsuura, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 530,538, May 30, 1990, abandoned.
This application Aug. 9, 1991, Ser. No. 744,686
Claims priority, application Japan, Jun. 16, 1989, 1-71056
Int. Cl.[5] F01L *1/14*
U.S. Cl. 29—888.03 **4 Claims**



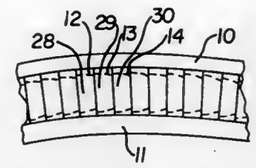
1. A method of making a frictionally sliding component, said component being made of lightweight aluminum and having a recess provided therein, said method comprising the steps of:
preparing an intermediate member which has a steel-based metallic head and a stud integrally fixed to the head;
bonding a friction-resistant ceramic chip securely to the head of the intermediate member by means of brazing so as to form a complete intermediate member; and
fixing the complete intermediate member securely to said component by interfitting the stud within the recess in said component.

5,185,924
METHOD OF REPAIR OF TURBINES

Michael J. Fraser, Broughton Hackett, England, assignor to Turbine Blading Limited, Droitwich, United Kingdom

Filed Jun. 7, 1991, Ser. No. 711,818
Claims priority, application United Kingdom, Jun. 12, 1990, 9013081; Jul. 10, 1990, 9015217
Int. Cl.[5] B23P *15/04*
U.S. Cl. 29—889.1 **12 Claims**

1. A method of repairing stator blades of a turbine comprising the steps of:
1. preparing a pre-shaped insert made from a material the same as or compatible with said stator blade, said insert affording at least 20 percent of the surface area of said stator blade;
2. treating said insert so that at least the trailing edge portion thereof has a surface that is harder than the material from which the insert is made;
3. removing at least 20 percent of said stator blade, the shape of the part removed being sufficient to accommodate said insert; and

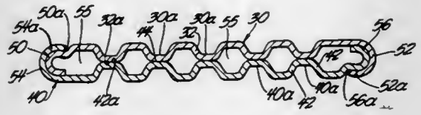


4. welding said insert to said stator blade with a weld material the same as or similar to the stator blade and/or insert material.

5,185,925
METHOD OF MANUFACTURING A TUBE FOR A HEAT EXCHANGER

Richard P. Ryan, East Amherst; Gary A. Halstead, Lockport; David M. Smith, Amherst, all of N.Y., and Shrikant M. Joshi, Cambridge, Mass., assignors to General Motors Corporation, Detroit, Mich.

Filed Jan. 29, 1992, Ser. No. 827,679
Int. Cl.[5] B23P *15/26*
U.S. Cl. 29—890.049 **2 Claims**

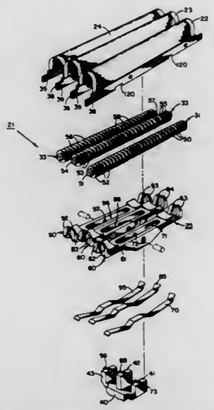


1. A method of making a tube for a heat exchanger having header plates, comprising the steps of:
providing blanks of aluminum base material, cladding said blanks with a coating of aluminum-silicone cladding material of a substantially constant thickness;
stamp die forming one of said cladded blanks into a first tube part having interior and exterior surfaces with bent elongated side edges and elongated depressions forming spaced webs;
stamp die forming the other of said cladded blanks into a second identical tube part having interior and exterior surfaces with bent elongated side edges and elongated depressions forming spaced webs;
applying flux to said internal surfaces of said first and second tube parts;
interlocking said side bent elongated side edges of said first and second tube parts to form a unitary tube;
beveling said elongated side edges of said first tube part so that it is substantially smoothly fitted throughout its length against the second tube part to define a smoothly, continuously curved surface at each of the ends of the unitary tube;
aligning the webs therein to cause interior apices thereon to be closely adjacent to one another,
providing a brazing material to said interior surfaces of said tube parts between adjacent apices of said webs,
flattening said tube so that said apices are sufficiently close to one another that the brazing material will be effective to seal said interfacing apices to one another during a subsequent brazing operation, placing said tubes in a furnace and heating said furnace until said interfacing apices are brazed together to form a plurality of separate passages in said tube.

5,185,926
MULTIPLE FOIL AND CUTTING BLADE ASSEMBLY FOR ELECTRIC DRY SHAVERS

David R. Locke, Bridgeport, Conn., assignor to Remington Products, Inc., Bridgeport, Conn.

Filed Feb. 7, 1992, Ser. No. 832,419
Int. Cl.[5] B26B *19/02, 19/12, 19/06*
U.S. Cl. 30—43.92 **19 Claims**



1. An improved cutting system constructed for mounted interconnected engagement with an electric dry shaver and comprising
A. an apertured foil member mounted to the electric dry shaver and comprising at least three separate and independent arcuate zones, each of said arcuate zones being capable of flexible movement independently of adjacent arcuate zones;
B. at least three separate and independent blade assemblies, each being mounted for reciprocating movement and supportingly maintained in sliding, frictional interengagement with one surface of one of said arcuate zones of the apertured foil member, for cooperating therewith to provide the desired cutting action; and
C. at least three separate and independent blade assembly support members mounted for side-to-side reciprocating movement, and each comprising
a. blade assembly holding means for supportingly engaging one of the blade assemblies and maintaining the blade assembly in contacting frictional engagement with one of the arcuate zones of the foil member,
b. biasing means for continuously urging the blade assembly into contact with the arcuate zone of the foil member, and
c. mounting means for securely affixing the support member to the shaver, and enabling the support member to arcuately pivot about a first axis and translationally move in its entirely along a second axis perpendicular to the first axis.

5,185,927
SEGMENTED GUARD BAR WITH IMPROVED SKIN FLOW CONTROL

David F. Rivers, Wallingford, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

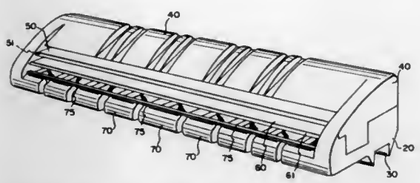
Filed May 13, 1991, Ser. No. 699,066
Int. Cl.[5] B26B *21/14*
U.S. Cl. 30—50 **12 Claims**

1. A flexible guard bar for a flexible razor head, comprising: a plurality of segments forwardly disposed for engagement with a skin surface being shaved, each of said segments

VOL
1147
ISS
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16
1993
UMI

comprising a forward skin engaging portion and a rearward portion, each of said segments being separated from adjacent segments, and having side walls thereby providing a space therebetween; and

means for controlling skin flow through at least one space between at least one pair of said segments;



wherein said controlling means comprises a unitary web comprising a plurality of skin flow control means disposed along a plurality of said segments; and

wherein said skin flow control means are substantially U-shaped and said web is disposed such that the base of said web is disposed forwardly of the point where said web contacts said side walls of said at least one pair of said segments.

5,185,928

WINDOW CUTTER FOR GAS SERVICE TIE OVERS AND TIE-OVER METHOD

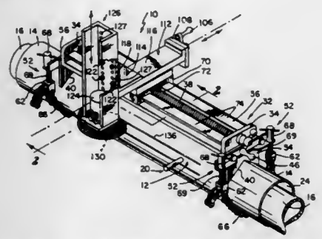
Luther W. Martin, Champaign; Richard L. Smith, Edwardsville, both of Ill., and Jesse W. Cotherman, Camby, Ind., assignors to Insertec Systems, Inc., Champaign, Ill.

Filed Nov. 15, 1991, Ser. No. 792,448

The portion of the term of this patent subsequent to Apr. 23, 2008, has been disclaimed.

Int. Cl.[5] B22B *5/00*

U.S. Cl. 30—92.5 **5 Claims**



1. A pipe slitter comprising a base for fixing the slitter to a pipe to be slit thereby, a carriage for supporting a slitter blade, means for movably supporting the carriage on the base for movement longitudinally of the pipe, and means for movably supporting the slitter blade on the carriage for movement transversely of the pipe, the base comprising a pair of end plates for mounting transversely of the pipe and a base plate extending longitudinally of the pipe and coupling the end plates to each other.

5,185,929

PECAN CRACKER

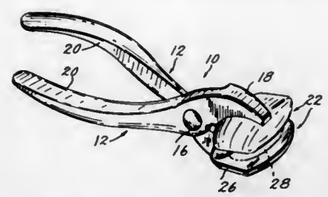
William R. Blaylock, 187 McCall St., Nashville, Tenn. 37211

Filed May 22, 1992, Ser. No. 886,867

Int. Cl.[5] A47J *43/26*

U.S. Cl. 30—120.4 **8 Claims**

1. A nut cracker comprising a pair of cooperating jaws, each jaw having an elongate outwardly opening concavity therein surrounded by a peripheral jaw edge portion, a pair of elongate manipulating arms mounting said pair of jaws in opposed overlying relation to each other with the concavities of the jaws in aligned facing relationship for reception of a nut therebetween, said elongate concavities extending in a common direction and including a major axis and a minor axis, said arms crossing each other at a common point along said arms, means adjustably pivotally joining said arms and defining a pivot axis at said common point, said arms forming head portions to one side of said pivot axis and handles to the opposite side of said pivot axis, the major axis of said jaws extending transversely



relative tot he longitudinal axis of said arms with said common major axis of said elongate concavities being parallel to said pivot axis, said head portions being fixed to the respective jaws transversely to said longitudinal direction of the corresponding concavities and centrally thereof, said handles comprising means for pivotally moving said jaws about said pivot axis between a closed position for the confining and cracking of a nut therebetween, and an open position for the introduction and removal of a nut.

5,185,930

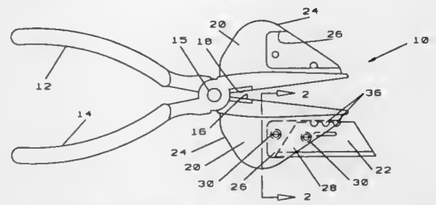
FLEX-DUCT CUTTERS

Michael R. Hamlin, 666 Heather St., Ojai, Calif. 93023

Filed Mar. 5, 1992, Ser. No. 846,040

Int. Cl.[5] B25B *7/22*

U.S. Cl. 30—131 **4 Claims**



1. A hand tool comprising:

a plier-type tool having a pair of wire cutting jaws pivotally connected together,

a razor-type blade having at least one cutting edge, and

attaching means mounted on at least one of said wire cutting jaws for releasably retaining said razor-type blade with said cutting edge facing outward from said jaws.

5,185,931

HAIR CUTTER

Shoji Fujikawa, Ishibe, and Hideaki Haraguchi, Hikone, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Continuation of Ser. No. 705,541, May 24, 1991, abandoned.

This application May 13, 1992, Ser. No. 885,055

Claims priority, application Japan, May 28, 1990, 2-137751; Dec. 25, 1990, 2-405528

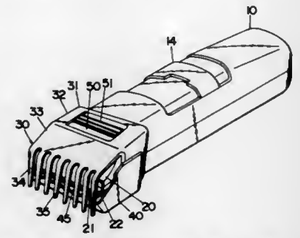
Int. Cl.[5] B26B *19/00; ,*

U.S. Cl. 30—201 **9 Claims**

1. A hair cutter comprising:

a cutter head with a cutter which comprises a toothed stationary blade and a toothed movable blade defining a cutting plane between toothed edges thereof, said movable blade being driven to reciprocate relative to said stationary blade in hair shearing engagement between said toothed edges with said movable blade defining a cutting edge at its leading toothed edge; and

a pair of first and second hair pressing members disposed at the front end of said cutter head each pressing member having a respective hair contacting edge, said first hair pressing member having a number of comb slots arranged in parallel with said toothed edge of said movable blade, with said hair contacting edge of said first pressign mem-



ber being defined by the bottom ends of said comb slots; said second hair pressing member having a plurality of comb slots arranged in parallel with said toothed edge and the hair contacting edge of said second hair pressing member being defined by the bottom ends of said slots; said first and second hair pressign members being located on the opposite sides of said cutting plane respectively to have said individual hair contacting edges spaced across said cutting plane in such a manner that said cutting edge is positioned on or rearwardly of a straight line connecting said hair contacting edges of said first and second hair pressing members.

5,185,932

ROBOTIC FLUID-ACTUATED MUSCLE ANALOGUE TREE TRIMMER

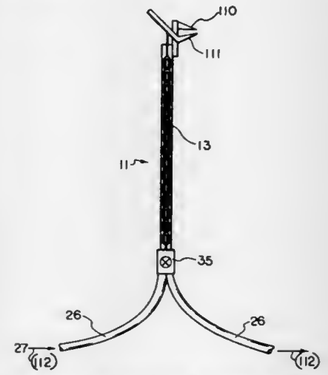
R. Scott Caines, 108 Ashmore Rd., Greer, S.C. 29651

Division of Ser. No. 384,533, Jun. 3, 1982, Pat. No. 5,021,063.

This application Jan. 2, 1991, Ser. No. 636,734

Int. Cl.[5] B26B *15/00*

U.S. Cl. 30—288 **19 Claims**



1. A tree trimmer appliance for snipping and cutting twigs and branches in which a cutting means is at a spaced distance from a handling and manipulating end of the appliance comprising:

an extending support pole having spaced-apart terminating extremities sufficiently distance one-from-another to facilitate reaching an object to be severed by an operator of the appliance; with

a handle and manipulating end portion towards one of said extremities of said pole; and

an actuatable cutting means having at least one movable cutting part that is closable for severing performance thereof by pulling effort upon said at least one movable cutting part; said cutting means being positioned and secured on said pole at or near

an outward extremity of said pole projecting opposite said handle portion thereof;

wherein there comprises between said extremities of and along said pole for energization and movement-powering of said cutting means by contractile pulling action of a robotic fluid-actuated muscle analogue device adapted to exert contractile and pulling motive power upon its activation, said device comprising:

a hollow expandable central conduit member containing an interior void space and having an expandable, balloonable, fluid-confining wall structure thereabout, i.e., about said void space, and respective end portions terminating same, said expandable conduit member exhibiting end-to-end contractibility when inflated from a position of undistended and non-foreshortened rest upon admission thereinto within said interior void space thereof of a fluid under pressure for expanding activation of said conduit member;

at least a single, longitudinally-extending strand of filamentary material running at least relatively peripherally as to, and fixedly secured with, said wall structure of the expandable conduit member of which said filamentary material is an integral part in physical attachment thereto, said filamentary material being aligned so as to extend along from one end of the expandable conduit to another end of said conduit member in emplacement therewith that is at least substantially parallel with the longitudinal center line of said conduit, said filamentary material having a tensile extensibility that is not in any substantial excess of the elongability of same under internal fluid-pressurization of the material of construction of said expandable conduit member;

means connected with the void space in said hollow expansable conduit member for introducing fluid under pressure thereinto for inflationary activation thereof, whereby said expandable conduit member becomes ballooned, so as to contractibly assume a foreshortened end-to-end length with corresponding lessening of the effective longitudinal span of the therewith emplaced and associated filamentary material; and

mechanical means for interlinkingly coupling through and with the extremity portions of said filamentary material the contractible ends of said expandable conduit member for physically anchoring same at one end thereof and respectively connecting same with a load to be moved at the other end thereof;

said appliance having means for mechanically coupling the movable, tractile end of said robotic fluid-actuated muscle analogue device with said cutting means for interlinking movement of said cutting means.

5,185,933

SHAVING FOIL

Werner Messinger, Kronberg, Fed. Rep. of Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 8, 1991, Ser. No. 772,931

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1990, 4031871

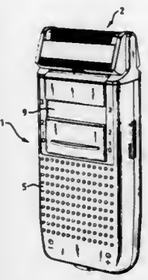
Int. Cl.[5] B26B *19/04*

U.S. Cl. 30—346.51 **9 Claims**

1. A shaving foil for a dry shaving apparatus comprising flexible sheet structure with an array of partition portions that define a plurality of adjacent apertures, each said partition portion separating one aperture from an adjacent aperture and

VOL 1147 ISS 3 FE 16 1993 UMI

having a center line, said center lines of said partition portions intersecting one another at nodal points, and knob-type protuberances provided on said partition portions at least in the area



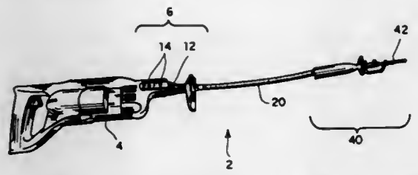
of said nodal points that separate contiguous ones of said apertures, said protuberances being of thinner material than the material of said partition portions surrounding said apertures.

5,185,934

FLEXIBLE EXTENSION FOR A RECIPROCATING TOOL

Eric L. Tillman, 614 Herrick St., Pascagoula, Miss. 39567

Filed Jan. 27, 1992, Ser. No. 826,382
Int. Cl.[5] B23D *49/06, 49/04, 49/10;* **B23B** *29/00*
U.S. Cl. 30—392 **12 Claims**



1. For use with an otherwise conventional hand held power tool driving a reciprocating and non-rotating drive shaft and having a non-rotating, reciprocating working element projecting therefrom, a flexible extension attachment assembly comprising;

a single, elongate, flexible, reciprocating extension shaft interposed between and directly interconnecting the power tool drive shaft and working element, whereby said flexible extension shaft and the power tool working member reciprocate in direct response to the reciprocating movement of the power tool drive shaft;

flexible sheath means concentric with and substantially encasing said flexible extension shaft and having a proximal end adjacent the power tool drive shaft and a distal end adjacent the power tool reciprocating working element;

first means affixing said sheath means proximal end to the power tool body, said sheath means and encased flexible drive shaft being dimensioned and configured such that said flexible drive shaft is free to reciprocate within said sheath means;

handle means fixedly surrounding said sheath means distal end; and

guide means located interiorly of said handle means for preventing rotational displacement of said handle means, said sheath means, said flexible extension means, and the working element relative to one another, and assuring unidirectional reciprocation only of the power tool working member with respect to the handle means whereby any twisting movement of said handle means about its length causes the power tool working element to change its orientation accordingly in response to said handle twisting movement;

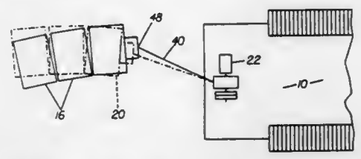
whereby, in use, said handle means and the power tool are grasped and the power tool working element may be extended and precisely guided into otherwise inaccessible locations to perform useful work.

5,185,935

METHOD AND APPARATUS FOR SEPARATION MEASUREMENT AND ALIGNMENT SYSTEM

Michael B. McMillion, Morgantown, W. Va.; Thomas R. Miller, Waynesburg, Pa., and Terry L. Koontz, Bridgeport, W. Va., assignors to Consolidation Coal Company, Pittsburgh, Pa.

Filed Jul. 11, 1991, Ser. No. 728,485
Int. Cl.[5] B65G *43/00, 41/00;* **B60D** *1/14*
U.S. Cl. 33—1 PT **7 Claims**



1. Apparatus for measuring the separation between a driven self propelled leading machine and a steerable driven self propelled trailing machine and operable to control the angular displacement between the machines comprising the combination of:

a. drive means for the trailing machine;

b. automatic control means for said drive means;

c. steering means for the trailing machine;

d. automatic control means for said steering means;

e. said apparatus including a first means having flexible means carried on one machine and attached to the other machine, said first means being responsive to a change in separation between the machines to activate said automatic control means for said drive means; and

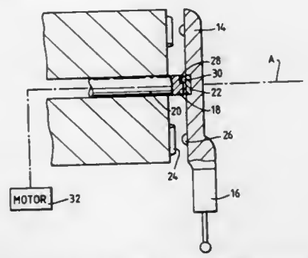
f. said apparatus including second means operable by said flexible means in response to a change in angular displacement between the machines to activate said automatic control means for said steering means.

5,185,936

PROBE HEAD WITH INDEXING MECHANISM

David R. McMurtry, Wotton-under-Edge, United Kingdom, assignor to Renishaw Metrology Limited, Gloucestershire, England

Filed Jul. 9, 1992, Ser. No. 911,120
Claims priority, application United Kingdom, Jul. 11, 1991, 9114946
Int. Cl.[5] G01B *5/00;* **B23Q** *17/22*
U.S. Cl. 33—572 **5 Claims**



1. A probe head for orienting a probe relative to the movable arm of a coordinate positioning machine, comprising:

a support by which the probe head is connectable to the arm of the machine;

a rotor for carrying a probe;

retaining means for releasably retaining the rotor on the support, to enable one rotor to be exchanged for another;

indexing means for providing a plurality of indexed angular positions of the rotor relative to the support, comprising a first set of engagement elements provided on one of the rotor and support, and a plurality of sets of second engagement elements provided on the other of the rotor and support, said first set of engagement elements being engageable with each set of said plurality of sets of second engagement elements to provide, at each indexed position, a stable, repeatable rest position of the rotor on the support;

coupling and decoupling means for engaging and disengaging said first set of engagement elements with a set of said second engagement elements; and

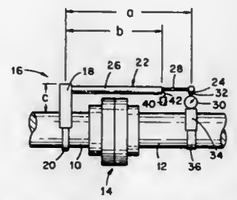
driving means for rotating said rotor relative to said support substantially about an axis when said first and second engagement elements are disengaged, thereby to rotate said rotor from one indexed position to another.

5,185,937

ALIGNMENT BRACKET ASSEMBLY INTEGRITY CHECK AND SAG DETERMINATION

Kenneth R. Piety, and Daniel L. Nower, both of Knoxville, Tenn., assignors to Computational Systems, Inc., Knoxville, Tenn.

Filed Jun. 3, 1992, Ser. No. 893,102
Int. Cl.[5] G01B *5/25*
U.S. Cl. 33—645 **12 Claims**



1. A method for determining the sag of an alignment bracket employed in the alignment of a pair of co-rotatable in-line shafts, the alignment bracket being of the type which includes a base attachable to one of the shafts and a measurement device for measuring relative displacement between a reference point referenced to the one shaft and the other one of the shafts at a plurality of angular positions, said method comprising the steps of:

setting up the alignment bracket in a position for use;

applying a known force to the alignment bracket;

measuring the resultant deflection of the alignment bracket at the reference point; and

determining a sag value from the measured deflection based on a previously-determined relationship.

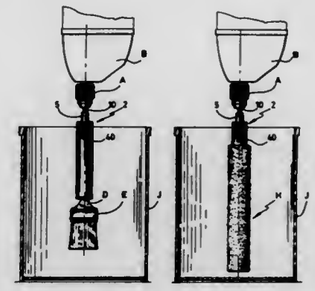
5,185,938

PAINT BRUSH AND ROLLER CLEANER

Heinz Hutt, 472 Place Closse, Ile Bizard, Canada H9C 1Y6

Filed Feb. 10, 1992, Ser. No. 833,116
Int. Cl.[5] F26B *17/24*
U.S. Cl. 34—58 **13 Claims**

1. An attachment securable to an electric motor for use in cleaning paint brushes and paint rollers, said paint brushes including a handle having a pointed tip, said attachment comprising a jaw unit including a screw portion with external screw threads, a cylindrical extension at one end of said screw portion defining a generally cylindrical bore to receive and center the pointed tip of a paint brush handle, said jaw unit further including spring jaws integrally formed with said cylindrical extension and including elongated resilient arms protruding from said cylindrical extension and each terminated by a jaw head having an inner clamping surface and an outer generally conical wedging surface, a nut surrounding and screwed on said screw portion, a cylindrical sleeve surrounding said cylindrical extension and said arms and having an inner end engaged by said nut and an outer end engaging said wedging surfaces, and a spindle fixed to said attachment and axially extending from said nut away from said sleeve and jaw



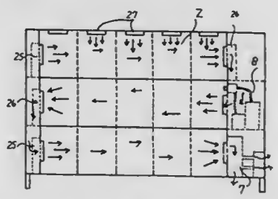
heads to be secured to an electric motor for spinning of the attachment, said sleeve having at its outer surface roller clamping means for engaging and clamping a paint roller in which said sleeve is inserted, screwing of said nut on said screw portion axially shifting said sleeve which causes retraction of said jaw heads for clamping a paint brush handle.

5,185,939

APPARATUS FOR DRYING RUBBER BOOTS AND OTHER ITEMS

Takayuki Kimura, 3307, Watari-cho, Sakaiminato City, Tottori, 684, Japan

Filed Sep. 26, 1991, Ser. No. 765,850
Claims priority, application Japan, Oct. 2, 1990, 2-104376
Int. Cl.[5] F26B *25/00*
U.S. Cl. 34—105 **17 Claims**



1. An apparatus for drying rubber boots and other items, comprising:

a hollow housing having open front and rear walls;

said housing being subdivided into a plurality of housing boxes;

said housing including at least two rows of said housing boxes;

disinfectant spraying equipment means being disposed in open communication with a first preselected row of housing boxes at a first end thereof;

a supply air fan means disposed at said first end of said first preselected row of housing boxes, said supply air fan means being associated with said disinfectant spraying equipment means;

a suction fan means disposed at a second end of said first preselected row of housing boxes;

low temperature dehumidifying means being disposed in open communication with a second preselected row of housing boxes at a first end thereof;

a suction fan means disposed in open communication with said low temperature dehumidifying means, said suction

VOL 1147 ISS 3 FE 16 1993 UMI

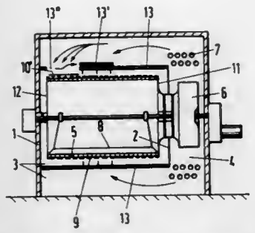
fan means blowing air into the environment external to said hollow housing;
a supply air fan means positioned at a second end of said second preselected row of housing boxes;
each of said housing boxes being individually closed at its front and rear sides, each of said housing boxes having at least one openable door means individual to it;
each of said housing boxes having a floor means in the form of plural rods of narrow diameter; and
means for maintaining the interior of said housing at a low temperature;
whereby an air flow pattern within said housing includes at least one return bend, said air flow pattern including a path of travel that begins at said first end of said first preselected row of housing boxes, continues to a second end of said first preselected row, executes said return bend, and flows from a second end of said second preselected row to said first end of said second preselected row and to the environment external to said housing.

5,185,940

DEVICE FOR THROUGH-FLOW PROCESSING OF WEB MATERIAL

Gerold Fleissner, Chur, Switzerland, assignor to Fleissner Maschinenfabrik AG, Rebstein, Switzerland

Filed May 8, 1991, Ser. No. 696,964
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1990, 4022336
Int. Cl.[5] F26B *11/02*
U.S. Cl. 34—115 **30 Claims**



1. A device for through-flow processing of web-shaped material with a fluid processing medium that is circulated in the entire device by a fan, said device comprising a drum that is fluid permeable and traversed from the outside to the inside by said processing medium, said drum being under suction, having non-perforated plates at its ends, and providing a transport element for the web-shaped material, and a baffle cover for forming a baffle chamber in front of a processing chamber, said baffle cover being arranged parallel to an axis of the drum and having holes located transversely over a working width of the drum, the processing medium permeability of said cover being less than that of the drum, characterized in that means are provided so that the degree of permeability of the baffle cover is temporarily increasable to a maximum over at least a partial area of the working width of the drum.

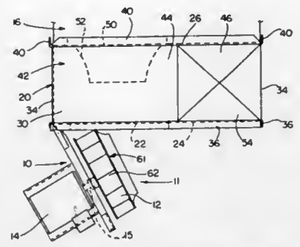
5,185,941

DRYER BLOWER CLEANOUT DOOR ASSEMBLY

Anthony A. Dongelmans, Bryan, Ohio, assignor to Challenge Industries, Bryan, Ohio

Continuation of Ser. No. 531,946, Jun. 1, 1990, abandoned. This application Apr. 23, 1992, Ser. No. 873,643
Int. Cl.[5] F04B *39/14, 17/00*
U.S. Cl. 34—242 **12 Claims**

1. A blower comprising a blower housing having a blower wheel opening, a blower assembly including a blower wheel and a motor, and a blower cleanout door, said door comprising a door panel dimensioned to cover said blower wheel opening, a motor platform attached to an exterior side of said door panel, said motor platform extending perpendicularly outwardly from said exterior side of said door panel, said motor being mounted on said motor platform, said door panel having a shaft opening, said motor having a shaft extending from said motor through said shaft opening, said blower wheel being mounted on said shaft inwardly of said door panel, means for adjusting the position of said motor on said motor platform to obtain a desired spacing and orientation of said motor relative



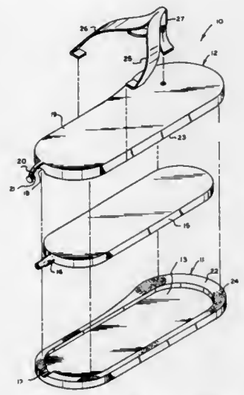
to said door panel, and pivot means pivotally mounting said door panel to said blower housing for swinging movement of said door panel between a closed position in which said door panel covers said blower wheel opening and said blower wheel is within said blower housing for operation and an open position in which said blower wheel is swung exteriorly of said blower housing out through said blower wheel opening for ease of cleaning said blower wheel.

5,185,942

LOTION CONTAINER APPARATUS

Patrick A. Decker, 3219 Shady Valley, Manhattan, Kans. 66502

Filed Nov. 25, 1991, Ser. No. 797,368
Int. Cl.[5] A43B *3/00, 3/12*
U.S. Cl. 36—11.5 **2 Claims**



1. A lotion container apparatus for transport and selective mounting to an individual's foot, wherein the apparatus comprises,
a lower resilient sole plate secured to an upper resilient sole plate, the upper resilient sole plate including an upper sole plate cavity, the lower resilient sole plate including a lower sole plate cavity, wherein the lower sole plate cavity and the upper sole cavity are in confronting coextensive relationship relative to one another, and the lower sole plate and the upper sole plate are in a contiguous and coextensive relationship relative to one another, and

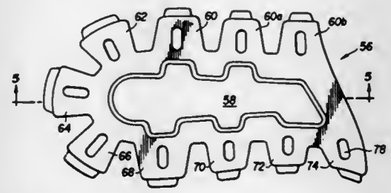
a fluid bladder mounted coextensively within the lower sole plate cavity and the upper sole plate cavity when the lower sole plate and the upper sole plate are in contiguous communication relative to one another, and
the lower sole plate including a lower groove directed through the top surface of the lower sole plate and the upper sole plate including an upper groove directed through a bottom surface of the upper sole plate, wherein the lower groove and the upper groove are in a coextensive confronting relationship relative to one another and the lower sole plate groove and the upper sole plate groove are each formed of a semi-cylindrical configuration, and
the fluid bladder includes a nozzle in fluid communication with the bladder and extending from the fluid bladder through the lower sole plate groove and the upper sole plate groove exteriorly of the lower sole plate and the upper sole plate, and
the upper sole plate includes an upper sole plate top surface, and a flexible support tether of a resilient shape retentent material is mounted to the upper sole plate adjacent the upper groove between the upper groove and the upper sole plate top surface, with a cylindrical nozzle plug mounted to a forward distal end of the support tether, wherein the nozzle plug is arranged for selective projection within the nozzle, and
the lower sole plate includes a lower sole plate side wall, and the upper sole plate includes an upper sole plate side wall, and the lower sole plate side wall includes a plurality of hook and loop fastener straps, including at least a first and second hook and loop fastener strap mounted to the lower sole plate side wall extending upwardly thereof, and the upper sole plate including an upper sole plate side wall and the upper sole plate side wall including at least a first and second hook and loop fastener patch for selective securement to the first and second hook and loop fastener.

5,185,943

ATHLETIC SHOE HAVING AN INSERT MEMBER IN THE OUTSOLE

James K. Tong, Beaverton; Lawrence Selbiger; Jerry D. Stubblefield, both of Portland, all of Oreg., and Jack Curley, Dunstable, Mass., assignors to Avia Group International, Inc., Portland, Oreg.

Continuation of Ser. No. 226,058, Jul. 29, 1988, abandoned. This application Sep. 20, 1991, Ser. No. 762,265
Int. Cl.[5] A43B *13/18*
U.S. Cl. 36—28 **30 Claims**



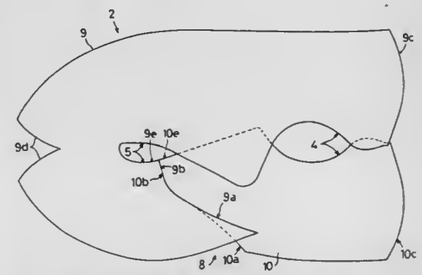
1. A shoe comprising:
(a) an outsole, said outsole including a central heel portion and a plurality of lugs disposed around the periphery of said central heel portion, said lugs extending downwardly from said central heel portion such that said central heel portion is maintained in a spaced-apart relationship to the ground; and
(b) an insert member at least partially encapsulated in said outsole, said insert member comprising a resilient material which tends to return to its original shape when deformed, said insert member having a central body portion corresponding to said central heel portion of said outsole and having a plurality of insert extensions, said insert extensions extending downwardly and outwardly from said central body portion so that said insert extensions are configured to redirect vertical forces applied to said shoe into substantially horizontal forces, said insert extensions configured to move outward as said vertical forces impinge on said outsole so that said insert member returns energy from said vertical forces to said outsole to enhance recovery of said outsole.

5,185,944

SHOE HAVING AN UPPER FORMED WITH AN INWARD PROJECTION IN A FOOT ARCH REGION

Shinpei Okajima, Izumi, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Sep. 4, 1991, Ser. No. 754,668
Int. Cl.[5] A43B *23/00, 23/02*
U.S. Cl. 36—45 **6 Claims**



1. A shoe comprising an upper and a sole adhered onto a lower edge of said upper, said upper further comprising a first section and a second section attached to said first section;
said first section including a first edge which traverses a foot-arch portion of said upper, and said second section including a second edge forming a foot-arch portion of said upper projected inwardly of said shoe when sewed together with said first edge;
wherein said first section and second section overlap with each other peripherally of said shoe at least in a region downwardly from an upper portion of said first edge and second edge when said first section and second section are extended on a plane in such manner that said first edge and second edge are contacted with each other at said upper portions.

5,185,945

UNIVERSAL PROTECTIVE SHIELD FOR THE FOOT

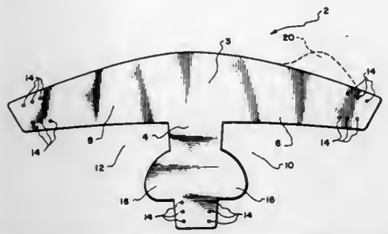
Peter A. Nielsen, and Paul F. Henthorn, both of Ventura, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 726,956, Jul. 8, 1991, abandoned. This application Jul. 10, 1992, Ser. No. 911,801
Int. Cl.[5] A43C *13/14*
U.S. Cl. 36—77 R **3 Claims**

1. A universal protective shield consisting of a unitary piece of sheet material shaped and then fastened to a protective foot covering, the foot covering having a sole portion with a bottom for contacting the ground, comprising:
a) a central portion;
b) three or more fingers integral with the central portion, the fingers bendable by hand to communicate with a foot covering and then rebendable by hand to communicate with different foot coverings, the universal protective shield having openings between adjacent said fingers when said fingers are bent and communicating with said foot covering, the openings located above the sole portion of said foot covering, wherein one of the openings receives the toe portion of the foot and the other openings

VOL 1147 ISS 3 FE 16 1993 UMI

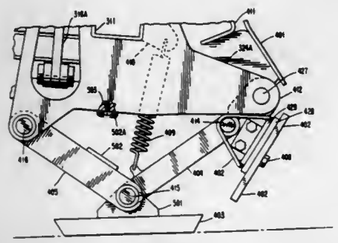
provide access to the toe portion of the foot, said fingers located above the bottom of said sole portion of said foot covering, said fingers further including one or more flaps



for diminishing the size of said openings, the flaps located on said fingers;

c) means for fastening said universal protective shield to said foot covering.

5,185,946
PLOW ASSEMBLY WITH FLEXIBLE MOLDBOARD
Eugene A. Farrell, P.O. Box 477, Fishers Landing, N.Y. 13641
Division of Ser. No. 512,932, Apr. 23, 1990, Pat. No. 5,079,866.
This application Jan. 8, 1992, Ser. No. 818,276
Int. Cl.[5] E01H *5/06*
U.S. Cl. 37—231 **6 Claims**



1. A plow assembly comprising:

a cross-beam;

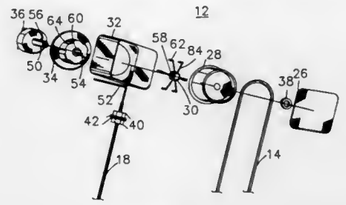
a moldboard assembly disposed on said cross-beam, said moldboard assembly having a cutting edge disposed at a lower edge of said moldboard assembly; and

quick release retention means for attaching said cutting edge to said plow assembly, the quick release retention means including a mounting plate connected to said cutting edge, the mounting plate having a plurality of wedge receptacles, a support strip having a plurality of receptacle slots for receiving the wedge receptacles of the mounting plate, and at least one wedge, the wedge being inserted through two or more of the plurality of wedge receptacles to secure the mounting plate to the support strip.

5,185,947
LINE-GUIDE ADVANCEMENT MECHANISM FOR COPYHOLDERS
David B. Thompson, and Linda L. Thompson, both of 19981 Pleasant Park Rd., Conifer, Colo. 80433
Filed Jul. 29, 1991, Ser. No. 737,191
Int. Cl.[5] B41J *11/64*
U.S. Cl. 40—355 **8 Claims**

1. In an improved line-guide advancement mechanism unit for copyholders of the type for holding a document containing information to be transcribed and containing a linearly moveable line-guide for highlighting individual lines of information, the improvement comprising:

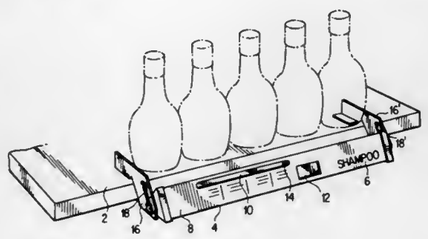
a line-guide advancement mechanism unit fixably attachable to said copyholders and their contained line-guide, the unit comprising a rotatable drive mechanism means, said rotatable drive mechanism means operable to move said line-guide in a step-wise linear motion, said rotatable drive mechanism means operable to select the movement distance of the step-wise linear motion of said line-guide, said rotatable drive mechanism means comprising an alignment knob member, a drum member, a housing member and an interposed one-way clutch member, said alignment



EXPLODED VIEW

knob member, said drum member, said housing member and said one-way clutch member are concentrically rotatable, said housing member is also a rotary transmission means, said one-way clutch member comprises finger-like projection members, biasing spring members attached to said finger-like projection members and a non-cylindrical projection engageable into a mating non-cylindrical hole in said drum member of said rotatable drive mechanism means.

5,185,948
INTERACTIVE SHELF DUO SELECTOR AND SHELF MANAGEMENT SYSTEM
Richard Markson, Goshen, N.Y., assignor to Markson Rosenthal & Company, Edgewater, N.J.
Filed May 2, 1991, Ser. No. 694,497
Int. Cl.[5] G09F *11/02*
U.S. Cl. 40—506 **10 Claims**



1. A display device comprising:

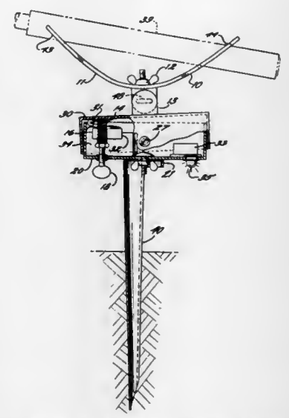
an elongated triangular tube for displaying indicia on a piurality of display faces formed on said elongated triangular tube;

support means for rotatably supporting said elongated triangular tube on a display shelf, said support means comprising means for permitting the movement of said elongated triangular tube from a display positioned to a raised portion;

first and second openings formed on at least two of said plurality of display faces on said elongated triangular tube; and

a V-shaped member which is shorter in length than said triangular tube and slidably mounted within said triangular tube, said V-shaped member having a plurality of indicia thereon such that said V-shaped member may be moved within said triangular tube to display a selected one of said plurality of indicia through each of said second openings formed on said at least two of said plurality of display faces on said triangular tube.

5,185,949
FISH ALERT
James S. Patterson, #7 Crissy Dr., Sandwich, Ill. 60548
Filed Dec. 19, 1991, Ser. No. 810,155
Int. Cl.[5] A01K *97/12*
U.S. Cl. 43—17 **10 Claims**



1. A fishing alarm apparatus for holding a fishing pole and emitting signals in response to movements of a fishing pole comprising: a cover having upper wall and four side walls in connection with said upper wall as as to form a box shape, mounting means for securing the handle of said fishing pole, said mounting means in connection with the top surface of said upper wall, a housing having a bottom wall and four side walls so as to form a second box shape, said cover and said housing of dissimilar size so that they are capable of interfitting, a thumbscrew in said bottom wall of said housing and offset from the center of said bottom wall, resilient means having one end in connection with said upper wall and one end in connection with said thumbscrew, said resilient means for providing a force between said cover and said housing, pivoting means in connection with one of said side walls of said housing and said cover, said pivoting means for allowing said cover to pivot in relation to said housing and against said resilient means, switch means located in said housing and near the underside of said upper wall of said cover for causing a signal upon pivoting movement of said cover, alarm means in connection with said switch for signalling a fishing strike upon receiving said signal from said alarm.

5,185,950
FISH TROLLING DEVICE
Edwin I. Hood, P.O. Box 417, Baker City, Oreg. 97814
Filed Dec. 23, 1991, Ser. No. 813,212
Int. Cl.[5] A01K *91/00*
U.S. Cl. 43—19.2 **8 Claims**

1. A trolling device for a fishing lure comprising:

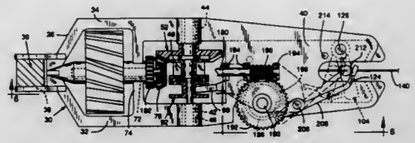
a frame adapted to be towed through a body of water;

a spool rotatably mounted on the frame and a length of fishing line connected at one end to the spool and adapted to be wound thereon;

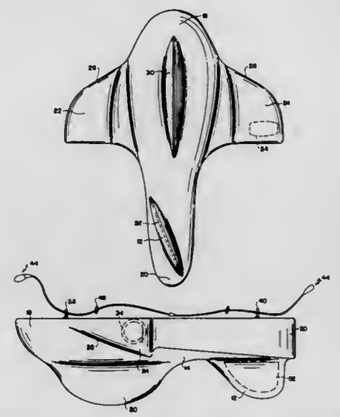
the fishing line trailing from the frame as the frame is towed, and adapted to be connected to a fishing lure;

drive means adapted to be driven by the force of water as the frame is towed therethrough for alternately engaging with and driving the spool to cause the line to wind upon the spool, and thereafter disengaging from said spool to permit the spool to reverse its rotation to allow the line to unwind; and

pause means operatively connected to said drive means and comprising a timer means including a rotating cam and adapted to be driven by the force of water as the frame is towed therethrough, and means operatively connected to said timer means for maintaining said drive means in disengagement from said spool for a predetermined period of time after the line has unwound from said spool, and for effecting re-engagement of said drive means with said spool after said predetermined time whereby said line will cycle in a sequence comprising accelerating toward the frame, dropping back from the frame, and maintaining a set distance from the frame for a predetermined period of time, and thereafter accelerating toward said frame again to recommence the cycle.



5,185,951
OUT-ROVER LURE
Clayton Hemmerle, 116 NE. 16 Ct., Fort Lauderdale, Fla. 33305
Filed Oct. 10, 1991, Ser. No. 774,343
Int. Cl.[5] A01K *95/00*
U.S. Cl. 43—43.13 **16 Claims**



1. A device for supporting and guiding a fishing line with respect to a towing boat comprising:

a main body member having a longitudinal axis and leading and trailing end portions;

first and second wing elements extending laterally from said main body member;

a keel element extending downwardly from said main body portion;

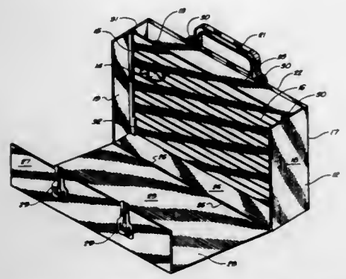
a rudder element extending downwardly from said trailing end portion of said main body member, a plane of said rudder element being inclined at an acute angle with respect to said longitudinal axis of said main body portion; and

means for laterally stabilizing said device during towing

VOL 1147 ISS 3 FE 16 1993 UMI

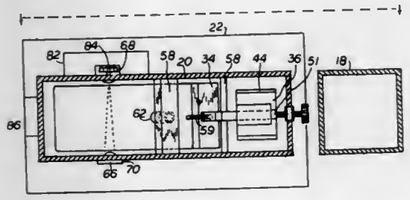
including providing a said first wing element which weighs more than said second wing element.

5,185,952
LURE STORAGE CONTAINER
Samuel E. Bruce, P.O. Box 1165, Crockett, Tex. 75835
Filed Sep. 12, 1991, Ser. No. 757,997
Int. Cl.[5] A01K *97/06*
U.S. Cl. 43—57.1 **25 Claims**



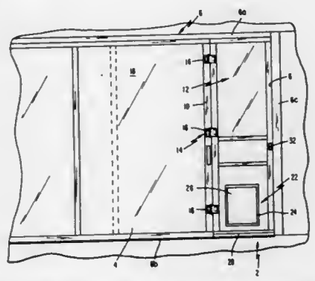
1. A container for fishing lures comprising:
a box having a vertical receptacle positioned therein, said box having a lid hinged to an edge of said box, said lid movable between an open and a closed position, said box having a handle formed along one surface of said box, said lid having a locking means affixed thereto, said locking means for engaging a portion of said handle when said lid is in said closed position, said handle having at least one receptacle formed therein, said locking means comprising a roughly V-shaped member affixed to a surface of said lid, said V-shaped member having a slidable insert positioned therein, said slidable insert movable within said V-shaped member so as to cause said V-shaped member to angularly expand for engagement with said receptacle of said handle;
a panel received by said vertical receptacle of said box, said panel having a plurality of slots formed therein and extending along a surface of said panel; and
lure receiving means received by at least one of said plurality of slots, said lure receiving means for detachably receiving a fishing lure.

5,185,953
RODENT EXTERMINATION DEVICE
Allen W. Gross, 1122 University Ave., Berkeley, Calif. 94702
Filed Aug. 16, 1991, Ser. No. 745,681
Int. Cl.[5] A01M *23/04*
U.S. Cl. 43—58 **3 Claims**



1. A rodent trap comprising:
a) a housing having a base, sides and a top with an end side having a structural opening means for allowing entry of a rodent and the top having a structural opening means for allowing ejection of a rodent that has entered the housing;
b) a ejection assembly having a launching means with a platform on which a rodent is supported for ejecting the rodent through the top structural opening means, an actuating means connected to the platform for displacing the platform, and a triggering means for activating the actuating means, the triggering means having a sensing means for sensing the presence of a rodent on the platform;
c) a receptacle means for receiving a rodent ejected from the housing on activation of said actuation means, wherein:
(1) the ejection assembly comprises a catapult paddle that forms the platform, the paddle having an end with a pivot means connected to the actuating paddle having an end with a pivot means connected to the actuating means for pivoting the paddle from the end having the pivot means and the housing having a paddle stop mounted on the housing that contacts the paddle and limits the range of pivot on actuation, the stop including spring means for cushioning the paddle on stopping and aiding the return of the paddle, and;
(2) the actuating means includes a sucking solenoid having a displaceable core element connected to the pivot means for pivoting the paddle on triggering.

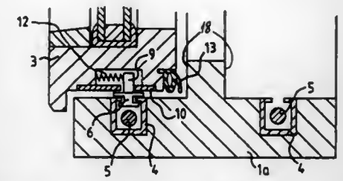
5,185,954
PET PORTAL DEVICE
Richard L. Waddle, Sr., 14401 Black Horse Ct., Centerville, Va. 22020
Filed Jun. 15, 1992, Ser. No. 898,819
Int. Cl.[5] E06B *7/28*
U.S. Cl. 49—168 **9 Claims**



1. A pet portal device for use with a door slidably mounted in a frame and which is movable therein to define an opening between a closure end of the door and the adjacent frame portion, comprising a panel member constructed to fit in the opening between the closure end of said door and the adjacent frame portion to close the opening, means for allowing a pet to pass through said panel member, and means for movably connecting said panel member to said door, whereby said panel member is selectively movable between a first position wherein said panel member is in substantially coplanar relation with said door and closes said opening and a second position wherein said panel member is supported out of coplanar relation with said door such that the closure end of the door is able to close the opening by abutting the adjacent frame portion.

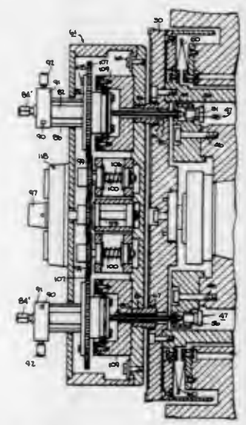
5,185,955
SASH WINDOWS
Svend A. S. Pedersen, Tandrupvej 5, DK-7755 Bedsted Thy, Denmark
Filed Mar. 28, 1991, Ser. No. 676,900
Int. Cl.[5] E05D *15/10*
U.S. Cl. 49—216 **19 Claims**

1. A window comprising:
a frame,
at least one sash element supported by block elements in slidable engagement with the frame, and
closure means on the sash element, the closure means being effective when actuated to cause relative movement between the sash element and the block elements,



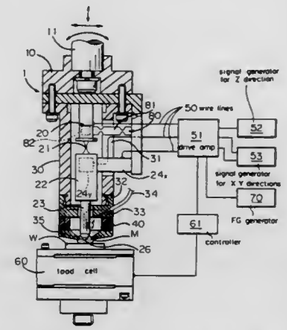
each block element comprising at least one member in cooperable engagement with the sash element for urging the sash element toward a sealing face on the frame in response to the relative movement.

5,185,956
WAFER SLICING AND GRINDING SYSTEM
Robert E. Steere, Jr., Boonton, N.J., assignor to Silicon Technology Corporation, Oakland, N.J.
Filed May 18, 1990, Ser. No. 525,466
Int. Cl.[5] B24B *27/06*
U.S. Cl. 51—5 C **23 Claims**



1. A slicing and grinding system for a wafer slicing machine comprising
a rotatably mounted internal diameter saw blade for slicing a wafer from a face of an ingot;
a rotatably mounted grind wheel coaxially mounted relative to said blade on a common axis for simultaneously grinding a front surface of a wafer being sliced from an ingot;
a plurality of adjusting means disposed in circumferentially spaced manner about said grind wheel for adjusting an extended position of said grind wheel relative to a plane of the front face of a wafer to be sliced from the ingot; and
means for simultaneously actuating said plurality of adjusting means to precisely index said grind wheel longitudinally of said axis.

5,185,957
MICRO-ABRADING METHOD AND MICRO-ABRADING TOOL
Shinichi Mizuguchi, Katano; Shuji Ueda, Neyagawa; Koji Kato, and Noritsugu Umehara, both of Sendai, all of Japan, assignors to Matsushita Electric Co., Ltd., Osaka, Japan
Filed May 31, 1991, Ser. No. 708,867
Claims priority, application Japan, Jun. 1, 1990, 2-144724; Jun. 1, 1990, 2-144725
Int. Cl.[5] B24B *1/04*
U.S. Cl. 51—59 SS **13 Claims**



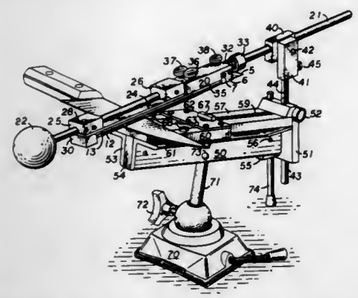
1. A micro-abrading method for abrading a workpiece, comprising the steps of:
mounting the workpiece on a support;
providing an abrading tool;
mounting a Z-direction piezoelectric actuator element to a main body of said abrading tool;
connecting an abrading section to said Z-direction piezoelectric actuator element via a connecting section which allows movement of said abrading section relative to said Z-direction piezoelectric actuator element in an X-direction and in a Y-direction orthogonal to said X-direction;
connecting at least one XY-direction piezoelectric actuator element between said main body of said abrading tool and said abrading section;
operating said at least one XY-direction piezoelectric actuator element in order to create micromotion of said abrading section in said X-direction and said Y-direction; and
limiting movement of said Z-direction piezoelectric actuator element in said X-direction and said Y-direction while allowing movement of said abrading section in said X-direction and said Y-direction during operation of said at least one XY-direction piezoelectric element, by connecting a movement regulating fixture between said Z-direction piezoelectric actuator element and said main body of said abrading tool.

5,185,958
PROFESSIONAL CUTLERY SHARPENING MACHINE
Benton Dale, 425 Federal Ave., E., #A, Seattle, Wash. 98102, assignor to Benton Dale, Hood River, Oreg.
Filed Oct. 19, 1990, Ser. No. 599,731
Int. Cl.[5] B24B *7/00*
U.S. Cl. 51—68 **7 Claims**

1. A cutlery sharpening machine of the type that includes a hand reciprocated tool carrier slideably received by a pivot means disposed at the upper terminus of a post means, said tool carrier provided with a tool of an abrading nature, said post adjustably and fixable received by a table means to thereby vary the angle of disposition of the tool carrier relative to said table means, said angle being indicated by a reference scale marked on the post means, a work positioning means disposed on the table means wherein the improvement comprises:

VOL 1147 ISS 3 FE 16 1993 UMI

an abrading tool cartridge system for said machine comprising at least one abrading cartridge, the cartridge composed of a planar layer of abrasive material of predetermined thickness and abrasive grade, a rigid support member of substantially same planar dimensions as the abrasive material piece, said rigid support member having at least two protrusions beyond the planar lines of the support member, and receiving means disposed within the tool carrier to mate with said protrusions, further including:



at least one work guiding surface for the abrading tool comprising a ramp shaped surface adjustably and fixedly retained to at least one of said receiving means and proximate at least one edge of an abrasive tool working surface, said ramp means fixable in horizontal and vertical displacement relative to said abrasive tool working surface to thereby smoothly guide the edge being formed on and off the abrasive tool surface during reciprocating work strokes.

5,185,959

APPARATUS FOR GRINDING THE EDGE OF A GLASS SHEET

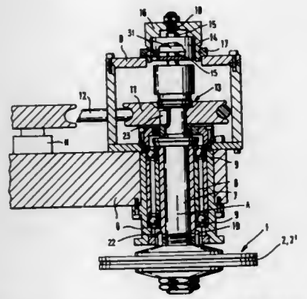
Kimmo J. Ikola, Kangasala; Kimmo E. Stenman, and Erkki P. J. Yli-Vakkuri, both of Tampere, all of Finland, assignors to Tamglass Oy, Tampere, Finland

Continuation of Ser. No. 544,385, Jun. 27, 1990, abandoned. This application Jun. 16, 1992, Ser. No. 899,052

Claims priority, application Finland, Mar. 29, 1990, 901573

Int. Cl.[5] B24B *15/00*

U.S. Cl. 51—72 R **10 Claims**



1. Apparatus for grinding an edge of a glass sheet, comprising:

a substantially horizontal table for carrying a glass sheet;

a frame;

a vertically extending tubular axle rotatably journaled to said frame for rotation about a substantially vertical axis;

a drive shaft mounted coaxially within said axle for rotation therewith and for up-and-down axial movement relative thereto;

a grinding wheel mounted to a lower end of said drive shaft for rotation therewith and including an outer peripheral edge having at least one circumferentially extending groove therein for grinding an edge of a glass sheet supported on said table;

a motor operably connected to said drive shaft for rotating said drive shaft and said grinding wheel about said axis; and

raising and lowering means disposed above, and aligned with, said drive shaft for moving said drive shaft along said axis for adjusting the elevation of said grinding wheel between an upper first position and a lower second position for grinding glass sheets of different thicknesses, said raising and lowering means including:

an adjustment member mounted to an upper end of said drive shaft by a rotary joint such that said drive shaft is rotatable relative to said adjustment member and is movable therewith along said axis, and

first and second independently vertically adjustable stop means for terminating the movement of said adjustment member at upper and lower limits, respectively, along said axis to define said upper first position and said lower second position, respectively, of said grinding wheel.

5,185,960

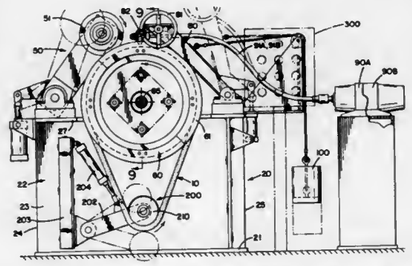
TREAD BUFFING APPARATUS

Norbert Majerus, Akron; Arthur W. Magee, Norton; Michael D. Hickman, Alliance; Gary C. Parrish, Uniontown; Timothy M. Rooney, Munroe Falls, and Lawrence E. Chlebina, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 550,265, Jul. 6, 1990. This application Feb. 10, 1992, Ser. No. 833,208

Int. Cl.[5] B24B *5/36*; B29D *30/68*

U.S. Cl. 51—104 **18 Claims**



1. An apparatus for buffing an annular tread with wings comprising:

(a) a frame;

(b) a means for supporting the tread including an axis of rotation, said means being axially rotatable about said axis and mounted to the frame;

(c) a means for stretching the tread being axially rotatable and having an axis of rotation parallel to the axis of rotation of the means for supporting the tread;

(d) a center tread buffing wheel means having a curved surface capable of being brought into contact with the tread for buffing a casing contacting tread surface creating circumferentially extending center grooves of substantially even depth;

(e) an electrically powered main drive means for rotating the mounted tread about one or more axes and for rotating the center tread buffing wheel;

(f) a pair of tread wing edge buffing means for buffing the wings at respective tread edges creating lateral extending grooves that are of substantially even depth and extend axially outwardly to tread edges wherein the pair of the tread wing edge buffing means are mounted to a wing buffer support arm including a means for providing a linear increase or linear decrease in spacing between the pair of the tread wing edge buffing means; and

(g) a means for rotating the tread wing edge buffing means.

5,185,961

METHOD AND APPARATUS FOR COPY-GRINDING AND FINISHING OR CYLINDRICAL AND SPHERICAL SURFACES

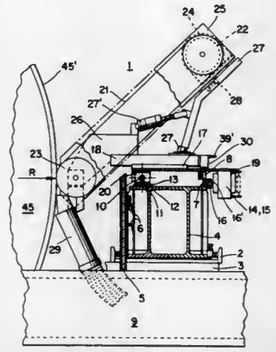
Urs Maier, Winterthur, Switzerland, assignor to Farros Blatter AG, Winterthur, Switzerland

Division of Ser. No. 407,295, Sep. 14, 1989, abandoned. This application Apr. 15, 1991, Ser. No. 684,980

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1988, 3831294

Int. Cl.[5] B24B *5/00*

U.S. Cl. 54—145 R **7 Claims**



1. An apparatus for grinding a cylindrical and spherical surface comprising:

a support,

a profile plate adjustably mounted on said support, said profile plate having a profile that corresponds to a predetermined spherical surface profile,

a grinding apparatus disposed on said support, said grinding apparatus having a grinding belt drive and a feed slide, said grinding belt drive having a contact roll, said feed slide having guide bushings for guiding said feed slide along said profile plate according to said surface profile,

an adjusting device mounted on said feed slide for providing a radial clearance X between said profile plate and said contact roll during an initial grinding operation,

a pressure mechanism mounted on said grinding apparatus for urging said adjusting device in the direction of the cylinder surface under a predetermined pressure during said initial grinding operation and for urging said adjusting device in an opposite direction during a subsequent grinding operation.

5,185,962

BELT ROLLER ADJUSTMENT DEVICE OF BELT SANDER

John Liou, No. 7-5 9-Cha Lane Min Sheng Rd., Shang Feng Tsun Ta Ya, Taichung, Taiwan

Filed Dec. 12, 1991, Ser. No. 805,740

Int. Cl.[5] B24B *21/00*

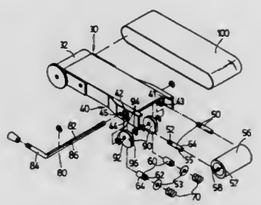
U.S. Cl. 51—148 **1 Claim**

1. A belt roller adjustment device of belt sander comprising a machine seat provided at both ends thereof with a driven roller and a driving roller actuated by a motor, a sanding belt arranged on said rollers, two support rod seats disposed at opposite sides of said machine seat, and two support rods with inner end portions thereof being disposed inside said support rod seats and with outer end portions thereof having slots extending outside said support rod seats, both ends of the main shaft of said driven roller fastened in said slots, said belt roller adjustment device being characterized in that:

(a) said machine seat is further provided with two axial holes disposed coaxially on opposite sides thereof and with a shaft disposed pivotally between said axial holes in such a manner that an axis of said shaft is parallel to axes of said driving roller and said driven roller;

(b) said shaft is provided with two cams disposed thereon in such manner that they are positioned correspondingly to said inner end portions of said support rods, said two cams deflecting a predetermined angle in conjunction with said shaft so as to urge said inner end portions of said support rods;

(c) two elastic elements are disposed between said support rods and said support rod seats in such a way that they urge said support rods to move in a direction toward inner ends of said two elastic members;



(d) each of said inner end portions of said support rods having a threaded portion fitted over with a tubular sleeve having an inner end portion, said tubular sleeve adjustable so that said inner end portion is urged against an outer edge of said cam while a corresponding one of said two elastic members is maintained in compression;

(e) said two elastic elements being coil springs respectively enclosing said support rods in such a manner that their ends are positioned between the outer end portion of said tubular sleeves and the corresponding support rod seats;

(f) each of said cams having a flat surface located on an outer edge between the longest radii of said each of said cams to engage said inner end portion of said tubular sleeve; and

(g) each of said support rod seats having a first lug and a second lug perpendicular to said machine seat; said first lug and said second lug having coaxial holes respectively slidably supporting said tubular sleeve and a corresponding one of said support rod, thereby facilitating said tubular sleeve being adjusted on said corresponding one of said support rods.

5,185,963

PIVOTAL ARM BELT LOADING DEVICE

Robert J. De brey, Edina, Minn., assignor to Timesavers, Inc., Minneapolis, Minn.

Filed Apr. 8, 1992, Ser. No. 865,356

Int. Cl.[5] B24B *21/20*

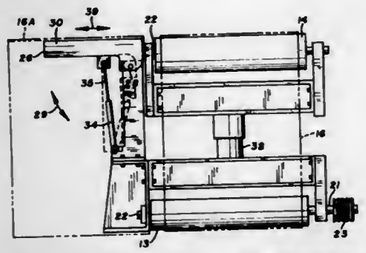
U.S. Cl. 51—148 **3 Claims**

1. In combination with an apparatus for driving and guiding a wide abrasive belt with abrading surface to treat surfaces of workpieces, with said apparatus including frame means, at least two guide drums, an upper and lower guide drums mounted about respective axes of rotation within said frame means for rotation and being disposed to define a predetermined path for said abrasive belt and for defining a work zone for functional contact between the surfaces of said wide abrasive belt and workpieces positioned within said work zone, with one of said guide drums being disposed above the plane of

VOL 1147 ISS 3 FEB 16 1993 UMI

the other of said at least two guide drums, having parallel axes of rotation and defining an elevated upper apex point for said predetermined path; and an abrasive belt trained about outer surfaces of said guide drums; a belt loading assist means secured to said frame means and disposed adjacent said upper guide drum; said belt loading assist means being characterized in that:

(a) said belt loading assist means including a body having a generally inverted "U"-shaped support arm portion and being pivotally mounted to said frame means and arranged for pivotal motion between pivotally spaced apart operative and retracted dispositions;



(b) said support arm having an upper arcuate surface extending radially about a central axis with said support arm being positioned with said central axis aligned substantially coincidentally with the axis of rotation of said upper guide drum and having an upper arcuate surface substantially coincidental with an outward projection of the surface of said upper guide drum; and

(c) means pivotally coupling said support arm to said frame means, and strut means providing a mechanical bias for maintaining said support arm in either of said operative or retracted dispositions.

5,185,964

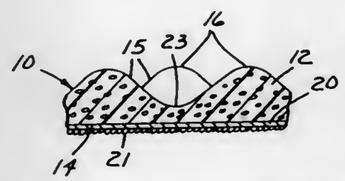
COMPOUNDING, GLAZING OR POLISHING PAD

Richard L. Englund, Maplewood, Minn., and Thomas W. Schwartz, Troy Township, St. Croix County, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 458,411, Dec. 28, 1990, Pat. No. 5,007,128, which is a continuation-in-part of Ser. No. 298,508, Jan. 18, 1989, Pat. No. 4,962,562. This application Dec. 7, 1990, Ser. No. 624,399

Int. Cl.[5] B24B *1/00*

U.S. Cl. 51—281 R **8 Claims**



1. A method for applying glazing or compounding material to an exposed surface of paint to remove imperfections from along the surface and polish the surface of the paint, said method comprising the steps of:

providing a finishing pad comprising a resiliently compressible layer of open cell polymeric foam having a generally planar rear surface, the layer of foam comprising a plurality of projecting portions projecting a first distance at a right angle from the rear surface, and a plurality of recessed portions spacing the projecting portions and projecting a second distance at a right angle from the rear surface which second distance is significantly less than the first distance, the projecting and recessed portions at least partially defining a front surface for the layer of foam opposite the rear surface;

applying the glazing or compounding material to the surface of the paint;

rapidly moving the front surface of the layer of foam over the surface of the paint with the glazing or compounding material between the front surface of the layer of foam and the surface of the paint;

pressing the layer of foam against the surface of the paint during an initial portion of the rapidly moving step with a force sufficient to compress the portions of the layer of foam toward the rear surface of the layer of foam and cause parts of the front surface of the layer of foam defined by both the projecting portions and the recessed portions to generally conform to the surface of the paint and press the material into engagement with the surface of the paint for efficient removal of imperfections; and

pressing the layer of foam against the surface of the paint during a final portion of the rapidly moving step with a lesser force sufficient to only compress parts of the projecting portions of the layer of foam to complete polishing of the surface of the paint.

5,185,965

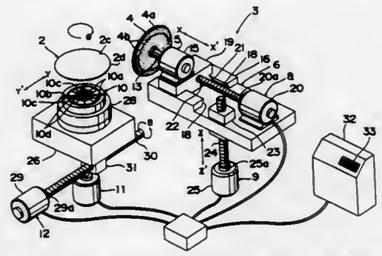
METHOD AND APPARATUS FOR GRINDING NOTCHES OF SEMICONDUCTOR WAFER

Haruo Ozaki, Hachioji, Japan, assignor to Daito Shoji Co., Ltd., Osaka and Emtec Co., Ltd., Tokyo, both of, Japan

Filed Jul. 12, 1991, Ser. No. 729,291

Int. Cl.[5] B24B *9/06*

U.S. Cl. 51—283 E **3 Claims**



1. A method for grinding a notch of a disk-form workpiece, specifically for chamfering the outer peripheral part of the notch of a notched semiconductor wafer with a disk-form grinding wheel, comprising the steps of:

mounting said workpiece on a workpiece holder which rotates so as to rotate said workpiece around the central axis thereof;

arranging a grinding wheel and a workpiece in such positions that flat faces thereof orthogonally cross with each other;

feeding straightly said wheel in an axial direction of the spindle thereof (direction X);

feeding straightly said workpiece in a direction towards and away from said wheel (direction Y); and

feeding straightly said wheel in a direction (direction Z) crossing orthogonally with said axial direction (direction X) and said direction towards and away from said wheel (direction Y) to thereby carry out chamfer processing of the outer peripheral part of the notch of said workpiece in the outer peripheral direction and the plate thickness direction.

5,185,966

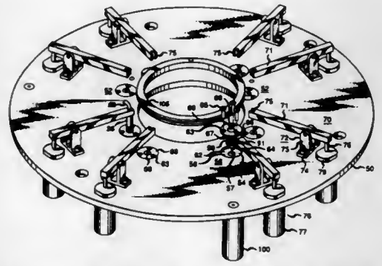
METHODS OF AND APPARATUS FOR POLISHING AN ARTICLE

Robert W. Mock, Jr., Lawrenceville; Harold F. Muth, Jr., Roswell, and Donald Q. Snyder, Marietta, all of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 578,996, Sep. 4, 1990, Pat. No. 5,107,627. This application Nov. 27, 1991, Ser. No. 799,518

Int. Cl.[5] B24B *5/00, 7/22*

U.S. Cl. 51—283 R **11 Claims**



1. A method of polishing simultaneously an end face of optical fibers each terminated by one of a plurality of cylindrically shaped connector plugs, said method comprising the steps:

inserting a free end portion of each of a plurality of cylindrical plugs into a respective nest which is mounted in a platform such that each plug has a degree of freedom relative to its corresponding the nest;

causing a free end of each fiber extending from a plug in which it is terminated to engage a polishing surface having a centerline axis normal to the polishing surface; and

applying a separate and adjustable force in a controlled manner, to each respective plug to individually control the pressure between each fiber end and the polishing surface and subsequently between each plug end face and the polishing surface; while

causing the polishing surface simultaneously to rotate about its centerline axis and to revolve about a second axis which is parallel to the centerline axis such that each fiber and plug end face are polished by an annular portion of the polishing surface.

5,185,967

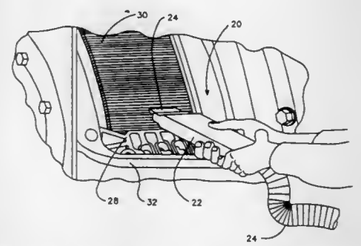
APPARATUS FOR TRUING OUT OF ROUND ROTATING COMPONENTS

David L. Cutsforth, 1005 Horseshoe Lake Rd., Grand Rapids, Minn. 55744

Filed Feb. 13, 1991, Ser. No. 655,329

Int. Cl.[5] B24B *19/00*

U.S. Cl. 51—289 R **9 Claims**



1. An apparatus for truing out of round components of rotating mechanisms comprising abrasive means for engaging and removing high areas and imperfections from an outer surface of an out of round rotating component and holder means for holding said abrasive means against said outer surface, said abrasive means including a grindstone having an end with a cross-sectional area of a predetermined size, said holder means including sleeve means having a cross-sectional area of a larger predetermined size than the predetermined size of the cross-sectional area of said grindstone for telescopically receiving said grindstone therein, fastener means for securing said grindstone relative to said sleeve means such that a predetermined amount of said grindstone protrudes from an end of said sleeve means when said grindstone is ready for use, means for connecting a vacuum source to said sleeve means for drawing air therethrough and thereby removing debris created by the truing operation, and a predetermined amount of weight added to said sleeve means wherein a predetermined amount of weight of the apparatus is coordinated to said predetermined size of said cross-sectional area of said grindstone such that the apparatus has a predetermined amount of resistance to movement when said end of said grindstone is engaging the surface of the rotating component.

5,185,968

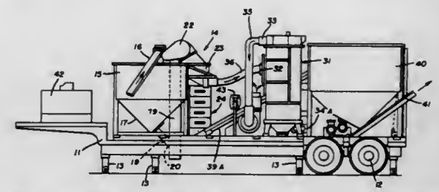
MOBILE SEPARATION SYTEM FOR ABRASIVE BLASTING MATERIAL

Gus G. Lyras, Lowellville, Ohio, assignor to Corcon (Ohio corporation), Lowellville, Ohio

Filed Jun. 26, 1991, Ser. No. 721,700

Int. Cl.[5] B24C *1/00*

U.S. Cl. 51—319 **4 Claims**



4. A process for separation and recovery of contaminated abrasive blasting material wherein said process comprises the steps of

(a) transferring contaminated abrasive blasting material to a mobile self-contained separation recovering apparatus,

(b) separating ferrous and non-ferrous material by a magnetic separator from said contaminated abrasive blasting material,

(c) separating contaminate within said abrasive ferrous material by specific gravity,

(d) removing airborne contaminates from said magnetic separator through a specific gravity separator,

(e) transferring said airborne contaminates to a filter media,

(f) filtering said airborne contaminates and exhausting clean air to atmosphere,

(g) transferring clean abrasive blasting material to a storage bin.

5,185,969

POSITIVE RETRACTING HONING MANDREL

Frank E. Vanderwal, Jr., Frontenac, Mo., assignor to Sunnen Products Company, St. Louis, Mo.

Filed Dec. 20, 1991, Ser. No. 811,816

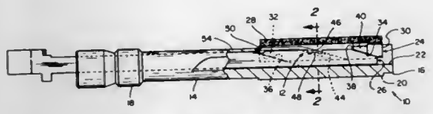
Int. Cl.[5] B24B *9/02*

U.S. Cl. 51—338 **25 Claims**

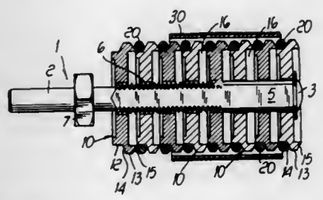
1. A honing mandrel comprising an elongated body member having a slot extending along at least a portion of its length thereof and a central longitudinally extending axis, a work engaging member positioned in the slot and radially movable therein, the work engaging member having a work engaging

VOL 1147 ISS 3 FE 16 1993 UMI

surface portion facing radially outwardly and a backing portion extending radially into the slot, the backing portion having a longitudinally extending side extending radially into the slot, at least one wedge surface on the backing portion adjacent the longitudinally extending side, the wedge surface being oriented at an acute angle to the axis of the elongated body member, a cam surface on the backing portion adjacent the longitudinally extending side, the cam surface being oriented at an acute angle to the axis of the elongated body member, an operator member positioned for longitudinal movement in the slot adjacent to said longitudinally extending side of the backing portion, a like number of wedge surfaces on said operator member positioned for surface to surface engagement respectively with said at least one wedge surface on the backing portion and slidably engageable therewith for radially outwardly extending said work engaging member by movement of said operator member in a first longitudinal direction in the slot, a projecting portion extending sidewardly from said operator member, said projecting portion being positioned for cooperative engagement with said cam surface when the work engaging member is radially outwardly extended to retain the work engaging member in the slot, and said projecting portion being slidably engageable with said cam surface when said operator member is moved in a second opposite longitudinal direction to positively draw said work engaging member radially inwardly in the slot.

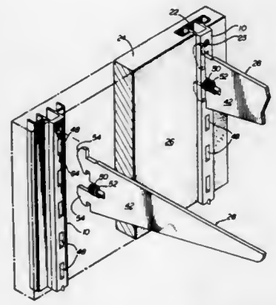


5,185,970
EXPANDING DEVICE FOR SUPPORTING GRINDING SLEEVES
Roberto Fiocchi, Vittuone, Italy, assignor to Sprint Filter S.r.l., Milan, Italy
Filed Oct. 28, 1991, Ser. No. 783,734
Claims priority, application Italy, Oct. 31, 1990, 22040/90[U]
Int. Cl.[5] B24D *9/02*
U.S. Cl. 51—372 **2 Claims**



1. Expanding device for supporting grinding sleeves, in particular emery cloth sleeves, comprising:
a shaft;
a plurality of axially aligned disks supported concentrically on said shaft, said disks being slideable in an axial direction and radially keyed to said shaft,
a plurality of seats formed on peripheral faces of said disks;
a plurality of elastic rings accommodated in said seats, said elastic rings expanding radially upon axial compression of said disks for engaging an inner surface of an emery cloth sleeve;
an axially protruding cylindrical flange formed on each of said disks;
a radial protrusion formed on each of said disks and extending away from said flange;
oppositely inclined peripheral surfaces formed on each of said disks, said oppositely inclined peripheral surfaces delimiting said radial protrusion and defining said peripheral seats;
a base defined by each of said disks on a face thereof located opposite to said axially protruding cylindrical flange, and
a recess formed on said base of each of said disks;
wherein a cylindrical flange of an adjacent facing disk is accommodatable in said recess.

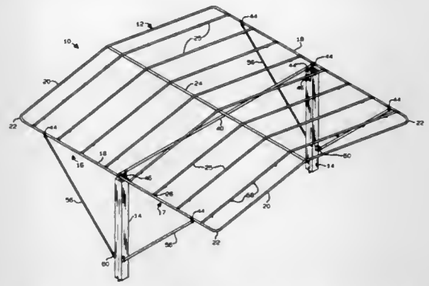
5,185,971
CHANNELED WALL PANEL
Hugh L. Johnson, Jr., 2297 Dunwoody Crossing, Atlanta, Ga. 30338
Filed May 17, 1991, Ser. No. 702,069
Int. Cl.[5] A47B *5/00*
U.S. Cl. 52—36 **17 Claims**



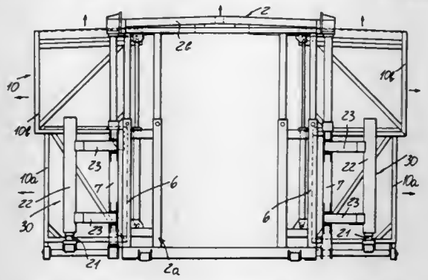
1. A channel adapted to fit within a slotted wall panel, comprising an elongated extruded member, which, in cross section, includes:
(a) a substantially U-shaped central box member, comprising a face plate adapted to be exposed on and oriented substantially parallel to an exposed surface of the panel, and two box support members extending substantially perpendicular from the face plate, adapted to extend into the panel from the face plate;
(b) a flange member extending from each of the support members, comprising a flange plate connected to one of the support members and extending substantially parallel to the face plate, and a flange support member connected to the flange plate and extending substantially perpendicular to the flange plate, the two box support members and the flange support members being oriented substantially parallel to each other, and terminating in substantially the same plane.

5,185,972
MODULAR CANOPY
Richard A. Markiewicz, 17729 Lewis Rd., Cement City, Mich. 49233
Filed Feb. 27, 1991, Ser. No. 661,208
Int. Cl.[5] E04B *1/12, 15/18*
U.S. Cl. 52—63 **17 Claims**

1. A modular canopy system characterized by its versatility of assembly comprising, in combination, a pair of pre-assembled unitary integral identical canopy end sections each having a length and a width and formed by a plurality of tubular elements welded together, said sections each including first and second substantially parallel spaced lateral elements extending in the direction of the length of the sections and defining the sections' width, each of said lateral elements having an inner end, each of said sections including a tubular gable element located substantially centrally between said lateral elements and substantially parallel thereto and having an inner end, each of said sections including a plurality of tubular rib elements having ends, the ends of each of said rib elements being welded to said first and second lateral elements, respectively, said rib elements extending over and welded to the associated gable element and being substantially parallel to each other, and connection means defined on said inner ends of said lateral and said gable elements' selectively permitting said lateral and gable elements' inner ends of said pair of end sections to be interconnected to define a complete canopy frame.

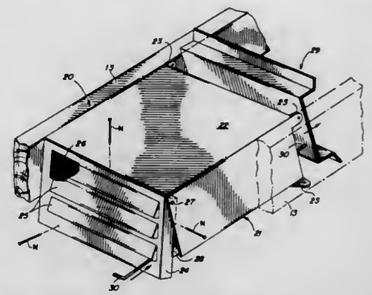


5,185,973
AIRCRAFT OR ROAD VEHICLE TRANSPORTABLE OPERATING ASSEMBLY ADAPTED TO BE TRANSFORMED INTO A FIELD HOSPITAL, OBSERVATION POST, TRANSMISSION CENTER AND THE LIKE
Gaetano Oldani, Via Stromboli, 20, 20089, Rozzano (Milano), Italy
Filed May 9, 1991, Ser. No. 698,490
Claims priority, application Italy, Aug. 2, 1990, 21176 A/90
Int. Cl.[5] E04H *1/12*
U.S. Cl. 52—64 **6 Claims**



1. An aircraft or road vehicle transportable operating assembly adapted to be transformed into a field hospital, observation post, transmission center and the like, comprising a central body, two side bodies slidably coupled to said central body to be withdrawn into said central body, during a transportation step of said operating assembly, and extended from said central body during an use of said operating assembly, said central body having a central body trampling floor and each of said two side bodies having a side body trampling floor, driving means for vertically up and down driving said side body trampling floors to arrange said side body trampling floors in a coplanar relationship with respect to said central body trampling floor, said central body including a bottom central body portion and a top central body portion vertically telescopically movable with respect to one another, from a first withdrawn position to a second vertically extended position in which said top central body portion is superimposed on said bottom central body portion, each said side bodies being provided with a bottom side body portion and a top side body portion which are also telescopically coupled.

5,185,974
DUCTED FRIEZE VENT
Rollie S. Diehl, 1301 W. Runyon Dr., Phoenix, Ariz. 85027
Filed Sep. 27, 1991, Ser. No. 766,741
Int. Cl.[5] E04B *7/02*
U.S. Cl. 52—95 **13 Claims**

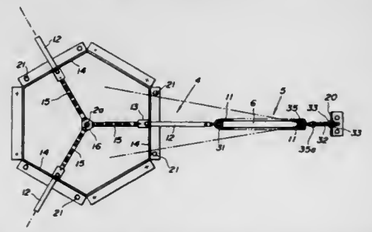


1. In a building having roof sheathing supported by rafters, and a space beneath said sheathing to be ventilated by air flowing beneath said sheathing and between selected pairs of said rafters, and insulation applied to said space, the application of said insulation tending to block the free flow of air into said space, the improvement comprising:
an air ventilation duct coupled between one of said selected pairs of said rafters for the free flow passage of air therethrough to said space to be ventilated, said duct having an input end and an output end for the entry and exit of air;
closure means closing said output end of said duct for precluding the entry into said duct of said insulation when said insulation is applied to said space; and,
means coupled to said closure means for actuating said closure means to open said output end of said duct after said insulation has been applied.

5,185,975

Patent Not Issued For This Number

5,185,976
FLOOR VIBRATION-DAMPING APPARATUS
Hiraku Miyake; Mitsuo Ishiguro; Shigetaka Abe; Nobuo Yamaguchi; Yutaka Hayamizu, and Satoru Aizawa, all of Tokyo, Japan, assignors to Takenaka Corporation, Japan
Continuation of Ser. No. 283,808, Dec. 19, 1988, abandoned. This application Jul. 15, 1991, Ser. No. 729,908
Claims priority, application Japan, Jan. 6, 1988, 63-822; Sep. 14, 1988, 63-231287; Sep. 19, 1988, 63-234642
Int. Cl.[5] E04B *1/98*
U.S. Cl. 52—167 RA **15 Claims**



1. In a floor vibration-damping apparatus having a movable supporting portion for supporting a floor structure which is

VOL 1147 ISS 3 FE 16 1993 UMI

free to move horizontally, and a damper working portion provided between said floor structure and a fixed floor, the improvement comprising:

a) said damper working portion including a resistance input portion fixed to said movable floor structure and a plurality of spring damper mechanisms arranged radially with respect to said resistance input portion, said spring damper mechanisms having damper rods connected to said resistance input portion and cylinder portions coupled with said fixed-floor, said damper rods extending from said spring damper mechanisms to said resistance input portion of said movable floor structure;

b) reaction bases fixed to said fixed floor at positions spaced from a neutral position of said resistance input portion by a predetermined movement distance; and

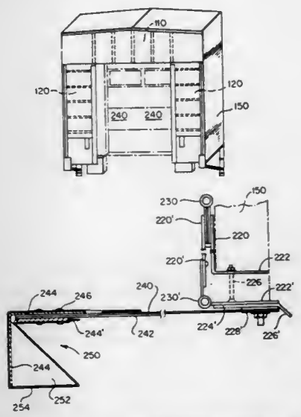
c) a tension coil spring wound around each said cylinder portion, one end of said spring being fixed to one end of said cylinder and the other end of said spring being fixed to said damper rod so that said cylinder and said spring are concentric, a stopper connected to said damper rod between said reaction base and said resistance input portion, and a flexible member connected between said stopper and said resistance input portion.

5,185,977

STORAGE TERMINAL SHELTER, INCLUDING SIDE CURTAIN ASSEMBLY FOR TRUCK/TRAILER HINGE GAP CLOSURE

Thomas R. Brockman, Kenton, and Mark Dillon, Upper Sandusky, both of Ohio, assignors to Fairborn USA Inc., Upper Sandusky, Ohio

Filed May 8, 1992, Ser. No. 880,415
Int. Cl.[5] E04H *14/00*
U.S. Cl. 52—173 DS **8 Claims**



1. The combination with a storage terminal having dock, door and truck/trailer shelter, said shelter comprising opposed shelter side frames fixed to the terminal, and a shelter side curtain assembly adjacent said dock for truck/trailer hinge gap closure, comprising:

a) at least one compressible truck/trailer hinge unit, including opposed leaves, a first leaf thereof being anchored to one of said shelter side frame and a second leaf thereof being free and articulable relative to the first leaf, said unit including extension-compression means, fixed to the shelter side frame, restraining the second leaf, relative to the first leaf and the side frame;

b) at least one side curtain secured at a near end thereof to the second leaf for movement relative to the first leaf, said curtain being laterally reinforced by stays;

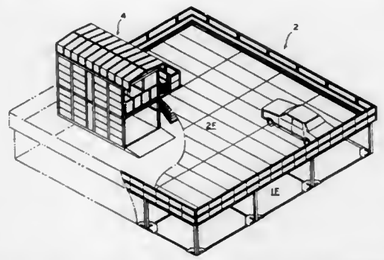
c) compressible hinge gap closure seal retained by the side curtain on a far end thereof, said seal being resiliently held by the side curtain, whereby upon rearward displacement of the reinforced curtain by the truck/trailer, the second leaf will be displaced rearwardly and any gap existing between truck/trailer body and door will be closed, relative to the shelter side frame.

5,185,978

PLACE-ON TYPE ASSEMBLABLE STRUCTURE

Mitsuo Sasaki, Yamato, Japan, assignor to Just Japan Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1991, Ser. No. 670,261
Claims priority, application Japan, Mar. 20, 1990, 2-68349
Int. Cl.[5] E04H *6/42*
U.S. Cl. 52—175 **12 Claims**



1. A place-on type assemblable structure to be supported by an underlying surface, comprising:

a foundation beam;

an assembly body assembled on said foundation beam; and

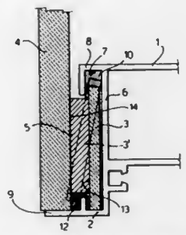
said foundation beam including a plurality of jack means which each have a lower end adapted for contact with the underlying surface, said jack means being individually adjustable in an up and down direction with respect to the underlying surface such that said foundation beam can be maintained essentially horizontal despite unevenness in the underlying surface.

5,185,979

ASSEMBLING SHEETS OF GLASS TO METAL STRUCTURES

Giovanni Azzimonti, Novara, Italy, assignor to Azzimonti Paolino S.p.A., Caltignaga, Italy

PCT No. PCT/IT88/00081, § 371 Date Jul. 9, 1990, § 102(e) Date Jul. 9, 1990, PCT Pub. No. WO89/04416, PCT Pub. Date May 18, 1989
PCT Filed Nov. 7, 1988, Ser. No. 474,792
Claims priority, application Italy, Nov. 12, 1987, 22615 A/87
Int. Cl.[5] E04C *2/46*
U.S. Cl. 52—235 **10 Claims**



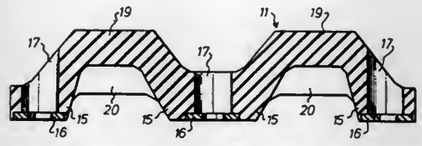
1. A process for attaching a sheet of glass (**4**, **4'**) to a metal structure (**1**, **21**), comprising mechanically fixing at least one strip of glass (**3**) to the metal structure (**1**) in such a way that it faces outwards, positioning a sheet of glass (**4**) in front of said strip (**3**) so that at least a localized zone (**14**, **14'**) is facing, but at a distance from said strip (**3**), then inserting an elastic fixing means (**5**) between facing surfaces (**13**, **14**) of said strip (**3**) and said sheet of glass (**4**), capable of sticking to both the facing surfaces.

5,185,980

WALL EXPOSED TO WEAR AND MEANS FOR MAKING IT

Bo L. Rydberg, and Bengt L. A. Dehlén, both of Trelleborg, Sweden, assignors to Trellex Aktiebolag, Trelleborg, Sweden

Filed Mar. 12, 1991, Ser. No. 667,312
Claims priority, application Sweden, Mar. 13, 1990, 9000905
Int. Cl.[5] E04B *1/38*
U.S. Cl. 52—506 **19 Claims**



1. A wall which is made up of ear resisting, impact-absorbing elements and a structure supporting said elements which form a wear-resisting, impact-absorbing layer of an elastomer or plastic material, wherein said elements are elongate in a longitudinal direction and comprise

spaced-apart base portions to permit mounting said elements on said structure, said base portions being spaced-apart in a transverse direction and having a length extending in a longitudinal direction, and

arch portions formed of said wear-resistant elastomer or plastic material and extending freely between said base portions, said arch portions also longitudinally extending for the longitudinal length of said base portions, and

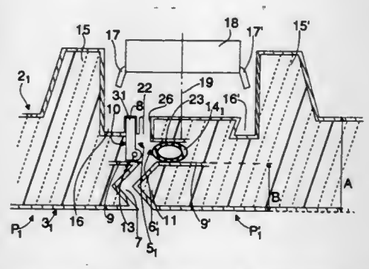
each element having at least two base portions and one arch portion between each pair of adjacent base portions.

5,185,981

ABUTMENT OF INSULATING PANELS

Joaquin L. Martinez, Pamplona, Spain, assignor to Perfil en Frio, S.A., Spain

Continuation of Ser. No. 439,627, Nov. 20, 1989, abandoned. This application Jan. 28, 1992, Ser. No. 827,562
Int. Cl.[5] E04B *5/52*
U.S. Cl. 52—578 **2 Claims**



1. A plurality of insulating panels, each said panel comprising an exterior metal plate, an interior metal plate, insulating material between the said interior and exterior metal plates and first and second abutment means at opposed ends of each panel,

(1) said first abutment means comprising

a first flange,

a depression on said first flange, said depression being triangular shaped and having legs and one leg of said triangular shaped depression extending immediately from said interior metal plate inwardly towards the interior of the panel,

(2) said second abutment means comprising

a second flange,

a projection on said second flange, said projection being triangular shaped and having legs which complement the legs of the triangle shaped depression on said first flange and

said projection extending immediately from said interior metal plate, and said projection being capable of being operatively interconnected in the depression in the end of an adjacent panel,

(3) each said abutment means having a width between one-third and two-thirds of the width of said panel,

(4) the first and second abutment means of adjacent panels being operatively interconnected to form a labyrinth zone between said adjacent panels,

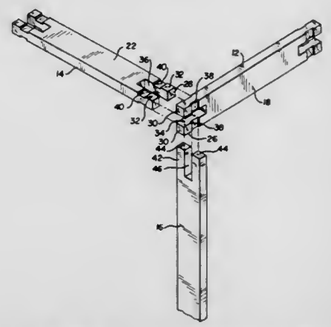
(5) at least one end of each panel further comprising an elastic element positioned between the exterior metal plate and the abutment means, one end of said elastic element being retained in a housing in the exterior metal plate and said elastic element having a hollow protuberance at the other end thereof which sealingly engages the abutting ends of adjacent panels when they are interconnected.

5,185,982

CORNER JOINT FOR MODULAR ASSEMBLIES

Vernon Hostetler, Hartville, Ohio, assignor to Stark Forest Products Inc., Canton, Ohio

Filed Sep. 23, 1991, Ser. No. 764,248
Int. Cl.[5] E04C *3/00*
U.S. Cl. 52—646 **4 Claims**



1. In a modular assembly which includes a plurality of elongated upright and lateral rail members of generally rectangular cross-sectional shape interconnected to form an open frame defining box-like modules for supporting shelving, side wall members, doors and such like components, a locking corner joint formed at the interconnection of the end sections of the first lateral rail member disposed within its side faces in vertical planes at right angles with a second lateral rail member with its side faces in horizontal planes, and an upright rail member with its side faces in vertical planes at right angles to both of said first and second lateral rail members, the improvement therewith in the locking corner joint compromising;

each of said first and second lateral rail members having similarly shaped first forks formed at the end sections thereof;

said upright rail member having a second fork formed at an end section thereof and similarly shaped as the said first fork;

each of said first and second forks having two tynes sepa-

VOL 1147 ISS 3 FE 16 1993 UMI

rated by a generally, centrally disposed longitudinally extending groove;

said tynes of said first and second forks having laterally extending slots formed intermediate the ends thereof and on both lateral surfaces thereof; and

said first and second forks being sized, shaped, constructed and arranged such that when said first and second lateral rail members are interconnected with said upright member as set forth herein the end sections of the groove side surfaces of the tynes of said first lateral rail member will be snugly and securely received in the respective slots of the tynes of said second lateral rail member and the end sections of the groove side surfaces of the tynes of said upright rail member will be snugly and securely received in the respective slots of the tynes of the fork of said first lateral member.

5,185,983

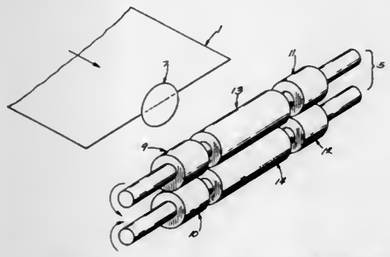
WAFER SEALER

John W. Slater, 4679 N. Ironwood La., Milwaukee, Wis. 53209

Filed Mar. 2, 1992, Ser. No. 844,532

Int. Cl.[5] B65B *51/06*

U.S. Cl. 53—136.3 **1 Claim**



1. An apparatus for applying a seal to the leading edge of a mailing form comprising, means for moving a form along a horizontal path, means for moving a seal narrower than said form across said path, means for moving said form into said seal and means for folding said seal on the leading edge of said form, said folding means comprising a shaft above and a shaft below said path extending across said path, non-powered sleeves floatingly mounted on said shafts for engaging said seal which sleeves are axially shorter than said form and longer than said seal, a pair of end rolls fixedly secured to each shaft on opposing axial end of said sleeves, means for driving said shafts and said rolls to engage only said form and pull it through said floating sleeves which sleeves are stopped from rotating when engaged by the seal to retard the movement of the seal and form a tight fit between the seal and the form.

5,185,984

AUTOMATIC PACKAGING EQUIPMENT

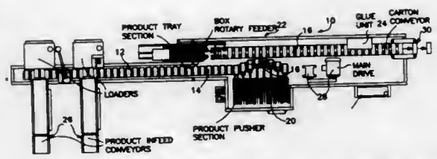
Stevan Tisma, Chicago, Ill., assignor to Tisma Machinery Corporation, Elk Grove Village, Ill.

Continuation-in-part of Ser. No. 762,497, Sep. 19, 1991, which is a continuation-in-part of Ser. No. 508,269, Apr. 11, 1990, Pat. No. 5,072,573, which is a continuation-in-part of Ser. No. 464,162, Jan. 12, 1990, abandoned. This application Mar. 27, 1992, Ser. No. 858,888

Int. Cl.[5] B65B *39/02, 39/14*

U.S. Cl. 53—252 **14 Claims**

1. In an automatic packaging machine, the combination comprising a pair of spaced parallel vertical conveyor means mounted to turn about horizontal axes, said conveyor means establishing a path through said packaging machine, support means comprising a first pair of spaced parallel horizontal guide bars suspended between and traveling with said vertical conveyor means, platform means slidingly mounted on said horizontal guide bars for moving between transport and forward thrust positions along said established path, a second pair of guide bars carried by said platform means, said first and second pairs of guide bars being orthogonally related, a width adjustable transport mandrel comprising two side members mounted to slide toward and away from each other on said



second pair of guide bars, whereby said mandrel has two axial motions along said orthogonal guide bars while being carried by said conveyors, and means for maintaining a predetermined adjustment of said width of said mandrel during said movement of said platform between said transport and forward thrust positions.

5,185,985

APPARATUS FOR HANDLING SYRINGE BODIES

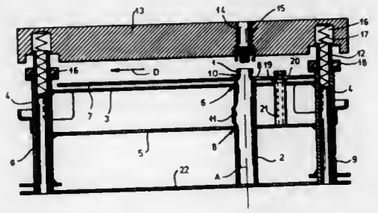
Helmut Vetter, Ravensburg, and Peter Geprägs, Weingarten, both of Fed. Rep. of Germany, assignors to Arzneimittel GmbH Apotheker Vetter & Co. Ravensburg, Ravensburg, Fed. Rep. of Germany

Filed Jun. 25, 1991, Ser. No. 720,902

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1990, 4021836

Int. Cl.[5] B65B *7/28*

U.S. Cl. 53—299 **14 Claims**



1. An apparatus for handling a plurality of elongated and tubular glass syringe bodies each having

a small-diameter neck,

a radially outwardly projecting and axially elongated bypass, and

a large-diameter mainly cylindrical shaft and predetermined circular section, the apparatus comprising:

a pair of support plates formed with respective similar arrays of throughgoing openings generally complementary to the section of the shafts of the bodies, the support plates being positioned such that one of them axially engages ends of the bypasses when the bodies are fitted to the openings;

spacers supporting the plates parallel to and spaced from each other with the openings arranged pairwise with on opening of each plate aligned along a respective axis with a respective opening of the other plate so that the bodies can be held therein;

a stop plate parallel to and spaced from the support plates and formed with stop openings in an array substantially identical to the arrays of openings of the support plates, the stop-plate openings being substantially wider in at least one direction than the support-plate openings; and

guide means supporting the stop plate parallel to and at a spacing from the support plates level with the small-diameter necks of the bodies when they are seated in the openings of the support plates for sliding the stop plate parallel to the support plates between

a loading position with the stop-plate openings aligned axially with the support-plate openings and the syringe bodies freely axially movable through the stop-plate openings and

a blocking position with the stop-plate openings hearing radially of the axes on the small-diameter necks of the syringe bodies and retaining same against axial movement in the respective openings.

5,185,986

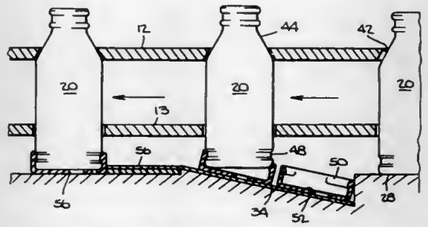
BAIL APPLICATOR AND METHOD

John J. Connolly, Lynbrook, and John T. Kawochka, Maspeth, both of N.Y., assignors to Pfizer, Inc., New York, N.Y.

Continuation of Ser. No. 604,706, Oct. 26, 1990, abandoned. This application Feb. 11, 1992, Ser. No. 835,050

Int. Cl.[5] B65B *29/04*

U.S. Cl. 53—397 **15 Claims**



13. A method of applying an end cap member to a receptacle comprising the steps of:

supplying a receptacle at a first location,

advancing said receptacle along a first surface to a second location,

at said second location, supplying a cap member, being configured to receive therein an end of said receptacle, from a laterally positioned means into a portion of a second surface stepped away from said first surface, said second surface extending toward said first surface and sloping in the direction of receptacle advancement from said stepped portion, said second surface defining a passive inclined plane,

aligning said receptacle and said cap member, positioning said receptacle for receipt within said cap member, and

advancing along said second surface a combination aligned receptacle and cap member by contacting said receptacle with at least two receptacle contacting surfaces and developing a compressive force between said receptacle and said cap member by coacting one of said contacting surfaces and said sloped second surface as said receptacle and cap member combination advances along said second surface thereby pressing the receptacle and the cap member into snug engagement.

5,185,987

APPARATUS FOR TRANSFERRING STACKS OF FLEXIBLE PRODUCTS

Robert R. Turvey, Saginaw; Jeffrey S. Hoffman, Linwood, and Robert J. Nestle, Essexville, all of Mich., assignors to Dowbrands Inc, Indianapolis, Ind.

Filed Nov. 1, 1991, Ser. No. 786,861

Int. Cl.[5] B31B *23/16;* **B65B** *25/14, 63/04*

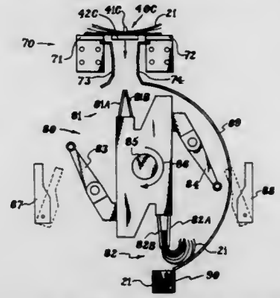
U.S. Cl. 53—429 **14 Claims**

1. A process for sequential handling of a stack of flexible products comprising:

(a) removing individual flexible products from a transfer drum;

(b) stacking said individual flexible products at a transfer point;

(c) delivering said stack of flexible products to an apparatus for transferring stacks of flexible products between at least two geometric planes comprising a base support structure having a top and bottom; at least one pair of oppositely positioned clamping means releasably attached to the top of the support structure for clamping a first stack of flexible products wherein each clamping means comprises a shaft member, at least one finger member releasably attached to the shaft member, and a stationary bracket releasably attached to the support structure; and a single actuating means for substantially simultaneously actuating the at least one pair of clamping means, said actuating means releasably attached substantially perpendicularly to the shaft member of each clamping means;



(d) transferring the stack of flexible products to a folding means;

(e) folding said stack of flexible products; and

(f) packaging the folded stack of flexible products.

5,185,988

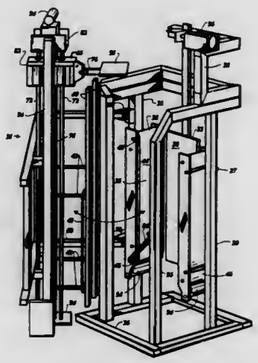
TOWER COMPRESSION UNIT

Thomas J. Cunningham, 11120 Rotherick Dr., Alpharetta, Ga. 30302

Filed Feb. 1, 1991, Ser. No. 649,456

Int. Cl.[5] B65B *35/52*

U.S. Cl. 53—436 **4 Claims**



4. A method of removing a case within a case compression chamber, the chamber comprising a frame and four surfaces facing each other, the first surface fixed to the frame, the second and third surfaces adjustably mounted to the frame and oriented perpendicular to the first surface and parallel and

VOL 1147 ISS 3 FE 16 1993 UMI

spaced apart from one another, the fourth surface connected to the frame, comprising the following steps:

exposing one side of a case having four sides, a top and a bottom within the compression chamber, by opening an L-shaped gate, the gate comprising a first gate section hinged to the frame, and a second gate section perpendicular to the first gate section and integral with the fourth surface;

causing an arm pivotably connected to an elevator member to extend perpendicular to the gate, the elevator member threadably connected to a vertically oriented threaded rod, the rod being rotatably mounted to the second section of the gate, and the elevator member in sliding relation with a pair of vertically oriented guide rods, one guide rod being located on each side of the threaded rod;

closing the gate;

locating the arm below the bottom of the case; and

causing the elevator to move upward in order to elevate the case.

5,185,989

MUSHROOM HARVESTING

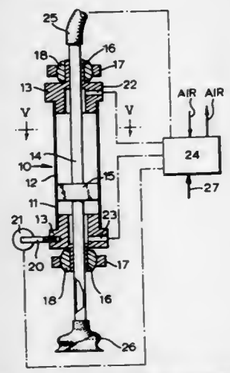
Tony A. Russell, Norfolk, and Geoffrey C. Wheeler, Cornwall, both of England, assignors to Priorlucky Limited, Norfolk, England

Continuation-in-part of Ser. No. 608,213, Nov. 2, 1990, Pat. No. 5,058,368. This application May 3, 1991, Ser. No. 694,987

Claims priority, application United Kingdom, May 4, 1990, 9010128

Int. Cl.[5] A01D *46/00*

U.S. Cl. 56—13.1 **13 Claims**



8. A picking head assembly for incorporation in an automated mushroom harvesting apparatus including a carriage arranged for movement over a growing area, which picking head assembly has a pneumatic ram for mounting on the carriage, the pneumatic ram having a slidable piston rod the vertical line of movement of which may be positioned by moving said carriage to intersect a selected mushroom to be harvested, a resiliently deformable suction head mounted on the free end of the piston rod remote from said carriage, which said suction head is adapted to contact a selected mushroom on operation of the ram and then to hold by suction that mushroom, and pneumatic control means for controlling the supply of air to the ram, in which picking head assembly said control means is arranged to control the speed of approach of said suction head to a selected mushroom so as to maintain the kinetic energy of the moving components of the picking head at less than 0.25 J at the time of contact between said suction head and a selected mushroom.

5,185,990

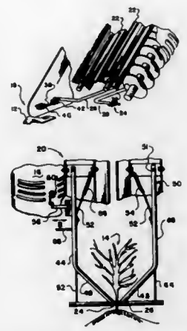
ROW FOLLOWER

Ronny L. Barnes, and Bryan R. Barnes, both of O'Donnell, Tex., assignors to Gar Bar Corporation (Texas Corporation), O'Donnell, Tex.

Filed Dec. 30, 1991, Ser. No. 814,767

Int. Cl.[5] A01D *45/00*

U.S. Cl. 56—51 **7 Claims**



1. Structure to touch a row of stalks so that an agricultural vehicle having a direction of travel may be located thereto and guided therealong comprising:

a. a pair of elongated horizontally oriented rods extending along said direction of travel, each rod:

i. having a front and rear,

ii. being a mirror mate to the other rod,

iii. having a straight trailing portion parallel to and proximate of the like portion of its mate, and

iv. curving outward in a horizontal direction at the front thereof,

v. so that the pair form a throat at the front which guides the pair of rods along the row of stalks with one of the rods on each side of the stalks,

b. a link having a leading end and a trailing end for each rod,

c. the front of each of the rods pivoted to the trailing end of its link and

d. the leading end of each of the links pivoted to a part of the agricultural vehicle,

e. a support pendant with a lower portion attached near the rear of the trailing portion of each of the rods, and with an upper portion pivoted to said agricultural vehicle,

f. bias means interconnecting each of the pendants and the agricultural vehicle to urge each pendant and its attached rod toward its mate, and

g. detecting means interconnecting one of the pendants and the agricultural vehicle to detect the movement normal to the direction of travel of that pendant.

5,185,991

APPARATUS AND METHOD FOR SELECTIVE CROP HARVESTING

Wilfred E. Klinner, Beechwood, Heath Lane, Aspley Heath, Woburns Sands, Milton Keynes, Buckinghamshire MK17 8TN, England

PCT No. PCT/GB89/00073, § 371 Date Nov. 30, 1990, § 102(e) Date Nov. 30, 1990, PCT Pub. No. WO89/11784, PCT Pub. Date Dec. 14, 1989

PCT Filed Jan. 26, 1989, Ser. No. 623,435

Claims priority, application United Kingdom, May 31, 1988, 8812820; Jul. 28, 1988, 8818054

Int. Cl.[5] A01D *45/30*

U.S. Cl. 56—128 **25 Claims**

1. Apparatus for harvesting crops comprising:

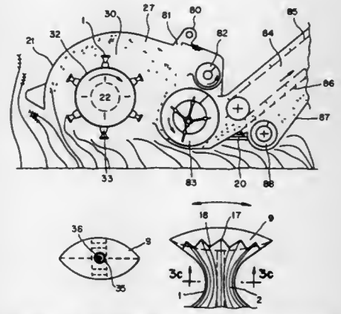
a mobile support structure for movement over the ground;

movable support means extending transversely across the direction of forward movement of the apparatus;

a plurality of crop engaging elements secured to the movable support means and extending longitudinally outwardly from said support means;

means mounting said movable support means for movement, relative to said support structure, such as to cause said crop engaging elements to comb through a naturally disposed uncut crop into which the movable support structure is moved;

at least some of said crop engaging elements comprising crop stripping elements, each having, at least in an outer region thereof, a form which, in section through the element substantially perpendicular to the direction of longitudinal extent of the element, presents the configuration of a wedge pointing in the direction of movement of the element consequent upon said movement of the movable support means whereby the crop stripping element presents a narrow leading edge facing in the direction of



movement of the element during such movement of the movable support means, and each crop stripping element having reclined side surfaces with outer boundaries shaped to promote smooth sliding and funnelling of crop material into principal inwardly and circumferentially extending crop engagement channels formed between laterally and circumferentially adjacent elements;

means for imparting said movement to the movable support means; and

crop containment and guide means extending over or under the apparatus, whereby, in operation as the apparatus is advanced through a naturally disposed uncut crop, and the movable support means is moved by said driving means, the crop stripping elements will comb through the crop to penetrate and split the crop mass apart and to detach and recover by lateral impelling wanted plant parts, and the crop containment and guide means will prevent detached wanted crop parts from becoming lost and will direct them rearward for collection.

5,185,992

GARDEN TOOL EXPANDING ASSEMBLY

Roque P. Garcia, 400 E. Spring, Central, N. Mex. 88026

Filed Aug. 19, 1991, Ser. No. 746,626

Int. Cl.[5] A01B *1/22;* **A01C** *5/02;* **A01D** *7/00*

U.S. Cl. 56—400.04 **19 Claims**

1. A garden tool expanding assembly for providing a quick interconnect capability of the shaped shaft of an alternate tool head to the handle of a mother tool, comprising:

(a) a first open-sided cylindrical quick-connect member for attaching to said mother tool handle;

(b) a second uniformly cross-sectioned tubular quick-connect member for accepting said alternate tool head shaped shaft;

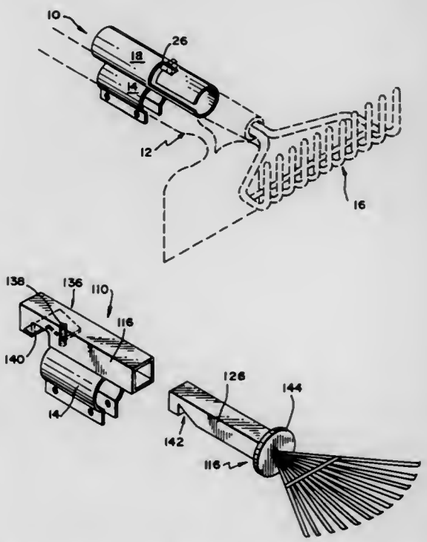
(c) said first member having at least one fastening means for circumferentially retaining said open-sided cylindrical member around said handle, and said second member cooperating with said shaped shaft to provide at lest one spring loaded locking means for longitudinally retaining said shaped shaft within said tubular member;

(d) said first and second members rigidly connected along a longitudinal axis with the open-sided portion of said first member circumferentially displaced from said axis; and

(e) whereby said tool expanding assembly allows readily interchangeable use of the mother tool type and any one of a variety of alternate tool head types affixed to a suitably shaped shaft.

10. A method of rapidly expanding the utility of an existing garden tool by providing rapidly insertable alternate tool heads into a coupling device which is in turn rapidly affixed to the garden tool handle, comprising the steps of:

(a) providing a two section coupling device for rapid attachment to a handle of the existing tool by a first section, and for rapidly accepting alternate tool head types by a second section;



(b) providing an open sided cylindrical member for fitting around said handle as said first section, said open-sided cylindrical member having at least one fastening means for circumferentially restraining said handle/member pair under compression;

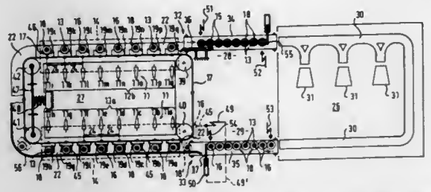
(c) providing an elongated tubular member for accepting shaped shafts carrying alternate tool head types as said second section, said elongated tubular member cooperating with said shaped shaft to provide at least one spring loaded locking means for longitudinally retaining such shaped shaft within said tubular member;

(d) permanently connecting said open sided cylindrical member and said elongated tubular member along a longitudinal axis; and

(e) thereby permitting ready access to a plurality of tool types in groups of two, including the mother tool type and any other one of a variety of alternate tool head types.

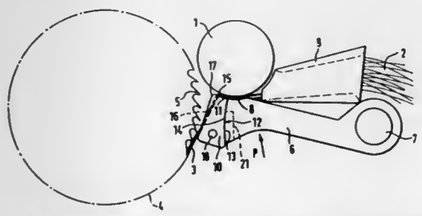
VOL 1147 ISS 3 FE 16 1993 UMI

5,185,993
SPINNING MACHINE HAVING A PEG TRAY CONVEYOR
Isidor Fritschi, Andelfingen; Urs Keller, Seuzach; Markus Erni, Winterthur; Urs Meyer, Niederglatt; Jorg Wernli, Winterthur, all of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland
PCT No. PCT/EP89/01098, § 371 Date Jul. 5, 1990, § 102(e) Date Jul. 5, 1990, PCT Pub. No. WO90/03461, PCT Pub. Date Apr. 5, 1990
PCT Filed Sep. 21, 1989, Ser. No. 499,379
Claims priority, application Switzerland, Sep. 24, 1988, 03547/88
Int. Cl.[5] D01H *9/10, 9/00*
U.S. Cl. 57—281 **17 Claims**



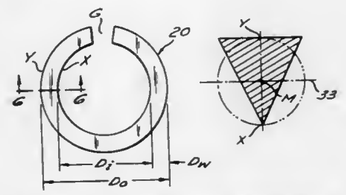
1. In a ring spinning machine, the combination comprising at least one row of spinning stations;
an endless conveyor having at least one run disposed along said row of spinning stations;
a plurality of drivers secured to said conveyor in spaced apart relation corresponding to a spacing between said spinning stations; and
a plurality of peg trays, each tray having a bobbin peg for receiving a bobbin thereon and being releasably engaged with a selected one of said drivers for conveyance with said conveyor into a position aligned with a selected spinning station.

5,185,994
FEEDING AND OPENING DEVICE FOR AN OPEN-END SPINNING ARRANGEMENT
Hans Stahlecker, Haldenstrasse 20, 7334 Süssen, Fed. Rep. of Germany, assignor to Hans Stahlecker, Fed. Rep. of Germany
Filed Jan. 16, 1992, Ser. No. 821,565
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1991, 4101315
Int. Cl.[5] D01H *4/32*
U.S. Cl. 57—412 **14 Claims**



1. A feeding and opening device for an open-end spinning arrangement, comprising:
a feeding roller,
a movable feeding table which has a feeding surface which forms a clamping point together with the feeding roller, and
a tuft support which follows the feeding table and has a supporting surface for a tuft which is situated opposite a mounting of an opening roller,
wherein the tuft support is arranged stationarily and has a guiding surface which is situated opposite the feeding roller extending substantially parallel to the circumference of the feeding roller, which guiding surface extends approximately radially with respect to the opening roller and continues the guiding surface of the feeding table and serves to guide substantially all of the sliver supplied to the opening roller.

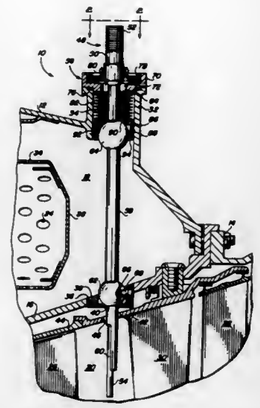
5,185,995
ROPE CHAIN WITH NOVEL LINK
Giuseppe A. Dal Monte, West Hollywood, Calif., assignor to OroAmerica, Inc., Burbank, Calif.
Filed Nov. 8, 1991, Ser. No. 789,858
Int. Cl.[5] B21L *5/02*
U.S. Cl. 59—80 **12 Claims**



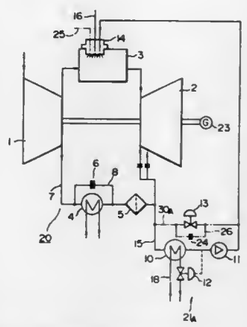
1. In a jewelry rope chain, having a plurality or tightly interfitting link members made from link wire, each of said link members being formed into partially closed members having a gap between opposed ends thereof which gap is slightly larger than the maximum width of said link wire to permit insertion of one link member into and through the gap of any other link member, the improvement which comprises:
each of said link members having an outer peripheral volume and an inner peripheral volume, the boundary between said outer and inner peripheral volumes being defined by a phantom bisecting surface drawn midway between an outermost perimeter and an innermost perimeter of each of said link members, said link wire having a majority of its weight lying within said outer peripheral volume of said link member and a balance of its weight lying within said inner peripheral volume of said link member.

5,185,996
GAS TURBINE ENGINE SENSOR PROBE
Alan A. Smith, Scottsdale; Paul B. Catmull, Gilbert; Lonnie J. Lucas, Chandler, and Karl P. Johnson, Tempe, all of Ariz., assignors to Allied-Signal Inc., Morris Township, N.J.
Filed Dec. 21, 1990, Ser. No. 633,548
Int. Cl.[5] F02G *3/00;* **F01B** *25/26;* **F01D** *25/00;* **G01K** *1/08*
U.S. Cl. 60—39.02 **20 Claims**

1. A method for sealing aligned openings in inner and outer housings of a gas turbine engine having a readily removable thermocouple extending through both of the aligned openings, comprising the steps of:
securing a cover to the outer housing in covering relation to the opening therein;
compressing a spring bellows in response to said securing step to create a biasing force urging a seat into sealing engagement with a first spherical sealing element carried on the thermocouple; and
transmitting the biasing force through the thermocouple to urge a second spherical sealing element carried on the thermocouple into engagement with the inner housing to seal the opening therein.

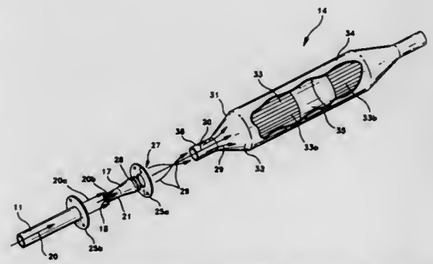


5,185,997
GAS TURBINE SYSTEM
Tsunemasa Nishijima, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Jan. 28, 1991, Ser. No. 646,433
Claims priority, application Japan, Jan. 30, 1990, 02-019579
Int. Cl.[5] F02C *6/18;* **F02G** *3/00*
U.S. Cl. 60—39.07 **4 Claims**



1. A gas turbine system comprising:
an air compressor having an air intake and an air discharge port;
a turbine having a cooling air intake;
a combustor including a fuel nozzle including a fuel gas inlet for introducing a fuel gas in a fuel gas operation mode of the system, a fuel oil inlet and an air inlet;
turbine cooling means including cooling air passage defining means for defining a cooling air passage communicating the air discharge port of the air compressor to the cooling air intake of the turbine, an intercooler provided in the cooling air passage, and an air filter provided in the cooling air passage downstream of the intercooler;
fuel oil atomizing means including an air passage defining means for defining an atomization air passage branching from the cooling air passage downstream of the air filter and communicating with the air inlet of the fuel nozzle, an atomization air compressor disposed in the atomization air passage for compressing atomization air, an air cooler arranged in the atomization air passage upstream of the atomization air compressor for cooling air to be introduced into the atomization air compressor, and a communication passage defining means for defining a communication passage communicating a portion of the atomization air passage downstream of the atomization air compressor to another portion thereof upstream of the air cooler; and
control valve means provided in the communication passage and being adapted to open in the fuel gas operation mode of the system to introduce air, discharged from the atomization air compressor, to the air cooler through the communication passage and to close in a fuel oil operation mode of the system.

5,185,998
CATALYTIC CONVERTER ACCESSORY APPARATUS
Kenneth Brew, 127 Goff Rd., Corning, N.Y. 14830
Filed Apr. 10, 1992, Ser. No. 866,625
Int. Cl.[5] F01N *3/28*
U.S. Cl. 60—299 **11 Claims**



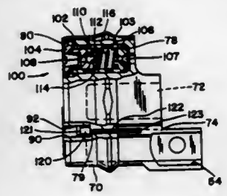
1. An exhaust device for use in an automotive catalytic converter system, said exhaust device being disposed between an exhaust manifold and a catalytic converter of the catalytic converter system to provide a substantially uniform bathing of a catalytic substrate of the converter with exhaust gases, said exhaust device comprising:
a housing having an inner chamber for conveying flowing manifold exhaust gases to an inlet portion of a catalytic converter;
means defining an axis of flow within said chamber for conveying said flowing manifold exhaust gases therethrough; and
bifurcating means disposed in said chamber of said housing for bifurcating said flowing manifold exhaust gases into two separate flow patterns, a first one of said flow patterns defining gases traveling along and about said axis of flow, and a second one of said flow patterns defining gases that have been caused to swirl and expand, whereby outer portions of a catalytic converter substrate will be bathed by said second one of said flow patterns, said first one and second one of said flow patterns combining to substantially uniformly bathe the substrate of the catalytic converter.

5,185,999
HYDRAULIC BRAKE BOOSTER AND VALVE MEMBERS
Mohamed L. Behchaar, Mishawaka, Ind., assignor to Allied-Signal Inc., Morristown, N.J.
Filed Oct. 18, 1991, Ser. No. 779,210
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—404 **4 Claims**

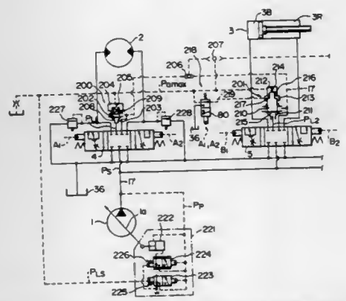
1. In a hydraulic brake booster having a housing defining a pressure chamber, a piston mounted in the housing and mov-

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able relative to the housing in response to pressure in the pressure chamber, the piston defining and enclosing a storage chamber and a passage connecting said storage chamber with said pressure chamber, a valve member carried by the piston within said passage and operable to communicate pressurized fluid from the pressure chamber to the storage chamber via said passage and to communicate higher pressure within said storage chamber through the valve member to the pressure chamber, a control valve mounted in the housing, and an operator actuator cooperating with the control valve to communicate pressurized fluid to the pressure chamber, the improvement comprising a two-function valve disposed in a second passage in said piston between the storage chamber and pressure chamber and actuatable by a pressure differential between the chambers to communicate pressurized fluid in the pressure chamber to the storage chamber and engageable by said operator actuator to communicate higher pressure in said storage chamber to said pressure chamber in the event sufficient pressure is not communicated to the pressure chamber during operation of the operator actuator, the two-function valve and valve member being disposed in substantially parallel alignment.



5,186,000
HYDRAULIC DRIVE SYSTEM FOR CONSTRUCTION MACHINES
Toichi Hirata, Ushiku; Genroku Sugiyama, Ibaraki, and Yusuke Kajita, Tsuchiura, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan
Division of Ser. No. 439,387, Nov. 16, 1989, Pat. No. 5,134,853. This application Mar. 31, 1992, Ser. No. 861,395
Claims priority, application Japan, May 10, 1988, 63-111453; Feb. 13, 1989, 1-31204; Apr. 3, 1989, 1-81510
Int. Cl.[5] F16D *31/02*
U.S. Cl. 60—420 **3 Claims**



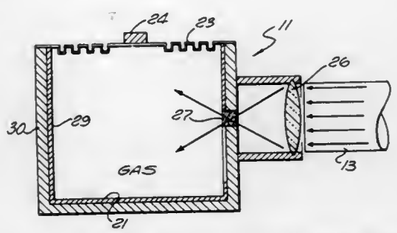
1. A hydraulic drive system comprising a hydraulic pump, a plurality of hydraulic actuators driven by a hydraulic fluid supplied from said hydraulic pump, a plurality of flow control valves for controlling flow rates of the hydraulic fluid supplied to said actuators, respectively, and a plurality of distribution compensating valves for controlling differential pressures across said flow control valves, respectively, said plurality of actuators including a first actuator which operates under a relatively large load and a second actuator which operates under a smaller load than that of the first actuator, wherein:

said hydraulic drive system further comprises distribution control means for controlling the distribution compensating valve associated with the second actuator such that a differential pressure across the flow control valve associated with the second actuator becomes larger than a differential pressure across the flow control valve associated with the first actuator when the first and second actuators are driven simultaneously;

wherein the plurality of distribution compensating valves are disposed downstream of associated flow control valves, respectively; the distribution compensating valve associated with the first actuator includes piston means having a first pressure receiving portion subjected to a pressure on the downstream side of its associated flow control valve acting in the valve-opening direction, and a second pressure receiving portion subjected to a maximum load pressure among the plurality of actuators acting in the valve-closing direction; and the distribution compensating valve associated with the second actuator includes piston means having a third pressure receiving portion subjected to a pressure on the downstream side of its associated flow control valve acting in the valve-opening direction, and fourth and fifth pressure receiving portions subjected to the maximum load pressure acting in the valve-closing direction, the fourth and fifth pressure receiving portions having the total of their pressure receiving areas substantially equal to the pressure receiving area of the third pressure receiving portion; and

wherein said distribution control means includes pressure reducer means, responsive to drive of the first actuator, for cutting off communication of one of the fourth and fifth pressure receiving portions with the maximum load pressure.

5,186,001
TRANSIENT ENERGY RELEASE MICRODEVICES AND METHODS
Eric P. Muntz, Pasadena; Daniel A. Erwin, Venice; Joseph A. Kunc, Rancho Palos Verdes, and Geoffrey R. Shiflett, Los Angeles, all of Calif., assignors to University of Southern California, Los Angeles, Calif.
Filed Nov. 8, 1991, Ser. No. 790,595
Int. Cl.[5] F01B *29/00*
U.S. Cl. 60—515 **44 Claims**



1. A microdevice for providing motion at a high repetition rate, including in combination:

a cell having an output wall with at least a portion movable in response to change in pressure in said cell;

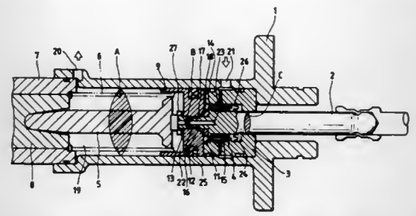
a charge of gas in said cell; and

means for cyclicly and directly heating said gas to increase the gas pressure in said cell and move said output wall portion,

said means for heating including pulse means for generating transient gas pressure increases in said cell at cycle times of not more than about 50 microseconds;

said cell including means for cooling said gas for reducing the gas pressure in said cell.

5,186,002
FLUID OPERATED BOOSTER
Toshifumi Maehara, Saitama, Japan, assignor to Akebono Brake Industry Co., Ltd., Tokyo, Japan
Filed Jan. 14, 1992, Ser. No. 820,335
Claims priority, application Japan, Feb. 6, 1991, 3-35080
Int. Cl.[5] B60T *13/00*
U.S. Cl. 60—547.1 **8 Claims**



1. A fluid operated booster for a vehicle brake system, comprising:

first valve means for controlling the communication between an accumulator for providing hydraulic pressure and a hydraulic pressure chamber, said first valve means comprising a spool valve mounted on said frictionally engaged for movement with a brake pedal rod within a predetermined distance, said first valve means precluding communication between said accumulator and said hydraulic pressure chamber when the brake system is not in operation, so that no hydraulic pressure from said accumulator is applied to said brake pedal rod; and

second valve means for controlling the communication between said hydraulic pressure chamber and a reservoir,

wherein operation of the brake system by pushing said brake pedal rod closes said second valve means and opens said first valve means, so that hydraulic pressure is applied from said accumulator to said hydraulic pressure chamber to act on a power piston; causing said power piston to transmit an operating force to a master cylinder piston.

2. A fluid operated booster for a vehicle brake system in which a brake force is applied from a brake pedal rod to a master cylinder piston slidably mounted in a master cylinder housing, comprising:

a booster housing fixed to the master cylinder housing;

a hollow plug fixedly mounted in said booster housing, said plug defining a hole for slidably receiving the brake pedal rod;

a power piston disposed between said plug and the master cylinder piston, said power piston being slidably fitted in said booster housing;

a booster rod between said power piston and the master cylinder piston;

a return spring for urging said booster rod toward said power piston;

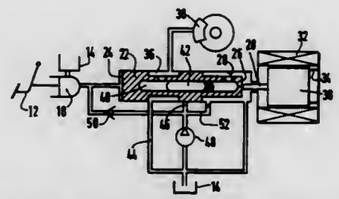
a low pressure chamber formed in said booster housing and said master cylinder housing and disposed between said power piston and the master cylinder piston, said low pressure chamber communicating with a reservoir tank, said low pressure chamber communicating with a first fluid passage formed in the brake pedal rod;

a fluid pressure chamber formed in booster housing for receiving a pressurized fluid which urges said power piston against said return spring;

first spool valve means for controlling the fluid communication between a second fluid passage connected to an accumulator and said fluid pressure chamber, said first spool valve means being slidably mounted on the brake pedal rod; and

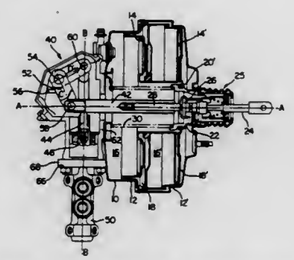
second spool valve means for selectively communicating said fluid pressure chamber and said low pressure chamber;

5,186,003
INTEGRATED PRESSURE AMPLIFICATION AND MODULATION SYSTEM FOR A HYDRAULIC CIRCUIT
Pierre Lebret, Le Chesnay, France, assignor to Bendix Europe Services Techniques, Drancy, France
Filed Feb. 27, 1992, Ser. No. 842,677
Claims priority, application France, Mar. 20, 1991, 91 03375
Int. Cl.[5] F15B *13/042, 13/044*
U.S. Cl. 60—555 **3 Claims**



1. Integrated pressure amplification and modulation system for a hydraulic brake circuit, comprising at least one master cylinder, a hydraulic motor, a source of fluid under high pressure and a reservoir of fluid under low pressure, a computer-controlled solenoid modulating by means of a magnetic core the position of a slide which slides in a bore, thereafter characterized in that fluid under pressure coming from the master cylinder is applied to one face of said slide the other face of which bears on said magnetic core and receives force exerted by a spring for return to rest, in that a reaction chamber formed in said slide is connected permanently to said hydraulic motor, and in that said hydraulic motor is connected to one of said reservoir and said source of fluid under pressure, depending on the position of said slide.

5,186,004
ASSEMBLY CONSISTING OF A BRAKE BOOSTER AND OF A MASTER CYLINDER
Jean-Pierre Gautier, Aulnay-sous-Bois; Miguel Perez, Argenteuil, and Ulysse Verbo, Aulnay-sous-Bois, all of France, assignors to Bendix Europe Services Techniques, Drancy, France
Filed Nov. 18, 1991, Ser. No. 793,920
Claims priority, application France, Dec. 13, 1990, 90 15611
Int. Cl.[5] B60T *7/02*
U.S. Cl. 60—594 **1 Claim**



1. A vacuum brake booster and master cylinder assembly, comprising:

a master cylinder provided with a piston movable along a first axis,

a vacuum brake booster comprising a first casing delimiting front and rear chambers, a control rod connected to a brake pedal, the control rod penetrating the rear chamber and located along a second axis different from said first axis, and a first output member which can effect displacement of the piston of said master cylinder, said first output

VOL 1147 ISS 3 FEB 16 1993 UMI

member extending from said front chamber and located on said second axis, and

a transfer member comprising an input member connected with the first output member and located on said second axis, a bell crank lever connected to the input member, a second output member controlled by the bell crank lever and located on said first axis and engaging the piston of the master cylinder, and a second casing supporting the input member, bell crank lever and second output member, said second casing having input and output faces provided with identical securing means for securing respectively the transfer member to the vacuum brake booster and to the master cylinder, whereby the first and second axes are both disposed substantially horizontal.

5,186,005

INTERNAL COMBUSTION ENGINE WITH A DUAL TURBOCHARGER SYSTEM

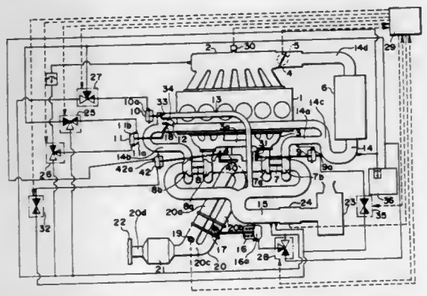
Mamoru Yoshioka, Susono; Toshihisa Sugiyama, Gotenba, and Toru Kidokoro, Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 7, 1991, Ser. No. 666,067

Claims priority, application Japan, Mar. 9, 1990, 2-256494; Mar. 12, 1990, 2-57978

Int. Cl.[5] F02B *37/12*

U.S. Cl. 60—600 **12 Claims**



1. An internal combustion engine with a dual turbocharger system comprising:

a multi-cylinder internal combustion engine having an air intake and an exhaust outlet;

a first and a second turbocharger arranged in parallel with each other with respect to the engine, each including a turbine and a compressor, the turbine being connected with the exhaust outlet of the engine and the compressors being connected with the air intake of the engine;

an intake switching valve installed downstream of the second turbocharger compressor and an exhaust switching valve installed downstream of the second turbocharger turbine, means for opening the intake switching valve and the exhaust switching valve whereby both the first turbocharger and the second turbocharger operate to produce a "two-turbocharger-operation" and for closing the intake switching valve and the exhaust switching valve whereby only the first turbocharger operates to produce a "one-turbocharger-operation";

means for measuring an engine speed;

means for measuring an intake air quantity; and

decision means operatively connected with the intake air quantity measuring means, the engine speed measuring means, and the means for opening and closing the intake and exhaust switching valves and serving to change an engine operation from the "one-turbocharger-operation" to the "two-turbocharger-operation" on the basis of an intake air quantity and serving to change the engine operation from the "two-turbocharger-operation" to the "one-turbocharger-operation" on the basis of an engine speed.

5,186,006

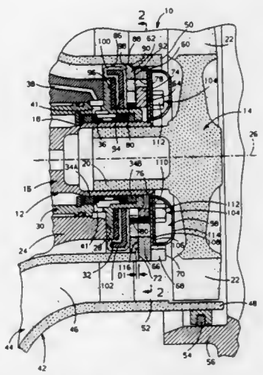
MOUNTING FOR CERAMIC SCROLL

Jack D. Petty, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 19, 1992, Ser. No. 854,103

Int. Cl.[5] F02C *3/04*

U.S. Cl. 60—753 **4 Claims**



1. In a gas turbine engine having

a metal engine block including a cylindrical wall aligned on a primary axis of said engine block and terminating at an annular mounting shoulder in a plane perpendicular to said primary axis, and

a ceramic scroll around said cylindrical wall including an annular nozzle defined between a generally cylindrical inner wall segment of said scroll and a generally cylindrical outer wall segment of said scroll each aligned on said primary axis,

a mounting for said scroll on said engine block comprising:

a first ceramic ring,

means defining a first cross key connection between said first ceramic ring and said cylindrical inner wall segment of said scroll and a second cross key connection between said first ceramic ring and said cylindrical wall of said engine block whereby said scroll is supported on said engine block independent of relative radial thermal growth between said engine block and said scroll and for bodily shiftable movement in the direction of said primary axis toward said mounting shoulder,

means on said inner wall segment of said scroll defining a first uninterrupted annular shoulder in a plane perpendicular to said primary axis and facing said mounting shoulder,

a second ceramic ring between said mounting shoulder and said first ceramic ring including an uninterrupted second annular shoulder engaged by said first annular shoulder when said scroll is bodily shifted in the direction of said primary axis toward said mounting shoulder,

seal means defining a gas seal between said mounting shoulder and said second ceramic ring when said second ceramic ring is clamped against said mounting shoulder with said seal means therebetween, and

clamp means operative to clamp said second ceramic ring against said mounting shoulder with said seal means therebetween by bodily shifting said scroll toward said mounting shoulder and effecting engagement of said first annular shoulder on said second annular shoulder.

5,186,007

CONTROLLED PROCESS FOR XENON CONCENTRATION

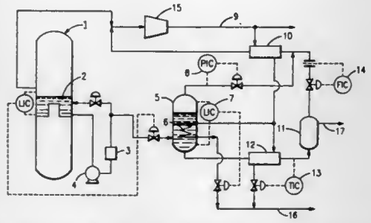
Hideaki Takano; Jitsuo Nakata, and Toshiaki Oonishi, all of Wakayama, Japan, assignors to Kyodo Oxygen Co., Ltd., Japan

Filed Oct. 4, 1991, Ser. No. 770,887

Claims priority, application Japan, Oct. 13, 1990, 2-274197

Int. Cl.[5] F25J *3/04*

U.S. Cl. 62—22 **5 Claims**



1. A process for the concentration of xenon from trace amounts contained in liquid oxygen comprising the steps of:

feeding said liquid oxygen to a xenon condensing column which contains heat-exchangers;

controlling the amount of liquid oxygen evaporated to correspond to the amount of the liquid oxygen fed into said xenon condensing column;

controlling liquid and pressure levels of said xenon condensing column while keeping constant the amount of liquid oxygen vented from said xenon condensing column;

heat-exchanging xenon condensed liquid oxygen vented from said xenon condensing column with high pressure oxygen gas;

recovering said heat-exchanged high pressure oxygen gas as liquid oxygen;

introducing xenon condensed oxygen gas converted from said xenon condensed liquid oxygen in the heat-exchanging step to a xenon adsorptive column; and

selectively adsorbing and condensing xenon from said xenon adsorptive column.

5,186,008

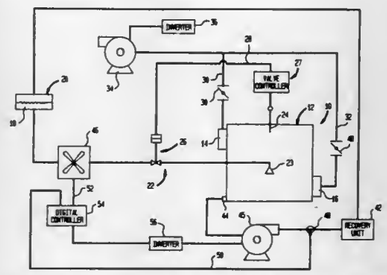
CRYOGENIC FREEZER APPARATUS AND METHOD

Jack Appolonia, Yardley, Pa.; Clair Wheeler, Basking Ridge, and Akhilesh Kapoor, Clark, both of N.J., assignors to The BOC Group, Inc., New Providence, N.J.

Filed Nov. 25, 1991, Ser. No. 798,307

Int. Cl.[5] F25D *13/06*

U.S. Cl. 62—63 **13 Claims**



1. In a cryogenic freezer including: a freezing chamber within which articles are cooled; a pair of inlet and outlet plenums connected to the freezing chamber; means for introducing the cryogen as a liquid into the freezing chamber and into direct contact with the articles causing the articles to cool and the cryogen to boil off into a cryogenic vapor having a density greater than air; and recovery means for compressing, liquefying and purifying the cryogenic vapor and for supplying the cryogen introducing means with liquid cryogen produced from the liquefaction of the cryogenic vapor, the improvement comprising:

exhaust means drawing the air from outside of the freezing chamber and the cryogenic vapor from inside of the freezing chamber into and then from the inlet and outlet plenums for preventing the air from entering the freezing chamber thereby, to prevent an increase in air concentration within the freezing chamber and such that the cryogenic vapor is drawn at an essentially constant, minimum flow rate;

the freezing chamber having an outlet;

outlet drawing means for drawing a combined flow of the cryogenic vapor and the air present within the freezing chamber through the outlet and to the recovery means at a combined flow rate;

the outlet spaced sufficiently below the top of the freezing chamber such that the air concentration of the combined flow is substantially minimized due to the density of the cryogenic vapor;

control means regulating the combined flow rate such that a total mass flow rate of the cryogenic vapor drawn through the inlet and outlet plenums and from the outlet is essentially equal to a liquid mass flow rate of the cryogen upon its entry into the freezing chamber for preventing production of over and under pressures within the freezing chamber that would expel cryogenic vapor through the inlet and outlet plenums above the essentially constant minimum flow rate and draw the air into the freezing chamber, respectively.

5,186,009

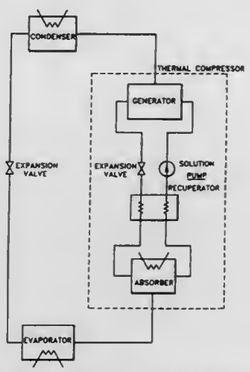
AQUEOUS ABSORPTION FLUIDS

Uwe Rockenfeller, Boulder City, Nev., assignor to Gas Research Institute, Chicago, Ill.

Continuation-in-part of Ser. No. 215,204, Jul. 5, 1988, Pat. No. 4,823,864, which is a continuation-in-part of Ser. No. 38,323, Apr. 14, 1987, abandoned. This application Apr. 24, 1989, Ser. No. 343,026

Int. Cl.[5] F25B *17/02*

U.S. Cl. 62—112 **30 Claims**



1. A water vapor absorption cycle apparatus containing a water vapor absorption fluid comprising an aqueous solution of a metal salt selected from the group consisting of alkali metal hydroxides, nitrites, and mixtures thereof, and alkaline earth and transition metal hydroxides, halides, and thiocyanates, and mixtures thereof, said solution having an initial metal

VOL 1147 ISS 3 FE 16 1993 UMI

salt concentration of between about 30% and about 80%, by weight, and having between about 14% and about 30% of said metal salt, by weight, an organic compound selected from the group consisting of aliphatic alcohols, glycerol, glycols, polyglycols, glycol ethers, aliphatic amines, alkanol amines, butyrolactone, and an alkyl pyrrolidone.

5,186,010

ABSORBENT-REFRIGERANT SOLUTION

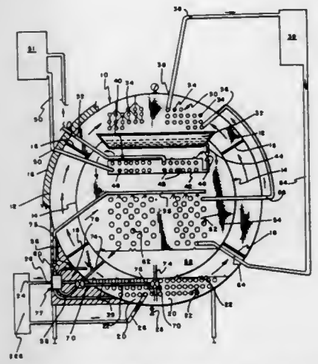
Don H. Wehr, Conifer, Colo., assignor to Darrel H. Williams and George A. Griffin, both of Wichita, Kans.

Continuation of Ser. No. 061,668, Jun. 15, 1987, Pat. No. 5,016,445, which is a continuation-in-part of Ser. No. 882,166, Jul. 7, 1986, abandoned, which is a continuation of Ser. No. 804,179, Nov. 18, 1985, abandoned. This application May 15, 1991, Ser. No. 700,570

The portion of tbe term of this patent subsequent to May 21, 2008, has been disclaimed.

Int. Cl.[5] F25B *15/00*

U.S. Cl. 62—112 **16 Claims**



1. An absorbent-refrigerant solution comprising a major proportion of water and a minor proportion of a transition metal halide comprising titanium trifluoride and titanium tetrafluoride in a ratio of from about 1:9 to about 9:1 by weight.

5,186,011

REFRIGERANT CYCLING APPARATUS

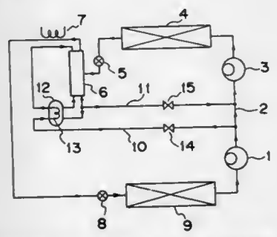
Yuji Yoshida, Itami; Minoru Tagashira, Hirakata; Kazuo Nakatani, Kadoma, and Masami Funakura, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 18, 1992, Ser. No. 836,430

Claims priority, application Japan, Feb. 18, 1991, 3-023197; Feb. 18, 1991, 3-023199

Int. Cl.[5] F25B *7/00*

U.S. Cl. 62—114 **9 Claims**



1. A refrigerant cycling apparatus, enclosing a non-azeotropic mixture comprising a high-boiling point refrigerant and a low-boiling point refrigerant. comprising:

a first compressor:

a second compressor, a suction pipe of which is connected with a discharge pipe of the first compressor;

a fractionating/separating device, the discharge pipe of the first compressor being connected with one of a top portion and a middle portion of the fractionating/separating device, the suction pipe of the first compressor being connected with the top portion of the fractionating-/separating device, the discharge pipe of the second compressor being connected with one of the middle portion and a bottom portion of the fractionating/separating device, the suction pipe of the second compressor being connected with the bottom portion of the fractionating-/separating device;

a first pressure reducing device provided between the top portion of the fractionating/separating device and the suction pipe of the first compressor;

a first vaporizing means provided between the first pressure reducing device and the suction pipe of the first compressor to vaporize the refrigerant;

a second pressure reducing device provided between the discharge pipe of the second compressor and the fractionating/separating device; and

a first condensing means provided between the second pressure reducing device and the suction pipe of the second compressor to condense the refrigerant.

5,186,012

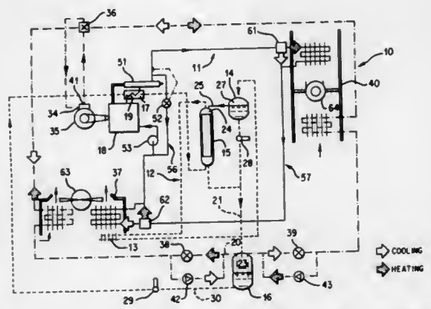
REFRIGERANT COMPOSITION CONTROL SYSTEM FOR USE IN HEAT PUMPS USING NON-AZEOTROPIC REFRIGERANT MIXTURES

Marek Czachorski, Darien, and Kenneth J. Kountz, Palatine, both of Ill., assignors to Institute of Gas Technology, Chicago, Ill.

Filed Sep. 24, 1991, Ser. No. 764,788

Int. Cl.[5] F25B *45/00*

U.S. Cl. 62—114 **15 Claims**



1. A heat pump system using a non-azeotropic refrigerant mixture comprising:

a main refrigeration circuit;

an engine coolant circuit;

a refrigerant rectifier circuit comprising refrigeration circuit interface means for interfacing with said main refrigeration circuit and engine coolant circuit interface means for interfacing with said engine coolant circuit;

said refrigerant rectifier circuit further comprising, in order of decreasing relative elevation, a condenser, a storage vessel in communication with said condenser, a refrigerant rectifier having a top portion in communication with said storage vessel and said condenser, a receiver vessel in communication with a bottom portion of said refrigerant rectifier, and a boiler in communication with said bottom portion of said refrigerant rectifier and said receiver vessel; and

said engine coolant circuit interface means comprising a heat exchanger in a heat exchange relationship with said boiler.

5,186,013

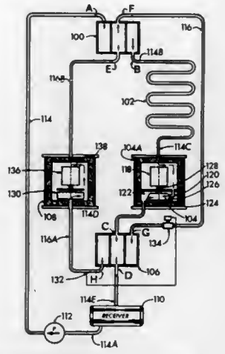
REFRIGERANT POWER UNIT AND METHOD FOR REFRIGERATION

Thomas Durso, 5522 Madison St., Morton Grove, Ill. 60053

Continuation-in-part of Ser. No. 309,937, Feb. 10, 1989, abandoned. This application Oct. 22, 1990, Ser. No. 602,478

Int. Cl.[5] F25B *27/00*

U.S. Cl. 62—115 **45 Claims**



1. A refrigerant power unit, comprising:

a closed piping loop;

refrigerant in said piping loop;

a pump in said piping loop;

an evaporator in said piping loop downstream of said pump;

a rotary machine in said piping loop downstream of said evaporator;

an electric generator in said piping loop between said evaporator and said rotary machine, said piping loop directing the flow of said refrigerant across said electric generator wherein said refrigerant absorbs heat energy dissipated from said generator;

a condenser in said piping loop downstream of said rotary machine; and

a receiver in said piping loop between said condenser and said pump.

5,186,014

LOW REFRIGERANT CHARGE DETECTION SYSTEM FOR A HEAT PUMP

Robert M. Runk, Gasport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 13, 1992, Ser. No. 912,374

Int. Cl.[5] F25B *49/00*

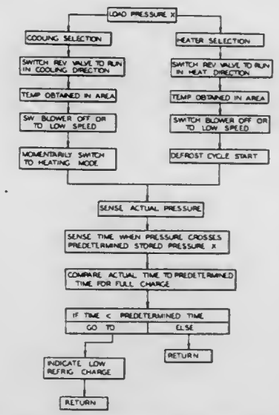
U.S. Cl. 62—129 **3 Claims**

1. A method of detecting low refrigerant charge in a heat pump system of the type having a compressor operatively connected to a reversing valve, the method including the steps of:

sensing the pressure of the refrigerant at a fluid line of the compressor,

detecting a first time at which the sensed pressure crosses a first predetermined pressure value in response to reversal of the reversing value and reversal of the fluid flow direction,

detecting a second time at which the sensed pressure crosses a second predetermined pressure value, and



indicating a low refrigerant charge in the heat pump system when the time difference between the first and second times crosses a predetermined value.

5,186,015

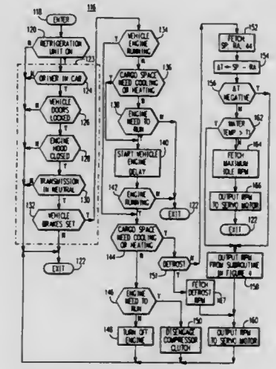
TRANSPORT REFRIGERATION UNIT AND METHOD OF OPERATING SAME

Roland L. Roehrich, Pittsburgh, Pa., and Jay L. Hanson, Bloomington, Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Feb. 27, 1992, Ser. No. 842,861

Int. Cl.[5] F25B *1/00*

U.S. Cl. 62—133 **20 Claims**



1. In a transport refrigeration unit associated with a vehicle having a drive engine and a cargo space to be conditioned to a predetermined set point temperature via a refrigeration cycle, with the transport refrigeration unit including a refrigerant compressor driven directly, or indirectly, by the vehicle drive engine and sensor means for sensing the temperature of the cargo space, the improvement comprising:

first means for determining when the vehicle engine may be safely started under control of the transport refrigeration unit,

second means for determining when the cargo space requires a refrigeration cycle to maintain the set point temperature,

VOL 1147 ISS 3 FE 16 1993 UMI

third means for starting the vehicle engine when the first means finds that the vehicle engine may be safely started and the second means finds that the cargo space requires a refrigeration cycle to maintain the set point temperature, and means detecting when the transport refrigeration unit is activated,

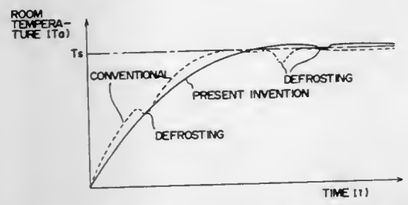
said first means including means detecting when the vehicle is in a safely parked condition, means detecting when the vehicle is unattended, and means detecting when the vehicle is locked.

5,186,016

DEFROSTING CONTROL METHOD AND APPARATUS FOR AIR CONDITIONER

Toshiro Nigo, Fuji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 25, 1991, Ser. No. 782,485
Claims priority, application Japan, Nov. 6, 1990, 2-300559
Int. Cl.[5] F25D *21/00*
U.S. Cl. 62—150 **10 Claims**



1. A defrosting control method for an air conditioner having a refrigerating cycle including in succession a compressor, and indoor heat exchanger, a decompressor, and an outdoor heat exchanger, said compressor being variable-speed driven by an inverter via a compressor motor, and when the frost amount of said outdoor heat exchanger becomes an allowable value or more during a heating operation, a defrosting operation is performed for defrosting the outdoor heat exchanger, said defrosting control method comprising:

a first step of setting a plurality of frequencies which said inverter can output;

a second step of calculating a time period required for a room temperature to reach a preset temperature after the start of the heating operation by said inverter running at one of said plurality of frequencies, in accordance with an environmental condition data;

a third step of calculating the frost amount of said outdoor heat exchanger in accordance with said environmental condition data, under the condition that said inverter runs for said time period calculated at the second step;

a fourth step of selecting an inverter output frequency from said plurality of frequencies set at the first step, said inverter output frequency allowing each of said frost amounts calculated at the third step to take said allowable value or less, said allowable value being determined as a level indicating the defrosting operation is unnecessary; and

a fifth step of controlling said inverter so as to have said output frequency selected at the fourth step.

5,186,017

REFRIGERANT RECOVERY DEVICE

John P. Hancock, and Ralph A. McClelland, both of Indianapolis, Ind., assignors to K-Whit Tools, Inc., Fishers, Ind.

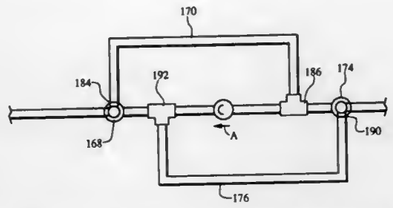
Continuation-in-part of Ser. No. 579,779, Sep. 10, 1990, abandoned. This application Jun. 22, 1992, Ser. No. 901,800
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—292 **15 Claims**

1. A device for recovering refrigerant from a mechanical refrigeration system having a high pressure port through which refrigerant can be withdrawn from the system, and a low pressure port through which refrigerant can be withdrawn from the system, the recovery device comprising:

(a) a refrigerant storage tank having a first entry port and a second entry port,

(b) a first refrigerant conduit extending between the high pressure port of the mechanical refrigeration system and the first entry port of the refrigerant storage tank,

(c) a second refrigerant conduit extending between the low



pressure port of the mechanical refrigeration system and the second entry port of the refrigerant storage tank, and

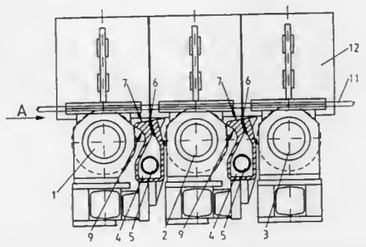
(d) a selectively actuable first flow control means disposed in the second refrigerant conduit, for controlling the flow of refrigerant from the refrigerant storage tank into the mechanical refrigeration system when the device is in a liquid refrigerant recovery mode of operation, and to permit the refrigerant to flow from the mechanical refrigeration system into the refrigerant storage tank when the device is in a gaseous refrigerant recovery mode of operation.

5,186,018

COOLING SYSTEM FOR COOLING A MOVING METAL STRIP

Gustaaf A. J. M. van Ditzhuijzen, Heemstede, and Philip A. Bond, Heemskerk, both of Netherlands, assignors to Hoogovens Groep BV, Ijmuiden, Netherlands

Filed Jun. 20, 1991, Ser. No. 718,284
Claims priority, application Netherlands, Jun. 27, 1990, 9001462
Int. Cl.[5] C21D *1/62, 1/54;* **B21B** *27/06*
U.S. Cl. 62—374 **5 Claims**



1. A cooling system for cooling a moving metal strip, comprising

a roller conveyor for said strip having a plurality of rollers spaced in the direction of movement of said strip; and

a plurality of water boxes arranged between said rollers in said direction and each having a plurality of outlet ducts for projecting cooling water onto said strip from below, said outlet ducts being parallel to each other and spaced uniformly across the strip width, and all said ducts in each box being oriented to project the cooling water upwardly and rearwardly relative to said direction of movement of said strip;

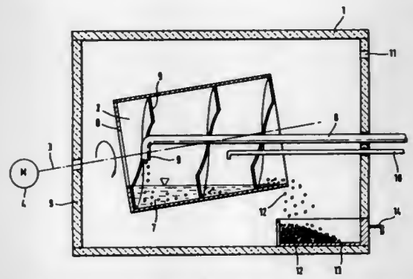
and wherein each said water box is located and arranged close to the next preceding one of said rollers, in said direction and has a top surface, at which exit mouths of said outlet ducts are located, which surface slopes downwardly in the direction opposite to the direction of movement of the metal strip and has a drip edge which is located close to and above the surface of said next preceding roller so that water flowing down said surface falls over said drip edge onto said next preceding roller.

5,186,019

DEVICE TO FREEZE FREE-FLOWING AND POURABLE SUBSTANCES

Gunther Weyermanns, Kempen, and Uwe Gorlich, Moers, both of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Fed. Rep. of Germany

Filed May 22, 1991, Ser. No. 704,040
Claims priority, application Fed. Rep. of Germany, May 31, 1990, 4017565
Int. Cl.[5] F25D *25/02*
U.S. Cl. 62—381 **3 Claims**



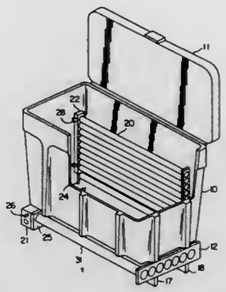
1. In a device to freeze free-flowing and pourable substances in a bath consisting of a liquid cryogen, in which the bath is located inside an insulated housing which has openings which serve to introduce the substances to be frozen and the liquid cryogen as well as to remove the frozen substances, the improvement being in that said bath is located inside a rotatable hollow cylinder, said rotatable hollow cylinder being mounted completely within said insulated housing, said cylinder having a rotational axis tilted with respect to the horizontal plane whereby said cylinder has a low end and a high end, said low end being the feed end of said cylinder, said high end being the outlet end of said cylinder, a feed mechanism at said low end for feeding the substances to be frozen at said low end, said bath being in said low end, said cylinder having an inner wall, a ribbon screw being on said inner wall for upwardly conveying the substances to be frozen to said outlet end for discharge from said cylinder, bath retaining means at said low end of said cylinder extending above said inner wall at the lowest point of said low end, said bath retaining means comprising a ring mounted to said low end extending radially inwardly of said inner wall to create a dam for holding said bath at said low end in accordance with the radially inward dimension of said ring, said ring extending radially inwardly by a distance less than the radius of said cylinder, and said cylinder being tilted at a shallow angle with the lowest portion of said high end being below the axial center of said low end and with said bath extending substantially the entire length of said cylinder.

5,186,020

PORTABLE COOLER

Uwe Rockenfeller, and Lance D. Kirol, both of Boulder City, Nev., assignors to Rocky Research, Boulder City, Nev.

Continuation-in-part of Ser. No. 644,833, Jan. 23, 1991, abandoned. This application Jul. 19, 1991, Ser. No. 732,652
Int. Cl.[5] F25B *17/00*
U.S. Cl. 62—457.9 **49 Claims**



1. A portable cooler capable of being repeatedly charged at a first location and after each such charge selectively discharged at a selected time and at a selected second location comprising:

a container having a cooling chamber therein,

an evaporator in thermal communication with said cooling chamber,

a reactor assembly comprising one or more reactors each containing a complex compound formed by adsorbing ammonia on a chloride, bromide, sulphate or chlorate salt of a metal selected from the group consisting of an alkali and alkaline earth metal, chromium, manganese, iron, cobalt, nickel, cadmium, tantalum and rhenium, or a double metal chloride salt,

means for charging said portable cooler comprising heating means for being connected to a source of electrical power and in thermal contact with said complex compound for heating said complex compound in said one or more reactors for desorbing said ammonia therefrom during said charging, conduit means extending between said one or more reactors and said evaporator and in communication therewith for directing said ammonia therebetween, and

a valve means cooperating with said conduit means for selectively directing ammonia from said evaporator to said one or more reactors during discharge for cooling said cooling chamber when said heating means is disconnected from said source of electrical power.

5,186,021

BYPASS EXPANSION DEVICE HAVING DEFROST OPTIMIZATION MODE

Fred J. Keller, Indianapolis, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 20, 1991, Ser. No. 702,471
Int. Cl.[5] F25B *41/06, 41/04;* **F16K** *31/02*
U.S. Cl. 62—511 **5 Claims**

1. An expansion device for passing a flow of refrigerant therethrough comprising:

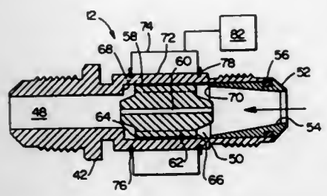
a body having a flow passage therethrough for passing a flow of refrigerant in either direction;

a piston, slideably mounted in said flow passage for normally free unopposed movement between a first position and a second position in response to the force imparted thereupon by the flow of refrigerant through said flow passage in a first direction, and, a second direction respectively;

said piston having a metering port extending therethrough for metering the flow of refrigerant therethrough when

VOL 1147 ISS 3 FE 16 1993 UMI

said piston is moved to said first position responsive to the flow of refrigerant in said first direction, and, at least one flow channel substantially parallel to said metering port for passing a substantially unrestricted flow of refrigerant when said piston is moved away froms aid first position in the direction of said second position, responsive to the flow of refrigerant in said second direction; and



selectively actuatable means, not in physical contact with said piston, for imparting a force upon said pistion, when actuated, which acts in said second direction, which is sufficient to move said pistion, against the force imparted thereupon by the flow of refrigerant in said first direction, away from said first position.

5,186,022

EVAPORATOR STRUCTURE FOR REFRIGERATOR-FREEZER

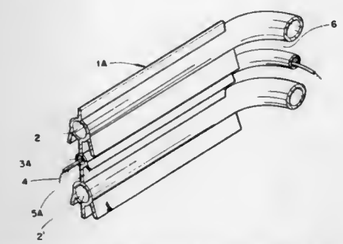
Man-Hoe Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 13, 1991, Ser. No. 668,636

Claims priority, application Rep. of Korea, Mar. 13, 1990, 90-2891; May 16, 1990, 90-6534; Jun. 27, 1990, 90-9194

Int. Cl.[5] F25B *39/02*

U.S. Cl. 62—515 **13 Claims**



1. An evaporator structure for a self-defrosting refrigerator-freezer, comprising a first tube for conducting refrigerant, a second tube disposed parallel with said first tube and containing an electrical heating wire, and heat exchanging fins extending outwardly from said first tube, said first and second tubes and said fins all being of one-piece construction, said structure being bent to form generally straight sections interconnected by curved sections, and open spaced being formed between said tubes at said curved sections to form air conducting paths.

5,186,023

RINGS THAT OPEN AND CLOSE

Gary J. Goldberg, 6728B Boca Pines Trail, Boca Raton, Fla. 33433

Filed Mar. 30, 1992, Ser. No. 859,916

Int. Cl.[5] A44C *9/02*

U.S. Cl. 63—15.5 **8 Claims**

1. A ring for a finger comprising:

a) an arcuate rigid section arranged for wearing on the dorsal area of a finger;

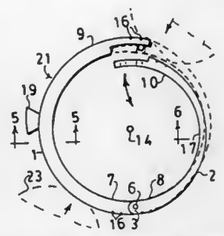
b) an arcuate resilient section arranged for wearing on the ventral area of a finger;

c) a hinge means pivotally joining a first end of said rigid section to a first end of said resilient section to enable said rigid and resilient sections to move pivotally between an open position for ready application to a finger and a closed position in which said finger is completely encircled;

d) a partial thickness first tongue means extending from a second end of said rigid section;

e) a partial thickness second tongue means extending from a second end of said resilient section;

f) said first and second tongue means arranged for overlapping one another in said closed position to form a substantially full thickness portion of said ring with said first tongue means lying away from the axis of said ring and said second tongue means lying toward said axis;



g) a pin means extending radially from said first tongue means toward said axis;

h) a hole means extending radially within said second tongue means and arranged to receive and closely engage said pin means for preventing diametral changes of said ring in said closed position by circumferential forces; and

i) said resilient section being provided with so much greater resilience than said rigid section that squeezing said first and second ends of both said sections together causes said first and second ends of said resilient section to move closer together than said first and second ends of said rigid section to thereby move said hole means closer to the axis than the pin means to thereby disengage said pin means from said hole means to enable closing and opening said ring.

5,186,024

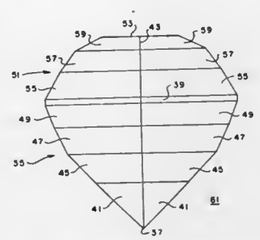
HIGH BRILLIANCE STEP-CUT STONE AND METHOD OF MAKING SAME

Lester C. Waters, Jr., Carrollton, Tex., assignor to Dorothy P. Waters, Carrollton, Tex.

Filed Feb. 3, 1992, Ser. No. 892,975

Int. Cl.[5] A44C *17/00*

U.S. Cl. 63—32 **6 Claims**



1. A cut stone having a pavilion portion, a crown portion and a girdle intermediate said pavilion portion and said crown portion, said stone having a substantially octagonal lateral cross-section, said pavilion portion being defined by a plurality of discrete groups of pavilion facets, each discrete group of pavilion facets having eight discrete pavilion facets cut at respective predetermined cutting machine indices, all of the pavilion facets of the same discrete group being cut at the same discrete cutting angle, adjacent ones of the pavilion facets of the same discrete group having substantially the same shape and dimensions, said crown portion being defined by a plurality of discrete groups of crown facets, each discrete group of crown facets having eight discrete crown facets cut at respective predetermined machine cutting indices, all of the crown facets of the same discrete group being cut at the same discrete cutting angle, adjacent ones of the crown facets of the same discrete group having substantially the same shape and dimensions.

5,186,025

PLUSH OR PILE KNITTED FABRIC AND CIRCULAR KNITTING MACHINE FOR THE PRODUCTION THEREOF

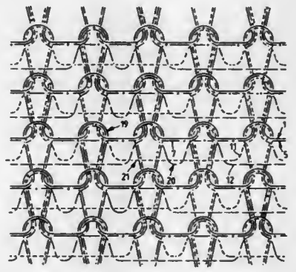
Paul Neher, Messtetten, Fed. Rep. of Germany, assignor to SIPRA Patententwicklungs-und Beteiligungsgesellschaft mbH, Albstadt, Fed. Rep. of Germany

Filed Aug. 23, 1990, Ser. No. 572,472

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1989, 3927815

Int. Cl.[5] D04B *9/12, 1/02*

U.S. Cl. 66—9 R **18 Claims**



1. A plush or pile knitted fabric comprising a basic knit containing a plurality of courses being formed with at least one first basic yarn, and plush yarns or pile fibres being incorporated into the basic knit and at least one second basic yarn being knitted in selected courses together with the first basic yarn and forming in said selected courses first stitches and first non-plush floats disposed between the first stitches.

5,186,026

COMPOUND NEEDLE

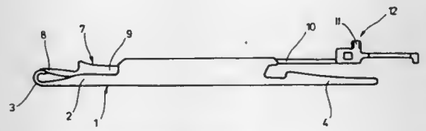
Albert Teufel, Veringenstadt, Fed. Rep. of Germany, assignor to Theodor Groz & Söhne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft, Albstadt, Fed. Rep. of Germany

Filed Jan. 10, 1992, Ser. No. 818,818

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1991, 4100931

Int. Cl.[5] D04B *35/06*

U.S. Cl. 66—123 **21 Claims**



1. A compound needle comprising:

(a) a needle member having a longitudinal direction and including a head; and

(b) a longitudinally extending closing member mounted on said needle member so as to be displaceable with respect to said needle member in the longitudinal direction and so as to cooperate with said head, said closing member including

(1) a first part having a shank, beard a tip on said shank, and a coupling means on an end region of said shank remote from said tip, and

(2) a second part following said first part in the longitudinal direction, said second part having a control butt, a crank spring acting laterally with respect to the longitudinal direction, and receiving means for receiving at least said end region of said shank together with said coupling means; the first and second parts being rigidly connected together by said coupling means and said receiving means.

5,186,027

CIRCULAR KNITTING MACHINE OF THE TYPE WITH CYLINDER AND DIAL WITH THREAD CLAMPING AND CUTTING DEVICE FOR MANUFACTURING OPEN FABRIC

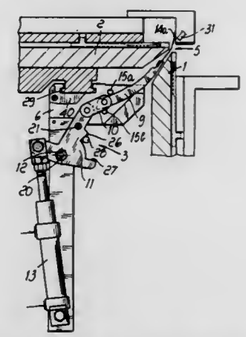
Riccardo Tenconi, Varese, Italy, assignor to Mec-Mor S.r.l., Induno Olona, Italy

Filed Sep. 9, 1991, Ser. No. 756,713

Claims priority, application Italy, Sep. 14, 1990, 21471 A/90

Int. Cl.[5] D04B *35/00*

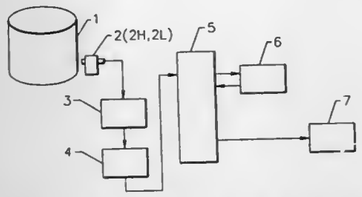
U.S. Cl. 66—147 **13 Claims**



1. Circular knitting machine comprising a needle cylinder and dial, said needle cylinder and said dial being provided with needles for knitting threads at a needle knitting region of the machine, said needle knitting region of the machine being arranged outside said cylinder and said dial at a region where said cylinder faces said dial, said cylinder defining an inside, a space being defined between said cylinder and said dial which communicates between said inside of said cylinder and said needle knitting region, the circular knitting machine further comprising a thread clamping and cutting device, wherein the thread clamping and cutting device is arranged at said inside of said cylinder, the machine further comprising a thread engagement element also arranged at said inside of said cylinder, said thread engagement element being controllably reciprocally movable through said space and between said inside and said needle knitting region in order to engage threads at said needle knitting region and pull said threads to said inside of said cylinder for engagement thereof with said clamping and cutting device.

VOL 1147 ISS 3 FE 16 1993 UMI

5,186,028
APPARATUS AND METHOD FOR CONTROLLING SELECTABLE KNITTING MACHINE MECHANISM
Yoji Kawase, Nishinomiya, and Takao Shibata, Takatsuki, both of Japan, assignors to Precision Fukuhara Works, Ltd., Hyogo, Japan
Filed Nov. 27, 1991, Ser. No. 799,401
Int. Cl.[5] D04B *15/00*; G05B *19/26*
U.S. Cl. 66—232 **9 Claims**

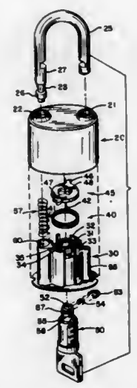


1. In a knitting machine having a rotating knitting machine component that rotates at a rotational speed, and a selectable knitting machine mechanism including a needle selection mechanism and a yarn feed changeover mechanism, an apparatus for controlling said selectable knitting machine mechanism comprising:

said rotating knitting machine component cooperating with a sensing means for sensing said rotational speed and for generating a periodic signal therefrom; and

control means cooperating with said sensing means for generating a control signal to said selectable knitting machine mechanism responsive to a predetermined trigger point of said periodic signal, said control means including means to delay said predetermined trigger point when said rotational speed of the rotating knitting machine component is relatively slow and to advance said predetermined trigger point when said rotational speed of the knitting machine is relatively fast.

5,186,029
PADLOCK
Gary L. Myers, River Grove, Ill., assignor to Fort Lock Corporation, River Grove, Ill.
Filed Sep. 27, 1991, Ser. No. 766,122
Int. Cl.[5] E05B *67/22*
U.S. Cl. 70—38 A **8 Claims**



1. A padlock comprising in combination:

an outer casing having a top wall, side wall and open bottom, and having a pair of spaced apart shackle-receiving openings in said top wall;

a generally U-shaped shackle having a first leg and a second leg, each including notches adjacent their ends and each adapted to be received by the shackle-receiving openings;

an insert shell adapted to be received by the outer casing and fixedly attached thereto and including pedestal means, the pedestal means having a lock plug bore extending therethrough and shackle receiving means disposed on opposite sides of the lock plug bore and wall means disposed between said lock plug bore and said shackle receiving means, said lock plug bore including longitudinally extending guiding ridges;

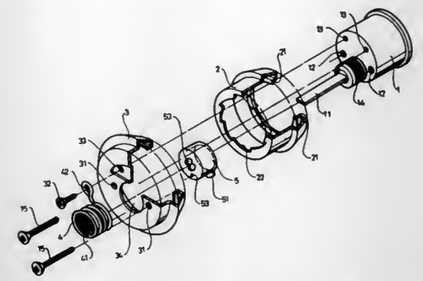
a key operated lock plug including actuator end means adapted to be inserted in the lock plug bore, guided into position by said guiding ridges, held therein by a latching means, and adapted to be limited in movement within the lock plug bore by the mutual engagement between a detent member extended from said lock plug and the gapped portion of gapped collar means disposed within said lock plug bore, said gapped collar means extending from the perimeter of the lock plug bore towards the center of the lock plug bore and comprising an upper surface, a lower surface and gap means connecting said upper and lower surfaces;

a movable lock bolt means, receivable by the pedestal means and engageable by the lock plug actuator end means for positioning the lock bolt means in a first "assembly" position, a second "unlocked" position for retained opening of the shackle, and a third "locked" position where the lock bolt means engages the shackle leg notches for locking the shackle, said "unlocked" position being intermediate said "assembly" and "locked" positions;

a spring means for engaging the lock bolt means and biasing the lock bolt means to the third "locked" position both before and after engagement between said lock bolt means and said lock plug actuator end means, such that when the lock plug is first inserted, the lock bolt means is positioned by the lock plug actuator end means in the first "assembly" position by rotation of said lock plug allowing insertion of the shackle into the outer casing, the lock bolt means is moved to the second "unlocked" position whereby the latching means is actuated and the mutually engageable detent means are engaged such that the lock bolt means is precluded from returning to the first "assembly" position thereby allowing only an opening and snap closing of the shackle with operation of the lock plug by a proper key.

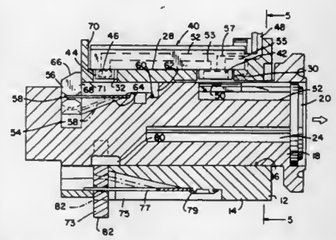
5,186,030
LOCKING DEVICE FOR AN AUXILIARY LOCK
Jui C. Lin, Kaohsiung Hsien, Taiwan, assignor to Taiwan Fu Hsing Industry Co., Ltd., Kaohsiung Hsien, Taiwan
Filed Nov. 25, 1991, Ser. No. 796,781
The portion of the term of this patent subsequent to Apr. 30, 2008, has been disclaimed.
Int. Cl.[5] E05B *9/04*
U.S. Cl. 70—190 **4 Claims**

1. A locking device for an auxiliary lock comprising a rotatable ring, a base, an actuating wheel and a coiled spring, said rotatable ring having a peripheral lip to combine with a flange of an auxiliary lock to be fitted around the lock and combined with the base at one vertical side; said lock, said actuating wheel and said base being fixed firmly on a door by means of screws inserting from one side of the door through the base, the actuating wheel and the lock; said rotatable ring being able to rotate the actuating wheel 90°, said actuating wheel being provided with an 8-shaped opening in its vertical side for an actuating plate of a dead bolt to pass through, said actuating plate being able to be rotated 90° by the actuating wheel for causing a latch of the dead bolt to be extended to lock the door



when the said actuating wheel is rotated 90° by said rotatable ring.

5,186,031
SELF-DESTRUCT ELECTRICAL INTERLOCK FOR CYLINDER LOCK AND KEY SET
David C. Janssen, Whitefish Bay, and Larry R. Grimmer, Sussex, both of Wis., assignors to Briggs & Stratton Corporation, Milwaukee, Wis.
Filed Aug. 20, 1991, Ser. No. 747,617
Int. Cl.[5] E05B *47/00, 63/00*
U.S. Cl. 70—277 **18 Claims**

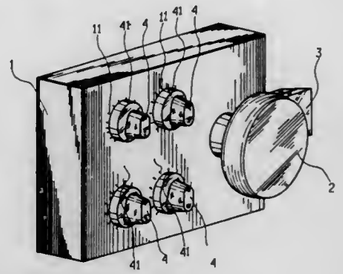


1. An anti-tampering device for a mechanical lock of the type having a sleeve with an outer peripheral surface, a hollow inner core having a longitudinal axis, a rotatable cylinder adapted to be longitudinally inserted in the hollow inner core of the sleeve, and a mated key operable for unlocking and rotating the cylinder when the key is inserted in a key slot in the cylinder, the lock further including an electrical interlock circuit which is enabled when the key is inserted in the key slot and the cylinder is properly rotated, the anti-tampering device comprising:

a. a frangible housing associated with the sleeve of the lock for containing a portion of the electrical interlock circuit; and

b. intercept means associated with the cylinder and adapted for intercepting and destructing both the frangible housing and the circuit portion therein when said cylinder is forcibly, axially removed from said sleeve, whereby enabling of the electrical interlock circuit is precluded.

5,186,032
NUMERAL LOCK WITH CHANGEABLE UNLOCKING NUMBERS
Tzyh-Suenn Chia, No. 52-5, Lane 39, Ton May Road, Hsinchu, Taiwan
Filed Sep. 4, 1991, Ser. No. 754,950
Int. Cl.[5] E05B *37/16*
U.S. Cl. 70—315 **1 Claim**



1. A numeral lock comprising:

a housing having two interior chambers, said housing having a plurality of recesses formed in an inner surface;

a handle member having a rotatable shaft extending through said housing and a handle disposed on opposite ends thereof;

a slider member mounted in said housing and being extendable therefrom;

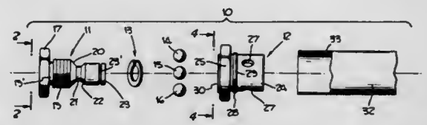
a plurality of rotatable dial members mounted on said housing, each said dial member having a shaft extending into said housing and a first gear disposed on an end of said shaft of each said dial member;

a pair of link members slidably disposed in each of the respective chambers of said housing, each said pair of link members having a first end pivotally connected to said slider member and a plurality of projections formed thereon that are received by said recesses of said housing;

a connector rod having a first end connected to said shaft of said handle member and a second end attached to said slider member;

a setting knob mounted on a first end of a locking rod slidably extending into said housing, and a second gear disposed on a second end of said locking rod, said second gear being adapted to engage with said first gear, whereby a combination of said numeral lock is changeable by pulling said setting knob outwardly from said housing to separate said second gear from said first gear, rotating said dial members to any desired notch on said housing, and releasing said setting knob.

5,186,033
APPARATUS AND METHOD FOR FORMING EXTERNAL RAISED BEADS ON HOLLOW TUBING
Alex Nieczyporowicz, Torrance, Calif., assignor to Earl's Supply Co., Long Beach, Calif.
Filed Dec. 6, 1991, Ser. No. 804,887
Int. Cl.[5] B21B *27/06*
U.S. Cl. 72—75 **18 Claims**



1. A tool forming an external annular bead on a hollow rigid tube comprising:

VOL 1147 ISS 3 FE 16 1993 UMI

a screw having a main threaded portion of a first outer diameter, a head of a greater outer diameter than said threaded portion having an irregularly shaped outer configuration, a first tapered portion leading away from said threaded portion to a neck portion of a lesser outer diameter than the outer diameter of said threaded portion and a second tapered portion leading away from said neck portion to a nose portion of an outer diameter greater than the outer diameter of said neck portion;

a body member having a main generally cylindrical body portion and an irregularly configured head of a greater outer diameter than the outer diameter of said body portion, said body member having an inner wall with a threaded throughbore extending through said body member, the threads of said throughbore adapted to threadably engage with the threads of said threaded portion of said screw, and at least one hole extending through said body portion opening into the interior thereof; and

at least one detent of a size adapted to fit between said neck portion and the inner wall of said cylindrical portion when said screw partially threadably engages said body member and said at least one detent is aligned with said at least one hole whereby a hollow tubing having an inner wall and an outer wall and of an inner diameter substantially the same as the outer diameter of said cylindrical portion may be inserted onto said cylindrical portion and rotation of said screw further into said body member pushes said at least one detent further outwardly when said first tapered portion engages said at least one detent through said at least one hole against the inner wall of said tubing thereby forming a raised bead on the outer wall of said tubing.

5,186,034

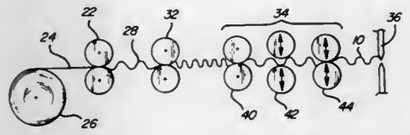
AIR CENTER MACHINE WITH PITCH ADJUSTMENT

Terry J. Hunt, Lockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 17, 1992, Ser. No. 822,236

Int. Cl.[5] B21D *13/04*

U.S. Cl. 72—187 **5 Claims**



1. A machine for forming corrugated ribbon from sheet stock with adjustable pitch of convolutions comprising:

forming rolls for producing corrugated ribbon from sheet stock;

stuffing rolls for compressing the corrugated ribbon to a pitch smaller than the desired product pitch; and

means for stretching the corrugated ribbon out to a desired pitch comprising metering rolls for paying out the ribbon at a controlled rate, first and second pairs of pullout rolls following the metering rolls adapted to selectively engage the payed out ribbon to form the ribbon to first and second pitches, respectively, and means for selectively engaging the pairs of pullout rolls with the ribbon to attain one of the first and second pitches.

5,186,035

TUBE LOADING SLEEVE FOR PILGER MILL

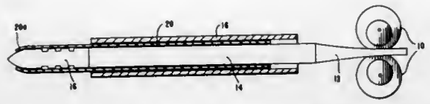
Paul B. Tuck, Wilmington, N.C., assignor to General Electric Company, San Jose, Calif.

Filed Feb. 18, 1992, Ser. No. 836,682

Int. Cl.[5] B21B *21/00, 25/00*

U.S. Cl. 72—208 **11 Claims**

1. In a pilger mill for reducing Zircaloy tube stock down to nuclear fuel cladding tube dimensions, an elongated loading sleeve having an inner diameter such as to permit insertion to said sleeve over a mandrel assembly of the pilger mill in close fitting relation and an outer diameter such as to permit insertion of a Zircaloy tube or said sleeve in close fitting relation,



said sleeve providing a barrier protecting an inner surface of the Zircaloy tube during loading thereof onto the mandrel assembly preparatory to pilgering, said sleeve then being removed prior to reduction of the loaded Zircaloy tube down to cladding tube dimensions.

5,186,036

CABLE WIRE BENDING METHOD AND CABLE WIRE BENDING DEVICE

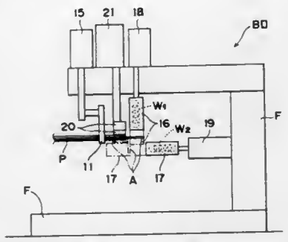
Satoshi Kamada, Tsu, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Filed Nov. 8, 1991, Ser. No. 789,609

Claims priority, application Japan, Nov. 13, 1990, 2-308242

Int. Cl.[5] H01R *43/28*

U.S. Cl. 72—306 **4 Claims**



1. A method for bending an exposed core wire (A) of an electric cable (P) having an insulating member thereon, said method comprising the steps of:

clamping said electric cable (P) at a clamping position adjacent said exposed core wire (A) so that an axis of said electric cable extends in a first direction;

bending said exposed core wire (A) with a first die, at an angle substantially perpendicular to said axis of said electric cable (P) while simultaneously heating said exposed core wire with a first heater integrally incorporated in said first die, said first die being moved in a direction substantially perpendicular to said axis; and

bending said perpendicularly bent core wire (A) with a second die, at an angle substantially parallel to said axis of said electric cable (P) so that an end portion of said core wire extends along the surface of said insulating member (4 and 5) while simultaneously heating said exposed core with a second heater integrally incorporated in said second die, said second die being moved relative to said first die and in a direction substantially parallel to said axis.

5,186,037

PROCESSING MACHINE, ESPECIALLY AUTOMATIC PUNCHING AND BENDING MACHINE

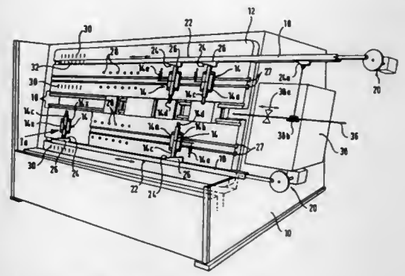
Otto Bihler, Schleiferweg 2, D-8959 Halblech/Füssen, Fed. Rep. of Germany

Filed Mar. 5, 1991, Ser. No. 664,924

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1990, 4007204

Int. Cl.[5] B21D *11/07*

U.S. Cl. 72—442 **42 Claims**



1. A processing machine comprising:

a machine frame (**10**);

means for defining a plurality of processing locations on the machine frame (**10**);

a processing unit (**14**) mounted on the machine frame at each of selected ones of said plurality of processing locations, each of said processing units so mounted having at least one moving part (**14***c*);

drive means supported by the machine frame (**10**) and common to one or more of said selected processing locations for driving said at least one moving part (**14***c*) of said processing units (**14**) mounted at said one or more selected processing locations;

said drive means comprising at least one drive rod unit (**18**) associated with said one or more selected processing locations and guided substantially linearly on the machine frame (**10**) in a guidance direction and reciprocating in an oscillating manner in said guidance direction, said drive rod unit (**18**) being provided with a control means (**24, 26**) allocated to each of said one or more selected processing locations to define respective pairs of a processing unit (**14**) and a control means (**24, 26**), each of said respective pairs of processing units-control means including a control cam element (**26**) and a cam follower (**14***h*) engageable therewith for driving the respective processing unit (**14**);

said control cam element (**26**) being movable with one of said drive rod unit (**18**) and said at least one moving part (**14***c*) of the respective processing unit (**14**) and said cam follower (**14***h*) being moveable with the other one of said drive rod unit (**18**) and said at least one moving part (**14***c*) of the respective processing unit (**14**).

5,186,038

RECTIFYING MEANS FOR A CAR BODY AND PROCEDURE IN RECTIFYING SAME

Teuvo O. Venalainen, Kuopio, Finland, assignor to Autorobot Finland Ky, Finland

PCT No. PCT/FI90/00289, § 371 Date Jul. 30, 1991, § 102(e) Date Jul. 30, 1991, PCT Pub. No. WO91/08063, PCT Pub. Date Jun. 13, 1991

PCT Filed Nov. 28, 1990, Ser. No. 741,420

Claims priority, application Finland, Dec. 1, 1989, 895748

Int. Cl.[5] B21D *1/12*

U.S. Cl. 72—457 **17 Claims**

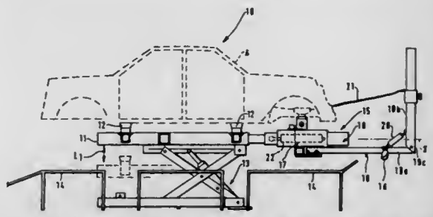
1. A car body rectifying means, comprising a rectifying table,

attachments for holding an object to be rectified, said attachments being located on said rectifying table,

lifting means structured and arranged to lift and lower said rectifying table,

a rectifying unit connected to said rectifying table, said rectifying unit comprising a base frame and a slide unit, said slide unit being freely movable relative to said base frame,

a first actuator located on said base frame, said first actuator being structured and arranged to move said slide unit



along a horizontal axis of said rectifying table, and said slide unit comprising a rectifying boom having a beam structure, said rectifying boom being turnable about a vertical axis of said rectifying table and being movable along with said slide unit, said rectifying boom being securable by securing means in optional positions relative to said slide unit, and

a second actuator provided on said rectifying boom, said second actuator directing a rectifying force from said beam structure of said rectifying boom to the object to be rectified.

5,186,039

DEVICE FOR MOUNTING A CLAMP FOR HOLDING THE BOTTOM OF A VEHICLE BODY ON A REPAIR STAND INTENDED FOR REPAIRING THE COACHWORK OF THIS VEHICLE

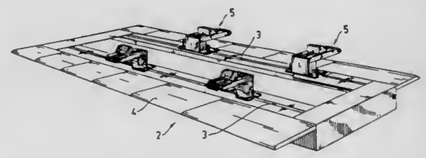
Germain Celette, 1 rue Porterne, 38299 Vienne, France

Filed Sep. 6, 1991, Ser. No. 756,151

Claims priority, application France, Sep. 10, 1990, 90 11356

Int. Cl.[5] B21D *1/12*

U.S. Cl. 72—457 **8 Claims**



1. A device for mounting a clamp for holding a base of a vehicle body on a repair stand frame intended for repairing of coachwork of the vehicle, in which said clamp includes a vertical support member consisting of a vertical threaded screw mounting said clamp at an upper end thereof; said device including a vertical support attached to said frame, a horizontal slideway extending transversely with respect to said frame and affixed onto said vertical support and formed of a pair of parallel horizontal bars with proximal ends thereof affixed onto the vertical support and distal free ends; upper and lower threaded nuts engaged on said screw and bearing against upper and lower surfaces of said pair of parallel bars to permit the clamp to be adjusted transversely along said slideway and to be adjusted vertically by their position on said screw; and removable connection means releasably joining and bracing the free ends of said bars to maintain a parallel relation between the pair of bars under stresses exerted by coachwork repair on the

VOL 1147 ISS 3 FE 16 1993 UMI

vehicle, without interfering with the transverse removal or installation of said clamp over the distal end of said slideway.

5,186,040

METHOD FOR MEASURING THE VISCOSITY OF A MATERIAL

Annie Tissier, Saint Ismier, and Jean-Francois Teissier, Voiron, both of France, assignors to France Telecom (CNET), Paris, France

Filed Nov. 27, 1991, Ser. No. 798,090
Claims priority, application France, Nov. 29, 1990, 90 15241
Int. Cl.[5] G01N *11/00*
U.S. Cl. 73—54.01 **2 Claims**



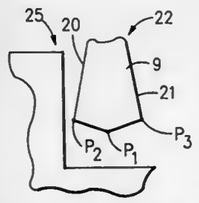
1. A method for measuring the viscosity of a material comprising the following steps:
forming an array of parallel strips (2) of said material for constituting a diffraction grating;
illuminating the array with a monochromatic light beam, the diffracted light of which produces a diffraction grating comprised of a main light spot (5) corresponding to the specular reflection and of a plurality of adjacent, aligned, diffraction spots, the envelope of which exhibits a major lobe (L0) including said main spot (5) and minor lobes (L1, L2) among which said first lobe (L1) is adjacent to said major lobe (L0);
subjecting said array to a thermal process consisting in rapidly heating it at a predetermined temperature (T) and maintaining it at said temperature;
selecting the brightest spot (6) among those of said first lobe (L1) and measuring the evolution of the light intensity (HL1) of said spot (6) during the thermal process;
determining the time interval (d) elapsing until the first passage by a minimum intensity value (HL1b) of said spot (6); and
deducing therefrom the value (ν) of the viscosity of the material constituting the array by the formula $1/\nu=\alpha d$, where α is a constant determined by calibration of the apparatus with a known material.

5,186,041

MICROPROBE-BASED CD MEASUREMENT TOOL

Diana Nyyssonen, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 619,378, Nov. 28, 1990, abandoned. This application Mar. 16, 1992, Ser. No. 852,849
Int. Cl.[5] G01B *5/28*
U.S. Cl. 73—105 **22 Claims**



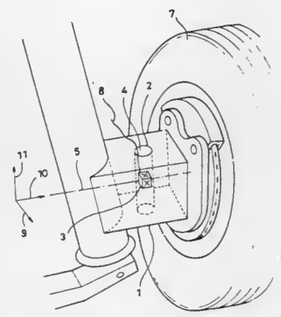
1. An atomic force microprobe metrology system for dimensionally measuring a sample including
a) a vibrating atomic force microprobe which indicates when said microprobe is a given distance from the surface to be sensed,
b) means for moving said microprobe relative to said sample,
c) first means for detecting vertical proximity of said microprobe to said sample and second means for detecting transverse proximity of said microprobe to the side walls of features of said sample, said first and second means for detecting providing separate vertical and transverse output signals indicative of the vertical and transverse relationship of said microprobe to said sample, and
d) means for adjusting the relative position of said microprobe and said sample in the vertical and transverse directions as a function of said output signals, and
e) said means for adjusting being connected to receive said output signals from said first and second means for detecting.

5,186,042

DEVICE FOR MEASURING ACTION FORCE OF WHEEL AND DEVICE FOR MEASURING STRESS OF STRUCTURE

Nagao Miyazaki, Osaka-Sayama, Japan, assignor to Japan Electronics Industry, Ltd., Osaka, Japan

Filed Mar. 12, 1991, Ser. No. 667,939
Claims priority, application Japan, Mar. 19, 1990, 2-69461; May 11, 1990, 2-125658
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—118.1 **22 Claims**



1. A device for measuring action force of a wheel characterized in that a vehicle axle is formed with a hole, a stress detection sensor is installed in said hole and secured therein through a spacer means, the spacer means is a solid material filling all space between said stress detection sensor and walls of said hole and bonding to said stress detection sensor and said walls, and a detection signal from said stress detection sensor is processed in a signal processing circuit.

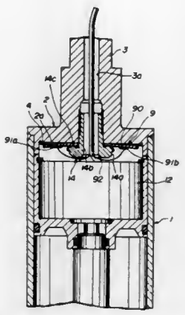
5,186,043

LOAD SENSOR

Fumiyuki Yamaoka, and Shinobu Kakizaki, both of Kanagawa, Japan, assignors to Atsugi Unisia Corporation, Atsuji, Japan

Filed May 28, 1991, Ser. No. 706,275
Claims priority, application Japan, May 28, 1990, 2-137367
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—118.1 **5 Claims**

1. An apparatus for detecting an input load, comprising:
a shock absorber including a cylinder and a lid closing one axial end of said cylinder;
a lid including a radially extending wall which is adapted to elastically deform upon being subject to an input load, the radially extending wall having a first portion and a second portion spaced from said first portion;
an elastically deflectable sensor body having an inner peripheral portion engaging with said first portion for movement therewith and an outer peripheral portion engaging with said second portion for movement therewith;
a first pair of diametrically opposed sensing elements on said sensor body;
a second pair of diametrically opposed sensing elements on said sensor body;



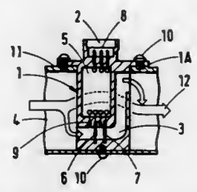
a first bridge circuit having said two diametrically opposed sensing elements of said first pair in series; and
a second bridge circuit having said two diametrically opposed sensing elements of said second pair in parallel.

5,186,044

AIR FLOW RATE MEASURING DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Shinya Igarashi, and Kaoru Uchiyama, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Automotive Engineering Co., Ltd., Ibaraki, both of, Japan

Filed Feb. 1, 1991, Ser. No. 649,859
Claims priority, application Japan, Feb. 7, 1990, 2-026058; Mar. 7, 1990, 2-053692
Int. Cl.[5] G01F *1/68*
U.S. Cl. 73—118.2 **17 Claims**



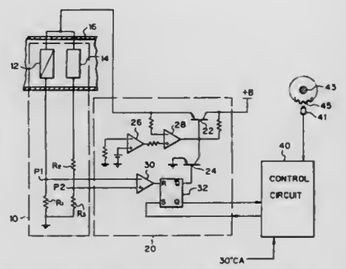
1. An air flow rate measuring device for an internal combustion engine including a housing adapted to be inserted through wall means defining an air intake main passage of said engine, said housing having an auxiliary air passage for a portion of the intake air, said housing supporting a thermal sensor for detecting the air flow rate in said auxiliary passage, said housing including a wall means located in said main passage to be cooled by intake air, and a circuit module mounted on said wall means for driving said thermal sensor and to process signals therefrom.

5,186,045

THERMAL AIR-FLOW SENSOR

Hiroki Matsuoka, Susono, and Kenichi Ono, Chiryu, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 15, 1991, Ser. No. 656,802
Claims priority, application Japan, Feb. 16, 1990, 02-33857
Int. Cl.[5] G01M *19/00*
U.S. Cl. 73—118.2 **3 Claims**



1. An apparatus for measuring an amount of air passed through an intake system for an internal combustion engine, which amount of air is pulsatively changed at a predetermined cycle, said apparatus comprising;
(a) a heat generating means arranged in the intake system for generating heat to be transmitted to the air flow;
(b) means for generating a timing signal for each sampling period which is shorter than the one full cycle of the pulsative change in the intake air amount;
(c) means for electrically energizing the heat generating means at each sampling period for measuring a time needed for obtaining a predetermined increase in a temperature of the heat generating means;
(d) means for calculating from said measured time at each sampling period, an amount of the intake air as measured;
(e) means for calculating at said one full cycle, an average of the measured intake air amount values obtained at each sampling period;
(f) means for calculating, from the measured values obtained at the consecutive timings, a ratio of the difference of these values from the sum of these values, and;
(g) means for obtaining an average intake air amount corrected in accordance with the ratio obtained at (f).

5,186,046

SURFACE PRESSURE MEASUREMENT BY OXYGEN QUENCHING OF LUMINESCENCE

Martin P. Gouterman, Seattle; Janet L. Kavandi, Renton; Jean Gallery, and James B. Callis, both of Seattle, all of Wash., assignors to Board of Regents of the University of Washington, Seattle, Wash.

Filed Aug. 20, 1990, Ser. No. 570,275
Int. Cl.[5] G01L *7/00*; G01N *9/00*
U.S. Cl. 73—147 **26 Claims**

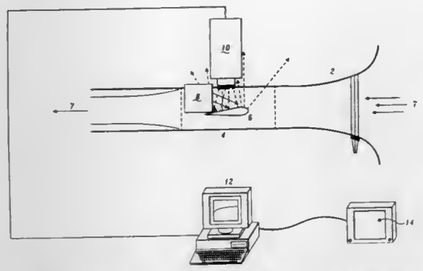
1. A method of measuring the pressure of an oxygen-containing gas on a surface, which comprises:
providing an aerodynamic surface coated with an oxygen-permeable film comprising sensors A, B, and C, wherein
sensor A, upon irradiation with exciting wavelength λ_a, produces luminescence at an emission wavelength λ_A of intensity I_A that is dependent on both temperature and oxygen pressure,
sensor B, upon irradiation with exciting wavelength λ_b, produces luminescence at an emission wavelength λ_B of intensity I_B that is dependent on temperature and independent of oxygen pressure,
sensor C, upon irradiation with exciting wavelength λ_c, produces luminescence at an emission wavelength λ_C of

VOL 1147 ISS 3 FE 16 1993 UMI

intensity I_C that is independent of oxygen pressure and independent of temperature;

causing an oxygen-containing gas to flow over said surface;

irradiating at least a portion of said surface with λ_a and λ_b, or with λ_a, λ_b, and λ_c, while said oxygen-containing gas is flowing over said irradiated surface;



detecting either I_A and I_B, or I_A, I_B, and I_C, for a plurality of smaller areas of said irradiated surface; and,

comparing the I_A value fo. each smaller area to the corresponding I_B or I_C value for said smaller area to calibrate said I_A value to a reference temperature or reference condition, thereby resulting in an indication of the pressure of said gas on said surface.

5,186,047

COMBINED ELECTRONIC CLINICAL THERMOMETER AND PACIFIER

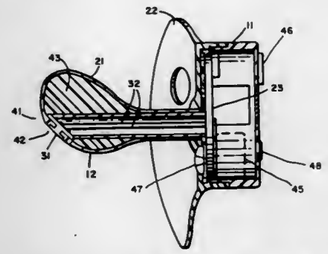
Michael D. Gordon, 2643 7th St., Apt. A, Santa Monica, Calif. 90405, and Darryl D. Massey, 1148 10th St., Manhatten Beach, Calif. 90266

Continuation-in-part of Ser. No. 442,845, Jan. 4, 1990, Pat. No. 5,013,160. This application May 7, 1991, Ser. No. 697,305

The portion of the term of this patent subsequent to Feb. 25, 1992, has been disclaimed.

Int. Cl.[5] G01K *7/14, 13/00*

U.S. Cl. 73—151 **1 Claim**



1. A combined electronic clinical thermometer and pacifier comprising:

a. a housing;

b. an integral mouth-piece including an outer sidewall and an inner sidewall with an opening adjacent and contiguous to said outer sidewall and having a flexible nipple portion and a stop ring flange portion coupled to said housing;

c. a temperature sensitive element having a transducer, said transducer being disposed in said opening of said flexible nipple;

d. a circuit board which is mounted within said housing and secured to an outer part of the stop ring flange portion;

e. a temperature oscillating circuit is electrically coupled to said temperature sensitive element and is disposed on said circuit board;

f. a body temperature measuring circuit electrically coupled to said temperature oscillating circuit and disposed on said circuit board, said circuits mounted on an inner part of the stop ring flange portion; and

g. a digital display device electrically coupled to said body temperature measuring circuit and disposed on said circuit board.

5,186,048

METHOD AND APPARATUS FOR LOGGING A WELL BELOW A DOWNHOLE PUMP

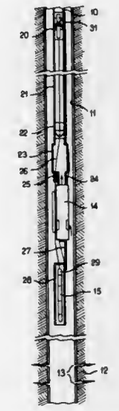
Brian Foster, Fife, Scotland, and John Blair, Joo Chiat Terrace, Singapore, assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed Sep. 13, 1990, Ser. No. 582,634

Claims priority, application European Pat. Off., Sep. 14, 1989, 89402510.5

Int. Cl.[5] E21B *23/08*

U.S. Cl. 73—155 **17 Claims**



1. A method for evaluating the fluids produced by pumping from a formation interval in a well, comprising the steps of:

lowering into the well a tubing carrying a downhole pump and a logging assembly, said logging assembly comprising a support slidably mounted in the tubing between an upper and a lower position above the pump, a cable section attached to the support and passing from the bore of the tubing to the well bore along the pump through a sealed passage, and a well logging tool attached at the lower portion of the cable section;

passing a cable from the surface through the tubing;

connecting the cable to the support; and

lowering the support in the tubing for bringing the logging tool to the formation interval to evaluate the fluids produced from the formation interval by the downhole pump.

5,186,049

ANGULAR MOMENTUM AND BANKING INDICATOR ACCELERATION-DECELERATION AND GRADE INDICATOR SYSTEM

E. Paul Shannon, Rte. 2, Box 249, Killen, Ala. 35645

Continuation-in-part of Ser. No. 589,329, Sep. 27, 1990, Pat. No. 5,134,883. This application Oct. 8, 1991, Ser. No. 772,886

Int. Cl.[5] G01C *21/00*

U.S. Cl. 73—186 **2 Claims**

2. A water speed and direction indicator comprising:

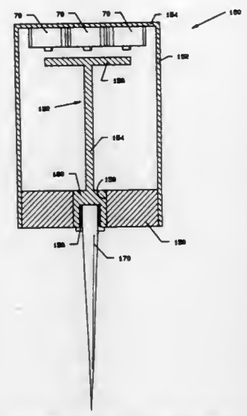
a. a housing having a top;

b. a flexible bottom mounted in the housing;

c. a center power coil mounted in the top for connection to a source of AC power;

d. a set of at least four sensing coils symmetrically spaced about the center coil and the top;

e. an armature mounted in the flexible bottom for movement within the housing, the armature having a vertical shaft



with a ferrous disk at its top, the disk having a rest position below the center coil; and,

f. a rod mounted to the armature through the flexible bottom for extending into the water so that deflection of the rod by the water is reflected in angular movement of the armature and housing, each sensing coil providing a signal indicative of the distance of th disk from the sensing coil.

5,186,050

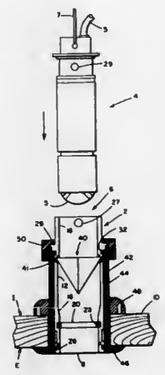
MARINE SENSOR MOUNTING MECHANISM

Maurice P. Lagace, Peterborough; Stephen G. Boucher, Amherst; Robert M. Cullen, Hudson; Andrew L. Noyes, Bedford; John Willette, Wilton, and Cynthia M. Russell, Bedford, all of N.H., assignors to Airmar Technology Corporation, Milford, N.H.

Filed Sep. 25, 1991, Ser. No. 765,546

Int. Cl.[5] G01C *21/00*

U.S. Cl. 73—187 **14 Claims**



7. Mechanism for removably mounting a marine sensor in the hull of a boat comprising:

a tubular sleeve, the interior of which is conformed to the shape of a sensor to be mounted, the sleeve having an inboard end and an outboard end;

means for positioning the sleeve in the hull of a boat with the inboard end exposed to the interior of the boat and the outboard end exposed to the exterior of the boat;

first and second cylindrical chambers in the sleeve, the first cylindrical chamber being of larger diameter than the second cylindrical chamber and located closer to the inboard end than is the second cylindrical chamber;

valve means for closing the sleeve, said valve means comprising two vanes in the form of hollow half cones, each hinged to an upper portion of the first chamber in inverted position, such that when the sensor is inserted in the housing, the half cones are biased to an open position with their exterior surfaces adjacent the wall of the first chamber and the interior surfaces surrounding the sensor.

5,186,051

DEVICE FOR MEASURING A FLOWING AIR QUANTITY

Günther Stecher, Ludwigsburg; Hans Hecht, Korntal; Dietrich Bergfried, Böblingen; Botho Ziegenbein, Reutlingen, and Richard Muehlheim, Tübingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

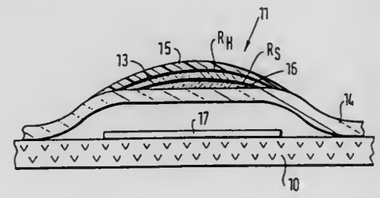
PCT No. PCT/DE89/00524, § 371 Date Feb. 27, 1991, § 102(e) Date Feb. 27, 1991, PCT Pub. No. WO90/02317, PCT Pub. Date Mar. 8, 1990

PCT Filed Aug. 9, 1989, Ser. No. 656,097

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1988, P3829194.0

Int. Cl.[5] G01F *1/68*

U.S. Cl. 73—204.26 **8 Claims**



1. Device, for measuring a flowing air quantity, having

a sensor element (**20**), exposed to the flowing air and constructed in thick-film technology, including

an insulating substrate (**10**);

a bubble (**11**) of ceramic material formed on said substrate (**10**) and including an arched membrane or diaphragm (**14**) having a substrate-adjacent side and a substrate-remote side;

a film system arranged on said substrate-remote side of said membrane and thereby thermally uncoupled from said substrate (**10**), said film system including

a heating film resistor (R_H) adapted to be heated to a greater-than-ambient temperature by passing current therethrough,

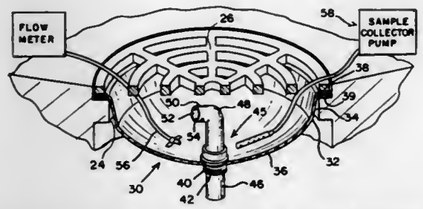
a sensor film resistor (R_S) for sensing the temperature of the heating film resistor (R_H), and

a thermally-good-conducting yet electrically insulating intermediate film (**13**), located between said heating film resistor and said sensor film resistor, thermally coupling them together while electrically insulating them from each other, and

bridge circuit evaluation means, connected to said sensor film resistor, for measuring the temperature of said sensor film resistor, and thus of said heating film resistor thermally coupled thereto.

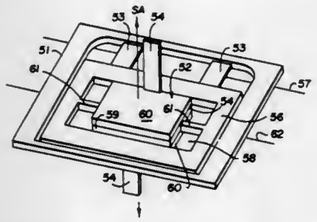
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5,186,052
STORM WATER FLOW MONITORING
Keith Gray, Villa Park, Ill., assignor to Environmental Monitoring and Technologies, Inc., Morton Grove, Ill.
Filed Aug. 7, 1991, Ser. No. 741,579
Int. Cl.[5] G01F *1/20*
U.S. Cl. 73—215 **6 Claims**



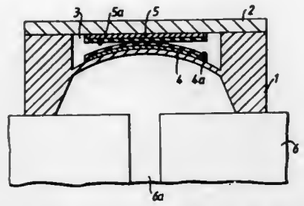
1. Apparatus for indicating rate of flow of a liquid into a sewer having a manhole with a top rim comprising:
a liquid-impermeable bowl having a flange projecting outwardly from the top edge thereof, said flange being operationally supported on the top rim of the manhole so that all liquid entering the sewer is collected first in said bowl;
an open-ended standing pipe and mounting means mounting said standing pipe in a central hole in the bottom of said bowl, so that said standing pipe projects upwardly a first height from the bottom of said bowl whereby collected liquid rising to a second height above said first height flows through said standing pipe and into the sewer;
flow meter means responsive to said second height operationally positioned in said bowl for measuring and recording the rate of flow; and
leveling means mounted on said flange whereby said standing pipe is positionable to project in verticality.

5,186,053
TEMPERATURE COMPENSATED PROOFMASS ASSEMBLY FOR ACCELEROMETERS
Bert D. Egley, Tacoma, Wash.; G. Richard Newell, Alamo, Calif., and Richard A. Hanson, Redmond, Wash., assignors to New SD, Inc., San Francisco, Calif.
Filed Dec. 19, 1990, Ser. No. 633,375
Int. Cl.[5] G01P *15/08*
U.S. Cl. 73—497 **7 Claims**



1. In a temperature compensated device for measuring acceleration along a sensing axis;
(a) a main support;
(b) a frame fabricated of fused quartz pivotally connected to the support for pendulous movement about a hinge axis with a component of motion along the sensing axis;
(c) a proofmass comprising a pendulum fabricated of fused quartz pivotally conducted to the frame for movement about a compensation axis spaced from and generally parallel to the hinge axis; and
(d) transducer means comprising a pair of crystalline quartz transducers connected between the pendulum and the support and having a greater coefficient of thermal expansion than fused quartz for sensing forces produced by acceleration of the proofmass along the sensing axis, with any difference in thermal expansion between the transducers and the elements fabricated of fused quartz resulting in rotation of the pendulum about the compensation axis.

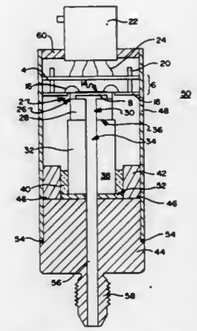
5,186,054
CAPACITIVE PRESSURE SENSOR
Masayuki Sekimura, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Nov. 29, 1990, Ser. No. 619,946
Claims priority, application Japan, Nov. 29, 1989, 1-312113
Int. Cl.[5] G01L *7/08, 9/12*
U.S. Cl. 73—724 **8 Claims**



1. A capacitive pressure sensor for use in measuring the pressure of a fluid comprising:
a pair of acing electrodes having a cavity disposed therebetween wherein a portion of at least one of said electrodes is movable to a position contacting the other electrode, and wherein at least one of said facing electrodes includes an insulation layer on a portion of a surface facing the other electrode;
movable means for moving said at least one electrode for varying the contacting area between said facing electrodes in response to the pressure of the fluid, thereby varying the capacitance of said pair of facing electrodes in a linear manner with respect to said pressure.

5,186,055
HERMETIC MOUNTING SYSTEM FOR A PRESSURE TRANSDUCER
John A. Kovacich, Wauwatosa, Wis.; Christopher C. Hoinsky, Huntington, Conn.; Donald G. Williams, Sherman, Conn., and Robert A. Schiesser, Ridgefield, Conn., assignors to Eaton Corporation, Cleveland, Ohio
Filed Jun. 3, 1991, Ser. No. 709,551
Int. Cl.[5] G01L *7/08, 9/06*
U.S. Cl. 73—727 **32 Claims**

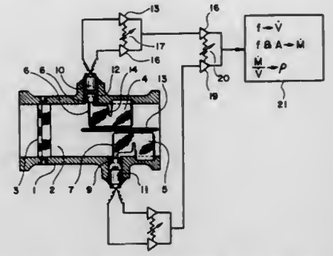
26. A transducer for measuring a pressure comprising:
a lower transducer member adapted to be connected to a source of pressure to be measured, said base having a passageway;
a main housing having walls and attached to said lower transducer member forming a cavity;
a crystalline diaphragm having a relatively thin center section, said diaphragm being flexed in response to variations of said pressure, having disposed on one side of an active area thereof at least one strain sensitive element with a thicker support portion at the periphery of said diaphragm;
an intermediate support member for said diaphragm formed of a borosilicate glass, said intermediate support member having a first end and a second end with a passageway extending therethrough, said diaphragm thicker support portion anodically bonded to the first end of said intermediate support member so that said active area is in substantial alignment with said passageway said intermediate support member having a coefficient of thermal expansion substantially equal to said diaphragm;
a main support member for said intermediate support member formed of a crystalline silicon having a first end and a second end and a passageway extending therethrough, said second end of said intermediate support member anodically bonded to said passageway of said main support member so that said passageway of said main support member so that said passageway of said main support member is in substantial alignment with said passageway of said intermediate support member said main support member having a coefficient of thermal expansion substantially equal to said intermediate support member;
a support collar formed of a precipitation hardened steel surrounding a section of said main support member and attached to said lower transducer member and having a void between said support collar and said main support member said support collar having a coefficient of thermal



expansion approximately four times as great as that of said main support member;
a support washer having a passageway therethrough in substantial alignment with said passageway of said main support member located at said second end of said main support member, a peripheral edge of said support washer contacting said support collar;
a sealing glass which occupies said void between said support collar and said main support member providing a hermetic seal therebetween said sealing glass having a coefficient of thermal expansion of 0% to 50% greater than that of said main support member;
an electrical signal conditioning means mounted in said housing and electrically connected to said strain sensitive element; and
an electrical connector mounted to said housing at an end opposite to said lower transducer member and electrically connected to said electrical signal conditioning means.

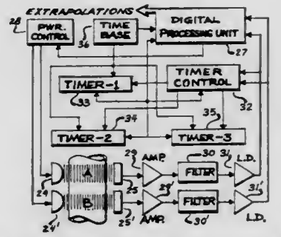
5,186,056
VORTEX FLOWMETER WITH DUAL VORTEX SENSORS
Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005
Continuation-in-part of Ser. No. 605,533, Oct. 29, 1990, Pat. No. 5,095,760, which is a continuation-in-part of Ser. No. 348,602, May 8, 1989, abandoned. This application Sep. 30, 1991, Ser. No. 768,365
The portion of the term of this patent subsequent to Jan. 22, 2008, has been disclaimed.
Int. Cl.[5] G01F *1/32*
U.S. Cl. 73—861.24 **20 Claims**

1. An apparatus for measuring flow rate of fluid comprising in combination :
a) a body including a flow passage therethrough;
b) a vortex generating cylindrical member disposed across a first cross section of the flow passage and secured to the body at at least one extremity thereof;
c) a first vortex sensing planar member disposed generally parallel to to the vortex generating cylindrical member across a first half of a second cross section of the flow passage on a plane generally parallel to the central axis of the flow passage, said first vortex sensing planar member including a first transducer means converting forces experienced by the first vortex sensing planar member to a first fluctuating electrical signal; and
d) a second vortex sensing planar member disposed generally parallel to the vortex generating cylindrical member across a second half of a third cross section of the flow passage opposite to the first half of the second cross section of the flow passage on a plane generally parallel to the central axis of the flow passage, said second vortex sensing planar member including a second transducer means converting forces experienced by the second vortex sensing planar member to a second fluctuating electrical signal; wherein leading edges of the first and second vortex sensing planar members are offset from one another by a distance equal to a noninteger times the wavelength of sinuating streamlines created by vortices generated by the vortex generating cylindrical member; and



e) means for combining the first and second fluctuating electrical signals in such a way that noise generated by mechanical vibrations of the body is cancelled therebetween and an alternating output electrical signal representing the vortices is obtained.

5,186,057
MULTI-BEAM LIQUID-DROP SIZE/RATE DETECTOR APPARATUS
Howard R. Everhart, 3808 Mt. Ainsworth Ave., San Diego, Calif. 92111
Filed Oct. 21, 1991, Ser. No. 779,865
Int. Cl.[5] G01F *13/00;* **A61M** *5/168*
U.S. Cl. 73—861.41 **20 Claims**

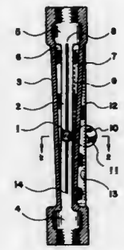


1. A method for extrapolating the volume of a free falling fluid drop comprising:
generating a first energy beam having a predetermined height (A) and a second energy beam having a predetermined height (B), to cross a path of the free falling fluid

VOL 1147 ISS 3 FE 16 1993 UMI

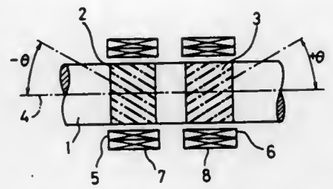
drop, with an upper edge of the first beam separated from an upper edge of the second beam by a predetermined distance (k);
measuring a time (t1) for the drop to pass through the first beam;
measuring a time (t2) for the drop to pass from a predetermined point within the first beam to a predetermined point within the second beam;
measuring a time (t3) for the drop to pass through the first and second beams;
calculating an approximate drop diameter (dd) using conventional mathematical relationships between the predetermined heights (A and B), the predetermined distance (k), the measured times (t1, t2 and t3) and a gravitational acceleration constant (g); and
calculating a fluid volume of the drop based on the drop diameter.

5,186,058
ROTAMETER WITH FLOAT GUIDES
Hyok S. Lew, 7890 Oak St., Arvada, Colo. 80005
Filed May 10, 1991, Ser. No. 698,296
Int. Cl.[5] G01F *1/22*
U.S. Cl. 73—861.56 **15 Claims**



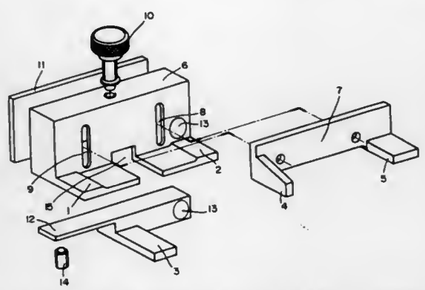
1. An apparatus for measuring flow of fluid media comprising in combination:
a) a body made of magnetically nonreacting material including a tapered flow passage with cross sectional area progressively increasing from an inlet extremity of the tapered flow passage to the outlet extremity of the tapered flow passage, and a float including a magnetically reacting material disposed within the tapered flow passage in a freely movable arrangement;
b) a plurality of float guides with guiding edges affixed to the body and extending into the tapered flow passage, wherein the guiding edges are disposed parallel to and about the central axis of the tapered flow passage in such a way that movement of the float is substantially limited to directions parallel to the central axis of the flow passage; wherein at least one of said plurality of float guides made of magnetically nonreacting material includes an elongated cavity sealed off from the tapered flow passage and disposed closely following the guiding edge of the float guide;
c) a marker of round geometry including a magnetically reacting material disposed within said elongated cavity in a freely movable arrangement in directions substantially parallel to the central axis of the tapered flow passage, wherein at least one of said float and said marker includes an element of permanent magnet attracting the float and the marker to one another, whereby the marker follows the float in movements thereof in directions substantially parallel to the central axis of the flow passage; and
d) means for indicating position of the marker relative to a reference section of the tapered flow passage as a measure of position of the float relative to the tapered flow passage.

5,186,059
TORQUE SENSOR SHAFT
Renshiro Ishino, Kobe; Shigeo Yoshimura, Itami; Mutsumi Sunahata, Sakai; Taro Saito, Minamikawachi, and Yasuo Tanizaki, Uji, all of Japan, assignors to Kubota Corporation, Osaka, Japan
Filed Jan. 14, 1991, Ser. No. 640,685
Claims priority, application Japan, Jun. 19, 1990, 2-161017
Int. Cl.[5] G01L *3/10*
U.S. Cl. 73—862.193 **1 Claim**



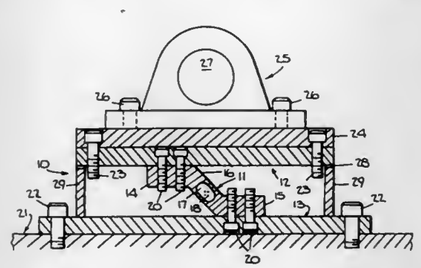
1. A torque sensor shaft for a non-contacting torque sensor including magnetically anisotropic portions formed on the surface of the shaft, wherein said magnetically anisotropic portions are in the form of machined grooves and wherein the inclination angle of magnetic anisotropy expressed by the absolute value of the angle of inclination of the anisotropic directions of said magnetically anisotropic portions relative to the axis of the shaft is higher than 15 degrees but lower than 30 degrees, whereby the hysteresis characteristics of the sensor, both clockwise hysteresis and counterclockwise hysteresis, become minimal.

5,186,060
DEVICE FOR MEASURING BELT TENSION
Jean-Pierre Marlier, Nice, France, assignor to Sud Est Electro Mecanique S.E.E.M. (Sarl), La Gaude, France
Filed Jul. 11, 1991, Ser. No. 728,727
Claims priority, application France, Jul. 11, 1990, 90 09009
Int. Cl.[5] G01L *5/04*
U.S. Cl. 73—862.474 **3 Claims**



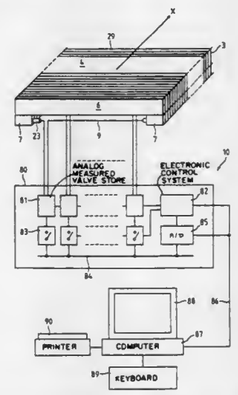
1. A device for measuring the tension of a belt, comprising means establishing three points of contact on the belt spaced lengthwise along the belt, a middle of said three contact points comprising a point of contact on a first side of the belt, including strain gauge, means defining two other points of contact on a second and opposite side of the belt, means for moving said two other points of contact toward the belt thereby to press the belt against said point of contact with said strain gauge, said moving means comprising a manually rotatable button, and means to limit the torque applied by said rotatable button thereby to limit the pressure by which said other two points of contact press against a said belt, said button being in two parts comprising a first and a second part rotatable relative to each other, and said torque limiting means preventing rotation of said two parts relative to each other below a predetermined torque and permitting rotation of said two parts relative to each other above said predetermined torque.

5,186,061
TRANSDUCER BEAM AND BEAM ASSEMBLY
William W. Montalvo, III, Raymond, and Philip R. Metcalf, Jr., Portland, both of Me., assignors to The Montalvo Corporation, Portland, Me.
Filed Jan. 23, 1991, Ser. No. 644,952
Int. Cl.[5] G01L *1/04*
U.S. Cl. 73—862.632 **14 Claims**



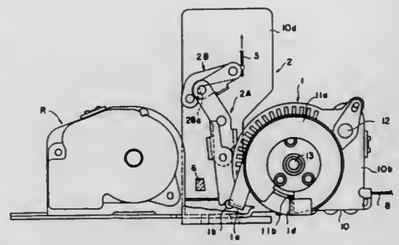
1. A transducer for sensing mechanical force and producing a corresponding electrical voltage signal comprising a beam having horizontally displaced parallel opposite end portions interconnected by a straight middle portion disposed at an obtuse angle with respect to said end portions and strain gage means mounted on said middle portion.

5,186,062
METHOD OF INVESTIGATING THE GAIT OF A LIVING BEING
Walter Roost, Zurich, Switzerland, assignor to Standard St Sensortechnik Ag., Chur, Switzerland
PCT No. PCT/CH89/00092, § 371 Date Mar. 30, 1990, § 102(e) Date Mar. 30, 1990, PCT Pub. No. WO89/11246, PCT Pub. Date Nov. 30, 1989
PCT Filed May 18, 1989, Ser. No. 455,397
Claims priority, application Fed. Rep. of Germany, May 19, 1988, 3817095
Int. Cl.[5] A61B *5/11*; G01L *5/16, 5/00*
U.S. Cl. 73—865.4 **11 Claims**



1. A method of investigating the gait of a living being having feet by measuring the force exerted by its feet on the ground and of the location, duration and course in time of the application of force in a zone of a substantially horizontal measuring surface taking the form of part of the ground, the measuring surface being subdivided substantially at right angles to the direction of movement of the living being into elongate measuring sections parallel to each other and adjacent in succession in lamellar fashion, said method comprising the steps of:
(a) measuring the force exerted by the living being on a measuring section an dividing the force exerted into two components, one of each component acts on the measuring section adjacent a respective end thereof;
(b) breaking the two components into a vertical and a horizontal part resulting in two horizontal parts and two vertical parts;
(c) measuring the two vertical parts separately to obtain a measured value for each of the two vertical parts; and
(d) cyclically interrogating the measured values in the course of an interrogation sequence corresponding to the succession of measuring sections in the direction of movement of the living being, the measured values are put into intermediate storage in an analog measured value store and subsequently compared with a predetermined threshold value, and only those measured values put into intermediate storage which exceed the threshold values are passed on for an evaluation wherein the sum of the two measured values is formed for the determination of the total force exerted vertically on the measuring section and the ratio between the difference in the two measured values and their sum is formed to determine the location where the force is exerted on the measuring section.

5,186,063
TRIGGER FOR SPRING-TYPE PRETENSIONER
Muneo Nishizawa, Shiga, Japan, assignor to Takata Corporation, Tokyo, Japan
Filed Aug. 22, 1991, Ser. No. 748,696
Claims priority, application Japan, Aug. 24, 1990, 2-223343
Int. Cl.[5] B60R *22/36*
U.S. Cl. 74—2 **1 Claim**



1. A trigger for a spring-type pretensioner for use in a vehicle seat belt system to apply pretension to the seat belt upon release of a normally preloaded spring characterized in that there is a first toggle normally engaging an operating portion of the spring and holding the spring in the preloaded condition, the first toggle having a dead point, in that there is a second toggle coupled to the first toggle, the second toggle having a dead point, in that the second toggle is normally in a state not beyond its dead point and holds the first toggel in a state beyond the dead point of the first toggle against movement farther from the dead point, and in that the second toggle is connected to an output member of a sensor that is adapted to move the second toggle beyond its dead point so as to enable both toggles to articulate and release the spring.

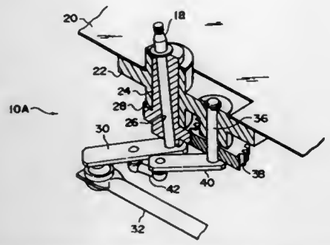
VOL 1147 ISS 3 FEB 16 1993 UMI

5,186,064

WIPER FOR USE IN A VEHICLE

Hiroshi Matsumoto, Hamamatsu; Toshiharu Aoyama, Kosai; Mitsuhiko Saitoh, Aichi, and Toshiaki Oshima, Kosai, all of Japan, assignors to Asmo Co., Ltd., Japan

Filed Jul. 30, 1991, Ser. No. 738,144
Claims priority, application Japan, Jul. 31, 1990, 2-203525
Int. Cl.[5] F16H *21/18*
U.S. Cl. 74—47 **19 Claims**



1. A wiper apparatus for use in a vehicle for wiping a windshield glass comprising:

a holder fixed to a baseplate of a vehicle body;

an eccentric bearing member rotatably supported in said holder so as to rotate relative to said vehicle body about an axis of the bearing member;

a pivot shaft rotatably supported in said eccentric bearing member so as to be inclined relative to said axis and to reciprocatively rotate a wiper arm fixed thereto; and

a rotating means coupled to a driving means, for reciprocatively rotating said eccentric bearing member and said pivot shaft such that said pivot shaft rotates relative to and with said eccentric bearing member;

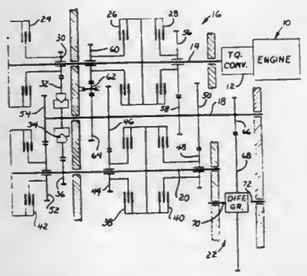
whereby changes in the inclination of said pivot shaft relative to the vehicle body are determined by the positions to which said pivot shaft and eccentric bearing member are relatively rotated, such that said changes in inclination are continuous and linear.

5,186,065

MULTI-RATIO POWER TRANSMISSION

Robert C. Downs, Clarkston, Mich., assignor to Saturn Corporation, Troy, Mich.

Filed Dec. 23, 1991, Ser. No. 812,291
Int. Cl.[5] F16H *3/08*
U.S. Cl. 74—331 **2 Claims**



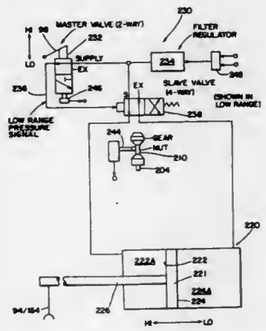
1. A power transmission comprising: an input shaft rotatably mounted on a first axis; an output shaft rotatably mounted on a second axis; a countershaft rotatably mounted on a third axis; transfer gear means including a first gear means rotatably mounted coaxial with said input shaft, second gear means continuously rotatable with said countershaft and third gear means including a gear member meshing with said first and second gear means and being selectively drivingly connectable with said output shaft through a one way drive means; first clutch means for selectively connecting said first gear means with said input shaft for establishing a one way drive relation between said input shaft and said output shaft at a first predetermined ratio via said one way drive means and said first and third gear means; second ratio gear and clutch means for establishing a second predetermined ratio between said input shaft and said output shaft via said first clutch means, said first, second and third gear means and said second ratio gear and clutch means, and said one way means being in an overrunning relation between said third gear means and said output shaft during said second predetermined ratio.

5,186,066

DUAL PRESSURE PRESSURE REGULATOR

William R. Pankratz, Royal Oak; Thomas A. Genise, Dearborn; John Dresden, III, Farmington Hills, and Ronald K. Markyvech, Allen Park, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jan. 23, 1992, Ser. No. 824,960
Int. Cl.[5] F16H *59/00*
U.S. Cl. 74—335 **16 Claims**



1. A control system for controlling a shift actuator assembly (230) associated with a synchronized jaw clutch (92) for selectively engaging and disengaging a selectable ratio in a first transmission section (14) of a compound transmission (10) comprising first and second (12) multiple speed sections connected in series, said second section shiftable into maintainable engaged and not engaged conditions, said actuator assembly (230) comprising a pressurized fluid actuated piston/cylinder assembly (220) defining two selectively pressurized and vented chambers (222A, 224A), a control valve (238) for selectively pressurizing a selected one of said chambers and venting the other of said chambers and a dual pressure pressure regulator (234) for providing pressurized fluid to said control valve pressurized to either a first pressure (p_1) or a second pressure (p_2), said first pressure (p_1) greater than said second pressure (p_2), said system comprising:

(a) means for sensing selection of engagement of said first transmission section selectable ratio 246;

(b) means for sensing if the second transmission section is in either an engaged or a not engaged condition (244);

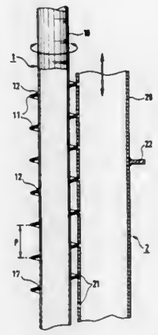
(c) means (248/234) for (i) responding to sensing ((a)) a selection of engagement of said first transmission section selectable ratio and ((b)) said second transmission section not engaged by causing said actuator to urge said synchronized jaw clutch into engagement with a first force by pressurizing one (224A) of said chambers to said first pressure (pl) and venting the other (222A) of said chambers; and for (ii) responding to sensing ((a)) a selection of engagement of said first transmission section selectable ratio and ((b)) said second transmission section engaged by causing said actuator to urge said synchronized jaw into engagement with a second force by pressurizing said one (224A) of said chambers to said second pressure (P2) and venting the other (222A) of said chambers, said second force being considerably smaller than said first force.

5,186,067

MECHANISM FOR CONVERTING ROTARY MOTION INTO TRANSLATION MOTION

Daniel Demissy, Montreal, Canada, assignor to GEC Alsthom Energie Inc., Laprairie, Canada

Filed Nov. 22, 1991, Ser. No. 796,355
Claims priority, application France, Nov. 23, 1990, 90 14627
Int. Cl.[5] F16H *25/08, 55/02*
U.S. Cl. 74—424.6 **6 Claims**



1. In a mechanism for converting rotary motion into translation motion, the mechanism comprising a cylindrical first member that is driven in rotation and is provided with an outside thread, and a second member designed to be driven in translation by the first member and including notches for engaging with the outside thread of the first member, the improvement wherein the first member is constituted by a first cylinder over which a flat section helical spring is threaded and is fixed locally to the outer periphery of said first cylinder at at least one point and otherwise is free of said first cylinder and forms a plurality of longitudinally spaced turns of a given pitch, and the inside diameter of the spring being substantially equal to the outside diameter of the first cylinder, and wherein the second member is a hollow second cylinder provided with a plurality of slots that are offset in the longitudinal direction of the cylinder, said plurality of slots being centered on a generator line thereof, being inclined at an angle of inclination of the turns of the spring, and being spaced apart at a pitch substantially equal to the pitch of the turns of the spring, whereby a plurality of the turns of the spring simultaneously engage respective slots of the hollow second cylinder irrespective of slight differences in pitch between the turns of the spring and the slots of the hollow second cylinder.

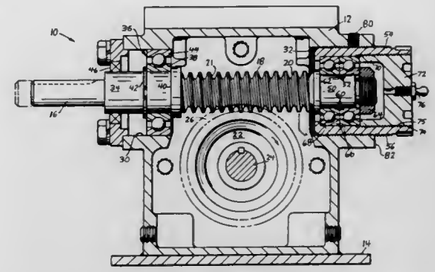
5,186,068

GEAR REDUCER WITH BACKLASH ELIMINATOR

Werner H. Heller, West Valley, N.Y., assignor to Peerless-Winsmith, Inc., Springville, N.Y.

Filed Jun. 20, 1991, Ser. No. 718,292
Int. Cl.[5] F16H *1/16, 1/20;* **F16G** *25/06;* **F16E** *43/04*
U.S. Cl. 74—425 **5 Claims**

1. A gear reducer comprising a housing, a worm gear rotatably mounted in said housing, an input shaft including a worm having a thread which engages said worm gear, aid thread becoming progressively thinner from one end of said worm to the other end, first and second bearing means mounted on said shaft at opposite ends of said worm and rotatably mounting said shaft in said housing, adjustment means connected to said housing and said second bearing means, said adjustment means comprising a cylindrical cartridge mounted in said housing, said cartridge having an outer surface and an inner surface, said housing and said outer surface having a cooperating means thereon for enabling movement of said cartridge in said housing along the axis of said input shaft, said second bearing means having an outer race axially fixed within said cartridge adjacent said inner surface, and releasable locking means mounted within said cartridge for securing said second bearing means to said cartridge, whereby said cartridge may be axially adjusted in said housing to move said second bearing means and said shaft axially in said housing to bring a selected thicker section of said thread of said worm into engagement with said worm gear, thereby compensating for wear between said worm and said worm gear after the gear reducer has been in use.

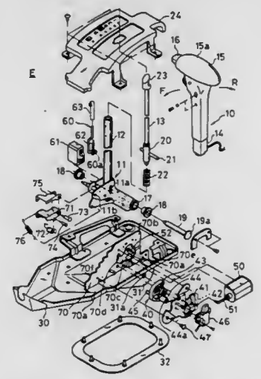


5,186,069

CONTROL DEVICE FOR AUTOMATIC TRANSMISSION

Yasushi Asano, and Yoshimasa Kataumi, both of Kosai, Japan, assignors to Fujikiko Kabushiki Kaisha, Shizuoka, Japan

Filed May 29, 1991, Ser. No. 706,871
Claims priority, application Japan, May 31, 1990, 2-57634
Int. Cl.[5] F16H *61/00;* **B60K** *41/26*
U.S. Cl. 74—477 **6 Claims**



1. A control device for an automatic transmission, comprising:

a base member mounted on a vehicle body;

a shift lever pivotably supported by said base member and comprising a positioning member movable in the axial direction of said shift lever;

a guide member for guiding said shift lever, having a parking position part and a moving position part for engaging said positioning member;

VOL 1147 ISS 3 FE 16 1993 UMI

a lock bushing for blocking disengagement of said positioning member from said parking position part, mounted on a fixed member other than said shift lever and supported by said fixed member in a manner pivotable on a pivoting locus surface;

a lock solenoid mounted on a fixed part of said base member for pivoting said lock bushing from a shift-lock position in which said lock bushing blocks disengagement of said positioning member from said parking position part to a shift-lock releasing position in which said lock bushing does not block disengagement of said positioning member from said parking position part; and

a lock releasing lever mounted on said shift lever in a manner movable through a moving locus surface for manually pivoting said lock bushing to the shift-lock releasing position, the pivoting locus surface of the lock bushing being parallel with the moving locus surface of the lock releasing lever.

5,186,070

GEAR-CHANGE DEVICE FOR THE TRANSMISSION OF A MOTOR VEHICLE

Rüdiger Nitzschke, Friedrichshafen, and Martin Schetter, Schwäbisch, both of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Fed. Rep. of Germany

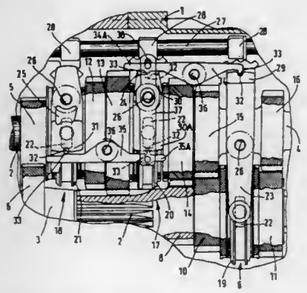
PCT No. PCT/EP90/00879, § 371 Date Oct. 29, 1991, § 102(e) Date Oct. 29, 1991, PCT Pub. No. WO90/15272, PCT Pub. Date Dec. 13, 1990

PCT Filed Jun. 5, 1990, Ser. No. 773,936

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1989, 3919100

Int. Cl.[5] F16H *63/36*

U.S. Cl. 74—477 **6 Claims**



1. A gear-engaging device for a transmission of a motor vehicle, said gear-engaging device comprising:

at least three gear-engaging elements (**23**, **24** and **25**) each engaging a sliding sleeve (**19**, **20**, **21**), each gear-engaging element (**23**, **24** and **25**) being pivotable about a swivel bearing (**26**), via at least one gear-shift shaft (**27**), from a neutral position to a shift position, and each swivel bearing (**26**) being mounted parallel to one another,

a locking mechanism, situated in a housing of the transmission, coacting with a locking groove (**32**, **44**, **45**) formed in a locking lever (**29**, **30**, **31**; **43**) secured to said gear-engaging element (**23**, **24**, **25**) so that when one of said at least three gear-engaging elements (**23**, **24** and **25**) pivots into a shift position, the others of said at least three gear-engaging elements (**23**, **24** or **25**) are locked in their neutral position,

wherein said at least three gear-engaging elements (**23**, **24** and **25**) define at least first and second pairs of adjacent gear-engaging elements with a first twin leg rocker (**34** or **35**; **40** or **41**), which engages said locking grooves (**32**; **44**, **45**) via a locking detent (**33**) supported by each leg of said first twin leg rocker, situated between the first pair of adjacent gear-engaging elements, and a second twin leg rocker (**35** or **34**; **41** or **40**), which engages said locking grooves (**32**; **44**, **45**) via a locking detent (**33**) supported by each leg of said second twin leg rocker, situated between the second pair of adjacent gear-engaging elements, said first and second twin leg rockers (**34**, **35**; **40**, **41**) are mounted in said transmission housing (**1**) parallel to said swivel bearings (**26**), at least one of said locking levers (**30**; **43**) has two opposed locking grooves (**32**; **44** and **45**), and a first leg of said first twin leg rocker (**34** or **35**; **40** or **41**) is positionable to engage a one of said two opposed locking grooves (**32**; **44** and **45**) and a first leg of said second twin leg rocker (**35** or **34**; **41** or **40**) is positionable to engage the other of said two opposed locking grooves (**32**; **44** and **45**), and said first legs are interconnected by a transmission element.

5,186,071

BICYCLE SPEED CHANGE LEVER ASSEMBLY

Yoshihisa Iwasaki, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan

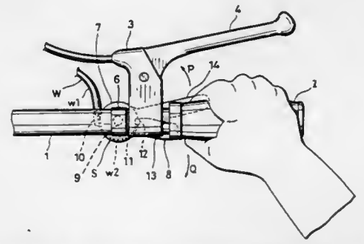
PCT No. PCT/JP91/00315, § 371 Date Nov. 4, 1991, § 102(e) Date Nov. 4, 1991, PCT Pub. No. WO91/13797, PCT Pub. Date Sep. 19, 1991

PCT Filed Mar. 8, 1991, Ser. No. 773,906

Claims priority, application Japan, Mar. 9, 1990, 2-24020; Mar. 26, 1990, 2-31700

Int. Cl.[5] G05G *5/06*

U.S. Cl. 74—489 **20 Claims**



1. A bicycle speed change lever assembly comprising a lever shaft extending downwardly at a position inwardly from an end grip of a handlebar, and a control arm pivotally supported on and extending radially outward from the lever shaft, wherein

the control arm has first and second operating arm portions which are integrally connected for pivotal movement solely about the lever shaft, the first operating arm providing a first pivotal path located vertically closer to the handlebar, the second operating arm portion having a second pivotal path located vertically farther from the handlebar.

5,186,072

BICYCLE SPEED CONTROL SYSTEM FOR CONTROLLING A CHANGE SPEED DEVICE THROUGH A CHANGE SPEED WIRE

Masahi Nagano, Izumi, Japan, assignor to Shimano, Inc., Osaka, Japan

Filed Nov. 12, 1991, Ser. No. 790,164

Claims priority, application Japan, Nov. 13, 1990, 2-308126

Int. Cl.[5] F16C *1/10;* **G05G** *9/06*

U.S. Cl. 74—501.5 **12 Claims**

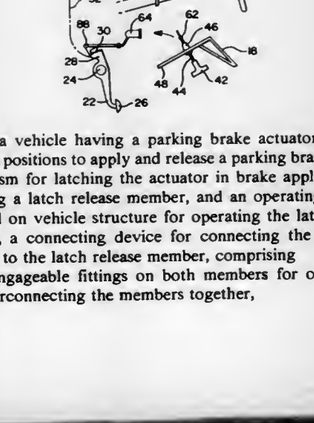
1. A speed control system for a bicycle for controlling a change speed device through a change speed wire, comprising:

a control member movable between a first shift end and a second shift end, with a home position provided between said first shift end and said second shift end;

take-up means connected to one end of said change speed wire, and movable in a wire winding direction and in a wire unwinding direction, said take-up means being urged in said wire unwinding direction;

one-way transmission means for transmitting only movement toward said second shift end of said control member to said take-up means, said take-up means being movable in said wire winding direction by the movement toward said second shift end;

position retaining means for retaining said take-up means in a plurality of winding positions;



retention canceling means for canceling retention of said take-up means by said position retaining means, and allowing said take-up means to move in said wire unwinding direction, said retention canceling means including a release element movable between a release position and a non-release position, said release element being movable to said release position by movement of said control member from said home position toward said first shift end which is opposite to said second shift end with respect to said home position; and

urging means for urging said release element to said non-release position.

5,186,073

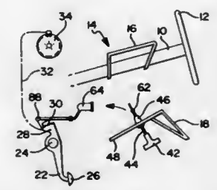
PARKING BRAKE OPERATING HANDLE ATTACHMENT

Miles G. Doolittle, Royal Oak, and Frank Kuzinski, Waterford, both of Mich., assignors to Dura Mechanical Components, Inc., Troy, Mich.

Filed May 15, 1992, Ser. No. 883,526

Int. Cl.[5] G05G *1/02, 5/06*

U.S. Cl. 74—503 **18 Claims**



1. In a vehicle having a parking brake actuator movable between positions to apply and release a parking brake, a latch mechanism for latching the actuator in brake apply position including a latch release member, and an operating member mounted on vehicle structure for operating the latch release member, a connecting device for connecting the operating member to the latch release member, comprising

interengageable fittings on both members for operatively interconnecting the members together,

one of the fittings comprising a projector having an elongated locking surface,

the other of the fittings comprising a receptor for receiving the projector throughout a range of positions, and

locking means carried by the receptor for engaging the projector upon insertion to any position in said range, while preventing withdrawal of the projector.

5,186,074

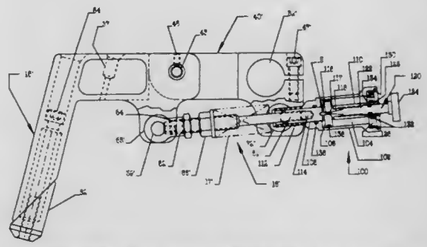
BICYCLE HANDLEBAR SHOCK ABSORBER

John R. Arnold, 905 SW. Cedar Hills Blvd., Apt. 1122, Portland, Oreg. 97225

Filed Dec. 2, 1991, Ser. No. 801,418

Int. Cl.[5] B62K *21/14*

U.S. Cl. 74—551.2 **17 Claims**



1. A handlebar shock absorber apparatus for a bicycle comprising:

a base member for attachment to a front fork of the bicycle;

a knuckle member for mounting to the bicycle handlebar;

pivoting means coupling the base member and the knuckle member together to permit relative rotational movement about a transverse axis oriented in a first orthogonal direction;

first and second offset means extending transversely from the base member and the knuckle member, respectively, in a second orthogonal direction;

a transverse guide member pivotably mounted within the second offset means of the knuckle member and oriented in said first direction;

resilient support means pivotably coupled to the base member at said first offset means and having a central rod member constrained by the transverse guide member to move longitudinally relative to the second offset means;

shock absorber means comprising a body defining a cylinder, a transverse piston mounted for axial movement within said cylinder, and a quantity of fluid within the cylinder for limiting movement of the piston, the body having an extended portion with means for mounting the body to said guide member;

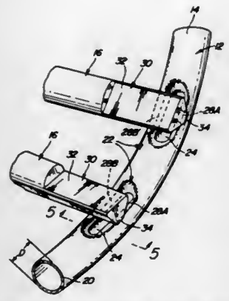
a pair of hollow threaded shafts extending axially from opposite sides of the piston, the first of said pair being coupled to the central rod member for longitudinal movement therewith;

means defining at least one passage extending from one side of the piston to the other within the body; and

control means for selectively restricting said passage, thereby limiting the flow of fluid from one side of the piston to the other and developing additional shock absorbing action for the resilient support means in order to control the extent of rotational movement of the knuckle member relative to the base member in response to shock forces from uneven terrain encountered while the bicycle is in use.

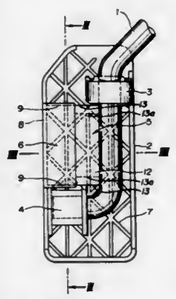
VOL 1147 ISS 3 FE 16 1993 UMI

5,186,075
STEERING WHEEL FOR MOTOR VEHICLE
Thomas R. Kushmaul, Springfield, and Barry C. Worrell, Miamisburg, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed May 22, 1992, Ser. No. 887,031
Int. Cl.[5] B62D *1/04*; G05G *1/10*; B21D *39/00*
U.S. Cl. 74—552 **1 Claim**



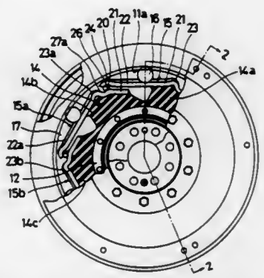
1. A motor vehicle steering wheel comprising:
a rim made from a hollow metal tube shaped into an endless ring,
a plurality of solid metal bars defining a plurality of spokes of said steering wheel, and
means on said rim defining a plurality of integral resistance welding pads each including a trough in the center of said hollow metal tube elongated in said circumferential direction of said endless ring and a pair of integral resistance welding projections on opposite sides of said trough each having an inverted U-shaped cross section and being elongated in the circumferential direction of said endless ring,
each of said spokes being arrayed across respective ones of said troughs in point contact with corresponding ones of said resistance welding projections and resistance welded to said hollow metal tube at said resistance welding projections.

5,186,076
VIBRATION PROOFING STRUCTURE OF PEDAL FOR VEHICLE
Yoshimasa Kataumi, and Yoshinobu Kondo, both of Kosai, Japan, assignors to Fuji Kiko Company, Limited, Japan
Filed Jul. 26, 1990, Ser. No. 557,645
Claims priority, application Japan, Jul. 27, 1989, 1-88477[U]
Int. Cl.[5] G05G *1/14*
U.S. Cl. 74—560 **7 Claims**



1. A pedal assembly for a vehicle comprising:
a pedal pad attached to a pedal arm on a back surface of said pedal pad;
a housing, provided on the back surface of said pedal, projecting from the back surface, said housing being transversely offset from the pedal arm with a given distance therebetween and having an opening oriented to said pedal arm;
a mass having a preselected weight for adjusting a resonant frequency of the pedal arm for preventing vibrations transmitted to the pedal arm from reaching said pedal pad, said mass including first and second sections, wherein the first section is fitted substantially entirely into the inside of said housing for retention to said pedal pad, and wherein the second section extends outside of the housing and is located between said housing and the pedal arm; and
hook means extending upwardly from the pedal pad and being located between the second section of the mass and the pedal arm.

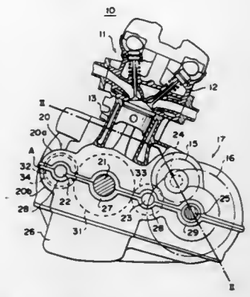
5,186,077
TORQUE VARIATION ABSORBING DEVICE
Mototaka Nakane, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Mar. 23, 1992, Ser. No. 855,877
Claims priority, application Japan, Mar. 30, 1991, 3-67324
Int. Cl.[5] G05G *1/00*; F16F *15/10*
U.S. Cl. 74—574 **4 Claims**



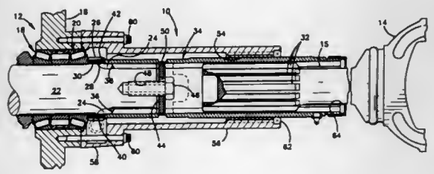
1. A torque variation absorbing device comprising:
an engine inertia body divided into a drive plate and a flywheel which is so connected to the drive plate as to be rotatable relative thereto;
a space defined between the drive plate and the flywheel;
an elastic member fixedly mounted on the flywheel and having its outer periphery a plurality of projections;
a plurality of plates arranged in such a manner that one end of the plate is secured on the projection and the other end of the plate is overlapped with one end of the adjacent plate which is secured on the adjacent projection;
a ball interposed between each of the plates and an inner periphery of the drive plate; and
a round shaft interposed between the other end of the plate and one end of the adjacent plate.

5,186,078
ENGINE UNIT
Osamu Kameda; Hitoshi Akutagawa; Sakumi Hasetoh; Junichi Okita, and Ichiro Hirose, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan
Filed Mar. 16, 1992, Ser. No. 851,823
Claims priority, application Japan, Mar. 19, 1991, 3-55086; Mar. 25, 1991, 3-60530
Int. Cl.[5] F16H *57/02*
U.S. Cl. 74—606 R **13 Claims**

1. An engine unit comprising an engine having a cylinder block and a crankshaft and a power train including a transmission having a transmission shaft and a differential having differential shaft, the engine and the power train being housed in parallel to each other in one engine housing formed of upper and lower parts which are mated with each other along respective mated surfaces, characterized in that
upper halves of bearings for the crankshaft and upper halves of bearings for one of the transmission shaft and the differential shaft are formed in the mating surface of the upper part of the engine housing, and lower halves of bearing for the crankshaft and lower halves of bearings for said one of the transmission shaft and the differential shaft are formed in the mating surface of the lower part of the engine housing, the upper part of the engine housing being formed integrally with the cylinder block of the engine.

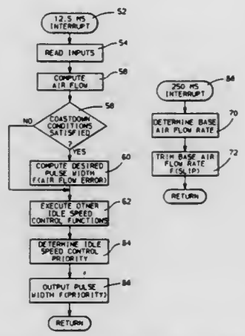


5,186,079
DRIVELINE TORQUE FUSE
Thomas A. Gee, Allen Park, Mich., assignor to Eaton Corporation, Cleveland, Ohio
Filed Dec. 4, 1991, Ser. No. 802,151
Int. Cl.[5] F16H *57/02*
U.S. Cl. 74—607 **4 Claims**



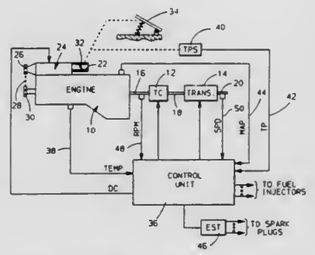
1. A torque-fuse link for a vehicle driveshaft having a critical torque level comprising:
(a) a tubular driving member having;
(i) first driving surfaces formed on the inner periphery in the input region thereof;
(ii) second driving surfaces formed on the inner periphery in the region of the output end;
(iii) a groove formed on the inner periphery intermediate said first and second driving surfaces;
(b) an annular member disposed in said tubular member, said annular member having portions thereof formed into said groove to drivingly secure said annular member to said tubular member; and,
(c) said tubular member having a frangible portion formed about the circumference thereof and intermediate said first and second driving surfaces, said frangible portion rupturable upon application between said first and second surfaces of a driving torque less than said critical level.

5,186,080
ENGINE COASTDOWN CONTROL SYSTEM
Robert C. Simon, Jr., Novi; George C. Mitchell, Ypsilanti; Joseph M. Tolkacz, Warren; William G. Polom, Mt. Clemens, and Peter M. Medich, Birmingham, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 7, 1992, Ser. No. 831,144
Int. Cl.[5] B60K *41/04*, *41/06*
U.S. Cl. 74—857 **7 Claims**



1. A method of controlling the rate of airflow into an engine of a vehicle during vehicle coastdown, the vehicle having wheels driven by the engine through an automatic transmission, the method comprising the steps of:
measuring a slip value of the automatic transmission;
sensing a coastdown condition of the vehicle;
comparing the measured slip value to a reference slip value; and
adjusting the rate of airflow into the engine during the sensed coastdown condition in a direction restoring the slip value of the automatic transmission to the reference slip value.

5,186,081
METHOD OF REGULATING SUPERCHARGER BOOST PRESSURE
Daniel J. Richardson, Grand Blanc, and Michael D. Parr, Highland, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Jun. 7, 1991, Ser. No. 712,121
Int. Cl.[5] F02B *37/12*
U.S. Cl. 74—859 **7 Claims**



1. A method of limiting the boost pressure output of a supercharger of an internal combustion engine of a vehicle having a drive train including the engine, the method comprising the steps of:
computing an output torque value at a predetermined point in the driveline;

VOL
1147
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determining a torque error that is the amount the computed output torque exceeds a maximum torque limit; and

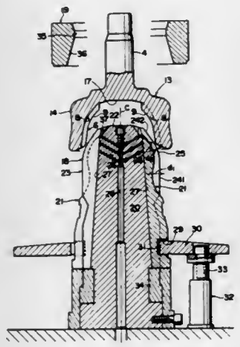
decreasing the boost pressure output of the supercharger in response to the determined torque error to establish the computed output torque at the maximum torque limit to thereby limit the computed output torque at the maximum torque limit.

5,186,082

IRONING PUNCH FOR MAKING SOCKET OF BALL-AND-SOCKET JOINT AND METHOD OF MANUFACTURING SUCH IRONING PUNCH

Masao Kuramitsu, and Toshio Maki, both of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1991, Ser. No. 739,460
Claims priority, application Japan, Aug. 7, 1990, 2-208687
Int. Cl.[5] B21J *13/02*
U.S. Cl. 76—107.1 **11 Claims**



1. A method of manufacturing an ironing punch for forming a socket of a ball-and-socket joint wherein a cup-shaped socket blank is placed over said ironing punch and said cup-shaped socket blank is ironed by an annular die which is forcibly squeezed over an outer peripheral wall of said cup-shaped socket blank, said ironing punch comprising a substantially cylindrical punch body having a plurality of ground ridges integrally formed around said punch body with recesses therebetween, and a plurality of ground ridge-shaped dies slidably fitted into said recesses between said ground ridges, the method comprising the steps of:

preparing a punch body blank, said punch body blank having a distal end surface and a plurality of unground ridges formed along an outer surface of said punch body blank with a plurality of recesses defined between said unground ridges, wherein each of said unground ridges comprises a first forming region, an arcuate forming region disposed adjacent said first forming region, and a second forming region disposed adjacent said arcuate forming regions, each of said unground ridges being formed with a grinding allowance;

forming a relief groove in each of junctions between said recesses and said distal end surface of said punch body blank;

grinding said first forming region, said arcuate forming region, and said second forming region of each of said unground ridges of said punch body blank with a grinding wheel to remove said grinding allowance and thereby form said punch body, said grinding wheel having a grinding surface complementary in shape to said first forming region, wherein said grinding wheel is allowed to enter into said relief groove during grinding to avoid physical interference between said grinding wheel and said junctions;

preparing a plurality of unground ridge-shaped die blanks each having a surface forming region having a grinding allowance;

grinding said unground ridge-shaped die blanks to remove said grinding allowance thereby forming said ground ridge-shaped dies; and

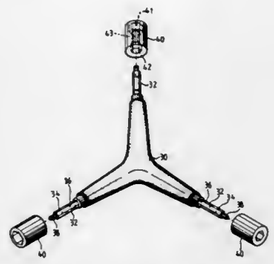
assembling the ground ridge-shaped dies onto said punch body.

5,186,083

STRUCTURE OF Y-TYPE SOCKET WRENCH

K. H. Hsiao, 4, Lane 11, Tze Chiang St., Tu Cheng Shiang, Taipei Shien, Taiwan

Filed Jun. 29, 1992, Ser. No. 905,455
Int. Cl.[5] B25B *13/06*
U.S. Cl. 81—124.4 **3 Claims**



1. A Y-type socket wrench comprising:

a Y-shaped handle having three hexagonal rods of the same size on three ends thereof, said hexagonal rods having each a first steel ball and a second steel ball received in two spaced holes on an outside surface thereof and partly projected over the outside surface and a hexagon bit of different size on a top edge thereof for turning socket head screws;

three double-head sockets detachably mounted on said three polygonal rods, said double-head sockets opposite ends thereof and a hexagonal boring bore connected therebetween; and

wherein each double-head socket can be stopped on the respective hexagonal rod at a first position by the respective first steel ball for turning a hexagon head screw, or stopped on the respective hexagonal rod at a second position by the respective second steel ball permitting the respective hexagon bit to extend out of the respective double-head socket for turning a socket head screw.

5,186,084

AUTOMATIC SCREW DRIVER AND A METHOD FOR CONTROLLING THE SAME

Katsuyuki Totsu, 1-17-8 Higashi-Mukojima, Sumida-ku, Tokyo, Japan

Filed Aug. 21, 1990, Ser. No. 570,592
Claims priority, application Japan, Aug. 25, 1989, 1-217222
Int. Cl.[5] B25B *23/06*
U.S. Cl. 81—431 **4 Claims**

1. An automatic screw driver comprising:

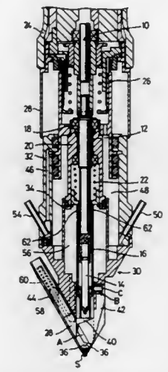
a bit detachably mounted on a distal end of a rotating output shaft extending from a motor-driven screw driver body;

a suction guide mounted on an end portion of the rotating output shaft so as to be movable in the axial direction of the output shaft, said suction guide surrounding said bit and projecting from a tip end of said bit by a sufficient length to receive a screw head;

a screw supplying and supporting unit having an inner and outer shell, said unit being movably mounted on the driver body and surrounding said suction guide, said unit including means for delivering a screw to a distal end of said unit and means for temporarily retaining said screw there, while moving said unit toward and away from end portions of said bit and said suction guide in the axial direction of the output shaft;

first and second fluid chambers positioned between said unit and the driver body, whereby the screw is delivered to a distal end of said unit and retained there due to a suction force developed by alternatively supplying fluid to said first and second fluid chambers;

a third fluid chamber located between said suction guide and the inner shell of said unit and communicating with an inner space of said suction guide, whereby a vacuum



suction force is developed therein, resulting in sucking and retaining the screw at distal end of said end preparatory to starting a screwing operation of the driver;

said screw supplying and supporting unit further comprising a pair of openable claws mounted opposite to each other on the distal end of said unit for temporarily retaining the screw there; an oscillating claw mounted on the distal end of said unit and including a suction guide passage for guiding and for correctly placing the screw which has passed through said suction guide passage at the distal end portion of said unit; a supply pipe for delivering from outside the driver body a screw into a screw guiding passage; a first ventilating pipe communicating with said first fluid chamber; a second ventilating pipe communicating with said second fluid chamber; and a third ventilating pipe communicating with said third fluid chamber.

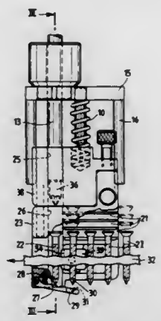
5,186,085

SCREW DRIVING DEVICE FOR SCREWS CONNECTED BY A SCREW CONNECTING STRIP

Umberto Monacelli, Via Parini 6, Monza, (Milan), Italy

Filed Oct. 1, 1991, Ser. No. 769,267
Claims priority, application Italy, Oct. 2, 1990, 21622 A/90
Int. Cl.[5] B25B *23/06*
U.S. Cl. 81—434 **11 Claims**

1. A screw driving device for screws connected together by a screw connecting strip, means for rotating a screw driving head about an axis thereof, screw advancing means for advancing said screw connecting strip to bring successive screws thereof into generally axial alignment with said screw driving head axis, a plurality of generally parallel screw head receiving channels disposed generally normal to said screw driving head axis for guiding screws of different lengths by their heads to said screw driving head axis, and said screw head receiving channels being spaced from each other along said screw driving head axis whereby the tips of said screws will always be located at the same relative position irrespective of screw length due to the selected disposition of the screw heads of



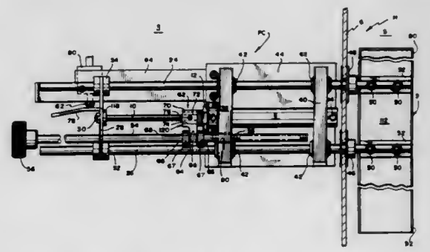
different length screws in different ones of said screw head receiving channels.

5,186,086

FINISHED PARTS CATCHER FOR AN AUTOMATIC MACHINE

Todd N. Wetherill, Montour Falls; Harold E. Walburn, and Terrence M. Sheehan, both of Elmira, all of N.Y., assignors to Hardinge Brothers, Inc., Elmira, N.Y.

Filed May 15, 1991, Ser. No. 700,455
Int. Cl.[5] B23B *15/00*
U.S. Cl. 82—124 **51 Claims**



1. A finished part catcher for an automatic machine having a workholder and part cut-off means comprising:

(a) a finished part receptacle positionable beneath said workholder;

(b) piston and cylinder means for imparting movement to said receptacle, said piston and cylinder means having first and second ends;

(c) said receptacle is spaced adjacent to one of said ends of said piston and cylinder means and free from any connection therewith;

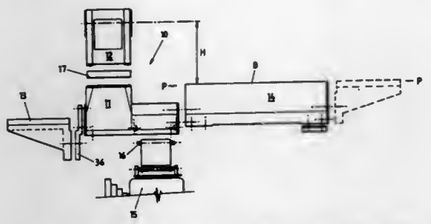
(d) at least one connecting rod having first and second ends, one of said ends of said connecting rod is directly attached to the other of said ends of said piston and cylinder means and movable therewith, the other of said ends of said connecting rods is directly attached to said receptacle;

(e) means for limiting travel of said at least one connecting rod; and

(f) control means to actuate said piston and cylinder means, thereby simultaneously moving said at least one connecting rod and causing said receptacle to move to a position beneath said workholder prior to release of the finished part so as to catch the finished part when released from said workholder.

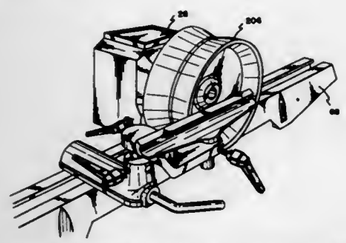
VOL 1147 ISS 3 FE 16 1993 UMI

5,186,087
WOOD LATHE
Allan McCormack, Glynde, Australia, assignor to Durden & Co. Pty. Ltd., South Australia, Australia
Filed Sep. 27, 1991, Ser. No. 766,753
Int. Cl.[5] B27C 7/02; B23B 17/00
U.S. Cl. 82—142 25 Claims



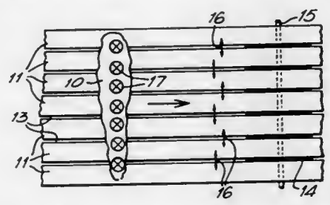
1. A modular construction wood lathe comprising a bed, a headstock assembly having a headstock base, a headstock, a motor assembly, bolts and dowels retaining said bed, said headstock base and said headstock in an assembly, and bed extension alignment apertures on a tail end of the bed, such that the headstock base is attachable to said tail end of the bed by fasteners extending through one or more of said alignment apertures, said motor assembly being pivotably mounted on said headstock base.

5,186,088
WOOD LATHE WITH SLIDING, HORIZONTALLY-ROTATABLE HEADSTOCK AND VARIABLE SPEED DRIVE
Barry D. Wixey, Pittsburgh, Pa., assignor to Delta International Machinery Corp., Pittsburgh, Pa.
Filed Aug. 6, 1991, Ser. No. 739,671
Int. Cl.[5] B27C 7/02; B23B 19/00
U.S. Cl. 82—142 10 Claims



1. A lathe comprising a slidable, horizontally-rotatable headstock, the lathe comprising:
(a) a lathe bed having a length along a longitudinal axis, the lathe bed comprising rails oriented parallel to the longitudinal axis, the rails defining a horizontal plane, the lathe bed having a side in front of which a user normally stands; and
(b) a headstock located on the lathe bed rails, the headstock comprising:
(i) a spindle shaft having a stock turning end for providing rotational movement to stock to be turned on the lathe, the spindle shaft having a length along a central axis, the central axis of the spindle shaft being located a predetermined distance above the rails;
(ii) adjustment means for selectively adjusting the orientation of the spindle shaft axis in at least two orientations including parallel to the longitudinal axis of the lathe bed or perpendicular to the longitudinal axis of the lathe bed, the spindle shaft axis in each orientation being parallel to the horizontal plane defined by the rails, the adjustment means further comprising means for slidably locating the headstock along the length of the lathe bed so that, when the headstock is oriented in the second orientation with the stock turning end of the spindle shaft turned toward the front side of the lathe bed, stock which is too large in diameter to be turned between the central axis of the spindle shaft and the rails can be turned on the front side of the lathe bed with the headstock located substantially in the center of the bed in order to achieve maximum stability of the lathe while turning;
(iii) a base having a surface which rests on the rails;
(iv) the surface which rests on the rails defining first and second mutually perpendicular slots formed in the bottom of the base; and
(v) the lathe bed comprising a clamp key which fits between the rails and into the first and second slots, the clamp key comprising means for securing the headstock to the rails so that the spindle shaft can be oriented in either of the two mutually perpendicular orientations anywhere along the length of the lathe bed.

5,186,089
APPARATUS AND PROCESS FOR CUTTING FOODSTUFFS
Lars G. A. Wadell, Aengelholm, Sweden, assignor to Nestec S.A., Vevey, Switzerland
Filed Oct. 12, 1990, Ser. No. 596,697
Claims priority, application European Pat. Off., Nov. 25, 1989, 89122139.2
Int. Cl.[5] B26D 7/30
U.S. Cl. 83—56 10 Claims

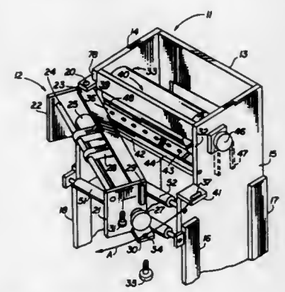


7. A process for cutting a foodstuff comprising transporting a foodstuff on a conveyor to a cutting device past an ultrasonic measuring device, taking foodstuff length and thickness information from the foodstuff with the ultrasonic measuring device from the foodstuff transported by the conveyor to the cutting device, feeding the information taken by the ultrasonic measuring device to a control unit, processing the information in the control unit to position the cutting device based on the processed information and to actuate cutting the foodstuff into measured portions.

5,186,090
SHEETING APPARATUS
Earnest B. Bunch, Jr., Phoenix, Ariz., assignor to B. Bunch Company, Inc., Phoenix, Ariz.
Filed Jun. 28, 1991, Ser. No. 722,670
Int. Cl.[5] B26D 1/02, 1/56
U.S. Cl. 83—341 3 Claims

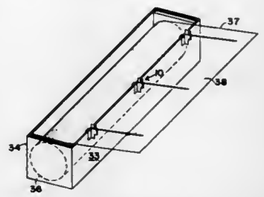
2. Apparatus for cutting at strip of paper at selected equal intervals therealong, the strip of paper including first and second spaced apart edges and a longitudinal axis, said apparatus including
(a) primary frame means having an exterior surface;
(b) a first elongate blade mounted in said primary frame means, and having a longitudinal axis;
(c) a second blade mounted in said primary frame means on a support surface;

(d) means for rotating at a selected speed said support surface and said second blade about an axis such that said second blade intermittently contacts said first blade at selected intervals to cut a strip of paper passing between said first and second blades transversely along spaced apart cut lines each comprised of a series of points and extending from the first edge toward the second edge of the strip of paper at a first selected angle with respect to the longitudinal axis of the strip of paper, said blades sequentially cutting said points comprising each of said cut lines;
(e) an opening formed in said primary frame means and leading from said exterior surface of said primary frame means to said first blade;



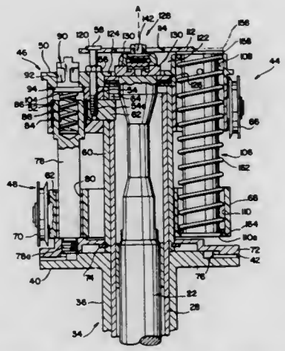
(f) secondary frame means;
(g) a driven feed roller rotatably mounted on said secondary frame means for dispensing at a selected speed the strip of paper into said opening and between said support surface and said first blade such that the longitudinal axis of the strip of paper is at a second selected angle with respect to said longitudinal axis of said first blade; and,
(h) means for adjusting said secondary frame means to alter said second selected angle to compensate for skewing of said cut lines with respect to the longitudinal axis of the strip of paper when the interval between cut lines is altered by altering said selected speed of rotation of said support surface with respect to said selected speed of movement of the strip of paper.

5,186,091
SHEETING SLITTER
Michael Wolf, Bay #929 Barnett Dr., Lake Worth, Fla. 33461
Filed May 6, 1991, Ser. No. 695,725
Int. Cl.[5] B26D 1/03; B65H 35/02
U.S. Cl. 83—649 7 Claims



1. A combined dispenser and slitter for a roll of sheeting comprising:
(I) a device for gripping a cutting blade, said device being formed from a unit of rigid sheet material of uniform thickness comprising:
(a) a principal rectangular portion thereof,
(b) two narrow extensions projecting from said principal rectangular portion at spaced-apart end areas thereof,
(c) walls defining an open rectangular relief in the center of said rectangular portion at an edge thereof opposite said extensions, and said device comprising
(d) bends in said narrow extensions, folding said narrow extensions substantially parallel to contiguous lengths of said principal rectangular portion,
(e) two bends in said principal rectangular portions, said bends folding areas of said principal rectangular portion and said extensions so as to extend at approximate right angles to contiguous area of the center of said principal rectangular portion, at least one of said right angles being very slightly less than 90 deg. whereby aligning said extensions will tighten the grip of said device upon a blade, and
(f) a substantially 180 deg. bend midway of said principal rectangular portion folding areas of said principal rectangular portion so as to grip said blade,
(II) a container comprising a substantially vertical wall having an upper edge, said device being clamped on said upper edge of said wall, and
(III) a blade comprising a sharp edge projecting upwardly from said device.

5,186,092
STRAND CARRIER FOR A BRAIDING MACHINE
Simon A. DeYoung, 5132 Mayview Rd., Lyndhurst, Ohio 44124
Division of Ser. No. 563,538, Aug. 6, 1990, Pat. No. 5,146,836.
This application May 4, 1992, Ser. No. 877,790
Int. Cl.[5] D04C 3/18
U.S. Cl. 87—22 5 Claims



1. A tension head for controlling the tension on a strand withdrawn from a strand carrier in a braiding machine, said tension head having an axis and comprising first and second head members coaxial with said axis, said first head member having an axially outer end and said second head member having an axially inner end, means supporting said first and second head members in a first axially spaced apart position and for axial displacement of said second head member toward said first head member, means biasing said first and second head members toward said first position, said means supporting said first and second head members including clutch plate means coaxial with said axis and means supporting said clutch plate means in a first clutch plate position for axial displacement toward said first head member, said clutch plate means engaging said axially inner end of said second head member, a plurality of clutch spring supports spaced apart about said axis, said supports being mounted on and extending axially from said clutch plate means toward said first head member and having ends facing said first head member, said first head member having a plurality of clutch spring openings therethrough axially aligned with said ends, a clutch spring engaging each of said ends, and clutch spring retaining means releasably interengaging with said first head member in each of said

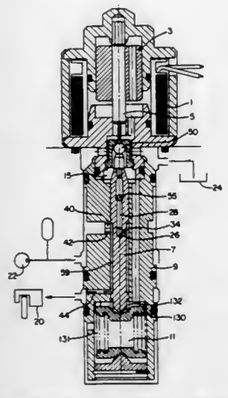
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plurality of clutch spring openings and compressing the corresponding clutch spring to bias said clutch plate means to said first position thereof.

5,186,093
ELECTRICALLY CONTROLLED PRESSURE-REGULATING SYSTEM FOR A HYDRAULIC CIRCUIT

Gilbert Kervagoret, Argenteuil, France, assignor to Bendix Europe Services Techniques, Drancy, France

Filed Mar. 25, 1991, Ser. No. 674,473
Claims priority, application France, Apr. 12, 1990, 90 04702
Int. Cl.[5] F15B *13/044*
U.S. Cl. 91—433 **4 Claims**



1. A pressure-regulating system for a hydraulic circuit, comprising at least one generator of fluid under pressure, a hydraulic motor and a reservoir of fluid under low pressure, and a solenoid valve controlled by a computer and comprising an electrical coil and a sliding magnetic core controlling a slide which slides in a bore provided in a body, said slide defining two chambers arranged on either side of the slide in said bore, a hydraulic cell communicating continually with said hydraulic motor and determining a reaction force added to the force generated by said coil and counter to prestressed elastic means and to a return spring returning said slide and said core to a rest position, said cell being defined by a blind bore made in said slide while a needle bearing on said body closes said cell substantially sealingly, and a radial duct in the slide putting the cell in communication with a groove provided on a periphery of said slide, so that an increase in the force generated by said coil results in a reduction of fluid pressure communicated to the hydraulic motor.

5,186,094
PRESSURIZED FLUID MECHANISM COMPRISING AT LEAST TWO DISTINCT OPERATIONAL CYLINDER CAPACITIES

Bernard R. Allart, Crepy en Valois, France, assignor to Poclain Hydraulics, France

Filed Jun. 17, 1992, Ser. No. 900,737
Claims priority, application France, Jun. 25, 1991, 91 07820
Int. Cl.[5] F01B *13/06*
U.S. Cl. 91—491 **11 Claims**

1. A pressurized fluid mechanism, such as a hydraulic motor or pump, with at least two distinct operational cylinder capacities, comprising:

a reaction cam;

a structure fast with said reaction cam and supporting it;

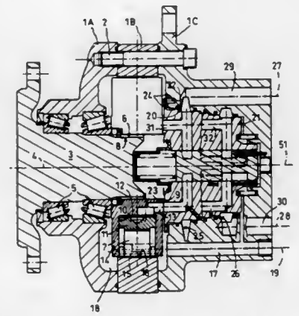
a cylinder-block mounted for relative rotation with respect to said structure about an axis of rotation and provided with a plane communication face perpendicular to the axis of rotation;

a plurality of cylinders arranged in said cylinder-block;

a plurality of pistons mounted to slide in said cylinders, at least one piston per cylinder defining inside said cylinder a fluid working chamber, which communicates with said communication face by a cylinder conduit;

an internal fluid distributor valve which is fast, with respect to rotation of said reaction cam, which defines between itself and said structure at least first and second principal fluid enclosures capable of containing, respectively, a fluid for supplying said working chamber and a fluid for exhaust of fluid from the working chambers, and which comprises a plane distribution face perpendicular to said axis of rotation, capable of being in substantially tight abutment on said communication face, distribution face into which open out pairs of distribution conduits made in the internal fluid distributor valve and distributed in at least two distinct groups of pairs of distribution conduits;

a device for selecting the cylinder capacity, which is constituted by a bore made in the internal fluid distributor and by a selection slide element mounted to move inside said bore, which is disposed on the distribution, conduits of at least a first of said two groups of pairs of distribution conduits, the mobile slide element comprising at least two positions, a first position in which first distribution conduits, one of each pair, of said two groups of pairs of



distribution conduits are connected to a first of said principal enclosures, the second distribution conduits of said pairs of distribution conduits then being connected to the second of the two principal enclosures, and the second position in which the first distribution conduits and the second distribution conduits of said first group of pairs of distribution conduits are placed in mutual communication, the first distribution conduits of the second group of pairs of distribution conduits being connected to said first principal enclosure and the second distribution conduits of said second group of pairs of distribution conduits being connected to said second principal enclosure; wherein:

a1) at least one first and at least one second connection conduit, made in the internal fluid distributor valve, connect said first and second principal enclosures to said bore of the device for selecting the cylinder capacity and open out in this bore between planes belonging to a group of two first transverse planes and between planes belonging to a group of two second transverse planes, respectively;

b1) particular distribution conduits, constituted by distribution conduits belonging to the first group of pairs of distribution conduits, open out in said bore between two particular transverse planes belonging either to the group of said two first particular transverse planes, or to the group of said two second transverse planes;

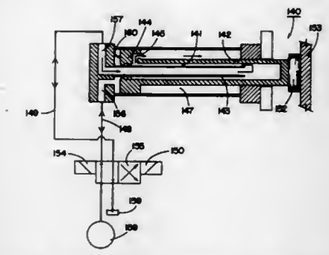
c1) the mobile slide element of the device for selecting the cylinder capacity comprises at least one groove capable of being disposed at least partially between said two particular transverse planes; and

d1) in the first position of the mobile slide element of the device for selecting the cylinder capacity, said groove is effectively contained at least partially between said two particular transverse planes and establishes communication between said particular distribution conduits and that of said first and second connection conduits which opens out between said two particular transverse planes, whilst, in its second position, said slide element obturates said connection conduit.

5,186,095
PISTON ASSEMBLY AND METHOD

William H. Todd, Winston-Salem, N.C., assignor to Todd Motion Controls, Inc., Winston-Salem, N.C.

Continuation-in-part of Ser. No. 639,117, Jan. 9, 1991, Pat. No. 5,090,296. This application Feb. 24, 1992, Ser. No. 840,101
The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.
Int. Cl.[5] F15B *13/00*
U.S. Cl. 91—518 **12 Claims**



1. A piston assembly comprising: an outer cylinder, said cylinder defining a piston well, said cylinder comprising a closed end and a piston rod receiving end, a piston, said piston slidably positioned within said well, said piston comprising a piston head and a piston rod joined thereto, said piston rod defining a chamber therein, said piston head defining an opening therein, a velocity communicating with said piston rod chamber, said cylinder closed end defining a first fluid entry conduit, said first fluid entry conduit in fluid communication with said velocity tube, said first entry conduit for directing fluid into said piston rod chamber to urge said piston outwardly through said piston rod receiving end to a work load, said closed end defining a second fluid entry conduit, said second fluid entry conduit in fluid communication with said piston well, said second fluid entry conduit for directing fluid into said well to secondarily urge said piston outwardly, a sequence valve, said valve joined to said second fluid entry conduit whereby fluid passing through said velocity tube will enter said piston chamber to drive said piston outwardly through said receiving end wherein said sequence valve will then direct fluid through said second fluid entry conduit into said piston well to provide additional force to said piston at said work load.

5,186,096
COFFEE BREWING MACHINE

Marco Willi, Wetzikon, Switzerland, assignor to Estro S.r.l., Bergamo, Italy

Filed Nov. 7, 1990, Ser. No. 610,415
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1989, 3937000
Int. Cl.[5] A47J *31/24*
U.S. Cl. 99—282 **4 Claims**

1. A coffee brewing machine for preparing espresso coffee in a first mode of operation when hot water is forced under pressure through a compressed cake of coffee powder and for preparing normal coffee in a second mode of operation when hot water runs without pressure through a filter containing coffee powder, said machine comprising:

first brewing means including a sieve holder for receiving a compressed cake of coffee powder;

second brewing means including a coffee filter support member for receiving a filter containing coffee powder;

an electrically operable boiler for heating water including thermostat means for enabling adjustment of the temperature to which the water in said boiler is to be heated, said boiler being operable in (i) a first mode of operation in which cold fresh water is heated to a first lower temperature of about between 85° C. and 90° C., and (ii) a second mode of operation in which cold fresh water is heated to a second higher temperature of about 95° C.;

supporting means connected to said boiler and to which said first and second brewing means can be connected alternatively;

a container adapted to receive cold fresh water;

a water pump having an adjustable feed rate and for feeding cold fresh water from said container to said boiler and therefrom to said supporting means, said water pump including feed rate adjusting means for enabling adjustment of the feed rate at which water through said water pump is to flow, said water pump being operable in (i) a first mode of operation in which said water pump feeds water to said boiler at a first higher feed rate, and (ii) a

second mode of operation in which said water pump feeds water to said boiler at a second lower feed rate;

a mode switch including a pin member axially displaceable between a first switching position corresponding to the first mode of operation of said machine to prepare espresso coffee and a second switching position corresponding to the second mode of operation of said machine to prepare normal coffee, said pin member being in said first switching position when said sieve holder of said first brewing means is connected to said supporting means, said pin member being in said second switching position when said coffee filter support member of said second brewing means is connected to said supporting means; and

a control unit for (i) monitoring the position of said pin member of said mode switch, (ii) controlling said thermostat means to adjust the temperature of the water in said boiler, and (iii) controlling said feed rate adjusting means to adjust the feed rate of the water flow through said water pump;

said control unit controlling said thermostat means to control the temperature of the water in said boiler and said feed rate adjusting means to control the feed rate of the water flow through said water pump in response to the position of said pin member of said mode switch, said water pump being in its first mode of operation in which said water pump feeds water from said container to said boiler at said first higher feed rate and said boiler being in

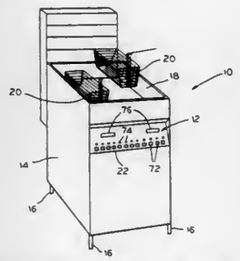
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its first mode of operation in which the water in said boiler is heated to said first lower temperature of about between 85° C. and 90° C. to thereby prepare espresso coffee when said pin member of said mode switch is in its first switching position corresponding to the first mode of operation of said machine, said water pump being in its second mode of operation in which said water pump feeds water from said container to said boiler at said second lower feed rate and said boiler being in its second mode of operation in which the water in said boiler is heated to said second higher temperature of about 95° C. to thereby prepare normal coffee when said pin member of said mode switch is in its second switching position corresponding to the second mode of operation of said machine.

5,186,097
FRYER CONTROLLER

Dennis J. Vaseloff, Waukegan; Gary J. Dobrino, River Grove; James A. King, Naperville, and Wai Y. Chu, Bloomingdale, all of Ill., assignors to Prince Castle, Carol Stream, Ill.

Filed Mar. 23, 1992, Ser. No. 855,298
Int. Cl.[5] A47J *27/00, 37/12;* H05B *1/02;* G06F *15/20*
U.S. Cl. 99—330 **14 Claims**



1. In a cooking apparatus including a vat storing a cooking medium for cooking food items placed therein, a heater for heating the cooking medium, and a temperature sensor for sensing cooking medium temperature, a cooking control comprising:

an interface circuit connected to said heater and said temperature sensor;

a programmed controller connected to said interface circuit for controlling said heater during a cooking cycle in response to sensed temperature in accordance with a programmed algorithm, said algorithm using a preselected cooking energy profile for a typical batch of a food product to be cooked during the cooking cycle, said profile identifying predetermined on and off times during the cooking cycle at which the heater is turned on or off based on expected temperature, and said algorithm periodically comparing sensed cooking medium temperature to the stored profile and in response to deviations from the stored profile expected temperature dynamically modifying the on and off times for use during the remainder of the cooking cycle.

5,186,098
APPARATUS FOR BUTTERING AND APPLYING CHEESE TOPPING TO BREAD

Danny T. Miller, Metamora, Mich., assignor to Little Caesar Enterprises, Inc., Detroit, Mich.

Filed Mar. 11, 1991, Ser. No. 666,906
Int. Cl.[5] A21C *9/04*
U.S. Cl. 99—494 **10 Claims**

1. A machine for buttering and applying a cheese topping to bread, comprising:

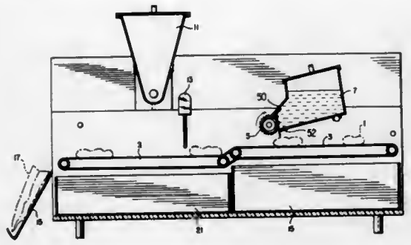
a frame;

a conveying means for conveying bread through the machine;

a liquid hopper removably mounted on said frame and having a mouth located a set distance above said conveying means;

a rotatable shaft adjacent to said liquid hopper, said rotatable shaft removably carrying a hollow cylindrical liquid applicator thereon, said applicator being adjacent to and in contact with said mount to form a seal;

a dry particle hopper removably mounted on said frame and having a base portion located above said conveying means;



a removable and rotatable agitator passing through the base portion;

means for continuously powering said conveying means to convey bread through said machine;

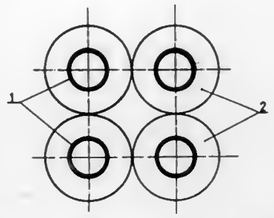
means for rotating said rotatable shaft and said applicator irrespective of the location of the bread in said machine, said applicator being adapted to retain said liquid until said applicator comes into contact with said bread, and said applicator being adapted to apply said liquid to said bread without crushing said bread; and

means for rotating said rotatable agitator to apply dry particles from said dry particle hopper to said bread.

5,186,099
METHOD OF SAVING SPACE OCCUPIED BY TOILET ROLLS IN TRANSPORTATION AND STORAGE PROCESSES AND RELATED SPECIAL DEVICES

Cai Qing, 115 Wenhua Road, Zhengzhou, China, assignor to China Henan Light Industrial Products Import and Export Corportation, Zhengzhou, China; Rober Ng, Quarry Bay, Hong Kong; Yi Xiao Guang and Cai Qing, both of Zhengzhou, China

Cootinuation of Ser. No. 453,826, Dec. 21, 1989, abandoned.
This application Mar. 18, 1992, Ser. No. 853,878
Claims priority, application China, Dec. 23, 1988, 88108963
Int. Cl.[5] B30B *13/00*
U.S. Cl. 100—35 **3 Claims**



1. A method for saving space occupied by toilet rolls, each roll including a core formed of a material capable of being flattened, the core having an original cylindrical-shaped periphery and including a first end and a opposing second end, in transportation and storage processes, comprising the steps of:

before transportation and storage, pressing the cylindrical toilet rolls so that the cross section of each roll presents a shape similar to a rectangle and the periphery of the core becomes two flat walls positioned closely adjacent to each other;

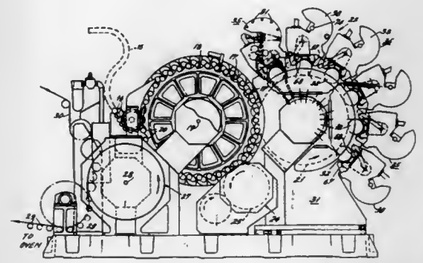
transporting the pressed toilet rolls; and

when the rolls are to be used, restoring the pressed rolls to their original cylindrical-shape by inserting a threaded rod between the two flat walls of the core, mounting a conical piece on each of opposite ends of said rod with the apex pointed toward said core, and screwing one of said pieces into said core until the periphery of the core has recovered to the original cylindrical-shape.

5,186,100
INTERCHANGEABLE INKER HAVING ENCLOSED TRANSMISSION

Michael Turturro, New City, N.Y., and Enn Sirvet, Washington Township, Bergen County, N.J., assignors to Sequa Corporation, New York, N.Y.

Filed Jan. 16, 1992, Ser. No. 821,650
Int. Cl.[5] B41F *17/08*
U.S. Cl. 101—40 **14 Claims**



1. Apparatus for decorating cylindrical articles, said apparatus including:

a main frame, a blanket wheel rotatably mounted on said main frame, a plurality of plate cylinders rotatably mounted on said main frame and disposed adjacent the periphery of said blanket wheel whereby printing plates mounted on said plate cylinders engage the periphery of said blanket wheel as the latter rotates in timed relationship with rotation of said plate cylinders, and a plurality of inker subassemblies removably mounted on said main frame to apply controlled amounts of ink to printing plates mounted on said plate cylinders, there being an individual one of said inker subassemblies associated with each of said plate cylinders, and said plate cylinders remaining mounted on the main frame upon dismounting of the subassemblies from the main frame;

each of said subassemblies comprising first and second sections disposed in side by side relationship;

said first section including a fountain for holding a supply of ink and first means for removing ink from said fountain, forming ink removed from said fountain into a thin film and applying the latter to a printing plate on the plate cylinder that is associated with the subassembly in question, said first means including a train of cylinders;

said second section including a transmission for positively driving a first cylinder of said train of cylinders, a liquid-type lubricant for lubricating said transmission, said transmission having an input and an output with the latter being operatively connected to said first cylinder, a housing for confining said lubricant when said subassembly is mounted on and dismounted from said main frame, and wherein said transmission is disposed;

drive means mounted on said main frame and including an individual driving shaft for each of said subassemblies;

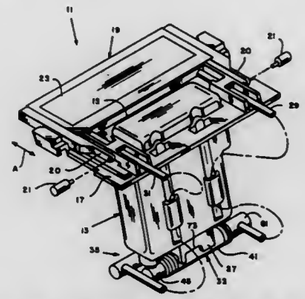
said input including an input shaft that is in axial alignment with an individual one of said driving shafts;

an individual second means associated with each of said subassemblies, said second means being disposed externally of the housings and providing disengageable couplings for independently connecting each of said input shafts to said drive shafts in axial alignment therewith so that they rotate at the same speed.

5,186,101
INK REPLENISHING SYSTEM

Charles F. Murphy, III, Fairfield, and Patrick Murphy, Stamford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Sep. 12, 1990, Ser. No. 582,584
Int. Cl.[5] B41K *1/42*
U.S. Cl. 101—97 **7 Claims**



1. An ink pad replenishing system having an ink tray containing an ink pad, inlet means for receiving ink and outlet means for providing drainage of excess ink from said ink tray, and an ink reservoir, said system comprising:

communication means for delivering ink from said ink reservoir to said ink tray and for delivering from said ink tray to said ink reservoir;

a first pump means for providing a positive pressure in said communication means to cause ink to be withdrawn form said ink reservoir and delivered to said ink tray in a metered amount upon each actuation of said first pump means;

a second pump means for providing a back pressure in said communication means between said ink tray and said reservoir to motivate excess ink in said ink tray to return to said ink reservoir through said communication means;

activation means for periodically activating said first and second pumps.

5,186,102
PRINTER USING A STENCIL

Hiroshi Kanno, Shiroishi; Yuuki Wagatsuma, Shibata, and Toshiaki Takase, Sendai, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

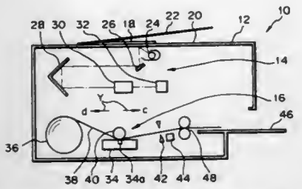
Filed Oct. 9, 1991, Ser. No. 773,211
Claims priority, application Japan, Oct. 11, 1990, 2-272828; Nov. 26, 1990, 2-321641
Int. Cl.[5] B41F *15/34;* B41C *1/14*
U.S. Cl. 101—128.4 **12 Claims**

1. A device for writing image information in desired positions of a single stencil, wherein said image information is read from a plurality of documents, said device comprising:

reading means for sequentially reading image information from a plurality of documents;

VOL
1147
ISS
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writing means for writing said image information read by said reading means in said desired positions of said stencil;
supporting means for supporting said stencil in a manner such that said stencil is movable in a subscanning direction which is perpendicular to a main scanning direction of the stencil;
stencil moving means for moving said stencil in said subscanning direction;
displaying means having a display for displaying a write start position indicating a position where said image information read by said reading means begins to be written in said



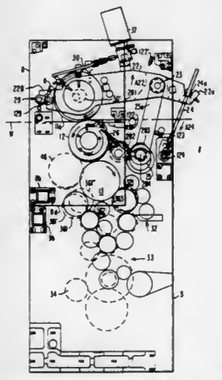
desired positions of said stencil and an area of said stencil where an operation for writing said information read by said reading means is under way;
marking means for selecting and designating said write start position on an operation board; and
control means connected to said reading means, said writing means, said displaying means and said stencil moving means for controlling said reading means, said writing means, said displaying means and said stencil moving means such that said writing operation is repetitively effected a desired number of times in said desired positions of said stencil.

5,186,103

PRINTING MACHINE SYSTEM, ESPECIALLY FOR PRINTING ON A WEB OF HEAVY OR THICK STOCK MATERIAL, WITH INTERCHANGEABLE PRINTING CYLINDERS

W. Robert Gelinas, Jewett City, Conn.; Arthur J. Leale, Westerly, R.I.; David J. Leitch, Pawcatuck, Conn.; John J. Mellow, Stonington, Conn.; George Rinaudo, North Stonington, Conn., and Ernest H. Treff, Groton, Conn., assignors to Man Roland Druckmaschinen AG, Offenbach am Main, Fed. Rep. of Germany

Filed Jun. 12, 1992, Ser. No. 898,039
Int. Cl.[5] B41F *7/04, 13/24*
U.S. Cl. 101—181 **19 Claims**



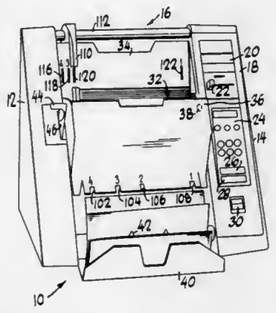
1. A versatile printing machine system for use with printing cylinders of different cut-off sizes, especially for printing on a web (W) of heavy or thick stock material, having
at least one printing station (**1–6**), the at least one printing station including
a printing tower (**9, 9'**);
an impression cylinder (**11**) located and retained in an upper part of the printing tower;
a printing cylinder (**12, 13**) carrying a printing image, said web (W) being conducted between the impression cylinder (**11**) and the printing cylinder (**12, 13**);
an inker (**33**) located and retained in the printing tower below the printing cylinder;
a removable cassette (**8**) selectively attachable and removable from the printing tower (**9, 9'**),
the printing cylinder (**12, 13**) being retained in said cassette (**8**) and positioned below the impression cylinder,
said cassette, when located in the printing tower, positioning the printing cylinder in ink-receiving position with respect to the inker retained in the tower;
positioning means (**8a, 19**) on the cassette (**8**) and on the tower (**9, 9'**), respectively, for selective positioning of the cassette in the tower, while permitting removal in a movement path extending, at least in part, upwardly from the plane of the web when conducted through the printing station; and
overhead hoist means (**15, 17**) engageable with the cassette (**8**) for removing the cassette from the printing tower in said movement path (**15b**).

5,186,104

AUTOMATIC ENDORSER

Donald Lane, Trevose, Pa., assignor to Brandt, Inc., Bensalem, Pa.

Filed Jun. 24, 1991, Ser. No. 720,194
Int. Cl.[5] B41F *5/00*
U.S. Cl. 101—216 **24 Claims**



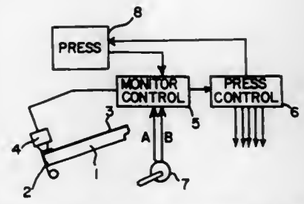
1. Apparatus for selectively applying an endorsement to checks at different locations along the back of a check including in combination, a platen, an endorser unit, means mounting said endorser unit for movement relative to said platen between an inactive position and an active position at which it applies an endorsement to a check moving between said unit and said platen, means for moving checks along a path past said endorser unit and said platen, said path being generally perpendicular to the length of a check, means mounting said endorser unit for movement laterally of said path to positions corresponding to said locations, means operable in the inactive position of said endorser unit for moving said unit to one of said positions, means for locking said unit in the position to which it has been moved, a guide extending along said platen in relatively closely spaced relationship thereto for guiding checks past said platen and a cover member having a plurality of notch means spaced laterally therein, wherein said means for moving said unit laterally moves said unit and said means for locking said unit includes a select lever engagable with one of said plurality of notch means.

5,186,105

DEVICE FOR MONITORING SHEET MOVEMENT NEAR THE LAY MARKS OF SHEET-FED OFFSET PRINTING PRESSES

Helmut Emrich, Offenbach am Main; Horst Muller, Seligenstadt; Walter Ruwe, Offenbach am Main, and Erich Wegel, Muhlheim am Main, all of Fed. Rep. of Germany, assignors to Man Roland Druckmaschinen AG, Fed. Rep. of Germany

Filed Apr. 15, 1992, Ser. No. 869,315
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1991, 4112222
Int. Cl.[5] B41F *7/02*
U.S. Cl. 101—217 **4 Claims**



1. A device for monitoring movement of a sheet to be printed in a sheet-fed offset printing press, including:
a press having rotating cylinders in a plurality of operating states and for providing a value indicative of the operating state of the cylinders;
means for transferring one of the sheets to the press;
a sheet sensor for detecting the position of the sheet on the transferring means and providing a value indicative thereof;
means for detecting at least two different angular positions of the rotating cylinders;
a monitor control unit responsive to the values from the press and sheet sensor and the at least two different angular positions of the rotating cylinders for 1) selecting one of the angular positions, depending on the value of the operating state of the cylinders, 2) evaluating the value indicative of the position of the sheet at the moment corresponding to the selected angular position, and 3) providing an output indicative of the sheet position at the selected angular position; and
means for receiving the output generated by the monitor control unit and controlling the press in accordance with the output received.

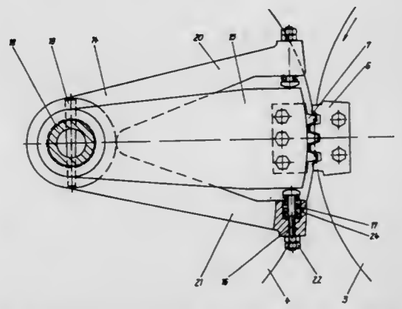
5,186,106

ARRANGEMENT ON TRANSFER DRUM FOR IN-REGISTRY SHEET TRANSFER

Karl-Heinz Fischer, and Arndt Jentzsch, both of Coswig, Fed. Rep. of Germany, assignors to KBA-Planeta AG, Radebeul, Fed. Rep. of Germany

Filed Nov. 22, 1991, Ser. No. 797,443
Claims priority, application Fed. Rep. of Germany, Nov. 23, 1990, 4037305
Int. Cl.[5] B41F *21/04;* **B65H** *5/12, 5/14*
U.S. Cl. 101—242 **4 Claims**

1. An arrangement on transfer drums for inregistry sheet transfer in sheet rotary printing machines having a plurality of cylinders and a plurality of transfer drums, the arrangement comprising first toothed segments mounted on the cylinders; a plurality of gripper units mounted on the cylinders and each having a gripper shaft, a gripper and a turnable gripper traverse which receives said gripper shaft and said gripper; turnable toothed segments connected with transfer drums and bringable in engagement with said first mentioned toothed segments mounted on the cylinders; and elastic means associated



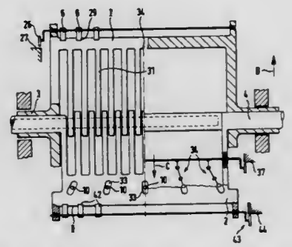
with said toothed segments for elastically mounting said toothed segments.

5,186,107

DRUM FOR TRANSPORTING SHEETS

Erich G. Wieland, Würzburg, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany

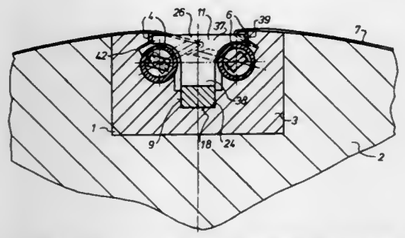
Filed Aug. 10, 1992, Ser. No. 926,703
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1991, 4126644; Jul. 17, 1992, 4223555
Int. Cl.[5] B41F *1/30*
U.S. Cl. 101—409 **10 Claims**



1. A drum for transporting a sheet between spaced printing units in a sheet fed rotary printing press, said drum comprising:
a drum base body having a plurality of sheet leading edge grippers and being rotatably supported;
a rotatable shaft supported in said drum body for rotation relative to said drum body;
a sheet trailing edge holding part secured to said rotatable shaft and having a plurality of sheet trailing edge grippers; and
a plurality of sheet smoothing suction nozzles pivotably supported in said holding part, said plurality of suction nozzles having individual lines of movement which intersect at a reference point.

VOL 1147 ISS 3 FEB 16 1993 UMI

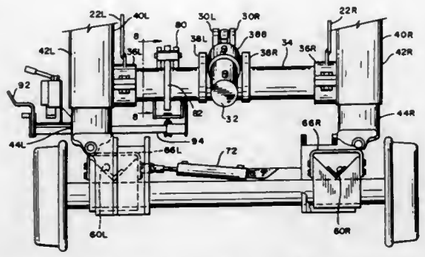
5,186,108
AXIALLY ADJUSTABLE REGISTER PIN
Bernd A. Hillebrand, Bergrheinfeld, Fed. Rep. of Germany, assignor to Koenig & Bauer Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany
Filed Dec. 4, 1991, Ser. No. 802,401
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1990, 4038919
Int. Cl.[5] B41F *27/06, 27/12*
U.S. Cl. 101—415.1 **3 Claims**



1. An axially adjustable register pin assembly which is useable to axially shift and align a printing plate having register slots on its leading and trailing ends on a plate cylinder, said axially adjustable register pin assembly comprising:
an insertion bar positionable in a cylinder gap which extends axially along a peripheral surface of a plate cylinder;
a register pin slidably securable on said insertion bar, said register pin having an upper register portion and a lower fastening portion;
holding means secured to said insertion bar, said holding means engaging said fastening portion of said register pin, said holding means including spaced first and second cooperating holding devices, each of said holding devices having a cantilever arm, each said cantilever arm being spaced from, and cooperating with said insertion bar to form a guide slot for said fastening portion of said register pin; and
means on said fastening portion to cause said fastening portion and said holding means to frictionally engage each other.

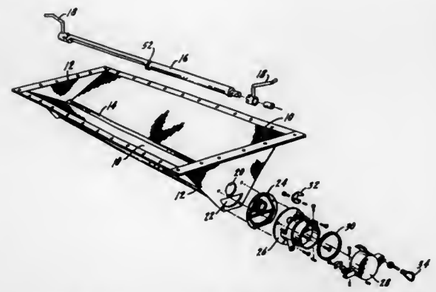
5,186,109
SIDE SHIFT RAILWAY GUIDE WHEEL APPARATUS FOR RAIL/HIGHWAY CONVERSION WITH V-SHAPED AUTOMATIC CENTERING SURFACES FOR CENTERING VEHICLE RELATIVE TO THE RAILS
Harry Madison, Germantown, Tenn., assignor to Harsco Corporation, Wormleysburg, Pa.
Filed Oct. 16, 1991, Ser. No. 777,142
Int. Cl.[5] B61F *5/00*
U.S. Cl. 105—215.2 **19 Claims**

1. A railway guide wheel apparatus for a road vehicle having road wheels comprising:
a mount frame adapted to be mounted to the road vehicle; a wheel support having first and second railway wheels mounted at opposite ends thereof, said wheel support supported by said mount frame to allow relative movement therebetween;
a mode actuator supported by said mount frame and operable to move said wheel support between;
I. a lower position in which said first and second railway wheels engage rails; and
II. an upper position wherein said first and second railway wheels are sufficiently raised for allowing the road vehicle to travel on a road;
a side shifter connected to said wheel support for shifting said wheel support sideways such that said first and second wheels are lined up with rails; and centering means for automatically centering the vehicle relative to said wheel support by moving said mount frame sideways relative to said shell support; and



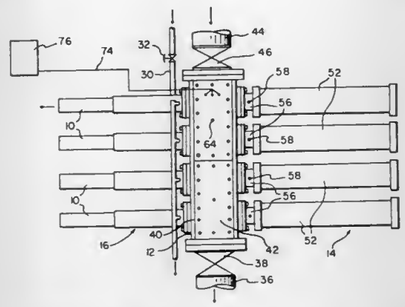
wherein said side shifter is operable in a float mode when said centering means is automatically centering.

5,186,110
RAILROAD HOPPER CAR DISCHARGE GATE VALVE
Robert F. Seitz, Batavia, Ill., assignor to Gen-Tech, Inc., North Aurora, Ill.
Filed May 11, 1992, Ser. No. 881,349
Int. Cl.[5] B65G *53/40*
U.S. Cl. 105—247 **4 Claims**



1. A discharge gate for a railroad hopper car including slope sheets, each terminating in a longitudinally extending lip, said lips being spaced, and a trough secured to the slope sheets beneath the space between the lips, a rotatable longitudinal discharge valve shaft extending between the spaced lips of the slope sheets and positioned to control flow of material from the gate interior above the slope sheets to the discharge trough,
operating handle means mounted to said gate for rotating said shaft,
said shaft having axially spaced and axially extending recessed areas, said recessed-areas being circumferentially non-aligned, but in part circumferentially overlapping, said shaft having an intermediate portion, between axially extending recesses, an elastomeric spacer extending circumferentially about said shaft intermediate portion and radially outwardly therefrom, said spacer being in contact with said slope sheet lips and uniformly locating said valve shaft between said lips and out of contact therewith.

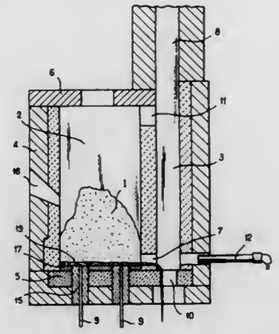
5,186,111
DEVICE FOR INJECTING SLUDGE INTO AN INCINERATOR
Guy Baria, 64, Boulevard du Jardin Exotique, Monte Carlo - 98000, Monaco
PCT No. PCT/FR90/00680, § 371 Date May 20, 1991, § 102(e) Date May 20, 1991, PCT Pub. No. WO91/04445, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 20, 1990, Ser. No. 684,961
Claims priority, application Monaco, Sep. 21, 1989, PV 2072
Int. Cl.[5] F23G *5/06, 7/04*
U.S. Cl. 110—238 **11 Claims**



1. Apparatus for injecting waste material as an extruded sludge into a combustion chamber of an incinerator comprising:
a distribution chamber having sludge inlet means;
at least one tubular injector having a bore therethrough, said at least one tubular injector operatively interconnecting said distribution chamber with said combustion chamber for passing sludge therethrough, said at least one tubular injector comprising a tubular stem having a cylindrical base portion connected to said distribution chamber and a sludge outlet nozzle having a conical base portion extending into said combustion chamber, said conical base portion having a wide diameter end at the sludge outlet;
a cooling system for said at least one tubular injector comprising a sleeve secured to and spaced from said tubular stem so that said sleeve and said stem define an enclosed passageway for a cooling fluid, said sleeve having an orifice on a lower portion thereof for controlling the flow of said cooling fluid to obtain a linear temperature gradient along the length of said at least one injector.

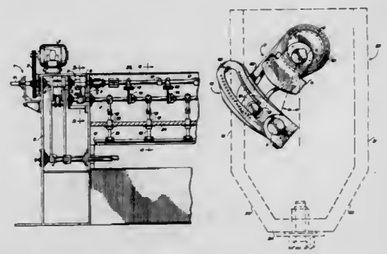
5,186,112
METHOD AND APPARATUS FOR MELTING MATERIALS CONTAINING INORGANIC MATERIAL FIBERS BY THE SUPPLY OF OXYGEN RICH GAS
Strnad Vojtech, Helsingborg, Sweden, assignor to Isover Saint-Gobain, Courbevoie, France
Continuation of Ser. No. 480,827, Feb. 16, 1990, Pat. No. 5,063,860. This application Jul. 16, 1991, Ser. No. 730,455
Claims priority, application Sweden, Feb. 23, 1989, 8900635
The portion of the term of this patent subsequent to Nov. 12, 2008, has been disclaimed.
Int. Cl.[5] F23G *5/00*
U.S. Cl. 110—256 **6 Claims**

1. A method of melting an inorganic material comprising inorganic fibers, which inorganic material has an adiabatic temperature of at least 850° C. and is mixed with an organic substance, comprising the steps of:
heating the inorganic material and organic substance in a stationary furnace to a temperature sufficient for the organic material to combust;
feeding oxygen enriched gas, having an oxygen content of at least 40% by volume, to the furnace to complete the



combustion of the organic substance and producing sufficient heat to melt the inorganic material.

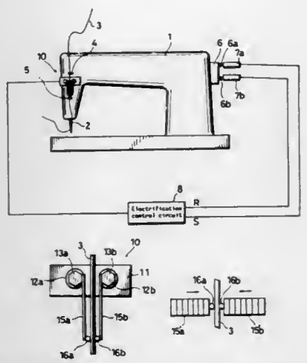
5,186,113
INVERTED TUFTING MACHINE NEEDLE DRIVE AND STROKE ADJUSTMENT
Jerry T. Green, Hixson, Tenn., assignor to Tuftco, Inc., Chattanooga, Tenn.
Filed Oct. 30, 1991, Ser. No. 784,973
Int. Cl.[5] D05C *15/20*
U.S. Cl. 112—80.42 **8 Claims**



1. A tufting machine which comprises:
(a) a head;
(b) a driveshaft rotatably mounted in the head and operatively connected to a power source for rotatably driving said driveshaft;
(c) a rocker shaft rotatably mounted parallel and below the driveshaft in the head of the tufting machine such that a line formed by connecting the driveshaft to the rocker shaft is less than 30° from a vertical plane passing axially through the driveshaft;
(d) a stroke adjustment means connecting the driveshaft to the rocker shaft;
(e) a push rod connected to the rocker shaft and driven reciprocally thereby; and
(f) a needle bar connected to the push rod and driven reciprocally thereby.

VOL 1147 ISS 3 FEB 16 1993 UMI

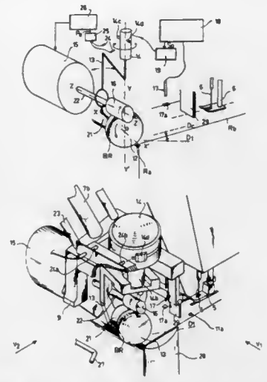
5,186,114
THREAD TENSION ADJUSTING APPARATUS FOR A SEWING MACHINE
Naoya Ikawa, Hyogo, Japan, assignor to Pegasus Sewing Machine Mfg. Co., Ltd., Osaka, Japan
Filed Apr. 17, 1991, Ser. No. 686,518
Claims priority, application Japan, Apr. 20, 1990, 2-105660
Int. Cl.[5] D05B *47/00*
U.S. Cl. 112—254 **6 Claims**



1. A thread tension adjusting apparatus provided on a thread supply path running from a thread source to a thread processing section such as a needle and a looper, said thread tension adjusting apparatus comprising:
a first piezoelectric actuator provided at a side of a thread;
a second piezoelectric actuator provided symmetrically to said first piezoelectric actuator with the thread interposed therebetween;
wherein said first and second piezoelectric actuators are controlled to bend in opposite directions to each other, whereby narrowing a distance between tips of bent portions of said actuators to a length which is shorter than a diameter of the thread.

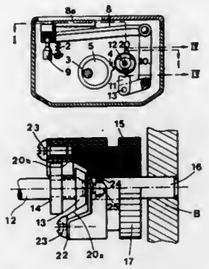
5,186,115
FABRIC GUIDING DEVICE AND PROCESS OF AUTOMATIC SEWING
Alain Rouleau, 3 rue Espinasse; Patrick Rouleau, 52 boulevard Carnot, both of 31000 Toulouse, and Jean-Pierre Touret, Route de Menville - Bretx, 31530 Levignac, all of France
Filed Jul. 26, 1991, Ser. No. 736,634
Claims priority, application France, Jul. 27, 1990, 90 09728
Int. Cl.[5] D05B *27/04, 27/10, 35/10, 19/00*
U.S. Cl. 112—306 **16 Claims**

1. A fabric guiding device mounted on a sewing machine provided with a support plate (**4**) for fabric and a presser-foot (**5**) for entrainment of the fabric associated with at least one needle (**6**), in order to permit automatically sewing pieces of fabric parallel to a predetermined reference line, the device comprising:
a rolling element (**12**) for entrainment of the fabric, mounted in front of the presser-foot (**5**) and free to rotate around a substantially horizontal axis of rotation (XX') in such a manner as to contact the fabric along entrainment generatrices (BR) situated in a vertical plane,
a pivoting actuator (**14**) on which said rolling element (**12**) is mounted, for pivoting said rolling element about the vertical axis (YY'), intersecting the rotation axis (XX') in such manner as to direct the entrainment generatrices (BR) in correspondence with different advancement directions (D_1, D_2),
a cylinder (**16**) situated along a transverse horizontal axis (ZZ') and bearing against the rolling element in order to make the rolling element turn around its axis of rotation (XX'), by frictional contact,
a drive-motor (**15**) for causing rotational movement of the cylinder (**16**),
a detector (**17**) of the transverse position of the fabric, mounted in front of the presser-foot (**5**) and associated with means (**18**) for generating a position signal (Sp) and with control means (**19**) for actuating pivoting of the rolling element as a function of the position signal (Sp),



said guiding device being characterized in that the cylinder (**16**) is situated above the rolling element (**12**) in such manner as to bear against the upper zone (Su) of said rolling element, opposite the lower contact zone (Si) of said element with the fabric, said upper zone (Su) of said rolling element where contact occurs between the cylinder and the rolling element being situated substantially on the axis (YY') around which the alternative pivoting of said rolling element occurs.

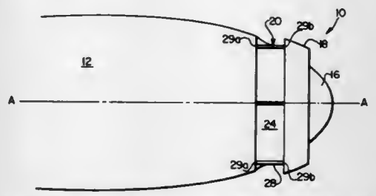
5,186,116
SEWING MACHINE
Antonio Jimenez, Meyrin, Switzerland, and Patrice Deplante, Annemasse, France, assignors to Mefina S.A., Switzerland
Filed Nov. 29, 1991, Ser. No. 798,916
Claims priority, application Switzerland, Nov. 29, 1990, 3780/90
Int. Cl.[5] D05B *27/02, 27/22*
U.S. Cl. 112—323 **3 Claims**



1. A sewing machine comprising a cloth transport mechanism and an adjusting device of adjusting cloth transport of said mechanism in amplitude and direction, the cloth transport mechanism comprising a drive shaft and a cloth transport member, the cloth transport member having two opposite

ends, each of which is connected kinematically to the drive shaft by a respective connecting rod and lever mechanism, one of the connecting rod and lever mechanisms defining a first displacement trajectory in a direction substantially parallel to a support plane for the cloth while the other of the connecting rod and lever mechanisms defines a second displacement trajectory in a direction substantially perpendicular to said support plane, the adjusting device comprising a slideway having two tracks in the form of arcs of concentric circles centered on a trajectory described by a pivoting axis of a pivotal connecting between two connecting rods of one of said connecting rod and lever mechanisms, and said slideway being mounted pivotingly about an axis parallel to aid pivotal axis and passing through the center of said trajectory described by said pivotal connection, wherein said slideway is formed by a profiled metal foil attached to a device mounted pivotally about said shaft.

5,186,117
SUBMARINE STEERING APPARATUS AND METHOD
Clinton W. Stallard, III, Hampton, Va., assignor to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.
Filed Nov. 1, 1991, Ser. No. 786,708
Int. Cl.[5] B63G *8/16*
U.S. Cl. 114—330 **29 Claims**



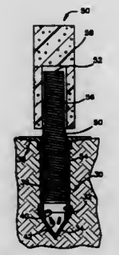
1. A steering control assembly for use on a vehicle traveling through a fluid medium, said vehicle having a body formed with a contoured surface and a forward portion forming a bow, said assembly comprising:
an annular member surrounding said bow;
actuating means secured to said body for movement of said annular member forward and away from said bow at an angle to the longitudinal axis of said vehicle;
wherein when said annular member is displaced at said angle, said vehicle is caused to turn in the direction toward which said annular member is turned.

5,186,118
WINDAGE-GAUGING METHOD AND APPARATUS FOR HUNTERS
Robert K. Stinson, 7292 Peaceful Valley Rd., Acme, Mich. 49610
Filed Jul. 3, 1991, Ser. No. 725,574
Int. Cl.[5] G08B *5/40*; G01W *1/00*
U.S. Cl. 116—214 **20 Claims**



1. A wind gauge of the type comprising a dispensable particulate media which when windborne indicates the wind direction, comprising:
power-like silica particles; and
color pigmented thermoplastic particles;
said media comprising a mixture of said thermoplastic particles and silica particles which provides a cloud-like dispersion when dispensed into the air, such dispersion being airborne under the influence of ambient wind and readily visually observable to gauge windage as it is carried by the wind.

5,186,119
MODULAR MARKING SYSTEM FOR ATHLETIC FIELDS
Dale J. Hlavin, Westlake, Ohio, assignor to Markers, Inc., Avon Lake, Ohio
Filed May 1, 1992, Ser. No. 876,770
Int. Cl.[5] A63F *9/00*; G09B *29/10*; G09F *7/18*
U.S. Cl. 116—222 **26 Claims**



1. An upright marking means for visibly marking playing field lines on an athletic field for a sporting event, comprising:
a ground anchor adapted to be inserted into the ground, the ground anchor containing a vertical central socket and a ground level upper peripheral collar defining a ground level opening of the anchor central socket;
an upright visible marker comprising an above ground structure containing a vertical channel for receiving supporting means to support the marker vertically above the ground anchor; and
a vertical support means consisting of a variable diameter coiled spring means vertically disposed within the ground anchor socket and secured within the vertical channel of the upright visible marker, the spring means comprising a tightly coiled heavy gauge steel wire having a metal gauge thickness between about 1 and 11, where said coiled spring means contains a lower spring section having a large diameter coil fitted within the anchor socket, an upper spring section having a small diameter coil disposed within the vertical channel and secured to the upright marker, and an intermediate transition coil section between the large diameter lower coil and small diameter upper coil located proximate to the ground level collar of the anchor whereby the upper coil section of the spring means and upright visible marker are adapted to bend laterally upon impact.

5,186,120
MIXTURE THIN FILM FORMING APPARATUS
Hiroshi Ohnishi, and Susumu Hoshinouchi, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 492,747, Mar. 13, 1990, abandoned.
This application Dec. 4, 1991, Ser. No. 801,627
Claims priority, application Japan, Mar. 22, 1989, 1-71293
Int. Cl.[5] C23C *16/00*
U.S. Cl. 118—667 **3 Claims**

1. A mixture thin film forming apparatus for accumulating

VOL 1147 ISS 3 FE 16 1993 UMI

gasified components on a substrate which is arranged in a reaction chamber, said apparatus comprising:

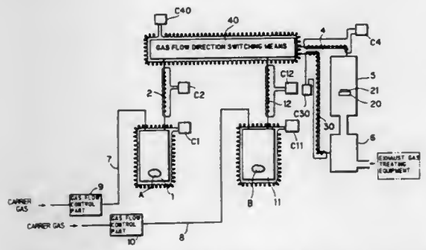
a plurality of sublimation chambers respectively containing a plurality of solid raw materials being different in gasification temperature from each other;

gas flow direction switching means for mixing gases and switching the flow of said gases;

a plurality of gas deriving pipes respectively connecting said plurality of sublimation chambers with said gas flow direction switching means for respectively transporting raw material gases of said solid raw materials respectively gasified in said sublimation chambers to said gas flow direction switching means;

a gas transport system connecting said gas flow direction switching means with said reaction chamber for transporting said raw material gases mixed by said gas flow direction switching means to said reaction chamber;

discharge line means for connecting said gas flow direction



switching means with an exhaust means for transporting said raw material gases in said gas flow direction switching means to said exhaust means;

a plurality of temperature control means for respectively independently controlling temperatures of said sublimation chambers, said gas flow direction switching means, said gas deriving pipes, said gas transport system and said discharge line means;

wherein:

each of said sublimation chambers, said gas flow direction switching means, said gas deriving pipes, said gas transport system and discharge line means have different heat capacities; and

said gas flow direction switching means can selectively feed a first raw material gas to said reaction chamber while feeding a second raw material gas to said exhaust means and feed said second raw material gas to said reaction chamber while feeding said first raw material gas to said exhaust means.

5,186,121

METHOD OF AND APPARATUS FOR USE IN THE DEPURATION OF BIVALVES

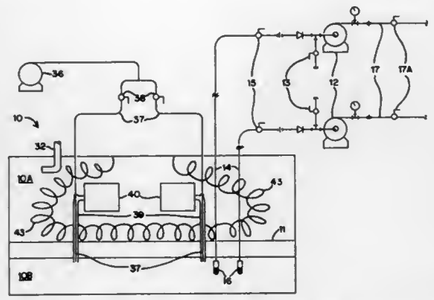
Franklin L. Smith, Jr., 2394 Old Augusta Rd., North Waldoboro, Me. 04572

Filed Oct. 31, 1991, Ser. No. 785,785

Int. Cl.[5] A01K *61/00, 63/04*

U.S. Cl. 119—4 **15 Claims**

1. The method of depurating bivalves harvested from a polluted area, said method consisting of the steps of establishing an underground body of seawater, dividing the body of the water by a transverse filter into upper and lower sections, providing a bivalve treatment area of a capacity for a substantial number of bushels of bivalves taken from the polluted area, continuously circulating seawater from the lower section of the underground body through the treatment area and over the batch of bivalves therein and back to the upper section thereof, the volume of seawater in the body thereof substantially greater than the volume of water in circulation, filtering the circulating water and then subjecting it to ultraviolet radiation to disinfect the water before reaching the treatment area, filtering the seawater returning to the upper section of the underground body, maintaining aerobic bacteria at each filtering site of a type consuming bivalve secretions, and continuing said circulation for an interval such that the depuration of the



bivalves is completed while maintaining the dissolved oxygen content, the pH, temperature and salinity of the water suitable to effect their depuration while shielding the circulating water and the treatment area from sunlight.

5,186,122

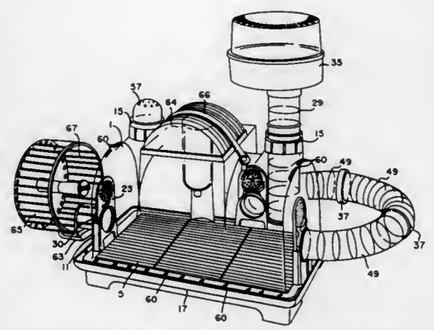
SMALL ANIMAL LIVING ENVIRONMENT SYSTEM

Gerald A. Phillips, Wantagh; Chi-Liu Wu, Bayside; Marvin A. Goldman, North Hills; Jerome N. Goldman, New York, and Terry I. Goldman, Lloyd Harbor, all of N.Y., assignors to Penn-Plax, Inc., New York, N.Y.

Continuation of Ser. No. 793,872, Nov. 18, 1991, abandoned, which is a continuation of Ser. No. 713,492, Jun. 12, 1991, Pat. No. 5,092,269. This application Jul. 23, 1992, Ser. No. 917,736

Int. Cl.[5] A01K *1/00*

U.S. Cl. 119—15 **8 Claims**



1. A small animal living environment system comprising:

at least one connectable small animal enclosure fabricated from a transparent thermoplastic material;

a lid opening, large enough to accommodate a human hand, formed in said enclosure;

ventilation openings of sufficient size and number to allow for air passage through the enclosure;

a plurality of through openings on walls of the enclosure, for passage of small animals therethrough; and

attaching members integrally formed at each through opening for direct attachment of tunnel tubes and small animal living accessories,

wherein two of said through openings are formed on adjacent walls of said enclosure in a spacial relationship so that a three quarter circle pathway can be directly attached to said attaching members which are internally formed at said two through openings.

5,186,123

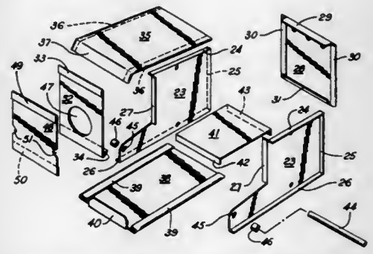
METAL/WOOD BIRDHOUSE KIT CONSTRUCTION

Ronald G. Cuddy, 3105 E. Clarkston Rd., Oakland, Mich. 48363

Filed Feb. 10, 1992, Ser. No. 833,071

Int. Cl.[5] A01K *31/00*

U.S. Cl. 119—23 **13 Claims**



1. Durable multiple component rectangular birdhouse comprising separate substantially flat front, back, top, bottom and two side sheet metal panel components, said front panel including an access hole for bird ingress and egress, said components having marginal flange right angle connecting means for accommodating manual sliding assembly and disassembly, said connecting means providing an integrated self-supporting box construction free of required supplemental assembly and disassembly fastening means.

5,186,124

TOOTH CLEANING TOY FOR CATS AND METHOD FOR ITS MANUFACTURE

Richard L. Woodford, 110 S. Irving, Tucson, Ariz. 85711

Filed May 11, 1992, Ser. No. 881,227

Int. Cl.[5] A01K *29/00*

U.S. Cl. 119—29 **12 Claims**

1. A chewable toy for cats, comprising a strip of fin-fish skin containing a layer of fish meat and dehydrated to a moisture content between 2 and 5 percent by weight.

5,186,125

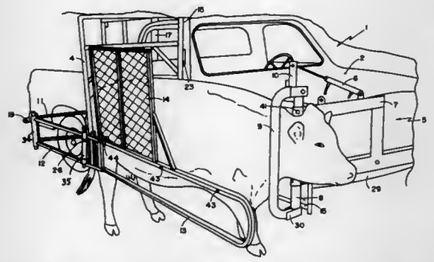
MOBILE CAPTURE AND RESTRAINT DEVICE

Warren P. Halyung, Box 69, Robsart, Saskatchewan, Canada S0N 2G0

Filed Sep. 14, 1992, Ser. No. 944,309

Int. Cl.[5] A61D *3/00*

U.S. Cl. 119—99 **21 Claims**



1. A capture and restraint device to be mounted on a vehicle having a vehicle frame, a front and a rear bumper and a vehicle body with doors all mounted on said vehicle frame comprising in combination, vehicle mounting means including horizontal support means to be mounted on said vehicle frame, vehicle body guard means including a guard frame, said vehicle body guard means being supported by said horizontal support means, an upright support to be supported by said vehicle frame, a guy connecting said upright support and said guard frame for stabilization thereof, an arch pivotally mounted on said vehicle body guard means, first fluid operated means connecting said guard frame and said arch for controlled pivotal movement thereof, main gate means pivotally mounted to said guard frame and including an end wing, a rear wing and a front wing all pivotally joined, a head gate assembly including a head gate frame for mounting said head gate assembly to said front bumper, a head gate post rotatably mounted in said head gate frame a head gate arm pivotally mounted to said head gate post, second fluid operated means connecting said head gate frame and said head gate arm for controlled pivotal movement thereof, said head gate frame and said guard frame are connected for strength and rigidity whereby an animal can be captured by said main gate means and restrained by said head gate assembly as the vehicle moves forwardly.

5,186,126

INTAKE APPARATUS FOR INTERNAL COMBUSTION ENGINE

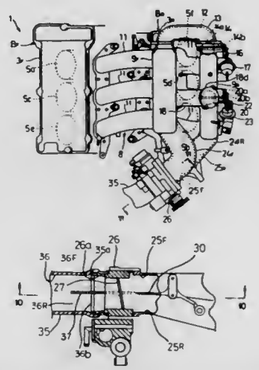
Kenji Tarekado; Masanori Nakamura; Kazuaki Hokazono; Hirotaka Fukada, and Takashige Ishikawa, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Mar. 29, 1991, Ser. No. 676,579

Claims priority, application Japan, Nov. 28, 1990, 2-332262; Mar. 29, 1991, 2-86333

Int. Cl.[5] F02M *35/00*

U.S. Cl. 123—52 MB **9 Claims**



1. An intake system having a throttle body for delivering air into a plurality of cylinders of an internal combustion engine, the cylinders being divided into two groups, the cylinders in each group being arranged in a same row so that adjoining cylinders in each row do not fire one after another, said intake system comprising:

an intake passage having an upstream passage portion, two separate downstream passage portions, and common passage means for interconnecting said upstream passage portion and said downstream passage portions, said two separate downstream passage portions extending from said common passage means and being connected to said two groups of cylinders, respectively;

a partition wall disposed in said intake passage so as to divide each downstream passage portion into two separate downstream passage portions in communication with said two groups of cylinders; and

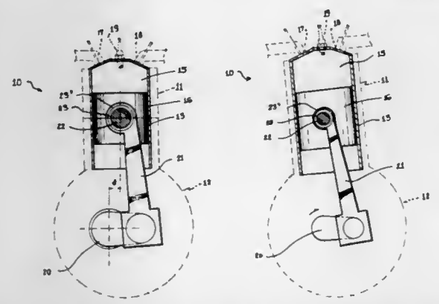
VOL
1147
ISS
3
FE
16
1993
UMI

throttle valve means for controlling air flow through said intake passage, said throttle valve means being disposed in said common passage means so as to extend upstream each of said separate downstream passage portions when said throttle valve means is in its full throttle position.

5,186,127
INTERNAL COMBUSTION ENGINE WITH OFFSET CONNECTING JOURNAL

Lorenzo Cuatico, 2113 M.L. Carreon St., Sta. Ana, Manila, Philippines

Filed Jan. 28, 1991, Ser. No. 646,176
Int. Cl.[5] F02B *75/06*
U.S. Cl. 123—54 R **3 Claims**



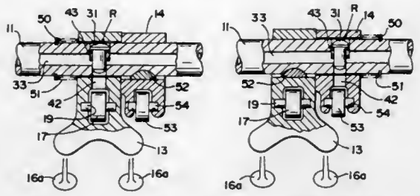
1. In an internal combustion engine of the type comprising an engine block, a crankcase disposed below said engine block, at least one piston cylinder provided in said engine block, a piston reciprocally disposed in each piston cylinder, each of said pistons being connected via a connecting rod to a rotatable off-set crankshaft longitudinally disposed within said crankcase, said crankshaft being disposed at a predetermined distance from the vertical axis of the cylinder sidewardly counter to the direction of said crankshaft, the improvement wherein, the upper end of the connecting rod being pivotally connected centrally to the hollow portion of said piston is provided with an off-set journal whereby the center line of said connecting rod is disposed at a predetermined distance sidewardly from the vertical axis of the piston during a downward stroke of the piston along the direction of rotation of said crankshaft.

5,186,128
VALVE OPERATING APPARATUS

Shinichi Murata; Noboru Nakamura; Michiyasu Yoshida, and Hideki Miayamoto, all of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP91/00053, § 371 Date Sep. 18, 1991, § 102(e) Date Sep. 18, 1991, PCT Pub. No. WO91/10816, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 18, 1991, Ser. No. 762,021
Claims priority, application Japan, Jan. 18, 1990, 2-009425; Mar. 31, 1990, 2-033577; Mar. 31, 1990, 2-033578; Mar. 31, 1990, 2-033579
Int. Cl.[5] F01L *1/34, 1/18*
U.S. Cl. 123—90.16 **68 Claims**

1. A valve operating apparatus for use in an engine, comprising:
- a camshaft with low- and high-speed cams mounted thereon;
- a rocker shaft disposed adjacent to said camshaft and angularly movably mounted on a support;
- a low-speed rocker arm fixed to said rocker shaft and having an end held against the stem of a valve, said low-speed rocker arm being swingable around said rocker shaft by said low-speed cam to actuate the valve;
- a high-speed rocker arm rotatably supported on said rocker shaft parallel to said low-speed rocker arm, said high-speed rocker arm being swingable by said high-speed cam;
- engaging means for selectively engaging and disengaging said rocker shaft and said high-speed rocker arm; and

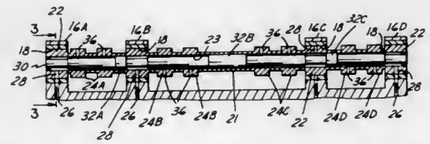


- actuating means for actuating said engaging means depending on an operating condition of the engine, to selectively engage and disengage said rocker shaft and said high-speed rocker arm.

5,186,129
INTERMITTENT OILING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE CAMSHAFT AND VALVE TRAIN

Michael B. Magnan, Dearborn; Charles A. Reichling, Grosse Pointe Woods, and Robert H. Wells, Dearborn Heights, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Mar. 30, 1992, Ser. No. 859,785
Int. Cl.[5] F01M *1/06*
U.S. Cl. 123—90.34 **11 Claims**



6. An intermittent oiling system for an engine valve train, comprising:
- a plurality of camshaft support assemblies, with each of said assemblies having a camshaft supply passage serviced with lubricating oil from an oil pump; and
- a camshaft having a plurality of actuating lobes and a plurality of bearing journals, with said camshaft being journaled for rotation within said support assemblies such that one journal is mounted to each support assembly, with said camshaft having a plurality of separate internal lubrication passages, with each such passage extending from one of said journals to the surface of at least one of said lobes such that lubricating oil is conducted from said camshaft supply passages to said lobes, with said internal lubrication passages each being fed by an oil induction port cooperating with a camshaft supply passage such that oil is admitted into only one of said internal lubrication passages at any particular rotational position of the camshaft.

5,186,130
CAMSHAFT CONTROL DEVICE

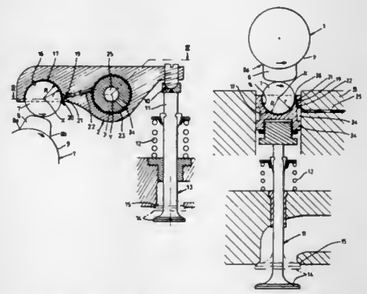
Jean F. Melchior, 126 Bld du Montparnasse, 75 014 Paris, France

Filed May 22, 1991, Ser. No. 704,047
Claims priority, application France, Jun. 8, 1990, 90 07161
Int. Cl.[5] F16C *32/06;* F01L *1/04*
U.S. Cl. 123—90.35 **15 Claims**

1. A control device, with a camshaft and a roller resting on a tappet or rocker arm, for a mechanical member having an alternating motion, notably for internal combustion engines, made up by a force-transmitting means from a cam of the

camshaft to said mechanical member and including a leading part bearing an essentially cylindrical roller which cooperates with the cam of the camshaft and a led part which is rigid with the leading part and cooperates with said mechanical member,
- said mechanical member moving between two extreme positions of which one corresponds to the maximal displacement of the roller on the cam and the other is determined by a fixed stop on which abuts the mechanical member which is recalled by an elastic return means when the roller cooperates with a downward part of the nose of the cam,
- the roller swivelling about itself in a recess which is arranged in the leading part and bordered by a circular semi-cylindrical wall and by internal walls of two lateral flanges which are perpendicular to an axis (X—X) of the semi-cylindrical wall,

characterized in that:



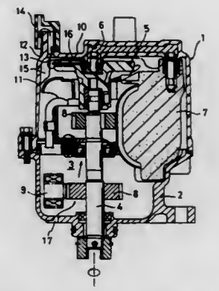
- a pressurized oil inlet communicating with an oil feeding circuit, leads to the semi-cylindrical wall of the recess, preferably near an outmost upstream generatrix of the semi-cylindrical wall, according to the rotational direction of the roller, and
- the semi-cylindrical wall has a radius (R) which is slightly large than the external radius (r) of the roller, whereas the internal walls of the lateral flanges are separated by a distance (L) which is slightly larger than the width of the roller so as to leave between the roller and the edges of the semi-cylindrical recess and the internal walls of the flanges only an operating clearance which is sufficiently small so that, in operation, the oil from the inlet maintains a hydrodynamic oil film between the roller and the walls of the recess and that a lateral oil leakage is reduced to a minimum.

5,186,131
DISTRIBUTOR

Toshiyuki Shinozawa; Hiroyuki Fujita, and Hideaki Arai, all of Saitama, Japan, assignors to Toyo Denso Kabushiki Kaisha and Honda Giken Kogyo Kabushiki Kaisha, both of Tokyo, Japan

Filed Sep. 5, 1991, Ser. No. 755,611
Claims priority, application Japan, Sep. 5, 1990, 2-93347[U]
Int. Cl.[5] F02P *1/00*
U.S. Cl. 123—146.5 A **3 Claims**

1. A distributor for a vehicle comprising:
- a housing;
- a cap operatively positioned on said housing for defining a closed space therebetween;
- a central electrode and a side electrode operatively mounted within said cap in a predetermined disposition;
- a distributor rotor rotatably mounted relative to said housing and projecting within said closed space, said distributor rotor includes an upper end and a lower end;
- at least one fin being mounted adjacent to said upper end of said distributor rotor for rotation together with said distributor rotor;
- an air flow guiding member projecting into said closed space and formed at one side of said cap and an auxiliary air flow guiding member formed to extend from said air flow guiding member to a central portion of said cap for defining an air flow guide passage extending from said central portion to an inner surface of said cap for guiding the discharge of acidic material and air from said closed space;
- an air intake aperture for introducing ambient air into the closed space; and

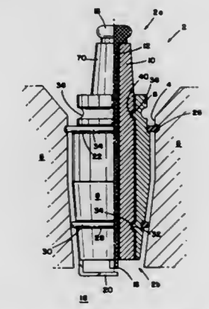


- a discharge aperture formed in said cap for discharging swirling air flow induced by rotation of the distributor rotor to travel from said air intake aperture along said air flow guiding member and through said discharge aperture to the atmosphere;
- said discharge aperture is formed in said cap at a position above said distributor rotor and said air intake aperture is formed in said housing at a position in a lower portion thereof for enabling acidic material, generated by a spark produced by said rotation of said distributor rotator relative to said central electrode and said side electrode, and air to be discharged through said discharge aperture by said swirling air flow.

5,186,132
SPARK PLUG FOR AN INTERNAL COMBUSTION ENGINE

Friedrich Runge, 143 Old Main Road, Pinetown 3600, South Africa

Filed Aug. 29, 1991, Ser. No. 751,730
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1990, 9012597[U]; Dec. 19, 1990, 9017086[U]
Int. Cl.[5] F02P *13/00*
U.S. Cl. 123—169 R **13 Claims**



1. A spark plug for insertion into a boring in a cylinder head of an internal combustion engine, the boring having an inner

VOL
1147
ISS
3
FE
16
1993
UMI

surface with at least one groove, and the spark plug having a top end and a lower end for engagement with a combustion chamber of the internal combustion engine, comprising:

an outer surface;

securing means for securing the spark plug in the boring of the cylinder head so that the lower end of the spark plug is in communication with the combustion chamber of the internal combustion engine, the securing means comprising a groove extending about the outer surface of the spark plug and a retainer ring seated in the groove, the groove on the spark plug being positioned so that the retaining ring engages in a releasable fashion with the groove at the inner surface of the boring of the cylinder head when the park plug is inserted into the boring; and

sealing means for completely sealing between the spark plug and the cylinder head.

5,186,133

FUEL ENRICHMENT ARRANGEMENT FOR MARINE PROPULSION UNIT

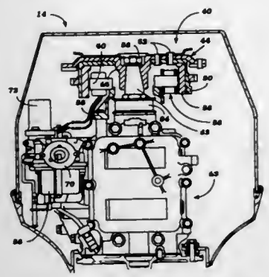
Takahide Watanabe; Yasuhiko Shibata; Shoichi Mitsui, and Takashi Koike, all of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 21, 1992, Ser. No. 823,681

Claims priority, application Japan, Jan. 25, 1991, 3-25279

Int. Cl.[5] F02M *1/12*

U.S. Cl. 123—179.14 **15 Claims**



1. A fuel enrichment arrangement for an internal combustion engine of a marine propulsion unit which is not provided with a battery power supply, comprising: a valve assembly and a fuel feed passage, said valve assembly positioned along said fuel feed passage for controlling the flow of fuel therethrough; a positive temperature coefficient heating device associated with said valve assembly for effecting the operation of said valve assembly; and, further, a multipolar generator as an exclusive power source communicating with and providing power to said heating device.

5,186,134

SPIRAL SPRING TYPE STARTER APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Ryuji Morishima; Katsutoshi Asai; Ryutaro Fukumoto, and Kanji Isomichi, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

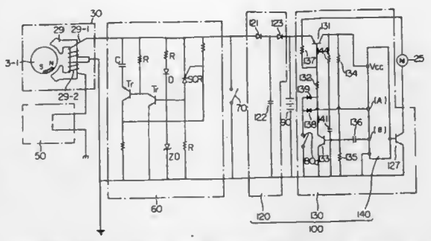
Division of Ser. No. 683,171, Apr. 9, 1991, which is a division of Ser. No. 458,374, Dec. 28, 1989, Pat. No. 5,083,534. This application Sep. 17, 1991, Ser. No. 761,248

Claims priority, application Japan, Oct. 25, 1989, 1-123981[U]; Apr. 5, 1991, 1-84708

Int. Cl.[5] F02N *5/02*

U.S. Cl. 123—179.5 **20 Claims**

1. A spiral spring type starter apparatus for a general purpose gasoline engine including a rotary magnetic pole type generator and an ignition timing control circuit, which comprises a charging circuit provided in parallel to the ignition timing control circuit, a storage battery for accumulating electric power fed from the charging circuit, a D.C. motor driven by electric power accumulated in the storage battery, a control unit for controlling operation and stoppage of the D.C. motor, a high reduction ratio speed reduction mechanism for transmitting mechanical power of said D.C. motor, a spiral spring type power accumulator device for accumulating mechanical energy upon receiving a torque exerted by said speed reduction mechanism, and a one-way type power transmission element for transmitting energy accumulated in said spiral spring to a crank shaft;



wherein said control unit causes said D.C. motor to be started after a first predetermined period taking a contact signal input interlocked with a starting ratchet as an origin of time; and

wherein said control unit causes said D.C. motor to stop in response to one of a timer output signal occurring a second predetermined period after starting of the motor and a detection of a predetermined value of a motor current of said D.C. motor.

5,186,135

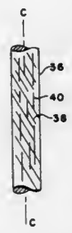
VALVE STEM TOPOGRAPHICAL OPTIMIZATION PROCESS

Joseph A. Kovach, Aurora, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 6, 1992, Ser. No. 817,171

Int. Cl.[5] F01L *3/20*

U.S. Cl. 123—188.3 **3 Claims**



1. An internal combustion engine valve having a stem having a plurality of circumferentially spaced marks in the outer surface thereof for a predetermined axial length therealong and respectively oriented at an acute angle with respect to a central longitudinal axis of the stem, said marks operative to promote stress planes in the stem that are effective to lessen stress arising from bending and reciprocating tensile forces acting upon the stem in a direction substantially parallel to said axis and to enable maintenance of an elastohydrodynamic lubrication film between the stem and a surrounding surface of a guide in which the stem reciprocates during operation of the engine.

5,186,136

ABNORMAL COMBUSTION DETECTION AND VIBRATION REDUCTION SYSTEM

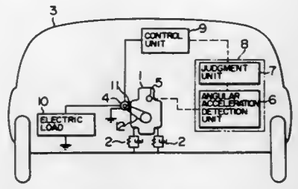
Yuzo Kadomukai; Makoto Yamakado, both of Ibaraki; Yuji Maeda, Hitachiota; Kenichi Nakamura, Katsuta; Masao Fukushima, Machida, and Kei Murakami, Zama, all of Japan, assignors to Hitachi, Ltd., Tokyo and Nissan Motor Co., Ltd., Yokohama, both of, Japan

Filed Aug. 19, 1991, Ser. No. 747,146

Claims priority, application Japan, Aug. 28, 1990, 2-226388

Int. Cl.[5] F02B *75/06*

U.S. Cl. 123—192.1 **37 Claims**



1. An apparatus for detecting abnormal combustion in an internal combustion engine, comprising:

means for detecting the rotation of the internal combustion engine;

means for calculating rotation angular acceleration on the basis of the detected rotation;

means for comparing the rotation angular acceleration at the position of a predetermined crank angle in one cycle of the operation of the internal combustion engine with a predetermined reference value; and

means for judging from the comparison result in the comparing means whether or not abnormal combustion occurs in the internal combustion engine.

5,186,137

ROCKING-PISTON MACHINE

Willy E. Salzmann, Schönegg 7, 6300 Zug, Switzerland

PCT No. PCT/CH88/00050, § 371 Date Dec. 27, 1988, § 102(e) Date Dec. 27, 1988, PCT Pub. No. WO88/06675, PCT Pub. Date Sep. 7, 1988

Continuation of Ser. No. 659,540, Feb. 22, 1991, abandoned, which is a continuation of Ser. No. 302,234, Dec. 27, 1988, abandoned. This PCT application Feb. 29, 1988, Ser. No. 747,434

Claims priority, application Switzerland, Feb. 27, 1987, 744/87-3; Oct. 26, 1987, 4174/87-8

Int. Cl.[5] F02B *75/06*

U.S. Cl. 123—192.2 **34 Claims**

1. A reciprocating rocking-piston machine comprising:

at least one cylinder forming a cylinder chamber and having a cylinder axis, a wall and a cylinder cover,

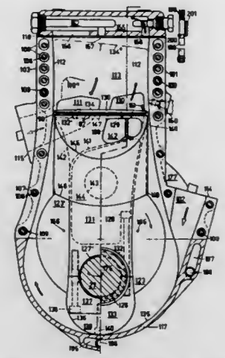
a crank casing;

a crank shaft rotatably supported in said crank casing and comprising at least one crank pin;

a piston rigidly secured to integral with one end of a connecting rod and slidably received in said cylinder;

a connecting rod bearing at the other end of said connecting rod for articulation of said rod to said crank pin;

a counterweight at said other end of said connecting rod for increasing at least the mass of said other connecting rod end situated beyond the center of said connecting rod bearing, said counterweight being of such size and mass that the center of impact of this moving assembly with



regard to the rocking piston center (2*, 147) substantially coincides with the center of the connecting rod bearing.

5,186,138

APPARATUS FOR CONTROLLING THE FUEL PRESSURE IN AN INTERNAL COMBUSTION ENGINE

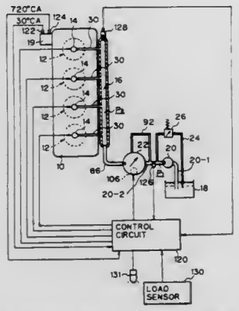
Eiji Hashimoto, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Nov. 14, 1991, Ser. No. 792,310

Claims priority, application Japan, Nov. 16, 1990, 2-308628

Int. Cl.[5] F02B *77/00*

U.S. Cl. 123—198 DB **4 Claims**



1. A fuel supply system for a fuel injection internal combustion engine having injectors for injecting an amount of fuel into the engine, said system comprising:

a fuel tank;

a fuel line connecting the fuel tank to the fuel injectors;

a reservoir tank arranged on the fuel line and adjacent to the fuel injectors, for storing an amount of fuel directed to the injectors;

a high pressure pump arranged on the fuel line for introducing fuel from the fuel tank into the reservoir tank;

means for detecting that the fuel tank is empty;

means for prohibiting an operation of the high pressure pump when it is detected that the fuel tank is empty;

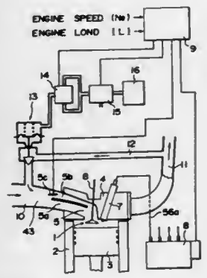
means for detecting whether an amount of fuel remaining in the reservoir tank is sufficient to continue the operation of the engine after it is detected that the fuel tank is empty; and

means for prohibiting the operation of the injector after it is detected that the amount of fuel remaining in the reservoir

VOL 1147 ISS 3 FE 16 1993 UMI

tank is not sufficient to continue the operation of the engine.

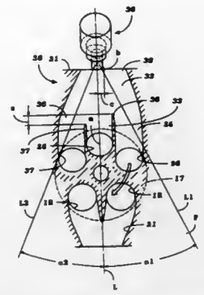
5,186,139
DIESEL ENGINE
Yoshimasa Matsura, Yokohama, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushi Kaisha, Tokyo, Japan
Filed Feb. 14, 1992, Ser. No. 835,545
Claims priority, application Japan, Feb. 19, 1991, 3-013723
Int. Cl.[5] F02B *31/00*
U.S. Cl. 013723 **14 Claims**



1. A diesel engine comprising:
(a) a variable swirl forming mechanism for generating strong air swirls in a combustion chamber when the engine is working, at low speeds and high loads, middle air swirls in said combustion chamber when the engine is working at low loads and at middle speeds and high loads, and weak air swirls in the combustion chamber when the engine is working at high speeds and high loads;
(b) an exhaust gas recirculation (EGR) control mechanism for recirculating a part of exhaust gas to said combustion chamber when the engine is working at low and middle speeds and low loads;
(c) an injection timing control mechanism for advancing the fuel injection timing when the engine is working at low loads, and for retarding the fuel injection timing when the engine is working at middle and high loads; and
(d) a controller for controlling said variable swirl forming mechanism, said EGR control mechanism and said injection timing control mechanism according to loads and speeds of the engine.

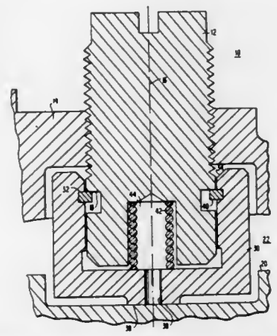
5,186,140
AIR INTAKE SYSTEM FOR FUEL INJECTION TYPE FOUR CYCLE ENGINE
Hideaki Ueda, and Hiroshi Isumi, both of Shizuoka, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Filed Feb. 18, 1992, Ser. No. 837,825
Claims priority, application Japan, Mar. 15, 1991, 3-76807
Int. Cl.[5] F02B *31/02*
U.S. Cl. 123—308 **30 Claims**

1. An induction system for an internal combustion engine having a combustion chamber, three intake ports serving said combustion chamber comprised of a center intake port and first and second side intake ports lying on opposite sides of said center intake port, intake passage means having a common portion separated into three outlet portions, a center outlet portion and a pair of side outlet portions, each serving a respective one of said intake ports, a first of said side portions being longer than the second of said side portions, and a fuel injector for spraying fuel into the common portion of said intake passage means toward said outlet portions, said fuel injector being disposed to spray more fuel toward said first side portion than



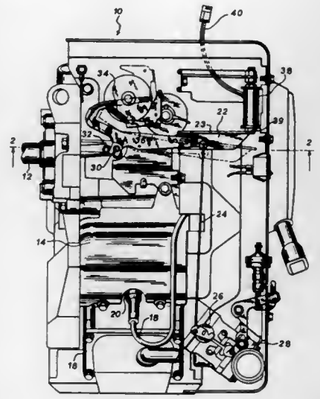
said second side portion to promote uniform fuel flow through all of said intake ports.

5,186,141
ENGINE BRAKE TIMING CONTROL MECHANISM
Dennis R. Custer, West Granby, Conn., assignor to Jacobs Brake Technology Corporation, Wilmington, Del.
Filed May 4, 1992, Ser. No. 880,369
Int. Cl.[5] F02D *13/04*
U.S. Cl. 123—321 **11 Claims**



1. A slave piston return stop mechanism for use in a compression release engine brake for automatically adjusting the location at which the return stroke of a slave piston in the brake stops when the engine brake is turned on comprising:
a first member having a surface which can contact a surface of said slave piston, said first member being mounted for limited reciprocal motion parallel to the reciprocation of said slave piston;
a second member which is stationary relative to the reciprocation of said slave piston, said second member cooperating with said first member to form a chamber for containing hydraulic fluid between said first and second members;
means for resiliently urging said first member to move toward said surface of said slave piston; and
an aperture through said first member to said chamber, said aperture passing through said surface of said first member so that said aperture is closed when said surface of said first member is in contact with said surface of said slave piston in order to trap hydraulic fluid in said chamber, said contact between said surface of said first member and said surface of said slave piston being the sole means by which said aperture is closed.

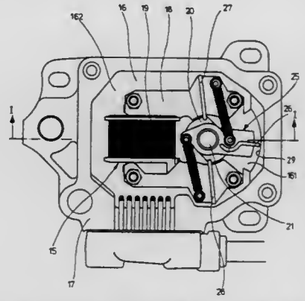
5,186,142
IDLING SYSTEM FOR A DEVICE HAVING A SPEED GOVERNOR
Brian Brunelli, Greendale, and John A. Fiorenza, II, Slinger, both of Wis., assignors to Briggs & Stratton Corporation, Milwaukee, Wis.
Continuation of Ser. No. 723,755, Jul. 1, 1991, abandoned. This application Apr. 21, 1992, Ser. No. 873,590
Int. Cl.[5] F02M *3/00*
U.S. Cl. 123—339 **19 Claims**



1. An idling system for an engine having a speed governor that sets the engine sped to a governed speed, said engine powering a load that outputs a gas or a fluid material, said speed governor including arm means whose movement effects the engine speed, the idling system comprising:
a current source;
electromagnet means for magnetically attracting said arm means to change said engine speed, wherein the electromagnet means is connected in circuit to said current source without any significant intermediate inductive component;
switch means for activating in response to a pressure differential or a flow of said material in said load and for switching current from said current source to said electromagnet means; and
means for electrically connecting said electromagnet means to said switch means.

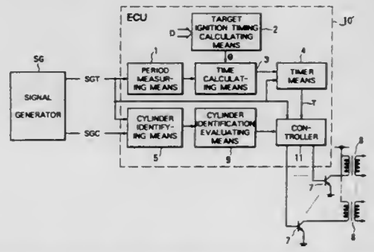
5,186,143
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES
Helmut Laufer, Gerlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
PCT No. PCT/DE90/00809, § 371 Date May 15, 1991, § 102(e) Date May 15, 1991, PCT Pub. No. WO91/07584, PCT Pub. Date May 30, 1991
PCT Filed Oct. 25, 1990, Ser. No. 679,034
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1989, 3937922
Int. Cl.[5] F02M *39/00*
U.S. Cl. 123—357 **7 Claims**

1. A fuel injection pump for internal combustion engines including a pump housing, a distributor plunger guided in a pump cylinder in said pump housing, said distributor plunger carries out a to-and-from and rotary movement and at the same time delivers an adjustable injection quantity of fuel to separate fuel injection nozzles, a control member is axially translatable on the distributor plunger and displacement of the control member relative to a control passage in the distributor plunger determines the injection quantity of fuel delivered by the distributor plunger, a rotary magnet regulator accommodated in a chamber located in the pump housing, said chamber being divided in a first chamber section (**161**) and a remaining chamber section (**162**) by means of separating walls (**27** and **28**) said walls form throttle openings which connect chambers (**161** and **162**) with each other, said rotary magnet regulator serves to actuate the control member in dependence on the operating parameters of the internal combustion engine, a rotating armature fitted onto a regulating spindle, an eccentric coupled onto the control member, a damping device coupled to the rotating



armature for the purpose of damping any rotary oscillations of the rotating armature, the damping device (**25**) includes a paddle (**26**) which is joined firmly to and rotatable with the rotating armature (**20**), the paddle (**26**) projects radially from the rotating armature (**20**) and extends in an axial direction thereby nearly completely covering the cross section of said first chamber section (**161**) in radial planes of said rotating armature comprising said paddle in consequence of the movement of said paddle following the swivel movement of said armature.

5,186,144
IGNITION CONTROL SYSTEM WITH CYLINDER IDENTIFICATION EVALUATION
Wataru Fukui, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 28, 1991, Ser. No. 751,010
Claims priority, application Japan, Aug. 31, 1990, 2-228024
Int. Cl.[5] F02P *7/077*
U.S. Cl. 123—414 **7 Claims**



1. An ignition control apparatus for an internal combustion engine having a plurality of ignition coils connected to spark plugs for igniting corresponding cylinders, said apparatus comprising:
a signal generator for generating a reference signal representative of at least one reference crank angle for each cylinder of the engine and a cylinder identification signal; and
ignition control means for performing ignition control on the cylinders on the basis of the output signals from said signal generator, said ignition control means identifying

VOL 1147 ISS 3 FE 16 1993 UMI

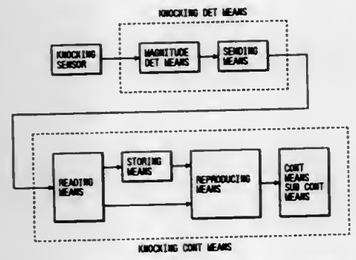
the operation of each cylinder based on the output signals of said signal generator at every predetermined reference timing, and including means for evaluating whether the cylinder identification is correct, and controlling the power supply to the ignition coils based on the result of the evaluation such that before cylinder identification is evaluated correct, the power supply to the ignition coils is prevented from being started in advance of the predetermined reference timing.

5,186,145

KNOCKING CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE

Kojl Sakakibara, Hekinan, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Dec. 20, 1991, Ser. No. 810,415
Claims priority, application Japan, Dec. 20, 1990, 2-404032
Int. Cl.[5] F02P *5/14*
U.S. Cl. 123—425 **10 Claims**



1. A control apparatus for an internal combustion engine comprising:

a knocking sensor for detecting knocking in said internal combustion engine and providing signals indicative thereof;

means for determining a magnitude of said knocking in accordance with said signals and outputting first and second magnitude signals indicative thereof, said determining means comprising means for representing said magnitude of said knocking as a first difference between a first level of said first magnitude signal at a first predetermined time and a second level of said first magnitude signal at a second predetermined time and a second difference between a third level of said second magnitude signal at a third predetermined time and a fourth level of said second magnitude signal at a fourth predetermined time; and

means for controlling said internal combustion engine in accordance with said first and second difference, said controlling means receiving said first and second magnitude signals.

5,186,146

COMBUSTION EVALUATION APPARATUS AND COMBUSTION CONTROLLER

Kenichi Sohma, Nakamachi; Tugibiro Yukitake, Tokaimura; Shigeru Azuhata; Norio Arashi, both of Hitachi, and Hiroatsu Tokuda, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 752,991, Sep. 3, 1991, abandoned, which is a continuation of Ser. No. 631,271, Dec. 20, 1990, abandoned. This application Apr. 6, 1992, Ser. No. 864,129
Int. Cl.[5] F02M *7/00*
U.S. Cl. 123—435 **40 Claims**

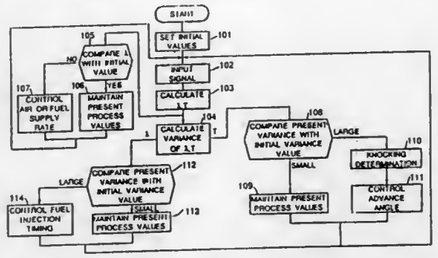
1. An apparatus for evaluating combustion, comprising:

a sampling member for sampling light emitted from flame in an internal combustion engine;

branch means for separating the light sampled by said sampling member into at least two lights;

means for selectively transmitting lights having different wavelengths by being provided in optical paths for the separated lights;

photoelectric conversion elements for respectively converting optical signals passing through said transmission means into electrical signals; and



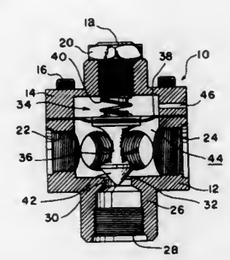
calculation/evaluation means for calculating a physical quantity for evaluation of the combustion condition of the flame by using a ratio of outputs from said photoelectric conversion elements, and for evaluating the combustion condition of the flame on the basis of the physical quantity.

5,186,147

MULTI-PORT RETURN TYPE PRESSURE REGULATOR

Peter D. Bellis, Carson City, Nev., assignor to Mallory, Inc., Carson City, Nev.

Filed Apr. 9, 1991, Ser. No. 682,625
Int. Cl.[5] F02M *41/00*
U.S. Cl. 123—457 **20 Claims**



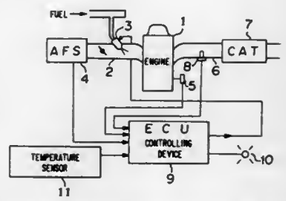
1. A pressure regulator for use with an internal combustion engine having at least one carburetor, said regulator comprising a body portion, a chamber formed in said body portion, said chamber having an axis, a plurality of ports formed in said body portion around said axis, means to supply fuel into said chamber via one of said ports, means to supply fuel from said chamber to all of said at least one carburetor via respective other ones of said ports, a floe return port formed in said body portion substantially on said axis, valve means or cooperation with said fuel return port to control the volume of fuel flowing therethrough, said valve means being arranged to respond to engine demands for fuel so as to decrease the volume of fuel flowing through said return port as the engine demand for fuel increases, said valve means including an hourglass shaped plunger positioned for motion on and along said axis, said hourglass shaped plunge being so positioned within said chamber that the restriction to flow of fuel from said supply port to all of said other carburetor supply ports is minimized and so that fuel flow traps are not created in said regulator and so that the distribution of fuel to all of said other carburetor supply ports is even, said regulator also comprising a cap member, said valve means including a diaphragm, means to removable secure said cap to said body member with edge portions of said diaphragm sealingly sandwiched therebetween, said valve means including spring means for normally biasing said plunger member towards said return port, and said valve means comprising manually adjustable spring pressure adjustment means formed in said cap member.

5,186,148

ABNORMALITY DETECTING DEVICE FOR AN AUTOMOBILE ENGINE

Seiji Wataya, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1992, Ser. No. 857,951
Claims priority, application Japan, Apr. 15, 1991, 3-082248
Int. Cl.[5] F02M *51/00*
U.S. Cl. 123—479 **1 Claim**



1. An abnormality detecting device for an automobile engine which comprises:

an airflow sensor for detecting a load to an engine,

a revolution speed sensor for generating pulses in response to a revolution speed of the engine,

an oxygen sensor for detecting the components of exhaust gas from the engine,

injectors for injecting fuel to an air intake pipe, and

a controlling device which measures a period of the pulses of the revolution speed sensor to thereby judge the presence or absence of misfiring based on a value indicating a change of angular speed or the like, and/or judges abnormality in a fuel supply system which is caused by abnormality in the airflow sensor and the injectors, and which nullifies an alarm to be generated on the basis of the judgment of abnormality in a case that the temperature of the fuel is determined to be higher than a predetermined value from an information of fuel temperature obtained by a temperature sensor after the engine has been re-started while the engine has been in an elevated temperature state after the stopping of the engine, or in a case that a predetermined time set by a timer has not been past after the re-starting of the engine.

5,186,149

SYSTEM FOR CONTROLLING FUEL SUPPLY FOR INTERNAL COMBUSTION ENGINE

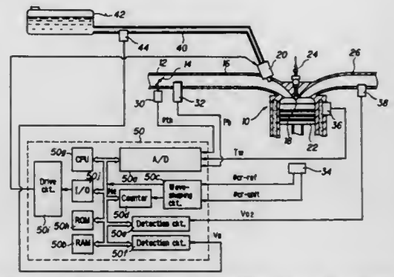
Shinichi Kitajima, Wako, and Yoshihiko Kobayashi, Haga, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1991, Ser. No. 810,065
Claims priority, application Japan, Dec. 25, 1990, 2-405962
Int. Cl.[5] F02M *51/00*
U.S. Cl. 123—491 **6 Claims**

1. A system for controlling fuel supply for an internal combustion engine provided with a blended fuel of gasoline and alcohol, the system comprising:

first means for determining an alcohol correction factor in accordance with an alcohol concentration in the fuel;

second means for one of increasing and decreasing the alcohol correction factor by a prescribed amount between an upper limit and a lower limit within a predetermined time period unless the engine is started; and



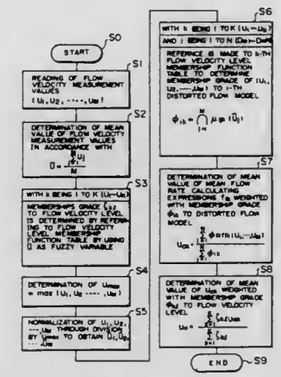
control means for correcting an amount of fuel supply at engine starting at least in response to the determined alcohol correction factor.

5,186,150

METHOD AND SYSTEM FOR MEASURING FLUID FLOW RATE BY USING FUZZY INFERENCE

Yoshihito Sekine, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 9, 1991, Ser. No. 757,063
Claims priority, application Japan, Sep. 7, 1990, 2-237670
Int. Cl.[5] F02M *51/00*
U.S. Cl. 123—494 **24 Claims**



1. A flow rate measuring method, in control apparatus for controlling an internal combustion engine, of determining an intake flow rate of a fluid flowing through a suction pipe of said internal combustion engine by using a fuzzy inference system which is implemented on the basis of fuzzy knowledge including fuzzy rules each described in the form of an IF part and a THEN part, and membership functions defining meanings of statements described in said IF and THEN parts, said control apparatus including speed detecting means for detecting rotational speed of said internal combustion engine, fuel injection means for injecting a fuel into the intake air flow within said suction pipe and control means for regulating said fuel injection amount of said fuel injection means on the basis of weighted flow rate means value of said fluid and output signal of said speed detecting means for thereby controlling the rotational speed of said internal combustion engine said method comprising steps of:

measuring flow velocities of said fluid at a plurality of locations within said suction pipe;

VOL 1147 ISS 3 FEB 16 1993 UMI

preparing a table of membership functions indicating grades of fitness of said flow velocities to a distorted flow model distribution;

preparing a mean flow rate calculating expression giving a flow rate corresponding to said distorted flow model distribution;

determining a membership grade of the measured flow velocities to said distorted flow model distribution by referring to said membership function table through the medium of said measured flow velocities; and

calculating said weighted flow rate mean value given by said mean flow rate calculating expression by using as a weight said membership grade to said distorted flow model distribution.

5,186,151

DEVICE FOR STEPPING UP OR TRANSMITTING FORCES AND STROKES

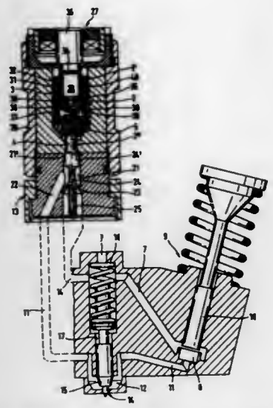
Paul Schwerdt, Freudenstadt; Dieter Dörrie, Stuttgart, and Karl Kirschenhofer, Ulm, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany

Filed Jun. 15, 1992, Ser. No. 897,934

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1991, 4119467

Int. Cl.[5] F02M *37/04*; F16K *31/12*

U.S. Cl. 123—506 **3 Claims**



1. A device employing a displacement principle for stepping up or transmitting at least one of forces and strokes in conjunction with a fuel injection system of an internal combustion engine in which the fuel injection system includes a control valve having a valve member, comprising a piezoelectric element, a displacer on an input side actuatable by the piezoelectric element and having a first cross-section of one amount, a displacer on the output side having a cross-section smaller than the first cross-section, and a displacer working chamber common to the two displacers and filled with a pressure transmission medium formed, at least in the region of one displacer, by an elastomer sealingly closing a side on which said displacer is situated in relation to a side on which the other displacer is situated, wherein the displacer on the output side is drivingly coupled to the valve member of the control valve in the fuel injection system, and the elastomer disposed on the displacer on the output side constitutes a leakproof barrier between a pipe system carrying fuel on the side of the output-side displacer of the elastomer and the piezoelectric element, and fastens the displacer on the output side.

5,186,152

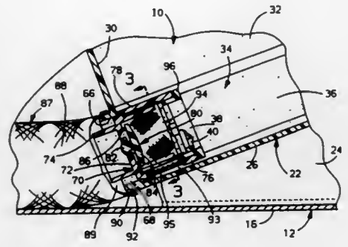
AUTOMOTIVE FUEL SYSTEM

Michael L. Cortochiato, Farmington Hills, and Sammy C. Lumetta, Rochester Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 10, 1992, Ser. No. 833,257

Int. Cl.[5] F02M *37/04*; F16K *31/18*

U.S. Cl. 123—514 **2 Claims**



1. In a fuel tank of a motor vehicle,

a fuel system comprising:

a covered container in said fuel tank having an inlet port in a wall of said container for admitting fuel from said fuel tank into a reservoir defined inside said container,

a tubular outside screen made of porous material permeable to liquid fuel and impermeable to vapor when said outside screen is partially submerged in fuel and including a neck portion,

means attaching said neck portion of said tubular outside screen to said wall of said container around said inlet port and on the side of said wall outside said reservoir so that fuel flows into said container through said inlet port only through said tubular outside screen,

means for emptying surplus fuel from a source of surplus fuel into said reservoir inside said container,

a fuel pump mounted in said container having an inlet open to said reservoir,

means on said fuel pump defining an annular flange located in spaced relation to said inlet port in said wall of said container and surrounding said inlet of said pump, and

means defining a tubular inside screen inside said container made of porous material permeable to liquid fuel and impermeable to vapor when said inside screen is partially submerged in fuel and having a first end attached to said wall of said container around said inlet port on the side of said wall inside said reservoir and a second end attached to said fuel pump around said annular flange on said fuel pump so that surplus fuel flows into said inlet of said pump only through said inside screen.

5,186,153

TANK-VENTING ARRANGEMENT FOR A MOTOR VEHICLE AND METHOD FOR CHECKING THE OPERABILITY THEREOF

Ulrich Steinbrenner; Helmut Denz, both of Stuttgart, and Ernst Wild, Oberriexingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/DE91/00180, § 371 Date Dec. 2, 1991, § 102(e) Date Dec. 2, 1991, PCT Pub. No. WO91/15670, PCT Pub. Date Oct. 17, 1991

PCT Filed Mar. 1, 1991, Ser. No. 777,313

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1990, 4010171; Aug. 11, 1990, 4025544

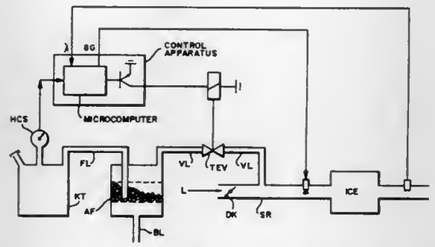
Int. Cl.[5] F02M *33/02*

U.S. Cl 123—519 **4 Claims**

1. A method for checking the operability of a motor vehicle tank-venting arrangement having an adsorption filter which connects a fuel tank to the intake pipe of an internal combustion engine via a tank-venting valve, the method comprising the steps of:

determining whether hydrocarbon vapors are present in the tank and, is so,

closing the tank-venting valve for a predetermined time period so that the hydrocarbon vapor can accumulate in the absorption filter;



opening the tank-venting valve and checking as to whether a correction of a lambda control in the lean direction is required; and,

drawing the conclusion as to the inoperability of the arrangement when a correction of this kind is not required.

5,186,154

IGNITION COIL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

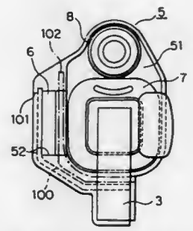
Tadao Takaishi, and Toshio Maekawa, both of Himeji, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed May 13, 1991, Ser. No. 699,402

Claims priority, application Japan, May 15, 1990, 2-122993; Jun. 7, 1990, 2-147337; Jun. 11, 1990, 2-149837; Jun. 11, 1990, 2-149838

Int. Cl.[5] F02P *3/02*

U.S. Cl. 123—634 **3 Claims**



1. An ignition coil device for an internal combustion engine, comprising:

a mold resin casing enclosing an accommodating chamber and a pocket portion at a side of the accommodating chamber;

a coil assembly accommodated within said accommodating chamber of the mold resin casing;

a control circuit unit for controlling said coil assembly, disposed in said pocket portion of the mold resin casing, wherein an air gap is formed between said accommodating chamber and said control circuit;

a core carrying said coil assembly wound thereon, said core having a leg exposed outside of said mold resin casing; and

a heat sink extending within said pocket, said heat sink having a first end in thermal contact with said control circuit unit, and a second end attached to said exposed leg of said core.

5,186,155

AIR-FUEL RATIO CONTROL METHOD FOR INTERNAL COMBUSTION ENGINES

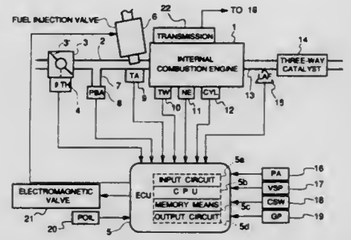
Yukio Miyashita; Hiroshi Mifune; Kunio Noguchi, and Hironao Fukuchi, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1991, Ser. No. 810,505

Claims priority, application Japan, Dec. 27, 1990, 2-414928

Int. Cl.[5] F02M *51/00*

U.S. Cl. 123—685 **4 Claims**



1. In an air-fuel ratio control method for an internal combustion engine including an intake passage, an exhaust gas ingredient concentration sensor arranged in said exhaust passage for producing output substantially proportional to the concentration of an ingredient in exhaust gases emitted from said engine, and a transmission, wherein the air-fuel ratio of an air-fuel mixture supplied to the engine is feedback-controlled to a desired air-fuel ratio depending on operating conditions of said engine in response to said output from said exhaust gas ingredient concentration sensor, said desired air-fuel ratio being settable to a value leaner than a stoichiometric air-fuel ratio when a temperature of said engine is above a predetermined reference value,

the improvement comprising the steps of:

(1) detecting a reduction ratio to which said transmission has been set; and

(2) changing said predetermined reference value of said temperature of said engine depending on the detected reduction ratio.

5,186,156

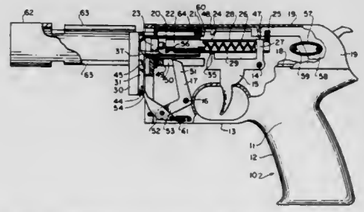
AIR OPERATED TOY GUN

Richard A. Clayton, 10200 Hillview Ave., Chatsworth, Calif. 91311

Filed Nov. 18, 1991, Ser. No. 793,186

Int. Cl.[5] F41B *11/00*

U.S. Cl. 124—59 **20 Claims**



1. An air operated toy gun comprising:

a frame;

an air chamber carried on said frame;

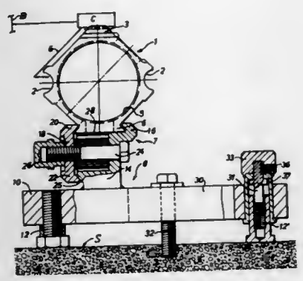
said chamber having an air outlet path adapted to conduct airflow from said chamber through a nozzle;

said nozzle being movably carried on said frame for motion between a cocking position and a firing position;

VOL 1147 ISS 3 FEB 16 1993 UMI

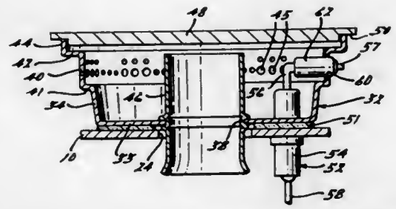
a magazine movably carried on said frame and comprising a plurality of barrels in spaced relationship;
each of said barrels comprising an elongated passageway open at both ends;
said magazine movable on said frame whereby said barrels are selectively alignable with said nozzle to allow airflow from said nozzle through said passageway;
a piston in said air chamber having a shape complementary to said air chamber;
means for propelling said piston through a firing stroke within said chamber to displace air under pressure from said chamber through said nozzle;
means urging said nozzle into said firing position during said piston firing stroke to engage said nozzle with a selected barrel, said barrel and said nozzle being adapted to form a substantially airtight seal with each other;
each said barrel adapted to carry a projectile and to form a substantially airtight seal with said projectile to normally prevent airflow through said barrel;
said airtight seal between said nozzle and said barrel being able to withstand a higher magnitude of air pressure than said airtight seal between said projectile and said barrel such that application of elevated air pressure within said barrel will cause breakdown of said seal between said projectile and said barrel prior to a substantial breakdown of said seal between said nozzle and said barrel for the desired result of said projectile being ejected from said barrel by force of said air pressure.

5,186,157
GUIDE AND SUPPORT STRUCTURE FOR SURFACE CUTTING APPARATUS
Hans Bieri, Pfäffikon, Switzerland, assignor to Hydrostress AG, Pfäffikon, Switzerland
Filed Jan. 17, 1992, Ser. No. 822,434
Claims priority, application Switzerland, Jan. 28, 1991, 00247/91
Int. Cl.[5] B28D *1/04*; B24B *41/00*
U.S. Cl. 125—14 **12 Claims**



1. Support structure system for a concrete and rock cutting apparatus,
wherein the cutting apparatus includes
a cutting device (C, B),
an elongated rail (**1**), and
guide means on said rail and cutting device, operatively coupled together, for supporting and guiding the cutting device for movement along said rail; and
wherein said support structure system includes
a support block means (**8, 34**) for attaching said elongated rail (**1**) to a base surface (**S**), and
wherein, in accordance with the invention,
the rail (**1**) is formed with a unitary base (**6**) for engagement with the support block means (**8, 34**);
interengaging projection-and-recess means are provided, coupling and interlocking the base (**6**) to the support block means (**8, 34**);
the support block means includes a clamping block (**14**) and clamping means, selectively engageable in clamped or unclamped condition with said interengaging projection-and-recess means of the base (**6**) and slidable longitudinally with respect to said elongated rail for permitting longitudinal positioning of said support block means (**8, 34**) along said rail and subsequent clamping thereto in selected positions along the rail;
wherein said clamping means comprises two clamping jaws (**16, 20**) fitting above and around said interengaging projection-and-recess means,
one of said clamping jaws having an upper jaw portion (**20**) and a lower jaw portion (**22**),
said upper clamping jaw portion being engageable with said interengaging projection-and-recess means on said base (**6**) and said lower clamping jaw portion being engageable with said clamping block (**14**) for selectively, releasably, clamping the interengaging projection-and-recess means and hence said base (**6**) to said clamping block in a selected position along said rail; and
clamping bolt means (**24**) penetrating said clamping block, engaging at least two of said clamping jaws, and clamping said jaws against the clamping block and said base (**6**).

5,186,158
GAS BURNER
William J. Ferlin, Plymouth, Mich., assignor to Lincoln Brass Works, Inc., Detroit, Mich.
Filed Aug. 23, 1990, Ser. No. 571,185
Int. Cl.[5] F24C *3/00*
U.S. Cl. 126—39 H **24 Claims**

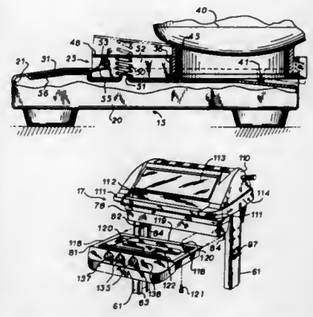


1. A range-top burner for a sealed top range, comprising:
(a) an upwardly diverging generally conical body;
(b) a plurality of generally radially disposed fuel ports in said body;
(c) a generally flat easily removable cap disposed on and supported by the upper periphery of said body, the outside of said cap being greater than the outside diameter of the upper periphery of said body, the outer periphery of said cap being folded under to define an inwardly facing annular shoulder, the upper periphery of said body being disposed inside said shoulder.

5,186,159
BARBECUE GRILL ASSEMBLY
Harvey L. Crow, Jr., and Charles W. Krosp, both of Paragould, Ark., assignors to Arkla Products Company, Paragould, Ark.
Filed Oct. 29, 1991, Ser. No. 783,782
Int. Cl.[5] F24C *3/00*
U.S. Cl. 126—41 R **12 Claims**

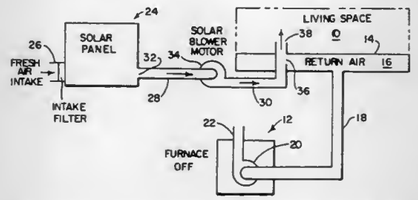
1. A barbecue grill comprising:
a supporting base member;
said base member including lever means comprising a pivot pin supported by said base member and a lever member supported by the pivot pin and having oppositely disposed lever moment arms,
one of said moment arms arranged for retentive support of a fuel tank, and the oppositely disposed moment arm including a flexible, longitudinally movable indicator;

wherein the said opposite moment arm has a downwardly facing channel shaped portion with depending apertured sidewalls, and wherein the movable indicator includes laterally extending portions pivotally supported by said apertured sidewalls and comprising a flexible strip include a cursor for displaying relative rotational movement of said opposite movement arm about the said pivot pin;



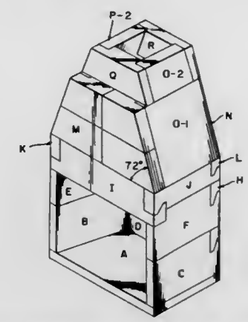
biasing means normally biasing said lever means in a rotational direction about the pivot pin and opposing the weight of a fuel tank retained by said one of said lever movement arms;
visual indicator means on said base member for observing relative movement of said movable indicator responsive to the weight of fuel contained in said fuel tank.

5,186,160
SOLAR RADON REDUCTION
Richard J. Klein, II, 4028 North Ave., Waterloo, Iowa 50702
Filed Aug. 28, 1991, Ser. No. 750,987
Int. Cl.[5] F24J *2/04*
U.S. Cl. 126—586 **10 Claims**



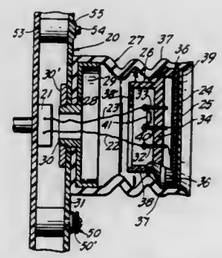
1. A supplementary heating and air supply system for use with a conventional heating system including a furnace and a return air duct extending between the furnace and a return air inlet in communication with the interior of a structure, comprising:
a solar panel mounted to the exterior of the structure and including a fresh air intake for receiving air from the exterior of the structure, and an outlet for discharging air from the solar panel;
a solar panel duct having a first end in communication with the solar panel outlet and a second end in communication both directly with the interior of the structure and with the return duct adjacent to the return air inlet; and
a blower for drawing air from the solar panel and supplying such air through the solar panel duct either directly to the interior of the structure or to the return duct;
whereby operation of the blower supplies heated air from the solar panel through the solar panel duct either directly to the interior of the structure or to the return duct for discharge through the return air inlet into the interior of the structure, and whereby operation of the furnace draws air from the solar panel duct through the return duct.

5,186,161
MODULAR FIREPLACE
Mark J. Shumock, Warrington, Pa., assignor to Pyro Place, Inc., Warrington, Pa.
Filed Aug. 15, 1991, Ser. No. 745,394
Int. Cl.[5] F24B *1/18*
U.S. Cl. 126—500 **7 Claims**



1. A modular fireplace constructed from the assemblage of individual interlocking masonry sections, comprising:
a base;
a firebox assembly resting on said base and containing a plurality of vertically extending tiers, each tier having separate masonry sections which are joined at their side edges forming the corners of the firebox, each corner joint including vertically-extending interlocking jaws formed in the side edges of said sections, said tiers being of different heights from one another;
a smoke chamber, comprising load-bearing vertical sections; and
means abutting the sides of said vertical sections for enclosing said smoke chamber without supporting the load which rests upon said vertical sections.

5,186,162
ULTRASONIC TRANSDUCER DEVICE FOR TREATMENT OF LIVING TISSUE AND/OR CELLS
Roger J. Talish, Fairfield, and Arthur L. Lifshey, East Brunswick, both of N.J., assignors to Interpore Orthopaedics, Inc., West Caldwell, N.J.
Continuation-in-part of Ser. No. 247,105, Sep. 14, 1988, Pat. No. 5,003,965. This application Dec. 17, 1990, Ser. No. 628,403
Int. Cl.[5] A61B *17/56*
U.S. Cl. 128—24 AA **19 Claims**



1. For use in the treatment of living tissue and/or cells with ultrasonic radiation, a treatment-head unit comprising a hous-

VOL 1147 ISS 3 FEB 16 1993 UMI

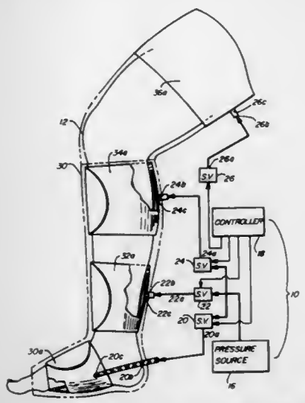
ing, an ultrasonic generator contained within said housing, an ultrasonic transducer connected to said generator and having an active body-application face exposed externally of said housing, means on said housing for removably mounting the same to a living-body member with the transducer poised for delivery of active ultrasonic energy to the living-body member, said means including a compliant flexible mount projecting externally of said housing for enabling the transducer to flexibly adapt to the local living-body surface to which it is applied, said flexible mount comprising a unitary bellows of elastomeric material, said bellows having a base end secured to said housing, and said bellows having an outwardly projecting end supporting said transducer.

5,186,163

COMPRESSION DEVICE

John F. Dye, Bridgewater, Mass., assignor to The Kendall Company, Mansfield, Mass.

Filed Nov. 25, 1991, Ser. No. 797,680
Int. Cl.[5] A61H *7/00, 1/00*
U.S. Cl. 128—64 **17 Claims**



1. In the method of promoting venous blood flow in a patient's limb, the limb being a leg having a foot having a sole essentially between the ball and the heel of the foot, the method having repeating compression cycles of applying compressive pressure to the lower and upper portions of the limb and decompression cycles where the compressive pressure is released;

the improvement wherein at the end of each compression cycle, a significantly higher pressure is applied at the sole of the foot whereby to compress the veins in the foot and thereby provide enhanced blood flow up the limb.

5,186,164

MIST INHALER

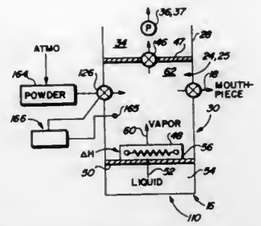
Puthalath Raghuprasad, 2400 East 8th Street, Odessa, Tex. 79761

Filed Mar. 15, 1991, Ser. No. 656,911
Int. Cl.[5] A61M *11/00*
U.S. Cl. 128—200.14 **19 Claims**

1. An inhaler apparatus by which a mixture of vapor and medication is formed to provide a cloud of very fine particle size that can be inhaled deep into a patient's lungs; said apparatus includes an enclosure which forms a cloud forming chamber within which a cloud of the vapor and medication can be formed;

a liquid containing chamber in communication with said cloud forming chamber; means included in said apparatus for vaporizing at least part of any liquid that may be contained in said liquid containing chamber and thereby increase the vapor present in the cloud forming chamber, and pump means by which the cloud forming chamber pressure is reduced to a value that enhances the vaporization of the liquid and the formation of a cloud;

cloud seeding means connected to introduce a quantity of medicated powder into said cloud forming chamber by



which the powder is dispersed and said cloud is formed within the cloud forming chamber by the provision of the proper pressure, moisture content, temperature, and medicated powder; and,

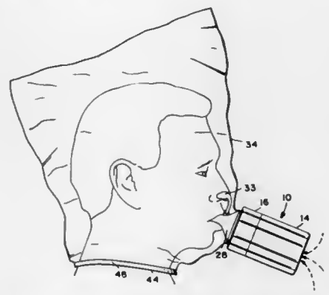
a mouthpiece connected to said inhaler apparatus through which the contents of the cloud forming chamber can flow.

5,186,165

FILTERING CANISTER WITH DEPLOYABLE HOOD AND MOUTHPIECE

Linsey J. Swann, Vancouver, Canada, assignor to Brookdale International Systems Inc., Vancouver, Canada

Filed Jun. 5, 1991, Ser. No. 710,812
Int. Cl.[5] A62B *18/10, 7/10, 19/00, 23/02*
U.S. Cl. 128—201.28 **36 Claims**



1. A personal emergency breathing system comprising:

a canister having a body with an opening and a cover releasably secured to said canister body for closing said opening;

an air filtration unit disposed within the body of said canister for filtering ambient air and having an air inlet for receiving ambient air and an air outlet, the ambient air passing through said air inlet into said filtration unit where it is filtered an passed through said air outlet;

a mouthpiece carried by said canister body for receiving filtered air from the outlet of said filtration unit;

a hood carried by said canister body and enveloping said mouthpiece, said mouthpiece and said hood being disposed in a collapsed condition in said canister adjacent said opening and between said cover and said filtration unit whereby, upon removable of said cover, said hood and mouthpiece are deployable from said canister body to a location external to said canister body, said hood having an opening for receiving an individual's head and neck;

means for connecting said hood and said mouthpiece to said canister body in said collapsed condition and when deployed, said connecting means, when said hood and said mouthpiece are deployed, enabling flow of filtered air from said filtration unit air outlet to said mouthpiece and preventing flow of filtered air from said filtration unit air outlet into said hood; and

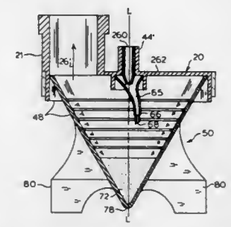
first and second one-way valves disposed between said mouthpiece and said filtration unit, said first valve enabling flow of filtered air from said filtration unit air outlet into said mouthpiece and preventing backflow of exhaled air into said filtration unit, said second valve enabling air exhaled into said mouthpiece for flow into said hood and preventing backflow of air from said hood through said second valve to said mouthpiece.

5,186,166

POWDER NEBULIZER APPARATUS AND METHOD OF NEBULIZATION

John H. Riggs, 3720 Summer Pl., Raleigh, N.C. 27604, and Barry O. Mangum, 1105 Shadywood La., Raleigh, N.C. 27603

Filed Mar. 4, 1992, Ser. No. 846,784
Int. Cl.[5] A61M *16/00*
U.S. Cl. 128—203.15 **22 Claims**



1. A nebulizer device for delivery of a nebulized powder material in a carrier gas to a patient, said nebulizer device comprising:

a nebulizer housing having an upper housing portion and a generally conical-shaped or funicular lower housing portion defining an interior volume enclosed by the housing, said housing further comprising means for containing powder material to be nebulized, in the lower housing portion interior volume;

a gas jet member at the upper portion of the housing extending through the housing, with an upper inlet portion coupleable to a source of carrier gas, and a lower portion forming a discharge structure means for directing carrier gas downwardly in a gas jet stream toward the lower extremity of the conical-shaped or funicular lower portion of the nebulizer housing for impingement on and entrainment of powder material in the lower housing portion interior volume, with the gas jet member depending downwardly from its upper inlet portion to a lower portion comprising said discharge means, and with said discharge means having a lower extremity which terminates within the upper housing portion interior volume; and

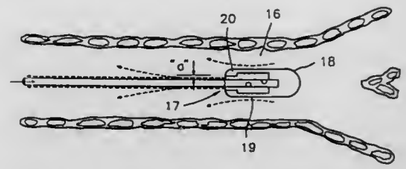
an exit port at the upper portion of the nebulizer housing, in transversely outwardly spaced relationship to the gas jet member, for discharge of solids-containing carrier gas from the nebulizer housing to an exterior treatment locus.

5,186,167

CATHETER TIP FOR INTRATRACHEAL VENTILATION AND INTRATRACHEAL PULMONARY VENTILATION

Theodor Kolobow, Rockville, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 606,967, Oct. 31, 1990. This application May 20, 1991, Ser. No. 702,479
Int. Cl.[5] A61M *16/00;* **A62B** *9/06, 7/00;* **F15C** *1/08*
U.S. Cl. 128—207.14 **8 Claims**



1. A method of providing ventilatory assistance to a patient which comprises:

positioning a distal end of a catheter in an area near the carina of a patient;

supplying a continuous supply of an oxygen containing gas mixture to the patient through the catheter;

providing a tubular member attached to the distal end of said catheter;

providing said tubular member with a closed distal end and a proximal end having at least one exit hole directed toward the proximal end of said catheter;

attaching said tubular member to the distal end of said catheter;

leaving a gap between the exterior wall of said catheter and the interior said tubular member;

creating a sub-atmospheric pressure beyond the distal end of said catheter, near the patient's carina by directing said continuous supply of oxygen containing gas through said catheter, out the distal end of said catheter, through said gap and said at least one exit opening in a direction towards the proximal end of said catheter.

5,186,168

TRANSTRACHEAL CATHETER SYSTEM AND METHOD

Bryan T. Spofford, 1470 S. Quebec Way, #227; Kent L. Christopher, 9086 E. Colorado Cir., both of Denver, Colo. 80231, and Michael E. Hovanes, 1721 Dahlia St., Denver, Colo. 80220

Division of Ser. No. 101,172, Sep. 28, 1987, Pat. No. 5,090,408, which is a continuation-in-part of Ser. No. 788,817, Oct. 18, 1985, abandoned, which is a continuation-in-part of Ser. No. 673,912, Nov. 21, 1984, abandoned. This application Jun. 6, 1990, Ser. No. 534,749
Int. Cl.[5] A61M *16/00;* **A62B** *9/06*
U.S. Cl. 128—207.29 **36 Claims**

1. A method of inserting a transtracheal catheter into the trachea of a spontaneously breathing patient suffering from hypoxemia, the method comprising the steps of:

(a) inserting a hypodermic needle in a predetermined position between the cricoid cartilage and the sternal notch;

(b) inserting a guide wire through said needle into the trachea of the patient;

(c) removing said needle over said guide wire;

(d) inserting a dilator over said guide wire to stretch the tissues surrounding the needle hole to form a tract;

(e) removing said dilator over said guide wire;

(f) inserting a stent over said guide wire into said tract to allow said tract to initially heal;

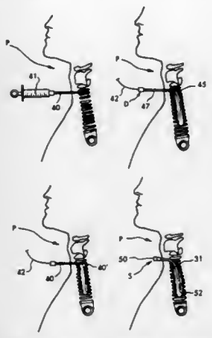
(g) removing said guide wire through said stent;

(h) removing said stent from said track after initial healing of said tract;

VOL 1147 ISS 3 FE 16 1993 UMI

(i) inserting a transtracheal catheter into said initially healed tract;

(j) securing said catheter to said patient; and



(k) connecting said transtracheal catheter to an external oxygen supply to provide supplemental oxygen through said transtracheal oxygen and into the trachea of the patient.

5,186,169

COMMON SIGNAL TRANSMISSION PATH CARDIAC PACEMAKER WITH SWITCHABLE CAPACITORS

Max Schaldach, Erlangen, Fed. Rep. of Germany, assignor to Biotronik Mess- und Therapiegeräte GmbH & Co., Berlin, Fed. Rep. of Germany

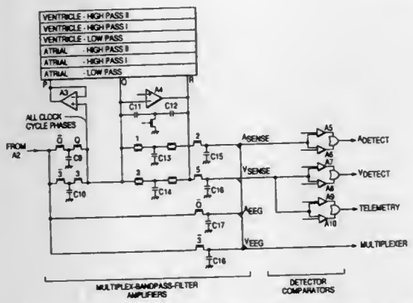
PCT No. PCT/DE88/00723, § 371 Date Jul. 12, 1990, § 102(e) Date Jul. 12, 1990, PCT Pub. No. WO89/04192, PCT Pub. Date May 18, 1989

PCT Filed Nov. 14, 1988, Ser. No. 543,817

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1987, 3739091

Int. Cl.[5] A61N *1/362*

U.S. Cl. 128—419 PG **21 Claims**



1. In an implantable cardiac pacemaker including a pacemaker housing and a plurality of inputs receiving analog signals from external and internal signal sources, the improvement comprising:

a common signal transmission path; and

switching means, comprising an integrated circuit including integrated switchable capacitors, within the housing coupled to the received analog signals for switching the received analog signals for consecutive, multiplex transmission on the common signal transmission path at least inside the housing.

5,186,170

SIMULTANEOUS RADIO FREQUENCY AND MAGNETIC FIELD MICROPROCESSOR RESET CIRCUIT

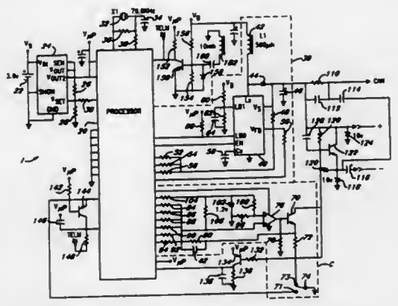
Anthony J. Varrichio, Flanders, N.J.; William L. Winstrom, Andover, N.J., assignors to Cyberonics, Inc., Webster, Tex.

Division of Ser. No. 434,985, Nov. 13, 1989, Pat. No. 5,154,172.

This application Dec. 5, 1991, Ser. No. 802,735

Int. Cl.[5] A61N *1/00*

U.S. Cl. 128—419 R **6 Claims**



1. A microprocessor reset circuit, comprising:

a microprocessor having a reset input;

means for receiving a radio frequency transmission and producing an output signal;

means for sensing the presence of a magnetic field; and

means connected to said radio frequency transmission means, to said magnetic field sensing means and to said microprocessor reset input for providing a signal to said microprocessor reset input if said magnetic field is present while a radio frequency transmission is received for at least a predetermined interval.

5,186,171

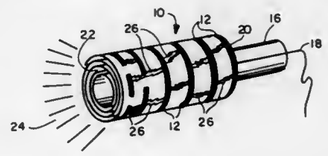
ELECTROTHERAPY DEVICE AND PROCESS

Anthony B. Kuhry, 6209 N. Mozart St., Chicago, Ill. 60659

Filed Feb. 19, 1991, Ser. No. 657,659

Int. Cl.[5] A61N *1/06*

U.S. Cl. 128—421 **20 Claims**



1. An electrotherapy device for treatment of musculoskeletal disorders, comprising

a. an antenna having a voltage application location and a corona discharge location, said locations being spaced from one another, said antenna comprising

i. a plurality of spaced rows of conductive strips between said application location and said discharge location, each row having at least one strip with the number of strips in each row increasing generally from said application location to said discharge location, and

ii. means mounting said rows of strips,

b. a high voltage, high frequency, low power source connected to said application location, and

c. dielectric shielding means at said discharge location for preventing arcing from said device during treatment of a disorder.

5,186,172

REMOTE SENSING TONOMETRIC CATHETER APPARATUS

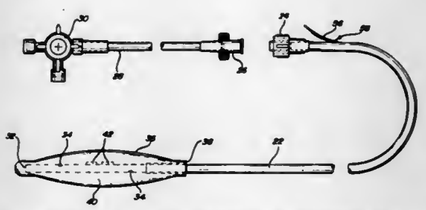
Richard G. Fiddian-Green, Marlborough, Mass., assignor to Mountpelier Investments, S.A., Liechtenstein, British Virgin Isls.

Continuation of Ser. No. 733,071, Jul. 17, 1991, abandoned, which is a continuation of Ser. No. 496,185, Mar. 20, 1990, abandoned, which is a continuation of Ser. No. 380,706, Jul. 13, 1989, abandoned, which is a continuation of Ser. No. 237,287, Aug. 26, 1988, abandoned, which is a continuation of Ser. No. 120,720, Nov. 6, 1987, abandoned, which is a continuation of Ser. No. 13,552, Feb. 11, 1987, abandoned, which is a continuation of Ser. No. 833,287, Feb. 27, 1986, Pat. No. 4,643,192, which is a continuation of Ser. No. 360,718, Mar. 22, 1982, abandoned.

This application Jun. 2, 1992, Ser. No. 892,631

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—632 **12 Claims**



1. A tonometric catheter apparatus for measuring a liquid fluid or gaseous fluid property indicative of the condition of an internal organ of a human or other mammal in vivo, comprising:

(a) an elongated tonometric catheter tube having a lumen extending longitudinally therethrough, said tube being composed of a first elastomeric material that is substantially impermeable to one or more liquid fluids or gaseous fluids of interest, said fluids of interest including oxygen gases and carbon dioxide gases;

(b) at least one walled sampling chamber on said catheter tube in fluid communication with the interior of said lumen, said walled sampling chamber being defined by a balloon member generally surrounding a portion of said tube and sealingly interconnected therewith, the wall of said balloon member being composed of a second material that is freely and selectively permeable to said one or more liquid fluids or gaseous fluids of interest, said second material being substantially impermeable to other liquid fluids or gaseous fluids, and said balloon member being inflated for forming an interior space between said balloon member and said catheter tube and for selectively positioning a portion of said balloon member substantially in direct contact with a wall portion of the internal organ in order to allow said one or more liquid fluids or gaseous fluids of interest from the tissue of the wall portion of the internal organ to permeate into said sampling chamber, with said tube extending to a position outside of the body of the human or other mammal, and with said lumen providing fluid communication between said sampling chamber and the outside of the body of the human or other mammal;

(c) sensor means for sensing the level of at least one of said liquid fluids or gaseous fluids of interest from the tissue of the wall portion of the internal organ present within said sampling chamber, said sensor means being disposed within said sampling chamber; and

(d) means for introducing a calibration fluid into said sampling chamber through said lumen in order to calibrate or recalibrate said sensor means while said balloon member is in said direct contact with the wall portion of the internal organ.

5,186,173

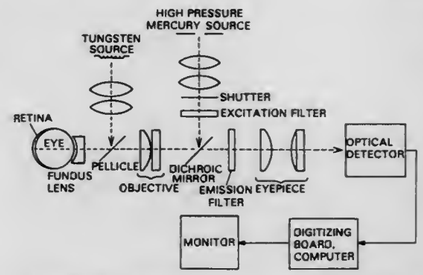
METHOD FOR IN VIVO MEASUREMENT OF OXYGEN CONCENTRATION LEVELS

Ralph Zuckerman, Philadelphia, Pa., assignor to Drexel University, Philadelphia, Pa.

Filed Aug. 14, 1990, Ser. No. 567,486

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—633 **21 Claims**



1. A method for in vivo measurement of oxygen concentration levels in an animal bodily tissue comprising administering a biocompatible fluorescent probe sensitive to oxygen quenching and having a known unquenched fluorescence intensity to an animal body in an amount sufficient to allow the probe to accumulate in the tissue, exposing the tissue to excitation light, measuring fluorescent emission light intensity form the probe in the tissue and determining the oxygen concentration level of the tissue by comparing the known unquenched fluorescence intensity and the measured fluorescence intensity.

5,186,174

PROCESS AND DEVICE FOR THE REPRODUCIBLE OPTICAL REPRESENTATION OF A SURGICAL OPERATION

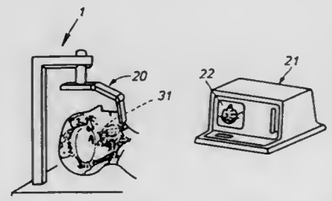
Georg Schlöndorff, Roetgen; Ralph Mösges, Munich; Dietrich Meyer-Ebrecht, and Philipp Moll, both of Aachen, all of Fed. Rep. of Germany, assignors to G. M. Piaff, Kaiserslautern, Fed. Rep. of Germany

Filed Jan. 29, 1990, Ser. No. 445,838

Claims priority, application Fed. Rep. of Germany, May 21, 1987, 3717871

Int. Cl.[5] A61B *19/00*

U.S. Cl. 128—653.1 **10 Claims**



1. A process for representing on a tomogram positions of an instrument located in an object represented by the tomogram, the process comprising the steps of:

creating three reference points on the object;

creating a tomogram of the object, said tomogram encompassing a predetermined number of tomogram slices, at

VOL 1147 ISS 3 FE 16 1993 UMI

least one of said tomogram slices containing said three reference points;

storing a first set of positional data associated with said three reference points included in said at least one tomogram slice;

placing said object in a non-rigid manner on a support;

positioning an instrument at said three reference points on said object which is placed on said support, and defining a second set of positional data associated with said three reference points on said object placed on said support, said defining being done by said positioning;

establishing a relationship between said first set of positional data and said second set of positional data;

inserting said instrument into said object placed on said support;

sensing positions of said instrument along a path of insertion movement into said object in relation to said second set of positional data, said sensing being performed during said step of inserting said instrument into said object;

using said relationship established between said first and second sets of positional data for transforming said positions of said instrument along said path of insertion movement into said object in relation to said second set of positional data into corresponding positions in relation to said first set of positional data;

superimposing an indication of said corresponding position of said instrument on said tomogram slices of said tomogram; and

displaying said tomogram slices containing said superimposed indication of said corresponding positions of said instrument during said step of inserting said instrument into said object in order to indicate in said tomogram slices said corresponding positions of said instrument located in said object represented by said tomogram.

5,186,175

ULTRASONIC DIAGNOSTIC APPARATUS

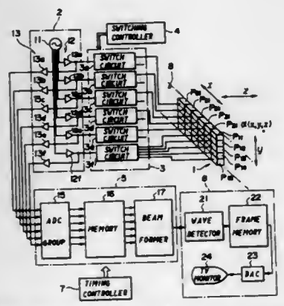
Makoto Hirama, and Takashi Kumazawa, both of Tochigi, Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jul. 10, 1991, Ser. No. 725,805

Claims priority, application Japan, Jul. 11, 1990, 2-181544; Jul. 8, 1991, 2-166638

Int. Cl.[5] A61B *8/12*

U.S. Cl. 128—661.01 **12 Claims**



1. An ultrasonic diagnostic apparatus for transmitting ultrasonic signals to a subject to be diagnosed and reconstructing an ultrasonic diagnostic image in response to received ultrasonic echo signals, the ultrasonic diagnostic apparatus comprising:

a probe including a plurality of transducers arranged two dimensionally in a lateral direction and an azimuth direction thereof and being organized into a plurality of transducer lines along either each of a plurality of lateral directional lines or each of a plurality of azimuth directional lines of the probe, said transducers being capable of converting electric driving signals into the ultrasonic transmitting signals and converting the ultrasonic echo signals into electric echo signals;

signal transmitting-receiving means for transmitting the electric driving signals to excite said transducers and for receiving the electric echo signals from said transducers, said signal transmitting-receiving means having a plurality of transmitting-receiver channels equal in number to the number of transducers arranged along either one of the lateral directional lines or one of the azimuth directional lines of the probe;

switch means for selectively connecting said transducers line by line to said transmitting-receiving channels of the signal transmitting-receiving means;

switching command means for operating said switch means to electrically connect the transducers in each of the respective transducer lines to said transmitting-receiving channels in a predetermined sequential line order;

storage means for storing the electric echo signals of all of the transducers obtained by the signal transmitting-receiving means;

processing means for delaying and adding the electric echo signals stored in the storage means so as to converge the ultrasonic echo signals onto a position to be diagnosed in said subject; and

image producing means for producing the ultrasonic diagnostic image in response to said electric echo signals received from said processing means.

5,186,176

ULTRASONIC DIAGNOSIS APPARATUS

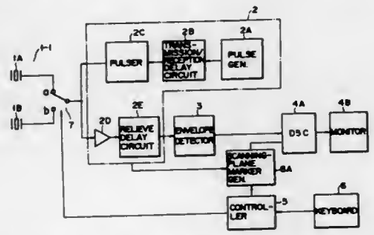
Susumu Hiki, Ootawara; Takashi Yanagawa, and Isao Uchiumi, both of Tochigi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 9, 1991, Ser. No. 682,375

Claims priority, application Japan, Apr. 11, 1990, 2-95280; Mar. 15, 1991, 3-51362

Int. Cl.[5] A61B *8/12*

U.S. Cl. 128—661.01 **29 Claims**



1. An ultrasonic diagnosis apparatus comprising:

an ultrasonic probe having a plurality of ultrasonic transducer groups, each transducer group comprising a plurality of ultrasonic transducer elements and said transducer groups having different directions of arrangement of the ultrasonic transducer elements to form different ultrasonic scanning planes;

selecting means for selecting at least one of said ultrasonic transducer groups;

driving means for driving at least one of said ultrasonic transducer groups selected by said selecting means to transmit and receive ultrasonic waves;

ultrasonic-image producing means responsive to a received signal from an ultrasonic transducer group driven by said driving means to produce an ultrasonic image;

scanning-plane mark generating means for generating a signal corresponding to a scanning-plane mark adapted to indicate the positional relationship between the ultrasonic scanning plane formed by a first ultrasonic transducer group selected by said selecting means and the ultrasonic scanning plane formed by a second ultrasonic transducer group; and

display means for displaying an ultrasonic image produced by said ultrasonic image producing means and said scanning-plane mark generated by said scanning-plane mark generating means.

5,186,177

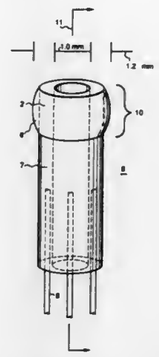
METHOD AND APPARATUS FOR APPLYING SYNTHETIC APERTURE FOCUSING TECHNIQUES TO A CATHETER BASED SYSTEM FOR HIGH FREQUENCY ULTRASOUND IMAGING OF SMALL VESSELS

Matthew O'Donnell, Ann Arbor, Mich., and Lewis J. Thomas, III, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 5, 1991, Ser. No. 803,242

Int. Cl.[5] A61B *8/12*

U.S. Cl. 128—662.06 **14 Claims**



1. A method of acquiring a plurality of pulse/echo signals obtained from a corresponding plurality of ultrasound transducer elements for imaging thereof comprising:

disposing said elements in an array around a catheter for intravascular placement;

providing a pulse capable of exciting said elements;

sequentially sampling said plurality of elements in order to fully multiplex an incrementally stepped contiguous subset thereof operating as a transceiver subarray on each consecutive excitation pulse;

fully multiplexing signals transmitted and received from each sequential transceiver subarray in a parallel manner on each consecutive excitation pulse;

maintaining a consecutively equivalent subarray by incrementally sampling array elements on each excitation pulse; and

dynamically focusing said multiplexed signals by characterizing said transceiver subarray as a subset of a synthetic aperture array; wherein respective echo signals derived from each excitation pulse are retrospectively time delayed, demodulated into respective complex components, respectively component weighted by complex filtering according to range and summed over said synthetic aperture array.

5,186,178

CRESCENT SHAPED BIOPSY PUNCH

Charles R. Yeh, Plantation, Fla., and Donald H. Huldin, Okemos, Mich., assignors to Acuderm, Inc., Ft. Lauderdale, Fla.

Filed Apr. 12, 1991, Ser. No. 685,226

Int. Cl.[5] A61B *10/00*

U.S. Cl. 128—754 **7 Claims**



1. A disposable surgical instrument in the form of a biopsy punch for making an incision in the skin to remove skin abnormalities, comprising:

(a) an elongated handle member formed of a rigid plastic material, said handle member including a means for retaining a cutting member on one end thereof; and

(b) a cutting member retained by said means having a first and second portion, said first portion being disposed within said retaining means and said second portion projecting therefrom to expose a cutting surface having a crescent shape for making the incision.

5,186,179

GUIDEWIRE ADVANCEMENT SYSTEM

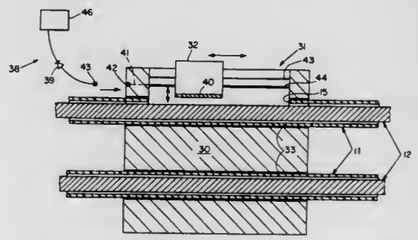
A. Walter MacEachern, Woburn, Mass., assignor to Medical Parameters, Inc., Woburn, Mass.

Continuation of Ser. No. 509,500, Apr. 13, 1990, abandoned, which is a continuation-in-part of Ser. No. 372,047, Jun. 27, 1989, Pat. No. 4,917,094, which is a division of Ser. No. 114,451, Oct. 28, 1987, Pat. No. 4,860,575. This application Mar. 25, 1992, Ser. No. 857,677

The portion of the term of this patent subsequent to Apr. 17, 2007, has been disclaimed.

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—772 **8 Claims**



1. A catheter guidewire monitoring system comprising:

a housing to contain a conductive catheter guidewire displaceable within the housing;

a conductor secured to the housing;

a port in the housing through which a distal end of guidewire can enter or exit the housing; and

engaging means mounted on the housing to cause electrical contact between a guidewire when positioned within the housing and the conductor such that the conductor trans-

VOL 1147 ISS 3 FE 16 1993 UMI

mits an electrical signal from a guidewire when in place within the housing.

5,186,180
INTRA-VAGINAL PROLAPSE DIAGNOSTIC INSTRUMENT

Gabriel A. S. Bellas, Qta. mary, 4ta transversal, Urbanización Horizonte, El Marques, Caracas, Venezuela

Continuation-in-part of Ser. No. 390,189, Aug. 7, 1989, abandoned. This application May 28, 1991, Ser. No. 705,790
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—778 **5 Claims**

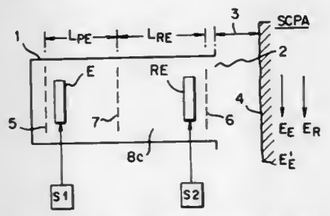


1. An intra-vaginal diagnostic instrument for detecting utero-vaginal prolapse comprising an elongated cylindrical plunger including a distal end and a proximal end, means defining an annular notch on said plunger, said distal end of said plunger including a bulbous terminal, and said proximal end including a pinched zone of diminished diameter, a tubular body encircling said plunger and including a distal end and a proximal end, said distal end of said tubular body terminating in a generally concave flange configured to engage the entrance of the vagina, an annular flange positioned on the proximal end of said tubular body, a scale tube mounted on the exterior of said tubular body for sliding movement thereon between said annular flange and said concave flange, measuring indicia on said scale tube configured to cooperate with said annular notch on said plunger to provide an indication of the depth of penetration of the bulbous end portion of said plunger into the vagina when said plunger is moved thereinto relative to said tubular body and said annular notch on said plunger is positioned beneath said measuring indicia on said scale tube.

5,186,181
RADIO FREQUENCY THERMOTHERAPY

Cafiero Franconi, 23, Via Sant'Erasmo, 00184 Rome, Italy, and Jan Vrba, 2, Durerova, 100 00 Prague 10, Czechoslovakia

Filed Jul. 27, 1990, Ser. No. 558,670
Int. Cl.[5] A61N *5/00*
U.S. Cl. 128—804 **39 Claims**

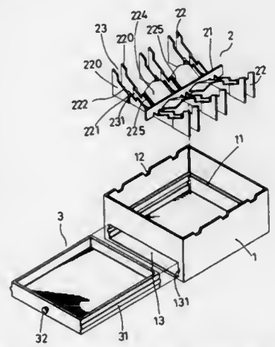


1. An electromagnetic heating method for the localized heating treatment of body tissues to therapeutic temperatures by exposing said tissues to an EM heating field produced by a hybrid passband applicator (HPA) comprising:
producing an electromagnetic power source with an output level, the frequency of said source ranging from about 0.1 MHz to 2450 MHz;
positioning a below cutoff waveguide segment having one end terminated by an active treatment aperture;
positioning a plurality of sets of resonant radiating elements inside said waveguide segment;
positioning a first set of resonant radiating elements within said waveguide segment to substantially work as pure exciters producing a multi-modal heating field propagating through said active treatment aperture;
positioning a second set of resonant radiating elements within said waveguide segment to substantially work both as exciters and direct radiators producing a multi-modal heating field and a direct heating field, respectively, both fields propagating through said active treatment aperture;
matching said sets of radiating elements to said power source;
tuning said sets of radiating elements to the frequency of said power source;
controlling the output level of said power source to each of said sets of resonant radiating elements; and
matching electromagnetically said active treatment aperture to said body tissue for optimizing the energy transfer to the body tissue and directing over said body tissue the composite heating fields resulting from the superposition of said multi-modal and direct heating fields.

5,186,182
ASH TRAY

Tung-Ming Lin, No. 17, Lane 997, Chung Cheng North Road, Yung Kang Hsiang, Tainan Hsien, Taiwan

Filed Nov. 6, 1991, Ser. No. 788,786
Int. Cl.[5] A24F *19/00, 19/14*
U.S. Cl. 131—241 **3 Claims**

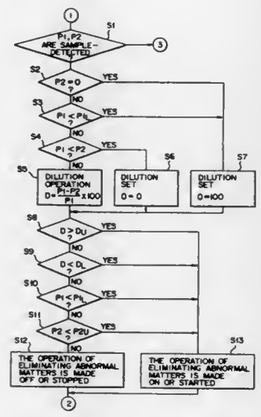


1. An ash tray for receiving and extinguishing ashes and butts accumulated therein, said ash tray comprising:
an upright hollow vessel having side walls and an open top, an internal flange and a side opening formed in a lower portion of a side wall thereof;
at least one slot formed in the top end of a side wall of the vessel;
a drawer member adapted to be positioned in a lower portion within the vessel through the side opening and containing a fire-extinguishing fluid;
means for removably sliding the drawer member into the position within the vessel; and
a cigarette rest bracket supported on the internal flange in an upper portion above the drawer member within the vessel and having at least one cigarette rest member formed with a pair of spaced triangular plates defining a first trough of which a rear end corresponds to the slot and the distance between the triangular plates is larger than the diameter of a cigarette, frontal portions of said triangular plates stepping inwardly towards each other to define a second trough of which the distance between the frontal portions of the triangular plates is smaller than the distance of the first trough and the diameter of a cigarette such that a lighted cigarette positioned on a sloping top of the cigarette rest member is supported by the slot and said frontal portions of said triangular plates but automatically falls through the first trough into the drawer member when the cigarette burns down to a length such that it no longer extends beyond the first trough and is extinguished by the fire-extinguishing fluid contained in the drawer member.

5,186,183
METHOD AND APPARATUS FOR DETECTING MICRO-HOLES OR EXAMINING THE STATE OF MICRO-HOLES FORMED ON EACH OF ROD-LIKE MATTERS

Mikio Komori; Shuichi Sato; Kazuyu Adachi, and Masayoshi Saito, all of Tokyo, Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Filed Dec. 7, 1990, Ser. No. 623,525
Claims priority, application Japan, Dec. 8, 1989, 1-317563
Int. Cl.[5] A24C *5/00*
U.S. Cl. 131—281 **19 Claims**

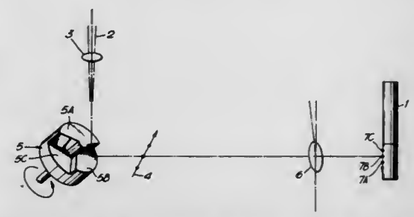


1. A method of detecting a state of micro-holes formed on a rod-like object comprising the steps of:
a) applying a pre-pressure to one end of the rod-like object while keeping the other end of rod-like object closed, in order to obtain a predetermined pressure within the rod-like object;
b) applying a measuring pressure to the rod-like object to the one end of the rod-like object,
c) detecting a first saturating pressure at the open end of the rod-like object, converting the first saturating pressure to a first electric signal, detecting a second saturating pressure at the other end of the rod-like object, and converting the second saturating pressure to a second electric signal;
d) processing the first and second electric signals to arithmetically calculate a dilution value of the rod-like object, wherein the pre-pressure applied in step (a) enables the dilution value of the rod-like object to be calculated more accurately in a short period of time;
e) comparing the dilution value with predetermined upper and lower limit values; and
f) eliminating the rod-like object if the dilution value is not within a range defined by the predetermined upper and lower limit values by comparing the first and second electric signals with first and second lower limit levels and eliminating the rod-like object if the first and second electric signals are less than the first and second lower limit levels, respectively.

5,186,184
CIGARETTE MANUFACTURE

Alan M. Aindow; Michael J. Cahill, and John Dawson, all of Coventry, England, assignors to Molins PLC, London, England

Filed Nov. 30, 1990, Ser. No. 619,967
Claims priority, application United Kingdom, Dec. 6, 1989, 8927534
Int. Cl.[5] B23K *26/00*; A24C *1/38*
U.S. Cl. 131—281 **20 Claims**

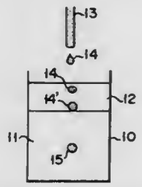


1. Apparatus for perforating cigarettes by means of a laser beam, comprising a rotary member having at least one reflective surface arranged to intermittently intercept a laser beam during rotation of the member so that the laser beam is directed along one path by the surface and follows at least one other path when the laser beam is not intercepted by the surface, said paths leading to different cigarette positions whereby the laser beams on said paths produce perforations in different cigarettes or different positions on a cigarette, and means synchronized with the rotary member and rotatable therewith for controlling the quantity of energy directed along said paths including intercepting means arranged to intercept the beam during predetermined periods so that it does not produce perforations during said periods.

5,186,185
FLAVORING GRANULE FOR TOBACCO PRODUCTS AND A PREPARATION METHOD THEREOF

Kimio Mashiko, Odawara; Sadatsuyo Isoda, and Atsushi Tateno, both of Hiratsuka, all of Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

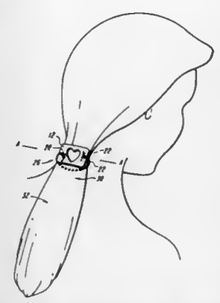
Filed Apr. 5, 1991, Ser. No. 680,903
Claims priority, application Japan, Jul. 6, 1990, 2-177370; Jul. 18, 1990, 2-187923
Int. Cl.[5] A24B *15/10*
U.S. Cl. 131—337 **10 Claims**



1. A flavoring granule for tobacco products comprising:
a solid substrate granule which comprises natural polysaccharides or derivatives thereof; and
a flavor for tobacco products which is contained in said solid substrate granule and is encapsulated therein so as to be released upon breakage of said solid granule, wherein said solid substrate granule further contains casein as a diluent for the flavor.

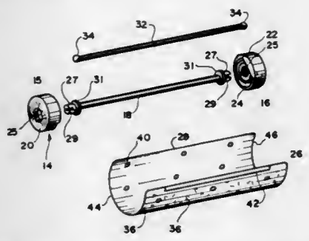
VOL 1147 ISS 3 FE 16 1993 UMI

5,186,186
MULTI-PURPOSE ORNAMENT AND METHOD OF USE IN RETAINING HAIR
Paul M. Hamilton, 15 Oak Ave., Newton, Mass. 02165
Continuation of Ser. No. 640,265, Jan. 11, 1991, abandoned. This application Feb. 7, 1992, Ser. No. 833,635
Int. Cl.[5] A45D *24/00*
U.S. Cl. 132—200 **15 Claims**



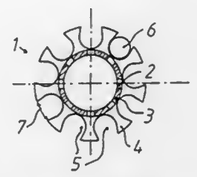
12. A method of retaining a ponytail, comprising:
gathering hair into a ponytail;
applying a planar member to the ponytail, the planar member comprising a front and a back, an elastic retainer adapted to releasably engage said planar member to the ponytail, the elastic retainer having a first end releasably mounted to said planar member at an elastic retainer mounting point, and a means for releasably engaging a second end of said elastic retainer to the planar member, said means for releasably engaging located on a side of said planar member spaced apart from said elastic retainer mounting point, said means for releasably engaging and said elastic retainer mounting point defining an axis of said planar member;
placing said ponytail in a direction substantially perpendicular to the axis of the planar member;
forming said planar member to an outer periphery of the ponytail;
engaging the planar member to the ponytail by wrapping said elastic member around the ponytail a number of times sufficient to bind the planar member to the ponytail; and
locking the second end of said elastic retainer to the planar member.

5,186,187
HAIR ROLLER
Kenneth B. Roberts, 3832 E. Loyola Dr., Kenner, La. 70065
Continuation-in-part of Ser. No. 396,060, Aug. 21, 1989, Pat. No. 5,000,200. This application Oct. 25, 1990, Ser. No. 603,235
Int. Cl.[5] A45D *2/14*
U.S. Cl. 132—245 **15 Claims**



1. A hair roller, comprising:
a pair of spaced-apart cap means rotationally mounted on opposite ends of an elongated shaft means, said cap means comprising a substantially circular disk having an outer surface and an inner surface, said disk being provided with a central opening for receiving one end of the shaft means in frictional engagement therein;
a substantially cylindrical outer tube means extending between said cap means, said tube means comprising a substantially rectangular flexible sheet rolled into a cylindrical tube, the sheet having an outer elongated edge overlapping at least a portion of the tube, and a first and a second transverse edges, said outer elongated edge being provided with a stiffening piece to prevent bending of the outer edges during rotation of the caps;
a means for changing exterior diameter of the tube means carried by said cap means, said cap means being provided with means for indicating a diameter of the tube means, wherein said means for changing exterior of the tube means comprises a continuous spiral groove formed in the inner surface of each disk and extending from an outer circumference of the disk towards approximately a center of each disk, said groove being adapted to receive a transverse edge of said rectangular sheet in frictional engagement therein, and whereby rotation of said disks causes continuous advancement of the sheet along the groove.

5,186,188
HAIR CURLER
Eva Fasolt, Schiffmuhlenstrasse 53, A-1200 Vienna, Austria
PCT No. PCT/AT89/00104, § 371 Date May 14, 1991, § 102(e) Date May 14, 1991, PCT Pub. No. WO90/05468, PCT Pub. Date May 31, 1990
PCT Filed Nov. 17, 1989, Ser. No. 659,304
Claims priority, application Austria, Nov. 17, 1988, 2821/88
Int. Cl.[5] A45D *6/14*
U.S. Cl. 132—251 **8 Claims**

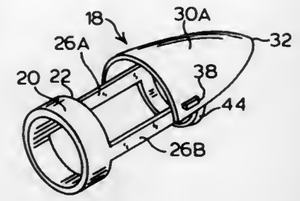


1. A hair curling device comprising:
an elongated cylindrical body having first and second ends; and
first and second flange members being affixed to said first and second ends respectively, each of said flange members including a plurality of bores disposed in a peripheral surface thereof and being parallel to the longitudinal axis of said body, the bores of said first flange member being disposed coaxially with the bores of said second flange member, said bores extending uniformly from an outer periphery of said flange members to an outer peripheral surface of said body, said bores having an opening at an outer peripheral surface of said flange members, an inside width of said opening being smaller than the diameter of said bores.

5,186,189
FINGER NAIL POLISH PROTECTOR
Pauline Harris, B-1 Cornwallis Ct., Durham, N.C. 27707
Filed Nov. 15, 1991, Ser. No. 792,419
Int. Cl.[5] A45D *29/00*
U.S. Cl. 132—285 **7 Claims**

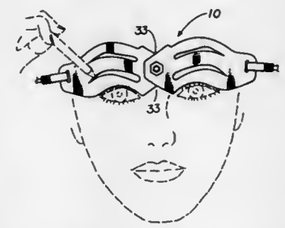
1. A fingernail polish protector for a finger having in sequence a distal end, a lower fingertip and an upper fingernail, a first joint and a second joint, said protector comprising:
(a) a finger-encircling piece;

(b) a first elongated piece and a second elongated piece, said elongated pieces extending in parallel from opposing sides of said finger-encircling piece, each of said elongated pieces having a distal portion;
(c) an upper piece defining an inner fingernail receiving space, said upper piece hinged to the distal portion of said first elongated piece and latchable to said second elongated piece;



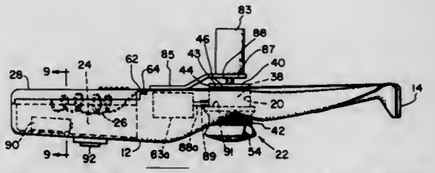
(d) at least one lower finger-retaining portion extending downward from at least one elongated piece between said finger encircling piece and the distal end of said elongated piece;
wherein said protector is formed so that when said finger-encircling piece is placed between the first and second joints of the finger, the upper piece extends over the fingernail, the lower finger-retaining portion is beneath the finger between the distal end and the first joint behind the fingertip, and the lower finger tip extends beyond the finger-retaining portion.

5,186,190
EYEBROW STENCIL KIT WITH ALIGNMENT MEMBERS
Suzy C. Hirzel, 933 Shellwood Way, Sacramento, Calif. 95831
Continuation-in-part of Ser. No. 187,304, Apr. 28, 1988, abandoned. This application Dec. 7, 1989, Ser. No. 449,393
Int. Cl.[5] A45D *40/30*
U.S. Cl. 132—319 **6 Claims**



1. An improved eyebrow and eyeline stencil device comprising a pair of stencils, each adapted to lie above an eye, each stencil comprising, in combination,
an upper edge, a lower edge, and inner and outer ends,
a stencil slot having an inner end and an outer end with the inner end of said stencil slot enlarged and tapering outwardly in a curved direction to correspond with the shape of a person's eyebrows,
said lower edge curved to follow the contour of the person's upper eyeline and forming an eyeline guide for the application of eyeliner,
said inner end of said stencil having a horizontally elongated slot,
connecting means pivotally connecting said horizontally elongated slots allowing both the horizontal distance and the angular direction with respect to the horizontal to be adjusted,
said connecting means further comprising means to fixedly maintain said pair of stencils in a desired position,
said upper edge of said stencil having a first slanted outer surface located above said horizontally elongated slot such that when said pair of stencils are pivotally connected by said connecting means, each said first slanted outer surfaces together create a first V-shape at the center of said stencil device allowing easy centering of said device above the person's nose,
said lower edge of said stencil having a second slanted outer surface located below said horizontally elongated slot such that when said pair of stencils are pivotally connected by said connecting means, each said second slanted outer surfaces together create a second V-shape at the center of said stencil device allowing easy centering of said device above the person's nose,
said stencil device further comprising a securing means to secure said stencil device to the person's head,
whereby said stencil device may be secured to the person's head, centered above the person's nose and adjusted and fixedly maintained in said desired position such that makeup may be applied accurately to both the eyebrows and upper eyelines.

5,186,191
MOTOR DRIVEN DENTAL FLOSS APPLICATOR
Robert J. Loubier, CR 700E, Box 216K, Roanoke, Ind. 46783
Filed Oct. 30, 1991, Ser. No. 784,983
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—322 **12 Claims**



1. A motor driven dental floss applicator for use in dispensing and supporting a strand of dental floss for cleaning teeth comprising:
a rigid elongated supporting frame having on one end two laterally spaced furcations, said furcations having floss-guiding portions on the tips thereof by means of which a floss strand may be tensioned and moved therebetween, said frame having a handle portion on its other end,
first means for storing floss strand on said frame,
second means for supplying and taking-up said strand after it is threaded across the tips of said furcations, and
electric motor means for actuating said second means unidirectionally, and means for controlling energization of said motor means whereby said strand may be controllably drawn across and between said furcations,
wherein said motor means is rigidly and stationarily mounted to said frame, and wherein said motor means, said handle and said furcations are relatively rigidly and stationarily disposed such that, when the motor means is energized, the strand moves in a single, axially directed motion relative to the motor means, the handle and the furcations.

VOL
1147
ISS
3
FE
16
1993
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5,186,192

APPARATUS FOR CLEANING SILICON WAFER

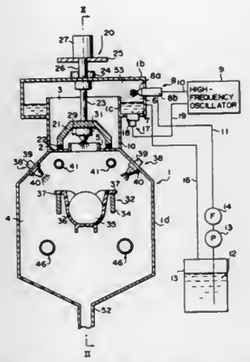
Shigeyoshi Netsu; Masaki Kameya, both of Selangor, Malaysia; Yasuyuki Harada, Tama, and Hiroshi Amano, Shizuoka, both of Japan, assignors to Shin-Etsu Handotai Co., Ltd. and Pre-Tech Co., Ltd., both of Tokyo, Japan

Filed Dec. 10, 1991, Ser. No. 804,451

Claims priority, application Japan, Dec. 14, 1990, 2-402400; Nov. 19, 1991, 3-302917

Int. Cl.[5] B08B *3/10*

U.S. Cl. 134—68 **7 Claims**



1. A silicon wafer-cleaning apparatus comprising:

a chamber which is divided into an upper region and a lower region by a partitioning wall having a communication section, said upper region defining a mist-generating chamber and said lower region defining a processing chamber;

opening/closing means including a shutter for closing the communication section of the partitioning wall;

a high-frequency oscillation member, attached to the chamber, for generating mist of an aqueous hydrofluoric acid solution in the mist-generating chamber;

a high-frequency oscillator for supplying high-frequency power to the high-frequency oscillation member;

conveyance means for conveying a storage member, in which a plurality of silicon wafers are held in an upright state, to the processing chamber;

a plurality of gas-ejecting means, attached to the chamber and the shutter, for ejecting a gas toward regions between the silicon wafers held in the storage member;

pure water-spraying means, attached to the chamber, for spraying pure water toward regions between the silicon wafers held in the storage member; and

gas exhaust means arranged inside the processing chamber to be lower than the storage member.

5,186,193

PARTS WASHER CLEANING APPARATUS HAVING PNEUMATIC VERTICAL AGITATION, STATIONARY BEARING MEANS AND PLATFORM HAVING CONTINUOUS POSITIVE SUPPORT

Kim R. Gullberg, Stronghurst, and William A. Leser, Rolling Meadows, both of Ill., assignors to D. C. Cooper Corporation, Chicago, Ill.

Filed Apr. 8, 1991, Ser. No. 682,137

Int. Cl.[5] B08B *3/04*

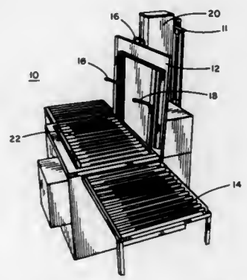
U.S. Cl. 134—105 **6 Claims**

1. A pneumatic parts washer apparatus, the apparatus having associated pneumatic means for facilitating a predetermined reciprocating agitation, the apparatus comprising in combination:

platform means, the platform means having support means for the continuous and positive support thereof, the platform means having a first position associated with the operation of the apparatus and a second position for when the apparatus is not operating;

beam means, the beam means having a substantially quadrilateral cross section of a predetermined size with bracing means integral thereto, the beam means having a first end and a second end opposite the first end, the second end adapted to receive the platform means operatively affixed thereto, the beam means adapted to raising and lowering of the platform means between the first and second positions, the pneumatic means of the apparatus providing the predetermined reciprocating agitation to the beam means, thereby facilitating a substantially vertical predetermined reciprocating action of the platform means during operation of the apparatus, the platform means being immersed in a cleaning solution during at least a portion of its substantially vertical predetermined reciprocating action, whereby parts are cleaned;

frame means for continuously stabilizing and supporting the platform means during operation of the apparatus, thereby completely supporting a load of a predetermined weight



of material placed on the platform means for cleaning by the apparatus during operation of the apparatus;

solution tank means defining a leakproof, immersion chamber for receiving and collecting a cleaning solution for cleaning parts submersed therein, the chamber having a bottom floor and side walls;

bearing means, the bearing means having a first end and a second end opposite the first end, the bearing means having a plurality of rollers at predetermined locations at the first and second ends, thereby defining a centrally disposed aperture, the bearing means being fixedly mounted to the frame means, the rollers adapted to engage each corner of said beam means to facilitate passage of said beam means through the aperture of the bearing means during operation of the apparatus;

means for raising and lowering the platform means from the first position to the second position;

means for heating the cleaning solution; and

means for closing the apparatus prior to operating the apparatus;

whereby during operation of the apparatus the bearing means are disposed to remain above the cleaning solution.

5,186,194

PROBE WASHING VESSEL

Masaichi Kitajima, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1991, Ser. No. 748,276

Claims priority, application Japan, Aug. 24, 1990, 2-223616

Int. Cl.[5] B08B *3/04, 9/08*

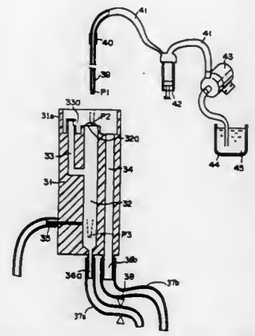
U.S. Cl. 134—154 **14 Claims**

1. A probe washing vessel for washing inside and outside portions of probes that suck in and dispense at least one of blood plasma, blood cells and blood serum, the probe washing vessel comprising:

a washing reservoir for storing a washing water;

a washing chamber in said washing reservoir for receiving a probe therein and for washing an outside portion of said probe, said washing chamber being elongated in a vertical direction thereof;

a bypass flow path for preventing said washing water from splashing, when said probe is positioned at a first position that is vertical above said washing chamber and when said vessel is viewed in a vertical position thereof, and wherein an additional washing water flows through and washes an inner wall of said probe, said additional washing water colliding with a surface of a quantity of said washing water that is already within said washing chamber;



a washing water exhaust aperture in said washing reservoir, for exhausting an overflow of washing water from said washing reservoir;

a washing water inlet port for supplying said washing water into said washing chamber and for washing said outside portion of said probe, said washing water inlet port being formed in a lower end portion of said washing reservoir, and said washing water inlet port being in fluid communication with said washing chamber;

a first washing water exhaust outlet port at a lower end portion of said washing chamber; and

a second washing water exhaust outlet port at a lower end portion of said washing reservoir, said second washing water exhaust outlet port being in fluid communication with said washing water exhaust aperture.

5,186,195

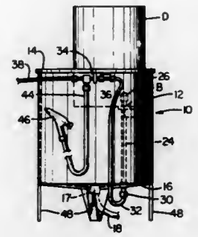
APPARATUS FOR RINSING CHEMICAL CONTAINERS

Bernard W. Wall, 37622 Highway 59, Yuma, Colo. 80759

Filed Jun. 13, 1991, Ser. No. 714,576

Int. Cl.[5] B08B *9/12*

U.S. Cl. 134—170 **13 Claims**



1. A power rinsing system for large drums comprising:

a vat having an upper open end of a size greater than the diameter of the drum to be rinsed and a lower end including a drain opening therein;

a rinse pipe disposed in said vat for upward extend in off-center relation to a vertical axis of said vat, and a nozzle at an upper end of said pipe; and

rinsing fluid supply means connected to said rinsing pipe for supplying fluid under pressure through said pipe, and drum support means mounted in off-center relation to said vat for supporting said drum in inverted relation within said vat with said rinsing pipe extending upwardly through an opening in said drum and said drum extending upwardly through the upper open end of said vat, said drum support means including at least one arm member extending horizontally between an interior surface portion of said vat and one side of said pipe nearest said interior surface portion.

5,186,196

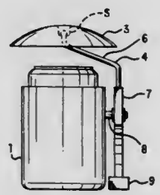
BEVERAGE SHADER

Karl Gorka, 910 Highmeyer Rd., Harborcreek, Pa. 16421, and Curt J. Smith, 56 East Dr., Erie, Pa. 16511

Filed Jun. 13, 1991, Ser. No. 714,636

Int. Cl.[5] A45B *3/00*

U.S. Cl. 135—16 **2 Claims**



1. A beverage shader comprising a holder for receiving an upright open top beverage container,

an umbrella spaced above and extending over said open top,

a support for said umbrella having a pivot, said support having a lower section and an upper section offset through the space between the umbrella and the open top of said container and connected in supporting relation to said umbrella, and means for maintaining said umbrella support in an upright position while said beverage container is tilted to drinking position.

5,186,197

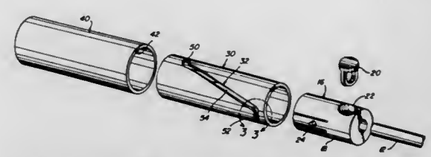
COLLAPSIBLE UMBRELLA HANDLE

Edward L. Lavine, 206 Allandale Rd., Chestnut Hill, Mass. 02167

Filed Jul. 6, 1992, Ser. No. 908,351

Int. Cl.[5] A45B *19/00*

U.S. Cl. 135—25.4 **11 Claims**



1. A telescopic handle construction for an umbrella having a shaft supporting a collapsible fabric supporting frame at one end of the shaft, comprising:

a shaft adapter secured to the other end of the shaft;

an elongated handle coaxial with said shaft adapter;

a sleeve intermediate said shaft adapter and handle with said

VOL
1147
ISS
3
FE
16
1993
UMI

shaft adapter and handle arranged to be moved longitudinally with respect to one another; and

means in part formed for locking said handle and said shaft adapter in at least two longitudinally related positions.

5,186,198

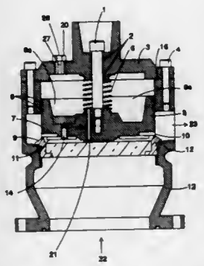
INTAKE MANIFOLD RELIEF VALVE

Paul G. Kennedy, Horseheads, N.Y., assignor to Penn Troy Maching Company, Inc., Troy, Pa.

Filed Dec. 12, 1991, Ser. No. 806,108

Int. Cl.[5] F16K *17/04*

U.S. Cl. 137—14 **11 Claims**



6. A method of relieving an excess gas pressure wave within a system resulting from an explosive occurrence where the high pressure transient within a gas relief valve determines whether said valve is open or closed comprising the following steps:

(a) placing the inlet of a normally closed gas relief valve in a position to sample the gas pressure in a system where a gas explosion might occur;

(b) controlling the gas relief valve so it will not open when the rate of gas pressure change within the system occurs slowly enough to equalize gas pressure between the inlet and an enclosed chamber by the use of an orifice of selected size connected therebetween

(c) controlling the gas relief valve so that it will be driven to an open position allowing gas to flow from the inlet through and out of the valve when an explosion occurs in the system creating a high pressure transient, and to remain in an open position only so long as it takes for the pressure transient to be passed out of the system and the pressure in the inlet and the enclosed chamber is equalized through the orifice of selected size.

5,186,199

CONDUIT STOPPER

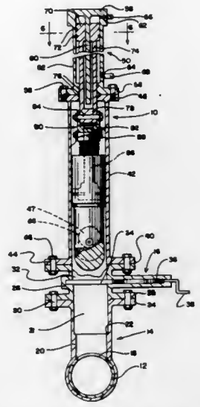
Kevin P. Murphy, 4 Carlisle Dr., Oak Brook, and Garland Y. Smith, 605 Lakeside Dr., Hinsdale, both of Ill. 60521

Filed Nov. 8, 1991, Ser. No. 790,655

Int. Cl.[5] F16K *43/00*; F16L *55/132*

U.S. Cl. 137—15 **12 Claims**

10. A method for interrupting the flow of fluid through an elongated conduit including the steps of; attaching a nozzle to the exterior of the conduit, cutting into the conduit and aperture communicating with the nozzle, inserting a deformable sealing element having opposed substantially flat sides into the conduit through the aperture, positioning a carrier connected to the sealing element into the nozzle, providing an engagement means on an interior portion of the nozzle, applying an actuating force to the carrier to hold serially the carrier in sealing connection with the nozzle, limiting the force applied to the carrier for holding the carrier in sealing connection with the nozzle after the seal engages the engagement means and then applying a force to the sealing element to deform the sealing element into entire sealing engagement with the interior of the conduit to interrupt the flow of fluid through the conduit when the seal engages the engagement means.



5,186,200

RESERVIOR ARRANGEMENT FOR USE IN AUTOMOTIVE FUEL TANK

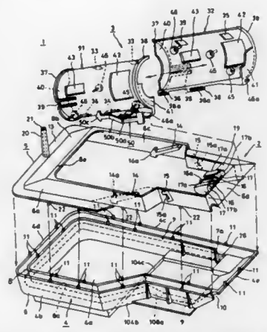
Shigeru Kimura; Atsushi Takahashi; Masaharu Shibao, and Kazuyuki Tomioka, all of Yokohama, Japan, assignors to Nifco, Inc., Yokohama, Japan

Filed Aug. 2, 1991, Ser. No. 739,156

Claims priority, application Japan, Aug. 3, 1990, 2-206045

Int. Cl.[5] F16L *55/18*

U.S. Cl. 137—15 **6 Claims**



1. A method of manufacturing a rotary tank for the interior of a vehicle fuel tank, the rotary tank including a fuel storage space, a fuel guide passage for delivering fuel into said space and a fuel discharge means for discharging fuel from said space into the fuel tank, the method comprising providing a first tank half and a second tank half and connecting the tank halves together along contact surfaces of the respective tank halves to form the rotary tank wherein the method includes the steps of providing the contact surface of at least one of the tank halves with welding projection means, heating and melting said projection means by a heating-panel positioned between the tank halves and welding the contact surfaces together by means of the melted projection means.

5,186,201

CHECK VALVES

William E. Warren, Potters Bar, England, assignor to British Technology Group Limited, London, England

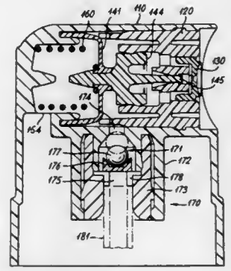
PCT No. PCT/GB90/01370, § 371 Date Apr. 30, 1991, § 102(e) Date Apr. 30, 1991, PCT Pub. No. WO91/03408, PCT Pub. Date Mar. 21, 1991

PCT Filed Sep. 5, 1990, Ser. No. 678,987

Claims priority, application United Kingdom, Sep. 8, 1989, 8920365

Int. Cl.[5] B65D *83/56*

U.S. Cl. 137—38 **6 Claims**



1. A check valve for the discharge passageway of an aerosol dispensing package, comprising:

a housing defining therein chamber having inlet and outlet openings for in-line connection in said passageway;

a dished seat extending centrally partway across said chamber between said openings with its dished surface facing towards said outlet opening; and

a ball housed in said chamber for free movement between substantial sealing engagement with said outlet opening and direct engagement in said seat;

said ball being gravitationally engaged in said seat when said chamber is in a generally upright position with said outlet opening uppermost, said seat having transverse dimensions at least similar to those of said ball to shield the said ball and acting to deflect discharge flow through said chamber around said ball when engaged in said seat, and said dished surface being outwardly divergently shaped in uniform manner therearound to cause said ball to roll therefrom under gravity and move to said sealing engagement when said chamber is inclined from said upright position by a substantially predetermined angle towards a horizontal disposition.

5,186,202

TRIGGER MEANS FOR SELF-CLOSING BREAKAWAY VALVE ASSEMBLIES

Daniel T. Meisenheimer, Jr., 404 Longmeadow Rd., Orange, Conn. 06477

Filed Jun. 28, 1989, Ser. No. 373,178

The portion of the term of this patent subsequent to Mar. 16, 2008, has been disclaimed.

Int. Cl.[5] F16L *29/00*

U.S. Cl. 137—68.1 **17 Claims**

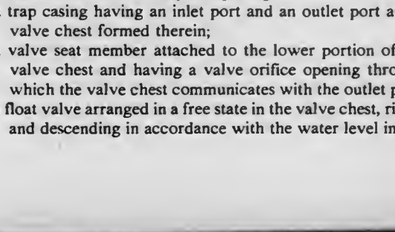
1. An improvement in self-closing breakaway valve assemblies of the type comprising:

(A) a first valve housing having a first rotatable valve member rotatably mounted therein, said first valve housing and first rotatable valve member each having a bore formed therethrough, said bores being aligned when said first rotatable valve member is in an open position to provide a passage through said first valve housing, and said first rotatable valve member spring biased to rotate to a closed position wherein the bores of said first rotatable valve member and said first valve housing are misaligned to block the passage through said first valve housing;

(B) a second valve housing having a second rotatable valve member rotatably mounted therein, said second valve housing and second rotatable valve member each having a bore formed therethrough, said bores being aligned when said second rotatable valve member is in an open position to provide a passage through said second valve housing, and said second rotatable valve member spring biased to rotate to a closed position wherein the bores of said second rotatable valve member and said second valve housing are misaligned to block the passage through said second valve housing;

(C) frangible means connecting said first valve housing and second housing with the bores formed therethrough in alignment,

wherein the improvement comprises trigger means holding the first rotatable valve member in its open position and releasing the first rotatable valve member upon separation of the first valve housing and second housing to permit the first rotatable valve member to rotate to its closed position, the trigger means comprising:



(1) a first spider member spanning the bore of the first rotatable valve member, the first spider member being curved to generally conform to and lie along the envelope of curvature of the first rotatable valve member, and having a centrally located, truncated trigger base;

(2) a trigger knob extending outwardly from the trigger base and terminating at a distal end recessed from the envelope of curvature of the first rotatable valve member; and

(3) a second spider member spanning the bore of the second rotatable valve member, the second spider member being curved to generally conform to and lie along the envelope of curvature of the second rotatable valve member, the second spider member defining a socket for receiving in releaseable interengagement the trigger knob of the first spider member;

wherein separation of the first and second housings upon fracture of the frangible connecting means releases the engagement between the first and second spider members and permits the first rotatable valve member to rotate to its closed position.

5,186,203

FREE FLOAT STEAM TRAP

Tadashi Oike, Kakogawa, Japan, assignor to TLV Co., Ltd., Kakogawa, Japan

Filed Oct. 15, 1991, Ser. No. 775,403

Claims priority, application Japan, Oct. 15, 1990, 2-276705; Oct. 15, 1990, 2-276710

Int. Cl.[5] F16T *1/20*

U.S. Cl. 137—192 **4 Claims**

1. A free float stream trap comprising:

a trap casing having an inlet port and an outlet port and a valve chest formed therein;

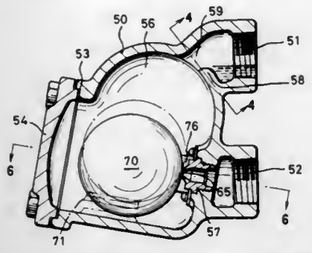
a valve seat member attached to the lower portion of the valve chest and having a valve orifice opening through which the valve chest communicates with the outlet port;

a float valve arranged in a free state in the valve chest, rising and descending in accordance with the water level in the

VOL 1147 ISS 3 FEB 16 1993 UMI

valve chest to directly open and close the valve orifice; and

a means for dispersing and passing condensate flow downward having an upwardly directed end wall spaced from



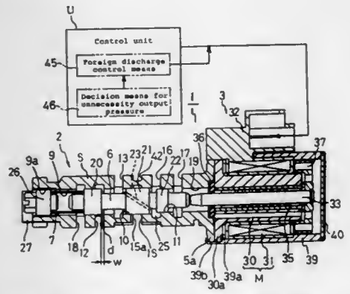
an upper inner surface of the trap casing to form a reservoir, wherein the dispersing means is an overall width dam located substantially above the valve orifice provided in a fluid inlet through which the inlet port communicates with the valve chest.

5,186,204

LINEAR SOLENOID VALVE APPARATUS

Takeya Oka, Nagoya; Masao Saito, Nishio; Nobuaki Miki, Kariya; Kazunori Ishikawa, Toyota; Kunihiro Iwatsuki, Toyota; Hideaki Otsubo, Toyota; Yasuo Hojo, Nagoya, and Norimi Asahara, Aichi, all of Japan, assignors to Aisin AW Co., Ltd. and Toyota Jidosha Kabushiki Kaisha, both of, Japan

Filed Nov. 5, 1991, Ser. No. 786,816
Claims priority, application Japan, Nov. 5, 1990, 2-300359
Int. Cl.[5] F15B *13/044*
U.S. Cl. 137—238 **4 Claims**



1. A linear solenoid valve apparatus comprising:

an overlapped type linear solenoid valve including:

a valve sleeve having:

a supply port;

an output port;

an exhaust port, said exhaust port normally opening only to a limited extent whereby any foreign matter in oil flowing to the exhaust port is trapped within the valve; and

a feedback chamber;

a spool slidably mounted in the valve sleeve;

a spring biasing the spool in one direction; and

an electromagnet for moving said spool; and

control means for supplying a first electric signal to the electromagnet, said control means including deciding means for deciding when an output pressure from the solenoid valve is not necessary; and

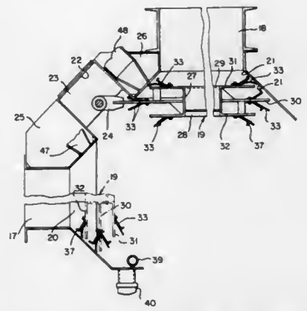
foreign matter discharging control means for sending a second electric signal, different from said first electric signal, to said electromagnet, said electromagnet being responsive to said second signal by moving said spool to open said exhaust port widely, beyond said limited extent, to allow discharge of the trapped foreign matter.

5,186,205

VALVES FOR USE IN CONTROLLING THE FLOW OF A GAS STREAM THROUGH DUCTS OF LARGE CROSS SECTIONAL AREAS

Lothar Bachmann, Auburn, Me., assignor to Bachmann Industries, Inc., Lewiston, Me.

Filed Apr. 29, 1991, Ser. No. 693,146
Int. Cl.[5] F16K *1/16*
U.S. Cl. 137—242 **12 Claims**



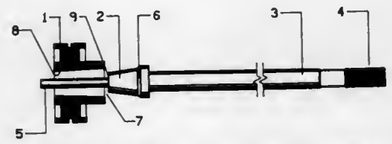
1. A valve for use in the control of a gas stream through a body having at least one port through which gas flow is to be permitted or prevented, a blade within the body, reversible means connected to the blade and to the body and operable to swing the blade between an operative position proximate to the port and a second position remote with respect thereto, said blade and port provided with a surrounding marginal sealing means interengageable when the blade is in said operative position then to effect the sealing of the port, one of said marginal sealing means having inwardly inclined surfaces and the other of said sealing means provided with first and second surrounding and resiliently flexible and spaced apart metallic seals which are in engagement with spaced apart, transverse zones of the inwardly inclined surfaces in said operative position, the first seal protruding beyond the edges of the second seal, the zone engaged by the second seal of a cross sectional area less than that engaged by the first seal, both seals in substantially linear contact with their respective zones in said operative position and in scraping engagement with the surfaces as the blade moves into and out of said position.

5,186,206

CONTROL VALVE TRIM

M. Dale Mayes, Baton Rouge, La., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 22, 1991, Ser. No. 796,491
Int. Cl.[5] F16K *1/38*
U.S. Cl. 137—244 **5 Claims**



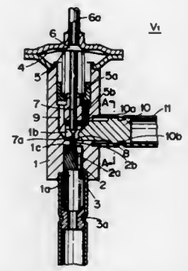
1. In a control valve assembly of the type comprising a valve body with an inlet end, an outlet end, and a passageway therebetween, and a valve trim which comprises a valve stem and a valve seat positioned axially in said passageway wherein said valve stem has a plug seat and a tapered plug section downstream of said plug seat and said plug seat engages said valve seat forming a fluid tight seal in a closed position, the improvement comprising said valve stem having a stepped portion positioned alongside said tapered plug section such that a sudden enlargement for flow through said passageway occurs as said valve stem moves to an open position and as said stepped portion clears said valve seat to allow said valve assembly to be self-cleaning.

5,186,207

SMALL-CAPACITY EXPANSION VALVE

Morio Kaneko, and Kazushige Tajima, both of Saitama, Japan, assignors to Kabushiki Kaisha Saginomiya Seisakusho, Tokyo, Japan

Filed Dec. 5, 1991, Ser. No. 800,553
Claims priority, application Japan, Aug. 9, 1991, 3-200458
Int. Cl.[5] F16K *31/126*
U.S. Cl. 137—495 **6 Claims**



1. A small-capacity expansion valve for use in a small refrigerating system such as a home refrigerator or automatic vending machine, comprising:

a primary chamber and a secondary chamber formed in a valve body;

a separating wall in the valve body between the primary and secondary chambers, with a valve seat provided therein;

a valve disc installed in the valve body to be slidably driven toward or away from the valve seat to cooperate with it to regulate a flow in the valve;

a pressure-activated diaphragm for operating the valve disc;

an operating spring for setting an operating pressure of the diaphragm;

a spring retainer movably installed in the valve body for holding the operating spring between it and the pressure-activated diaphragm; and

an operating pressure setting member for moving the spring retainer against the force of the operating spring, said operating pressure setting member being provided at a peripheral surface with a recess and being fixed at a selected setting position in a coolant flow pipe connected to the valve body by crimping of the flow pipe into engagement with said recess.

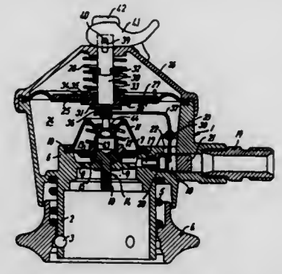
5,186,208

TWO-STEP REDUCTION VALVE ESPECIALLY FOR GAS CYLINDERS

Frits P. U. Hansen, Rungsted Kyst, Denmark, assignor to Kosan Teknova A/S, Niva, Denmark

Filed Jul. 2, 1991, Ser. No. 724,819
Claims priority, application Denmark, Jul. 3, 1990, 1595/90
Int. Cl.[5] F16K *31/12*
U.S. Cl. 137—505.12 **9 Claims**

1. A two-stage reduction valve for gaseous fluids comprising a high pressure assembly with a high-pressure diaphragm acting on a valve member preferably disposed in the throat of a gas cylinder, and a low-pressure assembly consisting of a valve member likewise diaphragm-operated and which is positioned in a gas duct extending from the high-pressure assembly, said diaphragm being exposed to the pressure in the duct downstream of the valve seat of the low-pressure valve, and in which a reduction valve closing rod connected with an operating handle is restrictedly displaceably connected with a diaphragm spindle firmly connected with the high-pressure diaphragm, which diaphragm spindle in the opening position with its lower end actuates the valve member accommodated in the cylinder throat, and at its upper end has a substantially cylindrical bore displaceably receiving the lower end of the closing rod so that the high-pressure valve in one position of the operating handle and thus of the closing rod is forcibly kept closed independent of the high-pressure diaphram, while in another position of the operating handle the high-pressure valve may be moved by the high-pressure diaphragm, the closing rod being firmly connected with the valve control mechanism of the low-pressure assembly and being further so connected with



the low-pressure valve member that said member is urged into the closing position when the closing rod is in the closing position, the upward facing mouth of said bore in the diaphragm spindle having over a part of its circumference a reduced diameter and the closing rod at its lower end having a head which in one direction has a width larger than said reduced diameter, and perpendicular to said direction has a smaller extent than the diameter of said mouth, and wherein the upward facing mouth is circular and has a reduced diameter, and the head of the closing rod has the shape of a hexagonal body in which a diagonal extends perpendicular to the axis of the closing rod and has a length larger than the diameter of the mouth of the bore while the shortest linear distance between two opposite sides that are not parallel to said diagonal is smaller than said diameter of the mouth such that said head may be inserted into the bore through the mouth of the bore when the closing rod is inclined in relation to the axis of the diaphragm spindle, but when in inserted position and with the closing rod coaxial with the bore it is prevented from being pulled out therefrom.

5,186,209

ACCURATE HIGH-FLOW CLEAN REGULATOR WITH INPUT-PRESSURE BALANCING

Paul G. McManigal, 16 Inverness La., Newport Beach, Calif. 92660, and Philip A. Vaughan, 1540 S. Bellwood Rd., San Marino, Calif. 91108

Continuation-in-part of Ser. No. 621,754, Dec. 4, 1990, Pat. No. 5,065,788. This application Nov. 12, 1991, Ser. No. 789,862
The portion of the term of this patent subsequent to Nov. 19, 2008, has been disclaimed.
Int. Cl.[5] G05D *16/06*
U.S. Cl. 137—505.18 **23 Claims**

1. In a high pressure gas regulator, the combination comprising

a) an axially movable poppet and an orifice controlled by the

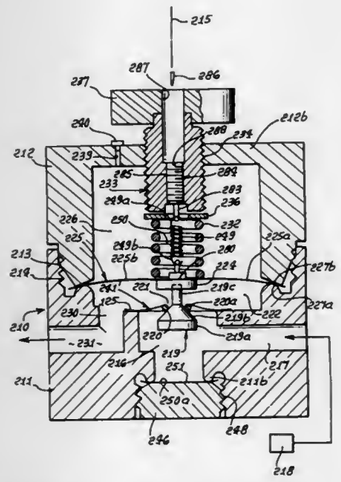
VOL 1147 ISS 3 FEB 16 1993 UMI

poppet in response to poppet axial movement, the orifice having upstream and downstream sides,

b) a metallic main diaphragm responsive to gas pressure at the downstream side of the orifice having operative connection with the poppet to extend openly proximate the orifice and to control poppet movement toward or away from the orifice in response to an increase or decrease in pressure at the downstream side of the orifice, respectively, the poppet and orifice defining interengageable annular surfaces,

c) a range spring operatively connected with the main diaphragm to yieldably urge the main diaphragm toward the orifice, and including an adjustment means operatively connected with the range spring to adjust the tension thereof,

d) auxiliary pressure responsive means comprising an auxiliary pressure responsive unit defining a pressure sensitive member at the upstream side of the orifice to control the relative motion of the poppet and orifice toward or away from each other in response to a decrease or increase in pressure at the upstream side of the orifice, respectively,



and said auxiliary pressure responsive means controlling at least one of the following:

i) the movement of the orifice toward or away from the poppet,

ii) the movement of the poppet toward or away from the orifice, and operatively connected with said poppet is a spring means to yieldably urge the said poppet toward the said orifice and said spring being incorporated into the regulator by at least one of the following: the said main diaphragm, the said auxiliary pressure response means, and a poppet spring outside the gas flow,

e) and, housing means enclosing said poppet, orifice, main diaphragm, and auxiliary pressure responsive means, said housing means having a gas pressure inlet and a gas pressure outlet, said inlet communicating with the upstream side of the orifice, and said outlet communicating with the downstream side of the orifice,

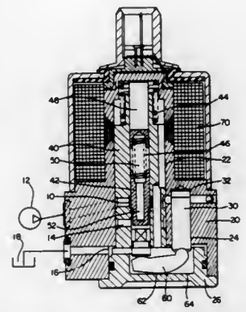
f) said auxiliary pressure responsive unit being free of any O-ring sliding engagement with said housing means, and said auxiliary pressure responsive unit having a side facing away from said orifice with said side remaining out of communication with said orifice.

5,186,210

FLUID PRESSURE REGULATING VALVE

Esteve C. Guasch, Mataro Barcelona, Spain, assignor to Bendix Espana S.A., Barcelona, Spain

Filed Oct. 15, 1991, Ser. No. 775,867
Claims priority, application Spain, Nov. 19, 1990, 9002919
Int. Cl.[5] F15B *13/044*
U.S. Cl. 137—596.17 **9 Claims**



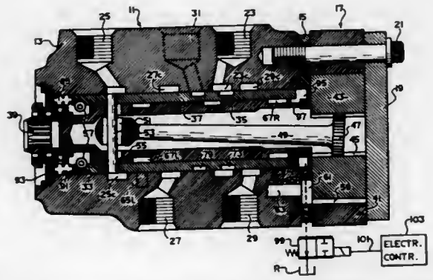
1. A fluid pressure regulating valve having an inlet connected to a pressurized fluid source and an application outlet, and comprising a reference piston one face of which is biased by a reference force, and a regulating piston upon one face of which is applied the fluid pressure at the application outlet, said regulating piston acting as a slide valve between said inlet, said application outlet, and a low pressure fluid reservoir, other faces of said pistons each biasing a respective end of a lever the fulcrum of which is movable between said ends according to the biasing force generated by each of said pistons.

5,186,211

FLUID CONTROLLED HAVING VARIABLE ANCILLARY CONTROL FUNCTIONS

Dwight B. Stephenson, Savage; Keith R. Carlson, Victoria, and Kenneth G. Rasmussen, Maple Grove, all of Minn., assignors to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 703,318, May 20, 1991, Pat. No. 5,115,640. This application May 1, 1992, Ser. No. 877,001
Int. Cl.[5] F15B *13/02*
U.S. Cl. 137—625.24 **16 Claims**



1. A hydrostatic power steering device operable to control the flow of fluid from a source of pressurized fluid, said device being of the type including housing means defining an inlet port for connection to the source of fluid, and a return port; valve means disposed in said housing means and comprising a primary, rotatable valve member and a cooperating, relatively rotatable follow-up valve member, said primary and follow-up valve members defining a neutral rotary position and a rotary

operating position in which said primary valve member is rotatably displaced from said neutral rotary position, relative to said follow-up valve member; said housing means and said valve means cooperating to define a main fluid path communicating between said inlet port and said return port when said valve members are in said valve members are in said rotary operating position; fluid actuated means for imparting follow-up movement to said follow-up valve member in response to the flow of fluid through said fluid actuated means, said fluid actuated means being disposed in series flow relationship in said main fluid path between said inlet port and said return port; said follow-up valve member defining a first axial position; said primary valve member defining fluid passage means said follow-up valve member defining fluid port means, said fluid passage means and said fluid port means being disposed to define a variable flow control orifice having a first area versus deflection relationship as said primary and follow-up valve members are displaced between said neutral rotary position and said rotary operating position, when said follow-up valve member is in said first axial position; characterized by:

(a) means operable, to bias said follow-up valve member toward said first axial position;

(b) means operable to displace said follow-up valve member from said first axial position toward a second axial position; and

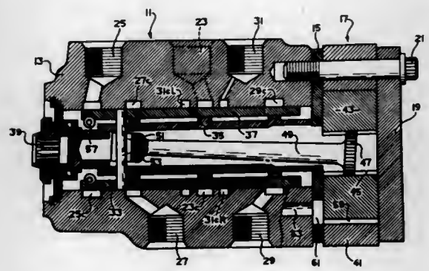
(c) one of said fluid passage means and said fluid port means being configured such that said variable flow control orifice has a second area versus deflection relationship as said primary and follow-up valve members are displaced between said neutral rotary position and said rotary operating position, when said follow-up valve member is in said second axial position .

5,186,212

FLUID CONTROLLER HAVING AXIAL MODULATION

Dwight B. Stephenson, Savage, and Don R. Draper, Chanhassen, both of Minn., assignors to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 602,829, Oct. 24, 1990, Pat. No. 5,080,135. This application Jan. 13, 1992, Ser. No. 819,715
Int. Cl.[5] F15B *13/02*
U.S. Cl. 137—625.24 **20 Claims**



1. A controller operable to control the flow of fluid from a source of pressurized fluid to a fluid pressure operated device; said controller being of the type including housing means defining an inlet port for connection to the source of pressurized fluid, a return port for connection to a reservoir, and first and second control fluid ports for connection to the fluid pressure operated device; valve means disposed in said housing means, and comprising a primary, rotatable valve member and a cooperating, relatively rotatable, follow-up valve member, said primary and follow-up valve members defining a neutral position, and a first operating position in which said primary valve member is rotatably displaced from said neutral position, relative to said follow-up valve member in a first direction; said primary valve member defining first and second fluid passages, and said follow-up valve member defining first and second fluid ports in continuous fluid communication with said inlet port, and said first control fluid port, respectively; said first and second fluid ports being blocked from fluid communication with said first and second fluid passages, respectively, when said valve members are in said neutral position, and said first and second fluid ports being in fluid communication with said first and second fluid passages, respectively, when said valve members are in said first operating position; said housing means and said valve members cooperating to define a first main fluid path providing fluid communication from said inlet port to said first control fluid port, and from said second control fluid port to said return port, when said valve members are in said first operating position; characterized by:

(a) means operable, in response to relative rotational displacement of said primary and follow-up valve members, to move said follow-up valve member in a first axial direction to said first operating position;

(b) said first and second fluid ports cooperating with said first and second fluid passages, respectively, to define first and second variable axial flow control orifices, respectively, when said follow-up valve member is axially displaced to said first operating position; and

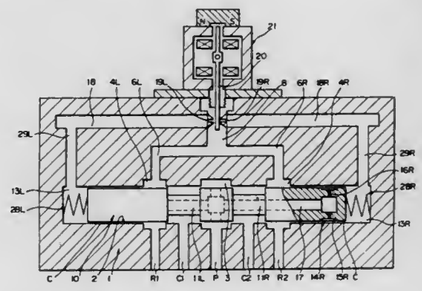
(c) said first main fluid path including said first and second variable axial flow control orifices.

5,186,213

HYDRAULIC SERVO-VALVE

Eizo Urata, 18-18, Ogawa 2-chome, Machida-shi, Tokyo, Japan, and Shinpei Miyakawa, Kanagawa, Japan, assignors to Ebara Research Co. Ltd., Kanagawa and Eizo Urata, Tokyo, both of, Japan

PCT No. PCT/JP88/01221, § 371 Date Jun. 10, 1991, § 102(e) Date Jun. 10, 1991, PCT Pub. No. WO89/05407, PCT Pub. Date Jun. 15, 1989
PCT Filed Dec. 2, 1988, Ser. No. 476,443
Claims priority, application Japan, Dec. 2, 1987, 62-303278; Dec. 2, 1987, 62-303279; Dec. 2, 1987, 62-303280
Int. Cl.[5] F15B *13/043*
U.S. Cl. 137—625.61 **7 Claims**



1. A hydraulic servo-valve comprising:

a spool adapted to slidably move in a valve body to change a direction of flowing of a working liquid and vary a flow rate of said working liquid;

nozzle back-pressure chambers to which a pilot pressure is applied to displace said spool;

a flapper mechanism including a nozzle and a flapper;

static pressure bearings formed at opposite ends of said spool, each of said static pressure bearings including a plurality of orifices and a pocket; and

a passage is formed inside said spool and connected to said static pressure bearings and to a pump port so as to allow the working liquid to flow from said pump port through said orifices and pocket of said static pressure bearing to said nozzle back-pressure chamber.

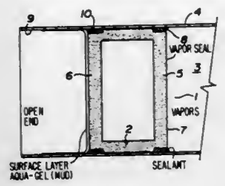
VOL 1147 ISS 3 FE 16 1993 UMI

5,186,214

TEMPORARY DISINTEGRATABLE PLUG FOR AN OPEN-ENDED OIL PIPELINE

Donald D. Savard, Edmonton, Canada, assignor to Interprovincial Pipe Line Company, Edmonton, Canada

Filed Jul. 9, 1990, Ser. No. 549,850
Int. Cl.[5] F16L *55/04*
U.S. Cl. 138—89 **2 Claims**



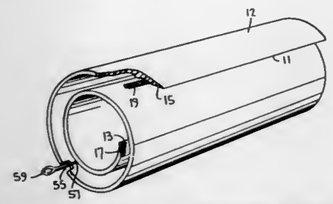
1. In combination:
an open-ended steel pipeline having an inner surface forming a bore containing hydrocarbon vapours;
a cylindrical plug sealing the bore of the pipeline, said plug being formed of fibrous material held together with oil-soluble binder and comprising a main body having a close fit with the inner surface of the pipeline, said pug having a reduced diameter inner end portion which is gas impermeable, said plug being disintegratable when pumped and contacted with liquid hydrocarbon; and
a bank of gas-impermeable oil-soluble sealant adhering to the pipeline inner surface and sealing between the reduced diameter portion of the plug and the inner surface of the pipeline.

5,186,215

APPARATUS FOR REPAIRING PIPELINES

Frank W. Gilleland, Orlando, Fla., assignor to Cues, Inc., Orlando, Fla.

Division of Ser. No. 387,818, Aug. 1, 1989, Pat. No. 5,042,532. This application Aug. 7, 1991, Ser. No. 741,727
Int. Cl.[5] F16L *9/16*
U.S. Cl. 138—98 **16 Claims**



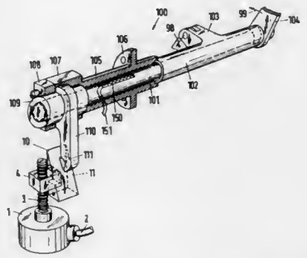
1. Apparatus for use inside a pipeline having a known inside circumference and diameter in order to repair the pipeline wall and seal leaks therein, said apparatus comprising:
a gasket sleeve of sticky stretchable material having a gummy consistency that sticks to the pipeline wall, said gasket sleeve having opposite longitudinally-spaced ends and a circumferentially continuous intermediate section, said gasket sleeve having an outer circumference and diameter smaller than said known inside circumference and diameter of said pipeline;
radially expandable means disposed within said gasket sleeve for controllably radially expanding and circumferentially stretching said gasket sleeve while urging said gasket sleeve into abutting and sticking contact with the inside of said pipeline;
wherein said radially expandable means comprises a tube having an interior surface, an exterior surface and a longitudinal slit extending the entire tube length to define first and second longitudinally-extending separate edges, said tube being constrainable in a partially rolled-up condition about a longitudinal axis such that the outside diameter of the tube is substantially smaller than the diameter of said sleeve when unstressed, and such that said first edge is rolled inwardly of said second edge, said tube being prestressed to assume an unrolled condition when radially unconstrained, said tube in said unrolled condition having an outside circumference and diameter at least as large as said known circumference and diameter of said pipeline; and
selectively removable constraining means for radially constraining said tube in said rolled-up condition;
wherein said selectively removable constraining means comprises a constraining sleeve of filmy material surrounding the rolled up tube between said tube and said gasket sleeve in order to constrain said sleeve in a rolled-up condition in the absence of forces applied interiorly of said tube to radially expand said tube, said constraining sleeve being sufficiently structurally weak to rupture in response to radial expansion of said tube due to said interiorly applied forces, wherein said filmy material has a much lower coefficient of friction than said gasket sleeve to thereby minimize frictional opposition to unrolling said tube.

5,186,216

TORSION ROD TYPE PICKING MECHANISM FOR A PROJECTILE LOOM

Mauritius Bollier, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Oct. 3, 1991, Ser. No. 770,644
Claims priority, application Switzerland, Nov. 2, 1990, 03479/90
Int. Cl.[5] D03D *47/24, 49/26*
U.S. Cl. 139—145 **14 Claims**



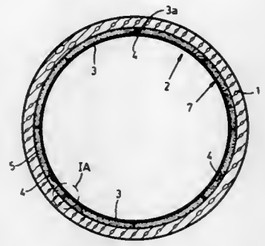
1. A picking mechanism for a projectile loom comprising
a torsion rod having a longitudinal axis;
an adjusting lever secured to said rod for rotating said rod about said axis relative to a zero position of said rod; and
an adjusting mechanism for pivoting said lever about said axis to vary said zero position of said rod, said mechanism including a rigid intermediate member disposed between said adjusting lever and a stationary surface and a drive for moving said member relative to said lever to effect a corresponding pivotal movement of said adjusting lever while transferring a force from said lever onto said stationary surface.

5,186,217

FLUID-IMPERVIOUS STRUCTURE AND METHOD OF MAKING SAME

Dietmar Kallinich, Gelsenkirchen; Wolfgand Kahlert, Castrop-Rauxel; Heinz Wind, Kronberg, and Friedrich Lehmann, Dormagen, all of Fed. Rep. of Germany, assignors to Flachglas Consult GmbH, Gelsenkirchen and Philipp Holzmann AG, Frankfurt, both of, Fed. Rep. of Germany

Filed Oct. 19, 1990, Ser. No. 600,776
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1989, 3935172; Mar. 29, 1990, 4010129
Int. Cl.[5] F16L *9/14*
U.S. Cl. 138—149 **16 Claims**



1. A pipe assembly, comprising:
a tubular concrete support forming a cylindrical wall;
a plurality of glass shell segments having juxta posed edges and lining said wall, said edges forming axially extending and circumferentially extending gaps having intersections at crossings of said gaps;
means for joining said glass shell segments along said edges into a statically unitary shell forming a space with said wall and including axially extending sealing strips filling said axially extending gaps and braced between the edges defining same, circumferential arc segmental sealing strips braced between the edges defining said circumferentially extending gaps, and sealing bodies filling said intersections and sealingly engaging said strips; and
compensating means including a backfilling mass filling said space between said shell and said wall and interposed between said strips and said wall for supporting said shell on said wall with limited relative freedom of movement of said shell and said support while exerting annular compressive force on said shell and said axially extending strips whereby an arch is formed by said segments and said axially extending strips.

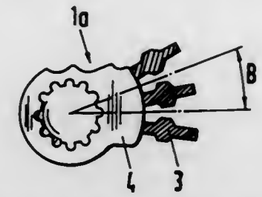
5,186,218

GRIPPER CHANGER FOR PROJECTILE LOOMS

Peter Riesen, Elgg, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Mar. 17, 1992, Ser. No. 852,606
Claims priority, application Switzerland, May 23, 1991, 01529/91
Int. Cl.[5] D03D *47/24;* D03J *5/06*
U.S. Cl. 139—438 **9 Claims**

1. A weft yarn changer system on a projectile loom, the system comprising a changer member (1) pivotable about a pivot axis and mounting at least two yarn transfer elements (2) each defining a slide rod (2*a*) slidably movable on the changer and a yarn gripper (21), the slide rod (2*a*) being made of plastics and having a cross-section which is longer in a radial direction relative to the pivot axis than in a direction transverse thereto, the slide rod including a duct (24) which is orientated



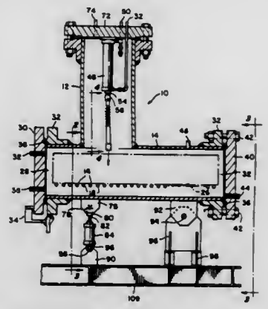
in a sliding direction of the slide rod and which forms a guide for the yarn in the form of a cavity.

5,186,219

CYLINDER RUPTURE VESSEL

Jeffrey W. Gold, Atlanta, Ga., and Dan A. Nickens, Orlando, Fla., assignors to Earth Resources Consultants, Inc., Ocoee, Fla.

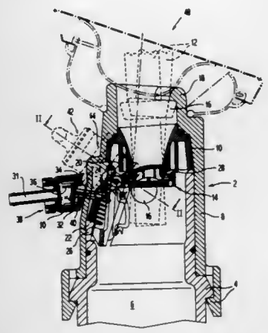
Continuation of Ser. No. 489,234, Mar. 6, 1990, abandoned, which is a continuation of Ser. No. 57,083, Jun. 3, 1987, Pat. No. 4,944,333, which is a continuation-in-part of Ser. No. 669,537, Nov. 8, 1984, Pat. No. 4,690,180. This application Feb. 20, 1992, Ser. No. 873,481
Int. Cl.[5] B65B *31/00;* B67B *7/24*
U.S. Cl. 141—51 **14 Claims**



1. A cylinder rupture vessel comprising:
an enclosed chamber;
a target container disposed within the enclosed chamber;
a plurality of V-shaped bearing surfaces disposed along an elongate length of the chamber for supporting the target container;
means for sealing the chamber;
inlet means for introducing an inert gas into the chamber to purge the air from the chamber;
puncture means disposed within the chamber for puncturing at least one wall of the target container;
outlet means for purging the air, including the inert gas, from the chamber; and
means for evacuating the released contents of the punctured target container.

VOL 1147 ISS 3 FE 16 1993 UMI

5,186,220
FILLING NIPPLE FOR A FUEL TANK
Konrad Scharrer, Hildren, Fed. Rep. of Germany, assignor to Blau KG, Langenfield, Fed. Rep. of Germany
Filed Jul. 1, 1991, Ser. No. 723,852
Claims priority, application Fed. Rep. of Germany, Jul. 4, 1990, 4021218
Int. Cl.[5] B65B *31/06*
U.S. Cl. 141—59 **8 Claims**



1. A tank filling nipple for a vehicle fuel tank including a mounting nipple connectable with a tank filling pipe, a closure flap and a sealing seat arranged inside of the mounting nipple, said closure flap being movable between a closed position at which it engages said sealing seat and an open position at which it is lifted from said sealing seat, a branch duct branching from the mounting nipple behind the sealing seat in the filling direction, an overfill valve in said branch duct operable by said adjustable closure flap, which overfill valve is closed upon opening of the closure flap, and an automatically opening overpressure valve, characterized in that,

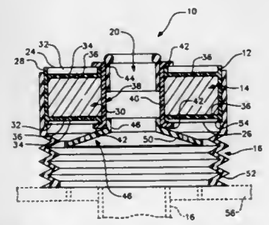
said branch duct (**31**) is connected with a dead space formed in the upper region of the fuel tank,

a second duct (**52**) is connected with the mounting nipple (**8**) behind the sealing seat (**28**) and is associated with said overpressure value (**54**),

a third duct (**72**) is connected with the mounting nipple (**8**) behind the sealing seat (**28**), and

a ventilating valve (**74**) is arranged in said third duct, said ventilating valve being open in the normal position of the vehicle and automatically closing at a given inclined position of the vehicle.

5,186,221
FUEL VAPOR FILTER
James E. Ellis, 1845 E. James, Mt. Vernon, Wash. 98273
Filed Sep. 24, 1991, Ser. No. 764,817
Int. Cl.[5] B67D *5/378*
U.S. Cl. 141—59 **8 Claims**



1. A portable filter to enable sealable mating of a fuel delivery nozzle with a fuel tank fill tube during refueling to prevent the passing of fuel vapors to the atmosphere, the filter comprising:

a housing having a central opening sized to be slidably engaged with a fuel delivery nozzle;

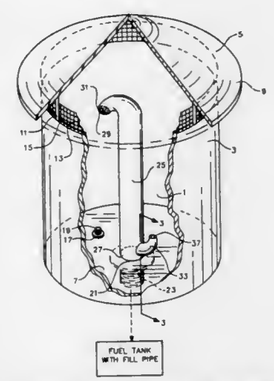
one or more vents formed in said housing to enable fluid communication between an interior of said housing and the exterior of said housing;

means for sealably engaging said housing with the open end of a fuel tank fill tube;

a filter means positioned in said housing such that as fuel is delivered to the fuel tank, displaced gas exiting through the fill tube passes through said filter means to remove entrained fuel vapor prior to venting to the atmosphere; and

means for deflecting liquid away from said filter means, said deflecting means being positioned between said filter means and said engaging means to deflect liquid fuel splashing out of the fuel tank fill tube back into the fuel tank fill tube wherein said deflecting means comprises a flange having a first end connected to said central opening and a second unconnected end projecting from said central opening to a position adjacent said engaging means.

5,186,222
FUEL SPILLAGE CONTROL APPARATUS
Randolf W. Brand, P.O. Box 80828, Fairbanks, Ak. 99708
Filed Jan. 7, 1991, Ser. No. 638,322
Int. Cl.[5] F16L *5/00;* **B65B** *3/06*
U.S. Cl. 141—86 **33 Claims**



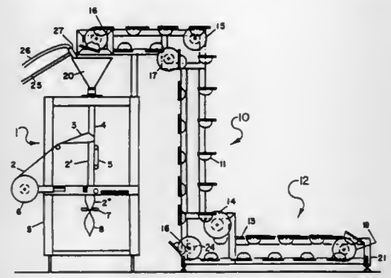
1. A liquid spillage control apparatus adapted to be connected to a liquid tank having a ventilation opening and a fill pipe, said liquid spillage control apparatus comprising:

a liquid holding chamber having a bottom;

a vent opening in said liquid holding chamber for venting vapor from said liquid holding chamber; and

a liquid spill transfer pipe for connecting said liquid holding chamber with the liquid tank ventilation opening for transfer of excess liquid from the liquid tank to said liquid holding chamber, said liquid spill transfer pipe being angled toward said bottom to direct liquid directly exiting therefrom to said bottom of said liquid holding chamber.

5,186,223
FILLING SYSTEM
Glenn E. Rummage, Simpsonville, and Philip P. Su, Greenville, both of S.C., assignors to W. R. Grace & Co.-Conn., Duncan, S.C.
Continuation of Ser. No. 614,053, Nov. 9, 1990, abandoned, which is a continuation of Ser. No. 251,156, Oct. 25, 1988, abandoned. This application Jan. 2, 1992, Ser. No. 816,775
Int. Cl.[5] B65G *17/36, 45/22;* **A23L** *1/39*
U.S. Cl. 141—91 **3 Claims**



1. A food preparation and package filling system for food products which are a mixture of as liquid and a solid phase such as soups, stews, or the like comprising:

a) receiving chute means;

b) bucket conveyor means for delivering a predetermined quantity of said mixture of a liquid and solid phase such as cooked soup, solids and stock to said receiving chute means, said mixture having less liquid or stock than its final desired mixture;

c) means for turning the buckets in said conveyor means substantially upside down to empty them into said receiving chute means;

d) nozzle means for directing and delivering a measured quantity of the liquid phase or soup stock of said mixture into the receiving chute means;

e) means for delivering a measured quantity of said liquid phase to said nozzle means whereby the liquid or stock upon being discharged from the nozzle removes solids clinging to the receiving chute and the liquid and removed solids leave the chute as part of said mixture in the final desired ratio of solids to liquid or stock; and

f) means for packaging said final mixture in containers which are filled directly from said chute.

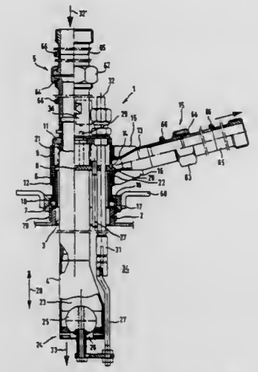
5,186,224
FILLING DEVICE
Manfred Schirmacher, Berkamen-Overberge, Fed. Rep. of Germany, assignor to Schering Aktiengesellschaft, Bergkamen, Fed. Rep. of Germany
PCT No. PCT/EP89/01120, § 371 Date Apr. 15, 1991, § 102(e) Date Apr. 15, 1991, PCT Pub. No. WO90/04566, PCT Pub. Date May 3, 1990
PCT Filed Sep. 26, 1989, Ser. No. 674,377
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1988, 3836365
Int. Cl.[5] B67D *5/32*
U.S. Cl. 141—387 **8 Claims**

1. Filling device, comprising a filling pipe (**4**) for the manual guidance and for cooperation with a pipe connector (**2**) located over a filling opening (**34**) in a tank container (**34**) for suitable receptacle; a vale (**24**) arranged in said filling pipe (**4**); a vent valve (**2**) and at least one connection for a flexible infeed conduit communicating with said filling pipe; and means for actuating said valve (**24**) and vent valve (**20**), said valve (**24**) being arranged at an outer end of the filling pipe (**4**) which is extendable through said pipe connector (**2**), said means causing said valve (**24**) and said vent valve (**2**) both to be automatically actuated in dependence upon a proper connection being formed between the filling pipe (**4**) and said pipe connector (**2**), said actuating means comprising:

(a) a first sleeve component (**6**) encompassing the filing pipe (**4**) and being open at the end thereof towards the pipe connector (**2**) and forming an attachment for the filling tube (**4**) on the pipe connector (**2**),

(b) a second sleeve component (**9**) coaxially encompassing said first sleeve component (**6**) and sealingly encompassing said filling pipe (**4**),

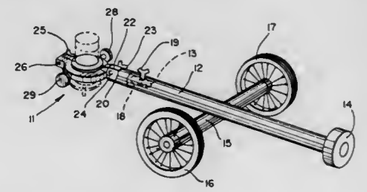
(c) said sleeve components (**6, 9**) being axially guided sealingly slidable within each other, said second sleeve component (**9**) cooperating with a coupling nut (**17**) for axially



moving the second sleeve component (**9**) relative to the first sleeve component (**6**) and for axially positioning the filling pipe (**4**) for connection thereof with the pipe connector (**2**), said coupling nut (**17**) cooperating with an external screwthread (**19**) on the pipe connector (**2**),

(d) and an axially acting spring element being arranged between the sleeve components (**6, 9**) and imparting a biasing stress therebetween for maintaining the relative position of the sleeve components, whereby indication of the presence of a proper connection between the filling pipe (**4**) and the pipe connector (**2**) is derivable from the axial positions of the sleeve components (**6, 9**) relative to each other.

5,186,225
THREE-DIMENSIONAL MATERIAL CUTTING ASSEMBLY
Peter Kenyeres, 2439 W. Grand Ave., Chicago, Ill. 60612
Filed Dec. 16, 1991, Ser. No. 808,532
Int. Cl.[5] B27C *9/02*
U.S. Cl. 144—2 N **7 Claims**



1. A cutting system having a cutting-tool holder mounted onto a chassis rod secured to an axle with wheels, the improvement comprising:

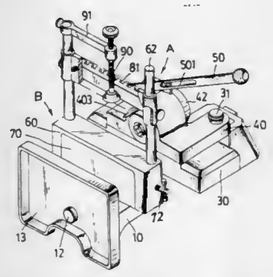
(a) a chassis rod;

(b) a tool holder;

VOL 1147 ISS 3 FEB 16 1993 UMI

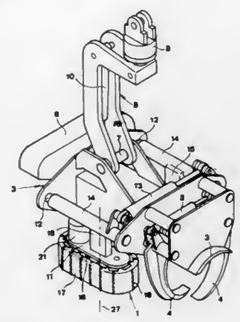
(c) a means to mount rotably and pivotably said tool holder to one end of said chassis rod;
(d) a horizontal axle secured perpendicularly under said chassis rod;
(e) two wheels independently mounted onto said axle;
(f) a counter-balance mounted on another end of said chassis rod; and
(g) at least one guide handle attached to said tool holder.

5,186,226
WOODWORKING MACHINE WITH MEANS FOR PROVIDING 3-DIMENSIONAL CUTTING TOOL MOVEMENT
Tian-Wang Wang, No. 45, Yi Chang E. Rd., Tai Ping Hsiang, Taichung Hsien, Taiwan
Filed Jun. 10, 1992, Ser. No. 896,658
Int. Cl.[5] B27M *3/00*
U.S. Cl. 144—144 R **1 Claim**



1. A woodworking machine comprising:
a base, said base comprising a first horizontal axle horizontally fastened in a longitudinal guide channel thereof, and a seat plate vertically disposed at one end;
a first carriage movably bridged over said base spaced from said seat plate, said first carriage comprising a bottom block having a hole in transverse direction fastened with a bearing and movably sleeved on said first horizontal axle, a top block having a hole in longitudinal direction fastened with a bearing.
a second carriage movably supported on said first carriage, said second carriage having a second horizontal axle suspended in a recessed guide way thereon in longitudinal direction, two lugs spaced at one side, two vertical axles fastened to said lugs at the top, and a vertical support raised from a top edge thereof at one corner, said second horizontal axle being inserted through the bearing in the hole on said top block of said first carriage, the vertical support of said second carriage having a pivot hole near a top edge thereof;
a cutting tool carrier movably supported on said second carriage, said cutting tool carrier comprising two spaced vertical axles respectively inserted through two circular through holes thereof at one side and retained in place by clamps, a motor fastened in a transverse through hole thereof and secured in place by a tightening up screw, said motor having a motor shaft controlled to drive a cutting tool for woodworking, a pilot transversely extended out of a side edge thereof at the top and disposed in parallel with said motor shaft, and a vertical support at the top spaced from said pilot, the vertical support of said cutting tool carrier having a pivot hole near a top edge thereof;
a work handle for cutting tool moving control, said work handle comprising a hole near a rear end thereof pivotably connected to the pivot hole on the vertical support of said second carriage by a pin, and an elongated slot at the middle movably secured to the pivot hole on the vertical support of said cutting tool carrier by a pin;
a chucking slide bridged over said base and disposed between said seat plate and said cutting tool carrier, said chucking slide comprising a bottom block having a circular through hole in transverse direction fastened with a bearing and movably sleeved on said first horizontal axle, a receiving chamber at one side, two vertical round rods respectively inserted in two vertical round holes at the top, and a bolt hole on an end edge thereof communicated with said receiving chamber;
an auxiliary chucking plate formed of a channel plate received in said receiving chamber of said chucking slide, said auxiliary chucking plate having a right-bevel dovetail slot on the inside in longitudinal direction, and a dovetail block inserted in said right-bevel dovetail slot, said dovetail block having a bolt hole longitudinally aligned with the bolt hole on said chucking slide;
a hand screw threaded through the bolt hole on said chucking slide into the bolt hole on said dovetail block, said hand screw being rotated to move said dovetail block causing said auxiliary chucking plate to be moved back inside said receiving chamber or pushed outwards toward said seat plate;
a mold holder connected to said round rods of said chucking slide to hold a mold, said mold holder comprising two vertical axle sleeves at two opposite ends respectively sleeved on said round rods of said chucking slide and secured in place by tightening up screws;
a workpiece retaining screw rod pivotably secured to either round rod of said chucking slide by a horizontal support and rotated up and down on said horizontal support to squeeze a workpiece against said chucking slide; and
wherein said second carriage can be moved by said first carriage in Y direction; said cutting tool carrier can be moved by said first carriage in X direction or by said work handle in Z direction.

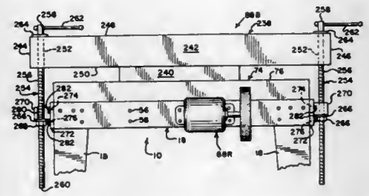
5,186,227
DRIVING DEVICE
Jan Eriksson, Box 4, 810 20, Österfärnebo, Sweden
PCT No. PCT/SE89/00202, § 371 Date Oct. 9, 1990, § 102(e) Date Oct. 9, 1990, PCT Pub. No. WO89/09685, PCT Pub. Date Oct. 19, 1989
PCT Filed Apr. 12, 1989, Ser. No. 582,933
Claims priority, application Sweden, Apr. 13, 1988, 8801353
Int. Cl.[5] B27L *1/00;* **B27B** *31/00*
U.S. Cl. 144—242 D **13 Claims**



1. A driving device, comprising:
at least one chain in the form of a closed loop;
a driving member;
a plurality of diverting members in contact with said chain and determining the shape of said closed loop;
said chain being connected to said driving member to cause said chain to orbit;
at least one of said diverting members being formed by said driving member;

a supporting surface adapted to be connected to a course of driving power;
said chain facing towards said supporting surface and having a side portion located outermost in said closed loop;
said supporting surface comprising at least one rubber element which is positioned on said side portion of said chain located outermost in said closed loop; and
said rubber element being in operational driving force transmitting engagement with said chain.

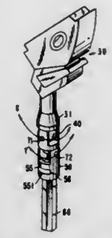
5,186,228
WORKBENCH AND MOUNTABLE IMPLEMENTS
Donald C. Stafford, 414 N. Quincy, Hinsdale, Ill. 60521
Filed Feb. 8, 1991, Ser. No. 652,798
Int. Cl.[5] B25H *1/00*
U.S. Cl. 144—286 R **21 Claims**



1. A workbench for mounting an implement thereon, the workbench comprising:
a top having a work surface, a peripheral edge and an attachment surface, said attachment surface being spaced apart from said work surface, said work surface being smooth, flat and imperforate; and
a base including a frame and a stand, said frame being removably attached to said attachment surface and supporting said top, said stand being attached to and supporting said frame, said frame including a plurality of rails and a plurality of independent attachment means disposed in each of said rails for removably mounting an implement to said frame, said stand including a plurality of attachment means for removably mounting at least one implement to said stand, each said attachment means comprising a plurality of spaced apart apertures, and the attachment means of the stand including horizontally opening spaced apart apertures, said attachment means allowing a plurality of implements to be adjustably positioned along and supported by said base independently positioned along and supported by said base independently of other implements which may be mounted to said base, whereby said implements may be mounted to said base for use in connection with a work piece independently of said top.

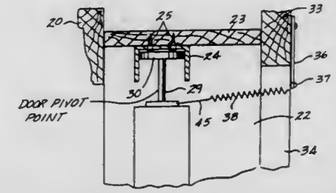
5,186,229
WINDOW SHADE OPERATOR
Henry C. Hsu, 29-42 162th St., Flushing, N.Y. 11358
Filed May 15, 1991, Ser. No. 701,441
Int. Cl.[5] E06B *9/30*
U.S. Cl. 160—176.1 **2 Claims**

1. In a window shade operator of the type including:
a worm gear case having a drive shaft disposed at a bottom end thereof; and
a universal joint connected to the bottom of said drive shaft, and which terminates in a connection member supporting an operating rod; the improvement comprising; said connection member having a recess of hexagonal transverse cross-section for the reception of one end of an operating rod of complementary hexagonal transverse cross-section, and having resilient ring means integral with said connection member providing a detent extending radially into said hexagonal recess, said detent being received within a locking recess provided in said end of said operating rod to lock said rod within said recess upon insertion of said rod into said recess, in which said connection member is of tubular form, and said resilient ring means is provided by



axially spaced slots provided in said connection member and positioned on axially opposite sides of said detent.

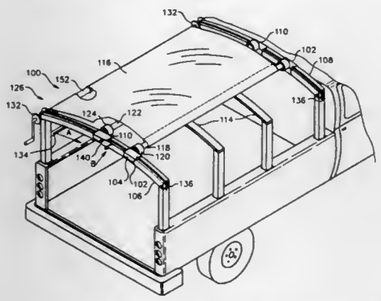
5,186,230
MECHANISM FOR OPERATING BI-FOLD DOORS
Robert F. Ostrander, 1 Doc's Hill Rd., Westbrook, Conn. 06498
Filed Aug. 6, 1991, Ser. No. 741,063
Int. Cl.[5] E05D *15/26*
U.S. Cl. 160—206 **1 Claim**



1. A mechanism for aiding in the closing of a bi-fold door which includes a door frame having vertically spaced apart frame members, an upper horizontal frame member extending between said vertical frame members, said frame members defining an opening in a wall, a pair of doors hinged together at adjacent edges adapted to at least partially close the opening, one of the doors being in a fixed position to pivot about points at the top and bottom thereof adjacent one of said vertical frame members and having a top edge, a guide and supporting track extending longitudinally along the length of the upper frame member, a roller member extending upwardly from the other of said doors into the track and being guided thereby in said track whereby said other of the doors at the free end thereof has sliding longitudinal movement in said track and said pair of doors may move from an open position in which they are in a generally V-shape into a closed position where they are in an in-line closed position to close the opening, comprising, a bracket member mounted within said opening and offset from the pivotal points of the one door within the opening, a spring having two ends, one end attached at one end thereof to the bracket member and the other end thereof attached to the one of said doors at said top edge thereof at a point spaced inwardly from the pivotal points of said one end of said one door, the point of connection of the spring to the bracket member and to the one door being such that as the pair of doors are opened the spring is tensioned and has energy stored therein to aid closing said door, said bracket member including a plurality of first and second points of attachment, a selected one of said first points of attachment mounting said bracket member to the frame, a selected one of said second points to attachment engaging said spring, the spring and the respective selected points of attachment being selected to achieve a desired closing characteristic of said closing mechanism.

VOL 1147 ISS 3 FE 16 1993 UMI

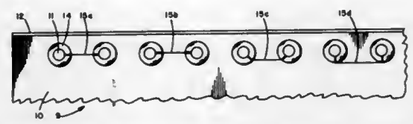
5,186,231
TARPAULIN DEPLOYMENT AND RETRACTION APPARATUS
Milburn Lewis, 18418-94th NE., Bothell, Wash. 98011
Filed May 1, 1992, Ser. No. 877,086
Int. Cl.[5] B60P *7/04*
U.S. Cl. 160—310 **11 Claims**



1. An improved tarpaulin deployment and retraction apparatus comprising:
a leading edge slider, the leading slider including a towing pin;
a ridgepole slider, the ridgepole slider including means for latching;
a first track, the first track including a fixed pin interposed between the ends of the first track
a second track;
a tarpaulin with a leading edge and a winding edge;
a ridge pole wherein one end of the ridge pole is restrained in a portion of the ridgepole slider and the other end is supported in the region of the second track;
a leading edge pole wherein one end of the leading edge pole is restrained in a portion of the leading edge slider, the leading edge of the tarpaulin is proximately joined therewith and the other end of the leading edge pole is supported in the region of the second track;
deploying means for urging the leading edge slider along the first track from a stowed position with the towing pin cooperating with the latching means to tow the ridgepole slider along the first track until the latching mechanism engages the fixed pin whereby the ridgepole slider is decoupled from the leading edge slider and engages the fixed pin, and the deploying means further urges the leading edge slider towards a fully deployed position; and
retraction means for urging the winding edge of the tarpaulin into a stowed position, urges the leading edge slider towards the stowed position, the towing pin with the latching means cooperates to decouple the ridgepole slider from the fixed pin, the further movement of the leading edge slider urging the ridgepole slider towards a fully stowed position by contact between adjacent portions of the sliders.

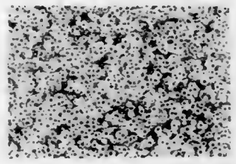
5,186,232
ACCESSORY
David Zahner, 145 W. 78 St., New York, N.Y. 10024
Filed May 18, 1992, Ser. No. 884,375
Int. Cl.[5] A47H *1/00*
U.S. Cl. 160—330 **20 Claims**

1. An accessory adapted for being detachably mounted onto a rod-like member, said accessory comprising a flexible sheet of material having an end portion and mounting means integral with said material near the end portion both for mounting onto and detaching from said rod-like member without the necessity of threading said accessory onto and off said rod-like member,



said mounting means comprising two openings defined in said material and communicating with each other.

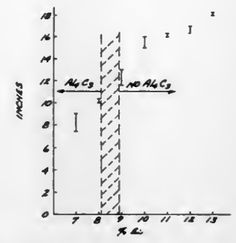
5,186,233
METHOD OF PRODUCING SPHEROIDAL GRAPHITE CAST IRON ARTICLE
Fumio Obata; Toshiaki Tanaka, and Hideaki Nagayoshi, all of Kitakyusyu, Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan
Filed Apr. 2, 1992, Ser. No. 862,230
Claims priority, application Japan, Apr. 4, 1991, 3-71426
Int. Cl.[5] B22D *27/00*
U.S. Cl. 164—58.1 **8 Claims**



1. A method of producing a spheroidal graphite cast iron article having a thin portion having a thickness of 2 mm or more and less than 10 mm and a thick portion having a thickness of 10 mm or more and less than 100 mm, the number of spheroidal graphite particles having a diameter of 2 μm or more being 600/mm^2 or more and less than 2000/mm^2 in said thin portion and 130/mm^2 or more and less than 600/mm^2 in said thick portion, and spheroidization percentage being 70% or more in said thick portion, comprising the steps of:
(a) preparing an iron-base alloy melt having a composition consisting essentially by weight of 3.0–4.0% of C, 0.8–1.7% of Si, 1.0% or less of Mn, 0.2% or less of P, 0.01–0.2% of S, the balance being substantially Fe and inevitable impurities;
(b) desulfurizing said iron-base alloy melt to control the sulfur content of said melt to less than 0.01% by weight;
(c) adding a sulfur-containing material to said melt in such an amount that the sulfur content of said melt becomes 0.011–0.03% by weight; and
(d) adding an Mg-containing material and a lanthanide element to said melt to conduct a spheroidizing treatment.

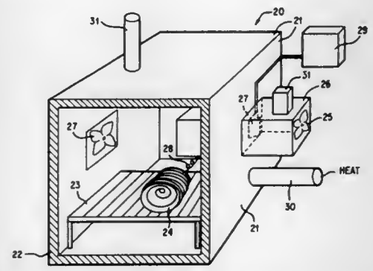
5,186,234
CAST COMPSOITE MATERIAL WITH HIGH SILICON ALUMINUM MATRIX ALLOY AND ITS APPLICATIONS
Donald E. Hammond, San Diego, and Michael D. Skibo, Leucadia, both of Calif., assignors to Alcan International Ltd., Montreal, Canada
Continuation of Ser. No. 572,218, Jul. 16, 1990, abandoned. This application Oct. 29, 1991, Ser. No. 784,615
Int. Cl.[5] C22C *1/10*; B22D *19/14*
U.S. Cl. 164—97 **6 Claims**

1. A method for preparing a cast composite material, comprising the steps of:
furnishing an aluminum-based matrix alloy containing from about 8.5 to about 12.6 weight percent silicon;
preparing a mixture of from about 5 to about 35 volume percent of free-flowing nonmetallic reinforcing particles and from about 95 to about 65 volume percent of molten matrix alloy;
preparing a cast composite material by using the mixture of particles and matrix alloy in a process having the steps of mixing the molten mixture to wet the matrix alloy to the particles and to distribute the particles throughout the



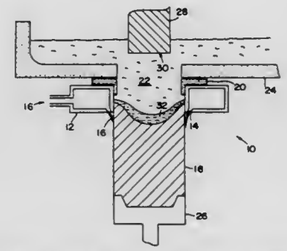
volume of the melt, the mixing to occur while minimizing the introduction of gas into and retention of gas within the molten mixture, and
casting the molten mixture;
remelting the cast mixture at a temperature that reaches at least about 1300° F.; and
recasting the remelted mixture.

5,186,235
HOMOGENIZATION OF ALUMINUM COIL
Bennie R. Ward, Jr., Chesterfield County, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Oct. 31, 1990, Ser. No. 607,327
Int. Cl.[5] B22D *11/12*
U.S. Cl. 148—552 **12 Claims**



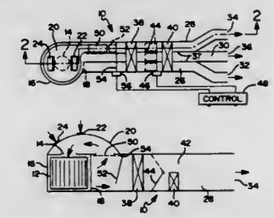
1. A method for grain refinement of aluminum contained in a coil of aluminum which comprises:
a) drag casting aluminum from an aluminum melt at an elevated temperature onto a single chilled surface to form an aluminum casting;
b) removing the aluminum casting from the chilled surface, coiling the as cast aluminum onto a coiler at a casting temperature of about 900° F., and
c) without heating said as cast aluminum, slowly cooling said as cast aluminum from said temperature under controlled conditions at a cooling rate ranging from about 5° F. per hour to 90° F. per hour to produce said coil of aluminum which has excellent grain refinement, high tensile strength and an increased spread between tensile strength and yield strength.

5,186,236
PROCESS FOR PRODUCING A LIQUID-SOLID METAL ALLOY PHASE FOR FURTHER PROCESSING AS MATERIAL IN THE THIXOTROPIC STATE
Jean-Pierre Gabathuler, Schleitheim, and Kurt Buxmann, Sierre, both of Switzerland, assignors to Alusuisse-Lonza Services Ltd., Zurich, Switzerland
Filed Dec. 12, 1991, Ser. No. 806,150
Claims priority, application Switzerland, Dec. 21, 1990, 4090
Int. Cl.[5] B22D *27/08*
U.S. Cl. 164—478 **15 Claims**



1. Process for producing a liquid-solid metal alloy phase for further processing as material in the thixotropic state, which comprises: maintaining an alloy melt having a solidified portion of primary crystals at a temperature between solidus and liquidus temperature of the alloy; producing mechanical vibrations in the frequency range between 10 and 100 KHz in the liquid-solid metal alloy phase; and molding the primary crystals, which have a structure of degenerated dendrites or casting grains of essentially globular shape, into an ingot.

5,186,237
MULTI-ZONE HVAC SYSTEM WITH AN AIR BYPASS FOR INDIVIDUAL FLOW CONTROL
Kenneth P. Adasek, Warren, and James C. Ostrand, Armada, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Jun. 8, 1992, Ser. No. 894,973
Int. Cl.[5] F25B *29/00*
U.S. Cl. 165—42 **8 Claims**



1. An automotive temperature control system for supplying air to different zones of a vehicle compartment comprising:
a blower having an intake and an outlet;
a plurality of air passages each separately communicating air from said blower outlet to a discharge vent in a different zone of a vehicle compartment;
heat exchange means in the passages for affecting the temperature of air passing to each discharge vent; and
bypass means in at least one passage for controlling the volume of air flow in that one passage across a range of air flows across a range of air flows while having the air flow in the other passages substantially unaffected comprising a bypass opening adjacent the blower outlet, means for connecting the bypass opening to the blower intake to

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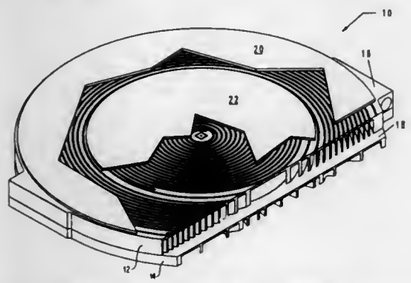
thereby draw air from the one passage to the intake, and valve means for controllably adjusting the air flow through the opening.

5,186,238

LIQUID FILM INTERFACE COOLING CHUCK FOR SEMICONDUCTOR WAFER PROCESSING

Santiago E. del Puerto, Milton, and Paul M. Gaschke, Pleasantville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 25, 1991, Ser. No. 691,655
Int. Cl.[5] F28F *7/00*
U.S. Cl. 165—80.4 **17 Claims**



1. A chuck for clamping a substrate comprising:
a top having at least one liquid interface circuit means disposed thereon for providing a liquid interface between the substrate and said top when the substrate is disposed on said top, and further wherein said liquid interface circuit means is comprised of:
a spiral shaped groove disposed on said top having a depth-/width/pitch ratio on the order of 1/1.2/4.

3. A chuck for clamping a substrate having an outside diameter, said chuck comprising:
a top having at least one liquid interface circuit means disposed thereon for providing a liquid interface between the substrate and said top when the substrate is disposed on said top, the at least one liquid interface means having an outside diameter, and wherein said top is further comprised of circular sealing groove means having a diameter greater than the outside diameter of said liquid interface means and lesser than the outside diameter of the substrate.

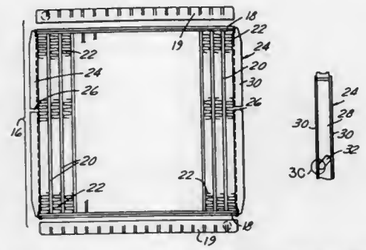
4. A chuck for clamping a substrate comprising:
a top having at least one spiral shaped groove means disposed thereon, for providing a liquid interface between the substrate and said top when the substrate is disposed on said top;
first input means for delivering liquid to said spiral shaped groove means;
first output means for providing a means for said liquid to exit said spiral shaped groove means; and,
a bottom for transferring heat away from said top, having a spiral shaped channel means for circulating fluid hydraulically separate from the at least one spiral shaped groove means, a second input means for delivering said cooling fluid into said channel means, and a second output means for providing a means for said cooling fluid to exit said channel means.

5,186,239

HEAT EXCHANGER WITH THERMAL STRESS RELIEVING ZONE

Darryl L. Young, Dearborn Heights; Josef Hirmann, Farmington Hills; Eugene E. Rhodes, Belleville, all of Mich., and David L. Brightwell, Brentwood, Great Britain, assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 30, 1992, Ser. No. 829,115
Int. Cl.[5] F28F *9/00*
U.S. Cl. 165—81 **14 Claims**



1. A heat exchanger for an automotive vehicle, comprising:
a frame including a pair of headers interconnected by a heat exchange fluid conduit and a pair of side supports disposed between said headers at opposite ends of said headers, each of said side supports including a generally planar base portion having a horizontal axis and a pair of flanges extending generally perpendicularly to the plane of said base portion, said side supports having a longitudinal axis and including a thermal stress relieving zone defined by an oblong-shaped slot disposed in said base portion, said oblong-shaped slot including a major axis extending at an angle of approximately 30–60 degrees to the horizontal axis of said base portion of said side support.

9. A heat exchanger for an automotive vehicle, comprising:
a pair of headers;
a plurality of tubular elements having opposite ends connected to each of the headers and defining air paths between adjacent pairs of tubular elements;
a plurality of fin elements provided in said air paths; and
a pair of channel-shaped side supports disposed between said headers at opposite ends of said headers, each of said side supports having a longitudinal axis and including a generally planar base portion having a horizontal axis and a pair of flanges extending generally perpendicularly to the plane of said base portion, said side supports including a thermal stress relieving zone defined by an oblong-shaped slot disposed in said base portion, said slot having a major axis extending generally perpendicularly to the longitudinal axis of said side support, and wherein said flanges are operative to shear upon imposition of a generally perpendicular force thereagainst proximate said stress relieving zone such that said side support is completely fractured at said stress relieving zone.

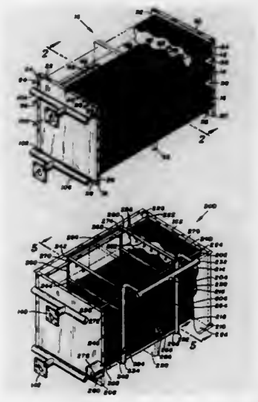
5,186,240

COIL CLEANSING ASSEMBLY

Douglas D. Kennon, Owatonna, and Robert G. Anhorn, Medford, both of Minn., assignors to King Company, Owatonna, Mich.

Filed Aug. 2, 1991, Ser. No. 739,409
Int. Cl.[5] F28G *1/16*
U.S. Cl. 165—95 **12 Claims**

1. A coil cleansing assembly for cleaning dirt and debris from within the stationary banks of a multi-bank heat exchanger of the type in which each bank includes a plurality of fluid carrying tubes of a predetermined length extending parallel to one another and having closely-spaced, parallel-oriented heat transfer fins operatively coupled to said tubes and extending transverse to the length dimension of said tubes, comprising in combination:
(a) a pair of support walls supporting said plurality of tubes; and
(b) a cleaning fluid delivery means for spraying cleaning fluid on said stationary banks of a multi-bank heat exchanger, said cleaning fluid delivery means being disposed between adjacent banks of said multi-bank heat exchanger, and having:
(i) conduit means, each having a first and second end and a midsection, with a cleaning fluid inlet port at each of said first ends, and said midsections being disposed between said adjacent banks, for transporting cleaning fluid,



(ii) spraying means dispersed between said first end and said second end along said midsection of each of said conduit means, for causing cleaning fluid to impinge on said heat exchanger at high velocity, and
(c) a carriage means for joining said plurality of conduit means in parallel orientation at said first and second ends, and
(d) drive means coupled to said cleaning fluid delivery means for imparting translating motion to said conduits relative to said heat exchanger banks, allowing said conduits to move as a unit, whereupon cleaning fluid exiting said spraying means impinges upon said banks of said heat exchanger to remove accumulated dirt and debris from between said heat transfer fins.

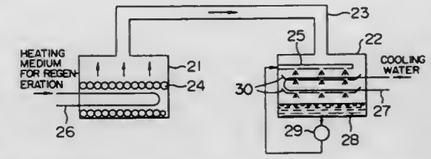
5,186,241

CHEMICAL HEAT PUMP

Yoshifumi Kunugi, Ibaraki; Michio Yanadori, Ryugasaki; Toshihiko Fukushima, Tsuchiura, and Tomihisa Ohuchi, Tsukuba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 30, 1989, Ser. No. 428,936
Claims priority, application Japan, Nov. 1, 1988, 63-274563
Int. Cl.[5] F25B *17/00*
U.S. Cl. 165—104.12 **4 Claims**

1. A chemical heat pump, which comprises a regenerator-heat releaser filled with a chemically reactive heat-storing material provided with a heat transfer tube, through which a heating medium is passed, at the inside, wherein said chemically reactive heat-storing material is calcium oxide or calcium hydroxide; an absorber-evaporator containing an aqueous solution of a salt, an acid, an alkali or an organic compound and provided with a heat transfer tube for cooling or heating; a vapor passage communicating the regenerator-heat releaser with the absorber-evaporator; and an aqueous solution recycle system comprising a sprayer for spraying the aqueous solution onto the heat transfer tube in the absorber-evaporator, a plurality of trays provided below the sprayer of the aqueous solution



and an aqueous solution pump being provided at the absorber-evaporator.

5,186,242

CONDENSER PROVIDED WITH FORCED COOLING MEANS

Tsunenari Adachi; Hitoshi Akasaka, and Yutaka Moriyama, all of Tokyo, Japan, assignors to Calsonic Corporation, Tokyo, Japan

Filed Mar. 5, 1991, Ser. No. 664,875
Claims priority, application Japan, Mar. 9, 1990, 2-23193[U]; Mar. 28, 1990, 2-76588
Int. Cl.[5] F25B *19/00*; F28B *5/00*
U.S. Cl. 165—110 **13 Claims**

1. A coolant condensing apparatus, comprising a condenser for air-cooling a gaseous coolant of high temperature and high pressure for conversion thereof into a liquid coolant,
cooling means disposed in a part of said condenser and adapted to effect cooling of said gaseous coolant by exchange of heat with an atomized or gas-liquid mixed liquid,
decompression means disposed in the upstream of the liquid flow path of said cooling means and adapted to atomize a liquid into the state of a gas-liquid mixture, and
circulation means for circulating said liquid in a closed loop passed through said decompression means and said cooling means.

5,186,243

COMBINATION CONDENSER AND RADIATOR TANK THERMAL GAP

Gary A. Halstead, Lockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jul. 13, 1992, Ser. No. 912,377
Int. Cl.[5] F28F *13/14*
U.S. Cl. 165—135 **2 Claims**

1. A combination radiator and condenser apparatus for a motor vehicle having a plurality of parallel tube passes for cooling high pressure refrigerant vapor in an air conditioning

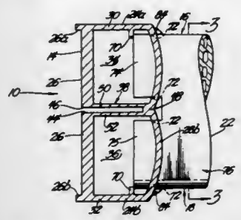
VOL 1147 ISS 3 FE 16 1993 UMI

system for the motor vehicle and for cooling engine coolant having air centers bonded thereto for cooling fluid flow through said parallel tube passes comprising:

said parallel tube passes each including a flow tube with aligned segments forming a refrigerant passage and a separate coolant passage;

a pair of longitudinally extending unitary tank and header units;

each of said tanks and header units including a longitudinal coolant space communicating with said coolant passages for flow of coolant therethrough, and a longitudinal high pressure refrigerant space for communicating said refrigerant passages with a mechanical refrigerant system for



directing refrigerant vapor through said refrigerant passages for condensation therein;

an internal partition in each of said tank and header units extending the length thereof to separate said coolant space from said high pressure refrigerant space;

air center means connected to each of said aligned flow tube segments for conductively transferring heat from said coolant and said refrigerant vapor, and

said internal partition including an open-sided air channel extending in said partition with an open side longitudinally extending through said tank and header units for reducing thermal conductivity between said coolant space and said refrigerant space.

5,186,244

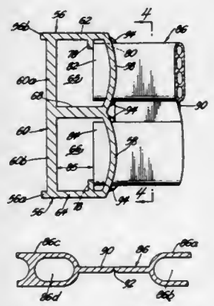
TUBE DESIGN FOR INTEGRAL RADIATOR/CONDENSER

Shrikant M. Joshi, Cambridge, Mass., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 8, 1992, Ser. No. 865,392

Int. Cl.[5] F28F *13/00*; F28D *7/16*

U.S. Cl. 165—135 **2 Claims**



1. A combination radiator and condenser apparatus for a motor vehicle having a plurality of parallel tube passes for cooling high pressure refrigerant vapor in an air conditioning system for the motor vehicle and for cooling engine coolant having air centers bonded thereto for cooling fluid flow through said parallel tube passes comprising:

said parallel tube passes each including a flow tube having a tube height with aligned segments forming a refrigerant passage and a separate coolant passage;

a pair of tank and header units;

each of said tanks and header units including a coolant space communicating with said coolant passages for flow of coolant therethrough, and a high pressure refrigerant space for communicating said refrigerant passages with a mechanical refrigerant system for directing refrigerant vapor through said refrigerant passages for condensation therein;

a partition in each of said tank and header units extending the length thereof to separate said coolant space from said high pressure refrigerant space;

air center means connected to each of said aligned flow tube segments for conductively transferring heat from said coolant and said refrigerant vapor; and

a web of a predetermined thickness less than said tube height integrally interconnecting said parallel tube passes, said web further including a notch therein that establishes a minimal thickness less than said predetermined thickness, thereby reducing heat conduction between said parallel tube passes.

5,186,245

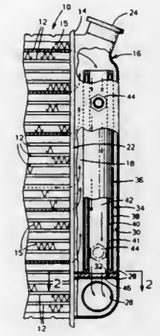
FLOW CONTROL BAFFLE FOR RADIATOR IN-TANK COOLER

Timothy J. Peters, Lockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Apr. 6, 1992, Ser. No. 864,274

Int. Cl.[5] F28F *9/26, 9/22*

U.S. Cl. 165—140 **1 Claim**



1. A heat exchanger, comprising:

an elongated reservoir on one side of a heat exchanger core having a top and a bottom with a coolant outlet port at the bottom of said reservoir,

means forming a plurality of parallel tube passes all of which inlet coolant to said reservoir along the length of said reservoir,

an auxiliary tubular heat exchanger within said reservoir having an upper end near the top of said reservoir and a lower end located just above said outlet port, said tubular heat exchanger having an inner wall defining a central passage and an outer wall spaced from said inner wall and said reservoir and inlet and outlet means for fluid to flow between said walls, and,

only one baffle in said elongated reservoir located at the lower end of said tubular heat exchanger, above said reservoir outlet port and below substantially all of said tube passes, said baffle filling the space between said tubular heat exchanger outer wall and reservoir and having an aperture registered with said central passage,

whereby coolant entering said reservoir from substantially all of said tube passes is forced to flow upwardly along said outer wall toward the top of said reservoir and down through said central passage baffle aperture before reaching said outlet port, thereby improving heat transfer from said tubular heat exchanger to said coolant.

5,186,246

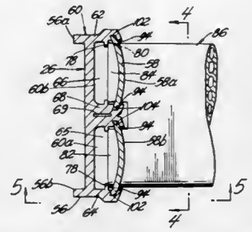
EXTRUDED COOLANT/REFRIGERANT TANK WITH SEPARATE HEADERS

Gary A. Halstead, Lockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Jun. 1, 1992, Ser. No. 891,067

Int. Cl.[5] F28D *7/16*

U.S. Cl. 165—140 **3 Claims**



1. A combination radiator and condenser apparatus for a motor vehicle having a plurality of parallel tube passes for cooling high pressure refrigerant vapor in an air conditioning system for the motor vehicle and for cooling engine coolant having air centers bonded thereto for cooling fluid flow through said parallel tube passes comprising:

said parallel tube passes each including a flow tube with aligned segments forming a refrigerant passage and a separate coolant passage;

a pair of tanks,

said tanks including a coolant space communicating with said coolant passages for flow of coolant therethrough, and a high pressure refrigerant space for communicating said refrigerant passages with a mechanical refrigerant system for directing refrigerant vapor through said passages for condensation;

air center means connected to each of said aligned flow tube segments for conductively transferring heat from said coolant and said refrigerant vapor,

each said tank comprising a unitary tank extrusion and two separate headers, said tank extrusion including a pair of side walls and a partition extending the length thereof to separate said coolant space from said high pressure refrigerant space, said separate headers having edges engaging said side walls and said partition to form said coolant space and said refrigerant space therebetween; and

means for mechanically connecting said separate header at said edges to said tank extrusion.

5,186,247

HIGH TEMPERATURE/PRESSURE GAS TUBULAR HEAT EXCHANGER

Alfred Schlemenat, Herten, Fed. Rep. of Germany, assignor to Man Gutehoffnungshutte AG, Oberhausen, Fed. Rep. of Germany

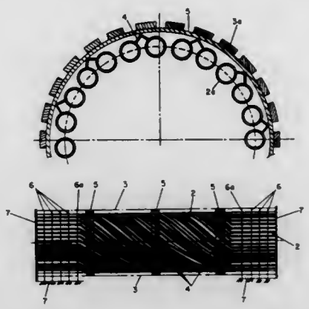
Filed May 4, 1992, Ser. No. 870,333

Claims priority, application Fed. Rep. of Germany, May 10, 1991, 4115250

Int. Cl.[5] F28D *7/14*; F28F *9/22*

U.S. Cl. 165—162 **5 Claims**

1. A tubular heat exchanger for operation at high gas temperatures and high gas pressures, comprising: a first end tube bottom at a gas inlet side and a second end tube bottom at a gas outlet side; each tube bottom having openings, the openings cooperating to form graduated circles; heat exchanger tubes arranged on said graduated circles, said heat exchanger tubes having a coiled section forming a greater part of a linear extension of said heat exchanger tubes; a plurality of tie rods arranged corresponding to every other graduated circle of the tube bottoms, said tie rods being connected between said tube bottoms in a coiled area of said tubes by rings to form a cage,



said tie rods having a substantially circular cross-sectional area except in an area of each of said rings wherein said tie rods are flattened, each of said tubes being connected to one adjacent of said tubes to form connected pairs in said coiled area by angular plates positioned in said area of said rings.

5,186,248

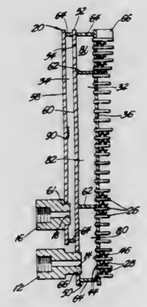
EXTRUDED TANK CONDENSER WITH INTEGRAL MANIFOLD

Gary A. Halstead, Lockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 23, 1992, Ser. No. 856,271

Int. Cl.[5] F28F *9/02*; F28D *1/053*

U.S. Cl. 165—173 **1 Claim**



1. In a heat exchanger apparatus of the type having a first tank unit on one side, a second tank unit on the other side, and a plurality of parallel tube passes for communicating cooling fluid between said tank units, the improvement comprising,

said first tank unit including a header that establishes the length of said first tank unit as measured between first and second ends of said first tank unit, and which receives said parallel tube passes,

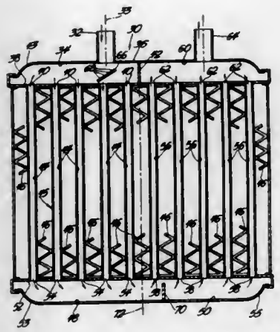
a first longitudinal tank wall parallel to and spaced from said header and extending less than the length of said header,

a second longitudinal tank wall of a length substantially equal to said header and extending parallel between said header and first tank wall, thereby forming, in combination with said header, a main tank portion and also forming, with said first tank wall, an outlet tank portion, said second tank wall further including an internal outlet near

VOL 1147 ISS 3 FEB 16 1993 UMI

said second end from said main tank portion to said outlet tank portion,
an outlet fitting on said first tank wall near said first end, opening to said outlet tank portion, and,
an inlet fitting on said second tank wall located below said outlet fitting in a clearance provided by said first tank wall having a shorter length than said second tank wall,
whereby said outlet and inlet fittings are located on the same side of said heat exchanger apparatus near the first end of said first tank unit, thereby providing a simple and compact arrangement.

5,186,249
HEATER CORE
Mohinder S. Bhatti, Amherst, and Prasad S. Kadle, Getzville, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.
Filed Jun. 8, 1992, Ser. No. 894,975
Int. Cl.[5] F28F *13/06*
U.S. Cl. 165—174 **5 Claims**



1. A heat exchanger assembly for dissipating heat energy from a circulated fluid, said assembly comprising:
an inlet port centered along a flow axis for receiving high temperature fluid from a heat source;
an inlet tank having a predetermined height and a predetermined length and at least one wall spaced from said flow axis for receiving high temperature fluid from said inlet port;
a plurality of flow tubes extending from said inlet tank for dissipating heat energy from the fluid;
an outlet tank for receiving low temperature fluid from said flow tubes;
an outlet port extending from said outlet tank for returning lower temperature fluid to the heat source;
and an inlet baffle plate disposed angularly within said inlet tank with respect to said flow axis and including at least one perforation therein, said inlet baffle plate having a minimum length and a gross surface area and an angular orientation in said inlet tank determined according to the formula

$$k = \frac{h}{2t}\left[\frac{x}{s} - \left(1 - \frac{t}{s}\right)\sin\theta\right]$$

where: k=ratio of the surface area of said perforation to said gross surface area of said inlet baffle plate; h=one half of said inlet tank height; t=one half of said minimum inlet baffle plate length; x=the distance between said flow axis and said wall; s=one half of said inlet tank length; and θ=the acute angle between said flow axis and said inlet baffle plate.

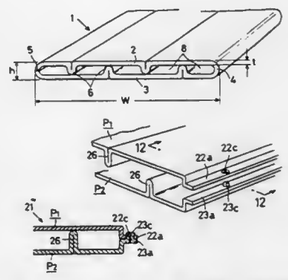
5. A heat exchanger assembly for dissipating heat energy from a circulated fluid, said assembly comprising:
an inlet port centered along a flow axis for receiving high temperature fluid from a heat source;
an inlet tank for receiving high temperature fluid from said inlet port;
a plurality of inlet flow tubes extending from said inlet tank for dissipating heat energy from the fluid;
an outlet tank;
a plurality of outlet flow tubes extending from said outlet tank;
an outlet port extending from said outlet tank for returning low temperature fluid to the heat source;
a return tank communicating with said inlet flow tubes and said outlet flow tubes, said return tank having a predetermined height and extending between a left end wall adjacent said inlet flow tubes and a right end wall adjacent said outlet flow tubes with a demarcation line between said inlet flow tubes and said outlet flow tubes;
and a return baffle plate disposed in said return tank and spaced from said right end wall of said return tank a predetermined distance and having a predetermined height determined according to the formula

$$\frac{b}{z} = \frac{40L^3(1-L)^3}{1 - 8L + 28L - 40L^3 + 40L^4}$$

$$\frac{b}{z} = \frac{40L^3(1-L)^3}{1 - 8L + 28L^2 - 40L^3 + 40L^4}$$

where: b=the spacing between said return baffle plate and said right end wall; z=the spacing between said right end wall of said return tank and said demarcation line; and L=the ratio of said return baffle plate height to said return tank height.

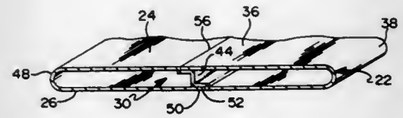
5,186,250
TUBE FOR HEAT EXCHANGERS AND A METHOD FOR MANUFACTURING THE TUBE
Wataru Ouchi, Shimodateshi; Katsuhisa Suzuki, Utsunomiyashi; Toshinori Tokutake, Oyamashi, and Hirosaburo Hirano, Utsunomiyashi, all of Japan, assignors to Showa Aluminum Kabushiki Kaisha, Japan
Filed Apr. 29, 1991, Ser. No. 693,955
Claims priority, application Japan, May 11, 1990, 2-1222289; Jul. 27, 1990, 2-200206
Int. Cl.[5] F28F *1/06*
U.S. Cl. 165—177 **12 Claims**



1. A tube for heat exchangers, the tube comprising:
a pair of plane walls spaced a predetermined distance from one another;
each plane wall having a lateral end integrally connected to the lateral end of the other wall by a U-shaped bent portion;

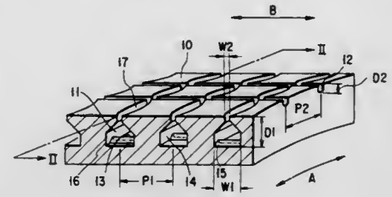
each plane wall having an opposite lateral end which abuts against and is tightly secured to the opposite lateral end of the other wall to define a flat configuration of the tube;
each plane wall including at least one curved lug, said lug being a folded, two ply portion of the plane wall, said lug and the remaining portion of the plane wall being a one-piece, integral unit;
the curved lug of one plane wall protruding towards the other plane wall and having an innermost top bearing against and being brazed to the inner surface of the other plane wall;
said tube being made from a brazing sheet comprising a core material having both sides coated with a brazing layer.
12. A tube for heat exchangers, the tube comprising:
a pair of preformed plates spaced a predetermined distance from one another;
the preformed plates being tightly secured to one another at both lateral ends to define a flat configuration for the tube;
one or more curved integral with and protruding inwardly from an inner surface of each preformed plate;
the curved lugs respectively having innermost tops, wherein the innermost tops of the curved lugs protruding from one preformed plate bear against and are secured to the inner surface of the other preformed plate or to the innermost tops of the other curved lugs protruding from said other preformed plate;
both lateral ends of the preformed plates including L-shaped bent portions which abut in parallel with one another and are fixedly secured together, said L-shaped bent portions protrude outwardly of the tube;
the bent portion of one preformed plate including at least one rib which protrudes toward the other preformed plate to penetrate a hole formed through the other L-shaped bent portion of the other preformed plate, wherein the top of the rib is distressed to retain the rib in the hole.

5,186,251
ROLL FORMED HEAT EXCHANGER TUBING WITH DOUBLE ROW FLOW PASSES
Shrikant M. Joshi, Cambridge, Mass., assignor to General Motors Corporation, Detroit, Mich.
Filed Jun. 1, 1992, Ser. No. 891,083
Int. Cl.[5] F28F *1/02;* **F16L** *9/04;* **B21D** *53/02*
U.S. Cl. 165—177 **6 Claims**



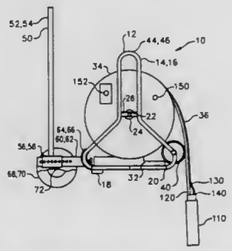
4. A one piece dual passage tube for transmitting heat exchanger fluid therethrough comprising an intermediate stepped portion defined by a first step having a flattened tread-like support surface,
said tube being defined by a wall of a predetermined thickness having a leading end portion supported on said support surface and extending in a first plane and in a first direction to a curved edge,
said tube being reversely curved at said curved edge so that the wall therefor extends in a second plane parallel to said first plane and in a second direction opposite to said first direction until intersection with a second step of said stepped portion,
said second step of said stepped portion having a tread-like support, said second step having a lower surface which is offset from said second plane by a measure approaching the thickness of said wall of said tube,
said intermediate stepped portion having a vertical web that connects to the forward extent of said first step,
said wall of said tube extending from an upper extremity of said first step in said first plane, but in said second direction to a second curved edge, said wall there being reversely curved to extend to said second plane and leading therefrom to a bottom surface of said second step for support thereon to complete the tube with the stepped intermediate portion separating the interior of said tube into discrete fluid flow passages.

5,186,252
HEAT TRANSMISSION TUBE
Takeshi Nishizawa, and Kazuhiko Ooba, both of Tokyo, Japan, assignors to Furukawa Electric Co., Ltd., Tokyo, Japan
Filed Jan. 13, 1992, Ser. No. 819,242
Claims priority, application Japan, Jan. 14, 1991, 3-14857
Int. Cl.[5] F28F *1/36*
U.S. Cl. 165—181 **7 Claims**



1. A heat transmission tube comprising:
a tube body;
first grooves formed at a predetermined pitch therebetween on an outer surface of said tube body continuously along a circumferential direction, said first grooves open to an outside, and having an opening portion, a width of which is narrower than that of a bottom space thereof;
second grooves formed at a predetermined pitch therebetween on said outer surface of said tube body continuously along an axial direction, said second grooves having a depth shallower than that of said first grooves, and connecting opening portions of adjacent first grooves to each other; and
a plurality of projecting members extending from a bottom surface of each of said first grooves and connecting at least a side wall of each of said first grooves to another.

5,186,253
PORTABLE GROUNDWATER SAMPLING DEVICE
Gregg S. Gustafson, Bothell, and Jay M. Kuga, Bellevue, both of Wash., assignors to Instrumentation Northwest, Inc., Redmond, Wash.
Filed May 28, 1991, Ser. No. 705,761
Int. Cl.[5] E21B *19/00*
U.S. Cl. 166—77 **10 Claims**

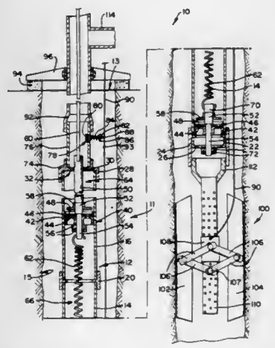


1. A device for monitoring the physical characteristics of ground water or other fluids and adapted for use with a well having a wellhead, the system comprising;

VOL 1147 ISS 3 FEB 16 1993 UMI

a frame including means for suspending the device from the wellhead;
a storage reel mounted for rotation on the frame;
means for rotating the reel;
means for locking the reel with respect to the frame; and
means for guiding a service cable from the reel to the wellhead.

5,186,254
BOREHOLE PUMPING INSTALLATION
Pieter R. van Staden, 16 Pasteur Drive, Hospitaalpark, Bloemfontein, Orange Free State, South Africa
Filed Nov. 20, 1990, Ser. No. 616,055
Claims priority, application South Africa, Nov. 22, 1989, 89/8918
Int. Cl.[5] E21B *43/00*; F04B *47/00*
U.S. Cl. 166—105 **16 Claims**

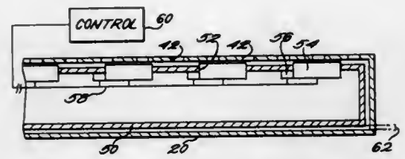


1. A borehole pumping installation, which comprises
a borehole;
a pump located down the borehole so that it is at least partially submerged in water in the borehole, the pump having a reciprocable piston or plunger such that on reciprocation of the piston or plunger, water is urged out of a pump outlet;
an elongate member connected to the piston or plunger and extending up the borehole so that, on reciprocation of the elongate member, the plunger or piston moves in reciprocating fashion;
a flexible water conduit or casing leading from the pump outlet along the borehole to the surface;
reciprocating drive means operatively connected to the elongate member; and
anchoring means anchoring the pump in position in the borehole, the anchoring means comprising an anchoring component, and attachment means attaching the anchoring component to the pump, with the anchoring component comprising at least one gripping member in an extended configuration and gripping the borehole wall, the gripping member being movable from the extended configuration to a retracted configuration in which is disengages the wall; and actuating means for moving the gripping member.

5,186,255
FLOW MONITORING AND CONTROL SYSTEM FOR INJECTION WELLS
John C. Corey, 212 Lakeside Dr., Aiken, S.C. 29803
Filed Jul. 16, 1991, Ser. No. 730,424
Int. Cl.[5] E21B *34/06, 34/16, 43/12, 47/00*
U.S. Cl. 166—250 **14 Claims**

1. Apparatus for controlling flow rate of a fluid from an injection well, said injection well having a plurality of apertures through which said fluid can be injected into a subsurface, said flow rate to be held to a preselected value, said apparatus comprising:
means for sensing said flow rate, said sensing means producing an output;
means in communication with said sensing means for comparing said flow rate to said preselected value, said comparing means responsive to said output and producing a difference signal; and
means for adjusting said flow rate in response to said difference signal, said adjusting means adjusting said flow rate by limiting passage of said fluid through said apertures.

13. A method for injecting a fluid into the subsurface

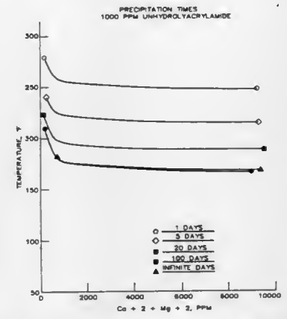


through apertures in an injection well, said fluid selected to interact with contaminants in the form of a subsurface plume having various concentrations of contaminants, said plume being likely to move through said subsurface with respect to said well, said method comprising the steps of:
selecting a desired flow rate;
injecting said fluid into said subsurface through said apertures;
sensing the flow rate of said fluid into said subsurface;
adjusting said flow rate so that it matches said desired flow rate; and
changing said preselected flow rate to in response to a change in the concentration of said contaminants nearest said well.

5,186,256
THREE DIRECTIONAL DRILLING PROCESS FOR ENVIRONMENTAL REMEDIATION OF CONTAMINATED SUBSURFACE FORMATIONS
Charles E. Downs, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.
Filed Jun. 20, 1991, Ser. No. 718,723
Int. Cl.[5] E21B *43/00, 43/24*
U.S. Cl. 166—272 **17 Claims**

11. A process for in-situ decontamination of a subsurface formation which comprises:
(a) constructing a horizontal extraction well system in the vicinity of a contaminated subsurface formation, said horizontal extraction well system having initial and second entry points from a surface location into a subsurface formation,
(b) constructing an horizontal injection well system separate and apart from the horizontal extraction well system of step (a),
(c) injecting a fluid or a gas into said injection well system, to mobilize contaminates toward said horizontal extraction well system; and
(d) extracting contaminated fluid or gas from said extraction well through said initial and second entry points subsurface formation.

5,186,257
POLYMERS USEFUL IN THE RECOVERY AND PROCESSING OF NATURAL RESOURCES
Allan Stahl, Humble, Tex.; Ahmad Moradi-Araghi, Bartlesville, Okla.; John Westerman, Wadsworth, Ohio; Henry L. Hsieh, Bartlesville, Okla.; James H. Hedges, Bartlesville, Okla., and Geir Bjornson, Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.
Division of Ser. No. 568,363, Jan. 9, 1984, Pat. No. 4,951,921, which is a continuation-in-part of Ser. No. 461,707, Jan. 28, 1983, Pat. No. 4,644,020. This application Dec. 10, 1991, Ser. No. 805,283
Int. Cl.[5] E21B *43/22*
U.S. Cl. 166—273 **13 Claims**

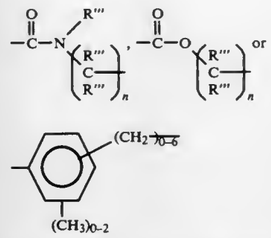


1. A process comprising injecting a surfactant system into a subterranean formation under hostile conditions defined as having a formation temperature and multivalent cation concentration above the infinite days line of FIG. **14** through an injection well to form a miceller composition or microemulsion in said formation; thereafter injecting a mobility buffer slug comprising a water-soluble polymer produced from a monomer composition comprising at least one monomer selected from the group consisting of hydrophilic N-vinyl amides and hydrophilic components of the formula

$$RC(R)=C(R)-(X)_{0-1}\ SO_3M \text{ or}$$

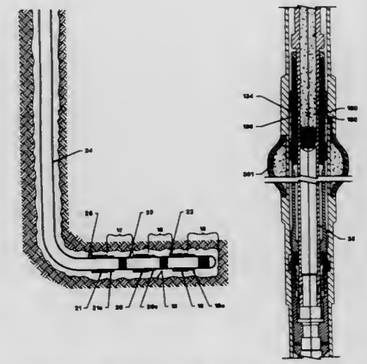
$$RC(R)=C(R)-(X)_{0-1}\ PO_3M \text{ wherein}$$

R is methyl, ethyl or H, provided further that at least one of the R groups on the terminal carbon of the vinyl group is H and the other is H or methyl, M is selected from the group consisting of H, Na^+, K^+, Li^+, R''''_4N^+, Ca^{++}, Mg^{++}, Zn^{++}, Sr^{++}, Fe^{++}, Mn^{++}, and $^+NH_3R^1NH_3^+$ where R^1 is a 1–20 carbon atom divalent hydrocarbon radical, R'''' is H, —ROH or a 1–3 carbon atom alkyl group; wherein X is selected from



where n is an integer of 1–5, and R''' is a 1–3 carbon atom alkyl group, or H; thereafter introducing a drive fluid; and recovering oil from a spaced apart production well.

5,186,258
HORIZONTAL INFLATION TOOL
Edward T. Wood, Kingwood, Tex.; David H. Surgnier, Golden, Colo., and Robert T. Brooks, Aberdeen, Scotland, assignors to CTC International Corporation, Houston, Tex.
Division of Ser. No. 586,248, Sep. 21, 1990, Pat. No. 5,082,062. This application Aug. 22, 1991, Ser. No. 748,788
Int. Cl.[5] E21B *33/124, 33/127, 34/12*
U.S. Cl. 166—387 **34 Claims**



1. A method of placing a string of tubing in fluid communication with an isolated interval of a tubular member in a well bore which traverses earth formations comprising the steps of:
disposing a well tool on the string of tubing in the tubular member in a well bore at a desired location where said well tool has an elongated tubular actuating member coupled to said string of tubing;
anchoring said well tool at said desired location in the tubular member in the well bore against downward movement;
applying weight through longitudinal motion of said string of tubing in one direction for setting spaced apart packing elements on said well tool in a sealing relationship to the tubular member in the well bore for defining an isolated annular space between said packing elements;
applying additional weight through longitudinal motion of said string of tubing in said one direction for opening valve means in said well tool and for placing said isolated annular space and the interior of the string of tubing in fluid communication with one another.

31. A well tool having weight set packer elements for selectively straddling an interval of a tubular member in a well bore and for selectively coupling the straddled interval of the tubular member between the packer elements to the interior of a supporting string of tubing comprising:
a tubular central actuating member for coupling to the supporting string of tubing;
normally retracted anchor means on said actuating member which are releasable for selective anchoring said well tool in the tubular member in the well bore and for permitting relative longitudinal movement of said actuating member while anchored;
pressure operated means in said actuating member for releasing said anchor means;
packer means including weight set packer elements disposed on said actuating member in a normally retracted condition and responsive to weight applied first longitudinal movement of said actuating member in one direction to move to an extended sealing condition with respect to the

VOL 1147 ISS 3 FE 16 1993 UMI

tubular member in the well bore to seal off the interval of the tubular member in the well bore; and

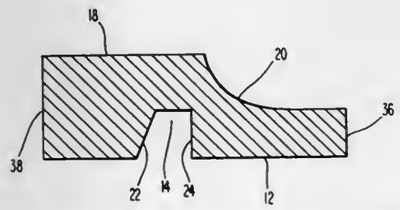
normally closed valve means including ports in said actuating member closed by a valve sleeve member for selectively placing the interior of said actuating member in fluid communication with the sealed off interval of the tubular member in the well bore, said valve sleeve member being movable to open said ports in response to second longitudinal movement of said actuating member in said one direction after said packer elements are in the extended sealing condition.

5,186,259

HORSESHOE HAVING A DEPRESSION ON THE INSIDE OF HOOF FACING SIDE

Stephen T. Teichman, #4 Forrest Hills, Downingtown, Pa. 19335

Filed Nov. 18, 1991, Ser. No. 793,530
Int. Cl.[5] A01L *1/02*
U.S. Cl. 168—24 **11 Claims**



1. A horseshoe for attachment to a horse's hoof wall comprising:

(a) a generally U-shaped article made of substantially solid material and having a toe section and a pair of arcuate branches with, a pair of quarter sections and heel sections at the ends thereof, said article having an inside height and an outside height, a hoof wall facing side, a ground facing, substantially planar side and a plurality of nail aperture therein for attaching said article to said hoof wall;

(b) said top wall facing side having a depression substantially along the entire inside of the shoe extending from and including the heel section to the opposite heel section and extending inwardly to about half the width of the web;

(c) said inside height of the shoe being within the range of about 20 to about 80 percent of the outside height of the shoe.

5,186,260

WIRE-SENSORED RESIDENTIAL RANGE HOOD FIRE EXTINGUISHER SYSTEM

William A. Scofield, Clifton, N.J., assignor to Pem All Fire Extinguisher Corporation, Cranford, N.J.

Filed Apr. 25, 1991, Ser. No. 691,316
Int. Cl.[5] A62C *3/00*
U.S. Cl. 169—65 **11 Claims**

1. A system for extinguishing a fire which may occur within a protected region, the system comprising:

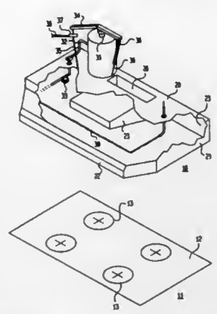
hood means arranged to overlie the protected region, said hood means having a top wall, first and second side walls, and a front wall;

supply coupling means for connecting to a supply of a fire suppressant material;

nozzle means arranged to direct the fire suppressant material toward the protected region, said nozzle means being connected to said supply coupling means for receiving the fire suppressant material;

first and second conductors for carrying a supervisory electrical current;

conductor separation means having a predetermined heat response characteristic whereby said first and second conductors are maintained electrically insulated from one another below a predetermined temperature, and are brought into electrical communication with one another when said predetermined temperature is exceeded to produce a short-circuit-like impedance across said first and second conductors and a corresponding increase in the magnitude of said supervisory electrical current; and



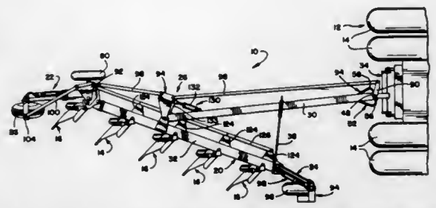
electrical coupling means for coupling across said first and second conductors an electrical device through which said supervisory electrical current is propagated, said electrical device having an electrical impedance characteristic which is substantially greater than said substantially short-circuit impedance.

5,186,261

ON-LAND PLOW ASSEMBLY WITH A PLURALITY OF ADJUSTABLE PLOW UNITS

John H. Will, Elkhart, and William L. Grimm, Wheaton, both of Ill., assignors to Case Corporation, Racine, Wis.

Filed Jun. 25, 1991, Ser. No. 720,651
Int. Cl.[5] A01B *69/00*
U.S. Cl. 172—285 **15 Claims**



8. A plow assembly adapted to be pulled behind an agricultural implement and including ak plurality of plow units each having ground engaging means capable of producing a furrow when the plow assembly is pulled along by the agricultural implement, said plow assembly comprising:

a main frame including a generally horizontal beam inclined relative to the direction of travel of the plow assembly and having each plow unit connected thereto in spaced relation relative to each other for rotation about respective vertical axes, said main frame further including an elongated structural member connected at one end in fixed relation to said horizontal beam and connected at an opposite end to said tractor about a generally vertical spindle defining an upright pivotal axis;

actuation means for simultaneously rotating all of the plow units about their respective vertical axes thereby adjusting the spacing between adjacent plow units within a predetermined range;

support means for supporting a rear end of said main frame, said support means including a ground engaging steering wheel adapted to ride in a furrow provided by the rearmost plow unit; and

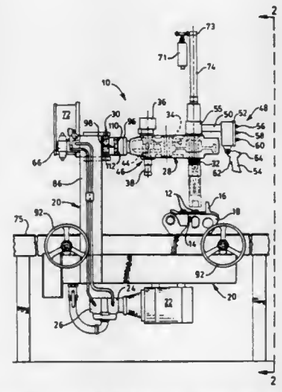
operative means for automatically holding said steering wheel generally parallel to the furrows produced by said plow units for all settings of the spacing between said plow units within said predetermined range and for turning said steering wheel through an angle in response to and in a direction opposed to a steering angle of the implement thereby facilitating turning of the plow assembly behind the agricultural implement, said operative means including a rotatable drive arm connected to said vertical spindle and responsive to the turning angle of the agricultural implement, a driven arm carried toward a distal end of said horizontal beam for pivotal rotation about a fixed vertical axis and connected to said steering wheel, a force transfer member pivotally connected to said horizontal beam for rotation about a vertical mount arranged intermediate said drive and driven arms, a first tie rod having a first end pivotally connected to a distal end of said force transfer member at a predetermined distance from said vertical mount and a second end pivotally connected to said drive arm such that a first quadrilateral is established by the axes of the pivotal connections between the first tie rod and said force transfer member and said drive arm, the pivotal axis of the drive arm relative to the main frame, and the pivotal axis of the force transfer vertical mount; said operative means further including a second tie rod having a first end pivotally connected to a distal end of said force transfer member at a second predetermined distance from the force transfer vertical mount and a second end pivotally connected to said driven arm such that a second quadrilateral is established by the axes of the pivotal connection between the second tie rod with said force transfer member and the driven arm, the pivotal axis of the driven arm relative to the main frame, and the pivotal axis of the force transfer vertical mount; and wherein one of the quadrilateral formations has a non-parallelogram configuration to proportionately reduce the turning angle of the steering wheel relative to the steering angle of the implement.

5,186,262

POWERED TOOL APPARATUS

Owen R. Thompson, Louisville, Ky., assignor to Caterpillar Inc., Peoria, Ill.

Filed Oct. 30, 1991, Ser. No. 785,374
Int. Cl.[5] B25B *23/14*
U.S. Cl. 173—182 **12 Claims**



1. A powered tool apparatus for installing and removing bolts of a bolted joint between track shoes and a track chain, said tool apparatus comprising:

a frame structure;

means for moving said frame structure relative to a preselected location;

a first hydraulic pump supported by said frame structure;

an electric motor supported on said frame structure, said motor being adapted to drive said first hydraulic pump;

a pivot joint;

a movable head structure pivotably connected to said frame structure at said pivot joint, said head structure including a rotatable spindle shaft, a gear train having first and second gear ranges and being coupled to said spindle shaft, said gear train being adapted to rotate in a horizontal plane, a single hydraulic motor adapted to be powered by said first hydraulic pump and being connected to said gear train, and means for shifting said gear train between said first and second ranges, said spindle shaft being axially movable relative to said head structure and said gear train;

means for controlling the rotational speed and direction of rotation of said spindle shaft; and

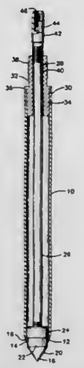
means for detecting the torque value applied to said spindle shaft and actuating said shifting means in response to said detecting means sensing a pre-determined torque value.

5,186,263

SOIL SAMPLE PROBE

Melvin P. Kejr, and Thomas M. Christy, both of Saline, Kans., assignors to Kejr Engineering, Inc., Salina, Kans.

Filed Sep. 17, 1990, Ser. No. 583,461
Int. Cl.[5] E21B *49/02*
U.S. Cl. 175—20 **17 Claims**



1. A soil sample probe for taking subterranean soil samples, said probe comprising:

a sample container elongated along a longitudinal axis, said container being hollow and having an open forward end and an open rearward end;

a piston tip slidably received within said sample container; and

means connected to said sample container proximate said open rearward end for releasably fixing said piston tip in a driving position in which said tip is received in and closes the open forward end, the releasably fixing means including a drive head connected to said sample container at said rearward end, said drive head including a through-hole extending longitudinally therethrough parallel to said longitudinal axis, a piston rod fixed to said piston tip and extending rearwardly therefrom to a free end, at least a portion of said piston rod being received within said through-hole, and a piston stop directly and releasably

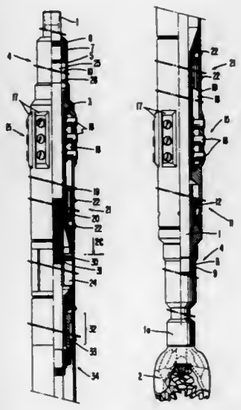
VOL 1147 ISS 3 FE 16 1993 UMI

connected to the drive head in disposition for blocking said through hole rearwardly of said free end of the piston rod and abutting the free end of said piston rod to releasably fix the piston tip in said forward position.

5,186,264
DEVICE FOR GUIDING A DRILLING TOOL INTO A WELL AND FOR EXERTING THEREON A HYDRAULIC FORCE

Benhoist A. du Chaffaut, Versailles, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

PCT No. PCT/FR90/00465, § 371 Date Apr. 26, 1991, § 102(e) Date Apr. 26, 1991, PCT Pub. No. WO91/00410, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 25, 1990, Ser. No. 655,420
Claims priority, application France, Jun. 26, 1989, 89 08588
Int. Cl.[5] E21B *4/18, 4/20, 7/08, 44/00*
U.S. Cl. 175—27 **14 Claims**



1. A device connected between a drilling tool and a drilling system connecting said tool to a surface facility, to exert a hydraulic thrust on the drilling tool, the device having a tubular body integral with the system, a sleeve outside the tubular body able to rotate relative to said body and being longitudinally displaceable relative thereto, coupling means which can be displaced radially between a resting position in which they do not contact the wall of the well drilled by the tool, and a coupling position in which they are applied against the wall and immobilize said outer sleeve, and a hydraulic system having drive means to move said coupling means between their resting and their coupling positions, pushing means to move said body longitudinally relative to said outer sleeve in order to exert a pushing force on the drilling tool, and pumping means driven by the rotation of the body relative to said outer sleeve, characterized by the hydraulic system having

hydraulic circuits isolated from the well, containing a fluid and connecting pumping means to said pushing means and said drive means,

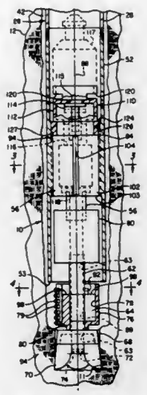
means for varying the fluid pressure in the circuits according to the hydrostatic pressure in the well, and

a control assembly which can automatically carry out a succession of cycles each consisting of immobilizing the outer sleeve relative to the well by moving coupling means into their coupling positions, moving the drilling tool relative to the outer sleeve by acting on said pushing means, from a first retracted position to a second extended position, and displacement in the reverse direction to return the outer sleeve and the body to their original positions relative to each other.

5,186,265
RETRIEVABLE BIT AND ECCENTRIC REAMER ASSEMBLY

Randy H. Henson, and Lloyd A. Baillie, both of Plano, Tex., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 22, 1991, Ser. No. 748,410
Int. Cl.[5] E21B *4/02, 10/32, 10/66*
U.S. Cl. 175—107 **7 Claims**



1. A retrievable bit assembly for use in drilling with one of drill pipe or drill casing in such a way that said bit assembly may be inserted in and removed from said drill pipe without removing said drill pipe from a wellbore, said bit assembly comprising:

fluid-driven motor means adapted for insertion in and traversal through said drill pipe to a lower distal end thereof, said motor means including a rotary output shaft;

cutter means connected to said rotary output shaft comprising a shaft member, bearing means connected to said shaft member and disposed eccentric with respect to the longitudinal central axis of said shaft member;

a cutter part disposed on said shaft member and engageable with said bearing means and movable from a position wherein said bit assembly may be inserted in or retrieved from said drill pipe without removing said drill pipe from a wellbore to a working position for enlarging the diameter of said wellbore; and

cooperating stop means on said bearing means and said cutter part for delimiting eccentric movement of said cutter part in response to rotation of said shaft member.

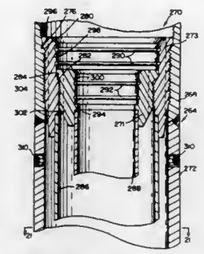
5,186,266
MULTI-WALLED DRILL STRING FOR EXPLORATION-SAMPLING DRILLING SYSTEMS

Marion E. Heller, P.O. Box 873, Lewistown, Mont. 59457

Filed Feb. 15, 1991, Ser. No. 656,207
Int. Cl.[5] E21B *17/18*
U.S. Cl. 175—215 **11 Claims**

1. An exploration mineral sample drill string adapted for reverse-circulation sample drilling composed of multi-walled pipe sections coupled in series to one another; each pipe section including an outer casing, an upper coupling welded to the upper end of said outer casing, a removable spider coupling means mounted within said coupling, and inner and intermediate pipes having upper ends concentrically-mounted by said spider coupling means within said outer casing; said spider coupling means being adapted to receive the bottom ends of inner and intermediate pipes from an upper, adjacent pipe section whereby said spider coupling means concentrically positions the bottom ends of the adjacent pipe section inner and intermediate pipes; the pipe sections being coupled together in

pin-and-box connections, the box connection comprising said upper coupling and the pin connection comprising a lower coupling with the inner and outer pipes extending beyond the pin end of said lower coupling by lengths sufficient to be inserted into an adjacent upper coupling and interfit with the spider coupling means therein, when the pin-and-box connection is completed, whereby the passages formed by said inner and intermediate pipes in adjacent pipe sections are joined

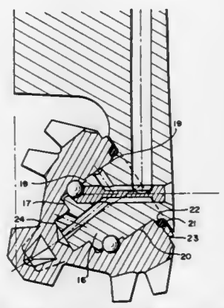


fluid-tightly within said spider coupling means when the pin-and-box connections is completed; said spider coupling means and said upper coupling of each pipe section being so constructed and arranged that said spider coupling means is mounted within said upper coupling below the box end of said upper coupling whereby the space occupied by the pin end of an adjacent pipe section lower coupling is unoccupied by said spider coupling means.

5,186,267
JOURNAL BEARING TYPE ROCK BIT

Kenneth M. White, Calgary, Canada, assignor to Western Rock Bit Company Limited, Calgary, Canada

Filed Feb. 6, 1991, Ser. No. 651,567
Claims priority, application Canada, Feb. 14, 1990, 2009987
Int. Cl.[5] E21B *10/22*
U.S. Cl. 175—371 **11 Claims**

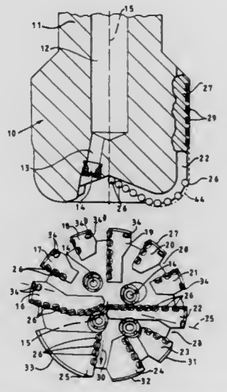


1. A sealed, lubricated journal bearing rock bit having a longitudinal axis about which the rock bit rotates, the rock bit having at least one cutter rotatably mounted on a cantilevered bearing pin aligned on an axis which extends generally radially from the longitudinal axis with the bearing pin having a radially inner free end proximate the longitudinal axis and a radially outer end remote from the longitudinal axis, the cutter and bearing pin having substantially coextensive complementary journal bearing surface extending parallel to the bearing pin axis, retention means proximate a radially inner end of the complementary journal bearing surfaces for retaining the cutter on the bearing pin and a seal proximate a radially outer end of the complementary journal bearing surfaces, a primary axial thrust surface located toward the radially inner end of the bearing pin on one side of the retention means and an axial lubricant flow restrictor located at the complementary journal bearing surfaces proximate the seal thereby reducing exposure of the seal to adverse hydrodynamic lubrication pressures during operation.

5,186,268
ROTARY DRILL BITS

John M. Clegg, Bristol, England, assignor to Camco Drilling Group Ltd.

Filed Oct. 31, 1991, Ser. No. 785,460
Int. Cl.[5] E21B *10/46*
U.S. Cl. 175—399 **16 Claims**



1. A rotary drill bit comprising a bit body having a shank for connection to a drill string and a passage for supplying drilling fluid to the face of the bit, the bit body having a central longitudinal axis and carrying a plurality of primary cutting elements defining a primary cutting profile, at least some of the primary cutting elements each comprising a preform cutting element having a superhard front cutting face, the bit including means to apply a resultant lateral force to the bit as it rotates in use, and a portion of the outer periphery of the bit body including at least one low friction bearing means so located as to transmit said resultant lateral force to the part of the formation which the bearing means is for the time engaging, there being associated with at least certain of said primary cutting elements respective secondary elements spaced inwardly of said primary cutting profile, each primary cutting element having an operative cutting edge portion, and at least certain of said respective secondary elements each having an outer surface portion located at substantially the same radial distance from the central longitudinal axis of the bit as a radially outer part of the operative cutting edge portion of its respective associated primary cutting element.

5,186,269
METHOD OF AND APPARATUS FOR MOTORIZING MANUALLY POWERED VEHICLES

Emik A. Avakian, 67 Applewood Dr., Chicopee, Mass. 01022, and James V. Masi, Wilbraham, Mass., assignors to Emik A. Avakian, Chicopee, Mass.

Continuation-in-part of Ser. No. 521,352, May 9, 1990, abandoned. This application Nov. 7, 1991, Ser. No. 789,054
Int. Cl.[5] B62D *11/02*
U.S. Cl. 180—6.5 **14 Claims**

1. Apparatus for motorizing a vehicle having a pair of drive wheels, each of the drive wheels having radially extending spokes, the drive wheels of the vehicle being mounted for rotation about respective ones of a pair of axially aligned sta-

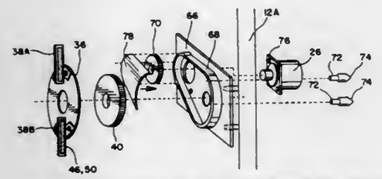
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tionary axles, the axles being supported from spatially separated side frames, said apparatus comprising:

a pair of electric motor means, said motor means each including a drive motor having an output shaft which is rotatable about an axis and a first gear affixed to said shaft;

support means for each of said motor means, said support means being mountable on the vehicle such that the axes of the output shafts of said drive motors will be non-aligned, said support means contacting respective ones of the vehicle side frames to prevent rotation of an associated motor means relative to the axis of the axles;

torque delivery means associated with each of said motor means, said torque delivery means each being supported coaxially of a respective axle and being positioned between an associated wheel and a side frame member of the vehicle, said torque delivery means establishing a frictionless direct drive connection to the associated wheel;

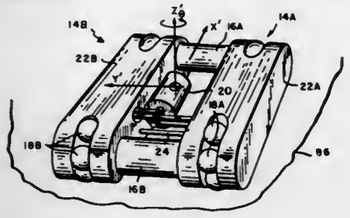


means for coupling each of said first gears to respective ones of said torque delivery means, said coupling means being rotatably mounted on an axle between a wheel and a side frame of the vehicle;

means for generating separate control signals for each of said drive motors, said drive motors and said control signal generating means being interconnected only by flexible electrical cables;

wherein said torque delivery means includes a plurality of spoke engaging members and a second gear, said second gear being in direct engagement with said first gear for establishing a direct drive connection between said motor means and said wheel spokes.

5,186,270
OMNIDIRECTIONAL VEHICLE
A. Mark T. West, Kendal, England, assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Oct. 24, 1991, Ser. No. 783,640
Int. Cl.[5] B62D *11/00*; B60S *9/215*; B25J *5/00*
U.S. Cl. 180—6.62 **21 Claims**



1. An omnidirectional vehicle comprising:

a) a first track mounted to said vehicle;

b) a second track mounted to said vehicle parallel to and spaced from said first track;

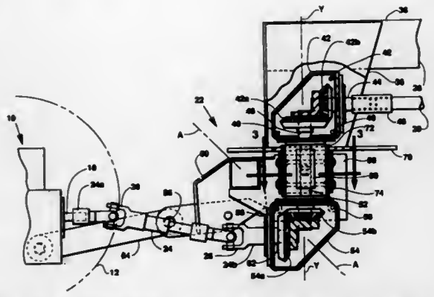
c) first means for independently driving said first track and said second track in a first direction;

d) a plurality of spheres mounted in each of said tracks at intervals spaced in said first direction;

e) second means for driving the spheres in at least one of said tracks to rotate in a second direction generally perpendicular to said first direction; and

means for controlling said first and second means to move the vehicle in a desired direction.

5,186,271
SWIVEL HITCH WITH IMPROVED MOUNTING OF LOWER GEARBOX
Kenneth W. McLean, New Holland, Pa., assignor to Ford New Holland, Inc., New Holland, Pa.
Filed May 31, 1991, Ser. No. 708,652
Int. Cl.[5] B60D *1/00*; B60K *25/08*
U.S. Cl. 180—14.4 **4 Claims**



1. In an arrangement wherein a power-take-off shaft on a tractor delivers power through a primary drive line to an input shaft on an implement, said primary drive line including a swivel hitch comprising:

an upper gearbox fastened to a tongue extending forwardly from the implement, the upper gearbox having an input shaft and an output shaft with said upper gearbox output shaft being coupled to said implement input shaft;

a lower gearbox mounted on a yoke assembly that is attached to the tractor, the lower gearbox having first and second shafts with said first shaft being coupled to said upper gearbox input shaft and said second shaft being connected to said tractor power-take-off shaft said yoke including a pair of spaced apart, lower vertical plates; and

said lower gearbox being mounted by resilient means permitting limited repositioning of said lower gearbox with respect to said yoke assembly in order to compensate for any misalignment of said first shaft when coupling it to said upper gearbox input shaft, said resilient means including a plurality of bolts which extend through corresponding bushings having rubber inserts, each said bolt passing through a corresponding sleeve fixed to an adjacent one of said lower vertical plates and being threadably received in said lower gearbox, said rubber inserts being disposed between the corresponding said sleeve and bolt and being compressed between a washer and said lower gearbox.

5,186,272
AUTOMOTIVE POWER STEERING GEAR
Richard H. Smith, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jun. 25, 1991, Ser. No. 720,567
Int. Cl.[5] B62D *5/083*
U.S. Cl. 180—132 **3 Claims**

1. In a power steering system including

a steering assist fluid motor having a movable reaction member defining a first variable volume working chamber on one side of said reaction member and a second variable volume working chamber on the other side of said reaction member,

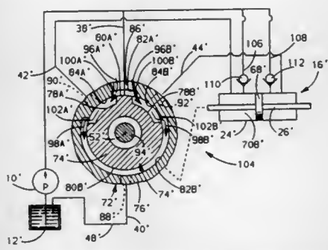
a power steering gear comprising:

a housing having an inlet port for connection to a fluid pump and a discharge port for connection to said first working chamber port for connection to said first fluid motor working chamber and a second working chamber port for connection to said second fluid motor working chamber,

an input shaft rotatably supported on said housing and connected to a steering wheel,

an output shaft rotatably supported on said housing and connected to said fluid motor reaction member,

an open-center control valve in said housing defining a pair of inlet branch passages from said inlet port to respective ones of said first and said second working chamber ports and a pair of discharge branch passages from respective ones of said first and said second working chamber ports to said discharge port and including land and groove means connected to said input shaft and said output shaft defining a variable orifice in each of said inlet branch passages and said discharge branch passages,



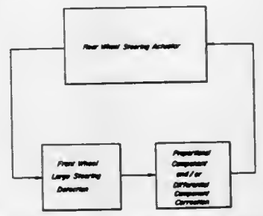
means on said housing defining a first bypass passage around said variable orifice in said first inlet branch passage,

means on said housing defining a second bypass passage around said variable orifice in said second inlet branch passage,

first valve means in said first bypass passage responsive to a pressure gradient between said inlet port and said first fluid motor working chamber operative to open said first bypass passage only when the pressure in said first fluid motor working chamber exceeds the pressure at said inlet port, and

second valve means in said second bypass passage responsive to a pressure gradient between said inlet port and said second fluid motor working chamber operative to open said second bypass passage only when the pressure in said second fluid motor working chamber exceeds the pressure at said inlet port.

5,186,273
REAR WHEEL STEERING SYSTEM FOR AUTOMOTIVE VEHICLE
Kazunori Mori, Ebina, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Mar. 27, 1991, Ser. No. 676,120
Claims priority, application Japan, Mar. 28, 1990, 2-76699
Int. Cl.[5] B62D *5/06*
U.S. Cl. 180—140 **8 Claims**



1. A rear wheel steering system of an automotive vehicle wherein steering of rear wheels is conducted in accordance with front wheel steering, with a steering angle which corresponds to a sum of proportional and differential components of the amount of said front wheel steering, said rear wheel steering system comprising:

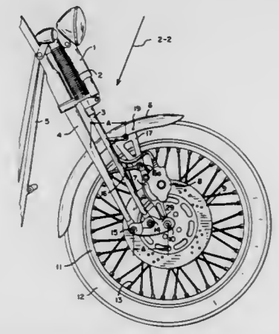
a detecting means for detecting a front wheel large steering condition in which the front wheels have been steered with an amount in excess of a preset value;

a correction means responsive to said detecting means, for correcting at least one of the proportional component and the differential component in said front wheel large steering condition, in such a direction so as to improve a transient turning response characteristic of the vehicle; and

an actuator means responsive to said correction means, for steering the rear wheels by a steering angle based on said at least one of the components which has been corrected by the correcting means in said large front wheel steering condition;

wherein said correction means decreases said proportional component when it is a same-phase component, in accordance with an increase in the amount of the front wheel steering.

5,186,274
MOTORCYCLE FRONT FENDER MOUNTING SYSTEM
Terry Hegman, Fountain Valley, Calif., assignor to Harley-Davidson, Inc., Milwaukee, Wis.
Filed Dec. 14, 1990, Ser. No. 627,307
Int. Cl.[5] B62K *25/08*
U.S. Cl. 180—227 **8 Claims**



7. In a motorcycle having a frame, said motorcycle comprising:

a. a front wheel having an axle and a tire;

b. a fender mounted radially outward from said tire a preselected distance;

c. a pair of elongate rockets, each said rocker having a first and second end, each said rocker having said first end pivotally mounted about said axle;

d. a fork mounted to said frame straddling said tire and having each lower of said fork pivotally mounted to said second end of each said rocker;

e. a pair of struts mounted to said frame by shock absorbing means, each said strut being pivotally mounted to one of said rockers at a point intermediate said first and second ends;

the improvement comprising:

means for mounting said fender to said motorcycle to maintain said preselected distance constant regardless of movement of said fork and said struts relative to said axle, said axle and said fender;

1) bracket means connecting said axle and said fender;

2) first link means pivotally connecting said bracket means to said struts; and

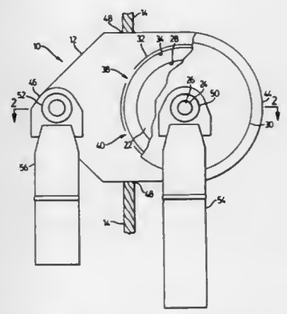
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3) second link means pivotally connecting said bracket means to said fork.

5,186,275
HIGHRISE FAMILY FIRE ESCAPE DEVICE

Zivojin Bajin, 353 Northcliffe Blvd., Toronto, Ontario, Canada M6E 3K9

Continuation-in-part of Ser. No. 600,737, Oct. 22, 1990, abandoned. This application May 21, 1992, Ser. No. 886,212
Int. Cl.[5] A62B *1/00, 35/00*
U.S. Cl. 182—5 **7 Claims**



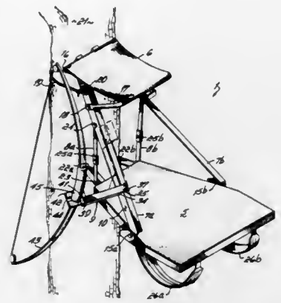
1. A fire escape device for enabling persons to be lowered from tall structures, said fire escape device comprising:
a cable spool having an outer surface defining a helical channel extending for at least one revolution about said spool;
a spool casing having an inner surface surrounding said outer surface of said cable spool, said spool casing defining first and second channel openings permitting access to said helical channel from the exterior of said spool casing;
a housing having first and second ends, said spool and spool casing being secured adjacent said first end, and said housing defining housing openings between said first and second ends such that said housing openings permit access to said channel openings from the exterior of said housing, said housing openings and said channel openings being generally aligned along a common axis;
a cable passing through said housing openings and channel openings such that said cable passes at least once about said spool along said helical channel and extends from each of said housing openings, said inner surface being spaced from said outer surface sufficiently to prevent said cable from riding out of said helical channel;
attachment means located at at least one end of said cable;
first and second harness supports, said first harness support being attached to said housing adjacent to the axis of said cable spool by a bolt that is coaxial with said cable spool, and said second harness support being attached adjacent to said second end of said housing, whereby said harness supports are located on opposing sides of said cable to provide balanced support to said person being lowered; and first and second harness straps attachable respectively to said first and second harness supports.

5,186,276
PORTABLE HUNTING TREE STAND

Charles R. Craig, 4 Truesdale Ave., South Newport, Ky. 41071

Filed May 10, 1991, Ser. No. 697,976
Int. Cl.[5] E604 *5/00;* **A45F** *3/00*
U.S. Cl. 182—187 **13 Claims**

1. A portable hunting tree stand adapted to be removably connected to a tree trunk comprising:
a platform,
a seat,
at least one frame member connected between said seat and said platform,
arm means pivotally connected on a first end to said frame member and being operable to pivot between a first position generally adjacent and parallel to said frame member and a second position generally perpendicular to said frame member, said arm means having an edge adapted to

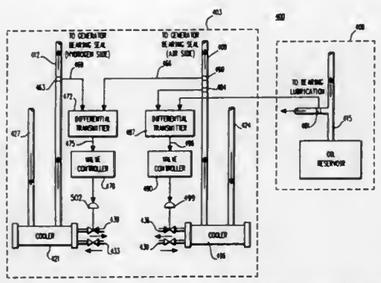


engage said frame member to maintain a spaced relationship between said arm means and said frame member, and
bracket means connected to a second end of said arm means and being operable for removable placement of a hunting bow therein,
whereby the bow may be supported in said bracket means slightly forward of a hunter seated atop said seat and laterally spaced away from a lateral edge of said platform.

5,186,277
GENERATOR SEALING OIL TEMPERATURE CONTROL METHOD AND APPARATUS UTILIZING TEMPERATURE MATCHING

Owen R. Snuttjer, Oviedo, and Michael J. Rasinski, Winter Springs, both of Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 646,925, Jan. 28, 1991, Pat. No. 5,147,015. This application Mar. 6, 1992, Ser. No. 847,559
Int. Cl.[5] F01M *5/00*
U.S. Cl. 184—6.22 **22 Claims**

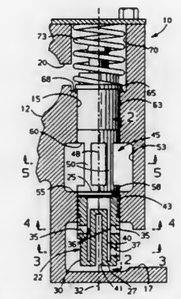


1. A method for supplying seal oil to a gland seal of a generator shaft and lubrication oil to a bearing upon which the shaft rotates, the method comprising:
providing a first supply of oil to said gland seal;
providing a second supply of oil to said bearing;
sensing the temperatures of said first and second supplies of oil; and
cooling said first supply of oil such that the temperature of the first supply of oil fed to the gland seal is maintained at a predetermined difference in reference to the temperature of the second supply of oil fed to the bearing.

5,186,278
OIL MIST SEPARATOR

Steven E. Ives, Durand; Thomas B. Ascroft, Laingsburg; Richard F. Reising; Robert F. Hill, both of Troy; John E. Brevick, Livonia, and Eric W. Schneider, Shelby Township, Macomb County, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 631,711, Dec. 21, 1990, abandoned. This application Dec. 20, 1991, Ser. No. 811,901
Int. Cl.[5] F01M *11/08*
U.S. Cl. 184—6.23 **4 Claims**



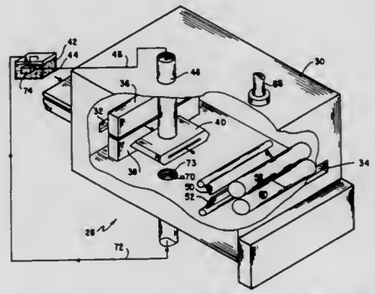
1. An oil mist separator for a gas flow having oil particles suspended therein, comprising:
a separator element including a duct having an open end, a closed end and a side wall extending between said open and closed ends;
a longitudinal axis extending between said open and closed ends, said longitudinal axis being parallel to said side wall;
an inlet orifice formed in said side wall;
a drain orifice formed in said side wall between said inlet orifice and closed end; and
an impingement plate mounted within said side wall, said impingement plate being parallel to said longitudinal axis and facing said inlet orifice and drain orifice,
said separator element being supported in the gas flow so that said longitudinal axis is approximately vertical and said closed end is below said open end, and so that the gas flow enters said separator element through said inlet orifice and strikes said impingement plate, the gas flow also entering said drain orifice and striking said impingement plate when said drain orifice is open, the striking of the gas flow against the impingement plate resulting in the oil particles adhering to said impingement plate and flowing downward toward said closed end with the oil particles exiting from said separator element through said drain orifice, and the gas flow exits said separator element through said open end, said drain orifice being sufficiently spaced apart from said inlet orifice so that when said drain orifice is blocked with oil, the velocity of the gas flow adjacent to said drain orifice is approximately zero.

5,186,279
METHOD AND APPARATUS FOR LUBRICATING TAB STOCK

Howard Chasteen, Westminster; Todd Farley, Golden; Richard Cramer, and Michael Lockner, both of Arvada, all of Colo., assignors to Ball Corporation, Muncie, Ind.

Filed Mar. 8, 1991, Ser. No. 666,725
Int. Cl.[5] F16N *7/24*
U.S. Cl. 184—15.1 **20 Claims**

1. An apparatus for applying a lubricant to first and second substantially planar surfaces of a piece of sheet metal to provide a substantially uniform thickness of the lubricant on the first and second surfaces, comprising:
means for applying the lubricant to the first and second surfaces of the sheet metal, the first surface being maintained at a first distance relative to a horizontal reference plane, the second surface being positioned above the first surface relative to said horizontal reference plane; and
means for controlling a thickness of the lubricant on the first and second surfaces by advancing the sheet metal relative to said means for controlling, said means for controlling comprising:
first and second means for engaging the lubricant on the first and second surfaces, respectively, said first and second means for engaging extending substantially across an entire width of the first and second surfaces, respectively, to provide for a substantially uniform thickness of the lubricant on the first and second surfaces, respectively, as the first and second surfaces advance relative to said first and second means for engaging, respectively, said first and second means for engaging comprising first and second rotatable roller means, respectively, and first and second wiper means, respectively, wherein an engaging surface of each of said first and second roller means is substantially parallel to the first and second surfaces of the sheet metal, respectively, wherein a position of a first plane coinciding with an interface of the first surface and said first means for engaging, said first plane being substantially parallel to the first surface, is substantially fixed relative to said horizontal reference plane to maintain the first surface at said first distance.



5,186,280
HIGH TEMPERATURE OVEN CONVEYOR CHAIN LUBRICATION SYSTEM

Donald L. Mattcheck, 5950 Beechdell Dr., Cincinnati, Ohio 45233

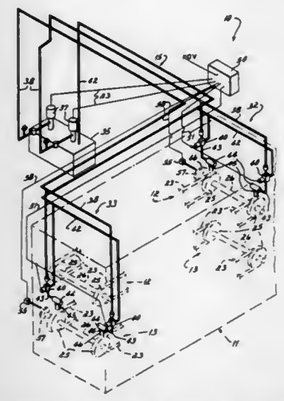
Filed May 3, 1991, Ser. No. 695,298
Int. Cl.[5] F16N *7/24*
U.S. Cl. 184—15.3 **29 Claims**

1. A conveyor chain lubricating system for depositing discrete shots of lubricant onto pins that pivotally interconnect links of a conveyor chain, the system comprising:
a lubricating fluid reservoir having a chain lubricating fluid contained therein;
a dispensing outlet adjacent and spaced from the conveyor chain;
a fluid conducting line extending from the reservoir to the dispensing outlet;
a pump connected in the line for pumping lubricating fluid from the reservoir and along the line at a predetermined pressure;
valve means connected in the line between the pump and the outlet for opening and closing the line to the flow of fluid from the pump toward the outlet in response to a control signal;
reverse flow preventing means, including a check valve, connected in the line downstream of the valve means and close to the outlet for retaining fluid in the line up to a

VOL 1147 ISS 3 FE 16 1993 UMI

point close to the outlet upon the closing of the line by the valve means, the check valve being sufficiently close to the outlet to accurately dispense, in cooperation with the valve means, a discrete metered shot of fluid from the outlet onto a point of the chain to be lubricated;

sensor means for generating a timing signal related to a



predetermined position of a each pin of the conveyor chain with respect to the outlet; and

controller means responsive to timing signals from the sensor means for generating the control signal to operate the valve means to cause a momentary flow of lubricating fluid through the line and from the outlet onto the chain near a pin thereof.

5,186,281

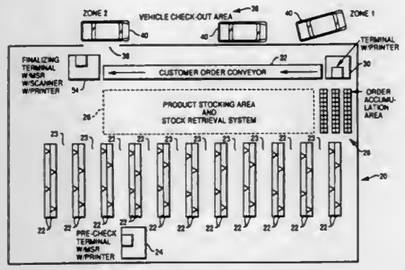
METHOD FOR RETAIL CHECKOUT

Alfred D. Jenkins, Cambridge, Ohio, assignor to NCR Corporation, Dayton, Obio

Filed Jun. 10, 1991, Ser. No. 712,835

Int. Cl.[5] E04H *3/00*

U.S. Cl. 186—55 **4 Claims**



1. A method of selecting and checking out merchandise in a retail establishment, said establishment including a system comprising a display area having individual display compartments for displaying actual samples of items to be sold, selection means employing vertical and horizontal values associated with rows and columns of said compartments in the display area for selecting items from the display area, ID means for identifying the customer selecting the items, quantity means for entering the quantity desired of each selected item, precheck means for producing a record of the items and quantity of items selected, a product stocking area for storing the items to be sold, an item accumulating area, means for retrieving items ordered by the customer from the product stocking area and placing them in locations in the item accumulating area in accordance with the customer identification, and a checkout station for checking out the items accumulated, comprising the following steps:

(a) providing identification to the system by a customer by applying a customer card to said ID means;

(b) viewing the samples in the display area by the customer;

(c) selecting the desired item by using said selection means to index values corresponding to those associated with said compartments;

(d) selecting the quantity desired of said selected items by entering a numerical value into said quantity means;

(e) repeating steps (c) and (d) if additional items are desired;

(f) removing said customer card from said ID means;

(g) performing a pre-check operation by or for the customer at the pre-check means;

(h) receiving by the customer from the pre-check means of an itemized, totaled receipt for items purchased with identification number and account verification;

(i) retrieving of selected items by the retrieving means from the product stocking area and assembling them in the item accumulating area;

(j) checking out by or for the customer at said checkout station, and

(k) receiving by the customer of the purchased items from the item accumulating area.

5,186,282

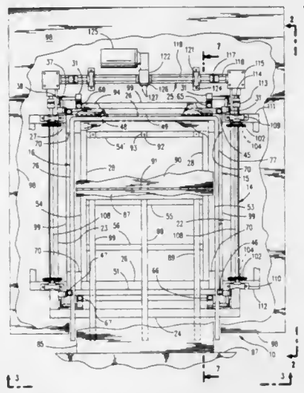
VERTICAL TRANSPORT APPARATUS

Paul R. Everhard, Nicholasville; Alan L. Everhard, and Roy K. Monroe, both of Lexington, all of Ky., assignors to Aging Technologies, Inc., Lexington, Ky.

Continuation-in-part of Ser. No. 824,337, Jan. 23, 1992, abandoned. This application Mar. 12, 1992, Ser. No. 850,658

Int. Cl.[5] B60S *13/00*

U.S. Cl. 187—8.59 **23 Claims**



1. A vertical transport apparatus for transporting a person from a ground level position to a raised position and vice versa including:

movable support means for supporting a person including a support surface not disposed above the ground when said movable support means is in its lowermost position;

retaining means surrounding at least a portion of said support surface of said movable support means for retaining the person on said support surface of said movable support means, said retaining means having no portion disposed above the ground when said retaining means is in its lowermost position;

first causing means for causing lifting of said retaining means relative to said movable support means for a first predetermined distance to dispose said retaining means in a raised position relative to said support surface of said movable support means;

and second causing means for causing lifting of said movable support means and said retaining means for a second predetermined distance to their uppermost positions after said retaining means has been lifted the first predetermined distance relative to said movable support means, said support surface of said movable support means being substantially level with a surface of another structure when said retaining means and said movable support means are in their uppermost positions.

5,186,283

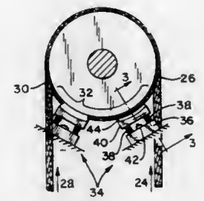
TRIPLE-WRAP TRACTION ARRANGEMENT

John K. Salmon, South Windsor, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Filed Sep. 26, 1991, Ser. No. 765,852

Int. Cl.[5] B66B *11/08*

U.S. Cl. 187—20 **2 Claims**



1. An elevator having a sheave having a groove for receiving greater than a 360° wrap of rope therein, the rope winding on the groove at a pay-on point adjacent one side portion thereof, moving axially across said groove, and winding off said groove adjacent a second side portion thereof characterized by:

a deflector disposed between said pay on point and said pay off point for urging said rope to move axially from said one side of said groove to said other side of the groove thereby minimizing the probability that adjacent wraps of rope in said groove contact each other; and

means for detecting motion of said deflector away from said groove to determine whether said elevator is experiencing an emergency condition.

5,186,284

FAIL SAFE SELF-ADJUSTING DISC BRAKE

Anthony J. Lamela, Gilberts, Ill.; Thomas F. Christensen, Twin Lakes, and David T. Rach, Wausau, both of Wis., assignors to Case Corporation, Racine, Wis.

Filed May 31, 1991, Ser. No. 708,584

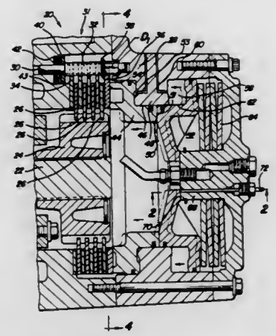
Int. Cl.[5] F16D *55/02, 66/00, 65/24*

U.S. Cl. 188—71.8 **8 Claims**

1. In a brake assembly having a primary service braking piston movable to urge rotating and non-rotating discs against one another for braking rotation of a shaft, the improvement comprising:

a plurality of tubes mounted for movement during braking, each tube being spring-biased toward the piston and tube movement during braking being limited by a stop;

a plurality of abutments retaining the piston at a non-braking position, each abutment being mounted on a tube and comprising a frictionally-mounted ring slidable on its respective tube to compensate for disc wear,



whereby the distance moved by the piston from the non-braking position to a brake-applying position is substantially constant notwithstanding disc wear.

5,186,285

METHOD OF, AND A DEVICE FOR, CONTROLLING THE ROTATION OF AN ELEMENT ABOUT AN AXIS BY MEANS OF A WRAP SPRING

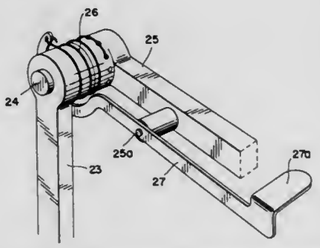
Jeichienus A. van der Werff, Montfoort, Netherlands, assignor to Hadewe B.V., Drachten, Netherlands

Division of Ser. No. 362,501, Jun. 7, 1989, Pat. No. 5,007,507. This application Feb. 28, 1991, Ser. No. 662,115

Claims priority, application Netherlands, Jun. 7, 1988, 8801461

Int. Cl.[5] F16D *51/00*

U.S. Cl. 188—77 W **14 Claims**



1. A device for controlling the rotation of an element about an axis, comprising:

means for selectively precluding rotation of the element in a first direction, said selective rotation precluding means including

a stationary cylindrical member,

a wrap spring wrapped around said cylindrical member, one end of said wrap spring being anchored to the element to preclude rotation of the element in said first direction relative to the cylindrical member about the axis, and

a control member mounted on the element for movement between a first position and a second position relative to the element, said control member being connected to an other end of said wrap spring such that said wrap spring is wrapped tightly about said cylindrical member to thereby preclude rotation of the element in said first direction about said axis relative to the cylindrical member whenever said control member is in the first position relative to the element, and such that said wrap spring is

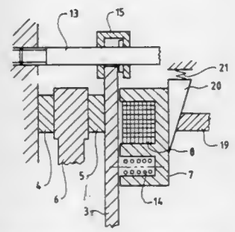
VOL 1147 ISS 3 FE 16 1993 UMI

wrapped loosely about said cylindrical member to thereby enable rotation of the element about said axis relative to the cylindrical member whenever said control member is in the second position relative to the element and whenever said element is rotating in a second direction that is opposite said first direction, the rotation of the element in said first direction about the axis causing said control member to return to said first position relative to the element.

5,186,286
ELECTROMAGNETIC BRAKE

Teppo Lindberg, Nuppulinna, Finland, assignor to Kone Oy, Helsinki, Finland

Filed Mar. 13, 1991, Ser. No. 668,658
Claims priority, application Finland, Mar. 13, 1990, 901248
Int. Cl.[5] F16D *9/02, 55/22, 65/52, 59/02*
U.S. Cl. 188—171 **12 Claims**

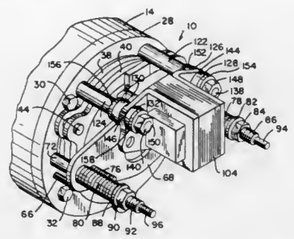


1. An electromagnetic brake comprising:
a. a brake wheel slidably disposed about an axle of the brake;
b. a friction plate fixedly attached to a frame of the brake;
c. an anchor plate movable in an axial direction of the brake;
d. at least two friction surfaces frictionally engaging said brake wheel during braking, said friction surfaces being fixedly disposed on said friction plate and said anchor plate respectively;
e. at least one brake spring for urging said anchor plate toward said brake wheel so as to force said friction surfaces into frictional engagement with said brake wheel;
f. an electromagnet disposed in operative relation to said anchor plate, said electromagnet serving to disengage said friction surfaces from said brake wheel when a current is supplied to said electromagnet; and
g. compensating means for compensating for wear of said friction surfaces and thereby maintaining a substantially constant predetermined clearance between said electromagnet and said anchor plate when said friction surfaces are in frictional engagement with said brake wheel;
wherein said compensating means comprises:
(i) at least one shaft disposed parallel to, and radially spaced form the axle of the brake;
(ii) a respective substantially U-shaped retainer slidably mounted on each said shaft, wherein said retainer comprises a front flange facing toward said brake wheel and a rear flange facing away from said brake wheel, said front and rear flanges being disposed on opposite sides of said anchor plate;
(iii) a respective directional element disposed about each said shaft between said anchor plate and said rear flange of said respective retainer, said directional element serving to limit the motion of said anchor plate away from said brake wheel to a predetermined amount sufficient to ensure release of the brake;
(iv) wedge means for moving said electromagnet towards said brake wheel; and
(v) spring means for urging said wedge means in a predetermined direction to thereby urge said electromagnet towards said brake wheel.

5,186,287
SIMPLIFIED MOTOR BRAKE

Bernard J. Lindner, Brookfield, and Harold Lorenz, Greenfield, both of Wis., assignors to Rexnord Corporation, Milwaukee, Wis.

Filed Nov. 27, 1990, Ser. No. 618,658
Int. Cl.[5] B60T *13/04*
U.S. Cl. 188—171 **18 Claims**



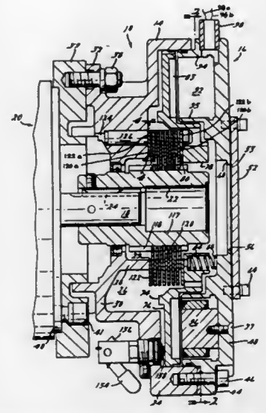
1. A brake mechanism for selectively stopping or permitting rotation of a shaft journaled in a motor frame, comprising:
friction disc means secured to said shaft for rotation therewith about the axis of said shaft;
end plate means secured to said motor frame;
non-rotatable pressure plate means mounted to said end plate means for axial movement toward and away from said friction disc means;
bearing means secured to said end plate means;
lever means mounted to said end plate means for pivotal movement about said bearing means toward and away from said pressure plate means;
biasing means biasing said lever means against said pressure plate means such that said pressure plate means engages said friction disc means and prevents rotation of said shaft;
solenoid means secured to said end plate means and having a reciprocally movable plunger connected to said lever means and movable to a first position moving said lever means in one axial direction away from said pressure plate means against the bias of said biasing means to release said friction disc means and permit rotation of said shaft, and movable to a second position permitting said lever means to move under the bias of said biasing means in the opposite axial direction toward and engaging said pressure plate means such that said pressure plate means engages said friction disc means and prevents rotation of said shaft;
said brake mechanism having an installed condition mounted to said motor frame, and a detached condition removed from said motor frame, said brake mechanism being a self-contained assembled unit in each of said conditions;
retaining means retaining said friction disc means in axial alignment with said pressure plate means and permitting removal and replacement of said friction disc means in said detached condition of said brake mechanism without disassembly of said brake mechanism.

5,186,288
ELECTRO-SHEAR BRAKE

Gordon M. Sommer, Boca Raton, Fla., assignor to Sommer Company, Warren, Mich.

Division of Ser. No. 157,925, Feb. 18, 1988, Pat. No. 4,921,078.
This application Apr. 27, 1990, Ser. No. 516,096
The portion of the term of this patent subsequent to May 1, 2007, has been disclaimed.
Int. Cl.[5] F16D *55/26*
U.S. Cl. 188—171 **13 Claims**

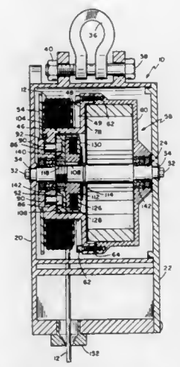
1. A brake for an electrical motor of the type having a rotatable and axially non-movable motor shaft, comprising a housing defining an enclosed chamber for receiving a viscous fluid, said housing having a first end connected to said motor and a second end axially spaced from said motor and from said first end, brake means, said brake means comprising a magnetizable pole piece axially movable relative to said shaft between a first position to prevent the shaft from rotation and to a second position wherein the shaft is permitted to rotate, a spring for normally biasing said pole piece into said first position, and an electromagnetic flux generating means, electrically connectible to the electrical circuit of said motor, for generating magnetic flux which acts on said pole piece to retract the pole piece against the biasing effect of said spring, said flux generating means comprising a plurality of generally axially extending, stationary, angularly spaced, electrical coils mounted on the second end of said housing.



5,186,289
RETRACTABLE LIFELINE SAFETY DEVICE

James T. Walner, Red Wing, Minn., and Duncan C. Engh, Hagger City, Wis., assignors to D B Industries, Inc., Red Wing, Minn.

Filed Oct. 26, 1990, Ser. No. 604,758
Int. Cl.[5] F16D *59/00*
U.S. Cl. 188—180 **23 Claims**

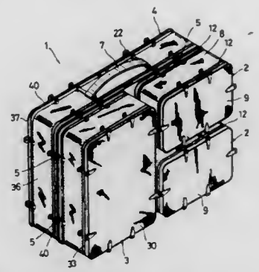


1. A fall arresting device, comprising:
support means;
a main shaft passing through said support means, the ends of said main shaft being non-rotatably connected to two opposing portions of said support means;
a sealed housing contained within said support means and rotatably mounted to said main shaft;
a drum fixedly attached to said sealed housing in rotatable relation about said main shaft, said drum also being contained within said support means;
cable means wound onto said drum, said cable means having a first end extending from said support means and a second end fixed to said drum;
spring means contained within said sealed housing biasing said sealed housing in a retracting direction, whereby when said cable means is unwound from said drum, said spring means biases said drum in a direction tending to rewind said cable means onto said drum; and
brake means contained within said sealed housing, whereby when said drum and said sealed housing attached thereto rotate at a rate greater than a predetermined rate due to the unwinding of said cable means from said drum, said brake means tends to brake the rotation of said drum, said brake means including: centrifugal clutch means; a brake driving hub rotatably mounted to said main shaft; a brake hub non-rotatably mounted to said main shaft; a plurality of rotor discs rotatably mounted to said brake hub; and a plurality of stator discs non-rotatably mounted to said brake hub.

5,186,290
COMBINATION TRUNK

Hiromitsu Takayama, 3-45, Takaido-Nishi, 2-chome, Suginami-ku, Tokyo, Japan

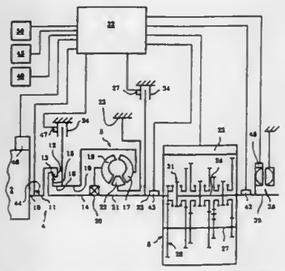
Filed Jan. 30, 1992, Ser. No. 828,383
Int. Cl.[5] A45C *1/02, 3/06*
U.S. Cl. 190—108 **10 Claims**



1. A combination trunk comprising:
a frame having opposed openings and separate toothed strips of a sip-fastener mounted in said opposed openings;
said frame having upper, lower, left and right sides;
at least six pairs of joiner blocks mounted to said frame at the upper, lower, left and right sides of the frame so that the joiner blocks extend outward from locations of the frame that are close to edges of said openings;
a separate cover releasably covering each of said openings of the frame, each cover having an edge with a zip-fastener strip mounted to the edge of each cover; and
at least six joiners mounted to specific locations of the edge of each cover at locations corresponding to the joiner blocks of the frame.

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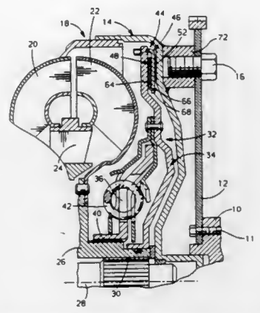
5,186,291
TRANSMISSION FOR A VEHICLE
Lars-Gunnar Hedstrom, Vagnbärad, and Björn Westman, Huddinge, both of Sweden, assignors to Saab-Scania Aktiebolag, Sweden
PCT No. PCT/SE91/00083, § 371 Date Oct. 8, 1991, § 102(e) Date Oct. 8, 1991, PCT Pub. No. WO91/12443, PCT Pub. Date Aug. 22, 1991
PCT Filed Feb. 8, 1991, Ser. No. 768,722
Claims priority, application Sweden, Feb. 9, 1990, 9000467
Int. Cl.[5] F16H *47/06;* B60K *17/06*
U.S. Cl. 192—3.23 **26 Claims**



1. A transmission for a vehicle, said transmission comprising:
a stepped gear box having an input shaft and an output shaft and a plurality of shiftable gear wheels coupled therebetween;
a hydrodynamic torque converter having an input for receiving driving power from a power source and an output shaft, said output shaft of said torque converter being coupled in a drive power transmitting relationship to said input shaft of said stepped gear box;
said torque converted including a turbine wheel which is connected in a drive power transmitting relationship to said output shaft of said torque converter via a free wheel;
a brake connected to at least one of said output shaft of said torque converter and said input shaft of said stepped gear box; and
an electrical control unit for controlling both gear shifting operations of said stepped gear box and the operation of said brake, said electrical control unit causing said brake to stop the rotation of said stepped gear box input shaft when a gear change operation is to take place in said stepped gear box.

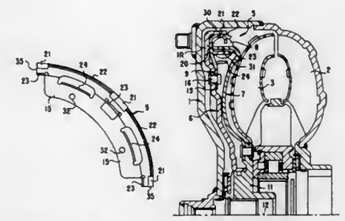
5,186,292
TORQUE CONVERTER AND CLUTCH WITH COMPLIANCE INTERFACE
John B. Hageman, Vandalia, and Gerald C. Danielewicz, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed May 11, 1992, Ser. No. 881,107
Int. Cl.[5] F16D *33/00*
U.S. Cl. 192—3.28 **3 Claims**

1. A torque converter and clutch comprising: an input shell adapted to be driven by an engine; an impeller drivingly connected with said input shell; a turbine disposed in toroidal fluid flow arrangements with the impeller; an output shaft drivingly connected with said turbine; a selectively engageable friction clutch disposed between said input shell and said turbine and being selectively engageable to connect said input shell to said output shaft; said friction clutch comprising, pressure plate mans drivingly connected with said output shaft, friction plate means drivingly connected to said pressure plate means and being disposed to selectively frictionally engage said input shell, and compliance plate means disposed between said friction plate means and said pressure plate means for permitting relative axial movement therebetween and for permitting compliance between said friction plate means and a friction surface on said input shell, said compliance plate means including resilient means for permitting said compliance between said



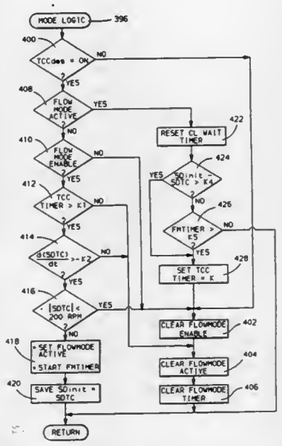
friction plate means and the friction surface an drive means continuously connecting with one of said friction plate means and said pressure plate means.

5,186,293
DAMPER DISK
Shinji Fujimoto, Neyagawa, Japan, assignor to Kabushiki Daisha Daikin Seisakusho, Osaka, Japan
Division of Ser. No. 445,635, Dec. 7, 1989, Pat. No. 5,105,921.
This application Sep. 20, 1991, Ser. No. 762,987
Claims priority, application Japan, Apr. 25, 1988, 63-55754[U]; Apr. 25, 1988, 63-102100
Int. Cl.[5] F16D *3/12;* F16H *45/02*
U.S. Cl. 192—3.28 **1 Claim**



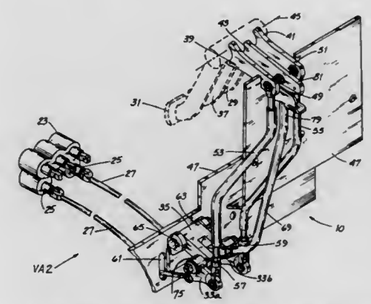
1. A damper disc comprising an annular input plate, an output plate, damper springs extending circumferentially of the input plate and circumferentially connecting the two plates, and an annularly extending retainer plate assembly for holding said springs, said retainer plate assembly comprising a plurality of arcuate plates arranged, end-to-end, in an annular pattern circumferentially around the peripheral portion of said annular input plate, each of said arcuate retainer plates having a retainer plate connection portion fixed to said input plate, a spring connector portion circumferentially connected to opposite ends of one of said springs, and a circumferentially extending support portion for supporting the outer periphery of said one of said springs, said input plate being connected to said spring through said retainer plate, said input plate being formed on its outer periphery with a cylindrical portion fitted on the outer periphery of said circumferentially extending support portion, each retainer plate connection portion having rivet insertion holes in the form of radially elongated holes extending through said retainer connection portion, said retainer plates making up said retainer plate assembly being fixed to said input plate by rivets passing through said radially elongated rivet insertion holes and rivet holes in said input plate.

5,186,294
CONTROL METHOD FOR THE ENGAGEMENT OF A TORQUE CONVERTER CLUTCH
Larry T. Nitz, Troy, and Susan L. Rees, Clawson, both of Mich., assignors to Saturn Corporation, Troy, Mich.
Filed Feb. 24, 1992, Ser. No. 840,246
Int. Cl.[5] F16H *61/14, 45/02*
U.S. Cl. 192—3.3 **6 Claims**



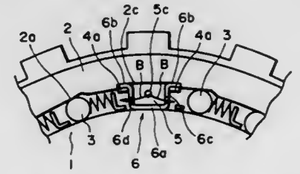
1. In a motor vehicle in which torque developed by an engine is transmitted to a drive axle through a fluid coupling and transmission, the fluid coupling having a TCC defined by a clutch plate adapted to engage a rotary element of said fluid coupling to establish a mechanical drive connection between the engine and transmission, the transmission including a solenoid operated fluid control valve alternately actuable to supply fluid pressure to and exhausting fluid pressure from a release chamber defined by an area between said clutch plate and said rotary element for regulating the engagement of said clutch plate with said rotary element, a control method for initiating and completing engagement of said clutch plate, comprising the steps of:
establishing a pressure control mode when a signal commanding engagement of the TCC is produced, wherein said solenoid operated fluid valve is actuated at a duty cycle determined in accordance with a predefined schedule designed to produce a progressively increasing fluid pressure differential across said clutch plate;
indicating unsuccessful TCC engagement if a predefined speed relationship across said fluid coupling is not achieved after said pressure control mode has been established for at least a predetermined interval;
establishing a flow control mode in place of said pressure control mode in response to said indication of unsuccessful TCC engagement, wherein said solenoid operated fluid valve is actuated at a duty cycle which provides substantially full exhaust of fluid from said release chamber, thereby to initiate engagement of said clutch;
indicating successful TCC engagement in response to the occurrence of a predefined change in the speed relationship across said fluid coupling during the establishment of said flow control mode; and
re-establishing said pressure control mode in place of said flow control mode in response to said indication of successful TCC engagement, thereby to complete the engagement of said clutch plate in accordance with said predefined schedule.

5,186,295
TRACTOR PEDAL ARRANGEMENT WITH ANTI-DECLUTCHING FEATURE
Claude M. Frisbee, Schofield; Ronald L. Sealine, Rothschild, and Ronald H. Werner, Edgar, all of Wis., assignors to Case Corporation, Racine, Wis.
Filed Feb. 19, 1992, Ser. No. 837,732
Int. Cl.[5] B60K *41/24*
U.S. Cl. 192—13 R **8 Claims**



1. In a vehicular clutch and brake control system of the type having at least one primary pedal mounted for movement between a repose position and a depressed position for operating a clutch, the improvement comprising:
clevis having an end hinge-mounted to the vehicle and including a link pivotably mounted on the clevis and coupled to the primary pedal;
an auxiliary pedal coupled to the clevis, the auxiliary pedal being mounted for movement between a repose position and a depressed position; and,
when the pedals are depressed substantially simultaneously, the clevis exhibits pivoting movement and the link exhibits substantially translational movement,
whereby de-clutching is prevented.

5,186,296
CENTERING BLOCK FOR ONE-WAY CLUTCH
Yoshio Kinoshita, Ayase; Shigeaki Kosbino, Ohisomachi, and Atsushi Sagne, Fujisawa, all of Japan, assignors to NSK-Warner K.K., Tokyo, Japan
Filed Feb. 26, 1991, Ser. No. 660,846
Claims priority, application Japan, Mar. 1, 1990, 2-19477[U]
The portion of the term of this patent subsequent to Aug. 4, 2009, has been disclaimed.
Int. Cl.[5] F16D *41/07, 13/74*
U.S. Cl. 192—41 R **6 Claims**

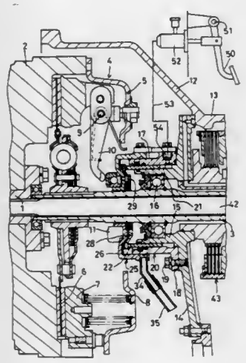


1. A one-way clutch which comprises an inner ring; an outer ring concentrically disposed about said inner ring; a plurality of torque transmitting members disposed between said inner and outer rings for allowing relative rotation between said rings in one direction and preventing relative rotation between said rings in an opposite direction; a centering block disposed between adjacent torque transmitting members and having a sliding portion slidingly contacting one of said inner and outer

VOL 1147 ISS 3 FE 16 1993 UMI

rings, a pair of fixed portions fixed to the other of said inner and outer rings, and a pair of supporting portions connecting said sliding portion and said fixed portions; and means for introducing lubricating oil directly from an outside oil supply into a space between said supporting portions, with at least one said supporting portion or said sliding portion being provided with means defining a penetrating hole therethrough for discharging said lubricating oil.

5,186,297
HYDRAULIC CLUTCH OPERATING APPARATUS
Toshinobu Owada; Akio Inamori; Yoshikazu Aota; Shigeo Sakamoto, and Seiichi Takahashi, all of Sakai, Japan, assignors to Kubota Corporation, Osaka, Japan
Filed Jan. 15, 1992, Ser. No. 820,828
Claims priority, application Japan, Mar. 25, 1991, 3-60517; Mar. 25, 1991, 3-60518; Mar. 25, 1991, 3-60521; Jul. 12, 1991, 3-54323[U]; Jul. 12, 1991, 3-172782; Jul. 12, 1991, 3-172783
Int. Cl.[5] F16D *25/08*
U.S. Cl. 192—85 CA **12 Claims**



1. A hydraulic operating apparatus for operating a clutch mounted in a clutch housing rotatably supporting a transmission shaft, comprising:

a tubular member surrounding said transmission shaft and fixed to said clutch housing, said tubular member including

an annular outer wall section extending axially, and

an annular inner wall section extending axially and defining an annular piston chamber with said outer wall section;

a tubular piston slidable in said piston chamber;

a release hub for supporting a clutch release bearing and receiving a pushing force of said piston, said release hub including

a peripheral wall,

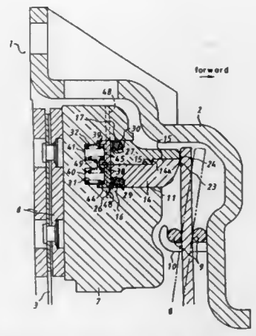
a release bearing support, and

a bottom wall extending radially to connect said peripheral wall to said release bearing support;

a ring-shaped abutting plate disposed between a forward end of said piston and said release hub for absorbing shocks, said abutting plate including a first portion for transmitting and receiving forces to/from said piston, and a second portion for transmitting and receiving forces to/from said release hub, said first portion having a smaller diameter than said second portion; and

means for supplying a fluid pressure to said piston chamber.

5,186,298
CLUTCH COVER ASSEMBLY
Hiroshi Takeuchi, Neyagawa, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan
PCT No. PCT/JP90/01587, § 371 Date Aug. 27, 1991, § 102(e) Date Aug. 27, 1991, PCT Pub. No. WO91/10074, PCT Pub. Date Jul. 11, 1991
PCT Filed Dec. 6, 1990, Ser. No. 752,584
Claims priority, application Japan, Dec. 29, 1989, 1-151635
Int. Cl.[5] F16D *13/75*
U.S. Cl. 192—111 A **1 Claim**



1. A clutch cover assembly having a pressure plate, a diaphragm spring and inside and outside fulcrum rings fitted in an annular axially extending cavity in said pressure plate and movable in an axial direction, said fulcrum rings each having a tapered face tapered away from an adjacent side wall of said cavity, radial inside and outside radially spaced fulcrum points on such fulcrum rings for contact with said diaphragm spring, said inside and outside fulcrum rings each having a radially extending step for engagement with each other for restricting said outside fulcrum ring and said fulcrum point thereon from moving said diaphragm spring in contact with said fulcrum point on said outside fulcrum ring beyond said fulcrum point on said inside fulcrum ring, inside and outside pressing springs compressively positioned between each of said inside and outside fulcrum rings and bottom faces of said axially extending cavity and an annular spring receiving plate between said pressing springs and each of said inside and outside fulcrum rings, said fulcrum rings being pressed against said diaphragm spring by said pressing springs and spring receiving plates, axially movable annular lock wires positioned between said fulcrum rings and said side wall surfaces of said axially extending cavities and lock springs, having spring forces weaker than spring forces of said pressing springs compressively positioned between said lock wires and said spring receiving plates for pressing said lock wires on said tapered faces against said adjacent side walls of said cavity for locking axial return motion of each of said fulcrum rings in said cavity.

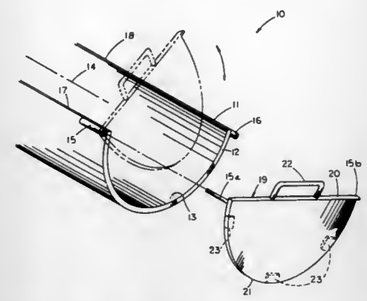
5,186,299
CONCRETE CHUTE APPARATUS
Brian L. Stimson, 286 Kansas-Jake Rd., Waco, Ga. 30182
Filed Mar. 16, 1992, Ser. No. 852,403
Int. Cl.[5] B65G *11/00*
U.S. Cl. 193—2 R **4 Claims**

1. A concrete chute apparatus, comprising in combination,

a concrete discharge chute, the chute including a distal end surface, and the chute oriented about a chute axis, wherein the chute is of a generally semi-cylindrical configuration and includes a chute first edge spaced from and parallel a chute second edge, with the distal end surface orthogonally oriented relative to the chute axis, and

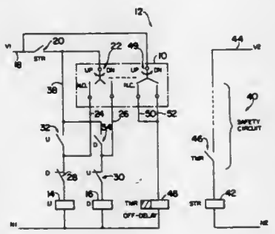
the chute including a concave interior surface, and

an abutment plate, the abutment plate including hinge means mounted to the chute first edge for pivotment of the



abutment plate relative to and in an orthogonal orientation to the chute axis.

5,186,300
STARTING CIRCUIT AND METHOD FOR ESCALATORS AND MOVING WALKS
Vlad Zaharia, Rocky Hill, Conn., assignor to Otis Elevator Company, Farmington, Conn.
Filed Jul. 6, 1992, Ser. No. 909,373
Int. Cl.[5] B65G *15/00*
U.S. Cl. 198—322 **10 Claims**



1. A method for checking a startup switch for an escalator or moving walkway, comprising the steps of:

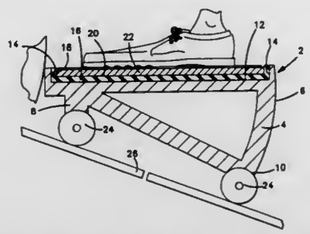
determining that a selected post-startup event has occurred;

checking that the keyswitch has returned to a normal position; and

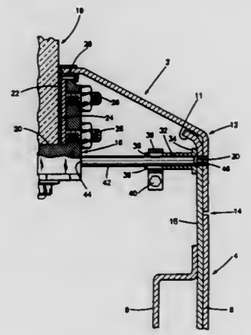
providing a permissive signal for permitting the escalator or moving walkway to continue to operate.

5,186,301
ISOLATION OF ESCALATOR STEP TREAD
James A. Rivera, Bristol, Conn., assignor to Otis Elevator Company, Farmington, Conn.
Filed Aug. 3, 1992, Ser. No. 924,268
Int. Cl.[5] B66B *23/12*
U.S. Cl. 198—333 **2 Claims**

1. A step assembly for an escalator or moving walkway, said step assembly comprising: a frame having step roller axles connected thereto, said frame having a top surface defined in part by a recess having a bottom wall surrounded by side walls spaced inwardly of outer sides of said frame; rollers mounted on each of said axles, said rollers being operable to guide said step assembly over escalator or moving walkway tracks; elastomeric pad means mounted in said frame recess; and a tread board positioned on said pad means, said tread board forming the portion of said step assembly upon which passengers stand, and said tread board being completely isolated from said frame by said pad means whereby vibrations originating in said rollers or said frame are dissipated in said pad so as to isolate said tread board from such vibrations.



5,186,302
ESCALATOR SKIRT AND DECK PANEL INSTALLATION
Gerald E. Johnson, Farmington, Conn.; Arthur McClement, Bloomington, Ind., and James A. Rivera, Bristol, Conn., assignors to Otis Elevator Company, Farmington, Conn.
Filed Apr. 10, 1992, Ser. No. 866,736
Int. Cl.[5] B66B *23/22*
U.S. Cl. 198—335 **5 Claims**



1. An inner deck and balustrade mounting assembly for an escalator or moving walkway, said assembly comprising:

a) clamp means for supporting said balustrade, said clamp means comprising an elastomeric liner disposed adjacent to said balustrade;

b) an inner deck panel connected to said liner, said deck panel including a first portion extending downwardly and inwardly toward a passenger conveying area of the escalator or moving walkway, and a second vertically depending portion extending downwardly from an inner end of said first portion;

c) tubular sleeve means disposed between said second portion of said deck panel and said clamp means, said sleeve means having a through bore;

d) an opening in said second portion of said deck panel, said opening aligning with said sleeve means through bore;

e) pin means telescopingly received in said sleeve means through said bore, said pin means extending toward and abutting said clamp means and said pin means being free of securement to said clamp means; and

f) means for locking said pin means against axial movement relative to said sleeve means whereby said deck panel is prevented from moving toward said clamp means.

5. A method for positioning an escalator or moving walkway inner deck panel relative to a balustrade mount assembly, said method comprising the steps of:

VOL 1147 ISS 3 FE 16 1993 UMI

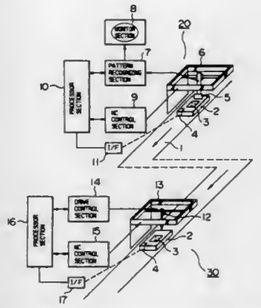
a) providing an opening in said deck panel opposite said mount assembly;
b) inserting a pin through said opening and advancing said pin toward said mount assembly until said pin engages said mount assembly, said pin remaining free of securement with said mount assembly; and
c) securing said pin to said deck panel.

5,186,303

POSITIONAL DEVIATION CORRECTING METHOD FOR SUBJECT CONVEYED ON PRODUCTION LINE

Shigeo Seto, Yokohama; Tsugihiro Kurihara, Fujisawa; Hiroshi Machida, and Keiji Shintani, both of Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 22, 1991, Ser. No. 796,638
Claims priority, application Japan, Nov. 30, 1990, 2-338231
Int. Cl.[5] B65G *14/64*
U.S. Cl. 198—345.1 **9 Claims**



7. A production line capable of correcting positional deviations of a subject, comprising
a convey means for conveying a pallet mounted with a subject on the upper surface thereof and with a memory,
a recognizing station where positional deviation information of said subject mounted on said pallet deviating from predetermined standard positional information of the subject are obtained, and said positional deviation information is stored in said memory, and
at least one adjusting station where said positional deviation information is read out from said memory; correct positions for the subject on the pallet are obtained by adding said read out positional deviations to said standard positions; and an adjusting means is moved to said correct positions for adjusting said subject.

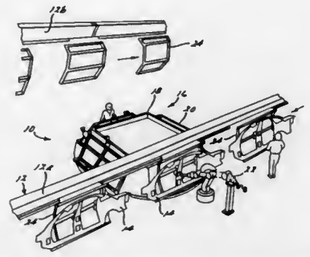
5,186,304

TOOL TURNTABLE FOR A MANUFACTURING SYSTEM

James S. Kaczmarek, 21317 Woodhill, Northville, Mich. 48167, and James M. Steimel, 2436 Lassiter, Rochester Hills, Mich. 48309

Filed Feb. 1, 1991, Ser. No. 649,537
Int. Cl.[5] B65G *37/00*
U.S. Cl. 198—346.1 **14 Claims**

1. A production line for assembling prefabricated parts to and performing work operations on a vehicle frame, comprising:
a work station having a substantially horizontal stationary base, a substantially horizontal rotary table rotatably mounted to said base about a substantially vertical axis, and a plurality of mounting tables,
mounting means for removably mounting said mounting tables to said base whereby said mounting tables are substantially vertically disposed,
conveyance means for transporting said vehicle frame to and from said work station,
drive means for rotating said rotary table relative to said base whereby a selected of said mounting tables is disposed in centered relation with said conveyance means and adjacent said vehicle frame,
clamping means acting between said base and said rotary table for locating and securing the selected mounting table in said centered relation,



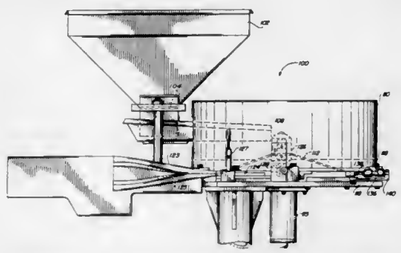
detection means for detecting each specific vehicle frame being transported by said conveyance means into said work station, and
electrical control means, responsive to said detection means, for automatically controlling the operation of said conveyance means, said drive means, and said clamping means.

5,186,305

APPARATUS AND METHODS FOR FEEDING CONTAINER CROWNS AND SIMILAR ARTICLES AT HIGH THROUGH-PUT RATES

George Everett, Orlando, Fla., assignor to Rollason Engineering & Mfg., Inc., Fern Park, Fla.

Filed Dec. 24, 1991, Ser. No. 813,352
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—392 **39 Claims**



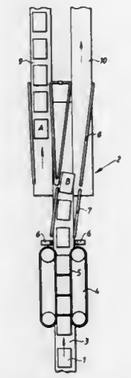
1. Apparatus for receiving and feeding large quantities of container crowns or similar articles at a high through-put rate, the apparatus comprising:
a generally circular table having a fence about its periphery with an opening in the fence;
means for feeding quantities of container crowns onto the table;
means for rotating the table so that container crowns on the table are moved outwardly against the fence and fed centrifugally out of the opening;
a twist chute at the opening for receiving the container crowns through the opening, the twist chute having at least two output tubes, each tube dimensioned to receive container crowns oriented in one direction, the two output tubes arranged to orient all of the container crowns in the same direction, a first one of the tubes having a container crown output of substantially greater quantity than the second one of the output tubes;
a first curved channel coupled for conveying container crowns out of the first output tube;
a second curved channel coupled for conveying container crowns out of the second output tube;
the second curved channel merging together with the first channel at a point along their respective paths; and wherein
the path length of the first channel is substantially longer than that of the second channel between the output tubes and the merging point.

5,186,306

METHOD AND AN APPARATUS FOR MARSHALLING OBJECTS

Uno Sjöstrand, Flyinge, Sweden, assignor to Tetra Alfa Holdings S.A., Pully, Switzerland

Continuation of Ser. No. 592,979, Oct. 5, 1990, abandoned. This application Nov. 15, 1991, Ser. No. 794,377
Claims priority, application Sweden, Nov. 23, 1989, 8903937
Int. Cl.[5] B65G *47/27*
U.S. Cl. 198—442 **3 Claims**



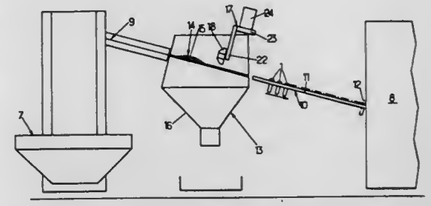
1. Apparatus for marshalling objects comprising:
an ingoing conveyor;
a pair of outgoing conveyors arranged in substantially parallel relation to each other, said ingoing conveyor and said outgoing conveyors being positioned for advancing objects in substantially the same direction; said ingoing conveyor extending between said outgoing conveyors;
movable gate means for displacing objects from the ingoing conveyor to a selected one of said outgoing conveyors, said movable gate means including first and second movable gates; said first gate being mounted for swinging laterally relative to the ingoing conveyor and having a pair of guide members in position for guiding objects from the ingoing conveyor to a selected one of said outgoing conveyors; said second gate being mounted for swinging laterally relative to the outgoing conveyors between a first position and a second position and having first and second pairs of guide members;
said first pair of guide members being aligned with one of said outgoing conveyors and said second pair of guide members extending diagonally across said ingoing conveyor and the other of said outgoing conveyors when said second gate is in said first position;
said first pair of guide members extending diagonally across said ingoing conveyor and said one outgoing conveyor and said second pair of guide members being aligned with said other outgoing conveyor when said second gate is in said second position;
belt brake means disposed along said ingoing conveyor restraining advancement of said objects on said ingoing conveyor relative to movement of said ingoing conveyor as the objects pass through the brake such that said objects are substantially equally spaced from each other after said objects leave said belt brake.

5,186,307

TRANSPORT DEVICE FOR REMOVING INTERLOCKED PREFORMS

Gerard Doudement, Le Havre, and Alain Dulong, Yport, both of France, assignors to Sidel, Le Havre Cedex, France

Filed Apr. 7, 1992, Ser. No. 864,788
Claims priority, application France, Apr. 16, 1991, 91 04647
Int. Cl.[5] B65G *47/12*
U.S. Cl. 198—454 **9 Claims**



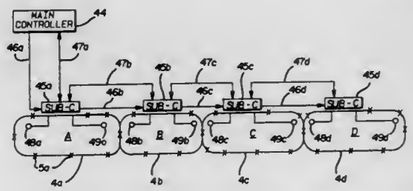
1. A conveyor device for transporting preforms (**1**) intended for the manufacture of hollow bodies made of synthetic material, such as bottles, including a conveyor track (**10**) incorporating two, substantially parallel slide-rails (**11**) arranged such that a perpendicular (**P**) common to both slide-rails is substantially horizontal, said preforms each having a head (**2**) larger than at least one portion of a body (**5**) thereof and being engaged vertically between the slide-rails during transport while being supported by their heads, said device comprising: means (**13**) for removing undesirably interlocked preforms (6_1, 6_2), said removal means comprising unbalancing means (**14**) for shifting a center of gravity (G) of the interlocked preforms such that a vertical line passing through the center of gravity of a group (6_1, 6_2) of interlocked preforms lies outside of one of the slide-rails, such that said group of interlocked preforms becomes unbalanced and falls off the slide rails.

5,186,308

ELECTRICAL SYSTEM FOR INDUSTRIAL CONVEYORS

Mark S. Munro, 4110 Robin Hood La., Traverse City, Mich. 49684

Filed Sep. 19, 1991, Ser. No. 762,406
Int. Cl.[5] B65G *43/08*
U.S. Cl. 198—572 **10 Claims**



1. For use with a conveyor system which comprises a plurality of individual conveyors each of which has a member which must be moved in timed relation with the movement of a movable member of at least one other of said plurality of conveyors,
a main control panel including a main switch for connection

VOL 1147 ISS 3 FE 16 1993 UMI

with electric power lines to supply power to the conveyor system, a programmable controller having plural output terminals and plural input terminals and a communications card having input terminals coupled with each of the output terminals of the programmable controller,

a sub-control panel for each of said conveyors, each sub-control panel including a motor starter, a signal output card having plural output terminals, a signal input card having plural input terminals, a communications card and power input terminals,

each of said conveyors including a track defining a conveyor path, a workpiece carrier movable on said track, an electric motor for driving said carrier along said track, at least one electrically controlled output device disposed adjacent said track, at least one sensor disposed adjacent said track for sensing an operating condition of said conveyor,

a conductive wire connected between said output device and one of the output terminals on said output card, a conductive wire connected between said sensor and one of the input terminals on said input card,

power lines connected between said main switch in said main control panel and said power input terminals in each of said sub-control panels,

a communications cable connected between the communications card in the main control panel and the communications card in each of the sub-control panels,

said programmable controller including a program memory with an application program stored therein and being operable under program control by said application program to produce output signals on the output terminals of the programmable controller in response to input signals on the input terminals of the programmable controller,

each of said communications cards at the sub-control panels transmitting data over said cable in accordance with the output signals on its respective input card and receiving data over said cable in accordance with the output signals addressed to it by the communications card at the main control panel.

5,186,309

TRANSFER STATION FOR TRANSFERRING MATERIAL BETWEEN CONVEYORS IN A MINE WORKING

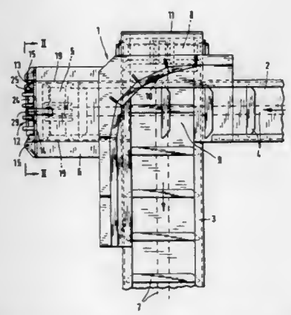
Bernhard Wieklinski, Werne, Fed. Rep. of Germany, assignor to Westfalia Becorit Industritechnik GmbH, Lunen, Fed. Rep. of Germany

Filed Nov. 25, 1991, Ser. No. 797,698

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1990, 4038230

Int. Cl.[5] B65G *15/24*

U.S. Cl. 198—606 **11 Claims**



4. Transfer station for transfer of material from a longwall face to a gate or roadway in an underground mine working; said station comprising at least part of a scraper-chain face conveyor for conveying material along the face, at least part of a gate scraper-chain conveyor for taking material from the face conveyor and transferring the material away from the face, a box frame which connects the face conveyor to the gate conveyor and in which a top run of the gate conveyor is arranged below a top run of the face conveyor, an opening in the face conveyor between the top run of the face conveyor and the top run of the gate conveyor, a chain drum around which a scraper-chain assembly of the face conveyor passes, a baffle plate cover in the form of pivotal flap means confronting the chain drum of the face conveyor for promoting the removal and conveying of fines material entrained by the scraper-chain assembly of the face conveyor from the top run into a bottom run of the face conveyor and means for locking the flap means in a closed position adjacent the chain drum; wherein the pivotal flap means is divided vertically and consists of two flap doors hinged outwardly at opposing sides.

5,186,310

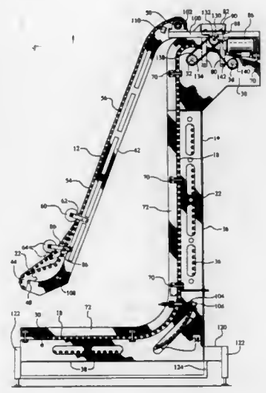
VERTICAL LIFT CONVEYOR

Donald M. Winchester, Rte. 2, Box 398, Kaufman, Tex. 75142

Continuation of Ser. No. 831,345, Feb. 5, 1992, abandoned. This application Jul. 6, 1992, Ser. No. 908,755

Int. Cl.[5] B65G *15/14*

U.S. Cl. 198—626.5 **28 Claims**



1. A conveyor for movement of bulk items over a multi-level transport path comprising:

first conveyor means having a generally horizontally extending infeed section at a first elevation, a generally vertically extending lift section extending from the infeed section, and a substantially horizontally extending discharge section extending from the vertical lift section at a second elevation for vertical and horizontal movement of the bulk items along the transport path;

spaced apart lift means attached to the first conveyor means for supporting the bulk items for movement along the transport path;

second conveyor means extending in a generally vertical position adjacent to the first conveyor means for contacting the lift means for retaining the bulk items in position between the first conveyor means and the second conveyor means; and

pivot means for pivotal attachment of the second conveyor means to the first conveyor means for pivotal movement of the second conveyor means away from the first conveyor means for cleaning and maintenance.

5,186,311

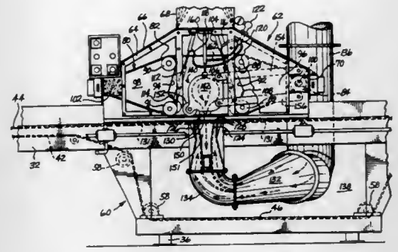
HOLD-DOWN DEVICE FOR ARTICLES ON A CONVEYOR

Oldrich Fryc, Renton, and Ronald M. Olive, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 559,470, Jul. 30, 1990, Pat. No. 5,099,542. This application Dec. 20, 1991, Ser. No. 811,514

Int. Cl.[5] B65G *15/14*

U.S. Cl. 198—626.6 **3 Claims**



1. A hold-down mechanism for holding a part down on a moving conveyor belt, comprising:

two triangular frames, each having an inside end facing the inside end of the other frame, and an outside end at an apex of each triangular frame;

each of said frames being pivotally supported at said end apex thereof on a support structure;

each of said frame includes a top and bottom corner on said inside end;

an idler roller rotatably mounted on said top and bottom corners of both of said frames;

an end roller mounted on said apex of both of said frames;

a foraminous web trained around said two end rollers and said four idler rollers;

drive means for driving one of said end rollers to drive said web around said six rollers;

means for synchronizing the speed of said web around said six rollers with the speed of said conveyor belt; and

suspension means for controlling the hold-down force exerted by said web on said part on said conveyor belt.

5,186,312

CONVEYOR FOR BULK MATERIALS

Richard W. Ambs, Williamsport, and Steven Kelchner, Linden, both of Pa., assignors to The Young Industries, Muncy, Pa.

Filed May 3, 1991, Ser. No. 695,006

Int. Cl.[5] B65G *19/14*

U.S. Cl. 198—716 **22 Claims**

1. A conveyor for bulk materials comprising:

a first housing;

a second housing;

a pair of conduits interconnecting said first and second housings to provide a circuitous path;

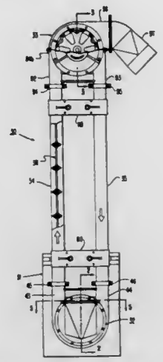
one of said housings and said conduits having means for feeding material therein;

one of said housings and said conduits having means for discharging material therefrom;

a sprocket mounted on a shaft journaled in each of said housings;

means for driving one of said sprockets; and

a rope assembly including a nylon-coated metallic wire rope disposed in said housings and said conduits, along said circuitous path, and reeved around said sprockets, metallic end ferrules press-fit on and welded to opposing, exposed end portions of said rope, a plurality of intermediate metallic ferrules press-fit onto the nylon coating of said rope at spaced intervals between said end ferrules, and a plurality of disc assemblies mounted on said rope and received within spaced recesses provided on the peripheries of said sprockets, one of said disc assemblies including a single boss mounted on said rope and engaging one of said end ferrules, a single disc mounted on said rope and engaging the other of said end ferrules and means for securing said boss and disc together to secure said end ferrules therebetween, and each of the other of said disc assemblies including a single boss mounted on said rope and engaging an intermediate ferrule, a single disc mounted on said rope and engaging an intermediate ferrule and means for securing said last mentioned boss and disc together to secure said intermediate ferrule therebetween.



5,186,313

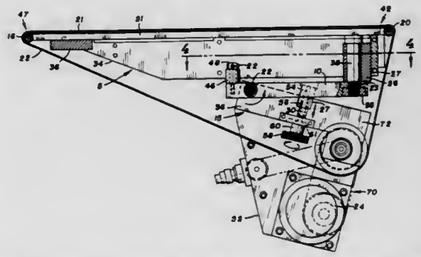
CONVEYOR BELT TRACKING AND DRIVE MECHANISM

Stanley D. Denker, and Bradley H. Lehrke, both of New Richmond, Wis., assignors to Doboy Packaging Machinery, Inc., New Richmond, Wis.

Filed May 6, 1992, Ser. No. 878,962

Int. Cl.[5] B65G *39/16*

U.S. Cl. 198—806 **21 Claims**



1. A conveyor belt tracking and drive mechanism for use with a conveyor belt system, said tracking and drive mechanism comprising:

(a) a stationary frame having a first and second roller journaled for rotation on said stationary frame to define a generally horizontal conveyor flight;

(b) a moveable frame suspended from said stationary frame, said moveable frame having a drive roller journaled for rotation therein and operatively connected to a source of rotational power;

(c) a tracking adjustment means, connected between said

VOL 1147 ISS 3 FE 16 1993 UMI

moveable frame and said stationary frame, for providing lateral movement of said moveable frame;

(d) a further adjustment means, operatively coupled between said moveable frame and said stationary frame, for providing vertical movement of said moveable frame; and

(e) an endless conveyor belt entrained about said first and second rollers and said drive roller, with said adjustment means affecting the tension of said conveyor belt.

5,186,314

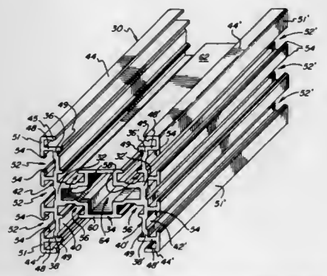
CONVEYOR SYSTEM

Robert T. Clopton, Magnolia, Ky., assignor to Simplimatic Engineering Company, Lynchburg, Va.

Continuation of Ser. No. 590,461, Sep. 28, 1990, Pat. No. 5,137,145. This application Oct. 7, 1991, Ser. No. 773,342

Int. Cl.[5] B65G *21/08*

U.S. Cl. 198—860.2 **19 Claims**



1. A longitudinally extending conveyor frame member comprising:

at least three longitudinally extending mounting slots formed in sides of said frame member;

at least one of said mounting slots open to a first direction;

at least one of said mounting slots open to a second direction, said second direction substantially opposite to said first direction;

at least one of said mounting slots open to a third direction; and

a longitudinally extending first flange disposed along an edge of said frame member.

5,186,315

HIGH VOLTAGE DISCONNECTING SWITCH

Denis Koppe; Patrick Leruyet, both of St. Genis Laval, France, and Francois Duval, Bergamo, Italy, assignors to Merlin Gerin, France

Filed Jul. 8, 1991, Ser. No. 726,923

Claims priority, application France, Jul. 19, 1990, 90 09360

Int. Cl.[5] H01H *31/00*

U.S. Cl. 200—48 V **4 Claims**

1. A disconnecting switch for a high voltage electrical substation, comprising:

a plurality of articulated arms pivotally connected together to define a movable system, one end of said movable system being connected to a stationary support means;

a contact head connected to an opposite end of said movable system;

a main conducting bar suspended from a high voltage conductor, such that said contact head is movable between said main conducting bar and said stationary support means via said movable system; and

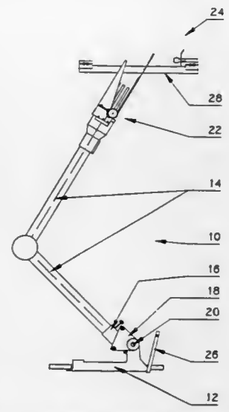
a stationary arcing contact electrically connected to said main conducting bar, said contact head comprising:

an insulating fork defined by a v-shaped splayed part for contact with and centering of said main conducting bar, and a central slot which receives said main conducting bar;

a movable main contact for electrical contact with said main conducting bar during engagement of said main conducting bar in said central slot;

a movable arcing contact whip including a retaining pin; and

an operating mechanism for controlling said movable arcing contact whip to electrically contact said stationary arcing contact, comprising a trip lever and a finger,



said finger movable between a locked position to lock said retaining pin to prevent movement of said movable arcing contact whip and an unlocked position to unlock said retaining pin to allow movement of said movable arcing contact whip, said finger being driven by said trip lever which is biased from contact with said main conducting bar.

5,186,316

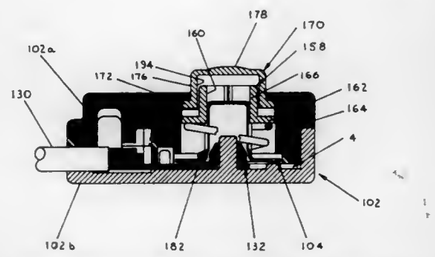
STABLE-ON PUSH-PUSH ELECTRICAL SWITCH

Sorin Mortun, Irvington, N.Y., and Jacob Rosales, Nutley, N.J., assignors to Lee Craft Manufacturing Co., Inc., Long Island City, N.Y.

Continuation-in-part of Ser. No. 583,227, Sep. 14, 1990, abandoned. This application Dec. 10, 1991, Ser. No. 805,550

Int. Cl.[5] H01H *13/56*

U.S. Cl. 200—527 **7 Claims**



1. A push-push electrical switch for switching between first and second electrical states, comprising:

a housing made of insulating material, said housing having a cylindrical bore with a longitudinal axis and first camming means formed in said bore;

a plunger slidably arranged within said bore of said housing for longitudinal displacement without rotation relative to said housing, said plunger having second camming means arranged on an end face thereof;

an actuator cam follower slidably arranged within said bore of said housing for longitudinal displacement and rotation relative to said housing, said actuator cam follower having a cylindrical bore formed along said cylindrical axis and third and fourth camming means formed thereon, said third camming means engaging said second camming means during downward longitudinal displacement of said plunger and said fourth camming means engaging said first camming means during upward longitudinal displacement of said plunger;

a distributor made of electrically conductive material for switching between said first and second electrical states, said distributor being slidably arranged within said cylindrical bore of said actuator cam follower for longitudinal displacement without rotation relative to said actuator cam follower and arranged within said housing for rotation relative thereto, said distributor comprising a cylindrical portion, a radial flange formed at an end of said cylindrical portion of said distributor, and a plurality of radial extension arms circumferentially distributed at equal angular intervals on a periphery of said radial flange, each extension arm having a contact portion which travels along a circular path during rotation of said distributor;

first, second and third electrical contacts supported by said housing and having respective contact portions arranged along the circular path of travel of said contact portions of said distributor, said contact portions of said first, second and third electrical contacts being substantially co-planar;

insulating means arranged between said contact portions of first, second and third electrical contacts along the circular path of travel of said contact portions of said distributor, said insulating means being substantially co-planar with said co-planar contact portions of said first, second and third electrical contacts;

a helical spring having one end abutting said actuator and another end abutting said distributor, said helical spring alternatingly pressing said contact portions of said distributor against opposing portions of said contact portions of said first, second and third electrical contacts and opposing portions of said insulating means during rotation of said distributor;

wherein said distributor rotates about said longitudinal axis a first predetermined angle relative to said housing, from a first angular position corresponding to said first electrical state to a second angular position corresponding to said second electrical state, by cooperation of said second and third camming means during downward longitudinal displacement of said plunger and cooperation of said first and fourth camming means during upward longitudinal displacement of said plunger, whereby said distributor electrically couples said first electrical contact to said second electrical contact in said first electrical state and couples said first electrical contact to said third electrical contact in said second electrical state.

5,186,317

LENS CASE FOR CONTACT LENS DISINFECTING SYSTEM

Francis E. Ryder, Arab, and Rowland W. Kanner, Guntersville, both of Ala., assignors to Ryder International Corporation, Arab, Ala.

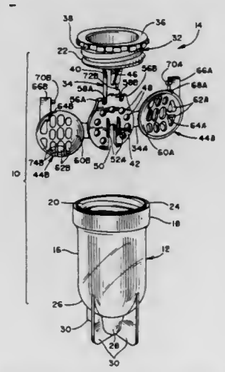
Filed Feb. 4, 1992, Ser. No. 830,887

Int. Cl.[5] B65D *85/38;* **A61L** *2/18*

U.S. Cl. 206—5.1 **22 Claims**

1. A contact lens case for use with a single or multi-tablet lens disinfecting or cleaning system, a contact lens case comprising: a cup including a cylindrical main body portion and a bottom surface portion, and lens retaining means for releaseably holding a pair of contact lenses for disposition within the cup; the cup being of dimensions sufficient for holding a predetermined amount of a disinfecting or cleaning solution such that when the lens retaining means is inserted into the cup, said retaining means may be immersed in a solution; and a reaction chamber formed in and depending from the bottom surface portion of the cup, said reaction chamber being of substantially reduced dimensions with respect to said cylindrical main body portion such that said reaction chamber is adapted to retain disinfecting or cleaning tablets in close proximity within said chamber for permitting occurrence of a disinfecting or cleaning solution producing reactions, and said lens retaining means including structure such that when assembled to said cup, said structure is being disposed in close proximity to the reaction chamber to prevent a disinfecting or cleaning tablet from migrating out of said reaction chamber.

17. A contact lens case comprising: a cup adapted to receive a quantity of disinfecting or cleaning solution; a lens supporting basket assembly mountable to said cup for disposing a pair of lenses in a disinfecting or cleaning solution contained within



said cup; said basket assembly comprising an integral molded component including a cap, a stem portion joined to the cap, a base plate joined to the stem portion for supporting one of a pair of lenses on each side thereof and basket means hingedly connected to the base plate at diametrically opposed locations by integral hinges such that the basket means can overlie said base plate on opposite sides in an overlying position thereof to maintain a pair of contact lenses within said basket assembly, and latch means for maintaining said basket means in said overlying position, said latch means comprising a flexible, integral extension formed on each basket means and extending upwardly therefrom and including a tab member on the end therewith which is engageable with said stem portion to maintain the basket means in said overlying position with respect to said base plate, and said stem portion including a notch for receiving said tab member.

5,186,318

AIR TIGHT CONTAINER

Curtis J. Oestreich, East Windsor, N.J.; Joseph S. Cannizzaro, South Salem, N.Y., and Joseph S. Wargo, Mountain Lakes, N.J., assignors to Estee Lauder, Inc., New York, N.Y.

Continuation of Ser. No. 594,006, Mar. 27, 1984, which is a continuation-in-part of Ser. No. 480,620, Mar. 30, 1983. This application Jun. 2, 1988, Ser. No. 203,592

Int. Cl.[5] A45D *40/00*

U.S. Cl. 206—37 **6 Claims**

1. A container having improved air tight properties when closed, comprising:

a container bottom formed with a well for receiving a product to be stored in the container;

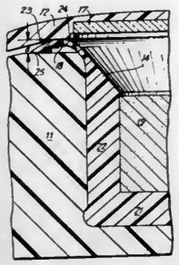
a top openably mounted to the bottom for selectively opening and closing the container;

said container formed with closure means for maintaining

VOL 1147 ISS 3 FE 16 1993 UMI

the container in a securely closed position when the top is displaced towards and contacts the bottom; and

a deformable sealing member securely mounted in one of the top or bottom and having a base and a flange member extending upwardly away from the mounting surface of the top or bottom, inclined inwarldy towards the center of the container and curving downwardly towards the mounting surface the flange member adapted to be de-



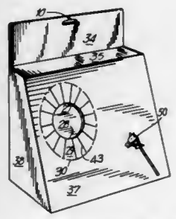
flected by the interior of the top or bottom member towards the other member when the container is closed by the top being displaced towards the bottom and the flange member maintained in its deflected condition with the downward portion compressed by the mounting surface and the upwad portion compressed by the opposite member at points at different distances from the portion of the sealing member secured in the mounting surface when the closure means secures the container in its closed position.

5,186,319

TRANSPORT AND DISPLAY CASE FOR A FIGURINE

Charles Ting, Taipei, Taiwan, assignor to T. L. Products Promoting Co., Ltd., Taipei, Taiwan

Filed Mar. 2, 1992, Ser. No. 844,475
Int. Cl.[5] B65D *75/54*
U.S. Cl. 206—45.14 **22 Claims**



1. A transport and display stand for a consumer article, comprising:

(a) a generally planar bottom portion having such dimensions to provide stability for the article and stand when the article is supported by the stand, when said bottom portion rests on a planar surface;

(b) a generally planar rear portion extending upward from said bottom portion;

(c) a generally planar front portion extending upward from said bottom portion at an inclination sloping backward toward said rear portion, said front portion having an article retention means comprising an aperture in said front portion defined by an edge and a plurality of slits in said front portion extending from said edge in a direction substantially perpendicular thereto, said slits extending for a distance to define a plurality of subportions of said front portion, each defined by said edge and two adjacent ones of said slits and which may be flexed inwardly from said front portion in the direction of said rear portion, so that the article, when inserted, flexes said subportions inwardly and is retained by said subportions acting against a part of the article;

(d) a top portion, extending between the upper edges of said front and rear portions; and

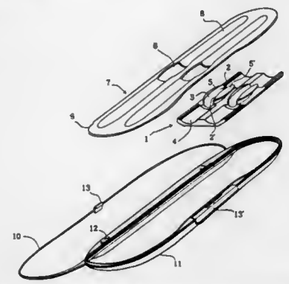
(e) two generally planar side portions, each extending from said bottom portion to said top portion, and from said front portion to said rear portion, said front, rear, top, bottom and side portions defining a closed structure.

5,186,320

RETAINER FOR RETAINING ARTICLES ACCOMODATED IN A CASE

Masaaki Aida, Tokyo, Japan, assignor to Midori Co., Ltd., Tokyo, Japan

Filed May 30, 1991, Ser. No. 707,807
Int. Cl.[5] B65D *5/50;* **A45C** *11/34*
U.S. Cl. 206—45.19 **10 Claims**



1. A retainer for retaining articles to be accommodated in a case, comprising:

a substantially flat, elongated base;

at least one pair of tabs for sandwiching an article therebetween extending upwardly from said base;

a grooved portion extending between said pair of tabs in the direction of elongation of said base;

a recess in said base adjoining said grooved portion in the direction of elongation;

an extension on the upper end of each said tab extending horizontally away from said grooved portion; and

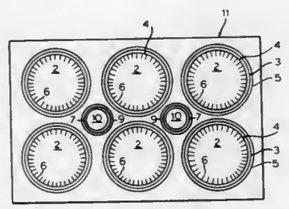
an intermediate case member having an opening therein engaged by said extension of said tabs such that said intermediate case member is held on said base.

5,186,321

BIODEGRADABLE MULTI-CONTAINER CARRIER

Richard F. Fadus, 225 Crescent Cir., Cheshire, Conn. 06410

Filed Feb. 24, 1992, Ser. No. 843,928
Int. Cl.[5] B65D *71/00, 75/00*
U.S. Cl. 206—151 **5 Claims**



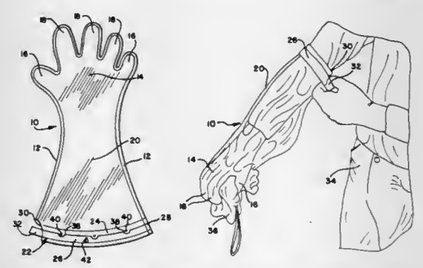
1. An improved biodegradable multiple can carrier body stamped out of paperboard with multiple circular orifices into which cans are inserted to be both frictionally and structurally retained and at least two other smaller orifices through which fingers may be extended wherein the improvement comprises a multilayered laminated paperboard, said multilayers made up of inner and outer layers said inner layers being made up of short fiber recycled paper, said outer layers being made up of long fiber virgin paper; said multiple orifices having lips extending circumferentially around said orifice, said lips are composed of a series of teeth extending into said orifices, said orifices having at least two indentations extending circumferentially around said orifice, the first of said indentations being located at the intersection of said teeth and said main carrier body, the second of said indentations located adjacent to said first indentation in said main carrier body, said multiple layered laminated paperboard, said teeth and said indentations acting in concert to retain said cans and to prevent tearing of said improved biodegradable multiple can carrier.

5,186,322

SPONGE CARRIER AND COUNTER

Donald R. Harreld, Woodstock, and Barbara T. Skiba, Chicago, both of Ill., assignors to Sage Products, Inc., Crystal Lake, Ill.

Continuation of Ser. No. 456,949, Dec. 26, 1989, abandoned. This application Apr. 14, 1992, Ser. No. 869,042
Int. Cl.[5] A61B *19/00*
U.S. Cl. 206—216 **14 Claims**



1. A surgical sponge carrier and counter formed from a pliable film and comprising

a. a glove portion including a thumb portion and a fingers portion,

b. a tubular sleeve portion extending from said glove portion, and

c. a closure located in said sleeve portion, said closure comprising

i. a circumferential drawtape guide formed in said sleeve portion and spaced from said glove portion,

ii. a continuous drawtape disposed in said guide, said drawtape being secured at one location to said sleeve and being slidable in said guide except at said one location, said one location being generally opposite said thumb portion,

iii. an engagement notch in said guide in alignment with said thumb portion, said notch being generally opposite said one location, and said drawtape extending into said notch and forming a loop in said notch for engagement of said drawtape and removal of the sponge carrier and counter by turning the sponge carrier and counter inside out about said glove portion, and

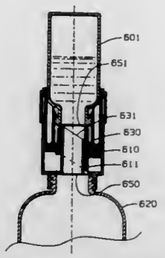
iv. means for temporarily retaining said drawtape at a location in said guide to maintain the carrier and counter closed, said means for temporarily retaining being located within said guide and engaging said drawtape within said guide.

5,186,323

DUAL COMPARTMENT MIXING CONTAINER

Frederick W. Pfleger, 1152 Barbara Dr., Cherry Hill, N.J. 08003

Filed Jun. 24, 1991, Ser. No. 719,637
Int. Cl.[5] B65D *25/08*
U.S. Cl. 206—221 **16 Claims**



1. A combination of attachable containers comprising: a first container having a first port and containing a first contents, a first removable barrier at said first port sealing said first contents in said first container, a transfer member attached to said first container, a second container having a second port and containing a second contents, a second removable barrier at said second port sealing said second contents in said second container, a tube member disposed within said transfer member and integral with an ingress member said ingress member circumscribing the transfer member and attached to said second container a first position and a second position of said transfer member with respect to said ingress member, movement of said transfer member from said first position to said second position causes the transfer member to remove said second removable barrier from said second port and said tube member to remove said first removable barrier allowing the contents of said first container to mix with the contents of said second container by passing thru said tube member.

12. A combination of two containers, a removable closure element for the first container, a removable closure element for the second container, and a container opener for removing the removable closure element from each of said two containers almost simultaneously, each of said removable elements displaceable inward into its container, the combination further comprising; securing means on each container to secure each container to said container opener, a first extending member of said container opener between the securing means of the first container and the removable closure element of the second container, a second extending member of said container opener between the securing means of the second container and the removable closure element of the first container, a first position of said first extending member relative to said second extending member, means to hold the first extending member to the second extending member in said first position, a second position of said first extending member and said second extending member resulting from movement of said first container toward said second container whereby said first extending member removes said removable closure element of said second container and said second extending member removes said removable element from said first container during movement between said first position and said second position.

5,186,324

PACKAGED HYDRAULIC OIL TANK ASSEMBLY AND ATTACHMENT KIT

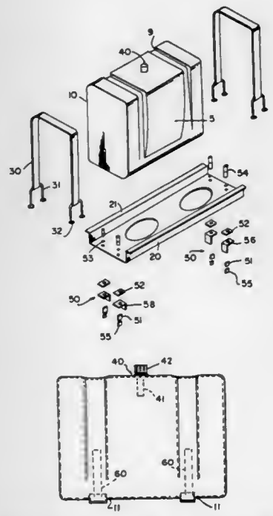
Darrell W. Brandon, Jr., P.O. Box 1143, Marion, Ind. 46952-7543

Filed Jan. 24, 1991, Ser. No. 647,500
Int. Cl.[5] B65D *85/68*
U.S. Cl. 206—223 **8 Claims**

1. A tank assembly comprising a rotationally molded poly-

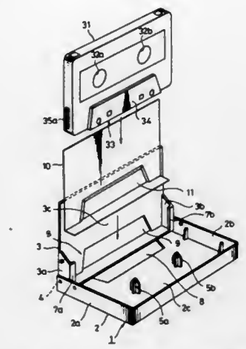
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ethylene material tank, comprising a rectangular shape, further comprising indentations in the tank for reinforcing the tank against distortion and for guiding alignment guides, a carriage base adjacent the tank, retaining straps in the guides for attachment of the tank to the carriage base, U-bolt attachments at ends of the retaining straps and extending through holes in the carriage base; further comprising two port openings having two metallic port fittings molded into the polyethylene material of the tank for forming a component part of leak proof compression seals; further comprising a filler/breather assembly at a top of the tank; further comprising a filter/diffuser connected to one of the port fittings for retarding returning fluid velocity without reducing flow in gallons per minute; further comprising a chassis attachment kit connected to the carriage base for mounting the carriage base and the tank assembly, further providing a crowning of both sides of the tank between the indentations for providing reinforcement and for resisting distortion caused by occasional heat build up; further providing, for attachment to the two metallic port fittings molded in the polyethylene material, two externally attached compression nuts to provide said leak proof compression seals; the two port fittings and the nuts being adaptable for an installer/user plumbing arrangement and to allow external installation and sealing of said filter/diffuser in either port opening.



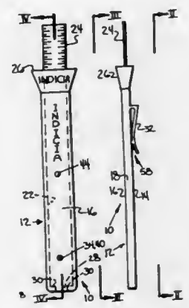
3. A wet tank assembly suitable for packaging and transportation and resistance to distortion, comprising a tank having dual screw-in ports; an externally mounted, screw-in filter/diffuser connected to one of the ports, a filler/breather assembly connected to the tank for providing passage of air into and out of the tank; attachment straps, circumferential indentations on the tank for providing reinforcement, as well as for serving to guide the attachment straps, corresponding U-bolts attached to ends of the straps, a carriage base, through holes provided in the carriage base for receiving the U-bolts; further comprising a chassis attachment kit consisting of four pre-punched mounting angles, four mounting pads, four cap screws, four lock nuts, four compression springs; all prepackaged into a single shipping carton, which consists of one corrugated carton; this complete tank assembly with corresponding carton providing shipment of complete product by parcel service; further the tank assembly dimensions do not exceed 130" girth and length.

5,186,325
CASSETTE CASE AND INDEX SHEET
Kiyoto Sato, and Kazuki Nakamaru, both of Miyagi, Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 647,811, Jan. 30, 1991, abandoned. This application Jul. 17, 1992, Ser. No. 917,518
Claims priority, application Japan, Jan. 31, 1990, 2-008606[U]
Int. Cl.[5] B65D *85/672*
U.S. Cl. 206—232 **5 Claims**



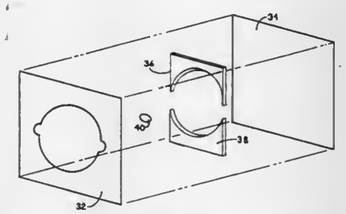
1. A cassette case in which a lid is pivoted to a casing so as to become freely openable and closable and accommodate therein a predetermined tape cassette, the cassette case comprising:
engaging portions formed on the lid so as to engage only guiding protrusions on left and right side portions of the tape cassette, the tape cassette thereby being captured against the lid by the engaging portions; and
recess portions formed on the casing and the lid so as to accommodate therein a thick portion which forms a front opening portion of the tape cassette.

5,186,326
INJECTION MOLDED THERMOPLASTIC MEASURING SCALE HOLDER
Arganious E. Peckels, R.R. 2, Box 489, and Timothy S. Peckels, R.R. 2, Box 747, both of Ogilvie, Minn. 56358
Filed Jun. 25, 1990, Ser. No. 543,030
Int. Cl.[5] A45F *5/02*
U.S. Cl. 206—234 **22 Claims**



1. An injection molded thermoplastic measuring scale holder comprising
a) an elongate tubular body having a generally rectangular cross-section and an internal elongate scale pocket having a cross-section which is relatively wide and thin and sized to slip-fit accept a metal measuring scale;
b) means on said body at an inlet end on said pocket for guiding the scale into said pocket;
c) a scale stop in said body and at a bottom end of said pocket for vertical support and positioning of the scale in said pocket, said pocket being open past said scale stop to the outside of said bottom end; and
d) at least one cored aperture through said body and into said pocket, said cored aperture being between said inlet end and said bottom end, and being molded by a core physically positioned to engage and hold a pocket core blade during injection molding of said holder for precisely fixing location of the pocket within the body.

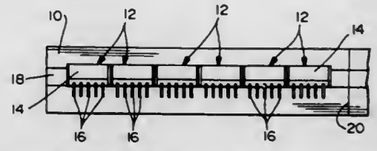
5,186,327
COMPACT DISC RETAINING SHEET
Daniel K. McCafferty, 410 W. 51 St. Apt. 404, New York, 10019, and Michael P. McCafferty, both of New York, N.Y.
Filed Jun. 4, 1992, Ser. No. 893,435
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—313 **9 Claims**



1. A compact disc retaining sheet for receiving and storing a compact disc, comprising:
(a) a rear panel of moderately rigid material in size to be accommodated by a phonograph album cover;
(b) a central pad with a diameter less than that of said disc, situated on said rear panel and affixed by an adhesive to said rear panel;
(c) a number of disc supports, said disc supports being of resilient material, having a long side slightly exceeding diameter of said disc, with two equal shorter sides extending from ends of said long side travelling in the same direction at 90 degree angles to said long side and one arc side connecting with ends of said shorter sides, said arc side curving towards said long side, said arc side designed to accommodate slightly less than one half the circumference of outer edge of said disc;
(d) a front panel of moderately rigid material in size to be accommodated by said standard phonograph album cover, said front panel is affixed by said adhesive over said rear panel and parts of said disc supports, said front panel having a cut-out portion circular in nature and slightly larger than said disc.

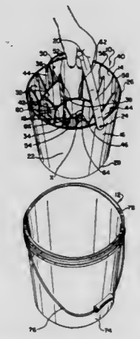
5,186,328
PACKAGING SYSTEM FOR ELECTRICAL CONNECTORS
William R. Lenz, Crestwood, and Daniel M. Palmieri, Bloomingdale, both of Ill., assignors to Molex Incorporated, Lisle, Ill.
Filed Sep. 23, 1991, Ser. No. 764,260
Int. Cl.[5] B65D *73/02*
U.S. Cl. 206—330 **13 Claims**

1. In a packaging system including a plurality of electrical connectors each having a longitudinal axis between opposite ends thereof and terminals projecting transverse of the axis, and an elongated planar carrier strip having a given width and on which the electrical connectors are mounted, the improvement wherein the electrical connectors are mounted on the carrier strip adjacent each other in an end-to-end abutting



array with the longitudinal axes of the connectors extending in the longitudinal direction of the carrier strip.

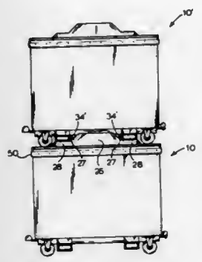
5,186,329
PORTABLE TOOL HOLDER
Donald D. Fogelberg, 541 W. 98th St., No. 102, Bloomington, Minn. 55420
Filed Jan. 15, 1992, Ser. No. 821,440
Int. Cl.[5] B65D *85/20*
U.S. Cl. 206—372 **4 Claims**



1. A portable tool holder for organizing and arranging tools, comprising:
(a) an outer side wall having an internal surface defining an internal tool holder cavity; and
(b) dividing means for dividing said cavity into a plurality of compartments for holding individual ones of said tools, said dividing means including an upright spiralled wall presenting an upper margin operably coupled to said side wall and a lower margin, said dividing means spiralled wall upper margin spiralling inwardly and downwardly within said cavity toward an inner portion of said cavity, whereby the spiralled wall upper margin and lower margin present a decreasing spiralled wall height therebetween as measured radially inwardly and downwardly within said cavity,
said outer side wall being generally cylindrical in shape, and said dividing means including a plurality of upright, generally radially oriented divider walls having upper margins said radially oriented divider walls being oriented transverse to said spiralled wall and interconnecting portions of said spiralled wall to define tool receiving compartments, the upper margins of the radially oriented divider walls sloping inwardly and downwardly toward said inner portion of the cavity, said tool receiving compartments thereby extending within the tool holder cavity and progressively decreasing in height from the outermost compartments adjacent the internal surface of the outer side wall to an innermost compartment at said inner portion of the tool holder cavity.

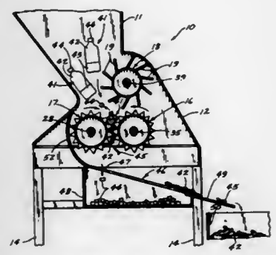
VOL 1147 ISS 3 FEB 16 1993 UMI

5,186,330
STACKABLE CONTAINER
Delmar H. McClure, Molalla, Oreg., assignor to McClure Industries, Inc., Portland, Oreg.
Filed Dec. 27, 1991, Ser. No. 815,119
Int. Cl.[5] B65D *21/02*
U.S. Cl. 206—508 **9 Claims**



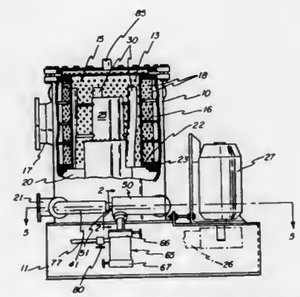
1. A stackable container comprising:
a first exterior surface portion including a projecting target region, said target region having a pair of generally oppositely-facing glide surfaces and a recess formed therein; and
a second exterior surface portion including a projecting alignment region, said alignment region having a first elongate member and a pair of spaced second elongate members, said first member extending transversely to said second members, said alignment region being adapted for cooperative interfitment with the target region of a similar, vertically-adjacent container, said first member being adapted for placement within the recess of the similar container's target region and each of said second members being positionable adjacent an oppositely-facing glide surface of the similar target region, transverse movement of said container relative to the similar container thus being opposed.

5,186,331
METHOD AND APPARATUS FOR SEPARATING BOTTLE CAPS FROM PLASTIC BOTTLES
Karl C. Valster, Pella, Iowa, assignor to Precision Pulley, Inc., Pella, Iowa
Filed Oct. 4, 1991, Ser. No. 770,883
Int. Cl.[5] B07C *5/02*; B07B *1/00*
U.S. Cl. 209—3.001 **8 Claims**



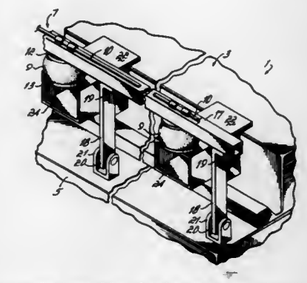
1. Apparatus for separating bottle caps from plastic bottles in combination with said bottles and caps, said combination comprising:
a first roller rotatable about a first axis having a plurality of projections thereon;
a second roller rotatably about a second axis substantially parallel to said first axis, said second roller having a plurality of projections thereon, said second roller being adjacent to said first roller and defining a space between said first and second rollers;
an input hopper means for receiving and guiding bottles;
said bottles being constructed entirely of flexible non-frangible plastic and having said caps thereon, said bottles with caps thereon being disposed in said input hopper means, said bottles being substantially wider than the space between said rollers;
means for turning said first roller so that a top portion thereof moves toward said second rollers;
means for turning said second roller so that a top portion thereof moves toward said first roller, whereby turning of said first and second rollers forces said bottles between said first and second rollers and forces said cap off of said bottle as it is crushed between said rollers;
screen means for receiving said bottle and caps and having openings therein larger than said caps and smaller than said bottle whereby said caps will pass through said openings but said bottle will not; and
means disposed downwardly from said screen means for receiving said crushed bottle whereby the bottle caps will be separated from said bottles.

5,186,332
PAPER STOCK SCREENING APPARATUS HAVING HEAVY REJECTS TRAP
Derald R. Hatton, Middletown; Joseph P. Constiner, Monroe, and David E. Suica, Cincinnati, all of Ohio, assignors to The Black Clawson Company, Middletown, Ohio
Filed Jun. 14, 1991, Ser. No. 715,445
Int. Cl.[5] B03B *7/00*
U.S. Cl. 209—17 **12 Claims**



1. Screening apparatus for paper fiber stock comprising:
(a) a housing including a generally cylindrical vertical wall,
(b) means defining an inlet chamber in a lower end portion of said housing wall and including a bottom wall,
(c) means defining a tangentially arranged stock inlet port for delivering stock to said inlet chamber adjacent said bottom wall with a circulatory movement in said chamber,
(d) a cylindrical perforate screening member supported in said housing above said inlet chamber and cooperating with said housing to define a screening chamber within said screening member and an annular accepts chamber between the outer side of said screening member and said housing,
(e) rotor means mounted for rotation in said screening chamber and including a hub having vane means mounted thereon in angular spaced relation,
(f) means for driving said rotor means in the same direction as said circulatory movement of said stock in said inlet chamber,
(g) means defining an outlet port from said inlet chamber through said lower end portion of said housing wall and adjacent said bottom wall of said inlet chamber for intercepting stock carrying heavy reject particles,
(h) means forming a conduit leading from said outlet port to a return port into said inlet chamber at a position spaced angularly from said outlet port in the direction of said circulatory movement in said inlet chamber to recirculate to said inlet chamber stock entering said outlet port, and
(i) means forming a part of said conduit-forming means for trapping high specific gravity reject particles carried into said conduit by stock recirculating therethrough and thereby removing said particles from said recirculating stock,
said trapping means being constructed and arranged to provide for continuous flow of said recirculating stock therethrough with the fibrous constituents thereof back to said inlet chamber.

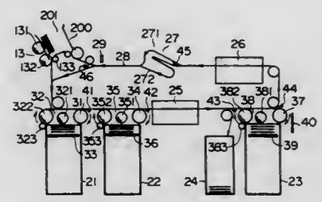
5,186,333
TOP COVER CLAMP FOR SCREENING MACHINE
Bruce A. Pierson, and William E. Lower, both of Cincinnati, Ohio, assignors to Rotex, Inc., Cincinnati, Ohio
Continuation-in-part of Ser. No. 732,036, Jul. 18, 1991, Pat. No. 5,150,796. This application Sep. 27, 1991, Ser. No. 766,789
Int. Cl.[5] B07B *1/00*
U.S. Cl. 209—370 **10 Claims**



1. A screening machine having a screen box mounting a screen assembly, a removable top cover on said box, and a plurality of clamps for clamping said cover and said box together,
each said clamp comprising:
an inflatable air actuator having opposite first and second ends and being expandable from an unpressurized normal condition by internal pressurization; and
at least one clamp arm having a pivot end and an outer end, said pivot end being pivotally mounted to one of said cover and said box, said first end of said actuator being mounted to the outer end of said clamp arm,
said cover and said box being clamped together by pivoting said clamp arm to position said actuator proximate to a clamping surface provided by the other of said cover and said box, and pressurizing said actuator to bring said second end to bear against said clamping surface.

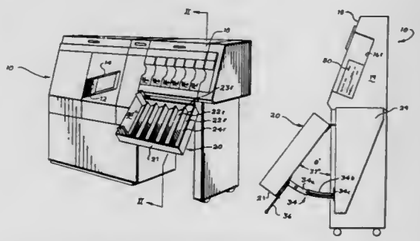
5,186,334
BANK NOTE HANDLING APPARATUS OF A RECIRCULATING TYPE
Yoshio Fukudome, Ibaraki; Yasunori Hamada, Tsuchiura; Masao Okayama, Ryugasaki; Yutaka Kako, Nagoya; Tetsuo Saito, and Itsunori Utsumi, both of Owariasahi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 16, 1989, Ser. No. 324,551
Claims priority, application Japan, Mar. 18, 1988, 63-63356
Int. Cl.[5] B07C *5/00*
U.S. Cl. 209—534 **8 Claims**

1. A bank note handling apparatus for paying out bank notes and for stacking deposited bank notes, said apparatus comprising:
means for paying-in and paying-out bank notes having a separating mechanism and a receiving mechanism;
means for stacking a plurality of bank notes, said staking means having a separating mechanism and a stacking mechanism and being operative to store said deposited bank notes until said deposited bank notes are to be paid out, said bank notes being paid out starting with a most recently stacked bank note;



means for conveying bank notes, said conveying means being provided in a form of a closed loop conveyor extending from the separating mechanism of said means for paying-in and paying-out through said means for stacking a plurality of bank notes and to said receiving mechanism of said means for paying-in and paying-out with bank notes to be paid in and paid out being conveyed by said closed loop conveyor; and
a plurality of means for discriminating a condition of bank notes being conveyed provided in said conveying means and spaced apart from on another along said closed loop conveyor.

5,186,335
ADJUSTMENT DOCUMENT STORAGE DEVICE FOR A DOCUMENT SORTER
Laura B. Fahey; Michael D. Garten, and David G. Lyke, all of Charlotte, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 20, 1989, Ser. No. 439,071
Int. Cl.[5] B07C *7/04*
U.S. Cl. 209—552 **2 Claims**

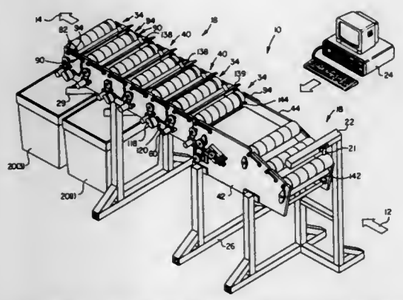


1. A document sorting apparatus comprising:
a frame;
a plurality of sorter pockets carried on said frame;
means carried on said frame for moving a document along a feed path from an input hopper to a selected one of said sorter pockets depending on reading of indicia on said document; and
a rack hingedly connected at one edge thereof to said frame and including a plurality of storage bins, each storage bin positioned adjacent to one of the sorter pockets, said hinged connection to said frame allowing the rack to move between a first position making a larger angle with respect to the frame and a second position making a sec-

VOL 1147 ISS 3 FE 16 1993 UMI

ond smaller angle with respect to said frame, with the second position allowing improved access to the feed path for the document.

5,186,336
PRODUCT SORTING APPARATUS
James M. Pippin, Keller; Kenneth C. Flagg, Jr., Arlington, and Gary S. Robertson, Euless, all of Tex., assignors to Electro-Com Automation L.P., Arlington, Tex.
Filed Jan. 22, 1991, Ser. No. 643,853
Int. Cl.[5] B07C 5/36, 3/06; B65G 47/00
U.S. Cl. 209—583 16 Claims

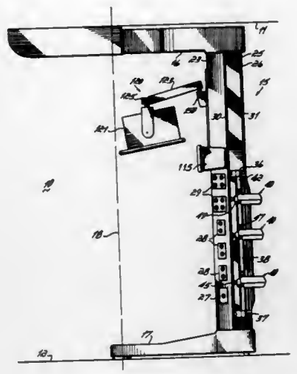


1. A method for diverting a selected product in a stream of products from a transport path having a plurality of diverting gates leading to output destinations comprising the steps of:
identifying one of the plurality of diverting gates on the transport path leading to a selected output destination for the selected product;
moving the selected product along the transport path to the identified diverting gate for the selected output destination;
opening the identified diverting gate for the selected output destination; and
accelerating movement of a selected portion of the transport path to propel the selected product from the transport path to the selected output destination.

2. The method for diverting as in claim 1 wherein the step of identifying includes the steps of:
scanning a code affixed to the selected product, the code related to one of the output destinations; and
locating the diverting gate corresponding to the output destination for the scanned code.

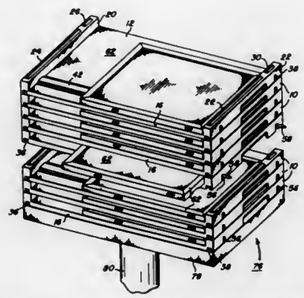
5,186,337
PIVOTED POWER COLUMN
L. Dale Foster, Brookville, Ind., and Timothy A. Kappers, Cincinnati, Ohio, assignors to Hill-Rom Company, Inc., Batesville, Ind.
Filed Aug. 9, 1991, Ser. No. 743,215
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—26 11 Claims

1. A power column adapted to swing from one side of a hospital bed around its end to the other side of said bed, said power column comprising:
upper and lower arms adapted for pivotal mounting to a ceiling and a floor respectively along a single pivot axis,
a hollow, vertical housing having six vertical walls mounted between said arms,
said vertical walls including a front wall having two vertical edges,
an outlet wall extending from each vertical edge of said front wall at an angle of about 45° to the plane of said front wall,
opposed side walls connected to said outlet walls,
a back wall connected to said side walls,
and a plurality of electrical outlets on said outlet walls,
whereby, when said column is swung to either side of said bed, an outlet wall will be disposed substantially perpendicular to the side of the bed at the corner of the bed,



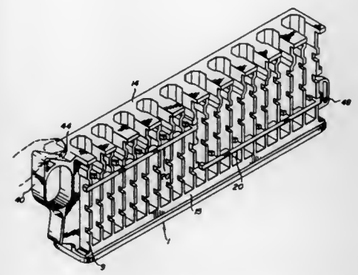
facing an attending nurse positioned at the side of the bed and thus optimally accessible to the attending nurse.

5,186,338
PALLET FOR HOLDING A CASSETTE
John C. Boutet, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 11, 1991, Ser. No. 728,425
Int. Cl.[5] A47F 5/00
U.S. Cl. 211—41 8 Claims



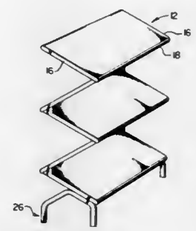
1. A pallet for a cassette, the pallet comprising:
a surface for supporting a cassette,
registration means on the surface for locating a cassette on the surface in 1) a first position wherein a portion of the cassette can be transported by the pallet and 2) a second position wherein the cassette projects from the surface of the pallet, and
means on the pallet for supporting a second pallet above the surface and above a cassette located on the surface so that a plurality of pallets with cassettes thereon can be stacked one above the other.

5,186,339
DEVICE COMPRISING A PLURALITY OF RECEPTACLES ARRANGED IN A SINGLE ROW FOR CONTAINERS FILLED WITH A LIQUID
Walter Heissler, Wendlingen, Fed. Rep. of Germany, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 18, 1991, Ser. No. 732,272
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1990, 4023194
Int. Cl.[5] A47F 7/00
U.S. Cl. 211—74 26 Claims



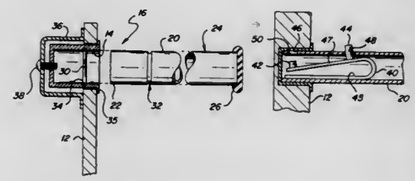
1. In a device comprising a plurality of connected receptacles aligned in a single row and in which are positioned containers of liquid that are of predeterminedly varying heights and diameters, said receptacles having first bottom wall means for supporting the bottom of containers, and exterior walls provided with apertures for scanning the containers;
the improvement wherein said device further includes removable second bottom wall means of varying lengths for supporting the bottom of containers of a reduced height, and mounting means in said exterior walls for mounting said second bottom wall means at a plurality of differing, alternative distances above said first bottom wall means so that said second bottom wall means, when mounted, are generally parallel to and above said first bottom wall means.

5,186,340
INTERLOCKING MODULAR TRAY STRUCTURE
Antonio Vardaro, c/o 11820 Adolphe Caron, Montreal, Quebec, Canada H1E 6J8
Filed Aug. 15, 1991, Ser. No. 745,339
Claims priority, application Canada, Feb. 5, 1991, 2041749
Int. Cl.[5] A47F 3/14
U.S. Cl. 211—133 10 Claims



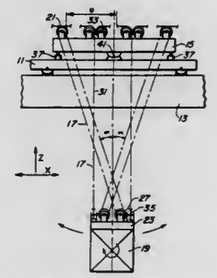
1. A display structure comprising:
a plurality of first and second cantilevered display trays, each of said trays including:
a base wall;
a pair of opposed walls each having opposed ends; and
at least one side wall extending between said opposed walls, each said opposed wall of each of said first and second display trays including a tapered segment at one end and having at least one projection operatively associated therewith and at least one aperture at the other end adjacent said side wall; said apertures of said second tray positioned to releasably receive said projections of said first tray when said second tray is in a cantilevered relationship with said first tray.

5,186,341
SUPPORT SYSTEM FOR HANGING ITEMS
Michael R. Zeid, 4640 Ravine Dr., Bloomfield Township, Oakland County, Mich. 48301
Filed Jan. 9, 1992, Ser. No. 818,390
Int. Cl.[5] A47B 47/00
U.S. Cl. 211—204 7 Claims



1. A device for supporting hangable items thereupon, comprising:
a support surface having a socket formed therein;
an elongated rod having a first end adapted to be inserted into said socket so that the rod extends substantially transversely to said surface and terminates in a second, free end; and
a detent mechanism comprising a female member formed in one of said socket or said first rod end and, a male member supported on the other of said socket or said first rod end, the male member being resiliently biased for outward movement from its supporting member, such that, when said first rod end is inserted into said socket, said male member engages said female member and secures said rod within said socket to support said rod in a cantilever fashion.

5,186,342
INTEGRATED PASSIVE SWAY ARREST SYSTEM FOR CARGO CONTAINER HANDLING CRANES
Yuso Shimizu, San Mateo, Calif., assignor to Paceco Corp., San Mateo, Calif.
Continuation of Ser. No. 610,421, Nov. 7, 1990, abandoned. This application Mar. 4, 1992, Ser. No. 845,350
Int. Cl.[5] B66C 13/08
U.S. Cl. 212—147 2 Claims



1. A passive sway arrest system for a dockside cargo container handling crane having a load carrying generally rectangular trolley which moves fore and aft on rails which are mounted on a girder and extended boom of the crane with a

VOL 1147 ISS 3 FE 16 1993 UMI

generally rectangular cargo container lifting spreader suspended beneath the trolley by wire rope reeving, said system comprising

sheaves mounted on said trolley and said lifting spreader to support said load by the wire rope reeving depending from said trolley, said sheaves on said trolley and said spreader being effective proximate to the corners of the fore and aft ends of said trolley and to the corners of the spreader, the wire ropes of said reeving being cross reeved in the fore and aft direction along the rails to opposite corners of the trolley and the spreader at both ends of the spreader, and

means for arresting sway in a direction perpendicular to the fore and aft direction of motion of the trolley along the rails of the crane, including pairs of sheaves disposed on said trolley proximate the lateral ends thereof, and a pair of sheaves supporting said lifting spreader proximate the middle thereof on opposite sides thereof, said reeving including wire ropes which are angled from the spaced-apart pairs of sheaves on said trolley through the pairs of sheaves supporting the load at the middle thereof to arrest sway perpendicular to the direction of trolley travel, the horizontal distance from the contact of the wire rope with the lateral end mounted sheaves on the trolley to the contact with the lifting spreader middle mounted sheaves being equal to the horizontal distance from the contact of the wire rope with corner mounted sheaves on the trolley to the spreader corner mounted sheaves, the angulation of the ropes which run from the trolley to the middle mounted sheaves disposed at the center of the lifting spreader being equal to the angulation of the ropes which are cross-reeved.

5,186,343

BRIDGE CRANE WITH ARTICULATED ROTARY BOOM

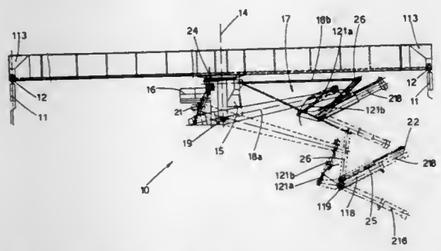
Eugenio Bozzi, Monza, Italy, assignor to ITI/CLM Impianti Tecnici Industriali SpA, Buttrio, Italy

Filed Mar. 15, 1990, Ser. No. 493,746

Claims priority, application Italy, Mar. 21, 1989, 83358 A/89; Jan. 5, 1990, 83301 A/90

Int. Cl.[5] B66C *17/04*

U.S. Cl. 212—206 **8 Claims**



4. A bridge crane comprising:

a longitudinally extending horizontal beam able to move in a horizontal plane transversely to its longitudinal axis;

a rotary platform;

means for operably connecting said rotary platform to said beam at a position substantially at a center portion of the span of said beam;

a boom anchored to said rotary platform so as to be able to rotate about a substantially vertical pivot, said boom comprising a longitudinally extending bearing arm and a longitudinally extending support arm located above said bearing arm, each of said bearing arm and said support arm being hinged at a first end to said rotary platform so as to be able to move relative to said horizontal plane, said support arm being hinged to said rotary platform at a position above a position at which said bearing arm is hinged and said support arm being shorter than said bearing arm, and further comprising a connecting bar having first and second opposite ends, said first end of said connecting bar being pivotally connected to said support arm and said second end of said connecting bar being pivotally connected to a longitudinally extending second boom element, and wherein said a second end of said bearing arm is connected to said connecting bar at a position between said first and second ends of said connecting bar such that said second boom element can move relative to said horizontal plane; and

means for moving and vertically positioning said bearing arm and second boom element.

5,186,344

CONTAINER AND CLOSURE HAVING MEANS FOR PRODUCING AN AUDIBLE SIGNAL WHEN A SEAL HAS BEEN ESTABLISHED

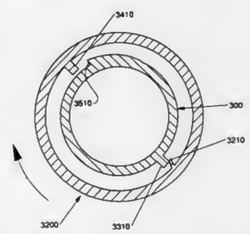
Charles D. Cook, Fairfield, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 2, 1990, Ser. No. 591,650

The portion of the term of this patent subsequent to Oct. 30, 2007, has been disclaimed.

Int. Cl.[5] B65D *41/04*

U.S. Cl. 215—330 **8 Claims**



1. In combination, a container having a discharge orifice defined by an externally threaded finish portion of said container and a removable internally threaded closure including an open end to permit threadedly engaging said closure on said externally threaded finish portion of said container and a closed end for sealing said discharge orifice, at least one of said container and said closure having a first resiliently deformable projection which will interfere with a second substantially non-deformable projection on the other of said container and said closure as it passes by said second substantially non-deformable projection to produce an audible signal, said first and second interfering projections being positioned so that they cannot contact one another as said closure is threadedly advanced onto said container until said discharge orifice in said container has been sealed by said closed end of said closure, said combination also including a sealing member located between said discharge orifice of said container and said closed end of said closure, whereby said discharge orifice forms a seal with a first surface of said sealing member and said closed end of said closure forms a seal with a second surface of said sealing member positioned opposite said first surface, said sealing member also including means for supporting a porous filter element, said combination further including a gas evolving granular product housed within said container and wherein a substantially gas-tight seal to the atmosphere is initially established between said closure, said sealing member and said discharge orifice of said container, whereby said container is pressurized by the gas evolving from said granular product relative to the surrounding atmosphere prior to initial opening, and whereby said porous filter element supported by said sealing member will prevent said granular product from aspirating through said discharge orifice of said container upon initial removal of said closure from said container, said sealing member being removed and discarded after initial opening, whereupon a reseal which will be effective to substantially resist ambient atmospheric pressure changes will be established directly between said closure and said container each time said closure is reapplied and said audible signal sounds.

5,186,345

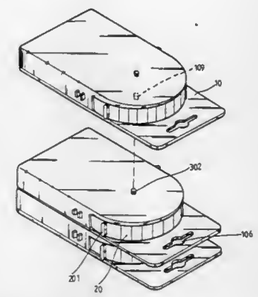
CONTAINER

Chiang Ching An, P.O. Box 82-144, Taipei, Taiwan

Filed Apr. 28, 1992, Ser. No. 874,810

Int. Cl.[5] B65D *43/20*

U.S. Cl. 220—23.4 **2 Claims**



1. A container comprising:

a body portion having a space provided with a first elongated member at a left side and a second elongated member at a right side on which there are a plurality of holes, said first elongated member being formed with a groove in the interior, said body portion further having a curved groove extending from the groove of said first elongated member to said second elongated member and a slot provided on a top side, said first elongated member being provided with a protuberance at an outer vertical side while said second elongated member with two protuberances at an outer vertical side so that the protuberance of the first elongated member of said container may be snug-fitted between two protuberances of a second elongated member of another container thereby enabling similar containers to be horizontally connected together;

a cover inserted into the groove of said first elongated member and having a projection on one end by means of which said cover may be moved to go along said curved groove to open or close said container;

a top cover having a plurality of pins adapted to engage with the holes of said body portion and a curved groove at an inner side to receive an upper edge of said cover.

5,186,346

CONTAINER

John H. Calvert, Manchester, United Kingdom, assignor to Cussons (International) Limited, Manchester, England

Filed Mar. 23, 1992, Ser. No. 855,235

Claims priority, application United Kingdom, Mar. 26, 1991, 9106420

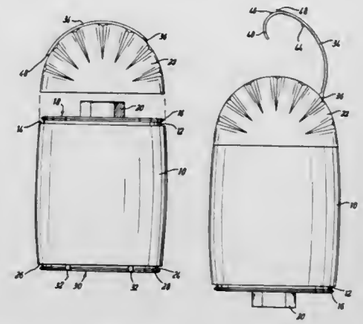
Int. Cl.[5] B65D *85/00*

U.S. Cl. 220—212.5 **12 Claims**

1. A container comprising

a body having a top, a bottom and dispensing means on said top;

a cap having an outer surface and a substantially arcuate hook of a given radius attached thereto, said hook having a free end and a barb located adjacent said free end, said hook being movable between a first position wherein at least part of said hook extends along said outer surface of said cap, and a second position wherein the hook projects outwardly from the outer surface of said cap; and



means for removably securing said cap on said top of said body and for removably securing said cap to said bottom of said body.

5,186,347

SPILL-PROOF CLOSURE

Mark A. Freeman, 15317 W. 91st Pl., Lenexa, Kans. 66219, and Timothy K. Stringer, 8921 W. 80th, Overland Park, Kans. 66204

Filed Oct. 15, 1991, Ser. No. 776,793

Int. Cl.[5] B65D *51/18*

U.S. Cl. 220—254 **20 Claims**



1. A controllable valved closure for use in dispensing a beverage from a container, said closure comprising:

(a) a substantially planar cover portion conforming in shape to the opened end of said container;

(b) attachable means for selectively maintaining said closure in covering relation with said container;

(c) a spout having an outer end, said spout extending upwardly and outwardly from said cover portion;

(d) an elongated opening located near said outer end of said spout, said opening providing communication between the interior and exterior of said spout, and said opening being completely contained within the user's mouth during operation of the closure;

(e) a thin membrane having attachable means for attaching said thin membrane to an inner surface of said spout, said thin membrane covering said opening in said spout, said thin membrane being made of an elastomer which can be repeatedly stressed and unstressed and retain memory of its original position; and

(f) a single slit through a planar section of said thin membrane, said slit being straight and parallel to a long axis of said opening, said slit functioning to provide an opening through said thin membrane when suction is applied to said thin membrane and reseal, as a result of said thin membrane being biased to its manufactured position, when suction is removed from said thin membrane.

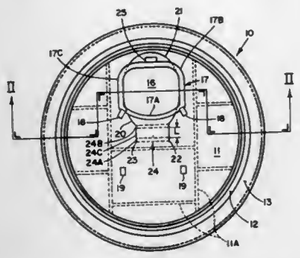
VOL 1147 ISS 3 FEB 16 1993 UMI

5,186,348

CAN END WITH LOCK OPEN AND LOCK CLOSED TAB OPERATED BY A PULL RING

Joseph D. Steiner, Coraopolis, Pa., assignor to Can Do Associates, Pittsburgh, Pa.

Filed Apr. 24, 1991, Ser. No. 690,706
Int. Cl.[5] B65D *17/34, 43/24*
U.S. Cl. 220—270 **13 Claims**



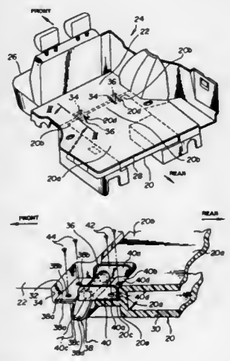
1. A beverage container lid comprising:
a lid body surrounded by a peripheral skirt for seating attachment to a rim of a beverage container;
a tear tab defined by a score line in said lid body extending from a blunt nose portion projecting along the lid body to inboard termination sites at opposite sides of an inboard hinge joined to the lid body;
a tab control ring hinged to an outboard part of said tear tab opposite said inboard hinge for controllably positioning said tear tab; and
means upstanding from said lid body at preselected sites to releasably engage said tab control ring for holding said tear tab in closed and re-closed positions relative to an opening formed by severing the tear tab along said score line in the lid body.

5,186,349

HINGE MECHANISM

Manabu Sakamoto, Kanagawa, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan

Filed Sep. 25, 1991, Ser. No. 765,210
Claims priority, application Japan, Sep. 26, 1990, 2-100614[U]
Int. Cl.[5] B65D *43/14*
U.S. Cl. 220—331 **9 Claims**



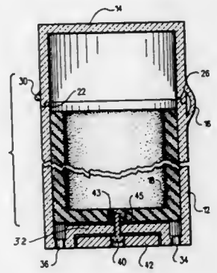
1. In combination,
a box having a lid;
a fixed member; and
a hinge mechanism for joining said lid of said box with said fixed member and allowing said lid to pivot relative to said fixed member, said lid being placed on a substantially horizontal top hem portion of said box and having a lower peripheral edge portion thereof which is in contact with said top hem portion and located near said fixed member and serves as a fulcrum of the pivotal movement of said lid, said fixed member being fixed relative to said box, said hinge mechanism comprising:
a rod secured to one of said lid and said fixed member;
securing means for securing said rod to said one of said lid and said fixed member, said securing means comprising two vertical wall portions which are secured to longitudinally opposed ends of said rod respectively and a horizontal wall portion which unites said vertical wall portions and is fixed to said one of said lid and said fixed member; and
guiding means for guiding the movement of said rod, said guiding means being secured to the other of said lid and said fixed member and comprising a horizontal flange portion which is secured to said fixed member and an envelop portion which defines an enclosed space inside the same for receiving said rod therein, said envelope portion being so sized as to allow said rod to slide smoothly therein and as to be interposed between said vertical wall portions of said securing means with having no play therebetween.

5,186,350

INSULATED BEVERAGE CONTAINER HOLDER

Larry D. McBride, Rte. 1, Box 712, Rogers, Ark. 72756

Filed Jun. 24, 1991, Ser. No. 720,206
Int. Cl.[5] B65D *25/18*
U.S. Cl. 220—412 **12 Claims**



1. An insulated beverage container holder, comprising:
a hollow cylindrical body;
a hollow cylindrical cap dimensioned for engagement with an open upper end face of said body;
an upstanding annular ledge on said upper end face of said body;
a step connecting said ledge with an outer cylindrical side wall of said body;
an annular groove formed in an open bottom end of said cap, said groove dimensioned for frictional engagement with said ledge for retaining said cap in a closed position over said upper end face of said body;
a radially outwardly projecting thumb catch on said cap for opening said cap;
an insulating liner removably received in said body;
a flexible hinge integrally molded with said body and said cap;
a cylindrical disk-shaped end plate integrally molded as a component of said body proximate a bottom end face of said body, said end plate forming a floor supporting said liner;
a downwardly opening cylindrical cup-shaped steel mounting cup secured externally to said end plate;

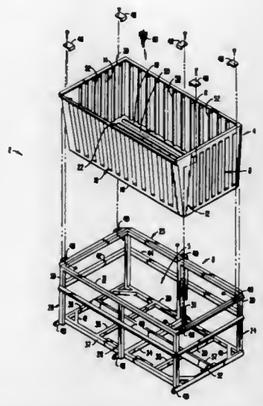
a magnet disposed in said mounting cup such that a bottom surface of said magnet is exposed and disposed flush with said bottom end face of said body; and
at least one drain hole in said bottom end face of said body.

5,186,351

SLURRY TANK

John R. Gallo, Modesto; Gregory J. Coleman, Fresno, and Claude E. Brown, Lodi, all of Calif., assignors to San Joaquin Valley Express, Modesto, Calif.

Continuation of Ser. No. 229,085, Aug. 5, 1988, abandoned. This application Dec. 3, 1990, Ser. No. 622,126
Int. Cl.[5] B61D *87/00*
U.S. Cl. 220—563 **12 Claims**



1. A tank and frame assembly for containing and transporting slurry and slurry-like material comprising:
an outer frame defining a central open region;
an inner, slurry-material-containing releasably secured to the outer frame and sized to be supported within the central open area, said container being fabricated from a plastic material and providing thermal insulation; and
the container having a circumferential sidewall with an inner surface against which the material rests, the inner surface having generally vertical corrugations sized to inhibit surging of the material during transport.

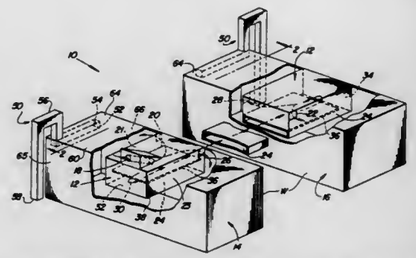
5,186,352

COMPARTMENTALIZED FLUID TANK

John E. Otto; Allen C. Bieber, both of Erie, and Ronald H. Till, Fairview, all of Pa., assignors to General Electric Company, Erie, Pa.

Filed May 12, 1992, Ser. No. 881,925
Int. Cl.[5] B61D *87/16*
U.S. Cl. 220—564 **19 Claims**

1. A compartmentalized fluid tank device comprising:
first fluid containment means,
second fluid containment means, and
filling chamber means, in fluid connection with said first and second fluid containment means, for filling said first and second containment means, said filling chamber means having a transverse width and a longitudinal length and including a first fluid passage, a second fluid passage, and a fluid channel,
said first fluid passage facilitating fluid flow between said filling chamber and said first fluid containment means,
said second fluid passage facilitating fluid flow between said filling chamber and said second fluid containment means,
said fluid channel having a first end orifice and a second end orifice, said first end orifice elevationally below and a lateral distance from said first fluid passage, said second end orifice elevationally below and a lateral distance from said second fluid passage, said fluid channel facilitating fluid flow between said first and second containment means when the tank is being filled, and for substantially preventing fluid flow between said first and second containment means when said tank is improperly oriented.

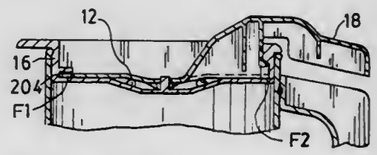


5,186,353

SELF-SEALING CLOSURE

Douglas P. Ramsey, 20 Ellington Cir., Rochester, N.Y. 14612

Continuation-in-part of Ser. No. 657,654, Feb. 19, 1991, which is a continuation-in-part of Ser. No. 619,056, Nov. 28, 1990, Pat. No. 5,036,993. This application Nov. 6, 1991, Ser. No. 788,551
The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.
Int. Cl.[5] B65D *51/18;* **A47G** *19/22*
U.S. Cl. 220—711 **9 Claims**



1. A self sealing closure for sealing a receptacle, the closure having a central axis, comprising:
(a) a substantially annular lid having a top surface and at least one orifice;
(b) a substantially annular shutter matching the orifice, wherein the shutter includes a lever extending beyond the periphery of the shutter;
(c) means for attaching the shutter to the lid; and
(d) means for holding the shutter against the orifice such that the shutter is normally in a closed position in which passage of fluid through the orifice is prevented, and the shutter may be moved from its closed position to an open position by the application of an external force applied to the lever in a direction substantially parallel to the central axis of the closure wherein the shutter moves from its closed position to its open position in a direction substantially parallel to the central axis.

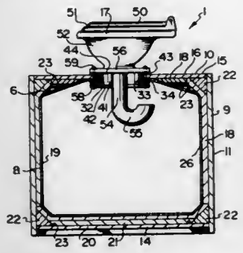
VOL 1147 ISS 3 FE 16 1993 UMI

5,186,354

TANK AND A SUPPORT HOUSING FOR SUPPORTING A BLADDER

Manus Coffey, Newtownmountkennedy, Ireland, and Michael G. McGarry, Ottawa, Canada, assignors to Harouniya Limited, Dublin, Ireland

Filed Apr. 5, 1991, Ser. No. 681,000
Claims priority, application Ireland, Apr. 5, 1990, 1224/90
Int. Cl.[5] B65D *6/12, 6/40*
U.S. Cl. 220—720 **19 Claims**



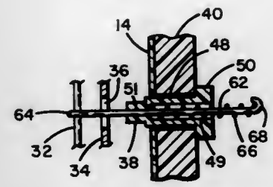
1. A tank comprising:
a support housing for supporting a bladder, the housing being of a relatively rigid material and defining a hollow interior region for the bladder, the interior region being of variable volume for accommodating expansion and contraction of the bladder, and the housing having an inlet to the hollow interior region, and
a bladder mounted in the hollow interior region, the bladder having an inlet, communicating with the housing inlet.

5,186,355

COIL POSITION ADJUSTMENT DEVICE FOR VENDING MACHINES

Dennis J. VonDeLinde, Wright, and Gordon M. Jacobs, McGregor, both of Minn., assignors to Venex Incorporated, McGregor, Minn.

Filed Dec. 23, 1991, Ser. No. 811,947
Int. Cl.[5] G07F *11/36*
U.S. Cl. 221—75 **6 Claims**



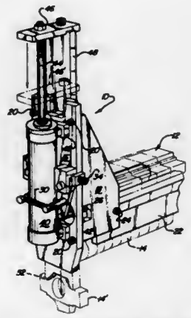
2. In a vending machine of the type in which products to be vended are placed between the convolutions of a generally rigid helix, said helix being supported in an elongated tray having an open front face and a generally closed rear face, a drive means operatively coupled to said helix, said drive means having an output drive shaft with a longitudinal bore extending therethrough and a non-circular cross-section, said drive shaft coupled in driving relation to one end of said helix, an improved coupling mechanism for joining said output drive shaft to said one end of said helix comprising:
(a) a generally U-shaped bracket with a central web joining parallel, spaced-apart legs, each of said legs including an aperture aligned with that in the other leg for receiving a radially extending shank portion of said one end of said helix therethrough, said bracket having a non-circular aperture through said web portion of a shape conforming to said non-circular cross-section of said drive shaft;
(b) a compression type coil spring having first and second ends, said spring being disposed within said longitudinal bore in said drive shaft; and
(c) a rigid pin having first and second ends and coaxially disposed in said coil spring, said first end of said pin being coupled to said radially extending shank portion of said helix and said second end of said pin engaging said first end of said coil spring.

5,186,356

CONVEYOR UNLOADING MECHANISM

Jeffery A. Stadler, Fenton, Mich., assignor to Excel Corporation, Fenton, Mich.

Filed Feb. 11, 1991, Ser. No. 653,140
Int. Cl.[5] B65G *59/00*
U.S. Cl. 221—250 **5 Claims**



1. A stripper assembly for discharging parts one at a time from an accumulating conveyor comprising:
a pair of part holding and releasing lever arms;
biasing means for biasing said lever arms towards each other to engage a part between said lever arms;
stop means engaging said lever arms to limit the movement of the lever arms toward each other so that a single part can be freely fed between said lever arms;
a push blade for moving said part through said lever arms against the bias of said biasing means;
a pair of gibs for guiding said push blade; and
means for reciprocating said push blade in said gibs from a part loading position to a part discharge position as the part is being retained between said lever arms;
wherein said lever arms, push blade and gibs are located in a generally vertical plane so that as said part is pushed through said lever arms by said push blade, the part is released to move away from the stripper assembly by gravity.

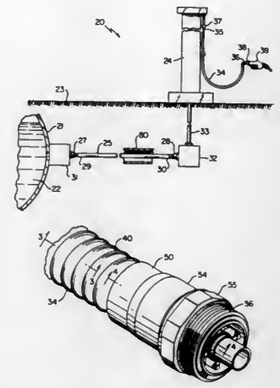
5,186,357

FUEL DISPENSING SYSTEM HAVING A FLEXIBLE HOSE WITH A STATIC DISSIPATER AND A FUEL LEAK DETECTOR

Randy C. Foster, Springfield, Mo., assignor to Dayco Products, Inc., Dayton, Ohio

Division of Ser. No. 575,723, Aug. 31, 1990, Pat. No. 5,102,012.
This application Nov. 26, 1991, Ser. No. 800,349
Int. Cl.[5] B67D *5/12;* **G01M** *3/08;* **F16L** *11/11;* **B29C** *27/04*
U.S. Cl. 222—1 **10 Claims**

1. In a method of making a fuel dispensing system comprising a storage tank for said fuel and being disposed in the ground, a dispensing pump means disposed above said ground, a first flexible hose construction having an inner surface means and being disposed in said ground for conveying fuel from said tank to said pump means, and a second flexible hose construction having opposed end means one of which is interconnected to said pump means, said second hose construction being disposed above said ground for dispensing fuel from said pump means into a fuel container of a transportation vehicle through a nozzle means interconnected to the other of said end means thereof, said second hose construction having electrical conductor means extending therealong for dissipating static electricity from said nozzle to said pump means, the improvement comprising the step of forming said first hose construction to have an electrical conductor means to extend along said first hose construction for dissipating static electricity from said pump means to said storage tank and for forming a portion of a means for detecting leakage of said fuel in said first hose construction through said inner surface means.

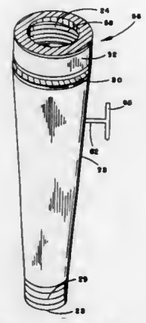


5,186,358

SPOUT DEVICE AND KIT COMBINATION

Clifford R. McVay, P.O. Box 5041, Sparks, Nev. 89432-5041

Filed Nov. 15, 1990, Ser. No. 613,294
Int. Cl.[5] B67D *5/06*
U.S. Cl. 222—1 **14 Claims**

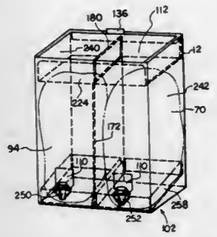


1. A spout device and kit for discharging containerized fluids comprising: wall mounting means for connection to a vertical surface and the like;
attachment member means for detachably fastening said spout device to said wall mounting means;
a generally tapered hollow spout body housing;
an exteriorly threaded spout upper portion comprising an opening at the extreme upper end of said spout body;
a chamber located within said spout upper portion;
receiving plugs, for insertion into said chamber;
cap means for retaining said plugs inserted into said chamber, and for attachment to said upper portion;
a spout intermediate portion;
an exteriorly threaded spout lower portion comprising an opening at the projection lower end of said spout body;
an on/off flow control means for controlling flow of fluids being dispensed through said spout body which has a passageway therethrough selectively cooperating with said spout body interior allowing fluid flow concurrently through said spout flow openings located at the top and bottom of said housing when said passageway is open to the spout interior;
an extension member comprising a housing, means for detachable connection to a projected member, and said extension member further comprises an opened upper portion and an opened lower portion and an on/off flow control means for regulating fluid flow contained within said upper portion, and which is an integral part thereof; said means comprises a rotatable ball with a passageway therethrough allowing fluid flow concurrently through said flow openings located at the top and bottom of said extension member housing;
an elongated activating member affixed to said rotatable ball for forcibly rotating said ball;
adaptor means for detachable connection to said plugs, to said extension member connection means, and to said cap means;
a dust plate for placement onto said spout body upper portion.

8. A method of utilizing a spout device in conjunction with a wall surface holding unit, when discharging elements from a container, comprising the steps of:
providing wall mounting means for connection to a vertical surface and the like;
providing attachment member means for detachably fastening said spout device to said wall mounting means;
providing a generally tapered hollow spout body;
providing an exteriorly threaded spout upper portion comprising an opening at the extreme upper end of said spout body;
providing a chamber located within said spout upper portion;
providing receiving plugs, for insertion into said chamber;
providing cap means for retaining said plugs inserted into said chamber; and for attachment to said upper portion;
providing a spout intermediate portion;
providing an exteriorly threaded spout lower portion comprising an opening at the projected lower end of said spout body;
providing an on/off means, for regulating fluid flow through said spout body;
providing an elongated activating member portion affixed to said means for regulating to initiate control of fluid flow;
providing adaptor means for detachable connection to said plugs, and to said cap means;
connecting said container to said spout device;
connecting said spout device and said container, in combination, to said attachment member means; and
dispensing containerized elements through said spout device by activating said means for regulating fluid flow.

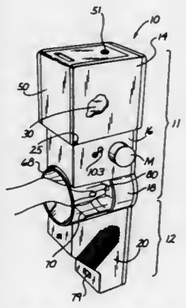
VOL 1147 ISS 3 FEB 16 1993 UMI

5,186,359
METHOD AND APPARATUS FOR DISPENSING FLOWABLE HAIR PRODUCTS
Donald A. Brown, 257 Royal Oak Court, Oakville, Ontario L6H 3A8; Steven P. Brown, 383 Pine Avenue, Oakville, Ontario L6J 2K2, and Barbara MacDonald, 340 Sandhurst Drive, Oakville, Ontario L6L 4L2, all of Canada
Filed Apr. 15, 1991, Ser. No. 684,875
Claims priority, application Canada, Apr. 23, 1990, 2015175
Int. Cl.[5] B65D *35/22*
U.S. Cl. 222—1 16 Claims



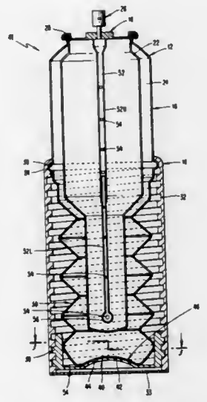
1. A method of dispensing small amounts of liquid hair products from a bulk source comprising the steps of:
providing at least first and second bulk sources of flowable first and second hair products individually packaged;
providing openable and closable dispensing means for each of said bulk sources;
mounting said bulk sources within a unitary container holding each of said bulk sources;
dispensing predetermined and desired amounts individually from each of said bulk sources, and
providing a hinged integral recessed accessory tray at a top end of said container.

5,186,360
AUTOMATIC SOAP DISPENSER AND HAND DRYER UNIT
Richard B. Mease, Carpinteria, and Robert E. Burridge, Santa Barbara, both of Calif., assignors to M & D International Enterprises, Inc., Carpinteria, Calif.
Filed Dec. 9, 1991, Ser. No. 803,543
Int. Cl.[5] B67D *5/06*
U.S. Cl. 222—63 4 Claims



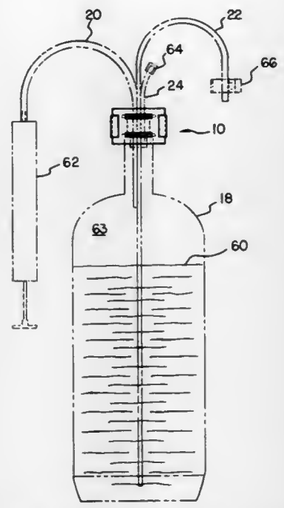
1. Apparatus for use in washing the hands of a user comprising:
a housing including an upper portion and upper and lower intermediate portions for enclosing an automatic soap dispenser and a lower portion for enclosing an automatic hand dryer;
said automatic soap dispenser comprising:
a disposable container of liquid soap located in the upper portion of the housing;
a resilient tubular member connected at one end thereof to the interior of the container and extending down through the upper intermediate portion of the housing, said tubular member having a self-sealing nipple valve on its opposite end;
actuating means including a motor means and a squeezer means, said squeezer means located in said upper intermediate portion in front of said tubular member; and
a horizontally disposed transparent cylindrical chamber located in the lower intermediate portion of the housing and having an upper wall with an opening therein aligned with the nipple valve; and
a first sensor located in said cylindrical chamber responsive to a hand placed therein to actuate said actuating means to cause said squeezer means to move from a rest position to press said tubular member and supply a dosage of soap from said tubular member into the hand of the user and then return to said rest position;
said automatic hand dryer comprising:
a warm air blower located in said lower portion of said housing beneath said cylindrical chamber;
said warm air blower having an outlet; and
a second sensor located adjacent said outlet and responsive to the hands of a user positioned opposite the outlet to energize the hot air blower to dry the hands.

5,186,361
SPRAY DISPENSER HAVING MANUAL ACTUATOR FOR GENERATING AND STORING PRODUCT-EXPELLING ENERGY
John E. Williams, Panorama City, Calif., assignor to Williams Dispenser Corporation, Los Angeles, Calif.
Filed Feb. 1, 1991, Ser. No. 649,029
Int. Cl.[5] B65D *35/28;* B67D *5/42, 5/60*
U.S. Cl. 222—95 18 Claims



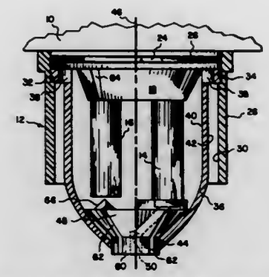
1. A spray dispenser comprising a housing carrying a discharge valve at a longitudinal end thereof, a flexible bag connected to said housing for carrying a liquid product in communication with said discharge valve, said housing including a body encompassing said bag and forming a gas-containing space therebetween, said body being formed of a stiffer material than said bag, and manually actuable means for collapsing said body to compress said gas and thereby pressurize said product, whereby the compressed gas stores energy for expelling product upon actuation of said discharge valve.

5,186,362
LIQUID TRANSFER ASSEMBLY
Hugh A. Biagi, Jr., Rte. 1, Box 174A, Bagdad, Ky. 40003
Filed Aug. 19, 1991, Ser. No. 747,141
Int. Cl.[5] B67D *5/52*
U.S. Cl. 222—136 2 Claims



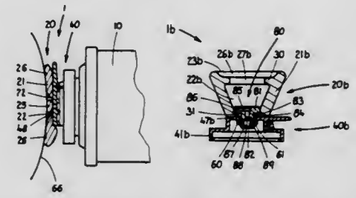
1. A new and improved liquid transfer assembly for attachment to a flanged neck of a liquid container, said liquid transfer assembly comprising:
stopper means positionable as a closure in said flanged neck of said liquid container;
air pressure supplying tube means positionable through said stopper means for effecting a pressurization of an air space above a liquid surface within said liquid container;
liquid dispensing means positionable through said stopper means and being operable to direct a flow of liquid from said liquid container in response to a pressurization of air within said liquid container;
supplemental air pressure supplying tube means positionable through said stopper means and being selectively attachable to a second liquid container whereby a plurality of said liquid containers can be operably attached together to effect a selective dispensing of liquid from individual containers;
holding clasp means for effecting a locking engagement between such stopper means and said flanged neck of said liquid container, said holding clasp means including at least one slot for engaging said flanged neck of said liquid container, said holding clasp means comprising a plurality of hingedly connected plates positionable around said flanged neck of said liquid container; and
retaining disk means separably positionable over said stopper means and being engageable with said holding clasp means to further effect a locking engagement between said stopper means and said flanged neck of said liquid container, said retaining disk means being in engagement with at least one further slot provided in said holding clasp means, said retaining disk means being further provided with a through-extending opening through which said air pressure supplying tube means, said liquid dispensing tube means, and said supplemental air pressure supplying tube means are directed.

5,186,363
LIQUID MIXING AND DISPENSING NOZZLE
Joel E. Haynes, 6248 Wynne Ave., Reseda, Calif. 91335
Filed Feb. 21, 1992, Ser. No. 838,833
Int. Cl.[5] B67D *5/60*
U.S. Cl. 222—145 12 Claims



1. A liquid mixing and dispensing nozzle comprising:
an accumulator chamber defined by an accumulator wall, said accumulator wall having an exterior surface, said accumulator chamber having a bottom and a top with said top being at a greater height than said bottom, said accumulator chamber having a longitudinal center axis, said axis being substantially aligned with the force of gravity;
a first liquid supply tube for discharging a first liquid, said first liquid supply tube discharging said first liquid within said accumulator chamber directly adjacent said bottom;
exit port means found within said accumulator wall directly adjacent said top, said first liquid to be conducted through said exit port means and flow by capillary action along said exterior surface of said accumulator wall to said bottom and then fall free of said accumulator wall; and
a second liquid supply tube for discharging a second liquid, said second liquid supply tube discharging said second liquid at said bottom to thereby mix with said first liquid that has fallen free of said accumulator wall.

5,186,364
DISPENSING HEAD FOR APPLYING FOAMY PRODUCT ON A SKIN SURFACE
Telekesi Laszlo, 1875 Martin Grove Rd. Apt. 307, Rexdale, Ontario, Canada M9V 3S8
Filed Jul. 15, 1991, Ser. No. 731,133
Claims priority, application Canada, Nov. 20, 1990, 2030297
Int. Cl.[5] B65D *83/28*
U.S. Cl. 222—153 7 Claims



1. For use with a pressurized container including a centrally located valve having an orificed valving member, a dispensing head assembly comprising:
(a) a mounting member having a ring portion for attachment to said container at a position radially spaced from and surrounding a vertical axis defined by said valving member, a generally circular outlet wall portion defining a substantially horizontal outer pressing surface at its upper side and an opening therethrough aligned with said verti-

VOL 1147 ISS 3 FE 16 1993 UMI

cal axis, a depending skirt portion joined to the lower side of said outlet wall portion at the edge of said opening and having a restricted lower end, a perimetrical skirt portion joined to and extending downward from said outlet wall portion and being connected to said ring portion by a flexible hinge at a first radial position, and a radially outwardly extending finger tab portion hingedly connected to one of said outlet wall portion and said perimetrical skirt portion substantially opposite to said first radial position and having a locking tang rigidly joined to its underside, said finger tab portion being operable between a first locked and a second unlocked position;

(b) an elastically squeezable collector member having a bottom wall portion and continuous side wall means joined to and extending upward from the periphery of said bottom wall portion, said side wall means defining a central axis generally uniaxical with said vertical axis, said side wall means enclosing a collecting chamber therein, the upper end of said side wall means defining a terminal end surface, said terminal end surface having at least one exit opening therethrough in communication with said collecting chamber, said bottom wall portion defining an inlet end surface at its lower side attaching to said outer pressing surface of said mounting member, said bottom wall portion further defining an engaging surface at its upper side and a centrally located hole opening therethrough; and

(c) a valve actuator member having a generally circular head portion and a centrally located shank portion thereon, said head portion having a sealing surface at its lower side attaching to said engaging surface of said collector member and a passageway extending radially outward from its center, said passageway terminating in a discharge orifice opening through the side surface of said head portion, said shank portion having a cylindrical outer surface joined to and extending downward from said sealing surface, said cylindrical outer surface engaging both said centrally located hole of said collector member and the inner surface of said restricted lower end of said depending skirt portion of said mounting member, said shank portion further having a surface engaging said valving member, a bore extending through said surface and providing fluid communication between said valving member and said passageway, and locking means for engaging said restricted lower end of said depending skirt portion of said mounting member;

wherein said bottom wall portion of said collector member is squeezed between said sealing surface of said valve actuator member and said outer pressing surface of said mounting member, to effect sealing between said sealing surface of said valve actuator member and said engaging surface of said collector member.

5,186,365

FITTING FOR EMPTYING A CONTAINER

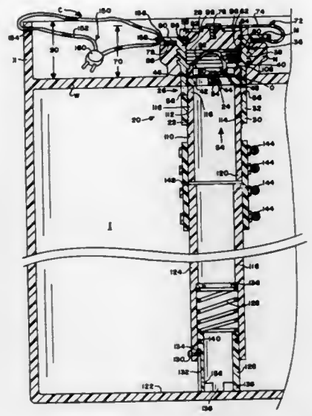
Paul A. Nolte, Memphis, Tenn., assignor to Ingersoll-Dresser Pump Company, Liberty Corner, N.J.

Filed Sep. 20, 1991, Ser. No. 763,349
Int. Cl.[5] B67B *5/00*
U.S. Cl. 222—153 **16 Claims**

1. A fitting for use in dispensing liquid from a container having a container wall, an interior, and an opening through said container wall communicating with said interior of said container, said fitting comprising:

(a) a housing having an open upper end, an open lower end, and a housing wall defining a passageway communicating said open upper end with said open lower end, said housing including means for mounting said housing in said opening in said container with said open upper end of said housing extending to the outside of said container and with said open lower end of said housing being in communication with said interior of said container;

(b) valve means disposed in said housing for blocking flow of liquid through said housing in a direction towards said open lower end and for permitting flow of liquid in the opposite direction towards said open upper end; and



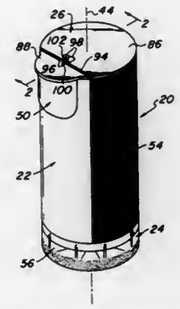
(c) first drain hole means through said housing wall in communication with said passageway and for being in communication with said interior of said container for draining the interior of said container through said passageway.

5,186,366

GROUND COFFEE DISPENSER UTILIZING A METERING TRAP CHAMBER

Edward H. Meisner, Short Hills, and Young C. Park, Palisades Park, both of N.J., assignors to Eagle Affiliates, Inc., Brooklyn, N.Y.

Filed Aug. 12, 1991, Ser. No. 743,948
Int. Cl.[5] B67D *5/38*
U.S. Cl. 222—158 **7 Claims**



1. Apparatus for dispensing a metered amount of particulate material therefrom comprising a housing and metering means,

said housing comprising a storage cavity for receipt of particulate material therein and a passageway isolated from said cavity, said passageway and said cavity being separated from said other by an intermediate wall, said passageway having an outlet in the form of a spout, said spout having a pivotable lid with means for releasably holding said pivotable lid in an open position to permit said particulate material to pass through said spout when said lid is open,

said storage cavity having a bottom outlet, an inlet located adjacent the top of the storage cavity and a cover, said inlet serving to introduce said particulate material into said storage cavity, said cover being arranged to pivotally close said inlet to said storage cavity and to be releasably held in the closed position, said cover and said lid being arranged to be pivotally secured to one another,

said metering means comprising plural receiving chambers disposed below said bottom outlet, said metering means being rotatable about an axis to predetermined rotational positions to bring at least one of said receiving chambers under said bottom outlet so that particulate material in said cavity may flow therein via said bottom outlet, said receiving chambers having side walls separating them from one another, with each of said side walls having a top surface in the same plane as the top surface of the other side walls, said metering means additionally comprising wiping means to wipe the top surface of said side walls as said metering means is rotated, whereupon each of said predetermined plurality of receiving chambers is filled with a predetermined amount of particulate material and is prevented from being filled up to more than said predetermined amount, wherein each of said rotational positions are releasably maintainable in a predetermined position by detent means, so that one or more of said selected filled receiving chambers are in communication with said passageway at one time,

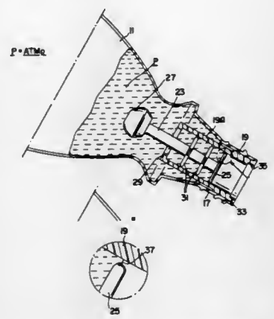
said rotational of said metering means to selected ones of said rotational positions bringing a selected number of said filled receiving chambers into communication with said passageway, whereupon inversion of said apparatus causes the particulate material within said selected ones of said filled receiving chambers to pass into said passageway for egress from said apparatus.

5,186,367

MEASURING DEVICE FOR DISPENSING PREDETERMINED QUANTITIES OF A LIQUID

Frederick R. Hickerson, R.D. 6, Box 530, Newton, N.J. 07860

Filed Feb. 21, 1991, Ser. No. 657,835
Int. Cl.[5] G01F *11/00*
U.S. Cl. 222—207 **10 Claims**



1. A device for dispensing a predetermined quantity of a liquid having a predetermined viscosity comprising:

a container having an elongated neck with a chamber having an inner wall, an inner end and discharge opening at its outer end;

piston means mounted for axial movement in said chamber having a predetermined clearance with said inner wall of said chamber and forming a meniscus seal with said chamber whereby the surface tension of the liquid prevents passage of liquid between said piston means and the inner wall; and

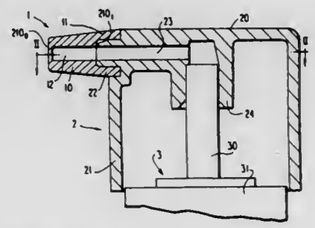
a valve member connected to said piston means and adapted to form a seal with the inner end of said chamber when said piston mean is disposed adjacent the discharge opening, said piston means operable between an inner limit position permitting flow of liquid from the container to said chamber and an outer limit position wherein said valve member seals the inner end of said chamber and the surface tension of said liquid between said piston means and the inner wall is broken and a predetermined quantity of the liquid can be discharged from the container.

5,186,368

SHUTTER FOR THE OUTLET CHANNEL OF A DISPENSER HEAD FOR SEMI-LIQUID SUBSTANCES, AND A DISPENSER HEAD ADVANTAGEOUSLY ASSOCIATED THEREWITH

Firmin Garcia, Evreux, France, assignor to Valois, Le Neubourg, France

Filed Nov. 6, 1990, Ser. No. 609,684
Claims priority, application France, Nov. 7, 1989, 89-14593
Int. Cl.[5] B65D *25/40*
U.S. Cl. 222—490 **3 Claims**



1. A dispenser head particularly adapted for delivering a semi-liquid substance at a pressure greater than atmospheric pressure, said dispenser head having an outlet channel, characterized in that said outlet channel is closed by a shutter, said shutter being made of a resiliently deformable material and including a perforation having lips that press against each other in sealed manner at rest, said shutter having an end wall with an inside surface and an outside surface, and a side wall extending from said inside surface of said end wall, said perforation being formed through said end wall and being constituted by a slot having its maximum width adjacent said inside surface and narrowing to a slit adjacent said outside surface, said shutter being engaged in a housing formed in said head in such a manner that:

a) said slot communicates with said outlet channel, said slit being at the outside of said dispenser head such that said substance dispensed under pressure exerts a force on the walls of said slot, thereby deforming the shutter and causing the slit to open; and

b) said head is in sealed contact with said side wall over a first surface and is in sealed contact with said inside surface of said end wall over a second surface, said first and second surfaces being such that no communication is possible between said outlet channel and the outside via said shutter other than through said perforation;

wherein said first surface extends only over the inside of said side wall.

5,186,369

TUBULAR CONTAINER WITH NON-REMOVABLE WORKING CAP

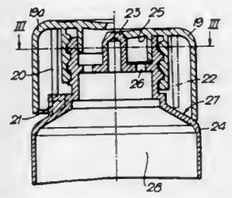
Antonio Aguirrezabal, Vitoria, Spain, assignor to Tuboplast Hispania, S.A., Vitoria, Spain

Filed Jul. 27, 1990, Ser. No. 558,589
Claims priority, application Spain, Jul. 28, 1989, 8902675; Jan. 22, 1990, 9000179
Int. Cl.[5] B65D *47/28*
U.S. Cl. 222—521 **5 Claims**

1. A tubular container with a non-removable working cap, wherein said cap is breakable if an attempt is made to remove the cap, comprising:

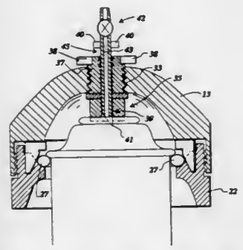
VOL 1147 ISS 3 FE 16 1993 UMI

a tube (6) having a threaded neck (7), an outlet from the tube for the passage of a product from inside of said tube, and a cap screwed to said neck; said cap having at least one hole to allow the product to be discharged from the tube;
a lug (3) vertically disposed on a truncated portion of tube (6) under the threaded neck (7) that forms a frontal outside zone that is interrupted a distance from a lateral outside surface of the tube, a second zone disposed counterclockwise that forms a right angle from said first zone, and a third zone clockwise of said first zone that forms an acute angle with said first zone;
said outlet from the tube comprising a number of circularly-arranged holes (13) projecting from an inside bottom of said threaded neck of said tube;
a boss (8) disposed on an inside bottom of said threaded neck of said tube;



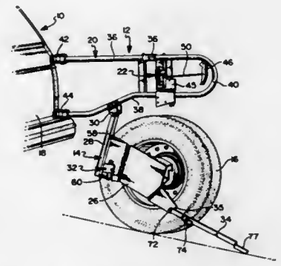
said cap having a lower surface that serves as a point of downward departure for one cylindrical flange (14) having a small diameter and height and lodged inside of the neck of said tube; another cylindrical flange (11) having a greater diameter and height than flap (14) and threaded to neck (7), and a third outside cylindrical flap having a height greater than flange (11) and having a diameter that coincides with an outside diameter of the tube; and
a tongue (2) having a helicoidal component that originates from the lower surface of said cap between the another and third flanges and from an inside surface of said third flange in a counterclockwise direction; said tongue having a height smaller than that of the outside flap of said cap, and slightly surpassing lug (3).

5,186,370
CONTAINER RESEALING METHOD AND APPARATUS
Robert M. Ricketts, 5054 Odins Way, Marietta, Ga. 30068
Filed Feb. 22, 1991, Ser. No. 659,848
Int. Cl.[5] B65D *47/00*
U.S. Cl. 222—545 **6 Claims**



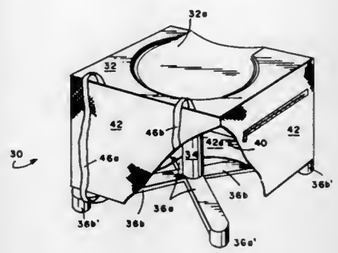
1. An apparatus for selectively capping and uncapping a container of the type having a container body and a container end with said apparatus comprising:
a skirt configured to extend at least partially about the body of the container adjacent the end thereof;
a cap configured to be received by said skirt with said cap at least partially spanning and covering the container end when said skirt is in position extending about the container body;
cooperative mating means on said cap and said skirt with said mating means being adapted to provide progressive movement of said cap onto said skirt upon appropriate manipulation of said cap relative to said skirt;
retaining means operatively associated with said cap and said skirt, said retaining means being configured to lock said skirt securely in position about the container body when moved into gripping engagement with the container;
means for moving said retaining means into gripping engagement with the container upon initial progressive movement of said cap onto said skirt to lock said skirt in position about the container;
means for maintaining said retaining means in gripping engagement with the container upon further progressive movement of said cap onto said skirt;
sealing means on said cap for engaging and sealing off the container end as said cap is moved progressively onto said skirt;
said retaining means comprising a diametrically compressible ring disposed within said apparatus and said means for moving said retaining means into gripping engagement with said container comprising means for compressing said compressible ring toward engagement with the container;
said means for compressing said ring comprising a cam formed in said cap with said cam being configured with a first contoured surface shaped and positioned to engage and compress said ring upon initial progressive movement of said cap onto said skirt; and
said skirt having an upper surface, said first contoured surface of said cam being positioned to confront and move toward the upper surface of said skirt as said cap is moved progressively onto said skirt, said compressible ring being disposed between said skirt upper surface and said first contoured surface whereby the ring is engaged by and rides up the first contoured surface upon initial progressive movement of the cap onto the skirt to compress the ring diametrically into gripping engagement with the container.

5,186,371
SPARE TIRE CARRIER
Thadius F. Jozefczak, Warren, and Kent W. Madill, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed May 2, 1991, Ser. No. 694,599
Int. Cl.[5] B62D *43/02*
U.S. Cl. 224—42.21 **3 Claims**



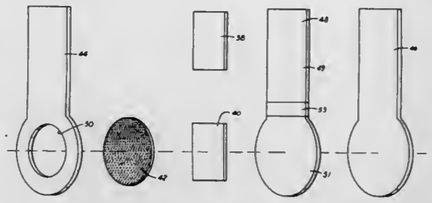
2. A spare tire carrier for a vehicle, the spare tire carrier adapted to move from a latched position wherein the carrier is located adjacent a rear portion of the vehicle to an open position wherein the carrier extends outwardly from the rear portion, the spare tire carrier comprising:
a frame member;
a hinge means pivotally connecting the frame member to a rear corner of the vehicle so as to pivot about a vertical axis when moving the carrier between the latched position and the open position;
a bracket fixedly connected to the frame member;
a swing-down device pivotally attached to the bracket and supporting a spare tire for movement between a raised position wherein the spare tire is located above the ground and a lowered position wherein the spare tire contacts the ground;
the swing-down device having a pivot arm pivotally attached to the bracket so as to pivot about a horizontal axis when moving the spare tire between the raised position and the lowered position;
the swing-down device having a tire support plate fixedly connected to the pivot arm for removably mounting the spare tire;
a first latching mechanism carried by the tire support plate for maintaining the spare tire in the raised position;
an extendible assist arm pivotally connected to the tire support plate and extending outwardly beyond the circumference of the spare tire for moving and controlling the movement of the spare tire from the raised position to the lowered position so as to facilitate removal of the spare tire;
the extendible assist arm being pivotally movable between a stowed position and an open position; and
the extendible assist arm engaging the frame member when in the stowed position.

5,186,372
COMBINATION BACKPACK AND STOOL
Eric C. Biedenharn, Jr., P.O. Box 669, Vicksburg, Miss. 39181-0669
Division of Ser. No. 739,335, Aug. 1, 1991, Pat. No. 5,156,310. This application May 13, 1992, Ser. No. 882,127
Int. Cl.[5] A45F *4/02*
U.S. Cl. 224—155 **9 Claims**



1. A combination backpack and stool comprising:
a frame having a seat-defining member upon which a user may sit, a ground-engageable pair of legs which cross at a central region thereof for supporting the frame upon a surface, and an upright column having (i) one end rigidly connected to said pair of legs at said central region thereof, and (ii) an opposite end rigidly connected to said seat-defining member so as to establish a space between said seat-defining member and said ground engageable pair of legs;
a flexible material connected to said frame and enclosing said space between said seat-defining member and said ground-engageable pair of legs to provide a storage compartment for articles; and
a pair of shoulder straps connected to said frame to allow carrying of said combination stool and backpack upon a user'back.

5,186,373
CONNECTOR ASSEMBLY FOR REMOVABLY HOLDING A GLOVE
John T. Taylor, 10805 Dorothy Dr., Oklahoma City, Okla. 73162
Filed Nov. 13, 1991, Ser. No. 791,823
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—183 **12 Claims**



1. A connector assembly for removably holding a glove having a glove attachment means connected thereto wherein the connector assembly is removably connectable to a pocket flap of a pocket on clothing, the pocket flap having an outside surface, an inside surface and a pocket side, the connector assembly comprising:
a holder having a first end, a second end, an upper surface and a lower surface, the holder being foldable at a fold position between the first and the second ends of the holder forming a first holder portion extending from the first end of the holder to the fold position and a second holder portion extending from the second end of the holder to the fold position;
a first permanent magnet connected to the holder and positioned in the first holder portion of the holder;
a second permanent magnet connected to the holder and positioned in the second holder portion; and
holder attachment means connected to the holder and positioned in the second holder portion of the holder, the holder attachment means being accessible via the upper surface of the holder, the first holder portion of the holder being disposable in the pocket with the lower surface of the first holder portion being disposed adjacent the inside surface of the pocket flap and the holder being foldable at the fold position with the second holder portion extending along the pocket flap with the inside surface of the second holder portion being disposed adjacent the outside surface of the pocket flap, the first permanent magnet being aligned with the second permanent magnet when the holder is folded over the pocket flap and the first permanent magnet being disposed adjacent the second permanent magnet with the pocket flap being disposed therebetween when the holder is folded over the pocket flap, the first permanent magnet being magnetically connected to the second permanent magnet with the pocket flap disposed therebetween for removably connecting the holder to the pocket flap, the glove attachment means being removably connected to the holder attachment means for removably connecting the glove to the holder.

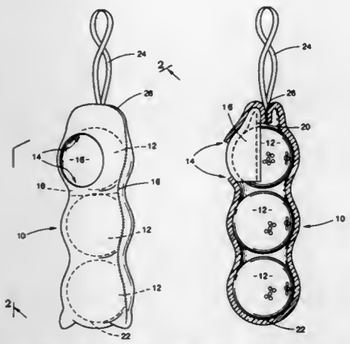
5,186,374
BALL HOLDER
Pierce Buxton, 1801 Gough St., #201, San Francisco, Calif. 94109
Filed Aug. 23, 1991, Ser. No. 750,895
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—191 **6 Claims**

1. A device for holding at least one ball, said device comprising:
a hollow pouch formed from at least one sheet of elastic material, said hollow pouch having a closed top, a bottom,

VOL 1147 ISS 3 FEB 16 1993 UMI

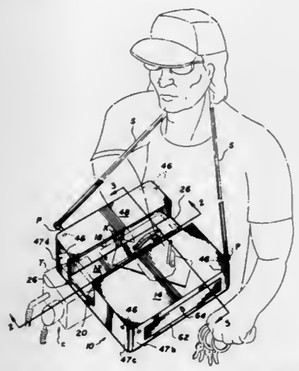
sides and an interior with inner dimension adapted to snugly accommodate said at least one ball;

at least one hole located in a side of said hollow pouch and having a diameter smaller than the diameter of said at least one ball wherein said elastic material permits said at least one hole to be expanded to receive said at least one ball therethrough and to reduce said at least one hole to the diameter less than the diameter of said at least one ball after said at least one ball has been inserted or removed therethrough,



whereby said at least one ball can be pushed into and removed through said at least one hole, and stored and carried in said hollow pouch; and a flap assembly formed from a sheet of elastic material and located within said pouch interior adjacent said at least one hole for covering said at least one hole whereby said at least one ball is further prevented from passing through said at least one hole unless the user intentionally applies pressure to said at least one ball to force it through said at least one hole.

5,186,375
BODY SUPPORTED HOLDER FOR ELECTRONIC DEVICES
Byron J. Plonk, 32 Kingswharf Pl., Waldorf, Md. 20602
Filed Apr. 30, 1991, Ser. No. 693,587
Int. Cl.[5] A45F *3/02*; A47B *23/00*
U.S. Cl. 224—202 **11 Claims**



1. A holder supported by the body of the user of said holder for a hand held computer or electronic device comprising;

means defining a channel for the containment of said electronic device,

said channel means having a forward and a rearward end,

said channel means defined by first and second spaced apart opposite walls with a floor extending therebetween and thereby defining a channel interior,

said first and second opposite channel walls each having an upper and a lower edge,

said channel interior formed so as to closely fit said electronic device contained therein,

said electronic device having exterior surfaces adapted to be conformed to said channel interior and an additional upper face extending between said first channel wall upper edge and said second channel wall upper edge when said electronic device is contained within said channel,

a planar surface extending outward from said first channel wall upper edge,

said planar surface having a periphery including a forward and a rearward edge conterminous with said channel forward and rearward ends,

a flange extending outward from said second wall upper edge,

said flange having a periphery including a forward and a rearward edge conterminous with said channel forward and rearward ends,

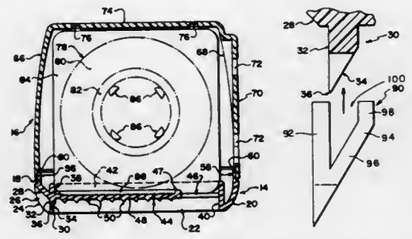
a plurality of side walls depending from said peripheries of said planar surface and said flange,

means providing support for said holder by said body of said user, and

upper and lower retaining means for said electronic device with said lower retaining means provided within said floor of said channel,

said support means comprise passages in said sidewalls for the removable insertion of releasable pins with said pins having at least one strap extending therebetween, whereby said electronic device is insertable within said channel and securely retainable therein and said strap is placed around said body of said user and said pins are inserted in said passages to provide said support.

5,186,376
PLASTIC WRAP DISPENSER
James E. Scharf, Perdue, and Orville Olm, Saskatoon, both of Canada, assignors to Jim Scharf Holdings Ltd., Perdue, Canada
Filed Mar. 21, 1991, Ser. No. 673,187
Int. Cl.[5] B65H *35/00*; B65D *85/672*
U.S. Cl. 225—42 **14 Claims**



1. In combination, a dispenser for plastic film wrap and a roll of plastic film wrap exhibiting static cling properties, said plastic film being without a pressure sensitive adhesive coating, the dispenser comprising a container for housing the roll of plastic film wrap, the container having spaced front and rear walls and a base with spaced front and rear sides adjacent the front and rear walls respectively, a dispensing slot adjacent the rear side of the base and a film cutter adjacent the front side of the base, and roll mounting means mounting the roll of film in the container such that an end of the film may be withdrawn from the container through the dispensing slot and drawn across the base of the container for engagement with the cutter, wherein the base has an anti-static cling configuration

including a bottom surface with a plurality of projections extending therefrom between the dispensing slot and the cutter.

14. A dispenser for plastic film comprising:

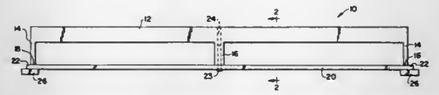
a housing for containing a roll of plastic film;

a dispensing opening along one side of the housing;

a first elongate cutter parallel to the dispensing opening and comprising a permanent part of the housing; and

a second elongate cutter comprising a channel engageable over the first cutter for detachably mounting the second cutter on the first cutter for removal and replacement of the second cutter.

5,186,377
APPARATUS FOR STIFFENING A CIRCUIT BOARD
Linda B. Rawson, and Donald W. Kuk, both of Madison, Ala., assignors to Intergraph Corporation, Huntsville, Ala.
Filed Apr. 29, 1991, Ser. No. 693,005
Int. Cl.[5] B23K *1/08, 37/04*
U.S. Cl. 228—37 **19 Claims**



1. An apparatus for stiffening a circuit board during soldering comprising:

an elongated crossmember including two opposing ends;

two circuit board upper surface engaging means, one each extending away from each crossmember end, the two upper surface engaging means extending in the same direction to form a bridge support with the crossmember, each upper surface engaging means including a contacting surface at a distal end for resting on an upper surface of the circuit board to permit relative movement between the upper surface engaging means and the circuit board; and

a central support leg extending away from a central portion of the crossmember between the two upper surface engaging means in the same direction as the two upper surface engaging means, the central support leg including means for attaching the central support leg to the circuit board to support a central portion of the circuit board, wherein the central support leg reduces deformation of the circuit board due to heat from the soldering.

5,186,378
METHOD AND APPARATUS FOR TRANSDUCER HEATING IN LOW TEMPERATURE BONDING
Rafael C. Alfaro, The Colony, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Sep. 30, 1991, Ser. No. 767,741
Int. Cl.[5] B23K *20/10*; H01L *21/607*
U.S. Cl. 228—110 **20 Claims**

1. A method of forming a microelectronic bond, the method comprising the steps of:

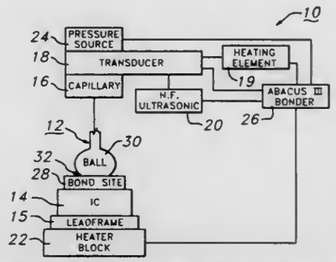
providing a conductive bond site;

providing a wire having a bond end;

contacting the bond end of the wire to the bond site, the bond end and the bond site presenting an interface therebetween;

providing a heat source;

providing between the heat source and the interface a thermally conductive path which includes a thermally conductive ultrasonic transducer; and



applying thermal energy to the interface via the thermally conductive transducer, including the step of using the heat source to heat the transducer.

5,186,379
INDIUM ALLOY COLD WELD BUMPS
Carlyle L. Helber, Jr., Fountain Valley, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Continuation-in-part of Ser. No. 716,489, Jun. 17, 1991, abandoned. This application Jun. 25, 1992, Ser. No. 904,917
Int. Cl.[5] H01L *21/98*
U.S. Cl. 228—116 **15 Claims**

1. A method for indium bonding of surfaces comprising the steps of:

(a) providing an indium bump on a first surface;

(b) providing a second surface having an alloying metal located thereon wherein said alloying metal is capable of forming an alloy with indium when cold welded wherein said alloy is substantially free of a primary intermetallic phase; and

(c) pressing said indium bump located on said first surface against said alloying metal located on said second surface at a pressure within the range of about 2000 to 6000 psi (1.0×10^5 to 3.1×10^5 mm Hg) at a temperature within the range of about 20° C. to 150° C. for a sufficient period of time to form said alloy of said indium and said alloying metal to thereby bond said indium bump to said second surface to provide a substantially durable cold weld electrical connection having a bond interface which is substantially free of primary intermetallic phase.

5,186,380
TITANIUM HYDRIDE COATED BRAZING PRODUCT
Dennis Beeferman, Brookfield, and William F. Lucas, Oak Creek, both of Wis., assignors to Handy & Harman, New York, N.Y.
Filed Aug. 15, 1991, Ser. No. 746,266
Int. Cl.[5] B23K *1/19*
U.S. Cl. 228—121 **20 Claims**

1. A method for brazing a first material to a second material which comprises:

forming an article of a filler metal;

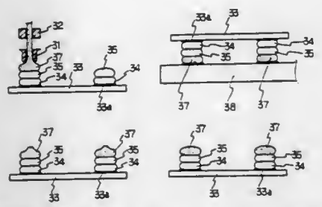
coating at least a portion of the article with a component for activating at least one of the first and second materials and a binder for retaining same upon the article;

placing the coated article adjacent or between the first and second materials; and

heating the first and second materials to an appropriate temperature to form an interfacial compound of the activating component and at least one of the materials to enable the article to melt and bond thereto through the interfacial compound, thus forming a braze joint.

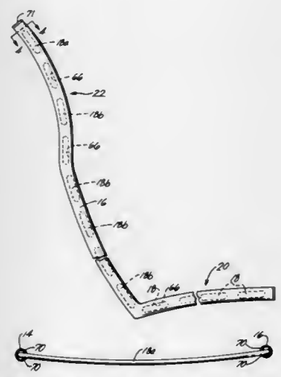
VOL 1147 ISS 3 FE 16 1993 UMI

5,186,381
SEMICONDUCTOR CHIP BONDING PROCESS
Gu S. Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics, Co., Ltd., Suweon, Rep. of Korea
Filed Sep. 9, 1991, Ser. No. 756,911
Claims priority, application Rep. of Korea, Apr. 16, 1991, 91-6053
Int. Cl.[5] H01L *21/60*
U.S. Cl. 228—123 **1 Claim**



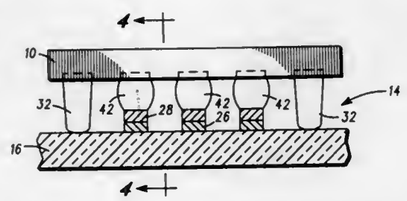
1. A semiconductor chip bonding process comprising the steps of:
forming a first Au ball by carrying out an Au wire ball bump bonding on an electrode of a chip with a wire ball bump bonding apparatus;
stacking a second Au ball on said first Au ball by again carrying out said Au wire ball bump bonding step;
forming a Pb ball on said second Au ball by carrying out a Pb wire ball bump bonding with said wire ball bump bonding apparatus; and
carrying out a chip bonding by attaching said chip to a substrate by means of a Pb bond formed from said Pb ball by heating said Pb ball to melt it.

5,186,382
METHOD OF MAKING PATIO CHAIRS WITH METAL SLATS
Fred C. Doughty, South Pasadena, Calif., assignor to Brown Jordan Company, El Monte, Calif.
Filed Jul. 23, 1991, Ser. No. 734,525
Int. Cl.[5] B23K *31/02*
U.S. Cl. 228—135 **13 Claims**



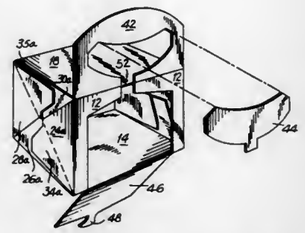
1. A method for making a metal patio chair having a seat frame elevated above the ground by a supporting sub-structure, the seat frame being made by the steps comprising:
providing a pair of seat rails in the form of elongated metal tubes;
placing a mandrel inside each tube to reinforce the wall of the tube;
punching a series of spaced apart holes in the wall of the tube with the mandrel contained in the tube holding the shape of the tube while punching out the holes;
removing the mandrel from the tube;
providing a plurality of metal slats having a cross-sectional shape to match the shape of the holes punched in the seat rail tubes;
inserting the ends of the slats into corresponding pairs of the holes formed in the pair of seat rail tubes to form a ladder type frame in which opposite ends of the slats are held captive in corresponding holes in the seat rail tubes; and
rigidly securing the captive slats to the seat rail tubes to lock the slats in place in the tubes to provide a rigid seat frame structure elevated above the ground by a supporting sub-structure to which the finished seat frame is attached.

5,186,383
METHOD FOR FORMING SOLDER BUMP INTERCONNECTIONS TO A SOLDER-PLATED CIRCUIT TRACE
Cynthia Melton, Bolingbrook; Carl Raleigh, Cary; Kenneth Cholewczynski, Streamwood, and Kevin Moore, Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 2, 1991, Ser. No. 770,070
Int. Cl.[5] B23K *31/02*; H05K *3/34*
U.S. Cl. 228—180.2 **10 Claims**



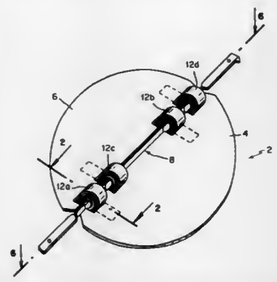
1. A method for forming a microelectronic component package comprising an integrated circuit component attached to a printed circuit board by a plurality of solder bump interconnections, said method comprising
fabricating a printed circuit board comprising a solder-wettable metal trace affixed to a dielectric substrate, said trace comprising a plurality of terminals, each said terminal comprising a terminal pad adapted for bonding a said solder bump interconnection and a runner section connected to the pad for conducting electrical signals to and from the interconnection for processing by the component, said trace further comprising a solder plate overlying the terminal and extending continuously from each said pad onto the adjacent runner section, said solder plate composed of a first lead-containing alloy having a melting temperature,
attaching a plurality of solder bumps to a generally planar surface of the component, said component bumps being composed of a second lead-containing alloy compositionally distinct from said first alloy and having a melting temperature greater than the first alloy melting temperature,
superposing said component onto said board to form an assembly such that said bumps rest against the solder plate at the board terminal pads,
heating the assembly to a temperature greater than the first alloy melting temperature and less than the second alloy melting temperature for a time sufficient to melt the solder plate adjacent the bumps, and
cooling to resolidify the solder alloy to form a plurality of solder bump interconnections bonding the component to the board.

5,186,384
COLLAPSIBLE RECEPTACLE FOR DISPOSAL OF ANIMAL WASTES
Robert J. Nelson, Atlantic Beach, Fla., assignor to Dirty Business Deals, Inc., Bridgehampton, N.Y.
Filed Jan. 28, 1992, Ser. No. 827,147
Int. Cl.[5] B65D *5/16*
U.S. Cl. 229—122 **12 Claims**



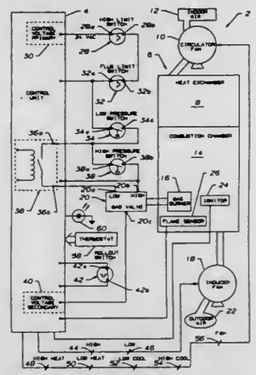
1. A receptacle for the disposal of animal waste comprising:
a container having a selectively sealable opening for enabling selective access to the interior of said container; and
means for carrying said container, said carrying means having a disconnectable scoop for gathering up animal wastes and placing said wastes through said opening in the container, wherein disconnection of said scoop form said carrying means forms an opening in said carrying means for defining a handle extending from said container.

5,186,385
THERMALLY ACTIVATED VENT DAMPER
Tadeusz Karabin, Huntington, and Frank H. Broome, Fort Wayne, both of Ind., assignors to Majco Building Specialties, L.P., Huntington, Ind.
Continuation-in-part of Ser. No. 550,380, Jul. 10, 1990, Pat. No. 5,082,172. This application Dec. 16, 1991, Ser. No. 807,715
Int. Cl.[5] G05D *23/08*
U.S. Cl. 236—1 G **8 Claims**



1. A thermally activated vent damper assembly for a flue, comprising:
a) a damper member adapted to be situated in relation to a flue for occluding the passage of gas through the flue;
b) at least one support member which is adapted to traverse the flue horizontally and to suspend the damper member across the flue for movement between a closed first position and an open second position with respect to passage of gas through the flue, the closed first position of the damper member defining a substantially horizontal plane across the flue and occluding the passage of gas through the flue, the open second position providing for free passage of gas through the flue, the support member substantially residing in the horizontal plane as defined by the damper member in the closed first position, the damper member being situated with respect to the support member so as to undergo movement between the closed first position and the open second position, the movement occurring in an airspace substantially below the horizontal plane; and
c) a thermally activated biasing member operatively coupled between the support member and the damper member to bias the damper member in the open second position in the presence of heat and to bias the damper member in the closed first position in the absence of heat, the damper member being suspended by the support member by way of the biasing member, the operative coupling of the biasing member to the support member and to the damper member being such that the bias of the biasing member on the damper member is removed upon a breakage of the biasing member, the damper member being movable under the force of gravity from the closed first position to the open second position upon the removal of bias by the biasing member.

5,186,386
TWO STAGE FURNACE CONTROL
Gregory A. Lynch, Murfreesboro, Tenn., assignor to Inter-City Products Corporation (USA), Lavergne, Tenn.
Filed Feb. 9, 1990, Ser. No. 478,252
Int. Cl.[5] F23N *1/00*
U.S. Cl. 236—11 **6 Claims**



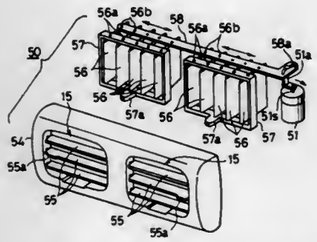
1. In a two stage furnace including a plenum having a combustion chamber and a heat exchanger, an inducer fan, a gas burner in communication with the combustion chamber, a circulator fan in communication with the heat exchanger, and a source of electric power including a first and second terminal, a control system comprising:
a gas valve fluidly connected to the gas burner;
an ignitor located adjacent to the gas burner;
a low pressure switch operatively connected to the combustion chamber;
a high pressure switch operatively connected to the combustion chamber; and
control means for enabling the inducer fan, the circulator fan, said ignitor, and said gas valve;
said gas valve coupled in a series circuit with said low pressure switch and said high pressure switch, said series circuit exclusive of said control means and coupled to the terminals of the electric power source whereby at least one of said low and high pressure switches directly controls supply of electric power to said gas valve so that when either of said low and high pressure switches are open said series circuit cannot provide electric current to said gas valve.

VOL
1147
ISS
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1993
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5,186,387
APPARATUS FOR CONDITIONING AIR IN AUTOMOTIVE VEHICLE

Shigetoshi Doi, and Tsutomu Fujiki, both of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Aug. 2, 1991, Ser. No. 739,427
Claims priority, application Japan, Aug. 2, 1990, 2-206447; Jun. 24, 1991, 3-178859
Int. Cl.[5] F24F *7/00*
U.S. Cl. 236—49.3 **18 Claims**



1. An air-conditioning apparatus for an automotive vehicle, comprising:

a louver disposed at an air outlet for defining a direction in which air is supplied to a vehicle compartment;

electrically driving means disposed in association with the louver for electrically driving the louver so as to periodically alter a direction of the louver;

control-state detecting means for detecting an air-conditioning control state of an air-conditioning device;

first control means for turning the electrically driving means on or off in accordance with the air-conditioning control state thereof in response to a signal from the control-state detecting means; and

second control means for delaying the time at which the electrically driving means is turned off until the louver is returned to its original position when the first control means turns the electrically driving means off.

5,186,388
PRODUCTION OF COMPOSITE STRUCTURES USING LIGHTWEIGHT LOW COST MATRIX EXTENDER MATERIALS

Michael Chapman, Portsmouth, R.I., and Michael Sumple, Danbury, Conn., assignors to Electrostatic Components, Inc., Bridgeport, Conn.

Filed Aug. 16, 1991, Ser. No. 745,930
Int. Cl.[5] B05B *7/08, 7/14, 7/30*
U.S. Cl. 239—8 **28 Claims**

1. An apparatus for producing composite structures comprising, in combination:

means for forming a liquid resin- and catalyst-containing spray pattern along a longitudinal axis;

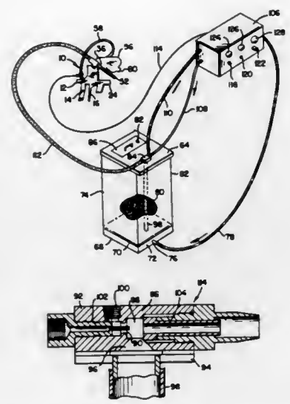
means for producing a fluidized suspension of dry particulate filler material in a gaseous medium;

means for injecting said fluidized suspension into said spray pattern;

means for delivering said fluidized suspension to said injecting means including a venturi orifice for producing a vacuum acting on said fluidized suspension;

means associated with said delivery means for controlling the concentration of said dry particulate filler material in said fluidized suspension by altering said vacuum; and

means for controllably positioning said injecting means so as to inject said fluidized suspension into said spray pattern at

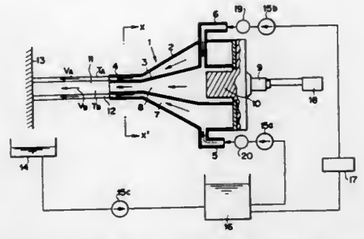


a predetermined acute angle with respect to said longitudinal axis.

5,186,389
SPRAY TUBE ULTRASONIC WASHING APPARATUS

Yoshihide Shibano, Aikob, Japan, assignor to S & C Co.,Ltd., Kanagawa, Japan

Continuation of Ser. No. 781,688, Oct. 25, 1991, abandoned, which is a continuation of Ser. No. 563,756, Aug. 7, 1990, abandoned. This application Jun. 23, 1992, Ser. No. 902,497
Claims priority, application Japan, Apr. 3, 1990, 2-88560
Int. Cl.[5] B05B *17/06;* **B08B** *3/02*
U.S. Cl. 239—102.2 **5 Claims**



1. A spray type ultrasonic washing apparatus for generating cavitation at an interface between a surface of an object being washed by said ultrasonic washing apparatus and a degassed fluid medium by inducing ultrasonic vibration in said degassed fluid medium, comprising:

a fluid nozzle assembly, comprising:

an inner first nozzle for discharging said degassed fluid medium toward said surface of said object to form a first fluid jet comprising said degassed fluid medium; and

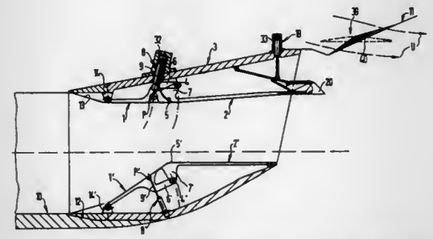
an outer second nozzle arranged coaxially about said inner first nozzle for discharging a gassed fluid medium comprising a gas therein to form a second fluid jet annually surrounding said first fluid jet to isolate said first fluid jet from a surrounding atmosphere; and

means for generating ultrasonic vibration in said degassed fluid medium to cause said first fluid jet to generate said cavitation at said surface of said object.

5,186,390
PROPELLING NOZZLE

Heinrich Enderle, Gröbenzell; Jörg Heyse, Gerlingen, and Helmut-Arnd Geidel, Karlsfeld, all of Fed. Rep. of Germany, assignors to MTU Motoren-und Turbinen-Union München GmbH, Fed. Rep. of Germany

PCT No. PCT/DE90/00020, § 371 Date Sep. 19, 1991, § 102(e) Date Sep. 19, 1991, PCT Pub. No. WO90/08254, PCT Pub. Date Jul. 26, 1990
PCT Filed Jan. 16, 1990, Ser. No. 721,641
Claims priority, application Fed. Rep. of Germany, Jan. 16, 1989, 3901487
Int. Cl.[5] F02K *1/12, 3/10, 9/78;* **B64D** *27/16*
U.S. Cl. 239—265.37 **19 Claims**



1. A propelling nozzle creating a nozzle flow and having a nozzle contour with a variable course for a turboramjet engine of a flight aggregate operable in a subsonic, supersonic and hypersonic range, the propelling nozzle comprising:

a four-cornered nozzle housing having lateral wall sections;

upper primary and secondary flaps;

lower primary and secondary flaps, said upper and lower primary and secondary flaps being disposed opposite one another at a mutual distance and being sealingly and movably guided between the lateral wall section of said four-cornered nozzle housing, said upper and lower primary flaps being pivotally arranged about a fixed axis of rotation on said nozzle housing;

first levers non-rotatably connected with said upper and lower primary flaps, said upper and lower secondary flaps being pivotally linked at an upstream end to said first levers via first pivots on the side away from the nozzle flow;

wherein said upper and lower secondary flaps transition into said upper and lower primary flaps at a surface section bent concentrically with respect to said first pivots;

wherein the turboramjet engine has a jet pipe and the flight aggregate has a radially exterior expansion ramp, said propelling nozzle being arranged between said jet pipe and the expansion ramp;

wherein said upper and lower primary and secondary flaps are arranged in said four-cornered nozzle housing in a closed manner forming a pressure housing;

wherein said upper and lower secondary flaps are arranged on said nozzle housing at their downstream ends to be axially movable and angularly adjustable;

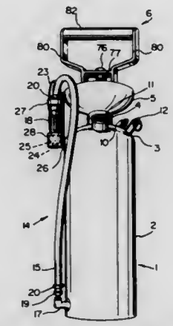
wherein said first levers are formed on interior sections bent away from said primary flaps in a toggle-lever manner and have cut-outs concentric with respect to said first pivots allowing said surface sections to be moved into said cut-outs; and

adjusting systems, each of said adjusting systems being arranged between one of an upper and lower wall portion of said nozzle housing and said upper and lower flaps, respectively, and acting upon one of said upper and lower primary and secondary flaps to pivot said flaps.

5,186,391
PORTABLE SPRAYER

Wallace Roueche, 23 Delaware Avenue, and Francois Robillard, 21 Beechmont Avenue, both of Ottawa, Ontario, Canada

Continuation-in-part of Ser. No. 428,602, Oct. 30, 1989, abandoned. This application Feb. 22, 1991, Ser. No. 659,558
Claims priority, application Canada, Oct. 6, 1989, 2000319
Int. Cl.[5] B05B *9/043*
U.S. Cl. 239—373 **4 Claims**



1. A pump assembly for a portable sprayer including a container for carrying a liquid to be sprayed, the pump assembly comprising elongated cylinder means for full insertion into the container; sleeve means at the top end of said cylinder means; first thread means on the bottom end of said sleeve means for mounting the cylinder means in the container; plunger means slidably mounted in said cylinder means; piston means on the bottom end of said plunger means; first one-way valve means in the bottom end of said plunger means for transferring air in said cylinder means from above to beneath said piston means during upward movement of said plunger means in said cylinder means; second one-way valve means normally closing the bottom end of said cylinder means for discharging the air from said cylinder means into the container during downward movement of said plunger means; cap means closing the top end of said cylinder means for retaining said plunger means in said cylinder means; second thread means on the upper end of said sleeve means for mounting said cap means on said cylinder means; handle means on the upper, outer end of said plunger means for manual reciprocation of the latter in the cylinder means; rod means extending outwardly form said sleeve means between said first and second thread means; hook means on said handle means for releasably engaging said rod means, whereby said cylinder means and plunger means can be removed as a unit from the container for filling the latter with liquid and, when said cylinder means is in the container, the hook means can be released from the rod means for reciprocation of said handle means and said plunger means in the cylinder means to pressurize the container.

5,186,392
LIQUID-APPLYING DEVICE FOR CLEANING WALL AND CEILING SURFACES

Mark Pleshek, Milwaukee, Wis., assignor to Von Schrader Company, Racine, Wis.

Filed Feb. 19, 1992, Ser. No. 837,731
Int. Cl.[5] B05B *15/06*
U.S. Cl. 239—532 **8 Claims**

1. In an extendable elongate liquid-applying device for cleaning inside surfaces such as walls and ceilings, the improvement comprising:

first and second tubular members telescopingly engaged with one another to extend and retract the device,

VOL 1147 ISS 3 FE 16 1993 UMI

a first coiled hose within the tubular members and extending therealong;

a base member having a second hose therewith and extending therealong, the base member being attached to the first tubular member,

whereby only the first hose extends and retracts as the device is extended and retracted.

5,186,393

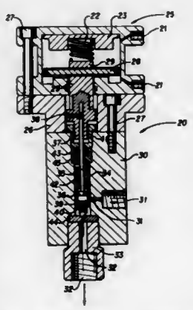
ON-OFF VALVES AND PRESSURE REGULATORS FOR HIGH-PRESSURE FLUIDS

Gene G. Yie, Auburn, Wash., assignor to Fluidyne Corporation, Auburn, Wash.

Continuation-in-part of Ser. No. 630,560, Dec. 20, 1990, Pat. No. 5,092,362. This application Nov. 19, 1991, Ser. No. 794,581

Int. Cl.[5] F16K *31/122*

U.S. Cl. 239—583 **23 Claims**



1. An on-off valve and pressure regulator for high-pressure fluid comprising:

a valve body defining a cavity with an upstream cavity end and a downstream cavity end, said valve body further defining a fluid inlet in communication with said cavity, a valve seat defining a discharge port, said discharge port in communication with said valve cavity at said downstream cavity end, a stem seal defining a stem seal through hole, a seal cage defining a seal cage through hole, said seal cage sealably mounted within said upstream cavity end of said valve body, said stem seal sealably secured within said seal cage, a seal support having a seal support through hole, said seal support secured within said valve body and retaining said stem seal and said seal cage within said valve body, said seal cage through hole, said seal support through hole and said stem seal through hole in communication with said valve cavity, a stem collar having a stem collar cavity, a valve poppet mounted with respect to said stem collar for engaging said valve poppet into and out of a seated position with respect to said valve seat, a valve stem having a stem shoulder at a downstream stem end of said valve stem, engagement means for engaging said stem shoulder with said stem collar to move said valve poppet in a linear direction, bias means for constantly forcing said valve poppet toward said valve seat, said valve stem mounted within said seal cage through hole, said seal support through hole and said stem seal through hole; and

an actuator secured to said valve body, a valve stem anchor slidably mounted within said actuator, an upstream stem end of said valve stem secured to said valve stem anchor, said actuator comprising an actuator body defining a chamber and an actuator body through hole, a piston rod slidably and sealably mounted within said actuator body through hole, an upstream rod portion of said piston rod secured to a piston and a downstream end of said piston rod secured to said valve stem anchor, said piston sealably and slidably mounted within said chamber, and movement means for moving said piston and said valve stem.

5,186,394

REMOTE CONTROLLED FREELY PIVOTAL NOZZLE

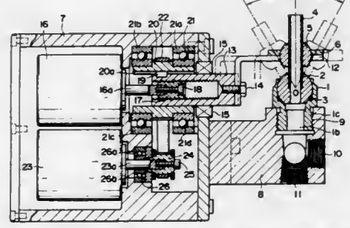
Takumi Tsuji, Gifu, Japan, assignor to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1991, Ser. No. 769,421

Claims priority, application Japan, Oct. 2, 1990, 2-103355[U]

Int. Cl.[5] F16L *27/04*

U.S. Cl. 239—587.4 **5 Claims**



1. A liquid spraying apparatus for use in a machining tool comprising:

an elongated nozzle pipe;

supporting means for supporting one end of said pipe pivotally on a frame such that said pipe may pivot around a predetermined pivotal point defined by said supporting means;

moving means operatively coupled to said pipe for moving said pipe pivotally around said predetermined pivotal point within predetermined limits;

first driving means fixedly mounted on said frame and operatively coupled to said moving means for driving to move said moving means in a first direction back and forth;

second driving means fixedly mounted on said frame and operatively coupled to said moving means for driving to move said moving means in a second direction different from said first direction back and forth; and

wherein said moving means includes an arm operatively coupled to said pipe and an elongated and hollow transmission member to which said arm is also fixedly attached, said transmission member being operatively coupled to said first and second driving means.

5,186,395

AIR POWERED PARTICLE SPRAYER WITH AIR FLOW CONTROL MEANS

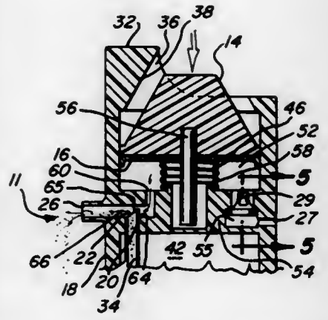
David E. Brody, 2800 S. University Blvd., No. 128, Denver, Colo. 80210

Continuation of Ser. No. 471,859, Jan. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 266,399, Jul. 29, 1988, Pat. No. 4,896,833. This application Nov. 15, 1991, Ser. No. 794,715

The portion of the term of this patent subsequent to Jan. 30, 2007, has been disclaimed.

Int. Cl.[5] B05B *7/30*

U.S. Cl. 239—654 **11 Claims**



1. A sprayer for particulate material, comprising in combination:

an elongated tubular main body separated into at least one air compartment and at least one storage compartment for the particulate material;

means for moving air mounted in the air compartment;

an air passageway providing air flow communication between the air compartment and the exterior of the main body: and

a discharge tube mounted within the tubular body extending into the storage compartment, said discharge tube having one end insertable within the particulate material in the storage compartment and a second end having an outlet orifice extending partially across and in air flow communication with said air passageway, a venturi opening in the air passageway located adjacent to said second end, said venturi opening further defined by a chamfer formed at the second end of said discharge tube, said chamfer extending partially across said air passageway, an upstream edge of said chamfer defining said venturi opening and a downstream edge of said chamber lying substantially flush with said air passageway, whereby movement of the means for moving air within said air compartment creates positive air flow from the air compartment to the exterior of the tubular body along the air passageway, which positive air flow passes past the venturi opening at an increased velocity creating a low pressure area at said second opening of said discharge tube to withdraw particulate material from the one end of said discharge tube and into the air passageway and then to the exterior of the main body; and

a relief passageway providing air flow communication between the air compartment and the exterior of the tubular body, said relief passageway having air flow control means mounted therein for limiting positive air flow from moving along said relief passageway and allowing some negative air flow from the exterior of the main body into the air compartment.

5,186,396

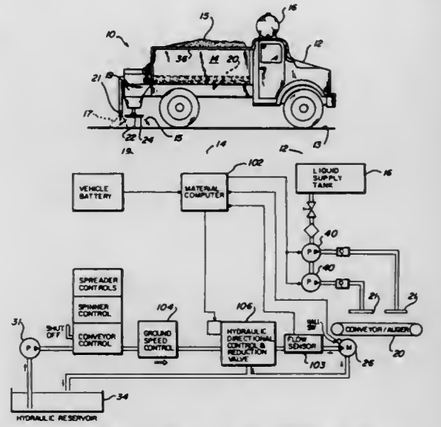
APPARATUS FOR SPREADING GRANULAR AND LIQUID MATERIALS

James J. Wise, 3020 Mason Ave., Las Vegas, Nev. 89102, and John A. Doherty, 1 Round Hill Rd., Granby, Conn. 06035

Filed Jan. 31, 1992, Ser. No. 830,175

Int. Cl.[5] B05B *12/00*

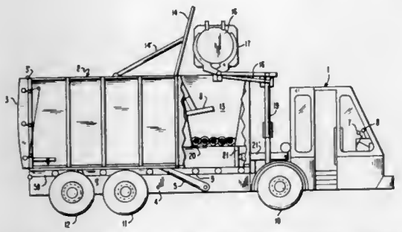
U.S. Cl. 239—675 **5 Claims**



1. A spreader for granular and liquid materials comprising a vehicle including a hydraulic system, a storage hopper mounted on said vehicle for containing granular material, a granular material delivery apparatus including a conveyor driven by said hydraulic system for moving the granular material from the hopper to a delivery position and means at said delivery position for receiving and distributing said granular material onto a roadway surface, a controller for controlling the speed of said conveyor, means for sensing conveyor speed and generating a conveyor speed signal, a liquid material storage tank mounted on said vehicle, a liquid material delivery apparatus including a conduit for supplying liquid material from said tank to a delivery position and means at said delivery position for distributing said liquid material, wherein the improvement comprises a material computer for controlling the feed rates of the granular and liquid materials, said material computer including mean for receiving said conveyor speed signal and generating first and second signals as a function of said sensed conveyor speed, said material computer including means for directing said first signal to said controller for controlling the delivery of said granular material, said material computer including means for directing said second signal to said liquid material delivery apparatus for controlling the delivery of liquid material thereby, means for selectively generating and directing a third signal to said material computer to actuate said liquid material delivery apparatus, said third signal generating and directing means including means for selectively presetting the rate of liquid material delivery within a selected range of feed rates, said material computer including mean for selectively setting the granular material feed rate within a selected range of feed rates, said material computer including means for maintaining a predetermined ratio of said feed rate of liquid material to said feed rate of granular material, and said material computer including means responsive to actuation of said liquid material delivery apparatus for reducing by a variably selected percentage the quantity of granular material delivered by said granular material delivery apparatus while maintaining said predetermined ratio of the feed rates of delivery of liquid and granular materials.

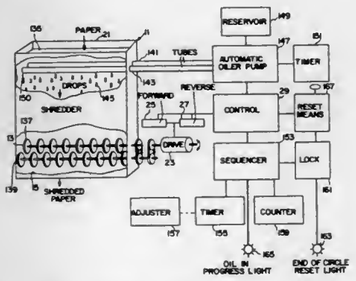
VOL
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5,186,397
METHOD AND DEVICE FOR DISPOSAL OF MEDICAL WASTE
Joseph A. Orlando, Pleasantville, N.Y., assignor to Health Care Management, Bronx, N.Y.
Filed Apr. 1, 1991, Ser. No. 678,445
Int. Cl.[5] B02C *19/12*
U.S. Cl. 241—23 **4 Claims**



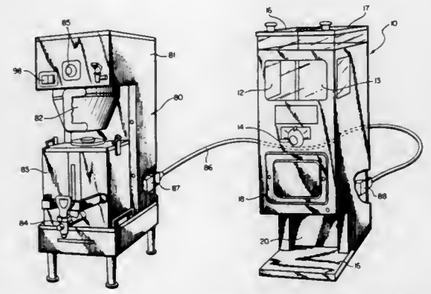
1. A method of mechanically loading, shredding, compacting, storing, transporting and unloading a heat or radiation sterilized medical waste on a highway useable mobile carrier, comprising:
a) engaging, lifting and emptying a separate receptacle spaced from said mobile carrier and containing the sterilized waste into a shredder bin on said mobile carrier;
b) shredding said medical waste on said mobile carrier;
c) moving and compacting said shredded medical waste into a storage area in the mobile carrier;
d) transporting and emptying said stored, shredded and compacted sterilized medical waste at a sanitary waste facility; and
e) said loading, shredding, compacting, storing, transporting and unloading operation being controlled from a central manifold system on said mobile carrier, by a single operator.

5,186,398
PAPER SHREDDER
Paul E. Vigneaux, Jr., 2214 Montgomery Ave., Woodbridge, Va. 22191, assignor to Paul E. Vigneaux, Jr., Woodbridge, Va.
Continuation of Ser. No. 384,922, Jul. 26, 1989, abandoned, which is a continuation of Ser. No. 285,400, Dec. 16, 1988, abandoned, which is a continuation of Ser. No. 102,759, Sep. 24, 1987, abandoned, which is a continuation of Ser. No. 9,060, Jan. 29, 1987, abandoned, which is a continuation of Ser. No. 801,396, Nov. 25, 1985, abandoned, which is a continuation of Ser. No. 428,800, Sep. 30, 1982, abandoned. This application Mar. 14, 1990, Ser. No. 494,861
Int. Cl.[5] B02C *18/06, 23/18, 25/00*
U.S. Cl. 241—33 **15 Claims**



1. In a paper shredder having a pair of counter-rotating shafts each mounting a plurality of spaced-apart disc-shaped cutters, drive means coupled to said shafts for reversible driving thereof and manual control means for controlling said driving means to selectively drive said shafts in a forward running direction or in a reverse clearing direction or to stop rotation of said shafts, automatic oiling means comprising:
timer means for timing a first timer interval corresponding to a predetermined accumulated time interval of forward driving of said shafts and a second time interval corresponding to a predetermined time interval of reverse driving of said shafts;
oil dispensing means disposed in spaced relation to said shafts and in operable communication with an oil pump and a supply of oil, for selectively oiling said plurality of cutters mounted on said shafts; and
automatic sequence control means in operable connection with said manual control means, said timer means and said oil dispensing means, for causing said drive means to drive said shafts in a reverse direction after said first time interval has elapsed, said reverse driving of said shafts occurring during said second time interval, and for causing said oil pump to supply oil under pressure from said source of oil to said oil dispensing means to oil said cutters only during said reverse driving, and for causing said drive means to stop rotation of said shafts after said second time interval has elapsed.

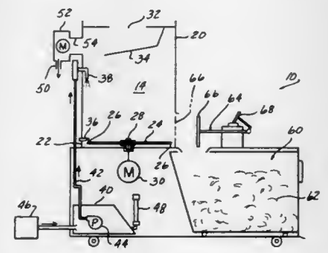
5,186,399
DIGITAL CONTROL SYSTEM FOR A COFFEE GRINDER AND ASSOCIATED COFFEE BREWER
John T. Knepler, Chatham; Cloyce Newton, Divernon, and Kenneth W. Stover, Springfield, all of Ill., assignors to Bunn-O-Matic Corporation, Springfield, Ill.
Continuation of Ser. No. 447,161, Dec. 7, 1989, abandoned, which is a division of Ser. No. 226,675, Aug. 1, 1988, abandoned. This application Dec. 4, 1990, Ser. No. 622,171
Int. Cl.[5] B02C *25/00*
U.S. Cl. 241—34 **3 Claims**



1. In combination with a coffee bean grinder having a bean grinding mechanism, an electric motor operably connected in driving relationship with said grinding mechanism, at least one bean hopper mounted in gravity feed relationship with said grinding mechanism, and gate means interposed between said hopper and said grinding mechanism and operable variably to connect said hopper in gravity feeding relationship with said grinding mechanism for measuring and dispensing different quantities of beans to the grinding mechanism, a coffee brewer operatively associated with said grinder and including a brewer control circuit providing multiple brewing modes and providing a control effect on said grinder indicative of a selected brewing mode, said control effect selecting a quantity of beans to be measured and ground by said grinder based on a selected volume of coffee to be brewed by said brewer, said grinder including a grinder control circuit comprising:
user-actuable switch means for entering a user-selected grinding mechanism cycle time;

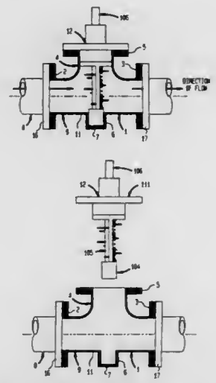
user-actuable grinder activation means;
first digital storage means for storing a first user-selected grinding mechanism cycle time appropriate for one brewing mode entered by said switch means;
second digital storage means for storing an alternate user-selected grinding mechanism cycle time appropriate for another brewing mode entered by said switch means;
hopper control circuit means operable upon actuation of said activation means for opening the gate means for a selected one of said stored user-selected grinding mechanism cycle times;
grinder motor control circuit means operable upon actuation of said activation means for operating the grinder motor for a grinder time cycle at least as long as said selected one of said stored user-selected grinding mechanism cycle times; and
selection circuit means communicating with said grinder control circuit and responsive to said control effect provided by said brewer control circuit and rendering said hopper control circuit means and said grinder motor control circuit means responsive to said first digital storage means when the associated coffee brewer is in a first brewing mode, and responsive to said second digital storage means when the associated coffee brewer is in the second brewing mode.

5,186,400
PROCESS AND APPARATUS FOR RECYCLING A POLYOLEFIN MATERIAL END PRODUCT
Dragan Ignjatovic, 1175 Chilver, Windsor, Ontario N8N 2K8, and Miodrag Kovacevic, 10455 Lonsdale Crescent, Windsor, Ontario N8R 2E2, both of Canada
Filed Jun. 5, 1991, Ser. No. 711,612
Int. Cl.[5] B07C *11/08*
U.S. Cl. 241—39 **10 Claims**



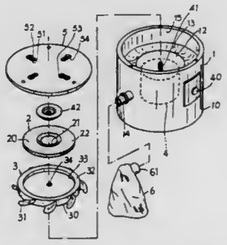
1. An apparatus for recycling a polyolefin material end product, comprising:
a housing;
a curvilinear recycling area disposed within said housing and having an inner curvilinear surface;
means, adjacent one end of the recycling area, for feeding the polyolefin material end product into said recycling area;
means, horizontally disposed and rotatably mounted within said recycling area at an end opposed to said one end, for cutting the polyolefin material end product;
means for introducing liquid into said recycling area;
means for venting moisture from said recycling area; and
means for heating said recycling area.

5,186,401
CRUSHING MACHINE
James Herdman, 525 Main St., Chatham, N.J. 07928, and John R. Paddock, Jr., 459 Washington Ave., Rutherford, N.J. 07070
Filed Mar. 12, 1991, Ser. No. 668,204
Int. Cl.[5] B02C *23/36*
U.S. Cl. 241—46.01 **12 Claims**



1. A crushing machine comprising:
(a) a housing comprising a "T"-shaped hollow body having two conduit ends adapted for connection into a flow line and having a bore end;
(b) said hollow body defining a cartridge bore fully intersecting the flow path between said conduit ends and terminating in said bore end;
(c) a crushing cartridge independent of said cartridge bore, said crushing cartridge extending axially through said cartridge bore, through said bore end and adapted for rotation by an external power source, said crushing cartridge being removable from and installable into said housing as a single, integral unit, and said crushing cartridge further being serviceable and adjustable independently of said housing; and
(d) attachment means to attach said crushing cartridge to said housing at said bore end.

5,186,402
INJECTION NEEDLE DISPOSAL DEVICE
Yung-Jyi Lin, c/o Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei (10477), Taiwan
Filed Jan. 21, 1992, Ser. No. 822,893
Int. Cl.[5] B02C *19/12*
U.S. Cl. 241—55 **11 Claims**



1. An injection needle disposal means comprising:

VOL
1147
ISS
3
FE
16
1993
UMI

a housing, a grinding wheel having a plurality of impellers of an exhaust fan means surrounding the grinding wheel rotatably mounted in said housing, a main driving motor operatively rotating the grinding wheel and the impellers, a positioning disk secured on the housing for inserting an injection needle secured on a syringe into the housing to be abrasively ground by the grinding wheel, said housing including: a housing wall portion, a bottom plate secured on a bottom portion of the housing wall portion, a partition plate formed in an upper portion of the housing wall portion, an annular groove annularly formed in an outer periphery of the partition plate, a discharge duct mounted through the housing wall portion and communicating with the annular groove, and a grinding chamber formed in between the partition plate and the positioning disk sealably secured on an uppermost edge portion of the housing wall portion of the housing; said exhaust fan means and said grinding wheel being rotatably mounted in said partition plate within said grinding chamber; and

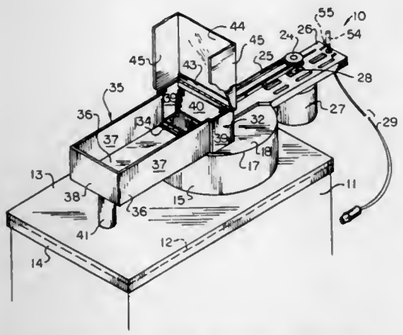
said exhaust fan means including said plurality of impellers circumferentially formed on a periphery extension portion of a circular retaining disk, a circular recess recessed in the circular retaining disk engageable with an outer perimeter of the grinding wheel, and a central hole of the circular retaining disk for mounting the circular retaining disk on a main shaft of the main driving motor, whereby upon a rotation of the grinding wheel and the fan means, dusts from a ground needle are sucked by the impellers and exhausted outwardly to be collected by a collection bag connected to the housing.

5,186,403

PORTABLE GLASS CRUSHING APPARATUS

Calvin B. Jones, and Debbie A. Jones, both of 320 Ridgelyn Rd., Calera, Ala. 35040

Filed Jul. 30, 1992, Ser. No. 921,630
Int. Cl.[5] B02C *19/14*
U.S. Cl. 241—99 **3 Claims**



1. A portable glass crushing apparatus, comprising,

a receiving container, the receiving container including a receiving container upper continuous edge, and

a lid plate, the lid plate arranged in contiguous communication relative to the upper continuous edge, with the lid plate having a lid plate skirt extending downwardly relative to the lid plate arranged in surrounding relationship relative to the upper continuous edge, with the lid plate arranged for selective mounting to the receiving container, and

a receiving tube fixedly mounted to the lid plate extending upwardly thereof, with the receiving tube defined along a tube axis, and the lid plate having a lid plate bore, with the lid plate bore and the cylindrical receiving tube coaxially aligned along the axis, and

the receiving tube including a receiving tube upper edge, with a cap plate mounted to the upper edge, the cap plate having an axle shaft rotatably mounted through the cap plate coaxially aligned relative to the axis, the axle shaft including a support flange mounted at a lower end of the axle shaft below the cap plate within the receiving tube, with the support flange having a plurality of rigid striker blades fixedly mounted to the support flange, with the striker blades oriented above the lid plate and below the receiving tube upper edge, and

an axle pulley mounted to an upper end of the axle shaft above the cap plate, and

a support plate fixedly mounted to the cap plate extending laterally beyond the cap plate in a parallel relationship, with the support plate including a drive motor mounted below the support plate spaced from the lid plate and the receiving tube, with the drive motor including a drive motor output shaft directed through the support plate, and the support plate further including a drive pulley mounted to the drive motor output shaft above the support plate, and a continuous belt mounted between the drive pulley and the axle pulley, with the drive motor arranged for selective actuation to effect rotation of the striker blades, and

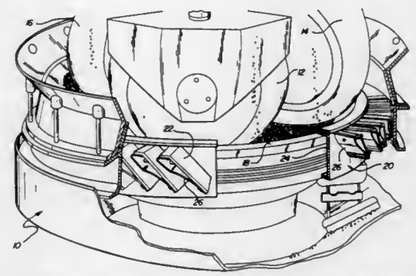
a cap plate entrance opening directed through the cap plate in adjacency to the axis to receive glass components therethrough for crushing of such glass components.

5,186,404

ADJUSTABLE FLOW RATE DEVICE FOR ROTATING VANE PULVERIZER

Rickey E. Wark, Pontiac, Mich., assignor to Sure Alloy Steel Corporation, Warren, Mich.

Continuation-in-part of Ser. No. 597,856, Oct. 15, 1990, Pat. No. 5,090,631. This application Aug. 6, 1991, Ser. No. 740,979
The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.
Int. Cl.[5] B02C *15/00*
U.S. Cl. 241—119 **30 Claims**



1. In a pulverizer of the type which includes an essentially circular arrangement of pitched vanes forming air flow passages therebetween and having upper and lower plane surfaces;

air flow velocity control means comprising deflector means for deflecting air in said air flow passages, the deflector means mounted on the lower plane surfaces of at least some of said vanes; and,

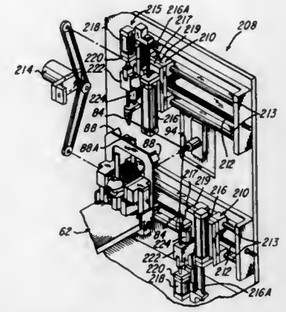
means for varying the spacing of a flexible portion of the deflector means from the lower surface of the vane by flexing it outwardly into said air flow passage.

5,186,405

PROGRAMMABLE LEAD PULL METHOD AND APPARATUS FOR USE WITH A STATOR WINDING MACHINE

John M. Beakes, Fairborn, and Mark T. Heaton, Springfield, both of Ohio, assignors to Globe Products Inc., Huber Heights, Ohio

Filed Sep. 27, 1990, Ser. No. 589,443
Int. Cl.[5] B65H *81/06;* H01F *5/04*
U.S. Cl. 242—1.10 R **7 Claims**



1. Lead pull apparatus for a stator winding machine used to wind field coils onto pole pieces of stators using wires supplied from sources of wire under tension, said lead pull apparatus being used to handle stator coil lead wires and comprising:

a wire gripper assembly including a movable carriage, a wire gripper mounted on said carriage, and mechanisms on said carriage for moving and operating said wire gripper;

a drive screw drivingly connected to said carriage for moving said carriage in a horizontal direction to move said wire gripper into positions for gripping and manipulating segments of the wire used to wind coils on stator pole pieces; and

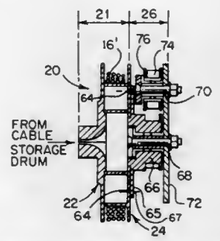
a programmably controllable drive motor connected to said drive screw for rotatably the same to move said carriage.

5,186,406

SPRING ACTUATED TAKE-UP REEL FOR REMOVING CABLE SLACK

Marcello J. Romanelli, Dix Hills, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed Jul. 22, 1991, Ser. No. 733,674
Int. Cl.[5] B65H *23/00, 16/00*
U.S. Cl. 242—54 R **2 Claims**



1. In a robotic vehicle remotely controlled through a cable by an operator console, a vehicle contained cable pay out system comprising:

a take up reel having

an axial cylindrical section for winding cable therearound when the reel rotates;

a radial slot formed in the cylindrical section for passing cable therealong when the reel is stationary;

a coaxial circular first flange extending outwardly from the cylindrical section for restraining wound cable on the cylindrical section;

a funnel member having

a circular second flange positioned adjacent the axial cylindrical section and in coaxial spaced relation with the first flange for further restraining wound cable on the reel cylindrical section;

a coaxial funnel-shaped opening formed in the funnel member guiding cable from a narrow opening to a widened opening transversely aligned with the radial slot in the cylindrical section;

a length of cable located in the funnel-shaped opening and the slot, to be paid out through the funnel-shaped opening and the reel when the reel is stationary, and to be wound around the cylindrical section when the reel is rotated thereby removing slack from the cable;

a cable storage drum located in the vehicle for supplying paid out cable to the operator console via the funnel-shaped opening and the take up reel, during forward vehicle movement; and

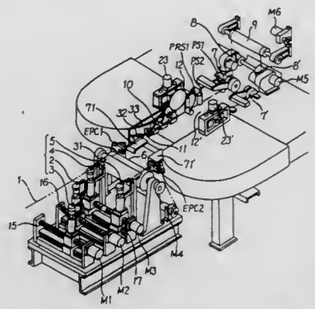
spring means connected to the reel for rotationally biasing the reel in a cable winding direction, the spring means being overcome when a preselected tension occurs in the cable thus enabling unwinding of any wound coil and subsequent passing of the cable through the funnel-shaped opening and the slot of the reel.

5,186,407

AUTO-THREADING METHOD

Noboru Kusafuka; Akira Yoshida; Susumu Tsuyuki; Tatsushi Seko; Yoshimitsu Tsutsui; Toshio Miki, and Ryoji Mouri, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1990, Ser. No. 612,147
Claims priority, application Japan, Nov. 10, 1989, 1-293118; Sep. 21, 1990, 2-252242
Int. Cl.[5] B65H *35/02;* G03B *1/56*
U.S. Cl. 242—56.2 **4 Claims**



1. An auto-threading method of transferring film to chain clips in a film processing line, aid method comprising the steps of:

feeding the film longitudinally, and taking up the fed film;

moving two pairs of cutters perpendicular to the surface of the film and into cutting engagement therewith with the cutters of each of the pairs being located at opposite sides of the film, respectively, while the film is being fed longitudinally so as to effect two longitudinal cuts in the film defining narrow strips at the sides of the film;

moving the cutters of one of said pairs to the side of the film while in cutting engagement therewith and while the film is being fed longitudinally to effect cuts in the film, ex-

VOL 1147 ISS 3 FE 16 1993 UMI

tending obliquely to the direction of feed of the film, which separate the narrow strips at respective ends thereof from the remainder of the film and leave oblique leading edges at the sides of the film;

providing the chain clips at positions at which said oblique leading edges pass through respective ones of the chain clips so that side parts of the film are received by the chain clips;

causing the chain clips to grasp onto the film at the side parts thereof once the oblique leading edges have passed the respective ones of the chain clips;

effecting two more longitudinal cuts in the film with the other of said pairs of cutters to divide the film into three longitudinal parts constituted by the side parts grasped by the chain clips and a central part located therebetween;

subsequently cutting away said side parts from said central part at respective ends of said side parts;

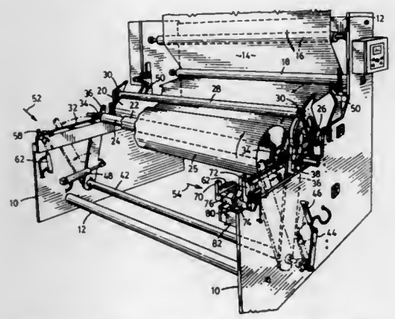
moving the cutters of said other of said pairs from cutting positions, at which said other of said pairs of cutters is effecting said two more longitudinal cuts, to the longitudinal center of the film while in cutting engagement therewith to facilitate the separation of a portion of the film corresponding to said central part from the remainder of the film.

5,186,408

MACHINE FOR WINDING ELONGATED STRIPS ON AN AXLE MOUNTED CORE

Mirek Planeta, 5118 Everest Drive, Mississauga, Ontario, Canada L4W 2R4

Filed May 13, 1991, Ser. No. 699,109
Claims priority, application Canada, May 14, 1990, 2016764
Int. Cl.[5] B65H *18/16, 19/30*
U.S. Cl. 242—65 **4 Claims**



1. A machine for winding an elongated strip on a core mounted on an axle to form a roll thereon, the machine comprising:

a support frame,

an axle to receive a core on which elongated strip is to be rolled,

the support frame including two transversely spaced parallel side members having tracks supporting opposite end portions of the axle and along which the axle is movable from a winding position to an unloaded position,

a driven roller at the winding position to engage elongated strip wound on a core on said axle to rotate said core and wind further strip thereon,

means for driving said driven roller,

means for moving said axle with strip wound on said core along said tracks from the winding position to the unloading position;

a support member having axle end engaging means mounted on one of the side members at the unloading position for rotation about a vertical axis,

said axle end engaging means being engagable with one end of the axle to hold the axle in a generally horizontal attitude, and

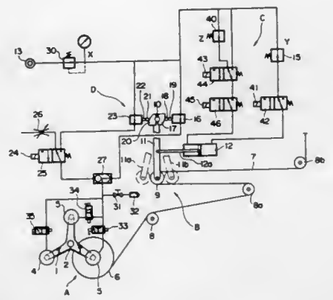
means to rotate the support member about the vertical axis until the other end of the axle is sufficiently clear of the support frame to permit the core and roll to be removed endwise off the axle.

5,186,409

TENSION CONTROL DEVICE FOR PRINTING PAPER

Toshio Kansaku, Sagamihara, Japan, assignor to Kabushikigaisha Tokyo Kikai Seisakusho, Tokyo, Japan

Filed Apr. 20, 1990, Ser. No. 512,110
Claims priority, application Japan, May 12, 1989, 1-119958
Int. Cl.[5] B65H *23/10*
U.S. Cl. 242—75.44 **5 Claims**



1. A device comprising:

(A) paper feeding means for feeding paper from a roll supported thereon;

(B) a braking unit which is connected to said paper feeding means and which brakes a feeding motion of said paper feeding means;

(C) tension force detecting and applying means for detecting a tension force applied to said printing paper and for imposing a tension force on said printing paper;

(D) braking force control means, connected to said tension force detecting and applying means, for controlling said braking unit to vary the braking force imposed on said paper feeding means in dependence on the tension force detected by said tension force detecting and applying means; and

(E) force applying means for imposing a force on said tension force detecting and applying means in addition to a tension force imposed on said tension force detecting and applying means by said printing paper, said force applying means comprising

(i) pressure regulators which apply opposing pressures on said tension force detecting and applying means to impose a net force on said force detecting and applying means resulting from the difference between said opposing pressures,

(ii) means for controlling said pressure regulators to apply opposing pressures to said tension force detecting and applying means to produce a first predetermined net pressure which imposes a first predetermined force on said tension force detecting and applying means during a an initial paper feeding operation, and

(iii) means for controlling said pressure regulators to apply opposing pressures to said tension force detecting and applying means to produce a second predetermined net pressure which imposes a second predetermined force on said tension force detecting and applying means during a paper feeding operation taking place following said initial paper feeding operation, said second predetermined force being lower than said first predetermined force;

wherein said tension force detecting and applying means comprises a swing arm and a stationary cylinder having a movable cylinder rod which is connected to said swing arm, and wherein said force applying means drives said cylinder rod within said cylinder to vary the distance between said swing arm and said cylinder;

wherein said cylinder further comprises a piston which is slidable therein and which is attached to said cylinder rod, and wherein said force applying means comprises fluid circuits which apply fluid pressure to opposite sides of said piston;

wherein said force applying means further comprises a source of fluid pressure,

first, second, and third lines which are connected to said source, said pressure regulators comprising first, second, and third pressure regulators located in said first, second, and third lines, respectively, each of said pressure regulators regulating the pressure of fluid within the respective line to respective first, second, and third pressure levels,

a first valve selectively supplying fluid from said first pressure regulator to one side of said piston,

a second valve selectively supplying fluid from said second regulator to said one side of said piston, and

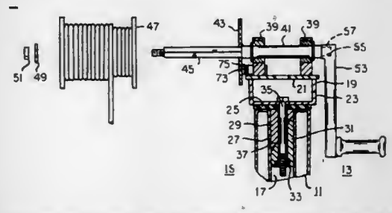
a third valve selectively supplying fluid from said third pressure regulator to the side of said piston opposite said first side.

5,186,410

WIRE REEL MECHANISM

Timothy R. Toews, 41390 Hwy. 226, Scio, Oreg. 97374

Filed Jun. 12, 1991, Ser. No. 714,037
Int. Cl.[5] B65H *75/40*
U.S. Cl. 242—86.5 R **1 Claim**



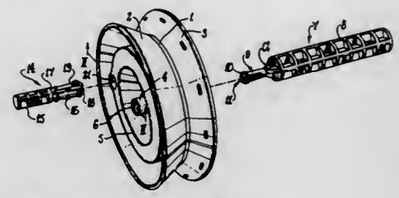
1. In a pickup truck that includes a cargo box having a side wall, and a stake pocket in said side wall: the improvement comprising a platform extending directly above the cargo box side wall and overlying the stake pocket; a post structure extending downwardly from said platform for disposition within the stake pocket; two spaced bearings mounted on said platform, said bearings being aligned on a horizontal axis extending crosswise of the cargo box side wall; a horizontal rotary shaft extending through said aligned bearings so that one end of the shaft is located within the truck cargo box and the other end of the shaft is located outboard from the cargo box beyond said bearings; means attached to said other end of the shaft for removably supporting a spool of wire outboard from the cargo box side wall; and means attached to said one end of the shaft for rotating the shaft, whereby wire can be wound on or off of the spool depending on the direction of shaft rotation; said post structure comprising an upper post section, a lower post section, and a threaded tie rod extending downwardly from the platform through the post sections; said post sections having mating cam surfaces acutely angled to the tie rod axis, whereby manual rotation of the tie rod causes the post sections to shift laterally into gripment with the stake pocket side surfaces.

5,186,411

SPOOL WITH HOLDER

Desmond G. Fanning, Balwyn, and Nicholas J. Booth, Tecoma, both of Australia, assignors to Peter Fanning and Company Proprietary Limited, Melbourne, Australia

PCT No. PCT/AU90/00012, § 371 Date Jul. 15, 1991, § 102(e) Date Jul. 15, 1991, PCT Pub. No. WO90/08090, PCT Pub. Date Jul. 26, 1990
PCT Filed Jan. 16, 1990, Ser. No. 720,776
Claims priority, application Australia, Jan. 17, 1989, PJ2304
Int. Cl.[5] B65H *75/40, 75/44*
U.S. Cl. 242—96 **6 Claims**



1. A spool and holder comprising:

a spool having a line side and an opposite holder side and including a cylindrical rim, radially outwardly extending holder-side and line-side flanges at each side of the spool, and a hub connected to the rim and having an axial bore;

a holding means including a grip portion and an axle portion, the axle portion extending into the axial bore so that the spool is rotatably mounted on the holding means;

an integral stop means on the holding means located between the grip portion and the axle portion for preventing the holding means from passing through the axial bore beyond a position at which the stop means abuts the spool, wherein the holding means does not project axially substantially beyond the line-side flange;

integral retention means on the axle portion and interacting with the axial bore for retaining the spool on the holding means; and

a winding means including a winding bore extending through the spool parallel to the axial bore and situated between the axial bore and the radially outermost portion of either flange, and a winding handle removably insertable into the winding bore through the line side of the spool, the winding handle including a substantially cylindrical hand-hold portion of a diameter forming a close sliding fit within the winding bore and which merges through an intermediate shoulder with a shaft portion of slightly lesser diameter, whereby the winding handle is axially movable within the winding bore between an extended or winding position in which the hand-hold portion of the winding handle projects from the line side of the spool, and a retracted position in which the hand-hold portion is retained substantially within the winding bore.

5,186,412

SPOOL BRAKING FORCE SWITCHING DEVICE FOR FISHING REEL

Bo K. Park, Busan, Rep. of Korea, assignor to Silver Star Co., Ltd., Rep. of Korea

Filed Mar. 27, 1990, Ser. No. 499,801
Claims priority, application Rep. of Korea, Apr. 22, 1989, 4966/1989
Int. Cl.[5] A01K *89/027*
U.S. Cl. 242—245 **2 Claims**

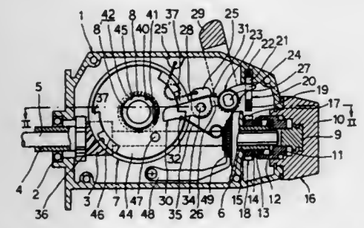
1. A spool braking force switching device for a fishing reel comprising:

a reel body;

a driving shaft rotatably disposed in said reel body;

VOL 1147 ISS 3 FE 16 1993 UMI

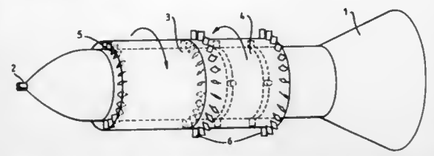
a spool shaft rotatably and movably supported in said driving shaft;
a driving gear rotatably mounted on said reel body for rotating said driving shaft, said driving gear having an inserting groove and catching projections disposed on opposite sides thereof and a rotary shaft, said rotary shaft including a spring inserting groove and a spring fixing groove;
a tension drag mechanism disposed on said reel body for applying a resistance against rotation of said spool shaft;
a ratchet member coaxially connected to said spool shaft, said ratchet member having a plurality of grooves;
a clutch member having a hooking projection, wherein said hooking projection engages one of the plurality of grooves of said ratchet member to prevent rotation of said spool shaft;
an arm shaft disposed in said reel body;
a clutch arm having a switching cam, said clutch arm and switching cam being fixed to said arm shaft;
an arm plate connected to said clutch arm, said arm plate, clutch arm, and switching cam being pivotally connected to said reel body, wherein said switching cam engages said



clutch member to move said hooking projection in and out of engagement with one of said plurality of grooves of said ratchet member;
a torsion spring having two ends, one of said ends being attached to said clutch arm, the other of said ends being attached to a protrusion in said reel body, said torsion spring biasing said clutch arm;
at least one braking switch lever fixed to said arm shaft;
a circular torsion spring having vertical hooking ends, said circular torsion spring being disposed on said rotary shaft, wherein said hooking ends are inserted into said spring inserting hold and said spring fixing groove on said rotary shaft respectively; and
a kicking disc fixed on said rotary shaft in connection with one of said vertical hooking ends, said kicking disc having catching grooves, said catching grooves engaging said catching projections upon rotation of said driving gear, said kicking disc having a kicking pin for pushing and rotating said arm plate, wherein said kicking disc is urged in a counterclockwise direction by said circular torsion spring.

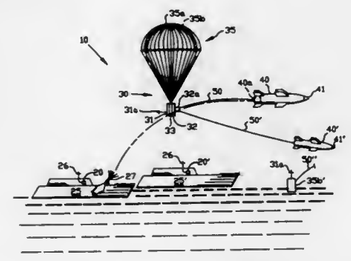
5,186,413
STABILIZATION SYSTEMS
Richard S. Deakin, Haslemere, United Kingdom, assignor to British Aerospace plc, Farnborough Hants, England
Filed May 28, 1991, Ser. No. 705,965
Claims priority, application United Kingdom, Jun. 6, 1990, 9012602
Int. Cl.[5] F42B *10/02*
U.S. Cl. 244—1 TD **7 Claims**

1. A means for stabilizing an aerodynamic body of generally cylindrical form having a longitudinal axis, said stabilizing means comprising:
front and rear tubular shrouds, each of said shrouds comprising a means for enveloping a portion of said body and is rotatable with respect to said body about said longitudinal axis; and



aerodynamically driven means for compelling said shrouds to rotate in opposite senses when said body is in motion.

5,186,414
HYBRID DATA LINK
Jack E. Holzschuh, and John D. Hightower, both of Kailua, Hi., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Apr. 20, 1992, Ser. No. 871,255
Int. Cl.[5] F41G *7/00, 7/20*
U.S. Cl. 244—3.12 **12 Claims**

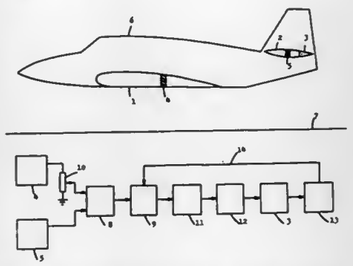


1. A method of providing high data rate over-the-horizon communication system between at least two platforms comprising:
launching an RF transmitter/receiver-optical fiber interface unit from a launch platform;
separating an autonomous vehicle having an optical communication capability from said RF transmitter/receiver-optical fiber interface unit;
suspending said RF transmitter/receiver-optical fiber interface unit;
paying-out an optical fiber from at least said autonomous vehicle platform;
RF communicating between said launch platform and said RF transmitter/receiver-optical fiber interface unit; and
optical communicating between said RF transmitter/receiver-optical fiber interface unit and said autonomous vehicle platform.

5,186,415
AIRCRAFT HAVING MEANS FOR CONTROLLING THE GROUND EFFECT FLYING ALTITUDE BY SENSING AIR PRESSURE ON THE SURFACE OF THE WING
Qun Li, 18172 Beach Blvd., Huntington Beach, Calif. 92648
Filed May 14, 1990, Ser. No. 524,301
Int. Cl.[5] B64C *39/02*
U.S. Cl. 244—12.1 **2 Claims**

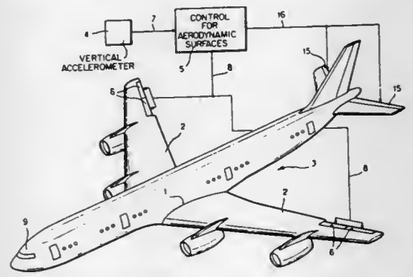
1. An aircraft for operation in ground effect having a main wing (1); and a horizontal tail (2), said horizontal tail having a smaller chord than said main wing, located on said aircraft at a higher position than said main wing and including a movable elevator (3) on its trailing edge; said aircraft further including means for controlling the height of said aircraft during ground effect flight comprising:

a) a first pressure sensor (4) which generates a first pressure signal representative of the aerodynamic pressure change directly on said main wing surface caused by height changes during ground effect flight;
b) a second pressure sensor (5) which generates a second pressure signal representative of the aerodynamic pressure changes on the surface of said horizontal tail;



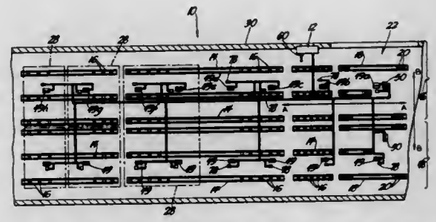
c) signal treatment means receiving said first and second pressure signals and generating a control signal to cause the angle of said elevator to be changed to maintain a constant height for said aircraft during ground effect flight.

5,186,416
SYSTEM FOR REDUCING THE FORCES APPLIED TO THE WINGS AND PARTICULARLY TO THE ROOT OF THE WINGS OF AN AIRCRAFT IN FLIGHT
Pierre Fabre; Xavier Le Tron, and Philippe Lacoste, all of Toulouse, France, assignors to Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle, Paris, France
Filed Dec. 27, 1990, Ser. No. 634,695
Claims priority, application France, Dec. 28, 1989, 89 17341
Int. Cl.[5] B64C *13/16*
U.S. Cl. 244—75 R **19 Claims**



1. A system for reducing the forces applied to the wings and particularly to the root of the wings of an aircraft in flight, comprising:
means for detecting and measuring the vertical acceleration of the aircraft, and providing corresponding acceleration signals,
control means supplying signals for controlling the aerodynamic surfaces connected to the wings of the aircraft, said control means controlling the deflection angle of said aerodynamic surfaces as a function of said acceleration signals received by said control means, the latter being only activated when said vertical acceleration γ exceeds a first predetermined threshold γs, such that, when the vertical acceleration γ decreases while remaining above said threshold γs, a new control signal is effectively applied to the aerodynamic surfaces only when the difference between the signal in force previously applied to the aerodynamic surfaces and the new signal reaches a second predetermined threshold.

5,186,417
AIRCRAFT CARGO CONTROL SYSTEM
Robert J. Pritchard, Lansdale, Pa., assignor to Teleflex Incorporated, Limerick, Pa.
Filed May 3, 1991, Ser. No. 695,567
Int. Cl.[5] B65G *43/08*
U.S. Cl. 244—137.1 **28 Claims**



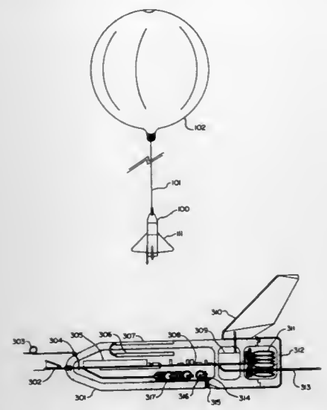
1. An aircraft conveyor assembly for controlling movement of a plurality of objects (28) through an aircraft, said conveyor assembly comprising:
a plurality of drive means (49) connected in series and spaced along the aircraft for receiving power to contact and move the objects (28),
said conveyor assembly characterized by including control means (12) operatively connected to said plurality of drive means (49) for powering said drive means (49) adjacent the objects (28) to be moved while preventing power to the remaining derive means (49) not adjacent and moving the object (28),
said control means including limiting means (74) connected to said drive means (49) for sensing the presence of an object (28) at said drive means (49) to provide power thereto and for preventing power to said drive means (49) in the absence of an object (28), and for allowing a limited number of drive means (49) to be powered to allow an additional drive means (49) in excess of the limited number to be powered only when one of said powered drive means becomes unpowered.

5,186,418
SELF GUIDED RECOVERABLE AIRBORNE INSTRUMENT MODULE
Dean K. Lauritsen, Boulder, Colo., assignor to University Corporation for Atmospheric Research, Boulder, Colo.
Filed Jul. 31, 1991, Ser. No. 738,350
Int. Cl.[5] B64D *1/08*
U.S. Cl. 244—138 A **32 Claims**

1. An unpropelled airborne module that returns to one of a plurality of ground level landing sites by gliding in a self-guided manner comprising:
an aerodynamically shaped winged exterior housing including:
at least one moveable control surface to steer said airborne module;
means for determining a geographic position of said airborne module;
means for storing, for the duration of said gliding, programmed data indicative of the geographic position of at least one of said plurality of ground level landing sites;
means, responsive to said storing of said programmed data and said determining of said geographic position of said airborne module, for computing a flight path for said airborne module to said at least one of said plurality of

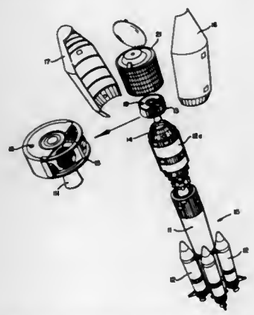
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ground level landing sites in response to said determining of said geographic position of said airborne module; and



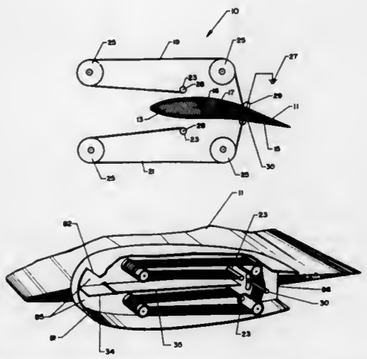
means, responsive to said computing of said flight path, for operating said moveable control surface to guide said airborne module along said flight path.

5,186,419
SPACE TRANSFER VEHICLE AND INTEGRATED GUIDANCE LAUNCH SYSTEM
David R. Scott, 1300-B Manhattan Ave., Manhattan Beach, Calif. 90266
Filed Jan. 30, 1990, Ser. No. 472,395
Int. Cl.[5] B64G *1/00*
U.S. Cl. 244—158 R **3 Claims**



1. An integrated guidance launch system for delivering a payload from earth to a space destination, comprising:
(A) an expendable atmospheric launch vehicle, constructed to withstand dynamic atmospheric effects and the pressure and thermal effects of atmospheric drag, said launch vehicle including protective shroud means defining an enclosed cargo bay; and
(B) a space-configured transfer vehicle, carried in said enclosed cargo bay of said launch vehicle, for transporting a payload from an intermediate space trajectory to a space destination, said transfer vehicle including
(i) primary propulsion engine means powered by liquid fuel,
(ii) attitude control system means powered by liquid fuel,
(iii) fuel supply means for supplying liquid fuel to both said primary propulsion engine and said attitude control system, and
(iv) guidance means for said launch system, integral with said transfer vehicle, including means for
(a) generating guidance signals for said transfer vehicle, and
(b) generating guidance signals for said launch vehicle.

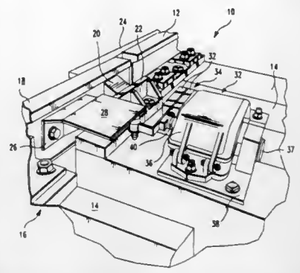
5,186,420
ARTICULATED FIN/WING CONTROL SYSTEM
Charles H. Beauchamp, Jamestown; Manuel Cincotta, Jr., Tiverton; Anthony V. Raffa, Newport, and Benoit G. Gauthier, Little Compton, all of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Nov. 8, 1991, Ser. No. 790,607
Int. Cl.[5] B64C *3/44*
U.S. Cl. 244—219 **9 Claims**



2. An improved moldable control surface system wherein the improvement comprises:
means for shaping said moldable control surface, located external to and remote from said moldable control surface and having linear actuating elements which contract upon heating and expand upon cooling;
means for cambering said moldable control surface affixed to the trailing edge structure of said control surface, one of said linear actuating elements connected to and driving a first side on said means for cambering in a first direction and another of said linear actuating elements connected to and driving a second side of said means for cambering in a second direction, thereby providing bi-directional movement of said moldable control surface; and
means for separately cooling said linear actuating elements attached to said moldable control surface.

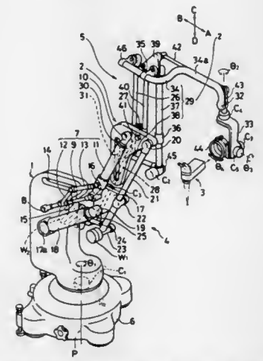
5,186,421
RAIL FINDER
Paul G. Caccomo, 18 Crossway Rd., Beacon, N.Y. 12508
Filed Feb. 27, 1991, Ser. No. 661,178
Int. Cl.[5] B61L *23/04*
U.S. Cl. 246—118 **8 Claims**

1. In rail finder for use with a railroad bridge having a rail and movable between raised and closed positions, a switch box having a rotatable shaft mounted so that the shaft is perpendicular to the rail, a lever fixed to the shaft and extending parallel to the rail, and means on the lever for direct engagement in the closed position of the bridge by a part fixed to the rail on the bridge and for being disconnected therefrom in the raised position of the bridge, wherein the means on the lever for



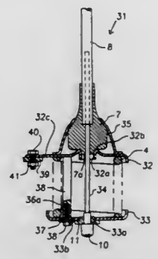
direct engagement comprises a contact assembly including an electrically insulating material.

5,186,422
STAND APPARATUS FOR MEDICAL OPTICAL INSTRUMENT
Katsushige Nakamura, Tokyo, Japan, assignor to Kesanori Sahara, Tokyo, Japan
Filed Jan. 17, 1992, Ser. No. 822,499
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—123.1 **2 Claims**



1. A stand apparatus for a medical optical instrument,
wherein a first link mechanism including a first pantograph arrangement has a proximal end which is mounted on a body having a horizontal groove, said body being rotatable about a vertical axis, said first pantograph arrangement has an intermediate section which is slidably engaged within said horizontal groove, and said first pantograph arrangement reciprocating linearly along a horizontal direction has a forward end on which a horizontal moving element having a vertical groove is mounted,
wherein a second link mechanism including a second pantograph arrangement has a proximal end which is mounted on said horizontal moving element, said second pantograph arrangement has an intermediate section which is slidably engaged within said vertical groove in said horizontal moving element, and said medical optical instrument is supported at a forward end of said second pantograph arrangement which reciprocates linearly along a vertical direction, and
wherein a counter weight for canceling a weight of said medical optical instrument is provided within said first link mechanism.

5,186,423
FALLABLE TYPE POLE SUPPORTING DEVICE
Hajime Wakayama; Toru Shimakura; Seiji Watanabe, and Akio Handa, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 16, 1990, Ser. No. 553,875
Claims priority, application Japan, Jul. 14, 1989, 1-82274[U]
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—160 **8 Claims**



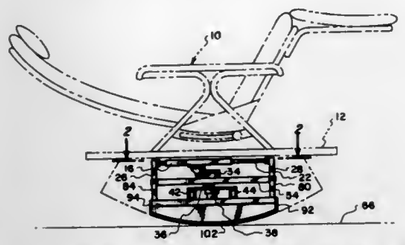
1. A supporting device for a pole, comprising:
a mounting plate adapted to be horizontally mounted on an object, and having at least one hole defined therein;
a pole;
a tilting member integrally fixed to one end of said pole;
a pedestal supported on an upper surface of said mounting plate, and said tilting member having a convex portion tiltably fitted to an upper surface of said pedestal;
a cable having one end thereof integrally molded within said one end of said pole and an opposite end extending through said hole in said mounting plate;
means for biasing said cable against a lower surface of said mounting plate;
a protective boot fixed to the upper surface of said mounting plate and covering at least said convex portion of said tilting member;
said biasing means comprising a compressional spring mounted to the lower surface of said mounting plate and pair of spring seats associated with opposite ends of said compressional spring, respectively; and
auxiliary means for securing said spring to said mounting plate, said auxiliary securing means comprising a shaft fixed between at least one of said spring seats and said mounting plate.

5,186,424
BASE FOR A HUMAN SUPPORT APPARATUS
Larry D. Shultz, Camarillo, and Carl W. Bolton, Ventura, both of Calif., assignors to Integrative Motion Systems, Inc., Ventura, Calif.
Filed Nov. 14, 1991, Ser. No. 791,368
Int. Cl.[5] F16M *11/12*
U.S. Cl. 248—179 **7 Claims**

1. A base for a human support apparatus comprising:
a platform adapted to be fixedly secured to said human support apparatus;
x-axis movement means connected to said platform, said x-axis movement means permitting said platform to move linearly along an x-axis;
y-axis movement means connected to said platform, said y-axis movement means permitting said platform to move linearly along a y-axis;
motor means connected to said platform, said motor means imparting rotary motion to said platform which produces simultaneous movement of said platform along said x-axis and said y-axis; and
a bottom wall, said bottom wall to rest on a supporting surface, said platform and said x-axis movement means and said y-axis movement means and motor means being

VOL 1147 ISS 3 FEB 16 1993 UMI

mounted on said bottom wall, said bottom wall being convex relative to the supporting surface thereby producing a separate rocking motion of said platform on the supporting surface in accordance to variance of the center of gravity of the human located on said platform.



5,186,425
TABLE SUPPORT FOR A WORK TABLE OR OFFICE DESK

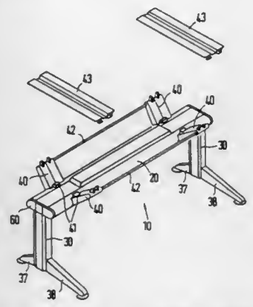
Siegfried Keusch, Plochingen, and Daniel Korb, Sindelfingen, both of Fed. Rep. of Germany, assignors to Dyes GmbH Buromobelfabrik, Fed. Rep. of Germany

Filed Sep. 6, 1991, Ser. No. 755,369

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1990, 4028452

Int. Cl.[5] A47B *35/00*

U.S. Cl. 248—188.1 **21 Claims**



1. In a table support for a work table or office desk having two lateral table legs, upper ends of the lateral table legs rigidly connected to each other with a plurality of connecting straps and a cross piece, lower ends of the lateral table legs having foot elements oriented towards a front and a back of the work table or office desk, the cross piece having a tub shape open towards a top of the cross piece and having side walls shaped as hollow sections, a horizontal cable channel cover for closing off the cross piece, and the cross piece accommodating additional attachable devices, the improvement comprising:

the cross piece with the side walls being a sheet metal section **(20)**;

the connecting straps **(36,)** inserted into a corresponding receptacle at each end of the sheet metal section **(20)**, the connecting straps **(36)** being connected with the sheet metal section **(20)** and the table legs **(30)**; and

an insertion connector **(50)** inserted into an end of the hollow sections of the side walls of the sheet metal section **(20)**, said insertion connector **(50)** having a fastening receiver for attaching the additional attachable devices in a front portion of said insertion connector **(50)** and through a cutout section in the side walls of the sheet metal section **(20)**.

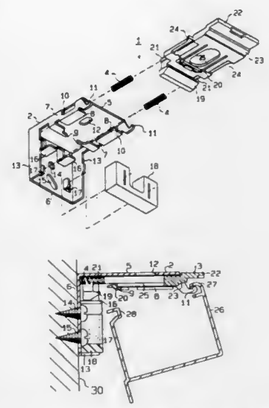
5,186,426
RAIL ATTACHMENT STRUCTURE

Kouichi Wada, Koshigaya, Japan, assignor to Tachikawa Corporation, Japan

Filed Dec. 10, 1991, Ser. No. 805,183

Int. Cl.[5] A47H *1/14*

U.S. Cl. 248—251 **14 Claims**



1. A rail attachment structure for securing a rail member to an attaching surface, comprising:

a frame to be attached to the attaching surface, and having a first support for supporting a first attaching piece of the rail member;

a slide block slidably attached to the frame and having a second support for supporting a second attaching piece of the rail member, the slide block being slidable between a supporting position where the second support is positioned to support the second attaching piece and a releasing position where the second support is released from the second attaching piece;

a spring for urging the slide block toward the support position; and

an actuating piece, provided in the slide block and shiftable in a direction different from a sliding direction of the slide block, the actuating piece engaging with a first part of the frame to hold the slide block at the release position when the slide block is shifted to the release position, the actuating piece being shifted to disengage from the first part of the frame based on the engagement with the rail member when the second attaching piece of the rail member is shifted toward the slide block with the first attaching piece of the rail member held by the first support, thereby allowing the slide block to move toward the support position by the urging force of the spring.

5,186,427
ACCESSORIES AND MOUNTING ASSEMBLIES THEREFOR

Mario E. Semchuck, Chatsworth, Calif., assignor to Emhart Inc., Newark, Del.

Continuation of Ser. No. 510,507, Apr. 19, 1990, abandoned.

This application Mar. 19, 1992, Ser. No. 853,843

Int. Cl.[5] A47G *29/00*

U.S. Cl. 248—251 **20 Claims**

1. A mounting assembly for an accessory, which comprises:

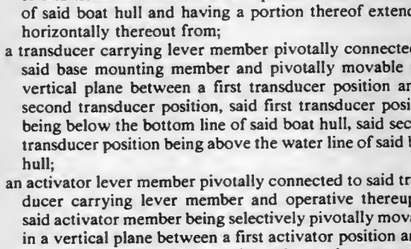
means for supporting an accessory element in position for utility;

means for facilitating attachment of the accessory element to the supporting means;

enclosing means formed as an integral one-piece unit with the supporting means for receiving and enclosing therein at least an enclosed portion of the facilitating means;

mounting means for locating the supporting means and the accessory element relative to an external support;

the supporting means formed with an aperture which is aligned with an aperture formed in the enclosed portion of the facilitating means; and



means positioned through the aligned apertures of the supporting means and the enclosed portion of the facilitating means and attached to the mounting means for securing together the supporting means and the facilitating means independently of the accessory element so that the supporting means and the facilitating means are inseparable without dismantling the securing means.

5,186,428
DEPTH GAUGE TRANSDUCER RETRACTOR DEVICE

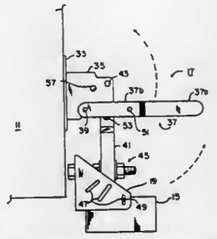
E. Frank Falkenberg, Trevose, Pa., assignor to Canyon Enterprises, Inc., Trevose, Pa.

Continuation of Ser. No. 629,995, Dec. 19, 1990, abandoned.

This application Jan. 10, 1992, Ser. No. 821,383

Int. Cl.[5] H04R *1/00*

U.S. Cl. 248—284 **21 Claims**



1. An acoustic transducer retractor device for mounting to the vertical extending face of a pleasure boat transom, comprising:

a base mounting member capable of being fixedly positioned to said transom vertical face at a point near the water line of said boat hull and having a portion thereof extending horizontally thereout from;

a transducer carrying lever member pivotally connected to said base mounting member and pivotally movable in a vertical plane between a first transducer position and a second transducer position, said first transducer position being below the bottom line of said boat hull, said second transducer position being above the water line of said boat hull;

an activator lever member pivotally connected to said transducer carrying lever member and operative thereupon, said activator member being selectively pivotally movable in a vertical plane between a first activator position and a second activator position, said activator lever member causing said transducer carrying lever member to move to said first transducer position when said activator lever member is in said first activator position and causing said transducer carrying lever member to move to said second transducer position when said activator lever member is in said second activator position; and

a detent mechanism operating against said activator lever member, said detent mechanism establishing at least one intermediate fixed position for said activator member.

5,186,429
ELONGATABLE SUPPORT

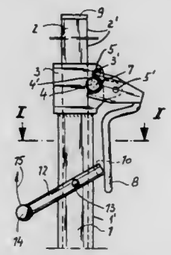
Kurt Linnepe, and Marcus Linnepe, both of Burgstr. 6, W-5820 Gevelsberg, Fed. Rep. of Germany

Filed Apr. 21, 1992, Ser. No. 872,711

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1991, 4132070

Int. Cl.[5] A47F *5/00*

U.S. Cl. 248—354.1 **12 Claims**



1. An elongatable support, comprising:

an outer support tube having a mouth at an end thereof;

an inner bar telescopingly receivable in said tube and adapted to be withdrawn from said tube at said mouth for extension of said support and to be inserted into said tube for contraction of said support;

an actuating head on said tube at said mouth and including:

a housing,

a drive roller adapted to be wedged between a running surface of said bar and an inclined surface of said housing upon loading of said support, said drive roller having a toothed surface engageable with said running surface of said bar,

an actuating element in the form of a fork pivotable on said housing and having shanks formed with guide slots generally transverse to a direction of elongation of said support and receiving ends of said roller for disengaging said roller from said running surface of said bar upon swinging of said fork in one sense,

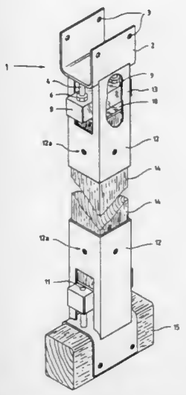
a spring biasing said fork in an opposite sense, thereby urging said roller into a wedged position between said running surface and said inclined surface, and

a leverlike handle connected to said fork and extending generally parallel to said dimension while defining a free space with said tube, whereby actuation of said handle to displace said handle toward a wall of said tube rotates said fork in said one sense; and

a blocking device including an abutment interposable in said space between said handle and said wall, and means applying a force to said abutment automatically inserting said abutment into said space to block displacement of said handle toward said wall, but enabling manual retraction of said abutment from said space to release said handle.

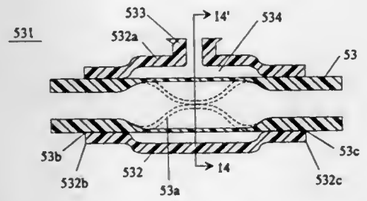
VOL
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5,186,430
ADJUSTABLE COLUMN CAP OR BASE
Richard C. Ellithorpe, 10,7139 - 40th St. S.E., Calgary, Canada T2C 2H7
Filed Apr. 2, 1992, Ser. No. 862,140
Claims priority, application Canada, Feb. 12, 1992, 2061072
Int. Cl.[5] E04G *25/00*
U.S. Cl. 248—354.3 **12 Claims**



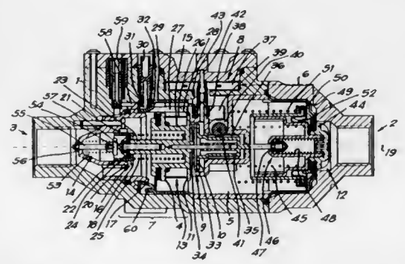
1. An adjustable load-bearing apparatus capable of being operatively disposed on the end of an elongate structural member having a substantially fixed length so as to produce a structural assembly having an adjustable length, said adjustable load-bearing apparatus comprising:
bearing plate means for engaging an end of said elongate structural member, and for distributing a load thereover;
cross-bar means disposed on said bearing plate means;
load engaging means for engaging a load to be supported;
a pair of adjustment screw means fixedly attached to said load engaging means;
nut means operatively engaged with respective ones of said adjustment screw means and capable of bearing on a surface of said cross-bar means; and
guide sleeve means depending from said load-engaging means and capable of operatively sliding longitudinally along a portion of said elongate structural member.

5,186,431
PRESSURE SENSITIVE VALVES FOR EXTRACORPOREAL CIRCUITS
Yehuda Tamari, 21 Singworth St., Oyster Bay, N.Y. 11771-3703
Continuation of Ser. No. 683,093, Apr. 10, 1991, abandoned, which is a continuation of Ser. No. 410,845, Sep. 22, 1989, abandoned. This application Mar. 13, 1992, Ser. No. 852,931
Int. Cl.[5] F16K *7/07*
U.S. Cl. 251—5 **17 Claims**



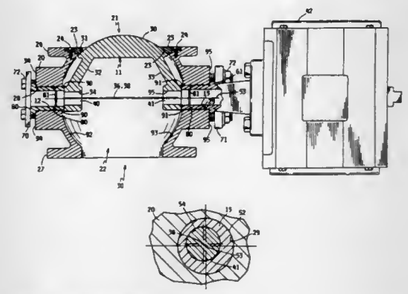
1. The combination of a pressure sensitive valve and an extracorporeal circuit, said combination comprising:
(a) an extracorporeal circuit for circulation of blood, said circuit having at least a plurality of blood compatible tubing members with connectors therebetween for circulation of blood therethrough;
(b) at least one of said tubing members being a length of unitary extracorporeal tubing, said tubing having a first end and a second end to be interconnected to first and second connectors in said extracorporeal circuit, said tubing having a first outer diameter and a first wall thickness, said tube also having a thin wall portion defined intermediate the first and second ends of the tubing said tubing having a smooth fissureless inner surface throughout;
(c) a housing having an inner cylindrical chamber at each end thereof which snugly engages said first outer diameter of said unitary tubing, said housing having a port therein, with said port communicating with a sealed interluminal chamber formed between said thin wall portion and the housing, each end of said housing extending beyond the thin wall portion to engage and seal said tubing along said first outer diameter to thereby define said sealed interluminal chamber therebetween;
(d) said length of unitary extracorporeal tubing having a first and second length of tubing extending beyond said housing to define a free length of tubing on each side of said housing between said housing and the first and second connectors to the extracorporeal circuit.

5,186,432
SAFETY VALVE
Guido Van De Moortele, Oosterveldlaan 71, 2610 Wilrijk, Belgium, assignor to S.McD. Murphy & Partners Ltd., Dublin, Ireland and Guido Van De Moortele, Wilrijk, Belgium
PCT No. PCT/BE90/00018, § 371 Date Oct. 28, 1991, § 102(e) Date Oct. 28, 1991, PCT Pub. No. WO90/13765, PCT Pub. Date Nov. 15, 1990
PCT Filed Apr. 23, 1990, Ser. No. 768,258
Claims priority, application Belgium, Apr. 28, 1989, 08900471
Int. Cl.[5] F16K *31/36*
U.S. Cl. 251—16 **29 Claims**



1. A safety valve, comprising:
a housing having an inlet, an outlet, a main passage, and a bypass channel;
a main cut-off valve installed in the housing;
means, actuated by the flow of liquid within the safety valve, for moving the main cut-off valve into a closed position after a predetermined period of time has lapsed and for holding the main cut-off valve in the closed position when a pressure drop exists across the main cut off valve, the moving and holding means being reset to a starting position each time a first pressure on liquid at the inlet and a second pressure on liquid at the outlet are approximately equal and including
a moving mechanism which after moving a specific stroke distance closes the main cut-off valve,
driving means, disposed in the bypass channel, for driving the moving mechanism
first resetting means for moving the moving mechanism into the starting position each time the main cut off valve is in an open position and liquid is not being removed from the safety valve;
second resetting means for moving the main cut-off valve from the closed position to the open position when the pressure drop across the main cut off valve is approximately zero;
a second cut-off valve disposed in the main passage which ensures that a substantially constant drop of pressure is created across the bypass channel;
a coupler having first and second coupling parts which can be engaged and disengaged with each other, the coupler being connected to the driving means and the moving mechanism; and
a servo device which engages with the coupler when a flow of liquid is created at the inlet such that when the first and second coupling parts are not engaged the first resetting means are set into operation.

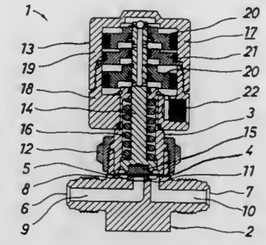
5,186,433
ADJUSTABLE ECCENTRIC VALVE
Josef Pausch, Minnetonka, Minn., assignor to General Resource Corporation, Hopkins, Minn.
Filed Jan. 21, 1992, Ser. No. 823,346
Int. Cl.[5] F16K *5/06*
U.S. Cl. 251—309 **8 Claims**



6. An eccentric valve comprising:
a) a valve body with inlet and outlet ports and a bearing hole having a bearing hole axis;
b) one of the ports having a valve seat;
c) a closure member engageable to the valve seat for closing the valve and including a seating surface, the closure member being rotated about an eccentric axis of rotation; the closure member having a valve shaft extending along said eccentric axis of rotation; and
d) not more than one eccentric bearing rotatable in the bearing hole for at least 90°, said bearing having a longitudinal opening for receiving said valve shaft, said longitudinal opening being offset from said bearing hole axis whereby rotation of the eccentric bearing adjusts the relative position between the valve axis and the bearing hole axis and thus eccentricity between the valve seat and closure member.

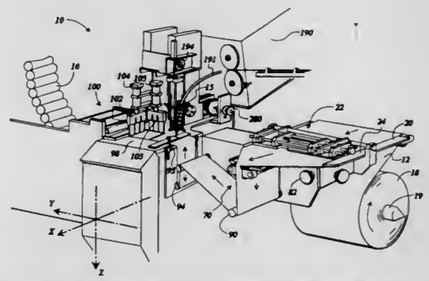
5,186,434
FLUID FLOW CONTROLLER
Ryutaro Nishimura; Michio Yamaji; Hirokatsu Maeda; Nobukazu Ikeda, and Kenji Yamamoto, all of Osaka, Japan, assignors to Masako Kiyohara, Kumamoto, Japan
Filed Apr. 8, 1992, Ser. No. 865,241
Claims priority, application Japan, May 9, 1991, 3-133450
Int. Cl.[5] F16K *7/17*
U.S. Cl. 251—331 **12 Claims**

1. A fluid flow controller comprising a flow passage which is opened and closed by the flexing of a diaphragm secured at its periphery characterised in that the diaphragm is a laminate



of a plurality of metal diaphragms and in that friction reducing material is provided between the diaphragms.

5,186,435
APPARATUS FOR COMPRESSING A SPRING
Ruslon J. Smith, Roaring Brooks Township, Pa., assignor to Simmons Company, Atlanta, Ga.
Filed Jan. 3, 1991, Ser. No. 637,290
Int. Cl.[5] B25B *5/02*
U.S. Cl. 254—10.5 **22 Claims**

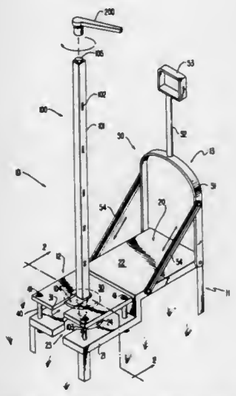


1. An apparatus for compressing a spring along its compression axis, comprising:
a first gear rotating about a first axis having a drive pin extending sidewardly therefrom;
a second gear rotating about a second axis substantially parallel to said first axis, said second gear having a drive pin extending sidewardly therefrom;
means for synchronized driving of said first and second gears such that they continuously rotate in opposing directions;
a star gear rotating about a third axis substantially parallel to said first and second axes; said star gear defining first and second radially-extending slots and a toothed segment, said drive pin of said first gear configured to fit within said first slot and drive said star gear in a first direction and said drive pin of said second gear configured to fit within said second slot and drive said star in a second, opposite direction;
supporting frame means for said first gear, second gear, and said star gear such that continuous rotation of said first and second gears causes a periodic movement of said star gear comprising a rotation in said first direction while being driven by said drive pin of first gear, a dwell period after said drive pin of said first gear exits said first slot of said star gear, a rotation in said second direction while being driven by said drive pin of second gear, followed by a dwell period after said drive pin of said second gear exits said first slot of said star gear;
a third gear in toothed engagement with said toothed seg-

VOL 1147 ISS 3 FE 16 1993 UMI

ment of said star gear, such that rotation of said third gear is responsive to said star gear;
means for driving a fourth gear such that rotation of said fourth gear is responsive to rotation of said third gear;
a substantially linear rack in toothed engagement with said fourth gear such that rotation of said fourth gear causes substantially linear movement of said rack; and
a spring compression head attached to one end of said rack, said spring compression head configured to compress a spring,
such that substantially constant rotation of said first and second gears causes periodic compression of springs.

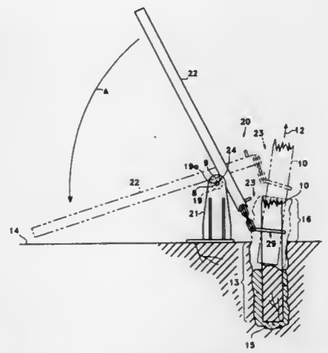
5,186,436
ELECTRIC FENCE POLE INSTALLATION APPARATUS
Beauregard Cummings, Jr., 315 Prairie Ct., Fayetteville, N.C. 28303
Filed Apr. 30, 1992, Ser. No. 876,317
Int. Cl.[5] E21B *19/00*
U.S. Cl. 254—29 R **8 Claims**



1. An apparatus for installing an elongated metal fence pole having a metal shaft provided with: a tapered point on one end; an enlarged collar formed proximate said one end; and further having a multi-sided gripping head formed on the other end; wherein, the apparatus comprises:
a stepped shoulder platform member having an upper platform element; a lower platform element which projects outwardly from said upper platform element; wherein, said lower platform element is provided with an enlarged aperture dimensioned to receive both said shaft and said enlarged collar of the fence pole; and,
spring biased means operatively associated with the lower platform element for providing a downwardly directed force against the top of said enlarged collar to maintain said fence pole in a vertical orientation relative to said apparatus as the fence pole is forced into the ground.

5,186,437
POST PULLER INCLUDING CONCRETE BASE PULLING MEANS
Ted P. Scott, P.O. Box 232, Fairfield, Calif. 94533
Filed Feb. 22, 1991, Ser. No. 660,347
Int. Cl.[5] B66F *3/06*
U.S. Cl. 254—30 **2 Claims**

1. A post puller for extracting posts of a given cross section from a hole penetrating the earth's surface, comprising
a fulcrum having a horizontal base, a pair of upright arms extending from said base and a pivot pin attached between said arms remote from said base;
a lever of circular cross section in pivoting contact with said pivot pin of said fulcrum to establish an axis of rotation substantially parallel to the earth's surface relative to said fulcrum, said lever including a handle of fixed length relative to the fulcrum, a lifting segment, and coupling means connected to lifting segment whereby leverage force of said lever can be applied through said coupling means and hence to a post to be extracted to cause upward movement of said post relative to said earth's surface;
said coupling means including a perforated plate sized to receive the said post and a pair of chains each of at least three links and attached between said perforated plate and said lifting segment, said links including a pair of end links attached to said lifting segment and said perforated plate,

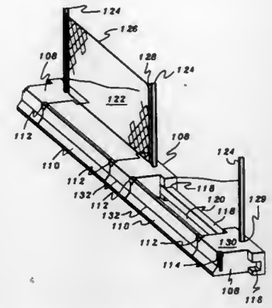


respectively and a series of center links interlocked with said end links whereby force applied to said handle of said lever causes said perforated plate and said post to be lifted away from the earth's surface in concert,
said end links including a first pair permanently attached to said perforated plate and a second pair permanently attached to said lifting segment of said lever,
said perforated plate including a central opening sized to slidably receive said post to be extracted but cantable to disconnectably engage said post, and
an insert receivable within said central opening, said insert including a swedge side wall in contact with said central opening and central opening of less area of said central opening to accommodate other sizes of posts.

5,186,438
MODULAR ROCK CATCHMENT BARRIER
Richard H. Cross, R.D. 1, Saddlemire Hill Rd., Sloansville, N.Y. 12160, and Peter J. Smith, 157 Parkhurst Rd., Gansevoort, N.Y. 12831
Filed Oct. 31, 1990, Ser. No. 607,447
Int. Cl.[5] E01F *7/04;* **E04H** *17/14*
U.S. Cl. 256—13.1 **37 Claims**

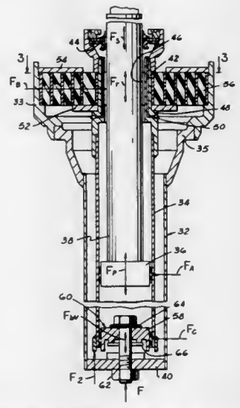
1. A rock catchment barrier comprising a plurality of modules, each said module comprising:
a concrete base having a top surface;
a post;
a concrete barrier;
a means for connecting said post to said top surface of said concrete base;
a means for connecting said concrete barrier to either side of said concrete base; and
a means for catching rocks, said means attachable to said post;
wherein when said concrete base is connected to said concrete barrier, and wherein when said post is connected to said concrete base and said means for catching rocks, a resulting module is formed;
wherein said rock catchment barrier further comprises

means for temporarily stabilizing said rock catchment barrier, said means for temporarily stabilizing comprising a beam connected to either side of said concrete base so as



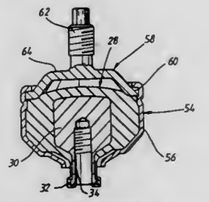
to form a cavity between said concrete beam, said concrete base, and said concrete barrier, said cavity capable of being filled.

5,186,439
FRICTION COMPENSATING AUTOMOTIVE SUSPENSION STRUT
Lawrence P. McDonagh, Canton; William H. Clarke, Farmington Hills; Jonathan D. Stinson, Plymouth, and John V. Lopez, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Sep. 6, 1991, Ser. No. 756,020
Int. Cl.[5] F16F *1/42*
U.S. Cl. 267—35 **7 Claims**



1. A suspension apparatus for an automotive vehicle, comprising:
a strut interposed between a sprung and unsprung mass of said vehicle and adapted to provide structural support between said sprung and unsprung masses and to hydraulically damp relative motion therebetween, said strut comprising:
an outer housing attached to said unsprung mass;
a pressure tube disposed within said outer housing;
a piston slidably carried within said pressure tube;
a piston rod having a lower end attached to said piston and an upper end attached to the sprung mass of said automotive vehicle; and
means for permitting said outer housing a limited amount of movement relative to said pressure tube under imposition of an axial load upon said strut.

5,186,440
SUPPORTING MOUNT
Hermann Schobbe, Fellbach; Gerd Steinhauser, Aichwald; Hans Scheerer, Esslingen; Andreas Opara; Werner Möhrmann, both of Fellbach; Hans-Rudolf Steinert, Wendlingen, and Wolfhard König, Stuttgart, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany
Filed Aug. 15, 1991, Ser. No. 745,403
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1990, 4026645
Int. Cl.[5] B60G *13/00*
U.S. Cl. 267—220 **8 Claims**



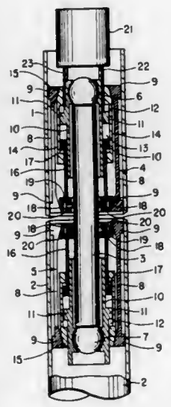
1. A supporting mount for angularly mobile flexible support of a supporting member of a wheel suspension, comprising:
a mount housing including two approximately conical housing halves;
an elastomer body provided inside said mount housing;
a mount core enclosed by said elastomer body;
housing-side stops provided in supporting directions for engaging said elastomer body, said housing-side stops limiting the travel of said mount core in the supporting directions;
wherein said elastomer body as constructed is spaced at a distance from said housing-side stops in a non-contacting relationship;
further wherein one of said conical housing halves provide an opening to said mount core, said one conical housing halve including a ring half as one of said housing-side stops which encloses the opening and is outwardly offset in a stepped manner towards the mount core; and wherein said mount core is surrounded on all sides by said elastomer body.

5,186,441
INTERNAL CENTERING DEVICE PARTICULARLY SUITABLE FOR CONNECTING THE ENDS OF TUBES
Dario Berti, Cassola, and Giovanni A. Chiuppani, Bassano Del Grappa, both of Italy, assignors to AGIP S.p.A., Milan, Italy
Filed Feb. 5, 1991, Ser. No. 650,921
Claims priority, application Italy, Feb. 7, 1990, 19281 A/90
Int. Cl.[5] B25B *1/20*
U.S. Cl. 269—43 **4 Claims**

1. An internal centering device which is particularly adapted for connecting the ends of tubes, having a central supporting body with at least one articulation joint as well as expansion means for radially clamping the device against the inside walls of the tubes to be connected, comprising two axially oriented hollow mandrels, at least one of which is axially movable, mounted on the central supporting body, which body is disposed within said mandrels and in general axial alignment therewith, wherein at least one of said mandrels is articulated on the central supporting body articulation joint, at least three radial actuators spaced from the articulation joint for angular positioning of one of said mandrels relative to the central supporting body, an outer resilient sleeve on each of said mandrels and in which each of said sleeves can be expanded radially, and an internal hydraulic axial actuator for expanding said

VOL
1147
ISS
3
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1993
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outer sleeves, and in which said internal hydraulic axial actuator further has opposing threads for the axially movable mandrel, each of said mandrels having a hollow body articulated at a respective articulation joint on the central body and an annular projection formed on each of said mandrels near the respective articulation joints, which each define respective annular actuating chambers with an annular jacket supported to slide axially on said hollow body, wedge-shaped expansion heads



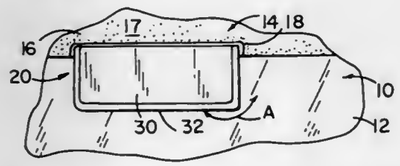
disposed at an end of at least one of said mandrels close to the articulation joint of said hollow body, a hollow stem forming the second of said annular actuating chambers for axial movement, said stem being disposed concentrically within said jacket to form a third annular actuating chamber, said stem being itself supported by said hollow body, and wedge-shaped expansion heads at an end of said stem which emerges from said annular jacket.

5,186,442

VISOR WITH DOUBLE ACTING SLIDE MECHANISM

Nels R. Smith, Holland, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Jan. 28, 1992, Ser. No. 827,417
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.8 **33 Claims**



1. A slide-out visor assembly for a vehicle including a double acting slide assembly, said visor assembly comprising;

support means adapted to be mounted to a vehicle behind the headliner and adjacent a window and including guide means formed therein;

a visor panel comprising a generally planar body including guide means; and

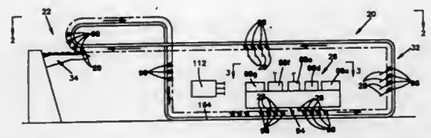
a slide assembly coupling said visor panel to said support member, said slide assembly including a pair of slides and means for pivotally coupling said slides to one another with a first of said slides being slidably mounted to said guide means of said support member and the second of said slides being slidably coupled to said guide means of said visor panel.

5,186,443

METHOD OF COLLATING NEWSPAPERS BASED UPON CREDIT CARD HOLDERS

John A. Manley, Vandalia; Aaron J. Belvo, Miamisburg; Todd C. Platt, Centerville; Andrew D. Bruce, Troy, and Peter A. Wolf, Piqua, all of Ohio, assignors to AM International Incorporated, Chicago, Ill.

Filed Feb. 28, 1991, Ser. No. 662,355
Int. Cl.[5] B41F *13/54;* **B65H** *5/30*
U.S. Cl. 270—1.1 **4 Claims**



1. A method of collecting newspapers containing materials which vary as a function of characteristics of the readers of the newspapers, said method comprising the steps of providing newspaper jackets for a first newspaper reader having a credit card for a newspaper advertiser and for a second newspaper reader who does not have a credit card for the newspaper advertiser, each of the jackets having a closed edge portion and an open edge portion and a central fold which extends between the open and closed edge portions and divides the jacket into first and second sections, moving each of the jackets in turn through a series of newspaper insert feed stations with the central folds in the jackets downward and the first and second sections spread apart to enable newspaper inserts to be fed into the jackets, feeding inserts for a newspaper for the first reader having a credit card for the newspaper advertiser into a first jacket at a first plurality of the insert feed stations as the first jacket moves through the series of insert feed stations, and feeding inserts for a newspaper for the second reader who does not have a credit card for the newspaper advertiser into a second jacket at a second plurality of insert feed stations as the second jacket moves through the series of insert feed stations, said step of feeding inserts into the second jacket including feeding newspaper inserts into the second jacket at some feed stations where newspaper inserts were fed into the first jacket and moving the second jacket through at least one feed station where a newspaper insert containing an advertisement for the newspaper advertiser was fed into the first jacket for the first reader having a credit card for the newspaper advertiser without feeding an insert into the second jacket for the second reader who does not have a credit card for the newspaper advertiser.

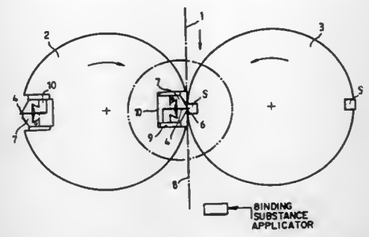
5,186,444

METHOD AND DEVICE FOR ASSURING ORDERLY WEB TRAVEL IN A FOLDER BY PUNCHING HOLES IN A PAPER WIDTH DIRECTION

Roland T. Palmatier, Durham; Michael A. Novick, New Durham, and Roger R. Belanger, Dover, all of N.H., assignors to Heidelberg Harris GmbH, Heidelberg, Fed. Rep. of Germany

Continuation of Ser. No. 684,691, Apr. 11, 1991, abandoned.
This application Jun. 29, 1992, Ser. No. 908,528
Int. Cl.[5] B65H *41/00*
U.S. Cl. 270—52.5 **18 Claims**

1. Device for assuring orderly web travel in a given direction in a folder, comprising at least one cutting cylinder, at least one cutting knife disposed on said cutting cylinder, a grooved cylinder disposed in cooperative engagement with said cutting cylinder, said grooved cylinder carrying at least one rubber beam in a groove formed in said grooved cylinder, said cutting cylinder and said grooved cylinder being contrarotatable so that said cutting knife and said rubber beam are periodically in mutual engagement at a cut-off location, and at least one stamping die disposed in vicinity of said cut-off location and extending across substantially the entire width of a path traversible by a layered structure formed of mutually superimposed web surface portions travelling through a nip between said cylinders for stamping holes out of the layered



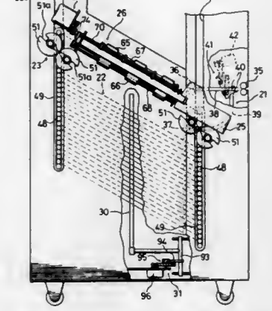
structure while leaving a tongue-like element appendant to the web surface portions and projecting through the holes adjacent a location of the web surface portions at which a signature is cut-off by said cutting knife.

5,186,445

SHEET HANDLING APPARATUS, WITH SHEET STORAGE BINS CONVEYABLE IN A VERTICLE AND A LATERAL DIRECTION

Tsugio Nakanishi, Osaka; Yoichiro Irie, Suita, and Tsuyoshi Nagao, Osaka, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Oct. 22, 1991, Ser. No. 780,297
Claims priority, application Japan, Oct. 29, 1990, 2-292771
Int. Cl.[5] B42B *2/00;* **B65H** *39/02*
U.S. Cl. 270—053 **14 Claims**



1. A sheet handling apparatus for handling sheets discharged from an image forming apparatus provided adjacent to said apparatus, said apparatus comprising:

a sheet storer for storing the sheets discharged from said image forming apparatus, said sheet storer being conveyable in a sheet width direction perpendicular to a sheet supplying direction;

a supply mechanism provided between said image forming apparatus and said sheet storer for supplying the sheets from said image forming apparatus to said sheet storer;

a processing mechanism for carrying out a predetermined process upon the sheets stored in said sheet storer;

a discharge mechanism for discharging the sheets processed by said processing mechanism from said sheet storer to a region frontward with respect to said image forming apparatus, where an operator normally stands, said discharge mechanism being a mechanism for transporting the sheets while nipping them, and said processing mechanism being located in a position so as to enable it to process the sheets while they are nipped by said discharge mechanism;

a stacker provided alongside the front of said image forming apparatus for storing the sheets discharged by said discharge mechanism;

control means for controlling said discharge mechanism and said processing mechanism in order that said processing mechanism processes the sheets while they are nipped by said discharge mechanism; and

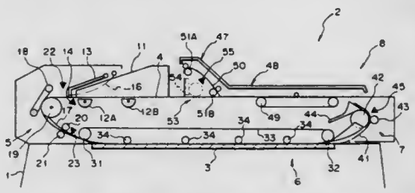
means for controlling conveyance of said sheet storer in order to place the sheets in said sheet storer into a nipping position of said discharge mechanism.

5,186,446

RECYCLING AUTOMATIC DOCUMENT FEEDER

Shiro Saeki, Yokohama; Yukitaka Nakazato, Tokyo; Hiroyuki Ishizaki, Ogaki; Fumitaka Hyodou, Nukata, and Kunihiro Uotani, Seto, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 2, 1991, Ser. No. 769,841
Claims priority, application Japan, Oct. 3, 1990, 2-267293
Int. Cl.[5] B65H *5/22*
U.S. Cl. 271—3.1 **6 Claims**



1. A recycling automatic document feeder (RADF) comprising:

a table to be loaded with a stack of documents;

a gate pawl located forwardly of said table with respect to an intended direction of document feed and movable into and out of contact with said table;

a feeding section comprising feeding means for feeding, when said gate pawl is moved away from said table, a stack of documents placed on said table one by one, the lowermost document being first;

a transporting section comprising transporting means for transporting the document fed from said feeding section to a predetermined illuminating position and, after illumination, discharging said document;

a returning section comprising turning means for turning over the document transported by said transporting means, said returning section returning said document discharged via said turning means to the top of said stack of documents;

sensing means for sensing a condition in which the documents are fed; and

control means for controlling said gate pawl, said feeding means, said transporting means and said turning means in response to output signals of said sensing means such that when said stack of documents is to be illuminated a plurality of times, said gate pawl is moved away from said table after the illumination of the last document of the first cycle of documents to start the feed of the second cycle of documents, then said gate pawl is brought into contact with the top of said stack, and then said gate pawl is moved away from the top of said stack to transport the remaining documents to a feed position one by one, whereby said gate pawl divides said first and second cycles of documents from each other.

VOL 1147 ISS 3 FEB 16 1993 UMI

5,186,447

APPARATUS FOR THE AUTOMATIC FILLING OF A MAGAZINE

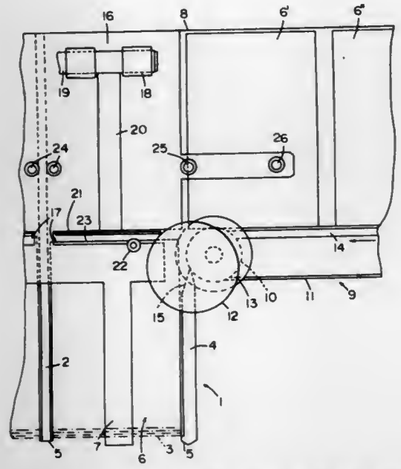
Siegfried Knecht, Gevelsberg, Fed. Rep. of Germany, assignor to Maschinenfabrik Alfred Schmermund GmbH & Co., Gevelsberg, Fed. Rep. of Germany

Filed Sep. 11, 1990, Ser. No. 580,781

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1989, 3930369

Int. Cl.[5] B65H *1/26*

U.S. Cl. 271—3.1 **28 Claims**



1. In apparatus for the automatic supply of package forming blanks to a magazine, the magazine having an open-ended generally vertically oriented shaft, the blanks being individually extracted from the bottom of the magazine shaft, the apparatus further having a conveyor which defines a stack delivery level, the conveyor terminating with its delivery end juxtapositioned to the upper end of the magazine shaft, the conveyor receiving and transporting a series of stacks of the blanks to the magazine and having a drive which may be selectively energized, the improvement comprising:

a guide wall forming the side of the magazine shaft located adjacent to the delivery end of the conveyor;

a second magazine shaft defining wall located opposite to said guide wall, said second wall projecting upwardly above the transport level of the conveyor by an amount at least equal to the maximum height of the stacks of the blanks to be delivered to the magazine whereby said second wall in part defines a magazine shaft extension and a stop for conveyor delivered stacks;

first sensor means positioned to detect the presence of a top edge of a stack of blanks located in the magazine shaft, said first sensor means being located at a level adjacent to but below the conveyor delivery level; and

movable supports for selectively engaging oppositely disposed edge regions of the lowermost blank of a stack of blanks delivered into registration with the magazine shaft by the conveyor, said supports being pivotal between a first position wherein they are in registration with the magazine shaft and are oriented generally transversely with respect to the direction of movement of incoming stacks of blansk on the conveyor and a second position wherein they are out of registration with the magazine shaft.

5,186,448

SHEET FEEDING APPARATUS

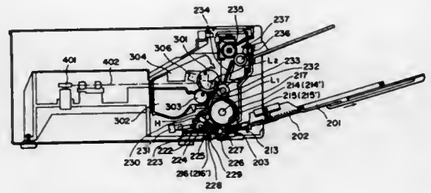
Ichiro Ohsawa, Yokohama; Yutaka Kikuchi, Kawasaki; Masanobu Kanoto, Tokyo, all of Japan; Hideki Sato, Glen Cove, N.Y.; Yoshifumi Endo, Kawasaki, and Hideshi Kawaguchi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 670,488, Mar. 13, 1991, abandoned, which is a continuation of Ser. No. 156,592, Feb. 17, 1988, abandoned. This application Apr. 10, 1992, Ser. No. 865,753

Claims priority, application Japan, Feb. 17, 1987, 62-035136; Feb. 17, 1987, 62-035139

Int. Cl.[5] B65H *3/52*

U.S. Cl. 271—9 **31 Claims**



1. A sheet feeding apparatus comprising:

a first rotatable member, having a feeding portion for contacting to and applying feeding force to a sheet material of a stack of sheet materials and a nonfeeding portion not applying the feeding force thereto;

a second rotatable member disposed co-axially with said first rotatable member, and having a diameter smaller than that of said feeding portion and larger than said non-feeding portion;

separating means for cooperating with said first rotatable member to allow one sheet of material to be fed; and

a third rotatable member for cooperating with said first rotatable member to transport the sheet material separated by said separating means;

wherein in a stand-by state prior to feeding operation, said second rotatable member contacts said separating means and said third rotatable member.

5,186,449

SHEET FEEDER UNIT

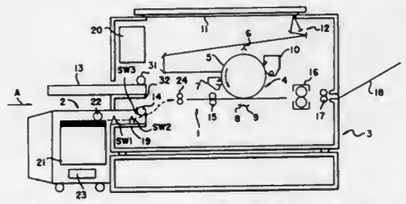
Ikuhiro Ohmi, Osaka; Yoshiaki Yanagida, Hirakata; Soichi Matsuyama, Kyoto, and Yoshihisa Ikuta, Toyonaka, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 644,762, Jan. 23, 1991, abandoned. This application Jan. 13, 1992, Ser. No. 821,312

Claims priority, application Japan, Jan. 23, 1990, 2-14549

Int. Cl.[5] B65H *5/00*

U.S. Cl. 271—10 **1 Claim**



1. A sheet feeder unit which is detachably mounted on an apparatus having a sheet transport mechanism for transporting sheets at a prescribed speed, comprising:

a sheet feeder roller which feeds sheets into the sheet transport mechanism;

a pair of sheet sensors disposed with a prescribed space provided between each other along a sheet transporting direction, each for detecting a sheet being fed into the sheet transport mechanism for transportation by the sheet transport mechansim;

a calculating means for calculating the sheet transporting speed of the sheet transport mechanism on the basis of the detection results of the pair of sheet sensors;

a setting means for setting the time required for one of the sensors to detect a trailing edge of the sheet; and

a control means for controlling the sheet feeder roller to supply the next sheet, from the sheet feeder unit to the sheet transport mechanism, on the basis of the calculation result and for intermittently feeding a sheet in a prescribed condition without overlapping the preceding sheet being transported by the sheet transport mechanism.

5,186,450

APPARATUS FOR OVERLAPPING AND LAYING DOWN SHEETS CUT FROM A WEB OF MATERIAL BY A CROSSCUTTER

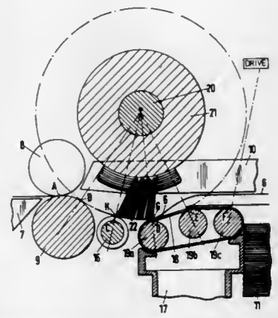
Hilmar Vits, Leichlingen, Fed. Rep. of Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

Filed Jun. 27, 1991, Ser. No. 721,130

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1990, 4020398

Int. Cl.[5] B65H *29/68*

U.S. Cl. 271—183 **10 Claims**



1. Apparatus for overlapping and depositing sheets cut by a crosscutter from a web of material, including a conveying device disposed immediately downstream from the crosscutter in a conveying direction of the sheets for conveying the sheets at a conveying speed along a conveying path and for further guidance thereof to floating strips extending over a sheet-pile stacking location, comprising a combined conveying and braking device disposed immediately upstream of the stacking location and including a camshaft disposed above the conveying path of the sheets, said camshaft carrying conveying and braking cams and being rotatable, slide elements and brake elements disposed one after the other along a circle of rotation of said cams below said sheet conveying path and at a distance from one another corresponding to the length of said cams, means for rotating said cams at the sheet conveying speed, means for rotating said brake elements at a braking speed, said cams having a constant radius and being engageable successively with said slide elements and said brake elements both for conveying and braking each of the sheets.

5,186,451

SHEET PAPER FEED APPARATUS HAVING VACUUM FEED ROLLERS

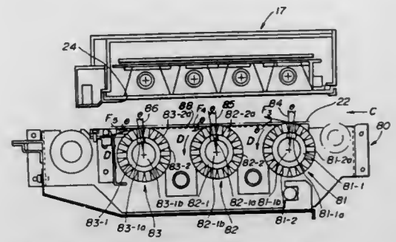
Naoto Hirao, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 7, 1991, Ser. No. 637,772

Claims priority, application Japan, Jan. 18, 1990, 2-10397; Jan. 18, 1990, 2-10398

Int. Cl.[5] G03G *15/00*

U.S. Cl. 271—196 **9 Claims**



1. A sheet paper feed apparatus, comprising:

(a) a roller that rotates in a direction of sheet paper feed and has a plurality of holes around its periphery,

(b) a hollow fixed center shaft that supports said roller rotatably and has an opening on a side of a surface of sheet paper that is fed, and

(c) a negative pressure source communicating with said hollow fixed center shaft, rotation of said roller causing said peripheral holes to successively communicate with said opening, thus creating a suction action to adhere and feed said sheet paper,

wherein said hollow fixed center shaft has said opening at a position shifted by a predetermined angle in the direction of sheet feed with respect to a line that is perpendicular to said sheet paper feed surface and passes through a center of said hollow fixed center shaft;

wherein said plurality of holes of said roller is formed in two circumferential zigzag-shaped rows such that, relative to a longitudinal axis of the roller, a hole in one row is non-collinear relative to an adjacent hole in the other row, and

wherein the two zigzag-shaped rows are arranged so that holes of both of the zigzag-shaped rows always communicated with the opening of the fixed shaft.

5,186,452

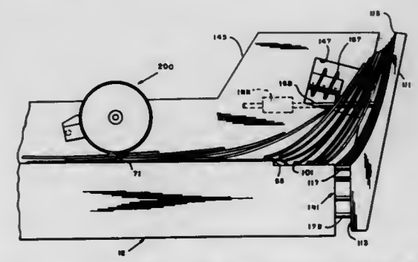
POWER STACKING APPARATUS

Russell W. Holbrook, Middlebury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 5, 1991, Ser. No. 803,275

Int. Cl.[5] B65H *31/06*

U.S. Cl. 271—216 **6 Claims**



1. A power stacker for collecting delivered articles including a housing having a transport deck, a registration wall

VOL 1147 ISS 3 FE 16 1993 UMI

mounted to and supported by said deck generally perpendicular to said deck, a stack wall slidably mounted to said housing at one end of said deck and means for transporting articles across said deck in a shingled manner and causing said article to vertically align and be biased against said stack wall, further comprises:

a power stacker wheel assembly having a motor housing, a motor mounted in said motor housing, a stacker wheel rotatively mounted to said motor housing, transmission means for providing driving communication from said motor rotation to said stacker wheel to cause rotation of said stacker wheel, said power stacker wheel assembly being mounted to said power stacker such that an envelope transported on the deck of said power stacker is caused to pass below said stacker wheel.

5,186,453

INTERMEDIATE FILM STORAGE DEVICE

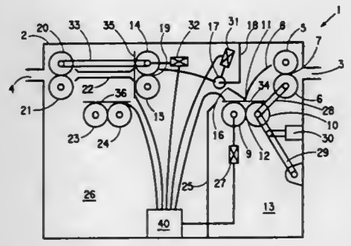
Egbert Kühnert, Erzhausen, Fed. Rep. of Germany, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 29, 1991, Ser. No. 751,482

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1990, 4028094

Int. Cl.[5] B65H *7/14*

U.S. Cl. 271—270 **19 Claims**



1. In an intermediate film storage device for a section of photographic film (**45, 46**) of limited length with a front end and a tail end including feed rolls, exit rolls, intermediate rolls (**9, 10**), and a guiding device (**8**) which guides the section of film (**45, 46**) from the feed rolls to the intermediate rolls (**9, 10**), the improvement comprising means for having the intermediate rolls (**9, 10**) transport the section of film (**45, 46**) front end first into a first buffer (**13**) at a first transport speed and then further transport the section of film (**45, 46**) tail end first from said first buffer (**13**) into a second buffer (**26**) at a second transport speed greater than said first transport speed, the transport of the section of film (**45, 46**) in the second buffer (**26**) being controlled by an arrangement of buffer rolls (**14, 15**).

5,186,454

APPARATUS FOR DISTRIBUTING SHEET MEMBERS

Makoto Kitahara, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1991, Ser. No. 704,601

Claims priority, application Japan, May 28, 1990, 2-139031

Int. Cl.[5] B65H *39/10*

U.S. Cl. 271—288 **8 Claims**

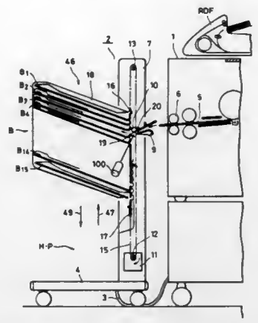
1. An apparatus for sorting sheet members comprising:

a plurality of bin trays for accommodating sheet members;

sheet member discharge means for discharging sheet members into said bin trays;

bin tray moving means for moving said bin trays upward and downward at the time of discharge of each sheet member; and

control means for changing a controlling factor for discharging said sheet members in accordance with upward and downward movements of said plurality of bin trays so that each of the sheet members lands on said bin trays in



generally the same length of time after it is discharged by said sheet member discharge means.

5,186,455

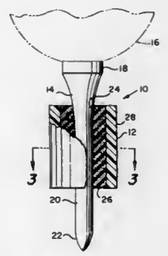
PROTECTIVE COLLAR FOR GOLF TEES

James A. Rosetta, 6255 Middlebranch Rd. NE., North Canton, Ohio 44721

Filed Jan. 27, 1992, Ser. No. 826,458

Int. Cl.[5] A63B *55/00*

U.S. Cl. 273—32 B **19 Claims**



1. A protective collar for golf tees to absorb the shock of impact of a golf club striking the collar and reduce the transmission of force of the golf club against a golf tee positioned within the collar comprising:

(A) an inner tubular cushioning member of soft resilient material;

(B) the cushioning member having a golf tee shank receiving hole extending axially therethrough, said hole being of a smaller diameter than the outside diameter of 0.150 inches (3.18 mm) of a standard golf tee shank when said collar is not positioned on a golf tee; and

(C) a circumferentially continuous outer tubular cover member surrounding the cushioning member in intimate contact therewith;

(D) said cover member being constructed of resilient material which is harder than the material of the cushioning member to withstand the initial high impact of a golf club striking the outside of the collar.

5,186,456

GOLF TEE AND ITS MANUFACTURING METHOD

Katsuji Takeno, 15-47, Nagayoshi Deto 6-chome, Hirano-ku, Osaka, Japan, assignor to Katsuji Takeno, Osaka, Japan

Division of Ser. No. 563,943, Aug. 7, 1990, Pat. No. 5,085,432, which is a continuation of Ser. No. 200,556, May 31, 1988, abandoned. This application Aug. 16, 1991, Ser. No. 745,883

Claims priority, application Japan, May 31, 1987, 62-085310; May 31, 1987, 62-085311; Sep. 19, 1987, 62-235692

Int. Cl.[5] A63B *57/00*

U.S. Cl. 273—33 **5 Claims**



1. A water-soluble golf tee made of a composition consisting essentially of:

90% by weight of pulverized granite;

8% by weight of fibrous pulp;

1.5% by weight of starch; and

0.5% by weight of a preservative and an anti-mildew agent.

5,186,457

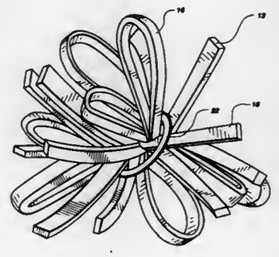
VARIABLE FLIGHT TOY

Eric Cole, 851 S. 600 East, Salt Lake City, Utah 84102

Filed Jul. 22, 1991, Ser. No. 733,867

Int. Cl.[5] A63B *37/14*

U.S. Cl. 273—58 K **9 Claims**



1. A variable flight toy comprising:

a plurality of strips constructed of a resilient material each strip having an essentially uniform length with a width greater than the depth of the strip, said strips each being folded in half and secured together intermediate the length of their folded lengths to form loops with free ends having a ratio of at least two free ends to one loop, said strips of a length which, when, secured form radially projecting ends and loops in a ball shape, which, when projected through the air, said loops and ends provide non-uniform aerodynamic resistance to affect the distance and curvature of the flight of the toy.

5,186,458

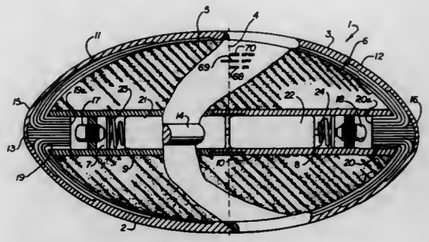
ILLUMINATED PLAYING BALL

Ronald E. Redondo, 2565 "J" Avenue, National City, Calif. 91950

Filed Oct. 21, 1991, Ser. No. 780,046

Int. Cl.[5] A63B *43/06*

U.S. Cl. 273—65 EF **9 Claims**



1. An illuminated ball which comprises:

a rounded body made of resilient material, said body having a transversal tubular cavity;

at least one light-emitting element mounted into said cavity;

an electrical battery;

releasable means for electrically connecting said light-emitting element to said battery;

a first strip of translucent material meridionally mounted around the periphery of said body;

said strip comprising a projection engaged into said cavity, said projection having a end exposed to said light-emitting element

a length of transparent tubular sleeve lining said cavity;

a second strip of translucent material meridionally mounted around the periphery of said body, said second strip merging integrally with said first strip at two opposite poles of said body to form a rib cage; wherein said tubular sleeve has opposite openings at said poles; and

one of said openings is engaged by said projection.

5,186,459

PROCESS FOR STRINGING RACKETS FOR BALL GAMES AND A DEVICE FOR CARRYING OUT THE PROCESS

Hans-Werner Korte-Jungermann, Klein Kollenburg Strasse 58, D-4156 Willich 2(DE), Fed. Rep. of Germany

PCT No. PCT/DE89/00655, § 371 Date Jun. 6, 1991, § 102(e) Date Jun. 6, 1991, PCT Pub. No. WO90/03829, PCT Pub. Date Apr. 19, 1990

PCT Filed Oct. 16, 1989, Ser. No. 671,876

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1988, 3835192

Int. Cl.[5] A63B *51/14*

U.S. Cl. 273—73 A **8 Claims**

1. Apparatus for stringing a racket having a frame with aligned opposing bore holes on opposite sides of said frame with a string having a thickened portion thereon spaced outside of said racket frame on a first side of said frame after said string has been passed through said aligned bore holes, passed over and under any strings which may already be strung in the face of the racket transverse thereto and secured to a second side of said frame;

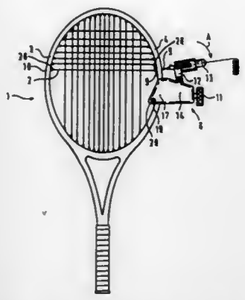
said apparatus including:

a base adapted to be detachably secured on said first side of said racket frame adjacent said bore hole therein;

a claw supported for pivotal movement on said base for engaging a thickened portion formed on said string to exert tension on said string in a direction outwardly of said

VOL 1147 ISS 3 FE 16 1993 UMI

racket frame when said claw is pivoted relative to said frame; and



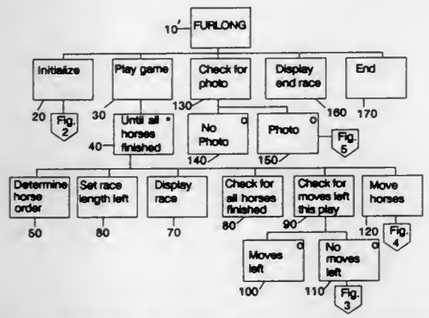
control means for pivotally moving said claw on said base to increase and decrease tension exerted on said string by said claw engaging said thickened portion.

5,186,460

COMPUTER-CONTROLLED RACING GAME

Laura Fongeallaz; Carl Fongeallaz, both of 22 Gibson Place, Glen Rock, N.J. 07452, and Albert Weinstein, Box J, Stanfordville, N.Y. 12581

Filed Aug. 7, 1991, Ser. No. 741,611
Int. Cl.[5] A63F *9/22*
U.S. Cl. 273—86 B **12 Claims**



1. A computerized racing game comprising computer means including:

(a) means for displaying at least part of a race course and race contestants,

(b) means for storing the positions of the contestants during the race, said means for storing comprising a two-dimensional array data structure having Y rows and X columns with the number of rows at least equal to the course length and the number of columns at least equal to the number of contestants, said array comprising contestant-occupiable locations and non-contestant-occupiable free spaces wherein a contestant on a move entering a free space is automatically moved forward to the next contestant-occupiable location,

(c) means for moving said contestants in response to chance, weighted random events, or strategical inputs from players,

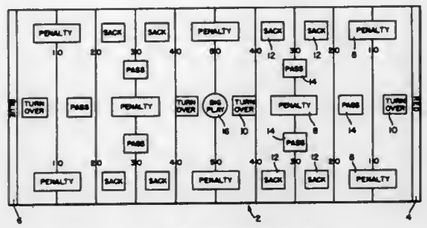
(d) means for displaying the outcome of the racing game.

5,186,461

SIMULATED FOOTBALL BOARD GAME

Donald K. Tucker, 92½ Montcalm, Glens Falls, N.Y. 12801

Filed Aug. 12, 1991, Ser. No. 745,210
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—94 **7 Claims**



1. A simulated football game comprising:

a game board having yard line delineations thereon simulating a football field, said game board further comprising a plurality of areas delineated thereon, each area having an indicia indicative of an occurrence of a particular play;

a field goal die comprising one or more sides, each side having an indicia thereon indicative of distance of a field goal attempt;

a simulated ball capable of sliding along the game board;

a deck of penalty cards, each card having indicia thereon indicative of a type of penalty associated with at least one of said particular plays;

a deck of pass cards, each card having indicia thereon indicative of results of a pass play associated with at least of one said particular plays;

a bid play die having indicia thereon indicative of results of a bid play, said big play die capable of being rolled when said ball comes to rest on an area of the board having indicia thereon indicative of an instruction to roll the big play dei; and

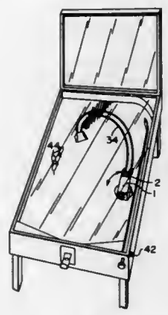
field goal post means for flicking the simulated ball therethrough during a field goal attempt.

5,186,462

OSCILLATING BALL CANNON

Carl Biagi, Chicago; Steve Ritchie, Evanston, and Dwight Sullivan, WoodDale, all of Ill., assignors to Williams Electronics Games, Inc., Chicago, Ill.

Filed Feb. 25, 1992, Ser. No. 841,403
Int. Cl.[5] A63B *71/04*
U.S. Cl. 273—129 S **13 Claims**



1. A play feature for a pinball game having an inclined play field supporting a rolling ball, comprising:

a) means for receiving a ball during the course of game play;

b) means for rotating said means for receiving a ball relative to the play field; and

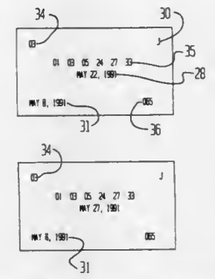
c) means for projecting the ball from the means for receiving a ball while said means for receiving a ball is being rotated by said means for rotating and means for arming said means for projecting the ball only during a portion of its rotation.

5,186,463

METHOD OF PLAYING A LOTTERY GAME

Thomas C. Marin, 2050 Geoffrey Dr., Willow Grove, Pa. 19090; Scott J. Fields, 163 Orchard Ct., Blue Bell, Pa. 19422, and Stephen B. Richter, 1620 Norristown Rd., Ambler, Pa. 19002

Filed May 29, 1991, Ser. No. 707,119
Int. Cl.[5] A63F *3/06*
U.S. Cl. 273—138 R **1 Claim**



1. A method for playing a lotto type lottery game comprising:

selling a first plurality of lottery tickets for a lotto style lottery game in which prizes are paid out at both the jackpot and sub-jackpot levels;

drawing a first winning combination; and

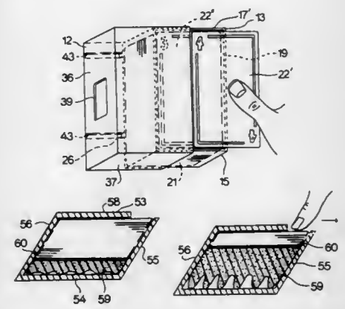
selling a second plurality of tickets for a subsequent game such that said first plurality of lottery tickets may be reutilized for either the jackpot or a sub-jackpot prize level of said subsequent game, said first and second plurality of tickets containing a code which indicates their sequence between jackpot drawings.

5,186,464

CARD DEALING CASE

Stewart Lamle, 3 Fordham Hill Oval, Suite 15F, Bronx, New York City, N.Y. 10468

Filed Oct. 25, 1991, Ser. No. 782,571
Int. Cl.[5] A63F *1/14, 1/10*
U.S. Cl. 273—149 R **22 Claims**



1. A card dealing case comprising a housing having a horizontal base and an open top with a rim, means defining a ramp surface extending from the housing interior to the rim, and means locating a deck of cards stacked, face down, parallel to the base, therein with a leading edge of an uppermost card in alignment with the ramp surface and comprising means biassing the deck towards the top of the housing;

cover means releasably engagable with the housing to close the top retaining the deck in the housing;

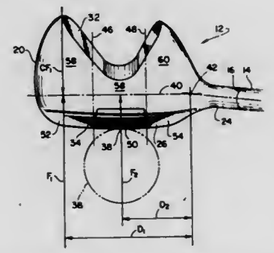
whereby uppermost cards can be dealt horizontally by sliding them sequentially, one-by-one, leading edges first from the top of the pack up the ramp surface and out from the housing by downward and forward pressure of the dealer's hand.

5,186,465

GOLF CLUB HEAD

Robert I. Chorne, 709 Jackie La., Baldwin, N.Y. 11510

Continuation-in-part of Ser. No. 643,860, Jan. 22, 1991, abandoned. This application Jul. 12, 1991, Ser. No. 729,173
Int. Cl.[5] A63B *53/04*
U.S. Cl. 273—167 H **1 Claim**



1. An improved golf club head of the driver type having a hosel, a front face and a shaft having an elongated axis connected to extend from a first heel end of said head, said head comprising a centrally located first central ball-striking zone bounded by toe and heel ball-striking zones on said front face, a first head mass rearwardly adjacent to said first ball-striking zone and second and third head masses rearwardly adjacent said second and third head zones, respectively, said second and third masses being approximately equal and each of said second and third masses being substantially greater than said first mass to minimize torsion effects about said shaft axis due to ball contact with either of said second or third zones, said first, second and third zones being dimensioned to provide an overall preferred ball-striking zone of large size, said second and third masses extending rearwardly a substantially greater distance than said first mass and cooperatively defining a head having a substantial recess extending vertically in the periphery of the head rearwardly of said face between said second and third masses.

5,186,466

TOURNAMENT FISHING GAME APPARATUS

Michale F. Mudd; Kenneth W. Mudd, and Kevin Mudd, all of Rt. 2, Box 225 Booker Rd., Springfield, Ky. 40069

Filed Jan. 27, 1992, Ser. No. 826,035
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—244 **2 Claims**

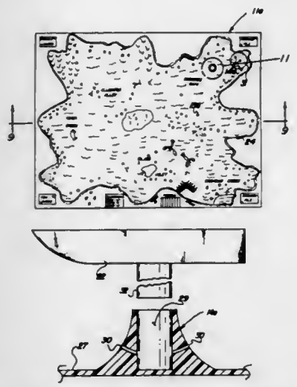
1. A tournament fishing game apparatus, comprising,

a game board, the game board including a simulated lake upon a top surface of the game board, wherein the simulated lake includes a circuitous lake perimeter, including a plurality of coves, and

a circuitous game path defined within the simulated lake within the lake perimeter, wherein the game path includes first spaces and second spaces, and

VOL
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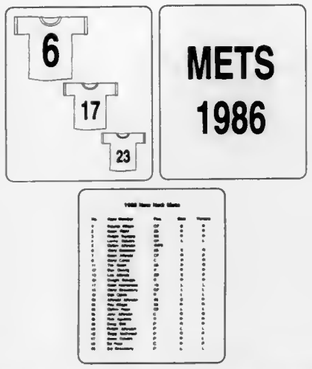
a plurality of first cards associated with the first spaces, and
a plurality of second cards associated with the second spaces, the first cards and the second cards positioned upon the game board adjacent the lake perimeter exteriorly of the simulated lake, and
a plurality of tokens, wherein a single token is awarded each player, and the token is directed along the game path, whereupon a player landing upon a first space is directed to follow directions on one of the first cards, and
said player landing upon a second space is directed to follow directions on one of the second cards, and
each player is provided a game score card to effect totalling of points directed by the first cards, and
a dice member to direct players about the game path by chance, and



the lake perimeter defines a wall extending upwardly of the game board, and a game board floor is defined within the wall, and a fluid trough is defined within the wall about the game board floor, and a fluid positioned within the fluid trough, and the first spaces and the second spaces are each defined as a post member extending upwardly relative to the game board floor, and each post member includes a cavity directed within the post member extending from an upper distal end of each post member, and each cavity including a plurality of drain ports directed from the cavity through the post member exteriorly thereof to permit projection of fluid through the drain ports, and each token including a token floor, and each token floor includes a token plug, and each plug is arranged for complementary reception within the cavity of each said post member.

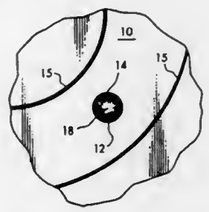
5,186,467
SPORTS GAME
Leonard Chasin, 220 Everit Ave., Hewlett Harbor, N.Y. 11557
Continuation of Ser. No. 574,278, Aug. 28, 1990. This application Jan. 23, 1992, Ser. No. 826,221
Int. Cl.[5] A63F *9/18*
U.S. Cl. 273—298 **8 Claims**

1. A sports game apparatus which comprises:
(a) means for generating a number corresponding to a uniform number of a team member, such means having a first deck of cards composed of a plurality of cards, each card having a first side and a second side, with one side of each card having a uniform number printed thereon;
(b) means for generating a list of team members and their corresponding uniform numbers for a particular team in a particular year, such means having a second deck of cards composed of a plurality of cards, each card having a first side and a second side, with a team name and year printed on the first side of each card and a list of team members and their corresponding uniform numbers printed on the second side of each card; and



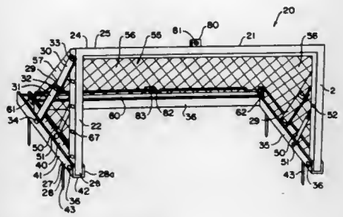
(c) means for recording correctly guessed team member-/uniform number combinations.

5,186,468
FIREARMS TARGET
Clifford L. Davies, 54 West Acres, Steamboat Springs, Colo. 80477
Filed Dec. 10, 1991, Ser. No. 805,865
Int. Cl.[5] F41J *1/00, 5/24*
U.S. Cl. 273—378 **18 Claims**



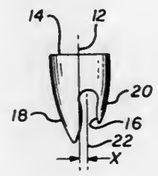
1. A firearms target comprising:
a target sheet having a front target surface of at least one color and a rear surface, said target sheet permitting a projectile striking said target sheet to pierce said target sheet leaving an opening through said target sheet of substantially the same size as said projectile; and
a backing sheet attached to said rear surface of said target sheet having a contrasting color to said target sheet color, said backing sheet being made of a dry woven fabric permitting said projectile to pierce said backing sheet leaving a multitude of severed fabric strands extending into the area of said backing sheet pierced by said projectile, whereby said contrasting color of said severed fabric strands is visible through said opening in said target sheet to provide a visible indication of the path of said projectile.

5,186,469
FOLDABLE SOCCER GOAL FOR EASY STORAGE
George Terris, 44 Floyd Ave., Tewksbury, Mass. 01876
Filed Dec. 11, 1991, Ser. No. 805,015
Int. Cl.[5] A63B *63/04*
U.S. Cl. 273—400 **13 Claims**



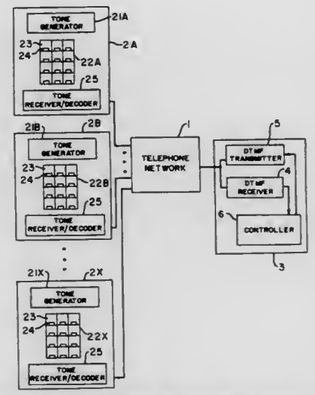
1. A soccer goal comprising:
A. a U-shaped, open-ended housing having leg means extending to free ends thereof and an open top for defining a U-shaped recess,
B. a U-shaped open-ended frame means having leg means extending to free ends thereof, said the free ends of said legs of said housing and frame means being connected on a common axis whereby said U-shaped frame means can rotate relative to said housing, said frame means and housing being dimensioned so that said frame means can nest in said housing in a storage position,
C. toggle means connected between said frame means and housing for allowing the relative displacement of said frame means and housing to an erect position and for releasably locking said frame means and housing in an essentially erect position, and
D. net means attached to said frame means and housing for enclosing the sides defined by said frame means when said frame means is in the erect position whereby said leg means of said frame means constitute goal posts for the soccer goal.

5,186,470
OFFSET ARROW NOCK
James L. Easton, Los Angeles, and Gary W. Filice, Moorpark, both of Calif., assignors to Easton Aluminum, Inc., Van Nuys, Calif.
Filed May 18, 1992, Ser. No. 884,439
Int. Cl.[5] F42B *6/06*
U.S. Cl. 273—416 **16 Claims**



1. An arrow nock having a first axis which is to be positioned coaxially with the centerline of an arrow, an arrow connecting end which is substantially centered on said first axis, a second axis parallel to said first axis, said second axis being spaced from said first axis by a distance in the range of from 0.010" to 0.060", and a bowstring receiving groove opening away from said arrow receiving end, said groove being centered on a plane (FIG. 2A-2D) containing said second axis laterally spaced from and parallel to a plane containing said first axis.

5,186,471
INTERACTIVE TELEPHONE GAMING SYSTEM
Jan Vancraeynest, White Plains, N.Y., assignor to Nynex Corporation, New York, N.Y.
Filed Jun. 21, 1991, Ser. No. 719,146
Int. Cl.[5] A63F *9/24*
U.S. Cl. 273—439 **19 Claims**



1. An interactive telephone gaming apparatus for use in a telephone network which supports transmission of standard DTMF tones to and from telephone stations connected to the network, the gaming apparatus comprising:
means for generating and transmitting one or more standard DTMF game tones to a telephone station over said telephone network;
means for receiving one or more standard DTMF telephone station tones from said telephone station over said telephone network; and
control means controlling said generating and transmitting means and said receiving means and including comparing means for comparing the one or more DTMF telephone station tones received by said receiving means with the one or more DTMF game tones transmitted by said generating and transmitting means and for enabling signalling to be provided to said telephone station indicative of said comparison;
whereby upon said telephone station receiving the one or more game tones transmitted by said generating and transmitting means, a player at said telephone station can operate said telephone station to cause DTMF telephone station tones to be transmitted and received by said receiving means so that said signalling enabled by said control means is based on a comparison of whether said DTMF telephone station tones caused to be generated by said player match said game tones transmitted by said generating and transmitting means.

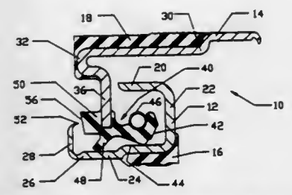
5,186,472
UNITIZED RADIAL SHAFT SEAL
Richard A. Romero, Farmington Hills, Mich., and Jesus Bengoa, Durango, Spain, assignors to Federal-Mogul Corporation, Southfield, Mich.
Filed Jun. 25, 1991, Ser. No. 720,343
Int. Cl.[5] F16J *15/34*
U.S. Cl. 277—37 **2 Claims**

1. A unitized seal, comprising:
a first seal casing comprising an axially-extending portion leading to a radially-extending unitizing flange, said unitizing flange having an axially-extending tip portion formed thereon;

VOL 1147 ISS 3 FE 16 1993 UMI

a second seal casing comprising an axially-extending portion leading to a radially-extending flange portion;

an annular, axially-extending bumper formed of an elastomeric material and carried by said radially-extending flange portion of said second seal casing and confronting said axially-extending tip portion of said first seal casing, said bumper and said tip portion each being dimensioned such that during operation of said unitized seal said elastomeric material of said bumper prevents said axially-



extending tip portion of said first seal casing from contacting said second seal casing so as to prevent contact between said first and second seal casings and such that, upon installation and rotation of said seal, said axially-extending tip portion slices into said bumper to form a 360° seal between said tip portion and said bumper; and

seal lip means mounted to said unitized seal and extending between said first and second seal casings so as to provide a fluid seal therebetween.

5,186,473

DEVICE FOR SEALING A GAP BETWEEN TWO RELATIVELY MOVING SURFACES

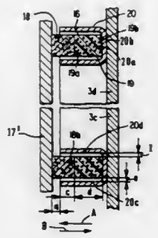
Bernd Windges, Mönchengladbach, and Ferdinand Leifeld, Kempen, both of Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany

Filed Oct. 25, 1991, Ser. No. 783,116

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1990, 4034841

Int. Cl.[5] F16J *15/34*

U.S. Cl. 277—81 R **11 Claims**



1. In a fiber processing machine including a rotary fiber processing roll having a substantially radial end face; a stationary machine wall component having a wall surface facing said radial end face and being at a clearance therefrom; and a seal unit situated in said clearance for providing a seal between the wall surface and the radial end face; the improvement in said seal unit comprising

(a) an annular, low-friction, wear-resistant sealing element made of felt and having a sealing face and a reverse face opposite the sealing face; the sealing element projecting axially beyond said radial end face; and

(b) a spring made of an annulus of axially resiliently compressible plastic material and having a soft spring characteristic and being in a face-to-face, force-transmitting engagement with said reverse face.

5,186,474

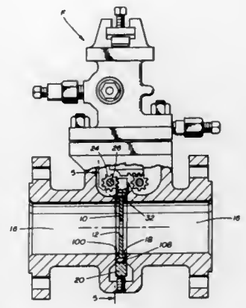
SEAL RING FOR ORIFICE PLATE

James L. Jacobs, 2031 Denais, Duson, La. 70529

Filed Dec. 3, 1991, Ser. No. 801,750

Int. Cl.[5] F16J *15/00*

U.S. Cl. 277—166 **7 Claims**



1. A seal ring for maintaining the radial position of a first plate in a second plate having a circular bore extending therethrough, the seal ring comprising:

a flexible, pliant body having an inner periphery containing an annular recessed groove for receiving and sealingly engaging the first plate, and said body having an outer periphery which is received by the circular bore of the second plate; and

a plurality of circumferentially spaced pins positioned in said body in a direction perpendicular to the first plate, wherein each said pin is substantially in direct contact with the first plate and the second plate for maintaining the radial position of the first plate in the second plate.

5,186,475

GASKET HAVING RETAINER ELEMENT FOR REED VALVE INTEGRALLY FORMED THEREWITH

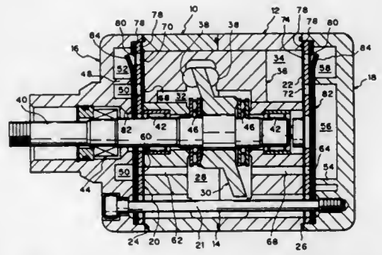
Katsunori Kawai; Atsushi Fukaya, and Toshiyuki Nakajima, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusbo, Kariya, Japan

Filed May 7, 1992, Ser. No. 879,620

Claims priority, application Japan, May 9, 1991, 3-32022[U]

Int. Cl.[5] F16J *15/00;* **F04B** *25/04*

U.S. Cl. 277—181 **11 Claims**



1. A gasket for a reed valve comprising a plate-like gasket body having at least one retainer element integrally formed therewith, said retainer element providing a sloped bearing surface for holding the reed valve at a given angle, said retainer element being defined by a pair of curved outer contour lines substantially included in a plane of said gasket body and by a pair of curved inner contour lines disposed between said curved outer contour lines and above the plane of said gasket body, the sloped bearing surface of said retainer element being extended between said curved outer contour lines, and each of side walls of said retainer element being extended from one of said curved outer contour lines to a corresponding one of said curved inner contour lines.

5,186,476

CLAMPING DEVICE FOR GRIPPING A TOOL IN A TOOL CARRIER

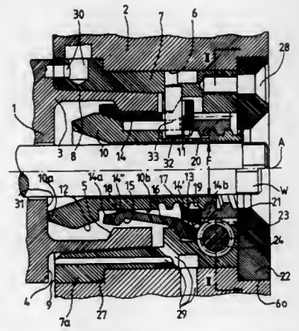
Helmut Heel, Lengenwang; Manfred Fauter, Faistenoy; Peter Mohr, Wiggensbach; Franz Friedl, Marktoberdorf, and Hans Kettel, Riederich, all of Fed. Rep. of Germany, assignors to Ott Maschinentechnik GmbH, Kempten, Fed. Rep. of Germany

Filed Mar. 22, 1991, Ser. No. 674,554

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1990, 4009991; Sep. 11, 1990, 4028775

Int. Cl.[5] B23B *31/42*

U.S. Cl. 279—2.03 **25 Claims**



1. In a clamping device for gripping a tool in a carrier in a turret of a machine tool, the clamping device having a conical or cylindrical hollow centering extension provided on the tool and an abutment surface adjoining the centering extension and extending perpendicularly to a central axis of the clamping device, a tool receptacle provided in the carrier and which has a receiving bore matched to the centering extension and an end face adjoining the bore and extending perpendicularly to the central axis and against which the abutment surface can be pressed, and a plurality of clamping jaws movable radially with respect to the central axis, acting on the centering extension and on a conical surface fixed with respect to the carrier and the tool receptacle and which can be pushed radially outwards by means of an axially movable clamping arrangement, the clamping arrangement comprising a clamping sleeve movable coaxially with respect to the central axis, also engaging in the centering extension and provided with a clamping cone which is arranged at an axial distance from a second clamping cone, the clamping jaws being arranged concentrically with respect to the clamping sleeve and substantially parallel to the central axis in the clamping position and being supported in each case by one end against the clamping cones, and the clamping jaws having at both their ends clamping surfaces whose angular position as regards the central axis is adapted to the conical surface of the tool receptacle and to a conical surface in the centering extension which is oppositely directed with respect to that conical surface, so that during the clamping process proper surface contact exists between the clamping surfaces and the conical surfaces, the improvement wherein the clamping arrangement moreover comprises a clamping ring or collet movable in the opposite direction to the clamping sleeve and bearing the second clamping cone, which faces towards the first clamping cone, and wherein the collet is movable axially relative to the clamping sleeve by means of a clamping nut screwable on the sleeve.

5,186,477

DRUM CHUCKING DEVICE

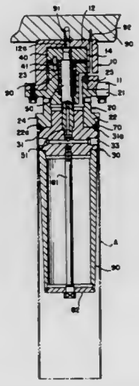
Toru Nakazawa, and Katsuya Kitaura, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jul. 27, 1990, Ser. No. 558,379

Claims priority, application Japan, Jul. 28, 1989, 1-197175

Int. Cl.[5] B23B *31/40*

U.S. Cl. 279—2.09 **1 Claim**



1. A drum chucking device for chucking a drum to keep it vertical while said drum is immersed in a coating liquid to be coated with said coating liquid on its outer circumferential surface,

said chucking device comprising:

upper and lower pressure members which can be moved toward and away from each other on a longitudinal axis, the lower end portion of said upper pressure member having a tapered peripheral surface tapering toward the lower end thereof, and the upper end portion of said lower pressure member having a tapered peripheral surface tapering toward the upper end thereof; and

an annular elastic member fitted between said tapered peripheral surfaces of said pressure members;

wherein said pressure members are moved away from each other on said longitudinal axis to cause said elastic member to contract, thereby allowing said elastic member to be inserted into said drum, and said pressure members are moved toward each other to cause said tapered peripheral surfaces to press said elastic member in a direction which is radially outward with respect to said longitudinal axis, thereby allowing said elastic member to tightly contact the inner circumferential surface of said drum to hold said drum;

said further wherein said lower pressure member is provided with a gas ejection passage into which gas is discharged from said drum, and said upper pressure member is also provided with a gas ejection passage which communicates with said gas ejection passage of said lower pressure member.

5,186,478

TOOL CHUCK FOR A TURNING MACHINE SUCH AS A DRILL

Claude V. L. Amyot, Doubs, France, assignor to Etablissements Amyot S.A., Pontarlier, France

Filed Dec. 11, 1990, Ser. No. 625,363

Claims priority, application France, Dec. 11, 1989, 89 17200

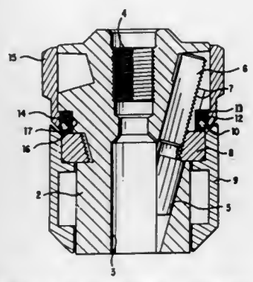
Int. Cl.[5] B23B *31/12*

U.S. Cl. 279—62 **9 Claims**

1. A tool chuck for a machine with a rotating motor shaft, comprising:

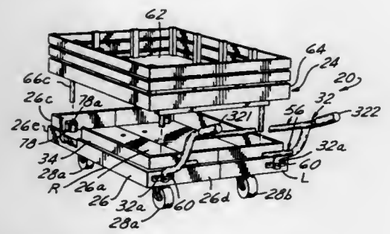
VOL 1147 ISS 3 FE 16 1993 UMI

a body mountable on a motor shaft of a machine at a first end of said body and containing a plurality of bores which converge towards a second end of said body;
a plurality of jaws slidably mounted on said bores and comprising external threads;
a first sleeve surrounded and rotatable around said body, said first sleeve comprising a nut in threaded engagement with said external threads of said jaws, said nut having a nut face which faces said first end of said body;
a series of balls interposed between said nut face and said body;



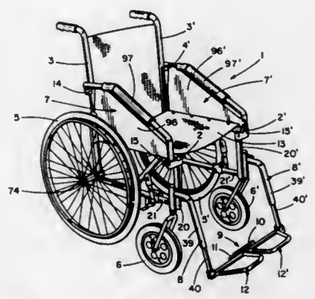
a first ring made of a hard material interposed between said balls and said body; and
a second ring made of a material which exhibits shock-absorbent characteristics interposed between said first ring and said body, said second ring being locked against said body, the hard material of said first ring being substantially harder than the shock-absorbent material of said second ring, and the shock-absorbent material of said second ring being substantially more shock-absorbent than the material of said body and said hard material of said first ring.

5,186,479
MULTI-FUNCTION CART
Henry C. Flowers, 19032 W. Davison, Detroit, Mich. 48223
Filed Mar. 20, 1992, Ser. No. 854,228
Int. Cl.[5] B62B *3/02*
U.S. Cl. 280—47.35 **4 Claims**



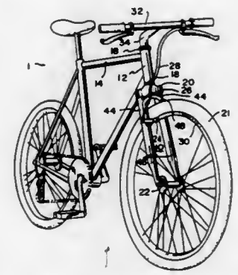
1. A cart comprising:
a cart body, comprising:
a substantially planar bed having a front end, a rear end, a left end, a right end, an upper side and an underside, said front, rear, left and right ends defining a perimeter of said bed;
a rail connected with said bed, said rail running along said perimeter at said upper side of said bed;
wheel means located on said underside of said bed and connected with said bed for providing wheeled movement of said bed;
handle means connected with said front end of said bed for providing a hand hold for a user to move the cart;
a plurality of seat means connected with said upper side of said bed; and
an upper deck structured for being removably connected with said cart body, said upper deck comprising:
a substantially planar upper deck bed having a front end, a rear end, a left end, a right end, an upper side and an underside, said front, rear, left and right ends of said upper deck bed defining a perimeter of said upper deck bed;
an upper deck rail connected with said upper deck bed and running along said perimeter of said upper deck bed at said upper side of said upper deck bed;
a first leg set pivotally connected with said underside of said upper deck bed substantially adjacent said front end thereof, said first leg set comprising a first leg substantially adjacent said right side of said upper deck bed and a second leg substantially adjacent said left side of said upper deck bed;
a second leg set pivotally connected with said underside of said upper deck bed substantially adjacent said rear end thereof, said second leg set comprising a third leg substantially adjacent said right side of said upper deck bed and a fourth leg substantially adjacent said left side of said upper deck bed; and
means connected respectively with said first leg set and said second leg set for selectively retaining said first and second legs and said third and fourth legs in selectively a first position and selectively in a second position, said first, second, third and fourth legs being adjacent said underside of said upper deck bed when in said first position, said first, second, third and fourth legs being perpendicular to said underside of said upper deck bed when in said second position;
wherein said first, second, third and fourth legs have lower end portions which are adapted to be inserted seatably into respective ones of said plurality of seat means to thereby connect said upper deck bed to said cart body a predetermined length from said bed of said cart body.

5,186,480
LIGHTWEIGHT TRANSPORTABLE WHEELCHAIR
Jerry E. Morgan, Clarendon Hills, and David E. Morgan, Downers Grove, both of Ill., assignors to Morgan Technology, Inc., Downers Grove, Ill.
Division of Ser. No. 622,488, Dec. 5, 1990, Pat. No. 5,141,250. This application Aug. 10, 1992, Ser. No. 926,322
Int. Cl.[5] A61G *5/02*
U.S. Cl. 280—250.1 **5 Claims**



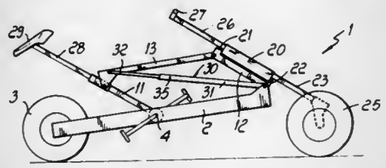
1. A foldable wheelchair having spaced left and right frame subassemblies and a footrest coupled to each frame subassembly, each footrest having a footrest platform, the footrest platforms being mounted for pivotal movement between an upward nonuse position and a coplanar use position, and a releasable interlock rigidly coupling the two footrest platforms together when the wheelchair is in an unfolded condition to strengthen the wheelchair, the interlock including an interlock bar fixed to each of the footrest platforms, each interlock bar of each platform having a free end portion lying along side the other one of the platforms when the platforms are in the coplanar use position and each free end portion having first coupling means for releasable mating with second coupling means located on the other one of the platforms when the platforms are in the coplanar use position.

5,186,481
BICYCLE WITH IMPROVED FRONT FORK WHEEL SUSPENSION
Paul H. Turner, Boulder, Colo., assignor to Rockshox, Inc., Fletcher, N.C.
Filed Apr. 3, 1991, Ser. No. 680,140
Int. Cl.[5] B62K *25/08*
U.S. Cl. 280—276 **21 Claims**



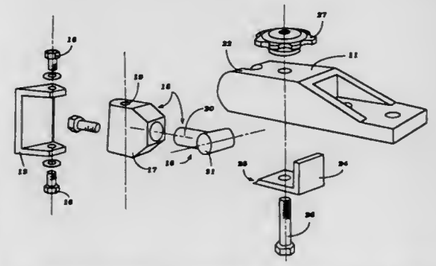
1. A front fork wheel suspension for a bicycle comprising a pair of suspension assemblies, each of which comprises an upper and a lower telescoping tube, the upper tubes of the suspension assemblies being connected by a crown member carrying a steering tube, and the lower telescoping tubes being connected by a U-shaped cross member; wherein the U-shaped cross member has a U-bend portion of a circular cross-sectional shape for resisting torsional forces acting to twist or rotate the suspension assemblies, and having straight leg portions of a rectangular cross section for resisting side loading forces acting to cause the suspension assemblies to move independently of each other.

5,186,482
BICYCLE WITH FOLDING FRAME
Richard Sapper, Via Beretta 3, 20121 Milan, Italy
Filed Mar. 28, 1991, Ser. No. 676,920
Int. Cl.[5] B62K *15/00*
U.S. Cl. 280—278 **20 Claims**



1. Bicycle with folding frame, particularly for use in city centers, comprising a front wheel, a rear wheel, a handlebar, a pedal crank shaft, and a frame which has a lower longitudinal member which rotatably supports said rear wheel and said pedal crank shaft, a saddle upright and a handlebar upright being hinged to said lower longitudinal member, said uprights being mutually substantially parallel and being joined by an upper cross member which is substantially parallel to said lower longitudinal member and is hinged to said uprights to provide an articulated-parallelogram coupling, a steering sleeve being articulated to said handlebar upright, said sleeve supporting said front wheel and being associated with said handlebar, a locking bar being furthermore provided for retaining said frame in operative position, said locking bar being arranged diagonally to said articulated parallelogram, wherein said locking bar is constituted by an outer telescoping tubular element and by an inner telescoping tubular element which are mutually slidable, locking means being furthermore provided for locking said bar at a required useful length.

5,186,483
COUPLING ARRANGEMENT
Michael J. Sheppard, Mona Vale, Australia, assignor to Lynline Pty Limited, Sydney, Australia
PCT No. PCT/AU88/00439, § 371 Date Jul. 6, 1990, § 102(e) Date Jul. 6, 1990, PCT Pub. No. WO89/04260, PCT Pub. Date May 18, 1989
Continuation of Ser. No. 499,314, Jul. 6, 1990, abandoned. This PCT application Nov. 11, 1988, Ser. No. 834,975
Claims priority, applicatioo Australia, Nov. 13, 1987, P15402
Int. Cl.[5] B60D *1/42*
U.S. Cl. 280—494 **3 Claims**

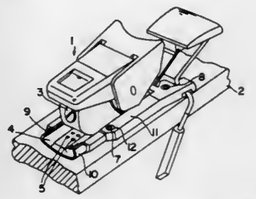


1. A tow coupling to connect a towing vehicle to a trailer, said coupling comprising:
a vehicle bar connected to said vehicle;
a trailer bar connected to said trailer;
an elongated spigot tubular arrangement extending generally vertically from said vehicle bar and having a groove therearound intermediate its ends;
a cup-shaped member, adapted to be received over said spigot, provided with a groove therethrough adapted to align with said groove of said spigot such that a first locking pin may be provided therein and maintain a locking relationship between said cup-shaped member and said spigot while allowing pivotal movement therebetween defining a first pivot axis, said cup-shaped member also provided with a rearwardly extending extension provided with a generally horizontal bar extending transversely therethrough;
a link member provided with a pair of arms at a first end therof and a longitudinal bore at a second end thereof, said arms being provided with through holes adapted to align with said bore of said cup-shaped member and said link member is allowed defining a second axis being in a direction substantially normal to said first pivot axis, and, a groove being provided in a substantially horizontal relationship intersecting said longitudinal bore intermediate the ends thereof; and,
a cylindrical shaft, a first end thereof adapted to be received in said longitudinal bore, and a second end thereof attached to said trailer bar, said first end being provided with a groove provided circumferentially therearound and being adapted to align with said groove of said link member such as to receive a third locking pin such that pivotal movement between said link member and said cylindrical shaft is allowed defining a third pivot axis

VOL 1147 ISS 3 FE 16 1993 UMI

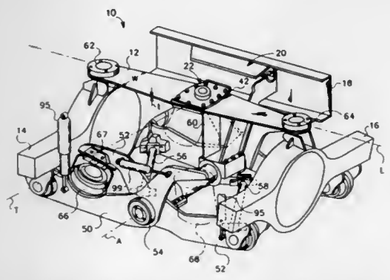
being in a direction substantially normal to each of said first and second pivot axes.

5,186,484
SKI SAFETY BINDING
Bernard Couderc, Annecy, France, assignor to Salomon S.A., Chavanod, France
Filed Jan. 6, 1992, Ser. No. 817,353
Claims priority, application France, Jan. 4, 1991, 91 00207
Int. Cl.[5] A63C *9/08, 9/22*
U.S. Cl. 280—633 **4 Claims**



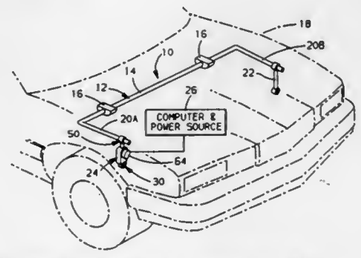
1. Alpine ski safety binding designed to hold a boot supported on a ski and comprising a slide track (5) attached to said ski, said slide track having a pair of edges body (3) longitudinally movable along said slide track (5), and a covering piece (11) which encloses said slide track (5) by closing over said edges (9,10), at least over a portion of the length, of said slide track said covering piece (11) having orifices (13) each of which houses an assembly screw having a screw head, said assembly screw being arranged so that the screw holds said slide track (5) in place while being supported on said covering piece (11), each said orifice (13) having a recess (15) in which said screw head is lodged and a bottom on which said screw head is supported, wherein said bottom of said recess (15) of said orifice is located at the level of the upper surface of said edge (9, 10) of said slide track (5) in the area of said orifice and wherein said orifice (13) has, on the side of said edge (9, 10) of said slide track, a cut-out section (16) through which the upper edge of said slide tracks penetrates said orifice (13) so that, in the screwed position, said screw head is supported partially on the bottom of said recess and partially on the edge of said slide track.

5,186,485
VEHICLE SUSPENSION
Larry W. Orr, Bellevue, and Gordon S. Kranick, Snohomish, both of Wash., assignors to Paccar, Inc., Bellevue, Wash.
Filed Apr. 1, 1991, Ser. No. 678,017
Int. Cl.[5] B60G *5/00*
U.S. Cl. 280—678 **27 Claims**



1. A vehicle suspension for use on the chassis frame of a vehicle for providing a soft ride while controlling roll about a longitudinal roll axis of said vehicle extending in the fore and aft direction thereof, comprising:
forward and rear transverse axles:
force transmitting means connected to said forward and rear axles at opposite ends thereof for allowing said forward and rear axles to move substantially independently of one another in the vertical and for resisting the amount of relative rotational roll movement of the chassis about said longitudinal roll axis such that said vehicle suspension is simultaneously torsionally stiff in roll about said longitudinal roll axis while permitting said axles to move vertically substantially independently of one another; and
resilient central bushing means generally centrally located on the force transmitting means for fastening said force transmitting means to the frame of said vehicle while allowing rotation about the vertical axis of the bushing means and suspension articulation about a transverse axis through the bushing means.

5,186,486
ACTIVE LINK FOR A STABILIZER BAR
Ernest J. Hynds, Meridian, Miss., and Joseph R. Marshalek, Saginaw, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Jul. 19, 1991, Ser. No. 732,888
Int. Cl.[5] B60G *17/015*
U.S. Cl. 280—689 **5 Claims**

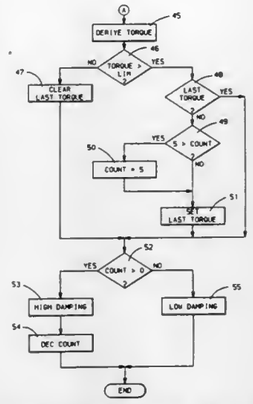


1. A vehicular suspension system comprising:
(A) a control arm;
(B) a stabilizer bar; and
(C) an active link assembly connecting the control arm and the stabilizer bar, including
(a) a housing;
(b) a link rod reciprocally mounted in the housing;
(c) means for mounting the housing to the control arm;
(d) means for mounting the link rod to the stabilizer bar;
(e) gear means provided on the link rod;
(f) drive means mounted in the housing and meshed with the gear means; and
(g) control means including a computer for variably driving the drive means to provide a desired rate and direction of travel of the link rod.

5,186,487
SELECTABLE DAMPING VEHICLE SUSPENSION CONTROL RESPONSIVE TO ENGINE TORQUE
Fred G. Wood, Novi; David C. Poirier, Troy; Douglas C. Campbell, Romulus; Howard H. Ludwig, E. Detroit, and Patrick J. Westphal, Canton, all of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 16, 1991, Ser. No. 747,200
Int. Cl.[5] B60G *11/26;* **G06F** *7/70*
U.S. Cl. 280—707 **2 Claims**

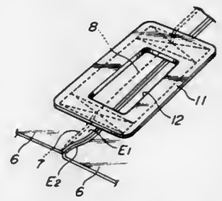
1. In a wheeled vehicle having an engine providing torque through a transmission to at least one of the wheels thereof, suspension apparatus having a damper with a low damping mode and a high damping mode and a suspension control effective to select one of the low and high damping modes, the suspension control comprising, in combination:

means for determining the torque provided from the engine through the transmission to the one of the wheels;
means for detecting when the torque increases from a value not exceeding a predetermined reference to a value exceeding the predetermined reference; and



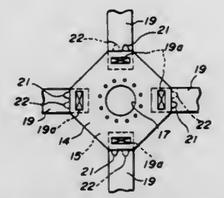
means responsive to the detection of the last means for initiating a first predetermined time period with the damper in the high damping mode.

5,186,488
AIRBAG RESTRAINT SYSTEM
Hiroyuki Takano, Kanagawa, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan
Filed Nov. 14, 1990, Ser. No. 612,455
Claims priority, application Japan, Nov. 16, 1989, 1-297891
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 **12 Claims**



1. An airbag restraint system comprising:
an airbag fluidly connected with a gas generator and adopted to inflate upon being supplied with gas from the gas generator, said airbag including
a bag-shaped section which is formed by sewing at least one sheet material having two end portions, into a bag-shape to form a sewed section, said sewed section elongating generally linearly and including a first sewed part and a second sewed part which is lower in sewing strength than said first sewed part, said second sewed part being openable under an internal pressure of the airbag to discharge the gas inside the airbag during inflation of the airbag; and
a reinforcement patch securely attached to the surface of said bag-shaped section and having a central opening defined by an inner periphery thereof, said reinforcement patch being located so that at last a major part of said second sewed part is within a range defined by the inner periphery of said reinforcement patch, said reinforcement patch being in a generally rectangular frame-shape and elongated along said linearly elongating sewed section, said reinforcement patch covering opposite end portions of said second sewed part to fix the opposite end portions, said reinforcement patch including first and second generally rectangular sections which are parallel with each other and spaced from each other to define said central opening therebetween, said first and second generally rectangular sections extending generally perpendicular to said linearly elongating sewed section and located respectively on the opposite end portions of said second sewed part, and third and fourth generally rectangular sections which are parallel with each other and spaced from each other to define said central opening therebetween, each of said third and fourth generally rectangular sections extending generally parallel with said linearly elongating sewed section and integral with said first and second generally rectangular sections.

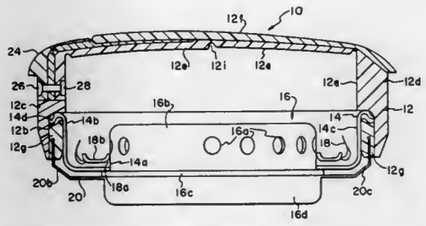
5,186,489
AIRBAG RESTRAINT SYSTEM
Hiroshi Imai, Kanagawa, Japan, assignor to Ikeda Bussan Co., Ltd., Ayase, Japan
Filed Jun. 20, 1991, Ser. No. 718,430
Claims priority, application Japan, Jun. 22, 1990, 2-164772
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—728 **8 Claims**



1. An airbag restraint system comprising:
an airbag fluidly connected with a gas generator and adapted to be supplied with gas from the gas generator, said airbag including:
a bag-shaped section including a first sheet member having a central opening through which gas is supplied into the bag-shaped section from the gas generator, and a second sheet member being connected at its outer peripheral portion with the first sheet member to define a gas chamber which is to be filled with the gas from the gas generator;
a suspension belt connecting the first and second sheet members at their inner surfaces to restrict a projection of the bag-shaped section during inflation of the bag-shaped section;
a pair of belt catch members between which one end section of each suspension belt is sewed, said pair of belt catch members being disposed inside of the bag-shaped section; and
a tongue-like member secured to at least one belt catch member of said pair of belt catch members so as to project from said belt catch member, the tongue-like member being covered with the suspension belt when the suspension belt is put between the pair of belt catch members.

VOL 1147 ISS 3 FE 16 1993 UMI

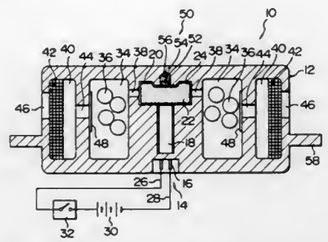
5,186,490
DRIVER COVER INTEGRAL HORN SWITCH WITH SOLID REINFORCEMENT STRUCTURE
Gary V. Adams, Brigham City, and Davin G. Saderholm, Salt Lake City, both of Utah, assignors to Morton International, Inc., Chicago, Ill.
Filed Sep. 23, 1991, Ser. No. 764,017
Int. Cl.[5] B60R *21/16*
U.S. Cl. 280—731 **13 Claims**



1. An inflatable occupant restraint module cover and integral horn switch with solid reinforcement structure for a motor vehicle comprising:
an air bag,
an inflator,
a reaction plate,
a box-like cover for said air bag folded up and encased so as to be inflated only when said inflator operates, said cover being an integral structure that includes an upper wall and a side wall extending downward from a periphery of the upper wall with the side wall secured to said reaction plate on which the air bag and inflator are mounted, said inflator and said air bag, said upper wall and said side wall of said cover being made of solid reinforcement material with said upper wall having soft outer cover material on the upper surface thereof and having a defined break-open area for releasing the air bag while leaving part of the peripheral area of the upper wall connected to the side wall when the air bag is expanded,
a first slot in the upper surface of the upper wall of said cover beneath said soft outer cover material thereon, said slot being so positioned as not to cross over the defined break-open area into another area of the upper surface of the upper wall of said cover,
a membrane switch assembly of generally plane rectangular shape positioned in said first slot, and
means for fixedly attaching said membrane switch assembly to a side wall portion on said cover,
wherein said means for fixedly attaching said membrane switch assembly to said side wall portion of said cover includes a bar the cross section of which is generally a right angle and which is attached to said side wall portion of said cover and extends along an upper corner of said cover.

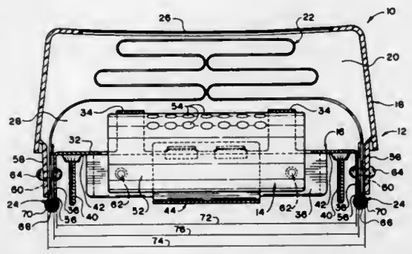
5,186,491
AUTO IGNITION DEVICE
Nobuo Yoshida, Himeji; Kenziro Nishida, Ageo, and Noboru Inoue, Himeji, all of Japan, assignors to Nippoo Kayaku Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 26, 1991, Ser. No. 721,278
Claims priority, application Japan, Jun. 29, 1990, 2-169765
Int. Cl.[5] B60R *21/26*
U.S. Cl. 280—741 **6 Claims**

1. A gas generation device for a vehicle passenger protecting system comprising:
a gas generation casing body comprising:
an ignition unit comprising a first chamber in said gas generation casing body, said first chamber having a gas-tight container containing secondary ignition means;
gas generation means for generating gases when ignited;
and auto ignition means disposed in said gas generation casing body, said auto ignition means comprising:
a second chamber in said gas generation casing body separate from said first chamber, said second chamber being



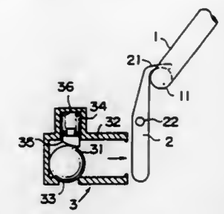
defined by a recess in said casing body, said recess having an opening therein, and sealing means for closing said opening; and
primary ignition means in said second chamber, said primary ignition means being ignitable at a temperature lower than the ignition temperature of said secondary ignition means.

5,186,492
AIR BAG MODULE
Eric W. Wright, Warren; Mark T. Lecznar, Dearborn Hts., and Thomas J. Klena, II, Troy, all of Mich., assignors to TRW Vehicle Safety Systems, Inc., Lyndhurst, Ohio
Filed Aug. 8, 1991, Ser. No. 743,167
Int. Cl.[5] B60R *21/20*
U.S. Cl. 280—743 **13 Claims**



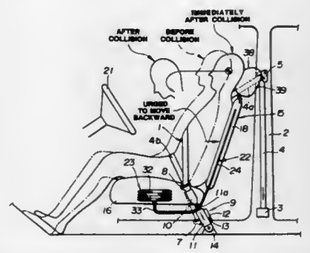
13. Apparatus for use in forming an air bag module, comprising:
a reaction device and a cover fastened to each other and forming a container with an internal cavity, said reaction device forming reaction structure on an exterior portion of said container;
an inflatable air bag disposed substantially in said internal cavity in said container, said inflatable air bag being adapted to be forced through said cover and out of said container when gas under pressure is directed into said air bag; and
a retainer frame located outside of said container, said retainer frame being connected with said air bag;
said retainer frame being located so as to be drawn into force transmitting relationship with said reaction structure on said reaction device as said inflatable air bag is being forced out of said container, to maintain said air bag anchored to said reaction device as said inflatable air bag is being forced out of said container.

5,186,493
ACTUATING MECHANISM FOR SEAT BELT APPARATUS
Tetsuo Tsuji, and Yoshiichi Fujimura, both of Shiga, Japan, assignors to Takata Corporation, Tokyo, Japan
Filed Apr. 19, 1991, Ser. No. 688,164
Claims priority, application Japan, Apr. 23, 1990, 2-108138
Int. Cl.[5] B60R *22/36*
U.S. Cl. 280—806 **6 Claims**



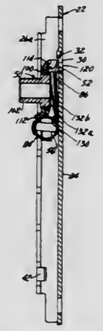
1. An actuating mechanism for actuating a component of a seat belt apparatus having a preloaded resiliently biased driving source adapted to actuate the component upon release of the preload characterized in that there is a trigger that is normally in engagement with the driving source such as to maintain the preload in the driving source, in that the trigger is arranged to be displaced by a force imposed on it and thereupon release the driving source, in that there is an acceleration sensor arranged to release the trigger from engagement with the driving source by applying a force to it, the sensor having an inertia body arranged to move along a path through a fixed distance by an initial force and in that the trigger is located in the path of movement of the inertia body and is directly struck by the inertia body after it has moved dynamically through the fixed distance.

5,186,494
PASSENGER RESTRAINT SYSTEM FOR USE IN AUTOMOTIVE VEHICLE
Yoshifumi Shimose, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Jul. 11, 1991, Ser. No. 728,473
Claims priority, application Japan, Jul. 11, 1990, 2-182907
Int. Cl.[5] B60R *22/36*
U.S. Cl. 280—806 **7 Claims**



1. A restraint system for a passenger in an automobile vehicle comprising:
a seat including a seat cushion and a seat back:
a seat belt arranged to restrain a passenger to said seat;
means for detecting a collision of the automotive vehicle and generating a signal when said collision of the automotive vehicle is detected;
means for providing a tension to said seat belt in response to said signal;
means for allowing movement of the passenger in a direction opposite to a driving direction of the automotive vehicle in response to said signal said movement allowing means being arranged to said seat back; and
means for driving substantially synchronously said tension providing means and said movement allowing means.

5,186,495
ADJUSTABLE SEAT BELT ANCHORAGE
Mohamed Boumarafi, Rochester Hills; Carl Pandell, Sterling Hgts., and Donald A. DiPaola, Mount Clemens, all of Mich., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.
Continuation-in-part of Ser. No. 664,418, Mar. 1, 1991, Pat. No. 5,050,907, which is a continuation of Ser. No. 546,132, Jun. 29, 1990, abandoned. This application Sep. 24, 1991, Ser. No. 764,595
Int. Cl.[5] B60R *22/20*
U.S. Cl. 280—808 **16 Claims**



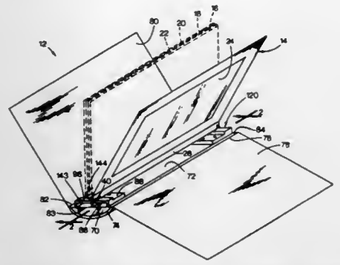
1. An adjustable seat belt anchorage (**20**, **240**) comprising:
a guide rail (**22**) adapted to be secured to a portion of a vehicle (**24**) generally at or above occupant shoulder height, the guide rail (**22**) forming an open channel (**34**), a plurality of pairs of cut-outs or slots (**36**) oppositely positioned in the front walls (**28**) of the guide rail;
a latch plate assembly (**50'**; **50''**; **240**) comprising:
a resilient carrier (**52'**, **52''**) slidingly received within the channel (**34**) comprising a lower carrier plate (**60**); slideable on the guide rail (**22**) and an upper carrier plate (**62**);
a latching mechanism (**54**) biased into the guide rail by the carrier and supported by the upper carrier plate (**62**) and movable within the carrier including a latch bar means (**112**, **114**) extending outwardly from the carrier for engaging a selected pair of cut-outs or slots (**36**) and an attachment means (**102**, **250**) for supporting a D-ring (**140**); wherein the latch bar means includes a bar (**112**) having an extending first portion (**113**) which extends from a plate portion (**106**) and an opposite end (**114**) extending from the plate portion (**106**).

5,186,496
DISPLAY BINDER WITH REMOVABLE STABILIZED PAGES
Katsumichi Seki, Wilsonville, Oreg., assignor to Kambara USA, Wilsonville, Oreg.
Filed Jul. 12, 1991, Ser. No. 728,980
Int. Cl.[5] B42D *3/00*
U.S. Cl. 281—46 **25 Claims**

1. An album for displaying aligned planar pages, comprising:
an elongated rigid spine;
a first retainer mounted on the spine and defining a first slot;
a second retainer mounted on the spine and defining a second slot, the first and second slots being substantially coplanar; and

VOL 1147 ISS 3 FE 16 1993 UMI

a hinge comprising first and second flexible hooks projecting from an edge of a page toward the spine, each hook comprising a first arm and a second arm, the second arm on the



first hook fitting into the first slot and the second arm on the second hook fitting into the second slot, with the second arm of the first hook and the second arm of the second hook pointing toward each other.

5,186,497

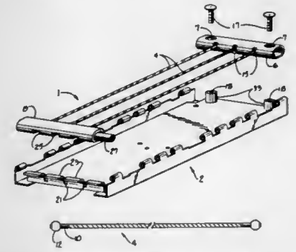
RAPID CHANGE DIRECTORY HOLDER

Stevens Van Pinkerton, Jr., St. Joseph, Mo., assignor to Acoustics Development Corporation, St. Joseph, Mo.

Continuation of Ser. No. 573,676, Aug. 27, 1990, Pat. No. 5,096,227. This application Oct. 15, 1991, Ser. No. 775,848

Int. Cl.[5] B42D *17/00*

U.S. Cl. 281—49 **7 Claims**



1. An apparatus for removably securing a book within a book binder comprising:

a spine having a first spine end and a second spine end, said spine mounted within said book binder;

at least one cable having a first cable end and a second cable end, said cable being adapted for longitudinal placement between pages of the book;

a first cable holder to which said first cable end is attached, said first cable holder having means for releasably engaging said first cable end;

a second cable holder having said second cable end attached thereto;

bracket means at said first spine end for releasably engaging said first cable holder with said first spine end, said bracket means comprising:

a vertical wall extending from said first spine end;

a flange atop said vertical wall and extending beyond said first spine end;

at least one slot extending through said wall and flange for extension of a portion of said at least one cable therethrough upon placement of said first cable holder underneath said flange and against said wall; and

fastener means at said second spine end for connecting said second cable holder to support means at said second spine end and spanning said at least one cable in tension between said bracket means and support means, said tensioned cable precluding displacement of said first cable holder from said bracket means prior to disengagement of said second cable holder fastener means from said support means, whereupon said at least one tensioned cable traverses said spine with the book therebetween.

5,186,498

METHOD FOR IDENTIFYING POSTAGE METER AND MONETARY VALUE STAMPING MACHINES

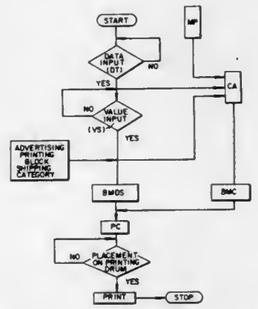
Klaus Dietrich, Berlin, Fed. Rep. of Germany, assignor to Francotyp-Postalia GmbH, Berlin, Fed. Rep. of Germany

Filed Jan. 29, 1991, Ser. No. 647,442

Claims priority, application Fed. Rep. of Germany, Jan. 30, 1990, 4003006

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—67 **1 Claim**



1. A method for identifying postage meter and monetary value stamping machines from printed patterns thereof, which comprises performing microprocessor-controlled printing processes in the machine for forming a printing pattern including a monetary value stamp, a date stamp and a printing block from stored data and current data, forming an identification characteristic from parameters of the machine, including a factory number of the machine and a number of printing operations of the machine in the machine parameters, and numerical values of the printed date, the monetary value and the printing block with a cryptographic algorithm, and temporarily storing the identification characteristic in the form of a multiple-place cryptographic number until being printed, imprinting the identification characteristic in the open in addition to the pattern to be printed, and supplying the temporarily stored printing pattern and the identification characteristic together to a printer control for generating a final printing pattern.

5,186,499

ERASABLE VIDEO CASSETTE LABEL KIT

Kenneth C. Mason, Westminster, Colo., assignor to Magic Label Corporation, Westminster, Colo.

Filed Jul. 9, 1991, Ser. No. 727,752

Int. Cl.[5] B42D *15/00*

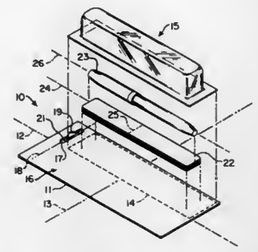
U.S. Cl. 283—81 **5 Claims**

1. An erasable video cassette labeling kit, comprising;

an elongated, rectangular, and generally rigid paperboard base member having a centrally located major axis and an orthogonal minor axis,

an elongated, rectangular, and optically transparent plastic bubble member adhesively fixed to said base member on one side of the major axis of said base member, said bubble member having a centrally located major axis that extends generally parallel to the major axis of said base member, and an orthogonal minor axis that extends generally parallel to the minor axis of said base member,

a stack of individually separate, rectangular, elongated, erasable video cassette labels loosely housed in the bottom of said bubble member, adjacent to said base member, said labels having a centrally located major axis that is positioned generally parallel to the major axis of said bubble member, each of said labels being of a selected color, said labels being formed of four layers, comprising a top layer of optically transparent polypropylene for marking by the use of a marking pen, a tear resistant and colored vinyl polymer layer immediately under said polypropylene



layer, a pressure sensitive adhesive layer immediately under said vinyl polymer layer, and a discardable paper support layer immediately under said adhesive layer, and

an elongate, generally cylindrical, marking pen loosely housed in said bubble member, on top of said stack of labels, said marking pin having a cylindrical axis that is positioned generally parallel to the major axis of said bubble member, and said marking pen containing a dry erasable ink of a color that contrasts to the color of said vinyl polymer layer.

5,186,500

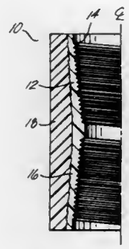
FIBERGLASS TUBULAR COUPLING WITH LINER

Joie L. Folkers, Wichita Falls, Tex., assignor to Ameron, Inc., Pasadena, Calif.

Filed Oct. 9, 1990, Ser. No. 595,272

Int. Cl.[5] F16L *9/14*

U.S. Cl. 285—55 **15 Claims**



1. A pipe coupling comprising:

a threaded liner of thermoplastic material having sufficient strength for coupling with a threaded composite fiberglass reinforced pipe and sufficiently deformable for sealing against the thread of the pipe; and

a wrapping of composite fiberglass reinforced thermoset material over the threaded liner and sufficiently strong for preventing the liner from separating from the pipe when subjected to the fluid pressure within the pipe; the liner having sufficient external surface irregularities for engaging the composite wrapping and preventing withdrawal of the liner from the coupling.

5,186,501

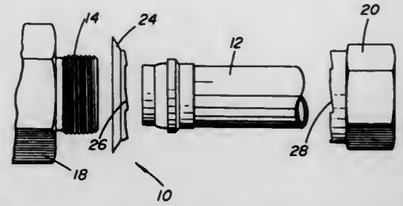
SELF LOCKING CONNECTOR

Michael E. Mano, 18501 S. Dalton Ave., Gardena, Calif. 90248

Filed Mar. 25, 1991, Ser. No. 674,455

Int. Cl.[5] F16L *55/00*

U.S. Cl. 285—89 **4 Claims**



4. A self-locking connector comprising: first and second tubular fittings, at least one end of said first fitting having external threads formed thereon; a nut having internal threads adapted to be threaded to the threads of said first fitting to bring the two fittings into axially aligned mating and sealing relationship as the nut is tightened onto the threads at the threaded end of said first fitting; and a frusto-conical resilient lock washer interposed between said nut and said first fitting, the adjacent edges of said nut and said washer having mating ramps formed thereon, each such ramp having an angle greater than the helical angle of the threads of said first fitting and of said nut, said washer ramps projecting outwardly from the adjacent edge of said washer.

5,186,502

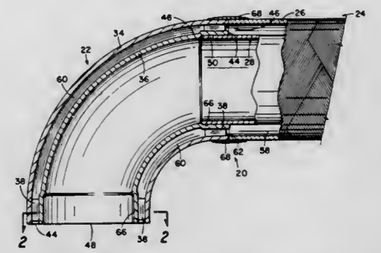
DOUBLE-CONTAINMENT PIPE FITTINGS AND SYSTEM

Carl E. Martin, Sand Springs, Okla., assignor to Fibercast Company, Sand Springs, Okla.

Filed Dec. 11, 1990, Ser. No. 625,837

Int. Cl.[5] F16L *39/00*

U.S. Cl. 285—133.1 **35 Claims**



1. A double-containment pipe fitting for joining sections of double-containment pipe, each section of double-containment pipe including a containment pipe and a carrier pipe positionable inside the containment pipe, the fitting comprising:

a containment housing having a plurality of open ends, each open end being constructed to securely connect to an open end of containment pipe;

a carrier housing having a plurality of open ends constructed and arranged for positioning within the containment housing, each open end being constructed to securely connect to an open end of a carrier pipe; and

a plurality of restraining means, at least one restraining means located at each open end of the containment housing and connected to the inside surface of the containment housing and to the outside surface of the carrier housing, for securely connecting the carrier housing to the contain-

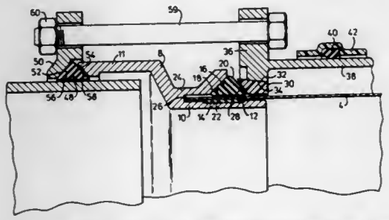
VOL 1147 ISS 3 FE 16 1993 UMI

ment housing and for restraining expansion and contraction of the carrier pipe and containment pipe, the carrier pipe and containment pipe being otherwise unrestrained against expansion and contraction.

5,186,503
DEVICE FOR CONNECTING A THIN-WALLED HOSE WITH A TUBULAR ELEMENT

Johan von Feilitzen, Bor, Sweden, assignor to Forsheda AB, Forsheda, Sweden

Filed Apr. 12, 1991, Ser. No. 684,644
Claims priority, application Sweden, May 31, 1990, 9001981
Int. Cl.[5] F16L *33/22*
U.S. Cl. 285—174 **12 Claims**

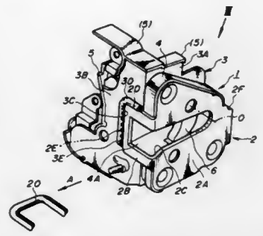


1. A device for connecting a thin-walled hose pulled into a pipe with a tubular element, comprising:
a sleeve-shaped connector element having a first end portion and a second end portion, said element being sealingly connectable at said first end portion with the tubular element by means of a sealing ring for sealing the sleeve-shaped connector element in relation to the tubular element and by a clamping ring for pressing said sealing ring against the connector element and the tubular element, and being sealingly connectable at said second end portion with the thin-walled hose by means of respective first and second annular sealing elements, said first and second sealing elements consisting of a highly elastic material, said first sealing element enclosing said second sealing element in substantially concentric relationship such that an annular space is defined between said first and second sealing elements, said thin-walled hose being positioned in said annular space;
said connector element including a flange portion at its second end portion, said flange portion including a conical surface, said conical surface being engageable with said first sealing element;
a locking ring axially pressed against said first sealing element so that said first sealing element engages said flange portion conical surface to provide a radial pressing of the first sealing element toward the wall of the thin-walled hose, said thin-walled hose being thereby pressed toward the second sealing element, said locking ring having a conical surface and engaging said first sealing element with said conical surface in a manner such that said axial pressing of said locking ring against the first sealing element provides for said radial pressing of the first sealing element against the wall of the thin-walled hose; and
a clamping ring for pressing said locking ring against the wall of the thin-walled hose while being counteracted by an annular surface of said sleeve-shaped connector element for providing a clamping force and thereby an axial locking of the thin-walled hose in relation to the sleeve-shaped connector element.

5,186,504
DOOR LOCK DEVICE

Tatsuyuki Takaishi; Masazumi Miyagawa, and Hitoshi Nakamura, Yokohama, Japan, assignors to Ohi Seisakusho Co., Ltd., Yokohama, Japan

Filed Mar. 19, 1992, Ser. No. 854,408
Claims priority, application Japan, Mar. 29, 1991, 3-20126[U]
Int. Cl.[5] E05C *3/26*
U.S. Cl. 292—216 **17 Claims**

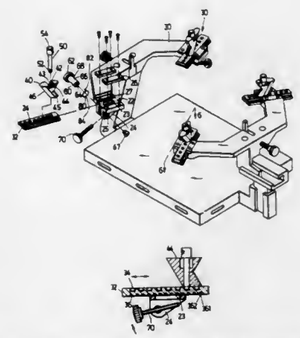


1. A door lock device comprising:
a structural base body by which a latch plate and a control mechanism for said latch plate are operatively carried, said base body being formed with guide groove over and across which said latch plate extends; and
a cover plate directly attached to said structural base body in a manner to cover said guide groove and said latch plate, said cover plate including mutually intersected larger and smaller flat portions which are integral with each other and affixed to side and front portions of said structural base body, said cover plate having an enclosed aperture which extends between said larger and smaller flat portions and through which said latch plate is exposed.

5,186,505
CHUCKING DEVICE OF RACKET STRINGING MACHINE

David T. Chu, 150, Chung Chen Rd., Taichung, Taiwan

Filed Mar. 9, 1992, Ser. No. 848,463
Int. Cl.[5] A63B *51/14*
U.S. Cl. 273—73 A **10 Claims**



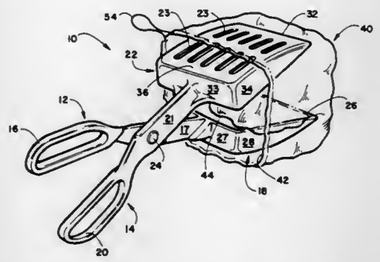
1. An improved racket stringing machine comprising means for chucking, said chucking means mounted on a chucking arm of said stringing machine, said chucking arm comprising a predetermined number of said chucking means and a sliding track located correspondingly to each of said chucking means and facing toward the directions in which a racket frame is fastened and released, said sliding track having a longitudinal slot with an upper width being narrower than a lower width, said sliding track having a through hole located at the center

thereof, said chucking arm further comprising two lugs extending downward by both sides of said through hole of said sliding track, with each of said lugs provided with a circular hole, each of said chucking means further comprising:
(a) a sliding block having an elongated body and cross-sectional profile corresponding to that of said longitudinal slot of said sliding track, said sliding block having a predetermined number of arresting holes disposed axially and spaced apart equidistantly on the bottom surface thereof, said sliding block received in said sliding track in such a manner that it slides along said sliding track;
(b) a clamping block disposed on said sliding block in such a manner that it moves in conjunction with said sliding block;
(c) a pivot member of cylindrical construction having a threaded hole disposed radially and located between said two lugs at the time when said pivot member is arranged horizontally and pivotally in said circular holes of said lugs;
(d) a threaded rod having a free end engageable with said threaded hole of said pivotal member in an inclined manner that it passes through said through hole of said sliding track to urge against said arresting hole; and
(e) a torsion spring fitted over said pivotal member and located between said pivotal member and one of said lugs to press against said threaded rod to urge against said arresting hole.

5,186,506
DEVICE FOR PICKING-UP AND REMOVING ANIMAL EXCREMENT

Edward L. Gale, 6615 Cowles Mountain Blvd., San Diego, Calif. 92119

Filed Mar. 30, 1992, Ser. No. 859,948
Int. Cl.[5] A01K *29/00*
U.S. Cl. 294—1.3 **2 Claims**

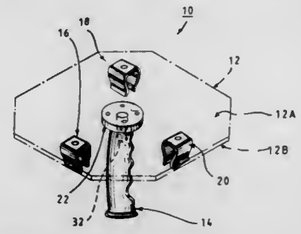


1. A device for picking-up and removing animal excrement and the like comprising:
a pair of elongated tong members each having a front end and a rear end;
means pivotally connecting together said tong members intermediate their ends;
each of said tong members having a loop handle portion at its rear end, an intermediate shank portion and a jaw portion at its front end;
one of said jaw portions being designated a top jaw portion and said other jaw portion being designated a bottom jaw portion;
said top jaw portion having a front edge, a top wall, left and right side walls, and a rear wall that extends transversely to its intermediate shank portion, said left and right side walls having their greatest height where they join said rear wall and their height becomes progressively smaller as they approach the front edge of said top wall where there is no height to said left and right side walls;
said bottom jaw portion having a front edge, a bottom wall, left and right side walls, and a rear wall that extends transversely to its intermediate shank portion, said left and right side walls having their greatest height where they join said rear wall and their height becomes progressively smaller as they approach the front edge of said bottom wall where there is no height to said left and right side walls;
the lateral distance between the respective left and right side walls of said top jaw portion and said bottom jaw portion being substantially the same so that they align with each other when closed together;
the left and right side walls and the rear wall of said bottom jaw portion each having a top edge having a groove extending longitudinally along its length;
the left and right side walls and the rear wall of said top jaw portion each having a bottom edge having a ridge extending longitudinally along its length; and
said respective ridges and grooves providing structure for being detachably interlocking together so that a plastic bag can be gripped between them.

5,186,507
SPACKLING TOOL WITH TOOL HOLDERS

Matthew A. Neidfeld, 240 Bernice Dr., East Meadow, N.Y. 11554, assignor to Matthew A. Neidfeld, East Meadow, N.Y.

Filed Mar. 6, 1992, Ser. No. 847,828
Int. Cl.[5] E04G *21/02*
U.S. Cl. 294—3.5 **15 Claims**



1. A plasterer's hawk comprising:
a blade having a flat working surface and a mounting surface opposite to said working surface, the working surface being capable of holding plaster, morter or spackling material;
a handle having a top end mounted to said mounting surface, the handle having a longitudinal axis which is substantially perpendicular to said working surface; and,
a plurality of retaining means circumferentially attached to said mounting surface about said handle, said retaining means adapted for removably retaining a plurality of spackling or plastering tools.

5,186,508
TRAILER LIFTING FOOT EXTENDER

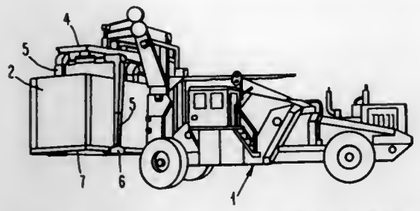
Dennis L. Beecher, Hammonton, N.J., assignor to Consolidated Rail Corporation, Philadelphia, Pa.

Filed Aug. 26, 1991, Ser. No. 750,889
Int. Cl.[5] B66C *1/22*
U.S. Cl. 294—81.51 **20 Claims**

1. In an apparatus for lifting containers having a lifting arm, a a device for supporting an object to be lifted, comprising:
a) a lifting foot connected to said arm and having a first pad extending in a substantially horizontal plane for engaging said object to be lifted;
b) second and third pads disposed on opposing sides, respectively, of said first pad; and
c) means for rotatably coupling said second and third pads to said lifting foot so that said second and third pads rotate into first and second positions, said first position placing said second and third pads into a substantially horizontal plane for engaging said object to be lifted, said second

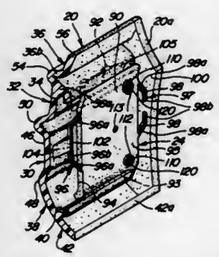
VOL 1147 ISS 3 FE 16 1993 UMI

position placing said second and third pads into a plane disposed at a predetermined angle from said horizontal



plane for preventing said second and third pads from engaging said object to be lifted.

5,186,509
BODY SIDE MOLDING ATTACHMENT
Zinovy Tyves, Tecumseh, Canada, assignor to General Motors Corporation, Detroit, Mich.
Filed Jun. 1, 1992, Ser. No. 896,088
Int. Cl.[5] B60R *13/04*
U.S. Cl. 296—1.1 **5 Claims**



1. A molding assembly for attachment to a vehicle body panel having pairs of spaced openings at spaced transverse locations comprising:

an elongated plastic reveal molding having a front surface, a rear surface, first means integral with the rear surface which define a pair of spaced channels facing toward each other and a plurality of second means including tapered ramps which are integral with the rear surface, said second means defining spaced pairs of transversely extending abutment surfaces at spaced longitudinal locations along the molding,

a plurality of molding retainer clips each comprising a generally planar body having opposed spaced ends and opposed spaced sides, a pair of spaced openings through said body and flexible strap means extending transversely of each of said sides, said strap means being flexible toward and away from its adjacently located side of said body and toward and away from a plane containing said body of said clip,

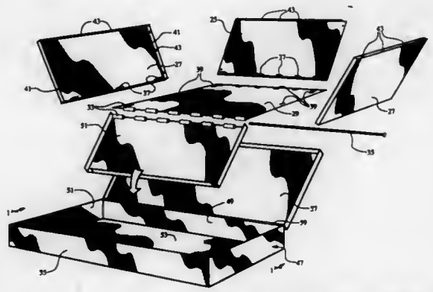
said body of said each retainer clip being slidably receivable adjacent its opposed ends within said first means defining said channels on said molding and being slidable along said channels until they are snap fittingly received between a pair of said spaced pairs of said transverse abutment surfaces so that said clips can be preassembled to said molding, said strap means being deflectable toward the plane of said body of said clip as they pass over said ramps as said clip is slid along said channels and then returning to their free state position in which said strap means are disposed between said abutment surfaces, said strap means being biasingly engageable with said abutment surfaces when the clips are preassembled to said molding,

a third means for mounting said molding adjacent its longitudinal midpoint to said panel, said openings in said fastener clips being substantially aligned with a pair of said spaced openings in said panel when said molding is mounted adjacent its midpoint to said panel,

and fastener means insertable through said pairs of openings in said panel from its side opposite said molding and threadably engageable with said clips along their through openings for securing said clips to said panel and for retaining said molding to said panel at locations spaced from its midpoint,

said transverse abutment surfaces on said molding causing said strap means on said fastener clips to deflect so that longitudinal sliding movement of said molding relative to said clips can take place due to thermal expansion and contraction of said molding and with such expansion and contraction taking place evenly from said midpoint of said molding.

5,186,510
FOLDABLE PICKUP TRUCK TOOL BOX
Carroll E. Stapp, 2170 Golden Arrow, Las Vegas, Nev. 89109
Filed Jan. 31, 1992, Ser. No. 829,700
Int. Cl.[5] B60R *9/00*
U.S. Cl. 296—37.5 **13 Claims**



1. A tool box for a pickup bed, the bed being of a type having a floor and side panels, the tool box comprising in combination:

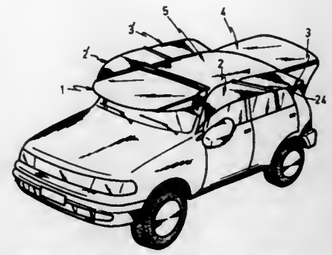
a rectangular lower compartment dimensioned to fit within the side panels of the bed, the lower compartment having a lower compartment back wall, two lower compartment side walls, a lower compartment bottom, and a front door which opens and closes to provide access to an interior of the lower compartment,

a rectangular upper compartment having an upper compartment bottom, an upper compartment back wall, two upper compartment side walls, an upper compartment front wall, and a top, the upper compartment having a greater dimension from one upper compartment side wall to the other upper compartment side wall than a dimension from one lower compartment side wall to the other lower compartment side wall;

fastening means for fastening the upper compartment to the lower compartment;

top hinge means for opening and closing the top of the upper compartment to provide access to an interior of the upper compartment; and folding means interconnecting the walls, the bottom, and the door of the lower compartment for folding the walls, the bottom, and the door of the lower compartment from a collapsed position parallel with each other and stacked on one another for storage in the upper compartment to an erect rectangular position.

5,186,511
SUN SHADE FOR THE WINDSHIELDS AND WINDOWS OF AN AUTOMOBILE
Tsong-Ching Hwang, No. 54-5, Sec. 1, Hsin Sheng S. Road, Taipei, Taiwan
Filed Jan. 14, 1992, Ser. No. 820,245
Int. Cl.[5] B60J *1/20*
U.S. Cl. 296—95.1 **2 Claims**



1. A sun shade for the windshields and windows of an automobile comprising:

a) a front shield including a top cover plate and a frame;

b) the top cover plate including a pair of side covers, each side cover extending downwardly from a first folded portion, a first positioning portion, and a second folded portion joining the cover plate to the first positioning portion;

c) the frame including a second positioning portion for attachment to a front windshield frame, means for attaching the first positioning portion to the second positioning portion, a rubber pad for disposition between the second positioning portion and the front windshield frame, a pair of toothed elements at opposite sides of the second position portion, a pair of supports, and means for attaching the top cover plate to the supports to permit the declination of the top cover plate to be adjusted relative to the frame about the second folded portion;

d) a pair of first side shields, each first side shield including an upper part defining an inclined cover and a lower part extending forwardly and turned downwardly to define a front side cover, and means for securing the first side shields to the front window frames of an automobile;

e) a pair of second side shields, each second side shield defining an inclined cover, and means for securing the second side shields to the rear window frames of an automobile; and

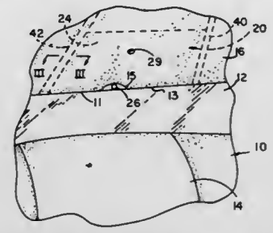
f) a back shield including two lateral sides, a downwardly bent wing portion forming a folded portion at each lateral side, a third positioning portion, means for securing the third positioning portion to the rear windshield frame of an automobile, and a toothed element at each lateral side.

5,186,512
REAR WINDOW SLIDING VISOR
Thomas C. VandenBerge, Jenison; Jerry M. DeJong, West Olive, and Michael J. Suman, Holland, all of Mich., assignors to Prince Corporation, Holland, Mich.
Filed Apr. 16, 1992, Ser. No. 869,755
Int. Cl.[5] B60J *3/02*
U.S. Cl. 296—97.8 **24 Claims**

1. A sliding visor assembly for mounting in the space between a vehicle headliner and roof comprising:

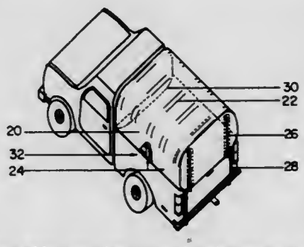
a pair of guide members defining guide slots and means for mounting said guide members to a vehicle such that said guide slots face one another in spaced parallel relationship and extend in a direction orthogonal to a vehicle window; and

a generally rectangular visor panel and guide rail means attached thereto and extending from opposite edges of said visor panel outwardly from an edge of said panel extending between said opposite edges a distance from said visor panel sufficient to permit the extension of said visor panel from behind the vehicle headliner to a position



for blocking at least a substantial portion of the adjacent window, wherein said guide rails are spaced to slideably fit within said guide slots defined by said guide members.

5,186,513
SOFTSHELL
Sander Strother, 3909 Navajo, Bakersfield, Calif. 93309
Filed Feb. 28, 1992, Ser. No. 843,727
Int. Cl.[5] B62D *25/06*
U.S. Cl. 296—100 **18 Claims**



1. A removable cargo bay cover for pick-up trucks comprising:

(a) a plurality of support arms of a generally inverted U-shape each having a pair of downardly extending leg portions;

(b) a plurality of bracket supports each having a receiving tube for releasably receiving the lower end of respective of said downwardly extending leg portions and having an outwardly opening C-shaped member for engaging the top portion of a side wall of a truck bed;

(c) a plurality of elongated stabilizer members each having end portions engagable with adjacent pairs of bracket supports;

(d) means for releasably attaching a flexible protective cover to said support arms and said bracket supports.

5,186,514
TRUCK BOX COVER APPARATUS
Christian Ronai, 3570 St-Germain St., Montreal, Quebec, Canada H1W 2V5
Continuation-in-part of Ser. No. 687,717, Apr. 18, 1991, abandoned. This application Feb. 21, 1992, Ser. No. 839,575
Claims priority, application Canada, Apr. 19, 1990, 2014863; Jun. 13, 1990, 2018973; Dec. 4, 1990, 2031410
Int. Cl.[5] B60J *7/10*
U.S. Cl. 296—100 **18 Claims**

1. A pick-up truck box cover apparatus able to securely cover a pick-up truck box, the box having two vertical sidewalls, a front vertical wall adjacent a cab of the truck and a

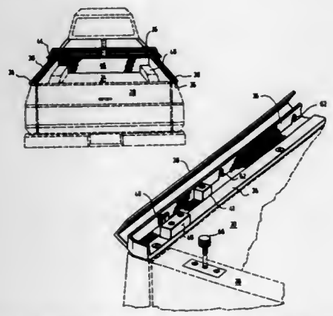
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rear gate wall pivotable between a vertical closed position and a horizontal open position, the cover apparatus comprising:

a cover member being rigid about a lengthwise axis and having two lengthwise sides, the cover member covering all of the box;

two lengthwise tracks to be attached to an upper surface of the two vertical sidewalls, the tracks receiving vertically the two sides of the cover member; and

a locking member provided on each of the two tracks for preventing the cover member from being vertically removed from the tracks, and for preventing the cover member from sliding lengthwise along the tracks when locked, and for allowing the cover member to be removed from the tracks when unlocked, the cover member can be placed onto and removed from the tracks from above and



be locked into the tracks to securely seal off contents of the box, the cover being rigid and resistant to impact and motion due to tampering when locked, each locking member including;

(i) an articulated flap member articulated lengthwise about an axis parallel to one of said tracks on an outer side thereof, such that said flap can be pivoted inward and over one of said lengthwise sides;

(ii) securing means for releasably locking said articulated flap in a position covering said one of said lengthwise sides; and

(iii) pin means for securing the cover member against lengthwise movement once the cover member is vertically placed into the tracks, the pin means cooperating between the cover member and said one of said tracks.

5,186,515

LOW FRICTION GRIPPER

Kenneth Y. Goldberg, Bethlehem, and Merrick L. Furst, Pittsburgh, both of Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Continuation of Ser. No. 617,915, Nov. 21, 1990, Pat. No. 5,098,145, which is a continuation of Ser. No. 384,941, Jul. 25, 1989, abandoned. This application Nov. 27, 1991, Ser. No. 799,080

The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.

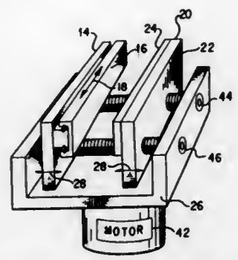
Int. Cl.[5] **B66C** *1/42*; **B25B** *1/24, 5/16*

U.S. Cl. 294—119.1 **1 Claim**

1. An apparatus for gripping objects having at least one edge comprising:

a first jaw having a first support member with a surface, and a first surface plate that is in he shape of a rectangle with a flat face and which is slidably connected to the first support member such that the first surface plate is able only to translate in a direction parallel with the surface of the first support member but not able to rotate;

a second jaw that has a second support member and a second surface plate that is in he shape of a rectangle with a flat face and which is fixedly attached to the second support member, said flat face of the second surface plate is essentially parallel to said flat face of the first surface plate and a structure holding the first jaw and the second jaw such that the first jaw and the second jaw can move in a direction toward each other to grip the object with the respective



faces by causing the object to rotate into a stable configuration from only the force created by the fist and second jaws moving toward each other, or away from each other to release the object, said direction perpendicular with the surface of the first support member.

5,186,516

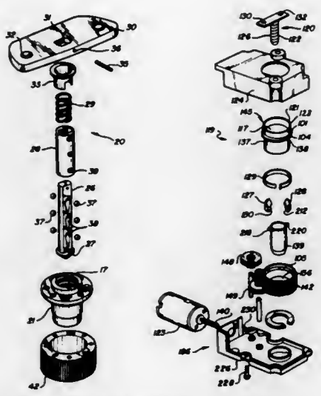
POWER LATCH SYSTEM

Michael P. Alexander, Grosse Ile; Allan J. Adams, and Stephen P. Tokarz, both of Lincoln Park, all of Mich., assignors to ASC Incorporated, Southgate, Mich.

Continuation of Ser. No. 385,495, Jul. 26, 1989, abandoned, which is a continuation-in-part of Ser. No. 231,522, Aug. 12, 1988, abandoned, and a continuation-in-part of Ser. No. 356,249, May 24, 1989, abandoned, said Ser. No. 231,522, is a continuation-in-part of Ser. No. 100,529, Sep. 24, 1987, Pat. No. 4,819,983. This application Jul. 29, 1991, Ser. No. 737,915

Int. Cl.[5] **B60J** *7/185*

U.S. Cl. 296—121 **7 Claims**



2. A power latching mechanism comprising:

(a) a pin member having a base portion for mounting to a vehicle surface and a substantially cylindrical shank portion which attaches to the base portion and extends therefrom, the shank portion being threaded on the outer surface thereof;

(b) a keeper member having a hollow cylindrical body which receives the pin member, the pin member and keeper member being rotatably and threadably interengagable with one another, said keeper member comprising:

(1) a pair of opposed pawls, each of said pawls having:

(i) a ramp portion which engages the threads of the pin member;

(ii) a notch formed along a lower surface thereof which opens radially inwardly and downwardly; and

(iii) a cam follower projection disposed in the notch;

(2) means for biasing the pawls inwardly in the keeper member;

(c) means for rotating the cylindrical body of the keeper member to threadably engage the pin member with the keeper member;

(d) means for retaining the pin member in the keeper member, said means for retaining being defined by said opposed pawls and means for biasing; and

(e) manually operable means for moving the retaining means to allow disengagement of the pin member from the keeper member.

5. A power latching mechanism, comprising:

(a) a pin member;

(b) a keeper member having a hollow cylindrical body which receives the pin member, the pin member and keeper member being rotatably and threadably interengageable with one another;

(c) means for rotating the cylindrical body of the keeper member to threadably engage the pin member with the keeper member;

(d) means for retaining the pin member in the keeper member, said means for retaining including a plurality of engagement members which threadably engage said pin member and means for biasing said engagement members into engagement with said pin member; and

(e) manually operable means for exerting an outward force on said engagement members to allow disengagement of the pin member from the keeper member without rotation of either the pin member or the keeper member body, said means for exerting being rotated to cause said engagement.

5,186,517

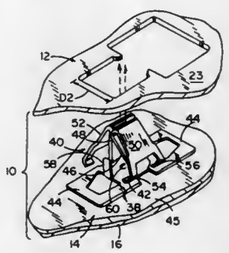
SHIFTABLE/RELEASABLE MOUNT

Michael R. Gilmore, and Anthony McConnell, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Mar. 5, 1992, Ser. No. 847,168

Int. Cl.[5] **B60R** *13/02, 7/04*

U.S. Cl. 296—214 **23 Claims**



12. A fastening arrangement for a first and second member comprising:

a shaped slot in the first member, said slot having a narrow end, an enlarged end, and a neck therebetween, said neck including at least one protrusion forming a ramp oriented from said narrow end toward said enlarged end; and

a fastener attached to the second member, said fastener including a resilient engaging portion that can be inserted directly into said narrow end of said slot from a location other than said enlarged end to retain the second member to the first member, said resilient engaging portion being held in said narrow end by said ramp but releasable therefrom by forcing said resilient engaging portion past said ramp into said enlarged end whereat said fastener is released, whereby said second member can be attached to said first member simultaneously as said second member is moved toward said first member thus simplifying assembly of the second member to the first members but can be removed if necessary for repair of the second member by moving the second member laterally relative to the first member.

5,186,518

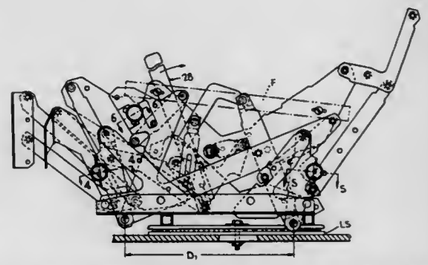
CARRIAGE MECHANISM FOR A GLIDER/THREE-WAY RECLINER CHAIR HAVING REAR DRIVE LINK AND REAR OTTOMAN LINK

James J. Pine, Tupelo, Miss., assignor to DBJU, Inc., Verona, Miss.

Filed Aug. 21, 1991, Ser. No. 748,262

Int. Cl.[5] **A47C** *1/02*

U.S. Cl. 297—85 **12 Claims**



1. A support assembly for use in a carriage mechanism employed to movably support a frame, seat, backrest, legrest and footrest of a glider/three-way recliner chair above a flooring surface, said support assembly being shiftable between a retracted condition, an intermediate extended condition and a fully extended condition, said support assembly enabling forward and rearward gliding movement of said frame, seat, backrest, legrest and footrest when in its retracted condition and forward and rearward movement in parallel with the flooring surface when in its intermediate extended condition, said support assembly including no locking linkages for positively stopping forward and rearward movement when in its intermediate extended condition, said support assembly comprising a base subassembly which includes bracket means providing front and rear spaced apart mounting points, a main linkage subassembly which is suspended from said front and rear mounting points, and an extendable footrest-legrest subassembly connected to said main linkage subassembly,

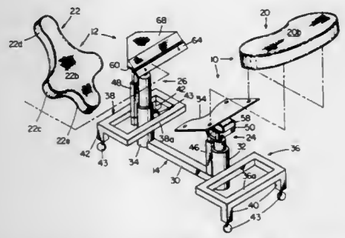
said main linkage subassembly including a front scissor link; a rear scissor link which is pivotally connected along its length to said front scissor link; a front swing link which is pivotally suspended from said front mounting point and pivotally connected to said front scissor link at a first pivot point below said front mounting point; a rear swing link which is pivotally suspended from said rear mounting point and pivotally connected to said rear scissor link at a second pivot point below said rear mounting point, the distance between the first and second pivot points being less than the distance between said first and second mounting points when said support assembly is in its retracted condition and equal when said support assembly is shifted to its intermediate extended condition; a mounting plate for attachment to a seat frame; a backrest support flange pivotally connected to a rear end of said mounting plate for attachment to a backrest frame; a rear drive link; and a rear ottoman link; said rear drive link being pivotally connected to an upper end of said rear scissor link and to said rear ottoman link and said rear ottoman link being

VOL 1147 ISS 3 FEB 16 1993 UMI

pivotally connected between said mounting plate and said extendable footrest-legrest subassembly,

said main linkage subassembly being capable of moving in a forward and rearward gliding motion relative to said flooring surface when said support assembly is in its retracted condition and moving in a forward and rearward motion which is parallel to said flooring surface when the support assembly is in its intermediate extended condition, such parallel motion tending to stop due to gravity.

5,186,519
WORKPLACE CHAIR
John E. Larson, P.O. Box 1607, Hamilton, Mont. 59840
Filed Nov. 15, 1990, Ser. No. 613,306
Int. Cl.[5] A47C *7/50*
U.S. Cl. 297—423 **22 Claims**



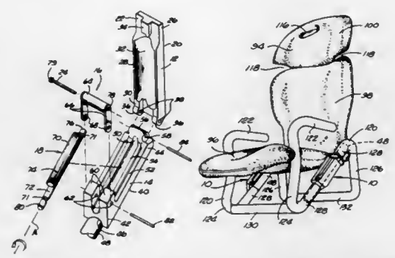
1. An adjustable chair comprising front seat assembly means, rear seat assembly means, and base assembly means, the base assembly means supporting the front and rear seat assembly means independently of one another; said front seat assembly means having a front seat pivotally mounted for rotation about a horizontal axis, said axis defining a front seat fulcrum; and said rear seat assembly means having a rear seat pivotally mounted for rotation about a horizontal axis, said axis defining a rear seat fulcrum; the two rotation axes being separated from one another a sufficient distance that a person may sit on the front seat and position his or her back against the rear seat; said front seat having a configuration adapted to support a sitting person and being so configured and positioned with respect to said rear seat whereby a sitting person may be supported by the front and rear seats with his or her sacrum, coccyx and ischial tuberosities clear of bearing contact with said front seat; said rear seat being provided with a rear seat cushion having a length sufficient below its horizontal axis of rotation to support the spinal dorsal region of a person sitting in the chair and a length sufficient above its horizontal axis of rotation to support the spinal dorsal region of a person sitting in the chair whereby a sitting person's spinal sacrum region will be supported as a result of a sitting person's upper back levering said rear seat into contact with the sitting person's sacrum region; said rear seat cushion being configured to provide an elongated narrow portion extending above its horizontal axis of rotation and to provide a wider mid portion adjacent the region of its horizontal axis of rotation, whereby said rear seat cushion may support a sitting person's upper and lower back regions without contacting his or her shoulders.

5,186,520
FORCE ACTIVATED TETHERING DEVICE FOR USE WITH A CHILD SAFETY SEAT IN AN AUTOMOBILE
Lenwood C. Whitaker, P.O. Box 18237, Asheville, N.C. 28814; Inge F. Whitaker, 1806 Wright St., Pomona, Calif. 91766, and E. Leonard Pate, 1984 N. Main St., Los Angeles, Calif. 90031
Filed Sep. 20, 1990, Ser. No. 585,572
Int. Cl.[5] A47D *15/00*
U.S. Cl. 297—468 **14 Claims**

1. A tethering device for securing a child safety seat to an automobile seat with an automobile seatbelt, said tethering device comprising:

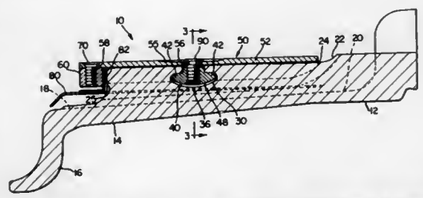
a cap having a curved inside surface and a wedging mechanism comprising a cylindrical wedging portion having a curved wedging surface and a cylindrical support portion that is fixedly secured along it length to the cylindrical wedging portion;

said cap and said wedging mechanism having an assembled passive position wherein said wedging surface faces said curved inside surface and said wedging surface and said curved inside surface for a nonlinear passage therebetween for said seatbelt to pass through; and



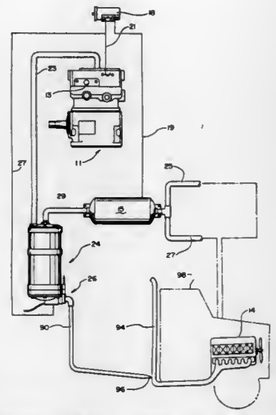
a means for permitting said wedging surface to move between said passive position and a first active locked position by rotation of the wedging mechanism in a first direction when said cap and wedging mechanism are in the assembled position, said passive position existing when said wedging surface is at a first predetermined distance from said inside surface and said first active locked position existing when said wedging surface is sufficiently closer to said inside surface to place a wedging force on said automobile seatbelt therebetween.

5,186,521
WHEEL AND DRIVE KEY ASSEMBLY
David A. Niespodziany; David L. Olson, both of South Bend; Ronald W. Schebel, and Julie A. Wentland, both of Granger, all of Ind., assignors to Allied-Signal Inc., Morristown, N.J.
Filed Sep. 24, 1991, Ser. No. 764,663
Int. Cl.[5] F16D *55/36*
U.S. Cl. 301—6.91 **17 Claims**



1. A wheel and drive key assembly, comprising a wheel having a generally cylindrical interior opening with at least one axially extending drive lug disposed in said interior opening, the drive lug comprising a torque-transmitting lug integral with said wheel and extending radially inwardly from an inner surface of said interior opening, the lug having axially extending side faces for transmitting torque to said wheel and a radially inner face of said lug spaced radially inwardly from said inner surface of the wheel, the lug being recessed at a position along the axial length thereof wherein the recess includes an undercut portion, a retention member disposed within the recess and having a laterally extending portion received in the undercut portion in order to retain the retention member within the recess, a drive key disposed over the radially inner face and extending along said side faces, and means for connecting the retention member and drive key in order to couple said retention member with said drive key.

5,186,522
AIR DRYER PURGE LINE
Joseph C. Spencer, Kansas City, Mo., assignor to Midland Brake, Inc., Kansas City, Mo.
Filed Sep. 24, 1991, Ser. No. 764,913
Int. Cl.[5] B60T *17/00*
U.S. Cl. 303—1 **2 Claims**



1. In a pneumatic braking system for vehicles equipped with an internal combustion engine having engine exhaust gas discharge means and an air dryer vessel intermediate an air compressor and an air reservoir, said air dryer vessel having a purge air outlet and means for reversely flowing purge air therethrough when the air compressor is switched to the unloading cycle, the improvement which consists in effecting combustion and vaporization of contaminants present in the purge air from the said air dryer vessel by introducing the purge air into the hot exhaust gases from said engine via a conduit providing communication between said purge air outlet of said air dryer vessel and the engine exhaust gas discharge means.

5,186,523
BRAKE COMPENSATOR FOR A MOTOR VEHICLE
Alain Thioux, Bry sur Marne, and Roland Levrai, Stains, both of France, assignors to Bendix Europe Services Techniques, Drancy, France
Filed Jan. 13, 1992, Ser. No. 819,681
Claims priority, application France, Feb. 7, 1991, 91 01361
Int. Cl.[5] B60T *11/34, 15/20*
U.S. Cl. 303—9.63 **7 Claims**

1. In a hydraulic braking circuit comprising:

a master cylinder having first and second working chambers, first and second sub-circuits connected respectively to said first and second working chambers so as to receive respective first and second pressures,

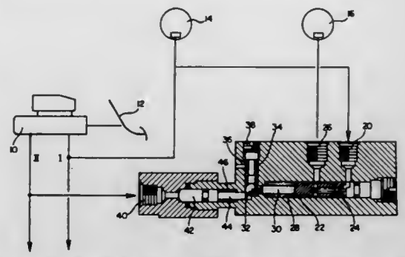
a front wheel brake connected to said first sub-circuit,

a rear wheel brake, and

a brake compensator comprising an operating inlet connected to said first subs-circuit, a control inlet connected to said second sub-circuit, and an outlet connected to said rear wheel brake, said brake compensator further comprising:

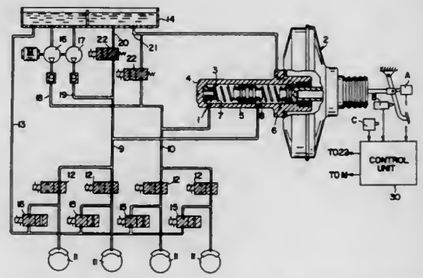
a first piston slidingly movable against an elastic force and between rest and active positions under the effect of said first pressure, said first piston when in said rest and active positions causing pressures communicated to said rear wheel brake to be respectively equal to and less than said first pressure,

pressure sensitive clearance means comprising a second piston slidingly movable between rest and clearance positions under the effect of said second pressure,



and a ball having a position controlled by the position of said second piston and movable between corresponding rest and clearance positions, said ball when in said corresponding rest position preventing said first piston from reaching said active position.

5,186,524
HYDRAULIC BRAKE SYSTEM
Jochen Burgdorf, Offenbach-Rumpenheim; Gerd Klostermann, Friedrichsdorf, and Nabil Henein, Darmstadt, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt am Main, Fed. Rep. of Germany
Division of Ser. No. 510,323, Apr. 16, 1990. This application Jul. 14, 1992, Ser. No. 913,156
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1989, 3912234
Int. Cl.[5] B60T *8/32, 11/16, 13/12*
U.S. Cl. 303—92 **8 Claims**



1. A hydraulic brake system for slip control operations comprising:

a brake pedal;

a master brake cylinder having first and second working chambers defined by first and second pistons disposed within said master brake cylinder and movable in response to movement of said brake pedal;

a plurality of wheel brake cylinders;

a pressure fluid supply reservoir;

pump means for supplying fluid under pressure from said pressure fluid supply reservoir;

first fluid conducting means for conducting fluid between said first and said second working chambers of said master brake cylinder and said plurality of wheel brake cylinders, said first fluid conducting means including first and second fluid lines extending between said first and said second working chambers, respectively, and said plurality of

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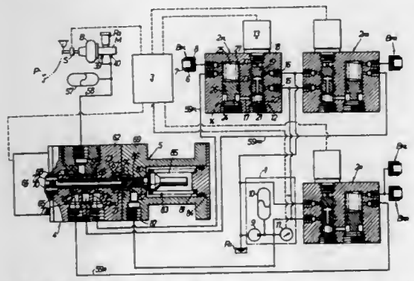
wheel brake cylinders and in open fluid communication with said first and said second working chambers regardless of the positions of said first and said second pistons;
second fluid conducting means extending between said plurality of wheel brake cylinders and said pressure fluid supply reservoir for conducting fluid between said plurality of wheel brake cylinders and said pressure fluid supply reservoir;
third fluid conducting means extending between said first and said second working chambers of said master brake cylinder and said pressure fluid supply reservoir for conducting fluid between said working chambers and said pressure fluid supply reservoir;
first electromagnetic valve means in said first fluid conducting means for regulating fluid flow between said first and said second working chambers of said master brake cylinder and said wheel brake cylinders;
second electromagnetic valve means in said second fluid conducting means for regulating fluid flow between said wheel brake cylinders and said pressure fluid supply reservoir;
third electromagnetic valve means in said third fluid conducting means for regulating fluid flow between said first and said second working chambers of said master brake cylinder and said pressure fluid supply reservoir;
and sensing means responsive to movement of said brake pedal for sensing the position of said brake pedal and for controlling:
(a) said third electromagnetic valve means to permit fluid flow between said first and said second working chambers of said master brake cylinder and said pressure fluid supply reservoir prior to the application of said brake pedal,
(b) said first electromagnetic valve means to permit fluid flow between said first and said second working chambers of said master brake cylinder and said wheel brake cylinders when said brake pedal is applied and prior to slip control operation,
(c) said pump means to regulate the delivery of fluid from said pressure fluid supply reservoir to said first and said second working chambers of said master brake cylinder during slip control operation.

5,186,525

HYDRAULIC BRAKING PRESSURE CONTROL SYSTEM FOR VEHICLE

Makoto Sato; Hiromi Inagaki; Wataru Saito; Kazuya Sakurai, all of Saitama; Koichi Hagiwara, and Makoto Horiuchi, both of Nagano, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo and Nissin Kogyo Kabushiki Kaisha, Ueda, both of, Japan

Filed Aug. 9, 1991, Ser. No. 744,116
Claims priority, application Japan, Aug. 10, 1990, 2-213375
Int. Cl.[5] B60T *8/32*
U.S. Cl. 303—113.4 **8 Claims**



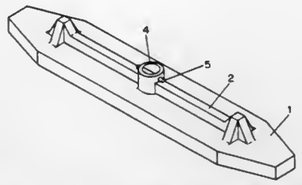
1. A hydraulic braking pressure control system comprising:
a master cylinder (M) having an output port (**39,40**) through which a hydraulic pressure for effecting a braking operation is delivered, the master cylinder having a reservoir (R_2) associated therewith and leading to the output port when there is no braking;
a plurality of brake devices (B_{FL} etc) for a plurality of wheels;
an operation-amount detector (**S**) for detecting the amount of braking operation;
a hydraulic pressure supply source (**1**);
a plurality of hydraulic pressure control units (2_{FL} etc) each including a hydraulic pressure control valve (**12**) interposed between each associated brake device (B_{FL} etc) and the hydraulic pressure supply source, said hydraulic pressure control units being capable of operating the associated brake devices independently of each other,
electric actuators (**13**) for actuating said hydraulic pressure control valves, respectively;
a control circuit (**3**) for controlling the operation of the electric actuators in accordance with a detection value provided by said operation-amount detector;
a shut-off valve (**4**) provided in oil passages (**58, 59**$_{FL}$ etc) connecting the hydraulic pressure control units with the output port in the master cylinder for controlling connection and disconnection of said hydraulic pressure control units with and from said output port collectively, means operable by the control circuit for closing said shut-off valve when a braking operation is detected by the operation-amount detector, and
a locking means (**5**) for inhibiting the closing of said shut-off valve when the output hydraulic pressure from said hydraulic pressure supply source is equal to or less than a predetermined value.

5,186,526

ONE-PIECE CRAWLER PAD

John H. Pennington, Green River, Wyo., assignor to General Chemical Corporation, Parsippany, N.J.

Continuation of Ser. No. 576,370, Aug. 31, 1990, abandoned. This application Mar. 24, 1992, Ser. No. 856,807
Int. Cl.[5] B62D *55/25*
U.S. Cl. 305—39 **3 Claims**



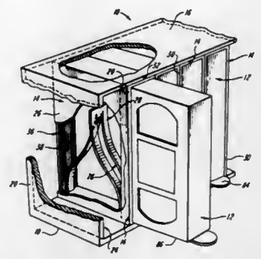
1. A one piece crawler pad for use with a mining machine having a drive chain comprising:
(a) a substantially rectangular body portion having first and second narrow ends and first and second major surfaces;
(b) a surface engaging means disposed on said first major surface of said body portion; and
(c) a drive chain engaging means for attaching said crawler pad to a drive chain, centrally disposed between said first and second ends of said body portion, wherein said drive chain engaging means comprises a hollow protrusion extending from the first major surface and having two horizontally opposed, aligned, bolt holes formed therein, said protrusion having an interior open portion extending from and perpendicular to the first major surface and being sized to accept a link of the drive chain within the open portion such that a bolt passed through the opposed bolt holes will engage the link of the drive chain within the hollow protrusion.

5,186,527

DEVICE PROVIDING EASY EXTRACTION OF VIDEO CASSETTES AND THE LIKE FROM CLOSELY FITTING STORAGE JACKETS THEREFOR

Michael A. Lockhardt, R.F.D. #4, Box 48, Dover, N.H. 03820

Continuation-in-part of Ser. No. 582,153, Sep. 14, 1990, Pat. No. 5,104,207. This application Apr. 10, 1992, Ser. No. 866,483
Int. Cl.[5] A47B *88/00*
U.S. Cl. 312—9.47 **8 Claims**



1. Device for use in aiding the extraction of a three-dimensional object from a close-fitting protective jacket therefor having an open front and defining an internal cavity for storage of said object, said extraction device comprising an elongated planar member of predetermined length defined by inner and outer ends and parallel, spaced-apart side edges and by top and bottom planar surfaces, said elongated planar member being further defined by an inner portion and an outer portion connected thereto, at least one elongated second planar member of predetermined length defined by top and bottom planar surfaces being provided in said inner portion of the extraction device and extending lengthwise thereof defined by parallel, elongated, spaced-apart, side edges parallel to the side edges of the first-named, elongated planar member and being located therebetween, said at least one second planar member being further defined by an inner and outer end edge of predetermined length spaced-apart from and parallel to one another, said inner and outer end edges being laterally disposed and perpendicular to the elongated side edges of the first-named planar member, the outer end edge and side edges of the at least one second planar member being free of the first-named planar member and the inner end edge thereof being fixedly attached thereto whereby when the bottom planar surface of the said at least one second planar member is secured adjacent its outer end to a fixed member and a force is applied to the first-named planar member at its outer end, the said at least one second-named planar member can be separated from the first-named planar member defining an opening in the inner portion of the first-named planar member of like shape and dimensions as the second-named planar member, the inner portion at least of the first-named planar member being sufficiently flexible so that when the force applied to the outer end of first-named planar member is released, the inner portion of the first named planar member will be caused to close on the second-named planar member and said second-named planar member will be relocated in the opening in said inner portion.

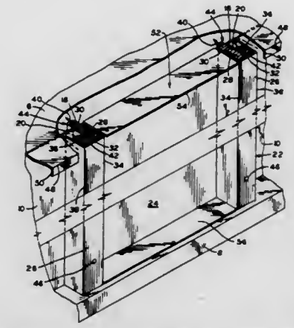
5,186,528

REMOVABLE ACCESS PANELS FOR ROOFTOP UNIT

David L. Schardt, Brentwood; Lois A. Luna, Murfreesboro, both of Tenn., and Ivor S. Jones, Brantford, Canada, assignors to Inter-City Products Corporation (USA), Lavergne, Tenn.

Filed Mar. 29, 1991, Ser. No. 677,234
Int. Cl.[5] A47B *47/00;* **F25D** *19/00*
U.S. Cl. 312—100 **23 Claims**

1. A cabinet for an air conditioner, said cabinet comprising:
a cabinet body defining an interior region and an access opening, said cabinet body including two opposite edges which partially define said access opening, said opposite edges including respective cabinet flanges; and
a removable panel disposed in said access opening, said removable panel having a generally planar side wall and two extensions projecting farther than said cabinet flanges, said extensions being arranged to overlap and surround said cabinet flanges to form a tortuous path for blocking penetration of air and water between said removable panel and said cabinet flanges.

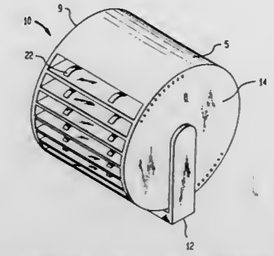


5,186,529

CASSETTE AND CD WHEEL, AND METHOD OF CONSTRUCTING AND UTILIZING SAME

Tony A. Smith, 4458 31 St., Detroit, Mich. 48210

Continuation-in-part of Ser. No. 440,254, Feb. 8, 1990. This application Nov. 21, 1990, Ser. No. 616,332
Int. Cl.[5] A47B *49/00*
U.S. Cl. 312—249.7 **6 Claims**

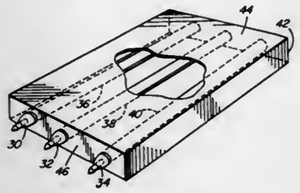


1. An interchangeable cassette storage assembly adapted to receive cassette tapes, compact discs and the containers associated therewith, comprising:
a storage drum including a plurality of slots therein rotatably and releasably secured by a support assembly, said storage drum supported at its end such that said slots are horizontally oriented;
said support assembly including a base with a pair of flexible arms secured thereto, said arms are adapted to flex outwardly to release said drum, said drum retained at the distal ends of said arms;
each of said slots includes cassette retaining means for securing a cassette in said slot during rotation and movement of said drum;
said storage drum having a plurality of resilient protrusions thereon which individually interact with a locking means on said support assembly wherein sufficient force must be applied to said drum to deform said protrusions to permit rotation of said drum; and

VOL 1147 ISS 3 FEB 16 1993 UMI

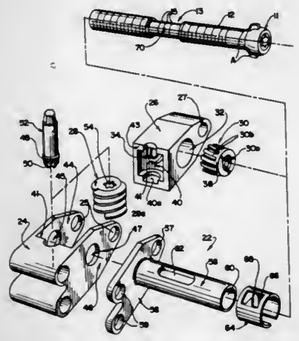
said flexible arms releasably secure said drum to permit moving said drum to another location.

5,186,530
LIGHTING STRUCTURE HAVING VARIABLE TRANSMISSIVITY INTERNAL LIGHT GUIDE ILLUMINATION
Lorne A. Whitehead, Vancouver, Canada, assignor to TIR Systems, Ltd., Burnaby, Canada
Filed Nov. 22, 1991, Ser. No. 796,305
Int. Cl.[5] F21V *8/00*
U.S. Cl. 362—31 **38 Claims**



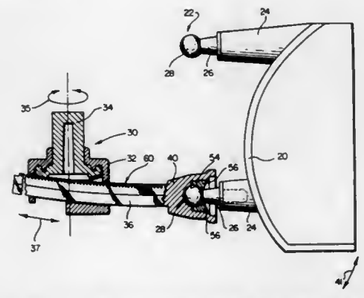
1. A lighting device, comprising:
(a) a hollow structure having an optically transmissive light emitting surface;
(b) at least one light guide extending within said structure; and,
(c) a light source for emitting light into said light guide;
wherein the light transmissivity of said light guide is varied as a function of position on the surface of said light guide such that the angular and spatial distribution of light emitted from said light guide results in a predetermined distribution of light intensity as a function of position on said light emitting surface.

5,186,531
HEADLAMP ADJUSTER
Ronald L. Ryder, Roscoe, and David C. Goss, Rockford, both of Ill., assignors to Textron Inc., Providence, R.I.
Filed Dec. 16, 1991, Ser. No. 808,220
Int. Cl.[5] F21M *3/20*
U.S. Cl. 362—66 **17 Claims**



1. An adjusting mechanism for use in the alignment of a headlamp or the like, comprising: housing means; drive gear means and adjusting gear means covered by said housing, said adjusting gear means being operatively engaged with a linearly movable adjusting member and with said drive gear means such that rotation of the drive gear produces linear movement of said adjusting member; said housing means including a first housing portion and a second housing portion, said first housing portion including an internal cylindrical wall and bore therein axially coextensive with and receiving said adjusting gear, said first housing portion and said second housing portion each including a partial cavity which when said portions are assembled form a chamber for the drive gear means, with the partial cavity in said first housing portion including an aperture passing transversely through said cylindrical wall and communicating with said bore for the adjusting gear so that drive gear and said adjusting gear may be engaged, and means for maintaining assembly of said first and second housing portions.

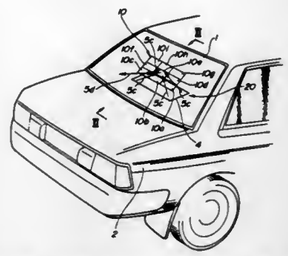
5,186,532
HEADLAMP ADJUSTING MECHANISM AND HEADLAMP ADJUSTING ASSEMBLY
Francis E. Ryder, Arab; Rowland W. Kanner, Guntersville, and Stephen P. Lisak, Arab, all of Ala., assignors to Textron Inc., Providence, R.I.
Filed May 7, 1991, Ser. No. 696,780
Int. Cl.[5] F21M *3/18*
U.S. Cl. 362—66 **44 Claims**



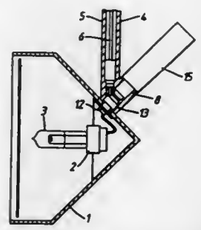
1. An adjusting mechanism for an articulated headlamp construction, or the like, comprising: a housing; a scroll member carried by said housing and journalled therein for rotation relative thereto, said scroll member including a generally planar spiral projection thereon; an adjusting rack member carried by said housing for substantially transitory movement relative thereto, said adjusting rack member having an end portion adapted to be operatively associated with said articulated headlamp construction such that said transitory movement of the adjusting rack member will produce movement of said headlamp construction, said rack member also having a series of laterally disposed teeth thereon with the spiral projection of said scroll member engaged between at least one pair of adjacent teeth on the rack member such that selective rotation of said scroll member relative to said housing will produce controlled transitory movement of said rack, and correspondingly adjusting movement of said articulated headlamp construction.

5,186,533
LAMP ARRANGEMENT FOR MOTOR VEHICLE
Masayuki Hori, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Continuation of Ser. No. 646,541, Jan. 28, 1991, abandoned. This application Apr. 10, 1992, Ser. No. 866,966
Claims priority, application Japan, Jan. 30, 1990, 2-20242
Int. Cl.[5] B60Q *1/26*
U.S. Cl. 362—80.1 **5 Claims**

1. A lamp arrangement for a motor vehicle, the motor vehicle having a rear shelf panel and a rear window, comprising:
a surface light source arranged in the rear shelf panel, said surface light source including a plurality of laterally spaced light sources, each emitting divergent light; and
a transmission hologram placed on the rear window,
wherein said transmission hologram includes a plurality of divisions, said plurality of divisions each having a different diffraction characteristic, said plurality of divisions being disposed on one plane, respectively, each of said plurality of divisions receiving light from each of said plurality of light sources.



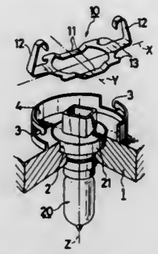
5,186,534
LIGHT FITTING
Terence A. Woodgate, Bruxelles, Belgium, assignor to GTE Rotaflex Limited, London, England
PCT No. PCT/GB90/00346, § 371 Date Aug. 22, 1991, § 102(e) Date Aug. 22, 1991, PCT Pub. No. WO90/11470, PCT Pub. Date Oct. 4, 1990
PCT Filed Mar. 7, 1990, Ser. No. 743,419
Claims priority, application United Kingdom, Mar. 23, 1989, 8906738
Int. Cl.[5] F21M *3/00*
U.S. Cl. 362—419 **11 Claims**



1. A light fitting comprising a lamp housing (1) having a central axis, a bulb holder (2) mounted in the lamp housing for supporting a light bulb having a predetermined beam direction, and a support (4) having mounting means (8) coupled to the lamp housing to enable rotation of the lamp housing relative to the support about a pivot axis inclined to said central axis, the support defining a rotation axis inclined to the pivot axis, wherein the light fitting includes means projecting from the lamp housing along the pivot axis and beyond the mounting means to provide a handle (15) for turning the lamp housing about the pivot axis and about the rotation axis for adjusting the beam direction.

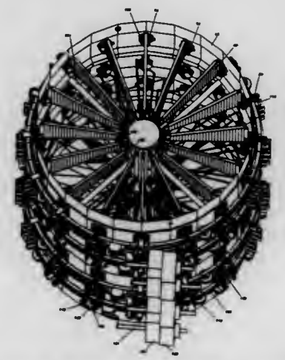
5,186,535
DEVICE FOR MOUNTING LAMP ON LAMP MOUNT
Takashi Yokoyama, Yokohama, Japan, assignor to Stanley Electric Co., Ltd., Tokyo, Japan
Filed Oct. 8, 1991, Ser. No. 772,842
Claims priority, application Japan, Oct. 15, 1990, 2-107895[U]
Int. Cl.[5] H01R *33/00*
U.S. Cl. 362—226 **11 Claims**

1. In a device for mounting a lamp on a lamp mount, wherein a lamp socket is inserted into a socket hole formed through said lamp mount so that said lamp socket is firmly held from a rear side thereof by means of a resilient force derived from an engagement spring,
the improvement wherein:
said engagement spring is configured such that it extends at a right angle relative to an axis of said lamp socket; and



said engagement spring exhibits a line symmetry relative to two lines extending on a common plane at a right angle relative to each other, said common plane extending at a right angle relative to said axis of said lamp socket, and said two lines intersecting along said axis of said lamp socket.

5,186,536
LIGHTING INSTRUMENT WITH MOVABLE FILTERS AND ASSOCIATED ACTUATION MECHANISM
James M. Bornhorst, De Soto, and Timothy D. Stacy, Plano, both of Tex., assignors to Vari-Lite, Inc., Dallas, Tex.
Continuation-in-part of Ser. No. 578,594, Sep. 6, 1990, Pat. No. 5,073,847. This application Dec. 16, 1991, Ser. No. 809,698
Int. Cl.[5] F21V *9/00*
U.S. Cl. 362—293 **16 Claims**



1. In a lighting instrument comprising a frame having a longitudinal axis; first and second longitudinally spaced sets of color filters supported by the frame, each color filter being characterized in that light passing through the filter varies in color depending upon the angular orientation of the filter with respect to the light beam, the filters of each set being pivotable about axes intersecting the longitudinal axis; first and second annular actuating members supported by the frame and rotatable about the longitudinal axis; first set of pivoting actuators coupling filters of the first set to the first annular actuating member; second set of pivoting actuators coupling filters of the second set to the second annular actuating member; first drive means for driving the first annular actuating member for pivoting the first set of filters; and second drive means for driving the second annular actuating member for pivoting the second

VOL 1147 ISS 3 FE 16 1993 UMI

set of filters independently from the pivoting action of the first set of filters; the improvements comprising:

a semi-flexible ring utilized as either said first or said second annular actuating member, said ring encircling the frame and being supported on said frame by a plurality of rollers, said ring and said rollers comprising an actuating member adaptable to deviations in the circularity of said frame; and

a plurality of flexible coupling means coupling said filters to said ring.

5,186,537

ILLUMINATION DEVICE

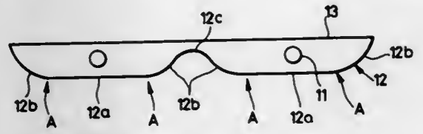
Hideaki Katoh; Nobuhisa Noguchi; Yutaka Kikuchi; Isamu Kaneko, all of Saitama, and Teruo Hoshi, Chiba, all of Japan, assignors to Dai-Ichi Seiko Co., Ltd., Kawaguchi, Japan

Continuation of Ser. No. 240,733, Sep. 6, 1988, abandoned. This application Jun. 3, 1991, Ser. No. 709,797

Claims priority, application Japan, Dec. 7, 1987, 62-307447; Dec. 25, 1987, 62-326861; Dec. 28, 1987, 62-197345[U]

Int. Cl.[5] F21V *5/00, 7/00*

U.S. Cl. 362—347 **5 Claims**



1. An illumination device comprising;

a diffusing plate; and

a plurality of linear light sources placed in proximity to said diffusing plate;

a reflecting plate, positioned on an opposite side of said plurality of linear light sources with respect to said diffusing plate, shaped in a continuous curve extending along the longitudinal direction of said plurality of linear light sources the reflecting plate having;

a linear shape in the vicinity of said plurality of linear light sources,

a continuous curve shape, at locations far from said plurality of linear light sources, having a center of curvature on the side of said reflecting plate wherein said plurality of linear light sources are located, and

a continuous curve shape, in the vicinity of the area between said plurality of linear light sources, having a center of curvature on the side of said reflecting plate opposite said plurality of linear light sources.

5,186,538

CORE AND MOLDING SAND PREPARATION APPARATUS WITH ADJUSTABLE MIXING BLADE

Junnosuke Ito, Toyonaka, and Minoru Iwamoto, Osaka, both of Japan, assignors to Taiyo Chuki Co., Ltd., Osaka, Japan

Filed Sep. 7, 1990, Ser. No. 579,856

Int. Cl.[5] B28C *7/04, 5/32*

U.S. Cl. 366—16 **7 Claims**

1. A dual purpose batch type sand preparation apparatus comprising:

a frame;

a sand hopper supported by the frame for containing a molding sand;

control means for dispensing a predetermined amount of fresh molding sand from the hopper;

a resin pump and a resin tank supported by the frame for containing a resin;

resin pump control means for dispensing a predetermined amount of the resin from the tank;

a catalyst tank for containing a catalyst;

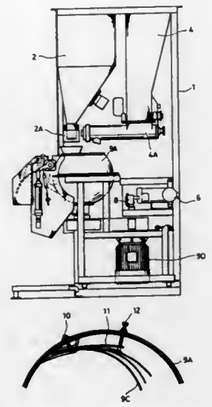
a catalyst pump and catalyst pump control means for dispensing a predetermined amount of the catalyst in a predetermined ratio to the amount of the resin;

a powder hopper supported by the frame for containing a powder;

a screw feeder and screw feeder control means for dispensing the powder when a face sand is prepared;

mixing means supported by the frame for receiving the sand, the catalyst and a face sand powder;

such mixing means including a stationary mixing bowl having at least one flexible mixing blade attached thereto;



rotatable agitating blades in the mixing bowl for mixing the sand, catalyst, and powder;

such mixing blade having a fixed end attached to the bowl and a movable end extending into the bowl and positionally adjustable for modifying mixing efficiency of the apparatus;

position adjustment of the movable end being by a bolt extending between the mixing blade and the bowl.

5,186,539

MIXING KNEADER DEVICE AND METHOD FOR THIS PRODUCTION OF DOUGH, PARTICULARLY FOR PASTA

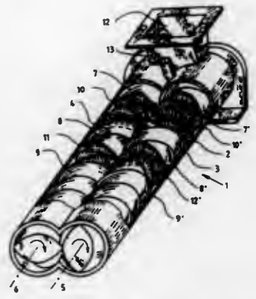
Josef Manser, Uzwil; Friedrich Egger, Niederuzwil, and Werner Seiler, Zueberwanger, all of Switzerland, assignors to Buehler AG, Uzwil, Switzerland

Continuation-in-part of Ser. No. 426,787, Oct. 25, 1989, abandoned. This application Apr. 11, 1990, Ser. No. 508,086

Claims priority, application Switzerland, May 25, 1989, 01968/89; Nov. 19, 1988 [CH] PCT/CH88/00219

Int. Cl.[5] B01F *7/08*

U.S. Cl. 366—85 **15 Claims**



1. A mixing kneader device for the production of raw dough, comprising: a closed housing, a product feed inlet, a water feed inlet, a discharge outlet, product flowing in a direction from product feed opening to discharge outlet, and continuously working work elements in the housing, said work elements including two cooperating work shafts, mixing and kneading elements which include kneading screws alternating in said product flow direction on each shaft with shearing elements therebetween, wherein said product feed inlet and water feed inlet are disposed in a first portion of the mixing kneader which is provided with screw elements, said product feed inlet being separated from said water feed inlet, said shafts lying in the same plane and said product feed inlet being arranged perpendicular to the plane of said work shafts so that raw product is grasped by said two work shafts and conveyed by positive conveying action at every work cross section of said housing, said discharge outlet being formed without extrusion die.

5,186,540

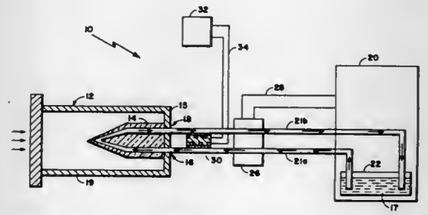
POWER MEASUREMENT CALORIMETER

Arthur L. Walsh, Westford, Mass., and Barry E. Genereux, Pascoag, R.I., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 30, 1991, Ser. No. 815,717

Int. Cl.[5] G01K *17/06*

U.S. Cl. 374—32 **4 Claims**



1. An apparatus, comprising:

means for conveying a fluid from a controller having a first path for receiving said fluid from a fluid source and a second path for returning said fluid to said fluid source and an RF absorbent element having a passageway through said element and an inlet port coupled to said first path of said conveying means and an outlet port coupled to said second path of said conveying means; and

a thermoelectric device comprising:

a pair of ceramic plates, each of said pair of plates having a conductive layer disposed over outer surfaces of the plates and coupled to respective ones of said first and second paths of said means for conveying a fluid; and

a plurality of thermocouples comprising an alloy of bismuth and antimony disposed between said pair of plates.

5,186,541

NON-CONTACT INFRARED TEMPERATURE SENSING SYSTEM

Raymond C. Paulk, Hopedale, Mass., assignor to Gentri Controls, Inc., Hopedale, Mass.

Filed Oct. 21, 1991, Ser. No. 780,716

Int. Cl.[5] G01J *5/10;* **G01N** *25/00*

U.S. Cl. 374—124 **32 Claims**

1. A non-contact infrared temperature sensing system for determining temperature values for a series of targets all having a similar emissivity value comprising:

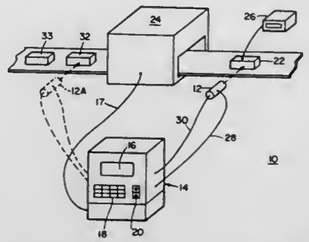
infrared means for sensing the total heat radiated from one said target;

means for inputting a temperature value for said one target;

means for determining a value extraneous radiation from said one target;

means, responsive to said infrared means for sensing the total heat radiated from the target, the inputted temperature of the target, and the value for the extraneous radiation from the target, for calculating an emissivity value for said one target; and

means, responsive to said infrared means for sensing and to



the calculated emissivity value, for computing, for each subsequent target whose heat radiation is detected by said infrared means for sensing, a temperature value for each said subsequent target dependent on the emitted component of radiation, and independent of the extraneous component of radiation.

5,186,542

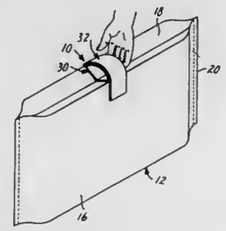
TAPE HANDLE FOR A CONTAINER AND METHOD FOR CONSTRUCTION THEREOF

Thomas W. Seabold, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 596,863, Oct. 12, 1990, abandoned. This application Jan. 31, 1992, Ser. No. 830,547

Int. Cl.[5] B65D *33/06*

U.S. Cl. 383—25 **23 Claims**



1. In combination:

(a) a container having an exterior;

(b) a first segment of tape having a back side and a pressure sensitive adhesive free of adhesive side and opposing end portions, with a portion of said pressure sensitive adhesive side of said first tape segment adhered to said exterior of said container;

(c) a second segment of tape having a back side free of adhesive and a pressure sensitive adhesive side and opposing end portions with a portion of said pressure sensitive adhesive side adhered to said pressure sensitive adhesive side of said first tape segment to form a loop and spaced portions of said pressure sensitive adhesive side of said second tape segment adhered to the container on opposite sides of said portion adhered to said pressure sensitive adhesive side of said first tape segment;

(d) whereby the handle may be manually grasped within said loop to manipulate the container.

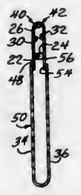
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5,186,543

TEAR-OPEN BAG HAVING GUIDE STRIPS

Gene A. Cochran, Midland, Mich., assignor to Illinois Tool Works Inc., Glenview, Ill.

Continuation of Ser. No. 663,568, Mar. 4, 1991, abandoned. This application May 19, 1992, Ser. No. 887,230
Int. Cl.[5] B65D *33/02, 33/16*
U.S. Cl. 383—203 3 Claims



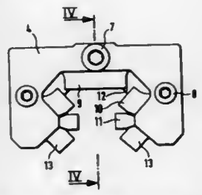
1. A bag comprising a bag body formed of thermoplastic film having generally opposed walls meeting to form one edge of the bag body and to define an opening of the bag body and a discrete membrane formed of thermoplastic film and sealed to the bag body along the edge of the bag body so as to seal the opening of the bag body and to define an enclosure, said membrane having an inner surface inside the enclosure and an outer surface outside the enclosure, said membrane comprising a tear strip extending along and protruding from the inner surface of the membrane and guide strips extending along and protruding from the inner surface of the membrane in spaced relation to the tear strip, said bag further comprising interlocking first and second zipper elements extending along the inner surface of the membrane in spaced relation to the guide strips, the guide strips being disposed between the zipper elements and the tear strip, each of the tear and guide strips having a height measured from the inner surface of the membrane and a width equal approximately to its height, the guide strips being spaced from the tear strip and from the zipper elements by areas of the thermoplastic film of the membrane which are wider than any of the tear and guide strips, the thermoplastic film of the membrane having a generally uniform thickness between the tear strip and the guide strips and between the guide strips and the zipper elements.

5,186,544

WIPER UNIT FOR A LINEAR BEARING ELEMENT

Jean M. Eder, Woerth, France; Hans-Reinhard Lambertz, Erkrath, and Hartmut Koschmieder, Erlangen, both of Fed. Rep. of Germany, assignors to INA Walzlager Schaeffler KG, Fed. Rep. of Germany

Filed Apr. 30, 1992, Ser. No. 876,482
Claims priority, application Fed. Rep. of Germany, May 7, 1991, 4114892
Int. Cl.[5] F16C *29/08*
U.S. Cl. 384—15 9 Claims



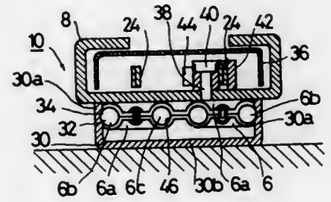
1. A wiper unit for a bearing element which is slidably mounted on the running surface of a shaped part and at least one of its front ends comprising a wiper blade retained by a supporting plate and whose one end region is in contact with the running surface for cleaning the same, characterized in that the wiper blade (5) comprises several flexible tongues (9 to 11) which lie in one common plane before the mounting of the wiper unit on the bearing element (1) and whose ends are in resilient contact with respective sections of the running surface of the shaped part (2) in the assembled state.

5,186,545

RECIPROCATING DEVICE

Takeki Shirai, Ichikawa, Japan, assignor to THK Co., Ltd., Tokyo, Japan

Filed Aug. 23, 1991, Ser. No. 748,945
Claims priority, application Japan, Aug. 27, 1990, 2-222629
Int. Cl.[5] F16C *29/06;* F16H *27/02*
U.S. Cl. 384—43 9 Claims



1. A reciprocating device comprising:
a track bed having a base and a pair of flanges perpendicularly projected from said base with a predetermined space between each flange and each flange is provided at an inner surface with one ball rolling groove extending in a reciprocating direction;
a bearing casing formed of a pair of upper and lower plates provided with annular grooves and coupled together, said coupled plates forming a pair of endless ball tracks each of which is formed of a linear load ball region, a no-load ball region and turning regions connecting them;
a large number of balls which circulate along said endless ball tracks in said bearing casing, said load ball regions being provided with recesses through which said balls partially project and are rotatably fitted in said ball rolling grooves in said track bed for slidably supporting said bearing casing with respect to said track bed;
a plate-like table member fixed to an upper portion of said bearing casing and cooperating with said bearing casing to form a slider; and
drive means including a motor, a continuous drive member driven by said motor, and a pair of pullies with each pulley rotatably mounted at one end of said track with said driven member rounded about each of said pullies and running in a plane parallel to said endless ball tracks; and
means fixing said continuous drive member to said slider, whereby said motor reciprocatively drives said continuous drive member and said slider with respect to said track bed.

5,186,546

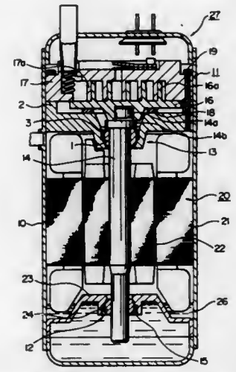
SELF-ALIGNING BEARING AND CLOSED-TYPE ELECTRICALLY DRIVEN COMPRESSOR HAVING THE SAME

Nobuo Abe, Tochigi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 9, 1991, Ser. No. 727,115
Claims priority, application Japan, Jul. 11, 1990, 2-181665
Int. Cl.[5] F16C *23/04;* F01C *1/04*
U.S. Cl. 384—206 2 Claims

1. A closed-type electrically driven compressor comprising:
a closed vessel;
an electric motor disposed in said vessel;
a rotary shaft driven by said electric motor;
a compressing mechanism connected to said rotary shaft;

a first bearing position between said compressing mechanism and said electric motor rotatably supporting said rotary shaft; and
a second bearing positioned on that side of said electric motor remote from said compressing mechanism for rotatably supporting said rotary shaft,
at least one of said first bearing and said second bearing comprising a self-aligning bearing comprising:
a spherical bearing member having a convex spherical outer surface and a first through-hole for rotatably supporting said rotary shaft;
a member supporting said spherical bearing member, said supporting member having a second through-hole, a part of said second through-hole having a concave spherical inner surface movably supporting the convex outer surface of said spherical bearing member, the remaining part of said second through-hole having a cylindrical inner surface, and an annular shoulder portion formed between said cylindrical inner surface and said concave spherical



inner surface, said annular shoulder portion extending radially inwardly from said cylindrical inner surface to said concave spherical inner surface; and a bushing having a concave spherical inner surface movably supporting said convex outer surface of said spherical bearing member in cooperation with said concave spherical inner surface of said supporting member, said bushing further including a cylindrical outer surface fitted into said cylindrical inner surface of said supporting member, said bushing holding said spherical bearing member in position in said supporting member while preventing their disengagement, and
wherein said first bearing comprises a self-aligning bearing whose supporting member is secured to an inner surface of said vessel, said rotary shaft has an eccentric portion drivingly connected to said compressing mechanism, and
wherein the spherical bearing member of said self-aligning bearing includes a flat end face in which said first through-hole opens, said rotary shaft having a thrust surface in sliding contact with said flat end face.

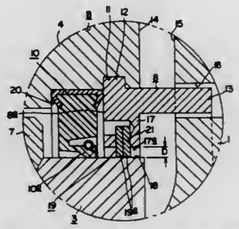
5,186,547

ROLLER BEARING AND SEAL ASSEMBLY

Helmut Mühl, Dietach, and Johann Müllner, Steyr, both of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

Filed May 7, 1992, Ser. No. 879,313
Claims priority, application Fed. Rep. of Germany, May 7, 1991, 4114842
Int. Cl.[5] F16C *33/78, 33/80*
U.S. Cl. 384—480 6 Claims

1. A roller bearing and seal assembly for supporting the drive rolls of a continuous casting machine including an angle ring forming a sealing gap and a lamellar ring seal between the angle ring and a bearing or bearing housing, comprising:
an angle ring having an axially directed shank and a radially oriented shank mounted in the outer ring of the bearing or in the bearing housing in such a way that its axially oriented shank projects beyond the end surface of the roller bearing or housing;



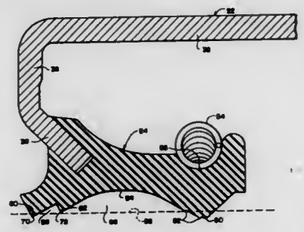
a lamellar ring seal installed between the radially oriented shank of the angle ring and the lateral surface of the inner ring of the bearing;
a rotary shaft lip seal installed on the side of the angle ring facing the interior of the bearing; and
said axially oriented shank of the angle ring extending into a ring-shaped groove in a drive roll end surface opposite the end surface of the roller bearing or housing.

5,186,548

BEARING SHAFT SEAL

Danny R. Sink, Richmond, Va., assignor to Brenco, Incorporated, Petersburg, Va.

Filed Feb. 7, 1992, Ser. No. 832,238
Int. Cl.[5] F16C *33/78;* F16J *15/32*
U.S. Cl. 384—486 5 Claims



1. A rail car wheel bearing seal assembly for sealing an annular space between a wheel housing having a cylindrical bore therein and an axle member extending into the base and having a bearing mounted thereon supporting the wheel for rotation thereon, the sealing assembly including a rigid support ring having a generally cylindrical body portion adapted to be received and supported in the cylindrical bore in fluid-tight relation therewith, and a resilient ring-shaped sealing body mounted on said support ring in position to contact and form a fluid seal around the outer surface of the axle member, said resilient sealing body including an annular lubrication sealing lip adapted to contact the axle around its periphery and low friction dust seal means axially spaced from said lubrication sealing lip, said dust seal means comprising
a single annular, resilient primary dust seal lip having an inside diameter less than the diameter of said shaft member for contacting the shaft member and forming a primary dust seal therewith,
a single annular, annular secondary dust seal lip between said primary dust seal lip and said lubrication sealing lip, said secondary dust seal lip having an inside diameter slightly

VOL 1147 ISS 3 FE 16 1993 UMI

greater than the diameter of said shaft member whereby when the seal assembly is mounted on said housing said secondary dust seal lip will form a non-contacting seal with the outer surface thereof,

a first annular recess in said resilient body between said primary and said secondary dust seal lips, said first annular recess in combination with the shaft member providing a first annular cavity spaced axially from said lubrication sealing lip,

the ratio of the axial distance between said lubrication sealing lip and said secondary dust seal lip to the distance between said secondary dust seal lip and said primary dust seal lip being at least 4 to 4,

said resilient sealing body having an annular concave inner surface between said secondary dust seal lip and said lubrication sealing lip, said concave surface cooperating with the outer surface of the shaft member to define a second annular cavity extending between said secondary dust seal lip and said lubrication sealing lip,

said resilient sealing body being molded from a single homogeneous mass of elastomeric material having a durometer hardness within the range of 73 to 90,

the difference between the diameter of said secondary dust seal lip and the diameter of the shaft member being within the range of about 0.001 to about 0.008 inches.

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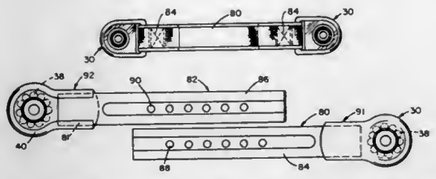
FLEXIBLE MOUNTING DEVICE FOR FURNITURE PRODUCTS AND THE LIKE

R. Jeffrey Walters, 28536 Knickerbocker Rd., Bay Village, Ohio 44140, and Paul Dennstedt, 26090 Byron Dr., North Olmsted, Ohio 44070

Continuation of Ser. No. 607,238, Oct. 31, 1990, abandoned. This application Jun. 5, 1992, Ser. No. 895,200

Int. Cl.[5] F16C *33/60, 35/04, 23/06;* **A47C** *3/02*

U.S. Cl. 384—505 **5 Claims**



1. A bearing assembly for use with a glider-type furniture piece having a support frame and a carriage member adapted for movement relative to the support frame, the bearing assembly including an inner race member having a recess groove therein and an outer race member having a recess formed therein, roller bearing means disposed in an annular raceway defined by said recesses, said inner race member having an upwardly and inwardly bent flange-like edge extending around a major peripheral portion thereof, said outer race member adapted to be frictionally secured beneath said bent edge, and said inner race member having an integral flange like portion adapted to mount a strap-like member, and a strap-like member selected from a generally rigid selectively adjustable strap-like member and a flexible strap-like member for interconnection between said support frame and said carriage member.

5,186,550

IMPACT PRINTER

Kiyofumi Koike, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

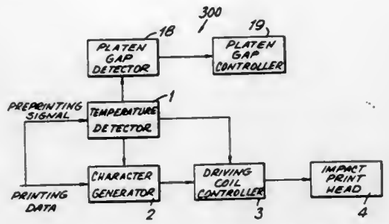
Continuation of Ser. No. 394,452, Aug. 16, 1989, Pat. No. 5,017,027. This application Mar. 18, 1991, Ser. No. 670,814

Claims priority, application Japan, Aug. 22, 1988, 53-207679

The portion of the term of this patent subsequent to May 21, 2008, has been disclaimed.

Int. Cl.[5] B41J *25/308*

U.S. Cl. 400—54 **9 Claims**



1. A printer that prints by impacting a transfer medium in response to a print signal to transfer printing material from the transfer medium to a recording medium, comprising:

signal means for providing a print signal having a preprinting signal portion for initiating printer temperature measurement and a data signal portion always following the preprinting signal for printing characters and images;

impact means including at least one impact member for impacting the transfer medium;

temperature detecting means responsive to the preprinting for measuring the temperature of the printer, comparing the temperature to a selected value and providing a warm-up signal if the temperature is less than or equal to the selected value; and

impact driving means responsive to both the warm-up signal and the data signal for printing by displacing the impact member in response to said data signal between a first home position away from the transfer medium and a second printing position in contact with the transfer medium and for warming up the printer by displacing the impact member between the first home position and a third warm-up position not contacting the transfer medium, in response to said warm-up signal and then printing in response to the data signal.

5,186,551

PRINTING APPARATUS FOR PRINTING RANDOMLY INPUT DATA IN ORDER

Hiroshi Hattori; Hideji Yoshimori, both of Nagoya; Kazuhiro Kondoh, and Akira Madama, both of Yokohama, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya and Hitachi Software Engineering Co., Ltd., Kanagawa, both of, Japan

Continuation of Ser. No. 258,640, Oct. 17, 1988, abandoned. This application Mar. 7, 1990, Ser. No. 515,672

Claims priority, application Japan, Oct. 15, 1987, 62-259889

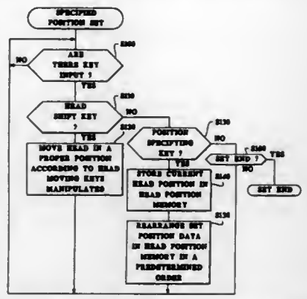
Int. Cl.[5] G06F *7/00*

U.S. Cl. 400—61 **14 Claims**

1. A printing apparatus having printing means for carrying out printing on a printing medium in accordance with printing data, the printing medium having a plurality of printable positions, each printable position being defined by a corresponding one of a plurality of consecutive column numbers and a corresponding one of a plurality of consecutive line numbers, said apparatus comprising:

moving means for moving printing means relative to the printing medium;

position specifying means for specifying a print position on the printing medium, said position specifying means comprising at least one head shift key for instructing said moving means to move said printing means to an arbitrary print position and a position specifying key for specifying the arbitrary print position as the print position by column number and line number on the printing medium, at least two print positions being specified at random, said position specifying key providing position data indicative of the specified print positions when depressed;



memory means for storing the position data in the order received from said position specifying key;

instruction means for issuing an instruction signal instructing to start printing; and

control means responsive to said instruction signal for controlling said moving means to move said printing means in a predetermined order in which said printing means is moved while completing the printing along a shortest distance path between the specified print positions.

5,186,552

DOT MATRIX PRINT HEAD

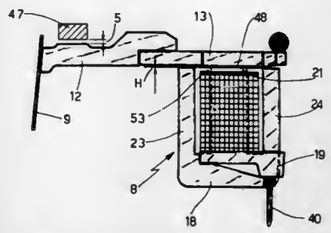
Gino Stevenin, Gaby, and Contardo Adamoli, Castellamonte, both of Italy, assignors to Microlys S.p.A., Ivrea, Italy

Filed Mar. 12, 1992, Ser. No. 849,777

Claims priority, application Italy, Mar. 19, 1991, 000199 A/91

Int. Cl.[5] B41J *3/12*

U.S. Cl. 400—124 **8 Claims**



1. A dot matrix print head comprising a number of printing devices and a number of corresponding electromagnets for selectively activating the printing devices, each said electromagnet comprising an anchor consisting of a plate pivotally cooperating with a ring support and a core of magnetic material having first and second coplanar pole pieces, and each said printing device comprising a printing element fitted to one end of the anchor of the associated electromagnet and having an operating direction, the anchor being substantially perpendicular to the operating direction of said printing element and having a flat surface cooperating with said first and second pole pieces; wherein

each said core is E-shaped and comprises a central bar defining an edge forming said first pole piece, and first and second opposite lateral bars spaced apart from the central bar and defining different parts of said second pole piece; and

said flat surface of the anchor having first and second opposite steps disposed parallel to each other, said first step being provided substantially in correspondence with said ring support for pivoting, when the anchor is in a rest position in which the electromagnet is de-energized, on said first lateral bar of the core, said second step being provided in correspondence with a gap between the central bar and said second lateral bar of the core so as to enable said anchor to overtravel pivoting on said edge of said central bar of the core for producing a ballistic stroke of the associated printing element.

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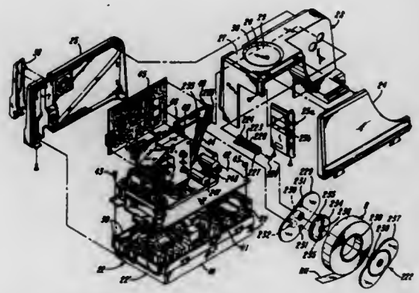
PRINTER AND METHOD

Ikuzo Sugiura, Sagamihara; Mitsuo Uchimura, Numazu; Kouichi Kawamura, Mishima, all of Japan; Ronald L. Fogle, Lebanon, and Orville C. Huggins, Dayton, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 223,207, Aug. 15, 1988, Pat. No. 5,051,009, which is a division of Ser. No. 885,886, Jul. 15, 1986, Pat. No. 4,776,714. This application May 20, 1991, Ser. No. 703,089

Int. Cl.[5] B65H *75/00*

U.S. Cl. 400—242 **17 Claims**



1. A method for loading an ink ribbon comprising applying a shaft cover to the front end of a ribbon guide shaft projecting in a cantilevered state from a side face of a case of a printer body; fitting cores of the ink ribbon respectively on the front ends of a ribbon feed shaft and a ribbon take-up shaft both projecting in a cantilevered state from said side face of said printer body case; the ink ribbon passing round the outer periphery of said shaft cover; and pushing in said cores and said shaft cover simultaneously to set the ink ribbon in a predetermined certain position.

5,186,554

INK RIBBON CARTRIDGE

Minoru Mizutani, and Norihisa Isaka, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Feb. 3, 1992, Ser. No. 829,405

Claims priority, application Japan, Feb. 13, 1991, 3-11975[U]

Int. Cl.[5] B41J *35/08*

U.S. Cl. 400—247 **10 Claims**

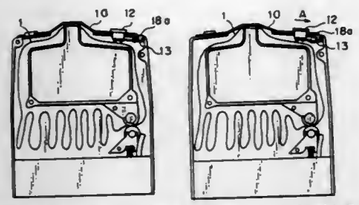
1. In an ink ribbon cartridge having an ink ribbon and a ribbon casing accommodating the ink ribbon therein and defining in a part thereof an ink ribbon exposure opening, the improvement comprising

a film defining a printing opening therethrough;

first and second supports, said film being fixed at lengthwise opposite ends thereof to said ribbon casing by said first and second supports, said film covering said ink ribbon exposure opening;

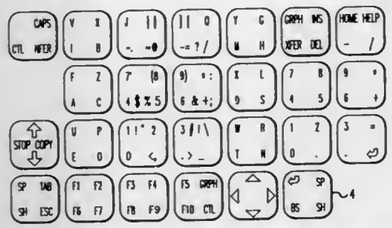
VOL 1147 ISS 3 FE 16 1993 UMI

means for movably mounting at least one of said first and second supports so as to be movable along the length of said film; and



means for normally biasing at least one of said first and second supports in a direction such that tension of said film is relaxed.

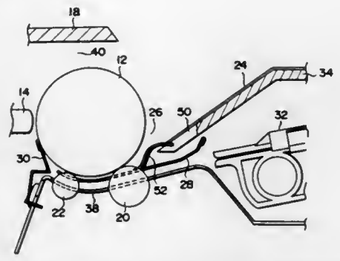
5,186,555
KEY ARRANGEMENT FOR WORD PROCESSOR OR THE LIKE ELECTRODE INSTRUMENT OR MACHINE
Ueru Chiba, 28-8, Kami-Shakujii 1-chome, Nerima-ku, Tokyo 177, Japan
Filed May 8, 1991, Ser. No. 696,566
Int. Cl.[5] B41J *5/28*
U.S. Cl. 400—485 **10 Claims**



1. Key arrangement in a keyboard of a word processor or the like electronic instrument or machine, comprising in combination:
a plurality of keys arranged substantially in an array of rows and columns having a distance between adjacent keys, means mounting each of said plurality of keys for movement in four diagonal directions relative to the remaining keys, means to produce a different distinguishable function responsive to movement of a key in each of said diagonal directions; and
a common stationary base member mounting said plurality of keys to be only slidably movable in said four diagonal directions relative to each of said keys and on a common horizontal plane.

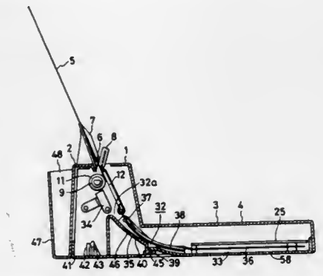
5,186,556
PAPER SHEET GUIDE FOR A PRINTER
Masayoshi Koyanagi, Shizuoka, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed Nov. 19, 1991, Ser. No. 794,386
Claims priority, application Japan, Nov. 22, 1990, 2-318945
Int. Cl.[5] B41J *13/14*
U.S. Cl. 400—642 **4 Claims**

1. A paper sheet guide for a printer, the printer including a printing head, a platen and an outer case that houses the printing head and said platen, said outer case including a paper sheet introducing opening, said paper sheet guide comprising:
a paper sheet introducing guide, mounted on the outer case, for guiding a paper sheet introduced into the paper sheet introducing opening to a position adjacent to the platen;
a paper sheet intermediate guide, mounted within the outer case, for guiding the paper sheet from a distal end portion of said paper sheet introducing guide to a gap formed between the platen and the printing head; and
a paper sheet auxiliary guide having an upper surface, said paper sheet auxiliary guide extending from said paper sheet intermediate guide such that a first obtuse angle is formed between the upper surface of the paper sheet auxiliary guide and an upper surface of said paper sheet intermediate guide;



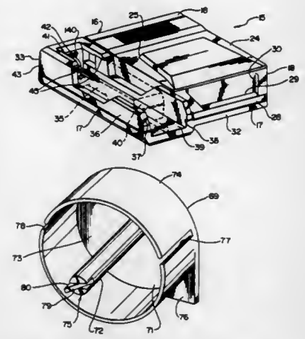
said paper sheet auxiliary guide intersecting an upper surface of the distal end portion of said paper sheet introducing guide such that a second obtuse angle is formed between the upper surface of said paper sheet auxiliary guide and an upper surface of said paper sheet introducing guide, whereby a paper sheet guided by said paper sheet guide in one of a direction toward said gap and a direction away from said gap, will move over the first and second obtuse angles without causing a paper jam.

5,186,557
PRINTER
Kazuhiro Fushimi, Mishima, Japan, assignor to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed Sep. 5, 1990, Ser. No. 577,516
Claims priority, application Japan, Sep. 6, 1989, 1-231237
Int. Cl.[5] B41J *29/02*
U.S. Cl. 400—691 **7 Claims**



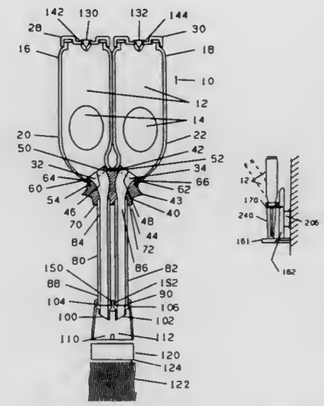
1. A printer comprising:
a printer mechanism housing portion which houses therein a printer mechanism including a print head and a platen located at a first position along a paper path, said printer mechanism housing portion having an upper surface and lower side faces, said printer mechanism housing portion comprising a paper insertion opening at said upper surface thereof through which paper is inserted at said upper surface thereof through which paper is inserted into the printer mechanism housing portion;
a flat terminal loading base disposed substantially perpendicular to said printer mechanism housing portion and being continuous to the lower side faces of said printer mechanism housing portion, said flat terminal loading base comprising a paper insertion passage for receiving paper to be printed formed inside of said flat terminal loading base and a terminal loading surface as an upper surface; and means for guiding paper form said paper insertion opening, between and past said print head and said platen in a first direction, and subsequently reversing the direction of paper feed to again feed said paper between said print head and platen in a second opposite direction and subsequently out of said paper insertion opening, said means including
a paper guide passage extending from said paper insertion opening in said printer mechanism housing portion to between said print head and the platen to said paper insertion passage in said flat terminal loading base for connecting the paper insertion opening with the paper insertion passage, said paper guide passage includes a portion curved paper guide located at a second position along the paper path which is spaced from the first position of the printer mechanism.

5,186,558
PORTABLE PRINTER WITH RECEPTACLE FOR DATA COMMUNICATION TERMINAL
Richard A. Sherman, Toddville; Robert B. Jaeger, Swisher, and Patrick H. Davis, Cedar Rapids, all of Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa
Filed Nov. 21, 1990, Ser. No. 616,857
Int. Cl.[5] B41J *29/02*
U.S. Cl. 400—692 **6 Claims**



1. A portable printer assembly comprising:
a rigid generally rectangular housing having a generally rectangular contiguous peripheral edge, the housing comprising:
a closed off generally rectangular printer cavity disposed within the peripheral edge of the housing;
a data entry terminal device cavity disposed at one side of the printer cavity and disposed within the peripheral edge of the housing, the terminal device cavity defining an open top channel for selectively receiving a data entry terminal device, said open top channel having a closed end co-terminal with the peripheral edge on a first side of the housing and having an open end co-terminal with the peripheral edge on a second opposite side of the housing;
a printer module mounted within the printer cavity of the housing; and
a self-contained power source disposed within the printer cavity and electrically coupled to the printer module;
wherein a terminal receptacle is disposed in the closed end of the open top channel and electrically couples the printer module with a data entry terminal device when one end of the data entry terminal device is inserted into the closed end of the open top channel.

5,186,559
COOKING SAUCE DISPENSER AND STAND
Peter P. Fu, 2 Berkshire Way, San Francisco, Calif. 94132
Filed Jul. 17, 1991, Ser. No. 731,498
Int. Cl.[5] A46B *11/02*; B65D *35/22, 35/56*
U.S. Cl. 401—44 **13 Claims**



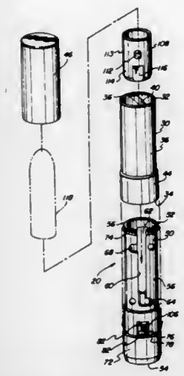
1. An elongated cooking sauce dispenser comprising:
a. a plurality of squeezable, tubular sauce containers each having a circular outlet aperture in a plane at an oblique angle to the axis of said container;
b. a hollow collar having a circular inlet aperture and a plurality of outlet apertures;
c. means for rotatably and sealingly connecting one of said container outlet apertures to one of said collar inlet apertures; and
d. a plurality of hollow flow tubes each connected to one of said collar outlet apertures with fluid communication passage therebetween for directing said sauce onto food;
whereby rotation of said container about said connecting means causes the axis of said container to form an acute angle with the axis of said elongated dispenser thereby forming a handle which improves the comfort of the user of said sauce dispenser.

5,186,560
INNERBODY FLEX TAB COSMETIC DISPENSER
Thomas F. Holloway, Southbury, Conn., assignor to Risdon Corporation, Naugatuck, Conn.
Filed Feb. 5, 1992, Ser. No. 831,189
Int. Cl.[5] A45D *40/12, 40/06*
U.S. Cl. 401—78 **16 Claims**

1. An innerbody flex tab cosmetic dispenser, comprising:
a tubular cam sleeve having upper and lower ends and inner and outer walls and having an internal helical thread extending along a substantial length of the inner wall of said cam sleeve;
a tubular innerbody having upper and lower ends, said innerbody being fitted into said tubular cam sleeve and being provided with a longitudinal track extending through the wall of said innerbody along a substantial length of said innerbody, said longitudinal track being provided with a lateral track segment extending laterally from a lower end of said longitudinal track;
a resilient tab formed with and attached to said innerbody and being at least partially cut away from said innerbody, said tab being retained from radially outward movement by frictional engagement with said inner wall of said cam sleeve, said tab having sufficient resilience to be flexed radially inwardly from said innerbody;

VOL 1147 ISS 3 FE 16 1993 UMI

a generally cylindrical elevator cup for containing a cosmetic preparation, fitted into said innerbody and having a cam follower lug extending through said longitudinal track to engage said helical thread, said elevator cup being movable in an axial path by relative rotation of said innerbody and cam sleeve, and having a reduced radius zone below said lug whereby said elevator cup has a clearance to permit retraction of said elevator cup into said innerbody without interference between said resilient tab and said elevator cup, by relative rotation of said innerbody and said cam sleeve, said elevator cup being rotatable in said innerbody by further relative rotation of said innerbody and said cam sleeve to cause said elevator cup lug to track into said lateral track segment such that said cup is rotated until said reduced radius zone is rotated away from said tab and said tab engages or confines a cylindrical outer wall of said elevator cup.

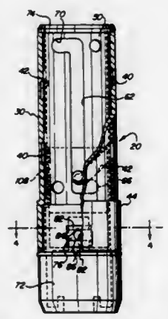


5,186,561

INCREMENTAL FEEL COSMETIC DISPENSER

Walter Ackermann, Watertown, and Thomas F. Holloway, Southbury, both of Conn., assignors to Risdon Corporation, Naugatuck, Conn.

Filed Mar. 17, 1992, Ser. No. 852,774
Int. Cl.[5] A45D *40/00, 40/06*
U.S. Cl. 401—78 **15 Claims**



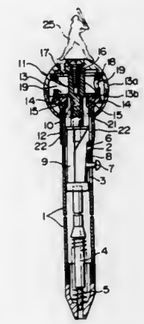
1. An incremental feel cosmetic dispenser, comprising:
a tubular cam sleeve having upper and lower ends and inner and outer walls and having an internal helical thread extending along a substantial length of the inner wall of said cam sleeve;
a plurality of rib elements provided on said inner wall of said lower end of said cam sleeve, said rib elements extending generally axially along said cam sleeve inner wall;
a tubular innerbody having upper and lower ends, said innerbody being fitted into said tubular cam sleeve and being provided with a longitudinal track extending through the wall of said innerbody along a substantial length of said innerbody;
a resilient round ended tab formed with and attached to said lower end of said innerbody and being at least partially cut away form said innerbody, said tab extending radially outwardly sufficiently to cam against said ribs of said cam sleeve such that a manual sensation of an incremental feel is provided to a user upon the relative rotation of said inner body and cam sleeve in both a dispensing and a retracting direction.

5,186,562

ELONGATE HANDWRITING IMPLEMENT WITH ROTATABLE DECORATION ON REAR END

Shigeo Yoshinaga; Tatsuo Ikegami, and Seiji Osaki, all of Tokyo, Japan, assignors to Yoshinaga Corporation, Tokyo, Japan

Filed May 29, 1992, Ser. No. 891,231
Claims priority, application Japan, Jan. 23, 1992, 4-006552[U]
Int. Cl.[5] B43K *29/00*
U.S. Cl. 401—112 **3 Claims**



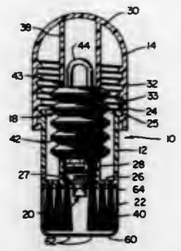
1. An elongate handwriting implement with a rotatable decoration on the rear end, comprising:
an elongate tubular handwriting casing an upper portion of which defines an engagement opening and a slot extending along the axis of said handwriting casing;
a writing core mounted within said handwriting casing, said writing core being movable axially of said handwriting casing;
a reset spring mounted within said handwriting casing and withdrawing the writing point of said writing core into the front end of said handwriting casing;
a handle assembly, fixed to the rear end of said writing core and including an elongate elastic handle extending along the axis of said handwriting casing, for moving said writing core axially of said handwriting casing, the handle having an engagement projection in and out of engagement with the opening and the slot;
a support fixed to the rear end of the handle assembly;
a decoration extending between said support and the rear end of the handwriting casing; and
said decoration having a tubular fixed element fixed to the rear end of said handwriting casing, and a hollow rotatable decoration body mounted to the fixed element, the decoration body being rotatable about and movable axially of the fixed element, the outer cylindrical surface of the fixed element having a plurality of autwardly radially extending camming pins, the interior surface of the decoration body having an annular rotatable cam follower the sidewall of which defines a plurality of follower grooves engaging the camming pins, the front end of each follower groove being open, the decoration body being connected to said handle assembly through said support so as to be rotatable about and relative to said support.

5,186,563

FLUID DISPENSER WITH APPLICATOR MEMBER

Patricia A. Gebhard, and Albert W. Gebhard, both of 2101 E. Alameda, Denver, Colo. 80209

Filed Jan. 7, 1991, Ser. No. 638,345
Int. Cl.[5] B65D *37/00*
U.S. Cl. 401—153 **8 Claims**



1. In a dispenser for the application of liquid material to the surface of the skin wherein an outer casing has a manually adjustable end cap at one end thereof and an applicator brush is mounted at an opposite end of said casing, the improvement comprising:
a generally bellows-shaped container for said material, said container having resilient wall portions compressible in a direction toward said brush and including an axial extension at one end; and
valve means at said opposite end of said casing in communication with said material within said container, said valve means having resiliently compressible wall portions biased radially and inwardly to a closed position and yieldable to open under the pressure of said material within said container, said end cap including an axial receiving portion engageable with said axial extension, and, said end cap being manually adjustable in a direction to compress said container and cause the discharge of said material through said valve means onto said brush, and said valve means movable to a closed position under a predetermined reduction in pressure of said material within said container.

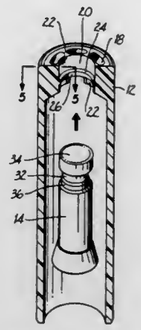
5,186,564

VENTED REMOVABLE CAP

Arthur D. Fuhrmann, III, Northford; Craig Stevens, Bethany, and Glenn Gramolini, Ansonia, all of Conn., assignors to BIC Corporation, Milford, Conn.

Filed Nov. 13, 1991, Ser. No. 791,897
Int. Cl.[5] B43K *9/00*
U.S. Cl. 401—202 **27 Claims**

18. A removable cap for receiving a writing implement, comprising:
a generally cylindrical member having an opening at a first end for receiving the implement and a partial enclosing wall at a second end, said partial enclosing wall integrally formed with said cylindrical member and including at least one radially projecting land portion defining at least one aperture through which the interior of said cylindrical member communicates with air external to said cylindrical member; and
an inner cap member disposed within said cylindrical member and in general axial alignment therewith, said inner cap member being opened at a first end and closed at a second end for receiving and sealing a writing point of the writing implement; and



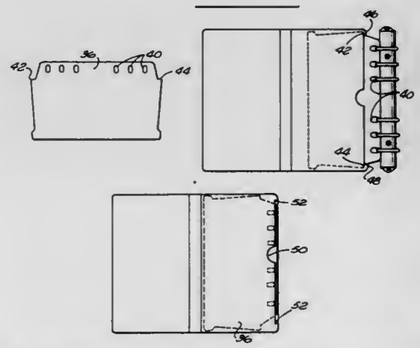
mounting means for suspendedly mounting said inner cap member at a second end thereof to said partial enclosing wall.

5,186,565

SLIDING RING MOUNT FOR A POCKET BINDER

Douglas M. Jack, Los Angeles, Calif., assignor to Day Runner, Inc., Fullerton, Calif.

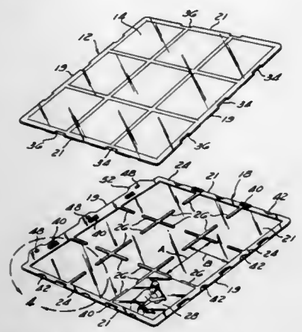
Filed Aug. 7, 1992, Ser. No. 927,830
Int. Cl.[5] B42F *13/00, 13/40*
U.S. Cl. 402—79 **24 Claims**



1. A pocket binder adapted for use with a ringed binder having rings, comprising:
a cover having an exterior panel and an interior panel, the cover having a compartment formed between the exterior panel and the interior panel and an opening along a first longitudinal edge of the cover to provide access to the compartment;
a ring mount slidably seated within the compartment, the ring mount having a first longitudinal portion defining a plurality of holes adapted for engagement with the rings of the ringed binder when the first portion of the ring mount is extended from the compartment; and
means for retaining a second portion of the ring mount in the compartment when the first portion of the ring mount is extended from the compartment.

VOL
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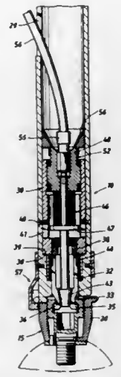
5,186,566
BASEBALL CARD STORAGE AND DISPLAY DEVICE
Michael E. Cameron, 311 Whitewood Pl., Encinitas, Calif. 92024
Filed Nov. 25, 1991, Ser. No. 798,077
Int. Cl.[5] B42F *13/00*
U.S. Cl. 402—79 **10 Claims**



1. A baseball card storage and display device, comprising:
a substantially rigid, transparent front plate having a generally planar bottom surface;
a substantially rigid, transparent back plate having a generally planar upper surface; and
at least four corner bosses formed on and extending upwardly from said upper surface of said back plate for maintaining at least one generally rectangular baseball card in a desired orientation upon said upper surface, said corner bosses each defining a top surface and being oriented to capture only the corners of a maintained baseball card and spaced from one another at distances substantially identical to the length and width dimensions of a maintained baseball card, said corner bosses further extending upwardly to a height slightly exceeding the thickness of a maintained baseball card;
said front plate and said back plate being secured to one another in a contiguous planar orientation with said bottom surface being abutted against the top surface of each of said corner bosses such that a maintained baseball card would be disposed but not compressed between said upper surface and said bottom surface.

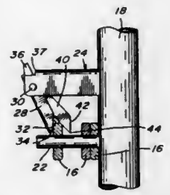
5,186,567
QUICK-CONNECT FASTENERS FOR ASSEMBLING DEVICES IN SPACE
Erik E. Evenson, Seabrook; Clarence J. Wesselski, Alvin, and Steve C. Ruiz, Houston, all of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.
Filed Jan. 15, 1992, Ser. No. 824,806
Int. Cl.[5] B25G *3/00*
U.S. Cl. 403—7 **20 Claims**

1. A quick-connect fastener to be coupled to a member having an opening and comprising:
a tubular body having an access opening in one side thereof and an open forward end arranged to be engaged against another member with the longitudinal axis of said tubular body aligned with an opening in another member;
a tubular collet coaxially mounted within said body ahead of said access opening and arranged to be moved along said longitudinal axis and including forwardly-projecting flexible fingers having enlarged ends sized to enter an opening in another member when said fingers are contracted;
an expander cooperatively arranged within said collet to be advanced against said flexible fingers for expanding said finger ends within an opening in another member;
an externally-threaded actuator cooperatively arranged in said collet to be advanced forwardly therein toward said expander in response to rotation of said actuator;
said actuator and operable in response to advancement of said actuator within said collet for urging said expander forwardly against said flexible fingers and expanding said finger ends once they are inserted into an opening; and
actuating means operable for rotating said actuator from outside of said tubular body including a first coupling member coaxially arranged on the rear of said actuator and accessible from said access opening, a flexible shaft having sufficient rigidity to withstand moderate axial



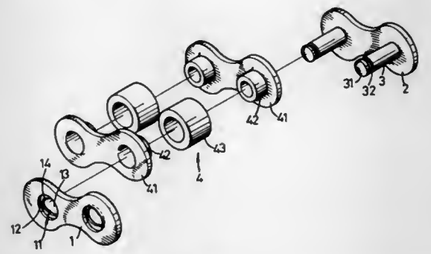
forces and arranged to pass through said access opening and be directed toward said first coupling member in response to movements of an actuating device positioned outside of said tubular body to the rear of said side opening and coaxially coupled to the rearward end of said flexible shaft for imparting axial and rotational forces thereto, and a second coupling member mounted on the forward distal end of said flexible shaft and arranged to be passed through said access opening and releasably engaged with said first coupling member for imparting said axial and rotational forces to said actuator before said flexible shaft and second coupling member are subsequently withdrawn from within said tubular body by way of said access opening.

5,186,568
SCAFFOLDING DOUBLE LATCH LOCKING DEVICE
Léo Falardeau, 2650, 4th Ave., Québec, Canada G1J 5E6
Filed Jul. 28, 1992, Ser. No. 920,906
Claims priority, application Canada, May 1, 1986, 508072
Int. Cl.[5] E04G *7/00*
U.S. Cl. 403—49 **7 Claims**



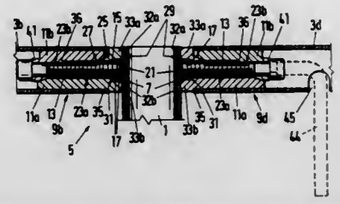
1. A double latch device destined to support in erected condition a dismantleable scaffolding, said scaffolding comprising at least three vertical, parallel frames, of which at least two are spaced, and at least two pairs of stay rods with bored ends interconnecting said frames when the scaffolding is in its erected condition; said double-latch device comprising at least one arm and a stem secured to each of said frames, said stem being parallel to said arm and underlying same, the bore end of a stay rod being able to slide along said stem, a first rigid, elongated, cross-sectionally U-shape latch defining two spaced, parallel wings being pivoted at an intermediate point to the free end of said arm around a pivotal axis for moving in the interior plane of the corresponding frame of scaffolding from a high limit position, released from said stem against the bias of gravity and enabling the free engagement and disengagement of said bored ends of stay rods and their sliding motion along aid stem, up to a lower limit position, where a lock end of said first latch is destined to lock the bored end of a stay rod which would be engaged onto said stem, and a second rigid, elongated latch mounted at one end in between said wings of the first latch and pivoted by this same end to said pivotal axis of the first latch to move along the same plane of frame between the first latch and the body of said arm from a high limit position, released from said stem against the bias of gravity and enabling the free engagement and disengagement of said bored ends of stay rods and their sliding motion along said stem, up to a lower limit position, where a lock end of the second latch locks the bored end of a first stay rod engaged onto said stem, the lock end of said first latch being farther from said frame than the lock end of said second latch in the lower limit positions of the two said first and second latches.

5,186,569
CHAIN CONNECTOR
Chia L. Wu, No. 734, Chung Shan Rd., Kuei Jen Hsiang, Tainan Hsien, Taiwan
Filed Apr. 5, 1991, Ser. No. 680,905
Int. Cl.[5] F16C *11/00*; F16G *13/18*
U.S. Cl. 403—154 **5 Claims**



1. A chain connector, comprising:
a first plate having two lateral portions each including an opening formed therein, each opening being defined by a first substantially-circular inner hold overlapping a second, relatively smaller semi-circular outer hole, the centers of said first and second holes being co-linear;
a second plate having two lateral portions each including a circular opening formed therein, the centers of said circular openings being coaxial with said centers of said second holes; and
two pins each having a first end, and a second end near which a neck and head are formed;
said first ends of said pins being inserted in said openings of said second chain plate and urged towards each other to permit said second ends of said pins to be inserted through said first holes of said first plate such that each neck is securely received in a respective second hole.

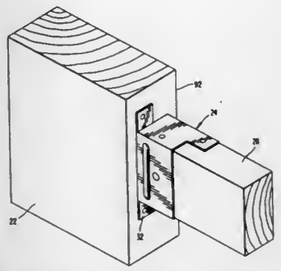
5,186,570
FASTENING DEVICE FOR THE RELEASABLE FASTENING OF A STRUT TO A COLUMN, A COLUMN FOR HOLDING STRUTS, AND STRUT FOR FASTENING TO A COLUMN
Rudolf Graf, Wolfhalden, Switzerland, assignor to USM U. Schärer Söhne AG., Munsingen, Switzerland
Filed Mar. 8, 1991, Ser. No. 666,733
Claims priority, application Switzerland, May 9, 1990, 1579/90
Int. Cl.[5] F16B *1/00*
U.S. Cl. 403—174 **8 Claims**



1. A fastening device for releasably fastening the front end face of at least one tubular strut (*3a–3d*) to the cylindrical peripheral side wall surface of a cylindrical column (**1**), said strut (*3a–3d*) having a hollow interior surface, a cylindrical peripheral surface and the front end face thereof to be fastened to said column (**1**) being at right angles to the longitudinal axis of the strut, comprising
a retainer ring (**7**), one connecting element (*9a–9d*) for each strut (*3a–3d*), and a single piece clamping element (**13**) for each connecting element,
said retainer ring (**7**) having a central opening with a cross-sectional area of a size to receive said column (**1**) therein,
said connecting element (*9a–9d*) having a central bore (*23a,23b*),
said clamping element (**13**) being situated in said central bore (*23a, 23b*),
said connecting element (*9a–9d*) having a first pressure contact surface (*32a, 32b*) being at least partly formed to said cylindrical peripheral side wall surface of said column (**1**) and said single piece clamping element (**13**) connected to pressably force-lock said first pressure contact surface against said cylindrical peripheral side wall surface of said column (**1**),
a bearing shoulder (**35**) on said connecting element inwardly of said first pressure contact surface (*32a, 32b*) receiving said front end face of said strut,
said connecting element (*9a–9d*) having a second pressure contact surface (**37, 43**) being at least partly formed to said hollow interior surface of said strut (*3a–3d*), and said clamping element (**13**) connected to pressably force-lock said second pressure contact surface against said hollow interior surface of said strut (*3a–3d*), and press said front end face of said strut against said bearing shoulder (**35**),
said retainer ring (**7**) having engaging means (**17**) for said clamping element (**13**) enabling said clamping element (**13**) to apply a force between said connecting element (*9a–9d*), said retainer ring (**7**), said strut (*3a–3d*) and said column (**1**) for pressably force-locking said first pressure contact surface (*32a, 32b*) against said cylindrical peripheral side wall surface of said column (**1**) and said second pressure contact surface (**37, 43**) against said hollow interior surface of said strut (*3a–3d*), and
said clamping element (**13**) having power coupling means only inside the hollow interior space of the strut (*3a–3d*) whereby openings are avoided through the peripheral surface of the end region of said tubular strut (*3a–3d*) immediately adjacent the front end face thereof.

VOL 1147 ISS 3 FE 16 1993 UMI

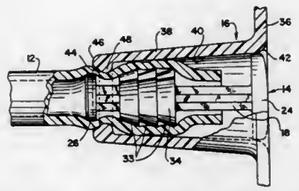
5,186,571
FENCE RAIL BRACKET
Walter G. Hentzschel, Weirton, W. Va., assignor to Desco Corporation, McKenzie, Tenn.
Filed Jan. 7, 1991, Ser. No. 637,811
Int. Cl.[5] F16B *7/04;* **E04H** *17/14*
U.S. Cl. 403—231 **3 Claims**



1. A fence rail bracket for use with a member having maximum and minimum cross-sectional dimensions comprising:
a generally planar body portion, having a longitudinal length essentially the same as the maximum cross-sectional dimension and a longitudinal stiffening rib;
a pair of L-shaped ears, disposed transversely of the body portion, parallel to one another, extending perpendicularly to the plane of the body portion by a distance essentially the same as the minimum cross-sectional dimension;
a generally rectangular tab disposed longitudinally of the body portion, extending perpendicularly to the plane of the body portion and being perpendicular to each of the L-shaped ears, having a length exceeding the maximum cross-sectional dimension, and a width no greater than the minimum cross-sectional dimension;
the planar body portion, the pair of L-shaped ears, and the generally rectangular tab defining a laterally open pocket;
wherein the body portion, the ears, and the tab are formed from a single metal piece;
wherein each of the L-shaped ears defines a notch;
wherein each notch is offset from the plane of the body portion by a predetermined distance; and
wherein the sum of those predetermined distances and the length of the body portion is essentially equal to the length of the rectangular tab;
whereby material waste is effectively eliminated in the manufacturing process.

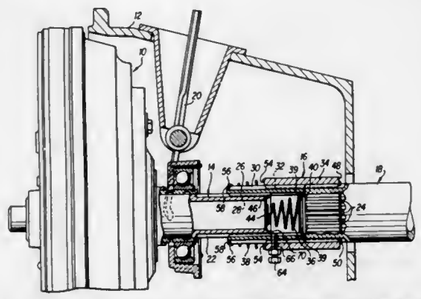
5,186,572
END CONNECTOR FOR TUBING
Francis G. Frano, Hoffman Estates, and Nelson D. McIlveen, Oak Forest, both of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.
Filed Jan. 17, 1992, Ser. No. 822,356
Int. Cl.[5] B25G *3/00*
U.S. Cl. 403—251 **20 Claims**

1. An end connector for attachment to an end portion of a tubing member, comprising:
a housing having a through-bore defined therethrough which has a predetermined inner diameter, a first aperture defined within a first end portion of said housing and in communication with said through-bore of said housing, an annular rib defined within the vicinity of said first aperture of said housing and projecting radially inwardly with respect to said first aperture of said housing and with respect to said through-bore of said housing such that the inner diametrical extent defined by said annular rib is less than said predetermined inner diameter of said through-bore of said housing, and a second aperture having a predetermined diametrical extent defined within a second end portion of said housing; and
plug means having a predetermined external diametrical extent which is less than said predetermined diametrical extent of said second aperture of said housing and said predetermined inner diameter of said through-bore of said housing, but greater than said inner diametrical extent of said annular rib, so as to be insertable through said second



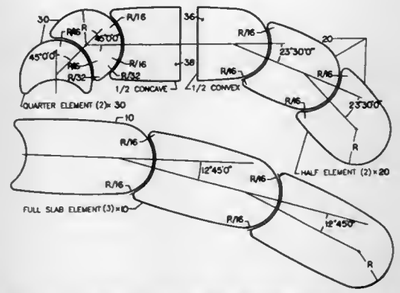
aperture of said housing and movable within said through-bore of said housing until said plug means encounters said annular rib of said housing for cooperative engagement with said annular rib of said housing for releasably retaining said end portion of said tubing member between said plug means and said annular rib of said housing so as to prevent removal of said end portion of said tubing member from said housing when said tubing member is subjected to a tensile force in a predetermined direction.

5,186,573
COUPLING FOR CONNECTING SHAFTS
Richard A. Flotow, Butler, Ind., assignor to Dana Corporation, Toledo, Ohio
Filed Sep. 23, 1991, Ser. No. 763,701
Int. Cl.[5] F16D *1/10*
U.S. Cl. 403—300 **13 Claims**



5. An arrangement for coupling the output shaft of a clutch to the input shaft of a transmission wherein the output shaft and input shaft are both splined, the arrangement comprising:
a coupling having first and second splined sleeves with the first splined sleeve being splined to the output shaft of the clutch and the second splined sleeve being splined on both the first splined sleeve and, when in a projected position, on the input shaft of the transmission; and
at least one spring for biasing the second sleeve to the projected position wherein, to decouple the output shaft of the clutch from the input shaft of the transmission, the second sleeve is axially slid against the bias of the spring to decouple the second sleeve from the input shaft of the transmission whereby the clutch can be removed from the drive line without also removing the transmission.

5,186,574
INTERLOCKING GROUND SLAB ELEMENT AND METHOD
Wayne R. Tavares, P.O. Box 543, Mashpee, Mass. 02649
Filed Feb. 10, 1992, Ser. No. 833,364
Int. Cl.[5] E01C *5/02, 5/04, 5/06*
U.S. Cl. 404—73 **18 Claims**

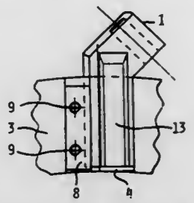


1. An interlockable, ground slab element adapted to form a surface of a selected design, by employing a plurality of the ground slab elements, with grout material as a bonding filler and spacing agent, in an interlocking and rotating relationship, which ground slab element comprises:
a) a generally rectangular, elongated, ground slab element composed of a hard material, and having a top surface and a one and other end, and a thickness less than the width or the length of the ground slab element;
b) the one end of the slab element forming a convex, arcuate surface, and having a radius R and extending generally from one to the other sides of the slab element;
c) the other end of the slab element forming a concave, arcuate surface;
d) the radius of the concave end having a greater radius than the radius R of the convex end, so as to provide for the convex end of the slab element to fit within the concave end of the slab element in an interlocking and partially rotatable relationship, while allowing space for grout material, and to permit the formation of arcuate design surfaces by the use of a plurality of the slab elements; and
e) the outer periphery of the slab element characterized as curvilinear throughout the periphery.

14. A method of preparing a surface composed of slab elements, which method comprises:
a) providing a plurality of slab elements of claim 1;
b) matingly interlocking the convex end of the slab elements within the concave end of an adjacent slab element, employing a grout material; and
c) forming a flat surface of selected design composed of the interlocked slab elements.

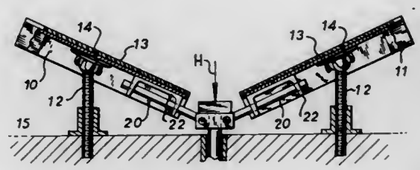
5,186,575
PLANING DEVICE FOR PLANING DOWN ROAD SURFACES
Reinhard Wirtgen, Hohner Strasse 2, D-5469 Windhagen, Fed. Rep. of Germany
Filed Jul. 9, 1991, Ser. No. 727,078
Claims priority, application Fed. Rep. of Germany, Jul. 12, 1990, 4022034
Int. Cl.[5] E21C *13/00*
U.S. Cl. 404—96 **10 Claims**

1. A cutter apparatus for being positioned on a conveyor worm of a roller-type planing device for planing down road surfaces, said cutter apparatus having a multiplicity of planing tools which are arranged in releasable retention boxes, said retention boxes having shank parts in turn bolted into radial recesses defining side openings in the conveyor worm wherein at least one retention box at least partially covering the shank part is fastenable by bolts penetrating through the conveyor



worm in order to retain the shank part of the respective retention box in the side opening of the conveyor worm.

5,186,576
BOAT HULL SUPPORT
Oscar A. Fournier, 10200 Gandy Blvd., Apt. 1018, St. Petersburg, Fla. 33702
Filed Sep. 6, 1991, Ser. No. 755,917
Int. Cl.[5] B63C *5/04*
U.S. Cl. 405—7 **7 Claims**



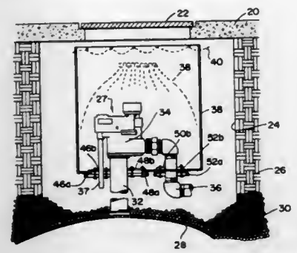
1. A boat hull support, comprising;
a pair of hull support members spaced from each other and each pivotally mounted intermediate its ends to a respective upright;
a guide post mounted for vertical movement in the space between the support members; and
means joining the support members to the guide post so that vertical movement of the guide post will be translated into substantially equal displacement of the support members on their pivot mountings and displacement of one of the support members will be translated into substantially equal displacement of the other support member.

5,186,577
SECONDARY CONTAINMENT SYSTEM FOR MANHOLES AND THE LIKE
Edward E. Reicin, Skokie; Rano J. Bertolozzi, Des Plaines, and Theodore Cortapassi, Dolten, all of Ill., assignors to MPC Containment Systems, Ltd., Chicago, Ill.
Filed Jun. 14, 1991, Ser. No. 715,437
Int. Cl.[5] B65G *5/00;* **B65B** *3/06*
U.S. Cl. 405—52 **12 Claims**

1. A secondary containment system for protecting against fluids leaking from equipment in confined spaces, said secondary containment system comprising an open top bag made of a flexible membrane which resists attack by liquids carried by said equipment, closure means at the top of the bag for gathering, pinching in and securing the top of said flexible bag in order to close said bag and resist entry of water or to open and spread the top in order to give access for servicing the equipment, at least one hole formed at a selected location in said bag

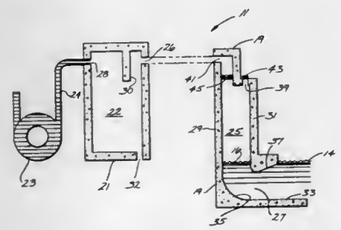
VOL 1147 ISS 3 FE 16 1993 UMI

at a point where devices enter said bag in order to give access to said equipment, means surrounding said devices and tightly



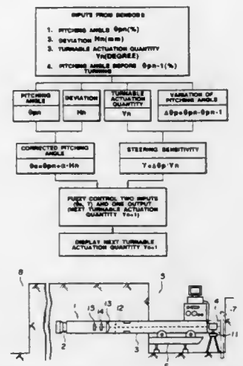
fastened on opposite sides of said membrane, and sealing means between said surrounding means and said membrane.

5,186,578
WAVE GENERATOR
Johan A. Perslow, Huntington Beach, Calif., assignor to Space Biospheres Venture, Oracle, Ariz.
Filed Sep. 20, 1991, Ser. No. 763,124
Int. Cl.[5] E02B *3/00*; E04H *3/18*
U.S. Cl. 405—79 **28 Claims**



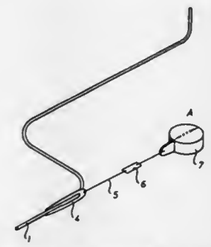
1. A wave generator for periodically inducing surface waves in a body of water, comprising:
(a) a water-lift elevator positioned next to said body of water and having:
(i) a water-lift chamber rising above the surface of said body of water;
(ii) an opening extending below the surface of said body of water for exchanging water between said water-lift chamber and said body of water;
(iii) an air inlet for admitting air into said water-lift chamber; and
(iv) an air outlet for exhausting air from said water-lift chamber;
(b) pump means for exhausting air, said pump means having an air intake;
(c) air buffer means for defining an enclosed air space connected between the air intake of said pump means for exhausting air and said air outlet; and
(d) valve means for periodically opening and closing said air inlet and said air outlet so as to periodically raise and drop, in said water-lift chamber, water from said body of water.

5,186,579
APPARATUS FOR CONTROLLING DIRECTION OF UNDERGROUND EXCAVATOR
Tadayuki Hanamoto, and Norio Takahashi, both of Hiratsuka, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusbo, Tokyo, Japan
PCT No. PCT/JP91/00521, § 371 Date Dec. 16, 1991, § 102(e) Date Dec. 16, 1991, PCT Pub. No. WO91/16525, PCT Pub. Date Oct. 31, 1991
PCT Filed Apr. 19, 1991, Ser. No. 777,560
Claims priority, application Japan, Apr. 19, 1990, 2-101583
Int. Cl.[5] E21D *9/06*
U.S. Cl. 405—143 **2 Claims**



1. An apparatus for controlling the direction of displacement of an underground excavator including a turnable jack to perform excavating operations in the underground region while controlling the direction of the same by turnably displacing a pilot jack, wherein said apparatus comprises;
first detecting means for detecting horizontal deviation of said underground excavator relative to a planned line for said excavating operations, vertical deviation of the same, a pitching angle assumed by said underground excavator and a yawing angle assumed by the same,
second detecting means for detecting a quantity of turnable displacement of said underground excavator caused by said turnable jack not only in the vertical direction but also in the horizontal direction,
first calculating means for determining a corrected pitching angle based on said pitching angle and said vertical deviation detected in the above-defined manner,
second calculating means for determining a corrected yawing angle based on said yawing angle and said horizontal deviation detected in the above-defined manner,
third calculating means for determining a difference between the preceding pitching angle and the present pitching angle, and moreover, determining a steering sensibility sensible in the vertical direction based on said detected quantity of turnable displacement of said underground excavator in the vertical direction,
fourth calculating means for determining a steering sensibility sensible in the horizontal direction based on a difference between the preceding yawing angle and the present yawing angle as well as said detected quantity of turnable displacement of said underground excavator in the horizontal direction,
first fuzzy controlling means for determining a quantity of next turnable actuation of said turnable jack in the vertical direction in accordance with fuzzy rules in response to outputs from said first calculating means and said third calculating means, said fuzzy rules being preset such that said corrected pitching angle and said steering sensibility sensible in the vertical direction determined in the above-defined manner are taken as premise variables and said quantity of next turnable actuation of said turnable jack in the vertical direction is taken as a conclusion variable, and
second fuzzy controlling means for determining a quantity of next turnable actuation of said turnable jack in the horizontal direction in accordance with fuzzy rules in response to outputs from said second calculating means and said fourth calculating means, said fuzzy rules being preset such that said corrected yawing angle and said steering sensibility sensible in the horizontal direction determined in the above-defined manner are taken as premise variables and said quantity of next turnable actuation of said turnable jack in the horizontal direction is taken as a conclusion variable.

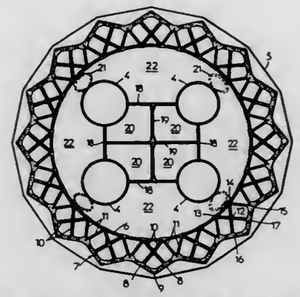
5,186,580
METHOD OF LAYING A PIPE ON A SEA FLOOR FOR THE TRANSPORTATION OF A FLUID
Jens J. Kappel, Hovmosevej 4, Gadevang, DK-3400 Hillerød, Denmark
PCT No. PCT/DK89/00283, § 371 Date May 30, 1991, § 102(e) Date May 30, 1991, PCT Pub. No. WO90/06466, PCT Pub. Date Jun. 14, 1990
PCT Filed Nov. 30, 1989, Ser. No. 689,765
Claims priority, application Denmark, Nov. 30, 1988, 6697/88
Int. Cl.[5] F16L *1/04*
U.S. Cl. 405—169 **9 Claims**



1. Method of laying a pipe on a sea floor for the transportation of a fluid having a temperature and/or a pressure exceeding the temperature and pressure of the surroundings by which method the pipe is trenched and buried in the bed of the sea, characterised by the pipe (1) being provided with prestressing by pulling before it is buried, said prestressing being at least substantially capable of neutralizing the influence on the pipe (1) as a result of the temperature and pressure difference during use.

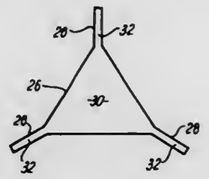
5,186,581
GRAVITY BASE STRUCTURE OF AN OFFSHORE PLATFORM RESISTING TO ICEBERGS
Guy P. Ngoc, Neuilly-Plaisance, and Tuong L. Huynh, Louvres, both of France, assignors to Doris Engineering, Paris, France
Filed Dec. 18, 1990, Ser. No. 629,697
Claims priority, application France, Jan. 30, 1990, 90 01055
The portion of the term of this patent subsequent to Mar. 6, 2007, has been disclaimed.
Int. Cl.[5] E02D *19/04, 27/52*
U.S. Cl. 405—217 **7 Claims**

1. A gravity base structure for offshore platforms for resisting the impact of icebergs, said structure comprising:
a concrete monolith caisson having a bottom slab for resting on the seabed and top slab for support of equipment;
an inner wall extending substantially vertically between said top and bottom slabs;
an outer wall generally concentric with said inner wall so as to define an annular area between said inner and outer walls and extending substantially vertically between said top and bottom slabs;
said outer wall consisting of a plurality of interconnected dihedron shaped defensive elements each of which is formed by two vertical walls connected an an angle to each other and which disposed over at least a part of the periphery of the caisson, each of said vertical walls having an inner planar surface and a midpoint;



a plurality of vertical partitions totally within said annular area between said inner and outer walls to define a lattice structure within said annular area, at least some of said partitions being directly connected to said inner planar surfaces of said vertical walls approximately at said midpoints.

5,186,582
PROCESS FOR FORMING PILES AND PRODUCT
Roger A. Bullivant, c/o Roxbury Limited, 28 Irish Town, Gibraltar, Gibralter
PCT No. PCT/GB90/00378, § 371 Date Sep. 11, 1991, § 102(e) Date Sep. 11, 1991, PCT Pub. No. WO90/10755, PCT Pub. Date Sep. 20, 1990
PCT Filed Mar. 12, 1990, Ser. No. 761,752
Claims priority, application United Kingdom, Mar. 15, 1989, 8905985
Int. Cl.[5] E02D *5/38, 7/18*
U.S. Cl. 405—239 **7 Claims**



1. A method of forming a pile, comprising:
(a) providing a pile forming member having no less than three and no more than four fins projecting transversely thereof;
(b) applying a downwardly directed force to said pile forming member to drive said member into the ground to a predetermined depth;
(c) driving the pile forming member into the ground to form a passage in the ground having a cross-section corresponding to that of the member and fins; and
(d) applying an upwardly directed vibratory force to withdraw said member from the ground;
(e) supplying a pile forming material through the member simultaneously with the step of (d) to fill said passage as the member is withdrawn therefrom thereby creating a

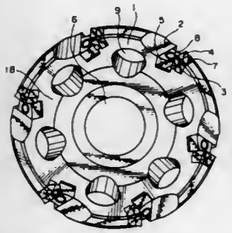
VOL
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pile having a cross-section corresponding to that of the member and fins.

5,186,583
ROTARY CUTTER

Masaaki Nakayama, and Masayuki Okawa, both of Ibaraki, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Jan. 23, 1992, Ser. No. 824,395
Claims priority, application Japan, Jan. 23, 1991, 3-6625
Int. Cl.[5] B26D *1/12*
U.S. Cl. 407—39 **4 Claims**



1. A rotary cutter comprising:

a tool body having an axis of rotation therethrough and defined by forward and rearward axial faces and a circumferential surface lying between said forward and rearward axial faces, said tool body having a plurality of insert receiving recesses formed in said circumferential surface in circumferentially spaced relation to one another and having a mounting bore formed coaxially therewith, said tool body having a plurality of vacant through holes formed in circumferentially spaced relation to one another, each of said through holes being disposed so as to extend in a radial manner about said axis of rotation of said tool body and opening to said circumferential surface and said forward axial face, each of said through holes being disposed between two adjacent insert receiving recesses whereby distortion of the tool body is prevented;

a plurality of indexable cutting inserts each releasably attached to a respective one of said insert receiving recesses; and

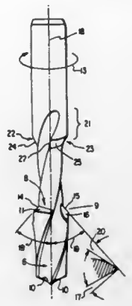
a plurality of clamp wedges each received in a respective one of said insert receiving recesses for securing a respective cutting insert.

5,186,584
TWIST DRILL

Gebhard Müller, Fürth, and Simon Escher, Ingolstadt, both of Fed. Rep. nf Germany, assignors to Hertel AG Werkzeuge & Hartstoffe, Fürth, Fed. Rep. of Germany

PCT No. PCT/DE90/00827, § 371 Date Jun. 27, 1991, § 102(e) Date Jun. 27, 1991, PCT Pub. No. WO91/06387, PCT Pub. Date May 16, 1991
PCT Filed Oct. 31, 1990, Ser. No. 688,587
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1989, 8912860[U]
Int. Cl.[5] B23B *51/08*
U.S. Cl. 408—26 **18 Claims**

1. A twist drill having a cutting direction, comprising: an elongated piece of solid metal having an end with cutting edges, a cutting member adjacent the end, a root clearance region adjacent the cutting member, and transition stages between the cutting member and the root clearance region, wherein at least the cutting member has spiral grooves, wherein the cutting member and the root clearance region have outermost portions with respective diameters, the diameter of the outermost portion of the root clearance region being smaller than the diameter of the outermost portion of the cutting member, wherein the transition stages are disposed between the spiral grooves and are configured as ring segment faces which slope in the direction of the cutting edges, and wherein cutting faces are provided adjacent the ring segment faces in the cutting direction of the drill to form undercutting

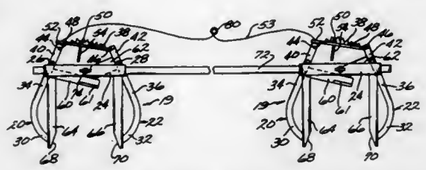


edges, the cutting faces extending into the spiral grooves, from the outermost portion of the cutting member to respective positions inward of the diameter of the outermost portion of the root clearance region.

5,186,585
WHEELCHAIR RESTRAINING SYSTEM

James E. Sousa, 18 Wheaton Dr., Attleboro, Mass. 02703; Ronald A. Rogers, Foxboro, Mass., and Allen Grota, Attleboro, Mass., assignors to James E. Sousa, Attleboro, Mass.

Filed Apr. 3, 1991, Ser. No. 679,957
Int. Cl.[5] B60P *7/08*
U.S. Cl. 410—9 **14 Claims**



1. A wheelchair restraining system for securing and selectively releasing a wheelchair in a vehicle comprising:

a support means,

first and second pairs of pincer elements mounted on the support means, the pincer elements of each pair movable relative to each other between a first open position and a second closed position, the pincer elements defining a space when in the closed position,

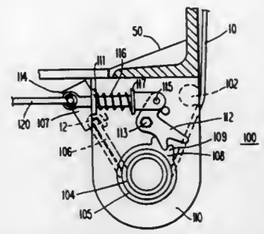
means for moving the pincer elements into the closed position including an arm extending from each pincer element of a pair toward the other pincer element of the respective pair and being adapted to be engaged by a wheel placed between the pincer elements with the pincer elements being movable by the wheel toward a closed position whereby a wheel placed between the pincer elements will be secured, the arms in the closed position each having a surface overlapping and lying on each other and being movable in the same plane whereby a wheel placed between the pincer elements will engage one arm moving it which in turn moves the other arm to close the pincer elements and

means for selectively moving the pincer elements into the open position to release the wheel.

5,186,586
REMOTE RELEASE DEVICE FOR LOAD BINDERS

Everett H. Stephenson, Jr., Savannah, Ga., assignor to Union Camp Corporation, Wayne, N.J.

Division of Ser. No. 661,923, Feb. 26, 1991, Pat. No. 5,145,299. This application Jun. 11, 1992, Ser. No. 898,784
Int. Cl.[5] B60P *7/08*
U.S. Cl. 410—100 **4 Claims**



1. Remote release apparatus for releasing a load restraint comprising an elongated flexible restraint member having a hook at a free end thereof, the restraint being placed in tension by a winch and surrounding a load on a load supporting body, said apparatus comprising:

a housing;

a drum rotatably mounted within said housing, said drum having two ends, at least a portion of each end extending through said housing;

a hook bar for receiving the hook in releasable engagement, said hook bar affixed to said drum and disposed within said housing;

at least one ratchet tooth affixed to a first end of said drum;

a pawl pivotably affixed to said housing in a position to engage said at least one ratchet tooth;

a connecting rod pivotably attached to said pawl;

a spring means for urging said pawl into engagement with said ratchet tooth; and

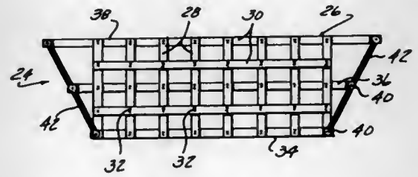
a release bar slidably connected to said pawl disengaging said pawl from said ratchet tooth,

whereby said ratchet tooth and said pawl may be selectively engaged to prevent rotation of said drum in one direction and disengaged to permit rotation in two directions and thereby release said hook from engagement with said hook bar.

5,186,587
AUTOMOTIVE BARRIER NET

Donal Moore, Northville, Mich., assignor to Polytech Netting Industries, L.P., Canada

Division of Ser. No. 584,467, Sep. 18, 1990, Pat. No. 5,090,856, which is a continuation-in-part of Ser. No. 469,966, Jan. 25, 1990, Pat. No. 5,026,231. This application Jan. 23, 1992, Ser. No. 824,044
The portion of the term of this patent subsequent to Jun. 25, 2008, has been disclaimed.
Int. Cl.[5] B61D *45/00*
U.S. Cl. 410—118 **9 Claims**



1. In an automobile having a car body with a passenger compartment and a trunk compartment, the trunk compartment having a forward end with a top wall, a bottom wall, and two side walls extending upwardly and outwardly from the bottom wall, the improvement comprising:

a barrier net at the trunk forward end and suspended between the passenger compartment and the trunk compartment, the barrier net comprising:

flexible, substantially inelastic webbing, the webbing comprising:

a plurality of vertical, spaced straps;

a plurality of horizontal, spaced straps traversing the vertical straps;

wherein the webbing has a top, bottom and two sides which conform to a space defined by the forward end's top, bottom and side walls; and

securing means for securing the vertical strap to the horizontal strap at each point where the two straps cross; and

barrier net attaching means for attaching the barrier net to the forward end side walls, wherein the barrier net attaching means comprises;

at least two apertures formed in each side of the webbing;

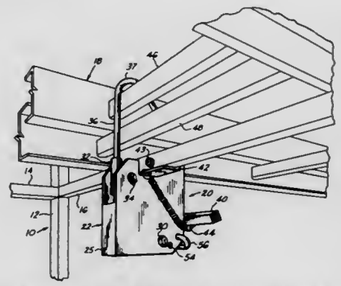
two brackets, each bracket having corresponding apertures formed therein;

bracket attaching means, receivable through the respective bracket and webbing apertures and through corresponding apertures in the forward end side wall, for attaching the brackets to the webbing and to the forward end side wall.

5,186,588
LADDER RACK LADDER LATCH

Charles W. Sutton, and J. Wayne Sutton, both of 5505 NW. 64th, Oklahoma City, Okla. 73132

Filed May 3, 1991, Ser. No. 695,063
Int. Cl.[5] E05B *73/00*
U.S. Cl. 410—120 **5 Claims**



1. In a ladder latch for a ladder rack having a cross brace for supporting a ladder having rungs, the improvement comprising:

a ladder latch body having spaced apart side walls and having body securing means thereon for securing the body to said cross brace;

hook means pivotally supported by said body for gripping a ladder rung when in a first position and releasing the ladder rung when in a second position;

lever means supported between said body side walls for pivoting movement about a first horizontal axis and including a handle for manually pivoting said hook means vertically about a second horizontal axis between said first and said second positions; and,

resilient means extending between said handle and said body securing means in laterally offset relation with respect to the first horizontal axis for maintaining said hook means in said rung gripping first position and said rung released second position, respectively.

VOL 1147 ISS 3 FE 16 1993 UMI

5,186,589

Patent Not Issued For This Number

5,186,590

MULTIPART DOWEL

Günter Oldendorf, Buchfeldstrasse 41, 7085 Bopfingen, Fed. Rep. of Germany

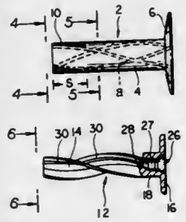
PCT No. PCT/EP90/00435, § 371 Date Oct. 1, 1991, § 102(e) Date Oct. 1, 1991, PCT Pub. No. WO90/12214, PCT Pub. Date Oct. 18, 1990

PCT Filed Mar. 16, 1990, Ser. No. 768,282

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1989, 3910702

Int. Cl.[5] F16B *13/06*; F24F *7/00*

U.S. Cl. 411—45 11 Claims



1. A multipart dowel comprising:

a sleeve (2) having an approximately cylindrical body including inner threads in the form of a plurality of helical grooves (8) in a stellate engagement to form a female threaded member, and a front section (S); and

a core (12) having a plurality of outwardly projecting helical ribs (14) in stellate arrangement matching said helical grooves and forming a male thread member, said female and male member cooperating to form a multiplex thread for engaging said core and said sleeve;

said male and female threaded members having a lead and a length greater than said lead;

said front section having an external wall and axial slots (10) extending to said outer wall and aligned with said grooves (8) to allow said sleeve (2) to expand radially at said front section when said core (12) is inserted in said sleeve (2);

at least one of said helical ribs (14) having a ventilation groove (30) running along the entire length of said one rib and connected to an outer end of said core to enable ventilation through said dowel.

5,186,591

TEMPORARY SUPPORT PIN

Josh B. Malks, 1802 Frobisher Way, San Jose, Calif. 95124

Filed Apr. 19, 1991, Ser. No. 687,967

Int. Cl.[5] F16B *19/00*

U.S. Cl. 411—508 6 Claims

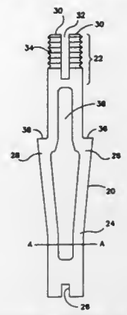
1. A pin for temporarily supporting a workpiece while said workpiece is being permanently mounted to an object, comprising:

an engaging end for insertion into a preformed aperture of said object, said engaging end having engaging means for removably holding said pin in said preformed aperture;

a gripping end opposite said engaging end which facilitates manipulation of the pin; and

an elongated central body between said engaging and gripping ends, said central body including a plurality of resilient protruding arms, said arms connected to and flaring outward from said gripping end toward said engaging end, said arms terminating in shoulders which are substantially perpendicular to the elongated dimension of the pin, at least two of said shoulders further connected to a neck which connects said shoulders to said engaging end of the pin, said arms, shoulders and neck defining a hollow central chamber into which said arms and shoulders can be compressed in a direction transverse to the elongated dimension of said pin, to temporarily reduce the width of said pin;

whereby after said engaging means have been attached to said preformed aperture of the object, an aperture in said workpiece may be aligned with said pin, thereby permitting said workpiece to be pushed over said resilient protruding arms and shoulders, compressing said arms and shoulders into said hollow central chamber until said workpiece passes over said shoulders, whereupon said arms and shoulders spring back into their uncompressed positions, so that said shoulders support but do not engage said workpiece, and whereby said pin can be removed from said preformed aperture and workpiece by disengagement of said engaging means without recompression of said arms and shoulders.



5,186,592

SHEET METAL CONTAINER WITH ATTACHED END CLOSURES

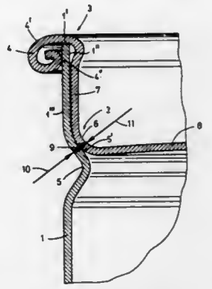
Bernd Büdenbender, Schubertweg 5, 2160-Stade, Fed. Rep. of Germany

Filed Mar. 20, 1992, Ser. No. 855,761

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1991, 4109371

Int. Cl.[5] B21D *51/26*

U.S. Cl. 413—2 7 Claims



1. A method of making a drum which comprises the steps of:

a) forming a drum body having an end provided with an end edge and axially inwardly of said edge, an inwardly extending circumferential corrugation having a flank turned toward said end;

b) inserting in said end a sheet metal closure member formed with a depression having a cylindrical wall lying along said body, a transition region extending inwardly, and a floor extending transversely so that said transition region lies circumferentially against said flank, said wall having a margin extending outwardly across said edge and formed with a bead rolled inwardly against said body; and

c) laser welding a circumferential weld seam between said flank and said transition region all around said closure member so as to circumferentially weld the closure member to the drum body.

5,186,593

FEEDING METHOD FOR WORK PRODUCTS AND APPARATUS THEREOF

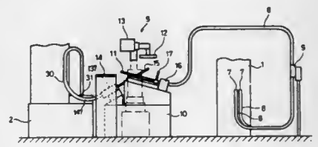
Shinichi Tsukada, Iwatsuki; Yoshiharu Iizuka, Kasukabe; Hideyuki Tamura, Chiba, and Osamu Sakashita, Kasukabe, all of Japan, assignors to Hokkai Can Co., Ltd., Tokyo, Japan

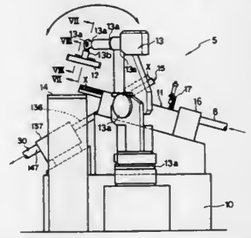
Filed Aug. 6, 1991, Ser. No. 740,891

Claims priority, application Japan, Aug. 6, 1990, 2-207878; Sep. 28, 1990, 2-261174; Oct. 8, 1990, 2-271917

Int. Cl.[5] B21D *51/46*

U.S. Cl. 413—19 9 Claims





4. The method as claimed in claim 1, wherein when the work products are can ends, the first process is a process comprising press-cutting a metal plate into can ends by the first machine, the first machine being a shell press machine having a plurality of outlets, and the second process is a process comprising coating inner surfaces of seaming panels and portions to be curled of the can ends with a sealing compound by the second machine, the second machine being a lining machine having a single inlet.

5,186,594

DUAL CASSETTE LOAD LOCK

Masato M. Toshima, Sunnyvale; Phil M. Salzman, San Jose; Steven C. Murdoch, Palo Alto; Cheng Wang, San Jose; Mark A. Stenbolm, San Jose; James Howard, San Jose; Leonard Hall, San Jose, and David Cheng, Sunnyvale, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Apr. 19, 1990, Ser. No. 511,481

Int. Cl.[5] B65G *49/05*

U.S. Cl. 414—217 3 Claims

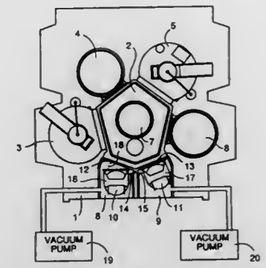
1. In a workpiece processing system comprising multiple vacuum chambers connected to a central chamber, a workpiece loading interface comprising:

dual external chambers each having an opening for receiving workpieces held in a cassette and for forwarding the workpieces to the central chamber of the workpiece processing system for processing;

cassette support means for lowering the cassette of workpieces out of each of said external chambers through said opening in a drawbridge motion;

means for producing a vacuum in each of said dual external chambers and

pivot means within each dual external chamber for pivoting the cassette support between a first position accessing said opening, and a second position from which workpieces from the cassette may be accessed by the central chamber of the workpiece processing system.



5,186,595

APPARATUS FOR LOADING AND UNLOADING A WORKPIECE

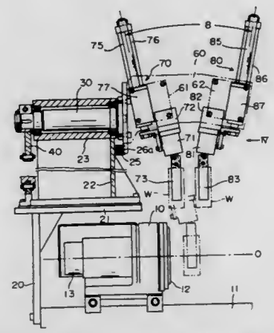
Ikuo Ohtsu, Toyota; Kinichi Kataoka, Obbu, and Shoichi Sano, Gamagori, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 17, 1991, Ser. No. 760,920

Claims priority, application Japan, Sep. 21, 1990, 2-250026

Int. Cl.[5] B25J *11/00*

U.S. Cl. 414—225 3 Claims



1. An apparatus for transferring workpieces between a machine tool having a work spindle rotatable about an axis, and a waiting position orthogonally spaced from the work spindle axis, comprising:

a supporting base;

a bracket mounted to the supporting base for rotation about an axis parallel to the work spindle axis;

an actuator for rotating said bracket;

a loading arm unit and an unloading arm unit mounted to said bracket for rotation therewith, said loading and unloading arm units being mutually spaced and lying in a plane substantially parallel to the rotational axis of said bracket;

first and second gripping mechanisms respectively mounted to said loading and unloading arm units for linear movement in said plane, said first gripping mechanism being mounted for movement along a first line and said second gripping mechanism being mounted for movement along a second line, said first and second lines being mutually angled so as to intersect substantially at said spindle axis when said bracket is at one rotational position, and so as to

VOL
1147
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intersect substantially at the waiting position when said bracket is at another rotational position; and

means for selectively moving said first and second gripping mechanisms along said lines so as to transfer workpieces between the work spindle and the waiting position.

5,186,596

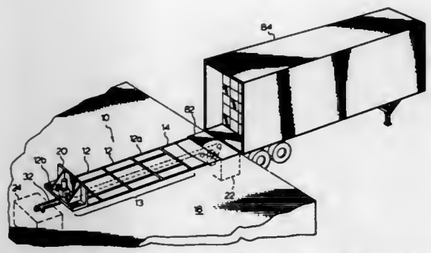
LOADING AND UNLOADING APPARATUS

Paul Boucher, 202 Flanders, Maidston, Ontario; Mario Boucher, 205 Michael Drive; John Ford, 270 Woodbridge Drive, both of Tecumseh, Ontario, and Gregg Stephenson, 205-820 Mercer Avenue, Windsor, Ontario, all of Canada

Filed Oct. 4, 1991, Ser. No. 770,836

Int. Cl.[5] B65G *67/02*

U.S. Cl. 414—395 **9 Claims**



1. A loading and unloading apparatus comprising a longitudinally extending platform adapted for longitudinal travel along a loading dock into a vehicle to be loaded or unloaded, said platform having a forward end and a rearward end,

a plurality of low profile framed sections hingedly joined together, said sections each having a plurality of transversely extending surface engaging rollers adapted for rolling along the loading dock and a plurality of transversely extending load engaging rollers presenting a loading surface,

a platen at the forward end of said platform, hingedly engaging a forwardmost framed section and having a wedge shape, a leading edge thereof adapted for frictionally engaging the loading dock,

a pusher assembly mounted on the load engaging rollers and adapted for longitudinal movement along said platform, said pusher assembly having a forward end having a load pushing surface adapted to push a load as the pusher assembly advances relative to the platform, said pusher assembly comprises

a base plate adapted for rolling along said load engaging rollers and

a pusher plate extending substantially perpendicular to said base plate at a forward end thereof presenting said load pushing surface, and

pusher drive means for effecting the longitudinal movement of said pusher assembly along said platform, said pusher drive means comprises

a pusher drive mounted on said baser plate,

a pusher drive chain longitudinally mounted within said platform and operatively engaging said pusher drive, whereby operation of said pusher drive advances said pusher assembly therealong and counter-operation retracts said pusher assembly therealong;

a main drive means mounted below a surface of the loading dock for effecting the longitudinal travel of the platform along the loading dock; and

a guide means for guiding said platform in the longitudinal direction; said guide means operably engaging between the loading dock and said platform; whereby to load a vehicle, a platform having a load resting on said loading surface and the pusher assembly in a retracted position is driven into the vehicle and the platform is retracted from the vehicle as the pusher assembly is advanced pushing the load off the platform, and whereby to unload a vehicle, the platform with the pusher assembly in a retracted position is driven into the vehicle, wedging the load upwardly and onto the platform and upon retraction of the platform removing the load from the vehicle.

5,186,597

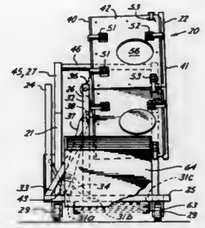
APPARATUS FOR SERVICING OF SEMICONDUCTOR MANUFACTURING EQUIPMENT

J. Charles Bulsterbaum; Robert D. Tolles, and Donald A. Costello, all of Austin, Tex., assignors to Sematech, Inc., Austin, Tex. and NCR Corporation, Dayton, Ohio

Filed Aug. 23, 1991, Ser. No. 749,016

Int. Cl.[5] B65G *67/02*

U.S. Cl. 414—469 **17 Claims**



1. An apparatus for transporting an equipment assembly comprising:

a mobile cart having an undercarriage with wheels disposed on its underside for mobility and having at least one vertical support member extending vertically upward from said undercarriage;

a housing having a bottom plate, a plurality of removable side plates and a removable top cover plate disposed to form a fully enclosed container when all said plates are coupled together in order to house said equipment assembly, said housing coupled to and supported by said vertical support member;

each of said side plates are of double-walled construction having a thinner inner panel and a thicker outer panel wherein said outer panel has openings for dissipating heat from an interior of said container;

said housing for fully encasing said equipment assembly at a temperature in excess of 400 degrees centigrade and for transporting said equipment;

said top and side plates being removable for accessing and servicing said equipment assembly.

5,186,598

RETRACTABLE ARM LOADING/UNLOADING DEVICE AND VEHICLE COMPRISING SAME

Bernard Lambert, Pierreclos, and Alain Jochum, Saint-Etienne, both of France, assignors to Bennes Marrel, Cedex, France

Filed Feb. 22, 1989, Ser. No. 313,751

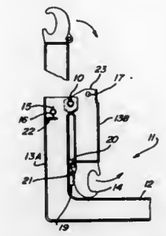
Claims priority, application France, Feb. 24, 1988, 88 02244

Int. Cl.[5] B60P *1/48*

U.S. Cl. 414—498 **10 Claims**

1. A lifting device designed to be mounted along a central longitudinal axis of a chassis of a vehicle for loading a load onto said vehicle and unloading said load from said vehicle, said lifting device comprising a first arm adapted to be articulated at least indirectly to the chassis of said vehicle and a second arm attached to said first arm, said second arm normally being perpendicular to said first arm and having a hook at its end for grasping an upper part of said load, said second arm being disposed vertically in a rest configuration of said lifting device, said second arm having a first section attached to said first arm and a second section having said hook at its end

opposite said first section, said first section having a first longitudinal central plane, said second section having a second longitudinal central plane, said second longitudinal central plane of said second section being substantially planar with said first longitudinal central plane of said first section during a working configuration in which a major part of the length of said second section becomes an extension of said first section, said second section further being uninfluenced by any external force other than gravity and having a major part of its length lying within a length of said first section at said rest configuration whereby movement of said lifting device from said rest configuration to said working configuration causes said second



section to freely move uninfluenced by any force other than gravity from said rest configuration wherein a major part of said length of said second section lies within said length of said first section to said working configuration wherein said second section becomes an extension of said first section of said second arm; and

at least one pair of complementary locking members associated with said first and second sections for locking said second section to said first section in its extended working configuration, said lifting device being operational to lift said load only when said second arm becomes an extension of said first arm and is positioned and locked to said first arm in said working configuration.

5,186,599

METHOD AND APPARATUS FOR FORMING GROUPS OF FLAT ITEMS

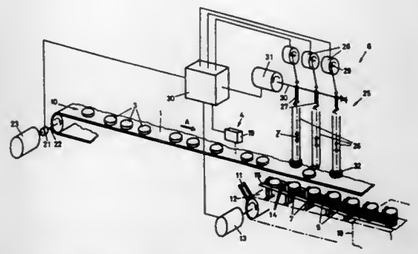
René Fluck, Schleitheim, Switzerland, assignor to Sig Schweizerische Industrie-Gesellscbaft, Neuhausen am Rheinfall, Switzerland

Filed Apr. 22, 1991, Ser. No. 688,249

Claims priority, application Switzerland, Apr. 23, 1990, 1361/90

Int. Cl.[5] B65B *5/08*

U.S. Cl. 414—792.9 **16 Claims**



7. An apparatus for forming groups of flat, face-to-face stacked items, comprising

(a) means for advancing an item carpet in a conveying direction, wherein the items of the item carpet are in a flat-lying, generally side-by-side arranged state;

(b) means for determining positions of the items in the item carpet and means for storing data representing said positions; said means for determining positions including a sensor;

(c) means for individually grasping the items of the item carpet at locations downstream of the sensor as viewed in the conveying direction; and

(d) means moving the individually grasped items into group-forming chambers such that, as viewed in the conveying direction, the quantity of items in the item carpet decreases and the quantity of items in the group-forming chambers increases.

5,186,600

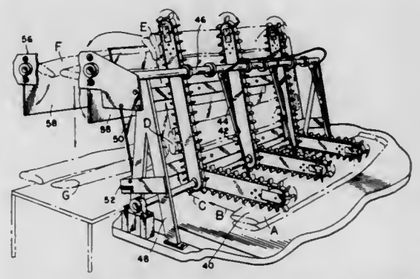
GARMENT STACKER APPARATUS

Arthur C. Wokeck, Mauldin, and Theodore Opuszenski, Greenville, both of S.C., assignors to Clinton Industries, Inc., Carlstadt, N.J.

Filed Jan. 22, 1991, Ser. No. 643,993

Int. Cl.[5] B65G *57/06*

U.S. Cl. 414—793.4 **14 Claims**



1. A device for stacking garments deposited on a worktable having a stationary planar worktable surface, comprising:

a first conveyor belt assembly with first and second ends, said first conveyor belt assembly comprising at least one first conveyor belt and being positionable above and substantially parallel to said stationary planar worktable surface wherein garments at said second end may be engaged by said at least one first conveyor belt and moved across said stationary planar worktable surface to said first end;

a second conveyor belt assembly with first and second ends, said second conveyor belt assembly comprising at least one second conveyor belt and extending generally away from said planar worktable surface and being positioned at an upwardly inclined angle to said at least one first conveyor belt, the first end of said second conveyor belt assembly being generally coaxial with said first end of said first conveyor belt assembly;

a slide positioned generally parallel to said at least one second conveyor belt, said slide being attached to said worktable adjacent the first end of said first conveyor belt assembly, said at least one second conveyor belt engaging garments at the second end of said first conveyor belt assembly and moving them along said slide to discharge the garments at the second end of said second conveyor belt assembly; and

means for discharging said garments in a uniform orientation to form a stack, said means being at the second end of said second conveyor belt assembly for receiving successive garments delivered by said at least one second conveyor belt.

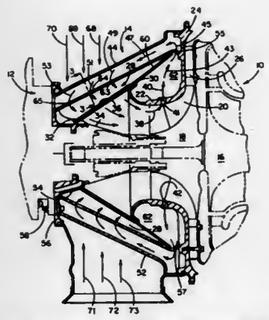
VOL 1147 ISS 3 FEB 16 1993 UMI

5,186,601

COMPRESSOR SHROUD AIR BLEED ARRANGEMENT

William D. Treece, La Mesa, and Robert C. Thompson, San Diego, both of Calif., assignors to Sundstrand Corp., Rockford, Ill.

Filed Sep. 16, 1991, Ser. No. 760,625
Int. Cl.[5] F01D 1/12
U.S. Cl. 415—58.4 3 Claims



1. A compressor for compressing fluid by means of a plurality of compressor blades mounted on a rotating hub within a compressor housing having a compressor inlet region, said compressor blades and said compressor housing cooperating to comprises and direct said fluid along a path defined by a compressor shroud section of said compressor housing, a portion of said fluid along said path being bled through passages in said compressor shroud section, said compressor comprising:

a fluid distributing means including;

a fluid directing means adapted or receiving and redirecting said fluid bled through said passages in said compressor shroud section; and

a fluid delivering means in fluid communication with said fluid directing means for receiving said bleed fluid redirected by said fluid directing means, said fluid delivering means adapted for uniformly distributing said bleed fluid received from said fluid directing means across a cross-sectional area of said compressor inlet region to provide uniform distribution of said bleed fluid into said compressor to thereby increase efficiency of compressing said fluid,

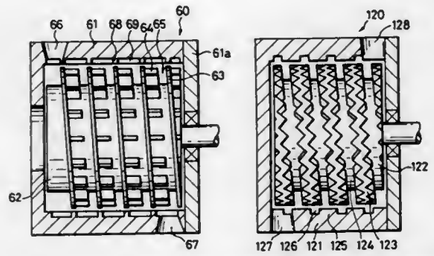
said fluid directing means includes an annular compressor shroud bleed baffle, said annular compressor shroud bleed baffle cooperating with said compressor shroud section to redirect said fluid bled from said compressor shroud section to said fluid delivering means to provide for recirculation of said bleed fluid in said compressor, said fluid delivering means further including a duct means integrally secured to said compressor housing, said duct means in fluid communication with said fluid directing means to receive said bleed fluid redirected from said fluid directing means, said duct means comprised of a plurality of ducts, said ducts including a plurality of openings, said openings adapted to uniformly distribute said bleed fluid received by said ducts, said openings distributing said bleed fluid uniformly across said cross-sectional area of said compressor inlet region to increase efficiency of compressing said fluid, said openings being further adapted to introduce preswirl into said fluid entering said compressor inlet region, said openings of said ducts located radially adjacent to said compressor inlet region to provide maximum preswirl into said compressor inlet region during minimum flow of said fluid through said compressor, said openings further providing minimum preswirl into said compressor inlet region during maximum flow of said fluid through said compressor.

5,186,602

TURBINE AND TURBOCHARGER USING THE SAME

Yasuo Nakanishi, 61-1-202, Yamane-cho, Higashi-ku, Hiroshima-shi, Hiroshima, Japan

Filed Dec. 7, 1990, Ser. No. 623,544
Claims priority, application Japan, Dec. 9, 1989, 1-319588
Int. Cl.[5] F04D 1/04
U.S. Cl. 415—75 24 Claims



1. A turbine comprising a casing, a rotor rotatably carried within said casing, one partition projectingly and continuously formed on and extending spirally along the outer periphery of said rotor, a number of blades projectingly formed at a suitable interval from each other on the outer periphery of the rotor between adjacent turns of said partition, a channel spirally and continuously formed on the circumference of the outer periphery of the rotor in adjacency to said blades and between adjacent turns of said partition, an inlet formed in said casing for introducing a working fluid into said channel, an outlet formed in said casing for discharging the working fluid flowing through said channel to outside, and a spiral channel defined between adjacent turns of one partition and formed on the inner periphery of the casing.

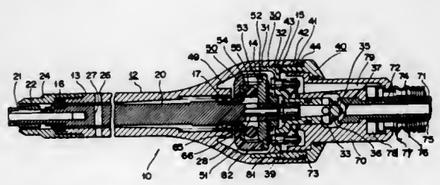
16. A turbine comprising a casing, a rotor rotatably carried in said casing, a partition or partitions projectingly formed on the outer periphery of said rotor for defining a channel meandering in alternate directions at a predetermined interval along the outer periphery of said rotor, an inlet formed in said casing for introducing a working fluid into said channel, an outlet formed in said casing for discharging said working fluid flowing in said channel, and a partition or partitions formed on the inner periphery of said casing for defining a channel at a predetermined interval along the inner periphery of said casing.

5,186,603

AIR MOTOR

Katsunobu Kishi, Tokyo, Japan, assignor to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Sep. 20, 1991, Ser. No. 763,222
Claims priority, application Japan, Sep. 29, 1990, 2-103290; Jun. 12, 1991, 3-167562
Int. Cl.[5] F03B 13/04
U.S. Cl. 415—80 9 Claims



1. An air motor used for a pneumatic tool, comprising:

a housing including an air supply channel connected to a compressed air supply source and a rotor chamber defined in said housing;

a rotor housed in said rotor chamber and having a rotary shaft rotatably supported in said housing, and a rotor body having a plurality of air jet nozzles about its periphery, said rotor body being mounted on said rotary shaft for rotation with said rotary shaft about an axis; said rotary body having a plurality of radially extending channels whose radially inner ends are connected to said air supply channel, an annular air chamber connected to radially outer ends of the channels, and a plurality of air reservoirs located outside said annular air chamber in communication with said annular air chamber and said air jet nozzles;

said rotor body including a front portion having a cylindrical peripheral wall about the axis opening at its rearward end, and a rear portion coupled to said front portion at said rearward end thereof and forming an annular air chamber between the rear and front portions, each of said air reservoirs including a recess having an approximately crescent cross-section formed on said peripheral wall and said channels being carried by said rear portion;

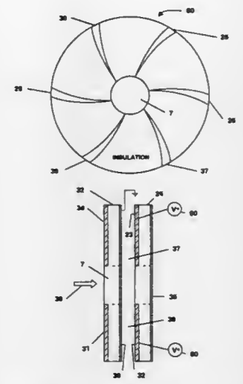
the peripheral wall of said front portion having a plurality of curved ridges projecting from the opening at its rearward end and being circumferentially spaced one from the other about said front portion, each curved ridge having one end at a location radially inwardly relative to the location of its opposite end, each said air jet nozzle being defined by one end of a ridge and the other opposite end of a circumferentially adjacent ridge.

5,186,604

ELECTRO-RHEOLOGICAL DISK PUMP

Vincent M. Iorio, Annapolis, Md., and Luke W. Loy, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 23, 1991, Ser. No. 812,477
Int. Cl.[5] F01D 1/36
U.S. Cl. 415—90 21 Claims



1. A rotary disk pump for pumping electro-rheological fluids comprising:

at least two disks having first and second faces;

means to coaxially mount said disks for rotation about their common axis; and

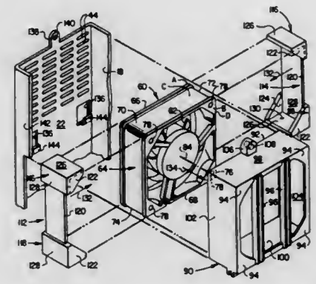
each of said disks having means thereon to increase the viscosity of selective portions of the electro-rheological fluid being pumped.

5,186,605

COMPUTER COOLING FAN VIBRATION ISOLATION APPARATUS

Mark S. Tracy, Tomball, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Jun. 27, 1991, Ser. No. 721,996
Int. Cl.[5] F04D 29/66, 29/52
U.S. Cl. 415—119 15 Claims



1. A method of resiliently mounting a cooling fan on an interior wall surface of a computer, said cooling fan including a rectangular fan frame with corner sections each having an exterior side surface area defined by contiguous first and second perpendicular peripheral portions extending between and generally transversely to spaced apart third and fourth opposite side portions, said method comprising the steps of:

covering said exterior side surface areas of said corner sections of said fan frame with an elastomeric vibration isolation material;

providing a mounting frame having a rectangular interior surface periphery sized to receive said fan frame, an open rear side, and front wall corner portions;

inserting said fan frame forwardly into said mounting frame in a manner engaging the elastomeric vibration isolation material with said front wall corner portions and wedging said elastomeric material between the facing exterior and interior peripheral surfaces of said fan and mounting frames; and

securing said open rear side of said mounting frame to said interior wall surface of the computer.

5,186,606

DOUBLE FEED PUMP, IN PARTICULAR FOR WINDSHIELD WASHER SYSTEMS IN MOTOR VEHICLES

Bruno Egner-Walter, Heilbronn, and Eberhard Pleiss, Lauf, both of Fed. Rep. of Germany, assignors to SWF Auto-Electric GmbH, Fed. Rep. of Germany

PCT No. PCT/EP90/00665, § 371 Date Jan. 31, 1991, § 102(e) Date Jan. 31, 1991, PCT Pub. No. WO90/13460, PCT Pub. Date Nov. 15, 1990
PCT Filed Apr. 25, 1990, Ser. No. 635,161
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1989, 3914228
Int. Cl.[5] F01D 1/30
U.S. Cl. 415—152.1 27 Claims

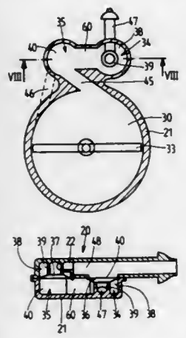
27. A double feed pump comprising:

a housing assembly defining an inlet channel adapted for connection to a fluid source and two outlet channels adapted for connection to separate fluid dispensing elements, said housing assembly including two mating body portions defining a parting plane therebetween. Two resilient valving elements sealingly partitioning and subdividing first and second valve chambers into respective front and rear compartments opening into said parting plane, at least one valving element co-acting with a valve

VOL 1147 ISS 3 FEB 16 1993 UMI

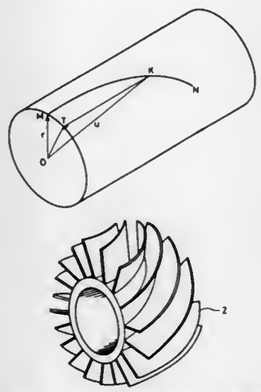
seat in an associated front compartment to modulate the flow of fluid therein to one of said outlet channels as a function of the fluid pressure across said valving element; and

pump means including a bi-directional rotary pumping element communicating with both said valve chambers to effect a discharge of fluid from one outlet channel when rotating in a first directional sense and a discharge of fluid



from the other outlet channel when rotating in an opposite directional sense, wherein said pump means communicate with each front compartment through a delivery channel and each front compartment further communicates with the rear compartment of the other valve chamber through one of said outlet channels, communication between said delivery and outlet channels being modulated by said associated valving element and valve seat.

5,186,607
SWIRL GENERATOR WITH AXIAL VANES
Shyh-Ching Yang, and Li-Chiang Chen, both of Hsinchu, Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan
Filed Feb. 5, 1992, Ser. No. 831,447
Int. Cl.[5] F01D *1/02*
U.S. Cl. 415—183 **5 Claims**



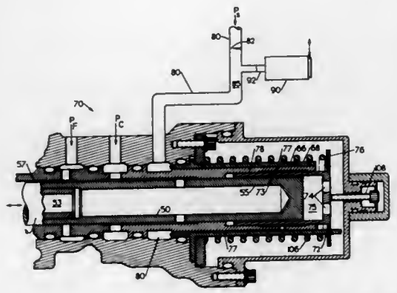
1. An axial vane for a swirl generator having an inner radius r_1 and an outer radius r_2, which has a lower boundary having a radius of curvature R_1 and an upper boundary having a radius of curvature R_2, wherein r_1, r_2, R_1 and R_2 have rational relationship that $R_1:R_2=r_1:r_2$, with respect to a point (u, ϕ) of said lower boundary and a point (u', ϕ') of said upper boundary wherein deviation angles at said points are both Θ_k, polar coordinates of said points on the development of the vane being represented by

$$\begin{cases} u = (r_1^2 + R_1^2\sin^2\Theta_k)^{\frac{1}{2}} \\ \phi = R_1 \int_0^{\Theta_k} \left[\dfrac{1 - R_1^2(r_1^2 + R_1^2\sin^2\Theta)^{-1}\sin^2\Theta\cos^2\Theta}{r_1^2 + R_1^2\sin^2\Theta} \right]^{\frac{1}{2}} d\Theta \end{cases}$$

and

$$\begin{cases} u' = (r_2^2 + R_2^2\sin^2\Theta_k)^{\frac{1}{2}} \\ \phi' = R_2 \int_0^{\Theta_k} \left[\dfrac{1 - R_2^2(r_2^2 + R_2^2\sin^2\Theta)^{-1}\sin^2\Theta\cos^2\Theta}{r_2^2 + R_2^2\sin^2\Theta} \right]^{\frac{1}{2}} d\Theta. \end{cases}$$

5,186,608
HYDRAULIC LOW PITCH SWITCH FOR PROPELLER PITCH CHANGE SYSTEM
William J. Bagge, East Longmeadow, Mass., assignor to United Technologies Corporation, Hartford, Conn.
Filed Oct. 25, 1991, Ser. No. 782,835
Int. Cl.[5] F01D *7/00*
U.S. Cl. 416—37 **2 Claims**



1. A low pitch alarm apparatus for generating an alarm signal indicative of low blade pitch in a blade pitch change system utilizing a hydraulically actuated translating blade actuation piston to affect a change in pitch of at least one blade and having an axially disposed fluid delivery tube operatively associated at its proximate end with said blade actuation piston so as to translate therewith, said low pitch alarm apparatus comprising:

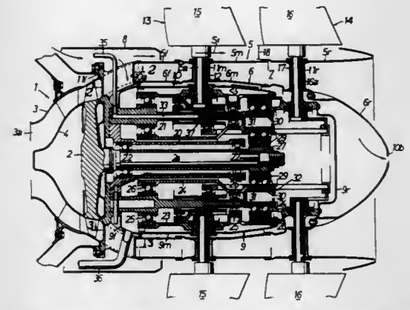
a. a fluid supply conduit for delivering a relatively high pressure fluid;

b. a pressure drop orifice disposed in an upstream portion of the fluid supply conduit;

c. pressure responsive means opening to the fluid supply conduit at a location downstream of said pressure drop orifice for generating an alarm signal whenever the fluid at an intermediate pressure in the fluid supply conduit downstream of said pressure drop orifice drops below a preselected pressure level;

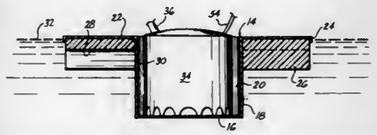
d. an axially extending capped sleeve disposed about the distal end of the fluid delivery tube and defining a chamber for receiving the distal end of the fluid delivery tube for axial translation therein, said sleeve having a relatively large flow area outlet opening from said chamber to a relatively low pressure drain and a relatively small flow area inlet opening thereto to receive fluid at the intermediate pressure from the fluid supply conduit, the inlet opening in said sleeve being positioned relative to the distal end of the fluid delivery tube such that the distal end of the fluid delivery tube is in registration with the inlet opening whenever the at least one blade is at a pitch angle above a preselected low pitch limit and is out of registration with the inlet opening whenever the at least one blade is at a pitch angle below the preselected low pitch limit.

5,186,609
CONTRAROTATING PROPELLER TYPE PROPULSION SYSTEM
Kazuo Inoue, Tokyo; Osamu Kubota; Takashi Komura, both of Saitama, and Etsuo Noda, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 20, 1990, Ser. No. 631,669
Int. Cl.[5] B64C *11/48*
U.S. Cl. 416—129 **25 Claims**



1. A contrarotating propeller type propulsion system wherein a planetary gear is interposed between a sun gear fixed to a driving shaft and a ring gear concentrically surrounding the sun gear for rotation of the planetary gear on its axis and revolution around the sun gear, characterized in that a first output rotary cylinder for driving a first propeller is coupled to the ring gear, and a second output rotary cylinder for driving a second propeller is coupled to a support shaft for the planetary gear, the first output rotary cylinder is borne on an outer peripheral surface of a first support cylinder fixedly secured to a support structure through bearing means, and the second output rotary cylinder is borne on the inner peripheral surface of said first support cylinder through separate bearing means.

5,186,610
BUOYANT PUMP ASSEMBLY
M. Steve Pennington, and Veronica J. Fowler-Pennington, both of 307 Timberwiod Dr., Norman, Okla. 73072
Filed Jan. 31, 1991, Ser. No. 648,260
Int. Cl.[5] F04D *15/00*
U.S. Cl. 417—61 **3 Claims**



1. A pumping apparatus for reclaiming water from a drilling mud pit, comprising:

disk-like horizontal buoyant body means having a central annular depending wall having an aperture in its upper end portion for forming a sump pit and further including:

a buoyant ring surrounding the upper end portion of said wall, said ring having a radially disposed downwardly open recess longitudinally aligned with the aperture for admitting water to said sump pit;

sump pump means in said pit for removing water collection therein;

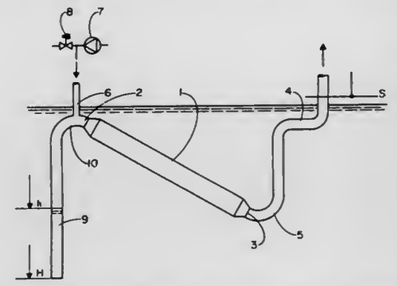
wiring connection a source of electrical energy with said pump;

electrical control mans interposed in said wiring for starting and stopping said pump including:

adjustable timer means for operating said pump at predetermined intervals; and,

sensing means responsive to variations in the magnitude of electrical current for controlling the voltage and amperage.

5,186,611
PUMP ARRANGEMENT FOR PUMPING LIQUID BY MEANS OF COMPRESSED AIR
Aksel S. Frandsen, Sellerupstrandvej 7, Brejning Strand, DK - 7080 Borkop, Denmark
Continuation-in-part of Ser. No. 556,552, Jul. 20, 1990. This application Feb. 19, 1992, Ser. No. 836,723
Int. Cl.[5] F04F *3/00*
U.S. Cl. 417—138 **7 Claims**



1. A pump arrangement for pumping liquid with compressed air, the pump arrangement being of the type having a pump chamber which is immersed in the liquid, the pump chamber having a top and a bottom, a discharge opening formed in the bottom of the chamber, a discharge pipe connected with the discharge opening and extending therefrom, a supply pipe extending between the top of the chamber and a source of compressed air for providing gaseous communication therebetween, whereby a pressure head is defined in the supply pipe and a valve disposed in the supply pipe for selectively alternatively permitting compressed air from the source thereof to pass into the chamber via the supply pipe and venting the compressed air from the source thereof to be vented to the ambient environment, the improvement upon the pump arrangement comprising:

the discharge pipe having a U-shaped bend formed therein, the entire U-shaped bend being located between the discharge opening and an end of the discharge pipe;

an inlet pipe connected to the pump chamber over the inlet opening thereof, the inlet pipe extending downwardly from the inlet opening and into the liquid where the inlet pipe terminates, such that liquid is supplied to the pump chamber via the inlet pipe and the inlet opening, and whereby a pressure head is defined where the inlet pipe terminates in the liquid;

the inlet pipe terminating in the liquid at a level, such that the pressure head defined where the inlet pipe terminates in the liquid is substantially greater than the pressure head defined in the supply pipe;

the inlet opening having a bottom edge and the discharge opening having a top edge, the bottom edge of the inlet

VOL 1147 ISS 3 FE 16 1993 UMI

opening being positioned at a level being higher than the top edge of the discharge opening; and

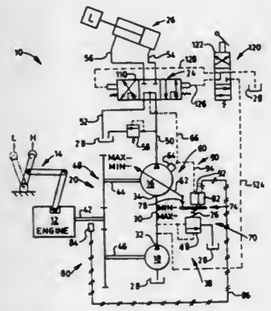
the inlet pipe being valve-free, whereby the inlet pipe is open during the entire operation of the pump arrangement so that the pump may pump liquids containing solid objects.

5,186,612

VARIABLE PRESSURE INLET SYSTEM FOR HYDRAULIC PUMPS

Tadeusz Bndzich, deceased, late of Moreland Hills, Ohio by Enphemia Agnes Marshal Budzich, executrix , assignor to Caterpillar Inc., Peoria, Ill.

Filed Jan. 16, 1992, Ser. No. 821,379
Int. Cl.[5] F04B *23/06*
U.S. Cl. 417—216 **9 Claims**



1. A variable pressure inlet system adapted for use in a system including a variable flow capacity hydraulic pump having a movable swash plate to control the rate of fluid flow therefrom between a minimum and a maximum position and an inlet fill port, a charge pump connected to the inlet fill port to provide pressurized fluid to the inlet fill port of the hydraulic pump, and a variable pressure relief valve including biasing means for varying the operating pressure setting thereof and being connected to the charge pump to control the operating pressure level of the fluid flow therefrom, the variable pressure inlet system comprising:

control means interconnected between the swash plate and the biasing means for varying the operating pressure setting of the variable pressure relief valve in response to the movement of the swash plate between its minimum and maximum flow positions.

5,186,613

REVERSE PHASE AND HIGH DISCHARGE TEMPERATURE PROTECTION IN A SCROLL COMPRESSOR

Peter A. Kotlarek, Onalaska, Wis.; John R. Moilanen, La Crescent, Minn., and Mark W. Harrison, Onalaska, Wis., assignors to American Standard Inc., New York, N.Y.

Filed Dec. 20, 1991, Ser. No. 811,777
Int. Cl.[5] F04B *49/00, 49/08*
U.S. Cl. 417—291 **23 Claims**

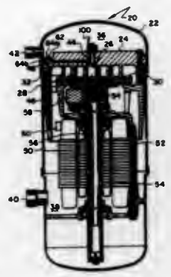
1. Scroll gas compression apparatus comprising:

a shell through which a gas flows when said compression apparatus is in operation, said shell defining a suction pressure portion and a discharge pressure portion;

a first scroll member disposed in said shell, said first scroll member having an involute wrap and defining a discharge aperture, said discharge aperture being in flow communication with said discharge pressure portion of said shell;

a second scroll member disposed in said shell, said second scroll member having an involute wrap in interleaving engagement with the involute wrap of said first scroll member, the involute wraps of said first and said second scroll members cooperating to define a plurality of pockets including a discharge pocket which is in flow communication with said discharge aperture of said first scroll member and out of which compressed gas is discharged when said apparatus is in normal operation; and

means for permitting selective bi-directional gas flow between said discharge pocket and said suction pressure portion of said shell, said gas flow occurring in a first direction when gas pressure in said discharge pocket is less than gas pressure in said suction pressure portion of said shell and said flow being in a direction opposite said first direction when discharge gas temperature exceeds a predetermined temperature.

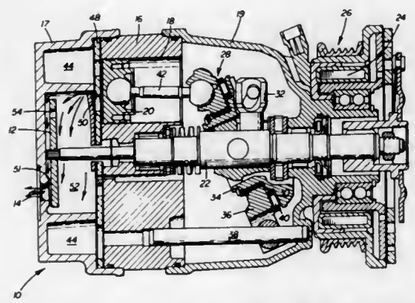


5,186,614

VARIABLE DISCHARGE FLOW ATTENUATION FOR COMPRESSOR

Naji G. Abousabba, Youngstown, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 4, 1991, Ser. No. 787,180
Int. Cl.[5] F04B *21/02*
U.S. Cl. 417—312 **6 Claims**



1. In a refrigerant compressor of the type having a piston operating in a cylinder bore of a stationary cylinder block and including a separate chamber for fluid discharged from said cylinder bore, an assembly is provided for attenuating discharge pressure pulsations comprising:

a compressor outlet port located within said discharge chamber; and

valving means for actively regulating the fluid flow to said outlet port and from said chamber, said valving means comprising a moveable plate having a solid portion and a flow orifice and being variable and operating to restrict fluid flow from said port during periods of relatively high pressure in said chamber and progressively increase fluid flow during periods of relatively low pressure;

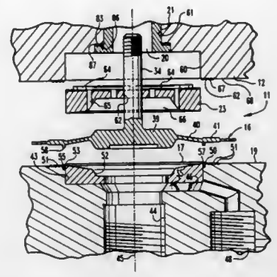
whereby a substantially constant volumetric rate of fluid is discharged from said outlet port and pressure pulsations at said outlet port are attenuated.

5,186,615

DIAPHRAGM PUMP

Rudolf R. Karliner, Minnetonka, Minn., assignor to Karldom Corporation, Wacconia, Minn.

Filed Jun. 26, 1990, Ser. No. 543,500
Int. Cl.[5] F04B *9/08*
U.S. Cl. 417—387 **24 Claims**



1. In a diaphragm pump having mating upper and lower pump bodies adapted to clamp a diaphragm therebetween which separates a driving fluid chamber in the upper body from a pump chamber in the lower body, inlet and outlet passages to the pump chamber, check valves between the pump chamber and both the inlet passage and the outlet passage, and drive means for alternately pressure loading and unloading driving fluid in the driving fluid chamber, a diaphragm assembly, comprising:

a diaphragm having a central body portion and an annular clamping portion connected to the body portion by an annular webbing portion;

a diaphragm retainer seatable within a recess in an upper pump body and adapted to receive said diaphragm in a complementary shaped recess during pressure unloading;

a diaphragm insert washer having an outer cylindrical surface, being seatable within a recess in a lower pump body and adapted to receive said diaphragm in a complementary shaped recess during pressure loading; and,

diaphragm deformation restraining means in at least one of said diaphragm, said retainer and said insert washer for restraining radially inward flow of diaphragm material when the upper and lower pump bodies clamp a diaphragm therebetween, thereby compressing and deforming the clamping portion of said diaphragm.

5,186,616

SCROLL TYPE FLUID MACHINERY WITH REDUCED PRESSURE BIASING THE STATIONARY SCROLL

Takahisa Hirano, Nagoya, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1991, Ser. No. 708,714
Claims priority, application Japan, Jul. 6, 1990, 2-179062; Jul. 6, 1990, 2-179063
Int. Cl.[5] F01C *1/04*
U.S. Cl. 418—55.5 **17 Claims**

1. A scroll type fluid machinery disposed in a housing comprising:

a stationary scroll and a revolving scroll having end plates, each end plate having a spiral element and the spiral elements being engageable with each other;

means forming a high pressure fluid chamber on an outside of the end plate of said stationary scroll and the high pressure fluid chamber being in communication with a discharge port defined in the stationary scroll;

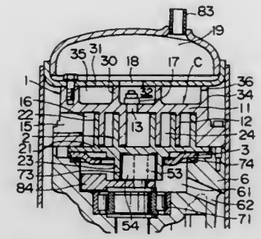
a low pressure fluid chamber being formed between the end plate of the stationary scroll and said means forming a high pressure fluid chamber;

a first annular member surrounding the discharge port in the stationary scroll;

a second annular member at a periphery of the end plate of the stationary scroll, a passage being formed in the second annular member to communicate the low pressure fluid chamber with a low pressure fluid atmosphere in the housing; and

a partition wall disposed at end surfaces of the first and second annular members, the end surfaces of the first and second annular members being in sealing engagement with the partition wall;

the low pressure fluid chamber being formed by said end plate, both of said annular members and said partition wall, said low pressure chamber receiving low pressure fluid.

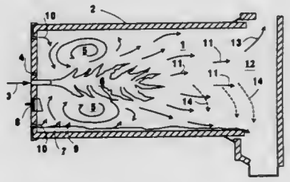


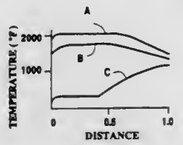
5,186,617

RECIRCULATION AND PLUG FLOW COMBUSTION METHOD

Min-Da Ho, Somers, N.Y., assignor to Praxair Technology, Inc., Danbury, Conn.

Filed Nov. 6, 1991, Ser. No. 788,603
Int. Cl.[5] F23M *3/00*
U.S. Cl. 431—9 **17 Claims**





1. A combustion method comprising

(A) injecting into the front portion of a combustion zone at least one stream of oxidant and at least one stream of fuel in a substoichiometric ratio and incompletely combusting said fuel with said oxidant in a fuel-rich, highly luminous, high momentum flame region to form combustion reaction products including highly luminous soot particles;

(B) creating a recirculation zone within the front portion of the combustion zone by passing at least one high velocity fluid stream through at least part of the front portion of the combustion zone,

(C) providing a charge containing water into the combustion zone and evaporating water from the charge;

(D) operating the front end of the combustion zone at negative pressure to cause ambient air to infiltrate into the front end of the combustion zone;

VOL 1147 ISS 3 FE 16 1993 UMI

(E) passing combustion reaction products, evaporated water and infiltrated air into the recirculation zone, mixing them therein, and then aspirating the mixture into the high momentum flame region;

(F) reacting unburned fuel in the high momentum flame region with oxygen from the aspirated mixture to produce combustion gas; and

(G) passing resulting combustion gas containing particulate matter into a plug flow zone wherein the combustion gas flow is expanded to the periphery of the combustion zone, said plug flow zone being within the combustion zone downstream of the recirculation zone, and reducing the combustion gas temperature and the combustion gas velocity within the plug flow zone thereby enhancing settling of particulate matter out of the combustion gas flow.

5,186,618

GAS LIGHTER WITH SAFETY DEVICE

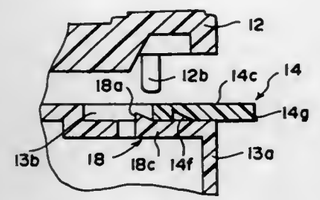
Tsutomu Shike; Toshihiko Eguchi; Yosimitu Kaga, and Kazuhiko Suganuma, all of Shimohara, Japan, assignors to Tokai Corporation, Yokohama, Japan

Filed Oct. 2, 1991, Ser. No. 770,111

Claims priority, application Japan, Oct. 3, 1990, 2-104222[U]; Nov. 30, 1990, 2-130580[U]; Jan. 11, 1991, 3-000582[U]; Sep. 30, 1991, 3-251396

Int. Cl.[5] F23D *11/36*

U.S. Cl. 431—153 **26 Claims**



1. A gas lighter with a safety device comprising a lighter body having a fuel reservoir in which fuel to be ignited is stored and a fuel supply means which supplies fuel from the fuel reservoir at a regulated flow rate, an ignition means for igniting the supplied fuel, and an actuating lever which is depressed to actuate the fuel supply means to supply fuel, characterized by having

a lock member which is able to linearly move between a locking position where it prevents depression of the actuating lever and a releasing position where it allows depression of the actuating lever and is urged to the locking position,

a holding means which holds the lock member in the releasing position in response to movement of the lock member to the releasing position,

a releasing means which releases the lock member from the holding means in response to depression of the actuating lever, thereby permitting the lock member to move away from the releasing position, and

a temporary holding means which temporarily holds the lock member in the releasing position or the vicinity thereof until the actuating lever returns to the original position after it is depressed.

5,186,619

FLOW RATE REGULATING MECHANISM FOR GAS LIGHTERS AND SIMILAR DEVICES AND METHOD OF PRODUCING A MICROCELL POLYMER FILTER FOR USE THEREIN

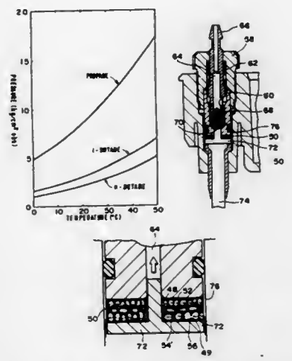
Hideo Mifune; Masato Seki, and Tsutomu Shike, all of Shizuoka, Japan, assignors to Tokai Corporation, Yokohama, Japan

Filed Apr. 16, 1991, Ser. No. 685,638

Claims priority, application Japan, Jun. 20, 1990, 2-159990; Mar. 25, 1991, 3-60350

Int. Cl.[5] F23D *14/28*

U.S. Cl. 431—344 **13 Claims**



1. A flow regulating mechanism for a gas emitting device having a fuel reservoir, a nozzle from which gas is discharged, and a passageway connecting the reservoir and nozzle, comprising a microcellular polymer filter within the passageway having connected, continuous bubbles through which fuel passes and independent air bubbles which expand with increases in temperature compressing and thereby restricting the flow of fuel through the connected, continuous bubbles.

5,186,620

GAS BURNER NOZZLE

Wayne S. Hollingshead, Guelph, Canada, assignor to Beckett Gas, Inc., North Ridgeville, Ohio

Filed Apr. 1, 1991, Ser. No. 679,636

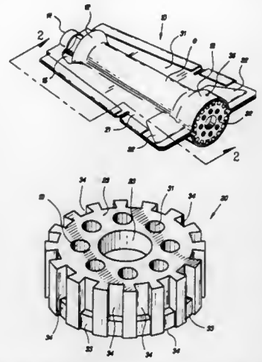
Int. Cl.[5] F23D *14/46, 14/62;* **F23Q** *9/00*

U.S. Cl. 431—354 **9 Claims**

1. A circular burner insert for placement at an outlet end of a burner nozzle comprising:

a. a central opening providing for the emission of gas/air mixture from said tube and the formation of a flame cone projecting from an outer face of said insert;

b. a series of notch openings arranged around the periphery of said insert, said series coaxial with and forming a circle around said central opening, said series of openings having stepped depths with the shallower depths opening on an inner face of said insert to define throat regions and the deeper depths opening on the outer face of said insert to define down stream expansion regions, whereby the gas-/air mixture emitted from said series of openings has a lower velocity than that of the mixture emitted through said central opening and forms a flame mantle; and



c. a zone of secondary openings between said central opening and said series of openings forming a secondary flame cone between said primary cone and said mantle.

5,186,621

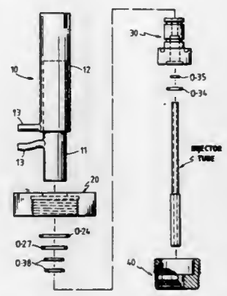
CHIMNEY HOLDER AND INJECTION TUBE MOUNT FOR USE IN ATOMIC ABSORPTION AND PLASMA SPECTROSCOPY

H. Dale Pennington, Bryan, Tex., assignor to The Texas A & M University System, College Station, Tex.

Continuation-in-part of Ser. No. 500,367, Mar. 28, 1990, Pat. No. 5,033,850. This application Jul. 22, 1991, Ser. No. 734,194

Int. Cl.[5] F23D *14/62;* **G01J** *3/30*

U.S. Cl. 431—354 **31 Claims**



1. A torch support assembly comprising:

(a) a torch element having a bore passing therethrough and a base;

(b) an upper chimney mount having a bore therethrough, the base of the torch element passing through the bore of the chimney mount;

(c) an injection tube mount having a shaft and a base, the base of the injection tube mount having an annular groove located at the base-end of the shaft, the injection tube mount positioned such that the shaft fits within the base of the torch element;

(d) a first O-ring positioned in the groove located at the base-end of the shaft, a second O-ring positioned around the base of the torch element, the outer diameter of the second O-ring being larger than the outer diameter of the groove, the two O-rings operating to effect a seal between the injection tube mount and the base of the torch element; and

(e) a compression plug for applying uniform pressure to the first and second O-rings.

5,186,622

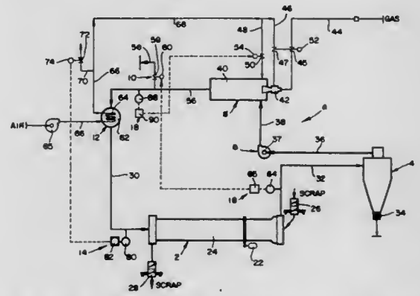
APPARATUS AND PROCESS FOR REMOVING VOLATILE COATINGS FROM SCRAP METAL

John R. Gillespie, and Charles K. Gillespie, both of St. Louis County, Mo., assignors to Gillespie & Powers, Inc., St. Louis, Mo.

Division of Ser. No. 401,795, Sep. 1, 1989, Pat. No. 5,059,116, which is a continuation-in-part of Ser. No. 285,637, Dec. 16, 1988, abandoned. This application Oct. 18, 1991, Ser. No. 779,023

Int. Cl.[5] F27B *14/00*

U.S. Cl. 432—13 **10 Claims**



1. A process for removing from aluminum scrap coatings having volatile components, said process comprising: passing the aluminum scrap through a kiln, the interior of which is isolated from the surrounding atmosphere; directing an airstream through the interior of the kiln; heating the airstream, before it enters the kiln, to a temperature in excess of that required to volatilize the coating and contemporaneously reducing the oxygen content of the airstream to below that necessary for supporting combustion of the coating within the kiln, so that the airstream within the kiln will volatilize the volatile components of the coating, but will not ignite those components; extracting heat from the airstream before it enters the kiln to maintain the temperature of the airstream where it enters the kiln substantially constant at a magnitude high enough to volatilize the coating, yet below the melting point of aluminum; and varying the mass flow of the airstream through the kiln to maintain the temperature of the airstream where it leaves the kiln substantially constant, whereby the airstream accommodates variations in the mass flow of the scrap and the nature of the scrap within the kiln.

5,186,623

ORTHODONTIC FINISHING POSITIONER AND METHOD OF CONSTRUCTION

Peter R. Breads, Grand Island; Gerard P. Abbatte, Buffalo, and Stephen P. Warunek, West Seneca, all of N.Y., assignors to Great Lakes Orthodontics, Ltd., Tonawanda, N.Y.

Division of Ser. No. 384,979, Jul. 25, 1989, Pat. No. 5,059,118, which is a division of Ser. No. 46,087, May 5, 1987, Pat. No. 4,856,991. This application Oct. 21, 1991, Ser. No. 781,076

Int. Cl.[5] A61C *3/00*

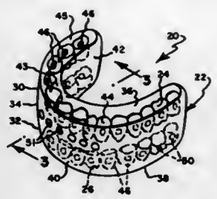
U.S. Cl. 433—6 **3 Claims**

1. A method of obtaining an enduring impression of teeth of a preselected dental arch including a model thereof to which coupling members are attached for use in the construction of an orthodontic positioner of elastomeric material adapted to coact with the coupling members for urging preselected ones

VOL 1147 ISS 3 FE 16 1993 UMI

of the teeth to a predetermined orientation comprising the steps of:

providing an amount of uncured impression material for accurately capturing the shape of the patient's teeth and of the coupling members when applied thereto and which, when cured, possesses a degree of flexibility;



selectively applying said amount of impression material to the preselected arch so that said impression material is shaped about and substantially conforms to the shape of the teeth of the preselected dental arch, coupling members and a portion of the gum tissue adjacent the teeth; and

utilizing the impression so obtained to form a model of the preselected arch.

5,186,624

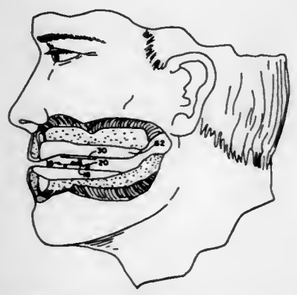
DENTAL MEASURING INSTRUMENT AND METHOD

Bradley D. Gottsleben, Lincoln, Nebr., assignor to Tresco, Inc., Lincoln, Nebr.

Filed Nov. 7, 1991, Ser. No. 789,068

Int. Cl.[5] A61C *19/04*

U.S. Cl. 433—69 **5 Claims**



1. A Gothic tracer comprising:

an angularly movable member adapted to be mounted in a plurality of different angles; and

a vertically adjustable scribe mounted to the movable member;

said movable member is mounted by a universal joint to first and second wing members and the scribe is adjustably mounted to the movable member.

5,186,625

CONTROL FOR DENTAL AIR-POLISHER

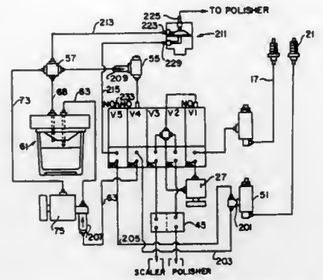
Ronald L. Bailey, Harvester, Mo., assignor to Young Dental Manufacturing Company, Earth City, Mo.

Filed Nov. 28, 1990, Ser. No. 619,037

Int. Cl.[5] A61C *3/02, 1/10, 1/02;* **A61G** *17/02*

U.S. Cl. 433—88 **38 Claims**

1. In a dental cleaner which cleans by abrading a tooth with a mild soluble abrasive carried by a gas in the presence of a liquid, the cleaner comprising a control unit and a remote handpiece, and multi-position switch means for switching said handpiece between a run mode, a rinse mode and an idle mode; the control unit comprising a source of pressurized gas in communication with a container of soluble abrasive through a first conduit means, said container of soluble abrasive being in communication with said handpiece through a second conduit means; the improvement comprising a diaphragm valve in said



second conduit means, said diaphragm valve having an air path therethrough, a flexible resilient diaphragm located in said air path to selectively open and close said air path; a source of control air for controlling said diaphragm valve, and means for controlling said control air and hence said diaphragm valve.

5,186,626

METAL-PORCELAIN DENTAL BRIDGES

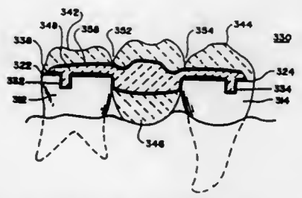
Asami Tanaka, Skokie, Ill., assignor to Asami Tanaka Dental Enterprises, Skokie, Ill.

Continuation-in-part of Ser. No. 553,783, Jul. 13, 1990, Pat. No. 5,076,789, which is a continuation of Ser. No. 480,557, Feb. 14, 1990, Pat. No. 4,997,723, which is a continuation-in-part of Ser. No. 49,119, May 13, 1987, abandoned. This application May 22, 1991, Ser. No. 704,121

The portion of the term of this patent subsequent to Mar. 5, 2008, has been disclaimed.

Int. Cl.[5] A61C *13/12*

U.S. Cl. 433—180 **10 Claims**



1. A dental prosthetic device comprising:

(a) A metal foil coping adapted to be placed on at least one abutment tooth, said tooth abutting an edentulous region, said foil being a foil for use in a dental application, said foil comprising a three-component alloyed component consisting of a total about 2–5 wt % of a color-adjusting metal from the group consisting of platinum, palladium, and silver; a total of about 0.1–5 wt % of a non-precious metal from the group consisting of indium, iron, zinc, aluminum, and copper; and the balance gold;

(b) A pontic metal substructure adapted to be joined to said metal foil coping; and

(c) A ceramic buildup to fill said edentulous region.

5,186,627

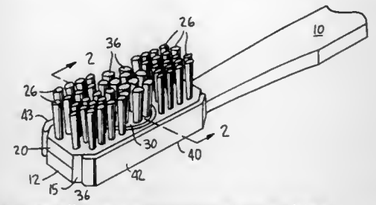
HAND-ACTUATED ROTATABLE TOOTHBRUSH

Noah Amit, 49 W. 44th St., New York, N.Y. 10026, and Miro S. Cater, 193 Hattertown Rd., Newtown, Conn. 06470

Continuation-in-part of Ser. No. 694,468, May 1, 1991. This application Dec. 3, 1991, Ser. No. 800,515

Int. Cl.[5] A61C *17/32;* **A46B** *13/08*

U.S. Cl. 433—216 **47 Claims**



1. A manually operated toothbrush comprising:

a handle elongated in a longitudinal dimension and adapted to be held by a human hand and manually reciprocated longitudinally;

a brush head having a first surface;

a plurality of positionally rotatable brush bristles extending away from said brush head in a direction generally perpendicular to said first surface;

means movably securing said handle to said brush head for permitting longitudinal movement of said handle relative to said brush head;

motion conversion means responsive to manually induced reciprocating linear motion of said handle along said longitudinal dimension relative to said brush head for rotating said plurality of rotatable brush bristles about an axis perpendicular to said first surface; and

position stabilization means secured to said brush head for engaging tooth surfaces to oppose longitudinal movement of said brush head along with said handle in response to longitudinal reciprocation of said handle.

5,186,628

PORTABLE DECOY DEVICE

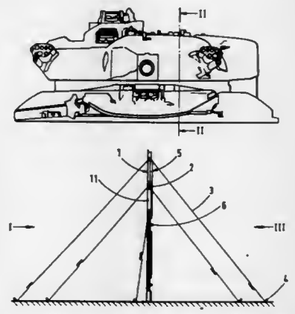
Alan C. Newman, Bridport, United Kingdom, assignor to Bridport Aviation Products Limited, Dorset, United Kingdom

Filed Jul. 30, 1991, Ser. No. 737,978

Claims priority, application United Kingdom, Aug. 9, 1990, 9017456

Int. Cl.[5] F41A *33/00*

U.S. Cl. 434—11 **13 Claims**



1. A decoy comprising a flexible target sheet having a front face and a reverse side, and an upper edge and a lower edge, a two dimensional simulation of a target object on said front face, a support system of spaced parallel poles, means for affixing said poles to said target sheet whereby said target sheet and said poles can be rolled up for transportation, said means for affixing said poles to said sheet comprising sleeve-like pockets on said reverse side adjacent said lower edge, and blind pockets on said reverse side vertically spaced above and aligned with said sleeve-like pockets, each of said poles having an end engaged in one of said blind pockets and extending therefrom through one of said aligned sleeve-like pockets, each pole extending below said lower edge of said target sheet.

5,186,629

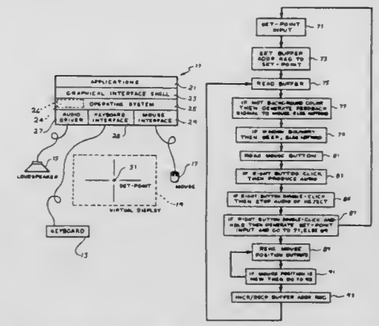
VIRTUAL GRAPHICS DISPLAY CAPABLE OF PRESENTING ICONS AND WINDOWS TO THE BLIND COMPUTER USER AND METHOD

James E. Rohen, Huntersville, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 22, 1991, Ser. No. 748,996

Int. Cl.[5] G09B *21/00*

U.S. Cl. 434—114 **4 Claims**



1. A virtual graphics display system for the blind computer user comprising:

a computer having a buffer for storing information to be presented to a user;

a mouse connected to said computer for providing buffer addressing input signals to said computer, and for receiving tactile feedback signals from said computer and presenting said tactile feedback signals to said user;

an audio output device for presenting audio information to said user;

first programmed means operating in said computer, said first programmed means responsive to a setpoint input signal for addressing a set point in said buffer;

second programmed means operating in said computer, said second programmed means responsive to said buffer addressing input signals from said mouse to retrieve presentation data representing virtual picture elements on a virtual display;

third programmed means operating in said computer, said third programmed means responsive to said picture elements for generating a first tactile feedback signal to said mouse when said picture elements represent a nonbackground information;

fourth programmed means operating in said computer, said fourth programmed means responsive to said picture elements for generating a first audio feedback signal to said audio output device when said picture elements represent nonbackground information that is also a window edge.

2. The method of presenting graphical information in the form of screen windows in the virtual display of a computer to a blind computer user comprising the steps of:

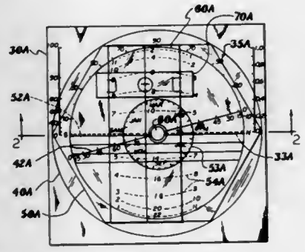
logically addressing presentation information in a memory by a hand held tactile feedback input device;

retrieving graphical information related to a point of said

VOL 1147 ISS 3 FEB 16 1993 UMI

presentation information in the virtual display of the computer;
vibrating a transducer on said hand held tactile feedback input device if said graphical information indicates that a non background color is being presented at said point; and
changing the logical address into said presentation information by means of said hand held tactile feedback input device before repeating the above steps.

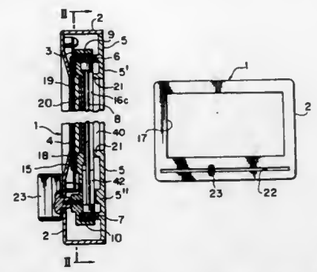
5,186,630
UNIVERSAL SUN-PATH DIAL
Li Chiu Tien, 4412 Huron, Midland, Mich. 48642
Filed Oct. 7, 1991, Ser. No. 774,041
Int. Cl.[5] G04B *19/22*
U.S. Cl. 434—149 **21 Claims**



1. A device, comprising
a base, having a flat surface modified with
a hole through its center;
a depicted celestial sphere, represented by a circle centered on the hole;
a depicted horizon, represented by a straight line nearly bisecting the circle;
and uniform angle scale, comprising uniformly graduated angles on the perimeter of the circle;
a flat major dial, rotatably surmounted on the base; having
a hole through its center;
a depicted earth's axis of rotation, represented by a straight line radial from the center of the hole through the major dial;
a date scale, comprising nearly, uniformly graduated dates, on a circle, centered on the hole through the major dial;
and a time scale, comprising elliptical lines, labeled with time, with major axes on the depicted earth's axis of rotation;
a fastener for rotatably holding the major dial and the base;
and a flat, transparent sun-path slider, slidably surmounted on the major dial, for sliding along the depicted earth's axis of rotation on the major dial; and the sun-oath slider having thereon
a depicted sun's daily path, represented by a straight line perpendicular to the depicted earth's axis of rotation.

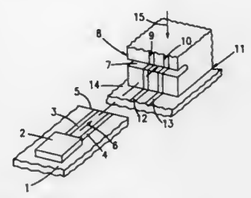
5,186,631
MAGNETIC DISPLAY DEVICE
Hiroyasu Okutsu, Zama, Japan, assignor to Kabushiki Kaisha Pilot, Tokyo, Japan
Filed Apr. 1, 1992, Ser. No. 861,565
Claims priority, application Japan, Apr. 5, 1991, 3-31196[U]; Aug. 26, 1991, 3-75193[U]; Nov. 26, 1991, 3-104742[U]
Int. Cl.[5] B43L *1/00*
U.S. Cl. 434—409 **10 Claims**

1. A magnetic display device having a case, a magnetic display panel fixed in the case, an eraser for erasing magnetic display in the display panel, and an eraser mounting member supporting said eraser, said eraser mounting member being movable along the display panel for causing the eraser to act successively on the display panel to erase the magnetic display, said display device comprising:
first and second racks fixedly mounted within said case and extending in parallel relation in the direction of the movement of the eraser mounting member; and
first and second pinions rotatably mounted to the eraser



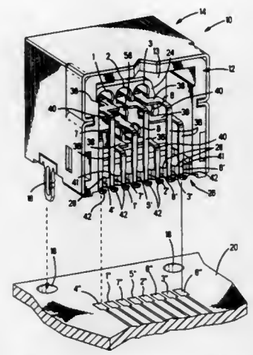
mounting member and meshing with said first and second racks, respectively, so as to be movable rotatingly along the racks for causing the eraser mounting member to move along the racks,
said first rack and pinion having the same pitch of teeth, said second rack and pinion having the same pitch of teeth, and said first and second pinions having the same pitch circle.

5,186,632
ELECTRONIC DEVICE ELASTOMERIC MOUNTING AND INTERCONNECTION TECHNOLOGY
Raymond R. Horton, Dover Plains; Ismail C. Noyan, Peekskill; Michael J. Palmer, Walden, all of N.Y., and Mark B. Ritter, Brookfield, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 20, 1991, Ser. No. 762,977
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—67 **15 Claims**



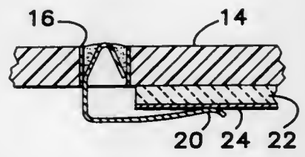
1. A structure comprising:
a body,
said body having at least one notch,
a flex tape member at least lining said notch,
said flex tape member having at least one conductor,
said flex tape member further having elastomeric properties,
at least one device supporting substrate,
said substrate having an edge with at least one device conductor at said edge,
said edge being inserted into said notch, and
said body being subjected to force operable to compress at least one flextape conductor into contact with at least one device conductor in said notch.

5,186,633
SURFACE MOUNT ELECTRICAL CONNECTOR WITH INTERLEAVED SOLDER TAILS
Benjamin H. Mosser, III, Middletown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Sep. 3, 1991, Ser. No. 753,575
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—79 **13 Claims**



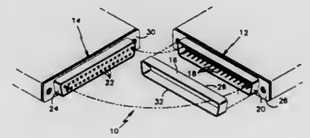
1. A right angle electrical connector comprising;
an insulating housing having a mating forward face and a terminal receiving face opposite thereto, the housing defining upper, middle and lower superposed rows of parallel terminal receiving cavities arranged in an unsymmetrical array and each opening into both of said faces; and
a set of electrical terminals each having a mating portion lodged in a respective one of said cavities, a solder tail extending from the terminal receiving face substantially normally of the mating portion of the terminal, and portions extending normally of the solder tail and the mating portion and connecting the mating portion to the solder tail, the connecting portions of the terminals being dimensioned relatively to offset the solder tails thereof with respect to the mating portions thereof, in interleaved relationship to form a single row of solder tails, at least some of said connecting portions extending laterally across the terminal receiving face and parallel thereto, to predetermined extents.

5,186,634
ELECTRICAL CONTACT HAVING SPRING-BIASED TABS FOR MOUNTING TO A CIRCUIT BOARD
Bradley H. Thompson, Lynnwood, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.
Filed Dec. 20, 1991, Ser. No. 811,709
Int. Cl.[5] H01R *9/09*
U.S. Cl. 439—82 **4 Claims**



1. An electrical component for mounting to a circuit board, comprising:
a component body; and
at least one tab of resilient conducting material having a free end extending from said component body and being received in a hole in said circuit board from one side of said circuit board without protruding appreciably from an opposite side of said circuit board,
wherein said tab is formed to provide a spring which compresses to urge said free end of said tab against an inner wall of said hole in said circuit board, thereby to secure said electrical component to said circuit board.

5,186,635
ELECTRICAL CONNECTOR ASSEMBLY WITH EMI PROTECTION
Joseph W. Pechulis, Monroe, and Joseph T. Cronan, Hamden, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Mar. 24, 1992, Ser. No. 856,416
Int. Cl.[5] H01R *13/648*
U.S. Cl. 439—89 **8 Claims**





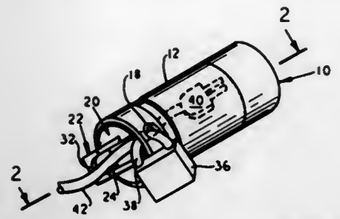
1. An electrical connector assembly with electromagnetic interference protection, comprising:
a conventional receptacle connector, having a plurality of electrically conductive pins surrounded by a receptacle flange;
a belly band of elastomeric material with conductive particles disposed through out which provides a high electrical conductivity path through said belly band, said band is positioned in tightly spaced relationship over said receptacle flange for attenuating impinging EMI; and
a conventional plug connector, having a plurality of electrically conductive sockets for carrying electrical signals and a plug flange surrounding said plurality of conductive sockets, said plurality of conductive sockets are aligned with and mated with said plurality of electrically conductive pins such that said belly band covers said receptacle flange and plug flange and a mating interface there between, and said belly band bows when compressed between said flanges to ensure intimate electrical and physical contact between said belly band and said flanges.

5,186,636
ELECTRIC PLUG LOCK
David J. Boyer, 3528 Sassafras St., Erie, Pa. 16508, and Rodney J. Cottrell, 606 Brown Ave., Erie, Pa. 16502
Filed Mar. 27, 1992, Ser. No. 858,659
Int. Cl.[5] H01R *13/44*
U.S. Cl. 439—133 **7 Claims**

1. An electrical plug lock comprising a generally hollow body and a closure;
said body comprising an open end and a closed end;
a hole in said body adjacent said open end;
said closure being shaped to fit said open end;
a fastening means supporting said closure on said body;
a slot in said closure;
said body being adapted to receive an electrical plug;

VOL 1147 ISS 3 FE 16 1993 UMI

said plug having an electric cord attached thereto with said cord extending through said slot and said plug disposed in said body;



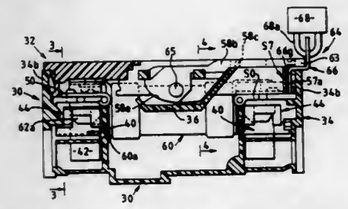
a padlock having a hasp adapted to extend through said slot and through said hole whereby said closure is held against rotation.

5,186,637

LOCKABLE ELECTRICAL APPARATUS

Alexander R. Norden, Boca Raton, Fla., assignor to Connectron, Inc., Lawrence Harbor, N.J.

Filed Sep. 27, 1991, Ser. No. 766,339
Int. Cl.[5] H01R *13/66, 13/639*
U.S. Cl. 439—133 **20 Claims**



1. Electrical apparatus including a locking device, and, a fuse holder comprising a receptacle and a fuse carrier, said receptacle having an opening at which the fuse carrier may be inserted, said receptacle having a pair of contacts for energizing a circuit when said contacts are bridged, said fuse carrier being receivable in a control position in said receptacle and then being effective for determining whether the contacts of the receptacle are or are not bridged, thereby to determine whether the circuit is or is not energized, said locking device including a padlock having a hasp and including a clip interengageable with said receptacle and blocked by said fuse carrier against disengagement from said receptacle when the fuse carrier is in said control position, said clip including an external portion having a hole for receiving the hasp of the padlock and locating the hasp in a position blocking shift of the fuse carrier out of said control position.

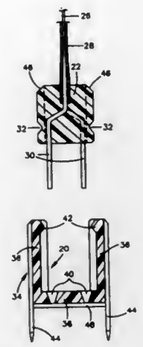
5,186,638

TRANSPORTATION PROTECTION AND INSERTION DEVICE FOR MULTI-CONDUCTOR CABLES

Reinhard Pusch, Rodgau, Fed. Rep. of Germany, assignor to Thomas & Betts Corporation, Bridgewater, N.J.

Filed Aug. 30, 1991, Ser. No. 752,717
Claims priority, application Fed. Rep. of Germany, Sep. 5, 1990, 4028135
Int. Cl.[5] H01R *13/40, 13/44*
U.S. Cl. 439—140 **11 Claims**

1. An assembly including a flexible multi-conductor connecting cable having a bar member attached at one end thereof, stripped ends of conductors extending through said bar member and being supported thereby in spaced relation, and a device movably attached to said bar member for transportation protection and for insertion of said stripped ends of said conductors into holes in a printed circuit board, said device comprising two legs (**36**) resiliently received on opposing sides of said bar member (**22**), latching means (**42**) for latching said legs to said sides in different positions, and a bottom plate portion (**38**) connecting said legs (**36**), said plate portion (**38**) having



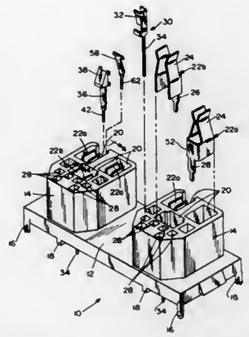
openings (**40**) receiving said stripped ends (**30**) in a transportation position of said device on said bar member and passing said stripped ends therethrough for insertion into holes of said printed circuit board in an operative position of said device on said bar member.

5,186,639

ELECTRICAL CONNECTOR WITH PLUG DETECTION SWITCH

Joseph D. Comerci, Elmhurst, and Robert DeRoss, Naperville, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Jan. 9, 1992, Ser. No. 819,251
Int. Cl.[5] H01R *33/54*
U.S. Cl. 439—188 **7 Claims**



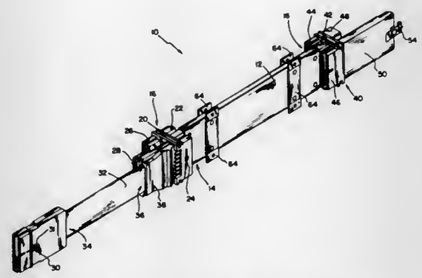
1. In a plug detection electrical receptacle which includes a dielectric housing having at least one passage with an open mating end for receiving a male terminal of a complementary mating electrical plug, a female terminal disposed in the passage for engagement by the male terminal, and a detect switch located in proximity to the passage for actuation by the male terminal when the male terminal is inserted into the passage in engagement with the female terminal, wherein the improvement in said detect switch comprises a detect contact engageable by a resilient actuator contact with the resilient actuator contact having an insulating separator non-removably fixed thereto, the insulating separator being disposed in a path of insertion of the male terminal for engagement by the male terminal to bias the resilient actuator contact into engagement with the detect contact to close a circuit therethrough.

5,186,640

WIRING HARNESS ASSEMBLY

Phillip A. McCoy, Laotto, Ind., assignor to Group Dekko International, Laotto, Ind.

Filed Feb. 24, 1992, Ser. No. 840,317
Int. Cl.[5] H01R *25/00*
U.S. Cl. 439—211 **25 Claims**



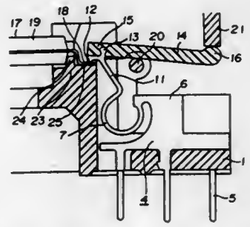
1. A wiring harness assembly comprising:
a conductor carrying channel having a first end and a second end;
a first socket electrically coupled to the first end of the conductor carrying channel; and
a connector assembly coupled to the second end of the conductor carrying channel, the second connector assembly including a body portion, a second socket coupled to the body portion and extending a first predetermined distance longitudinally outwardly from the body portion, and a third socket coupled to the body portion extending a second predetermined distance, longer than the first predetermined distance, longitudinally outwardly from the body portion, the second and third sockets being configured to mate with a first socket coupled to a separate wiring harness assembly located adjacent the second end of the conductor carrying channel to electrically couple the two adjacent wiring harnesses.

5,186,641

SOCKET FOR ELECTRIC PART

Kazumi Uratsuji, Tokyo, Japan, assignor to Yamaichi Electric Co., Ltd., Tokyo, Japan

Filed Oct. 16, 1991, Ser. No. 777,114
Claims priority, application Japan, Oct. 17, 1990, 2-278461
Int. Cl.[5] H01R *11/22*
U.S. Cl. 439—266 **3 Claims**



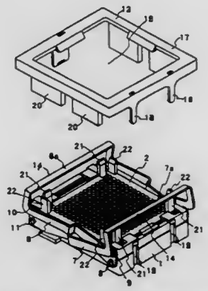
1. A socket for receiving an electric part having contact elements, comprising:
a base having an accommodating space defined therein for receiving the electric part;
a plurality of contacts arranged in parallel relation to one another in rows along at least two opposing sides of said accommodating space, each of said contacts including a nose portion for contacting one of the contact elements of the electric part when the electric part is accommodated in said accommodating space, and a spring portion for biasing said nose portion inwardly toward said accommodating space and causing said nose portion to press against the contact element of the electric part;
a guide shaft, associated with each of said rows of said contacts, fixed relative to said base;
a pivotable lever operably associated with each of said rows of said contacts and with each of said guide shafts and having a first end disposed outwardly of said accommodating space and inwardly of said guide shaft and a second end disposed on a side of said guide shaft opposite said first end;
wherein each of said contacts is operably connected at a portion thereof adjacent said nose portion with said first end of said lever; and
wherein said lever is slidably supported on said guide shaft, such that said guide shaft defines a pivot means for slidably and pivotably supporting said lever such that, when said second end of said lever is pressed downwardly, said lever slides along said guide shaft moving laterally relative thereto in a direction outwardly from said accommodating space and pivots about said guide shaft, and said first end of said lever forces said nose portion of said contact to move upwardly and outwardly away from said accommodating space in order to release the contact element of the electric part.

5,186,642

CONNECTOR

Noriyuki Matsuoka, Yokohama, and Kazumi Uratsuji, Tokyo, both of Japan, assignors to Yamaichi Electric Co., Ltd., Tokyo, Japan

Division of Ser. No. 692,253, Apr. 26, 1991, abandoned. This application Jun. 18, 1992, Ser. No. 900,461
Claims priority, application Japan, May 14, 1990, 2-124487
Int. Cl.[5] H01R *11/22*
U.S. Cl. 439—268 **2 Claims**



1. A connector for mounting an electric element having dependent terminals thereon and removing it from a circuit means, comprising:
a connector body having a plurality of terminal receiving apertures therethrough each having a contact means therein with a contact part movable from a normally closed position where it contacts a terminal inserted into the aperture to an open position to permit no-load insertion and removal of the terminal;
a movable plate mounted on said connector body for recip-

VOL 1147 ISS 3 FE 16 1993 UMI

rocal movement along said body in a direction between ends of said body and transverse to said apertures and engaged with the contact elements so that, when the plate is moved in one direction along said body, the contact elements are moved to the open position;

operating lever means connected between said connector body and said movable plate and having a free end means engagable for causing pivoting movement of said operating lever means to move said movable plate in said one direction;

an operating member engagable with said free end means for moving said lever means in pivotal movement;

a first guide means on said connector body at the ends thereof and projecting upwardly above said movable plate for engaging opposite edges of an electric element to be mounted on said connector for ensuring that the element is positioned correctly on said movable plate in said one direction; and

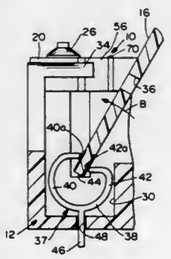
a second guide means on said movable plate at opposite sides thereof and projecting upwardly therefrom for engaging opposite edges of the electric element to be mounted for ensuring that the element is positioned correctly on said movable plate in a direction transverse to said one direction.

5,186,643

LATCHING DEVICE FOR AN EDGE CONNECTOR

Patrick D. Bakke, Naperville, and David C. Bowen, Downers Grove, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Sep. 19, 1991, Ser. No. 762,698
Int. Cl.[5] H01R *13/62*
U.S. Cl. 439—326 **18 Claims**



1. An edge connector for receiving a printed circuit board having a mating edge and a plurality of contact pads adjacent the edge, comprising:

an elongated insulating housing having a plurality of contacts mounted on the housing along the length thereof for engaging the printed circuit board contact pads when the printed circuit board is inserted into the housing at a first angular position and subsequently pivoted to a second angular position, the contacts exerting an opposing force against the printed circuit board when in said second angular position;

a latching device having a latching section for engaging the printed circuit board, the latching device being rotatably mounted on the housing for rotation from a first position to a second position in response to pivoting the printed circuit board from said first angular position to said second angular position, the latching device being linearly movable from said second position to a third locking position under the influence of said opposing force of the contacts; and

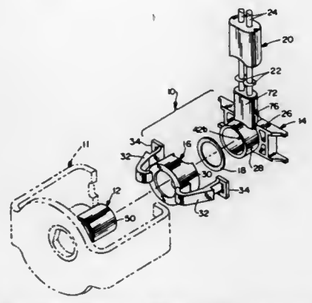
complementary interengaging latching means between the latching device and the housing for locking the printed circuit board to the housing when the latching device moves to said third locking position.

5,186,644

ELECTRICAL CONNECTOR SYSTEM

Jeffrey J. Pawlicki, Downers Grove; Timothy R. Ponn, Aurora, and Thomas G. Premo, West Chicago, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Continuation of Ser. No. 668,643, Mar. 13, 1991, abandoned. This application May 8, 1992, Ser. No. 884,267
Int. Cl.[5] H01R *33/00*
U.S. Cl. 439—353 **6 Claims**



1. An electrical connector assembly for connecting an electronic control system to an adjustable automotive suspension component, comprising:

a dielectric housing having terminals for connection to appropriate mating terminals on the suspension component;

a separate dielectric latching means for latching the electrical connector assembly to appropriate complementary latch means on the suspension component, the separate latching means being ultrasonically welded to the dielectric housing;

the dielectric housing having a receptacle portion for receiving an appropriate plug of the suspension component, and said latching means having a shroud portion for embracing the receptacle portion of the dielectric housing, the shroud portion being ultrasonically welded to the receptacle portion; and

wherein said receptacle portion and said shroud portion are generally cylindrical, said receptacle portion is shorter than said shroud portion with the shroud portion telescoped over the receptacle portion said shroud portion having an in-turned circular flange, said flange and said receptacle forming a groove for accommodating an O-ring seal.

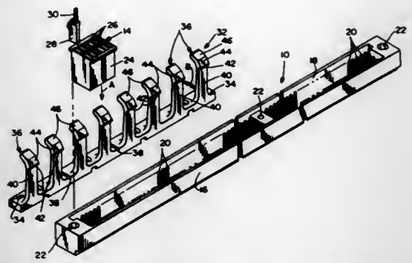
5,186,645

ELECTRICAL CONNECTOR LATCHING SYSTEM

Craig A. Bixler, Elmhurst, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Oct. 29, 1991, Ser. No. 783,956
Int. Cl.[5] H01R *13/627*
U.S. Cl. 439—358 **12 Claims**

1. In an electrical connector system which includes a backplane connector mounted on a backplane of an electrical apparatus, and a mating connector mateable with the backplane connector in a direction generally perpendicular to the backplane, the improvement comprising a latching device mounted on the backplane independent of said connectors and adjacent the backplane connector, and including a latch element projecting from the backplane, and complementary interengaging latching surface means between the latch element and the mating connector for holding the mating connector in mated condition with the backplane connector, the latching device detachable from said connectors when they are mated together.

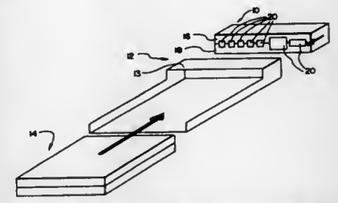


5,186,646

CONNECTOR DEVICE FOR COMPUTERS

William A. Pederson, 6500 Brown Thrush Trail, Eden Prairie, Minn. 55346

Filed Jan. 16, 1992, Ser. No. 821,690
Int. Cl.[5] H01R *13/64*
U.S. Cl. 439—374 **6 Claims**



1. A connecting device for positioning a plurality of peripheral connectors in relative positions for registration with a plurality of corresponding computer ports, the connecting device comprising:

a body having a plurality of peripheral connector holding means for securely holding and positioning a plurality of peripheral connectors, each peripheral connector holding means being located in the body so as to position a peripheral connector held therein in a registering position with respect to a predetermined port of the computer,

whereby the computer ports register for direct attachment and detachment to a plurality of peripheral connectors.

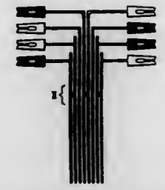
5,186,647

HIGH FREQUENCY ELECTRICAL CONNECTOR

W. John Denkmann, Carmel; Willard A. Dix, Noblesville, and William T. Spitz, Indianapolis, all of Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 24, 1992, Ser. No. 840,476
Int. Cl.[5] H01R *4/24*
U.S. Cl. 439—395 **14 Claims**

1. An electrical connector including a plurality of input terminals, a plurality of output terminals, and interconnection apparatus for electrically interconnecting the input and output terminals, the interconnection apparatus comprising at least four non-insulated conductors that are spaced apart from each other and mounted on a dielectric surface, said conductors being generally parallel to each other along a portion of the interconnection path between input and output terminals, the interconnection apparatus further including means for crossing the path of one of the non-insulated conductors over the path of another one of said conductors without making electrical contact therewith; whereby crosstalk of electrical signals between conductors in an electrical connector is reduced.

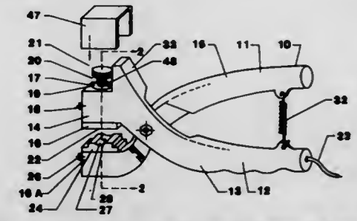


5,186,648

INSULATED WIRE CONTACT CLAMP

Enrique M. Senra, 740 E. 11 Pl., Hialeah, Fla. 33013

Filed Jun. 10, 1992, Ser. No. 896,650
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—409 **6 Claims**



1. An insulated wire or cable contact clamp for measuring voltage, or resistance in electrical circuits without removing the wire or cable insulation, comprising:

a) pair of pivotally connected elongated members, of an insulating material such as plastic, in a plier-like configuration, one of the members having a handle on one end and a support jaw having a pin or needle assembly in the other end, and the other of said elongated members having a handle on one end and a support jaw having a wire or cable anvil assembly on its other end, which opposes the pin or needle assembly on the other elongated member;

b) pin or needle assembly, formed by a ratchet drive supported in the corresponding jaw by a circular bore in said jaw and held in position by screw means attached to the jaw. An adjusting screw threaded into a threaded bore in the center of the ratchet drive, said screw having a knurled head to adjust the screw travel inside the threaded bore inside the ratchet, and said screw attached at the other end opposed to the head, to a pin or needle, permitting the knurled head to move the pin or needle in either direction, and means to connect said adjusting screw to a cable that extends outside the clamp;

c) wire or cable anvil formed by a rectangular plastic anvil having a "U" channel or groove on its upper surface relative to the supporting jaw, to accommodate the thickness of a given wire or cable, said anvil supported and held in position by a screw threaded into the jaw, and said anvil having a hole in its center to permit passage of the pin or needle;

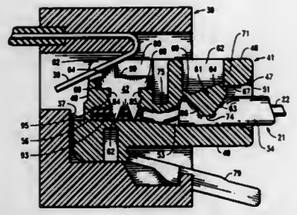
d) detachable spring that may be attached to appropriate sections of both elongated members of the plier-like clamp, in order to maintain close contact between the pin or needle and the metallic core of the wire or cable under test, when both handles of the clamp are squeezed.

VOL 1147 ISS 3 FE 16 1993 UMI

5,186,649
MODULAR PLUG HAVING ENHANCED CORDAGE STRAIN RELIEF PROVISIONS

Larry E. Fortner, Indianapolis, Ind.; Paul R. Gustin, Glendale, Ariz.; Leonard F. Hasler, Indianapolis, Ind.; Harold E. Johnson, Phoenix, Ariz.; George R. Maul, Glendale, Ariz.; David L. Reed, New Palestine, Ind., and George W. Reichard, Jr., Carmel, Ind., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 30, 1992, Ser. No. 876,340
Int. Cl.[5] H01R *13/58*
U.S. Cl. 439—460 **21 Claims**



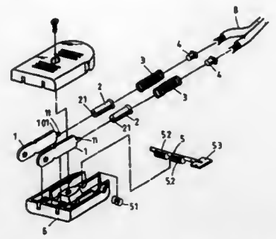
1. A modular plug which is used to terminate an end portion of a length of cordage, said modular plug comprising:
a housing which is made of a dielectric material, which includes a cavity for receiving an end portion of a jacketed length of cordage and a portion that communicates with said cavity and that receives transmission media extending from the jacketed end portion of a length of cordage, which includes a plurality of slots each adapted to receive a terminal that engages an aligned transmission medium of the end portion of the cordage and which includes an opening that is disposed toward a cordage input end thereof;
a plurality of blade-like terminals each received in one of said slots for engaging an aligned transmission medium of the end portion of the cordage, and having a portion exposed to an exterior of said housing for engaging an exterior component; and
an anchoring member disposed in said opening of said housing and capable of being moved pivotally from an unoperated position to an operated position wherein it engages the jacketed end portion of the cordage to hold the cordage in secured engagement with said housing, said anchoring member including a jacket-engaging surface which in an unoperated position is angled to a longitudinal axis of the end portion of the cordage and which has suitable length so that when in an operated position in which said jacket-engaging surface is substantially parallel to the longitudinal axis of the end portion of the length of cordage and relative motion between the housing and portions of the cordage adjacent to the end portion of the cordage is caused to occur, undue stress concentrations in the cordage are inhibited.

5,186,650
QUICK DETACHABLE ELECTRIC DEVICE

Haw C. Hwang, No. 3, Lane 21, Hsing Der Rd., Taipei, Taiwan

Filed May 7, 1992, Ser. No. 879,285
Int. Cl.[5] H01R *13/58*
U.S. Cl. 439—463 **5 Claims**

1. An electric device comprising a casing having a plurality of conductive plates fastened on the inside, said conductive plates each having a projecting end rod, a plurality of conductive cylindrical clamping plates respectively welded to the projecting end rod of each conductive plate, a plurality of compression springs respectively sleeved on said conductive cylindrical clamping plates, an electric line consisted of a plurality of electric wires, said electric wires being attached with cap clamps and respectively inserted through wire holes on said casing into holes on said conductive cylindrical clamping plates, and an eccentric locating device inserted in a side hole on said casing above said wire holes and rotated into operative position to hold down said electric line in place permitting said electric wires to be respectively electrically

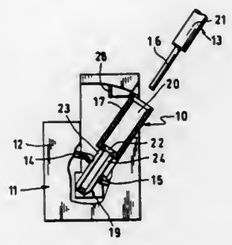


connected to said conductive plates through said conductive cylindrical clamping plates, or non-operative position to release said electric line permitting said electric wires to be pushed away from said conductive cylindrical clamping plates by said compression springs.

5,186,651
PLUG CONNECTOR, ESPECIALLY FOR THE RELEASABLE CONNECTION OF ELECTRICAL CONDUCTORS

Helmut Fuchs; Ute Wilmsmann, both of Halver, and Lothar Fuhrmeister, Schalksmuhle, all of Fed. Rep. of Germany, assignors to Firma Karl Lumberg GmbH & Co., Schalkmuhle, Fed. Rep. of Germany

Filed Jan. 29, 1992, Ser. No. 827,798
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1991, 4102541
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—495 **17 Claims**

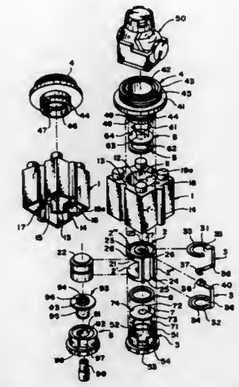


1. A plug connector comprising:
a plug formed with an insulating body adapted to receive a wire and having an elongated portion formed with at least one window through which a conductor of said wire is exposed; and
a coupler having an insulated hollow body receiving said plug in a force-free first position, said plug being swingable in said body of said coupler into an end position, said coupler having a contact engageable through said window with said conductor upon swinging of said plug from said one position into said end position.

5,186,652
SELF-POWER-CONTAINED MULTIPURPOSE PLUG SOCKET

Ku Hai-Yang, No. 11, Lane 221, Sec. 3, Pei-Hsin Road, Hsintein, Taipei, Taiwan

Filed Oct. 21, 1991, Ser. No. 780,047
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—500 **8 Claims**

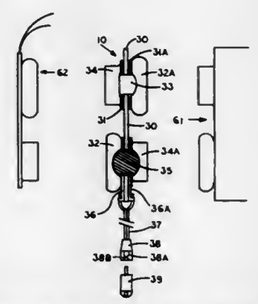


1. A plug for connecting electrical power to an apparatus means and a formation base comprising:
a main body unit;
a battery holder;
said main body unit having a generally cylindrical bore;
said battery holder being slidably received in said generally cylindrical bore;
said apparatus means on said main body unit;
said battery holder being adapted to receive a battery;
a first electric circuit on said battery holder connected to said apparatus means;
said formation base supported on said apparatus means; and,
switch means on said battery holder for connecting said battery to said first electric circuit whereby said apparatus means is energized.

5,186,653
SMOKE ALARM REMOTE DISCONNECT

Normand A. Robert, 25085 Firwood, Warren, Mich. 48089

Filed Jan. 6, 1992, Ser. No. 817,056
Int. Cl.[5] G08B *17/10*
U.S. Cl. 439—500 **2 Claims**

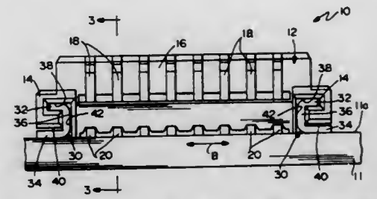


1. A remote disconnect device for deactivating a smoke alarm, said remote disconnect device being installed between the battery of said smoke alarm and the battery connector of said smoke alarm, said remote disconnect device comprising:
an electric cord having a first end connected to said smoke alarm, and an opposite end extending in a direction away from said first end, said electric cord further comprising a first conductor and a second conductor;
means for connecting said electric cord to said battery of said smoke alarm and said battery connector of said smoke alarm;
a jack having a first conductor and a second conductor, said first conductor of said jack being connected to said first conductor of said electric cord at said opposite end of said electric cord, said second conductor of said jack being connected to said second conductor of said electric cord at said opposite end of said electric cord;
a plug having a first conductor and a second conductor, said plug being removably insertable in said jack, said first conductor of said plug being adapted to contact said first conductor of said jack, said second conductor of said plug being adapted to contact said second conductor of said jack, said first conductor of said plug being electrically connected to said second conductor of said plug, whereby when said plug is inserted in said jack, said battery is electrically connected to said smoke detector such that said smoke detector is operational, and when said plug is removed from said jack, said battery is electrically disconnected from said smoke detector such that said smoke detector becomes non-operational, such that when said smoke alarm is activated due to a false alarm, said plug may be removed to make said smoke alarm non-operational and said plug may be replaced once the source of said false alarm is removed, such that said smoke alarm becomes operational.

5,186,654
RETENTION SYSTEM FOR ELECTRICAL CONNECTORS ON PRINTED CIRCUIT BOARDS

Masahiro Enomoto, Tokyo, Japan; Arvind Patel, Naperville, and Jack J. Schafer, LaGrange, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

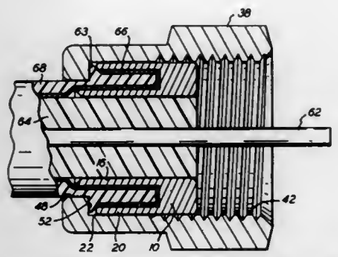
Filed Mar. 11, 1992, Ser. No. 850,190
Int. Cl.[5] H01R *13/60*
U.S. Cl. 439—570 **10 Claims**



1. In a retention system for an electrical connector mountable to a printed circuit board, including an elongated electrical connector having opposite ends and elongated sides extending therebetween, and at least one retention member for securing the connector to the printed circuit board, wherein the improvement comprises said retention member including a generally U-shaped portion defining a pair of leg sections extending in the longitudinal direction of the connector generally parallel to the printed circuit board and a bight section joining the leg sections generally perpendicular to the printed circuit board, and recess means in one elongated side of the connector complementarily shaped for receiving the U-shaped portion of the retention member inserted thereinto from one side of the connector.

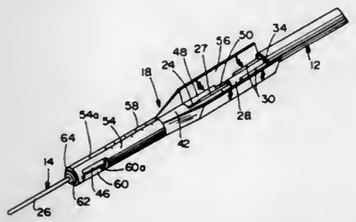
VOL 1147 ISS 3 FEB 16 1993 UMI

5,186,655
RF CONNECTOR
Alan J. Glenday, and Frederick C. Steenhoff, both of Rochester, N.Y., assignors to Andros Manufacturing Corporation, Rochester, N.Y.
Filed May 5, 1992, Ser. No. 879,176
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—583 **9 Claims**



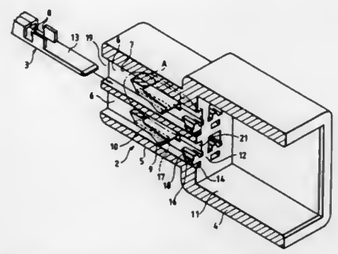
1. A connector for an elongated cylindrical element having a deformable jacket surrounding a core, comprising:
an inner member including a sleeve characterized by a diameter and thickness adapted to allow the sleeve to be inserted between the jacket and the core and to extend longitudinally into a space between the jacket and the core a first distance, an outer sleeve spaced radially outside the inner sleeve to form a cavity therebetween for receiving a portion of the deformable jacket, the outer sleeve extending longitudinally along the cylindrical element a distance less than the first distance; and
an outer member rotatably disposed on the cylindrical member and slidably movable with respect to the inner member, having a first cavity for receiving the inner member and radially inwardly extending means for engaging the deformable jacket and deforming at least a portion of the jacket radially outwardly to anchor the connector with respect to the elongated cylindrical element.

5,186,656
MINIATURE COAXIAL ELECTRICAL CONNECTOR
Frank A. Harwath, Downers Grove; Donald J. Brinkman, Woodridge; Glean A. Landgraf, Naperville; Hasmukh Shah, Wheaton; Eric Stenstrom, Warrenville; David L. Brunker, Naperville, all of Ill., and Richard A. Johnson, Poughkeepsie, N.Y., assignors to Molex Incorporated, Lisle, Ill. and International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 13, 1991, Ser. No. 790,977
Int. Cl.[5] H01K *17/04*
U.S. Cl. 439—585 **20 Claims**



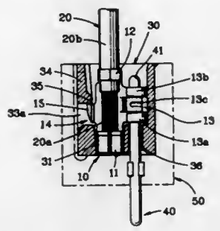
1. A coaxial contact for termination to a coaxial cable, said cable including a signal wire surrounded by an inner insulating member, ground means surrounding said inner insulating member an outer insulating sheath surrounding said ground means, said coaxial contact comprising:
a male signal pin formed of a solid cylindrical rod throughout substantially its entirety and including a contact end for mating with an appropriate female receptacle contact and a terminating end for termination to said signal wire, said terminating end having a coined portion acting as a bonding site for said signal wire;
insulation means surrounding a portion of said signal pin including said terminating end; and
a generally cylindrical, one piece, stamped and formed ground shield tube positioned about said insulation means, said ground shield tube having an inner surface for termination to said ground means of said coaxial cable, said terminating end of said signal pin being located within said ground shield tube and said ground shield tube further including a leading edge, a rear portion and a front portion therebetween, said front portion including at least one spring contact arm extending in cantilever fashion away from said leading edge for contacting a conductive surface of a bore into which said contact is inserted when mated with a mating connector; and
said insulation means further includes recess means radially inward from said at least one contact arm to prevent restriction of movement of said contact arm.

5,186,657
CONNECTOR
Kimihiro Abe, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Jun. 17, 1992, Ser. No. 899,845
Claims priority, application Japan, Jun. 19, 1991, 3-147313
Int. Cl.[5] H01R *13/40*
U.S. Cl. 439—595 **3 Claims**



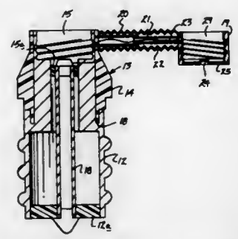
1. A connector form by a molding comprising:
a connector housing (**2**) having a terminal accommodating chamber (**6**) provided at the inner end thereof with a stripping hole (**21**) for a flexible locking lance (**10**) and a lead-out hole (**14**) for receiving an end portion (**13**) of a terminal. (**3**) to be inserted into said connector housing (**2**);
a guide wall (**16**) provided between said stripping hole (**21**) and said lead-out hole (**14**) for guiding said terminal (**3**), said guide wall having a guide prolongation (**18**) protruded from said guide wall; and
said flexible locking lance (**10**) for locking said terminal (**3**) at a predetermined position, said flexible locking lance (**10**) being protruded from an inner wall of said terminal accommodating chamber (**6**) formed in said connector housing (**2**), said flexible locking lance (**10**) being formed with a stripping groove (**17**) extended longitudinally of said flexible locking lance, and said guide prolongation (**18**) being formed in correspondence to said stripping groove (**17**).

5,186,658
ELECTRICAL CONTACT
Shoji Kikuchi, and Nobuaki Onone, both of Kanagawa, Japan, assignors to AMP Incorporated, Harrisburg, Pa.
PCT No. PCT/US89/04793, § 371 Date May 24, 1991, § 102(e) Date May 24, 1991
PCT Filed Oct. 30, 1989, Ser. No. 689,034
Claims priority, application Japan, Nov. 30, 1988, 63-156292
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—595 **2 Claims**



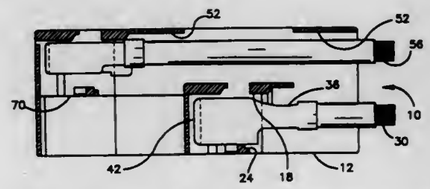
1. An electrical connector comprising:
an insulation housing having at least one cavity, one wall of the housing forming the cavity including a resilient lance having an inwardly-directed raised portion adjacent an inner end;
an electrical contact including a conductor core crimping section and an insulation cover crimping section, said conductor core crimping section and said insulation cover crimping section being located at opposite ends of the electrical contact for respectively crimping to a conductor core and an insulation cover of an electrical wire, a securing member, having a side edge facing the conductor core crimping section and a side edge facing the insulation cover crimping section and having an engaging member formed therein which protrudes outwardly and tapers gradually from a maximum at the side edge facing the insulation cover crimping section to a minimum toward the side edge facing the conductor core crimping section for engagement with said raised portion when the electrical contact is inserted into the cavity to retain the electrical contact therein, and a contact section for electrical connection with a complementary mating electrical contact, said securing member and said contact section being positioned between the conductor core crimping section and the insulation cover crimping section.

5,186,659
LIGHT BULB ADAPTER APPARATUS
George F. Hefner, 1611 N. Sugar St., Lima, Ohio 45801
Filed Nov. 14, 1991, Ser. No. 791,357
Int. Cl.[5] H01R *27/02*
U.S. Cl. 439—643 **2 Claims**



1. A light bulb adapter apparatus in combination with a standard light bulb socket, including an internally threaded first bore of a first diameter, wherein the apparatus comprises,
an adapter externally threaded cylindrical base defined by a base diameter equal to the first diameter, and wherein the adapter externally threaded cylindrical base includes an adapter internally threaded socket mounted to an upper terminal end of the adapter base and coaxially aligned therewith, wherein the adapter internally threaded socket is defined by a second diameter less than the first diameter, and wherein the adapter base and the adapter socket are formed of a unitary integral construction, and
the adapter socket includes an adapter head circumferentially coextensively mounted exteriorly of the adapter socket, and wherein the adapter head includes an adapter head upper terminal end coincident with an upper terminal end of the adapter socket, and the adapter head includes an adapter head lower terminal end defining a skirt, and the adapter base includes a cylindrical groove positioned within an upper terminal end of the base receiving the skirt, and the adapter head further includes a flange extending radially exteriorly beyond the adapter base upper terminal end defining a torroidal abutment surface for abutment of an upper terminal end of the standard light bulb socket, and
at least one further socket member mounted to the adapter socket, the further socket member formed with an internally threaded socket cylindrical wall and a further socket floor, and a further socket post positioned coaxially of the further socket floor, and a central inner conductor rod extending coextensively of the adapter base and the adapter socket, with the adapter base including a polymeric adapter base floor, and the adapter socket including a polymeric adapter socket floor, with the central conductor rod extending coaxially of the base floor and the adapter socket floor, and an electrical conductor wire in electrical communication between the central inner conductor rod and the further socket post.

5,186,660
BI-LEVEL WIRING HARNESS CONNECTOR
Thaddeus S. Wielgos, Des Plaines; Declan E. Killarney, Naperville, and Katalin A. Schmidt, Des Plaines, all of Ill., assignors to Eaton Corporation, Cleveland, Ohio
Filed Nov. 9, 1989, Ser. No. 433,815
Int. Cl.[5] H01R *21/00*
U.S. Cl. 439—685 **12 Claims**

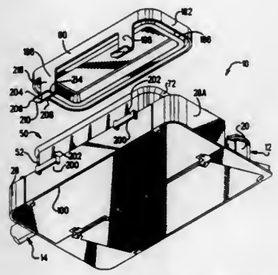


1. A harness connector for a plural conductor cable comprising:
(a) casing means having a plurality of channels formed in one end thereof;
(b) at least one individual conductor received in each of said channels;
(c) a first connecting surface on said casing means having, at lest one opening therein communicating with one of said channels in a direction at right angles to the conductor therein; and,
(d) a second connecting surface adjacent said first surface, said second surface having at least one opening therein communicating with another of said channels in said direction at right angles to the conductor therein, said sec-

VOL 1147 ISS 3 FEB 16 1993 UMI

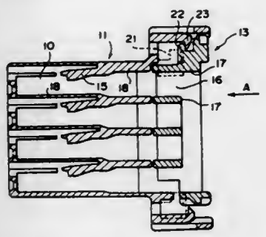
ond surface located on said casing means at a level displaced in said direction from said first surface.

5,186,661
LID WITH INTEGRAL HINGES
Harry M. Capper, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Apr. 3, 1992, Ser. No. 863,255
Int. Cl.[5] H01R *13/52*
U.S. Cl. 439—718 **4 Claims**



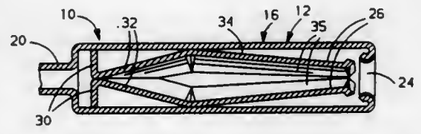
1. A module for containing an array of electrical components comprising a housing and a lid and adapted to receive respective ones of said electrical components, said lid having at least one hinge tab along an edge thereofand oriented parallel to said edge, each said hinge tab extending to a free end insertable into a corresponding at least one corresponding oriented slot defined through an elongate embossment along a corresponding side wall of said housing means for securing said lid to said housing, said free end including a pair of latch projections extending laterally from side edges thereof and parallel to said lid edge, each latch projection defining a rearwardly facing transverse latch surface latchable behind a corresponding oppositely facing latch surface defined along end walls of said corresponding slot upon insertion therethrough, and each latch projection including a tapered forwardly and outwardly facing bearing surface forwardly of said latch surface adapted to be deflected inwardly during passage through said slot by said end walls thereof.

5,186,662
DOUBLE LOCKING-TYPE ELECTRICAL CONNECTOR
Katsuhiko Yuasa, Ageo; Shinji Amemiya, Yokohama, and Akira Nagamine, Kawasaki, all of Japan, assignors to AMP Incorporated, Harrisburg, Pa.
Continuation-in-part of Ser. No. 706,684, May 29, 1991, abandoned. This application Apr. 21, 1992, Ser. No. 871,884
Claims priority, application Japan, May 30, 1990, 2-140348; Dec. 27, 1991, 3-107594; Apr. 3, 1992, 4-20119
Int. Cl.[5] H01R *13/514*
U.S. Cl. 439—752 **12 Claims**



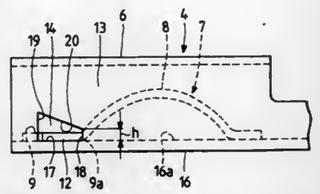
1. An electrical connector housing, comprising:
a dielectric housing member having partitions forming a plurality of contact-receiving chambers extending from a front end to a contact insertion end of said housing for receiving electrical contacts therein;
a dielectric contact-locking member having further partitions defining a plurality of holes extending therethrough corresponding to that of the contact-receiving chambers;
first latch means provided by said housing member and said contact-locking member mounting said contact-locking member at a first position on the contact insertion end of said housing member with the housing partitions and the locking member partitions being in alignment such that the spacing between the partitions is essentially eliminated thereby forming substantially continuous surfaces by the partitions enabling smooth insertion of the electrical contacts through the locking member holes into the contact-receiving chambers; and
second latch means including guide means for guiding said locking member as it moves to a second position causing upper sections of the locking member partitions to move from their aligned positions with the housing partitions and then along upper sections of the housing member partitions for engaging outer ends of the electrical contacts to maintain them in the contact-receiving chambers and said second latch means maintaining the locking member at said second position.

5,186,663
ELECTRICAL FEMALE TERMINAL
Mark J. V. Wymelenberg, Hubbard, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Mar. 23, 1992, Ser. No. 914,703
Int. Cl.[5] H01R *13/87*
U.S. Cl. 439—843 **5 Claims**



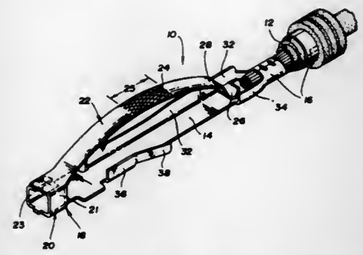
1. An electrical female terminal of one piece construction comprising:
a contact portion at one end and an attachment portion at an opposite end for attaching the terminal to an electric cable;
the contact portion including a split socket that is attached to the attachment portion by an intermediate neck of reduced diameter;
the split socket having a pair of longitudinal edges defining the split and a curled annular lip at its front end defining an entrance for plugging a mating terminal pin into the split socket;
the contact portion further including a pair of longitudinal contact arms that are disposed inside the split socket and that are integrally attached to the respective longitudinal edges of the split socket by inwardly bent support tabs that are located near its rearward end;
the longitudinal contact arms having rearward plates that abut each other an that each have a perpendicular, semicircular flange at its rearward end that engages the inside surface of the socket rearwardly of the support has to provide a solid anchor for the longitudinal contact arms to extend forwardly in cantilever fashion;
the longitudinal contact arms having diverging medial portions of arcuate cross section that engage the inside surface of the socket forwardly of the support tabs; and
the longitudinal contact arms having converging forward portion of arcuate cross section that provide deflectable contact fingers for engaging opposite sides of a pin terminal when it is inserted into the socket.

5,186,664
FEMALE TERMINAL
Kimihiro Abe, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed Jun. 10, 1992, Ser. No. 896,591
Claims priority, applicatioo Japan, Jun. 17, 1991, 3-144671
Int. Cl.[5] H01R *13/87*
U.S. Cl. 439—845 **4 Claims**



1. A female terminal for receiving a male terminal, comprising:
a main body portion extending in a longitudinal direction and having a cable connecting portion at one end and an electric contact portion at an opposite end thereof, said electric contact portion having an opening at a forward end thereof for receiving a male tab terminal to make electrical connection therebetween;
a leaf spring provided in said electric contact portion for urging against said male tab terminal, said leaf spring including a convexly curved spring portion extending in said longitudinal direction and a flat portion disposed at an end of said curved spring portion, said flat portion extending toward said forward end and having a pair of engagement pieces projecting in a transverse direction with respect to said longitudinal direction and being engaged in support holes provided in opposite side walls of the female terminal, wherein each of said support holes has a forward enlarging configuration corresponding to a locus of said engagement pieces resulting from arcuate movement of said engagement pieces due to pivotal motion of said flat portion upon insertion of said male terminal into the female terminal.

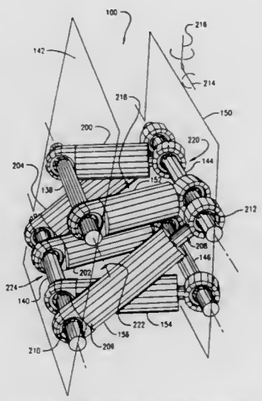
5,186,665
ELECTRICAL TERMINAL
Steven C. Kelly, Cortland; Daniel H. Huff, Austintown, and William G. Strang, Warren, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed May 15, 1992, Ser. No. 884,090
Int. Cl.[5] H01R *13/00*
U.S. Cl. 439—862 **6 Claims**



1. An electrical terminal for making butt contact with a dome shaped contact of an electrical device comprising:
an elongated base plate that has core and insulation crimp wings at one end and a contact support at the opposite end that is formed as a closed, four sided box at a front end of the terminal, and
a resilient contact tongue that is integral with a side of the box that is opposite to the front end of the base plate so that the contact tongue extends rearwardly over the base plate in cantilever fashion,
the contact tongue being bow shaped in the longitudinal direction and having a free end that engages and slides along the base plate when the contact tongue is depressed, and
the contact tongue having an apex midway between its ends for butt engaging a solder or dome shaped contact of an electrical device, such as a lamp bulb that is arcuate in cross section

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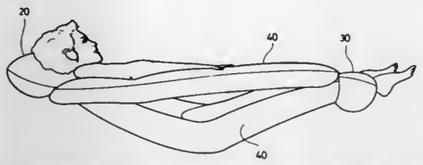
5,186,666
MARINE MOTOR DRIVE UNIT MOUNTING APPARATUS
Thomas R. Stanley, 1645 East 29th Avenue, Vancouver, British Columbia, Canada V5N 2Y7
Filed Dec. 6, 1991, Ser. No. 803,225
Int. Cl.[5] B63H *21/26*
U.S. Cl. 440—61 **35 Claims**



1. An apparatus for mounting a motor drive unit to a boat, the apparatus comprising:
a) first and second boat mounting members securable to a boat and lying in a boat plane;
b) first and second motor members securable to a motor and lying in a motor plane spaced apart from said boat plane by a distance, the motor plane having an angular orientation relative to said boat plane;
c) setting means connected between said boat mounting members and said motor mounting members for setting said motor mounting members in a position displaced from said boat mounting members, said setting means permitting movement of said motor mounting members relative to said boat mounting members, to selectively and independently set said angular orientation, to selectively and independently set the distance between the boat plane and the motor plane, and to selectively and independently set the vertical translation of the motor plane relative to the boat plane.

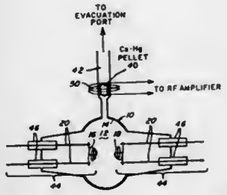
VOL 1147 ISS 3 FE 16 1993 UMI

5,186,667
FLOATING HAMMOCK
Cheng-Chung Wang, Taipei, Taiwan, assignor to Team Worldwide Corporation, Taiwan
Filed Sep. 3, 1991, Ser. No. 754,005
Int. Cl.[5] B63C 9/08
U.S. Cl. 441—129 20 Claims



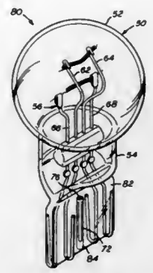
1. A floating hammock for a user to rest thereupon on the water of a pool, comprising:
a sling having two ends for the user to lie thereon;
a headrest connected to one end of said sling;
a footrest connected to the other end of said sling, said footrest comprising a first engaging means; and
a pair of armrests having one end connected to said headrest and the other end connected to said footrest, said armrests being disposed near the two sides of said sling such that the user lying upon said sling may rest his/her hands thereupon and each said armrest comprising a non-inflatable segment having at least one second engaging means;
wherein said headrest, said footrest, and said armrest are capable of floating above the water; and
said first engaging means and said second engaging means being capable of engaging with each other such that the length of said armrest can be adjusted to allow the user lying upon said sling to be further immersed into the water.

5,186,668
NEGATIVE GLOW DISCHARGE LAMP
Joseph D. Michael, University Heights, Ohio; Radomir Lagushenko; Jakob Maya, both of Brookline, Mass., and Oscar Biblarz, Carmel, Calif., assignors to GTE Products Corporation, Danvers, Mass.
Continuation of Ser. No. 653,324, Feb. 11, 1991, Pat. No. 5,120,251, which is a division of Ser. No. 473,529, Feb. 1, 1990, abandoned. This application Apr. 8, 1992, Ser. No. 865,418
The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.
Int. Cl.[5] H01J 9/395
U.S. Cl. 445—9 3 Claims



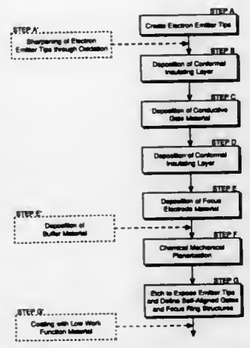
1. A method of constructing a glow discharge lamp having an anode and a cathode, said method comprising the steps of providing an envelope having an exhaust tube, depositing within the exhaust tube an amalgam of mercury and a metal which when vaporized within the lamp is effective for reducing the work function of the anode to thereby enhance the efficacy of the lamp, heating the amalgam within the exhaust tube and introducing the amalgam in a liquid state into the envelope, filling the envelope also with a rare gas and tipping the exhaust tube off.

5,186,669
INCANDESCENT LAMP
Michael R. Holman, and Richard A. Smith, Jr., both of Sparta, Tenn., assignors to Cooper Industries, Inc., Houston, Tex.
Filed Feb. 1, 1990, Ser. No. 473,357
Int. Cl.[5] H01J 9/395, 9/26
U.S. Cl. 445—16 7 Claims



1. A method of manufacturing an incandescent lamp having a bulbous portion and a base portion, comprising the steps of:
providing a tube extending through the base portion, the tube having a tube inlet and a tube outlet;
injecting a first gas into the lamp to displace substantially all of a second gas; and
press sealing the base portion to trap the first gas within the bulbous portion and to prevent the first gas from escaping from the interior of the bulbous portion to the exterior of the lamp.

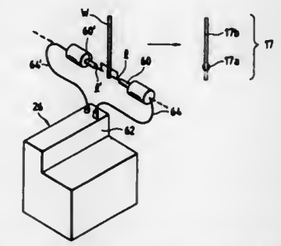
5,186,670
METHOD TO FORM SELF-ALIGNED GATE STRUCTURES AND FOCUS RINGS
Trung T. Doan; Tyler A. Lowrey; David A. Cathey, and J. Brett Rolfson, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Filed Mar. 2, 1992, Ser. No. 844,369
Int. Cl.[5] H01J 9/04
U.S. Cl. 445—24 20 Claims



1. A process for the formation of self-aligned gate and focus ring structures around a cold cathode emitter tip, said process comprising the following steps:
processing a wafer to form at least one conical cathode on a substrate, said cathode having an emitter tip;
depositing a first conformal insulating layer over the surface of the wafer;
depositing a conductive material layer superjacent said first conformal insulating layer;

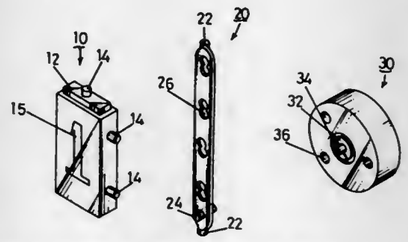
depositing a second conformal insulating layer superjacent said conductive material layer;
depositing a focus electrode material layer superjacent said second conformal insulating layer;
subjecting the wafer to chemical mechanical planarization (CMP) to expose at least a portion of said conductive material layer; and
etching said layers to expose the emitter tip.

5,186,671
MANUFACTURING METHOD OF DISCHARGE LAMP ELECTRODE
Masakazu Nagasawa; Masami Handa; Kunio Fukai, and Yasuo Hirozumi, all of Shizuoka, Japan, assignors to Kolto Manufacturing Co., Ltd., Tokyo, Japan
Filed Jun. 11, 1991, Ser. No. 713,225
Claims priority, application Japan, Jun. 15, 1990, 2-155069
Int. Cl.[5] H01J 9/12
U.S. Cl. 445—49 4 Claims



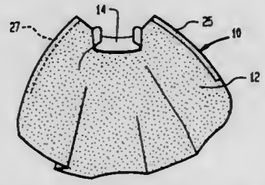
1. A method of manufacturing a discharge lamp electrode, comprising the steps of:
preparing a rod-shaped electrode material made of tungsten or tungsten alloy;
fixedly holding the electrode material; and
irradiating an end portion of the electrode material with a plurality of laser beams simultaneously in different directions to form the end portion into a spherical shape having a diameter larger than a remaining base portion of the electrode material.

5,186,672
MULTIPURPOSE BLOCK TOY
Chen C. Tung, No. 15, Lane 63, Sec. 7, Yen Fing N. Rd., Taipei, Taiwan
Filed Dec. 4, 1991, Ser. No. 802,095
Int. Cl.[5] A63H 33/04
U.S. Cl. 446—95 3 Claims



1. A block toy, the improvement comprising:
a plurality of hollow quadratic blocks, said blocks each having a raised portion on a top edge thereof, a round pin on said raised portion at the middle, at least one round pin projecting from a right-side edge thereof, at least one pin hole on a left-side edge thereof, at least one pin hole on a back face thereof, indicia on a front face thereof, and an opening on a bottom edge thereof, said raised portion being made in a size tightly fitting into said opening;
a plurality of connecting rods, said connecting rods each having two round pins longitudinally aligned at two opposite ends, and at least one circular cross pin and at least one pin hole on the body thereof;
a plurality of rollers, said rollers each having a shaft rotatably mounted through the central axis thereof, said shaft having a unitary round pin and a pin hole co-axially aligned at opposite ends thereof, at least one pin hole on a front face thereof, and a recess on a back face thereof; and
wherein said round pins and said at least one circular cross pin can be respectively alternatively fitted into said pin holes.

5,186,673
REMOVABLE CLOTHING IN COMBINATION WITH A DOLL
A. Edward Fogarty, and Bonnie R. Fogarty, both of 39 Sandy Hook Rd., Sarasota, Fla. 34242
Filed May 13, 1992, Ser. No. 882,482
Int. Cl.[5] A63H 3/08, 3/00; A41D 13/00; A41B 13/10
U.S. Cl. 446—98 8 Claims



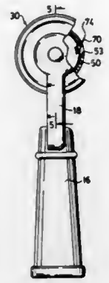
1. Removable clothing in combination with a doll having three-dimensional body being at least semi-rigid comprising:
a removable article of doll clothing fabricated of flexible fabric which simulates the appearance and feel of an article of real clothing;
said doll clothing including a resilient waistband attached adjacent an upper end of said flexible fabric sized to biasedly engage around a waist of said doll, said waistband removably attaching said doll clothing to said doll;
said flexible fabric separated along a generally upright margin thereof to accommodate engagement of said waistband around said doll waist area;
said margin further including closure means to close said clothing around said doll.

5,186,674
TOY PAINT APPLICATORS
Gerard F. Beckhusen, East Aurora, and Gail S. Mowrer, Elma, both of N.Y., assignors to Fisher-Price, Inc., East Aurora, N.Y.
Filed Jun. 7, 1991, Ser. No. 711,817
Int. Cl.[5] A63H 33/30, 17/44; B05C 1/00; A63J 3/00
U.S. Cl. 446—144 16 Claims

1. A toy paint applicator comprising:
(a) a handle;
(b) a simulated paint receiving element having a translucent portion for simulating a paint receiving area of the applicator; and
(c) color imparting means movably disposed with respect to the translucent portion for movement between a coloring position for simulating the presence of paint or the paint

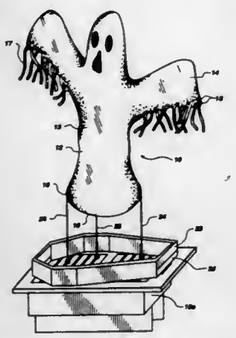
VOL 1147 ISS 3 FE 16 1993 UMI

receiving element and a noncoloring position for simulating the absence of paint on the paint receiving element to



create the effect of picking up paint and applying it to a surface.

5,186,675
AIR VENT TOY
Robert D. D. Stoddard, 1095 W. 1060 North, Layton, Utah 84041
Filed Nov. 19, 1991, Ser. No. 794,040
Int. Cl.[5] A63H *13/00, 3/06, 33/00;* G09F *19/08*
U.S. Cl. 446—199 **14 Claims**



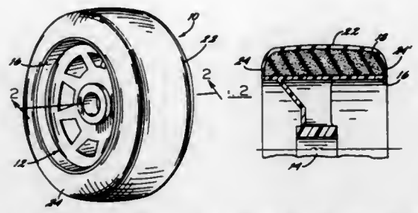
1. An inflatable vent toy covering an exhaust vent air outlet of a forced air heating or cooling system leading into a room enclosure, the flow of which is responsive to the temperature within said room enclosure comprising: an inflatable balloon made of a flexible material patterned and shaped to suit the preference of a user having a base defining an air inlet with surrounding attachment structure means releasalely securing the base over an exhaust vent air outlet such that when the air inlet is in communication with a vent air outlet to direct incoming air from a vent to enter the base air inlet and fill the balloon in a first mode while allowing vented air to also enter the room, and when the in-coming air from a vent stops, the balloon collapses in a second mode.

5,186,676
MODEL RACING CAR TIRE AND WHEEL ASSEMBLY
Timothy L. Morton, Troy, N.C., assignor to Total Racing Connection, Inc., Albemarle, N.C.
Filed Apr. 17, 1991, Ser. No. 686,789
Int. Cl.[5] A63H *17/26;* B60C *7/00*
U.S. Cl. 446—465 **24 Claims**

1. A tire and wheel assembly for a high-speed, radio-controlled model racing car, comprising:

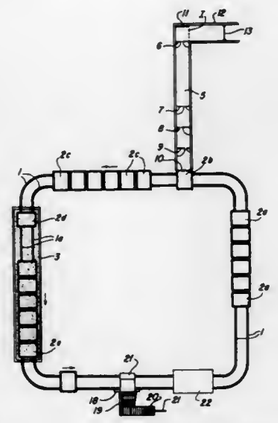
a wheel having a generally cylindrical rim;

a foam rubber body overlying said rim and having opposite side surface adjacent respective ones of the opposite sides of said rim;



a tread rubber body having a central section overlying said foam rubber body, and having opposite side sections extending angularly from said central section and located adjacent respective ones of said opposite side surfaces of said foam rubber body.

5,186,677
PROCEDURE AND PLANT FOR THE STUNNING OF ANIMALS TO BE SLAUGHTERED AT SLAUGHTERHOUSES
Leif L. Christensen, Vaerloese; Tage W. Joergensen, Copenhagen S, both of Denmark, and Claes-Henrik Hansen, Lund, Sweden, assignors to Slagteriernes Forskningsinstitut, Roskilde, Denmark
Filed Feb. 7, 1991, Ser. No. 652,560
Claims priority, application Denmark, Feb. 8, 1990, 334/90
Int. Cl.[5] A22B *3/00;* B61D *9/14*
U.S. Cl. 452—66 **20 Claims**



1. A method for stunning animals using a stunning pit with an anaesthetic atmosphere and a plurality of boxes having a free floor area, said method comprising the steps of: (a) leading a group of at least three animals from a pen area of a slaughterhouse into a first box; (b) moving the filled box down into the stunning pit; (c) allowing the box to remain in the pit for a predetermined period of time; (d) lifting the box out of the pit; (e) leading another group of at least three animals into a second box; (f) repeating steps (b) to (d) for said second box independently of said first box; said boxes being transported in an endless transport path by means of a conveyor which is divided into sections that may be operated independently of each other, by which at least the transportation of a filled box to the stunning pit and the lowering of a filled box into the pit are performed on tow different, non-coupled sections.

5,186,678
HEART AND LIVER HARVESTING SYSTEM
Ronnie M. Conner, Dahlonega, Ga.; Tommy N. Hulsey, James S. Ellis, Julius A. Ellis, Jimmie C. Hewell, all of Gainesville, Ga., assignors to Cantrell Machine Company, Inc., Gainesville, Ga.
Filed Aug. 1, 1990, Ser. No. 561,730
Int. Cl.[5] A22C *11/00*
U.S. Cl. 452—106 **15 Claims**



1. A method of removing the vascular package from the rest of the poultry viscera comprising the steps of:

a) conveying poultry along a prescribed conveying path with the viscera still attached to the poultry carcass;

b) hanging the vascular package over a locating edge while the vascular package is still attached to the rest of the viscera so that the vascular package is on that side of the locating edge opposite the poultry carcass while the major portion of the poultry viscera is on the same side of the edge as the poultry carcass;

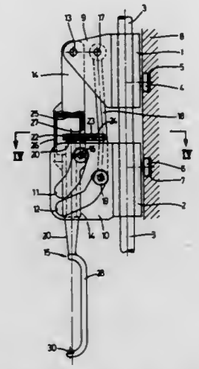
c) pulling the viscera away from the locating edge by pressing down on the viscera between the locating edge and the poultry carcass until the vascular package is pulled up against the locating edge;

d) while the vascular package is still pulled up against the locating edge, separating the vascular package from the viscera by cutting the viscera along the locating edge; and,

e) moving the locating edge synchronously with the movement of the poultry carcasses along the prescribed conveying path.

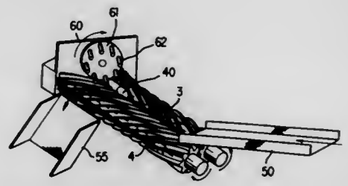
5,186,679
APPARATUS FOR EVISCERATING SLAUGHTERED POULTRY
Cornelis Meyn, Oostzaan, Netherlands, assignor to Machinefabriek Meyn B.V., Netherlands
Continuation of Ser. No. 820,315, Jan. 9, 1992, abandoned. This application Jun. 15, 1992, Ser. No. 899,017
Claims priority, application Netherlands, Jan. 30, 1991, 9100153
Int. Cl.[5] A22C *21/06*
U.S. Cl. 452—117 **9 Claims**

1. Apparatus for eviscerating slaughtered poultry, comprising an eviscerating means which through an opening between the sternum and the tail of a bird suspended with its ankle joints from a hook and resting with its back against a counter pressure surface is entered into the bird, whereby said eviscerating means carries at its foremost end a processing member for engaging the gullet of the bird, which when the eviscerating tool enters the bird is positionable in a first position and which when reaching the extreme position of the eviscerating means is movable towards the spinal column into a second position for engaging the gullet and which in this position together with the eviscerating means is moved out of the bird, characterized in that the processing member comprises two halves (28, 29)



which can rotate around rotation axes extending in parallel with the longitudinal axis of the eviscerating means (15) and which, in the first position, are substantially aligned and which, in the second position, engage each other substantially in a co-planar fashion while clamping between them the gullet of the bird.

5,186,680
POULTRY DESKINNING APPARATUS
Everett T. Conaway, Seaford, Del., and Norma L. Conaway, P.O. Box 449, Seaford, Del. 19973, assignors to Norma L. Conaway, Seaford, Del.
Filed Dec. 30, 1991, Ser. No. 814,610
Int. Cl.[5] A22C *21/00*
U.S. Cl. 452—125 **13 Claims**



1. A deskinning apparatus, comprising:

two helically toothed rollers having a first infeed end, and a second outfeed end, said rollers being in operative engagement with each other at at least one end;

two bearing means for supporting said rollers at their infeed ends;

a pair of open ended back blocks for supporting said rollers at their outfeed ends, each back block having a through hole traversing each of said back blocks, and each back block being penetrated by the toothed portion of one of the helically toothed rollers so that at least a portion of the toothed portion of the helically toothed roller in the back block substantially traverses the length of said through hole;

means for driving at least one of said rollers so that the rollers move in a counter-rotating fashion; and

means for delivering product having skin to the infeed end

VOL 1147 ISS 3 FEB 16 1993 UMI

and means for removing product from the apparatus once its skin has been removed,

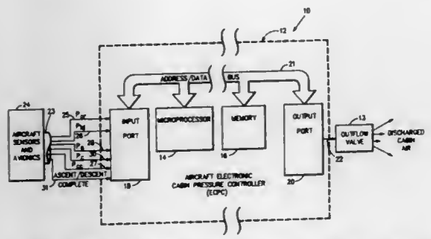
whereby skin is pried loose from the product as it moves along the rollers.

5,186,681

AIRCRAFT CABIN PRESSURE CONTROL FOR ASCENTS AND DESCENTS

Floyd R. Emmons, West Hartford, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Sep. 30, 1991, Ser. No. 768,505
Int. Cl.[5] B64D *13/04*
U.S. Cl. 454—74 **10 Claims**



4. An aircraft cabin pressure controller which receives sensed information indicative of ambient air pressure outside the aircraft P_a, pressure inside the aircraft cabin P_c, and pressure at the aircraft landing site P_{ld}, ambient pressure at cruise altitude P_{cr}, and cabin pressure at cruise altitude P_{cc}, comprising:

means for computing at successive intervals during ascent and descent of the aircraft, a ratio which is equal to $(P_{ld}-P_c)/(P_{ld}-P_a)$ during descent of the aircraft cabin, and which is equal to $(P_{cc}-P_c)/(P_{cr}-P_a)$ during ascent of the aircraft cabin;

means for scheduling at successive intervals during ascent and descent a set point value P_r which during descent is a function of P_a, P_c, P_{ld} and the descent starting point, for scheduling said set point value during an ascent as a function of P_a, P_c, P_{cc}, P_{cr} and the ascent starting point, and for providing a signal indicative of said set point value P_r;

means for computing the difference between said ratio signal and said set point value signal P_r, and for providing an error signal indicative thereof; and

means for summing said error signal and a constant value to provide an adjustable rate set point signal for controlling the cabin pressure rate of change, said constant value is indicative of the initial cabin pressure rate of change desired at the start of an ascent or descent.

5,186,682

AIR CONDITIONING SYSTEM FOR VEHICLES

Katsumi Iida, Ohsato, Japan, assignor to Zexel Corporation, Tokyo, Japan

Filed Oct. 3, 1991, Ser. No. 770,356
Claims priority, application Japan, Oct. 9, 1990, 2-271426
Int. Cl.[5] B60H *3/00*
U.S. Cl. 454—75 **13 Claims**

1. A vehicular air conditioning system in which an air flow produced by a blower is conditioned and discharged into a passenger compartment, said system comprising:

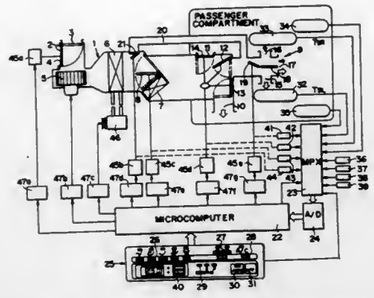
a regulating member for regulating an air-distribution ratio between an amount of air discharged to a right side of the passenger compartment and an amount of air discharged to a left side thereof;

a plurality of solar radiation quantity detectors for detecting quantities of solar radiation at a plurality of points in the passenger compartment;

a calculating means responsive to said solar radiation quantity detectors for calculating a direction of the solar radiation;

a first setting means for setting a rotational speed of the blower;

a second setting means responsive to the first setting means



for setting a control range for the air-distribution ratio; and

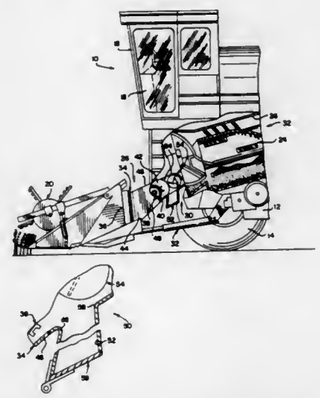
a control means responsive to said calculating means for controlling the regulating member so as to obtain the air-distribution ratio suitable for the calculated direction of the solar radiation within the control range.

5,186,683

STONE TRAP ASSEMBLY FOR A COMBINE

Herbert M. Farley, Plainfield, and William L. Cooksey, Romeoville, both of Ill., assignors to Case Corporation, Racine, Wis.

Filed Sep. 23, 1991, Ser. No. 763,984
Int. Cl.[5] A01F *12/10, 12/16*
U.S. Cl. 460—105 **12 Claims**



1. A stone trap assembly for a combine having a mobile frame, crop threshing means mounted on the frame, crop feeding means comprising a housing attached toward an upper end to the frame, and power means for driving said crop feeding means and advancing crop material toward said crop threshing means, said crop feeding means housing including lateral spaced side walls, a top wall and a bottom wall, said stone trap assembly comprising:

a stone receiving trough arranged between an inlet to said crop feeding means and said crop threshing means for receiving stones and the like being advanced with the crop materials toward said threshing means, with said stone receiving trough extending across the width of said crop feeding means; and

rotatable beater means laterally mounted about a generally fixed axis above said stone receiving trough for diverting rocks and the like down into said stone receiving trough, said beater means including a series of equally spaced laterally elongated spiral flight sections for engaging and propelling crop material toward said crop threshing means, with each flight section having a helix configuration between opposite ends thereof such that crop material contact shifts along the length of each flight section as the beater means rotates.

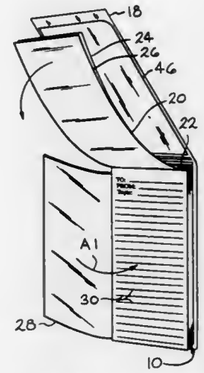
2. The stone trap assembly according to claim 1 wherein said beater means further includes a laterally elongated shaft, with each flight section extending away from said elongated shaft and disposed thereabout.

5,186,684

PORTABLE COMMUNICATION DEVICE

Morris J. Weinberger, 31 Rosewood Ct., Bowling Green, Ohio 43402

Filed Dec. 13, 1991, Ser. No. 807,137
Int. Cl.[5] B41L *1/20*
U.S. Cl. 462—17 **5 Claims**



1. A portable communication device comprising

a rectangularly shaped pad having a major dimension and a minor dimension which is substantially half of said major dimension, said pad comprising a plurality of sets of carbonless sheets of paper connected to each other along a side which has the minor dimension,

a case comprising a rectangularly shaped rear panel having substantially the same dimensions as said pad, said rear panel having a minor dimension and a major dimension, said minor dimension being such that the device can be held in an adult's hand, between the heel and fingers,

a strike through shield having substantially the same dimensions as said rear panel, a side of said strike through shield having the major dimension being connected to a side of said rear panel which has the major dimension,

rule means provided on said sets of carbonless paper, said rule means being oriented substantially parallel to said minor dimension, and

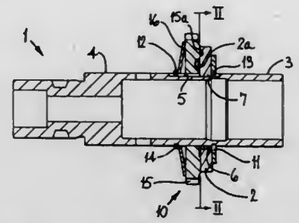
means provided on said case for supporting said pad thereon.

5,186,685

FLANGE MOUNTING ARRANGEMENT

Horst Grossmann, Huenfelden, and Jurgen Hoser, Neu-Ansbach, both of Fed. Rep. of Germany, assignors to Black & Decker, Inc., Newark, Del.

Filed Mar. 1, 1991, Ser. No. 663,330
Claims priority, application Fed. Rep. of Germany, Mar. 2, 1990, 9004690
Int. Cl.[5] F16D *7/02*
U.S. Cl. 464—46 **11 Claims**



1. A flange mounting arrangement for mounting a flange member non-rotatably on a shaft, comprising:

a rotatable shaft axially extending and having two axially spaced apart bearing surface portions for rotatably mounting the shaft thereon;

the shaft having an axial recess in its surface intermediate said bearing surface portions; thereof;

a collar partially encircling the shaft, the collar being discontinuous and having two opposite ends space apart circumferentially with a gap therebetween;

an annular flange member dimensioned to fit radially over said collar and having a radially inwardly directed lug engaging the recess through the gap between the ends of the collar;

the radial inward extent of the lug being greater than the radial thickness of the collar but less than twice the thickness of the collar;

the recess extending axially beyond at least one side of the collar by at least the axial thickness of the flange member; and

the flange member being mountable on the shaft by sliding the flange member along the shaft while the flange member is off-center with respect to the shaft until the flange member is next to the collar and the lug can enter the recess, whereupon the flange member can be arranged concentrically of the shaft and positioned over the collar.

5,186,686

LINK AND BEARING FOR ROTARY COUPLING

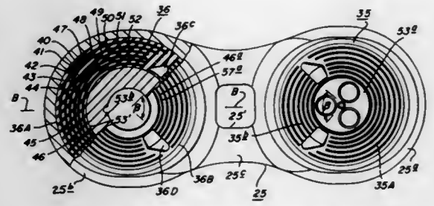
Frank E. Staples; Donald D. Russell, both of Fairview, and James L. Potter, Edinboro, all of Pa., assignors to Lord Corporation, Erie, Pa.

Filed May 11, 1990, Ser. No. 522,288
Int. Cl.[5] F16D *3/62*
U.S. Cl. 464—69 **25 Claims**

18. In a link-type coupling for transferring torque between a drive member having a first rotational axis and a driven member having a second rotational axis, wherein said first and second axis may be misaligned, including a first plurality of connectable means for transmitting torque from said drive member to a linkage means, attached to said drive member and said linkage means, a second plurality of connectable means for transmitting torque from said linkage means to said driven member, attached to said driven member and said linkage means, each plurality being located radially outwrad of their respective rotational axes in spaced confronting relation with one another, said linkage means disposed between said drive and driven members interconnecting said first and second plurality of connectable means of said drive and said driven

VOL 1147 ISS 3 FE 16 1993 UMI

members respectively, said linkage means including a link body having a longitudinal axis extending between at least certain ones of said plurality of connectable means substantially tangentially to said rotational axis, and elastomeric bearing means connecting said link body to said connectable means for pivotal relative motion about spaced axes transverse to said longitudinal axis, said link being subjected to tension and compression loading under various conditions of rotational motion, the



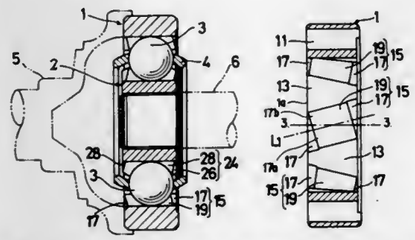
improvement wherein said elastomeric bearing means includes alternating layers of elastomeric material and inelastic shims bonded together throughout separate arcuate zones which zones have their ends defined by discontinuities, said zones being spaced apart on said longitudinal axis on diametrically opposite sides of said connectable means, whereby internal stresses can be reduced among the elastomeric layers while accommodating link motions.

5,186,687

CONSTANT VELOCITY JOINT HAVING CROSS GROOVES

Yasuaki Hayashi, Kariya; Tadashi Tomita; Kenzo Yokoyama, both of Chiryu; Setsuji Suzuki, Okazaki, and Yoshihito Uno, Toyota, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

Filed Jun. 26, 1991, Ser. No. 721,835
Claims priority, application Japan, Jun. 29, 1990, 2-173957
Int. Cl.[5] F16D *3/22*
U.S. Cl. 464—144 **5 Claims**



1. A constant velocity joint composed of an outer joint member having a plurality of first guide grooves in its inner surface, an inner joint member having a plurality of second guide grooves in its outer surface, a plurality balls disposed between said first guide grooves and said second guide grooves, and a cage disposed between said outer joint member and said inner joint member for holding said balls, each of said first guide grooves inclining with respect to the rotational axis of said inner joint member in circumferential direction and each of said second guide grooves inclining with respect to the rotational axis of said inner joint member in a circumferential direction opposite to that of corresponding one of said first guide grooves, wherein

every groove of said first guide groove and/or said second guide grooves is provided with a pair of groove end portions formed at both ends of said groove and asymmetric shapes with respect to the center line of said groove, the depth of said groove end portions being larger than that of the center portion of said groove,

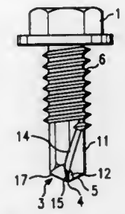
wherein each of said groove end portions intersects with the center portion of a respective one of said grooves at a line of intersection, said line of intersection being inclined with an axial end surface of the respective one of said inner and outer joint members by an angle substantially corresponding to the angle of inclination of the respective one of said grooves, and wherein one end of each of said lines of intersection intersects the axial end surface of the respective one of said inner and outer joint members.

5,186,688

METHOD OF MANUFACTURING AUSTENITIC STAINLESS STEEL DRILL SCREWS

Yasu Uejima, Osaka, Japan, assignor to Hargo 300-Technology, Inc., Tyler, Tex.

Filed Mar. 18, 1992, Ser. No. 853,102
Claims priority, application Japan, Jul. 26, 1991, 3-276095
Int. Cl.[5] B12H *3/02*
U.S. Cl. 470—9 **8 Claims**



1. A method for making an austenitic stainless steel drill screw having a head, a threaded shaft, and a drill portion, which comprises:

forming by cold working on a head and shaft from austenitic stainless steel including nitrogen;

pressing the end of the shaft opposite the head between a pair of pointer dies to form a drill portion having a pointed part and a cutting edge, each pointer die having a die face, cutting edge and receiving face complementary to the other pointer die;

forming threads on the shaft, said forming and pressing steps providing increased hardness through cold work hardening;

passivating the entire surface of the drill screw; and

aging the drill screw, such that said nitrogen is precipitated to the surface of said drill screw to provide further increased hardness.

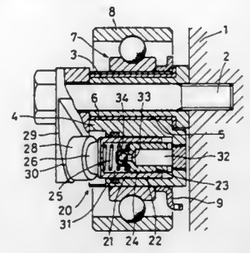
5,186,689

AUTOTENSIONER

Ken Yamamoto; Kazufumi Nakagawa, and Isao Hori, all of Iwata, Japan, assignors to NTN Corporation, Osaka, Japan

Filed Jan. 30, 1992, Ser. No. 828,361
Int. Cl.[5] F16H *7/08*
U.S. Cl. 474—112 **2 Claims**

1. A belt autotensioner comprising a pulley support shaft secured to a base, an eccentric ring rotatably supported on said pulley support shaft at an offset position, a pulley for the belt rotatably supported on said eccentric ring through a rolling bearing, a biasing means for biasing said eccentric ring to press said pulley against the belt, and a damper for imparting resistance to rotation to said eccentric ring to restrain the pivoting motion of said pulley, characterized in that the resistance to



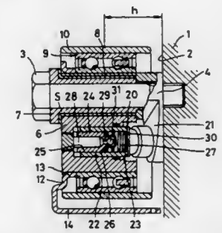
rotation is imparted to said eccentric ring by said damper at the side of said rolling bearing opposite to said base.

5,186,690

AUTOTENSIONER

Ken Yamamoto, Iwata, Japan, assignor to NTN Corporation, Osaka, Japan

Claims priority, application Japan, Jan. 31, 1991, 3-2769; Jul. 31, 1991, 360429
Filed Jan. 30, 1992, Ser. No. 828,360
Int. Cl.[5] F16H *7/08*
U.S. Cl. 474—135 **4 Claims**



1. A belt autotensioner comprising a support shaft secured to a stationary member, a pulley support rotatably supported on said support shaft at an offset position, a tension pulley rotatably supported on said pulley support, a spring coupling member mounted on said pulley support, a tension adjusting spring for biasing said pulley support in a belt stretching direction by exerting a spring force on said spring coupling member, and a damper means for damping vibrations transmitted from said belt to said pulley support through said tension pulley, characterized in that at least one of said spring coupling member and said tension adjusting spring is mounted on said pulley support at a side thereof remote from said stationary member.

5,186,691

TRI-LOBE SHEAVE

Charles E. Strock, 5637 Moutgomery Church Rd., Greencastle, Pa. 17225, and Scottie J. Oliver, 3596 Lightouse Rd., Chambersburg, Pa. 17201

Filed Feb. 24, 1992, Ser. No. 840,043
Int. Cl.[5] F16H *7/00*
U.S. Cl. 474—166 **4 Claims**

1. A sheave apparatus, comprising,

a support shaft, the support shaft including spaced annular grooves, and

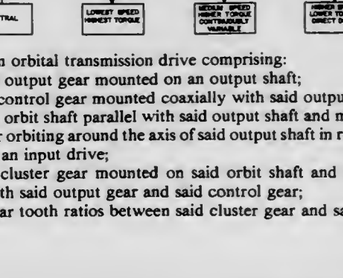
a plurality of end caps mounted between the annular grooves, with one of said end caps positioned adjacent one of said annular grooves, and

each end cap including an end wall, and each end wall including a counter bore directed therewithin, and each counter bore receiving a resilient snap-ring member positioned within each counter bore in surrounding relationship relative to one of said annular grooves, and

each end cap including a polygonal skirt, the polygonal skirt orthogonally oriented relative to the end wall, and

the end wall including a central bore coaxially directed through the end wall receiving the shaft therethrough, and

each polygonal skirt including at least three planar walls,



and at least one of said planar walls including a lock fastener directed therethrough into communication with a support shaft to fixedly secure each end cap to the support shaft, and

each end cap including a hub member, with hub members arranged in confronting relationship relative to one another between the end caps, and

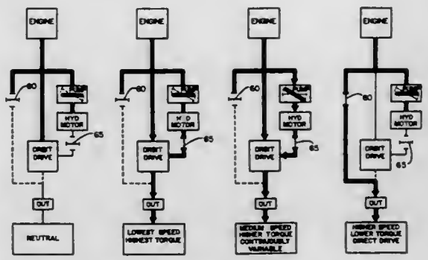
the hub members slidingly mounted to the support shaft to receive a drive belt therebetween.

5,186,692

HYDROMECHANICAL ORBITAL TRANSMISSION

Vernon E. Gleasman, 11 Pondview Dr., Pittsford, N.Y. 14534, and Keith E. Gleasman, 11 McCoord Woods, Fairport, N.Y. 14450

PCT No. PCT/US90/01407, § 371 Date Sep. 12, 1991, § 102(e) Date Sep. 12, 1991, PCT Pub. No. WO90/10807, PCT Pub. Date Sep. 20, 1990
Continuation-in-part of Ser. No. 323,444, Mar. 14, 1989, abandoned. This PCT application Mar. 14, 1990, Ser. No. 768,399
Int. Cl.[5] F16H *47/04*
U.S. Cl. 475—82 **29 Claims**



1. An orbital transmission drive comprising:

a. an output gear mounted on an output shaft;

b. a control gear mounted coaxially with said output gear;

c. an orbit shaft parallel with said output shaft and mounted for orbiting around the axis of said output shaft in response to an input drive;

d. a cluster gear mounted on said orbit shaft and meshed with said output gear and said control gear;

e. gear tooth ratios between said cluster gear and said con-

VOL 1147 ISS 3 FE 16 1993 UMI

trol and output gears being arranged so that said input drive orbiting said cluster gear around said control and output gears produces a reduced rotation of said output shaft;

f. said control gear being arranged relative to said output gear and said cluster gear so that holding said control gear against rotation produces a reduction of said input drive, rotating said control gear in one direction diminishes said reduction of said input drive, and rotating said control gear in an opposite direction produces reverse rotation of said output shaft;

g. a control drive for rotating said control gear;

h. a first clutch for selectively connecting said control drive and said control gear; and

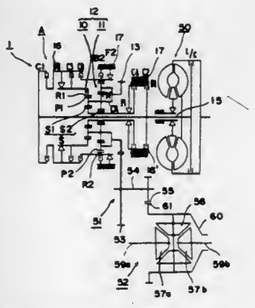
i. a second clutch for selectively connecting said input drive directly to said output shaft.

5,186,693

AUTOMATIC TRANSMISSION

Masaaki Nishida; Naoji Kato, both of Anjo, and Yochi Hayakawa, Toyoake, all of Japan, assignors to Aisin AW Co., Ltd., Japan

Filed Aug. 28, 1991, Ser. No. 750,592
Claims priority, application Japan, Sep. 25, 1990, 2-251987
Int. Cl.[5] F16H *3/62*
U.S. Cl. 475—148 **20 Claims**



1. An automatic transmission comprising:

a casing;

input and output members;

a planetary gear set connecting said input member with said output member and having elements including a sun gear, a carrier and a ring gear;

a connecting member having an inner cylinder slidably mounted within said casing and a first outer cylinder;

a first annular piston slidably mounted between said inner and said first outer cylinder to define a first chamber;

a first clutch for connecting and disconnecting said connecting member to and from one of said elements of said planetary gear set;

a brake provided between said connecting member and said casing; and

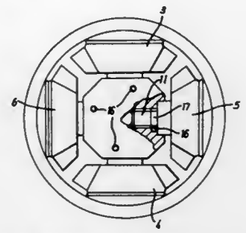
a one-way clutch provided between said one element of said planetary gear set and said first clutch, said one-way clutch including inner and outer races, one of said races being connected to said connecting member and the other of said races being connected to said first clutch.

5,186,694

DIFFERENTIAL ASSEMBLY

John E. Cooper, Stoke-on-trent, England, assignor to Rolls-Royce Motor Cars Limited, Cheshire, England

Filed Aug. 8, 1991, Ser. No. 742,311
Claims priority, application United Kingdom, Aug. 15, 1990, 9017927
Int. Cl.[5] F16H *1/40*
U.S. Cl. 475—230 **4 Claims**



1. A differential assembly comprising:

a housing;

a carrier member centrally disposed within the housing;

four internally screwthreaded bores disposed in the carrier member;

four carrier pins, each of said carrier pins having an undercut and a screwthreaded shank complementary to a said respective screwthreaded bore in the carrier member and being screwed into a said respective bore, thereby mounting the carrier pin;

four pinions, each of said pinions being rotatably mounted on a respective carrier pin; and

four locking pins, each of said locking pins being inserted through the carrier member to engage the undercut of a respective carrier pin after the pin is screwed into the carrier member to lock the carrier pin in position.

5,186,695

APPARATUS FOR CONTROLLED EXERCISE AND DIAGNOSIS OF HUMAN PERFORMANCE

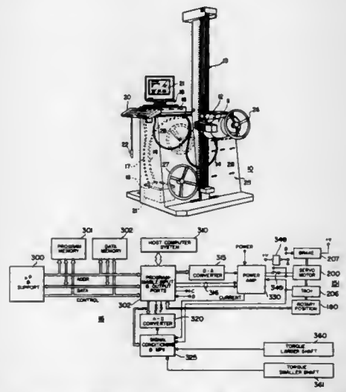
Glen Mangseth, El Dorado Hills; Albert J. Lovas, Sacramento, and Philip T. Dempster, St. Helena, all of Calif., assignors to Loredan Biomedical, Inc., West Sacramento, Calif.

Continuation of Ser. No. 306,737, Feb. 3, 1989, abandoned, and a continuation of Ser. No. 559,652, Jul. 30, 1990, abandoned.
This application Oct. 26, 1990, Ser. No. 603,657
Int. Cl.[5] A63B *21/005*
U.S. Cl. 482—6 **40 Claims**

1. A patient interface for a muscle exercise and diagnostic apparatus wherein an output shaft is coupled to an exercise controller which includes a torque signal processing unit, the interface comprising:

the output shaft having first and second shaft sections, said first shaft section having a larger diameter than said second shaft section to handle higher torque loads, said second shaft section being coaxial with said first shaft section; first torque sensing means for sensing torque applied to said first shaft section and for providing a first torque output signal to said torque signal processing unit; second torque sensing means for sensing torque applied to said second shaft section and for providing a second torque output signal to said torque signal processing unit; a plurality of high torque tools each adapted for use by a user of said apparatus in performing an exercise motion with a high torque; a plurality of low torque tools each adapted for use by said user of said apparatus in performing an exercise motion with a low torque; first coupling means for removably coupling said high torque tools to said first shaft section; and second coupling means for removably coupling said low torque tools to said second shaft section.

32. In muscle exercise and diagnostic apparatus, said apparatus comprises an output shaft; a servo motor coupled in driving relation to said output shaft; support means for mounting said output shaft and said servo motor in a selectable stationary position; a plurality of work simulation tools; and coupling means including coupling arrangements on said output shaft and each of said tools for removably coupling one of said tools to said output shaft; torque measuring means carried on said output shaft and producing a torque output signal corresponding to measured torque applied thereto by said servo motor and said tool; shaft position sensing means for sensing the angular position of said output shaft and producing an output shaft position signal; servo control means responsive to a preselected command signal for controlling operation of said servo motor and including servo signal measuring means for measuring a preselected servo control signal parameter associated with said servo motor and output shaft and operatively related to said command signal; and exercise control means coupled to



said servo control means and receiving said output shaft position signal and said torque signal for controlling said servo motor and output shaft in accordance with a preselected exercise control algorithm; said exercise control means comprising programmable computer means including program storage means storing a plurality of exercise mode control programs operative to control said servo control means and said servo motor in accordance with a plurality of prearranged exercise control algorithms each having a set of control parameters associated therewith, and program interface means including type means for selecting an exercise type from a set of prearranged exercise types, motion means for selecting an exercise motion from a set of prearranged exercise motions associated with said selected exercise type, mode means for selecting said exercise mode from a set of prearranged exercise modes associated with said selected exercise motion, and parameter means for entering the values of control parameters associated with said selected exercise mode.

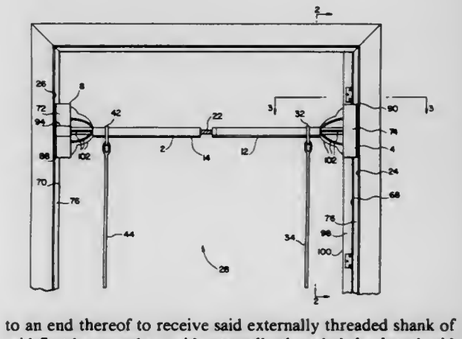
5,186,696

DOORWAY BAR SUPPORT AND OPERATING UNIT COMBINATION

Troy Pfefferle, 420 Perrie Dr., Elk Grove Village, Ill. 60007, and Melvin J. Fein, 405 Di Lorenzo, Naperville, Ill. 60565

Filed Mar. 25, 1991, Ser. No. 674,233
Int. Cl.[5] A63B *1/00*
U.S. Cl. 482—40 **6 Claims**

1. A laterally extending support assembly for support between a pair of spaced apart upright members and an operating unit operationally supported thereby, comprising an adjustable elongated structure having a first end facing outwardly in one direction and a second end facing outwardly in the opposite direction, said elongated structure including adjustment means to move said first and second ends farther apart when adjusted one way and closer together when adjusted a second way, a first pressure plate member at said first end of said adjustable elongated structure, a second pressure plate member at said second end of said adjustable elongated structure, each of said pressure plate members including holding means to hold them in place against respective ones of said pair of spaced apart upright members, said holding means including first friction holding means having a first planar surface extending in a first plane to frictionally bear against a first planar portion of said upright members and second friction holding means having a second planar surface extending in a second plane to bear against a second planar portion of said upright member, said second plane in which said second planar surface of said second friction holding means extends being positioned apart from said first plane in which said first planar surface of said first friction holding means extends, wherein said adjustable elongated structure includes a first elongated bar member, an externally threaded shank extending therefrom, a second elongated bar member, an internally threaded recess therein and opening



to an end thereof to receive said externally threaded shank of said first bar member, said externally threaded shank and said internally threaded recess comprising said adjustment means to move said first and second ends of said adjustable elongated structure farther apart when rotated in one direction relative to each and closer together when rotated in the opposite direction relative to each other, wherein said first and second elongated bar members are cylindrical, said first elongated bar member includes an outer end opposite from the end from which its externally threaded shank extends, said second elongated bar member includes an outer end opposite from the end to which its internally threaded recess opens, said pressure plate members include a body portion, a first cylindrical socket in said body portion of said first pressure plate member to receive said outer end of said first elongated bar member, a second cylindrical socket in said body portion of said second pressure plate member to receive said outer end of said second elongated bar member, said first and second cylindrical bar members being rotatable within respective ones of said first and second cylindrical sockets of said first and second pressure plate members and secured thereto.

5,186,697

BI-DIRECTIONAL STAIR/TREADMILL/RECIPROCATING-PEDAL EXERCISER

Brian G. Rennex, 431 Muddy Branch Rd., #101, Gaithersburg, Md. 20878

Continuation-in-part of Ser. No. 304,443, Jan. 31, 1989, abandoned. This application Sep. 4, 1990, Ser. No. 576,761
Int. Cl.[5] A63B *22/04*
U.S. Cl. 482—52 **6 Claims**

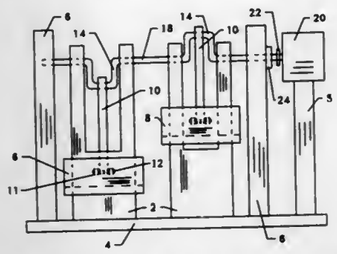
1. An improved portable stepping exerciser comprising:

a downward step assembly comprising a pair of movable

VOL 1147 ISS 3 FE 16 1993 UMI

steps and first means for repeatedly moving each of said steps from a first lower position to a first upper position, whereby the center of mass of a user who has stepped onto one of said steps is shifted upwardly when said step is moving upwardly;

an upward step assembly comprising said pair of movable steps and second means for repeatedly allowing each of



said steps to move from a second upper position to a second lower position, whereby the center of mass of said user who has stepped onto one of said steps is shifted downwardly when said step is moving downwardly; and

switching means coupled to said downward step assembly and said upward step assembly for selecting one of said assemblies for operation.

5,186,698

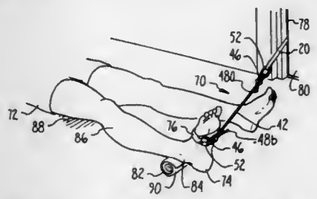
ANKLE EXERCISE SYSTEM

Bradley R. Mason, Olivenhain, and Jeffrey T. Mason, Escondido, both of Calif., assignors to Breg, Inc., Vista, Calif.

Filed Jun. 20, 1991, Ser. No. 717,965

Int. Cl.[5] A61H *1/02*

U.S. Cl. 482—79 **14 Claims**



9. An ankle exercise kit having a plurality of interactive components combinable in a plurality of configurations to form a plurality of means for exercising an ankle of a user, said ankle exercise kit comprising:

a plurality of elastomeric tubing segments, each segment having a different modulus of elasticity of elongation and having a first end and a second end;

a door strap loop having a stop appended thereto for fixably positioning said loop on one side of a closed door when said stop is positioned on an opposite side of the closed door, wherein said door strap loop and said stop consist essentially of a continuous length of strap having two ends joined together, and further wherein said stop is a plurality of strap overlaps;

a foot strap loop positionable around a foot on a same leg as the ankle of the user;

a first releasable loop engagement means for engaging said foot strap loop, wherein said first releasable loop engagement means comprises a curved member dissociated from said tubing segment and having two ends, an opening therebetween, and a closure releasably engagable with said two ends to said first releasible loop engagement means to selectively close said opening and form a closed loop releasably engagable with said foot strap loop;

a first releasable tubing attachment means for releasably attachment to said first end of said tubing segment and to said first releasable loop engagement means, thereby connecting said first end of said tubing segment to said foot strap, wherein said first relesable tubing attachment means comprises a body having two bores formed therethrough, said first end of said tubing segment attachable through said first bore, and said closed loop of said releasable loop engagement means releasably attachable through said second bore;

a second releasable loop engagement means for engaging said door strap loop, wherein said second releasable loop engagement means comprises a curved member dissociated from said tubing segment and having two ends, an opening therebetween, and a closure releasably engagable with said two ends to selectively close said opening and form a closed loop releasably engagable with said door strap loop; and

a second releasable tubing attachment means for releasable attachment to said second end of said tubing segment and to said second releasable loop engagement means, thereby connecting said first end of said tubing segment to said door strap and forming a dorsiflexion strengthening means, wherein said second releasable tubing attachment means comprises a body having two bores formed therethrough, said second end of said tubing segment attachable through said first bore, and said closed loop of said second releasable loop engagement means releasably attachable through said second bore.

5,186,699

FUNCTIONAL EXERCISE ATTACHMENT TRAINER FOR SWUNG ATHLETIC IMPLEMENTS

D. Avery Dimmig, P.O. Box 61, East Aurora, N.Y. 14052

Filed Nov. 12, 1991, Ser. No. 790,165

Int. Cl.[5] A63B *21/00*

U.S. Cl. 482—111 **13 Claims**



1. A training device for attachment to sports swung implements producing air resistance (drag) against the direction of the stroke motion comprising:

a generally rigid body of air impermeable material;

an implement housing recess formed in the body, a peripheral wall of varying height on the body for increasing the resistance of the body as it is swung through the air, and an attachment means for connecting said body to a sports swung implement.

5,186,700

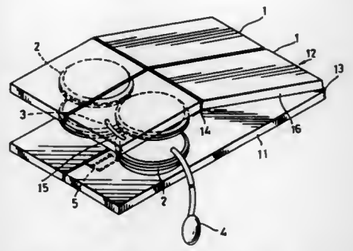
PEDALING EXERCISE DEVICE

John Wang, Chiayi, Taiwan, assignor to Lee Wang Industry Ltd., Taiwan

Filed Aug. 27, 1992, Ser. No. 936,586

Int. Cl.[5] A63B *21/008*

U.S. Cl. 482—111 **3 Claims**



1. A pedaling exercise device, comprising:

two pairs of pedaling plates each of which includes an upper plate and a lower plate hinged to said upper plate;

two pressure-operating members respectively provided between said upper and lower plates of said pairs of pedaling plates, each of said pressure-operating members including an enclosed flexible hollow housing having a top wall adjacent to said upper plate and a bottom wall adjacent to said lower plate, an upper partition and a lower partition dividing said housing into a first, a second and a third chamber from said top wall to said bottom wall of said housing, said upper and lower partitions having a first flexible tube connected therebetween to communicate said first and third chambers, each of said second chambers having a predetermined amount of air contained therein, said first and third chambers and said first flexible tube having a predetermined amount of liquid contained therein, said housings having a second flexible tube connected therebetween to communicate said second chambers; and

means for pumping air into and for allowing air to escape from said second chambers.

5,186,701

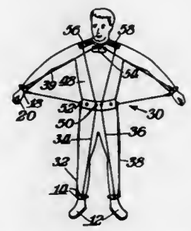
AEROBIC RESISTANCE EXERCISE GARMENT

William T. Wilkinson, 1717 Town Point Rd., Chesapeake City, Md. 21915

Continuation-in-part of Ser. No. 746,900, Aug. 19, 1991. This application Nov. 6, 1991, Ser. No. 788,364

Int. Cl.[5] A63B *21/02*

U.S. Cl. 482—125 **19 Claims**



1. An aerobic resistance exercise garment to supplement motion exercises comprising an article of clothing worn on the body of the user, said article of clothing including a body portion, a pair of gloves to be worn on the hands of the user, each of said gloves including a palm portion extending to at least the fingers and including a closed loop wrist portion, a pair of feet portions each of which is to be worn on a foot of the user, a pair of anchor members remote from said feet portions, a plurality of elastic cords, each of said cords having two free ends with an intermediate portion, said plurality of cords being arranged in at least two sets of cords, one of said sets of cords comprising at least one cord having one of its free ends attached to a respective one of said gloves at its said wrist portion and the other of its free ends attached to the other of said gloves at its said wrist portion with said intermediate portion of said cord extending through first guides means on said body portion whereby said cord elastically interconnects said gloves to each other to provide resistance to arm movement of the user, and the second set of said cords comprising two cords with each of said cords being attached at one of its free ends to a respective one of said anchor members and being attached are the other of its free ends to a respective one of said feet portions and with its intermediate portion extending through second guide means on said body portion of said clothing whereby each of said elastic cords of said second set elastically interconnects a respective one of said anchor members with a respective one of said feet portions to provide resistance during relative movement between a respective arm and leg of the user.

5,186,702

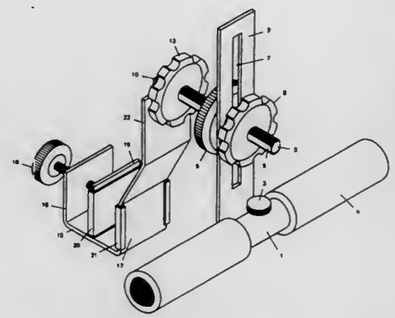
MULTI-PURPOSE SIT-UP DEVICE

Charles U. Amanze, 14816 DaCosta, Detroit, Mich. 48223-1829

Filed Oct. 22, 1991, Ser. No. 779,726

Int. Cl.[5] A63B *26/00*

U.S. Cl. 482—145 **4 Claims**



1. A sit-up exercise apparatus characterized by:

a bar for restraining feet of a person;

a lever element having a slot, one end of said lever being attached to a center portion of said bar;

a base slideably and adjustably connected to said lever element;

a means for slideably adjusting the lever element and bar in both vertical and horizontal directions with respect to said base and affixing said lever element and bar with said base in one of a plurality of vertical and horizontal adjusted positions.

5,186,703

WALK EXERCISING FLOOR

Lien-teng Huang, 9F, No. 63, Sec. 3, Ho-Ping E. Road, Taipei, Taiwan

Filed Nov. 20, 1991, Ser. No. 795,143

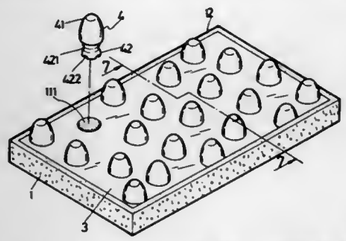
Int. Cl.[5] A61H *15/00*

U.S. Cl. 482—148 **1 Claim**

1. A walk exercising floor comprising at least one base board made from foamed plastics, said base board having a flange vertically projecting upward around the peripheral edge thereof and a recessed surface portion defined within said

VOL 1147 ISS 3 FE 16 1993 UMI

flange, said recessed surface portion having a plurality of recessed holes thereon; a plurality of artificial stones respectively fastened in said recessed holes, each of said stones having a top edge protruding above the level of the topmost edge of said flange and having a unitary, cylindrical stub rod vertically extending downward from an eliiptic body for inserting



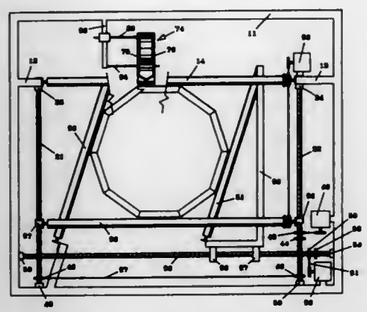
in said recessed holes respectively, said cylindrical stub rod having an annular groove around the peripheral surface thereof, a blind hole on the bottom edge thereof in longitudinal direction, and a crossed groove on the bottom edge thereof; and a layer of epoxy resin covered over said recessed surface portion in flush with the topmost edge of said flange to secure said stones to said base board.

5,186,704

DUCT FORMING MACHINE

Robert A. Cunningham, Jr., Argyle, Tex., assignor to Glass Master Corporation, San Antonio, Tex.

Filed Apr. 15, 1992, Ser. No. 869,321
Int. Cl.[5] B31B *3/72, 3/60;* **B31F** *1/00;* **B65H** *45/22*
U.S. Cl. 493—18 **5 Claims**



1. A combination closure apparatus for closing duct board having four or more sides comprising:

opposed upper and lower roller sets arranged in parallel planes,

means for changing the spacing between said upper and lower roller sets to accommodate different size ducts,

opposed side roller sets arranged in parallel planes,

means for changing the spacing between said side roller sets to accommodate different size ducts,

means for driving said upper and lower roller sets to move duct through the apparatus utilizing a single power source and a chain drive engaging said upper and lower roller sets in all relative positions of said upper and lower roller sets,

tape applicator means for applying duct tape to duct board moving through the apparatus,

means mounting said tape applicator means for movement perpendicular to the direction of travel of duct board through the apparatus to apply tape to duct board joints at different positions in the apparatus,

said tape applicator means comprising;

a spool for supporting a roll of tape,

smoothing iron means positioned to bear against a duct board at a joint to be closed,

a slot in said iron means,

a knife reciprocal in said slot to cut free a section of tape applied to a duct board joint from a roll of tape carried on said spool,

rotatable means for wiping tape against a duct board,

brake means for holding the tape while it is being cut by the knife, and

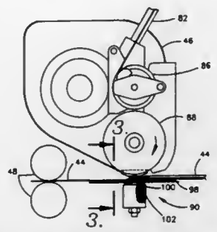
electrical means including switch means in the path of and engagable and disengagable by a duct board moving through the apparatus for retracting said knife and releasing said brake upon engagement of said means and upon disengagement extending said knife and engaging said tape with said brake means.

5,186,705

METHOD AND APPARATUS FOR FORMING CLASP ENVELOPES

Alfred Doderer-Winkler, Melsbach, Fed. Rep. of Germany, assignor to Winkler & Dunnebier, Fed. Rep. of Germany

Filed Dec. 13, 1991, Ser. No. 806,251
Int. Cl.[5] B31B *19/90*
U.S. Cl. 493—215 **7 Claims**



1. In an apparatus for attaching clasps, having deformable prongs, to envelopes having first and second panels, the apparatus including frame means, means mounted on said frame means for pressing the clasp against the first panel of the envelope and a support plate positioned in opposed spaced relation to said pressing means and between the panels of the envelope, said support plate being mounted to said frame means, an anvil comprising:

anvil mounting means mounted to said frame means;

a pressure plate mounted on said mounting means for movement in a direction substantially parallel to the pressure applied by the pressing means toward and away from said pressing means, said pressure plate being in opposed spaced relation to said pressing means; and

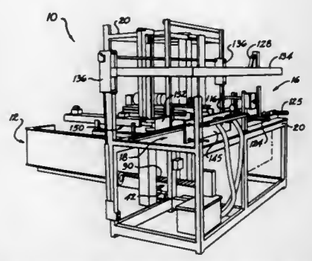
spring means for biasing said pressure plate toward the pressing means, whereby said pressure plate is adapted to resist, via the second panel, support plate and first panel, the pressure applied by the pressing means and thereby limit deflection of the support plate such that the prongs of the clasp may be deformed against the support plate.

5,186,706

CARTON ERECTING MACHINE

Thomas S. Hartness, and Thomas P. Hartness, both of Greenville, S.C., assignors to Hartness International, Inc., Greenville, S.C.

Filed Sep. 10, 1990, Ser. No. 580,107
Int. Cl.[5] B31B *5/78, 5/80;* **B65H** *5/02;* **B65G** *47/34*
U.S. Cl. 493—316 **9 Claims**



1. A carton erecting machine for positioning and erecting carton blanks, said carton erecting machine comprising:

a conveyor for transporting stacks of flattened carton blanks in succession to a lift position,

means for vertically lifting each stack of carton blanks in timed sequence from said lift position to a feed position,

means for sequentially separating each of the carton blanks from the top of said stack while in said feed position and conveying the separated blanks to a work station,

means adjacent said work station for erecting said separated carton blanks as the same are moved thereto, and further including

a holding member adapted to hold a stack of blanks in said feed position during separation of each of the carton blanks and including power means for moving said holding member out of its holding condition relative to remaining blanks and to a position below the bottom most blank of a succeeding stack when said lifting member moves a succeeding stack from said lift position to said feed position.

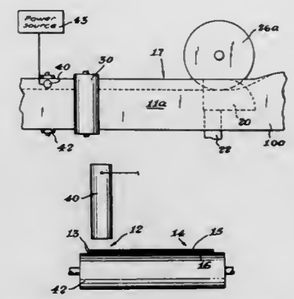
5,186,707

ELECTROSTATIC PINNING IN A PROCESS FOR GUSSETING FILM WEB

Raymond D. Barta, Midland, Mich., assignor to Dowbrands L.P., Indianapolis, Ind.

Division of Ser. No. 547,416, Jul. 3, 1990, Pat. No. 5,083,999, which is a continuation-in-part of Ser. No. 272,855, Nov. 18, 1988, abandoned. This application Nov. 20, 1990, Ser. No. 615,955
The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.
Int. Cl.[5] B65H *45/16*
U.S. Cl. 493—439 **9 Claims**

1. Apparatus for gusseting a continuous, dual-walled plastic film web having walls integrally connected along at least one continuous edge, comprising means for providing the web, means for forming a gusset having gusset folds extending continuously along at least one integrally connected edge of the web, means for applying an electrostatic charge of sufficient magnitude to the gusset to cause the gusset folds to cling to each other, and means for disposing of the film web.

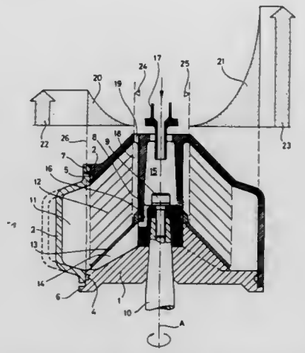


5,186,708

CENTRIFUGAL SEPARATOR HAVING A ROTOR BODY WITH A MOVABLE WALL

Klaus Stroucken, Rönninge, and Rolf Ridderstrale, Stockholm, both of Sweden, assignors to Alfa-Lavel Separation AB, Tumba, Sweden

PCT No. PCT/SE90/00722, § 371 Date Jun. 28, 1991, § 102(e) Date Jun. 28, 1991, PCT Pub. No. WO91/08054, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 7, 1990, Ser. No. 721,614
Claims priority, application Sweden, Nov. 27, 1989, 8903988
Int. Cl.[5] B04B *1/08, 7/08*
U.S. Cl. 494—41 **18 Claims**



1. A centrifugal separator comprising: a rotor body rotatable about an axis and forming a separation chamber, the rotor body comprising two axially separated end walls and a surrounding wall situated axially between the end walls; a stack of conical separation discs arranged between the end walls in the separation chamber and coaxially with the rotor; and fastening means arranged to keep the end walls and the stack of separation discs axially together, the surrounding wall being formed separate from the fastening means and the end walls and being sealed at two respective areas against the end walls, the surrounding wall further having a smaller inner diameter in both of said areas in which it seals against the end walls that it has in an area axially between these said areas, and the surrounding wall during rotor operation bring free to move axially relative to at least one of the end walls in the area of its sealing thereagainst.

VOL 1147 ISS 3 FEB 16 1993 UMI

5,186,709

CUVETTE ROTOR

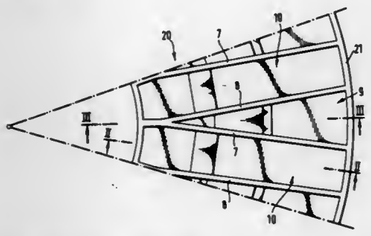
Alfred R. Hissung, Marburg, Fed. Rep. of Germany, assignor to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Oct. 26, 1990, Ser. No. 603,550

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1989, 3937609

Int. Cl.[5] B04B *1/04*

U.S. Cl. 494—43 **9 Claims**



1. A cuvette rotor, comprising:
a plurality of alternating cuvettes and vessels angularly disposed in a circle about a central axis,
each cuvette for mixing a biological fluid with a reagent during rotation about the central axis,
each vessel for centrifuging samples during rotation about the central axis,
a cuvette barrier dividing each cuvette into first and second radially spaced chambers,
a vessel barrier dividing each vessel into first and second radially spaced chambers,
adjacent cuvettes and vessels of the plurality of alternating cuvettes and vessels having common sidewalls,
a top covering the alternating cuvettes and vessels,
the top having a cuvette orifice aligned with each of the cuvette chambers,
the top having a vessel orifice aligned with one of the vessel chambers, and
a guard for each of the plurality of vessels disposed on the top and extending a predetermined distance into one of the two vessel chambers of each vessel for preventing centrifuged material from remixing within the vessel.

5,186,710

TRANSPORT INCUBATOR HAVING AN INTEGRATED ENERGY STORE

Jochim Koch, Ratzeburg, and Ulrich Heim, Lübeck, both of Fed. Rep. of Germany, assignors to Drägerwerk Aktiengesellschaft, Lübeck, Fed. Rep. of Germany

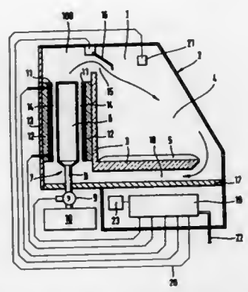
Filed Jun. 21, 1991, Ser. No. 718,958

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1990, 4022448

Int. Cl.[5] A61G *11/00*

U.S. Cl. 600—22 **6 Claims**

1. A transport incubator having an infant compartment for accommodating an infant, the transport incubator comprising:
a base;
an incubator hood seated on said base to define the infant compartment for accommodating the infant;
an energy store mounted in said incubator;
said energy store including a holding vessel and adsorption means disposed in said holding vessel;
a supply vessel for a fluid which is adsorbable by said adsorption means;
connecting means for connecting said vessels so as to permit said fluid to flow into said holding vessel where said fluid is adsorbed by said adsorption means thereby releasing heat for heating said compartment;
structure means for defining a channel for conducting air toward said infant compartment;
electrical heating means mounted in said channel for imparting heat to the air flowing through said channel;
electrical supply means for supplying electric energy to said heating means from a house current supply so as to permit said heating means to heat the air flowing through said channel during stationary operation of the incubator;
said energy store being mounted in said channel for heating



the air flowing through said channel during transport operation of the incubator when the house current supply is unavailable; and,
said heating means and said energy store being spaced mutually adjacent so as to place said energy store sufficiently close to said heating means so as to permit said heating means to heat said holding vessel while receiving said electrical energy to desorb and condense said fluid thereby regenerating said energy store and permitting the condensed fluid to flow back to said supply vessel.

5,186,711

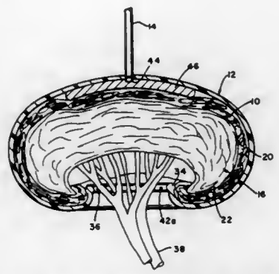
HEMOSTASIS APPARATUS AND METHOD

Adam Epstein, Brooklyn, N.Y., assignor to Albert Einstein College of Medicine of Yeshiva University, Bronx, N.Y.

Continuation of Ser. No. 320,016, Mar. 7, 1989, abandoned. This application May 28, 1991, Ser. No. 708,101

Int. Cl.[5] A61B *17/04*

U.S. Cl. 600—37 **31 Claims**



1. A device for effecting hemostasis of an organ comprising:
(A) an air-permeable mesh of semirigid bioabsorbable material defining interstices and adapted to be generally conformingly disposed on at least the bleeding surface of an organ; and
(B) a sack defining a continuous surface made of flexible, elastic, resilient air-impermeable material and an opening at one portion thereof adapted to enable passage of the bleeding surface of the organ therethrough, said elastic material being configured and dimensioned to be elastically stretched over said mesh and over a substantial

portion of the organ and upon release to compress the organ portion and thereby decrease the flow of blood thereto; said sack further including means for operative attachment of the undersurface thereof to a vacuum source so that portions of the organ may be pulled outwardly by the vacuum into the interstices of said underlying mesh to promote hemostasis.

5,186,712

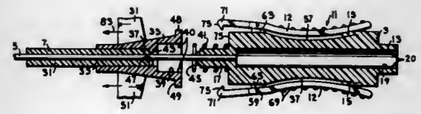
INTRAVENOUS CATHETER LAUNCHING DEVICE

Jimmie J. Kelso, Olathe; Russell M. Hustead, Overland Park, and Walter T. Miller, Leawood, all of Kans., assignors to Kansas Creative Devices, Inc., Leawood, Kans.

Filed Aug. 23, 1991, Ser. No. 749,322

Int. Cl.[5] A61M *5/00*

U.S. Cl. 604—165 **15 Claims**



1. A device for flow communication with a blood vessel of a patient for use with an infusion apparatus and/or obtaining blood specimens, comprising:
(a) a body;
(b) injection means having a needle sheathed in a catheter, each having a distal end for penetrating into a blood vessel of the patient; said needle having a proximal end connected to said body; said catheter having a proximal end releasably connected to said body;
(c) launching means engaging the body and the catheter for selectively and biasingly displacing said catheter relative to said needle, said launching means including a helical compression spring having a proximate end engaging said body and a distal end engaging said catheter proximal end, said compression spring coaxially receiving said needle.

5,186,713

EXTRACORPOREAL BLOOD OXYGENATION SYSTEM AND METHOD FOR PROVIDING HEMOPERFUSION DURING TRANSLUMINAL BALLOON ANGIOPLASTY PROCEDURES

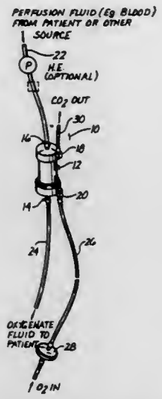
Donald A. Raible, Santa Ana, Calif., assignor to Baxter International Inc., Deerfield, Ill.

Filed Nov. 1, 1990, Ser. No. 609,301

Int. Cl.[5] A61M *37/00*

U.S. Cl. 604—4 **39 Claims**

1. A method of providing a flow of extracorporeally oxygenated perfusion fluid through a balloon angioplasty catheter inserted into an artery of a patient whose heart and lungs are functioning absent extracorporeal cardiopulmonary support, said method comprising the steps of:
a) passing a perfusion fluid through an extracorporeal membrane oxygenation device such that the perfusion fluid will become oxygenated thereby; and, subsequently,



b) passing the oxygenated perfusion fluid through the catheter lumen and causing the oxygenated perfusion fluid to exit the catheter distal to the angioplasty balloon.

5,186,714

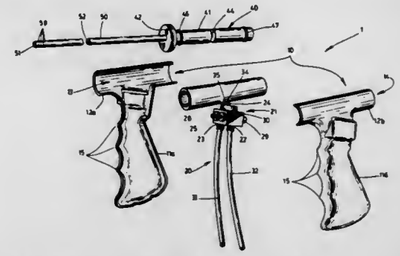
MULTIFUNCTIONAL SURGICAL INSTRUMENT

Yvon Boudreault; Steven Boudreault, both of Castroville, Calif., and Fernand Jalbert, Sherbrooke, Canada, assignors to Yab Revo-Tech Inc., Notre-Dame-du-Bon-Conseil, Canada

Filed May 18, 1992, Ser. No. 884,768

Int. Cl.[5] A61M *1/00;* **A61B** *17/39*

U.S. Cl. 604—21 **13 Claims**



1. A multi-functional surgical instrument for use in carrying out laparoscopic surgery, said instrument comprising:
A) a pistol-shaped holder, said holder including:
(i) a handle shaped as a pistol-grip; and
(ii) a hollow cylinder shaped, positioned and oriented as a pistol barrel on top of the handle; said cylinder having an open front end and a rear end,
B) a suction and irrigation cartridge mounted within said handle and connectable to a source of vacuum and a source of flushing liquid, respectively, said cartridge including:
(i) a three way valve mounted inside said handle, said valve including:
first, second and third fluid ports and
first and second spring-biased valve plugs operable by first and second push-buttons respectively,
said first valve plug being devised to place in fluid communication said first port with said third port when said first push button is pressed,

VOL 1147 ISS 3 FE 16 1993 UMI

said second valve plug being devised to place in fluid communication said second port with said third port when said second push button is pressed,

both of said first and second push buttons projecting outwardly of said handle so as to be easily accessible and operable with a finger when said handle is held in one hand,

(ii) a fluid irrigation tube having one end connected to and in fluid communication with the one port of the valve and another end extending outside said handle and connectable to said source of flushing liquid;

(iii) a fluid evacuation tube having one end connected to and in fluid communication with the second port of the valve and another end extending outside said handle and connectable to said source of vacuum;

(iv) a fluid connection tube having one end connected to and in fluid communication with the third port of the valve and another end connected to a fluid opening provided in said cylinder between the front and rear ends thereof; and

C) an interchangeable surgical tool including:

(i) a cylindrical shaft sized in diameter and length to fit into said cylinder, said shaft having front and rear ends and including:

an annular groove positioned to be in front of and in fluid communication with said fluid opening when said shaft is fully inserted into said cylinder through the open front end thereof;

an internal bore opening into said annular groove and extending therefrom up to the front end of the shaft; and

sealing means located forwardly and rearwardly of the annular groove to prevent flushing liquid from leaking out of the cylinder when the shaft is inserted therein and liquid is allowed to flow through the annular groove and bore; and

(ii) a trocar in the form of a long, rigid tube connected to and projecting substantially coaxially away from the front end of the shaft, said trocar having an open free end distant from said shaft and an internal passage extending between said open free end and the internal bore of the shaft, said passage placing said open free end and said internal bore in fluid communication.

5,186,715

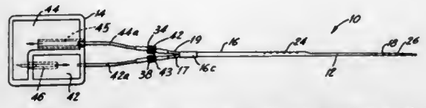
BILIARY DRAINAGE METHOD

David Phillips, Boston, Mass., and William M. Appling, Hartford, N.Y., assignors to E-Z-EM, Inc., Westbury, N.Y.

Filed Dec. 6, 1990, Ser. No. 622,977

Int. Cl.[5] A61M *1/00*

U.S. Cl. 604—28 **1 Claim**



1. A method of biliary drainage comprising the steps of:

placing a catheter having first and second lumens each provided with associated holes in a patient such that said first lumen terminates at its distal end, in the patient's duodenum and said second lumen terminates, at its distal end, in the patient's common bile duct;

connecting the catheter to a drainage bag having first and second segments, said first segment of the drainage bag being connected to said first catheter lumen and said second segment of the drainage bag being connected to said second catheter lumen;

providing the first bag segment with a one-way valve to allow material to flow from said second segment to said first segment while preventing the flow of material from said first segment to said second bag segment;

collecting bile from the patient's common bile duct through the associated holes in said second lumen through said second lumen and into the second bag segment;

providing bile, on demand, to the patient's duodenum by squeezing the drainage bag causing bile to flow from said second segment to said first segment, into said first lumen and through its associated holes.

5,186,716

N[1]TRIFLUOROALKYL SUBSTITUTED 2-NITRO-P-PHENYLENEDIAMINE DYES AND HAIR DYEING COMPOSITIONS AND METHODS THEREOF

Mu-Ill Lim, Trumbull, and Yuh-Guo Pan, Stamford, both of Conn., assignors to Clairol Incorporated, New York City, N.Y.

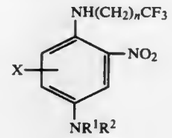
Filed Sep. 13, 1991, Ser. No. 759,282

Int. Cl.[5] A61K *7/13*

U.S. Cl. 8—405 **5 Claims**

1. A composition for dyeing a keratinous fiber comprising:

a) an amount of from about 0.01% to about 10% by weight based on the total weight of the composition, of a compound of the formula



(I)

wherein:

n is 1 or 2;

R^1 and R^2 are each, independently, hydrogen, C_{1-6} alkyl, C_{1-6} hydroxyalkyl, or C_{1-6} (poly)hydroxyalkyl; and

X is hydrogen, C_{1-6} alkyl, C_{1-6} alkoxy, or halogen; and

b) a cosmetically acceptable carrier for said compound of formula I.

5,186,717

DYEING COMPOSITIONS FOR KERATIN FIBRES, BASED ON 3-NITRO-ORTHO-PHENYLENEDIAMINES, AND CERTAIN 3-NITRO-ORTHO-PHENYLENEDIAMINES USED THEREIN

Andree Bugaut, Boulogne-Billancourt; Alex Junino, and Jean J. Vandenboosche, both of Aulnay-sous-Bois, all of France, assignors to L'Oreal, Paris, France

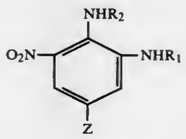
Continuation of Ser. No. 124,433, Nov. 23, 1987, abandoned, which is a continuation of Ser. No. 339,141, Jan. 13, 1982, abandoned. This application Sep. 25, 1991, Ser. No. 764,958

Claims priority, application Luxembourg, Jan. 14, 1981, 83063

Int. Cl.[5] A61K *7/13, 7/135, 9/12*

U.S. Cl. 8—405 **16 Claims**

1. A composition suitable for dyeing keratin fibres, which comprises, in an amount effective for dyeing said keratin fibres, at least one dyestuff corresponding to the formula (I)



(I)

in which R_1 is a hydrogen atom, R_2 is a monohydroxyalkyl or polyhydroxyalkyl group, and Z denotes a hydrogen atom or an alkyl group, or a cosmetically acceptable salt thereof, wherein each of said alkyl groups contains 1–4 carbon atoms.

5,186,718

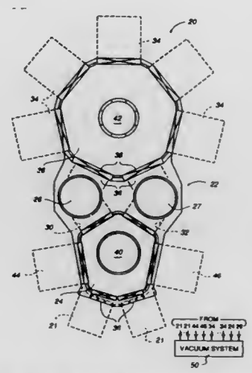
STAGED-VACUUM WAFER PROCESSING SYSTEM AND METHOD

Avi Tepman, Cupertino; Howard Grunes, Santa Cruz; Sasson Somekh, and Dan Maydan, both of Los Altos Hills, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Continuation of Ser. No. 355,008, May 19, 1989, abandoned. This application Apr. 15, 1991, Ser. No. 685,976

Int. Cl.[5] C23C *13/08*

U.S. Cl. 29—25.01 **23 Claims**



1. A staged vacuum-isolation processing system comprising: a multiplicity of isolatable communicating regions including at least a vacuum load lock chamber; a vacuum workpiece-processing chamber and an intermediate workpiece transport region; and vacuum means communicating with the isolatable regions for establishing a vacuum gradient of decreasing pressure across the system from load lock chamber to workpiece-processing chamber.

5,186,719

APPARATUS FOR CONVEYING SEMICONDUCTOR LEAD FRAME STRIP USING GUIDE RAILS

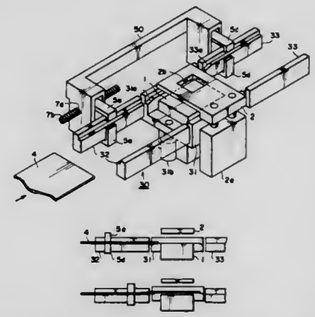
Toshiyuki Egashira; Masahiro Ishizuka, and Toshinobu Banjou, all of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1991, Ser. No. 688,295

Claims priority, application Japan, Apr. 23, 1990, 2-105463

Int. Cl.[5] H01L *21/58*

U.S. Cl. 29—25.01 **5 Claims**



1. An apparatus for conveying a continuous strip of semiconductor frames and positioning a semiconductor frame in the strip on a working/processing means comprising:

VOL 1147 ISS 3 FE 16 1993 UMI

a movable guide rail portion movable along vertical directions;

working/processing means disposed at a central portion of said movable guide rail portion for processing a semiconductor frame;

first and second fixed guide rail portions on opposite sides of said movable guide rail portion and fixed in position, said movable and first and second fixed guide rail portions for supporting a continuous strip of semiconductor frames; and

clamp means for clamping and conveying the strip of semiconductor frames along each of said first and second fixed guide rail portions and including first and second pairs of upper and lower clamp claws movable along said first and second fixed guide rail portions, respectively, while clamping said strip wherein said movable guide rail portion is vertically moved during conveyance of the strip on said movable guide rail portion to avoid contact between the strip and said working/processing means during conveyance of the strip.

5,186,720

USE OF PRODUCTS OF THE REACTION OF ALKENYL-SPIRO-BISLACTONES WITH AMINES AS PARAFFIN-DISPERSANTS

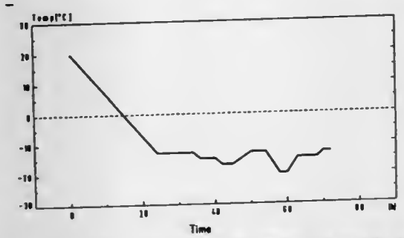
Michael Feustel, Kelkheim, Fed. Rep. of Germany, and Werner Ritschel, deceased, late of Königstein, Fed. Rep. of Germany by Maria A. Ritschel, née Breunig, heir , assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 15, 1990, Ser. No. 567,966

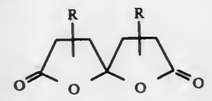
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1989, 3926992

Int. Cl.[5] C10L *1/18, 1/22*

U.S. Cl. 44—351 **15 Claims**



1. A process for improving the flowability of middle distillates and crude oil at low temperatures, which comprises adding to the middle distillates or crude oil a flow improving product of the reaction of the components comprising an alkenyl-spirobislactone of the formula



in which R is in each case C_8–C_{200}-alkenyl, with an amine of the formula

$$NR^1R^2R^3$$

in which R^1, R^2 and R^3 are identical or different and at least one of these groups R^1, R^2 or R^3 is C_8–C_{36}-alkyl, C_8–C_{36}-alkenyl or cyclohexyl and the other groups are hydrogen or a group of the formula $-(A-O)_xH$ or $-(CH_2)_n-NYZ$, A is $-C_2H_4-$ and/or $-C_3H_5-$, x is a number from 1 to 20, n is 2 or 3 and Y and Z are identical or different and are hydrogen or a group of the formula $(-A-O)_xH$.

5,186,721

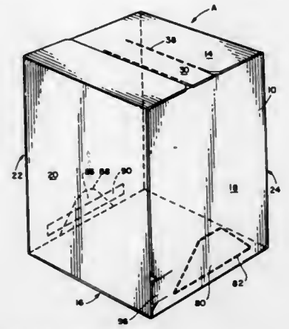
FUEL PACKAGE

Patsie C. Campana, Lorain, Ohio, assignor to Caldo International, Inc., Lorain, Ohio

Filed Dec. 18, 1991, Ser. No. 810,706

Int. Cl.[5] C10L *11/06*

U.S. Cl. 44—519 **26 Claims**



1. A fuel package comprising:

a container, said container being comprised of a plurality of planar surfaces, said container having a top wall and a bottom wall, said top wall comprising a first flap, said first flap comprising a pull tab which is selectively displaceable between a first and second position, said first position being in the plane of said first flap and said second position being outside the plane of said first flap, said tab being selectively rotatable from said first position to said second position about a side of said tab, said rotation to said second position effective to expose a slot, said slot adapted to pass byproducts of combustion outwardly from said container;

a charge of fuel within said container; and,

igniting means for igniting said charge of fuel, said igniting means positioned within said container.

5,186,722

HYDROCARBON-BASED FUELS FROM BIOMASS

Charles L. Cantrell, and Ngee S. Chong, both of Austin, Tex., assignors to Cantrell Research, Incorporated, Austin, Tex.

Filed Jan. 25, 1991, Ser. No. 720,724

Int. Cl.[5] C10M *1/04*

U.S. Cl. 44—605 **29 Claims**

1. A process for the preparation of a biomass fuel having an octane number of at least 95, comprising the steps:

obtaining a feedstock that includes one or more terpenoids;

converting the feedstock in a liquid phase at a temperature between about 80° C. to about 150° C. at ambient pressure in the presence of a matrix-supported single metal catalyst selected from a group consisting essentially of platinum, palladium or rhodium for a period of time sufficient to provide a hydrocarbon fuel mixture having at least 70% monocyclic aromatic hydrocarbon content wherein said hydrocarbon mixture contains up to 3% of volatile hydrocarbons with vapor pressures of at least 0.17 psi at 100° C. and contains less than 2% of aliphatic olefins and polycyclic aromatic hydrocarbon components.

5,186,723

PROCESS FOR THE PREPARATION AND USE OF ANTIDOTE-CARRYING MAIZE PLANT PARTS USEFUL FOR LOWERING THE CULTIVATED PLANT-DAMAGING EFFECT OF THIOLCARBAMATES AND CHLOROACETANILIDES

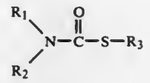
József Nagy; István Nagy; Károly Balogh; Erzsébet Mile; Gyula Tarpai; Katalin Sellei née Kulik; Károly Fodor, all of Miskolc; Mihály Kecskés, Budapest; Erzsébet Tóth née Juhász, Miskolc, and Zsuzsanna Horváth née Pethó , Gödöllő, all of Hungary, assignors to Eszakmagyarorszagi Vegyimuuek, Sajobabony, Hungary

Filed Jan. 30, 1989, Ser. No. 304,355

Int. Cl.[5] A01C *1/06;* **A01N** *65/00*

U.S. Cl. 47—58 **3 Claims**

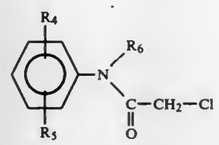
1. A process for the preparation of an antidote-carrying Pioneer 3707 maize plant part, which is useful for lowering the cultivated plant damaging effect of the thiolcarbamates of the Formula (I)


(I)

wherein

R_1 and R_2 are the same or different, and stand for C_{1-6}alkyl or C_{3-6}cycloalkyl group, or R_1 and R_2 together with the nitrogen atom, to which they are attached, form a hexamethylenimino group; and

R_3 means a C_{1-5}alkyl group, or chloroacetanilides of the Formula (VIII),


(VIII)

wherein

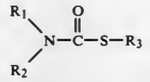
R_4 and R_5 are the same or different and stand for hydrogen or C_{1-5}alkyl group; and

R_6 means a C_{1-5}alkyl, C_{2-5}alkenyl, (C_{1-3}alkoxy)-(C_{1-3}alkyl) or pyrazolyl-(C_{1-3}alkyl) group,

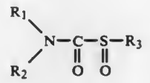
which comprises the steps of:

(a) cultivating Pioneer 3707 maize seeds in field soil or under laboratory conditions to obtain cultivated maize plants;

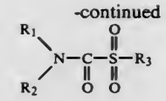
(b) applying to the Pioneer 3707 maize seeds cultivated during step (a) a compound of the Formula (I)

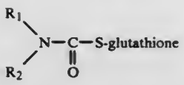

(I)

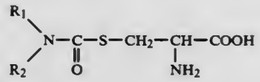
or an acylated or esterified derivative thereof so as to obtain maize plants carrying a herbicidal antidote wherein the herbicidal antidote is a maize-protective amount of a compound of the Formula (II) through (VII)

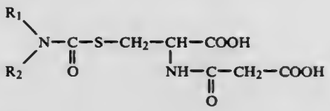

(II)

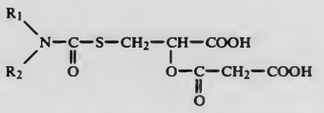
-continued


(III)


(IV)


(V)


(VI)


(VII)

or a mixture thereof or an acylated or esterified derivative thereof;

(c) harvesting the Pioneer 3707 maize plants carrying a herbicidal antidote within 30 days following the application of the compound of the Formula (I);

(d) isolating the root or shoot portions of the Pioneer 3707 maize plant harvested according to step (c), crushing said root or shoot portions in water and filtering the crushed root or shoot portions in the water to obtain a filtrate and a fibrous material on the filter; and

(e) recovering either the filtrate or the fibrous material obtained from the maize shoot or recovering the fibrous material obtained from the maize root to obtain an antidote-containing maize plant part.

5,186,724

SHAPED BODIES FOR DRILLING OR CUTTING HARD MATERIALS

Dietmar Sartor, Fürstentum, Liechtenstein, assignor to Hilti Aktiengesellschaft, Furstentum, Liechtenstein

Filed Oct. 15, 1991, Ser. No. 776,813

Claims priority, application Fed. Rep. of Germany, Oct. 19, 1990, 4033214

Int. Cl.[5] B24D *3/00*

U.S. Cl. 51—293 **6 Claims**

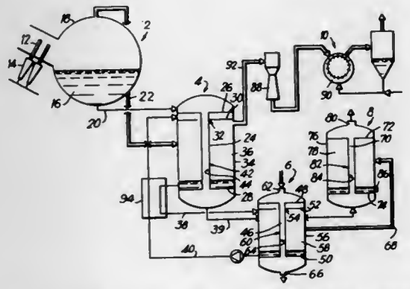
1. Method of making shaped bodies for use in drilling or cutting hard materials comprising the steps of mixing abrasive material in a matrix of a precipitation or age hardenable copper alloy, forming the mixture into a shaped body, heat treating the shaped body by precipitation or age hardening in a temperature range of 200° to 600° C. in accordance with the specific use of the shaped body.

VOL 1147 ISS 3 FE 16 1993 UMI

5,186,725
ABRASIVE PRODUCTS
Trevor J. Martell, 8 Erica Place, Vale Road, Weltevreden Park, and Moosa M. Adia, 1966 Peacock Street, Lenasia South, both of Transvaal, South Africa
Filed Dec. 10, 1990, Ser. No. 624,561
Claims priority, application South Africa, Dec. 11, 1989, 89/9440
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 **6 Claims**

1. A method of making an abrasive product includes the steps of providing a polycrystalline diamond abrasive compact, fragmenting the compact into a plurality of polycrystalline diamond fragments having a rough, irregular outer surface, placing the fragments, as such from the fragmenting step, in a suitable reaction capsule, placing the capsule in the reaction zone of a high temperature/high pressure apparatus and subjecting the contents of the capsule to elevated temperature and pressure conditions for a time sufficient to produce a coherent product of the fragments, said coherent product being a diamond abrasive compact having a rough outer surface.

5,186,726
SUSPENSION DEAERATING PROCESS
Rolf Ryham, Princeton, N.J., assignor to Ahlstromforetagen Svenska, Norrkoping, Sweden
Filed May 11, 1990, Ser. No. 522,223
Int. Cl.[5] B01D *19/00*
U.S. Cl. 55—32 **6 Claims**

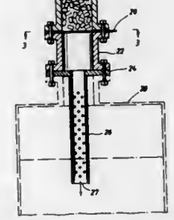


1. A process for deaerating a suspension of solids in a liquid, comprising the steps of:
a) expanding said suspension at a reduced pressure so as to remove air from said suspension and obtain vapor and cooled suspension;
b) condensing and absorbing said vapor in an absorption liquid having a lower vapor pressure than said vapor at a corresponding temperature by indirect heat exchange with a cooling fluid thereby forming diluted absorption liquid;
c) utilizing as a cooling fluid in step b) the cooled suspension from step a);
d) heating the diluted absorption liquid formed in step b) to the boiling point thereof by indirect heat exchange with a heating fluid to form vapor and concentrated absorption liquid; and
e) recirculating said concentrated absorption liquid to step b).

5,186,727
MIXED-METAL OXIDE ABSORBENT FOR CARBON DIOXIDE AND WATER REMOVAL
Chin-Hsiung Chang, Palatine, Ill., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Jun. 7, 1991, Ser. No. 712,223
Int. Cl.[5] B01D *53/04*
U.S. Cl. 55—35 **33 Claims**

1. A mixed-metal carbonate precursor comprising silver and zinc and having a characteristic x-ray powder diffraction pattern which contains at least the d-spacing set forth in Table VII.

5,186,728
PROCESS FOR REMOVING VOLATILE ORGANIC MATERIALS
Raymond T. Fong, Martinez, Calif., assignor to Shell Oil Company, Houston, Tex.
Filed Mar. 31, 1992, Ser. No. 861,405
Int. Cl.[5] B01D *47/14*
U.S. Cl. 55—90 **5 Claims**

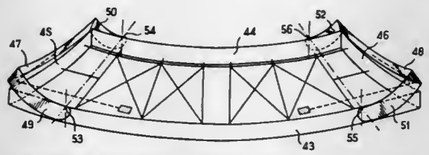


1. A liquid scrubber process for reducing the volatile organic materials in gases which comprises
a) passing a liquid into a distributor cup extending downwardly into a scrubber body, the cup having a plurality of holes in the bottom thereof and a vent tube passing through the cup;
b) passing the liquid through the holes of the cup and onto solid, inert material maintained in the scrubber body, thereby producing a film of the liquid on the solid, inert material;
c) passing the liquid from the scrubber body through a dip-tube having a plurality of holes in the sides thereof, the dip-tube extending downwardly from the scrubber body below the surface of a liquid from which the volatile organic materials vaporize, thereby forming a film of the liquid on the internal surfaces of the dip-tube; and
d) whereby the volatile organic material enters the dip-tube, contacts the liquid counter-currently during passage of the volatile organic material through the dip-tube and scrubber body, and exits the liquid scrubber through the vent tube.

5,186,729
METHOD OF MAKING IN-SITU WHISKER REINFORCED GLASS CERAMIC
Jesse J. Brown, Christiansburg; Deidre A. Hirschfeld, Elliston, and K. H. Lee, Blacksburg, all of Va., assignors to Center for Innovative Technology, Herndon and VPI & SU, Blacksburg, both of, Va.
Filed Apr. 26, 1991, Ser. No. 692,214
Int. Cl.[5] C03C *10/12*
U.S. Cl. 65—33 **10 Claims**

1. A method for the in-situ formation of TiO_2 whiskers with a glass-ceramic matrix material, comprising the steps of:
combining six to twelve weight percent of TiO_2 with a ceramic material selected from the group consisting of $Li_2O{\cdot}Al_2O_3{\cdot}nSiO_2$ where n ranges between 1 and 4, $MgO{\cdot}Al_2O_3{\cdot}nSiO_2$ where n ranges between 1 and 4, $Li_{1-x}AlP_xSi_{1-x}O_4$ where x ranges between 0.05 and 0.65, and $Li_xMg_xAlP_xSi_{1-x}O_4$ where x ranges between 0.05 and 0.65;
forming a glass of the mixture of said TiO_2 and said ceramic material;
creating exposed surfaces in said glass; and
heating said glass with said exposed surfaces to a temperature and for a period of time sufficient to cause in-situ formation of TiO_2 whiskers within a glass-ceramic matrix material of a size sufficient to reinforce said glass-ceramic matrix material.

5,186,730
DEVICE HAVING FINAL FRAME WHICH DOUBLES A BLANK FRAME, FOR BENDING GLASS SHEETS
M. Frederic Weber, Compiegne, France, assignor to Saint-Gobain Vitrage International c/o Saint-Gobain Recherche, Aubervilliers Cedex, France
Division of Ser. No. 672,336, Mar. 20, 1991. This application Jan. 21, 1992, Ser. No. 823,365
Claims priority, application France, Mar. 20, 1990, 90 03513
Int. Cl.[5] C03B *23/025, 23/027*
U.S. Cl. 65—289 **9 Claims**



1. A device for gravity bending at least one glass sheet, comprising:
a blank frame shaped for supporting the periphery of at least one glass sheet; and
at least one final frame mounted to said blank frame for movement between a first position in which the final frame substantially doubles a part of the blank frame and a second position in which the final frame supports a portion of the periphery of at least one glass sheet otherwise supported on the blank frame.

5,186,731
METHOD AND COMPOSITIONS FOR PROMOTING MUSHROOM GROWTH
Frank H. Parker, Ballstone Farm, Quarnford, Nr. Buxton, Derbyshire, England SK17 OSZ
Filed Dec. 6, 1990, Ser. No. 622,963
Claims priority, application United Kingdom, Mar. 6, 1990, 9004963; May 1, 1990, 9009774; Jul. 3, 1990, 9014769
Int. Cl.[5] C05F *9/04;* **C05G** *3/00*
U.S. Cl. 71—5 **13 Claims**

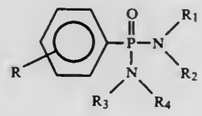
1. A method of cultivating mushrooms comprising:
(a) mixing mushroom spawn with compost and an effective amount of a compost supplement to enhance the yield of fruiting bodies; said supplement being a calcium and/or aliphatic, alicyclic or heterocyclic amine salt of an aliphatic, alicyclic or heterocyclic carboxylic acid;
(b) allowing the mushroom mycelium to grow;
(c) casing the compost with a casing layer to induce production of the fruiting bodies; and
(d) cropping the developed fruiting bodies.

5,186,732
ENCAPSULATED SLOW RELEASE FERTILIZERS
Harold E. Thompson, and Richard A. Kelch, both of Columbus, Ohio, assignors to The O. M. Scott & Sons Company, Marysville, Ohio
Division of Ser. No. 497,442, Mar. 22, 1990, Pat. No. 5,089,041. This application Nov. 12, 1991, Ser. No. 791,037
Int. Cl.[5] A01N *25/26;* **C05G** *5/00*
U.S. Cl. 71—64.11 **25 Claims**

1. A coated product comprising a water soluble core material having a water insoluble polymeric coating encapsulating said core, said encapsulating coating comprising a waterborne, polyvinylidene chlore-based latex composition which provides for the release of said water soluble core material over an extended period of time, said latex composition having a solid content, a glass transition temperature and a blocking temperature sufficient to promote said coating without causing agglomeration, said glass transition temperature being in a range of about 15°–35° C. and said blocking temperature being at least about 32° C.

5,186,733
ARYLPHOSPHONODIAMIDE COMPOUNDS AND HERBICIDAL COMPOSITIONS THEREOF
Michael D. Broadhurst, Novato; Tsze H. Tsang, El Cerrito, both of Calif., and John Tomko, Dobbs Ferry, N.Y., assignors to Imperial Chemical Industries PLC, London, United Kingdom
Filed Nov. 12, 1991, Ser. No. 790,328
Int. Cl.[5] A01N *43/44;* **C07D** *205/04*
U.S. Cl. 504—195 **26 Claims**

16. A method of controlling undesirable vegetable comprising applying to said vegetation or the locus thereof an herbicidally effective amount of a compound having the formula



in which
R is hydrogen, mono- or poly-halo, mono- or di-(C_1–C_4 alkyl), C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, phenoxy or nitro;
R_1 is hydrogen or C_1–C_4 alkyl;
R_3 is C_1–C_6 alkyl;
R_2 is C_2–C_4 alkyl, C_3–C_6 cycloalkyl, phenyl, optionally substituted by C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, one or more halogens, or two C_1–C_4 alkoxy groups, or one C_1–C_6 alkyl and one C_1–C_4 alkoxy group, phenyl-(C_1–C_2)alkyl or pyridyl; or
R_1 and R_2, or R_3 and R_4 respectively, taken together with the nitrogen atom, form a 4–8 member ring, optionally including an oxygen hetero atom;
and R_4 is C_1–C_6 alkyl, C_3–C_6 cycloalkyl, phenyl optionally substituted by C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy, one or more halogens, or two C_1–C_4 alkoxy groups, or one C_1–C_4 alkyl and one C_1–C_4 alkoxy group; phenyl-(C_1–C_2 alkyl) or pyridyl;
provided that if R_1 is hydrogen, R_2 is alkyl or cycloalkyl.

VOL 1147 ISS 3 FE 16 1993 UMI

5,186,734

HERBICIDAL BISAZINYL COMPOUNDS

Roland Andree; Mark W. Drewes, both of Langenfeld; Hans-Joachim Santel, Leverkusen; Klaus Lürssen, and Robert R. Schmidt, both of Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

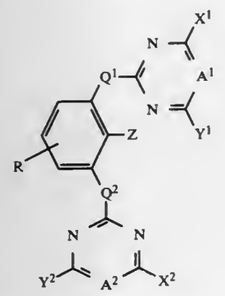
Filed Sep. 11, 1991, Ser. No. 757,860

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1990, 4030041

Int. Cl.[5] **A01N** *43/48, 43/64;* **C07D** *251/00, 251/40*

U.S. Cl. 504—196 **9 Claims**

1. A bisazinyl compound of the formula



(I)

in which

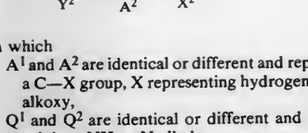
A^1 and A^2 are identical or different and represent nitrogen or a C—X group, X representing hydrogen, halogen, alkyl or alkoxy,

Q^1 and Q^2 are identical or different and represent oxygen, sulphur, NH or N-alkyl,

R represents hydrogen, amino, hydroxyl, cyano, nitro, halogen, alkyl, halogenoalkyl, alkoxy, halogenoalkoxy, alkylthio, halogenoalkylthio, alkylamino, dialkylamino, alkylcarbonylamino, alkoxycarbonylamino or alkylsulphonylamino,

X^1, X^2, Y^1 and Y^2 are identical or different and represent hydrogen, halogen, alkyl, halogenoalkyl, alkoxy, halogenoalkoxy, alkylthio, alkylamino, dialkylamino or optionally substituted phenoxy, and

Z represents one of the groups below:



where

R^1 represents hydrogen, optionally substituted alkyl or optionally substituted phenyl,

R^2 represents hydrogen, hydroxyl or amino, or represents in each case optionally substituted alkyl, alkenyl, alkinyl, alkoxy, alkenyloxy, alkoxycarbonylalkoxy, dialkylaminocarbonylalkoxy, alkylamino, dialkylamino, alkylcarbonylamino, alkoxycarbonylamino, alkylsulphonylamino, aryl, aralkyl, aryloxy, aralkyloxy, arylamino, diarylamino, aralkylamino, N-alkyl-N-arylamino, arylcarbonylamino, heteroarylamino, heteroarylcarbonylamino or arylsulphonylamino,

R^3 represents hydrogen, halogen, cyano, carboxyl, alkoxycarbonyl, alkylcarbonylamino or dialkoxyphosphoryl, and

R^4 represents formyl, cyano, carboxyl, hydroxymethyl or carbamoyl, or represents in each case optionally substituted alkoxycarbonyl, cycloalkoxycarbonyl, alkylthiocarbonyl, alkylaminocarbonyl, cycloalkylaminocarbonyl, dialkylaminocarbonyl, alkylaminocarbonylalkoxycarbonyl, dialkylaminocarbonylalkoxycarbonyl, arylaminocarbonylalk oxycarbonyl, N-alkyl-N-arylaminocarbonylalkoxycarbonyl, pyrrolidinylcarbonyl, piperidinylcarbonyl, morpholinylcarbonyl, piperazinylcarbonyl, aryloxycarbonyl, aralkyloxycarbonyl, heterocyclylalkoxycarbonyl, arylthiocarbonyl, aralkylthiocarbonyl, arylaminocarbonyl, aralkylaminocarbonyl, N-alkyl-N-arylaminocarbonyl, arylhydrazinocarbonyl, alkylhydrazinocarbonyl or phthalimidoxycarbonyl, or R^4 together with R^3 represents the group —CO—O—$(CH_2)_n$—, n representing the numbers 1 to 4.

5,186,735

DERIVATIVES OF 4-((ARYLOXY)PHENOXY)ALKENOLS AND THEIR HERBICIDAL USES

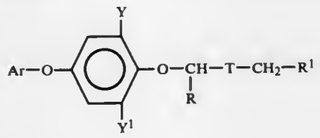
James A. Turner, Pittsburg; Paul S. Zorner, Clayton, and Wendy S. Jacks, Walnut Creek, all of Calif., assignors to DowElanco, Indianapolis, Ind.

Division of Ser. No. 367,274, Jun. 16, 1989, Pat. No. 5,034,050, which is a continuation of Ser. No. 150,803, Feb. 1, 1988, abandoned, which is a continuation of Ser. No. 837,229, Mar. 7, 1986, Pat. No. 4,731,108. This application Apr. 12, 1991, Ser. No. 684,701

Int. Cl.[5] **C07D** *239/10;* **A01N** *43/48*

U.S. Cl. 504—242 **13 Claims**

1. A compound or an optical isomer thereof corresponding to the formula



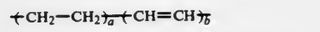
wherein Ar represents



Y and Y^1 each independently represent —H or —F;

R represents methyl or ethyl;

T represents



and the cis (Z) or trans (E) stereoisomers thereof or

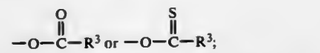


a represents the integer 0, 1 or 2;

b represents the integer 1 or 2;

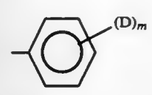
P represents —Br, —Cl, —I or —CF_3;

R^1 represents —SO_2R^2,



R^2 represents C_1–C_4 alkyl, C_2–C_4 alkenyl or —NR^4R^5;

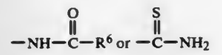
R^3 represents C_2–C_4 alkenyl, C_1–C_4 alkyl, —NR^4R^5 or



wherein

R^4 and R^5 each independently represent —H or C_1–C_4 alkyl;

D represents C_1–C_4-alkyl, —Br, —Cl, —NO_2, —CF_3, —OCF_3,



wherein R^6 represents C_1–C_4 alkyl and m represents an integer of from 0–3, inclusive.

5,186,736

HETEROCYCLIC N-ACYLSULFONAMIDES AND THEIR USE AS HERBICIDES OR GROWTH REGULATORS

Oswald Ort, Kelkheim; Lothar Willms, Hillscheid; Klaus Bauer, Hanau; Hermann Bieringer, Eppstein/Taunus, and Arno Schulz, Hattersheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

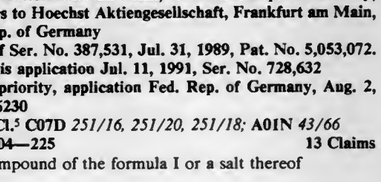
Division of Ser. No. 387,531, Jul. 31, 1989, Pat. No. 5,053,072. This application Jul. 11, 1991, Ser. No. 728,632

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1988, 3826230

Int. Cl.[5] **C07D** *251/16, 251/20, 251/18;* **A01N** *43/66*

U.S. Cl. 504—225 **13 Claims**

1. A compound of the formula I or a salt thereof



(I)

wherein

R^1 is hydrogen, (C_1–C_4)-alkyl, (C_2–C_6)-alkenyl or (C_2–C_6)-alkynyl;

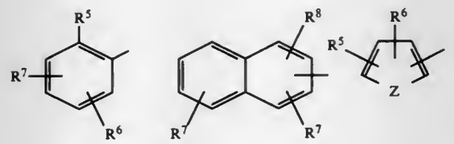
R^2 and R^3 independently of one another are hydrogen, (C_1–C_3)-alkyl or phenyl;

W is O, S, NR^4 or NOR^4;

R^4 is hydrogen, (C_1–C_3)-alkyl, (C_1–C_3)-haloalkyl or phenyl;

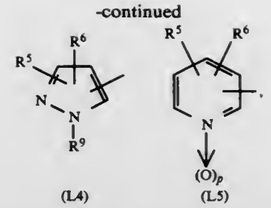
X is CHR^2, O, NR^4 or NOR^4;

L is a heterocyclic or isocyclic radical of the formulae (L1)–(L5)



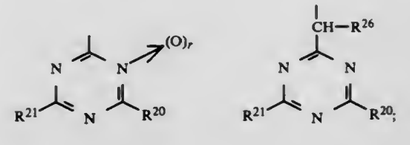
(L1) (L2) (L3)

-continued



(L4) (L5)

A is a heterocyclic radical of the formula (A1) or (A8)



(A1) (A2)

Z is O or $S(O)_q$;

E^1 is O or $S(O)_b$;

R^5 is hydrogen, halogen, NO_2, CN, (C_1–C_4)-alkyl which is unsubstituted or monosubstituted or polysubstituted by F, Cl or Br or monosubstituted by CN, OCH_3 or SCH_3, or is (C_2–C_4)-alkenyl which is unsubstituted or monosubstituted or polysubstituted by F, Cl or Br or monosubstituted by OCH_3; or is (C_2–C_4)-alkynyl which is unsubstituted or monosubstituted or polysubstituted by F, Cl or Br or monosubstituted by OCH_3 or $Si(CH_3)_3$; or is (C_3–C_6)-cycloalklyl which is unsubstituted or monosubstituted or polysubstituted by F, Cl or CH_3; or is —$C(O)R^{10}$, —$OCH_2CH_2OR^{10}$, —OH, —$C(R^{10})$ (OR^{11}) (OR^{12}); —CO_2R^{13}, —$C(O)NR^{14}R^{15}$, —N_3, —$SO_2NR^{14}R^{15}$, —SO_3R^{16}, —OSO_2R^{17}, phenyl which is unsubstituted or monosubstituted or polysubstituted by F, Cl, Br, CH_3 or OCH_3; or is —E^1R^{18} or —$(CH_2)_sG$;

R^6 is hydrogen or halogen; CN; NO_2; (C_1–C_4)-alkyl which is unsubstituted or monosubstituted or polysubstituted by halogen or monosubstituted to disubstituted by CO_2R^{13}, —$SO_2NR^{14}R^{15}$, —$NR^{14}R^{15}$, (C_1–C_2)-alkoxy, —E^1R^{19}, (C_1–C_2)-haloalkoxy, (C_1–C_2)-alkylthio, (C_1–C_2)-haloalkylthio, CN, OH, or SH; or is —CO_2R^{13}, —$SO_2NR^{14}R^{15}$, —$NR^{14}R^{15}$ or —E^1R^{19};

R^7 radicals, independently of one another, are hydrogen, (C_1–C_4)-alkyl, (C_1–C_4)-haloalkyl, (C_2–C_4)-alkenyl, phenyl or phenyl which is monosubstituted or polysubstituted by halogen or —E^1R^{19}; or is —E^1R^{19} or halogen;

R^8 is hydrogen, (C_1–C_4)-alkyl, (C_1–C_4)-haloalkyl, halogen, —CO_2R^{13}, —$SO_2NR^{14}R^{15}$, —OSO_2R^{17}, —$S(O)_2R^{18}$, CN or NO_2;

R^9 is hydrogen, (C_1–C_4)-alkyl which is unsubstituted or monosubstituted or polysubstituted by halogen or monosubstituted by phenyl; or is (C_2–C_4)-alkenyl; or is phenyl or phenyl which is monosubstituted or polysubstituted by halogen, (C_1–C_4)-alkyl, NO_2, CN or (C_1–C_4)-alkoxy;

R^{10} is hydrogen, (C_1–C_4)-alkyl, (C_1–C_4)-alkyl which is monosubstituted or polysubstituted by F, Cl, Br or OCH_3; or is (C_3–C_6)-cycloalkyl which is unsubstituted or monosubstituted or polysubstituted by F, Cl, Br or CH_3; or is (C_2–C_4)-alkenyl or (C_2–C_4)-alkynyl;

R^{11} and R^{12} independently of one another are (C_1–C_4)-alkyl, or R^{11} and R^{12} together are —CH_2CH_2—, —CH_2OCH_2— or —$CH_2C(CH_3)_2CH_2$—;

R^{13} is hydrogen, (C_1–C_4)-alkyl which is unsubstituted or monosubstituted or polysubstituted by halogen or monosubstituted to disubstituted by CN, CO_2R^{10}, $NR^{14}R^{15}$, OR^{10} or $Si(CH_3)_3$; or is (C_2–C_4)-alkynyl which is unsubsti-

VOL 1147 ISS 3 FE 16 1993 UMI

tuted or substituted by CH_3or $Si(CH_3)_3$; or is (C_3-C_6)-cycloalkyl, (C_3-C_6)-cycloalkyl-(C_1-C_4)alkyl, (C_1-C_4)-alkoxy or $Si(CH_3)_3$;

R^{14} is hydrogen or (C_1-C_4)-alkyl, or R^{14} and R^{15} together are $—(CH_2)_2(CH_2)_a(CH_2)_2—$ or $—(CH_2)_2O(CH_2)_2—$;

R^{15} is hydrogen, (C_1-C_4)-alkyl, (C_1-C_4)-alkoxy, (C_2-C_4)-alkenyl, or R^{14} and R^{15} together are $—(CH_2)_2(CH_2)_a(CH_2—$ or $—(CH_2)_2O(CH_2)_2—$;

R^{16} is (C_1-C_4)-alkyl or (C_1-C_4)-haloalkyl;

R^{17} is (C_1-C_4)-alkyl or $NR^{14}R^{15}$;

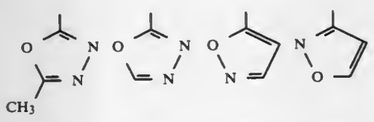
R^{18} is (C_1-C_4)-alkyl, (C_1-C_4)-haloalkyl, (C_2-C_4)-alkoxyalkyl, (C_2-C_4)-alkenyl, (C_3-C_4)-alkynyl, phenyl or phenyl which is monosubstituted or polysubstituted by halogen, (C_1-C_3)-alkyl, (C_1-C_3)-alkoxy or (C_1-C_3)-haloalkyl;

R^{19} is (C_1-C_4)-alkyl or (C_1-C_4)-alkyl which is monosubstituted or polysubstituted by F or Cl or monosubstituted by OR^{16};

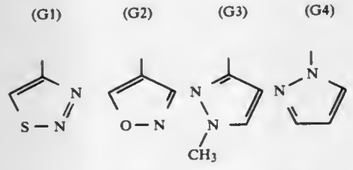
R^{20} and R^{21} independently of one another are hydrogen, halogen, (C_1-C_6)-alkyl, (C_1-C_6)-alkoxy or (C_1-C_6)-alkylthio, it being possible for the three abovementioned radicals to be monosubstituted or polysubstituted by halogen or monosubstituted or disubstituted by (C_1-C_4)-alkoxy or (C_1-C_4)-alkylthio; or are $NR^{14}R^{15}$, (C_3-C_6)-cycloalkyl, $—OCHR^{14}—CO_2R^{13}$, (C_2-C_5)-alkenyl, (C_2-C_4)-alkynyl, (C_3-C_5)-alkenyloxy or (C_3-C_5)-alkynyloxy;

R^{26} is hydrogen or (C_1-C_3)-alkyl;

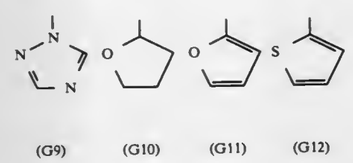
G is a heterocyclic radical (G 1)-(G 25),



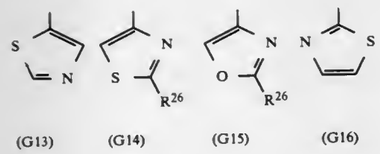
(G1) (G2) (G3) (G4)



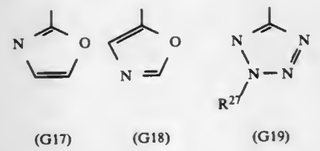
(G5) (G6) (G7) (G8)



(G9) (G10) (G11) (G12)

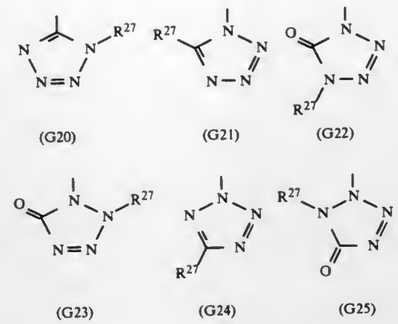


(G13) (G14) (G15) (G16)



(G17) (G18) (G19)

-continued



(G20) (G21) (G22)

(G23) (G24) (G25)

R^{27} is hydrogen, (C_1-C_3)-alkyl or (C_2-C_4)-alkenyl;

a, m, n, p, r and s, independently of one another are 0 or 1; and b and q, independently of one another, are 0, 1 or 2.

5,186,737

PESTICIDAL 3-ARYL-PYRROLIDINE-2,4-DIONES

Reiner Fischer, Monheim; Bernd Baasner, Bergisch-Gladbach; Hermann Hageman, Leverkusen; Andreas Krebs, Odebthal-Holz; Albrecht Marhold; Hans-Joachim Santel, both of Leverkusen; Robert R. Schmidt; Klaus Lürssen, both of Bergisch-Gladbach, all of Fed. Rep. of Germany; Benedikt Becker, Bolzano, Italy; Klaus Schaller, Wuppertal, and Harry Strang, Duesseldorf, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 460,208, Jan. 2, 1990, Pat. No. 5,045,560. This application Apr. 1, 1991, Ser. No. 678,479

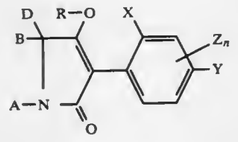
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1989, 3900301; Aug. 18, 1989, 3927222

Int. Cl.[5] D01N *43/36*

U.S. Cl. 504—283 **12 Claims**

1. A method combating unwanted vegetation which comprises applying thereto or to a locus from which it is desired to exclude such vegetation, a herbicidally effective amount of a 3-aryl-pyrrolidine-2,4-dione of the formula

(I)



in which

X represents C_1-C_6-alkyl, halogen or C_1-C_6-alkoxy,

Y represents hydrogen, C_1-C_6-alkyl, halogen, C_1-C_6-alkoxy or (C_1-C_3)-halogenoalkyl,

Z represents C_1-C_6-alkyl, halogen or C_1-C_6-alkoxy,

n represents a number from 0–3,

R represents hydrogen (Ia) or represents the groups of the formula

$—CO—R^1$ or $—CO—O—R^2$,

in which

R^1 represents C_1-C_{20}-alkyl, C_2-C_{20}-alkenyl, C_1-C_8-alkoxy-C_2-C_8-alkyl, C_1-C_8-alkylthio-C_2-C_8-alkyl, C_1-C_8-polyalkoxy-C_2-C_8-alkyl or cycloalkyl which has 3–8 ring atoms and which can be interrupted by oxygen and/or sulphur, each of which radicals is optionally substituted by halogen, or represents phenyl which is optionally substituted by halogen, or represents phenyl which is optionally substituted by halogen, nitro, C_1-C_6-alkyl, C_1-C_6-alkoxy, C_1-C_6-halogenoalkyl or C_1-C_6-halogenoalkoxy, or represents phenyl-C_1-C_6-alkyl which is optionally substituted by halogen, C_1-C_6-alkyl, C_1-C_6-alkoxy, C_1-C_6-halogenoalkyl or C_1-C_6-halogenoalkoxy,

R^2 represents C_1-C_{20}-alkyl, C_2-C_{20}-alkenyl, C_1-C_8-alkoxy-C_2-C_8-alkyl or C_1-C_8-polyalkoxy-C_2-C_8-alkyl, each of which radicals is optionally substituted by halogen, or represents phenyl or cycloalkyl which has 3–8 ring atoms, each of which radicals is optionally substituted by halogen, nitro, C_1-C_6-alkyl, C_1-C_6-alkoxy or C_1-C_6-halogenoalkyl,

A represents straight-chain or branched C_1-C_{12}-alkyl, C_3-C_8-alkenyl, C_3-C_8-alkinyl, C_1-C_{10}-alkoxy-C_2-C_8-alkyl, C_1-C_8-polyalkoxy-C_2-C_8-alkyl, C_1-C_{10}-alkylthio-C_2-C_8-alkyl or cycloalkyl which has 3–8 ring atoms and which can be interrupted by oxygen and/or sulphur, each of which radicals is optionally substituted by halogen, or represents aryl-C_1-C_6-alkyl which is optionally substituted by halogen, C_1-C_6-alkyl-C_1-C_6-haloalkyl, C_1-C_6-alkoxy or nitro, and

B and D independently of one another represent hydrogen, straight-chain or branched C_1-C_{12}-alkyl or C_1-C_8-alkoxy-alkyl.

5,186,738

VANADYL COMPOSITIONS AND METHODS FOR APPLYING THE COMPOSITIONS TO PROMOTE PLANT GROWTH

Charles W. Wendt, 4518 - 22nd St.; Stanley K. Hicks, 2702 Genoa F4, both of Lubbock, Tex. 79407, and Richard B. Baker, 5422 - 44th St., Lubbock, Tex. 79414

Filed Apr. 5, 1990, Ser. No. 504,889

Int. Cl.[5] A01N *37/02*

U.S. Cl. 504—192 **17 Claims**

1. A method for promoting the lint yield of a fiber-producing plant comprising:

treating the plant during a growth period of the plant with an amount of a composition comprising a vanadyl salt of a carboxylic acid, said composition being effective for promoting the lint yield of the plant.

5,186,739

CERMET ALLOY CONTAINING NITROGEN

Kazutaka Isobe, and Toshio Nomura, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

PCT No. PCT/JP90/00200, § 371 Date Oct. 19, 1990, § 102(e) Date Oct. 19, 1990, PCT Pub. No. WO90/10090, PCT Pub. Date Sep. 7, 1990

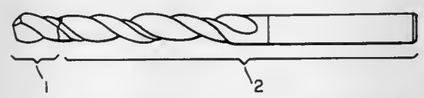
PCT Filed Feb. 21, 1990, Ser. No. 601,718

Claims priority, application Japan, Feb. 22, 1989, 1-42766; Feb. 22, 1989, 1-42767; Feb. 23, 1989, 1-44716

The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.

Int. Cl.[5] B22F *5/00, 7/06;* B23B *27/14*

U.S. Cl. 75—238 **4 Claims**



1. A cermet alloy containing nitrogen, comprising hard dispersed phases mainly composed of one member selected from the group consisting of a nitride compound of titanium and a carbo-nitride compound of titanium, said cermet alloy further comprising at least one metal selected from the group consisting of groups IVa, Va and VIa of the periodic table excluding titanium, and binder metal phases selected from the group consisting of nickel and cobalt, wherein

said hard dispersed phases include a metal atom group containing titanium and a nonmetal atom group containing nitrogen,

the amount of said titanium contained in said metal atom group is at least 0.5 and not more than 0.95 as an atomic ratio,

the amount of said nitrogen contained in said nonmetal atom group is at least 0.1 and not more than 0.7 as an atomic ratio,

said hard dispersed phases comprise a fine grained portion having a mean grain size within the range of at least 0.2 μm and not more than 0.6 μm and a coarse grained portion having a mean grain size within the range of at least 1 μm and not more than 3 μm,

the volume ratio of said fine grained portion to said coarse grained portion is at least 0.3 and not more than 3, and wherein

the proportion of said binder metal phases contained in said cermet alloy containing nitrogen, is at least 5 percent by weight and not more than 30 percent by weight.

5,186,740

METHOD FOR PREHEATING SCRAP IRON BY PYROLYSIS OF RESINOUS RESIDUES CONTAINED THEREIN, WITH TOTAL RECOVERY OF THEIR ENERGY CONTENT AND IMPROVEMENT OF THE STEELMAKING CYCLE

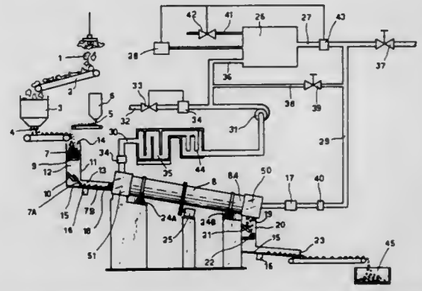
Roberto Sancinelli, Bergamo, Italy, assignor to Blufin S.r.l., Italy

Filed Sep. 13, 1990, Ser. No. 581,925

Claims priority, application Italy, Apr. 9, 1990, 2920A/90

Int. Cl.[5] C21B *3/00*

U.S. Cl. 75—401 **6 Claims**



1. Method of pretreating scrap iron containing organic materials to render the same suitable for smelting in an electric furnace by preheating said scrap iron and removing the organic material therefrom, which comprises

shredding said scrap iron containing said organic material,

providing material charging means to pass the thus-shredded scrap iron into a rotating pyrolysis reactor while substantially preventing any air contact between the interior and exterior of said pyrolysis reactor,

passing the thus-shredded scrap iron into said pyrolysis reactor in countercurrent with a hot gas, in the absence of air, at a temperature sufficiently high to effect pyrolysis of said organic material, the iron of said scrap iron being heated by the hot gas and by heat from the combustion of said pyrolized organic material, and

providing material discharging means to remove said scrap iron from said pyrolysis reactor while substantially preventing any air contact between the interior and exterior of said pyrolysis reactor.

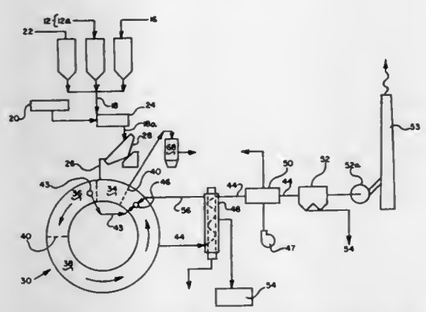
VOL 1147 ISS 3 FEB 16 1993 UMI

5,186,741

DIRECT REDUCTION PROCESS IN A ROTARY HEARTH FURNACE

Norman L. Kotraba, Tega Cay, S.C., and Carl A. Holley, Riverview, Mich., assignors to Zia Patent Company, Dallas, Tex.

Filed Apr. 12, 1991, Ser. No. 684,622
Int. Cl.[5] C21B *11/08*
U.S. Cl. 75—484 **16 Claims**



1. A method of recovering iron from iron-bearing steel mill wastes comprising the steps of:
(a) combining steel mill wastes, having metallic oxides including iron oxides therein, with carbonaceous material and an organic binder to form a mixture;
(b) mixing said mixture with water to form a wetted mixture;
(c) pelletizing said wetted mixture to form green pellets;
(d) charging said green pellets into a rotary hearth furnace;
(e) drying and coking said green pellets for 10 to 15 minutes at a temperature no higher than 900° C. (1652° F.) to form dried pellets;
(f) reducing said dried pellets for 20 to 30 minutes at a temperature no higher than 1150° C. (2102° F.) to form reduced pellets; and
(g) discharging said reduced pellets from said rotary hearth furnace;
wherein:
the charging step (d) and the discharging step (g) occupy about 10% of the total time the pellets remain within the rotary hearth furnace;
the drying and coking step (e) occupies approximately 25% of the total time the pellets remain within the rotary hearth furnace, and
the reducing step (f) occupies approximately 65% of the total time the pellets remain within the rotary hearth furnace.

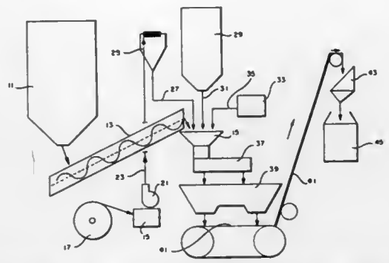
5,186,742

METHOD AND COMPOSITION FOR USE IN RECYCLING METAL CONTAINING FURNACE DUST

David C. Hoffman, Ft. Worth, and Norman L. Hains, Arlington, both of Tex., assignors to Chemical Lime Company, Fort Worth, Tex.

Filed Nov. 27, 1991, Ser. No. 799,407
Int. Cl.[5] C21B *1/24*
U.S. Cl. 75—773 **12 Claims**

1. A method of recycling metal containing furnace dust contaminated with heavy metals and oxides, the method comprising the steps of:
preparing a powder blend by blending from about 10 to 40% by weight of the metal contaminated furnace dust with from about 85 to 55% by weight lime, from about 0.1 to 2% by weight paper fiber and from about 0.1 to 4% by weight of a lubricant selected from the group consisting of alkaline earth metal stearates, fatty acids, stearic acid, and paraffin;



pelletizing the powder blend by mechanically forming the blend into a pellet shape; and
returning the pellets to the furnace.

5,186,743

LOW VOLATILE ORGANIC CONTENT HYBRID SILICA BINDER

John R. Flasch, Adrian, Mich., assignor to Akzo nv, Arnhem, Netherlands

Continuation-in-part of Ser. No. 626,925, Dec. 13, 1990, abandoned. This application Oct. 29, 1991, Ser. No. 783,957
Int. Cl.[5] B28B *7/34*
U.S. Cl. 106—38.35 **17 Claims**

1. An acidified, substantially non-aqueous silica hybrid binder, which contains from about 29% to about 42% total silica expressed as SiO_2, exclusive of any added quantity of curing accelerators, other modifiers, or mixtures thereof, and which comprises:
(a) a predominant amount of a silica component derived from the hydrolysis of an organic silicate and a lesser amount of a silica component derived from a silica sol; and
(b) a solvent component which contains:
(i) from 0 to about 75% by weight of an organic solvent having a volatility equal to or greater than the volatility of a C_1 to C_3 alkyl monohydric alkanol; and
(ii) from about 25% to 100% by weight of a solvent having a lesser volatility than the volatility of a C_1 to C_3 alkyl monohydric alkanol, said solvent of lesser volatility optionally containing no more than about 90%, by weight, of a solvent selected from the group consisting of n-butyl alcohol, iso-butyl alcohol and sec-butyl alcohol.

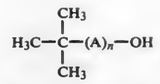
5,186,744

PROPOXYLATED PTB COALESCING AGENTS FOR WATER-BORNE PROTECTIVE COATINGS

James R. Bodwell, 806 Edward La., West Chester, Pa. 19382; Stephen H. Harris, 1206 Estate Dr., West Chester, Pa. 19380, and David C. Dehm, 7 Lake Rd., Thornton, Pa. 19373

Filed Jan. 11, 1991, Ser. No. 640,451
Int. Cl.[5] C09D *4/00*
U.S. Cl. 106—243 **4 Claims**

1. A versatile coalescing agent for use in water-borne coatings that have good film-forming characteristics and rapid hardness development upon application, said coalescing agent comprising:
(a) from about 1 to 10 weight percent of one or more propylene oxide adducts of propylene glycol tert-butyl ether having the formula:



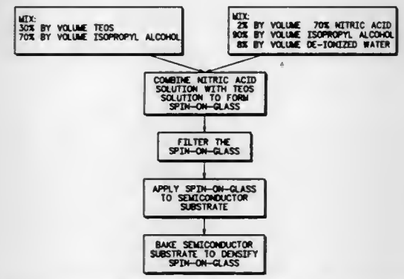
wherein n is an integer from 2 to 6, and A is an oxypropylene unit; and
(b) from about 90 to 99 weight percent of an organic solvent selected from the group consisting of alcohols, glycols, glycol ethers, glycol ether esters, ketones, esters, aliphatic and aromatic hydrocarbons, halogenated hydrocarbons, nitriles, amides, and carbonates.

5,186,745

TEOS BASED SPIN-ON-GLASS AND PROCESSES FOR MAKING AND USING THE SAME

Papu D. Maniar, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 4, 1991, Ser. No. 650,119
Int. Cl.[5] C09D *183/06*
U.S. Cl. 106—287.16 **9 Claims**



1. A tetraethylorthosilicate based spin-on-glass composition consists essentially of:
a) between approximately 15% to 22% by volume of tetraethylorthosilicate;
b) an amount of nitric acid equivalent to between approximately 0.2% to 1.3% by volume of 70% by weight nitric acid;
c) between approximately 70% to 85% by volume of alcohol; and
d) balance water, not to exceed 10% by volume of the composition.

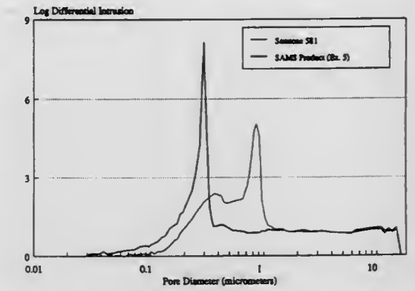
5,186,746

HIGH PERFORMANCE SAMS PIGMENTS OF LOW OIL, ABSORPTION, PREPARATION, PROPERTIES AND END-USE APPLICATIONS

Gary M. Freeman, Macon, Ga., assignor to J. M. Huber Corporation, Rumson, N.J.

Continuation of Ser. No. 567,563, Aug. 15, 1990, abandoned. This application Jan. 10, 1992, Ser. No. 819,637
Int. Cl.[5] C01B *33/26*; C09C *1/02, 1/28*
U.S. Cl. 106—416 **6 Claims**

1. A sodium aluminosilicate pigment produced by the hydrothermal reaction of a sodium silicate and a clay in aqueous medium, said pigment being characterized by a pore volume greater than 2.0 ml/gm, wherein the pore diameters are sized between 0.2 to 0.7 micron centered near a pore diameter of 0.3 micron as depicted in FIGS. 6 and 9;
an oil absorption of less than about 115 ml/100 gm, a particle size within the range of 78–90% - 2 microns an average particle diameter of 0.5–0.7 micron as determined by x-ray



sedigraph and wherein the SiO_2 to Al_2O_3 ratio is limited to between 2.01 to 3.0.

5,186,747

ORGANOPHILIC CLAYS PREACTIVATED WITH PROPYLENE CARBONATE

Wayne T. Mattingly, Louisville, Ky., assignor to United Catalysts Inc., Louisville, Ky.

Filed Mar. 28, 1991, Ser. No. 676,558
Int. Cl.[5] C09C *1/02*; C10M *125/30, 125/26/113/10*
U.S. Cl. 106—468 **9 Claims**

1. A free flowing dry powder comprising a blend of
a) about 10 to about 75 weight percent 1,2-propylene carbonate; and
b) about 25 to about 90 weight percent finely divided amorphous silica,
wherein said weight percents are based on the total weight of a) and b) and
wherein about 2 to about 10 weight percent of the propylene carbonate is replaced with an equal weight of water.

5,186,748

PROCESS FOR THE PREPARATION OF BISMUTH VANADATE PIGMENTS, AND NOVEL BISMUTH VANADATE PIGMENTS OF HIGH COLOR STRENGTH

Leonardus J. H. Erkens, Maastricht; Gregor Schmitt, Landgraaf; Herman J. J. M Geurts, and Werner F. C. G. Corvers, both of Maastricht, all of, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

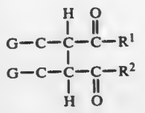
Continuation of Ser. No. 728,009, Jul. 5, 1991, abandoned, which is a continuation of Ser. No. 616,555, Nov. 21, 1990, abandoned. This application Feb. 27, 1992, Ser. No. 845,517
Claims priority, application Switzerland, Nov. 30, 1989, 4301/89
Int. Cl.[5] C01G *29/00, 31/02*
U.S. Cl. 106—479 **15 Claims**

1. An improved process for the preparation of bismuth vanadate pigments and solid solutions based on bismuth vanadate comprising
a) admixing a solution of a bismuth (III) salt containing one or more further metal salts, with an aqueous solution of a vanadate salt optionally containing a molybdate, tungstate or sulfate salt or a mixture thereof, thereby producing a suspension of particles in amorphous form; and
b) subjecting said suspension thus obtained to a subsequent aftertreatment to convert the particles first precipitated in amorphous form into crystalline compounds; wherein in step a), step b), both step a) and step b) or after step b fluoride ions are present.

VOL 1147 ISS 3 FE 16 1993 UMI

5,186,749
HIGH STRENGTH WATER RESISTANT CEMENTITIOUS COMPOSITIONS
Robert G. Allred, 429 Eastview Dr., Alpin, Utah 84004
Filed Sep. 26, 1991, Ser. No. 765,871
Int. Cl.[5] C04B *24/04, 7/02*
U.S. Cl. 106—810 **8 Claims**

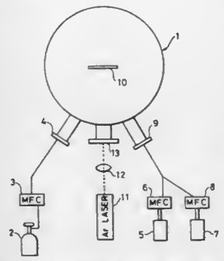
1. In a composition of matter adapted to be cured upon hydration to obtain a solid and which comprises a cementitious material; and an effective amount of a chemical compound of the general formula:



where at least one G may be an alkyl, haloalkyl or alkenyl group having from 6 to 40 carbon atoms, and the other G independently represents hydrogen, an alkyl, haloalkyl, or alkenyl group having from 6 to 40 carbon atoms, R^1 and R^2 may be the same or different, and may be NR^3R^4 or $—OR^5$, wherein R^3, R^4, or R^5 may be the same or different, and may be hydrogen or an alkyl group having 1 to 3 carbon atoms—provided that at least one of the R^1 and R^2 groups is a hydroxy moiety; and their ammonia, amine or metal salts, or R^1 and R^2 combined represent a single divalent oxygen atom:

an amount of an antifoam agent effective to significantly upgrade the compressive strength of the cured solid.

5,186,750
METHOD AND APPARATUS FOR FORMING SEMICONDUCTOR THIN FILMS
Hideo Sugiura; Takeshi Yamada, both of Atsugi, and Ryuzo Iga, Yokohama, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan
PCT No. PCT/JP89/00827, § 371 Date Apr. 10, 1990, § 102(e) Date Apr. 10, 1990, PCT Pub. No. WO90/01794, PCT Pub. Date Feb. 22, 1990
PCT Filed Aug. 15, 1989, Ser. No. 477,870
Claims priority, application Japan, Aug. 15, 1988, 63-203,036; Dec. 16, 1988, 63-318,983; Dec. 16, 1988, 63-318,986; Jun. 19, 1989, 64-157,893; Jul. 17, 1989, 64-185,188
Int. Cl.[5] C23C *16/00;* **H01L** *21/203*
U.S. Cl. 118—50.1 **5 Claims**



1. An apparatus for forming a thin film of a semiconductor comprising:

a vacuum chamber constituting a body of a metalorganic molecular beam epitaxial system;

a vacuum system for establishing a vacuum within said vacuum chamber by evacuation;

a holder for holding a substrate within said vacuum chamber;

a first cell for forming a molecular beam of an organometal of an element constituting a compound semiconductor, and for guiding said formed molecular beam to said substrate;

a second cell for forming a molecular beam of said the other element of the compound semiconductor, and for guiding said formed molecular beam to said substrate;

a first supply system for supplying said first cell with a starting material of said organometal;

a second supplying system for supplying said second cell with a starting material of said the other element;

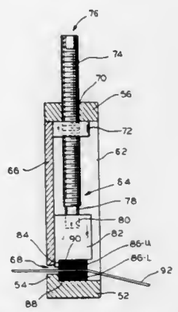
a source of laser rays for generating laser rays with which said substrate is irradiated;

an optical system for guiding said laser rays from its source to said substrate;

a light lead-in window for guiding said laser rays from said optical system to said substrate placed within said vacuum chamber; and

a vibration proof base on which said source of laser rays, said optical system and said vacuum chamber are mounted so that the propagation of external vibrations is prevented.

5,186,751
LAMINATED WIPER
Beverly L. Moore, Madill, Okla., assignor to Oklahoma Steel & Wire Co., Inc., Madill, Okla.
Filed Mar. 28, 1991, Ser. No. 676,560
Int. Cl.[5] B05C *11/02*
U.S. Cl. 118—109 **10 Claims**



1. In a wire plating system for providing a plating coat on a wire and including a plating tank holding a plating material and means for drawing wire through the plating tank from an entry end to an exit end to apply the material to the wire, an improved wiper head comprising:

a laminated wiper comprising a plurality of discrete layers of a fibrous material and means for bonding said layers to provide a unitary structure wherein said wiper includes an outermost layer in contact with the wire and a plurality of inner layers spaced from the wire; and

a wiper holder mounted adjacent the exit end of said tank and including means for supporting said wiper in a path of movement of the wire so that the wiper outermost layer removes excess plating material from the wire.

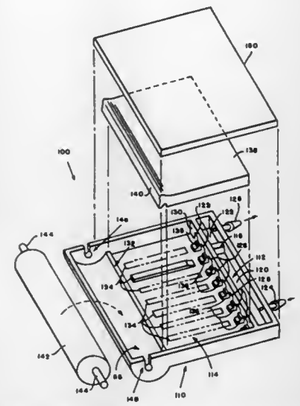
5,186,752
INKING SYSTEM FOR FLAT-BED MAIL PROCESSING SYSTEM
Danilo P. Buan, Easton, and Thomas M. Lyga, Torrington, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Dec. 23, 1991, Ser. No. 812,546
Int. Cl.[5] B05C *1/08*
U.S. Cl. 118—260 **8 Claims**

1. An ink tray comprising:

a housing having a first and second chamber;

said first chamber having an overflow baffle extending laterally within said chamber to divide said first chamber into an inlet side and an outlet side, inlet port means for receiving replenishing ink in said inlet side of said first chamber and outlet port means for removal of excess ink from said ink tray;

a plurality of portals extending between said first and second chambers for directing replenishing ink to said second chamber from said inlet side of said first chamber and for directing excess replenishing ink from said second chamber to said outlet side of said first chamber;

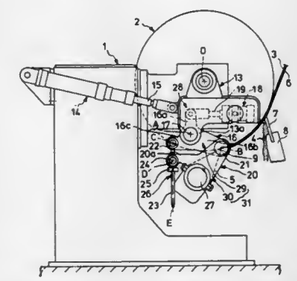


an elongated inking roller;

means for rotatively mounting said inking roller to said housing; and,

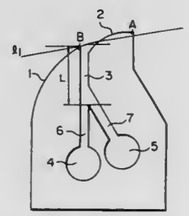
absorption material mounted in said second chamber to contact said replenishing ink, said absorption material having a portion extending from said second chamber and contacting said inking roller to allow the transfer of replenishing ink to said inking roller.

5,186,753
FOUNTAIN COATER
Takeo Nakazawa; Hirofumi Morita; Takeshi Hitomi, and Katsumi Ishizuka, all of Tokyo, Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 6, 1991, Ser. No. 711,065
Claims priority, application Japan, Jul. 10, 1990, 2-73283[U]; Jul. 10, 1990, 2-181827; Aug. 1, 1990, 2-81761[U]
Int. Cl.[5] B05C *5/02*
U.S. Cl. 118—410 **5 Claims**



1. In a fountain coater including a backing roll and a fountain for applying through a slit at a tip thereof a coating color on a surface of a web engaged with said backing roll for movement of said web, and a metering element at an outer periphery of the backing roll and downstream of the fountain for removing excessive coating color applied to form a uniform coating color layer on the web, the improvement comprising an application adjusting mechanism through which the fountain is pivotably supported at said tip thereof so as to be angularly displaceable around said tip, said application adjusting mechanism including a gap adjusting bracket swingable around an axis extending in parallel with an axis of the backing roll, a drive for swinging said gap adjusting bracket, said gap adjusting bracket having an operating arm extending to an outer periphery of the backing roll, a fountain angle adjusting bracket mounted on said operating arm so as to be swung around an axis in parallel with an axis of swing of said gap adjusting bracket, said fountain being supported by said fountain angle adjusting bracket with the tip of the fountain being substantially on said axis of swing of the fountain angle adjusting bracket, and a further drive between said gap adjusting bracket and said fountain angle adjusting bracket for swinging said fountain angle adjusting bracket.

5,186,754
COATER
Masahiro Umemura; Takemasa Namiki; Seiichi Tobisawa; Shigetoshi Kawabe, and Takeshi Nakajima, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan
Filed Apr. 6, 1990, Ser. No. 505,937
Claims priority, application Japan, Apr. 7, 1989, 1-89302
Int. Cl.[5] B05C *5/02, 9/06*
U.S. Cl. 118—411 **10 Claims**



1. An apparatus for coating a plurality of layers of electro magnetic material onto a flexible base comprising:

an extruder; and a transporter for moving a flexible base in a direction from a front face to a back face of said extruder;

wherein said extruder comprises

(a) a first reservoir connected to a pressurized supply source of a first coating material for forming a first coating layer;

(b) a second reservoir connected to a pressurized supply source of a second coating material for forming a second coating layer;

(c) a first outlet channel which is connected to said first reservoir to extrude said first coating material;

(d) a second outlet channel which is connected to said second reservoir to extrude said second coating material;

(e) a third outlet channel between said front face and said back face to extrude said first coating material and said second coating material to provide said first layer and said second layer on said base;

said first outlet channel and said second outlet channel converging into said third outlet channel at an angle;

wherein a part of said back face projects beyond a tangent line which is tangent to said front face at a downstream end of said front face in a cross section of said extruder.

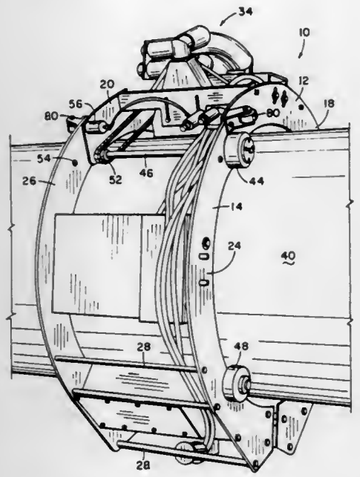
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5,186,755

GIRTH WELD HEATING AND COATING SYSTEM

Ronald E. Carlson, Jr., Catoosa, Okla., and David Paulley, Milton Keynes, England, assignors to Commercial Resins Company, Tulsa, Okla.

Continuation of Ser. No. 529,636, May 29, 1990, Pat. No. 5,071,672. This application Nov. 12, 1991, Ser. No. 791,118
Int. Cl.[5] B05D *3/00*
U.S. Cl. 118—641 4 Claims



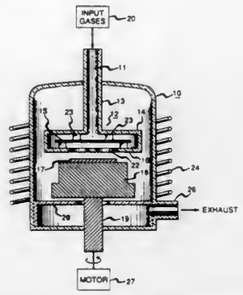
1. Apparatus for heating and coating a section of a pipe comprising an articulated ring adapted to encircle the pipe, rotating means mounted on the ring so that the apparatus can be rotated in either direction around the pipe, the articulated ring comprising an upper yoke section and two side yoke sections which pivot with respect to the upper yoke section, a pair of releasable locking devices mounted on the upper yoke section for engaging the side yoke sections when the latter are pivoted outwardly away from each other to an open position of the ring thereby locking the side yoke sections in an open ring position; means for actuating the releasable locking devices to unlock the side yoke sections with respect to the upper yoke section whereby the side yoke sections pivot in relation to the upper yoke section so as to closely surround the pipe; latching means located at the lower end of one of the side yoke sections for urging the lower ends of the side yoke sections towards each other to a closed position of the ring and for locking the lower ends of the side yoke sections in a closed ring position, a powder dispensing system mounted on the upper yoke section for dispensing a powdered coating material therefrom onto the surface of the pipe; an induction heating assembly mounted on each side yoke section, each induction heater assembly including an induction coil comprising a length of hollow copper tubing wound in an elliptical pattern a multiplicity of times, each said coil being bowed correspondingly to the curvature of said pipe, whereby the induction coils are disposed in a cylindrical surface adjacent to, and parallel with, the surface of the pipe when the ring is locked in the closed position, means for actuating the rotating means whereby the ring is rotated around the pipe, thereafter applying an alternating electric potential to the induction coils to heat the pipe to an application temperature for the coating material, and whereby coating material can be applied thereafter to the thus-heated pipe through the dispenser while continuing to rotate the assembly.

5,186,756

MOCVD METHOD AND APPARATUS

John W. Benko, Trenton; Jerome Levkoff, Ewing, both of N.J.; Daniel C. Sutryn, Wyomissing Hills, Pa., and Montri Viriyayuthakorn, Hamilton Square, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 471,458, Jan. 29, 1990, Pat. No. 5,106,453. This application Dec. 9, 1991, Ser. No. 803,938
Int. Cl.[5] C23C *16/46*
U.S. Cl. 118—730 5 Claims



1. A metalorganic chemical vapor deposition reactor comprising:
an enclosure having a central axis;
a substrate holder within the enclosure;
means for rotating the substrate holder;
an inlet tube for transmitting gases into one end of the enclosure in an axial direction;
a baffle plate arranged transverse to said axis;
an injection plate parallel to the baffle plate and located on the side of the baffle plate opposite the inlet tube, the center of the injection plate being substantially coincident with the central axis of the enclosure;
means for guiding gases including metalorganic gases from the inlet tube around the periphery of the baffle plate so as to flow radially inwardly along one surface of the injection plate;
the substrate holder being arranged parallel to the injection plate and opposite the baffle plate;
and means comprising a plurality of slots in the injection plate for permitting said gases to be transmitted through the injection plate toward the substrate holder, the slots being arranged radially with respect to the center of the injection plate with each slot being narrower at the end nearest the center of the injection plate than at the end nearest the periphery of the injection plate, whereby the rate of transmission through the injection plate is non-uniform with respect to radial distance along said one surface of said injection plate.

5,186,757

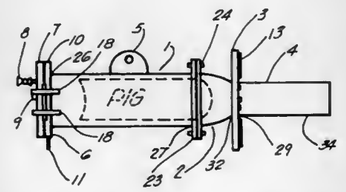
PIG LOADING SYSTEM AND METHOD THEREOF

Marvin D. Abney, Sr., 158 Willow Brook Dr., Gretna, La. 70056

Filed Aug. 26, 1991, Ser. No. 750,100
Int. Cl.[5] B08B *9/04*
U.S. Cl. 134—8 9 Claims

1. A portable pig launcher for launching a pig into a pipeline having an inner wall and an opening, comprising:
a pig barrel having a generally cylindrical inner wall, and front and rear ends, said rear end further comprising a fluid impermeable door;
a reducer having a front end, a rear end, a tapered midsection, and a generally radially tapered inner wall, wherein said rear end is of greater diameter than said front end, said rear end communicating with said front end of said pig barrel such that the inner wall of said pig barrel and inner wall of said reducer engage to form a single conduit;
a nozzle barrel having a generally cylindrical inner wall of lesser diameter than the inner wall of said pig barrel and an outer wall at least one sixteenth of an inch lesser diameter than the inner wall of said pipeline, said nozzle barrel configured to engage said inner wall of said pipeline via said opening in said pipeline;
means for applying a hydrostatic pressure within said pig barrel, for forcing the pig out of said pig barrel, reducer and nozzle barrel;
means for automatically venting said hydrostatic pressure once said pig has passed through said pig barrel and reducer comprises a nozzle flange, said nozzle flange comprising at least one anti-pressure relief bar, said nozzle flange juxtaposed said nozzle barrel and said reducer; and
flange connecting means for removeably connecting said nozzle flange to various pipe flanges of differing diameters.

8. A method of launching a pig in a pipeline having an inner wall and an opening, comprising the following steps:
(a) providing a pig;
(b) providing a portable pig launcher, comprising:
a pig barrel having a generally cylindrical inner wall, and front and rear ends, said rear end further comprising a fluid impermeable door;
a reducer having a front end, a rear end, a tapered midsection, and a generally radially tapered inner wall, wherein said rear end is of greater diameter than said front end, said rear end communicating with said front end of said pig barrel such that the inner wall of said pig barrel and inner wall of said reducer engage to form a single conduit;
a nozzle barrel having a generally cylindrical inner wall of lesser diameter than the inner wall of said pig barrel and an outer wall at least about one sixteenth of an inch lesser diameter than the inner wall of said pipeline, said nozzle barrel configured to engage said inner wall of said pipeline via said opening in said pipeline, said pipeline having a pipeline flange with tap holes at the opening;
means for applying a hydrostatic pressure within said pig barrel for forcing the pig out of said pig barrel, reducer and nozzle barrel; and
means for automatically venting said hydrostatic pressure once said pig has passed through said pig barrel and reducer, said means for automatically venting said hydrostatic pressure further comprising a nozzle flange, said nozzle flange comprising at least one anti-pressure relief bar, said nozzle flange being juxtaposed to said nozzle barrel and said reducer, said nozzle flange further comprising a series of slotted bolt holes configured to communicate with various pipe flanges of differing pressure ratings and diameters;
(c) opening the fluid impermeable door of said pig barrel;
(d) placing said pig into said pig barrel;
(e) placing said nozzle barrel in the opening of said pipeline such that said nozzle barrel communicates with said inner wall of said pipeline, and sliding said nozzle barrel within said opening of said pipeline until said nozzle flange communicates with said pipeline flange;
(f) applying up to about 120 pounds of hydrostatic pressure in said pig barrel;
(g) launching said pig out of said pig barrel and reducer; and
(h) beginning to vent said hydrostatic pressure, while continuing to apply sufficient hydrostatic pressure to force said pig out of said nozzle barrel into said pipeline.

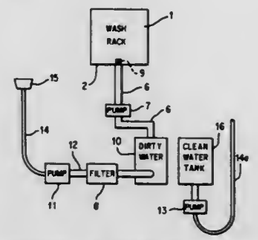


5,186,758

ENVIRONMENTALLY-FRIENDLY BATTERY CLEANING METHOD

Robert Hartman, Box 1, Thaxton, Va. 24174

Filed Aug. 9, 1991, Ser. No. 743,464
Int. Cl.[5] B08B *3/02*; C23G *5/032*
U.S. Cl. 134—10 3 Claims



1. An environmentally-acceptable process for cleaning dirty high-capacity acid storage batteries after use, comprising:
(1) applying an aqueous cleaning solution containing (a) active cleaning detergent and (b) alkaline buffer, wherein aqueous cleaning solution having a pH at least 8, under a pressure within the range from about 0.5 to about 30 psi to a dirty battery;
(2) collecting dirty cleaning solution containing dirt and contaminants suspended therein and draining from the battery after cleaning;
(3) filtering the collected dirty cleaning solution at least once, thereby removing suspended material therefrom;
(4) recycling clean filtrate from the filtering to the supplying step (1);
(5) applying rinsing water under a pressure within the range from about 800 to about 2500 psi to the battery after draining off aqueous cleaning solution;
(6) collecting dirty rinsing water from the rinsing; and
(7) recycling dirty rinsing water to the applying step (1) or to the filtering step (3), selectable according to the cleanliness of the rinsing water.

5,186,759

METHOD FOR CLEANING AND REMOVING HARMFUL MICROORGANISMS FROM AN AIR CONDITIONING SYSTEMS

Tom Yacobellis, 972 16th Way, Palm Harbor, Fla. 34683

Continuation-in-part of Ser. No. 611,832, Nov. 13, 1990, abandoned. This application Dec. 2, 1991, Ser. No. 801,321
Int. Cl.[5] B08B *5/04, 9/02*
U.S. Cl. 134—21 10 Claims

1. A method for cleaning the ductwork and related parts of an air conditioning system, comprising the steps of:
scrubbing all exposed interior surfaces of the ductwork;
vacuuming said exposed interior surfaces;
chemically cleaning said surfaces, after the completion of said scrubbing and vacuuming, with an effective amount of a microbiocide having an effective period of about one day;
chemically cleaning said surfaces, after the completion of said scrubbing and vacuuming, with an effective amount of a microbiocide having an effective period of about six months to two years; and
applying an adhesive to said exposed interior surfaces after

VOL 1147 ISS 3 FE 16 1993 UMI

completion of said scrubbing, vacuuming and chemical cleaning;

completely lining all of said surfaces with a flat, flexible liner that is adhered to said exposed interior surfaces;

said flat, flexible liner being a metallic foil and being inhospitable to the growth of life forms of the type that live in air conditioning ducts.

5,186,760

CLEANING DEVICE FOR CUVETTES

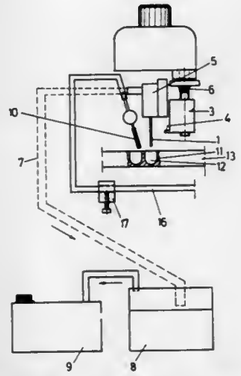
Peter Rubenzer, Salzburg, Austria, assignor to SLT Labinstruments Gesellschaft m.b.H., Grodig, Austria

PCT No. PCT/EP89/00358, § 371 Date Feb. 4, 1991, § 102(e) Date Feb. 4, 1991, PCT Pub. No. WO90/11831, PCT Pub. Date Oct. 18, 1990

PCT Filed Apr. 3, 1989, Ser. No. 623,951

Int. Cl.[5] B08B *3/04*

U.S. Cl. 134—22.18 **6 Claims**



4. A process for cleaning cuvettes containing an accumulation of cells or sediment, comprising the steps of:

providing a liquid container containing a cleaning liquid connected to a plurality of charging pipes, a pump between said container and said charging pipes for pumping the cleaning liquid to said charging pipes and a plurality of pipettes;

delivering the cleaning liquid from said container to said charging pipes with said pump and feeding the liquid to the cuvettes drop by drop along the walls of the cuvette with said charging pipes; and

suctioning off the cleaning liquid fed to the cuvettes with said pipettes by gradually inserting the pipettes deeper into the cuvettes, while the pipettes are suctioning the cleaning liquid, along with the drop in the cleaning liquid level in the cuvettes.

5,186,761

MAGNETIC ALLOY AND METHOD OF PRODUCTION

Osamu Kobayashi; Koji Akioka, and Tatsuya Shimoda, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

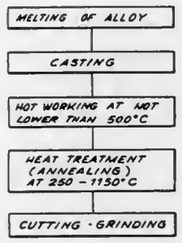
Continuation of Ser. No. 638,014, Jan. 7, 1991, Pat. No. 5,076,861, which is a continuation of Ser. No. 527,687, May 21, 1990, abandoned, which is a continuation of Ser. No. 101,609, Sep. 28, 1987, abandoned. This application Dec. 31, 1991, Ser. No. 815,659

Claims priority, application Japan, Apr. 30, 1987, 62-104622

The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.

Int. Cl.[5] H01F *1/04*

U.S. Cl. 148—101 **15 Claims**



1. A rare earth-iron magnetic alloy comprising an alloy of between about 8 to 30 atomic percent of at least one rare earth element, between about 2 and 8 atomic percent boron and the balance iron, wherein said magnetic alloy has a columnar macrostructure and an easy axis of magnetization aligned in a plane perpendicular to the direction of crystal growth.

5,186,762

PROCESS FOR PRODUCING GRAIN-ORIENTED ELECTRICAL STEEL SHEET HAVING HIGH MAGNETIC FLUX DENSITY

Yoshiyuki Ushigami; Tadashi Nakayama, and Nobuyuki Takahashi, all of Fukuoka, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

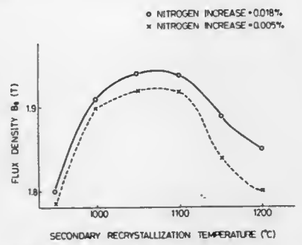
Continuation of Ser. No. 501,165, Mar. 29, 1990, abandoned. This application Oct. 4, 1991, Ser. No. 770,775

Claims priority, application Japan, Mar. 30, 1989, 1-79991; Mar. 30, 1989, 1-79992

The portion of the term of this patent subsequent to Mar. 3, 2008, has been disclaimed.

Int. Cl.[5] C21D *8/12*

U.S. Cl. 148—111 **7 Claims**



1. A process for producing a grain-oriented electrical steel sheet having a high magnetic flux density, comprising the steps of:

heating a steel slab comprising 1.8 to 4.8 wt % Si, 0.012to 0.050 wt % acid-soluble Al, 0.010 wt % or less N, and the balance being Fe and unavoidable impurities to a temperature for hot rolling;

hot-rolling the heated slab to form a hot-rolled strip;

cold-rolling the hot-rolled strip to a final product sheet thickness at a final cold rolling reduction of 80% or more by a single step of cold rolling or by two or more steps of cold rolling with an intermediate annealing step inserted therebetween;

primary-recrystallization-annealing the cold rolled strip;

nitriding the primary-recrystallization-annealed strip during a period from after the primary-recrystallization annealing and before the beginning of secondary recrystallization during secondary recrystallization annealing to increase the amount of nitrogen in the steel strip by above 0.005%;

subjecting the nitrided primary-recrystallization annealed strip to secondary recrystallization annealing, which comprises developing and completing secondary recrystallization at a temperature of from 1000° to 1100° C.

5,186,763

PROCESS FOR PRODUCTION OF NON-ORIENTED ELECTRICAL STEEL SHEET HAVING EXCELLENT MAGNETIC PROPERTIES

Takeshi Kubota, Kitakyushu, and Tadashi Nakayama, Futtsu, both of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Apr. 22, 1992, Ser. No. 872,087

Claims priority, application Japan, Apr. 25, 1991, 3-95375

Int. Cl.[5] H01F *1/04*

U.S. Cl. 148—111 **1 Claim**

1. A process for the preparation of a non-oriented electrical steel sheet having excellent magnetic properties wherein a steel slab comprising up to 0.010% by weight of C, 0.1 to less than 1.5% by weight of Si, 0.3 to 2.0% by weight of Al, 2.0% or more by weight of Si +2Al and the balance Fe and unavoidable impurities is hot rolled and a hot rolled steel sheet is formed, thereafter; the hot rolled steel sheet is annealed, the annealed hot rolled steel sheet is then cold rolled in a single stage to assume a final thickness and a cold rolled steel sheet is formed, and subsequently, the cold rolled steel sheet is subjected to finish annealing, said annealing of the hot rolled steel sheet is at a temperature of 1000° to 1200° C. and for time of 30 seconds to 5 minutes; said cold rolling of the hot rolled steel sheet is at a reduction ratio of 85 to 95%, and said finish annealing is at under a temperature of 750° to 1000° C. and for a time of 15 seconds to 2 minutes.

5,186,764

METHOD AND APPARATUS FOR TREATING PLATES WITH GAS

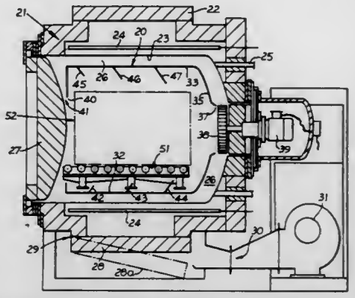
Carl-Heinz Stiasny, Gais, Italy, assignor to Viscodrive GmbH, Lohmar, Fed. Rep. of Germany

Continuation of Ser. No. 479,345, Feb. 13, 1990, abandoned. This application Aug. 12, 1991, Ser. No. 746,793

Int. Cl.[5] G21D *1/48*

U.S. Cl. 148—206 **17 Claims**

1. Apparatus for treating a multiplicity of apertured plates with a gaseous medium comprising a furnace, a chamber defined by opposite end walls and side walls extending between said end walls, apertures in said end walls; the chamber being located within said furnace so that a space is provided between the chamber and the furnace; means to circulate gaseous medium through said chamber in a general direction from said aperture in one of said end walls to said aperture in the other end wall and through said space from said aperture in said other end wall to said aperture in said one end wall; means to support said plates in the chamber in fixed positions and in mutually spaced relation in a plurality of adjacent rows which extend generally parallel to said end walls so that faces of the plates lie parallel to said general direction of flow; and deflector means on the side walls deflecting gaseous medium flowing within the chamber along the side walls to flow away from said side walls towards and between said rows to give a substantially uniform flow of gaseous medium across the whole of the cross-sectional area of the chamber transverse to said general



direction of flow and thus to give a substantially uniform flow of gaseous medium across all of said plates.

5,186,765

COLD ACCUMULATING MATERIAL AND METHOD OF MANUFACTURING THE SAME

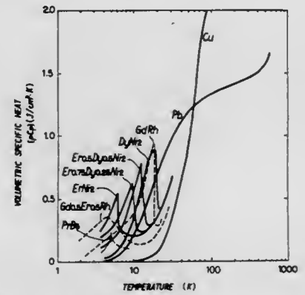
Tomohisa Arai; Naoyuki Sori; Masashi Sahashi, all of Yokohama, and Yoichi Tokai, Urayasu, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 27, 1990, Ser. No. 558,484

Claims priority, application Japan, Jul. 31, 1989, 1-196870

Int. Cl.[5] H01F *1/053*

U.S. Cl. 148—301 **10 Claims**



1. A refrigerator for accumulating an extremely low temperature cold, comprising:

a vacuum vessel;

an outer shell disposed in the vacuum vessel, the outer shell enclosing an inner space;

a first cold accumulating means for accumulating cold and a second cold accumulating means for accumulating cold which are arranged at the inner space inside of the outer shell, the first cold accumulating means accumulating a first cold generated at a first cooling stage, the second cold accumulating means accumulating a second cold generated by further cooling the first cold at a second cooling stage,

a mesh-like member packed int he first cold accumulating means for accumulating cold, and

a second cold accumulating material packed int eh second cold accumulating means, the second cold accumulating material comprising a set of particles having a total weight, wherein each particle comprises at least one element selected form a group consisting of yttrium (Y), lanthanum (La), and rare earth elements cerium (Ce), praseodymium (Pr), neodymium (Nd), promethium (Pm), samarium (Sm), europium (Eu), gadolinium (Gd), terbium

VOL 1147 ISS 3 FE 16 1993 UMI

(Tb), dysprosium (Dy), holmium (Ho), erbium (Er), thulium (Tm), and ytterbium (Yb), and wherein at least 70% of said total weight is comprised of particles which have a particle size of 0.01 to 3 mm and at least 70% of said total weight is comprised of particles which each have a major diameter to a minor diameter ratio that is not greater than 5.

5,186,766

MAGNETIC MATERIALS CONTAINING RARE EARTH ELEMENT IRON NITROGEN AND HYDROGEN

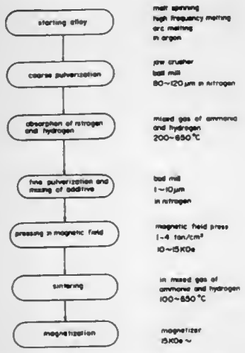
Takahiko Iriyama; Kurima Kobayashi, and Hideaki Imai, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 323,910, Mar. 15, 1989, abandoned. This application Nov. 6, 1991, Ser. No. 788,436

Claims priority, application Japan, Sep. 14, 1988, 63-228547; Nov. 14, 1988, 63-285741

Int. Cl.[5] H01F *1/053*

U.S. Cl. 148—301 **22 Claims**



1. A magnetic material represented by the formula

$$R_\alpha Fe_{(100-\alpha-\beta-\gamma)}N_\beta H_\gamma$$

wherein

R is at least one rare earth element inclusive of Y,

α is 5 to 20 atomic percent,

β is 5 to 30 atomic percent,

γ is 0.01 to 10 atomic percent and the magnetic material has a crystal structure selected from the group of a rhombohedral crystal structure and a hexagonal crystal structure.

5,186,767

LITHOPLATE AND METHOD FOR MAKING SAME

Elwin L. Rooy; Gerald R. Petrey, both of Pittsburgh, Pa.; James R. Weaver, Bettendorf, Iowa; Douglas A. Granger, Murrysville; Raymond T. Richter, New Kensington, both of Pa., and H. Gray Reravis, Jr., Newburgh, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

PCT No. PCT/US88/01858, § 371 Date Jan. 7, 1991, § 102(e) Date Jan. 7, 1991, PCT Pub. No. WO89/12114, PCT Pub. Date Dec. 14, 1989

PCT Filed Jun. 8, 1988, Ser. No. 613,853

The portion of the term of this patent subsequent to Apr. 4, 2006, has been disclaimed.

Int. Cl.[5] C22F *1/04*

U.S. Cl. 148—552 **21 Claims**

1. A method for producing lithoplate comprising:

providing molten aluminum alloy of the 5XXX series;

forming an ingot by casting the molten alloy into a mold;

homogenizing the ingot at a temperature and for a period of time suitable to ensure conversion of Fe-bearing constituent to the Al_3Fe form;

cooling the homogenized ingot;

hot rolling the ingot to produce a reroll stock;



cold rolling the reroll stock to a finished gauge workpiece; and

graining at least one surface of the workpiece.

5,186,768

FLAT SPRING HOSE CLAMP AND MANUFACTURE OF SAME

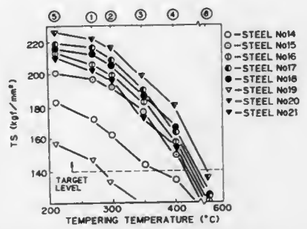
Masai Nomoto, Toyoake; Koichi Sakurai, Aichi; Takashi Suzuki, Nagoya; Kiyoshi Fukui, Nishinomiya, and Atsuki Okamoto, Ashiya, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka and Togo Seisakusyo Corporation, Aichi, both of, Japan

Filed Jun. 13, 1991, Ser. No. 714,823

Claims priority, application Japan, Jun. 14, 1990, 2-156025

Int. Cl.[5] C21D *9/02*

U.S. Cl. 148—580 **24 Claims**



11. A method of manufacturing a flat spring hose clamp having an improved resistance to brittle fracture, comprising the steps of heating a steel after forming the steel into a shape of a clamp at a temperature of 800°–900° C. and carrying out austempering by rapid cooling and maintaining the steel at a temperature of 240°–400° C. to form a uniform bainitic structure, the steel having a composition consisting essentially of, by weight %:

C: 0.30–0.70%,

Si: 0.70% or less,

Mn: 0.05–1.00%,

P: 0.030% or less,

S: 0.020% or less,

Cr: 0.50–2.00%,

Mo: 0.10–0.50%,

Nb: 0.005–0.100%,

sol. Al: 0.10% or less

N: more than 0.0020%, but not more than 0.015%,

Ti: 0–0.10% and/or B: 0–0.0020%,

and a balance of Fe and incidental impurities, the steel comprising a uniform bainite structure.

5,186,769

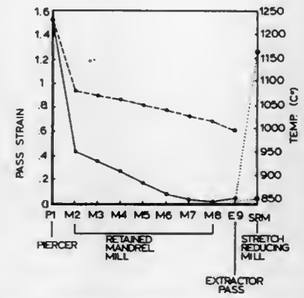
SEAMLESS STEEL TUBE MANUFACTURE

Patrick J. Hunt, Sault Ste. Marie; John J. Jonas, Westmount; Stephen Yue, Montreal; George E. Ruddle, Ottawa, and Lakshman N. Pussegoda, Kanata, all of Canada, assignors to The Algoma Steel Corporation, Limited, Sault Ste. Marie, Canada

Continuation-in-part of Ser. No. 568,673, Aug. 16, 1990, abandoned. This application Jul. 28, 1991, Ser. No. 751,078

Int. Cl.[5] C21D *8/10*

U.S. Cl. 148—593 **11 Claims**



1. A method of manufacturing a high-strength seamless steel tube from a billet by passing a hot billet of steel through a piercing mill located downstream of the reheating furnace, wherein the billet is formed into a steel shell; elongating the steel shell within a mandrel mill located downstream of the piercing mill; and reducing the diameter of the elongated shell by a series of reductions in a stretch reducing mill located downstream of the mandrel mill to form a tube of desired diameter; wherein

a) the steel comprises, by weight, about 0.10% to 0.18% carbon, about 1.0% to 2.0% manganese, about 0.10% to 0.16% vanadium, about 0.008% to 0.012% titanium and about 150 p.p.m. to 220 p.p.m. nitrogen, the balance comprising iron and incidental impurities; and

b) in the stretch reducing mill, strains are applied to the shell to form the tube according to a reduction schedule selected to avoid the onset of precipitation of vanadium nitride during the austenite phase, while the temperature of the steel is maintained above the A_{r3} temperature but below the T_{nr} temperature, thereby causing accumulated strain in the stretch-reduced tube;

whereby the yield strength of the steel tube is enhanced by

(i) dynamic recrystallization in the absence of strain-induced precipitation;

(ii) grain refinement of austenite that is transformed upon further cooling to retained grain refinement of ferrite in the shell; and

(iii) precipitation strengthening by precipitation of vanadium nitride during the ferrite phase.

5,186,770

BIS(2-NITRO-2-AZAPROPYL) ETHER

Theodore C. Adams, Jr., Beltsville, and Horst G. Adolph, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 29, 1984, Ser. No. 626,501

Int. Cl.[5] C07C *111/00*; C06B *25/34*

U.S. Cl. 149—92 **9 Claims**

1. bis(2-nitro-2-azapropyl) ether.

4. A method of preparing bis(2-nitro-2-azapropyl) ether comprising:

(1) reacting one mole of 2-nitro-2-azapropyl trifluoroacetate with one mole of 1-hydroxy-2-nitro-2-azapropane in a polar solvent at a temperature from −30° C. to +50° C. to form bis(2-nitro-2-azapropyl) ether; and

(2) isolating the product bis(2-nitro-2-azapropyl) ether.

5,186,771

RING DEVICE FOR RUNNING WITH A FLAT TIRE

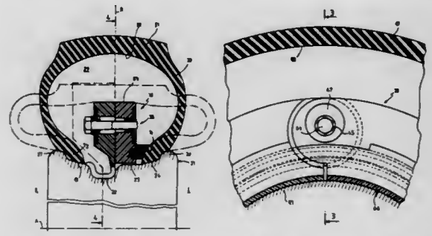
Eric Carpentier, Champagne S/Oise; Bruno Pelletier, Villers S/Saint Leu, and Bernard Boni, Champagne Sur Oise, all of France, assignors to Hutchinson, Paris, France

Filed Nov. 28, 1990, Ser. No. 619,062

Claims priority, application France, Nov. 29, 1989, 89 15700

Int. Cl.[5] B60C *17/04*

U.S. Cl. 152—158 **6 Claims**



1. A ring device for a vehicle wheel equipped with a tubeless tire mounted on a one-piece rim with drop center, housed inside said tire and enabling running upon deflation of said tire, said device comprising a plurality of articulated sectors matching at least partially to the shape of the rim, the radially outermost external surface of said ring being distant from the internal surface of the tread of the tire as long as the latter is in its normal operating condition, wherein said ring is made from a composite material of reinforced thermoplastic resin shaped so as to have a base portion positioned to come into contact with the rim drop center and a stop lip extending from the base portion and positioned for holding a first bead of the tire in position, the other bead of the tire being subjected to the action of an elastomer made beadlock provided on the diametrical face of the ring opposite that carrying the stop lip, the articulated sectors being assembled together by mechanical fixing means providing positioning of the assembly of the ring and during actuation thereof.

5,186,772

RUN-FLAT TIRE AND RIM ASSEMBLIES FOR ATV

Eiji Nakasaki, Kakogawa, and Yasuo Igarashi, Kawanishi, both of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Continuation of Ser. No. 229,497, Aug. 8, 1988, abandoned, which is a continuation-in-part of Ser. No. 935,261, Nov. 26, 1986, abandoned. This application Oct. 17, 1990, Ser. No. 598,812

Claims priority, application Japan, Nov. 30, 1985, 60-269920

Int. Cl.[5] B60C *15/024*

U.S. Cl. 152—516 **10 Claims**

1. A run-flat tire and rim assembly comprising:

(A) a run-flat tire having

a pair of beads each provided with a bead core and a bead apex extending radially outwardly from said bead core and having a radially inwardly protruding toe,

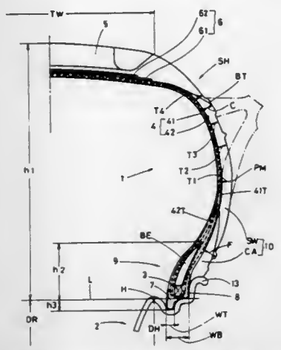
a carcass ply of cords extending from one bead to the other bead and turned up around said bead cores at both of its edge portions, and

a tread and a pair of sidewalls disposed outside said carcass ply so as to form a rubber layer extending from one bend to the other bead thereof, a shoulder being formed at the intersection of said tread with each of said sidewalls, the shoulder including a buttress portion;

(B) a rim having

VOL 1147 ISS 3 FE 16 1993 UMI

a pair of bead seats on which said beads are located,
a well located between said bead seats,
a flange extending radially outwardly from the axially outer edge of each said bead seat,
a circumferentially extending groove provided in each said bead seat with which said toe is engaged, and
a pair of circumferentially extending protrusions, one of said protrusions being located axially between said well and each said groove of each of said bead seats, the apex

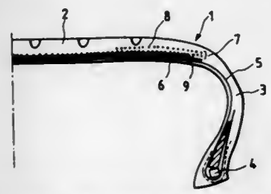


of each said protrusion extending radially outward from the central axis of said rim to a greater extent than said bead seat associated therewith;
(C) the height of the radially outer end of each bead apex from a bead base being in a range of 15% to 30% of the tire section height; and
(D) the thickness of the rubber layer in a region on each side of the tire from said bead to the buttress portion being at least 10 times the diameter of the carcass ply cord.

5,186,773
PNEUMATIC RADIAL TIRE FOR PASSENGER CARS WITH SPECIFIED SPACING OF TREAD AND BAND JOINTS

Masahiro Oku, Osaka; Kazumitsu Iwamura, and Kiichiro Kakumu, both of Hyogo, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Japan

Continuation-in-part of Ser. No. 436,698, Nov. 15, 1989, abandoned. This application Jan. 22, 1991, Ser. No. 643,904
Claims priority, application Japan, Nov. 21, 1988, 63-292412
Int. Cl.[5] B60C *9/00, 9/18*
U.S. Cl. 152—531 **5 Claims**

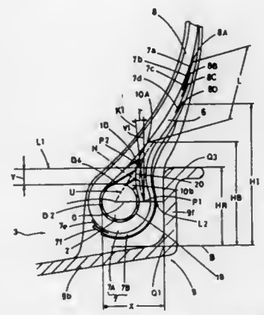


1. In a pneumatic radial tire for passenger cars which has a tread, a steel belt composed of at least two superposed plies of a steel cord layer made of a parallel array of steel cords and a reinforcement structure made of organic fiber cords which is placed radially outward of the steel belt, the improvement wherein said reinforcement structure is composed of a full band reinforcement layer that covers the whole width of the steel belt and an edge band reinforcement layer that is placed either between the full band reinforcement layer and the steel belt or between the full band reinforcement layer and the tread to cover each edge of that steel belt, and wherein the circumferential location of the joint area of the full band reinforcement layer and the joint area of the tread forms an angle of 150° to 210° therebetween, and the joint area of the edge band reinforcement layer is circumferentially located between the joint area of said tread and that of the full band reinforcement layer within the 150° to 210° angle to form an angle of not less than 30 degrees with each of the joint areas of the tread and the full band reinforcement layer with respect to the central tire axis.

5,186,774
HEAVY DUTY RADIAL TIRE WITH DEFINED CARCASS TURNUP CURVATURE

Kiyoshi Ueyoko, 2-10-2, Fukaeminami, Higashinari-ku, Osaka-shi, Osaka-fu; Tsuneyuki Nakagawa, 4-6-10, Konnancho, Higashinada-ku, Kobe-shi, Hyogo-ken, and Yasuyoshi Mizukoshi, 9, Oone, Wakabayashi-higashicho, Toyota-shi, Aichi-ken, all of Japan

Division of Ser. No. 388,056, Aug. 1, 1989. This application May 3, 1991, Ser. No. 695,109
Claims priority, application Japan, Aug. 16, 1988, 63-204512; Aug. 16, 1988, 63-204513
Int. Cl.[5] B60C *15/00*
U.S. Cl. 152—539 **1 Claim**



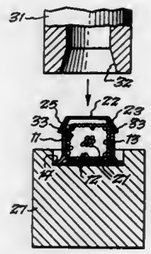
1. A tire and rim assembly comprising a radial tire and a rim on which said tire is mounted,
said rim comprising
a pair of bead seats, and
a flange extending radially outwardly from the axially outer edge of said bead seat, said flange having a radially outer edge Q3; and
said tire comprising
a pair of bead portions, each said bead portion having a bead core disposed therein,
a tread portion having a pair of tread edges,
a pair of sidewall portions, each of said sidewall portions extending between one of said tread edges and one of said bead portions,
a carcass composed of at least two plies of organic fiber cords arranged radially at an angle of 90 to 75 degrees to the equatorial plane of said tire extending across said bead portions and turned up around each said bead core from the axially inside to the outside thereof to form a pair of turned up portions and one toroidal main portion,
a pair of bead apexes, each of said bead apexes corresponding to each of said bead cores, each of said bead apexes being positioned between said main portion and one of said turned up portions,
said turned up portion of the carcass ply adjacent to the bead core directly contacting with said main portion in a predetermined range L and said turned up portion of the remaining at least one carcass ply having a radially outer edge, said radially outer edge terminating in said range L,

said turned up portion being curved axially inwardly such that the mid-thickness line N thereof extends between two points P1 and P2 and passes through axially inside a straight line P1–P2 drawn between said two points P1 and P2, wherein
the point P1 is an intersection between the mid-thickness line N and a straight line L2 drawn from the center of gravity G of said bead core in parallel to the axial direction of said tire, and the point P2 is an intersection between a straight line L1 drawn in parallel to the axial direction of said tire from said radially outer edge Q3 of said flange and a straight line K1 drawn from the point P1 to incline axially inwardly at an angle (alpha) of 0 to 20 degrees with respect to a radial line V1 drawn from the point P1,
the radially outer edge of each said bead apex extends radially outwardly from said bead core beyond said radially outer edge Q3 of said flange, but not beyond said radially outer edge 8D of the axially outermost ply of said turned up portion of said remaining at least one carcass ply,
an annular tread disposed radially outside said carcass to define a tread portion, and
a breaker composed of at least two plies of cords disposed between said tread and said carcass.

5,186,775
METHOD OF FABRICATION OF A CONTAINER FOR BULK MATERIAL

John S. Cullen, 82 Meadow Rd., Buffalo, N.Y. 14216; Samuel A. Incorvia, 114 Joseph Dr., Tonawanda, N.Y. 14150; Christopher S. Nigon, 27 Foxmeadow La., Orchard Park, N.Y. 14127, and Frederick A. Boczkowski, 685 Englewood Ave., Tonawanda, N.Y. 14223

Division of Ser. No. 366,128, Jun. 14, 1989, Pat. No. 5,005,763, which is a continuation-in-part of Ser. No. 253,553, Oct. 5, 1988, abandoned. This application Feb. 4, 1991, Ser. No. 650,192
Int. Cl.[5] B65B *7/00*
U.S. Cl. 156—69 **12 Claims**

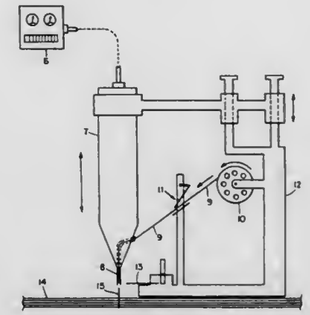


1. A method of attaching a membrane across an opening comprising the steps of providing a member with an annular deformable wall having an outer surface and an end surface and a first edge portion on said outer surface proximate said end surface and extending transversely thereto, an opening within said end surface, providing a membrane of larger size than said opening and said end surface, a second edge portion on said membrane, placing said membrane across said end surface with an outer portion of said second edge portion lying outwardly beyond said end surface, applying a sealing die with a tapered opening to said first edge portion and said outer portion of said second edge portion to simultaneously deform and seal together said first edge portion and said outer portion of said second edge portion into a shape which is complementary to said tapered opening of said die, and applying a second die with a tapered opening of lesser slope to said outer portion of said second edge portion to trim off any flash existing on said second edge portion after the application of said sealing die.

5,186,776
COMPOSITE LAMINATE TRANSLAMINAR REINFORCEMENT APPARATUS AND METHOD

Joseph S. Boyce, Hanover, Mass.; James P. Ross, Hudson, N.H.; Stephen C. Jens, Ashland, and David A. Evans, Chelmsford, both of Mass., assignors to Foster-Miller, Inc., Waltham, Mass.

Continuation of Ser. No. 520,210, May 7, 1990, abandoned. This application Jul. 17, 1992, Ser. No. 915,789
Int. Cl.[5] B32B *31/16, 7/08*
U.S. Cl. 156—73.2 **1 Claim**



1. A method of inserting a thermally stable reinforcement fiber into a composite laminate for z-axis reinforcement of the laminate, comprising:
providing an elongated, hollow-core needle;
ultrasonically vibrating the needle;
inserting said vibrating needle transversely into a composite laminate to both heat and soften the composite laminate while nudging the composite fibers out of the needle's insertion path to effect a tunnel for guiding the fiber into the laminate;
feeding a reinforcement fiber axially into the hollow core of the needle before, during or after insertion of the needle into the composite laminate to insert the fiber into the laminate;
inhibiting the retraction of the reinforcement fiber from its position in the composite laminate; and
retracting the needle and cutting off the reinforcement fiber leaving the fiber embedded in the laminate to bond with the heated surrounding composite laminate.

5,186,777
PROCESS FOR THE MANUFACTURE OF A COMPOSITE MOLDED STRUCTURE, AND ESPECIALLY OF A SKI

Jacques Perenon, Voiron; Maurice Pichon, La Murette; Henri C. Deborde, Bilieu Charavines, and Francois Jodelet, Voiron, all of France, assignors to Skis Rossignol S.A., France

Filed Nov. 16, 1990, Ser. No. 614,502
Claims priority, application France, Nov. 23, 1989, 89 15673
Int. Cl.[5] B32B *5/20;* **B29C** *67/22*
U.S. Cl. 156—79 **5 Claims**

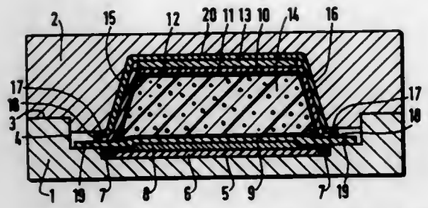
1. A process for manufacturing a ski from substantially flat stock materials, said ski having a distinct cross-sectional shape and consisting of a plastic foam core and upper and lower half-casings formed on respective upper and lower peripheral surfaces of said plastic foam core, said upper half-casing unitarily forming upper and side surfaces of the ski, said process comprising:
arranging in a lower portion of a mold a first substantially flat sub-assembly which forms said lower half-casing;
arranging in said mold a second substantially flat subassembly which forms said upper half-casing;
arranging at least one flexible plastic membrane between said first sub-assembly and said second sub-assembly, said

VOL 1147 ISS 3 FE 16 1993 UMI

at least one membrane being adherable to said plastic foam core and to said half-casings;

closing said mold, such that when said mold is closed, said at least one flexible plastic membrane forms a sheath within said mold between the first and second sub-assemblies;

pressure injecting into said sheath reactants which react to form a foam which expands in situ, until said sheath sub-



stantially fully urges the sub-assemblies against upper and lower inner surface walls of the respective upper and lower portions of said mold, wherein said edges of said upper sub-assembly slide within said mold to allow the sub-assemblies to be urged substantially fully against inner surface walls of said mold;

cooling all contents within the mold to form said ski; and

opening the mold to remove said ski.

5,186,778

CYLINDRICAL MEMBER REMOVAL AND TRANSFER METHOD

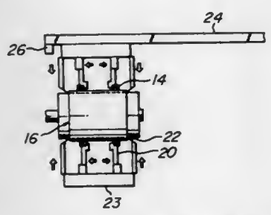
Yukitaka Okafuji, Kodaira, and Tatsuo Waki, Kuroiso, both of Japan, assignors to Bridgestoue Corporation, Tokyo, Japan

Filed Mar. 22, 1991, Ser. No. 673,556

Claims priority, application Japan, Mar. 27, 1990, 2-75621

Int. Cl.[5] B29D *30/30*

U.S. Cl. 156—126 **2 Claims**



1. A method of removing a cylindrical member from a radially expansible and contractible band-forming drum, and transferring the cylindrical member to a subsequent station, said cylindrical member including a cylindrical laminate structure which has been prepared by winding tire constituent elements in the form of an inner liner and a carcass ply around the band-forming drum, and a pair of bead rings spaced from each other and fixed to and held at predetermined positions on outer circumference of said laminate structure, wherein the method comprises the steps of:

grasping said bead rings of the cylindrical member while maintaining said predetermined distance between the bead rings, without displacing the bead rings before the band-forming drum is contracted to decrease its diameter; said step of grasping performed by providing holding pawls for holding and grasping the bead rings, reducing axial distance between the holding pawls and inserting them radially inwardly into a space between the bead rings without contacting the bead rings, and subsequently moving the holding pawls away from each other axially of the cylindrical member into abutment with the bead rings by providing a carrier member for mounting said holding pawls thereon, and slightly moving the carrier member for an adjustment axially of the cylindrical member while axially moving the holding pawls away from each other into abutment with the bead rings, thereby allowing the holding pawls on both sides to properly engage and grasp the bead rings by;

slightly expanding and holding at least one axial end of the cylindrical member on its side which is close to said subsequent station; and

thereafter contracting the band-forming drum to decrease its diameter allowing the cylindrical member to be formed from the band-forming drum in its axial direction.

5,186,779

METHOD OF MAKING AN ELASTIC WAISTBAND WITH RELEASABLY SECURED DRAWSTRING

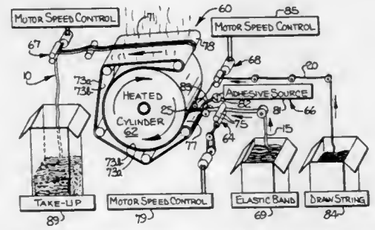
Robert W. Tubbs, Shelby, N.C., assignor to Elastex, Inc., Asheboro, N.C.

Division of Ser. No. 396,529, Aug. 21, 1989, Pat. No. 5,040,244.

This application Apr. 15, 1991, Ser. No. 685,621

Int. Cl.[5] A41D *27/00;* **B32B** *31/00*

U.S. Cl. 156—161 **12 Claims**



1. A method of releasably securing a drawstring to a band of elastic material for use in garments having an elastic waistband and a drawstring, said method comprising directing an elastic band in a predetermined path of travel in a stretched condition and in a heat transferring relationship around a periphery of a rotating heated cylinder, simultaneously depositing a releasable heat curable adhesive to a medial lengthwise extending portion of the elastic band prior to movement of the elastic band into heat transfer relationship with the heated cylinder, directing a non-elastic stretchable drawstring in a relaxed condition into engagement with the deposited adhesive so as to be carried by the elastic band in a path of travel around the rotating cylinder, curing the deposited heat curable adhesive as it is carried by the elastic band around the heated cylinder and directing the elastic band with the drawstring releasably secured thereto away from the heated cylinder, said drawstring, upon relaxation of the elastic band, being in a lengthwise-bulked condition.

5,186,780

METHOD OF MANUFACTURING TRANSMISSION TYPE SCREEN

Kenichi Sakunaga, Toyama, and Mizuo Okada, Yokohama, both of Japan, assignors to Mitsubishi Rayon Co., Tokyo, Japan

Filed Nov. 27, 1989, Ser. No. 441,385

Claims priority, application Japan, Nov. 28, 1988, 63-300064; Nov. 29, 1988, 63-301690

The portion of the term of this patent subsequent to Jun. 9, 2009, has been disclaimed.

Int. Cl.[5] G03B *21/60*

U.S. Cl. 156—167 **10 Claims**

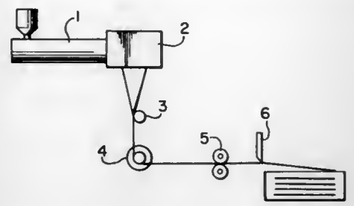
1. A method of manufacturing a transmission type screen having front and rear surfaces, wherein the screen receives light at said rear surface and refracts light at said front surface, comprising the steps of

(a) spinning a multiplicity of transparent plastic strands in a

melt spinning manner, each of said transparent plastic strands having a non-circular cross-sectional shape;

(b) aligning the transparent plastic strands adjacent to each other; and

(c) welding the transparent plastic strands together at their side surfaces to form a screen body, wherein the transparent plastic strands are aligned such that each strand forms a lenticular lens unit on the front and rear surfaces of the screen body and wherein light is collected by the lenticular lens units on the rear surface, transmitted through the screen body and refracted by the lenticular lens units on the front surface.



5,186,781

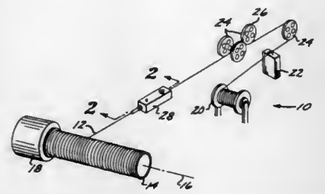
APPLICATION OF ADHESIVE DURING OPTICAL FIBER CANISTER WINDING

Thomas J. Verville, Tucson, Ariz., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 370,527, Jun. 23, 1989, abandoned, Continuation-in-part of Ser. No. 275,291, Nov. 23, 1988, abandoned. This application Jan. 24, 1991, Ser. No. 645,154

Int. Cl.[5] B65H *55/04*

U.S. Cl. 156—169 **2 Claims**



1. A continuous process for fabricating an optical fiber canister, comprising the steps of:

providing an optical fiber;

providing a support upon which the optical fiber is to be wound;

passing the optical fiber continuously through applicator means for coating the optical fiber with a uniform layer of adhesive consisting of a mixture of polydimethylsiloxane and 3,3,3-trifluoropropylmethylsiloxane; and

winding the optical fiber continuously onto the support after it has passed through the applicator means.

5,186,782

METHOD FOR HIGH SPEED LABELLING OF DEFORMABLE SUBSTRATES

Melvin S. Freedman, Beachwood, Ohio, assignor to Avery Denison Corporation, Pasadena, Calif.

Filed Oct. 17, 1990, Ser. No. 599,307

Int. Cl.[5] B29C *47/00;* **B32B** *31/14*

U.S. Cl. 156—244.11 **13 Claims**

1. A method for the labelling of workpieces that present deformable substrates to which die-cut heat-set polymeric-film labels are applied at high speeds by a labelling machine comprising the steps of extruding in film form a charge of polymeric material for label stock, hot-stretching and heat-setting said extruded film, the degree of hot-stretching in the cross direction being zero or greater, said step of hot-stretching including selecting a differentiation between hot-stretching in the machine direction and hot-stretching in the cross direction such that the degree of hot-stretching in the machine direction substantially exceeds the degree of hot-stretching in the cross direction, such that the degree of hot-stretching in the machine direction stiffens the heat set-film to a stiffness of between about 20 and 45 Gurley, and such that stiffness of the heat-set film in the cross direction is less than 0.75 times the machine



direction stiffness, combining said hot-stretching heat-set film with an adhesive layer and a carrier, die-cutting said film into a series of individual heat-set-polymeric-film labels carried on said carrier, and dispensing said heat-set-polymeric-film labels past a peel-back edge and onto workpieces that present deformable substrates on which the labels are applied at a higher line speed while maintaining conformability than is achievable for the same film on the same deformable substrates using the same labelling machine, but without such machine and cross direction stiffness differential.

5,186,783

METHOD OF BONDING WITH ADHESIVE COMPOSITION CONTAINING A THIOCARBOXYLIC ACID COMPOUND

Mitsunobu Kawashima, and Ikuo Omura, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Division of Ser. No. 368,799, Jun. 20, 1989, abandoned. This application Feb. 28, 1991, Ser. No. 662,513

Claims priority, application Japan, Jun. 20, 1988, 63-152491; Aug. 8, 1988, 63-198623

Int. Cl.[5] C09J *5/02, 5/00*

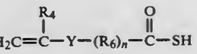
U.S. Cl. 156—307.3 **1 Claim**

1. A method of bonding a metal or alloy to another material, comprising:

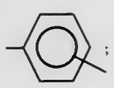
(i) applying an adhesive composition to said metal or alloy to obtain an adhesive coated metal or alloy; and

(ii) contacting said another material with said adhesive coated metal;

wherein said adhesive composition comprises a polymerizable thiocarboxylic acid or derivative thereof of the formula:



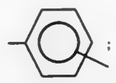
wherein R_4 is hydrogen or methyl; R_6 is an organic group of 1 to 40 carbon atoms which can contain —OH, —C≡N, —NH_2, —SO_3H, halogen, —COOH, —CSSH or —COSH; Y is —COO—, —OOC—, —CONH—, —COS—, —SOC—, —S— or



with the provision that when Y is —COO—, —OOC—,

VOL 1147 ISS 3 FE 16 1993 UMI

—CONH—, —COS—, —SOC— or —S—, n is 1, and when Y is



n is 0 or 1.

5,186,784

PROCESS FOR IMPROVED DOPING OF SEMICONDUCTOR CRYSTALS

Mann-Fu Rau; Faa-Ching M. Wang, both of Plano, and Jimmy D. Kurz, Rockwall, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 20, 1989, Ser. No. 368,561
Int. Cl.[5] C30B *15/04*
U.S. Cl. 156—605 16 Claims

1. A method of forming a doped crystalline body of a group III-V compound semiconductor material, comprising the steps of:

(a) providing a container;

(b) placing in said container each of a group III-V compound semiconductor material, boric oxide a dopant taken from one of group IVB and VIB and a metal having a lower melting temperature than the dopant;

causing said metal to melt in said container prior to melting of said dopant;

(d) causing said boric oxide, said dopant and said semiconductor material to melt in said container; and

(e) pulling a crystal from the melting mixture in said container.

5,186,785

ZONE MELTED RECRYSTALLIZED SILICON ON DIAMOND

Nagappan K. Annamalai, Nashua, N.H., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 5, 1991, Ser. No. 688,637
Int. Cl.[5] C30B *19/00*
U.S. Cl. 156—613 16 Claims



1. A process for fabricating a recrystallized silicon wafer, said process comprising the steps of:

growing a diamond film on a silicon wafer such that the silicon wafer has an exposed outer rim which circumscribes the diamond film;

depositing a polysilicon coating over the diamond film so that the polysilicon coating contacts the rim of the silicon wafer;

recrystallizing the polysilicon coating into a recrystallized layer; and

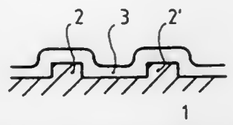
trimming the rim of the silicon wafer to finish thereby the recrystallized silicon wafer.

5,186,786

METHOD FOR DETERMINING THE COMPLETE ELIMINATION OF A THIN LAYER ON A NON PLANAR SUBSTRATE

Jean Galvier, Saint Martin D'Heres; Philippe Gayet, Saint Vincent De Mercuze, and Annie Tissier, Saint Ismier, all of France, assignors to France Telecom (CNET), Paris, France

Filed Jul. 19, 1991, Ser. No. 732,192
Claims priority, application France, Jul. 20, 1990, 90 09467
Int. Cl.[5] H01L *21/306*
U.S. Cl. 156—626 6 Claims



1. A method for determining the complete elimination of a thin layer deposited on a substrate, comprising the steps of:

providing on an area of the substrate an optical diffraction grating having a diffraction pattern; depositing said thin film on the substrate wherein said thin layer also covers this diffraction grating; etching the thin layer;

illuminating the grating with a monochromatic light beam; and

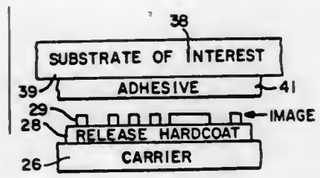
observing the evolution of the diffracted light during the etching of the thin layer, in order to determine the moment when the material of the thin layer is entirely removed.

5,186,787

PRE-IMAGED HIGH RESOLUTION HOT STAMP TRANSFER FOIL, ARTICLE AND METHOD

Roger W. Phillips, 466 Jacqueline Dr., and Kraig R. Willison, 3148 Claremont Dr., both of Santa Rosa, Calif. 95405

Division of Ser. No. 453,046, Dec. 12, 1989, Pat. No. 5,002,312, which is a continuation of Ser. No. 189,620, May 3, 1988, abandoned. This application Mar. 25, 1991, Ser. No. 674,574
Int. Cl.[5] B44C *1/22, 1/165*
U.S. Cl. 156—631 6 Claims



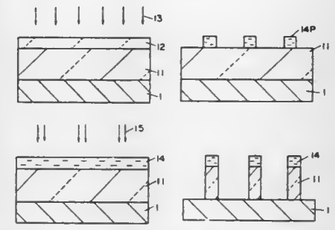
1. In a method for producing a high resolution image of graphic quality on a substrate, providing a carrier, depositing a release coat on the carrier, depositing a vacuum deposited coating on the release coat, etching an image of graphic quality in the vacuum deposited coating to form edges with voids therebetween, placing an adhesive either on the vacuum deposited coating or on the substrate, bringing the substrate and the carrier into engagement with each other so that the image carried by the carrier comes into engagement with the adhesive, applying heat and pressure to the carrier and the vacuum coating carried thereby to cause the vacuum deposited coating having the etched image therein to be bonded to the adhesive whereby the edges are encapsulated and separating the carrier from the vacuum deposited coating.

5,186,788

FINE PATTERN FORMING METHOD

Kazuhiko Hashimoto, Moriguchi; Kazuhiro Yamashita, Amagasaki, and Noboru Nomura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 224,008, Jul. 25, 1988, abandoned. This application Feb. 12, 1991, Ser. No. 655,237
Claims priority, application Japan, Jul. 23, 1987, 62-183973; Apr. 28, 1988, 63-106301
Int. Cl.[5] G03C *5/00*
U.S. Cl. 156—643 4 Claims



1. A method for forming a fine pattern of a double-layered photoresist comprising the steps of:

a. coating a semiconductor substrate with a high molecular weight organic resist as a lower resist of said double-layered photoresist;

b. coating said high molecular weight organic resist with a positive resist as a upper resist of said double-layered photoresist, wherein said positive resist is insoluble in a developer;

c. irradiating an entire surface of said positive resist with at least one of H and Si ions in batch at a dosage, whereby said positive resist becomes soluble in said developer;

d. exposing a portion of said positive resist selectively to electron beams or focused ion beams at a dosage, whereby the selectively exposed portion of said positive resist again becomes insoluble in said developer and has high dry etch resistance;

e. developing said positive resist to form a positive-to-negative reversal pattern of said positive resist; and

f. etching said high molecular weight organic resist by using said positive resist pattern as a mask.

5,186,789

METHOD OF MAKING A CANTILEVER STYLUS FOR USE IN AN ATOMIC FORCE MICROSCOPE

Nobuhiro Tsuda; Hirofumi Yamada, both of Tukuba; Hiroyuki Kado, Osaka, and Takao Tohda, Ikoma, all of Japan, assignors to Agency of Industrial Science and Technology, Tokyo and Matsushita Electric Industrial Co., Ltd., Osaka, both of, Japan

Filed Nov. 29, 1991, Ser. No. 799,993
Claims priority, application Japan, Nov. 29, 1990, 2-334024
Int. Cl.[5] H01L *21/306;* B44C *1/22;* C03C *15/00;* C23F *1/00*
U.S. Cl. 156—659.1 4 Claims

1. A method of making a cantilever stylus for use in an atomic force microscope, which comprises the steps of:

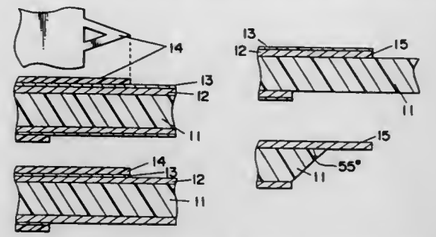
forming a first film on a substrate;

forming a second film of metallic material on an external surface of said first film, said metallic material being different from a material of said first film;

forming a photoresist film on an external surface of said second film by making use of a photolithography technique;

performing etching with respect to said second film with only a portion thereof covered with said photoresist film left on said first film; and

further performing etching with respect to said first film with said second film being used as a resist film so that said



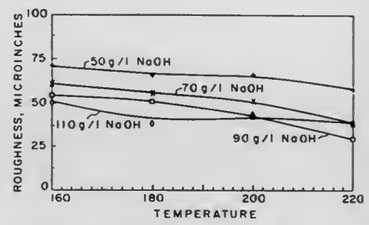
first film is configured into a cantilever stylus suited for use in an atomic force microscope.

5,186,790

CHEMICAL MILLING OF ALUMINUM-LITHIUM ALLOYS

John H. Powers, Lower Burrell, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Nov. 13, 1990, Ser. No. 611,780
Int. Cl.[5] H01L *21/00*
U.S. Cl. 156—665 19 Claims



1. A method of etching an aluminum base alloy product, wherein the product has a roughness height rating of less than 125 microinches, the method comprising the steps of:

(a) providing an etch bath based on a liter of bath comprised of:

(i) 30–110 gms/liter sodium hydroxide;

(ii) 15–150 gms/liter aluminum;

(iii) at least 20 gms/liter sodium sulphide; and

(iv) at least 20 gms/liter alkanolamine, the remainder water;

(b) maintaining said bath at a temperature range of 215° to 225° F.;

(c) etching said product in said bath; and

(d) rinsing said product after etching to provide a product having a high level of smoothness.

5,186,791

APPARATUS FOR THICKENING PULP AND PAPER STOCK

Peter Seifert, and David E. Chupka, both of Middletown, Ohio, assignors to The Black Clawson Company, Middletown, Ohio

Division of Ser. No. 692,232, Jan. 29, 1991, which is a continuation of Ser. No. 264,118, Oct. 28, 1988, abandoned. This application Mar. 5, 1992, Ser. No. 846,168
Int. Cl.[5] D21C *9/18*
U.S. Cl. 162—56 2 Claims

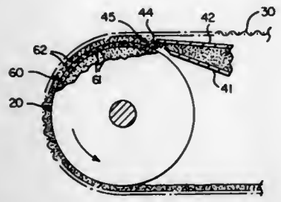
1. The method of thickening a suspension of solid particles, including papermaking fibers, of predetermined maximum size in liquid which comprises the steps of:

(a) training an endless wire belt loop in wrapping relation around a limited angular portion of a roll rotatably

mounted within said belt loop with the portion of the surface thereof not wrapped by said belt exposed,

(b) said roll comprising means defining a discontinuous cylindrical outer surface enclosing a chamber and having multiple openings therethrough which are of sufficiently greater flow area than said maximum particle size to provide for free flow of said suspension therethrough both into and out of said chamber,

(c) directing a jet flow of said suspension from a headbox located outside said roll toward the wedge zone defined by said exposed discontinuous surface of said roll and a portion of said belt approaching said roll whereby at least some of said suspension including all solid particles therein



enters said chamber within said roll through said openings in said exposed surface portion,

(d) driving said roll and said wire at a predetermined surface speed sufficiently high to effect the development of centrifugal force causing all of said suspension in said roll chamber to be discharged therefrom through said openings in the portion of said discontinuous surface thereof wrapped by said belt and also causing the liquid component of said suspension to be expressed through the portion of said belt wrapping said surface while said solid particles in said suspension which are retained by said belt form a mat of pulp on the inner surface of said belt,

(e) collecting said thickened mat from said belt, and

(f) removing said collected pulp from within said belt.

5,186,792

APPARATUS FOR MAKING DRY SHEET-LIKE SAMPLE OF SOLID PARTICLES FROM A SUSPENSION

Masahiro Nishi, Shizuoka, Japan, assignor to Kyoritsu Electric Corporation, Japan

Division of Ser. No. 496,702, Mar. 21, 1990, Pat. No. 5,069,753. This application Aug. 30, 1991, Ser. No. 753,161

Claims priority, application Japan, Jul. 19, 1989, 1-186374; Jul. 19, 1989, 1-186375; Jul. 19, 1989, 1-186376; Jul. 19, 1989, 1-186377; Jul. 19, 1989, 1-186378; Jul. 19, 1989, 1-186379

Int. Cl.[5] **D21F** *13/00;* **G01N** *5/04*

U.S. Cl. 162—263 **18 Claims**



1. An apparatus for making a dry sheet-like sample of solid particles from a suspension, comprising:

(a) a sampling unit including a sampling mechanism having a hopper connected in branched fashion to a main pipe or a storage tank for sampling a part of the suspension as it flows through the main pipe or while it is retained in the storage tank, and a water sprinkling mechanism for sprinkling water against said sampling mechanism and an inside surface of said hopper for removing the suspension adhering to said sampling mechanism and said inside surface of said hopper;

(b) a wet sheet-like intermediate sample forming unit including a tank for holding therein the sampled suspension, a filter removably disposed i n said tank, means for stirring the sampled suspension held in said tank, and means for dewatering the sampled suspension from the tank to thereby form a wet sheet-like intermediate sample of solid particles deposited on said filter;

(c) an overturning conveyor unit structured for conveying said filter and the wet sheet-like intermediate sample from a position within said tank to a drying station while turning said filter and the wet sheet-like intermediate sample upside-down onto a lower hot plate of the drying station;

(d) a sample removing unit for removing the wet sheet-like intermediate sample from said filter; and

(e) a dryer unit disposed at said drying station and including an upper hot plate and said lower hot plate movable toward and away from each other to compress the wet sheet-like intermediate sample therebetween and structured for drying the wet sheet-like intermediate sample with heat and pressure, thereby forming a dry sheet-like final sample.

5,186,793

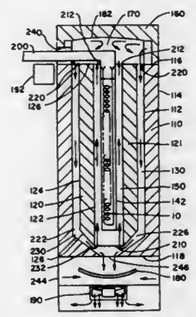
OXYGEN CONCENTRATOR UTILIZING ELECTROCHEMICAL CELL

Gregory A. Michaels, Seven Hills, Ohio, assignor to Invacare Corporation, Elyria, Ohio

Filed Dec. 31, 1990, Ser. No. 636,487

Int. Cl.[5] **C25B** *1/02, 9/00*

U.S. Cl. 204—59 R **56 Claims**



1. An oxygen concentration system for producing oxygen from oxygen-containing gases and mixtures of gases, said system comprising:

an electromechanical oxygen generator, said generator having an outer surface and means for extracting oxygen from the gases by an electromechanical reaction; and,

an inner housing, said inner housing having inner, outer, base, and top surfaces, said generator mounted within said inner housing so that a first passageway is created between said inner surface of said inner housing and an outer surface of said generator, said first passageway having a first inlet near said base surface of said inner housing and having a first outlet near said top surface of said inner housing, said first passageway passing the gases entering said first inlet to said first outlet, the gases exiting said first passageway being in a heat-exchanging relationship with the gases entering said first inlet.

38. A method for extracting oxygen from oxygen-containing gases and mixtures of gases, said method comprising the steps of:

energizing an electrochemical generator, said generator for generating oxygen from the gases upon the application of an electric current;

confining said generating within an enclosed first housing so that a relatively narrow first gap is created between said first housing and said generator;

heating the the gases in said first gap; and,

upwardly transporting the gases in said first gap by placing the gases heated in said first gap in heat-exchanging relationship with gases entering said first gap.

5,186,794

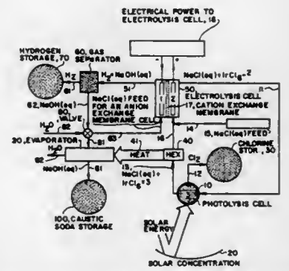
ALKALI METAL HYDROXIDE GENERATION SYSTEM AND THE METHOD THEREFOR

Robin Parker, Miami; Robert Hanrahan, and Avinash Gupta, both of Gainesville, all of Fla., assignors to Solar Reactor Technologies, Inc., Miami, Fla.

Filed Sep. 26, 1990, Ser. No. 589,916

Int. Cl.[5] **C01B** *7/00;* **C25B** *1/02, 1/16*

U.S. Cl. 204—98 **15 Claims**



1. A method of depositing solar energy, comprising the steps of:

using solar photolytic energy to excite a transition metal halide complex in solution with an alkali halide, causing a metal ion-ligand to be photochemically reduced to a lower oxidation state, and halide ions to be oxidized to molecular halogen;

using solar thermal energy to heat said solution; and

continuously removing said molecular halogen from the presence of said photolytic reaction;

whereby said alkali halide solution comprises an anolyte.

10. A solar energy deposition system comprising:

a transition metal halide complex in solution with an alkali metal halide

means for using solar photolytic energy to excite said transition metal halide complex in solution with an alkali halide, causing a metal ion-ligand to be photochemically reduced to a lower oxidation state, and halide ions to be oxidized to molecular halogen;

means for using solar thermal energy to heat said solution; and

means for continuously removing said molecular halogen from the presence of said photolytic reaction; whereby said alkali halide solution comprises an anolyte.

5,186,795

TWO-STAGE PROCESS FOR ELECTROLYTIC GRAINING OF ALUMINUM

Susan C. Hall, Fort Collins, Colo., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 22, 1991, Ser. No. 733,569

Int. Cl.[5] **C25F** *3/04*

U.S. Cl. 204—129.4 **21 Claims**

1. A two-stage process for the electrolytic graining of the surface of an article comprised of aluminum, or an aluminum alloy, to achieve a fine uniform grain that is essentially free of pits; in which process said article is immersed in an acidic electrolyte solution while it is subjected to an electric current in successive first and second stages of said process and the application of said electric current is controlled so that D_1:D_2 is in the range of from about 1:1 to about 7:1, t_1:t_2 is in the range of from about 1:2 to about 1:15, Q_1 is less than Q_2, and the total current consumption is in the range of from about 200 to about 5,000 coulombs/dm^2; wherein D_1 and D_2 respectively represent current density in amps/dm^2 in said first and second stages, t_1 and t_2 respectively represent treatment time in seconds in said first and second stages, and Q_1 and Q_2 respectively represent current consumption in coulombs/dm^2 in said first and second stages.

5,186,796

METHOD AND APPARATUS FOR ELECTROLYTIC ETCHING OF METALS

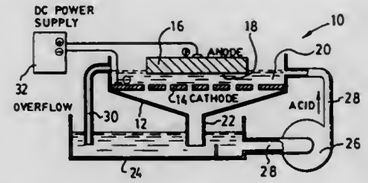
John H. Kelly, Burlington, and Leonard E. Guest, Binbrook, both of Canada, assignors to Stelco Inc., Hamilton, Canada

Continuation-in-part of Ser. No. 519,394, May 4, 1990, Pat. No. 5,061,352. This application Aug. 14, 1991, Ser. No. 745,276

Claims priority, application Canada, Jun. 5, 1989, 601708

Int. Cl.[5] **C25F** *1/00, 3/02, 7/00*

U.S. Cl. 204—129.35 **16 Claims**



1. A method of effecting etching of a generally rectangular sample having a smooth surface to be etched to determine the internal quality of a mass of metal from which the sample is removed, which comprises:

loading said sample in a sample carrier with the smooth surface facing downwardly;

transporting said sample in said carrier through a rectilinear path from a loading station successively through an etch station and a wash station to an unload station,

applying a positive electrical potential to said sample and a negative electrical potential to an elongate bar extending transverse to said rectilinear path of travel in said etch station while said sample is transported through said etch station,

activating a flow of aqueous etchant over the smooth surface to be etched when said sample is in said etch station, whereby a current passes between said bar and said surface to be etched and metal is etched from said surface,

activating a flow of cleaning solution over the etched surface of sample when said sample is in said wash station,

deactivating said flow of aqueous etchant when said sample exits said etch station,

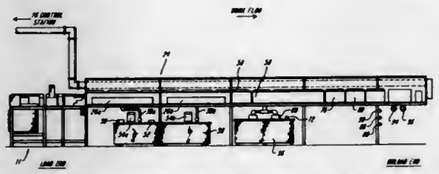
deactivating said flow of cleaning solution and when said sample exits said wash station, and

unloading said sample from said sample carrier in said unloading station.

VOL 1147 ISS 3 FE 16 1993 UMI

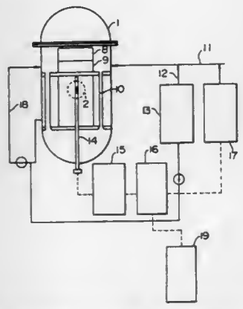
VOL 1147 ISS 3 FE 16 1993 UMI

5,186,797
METHOD AND SYSTEM FOR REMOVING RESIN BLEED FROM ELECTRONIC COMPONENTS
Heinz W. Schlenker, Northridge; Louis J. Hirbour, Yorba Linda, and Daniel J. Gramarossa, Oakhurst, all of Calif., assignors to Future Automation, Inc., Simi Valley, Calif.
Filed Feb. 13, 1991, Ser. No. 640,053
Int. Cl.[5] C25F *5/00, 7/00*; C25D *17/28*
U.S. Cl. 204—146 **6 Claims**



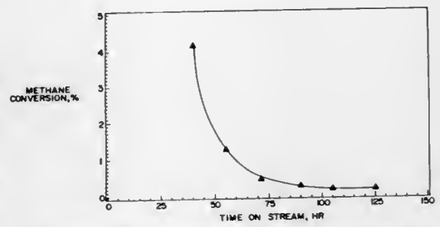
3. A method for removing resin bleed and other material from the leadframe of an encapsulated electronic component, said method comprising the steps of:
loading said encapsulated electronic component onto a transporting member for transporting said encapsulated electronic component through the steps of said method;
causing formation of hydrogen gas on a surface of said leadframe as said encapsulated electronic component is passed through a resin bleed-loosening solution in order to electrolytically loosen said resin bleed on the leadframe of said encapsulated electronic component;
rinsing said encapsulated electronic component after said encapsulated electronic component has been passed through said resin bleed-loosening solution comprised of dipotassium phosphate heated to a temperature of approximately 160° F. to remove said solution and said resin bleed from said encapsulated electronic component.

5,186,798
SOLUTION QUANTITATIVE ANALYSIS APPARATUS, QUANTITATIVE ANALYSIS METHODS, AND NUCLEAR REACTOR WATER QUALITY CONTROL SYSTEM
Masanori Sakai; Katsumi Ohsumi, both of Hitachi; Noriyuki Ohnaka; Eiji Kikuchi, both of Katsuta; Katsumi Mabuchi, and Takuya Takahashi, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Division of Ser. No. 281,212, Dec. 8, 1988, Pat. No. 4,937,038.
This application Apr. 26, 1990, Ser. No. 514,970
Claims priority, application Japan, Dec. 11, 1987, 62-311969; May 17, 1988, 63-119125
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—153.1 **20 Claims**



1. A solution quantitative analysis apparatus comprising:
an electrolytic cell for electrolyzing a solution containing a plurality of chemical species to be analyzed, the electrolytic cell including a working electrode, a counter electrode, and a reference electrode;
means for producing a plurality of mutually different voltage-time waveform signals corresponding to a plurality of mutually different voltammetry modes equal in number to the plurality of chemical species to be analyzed;
means for separately applying the plurality of voltage-time waveform signals to the working electrode, thereby performing the plurality of voltammetry modes, wherein each of the plurality of voltage-time waveform signals electrolyzes the solution, thereby producing a respective electrolysis current having one of a limiting current and a peak current depending on the corresponding voltammetry mode;
means for measuring the one of a limiting current and a peak current of the electrolysis current produced by each of the plurality of voltage-time waveform signals; and
means for calculating respective concentrations of the plurality of chemical species to be analyzed on the basis of the measured ones of a limiting current and a peak current.

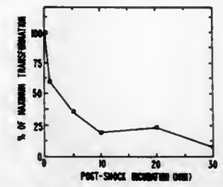
5,186,799
METHOD FOR IMPROVING THE ACTIVITY MAINTENANCE OF A PLASMA INITIATOR
William J. Murphy, Brights Grove, Canada, assignor to Exxon Research and Engineering Company, Florham Park, N.J.
Continuation of Ser. No. 457,621, Dec. 27, 1989, abandoned.
This application May 3, 1991, Ser. No. 695,199
The portion of the term of this patent subsequent to Dec. 4, 2007, has been disclaimed.
Int. Cl.[5] C07C *7/00*
U.S. Cl. 204—157.15 **10 Claims**



1. A method for improving the activity maintenance of at least one plasma initiator during upgrading of a hydrocarbon feedstock in a reaction zone by using microwave radiation which comprises adding molecular hydrogen to the reaction zone for a period time sufficient to ensure that the weight ratio of carbon (in the molecules in contact with the plasma initiator) to hydrogen is less than 6:1 during upgrading.

5,186,800
ELECTROPORATION OF PROKARYOTIC CELLS
William J. Dower, San Anselmo, Calif., assignor to Bio-Rad, Laboratories, Inc., Hercules, Calif.
Division of Ser. No. 182,804, Apr. 18, 1988, Pat. No. 4,910,140.
This application Mar. 14, 1990, Ser. No. 493,253
Int. Cl.[5] B01D *57/02*
U.S. Cl. 204—180.1 **7 Claims**

1. A method for increasing the permeability of bacterial cells, said method comprising:
suspending the bacterial cells in a low electrical conductivity solution of at least 1000Ω and at a cell density of at least about 10^9 cells/ml while said cell walls remain intact;
subjecting the cells in the solution of an electric pulse having a field strength of at least about 5 kV/cm for a time period sufficient to permeabilize the cells; and



transferring the cells within 60 seconds after being subjected to the electric pulse to a media capable of supporting growth of the cells.

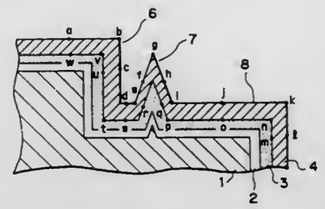
5,186,801
PRODUCTION OF COLOR FILTER
Akira Matsumura, Hirakata; Masashi Ohata, Osaka, and Katsukiyo Ishikawa, Kuze, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan
Filed Aug. 23, 1991, Ser. No. 749,294
Claims priority, application Japan, Aug. 23, 1990, 2-223026
Int. Cl.[5] C25D *13/04*
U.S. Cl. 204—181.1 **5 Claims**



1. A process for preparing a color filter comprising:
(a) forming a transparent electroconductive layer on a substrate,
(b) forming a negative type photosensitive resin layer having a desired color by electrodeposition directly on the transparent electroconductive layer,
(c) exposing the photosensitive resin layer to light through a negative mask having a desired pattern followed by developing to form a patterned color layer, and
(e) effecting the steps (b) and (c) necessary times to form patterned layers having required colors.

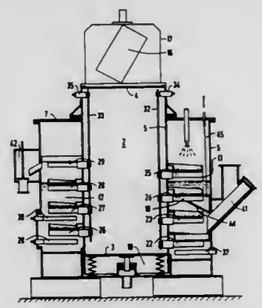
5,186,802
ELECTRO-DEPOSITION COATED MEMBER AND PROCESS FOR PRODUCING IT
Susumu Kadokura, Sagamihara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 21, 1991, Ser. No. 673,073
Claims priority, application Japan, Mar. 22, 1990, 2-69817; Mar. 22, 1990, 2-69818; Mar. 22, 1990, 2-69819; May 9, 1990, 2-117498
Int. Cl.[5] C25D *13/10*
U.S. Cl. 204—181.4 **14 Claims**

5. A process for producing an electro-deposition coated member comprising a housing having on its surface a terraced portion or an angular portion, or both, said housing being provided on a corner of the terraced portion or the angular portion, or both, with an electro-deposition coating film incorporated with conductive particles;
said process comprising the steps of:
immersing said housing in an electro-deposition coating composition containing conductive particles comprising at least one of metallized ceramic powder and a metallized natural mica powder
coating said housing with said electro-deposition coating composition, thereby forming on the surface of said housing an electro-deposition coating film having a surface



roughness from 0.3 μm to 5 μm as the center line average roughness (Ra), a thickness from 7 μm to 40 μm, and used for shielding electromagnetic waves.

5,186,803
DEVICE FOR ELECTROLYTIC SURFACE TREATMENT OF BULK MATERIAL
Siegfried Birkle, Höchstadt/Aisch; Jürgen Fischer, Bergisch Gladbach, and Johann Gehring, Spardorf, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany
PCT No. PCT/EP90/00296, § 371 Date Nov. 6, 1991, § 102(e) Date Nov. 6, 1991, PCT Pub. No. WO90/10740, PCT Pub. Date Sep. 20, 1990
PCT Filed Feb. 21, 1990, Ser. No. 752,675
Claims priority, application European Pat. Off., Mar. 6, 1989, 89103917.4
Int. Cl.[5] C25D *17/28*
U.S. Cl. 204—201 **5 Claims**



1. A device for electrolytic surface treatment of bulk material, comprising: a vibrator conveyor having a conveying trough; a central pipe; supporting stringpieces, for mechanically attaching the conveying trough on the central pipe and for transmitting current to a cathode, said supporting stringpieces forming an electrically conducting contact shaft which is electrically insulated from the central pipe and from electrolyte; and contact bolts for attaching the conveying trough to the supporting stringpieces and for transmitting current from the contact shaft to the bulk material.

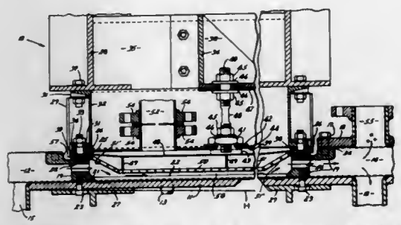
VOL 1147 ISS 3 FE 16 1993 UMI

5,186,804

LIQUID METAL CATHODE ELECTROCHEMICAL CELL

James M. Ford; David W. Cawlfield, and Kenneth E. Woodard, Jr., all of Cleveland, Tenn., assignors to Olin Corporation, Cheshire, Conn.

Filed Sep. 5, 1991, Ser. No. 755,401
Int. Cl.[5] C25B *9/00, 15/08*
U.S. Cl. 204—251 **18 Claims**



9. An electrolytic cell having a flowable liquid metal cathode in a catholyte compartment, an anode, a separator, a catholyte inlet and catholyte outlet for the flow of catholyte into and out of the catholyte compartment in the cell comprising in combination:

(a) a cathode side frame having an obliquely angled lower internal side frame portion and an upper portion, the upper portion being separated from the obliquely angled lower internal portion by the catholyte inlet and catholyte outlet, the obliquely angled lower internal portion contacting and retaining the flowable liquid metal cathode within the catholyte compartment;

(b) an anode side frame sealably connectable to the upper portion of the cathode side frame;

(c) an anode adjacent frame;

(d) a separator contactable with and supportable by the anode and retained in position by the upper portion of the cathode side frame and the anode side frame, the separator further having a major portion thereof positioned in an extended plane between the liquid metal cathode and the anode; and

(e) a gap defined by the flowable liquid metal cathode and the membrane in fluid flow communication with the catholyte inlet and the catholyte outlet through which the catholyte flows, the catholyte entering through the catholyte inlet and exiting through the catholyte outlet at a level above the major portion of the separator in the extended plane.

5,186,805

ELECTROLYTIC DISPENSING DEVICE

Joseph Gross, Moshav Mazor, and Shlomo Zucker, Mihmoret, both of Israel, assignors to S. I. Scientific Innovations Ltd., Kirvat Arie Petah Tikva, Israel

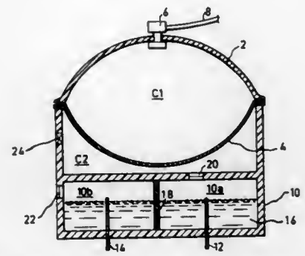
Filed Jan. 21, 1992, Ser. No. 822,798
Claims priority, application Israel, Jan. 30, 1991, 97099
Int. Cl.[5] C25B *1/10, 9/00, 15/08*
U.S. Cl. 204—265 **20 Claims**

1. An electrolytic dispensing device, comprising:

a housing having a displaceable member therein dividing the interior of the housing into a first contractible chamber for receiving a liquid to be dispensed, and a second contractible chamber for receiving a gas to control the rate of dispensing of the liquid from said first chamber;

and an electrolytic cell adapted to contain an electrolyte, said cell including a pair of electrodes connectible to a source of electrical current for generating a gas and for feeding the gas to the second chamber in accordance with the electrical current conducted through the electrolyte via the electrodes;

characterized in that said electrolytic cell includes a partition of an ion-permeable, but gas-impermeable, material separating said two electrodes and effective to permit gas generated at one of said electrodes to be fed to said second



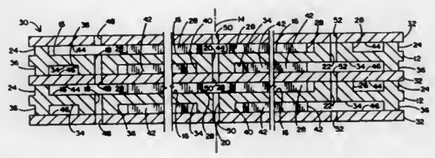
chamber, and to block from said second chamber gas generated at said other electrode.

5,186,806

CERAMIC DISTRIBUTION MEMBERS FOR SOLID STATE ELECTROLYTE CELLS AND METHOD OF PRODUCING

Douglas J. Clark, Ontario; Leo M. Galica, Mira Loma; Robert W. Losey, Lancaster, and Jerry W. Suitor, El Toro, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed Dec. 31, 1990, Ser. No. 636,484
Int. Cl.[5] C25B *9/00*
U.S. Cl. 204—265 **49 Claims**



1. An apparatus for producing a fluid product from a fluid feedstock comprising:

a first electrode member having a first surface which is impervious to fluid flow;

a second electrode member having a second surface which is impervious to fluid flow;

membrane means, which comprises a solid ceramic electrolyte, located between the first surface of the first electrode member and the second surface of the second electrode member, the membrane means having a first surface on one side thereof and a second surface on the opposite side thereof, the first surface of the membrane means facing the first surface of the first electrode member and the second surface of the membrane means facing the second surface of the second electrode member, the distance between the first surface of the membrane means and the second surface of the membrane means being much smaller than the distances across the first surface and the second surface of the membrane means, the membrane means being operable for transporting fluid ions therethrough, the membrane means for allowing the flow of electrical current from the first electrode member to the membrane means, ionic current through the membrane means and electrical current from the membrane means to the second electrode member while preventing the short circuiting of electrical current around the membrane means;

a plurality of ribs on the first surface of either the membrane means or the first electrode member which form first passageways between said first surfaces;

a plurality of ribs on the second surface of either the membrane means or the second electrode member which form second passageways between said second surfaces;

first port means in communication with the first passageways;

second port means in communication with the first passageways; and,

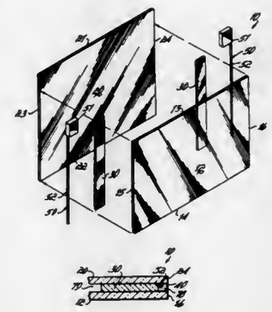
third port means in communication with the second passageways, wherein the first port means, the second port means, and the third port means extend through the first electrode member, the second electrode member and the membrane means in a direction perpendicular to the first surface.

5,186,807

ELECTROPHORESIS GEL SLAB CASSETTES HAVING PULL CORDS AND METHODS

David P. Sanford, Portsmouth; Bruce R. Turner, Fremont, and Richard J. Heim, Exeter, all of N.H., assignors to Erie Scientific Company, Portsmouth, N.H.

Filed Aug. 13, 1991, Ser. No. 744,484
Int. Cl.[5] G01N *27/26;* **B01D** *57/02*
U.S. Cl. 204—299 R **16 Claims**



1. An electrophoresis cassette, comprising:

a front electrically nonconductive flat plate having two faces which are substantially parallel to one another and having top and bottom edges and left and right vertical side edges;

a back electrically nonconductive flat plate having two faces which are substantially parallel to one another and having top and bottom edges and left and right vertical side edges;

a pair of electrically nonconductive spacers for spacing said plates apart and being generally parallel with one another to form a gel slot between said plates;

electrically nonconductive adhesive means for holding said front and back plates in a fixed relationship with each other wherein the faces of the front plate are substantially parallel to the faces of the back plate and the confronting faces of the plates are separated by a distance determined substantially by said spacers to form said gel slot, said adhesive means being positioned along the left and right vertical side edges of said front and back plates and providing a seal between said front and back plates along the left and right vertical side edges thereof; and

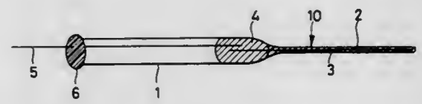
a pull cord assembly for enabling said cassette to be opened, said pull cord assembly comprising a grippable element integrally connected to an electrically nonconductive tear strip, said tear strip being nonintegral with said plates and positioned inwardly of one of its associated adhesive means and between planes containing said front and back plates, said tear strip ripping through said associated adhesive means when said grippable element is pulled to facilitate opening of said cassette.

5,186,808

FILM-COATED SENSOR

Shuichiro Yamaguchi; Naoto Uchida; Satoru Kasai; Takeshi Shimomura, all of Kanagawa, and Noboru Oyama, Tokyo, all of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP89/00085, § 371 Date Jul. 27, 1990, § 102(e) Date Jul. 27, 1990, PCT Pub. No. WO89/07262, PCT Pub. Date Aug. 10, 1989
PCT Filed Jan. 27, 1989, Ser. No. 548,931
Claims priority, application Japan, Jan. 29, 1988, 63-017414; Apr. 4, 1988, 63-081419
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—418 **3 Claims**



1. A film-coated sensor comprising:

a capillary having two open ends;

an electrically conductive substrate having less than $10^{-5}cm^2$ cross-sectional area, being connected to a lead wire at one end and another end internally located at one open end of said capillary; and

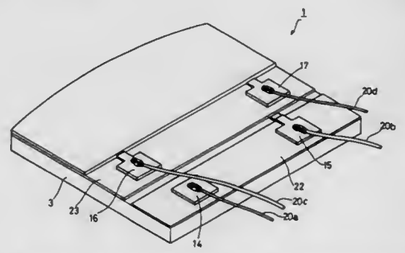
a sensing film coating a surface of said another end of said electrically conductive substrate at said open end of said capillary for sensing a substance of interest contained in a biological fluid.

5,186,809

STRUCTURE FOR JOINING A WIRE TO A SOLID ELECTROLYTIC ELEMENT

Toshihiko Aoyama, Seto; Haruhisa Shiomi, Kyoto, and Yasuhiro Ujita, Kasugai, all of Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 697,747, May 6, 1991, which is a continuation of Ser. No. 430,694, Nov. 1, 1989. This application Nov. 18, 1991, Ser. No. 794,663
Claims priority, application Japan, Nov. 2, 1988, 63-278115
Int. Cl.[5] G01N *27/406, 27/407*
U.S. Cl. 204—421 **22 Claims**



1. A structure for attaching a wire to a solid electrolytic element with solder, comprising:

a solid electrolytic element;

an intermediate layer formed on a surface of the solid electrolytic element;

terminal means attached to the intermediate layer for attaching a wire to the solid electrolytic element, said terminal means comprising a base layer and an upper layer, wherein the base layer is adjacent to the intermediate layer and contains a larger amount of the composition of the intermediate layer than the upper layer which is not adjacent to the intermediate layer, said terminal means

VOL
1147
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comprising a plurality of terminals, wherein at least one of said plurality of terminals is electrically connected to a plurality of electrode portions formed on a surface of the solid electrolytic element, said plurality of electrode portions including first and second measuring electrode portions;

means for heating said solid electrolytic element, wherein said terminal means includes two heating terminals electrically connected to said heating means; and

an outer insulating layer positioned over said heating means such that said two heating terminals are not overlapped by said outer insulating layer, said outer insulating layer having a plurality of windows positioned over said first and second measuring electrode portions such that said first and second measuring electrode portions are not overlapped by said outer insulating layer;

wherein said base layer of said terminal means includes 20% to 60% of the same material as that of which said intermediate layer is composed, and said upper layer of said terminal means includes less than 10% of the same material as that of which said intermediate layer is composed;

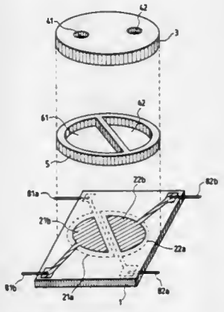
wherein the intermediate layer has a thermal conductivity coefficient larger than the thermal conductivity coefficient of the solid electrolytic element so that heat is uniformly conducted to said terminal means and said intermediate layer, thereby to ensure the fluidity of said solder, and a thermal expansion coefficient not greater than the thermal expansion coefficient of the solid electrolytic element so that said intermediate layer has dimensions which do not deviate from those of said solid electrolytic element and is prevented from detaching from said solid electrolytic layer due to thermal expansion thereof.

5,186,810

OXYGEN SENSOR

Takeshi Nagai, Nara, and Kunihiro Tsuruda, Kashihara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 7, 1991, Ser. No. 651,853
Claims priority, application Japao, Feb. 13, 1990, 2-32024
Int. Cl.[5] G01N *27/26*
U.S. Cl. 204—425 **4 Claims**



1. An oxygen sensor comprising:

an oxygen ion conductive solid-electrolyte plate having first and second opposite surfaces;

a plurality of negative electrodes formed on the first surface of said solid-electrolyte plate;

a plurality of positive electrodes formed on the second surface of said solid-electrolyte plate, at the positions respectively opposed to said plurality of negative electrodes;

a spacer hermetically secured to the first surface of said electrolyte plate and disposed in such a way that it surrounds each of the plurality of negative electrodes;

a sealing plate hermetically secured to said spacer;

a plurality of closed spaces being defined by said first surface of the solid-electrolyte plate, said spacer and said sealing plate; and said closed spaces being formed in such a way that each of said plurality of closed spaces contains one of the plurality of negative electrodes; and

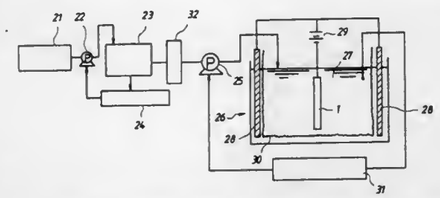
a plurality of windows so provided that oxygen molecules present in the external space may diffuse into each of said plurality of closed spaces, each of a respective said positive electrode, negative electrode, window and closed space forming a sensor element, whereby detection of limiting currents passing through a plurality of said sensor elements facilitates detection of deterioration in said oxygen sensor; wherein said plurality of windows are comprised of a plurality of small orifices formed in said solid-electrolyte plate, and each of the plurality of small orifices communicates with each of the plurality of closed spaces.

5,186,811

METHOD OF MANUFACTURING PRINTED WIRING BOARDS

Yasuaki Otani; Toichi Takishima, and Yasuhiko Sakata, all of Saitama, Japan, assignors to Nippon CMK Corp., Japan

Filed Apr. 15, 1992, Ser. No. 869,332
Claims priority, application Japan, Apr. 18, 1991, 3-114132
Int. Cl.[5] C25D *5/02*
U.S. Cl. 205—125 **2 Claims**



1. A method of manufacturing printed wiring boards, comprising the steps of:

recovering a copper compound by neutralizing etching waste liquor produced in etching process for the manufacture of printed wiring boards;

dissolving said copper compound into a copper ion solution; and

using said copper ion solution as a copper ion supply source for copper plating process of the printed wiring boards.

5,186,812

METHOD FOR MANUFACTURING ZINC-SILICA COMPOSITE ELECTROPLATED STEEL SHEET

Yukimitsu Shiohara, and Masaki Abe, both of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Filed Feb. 11, 1991, Ser. No. 654,065
Claims priority, application Japan, Mar. 8, 1990, 2-57688; Mar. 13, 1990, 2-61960
Int. Cl.[5] C25D *7/06*
U.S. Cl. 205—141 **10 Claims**

1. In a method for manufacturing a zinc-silica composite electroplated steel sheet, which comprises the steps of:

electroplating a steel sheet in a zinciferous acidic electroplating solution containing silica particles and nitric acid ions to form, on at least one surface of said steel sheet, a zinciferous plating layer in which silica particles are uniformly dispersed;

the improvement wherein:

said zinciferous acidic electroplating solution further contains a complexing agent, which has a degree of stability of a complex with zinc of at least 1.0 in a zinciferous acidic electroplating solution having a pH value of 6, in an amount within a range of from 0.001 to 10 moles per liter of said electroplating solution.

5,186,813

DEPOSITION OF ELECTROACTIVE POLYMERS

Jeffrey H. Helms, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 628,033, Dec. 17, 1990. This application Apr. 6, 1992, Ser. No. 864,260
Int. Cl.[5] C25D *5/00*
U.S. Cl. 205—171 **6 Claims**

1. A process for preparing an electroactive laminate, comprising the steps of:

A) providing a conductive substrate;

B) depositing onto the conductive substrate a first layer of an electroactive polymer prepared from a first monomer having an oxidation potential; and

C) depositing onto the first layer a second layer of an electroactive polymer prepared substantially from a second monomer having an oxidation potential greater than the oxidation potential of the first monomer and a small amount of the first monomer.

5,186,814

HYDROCARBON CONVERSION PROCESSES USING CRYSTALLINE MICROPOROUS ZINC PHOSPHATE COMPOSITIONS

Robert L. Bedard, Fishkill, N.Y., assignor to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 645,082, Jan. 23, 1991, Pat. No. 5,126,120, which is a continuation-in-part of Ser. No. 591,915, Oct. 2, 1990, abandoned. This application Mar. 30, 1992, Ser. No. 860,387
Int. Cl.[5] C10G *45/04*
U.S. Cl. 208—46 **8 Claims**

1. A process for converting a hydrocarbon comprising contacting a hydrocarbon under hydrocarbon conversion conditions with a crystalline molecular sieve having: 1) a three-dimensional microporous framework structure of ZnO_2 and PO_2 tetrahedral units; 2) an intracrystalline pore system; and 3) an empirical chemical composition on an anhydrous basis expressed by the formula: $rM_2O{:}sZnO{:}P_2O_5$, where M is at least one alkali metal, r ranges from about 0.9 to about 1.5 and s ranges from about 1.8 to 3.0, to give a hydroconverted product.

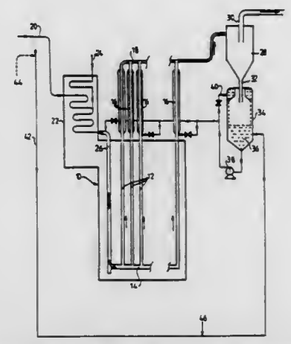
5,186,815

METHOD OF DECOKING AN INSTALLATION FOR STEAM CRACKING HYDROCARBONS, AND A CORRESPONDING STEAM-CRACKING INSTALLATION

Eric Lenglet, Marly le Roi, France, assignor to Procedes Petroliers et Petrochimiques, Marly le Roi, France, a part interest

PCT No. PCT/FR90/00272, § 371 Date Dec. 12, 1990, § 102(e) Date Dec. 12, 1990, PCT Pub. No. WO90/12851, PCT Pub. Date Nov. 1, 1990
PCT Filed Apr. 13, 1990, Ser. No. 623,730
Claims priority, application France, Apr. 14, 1989, 89 04986; Jul. 12, 1989, 89 09373; Jul. 12, 1989, 89 09375; Oct. 6, 1989, 89 13070; Oct. 27, 1989, 89 14118
Int. Cl.[5] C10G *9/12, 9/16*
U.S. Cl. 208—48 R **11 Claims**

1. A method of decoking a hydrocarbon steam-cracking installation which includes a steam cracking furnace and an indirect quench boiler, said method comprising eroding away at least a portion of the coke deposited on the inside walls of the installation by introducing solid particles having a mean diameter of less than about 150 μm into said installation and by conveying the particles by a high speed flow of a vector gas through said installation while the installation is in hydrocarbon cracking operation, said vector gas comprising, at least in part, the hydrocarbon feed stock mixed with steam, and said solid particles and said vector gas forming a very low ratio of solid particles to gas, such that the resulting mixture of solid particles and vector gas behaves as a gas and performs light erosion of said coke deposited on the inside walls of the installation, thereby decoking said hydrocarbon steam-cracking installation during normal operation of said installation.



5,186,816

METHOD OF PRODUCING HIGH AROMATIC-CONTENT SOLVENTS

Fumio Maruyama; Shiro Aizawa, both of Toda, and Kazuo Fujiyoshi, Tokyo, all of Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Filed Mar. 12, 1990, Ser. No. 492,469
The portion of the term of this patent subsequent to Oct. 16, 2007, has been disclaimed.
Int. Cl.[5] C10G *35/04;* C07C *5/22*
U.S. Cl. 208—135 **9 Claims**

1. A method of producing a high aromatic-content solvent, which comprises subjecting a petroleum fraction containing at least 50% by volume of components having a boiling point range of 150°–215° C. to a reforming reaction and then subjecting the resulting product oil to a fractional distillation to recover a fraction having a mixed aniline point of not higher than 21° C. and a boiling point range of 185°–245° C.

5,186,817

PROCESS FOR SEPARATING EXTRACTABLE ORGANIC MATERIAL FROM COMPOSITIONS COMPRISING OIL-IN-WATER EMULSIONS COMPRISING SAID EXTRACTABLE ORGANIC MATERIAL AND SOLIDS

Stephen C. Paspek, Broadview Hts.; Jeffrey B. Hauser, Middleburgh Hts., and Christopher P. Eppig, Cleveland Hts., all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 513,107, Apr. 3, 1990, abandoned, which is a continuation-in-part of Ser. No. 441,110, Nov. 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 320,865, Mar. 7, 1989, Pat. No. 4,885,079, which is a continuation of Ser. No. 906,727, Sep. 12, 1986, abandoned, said Ser. No. 513,107, is a continuation-in-part of Ser. No. 343,395, Apr. 25, 1989, abandoned, which is a continuation of Ser. No. 71,433, Jul. 8, 1987, Pat. No. 4,824,555, said Ser. No. 513,107, is a continuation-in-part of Ser. No. 278,967, Dec. 2, 1988, Pat. No. 4,981,579. This application Apr. 15, 1991, Ser. No. 686,278
Int. Cl.[5] C10G *33/04*
U.S. Cl. 208—188 **69 Claims**

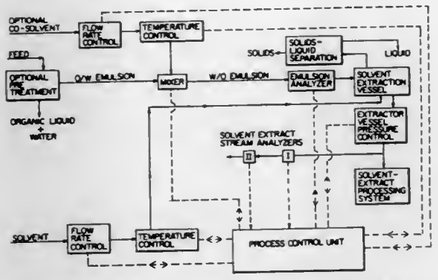
1. A process for separating extractable organic material from a feed composition comprising an oil-in-water emulsion comprising a continuous aqueous phase, a discontinuous organic liquid phase comprising said extractable organic material, and solids dispersed in said emulsion, the process comprising the steps of:

(I) subjecting said feed composition to sufficient shear to

VOL 1147 ISS 3 FE 16 1993 UMI

convert said feed composition to a water-in-oil emulsion; and

(II) contacting said water-in-oil emulsion with at least one organic solvent, said organic solvent being capable of forming with said emulsion a system comprising at least two phases and being capable of dissolving at least about ten parts of said extractable organic material per million parts of said organic solvent at the temperature wherein at



least about 50% by weight of said solvent boils at atmospheric pressure; forming a system comprising at least two phases, one of said phases being an emulsion phase comprising said emulsion and the other of said phases being a solvent phase comprising said solvent; extracting at least part of said extractable organic material with part of said solvent, the extracted extractable organic material being dispersed in said solvent phase; and separating said emulsion phase from said solvent phase.

5,186,818

CATALYTIC PROCESSES

Michel Daage, Yardley, Pa., and Russell R. Chianelli, Somerville, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Aug. 12, 1991, Ser. No. 743,957
Int. Cl.[5] C10G *45/00, 45/02, 45/04*
U.S. Cl. 208—254 H **10 Claims**

1. In a hydrotreating process wherein a feedstock is contacted with a transition metal catalyst and hydrogen under hydrotreating conditions to provide a product having a lower sulfur and nitrogen content, the improvement comprising:

contacting the feedstock with a catalytic component selected from the group consisting of transition metal catalysts, a mixture of transition metal catalysts or a stacked bed of transition metal catalysts, the catalytic component having a pre-selected rim to edge ratio sufficient to provide a hydrotreated product with a predetermined sulfur and nitrogen content.

5,186,819

BENZENE REMOVAL FROM GASOLINE BOILING RANGE STREAMS

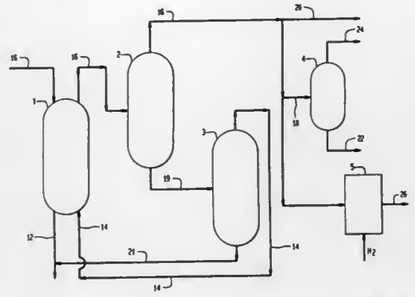
Bal K. Kaul, Randolph; Josepb T. O'Bara, Parsippany; David W. Savage, Lebanon; J. Patrick Dennis, Chatham; Bellows,Richard J., Hampton, and Edward Kantner, East Brunswick, all of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jul. 15, 1991, Ser. No. 729,678
Int. Cl.[5] C07G *7/12*
U.S. Cl. 208—310 Z **16 Claims**

1. A process for selectively removing benzene from gasoline boiling range process streams, which process comprises:

(a) passing a gasoline boiling range hydrocarbonaceous process stream to an adsorption zone containing a solid adsorbent comprised of a cation-exchanged zeolite having: (i) silicon to aluminum ratio of less than about 10; (ii) an average pore diameter greater than the size of the benzene molecule; and (iii) a selectivity for benzene over toluene;

(b) passing a desorbent capable of extracting benzene from the adsorbent and having an average boiling point which is at least 10° F. different than the boiling point of benzene, through the bed of benzene-containing adsorbent in the adsorption zone, thereby removing benzene from the adsorbent;



(c) passing the benzene-containing desorbent to a distillation zone to separate a benzene-rich stream from the desorbent, thereby resulting in a benzene rich stream and a desorbent stream; and

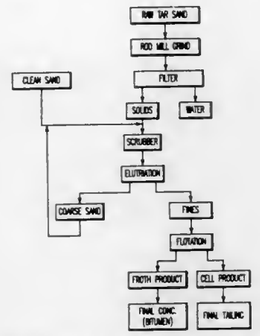
(d) recycling the desorbent stream back to the adsorption zone.

5,186,820

PROCESS FOR SEPARATING BITUMEN FROM TAR SANDS

Clifford W. Schultz, and G. Daniel Irvin, both of Tuscaloosa, Ala., assignors to University of Alabama, Tuscaloosa, Ala.

Filed Dec. 4, 1991, Ser. No. 802,186
Int. Cl.[5] B03D *1/02*; C10G *1/00, 1/04*
U.S. Cl. 209—164 **10 Claims**



1. A process for separating bitumen from tar sands, which comprises:

a) agitating a mixture of said tar sand with substantially coarse clean sand at ambient or below ambient temperature in the presence of water, so as to mechanically shear bitumen and enhance the detachment of bitumen particles from mineral matter in said tar sand,

b) eluting the detached bitumen and fine mineral matter from the coarse sand by an upward flow of water while stirring gently,

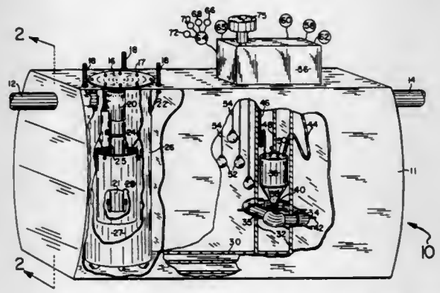
c) returning the coarse sand to step a) for reuse, and subjecting the eluted bitumen and fine mineral matter to froth flotation to separate the bitumen from said fine mineral matter, wherein the flotation is effected without using any reagents.

5,186,821

WASTEWATER TREATMENT PROCESS WITH COOPERATING VELOCITY EQUALIZATION, AERATION AND DECANTING MEANS

D. Thomas Murphy, 35 Walaka P-109, Kihei, Hi. 96753, assignor to D. Thomas Murphy, Kihei, Hi.

Filed Sep. 3, 1991, Ser. No. 753,860
Int. Cl.[5] B01D *17/12, 21/24, 21/30*
U.S. Cl. 210—86 **20 Claims**



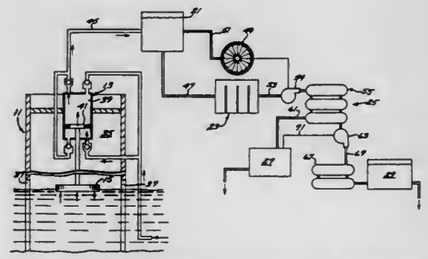
1. A wastewater treatment system comprising; a tank, said tank being capable of holding a liquid, said tank having a top, a bottom floor, four walls and containing, at least in part: aeration means, air diffusions means, decanting means, system means for receiving influent delivery, collector means for collecting influent and equalizing influent velocity and an access cover, said tank mounting a manway, said system also having a programmable timer and control switch means responsive to multiple liquid levels in said tank, including at least a selected maximum and a selected minimum level, said collector means being closed on it's bottom end, said collector means having a bottom section adjacent said bottom end, said collector means being open on it's top end, said influent delivery system terminating in substantially said bottom section of said collector means, a partition, said partition being of a size larger than and surrounding said collector means and providing a space between said partition and said collector means, said partition being open on it's top and bottom ends, said partition being suspended above said bottom floor of said tank, said partition extending substantially from said bottom floor to said top of said tank, said decanting means being arranged for decanting supernatant from below the levels of said liquid, said timer, said switch means, said decanting means and said aeration means having cooperating associated circuitry arranged to provide intermittent cyclic operation, whereby, said tank, said aeration means, said air diffusion means, said aeration means, said air diffusion means, said decanting means, said switch means, said timer, said associated circuitry, said manway and said access over cooperate together to provide a minimum of hydraulic turbulence and a maximum quality of supernatant effluent even in the event of excessive above average influent input.

5,186,822

WAVE POWERED DESALINATION APPARATUS WITH TURBINE-DRIVEN PRESSURIZATION

Tsair-Jyh Tzong, La Palma; Frank H. Y. Wu, Pasadena, and Chan-Feng Tsai, Arcadia, all of Calif., assignors to Ocean Resources Engineering, Inc., South Pasadena, Calif.

Filed Feb. 25, 1991, Ser. No. 659,699
Int. Cl.[5] B01D *61/12*
U.S. Cl. 210—122 **2 Claims**



1. A wave powered desalination apparatus for disposition in a body of undulating ocean water and comprising:

a caisson formed by vertical wall means for disposition in the ocean, defining a chamber formed with an opening arranged to face in a direction of wave propagation for flow therethrough of such ocean waves;

a float in said chamber;

a water pressure pump coupled with an driven by said float and having an inlet and outlet;

a feed conduit leading from said chamber to said inlet for feeding ocean water thereto;

a water accumulator tank means for storage of water to build water pressure up to a selected pressure and having a tank inlet and first and second tank outlets;

water desalination means operative in response to a predetermined water pressure higher than said selected pressure to separate potable water from ocean water;

a turbine generator connected with said first outlet from said tank and operative in response to said selected pressure to generate electricity;

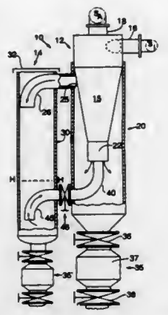
a pressure accumulator operative to raise water pressure of water flowing therethrough from said selected pressure to said predetermined pressure;

an electric drive motor drivingly coupled with said pressure accumulator and connected with said turbine generator for driving said generator; and

conduit means connecting said outlet of said pump with said tank inlet to said tank and said second outlet of said tank with said turbine generator, said pressure accumulator and said desalinating means to cause said pump to pump water into said water tank to raise the pressure thereof to said selected pressure and to cause water at said selected pressure to drive said turbine generator to drive said pressure accumulator to raise the pressure of ocean water flowing therethrough from said selected to said predetermined pressure to render said desalination means operative to produce potable water.

VOL 1147 ISS 3 FE 16 1993 UMI

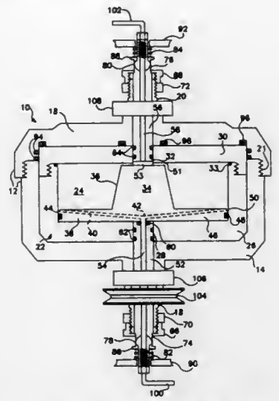
5,186,823
HYDROCYLONE APPARATUS FOR SEPARATING DENSE PARTICLES FROM A FLOWING LIQUID
William Robinson, Täby, Sweden, assignor to A. Ahlstrom Corporation, Noormarkku, Finland
PCT No. PCT/FI90/00185, § 371 Date May 31, 1991, § 102(e) Date May 31, 1991, PCT Pub. No. WO91/01810, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 24, 1990, Ser. No. 678,291
Claims priority, application Sweden, Aug. 3, 1989, 890266
Int. Cl.[5] B04C *9/00*
U.S. Cl. 210—197 **7 Claims**



1. A hydrocyclone apparatus for separating dense particles from a flowing liquid, comprising:
a main vessel having an upper portion and a lower portion, the lower portion forming a settling chamber, the upper portion of the main vessel having an overflow opening;
a hydrocyclone coaxially mounted within the main vessel, the hydrocyclone having upper and lower ends, the hydrocyclone further comprising inlet means for conducting the liquid into the upper end of the hydrocyclone, and an accept outlet for discharging liquid at the upper end of the hydrocyclone, a cylindrical nozzle portion mounted at the lower end of the hydrocyclone for conducting reject containing the dense particles into the lower portion of the main vessel;
an additional vessel having an upper portion and a lower portion;
a first conduit connected to the overflow opening of the main vessel and extending into the upper portion of the additional vessel; and
a second conduit extending from the lower portion of the additional vessel into the cylindrical nozzle portion of the hydrocyclone.

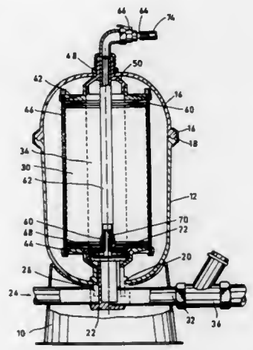
5,186,824
SYSTEM FOR SOLID PHASE REACTIONS
Norman G. Anderson, Rockville, Md., and N. Leigh Anderson, Washington, D.C., assignors to Large Scale Biology Corporation, Rockville, Md.
Filed Sep. 4, 1991, Ser. No. 754,892
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.2 **14 Claims**

1. A system for solid phase reactions comprising:
rotor means for performing a solid phase reaction in the presence of a solid support matrix, said rotor means comprising a rotor body capable of rotating about a rotational axis and defining an inner chamber, said rotor body having a first central, axial fluid passage connecting the inner chamber to the outside of said rotor body and a second fluid passage opposite said first passage and having an opening to said inner chamber adjacent a radially-outward, inner wall surface of the rotor body;
a solid support matrix;
means for retaining said matrix in said rotor means;
means coupled to said rotor means for introducing selected fluids of sequentially differing densities to one of either said first or second passage and removing fluid from the other of said first or second passage; and
means for ordering said fluids of sequentially differing densities to allow for either introduction of fluid gradually or stepwise increasing density into said rotor body through



said second passage such that fluid phases of different density are formed in said chamber and move toward said rotational axis, forcing less dense fluid out said first passage or introduction of fluid of gradually or stepwise decreasing density into said rotor through said first passage such that fluid phases of different density are formed in said chamber and move radially outward, forcing denser fluid out said second passage.

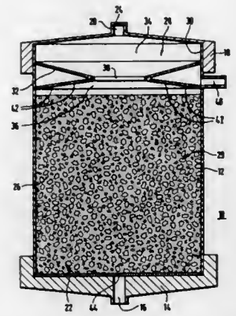
5,186,825
FILTER APPARATUS
Mordeki Drori, P.O. Box 21538, Tel Aviv, Israel
Continuation of Ser. No. 462,642, Jan. 9, 1990, Pat. No. 5,030,349. This application Nov. 13, 1990, Ser. No. 611,690
The portion of the term of this patent subsequent to Jul. 9, 2008, has been disclaimed.
Int. Cl.[5] B01D *29/13*
U.S. Cl. 210—411 **23 Claims**



1. A filter system for separating particles from a fluid, comprising:

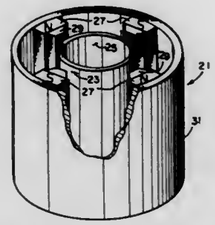
a filter element defining an upstream side and a downstream side;
side filter element being assembled from a plurality of substantially disk elements with cooperating surfaces, said plurality of substantially disk elements comprising at least one substantially disk element of relatively fine, porous material disposed between at least two substantially disk elements of relatively coarse, porous material, said filter element further including at least first and second relatively rigid divider elements each having raised, elongated grooves defined on first and second opposite sides thereof, said substantially disk elements of porous material being supported between said at least first and second relatively rigid divider elements such that one of said substantially disk elements of relatively course, porous material engages said elongated grooves on said first side of said first divider element to define elongated chambers terminating in downstream openings in communication with said downstream side and said other of said substantially disk elements of relatively coarse, porous material engages said raised elongated grooves on said second side of said second divider element to define elongated chambers terminating in upstream openings in communication with said upstream side; and
means for separating particles from said filter element disposed to provide communication with said downstream openings.

5,186,826
APPARATUS FOR SEPARATING AT LEAST TWO BIOLOGICAL SUBSTANCES IN SOLUTION BY ADSORPTION
Velt Otto, St. Wendel; Wolfram Weber, Spiesen-Elversberg; Iris Müller-Stein, Bexbach-Höchern, and Wolfgang Schiebler, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Fresenius AG, Fed. Rep. of Germany
Filed Apr. 1, 1992, Ser. No. 861,448
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1991, 4110730
Int. Cl.[5] B01D *15/08*
U.S. Cl. 210—198.2 **11 Claims**



1. Apparatus for separating at least two biological substances in solution by adsorption, comprising a housing having a lower housing section which has at least one outlet, is packed with adsorption agent and comprises at its lower end a means which prevents emergence of adsorption agent particles therefrom, an upper housing section which is free from adsorption agent and into which at least one feed for the solution to be separated opens, an upper interior section (**28**) having a means effecting a partial constriction of the cross-section thereof in such a manner that said section (**28**) is divided into an upper and a lower subspace (**34**, **36**) which via an opening (**38**) are in flow connection with each other as regards the solution to be separated, wherein the upper subspace (**34**) and the lower subspace (**36**) are also in flow connection as regards the adsorption agent particles, that the feed tube (**40**) for the solution to be separated is arranged in such a manner that the discharge thereof takes place into the lower subspace (**36**), and that the apparatus is a self contained unit in sterile form.

5,186,827
APPARATUS FOR MAGNETIC SEPARATION FEATURING EXTERNAL MAGNETIC MEANS
Paul A. Liberti, Churchville; Brian P. Feeley, Easton, and Dhanesh I. Gohel, Philadelphia, all of Pa., assignors to Immunicon Corporation, Huntington Valley, Pa.
Filed Mar. 25, 1991, Ser. No. 674,678
Int. Cl.[5] B01D *35/06*
U.S. Cl. 210—222 **18 Claims**



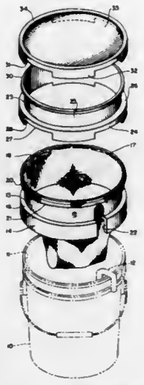
1. A magnetic separator for separating magnetic particles from a non-magnetic test medium in which said magnetic particles are suspended, the separator comprising:
(a) a non-magnetic container having a peripheral wall with an internal surface area for receiving said test medium; and
(b) magnetic means for generating a magnetic field gradient within said container, in which the magnetic field is stronger in the test medium along said internal surface area of said wall than in said test medium most distant from said wall and is operative upon said magnetic particles within said test medium to attract said magnetic particles toward said surface area and cause such particles to be adhered to said area, said magnetic means comprising a plurality of north magnetic poles and a plurality of south magnetic poles positioned alternately around an exterior surface of said peripheral wall of said container and defining a receptacle for said container, said container being removably mounted in said receptacle.

5,186,828
PAINT STRAINER KIT
Gary L. Mankin, 38872 Juniper Rd., Palmdale, Calif. 93551
Filed Feb. 14, 1992, Ser. No. 835,417
Int. Cl.[5] B01D *29/085*
U.S. Cl. 210—232 **3 Claims**

1. A paint strainer comprising:
a pail having a circular upper edge carrying a circular lip;
a bottom piece seated on said pail lip in coaxial relationship therewith;
a filter bag having an edge marginal region folded over said bottom piece so that a major length of said filter bag downwardly depends into said pail;
a holder seated on said bottom piece having said bag edge marginal region disposed therebetween;

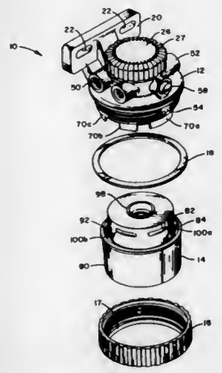
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said bottom piece and said holder snap-lock fastener means detachably connecting together;



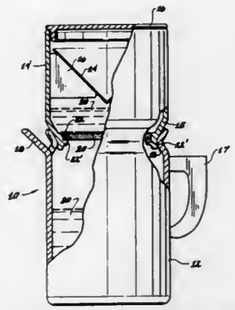
a cap detachably coupled to said holder in spaced relationship to said filter bag.

5,186,829
FUEL FILTER KEY SYSTEM
Leon P. Janik, Suffield, Conn., assignor to Stanadyne Automotive Corp., Windsor, Conn.
Filed Aug. 16, 1991, Ser. No. 745,870
Int. Cl.[5] B01D *27/08*
U.S. Cl. 210—232 **23 Claims**



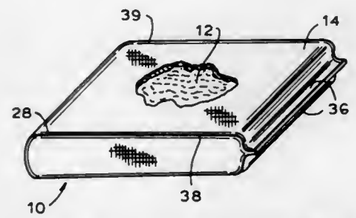
1. A fuel filter assembly comprising:
base means comprising an inlet and an outlet, receptacle means having a first axis, and conduit means for providing fluid communication with said inlet and said outlet, a plurality of keys projecting axially from said receptacle means parallel to and angularly spaced about said first axis, said receptacle means comprising at least one axial track comprising a pair of spaced edges generally parallel to said first axis and a surface section interconnecting said spaced edges, said track opening towards said first axis;
disposable cartridge means at least partially axially receivable in said receptacle means and comprising filter means housing means having a second axis for housing said filter means for filtering fuel, said housing means comprising slot means for defining a plurality of axial slots complementary with said keys, said cartridge means having at least one protrusion extending generally radially outward relative to said second axis and corresponding to said at least one track and closely receivable in said corresponding track; and
retainer means for lockably retaining said cartridge means to said base means so that said keys are received in said corresponding slots and said at least one protrusion is received in said at least one corresponding track to lock said cartridge means to said base means at a fixed angular position thereof.

5,186,830
WATER FILTRATION APPARATUS
Joseph M. Rait, 1100 Amherst St., Buffalo, N.Y. 14216
Continuation-in-part of Ser. No. 522,594, May 14, 1990, abandoned. This application May 31, 1991, Ser. No. 708,809
Int. Cl.[5] B01D *29/085*
U.S. Cl. 210—232 **4 Claims**



1. Apparatus for filtering water to eliminate contaminants comprising in combination a pair of vertically stacked containers including an upper filtering vessel and a lower receptacle in nested relationship, said upper filtering vessel being closed at its lower end by a microporous filter unit, said microporous filtering unit comprising a fired ceramic filter element incorporating silver salts and overlying in juxtaposition a carbon filter element, and a plurality of beads of ion exchange resins positioned between the said filter elements.

5,186,831
OIL SORBENT PRODUCTS AND METHOD OF MAKING SAME
Robert DePetris, Chatsworth, N.J., assignor to Leucadia, Inc., La Jolla, Calif.
Filed Jan. 21, 1992, Ser. No. 824,810
Int. Cl.[5] B01D *1/28*
U.S. Cl. 210—242.4 **21 Claims**



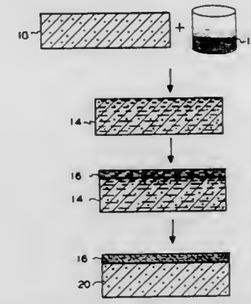
1. A composite fiber blanket and polymer sheet of a size sufficient to enable a great range of oil sorbent products and product sizes, said composite made from a process comprising the steps of:

(a) providing a fiber blanket comprising oil absorbent fibers; and
(b) encapsulating said fiber blanket in a polymer sheet of adsorbent material, said sheet of adsorbent material being oleophilic and substantially hydrophobic, said sheet being capable of passing oil therethrough and being substantially impervious to the passage of water therethrough.

5,186,832
SPIRAL-WOUND HOLLOW FIBER MEMBRANE FABRIC CARTRIDGES AND MODULES HAVING INTEGRAL TURBULENCE PROMOTERS
Anthony W. Mancusi, Charlotte, N.C.; J. Clift Delozier, Ft. Mill, S.C.; Ravi Prasad; Charles J. Runkle, both of Charlotte, N.C., and Harry F. Shuey, San Dimas, Calif., assignors to Hoechst Celanese Corporation, Charlotte, N.C.
Continuation of Ser. No. 815,450, Dec. 31, 1991, abandoned. This application Jul. 20, 1992, Ser. No. 917,690
Int. Cl.[5] B01D *63/10*
U.S. Cl. 210—321.8 **13 Claims**

1. In a spiral-type hollow fiber membrane-containing module, said module comprising:
a. a plurality of hollow fiber membranes each having a lumen, said membranes being formed into an array in which the hollow fibers substantially are mutually-parallel;
b. the array being wound upon an axis which is substantially parallel to the hollow fibers into a spirally-wound membrane bundle having two bundle ends and an exterior surface;
c. each of the two bundle ends being potted in resinous potting material serving to seal the bundle end into an adjacent monolithic tube sheet, a portion of the bundle between the two tube sheets being free from potting material to form a shell-side region, and the lumen ends of the hollow fibers constituting a first one of the bundle ends being exposed and communicating with the exterior of the bundle;
d. a housing having first and second housing ends and a housing interior and being suitably shaped to contain the membrane bundle, having means adjacent the first housing end sealing the tube sheet adjacent the first bundle end to the housing interior, said housing which contains the bundle defining two regions mutually communicating through the membrane including (1) a shell-side space exterior to the portion of the bundle between the tube sheets and within the housing, and (2) a space including the hollow fiber lumens and the first bundle end;
e. first end cap means adjacent the first housing end and suitably shaped, together with the housing interior and the first bundle end, to seal the first housing end and define a first chamber communicating with the membrane lumens;
f. second end cap means adjacent the second housing end and suitably shaped, together with the housing interior and the second bundle end, to seal the second housing end and define a second chamber;
g. the housing having at least one port communicating with the shell-side space, arranged to permit fluid injection and withdrawal therethrough; and
h. the housing having at least one port communicating with the first chamber, arranged to permit fluid injection and withdrawal therethrough;
the improvement comprising:
i. a turbulence promoting web;
in which the hollow fibers in the array are arranged in a single mutually parallel layer facing one side of and at least intermittently bonded across their full lengths to the web, the web being coextensive with the entire layer of hollow fibers.

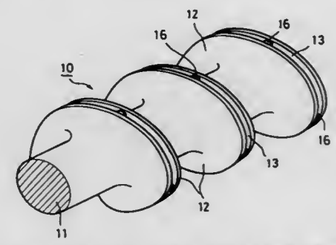
5,186,833
COMPOSITE METAL-CERAMIC MEMBRANES AND THEIR FABRICATION
James A. Mchenry, Washington; Harry W. Deckman, Clinton; Wen-Yih F. Lai, Fair Lawn; Michael G. Matturro, Lambertville, all of N.J.; Allan J. Jacobson, Houston, Tex., and Jack W. Johnson, Clinton, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.
Filed Oct. 10, 1991, Ser. No. 775,656
Int. Cl.[5] B01D *61/18*
U.S. Cl. 210—321.75 **14 Claims**



1. A composite membrane consisting essentially of a porous metal support having a first surface and a second surface; and a microporous ceramic layer deposited on this support.

7. A method comprising: forming a metal ceramic composite membrane structure consisting essentially of a porous metal support having a first surface and a second surface and a microporous ceramic layer deposited on this support, by, providing a metal support having large pores therein, the support having a first surface and a second surface;
forming a ceramic gel on the first surface of the support; and
thereafter calcining the ceramic gel at a temperature and for a time sufficient to form a microporous ceramic layer which is integral with the support.

5,186,834
SCRAPER FILTER SYSTEM
Koichi Arai, Arai Corporation, 1390-1, Kurami, Samukawa-cho, Koza-gun, Kanagawa-ken, Japan
Filed Aug. 6, 1991, Ser. No. 740,960
Claims priority, application Japan, Aug. 16, 1990, 2-214964
Int. Cl.[5] B01D *29/48, 29/64*
U.S. Cl. 210—413 **19 Claims**



1. A scraper filter device comprising: a filter element of a cylindrical or conical form having a cylindrical wall formed with a filter surface, in which a plurality of filter openings of a predetermined dimension are formed;
a spiral impeller mounted for rotation with respect to a longitudinal axis along the internal surface of said filter element;

VOL
1147
ISS
3
FE
16
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UMI

scraper means disposed around the spiral edge of said spiral impeller;

said means including a plurality of separate arcuate segments each being urged radially and externally by a resilient member means for resiliently engaging with said filter surface, each of said segments not being rigidly attached to the sprial impeller along the entire length of said segment whereby all the segments are moveable in said external radial direction over the entire length thereof.

5,186,835

POROUS HYDROPHILIC POLYPROPYLENE MEMBRANE, METHOD FOR PRODUCTION THEREOF, AND BLOOD PLASMA SEPARATION APPARATUS

Toshio Masuoka, Tsukuba; Okihiko Hirasa, Tsukuba; Makoto Onishi, and Yukio Seita, both of Fuji, all of Japan, assignors to Agency of Industrial Science and Technology and Terumo Kabushiki Kaisha, both of Tokyo, Japan

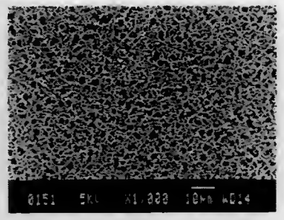
PCT No. PCT/JP88/00920, § 371 Date Apr. 26, 1990, § 102(e) Date Apr. 26, 1990, PCT Pub. No. WO89/02303, PCT Pub. Date Mar. 23, 1989

PCT Filed Sep. 12, 1988, Ser. No. 465,240

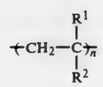
Claims priority, application Japan, Sep. 11, 1987, 62-226298

Int. Cl.[5] B01D *67/00*

U.S. Cl. 210—500.36 **14 Claims**



1. A porous hydrophilic polypropylene membrane possessing a fine reticular structure, wherein at least either of the opposite surfaces of the membrane forms a surface layer of a reticular structure substantially equal to that in the interior of the membrane; the membrane surfaces and the surfaces of pores in the membrane have a hydrophilic polymer chemically bonded thereto, said hydrophilic polymer being at least one member selected from the group of polymers consisting of the polymers represented by the following formula I:

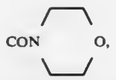


(I)

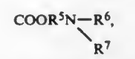
wherein R^1 is H or CH_3 and R^2 is



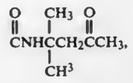
wherein R^3 and R^4 are each an alkyl of 1 to 4 carbon atoms,



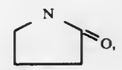
COOM, wherein m is a metallic atom, $COOR^5NHR^6$, wherein R^5 is an alkylene of 1 to 4 carbon atoms and R^6 is an alkyl of 1 to 4 carbon atoms,



wherein R^5 and R^6 are as defined above and R^7 is an alkyl of 1 to 4 carbon atoms, or



providing that R^1 is H where R^2 is



and n is an integer in the range of 10 to 10^4; the membrane is composed substantially of a polypropylene possessing an average pore diameter in the range of 0.1 to 2.0 μm, a bubble point of not more than 2.0 kg/cm^2, a porosity in the range of 60 to85%, and a water permeability of not less than 2 $ml/min.mmHg.m^2$; and the membrane is prepared using liquid polyether as a cooling and solidifying liquid.

5,186,836

CO-CURRENT CYCLONE SEPARATOR AND ITS APPLICATIONS

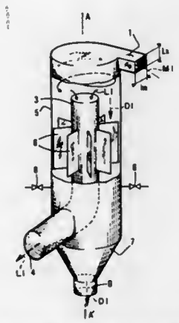
Thierry Gauthier, Saint Genis Laval, France; Maurice Bergougnou; Cedric Briens, both of London, Canada, and Pierre Galtier, Vienne Estressin, France, assignors to Institut Francais du Petrole, Rueil Malmaison, France

Filed Jun. 4, 1991, Ser. No. 710,047

Claims priority, application France, Jun. 5, 1990, 90 06938

Int. Cl.[5] B04C *1/00*

U.S. Cl. 210—512.1 **9 Claims**



1. A co-current cyclone separator comprising in combination:

a) an outer enclosure having a cylindrical wall about an axis, the outer enclosure having a first end with a top wall and a second end spaced from the top wall by a distance (L);

b) an outer enclosure inlet at the first end, the inlet having a top wall proximate the top wall of the outer enclosure and extending in a direction perpendicular, but radially spaced, with respect to the axis of the outer enclosure for introducing a mixture M1 containing at least one dense phase D1 and a light phase L1 tangentially into the outer enclosure;

c) means for recovering the dense phase D1 positioned at the second end of the outer enclosure;

d) an outer enclosure outlet downstream of the recovering means proximate second end of the outer enclosure;

e) an inner enclosure of a circular cross section disposed coaxially within the outer enclosure to define an annular space therebetween; the inner enclosure having first and second ends;

f) an inner enclosure inlet axially spaced from the outer enclosure inlet by a distance LC;

g) an inner enclosure outlet positioned exteriorly with respect to the outer enclosure;

h) a plurality of spaced, axially extending blades disposed in the annular space between the inner and outer enclosures, the blades being planar and also extending radially with respect to the axis of the outer enclosure; the spaced blades providing means for limiting accumulation of the light phase proximate the circular wall of the outer enclosure; and

i) means disposed in the outer enclosure between the inner enclosure inlet and the second end of the outer enclosure for introducing additional light phase fluid L2 into the outer enclosure whereby at least a substantial portion of the dense phase D1 is separated from the mixture M1 and exits from the outer enclosure outlet.

5,186,837

METHOD FOR BIOLOGICAL PURIFICATION OF WASTEWATER WITH NO EXCESS SLUDGE

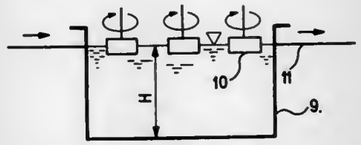
Ognjen Nikolic, Rijeka; Jadranka Kralj-Baretic, Kraljevica, and Smiljana Koscina-Korunic, Rijeka, all of Yugoslavia, assignors to INA Rafinerija nafte rijeka n.sol.o, OOUR proizvodnja goriva i aromata sa.sub.o. druge, Kostrena-Urinj, Yugoslavia

Filed Dec. 23, 1987, Ser. No. 137,125

Claims priority, application Yugoslavia, Dec. 24, 1986, 2240/86

Int. Cl.[5] C02F *3/02*

U.S. Cl. 210—614 **11 Claims**



1. A method for the biological purification of wastewater with no excess activated sludge with comprises

charging into a purification basin, wastewater that is mechanically pretreated or chemically pretreated or both and which contains substantially no toxic or inhibiting substances for the microorganisms or both wherein the level of said wastewater is at least 5 m over the bottom of said basin, and said wastewater is under the conditions of total endogenous respiration aerated with one or more surface turbine type aerators of 5.10^{-2} to $12.10^{0.2}$ kW/m^3 of wastewater, at a microorganism to food ratio of 20 to 100.

5,186,838

CHROMATOGRAPHIC PACKING MATERIAL HAVING FUNCTIONALIZED POLYMERIC COATING ON A SUBSTRATE

Ethan S. Simon; Kevin B. Holland, and Christopher McClanahan, all of Charlottesville, Va., assignors to Biotage Inc., Charlottesville, Va.

Filed Mar. 4, 1991, Ser. No. 664,344

The portion of the term of this patent subsequent to Dec. 1, 2009, has been disclaimed.

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—635 **9 Claims**

1. Method of separating organic materials, said method comprising the steps of providing a bed of packing material selected from the group consisting of silica and alumina, said packing material having bonded thereto, a polymeric coating, said coating having a uniform immobilized functionalized group, said group having terminal vinyl groups.

5,186,839

SYRINGE TYPE COLUMN FOR CHROMATOGRAPHY

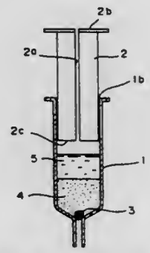
Masaru Kimura, Okayama, and Hiromi Kochi, Fukuyama, both of Japan, assignors to Manac Inc., Hiroshima, Japan

Continuation of Ser. No. 459,828, Jan. 26, 1990, abandoned. This application Sep. 23, 1991, Ser. No. 764,974

Claims priority, application World Int. Prop. O., Jun. 3, 1988, 88/00539

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—656 **10 Claims**



1. A method of using a column for use in liquid chromatography, using a generally cylindrical barrel having a solution discharge port at one end thereof and an opening at another end thereof, the method comprising:

closing said solution discharge port with a liquid-permeable member;

filling a predetermined amount of a stationary phase into said barrel;

introducing a predetermined amount of a sample solution through said opening of said barrel;

introducing a predetermined amount of a solvent for development into said barrel;

inserting a plunger into said opening of said barrel, said plunger having at least one air vent formed therein and which extends therethrough in the longitudinal direction thereof;

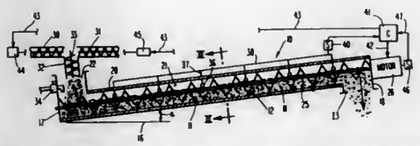
pressing said plunger into the interior of said barrel by finger pressure thereon to cause said solvent for development to permeate through said stationary phase;

releasing said finger pressure, withdrawing said plunger from said barrel so that air flows into said barrel, from the outside, not through said solution discharge port but through said at least one air vent to prevent negative pressure in said barrel, whereby said stationary phase is never subjected to turbulence due to the movement of the in-flowing air and introducing of additional solvent for development into said barrel; and

repeating said last three steps in order for a predetermined number of times.

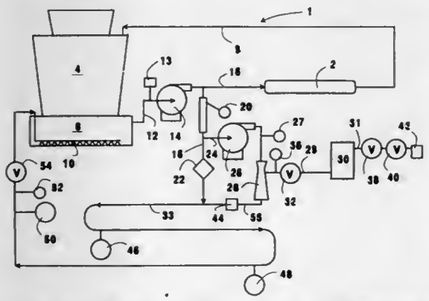
VOL
1147
ISS
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FE
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1993
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5,186,840
PROCESS FOR TREATING SEWAGE SLUDGE
Paul G. Christy, Devon, and Richard W. Christy, Ambler, both of Pa., assignors to RDP Company, Plymouth Meeting, Pa.
Filed Aug. 26, 1991, Ser. No. 749,988
Int. Cl.[5] C02F *11/14, 11/18*
U.S. Cl. 210—709 **17 Claims**



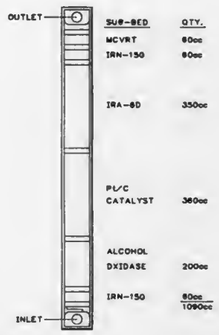
1. A process for treating partially dewatered sewage sludge comprising the steps of:
(a) providing the sludge in a form that has a solids content in the range of 10% to 60% by weight and
(b) combining the sludge with at least one alkaline additive selected from the group consisting of calcium oxide, calcium carbonate, hydrated lime, quicklime, lime kiln dust, cement kiln dust and fly ash, by
(i) delivering sludge and additive to at least one inlet of a substantially closed mixing chamber having at least one generally horizontally disposed shaft-mounted screw mixer with generally helical flighting on the shaft, disposed therein;
(ii) rotatingly driving the mixer in the chamber to intimately mix the sludge and additive therein while conveying the mixture in the chamber toward an outlet therein that is generally horizontally spaced from the inlet; while
(iii) controlling the rate of addition of any of sludge and additive to the inlet and the speed of rotation of the mixer to be amounts sufficient to maintain a level of depth of sludge and additive along the screw mixer in the chamber, that enables the mixer to impart a spiral rolling action to the sludge and additive, rolling particles of the sludge and additive over the rotating shaft of the screw mixer as the sludge and additive is conveyed through the mixer toward the outlet.

5,186,841
COOLING WATER OZONATION SYSTEM
Robert P. Schick, Amherst, N.Y., assignor to Praxair Technology Inc., Danbury, Conn.
Filed Nov. 5, 1991, Ser. No. 787,825
Int. Cl.[5] C02F *1/78*
U.S. Cl. 210—760 **21 Claims**



1. A process for dissolving ozone in aqueous solutions comprising:
(a) injecting ozone through at least one ozone injection means operating with a pressure drop of at least about 35 psi into a stream of aqueous solution to form an ozone containing stream;
(b) combining said ozone containing stream with a second aqueous solution to form a combined solution; and
(c) increasing or regulating the velocity of the combined solution to at least about 7 feet per second.

5,186,842
METHOD FOR REMOVING LOW MOLECULAR WEIGHT CONTAMINANTS
Clifford D. Jolly, Roseburg, Oreg., assignor to Umpqua Research Company, Myrtle Creek, Oreg.
Filed Jul. 15, 1991, Ser. No. 730,216
Int. Cl.[5] C02F *1/72;* C12N *9/02, 11/14*
U.S. Cl. 210—763 **21 Claims**

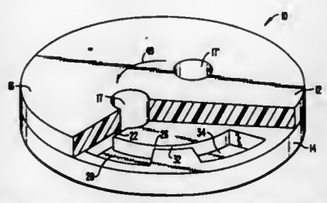


12. A method for removing low molecular weight contaminants from a contaminant-containing material, said low molecular weight contaminants including alcohol compounds and aldehyde compounds having up to three carbon atoms, which comprises:
providing an alcohol oxidase enzyme-based catalyst system including co-immobilized transition metals comprising platinum and copper for catalytically oxidizing said contaminant-containing material; and
catalytically oxidizing said low molecular weight contaminants in the presence of said alcohol oxidase enzyme-based catalyst system.

5,186,843
BLOOD SEPARATION MEDIA AND METHOD FOR SEPARATING PLASMA FROM WHOLE BLOOD
John S. Baumgardner, Aspers, and Mark D. Loewen, Carlisle, both of Pa., assignors to Ahlstrom Filtration, Inc., Chattanooga, Tenn.
Filed Jul. 22, 1991, Ser. No. 733,592
Int. Cl.[5] B01D *37/00, 39/00*
U.S. Cl. 210—767 **20 Claims**

15. A process for separating plasma or serum from whole blood, comprising:
providing a single-layer, composite sheet comprising glass microfibers having a mean bulk density of less than 0.1 g/cm^3 and mean diameter in the range 0.3–0.7 μm, cellulose fibers, and synthetic textile staple fibers; and
slowly trickling whole blood onto one side of said sheet, whereby plasma or serum separated from the blood becomes available on the surface of said side and in the interior of said sheet.

5,186,844
APPARATUS AND METHOD FOR CONTINUOUS CENTRIFUGAL BLOOD CELL SEPARATION
Tammy L. Burd, Fremont, and Carol T. Schembri, San Mateo, both of Calif., assignors to Abaxis, Inc., Mountain View, Calif.
Filed Apr. 1, 1991, Ser. No. 678,762
Int. Cl.[5] B01D *21/26*
U.S. Cl. 210—782 **44 Claims**

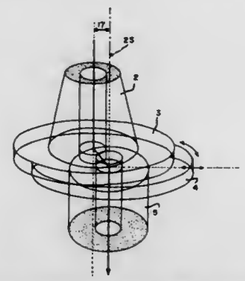


1. An analytical rotor for continuously separating fluid from a cell-containing liquid sample, said rotor comprising a rotor body having an axis of rotation, a sample chamber, a separation chamber, a cell retention region located generally at the radially outward periphery of the separation chamber, a flow restrictive channel connecting the sample chamber to the separation chamber, and means annularly offset from the flow restrictive channel and radially inward from the cell retention region for collecting cell-free fluid from the separation chamber, whereby spinning the rotor causes liquid sample in the sample chamber to flow into the separation chamber where cells in the sample move radially outward into the retention region and cell-free fluid flows annularly into the collecting means, wherein said flow restrictive channel and said collecting means are annularly separated by a distance sufficient to permit cells to separate from the fluid before the fluid reaches the collecting means.

25. A method for separating cells from a biological fluid, said method comprising:
introducing the fluid into a receptacle region within a rotor;
spinning the rotor to effect radially outward flow of the fluid from the receptacle region through a flow restrictive passage into a separation chamber, whereby cells collect in a retention region at the radially outward periphery of the separation chamber; and
continuously removing the resulting cell-free fluid through a port which is disposed at a position located radially inward from the retention region and annularly displaced from the flow restrictive passage.

5,186,845
RECTILINEARLY MOVING, AXIALLY SYMMETRICAL SLIDING GATE
Edouard Detalle, 30, avenue du General-Leclerc, F-54320 Maxeville, France
PCT No. PCT/FR89/00163, § 371 Date Mar. 13, 1990, § 102(e) Date Mar. 13, 1990, PCT Pub. No. WO89/10812, PCT Pub. Date Nov. 16, 1989
PCT Filed Apr. 10, 1989, Ser. No. 465,093
Claims priority, application France, May 13, 1988, 88/06617
Int. Cl.[5] B22D *41/26*
U.S. Cl. 222—598 **27 Claims**

1. A slide valve closure device for a discharge opening in a container for corrosive liquids, comprising wear resistant, planar closure components, and means for sliding a first closure component provided with a first aperture relative to a second, contiguous closure component provided with a second aperture so that at least partial coincidence of the first aperture and the second aperture establishes a flow, and non-coincidence of the first aperture and the second aperture ensures a leaktight closure of the container;
wherein at least the first aperture of the first closure component has a central axis of rotation and a single, central axial aperture positioned so that the difference between longest paths of heat transfer and shortest paths of heat transfer originating from the central axial aperture correspond to regular homogenous expansion of the first closure component;
wherein at least the first aperture of the first closure component is positioned coaxially relative to the central axis of the first closure component;
wherein the first closure component is displaceable relative to the second closure component along either a rectilinear path or a curvilinear path passing through the central axis of the first closure component to cause coincidence and non-coincidence of the central axis aperture with the second aperture provided in the second closure component contiguous with the first closure component; and
wherein the first closure component is rotatable about its central axis to provide symmetrical wear distributed over the periphery of the central axial aperture.



5,186,846
DYE DISPERSANTS: ARYL SULPHONIC ACID-FORMALDEHYDE CONDENSATE OR LIGNINSULFONATE
Ralf Brueckmann, Goennheim; Willi Bury, Ludwigshafen; Johannes P. Dix, Weisenheim; Manfred Herrmann; Waldemar Dlugosch, both of Ludwigshafen; Erich Kromm, Weisenheim; Herbert Letter, Ludwigshafen; Norbert Zimmermann, Waldsee; Wolf-Dieter Kermer, Fussgoenheim, and Klaus Taeger, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany
Filed Jun. 13, 1991, Ser. No. 714,589
Claims priority, application Fed. Rep. of Germany, Jun. 13, 1990, 4018873
Int. Cl.[5] B01F *17/52;* C09B *67/42;* C08G *16/02;* D06P *1/56*
U.S. Cl. 252—8.7 **6 Claims**

1. A dispersant of increased bioeliminability or biodegradability for use in dye and pigment products, containing
A) from 50 to 97% by weight of one or more arenesulfonic acid-formaldehyde condensates, one or more ligninsulfonates or a mixture thereof, and
B) from 3 to 50% by weight of one or more aromatic or C_8- to C_{22}-aliphatic carboxylic acids, salts thereof or anhydrides thereof or a mixture thereof, the addition of component B taking place before, during or after the sulfonation step or the condensation step in the preparation of component A.

VOL 1147 ISS 3 FE 16 1993 UMI

5,186,847
METHODS OF PREPARING AND USING SUBSTANTIALLY DEBRIS-FREE GELLED AQUEOUS WELL TREATING FLUIDS
R. Clay Cole, Duncan, and Bobby K. Bowles, Comanche, both of Okla., assignors to Halliburton Company, Duncan, Okla.
Filed Jan. 30, 1991, Ser. No. 647,866
Int. Cl.[5] B01F *3/12*; E21B *43/27*
U.S. Cl. 252—8.551 **19 Claims**

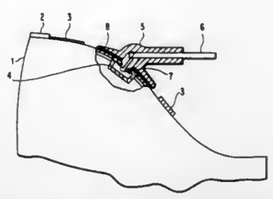
16. A method of treating a subterranean formation penetrated by a well bore comprising the steps of:
(a) forming a gelled aqueous fluid by mixing a cellulose gelling agent with water;
(b) combining an amine phosphonate compound with said gelled aqueous fluid in an amount sufficient to cause the hydration of unhydrated gelling agent remaining in said gelled aqueous fluid;
(c) raising the pH of said resulting solution to about 7; and
(d) pumping said gelled aqueous fluid into said subterranean formation by way of said well bore wherein the pH of said water in step (a) is lowered to about 3 to 4 prior to mixing said gelling agent therewith; and after mixing said gelling agent with said water, the pH of the mixture is raised to about 7.

5,186,848
PREPARING SULFUR SOLVENT COMPOSITIONS COMPRISING TREATING A SULFIDE AND POLYALKYLENEOXYAMINE OR POLYALKYLENEOXYPOLYAMINE MIXTURE WITH AN ALKYLAMINE OR ALKANOLAMINE
Glenn T. Carroll, Jeffersonville, and Michael J. Lindstrom, Downingtown, both of Pa., assignors to Elf Atochem North America, Inc., Philadelphia, Pa.
Continuation of Ser. No. 255,221, Oct. 11, 1988, abandoned. This application Mar. 28, 1991, Ser. No. 678,905
The portion of the term of this patent subsequent to Feb. 14, 2006, has been disclaimed.
Int. Cl.[5] E21B *37/00*
U.S. Cl. 252—8.552 **10 Claims**

1. A process for preparing a liquid sulfur-solvent composition containing a major proportion of a sulfide or mixture of sulfides having the formula RSS_aSR^1 where R and R^1 are independently alkyl, alkaryl, alkoxyalkyl or hydroxyalkyl radicals having from 1 to 24 carbon atoms in the alkyl moieties, phenyl or C_1–C_{20} alkyl substituted phenyl and the value of a is 0 to 3, and a catalyst which is a polyalkyleneoxyamine or polyalkyleneoxypolyamine, said process comprising treating said composition either before, during or after the addition of said catalyst to said composition, with a primary or secondary amine which is an alkylamine or alkanolamine or mixture thereof having alkyl moieties of from 1 to 20 carbon atoms, in an effective amount and for an effective period of time to inhibit the deleterious effects of impurities in said composition.

5,186,849
SILICONE GREASE COMPOSITION
Masanori Toya; Hideo Takahashi, and Yasuji Matsumoto, all of Tokyo, Japan, assignors to Toshiba Silicone Ltd., Tokyo, Japan
Filed Nov. 26, 1991, Ser. No. 798,175
Claims priority, application Japan, Nov. 30, 1990, 2-330041; Jan. 14, 1991, 3-16030
Int. Cl.[5] C10M *113/08, 113/06*
U.S. Cl. 252—21 **10 Claims**

1. A silicone grease composition comprising:
(A) 100 parts by weight of a polyorganosiloxane containing at least two silicon-bonded vinyl groups per molecule and having a viscosity at 25° C. of from 10 to 1,000,000 cSt;
(B) from 10 to 200 parts by weight of a filler comprising at least one member selected from the group consisting of calcium carbonate, zinc carbonate and a composite zinc white; and



(C) from 0.001 to 0.1 part by weight of platinum or a platinum compound.

5,186,850
MULTIFUNCTIONAL ASHLESS DISPERSANTS DERIVED FROM MANNICH REACTION OF ALKYL- OR ALKENYLSUCCINIMIDES, DIMERCAPTOTHIADIAZOLES, AND CARBONYL COMPOUNDS
Abraham O. M. Okorodudu, West Deptford; Angeline B. Cardis, Florence, and Ross A. Kremer, Ringoes, all of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Jul. 9, 1992, Ser. No. 910,923
Int. Cl.[5] C10M *135/36*
U.S. Cl. 252—47.5 **21 Claims**

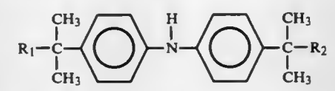
1. An improved lubricant composition comprising a major proportion of an oil of lubricating viscosity or a grease prepared therefrom and a minor proportion of a non-phosphorus, ashless dispersant multifunctional antioxidant, load-carrying and corrosion inhibiting additive product of reaction prepared by (A) imidation of an anhydride with a polyamine to obtain the corresponding dispersant alkyl- or alkenylsuccinimide and (b) reacting in a Mannich-type post reaction, said succinimide with a dimercaptothiadiazole and a carbonyl compound to obtain the desired additive product of reaction.

5,186,851
ETHYLENE ALPHA-OLEFIN COPOLYMER SUBSTITUTED MANNICH BASE LUBRICANT DISPERSANT ADDITIVES
Antonio Gutierrez, Mercerville; Won R. Song, Short Hills; Robert D. Lundberg, Bridgewater, and Robert A. Kleist, Bayonne, all of N.J., assignors to Exxon Chemical Patents Inc., Linden, N.J.
Continuation of Ser. No. 780,827, Oct. 23, 1991, abandoned, which is a continuation of Ser. No. 657,583, Feb. 19, 1991, abandoned, which is a division of Ser. No. 226,604, Aug. 1, 1988, Pat. No. 5,017,299. This application Apr. 7, 1992, Ser. No. 866,119
Int. Cl.[5] C10M *159/16*
U.S. Cl. 252—49.006 **8 Claims**

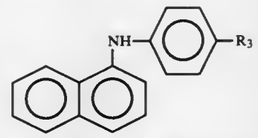
1. A lubricating oil dispersant additive useful in oleaginous compositions which comprises a condensation product obtained by the reaction of:
(a) at least one alkyl-substituted hydroxyaromatic compound formed by the alkylation of at least one hydroxy aromatic compound with at least one terminally unsaturated ethylene alpha-olefin polymer of 300 to 10,000 number average molecular weight, at least 30% of said polymer's chains contain terminal ethenylidene unsaturation;
(b) at least one aldehyde reactant; and
(c) at least one nucleophilic reactant wherein said dispersant additive is borated to provide from about 0.05 to 2.0 weight percent boron in said borated dispersant adduct.

5,186,852
P,P'-DINONYLDIPHENYLAMINE AND COMPOSITION CONTAINING THE SAME
Noboru Ishida, Kawasaki, and Hiroyuki Takashima, Yokohama, both of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan
Filed Jan. 8, 1990, Ser. No. 462,013
Claims priority, application Japan, Jan. 13, 1989, 1-4693
Int. Cl.[5] C10M *133/04*
U.S. Cl. 252—50 **5 Claims**

1. A composition prepared by adding p,p'-dinonyldiphenylamine represented by the following general formula:



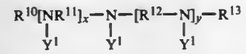
wherein R_1 and R_2 may be the same or different from each other and each stand for a branched alkyl group having 6 carbon atoms,
and an N-p-alkylphenyl-α-naphthylamine represented by the following general formula:



wherein R_3 is an alkyl group having 12 to 15 carbon atoms derived from a propylene oligomer,
an essential components to a mineral oil having an aromatic content of 30% by weight or below and/or a synthetic oil containing no aromatic ring in its structural unit.

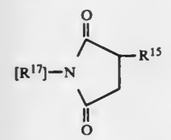
5,186,853
POLYACRYLATE-MODIFIED BIS-SUCCINIMIDE LUBRICANT ADDITIVES
William D. Carlisle, Hull, England, assignor to BP Chemicals (Additives) Limited, London, England
Filed Mar. 25, 1991, Ser. No. 674,617
Claims priority, application United Kingdom, Mar. 31, 1990, 9007336
Int. Cl.[5] C10M *133/44*
U.S. Cl. 252—51.5 A **15 Claims**

11. A compound of the formula



(IV)

where
R^{10} and R^{13} are:



R^{11} and R^{12} are $—CH_2CH_2—$;
Y^1 is $—CH_2CR^4(CO)Z^1R^3Z^2(CO)CR^5=CH_2$;
x+y is an integer from 2 to 7;
R^4 and R^5 are independently hydrogen or methyl;
Z^1 and Z^2 are oxygen;
R^3 is an alkylene or arylene group; and
R^{17} is an aliphatic or substituted aliphatic group.

5,186,854
COMPOSITES HAVING HIGH MAGNETIC PERMEABILITY AND METHOD OF MAKING
Alan S. Edelstein, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 21, 1990, Ser. No. 526,259
Int. Cl.[5] C04B *35/26*; C23C *14/34*
U.S. Cl. 252—62.55 **20 Claims**

1. A composite for magnetic applications comprising a matrix selected from the group consisting of ferrous ferrite, cuprous ferrite and mixtures thereof having embedded therein particles of metallic iron, said particles of metallic iron being present in said composite at a volume fraction of about 0.01 to about 0.5 and having a diameter ranging from about 10 to about 5000 Angstrom units, said composite having magnetically recorded information stored therein.

5,186,855
PROCESS FOR PRODUCING A SYNTHETIC DETERGENT SOAP BASE FROM N-ACYL SARCOSINE
Josepb J. Crudden, Hudson, N.H., assignor to W. R. Grace & Co.-Conn., New York, N.Y.
Filed Mar. 18, 1991, Ser. No. 670,799
Int. Cl.[5] C11D *9/30*
U.S. Cl. 252—117 **4 Claims**

1. A method of producing synthetic detergent soap base comprising dissolving in a composition consisting essentially of an N-Acyl sarcosine selected from the group consisting of lauroyl sarcosine, cocoyl sarcosine, myristoyl sarcosine and oleoyl sarcosine an effective amount of a fatty acid salt to reach a pH of from about 4.5 to about 9.5, thereafter optionally adding at least one other surfactant and one or more conventional soap additives.

5,186,856
AQUEOUS PREWASH STAIN REMOVER COMPOSITIONS WITH EFFICACY ON TENACIOUS OILY STAINS
Richard J. Holland, Grosse Ile, Mich., assignor to BASF Corp., Parsippany, N.J.
Filed Jun. 2, 1992, Ser. No. 892,295
Int. Cl.[5] C11D *1/72, 3/30, 3/33, 17/08*
U.S. Cl. 252—143 **14 Claims**

1. An aqueous laundry prewash stain remover composition, comprising on a weight basis:
(a) from about 0.1 to about 20% of at least one chelating agent selected from the group consisting of citric acid, tartaric acid, and ethylene diamine tetracetic acid;
(b) from about 0.1 to about 40% of a mixture of nonionic surfactants selected from the group consisting of ethoxylated alcohols and propoxylated alcohols;
(c) from about 0.1 to about 10% of propoxylated ethylenediamine known as N,N,N',N'-tetrakis(2-hydroxypropyl) ethylenediamine;
(d) from about 0.1 to about 5% of alpha-olefin epoxide modified polyether thickener;
(e) from about 0.1 to about 19.9% of at least one additional chelant selected from the group consisting of isoserine diacetate and Beta-alanine diacetate;
(f) the remainder of said composition being water.

VOL
1147
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5,186,857

SELF-FOAMING OIL COMPOSITIONS AND PROCESS FOR MAKING AND USING SAME

Jose E. Ramirez, Trumbull, and Mohan Vishnupad, Monroe, both of Conn., assignors to Imaginative Research Associates, Inc., Bridgeport, Conn.

Continuation-in-part of Ser. No. 270,263, Nov. 14, 1988, Pat. No. 4,931,204. This application Mar. 21, 1989, Ser. No. 326,377

Int. Cl.[5] C10M *101/00;* **C11D** *7/50*

U.S. Cl. 252—167 **28 Claims**

1. Aqueous, lotion-like, oil-in-water liquid emulsion composition containing large amounts of oil or oil/wax mixture, which is capable of being contained within a non-pressurized container without self-foaming therefrom when opened at a temperature of 110° F. and up to about 120° F. and capable of being poured onto a surface at temperatures at or above room temperatures and spread as a thin layer to self-develop a copious foam, said compositions comprising an aqueous emulsion containing a dispersed oil phase comprising (a) at least about 10% by weight of the total composition of at least one oil or oil/wax mixture, (b) at least about 5% by weight of the total composition of a volatile organic foam-producing liquid which is dissolved within the oil phase and evaporates at or slightly above ambient room temperature, (c) at least about 5% by weight or the total composition of at least one surface active material which increases the solubility of said foam producing liquid in said oil or oil/wax mixture to a sufficient extent that the composition is capable of being contained within a non-pressurized container without self-foaming therefrom at temperatures up to about 120° F., said surface active material being selected from the group consisting of (i) one or more surface active agents (A) which produce the necessary solubility of said foam-producing liquid in said oil or oil/wax mixture to prevent said self-foaming, and (ii) surface active mixtures of (B) one or more surface active agents which do increase the solubility of said foam-producing liquid in said oil or oil/wax mixture but to an insufficient extent to prevent said self-foaming, and (C) one or more foam suppressing agents, said surface active mixture (ii) increasing the solubility of said foam-producing liquid in said oil or oil/wax mixture to a sufficient extent to prevent self-foaming at temperatures up to about 120° F., and the remainder comprising water as the continuous phase of said liquid emulsion composition.

5,186,858

FERROELECTRIC CHIRAL SMECTIC LIQUID CRYSTAL COMPOSITION AND LIQUID CRYSTAL DEVICE USING SAME

Masahiro Terada, Atsugi; Takeshi Togano, Yokohama; Masataka Yamashita, Hiratsuka; Kazuharu Katagiri, Tama; Takao Takiguchi, Setagaya; Kenji Shinjo, Atsugi; Hiroyuki Kitayama, Sagamihara, and Shinichi Nakamura, Asugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 12, 1989, Ser. No. 378,922

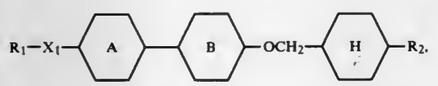
Claims priority, application Japan, Jul. 13, 1988, 63-175788; Feb. 3, 1989, 1-025048

Int. Cl.[5] C09K *19/34, 19/30*

U.S. Cl. 252—299.61 **7 Claims**

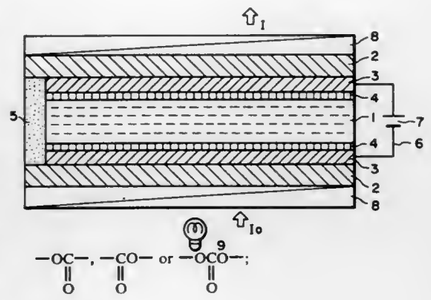
1. A ferroelectric chiral smectic liquid crystal composition, comprising:

at least one compound represented by the following formula (I):

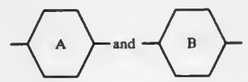


(I)

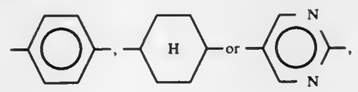
wherein R_1 denotes a linear or branched alkyl group having 1–18 carbon atoms optionally substituted with alkoxy group or halogen, R_2 denotes a linear alkyl group having 1–12 carbon atoms: X_1 denote a single bond, —O—,



and

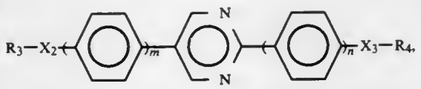


denote



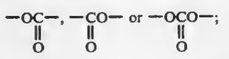
and

at least one compound represented by the following formula (II):



(II)

wherein R_3 and R_4 denote a linear or branched alkyl group having 1–18 carbon atoms wherein R_3 and R_4 are individually optionally substituted with alkoxy group; X_2 and X_3 denote a single bond, —O—,



and m and n are 0, 1 or 2 with proviso that m+n is 2 or above.

5,186,859

PROCESS FOR CATALYTIC PARTIAL OXIDATION OF A HYDROCARBON-CONTAINING FUEL USING ENTRAINED CATALYST

Swan T. Sie, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 21, 1992, Ser. No. 822,769

Int. Cl.[5] C01B *3/28*

U.S. Cl. 252—373 **8 Claims**

1. A process for catalytic partial oxidation of a hydrocarbon-containing fuel to produce carbon monoxide and hydrogen, the process comprising the steps of mixing in a mixing zone an oxygen-containing gas, a hydrocarbon-containing fuel and, optionally, a moderator, with a catalyst in the form of fine particles transferred to the mixing zone by means of a carrier gas, in which zone the partial oxidation reaction is ignited and proceeds in the presence of the catalyst, subsequently entraining the catalyst with the reaction product gas through the reactor and separating the catalyst from the product gas.

5,186,860

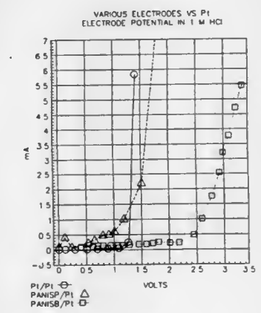
INERT ELECTRODE COMPRISING A CONDUCTIVE COATING POLYMER BLEND FORMED OF POLYANISIDINE AND POLYACRYLONITRILE

James L. Joyce, Jr.; Warren C. Jones, both of Winston-Salem, and David F. MacInnes, Jr., Greensboro, all of N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 527,799, May 23, 1990, abandoned. This application Oct. 11, 1990, Ser. No. 596,066

Int. Cl.[5] H01B *1/00*

U.S. Cl. 252—500 **7 Claims**



1. An inert electrode comprising:

an electrode substrate formed of an electrically conductive material; and

a conductive coating polymer blend that is chemically inactive in oxidizing or reducing solution environments, said conductive coating polymer blend being in physical and conductive contact with said electrode substrate; and wherein

said conductive coating polymer blend is formed of a homogeneous blend of polyanisidine and polyacrylonitrile in which said polyanisidine is present in an amount of between about 5 and 90 percent by weight; and wherein

the amount of said polyacrylonitrile in said conductive coating polymer blend is sufficient to prevent said polyanisidine from undergoing oxidation-reduction during the application of voltage to said substrate and said conductive coating polymer blend; and wherein

the amount of said polyacrylonitrile in said conductive coating polymer blend is sufficient to prevent said polyanisidine from the degrading action of irreversible over-oxidation when voltages are applied to said substrate and said conductive coating polymer blend that are greater than the applied voltages at which polyanisidine is irreversibly over-oxidized when polyanisidine is applied to a conductive substrate in substantially pure form.

5,186,861

INTRINSICALLY CONDUCTIVE MOULDING COMPOUND

Ronald M. A. M. Schellekens, Maastricht; Hans K. Van Dijk, Geleen, and Marcus J. H. Bulters, Sittard, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Jan. 22, 1991, Ser. No. 643,590

Claims priority, application Netherlands, Jan. 24, 1990, 9000167; Feb. 10, 1990, 9000321

Int. Cl.[5] H01B *1/00*

U.S. Cl. 252—500 **7 Claims**

1. A process for preparing an intrinsically conductive moulding compound comprising the steps of:

(a) dissolving a matrix polymer in an essentially solvent free monomer chosen from the group consisting of furan, pyrrole, benzene, aniline and derivatives thereof to form a solution;

(b) shaping said solution of step (a) into a form; and

(c) polymerizing said monomer of step (a) shaped in said form of step (b) in situ in the presence of a catalyst.

5,186,862

PLASTIC GRANULATED MATERIAL WITH NON-DISPERSED ELECTRICALLY CONDUCTIVE FIBRE BUNDLES

Louis C. Krijger; Jozef M. A. Jansen, both of Geleen; Nicolaas G. M. Hoen, Stein; Laurentius W. Steenbakkers, and Peter E. Froehling, both of Sittard, all of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Oct. 19, 1989, Ser. No. 423,881

Claims priority, application Netherlands, Oct. 20, 1988, 8802584; Jul. 19, 1989, 8901859

Int. Cl.[5] H01B *1/00*

U.S. Cl. 252—512 **5 Claims**

1. A granulated thermoplastic polymer composition containing electrically conductive fibers, consisting of:

granules incorporating 0.3–4% (vol) electrically conductive fiber bundles with a degree of dispersion of 0.01 to 0.10, wherein the degree of dispersion is the reciprocal value of the volume fraction in % of a granule occupied by the electrically conductive fiber bundles, each comprising 60–20,000 fibers, and measured according to the threshold value method.

5,186,863

HIGH DIELECTRIC SOLVENT

Thomas Mancini, Lincoln Park, N.J., assignor to U.S. Polychemical Corporation, Spring Valley, N.Y.

Continuation-in-part of Ser. No. 858,050, Mar. 26, 1992, Pat. No. 5,126,378, which is a division of Ser. No. 795,723, Nov. 21, 1991, Pat. No. 5,158,706. This application Jul. 29, 1992, Ser. No. 921,550

The portion of the term of this patent subsequent to Oct. 27, 2009, has been disclaimed.

Int. Cl.[5] H01B *3/24, 3/20;* **B01J** *1/00*

U.S. Cl. 252—570 **5 Claims**

1. A high dielectric strength solvent for use in electrical and electronic environments, comprising:

about 5–20% by weight dimethyl glutarate, about 30–75% by weight aliphatic hydrocarbon, about 1–5% by weight dimethyl adipate, about 0–15% by weight methyl salicylate, about 1–7% by weight dimethyl succinate, and about 10–40% by weight dipropylene glycol methyl ether, the solvent having a dielectric strength of more than 60 KV.

VOL 1147 ISS 3 FE 16 1993 UMI

5,186,864

SYNTHESIS OF DIELECTRIC LIQUIDS BY IMPROVED FRIEDEL-CRAFTS CONDENSATION

Raymond Commandeur, Vizille; Noelle Berger, Ecully; Pierre Jay, Saint Didier au Mont d'Or, and Jacques Kervennal, Lyons, all of France, assignors to Atochem, Puteaux, France

Filed Oct. 15, 1990, Ser. No. 597,030
Claims priority, application France, Oct. 13, 1989, 89 13451
Int. Cl.[5] C07C *1/26, 2/02;* **H01B** *3/22, 3/24*
U.S. Cl. 252—581 **16 Claims**

1. A process for the preparation of a dielectric liquid, comprising (a) Friedel-Crafts condensing at least one aromatic halide with at least one aromatic compound in the presence of a catalytically effective amount of ferric chloride, said aromatic compound being different than said aromatic halide, and thereafter deliberately avoiding any downstream destruction/-neutralization and/or washing of said ferric chloride catalyst, and (b) recovering from the medium of reaction a dielectric liquid.

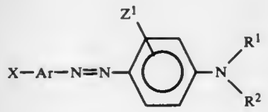
5,186,865

ELECTRO-OPTICAL MATERIALS AND LIGHT MODULATOR DEVICES CONTAINING SAME

Chengjiu Wu, Morristown; Ajay Nahata, Madison; Michael J. McFarland, Washingtoo; Keith Horn, Long Valley, and James T. Yardley, Morristown, all of N.J., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 456,420, Dec. 26, 1989, Pat. No. 5,061,404. This application Oct. 3, 1991, Ser. No. 770,373
Int. Cl.[5] F21V *9/00;* **C09B** *29/039, 29/09, 29/36;* **C07D** *277/04*
U.S. Cl. 252—582 **5 Claims**

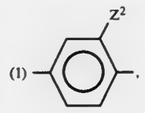
1. A compound of the formula:



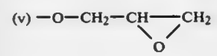
wherein:

(a) X is selected from the group consisting of:
(1) $-NO_2$,
(2) —CN,
(3) $-COOR^3$ wherein R^3 is alkyl, straight chain, cyclic or branched having 1–20 carbon atoms,
(4) $-CH=C(CN)_2$ and
(5) $-C(CN)=C(CN)_2$;

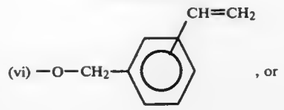
(b) Ar is selected from the group consisting of



wherein Z^2 is
(i) —H
(ii) —OH
(iii) —OC—(O)—CH=CH_2
(iv) —OC—(O)—C(CH_3)=CH_2

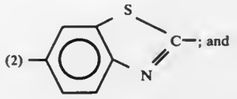


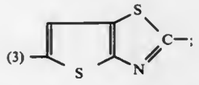
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, or

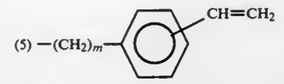
(vii) $-O(CH_2)_2-OCH=CH_2$;



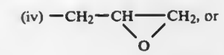


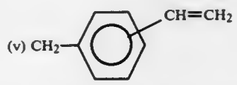
(c) Z^1 is selected from the group consisting of —H and —OH;

(d) R^1 is selected from the group consisting of
(1) —H,
(2) alkyl, straight chain, branched or cyclic, having about 1–20 carbon atoms,
(3) $-C_nH_{2n}OH$, wherein n is an integer of from about 1–20,
(4) $-(CH_2)_m-CH=CH_2$, wherein m is an integer of from about 1–20,



wherein m is an integer of from about 1–20 and the —CH=CH_2 substituent is in the m- or p- position,
(6) $-(CH_2)_m-O-M$ wherein m is an integer of from about 1–10, and wherein M is
(i) —CH=CH_2,
(ii) —C(O)—CH=CH_2,
(iii) —C(O)—C(CH_3)=CH_2,





wherein the —CH=CH_2 substituent is in the m- or p-position and
(7) an alkylene bridging group having 2 to 4 carbon atoms connecting the N atom to the o- position of the aromatic ring to which the N atom is attached; and

(e) R_2 is selected from the group consisting of
(1) —H,
(2) alkyl, straight chain, branched or cyclic, having about 1–20 carbon atoms,
(3) $-C_nH_{2n}OH$ wherein n is an integer of from about 1–20, and
(4) an alkylene bridging group having 2 to 4 carbon atoms connecting the N atom to the o- position of the aromatic ring to which the N atom is attached;

with the proviso that at least one of R^1 and R^2 is an alkylene bridging group having from 2 to 4 carbon atoms connecting the N atom to o- position of the aromatic ring to which the N atom is attached.

5,186,866

OXIDE GARNET SINGLE CRYSTAL

Toshihiko Ryuo, and Toshiaki Watanabe, both of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jul. 19, 1990, Ser. No. 555,723
Claims priority, application Japan, Jul. 20, 1989, 1-188091
Int. Cl.[5] G02B *5/20;* **C01G** *49/00*
U.S. Cl. 252—584 **4 Claims**



1. A single crystal of an oxide garnet having a chemical composition expressed by the formula

$$(Bi_aEu_bLn_{1-a-b})_3(Fe_{1-c}M_c)_5O_{12},$$

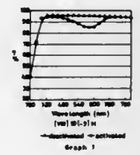
in which Ln is a rare earth element other than europium, M is an element selected from the group consisting of aluminum, gallium, indium and scandium, the subscript a is a positive number defined by $0.15 \leqq a \leqq 0.6$, the subscript b is a positive number defined by $0.01 \leqq b \leqq 0.16$ and the subscript c is a positive number defined by $0.01 \leqq c. \leqq 0.1$.

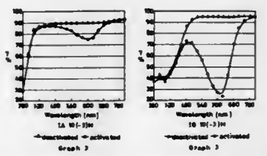
5,186,867

SPIRO-INDOLINE OXAZINE COMPOUNDS WITH PHOTOCHROMATIC AND PHOTOSENSITIZING CHARACTERISTICS AND THE PROCESS FOR THEIR PREPARATION

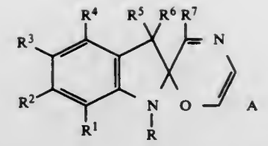
Graziano Castaldi, Briona; Pietro Allegrini, San Donato Milanese; Luciana Crisci, Sant'Angelo Lodigiano, and Fiorenzo Renzi, Gorgonzola, all of Italy, assignors to Enichem Synthesis, S.p.A., Palermo, Italy

Continuation of Ser. No. 623,219, Dec. 6, 1990, abandoned. This application Feb. 27, 1992, Ser. No. 842,800
Claims priority, application Italy, Dec. 12, 1989, 22660 A/89
Int. Cl.[5] G02B *5/23;* **G02F** *1/00;* **F21V** *9/04;* **C07D** *265/00*
U.S. Cl. 252—586 **4 Claims**





1. A photochromatic and photosensitizing composition comprising a spiro-indoline-oxazine of the general formula (I):



(I)

where

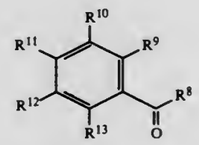
R represents a methyl group; a C_1–C_5 carboxyalkyl group; a cyano group; or a C_2–C_5 alkenyl group;

R^1 to R^4, which can be identical or different, each independently represent a hydrogen atom; a linear or branched C_1–C_5 alkyl group; a C_1–C_5 alkyl group substituted with 1 to 5 atoms of halogen chosen from fluorine, chlorine, bromine and iodine, hydroxy groups, C_1–C_5 alkoxy groups, C_1–C_5 carboxyalkyl groups, cyano groups; a C_2–C_5 alkenyl group, a benzyl group, a halogen atom chosen from fluorine, chlorine, bromine and iodine; a hydroxy group; a C_1–C_5 alkoxy group; an amino group; a C_1–C_5 monoalkyl amino group; a C_1–C_5 dialkyl amino group; a C_3–C_{10} cycloalkyl amino group; a piperidino, piperazino or morpholino group; a carboxyl group; a C_1–C_5 carboxyalkyl group; a C_2–C_5 carboxyalkenyl group; a carboxyamide group; a C_1–C_5 N-alkyl substituted carboxyamide group; a C_1–C_5 N,N-dialkyl substituted carboxyamide group; a cyano group; a nitro group; a sulfonic group; a C_1–C_5 alkylsulfonic group; an arylsulphonic group chosen from benzenesulfonic, p-toluenesulfonic and p-chlorotoluenesulfonic groups; or an aryl group chosen from phenyl, diphenyl and naphthyl groups;

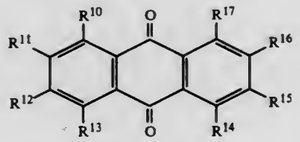
R^5 and R^6 both represent a methyl group;

R^7 represents a hydrogen atom; or a halogen atom chosen from fluorine, chlorine and bromine; and

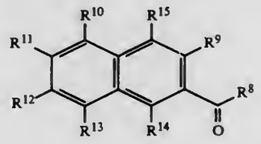
A represents a monocyclic or polycyclic arene group containing at least one carbonyl function (C=O) on the nucleus or in a side chain, and chosen from those representable by the following formulas (II), (III), (IV), (V) or (VI):



(II)



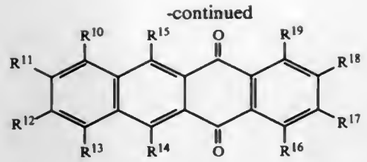
(III)



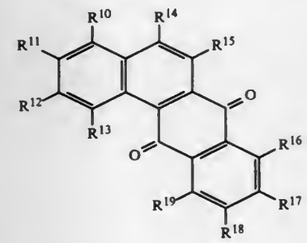
(IV)

VOL 1147 ISS 3 FE 16 1993 UMI

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(V)



(VI)

where

R^8 represents a hydrogen atom; a halogen atom chosen from chlorine and bromine; a linear branched C_1–C_5 alkyl group; a C_2–C_5 alkenyl group; a monocyclic or polycyclic aryl group; or a heteroaryl group chosen from phenyl, naphthyl, anthracyl, furanyl, thiophenyl, quinolyl and pyrrolyl; or an aryl or heteroaryl group substituted with 1 to 4 groups chosen from a halogen atom selected from fluorine, chlorine and bromine, linear or branched C_1–C_5 alkyl groups, hydroxy groups, C_1–C_5 alkoxy groups, nitro groups, cyano groups, amino groups, C_1–C_5 monoalkyl amino groups; C_1–C_5 dialkyl amino groups; piperidino groups, piperazino groups or morpholino groups;

two adjacent of R^{10} to R^{13} represent the position of fusion with the oxazine ring in general formula (I), the others having the same meaning as R^9 and R^{14}–R^{19};

R^9 and R^{14}–R^{19} represent a hydrogen atom; a linear or branched C_1–C_5 alkyl group; a C_1–C_5 alkyl group substituted with 1 to 5 atoms of halogen chosen from fluorine, chlorine, bromine and iodine, hydroxy groups, C_1–C_5 alkoxy groups, C_1–C_5 carboxyalkyl groups, cyano groups; a C_2–C_5 alkenyl group; a benzyl group; a halogen atom chosen from fluorine, chlorine and bromine and iodine; a hydroxy group; a C_1–C_5 alkoxy group; a carboxyl group; a C_1–C_5 carboxyalkyl group; a C_1–C_5 carboxyalkenyl group; a carboxyamide group; a C_1–C_5 N-alkyl substituted carboxyamide group; a C_1–C_5 N,N-dialkyl substituted carboxyamide group; a cyano group; a nitro group; a sulfonic group; a C_1–C_5 alkylsulfonic group; an arylsulfonic group chosen from benzenesulfonic, p-toluenesulfonic and p-chlorotoluenesulfonic groups; or an aryl group chosen from phenyl, diphenyl and naphthyl groups.

5,186,868

METHODS FOR TRITIUM LABELING

Hendrik Andres, Hochwald, Switzerland; Hiromi Morimoto, El Cerrito, and Philip G. Williams, Oakland, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Apr. 5, 1990, Ser. No. 505,257

Int. Cl.[5] G21G *4/08*

U.S. Cl. 252—645 **9 Claims**

1. A process for introducing high activity levels of tritium radiolabel into an organic compound having a chemically reducible site comprising

a) reacting an organic solvented solution of alkali metal alkyl with gas comprising at least about 20% molar tritium gas in the presence of an alkyl tertiary amine thereby giving rise to high activity alkali metal tritide,

b) reacting the high activity alkali metal tritide of step a and a solution of aluminum halide thereby forming a solution of high activity alkali metal aluminum tritide and

c) thereafter admixing the solution of high activity alkali metal aluminum tritide with the organic compound having a chemically reducible site thereby directly reducing the chemically reducible site by introducing tritium atoms of the tritide thereinto in an amount equal to at least about 20% of the total reducing atoms introduced.

5,186,869

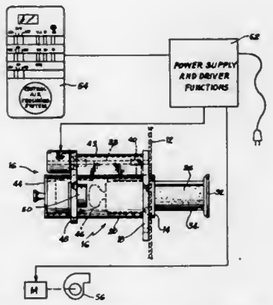
ELECTRONICALLY CONTROLLED CENTRAL AIR FRESHENING SYSTEM AND METHOD FOR USING SAME

Donald D. Stumpf, 13418 Floral Ave., and Scott A. Stager, 1449 View Pointe Ave., both of Poway, Calif. 92064

Filed Oct. 15, 1991, Ser. No. 775,469

Int. Cl.[5] B01F *3/04, 5/00*

U.S. Cl. 261—30 **11 Claims**



1. For an air passageway having a wall with an opening therein, an apparatus for dispersing vapor into said passageway comprising:

(a) a dispersant;

(b) a movable carrier supporting said dispersant;

(c) a housing defining an internal chamber into which said dispersant can be withdrawn by said carrier in substantially sealed relation from said passageway; and,

(d) means for selectively and automatically moving said carrier between an active mode in which dispersant is inserted at least partially into said passageway and a passive mode in which said dispersant is substantially withdrawn from said passageway into substantial non-communication therewith.

5,186,870

PROCESS FOR FABRICATING AN IR TRANSMITTING OPTICAL FIBER

Terry A. Fuller, Highland Park; Vijay J. Nadkarni, Mundelein, and John R. Peschke, Woodstock, all of Ill., assignors to Fuller Research Corporation, Huntingdon Valley, Pa.

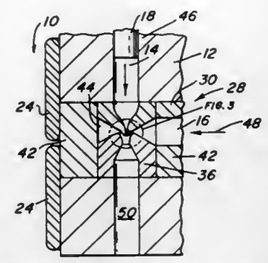
Filed Dec. 17, 1987, Ser. No. 134,276

Int. Cl.[5] B29C *47/06;* B32B *31/30;* G02B *6/16, 6/18*

U.S. Cl. 264—1.2 **28 Claims**

1. A process for manufacturing a cladded optical fiber comprising the steps of:

(a) extruding a first halide from a first chamber, to form the fiber core;



(b) extruding a second halide from a second chamber into contact with said core, to form a cladding around said core; and

(c) joining said cladding and said core.

5,186,871

METHOD AND APPAPARATUS TO PREPARE MONOBASIC PROPELLANT CHARGE POWDERS WITH ALCOHOL AND ETHER AS SOLVENTS

Wolfgang Miehling, Mühldorf, Fed. Rep. of Germany, assignor to WNC-Nitrochemie GmbH, Aschau, Fed. Rep. of Germany

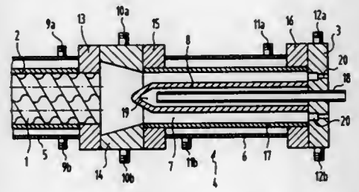
PCT No. PCT/EP90/00615, § 371 Date Dec. 13, 1990, § 102(e) Date Dec. 13, 1990, PCT Pub. No. WO90/12772, PCT Pub. Date Nov. 1, 1990

PCT Filed Apr. 17, 1990, Ser. No. 634,161

Claims priority, application Fed. Rep. of Germany, Apr. 25, 1989, 3913603

Int. Cl.[5] C06B *21/00*

U.S. Cl. 264—3.3 **7 Claims**



1. In a method of preparing monobasic propellant charge powders using alcohol and ether as solvents by an extrusion process using an extruder, the improvement comprising the step of cooling the propellant charge powder and solvent to a temperature range between about 35° C. and 40° C.

5,186,872

METHOD FOR GENERATION AND COLLECTION OF ULTRA FINE PARTICLES WITHOUT SCATTER

Akira Nishiwaki, and Yasuo Morohoshi, both of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Jun. 28, 1991, Ser. No. 722,973

Claims priority, application Japan, Jun. 29, 1990, 2-172125; Aug. 23, 1990, 2-222118

Int. Cl.[5] B29B *9/00*

U.S. Cl. 264—5 **6 Claims**

4. A method of producing ultra fine particles of a material, said method comprising:

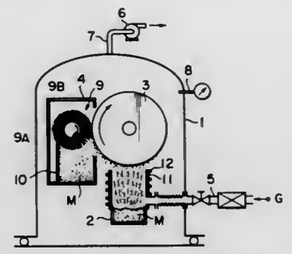
setting an evaporation vessel containing said material in a vacuum chamber;

evaporating said material in said evporation vessel;

injecting an inert gas through an inert gas suply duct into said evaporation vessel, said inert gas cooling said evaporated material to form ultra fine particles;

directing a flow of said ultra fine particles toward a deposit holding body through a confined space bounded by said evaporation vessel and a scatter prevention wall;

depositing said ultra fine particles onto a surface of said deposit holding body; and



collecting said ultra fine particles form said surface of said deposit holding body.

5,186,873

PROCESS FOR PREPARING CARBON/CARBON COMPOSITE

Seiichi Uemura, Ota; Yoshio Sonda, Machida; Osamu Kato, Yokohama; Takefumi Kouno, Kawasaki, and Tsutomu Kihara, Yokohama, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed May 10, 1991, Ser. No. 698,658

Claims priority, application Japan, May 11, 1990, 2-119916

Int. Cl.[5] C01B *31/02*

U.S. Cl. 264—29.5 **12 Claims**

1. A process for preparing a carbon/carbon composite, which process comprises polymerizing a polycyclic aromatic compound in the presence of a coupling agent, then impregnating a bundle of carbon fibers with the resulting polymer, then carbonizing the thus-impregnated carbon fiber bundle under pressure or under pressing, and optionally, further carbonizing the thus-carbonized carbon fiber bundle at atmospheric pressure.

5,186,874

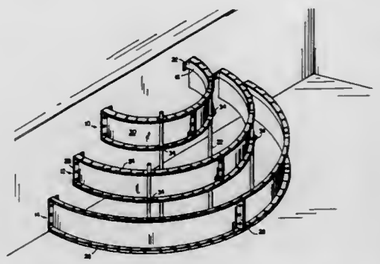
METHOD FOR CASTING STAIRS WITHIN POOLS

Raymond McLaughlin, Rogers Rd., Far Hills, N.J. 07931

Filed May 15, 1990, Ser. No. 523,740

Int. Cl.[5] B28B *7/22;* E04B *1/16;* E04G *13/06;* E04H *4/00*

U.S. Cl. 264—35 **5 Claims**



1. A method of constructing arcuate cement stairs in a pool having an inner wall, comprising

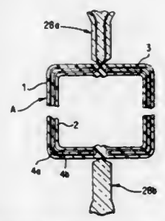
(a) providing a first form member having a vertical stair-shaping surface defining an arc of a first form radius;

(b) providing a second form member having a vertical stair-

VOL
1147
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shaping surface defining an arc of a second form radius smaller than said first form radius;
(c) attaching said first form member to said inner wall of said pool, providing a space between said stair-shaping surface of said first form radius and said inner wall of said pool;
(d) attaching said second form to said inner wall in a plane above said first form member, providing a space between said stair-shaping surface of said second form radius and said inner wall of said pool;
(e) attaching to said inner wall of said pool, inwardly of said first form member and positioned between a top and a bottom of said stair-shaping surface of said first form member, a first arcuate support band having a first band radius generally corresponding to said first form radius and having a vertical height less than a vertical height of said stair-shaping surface of said first form member;
(f) attaching to said inner wall of said pool, inwardly of said second form member and positioned between a top and a bottom of said stair-shaping surface of said first form member, a second arcuate support band having a second band radius generally corresponding to said second form radius and having a vertical height less than a vertical height of said stair-shaping surface of said second form member;
(g) pouring a curable cement containing material into said space between said stair-shaping surface of said first form member and said inner wall of said pool to form a first arcuate stair having a height corresponding to said height of said stair-shaping surface of said first form member and into said space between said stair-shaping surface of said second form member and said inner wall of said pool to form a second arcuate stair having a height corresponding to said height of said stair-shaping surface of said second form member; and
(h) removing said first and second form members to provide said stairs constructed against said inner wall of said pool, said first and second bands remaining in place and supporting said stairs when said form members are removed.

5,186,875
METHOD OF MANUFACTURING OF A NOVEL HOLLOW MULTI-LAYER ARTICLE
Keiji Fukuhara, Hiroshima, Japan, assignor to Mazda Motor Corporation, Hiroshima, Japan
Continuation of Ser. No. 182,458, Apr. 18, 1988, abandoned. This application Mar. 11, 1991, Ser. No. 668,315
Claims priority, application Japan, Apr. 17, 1987, 62-94922
Int. Cl.[5] B29C *49/04, 49/22*
U.S. Cl. 264—37 **7 Claims**



1. A method of manufacturing a multi-layer hollow article which comprises the steps of:
(a) extruding a multi-layer parison by
(i) feeding a molten chief resin material to an annular resin passage in an extrusion head at a chief resin extrusion pressure,
(ii) dividing said chief resin material into at least two chief resin layers in the annular resin passage,
(iii) feeding a molten adhesive resin material and a molten sub resin barrier material into the annular passage at an adhesive resin extrusion pressure and a sub resin barrier extrusion pressure, respectively, said adhesive resin material and said sub resin barrier material being fed into said annular passage such that a layered polymer material is formed having at least two layers of said chief resin material, a layer of said sub resin barrier material, said two layers of said adhesive resin material, each of the layers of adhesive resin material being located between one of the layers of the chief resin material and the sub resin barrier material and the layer of sub resin barrier material being sandwiched between two layers of adhesive resin material, the adhesive resin material being chemically related to the chief resin material, and
(iv) extruding the layered polymer material through a die slit in a die attached to an exit portion of the extrusion head, the die slit being in fluid communication with the annular passage, to form the multi-layer parison;
(b) reducing the sub resin barrier extrusion pressure to zero and, at the same time, raising the adhesive resin extrusion pressure by a predetermined amount and for a predetermined time to a raised adhesive resin extrusion pressure when the multi-layer parison has been extruded a predetermined length so that the sub resin barrier material layer is cut off completely;
(c) reducing the adhesive resin extrusion pressure from said raised adhesive resin extrusion pressure to zero after said predetermined time has passed;
(d) molding the multi-layer parison so that an upstream cut off end of the sub resin barrier material layer is positioned just within a molding space;
(e) collecting flash, produced as said multi-layer parison is molded, from the molding; and
(f) recycling the flash for use as part of the chief resin material.

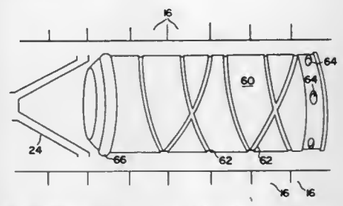
5,186,876
PROCESS OF MAKING DIMENSIONALLY STABLE SECTION
Franz Purstinger, Bad Hall, and Frank Dorninger, Micheldorf, both of Austria, assignors to Schaumstoffwerk Greiner Gesellschaft m.b.H, Kremsmunster, Austria
Continuation of Ser. No. 472,215, Jan. 29, 1990, abandoned, which is a continuation-in-part of Ser. No. 415,125, Sep. 29, 1989, abandoned. This application Dec. 23, 1991, Ser. No. 814,233
Claims priority, application Austria, Jan. 27, 1989, 157/89; Jul. 5, 1989, 1642/89
Int. Cl.[5] B29C *47/04, 47/92, 65/02;* B32B *31/30*
U.S. Cl. 264—40.6 **17 Claims**

1. A process for the production of a dimensionally stable section formed from a plastics extrudate and having a wall provided with a layer produced by extrusion, the process comprising the steps of:
forming said section by extrusion through a nozzle;
calibrating said section upon its emergence from said nozzle and cooling said section to an extent to render it dimensionally stable;
heating a surface area of said section wall to bring said surface area to a plastic condition;
extruding said layer directly onto said heated wall surface area to laminate said layer thereto and to support said layer on said heated wall surface area in continuous contact therewith; and
gripping said section with said laminated layer by means of a take-up device for removing it.

5,186,877
PROCESS OF PREPARING ELECTRODE FOR FUEL CELL
Masahiro Watanabe, No. 2-10, Kitashin 2-chome, Kofu-shi, Yamanashi, Japan, assignor to Tanaka Kikinzoku Kogyo K.K. and Masahiro Watanabe, both of, Japan
Filed Oct. 25, 1991, Ser. No. 782,573
Claims priority, application Japan, Oct. 25, 1990, 2-287824
Int. Cl.[5] B29C *43/00*
U.S. Cl. 264—104 **2 Claims**

2. A process for preparing an electrode for a fuel cell which comprises impregnating catalyst particles with a solution of ion exchange resin to form, after drying, a thin layer of the ion exchange resin on the surface thereof, impregnating non-catalyst particles separately prepared with a solution of ion exchange resin to form, after drying, a thicker layer of the ion exchange resin on the surface thereof than that on the catalyst particle surface, mixing the two kinds of particles coated with the ion exchange resin layer with a hydrophobic binder, forming a sheet-like catalyst layer by means of hot pressing or cold pressing and thermally bonding this sheet-like catalyst layer and an ion exchange membrane under pressure.

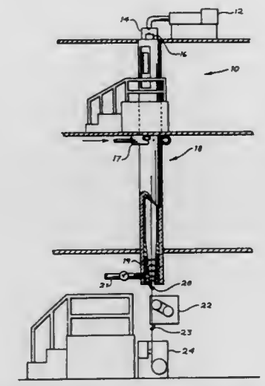
5,186,878
IMPROVEMENTS RELATING TO COOLING PLUGS IN THERMOPLASTIC PIPE FORMING APPARATUS AND PROCESS
Manfred A. A. Lupke, Thornhill, Canada, assignor to Corma Inc., Toronto, Canada
Continuation of Ser. No. 666,643, Mar. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 462,598, Jan. 9, 1990, abandoned. This application Apr. 1, 1992, Ser. No. 860,269
Claims priority, application Canada, Jan. 16, 1989, 588338
Int. Cl.[5] B29C *47/90, 53/30*
U.S. Cl. 264—209.4 **9 Claims**



6. In an apparatus for forming seamless, profile thermoplastic tube with a travelling mold tunnel;
a plug with a substantially cylindrical sizing surface for sizing the inner wall of the formed tube and cooling the tube, the plug extending coaxially within the mold tunnel and defining an upstream plug end and a downstream plug end; and
a suction stop lip located proximate the upstream plug end and positioned on said plug surface;
suction distribution means for communicating suction in progressively diminishing strength in the upstream direction of said plug to said sizing surface, said suction distribution means including conduit means for suction extending within said plug and communicating suction from a source of suction to said sizing surface of said plug through a suction port, said suction port being only located proximate to the downstream end of the plug, whereby suction sufficient to bias the inner tube wall towards the sizing surface is applied to the inner tube wall, and distribution channel means for distributing suction over the sizing surface of the plug upstream of the port and downstream of said suction stop lip, the channel means being open along its length which is arranged with respect to the surface of the plug to distribute suction of substantially continuously diminishing strength on the surface of the plug upstream of the port, whereby the strength of suction progressively diminishes upstream of the port.

9. A method of forming an inner wall of seamless, profile, thermoplastic tube, comprising the steps of: sizing the inner wall and forming a smooth inner wall by means of a sizing plug having a surface within the formed tube and applying suction through a suction port being only located at the downstream end of the sizing plug where the applied suction is of sufficient strength to draw the inner wall of the tube to the sizing plug and the suction is of substantially continuously diminishing strength in the upstream direction of the plug to the inner wall of the tube, preventing application of suction beyond the upstream end of the plug with a suction stop lip on said plug surface, and introducing cooling fluid at the upstream end of the plug and distributing the cooling fluid downstream and across the plug surface with the suction to prevent unevenness in the inner wall.

5,186,879
SPINNING PROCESS FOR PRODUCING HIGH STRENGTH, HIGH MODULUS, LOW SHRINKAGE YARNS
F. Holmes Simons, and Ronald L. Griffith, both of Charlotte, N.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.
Continuation of Ser. No. 523,099, May 11, 1990, abandoned. This application Jul. 1, 1991, Ser. No. 726,150
Int. Cl.[5] B29C *47/88*
U.S. Cl. 264—211.150 **14 Claims**



1. A process for spinning a polyester polymer, to produce a filament, the filaments produced by such process being characterized by either: a crystal size of less than about 55 Angstroms and either an optical birefringence greater than about 0.090 or an amorphous birefringence greater than about 0.060 or a long period spacing of less than about 300 Angstroms; or a crystal content of about 10 to about 43%, a spun tenacity of about 1.7 to about 5.0 grams per denier, a spun modulus in the range of about 10 to about 140 g rams per denier per 100%, a hot air shrinkage of about 5 to about 45%, and an elongation of about 50–160%, said process comprising the steps of:
extruding the polymer through a spinneret;
passing the filaments from the spinneret through an elongated zone;
maintaining the filaments at a temperature above the glass transition temperature of the polymer over a distance of about 3 meters or greater within the zone;
converging said filaments; and
taking up the filament at a speed of greater than 3,000 meters per minute.

VOL
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5,186,880

PROCESS FOR PRODUCING CYANATE ESTER RESIN CURE PRODUCT

Morio Gaku, and Mitsuru Nozaki, both of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jul. 3, 1990, Ser. No. 547,207
Claims priority, application Japan, Jul. 4, 1989, 1-171188
Int. Cl.[5] B29C *39/38, 71/02*
U.S. Cl. 264—236 **8 Claims**

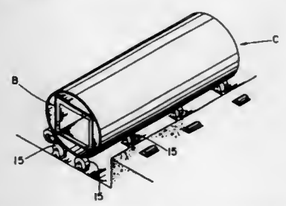
1. A process for producing a cyanate ester resin cured product which comprises:
   (i) a step of adding an organic metal compound (a) and triethanol amine (b) to a cyanate resin composition, which is flowable at a temperature of not more than 50° C., comprising a polyfunctional cyanate ester compound having at least two cyanato groups in its molecule as a main component, thereby forming a resin composition having 0.1–5% by weight of (a) and 0.1–5% by weight of (b), and which is flowable at a temperature of not more than 50° C.;
   (ii) a step of molding the resin composition at a temperature of not more than 50° C.;
   (iii) a step of primary curing of the resin composition at a temperature of not more than 50° C.;
   (iv) a step of post-curing of the resin composition at a temperature of not less than 170° C.

5,186,881

METHOD FOR MANUFACTURING HOLLOW CONCRETE STRUCTURES

Samuel W. Beaman, 5233 Petty St., Houston, Tex. 77007

Division of Ser. No. 502,770, Apr. 2, 1990, Pat. No. 5,090,884. This application Nov. 5, 1991, Ser. No. 788,209
Int. Cl.[5] B28B *1/02, 1/16, 7/10, 13/06*
U.S. Cl. 264—256 **2 Claims**



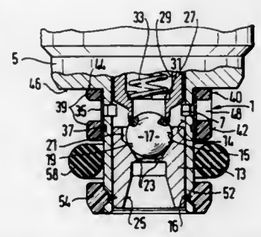
1. A method of forming a unitary concrete modular building structure comprising the steps of:
   (a) forming a multi-sided assembly of concrete reinforcing material shaped to substantially a size and shape of a desired building structure;
   (b) inserting said assembly of concrete reinforcing material into a rotatable form comprising a plurality of substantially flat surfaces each of which corresponds and is spaced uniformly from one side of said multi-sided assembly for receiving liquid cement to be a applied to said assembly;
   (c) applying a desired amount of liquid cement to a side of said reinforcing assembly after positioning said side and its corresponding flat form surface in a substantially horizontal position, to cover an inner surface of said reinforcing assembly to a desired amount;
   (d) finishing an upper surface of said liquid cement above said inner surface of said reinforcing assembly, while said reinforcing assembly is in said substantially horizontal position;
   (e) rotating said form and said concrete reinforcing assembly sufficiently to position another side of said assembly and its corresponding substantially flat form surface in said substantially horizontal position;
   (f) applying a desired amount of liquid cement to said another side of said relationship assembly when that side and its corresponding flat form surface is in said substantially horizontal position to cover an inner surface of said reinforcing assembly to a desired amount;
   (g) finishing an upper surface of said liquid cement above said inner surface of said another side of said reinforcing assembly, while said reinforcing assembly is in said substantially horizontal position;
   (h) further rotating said form and said concrete reinforcing assembly sequentially so as to position each further side of said reinforcing assembly in a substantially horizontal position for receiving and finishing of liquid cement until all sides of said multi-sided assembly are covered with a desired amount of said liquid cement to form said unitary concrete structure; and
   (i) removing said concrete structure from said form.

5,186,882

METHOD FOR MOUNTING A FILTER ON THE VALVE

Udo Hafner, Ludwigsburg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 29, 1991, Ser. No. 800,308
Claims priority, application Fed. Rep. of Germany, Nov. 29, 1990, 4037952
Int. Cl.[5] B01D *35/02;* **F02M** *51/08;* **B29C** *67/18*
U.S. Cl. 264—257 **6 Claims**



1. A method for mounting a filter on the circumference of a valve body of a valve, especially of a fuel injection valve, said valve body defining in a radial direction the outside of the valve, the valve body having at least one through opening on its circumference, through which fuel flows, the method steps comprise applying a filter cloth in such a way on the circumference of the valve body that the at least one through opening is covered by the filter cloth, spraying a plastic coating onto different portions of the filter cloth, leaving at least one opening through which fuel can flow through the filter cloth and the at least one through opening into the valve body and permitting the plastic coating to cool thereby shrinking on the filter cloth, and on at least one portion of the circumference of the valve body so as in this way to fix the filter cloth in its position relative to the valve body.

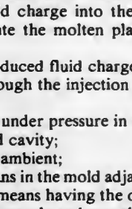
5,186,883

METHOD OF FORMING A CONCRETE BLOCK

John N. Beall, III, 319 NE. 72nd St., Seattle, Wash. 98115

Division of Ser. No. 247,761, Sep. 21, 1988, abandoned. This application Sep. 29, 1989, Ser. No. 415,407
Int. Cl.[5] B29C *39/10*
U.S. Cl. 264—275 **1 Claim**

1. A method of making an insulated building block comprising the steps of:
   (a) piercing said block of insulation with a plurality of rods to spaced said block of insulation form top, bottom and sides of a form, each of said rods having a length substantially equal to one of the inside dimensions of said form;



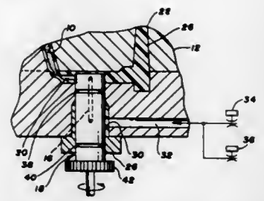
   (b) filling said form with concrete to fill the space between the inside surfaces of said form and said block of insulation;
   (c) covering said block of insulation with a layer of concrete.

5,186,884

METHOD OF INJECTION MOLDING WITH PRESSURIZED FLUID ASSIST

James W. Hendry, Brooksville, Fla., assignor to Milad Limited Partnership, Naples, Fla.

Filed Jun. 6, 1991, Ser. No. 711,288
Int. Cl.[5] B29C *45/00;* **B29D** *22/00*
U.S. Cl. 264—572 **11 Claims**



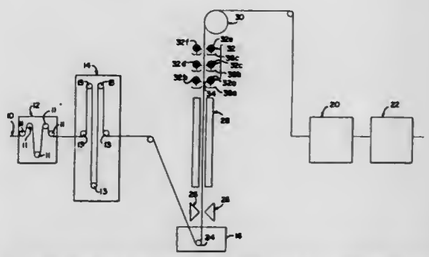
1. A method for the injection molding of a plastic article in an injection molding system including a resin injection nozzle and a mold having an injection aperture for receiving molten resin from the nozzle at an upstream position, a mold cavity at a downstream position and a resin flow path for fluidly communicating the injection aperture and the mold cavity between the upstream and downstream positions, and a subgate in communication with the resin flow path, the method comprising the steps of:
   pressurizing a charge of fluid at a predetermined pressure level;
   injecting a quantity of molten plastic from the injection nozzle through the injection aperture and the flow path and into the mold cavity at a nominal injection pressure;
   communicating the charge of pressurized fluid to an orifice opening to the subgate and the resin flow path in the mold between the upstream and downstream positions;
   introducing the fluid charge into the flow path from the orifice to distribute the molten plastic within the mold cavity;
   preventing the introduced fluid charge from traveling from the flow path through the injection aperture and into the injection nozzle;
   containing the fluid under pressure in the article until it has set up in the mold cavity;
   venting the fluid to ambient;
   providing valve means in the mold adjacent to or in the mold cavity, the valve means having the orifice located remote from the injection nozzle and movable relative to the rest of the mold between fluid open and fluid closed positions, the valve means allowing the fluid charge to travel through the orifice, into the subgate and into the flow path in the fluid charge through the orifice in the fluid closed position and wherein said step of introducing includes the step of moving said valve means and the orifice and wherein the flow path does not extend into said valve means; and
   providing a pair of spaced seals wherein the valve means is sealed within the mold by the pair of spaced seals and wherein the orifice opens to the subgate between the seals, the seals and the subgate preventing fluid leakage between the valve means and the mold.

5,186,885

APPARATUS FOR COOLING A TRAVELING STRIP

George C. Perneczky, 14032 S. Kostner Ave., Unit H, Crestwood, Ill. 60445

Filed Oct. 22, 1990, Ser. No. 601,197
Int. Cl.[5] C21D *9/52*
U.S. Cl. 266—115 **20 Claims**



1. An apparatus for cooling the surface of a traveling strip of heated material, comprising at least one pair of header means, with each of said at least one pair of header means comprising a first cooling header and a second cooling header, with said first cooling header and said second cooling header being positioned in spaced apart relation and lying on opposite sides of the traveling strip, each cooling header being provided with an air exit to be positioned adjacent the traveling strip through which an air stream is discharged, each cooling header including a first chamber communicating through an air passage with a source of air, an external pipe having end plates and an opening communicating with said exit, said external pipe having a longitudinal axis lying centrally through the length thereof with said external pipe having an interior wall and an exterior wall, a second chamber located at each end of said external pipe and communicating with said first chamber, a plurality of internal pipes disposed within said external pipe such that said internal pipes define an interior circumference and an exterior circumference, each of said internal pipes having inlets communicating with said second chamber through said end plates, each of said internal pipes further having a plurality of discharge holes disposed along at least a portion of the length of said internal pipes with said discharge holes being positioned to direct an air stream toward a region of said external pipe lying along the central longitudinal axis of said external pipe, a raceway lying between the interior wall of said external pipe and the exterior circumference of said internal pipes and adapted to receive an air stream from said region of said external pipe and discharge the air through said opening and said exit.

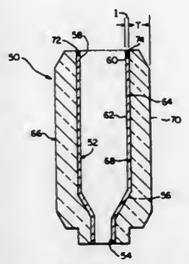
VOL 1147 ISS 3 FE 16 1993 UMI

5,186,886

COMPOSITE NOZZLE ASSEMBLY FOR CONDUCTING A FLOW OF MOLTEN METAL IN AN ELECTROMAGNETIC VALVE

Miklos C. Zerinvary, and Charles P. Nyilas, both of Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 16, 1991, Ser. No. 760,785
Int. Cl.[5] B22D *41/54*
U.S. Cl. 266—237 18 Claims



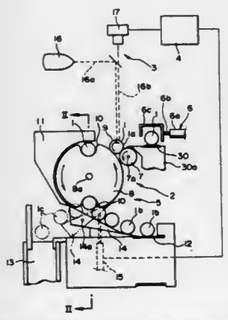
1. A composite nozzle assembly for conducting a flow of molten metal in an electromagnetic valve, comprising an inner nozzle shell formed from an erosion-resistant ceramic material which undergoes tensile stresses of a magnitude sufficient to promote cracking when subjected to the thermal gradient caused when said nozzle shell initially conducts said flow of liquid metal, and a means for applying a compressive load to said inner nozzle shell for reducing said tensile stresses including a layer of electrically non-conductive material disposed around the outside of the inner nozzle shell, wherein said compressive load means applies said load only when said thermal gradient exists between said inner nozzle shell and said layer of material.

5,186,887

APPARATUS FOR INSPECTING PERIPHERAL SURFACES OF NUCLEAR FUEL PELLETS

Yoshitaka Yaginuma, Ibaraki, Japan, assignor to Mitsubishi Nuclear Fuel Co., Tokyo, Japan

Filed Sep. 30, 1991, Ser. No. 767,817
Claims priority, application Japan, Oct. 2, 1990, 2-264509
Int. Cl.[5] G21C *17/06*
U.S. Cl. 376—248 8 Claims



1. An apparatus for inspecting peripheral surfaces of nuclear fuel pellets, comprising:

a handling unit for holding a plurality of nuclear fuel pellets in a line and rotating the same on axes thereof;

a loading device for loading said nuclear fuel pellets onto said handling unit;

an image pick-up device disposed adjacent to said handling unit for picking up image data as to the peripheral surfaces of said nuclear fuel pellets;

a judging device operably connected to said image pick-up device for analyzing said image data outputted from said image pick-up device to output judging signals; and

a sorting unit operably connected to said judging device for separating defective pellets from non-defective pellets based on said judging signals, said sorting unit including a plurality of sorting members disposed adjacent to said handling unit so as to correspond to said nuclear fuel pellets, respectively, and operating means operably connected to said judging device and said sorting members for operating said sorting members based on said judging signals;

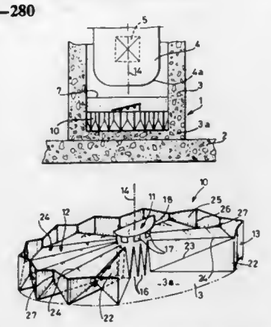
wherein: said handling unit includes a first roller having a first predetermined diameter disposed rotatably about an axis thereof and adjacent to said loading device, a second roller having a second predetermined diameter which is comparatively larger than the first predetermined diameter of the first roller disposed adjacent to said first roller so as to be rotatable about an axis parallel to said axis of said first roller, said first roller and said second roller cooperating to define an inspecting position therebetween, said second roller including at least one ejecting groove for receiving and carrying said plurality of nuclear fuel pellets, said ejecting groove being formed in a peripheral surface of said second roller so as to extend axially thereof.

5,186,888

DEVICE FOR RECOVERING AND COOLING THE CORE OF A NUCLEAR REACTOR IN MELTDOWN FOLLOWING

Claude Malaval, Antony, France, assignor to Framatome, Courbevoie, France

Filed May 18, 1992, Ser. No. 884,181
Claims priority, application France, May 17, 1991, 91 06047
Int. Cl.[5] G21C *9/016*
U.S. Cl. 376—280 6 Claims



1. Device for recovering and cooling the core (5) of a nuclear reactor in meltdown, following an accident, said reactor comprising a generally cylindrical vessel (4) enclosing said core (5), said vessel being disposed with its axis vertical in a cylindrical reactor pit (3) having a lower bottom (3*a*) located vertically below said vessel (4), and said device being constituted by a metal structure (10) resting on said lower bottom (3*a*) and being submerged in a mass of water filling a lower portion of said reactor pit (3), said metal structure (10) comprising

(a) a central chimney (11) comprising a cylindrical body (11*a*) disposed coaxially with said reactor pit (3) and a deflecting upper wall (15) inclined in relation to the horizontal plane, disposed above said cylindrical body (11*a*);

(b) a wall (12, 42) for recovering and cooling said core, said wall being disposed around said body of said chimney (11) and being constituted by a first assembly of contiguous dihedral elements (22, 52) consisting of metal sheets and having a straight ridge (24), said elements being fixed radially around said body of said chimney (11) by inner end portions, in a region of triangular openings (16, 46) traversing said wall of said body of said chimney (11), said ridges (24) of said dihedra constituting upper portions of said dihedra and being inclined upwards in the direction of said chimney (11) and a space located between said wall (12, 42) and said bottom of said reactor pit (3) communicating with said chimney (11) via said triangular openings (16, 46); and

(c) a peripheral wall (13, 43) fixed to external ends of said dihedra (22) of said first assembly, said external ends being opposite the ends fixed to said chimney (11), and said peripheral wall being disposed in the vicinity of an internal surface of said reactor pit (3), in such a manner as to provide at least one passage (30, 55) bringing the space located between said recovery wall (12) and said bottom (3*a*) of said reactor pit (3) into communication with the internal volume of said reactor pit (3), above said recovery wall (12).

5,186,889

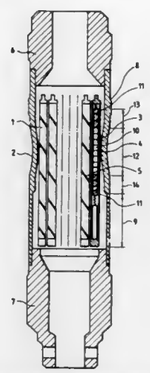
Patent Not Issued For This Number

5,186,890

REACTOR CORE OF FAST BREEDER REACTOR, COMPONENTS OF SAME, AND REGULATING METHOD OF COOLANT DISTRIBUTION OF SAME

Masahisa Ohashi; Shusaku Sawada, both of Hitachi; Motomu Sogame, Mito; Yoshiaki Oomasa, Hitachi, and Kunikazu Kaneto, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 1, 1991, Ser. No. 663,432
Claims priority, application Japan, Mar. 2, 1990, 2-49275
Int. Cl.[5] G21C *3/32*
U.S. Cl. 376—434 12 Claims



1. A fuel assembly for a fast breeder reactor comprising a plurality of nuclear fuel rods, and fuel rod containment means for containing the plurality of nuclear fuels rods therein, the fuel rod containment means having an hourglass shape.

5,186,891

SWIRL VANES IN INCONEL SPACER

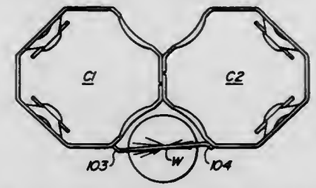
Eric B. Johansson, Wrightsville Beach, N.C., and Bruce Matzner, San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed May 17, 1991, Ser. No. 702,212
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—438 9 Claims

1. A swirl vane for addition to a spring metal grid spacer utilized within a fuel bundle for a conventional nuclear boiling water nuclear reactor, said fuel bundle including a matrix of vertical fuel rods, a lower tie plate for supporting the fuel rods and permitting the inflow of water, an upper tie plate for maintaining the fuel rods in the vertical disposition and permitting the outflow of water and generated steam, a channel for surrounding the fuel rods between the tie plates to establish a flow path of water and steam between the tie plates through the fuel bundle and a plurality of spacers at differing elevations interior of said channel and forming individual containment cells around the fuel rods,

wherein each said spacer includes:

one or more spring legs and at least upper and lower fuel rod encircling arms, said spring leg functioning to bias a fuel rod contained within the cell at the spacer to one side of the cell and said two rod encircling arms defining stops against which said fuel rods are biased,



said cells joined into a unitary matrix at said upper and lower rod encircling arms whereby said upper arms form an upper grid in said spacer and said lower arms form a lower grid in said spacer, an improved swirl vane comprising:

a spring steel strip, said strip including top and bottom tabs for engaging the respective top and bottom grid structure of the spacer and forming said top and bottom portions of said strip, said tabs having a width for placement to said grid at locations outside of said rod encircling arms;

said strip being twisted between said tabs to provide the swirl vane surface;

means for securing said vane at said upper and lower grids for joining said swirl vanes to said spacer.

5,186,892

METHOD OF HEALING CRACKS AND FLAWS IN A PREVIOUSLY SINTERED CEMENTED CARBIDE TOOLS

Louis M. Pope, Provo, Utah, assignor to U.S. Synthetic Corporation, Provo, Utah

Filed Jan. 17, 1991, Ser. No. 643,137
Int. Cl.[5] B22F *3/24*
U.S. Cl. 419—53 8 Claims

1. A method of healing internal microcracks and internal fatigue flaws in a previously sintered cemented carbide object comprising resintering said object for a predetermined period of time at about the same as the original sintering temperatures and heating cycles.

5,186,893

PLASMA CYCLING STERILIZING PROCESS

Kern A. Moulton, Livermore; Bryant A. Campbell, Los Gatos, both of Calif., and Ross A. Caputo, Long Grove, Ill., assignors to Abtox, Inc., Pleasanton, Calif.

Continuation-in-part of Ser. No. 475,602, Feb. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 321,483, Mar. 8, 1989, abandoned. This application Aug. 31, 1990, Ser. No. 576,294
The portion of the term of this patent subsequent to Jan. 12, 2010, has been disclaimed.
Int. Cl.[5] A61L *2/00*
U.S. Cl. 422—23 13 Claims

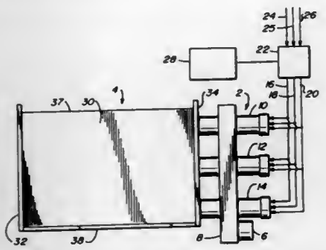
1. A method for plasma sterilization within a controlled temperature range comprising

a) exposing an article in a sterilizing chamber to a gas plasma flowing from a plasma generating chamber until the tem-

VOL 1147 ISS 3 FEB 16 1993 UMI

perature in the sterilizing chamber rises to a preselected maximum temperature;

b) terminating flow of the gas plasma to the sterilizing chamber until the temperature in the sterilizing chamber falls to



a preselected temperature below the preselected maximum temperature; and

c) repeating steps (a) and (b) until sterilization of the article as defined by a preselected probability of survivors is effected.

5,186,894

DRY ANALYSIS ELEMENT FOR THE ANALYSIS OF IRON IONS

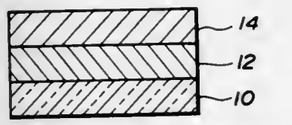
Harumi Katsuyama, Asaka, Japan, assignor to Fuji Photo Film Co, Ltd., Kanagawa, Japan

Filed Oct. 18, 1991, Ser. No. 780,740

Claims priority, application Japan, Oct. 20, 1990, 2-282316

Int. Cl.[5] G01N *31/22*

U.S. Cl. 422—56 **10 Claims**



1. A dry analysis element for the analysis of iron ion, comprising:

(a) a detection reagent layer containing Nitro-PAPS acting as a chelating agent for iron ion and a cationic compound;

(b) a pre-treating layer containing a chelating agent specifically forming a coordination compound with cupric ion; and

(c) a pH buffer for keeping the pH value of said detection reagent layer within the range of from pH 3.0 to pH 5.0, said pH buffer being contained in either one of said detection reagent layer or said pre-treating layer or contained in another layer in said dry analysis element.

5,186,895

METHOD AND APPARATUS FOR AUTOMATIC ANALYSIS OF FLUID COMPOSITION INVOLVING A TIME-DEPENDENT VARIATION THEREOF

Mitsuo Onofusa, Kanagawa; Nobuyoshi Hashimoto, Yokohama; Kimiteru Tagawa, Tokyo, and Michiro Hagiwara, Hiratsuka, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Feb. 15, 1991, Ser. No. 656,006

Claims priority, application Japan, Jun. 16, 1989, 1-152430

Int. Cl.[5] G01N *31/16, 27/02, 33/20*

U.S. Cl. 422—67 **9 Claims**

1. An automatic analytical apparatus for analyzing the composition of a fluid involving a time-dependent variation of composition, the apparatus comprising at least:

(a) a treating receptacle;

(b) a quantitative sampling means for taking and providing a fluid sample into said treating receptacle;

(c) a quantitative supply means for supplying each analytical reagent necessary for the analytical operation to said treating receptacle;

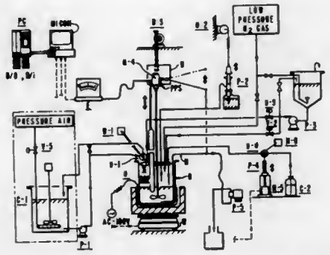
(d) a pretreatment means for subjecting the obtained sample to at least one pretreatment operation selected from the group consisting of heating, cooling, filtration, adsorption and dissolution;

(e) a detection means for detecting the analytical course;

(f) a signal conversion means for converting the detected signals;

(g) a discharge means for ejecting the liquid contained in the treating receptacle;

(h) a means for processing the analytical course detection signals, calculating analytical results, and determining the next analytical conditions, said means for determining the



next analytical conditions comprises means for determining an amount of sample for the present analysis in response to the analytical result of the previous sample and means for controlling the quantitative sampling means to take and provide the amount of sample determined by the sample amount determining means into said treating receptacle; and

(i) a control means for actuating each of the foregoing means in order according to a predetermined rule,

by means of which a series of operations ranging from the sampling into the treating receptacle, pretreatment, analysis, and discharge of a fluid sample to the preparation for the next analysis are repeated automatically in sequence so that the time-dependent variation of the composition is traced in order, thus permitting the presence of the composition variation or the course of the composition variation to be confirmed or the composition variation to be controlled automatically.

5,186,896

CUVETTE ROTOR

Bernhard Bouchée, Hofheim am Taunus, and Karl Fickenscher, Marburg, both of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed May 30, 1990, Ser. No. 530,310

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1989, 3917866

Int. Cl.[5] G01N *21/07*

U.S. Cl. 422—72 **9 Claims**

1. A cuvette rotor, comprising:

at least one radially extending cuvette for centrifuging samples about a central axis, the cuvette having first, second and third chambers respectively disposed radially from the central axis to a peripheral edge, the cuvette having a top wall, a bottom wall, and side walls;

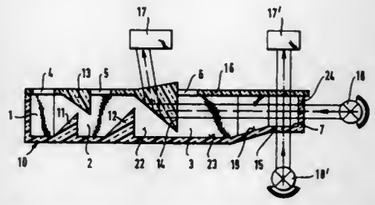
a first barrier projecting into the cuvette from the bottom wall and defining a boundary between the first and second chambers;

a second barrier projecting into the cuvette from the bottom wall and defining a boundary between the second and third chambers;

first, second and third ports disposed through the top wall of the cuvette above the first, second and third chambers, respectively;

a first deflector disposed between the first and second ports, projecting into the cuvette from the top wall and connected to the top wall of the cuvette;

a second deflector disposed between the second and third ports, projecting into the cuvette from the top wall and connected to the top wall of the cuvette;



at least one vessel having top, bottom and side walls, the at least one vessel disposed arcuately around the central axis a predetermined distance from the at least one cuvette;

at least one common side wall separating the at least one vessel from the at least one cuvette; and

a fourth port disposed through the top wall of the at least one vessel.

5,186,897

MULTIANALYTE TEST VEHICLE

Stephen W. Eason, Redgrave; John W. Attridge, Weybridge, and Simon Degroot, Woking, Knaphill, all of United Kingdom, assignors to Ares-Serono Research & Development Limited Partnership, Boston, Mass.

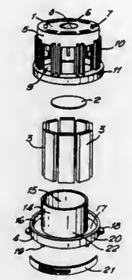
PCT No. PCT/GB90/00556, § 371 Date Dec. 4, 1990, § 102(e) Date Dec. 4, 1990, PCT Pub. No. WO90/11830, PCT Pub. Date Oct. 18, 1990

PCT Filed Apr. 11, 1990, Ser. No. 613,575

Claims priority, application United Kingdom, Apr. 11, 1989, 8908112; Sep. 12, 1989, 8920618

Int. Cl.[5] G05D *7/00*

U.S. Cl. 422—100 **19 Claims**



1. An apparatus for simultaneously communicating sample fluid to a plurality of capillary fill sensor cells, said apparatus comprising a rotatable test vehicle having a central reservoir for receiving sample fluid, an annular spin collection chamber surrounding said reservoir, and means for communicating sample fluid from said reservoir to said spin collection chamber upon rotation of said test vehicle, said test vehicle holding a plurality of capillary fill sensor cells with the inlet ends of said cells, when installed, in fluid communication with said spin collection chamber, whereby during use sample fluid flows from said reservoir to said spin collection chamber upon rotation of said test vehicle, where it contacts the inlet ends of said capillary fill sensor cells into which it flows by capillary action.

5,186,898

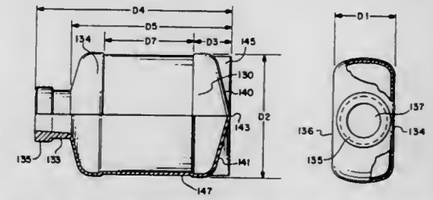
AUTOMATED POLYPEPTIDE SYNTHESIS APPARATUS

John Bridgham, Palo Alto; Timothy G. Geiser, La Honda; Michael W. Hunkapiller, San Carlos; Stephen B. H. Kent, Pasadena; Mark P. Marriott, Los Altos; Paul O. Ramstad, Oakland, and Eric S. Nordman, San Bruno, all of Calif., assignors to Applied Biosystems, Inc., Foster City, Calif.

Division of Ser. No. 53,324, May 22, 1987, which is a division of Ser. No. 592,638, Mar. 23, 1984, Pat. No. 4,668,476. This application Mar. 24, 1989, Ser. No. 328,488

Int. Cl.[5] G01N *37/00, 35/02*

U.S. Cl. 422—102 **2 Claims**



1. A device for providing at least one precise volume of fluid for use in a chemical process requiring deliver of precise volumes of reactant fluids, said device comprising:

(a) two substantially parallel sides;

(b) two other sides, symmetrically located opposite each other and connected to said two substantially parallel sides to form a box shape;

(c) a bottom portion, connected to all four of these sides and having an internal configuration of a vee-shaped trough that has an apex aligned substantially perpendicular to said parallel sides;

(d) a top portion, having a septum therein and connected to said sides to form a cartridge having a closed volume; and

(e) a flange connected to said bottom portion, aligned substantially parallel to said two substantially parallel sides and located substantially midway between said substantially parallel sides, orthogonal to the apex of said trough;

wherein (i) said flanges and (ii) a portion of an exterior surface of said bottom portion, adjacent to the apex of said trough, form a cross-shaped surface that, when placed in contact with a top surface of a horizontal, flat support surface, will support elements (a)–(e) in an orientation in which the top portion is vertically above said bottom portion.

5,186,899

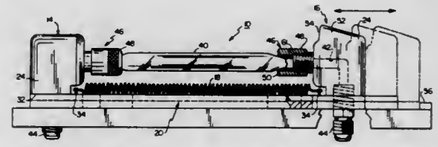
FIXTURE FOR SUPPORTING A REFRIGERANT SAMPLING TUBE IN A CLOSED SYSTEM

Thomas E. Drago, 4775 Black Oak Dr., Liverpool, N.Y. 13088, and Alan D. Abbott, 4470 Brickyard Falls Rd., Manlius, N.Y. 13104

Filed Nov. 13, 1990, Ser. No. 612,639

Int. Cl.[5] G01N *1/22*

U.S. Cl. 422—104 **5 Claims**



1. A holder for use with a sampling tube of the type through which a fluid to be tested is passed, comprising;

a base;

a first end fitting including:

means for releasably engaging one end of a sampling tube,

VOL
1147
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and, for establishing a fluid tight, fluid path with the interior of the tube; and

means for establishing fluid communication between said means for releasably engaging, and, an external conduit;

said first end fitting being fixedly attached to said base;

a second end fitting including:

means for releasably engaging the other end of a sampling tube and for establishing a fluid tight fluid path with the interior of the tube; and

means for establishing fluid communication between said means for releasably engaging and an external conduit;

said second end fitting being slidably mounted on said base, for movement toward and away from said first end fitting, with said means for releasably engaging being in spaced confronting relationship with said means for releasably engaging of said first end fitting; and

means for biasing said slidably mounted second end fitting toward said first end fitting.

5,186,900

BLOOD COLLECTION AND TRANSPORTATION ASSEMBLY FOR EVIDENTIARY PURPOSES

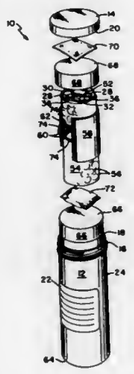
Richard E. Jensen, St. Peter; Donald H. Nichols, Roseville, and D. Gary Hemphill, Wayzata, all of Minn., assignors to Forensic Applications Corporation, Minneapolis, Minn.

Continuation-in-part of Ser. No. 89,586, Aug. 26, 1987, Pat. No. 4,873,193, and a continuation-in-part of Ser. No. 212,016, Jun. 27, 1988, Pat. No. 4,917,867. This application Sep. 27, 1989, Ser. No. 413,493

The portion of the term of this patent subsequent to Oct. 10, 2006, has been disclaimed.

Int. Cl.[5] B01L *3/00*

U.S. Cl. 422—104 **14 Claims**



1. An assembly for the collection and transportation of a sample of a biological fluid such as blood for evidentiary purposes, said sample to be collected by a user and placed within said assembly for transportation to a remote location, said assembly comprising:

an outer container defining a receptacle region, said outer container having a bottom portion and a lid member mountable on said outer container opposing said bottom portion thereof;

at least one sample tube for removably receiving and containing the sample;

a protective wrap, said protective wrap surrounding said sample tube, said sample tube and said protective wrap being received within said receptacle region of said outer container;

lower cushioning means for cushioning said sample tube, said lower cushioning means being disposed between said bottom portion of said outer container and said sample tube;

upper cushioning means for cushioning said sample tube, said upper cushioning means being disposed between said lid member of said outer container and said sampler tube; and

tamper-evidencing wrapper means, said outer container and said sample tube being initially received within said tamper-evidencing wrapper means prior to the sample being collected by the user and placed within said sample tube.

5,186,901

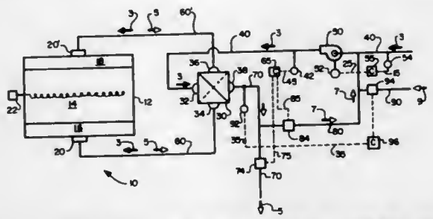
REGENERATIVE BED INCINERATOR SYSTEM

Craig E. Bayer, and Edward G. Blazejewski, both of Wellsville, N.Y., assignors to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Dec. 4, 1989, Ser. No. 445,577

Int. Cl.[5] B01D *53/36*

U.S. Cl. 422—111 **4 Claims**



1. A regenerative bed incinerator system for treating combustible contaminants in a process exhaust stream, comprising:

a. incinerator means for receiving the contaminated process exhausted stream, preheating the contaminated process exhaust stream, incinerating the combustible contaminants in the preheated process exhaust stream, cooling the incinerated process exhaust stream, and discharging the cooled incinerated process exhaust stream, said incinerator means having at least one gas permeable bed of particulate material having heat-accumulating and heat-exchanging properties disposed therein;

b. gas flow directing means operatively associated with said incinerator means for receiving the contaminated process exhaust stream, directing the contaminated process exhaust stream to and through said incinerator means so as to periodically reverse the direction of gas flow through said incinerator means, receiving the cooled incinerated process exhaust stream from said incinerator means, and discharging the cooled incinerated process exhaust stream;

c. a process exhaust stream supply duct connected in flow communication with said gas flow directing means for supplying a flow of contaminated process exhaust gas thereto;

d. a process exhaust stream vent duct connected in flow communication with said gas flow directing means for exhausting the cooled incinerated process exhaust stream discharging from said gas flow directing means;

e. fan means operatively associated with said supply duct for imparting a pressure boost to the process exhaust stream passing through said supply duct;

f. first gas flow regulation means disposed in said vent duct for selectively regulating the amount of cooled incinerated process exhaust gases exhausting through said first gas flow regulation means;

g. a gas recirculation duct having an inlet opening to said vent duct at a location upstream with respect to gas flow of said first gas flow regulations means and an outlet opening to said supply duct at a location upstream with respect to gas flow of said fan means, said gas recirculation duct providing a flow path for recirculating a portion of the cooled incinerated process exhaust stream;

h. second gas flow regulation means disposed in said gas recirculation duct for selectively regulating the amount of cooled incinerated process exhaust gases recirculated to said supply duct;

i. first control means operatively associated with said first gas flow regulation means and with said second gas flow regulation means for selectively proportioning the flow of cooled incinerated process exhaust stream discharged from said incinerator means through said gas flow directing means into a first portion which is exhausted from the system and a second portion which is recirculated to said supply duct through said gas recirculation duct whereby the flow of gases through said incinerator means is maintained relatively constant.

5,186,902

SUPPLY OF CONTROLLED, MEDIUM-PRESSURE CO_2 GAS IN SIMPLE, CONVENIENT DISPOSABLE PACKAGING

George Plester, Essen, Fed. Rep. of Germany, assignor to The Coca-Cola Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 423,697, Oct. 17, 1989, which is a continuation of Ser. No. 108,921, Oct. 15, 1987. This application May 18, 1990, Ser. No. 525,067

Int. Cl.[5] G05D *16/04*

U.S. Cl. 422—112 **33 Claims**

1. An article of manufacture for chemically generating a gas, comprising:

a vessel for housing a gas generating container;

a changeable gas generating container removably located in said vessel, said container having first and second reagent chambers separated by at least a first partition, said first partition having at least one opening formed therein for permitting the passage of a first reagent between said chambers;

said first reagent being located in said first reagent chamber;

a second reagent being located in said second reagent chamber, said first reagent and said second reagent chemically reacting to generate a gas upon contact with each other;

said second reagent chamber having a gas holding region for holding the gas generated;

means for starting a reaction between said first and second reagents;

means for applying a predetermined pressure to said first reagent to urge said first reagent into contact with said second reagent in opposition to a force caused by a pressure exerted by said gas generated against the first reagent; and

movable coupling means having an external orifice on said vessel for coupling to said container and thereafter supplying said gas from said gas holding region of said second chamber to said external orifice.

5,186,903

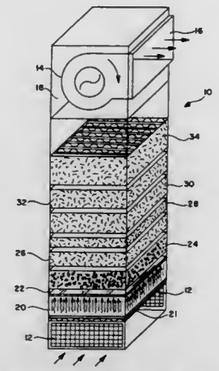
APPARATUS FOR TREATING INDOOR AIR

James H. Cornwell, Raleigh, N.C., assignor to North Carolina Center for Scientific Research, Inc., Morrisville, N.C.

Filed Sep. 27, 1991, Ser. No. 766,713

Int. Cl.[5] A61L *9/00*; **A62B** *7/08*; **B01J** *37/34, 23/32*

U.S. Cl. 422—122 **3 Claims**



1. Apparatus for purifying indoor air comprising a duct means; means for drawing air into said duct means and discharging air from said duct means; and at least one filter disposed in said duct means in the path of the moving air for molecular catalytic cracking of heavy hydrocarbons at ambient temperatures, comprising a fibrous material carrier impregnated with a catalyst compound, wherein the catalyst compound is composed of at least two mechanically mixed elements of the type forming active catalyst sites at the boundaries of such elements, and in which the catalyst material has been surface modified by irradiation at an energy level sufficient to cause molecular dispersion of at least one of the elements and thereby increase the number of active sites.

5,186,904

LABORATORY SIMULATOR OF REACTOR FOR A PETROLEUM REFINERY

David Lyzinski, Wheaton; Robert D. Buttke; James L. Taylor, both of Naperville, and William M. Hall, Batavia, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

Filed Aug. 23, 1989, Ser. No. 397,390

Int. Cl.[5] B01J *19/00*

U.S. Cl. 422—130 **17 Claims**

1. An ebullated bed laboratory reactor for simulating a process and operating conditions of a full scale ebullated bed reactor in a petroleum refinery having a feed for oil and hydrogen containing gas, said laboratory reactor comprising:

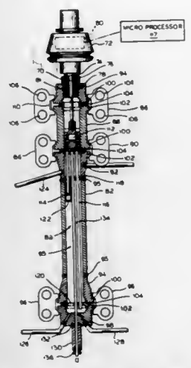
a reactor shell means assembled from a plurality of housing parts for providing a reaction zone and for enabling an emplacement of catalyst into and removing and replacing catalyst from said reaction zone by at least partially disassembling and reassembling said housing;

feed means connected to said reactor shell for feeding oil and a hydrogen-containing gas to said reaction zone at a particular rate which substantially simulates a corresponding rate at which said oil and gas is fed into a full scale ebullated bed reactor;

internal recycle displacement pump means operatively positioned within said reactor shell for substantially back mixing said oil feed and said gas in a presence of said

VOL 1147 ISS 3 FEB 16 1993 UMI

catalyst, under a catalyst to liquid ratio fluid displacement and at a pressure and temperature substantially similar to a ratio, pressure, and temperature used in said full scale ebullated bed reactor in order to produce upgraded oil and product gases; and



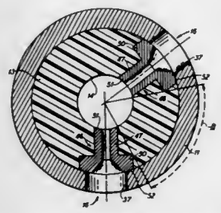
a product outlet line connected to said reactor shell for removing said upgraded oil and said product gases from said shell.

5,186,905

CARTRIDGE PORT DESIGN FOR DISPENSING FOAM PRECURSORS

George T. Bertram, Newtown, and Semyon Krislav, Stamford, both of Conn., assignors to Sealed Air Corporation, Saddle Brook, N.J.

Filed Jul. 16, 1991, Ser. No. 730,708
Int. Cl.[5] B01F *15/02;* B67D *5/60;* G01F *11/28*
U.S. Cl. 422—133 21 Claims



1. An injection assembly for an injection cartridge used to receive, mix, and disperse polymeric foam precursors, said assembly comprising:

a housing having an outer surface and an inner surface, and wherein said inner surface defines a cylindrical mixing chamber along a longitudinal axis of said housing, said cylindrical mixing chamber having a curved inner surface;

an entry port assembly positioned within said housing substantially perpendicularly to the axis of said housing, said port assembly further comprising,

an entry opening in said housing that extends through said housing to form a path of fluid communication through said housing to said mixing chamber,

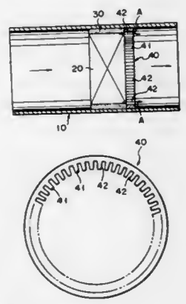
an entry fitting positioned in said entry opening and having front and rear coaxial portions with a common axial opening therethrough, said rear portion being adjacent said outer surface of said housing and said front portion being adjacent said cylindrical mixing chamber, with the end of said front portion having a curved face that substantially matches and aligns with said curved inner surface of said cylindrical mixing chamber so that said curved face and said curved inner surface are flush with one another, and said entry fitting further comprising means associated with said rear portion for maintaining said curved face of said front portion substantially in place and flush with the corresponding arc portion of said chamber.

5,186,906

APPARATUS FOR MOUNTING A HONEYCOMB STRUCTURE IMPREGNATED WITH A CATALYST IN A FLOW TUBE

Takashi Kawakami, Yokohama, and Susumu Handa, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki and The Tokyo Electric Power Co., Inc., Tokyo, both of, Japan

Filed Dec. 29, 1989, Ser. No. 459,311
Claims priority, application Japan, Feb. 10, 1989, 1-29759
Int. Cl.[5] B01D *53/34;* F01N *3/10, 3/24*
U.S. Cl. 422—180 5 Claims



1. An apparatus, comprising:

a tube through which a high-speed high-temperature fluid flows downstream, said tube having an axial direction in which the fluid flows and a radial direction perpendicular to the axial direction

a honeycomb structure impregnated with a catalyst and having upper- and lower-course end faces extending at right angles to the axial direction and a plurality of cells which allow the fluid to flow from the upper-course end face to the lower-course end face;

a first supporting member fixed in the tube and surrounding the honeycomb structure, thereby supporting the honeycomb structure in a radial direction relative to the axial direction of the tube; and

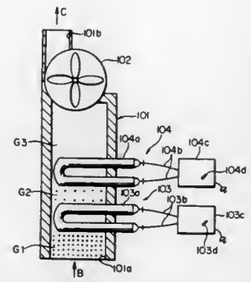
a ring-shaped second supporting member fixed in the tube, having a ring-shaped contact region contacting with a ring-shaped fringe region of the lower-course end face of the honeycomb structure, and having a central hole through which the fluid except for that of the ring-shaped fringe region of the honeycomb structure flows out downstream, said second supporting member having a number of comb teeth and passages between adjacent ones of the comb teeth in the ring-shaped contact region, the comb teeth having substantial width so as to support the honeycomb structure in the axial direction, the passages having a substantial width such that the fluid of the fringe region of the honeycomb structure can flow out downstream, a pitch of the passages being substantially equal to a pitch of the honeycomb structure.

5,186,907

APPARATUS FOR TREATING ORGANIC WASTE GAS

Motonori Yanagi; Masaharu Hama; Takaaki Fukumoto, and Miki Tsukaguchi, all of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 27, 1988, Ser. No. 149,155
Claims priority, application Japan, Mar. 30, 1987, 62-79122; May 15, 1987, 62-119203; Aug. 12, 1987, 62-199901
Int. Cl.[5] B01J *19/08*
U.S. Cl. 422—186.3 25 Claims



1. An apparatus for treating an organic waste gas containing an organic phase comprising:

oxidizing means for carrying out primary oxidation of the organic waste gas by contacting the waste gas with a chemical oxidizing agent to generate a primary oxidation product; and

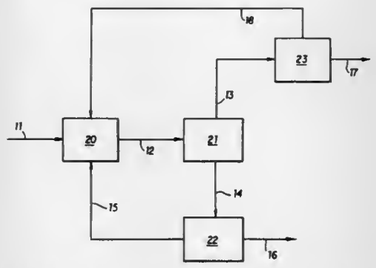
a first ultraviolet ray generator for irradiating the primary oxidation product with ultraviolet rays having a wavelength which promotes the secondary oxidation of the primary oxidation product.

5,186,908

INCREASED CONVERSION OF C_2–C_{12} ALIPHATIC HYDROCARBONS TO AROMATIC HYDROCARBONS USING A HIGHLY PURIFIED RECYCLE STREAM

Margaret Nemet-Mavrodin, Cherry Hill, N.J., and John L. Pickering, Jr., Kingwood, Tex., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 254,556, Oct. 7, 1988, Pat. No. 4,996,381.
This application Aug. 9, 1990, Ser. No. 565,009
Int. Cl.[5] B01J *8/00;* C07C *15/00*
U.S. Cl. 422—190 6 Claims



1. An apparatus for the conversion of an aliphatic hydrocarbon feedstream to an aromatic hydrocarbon product stream comprising:

(a) a process furnace for heating an aliphatic hydrocarbon feedstream;

(b) a reactor having an inlet and an outlet, said inlet in communication with said process furnace;

(c) a gas-liquid separator in communication with said outlet of said reactor for separating said product stream into a gas stream comprising hydrogen and C_4- hydrocarbons and a liquid stream comprising aromatic hydrocarbons and C_5+ aliphatic hydrocarbons;

(d) an aromatic separator in communication with said gas-liquid separator for separating said liquid stream into an aromatic product stream an a heavy aliphatic recycle stream;

(e) a dephlegmator in communication with said gas-liquid separator for separating said gas stream into an off-gas stream comprising methane and hydrogen and a light aliphatic recycle stream containing less than 0.5 wt. % hydrogen; and

(f) conduit connecting said dephlegmator to said reactor for combining said light aliphatic recycle stream with said feedstream; and

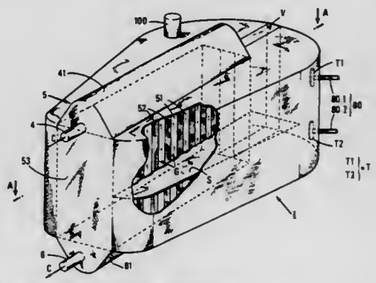
(g) conduit connecting said aromatic separator to said reactor for combining said heavy aliphatic recycle stream with said feedstream.

5,186,909

REACTION CHAMBER COMPRISING A CALENDER REACTOR AND MEANS FOR BEDDING THE FLOW OF A HEAT-CARRYING FLUID

Quang Dang Vu, Neully; Sigismond Franckowiak, Rueil Malmaison; Alain Grehier, Paris; Philippe Vacher, Vienne, and Jean-Pierre Burzynski, Lyons, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jan. 17, 1991, Ser. No. 642,585
Claims priority, application France, Jan. 19, 1990, 90 00664
Int. Cl.[5] B01J *8/02*
U.S. Cl. 422—213 15 Claims



1. A reaction chamber comprising:

an extended reactor comprising reactor walls, at a first end at least one means for introducing a feedstock to be treated, and at a second end at least one means for carrying off the treated charge; at least two elementary reaction cells out of touching contact with one another and out of touching contact with the walls of said reactor, each reactor cell linked from an end thereof to said means for introducing said feedstock, and from an opposite end thereof to said means for carrying off said treated feedstock, said elementary reaction cells containing in at least a part of their volume at least one powdery solid, said reaction cells being separated from one another and from the walls of said reactor, by a channel stretching over a length at least equal to that over which said powdery solid contained in said elementary reaction cells stretches,

at least one means for circulating in each channel of said reactor, in a substantially transverse way in relation to the overall direction of circulation of the feedstock to be treated in said reactor, at least one heat-carrying fluid contained in said reaction chamber,

at least n means for stratifying the flow of heat-carrying fluid, said means being positioned substantially perpendicularly to the overall direction of circulation of the feedstock to be treated in said reactor, and positioned up-

VOL
1147
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stream in relation to the direction of circulation of said heat-carrying fluid, from the face of the channels through which said heat-carrying fluid enters said channels, n being an integer greater than or equal to 1,

at least n+1 thermal means for modifying the enthalpy of part of said heat-carrying fluid, each one of said thermal means being positioned on either side of a plane defined by one of said stratifying means, and upstream, in relation to the direction of circulation of said heat-carrying fluid, from the face of the channels through which said heat-carrying fluid enters said channels.

5,186,910

METHOD AND REACTOR FOR OXIDATION WITH A PRESSURE DROP DIFFERENTIAL, AND ITS USE

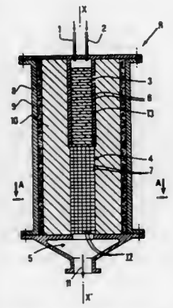
Jacques Alagy, Charbonnieres; Paul Broutin, Ecully; Christian Busson, Dardilly; Yves Gougne, Givors, and Jerome Weill, Lyons, all of France, assignors to Institut Francais du Petrole, Rueil Malmaison Cedex, France

Filed Sep. 12, 1990, Ser. No. 582,426

Claims priority, application France, Sep. 12, 1989, 89 12016; Jun. 21, 1990, 90 07915; Jun. 21, 1990, 90 07914; Jun. 21, 1990, 90 07913

Int. Cl.[5] B01J *8/02*

U.S. Cl. 422—220 **30 Claims**



1. An oxidation reactor of elongated shape comprising in combination:

at least one mixing member comprising means for feeding oxidizing gas and means for feeding oxidizable charge,

at least one reaction member, following said mixing member and located at a distance therefrom which is no greater than a flame pinching distance wherein a flame which may result from reaction of the oxidizable charge and the oxidizing gas is stopped, and

at least one member for discharging the products of the reaction, connected to said reaction member; said reaction member comprising a central zone, which over at least part of its cross-section has at least one first lining, adapted to define a multiplicity of spaces providing passages which, in at least one direction, have a dimension no greater than the flame pinching distance, and at least one peripheral zone adjacent to said central zone which, over at least part of its cross-section, has at least one second lining, adapted to define a multiplicity of spaces providing passages which, in at least one direction, have a dimension smaller than that of the passages in the central zone, so that a pressure loss in the second lining is greater than that in the first lining, said second lining forming a sleeve surrounding said first lining.

5,186,911

SINGLE CRYSTAL GROWING APPARATUS AND METHOD

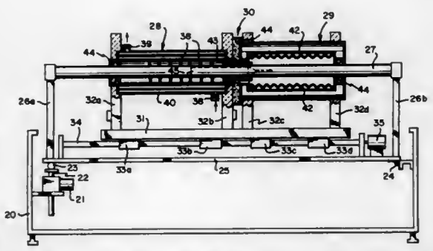
Suk Ki Min; Seung Chul Park, and Chul Won Han, all of Seoul, Rep. of Korea, assignors to Korea Advanced Institute of Science and Technology, Seoul, Rep. of Korea

Division of Ser. No. 344,293, Apr. 25, 1989, Pat. No. 4,957,711. This application May 1, 1990, Ser. No. 517,564

Claims priority, application Rep. of Korea, Jul. 5, 1988, 8305/1988

Int. Cl.[5] B01D *19/00*

U.S. Cl. 422—245 **11 Claims**



1. A method of growing a single crystal, comprising the steps of:

heating an outer periphery of an elongated quartz tube in a furnace, the step of heating also generating infrared rays;

circulating cooling water within an interior of a double quartz tube which extends about the elongated quartz tube in a direction of elongation of the elongated quartz tube; and

reflecting most of the infrared rays by a film on an internal surface of the double quartz tube, the film allowing transmission of some portion of visible light to enable an observer to look through the film and thereby see inside of the double quartz tube.

5,186,912

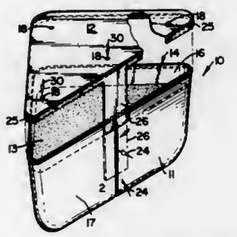
CONTROLLED RELEASE DISHWASHER DETERGENT DISPENSER

Richard E. Steindorf, St. Paul, Minn.; Katsumi Maeda, Tokyo, Japan; Daniel K. Boche, Eagan, Minn., and Yoichi Satoh, Kanagawa, Japan, assignors to Ecolab, Inc., St. Paul, Minn.

Filed Jan. 3, 1991, Ser. No. 637,054

Int. Cl.[5] B01F *1/00;* **C11D** *17/00*

U.S. Cl. 422—263 **13 Claims**



1. A dispenser for dishwashing machine detergent, comprising:

a) a container having a bottom wall and side walls, one of said side walls having a slot therein for egress of solution, said slot being continuous and elongated and having an upper end and a lower end, said lower end being proximate said bottom wall;

b) a removable lid for a top portion of said container, said lid having a plurality of openings for ingress of solution;

c) means for removably covering the openings in the lid;

d) a solid composition in the container, wherein an upper surface of said composition is below the upper end of said slot, and water dissolves the upper surface of said composition and drains from said slot;

e) a planar sheet which is parallel to one of said side walls and which substantially covers said slot, said sheet being spaced away from said slot.

5,186,913

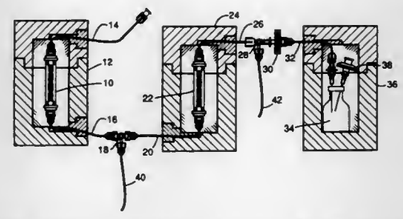
TUNGSTEN-188/CARRIER-FREE RHENIUM-188 PERRHENIC ACID GENERATOR SYSTEM

Furn F. Knapp, Jr., Oak Ridge; Edward C. Lisic, Cookeville; Saed Mirzadeh, Knoxville, and Alvin P. Callahan, Harriman, all of Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Filed Apr. 26, 1991, Ser. No. 692,110

Int. Cl.[5] C01G *41/00, 47/00*

U.S. Cl. 423—2 **12 Claims**



1. A method for generating carrier-free Re-188 perrhenic acid comprising the steps of:

providing a chromatography column and a cation-exchange column;

applying to said chromatography column a charge of W-188;

eluting said chromatography column with a metal salt solution to generate Re-188 in the form of an intermediate solution; and,

passing said intermediate solution through said cation-exchange column to convert said Re-188 to a carrier-free acid form.

5,186,914

PROCESS FOR REMOVING NO_x AND SO_2 UTILIZING ACTIVATED CARBON

Ikenaga Yoshihiro, and Kobata Takeji, both of Hokkaido, Japan, assignors to The Social Welfare Foundation Hokkaido Rehability, Hukkaido, Japan

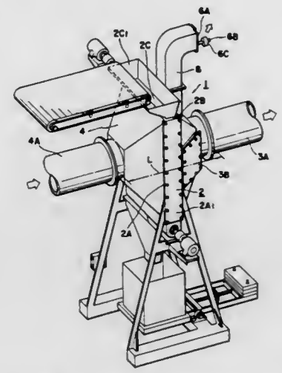
Filed Mar. 15, 1991, Ser. No. 669,917

Claims priority, application Japan, Nov. 26, 1990, 2-325036

Int. Cl.[5] B01J *8/00;* **C01B** *21/00, 17/00*

U.S. Cl. 423—239 **2 Claims**

1. A method for removing SO_2 and/or Nox from an exhaust gas formed by the combustion of heavy oil which comprises passing the exhaust gas through an activated carbon which comprises carbon microcrystals irregularly arranged and difficulty graphitizable carbon which comprises difficulty graphitizable crosslinking lattices in the gaps among carbon imicrocrystals and has pencil hardness of from B to 6B, pore size of



100–400Å, specific surface area of 100–500 m^2/g, and pore volume of 1.3–5.0 ml/g.

5,186,915

HEAP LEACHING AGGLOMERATION AND DETOXIFICATION

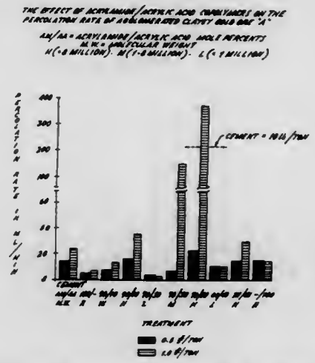
David M. Polizzotti, Yardley, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 522,436, May 11, 1990, Pat. No. 5,112,582, which is a continuation-in-part of Ser. No. 508,517, Apr. 9, 1990, abandoned, which is a continuation of Ser. No. 325,608, Mar. 20, 1989, abandoned. This application Aug. 9, 1991, Ser. No. 742,828

The portioo of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.

Int. Cl.[5] C22B *11/00, 3/00*

U.S. Cl. 423—29 **12 Claims**



1. A process for percolation leaching of precious metals from a mineral bearing ore and detoxification of the resulting spent mineral bearing ore wherein the mineral bearing ore is first agglomerated with an agglomeration agent, formed into a heap, leached by percolation a cyanide leaching solution through the heap to extract precious metals from the mineral bearing ore and detoxifying the resulting spent mineral bearing ore with aqueous washes, in which the agglomerating agent comprises an anionic copolymer of acrylamide and acrylic acid in an acrylamide to acrylic acid ratio of from about 90 to 10 to

VOL 1147 ISS 3 FE 16 1993 UMI

about 70 to 30 having a molecular weight above about 1 million and sufficient lime to provide a pH of from about 9.5 to 11.

5,186,916

METHOD FOR PURIFYING FLUE-GASSES

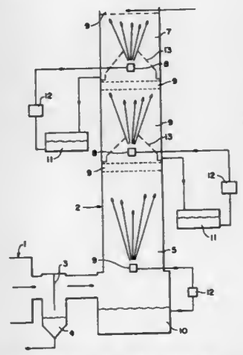
Leonardus M. M. Nevels, Daalzicht 37, 6097 EK Heel, Netherlands

Filed Oct. 5, 1990, Ser. No. 594,821

Claims priority, application Netherlands, Oct. 6, 1989, 8902490

Int. Cl.[5] B01D *47/02*

U.S. Cl. 423—210 **10 Claims**



1. A method for purifying flue-gasses and oxidative waste gases exceeding 100° C. and originating from industrial installations, combustion furnaces and engines, comprising the steps of:

(a) passing said gases through at least one spraying chamber or area;

(b) and simultaneously spraying a gas washing liquid comprising a residual liquid derived from photographic, photochemical or galvanizing fixing-baths selected from the group consisting of complex builders, heavy metals compounds, sulfur-containing compounds and nitrogen-containing compounds into said chamber or area in order to contact said gas washing liquid with said gases;

(c) cooling said gases to below 100° C.;

(d) purifying said gas washing liquid by subjecting said liquid to means for removing noxious components; and thereby

(e) removing harmful impurities selected from the group consisting of acidic gases, heavy metal compounds, sulfur compounds and dust from said gases;

and wherein said method further provides for the simultaneous purification of said gas washing liquid as a result of said contact of said gas washing liquid with said gases.

5,186,917

PROCESS FOR THE REMOVAL OF NO_x SO_x UTILIZING A PARTICULATE AGENT

Sven G. Järos; Marek T. Tokarz, both of Knogälv, and Börje Persson, Angered, all of Sweden, assignors to Eka Nobel AB, Sweden

Filed Feb. 7, 1991, Ser. No. 652,411

Claims priority, application Sweden, Feb. 7, 1990, 9000444

Int. Cl.[5] B01J *8/00;* **C01B** *17/00, 21/00*

U.S. Cl. 423—239 **14 Claims**

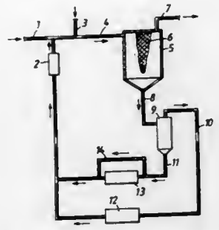
1. A method for the removal of NO_x and SO_x in a gas, comprising the steps of:

(a) providing a reaction chamber containing a particulate agent, the particulate agent comprising a mixture of a fist particle type for removing NO_x and a second particle type for removing SO_x, the first and second particle types being separable by means of particle weight, particle size or both;

(b) contacting the gas with the particulate agent thereby reducing the levels of NO_x and SO_x in the gas;

(c) separating the gas from the particulate agent in the reaction chamber;

(d) removing the particulate agent from the reaction chamber; and



(e) separating particles in the particulate agent according to particle type;

wherein the first particle type includes a catalytically effective amount of V_2O_5 and wherein the second particle type includes at least one compound selected from the group consisting of alkali metal oxides, hydroxides and carbonates, alkaline earth metal oxides, hydroxides and carbonates, and oxides of manganese, rhenium, sodium, potassium, zinc, copper and silver.

5,186,918

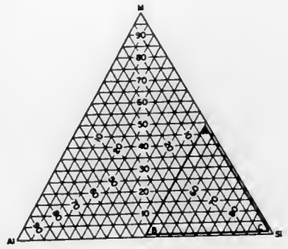
SUBSTITUTION OF CR IN PLACE OF AL IN THE FRAMEWORK OF MOLECULAR SIEVE VIA TREATMENT WITH FLUORIDE SALTS

Gary W. Skeels, Brewster; Diane M. Chapman, Ossining, and Edith M. Flanigen, White Plains, all of N.Y., assignors to UOP, Des Plaines, Ill.

Continuation-in-part of Ser. No. 450,931, Dec. 14, 1989, which is a continuation-in-part of Ser. No. 133,372, Dec. 15, 1987, abandoned. This application Jan. 25, 1991, Ser. No. 645,866

Int. Cl.[5] C01B *33/34*

U.S. Cl. 423—718 **6 Claims**



1. A molecular sieve having a three-dimensional microporous framework structure which has a unit empirical formula on an anhydrous basis of:

$$(Cr_wAl_xSi_y)O_2$$

where w, x and y are the mole fractions of chromium, aluminum and silicon, respectively, present as the framework tetrahedral oxide units said mole fractions being such that they are within the triagonal area defined by points A, B, and C of FIG. 1, which points have the following values of w, x and y

Point	w	x	y
A	0.49	0.01	0.50
B	0.01	0.49	0.50
C	0.01	0.01	0.98.

5,186,919

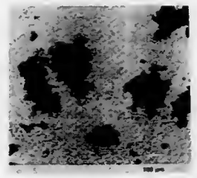
METHOD FOR PRODUCING THIN GRAPHITE FLAKES WITH LARGE ASPECT RATIOS

L. Roy Bunnell, Kennewick, Wash., assignor to Battelle Memorial Institute, Richland, Wash.

Continuation-in-part of Ser. No. 599,670, Oct. 18, 1990, Pat. No. 5,065,948, which is a division of Ser. No. 275,071, Nov. 21, 1988, Pat. No. 4,987,175. This application Nov. 12, 1991, Ser. No. 791,864

Int. Cl.[5] C01B *31/04*

U.S. Cl. 423—448 **8 Claims**



1. A method for making thin graphite flakes, comprising:

(a) intercalating a strong concentrated acid into a graphite mass,

(b) exfoliating the intercalated graphite mass, and

(c) separating the exfoliated graphite mass into discrete flakes.

5,186,920

RECOVERING TIO_2 CONCENTRATES FROM TIO_2-CONTAINING SUBSTANCES

Rudolf Heng, Oberursel; Walter Koch, Mühlheim, and Ali-Naghi Beyzavi, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 555,247, Jul. 19, 1990, abandoned. This application Nov. 19, 1991, Ser. No. 795,292

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1989, 3924796

Int. Cl.[5] C01G *23/047*

U.S. Cl. 423—610 **12 Claims**

1. A method of recovering a TiO_2 concentrate from a TiO_2-containing and iron-compound-containing composition, which comprises the steps of:

(a) directly reducing iron compounds in said composition to metallic iron to effect a metallization thereof of at least 90% and produce a further composition containing a magnetic fraction with TiO_2 and metallic iron and a non-magnetic fraction with residual reducing agent and cooling the metallic iron under conditions under which metallic iron will not be oxidized to prevent reoxidation of the metallic iron;

(b) magnetically separating said fractions in said further composition and recovering said magnetic fraction from said further composition;

(c) oxidizing the recovered magnetic fraction by forming a suspension thereof in a sulfuric acid or hydrochloric acid medium at a pH below 2 under a pressure of 12 to 24 bar and at a temperature of 150° to 210° C. and by supplying an oxygen-containing gas to said medium which contains at least 90% oxygen at a rate at least equal to the rate of supply stoichiometrically required to form hematite by the iron of said magnetic fraction, thereby transforming the iron of said magnetic fraction substantially quantitatively to hematite;

(d) pressure relieving said suspension; and

(e) separating hematite from a TiO_2 concentrate in said suspension by multistage hydrocyclone treatment, thereby separately recovering suspensions of hematite and said TiO_2 concentrate therefrom.

5,186,921

DOPAMINE RECEPTOR LIGANDS AND IMAGE AGENTS

Hank F. Kung, Wynnewood, and Raymond Murphy, Philadelphia, both of Pa., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

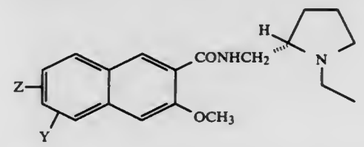
Continuation of Ser. No. 339,006, Apr. 17, 1989, Pat. No. 5,122,361. This application Dec. 31, 1991, Ser. No. 816,140

Int. Cl.[5] A61K *49/02;* **C07B** *59/00;* **C07D** *207/09*

U.S. Cl. 424—1.1 **12 Claims**

1. A compound selected from the group consisting of compounds of the formula

Formula II



where

Y is selected from the group consisting of hydrogen C_1–C_5 alkyl, C_1–C_5 alkenyl and C_1–C_5 alkynyl groups;

Z is selected from the group consisting of H, halogen (Hal), C═CH-Hal; C_1–C_{10} alkylene-Hal; C_1–C_{10} alkylene-C═CH-Hal; C_1–C_{10} alkylene-phenyl-Hal; or C1-C10 alkylene-heteroaryl-Hal.

5,186,922

USE OF BIODEGRADABLE MICROSPHERES LABELED WITH IMAGING ENERGY CONSTRAST MATERIALS

William E. Shell, Los Angeles, and Jackie R. See, Fullerton, both of Calif., assignors to See/Shell Biotechnology, Inc., Los Angeles, Calif.

Continuation of Ser. No. 937,697, Oct. 4, 1986, abandoned, which is a continuation-in-part of Ser. No. 712,038, Mar. 15, 1985, Pat. No. 4,680,171. This application Jan. 8, 1990, Ser. No. 462,740

Int. Cl.[5] A61K *49/04*

U.S. Cl. 128—654 **21 Claims**

1. A non-toxic method of visualizing circulation in the bloodstream of a subject comprising the steps of:

a) selecting a quantity of contrast agent laden microspheres which will enable generation of an image and for a desired duration when injected into the bloodstream of a subject and which microspheres are laden with a non-toxic amount of a non-metallic imaging energy responsive material but which is nevertheless sufficient to enable imaging when subjected to an imaging energy;

b) injecting the selected quantity of non-metallic biodegradable imaging energy responsive microspheres into the bloodstream of the subject at a point in the subject's circulatory system such that said microspheres are carried to a bloodstream circulation area sought to be visualized, said microspheres being sold and having the contrast agent inculcated throughout the microspheres, said microspheres also having a size with respect to the bloodstream circulatory system which is to be imaged such that the microspheres will lodge within the bloodstream circulatory system, and said microspheres further being sufficiently cross-linked so that they will not readily dissolve in the bloodstream in a short time and which will thereby

VOL 1147 ISS 3 FEB 16 1993 UMI

remain in that circulatory system for a time sufficient to be subjected to imaging;

c) subjecting said bloodstream circulation area to electromagnetic wavelength imaging energy of a type which is absorbed by said microspheres to form an image of said bloodstream circulation area without resulting in toxicity to the subject; and

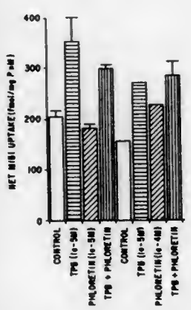
d) examining said image for the presence of said microspheres, which will enable visualization of said circulation area by response of said microspheres to the imaging energy, and thereafter enabling said microspheres to be absorbed in the bloodstream without resulting in toxicity to the subject.

5,186,923

ENHANCEMENT OF CELLULAR ACCUMULATION OF LIPOPHILIC CATIONIC ORGANOMETALLIC COMPOUNDS BY REDUCTION OF INTRAMEMBRANE POTENTIAL

David R. Piwnica-Worms, Wessesliey, and James F. Kronauge, Brookline, both of Mass., assignors to Brigham and Womens Hospital, Boston, Mass.

Filed Oct. 10, 1990, Ser. No. 594,813
Int. Cl.[5] G01N *31/00*; A61K *37/69*
U.S. Cl. 424—9 **8 Claims**



1. A composition for enhancing the intracellular accumulation of a lipophilic cationic organometallic complex comprising said complex and an agent which reduces intramembrane potential.

5,186,924

MAGNETIC RESONANCE HUMAN MEDICAL AND VETERINARY IMAGING METHOD

Royce S. Fishman, Iselin, N.J., assignor to Praxair Technology Inc., Danbury, Conn.

Division of Ser. No. 641,789, Jan. 16, 1991, Pat. No. 5,046,498. This application Jun. 17, 1991, Ser. No. 716,393
Int. Cl.[5] A61K *49/02*
U.S. Cl. 424—9 **10 Claims**

1. A mixture, particularly useful for provision to a living organic subject for contrast enhancement in magnetic resonance imaging, said mixture consisting essentially of:

(A) from 10 to 80.5 mole percent stable neon;

(B) from 19.5 to 90 mole percent oxygen;

(C) from 0 to 30 mole percent helium;

(D) from 0.2 to 7 mole percent carbon dioxide; and

(E) from 0 to 70.5 mole percent nitrogen.

5,186,925

NITROGLYCERIN PUMP SPRAY

Walter Cholcha, Elmshorn, Fed. Rep. of Germany, assignor to G. Pohl-Boskamp GmbH & Co., Hohenlockstedt, Fed. Rep. of Germany

Filed Mar. 6, 1991, Ser. No. 665,087
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1990, 4007705
Int. Cl.[5] A61K *9/08, 9/12*
U.S. Cl. 424—43 **5 Claims**

1. Nitroglycerin pump spray containing 0.2 to 3.5% by wt. of nitroglycerin and up to 3% by wt. of additives selected from the group consisting of flavouring agents and antioxidants, and a liquid phase consisting of 10 to 40% by wt. of ethyl alcohol and 90 to 60% by wt. of synthetic or natural fatty oils.

5,186,926

FLAVOR FOR PEROXIDE-BICARBONATE ORAL COMPOSITIONS

David R. Williams, Monroe, and Christine W. Ryles, Milford, both of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Division of Ser. No. 719,871, Jun. 24, 1991, Pat. No. 5,085,853. This application Jan. 3, 1992, Ser. No. 816,992
Int. Cl.[5] A61K *7/16, 7/20, 33/40*
U.S. Cl. 424—53 **8 Claims**

1. An oral mouthwash composition comprising:

(A) a first component which is a liquid comprising:

(i) a peroxygen compound present in an amount from about 0.1 to 10% by weight of the first component;

(ii) a first flavor agent which is reactively incompatible with bicarbonate salts, said first flavor agent being present in an effective amount to impart a flavor taste;

(B) a second component which is a liquid comprising:

(i) a bicarbonate salt present in an amount from about 0.5 to about 80% by weight of the second component;

(ii) a second flavor agent which is reactively compatible with said bicarbonate salt and different from the first flavor agent, said second flavor agent being present in an effective amount to impart a flavor taste, said components being held in separate compartments of a dual-compartment dispenser container for said oral composition, and relative amounts of aid first and second flavor agents ranging from about 2:1 to 1:20.

5,186,927

POLYMERIC PARTICLES FOR DENTAL APPLICATIONS

Jean L. Spencer, 19 Middle St., #4, Boston, Mass. 02127

Filed Sep. 13, 1991, Ser. No. 759,535
Int. Cl.[5] A61K *7/16, 7/22, 9/14*
U.S. Cl. 424—54 **29 Claims**

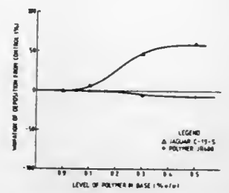
1. An anti-microbial composition for oral hygiene, comprising a toothpaste or a mouthwash including solid particles having an ionically charged outer surface onto which an anti-microbial agent having an ionic charge that is the opposite of the ionic charge of said outer surface has been adsorbed, wherein said anti-microbial agent is present in said composition only on said outer surface.

5,186,928

SHAMPOO COMPOSITION

David H. Birtwistle, Wirral, United Kingdom, assignor to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Continuation of Ser. No. 479,325, Feb. 13, 1990, abandoned. This application Jan. 8, 1992, Ser. No. 818,496
Claims priority, application United Kingdom, Feb. 20, 1989, 8903777
Int. Cl.[5] A61K *7/075*
U.S. Cl. 424—70 **11 Claims**



1. An aqueous shampoo composition comprising, in addition to water,

a) from 2 to 40% by weight of an anionic surfactant;

b) from 0.3 to 5% of a sunscreen that is water-insoluble and in liquid form at 20° C.; and

c) from 0.1 to 3% of a cationic polygalactomannan gum which is a hydroxypropyltrimonium derivative thereof.

5,186,929

TREATING PROTEINACEOUS SUBSTRATES WITH CATIONIC COPOLYMER

Richard DeMarco, Danbury; Raymond Feinland, Stamford, and Janusz Jachowicz, Bethel, all of Conn., assignors to Clairol, Incorporated, New York, N.Y.

Continuation of Ser. No. 240,787, Sep. 2, 1988, abandoned. This application Oct. 16, 1990, Ser. No. 598,571
Int. Cl.[5] A61K *7/06, 7/09*
U.S. Cl. 424—71 **6 Claims**

1. A method of treating a proteinaceous substrate to render it more easily combed when wet comprising the step of applying to the substrate a composition consisting essentially of:

(a) water, and

(b) a cationic copolymer which contains, on a mole basis, about 1% to about 20% hexadecyldimethylpropylmethacrylamide ammonium halide and about 80% to about 99% methacrylamidopropyltrimethyl ammonium halide,

wherein the halide is selected from the group consisting of chloride and bromide.

5,186,930

SUSTAINED RELEASE ORAL SUSPENSIONS

Patricia W. Kogan, Union, N.J.; Edward M. Rudnic, Boca Raton, Fla.; Joel A. Sequeira, New York, N.Y., and Imtiaz A. Chaudry, Denville, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Division of Ser. No. 270,311, Nov. 14, 1988, Pat. No. 4,999,189. This application Dec. 19, 1990, Ser. No. 630,122
Int. Cl.[5] A61K *31/74, 47/34*
U.S. Cl. 424—78.1 **15 Claims**

1. A stable sustained release drug-resin complex for use in liquid carrier for oral administration comprising a drug-resin particle coated with a first inner coating of a high temperature melting water-insoluble pharmaceutically acceptable wax and a second outer coating of a pharmaceutically acceptable water-insoluble polymer, wherein said drug-resin particle comprises an acidic or basic drug ionically bond to a pharmaceutically acceptable ion exchange resin particle and wherein the amount of the first inner coating is sufficient to prevent the resin in the drug-resin particle from swelling and cracking the second outer coating thereby releasing drug when said complex is placed in said liquid carrier.

5,186,931

COMPOSITION AND METHOD FOR SUPPORTING BONE MARROW TRANSPLANTATION

Tadamitsu Kishimoto, No. 3-5-31, Nakano Tondabayashi-shi, Oosaka-fu; Toshio Hirano, Ibaraki; Yukio Akiyama, Kawasaki; Akira Okano, Kawasaki; Hiroshi Matsui, Kawasaki, and Yoshiyuki Takahara, Kawasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo and Tadamitsu Kishimoto, Tondabayashi, both of, Japan

Continuation-in-part of Ser. No. 81,746, Aug. 5, 1987. This application Jun. 15, 1989, Ser. No. 366,866
Claims priority, application Japan, Aug. 6, 1986, 61-184858; Aug. 27, 1986, 61-200433; Dec. 18, 1986, 61-302699; May 13, 1987, 62-116332; Jun. 15, 1988, 63-147594; Dec. 8, 1988, 63-310578
Int. Cl.[5] A61K *37/02*; C07K *13/00*
U.S. Cl. 424—85.2 **2 Claims**

1. A method for promoting the proliferation of hematopoietic cells in vitro comprising treating bone marrow cells with an agent consisting essentially of human B cell differentiating factor or its biological equivalent with IL-3.

5,186,932

Patent Not Issued For This Number

5,186,933

SYNTHESIS AND IMMUNOGENICITY OF ROTAVIRUS GENES USING A BACULOVIRUS EXPRESSION SYSTEM

Mary K. Estes, Friendswood, Tex., assignor to Baylor College of Medicine, Houston, Tex.

Filed Dec. 30, 1986, Ser. No. 947,773
Int. Cl.[5] A61K *39/12*; C12N *7/00, 15/00*
U.S. Cl. 424—89 **8 Claims**

1. A vaccine for rotavirus, comprising:

a rotavirus antigen synthesized from recombinant molecules comprising a baculovirus gene promoter and at least one rotavirus gene, said promoter spatially positioned in relation to said gene effective to regulate the expression of said gene, wherein said antigen is selected from the group consisting of VP1, VP2, VP3, VP4, VP7, VP9, NS35, NS34, NS28 and any combination thereof.

5,186,934

BACILLUS THURINGIENSIS GENE ENCODING A COLEOPTERAN-ACTIVE TOXIN

Kenneth E. Narva, San Diego; George E. Schwab, La Jolla, and Gregory A. Bradfisch, San Diego, all of Calif., assignors to Mycogen Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 658,935, Feb. 21, 1991, abandoned. This application Jun. 12, 1991, Ser. No. 715,184
Int. Cl.[5] A01N *63/00*; C12N *1/21, 1/15, 15/32*
U.S. Cl. 124—93 A **25 Claims**

1. A purified DNA encoding an ≈58 kDa *Bacillus thuringiensis* toxin active against coleopteran pest, said DNA having the DNA sequence shown in Sequence ID No. 3.

5,186,935

INSECTICIDAL BAIT COMPOSITION AND METHOD OF MAKING SAME

John W. Tucker, deceased, late of Boylston, Canada by Dianne Tucker, executrix , assignor to Hedley Pacific Ventures, Ltd., Vancouver, Canada

Filed Jun. 19, 1991, Ser. No. 717,803
Claims priority, application Canada, Jun. 8, 1989, 602158
Int. Cl.[5] A01N *25/26, 59/00*
U.S. Cl. 424—410 **14 Claims**

1. An insecticidal bait composition comprising:

(a) between about 92.5% to 98% by weight of a member selected from the group consisting of diatomaceous silica,

VOL 1147 ISS 3 FE 16 1993 UMI

crushed clamshells and mixtures thereof, the diatomaceous silica and clamshells being crushed to particles of a size of less than about 45 microns;
(b) between about 1.3% to 5% by weight honey; and
(c) between about 0.7% to 2.5% by weight paste yeast, the honey and paste yeast being crystallized onto the particles by agitation with the particles together with water and baking the agitated ingredients to evaporate the water.

5,186,936

PACKING MATERIAL FOR TREATMENT OF INFECTIONS

Michael J. Groves, Lake Forest, Ill., assignor to Board of Trustees of the University of Illinois, Chicago, Ill.

Filed Aug. 6, 1990, Ser. No. 563,394
Int. Cl.[5] A01N *25/08, 25/24;* **A61K** *9/70, 47/36*
U.S. Cl. 424—435 **16 Claims**

1. A packing material for the treatment of infections, particularly of the teeth and gums, which comprises:
a biocompatible, polymeric carrier material having therein an metronidazole ester which defines at least one ester group of 10 to 18 carbon atoms per molecule, said metronidazole ester being present in said polymeric carrier in an initial concentration sufficient to allow the continuous, controlled release of at least a bacterial growth inhibitory concentration of free antibiotic as a hydrolysis product from said antibiotic ester in response to the presence of bacterial lipase.

5,186,937

COMPOSITION FOR FEEDING RUMINANTS

Robert E. Sparks, Kirkwood; Norbert S. Mason, St. Louis, both of Mo.; Pierre Autant; Andre Cartillier, both of Commentry, France, and Raymond Pigeon, Francheville, France, assignors to A.E.C. Societe de Chimie Organique et Biologique, France

Continuation of Ser. No. 871,295, Jun. 6, 1986, abandoned. This application Jun. 22, 1990, Ser. No. 541,195
Claims priority, application France, Jun. 7, 1985, 85 08626
Int. Cl.[5] A61K *9/14*
U.S. Cl. 424—438 **6 Claims**

1. An at least partly coated composition having improved release characteristics at pH of less than or equal to 3.5 which is suitable for use in feeding ruminants and which is stable in a medium in which the pH is greater than or equal to 5.5 and which permits the release of an active substance in a medium in which the pH is less than or equal to 3.5, comprising the active substance, which contains inclusions of, or which is completely or partially covered by a pH sensitive material which is a polymer containing at least one basic amino group and which has a nitrogen content of from 2 to 14%, and an outer coating consisting of a hydrophobic material which is non-sensitive to pH.

5,186,938

ADHESIVE TRANSDERMAL DOSAGE LAYER

Steven Sablotsky, Miami, Fla.; John M. Questel, Cuyahoga Falls, and James A. Thompson, Akron, both of Ohio, assignors to Key Pharmaceuticals, Inc., Kenilworth, N.J.

Continuation of Ser. No. 515,771, Apr. 29, 1990, abandoned, which is a continuation of Ser. No. 290,824, Dec. 22, 1988, abandoned, which is a continuation of Ser. No. 758,233, Jul. 24, 1985, abandoned, which is a continuation-in-part of Ser. No. 633,992, Jul. 24, 1984, abandoned. This application Aug. 7, 1991, Ser. No. 744,632
Int. Cl.[5] A61F *13/00*
U.S. Cl. 424—443 **19 Claims**

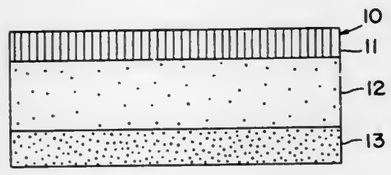
1. An adhesive bilayer transdermal dosage system for the sustained release of nitroglycerin to the skin of a human patient, comprising:
(i) a first component layer formed of a nitroglycerin-containing essentially planar sheet of an at least partially cross-linked acrylic pressure-sensitive adhesive, said essentially planar sheet comprising a flexible self-supporting cross-linked acrylate polymer of sufficient adhesivity, durability and strength whereby intimate diffusional contact with skin of the patient is maintained for a period of at least about 24 hours without destruction of the physical integrity of said sheet, said essentially planar sheet being capable of retaining dispersed therein sufficient nitroglycerin to deliver to the skin a pharmaceutically effective amount of said nitroglycerin over a 24-hour time interval, without dissolution of the at least partially cross-linked acrylic pressure-sensitive adhesive and
(ii) a second component layer intimately adhered to one side of said first component layer, said second component layer being resistant to the passage of pharmaceutically active drug from said first component layer;
wherein said first component layer comprises about 40 to about 80% by weight of acrylic adhesive; wherein said acrylic adhesive comprises about 1 to about 5% by weight of acrylic acid and about 5 to about 20% by weight of a C_4 to C_{12} alkyl acrylate; about 20 to about 60% by weight of nitroglycerin; about 0.2 to about 1% of a cross-linking agent and 10% or less of water.

5,186,939

LAMINATED COMPOSITE FOR TRANSDERMAL ADMINISTRATION OF FENTANYL

Gary W. Cleary, San Mateo, and Samir D. Roy, Redwood City, both of Calif., assignors to Cygnus Therapeutic Systems, Redwood City, Calif.

Filed Jan. 15, 1992, Ser. No. 823,017
Int. Cl.[5] A61F *13/02*
U.S. Cl. 424—448 **8 Claims**



1. A solid-state laminated composite for administering fentanyl transdermally comprising:
(a) a backing layer that is substantially impermeable to fentanyl and defines the face surface of the composite,
(b) an adhesive fentanyl reservoir layer that defines the basal surface of the composite during use and comprises:
(i) 1 to 5% by weight fentanyl;
(ii) 1 to 10% by weight propylene glycol monolaurate (PGML);
(iii) 85 to 98% by weight of an amine resistant pressure sensitive adhesive polymer having a diffusivity to fentanyl in the range of 10^{-8} to 10^{-11} cm^2/sec and a solubility for fentanyl in the range of 1.5 to 5 mg/ml,
said composite exhibiting a steady state fentanyl skin flux in the range of about 2 to abcut 10 $mcg/cm^2/hr$ and administering at least about 75% of the fentanyl in the composite during approximately the first day of use.

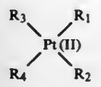
5,186,940

HYDROPHOBIC CIS-PLATINUM COMPLEXES EFFICIENTLY INCORPORATED INTO LIPOSOMES

Abdul R. Khokhar; Gabriel Lopez-Berestein, and Roman Perez-Soler, all of Houston, Tex., assignors to The Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 914,591, Oct. 7, 1986, Pat. No. 5,041,581, which is a continuation-in-part of Ser. No. 788,750, Oct. 18, 1985, abandoned. This application May 31, 1991, Ser. No. 709,121
Int. Cl.[5] A61K *37/22*
U.S. Cl. 424—450 **18 Claims**

1. A liposome comprising a phospholipid and a platinum (II) four-coordinate complex having the formula:



wherein R_1 and R_2 are each alkyl carboxylato bearing a hydrophobic radical function or, when linked together, are a dicarboxylato bearing a hydrophobic radical function, and wherein R_3 and R_4 are each amines of the formula:



wherein R_5 is selected from the group consisting of hydrogen, alkyl, aryl, aralkyl, alkenyl, cycloalkyl, or cycloalkenyl having between 1 and 20 carbon atoms; or
wherein R_3 and R_4, when linked together, are selected from the group consisting of cycloalkyl-1,2-diamino having between about 3 and 7 carbon atoms, and alkyl-vicinal-diamino having between about 2 and 12 carbon atoms; and
said complex is defined further as being substantially soluble in methanol or chloroform and substantially insoluble in water.

5,186,941

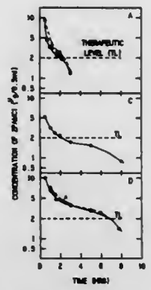
VESICLE FORMULATION FOR THE CONTROLLED RELEASE OF THERAPEUTIC AGENTS

Richard A. Callahan, S. Pasadena, and George W. Tin, Arcadia, both of Calif., assignors to Vestar, Inc., San Dimas, Calif.

Continuation of Ser. No. 136,455, Dec. 21, 1987, abandoned, which is a continuation of Ser. No. 904,849, Sep. 5, 1986, abandoned, which is a continuation of Ser. No. 606,450, Apr. 30, 1984, abandoned, which is a continuation-in-part of Ser. No. 492,297, May 6, 1983, abandoned. This application Nov. 18, 1991, Ser. No. 794,777
Int. Cl.[5] A61K *9/127, 9/133*
U.S. Cl. 424—450 **9 Claims**

1. A composition comprising a solution of a therapeutic agent encapsulated in vesicles, the vesicles being suspended in a solution containing sufficient solute selected from the group consisting of sugars and polypeptides to provide an osmolarity of the suspending solution which is hypertonic, with respect to the solution within the vesicles and which is of greater osmolarity than physiological saline, said composition being capable of controlling the release in vivo of said therapeutic agent and capable of subcutaneous and intramuscular administration to a host.

4. A process for administration to a host of a therapeutic agent encapsulated in vesicles, comprising administering to the host a suspension of the agent in vesicles, the vesicles being suspended in a solution containing sufficient solute selected from the group consisting of sugars and polypeptides to provide an osmolarity which is at least about 25% of the osmolarity of the solution within the vesicles and which is of greater



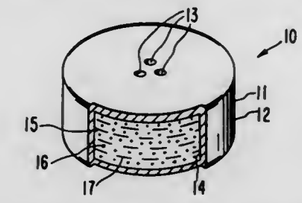
osmolarity than physiological saline to control the release in vivo of said therapeutic agent.

5,186,942

NICARDIPINE THERAPY

Joseph C. Deters, Napa; David R. Swanson, Palo Alto, and Stephen C. DeRosa, Menlo Park, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation-in-part of Ser. No. 524,951, May 18, 1990, Pat. No. 5,096,716, which is a continuation-in-part of Ser. No. 303,706, Jan. 30, 1989, abandoned. This application Nov. 18, 1991, Ser. No. 793,988
The portion of the term of this patent subsequent to Mar. 7, 2009, has been disclaimed.
Int. Cl.[5] A61K *9/21*
U.S. Cl. 424—473 **2 Claims**



1. An improvement in a method for administering nicardipine to a patient in need of nicardipine therapy, wherein the method comprises:
(A) admitting into a patient a dosage form comprising:
(1) a wall comprising an interior and an exterior surface, said wall comprising a composition permeable to the passage of fluid, which wall surrounds;
(2) a compartment;
(3) a push composition in the compartment comprising a polyethylene oxide possessing a 4,500,000 to 10,000,000 molecular weight for imbibing fluid and expanding in the compartment;
(4) a passageway in the wall that connects the exterior with the interior of the dosage form, and wherein the improvement in the dosage form comprises:
(5) a drug composition in the compartment comprising from 1 mg to 650 mg of a member selected from the group consisting of nicardipine and its therapeutically acceptable salts, a member selected from the group consisting of polyethylene oxide comprising a 200,000 molecular weight and a polyethylene oxide comprising a 300,000 molecular weight, which polyethylene oxide acts with the push composition to deliver a substantially

VOL
1147
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maximum dose of nicardipine from the dosage form; and

(6) a drug composition comprising 1 to 100 mg of a member selected from the group consisting of nicardipine and its pharmaceutically acceptable salts releasably coated on the exterior surface of the wall for providing immediate nicardipine therapy;

(B) letting fluid contact the exterior nicardipine coat for releasing the coat for providing 1 mg to 100 mg of immediate nicardipine therapy to the patient;

(C) letting fluid enter the dosage form for (a) contacting the composition in the compartment comprising nicardipine for providing an administrable nicardipine composition, and for (b) contacting the push composition causing it to expand and push nicardipine through the exit passageway; thereby

(D) delivering a therapeutically effective amount of 1 mg to 650 mg of nicardipine from the dosage form to the patient.

5,186,943

COMPRESSED-MOLDED PREPARATIONS

Minoru Okada, Inzai; Toshiaki Horie; Hirohisa Okuyama, both of Tomisato; Syuichi Kasai, Narita, and Akira Iwasa, Yotsukaido, all of Japan, assignors to SS Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jan. 3, 1989, Ser. No. 293,108

Claims priority, application Japan, Aug. 22, 1988, 63-207956; Nov. 11, 1988, 63-285287

Int. Cl.[5] A61K *9/16, 9/26*

U.S. Cl. 424—490 **4 Claims**

1. A compressed-molded preparation, in which coated granules of a pharmaceutical composition comprising a pharmaceutically active component are compressed and molded together with a non-coated component or components containing 10% or more by weight of a non-swelling polymer, wherein said non-swelling polymer is one member selected from the group consisting of water insoluble polymers, intestinally soluble polymers, acid soluble polymers, water soluble polymers, and a mixture thereof, and

wherein said coated granules are comprised of the pharmaceutical composition which is first to form a coated layer comprising 1–80 wt % of one member selected from the group consisting water insoluble polymers, intestinally soluble polymers, paraffin waxes, higher alcohols, higher fatty acid esters, higher fatty acids, salts of higher fatty acids, acid soluble polymers, water soluble polymers, and a mixture thereof; and

on top of this coated layer, is further coated with a second protective coating layer of a water soluble polymer or an acid soluble polymer wherein the polymer of said first layer is different from the polymer of said second layer.

5,186,944

THERAPEUTIC MEDICAMENT FOR THROMBOSIS

Yoichi Ishii; Hisashi Mihara, both of Miyazaki, Japan; Lee M. Ho, Seoul, Rep. of Korea, and Goro Kimura, Kamakura, Japan, assignors to Eimei Company Ltd., Miyazaki, Japan

Continuation of Ser. No. 475,021, Feb. 5, 1990, abandoned. This application Dec. 12, 1991, Ser. No. 807,406

Claims priority, application Japan, Feb. 15, 1989, 1-33701; Apr. 28, 1989, 1-107250

Int. Cl.[5] A61K *35/36*

U.S. Cl. 424—520 **3 Claims**

1. A method for controlling thrombosis in a mammal in need thereof which comprises orally administering an effective amount of earthworm powder to said mammal which has been prepared by the steps of:

a) cleaning living earthworms of dirt on the body surface and fecal mud in the digestive tract by placing the living earthworms in an acidic aqueous solution having a pH of from 3 to 6.5 for from 0.1 to 5 hours;

b) pulverizing the living earthworms into a paste;

c) freezing the paste at a temperature of −10° C. to −60° C. followed by freeze-drying the paste at said temperature for 5 to 12 hours under a vacuum of 0.01 to 0.2 mm Hg;

d) vacuum-drying the paste in a step-wise progression of 5 to 15 hours at 20° C. to 30° C. under 0.01 to 0.2 mm Hg, 10 to 20 hours at 35° C. to 50° C. under 0.1 to 0.5 mm Hg; and 0.1 to 19 hours at 70° C. to 80° C. under 0.001 to 5 mm Hg.

5,186,945

BLOOD PLASMA ANTIVIRAL PROCESS AND COMPOSITION

Edward Shanbrom, 2252 Liane La., Santa Ana, Calif. 92705

Continuation-in-part of Ser. No. 321,522, Mar. 9, 1989, abandoned, and a continuation-in-part of Ser. No. 290,161, Dec. 28, 1988, Pat. No. 4,891,221, and a continuation-in-part of Ser. No. 276,113, Nov. 23, 1988, abandoned. This application Nov. 7, 1989, Ser. No. 433,540

Int. Cl.[5] A61K *35/16*

U.S. Cl. 424—529 **25 Claims**

1. A method of treating human blood plasma comprising mixing such human blood plasma at the time of sampling with one or more glycyrrhizic triterpenoid compounds in a concentration of from about 0.0001 to about 3 wt/%, and detergent in a concentration of from about 0.0001 to about 5 wt/%, based on the quantity of the human blood plasma, sufficient to substantially inactivate susceptible viruses in said human blood plasma.

14. The method of treating a human patient comprising: drawing blood from the human patient, fractionating such blood sufficiently to form an albumin-containing liquid, adding one or more glycyrrhizic triterpenoid compounds to said albumin-containing liquid, and adding the resulting mixture of albumin-containing liquid and glycyrrhizic triterpenoid compounds to transfusion blood, the glycyrrhizic triterpenoid compounds being added in an amount of from about 0.0001 to about 5 wt/%, based on the amount of transfusion blood, sufficient to substantially inactivate susceptible viruses in the transfusion blood; and infusing the patient's thus treated transfusion blood into said patient.

5,186,946

DISINFECTANT WITH WIDE SPECTRUM GERMICIDAL ACTIVITY

Lucien Valliéres, 3001 Sherbrooke W., Ste. G03, Montréal, Québec, Canada H3Z 2X8

Filed Feb. 26, 1992, Ser. No. 841,812

Int. Cl.[5] A01N *37/00, 39/00;* **A61L** *9/00, 11/00*

U.S. Cl. 424—613 **12 Claims**

1. A germicide composition for deodorizing, cleaning and disinfecting in a single application, consisting of:

(a) from 60 to 90% by weight of potassium monoperoxysulfate;

(b) from 2 to 10% by weight of malio acid;

(c) from 2 to 6% by weight of sulfamic acid;

(d) from 0.25 to 3% by weight of EDTA Na_2;

(e) from 1 to 15% by weight of an alkylated ether of polyethylene glycol surfactant;

a total of 100% by weight of the composition being obtained wherein said disinfectant is bactericidal, fungicidal, sporicidal and virucidal.

5,186,947

WOOD PRESERVATIVE BASED ON POLYMERIC NITROGEN COMPOUNDS AND METAL-FIXING ACIDS

Reimer Goettsche, Baden-Baden, and Wolfgang Reuther, Heidelberg, both of Fed. Rep. of Germany, assignors to Dr. Wolman GmbH, Sinzheim, Fed. Rep. of Germany

Filed Sep. 19, 1991, Ser. No. 762,369

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1990, 4033419

Int. Cl.[5] A01N *59/20, 59/16, 59/26*

U.S. Cl. 424—638 **8 Claims**

1. A water-soluble wood preservative comprising:

(a) a wood-preserving effective mount of a metal compound selected from the group consisting of copper compounds, zinc compounds and a mixture thereof;

(b) a metal-fixing acid selected from the group consisting of aliphatic C_{5-20}-carboxylic acids, halogen substituted C_{5-20}-carboxylic acids, amino substituted C_{5-20}-carboxylic acids, alkoxy substituted C_{5-20}-carboxylic acids, aliphatic C_{5-20}-dicarboxylic acids aminohydroxy C_{5-20}-carboxylic acids, 2-mercaptopyridine C-oxide, 2-hydroxypyridine N-oxide, dehydroacetic acid, cycloalkyl carboxylic acids, aryl carboxylic acids, polycarboxylic acids, and heterocyclic carboxylic acids; and

(c) a washout-reducing effective amount of a polyethyleneimine having a degree of polymerization between 50 and 1000.

5,186,948

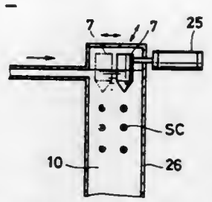
APPARATUS FOR MANUFACTURING SEAMLESS CAPSULES

Narimichi Takei, Sugito, Japan, assignor to Freund Inphachem Inc., Los Angeles, Calif.

Filed May 28, 1991, Ser. No. 706,230

Int. Cl.[5] B29B *9/00;* **B29C** *67/00*

U.S. Cl. 425—5 **4 Claims**



1. An apparatus for manufacturing seamless capsules, wherein a multilayer liquid flow is blown out of a multiple nozzle to form multilayer liquid drops, and said multilayer liquid drops are brought into contact with a hardening liquid, to thereby manufacture the seamless capsules, comprising means for mounting said multiple nozzle so that prior to manufacturing the seamless capsules, the multiple nozzle is movably adjustable in a direction intersecting a flow of the hardening liquid to an optimum position for manufacturing the seamless capsules and maintained in said optimum position while the capsules are being manufactured.

5,186,949

FILLER INJECTOR FOR FILLING CRACKS IN CONCRETE

Mei H. Lai, 5F. No. 3-1, Yung Yeh Road, Hsin Tien City, Taipei County, Taiwan

Filed Mar. 19, 1991, Ser. No. 670,782

Int. Cl.[5] B29C *45/17*

U.S. Cl. 425—11 **11 Claims**

1. Filler Injection Assembly which can apply a filler to a surface comprising

an elongated, hollow outer tube that includes at one end an enclosed top with a bore therethrough and an opening at the other end, said outer tube having an inner diameter;

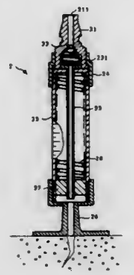
an inner tube having a bore therethrough and of a smaller diameter and shorter length than said outer tube, said inner tube being positioned in the bore of the enclosed top of the outer tube, the inner tube including a mounting therefor on top thereof for orienting the inner tube;

an adaptor having a bore therethrough;

a fastening cap which is screw-coupled to the top of said outer tube and which mounts said adaptor on the top of said outer tube, in doing so the mounting for the inner tube is compressed therebetween and said adaptor bore is in communication with said inner tube bore;

a piston having an outer diameter that is equal to the inner diameter of the outer tube and positioned inside said outer tube and having a bore therethrough; and

a spring seated on top of said piston; said piston bore receiving said inner tube, and said piston being slidably movable up-and-down against said spring and in engagement with the inner tube which acts as a guide rail therefor;



whereby a filler introduced in said adaptor can travel through said inner tube and can be applied to the surface through the other end of said outer tube and any filler backing up from the surface can exert a pressure against said piston.

5,186,950

CURING DEVICE

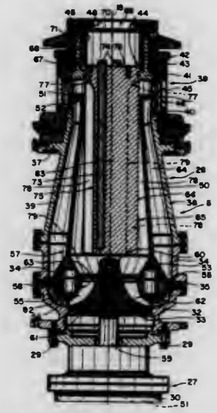
Roberto Mauro, and Karl J. Siegenthaler, both of Rome, Italy, assignors to Bridgestone/Firestone, Inc., Akron, Ohio

Filed Jul. 3, 1991, Ser. No. 725,712

Claims priority, application Italy, Jul. 17, 1990, 67556 A/90

Int. Cl.[5] B29C *35/02*

U.S. Cl. 425—28.1 **8 Claims**



1. A tire curing device comprising a mold defining a toroidal chamber for accommodating a tire to be cured; a conduit loop for a batch charge of a heat exchange fluid, said chamber forming part of said conduit loop; powered circulating means useable with said conduit loop for force circulating said heat exchange fluid along same; and heating means useable with said conduit loop for heating said heat exchange fluid to a predetermined temperature; said device further comprising a first and second tubular body arranged coaxially, the second inside the first, and defining a delivery conduit for said heat exchange fluid to said toroidal chamber; said first tubular body presenting an end portion extending beyond said second tubu-

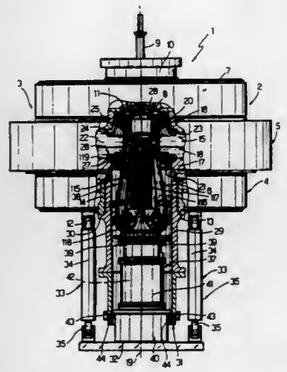
VOL 1147 ISS 3 FE 16 1993 UMI

lar body; said heating means comprising a heating unit having internal axial electric resistors, and mounted axially through said end portion and said second tubular body; and a return conduit from said toroidal chamber being defined between said second tubular body and said heating unit, the resistors of which are accessible through said end portion of said first tubular body.

5,186,951
CURING DEVICE FOR TIRES

Karl J. Siegenthaler, Rome, Italy, assignor to Bridgestone/Firestone, Inc., Akron, Ohio

Filed Jul. 3, 1991, Ser. No. 725,868
Claims priority, application Italy, Jul. 17, 1990, 67555 A/90
Int. Cl.[5] B29C *35/02*
U.S. Cl. 425—28.1 **10 Claims**



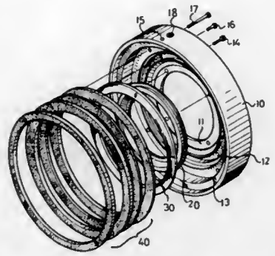
1. A tire curing device including an upper half mold and a lower half mold; a toroidal chamber for accommodating a tire to be cured and defined by said half molds; a closed circuit for a batch charge of a heat exchange fluid, said toroidal chamber forming part of said closed circuit; impeller means for force circulating said heat exchange fluid along said closed circuit, said closed circuit including a delivery conduit and a return conduit for said heat exchange fluid, connected to said toroidal chamber; and heating means located along said return conduit, for heating said heat exchange fluid to a predetermined temperature; said return conduit being an annular section conduit defined internally by said heating means, and having an annular outlet end; said impeller means having an annular inlet end coaxial and aligned with said outlet end; said return conduit presenting a section increasing toward said annular outlet end such as to enable expansion of said heat exchange fluid during heating; and radially extending guide means along said return conduit for guiding said heat exchange fluid in an axial direction in relation to said impeller means.

5,186,952
MOLD FOR MANUFACTURING TIRES

Tsai J. Lo, and David Hwang, both of Chang Hua Hsien, Taiwan, assignors to Cheng Shin Rubber Ind., Co., Ltd. and Ming King Ind., Co., Ltd., both of, Taiwan

Filed Nov. 20, 1991, Ser. No. 796,112
Int. Cl.[5] B29C *35/00*
U.S. Cl. 425—36 **4 Claims**

1. A mold comprising generally a pair of bodies engageable with each other, each of said bodies including an annular recess, an annular groove and an annular depression formed therein; a first ring engaged in said annular recess of each of said bodies and having a shape corresponding to the bead portion of a tire; a second ring engaged in said annular groove of each of said bodies and having a shape corresponding to the side wall portion of said tire; at least one third ring engaged in said annular depression of each of said bodies and having a shape corresponding to the tread portion of said tire; a mold cavity for forming said tire being formed in said bodies, said

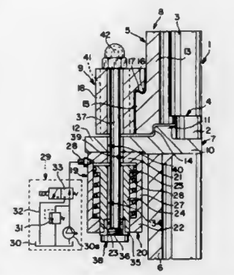


first rings, said second rings, and said third rings; said third rings being disposed and arranged in parallel with each other so that said third rings can be stably and properly retained in said annular depressions of said bodies.

5,186,953
CLOSING DEVICE FOR A TIRE CURING MOLD

Diego Minaudo, Rome, Italy, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Oct. 9, 1991, Ser. No. 774,758
Claims priority, application Italy, Nov. 30, 1990, 67953 A/90
Int. Cl.[5] B29C *35/00*
U.S. Cl. 425—47 **9 Claims**

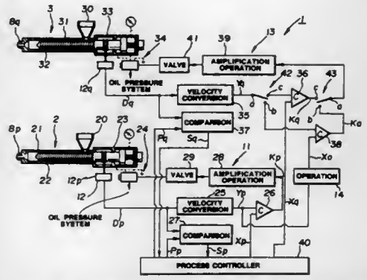


1. A closing device for a tire curing mold including two half molds housed inside a casing which in turn include two half casings; said closing device including a peripheral outer flange on one of said half casings; a peripheral flange element on the other one of said half casings and coaxial with and facing said flange; and releasable connecting means for axially connecting said flange and said flange element; characterized by the fact that said connecting means include a number of hydraulic cylinders connected integrally with said flange, each having a rod extending toward said flange element and having a flared head on an outer end thereof; a hydraulic circuit for supplying said hydraulic cylinders with hydraulic fluid at a given maximum pressure; a number of axial through openings formed through said flange element each engaged in an axially sliding manner by a respective one of said rods and a respective one of said heads; and displacing means for moving each of said heads in relation to said flange element and to and from a position of axial engagement with same.

5,186,954
CONTROLLER OF AN INJECTION MOLDING MACHINE

Masaaki Miyahara, and Masashi Suganuma, both of Nagano, Japan, assignors to Nissei Jushi Kogyo Kabushiki Kaisha, Nagano, Japan

Filed Jul. 30, 1991, Ser. No. 737,484
Claims priority, application Japan, Aug. 4, 1990, 2-207191
Int. Cl.[5] B29C *45/77*
U.S. Cl. 425—130 **6 Claims**

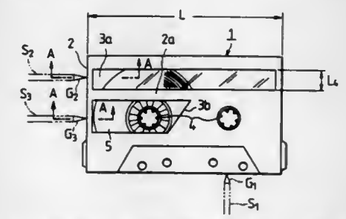


1. A controller of an injection molding machine for injecting molding material into a cavity of a mold from at least a first injection apparatus and a second injection apparatus, said controller comprising a first control unit for controlling said first injection apparatus on the basis of a set target value for said first injection apparatus, a physical amount detection unit for detecting a physical amount concerning the operation of the first injection apparatus, and a second control unit for obtaining a linkage target value from the detected physical amount, said linkage target value controlling the operation of the second injection apparatus.

5,186,955
MOLD FOR PRODUCING A MAGNETIC TAPE CASSETTE

Kiyoo Morita, and Kengo Oishi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 327,263, Mar. 22, 1989, Pat. No. 5,084,223.
This application Aug. 21, 1991, Ser. No. 747,835
Claims priority, application Japan, Mar. 25, 1988, 63-38494[U]; Nov. 15, 1988, 63-147999
Int. Cl.[5] B29C *45/16*
U.S. Cl. 425—130 **4 Claims**

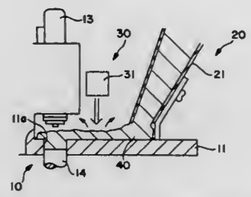


1. A mold adapted for use with first and second resins for making a magnetic tape cassette, comprising:
a fixed die part;
a movable die part; and
a plurality of movable cores located within said movable die part, said movable cores being movable within an area defined by said fixed die part and said movable die part to define a fist space when in an extended position and a second space when in a retracted position, said first and second spaces for molding respective first and second portions of a body of said cassette, a first and second passage being defined between said fixed die part and said movable die part for respectively injecting said first and second resins into said first and second spaces through respective first and second submarine gates, a sprue-runner being formed in said first passage upon solidification of said first resin, and one of said fixed and movable die parts having a projection near said first submarine gate for forming a notch in said sprue-runner which buffers the ejection of a molded part and absorbs a load of an end portion of said first submarine gate on said sprue-runner.

5,186,956
ROTARY POWDER COMPRESSION MOLDING MACHINE

Tadatsugu Tanino, Ibaraki; Yoshihiro Furuya, Osaka; Toyohiko Takeda, Kobe; Yoshiyuki Endo, and Hayao Inoue, both of Osaka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Aug. 30, 1991, Ser. No. 753,629
Claims priority, application Japan, Aug. 31, 1990, 2-92044[U]
Int. Cl.[5] B29C *43/00*
U.S. Cl. 425—135 **4 Claims**



1. A rotary powder compression molding machine, comprising:
a compression molding machine body having a horizontal turntable which is rotatable in a predetermined direction and provided with a plurality of bores at a distance therebetween in a rotation direction of the turntable, and means for compressing powder successively filled in each bore on the turntable for molding;
a powder supply device having an open feed shoe adjacent to an upper surface of the turntable in the compression molding machine body, and means for dropping powder on an upstream side of the open feed shoe in the rotation direction of the turntable; and
a detecting device having an ultrasonic sensor which is disposed so that an ultrasonic wave is reflected from a region of the upper surface of the turntable on which powder is dropped by the means for dropping powder of the powder supply device, and which detects an intensity of the reflected ultrasonic wave.

5,186,957
EXTRUSION LINE FOR SHEATHING ELONGATED METAL ELEMENTS

Gilbert Magnollay, Chexeaux; Rémy Seigneur, Grandvaux; Jacques Budry, Morrens; Jean-Claude Clément; Michel Jaccottet, both of Ecublens; Pierre-Yves Jaggi, Lausanne; Hans Jaun, La Conversion, and Philip De Boer, Bursinel, all of Switzerland, assignors to Nokia - Maillefer Holding SA, Ecublens, Switzerland

Filed Mar. 28, 1991, Ser. No. 676,364
Claims priority, application Switzerland, Apr. 3, 1990, 1116/90; Apr. 3, 1990, 1117/90
Int. Cl.[5] B29C *47/12*
U.S. Cl. 425—192 R **11 Claims**

1. An automated extrusion line for continuously producing an elongated metal element provided with a sheath of material, the extrusion line comprising:
at least one extruder;

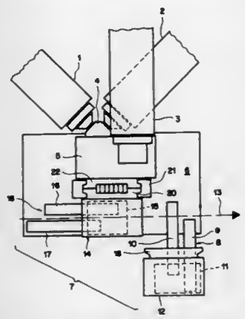
VOL 1147 ISS 3 FEB 16 1993 UMI

a connection unit connected to the at least one extruder and having an outlet orifice;

a plurality of extruder heads, each extruder head having an inlet orifice for connection to the outlet orifice of the connection unit;

a locking apparatus for connecting one of the plurality of extruder heads to the connection unit; and

an automatic exchanging apparatus for supporting first and second extrusion heads of the plurality of extrusion heads on a common base, the automatic exchanging apparatus including means for independently pivoting each of the first and second extrusion heads in first and second predetermined arcs, respectively, between a working position in which the inlet orifice of one of the first and second extrusion heads is fluid tightly connectable to the outlet orifice of the connection unit and a preparatory position in which the inlet orifice of one of the first and second extrusion heads is spaced from the outlet orifice, the means for independently pivoting the first and second extrusion heads moving one of the first and second extrusion heads along its predetermined arc to automatically align the inlet orifice of the one extrusion head with the outlet orifice and retracting the other of the first and second extrusion heads to its preparatory position.



5,186,958

INDUSTRIAL EQUIPMENT FOR MANUFACTURING COMPRESSION MOLDINGS

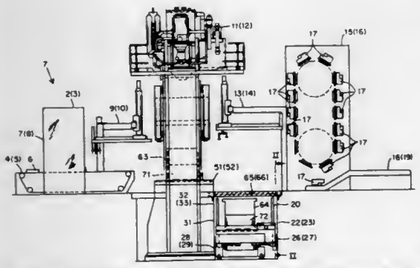
Klaus Schmidt, Dortmund, Fed. Rep. of Germany, assignor to Hoesch Maschinenfabrik Deutschland AG, Dortmund, Fed. Rep. of Germany

Filed Jun. 18, 1991, Ser. No. 716,705

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1990, 900685[U]

Int. Cl.[5] B29C *39/04, 39/22, 45/17*

U.S. Cl. 425—193 **5 Claims**



1. An arrangement for manufacturing compression moldings, comprising: at least two compressing lines and two tool-changing carriages; loading means and unloading means in each compressing line; a molding press between said loading means and said unloading means; a horizontal rail, and tool-changing carriages traveling on said horizontal rail back and forth across said compressing lines; a platform traveling up and down each tool-changing carriage; a shaft upstream of each said molding press on a tool-changing side for positioning and centering said platforms.

5,186,959

PELLET MAKING MACHINE FOR PRODUCING PELLETS FROM A STRAND

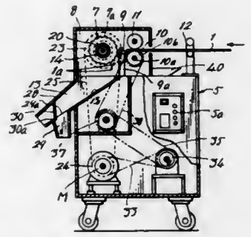
Masaru Tanaka, Higashi Katsushika, Japan, assignor to Katsu Manufacturing Co., Ltd., Chiba, Japan

Filed Jan. 8, 1992, Ser. No. 818,098

Claims priority, application Japan, Jun. 19, 1991, 3-77262

Int. Cl.[5] B29B *9/06*

U.S. Cl. 425—215 **8 Claims**



1. A pellet making machine for producing pellets from a strand, comprising:

a rotary cutter having a cooling chamber;

a motor operably connected to said rotary cutter to drive said rotary cutter;

a fixed blade disposed opposite to said rotary cutter;

a pellet exhaust chute disposed below said rotary cutter extending downwardly at a slant;

a hollow rotary shaft having said rotary cutter mounted thereon, said hollow rotary shaft having water inflow holes and water exhaust holes communicating with said cooling chamber of said rotary cutter; and

a water supply tube extending into said hollow rotary shaft and supported within said hollow rotary shaft by a partition wall defining a water supply passage in said hollow rotary shaft communicating with said water inflow holes and a water exhaust passage in said hollow rotary shaft communicating with said water exhaust holes.

5,186,960

LOW PRESSURE 3D EXTRUSION

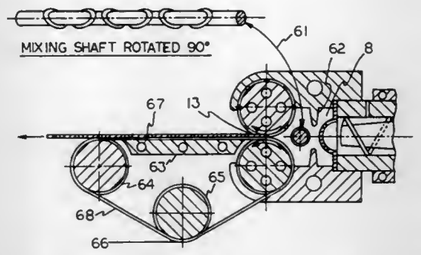
Thomas J. Walsh, Jr., 2 Deer Run Rd., Poughkeepsie, N.Y. 12603

Filed Nov. 7, 1990, Ser. No. 610,146

Int. Cl.[5] B29C *47/00*

U.S. Cl. 425—376.1 **10 Claims**

1. In a sheet discharging apparatus, a moving element having a surface, an object having a surface opposite and in close proximity to said moving element surface so as to define an opening therebetween which can be filled by discharged material, and means juxtaposed to the element for bathing the element surface with a low pressure supply of liquefied disoriented material by exposing it to contact therewith, the element surface being movable so as to discharge the material by dragging it past by adhesion the object surface, wherein the bathing means also includes a rotatable shaft for randomly mixing a low pressure supply of liquefied extrudable material to disorient it, said low pressure supply being provided by a means including a feeder screw with respect to which the rotatable shaft is arranged transversely.



5,186,961

METHOD AND COMPOSITION FOR MAINTAINING ANIMALS ON A KERATIN-CONTAINING DIET

Jason C. H. Shih, Cary, N.C., and Chung-Ginn Lee, Taipei, Taiwan, assignors to North Carolina State University, Raleigh, N.C.

Filed Mar. 15, 1991, Ser. No. 670,122

Int. Cl.[5] A23K *1/04, 1/10*

U.S. Cl. 426—2 **11 Claims**

1. A method of maintaining an animal on a keratin-containing diet comprising feeding the animal a carbohydrate source and a first protein source, the first protein source comprising keratin, concurrently with a keratinase capable of hydrolyzing said keratin in an amount effective to enhance the digestibility of said keratin in the digestive tract of said animal.

5,186,962

COMPOSITION AND METHOD FOR INHIBITING PATHOGENS AND SPOILAGE ORGANISMS IN FOODS

Robert W. Hutkins, Lincoln, Nebr.; Elaine D. Berry, Raleigh, N.C., and Michael B. Liewen, Shorewood, Minn., assignors to Board of Regents of the University of Nebraska, Lincoln, Nebr.

Filed Mar. 12, 1991, Ser. No. 668,067

Int. Cl.[5] A23L *3/00*

U.S. Cl. 426—61 **27 Claims**

1. A method of inhibiting the growth of a food spoilage or pathogenic organism in a food mixture, comprising: combining an edible food substance, that is fermentable by lactic acid bacteria, and a population of living bacteriocin-producing lactic acid bacterial cells to produce the food mixture, wherein the cells have been modified to render them incapable of significantly fermenting the edible food substance, and the population cell count is effective to provide bacteriocin to inhibit growth of the food spoilage or pathogenic organism in the food mixture.

5,186,963

THERAPEUTIC DIETARY COMPOSITION CONTAINING AMARANTH

Karen Howman, 733 Cedar Run, Waldorf, Md. 20603

Filed Jan. 7, 1992, Ser. No. 817,644

Int. Cl.[5] A23J *1/14;* **A23L** *2/38*

U.S. Cl. 426—72 **12 Claims**

1. An infant food composition for use in the feeding of low birthrate infants which provides 65 to 85 Kcal of energy and comprises about 10.0 to 30.0 g of amaranth protein, 4.0 to 5.5 g of fat, 6.0 to 9.0 g of carbohydrate per 100 ml, and vitamins and minerals in amounts generally equivalent to or greater than those present in human milk on a per calorie basis, whereby the nutritional needs of said infants are met without imposing metabolic stress.

5,186,964

FLAVOR COMPOSITION FOR PET FOOD

Dennis L. Gierhart, High Ridge, and William C. Hogan, Bridgeton, both of Mo., assignors to Applied Food Biotechnology, Inc., Fenton, Mo.

Filed Sep. 4, 1990, Ser. No. 577,114

Int. Cl.[5] A23K *1/00*

U.S. Cl. 426—74 **3 Claims**

1. A method of increasing the palatability of an extruded dry cat food composition comprising topically applying to said cat food a palatability enchancer composition consisting essentially of from about 0.1 to about 99%, by weight, of sodium acid pyrophosphate, in sufficient quantity to deposit from about 0.05 to about 2.0% of said sodium acid pyrophosphate, by weight of the food composition.

5,186,965

CALCIUM CITRATE MALATE COMPOSITION

Mary M. Fox, Fairfield; David C. Heckert, Oxford, both of Ohio, and Kenneth R. Luhrsen, Aurora, Ind., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 608,055, Oct. 31, 1990, abandoned, which is a continuation-in-part of Ser. No. 537,313, Jun. 14, 1990, abandoned. This application Dec. 16, 1991, Ser. No. 808,116

Int. Cl.[5] A23L *1/304*

U.S. Cl. 426—74 **18 Claims**

1. A process for making a metastable calcium citrate malate comprising:

a) adding a calcium source selected from the group consisting of calcium hydroxide, calcium carbonate, or calcium oxide to citric and malic acid and water, wherein the mole ratio of calcium is from 2 to 10, of citric is from 1 to 3, and of malic is from 1 to 5;

b) mixing the solution until the citric and malic acids are neutralized by the calcium;

c) drying the mixture at a temperature of less than 100° C.; and

d) grinding the resultant solid product to a particle size less than 1 mm in size; and wherein the metastable calcium citrate malate has a solubility in water at about 20° C. of 75% or more weight % calcium per calcium citrate malate on 100 mg basis; and wherein the calcium citrate malate is represented by the formula $3x+2y=2z$ or $3x+2y>2z$, wherein x is the moles of citric, y is the moles of malic, and z is the moles of calcium.

5,186,966

REMOVAL OF FREE WATER FOR PACKAGING COOKED MEAT

Svein A. Berg, Angelholm, and Jonas P. Halden, Helsingborg, both of Sweden, assignors to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 642,413, Jan. 17, 1991, abandoned. This application Mar. 18, 1992, Ser. No. 855,123

Claims priority, application European Pat. Off., Jan. 24, 1990, 90101389.6

Int. Cl.[5] A23L *1/31*

U.S. Cl. 426—402 **9 Claims**

1. A process for preparing a meat product comprising cooking meat and after cooking the meat, contacting the cooked meat with a water-absorbing material for a time period sufficient to remove free, unbound water from the cooked meat, and then packaging a product consisting of the cooked meat from which free, unbound water has been removed.

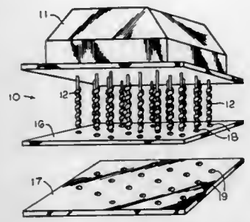
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5,186,967

METHOD FOR PREPARING AND COOKING POTATOES

Grady E. Housley, 1051 Housley Rd., Marietta, Ga. 30066

Division of Ser. No. 415,635, Oct. 2, 1989, Pat. No. 5,128,210.
This application Jun. 26, 1992, Ser. No. 904,594
Int. Cl.[5] A23L *1/216*
U.S. Cl. 426—438 4 Claims



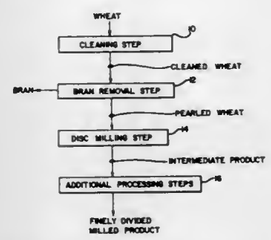
1. A method of preparing a potato for eating comprising the steps of placing the potato upon a support having an array of channels extending to the top surface thereof, advancing a set of rotating drills downwardly through the potato and into the support channels thereby forming a set of holes extending completely through the potato; retracting the set of drills from the support channels and the potato, and removing the potato from the support.

5,186,968

PROCESS FOR MILLING CEREAL GRAINS

Warner Wellman, Omaha, Nebr., assignor to ConAgra, Inc., Omaha, Nebr.

Filed Sep. 9, 1991, Ser. No. 756,927
Int. Cl.[5] A23P *1/00*
U.S. Cl. 426—483 6 Claims



1. A process for milling a quantity of a cereal grain of the type comprising an endosperm and a bran portion, said process comprising the following steps:

removing at least a substantial part of the bran from the cereal grain without substantially reducing the size of the endosperm to produce a pearled cereal grain, said removed bran portion amounting to at least about 5 wt % of the cereal grain;

disc milling at least a portion of the pearled cereal grain to reduce the size of the endosperm and to produce an intermediate product, wherein the endosperm of said at least a portion of the pearled cereal grain is substantially unreduced in size prior to the disc millings step; and

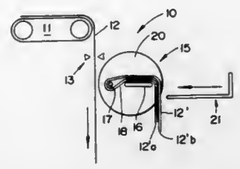
further processing the intermediate product to produce a finely divided milled product.

5,186,969

METHOD OF FORMING NOODLE BUNDLES

Wing-Fai Jor, Flat C, 22nd Floor, Aik San Industrial Building, 14 Westlands Road, Quarry Bay, Hong Kong

Filed Jun. 25, 1991, Ser. No. 720,387
Claims priority, application United Kingdom, Sep. 5, 1990, 9019322
Int. Cl.[5] A23L *1/00*; A23P *1/00*
U.S. Cl. 426—500 8 Claims



1. A method of forming noodle bundles comprising:

firstly folding strands of said noodle;

suspending said folded noodle strands from an operating device at an intermediate position of said folded noodle strands thereby doubly folding said noodle strands;

rotating said operating device to finally fold at least once to roll up said doubly folded noodle strands to form a noodle bundle in order to place the loose ends of said noodle strands within the finally folded or rolled up noodle bundle; and

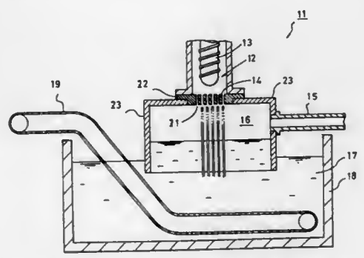
subsequently removing the operating device laterally from said folded or rolled up noodle bundle.

5,186,970

FOOD FORMING METHOD

Hiroshi Ogiwara, Tokyo; Tatuya Miyata, Minoo, and Akihiro Oda, Tomioka, all of Japan, assignors to Yugenkaisha Matsubei, Tokyo, Japan

Filed Jun. 28, 1991, Ser. No. 724,977
Claims priority, application Japan, Jul. 9, 1990, 2-181281
Int. Cl.[5] A23P *1/00*
U.S. Cl. 426—512 12 Claims



1. A food forming method comprising the steps of:

forcing a food material through a die of a forming apparatus to form said food material into a linear product,

deaerating said food material before it is fed to said forming apparatus, and

drawing out said food material by suction from said die by evacuating a zone external to said die with a reduced pressure.

5,186,971

HYPOALLERGENIC MILK PRODUCTS AND PROCESS OF MAKING

Leonard S. Girsh, Melrose Park, Pa., assignor to Immunopath Profile, Inc., Huntingdon Valley, Pa.

Continuation of Ser. No. 562,777, Aug. 3, 1990, Pat. No. 5,064,674, which is a continuation-in-part of Ser. No. 297,451, Jan. 13, 1989, Pat. No. 4,954,361. This application Sep. 4, 1991, Ser. No. 754,782
The portion of the term of this patent subsequent to Sep. 4, 2007, has been disclaimed.
Int. Cl.[5] A23C *9/15*
U.S. Cl. 426—580 60 Claims

1. A hypoallergenic milk product comprising:

(a) a permeate substance free of hyperallergenic protein containing molecules therein having a molecular weight of less than or equal to about 5 kDa, said permeate being selected from the group consisting of milk permeate and whey permeate; and

(b) a nutritionally effective amount of an additive selected from the group consisting of short chain polypeptides, amino acids, and a combination thereof.

5,186,972

METHOD FOR LUBRICATING ARTICLES

Joel L. Williams, Cary, and Thomas A. Shepard, Raleigh, both of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Filed Jun. 6, 1991, Ser. No. 710,984
Int. Cl.[5] A01N *1/02*; B05D *3/00*
U.S. Cl. 427—2 15 Claims

1. A method for lubricating an article comprising:

a) preparing a lubricating composition by dissolving a gelling agent selected from the group consisting of an ether of a polyhydroxy compound and a fatty acid salt in a lubricant at a temperature above the gelling temperature of said composition so that said composition is liquid;

b) applying a coating of the liquid composition to the surface of an article to be lubricated; and

c) cooling the coated article below said gelling temperature whereby said liquid composition gels on said surface.

5,186,973

HFCVD METHOD FOR PRODUCING THICK, ADHERENT AND COHERENT POLYCRYSTALLINE DIAMONDS FILMS

Diwakar Garg, Macungie, Pa.; Wilman Tsai, Cupertino, Calif.; Fred M. Kimock, Macungie, Pa.; Robert L. Iampietro, Emmaus, Pa., and Paul N. Dyer, Allentown, Pa., assignors to Diamonex, Incorporated, Allentown, Pa.

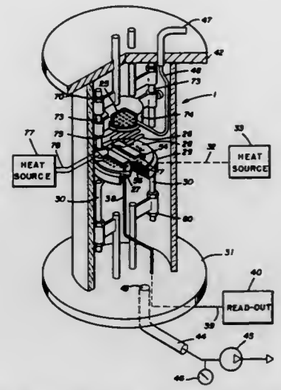
Filed Sep. 13, 1990, Ser. No. 582,439
Int. Cl.[5] B05D *3/06*; C23C *16/26*
U.S. Cl. 427—590 13 Claims

1. A chemical vapor deposition method for producing a coated substrate product comprising:

placing a parent substrate comprising a material selected from the group consisting of metal, metal alloy, mixture of metals, and mixtures thereof into a hot filament chemical vapor deposition reactor;

heating said parent substrate to a deposition temperature by means of a filament electrically charged to a temperature in the range of about 1800° to 2250° C.;

chemically vapor depositing an adherent and coherent polycrystalline diamond layer onto the heated substrate at a deposition rate of no greater than 0.4 μm per hour by passing a gaseous mixture of about 0.1% to about 5% hydrocarbon and the balance hydrogen into said reactor under a pressure of not greater than 100 Torr for a period of at least 30 hours; and



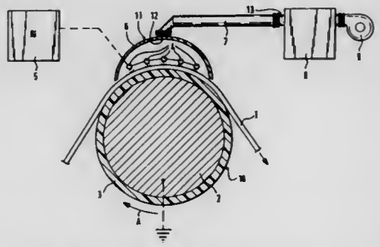
recovering a substrate coated with a thickness of at least about 12 μm of a smooth polycrystalline diamond layer.

5,186,974

SELF-SUPPORTING SHEET-LIKE STRUCTURE COMPRISING A SUBSTRATE AND A COATING, AND A PROCESS FOR ITS PRODUCTION

John D. Gribbin, Schlangenbad; Lothar Bothe, Mainz; Peter Dinter, Oestrich-Winkel, and Hermann Dallmann, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 391,076, Aug. 8, 1989. This application Oct. 5, 1990, Ser. No. 593,444
Claims priority, application Fed. Rep. of Germany, Aug. 16, 1988, 3827632; Aug. 16, 1988, 3827634
The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.
Int. Cl.[5] B05D *3/06*; H05F *3/00*
U.S. Cl. 427—536 7 Claims



1. A process for the production of a film structure, comprising treating at least one surface of a substrate layer by means of a corona discharge operated at an alternating current voltage between 5,000 and 25,000 V, said corona discharge occurring between a high voltage electrode and a counter electrode; and introducing an aerosol containing a polymeric film-forming agent with a carrier gas into the corona discharge.

VOL 1147 ISS 3 FE 16 1993 UMI

5,186,975

PROCESS AND MACHINERY FOR STEP-AND-REPEAT VACUUM-DEPOSITION OF LARGE-AREA THIN-FILM-ELECTRONICS MATRIX-CIRCUITS ON MONOLITHIC GLASS PANES THROUGH SMALL PERFORATED METAL MASKS

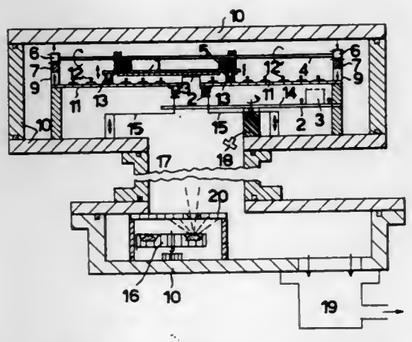
Djamshid Tizabi, and Albert G. Fischer, both of Dortmund, Fed. Rep. of Germany, assignors to Enichem S.p.A., Milan, Italy

Continuation of Ser. No. 412,614, Sep. 26, 1989, abandoned, which is a continuation of Ser. No. 255,665, Oct. 11, 1988, abandoned. This application Jul. 24, 1991, Ser. No. 734,102

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1987, 3734770

Int. Cl.[5] B05D *5/12, 1/32;* C23C *16/04, 16/52*

U.S. Cl. 427—99 12 Claims



1. A process for the automated production of monolithic large-area thin-film electronics matrix circuits onto large glass panes, especially suited for producing flat, square-meter-sized liquid crystal TV panels, wherein the large-area monolithic thin-film pixel matrix circuit which is square meter sized including peripheral shift and storage registers is vacuum-deposited from a multiple source evaporator through a number of etched small perforated metal foil masks onto one monolithic large glass pane, which is not intentionally heated, in

the form of reticles comprising:

a) successively pressing the small foil masks against a reticle of the large glass pane and vacuum depositing a film layer in exact registration with other film layers and neighboring reticles to deposit the circuit matrix in that reticle;

b) shifting the glass pane stepwise, in exact registration with the previously deposited film layer, to expose a new reticle to the multiple vacuum deposition until completion of the entire matrix circuit.

2. An apparatus for the production of monolithic large area thin film electronic matrix circuits onto large glass panes by vacuum deposition of multiple film layers on the glass pane in the form of reticles comprising a low thermal expansion holding plate including means for clamping the large glass pane to the underside of said holding plate, means for positioning vacuum deposition masks, at least four bearing-supported, round rotating and sliding precision rods on the face of said holding plate, said rods having precision toothed gears on each end, with at least two of said rods extending in the X direction and at least two of said rods extending in the Y direction, one or more electronic-controlled stepper motors which rotate said rods, and four precision toothed bars, which form a rectangular frame, with which said precision toothed gears on said rods intermesh whereby said rectangular frame is mounted in a vacuum bell jar in such a way that the large glass frame can be shifted in X and Y directions into the approximate positions where the reticular vacuum depositions can take place.

5,186,976

METHOD FOR PRODUCING SHEET-FORMED RECORDING MEDIUM

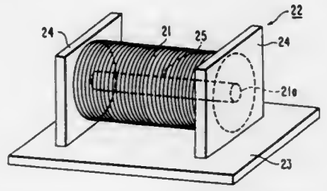
Hiroshi Kubo, Odawara, and Keitetsu Imahuzi, Chofu, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 501,582, Mar. 29, 1990. This application Dec. 19, 1991, Ser. No. 810,450

Claims priority, application Japan, Mar. 29, 1989, 1-74922; Mar. 29, 1989, 1-74923; Oct. 19, 1989, 1-270441; Oct. 19, 1989, 1-270442

Int. Cl.[5] B05D *5/12*

U.S. Cl. 427—129 14 Claims



1. A method for producing a sheet-formed recording medium having a heat treatment process of a synthetic resin base material, comprising forming said base material into a sheet before or after providing a recording layer on a surface of said base material, and subjecting a plurality of said sheet-formed base materials, juxtaposed to each other and supported so that the surface of each of said base materials is parallel to a vertical direction, to heat treatment, said heat treatment being performed with the surface of each of said plurality of sheet-formed base materials being vertically arranged so that adjacent base materials are held in a free state without applying an external force thereto,

wherein said sheet-formed base material is provided at its center with an engaging member for engagement with a drive shaft, and said heat treatment is performed after said base material is formed into a final disk shape,

wherein said base material comprises polyethyleneterephthalate and said heat treatment is performed at a temperature of 40° to 80° C. and a humidity of 0.02 kg H_2O/kg dry air or more, and

further wherein said sheet-formed recording medium comprises a 2-inch video floppy disk having a video signal recorded on an outermost track thereof, said sheet-formed recording medium exhibiting a reproduction jitter of 0.2 μsec, said reproduction jitter being measured after said sheet-formed recording medium was kept at 60° C., 0.120 kg H_2O/kg for 72 hours and then allowed to stand for 24 hours at room temperature.

5,186,977

METHOD FOR MANUFACTURING FUNCTIONAL THIN FILM

Yoshiharu Maezawa, Shiga, and Norimoto Nouchi, Katano, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Apr. 22, 1991, Ser. No. 688,136

Claims priority, application Japan, Apr. 23, 1990, 2-107241

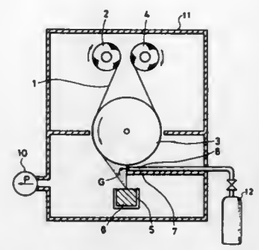
Int. Cl.[5] B05D *5/12*

U.S. Cl. 427—132 5 Claims

1. In a method for manufacturing a functional thin. film wherein a thin film containing at least a magnetic material is formed on a substrate by a vacuum evaporation method, the improvement comprising

evaporation depositing said thin film on said substrate with an orientation of particles of said magnetic material being uniform across said thin film, and

simultaneously flowing an inert gas from a gas discharge nozzle toward a vapor flow of said magnetic material onto



said substrate so as to substantially intersect a direction of said vapor flow.

5,186,978

PROTECTIVE COATING AND METHOD OF USING SUCH COATING

Edward W. Woodhall, Los Altos, and Nicholas Kondrats, Goleta, both of Calif., assignors to Cal-West Equipment Company, Inc., Los Altos, Calif.

Continuation-in-part of Ser. No. 614,330, Nov. 16, 1990, abandoned. This application Nov. 5, 1991, Ser. No. 788,006

Int. Cl.[5] B05D *1/32;* C09D *5/20*

U.S. Cl. 427—154 46 Claims

1. A method of protecting selected surfaces in vehicle painting operations from paint overspray comprising the steps of:

a) applying a masking material to said selected surfaces to be protected, said step of applying resulting in a substantially continuous film of such masking material, said masking material comprising:

i) at least about 10% polyvinyl alcohol by weight;

ii) ethyl alcohol and a denaturing alcohol selected from the group of methyl alcohol and propyl alcohol, said ethyl alcohol comprising less than about 20% of said masking material by weight based on 190-proof alcohol, said denaturing alcohol comprising less than 1% of said masking material by weight;

iii) a surfactant; and water;

iv) water;

b) painting at least a portion of a vehicle, said masking material preventing paint from contacting said surface to be protected; and

c) removing said masking material for said surfaces to be protected.

13. A masking composition comprising:

a) between 5 and 15% polyvinyl alcohol by

b) less than 15% by weight ethyl alcohol, based on 190-proof alcohol;

c) a surfactant in an amount less than 1% by weight;

d) greater than 0.1% plasticizer by weight;

e) a denaturant; and

f) water.

5,186,979

METHOD OF PREVENTION OF ADHESION OF HOT-MIX ASPHALT TO CONTAINERS AND EQUIPMENT

William T. Ballenger, Jr., San Benito, and Terry J. Light, Sr., Livingston, both of Tex., assignors to Asphalt Control Systems Inc., Livingston, Tex.

Filed Mar. 25, 1991, Ser. No. 674,182

Int. Cl.[5] B05D *7/22*

U.S. Cl. 427—156 14 Claims

1. A method of transporting hot-mix asphalt in containers without adhesion to the walls thereof which comprises

providing hot-mix asphalt to be transported,

providing a container for transporting said hot-mix asphalt,

providing a release agent consisting essentially of at least one vegetable oil dispersed in water with an emulsifier to yield a stable emulsion,

said emulsion comprising 1-5 oz. vegetable oil and emulsifier per gallon of water.

applying said emulsion uniformly on the walls of said container as a film or coating,

loading said emulsion-coated container with said hot-mix asphalt for transportation to a site of use, and

unloading said hot-mix asphalt from said container leaving substantially no asphalt adhered to the walls thereof.

5,186,980

ROOFING SHINGLES AND METHOD OF MAKING SAME

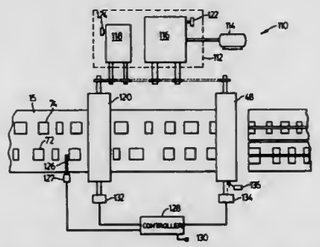
Henry Koschitzky, Downsview, Canada, assignor to Iko Industries Ltd, Toronto, Canada

Filed Oct. 28, 1991, Ser. No. 783,594

Claims priority, application Canada, Sep. 23, 1991, 2052083

Int. Cl.[5] B05D *1/12;* B32B *11/02*

U.S. Cl. 427—187 14 Claims



1. A method of making roofing shingles, comprising:

providing a strip formed of a base material saturated with a coating material and having a first layer of granules adhered on said coating material, said strip having the width of a plurality of shingles and having a plurality of lanes, one lane corresponding to each of a plurality of set of shingles to be produced, printing on top of said first layer of granules of each lane a pattern of spaced apart patches of coating material, the pattern of patches for each lane being different in appearance from that of the pattern of patches for each other lane when the shingles are viewed when they have a common orientation, the repeat length of each pattern of bars being the same as the length of an integral number of shingles, adhering to said patches granules of a color different from the color of said first layer of granules, cutting said strip into shingles, and packing said shingles in bundles with each bundle containing some shingles from one lane and some shingles from at least one other lane, whereby to provide a varied appearance for the shingles of a bundle when installed on a roof while at the same time ensuring that at least some shingles in each bundle are substantially identical.

12. A bundle of roofing shingles comprising at least first and second sets of shingles, each shingle having a base material saturated with a coating material and having a first layer of granules adhered on said coating material, each shingle also having a plurality of spaced apart patches of coating material printed on said first layer of granules at one edge of said shingle and a second layer of granules of a color contrasting with said first layer adhered to said patches, all of the shingles of said first set having the same first pattern of patches and all of the shingles of the second set having the same second pattern of patches, said second pattern being different from said first pattern, said first and second patterns of patches being such that when a shingle is cut into a predetermined number of portions, at least one such portion of each shingle will have a

VOL
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center which is free of said patches thus to facilitate bending such portion over a peak or ridge, the shingles of said first set having said one edge at one side of said bundle and the shingles of said second set having said one edge at a side of said bundle opposite said one side.

5,186,981

ROLLERS FOR PRESTRETCH FILM OVERWRAP

Terry M. Shellhamer; James C. Ward, both of Louisville, Ky., and David M. Edwards, Corydon, Ind., assignors to Lantech, Inc., Louisville, Ky.

Continuation of Ser. No. 894,482, Aug. 11, 1986, abandoned, which is a continuation of Ser. No. 665,530, Oct. 26, 1984, abandoned. This application Dec. 22, 1988, Ser. No. 289,442

Int. Cl.[5] B05D *5/00*

U.S. Cl. 427—247 **14 Claims**

1. A process for making a roller with a textured surface for transporting and stretching a film web comprising:

forming a foamable curable plastic material containing a blowing agent into the shape of a roller;

curing the plastic material containing the blowing agent for a time sufficient for the plastic material to develop an internal cellular structure; and

removing an outer layer of the plastic material to expose the internal cellular structure and form a textured surface on the plastic material from the exposed cellular structure for engaging, transporting and releasing a film web.

5,186,982

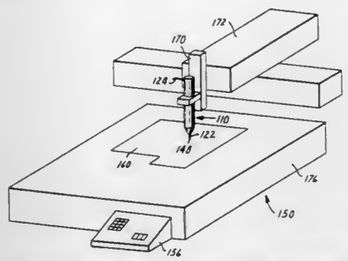
PIN TRANSFER APPLICATOR AND METHOD

Russell E. Blette, Hastings, Minn., and John O. Roeser, Barrington, Ill., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 18, 1990, Ser. No. 584,356

Int. Cl.[5] B05D *5/00, 1/26;* **B05C** *1/02*

U.S. Cl. 427—256 **17 Claims**



1. A pin transfer applicator assembly for dispensing liquid materials comprising:

an applicator having a passageway with an inlet for admitting a quantity of liquid materials to be dispensed, said passageway having an outlet remote from said inlet, said applicator including a pin in said passageway and means for selectively moving said pin relative to said passageway past said inlet and toward an extended position in order to direct said quantity of liquid materials in said passageway through said outlet;

a support for supporting a workpiece; and

means for moving said applicator relative to said support along a path for bringing said pin when in said extended position to a location closely adjacent said workpiece such that at least a portion of said quantity of liquid materials is transferred from said pin to said workpiece, said means for moving said pin including means for moving said pin relative to said passageway along a path and in a single continuous motion that directs said quantity of liquid materials past said inlet, through said outlet and onto said workpiece.

12. A pin transfer applicator assembly for dispensing liquid materials comprising:

an applicator having a passageway with an inlet for admitting a quantity of liquid materials to be dispensed, said passageway having an outlet remote from said inlet, said applicator including a pin and means for selectively moving said pin relative to said passageway and toward an extended position in order to direct said quantity of liquid materials in said passageway through said outlet;

a support for supporting a workpiece; and

means for moving said applicator relative to said support along a path for brining said pin when in said extended position to a location closely adjacent said workpiece such that at least a portion of said quantity of liquid materials is transferred from pin to said workpiece, wherein said means for moving said pin includes a piston movable in response to pressurized fluid, and wherein said pin is connected to said piston, and wherein said applicator includes a spring for biasing said piston away from said passageway.

5,186,983

PROCESS FOR DECORATING A HARD SURFACE

Robert J. Brown, 120 Hill Top Dr., Travelers's Rest, S.C. 29690

Filed Feb. 25, 1991, Ser. No. 660,527

Int. Cl.[5] B05D *5/00, 1/32*

U.S. Cl. 427—261 **1 Claim**

1. A process of decorating a hard surface comprising:

providing a mortar-colored paint;

providing a template constructed of a durable, stiff plastic material, said template having holes cut therein, said holes having feathered edges;

providing a colored paint;

painting said hard surface with said mortar-colored paint;

placing said template over the painted mortar-colored surface;

painting over said template and thus onto the painted mortar-colored surface with said colored paint whereby the colored paint partially covers the mortar-colored surface, thereby leaving a painted design having feathered boundaries on said surface.

5,186,984

SILVER COATINGS

James D. Gabbert, Des Peres, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jun. 28, 1990, Ser. No. 545,439

Int. Cl.[5] C23C *26/00*

U.S. Cl. 427—443.1 **6 Claims**

5. In a method for providing a silver coating comprising:

(a) coating a substrate with a film-forming aqueous solution comprising water soluble polymer and water soluble compound of a catalytic metal of Group 8 in the weight ratio of at least 3:1;

(b) drying said solution to form a catalytically inert film comprising said polymer and said metal;

(c) activating at least selective areas of said film to catalyze electroless deposition of metal;

(d) electrolessly depositing copper on said selective areas; and

(e) contacting said copper with a silver replacement solution; the improvement comprising contacting said copper with a cyanide-free, ammoniacal silver replacement solution containing a chelant and soluble copper at a level of at least about 1 mole copper per mole silver.

5,186,985

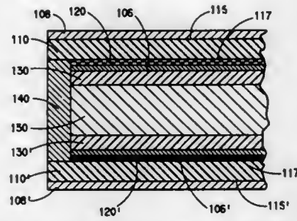
LIQUID CRYSTAL DISPLAYS OF HIGH TILT BIAS ANGLES

William E. Estes, Pittsboro, N.C.; David P. Higley, Wilmington, Del.; Brian C. Auman, Newark, Del., and Andrew E. Feiring, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 4, 1991, Ser. No. 680,488

Int. Cl.[5] C09K *19/00*

U.S. Cl. 428—1 **12 Claims**



1. In an improved liquid crystal display device of the type having a common liquid crystal layer with opposite sides, a set of electrodes on either side of the liquid crystal layer, and an alignment polyimide layer between each set of electrodes and the common liquid crystal layer, wherein the improvement comprises the polyimide layer contains pendant perfluorinated hydrocarbon chains of more than 6 perfluorinated carbon atoms, wherein the polyimide layer comprises a reaction product of an acid dianhydride and a diamine, and wherein the pendant perfluorinated chains are part of the diamine.

5,186,986

LIQUID CRYSTAL ALIGNMENT FILM AND METHOD OF MANUFACTURING THE SAME

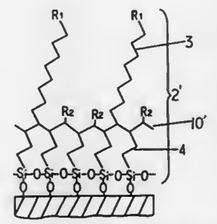
Kazufumi Ogawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 17, 1991, Ser. No. 760,998

Claims priority, application Japan, Sep. 17, 1990, 2-248183

Int. Cl.[5] G02F *1/1337*

U.S. Cl. 428—1 **18 Claims**



1. A liquid crystal alignment film comparising a monomolecular film including straight carbon chains, said straight carbon chains being directly or indirectly chemically adsorbed at one end to an electrode via —Si—O— bonds and crosslinked in a state of alignment in a particular direction.

5,186,987

LINING MATERIAL FOR PIPE LINES AND A PROCESS FOR PROVIDING PIPE LINES THEREWITH

Takayoshi Imoto, Otsu; Masahiro Seshimo, Nishinomiya; Futoshi Makimoto, Otsu, and Eiji Kitagawa, Kyoto, all of Japan, assignors to Ashimori Industry Co., Ltd., Osaka, Japan

Filed Nov. 26, 1990, Ser. No. 617,614

Claims priority, application Japan, Apr. 10, 1990, 2-95881

Int. Cl.[5] F16L *55/162, 58/04*

U.S. Cl. 428—34.5 **5 Claims**



1. A lining material for pipe lines which comprises a flexible tubular film, a sheet covering the outer surface of the tubular film and a film capable of being split off covering the outer surface of the sheet, characterized in that the sheet is comprised of a fabric and a mat of fibers of high tenacity impregnated with a thickened liquid thermohardenable resin to form a fabric-fiber-reinforced composite molding sheet having a sufficient length and a width greater than the inner circumferential length of a pipe line to be treated, and that both laterally end portions of the sheet are slidably overlapped with each other to form a tube around the tubular film, the outer circumferential length of the tube being shorter than the inner circumferential length of the pipe line.

5,186,988

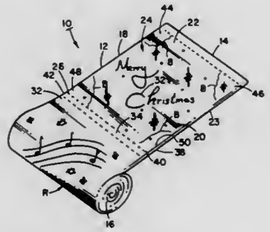
GIFT WRAPPING

Merle Dixon, 2624 N. Steadman Dr., Petersburg, Va. 23803

Filed Dec. 7, 1990, Ser. No. 623,560

Int. Cl.[5] B65B *53/02;* **B65D** *30/10*

U.S. Cl. 383—37 **10 Claims**



1. Gift wrapping comprising:

a monolithic, one-piece tubular body of undefined extent having a forward end edge and a rear end edge;

two side edges;

a width dimension extending between said side edges;

a length dimension defined between said forward end edge and said rear end edge;

an outer sheet;

an inner sheet;

said body being divided into a multiplicity of bag-forming sections, each bag-forming section having a bottom edge and a top edge located forwardly of said bag-forming section bottom edge, and bag-forming section side edges which extend from said bag-forming section top edge to said bag-forming section bottom edge and which are coincident with said body side edges, said body outer sheet being connected so said body inner sheet at each bag-forming section side edge and along said bag-forming

VOL
1147
ISS
3
FE
16
1993
UMI

section bottom edge, each bag-forming section further including four corners, which include two top corners located adjacent to an intersection of a bag-forming section top edge and said bag-forming section side edges and two bottom corners located adjacent to an intersection of a bag-forming section bottom edge and said bag-forming section side edges, a heat-shrinkable section adjacent to each bag-forming section corner, and non-heat shrinkable material between said heat-shrinkable sections;

a plurality of forward tear lines extending widthwise of said body, said forward tear lines being spaced apart from each other along the length dimension of said body and each including a plurality of perforations and being located immediately adjacent to and rearwardly of a bag-forming section bottom end edge whereby each bag-forming section can e torn off of said body and will have closed sides at the side edges thereof, a closed bottom at the bottom edge thereof and an open mouth defined at the top end edge thereof;

a plurality of rearward tear lines extending widthwise of said body, each of said rearward tear lines being spaced apart from one of said forward tear lines along the length dimension of said body and each rearward tear line including a plurality of perforations and being located immediately adjacent to and forwardly of a rearwardly adjacent bag-forming section top end edge and being located rearwardly spaced along said body length dimension from a forwardly adjacent forward tear line and defining with said forwardly adjacent tear line a tear-off strip, said tear-off strip including first and second end edges which are coincident with each other and with one of said body side edges, and a midsection which is coincident with another of said body side edges, each; of said tear-off strips being monolithic and one-piece and having a length as measured between said tear-off strip first and second edges which is approximately twice the width dimension of said body; and

said bag-forming section to edges being tearably connected to a forwardly adjacent rearward tear line and each of said body section bottom edges being tearably connected to a rearwardly adjacent one of said forward tear lines so that each bag-forming section is separated from adjacent bag-forming sections by a tear-off strip.

5,186,989

ANNULAR ARTICLE-WRAPPING MEMBER AND METHOD OF MAKING SAME

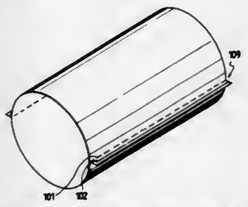
Masamitsu Tsukada; Kiyoshi Murata; Yasushi Ota, and Yoshihiko Watanabe, all of Tokyo, Japan, assignors to Heisei Polymer Co., Ltd., Tokyo, Japan

Filed Mar. 6, 1990, Ser. No. 488,825

Claims priority, application Japan, Mar. 8, 1989, 1-55580; Jul. 18, 1989, 1-185202

Int. Cl.[5] B65B *53/00;* **B32B** *31/20;* **B65D** *85/02*

U.S. Cl. 428—34.9 **2 Claims**



1. A circumferentially wrapped, heat-sealed article, comprising:

a heat-sealed plastics thermal shrinkable wrapping material, wherein a heat-sealed portion thereof has at least two rows of seal, and at least one of said at least two rows is a row of dot seal, said at least one row of dot seal being positioned on a side of said heat-sealed portion closer to said article than that of a second of said at least two rows of seal, wherein said at least two rows of seal of said heat-sealed portion have a space therebetween for absorbing stress applied to said heat-sealed portion from said wrapped article.

5,186,990

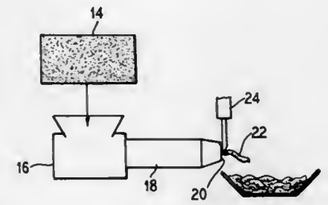
BIODEGRADABLE AND WATER SOLUBLE PACKAGING MATERIAL

Bradley K. Starcevich, Woodstock, Ill., assignor to Eagle Scientific Co., Woodstock, Ill.

Filed Apr. 5, 1991, Ser. No. 681,107

Int. Cl.[5] B29C *67/22*

U.S. Cl. 428—35.6 **9 Claims**



1. A method of making an expanded biodegradable, low density, packaging material which is substantially free of petroleum-based products comprising the steps of:

a. mixing at least one grain, a biodegradable binding agent and water to form an initial mixture which is principally grain, an amount of binding agent effective to bind the final product together, and water in an amount effective to provide an expanding agent;

b. extruding said mixture so as to mix, heat and shape said mixture, and said mixture being heated to a temperature between about 345°0 and 351° F.;

c. permitting said mixture to expand to form a material which is suitable for packaging having a density in the range of 0.6 to 2.5 pounds per cubic feet, wherein said binding agent is present in the amount of 0.5% by weight;

d. said water being present in an amount effective to raise the total water in the mixture to between about 14% and 16% for assuring subsequent expansion; and

e. whereby the grain is corn grit in an amount between 80–97% by weight of said mixture.

5,186,991

CONTAINER CLOSURES, SEALED CONTAINERS AND SEALING COMPOSITIONS FOR THEM

David N. Samuel, Great Gransden, and Richard S. Williams, Impington, both of England, assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation of Ser. No. 370,546, Jun. 23, 1989, abandoned. This application Jun. 7, 1991, Ser. No. 718,931

Claims priority, application United Kingdom, Jun. 29, 1988, 8815487; Aug. 26, 1988, 8820283

Int. Cl.[5] B65D *41/00;* **C08L** *23/04, 23/16, 53/02*

U.S. Cl. 428—35.8 **18 Claims**

1. A container closure having reduced oxygen permeability consisting essentially of a metal closure, the closure having at least one surface coated with a sealing composition comprised of a polymer matrix blend of polyethylene and an elastomer selected from the group consisting of, carboxylated styrene butadiene polymers, ethylene propylene copolymers, ethylene propylene diene copolymers and blends thereof and from about 5 to about 50% by weight of the matrix of an ethylene vinyl alcohol polymer.

5,186,992

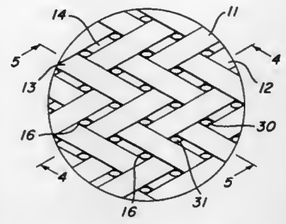
BRAIDED PRODUCT AND METHOD OF MAKING SAME

J. Sellers Kite, III, West Chester, Pa., assignor to The Bentley-Harris Mannfacturing Company, Lionville, Pa.

Continuation of Ser. No. 492,802, Mar. 12, 1990, abandoned. This application May 27, 1992, Ser. No. 890,297

Int. Cl.[5] B32B *1/08*

U.S. Cl. 428—36.3 **6 Claims**



1. A braided product which, when compressed along a first direction, expands along a second direction transverse to said first direction and when released tends to return to its original configuration, comprising:

a plurality of over-and-under mutually-crossing braided monofilaments forming with each other a plurality of monofilament cross-overs, with apertures extending through said braided product between said monofilaments; and

a thin deposit of an elastomeric material extending over the exterior surfaces of said monofilaments at each of said cross-overs but leaving said apertures at least partially open, said elastomeric material differing from the material of said monofilaments and serving as a resilient adhesive for holding said monofilaments against mutual lateral motion while permitting them to pivot with respect to each other at said cross-overs.

5,186,993

POLYMER BLENDS

Michael P. Hallden-Abberton, Maple Glen, Pa., and William L. Wills, Roebling, N.J., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Oct. 11, 1991, Ser. No. 776,542

Int. Cl.[5] C08L *51/00, 33/04, 25/04, 25/14*

U.S. Cl. 428—36.92 **15 Claims**

1. A polymer blend, comprising:

a) from about 55 to about 95 weight percent of an acrylic/vinyl aromatic matrix copolymer, and

b) from about 5 to about 45 weight percent of particles of a core-shell polymer comprising:

i) a core of from about 70 to about 95 weight %, based on the core-shell polymer weight, of a crosslinked polymer derived from at least 50 weight %, based on the core, of a conjugated diolefin monomer, up to about 50 weight % of at least one vinyl comonomer, and up to about 5 weight % of a polyvinyl monomer, the core having a toluene swell ratio of from about 7 to about 25, and

ii) at least one polymer shell of from about 5 to about 25 weight %, based on the core-shell polymer weight, of a polymer derived from at least one vinyl aromatic monomer or of a copolymer derived from a vinyl aromatic monomer and at least one comonomer selected from a vinyl aromatic, a lower alkyl acrylate, a lower alkyl methacrylate, or a polyvinyl monomer; wherein the core-shell particles have an average particle diameter less than about 400 nanometers and wherein the polymer blend has a luminous transmittance greater than about 85%.

5,186,994

OPTICAL DISC

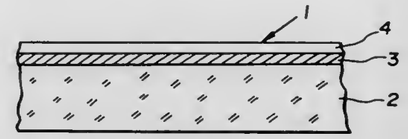
Masayuki Tatewaki; Hiromasa Kato; Kenichi Obinata, and Masahiro Aoki, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 12, 1991, Ser. No. 667,829

Claims priority, application Japan, Mar. 16, 1990, 2-064387

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—64 **2 Claims**



1. An optical disc comprising a transparent substrate and a reflective film on said substrate, said reflective film being composed mainly of aluminum, wherein the improvement resides in that said reflective film contains an oxide of Al, and in that aluminum and oxygen constituting the oxide of Al bear an oxygen to aluminum atomic ratio of 1.3 to 2.0.

5,186,995

OPTICAL DISK

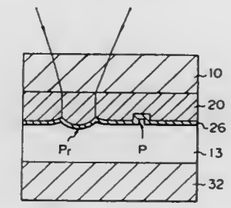
Atsushi Yoshizawa, and Fumio Matsui, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 23, 1990, Ser. No. 496,972

Claims priority, application Japan, Jul. 6, 1989, 1-175155

Int. Cl.[5] B32B *3/02*

U.S. Cl. 428—64 **20 Claims**



1. An erasable optical disk comprising:

a transparent substrate;

an elastomer layer comprising a first pigment capable of absorbing a first laser beam for writing data and formed on said substrate; and

a reflective retention layer comprising a thiophene vinylene resin and containing a second pigment capable of absorbing a second laser beam for erasing data whose wavelength is different from that of said first laser beam and formed on said elastomer layer.

5,186,996

SOUND DAMPING MULTI-LAYER STRUCTURE

Thorsten Alts, Gross-Bieberau, Fed. Rep. of Germany, assignor to Matec Holding AG, Switzerland

PCT No. PCT/CH90/00291, § 371 Date Aug. 26, 1991, § 102(e) Date Aug. 26, 1991, PCT Pub. No. WO91/09728, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 21, 1990, Ser. No. 743,372

Claims priority, application Switzerland, Dec. 29, 1989, 4683/89

Int. Cl.[5] B32B *3/00*

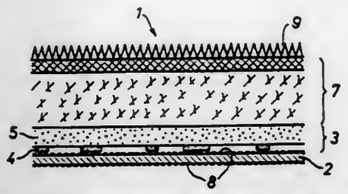
U.S. Cl. 428—72 **21 Claims**

1. A sound absorbing multi-layer structure for noise reduc-

VOL 1147 ISS 3 FE 16 1993 UMI

tion, comprising: a structural sheet which is capable of oscillating, made of a material selected from the group consisting of sheet metal and plastic; and an oscillation-absorbing damping sheet, wherein:

the oscillation-absorbing sheet comprising at least one flexible heavy sheet and one viscoelastic support layer tightly connected therewith, which support layer incorporates a plurality of angularly constructed support elements,



the oscillation-absorbing sheet with its support layer engages loosely on the structure which is capable of oscillating, and

the individual support elements are shaped and arranged so that together with the structure which is capable of oscillating and the flexible heavy sheet they form a coherent labyrinth of transversely interconnected hollow spaces with acoustically active cavities.

5,186,997

DEVICE FOR THE ATTACHMENT OF A SHEET ONTO A BACKING

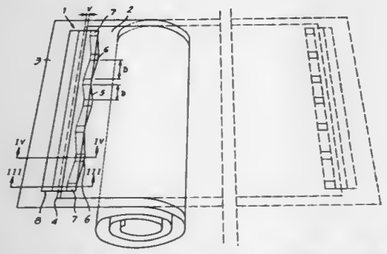
Peter Vermeulen, Merellaan 14, 2930 Brasschaat, Belgium

Filed Dec. 28, 1990, Ser. No. 633,621

Claims priority, application Belgium, Dec. 29, 1989, 8901408

Int. Cl.[5] B32B *7/14*

U.S. Cl. 428—99 **11 Claims**



1. Device for the attachment of a sheet onto a backing, comprising a strip (5); first attachment means (6) which connect the strip at a plurality of first well defined places directly or indirectly to the sheet (2); and second attachment means (7) which directly or indirectly connect the strip (5) to the backing (3) at a plurality of second places different from the first places, and with a predetermined distance (D) between the first and second places, such that there are a total of at least three of the first and second places, whereby the sheet and backing may be mutually displaced.

5,186,998

DUPLEX FILTER CLOTH AND METHOD

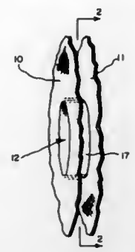
John R. Eugster, Salt Lake City, Utah, assignor to National Filter Media Corporation, Salt Lake City, Utah

Filed May 21, 1990, Ser. No. 528,821

Int. Cl.[5] B32B *3/06*

U.S. Cl. 428—102 **7 Claims**

1. A duplex filter cloth product for use on chamber type filter presses, comprising two initially separate pieces of a filter cloth material each having a filtrate feed opening intermediate its periphery, the opening of one being of less diameter than that of the other and each having the circumferential margin of such opening turned down and interlapped as component collar parts of a barrel neck for such product, the piece with feed hole opening of lesser diameter having its turned-down



margin closely and smoothly fitted over and against the turned-down margin of the other and defining the filtrate feed hole of the final product; and means attaching said turned-down interlapped margins to each other to retain the close and smooth fit.

5,186,999

SANDWICH MATERIAL PROVIDED WITH A LOCAL REINFORCEMENT

Johan A. Brambach, Leimuiden, Netherlands, assignor to Schreiner Luchtvaart Groep B.V., Leiden, Netherlands

Filed Feb. 7, 1990, Ser. No. 476,533

Claims priority, application Netherlands, Feb. 17, 1989, 8900398

Int. Cl.[5] B32B *3/12*

U.S. Cl. 428—117 **20 Claims**

1. A sandwich material provided with a local reinforcement, comprising a core material sandwiched between two reinforced top layers, said core materials being selected from the group consisting of a thermoplastic, foamed core material and a core material having a honeycomb structure, said top layers comprising a thermoplastic synthetic plastics material reinforced with fibers, and at least one local reinforcement comprising an amount of plastic material injected under pressure into the core material through one of the top layers, said plastic material becoming hardened after injection.

5,187,000

CELLULOSIC CONSTRUCTION PANEL

Suezone Chow, Richmond, and David H. Dawes, Westbrook, both of Canada, assignors to Canadian Forest Products Limited, Vancouver, Canada

Filed Nov. 13, 1990, Ser. No. 611,577

Claims priority, application United Kingdom, Nov. 15, 1989, 8925813

Int. Cl.[5] B32B *21/04, 27/10*

U.S. Cl. 428—141 **5 Claims**

1. A panel consisting essentially of:

a) a planar substantially inflexible cellulosic substrate formed from wood fragments having a rough or uneven surface; and

b) at least one layer of paper or a veneer;

c) said surface and said layer of paper or a veneer being bonded to an interposed layer in the form of a coating or film of polyolefin selected from the group consisting of (i) homopolymers of ethylene and copolymers of ethylene and at least one C_4–C_{10} hydrocarbon alpha-olefin, and mixtures thereof, and having a melt index of less than 20 dg/min, (ii) copolymers of ethylene with at least one of vinyl acetate, acrylic acid, methacrylic acid, carbon monoxide, alkyl esters of acrylic acid and alkyl esters of methacrylic acid, and (iii) copolymers of ethylene with at least one unsaturated carboxylic acid, and mixtures of said polyolefins, said polyolefins of (i) and (ii) having been grafted with at least 9 ppm by weight of an ethylenically unsaturated carboxylic acid or anhydride, said panel having a smoother surface than said substrate.

5,187,001

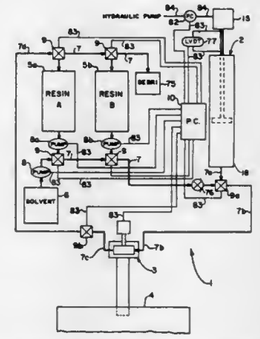
RESIN TRANSFER MOLDING APPARATUS

James K. Brew, Greenwood, Ind., assignor to GenCorp Inc., Fairlawn, Ohio

Continuation of Ser. No. 588,209, Sep. 26, 1990, abandoned. This application Dec. 6, 1991, Ser. No. 806,821

Int. Cl.[5] B29C *45/77*

U.S. Cl. 425—145 **3 Claims**



1. A resin transfer molding apparatus comprising:

a) means for storing a flowable resin;

b) an injector assembly mounted on a mold, said injector assembly having a resin inlet and outlet, a resin conduit through which the inlet and outlet communicate, and means for regulating communication between the resin conduit and the mold;

c) a metering pump for pumping a predetermined amount of said resin into said mold via said injector assembly with a single stroke of said pump, said metering pump being located remote from said injector assembly;

d) means for conveying said resin from said resin storage means into said metering pump;

e) first conduit means for communication among said resin storage means, said resin conveying means, the resin inlet of said metering pump, and said injector assembly;

f) second conduit means for communication between the resin outlet of said injector assembly and said resin storage means;

g) a plurality of valves for regulating the flow of said resin within said conduit means; and

h) means for automatically controlling the operation of said injector assembly, said metering pump, said resin conveying means, and said valves, whereby unused portions of said resin can be recirculated back to said storage means during cure of said resin contained in said mold and replaced with a predetermined amount of said resin contained in said storage means, or whereby unused portions of said resin can be flushed from said apparatus during cure of said resin contained in said mold and replaced with a predetermined amount of said resin contained in said storage means.

5,187,002

ELECTROTHERMAL TRANSFER SHEET

Noritaka Egashira; Naoto Satake, and Masanori Akada, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

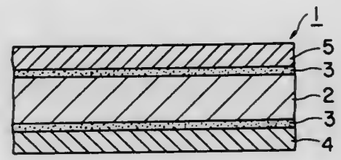
PCT No. PCT/JP89/00961, § 371 Date May 18, 1990, § 102(e) Date May 18, 1990, PCT Pub. No. WO90/03274, PCT Pub. Date Apr. 5, 1990

PCT Filed Sep. 21, 1989, Ser. No. 490,592

Claims priority, application Japan, Sep. 24, 1988, 63-239440; Apr. 17, 1989, 1-95257

Int. Cl.[5] B32B *51/16;* **B41M** *5/26*

U.S. Cl. 428—195 **17 Claims**



1. An electrothermal transfer sheet comprising:

a substrate sheet;

a dye layer comprising a sublimable dye and a binder, said dye layer being formed on one side of said substrate sheet; and

at least one resistor layer formed on the other side of said substrate sheet, wherein said at least one resistor layer has a positive temperature coefficient of resistance, a ratio R_{100}/R_{25} of the resistance value, R_{100}, at 100° C. to the resistance value, R_{25}, at 25° C. in the resistor layer of at least 1.2, and a ratio R_{200}/R_{100} of the resistance value, R_{200}, at 200° C. to the resistance value, R_{100}, at 100° C. in the resistor layer of at least 2.5.

5,187,003

HYBRID BALLISTIC FABRIC

Chitrangad, Midlothian, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 26, 1991, Ser. No. 798,606

Int. Cl.[5] D03D *15/00*

U.S. Cl. 428—225 **12 Claims**

1. A woven fabric for ballistic protection comprising a warp of fibers with elongation to break greater than 2.2% and a fill of fibers with elongation to break greater than that of the warp fibers.

5,187,004

SUPPORT FABRIC FOR BULK GOODS

Paul Risseeuw, Velp, Netherlands, assignor to Akzo N.V., Arnhem, Netherlands

Filed May 29, 1990, Ser. No. 529,442

Claims priority, application Fed. Rep. of Germany, May 29, 1989, 3917358

Int. Cl.[5] D03D *3/00*

U.S. Cl. 428—229 **14 Claims**

1. A support fabric for bulk goods comprising synthetic warp yarns interwoven with weft yarns, said warp yarns being formed from straight warp yarns and from binding warp yarns, each of the straight warp yarns having a higher strength than the binding warp yarns and the construction being such that on exposure of the fabric to a tensile force in the warp direction the straight warp yarns absorb a significantly higher proportion of the tensile force than the binding warp yarns, wherein a sufficiently large proportion of at least the straight warp yarns comprises a polyester and a second sufficiently large proportion of at least the straight warp yarns comprises at least one other polymer, a breaking elongation of the straight warp yarns made of the polyester being significantly less than that of

VOL
1147
ISS
3
FE
16
1993
UMI

the straight warp yarns made of the other polymer and a long-term stability of the straight warp yarns made of the other polymer to highly concentrated acids or alkalis at 35° C. is significantly higher than that of the straight warp yarns made of the polyester.

5,187,005
SELF-BONDED NONWOVEN WEB AND WOVEN FABRIC COMPOSITES

Arno W. Stahle, Chamble; Larry M. Bailey, Decatur, and William T. Tapp, Marietta, all of Ga., assignors to Amoco Corporation, Chicago, Ill.

Continuation of Ser. No. 690,651, Apr. 24, 1991, abandoned. This application Dec. 10, 1991, Ser. No. 805,579
Int. Cl.[5] B32B *7/00*
U.S. Cl. 428—252 18 Claims

1. A self-bonded nonwoven web and woven thermoplastic yarn composite comprising,

at least one layer of a uniform basis weight self-bonded, fibrous, nonwoven web comprising a plurality of substantially randomly disposed, substantially continuous thermoplastic filaments wherein said web has a Basis Weight Uniformity Index of 1.0±0.05 determined from average basis weights having standard deviations of less than 10%, adhered to

at least one layer comprising woven thermoplastic yarns.

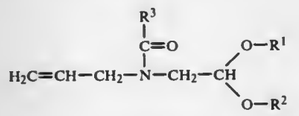
5,187,006
N-ALLYL-N-DIALKOXYETHYL AMIDE OR AMINE EMULSION BINDERS FOR NONWOVEN FABRICS

John C. Leighton, Flanders, N.J.; Dennis Neigel, Salisbury, N.C., and Carmine P. Iovine, Bridgewater, N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Division of Ser. No. 764,745, Sep. 24, 1991. This application Aug. 14, 1992, Ser. No. 930,871
Int. Cl.[5] D04H *1/64*
U.S. Cl. 428—288 9 Claims

1. A nonwoven fabric formed from a loosely assembled web of fibers bonded together with a copolymer emulsion binder having a glass transition temperature of about −50° C. to about 50° C., comprising polymerized residues derived from

(a) monomer units represented by the formula



in which R^1 and R^2 are C_1–C_3 alkyl, and R^3 is C_1–C_3 alkyl or C_6–C_8 aryl, present in an amount of about 1 to about 10 parts by weight of total monomers;

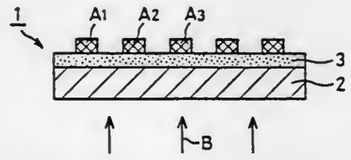
(b) comonomer units, copolymerizable with the monomer of (a), present in an amount of about 90 to about 99 parts by weight of total monomers;

(c) optionally, hydroxyl-containing monomer units, coreactive with the monomer units of (a), present in an amount up to 10 parts by weight of total monomers.

5,187,007
ADHESIVE SHEETS

Kazuyoshi Ebe; Hiroaki Narita; Katsuhisa Taguchi; Yoshitaka Akeda, and Takanori Saito, all of Saitama, Japan, assignors to Lintec Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 111,849, Oct. 22, 1987, Pat. No. 4,965,127, which is a continuation of Ser. No. 932,210, Nov. 18, 1986, Pat. No. 4,756,968. This application Jun. 29, 1990, Ser. No. 549,496
Claims priority, application Japan, Dec. 27, 1985, 60-295188; Dec. 27, 1985, 60-295189; Dec. 27, 1985, 60-295190; Mar. 3, 1986, 61-45785; Mar. 3, 1986, 61-45786; Jul. 9, 1986, 61-161680
The portion of the term of this patent subsequent to Jul. 12, 2005, has been disclaimed.
Int. Cl.[5] C09J *7/02, 133/08, 133/10*
U.S. Cl. 428—343 15 Claims



1. An adhesive sheet for semiconductor wafer processing, comprising a substrate having coated on the surface thereof an adhesive layer comprising an acrylic or methacrylic adhesive and a radiation polymerizable compound, wherein the radiation polymerizable compound is a urethane acrylate oligomer having a molecular weight of 3,000–10,000, and the substrate is an ethylene-acrylic acid or ethylene-methacrylic acid copolymer film.

5,187,008
PROCESS FOR THE PREPARATION OF FIBER-REINFORCED CERAMIC MATRIX COMPOSITES

Wolfgang Haller, Chevy Chase, Md., and Uday V. Deshmukh, Concord, Calif., assignors to The United States of America as represented by the Secretary of Commerce, Washington, D.C.

Continuation of Ser. No. 307,109, Feb. 7, 1989, abandoned. This application Mar. 20, 1991, Ser. No. 673,246
Int. Cl.[5] D02G *3/00;* B05D *3/12*
U.S. Cl. 428—378 1 Claim

1. A fiber-reinforced ceramic matrix composite intermediate product comprised of monofilament fibers having a continuous uniform coating of a ceramic matrix material produced by a process comprising the steps of:

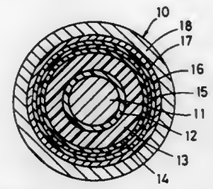
(a) coating at least one monofilament fiber by drawing the fiber through a filament guide immersed in a slurry comprised of a ceramic matrix material in an amount sufficient to form a continuous uniform coating on the surface of the fiber and an ultraviolet curing agent in an amount sufficient to bind the continuous uniform coating of ceramic matrix material to the fiber upon curing with ultraviolet radiation; and

(b) rapidly curing the coating before breakup of the coating slurry on the fiber by exposure to ultraviolet radiation so as to form the composite intermediate product.

5,187,009
RUBBER/PLASTIC INSULATED POWER CABLES AND A JOINT THEREOF AND A METHOD FOR MANUFACTURING THE SAME

Hitoshi Kimura; Tetsuo Matsumoto, both of Ichihara, and Michihiro Shimada, Nagoya, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Apr. 15, 1991, Ser. No. 685,602
Claims priority, application Japan, Sep. 13, 1990, 2-243075
Int. Cl.[5] B44D *1/42;* C08L *23/08;* B05D *3/02*
U.S. Cl. 428—383 20 Claims

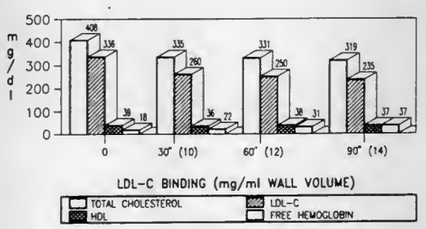


1. A rubber/plastic insulated power cable comprising a conductor having an inner semiconductor layer and an insulation layer, and optionally, an outer semiconductor layer, formed thereon in the order named, at least one of said layers being formed of a crosslinked polyolefin composition containing at least one polyolefin selected from the group consisting of an ethylene homopolymer and an ethylene copolymer, 0.5 to 10 parts by weight of an organic peroxide, and 0.1 to 5 parts by weight of 2,4-diphenyl-4-methyl-1-pentene, based on 100 parts by weight of said polyolefin.

5,187,010
MEMBRANE HAVING HIGH AFFINITY FOR LOW DENSITY LIPOPROTEIN-CHOLESTEROL FROM WHOLE BLOOD

Marc E. Parham, Bedford, and Richard L. Duffy, Cambridge, both of Mass., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Nov. 27, 1990, Ser. No. 618,791
Int. Cl.[5] B01D *63/02, 69/08*
U.S. Cl. 428—398 6 Claims



1. A membrane for binding low density lipoprotein cholesterol consisting essentially of a microporous polysulfone hollow fiber membrane having substantially uniform pore diameters in the range of about 0.1 to about 0.7 microns and having an amount of polyacrylic acid effective to bind low density lipoprotein cholesterol immobilized by inter-penetrating network on the surface of said hollow fiber membrane.

5,187,011
COMPOSITION COMPRISING ENCAPSULATED SUBSTRATE WITH THERMOPLASTIC POLYMER OVERCOATING

Pacifico V. Manalastas, Edison; Evelyn N. Drake, Bernardsville; Edward N. Kresge, Watchung, and Warren A. Thaler, Flemington; all of N.J., Lee A. McDougall, Houston; John C. Newlove, Kingwood, both of Tex.; Vijay Swarup, Clinton, N.J.; Albert J. Geiger, Fort Saskatchewan, Canada, assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Division of Ser. No. 676,662, Mar. 28, 1991, Pat. No. 5,110,486, which is a continnation-in-part of Ser. No. 637,391, Jan. 4, 1991, Pat. No. 5,102,559, and Ser. No. 637,401, Jan. 4, 1991, Pat. No. 5,102,558, said Ser. No. 637,391, and Ser. No. 637,401, each is a continuation-in-part of Ser. No. 446,572, Dec. 4, 1989, abandoned, Ser. No. 446,573, Dec. 4, 1989, abandoned, Ser. No. 446,736, Dec. 6, 1989, abandoned, Ser. No. 446,831, Dec. 6, 1989, abandoned, and Ser. No. 446,958, Dec. 6, 1989, abandoned. This application Jan. 9, 1992, Ser. No. 819,304
Int. Cl.[5] B32B *27/06, 27/00*
U.S. Cl. 428—402.24 6 Claims

1. An encapsulated particulate composition comprising:

(a) a solid particulate substrate;

(b) a coating substantially free of pinholes comprising an ionically and convalently crosslinked neutralized sulfonated elastomeric polymer having a thickness of at least about 1 micron deposited on the surface of particles of said substrate, wherein said crosslinked neutralized sulfonated polymer encapsulates said substrate, wherein said crosslinked neutralized sulfonated polymer is permeable to said substrate at conditions of use and said crosslinked neutralized sulfonated polymer is non-reactive to said substrate, and

(c) a layer of thermoplastic polymer overcoating said coating.

5,187,012
THERMOPLASTIC MATERIALS AND ARTICLE MADE THEREFROM

Nobukazu Takahashi, Yokohama; Teiji Kohara, Kawasaki, and Tadao Natsuume, Yokosuka, all of Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Dec. 20, 1990, Ser. No. 630,640
Claims priority, application Japan, Dec. 26, 1989, 1-335192
Int. Cl.[5] B32B *33/00;* C08K *5/05*
U.S. Cl. 428—402 18 Claims

1. A thermoplastic composition comprising a thermoplastic saturated norbornene polymer having a number-average molecular weight (Mn) of 50,000 to 500,000 and a weight-average molecular weight (Mw) of 100,000 to 2,000,000 which are measured by high performance liquid chromatography, and a molecular weight distribution (Mw/Mn) of at least 2.2, and a maximum volatile content of 0.3% by weight, which contains an antioxidant having a maximum vapor pressure of 10^{-6} Pa at 20° C. in an amount of 0.01–5 parts by weight based on 100 parts by weight of the thermoplastic saturated norbornene polymer.

5,187,013
GOLF BALL COMPOSITIONS

Michael J. Sullivan, Chicopee, Mass., assignor to Lisco, Inc., Tampa, Fla.

Continuation-in-part of Ser. No. 642,469, Jan. 17, 1991, Pat. No. 5,098,105, which is a continuation-in-part of Ser. No. 449,774, Dec. 13, 1989, Pat. No. 4,986,545. This application Mar. 24, 1992, Ser. No. 856,552
Int. Cl.[5] A63B *37/12*
U.S. Cl. 428—407 6 Claims

1. A golf ball comprising a core and a cover wherein the cover is formed from a composition comprising from about 5 to about 50 parts by weight of a brominated thermoplastic elastomeric copolymer of styrene and isobutylene and from about 95 to about 50 parts by weight of an ionic copolymer of

VOL 1147 ISS 3 FEB 16 1993 UMI

an olefin and a metal salt of an unsaturated carboxylic acid based on 100 parts by weight of the composition.

5,187,014

METHOD OF MANUFACTURING A PRODUCT OF ONE-PIECE CONSTRUCTION WHEREIN SILICONE RUBBER HAS BEEN MADE TO ADHERE

Akio Suzuki; Masaaki Matsumura, and Takeshi Hashimoto, all of Gunma, Japan, assignors to Shin-Etsu Chemical Company, Limited, Tokyo, Japan

Filed Aug. 15, 1990, Ser. No. 567,587
Claims priority, application Japan, Aug. 15, 1989, 1-210979
Int. Cl.[5] B32B *9/04; C09J 5/02*
U.S. Cl. 428—447 **21 Claims**

1. In a method of manufacturing a product of one-piece construction wherein silicone rubber is adheringly bonded to a surface of a substrate coated with a primer, the improvement which comprises the steps of:

immersing the surface of said substrate for more than 3 hours in a primer consisting essentially of:

(A) a silicon compound containing at least 1 organic group with an aliphatic unsaturated bond and at least 1 hydrolyzable group bonded to a silicon atom,

(B) a silicon compound containing at least 1 organic group with an epoxy group, and at least 1 hydrolyzable group bonded to a silicon atom,

(C) platinum or a platinum compound, and

(D) an organic solvent;

drying the resultant primer-coated surface; and

bonding said substrate and said silicone rubber together with heat while in pressure contact.

5,187,015

ICE RELEASE COMPOSITION, ARTICLE AND METHOD

Elaine M. Yorkgitis, Oakdale, and Kurt C. Melancon, Saint Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 17, 1989, Ser. No. 312,257
Int. Cl.[5] B32B *9/06*
U.S. Cl. 428—447 **21 Claims**

1. An article capable of repeatedly releasing ice from a surface thereof which comprises a coating of a crosslinked organosilicone material on said surface, said coating resulting from the crosslinking of a composition containing (a) a polysiloxane having terminal ethylenically unsaturated groups, (b) a polyhydrosiloxane, (c) a platinum- or other metal-containing hydrosilation catalyst in an amount sufficient to facilitate the crosslinking of said components (a) and (b), and (d) at least 0.01% by weight of a nonfunctional polysiloxane free from ethylenic unsaturation, wherein said coating is present at a weight of at least 3 g/m^2.

5,187,016

THERMOPLASTIC COMPOSITION COMPRISING A COPOLYMER BASED ON ETHYLENE AND MALEIC ANHYDRIDE, AND INDUSTRIAL ARTICLES OBTAINED FROM SUCH A COMPOSITION

Jean Lebez, Lens, France, assignor to Atochem, Paris, France

Filed Jul. 5, 1991, Ser. No. 726,197
Claims priority, application France, Jul. 5, 1990, 90 08571
Int. Cl.[5] C08L *23/08, 23/16;* B32B *27/28;* C08J *123/08, 123/16*
U.S. Cl. 428—462 **9 Claims**

1. A thermoplastic composition comprising a mixture of:

(A) 25 to 80% by weight of at least one partially crystalline ethylene polymer or copolymer which has a density between 0.870 and 0.945 wherein said polymer is at least 98 mol % of ethylene and not more than 2 mol % of a polar comonomer selected from the group consisting of carbon monoxide vinyl acetate, alkyl acrylates and alkyl methacrylate where the alkyl group contains from 1 to 12 carbon atoms or a copolymer containing at least 79 mol % of units derived from ethylene and not more than 21 mol % of alpha-olefin units containing from 3 to 12 carbon atoms;

(B) 15 to 85% by weight of at least one random copolymer containing:

(a) from 83 to 99.7 mol % of units derived from ethylene;

(b) from 0 to 14 mol % of units derived from at least one acrylic or methacrylic ester; and

(c) from 0.3 to 3 mol % of units derived from maleic anhydride;

which has a melt index of 1 to 500 dg/min; and

(C) 1 to 8% by weight of at least one rubber which has no residual crystallinity, wherein said rubber is butyl rubber, ethylene-propylene rubbers, ethylene-propylene-diene rubbers or their mixtures; and

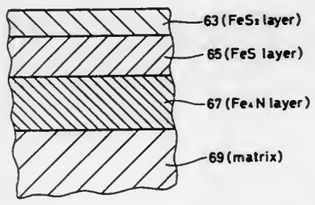
(D) 0 to 8% by weight of talc.

5,187,017

SLIDING MEMBER, AND METHOD AND APPARATUS FOR PRODUCING THE SAME BY GAS SULPHONITRIDING

Kazuyoshi Hatano; Ken Ichiryu, both of Ibaraki; Morio Tamura, Tsuchiura; Eiji Kometani, Abiko; Yasuharu Gotoh, Tsuchiura, and Nobuyoshi Hidao, Kashiwa, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1991, Ser. No. 722,182
Claims priority, application Japan, Jul. 5, 1990, 2-178437; Mar. 26, 1991, 3-086125
Int. Cl.[5] B32B *9/04*
U.S. Cl. 428—469 **4 Claims**



1. A sliding member comprising Fe as a matrix and comprising:

an FeS_2 layer on the topmost surface of the sliding member,

an FeS layer below the FeS_2 layer, and

a γ'-Fe_4N layer below the FeS layer, wherein said FeS_2 layer, FeS layer and γ'-Fe_4N layer are formed by a gas sulphonitriding method.

5,187,018

FIBER-REINFORCED THERMOPLASTIC POLYMER COMPOSITE AND PROCESS FOR PREPARATION THEREOF

Michel Glemet, Serquigny, France, assignor to Atochem, France

Division of Ser. No. 841,194, Mar. 19, 1986, Pat. No. 5,047,263.
This application Jun. 19, 1991, Ser. No. 717,372
Claims priority, application France, Mar. 24, 1985, 85 04374
Int. Cl.[5] B32B *5/22, 27/34*
U.S. Cl. 428—474.7 **4 Claims**

1. A fiber-reinforced thermoplastic composite comprising a fiber reinforcement, a polyamide about said fiber reinforcement, and a thermoplastic polymer interposed between said fiber reinforcement and said polyamide; said thermoplastic resulting from the polyaddition of a polyamide oligomer carrying functional groups with a reaction partner or a thermoplastic polymer that is a sequenced poly(ether-amide) copolymer and capable of wetting said fiber reinforcement.

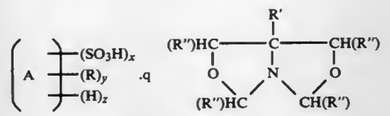
5,187,019

LATENT CATALYSTS

Leonard J. Calbo, Bethel, and Robert D. Coughlin, Fairfield, both of Conn., assignors to King Industries, Inc., Norwalk, Conn.

Filed Sep. 6, 1991, Ser. No. 755,799
Int. Cl.[5] C08L *31/00*
U.S. Cl. 428—524 **27 Claims**

1. A thermally-decomposable composition comprising a bicyclic oxazolidine adduct of an aromatic sulfonic acid, the adduct having the formula:



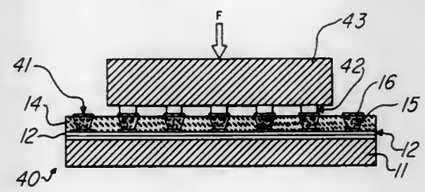
wherein A is phenyl or naphthyl; x is 1 to 8; y is 0 to 7; the sum of x and y is no greater than 8; z is 8−x−y when A is naphthyl and z is 6−x−y when A is phenyl; q is equal to or greater than about 0.5; R is an alkyl, halogen, haloalkyl, or alkoxy group; R' is an organic group; and R" is hydrogen or a C_1–C_6 alkyl group.

5,187,020

COMPLIANT CONTACT PAD

Oh-Kyong Kwon, Richardson; Satwinder Malhi, and Masahi Hashimoto, both of Garland, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 560,936, Jul. 31, 1990, abandoned. This application Nov. 5, 1991, Ser. No. 745,994
Int. Cl.[5] B32B *15/08;* H01R *4/58;* G01R *3/00;* H05K *1/18*
U.S. Cl. 428—601 **4 Claims**



1. A plurality of contact pads comprising:

a base substrate having an upper surface;

an electrically conductive interconnecting layer formed on said upper surface;

a plurality of metallic pads contacting said interconnecting layer;

a dielectric layer covering said interconnecting layer;

a plurality of compliant, electrically conductive polymeric contact pads, each of said polymeric contact pads extending through said dielectric layer and one each of said polymeric contact pads on top of and in contact with one each of said plurality of metallic pads; and

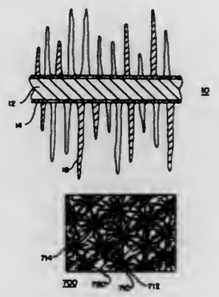
a plurality of metallic contacts, one each of said plurality of metallic contacts covering an upper surface of one each of said polymeric contact pads.

5,187,021

COATED AND WHISKERED FIBERS FOR USE IN COMPOSITE MATERIALS

Jacob Vydra, Worthington, Ohio, and Anatoly Altshuler, Lynn, Mass., assignors to Diamond Fiber Composites, Inc., Columbus, Ohio

Filed Feb. 8, 1989, Ser. No. 307,826
Int. Cl.[5] C22C *1/09;* B32B *5/00*
U.S. Cl. 428—607 **25 Claims**



1. A coated and whiskered fiber comprising:

a) a core fiber,

b) a continuous, uninterrupted coating deposited on said core fiber, and

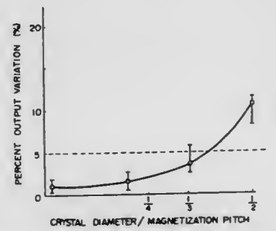
c) whiskers intimately attached to and projecting outwardly from said coating.

5,187,022

MAGNETIC RECORDING MEDIUM FOR ENCODERS

Mutsumi Harada; Nobuji Kato; Yoshinori Hayashi; Toshiharu Hoshi, and Kenzaburo Iijima, all of Shizuoka, Japan, assignors to Yamaha Corporation, Japan

Filed Mar. 8, 1990, Ser. No. 490,934
Claims priority, application Japan, Mar. 8, 1989, 1-55578
Int. Cl.[5] G11B *5/66*
U.S. Cl. 428—694 **10 Claims**



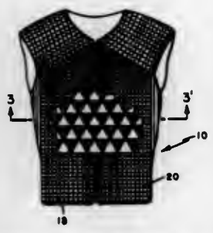
1. A magnetic recording medium for encoders comprising

a substrate, and

a thin layer of Sm—Co alloy which exhibits a coercive force of no greater than about 5000 Oe deposited on said substrate and bearing magnetic information at a magnetization pitch which is at least three times as large as the crystal diameter of magnet particles in said alloy.

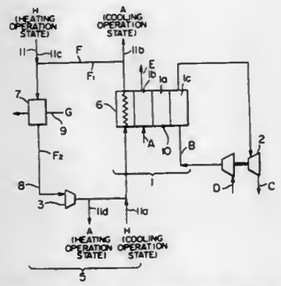
VOL 1147 ISS 3 FEB 16 1993 UMI

5,187,023
BALLISTIC RESISTANT FABRIC ARTICLES
Dusan C. Prevorsek, and Gary A. Harpell, both of Morristown, N.J., assignors to Allied-Signal Inc., Morristown, N.J.
Filed Nov. 19, 1990, Ser. No. 615,746
Int. Cl.[5] F41H *1/02*
U.S. Cl. 428—911 37 Claims



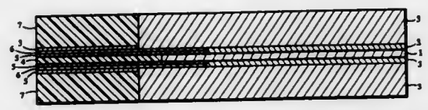
1. A flexible ballistic resistant article comprising one or more composite layers each of which comprises a flexible substrate layer having a plurality of planar metallic bodies on a surface thereof, said bodies shaped and positioned such that said article has one or more first semi-continuous or continuous seams, one or more second semi-continuous or continuous seams and one or more third semi-continuous or continuous seams in which the directions of said first, second and third seams are such that said seams intersect at an angle whereby said article is capable of flexing along said seams.

5,187,024
FUEL CELL GENERATING SYSTEM
Mitsuie Matsumura, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 22, 1991, Ser. No. 733,900
Claims priority, application Japan, Jul. 23, 1990, 2-192974
Int. Cl.[5] H01M *8/04*
U.S. Cl. 429—24 7 Claims



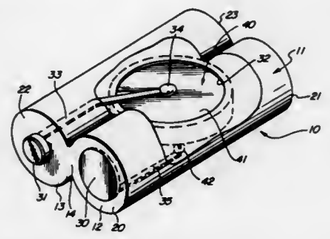
1. A fuel cell generating system, comprising: fuel cell means comprising one of a single fuel cell and a which has a fuel gas electrode and an oxidant gas electrode, fuel cell stack having a plurality of stacked fuel cells, each of temperature control means for controlling the temperature of said fuel cell means, said temperature control means including a first reaction portion provided so as to be thermally combined with said fuel cell means; a second reaction portion provided at a position different from said first reaction portion; a gas flow circuit provided so as to include said first and second reaction portions in a passage thereof; a reaction gas which can reversibly react when giving and receiving heat supplied to said gas flow circuit; and a control portion for controlling said second reaction portion so that endothermic reaction is produced in said second reaction portion when exothermic reaction is produced in said first reaction portion, and exothermic reaction is produced in said second reaction portion when endothermic reaction is produced in said first reaction portion.

5,187,025
UNITIZED FUEL CELL STRUCTURE
James W. Kelland, E. Walpole, and Stephan G. Braun, Newton, both of Mass., assignors to Analytic Power Corp., Boston, Mass.
Filed Feb. 3, 1992, Ser. No. 824,414
Int. Cl.[5] H01M *8/10*
U.S. Cl. 429—33 6 Claims



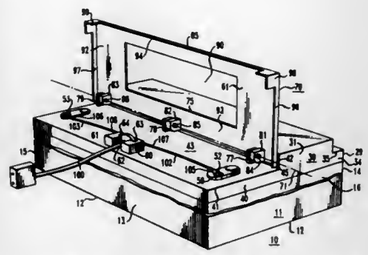
1. An electrochemical cell comprised of an electrochemically active area surrounded by an electrochemically inactive frame area, the active area being comprised of a catalyzed polymer exchange membrane electrolyte disposed between two porous electrodes and the frame area being comprised of two electrode frames, two layers of plastic film and one plastic membrane spacer; layers of adhesive film are placed between each plastic layer in the frame and each adhesive layer extends from the outer edge of the cell radially inwards to a region under the porous electrode layer.

5,187,026
BATTERY ADAPTER
Thomas J. Scrivano, 976 Mission Dr., #4, Costa Mesa, Calif. 92626-4228
Filed Oct. 9, 1990, Ser. No. 594,552
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—96 13 Claims



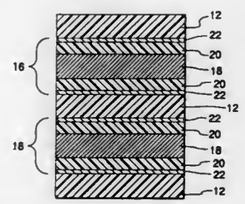
1. A battery adapter comprising:
a housing formed to define an outer surface corresponding generally to a pair of cylindrical batteries and defining elongated major axes and opposed end portions;
a generally disk-shaped battery having a positive terminal and a negative terminal and means for establishing an electrical potential therebetween approximately double that of a cylindrical battery;
a positive contact and a negative contact supported upon said end portions of said housing at positions corresponding to the positions of one positive and one negative contact terminal of a pair of cylindrical batteries; and
means providing electrical connection between said positive contact and said positive terminal and between said negative contact and said negative terminal.

5,187,027
BATTERY ASSEMBLAGES AND BATTERIES THEREFOR
John J. Larkin, Long Valley, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Continuation of Ser. No. 767,005, Sep. 27, 1991, abandoned. This application Mar. 10, 1992, Ser. No. 850,000
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—99 5 Claims



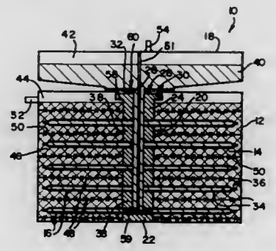
1. A combination comprising: an array of longitudinal rows and lateral columns of electric batteries having respective laterally spaced front and rear sides with laterally adjacent batteries being disposed so that the rear side of one battery faces the front side of the other, each of said batteries having: (a) a longitudinal notch formed therein at its top and rear, (b) reduced height shelf regions extending inward from the front side of the battery below its top to the rear of such regions, and (c) a pair of longitudinally spaced terminals upstanding from said regions to have vertical extents overlapping in the vertical dimension with the vertical extent of said notch, the notches of the batteries in each row being substantially colinear so that such notches at the interface of the row with an adjacent row define a conduit extending entirely through such array for routing therethrough conductors connected to terminals of batteries in such adjacent row.

5,187,028
NICKEL-HYDROGEN CELLS
Howard H. Rogers, Torrance; Richard P. Sernka, Long Beach, and Steven J. Stadnick, Lakewood, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Feb. 28, 1992, Ser. No. 843,345
Int. Cl.[5] H01M *10/34*
U.S. Cl. 429—101 19 Claims



1. A nickel-hydrogen battery that is adapted to permit drainage of excess electrolyte therefrom, said battery comprising:
a housing, said housing having at least two individual cells therein, each of said cells having
a nickel electrode;
a hydrogen electrode; and
a separator disposed between the nickel and hydrogen electrodes;
said battery further comprising a porous plastic cloth gas diffusion screen situated between said cells so as to separate them, said screen having been treated to make the surfaces thereof wettable; and
electrolyte disposed within the housing surrounding the nickel and hydrogen electrodes, the separator and the porous plastic cloth gas diffusion screen.

5,187,029
ELECTROCHEMICAL CELL
Johan Coetzer, Pretoria, South Africa, and James H. Duncan, Stafford, England, assignors to Programme 3 Patent Holdings, Luxembourg, Luxembourg
Filed May 8, 1991, Ser. No. 700,390
Claims priority, application United Kingdom, May 16, 1990, 9011035
Int. Cl.[5] H01M *6/20*
U.S. Cl. 429—102 34 Claims



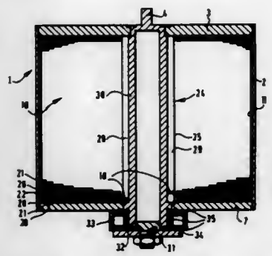
1. A high temperature electrochemical power-storage cell comprising a cell housing defining a cathode compartment containing a cathode and containing an anode structure located within the cathode compartment and comprising a plurality of holders filled with active anode material which is molten at the operating temperature of the cell, the anode structure defining a conduit containing active anode material and the holders being flattened in shape and spaced along the conduit in series from one another, the interior or each holder being in communication with the conduit and each holder having a pair of oppositely outwardly facing major faces extending transversely to the conduit and comprising a material which is an ionic conductor of the active anode material, the cathode occupying the spaces between the holders and the cell including a reservoir for active anode material in communication with the conduit, the reservoir in all states of charge of the cell being at least partially filled with active anode material, the housing having a base forming its lower end on which it rests with the cell in an upright operative condition, the anode structure and conduit extending upwardly along the interior of the housing, the holders being vertically flattened and vertically spaced in series from one another, and the major faces of the holders being upper and lower faces respectively.

5,187,030
ELECTROCHEMICAL BATTERY HAVING HIGH ENERGY PER UNIT MASS
Jean-Luc Firmin, and Alain Alexandre, both of Poitiers, France, assignors to SAFT, Romainville, France
Filed Jul. 16, 1991, Ser. No. 730,724
Claims priority, application France, Jul. 15, 1991, 91 08888
Int. Cl.[5] H01M *10/50*
U.S. Cl. 429—120 6 Claims

1. In a electrochemical lithium and thionyl chloride battery having high energy per unit mass, comprising a stack of positive and negative electrodes within a housing closed by a cover, two metal terminals connected respectively to said positive electrodes and said negative electrodes passing through the stack and emerging from said cover, the improvement wherein one of said terminals is in the form of a hermetically closed tube lined internally with a capillary structure,

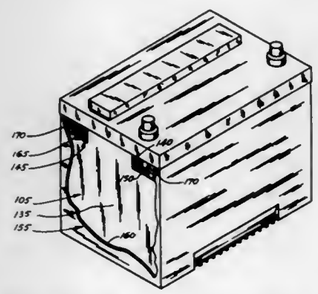
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filled with a CFC13 heat-conveying fluid completely compatible with nickel, lithium and thionyl chloride under a vacuum,



and said hermetically closed tube passing through the bottom of said housing in contact with a cooling means and constituting a heat pipe for said battery.

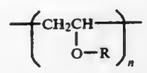
5,187,031
ANTI-VIBRATION PLAQUE FOR A BATTERY
Jerome R. Heiman, Milwaukee, and Jack Bruss, Elm Grove, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.
Filed Aug. 7, 1991, Ser. No. 741,381
Int. Cl.[5] H01M *2/10, 2/14, 2/22*
U.S. Cl. 429—129 **12 Claims**



1. A battery including an anti-vibration plaque and a container enclosing plural battery elements interconnected by straps, said plaque comprising a flat sheet of uniform thickness having rigidity evidenced by a flexural modulus of at least 250,000 psi and having the shape and the interior dimensions of an end wall of said battery except for at least one cutout portion along a top edge positioned to prevent contact between said sheet and any of said straps, said plaque being inserted in a space between an end cell element of the battery and a proximate container end wall during production line battery assembly so as to form an interference fit wherein the thickness of said sheet is at least 0.025 inches but not more than 0.075 inches greater than the width of said space.

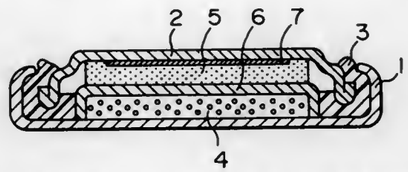
5,187,032
SOLID POLYMER ELECTROLYTES
Takashi Sasaki, Tokyo; Isao Ishigaki, Gunma; Syuichi Izuchi, Shiga, and Tomohiko Noda, Osaka, all of Japan, assignors to Yuasa Battery Co., Ltd., Osaka and Japan Atomic Energy Research Institute, Tokyo, both of, Japan
Filed Apr. 16, 1991, Ser. No. 685,677
Claims priority, application Japan, Apr. 17, 1990, 2-100803
Int. Cl.[5] H01M *6/16*
U.S. Cl. 429—192 **12 Claims**

1. A solid polymer electrolyte containing an ionic salt in a three-dimensional crosslinked compound of a poly(vinylalkyl ether) represented by the following general formula:



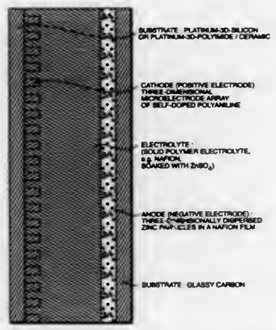
(where R is CH_3, C_2H_5 or $CH(CH_3)(C_2H_5)$; and n is an integer of 100–2,000).

5,187,033
LITHIUM SECONDARY BATTERY
Nobuharu Koshiba, Nara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 27, 1990, Ser. No. 634,388
Int. Cl.[5] H01M *6/14, 4/62, 4/74*
U.S. Cl. 429—194 **11 Claims**



11. A lithium secondary battery which comprises a positive electrode of vanadium pentoxide, a negative electrode of niobium pentoxide doped with lithium and containing a corrosion-resistant conductive material incorporated therein and an electrolyte comprising an organic solvent in which a lithium salt is dissolved, said corrosion-resistant conductive material comprising a corrosion-resistant metal powder and 3 wt % or less of a carbon black powder.

5,187,034
PERMANENTLY DOPED POLYANILINE AND METHOD THEREOF
Takaaki Otagawa, Fremont, and Marc J. Madou, Palo Alto, both of Calif., assignors to Osaka Gas Company Limited, Japan
Division of Ser. No. 334,680, Apr. 6, 1989, Pat. No. 5,002,700, and a continuation-in-part of Ser. No. 238,571, Aug. 30, 1988, Pat. No. 4,973,391. This application Mar. 25, 1991, Ser. No. 675,091
Int. Cl.[5] H01M *6/16, 4/60*
U.S. Cl. 429—198 **8 Claims**

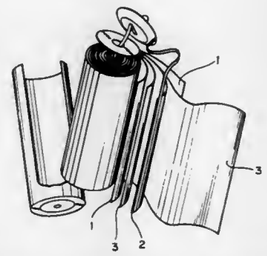


1. A process of using an electrically conducting water-insoluble polymer, in a battery itself comprising an anode, a cathode and an electrolyte, said polymer having essentially permanent self-doping properties as compared to a physical combination of polyaniline and an organic dopant having at least one sulfonic acid group, which polymer consists essentially of:

(a) an electrically polymerized polyaniline which is chemically bonded to

(b) an organic dopant, said dopant having at least one sulfonic acid functional group, as a battery cathode with zinc as the anode and zinc sulfate as the electrolyte.

5,187,035
ELECTRODE FOR SECONDARY BATTERY
Mitsutaka Miyabayashi, and Manabu Hayashi, both of Ami, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan
Filed Jun. 4, 1991, Ser. No. 709,973
Claims priority, application Japan, Jun. 4, 1990, 2-144550; Jun. 4, 1990, 2-144551; Jun. 4, 1990, 2-144552; Jun. 4, 1990, 2-144553
Int. Cl.[5] H01M *10/40*
U.S. Cl. 429—218 **16 Claims**



1. An electrode for secondary battery, comprising an alkali metal as the active substance carried on a carrier composed of

(1) 100 parts by weight of a carbonaceous material in the shape of a particle or fiber satisfying the following conditions:

(A) a hydrogen/carbon atomic ratio of less than 0.15 and

(B) a spacing (d_{002}) of the (002) plane according to the X-ray wide angle diffraction method of 3.37 Å or more and a crystallite size in the c-axis direction (Lc) of 5 Å or more,

(C) a total fine pore volume of 1.5×10^{-3} ml/g or more, and

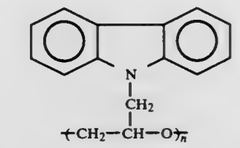
0 to 70 parts by weight of a metal capable of forming an alloy with the active substance or an alloy of said metal and

(2) 0.1 to 40 parts by weight of a fibrous organic polymer as the binder, the average diameter of the fibrous organic polymer being $\frac{1}{3}$ or less than the average particle size of the particles of the carbonaceous material.

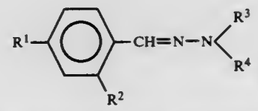
5,187,036
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MATERIAL
Naoyuki Matsui, and Shigemasa Takano, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed May 21, 1991, Ser. No. 703,727
Claims priority, application Japan, May 22, 1990, 2-131800
Int. Cl.[5] G03G *5/047*
U.S. Cl. 430—59 **7 Claims**

1. An electriphotographic photosensitive material comprising a charge generation layer and a charge transport layer, wherein the charge transport layer contains, as a hole transport material for forming the charge transport layer, a poly-2,3-epoxypropyl carbazole compound represented by formula (A) together with at least one of a hydrazone compound represented by formula (I) and a butadiene compound represented by formula (II):

(A)

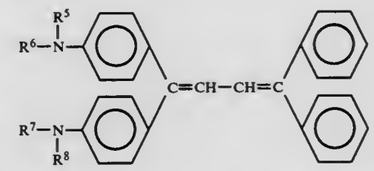


(I)



wherein R^1 is a hydrogen atom, a substituted or unsubstituted alkyl or alkoxy group, a halogen atom or a substituted or unsubstituted amino, morpholino or piperidino group, or R^1 may form a substituted or unsubstituted carbazolyl group together with the phenyl group in formula (I); R^2 is a hydrogen atom or a substituted or unsubstituted alkyl, alkoxy or aralkyloxy group; and R^3 and R^4 independently or both are a hydrogen atom or a substituted or unsubstituted alkyl, aryl or aralkyl group, or R^3 and R^4 may form a ring with the nitrogen atom to which they are bonded to form a substituted or unsubstituted heterocyclic group;

(II)



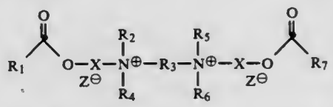
wherein R^5, R^6, R^7 and R^8 are the same or different alkyl groups;

wherein the charge generated and transported in the photosensitive material is a negative charge; and

wherein the charge transport layer further contains a film-forming resin which is different from the poly-2,3-epoxypropyl carbazole compound.

5,187,037
TONERS AND DEVELOPERS CONTAINING ESTER-CONTAINING QUATERNARY AMMONIUM SALTS AS CHARGE CONTROL AGENTS
John W. Wilson, Rochester, and Alexandra D. Bermel, Spencerport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 18, 1991, Ser. No. 734,356
Int. Cl.[5] G03G *9/135*
U.S. Cl. 430—110 **14 Claims**

1. A dry, particulate electrostatographic toner composition comprising a polymeric binder and a charge control agent comprising an ester-containing quaternary ammonium salt having the structure:



wherein R_1 is alkyl or aryl, R_2 is alkyl or aryl, R_3 is alkylene,

VOL 1147 ISS 3 FE 16 1993 UMI

arylene or arylenedialkylene, R_4 is alkyl or aryl, R_5 is alkyl or aryl, R_6 is alkyl or aryl, R_7 is alkyl or aryl, X is

$$+CH_2\frac{}{n},$$

$Z^{\ominus}$ is an anion and n is an integer from 2 to 6.

5,187,038

POLYMERIC AMMONIUM COMPOUNDS AS CHARGE CONTROL AGENTS

Jörg Gitzel, Waldems; Detlef Wehle, Niedernhausen, and Hans-Tobias Macholdt, Darmstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 17, 1991, Ser. No. 761,412

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1990, 4029653; Feb. 7, 1991, 4103610

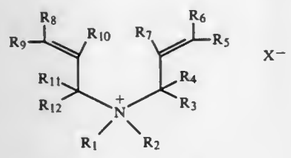
Int. Cl.[5] G03G *9/097*

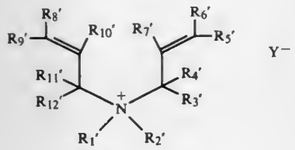
U.S. Cl. 430—110 **18 Claims**

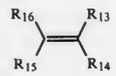
1. A powdered resin-containing composition capable of obtaining an electrostatic charge for copying or duplicating masters or for printing electronically, magnetically, or optically stored information or for colorproofing or for surface coating of an object by means of a corna process or a triboelectric or electrokinetic process or a combination of corona and triboelectric or electrokinetic processes, said composition comprising:

a powder coating resin or powdered toner binder comprising a resin, and

a polymeric ammonium salt charge control or charge-improving agent having a moleculr weight of about 5000 to about 500,000, said charge control or charge-improving agent having been obtained by homopolymerization of monomers of the formulae I or II or copolymerization of essentially two of the three monomers I, II, and III in essentially a molar monomer ratio I:II, 1:III, or II:III ranging from about 0.5:0.5 to about 9.95:0.5 in the copolymer, optionally with subsequent anion exchange, said formulae I, II, and III being

I 

II 

III 

wherein, in said formulae I, II, and III:

R_1 to R_{12} and r_1' to R_{12}' independently of one another are each a hydrogen atom, a halogen atom, a hydroxy radical, a primary, secondary or tertiary amino radical, a carboxylic acid or carboxylic acid ester radical, a sulfonic acid or sulfonic acid ester radical or a cyano or nitro radical, or are each a radical based on a hydrocarbon that is optionally interrupted by hetero atoms, and X and Y are in each case the stoichiometric equivalent of an organic or inorganic anion or of a mixture of organic, inorganic, or inorganic and organic anions, and the radicals R_{13} to R_{16} independently of one another are each a hydrogen atom, a chlorine atom, a bromine atom, a hydroxyl radical, a primary, secondary or tertiary amino radical, a carboxylic acide or carboxylic acid ester radical, a sulfonic acid or sulfonic acid ester radical or a cyano or nitro radical, or are in each case a radical based on a hydrocarbon that is optionally interrupted by hetero atoms.

5,187,039

IMAGING MEMBER HAVING ROUGHENED SURFACE

Robert J. Meyer, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 31, 1990, Ser. No. 560,875

Int. Cl.[5] G03G *13/16*

U.S. Cl. 430—126 **18 Claims**

1. A system comprising a blade, a toner composition and an unused imaging member, said imaging member comprising a surface to which said toner composition is applied to form a toner image, said surface having a surface roughness defined by

$$R/a_{nn}^4 > \frac{K_B(1-\sigma^2)}{32\pi E t^2 a_f}$$

and

$$R/a_{nn}^2 < \frac{\sqrt{3}}{8\pi^2}\ \frac{1+\mu^2}{\mu}\ \frac{K_B}{\Gamma}\ \frac{t}{a_f}\ \theta$$

wherein R is an average height of asperities of said surface, a_{nn} is one-half the nearest neighbor distance between said asperities on said surface, K_B is bulk modulus of the blade, σ is Poisson's ratio of the toner composition, E is Young's modulus of the toner composition, t is an average thickness of flat particles in said toner composition, a_f is an average radius of the flat particles, μ is an average of toner-blade and toner-surface friction coefficients, Γ is the Dupré work of adhesion between the surface and the flat particles, and θ is blade tip angle, wherein:

R=about 0.0025 to about 0.05 micrometer;

a_{nn}=about 2.5 to about 7 micrometers;

K_B=about 1.0×10^8 to about 2.0×10^8 dynes/cm^2;

σ=about 0.33 to about 0.38;

E=about 1.2×10^{10} to about 3.0×10^{10} dynes/cm^2;

t=about 1 to about 2 micrometers;

a_f=about 4 to about 5 micrometers;

μ=about 0.3 to about 2; and

Γ=about 30 to about 90 dynes/cm.

5,187,040

PHOTOCURABLE MIXTURE AND MATERIAL CONTAINING DIAZONIUM SALT POLYCONDENSATION PRODUCT OR ORGANIC AZIDO COMPOUND PHOTOSENSITIZER AND POLYURETHANE BINDER GRAFTED WITH VINYL ALCOHOL AND VINYL ACETAL UNITS

Waltraud Mueller-Hess, Wiesbaden; Dieter Mohr, Budenheim; Matthias Kroggel, and Karl-Josef Rauterkus, both of Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 21, 1990, Ser. No. 541,791

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1989, 3920230

Int. Cl.[5] G03F *7/012, 7/021*

U.S. Cl. 430—157 **16 Claims**

1. A photocurable mixture, comprising:

from about 5 to 90 percent by weight of a photosensitive compound selected from the group consisting of a diazonium salt polycondensation product and an organic azido compound; and

from about 90 to 10 percent by weight of a binder comprising a high-molecular weight polymer having vinyl alcohol units, wherein said polymer is a graft polymer comprising a polyurethane graft backbone onto which chains containing vinyl alcohol units and vinyl acetal units are grafted wherein the polyurethane is a polyaddition product obtained from diisocyanates and diols.

5,187,041

IMAGE FORMING METHOD AND IMAGE FORMING APPARATUS

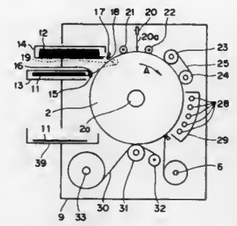
Akihiro Mouri, Kokubunji; Kazuo Isaka, Tokyo; Tetsuro Fukui, Kawasaki, and Masato Katayama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 3, 1991, Ser. No. 679,903

Claims priority, application Japan, Apr. 4, 1990, 2-088168

Int. Cl.[5] G03C *5/54*

U.S. Cl. 430—201 **5 Claims**



1. A method of forming an image by a process comprising the steps of;

(a) securing an image receiving medium onto a support member;

(b) superposing onto said image receiving medium an image forming medium containing at least a photosensitive silver halide, an organic silver salt, a reducing agent, a polymerizable polymer precursor and a photopolymerization initiator, and in that state subjecting said image forming medium to imagewise exposure;

(c) heating the image forming medium having been subjected to the step (b);

(d) subjecting the image forming medium having been subjected to the step (c), to polymerization exposure to form a polymer image in the image forming medium; and

(e) transferring a heat-diffusible coloring matter to said image receiving medium, corresponding with said polymer image.

5,187,042

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Kazunobu Katoh; Hisashi Okamura; Hisashi Okada; Nobuaki Inoue; Toshiro Takahashi; Morio Yagihara, and Tetsuo Yamaguchi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 27, 1990, Ser. No. 515,882

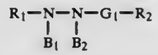
Claims priority, application Japan, Apr. 27, 1989, 1-108216; Apr. 28, 1989, 1-109981; May 2, 1989, 1-113093; May 23, 1989, 1-129226; Jun. 7, 1989, 1-144721

The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.

Int. Cl.[5] G03C *1/09, 1/42*

U.S. Cl. 430—264 **5 Claims**

1. A silver halide photographic material comprising a support having thereon at least one sensitive silver halide emulsion layer, wherein said emulsion layer comprises a monodisperse emulsion which comprises silver halide grains containing an iridium salt in an amount of at least 10^{-8} mol per mol of silver, and said emulsion layer or another hydrophilic colloid layer contains at least one hydrazine compound according to formula (II) below and at least one redox compound according to formula (I) which is capable of releasing a development inhibitor when oxidized by the oxidation product of a developer:

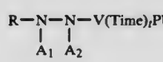


(II)

wherein R_1 represents an aliphatic group or an aromatic group; R_2 represents a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, or aryloxy group, an amino group, a carbamoyl group or an oxycarbonyl group; G_1 represents a carbonyl group, a sulfonyl group, a sulfoxy group, a group of



or an iminomethylene group; and both B_1 and B_2 represent hydrogen atoms, or one of B_1 and B_2 is a hydrogen atom and the other is a substituted or unsubstituted alkylsulfonyl group, a substituted or unsubstituted arylsulfonyl group or a substituted or unsubstituted acyl group;



(I)

wherein both A_1 and A_2 represent hydrogen atoms, or one of A_1 and A_2 represents a hydrogen atom and the other represents a residue of a sulfinic acid or



(wherein R_0 represents an alkyl group, an alkenyl group, an aryl group, an alkoxy group or an aryloxy group; and l represents 1 or 2); t represents 0 or 1; Time represents a bivalent bonding group; PUG represents a development inhibitor; V represents a carbonyl group,



a sulfonyl group, a sulfoxy group,



(wherein R_1 represents an alkoxy group or an aryloxy group), an iminomethylene group or a thiocarbonyl group; and R represents an aliphatic group, an aromatic group or a heterocyclic group.

VOL 1147 ISS 3 FEB 16 1993 UMI

5,187,043

OPTICAL RECORDING MEDIUM

Tsuyoshi Santoh, Yokohama, and Chieko Mihara, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 707,980, May 23, 1991, abandoned, which is a continuation of Ser. No. 598,780, Oct. 18, 1990, abandoned, which is a continuation of Ser. No. 467,524, Jan. 19, 1990, abandoned. This application Nov. 12, 1991, Ser. No. 794,835

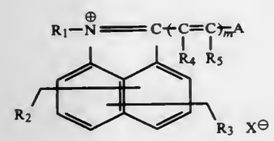
Claims priority, application Japan, Jan. 20, 1989, 1-9887; Jan. 20, 1989, 1-9889; Mar. 22, 1989, 1-67465

Int. Cl.[5] G03C *1/72*

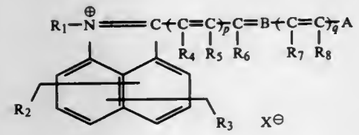
U.S. Cl. 430—270 **8 Claims**

1. An optical recording medium comprising at least one naphtholactam compound represented by the following Formulas (I), (II), (III), (IV) and (V):

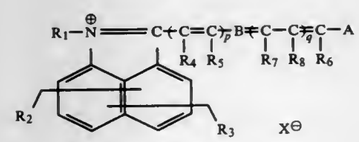
Formula (I)



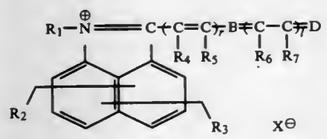
Formula (II)



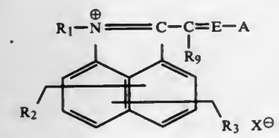
Formula (III)



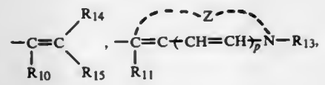
(Formula (IV)



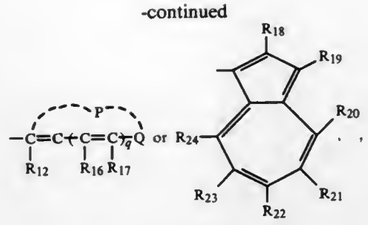
Formula (V)



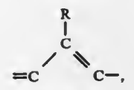
wherein A represents



-continued

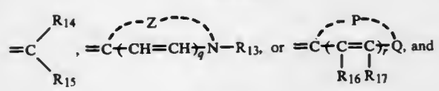


B represents

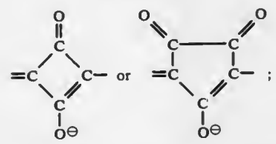


Y

D represents



E represents



Z represents a group of atoms necessary to complete a substituted or unsubstituted nuclei of thiazole series, nuclei of benzothiazole series, nuclei of naphthothiazole series, nuclei of thionaphthene (7, 6-d) thiazole series, nuclei of oxazole series, nuclei of benzoxazole series, nuclei of naphthoxazole series, nuclei of selenazole series, nuclei of benzoselenazole series, nuclei of naphthoselenazole series, nuclei of thiazoline series, nuclei of oxazoline series, nuclei of selenazoline series, nuclei of 2-quinoline series, nuclei of 4-quinoline series, nuclei of 1-isoquinoline series, nuclei of 3-isoquinoline series, nuclei of 3,3-dialkylindolenine series, nuclei of pyridine series and nuclei of benzimidazole series;

Q represents a sulfur atom, an oxygen atom, or a selenium atom;

P represents a hydrocarbon group comprising a group of atoms necessary to complete a substitute or unsubstituted pyran, thiopyran, selenapyran, benzopyran, benzothiopyran, benzoselenapyran, naphthopyran, naphthothiopyran or naphthoselenapyran;

Y represents a divalent hydrocarbon group that forms a substituted or unsubstituted ring of 5 or 6 members;

R_1 represents a substituted or unsubstituted alkyl group, cycloalkyl group, alkoxy group, allyl group, aryl group or aralkyl group, and R_2 to R_{12} and R_{18} to R_{24} each represent a hydrogen atom, a halogen atom or a monovalent organic residual group, where at least one combination of the combinations of R_{18} and R_{19}, R_{19} and R_{20}, R_{20} and R_{21}, R_{21} and R_{22}, R_{22} and R_{23}, and R_{23} and R_{24} may form a substituted or unsubstituted condensed ring;

R_{13} represents a hydrogen atom, a substituted or unsubstituted alkyl group, a cyclic alkyl group, an allyl group, a substituted or unsubstituted aralkyl group or a substituted or unsubstituted aryl group; R_{14}, R_{15}, R_{16} and R_{17} each represent a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted styryl group, or a substituted or unsubstituted heterocyclic group and R_{16} and R_{17} can also be a hydrogen atom; and

m represents an integer of 1, 2 or 3; p, an integer of 0, 1 or 2; q, an integer of 0, 1 or 2; r, an integer of 1 or 2; and l, an integer of 1 or 2; and

$X^{\ominus}$ represents an anion.

5,187,044

FLEXOGRAPHIC PRINTING PLATE

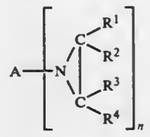
Lori-Ann S. Prioleau, St. Paul, and George Canty, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 14, 1991, Ser. No. 699,666

Int. Cl.[5] G03F *7/11*

U.S. Cl. 430—271 **17 Claims**

1. A flexographic, relief radiation sensitive printing plate comprising a flexible substrate having on at least one surface thereof a primer layer comprising at least 10% by weight of an aziridine-functional compound of the formula



wherein A is selected from the group consisting of an n-valent organic and an inorganic group, n is a whole number, and R^1, R^2, R^3 and R^4 are independently selected from the group consisting of hydrogen and alkyl group, and a layer of at least 0.3 mm thickness comprising a radiation curable polyurethane elastomer having ethylenically unsaturated groups available for addition polymerization, and said polyurethane elastomer comprising the reaction product of

A) at least on diisocyanate,

B) a first chain extending agent having at least two free hydrogen groups capable of polymerizing with isocyanate groups, and said first chain extending agent having at least one ethylenically unsaturated addition polymerizable group per molecule, and

C) an organic polyol having a molecular weight of at least 500 and containing at least two free hydrogen containing groups capable of polymerizing with isocyanate groups per molecule,

said polyurethane elastomer having a number average molecular weight of at least 10,000 grams/mole, a melt transition temperature of less than 180° C. and a melt index at 180° C. of at least 0.5 grams/minute.

5,187,045

HALOMETHYL-1,3,5-TRIAZINES CONTAINING A SENSITIZER MOIETY

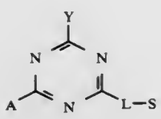
James A. Bonham, and Mitchell A. Rossman, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 508,370, Apr. 11, 1990, Pat. No. 5,034,526, which is a continuation-in-part of Ser. No. 241,319, Sep. 7, 1988, abandoned. This application Jun. 4, 1991, Ser. No. 710,103

Int. Cl.[5] G03F *7/031, 7/09*

U.S. Cl. 430—275 **20 Claims**

1. A radiation-sensitive composition comprising: (1) an ethylenically unsaturated polymerizable compound, and (2) a compound having the formula:



wherein

A represents a member selected from the group consisting of mono-, di- and trihalomethyl groups,

Y represents a member selected from the group consisting of A, L-S, NH_2, NHR, NR_2, OR, and R', where R alkyl group, or a substituted or unsubstituted aryl group, R' represents a substituted or unsubstituted alkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted heterocyclic aromatic group,

S represents a sensitizer moiety not being part of the triazine chromophores and being capable of absorbing actinic radiation, said sensitizer moiety having a λmax of at least 330 nm, and

L represents a group linking the sensitizer moiety to the triazine nucleus, provided that the chromophore of said triazine nucleus is not attached to the chromophore of said sensitizer moiety either directly by a covalent bond or by a conjugated linkage, the portion of L directly attached to the triazine nucleus being selected from (a) carbon atom, (b) amino group selected from the group consisting of (1) aminoaryl groups wherein the nitrogen atom of the amino group is attached to the triazine nucleus and (2) an amino group wherein the nitrogen atom of the amino group is attached to both the triazine nucleus and the carbon atom of at least one



group, and (c) oxygen atom.

5,187,046

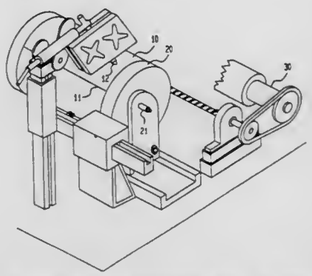
ARC-GRAINED LITHOPLATE

Edward P. Patrick, Murrysville, and A. Victor Pajerski, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Mar. 18, 1991, Ser. No. 670,576

Int. Cl.[5] G03C *1/492*

U.S. Cl. 430—278 **4 Claims**



1. In a coated lithoplate of aluminum sheet, the improvement comprising, said lithoplate having an overall thickness in the range from 5 miles to 30 mils and a surface having a non-uniform microstructure having a roughness in the range from 0.1μ to 1.5μ[RA, including a profusion of craters having a

VOL 1147 ISS 3 FE 16 1993 UMI

diameter in the range from 1μ to 10μ, peripherally surrounded by petal-like projections with from about 30% to about 80% terminating in peaks packed closely enough to provide a capillary uptake of water and printing ink in separately identifiable zones;

a coating of aluminum oxide or boehmite on said non-uniform microstructure, said aluminum oxide having a thickness in the range from 1.2μ to 3μ, and said boehmite having a thickness in the range from 0.6μ to 3μ; and,

a light-sensitive resist deposited on said coating.

5,187,047

PHOTOSENSITIVE AND HEAT-SENSITIVE POLYMERS, PROCESS FOR PRODUCING THE SAME AND PROCESS FOR RECORDING INFORMATION USING THE SAME

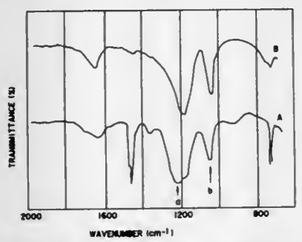
Yasuki Shimamura, Fuji, and Jyoji Ihata, Mishima, both of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 554,751, Jul. 20, 1990, Pat. No. 5,025,266, which is a division of Ser. No. 171,590, Mar. 22, 1988, Pat. No. 4,965,322. This application Apr. 2, 1991, Ser. No. 679,408

Claims priority, application Japan, Apr. 6, 1987, 62-83071; Apr. 16, 1987, 62-91964; Apr. 20, 1987, 62-95055; May 18, 1987, 62-118865; Jun. 1, 1987, 62-134934; Jun. 12, 1987, 62-145235; Jul. 10, 1987, 171074; Jul. 15, 1987, 62-174899

Int. Cl.[5] G03F *7/26*

U.S. Cl. 430—286 **7 Claims**



1. A process for recording information which comprises irradiating, with a modulated laser beam, a photosensitive and heat-sensitive polymer having conjugated polyenes and sulfonic acid groups and an absorbance ratio of a strong band in the region of 1200 cm^{-1} to 1300 cm^{-1} assignable to sulfonic acid groups adjacent to conjugated polyenes of at least 3 sequence lengths to a strong band near 1050 cm^{-1} assignable to sulfonic acid groups in the IR spectrum of at least 0.6.

5,187,048

PHOTORESISTS FORMED BY POLYMERIZATION OF DI-UNSATURATED MONOMERS

John Woods, County Dublin; John Guthrie, County Kildare, and Pauline Coakley, County Kilkenny, all of Ireland, assignors to Loctite (Ireland) Limited, Dublin, Ireland

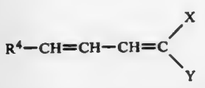
Filed Aug. 28, 1991, Ser. No. 751,414

Claims priority, application Ireland, Jun. 23, 1989, 2044/89

Int. Cl.[5] G03C *5/00*

U.S. Cl. 430—286 **11 Claims**

1. An imaging method comprising applying a polymeric resist coating comprising a polymer of a monomer of the formula V



V

wherein X and Y are strong electron withdrawing groups and R^4 is H or, provided that X and Y are both —CN, R^4 may be hydrocarbyl, aryl or alkaryl, to a substrate, imagewise exposing the coated substrate to high energy radiation, and developing the image by a solvent development process to form a negative tone image.

5,187,049

PHOTOSENSITIVE THERMALLY DEVELOPED COMPOSITIONS

Frank T. Sher, and David R. Whitcomb, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 16, 1990, Ser. No. 552,887

Int. Cl.[5] G03C *1/72*

U.S. Cl. 430—340 **20 Claims**

1. A photothermographic composition comprising a spectral sensitizing dye, and the salt formed from an oxidizing acid and a leuco dye, wherein said acid consists of a Group V, VI, or VII element, hydrogen, and oxygen, and said spectral sensitizing dye is a dye which is different from both said leuco dye and the oxidized color form of said leuco dye.

5,187,050

METHOD FOR AUTOMATIC PROCESSING OF SILVER HALIDE PHOTOGRAPHIC MATERIAL

Minoru Yamada; Takashi Toyoda, and Sumito Yamada, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 641,613, Jan. 16, 1991, abandoned, which is a continuation of Ser. No. 328,771, Mar. 24, 1989, abandoned, which is a continuation of Ser. No. 117,606, Nov. 6, 1987, abandoned. This application Feb. 4, 1992, Ser. No. 830,527

Claims priority, application Japan, Nov. 7, 1986, 61-264072

Int. Cl.[5] G03C *5/30*

U.S. Cl. 430—399 **18 Claims**

1. A method for processing a silver halide photographic material comprising the steps of:

(a) developing, in a developing solution consisting essentially of a single concentrated developer or a single concentrated developer and water comprising the components required for the development of a silver halide photographic material comprising a support having thereon at least one hydrophilic colloidal layer, including at least one light-sensitive emulsion layer containing tabular silver halide grains having an aspect ratio of at least about 4, the total number of hydrophilic colloidal layers having a degree of swelling of about 250% or less; and

(b) adding to the developing solution a replenisher of the developer consisting essentially of a single concentrated developer or a single concentrated developer and water in an amount of from about 50 to 1,500 ml/m^2 of the photographic material processed, wherein said developing solution and replenisher thereof each contains a 3-pyrazolidone developing agent in an amount of about 0.1 to 30 g per liter selected from:

(1) 1-Phenyl-4,4-dihydroxymethyl-3-pyrazolidone,
(2) 1-p-Tolyl-4,4-dihydroxymethyl-3-pyrazolidone,
(3) 1-Phenyl-4-hydroxymethyl-4-methyl-3-pyrazolidone,
(4) 1-Phenyl-4,4-dimethyl-3-pyrazolidone,
(9) 1-Phenyl-5,5-dimethyl-3-pyrazolidone,
(10) 1-Phenyl-5-methyl-3-pyrazolidone,
(11) 1-p-Tolyl-4-methyl-5-hydroxymethyl-3-pyrazolidone,
(12) 1-p-Hydroxphenyl-4,4-dimethyl-3-pyrazolidone,
(13) 1-o-Tolyl-4-methyl-4-hydroxymethyl-3-pyrazolidone,
(14) 1-p-Methoxyphenyl-4-methyl-4-hydroxymethyl-3-pyrazolidone, and
(15) 1-(3,5-Dimethyl)phenyl-4-methyl-4-hydroxymethyl-3-pyrazolidone.

5,187,051

METHOD FOR PROCESSING A SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Takatoshi Ishikawa, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 29, 1991, Ser. No. 647,127

Claims priority, application Japan, Jan. 29, 1990, 2-18391

Int. Cl.[5] G03C *1/71*

U.S. Cl. 430—448 **17 Claims**

1. A method for processing a silver halide color photographic material having at least one silver halide photosensitive layer on a reflective base whose substrate is coated with a water-resistant resin layer, which comprises processing the silver halide color photographic material containing titanium oxide particles in a concentration of 14 wt. % or more in the water-resistant resin layer on the side where the silver halide photosensitive layer is applied, with a color developer containing chloride ions in an amount of 0.035 to 0.3 mol/l.

5,187,052

OPTICAL RECORDING MEDIUM

Yoshihito Maeda, Mito; Toshiki Kaneko, Hitachi; Masaichi Nagai, Hitachi; Hisashi Andoh, Hitachi; Yoshimi Katou, Takahagi; Isao Ikuta, Iwaki, and Ryuji Watanabe, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 10, 1992, Ser. No. 831,746

Claims priority, application Japan, Apr. 8, 1987, 62-84778

Int. Cl.[5] G03C *1/72*; G11B *7/24*

U.S. Cl. 430—495 **5 Claims**

1. An optical recording medium, which comprises a recording layer itself capable of reversibly undergoing a phase change between a crystalline state and an amorphous state by irradiation of an electromagnetic energy and reversibly undergoing a reflectivity change due to the phase change, the recording layer consisting essentially of Bi_2SeTe_2, said material having a single phase in the crystalline state of Bi_2SeTe_2.

2. An optical recording medium which comprises a recording layer itself capable of reversibly undergoing a phase change between a crystalline state and an amorphous state by irradiation of an electromagnetic energy and reversibly undergoing a reflectivity change due to the phase change, the recording layer consisting essentially of Sb_2SnTe_4, said materil having a single phase in the crystalline state of Sb_2SnTe_4.

3. An optical recording medium, which comprises a recording layer itself capable of revesibly undergoing a phase change between a crystalline state and an amorphous state by irradiation of an electromagnetic energy and reversibly undergoing a reflectivity change due to the phase change, the recording layer consisting essentially of $Au_2Sb_2Te_3$, said material having a single phase in the crystalline state of $Au_2Sb_2Te_3$.

4. An optical recording medium, which comprises a recording layer itself capable of revesibly undergoing a phase change between a crystalline state and an amorphous state by irradiation of an electromagnetic energy and reversibly undergoing a reflectivity change due to the phase change, the recording layer consisting essentially of $AgSbTe_2$, said materil having a single phase in the crystalline state of $AgSbTe_2$.

5. An optical recording medium, which comprises a recording layer itself capable of revesibly undergoing a phase change between a crystalline state and an amorphous state by irradiation of an electromagnetic energy, the recording layer consisting essentially of In_3SbTe_2 and not more than 5% by atom of at lteast one of Ag, Sn and Cu, said recording layer having a singie phase in the crystalline state.

5,187,053

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL HAVING IMPROVED COLOR REPRODUCIBILITY AND HIGH SENSITIVITY TO RED LIGHT

Yasuhiro Hayashi, Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

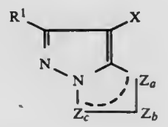
Filed Nov. 15, 1989, Ser. No. 436,859

Claims priority, application Japan, Nov. 16, 1988, 63-289703

Int. Cl.[5] G03C *1/34, 1/46, 1/12, 7/38*

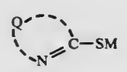
U.S. Cl. 430—505 **22 Claims**

1. A silver halide color photographic material comprising a support having thereon at least three silver halide emulsion layers which have different color sensitivities from each other, wherein at least one of the silver halide emulsion layers contains at least one magenta coupler represented by general formula (I) described below, at least one of the silver halide emulsion layers contains at least one compound represented by general formula (II) described below, at least one of the silver halide emulsion layers contains at least one compound represented by general formula (III) described below and the pH of the layers of the silver halide color photographic material is 5.0 to 6.5:



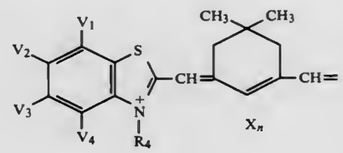
(I)

wherein R_1 represents a hydrogen atom or a substituent; X in formula (I) represents a hydrogen atom or a group capable of being released upon a coupling reaction with an oxidation product of an aromatic primary amine developing agent; Za, Zb and Zc each represents a methine group, a substituted methine group, =N— or —NH—, one of the Za—Zb bond and the Zb—Zc bond is a double bond and the other is a single bond; when the Zb—Zc bond is a carbon-carbon double bond, it may form a part of a condensed aromatic ring; R^1 or X may form a part of a polymer including a dimer or higher polymer; or when Za, Zb or Zc is a substituted methine group, the substituted methine group may form a part of a polymer including a dimer or a higher polymer,



(II)

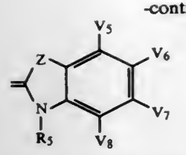
wherein Q represents an atomic group necessary to form a 5-membered or 6-membered heterocyclic ring which may be condensed with a benzene ring; and M represents a hydrogen atom, an alkali metal atom, an ammonium group or a precursor thereof,



(III)

VOL 1147 ISS 3 FE 16 1993 UMI

-continued



wherein Z represents an oxygen atom or a sulfur atom; R_4 and R_5 each represents an unsubstituted or substituted alkyl group; V_1, V_2, V_3, V_4, V_5, V_6, V_7 and V_8 each represents a hydrogen atom, a halogen atom, an alkyl group, an acyl group, an acyloxy group, an alkoxycarbonyl group, a carbamoyl group, a sulfamoyl group, a carboxy group, a cyano group, a hydroxy group, an amino group, an acylamino group, an alkoxy group, an alkylthio group, an alkylsulfonyl group, a sulfonic acid group, or an aryl group, provided that adjacent groups represented by V_1 to V_8 can not bond to each other to form a condensed ring, and further provided that Y is not larger than −0.08 when Z represents an oxygen atom or Y is not larger than −0.15 when Z represents a sulfur atom, wherein Y represents the total of σ_{p1}, σ_{p2}, σ_{p3}, σ_{p4}, σ_{p5}, σ_{p6}, σ_{p7} and σ_{p8}, which are the Hammett's σ_p values of V_1 to V_8 respectively; X in formula (III) represents a charged ion to neutralize the electrical charge of the compound; and n represents a value necessary to neutralize the electrical charge of the compound.

5,187,054

ANTI-SLUDGING COMPOUNDS IN PHOTOGRAPHIC MATERIAL

Jean-Marie O. Dewanckele, Drongen, and Emiel A. Hofman, Mortsel both of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

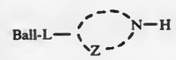
Filed Jun. 1, 1992, Ser. No. 891,744

Claims priority, application European Pat. Off., Jun. 24, 1991, 91201605.2

Int. Cl.[5] G03C *1/76*

U.S. Cl. 430—523 **8 Claims**

1. Photographic material comprising a support, at least one silver halide emulsion layer, and a non-light sensitive colloid layer, situated at the same side of the support and farther from said support than said emulsion layer, characterized in that said non-light sensitive layer contains an anti-sludging compound corresponding to following general formula (I):



wherein:

Ball represents a ballast group preventing the diffusion of the compound out of the non-light sensitive colloid layer;

L represents a divalent linking group;

Z represents the necessary atoms to close a heterocyclic ring with the proviso that said heterocyclic ring contains no mercapto substituent.

5,187,055

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Hidetoshi Kobayashi; Yasuhiro Shimada; Seiji Ichijima, and Yoshio Ishii, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

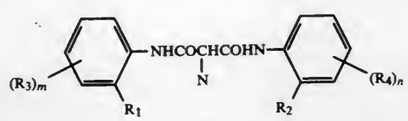
Filed Dec. 14, 1988, Ser. No. 284,047

Claims priority, application Japan, Dec. 15, 1987, 62-316973; Nov. 21, 1988, 63-294306

Int. Cl.[5] G03C *7/36*

U.S. Cl. 430—544 **37 Claims**

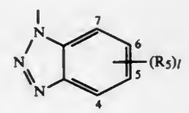
34. A silver halide color photographic material having at least one silver halide emulsion layer on a support, said photographic material containing at least one coupler represented by the following general formula (I) in a constituent layer:



(I)

wherein R_1 and R_2, which may be the same or different, each represents an alkyl group containing 6 to 24 carbon atoms, an alkoxy group containing 6 to 24 carbon atoms, an alkylthio group containing 6 to 24 carbon atoms, an alkylsulfonyl group containing 6 to 24 carbon atoms, an alkoxycarbonyl group containing 6 to 24 carbon atoms, an alkoxysulfonyl group containing 6 to 24 carbon atoms, an aryl group containing 6 to 24 carbon atoms, an aryloxy group containing 6 to 24 carbon atoms, an arylthio group containing 6 to 24 carbon atoms, an arylsulfonyl group containing 6 to 24 carbon atoms; R_3 and R_4, which may be the same or different, each represents a group by which benzene can be substituted; m and n represents an integer of from 0 to 4, and when they are each a plural number, a plural R_3 or a plural R_4 may be the same or different; and wherein

is presented by the following general formula (II):



wherein R_5 represents a halogen atom, a nitro group, a cyano group, an amino group, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an alkoxycarbonyl group, an aryloxycarbonyl group, an alkylthio group, an arylthio group, a thiazolylideneamino group, an alkylsulfonyl group, an arylsulfonyl group, an acyloxy group, a carbonamido group, a sulfonamido group, a carbamoyl group, a sulfamoyl group, an imido group, an alkoxycarbonylamino group, an aryloxycarbonylamino group, or an ureido group and λ represents an integer of from 0 to 4.

5,187,056

SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Naoki Saito, and Keiji Mihayashi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

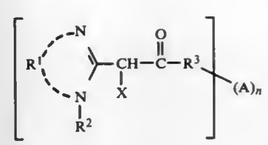
Filed Jul. 29, 1991, Ser. No. 737,274

Claims priority, application Japan, Jul. 30, 1990, 2-201845

Int. Cl.[5] G03C *7/36*

U.S. Cl. 430—544 **14 Claims**

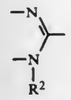
1. A silver halide color photographic material, which contains a compound of the following general formula (I) in at least one hydrophilic colloid layer as provided on a support:



(I)

wherein:

R^1 represents a non-metallic atomic group necessary for forming a 5-membered unsaturated hereto ring together with a residue of



in the formula;

R^2 represents a hydrogen atom, an aliphatic group, an aromatic group, or a heterocyclic group;

R^3 represents an organic residue;

X represents a group capable of splitting off from the formula when the compound has reacted with the oxidation product of an aromatic primary amine developing agent and forms a structure shown in the following formula (VI) that is bonded to a coupler residue B:

$$B—(L^1)_a—Z—(L^2—Y)_b \quad (VI)$$

where B represents a residue of a coupler component of formula (I) except X;

Z represents a main part of a compound having a development inhibiting activity, and is bonded to the coupling position of the coupler directly when a is 0 or by a linking group L^1 when a is 1;

L^1 and L^2 each represents a linking group, and the linking group L^2 contains a chemical bond which is cleaved in a developer;

Y represents a substituent capable of expressing the development inhibiting activity of Z and is bonded to Z via a linking group L^2;

a is 0 or 1, and b is an integer from 0 to 2, and when b is 2, two ($—L^2—Y$)'s may be same as or different from each other;

A represents an acidic dissociating group which may be at any substitutable position in the formula; and

n represents an integer of 1 or more;

provided that when A is a substituent in X, the X as split off from the formula when the compound has reacted with the oxidation product of a developing agent does not further react with the oxidation product of the developing agent.

5,187,057

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL AND COLOR PHOTOGRAPHIC COUPLER

Satoru Ikesu, Hino; Hiroshi Kita, Hachioji, and Yutaka Kaneko, Sagamihara, all of Japan, assignors to Konica Corporation, Tokyo, Japan

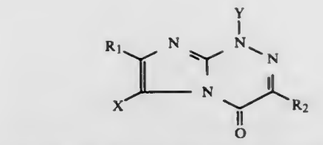
Filed Feb. 24, 1992, Ser. No. 840,278

Claims priority, application Japan, Feb. 26, 1991, 3-53226

Int. Cl.[5] G03C *7/38*

U.S. Cl. 430—558 **8 Claims**

1. A color photographic material having a substrate and a light sensitive silver halide emulsion layer containing a coupler represented by a formula



wherein R_1, R_2 and Y independently represent a hydrogen atom or substituent,

X represents a hydrogen atom or an atom or group capable of splitting off upon reaction with the oxidation product of a color developing agent.

5,187,058

SILVER HALIDE PHOTOGRAPHIC MATERIAL

Nobuaki Inoue, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

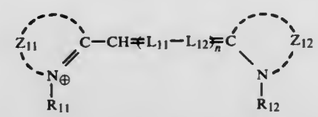
Continuation of Ser. No. 555,954, Jul. 20, 1990, abandoned. This application Dec. 16, 1991, Ser. No. 810,344

Claims priority, application Japan, Jul. 20, 1989, 1-187701; Sep. 14, 1989, 1-239275

Int. Cl.[5] G03C *1/035*

U.S. Cl. 430—567 **26 Claims**

1. A negative silver halide photographic material comprising a support having thereon at least one light-sensitive silver halide emulsion layer comprising a silver halide emulsion comprising regular silver halide grains containing from 0.3 mol % to 3.0 mol % of silver iodide, said silver halide grains being produced by conversion of silver halide host grains using high silver iodide silver halide grains comprising silver iodide, silver iodobromide, silver iodochlorobromide or silver iodochloride having a silver iodide content of at least 90 mol % in an amount sufficient to provide from 0.1 mol % to 2.5 mol % of silver iodide based on the total silver halide content of the silver halide host grains and the high silver iodide grains, said silver halide host grains comprising silver bromide or silver iodobromide having a silver iodide content of at most 2.5 mol % and a mean grain size of at most 0.7 μm, wherein said conversion is performed in the presence of a compound represented by formula (A):



(A)

wherein Z_{11} and Z_{12}, which may be the same or different each represents an atomic group necessary for forming a thiazole nucleus, a thiazoline nucleus, a benzothiazole nucleus, a naphthothiazole nucleus, an oxazole nucleus, a benzoxazole nucleus, an oxazoline nucleus, a naphthozazole nucleus, an imidazole nucleus, a benzimidazole nucleus, an imidazoline nucleus, a selenazole nucleus, a selenazoline nucleus, a benzoselenazole nucleus or a naphthoselsenazole nucleus; R_{11} and R_{12}, which may be the same or different, each represents a substituted or unsubstituted alkyl group, provided that at least one of R_{11} and R_{12} comprises a sulfo group or a carboxy group; L_{11} and L_{12} each represents a substituted or unsubstituted methine group; and n is from 0, 1 or 2.

VOL
1147
ISS
3
FE
16
1993
UMI

5,187,059

SILVER HALIDE EMULSION CONTAINING ACRYLIC AMPHOTERIC POLYMERS

Robert P. Foss, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 343,773, Apr. 27, 1989, Pat. No. 5,011,898, which is a division of Ser. No. 76,806, Apr. 1, 1988, Pat. No. 4,756,669, which is a division of Ser. No. 377,373, May 12, 1982, Pat. No. 4,749,762. This application Feb. 5, 1991, Ser. No. 650,784

Int. Cl.[5] G03C *1/005*

U.S. Cl. 430—627 6 Claims

1. Photographic emulsion, comprising:

A. an amphoteric polymer containing the following monomeric units:

(a) 20 to 90 mol percent of acrylic acid,

(b) 10 to 30 mol percent of N,N-dimethylaminoethyl methacrylate of N,N-diethylaminoethyl methacrylate, and

(c) 0 to 70 mol percent from one or more members of the group consisting of C_{1-8} alkyl acrylate, C_{1-8} alkyl methacrylate, 2-hydroxyethyl acrylate, 2-hydroxyethyl methacrylate, 2-hydroxypropyl acrylate and 2-hydroxypropyl methacrylate;

said polymer prepared by copolymerizing (a), (b), and (c), in solution, in the presence of a strong acid selected from the group consisting of nitric acid, sulfuric acid and hydrochloric acid, in a quantity sufficient to protonate the amine group of (b),

the polymer characterized further by having (i) a molar ratio of (a) to (b) of at least 2 to 1, and (ii) substantially no betaine contaminant; and

B. a silver halide.

5,187,060

DETECTION OF INFLUENZA A VIRUS BY POLYMERASE CHAIN REACTION (PCR) PRECEDED BY REVERSE TRANSCRIPTION OF A REGION OF THE VIRAL HEMAGGLUTININ GENE

Peter A. Cerutti, Poly/Lausanne, and Albéric Bressoud, Lausanne, both of Switzerland, assignors to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Aug. 31, 1990, Ser. No. 575,601

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1989, 3929144

Int. Cl.[5] C12Q *1/70, 1/68, 1/02;* C07H *15/12*

U.S. Cl. 435—5 8 Claims

1. A method for the detection of influenza A virus, which comprises using amplimers from the conserved region of the hemagglutinin gene H1 for reverse transcription (RT), wherein said region encompasses nucleotides in positions 96 ± 80 to 536 ± 80 of said hemagglutinin gene H1; using said amplimers in a subsequent polymerase chain reaction (PCR); and subsequently detecting the amplified cDNA by known methods.

5,187,061

TRANSDUCING PARTICLES AND METHODS FOR THEIR PRODUCTION

Neal I. Gutterson; William T. Tucker, both of Oakland, and Paul K. Wolber, Hayward, all of Calif., assignors to DNA Plant Technology Corporation, Oakland, Calif.

Continuation-in-part of Ser. No. 474,282, Feb. 5, 1990, which is a continuation-in-part of Ser. No. 253,160, Oct. 4, 1988, abandoned. This application Nov. 5, 1990, Ser. No. 609,331

Int. Cl.[5] C12N *15/00, 7/01, 1/21*

U.S. Cl. 435—5 35 Claims

1. A method for producing a transducing particle, said method comprising:

introducing DNA sequences into a bacterial host, wherein the host carries a prophage in its genome and the DNA sequences include (a) a pair of transposable element terminal sequences having a selectable marker sequence therebetween and (b) a transposase gene located outside of the transposase element terminal sequences, whereby the marker sequence can become incorporated within the prophage;

inducing the prophage to a lytic cycle, whereby transducing particles are released;

selecting viable transducing particles which carry the selectable marker sequence; and

introducing a screenable marker gene to a selected transducing particle.

5,187,062

METHOD FOR DETECTING AND MEASURING FGF

Yuji Sato, Tokyo, Japan, and Henry G. Friesen, Winnipeg, Canada, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 28, 1989, Ser. No. 345,220

Claims priority, application Japan, Dec. 7, 1988, 63-310856

Int. Cl.[5] C12Q *1/00*

U.S. Cl. 435—7.94 3 Claims

1. A method for detecting and/or measuring fibroblast growth factor (FGF), which comprises subjecting a sample to a sandwich technique using heparin coupled to a carrier and an antibody labeled with a labeling agent said fibroblast growth factor coupling to said heparin and said labelled antibody coupling to said fibroblast growth factor.

5,187,063

MEASURING NON-DYSTROPHIN PROTEINS AND DIAGNOSING MUSCULAR DYSTROPHY

Kevin P. Campbell; James M. Ervasti; Kay Ohlendieck, all of Iowa City, Iowa; Mitchell G. Gaver, Cockeysville, Md., and Steven D. Kahl, Iowa City, Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa

Filed May 23, 1990, Ser. No. 527,583

Int. Cl.[5] G01N *33/567*

U.S. Cl. 435—7.21 9 Claims

1. A method of diagnosing Duchenne's or Becker's muscular dystrophy in a mammalian skeletal muscle sample by detecting the loss or substantial reduction in the quantity of a 156 kDa non-dystrophin component of the dystrophin-glycoprotein complex, comprising the steps of:

a) combining the sample, previously treated to render the 156 kDa non-dystrophin component available for antibody binding, with antibodies which specifically bind to the 156 kDa non-dystrophin component;

b) detecting and characterizing the extent of the binding of the antibodies to the 156 kDa non-dystrophin component; and

c) comparing the extent of binding to the sample with the extent of binding to a non-dystrophic muscle tissue sample treated in an identical manner, a substantial reduction in the extent of binding being indicative of Duchenne's or Becker's muscular dystrophy.

5,187,064

MONOCLONAL ANTIBODIES AND METHODS FOR FUNGAL PATHOGEN DETECTION

Frank P. Petersen, Burlington; Adrianna Maybroda, Trenton, and Sally A. Miller, Pennsauken, all of N.J., assignors to Agri-Diagnostics Associates, Cinnaminson, N.J.

Continuation-in-part of Ser. No. 834,198, Feb. 27, 1986, Pat. No. 4,803,155. This application Dec. 20, 1988, Ser. No. 287,365

The portion of the term of this patent subsequent to Feb. 7, 2006, has been disclaimed.

Int. Cl.[5] C07K *15/02;* C12Q *1/04;* G01N *33/577*

U.S. Cl. 435—7.31 16 Claims

1. A hybridoma having the identifying characteristics of ATCC HB 9921.

5,187,065

METHOD AND MATERIALS FOR DETECTING LYME DISEASE

Steven E. Schutzer, 21 Canterbury Rd., Great Neck, N.Y. 11021

Filed Dec. 22, 1989, Ser. No. 455,175

Int. Cl.[5] G01N *33/569, 33/564*

U.S. Cl. 435—7.32 19 Claims

1. A method for detecting the onset or presence of Lyme disease caused by *Borrelia burgdorferi* infection in a mammal, which comprises:

A) collecting a biological sample from said mammal;

B) isolating from said sample any immune complexes suspected of containing antibodies to *Borrelia burgdorferi;*

C) dissociating any immune complexes isolated in step B) to release any of said antibodies to *Borrelia burgdorferi* present therein; and

E) determining the presence of said antibodies through a specific binding reaction as indication of Lyme disease in said mammal.

5,187,066

METHODS FOR DETECTING AMPHIPHILIC ANTIGENS

Martin Becker; Nurith Kurn, both of Palo Alto; Yen P. Liu, Cupertino; Rajesh D. Patel, Fremont; Thomas M. Houts, Mountain View, and John D. Olson, Sunnyvale, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Feb. 14, 1990, Ser. No. 479,930

Int. Cl.[5] C12Q *1/00;* G01N *33/545*

U.S. Cl. 435—7.36 41 Claims

1. A method for detecting an amphiphilic antigen in a biological sample suspected of containing said antigen which comprises:

(a) providing in combination:

(i) a hydrophilic solid support modified to have a hydrophobic surface by treatment with a hydrophobic reagent that is capable of generating a hydrophobic surface on said solid support, said hydrophobic reagent being selected from the group consisting of antibacterial polypeptides having one or more fatty acid side chains of 4 to 12 carbon atoms, siliconizing agents of 4 to 20 carbon atoms, alkylation agents of 4 to 20 carbon atoms, and acylation agents of 4 to 20 carbon atoms; and

(ii) an assay medium suspected of containing an amphiphilic antigen;

(b) incubating said combination under conditions sufficient for said amphiphilic antigen to bind to said hydrophobic surface; and

(c) determining the presence or amount of said amphiphilic antigen bound to said hydrophobic surface, wherein said determining comprises contacting said hydrophobic surface with an antibody specific for said amphiphilic antigen to form an antibody-amphiphilic antigen immune complex bound to said hydrophobic surface.

5,187,067

IMMUNOLOGICAL DETERMINATION OF FREE HUMAN PROTEIN S AND C4BP-PROTEIN S COMPLEX

Yukiya Koike; Kenji Wakabayashi; Yoshihiko Sumi, all of Hino, and Yataro Ichikawa, Tokorozawa, all of Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 132,886, Dec. 9, 1987, abandoned. This application Mar. 14, 1991, Ser. No. 670,383

Claims priority, application Japan, Dec. 15, 1986, 61-296766; Dec. 17, 1986, 61-298881

Int. Cl.[5] C07K *15/00, 3/18;* G01N *33/53;* C12N *5/18*

U.S. Cl. 435—7.9 14 Claims

1. A method of immunologically determining free human protein S in an assay sample, which comprises contacting a primary antibody fixed to an insoluble solid carrier and a labelled secondary antibody with the assay sample, wherein each antibody binds to a distinct epitope of free human protein S, and either the primary or the secondary antibody, but not both,

VOL 1147 ISS 3 FE 16 1993 UMI

is a monoclonal antibody having a property of binding to free human protein S, and not binding to a complex of the human protein S and human complement cofactor C4b-binding protein (C4bp), said monoclonal antibody being produced by hybridoma FERM BP-2629 deposited in Fermentation Research Institute, Agency of Industrial Science and Technology, Japan and determinating the presence of said antibody.

5,187,068

METHOD FOR DETERMINATION OF LIPID MOIETY AND APOLIPOPROTEIN EXPRESSED EPITOPE IMMUNOREACTIVITY ON INTACT LIPOPROTEIN

Nicolae Luca, 1210 E. Foster Rd., Unit B, Santa Maria, Calif. 93455

Filed Jun. 9, 1989, Ser. No. 366,752
Int. Cl.[5] G01N *33/53*; C12Q *1/60*
U.S. Cl. 435—7.92 **12 Claims**

1. A method for measuring dynamic changes over a predetermined period of time in the lipid moiety of intact lipoproteins contained in a sample selected from the group consisting of body fluids, cells and tissues, said intact lipoproteins comprising an apolipoprotein moiety and said lipid moiety comprising at least one class of lipid, comprising the steps of:

(a) obtaining a first fasting sample;

(b) providing a predetermined, nonsaturable excess amount of capturing antibodies relative to the nonsaturating limited amount of the intact lipoproteins in the first fasting sample, said capturing antibodies being immobilized on a solid phase and capable of specifically binds to at least one preselected epitope present on the apolipoprotein moiety of the intact lipoproteins;

(c) capturing quantitatively any intact lipoproteins in said first fasting sample having said at least one said preselected epitope present on the apolipoprotein moiety of the intact lipoproteins by contacting the first fasting sample with said predetermined nonsaturable excess amount of solid phase immobilized capturing antibodies;

(d) incorporating a fluorescent lipid probe which selectively stains said at least one class of lipid in the lipid moiety of said quantitatively captured intact lipoproteins from said first fasting sample;

(e) exciting the fluorescent lipid probe from step (d) with radiation of a preselected wavelength in order to generate and measure a signal with a preselected wavelength indicative of the amount of fluorescent lipid probe incorporated into said at least one class of lipid in the lipid moiety of said quantitatively captured intact lipoproteins in said first fasting sample;

(f) comparing the signal from step (e) with a signal obtained from a standard with a known amount of said at least one class of lipid also measured according to steps (b) through (e) in order to measure the amount of said at least one class of lipid in the lipid moiety of the intact lipoproteins in said first fasting sample;

(g) repeating steps (b) through (f) on at least one second postprandial sample obtained from the same source but at a later, predetermined time from when the first fasting sample was obtained; and

(h) following step (g), comparing the amount of said at least one class of lipid in the lipid moieties present in said intact lipoproteins in the first fasting sample and in the at least one second postprandial sample in order to measure the dynamic changes occurring over said predetermined period of time.

5,187,069

ACTIVE SITE LABELLING OF PLASMINOGEN

Joseph D. Shore, Grosse Pointe Farms; Paul E. Bock, Hamtramck; Steven T. Olson, Detroit, and Duane E. Day, Waterford, all of Mich., assignors to Henry Ford Health System, Detroit, Mich.

Filed Aug. 6, 1990, Ser. No. 562,702
Int. Cl.[5] C12Q *1/56, 1/00*; G01N *33/86*
U.S. Cl. 435—13 **12 Claims**

3. A process for preparing a labelled plasminogen which is enzymatically inactive upon cleavage by plasminogen activators comprising:

a) forming a streptokinase-plasminogen complex;

b) inhibiting the streptokinase-plasminogen complex by attaching a thioester peptide chloromethyl ketone thereto, said peptide selected from the group consisting essentially of thioester derivatives of arginine-containing peptide chloromethyl ketones;

c) adding a fluorescent probe to the thiol group derived from said thioester peptide chloromethyl ketone by reaction with hydroxylamine thereby forming a labelled complex; and

d) dissociating and chromatographically separating the streptokinase from the labelled plasminogen thereby forming a fluorescent labelled plasminogen which is enzymatically inactive after proteolytic cleavage by plasminogen activator, and which exhibits a change in fluorescence emission intensity upon cleavage.

5,187,070

ASSAY FOR MOTILE FACULTATIVE ANAEROBIC PATHOGENS

Daniel Y. C. Fung, and Linda Yu, both of Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Oct. 9, 1990, Ser. No. 594,647
Int. Cl.[5] C12Q *1/26*; C12N *1/20*
U.S. Cl. 435—25 **12 Claims**

1. In an assay for determining the presence of motile facultative anaerobic pathogens in a product which supports the growth of said pathogens, said assay including the steps of incubating said product in a growth medium comprising an amount of esculin which will change the color of said medium in the presence of a target motile facultative anaerobic pathogen, and, if the color change is observed, determining if the pathogen responsible for said color change has motility characteristics of the target pathogen, the improvement which comprises the step of incubating said product in the presence of an effective amount of a substance which enhances the growth rate of said target pathogen in said growth medium, wherein said substance is a growth-stimulating oxygen-reactive enzyme.

5,187,071

METHOD FOR THE SELECTIVE CONTROL OF WEEDS, PESTS, AND MICROBES

Randy S. Fischer, 3746 NW. 7th Ave., Gainesville, Fla. 32607, and Roy A. Jensen, P.O. Box 1460, Melrose, Fla. 32666

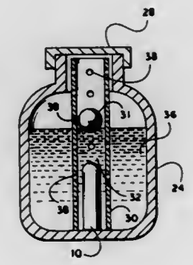
Filed Jul. 15, 1988, Ser. No. 219,959
Int. Cl.[5] C12Q *1/18*
U.S. Cl. 435—32 **11 Claims**

1. A method for identifying and producing agents for the selective control of microbial or plant targets, said method comprising:

i. identifying a difference which exists between an amino acid metabolic pathway of the microbial or plant target and any non-target specie; and

ii. preparing a control agent which, when applied to said microbial or plant target in the presence of said non-target species, perturbs said amino acid metabolic pathway of said target species but does not significantly perturb the metabolism of said non-target species; wherein said control agent is either a natural compound or an analog of a natural compound.

ing the steps of mixing a given sample with a culture medium for promoting growth of a selected microorganism, placing a semi-permeable test device within said culture medium and preventing said semi-permeable test device from lying horizontally within said culture medium so that said semi-permeable test device has a lower end and an upper end, said semi-permeable test device having a density greater than the density of said culture medium and having its upper end closed, and



purging air from semi-permeable test device so that said test device sinks in said culture medium, allowing said selected microorganism to create a biofilm within said semi-permeable test device so that, subsequently, said semi-permeable test device will confine gas generated by said selected microorganism, and including the step of determining the presence of said selected microorganism by flotation of said semi-permeable test device caused by the gas generated by said selected microorganism.

5,187,072

METHOD AND APPARATUS FOR THE DETERMINATION OF FERMENTATIVE ANALYTIC CULTURED ACTIVITIES

D. Roy Cullimore, 2003 Styles Crescent E., Regina, Saskatchewan, Canada S4V 0P8 ; George W. Alford, 1954 Old Daytona Rd., Daytona Beach, Fla. 32014; Abimbola T. Abiola, No. 12 Olonade Street, Ile-Ife, Nigeria; Jeff Reihl, 1005 Normandy Dr., Moose Jaw, Saskatchewan, Canada S6H 3G8 , and Karim Naqvi, 7-2920 Victoria Avenue, Regina, Saskatchewan, Canada S4T 1K7

Filed Mar. 19, 1991, Ser. No. 671,435
Int. Cl.[5] C12Q *1/04*; C12M *1/24, 1/34*
U.S. Cl. 435—34 **11 Claims**

6. A method for testing to determine the presence of a selected microorganism in a given sample, said method compris-

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5,187,073

PROCESS FOR TRANSFORMING GRAMINEAE AND THE PRODUCTS THEREOF

Stephen L. Goldman, Toledo, and Anne C. F. Graves, Bowling Green, both of Ohio, assignors to The University of Toledo, Toledo, Ohio

Continuation of Ser. No. 67,902, Jun. 29, 1987, abandoned, which is a continuation-in-part of Ser. No. 880,271, Jun. 30, 1986, abandoned. This application Nov. 13, 1989, Ser. No. 436,187
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] C12N *15/00*; C12R *1/41*
U.S. Cl. 435—172.3 **4 Claims**

1. A method of producing transformed Gramineae, said method comprising:

VOL 1147 ISS 3 FE 16 1993 UMI

making a wound in a graminaceous seedling with newly emerged radicle and stem, said wound being made in an area of the seedling containing rapidly dividing cells, wherein said area extends from the base of the scutellar node to slightly beyond the coleoptile node; and



inoculating the wound with vir+ *Agrobacterium tumefaciens*.

5,187,074

METHOD OF HYDROXYLATION WITH ATCC 55086

Laszlo R. Treiber, Gillette; Russell B. Lingham; Byron H. Arison, both of Watchung; Lawrence F. Colwell, Jr., Eatontown; Georgette Dezeny, Short Hills, all of N.J., and Nancy E. Kohl, Wyndmoor, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

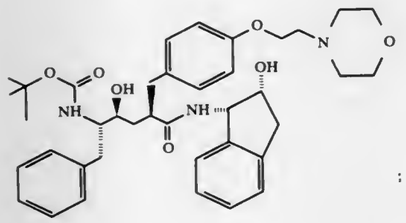
Continuation of Ser. No. 595,905, Oct. 11, 1990, abandoned. This application Feb. 20, 1992, Ser. No. 840,601

Int. Cl.[5] C12P *1/00*; C12N *1/20*

U.S. Cl. 435—41 **1 Claim**

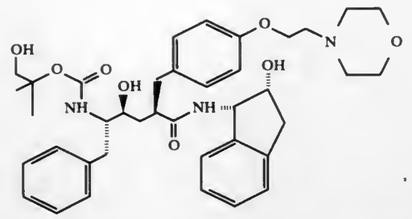
1. A method of hydroxylation comprising the steps of

(1) providing a quantity of N-(cis-2(R)-hydroxy-1(S)-indanyl)-5(S)-(1,1-dimethylethoxycarbonylamino)-4 (S)-hydroxy-6-phenyl-2(R)-[(4-(2-(4-morpholinyl)ethoxy)-phenyl)methyl]hexanamide, of the structure



(2) incubating the compound of step (1) with Streptomyces culture #S-29-145; and

(3) isolating a compound of the structure



or a pharmaceutically acceptable salt, hydrate, or ester thereof.

5,187,075

CLONING AND EXPRESSION OF A VARIANT GENE OF PLATELET FACTOR 4 AND COMPOSITIONS THEREOF TO MODULATE IMMUNE RESPONSES

Christopher J. Green, and Paul H. Johnson, both of Menlo Park, Calif., assignors to SRI International, Menlo Park, Calif.

Filed Jan. 26, 1989, Ser. No. 302,425

Int. Cl.[5] C12N *15/67, 15/03, 15/12*; C12P *21/00*

U.S. Cl. 435—69.1 **16 Claims**

1. An isolated, cloned recombinant or synthetic DNA sequence encoding a Leu_{58}, Glu_{66}, His_{67} variant of platelet factor 4.

5,187,076

DNA SEQUENCES ENCODING BMP-6 PROTEINS

John M. Wnzney, Hudson; Elizabeth A. Wang, Carlisle; Vicki A. Rosen, Brookline, and Anthony J. Celeste, Hudson, all of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 370,544, Jun. 23, 1989, which is a continuation-in-part of Ser. No. 347,559, May 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 329,610, Mar. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 179,100, Apr. 8, 1988, Pat. No. 5,013,649, and a continuation-in-part of Ser. No. 179,101, Apr. 8, 1988, abandoned, and a continuation-in-part of Ser. No. 179,197, Apr. 8, 1988, which is a continuation-in-part of Ser. No. 28,285, Mar. 20, 1987, abandoned, and a continuation-in-part of Ser. No. 31,346, Mar. 26, 1987, Pat. No. 4,877,864, which is a continuation-in-part of Ser. No. 943,332, Dec. 17, 1986, abandoned, and a continuation-in-part of Ser. No. 880,776, Jul. 1, 1986, abandoned. This application Mar. 7, 1990, Ser. No. 490,033

The portion of the term of this patent subsequent to Apr. 21, 2009, has been disclaimed.

Int. Cl.[5] C12P *21/02, 19/34*; C12N *15/00, 1/00, 5/00, 1/21, 1/18*; C07K *3/00*; C07H *15/12*

U.S. Cl. 435—69.1 **27 Claims**

10. A method for producing a purified BMP-6 protein said method comprising the steps of

(a) culturing in a suitable culture medium cells transformed with a DNA sequence comprising the DNA nucleotide #1 to #2923 of FIG. 3; and

(b) isolating and purifying said protein from said culture medium said BMP-6 protein.

5,187,077

LEUKAEMIA INHIBITORY FACTOR

David P. Gearing, North Fitzroy; Nicholas M. Gough, North Balwn; Douglas J. Hilton, Warrandyte; Julie A. King, Nunawading; Donald Metcalf, Balwyn; Edouard C. Nice, St. Kilda; Nicos A. Nicola, Regent; Richard J. Simpson, Richmond, and Tracy A. Willson, North Balwyn, all of Australia, assignors to Amrad Corporation Limited, Victoria, Australia

Filed Dec. 9, 1988, Ser. No. 294,514

Claims priority, application Australia, Apr. 2, 1987, PI2109/87; Jul. 24, 1987, PI3317/87; Oct. 15, 1987, PI4903/87; Dec. 21, 1987, PI6005/87

Int. Cl.[5] C12P *21/06*; C12N *5/00*; C07H *15/12*

U.S. Cl. 435—69.1 **7 Claims**

1. A recombinant DNA molecule comprising a nucleotide sequence which codes for a polypeptide having LIF activity.

5,187,078

PLASMA-TYPE GLUTATHIONE PEROXIDASE GENE AND APPLICATION OF THE SAME

Masami Ohya, Tomakomai; Junzo Mizoguchi, and Takashi Onozawa, both of Shizuoka, all of Japan, assignors to Toyo Jozo Co., Ltd., Sizuoka, Japan

Filed Jun. 19, 1990, Ser. No. 540,115

Claims priority, application Japan, Jun. 22, 1989, 1-159870

Int. Cl.[5] C12N *9/08, 15/53, 15/70, 15/79*

U.S. Cl. 435—69.1 **11 Claims**

1. An isolated DNA fragment consisting essentially of the base sequence represented by SEQ ID No. 1.

5,187,079

GLUCOSE-REPRESSIBLE GENE FOR THE REGULATED EXPRESSION OF PROTEINS AND EXPRESSION VECTOR THEREFOR

Stephen J. Free, Williamsville, N.Y.; Mark T. McNally, Baltimore, Md., and Khaled A. Tarawneh, North Tonawanda, N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Dec. 21, 1988, Ser. No. 288,687

Int. Cl.[5] C12P *21/00*; C12N *1/15, 5/10, 15/80*

U.S. Cl. 435—69.1 **13 Claims**

1. A eukaryotically active, fungus compatible chimeric gene comprising:

a) a glucose-repressible gene region, wherein said region consists essentially of the following nucleotide sequence:

```
CAGCTGTAGA AGGAGCAGTC CATCTGCGTG AATCACGAGA GAATCAGCTA
                                                -867
CTTTGAATCG  ATGGATGCAG CTACCAGAAG TCACTCAGTT CGTTCAAAGC
                                          -807
CACATCACTG GGCACTTCAA  TTGGGACAGG CATTGATCGG ACGAGACCGA
                                                -747
CTTCTGGCCG CTTTCAACAG CCACATTATA  TCCATGTCAC GGCTACGCGC
                                                -687
GGCCTTCGGT AACAGAAAAG CACACAGACA GCGATTGTGA  CATGGATTCG
                                                -627
GGCAAACGAT TGGTGGTCGC ACCAGGTCAC CTGAGTGTGC AGTGGCTGCT

ATTCAGATTT CATCTAACTG CGGGAGAGGG GTTCAAAGGG GCGTGACGTC
                                          -567
ACAGACAACG  GGTGAAGGAC GAAGATTGCC TCACTTCTTT GCTAGCAATT
                                          -507
TGCCTGCAAA GAAGGCGCAC  ATGTCAAGCA AACAACTGGG AAACCACTAT
                                                -447
TGAATACCCA CAATGCAAAG CTCGGAAGGT  ACGTCTTGAT TGCAGTGTGT
```

```
                                                -387
CGAGTGTCAA AAAAGAAGCA AGTGTTCATG CAAGCCAAAA  TTGGCACCTC
                                                -327
CTCCACTTCT CCGAGTGCCC CACCCGAACC TCCAGGCGAG ATGGCCGGAA

CATACCATCC GCGTTGGGAT TATGACGTAT CTCCTTCTTC TTCACATGAT
                                          -267
TCCATCCCGT  TGTTGCTTGT TTGCGAGCTG TGACGGGAGA TCGTAGATGC
                                          -207
CACTTAGGGC CAGGCAGGCA  GTGCAGGCAG CCAGGAACAC AAGCTTCCAA
                                                -147
CTTGGTCATC TCGATTGCCG ATTAAGGGAA  CCAAATGCCT ATATAAGACT
                                                -87
GTCCTCCCAC CTCCCCAATA CCATTCTTTT CTTCTTCCAT  CATCAGCCAA
                                                -27
CAAAGCAATC ACATCTTCAC TACTTCAAAT CAACACAACA CTCAAACCAC

TTTCACAACC CCTCACATCA ACCAAAATG  GAT ACC CTC AAG AAC GCT GCC
27
AAC  TAC GTC GGT GAC AAG GTC CAG G GTAGGTTTCCTCC AGCTCTCGCC
82
TCCAGCACCC  GAGGCACATC TCGGGCATCT TCACAAC AGCAGACACTGAC
139
ATCTCATTCT CACAG GC  GCT ACC GCC ACT GCT TCC AAG GAG GCC AAC
187
AAG GAC GTT GCC AAG GAC  TCC AAC CAG GGC GTC GGC ACT CG
240
GTAAGCTCCA TCACTTTTCC ACTCTCACAG  CCATCATCAG ACACTAACAT
294
TCATCTTCCTCTCAG T CTC AAC GCT GCC GGT GAT  GCC ATC TCC GAC
342
AAG GTC TCC GAG AAC AAG CAC GAC GCT AAG GCC GAG  GCC CAC AAG
395
CAG GGT GCT ACC CAC TAA GCGACT TTACCAACAG TCGTTTTCCA

TTTCCTTTTT ATCAGTCATG ACTTGATGAT AATGGCGGC TAAGGAGTTC
455
GCCAAGGGCT  TCTCTATGAC ATACTTGGCT TGGAATTTCG AAGGGCAGCT
515
TTAGCATTAC ACCAGAACCG  ATACCCCTAT TACATAGGCA TGGACACTGG
575
TCCGTTCTAG CTAGGAATTG ACCCGGCTCT  CTGCCAATTA ATACCTTCAC
635
ATCTGTTTTT TTCCTCTTTG TTTTTGTGAC ATTGACATTG  CCTTTCTGAC
695
ATTGCTGTGT GCTTTGCAAC TTTGATCTTT ATAATTCTAC TTTGGCATTT

GGGGGGATTA TAAATGAGCC ATCGTCTTCA CGACTTGACT TAATGTAATA
755
GCAGTGACAC  GAAAAGTTCG GCAAACATCA ACAACCCCAA ATGTCTTGCA
815
TGAGAGAGTG TTGATCCAGA  CCCTCAATAA GCTGAACGAC ACTAGCAGGG
875
GCTGTGCACG GGCCACAAAG ATCAGCCCTC  GCGATGAACT TCGCGTCCTT
935
CAAGATTTCG GAGGCCACTT CGTTGAGGCC CAGCATCCTT  TCGTCAACTC
962
GGCAAGAAAC ACAGCTG ;
```

b) a DNA sequence of eukaryotic or prokaryotic origin inserted into said glucose-repressible gene region and replacing all, or a portion thereof, of the gene grg-1 which is from about nucleotide 1 to about nucleotide 369, wherein the transcription of said chimeric gene into m-RNA is regulatable; and

c) a regulatory region which regulates the transcription of said chimeric gene, wherein said regulatory region comprises all, or a portion thereof, of the nucleotide sequence from about nucleotide −1 to about nucleotide −926 of said glucose-repressible gene region.

2. The chimeric gene of claim 1, wherein said regulatory region further comprises an additional upstream nucleotide sequence which increases the level of transcription to m-RNA, said upstream nucleotide sequence consists essentially of the following nucleotide sequence:

VOL
1147
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1
CTCGAGTTGC ACGTGCCCTT TCTTGCACAC GAGTTCGCCT GTTAAAACAT

CCCGGCGTCA AGGGCAGTCG CTGTCCGTTG GTCTACCCGT TCATTGGAAT

101
TTCTCTTGGC GGCCTTGGTG AGGATGGCTC GATGGGTTAT ACGGAGTTCG

GTTGAACGTG GCACTGATGC GAGCTGCTTC TGTTACACCC GACGAAGTCG

201
GTCTTCCTCC CAACATCCGT CCTGAACCTG CTTCACCCAC GAAACCGAGA

TGATGCCACT GCACGATCTG ACCACCCTCC CAAATTCTGT TGAGTCTTGA

301
CTCTCAACAA GTGCCCGGGC CTGTTGCCTT TCACCCACGT CAAGAATGCC

AACGAGCAGA ACGCCCTGTG CTCCTTCCAT CTCATAGATC GTGATATTTG

401
ATTTTGCAAA CGGGTAAGAA CTTGACGGCA CCTGTCAGCT GATGAAGAAA

AGGCAAGTTC CAACCGGGCG CAATCATCGC TAAGCTCAAG AAGCTAATGG

501
TTCCTGCCGC TCATATCTGT TGATGGATAT TGGTACATCG ATAGTTTTGC

ACCTCTGCAT GGATATAAAG GGTTAGCTTG GTACGATGAG CCTACATAAA

601
ATATGGAGTA GACAGATGAC AGGAGAGCCA TTTCCTGTGC CAAAACCAAG

CTTCTTTGCC ACTCGCAGGA ACCGAGCTAA TATTTACACT ACACAATGCA

701
GAGGCGCCCA AGCTGCAAGT CATCGCCGAT TCGTTTCATC TCGAGCCAGG

CTCGCAGGCA CAAAGCACGC TGGGAAGAGG AGCAACGTTG AGTGGGCGGG

801
CCTCGAACCG TCGGTAGTTC CTCTTGCCAA TGGGATTCGC TGCCCGTGTT

TGGCGAGCTT GGTCTCTAGT GCAGAGCAAC CCCTCATTTG GGGAATCCAG

901
CGAGCAATCT GTTGCACGTT GGGAAAGGCA GGAGCGCAAT CTTCCTATCA

GCTGCTCACA CTCGTCAGTG CATCATCGAA GAGCCGAATT GCCATGGAGA

1001
AACAGGATGG GAATCTGGCA ATCCGAGGAA TCTCGCCACT GGCTCCAACA

GATCATTCAA CCGAGGCAGG AGGATCTACC AATGCGAGGC GCCTTTCGTA

1101
CGTTCATTTA CAAAATTGAA CCAAGATCAA GATGACCGTG TTCTCGGTTT

GATACTATGG AGCCCACGGC TGTTCAAGTC CTGTGTGAAT GCAAGTCGGC

1201
CGCAGCGGCT CCTCCCCAGA TTTCAGATTG TAGTATGTAC CTAGCAGTGC

GGGCATAAGT AGCTAGCTGC ACATCAATAG TGCGGGCTCA GCTAATGGGA

1301
ATCGTTCTTT GACGGCCAGC CCTGCCATGC GTCACTGGCC GGGATAATGG

CCCATGATGC CTCTTTCCAT TTCCGGAAGT TTGTGTACTT TCGCCTAAAC

1401
ACGAGATGTG ATTCTCAGGC AACGACGCGG AAGGAGAGAG CCCAAAGTCG

GGCGCGTCTT GTTC
```

5,187,080

DNA ENCODING AN ANTIGENIC PROTEIN DERIVED FROM *EIMERIA TENELLA* AND VACCINES FOR PREVENTION OF COCCIDIOSIS CAUSED BY *EIMERIA TENELLA*

William H. Andrews, San Mateo; Virginia M. Brothers, Albany; James G. Files, Belmont; Irene Kuhn, San Francisco; Michael T. McCaman, San Bruno; Stacey R. Sias, San Anselmo, all of Calif.; Leland S. Paul, Island Lake, Ill.; Thomas C. Gore, Charles City, Iowa; Karel Z. Newman, Jr., Eden Prairie, Minn., and John L. Tedesco, St. Peters, Mo., assignors to Solvay & Cie S.A., Brussels, Belgium

Continuation of Ser. No. 125,012, Nov. 24, 1987, abandoned, which is a continuation-in-part of Ser. No. 805,824, Dec. 6, 1985, Pat. No. 4,874,705, which is a continuation-in-part of Ser. No. 734,085, May 16, 1985, abandoned, which is a continuation-in-part of Ser. No. 617,483, Jun. 5, 1984, abandoned. This application Jan. 21, 1992, Ser. No. 824,700

The portion of the term of this patent subsequent to Oct. 17, 2006, has been disclaimed.

Int. Cl.[5] **C12P** *21/02, 19/34;* **C12N** *15/00, 7/00, 1/21;* **A61K** *37/02;* **C07K** *3/00;* **C07H** *15/12*

U.S. Cl. 435—69.3 **20 Claims**

1. An isolated nucleic acid molecule encoding a 17,000 dalton antigenic protein derived from *Eimeria tenella* and having the amino acid sequence shown in FIG. 1.

3. The nucleic acid molecule of claim **1**, wherein said molecule is a cDNA molecule.

10. An expression vector which comprises the cDNA molecule of claim **3** operably linked to a promoter of DNA expression.

18. A bacterial host cell which comprises the expression vector as in any one of claims **10–17**.

19. A method of preparing an antigenic protein derived from *Eimeria tenella* which comprises growing the bacterial hose cell of claim **18** under conditions permitting DNA expression and protein production followed by recovering the protein so produced.

5,187,081

PROCESS FOR PREPARING PROTEASE FROM *ENDOTHIA PARASITICA* USING GLUCANASES TO REDUCE VISCOSITY

René Couderc, Castanet Tolosan; Bruno Eyssautier, Carentan; Martine Laporte, Ramonville Saint Agne, and Marie-France Planard, Carentan, all of France, assignors to Sanofi, Paris, France

Filed Feb. 17, 1989, Ser. No. 311,776

Claims priority, application France, Feb. 18, 1988, 88 01934

Int. Cl.[5] **C12N** *9/58, 21/00*

U.S. Cl. 435—71.1 **7 Claims**

1. In a process for preparing a protease, comprising the steps of culturing the fungus *Endothia parasitica* in a suitable fermentation medium, separating the cells from the medium, concentrating the resultant medium, and isolating from the concentrated medium a protease produced by the fungus,

the improvement comprising reducing increased viscosity caused by a polysaccharide or polysaccharides produced by *Endothia parasitica* during the fermentation process by adding to said medium an enzyme selected from the group consisting of a beta-1,3 glucanase, a beta-1,3-beta-1,6 glucanase or an alpha-amylase, or a mixture thereof wherein said enzyme or mixture of enzymes is introduced during or after fermentation, but prior to isolation of said protease.

11. A method for efficient production of a recombinant protein comprising:

a) introducing a vector containing the chimeric gene of claim **1** or **2** into a eukaryotic microorganism;

b) growing a culture of the microorganism of a) in an appropriate glucose containing medium, wherein the glucose is fermented during the exponential growth phase;

c) depleting the glucose in the culture medium during the growth phase such that her grg-1 regulatory region of said chimeric gene turns on the production of m-RNA encoding the recombinant protein thereby synthesizing said protein; and

d) purifying the recombinant protein from the culture medium.

5,187,082

PROCESS FOR PRODUCING A83850 ANTIBIOTICS

Robert L. Hamill, Greenwood; and Raymond C. Yao, Carmel, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 16, 1990, Ser. No. 568,578

Int. Cl.[5] **C12P** *21/04, 1/04;* **C12N** *1/20;* **C07K** *5/12*

U.S. Cl. 435—71.3 **4 Claims**

1. A process for producing antibiotic A83850 which comprises cultivating *Amycolatopsis albus* NRRL 18532, or an A83850-producing mutant thereof, in a culture medium containing assimilable sources of carbon, nitrogen, and inorganic salts under submerged aerobic fermentation conditions until antibiotic A83850 is produced; and recovering said antibiotic A83850.

5,187,083

RAPID PURIFICATION OF DNA

Kary B. Mullis, La Jolla, Calif., assignor to Specialty Laboratories, Inc., Santa Monica, Calif.

Filed Nov. 13, 1990, Ser. No. 611,921

Int. Cl.[5] **C12P** *19/34;* **C12N** *1/08, 1/06*

U.S. Cl. 435—91 **29 Claims**

1. A method for rapidly obtaining substantially pure DNA from blood cells comprising the steps of:

(a) avoiding high shear forces by gently lysing the membranes of said cells with a detergent to release the contents of the cells as a lysate containing high molecular weight DNA wherein said high molecular weight DNA comprises more than about 500,000 nucleotide base pairs per fragment;

(b) allowing said lysate to stand from about two to about fifty minutes;

(c) filtering said lysate through a membrane filter to selectively trap said high molecular weight DNA on the filter, wherein said filter comprises a porous substrate having a surface that reversibly and specifically traps said high molecular weight DNA, wherein said filter has a pore size from about 0.2 microns to about 0.8 microns

(d) releasing said high molecular weight DNA from said filter using an aqueous solution comprising divalent cations selected from the group consisting of magnesium and calcium, wherein the cation concentration is less than about 100 mM; and

(e) recovering said DNA in a substantially purified from said solution.

5,187,084

AUTOMATIC AIR TEMPERATURE CYCLER AND METHOD OF USE IN POLYMEROSE CHAIN REACTION

G. Anders Hallsby, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jun. 22, 1990, Ser. No. 542,384

Int. Cl.[5] **C12P** *19/34;* **C12M** *1/38*

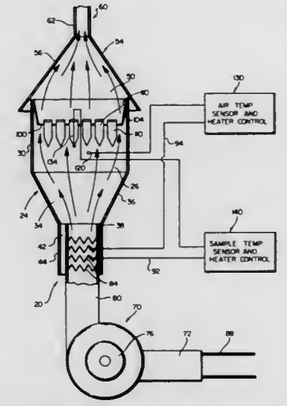
U.S. Cl. 435—91 **3 Claims**

3. In a method for replicating a particular sequence of DNA and for amplifying the concentration thereof in vessels containing samples to be treated,

said method includes providing a chamber means having means for developing and maintaining a selectable, predetermined temperature profile in said chamber means comprising a heater means, temperature cycling means, and temperature control means,

the improvement comprising steps of repetitively and uninterruptedly establishing and effectively controlling each of successive temperatures of said profile for a selectable time duration in a predetermined sequence of temperatures in said selectable, predetermined temperature profile, circulating a heat transfer gas in an open-ended gas throughout system in a continuous, efficient, heat-exchanging mode to envelop vessels containing samples of a DNA fraction in said chamber means then treating the samples thermally in sequential steps for regulated time periods defining a selectable, cyclical incubation-promoting protocol,

positioning first sensor means in said chamber means of samples contained in the vessel thereby monitoring and controlling the temperature therein to maintain said selectable, predetermined temperature profile, and



positioning second sensor means to project into a chamber-housed vessel to sense the temperature of a liquid sample contained therein, thereby monitoring and controlling the temperature to maintain a selectable, predetermined temperature profile in the sample corresponding to said protocol.

5,187,085

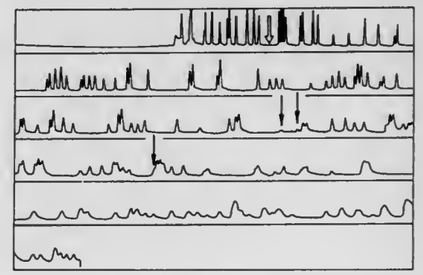
NUCLEIC ACID SEQUENCE ANALYSIS WITH NUCLEOSIDE-5'-O-(1-THIOTRIPHOSPHATES)

Linda G. Lee, Palo Alto, Calif., assignor to Applied Biosystems, Inc., Foster City, Calif.

Filed Sep. 28, 1990, Ser. No. 590,218

Int. Cl.[5] **C12Q** *1/68*

U.S. Cl. 435—91 **20 Claims**



1. A method of determining the nucleotide sequence of a target nucleic acid, the method comprising the steps of:

providing a template nucleic acid, the template nucleic acid containing the target nucleic acid;

providing an oligonucleotide primer for the template nucleic acid;

hybridizing the oligonucleotide primer to the template nucleic acid;

extending the oligonucleotide primer with a nucleic acid

VOL 1147 ISS 3 FEB 16 1993 UMI

polymerase in a reaction mixture comprising nucleotide precursors and at least one chain-terminating nucleotide to form a nested series of DNA fragment populations such that every DNA fragment of the same size terminates with the same chain-terminating nucleotide, wherein said nucleotide precursors consist of nucleoside-5'-O-(1-thiotriphosphate)s;

separating the DNA fragment populations by size; and

identifying the chain-terminating nucleotide associated with each DNA fragment population.

5,187,086

MOLECULES WITH ANTIBODY COMBINING SITES THAT CATALYZE HYDROLYSIS REACTIONS THROUGH USE OF A CHARGED HAPTEN

Kim Janda, San Diego, Calif., assignor to Scripps Clinic and Research Foundation, La Jolla, Calif.

Continuation-in-part of Ser. No. 470,924, Jan. 26, 1990, abandoned. This application Jan. 23, 1991, Ser. No. 644,909

Int. Cl.[5] C12P *7/42;* **C12N** *9/00*

U.S. Cl. 435—146 **16 Claims**

1. Monoclonal antibody molecules or molecules containing antibody combining site portions that catalytically hydrolyze a preselected carboxylic acid ester bond of a reactant ligand, the antibody combining site of said molecules binding to:

(a) a reactant ligand containing the preselected carboxylic acid ester bond that is hydrolyzed; and

(b) a haptenic ligand structurally analogous to said reactant ligand that contains a tetrahedral carbon atom bonded to a hydroxyl group as well as to a saturated carbon atom at a position in the haptenic ligand corresponding to the position of the carbonyl group as well as to the carbonyl-bonded heteroatom, respectively, of the preselected carboxylic acid ester bond to be hydrolyzed, said haptenic ligand further including a group that bears an ionic charge in aqueous solution at physiological pH values, the ionic charge-bearing group being absent from a corresponding position of said reactant ligand and located within a spherical volume defined by a radius of about 7 Ångstroms from said tetrahedral carbon atom.

5,187,087

RECOMBINANT HERPESVIRUS OF TURKEYS AND LIVE VECTOR VACCINES DERIVED THEREOF

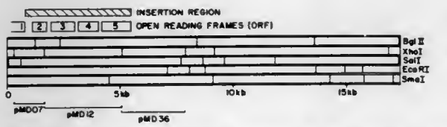
Pulus J. A. Sondermeijer; Johannes A. Claessens, both of Boxmeer, Netherlands, and Albert P. A. Mockett, Huntington Cames, United Kingdom, assignors to AKZO N.V., Arnhem, Netherlands

Filed Nov. 30, 1990, Ser. No. 621,193

Claims priority, application European Pat. Off., Dec. 4, 1989, 89.2003071.9

Int. Cl.[5] C12N *15/00, 7/00, 5/00;* **C07H** *15/12*

U.S. Cl. 435—172.1 **19 Claims**



1. A recombinat comprising a heterologous nucleic acid sequence, said nucleic acid sequence being introduced in an insertion region of the HVT genome which comprises the genomic region from the end of ORF-1 through ORF-5 located within a DNA fragment of the HVT genome having a restriction enzyme map defined by FIG. 1.

5,187,088

CHOLINE OXIDASE AND METHOD FOR PRODUCING THE SAME

Itsuo Furuoya, Suita; Takashi Suzuki, Takatsuki, and Takeshi Takahashi, Izumi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Division of Ser. No. 398,733, Aug. 25, 1989, Pat. No. 5,079,157. This application Sep. 5, 1991, Ser. No. 755,163

Claims priority, application Japan, Aug. 26, 1988, 63-212781; Nov. 4, 1988, 63-280170

Int. Cl.[5] C12R *1/01, 1/04;* **C12N** *9/06*

U.S. Cl. 435—191 **4 Claims**

1. A method for producing choline oxidase which comprises culturing an actinomycete belonging to the genus Streptomyces, Thermoactinomyces or Saccharopolyspora and which is capable of producing choline oxidase and growing at a temperature not lower than 45° C. in a culture medium to produce choline oxidase and then recovering the choline oxidase.

5,187,089

PROTEASE NEXIN-I VARIANTS WHICH INHIBIT ELASTASE

Randy W. Scott, Sunnyvale; Fred Golini, San Mateo, and Michael McGrogan, San Carlos, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Jun. 21, 1990, Ser. No. 542,484

Int. Cl.[5] C12N *9/48, 9/66*

U.S. Cl. 435—212 **4 Claims**

1. A protease nexin-I variant capable of inhibiting elastase, where said variant is comprised of non-polar amino acid substitutions at the substrate binding site.

5,187,090

HUMAN PAPILLOMA VIRUS TYPE 57 AND THE DNA THEREOF

Ethel-Michele de Villiers, Hirschberg; Anja Hirsch-Behnam, and Harald zur Hausen, both of Heidelberg, all of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg, Fed. Rep. of Germany

Filed Aug. 4, 1989, Ser. No. 389,807

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1988, 3826793

Int. Cl.[5] C12N *7/00, 15/37;* **C12Q** *1/70*

U.S. Cl. 435—235.1 **2 Claims**

1. Isolated human papilloma virus (HPV) 57 including equivalent variants thereto.

5,187,091

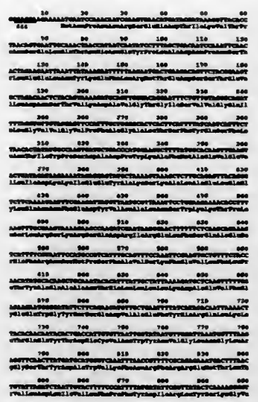
BACILLUS THURINGIENSIS CRYIIIC GENE ENCODING TOXIC TO COLEOPTERAN INSECTS

William P. Donovan, Levittown, Pa.; Mark J. Rupar, Wilmington, Del.; Annette C. Slaney, Hamilton Square, N.J., and Timothy B. Johnson, Langhorne, Pa., assignors to Ecogen Inc., Langhorne, Pa.

Filed Mar. 20, 1990, Ser. No. 496,568

Int. Cl.[5] C12N *5/04, 15/75, 15/74, 15/32*

U.S. Cl. 435—240.4 **9 Claims**



1. A purified and isolated cryIIIC gene having a nucleotide base sequence coding for the amino acid sequence illustrated in FIG. 1.

9. A plant cell transformed with the gene of claims 1 or 2.

5,187,092

SOMATIC EMBRYOGENESIS IN GYMNOSPERMS

M. Rafique Uddin, Atlanta, Ga., assignor to Institute of Paper Science and Technology, Inc., Atlanta, Ga.

Filed Mar. 22, 1990, Ser. No. 497,445

Int. Cl.[5] C12N *5/00*

U.S. Cl. 435—240.45 **38 Claims**

1. A method of producing mature embryonic tissue from embryogenic callus derived from cultured immature zygotic embryos of gymnosperms selected from the group consisting of *Pinus taeda* and *Pseudotsuga menziesii*, said method comprising culturing said callus in a culture medium containing at least about 3% of a sugar selected from the group consisting of glucose and maltose and at least about 10 μM abscisic acid.

5,187,093

MICROORGANISMS USEFUL IN THE PROCESS FOR THE PRODUCTION OF L-CARNITINE

Hans Kulla, Visp, and Pavel Lehky, Naters, both of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

Continuation of Ser. No. 117,921, Nov. 6, 1987, abandoned, which is a continuation-in-part of Ser. No. 717,698, Mar. 29, 1985, abandoned. This application Mar. 15, 1990, Ser. No. 496,093

Claims priority, application Switzerland, Mar. 29, 1984, 1600/84

The portion of the term of this patent subsequent to Nov. 24, 2004, has been disclaimed.

Int. Cl.[5] C12N *1/12, 1/20*

U.S. Cl. 435—252.1 **3 Claims**

1. A biologically pure culture of live microorganism HK 13 (DSM No. 2903).

2. A biologically pure culture of live microorganism HK 1331 b (DSM No. 3225).

3. A biologically pure culture of live microorganism HK 4 (DSM No. 2938).

5,187,094

METHOD FOR THE PREPARATION OF OPTICALLY ACTIVE 3-HYDROXYPYRROLIDINE DERIVATIVES

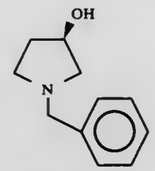
Ikuo Sawa; Natsuki Mori; Shunichi Maemoto, all of Takasago; Hidetoshi Kutsuki, Kobe, and Junzo Hasegawa, Akashi, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 407,394, Sep. 6, 1989, abandoned. This application Sep. 24, 1991, Ser. No. 764,119

Int. Cl.[5] C12P *41/00*

U.S. Cl. 435—280 **8 Claims**

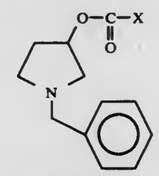
1. A method for the preparation of optically active (R)-N-benzyl-3-hydroxypyrrolidine of the formula (R)-[II]:



(R)-[II]

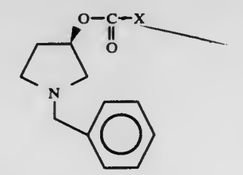
comprising the steps of:

(1) hydrolyzing a mixture of (R)- and (S)-N-benzyl-3-acyloxypyrrolidine of the formula [I]:



[I]

wherein X is hydrogen or a substituted or unsubstituted alkyl or alkenyl group containing 1 to 17 carbon atoms, by the use of microorganisms selected from the group consisting of Pseudomonas fluorescens IFO 3081, Pseudomonas aeruginasa IFO 3080, and Mucor javanicus IFO 4569, or the enzyme LPL Amano 3, said microorganisms and enzyme having a stereospecific esterase activity for (R)-N-benzyl-3-acyloxypyrrolidine of the formula (R)-[I]:

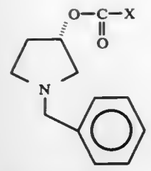


(R)-[I]

wherein x is as defined as above; and

(2) separating form the hydrolysate in the foregoing step (1), (R)-N-benzyl-3-hydroxypyrrolidine of the formula (R)-[II] and (S)-N-benzyl-3-acyloxypyrrolidine of the formula (S)-[I]:

VOL 1147 ISS 3 FE 16 1993 UMI



(S)-[I]

wherein X is as defined above.

5,187,095

APPARATUS FOR CULTURING ANIMAL CELLS

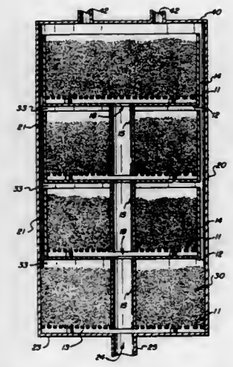
Rudolf F. Bliem, Castro Valley; Robert V. Oakley, Lafayette, and Van Taiariol, Redwood City, all of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Division of Ser. No. 286,756, Dec. 19, 1988, Pat. No. 5,102,790. This application Jan. 22, 1992, Ser. No. 824,203

The portion of the term of this patent subsequent to Apr. 7, 2009, has been disclaimed.

Int. Cl.[5] C12M *3/04*

U.S. Cl. 435—285 3 Claims



1. An apparatus for culturing animal cells, comprising:

(a) a vertically-oriented, liquid-tight housing comprising a top, a bottom, and surrounding side walls therebetween;

(b) within said housing, a first culture subunit comprising a first vertically-oriented receptacle area, having a bottom portion and side walls upstanding therefrom, a first perforated plate constructed and arranged above said bottom portion so as to define a first spent culture fluid collection space, and a first packing of cell carrier particles and animal cells within said first receptacle area supported by said first perforated plate;

(c) within said housing, a second culture subunit, comprising a second vertically-oriented receptacle area, having a bottom portion and side walls upstanding therefrom, a second perforated plate constructed and arranged above said bottom portion so as to define a second spent culture fluid collection space, and a second packing of cell carrier particles and animal cells within said second receptacle area supported by said second perforated plate, said second culture subunit being disposed vertically above, and spaced vertically apart from, said first culture subunit so as to define a culture fluid flow space therebetween, and wherein the bottom portion and upstanding side walls of at least one of said first and second culture subunits are distinct from, and unaffixed to, said housing, and are sized so as to define a culture fluid flow space between the surrounding side walls of said housing and said upstanding side walls of said first or second culture subunit;

(d) conduit means positioned and arranged for placing the first spent culture fluid collection space of said first culture subunit in liquid communication with the second spend culture fluid collection space of said second culture subunit;

(e) culture medium inlet means positioned and arranged so as to introduce, into said housing, culture medium for separate and parallel introduction into said first receptacle area, said second receptacle area, and said culture fluid flow spaces; and

(f) liquid withdrawing means associated at least in part with said conduit means and positioned and arranged so as to withdraw from said housing spent culture fluid from said first and second spent culture fluid collection spaces.

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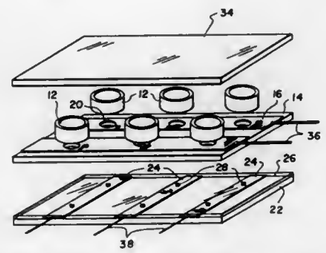
CELL SUBSTRATE ELECTRICAL IMPEDANCE SENSOR WITH MULTIPLE ELECTRODE ARRAY

Ivar Giaever, Schenectady, and Charles R. Keese, Schoharie, both of N.Y., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed Aug. 8, 1991, Ser. No. 742,439

Int. Cl.[5] G01N *27/02;* C12M *1/34, 1/20*

U.S. Cl. 435—291 12 Claims



1. An apparatus for monitoring cell-substrate impedance, comprising:

means defining a plurality of separate tissue culture chambers in a matrix, each tissue culture chamber having a solid growth surface on which a tissue culture containing a multiplicity of cells may grow, the cells having ventral surfaces at least partly in contact with the growth surface;

a measuring electrode directly on each growth surface, each measuring electrode having an area of less than 10^{-2} cm^2 so that the ventral surfaces of from 1 to about 50 cells are at least partly in contact with the measuring electrode;

means for measuring impedance of the cells in at least partial contact with the measuring electrode, connected to the measuring electrode of each tissue culture chamber, said means for measuring impedance including a reference electrode in each tissue culture chamber which has an area that is greater than the area of the measuring electrode, an upper substrate (**14**) having a first electrode layer (**16**) thereon, the upper substrate having a plurality of first holes (**20**) therethrough which extend through the first electrode layer, each first hole being in one of the tissue culture chambers;

a plurality of well walls (**12**) engaged on the upper substrate around respective first holes and around at least a portion of the first electrode layer to define the reference electrodes (**18**) around at least a portion of each first hole, the plurality of well walls comprising the means defining the plurality of separate tissue culture chambers;

a lower substrate (**22**) engaged under the upper substrate, the lower substrate having a second electrode layer (**24**) thereon extending between the upper and lower substrates and under at least a portion of each first hole;

an insulation layer (**26**) between the upper substrate and the second electrode layer extending at least under each first hole, the insulation layer having a plurality of second holes (**28**) therethrough and in each respective first hole for exposing areas of the second electrode layer to define the measuring electrodes (**30**) in the first hole;

the means for measuring impedance including electric power means (**46**) connected between the measuring and reference electrodes for applying electric power between the electrodes, and electric impedance monitoring means (**48**) connected between said measuring and reference electrodes for monitoring electric impedance between the electrodes.

5,187,097

COMPOSTING SYSTEM AND COMPOSTING METHOD

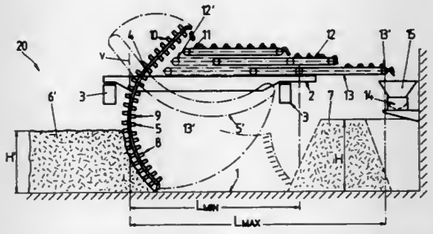
Heinrich Weber; Falko Lehrmann, both of Oberuzwil; Hermann Hofer, Niederuzwil, all of Switzerland; Werner Vogel, Lauterach, and Peter Mueller, Rankweil, both of Australia, assignors to Buehler AG, Uzwil, Switzerland

Filed Mar. 23, 1990, Ser. No. 498,270

Claims priority, application Switzerland, Mar. 28, 1989, 1119/89; Mar. 1, 1990, 630/90

Int. Cl.[5] C12M *1/04;* B65G *65/02, 15/26*

U.S. Cl. 435—313 20 Claims



1. A composting system for the production of compost of different degrees of ripeness by repeated rearrangement of layers of a tabular stack, comprising:

a controlled layer rearranging unit, which is movable in longitudinal and transverse directions over a tabular stack and which defines a take-up location for picking up rot, layer by layer, from the tabular stack and a depositing location, positioned a distance from the take-up location, for depositing each layer, said rearranging unit comprising:

a) take-up means for working the rot at the take-up location which operates in an upward direction, said controlled layer rearranging unit including means for lifting and lowering said take-up means and means for also moving the take-up means in a crane-like manner;

b) a conveyor system, said conveyor system providing a means for transporting the rot picked-up by the take-up means, at the take-up location, to the deposit location, the conveyor system being moveable in a crane-like manner over the rot and adjustable in effective length so as to enable the distance between take-up and depositing locations to be changed, said conveyor system comprising at least two conveyors extending substantially in a horizontal direction between and take-up depositing locations and being longitudinally displaceable relative to one another; and,

c) control means for selectably adjusting the effective length of said conveyor system.

5,187,098

DNA ENCODING HYBRID STREPTOKINASES WITH PLASMINOGEN FIBRIN BINDING DOMAINS

Horst Malke, Jena-Lobeda, German Democratic Rep., and Joseph J. Ferretti, Oklahoma City, Okla., assignors to Board of Regents of the University of Oklahoma, Norman, Okla.

Continuation of Ser. No. 348,206, May 9, 1989, abandoned, which is a continuation-in-part of Ser. No. 212,254, Jun. 27, 1988, Pat. No. 5,066,589, which is a continuation of Ser. No. 585,417, Mar. 2, 1984, Pat. No. 4,764,469. This application May 22, 1992, Ser. No. 888,420

Int. Cl.[5] C12N *15/00, 9/68, 9/70, 15/58*

U.S. Cl. 435—320.1 6 Claims

1. A recombinant DNA molecule comprising sequence comprising the following elements in the 5′ to 3′ direction, said elements which are operably linked:

a translation initiation codon;

four polylinker condons;

a DNA sequence encoding the first part of a fusion protein, said DNa sequence encoding human plasminogen fibrin binding regions selected from the group consisting of (a) kringle 1, (b) kringle 4, (c) kringle 5, (d) kringle 4 and kringle 5, and (e) kringle 1 and kringle 2 and kringle 3 and kringle 4;

six polylinker condons; and

a DNA sequence encoding the second part of a fusion protein, said DNA sequence encoding streptokinase derived from *Streptococcus equisimilis.*

5,187,099

CONTROL SLIDE FOR IMMUNOASSAY KIT USING A LOW-TEMPERATURE MELTING PARAFFIN

Healy, Jr. Stephen F., Miami; Michael L. Rice, North Miami Beach, and Martin L. Golick, Miami, all of Fla., assignors to Coulter Corporation, Hialeah, Fla.

Continuation of Ser. No. 561,481, Apr. 27, 1990, abandoned, which is a continuation of Ser. No. 260,301, Oct. 30, 1988, abandoned, which is a continuation of Ser. No. 925,617, Oct. 29, 1986, Pat. No. 4,816,410. This application May 15, 1991, Ser. No. 702,102

The portion of the term of this patent subsequent to Mar. 28, 2006, has been disclaimed.

Int. Cl.[5] G01N *31/00*

U.S. Cl. 436—10 2 Claims



1. A control cell medium for use in an immunoassay in which a fixed cell line functions as the control, comprising:

a. a collection of intact, chemically fixed cells of the cell line selected to function as the control for the immunoassay;

b. said cells being in a pellet formation and embedded in a low temperature melting point paraffin having a melting point within the approximate range of between 52°–55° C., which is capable of being separated selectively into sections for use as the control;

c. the cells in said formation further being stained, dehydrated, and authentic in their morphology;

said control medium being characterized as substantially permanently stable and non-degrading with respect to its antigenicity at ordinary room temperature.

VOL 1147 ISS 3 FEB 16 1993 UMI

5,187,100

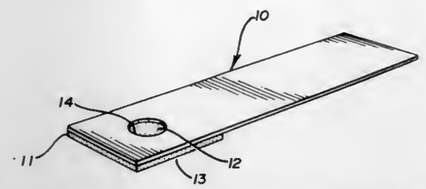
DISPERSION TO LIMIT PENETRATION OF AQUEOUS SOLUTIONS INTO A MEMBRANE

David P. Matzinger, Menlo Park; Maria Teodorczyk, Palo Alto, and Darwin R. Poalos, Los Altos, all of Calif., assignors to Lifescan, Inc., Mountain View, Calif.

Continuation of Ser. No. 530,044, May 29, 1990, abandoned. This application Nov. 19, 1991, Ser. No. 795,285

Int. Cl.[5] G01N *31/00*

U.S. Cl. 436—16 **11 Claims**



1. A control solution which mimics whole blood, for use with a porous reagent strip comprising: a suspension of about 40% to about 55% solid polyvinyl acetate particles dispersed in water, and a dispersant to maintain said particles in suspension and glucose.

5,187,101

ELECTROLYTIC SOLUTION FOR KARL FISCHER'S COULOMETRIC TITRATION AND METHOD FOR MEASURING WATER CONTENT USING SAME

Hiromasa Kato, Tokyo; Yuka Fujimoto, Kanagawa; Akiyoshi Nozawa, Kanagawa, and Shinichi Kuwata, Kanagawa, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed May 23, 1991, Ser. No. 704,510

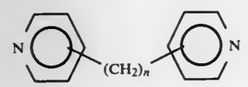
Claims priority, application Japan, Nov. 6, 1990, 2-300859

Iot. Cl.[5] G01N *33/18*

U.S. Cl. 436—42 **29 Claims**

1. An electrolytic solution for Karl Fischer's coulometric titration comprising an iodide ion, sulfur dioxide, a basic compound, and a solvent, said basic compound being a mixture comprising an amino alcohol and a compound represented by formula (I):

(I)



wherein n represents an integer of from 1 to 3, said amino alcohol being present at a molar ratio of not more than 1 to sulfur dioxide, and said basic compound being present at a total molar ratio of from 1 to 5 to sulfur dioxide, wherein said amino alcohol is mono-, di- or tri-lower alkanolamine.

5,187,102

INHIBITORS FOR THE ANTICOAGULANT PRETREATMENT OF BLOOD SAMPLES

Kurt F. Stocker, Aesch, Switzerland, and Ernst Wenzel, Wien, Austria, assignors to Pentapharm AG, Basel, Switzerland

Filed Feb. 13, 1991, Ser. No. 654,706

Claims priority, application Switzerland, Feb. 14, 1990, 00478/90

Int. Cl.[5] G01N *33/86;* **A61K** *31/445*

U.S. Cl. 436—69 **20 Claims**

1. A method for determining meizothrombin- and thrombin-independent functions and properties of blood cells which comprises treating a blood sample with a meizothrombin and thrombin inhibitor which does not bind bivalent cations, and measuring the meizothrombin- and thrombin-independent functions and properties of blood cells in the blood sample.

5,187,103

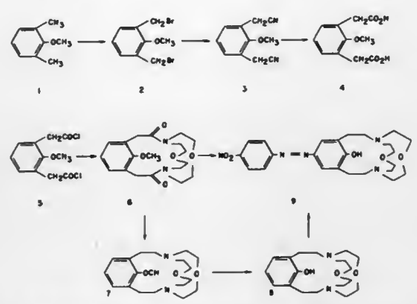
COLORIMETRIC METHOD AND REAGENT FOR THE ASSAY OF LITHIUM IN A TEST SAMPLE

Bronislaw P. Czech, Peekskill; Eddy Chapoteau, Brooklyn, and Anand Kumar, Monroe, all of N.Y., assignors to Miles Inc., Tarrytown, N.Y.

Filed Jan. 31, 1991, Ser. No. 648,073

Int. Cl.[5] G01N *33/20, 21/78*

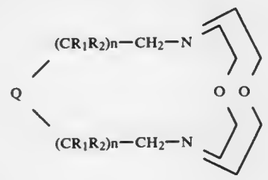
U.S. Cl. 436—79 **10 Claims**



6. A method for selectively determining the presence of lithium ions in a test sample comprising the steps of:

(a) contacting said test sample with a reagent composition including a compound which complexes selectivity to the test cation and being the formula:

(I)

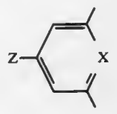


where:

n=1 or 2,

1 R_1 and R_2, same or different, are hydrogen, lower alkyl, lower alkenyl, or lower alkylidene; and

Q is a chromogenic moiety which provides a detectable response upon complexation of said compound with lithium ion and has the structure:



wherein:

X is CH, C-OH or N; and

Z is p-nitrophenylazo, 2,4-dinitrophenylazo, 2,4,6-trinitrophenylazo, p-nitrostyryl, p-benzoquinonemonoimino, bis-(4-dimethylaminophenyl) hydroxymethyl, 3-phenylisothiazolyl-5-azo, thiazolyl-5-azo, or isothiazolyl-5-azo;

(b) measuring the detectable response; and

(c) comparing the response so detected with responses measured when said compound is reacted with a series of standard compositions containing known amounts of lithium ions.

5,187,104

NITRO OR NITROSO SUBSTITUTED POLYHALOGENATED PHENOLSULFONEPHTHALEINS AS PROTEIN INDICATORS IN BIOLOGICAL SAMPLES

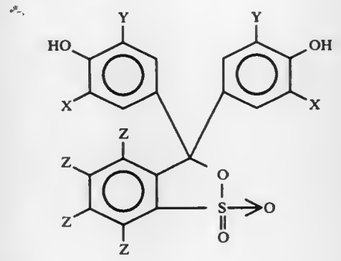
Paul F. Corey; Angela A. Michaels, both of Elkart; Lois J. Proud, Granger, all of Ind.; Michael Salvati, St. Paul, Minn.; Robert W. Trimmer, Germantown, Md., and Ronald G. Sommer, Elkart, Ind., assignors to Miles Inc., Elkart, Ind.

Filed Jun. 6, 1991, Ser. No. 710,952

Int. Cl.[5] C01N *33/00*

U.S. Cl. 436—86 **11 Claims**

1. The compound:



wherein

X is —Cl or —I where Y is —NO_2 and X is —Cl, —Br or —I where Y is —NO;

Y is —NO_2 or —NO; and

Z is —Cl, —Br, or —I.

5,187,105

PROCESS FOR DETERMINING THIOLS USING CHROMOGENIC BENZOISOTHIAZOLONE DERIVATIVES

James P. Albarella; David L. Garling, and Robert P. Hatch, all of Elkhart, Ind., assignors to Miles Inc., Elkhart, Ind.

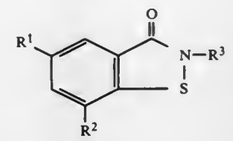
Division of Ser. No. 546,703, Jul. 2, 1990, Pat. No. 5,130,433, which is a continuation of Ser. No. 214,426, Jul. 1, 1988. This application Feb. 25, 1991, Ser. No. 659,897

Int. Cl.[5] G01N *21/78*

U.S. Cl. 436—119 **1 Claim**

1. A process for measuring the presence or appearance of thiols in an aqueous system, the process comprising:

contacting said aqueous system with a chromogenic thiol-indicating benzoisothiazolone derivative having the structure:



wherein at least one of R^1 and R^2 is nitro, arylazo, 4-hydroxyphenylazo; 4-nitro-2-methylphenylazo; 2-hydroxy-1-naphthylazo; 2-hydroxy-5-methylphenylazo; 2-hydroxy-4-methyl-5-nitrophenylazo; 4-hydroxy-1-naphthylazo; 4-hydroxy-3-methyl-1-naphthylazo; 4-hydroxy-5-aza-1-naphthylazo; 2-amino-1-naphthyl-azo; 1-hydroxy-2-naphthylazo; 3-N,N-dimethylaminopropylcarboxyamido-1-hydroxy-4-naphthylazo; 1-hydroxy-4-methoxy-2-naphthylazo; 2-hydroxy-3-carboxy-1-naphthylazo; 1-hydroxy-3,6-disulfonate-2-naphthylazo; 2,3-dihydroxy-1-naphthylazo; 2-hydroxy-3,5-dimethyl-1-phenylazo; benzylideneamino or 2,4-dinitro-benzylideneamino and one of R^1 and R^2 is hydrogen;

R^3 is alkyl; carboxyalkyl; hydroxyalkyl; aminoalkyl; haloalkyl; aryl; carboxyaryl; hydroxyaryl; aminoaryl; a heterocyclic radical selected from the group consisting of pyridyl, oxazolyl, quinolyl and thiazolyl which is unsubstituted or substituted by carboxy, hydroxy, or amino; hydroxy; alkoxy; or amino; and

observing chromophoric changes due to thiol-mediated reduction of the benzoisothiazolone derivative, said changes being proportional to the amount or rate of appearance of thiols in the aqueous system.

5,187,106

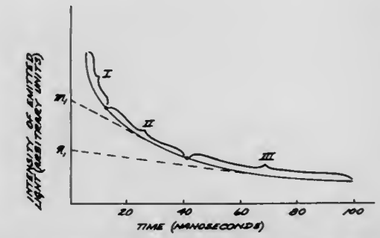
METHOD AND APPARATUS FOR HOMOGENEOUS FLUORESCENCE MEASUREMENTS

Robert W. Fritzsche, Bernardsville, N.J., and Kenneth J. Schlager, Elm Grove, Wis., assignors to Orbit Medical Systems, Inc., Capistrano Beach, Calif.

Filed Aug. 30, 1984, Ser. No. 645,567

Int. Cl.[5] G01N *33/536, 33/542*

U.S. Cl. 436—501 **15 Claims**



1. A homogeneous, fluorescent specific binding method for detecting the presence and concentration of at least two target ligands in a sample containing interfering fluorescing species which comprises:

a. treating a sample containing at least two target ligands with at least two specific binding molecules, each reactive with a different one of said target ligands and provided with a different fluorescent label, to form thereby in said sample, at least two ligand fluorescently labelled specifically binding molecule complexes, wherein the fluorescent decay time of one of the complexes is demonstrably shorter than that of the other,

b. exciting the sample with a source of exciting light to induce fluorescence in each of the complexes and interfering fluorescing species in said sample,

c. measuring the decay of the fluorescence so induced and determining its relationship to time,

d. determining from said relationship, values for a decay time-fluorescence intensity curve for said sample,

e. locating from among said values regions of values which correspond to the fluorescent contributions of each of the complexes,

f. determining for each of said regions, a first fluorescence intensity value at time zero, and

g. comparing the first intensity value at time zero for each of said complexes with a second fluorescent intensity value at time zero obtained on a known concentration of each of said complexes to thereby obtain the concentration of each of the target ligands.

VOL 1147 ISS 3 FE 16 1993 UMI

5,187,107

B_{12} ENZYME IMUNOASSAY AND SAMPLE PRETREATMENT

Michael I. Watkins, Hercules; Clifford R. Bartlett, Fairfield; Edward T. Liang, Hercules; John M. Pocekay, Napa, and Mark A. Staples, Richmond, all of Calif., assignors to Bio-Rad Laboratories, Inc., Hercules, Calif.

Filed Jun. 27, 1991, Ser. No. 722,034

Int. Cl.[5] G01N *33/567, 1/00*

U.S. Cl. 436—505 **14 Claims**

1. A process for preparing a test sample for an enzyme immunoassay in which the presence therein of vitamin B_{12} will be detected, wherein at least a portion of said vitamin B_{12} if present in said test sample is bound to endogenous binding proteins capable of interfering with said enzyme immunoassay, said processing comprising:

(a) combining said test sample with an inorganic base and a thiol to form a first mixture;

(b) incubating said first mixture to cause said inorganic base and said thiol to denature substantially any of said endogenous binding proteins present in said test sample and to thereby release substantially any of said vitamin B_{12} present in said test sample from said engogenous binding proteins, thereby forming a second mixture; and

(c) combining said second mixture with

(i) a buffering agent in acid form, and

(ii) a sulfhydryl group converting agent selected from the group consisting of (1) oxidizing agents having an electrochemical potential of a level selected to oxidize any sulfhydryl compounds present in said first mixture to disulfides yet to substantially avoid denaturation of further proteins not already denatured, and (2) alkylating agents, to lower the pH of said second mixture to a value within the range of approximately 6.5 to approximately 8.0 and to convert any thiol groups remaining therein to disulfide or alkylthio groups.

5,187,108

METHOD OF MANUFACTURING A BIPOLAR TRANSISTOR

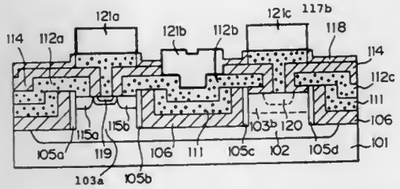
Masahiko Shinozawa, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Minato, Japan

Filed Jan. 14, 1991, Ser. No. 641,737

Claims priority, application Japan, Jan. 16, 1990, 2-4450

Int. Cl.[5] H01L *21/265, 21/20*

U.S. Cl. 437—31 **21 Claims**



1. A method of manufacturing a bipolar transistor, comprising the steps of:

a. providing a semiconductor substrate having on a side thereof a semiconductor zone and first and second mesa regions formed on the semiconductor zone so as to define an isolation trench separating and surrounding the mesa regions, the semiconductor zone and the mesa regions being formed of a semiconductor material of a first conductivity type;

b. forming a first insulation film on inner walls of the isolation trench;

c. forming a second insulation film on upper surfaces of the mesa regions, the second insulation film having an inner region and an outer region, the outer region adjacent the first insulating layer;

d. forming a first polycrystalline silicon layer on the first insulation film;

e. selectively growing polycrystalline silicon from the first polycrystalline silicon layer onto the outer region of the second insulation film to form a second polycrystalline silicon layer while leaving the inner region of the second insulation film exposed;

f. removing the second insulation film formed on the first mesa region to expose the upper surface of the first mesa region so as to leave a gap between the upper surface of the first mesa region and the second polycrystalline silicon layer;

g. depositing polycrystalline silicon in the gap between the upper surface of the first mesa region and the second polycrystalline silicon layer so as to connect the second polycrystalline silicon layer to the upper surface of the first mesa region;

h. forming a third insulating film covering upper and side surfaces of the second polycrystalline silicon layer;

i. forming a base and an emitter in the first mesa region, the emitter being formed at a portion of the upper surface of the first mesa region remaining exposed after said step g; and

j. providing a base electrode, an emitter electrode and a collector electrode electrically connected to the base, the emitter and the upper surface of the second mesa region, respectively.

5,187,109

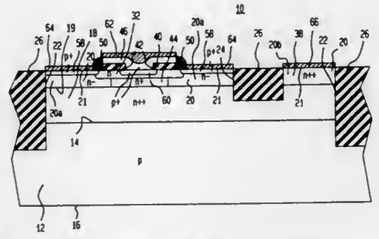
LATERAL BIPOLAR TRANSISTOR AND METHOD OF MAKING THE SAME

Robert K. Cook, and Mario M. A. Pelella, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 19, 1991, Ser. No. 733,090

Int. Cl.[5] H01L *21/328*

U.S. Cl. 437—32 **18 Claims**



18. A method of making a lateral p-n-p transistor comprising the steps of:

depositing on a surface of a semiconductor body of p-type conductivity a first layer of semiconductor material of n++ type conductivity;

depositing on the first layer a second layer of a semiconductor material of n− type conductivity;

forming first and second spaced apart trenches through the first and second layers and into the semiconductor body;

forming a third trench through the second layer into the first layer, the third trench being located between the first and second trenches and dividing the second layer into a first portion and a second portion which is smaller than the first portion;

doping the second portion of the second layer with an n−type conductivity impurity to form an n++ type conductivity region extending through the second portion of the second layer to the first layer;

doping a portion of the first portion of the second layer with an n−type conductivity impurity to form an n−type conductivity region in the first portion of the first layer;

forming an aperture in the insulating material over a portion of the n−type conductivity region to expose a portion of the n−type conductivity region;

implanting ions of n−type conductivity impurity into the first layer through the aperture in the insulating layer to form an n+ type conductivity region in the first layer between the n−type region and the first layer;

forming a masking layer over the portion of the polycrystalline silicon layer which is within the aperture in the insulating layer and a portion of the polycrystalline silicon layer which extends a short distance beyond the aperture in the insulating layer;

depositing a layer of polycrystalline silicon on the exposed portion of the n−type region in the aperture in the insulating layer and over the insulating layer;

removing the polycrystalline silicon layer not covered by the mask layer to expose the insulating layer under the removed portion;

removing the exposed portion of the insulating layer to expose a portion of the second layer under the removed layer;

implanting ions of a p−type conductivity impurity into the polycrystalline silicon layer and into the exposed portion of the second layer to form a p-type conductivity region in the second layer around the n−type region;

annealing to drive the p-type impurities from the polycrystalline silicon layer into the n−type so as to form a p-type region in a portion thereof under the aperture in the insulating layer; and

forming a layer of electrically conductive material containing a metal and patterning same so as to form separate first-level electrical contacts on the p-type region in the second layer, on the polycrystalline silicon layer, and on the n++ type region.

5,187,110

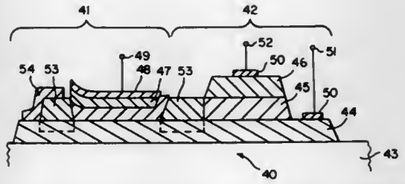
FIELD EFFECT TRANSISTOR-BIPOLAR TRANSISTOR DARLINGTON PAIR

Olaleye A. Aina, Columbia, Md., and Eric A. Martin, Nahant, Mass., assignors to Allied-Signal Inc., Morris Township, Morris County, N.J.

Division of Ser. No. 593,459, Oct. 5, 1990, Pat. No. 5,086,282. This application Nov. 13, 1991, Ser. No. 792,104

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—34 **3 Claims**



1. A method of fabricating a high frequency amplifying device comprising the steps of:

forming a semi-insulating InP substrate having an n-type InP active region formed thereon from any suitable group III-V compound semi-conductor;

combining a p-channel MISFET and a n-p-n HBT on said semi-insulating substrate;

electrically isolating said p-channel MISFET and said n-p-n HBT by implanting isolation regions in said active region;

forming a p+ type InGaAs layer above said active region;

forming an n-type InP layer and an SiO_2 layer above said p+ type InGaAs layer;

forming a TiAu layer above said SiO_2 layer and providing a terminal for V_{in};

forming an AuGeNi layer above said active region, and providing a terminal for ground; and

forming an AuGeNi layer above said n-type InP layer and providing a terminal for V_{cc}.

5,187,111

METHOD OF MANUFACTURING SCHOTTKY BARRIER GATE FET

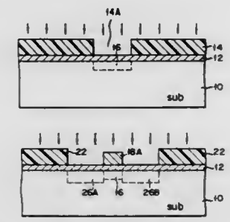
Takeshi Nogami, Tokyo, and Hiroshi Iwasaki, Chigasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 393,820, Aug. 15, 1989, abandoned, which is a continuation of Ser. No. 267,734, Nov. 3, 1988, abandoned, which is a continuation of Ser. No. 911,905, Sep. 26, 1986, abandoned. This application Apr. 23, 1991, Ser. No. 688,711

Claims priority, application Japan, Sep. 27, 1985, 60-212201; Aug. 25, 1986, 61-197358

Int. Cl.[5] H01L *21/338, 21/28*

U.S. Cl. 437—41 **5 Claims**



1. A method of manufacturing a Schottky barrier gate type FET comprising:

a first step of forming a first film, made of a refractory metal or refractory metal compound, on a semiconductor substrate;

a second step of forming a first ion-implanted region in said semiconductor substrate by an ion-implantation process during which impurity ions pass through said first film;

a third step, independent of said second step, of forming second and third ion-implanted regions in said semiconductor substrate by an ion-implantation process during which impurity ions pass through said first film, said second and third ion-implanted regions being adjacent to said first ion-implanted region;

a fourth step of forming a channel region, source region, and drain region, by annealing to activate said first, second, and third ion-implanted region using said first film as a protective film, and bringing said first film in Schottky contact with said channel region; and

a fifth step of forming a Schottky gate electrode, in Schottky contact with said channel region, by patterning said first after said channel, source, and drain regions have been formed, with said first film being selectively maintained to prevent exposure of the channel region underlying the Schottky gate electrode.

5,187,112

METHOD FOR PRODUCING A SEMICONDUCTOR DEVICE

Yasutaka Kohno, and Tomoki Oku, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 5, 1990, Ser. No. 504,837

Claims priority, application Japan, Apr. 12, 1989, 1-93579

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—41 **6 Claims**

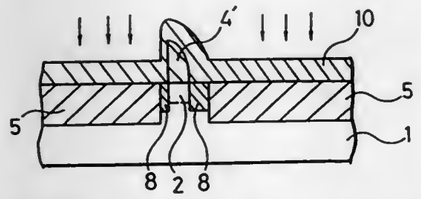
1. A method for producing a semiconductor device comprising:

forming an active region in and at a surface of a semiconductor substrate;

depositing a first insulating film on said active region;

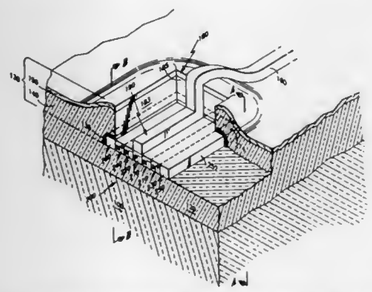
VOL
1147
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removing a portion of said first insulating film at the active region, leaving a side wall of said first insulating film transverse to the surface of said substrate;
depositing a refractory metal material layer on the first insulating film and surface of said semiconductor substrate;
removing said refractory metal material except for a residual portion at the side wall of said first insulating film to produce a gate electrode;
removing said first insulating film;
producing intermediate concentration regions in said semiconductor substrate by ion implantation using said gate electrode as a mask;



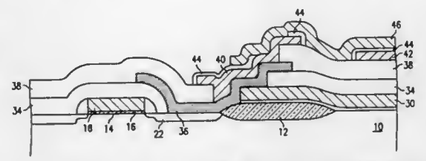
depositing a second insulating film on the gate electrode and the surface of said substrate having first and second side walls adjacent the gate electrode, the first side wall being wider than the second side wall;
producing relatively high dopant concentration regions in said semiconductor substrate by ion implantation using said gate electrode and second insulating film as a mask; and
producing a drain electrode on the relatively high dopant concentration region at the first side of the gate electrode and producing a source electrode on the relatively high dopant concentration region at the second side of the gate electrode.

5,187,113
FIELD OXIDE TERMINATION AND GATE OXIDE FORMATION
Scott M. Tyson, and Gary M. Wodek, both of Colorado Springs, Colo., assignors to United Technologies Corporation, Hartford, Conn.
Filed May 17, 1991, Ser. No. 701,739
Int. Cl.[5] H01L *21/265*
U.S. Cl. 437—42 **15 Claims**



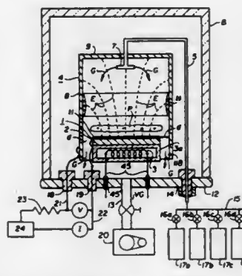
1. A method of forming a field effect transistor in a silicon layer on a silicon substrate doped with a predetermined concentration of dopant comprising the steps of:
forming a field insulator structure, having at least one aperture, above said silicon layer;
growing a first gate oxide layer of thermal oxide in said aperture to a first oxide thickness at a predetermined oxide growth temperature;
growing a second gate oxide layer of pyrogenic oxide in said aperture to a predetermined pyrogenic oxide thickness below said first gate oxide layer;
growing a third gate oxide layer of thermal oxide below said second gate oxide layer to a predetermined third oxide layer thickness;
annealing said first and second gate oxide layers in an inert ambient at a predetermined annealing temperature for a predetermined annealing period;
depositing a transistor gate electrode above said first and second gate oxide layers; and
implanting source and drain regions in said silicon layer in proximity to said transistor gate electrode.

5,187,114
METHOD OF MAKING SRAM CELL AND STRUCTURE WITH POLYCRYSTALLINE P-CHANNEL LOAD DEVICES
Tsin C. Chan, Carrollton, and Frank R. Bryant, Denton, both of Tex., assignors to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Filed Jun. 3, 1991, Ser. No. 709,630
Int. Cl.[5] H01L *21/70*
U.S. Cl. 437—52 **16 Claims**



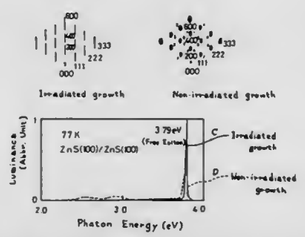
1. A method of producing a SRAM structure with polycrystalline P-channel load devices of an integrated circuit comprising:
forming a field oxide region over a portion of a substrate;
forming a first gate electrode of a first N-channel field effect device over the substrate having a source/drain region in the substrate and forming a second gate electrode of a second N-channel field effect device over a portion of the field oxide region and the substrate;
forming a first insulating layer over the first and second N-channel field effect devices and a portion of the substrate;
patterning and etching the first insulating layer to expose a portion of the source/drain region of the first N-channel field effect device and a portion of the second gate electrode of the second N-channel field effect device;
forming a metal containing layer over the a portion of the first insulating layer, the second gate electrode and the source/drain region of the first N-channel device;
patterning and etching the metal containing layer to define a shared contact region covering the exposed source/drain region of the first N-channel field effect device and the second gate electrode of the second N-channel field effect device;
forming a second insulating layer over the first insulating layer and the metal containing layer;
patterning and etching the second insulating layer to expose a portion of the metal containing layer;
forming a first conductive layer over the second insulating layer and the metal containing layer;
patterning and etching the first conductive layer to define a first gate electrode of a first P-channel field effect device and a second gate electrode of a second P-channel device;
forming a gate oxide layer over a portion of the first gate electrode of the first P-channel field effect device and a portion of the second gate electrode of the second P-channel field effect device exposing a portion of the second gate electrode;
forming a second conductive layer over the a portion of the first and second P-channel devices; and,
patterning and etching the second conductive layer to define a source/drain and channel region of the first gate electrode of the first P-channel field effect device and disposed over the exposed portion of the first conductive layer.

5,187,115
METHOD OF FORMING SEMICONDUCTING MATERIALS AND BARRIERS USING A DUAL ENCLOSURE APPARATUS
John H. Coleman, Locust Valley, N.Y., assignor to Plasma Physics Corp., Locust Valley, N.Y.
Division of Ser. No. 394,281, Aug. 16, 1989, Pat. No. 5,049,523, which is a continuation of Ser. No. 180,720, Apr. 4, 1988, abandoned, which is a continuation of Ser. No. 935,606, Dec. 1, 1986, abandoned, which is a continuation of Ser. No. 716,409, Mar. 27, 1985, abandoned, which is a division of Ser. No. 355,202, Mar. 5, 1982, abandoned, which is a division of Ser. No. 88,100, Oct. 24, 1979, Pat. No. 4,328,258, which is a division of Ser. No. 857,690, Dec. 5, 1977, Pat. No. 4,226,897. This application Mar. 11, 1991, Ser. No. 639,197
Int. Cl.[5] H01L *21/00, 21/02, 21/20*
U.S. Cl. 437—101 **9 Claims**



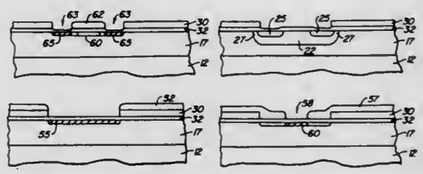
1. The method of producing a semiconductor junction comprising amorphous silicon on the surface of a substrate in an evacuated enclosure comprising a first enclosure and a second enclosure, a first means for introducing a first gaseous material comprising a dopant into said first enclosure, a second means for introducing a second gaseous material comprising silicon and hydrogen into said second enclosure, a means for restricting the flow of said dopant from said first enclosure into said second enclosure, and a means for transporting said substrate from said first enclosure through said flow-restricting means to said second enclosure, a first electrode means for applying a first electric field to said substrate in said first enclosure and a second electrode means for applying a second electric field to said substrate in said second enclosure, which includes the steps of:
introducing said first and second gaseous materials at subatmospheric pressures in said first and second enclosures,
applying said first electric field by said first electrode means to said substrate in said first enclosures to deposit a doped film, transporting by said transport means said substrate through said flow restricting means into said second enclosure,
applying said second electric field by said second electrode means to said substrate in said second enclosure while
controlling the pressure of said first gaseous material comprising a dopant in said first enclosure and said second gaseous material comprising silicon and hydrogen in said second gaseous enclosure and restricting the flow by said flow-restricting means of said first and second gaseous materials between said first and second enclosures to deposit a film comprising amorphous silicon in said second enclosure substantially free of said dopant from said gaseous material comprising a dopant in said first enclosure.

5,187,116
PROCESS FOR PREPARING ELECTROLUMINESCENT DEVICE OF COMPOUND SEMICONDUCTOR
Masahiko Kitagawa; Yosbitaka Tomomura, and Kenji Nakanishi, all of Nara, Japan, assignors to Sharp Kabusbiki Kaisha, Osaka, Japan
Filed Jul. 3, 1990, Ser. No. 547,077
Claims priority, application Japan, Jul. 5, 1989, 1-174417
Int. Cl.[5] H01L *21/363, 21/443*
U.S. Cl. 437—105 **8 Claims**



1. A process for preparing an electroluminescent device of a compound semiconductor comprising a step (A) of epitaxially forming over a semiconductor substrate an electroconductive layer of a compound semiconductor and an electroluminescent layer of compound semiconductor which has a p-n junction, said electroluminescent layer being placed over the electroconductive layer and a step (B) of forming a pair of ohmic electrodes electrically connected to each of said layers,
the electroconductive layer and the electroluminescent layer each being formed by applying, over the semiconductor substrate heated to a predetermined temperature range, molecular or atomic beams for constituting a compound semiconductor and for doping the compound semiconductor with an impurity element, under the irradiation of the semiconductor substrate with a light beam and
the pair of ohmic electrodes each being formed by applying a molecular or atomic beam of a metal over the electroconductive layer or the electroluminescent layer under the irradiation with a light beam.

5,187,117
SINGLE DIFFUSION PROCESS FOR FABRICATING SEMICONDUCTOR DEVICES
Nathan Zommer, Los Altos, Calif., assignor to IXYS Corporation, San Jose, Calif.
Continuation of Ser. No. 664,580, Mar. 4, 1991, abandoned. This application Feb. 11, 1992, Ser. No. 833,603
Int. Cl.[5] H01L *21/22, 21/266*
U.S. Cl. 437—151 **8 Claims**



1. In a process of fabricating an insulated gate transistor having body and source regions, including the steps, performed after the deposition and patterning of a polysilicon layer, of (a) implanting and (b) diffusing impurities of one of

VOL 1147 ISS 3 FE 16 1993 UMI

two conductivity types, (c) implanting and (d) diffusing a heavy dose of impurities of the same conductivity type, and (e) implanting and (f) diffusing impurities of the other conductivity type, the improvement wherein:

said implanting steps (a), (c), and (e) are the only implanting steps performed in connection with forming the body and source regions

said implanting steps (a), (c), and (e) are performed with no intervening high-temperature processing steps; and

said diffusing steps (b), (d), and (f) are performed at the same time.

5,187,118

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

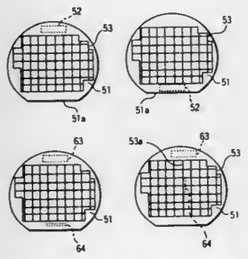
Masashi Ohmori, and Youichi Midou, both of Itami, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 22, 1990, Ser. No. 570,828

Claims priority, application Japan, Oct. 5, 1989, 1-260635; Jun. 8, 1990, 2-148653

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—180 **9 Claims**



1. A method of manufacturing semiconductor devices comprising:

preparing a semiconductor wafer having a circuit area in which a circuit pattern is to be formed and a character printing area in which a lot number pattern is to be formed;

etching a surface of the semiconductor substrate to form the lot number pattern in the character printing area and forming a metallic layer on the whole of the surface of the semiconductor wafer; and

forming a circuit pattern by sequentially depositing, patterning, and etching a plurality of metallic layers and insulating layers on the circuit area, including depositing each of the metallic layers and insulating layers on the character printing area wherein, while etching each metallic layer to remove undesired portions of that metallic layer from the circuit area, selectively and simultaneously removing that metallic layer from the character printing area whereby formation of material in the character printing area interfering with reading of the lot number pattern is avoided.

5,187,119

MULTICHIP MODULE AND INTEGRATED CIRCUIT SUBSTRATES HAVING PLANARIZED PATTERNED SURFACES

Jay M. Cech, Bellevue, and Andrew F. Burnett, Redmond, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Feb. 11, 1991, Ser. No. 654,880

Int. Cl.[5] H01L *21/44*

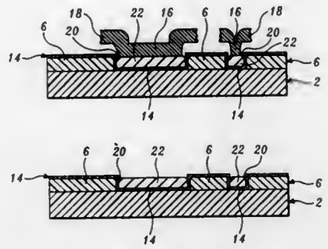
U.S. Cl. 437—187 **17 Claims**

1. A method of filling dielectric features in a substrate to produce a substantially planar patterned surface on said substrate, comprising the steps of:

providing a substrate having a surface containing a pattern of features defined by a dielectric material;

depositing a conductor layer on the surface of said substrate such that first portions of said conductor layer cover said dielectric material, second portions of said conductor layer fill said features, and said first and second portions are connected by thin sidewall portions of said conductor layer;

coating said conductor layer with a resist and patterning said resist with a resist pattern similar to said pattern of features so that the resulting resist pattern extends over the



second portions, sidewall portions, and a part of the first portions adjacent the sidewall portions;

etching away said conductor layer except for said second portions filling said features, under conditions such that lateral etching of said sidewall portions of said conductor layer is inhibited by the resist pattern that extends over a part of the first portions adjacent the sidewall portions; and

stripping said resist to produce a substantially planar patterned surface formed of the dielectric material and conductor layer second portions.

5,187,120

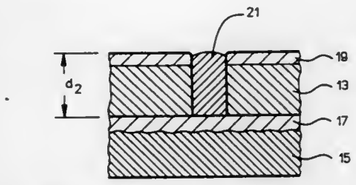
SELECTIVE DEPOSITION OF METAL ON METAL NITRIDE TO FORM INTERCONNECT

Shein-Sen M. Wang, Cupertino, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 24, 1992, Ser. No. 934,376

Int. Cl.[5] H01L *21/443*

U.S. Cl. 437—192 **18 Claims**



1. A method of forming an electrical interconnect for a multi-layer semiconductor circuit, the method comprising the steps of

providing a layer of a selected $TiSi_x$ ($1<x<2$) of predetermined electrical conductivity;

forming a thin first layer of TiN within the $TiSi_x$ layer;

forming an oxide layer of predetermined thickness on the TiN and $TiSi_x$ layer and having an exposed surface;

forming a second layer of TiN on the exposed surface of the oxide layer to form a second phase of TiN, denoted TiN-(II);

providing an aperture of predetermined diameter in the oxide layer and the TiN(II) layer to expose a surface of the TiN layer within the aperture;

annealing the structure at a temperature T in the range 900°-1,000° C. for a time interval Δt=20-40 sec to form an exposed TiN layer of a first phase, denoted TiN(I), and an adjacent $TiSi_2$ layer at the exposed surface within the aperture;

depositing W on the exposed surfaces of the structure, and allowing the W to grow upon the TiN(I) layer within the aperture but not on the TiN(II) layer on the oxide layer.

5,187,121

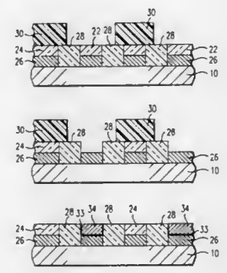
PROCESS FOR FABRICATION OF A SEMICONDUCTOR STRUCTURE AND CONTACT STUD

Donna R. Cote, Poughquag; David Stanasolovich, Wappingers Falls, both of N.Y., and Ronald A. Warren, Essex Junction, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1991, Ser. No. 810,004

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—195 **31 Claims**



1. A process for fabricating a semiconductor structure and stud therefor on a semiconductor substrate, comprising:

depositing a first material onto said substrate;

depositing a second material onto said first material;

removing excess portions of said second material so as to form openings through said second material exposing excess portions of said first material, whereby a selected portion of said second material is retained and forms a sacrificial element;

removing the excess portions of said first material selectively to said substrate so as to extend said openings through said first material to said substrate, whereby a selected portion of said first material is retained and forms said semiconductor structure, said semiconductor structure having said sacrificial element situated thereon;

filling said openings with a first insulating material for insulating said semiconductor structure;

removing said sacrificial element selectively to said insulating material and said semiconductor structure for forming a contact window opening for allowing access to said semiconductor structure; and

filling said contact window opening with stud material so as to contact said semiconductor structure for forming said stud.

5,187,122

PROCESS FOR FABRICATING AN INTEGRATED CIRCUIT USING LOCAL SILICIDE INTERCONNECTION LINES

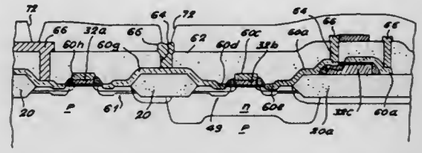
Maurice Bonis, Crolles, France, assignor to France Telecom Establissement autonome de droit public, France

Filed Feb. 26, 1991, Ser. No. 661,522

Int. Cl.[5] H01L *21/283, 21/336*

U.S. Cl. 437—200 **12 Claims**

1. A process for fabricating an integrated circuit having a plurality of electronic elements disposed on a semiconductor substrate, said plurality of elements of said integrated circuit being formed on said substrate such that said elements are grouped into a first region and a second region, said first and second regions being adjacent to each other on said substrate and each having predetermined conductivities, said first region of said integrated circuit having a layer of dielectric material located therein with at least one capacitive element disposed on said layer of dielectric material, said at least one capacitive element including a first electrode layer and a second electrode layer, said second region of said integrated circuit having at least one double junction metal-insulator-semiconductor field effect transistor (MISFET) located therein, said at least one MISFET including a gate region, and two active regions, a



source region and a drain region, one of said two active regions being electrically connected by a first local connection line to said first electrode layer of said capacitive element, said gate region having a gate bond pad disposed thereon, said source region having a source bond pad disposed thereon, and said drain region having a drain bond pad disposed thereon, said process comprising forming a layer of a silicide of a refractory metal and etching said silicide layer to simultaneously form said first connection line, said gate bond pad, said source and drain bond pads, and said second electrode layer of said capacitive element.

5,187,123

METHOD FOR BONDING A SEMICONDUCTOR DEVICE TO A LEAD FRAME DIE PAD USING PLURAL ADHESIVE SPOTS

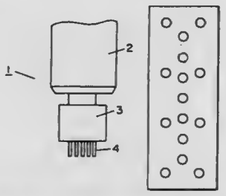
Hiroyoshi Yoshida, Uji, and Yuki Koishi, Yawata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 344,393, Apr. 28, 1989, abandoned. This application Dec. 30, 1991, Ser. No. 815,621

Claims priority, application Japan, Apr. 30, 1988, 63-108392

Int. Cl.[5] H01L *21/58*

U.S. Cl. 437—220 **36 Claims**



1. A die bonding method for semiconductor devices, comprising the steps of:

providing a die pad of a lead frame to which a die is to be bonded;

providing a die having a large aspect ratio; and

adhering said die to said die pad with an adhesive paste such that no voids are created in said adhesive by applying said adhesive paste in a plurality of individual spots on the surface of said die pad in a modified radial pattern and pressing said die against said adhesive paste, said modified radial pattern comprising a first row of adhesive spots arranged substantially along a center line of said die in the longitudinal direction thereof, second and third rows of

VOL 1147 ISS 3 FE 16 1993 UMI

adhesive spots extending from one end of said first row in a direction diagonally away from said first row toward one end of said die, fourth and fifth rows of adhesive spots extending from the opposite end of said first row in a direction diagonally away from said first row toward the opposite end of said die, and a plurality of further rows of adhesive spots orthogonal to and extending from said first row on said surface of said die pad, located along said first row between said second and third rows and said fourth and fifth rows, each said further row being shorter than said first row, and said plurality of further rows of adhesive spots extending from positions along said first row no closer to each other than every other adhesive spot of said first row;

wherein said rows of adhesive spots are applied in said step of adhering by providing a plurality of nozzles in a pattern of nozzle rows corresponding to said rows of said adhesive spots, each nozzle corresponding to a respective said adhesive spot, and applying said adhesive paste to said die pad with said plurality of nozzles.

5,187,124

DISINFECTANT CERAMIC COMPOSITION

Young J. Kweon, Seoul, Rep. of Korea, assignor to Samwoo Far Infra-Red Ray Co., Ltd., Rep. of Korea

Filed Oct. 2, 1991, Ser. No. 770,117

Claims priority, application Rep. of Korea, Oct. 9, 1990, 90-16729

Int. Cl.[5] C09K *3/00;* **C04B** *35/00*

U.S. Cl. 501—1 **7 Claims**

1. A disinfectant composition manufactured by substituting an amount of the alkaline earth metal in powdered vertebrate animal bone with an amount of silver, copper or zinc effective to render the composition antibacterial and non-toxic to a human body.

5,187,125

SINTERED BODY OF CALCIUM CARBONATE AND PROCESS FOR PRODUCING SAME

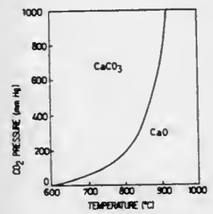
Nobuo Someya; Tadao Kitazato, both of Tokyo; Takao Fujikawa, Kobe, and Yasuo Manabe, Osaka, all of Japan, assignors to Marine Bio Co. Ltd., Tokyo and Kabushiki Kaisha Kobeseikosho, Kobe, both of, Japan

Filed Sep. 27, 1991, Ser. No. 766,263

Claims priority, application Japan, Sep. 28, 1990, 2-261525; May 10, 1991, 3-106052

Int. Cl.[5] C04B *35/00;* **C01F** *11/18*

U.S. Cl. 501—1 **7 Claims**



1. A process for producing a sintered body of calcium carbonate which comprises subjecting a powder material primarily comprising calcium carbonate to a cold powder pressing process to prepare a green compact, and heating the compact in a high-pressure gas atmosphere consisting essentially of an inert gas and an effective amount of carbon dioxide at a temperature t° in centigrade of

$$900 \leqq t < 1200$$

and at a high gas pressure P in kgf/cm^2 of

$$P > \frac{(t-600)^{3.5}}{4.7 \times 10^8}$$

5,187,126

SLAG TREATMENT MATERIAL

Kozo Sonobe; Takashi Fukuzawa; Kohsuke Takeuchi; Tatushi Tabata; Hiroshi Fukuoka; Kunio Hisamatsu, and Makoto Katamura, all of Koriyama, Japan, assignors to Nippon Chemical Industrial Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 226,278, Jul. 29, 1988, abandoned. This application Nov. 20, 1990, Ser. No. 616,643

Int. Cl.[5] C03C *3/089*

U.S. Cl. 501—65 **1 Claim**

1. A slag treatment material comprising a material for improving molten slag in such a manner that the resulting fused slag is made resistant against powdering in a cooling process or against generation of yellowish turbid water which is caused when said slag is contacted with rain water, characterized in that: said slag treatment material is formed by coarsely crushing a substantially dehydrated heat treated material containing boron, having a particulate size distribution ranged from 0.1 mm to a first sized mass and melting point below 1,100° C., wherein 90 wt % or more of the particles fall within a range of from 0.1 to 50 mm, and having a melting or softening point ranging from 700° C. to 1050° C., said substantially dehydrated heat treated material being a vitrified material, sintered material or a mixture thereof and consisting essentially of the following components represented by, as oxide form, B_2O_3: 20 to 50 wt %, Me_2^1O: 3 to 20 wt %, Me^2O: 10 to 35 wt %, SiO_2: 20 to 50 wt % (wherein Me^1 represents an alkali metal and Me^2 represents alkaline earth metal); and the balance (unavoidable contaminants): 0 to 10 wt %;

and that said material when added to a slag and made into a ballast having a range equivalent to MS-25 and eluated in accordance with JIS A5015, provide a spectorphotometric index of less than about 1.0.

5,187,127

FIBER-REINFORCED SILICON NITRIDE CERAMIC

Yasuhiro Goto, Urayasu; Takeyuki Yonezawa, Tokyo; Yoshiyuki Ohnuma, Kawasaki, and Jen Ando, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 590,594, Sep. 27, 1990, abandoned, which is a continuation of Ser. No. 471,061, Jan. 29, 1990, abandoned, which is a continuation of Ser. No. 245,223, Sep. 16, 1988, abandoned. This application Dec. 17, 1991, Ser. No. 807,759

Claims priority, application Japan, Sep. 18, 1987, 62-233938

Int. Cl.[5] C04B *35/58, 35/80*

U.S. Cl. 501—95 **4 Claims**

1. A fiber-reinforced silicon nitride ceramic produced by sintering a composition consisting essentially of:

about 5 to about 50 wt % of a silicon carbide fiber having a length of 200 μm or more;

about 50 wt % or more of silicon nitride;

about 0.1 to about 15 wt % of at least one sintering additive selected from the group consisting of an oxide, a nitride or a carbide of titanium or zirconium, a composite oxide of titanium and zirconium, magnesia, and spinel; and

about 0.1 to about 15 wt % of a at least one second sintering additive comprising at least one selected from the group consisting of a rare earth oxide, alumina, and aluminum nitride;

wherein said silicon nitride ceramic exhibits a fracture strength of at least 100 Kg/mm^2, and a toughness value of at least 17.1 MPa $M^{1/2}$.

5,187,128

PROCESS FOR PREPARING SELF-SUPPORTING BODIES

Danny R. White, Elkton, Md., and Terry D. Claar, Newark, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation-in-part of Ser. No. 449,521, Dec. 12, 1989, Pat. No. 4,978,644. This application Jul. 12, 1990, Ser. No. 551,748

The portion of the term of this patent subsequent to Dec. 18, 2007, has been disclaimed.

Int. Cl.[5] C04B *35/58, 35/65*

U.S. Cl. 501—96 **9 Claims**

1. A method for producing a self-supporting body, comprising:

selecting a parent metal;

heating said parent metal in a substantially inert atmosphere to a temperature above its melting point to form a body of molten parent metal;

contacting said body of molten parent metal with a permeable mass comprising boron nitride;

maintaining said temperature for a time sufficient to permit infiltration of molten parent metal into said permeable mass and to permit reaction of said molten parent metal with said boron nitride to form at least one compound selected from a boron-containing compound and a nitrogen-containing compound; and

continuing said infiltration and reaction until at least one of said parent metal and said permeable mass is consumed to produce said self-supporting body.

5,187,129

PROCESS FOR MAKING SILICON NITRIDE AND POWDERS AND ARTICLES MADE THEREFROM

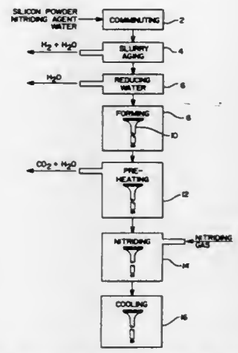
James P. Edler, and Bohdan Lisowsky, both of Troy, Mich., assignors to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 135,864, Dec. 21, 1987, Pat. No. 4,943,401. This application Jul. 24, 1990, Ser. No. 558,109

The portion of the term of this patent subsequent to Jul. 24, 2007, has been disclaimed.

Int. Cl.[5] C04B *35/58*

U.S. Cl. 501—97 **33 Claims**



1. A process for making high alphaphase content silicon nitride, comprising:

(a) comminuting a slurry comprising a mixture of about 10 to about 60 volume percent of silicon powder and about 90 to about 40 volume percent of water, to form fresh, non-oxidized surfaces on the silicon powder and to allow substantial chemical reaction between the silicon and the water;

(b) reducing the water content of the reacted slurry to a degree sufficient to form a dry mass; and

(c) nitriding the dry mass by exposure to a nitriding gas including at least nitrogen to form a mass of substantially silicon nitride.

5,187,130

COMPOSITE CERAMIC ARTICLES

Marc S. Newkirk; Andrew W. Urquhart, both of Newark, Del.; Harry R. Zwicker, Elkton, Md., and H. Daniel Lesher, Wilmington, Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation of Ser. No. 415,180, Sep. 29, 1989, abandoned, which is a division of Ser. No. 265,835, Nov. 1, 1988, Pat. No. 4,916,113, which is a continuation of Ser. No. 819,397, Jan. 17, 1986, Pat. No. 4,851,375, which is a continuation-in-part of Ser. No. 697,876, Feb. 4, 1985, abandoned. This application Feb. 25, 1991, Ser. No. 659,473

The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.

Int. Cl.[5] C04B *35/65*

U.S. Cl. 501—97 **20 Claims**

5. A self-supporting ceramic matrix composite body consisting essentially of from about 2% to about 95% by volume of a three-dimensionally interconnected ceramic matrix and from about 5% to about 98% by volume of at least one filler incorporated within said matrix, said matrix consisting essentially of from about 60% to about 99% by weight of a three-dimensionally interconnected oxidation reaction product consisting essentially of a material selected from the group consisting of alumina, aluminum nitride and silicon nitride and the remainder of said matrix consisting essentially of an interconnected metallic constituent and voids.

5,187,131

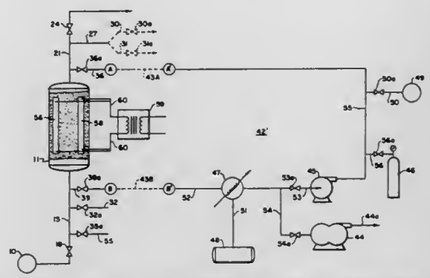
METHOD FOR REGENERATING PARTICULATE ADSORBENTS

Donald D. Tiggelbeck, Pittsburgh, and George M. Goyak, Murrysville, both of Pa., assignors to Tigg Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 464,550, Jan. 16, 1990, abandoned. This application Sep. 13, 1991, Ser. No. 759,882

Int. Cl.[5] B01J *20/34, 38/04, 37/34;* **B01D** *51/06*

U.S. Cl. 502—34 **8 Claims**



1. The method for regenerating a bed of particulate activated carbon in a container having an inlet conduit and an outlet conduit, said particulate activated carbon having adsorbed thereon an adsorbate which lowers the adsorbing efficiency of said particulate adsorbent, comprising:

A. Heating said bed to an elevated temperature above 225° F. at which said adsorbate has a vapor pressure which is greater than the adsorbate vapor pressure of said adsorbate at ambient temperature;

B. Passing inert gas through the heated bed to entrain volatilized adsorbate until the residual adsorbate in said bed is reduced to a first weight percentage; recovering a first gaseous mixture from said container including said inert gas and said volatilized adsorbate;

VOL 1147 ISS 3 FE 16 1993 UMI

C. Chilling said first gaseous mixture whereby said adsorbate is separated from said inert gas;

D. While said bed remains at said elevated temperature, closing said inlet conduit and, without deliberate cooling of said bed, connecting said outlet conduit through said chiller to a vacuum source to reduce the pressure within said container to less than 0.01 Torr and withdrawing through said outlet conduit a second gaseous mixture containing residual inert gas and devolatilized adsorbate;

E. Passing said second gaseous mixture through said chiller to separate adsorbate as a liquid from chilled residual inert gas;

F. Discharging said chilled residual inert gas;

G. Continuing to withdraw said second gaseous mixture until the residual adsorbate content of said bed is less than a pre-established content and said bed has developed a lowered temperature as a result of the cooling achieved by volatilization of adsorbate from said bed.

5,187,132

PREPARATION OF BOROSILICATE ZEOLITES

Stacey I. Zones; Lun T. Yuen, both of San Francisco, and Susan D. Toto, South San Francisco, all of Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Filed May 14, 1991, Ser. No. 699,870

Int. Cl.[5] B01J *29/04;* **C01B** *35/10*

U.S. Cl. 502—64 **15 Claims**

1. A method of preparing crystalline zeolites which comprises preparing a reaction mixture comprising calcined boron beta zeolite or the ammonium form of boron beta zeolite, an alkali metal oxide, an organic template and water; and said mixture having a composition in terms of mole ratios of oxides falling within the following ranges:

M^+/SiO_2 = 0.01–0.50
OH^-/SiO_2 = 0.01–0.60
H_2O/SiO_2 = 10–120
Q/SiO_2 = 0.10–1.00
SiO_2/Y_2O_3 = Greater Than 10

wherein Q is an organic template, M^+ is an alkali metal not supplied by the boron beta zeolite, and Y_2O_3 is boron beta zeolite in its calcined or ammonium form; and maintaining said mixture at crystallization temperature until said crystals are formed.

5,187,133

CATALYST COMPOSITION FOR HYDROTREATING OF HYDROCARBONS AND HYDROTREATING PROCESS USING THE SAME

Tomohiro Yoshinari, Urawa; Kazushi Usui, Noda; Yasuo Yamamoto, Koshigaya, and Mitsuru Ohi, Souka, all of Japan, assignors to Cosmo Oil Co., Ltd. and Petroleum Energy Center, both of Tokyo, Japan

Filed Mar. 18, 1991, Ser. No. 670,719

Claims priority, application Japan, Mar. 30, 1990, 2-85967

Int. Cl.[5] B01J *29/06*

U.S. Cl. 502—66 **22 Claims**

1. A catalyst composition for the hydrotreatment of hydrocarbon oils comprising at least one metal component having hydrogenating activity selected from the group consisting of metals belonging to Group VIB or Group VIII of the Periodic Table carried on a carrier comprising 2–35% by weight of zeolite and 98–65% by weight of alumina or an alumina-containing substance, and wherein, (A) said alumina or alumina-containing substance (1) has a mean pore diameter of 60–125 angstrom and (2) contains the pore volume of which the diameter falls within ±10 angstrom of the mean pore diameter of 70–98% of the total pore volume, (B) said zeolite (3) has an average particle size of 6 μm or smaller and (4) contains particles of which the diameter is 6 μm or smaller of 70–98% of all zeolite particles, and (C) said catalyst contains at least one metal belonging to Group VIB of the Periodic Table in an amount of 2–30% by weight, in terms of an oxide, and at least one metal belonging to Group VIII of the Periodic Table in an amount of 0.5–20% by weight, in terms of an oxide.

5,187,134

FORMED, POLYMERIC TRANSITION-METAL COMPLEX CATALYSTS WITH ORGANOSILOXANE PHENYLPHOSPHINE LIGANDS

Peter Panster, Rodenbach, and Robert Gradl, Alzenau, both of Fed. Rep. of Germany, assignors to Degussa AG, Hanau, Fed. Rep. of Germany

Filed Nov. 1, 1991, Ser. No. 784,951

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1990, 4035032

Int. Cl.[5] B01J *31/24*

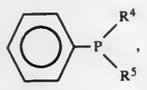
U.S. Cl. 502—158 **29 Claims**

1. A formed, polymeric metal complex of iron, cobalt, nickel, ruthenium, rhodium, palladium, osmium, iridium and-/or platinum, including a central metal atom and a ligand, wherein the ligand includes a formed organosiloxane copolycondensate having amine units of the formula



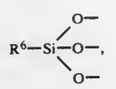
(I)

and phosphine units of the formula



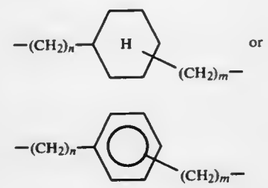
(II)

wherein the central atom is coordinatively bound via a strongly bonding phosphorus atom of the phosphine units and/or, via a more weakly bonding nitrogen atom of the amine units, wherein R^2 to R^5 are the same or different and signify a group of the formula



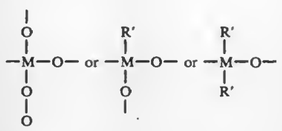
(III)

in which R^6 is bound directly to the phosphorus atom or to the nitrogen atom and represents a linear or branched alkylene group with 1 to 10 carbon atoms, a cycloalkylene group with 5 to 8 carbon atoms or a unit of the formula



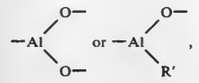
wherein n and m each are numbers from 0 to 6, n represents the number of methylene groups bound to an N position or bound to a P position and m represents the number of methylene groups bound to an Si position, wherein R^1 represents a group of formula (III) or H, CH_3, C_2H_5, C_3H_7, wherein the free valences of the oxygen atoms bound to the Si atom are saturated as in silica skeletons by silicon atoms of further groups of

formula (III) and/or via the metal atoms in one or several cross-linking bridge members



(IV)

and/or



wherein M is an Si, Ti or Zr atom and R' is a linear or branched alkyl group having 1 to 5 carbon atoms or a phenyl group, and the ratio of the silicon atoms from the groups of formula (III) to the metal atoms in the cross-linking bridge members (IV) is 1:0 to 1:20, and the ratio between the number of moles of phosphine units (II) and the number of totally complex-bound metal units is 1:1 to 1000:1, and wherein the polymeric complex catalyst is present macroscopically as spherical particles having a diameter of 0.01 to 3.0 mm, having a specific surface of greater than 0 to 1000 m^2/g, having a specific pore volume of 0.01 to 6.5 ml/g and a bulk density of 50 to 1000 g/l.

5,187,135

ASYMMETRIC HYDROGENATION OF AROMATIC-SUBSTITUTED OLEFINS USING ORGANO-COBALT CATALYST

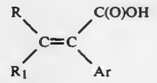
Charles H. Kolich; Thanikavelu Manimaran, and W. Dirk Klobucar, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jun. 17, 1991, Ser. No. 716,017

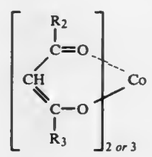
Int. Cl.[5] B01J *31/00;* **C07F** *15/00, 17/02;* **C07C** *63/04*

U.S. Cl. 502—162 **18 Claims**

1. A process for preparing optically active α-aryl aliphatic carboxylic acids which comprises catalytically, asymmetrically hydrogenating a carboxylic acid of the formula



or the amine salt thereof, where R and R_1 are the same or different and are hydrogen, alkyl, cycloalkyl, or haloalkyl; and Ar is aryl or substituted aryl; by utilizing a catalytically effective amount of a mixture of (i) a cobalt compound of the formula



where R_2 and R_3 are the same or different and are alkyl, haloalkyl, aryl, substituted aryl, phenylalkyl or substituted phenylalkyl; and (ii) a chiral phosphine compound.

5,187,136

ASYMMETRIC HYDROGENATION OF AROMATIC-SUBSTITUTED OLEFINS USING ORGANORHENIUM CATALYST

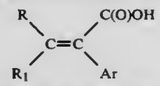
W. Dirk Klobucar; Charles H. Kolich, and Thanikavelu Manimaran, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jun. 17, 1991, Ser. No. 716,013

Int. Cl.[5] B01J *31/00;* **C07F** *13/00;* **C07C** *63/04, 53/134*

U.S. Cl. 502—162 **14 Claims**

1. A process for preparing optically active α-aryl aliphatic carboxylic acids which comprises catalytically, asymmetrically hydrogenating a carboxylic acid of the formula



or the amine salt thereof, where R and R_1 are the same or different and are hydrogen, alkyl, cycloalkyl, or haloalkyl; and Ar is aryl or substituted aryl; by utilizing a catalytically effective amount of a mixture of (i) a rhenium-containing compound selected from the group consisting of halide, a mixed halide-chelate complex and a chelate complex and (ii) a chiral phosphine compound.

5,187,137

CATALYST AND METHOD OF PREPARING THE CATALYST

Sadao Terui, Hyogo, and Yoshiyuki Yokota, Suita, both of Japan, assignors to Nippon Shokubai Co., Ltd., Osaka, Japan

Filed Sep. 27, 1991, Ser. No. 766,092

Claims priority, application Japan, Sep. 29, 1990, 2-262450; Feb. 14, 1991, 3-43021; Feb. 14, 1991, 3-43022

Int. Cl.[5] B01J *23/64, 21/06*

U.S. Cl. 502—241 **4 Claims**

1. A method of preparing a catalyst comprising a composition containing Mn oxide, metal Pd and/or Pd oxide formed as a thin film on a support which comprises mixing Mn oxide, metal Pd and/or Pd compound and water, heating and subsequently cooling the mixture, adding an inorganic oxide sol as a binder forming the mixture into a slurry, dipping a support into the slurry and removing the support therefrom, removing deposited excess slurry by pressurized air, and drying and baking the coated support to form said catalyst.

2. The method of claim **1** wherein the inorganic oxide sol is alumina sol.

5,187,138

SILICA MODIFIED HYDROISOMERIZATION CATALYST

Stephen M. Davis, Baton Rouge, La., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Sep. 16, 1991, Ser. No. 760,266

Int. Cl.[5] B01J *21/12, 23/68, 23/88*

U.S. Cl. 502—255 **13 Claims**

1. A catalyst composition comprising:

a Group VIII metal;

a support therefor of alumina or silica-alumina wherein the silica content is less than about 35 wt%;

at least about 0.5 wt% silica other than the support silica; and a surface area of about 180–400 m^2/gm.

4. The catalyst of claim **1** wherein the Group VIII metal is a non-noble metal.

5. The catalyst of claim **4** wherein the metal is nickel, cobalt, or mixtures thereof.

6. The catalyst of claim **5** wherein the composition also contains molybdenum.

5,187,139

Patent Not Issued For This Number

VOL 1147 ISS 3 FE 16 1993 UMI

5,187,140

ALKYLENE OXIDE CATALYSTS CONTAINING HIGH SILVER CONTENT

Erlind M. Thorsteinson; Madan M. Bhasin, both of Charleston, and Seyed R. Seyedmonir, Cross Lanes, all of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 423,197, Oct. 18, 1989, abandoned. This application Jul. 23, 1990, Ser. No. 556,828

Int. Cl.[5] B01J *23/50*

U.S. Cl. 502—348 **36 Claims**

1. A method for preparing a catalyst for the manufacture of alkylene oxide by the vapor phase epoxidation of alkene comprising:

a) providing a refractory solid support having a surface area of at least about 0.7 m^2/g, a pore volume of at least about 0.5 cc/g, and a median pore diameter between about 1 and 25 microns, and wherein between about 10 and 25 volume percent of the pores of the support have a pore diameter between about 0.5 and 1 micron, at least about 10 volume percent of the pores of the support have a pore diameter between about 1 and 10 microns, and at least about 20 volume percent of the pores of the support have a pore volume between about 10 and 100 microns;

b) impregnating the support with a first impregnating solution containing dissolved silver compound;

c) removing the impregnated support from the first impregnating solution, said support containing silver compound, and subjecting the impregnated support to conditions which form silver metal from the silver compound;

d) impregnating the support with a second impregnating solution containing additional silver compound dissolved therein;

e) removing the impregnated support from the second impregnating solution, said support containing additional silver compound, and subjecting the impregnated support to conditions which form silver metal from the additional silver compound; and

f) repeating steps (d) and (e) until the amount of silver metal contained in the support is at least 30 percent by weight based on the entire weigh of the catalyst.

21. A catalyst for the manufacture of alkylene oxide by the vapor phase epoxidation of alkene containing at least about 30 weight percent silver impregnated in at least two impregnation steps on an inert, refractory solid support having a surface area of at least about 0.7 m^2/g and a pore volume of at least about 0.5 cc/g, a median pore diameter between about 1 and 25 microns, and wherein between about 10 and 25 volume percent of the pores of the support have a pore diameter between about 0.5 and 1 micron, at least about 10 volume percent of the pores of the support have a pore diameter between about 1 and 10 microns, and at least about 20 volume percent of the pores of the support have a pore volume between about 10 and 100 microns, and a promoting amount of at least one promoter to enhance the efficiency of the catalyst, wherein the amount of silver on the support is sufficient to increase the activity of the catalyst, as determined under STANDARD ETHYLENE OXIDE PROCESS CONDITIONS, by at least about 5° C., as compared to the same catalyst but containing a lesser amount of silver.

5,187,141

PROCESS FOR THE MANUFACTURE OF ACTIVATED CARBON FROM COAL BY MILD GASIFICATION AND HYDROGENATION

Mahesh C. Jha, 7891 Everett Way, Arvada, Colo. 80005, and Robert L. McCormick, 711 Concord Ave., Boulder, Colo. 80304

Filed Aug. 24, 1990, Ser. No. 571,794

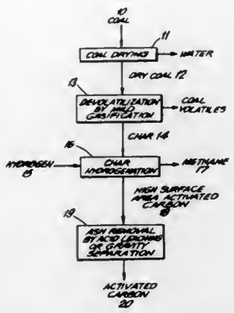
Int. Cl.[5] C01B *31/10;* **B01J** *20/20*

U.S. Cl. 502—432 **3 Claims**

1. A process of forming activated carbon from coal in the particulate state which comprises:

drying said coal at a temperature ranging from about 100° C. to 300° C. for a time sufficient to remove moisture therefrom,

subjecting said dried coal to heating at an elevated temperature ranging from about 400° C. to about 700° C. for a time sufficient to remove a substantial portion of the volatile matter from said coal and produce a char therefrom, and



then subjecting said char to hydrogenation at a temperature ranging from about 700° C. to about 900° C. at a pressure of about 115 psia to 415 psia for a time sufficient to form activated carbon characterized by a BET surface area of at least about 200 m^2/g and an iodine number of at least about 400.

5,187,142

CATALYTIC CONVERTER METAL MONOLITH

Russell P. Richmond, North Branch, and Michael R. Foster, Columbiaville, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 3, 1991, Ser. No. 754,514

Int. Cl.[5] B01J *32/00, 35/04*

U.S. Cl. 502—439 **4 Claims**

1. A catalyst support substrate for use in a catalytic converter comprising a plurality of corrugated metal foil sheets stacked together to form a plurality of axially extending fluid flow paths therebetween, foil retainer sheets disposed at intervals in said stack of corrugated sheets, said retainer sheets having tabs extending outwardly from the side edges thereof and folded to contact the sides of the substrate stack formed by the edges of said stack of corrugated metal foil sheets to form a segmented foil skin about a portion of said stack, said foil skin welded along its length and forming a unitary skin about said substrate.

5,187,143

HEAT SENSITIVE RECORDING MATERIAL

Kazuo Watanabe, Itami, and Tosaku Okamoto, Osaka, both of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Oct. 25, 1991, Ser. No. 783,021

Claims priority, application Japan, Oct. 25, 1990, 2-289301; Jun. 13, 1991, 3-169460

Int. Cl.[5] B41M *5/32*

U.S. Cl. 503—212 **11 Claims**

1. A heat sensitive recording material having a recording layer formed on a substrate and containing a colorless or light-colored basic dye and a color developer, the heat sensitive recording material being characterized in that the color developer comprises a zinc salt of terephthaladehydic acid.

5,187,144

IMAGE RECEIVING SHEET FOR THERMAL TRANSFER RECORDING

Hideo Shinohara, Yokohama; Yukichi Morata, Sagamihara, and Tsutomu Taki, Tokyo, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Feb. 1, 1991, Ser. No. 649,043

Claims priority, application Japan, Feb. 2, 1990, 2-24222; Aug. 23, 1990, 2-222176; Aug. 23, 1990, 2-222177

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **13 Claims**

1. An image receiving sheet for thermal transfer recording, which comprises a substrate and an image receiving layer formed thereon for receiving a sublimable dye, wherein the image receiving layer comprises, as the main component, a product formed by thermosetting a composition comprising an active hydrogen-containing resin, a silicone resin, a silicone oil and a polyfunctional isocyanate compound.

5,187,145

HEAT TRANSFER SHEETS

Jumpei Kanto; Hitoshi Saito; Hiroshi Eguchi; Masayuki Nakamura; Koumei Kafuku; Junji Chiba, and Kaoru Suda, all of Tokyo, Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Japan

PCT No. PCT/JP90/00953, § 371 Date May 1, 1991, § 102(e) Date May 1, 1991, PCT Pub. No. WO91/01890, PCT Pub. Date Feb. 21, 1991

PCT Filed Jul. 26, 1990, Ser. No. 667,390

Claims priority, application Japan, Aug. 2, 1989, 1-202228; Jun. 14, 1990, 2-153912

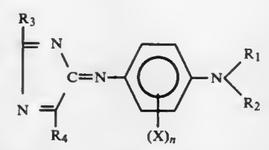
Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **6 Claims**

1. A heat transfer sheet comprising:

a substrate sheet; and

a dye carrier layer formed on one surface of said substrate sheet, the dye included in said dye carrier layer comprising a dye represented by the following general formula (I):



(I)

wherein:

R_1 and R_2 each stand for an identical or different substituted or unsubstituted alkyl, cycloalkyl, aralkyl or aryl group or an atom or atomic group forming a five- or six-membered ring together with X, provided that R_1 and R_2 may form together a five- or six-membered ring which may contain an oxygen or nitrogen atom;

R_3 and R_4 each represent an identical or different substituted or unsubstituted phenyl or naphthyl group or a heterocyclic group containing at least one of oxygen, nitrogen and sulfur atoms, with the proviso that R_3 and R_4 cannot be phenyl groups at the same time;

X indicates a hydrogen atom, a halogen atom, a cyano group or a nitro group, or an alkyl, cycloalkyl, alkoxy, aryl, aralkyl, acylamin-o, sulfonylamino, ureido, carbamoyl, sulfamoyl, acyl or amino group which may have a substituent; and

n is an integer of 1 or 2.

5,187,146

METHOD FOR INCREASING ADHESION OF SPACER BEADS ON A DYE-DONOR OR DYE-RECEIVING ELEMENT FOR LASER-INDUCED THERMAL DYE TRANSFER

Linda I. Ficcaglia, Geneva; Mark P. Gulttard, and Stephen M. Neumann, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 26, 1991, Ser. No. 799,473

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **7 Claims**

1. A process for increasing the adhesion of spacer beads on a dye-donor or dye-receiver element for use in a laser-induced thermal dye transfer system comprising:

a) coating a support with either:

1) a dye layer in a polymeric binder having an infrared absorbing material associated therewith, or

2) a dye image-receiving layer; said dye layer or said dye image-receiving layer also having spacer beads located either in said layer or in a polymeric overcoat layer; and

b) heating said element at a temperature above the glass transition temperature of said dye layer or said dye image-receiving layer while under tension.

5,187,147

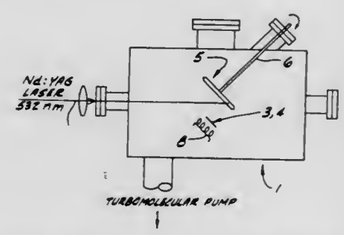
METHOD FOR PRODUCING FREESTANDING HIGH TC SUPERCONDUCTING THIN FILMS

Hoo-Kie Ng, and Snezana Kilibarda-Dalafave, both of Tallahassee, Fla., assignors to Florida State University, Tallahassee, Fla.

Filed Sep. 31, 1991, Ser. No. 708,186

Int. Cl.[5] B05D *5/12*

U.S. Cl. 505—1 **19 Claims**



1. A process for producing a freestanding thin film of high Tc superconducting material, the process comprising:

providing a carbon substrate,

depositing the high Tc superconducting materials onto the substrate as a thin film to form a composite of the substrate and the thin film of the high Tc superconducting materials, and

removing the substrate from the composite by converting the substrate to a gaseous composition at a temperature insufficient to cause thermal damage to said thin film of high Tc superconducting material but greater than 500° C. in an oxygen containing atmosphere.

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5,187,148
APPARATUS FOR PREPARING OXIDE SUPERCONDUCTING FILM

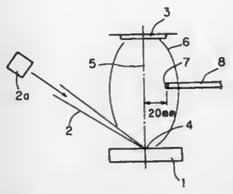
Noriyuki Yoshida; Satoshi Takano; Shigeru Okuda; Noriki Hayashi, all of Osaka; Tsukushi Hara, Chofu; Kiyoshi Okaniwa, Chofu, and Takahiko Yamamoto, Chofu, all of Japan, assignors to Sumitomo Electric Industries and The Tokyo Electric Power Company, Inc., both of Tokyo, Japan

Filed Mar. 1, 1991, Ser. No. 662,874

Claims priority, application Japan, Mar. 2, 1990, 2-52522; Mar. 2, 1990, 2-52523; Mar. 2, 1990, 2-52524; Feb. 25, 1991, 3-30403

Int. Cl.[5] C23C *16/00*

U.S. Cl. 505—1 **3 Claims**



1. An apparatus for preparing an oxide superconducting film using laser ablation, comprising:
a tubular member having a first and second end;
a target containing components of an oxide superconductive material arranged apart from said tubular member and adjacent to said first end of said tubular member;
a laser source for applying a laser beam to said target;
a substrate arranged apart from said tubular member and adjacent to said second end of said tubular member; and
a gaseous oxygen inlet for supplying gaseous oxygen toward laser plasma generated by application of said laser beam to said target
wherein said tubular member encloses only said laser plasma.

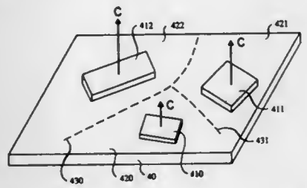
5,187,149
METHOD OF MAKING A RIBBON-LIKE OR SHEET-LIKE SUPERCONDUCTING OXIDE COMPOSITE BODY

Sungho Jin, Millington, and Thomas H. Tiefel, North Plainfield, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 15, 1991, Ser. No. 656,354

Int. Cl.[5] B05D *5/12, 3/02*

U.S. Cl. 505—1 **11 Claims**



1. A method of making an article comprising a Bi-Sr-Ca-Cu-containing superconducting oxide layer on a major surface of a substrate, associated with the superconducting oxide being a critical temperature $T_c > 30$ K, a critical current density J_c and a crystal structure that comprises an ab-plane and a c-axis normal to the ab-plane, the method comprising
a) providing the substrate;
b) forming on the major surface of the substrate a layer that comprises a Bi-Sr-Ca-Cu-containing oxide; and
c) heat treating the substrate with the layer thereon in an O_2-containing atmosphere such that the Bi-Sr-Ca-Cu-containing superconducting oxide layer results;
characterized in that
d) the substrate is a metal substrate selected such that the substrate does substantially not oxidize during step c);
e) the layer formed on the major surface comprises Bi-Sr-Ca-Cu-containing oxide particles, with the density of oxide material in the layer being less than 80% of the theoretical density of the oxide;
f) the method further comprises mechanically deforming the substrate with the layer thereon such that the density of Bi-Sr-Ca-Cu-containing oxide material in the layer is increased to more than 80% of the theoretical density of said Bi-Sr-Ca-Cu-containing oxide, and such that the thickness of the layer is less than 10 μm; and still further comprises at least partially melting the densified layer, substantially without melting the metal substrate, and allowing the molten material to re-solidify, such that at least 50% of the material of the oxide layer is in the form of crystallites oriented such that the c-axis of the crystallites is essentially perpendicular to the major surface of the substrate.

5,187,150
POLYESTER-BASED COMPOSITION FOR THE CONTROLLED RELEASE OF POLYPEPTIDE MEDICINAL SUBSTANCES

Peter Speiser; Urs Schleuniger, both of Zurich; Piero Orsolini, and Frédéric Heimgartner, both of Martigny, all of Switzerland, assignors to Debiopharm S.A., Lausanne, Switzerland

Continuation of Ser. No. 255,936, Oct. 11, 1988, abandoned. This application Mar. 29, 1990, Ser. No. 503,066

Claims priority, application Switzerland, Oct. 14, 1987, 4022/87

Int. Cl.[5] A61K *37/02, 9/58*

U.S. Cl. 514—2 **21 Claims**

1. A pharmaceutical composition which comprises a polypeptide, a polypeptide derivative or a non-toxic salt thereof, and, as a carrier, a polyester or copolyester or a mixture thereof having a weight average molecular weight of between about 2,000 and 10,000 and being the esterification product of fumaric or succinic acid with an aliphatic diol containing 4 carbon atoms or cyclohexane-1,4-dimethanol.

5,187,151
USE OF BINDING PROTEIN WITH IGF-I AS AN ANABOLIC GROWTH PROMOTING AGENT

Ross G. Clark, Pacifica, and Venkat R. Mukku, Fremont, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Filed Feb. 12, 1991, Ser. No. 654,436

Int. Cl.[5] A61K *37/26;* **C07K** *5/00*

U.S. Cl. 514—3 **17 Claims**

1. A method for producing an anabolic state in a mammal comprising co-administering to the mammal by subcutaneous bolus injection effective amounts of IGFBP-3 and IGF-I in a molar ratio of IGFBP-3 to IGF-I of about 0.5:1 to about 3:1 so as to produce a greater anabolic state in the mammal than that achieved using an equivalent dose of IGF-I alone, wherein growth hormone is not also administered to the mammal.

5,187,152

Patent Not Issued For This Number

5,187,153
METHODS OF TREATMENT USING ALZHEIMER'S AMYLOID POLYPEPTIDE DERIVATIVES

Barbara Cordell; James W. Schilling, both of Palo Alto, Calif., and Nobuhiko Katunuma, Tokushima, Japan, assignors to Scios Nova Inc., Mountain View, Calif.

Continuation-in-part of Ser. No. 361,912, Jun. 6, 1989, which is a continuation of Ser. No. 359,911, May 12, 1989, abandoned, which is a continuation-in-part of Ser. No. 87,002, Aug. 18, 1987, abandoned, which is a continuation-in-part of Ser. No. 8,810, Jan. 30, 1987, abandoned, which is a continuation-in-part of Ser. No. 948,376, Dec. 31, 1986, abandoned, which is a continuation-in-part of Ser. No. 932,193, Nov. 17, 1986, abandoned. This application Mar. 29, 1990, Ser. No. 502,273

Int. Cl.[5] A61K *37/64*

U.S. Cl. 514—12 **3 Claims**

1. A method of treating an individual having excessive activity of serine proteases, comprising:
administering to the individual in need thereof a pharmaceutically effective amount of the composition, comprising:
a pharmaceutically acceptable carrier; and
a protein analog wherein the amino acid corresponding to arginine at position 13 in the sequence

GluValCysSerGluGlnAlaGluThrGlyProCysArg$_{13}$AlaMet
IleSerArgTrpTyrPheAspValThrGluGlyLysCysAla
ProPhePheTyrGlyGlyCysGlyGlyAsnArgAsnAsnPhe
AspThrGluGluTyrCysMetAlaValCysGlySerAlaIle

is substituted with a neutral hydrophobic amino acid.

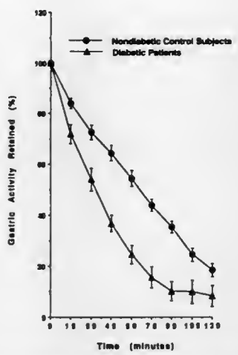
5,187,154
DIAGNOSIS AND TREATMENT OF HUMANS WITH DIABETES OR AT RISK TO DEVELOP DIABETES

William Phillips, and Joyce G. Schwartz, both of San Antonio, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Dec. 13, 1990, Ser. No. 626,579

Int. Cl.[5] A61K *37/00, 49/00*

U.S. Cl. 514—12 **4 Claims**



1. A method of maintaining the following glucose metabolic indicators at or near normal levels; blood glucose, C-peptide, insulin levels at fasting and during oral glucose tolerance tests, hemoglobin AIC, insulin resistance, GIP levels and CCK levels, in an individual having an early noninsulin-dependent diabetic condition and exhibiting rapid gastric emptying comprising administering to the individual a therapeutically effective dose of cholecystokinin.

5,187,155
ANTICOAGULANT PEPTIDES

Daryl S. Fair, Tyler, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Filed Jun. 23, 1989, Ser. No. 371,561

Int. Cl.[5] C07K *7/00;* **A61K** *37/02*

U.S. Cl. 514—12 **19 Claims**

1. A composition of matter, consisting essentially of a peptide of about 10–50 amino acids, said peptide having a sequence that is at least about 95% homologous to a sequence of from about 10–50 amino acids selected from the following sequence: E-Q-E-E-G-G-E-A-V-H-E-V-E-V-V-I-K-H-N-R-F-T-K-E-T-Y-D-F-D-I-A-V-L-R-L-K-T-P-I-T-F-R-M-N-V-A-P-A-C-L.

5,187,156
PEPTIDE COMPOUNDS, PROCESSES FOR PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Masaaki Matsuo, Toyonaka; Daijiro Hagiwara, Moriguchi, and Hiroshi Miyake, Kyoto, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Mar. 2, 1989, Ser. No. 317,858

Claims priority, application United Kingdom, Mar. 16, 1988, 8806193; Oct. 28, 1988, 8825323; Jan. 30, 1989, 8901964

Int. Cl.[5] A61K *37/00;* **C07K** *5/00*

U.S. Cl. 514—18 **5 Claims**

1. A compound of the formula:

$$R^1—A—D—Trp(R^2)—Phe—R^3$$

wherein
R^1 is hydrogen, carbamoyl, lower alkoxycarbonyl, lower alkanoyl, ar(lower)alkoxycarbonyl, carbamoyl(lower)alkanoyl, lower alkoxalyl, di(lower)alkylamino(lower)alkanoyl, N-ar(lower)alkyl-N-lower alkoxycarbonylamino(lower)alkanoyl, tetrazolyl(lower)alkanoyl, carboxy(lower)alkanoyl, hydroxy(lower)alkanoyl, morpholinecarbonyl, N-lower alkylcarbamoyl, lower alkanoylaminothiazolyl(lower)alkanoyl, lower alkanoylaminothiazolyl(lower)alkanoyl having lower alkoxycarbonylamino or lower alkanoylamino on the alkanoyl moiety, carboxy(lower) alkylamino(lower)alkanoyl, ar(lower)alkylamino(lower)alkanoyl or N-lower alkoxycarbonyl-N-lower alkoxycarbonyl(lower)alkylamino(lower)alkanoyl,
R^2 is hydrogen, lower alkanoyl, arenesulfonyl, carbamoyl(lower)alkyl, carboxy(lower)alkyl or lower alkoxycarbonyl(lower)alkyl,
R^3 is a group of the formula:



wherein
R^4 is hydrogen, lower alkyl, hydroxy(lower)alkyl or ar(lower)alkoxycarbonyloxy(lower)alkyl, and
R^5 is aryl, ar(lower)alkyl or haloar(lower)alkyl,
or a group of the formula:

$$—OR^6$$

wherein
R^6 is aryl, lower alkyl, ar(lower)alkyl, haloar(lower)alkyl or pyridyl(lower)alkyl, and
A is one amino acid residue selected from Gln Ser, Asn Thr, D-Gln, Lys, His, βAsp, Orn, Glyn Hyp, pGlu, Glu,

$$\begin{matrix} NMe_2 & OTce & Troc & Z & Cl—Z & Tos & Z \\ | & | & | & | & | & | & | \\ Glu\ , & Glu\ , & Lys\ , & Lys, & Lys, & His, & Orn, \end{matrix}$$

VOL 1147 ISS 3 FE 16 1993 UMI

-continued

Bzl Thr, $CO(CH_2)_2COOH$ Thr and MeThr,

and wherein

Z is benzyloxycarbonyl

or a pharmaceutically acceptable salt thereof.

5,187,157

PEPTIDE BORONIC ACID INHIBITORS OF TRYPSIN-LIKE PROTEASES

Charles A. Kettner, and Ashokkumar B. Shenvi, both of Wilmington, Del., assignors to Du Pont Merck Pharmaceutical Company, Wilmington, Del.

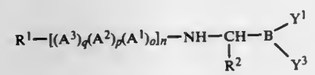
Continuation-in-part of Ser. No. 59,670, Jun. 5, 1987, abandoned. This application Apr. 6, 1988, Ser. No. 178,368

Int. Cl.[5] A61K *37/02;* **C07K** *5/06, 5/08, 5/10*

U.S. Cl. 514—18 **51 Claims**

1. A compound of the formula

[FORMULA I]



wherein

Y^1 and Y^2, independently, are —OH or F or, taken together, form a moiety derived from a dihydroxy compound having at least two hydroxy groups separated by at least two connecting atoms in a chain or ring, said chain or ring comprising 1 to about 20 carbon atoms and, optionally, a heteroatom which can be N, S, or O;

R^2 is a substituted alkyl selected from the group consisting of $—(CH_2)_z—X$, $—CH(CH_3)—(CH_2)_2—X$, $—CH_2CH(CH_3)—CH_2—X$, $—(CH_2)_2—CH(CH_2)—X$, and $—(CH_2)_2—CH(CH_3)_2—X$, where X is $—NH_2$, $—NH—C(NH)—NH_2$ or $—S—C(NH)—NH_2$, and z is 3 to 5;

n, o, p, and q are, independently, either 1 or 0;

A^1, A^2 and A^3, independently, are amino acids of L- or D-configuration selected from the group consisting of Ala, Arg, Asn, Asp, Cys, Gln, Glu, Gly, His, Ile, Leu, Lys, Met, Phe, Pro, Ser, Thr, Trp, Tyr and Val; and

R^1 is H or an N-terminal protecting group;

or a physiologically acceptable salt thereof.

5,187,158

BRAIN-SPECIFIC DRUG DELIVERY

Nicholas S. Bodor, Gainesville, Fla., assignor to University of Florida, Gainesville, Fla.

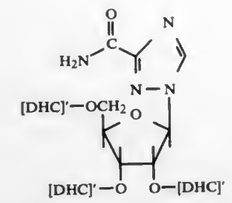
Division of Ser. No. 295,938, Jan. 11, 1989, Pat. No. 5,008,257, which is a division of Ser. No. 665,940, Oct. 29, 1984, Pat. No. 4,824,850, which is a continuation-in-part of Ser. No. 379,316, May 18, 1982, Pat. No. 4,479,932, and a continuation-in-part of Ser. No. 461,543, Jan. 27, 1983, abandoned, and a continuation-in-part of Ser. No. 733,463, May 13, 1985, Pat. No. 4,727,079, and a continuation-in-part of Ser. No. 475,493, Mar. 15, 1983, Pat. No. 4,622,218, and a continuation-in-part of Ser. No. 516,382, Jul. 22, 1983, Pat. No. 4,540,564. This application Jan. 10, 1991, Ser. No. 639,283

Claims priority, application Canada, May 16, 1983, 428192

Int. Cl.[5] A61K *31/445;* **C07D** *405/14*

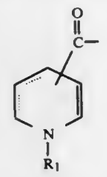
U.S. Cl. 514—13 **11 Claims**

1. A compound having the structural formula



or a nontoxic pharmaceutically acceptable salt thereof, wherein one [DHC]' is a radical of the formula

(a')



wherein the dotted line indicates the presence of a double bond in either the 4 or 5 position of the dihydropyridine ring; R_1 is C_1–C_7 alkyl, C_1–C_7 haloalkyl or C_7–C_{10} aralkyl; and the carbonyl-containing grouping in formula (a') is attached at the 2, 3 or 4 position of the dihydropyridine ring; and each remaining [DHC]' is H or a radical of formula (a') as defined above.

5,187,159

ANGIOTENSIN II ANTAGONISTS INCORPORATING A SUBSTITUTED 1,3-BENZODIOXOLE OR 1,3-BENZODITHIOLE

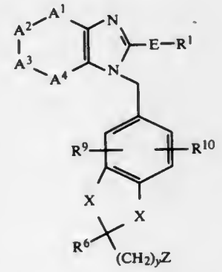
William J. Greenlee, Teaneck, and Ralph A. Rivero, Eatontown, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 7, 1991, Ser. No. 773,070

Int. Cl.[5] A61K *31/435;* **C07D** *471/04*

U.S. Cl. 514—81 **9 Claims**

1. A compound of structural formula:



or a pharmaceutically acceptable salt thereof wherein:

R^1 is:

(a) $(C_1$–$C_6)$-alkyl, $(C_2$–$C_6)$-alkenyl or $(C_2$–$C_6)$-alkynyl each of which can be unsubstituted or substituted with a substituent selected from the group consisting of:

i) aryl as defined below in R^1(b),

ii) $(C_3$–$C_7)$-cycloalkyl,

iii) Cl, Br, I, F,

iv) OH,

v) NH_2,

vi) $NH(C_1$–$C_4)$-alkyl,

vii) $N[((C_1$–$C_4)$-alkyl$)]_2$,

viii) $NHSO_2R^2$,

ix) CF_3,

x) $COOR^2$, or

xi) SO_2NHR^{2a};

(b) aryl, wherein aryl is defined as phenyl or naphthyl, unsubstituted or substituted with 1 or 2 substituents selected from the group consisting of:

i) Cl, Br, I, F,

ii) $(C_1$–$C_4)$-alkyl,

iii) $(C_1$–$C_4)$-alkoxy,

iv) NO_2

v) CF_3

vi) $SO_2NR^{2a}R^{2a}$,

vii) $(C_1$–$C_4)$-alkylthio,

viii) hydroxy,

ix) amino,

x) $(C_3$–$C_7)$-cycloalkyl,

xi) $(C_3$–$C_{10})$-alkenyl; and

(c) heteroaryl, wherein heteroaryl is defined as a 5- or 6-membered heteroaromatic moiety, which can contain one or two members selected from the group consisting of N, O, S and wherein the heteroaryl is optionally mono- or disubstituted with substituents selected from the group consisting of:

i) Cl, Br, I, F,

ii) OH,

iii) SH,

iv) NO_2,

v) $(C_1$–$C_4)$-alkyl,

vi) $(C_2$–$C_4)$-alkenyl,

vii) $(C_2$–$C_4)$-alkynyl,

viii) C_1–C_4)-alkoxy, or

ix) CF_3,

(d) $(C_1$–$C_4)$-perfluoroalkyl,

(e) $(C_3$–$C_8)$-cycloalkyl, or

(f) $(C_1$–$C_4)$-alkyl-$(C_3$–$C_8)$-cycloalkyl;

$—A^1—A^2—A^3—A^4—$ is:

(a) $—C(R^4)=C(R^4)—C(R^4)=N—$,

(b) $—N=C(R^4)—C(R^4)=C(R^4)—$,

(c) $—C(R^4)=N—C(R^4)=C(R^4)—$, or

(d) $—C(R^4)=C(R^4)—N=C(R^4)—$;

E is:

(a) a single bond,

(b) $—S(O)_n(CH_2)_s—$, or

(c) —O—;

n is 0 to 2;

s is 0 to 5;

y is 0 or 1;

X groups are independently:

—O— or —S—;

R^2 is:

(a) H, or

(b) $(C_1$–$C_6)$-alkyl;

R^{2a} is:

(a) R^2,

(b) CH_2-aryl, or

(c) aryl;

R^4 groups are independently:

(a), H,

(b) $(C_1$–$C_6)$-alkyl, $(C_2$–$C_6)$-alkenyl or $(C_1$–$C_6)$-alkynyl, each of which is unsubstituted or substituted with a substituent selected from the group consisting of: OH, $(C_1$–$C_4)$-alkoxy, CO_2R^2, $OCOR^2$, $CONHR^2$, $CON(R^2)_2$, $N(R^2)C(=O)R^2$, NH_2, $NH[(C_1$–$C_4)$-alkyl], $N[(C_1$–$C_4)$-alkyl$]_2$,

(c) $—C(=O)—$aryl,

(d) $(C_3$–$C_7)$-cycloalkyl,

(e) Cl, Br, I, F,

(f) —OH,

(g) $—OR^{21}$,

(h) $—CF_3$,

(i) —SH,

(j) $—S(O)_n—(C_1$–$C_4)$-alkyl,

(k) $—CO_2R^{2a}$,

(l) $—SO_3H$,

(m) $—NR^2R^{21}$,

(n) $—NR^2C(O)R^{21}$,

(o) $—NR^2COOR^{21}$,

(p) $—SO_2NR^2R^{2a}$,

(q) $—NO_2$,

(r) $—NHSO_2—(C_1$–$C_4)$-alkyl,

(s) $—C(O)NHSO_2R^{14}$,

(t) aryl,

(u) heteroaryl, or

(v) morpholin-4-yl;

R^6 is:

(a) H,

(b) $(C_1$–$C_4)$-alkyl,

(c) aryl, wherein aryl is phenyl or naphthyl, substituted or unsubstituted with one or two substituents selected from the group consisting of: $(C_1$–$C_4)$-alkyl, $(C_1$–$C_4)$-alkoxyl, $(C_1$–$C_4)$-alkyl-$S(O)_n—$, $—CO_2R^2$, Cl, Br, I, F, $CONR^2R^{2a}$, $NHCO(C_1$–$C_4)$-alkyl, $NHCONR^2R^{2a}$, O-phenyl, or S-phenyl; or

(d) aryl-$(C_1$–$C_2)$-alkyl;

R^9 and R^{10} are each independently:

(a) H,

(b) Cl, Br, I, F,

(c) NO_2,

(d) $(C_1$–$C_8)$-alkyl,

(e) $(C_2$–$C_4)$-alkenyl,

(f) $(C_2$–$C_4)$-alkynyl,

(g) $(C_1$–$C_4)$-alkoxy,

(h) $(C_1$–$C_4)$-alkylthio,

(i) $(C_1$–$C_4)$-alkylsulfinyl, or

(j) $(C_1$–$C_4)$-alkylsulfonyl;

when y=1, Z is:

(a) $—CO_2R^{2a}$,

(b) —tetrazol-5-yl,

(c) $—PO(OH)_2$,

(d) —CONH(tetrazol-5-yl),

(e) $—CH_2CO_2R^{2a}$,

(f) $—CONHSO_2R^{14}$,

when y=0, then Z can be:

(g) $—CO_2R^{2a}$,

(h) —tetrazol-5-yl,

(i) —CONH(tetrazol-5-yl),

(j) $—NHSO_2CF_3$, or

(k) $—CONHSO_2R^{14}$;

R^{14} is:

(a) aryl,

(b) heteroaryl,

(c) $(C_3$–$C_7)$-cycloalkyl, or

(d) $(C_1$–$C_4)$-alkyl unsubstituted or substituted with a substituent selected from the group consisting of: aryl, heteroaryl, —OH, —SH, $(C_1$–$C_4)$-alkyl, $—O(C_1$–$C_4)$ alkyl, $—S(C_1$–$C_4)$-alkyl, $—CF_3$, Cl, Br, F, I, $—NO_2$, $—CO_2H$, $CO_2—(C_1$–$C_4)$-alkyl, NH_2, $NH[(C_1$–$C_4)$alkyl], $N[(C_1$–$C_4)$-alkyl$]_2$, $—PO_3H$, $PO(OH)(O—(C_1$–$C_4)$-alkyl); and

R^{21} is:

(a) H, or

(b) C_1–$C_4)$-alkyl, unsubstituted or substituted with a substituent selected from the group consisting of: NH_2, $NH[(C_1$–$C_4)$-alkyl], $N[(C_1$–$C_4)$-alkyl$]_2$, CO_2H, $CO_2(C_1$–$C_4)$-alkyl, OH, SO_3H, or SO_2NH_2.

VOL 1147 ISS 3 FEB 16 1993 UMI

5,187,160

NEW CEPHEM COMPOUND

Kazuo Sakane; Kohji Kawabata; Kenzi Miyai, all of Kawanishi, and Yoshiko Inamoto, Toyonaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Feb. 23, 1990, Ser. No. 483,646

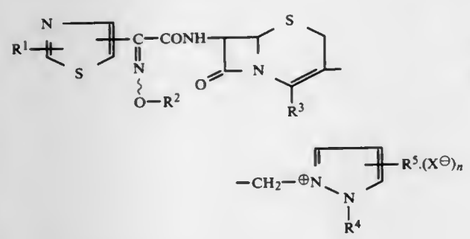
Claims priority, application United Kingdom, Mar. 8, 1989, 8905301

The portion of the term of this patent subsequent to Aug. 28, 2007, has been disclaimed.

Int. Cl.[5] C07D *501/46;* **A61K** *31/545*

U.S. Cl. 514—202 **9 Claims**

1. A cephem compound of the formula:



wherein

R^1 is amino or a protected amino,

R^2 is ethyl, propyl or lower alkenyl,

R^3 is $COO\ominus$, carboxy or a protected carboxy,

R^4 is hydroxy(lower)alkyl or protected hydroxy(lower)alkyl,

R^5 is amino or a protected amino,

$X\ominus$ is an anion, and

n is 0 or 1,

or,

R^1, R^3, R^5, $X\ominus$ and n are each as defined above,

R^2 is lower alkyl, and

R^4 is 3-hydroxypropyl,

with proviso that

(i) when R^3 is $COO\ominus$, then n is 0, and

(ii) when R^3 is carboxy or a protected carboxy, then n is 1,

or a pharmaceutically acceptable salt thereof.

5,187,161

P-AMINOPHENOL DERIVATIVES, AND PROCESSES FOR PRODUCTION OF AND USES FOR THE SAME

Kiyoto Goto; Kinji Hashimoto, and Kenichi Kanai, all of Naruto, Japan, assignors to Otsuka Pharmaceutical Factory, Inc., Tokushima, Japan

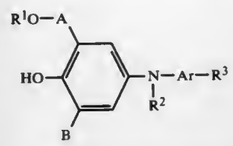
Continuation of Ser. No. 582,229, Oct. 3, 1990, abandoned. This application Feb. 27, 1992, Ser. No. 842,752

Claims priority, application Japan, Feb. 23, 1989, 1-44728

Int. Cl.[5] A61K *31/495;* **C07D** *241/00, 241/02, 241/04*

U.S. Cl. 514—255 **6 Claims**

1. A p-aminophenol derivative of the formula



wherein each of R^1 and R^2 is independently a hydrogen atom or a C_{1-6} acyl group; Ar is a pyrazine ring; R^3 is a hydrogen atom, a C_{1-6} alkyl group, a C_{1-6} alkyl group, a C_{1-6} alkoxy-carbonyl-C_{1-6} alkyl group, a C_{1-6} alkoxy group, a halogen atom or a carboxy-C_{1-6} alkyl group; A is a C_{1-6} alkylene group; and B is a C_{1-6} alkyl group, or a salt thereof.

5,187,162

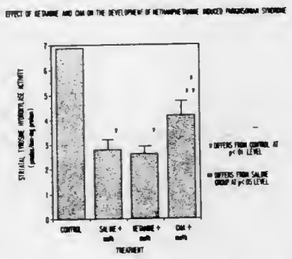
METHODS OF TREATING NEURODEGENERATIVE CONDITIONS

Paul Marangos, Encinitas, and Harry E. Gruber, San Diego, both of Calif., assignors to Gensia Pharmaceuticals, San Diego, Calif.

Continuation-in-part of Ser. No. 407,913, Sep. 15, 1989, abandoned. This application Sep. 12, 1990, Ser. No. 582,630

Int. Cl.[5] A61K *31/70*

U.S. Cl. 514—46 **26 Claims**



1. A method of preventing neural tissue damage caused by excitotoxicity due to increased release of excitatory amino acids in an affected animal wherein said excitotoxicity is caused by or causes a neurodegenerative condition which comprises increasing the extracellular concentration of adenosine in and about said neural tissue.

5,187,163

ANTI-VIRAL COMPOUNDS, DOSAGE FORMS AND METHODS

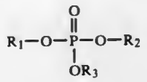
Phillip Frost, Miami Beach; Jack Fishman, Miami; Elliot Hahn, North Miami Beach, all of Fla., and Jing J. Lu, Terre Haute, Ind., assignors to Baker Norton Pharmaceuticals, Inc., Miami, Fla.

Continuation of Ser. No. 638,335, Jan. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 319,680, Mar. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 122,736, Nov. 19, 1987, abandoned, which is a continuation-in-part of Ser. No. 103,475, Oct. 1, 1987, abandoned, which is a continuation-in-part of Ser. No. 76,260, Jul. 21, 1987, abandoned, which is a continuation-in-part of Ser. No. 30,519, Mar. 27, 1987, abandoned. This application Jan. 28, 1992, Ser. No. 825,823

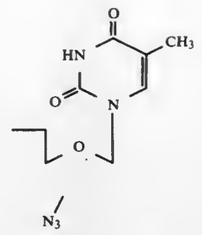
Int. Cl.[5] A61K *31/70;* **C07H** *17/00*

U.S. Cl. 514—47 **10 Claims**

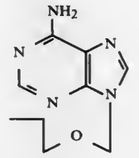
1. A compound having the formula

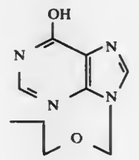


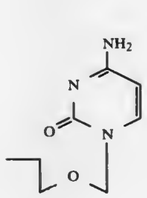
wherein R_1 is:



and R_2 is selected from the group consisting of:







(d)

and wherein R_3 is selected from the group consisting of hydrogen, lower alkyl, substituted lower alkyl, haloalkyl, cyanoalkyl, aryl, aralkyl, substituted acryl and substituted aralkyl, or a pharmaceutically acceptable salt of said compound.

5,187,164

SUBSTITUTED UREA COMPOUNDS AND THEIR PREPARATION AND USE

John B. Hansen, Jyderup, Denmark, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

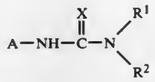
Filed Feb. 4, 1991, Ser. No. 650,143

Claims priority, application Denmark, Feb. 16, 1990, 0408/90

Int. Cl.[5] A61K *31/44;* **C07D** *221/02*

U.S. Cl. 514—299 **6 Claims**

1. A compound of formula I:

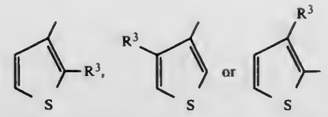


(I)

wherein

A is

(a)



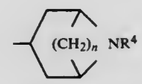
wherein R^3 is an oxadiazol substituted with C_{1-8}-alkyl, C_{2-8}-alkenyl, C_{2-8}-alkynyl, C_{3-7}-cycloalkyl, benzyl, phenyl, C_{1-6}-alkoxy, C_{1-6}-alkylthio or amino;

R^2 is H or lower alkyl;

X is O or S; and

R^1 is a group of formula II

(b)



(II)

wherein n is 3 and R^4 is H, C_{1-7}-alkyl or C_{3-6}-cycloalkyl; or an N-methylated ammonium derivative thereof.

5,187,165

(c)

MEMORY ENHANCING AND ANALGESIC 1,2,3,3A,8,8A-HEXAHYDRO-3A,8(AND 1,3A,8)-DI(AND TRI)METHYLPYRROLO[2,3-B]INDOLES

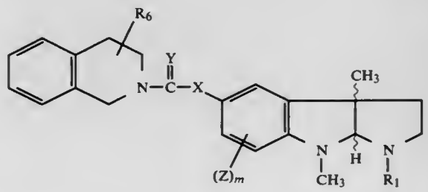
Russell R. L. Hamer, Far Hills; Grover C. Helsley, Pluckemin; Edward J. Glamkowski, Warren; Yulin Chiang, Convent Station; Brian S. Freed, Somerset, and Barbara E. Kurys, Elmwood Park, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Continuation-in-part of Ser. No. 49,894, May 15, 1987, Pat. No. 4,791,107, which is a continuation-in-part of Ser. No. 885,991, Jul. 16, 1996, abandoned. This application Sep. 22, 1988, Ser. No. 247,826

Int. Cl.[5] C07D *471/04;* **A61K** *31/475*

U.S. Cl. 514—307 **18 Claims**

1. A compound of the formula



where

(a) X is O or S;

(b) Y is O or S;

(c) m is 1 or 2;

(d) each Z is independently H, loweralkyl, halogen, nitro, $—NH_2$, loweralkylcarbonylamino, arylcarbonylamino, loweralkoxycarbonylamino, loweralkylamino, trialoweralkylsilyl, formyl, loweralkylaminocarbonyl, carboxyl or loweralkoxycarbonyl;

(e) R_1 is H, loweralkyl, aryllowеralkyl, heteroaryllowеralkyl, cycloalkylmethyl or loweralkenylmethyl, and

(f) R_6 is hydrogen or methyl; the term aryl in each occurrence signifying an unsubstituted phenyl group or naphthyl group or a phenyl group substituted with 1, 2 or 3 substituent groups each of which being independently loweralkyl, halogen, nitro, loweralkoxy, hydroxy or trifluoromethyl; and the term heteroaryl signifying a group having the formula

VOL 1147 ISS 3 FE 16 1993 UMI



where W is O, S, NR_5 or CH=N, R_5 being hydrogen or loweralkyl; or a pharmaceutically acceptable acid addition salt thereof.

5,187,166

AZABICYCLO DERIVATIVES AND THEIR USE AS ANTIEMETICS

Haruhiko Kikuchi; Hiroaki Satob; Nobuhiro Yahata; Koichiro Hagihara, all of Saitama; Toru Hayakawa, Kawagoe; Setsuko Mino, Fujimi, and Makoto Yanai, Saitama, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1991, Ser. No. 730,699

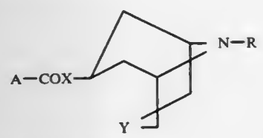
Claims priority, application Japan, Jul. 31, 1990, 2-201453; Oct. 31, 1990, 2-292000; Dec. 28, 1990, 2-418549; Mar. 26, 1991, 3-84473

Int. Cl.[5] A61K *31/54, 31/535, 31/495, 31/50*

U.S. Cl. 514—249 **5 Claims**

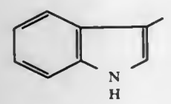
1. A compound of formula (I) or a pharmaceutically acceptable salt thereof:

(I)



wherein A is of formula (a):

(a)



wherein

X is O or NH;

Y is NR; and

R is C_1–C_4 alkyl.

5,187,167

PHARMACEUTICAL COMPOSITIONS COMPRISING QUINAZOLIN-4-ONE DERIVATIVES

Leslie R. Hughes, MacClesfield, England, assignor to Imperial Chemical Industries Plc, London, England

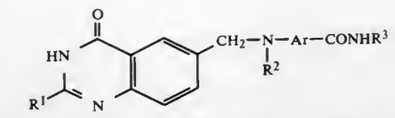
Division of Ser. No. 577,579, Sep. 5, 1990, Pat. No. 5,081,124, which is a division of Ser. No. 334,748, Apr. 6, 1989, Pat. No. 4,992,550, which is a continuation of Ser. No. 30,424, Mar. 26, 1987, abandoned. This application Oct. 11, 1991, Ser. No. 775,102

Claims priority, application United Kingdom, Mar. 27, 1986, 8607683

Int. Cl.[5] A01N *43/48;* **A61K** *31/165*

U.S. Cl. 514—259 **10 Claims**

1. A pharmaceutical composition suitable for use in producing an anti-tumor effect comprising an effective amount of a quinazoline of the formula:

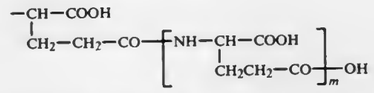


wherein R^1 is alkyl, cycloalkyl, alkenyl, alkynyl, alkoxy or alkylthio each of up to 6 carbon atoms; aryl, aryloxy or arylalkyl each of up to 10 carbon atoms; halogeno, hydroxy, mercapto, pyridylthio or pyrimidinylthio; alkyl of up to 3 carbon atoms which bears one, two or three halogeno substituents or which bears one or two substituents selected from hydroxy, amino, pyridylthio, pyrimidinylthio, alkoxy, alkanoyloxy, alkylthio, alkylamino, dialkylamino and alkanoylamino each of up to 6 carbon atoms and aroyloxy and aroylamino each of up to 10 carbon atoms; or alkoxy of up to 3 carbon atoms which bears one or two substituents selected from hydroxy and alkoxy of up to 6 carbon atoms;

wherein R^2 is hydrogen, alkyl, alkenyl, alkynyl, hydroxyalkyl, alkoxyalkyl, mercaptoalkyl, alkylthioalkyl, halogenoalkyl, cyanoalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, alkanoylalkyl, carboxyalkyl, carbamoylalkyl or alkanoyl each of up to 6 carbon atoms or aroylalkyl of up to 10 carbon atoms;

wherein Ar is phenylene, naphthylene or heterocyclene which is unsubstituted or which bears one or two substituents selected from halogeno, phenyl, cyano, nitro, hydroxy, amino and carbamoyl and alkyl, alkoxy, halogenoalkyl, alkanoylamino, alkylthio and alkoxycarbonyl each of up to 6 carbon atoms; and

wherein R^3 is such that R^3—NH_2 is L-aspartic acid, L-glutamic acid, L-alanine, L-phenylalanine, L-serine, glycine, L-ornithine, L-2-aminobutyric acid or a poly-L-glutamic acid of the formula



wherein m is an integer from 1 to 10; or a pharmaceutically acceptable salt or ester thereof,

together with a pharmaceutically acceptable diluent or carrier.

5,187,168

SUBSTITUTED QUINAZOLINES AS ANGIOTENSIN II ANTAGONISTS

John L. Primeau, Princeton, and Lloyd M. Garrick, Plainsboro, both of N.J., assignors to American Home Products Corporation, New York, N.Y.

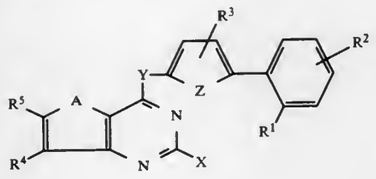
Filed Oct. 24, 1991, Ser. No. 782,850

Int. Cl.[5] A61K *31/505;* **C07D** *239/14*

U.S. Cl. 514—259 **35 Claims**

1. The compounds of formula I:

I



wherein

A is $—CR^7=CR^8—$;

Z is $—CR^7=CR^8—$;

X is H, NR^9R^{10}, OR^{11}, CN, F, Cl, I, Br, perfluoroalkyl, alkyl, alkyl-OH, alkoxyalkyl, $—(CH_2)_nCO_2R^{11}$, $—(CH_2)_nCONR^9R^{10}$;

Y is NR^{13}, $NR^{13}CR^{12}R^{14}$, $CR^{12}R^{14}NR^{13}$;

R^1 is 5-tetrazolyl, CO_2R^{11}, SO_3H, $NHSO_2CH_3$, $NHSO_2CF_3$;

R^2, R^3, R^4, R^7, R^8 is H, alkyl, alkoxyalkyl, alkyl-OH, perfluoroalkyl, aralkyl, CN, NO_2, SO_2R^{13}, $—(CH_2)_nCO_2R^{11}$, $—(CH_2)_nCONR^9R^{10}$, OR^{11}, F, Cl, Br, I, NR^9R^{10};

R^5 is alkyl, alkoxyalkyl, alkyl-OH, perfluoroalkyl, aralkyl, H, —CN, NO_2, SO_2R^{13}, $—(CH_2)_nCO_2R^{11}$, $—(CH_2)_nCONR^9R^{10}$, —OH, OR^{11}, F, Cl, Br, I, NR^9R^{10};

R^9, R^{10} is H, alkyl, alkoxyalkyl, alkyl-OH, perfluoroalkyl, aralkyl;

R^{11} is H, alkyl, aralkyl, alkoxyalkyl;

R^{12}, R^{14} is H, alkyl, alkoxy, alkoxyalkyl, alkyl-OH, perfluoroalkyl, aralkyl, CN, NO_2, SO_2R^{13}, $—(CH_2)_nCO_2R^{11}$, $—(CH_2)_nCONR^9R^{10}$;

R^{13} is H, OR^{11}, alkyl, perfluoroalkyl, aralkyl, $—(CH_2)_nCO_2R^{11}$, $—(CH_2)_nCONR^9R^{10}$; wherein alkyl and alkoxy contain 1–8 carbon atoms; perfluoroalkyl contains 1–6 carbon atoms; aralkyl contains 7–12 carbon atoms or 7–12 carbon atoms substitued with fluorine, bromine or chlorine; n is 0, 1, 2 or 3 or the pharmaceutically acceptable salts, solvates and hydrates thereof.

5,187,169

METHOD FOR TREATMENT OF NEURODEGENERATIVE DISEASES

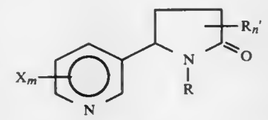
Patrick M. Lippiello, Clemmons, and William S. Caldwell, Winston-Salem, both of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Apr. 10, 1992, Ser. No. 866,698

Int. Cl.[5] A61K *31/44*

U.S. Cl. 514—343 **12 Claims**

1. A method for treating a patient suffering from senile dementia of the Alzheimer's type, the method comprising administering to the patient an effective amount of a compound having the formula:



where R represents H or alkyl; R′ represents alkyl, alkoxy or hydroxy; X represents halo or alkyl; m represents an integer from 0–4 and n represents an integer from 0–5.

5,187,170

THIOCARBOXYLIC ESTERS AND FUNGICIDES CONTAINING THEM

Horst Wingert; Hubert Sauter, both of Mannheim; Siegbert Brand, Birkenheide; Bernd Wenderoth, Lampertheim; Gisela Lorenz, Neustadt, and Eberhard Ammermann, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 608,351, Nov. 2, 1990, Pat. No. 5,112,860. This application Feb. 4, 1992, Ser. No. 831,103

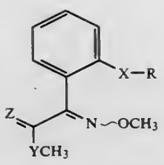
Claims priority, application Fed. Rep. of Germany, Nov. 16, 1989, 3938054; Sep. 13, 1990, 4029092

Int. Cl.[5] A01N *43/40;* **C07D** *213/32*

U.S. Cl. 514—351 **3 Claims**

1. A compound of the Formula I

I



where the substituents have the following meanings:

X is oxygen, sulfur, oxymethylene, methyleneoxy, thiomethylene, methylenethio, ethylene, ethenylene or ethynylene,

Y,Z are each sulfur or oxygen, but Y and Z are not simultaneously oxygen,

R is pyridyl or pyridyl substituted by the following radicals R^1:

R^1 is halogen, cyano, nitro, C_1–C_6-alkyl, C_3–C_6-cycloalkyl, C_1–C_6-alkoxy, trifluoromethyl, mononuclear or dinuclear carbocyclic aryloxy or mononuclear, dinuclear or trinuclear carbocyclic aryl, and aryloxy and aryl in turn may be substituted by the stated radicals R^1.

5,187,171

USE OF A GLYCINE B PARTIAL AGONIST AS AN ANTIPSYCHOTIC

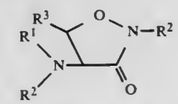
Alex A. Cordi, St. Louis, Mo., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Jan. 9, 1989, Ser. No. 294,851

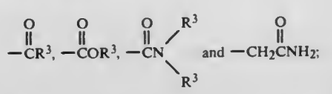
Int. Cl.[5] A61K *31/41, 31/42*

U.S. Cl. 514—359 **8 Claims**

1. A method to treat a psychotic disorder by administering to a subject susceptible to or suffering from a psychotic disorder a therapeutically-effective amount of a Glycine B partial agonist or a prodrug thereof selected from the family of compounds of the formula



wherein R^1 is selected from hydrido, alkyl, haloalkyl, alkoxyalkyl, cycloalkyl, aralkyl and aryl; wherein R^2 is selected from hydrido, alkyl, aralkyl, aryl,



wherein R^1 and R^2 which are attached to the same nitrogen atom may be taken together to form a Schiff-base derived group selected from derivatives of aldehydes and ketones; wherein R^3 is selected from hydrido, alkyl, haloalkyl, alkoxy, alkoxyalkyl, cycloalkyl, aralkyl and aryl; or a pharmaceutically-acceptable salt thereof.

VOL
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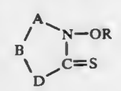
5,187,172

BIOCIDES

Peter W. Austin, Bury, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 443,029, Dec. 1, 1989, abandoned, which is a continuation of Ser. No. 048,648, May 11, 1987, abandoned. This application Feb. 18, 1992, Ser. No. 837,109
Claims priority, application United Kingdom, May 23, 1986, 8612630
Int. Cl.[5] A01N *43/78*
U.S. Cl. 514—369 **14 Claims**

1. An antimicrobial composition which is a solution, suspension or emulsion containing an antimicrobially effective amount of at least one compound of the formula



(I)

or a metal complex or salt thereof;
wherein
A and B are, independently, an optionally substituted carbon atom which is a group $—C(R^2)_2—$, $—CR^2=$, or



D is sulphur;
R is a hydrocarbonyl group, a substituted hydrocarbonyl group, or a group $—COOR^1$,
R^1 is a hydrocarbyl group; and
R^2 is hydrogen, a hydrocarbyl group, a substituted hydrocarbonyl group or two groups, R^2, together with the carbon atom or carbon atoms to which they are attached, form a 5- or 6-membered hydrocarbon ring system; wherein each hydrocarbyl group is an alkyl group containing up to five carbon atoms or is a phenyl group; and any substituent on a hydrocarbyl group is a hydrocarbonoxy group, an acyl group, an ester group, a halogen atom, or a nitrile group, and may contain a further ring system of formula I.

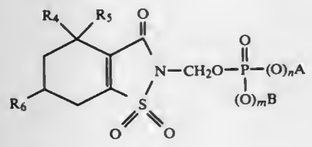
5,187,173

2-SACCHARINYLMETHYL AND 4,5,6,7-TETRAHYDRO-2-SACCHARINYLMETHYL PHOSPHATES, PHOSPHONATES AND PHOSPHINATES USEFUL AS PROTEOLYTIC ENZYME INHIBITORS AND COMPOSITIONS AND METHOD OF USE THEREOF

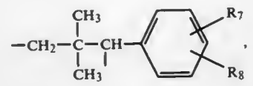
Ranjit C. Desai; John J. Court, both of Colonie; Dennis J. Hlasta, Clifton Park, and Chakrapani Subramanyam, East Greenbush, all of N.Y., assignors to Sterling Winthrop Inc., New York, N.Y.

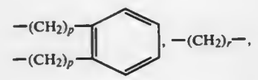
Filed Dec. 27, 1991, Ser. No. 814,741
Int. Cl.[5] A61K *31/425;* C07D *275/06*
U.S. Cl. 514—373 **9 Claims**

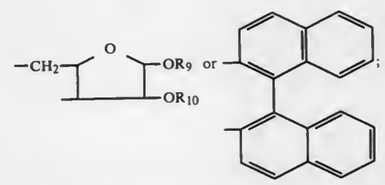
1. A compound having the formula:



wherein:
R_4 is hydrogen, lower-alkyl or phenyl;
R_5 is hydrogen or primary lower-alkyl;
or R_4 and R_5, taken together, represent ethylene;
R_6 is hydrogen or lower-alkoxy;
m and n are independently 0 or 1;
when m and n are 1, A and B are independently hydrogen, lower-alkyl, phenyl or benzyl, or, taken together, represent:







where R_7 and R_8 are independently hydrogen or chlorine, R_9 and R_{10} each is hydrogen or together represent isopropylidene, p is 0 or 1 and r is 2, 3 or 4;
when m is 1 and n is 0, A and B are independently lower-alkyl, phenyl, benzyl or 2-pyridinyl; and
when m and n are 0, A and B are independently lower-alkyl, phenyl or phenyl substituted by lower-alkoxy; or acid-addition salts of basic members or base-addition salts of acidic members thereof.

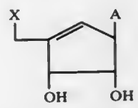
5,187,174

6′-DEOXY-6′-HALO-NEPLANOCIN A AND ITS PRODUCTION

Satoshi Shuto; Takumi Obara; Hiromichi Itoh; Takehiro Koshio; Tatsuro Fujiwara, and Masao Yaso, all of Shizuoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 477,520, Feb. 9, 1990, abandoned. This application Mar. 18, 1991, Ser. No. 673,177
Claims priority, application Japan, Feb. 14, 1989, 1-34748
Int. Cl.[5] A61K *31/52;* C07D *473/00*
U.S. Cl. 514—261 **2 Claims**

1. A compound of the formula



wherein A is adenine-9-yl and X is halogen, or a pharmaceutically acceptable salt thereof, said compound or salt being isolated from other compounds present during its production.

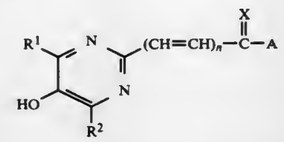
5,187,175

2-CARBONYL SUBSTITUTED-5-HYDROXY-1, 3-PYRIMIDINES AS ANTIINFLAMMATORY AGENTS

Thomas R. Belliotti, Ypsilanti; David T. Connor, Ann Arbor; Catherine R. Kostlan, Saline, and Steven R. Miller, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Mar. 6, 1992, Ser. No. 847,511
Int. Cl.[5] C07D *239/36;* A61K *31/505*
U.S. Cl. 514—269 **15 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt, or hydrate thereof; wherein X is O or NOH; R^1 and R^2 are each independently hydrogen or lower alkyl; n is an integer of zero or one; and A is phenyl, phenyl substituted by lower alkyl, lower alkoxy, halogen, trifluoromethyl, $NR_{10}R_{11}$ wherein R_{10} and R_{11} are independently hydrogen or lower alkyl, NO_2, mercapto, hydroxy, or lower thioalkoxy, $—CH_2OPh$, $—(CH_2)_mC≡CH$ in which m is an integer from two to four, or a 5 or 6 membered heteroaromatic ring 1) selected from pyridinyl, pyrimidinyl, thienyl, furyl, pyrrolyl, pyrazinyl, triazinyl, oxazolyl, isoxazolyl, pyrazolyl, pyridazinyl, imidazolyl, isothiazolyl, thiazolyl, thiadiazolyl, oxadiazolyl, and triazolyl, 2) which ring is attached at a carbon in the ring, and 3) which ring is optionally substituted by lower alkyl.

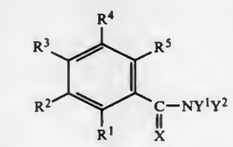
5,187,176

1-PHENYL SUBSTITUTED PYRIMIDONE DERIVATIVES

Roger Salmon, Bracknell; Raymond L. Sunley, and Alan J. Whittle, both of Twyford, all of England, assignors to Imperial Chemical Industries PLC, London, England

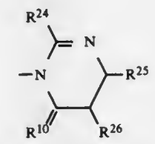
Filed Oct. 9, 1991, Ser. No. 775,677
Claims priority, application United Kingdom, Oct. 16, 1990, 9022444
Int. Cl.[5] A01N *43/54;* C07D *239/06*
U.S. Cl. 514—269 **9 Claims**

1. An insecticidal compound of formula (I):



(I)

wherein R^1 is of the formula:



where R^{10} is oxygen or sulphur; R^{24} is hydrogen, halogen, NR^7N^8, $S(O)_nR^6$, C_{1-6} alkyl or C_{3-10} cycloalkyl wherein R^7 and R^8 are independently selected from hydrogen, C_{1-6} alkyl or C_{3-10} cycloalkyl; R^{25} is halo, nitro, C_{1-6} haloalkyl, C_{1-6} haloalkoxy or $S(O)_nR^6$; and R^{26} is hydrogen, C_{1-6} alkyl, halogen, cyano, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, $S(O)_nR^6$, C_{1-6} haloalkylthio, $NR^{11}R^{12}$, formyl, nitro or C_{1-6} haloalkyl; R^2 is hydrogen, halogen, C_{1-6} haloalkyl, nitro, or cyano; R^3 and R^5 are independently selected from hydrogen, halogen, C_{1-6} alkyl or C_{3-10} cycloalkyl; R^4 is halogen, C_{1-6} haloalkyl, C_{1-6} haloalkoxy or $S(O)_nR^6$ where R^6 is C_{1-6} alkyl, C_{1-6} haloalkyl or C_{3-10} cycloalkyl and n is 0, 1 or 2; X is O or S and Y^1 and Y^2 are independently selected from hydrogen, nitro, amino or C_{1-6} alkyl optionally substituted by halogen, by C_{3-10} cycloalkyl, by formyl, by C_{2-7} alkanoyl, by C_{4-7} cycloalkylcarbonyl, by C_{2-7} alkoxycarbonyl, by C_{2-7} haloalkoxycarbonyl, or by an phenyl group or
Y^1 and Y^2 together form the group $=CHY^3$ wherein Y^3 is C_{1-6} alkyl, C_{2-6} alkenyl, phenyl, or amino optionally substituted by C_{1-6} alkyl or
Y^1 is hydrogen and Y^2 is C_{1-6} alkoxycarbonyl, C_{1-6} alkylcarbonyl, or a group $—S(O)_nR^6$ where R^6 and n are as hereinbefore defined.

5,187,177

METHOD AND A PHARMACEUTICAL PREPARATION FOR TREATING PAIN

Jose P. Garzaran, Barcelona, Spain, assignor to Novo Nordisk A/S, Bagsvaerd, Denmark

Filed Mar. 21, 1991, Ser. No. 672,546
Int. Cl.[5] A61K *31/44*
U.S. Cl. 514—282 **5 Claims**

1. A method of relieving pain in a subject suffering from biliary colic pain comprising administering to the said subject suffering from biliary colic pan a pharmaceutically effective amount of glucagon and a pharmaceutically effective amount of a spasmogenic analgesic at about the same time in a ratio of about 0.1–10 parts of glucagon per 10 parts of spasmogenic analgesic.

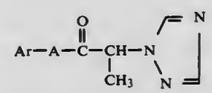
5,187,178

FUNGICIDAL SUBSTITUTED TRIAZOLES

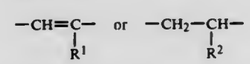
Gerd Kleefeld, and Stefan Dutzmann, both of Duesseldorf, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 526,935, May 22, 1990, Pat. No. 5,049,373, which is a division of Ser. No. 311,327, Feb. 15, 1989, Pat. No. 4,962,118. This application Apr. 17, 1991, Ser. No. 686,719
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1988, 3804981
The portion of the term of this patent subsequent to Nov. 6, 2007, has been disclaimed.
Int. Cl.[5] A01N *43/653;* C07D *249/08*
U.S. Cl. 514—383 **5 Claims**

1. A substituted triazole of the formula



in which
Ar stands for phenyl which can be monosubstituted or disubstituted by identical or different substituents selected from the group consisting of chlorine and trifluoromethoxy,
A stands for a



group,
R^1 stands for hydrogen or methyl, and
R^2 stands for hydrogen or methyl,
or an addition product thereof with an acid or metal salt.

VOL 1147 ISS 3 FEB 16 1993 UMI

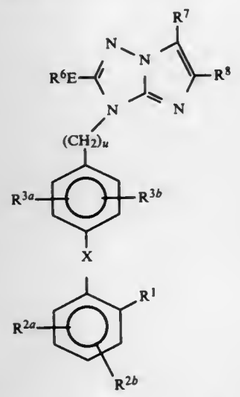
5,187,179

ANGIOTENSIN II ANTAGONISTS INCORPORATING A SUBSTITUTED IMIDAZO [1,2-B][1,2,4]TRIAZOLE

Wallace T. Ashton, Clark; Steven M. Hutchins, Iselin, and Malcolm MacCoss, Freehold, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Mar. 22, 1991, Ser. No. 673,630
Int. Cl.[5] A61K *31/41*; C07D *249/08, 279/10, 413/10*
U.S. Cl. 514—383 12 Claims

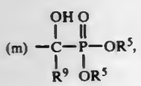
1. A compound of structural formula:



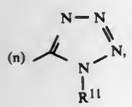
(I)

or a pharmaceutically acceptable salt thereof wherein:

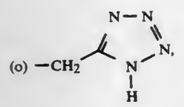
R^1 is
(a) $—CO_2R^5$,
(b) $—SO_3R^5$,
(c) $—NHSO_2CF_3$,
(d) $—PO(OR^5)_2$,
(e) $—SO_2—NH—R^9$,
(f) $—CONHOR^5$,
(g) $—SO_2NHCOR^{23}$,
(h) $—CH_2SO_2NHCOR^{23}$,
(i) $—CONHSO_2R^{23}$,
(j) $—CH_2CONHSO_2R^{23}$,
(k) $—NHSO_2NHCOR^{23}$,
(l) $—NHCONHSO_2R^{23}$,



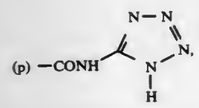
(m)



(n)



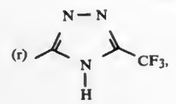
(o)



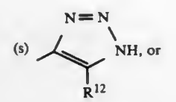
(p)

(q) $—CONHNHSO_2CF_3$,

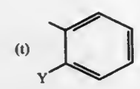
-continued



(r)



(s)



(t)

Y is
(1) $—CO_2R^4$,
(2) $—SO_3R^5$,
(3) $—NHSO_2CF_3$,
(4) $—PO(OR^5)_2$,
(5) $—SO_2—NH—R^9$, or
(6) 1H-tetrazol-5-yl;

R^{2a} and R^{2b} are each independently:
(a) hydrogen,
(b) Cl, Br, I, F,
(c) NO_2,
(d) NH_2,
(e) $(C_1–C_4)$-alkylamino,
(f) $—SO_2NHR^9$,
(g) CF_3,
(h) $(C_1–C_4)$-alkyl
(i) $(C_1–C_4)$-alkoxy, or
(j) when R^{2a} and R^{2b} are on adjacent carbons, they can be bonded together to form a phenyl ring;

R^{3a} is
(a) H,
(b) Cl, Br, I, F,
(c) $(C_1–C_6)$-alkyl,
(d) $(C_1–C_6)$-alkoxy,
(e) $(C_1–C_6)$-alkoxy-$(C_1–C_4)$-alkyl;

R^{3b} is
(a) H,
(b) Cl, Br, I, F,
(c) NO_2,
(d) $(C_1–C_6)$-alkyl,
(e) $(C_1–C_5)$-alkylcarbonyloxy,
(f) $(C_3–C_6)$-cycloalkyl,
(g) $(C_1–C_6)$-alkoxy,
(h) $—NHSO_2R^4$,
(i) hydroxy-$(C_1–C_4)$-alkyl,
(j) aryl-$(C_1–C_4)$-alkyl,
(k) $(C_1–C_4)$-alkylthio,
(l) $(C_1–C_4)$-alkylsulfinyl,
(m) $(C_1–C_4)$-alkylsulfonyl,
(n) NH_2,
(o) $(C_1–C_4)$-alkylamino,
(p) di[$(C_1–C_4)$-alkyl]amino,
(q) CF_3,
(r) $—SO_2—NHR^9$,
(s) phenyl or naphthyl unsubstituted or substituted with one or two substituents selected from the group consisting of: Cl, Br, I, F $(C_1–C_4)$-alkyl, $(C_1–C_4)$-alkoxy, NO_2, CF_3, $(C_1–C_4)$-alkylthio, OH or NH_2,
(t) furyl, or
(u) when R^{3a} and R^{3b} are on adjacent carbons, they can be bonded together to form a phenyl ring;

R^4 is H, $(C_1–C_6)$-alkyl, phenyl, naphthyl, CH_2-phenyl or CH_2-naphthyl;

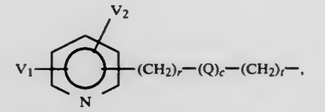
R^{4a} is $(C_1–C_6)$-alkyl, phenyl, naphthyl, CH_2-phenyl or CH_2-naphthyl;

R^5 is H or $—CH(R^4)—O—CO—R^{4a}$;

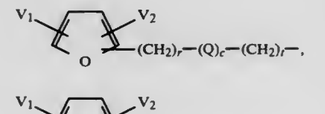
E is a single bond, $—NR^{13}(CH_2)_s—$, $—S(O)_x(CH_2)_s—$ where x is 0 to 2 and s is 0 to 5, $—CH(OH)—$, $—O(CH_2)_s—$ or $—CO—$;

R^6 is
(a) phenyl or naphthyl, unsubstituted or substituted with 1 or 2 substituents selected from the group consisting of: Cl, Br, I, F, $—O—(C_1–C_4)$-alkyl, $(C_1–C_4)$-alkyl, $—NO_2$, $—CF_3$, $—SO_2NR^9R^{10}$, $—S—(C_1–C_4)$-alkyl, —OH, $—NH_2$, $(C_3–C_7)$-cycloalkyl, $(C_3–C_{10})$-alkenyl,
(b) $(C_1–C_6)$-alkyl, $(C_2–C_6)$-alkenyl or $(C_2–C_6)$-alkynyl each of which can be unsubstituted or substituted with one or more substituents selected from the group consisting of: phenyl or naphthyl, $C_3–C_7$-cycloalkyl, Cl, Br, I, F, —OH, $—O—C_1–C_4$-alkyl, $—NH_2$, $—NH((C_1–C_4)$-alkyl), $—N[(C_1–C_4)$-alkyl$]_2$, $—NH—SO_2R^4$, $—COOR^4$, $—SO_2NHR^9$, or $—S—(C_1–C_4)$-alkyl,
(c) mono-, di-, tri- or polyfluoro-$(C_1–C_5)$-alkyl,
(d) $(C_3–C_7)$-cycloalkyl, unsubstituted or substituted with one or more substituents selected from the group consisting of: $(C_1–C_4)$-alkyl, O-$(C_1–C_4)$-alkyl, S—$(C_1–C_4)$-alkyl, OH, perfluoro-$(C_1–C_4)$-alkyl, Cl, Br, F or I, or
(e) $(C_3–C_7)$-cycloalkyl-$(C_1–C_3)$-alkyl wherein the cycloalkyl is substituted with one or more substituents selected from the group consisting of: $(C_1–C_4)$-alkyl, O—$(C_1–C_4)$-alkyl, S—$(C_1–C_4)$-alkyl, OH, perfluoro-$(C_1–C_4)$-alkyl, Cl, Br, F or I;

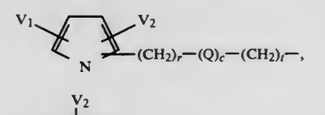
R^7 and R^8 are independently:
(a) H,
(b) $(C_1–C_{10})$-alkyl, unsubstituted or substituted $(C_1–C_{10})$-alkyl in which one or more substituent(s) is selected from the group consisting of:
(1) I, Br, Cl, F,
(2) hydroxy,
(3) $(C_1–C_{10})$-alkoxy,
(4) $(C_1–C_5)$-alkoxycarbonyl,
(5) $(C_1–C_4)$-alkylcarbonyloxy,
(6) $(C_3–C_8)$-cycloalkyl,
(7) phenyl or naphthyl
(8) substituted phenyl or naphthyl in which the substituents are V_1, V_2, V_3, V_4 and V_5,
(9) $(C_1–C_{10})$-alkyl-$S(O)_p$ in which p is 0 to 2,
(10) $(C_3–C_8)$-cycloalkyl-$S(O)_p$,
(11) phenyl-$S(O)_p$,
(12) substituted phenyl-$S(O)_p$ in which the substituents are V_1–V_5,
(13) oxo,
(14) carboxy,
(15) NR^9R^9,
(16) CONH-$(C_1–C_5)$-alkyl,
(17) CON[$(C_1–C_5)$-alkyl$]_2$, or
(18) cyano,
(c) $(C_2–C_{10})$-alkenyl,
(d) $(C_2–C_{10})$-alkynyl,
(e) $(C_3–C_8)$-cycloalkyl,
(f) substituted $(C_3–C_8)$-cycloalkyl or substituted $(C_3–C_8)$-cycloalkyl-$C_1–C_4$-alkyl having one or more substituents selected from the group:
(1) Cl, Br, F, I,
(2) hydroxy,
(3) $(C_1–C_6)$-alkyl,
(4) $(C_1–C_6)$-alkoxy,
(5) $(C_1–C_4)$-alkylcarbonyloxy,
(6) $(C_1–C_5)$-alkoxycarbonyl,
(7) carboxy,
(8) oxo,
(9) $(C_1–C_5)$-alkylaminocarbonyl,
(10) di[$(C_1–C_5)$]-alkylaminocarbonyl,
(11) $(C_1–C_4)$-alkylcarbonyl,
(12) phenyl or naphthyl or
(13) substituted phenyl or naphthyl in which the substituents are V_1, V_2, V_3, V_4 and V_5,
(g) phenyl or naphthyl
(h) substituted phenyl or naphthyl in which the substituents are V_1, V_2, V_3, V_4 and V_5,
(i) phenyl$—(CH_2)_r—(Q)_c—(CH_2)_t—$ or naphthyl $—(CH_2)_r—(Q)_c—(CH_2)_t—$,
(j) substituted phenyl $—(CH_2)_r—(Q)_c—(CH_2)_t—$ or substituted naphthyl $—(CH_2)_r—(Q)_c—(CH_2)_t—$ in which the phenyl or naphthyl group is substituted with V_1, V_2, V_3, V_4 and V_5,
(k) a heterocyclic moiety selected from the group consisting of:



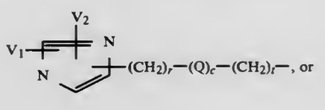
$—(CH_2)_r—(Q)_c—(CH_2)_t—$,



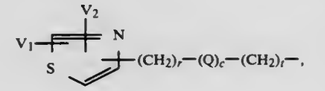
$—(CH_2)_r—(Q)_c—(CH_2)_t—$,



$—(CH_2)_r—(Q)_c—(CH_2)_t—$,

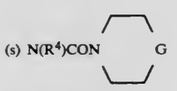


$—(CH_2)_r—(Q)_c—(CH_2)_t—$, or



$—(CH_2)_r—(Q)_c—(CH_2)_t—$,

(l) Cl, Br, I, F,
(m) nitro,
(n) nitroso,
(o) NR^9R^{10},
(p) NR^4COR^9,
(q) $NR^4CO_2R^9$,
(r) $NR^4CONR^9R^{10}$,



(s) $N(R^4)CON$ G

(t) $NHSO_2CF_3$,
(u) CO_2R^4,
(v) CN,
(w) 1H-tetrazol-5-yl,
(x) O—$(C_1–C_4)$-alkyl, or
(y) $S(O)_p—(C_1–C_4)$-alkyl;

G is O, $S(O)_p$, or NR^9;

R^9 is H, $(C_1–C_5)$-alkyl; phenyl, naphthyl, CH_2-phenyl or CH_2-naphthyl;

R^{10} is H, $(C_1–C_4)$-alkyl, or R^9 and R^{10} together can be $—(CH_2)_m—$, where m is 3–6;

R^{11} is H, $(C_1–C_6)$-alkyl, $(C_2–C_4)$-alkenyl, $(C_1–C_4)$-alkoxy-$(C_1–C_4)$-alkyl, or $—CH_2—C_6H_4R^{20}$;

R^{12} is —CN, $—NO_2$ or $—CO_2R^4$;

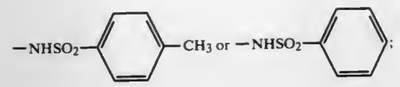
R^{13} is H, $(C_1–C_4)$-acyl, $(C_1–C_6)$-alkyl, allyl, $(C_3–C_6)$-cycloalkyl, phenyl or benzyl;

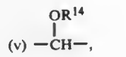
R^{14} is H, $(C_1–C_8)$-alkyl, $(C_1–C_8)$-perfluoroalkyl, $(C_3–C_6)$-cycloalkyl, phenyl or benzyl;

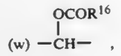
R^{15} is H, $(C_1–C_6)$-alkyl or hydroxy;

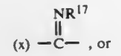
VOL 1147 ISS 3 FE 16 1993 UMI

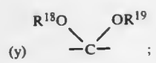
R^{16} is H, (C_1-C_6)-alkyl, (C_3-C_6)-cycloalkyl, phenyl or benzyl;
R^{17} is $-NR^9R^{10}$, $-OR^{10}$, $-NHCONH_2$, $-NHCSNH_2$, $-NHSO_2CF_3$,











R^{18} and R^{19} are independently (C_1-C_4)-alkyl or taken together are $-(CH_2)_q-$ where q is 2 or 3;
R^{20} is H, $-NO_2$, $-NH_2$, $-OH$ or $-OCH_3$;

Q is $-C(O)-$, $-S-$, $-O-$ or $-NR^4$;
c is 0 or 1;
r and t are 0 to 2;

R^{23} is
(a) phenyl or naphthyl
(b) (C_3-C_7)-cycloalkyl,
(c) (C_1-C_4)-alkyl, unsubstituted or substituted with a substituent selected from the group consisting of: aryl, heteroaryl, —OH, —SH, (C_1-C_4)-alkyl, $-O((C_1-C_4)$-alkyl), $-CH_3$, $S(C_1-C_4)$-alkyl, Cl, Br, F, I, $-NO_2$, $-CO_2H$, $-CO_2-(C_1-C_4)$-alkyl, $-NH_2$, $-NH(-C_1-C_4)$-alkyl, $-N((C_1-C_4)$-alkyl$)_2$, $-N(CH_2CH_2)_2L$, $-PO_3H$, or $-PO(OH)(O-(C_1-C_4)$-alkyl);
L is a single bond, CH_2, O, $S(O)_p$, or NR^9;

V_1, V_2, V_3, V_4 and V_5 are each independently selected from:

(a) H,
(b) (C_1-C_5)-alkoxy,
(c) (C_1-C_5)-alkyl,
(d) hydroxy,
(e) (C_1-C_5)-alkyl-$S(O)_p$,
(f) —CN,
(g) $-NO_2$,
(h) $-NR^9R^{10}$,
(i) (C_1-C_5)-alkyl-$CONR^9R^{10}$,
(j) $-CONR^9R^{10}$,
(k) $-CO_2R^9$,
(l) (C_1-C_5)-alkyl-carbonyl,
(m) CF_3,
(n) I, Br, Cl, F,
(o) hydroxy-(C_1-C_4)-alkyl-,
(p) carboxy-(C_1-C_4)-alkyl-,
(q) -1H-tetrazol-5-yl,
(r) $-NH-SO_2CF_3$,
(s) aryl,
(t) (C_1-C_5)-alkyl-CO_2R^9,
(u) phenoxy or naphthoxy,
(v) phenyl-(C_1-C_3)-alkoxy, or naphthyl-(C_1-C_3)-alkoxy,
(w) phenyl-(C_1-C_3)-alkyl, or naphthyl-(C_1-C_3)-alkyl,
(x) carboxyphenyl,
(y) 2-oxazolin-2-yl, unsubstituted or substituted with one or more (C_1-C_4)-alkyl substituents,
(z) $-(CH_2)_tOCOR^9$,
(aa) $-(CH_2)_tOCONR^9R^{10}$,
(bb) $-(CH_2)_tNR^4COR^9$,
(cc) $-(CH_2)_tNR^4CO_2R^9$,
(dd) $-(CH_2)_tNR^4CONR^9R^{10}$,

X is
(a) a single bond,
(b) —CO—,
(c) —O—,
(d) —S—,
(e) —N—, R^{13}
(f) —CON—, R^{15}
(g) —NCO—, R^{15}
(h) $-OCH_2-$,
(i) $-CH_2O-$
(j) $-SCH_2-$,
(k) $-CH_2S-$,
(l) $-NHC(R^9)(R^{10})-$,
(m) $-NR^9SO_2-$,
(n) $-SO_2NR^9-$,
(o) $-C(R^9)(R^{10})NH-$,
(p) —CH=CH—,
(q) —CF=CF—,
(r) —CH=CF—,
(s) —CF=CH—,
(t) $-CH_2CH_2-$,
(u) $-CF_2CF_2-$,

(ee)



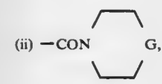
(ff) $-(CH_2)_tOCON$ G,

(gg) $-N(CH_2CH_2)_2G$,

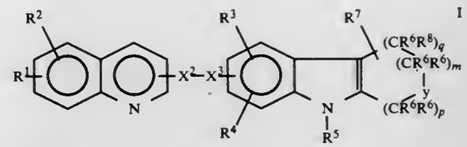
(hh),



(ii);



G is O, $S(O)_p$ or NR^9;
u is 1 or 2;
Z is O, NR^{13} or S.



wherein:
each of R^1, R^2, R^3, R^4 and R^{10} is independently hydrogen, halogen, lower alkyl, lower alkenyl, lower alkynyl, $-CF_3$, —CN, $-NO_2$, $-N_3$, $-C(OH)R^6R^6$, $-C(O)OR^{12}$, $-SR^{13}$, $-S(O)R^{13}$, $-S(O)_2R^{13}$, $-S(O)_2NR^{15}R^{15}$, $-C(O)NR^{15}R^{15}$, $-OR^{15}$, $-NR^{15}R^{15}$, $-C(O)R^{16}$ or $-(CH_2)_rR^{21}$;
R^5 is hydrogen or $X-R^9$,
R^6 is independently hydrogen or lower alkyl, or two R^6 groups on the same carbon atom are joined to form a cycloalkyl ring of 3 to 6 carbon atoms;
R^7 is $-(CR^6R^6)_tQ$;
R^8 is hydrogen, R^9, $-CR^{23}=CR^{24}R^{25}$, $-C(Cl)=CCl_2$ or R^6 plus R^8 on the same carbon atom may be a double bonded oxygen (=O);
R^9 is alkyl, alkenyl, $-(CH_2)_tPh(R^{10})_2$ or $-(CH_2)_tTh(R^{10})_2$;
R^{11} is the structure of a standard amino acid except for the amino group α to the carboxy group, or R^{11} and R^{18} attached to the same nitrogen can cyclize to form a proline residue;
R^{12} is hydrogen, lower alkyl or $-CH_2R^{21}$;
R^{13} is $-CF_3$ or R^{14};
R^{14} is lower alkyl or $-(CH_2)_uR^{21}$;
R^{15} is hydrogen, $-C(O)R^{16}$, R^{14}, or two R^{15} groups on the same nitrogen may be joined to form a heterocyclic ring of 4 to 6 atoms containing up to 2 heteroatoms chosen from O, S or N;
R^{16} is hydrogen, lower alkenyl, lower alkynyl, or R^{13};
R^{17} is $-(CH_2)_v-C(R^{18}R^{18})-(CH_2)_r-R^{19}$ or $-CH_2-C(O)NR^{15}R^{15}$;
R^{18} is hydrogen or lower alkyl;
R^{19} is
a) a monocyclic or bicyclic heterocyclic radical containing from 3 to 9 nuclear carbon atoms and 1 or 2 nuclear hetero-atoms selected from N, S or O and with each ring in the heterocyclic radical being formed of 5 or 6 atoms, or
b) the radical W-R^{20};
R^{20} contains up to 21 carbon atoms and is (1) a hydrocarbon radical or (2) an acyl radical of an organic acyclic or monocyclic carboxylic acid containing not more than 1 heteroatom in the ring;
R^{21} is phenyl substituted with 1 or 2 R^{22} groups;
R^{22} is hydrogen, halogen, lower alkyl, lower alkoxy, lower alkylthio, lower alkylsulfonyl, lower alkylcarbonyl, $-CF_3$, —CN, $-NO_2$ or $-N_3$;
R^{23} is R^{18} or R^{23} and R^{24} may form a bond;
R^{24} is R^6 or R^{23} and R^{24} may form a bond;
R^{25} is R^6;
m is 0 to 3;
p is 1 to 3
q is 0 or 1;
m+p+q is 2 to 4;
m+q is 0 to 3;
r is 0 to 2;
s is 0 to 4;
t is 0 to 3;
u is 0 to 3;
v is 0 to 3;
W is O, S, or NR^{15};
X is C(O), CR^6R^6, $S(O)_2$, or a bond;
X^2-X^3 is CH_2O, CH_2S, $CH_2S(O)_2$, CH_2CH_2, or CH=CH;
Y is O, NR^{15}, S, S(O), or $S(O)_2$;
Q is $-C(O)NR^{11}R^{18}$ $-C(O)OR^{12}$, $-C(O)NHS(O)_2R^{13}$,

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5,187,180
(QUINOLIN-2-YLMETHOXY)HETEROTETRAHYDROCARBAZOLES AS INHIBITORS OF THE BIOSYNTHESIS OF LEUKOTRIENES

John W. Gillard, Baie d'Urfe, Canada, assignor to Merck Frosst Canada, Inc., Kirkland, Canada

Continuation-in-part of Ser. No. 558,724, Jul. 26, 1990, abandoned. This application Jul. 12, 1991, Ser. No. 729,019
Int. Cl.[5] **A01N** *43/42;* **C07D** *215/36*
U.S. Cl. 514—312 **7 Claims**

1. A compound of the formula:

VOL 1147 ISS 3 FE 16 1993 UMI

—$NHS(O)_2R^{13}$, —$S(O)_2NHR^{15}$, —$C(O)NR^{15}R^{15}$, —$C(O)OR^{17}$, —CH_2OH, or 1H- or 2H-tetrazol-5-yl;
or the pharmaceutically acceptable salts thereof.

5,187,181

Patent Not Issued For This Number

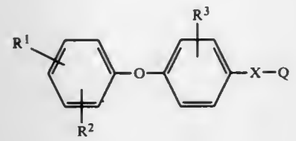
5,187,182

N-PHENOXYPHENOXYMETHYL-TRIAZOLES AND A METHOD FOR CONTROLLING PESTS

Rainer Buerstinghaus, Telgte; Hans-Juergen Neubauer, Mannheim; Peter Hofmeister, Neustadt; Christoph Kuenast, Otterstadt; Joachim Leyendecker, Mannheim, and Uwe Kardorff, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 516,925, Apr. 30, 1990, Pat. No. 5,116,860, which is a division of Ser. No. 184,804, Apr. 22, 1988, Pat. No. 4,943,585. This application Mar. 12, 1992, Ser. No. 849,980
Claims priority, application Fed. Rep. of Germany, May 2, 1987, 3714709; Jan. 23, 1988, 3801919
Int. Cl.[5] A01N *43/653;* **C07D** *249/08, 249/12*
U.S. Cl. 514—383 **4 Claims**

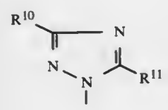
1. N-substituted azole of the formula I



(I)

where R^1, R^2, R^3 are each hydrogen, halogen, C_1–C_8-alkyl, C_1–C_8-alkoxy, C_{1-C4}-haloalkyl, C_1–C_4-haloalkoxy, C_3–C_{10}-cycloalkyl, nitro or cyano,

Q is an unsubstituted or substituted azole group of the formulae



(IIc)

R^{10} and R^{11} denoting hydrogen, halogen, C_1–C_8-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_3–C_{10}-cycloalkyl or phenyl, 1-naphthyl or 2-naphthyl which are unsubstituted or mono-, di- or trisubstituted by halogen, C_1–C_8-alkyl, C_1–C_8-alkoxy, C_1–C_4-haloalkyl or C_1–C_4-haloalkoxy, and X is —OCH_2—.

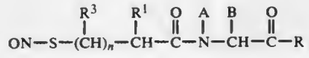
5,187,183

S-NITROSO DERIVATIVES OF ACE INHIBITORS AND THE USE THEREOF

Joseph Loscalzo, Dedham, and John Cooke, Needham Heights, both of Mass., assignors to Brigham & Women's Hospital, Boston, Mass.

Division of Ser. No. 328,397, Mar. 24, 1989, Pat. No. 5,025,001, which is a continuation-in-part of Ser. No. 206,763, Jun. 15, 1988, Pat. No. 5,002,864. This application Jun. 14, 1991, Ser. No. 715,588
Int. Cl.[5] A61K *31/415*
U.S. Cl. 514—400 **21 Claims**

1. An S-nitrosothiol having the formula:



wherein
R is hydroxy, NH_2, NHR^4, NR^4R^5 or C_1–C_7 alkoxy, wherein R^4 and R^5 are C_1–C_4 alkyl, aryl, or C_1–C_4 alkyl substituted by aryl;
R^1 is hydrogen, C_1–C_7 alkyl or C_1–C_7 alkyl substituted by phenyl, amino, guanidino, NHR^6 or NR^6R^7, wherein R^6 and R^7 are methyl, or C_1–C_4 carboxylic acyl;
R^3 is hydrogen, C_1–C_7 alkyl or C_1–C_7 alkyl substituted by phenyl;
n is 0 to 2;
A is hydrogen,
lower C_1–C_7 alkyl,
lower C_2–C_7 alkylene,
lower C_2–C_7 alkylene substituted by hydroxy, C_1–C_4 alkyl, aryl, or
a C_4–C_7 ring which may be fused to a benzene ring;
B is hydrogen,
lower C_1–C_7 alkyl,
phenyl,
lower C_1–C_7 alkyl substituted by phenyl, hydroxy, guanidino, amino, imidazoyl, indolyl, mercapto, mercapto substituted by lower C_1–C_4 alkyl, carbamoyl, or carboxy, or
lower C_2–C_7 alkylene.

5,187,184

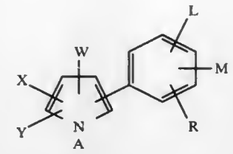
INSECTICIDAL AND SYNERGISTIC MITICIDAL COMPOSITIONS

James B. Lovell, Pennington, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 26, 1990, Ser. No. 634,289
Int. Cl.[5] A01N *43/36, 43/58*
U.S. Cl. 514—406 **8 Claims**

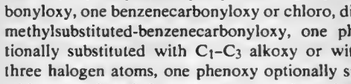
1. A synergistic miticidal composition comprising as essential active ingredients a synergistically effective amount of an

arylnitropyrrole or arylpyrrolecarbonitrile having the structure of formula I:

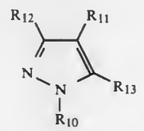


(I)

wherein
X is H, F, Cl, Br, I, or CF_3;
Y is H, F, Cl, Br, I, CF_3 or CN;
W is CN or NO_2;
A is H, C_1–C_4 alkyl or C_2–C_4 monohaloalkyl, each optionally substituted with from one to three additional halogen atoms, one cyano, one hydroxy, one or two C_1–C_4 alkoxy groups each optionally substituted with one to three halogen atoms, one C_1–C_4 alkylthio, one C_1–C_4 carbalkoxy, one C_1–C_6 alkylcarbonyloxy one C_2–C_6 alkenylcarbonyloxy, one benzenecarbonyloxy or chloro, dichloro or methylsubstituted-benzenecarbonyloxy, one phenyl optionally substituted with C_1–C_3 alkoxy or with one to three halogen atoms, one phenoxy optionally substituted with one to three halogen atoms or one benzyloxy optionally substituted with one halogen substituent; C_3–C_4 alkenyl optionally substituted with one to three halogen atoms; cyano, C_3–C_4 alkynyl optionally substituted with one halogen atom, di-(C_1–C_4 alkyl) aminocarbonyl, C_3–C_6 polymethyleneiminocarbonyl;
L is H, F, Cl or Br; and
M and R are each independently H_1, C_1–C_3 alkyl, C_1–C_3 alkoxy, C_1–C_3 alkylthio, C_1–C_3 alkylsulfinyl, C_1–C_3 alkylsulfonyl, cyano, F, Cl, Br, I, nitro, CF_3, R_1CF_2Z, R_2CO or NR_3R_4; and when M and R are on adjacent positions and taken with the carbon atoms to which they are attached they may form a ring in which MR represents the structure:



Z is S(O)n or O;
R_1 is H, F, CHF_2, CHFCl, or CF_3;
R_2 is C_1–C_3 alkyl, C_1–C_3 alkoxy, or NR_3R_4;
R_3 is H or C_1–C_3 alkyl;
R_4 is H, C_1–C_3 alkyl, or R_5CO;
R_5 is H or C_1–C_3 alkyl; and
n is an integer of 0, 1 or 2;
and an arylpyrazolecarboxamide having the structure of formula II:

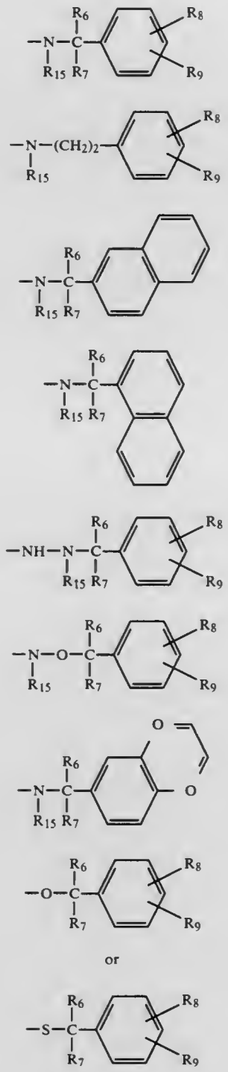


(II)

wherein
R_{10} represents a hydrogen atom, C_1–C_4 alkyl, C_1–C_4 haloalkyl, phenyl or benzyl;
one of R_{12} and R_{13} represents



wherein R_{14} represents



wherein
R_6, R_7 and R_{15} each represent hydrogen, C_1–C_4 alkyl or phenyl;
R_8 and R_9 each represent hydrogen, halogen, C_1–C_8 alkyl, C_3–C_5 alkenyl, C_3–C_5 alkynyl, C_3–C_6 cycloalkyl, C_2–C_4 alkoxyalkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, nitro, trifluoromethyl, phenyl, benzyl, phenoxy, benzyloxy, amino, C_1–C_4 alkylamino, cyano, C_2–C_8 dial-

VOL 1147 ISS 3 FE 16 1993 UMI

kylamino, carboxyl, C_2–C_5 alkoxycarbonyl, C_4–C_7 cycloalkoxycarbonyl, C_3–C_9 alkoxyalkoxycarbonyl, C_2–C_6 alkylaminocarbonyl, C_3–C_{11} dialkylaminocarbonyl, piperidinocarbonyl, morpholinocarbonyl, trimethylsilyl, C_1–C_4 alkylthio, C_1–C_4 alkylsulfinyl or C_1–C_4 alkylsulfonyl;

R_{11} is hydrogen, halogen, C_1–C_4 alkyl, nitro, cyano, C_1–C_5 alkylamino, C_2–C_{10} dialkylamino or C_2–C_7 acylamino;

providing that when all of R_6, R_7, R_8 and R_9 are hydrogen atoms, then R_{10} is C_1–C_4 alkyl, C_1–C_4 haloalkyl, phenyl or benzyl; and the other of R_{12} and R_{13} represents hydrogen, C_1–C_4 alkyl, C_1–C_4 haloalkyl, C_3–C_6 cycloalkyl or phenyl wherein the ratio of the formula II compound to the formula I compound in the synergistic composition is between about 1:1 and 2:1.

5,187,185

PESTICIDAL 1-ARYLPYRROLES

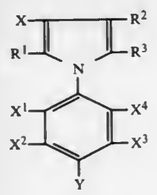
Russell J. Outcalt, Cary; Philip R. Timmons, Durham, both of N.C.; Susan M. Cramp, Dagenham, England; Patricia L. Kwiatkowski; Anibal Lopes, both of Raleigh, N.C.; Paul A. Cain; David N. Sinodis, both of Cary, N.C.; Lee S. Hall, Raleigh, N.C., and Jean-Pierre A. Vors, Lyons, France, assignors to Rhone-Poulenc AG Company, Research Triangle Park, N.C.

Continuation-in-part of Ser. No. 435,362, Nov. 16, 1989, which is a continuation-in-part of Ser. No. 282,439, Dec. 9, 1988, abandoned. This application Jun. 5, 1990, Ser. No. 533,470

Int. Cl.[5] A01N *43/36*

U.S. Cl. 514—408 **64 Claims**

1. A pesticidal composition, which is employed as an insecticidal, acaricidal or nematicidal agent, which comprises one or more compatible components selected from the group consisting of a pesticidally acceptable carrier and a pesticidally acceptable surface-active agent and a pesticidally effective amount of a compound of formula (Ia), as active ingredient,



(Ia)

wherein:

X is selected from the group consisting of: halogen, cyano, cyanato, thiocyanato, haloalkyl, alkoxy, haloalkoxy, alkylthio, alkylsulfinyl, alkylsulfonyl, haloalkylthio, haloalkylsulfinyl, haloalkylsulfonyl, haloalkylcarbonyl, alkenylthio, alkenylsulfinyl, alkenylsulfonyl, haloalkenylthio, haloalkenylsulfinyl, haloalkenylsulfonyl, haloalkylthiocarbonyl, phenylthio, phenylsulfinyl, and phenylsulfonyl; and wherein the phenyl groups are optionally substituted with halogen, cyano or haloalkyl groups; and wherein the alkyl, haloalkyl, alkenyl, haloalkenyl, alkoxy and haloalkoxy groups herein are linear or branched chains, having less than 10 carbon atoms, and the halosubstitution in all these groups consists of one or more halogen atoms, which are the same or different, from mono substitution up to complete poly substitution;

R^1, R^2, and R^3 are individually selected from the group consisting of: one of the same set of substituents as described for X; a hydrogen atom; an alkyl group; and a substituent of which no more than one of R^1, R^2, and R^3 is selected from the group consisting of formyl, hydroxyiminoalkylidenyl, alkoxyiminoalkylidenyl, azido, amino, alkylamino, dialkylamino, aralkylamino, aminocarbonylamino, alkylcarbonylamino, haloalkylcarbonylamino, arylcarbonylamino, alkylsulfonylamino, haloalkysulfonylamino, alkylaminocarbonylamino, arylaminocarbonylamino, benzylideneimino, alkylideneimino, alkoxyalkylideneimino, dialkylaminoalkylideneimino, bis(alkylthio)methyl, bis(arylthio)methyl, alkylthioalkylideneimino, alkoxycarbonylamino, haloalkoxycarbonylamino, and a phenyl optionally substituted with halogen, cyano or haloalkyl; and wherein the alkyl, haloalkyl, alkenyl, haloalkenyl, alkynyl, haloalkynyl, haloalkoxy, alkoxy, alkenyloxy, and alkynyloxy groups herein are linear or branched chains, having less than 10 carbon atoms, and the halosubstitution in all these groups herein consists of one or more halogen atoms, which are the same or different, from mono substitution up to complete poly substitution; and wherein for the aralkyl portion in the above mentioned groups and the phenyl portion are optionally substituted as defined above;

Y is selected from the group consisting of; halogen, cyano, alkyl, haloalkyl, alkoxy, haloalkoxy, alkylsulfinyl, alkylsulfonyl, alkylthio, haloalkylthio, haloalkylsulfinyl, haloalkylsulfonyl, alkylcarbonyl, haloalkylcarbonyl, alkenyl, haloalkenyl, haloalkynyl, and alkynyl; and wherein the alkyl, alkoxy, haloalkyl, haloalkoxy, alkenyl, haloalkenyl, alkynyl and haloalkynyl groups herein are linear or branched chains, having less than 10 carbon atoms, and the halo substitution in all these groups herein consists of one or more halogen atoms, which are the same or different, from mono substitution up to as much as complete poly substitution; or Y optionally is a hydrogen atom when:

X is a halogen atom or a group $R^5S(O)_n$, in which n is 0, 1, or 2 and R^5 is alkyl, haloalkyl, alkenyl or haloalkenyl; and the alkyl and alkenyl carbon chains and the halosubstitution are as defined above;

R^1 and R^3 are each a hydrogen atom; and

R^2 is cyano;

X^1, X^2, X^3 and X^4 are individually selected from the same set of substituents as described for Y or a hydrogen atom; and provided:

that at least one of R^1, R^2, and R^3 is selected from the same set of substituents as described for X;

that if X^4 and X^1 are H, and X is halogen or cyano, then R^2 is different from X; and

that if X^4 and X^1 are H, and Y is methyl, then X is different from bromo.

5,187,186

PYRROLOINDOLE DERIVATIVES

Yntaka Kanda, Houston, Tex.; Youichi Uosaki, Machida, Japan; Hiromitsu Saito, Sagamihara, Japan; Hiroshi Sano, Machida, Japan; Eiji Kobayashi, Shizuoka, Japan; Makoto Morimoto, and Satoru Nagamura, both of Machida, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

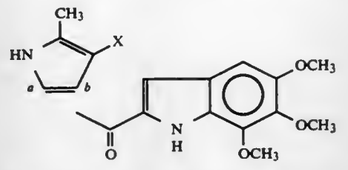
Division of Ser. No. 545,579, Jun. 29, 1990, Pat. No. 5,070,092. This application Sep. 6, 1991, Ser. No. 755,760

Claims priority, application Japan, Jul. 3, 1989, 1-171605

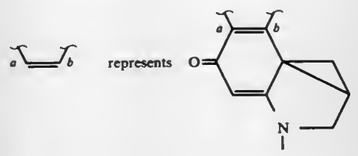
Int. Cl.[5] A61K *31/40;* **C07D** *487/08*

U.S. Cl. 514—410 **5 Claims**

1. A compound represented by the formula:



wherein X represents hydrogen or CO_2R^1 (in which R^1 represents hydrogen, a straight-chain or branched alkyl having 1 to 4 carbon atoms, allyl, or benzyl); and



represents

5,187,187

IRREVERSIBLE LIGANDS FOR NONSTEROIDAL ANTIINFLAMMATORY DRUG AND PROSTAGLANDIN BINDING SITES

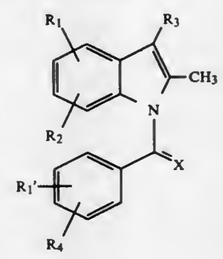
Trevor M. Penning, Springfield, Pa., and Leslie J. Askonas, Haddonfield, N.J., assignors to Trustees of the University of Pennsylvania, Philadelphia, Pa.

Division of Ser. No. 251,550, Sep. 29, 1988, Pat. No. 5,068,250. This application Feb. 19, 1991, Ser. No. 640,987

Int. Cl.[5] C07D *209/26;* **A61K** *31/405*

U.S. Cl. 514—419 **26 Claims**

1. A compound of the formula



where

X is H_2 or O;

R_1 and R_1' are independently selected from the groups consisting of H, $NHCOCH_2Z$, $OCOCH_2Z$, $COCH_2Z$, CH_2N_3, and CH_2OSO_2Me;

R_2 is selected from the groups consisting of H, OMe, $N(ME)_2$, NO_2, NH_2, OH, Z, CH_3, CH_2Z, CHZ_2, and CZ_3;

R_3 is selected from the groups consisting of Y, CH_2Y, $CH(CH_3)Y$ and Y is selected independently from the groups consisting of COOH, COOMe, COOEt, CH_2O-$COCH_2Z$, $CH_2NHCOCH_2Z$, CH_2N_3, CH_2OSO_2Me, and $COCH_2Z$;

R_4 is selected from the groups consisting of H, Z, SCH_3, $S(O)CH_3$, NO_2, NH_2, OH, CH_3, CH_2Z, and CZ_3;

where Z is a halogen atom;

provided that, if both R_1 and R_1' are H, then Y is other than COOH, COOMe or COOEt; and if Y = COOH, COOMe, or COOEt, then both R_1 and R_1' are other than H.

5,187,188

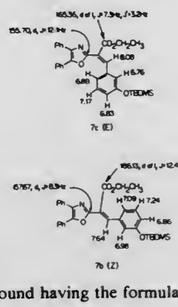
OXAZOLE CARBOXYLIC ACID DERIVATIVES

Nicholas A. Meanwell, East Hampton, Conn., assignor to Bristol-Myers Squibb Company, New York, N.Y.

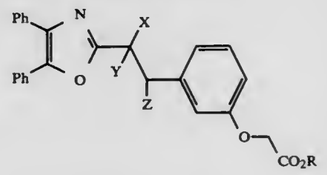
Filed Apr. 3, 1992, Ser. No. 862,674

Int. Cl.[5] A61K *31/42;* **C07D** *263/32*

U.S. Cl. 514—374 **39 Claims**



1. The compound having the formula



wherein

Y and Z are independently hydrogen or together form a bond;

X is CN, CO_2R^1 or $CO.NR^2R^3$;

R and R^1 are independently or together H, Na, or C_1–C_5 lower alkyl;

R^2 and R^3 are independently or together H, or C_1–C_5 lower alkyl;

or alkali metal salt thereof.

5,187,189

S-AMINOALKYL-S-ARYLSULFOXIMINES AS ANTIARRHYTHMIC AGENTS

Mark R. Hellberg, Arlington, Tex., and James R. Shanklin, Jr., Richmond, Va., assignors to American Home Products Corporation, New York, N.Y.

Filed Jan. 22, 1991, Ser. No. 643,364

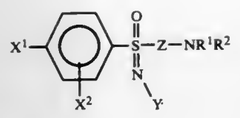
Int. Cl.[5] A61K *31/04;* **C07C** *313/24*

U.S. Cl. 514—608 **5 Claims**

1. A compound according to the formula

VOL 1147 ISS 3 FE 16 1993 UMI

Formula I

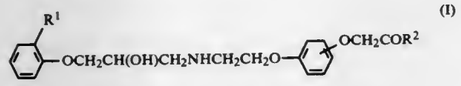


wherein:
X^1 is $—NO_2$;
X^2 is hydrogen;
Y is H;
Z is C_2–C_6 alkylene;
R^1 and R^2 are H or C_1–C_6 alkyl; [R^3 is hydrogen, C_1–C_6 alkyl, benzyl] or a pharmaceutically acceptable salt thereof.

5,187,190
PHENOXYPROPANOLAMINE COMPOUNDS
David J. Lecount, Congleton, Great Britain, assignor to Imperial Chemical Industries PLC, London, England
Filed Nov. 2, 1990, Ser. No. 608,475
Claims priority, application United Kingdom, Nov. 6, 1989, 8925032
Int. Cl.[5] **C07C** *217/36*
U.S. Cl. 514—652 **7 Claims**

1. A compound of the formula (I):

(I)



wherein R^1 is hydrogen or fluoro and R^2 is hydrogen or C_{1-6} alkyl, or a pharmaceutically acceptable salt thereof.

5,187,191
LIQUID ANALOGS OF CERTAIN POLYOXYALKYLENE COMPOUNDS HAVING A PLURALITY OF HETERIC POLYOXYPROPYLENE/POLYOXYETHYLENE CHAINS AS DISPERSANTS FOR PESTICIDAL FORMULATIONS
Jay G. Otten, Flat Rock, Mich., and Kenneth F. Schoene, West Milford, N.J., assignors to BASF Corp., Parsippany, N.J.
Continuation-in-part of Ser. No. 494,028, Mar. 5, 1990, abandoned. This application Mar. 27, 1991, Ser. No. 675,785
Int. Cl.[5] **A01N** *25/02;* **A61K** *47/00*
U.S. Cl. 514—772.3 **6 Claims**

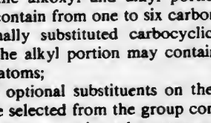
1. A stable, aqueous pesticide dispersion composition comprising:
(a) a water insoluble pesticide;
(b) A polyoxyalkylene copolymer having surface active properties, said copolymer having the formula

$$Y[EO,PO)_m(PO)_m(EO,PO)_{m'}H]_n$$

wherein Y is the nucleus of an organic reactive hydrogen compound having x reactive hydrogen atoms and up to 6 carbon atoms, x is an integer, EO is ethylene oxide, PO is a propylene oxide hydrophobe having an oxygen/carbon ratio of not more than 0.04, (EP,PO) represents a hydrophilic heteric block having an oxygen/carbon ratio of more than 0.40, m, m′ and n are numbers such that the total molecular weight of said hydrophilic heteric block is from about 660 to 4,400, the total molecular weight of said PO hydrophobe is from about 1600 to 3600 and the total molecular weight of said copolymer ranges from about 2200 to 800, said copolymer being about 30 to 55 weight percent hydrophilic with said hydrophilic heteric block comprising from about 5 to 40 weight percent of PO; and
(c) water, wherein said composition has at least one improved property elected from the group consisting of viscosity, pour out residue, spontaneity, separation, reconstitution, percent suspensibility, zeta potential, and ten inversion foam height, as compared with said composition not having copolymer (b).

5,187,192
CYCLOBUTYL DERIVATIVES HAVING LIPOXYGENASE INHIBITORY ACTIVITY
Dee W. Brooks, Libertyville, Ill., and Karen E. Rodriques, Stowe, Mass., assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Mar. 13, 1992, Ser. No. 850,719
Int. Cl.[5] **A61K** *31/38;* **C07D** *332/34, 332/32*
U.S. Cl. 514—445 **11 Claims**

1. A compound having the structure

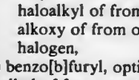


or a pharmaceutically acceptable salt thereof wherein
M represents hydrogen, a pharmaceutically acceptable cation, or a pharmaceutically acceptable metabolically cleavable group;
R is selected from the group consisting of hydrogen,
alkyl of from one to twelve carbon atoms,
cycloalkyl of from three to eight carbon atoms,
and $—NR^1R^2$ wherein
R^1 is selected from the group consisting of hydrogen,
alkyl of from one to six carbon atoms,
hydroxyalkyl of from one to six carbons atoms, and
alkoxyalkyl in which the alkoxy portion and the alkyl portion each contain, independently, from one to six carbon atoms; and
R^2 is selected from the group consisting of
hydrogen,
hydroxy,
alkyl of from one to six carbon atoms,
hydroxyalkyl of from one to six carbon atoms,
alkoxyalkyl in which the alkoxy portion and the alkyl portion each contain, independently, from one to six carbon atoms,
alkanoyl of from two to eight carbon atoms,
alkyl(carbocyclic aryl) in which the alkyl portion contains from one to six carbon atoms, and
optionally substituted (carbocyclic aryl);
A is selected from the group consisting of
(a) alkyl of from five to twenty carbon atoms;
(b) cycloalkyl of from three to eight carbon atoms;
(c) optionally substituted carbocyclic aryl;
(d) optionally substituted (carbocyclic aryl)cycloalkyl in which the cycloalkyl portion may contain from three to eight carbon atoms;
(e) optionally substituted (carbocyclic aryl)alkyl in which the alkyl portion may contain from one to six carbon atoms;
(f) optionally substituted carbocyclic aryloxyalkyl in which the alkyl portion contains from one to six carbon atoms;
(g) optionally substituted (carbocyclic aryl)alkoxyalkyl in which the alkoxyl and alkyl portions may independently contain from one to six carbon atoms;
(h) optionally substituted carbocyclic arylthioalkyl in which the alkyl portion may contain from one to six carbon atoms;
wherein the optional substituents on the carbocyclic aryl groups are selected from the group consisting of
alkyl of from one to six carbon atoms,
haloalkyl of from one to six carbon atoms,
alkoxy of from one to twelve carbon atoms,

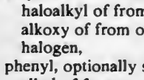
alkoxyalkoxyl in which the two alkoxy portions may each independently contain from one to six carbon atoms,
phenyl, optionally substituted with
alkyl of from one to six carbon atoms,
haloalkyl of from one to six carbon atoms,
alkoxy of from one to six carbon atoms,
hydroxy, or
halogen,
phenoxy, optionally substituted with
alkyl of from one to six carbon atoms,
haloalkyl of from one to six carbon atoms,
alkoxy of from one to six carbon atoms,
halogen,
phenylthio, optionally substituted with
alkyl of from one to six carbon atoms,
haloalkyl of from one to six carbon atoms,
alkoxy of from one to six carbon atoms,
halogen,
2-, 3-, or 4-pyridyl, optionally substituted with
alkyl of from one to six carbon atoms,
haloalkyl of from one to six carbon atoms,
alkoxy of from one to six carbon atoms,
halogen,
2-, 3-, or 4-pyridyloxy, optionally substituted with
alkyl of from one to six carbon atoms,
haloalkyl of from one to six carbon atoms,
alkoxy of from one to six carbon atoms,
halogen,
(i) 2- or 3-furyl, optionally substituted with
alkyl of from one to six carbon atoms;
haloalkyl of from one to six carbon atoms;
alkoxy of from one to six carbon atoms;
halogen,
phenyl, optionally substituted with
alkyl of from one to six carbon atoms,
haloalkyl of from one to six carbon atoms,
alkoxy of from one to six carbon atoms,
halogen,
phenoxy, optionally substituted with
alkyl of from one to six carbon atoms,
haloalkyl of from one to six carbon atoms,
alkoxy of from one to six carbon atoms,
halogen,
phenylthio, optionally substituted with
alkyl of from one to six carbon atoms,
haloalkyl of from one to six carbon atoms,
alkoxy of from one to six carbon atoms,
halogen,
2-, 3-, or 4-pyridyl, optionally substituted with
alkyl of from one to six carbon atoms,
haloalkyl of from one to six carbon atoms,
alkoxy of from one to six carbon atoms,
halogen,
2-, 3-, or 4-pyridyloxy, optionally substituted with
alkyl of from one to six carbon atoms,
haloalkyl of from one to six carbon atoms,
alkoxy of from one to six carbon atoms, or
halogen; and
(l) 2- or 3-benzo[b]thienyl, optionally substituted with
alkyl of from one to six carbon atoms,
haloalkyl of from one to six carbon atoms;
alkoxyl of from one to six carbon atoms, or
halogen.

5,187,193
METHOD FOR STIMULATING TRANSPLANTED BONE MARROW CELLS
Richard F. Borch, Pittsford, N.Y., and Therese K. Schmalbach, Newton, Mass., assignors to University of Rochester, Rochester, N.Y.
Continuation-in-part of Ser. No. 586,304, Sep. 21, 1990, which is a continuation-in-part of Ser. No. 418,549, Oct. 10, 1990, Pat. No. 5,035,878, which is a continuation-in-part of Ser. No. 243,405, Sep. 12, 1988, Pat. No. 4,938,949. This application Mar. 21, 1991, Ser. No. 673,089
Int. Cl.[5] **A01N** *47/10*
U.S. Cl. 514—476 **10 Claims**

1. A method for protecting and stimulating proliferation of transplanted cells in the bone marrow of a human recipient of a bone marrow transplant, wherein prior to the bone marrow transplant, the recipient has received a myelosuppressing amount of an anti-cancer drug, said process comprising administering to the recipient an amount of a dithiocarbamate compound of the formula:



wherein R^1 and R^2 are the same or different (C_1–C_6) aliphatic, (C_5–C_{10}) cycloaliphatic or one of R^1 and R^2, but not both, can be H, and M is H or one equivalent of a pharmaceutically acceptable cation, in which case the rest of the molecule is negatively charged, or M is



wherein R^3 and R^4 are defined in the same manner as R^1 and R^2; wherein said amount effectively counteracts myelosuppression caused by the anti-cancer drug and causes bone marrow cell proliferation by the induction of one or more bone marrow cell growth factors.

VOL 1147 ISS 3 FEB 16 1993 UMI

5,187,194
WOOD PRESERVATIVES CONTAINING POLYMERIC NITROGEN COMPOUNDS

Reimer Goettsche, Baden-Baden, and Wolfgang Reuther, Heidelberg, both of Fed. Rep. of Germany, assignors to Dr. Wolman GmbH, Sinzheim, Fed. Rep. of Germany

Filed Oct. 16, 1990, Ser. No. 598,080

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1989, 3934935

Int. Cl.[5] A01N *55/02, 33/24*

U.S. Cl. 514—499 **3 Claims**

1. A wood preservative composition, comprising:
an effective preservative amount of a metal compound of an N-organyldiazeniumdioxy compound and a complex forming

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5,187,195
ANTHRAQUINONE DERIVATIVES AND PREPARATION THEREOF

Nobutaka Oohata; Motoaki Nishikawa; Sumio Kiyoto, all of Tsukuba; Shigehiro Takase, Ishioka; Keiji Hemmi, Tsukuba; Hidetsugu Murai, Tsukuba, and Masakuni Okuhara, Tsukuba, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Filed Jun. 26, 1990, Ser. No. 543,437

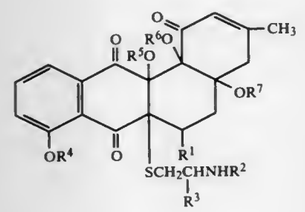
Claims priority, application United Kingdom, Jun. 30, 1989, 8915110; Oct. 23, 1989, 8923848

Int. Cl.[5] A01N *37/00, 35/04;* **C07C** *50/22*

U.S. Cl. 514—510 **13 Claims**

1. A compound of the formula:

[1]



wherein
R^1 is hydrogen, hydroxy or acyloxy,
R^2 is hydrogen, or acyl,
R^3 is acyl,
R^4 is hydrogen or acyl,
R^5 is hydrogen or acyl,
R^6 is hydrogen or acyl, and
R^7 is hydrogen or acyl,
or a pharmaceutically acceptable salt thereof.

5,187,196
GRAZING REPELLENT FOR GEESE AND SWANS

John L. Cummings, Lakewood, Colo.; James R. Mason, Bridgeton, and Ralph M. Trksak, Manville, both of N.J., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 13, 1989, Ser. No. 322,039

Int. Cl.[5] A01N *37/12*

U.S. Cl. 514—535 **22 Claims**

1. A method of repelling geese and swans from habitats for such birds comprising applying a compound selected from the group consisting of dimethyl anthranilate and methyl anthranilate to said habitats in an amount effective to repel geese or swans from said habitats.

5,187,197
PHENYLTHIOUREAS, PHENYLISOTHIOUREAS AND PHENYLCARBODIIMIDES, COMPOSITIONS, CONTAINING THEM AND THEIR USE IN THE CONTROL OF PESTS

Josef Ehrenfreund, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

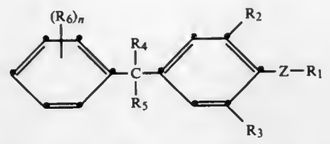
Division of Ser. No. 231,749, Aug. 12, 1988, Pat. No. 4,968,720. This application Aug. 20, 1990, Ser. No. 570,195

Claims priority, application Switzerland, Aug. 20, 1987, 3197/87-4; Mar. 3, 1988, 790/88-6

Int. Cl.[5] A01N *47/28;* **C07C** *335/00*

U.S. Cl. 514—585 **11 Claims**

1. Compounds of formula I



(I)

in which R_1 is C_1–C_8alkyl, C_1–C_8alkyl mono- or poly-substituted by halogen and/or by C_1–C_6alkoxy, C_3–C_8cycloalkyl, C_3–C_8cycloalkyl mono- or poly-substituted by C_1–C_3alkyl, or is C_3–C_8cycloalkyl-C_1–C_4alkyl; each of R_2 and R_3 is C_1–C_6alkyl, C_5–C_6cycloalkyl or C_5–C_6cycloalkenyl; each of R_4 and R_5 is hydrogen or C_1–C_4alkyl; each R_6 is halogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4haloalkyl, C_1–C_4haloalkoxy or a —CH=CH)$_2$, —CH_2)$_3$ or —CH_2)$_4$ bridge in the 2,3- or 3,4-position; n is 0, 1 or 2; Z is —NH—CS—NH—, and R_7 is C_1–C_{10}alkyl or C_3–C_5alkenyl, and salts thereof with organic or inorganic acids.

5,187,198
RESIN COMPOSITION FOR CATIONICALLY ELECTRODEPOSITABLE PAINT CONTAINING AS CROSSLINKING AGENTS THE REACTION PRODUCTS OF HYDROXY FUNCTIONAL ALICYCLIC EPOXY COMPOUNDS AND POLYISOCYANATES

Reiziro Nishida, and Akira Tominaga, both of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Filed May 13, 1991, Ser. No. 698,773

Claims priority, application Japan, May 11, 1990, 2-120058

Int. Cl.[5] C08L *63/00;* **C08G** *59/40*

U.S. Cl. 523—404 **18 Claims**

1. A resin composition for a cationically electrodepositable paint comprising:
(A) a base resin containing a primary hydroxyl group and a cationic group obtained by reacting a polyepoxy resin and an alkanolamine, and
(B) a crosslinking agent, said crosslinking agent (B) being a product obtained by reacting (B-1) a compound containing in its molecule one hydroxyl group and at least one alicyclic epoxy group with (B-2) a polyisocyanate compound selected from aliphatic, alicyclic or aromatic-aliphatic polyisocyanates such that in principle, a free isocyanate group substantially does not remain, said electrodepositable paint forming a coating upon application of an electrical current.

5,187,199
CLEAR COATING COMPOSITION AND METHOD OF PRODUCING SAME

Nobuhisa Sudo, Yokohama, Japan, assignor to Nippon Paint Co., Ltd., Osaka, Japan

Filed Sep. 19, 1991, Ser. No. 762,106

Claims priority, application Japan, Sep. 20, 1990, 2-251301

Int. Cl.[5] C08L *33/02, 61/28*

U.S. Cl. 523—523 **12 Claims**

1. A clear coating composition comprising:

(a) an acrylic resin having a number-average molecular weight of 2500–10000 and a hydroxyl number of 70–120, and containing 20–40 parts by weight of styrene and/or its derivative, based on 100 parts by weight of acrylic resin-constituting monomers (solid basis);
(b) a polyester resin having a number-average molecular weight of 350–1500 and a hydroxyl number of 150–300;
(c) a mixture of:
(i) an alkyl ether-substituted melamine resin containing 5 or more alkyl ether groups per each triazine ring; and
(ii) a melamine resin containing 1.1-3 imino groups per each triazine ring,
a weight ratio of said component (i) to said component (ii) being 8/2–5/5;
(d) an acid catalyst blocked with an amine having a boiling point of 150°–280° C.; and
(e) a blocked isocyanate,
weight ratios of said components being:
(a)/(b)=100/0–60/40; and
(c)/(e)=100/0–33/67.

5,187,200
PROCESS FOR THE SELECTIVE ABSORPTION OF ANIONS

Norman B. Rainer, 2008 Fondulac Rd., Richmond, Va. 23229

Continuation-in-part of Ser. No. 668,929, Mar. 13, 1991. This application Dec. 18, 1991, Ser. No. 808,884

Int. Cl.[5] C08L *11/00;* **C08J** *5/20;* **B01D** *15/00;* **C08G** *69/26*

U.S. Cl. 524—30 **10 Claims**

1. A process for the selective removal of anions from aqueous solution comprising contacting said solution with a porous format of an insoluble gel form of an aliphatic polymer having recurring nitrogen atoms spaced apart by two carbon atoms, said polymer containing chemically bonded thereto a substantially saturation amount of a multivalent metal cation representing between 2% and 20% of the dry weight of said polymer, said gel form containing between 90% and 300% of water based upon the dry weight of polymer.

5,187,201
COATING AND MOLDING COMPOSITIONS CONTAINING ALKYL VINYL ETHER POLYMERS AND USE THEREOF AS LEVELING AGENTS OR ANTIFOAM AGENTS

Karl-Heinz Haubennestel, and Alfred Bubat, both of Wesel, Fed. Rep. of Germany, assignors to BYK-Chemie GmbH, Wesel, Fed. Rep. of Germany

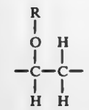
Filed Jan. 19, 1990, Ser. No. 466,149

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1989, 3901608

Int. Cl.[5] B01D *19/04*

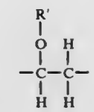
U.S. Cl. 524—31 **9 Claims**

1. A coating or molding composition comprising a resin binder component and an amount up to about 3.0% by weight relative to the total weight of the resin system of an alkyl vinyl ether polymer which is effective for improving leveling or suppressing foaming, wherein said alkyl vinyl ether polymer is a coplyomer which consists essentially of, per 100 identical or different repeating units of the formula



(Ia)

in which R represents a C_{1-18}-alkyl group, 1 to 100 identical or different repeating units of the formula



(IIa)

in which R' represents one of the following groups:
—$(CH_2)_x$—O —$(CH_2$—CHR_1—$O)_y$—R_2
—$(CH_2$—CHR_1—$O)_z$—R_3
—$(CH_2)_x$—O—[CO—$CH_2)_5$—O]$_p$—R_2
—$(CH_2)_x$—O—[CO—$(CH_2)_5$—O]$_p$—$(CH_2$—CH-R_1—$O)_y$—R_2
—$(CH_2)_x$—O—$(CH_2$—CHR_1—$O)_y$—[CO—$(CH_2)_5$—O]-$_p$—R_2
—$(CH_2)_x$—Q—$(CH_2$—CHR_1—$O)_y$—R_2
—$(CH_2)_x$—Q—[$(CH_2)_5$—CO—O]$_p$—R_6
—$(CH_2)_x$—Q—[$(CH_2)_5$—CO—O]$_9$—$(CH_2$—CH-R_1—$O)_y$—R_3
—$(CH_2)_x$—Q—$(CHR_1$—CHR_2—$O)_y$—[$(CH_2)_5$—CO—O]-$_p$—R_6
—$(CH_2)_{2-4}$—NR_4R_5
wherein
R_1 represents CH_3 or H,
R_2 represents H, —$CH_{n\,H2n+1}$ wherein n is a number from 1 to 4, —CO—CH_3, or benzyl,
R_3 represents C_{1-22}-alkyl or phenyl which may be substituted by 1 to 3 C_{1-9}-alkyl groups,
R_4 and R_5 represent alkyl groups having 1 to 4 carbon atoms or together with the nitrogen atom form a 5- membered or 6-membered ring free of Zerewittinoff hydrogen,
R_6 represents C_{1-22}-alkyl,
Q represents a —O—CO—HN-R_7NH—CO—O— group wherein R_7 represents alkylene having 6 or 9 carbon atoms, 1,3,3-trimethylcyclohexylene-1-methylene or methylphenylene,
x is a number from 2 to 6,
y is a number from 0 to 50,
z is a number from 1 to 50, and
p is a number from 1 to 15.

5,187,202
CONCENTRATES FOR IMPARTING A SIMULATED STONE EFFECT TO THERMOPLASTIC SUBSTRATES

Timothy L. Walkowski, Bryan, Ohio, assignor to Ferro Corporation, Cleveland, Ohio

Filed Sep. 17, 1991, Ser. No. 761,002

Int. Cl.[5] C08L *1/00;* **B32B** *23/02*

U.S. Cl. 524—35 **18 Claims**

1. An additive concentrate comprising:
a cellulosic short fiber or floc having a length of about 10 to about 125 mils and fineness of about 1 to about 25 denier; and
at least one dispersant aid selected from silicone fluids, glycerol plasticizers, epoxy plasticizers, metallic salts of fatty acids, waxes and mixtures of two or more thereof.

5,187,203
NON-CORROSIVE ELASTOMERIC FOAM FOR INSULATING COPPER TUBES

Ronald S. Lenox, Lancaster, Pa.; Kim S. Boyd, Quincy, Mass., and William S. Vought, Jr., Landisville, Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Oct. 23, 1991, Ser. No. 781,418

Int. Cl.[5] C08J *9/00, 9/30*

U.S. Cl. 521—75 **9 Claims**

1. A thermally-insulative, elastomer insulation for copper tubing comprising: a foamed mixture of 100 parts by weight of rubber, a vinyl chloride polymer in an amount of from about 15 to about 85 pphr, a plasticizer selected from the group consist-

VOL 1147 ISS 3 FE 16 1993 UMI

ing of an alkyl phosphate ester and an oxyalkyl phosphate ester at an amount in the range of from about 10 to about 100 pphr, a fire retardant in an amount of at least about 100 pphr, a stabilizer in an amount effective to prevent degradation of the rubber and vinyl chloride polymer, a preservative at an amount of from about 0.1 to about 10 pphr, and a lubricant at an amount in the range of from about 10 to about 85 pphr, wherein the foamed mixture contains no more than about 5 parts of free phenol per million to prevent stress corrosion.

5,187,204

ENERGY ABSORBING, WATER BLOWN, RIGID POLYURETHANE FOAM ARTICLES

Michael L. Jackson, Allen Park, and Mark A. Easterle, Rochester, both of Mich., assignors to BASF Corporation, Parsippany, N.J.

Filed Dec. 27, 1990, Ser. No. 634,643

Int. Cl.[5] C08J *9/12*

U.S. Cl. 521—111 **9 Claims**

1. A method of forming an energy absorbing foamed article, comprising;

A) reacting in a closed, preheated, prepared mold, a formulation capable of producing a predominantly open-celled energy absorbing foam, comprising;

i) a C_2–C_4 alkylene oxide adduct of an initiator selected from a group consisting of propylene glycol, ethylenediamine, or mixtures thereof,

ii) an isocyanate in which all the isocyanate groups are aromatically bound,

iii) a catalyst,

iv) a blowing agent consisting essentially of water,

v) a surfactant, and

vi) optionally a chain extender,

B) demolding and curing said article, wherein the cured foamed article has a density of from about 2.0 pcf to about 3.0 pcf, and has a constant crush strength from about 10 percent to about 70 percent deflection at loads less than 50 psi.

5,187,205

COMPATIBLE ISOCYANATE REACTIVE COMPOUNDS

Herbert R. Gillis, Sterling Heights, Mich., assignor to Imperial Chemical Industries PLC, London, England

Filed Aug. 15, 1991, Ser. No. 745,340

Claims priority, application United Kingdom, Aug. 16, 1990, 9018046

Int. Cl.[5] C08G *18/14*

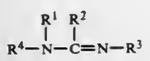
U.S. Cl. 501—129 **9 Claims**

1. An isocyanate-reactive composition having a plurality of isocyanate-reactive groups comprising:

(i) at least one polyol having a number average molecular weight of from 2000 to 12,000;

(ii) at least one member of the group consisting of low molecular weight polyol and water, immiscible in said high molecular weight compound and having a molecular weight in the range of 18–500; and

(iii) a compatibilising amount of an amidine compound of the Formula (1)



(1)

wherein each of R^1 to R^4 represents H or, independently or together, an organic radical selected from:

(a) alkyl radicals having 1 to 25

(b) cyclo alkyl radicals having 5 to 25 carbon atoms;

(c) aralkyl and/or aryl radicals having 6 to 18 carbon atoms,

(d) the atoms necessary to complete a heterocyclic ring with one or both the N-atoms; and

(e) polymeric chains containing hetero atoms selected from polyether, polythioether, polyester, polycarbonate and polyacetal chains.

5,187,206

PRODUCTION OF CELLULAR PLASTICS BY THE POLYISOCYANATE POLYADDITION PROCESS, AND LOW-BOILING, FLUORINATED OR PERFLUORINATED, TERTIARY ALKYLAMINES AS BLOWING AGENT-CONTAINING EMULSIONS FOR THIS PURPOSE

Otto Volkert, Weisenheim, and Walter Maurer, Mutterstadt, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 3, 1992, Ser. No. 892,874

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1991, 4119459

Int. Cl.[5] C08J *9/14*

U.S. Cl. 521—129 **13 Claims**

1. A process for the production of cellular plastics by the polyisocyanate polyaddition process, by reacting

a) an organic and/or modified organic polyisocyanate with

b) at least one relatively high-molecular-weight compound containing at least two reactive hydrogen atoms, and, if desired,

c) a low-molecular-weight chain extender and/or cross-linking agent,

in the presence of

d) a blowing agent

e) a catalyst and

f) assistants and/or additives,

wherein the blowing agent (d) used is a low-boiling, fluorinated or perfluorinated, tertiary alkylamine.

5,187,207

MELANIN HYDROPHILIC CONTACT LENSES

James M. Gallas, San Antonio, Tex., assignor to Photoprotective Technologies, Inc., San Antonio, Tex.

Continuation-in-part of Ser. No. 255,905, Oct. 6, 1988, abandoned, Ser. No. 105,631, Oct. 5, 1987, abandoned, Ser. No. 105,632, Oct. 5, 1987, abandoned, and Ser. No. 88,029, Aug. 18, 1987, abandoned, which is a continuation of Ser. No. 837,852, Mar. 6, 1986, abandoned, which is a continuation of Ser. No. 739,756, May 30, 1985, abandoned, which is a continuation of Ser. No. 618,745, Jun. 8, 1984, abandoned, said Ser. No. 255,905, is a continuation-in-part of Ser. No. 105,632, , said Ser. No. 105,631, is a continuation-in-part of Ser. No. 88,029, , and Ser. No. 739,556, , which is a continuation-in-part of Ser. No. 618,745,. This application Dec. 19, 1989, Ser. No. 454,094

The portion of the term of this patent subsequent to Oct. 6, 2004, has been disclaimed.

Int. Cl.[5] C08L *89/04*

U.S. Cl. 523—106 **41 Claims**

1. A hydrophilic contact lens, comprising:

a polymeric material; and

a scavenging agent for scavenging a superoxide coming into contact with the scavenging agent, the scavenging agent being connected to the polymeric material.

5,187,208

POLYCARBONATE COMPOSITIONS RESISTANT TO GAMMA RADIATION

Randall A. Rodenhouse, Uerdingen, Fed. Rep. of Germany, assignor to Miles Inc., Pittsburgh, Pa.

Filed Nov. 6, 1991, Ser. No. 788,686

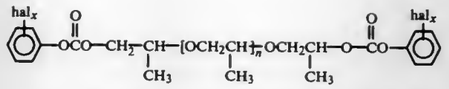
Int. Cl.[5] C08L *69/00*; C08G *65/42, 64/16*

U.S. Cl. 523—136 **10 Claims**

1. A thermoplastic molding composition comprising

(i) an aromatic polycarbonate resin and about 0.05 to 5.0% of

(ii) a stabilizing agent conforming to



where hal denotes bromine or chlorine n is 10 to 40 and x is 1 to 5.

5,187,209

COLLOIDAL METAL DISPERSION, AND A COLLOIDAL METAL COMPLEX

Hidefumi Hirai, 14-10, Yutenji 1-chome, Meguro-ku; Makoto Komiyama, 16-1-508, Kosuge 4-chome, Katsushika-ku, both of, Tokyo, and Michitaka Otaki, Oimatsn Jyutaku 3-403, 30 Oimatsu-cho, Nishi-ku, Yokohama-shi, Kanagawa-ken, all of Japan

Continuation of Ser. No. 395,821, Oct. 6, 1989, abandoned, which is a division of Ser. No. 46,608, May 7, 1987, Pat. No. 4,888,248. This application Aug. 12, 1991, Ser. No. 745,978

Claims priority, application Japan, Jul. 1, 1986, 61-152761; Jul. 8, 1986, 61-158676; Jul. 24, 1986, 61-172781; Jul. 24, 1986, 61-172782; Aug. 15, 1986, 61-190435; Aug. 15, 1986, 61-190436; Dec. 17, 1986, 61-298835; Dec. 17, 1986, 61-298836; Dec. 17, 1986, 61-298837; Dec. 17, 1986, 61-298838; Dec. 17, 1986, 61-298839; Dec. 17, 1986, 61-298840

Int. Cl.[5] A61K *47/00*; C08K *9/10*; C12N *11/14*

U.S. Cl. 523—205 **6 Claims**

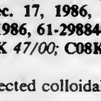
1. A polymer-protected colloidal metal dispersion comprising:

(a) a polar dispersion medium selected from the group consisting of water, a mixture of water and at least one lower alcohol and a mixture of water and a water-miscible ether;

(b) colloidal particles of at least one metal selected from the group consisting of metals belonging to Groups Ib, VIIb and VIII of the Periodic Table, said colloidal particles having an average size of less than 500 Å being dispersed in said dispersion medium; and

(c) a protective polymer adsorbed on each of said colloidal particles;

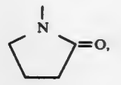
said protective polymer comprising 1 to 100 mol percent, based on the total of units (i), (ii) and (iii), of units (i) represented by the formula [I]



[I]

wherein

R^1 is selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group having 1 to 6 carbon atoms, a substituted or unsubstituted phenyl group, a hydroxyl group,



—CO—R and —O—R',

wherein

R is selected from the group consisting of a substituted or unsubstituted alkyl group having 1 to 10 carbon atoms and $-(CH_2)_{n1}-X_{n2}-(CH_2)_{n3}-Y_{n4}-(CH_2)_{n5}-CO-R^7$,

wherein

X and Y are each independently selected from the group consisting of —O— and —NH—,

R^7 is selected from the group consisting of —NH—NH_2, —A—R^8 and —NH_2,

wherein

A is selected from the group consisting of —O— and —S—, and

R^8 is selected from the group consisting of a substituted or unsubstituted alkyl group having 1 to 10 carbon atoms, a substituted or unsubstituted phenyl group and a substituted or unsubstituted succinimido group,

n1, n3 and n5 each independently represent an integer of 0 to 6, and

n2 and n4 each independently represent an integer of 0 or 1, and

R' has the same meaning as R, and

R^2 represents $-(CH_2)_{n1'}-X'_{n2'}-(CH_2)_{n3'}-Y'_{n4'}-(CH_2)_{n5'}-CO-R^{7'}$

wherein

X', Y', R7', n1', n2', n3', n4' and n5' respectively have the same meanings as X, Y, R^7, n1, n2, n3, n4 and n5;

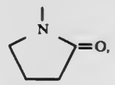
0 to 99 mol percent, based on the total of units (i), (ii) and (iii), of units (ii) represented by the formula [II]



[II]

wherein

R^3 is selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group having 1 to 6 carbon atoms, a substituted or unsubstituted phenyl group, a hydroxyl group,



—CO—R and —O—R'

wherein

R and R' are as defined above, and

R^4 represents $-(CH_2)_{n1''}-X''_{n2''}-(CH_2)_{n3''}-Y''_{n4''}-(CH_2)_{n5''}-CO-R^9$

wherein

X'', Y'', n1'',n2'', n3'', n4'' and n5'' respectively have the same meanings as X, Y, n1, n2, n3, n4 and n5, and

R^9 represents —A'—R^{10},

wherein

A' has the same meaning as A, and

R^{10} is selected from the group consisting of a hydrogen atom, an alkali metal, an alkaline earth metal, a substituted or unsubstituted alkyl group having 1 to 10 carbon atoms, a substituted or unsubstituted phenyl group and a substituted or unsubstituted succinimido group; and

0 to 99 mol percent, based on the total of units (i), (ii) and (iii), of units (iii) represented by the formula [III]

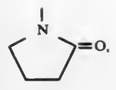


[III]

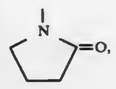
wherein

R^5 is selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group having 1 to 6 carbon atoms, a substituted or unsubstituted phenyl group, a hydroxyl group,

VOL 1147 ISS 3 FE 16 1993 UMI



—CO—R and —O—R'
wherein
R and R' are as defined above, and
R^6 is selected from the group consisting of a hydroxyl group



—CO—R and —O—R'
wherein
R and R' are as defined above;
provided that
where
R^1 is a hydrogen atom, R^2 is —CO—NH_2 and the proportion of units (ii) is 0 mol percent, R^6 is selected from the group consisting of a hydroxyl group, —CO—R and —O—R';
where
R^7 is —NH—NH_2, the —NH—NH_2 groups are unmodified, or part or all of the —NH—NH_2 groups are modified to form $-N_3$ groups; and
where
R^1 is a hydrogen atom or a substituted or unsubstituted alkyl group having 1 to 6 carbon atoms, the proportions of units (i), (ii) and (iii) are respectively 1 to 95 mol percent, 0 to 90 mol percent and 5 to 99 mol percent, based on the total of units (i), (ii) and (iii).

5,187,210

METHOD OF MAKING A CARRIER PHASE COMPOSITION AND A HIGH-SPEED STARCH-BASED CORRUGATING ADHESIVE CONTAINING A CARRIER PHASE COMPRISED OF STARCH, MODIFIED STARCH OR DEXTRIN AND POLYVINYL ALCOHOL

Larry E. Fitt, Orland Park; James J. Pienkowski, Oak Forest, and Jack R. Wallace, Bolingbrook, all of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Division of Ser. No. 563,379, Aug. 6, 1990, Pat. No. 5,075,360. This application Oct. 4, 1991, Ser. No. 771,233
Int. Cl.[5] C08L *3/02*
U.S. Cl. 524—48 **12 Claims**

1. A method of making a carrier phase composition for use in a corrugating adhesive composition which comprises the following sequential steps with continuous mixing:

a) admixing with water from about 0.1 to about 10 parts per 100 parts of the carrier phase composition of a cold water soluble polyvinyl alcohol having a degree of hydrolysis of less than about 92 mole % and from about 5 to about 30 parts per 100 parts of the carrier phase composition of a component selected from the group consisting of unmodified starch and modified starch;

b) heating the mixture to a temperature from about 125° F. to about 165° F.;

c) admixing sufficient caustic to provide an alkaline pH while maintaining heating for a sufficient time and at a sufficient temperature to hydrolyze the polyvinyl alcohol to a degree of hydrolysis of more than about 95 mole %; and

d) admixing additional water.

5,187,211

GAMMA RADIATION RESISTANT POLYCARBONATE COMPOSITIONS

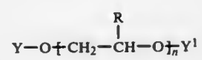
Charles E. Lundy; Sivaram Krishnan, both of Pittsburgh; Gerald L. Robbins, Wexford, and Rick L. Archey, Pleasant Hills, all of Pa., assignors to Miles Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 67,670, Jun. 26, 1987, abandoned. This application Feb. 1, 1989, Ser. No. 305,301
Int. Cl.[5] C08K *5/15, 5/06*
U.S. Cl. 524—107 **6 Claims**

1. A polycarbonate molding composition comprising

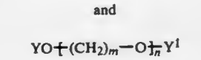
(i) a substantially amorphous aromatic polycarbonate resin and

(ii) a stabilizing agent selected from the group consisting of



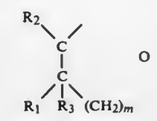
I.

and

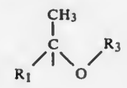


II.

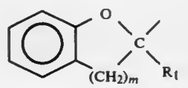
wherein R is a hydrogen or a halogen atom or a C_1–C_{10} alkyl, C_6–C_{10} aryl, C_6–C_{18} arylalkyl or a C_4–C_{10} cycloalkyl radical, Y and Y^1 are independently a C_{6-C10} aryl or C_6–C_{18} arylalkyl radical or



III.

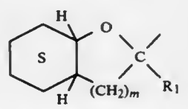


IV.



V.

or



VI.

wherein m is 1 or 3–6, R_1, R_2 and R_3 independently are a hydrogen atom or a C_1–C_{10} alkyl, C_6–C_{10} aryl or a C_6–C_{18} arylalkyl radical and n is about 1 to 100, said (ii) being present in an amount of about 0.1 to 5.0 percent relative to the weight of the composition.

5,187,212

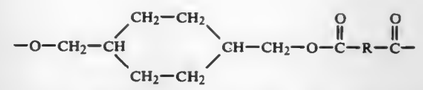
FLAME RETARDANT POLYESTER BLENDS

Keith N. Gray, Newburgh, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Jul. 8, 1991, Ser. No. 726,493
Int. Cl.[5] C08K *5/15, 5/06;* C08F *20/00*
U.S. Cl. 524—114 **11 Claims**

1. A flame retardant thermoplastic composition comprising:

(a) a polyester resin derived from a cyclohexanedimethanol and a carbocyclic dicarboxylic acid or ester that has repeating units of the formula:



wherein the substituted cyclohexane ring is selected from the group consisting of the cis- and trans- isomers thereof and R represents an organic radical containing from 6 to 20 carbon atoms which is the decarboxylated residue derived from a hexacarboxylic dicarboxylic acid;

(b) a glass fiber reinforcing agent; and

(c) an effective flame retardant amount of a tetra brominated bisphenol-A epoxy eligomer endcapped with epichlorohydrin flame retardant, said flame retardant having a molecular weight range of from about 15,000 to 60,000 and a bromine content of at least 50 percent by weight, and wherein component (a) comprises from about 40% to about 90% by weight of components (a) and (b).

5,187,213

STABILIZED COPOSITIONS COMPRISING 3,7,9-TRIOXA-1-AZA-2,8-DIPHOSPHASPIRO[4,5]DECANES

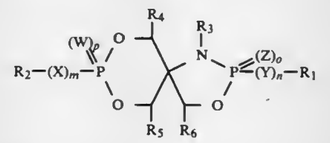
Raymond Seltzer, New City, N.Y.; Paul A. Odorisio, Edgewater, N.J.; Sai P. Shum, Hawthorne, N.Y., and Stephen D. Pastor, Danbury, Conn., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 702,982, May 20, 1991, Pat. No. 5,132,426, which is a continuation-in-part of Ser. No. 572,728, Aug. 23, 1990, Pat. No. 5,075,482. This application Feb. 27, 1992, Ser. No. 843,790
Int. Cl.[5] C08K *5/5399*
U.S. Cl. 524—120 **13 Claims**

1. A stabilized composition which comprises

(a) an organic material subject to oxidative, thermal or actinic degradation, and

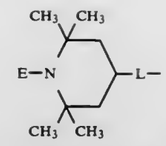
(b) an effective stabilizing amount of a compound which is a substituted 3,7,9-trioxa-1-aza-2,8-diphosphaspiro[4.5]decane of formula I



(I)

wherein

R_1 and R_2 are independently hydrogen; a linear or branched alkyl of 1 to 30 carbon atoms; said alkyl optionally terminated with $-OR_7$, $-NR_8R_9$, $-SR_{10}$, $-COOR_{11}$ or $-CONR_{12}R_{13}$, where R_7, R_8, R_9 and R_{10} are independently alkyl of 1 to 20 carbon atoms or alkenyl of 3 to 18 carbon atoms, and R_{11}, R_{12} and R_{13} are independently hydrogen or the same meaning as R_7; or said alkyl interrupted by one or more —O—, —S—, —SO—, $-SO_2$—, —CO—, —COO—, —OCO—, —$CONR_{14}$, $-NR_{14}CO$— or $-NR_{15}$— where R_{14} and R_{15} have the same meaning as R_{11}; alkenyl of 3 to 20 carbon atoms; aryl of 6 to 10 carbon atoms; said aryl substituted by one to three substituents selected from the group consisting of alkyl of 1 to 20 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, phenylalkyl of 7 to 15 carbon atoms and the group $-(CH_2)_kCOOR_{20}$ where k is 0, 1 or 2 and R_{20} is hydrogen, alkyl of 1 to 20 carbon atoms or cycloalkyl of 5 to 12 carbon atoms; phenylalkyl of 7 to 9 carbon atoms; bicycloalkyl of 7 to 18 carbon atoms; or tricycloalkyl of 10 to 20 carbon atoms; or R_1 and R_2 are independently a group of formula II



(II)

where E is hydrogen, —OH, alkyl of 1 to 18 carbon atoms, alkenyl of 3 to 18 carbon atoms, aralkyl of 7 to 15 carbon atoms, alkoxy of 1 to 18 carbon atoms or cycloalkoxy of 5 to 12 carbon atoms; and L is —O— or —NT— where T is hydrogen, alkyl of 1 to 18 carbon atoms or cycloalkyl of 5 to 12 carbon atoms; or when n or m is zero, R_1 or R_2 is also independently F, Cl, Br or I;

R_3 is hydrogen, alkyl of 1 to 20 carbon atoms, phenylalkyl of 7 to 15 carbon atoms or aryl of 6 to 10 carbon atoms;

R_4, R_5 and R_6 are independently hydrogen, alkyl of 1 to 4 carbon atoms or aryl of 6 to 10 carbon atoms;

X and Y are independently —O—, —S— or $-NR_{16}$— where R_{16} is hydrogen, alkyl of 1 to 20 carbon atoms, cycloalkyl of 5 to 12 carbon atoms, alkenyl of 3 to 18 carbon atoms, aryl of 6 to 10 carbon atoms, said aryl substituted by one or two alkyl of 1 to 4 carbon atoms; or phenylalkyl of 7 to 15 carbon atoms;

W and Z are independently O or S; and

n, m, o and p are independently zero or 1.

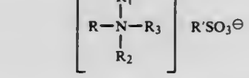
5,187,214

QUATERNARY AMMONIUM ANTISTATIC POLYMER COMPOSITIONS

Cheruthur Govindan, Wadsworth, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 449,651, Dec. 12, 1989, Pat. No. 5,053,531, which is a division of Ser. No. 268,903, Nov. 8, 1988, Pat. No. 4,904,825. This application Jul. 12, 1991, Ser. No. 729,274
Int. Cl.[5] C08K *5/17, 5/42*
U.S. Cl. 524—157 **14 Claims**

1. A synthetic polymer composition having antistatic properties comprising a synthetic polymer having incorporated therein an antistatically effective amount of a quaternary ammonium compound represented by the graphic formula:



wherein R is a C_2–C_{22} alkyl, R_1 is selected from the group consisting of C_1–C_{22} alkyl and an alkyleneoxy radical represented by the formula $-[CH_2—C(A)H—O]_xH$, R_2 is selected from the group consisting of C_1–C_3 alkyl and the radical, $-[CH_2—C(A)H—O]_xH$, or R_2 may join together with R_1 to form a morpholino group, R_3 is a radical represented by the formula, $-[CH_2—C(A)H—O]_xH$, R' is selected from the group consisting of C_1–C_{18} alkyl and C_8–C_{18} alkyl phenyl, A is selected from the group consisting of hydrogen, methyl and ethyl and x is 1.

5,187,215

COMPOSITIONS AND METHOD FOR REDUCING THE BLOCKING PROPERTIES OF POLYOLEFINS

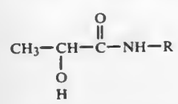
Bing-Lin Chen, Germantown, Tenn., assignor to Witco Corporation, New York, N.Y.

Filed Nov. 12, 1991, Ser. No. 791,567
Int. Cl.[5] C08K *5/20*
U.S. Cl. 524—224 **19 Claims**

1. A method for reducing the blocking properties of polyole-

VOL 1147 ISS 3 FE 16 1993 UMI

fins which comprises adding to the polyolefin an effective amount of a lactamide having the formula:



wherein R is alkyl having from about 14 to about 22 carbon atoms.

5,187,216

PROCESS FOR THE PREPARATION OF CRYSTALLINE COPOLYESTERS

Michael L. Cassell; Waylon L. Jenkins, both of Kingsport, and Gerry F. Rhodes, Gray, all of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 18, 1991, Ser. No. 687,132
Int. Cl.[5] C08L *67/02*
U.S. Cl. 524—261 **1 Claim**

1. A process for the preparation of a particulate, crystalline polyester having a percent volume crystallinity of about 20 to 40 by contacting a particulate copolyester (1) having an inherent viscosity of about 0.74 to 0.8 dL/g as determined at 25° C. using a 0.5 g of polymer per 100 Ml of solvent consisting of 60 weight percent phenol and 40 weight percent tetrachloroethane, (2) having a crystalline content of less than 5 volume percent, (3) containing about 0.01 to 0.1 weight percent of a zeolite and (4) composed of:

A. dicarboxylic acid residues consisting essentially of terephthalic acid residues; and

b. diol residues consisting essentially of residues of (i) ethylene glycol and (ii) diethylene glycol wherein the mole ratio of (i):(ii) is about 3:1 to 1:1;

with water at a temperature of about 85° to 95° C.

5,187,217

PROCESS FOR THE PRODUCTION OF A PLASTICIZED POLYVINYL BUTYRAL FOR GLUING A BASE ONTO A GLAZING

Robert Degeilh, Le Port Marly, and Daniel Dages, Les Mureaux, both of France, assignors to Saint-Gobain Vitrage, Courbevoie, France

Continuation of Ser. No. 176,751, Apr. 1, 1988, abandoned. This application Jul. 24, 1991, Ser. No. 734,104
Claims priority, application France, Apr. 2, 1987, 87 04620
Int. Cl.[5] C08L *0/00*
U.S. Cl. 524—297 **7 Claims**

1. A process for the production of a polyvinyl butyral particularly useful for gluing a base onto glazing, comprising reacting butyric aldehyde with polyvinyl alcohol, with the polyvinyl alcohol demonstrating a level of hydrolysis of at least 98%, in the presence of an acid catalyst and an emulsifier, wherein the viscosity of the polyvinyl alcohol is at least 50 cP, and the quantity of butyric aldehyde is such that the level of hydroxylation of the polyvinyl butyral obtained is 23 to 25%.

5,187,218

ACETAL RESIN COMPOSITION CONTAINING A TERMINAL-ETHERIFIED POLYALKYLENE GLYCOL

Isamu Masumoto; Zenpei Mizutani; Hiroshi Yada, and Yoshihito Hara, all of Yokkaichi, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Aug. 5, 1991, Ser. No. 740,617
Claims priority, application Japan, Aug. 21, 1990, 2-218182
Int. Cl.[5] C08J *5/16*; C08K *5/10*; C08L *75/10*
U.S. Cl. 524—317 **5 Claims**

1. An acetal resin composition comprising:

(A) 100 parts by weight of an acetal resin,

(B) 0.01 to 5 parts by weight of a terminal-etherified polyalkylene glycol of the formula (1)

$$R^1—O—(—R^2—O—)_m—R^3$$

wherein R^1 is a hydrogen atom, an aliphatic hydrocarbon group having 1 to 7 carbon atoms, an aryl group or an aralkyl group, R^2 is an alkylene group having 2 to 3 carbon atoms, R^3 is an aliphatic hydrocarbon group having 1 to 7 carbon atoms, an aryl group or an aralkyl group, and m is a number of at least 20,

and

(C) 0.01 to 2 parts by weight of an ester from a polyhydric alcohol having 2 to 10 carbon atoms and a higher fatty acid having 22 to 32 carbon atoms.

5,187,219

WATER SOLUBLE POLYOLS IN COMBINATION WITH GLYOXLATED ACRYLAMIDE/DIALLYLDIMETHYL AMMONIUM CHLORIDE POLYMERS AS YANKEE DRYER ADHESIVE COMPOSITIONS

Gary S. Furman, Jr., St. Charles, Ill., assignor to Nalco Chemical Company, Naperville, Ill.

Filed Aug. 22, 1991, Ser. No. 748,476
Int. Cl.[5] C08L *33/06*
U.S. Cl. 524—377 **6 Claims**

1. A creping adhesive composition for creping cellulosic webs comprising:

a) from 5 to 95 weight per-cent of a water soluble acrylamide polymer having sufficient glyoxal-reacted amide substituents and unsubstituted amide groups to be thermosetting with the ratio of the number of said glyoxal reacted amide substituents to unsubstituted amide groups being in excess of 0.06:1, and,

b) from 5 to 95 per-cent by weight of water soluble polyol having a MW below 3000.

5,187,220

THERMOSETTING RESIN-BASED COATING POWDERS CONTAINING METAL FLAKES

Douglas S. Richart, Reading, and Andrew T. Daly, Sinking Spring, both of Pa., assignors to Morton International, Inc., Chicago, Ill.

Filed Dec. 21, 1990, Ser. No. 632,376
Int. Cl.[5] C08K *3/08*; B32B *5/16*
U.S. Cl. 524—441 **4 Claims**

1. A method for preparing a metal flake-containing coating powder comprising admixing a thermosetting resin-based coating powder and (b) metallic flake having flake ratios in the range of from about 10 to about 2000 to provide an admixture, and mixing in a rotating blade mixer with a tip speed of at least about 3 meters per second said admixture of said coating powder (a) and said flake (b) while heating said admixture to the softening point of the thermosetting resin in said coating powder (a) but below the melting temperature of the thermosetting resin in said coating powder (a), said mixing being conducted with sufficient shear to maintain a relative motion of coating powder particulates sufficient to prevent agglomeration of coating powder particulates, said mixing continuing for a time sufficient to adhere at least about 95% by weight of said flake (b) to said coating powder (a).

5,187,221

STYRENE/BUTADIENE GRAFT COPOLYMER LATEX AND HEAT-VULCANIZABLE COMPOSITION, CONTAINING THE LATTER AS REINFORCING LATEX, FOR THE PRODUCTION OF LATEX FOAM

Herbert Schlüter, Marl; Herbert Knipp, Haltern, and Alfred Wieland, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Continuation of Ser. No. 813,733, Dec. 27, 1985, abandoned. This application Jan. 20, 1988, Ser. No. 147,080
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1984, 3447585
Int. Cl.[5] C08L *9/08*
U.S. Cl. 524—461 **4 Claims**

1. A styrene/butadiene graft copolymer latex wherein: the graft copolymer is characterized by the following features:

a. it is obtained by a semicontinuous emulsion feed polymerization process in the presence of 1–6% by weight of a conventional fat soap and/or resin soap as the emulsifier and ≦0.3% by weight of a conventional compound regulating the molecular weight of the polymer, based in each case on the entire amount of all monomers used to prepare the latex;

b. The graft copolymer (A) comprises 35–65% by weight of a graft substrate (A1) which, in turn comprises a graft substrate (B1) and a grafted-on proportion (B2), and 35–65% by weight of a grafted-on proportion A2;

c. (A1) is obtained in two stages; in the first stage, a polystyrene nucleating latex (B1) is obtained having a solids content of 1–20% by weight based on the final amount of (A); in the second stage (B2) is grated onto (B1) and comprises 86–95% by weight of styrene units and 5–14% by weight of 1,3 butadiene units; intensive agitation is performed while feeding the emulsifier during the grafting process in order to avoid formation of new particles and in this stage the styrene and butadiene monomers, the emulsifier and an initiator are dosed simultaneously;

d. (A2) (grafted on in the last stage) comprises 62–70% by weight of styrene units and 30–38% by weight of 1,3-butadiene units; intensive agitation is carried out while feeding the emulsifier during the grafting process in order to avoid formation of new particles and the styrene and butadiene monomers, the emulsifier and an initiator are dosed simultaneously;

e. (A) is present in the disperse phase of the latex; the latter comprising particles of an average diameter of 120–300 nm, as determined by surface titration (soap titration), having more rigid central regions due to a higher styrene content and less rigid outer regions due to lesser styrene content.

5,187,222

PEROXIDE-VULCANIZABLE, FLUORINE-CONTAINING ELASTOMER COMPOSITION

Masatoshi Abe; Yuichi Yamamoto, and Akihiro Naraki, all of Kitaibaraki, Japan, assignors to Nippon Moktron Limited, Tokyo, Japan

Continuation of Ser. No. 466,490, Jan. 17, 1990, abandoned. This application Oct. 16, 1991, Ser. No. 777,192
Claims priority, application Japan, Feb. 22, 1989, 1-40166
Int. Cl.[5] C08K *3/34*
U.S. Cl. 524—492 **20 Claims**

1. A peroxide-vulcanizable, fluorine-containing elastomer composition, which comprises a fluorine-containing elastomer containing at least one of iodine and bromine in the molecule, an organic peroxide, a polyfunctional compound and ultra fine white silicic anhydride or hydrated silicic acid particles having a pH of 9 to 12 as an aqueous 4–5% by weight solution.

5,187,223

PNEUMATIC TIRES

Keiji Asatsuma; Yasuhito Inoue, and Akitoshi Kondo, all of Niigata, Japan, assignors to Asahi Carbon Co., Ltd., Niigata, Japan

Filed Dec. 27, 1990, Ser. No. 634,651
Claims priority, application Japan, Dec. 27, 1989, 1-339488
Int. Cl.[5] C08K *3/04*
U.S. Cl. 524—496 **6 Claims**

1. A pneumatic tire comprising a tread portion, a pair of side wall portions and a pair of bead portions, wherein said tread portion comprises a rubber composition comprising

(A) 100 parts by weight of at least one rubber selected from the group consisting of natural rubber and diene series synthetic rubbers and

(B) 30–70 parts by weight of powdery carbon black having a specific surface area of nitrogen adsorption (N_2SA) of 125–250 m^2/g and a DBP absorption number of compressed sample (24M4DBPA) of 80–140 ml/100 g and containing surface functional groups, wherein the amount of functional groups which have been acetylated with acetic anhydride (ACF) and the amount of functional groups which have been reacted with hydroxyamine to form oxime (OXF) satisfy a relationship represented by the following equation (1)

$$ACF \geqq 0.125 + 2 \times OXF \quad (1)$$

wherein ACF and OXF are measured in milliequivalents per 1 g of carbon black (meq/g).

5,187,224

THERMOPLASTIC ELASTOMER COMPOSITION WHICH HAS A SHORE A HARDNESS OF LESS THAN 45

Tatsuo Hamanaka; Tadashi Hikasa, and Koichiro Ibuki, all of Chiba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 8, 1991, Ser. No. 692,456
Claims priority, application Japan, Apr. 9, 1990, 2-94485
Int. Cl.[5] C08J *3/24*; C08K *5/14*; C08L *53/00*
U.S. Cl. 524—505 **6 Claims**

1. A thermoplastic elastomer composition which has a Shore A hardness of less than 45 and which comprises:

(a) 100 parts by weight of a selectively hydrogenated block copolymer which has a structure having at least two terminal polymer blocks A comprising an aromatic monoalkenyl or monoalkenylidene hydrocarbon polymer of 5,000–125,000 in number average molecular weight and at least one intermediate polymer block B comprising a partially or completely hydrogenated aliphatic conjugated diene hydrocarbon polymer of 10,000–800,000 in number average molecular weight,

(b) 50–400 parts by weight of an oil-extended olefinic copolymer rubber comprising 100 parts by weight of an olefinic copolymer rubber having a 100° C. Mooney viscosity (ML_{1+4} 100° C.) of 150–350 and 20–150 parts by weight of a mineral oil type softening agent,

(c) 2–100 parts by weight of a polyolefin resin, and

(d) 50–350 parts by weight of a mineral oil type softening agent, said composition being prepared by heat treating a mixture comprising at least a total amount of the component (b) and a part or a total amount of the component (c) among the components (b)–(d) in the presence of an organic peroxide to partially crosslink the mixture and then, blending the resulting partially crosslinked product with the component (a) and the remainder components.

VOL 1147 ISS 3 FE 16 1993 UMI

5,187,225

SEALANT COMPOUND WITH CARBON FIBER MIXED THEREIN

Hiroji Kitagawa, Nagoya, Japan, assignor to Kitagawa Industries Co., Ltd., Aichi, Japan

Filed Oct. 27, 1989, Ser. No. 427,525
Claims priority, application Japan, Nov. 2, 1988, 63-278114
Int. Cl.[5] C08K *3/4;* **C08L** *75/04*
U.S. Cl. 524—847 **12 Claims**

1. A sealant composition comprising:
polyurethane resin; and
between 5% and 30% by weight of vapor grown carbon fibers manufactured by a vapor phase system in which ultra fine particles of high melting metallic compound are suspended on a floating bed in a three dimensional reaction zone in which hydrocarbon is thermally decomposed, based on 100% by weight of said polyurethane resin;
where said carbon fibers are mixed into the polyurethane resin so that said carbon fibers enhance the physical strength of the polyurethane resin; and
wherein said sealant composition has a rubbery elasticity.

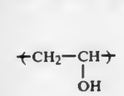
5,187,226

VINYL ALCOHOL POLYMER

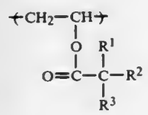
Mikiharu Kamachi, Toyonaka; Tohei Yamamoto, Hyogo; Toshiaki Sato, and Yoshiharu Fukunishi, both of Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 6, 1990, Ser. No. 488,876
Claims priority, application Japan, Mar. 7, 1989, 1-55799; Aug. 7, 1989, 1-205509
Int. Cl.[5] C08F *16/06*
U.S. Cl. 525—56 **5 Claims**

1. A vinyl alcohol polymer containing the constituent unit (I) and the constituent unit (II) represented by the following formulae, having a content of the constituent unit (I) of 10 to 99.99 mol % and a content of the constituent unit (II) of 90 to 0.01 mol %, a diad syndiotacticity of not less than 55 mol % and an intrinsic viscosity of polyvinyl acetate obtained by acetylation of not less than 0.7 dl/g, which is measured in benzene at 30° C.



(I)



(II)

wherein R_1 is a hydrogen atom or a hydrocarbon group, and each of R_2 and R_3 is a hydrocarbon group.

5,187,227

POLYCARBONATE RESIN COMPOSITION

Isao Tera, Tonami; Kohji Kato, Yamato; Makoto Yamamoto, Hiratsuka; Kazuto Hashimoto, and Hitoshi Yasumura, both of Ichihara, all of Japan, assignors to Nippon Zeon Co., Ltd. and Idemitsu Petrochemical Co., Ltd., both of Tokyo, Japan

Filed Jun. 10, 1991, Ser. No. 713,119
Claims priority, application Japan, Jul. 6, 1990, 2-177561; Jul. 6, 1990, 2-177562
Int. Cl.[5] C08L *69/00, 67/02, 51/04*
U.S. Cl. 525—65 **16 Claims**

1. A polycarbonate resin composition comprising
(A) 100 parts by weight of polycarbonate resin, and
(B) 1 to 80 parts by weight of an acrylic ester graft copolymer, said acrylic ester graft copolymer being produced by grafting on 100 parts by weight of an acrylic ester copolymer produced by copolymerizing (i) 100 parts by weight of at least one acrylic ester monomer having 1 to 16 carbon atoms (ii) 0.1 to 5 parts by weight of a first polyfunctional ester monomer selected from the group consisting of a polyfunctional allyl ester monomer having a benzene ring as a skeleton, a polyfunctional methallyl ester monomer having a benzene ring as a skeleton and a mixture thereof; a copolymer comprising (iii) 15 to 100 parts by weight of (a) one or two vinyl monomers selected from the group consisting of a methacrylic ester, an aromatic monovinyl compound and a vinyl cyanide compound, and (b) an acrylic ester in an amount of 0 to 20% by weight to the vinyl monomer and (iv) 0.1 to 5 parts by weight of a second polyfunctional ester monomer selected from the group consisting of a polyfunctional allyl ester monomer having a benzene ring as a skeleton, a polyfunctional methallyl ester monomer having a benzene ring as a skeleton and a mixture thereof.

5,187,228

STABILIZER FOR COMPATIBILIZED POLYCARBONATE AND POLYAMIDE POLYMER BLENDS

Peter J. Perron; Khemchand Nangrani, both of Arlington, and Ed Bourbonais, Houston, all of Tex., assignors to Dexter Corporation, Windsor Locks, Conn.

Continuation-in-part of Ser. No. 254,542, Oct. 6, 1988, Pat. No. 5,019,625, which is a division of Ser. No. 95,497, Sep. 10, 1987, Pat. No. 4,782,114, which is a continuation-in-part of Ser. No. 915,239, Oct. 3, 1986, abandoned. This application Mar. 22, 1991, Ser. No. 673,876
Int. Cl.[5] C08L *69/00, 77/00*
U.S. Cl. 525—66 **24 Claims**

1. A polycarbonate and polyamide melt compounded blend having improved chemical and physical properties, said blend consisting essentially of:
a polycarbonate resin in an amount sufficient to impart a heat distortion temperature of at least about 200° F. to the blend:
a polyamide in an amount sufficient to impart to the blend chemical resistance against solvents and stress cracking agents as well as an impact strength of at least 15 foot-pounds when measured by the notched izod test;
a polymeric compatibilizing agent comprising a compatibilizing compound having at least one functional group soluble in said polyamide and one functional group soluble in said polycarbonate, in an amount sufficient to provide a substantially uniform polymeric blend, wherein the melting point or softening point of the polymeric compatibilizing agent is no greater than the melting or softening point of the polycarbonate and polyamide components of the blend; and
a monoglycidyl epoxy compound as a stabilizer for the blend selected from the group of butyl glycidyl ether, allyl glycidyl ether, and t-butyl glycidyl ether.

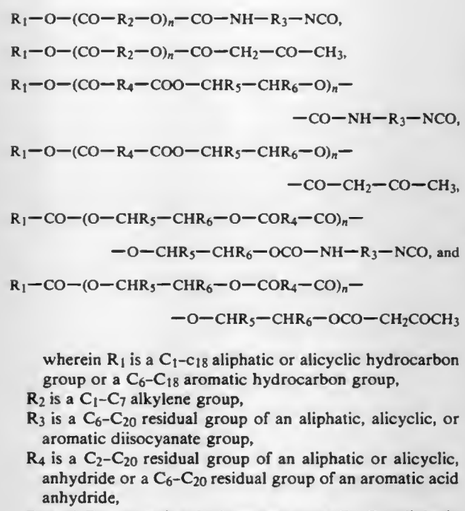
5,187,229

PIGMENT DISPERSING AGENT

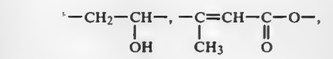
Toshio Yamamoto; Yoshiaki Matsukura, both of Yokohama; Osamu Obe, Tokyo; Hisao Ogawa, Zushi; Masahiro Ishidoya, Kamakura, and Yoshiro Matsubara, Yokohama, all of Japan, assignors to Nippon Oil and Fats Company, Ltd., Japan

Division of Ser. No. 395,495, Aug. 18, 1989, Pat. No. 5,100,969. This application Dec. 13, 1991, Ser. No. 806,263
Claims priority, application Japan, Aug. 26, 1988, 63-210789; May 12, 1989, 1-119666; May 12, 1989, 1-119667; Jun. 20, 1989, 1-155649; Jun. 20, 1989, 1-155650; Jul. 19, 1989, 1-184497
Int. Cl.[5] C08F *8/32*
U.S. Cl. 525—123 **4 Claims**

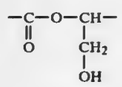
1. A pigment dispersing agent consisting of a product obtained by reacting
(1) an amine compound having (a) at least one amino group or (b) at least two imino groups or (c) at least one amino group and at least one imino group, a weight average molecular weight of about 60 to about 30,000, and an amine value of about 50 to about 2,000 mg KOH/mg.
(2) an acrylic polymer having a weight average molecular weight of about 2,000 to about 100,000, a hydroxyl value of about 5 to about 200, and one of a glycidyl group, an acetoacetoxy group, and a cyclocarbonate group in a functional group number of about 0.7 to about 3.0 on average per molecule as a side chain, provided that 1 mol of glycidyl group is deemed to be 1 mol of hydroxyl group when calculating the hydroxyl value, and
(3) a polyester resin having (a) a weight average molecular weight of about 1,000 to about 30,000, (b) a terminal isocyanate group or terminal acetoacetoxy group, and (c) one of the formula selected from the group consisting of



wherein R_1 is a C_1–C_{18} aliphatic or alicyclic hydrocarbon group or a C_6–C_{18} aromatic hydrocarbon group,
R_2 is a C_1–C_7 alkylene group,
R_3 is a C_6–C_{20} residual group of an aliphatic, alicyclic, or aromatic diisocyanate group,
R_4 is a C_2–C_{20} residual group of an aliphatic or alicyclic, anhydride or a C_6–C_{20} residual group of an aromatic acid anhydride,
R_5 and R_6 are each a hydrogen atom, a C_1–C_{20} aliphatic hydrocarbon group, a C_1–C_{20} alicyclic hydrocarbon group, a C_6–C_{20} aromatic hydrocarbon group, a $-CH_2-O-R_1$ group, or a $-CH_2-OCO-R_1$ group where R_1 is as previously defined, and
n is an integer of at least 1,
the mol ratio of the amino compound to the acrylic polymer to the polyester resin being from 1:1:1 to 1:40:40, and
the bridge between the amine compound amino and/or imino nitrogen and the acrylic copolymer being



and



depending on whether the copolymer contains a glycidyl group, an acetoacetoxy group, or a cyclocarbonate group, respectively.

5,187,230

RUBBER-MODIFIED POLYMER BLENDS OF POLYCARBONATE AND PETG

Kishore Udipi, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 480,429, Feb. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 452,657, Dec. 15, 1989, abandoned. This application Aug. 7, 1991, Ser. No. 742,567
Int. Cl.[5] C08L *69/00, 67/02, 9/02, 33/08*
U.S. Cl. 525—133 **8 Claims**

1. A polymer blend useful as a thermoplastic injection molding resin consisting essentially of:
(A) at least 30 percent by weight PC which is an aromatic polycarbonate derived from the reaction of bisphenol-A and phosgene,
(B) at least 30 percent by weight of PETG which is a copolymer of terephthalic acid and a mixture of predominately ethylene glycol and a lesser amount of 1,4-cyclohexanedimethanol, and
(C) at least 3 percent by weight of nitrile rubber;
wherein said blend has the following properties;
(1) melt flow into a mold (Spiral Flow) as measured by the procedure for Spiral Flow of at least 27 centimeters,
(2) heat distortion temperature underload (HDTUL) as measured by ASTM D648 of at least 75° C., and
(3) thick section notched IZOD impact resistance (IZOD-¼) as measured by ASTM 256- 56 on a 6.4 mm thick notched specimen at 23° C. of at least 130 Joules/meter.

5. A polymer blend useful as a thermoplastic injection molding resin consisting of:
(A) at least 30 percent by weight PC which is an aromatic polycarbonate derived from the reaction of bisphenol-A and phosgene,
(B) at least 30 percent by weight PETG which is a copolymer of terephthalic acid and a mixture of predominately ethylene glycol and a lesser amount of 1,4- cyclohexanedimethanol, and
(C) at least 3 percent by weight of a terpolymer rubber of ethylene-methyl acrylate and a monoester of maleic acid;
wherein said blend has the following properties:
(1) melt flow into a mold (Spiral Flow as measured by the procedure for Spiral Flow of at least 27 centimeters,
(2) heat distortion temperature under load (HDTUL) as measured by ASTM D648 of at least 75° C., and
(3) thick section notched IZOD impact resistance (IZOD-¼) as measured by ASTM 256-56 on a 6.4 mm thick notched specimen at 23° C. of at least 130 Joules/meter.

5,187,231

HIGH HEAT-DISTORTION PLASTICS

Christian Lindner, Cologne; Herbert Eichenauer, Dormagen; Holger Lütjens, and Hans-Eberhard Braese, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 30, 1991, Ser. No. 753,653
Claims priority, application Fed. Rep. of Germany, Sep. 11, 1990, 4028749
Int. Cl.[5] C08L *33/10, 27/06, 25/12, 35/06*
U.S. Cl. 525—207 **11 Claims**

1. Plastics materials suitable for use as thermoplastic moulding compositions and obtained from
A) a thermoplastic vinyl polymer selected from the group consisting of polyvinylchloride, styrene/acrylonitrile copolymers, styrene/maleic acid anhydride copolymers, acrylonitrile/methylmethacrylate copolymers, polymethylmethacrylate, graft polymers of styrene copolymers grafted onto rubber, polyvinyl chloride grafted onto rubber and polymethylmethacrylate grafted onto rubber and
B) a mixture of
B1) a copolymer of 35 to 49% by weight of maleic acid anhydride and 65 to 51% by weight of styrene and
B2) a copolymer of styrene, α-methylstyrene or mixtures thereof and acrylonitrile with an acrylonitrile content

VOL
1147
ISS
3
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16
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of from 35 to 60% by weight (based on B2) which has been prepared by dissolving B1) and B2) in a solvent and removing the solvent or by dissolving B1) in a solvent, mixing with a melt of B2 and removing the solvent, said B1) and B2) differ from A) in their chemical structure.

5,187,232

RUBBER COMPOUNDS OF POLYCHLOROPRENE AND HYDROGENATED NITRILE RUBBER

Rüdiger Musch, Bergisch Gladbach; Joachim Thörmer, Leverkusen; Hartmuth Buding, Dormagen, and Friedrich Leibbrandt, Kuerten-Busch, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Oct. 9, 1990, Ser. No. 594,624

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1989, 3934954

Int. Cl.[5] C08L *11/00, 27/04, 27/00*

U.S. Cl. 525—215 **2 Claims**

1. Compositions containing

A) 20 to 60% by weight polychloroprene and

B) 80 to 40% by weight hydrogenated nitrile rubber having a degree of hydrogenation of at least 95%.

5,187,233

PROCESS FOR EMULSION POLYMERIZATION OF GRAFT COPOLYMERS

Peter Ball, Emmerting; Josef Christ, Burghausen; Albin Frank, Burghausen; Klaus Marquardt, Burghausen, and Manfred Selig, Burghausen, all of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 254,368, Oct. 5, 1988, abandoned. This application Mar. 8, 1990, Ser. No. 490,729

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1987, 3743142

Int. Cl.[5] C08F *263/04, 255/02*

U.S. Cl. 525—267 **21 Claims**

1. A process for the production of graft copolymers which comprises forming a vinyl ester/ethylene emulsion copolymer containing, in copolymerized form:

a) from about 35–about 60% by weight of ethylene,

b) from about 40–about 65% by weight of at least one vinyl ester of a carboxylic acid having from 1 to about 12 carbon atoms,

c) from about 0.05 to about 1.0% by weight of at least one ethylenically unsaturated monomer containing sulfonate groups selected from the group consisting of salts of vinyl sulfonic acid, salts of sulfoalkyl ester of (meth)acrylic acid and sulfoalkylamides of (meth)acrylic acid, and

d) about 0 to about 0.5% by weight of at least one ethylenically polyunsaturated, crosslinkable monomer by emulsion polymerization of a mixture of monomers at a temperature of from about 30° C. to about 90° C. at an ethylene pressure of from about 40 to 90 bar in the presence of from about 0.05 to about 1.5% by weight, relative to the amount of comonomers, of an anionic emulsifier having a critical micelle concentration greater than about 0.5% by weight in water, and a water-soluble free radical initiator without the addition of other emulsifiers and protective colloids; and grafting to the vinyl ester/ethylene copolymer emulsion, at a temperature in the range of from about 30° C. to about 90° C., without the further addition of emulsifiers or protective colloids, at least one monomer other than a vinyl ester and ethylene, whose homopolymers have a glass transition temperature about 50° C.

5,187,234

VINYL POLYMERS EXHIBITING NONLINEAR OPTICAL RESPONSE

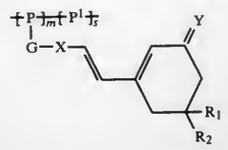
Thomas M. Leslie, Hunstville, Ala.; Ching F. Shu, New Providence, N.J.; Karsten Blatter, Frankfurt, Fed. Rep. of Germany; Ronald DeMartino, Wayne, and Frank Battito, West Orange, both of N.J., assignors to Hoechst Celanese Corp., Somerville, N.J.

Continuation-in-part of Ser. No. 603,982, Oct. 23, 1990, abandoned, and a continuation-in-part of Ser. No. 710,726, Jun. 4, 1991, abandoned. This application Sep. 6, 1991, Ser. No. 755,954

Int. Cl.[5] C08F *226/06*

U.S. Cl. 525—276 **18 Claims**

1. A vinyl polymer which is characterized by recurring monomeric units corresponding to the formula:



where P and P[1] represent vinyl monomer moieties forming the polymer backbone, m and s are integers which total at least 10, and the m monomer comprises between about 10–100 mole percent of the total (m+s) monomer units; G represents a spacer group, R_1 and R_2 may be the same or different and are selected from the group consisting of hydrogen, C1–C6 alkyls and C1–C6 haloalkyls; X represents an electron donor group that donates electrons to the pi-system, and Y represents an electron acceptor group.

5,187,235

ENERGY-CURABLE ACRYLIC PRESSURE-SENSITIVE ADHESIVES

Binoy K. Bordoloi, Newhall; Sebastian S. Plamthottan, Pasadena; Yehuda Ozari, and Robert Lan Ham, both of Arcadia, all of Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.

Continuation of Ser. No. 522,471, May 11, 1990, abandoned, which is a continuation of Ser. No. 211,130, Jun. 22, 1988, abandoned, which is a continuation of Ser. No. 916,717, Oct. 8, 1986, abandoned. This application Dec. 27, 1991, Ser. No. 815,593

Int. Cl.[5] C08F *265/04*

U.S. Cl. 525—305 **12 Claims**

1. A cured pressure-sensitive adhesive comprising a copolymer formed of:

at least one interpolymerized first monomer having a glass-transition temperature less than about 25° C. and an entanglement molecular-weight, said first monomer being selected from the group consisting of 2-ethylhexyl acrylate, butyl acrylate and 2-methylbutyl acrylate greater than about 20,000 and present in an amount of from about 55% to about 90% by weight based on the total weight of the monomers;

at least one interpolymerized second monomer having a glass-transition temperature greater than about −25° C. and an entanglement molecular-weight less than about 20,000 said second monomer being an unsaturated carboxylic acid and present in an amount up to about 25% by weight based on the total weight of the monomers; and

at least one interpolymerized tackifier monomer having a glass-transition temperature greater than −25° C. and an entanglement molecular-weight of at least about 20,000, said tackifying monomer being a lower alkyl diester of an unsaturated dicarboxylic acid containing 4 carbon atoms and in which each alkyl group contains from 1 to 3 carbon atoms and present in an interpolymerized amount sufficient to form an interpolymer having a glass-transition temperature less than about −25° C. and an entanglement molecular-weight greater than about 20,000; and wherein the pressure-sensitive adhesive is a hot-melt applied and radiation cross-linked after application in the presence of a multifunctional monomer selected from the group consisting of pentaerythritol triacrylate, tetraethylene glycol dimethacrylate and trimethylol propane trimethacrylate.

5,187,236

SOLID BLOCK AND RANDOM ELASTOMERIC COPOLYMERS

Thomas S. Coolbaugh, Morrisville; Frederick C. Loveless, Yardley, both of Pa., and Demetreos N. Matthews, Ewing, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jan. 16, 1990, Ser. No. 466,233

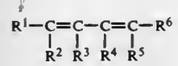
Int. Cl.[5] C08F *297/04;* **C08L** *53/02*

U.S. Cl. 525—314 **19 Claims**

1. A solid block copolymer comprising at least three alternating blocks

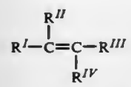
$(A)_x$-$(D)_y$-$(A)_x$

wherein A is a random or block copolymer of at least one aryl-substituted olefin and at least one conjugated diene having at least five (5) carbon atoms and the following formula:



(1)

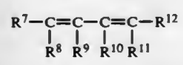
wherein R^1–R^6 are each hydrogen or a hydrocarbyl group, provided that at least one of R^1–R^6 is a hydrocarbyl group and provided that the structure of the residual double bond in the polymerized block A has the following formula:



(2)

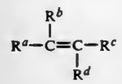
wherein R^I, R^{II}, R^{III} and R^{IV} are each hydrogen or a hydrocarbyl group, provided that either both R^I and R^{II} are hydrocarbyl groups or both R^{III} and R^{IV} are hydrocarbyl groups;

D is a block polymer of a conjugated diene, different from that used to polymerize the block A, having at least four (4) carbon atoms and the following formula:



(3)

wherein R^7–R^{12} are each hydrogen or a hydrocarbyl group, provided that the structure of the residual double bond in the polymerized block D has the following formula:



(4)

wherein R^a, R^b, R^c and R^d are each hydrogen (H) or a hydrocarbyl group, provided that one of R^a or R^b is hydrogen, one of R^c or R^d is hydrogen, and at least one of R^a, R^b, R^c or R^d is a hydrocarbyl group, x is about 0.25 to about 25% wt. of the total weight of the block copolymer, and y is about 50 to 99.5% wt. of the total weight of the block copolymer, said polymerized block D containing at least about 25 wt. % of 1,2-units prior to selective hydrogenation if it is a polymer of at least 50% by mole 1,3-butadiene.

5,187,237

CROSS-LINKED EPOXY RESINS WITH NON-LINEAR OPTICAL PROPERTIES

Jens Nordmann, Neunkirchen, and Heinz Hacker, Nuernberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

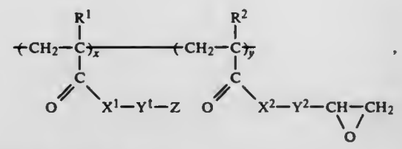
Filed Sep. 17, 1991, Ser. No. 761,263

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1990, 4030181

Int. Cl.[5] C08F *214/18, 220/32*

U.S. Cl. 525—326.2 **12 Claims**

1. An epoxy resin of the structure



where the following applies:

x:y = 1:99 to 99:1;

R^1 and R^2 = H, CH_3 or halogen;

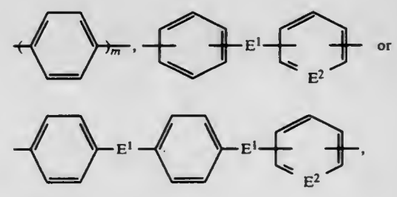
X^1 and X^2 = O or NR^3, with R^3 = H or alkyl (linear or branched) with 1 to 6 C atoms;

Y^1 = alkylene (linear or branched) with 2 to 20 C atoms, where one or more non-adjacent CH_2 groups, with the exception of the binding CH_2 group to the group Z, can be replaced with O, S or NR^4 (R^4 = H or C_1 to C_6 alkyl);

Y^2 = alkylene (linear or branched) with 1 to 3 C atoms;

Z is a conjugated π electron system (E) with the structure -D-E-A, substituted with an electron donor (D) and an electron acceptor (A), where the following applies:

E =



with

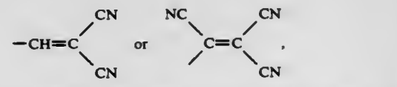
m = 1 to 3,

E^1 = $-(CH{=}CH)_n-$, $-N{=}N-$, $-CH{=}N-$, $-N{=}CH-$ or $-C{\equiv}C-$, with n = 1 to 3, and

E^2 = CH or N;

D = O, S, NR^5, PR^6 or NR^7—NR^8, with R^5, R^6, R^7 and R^8 = hydrogen, alkyl, alkenyl, aryl or heteroaryl; and

A = halogen, NO, NO_2, CN, CF_3, COR^9, $COOR^{10}$, SO_2OR^{11}, $SO_2NR_2^{12}$,



with R^9, R^{10}, R^{11} and R^{12} = hydrogen, alkyl, alkenyl, aryl or heteroaryl;

where X^1, Y^1 and D or Y^1 and D together can also form a heterocyclic group containing nitrogen.

VOL 1147 ISS 3 FE 16 1993 UMI

5,187,238

POLYETHER POLYCARBOXYLATE COMPOSITIONS USEFUL AS DETERGENT BUILDERS

Carmine P. Iovine, Bridgewater; Rama S. Chandran, So. Bound Brook, and John C. Leighton, Flanders, all of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Division of Ser. No. 422,355, Oct. 16, 1989, Pat. No. 5,087,682. This application Apr. 24, 1991, Ser. No. 690,741

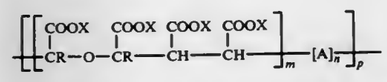
Int. Cl.[5] C08F *24/00*

U.S. Cl. 525—327.2 **3 Claims**

1. A process for oxidizing a polymer, comprising the steps of:

a) copolymerizing furan, maleic anhydride and, optionally, one or more copolymerizable comonomers to provide a polymer containing an unsaturated furan residue; and

b) oxidizing the unsaturated furan residue by reacting the polymer with an oxidizing reagent selected from the group consisting essentially of a mixture of ozone and hydrogen peroxide; a mixture of sodium tungstate and hydrogen peroxide; potassium permanganate; and nitric acid, wherein the oxidized polymer comprises a repeating unit of the structure:



wherein A is a repeating unit derived from at least one copolymerized comonomer; R is H, $-CH_3$, $-CH_2CH_3$, or a combination thereof; X is H, or a salt forming cation, or a C_1–C_{12} alkyl substituent, or a C_5–C_{12} cycloalkyl substituent having at least one five- or six-membered ring, or a combination thereof; m is at least 1; n is a number greater than 0 or is 0; and p is an integer from about 1 to 300.

5,187,239

SULFUR VULCANIZABLE RUBBER COMPOSITIONS CONTAINING A METHYL TRIALKYL AMMONIUM SALT

Carl R. Parks, Akron; Richard M. D'Sidocky, Ravenna, and Martin P. Cohen, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

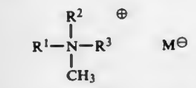
Continuation-in-part of Ser. No. 290,796, Dec. 28, 1988, abandoned. This application Mar. 22, 1990, Ser. No. 495,921

The portion of the term of this patent subsequent to Aug. 29, 2006, has been disclaimed.

Int. Cl.[5] C08C *19/22, 19/20*

U.S. Cl. 525—329.3 **5 Claims**

1. A sulfur vulcanizable rubber composition comprising an elastomer containing olefinic unsaturation, a vulcanizing agent, an accelerator and from about 0.05 phr to about 5.0 phr of a methyl trialkyl ammonium salt of the formula:



wherein R^1, R^2, and R^3 are independently alkyl radicals having 8 to 10 carbon atoms and M is selected from the group consisting of Cl, Br, CH_3SO_4 and HSO_4.

5,187,240

PROCESS FOR PREPARING N-HALOTHIOSULFONAMIDE-MODIFIED NON-RUBBERY THERMOPLASTIC OLEFINS

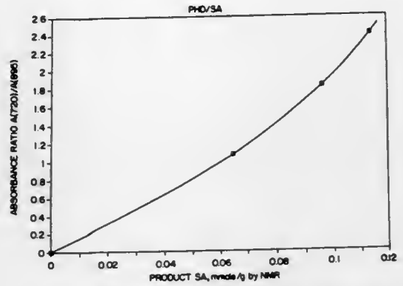
Donald A. White, Edison, N.J., assignor to Exxon Chemical Patents Inc., Linden, N.J.

Division of Ser. No. 439,542, Nov. 20, 1989, Pat. No. 5,034,467, which is a continuation-in-part of Ser. No. 244,743, Sep. 15, 1988, Pat. No. 4,956,420. This application Dec. 12, 1990, Ser. No. 626,280

The portion of the term of this patent subsequent to Sep. 11, 2007, has been disclaimed.

Int. Cl.[5] C08C *19/22*

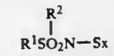
U.S. Cl. 525—351 **20 Claims**



1. A process for preparing a modified polymer product, which comprises contacting, at reaction conditions,

(a) a component comprising a non-rubbery thermoplastic polymer of (1) at least one 1-alkene containing from 2 to 16 carbon atoms, and (2) at least one nonconjugated diene containing from 6 to 16 carbon atoms, wherein said diene following incorporation into said non-rubbery thermoplastic polymer does not include an olefinic carbon atom which has been fully substituted; said rubbery thermoplastic polymer having an initial tensile modulus ranging from about 10^0 to about 10^3 kilograms per square millimeter, and having an amount of crystallinity of at least about 35 weight percent; and

(b) a N-halothiosulfonamide of the formula:



wherein x is bromine or chlorine and wherein R^1 and R^2 are selected from the group consisting of alkyl groups having from 1 to 20 carbon atoms, aralkyl groups having from 7 to 20 carbon atoms, and wherein R^2 is also selected from groups having the general formula;



wherein R_3 and R_4 are individually selected from said alkyl, aryl and substituted aryl groups and where R^3 and R_4 can be joined together to represent groups selected from the group consisting of $-(CH_2)_n-$, wherein n is an integer from 4 to 7 and $-(CH_2)_2-O-(CH_2)_2-$, said N-halothiosulfonamide being contacted in an amount sufficient to provide unsaid polymer product from about 0.1 to 10 mole percent of said N-halothiosulfonamide, and in the presence of a catalyst comprising an effective amount of a salt of a weak acid, said salt being represented by the formula MA_n where A is a anion or mixture of anions of a weak acid, M is a metal selected from the group consisting of copper, antimony, bismuth, tin, zinc, iron, and mixtures thereof, and $_n$ is a number corresponding to the oxidation state of M divided by the valence of said anion.

5,187,241

ISOIMIDE MODIFICATIONS OF A POLYIMIDE AND REACTION THEREOF WITH NUCLEOPHILES

Stephen L. Buchwalter, Wappingers Falls, N.Y.; Ernest R. Frank, Madison, Wis.; Terrence R. O'Toole, Hopewell Junction, N.Y.; Richard R. Thomas, Fishkill, N.Y., and Alfred Viehbeck, Stormville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 523,764, May 15, 1990, Pat. No. 5,133,840. This application Oct. 3, 1991, Ser. No. 770,506

Int. Cl.[5] C08L *77/06*

U.S. Cl. 525—420 **61 Claims**

1. A process for improving the reactivity of a polyamic acid with a nucleophile comprising reacting said polyamic acid with an isoimidizing agent to form a polyisoimide and reacting said polyisoimide with a nucleophile.

5,187,242

POLYCARBONATE, POLYESTERCARBONATE RESIN COMPOUNDS AND PREPARING METHODS THEREOF

Takeshi Sakashita, Iwakuni City; Tomoaki Shimoda, Kuga; Takashi Nagai, Otake City, and Kotarou Kishimura, Iwakuni City, all of Japan, assignors to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 13, 1990, Ser. No. 627,125

Claims priority, application Japan, Dec. 28, 1989, 1-344041

Int. Cl.[5] C08L *69/00, 67/02*; C08G *81/00*

U.S. Cl. 525—439 **2 Claims**

1. A polycarbonate composition which contains 60 to 95 parts by weight of a polycarbonate with a terminal hydroxyl group concentration of 5 to 95 mole percent and 40 to 5 parts by weight of a polyester wherein said polyester consists of an aliphatic dicarboxylic acid unit and an aromatic organic diol unit.

5,187,243

HIGH IMPACT, FLAME RETARDANT, TRANSPARENT BLENDS OF AROMATIC POLYCARBONATE AND POLY(ARYLOXYSILOXANE)

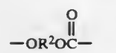
Therese C. Jordan, Clifton Park, and Jimmy L. Webb, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 28, 1991, Ser. No. 646,902

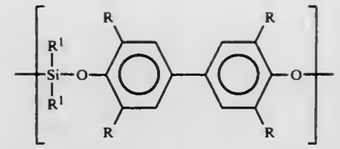
Int. Cl.[5] C08L *69/00*

U.S. Cl. 525—464 **3 Claims**

1. Transparent flame retardant polycarbonate compositions comprising about 5 to 80% by weight of aromatic polycarbonate consisting essentially of condensed units of the formula,



and about 20 to about 95% by weight of poly(aryloxysiloxane) consisting essentially of chemically combined groups of the formula,



where R is selected from the same or different $C_{(1-8)}$ alkyl radicals, R^1 is selected from the same or different $C_{(1-13)}$ monovalent hydrocarbon radicals, and R^2 is a divalent $C_{(6-30)}$ aromatic organic radical.

5,187,244

PREPARATION PROCESS OF BLOCK COPOLYMERS AND RESULTING BLOCK COPOLYMERS

Masahiro Sugimori, Nagoya; Haruko Takeda, Fujisawa, and Seiji Tone, Ohtake, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

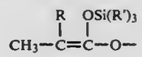
Filed Jul. 19, 1989, Ser. No. 381,864

Claims priority, application Japan, Jul. 22, 1988, 63-183085

Int. Cl.[5] C08F *283/12*

U.S. Cl. 525—479 **10 Claims**

1. A process for preparing a block copolymer, which comprises conducting living polymerization of a (meth)acrylic ester substantially in the absence of water, by using a polydimethylsiloxane having a functional end group represented by the formula (1):



wherein R is H or an n-alkyl group having from 1 to 3 carbon atoms and R′ is H or an alkyl group having from 1 to 6 carbon atoms, as a polymerization initiator and in the presence of a Lewis acid or in the presence of a donor compound of an anion selected from the group consisting of HF_2^-, $(CH_3)_3SiF_2^-$ and F^-.

5,187,245

METHOD OF ADDITION OF POLYMERIZATION INITIATOR

Tatsumi Nakamura, and Mineo Nagano, both of Yokkaichi, Japan, assignors to Tosoh Corporation, Shinnanyo, Japan

Continuation of Ser. No. 605,312, Oct. 30, 1990, abandoned. This application Jan. 2, 1992, Ser. No. 815,911

Claims priority, application Japan, Nov. 13, 1989, 1-292494

Int. Cl.[5] C08F *2/18, 2/22*

U.S. Cl. 526—88 **7 Claims**

1. A method of addition of polymerization initiator int he process of suspension polymerization or emulsion polymerization of a vinyl monomer in aqueous medium, comprising introducing at least one low-temperature active polymerization initiator selected from the group consisting of organic peroxides and azobis compounds from one or more initiator tanks which are cooled to a temperature of from about 5° C. to −20° C. to a single piping system filled beforehand with water and then feeding said initiator in the piping system to one or more polymerization reactors which have been charged with at least a part of said monomer prior to commencement of polymerization within 5 minutes of its introduction into said piping system using water, wherein said piping system is maintained at room temperature.

VOL 1147 ISS 3 FE 16 1993 UMI

5,187,246

PROCESS FOR MAKING EPR RESINS

Edgar C. Baker, Bridgewater; Francis G. Stakem, Flemington; Allen Noshay, East Brunswick, all of N.J.; Kiu H. Lee, South Charleston, and Arthur E. Marcinkowsky, Charleston, both of W. Va., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Jun. 26, 1990, Ser. No. 544,547
Int. Cl.[5] C08F *2/34, 4/20, 4/50*
U.S. Cl. 526—88 3 Claims

1. An improved fluid bed polymerization process for making one of an EPM and an EPDM resin containing from 30% by weight to 75% by weight of ethylene by the addition of a chain transfer agent, which comprises initiating polymerization with a high activity vanadium catalyst fed to a fluid bed, to which is fed gaseous ethylene and propylene in the presence or absence of another comonomer, under polymerization conditions, and providing in the fluid bed, in the absence of hydrogen, small amounts of a dialkyl zinc compound, said high activity vanadium catalyst comprising

(a) a supported precursor consisting of a vanadium compound and modifier impregnated on a solid, inert carrier, said vanadium compound being the reaction product of a vanadium trihalide and an electron donor, the halogen in said vanadium trihalide being chlorine, bromine or iodine, and said modifier having the formula

$$MX_aR_{(3-a)}$$

wherein M is either boron or Al and wherein each R is independently alkyl provided that the total number of aliphatic carbon atoms in any one R group may not exceed 14; X is chlorine, bromine or iodine; and a is 1-2 with the provision that when M is boron, a is 3;

(b) a cocatalyst having the formula

$$AlR_3$$

wherein R is independently alkyl provided that the total number of aliphatic carbon atoms in any one R group may not exceed 14; and

(c) a halogenated organic promoter.

5,187,247

PROCESS FOR MAKING ELASTOMERIC ETHYLENE-ALPHA-OLEFIN POLYMERS WITH STAGE-MODIFIED VANADIUM CATALYST

Edgar C. Baker, Bridgewater; John H. Moorhouse, Kendall Park, and Allen Noshay, East Brunswick, all of N.J., assignors to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Jun. 26, 1990, Ser. No. 543,392
Int. Cl.[5] C08F *4/68, 2/34*
U.S. Cl. 526—133 12 Claims

1. A process for making essentially non-agglomerated ethylene polymers which comprises polymerizing ethylene in a fluid bed containing a stage-modified high activity vanadium catalyst under polymerization conditions that normally would yield an undesirable amount of agglomerated polymer with non-stage modified high activity vanadium catalysts, said catalyst being a modification of the Beran et al. Catalyst System comprising a catalyst precursor comprising a supported electron donor-complexed vanadium halide component, a cocatalyst and a promoter, wherein the complexed vanadium halide component in the catalyst precursor is obtained by a multistage reduction with a reducing agent containing a Group 13 element in which the vanadium halide component is first reduced to an intermediate stage to a level of about 0.15 to about 1.0 mmoles of the Group 13 element per gram of supported precursor, dried, reslurried and further reduced by one or more of adding more modifier and converting unreduced modifier present so as to achieve a total level of about 1.0 to about 3.0 mmoles of the Group 13 element per gram of supported precursor.

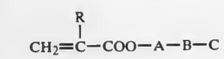
5,187,248

MONOMERS AND THEIR USE FOR THE PRODUCTION OF A LASER-OPTICAL RECORDING ELEMENT WHICH CAN BE REPEATEDLY ERASED AND RECORDED ON

Karl-Heinz Etzbach; Gerhard Wagenblast, both of Frankenthal; Wolfgang Brox, Heidelberg; Axel Paul, Mannheim, and Volker Bach, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 524,989, May 18, 1990. This application Dec. 30, 1991, Ser. No. 814,516
Claims priority, application Fed. Rep. of Germany, May 26, 1989, 3917196
Int. Cl.[5] C08F *22/24*
U.S. Cl. 526—243 18 Claims

1. A polymer 1 (a) having chiral mesogenic pendant side groups (b) exhibiting ferroelectric smectic liquid crystalline behavior and (c) comprising monomer units which are derived from monomers of the structure I



(I)

where

R is hydrogen, chlorine or methyl,

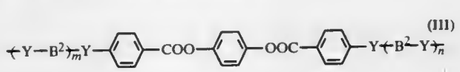
A is a flexible space-maintaining long-chain molecular moiety,

C is an optically active chiral molecular moiety and

B is a mesogenic molecular moiety which consists of three or more aromatic nuclei bonded linearly or virtually linearly to one another and which is selected from the group consisting of

i) moieties B which contain one or more naphth-2,6-ylene groups,

ii) moieties B of the formula III



(III)

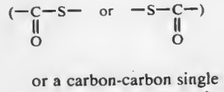
where

B^2 is a p-phenylene or a biphenyl-4,4'-diyl group

Y is an ether, methylene ether (—CH_2—O— or —O—CH_2—), ester



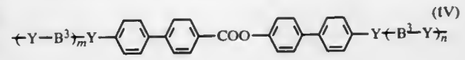
or thioester group



or a carbon-carbon single bond and

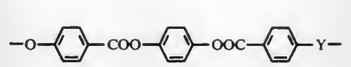
m and n are each 0 or an integer ≧1;

iii) moieties B of the formula IV



(IV)

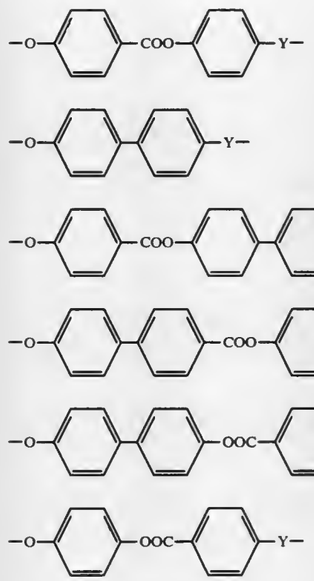
where m and n and Y have the abovementioned meanings and B^3 is selected from the group consisting of the p-phenylene, the biphenyl-4,4'-diyl group and the group III-1



(III-1)

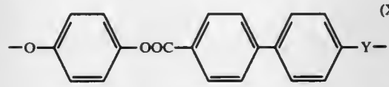
where Y has the abovementioned meanings; and

iv) moieties B, selected from the group consisting of the groups X-1 to X-7



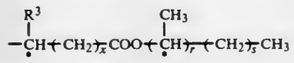
(X-1) (X-2) (X-3) (X-4) (X-5) (X-6)

and



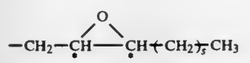
(X-7)

where Y has the abovementioned meanings and the groups X-1 to X-7 are bonded via the ether group to moiety A, with the proviso that the moiety C of the molecule is exclusively selected from the group consisting of the pinan-3-yl, the camphan-2-yl and the p-menthan-3-yl group and the group of the formula VII



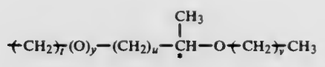
(VII)

where R^3 is methyl or trifluoromethyl, x and r independently of one another are each 0 or 1 and s is an integer from 1 to 3, the group of the formula VIII



(VIII)

where s has the abovementioned meaning, and the group of the formula IX



(IX)

where t, u and v independently of one another are each an integer of from 1 to 10 and t and u independently of one another may furthermore be 0, and y is 0 or 1, whenever one of the said groups X-1 to X-7 is selected for moiety B of the molecule.

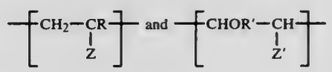
5,187,249

DEGRADABLE B-ALKOXY VINYL KETONE RESIN COMPOSITION

Virginia A. Dais, and Duane B. Priddy, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 29, 1990, Ser. No. 604,518
Int. Cl.[5] C08F *16/36, 16/12*
U.S. Cl. 526—316 5 Claims

1. Thermoplastic polymers comprising repeat units corresponding to the formulas:



wherein R is hydrogen or R'; R' is C_{1-6} alkyl; Z is phenyl, halo, or C(O)OR; and Z' is a C_{2-10} ketone containing aliphatic or aromatic moiety derived from a vinyl ketone or substituted derivative thereof.

5,187,250

POLY-α-OLEFINS

Tadashi Asanuma, Osaka; Tetsunosuke Shiomura, Tokyo; Yukari Nishimori, and Nobutaka Uchikawa, both of Osaka, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Continuation of Ser. No. 533,520, Jun. 5, 1990, abandoned. This application Dec. 23, 1991, Ser. No. 813,057
Claims priority, application Japan, Jun. 5, 1989, 1-141168; Jun. 21, 1989, 1-156707; Sep. 5, 1989, 1-228369; Oct. 11, 1989, 1-262966; Oct. 27, 1989, 1-278617; Oct. 27, 1989, 1-278618; Jan. 10, 1990, 2-001450
The portion of the term of this patent subsequent to Oct. 20, 2009, has been disclaimed.
Int. Cl.[5] C08F *110/08, 110/14*
U.S. Cl. 526—348.6 8 Claims

1. A poly-α-olefin which is an addition polymer of a straight chain α-olefin having 4 carbon atoms or more, wherein (a) by the analysis of the peaks attributable to the side chain methylene groups directly bonded to the main chain in the ^{13}C-NMR spectrum produced by the measurement in 1,2,4-trichlorobenzene, (i) a main peak not attributable to the isotactic structure thereof is positioned on the side of higher magnetic field than is the peak attributable to the isotactic structure, and (ii) the intensity of said main peak is 0.3 or more relative to the sum of the intensities of the total peaks attributable to the side chain methylene groups directly bonded to the main chain, and (b) the number-average molecular weight measured by gel permeation chromatography and calculated in terms of polypropylene is not less than 1,000.

VOL 1147 ISS 3 FE 16 1993 UMI

5,187,251

CURABLE ORGANOPOLYSILOXANES HAVING EPOXY GROUPS, METHODS OF SYNTHESIZING THEM AND THEIR USE AS CURABLE COATING MATERIALS WITH ABHESIVE PROPERTIES

Jürgen Jachmann, Herne; Christian Weitemeyer, Essen, and Dietmar Wewers, Bottrop, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

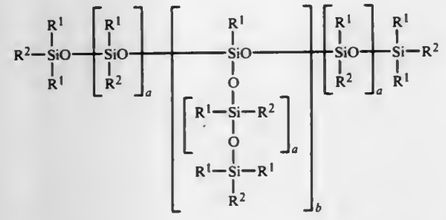
Filed Jul. 15, 1991, Ser. No. 730,347

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1990, 4023556

Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—15 **14 Claims**

1. A curable organopolysiloxane which contains at least one epoxy group and has the average formula



wherein

R^1 is the same or different in the molecule and represents an alkyl group with 1 to 4 carbon atoms, with the proviso that at least 90% of the R^1 groups are methyl groups,

R^2 is selected from

a) an alkyl group with 1 to 20 carbon atoms, aryl group or aralkyl group,

b) an epoxy group which is linked by way of an Si-C bond to a silicon atom of the polysiloxane, or

c) a group of the formula $—R^3OH$, wherein R^3 is a divalent alkylene group with 3 to 11 carbon atoms

a has a value of 1 to 1,000 and

b has a value of 0 to 10, with the proviso that in the average organopolysiloxane molecule, at least one R^2 groups has the meaning b) and one the meaning c).

5,187,252

SILAZANE POLYMERS CONTAINING SICL GROUPS, PROCESS FOR THEIR PREPARATION, SILICON NITRIDE-CONTAINING CERAMIC MATERIALS WHICH CAN BE PREPARED FROM THEM, AND THEIR PREPARATION

Tilo Vaahs, Kelkheim; Hans-Jerg Kleiner, Kronberg, and Martio Brück, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 24, 1991, Ser. No. 645,264

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1990, 4002383

Int. Cl.[5] C08G *77/26*

U.S. Cl. 528—33 **5 Claims**

1. A process for the preparation of a silazane polymer containing SiCl groups, which comprises heating an α,ω-chlorosilazane of the formula I



(I)

in which m has a value of from 1 to 12 and —(Si) is a silyl radical of the formula $—SiHR^1Cl$, $—SiR^2R^3Cl$, $—SiR^4Cl_2$, $—SiR^5Cl—CH_2CH_2—SiR^5Cl_2$ or $—SiCl_2—CH_2CH_2—SiR^6Cl_2$, and R is C_1-C_6-alkyl or C_2-C_6-alkenyl and, independently of one another, R^1-R^6 are H, C_1-C_6-alkyl or C_2-C_6-alkenyl, to a temperature of from 100° C. to 400° C.

5,187,253

METHOD OF MANUFACTURING POLYETHERURETHANE UREA AMINES, AND USE OF SAME

Elmar Wolf, Recklinghausen, Fed. Rep. of Germany, assignor to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jul. 23, 1991, Ser. No. 734,480

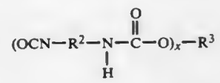
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1990, 4031811

Int. Cl.[5] C08G *18/30*

U.S. Cl. 528—49 **6 Claims**

1. A method of manufacturing polyether urethane urea amines comprising:

reacting an isocyanate prepolymer of the formula:



wherein R^2 is equivalent to R is defined below; R^3 is $(CH_2—CH_2—O)_m$, $[CH_2—CH(CH_3)—)]_m$ or $[CH_2—CH_2—CH_2—O]_m$; x is 2 or 3 and m is 5-200; with a polyamine of the formula: $H—(NH—R)_nNHR^1$ wherein R is an alkanediyl group of 2-12 carbon atoms, which is optionally substituted by an alkyl group, or a cycloalkanediyl group of 4-14 carbon atoms, which is optionally substituted by an alkyl group; R is H, $—CH_2CH_2CN$, cycloalkyl or 2,2,6,6-tetramethylpiperidin-4-yl and n is 1-5, at an NCO:NH equivalent ratio of 1:2-12 and at a temperature of 140°-170° C.

5,187,254

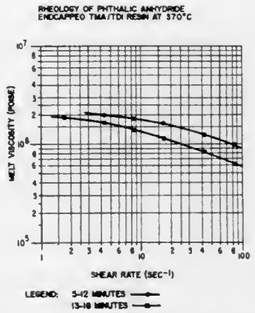
AMIDE-IMIDE RESIN HAVING PHTHALIC ANHYDRIDE MOIETIES

Howard B. Yokelson, Aurora; James H. Han, Naperville, and Jeff J. Felberg, River Forest, all of Ill., assignors to Amoco Corporation, Chicago, Ill.

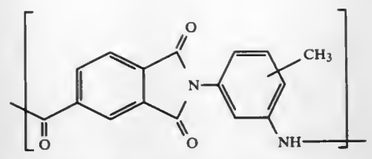
Continuation-in-part of Ser. No. 708,493, May 31, 1991, Pat. No. 5,124,428. This application Sep. 30, 1991, Ser. No. 768,006

Int. Cl.[5] C08G *18/28, 18/77*

U.S. Cl. 528—73 **8 Claims**



1. A melt-processible molding resin in which polymeric chains present in the resin comprise amide-imide repeating units having the following general formula:



and wherein terminal amine groups of said polymeric chains are endcapped with phthalic anhydride moieties.

5,187,255

METHOD OF PRODUCING A POLYETHER COPOLYMER

Shigeru Matsuo, Chiba, Japan, assignor to Idemitsu Kosan Co., Ltd., Tokyo, Japan

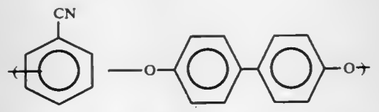
Division of Ser. No. 612,609, Nov. 13, 1990, Pat. No. 5,149,581. This application Apr. 30, 1992, Ser. No. 876,499

Claims priority, application Japan, Nov. 21, 1989, 1-302753

Int. Cl.[5] C08G *63/66*

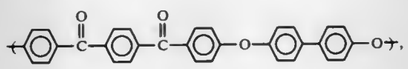
U.S. Cl. 528—176 **4 Claims**

1. A method of producing a polyether copolymer comprising the repeating units represented by the following general formula (I)



(I)

and the repeating units represented by the following formula (II)



(II)

the molar ratio of the repeating units represented by the formula (I) based on the total of the repeating units represented by the formula (I) and the repeating units represented by the formula (II) (the molar ratio of (I)/{(I)+(II)}) being from 0.1 to 0.8, and the polyether copolymer having a melt viscosity (the viscosity under no shearing stress) of at least 500 poise as measured at 400° C., comprising:

reacting a dihalogenobenzonitrile, 1,4-bis(4'-halobenzoyl)-benzene, with 4,4'-biphenol in an aprotic polar solvent in the presence of an alkali metal compound.

5,187,256

UNIFORM DISTRIBUTION POLYCARBONATE PELLET

Richard O. Kirk, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 3, 1990, Ser. No. 621,705

Int. Cl.[5] C08G *64/40*

U.S. Cl. 528—196 **33 Claims**

1. A composition of matter comprising aromatic polycarbonate pellets characterized in that

(a) the median particle size of said pellets is between 250 and 1,000 microns;

(b) the particle size dispersion of said pellets is less than 100 microns; and

(c) the skew of the particle distribution is less than 0.25;

each as determined according to ASTM Designation D 1921-63.

5,187,257

THERMOFORMED POLYARYLENE SULFIDE CONTAINER

Takayuki Katto; Yukio Ichikawa; Toshio Enoki, all of Iwaki, and Kenichi Katase, Ushiku, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 524,330, May 16, 1990, abandoned, which is a continuation of Ser. No. 433,391, Nov. 7, 1989, abandoned, which is a continuation of Ser. No. 185,681, Apr. 22, 1988, abandoned. This application Jun. 22, 1992, Ser. No. 902,556

Claims priority, application Japan, Apr. 24, 1987, 62-101589

Int. Cl.[5] C08G *75/14*

U.S. Cl. 528—388 **4 Claims**

1. A process for producing a crystallized, thin-wall container having a wall thickness of not less than 0.04 mm and less than 1 mm and having a crystallinity index of not less than 15%, which consists essentially of:

thermoforming, which consists essentially of at least a shaping step and a crystallization step, a sheet having a crystallinity index of less than 15% and an elongation of not less than 100% at room temperature and which is prepared from poly(arylene sulfide) resin having substantially linear structure, containing not less than 70% by weight of a repeating unit of paraphenylene sulfide, having a logarithmic viscosity number of 0.25 to 0.9 measured in a solution of 1-chloronaphthalene at a concentration 0.4 g/dl and at a temperature of 208° C., having at least one of the following procedures selected from the group consisting of (i) being treated with an aqueous solution of a salt of a strong acid and a weak base and (ii) being mixed with not more than 10% by weight of poly(biphenylene sulfide) after polymerization, but before sheet-making in all two procedures; and

in the crystallization step, the half-width of the peak on a crystallization curve obtained on a sheet crystallized by heating being not more than 15° C.

5,187,258

PROCESS FOR PREPARING POLKETONES WITH BORON CONTAINING ANION FROM SUBSTITUTED SALICYLIC ACID AND BORIC ACID

Kevin G. Smith, Staines, England, assignor to The British Petroleum Company p.l.c., London, England

Filed Mar. 22, 1990, Ser. No. 497,587

Claims priority, application United Kingdom, Apr. 5, 1989, 8907624

Int. Cl.[5] C08G *67/02*

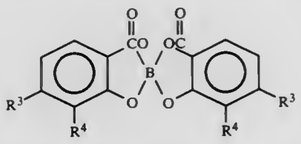
U.S. Cl. 528—392 **10 Claims**

1. A process for preparing polyketones, comprising polymerizing a mixture of carbon monoxide and one or more olefins in the presence of a palladium catalyst, said palladium catalyst being prepared by reacting together:

(a) a source of palladium,

(b) a bidentate amine, phosphine, arsine or stibine having the formula $(R^1)_2M—R^2—M(R^1)_2$ wherein the M atoms are independently selected from the group consisting of nitrogen, phosphorus, arsenic and antimony, the R^1 groups are independently selected from the group consisting of alkyl, cycloalkyl and aryl groups and R^2 is an alkylene group, and

(c) a source of an anion having the formula:



(I)

wherein the R^3 and R^4 groups are independently selected

VOL 1147 ISS 3 FE 16 1993 UMI

from the group consisting of hydrogen, C_1 to C_6 alkyl, chlorine, bromine and iodine with the proviso that both of the R_4 groups are other than hydrogen.

5,187,259
CHAIN EXTENDED GELATIN

Melvin D. Sterman, Pittsford, and James L. Bello, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 14, 1990, Ser. No. 612,370
Int. Cl.[5] C07K *15/06, 15/20;* C09D *189/00;* G03C *1/047*
U.S. Cl. 530—354 **22 Claims**

1. A soluble, chain extended gelatin comprising from about 0.25 to about 5 millimoles of a bis-(vinyl sulfonyl) compound per 100 grams of gelatin.

5,187,260
PROCESS FOR THE PREPARATION OF A HIGH PURITY PROTAMINE-DNA COMPLEX AND PROCESS FOR USE OF SAME

Sharifa Karali, 143-25 41st Ave., Flushing, N.Y. 11355, and John K. Barberii, 4040 E. Kilmer, Tucson, Ariz. 85711

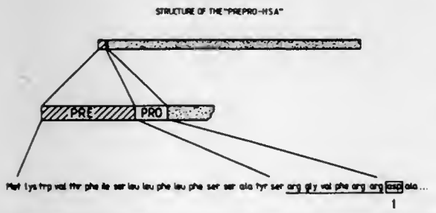
Continuation-in-part of Ser. No. 240,528, Sep. 6, 1988, abandoned. This application Apr. 15, 1991, Ser. No. 685,593
Int. Cl.[5] C07K *15, 18, 3/28, 3/20*
U.S. Cl. 530—358 **30 Claims**

17. A process for providing a high-purity protamine-DNA complex, consisting essentially of the sequential steps of:
collecting and treating a nucleoprotamine from a developmental stage of a life form by homogenization in an aqueous buffered salt solution to obtain a mixture;
removing insoluble matter from the mixture of said collecting and treating step;
isolating protein and removing lipids from the mixture by a single aqueous chloroform extraction;
performing dialysis of the protein obtained by the second extraction, against sterile water, to remove excess salt; and,
reconstituting the dialyzed protein with 5% weight/volume heterologous or homologous DNA;
and, sterile filtration to obtain an aqueous protamine-DNA complex.

5,187,261
PROCESS FOR THE PREPARATION OF MATURE HUMAN SERUM ALBUMIN

Martine Latta, Paris; Jean-Francois Mayaux, Fontenay aux Roses, both of France, and Paolo Sarmientos, Milano, Italy, assignors to Genetica, Joinville le Pont, France

Division of Ser. No. 16,651, Dec. 19, 1987, Pat. No. 5,100,784. This application Feb. 8, 1991, Ser. No. 653,195
Claims priority, application France, Feb. 21, 1986, 86 02379
The portion of the term of this patent subsequent to Apr. 3, 2007, has been disclaimed.
Int. Cl.[5] C07K *15/02, 15/06*
U.S. Cl. 530—363 **4 Claims**



1. A hybrid protein comprising a peptide sequence of the first seven amino acids of the lambda bacteriophage cII protein, (Met)-Val-Arg-Ala-Asn-Lys-Arg, fused to the N-terminal end of the peptide sequence of mature human serum albumin, when produced by culture of a strain of *Escherichia coli* which ensures the maintenance of the plasmid "pXL462".

5,187,262
CDNA ENCODING A POLYPEPTIDE INCLUDING A HEVEIN SEQUENCE

Natasha V. Raikhel, Okemos, Mich.; Willem F. Broekaert, Dilbeek, Belgium; Nam-Hai Chua, Scarsdale, and Anil Kush, New York, both of N.Y., assignors to Board of Trustees, operating Michigan State University, East Lansing, Mich.

Filed Sep. 24, 1990, Ser. No. 587,071
Int. Cl.[5] C07K *15/10*
U.S. Cl. 530—370 **2 Claims**



1. A protein free of other proteins naturally occurring with the protein, said protein selected from the group consisting of the sequence of 204 amino acids shown in FIG. 2 and subfragments of said sequence larger than the 43 amino acid hevein sequence which includes the hevein sequence and which binds chitin.

5,187,263
EXPRESSION OF BIOLOGICALLY ACTIVE PDGF ANALOGS IN EUCARYOTIC CELLS

Mark J. Murray, and James D. Kelly, both of Seattle, Wash., assignors to ZymoGenetics, Inc., Seattle, Wash.

Continuation of Ser. No. 235,381, Aug. 22, 1988, abandoned, which is a division of Ser. No. 896,485, Aug. 13, 1986, Pat. No. 4,766,073, which is a continuation-in-part of Ser. No. 705,175, Feb. 25, 1985, Pat. No. 4,801,542, which is a continuation-in-part of Ser. No. 660,496, Oct. 12, 1984, Pat. No. 4,769,328. This application Jan. 2, 1992, Ser. No. 818,397
Int. Cl.[5] C07K *13/00*
U.S. Cl. 530—399 **1 Claim**

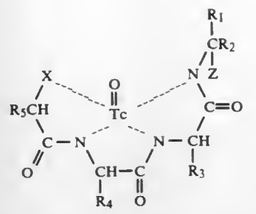
1. A mitogenic protein produced by a method comprising:
(a) introducing into a eucaryotic host cell a DNA construct capable of directing the expression and secretion of biologically active PDGF analogs in eucaryotic cells, said DNA construct containing a transcriptional promoter followed downstream by a DNA sequence that encodes the B-chain of a primate PDGF; and
(b) isolating from the host cell a mitogenic protein, which is a PDGF BB Romodimer, expressed from said DNA construct.

5,187,264
TECHNETIUM CHELATES TO BE USED FOR DETERMINING THE RENAL FUNCTION

Alfons M. Verbruggen, Leuven, Belgium, assignor to Mallinckrodt Medical, Inc., St. Louis, Mo.

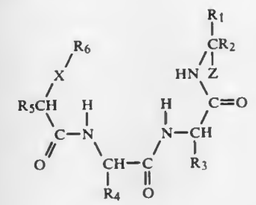
Division of Ser. No. 54,649, May 26, 1987, Pat. No. 4,849,511. This application Apr. 10, 1989, Ser. No. 335,606
Claims priority, application Netherlands, May 28, 1986, 8601369
Int. Cl.[5] C07F *13/00;* A61K *49/02*
U.S. Cl. 534—14 **1 Claim**

1. A method of preparing a compound of the general formula



(I)

wherein
X is a sulphur atom or an imino group,
Z is a hydrogen group, a carboxy group, an alkoxycarbonyl group having 1–4 carbon atoms, an alkoxycarbonyl group having 1–4 carbon atoms, an aminocarbonyl group, a sulpho group, an aminosulphonyl group or a carboxymethylaminocarbonyl group,
Tc represents technetium-99m,
R_1 is a hydrogen atom or an alkyl group having 1 or 2 carbon atoms, and
R_2, R_3, R_4 and R_5 are equal or different and represent hydrogen atoms or branched or non-branched alkyl groups having 1–4 carbon atoms, which alkyl groups are optionally substituted with an amino group, a hydroxy group, a mercapto group, a halogen atom, a carboxy group or an aminocarbonyl group,
with the proviso that R_3, R_4 and R_5 are not all hydrogen atoms; as well as water-soluble salts of these compounds comprising the step of reacting technetium-99m in the form of a pertechnetate in the presence of a reducing agent and optionally a suitable exchanging ligand, with a tripeptide compound of the general formula



(II)

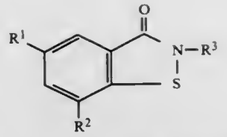
wherein X, Z, R_1, R_2, R_3, R_4 and R_5 have the meanings given above, and R_6 is a hydrogen atom or suitable protective group.

5,187,265
CHROMOGENIC THIOL INDICATING BENZOISOTHIAZOLONE COMPOUNDS

James P. Albarella, Granger, Ind.; David L. Garling, Largo, Fla., and Robert P. Hatch, Elkhart, Ind., assignors to Miles Inc., Elkhart, Ind.

Division of Ser. No. 546,703, Jul. 2, 1990, Pat. No. 5,130,433, which is a continuation of Ser. No. 214,426, Jul. 1, 1988, abandoned. This application Feb. 28, 1992, Ser. No. 843,143
Int. Cl.[5] C09B *29/36, 33/12, 35/02, 69/10*
U.S. Cl. 534—573 **3 Claims**

1. A chromogenic thiol indicating benzoisothiazolone having the structure:



(I)

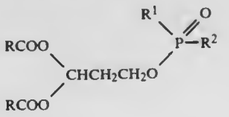
wherein at least one of R^1 and R^2 is phenylazo; 4-hydroxyphenylazo; 4-nitro-2-methylphenylazo; 2-hydroxy-1-naphthylazo; 2-hydroxy-5-methylphenylazo; 2-hydroxy-4-methyl-5-nitrophenylazo; 4-hydroxy-1-naphthlazo; 4-hydroxy-3-methyl-1-naphthylazo; 4-hydroxy-5-aza-1-naphthylazo; 2-amino-1-naphthyl-azo; 1-hydroxy-2-naphthlazo; 3-N,N-dimethylaminopropylcarboxyamido-1-hydroxy-4-naphthylazo; 1-hydroxy-4-methoxy-2-naphthylazo; 2-hydroxy-3-carboxy-1-naphthylazo; 1-hydroxy-3,6-disulfonate-2-naphthylazo; 2,3-dihydroxy-1-naphthylazo; 2-hydroxy-3,5-dimethyl-1-phenylazo; benzylideneamino or 2,4-dinitro-benzylideneamino and one of R^1 and R^2 may be hydrogen; and
R^3 is a member of the group consisting of a carboxyalkyl, carboxyaryl or carboxyheteroaryl covalently linked to polyethylene glycol, hexathylene glycol, chitosan, polyalkylamine, aminodextran, polyethyleneimine, polylysine or aminostyrene, in which the alkyl group has 1 to 6 carbon atoms and the aryl group is phenyl or naphthyl; an aminoalkyl or aminoaryl covalently linked to polyepichlorohydrin, chloromethylpoplystyrene, polyvinylalcohol or polyvinylpyridine, in which the aryl group has 1 to 6 carbon atoms and the aryl group is phenyl or naphthyl; and an aminoalkyl, hydroxyalkyl, aminoaryl or hydroxyaryl linked to polyacrylic acid, polymethacrylic acid, polyitaconic acid, oxidized polyethylene oxide, poly(methylmethacrylate/methacrylic acid), carboxymethyl cellulose, carboxymethyl agarose or carboxymethyldextran, in which the alkyl group has 1 to 6 carbon atoms and the aryl group is phenyl or naphthyl.

5,187,266
ANTITUMOR ALDOPHOSPHAMIDE GLYCOSIDE AND DIDEOXYURIDINE DERIVATIVES

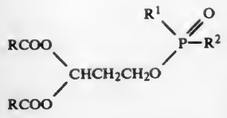
David Farquhar, Houston, Tex., and Yugiang Wang, Edmonton, Canada, assignors to Board of Regents the University of Texas System, Austin, Tex.

Division of Ser. No. 323,423, Mar. 14, 1989, Pat. No. 5,091,552, which is a continuation-in-part of Ser. No. 879,910, Jun. 30, 1986, Pat. No. 4,841,085. This application Feb. 24, 1992, Ser. No. 840,451
Int. Cl.[5] C07H *21/02, 21/04, 19/10, 19/20*
U.S. Cl. 536—6.4 **2 Claims**

1. A compound having the structure:



wherein:
R is CH_3, C_2H_5, C_3H_7, $C(CH_3)_2$ or C_6H_5;
R^1 is N-(3')-Doxorubicin or N-(3')-Daunorubicin; and
R^2 is $N(CH_2CH_2Cl)_2$ or $NHCH_2CH_2Cl$.
2. A compound having the structure:



wherein:
R is CH_3, C_2H_5, C_3H_7, $C(CH_3)_2$ or C_6H_5;
R^1 is NH_2; and
R^2 is 2',3'-dideoxyuridine-5'yl or 5-methyl-2',3'-dideoxyuridine.

5,187,267
PLANT PROTEINS, PROMOTERS, CODING SEQUENCES AND USE
Luca Comai, Seattle, Wash., and Ann J. Koning, Davis, Calif., assignors to Calgene, Inc., Davis, Calif.
Filed Jun. 19, 1990, Ser. No. 541,883
Int. Cl.[5] C07H *15/12;* **A01H** *1/04;* **C12N** *15/00, 5/00*
U.S. Cl. 536—23.1 **20 Claims**

1. A DNA construct comprising, in the 5' to 3' direction of transcription, a 5' non-coding region from a tomato hsp80 gene and (b) a DNAsequence of interest wherein said sequence is heterologous to said 5' non-coding region.

5,187,268
GENE ENCODING AN ANTI-COMPLEMENT PROTEIN FROM VACCINIA
Girish Kotwal, and Bernard Moss, both of Bethesda, Md., assignors to United States of America, Washington, D.C.
Division of Ser. No. 239,208, Aug. 20, 1988, Pat. No. 5,157,110. This application Jul. 1, 1992, Ser. No. 906,983
Int. Cl.[5] C12N *15/39*
U.S. Cl. 536—23.72 **2 Claims**

1. A cloned gene encoding a mature protein having the amino acid sequence of SEQ ID NO:2 beginning at amino acid number 1.

5,187,269
FLUORINE-CONTAINING CELLULOSE DERIVATIVE
Nobuo Shiraishi, Kyoto, and Motonobu Kubo, Toyonaka, both of Japan, assignors to Daikin Industries Ltd., Osaka, Japan
Filed Feb. 8, 1990, Ser. No. 476,697
Claims priority, application Japan, Feb. 10, 1989, 1-31845; Feb. 28, 1989, 1-47098
Int. Cl.[5] C08B *3/08, 3/10, 3/14, 13/00*
U.S. Cl. 536—56 **1 Claim**

1. A fluorine-containing cellulose derivative of the formula:

$$[C_6H_7O_2(OH)_a(OR)_b(OCOA)_c]_p \quad (I)$$

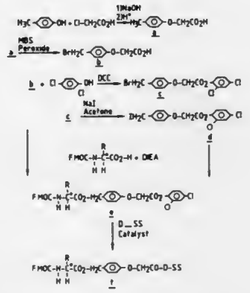
wherein a ≧0, b≧0 and c >0 provided that the sum of a, brand c is 3; p represents a degree of polymerization of the cellulose derivative and is a number of 5 to 3000; R is an alkyl group having 1 to 8 carbon atoms, an acyl group having 2 to 8 carbon atoms, an aryl group having 6 to 20 carbon atoms, a cyanoethyl group, a hydroxyethyl group, a hydroxypropyl group or a carboxymethyl group and

A is a group of the formula:

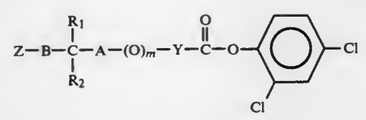
$$-CF_2CZ_2-(OCF_2CF_{CF_2}CZ_2)_q-F \quad (IV)$$

wherein the Z substituents are each a hydrogen, a fluorine or a chlorine and q is a number of 1 to 200.

5,187,270
RACEMIZATION FREE ATTACHMENT OF AMINO ACIDS TO A SOLID PHASE
Michael S. Bernatowicz, Cambridge, Mass., assignor to Millipore Corporation, Bedford, Mass.
Continuation-in-part of Ser. No. 290,433, Dec. 27, 1988, abandoned. This application Jan. 6, 1989, Ser. No. 295,048
Int. Cl.[5] C07D *233/64;* **C07C** *261/00*
U.S. Cl. 548—338.1 **7 Claims**



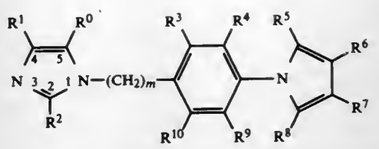
1. An enantiomerically pure compound of the formula:



wherein
Z is an N∝ amino acid protecting group;
B is a naturally occurring D or L amino acid having protected or unprotected side chains;
R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, linear or branched, saturated or unsaturated alkyl of 1 to 6 carbon atoms and phenyl;
A is a substituted or unsubstituted phenyl ring wherein the substituents are selected from the group consisting of alkyl of 1 to 6 carbon atoms, halo, nitro, alkoxy of 1 to 6 carbon atoms and combinations thereof;
Y is a hydrocarbon chain having a linear or branched, saturated or unsaturated alkyl of 1 to 6 carbon atoms, phenyl or phenalkyl having an alkyl group of 1 to 6 carbon atoms; and p1 m is zero or one.

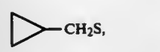
5,187,271
N-SUBSTITUTED (α-IMIDAZOLYL-TOLUYL) PYRROLE COMPOUNDS FOR TREATMENT OF CIRCULATORY DISORDERS
Philippe R. Bovy, St. Louis; Joe T. Collins, Ballwin, and Robert E. Manning, St. Louis, all of Mo., assignors to G. D. Searle & Co., Chicago, Ill.
Filed Feb. 28, 1991, Ser. No. 662,584
Int. Cl.[5] C07D *257/07, 233/90;* **A61K** *31/41, 31/415*
U.S. Cl. 548—314.7 **7 Claims**

1. A compound of Formula I:



(I)

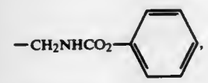
wherein m is one; wherein each of R^0, R^1 and R^2 is independently selected from 1-oxoethyl, 1-oxopropyl, 1-oxobutyl, 1oxopentyl, 2-butenyl, 3-butenyl, 2-butynyl, 3-butynyl, 2-hydroxybutyl, $CH_3CH_2CH{=}CH$, SC_3H_7, SC_4H_9,



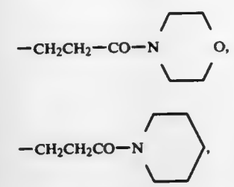
amino, aminomethyl, aminoethyl, aminopropyl, CH_2O-$COCH_3$, CH_2Cl, CH_2OCH_3, $CH_2OCH(CH_3)_2$, CHO, CH_2CO_2H, $CH(CH_3)CO_2H$, NO_2,



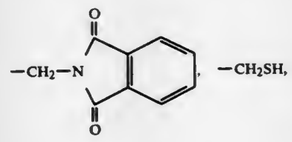
$-CO_2CH_3$, $-CONH_2$, $-CONHCH_3$, $CON(CH_3)_2$, $-CH_2-NHCO_2C_2H_5$,



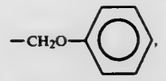
$-CH_2NHCO_2CH_3$, $-CH_2NHCO_2C_3H_7$, $-CH_2NHCO_2CH_2(CH_3)_2$, $-CH_2NHCO_2C_4H_9$, CH_2NHCO_2-adamantyl, $-CH_2NHCO_2$—(1-napthyl), $-CH_2NHCONHCH_3$, $-CH_2NHCONHC_2H_5$, $-CH_2NHCONHC_3H_7$, $-CH_2NHCONHC_4H_9$, $-CH_2NHCONHCH(CH_3)_2$, $-CH_2NHCONH$(1-napthyl), $-CH_2NHCONH$(1-adamantyl),



$CH_2CH_2CH_2CO_2H$, $-CH_2CH_2F$, $-CH_2OCONHCH_3$, $-CH_2OCSNHCH_3$, $-CH_2NHCSOC_3H_7$, $-CH_2CH_2CH_2F$, $-CH_2ONO_2$,



-continued



methyl, ethyl, n-propyl, isopropyl, n-butyl, sec-butyl, isobutyl, tert-butyl, 4-methylbutyl, n-pentyl, neopentyl, phenyl, benzyl, CF_3, CH_2OH, Br, Cl, F, I, dimethoxymethyl, 1,1-dimethoxypropyl, 1,1-dimethoxypentyl, hydroxyalkyl, 1-oxo-2-phenylethyl, 1-oxo-2-cyclohexylethyl 1,1-difluoro-2-phenylethyl, monofluoromethyl, 1,1-difluoro-2-cyclohexylethyl, 2-cyclohexylethyl, 1,1-difluoro-3-cyclohexylpropyl, 1,1-dimethoxybutyl, 1,1-difluoroethyl, 1,1-difluoropropyl, 1,1-difluorobutyl, 1,1-difluoropentyl, 2-phenylethyl, 1,1-difluoro-3-phenylpropyl, difluoromethyl, CO_2H, CO_2CH_3, $CO_2CH_2CH_3$, SH, PO_3H_2, SO_3H, $CONHNH_2$, $CONHNHSO_2CF_3$ and OH; wherein each of R^3 through R^{10} is independently selected from hydrido, halo, nitro, trifluoromethyl, hydroxy, alkoxy, cyano, carboxyl, methoxycarbonyl and tetrazole; or a tautomer thereof or a pharmaceutically-acceptable salt thereof.

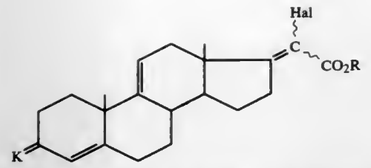
5,187,272
PROCESS FOR PREPARING NON-HYDROXYPROPYLATED, DEFLAVORED, CROSSLINKED, PREGELATINIZED, STARCH AND PRODUCT
Jay H. Katcher, Chestnut Ridge, N.Y., and Charles W. Bertalan, New Brunswick, N.J., assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Jan. 21, 1992, Ser. No. 823,510
Int. Cl.[5] C08B *31/08, 33/04;* **A23L** *1/05, 1/187*
U.S. Cl. 536—102 **14 Claims**

1. A process for preparing a deflavored, non-hydroxypropylated, crosslinked, pregelatinized starch comprising:
a) dispersing and agitating raw starch in water to form a homogeneous slurry containing at least 25% starch;
b) adding a base to adjust the slurry pH to at least 11.0;
c) washing the starch solids with water to remove flavor while maintaining the starch pH above 11.0 and while maintaining the starch solids concentration at least 25% or more;
d) crosslinking the starch using any food-acceptable procedure;
e) neutralize the starch with a food grade acid to pH 5.0 to 9.0; and
f) gelatinizing and drying the neutralized starch using a process selected from the group consisting of spray-drying using a two-fluid nozzle, drum drying and cooking in a water-miscible solvent at high temperature and pressure followed by drying, with the proviso that the starch is not hydroxypropylated but is treated with an emulsifying agent having an HLB value greater than 1.0.

5,187,273
$\Delta^{4,9(11),17(20)}$-PREGNATRIENE-3-ONES
Francis Brion, Gagny; Jean Buendia, Le Perreux sur Marne; Christian Diolez, Palaiseau, and Michel Vivat, Lagny sur Marne, all of France, assignors to Roussel Uclaf, Paris, France
Filed May 18, 1992, Ser. No. 885,150
Claims priority, application France, May 23, 1991, 91 06202
Int. Cl.[5] C07J *21/00, 33/00*
U.S. Cl. 540—4 **3 Claims**

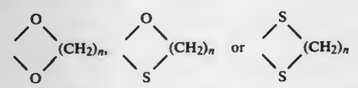
1. A compound of the formula

VOL 1147 ISS 3 FE 16 1993 UMI



I

wherein Hal is chlorine or bromine; R is selected from the group consisting of alkyl of 1 to 6 carbon atoms, aralkyl of 7 to 15 carbon atoms and a silylated group; K is a protective group selected from the group consisting of



n is 2 or 3; and the wavy lines mean the groups may have either isomer form or are mixtures thereof.

5,187,274

PROCESS TO AVOID THE FORMATION OF WASTE WATER DURING HEXAMINE PRODUCTION

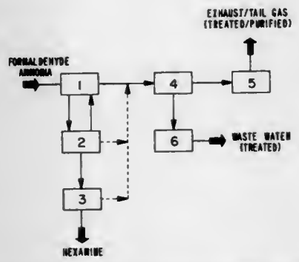
Heinrich Hermann, Cologne; Gunther Pelster, Sankt-Augustin, and Klaus Degener, Cologne, all of Fed. Rep. of Germany, assignors to Josef Meissner GmbH & Co., Cologne, Fed. Rep. of Germany

Filed Jul. 19, 1991, Ser. No. 732,971

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1990, 4023476

Int. Cl.[5] C07D *487/12*

U.S. Cl. 544—186 **9 Claims**



1. In the process comprising oxidatively dehydrogenating or oxidizing methanol to form a gas stream containing formaldehyde and reacting said gas-stream with ammonia in aqueous phase, thereby forming hexamine crystals and a gaseous waste stream of unreacted formaldehyde and waste water, the improvement which comprises maintaining the liquid volume of the aqueous phase constant during the reaction, and oxidizing the waste gas stream to convert organic components by discharging any introduced methanol and water and also the reaction water from the hexamine reactor together with the stream of exhaust gas, carbon monoxide and any hydrogen contained therein to carbon dioxide and water.

5,187,275

PIPERIDINE-TRIAZINE COMPOUNDS

Valerio Borzatta; Roberto Scrima, and Graziano Vignali, all of Bologna, Italy, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

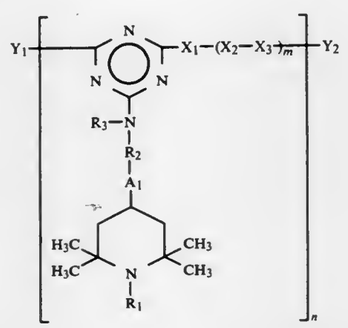
Filed Sep. 30, 1991, Ser. No. 769,982

Claims priority, application Italy, Oct. 3, 1990, 21632 A/90

Int. Cl.[5] C07D *401/12, 401/14*

U.S. Cl. 544—207 **8 Claims**

1. A compound of formula (I)



(I)

in which

R_1 is hydrogen, C_1–C_8alkyl, O·, OH, NO, CH_2CN, C_1–C_8alkoxy, C_5–C_{12}cycloalkoxy, C_3–C_6alkenyl, C_7–C_9phenylalkyl which is unsubstituted or mono-, di-or tri-substituted on the phenyl by C_1–C_4alkyl; or

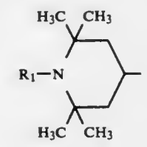
R_1 is C_1–C_8alkanoyl, C_3–C_8alkenoyl or benzoyl,

A_1 is —O— or >N—R_4 where R_4 is methyl, C_1–C_8alkanoyl, C_3–C_8alkenoyl, benzoyl or (C_1–C_8alkoxy)-carbonyl,

R_2 is C_2–C_{12}alkylene,

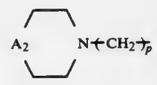
R_3 is hydrogen,

C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl; C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl; or a group of the formula (II)



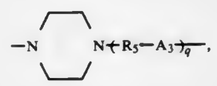
(II)

with R_1 being as defined above, or —A_1—R_2— is a direct bond and, in this case, R_3 is a group of the formula (III)



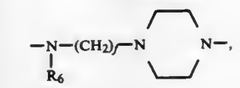
(III)

in which A_2 is a direct bond, —O—, —CH_2—, —CH_2CH_2— or >N—CH_3 and p is an integer from 2 to 6, or

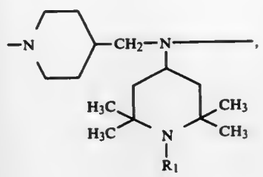


(IVa)

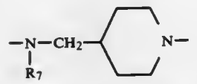
-continued



(IVb)

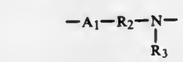


(IVc)



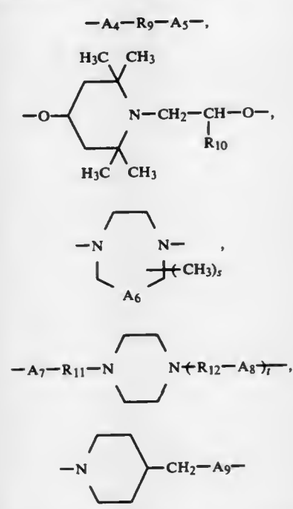
(IVd)

is also one of the groups of the formulae (IVa)–(IVd)



in which R_5 is C_2–C_6alkylene, A_3 is —O— or a group >N—R_8 where R_8 is as defined for R_3, q is zero or 1, R_6 and R_7 are as defined for R_4, r is an integer from 2 to 6 and R_1 is as defined above,

X_1 and X_3 which are identical or different are one of the groups of the formulae (Va)–(Ve)



(Va)

(Vb)

(Vc)

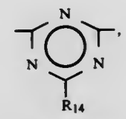
(Vd)

(Ve)

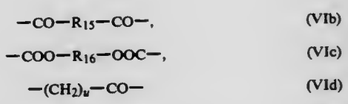
in which A_4, A_5, A_7, A_8 and A_9 which are identical or different are as defined for A_3, R_9 is C_2–C_{12}alkylene, C_4–C_{12}alkylene interrupted by 1, 2 or 3 oxygen atoms or by 1 or 2>N—R_{13} groups where R_{13} is as defined for R_3, or R_{13} is C_1–C_8alkanoyl, C_3–C_8alkenoyl, benzoyl or (C_1–C_8alkoxy)-carbonyl;

C_5–C_7cycloalkylene unsubstituted or mono-substituted by C_1–C_4alkyl, C_5–C_7cycloalkylene-di-(C_1–C_4alkylene), C_1–C_4alkylene-di-(C_5–C_7cycloalkylene), C_2–C_4alkylidene-di-(C_5–C_7cycloalkylene), phenylene, phenylene-di-(C_1–C_4alkylene), (C_1–C_4alkylene)-diphenylene or (C_2–C_4alkylidene)-diphenylene, where each phenylene group is unsubstituted or mono- or di-substituted by C_1–C_4alkyl, R_{10} is hydrogen, C_1–C_8alkyl or phenyl, A_6 is a direct bond or —CH_2—, s is zero, 1, 2 or 3, R_{11} and R_{12} which are identical or different are C_2–C_6alkylene, and t is zero or 1,

X_2 is C_2–C_{12}alkylene, C_4–C_{12}alkylene interrupted by 1, 2 or 3 oxygen atoms; 2-hydroxytrimethylene, xylylene, carbonyl or one of the groups of the formulae (VIa)–(VIe)



(VIa)



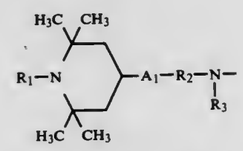
(VIb)

(VIc)

(VId)

(VIe)

in which R_{14} is a group of the formula (VII)



(VII)

in which R_1, A_1, R_2 and R_3 are as defined above, or R_{14} is a group —OR_{18}, —SR_{18} or

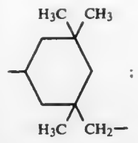


in which R_{18}, R_{19} and R_{20} which are identical or different are hydrogen, C_1–C_{18}alkyl, C_5–C_{12}cycloalkyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl; C_3–C_{18}alkenyl, phenyl which is unsubstituted or mono-, di- or tri-substituted by C_1–C_4alkyl or C_1–C_4alkoxy; C_7–C_9phenylalkyl which is unsubstituted or mono-, di- or tri-substituted on the phenyl by C_1–C_4alkyl; tetrahydrofurfuryl, a group of the formula (II), C_2–C_4alkyl substituted in the 2-, 3- or 4-position by C_1–C_8alkoxy or by di-(C_1–C_4alkyl)-amino or by a group of the formula (III); or the group

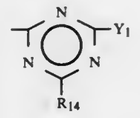


is 1-pyrrolidyl, 1-piperidyl, 4-morpholinyl, 4-methyl-1-piperazinyl or 1-hexahydroazepinyl,

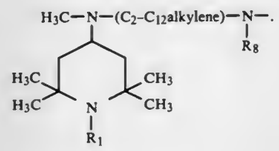
R_{15} is a direct bond, C_1–C_{12}alkylene, cyclohexylene, methylcyclohexylene or phenylene, R_{16} is as defined for R_9, u is an integer from 1 to 10 and R_{17} is as defined for R_9 or is a group



m is zero, 1, 2, 3 or 4,
n is a number from 1 to 50,
Y_1 is Cl, OH, ONa, OK, a group R_{14} or Y_1 is a group $—X_1Z$ or $—X_3Z$ where Z is hydrogen, methyl, benzyl, C_1–C_8alkanoyl, C_3–C_8alkenoyl, benzoyl or (C_1–C_8alkoxy)-carbonyl and Y_2 is Z, a group



or a group $—X_2OH$, and
when m is 0 and n is 1, the only definition of Y_1 is the group $—X_1Z$, with the proviso that the said group $—X_1Z$ is other than the group of the formula



and, in the individual recurrent structural units of the formula (I), each of the groups R_1, A_1, R_2, R_3, X_1, X_2, X_3 and m have the same or different definitions.

5,187,276

2-PYRIMIDINYL-1-PIPERAZINE DERIVATIVES

Peter-Rudolf Seidel, Cologne; Harald Horstmann, Wuppertal; Jorg Traber, Lohmar; Wolfgang Dompert, Roesrath-Forsbach; Thomas Glaser, Cologne, and Tennis Thurman, Overath, all of Fed. Rep. of Germany, assignors to Troponwerke GmbH & Co. KG., Cologne, Fed. Rep. of Germany

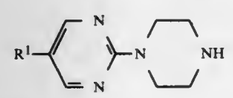
Division of Ser. No. 482,580, Feb. 21, 1990, Pat. No. 4,988,809, which is a division of Ser. No. 247,813, Sep. 22, 1988, Pat. No. 4,937,343, which is a division of Ser. No. 838,238, Mar. 10, 1986, Pat. No. 4,818,756, which is a division of Ser. No. 617,858, Jun. 6, 1984, abandoned. This application Nov. 28, 1990, Ser. No. 619,270

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1983, 3321969

Int. Cl.[5] C07D *403/04*

U.S. Cl. 544—295 **1 Claim**

1. A piperazine derivative of the formula



(II)

in which
R^1 represents, 4-methoxyphenyl, 4-chlorophenyl, 3-(trifluoromethyl)phenyl, 2-chloro-6-fluorophenyl or 3-indolyl.

5,187,277

DL-3-[4-[4-(2-PYRIDYL)-1-PIPERAZINYL]-BUTYL]-1,8,8-TRIMETHYL-3-AZABICYCLO[(3,2,1]OCTANE-2,4-DIONE HAVING PSYCHOTROPIC AND ANTIEMETIC EFFECT

Igor V. Komissarov, ulitsa Artema, 100, kv.57; Vladimir I. Dulenko, prospekt Osvobozhdenia Donbassa, 2a, kv.45; Valentin N. Voschula, ulitsa Universitetskaya, 63, kv.19; Nikolai A. Kharin, ulitsa Artema, 136b, vk.99; Sergei V. Naletov, prospekt Gurova, 7, kv.33, and Alexandr B. Mamonov, prospekt Iliicha, 16, kv.102, all of Donetsk, U.S.S.R.

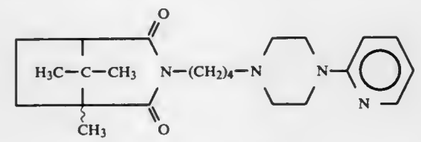
Filed Aug. 23, 1991, Ser. No. 749,270

Claims priority, application U.S.S.R., Oct. 29, 1990, 4875060

Int. Cl.[5] C07D *401/14*

U.S. Cl. 544—362 **2 Claims**

1. DL-3-[4-[4-(2-pyridyl)-1-piperazinyl]-butyl]-1,8,8-trimethyl-3-azabicyclo[3,2,1]octane-2,4-dione of the formula:



and pharmaceutically acceptable salts thereof.

5,187,278

TRIALKYLSILYL TRIFLUOROMETHANESULFONATE MEDIATED α-METHYLENIC CARBON FUNCTIONALIZATION OF 4-AZA-5α-ANDROSTAN-3-ONE STEROIDS

Anthony O. King, Hillsboro; Kevin Anderson, Plainsboro; Sandor Karady, Mountainside; Alan W. Douglas, Monmouth Junction; Newton L. Abramson, Edison, and Richard F. Shuman, Westfield, all of N.J., assignors to Merck & Co., Inc., N.J.

Division of Ser. No. 572,811, Aug. 27, 1990, Pat. No. 5,091,534. This application Nov. 1, 1991, Ser. No. 786,615

Int. Cl.[5] C07J *73/00*

U.S. Cl. 546—14 **1 Claim**

1. A compound, selected from:
a) 2α-[phenyl(trimethylsilyl)amino]sulfinyl3-[(trimethylsilyl)oxy]-4-aza-5-α-androstane-3-ene-17β-carboxylic acid methyl ester,
b) 2α-[phenylamino]sulfinyl-3-oxo-4-aza-5-α-androstane-17β-carboxylic acid methyl ester, and
c) 2α-trifluoromethylsulfinyl-3-oxo-4-aza-5-α-androstane-17β-carboxylate.

5,187,279

SYNTHESIS OF (—) SWAINSONINE AND INTERMEDIATE COMPOUNDS EMPLOYED IN SUCH SYNTHESIS

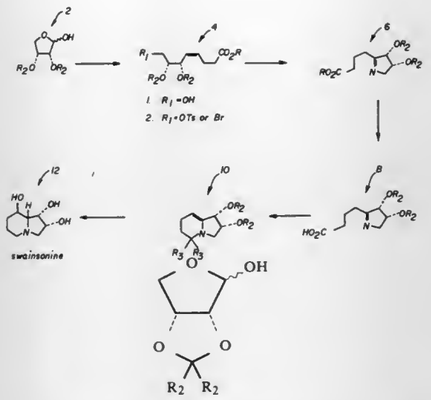
Jin K. Cha, 1030 Grassland La., Nashville, Tenn. 37220, and Richard B. Bennett, III, 4102 Sir Buxton Pl., Greensboro, N.C. 27405

Continuation of Ser. No. 555,523, Jul. 27, 1990, abandoned. This application Aug. 14, 1991, Ser. No. 747,391

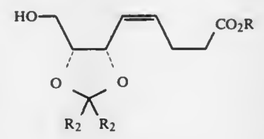
Int. Cl.[5] C07D *487/04, 491/056, 317/30*

U.S. Cl. 546—183 **3 Claims**

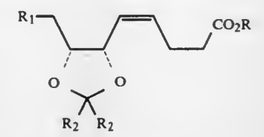
1. The process for the preparation of swainsonine, which comprises;
A. reacting a compound having the formula:



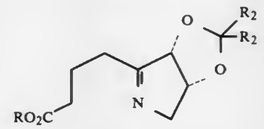
wherein each R_2 is lower alkyl, with (4-carbalkoxybutyl) triphenylphosphonium bromide in a strong base to obtain an alcohol having the formula:



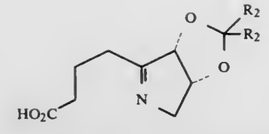
wherein R_2 is as defined above and R is C_1–C_8 alkyl;
B. reacting said alcohol with a compound selected from the group consisting of methanesulfonyl chloride, p-toluenesulfonyl chloride or benzenesulfonyl chloride in the presence of a tertiary amine to obtain the corresponding sulfonate having the formula:



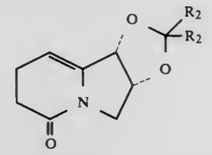
wherein R_1 is a sulfonate; and R_2 and R are as defined above;
C. heating said sulfonate with an azide in an organic solvent to obtain an imine having the formula:



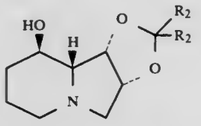
wherein R_2 and R are as defined above;
D. treating said imine with an inorganic base, in aqueous alcohol to obtain, upon acidification, the acid having the formula:



wherein R_2 is as defined above;
E. heating said acid at reflux temperature in organic solvent, to obtain an enamide having the formula:



wherein R_2 is as defined above;
F. treating said enamide with a molar excess of diborane reagent in an ether solvent, followed by reaction with hydrogen peroxide to obtain a protected swainsonine having the formula:



wherein R_2 is as defined above; and
G. converting said protected swainsonine to swainsonine by acid hydrolysis.

5,187,280

SUBSTITUTED TETRAHYDROPYRIDINES AND THEIR USE AS CENTRAL NERVOUS SYSTEM AGENTS

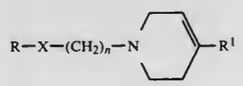
Juan C. Jaen, Plymouth; David G. Nickell, Ann Arbor; Donna M. Reynolds, Plymouth; Sarah J. Smith, Ann Arbor; Lawrence D. Wise, Ann Arbor, and David J. Wustrow, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 585,758, Sep. 20, 1990, Pat. No. 5,045,550. This application Aug. 16, 1991, Ser. No. 746,434

Int. Cl.[5] C07D *401/14, 405/14, 417/14;* **A61K** *31/44*

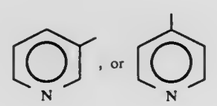
U.S. Cl. 546—255 **6 Claims**

1. A compound of Formula I



I

wherein
R^1 is



X is

VOL 1147 ISS 3 FE 16 1993 UMI



or $—CH_2—$;

n is an integer of 2 to 4 with the proviso that when X is $—CH_2—$, n is 3 or 4;

R^1 is 2-or 3–1H-indilyl, or 2- or 3-1H-indolyl substituted by lower alkyl, lower alkoxy, or halogen, 2-, 3-, or 4-pyridinyl, or 2-, 3-, or 4-pyiridinyl substituted by lower alkyl, lower alkoxy, or halogen, 2- or 3-furanyl, or 2-or 3-furanyl substitued by lower alkyl or halogen, 2-, 4-, or 5-thiazolyl, or 2-, 4-, or 5- thiazoyl substituted by lower alkyl or halogen; or a pharmaceutically acceptable acid addition salt thereof.

5,187,281

ASYMMETRIC HYDROGENATION OF AROMATIC-SUBSTITUTED OLEFINS USING ORGANOIRIDIUM CATALYST

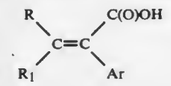
Charles H. Kolich; Thanikavelu Manimaran, and W. Dirk Klobucar, all of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed Jun. 17, 1991, Ser. No. 716,016

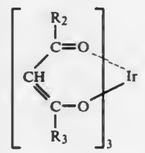
Int. Cl.[5] C07F *15/00;* **C07C** *63/04, 53/134, 57/30*

U.S. Cl. 556—16 **18 Claims**

1. A process for preparing optically active α-aryl aliphatic carboxylic acids which comprises catalytically, asymmetrically hydrogenating a carboxylic acid of the formula



or the amine salt thereof, where R and R_1 are the same or different and are hydrogen, alkyl, cycloalkyl, or haloalkyl; and Ar is aryl or substituted aryl; by utilizing a catalytically effective amount of a mixture of (i) an iridium compound of the formula



where R_2 and R_3 are the same or different and are alkyl, haloalkyl, aryl, substituted aryl, phenylalkyl or substituted phenylalkyl, and (ii) a chiral phosphine compound.

5,187,282

SULFONATED XANTHENE DYES, AND PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING THESE DYES

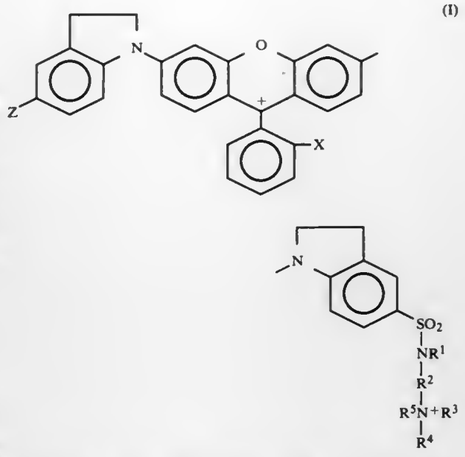
Paul R. Carlier, Newton; Michael P. Filosa, Medfield, and Mary P. Lockshin, Cambridge, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 8, 1991, Ser. No. 683,452

Int. Cl.[5] C07D *209/02*

U.S. Cl. 548—455 **10 Claims**

1. A xanthene derivative having a cation of the formula:



(I)

in which X is an $—SO_2—N(R^6)—COR^7$ or $—SO_2—N(R^6)—CO_2(CH_2)_2Y$ grouping, wherein R^6 is an alkyl group containing not more than about 6 carbon atoms, R^7 is an alkyl or aryl group containing not more than about 10 carbon atoms and Y is an electron-withdrawing group; Z is a hydrogen atom or an $—SO_2—N(R^1)—R^2—NR^3R^4R^5$ grouping; R^1 is hydrogen or an alkyl group containing not more than about 6 carbon atoms; R^2 is an alkylene group containing from 2 to about 10 carbon atoms; R^3 and R^4 are each independently an alkyl group containing not more than about 6 carbon atoms, and R^5 is a hydrogen atom or an alkyl group containing not more than about 6 carbon atoms.

5,187,283

PROCESS FOR THE PREPARATION OF INDIGO COMPOUNDS

Yoshihiro Yamamoto, Yokohama; Usaji Takaki, Fujisawa; Shinobu Aoki; Yoshihisa Inoue, both of Yokohama, and Isao Hara, Kanagawa, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

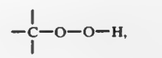
Filed Nov. 21, 1991, Ser. No. 796,265

Claims priority, application Japan, Nov. 22, 1990, 2-316209; Apr. 10, 1991, 3-077628

Int. Cl.[5] C07D *403/04*

U.S. Cl. 548—457 **13 Claims**

1. A process for the preparation of an indigo compound from a corresponding indole compound which is unsubstituted at the 2- and 3-positions, which comprise reacting the indole compound with an organic hydroperoxide which has a hydroperoxy group represented by the formula



in the presence of a metal selected from the group consisting of the metals in Groups 4, 5 and 6 of the periodic table or a compound of the metal as a catalyst while removing from the reaction system water introduced into the reaction system and formed during the reaction.

5,187,284

N-PHENYL-N'-BENZOTHIENYLMETHYL-BIS-DIAMINO-5-METHYLENE-1,3-DIOXANE-4,6-DIONE DERIVATIVES

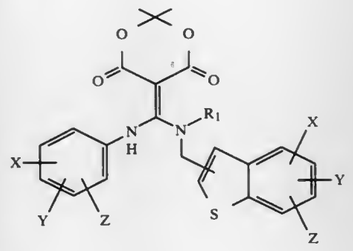
William F. Fobare, Hamilton, N.J., and Donald P. Strike, St. Davids, Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Jul. 22, 1992, Ser. No. 914,886

Int. Cl.[5] C07D *333/56*

U.S. Cl. 549—58 **6 Claims**

1. A compound of the formula:



in which

X, Y and Z are, independently, hydrogen, halogen, hydroxy, nitro, cyano, carboxyl, trifluoromethyl, phenyl, amino, alkylamino of 1 to 12 carbon atoms, dialkylamino in which each alkyl group has 1 to 12 carbon atoms, alkyl of 1 to 12 carbon atoms or alkoxy of 1 to 12 carbon atoms;

R_1 is hydrogen, alkyl of 1 to 18 carbon atoms, alkenyl of 2 to 18 carbon atoms, cycloalkyl of 5 to 8 carbon atoms, phenyl, benzyl or substituted phenyl or benzyl where the substituents are alkyl of 1 to 12 carbon atoms or alkoxy of 1 to 12 carbon atoms;

or a pharmaceutically acceptable salt thereof.

5,187,285

PRODUCING BIS(ALICYCLIC) THIOETHERS

G. Patrick Stahly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 426,993, Oct. 26, 1989, abandoned, which is a division of Ser. No. 917,773, Oct. 10, 1986, Pat. No. 4,798,900. This application Aug. 22, 1990, Ser. No. 571,071

Int. Cl.[5] C07D *307/77, 209/02*

U.S. Cl. 549—241 **4 Claims**

1. 4,4'-thiobis(1,2,3,6-tetrahydrophthalic) anhydrides prepared by the Diels Alder reaction of maleic anhydride, bromomaleic anhydride, methylmaleic anhydride, citraconic anhydride, itaconic anhydride, diemthylmaleic anhydride, dichloromaleic anhydride, dibromomaleic anhydride, acetoxymaleic anhydride, 3,6-dihydrophthalic anhydride, 3,4,5,6-tetrahydrophthalic anhydride, 3,6-endo-methylene-3,4,5,6-tetrahydrophthalic anhydride, 3,4-dihydronaphthalene-1,2-dicarboxylic anhydride, 7-tert-butyl-3,4-dihydronaphthalene-1,2-dicarboxylic anhydride, 7-methoxy-3,4-dihydronaphthalene-1,2-dicarboxylic anhydride, 6-methoxy-7-methyl-3,4-dihydronaphthalene-1,2-dicarboxylic anhydride, 6,7-dimethoxy-3,4-dihydronaphthalene-1,2-dicarboxylic anhydride, 3,4-dihydrophenanthrene-1,2-dicarboxylic anhydride, 1,2-dihydrophenanthrene-3,4-dicarboxylic anhydride or 3,4-dihydro-8,9acephenanthrene-1,2-dicarboxylic anhydride, and 3,3'-thiobis (2,5-dihydrothiophene-1,1-dioxide) wherein the rings are unsubstituted or substituted with the inert substituents straight or branched chain alkyl having 1 to 20 carbon atoms, cyclic alkyl having 3 to 7 carbon atoms, phenyl, phenyl substituted by at least one substituent selected from the group consisting of halogen, amino, nitro, hydroxy, alkyl, alkoxy having 1 to 10 carbon atoms, alkyl having 1 to 8 carbon atoms which is substituted by at least one halogen, phenylalkyl where the alkyl moiety is straight or branched chain having 1 to 8 carbon atoms, substituted phenylalkyl where the phenyl group is substituted by at least one substituent selected from the group consisting of halogen, amino, nitro, hydroxy, alkyl, alkoxy, haloalkyl and cycloalkylalkyl where the cycloalkyl moiety is cyclic alkyl having 3 to 7 carbon atoms and the alkyl moiety is straight or branched chain alkyl having 1 to 8 carbon atoms.

5,187,286

LEUKOTRIENE-B4 DERIVATIVES, PROCESS FOR THEIR PRODUCTION AND THEIR USE AS PHARMACEUTICAL AGENTS

Werner Skuballa; Bernd Buchmann; Josef Heindl; Wolfgang Frohlich, and Roland Ekerdt, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

PCT No. PCT/DE90/00397, § 371 Date Mar. 25, 1991, § 102(e) Date Mar. 25, 1991, PCT Pub. No. WO90/14329, PCT Pub. Date Nov. 29, 1990

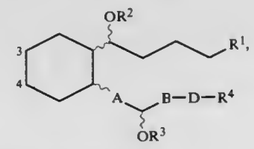
PCT Filed May 25, 1990, Ser. No. 663,927

Claims priority, application Fed. Rep. of Germany, May 26, 1989, 3917597

Int. Cl.[5] C07D *311/02;* **C07C** *67/02*

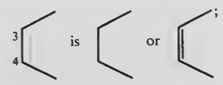
U.S. Cl. 549—283 **18 Claims**

1. A compound of formula I,



(I)

wherein the radicals have the following meanings:



R^1 is CH_2OH; CH_3; CF_3; $COOR^5$, wherein

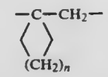
R^5 is H, a C_{1-10}-alkyl radical, a C_{3-10}-cycloalkyl radical, a C_{6-10}-aryl radical optionally substituted by 1–3 chlorine, bromine, phenyl, C_{1-4}-alkyl, C_{1-4}-alkoxy, chloromethyl, fluoromethyl, trifluoromethyl, carboxy or hydroxy groups, a $—CH_2—CO—C_{6-10}$-aryl radical; or a 5–6-member aromatic heterocyclic radical having at least 1 heteroatom N, S or O, or

R^1 is $CONHR^6$ wherein

R^6 is a C_{1-10}-alkanoyl or -alkanesulfonyl radical or an R^5 radical;

A is a trans, trans—CH=CH—CH=CH— group or a tetramethylene group;

B is a straight-chain or branched-chain, saturated or unsaturated C_{1-10}-alkylene group, optionally substituted by fluorine, or the group



wherein n is 1, 2 or 3; and

D is a direction bond, oxygen, sulfur, a —C≡C group or a $—CH=CR^7$ group wherein

R^7 is H, C_{1-5}-alkyl, chlorine, bromine or

VOL 1147 ISS 3 FE 16 1993 UMI

 ;

or

B and D together are a direct bond;

R^2 and R^3 are the same or different and are H or a C_{1-15}-organic carboxylic or sulfonic acid radical;

R^1 and R^2 together are a carbonyl group;

R^4 is H; C_{1-10}-alkyl optionally substituted by chlorine or bromine; C_{3-10}-cycloalkyl; a C_{6-1}-aryl radical optionally substituted by 1-3 chlorine, bromine, phenyl C_{1-4} alkyl C_{1-4} alkoxy, chloromethyl, fluoromethyl, trifluoromethyl, carboxy or hydroxy groups; or a 5-6-member aromatic heterocyclic radical having at least 1 heteroatom N, S or O; and

when R^5 is H, a salt thereof with a physiologically compatible base or a cyclodextrin clathrate thereof.

5,187,287

LOWER ALKYLENE OXIDE PURIFICATION

T. Thomas Shih, Bryn Mawr, Pa., assignor to Arco Chemical Technology, L.P., Wilmington, Del.

Filed Feb. 20, 1992, Ser. No. 839,985
Int. Cl.[5] C07D *301/32, 303/04*
U.S. Cl. 549—542 **1 Claim**

1. The method of purifying butylene oxide containing contaminating amounts of one or more of methyl acetate, ethyl acetate, methyl ethyl ketone and C_6-C_8 hydrocarbon impurities which comprises contacting a liquid mixture of butylene oxide and impurity with a solid activated carbon absorbent and separating butylene oxide having a reduced impurity content from the absorbent.

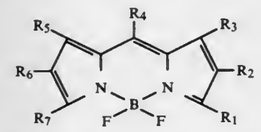
5,187,288

ETHENYL-SUBSTITUTED DIPYRROMETHENEBORON DIFLUORIDE DYES AND THEIR SYNTHESIS

Hee C. Kang, and Richard P. Haugland, both of Eugene, Oreg., assignors to Molecular Probes, Inc., Eugene, Oreg.

Filed May 22, 1991, Ser. No. 704,287
Int. Cl.[5] C07D *209/56*
U.S. Cl. 548—110 **20 Claims**

1. A compound of the general formula:



wherein at least one of the fluorophore substituents R_1-R_7 is an initial ethenyl group having initial ethenyl substituents; or a conjugated dienyl group having initial and secondary ethenyl substituents; or a conjugated trienyl group having initial, secondary and tertiary ethenyl substituents, and

where said initial, secondary, and tertiary ethenyl substituents which may be the same or different, are hydrogen; halogen; alkyl (containing 1-10 carbon atoms); cyano; carboxylate ester; carboxamide; or aryl or heteroaryl, where said heteroaryl is pyrrole, thiophene, furan, oxazole, isoxazole, oxadiazole, imidazole, benzoxazole, benzothiazole, benzimidazole, benzofuran, or indole, which aryl or heteroaryl may be further substituted, one or more times, by alkyl (containing 1-5 carbon atoms), or alkoxy groups the alkyl portions of which groups have less than 5 carbon atoms, or combinations thereof; and

the remaining fluorophore substituents R_1-R_7 that are non-ethenyl, -dienyl, or -trienyl, which may be the same or different, are hydrogen; alkyl (containing 1-18 carbon atoms); acyl; sulfo; arylalkyl, the alkyl portion of which contains 1-18 carbon atoms; or aryl or heteroaryl, which may be further substituted, one or more times, by alkyl (containing 1-5 carbon atoms), or alkoxy or dialkylamino groups wherein the alkyl portions of such groups have less than 5 carbon atoms, or combinations thereof;

said compound having an absorption maximum at a wavelength longer than about 525 nm.

5,187,289

METHOD OF PREPARING 2-PHENYL BENZOTRIAZOLES

Naohiko Fukuoka, Kobe; Kazunobu Kubota, Tatsuno, and Kunitoshi Iguchi, Osaka, all of Japan, assignors to Chemipro Kasei Kaisha, Ltd., Hyogo, Japan

Continuation of Ser. No. 561,354, Aug. 1, 1990, abandoned, which is a continuation of Ser. No. 320,992, Mar. 9, 1989, abandoned. This application Jul. 31, 1991, Ser. No. 740,868
Claims priority, application Japan, Jan. 31, 1989, 1-22225
Int. Cl.[5] C07D *249/18*
U.S. Cl. 548—260 **6 Claims**

1. A method of preparing 2-phenylbenzotriazoles of Formula I:



wherein

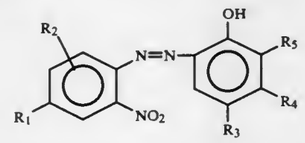
R_1 is hydrogen or chlorine, a C_1-C_4 alkyl, a C_1-C_4 alkoxyl, a carboxyl group or a sulfonic acid group;

R_2 is hydrogen or chlorine, a C_1-C_4alkyl or a C_1-C_4 alkoxyl;

R_3 is hydrogen of chlorine, a C_1-C_{12} alkyl, a C_1-C_{12} alkoxyl, a phenyl group, a phenyl group substituted by a C_1-C_8 alkyl, a phenoxy group or a phenylalkyl group with a C_1-C_4alkyl;

R_4 is hydrogen of chlorine, a hydroxyl group or a C_1-C_4 alkoxyl; and

R_5 is hydrogen, a C_1-C_{12} alkyl or a phenylalkyl group with a C_1-C_4 alkyl part consisting of reducing, with hydrogen, o-nitroazobenzene compounds of Formula II:



wherein R_1, R_2, R_3, R_4 and R_5 each denotes the same as in said Formula I, and effecting said reduction in the presence of added water and an organic solvent in a ratio range of 2:1 to 1:50 by volume wherein the amount of water added is 14-70 times the moles of the substance to be reduced, and in the presence of an organic amine selected from the group consisting of methylamine, ethylamine, propylamine, dimethylamine, diethylamine, dibutylamine, triethylamine, tributylamine, diethylenetriamine, triethylenetetramine, dipropylenetriamine and tripropylenetetramine, monoethanolamine, monopropanolamine, diethanolamine, dipropanolamine, triethanolamine, tripropanolamine, aniline, tolylamine, methylcyclohexylamine, pyridine, piperazine, triethylenediamine and diazabicyclononene,

wherein said reduction further consists of using a palladium carbon hydrogenation catalyst.

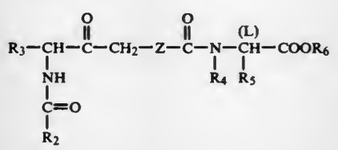
5,187,290

ACYLAMINOALKANOYL URETHANES OR THIOURETHANES

Eric M. Gordon, Pennington, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 715,217, Mar. 22, 1985, Pat. No. 4,636,522.
This application Sep. 29, 1986, Ser. No. 912,721
Int. Cl.[5] C07D *207/09, 209/12, 213/16, 215, 14*
U.S. Cl. 548—338.1 **10 Claims**

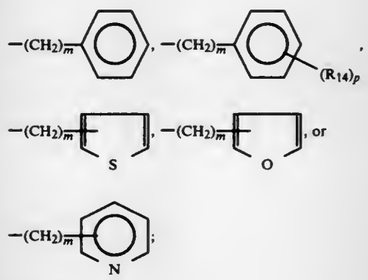
1. A compound of the formula



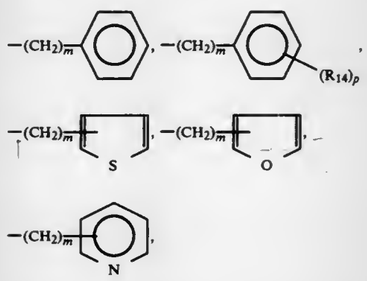
including a pharmaceutically acceptable salt thereof wherein:

Z is oxygen or sulfur;

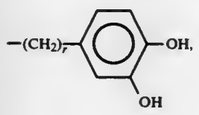
R_2 is



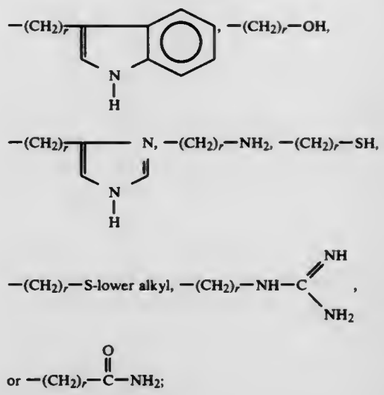
R_3 is hydrogen, lower alkyl,



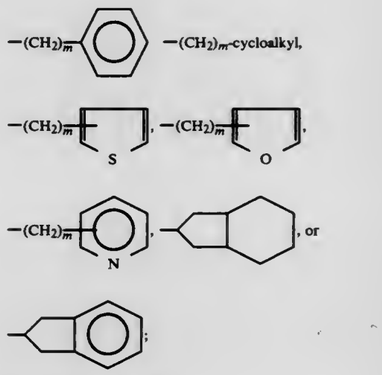
halo substituted lower alkyl, $-(CH_2)_m$-cycloalkyl,



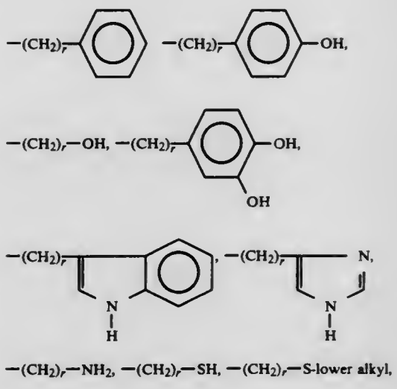
-continued



R_4 is hydrogen, lower alkyl,

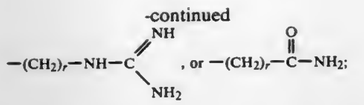


R_5 is hydrogen, lower alkyl,



$-(CH_2)_r-NH_2$, $-(CH_2)_r-SH$, $-(CH_2)_r-S$-lower alkyl,

-continued



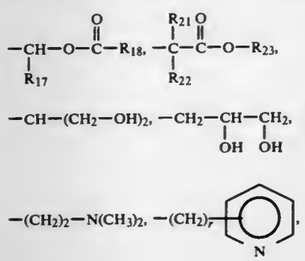
R_{14} is lower alkyl of 1 to 4 carbons, lower alkoxy of 1 to 4 carbons, lower alkylthio of 1 to 4 carbons, chloro, bromo, fluoro, trifluoromethyl or hydroxy;

m is zero, one, two, three, or four;

p is one, two or three provided that p is more than one only if R_{14} is methyl, methoxy, chloro, or fluoro;

r is an integer from 1 to 4;

R_6 is hydrogen, lower alkyl, benzyl, benzhydral,



or pharmaceutically acceptable salt ion;

R_{17} is hydrogen, lower alkyl, cycloalkyl, or phenyl;

R_{18} is hydrogen, lower alkyl, lower alkoxy or phenyl;

R_{21} and R_{22} are independently selected from hydrogen and lower alkyl; and

R_{23} is lower alkyl;

5,187,291

PROCESS FOR THE SIMULTANEOUS AND CONTINUOUS PREPARATION OF ACYLOXYSILANES AND CARBOXYLIC ACID CHLORIDES

Claus-Dietrich Seiler; Reinhold Schork; Albert Frings; Hans-Joachim Kötzsch, and Hartwig Rauleder, all of Rheinfelden, Fed. Rep. of Germany, assignors to Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Apr. 14, 1992, Ser. No. 868,548

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1991, 4112650

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—442 **13 Claims**

1. Process for the simultaneous and continuous preparation of acyloxysilane and carboxylic acid chloride comprising reacting an organochlorosilane with excess monocarboxylic acid anhydride at an elevated temperature, separating the carboxylic acid chloride when said reaction has ended and collecting the acyloxysilane, wherein said organochlorosilane and monocarboxylic acid anhydride are passed through at least one reactor at a temperature of 25° to 100° C. with the addition of organic bases, their salts or organic acid amides which are soluble in said reaction mixture, removing said carboxylic acid chloride in vacuo in a distillation reactor and transferring said reaction mixture which remains after said carboxylic acid chloride has been separated off to a central intake of a distillation column, said excess carboxylic acid anhydride being distilled off at the top of said distillation column in vacuo and said acyloxysilane being removed from said distillation column.

5,187,292

N-SULFOMETHYLGLYCINATE, USE IN THE PREPARATION OF HERBICIDES OF THE GLYPHOSATE TYPE

Bernard Botannet, Vienne; Jean-Louis Clavel, Ecully; Jean-Pierre Corbet, Ecully, and Michel Mulhauser, Ecully, all of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

Division of Ser. No. 388,570, Aug. 1, 1989, Pat. No. 5,117,043.

This application Mar. 2, 1992, Ser. No. 844,728

Claims priority, application France, Aug. 18, 1988, 88 11141

Int. Cl.[5] C07F *9/40*

U.S. Cl. 558—134 **14 Claims**

1. A method of use of an N-sulfomethylglycinate of formula (I)

$$HO_3S—CH_2—NH—CH_2—COOR_1 \quad (I)$$

wherein $COOR_1$ is a hydrolyzable carboxylic ester group, for the preparation of herbicides of the glyphosate type, in which the N-sulfomethylglycinate of formula (I) is put in contact with a phosphonate or phosphite of formula (II):

$$(R_2O)_2P(O)H \quad (II)$$

$(R_2O)_2P$ being a hydrolyzable phosphonic ester group, in order to arrive at a compound of formula (III)

$$(R_2O)_2—P(O)—CH_2—NH—CH_2—COOR_1 \quad (III)$$

this compound being capable of then being optionally hydrolyzed.

5,187,293

GLYCERIN DERIVATIVES

Richard Barner, Witterswil; Kaspar Burri, Rheinfelden, both of Switzerland; Jean-Marie Cassal, Mulhouse, France; Paul Hadvary, Biel-Benken, Switzerland; Georges Hirth, Huningue, France, and Klaus Müller, Münchenstein, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 679,734, Dec. 10, 1984, Pat. No. 4,731,373.

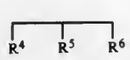
This application Nov. 19, 1987, Ser. No. 122,957

Claims priority, application Switzerland, Dec. 30, 1983, 6985/83; Sep. 20, 1984, 4498/84

Int. Cl.[5] C07C *69/96, 303/00, 261/00*

U.S. Cl. 558—267 **4 Claims**

1. A compound of the formula



II

wherein one of the residues R^4, R^5 and R^6 is group U of the formula [-OY^1 or] $—X^1—C(O)—(A^1)_n—Z^1$, another of the residues is group V of the formula [-OY^2 or] $—X^2—C(O)—(A^2)_p—Z^2$, and the remaining residue is group W of the formula $—X^3T—(C_{2-6}$-alkylene)-leaving group, wherein one of X^1, X^2 and X^3 is oxygen or NH and the other two are oxygen, and the leaving group is selected from the group consisting of chlorine, bromine, iodine, mesyloxy, phenylsulfonyloxy and tosyloxy, Y^1 is C_{10-26}-alkyl or C_{10-26}-alkenyl, Y^2 is C_{1-6}-alkyl, C_{2-6}-alkenyl, C_{3-6}-cycloalkyl, C_{5-6}-cycloalkenyl, phenyl, benzyl or 2-tetrahydropyranyl, A^1 and A^2, independently, are oxygen or NH, n and p are the integer 1 or O, Z^1 is C_{9-25}-alkyl or C_{9-25}-alkenyl, Z^2 is C_{1-5}-alkyl, C_{2-5}-alkenyl, phenyl or, when $(A^2)_p$ is not oxygen, Z^2 is also hydrogen, T is carbonyl, C(O)O or C(O)NH when X^3 is other than oxygen, and when X^3 is oxygen, T is carbonyl, C(O)O, C(O)NH or methylene.

5,187,294

REGIOSELECTIVE NITRATION OF DIPHENYL COMPOUNDS

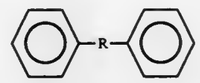
Allen B. Mossman, Wheaton, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Mar. 22, 1989, Ser. No. 327,043

Int. Cl.[5] C07C *79/26*

U.S. Cl. 558—272 **4 Claims**

1. A regioselective nitration process to mononitrate each ring of a compound of formula



primarily in the para position, wherein R is selected from the group consisting of $—OCO_2—$, $>C(CH_3)_2$, $>C(CF_3)_2$, >CO, $>SO_2$, S, O, $>CH_2$, >CHR', and >CR'R", and wherein R' and R" are C_1 to C_5 alkyl radicals, to form primarily the di(4-nitrophenyl) derivative which comprises treating said compound in the presence of nitrobenzene at a temperature above about 15° C. with a nitrating agent selected from concentrated HNO_3 and mixtures of HNO_3 and H_2SO_4 or CF_3SO_3H.

5,187,295

PROCESS FOR THE PREPARATION OF 2,4-DICHLORO-5-FLUOROBENZONITRILE

Thomas Schach, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 14, 1992, Ser. No. 837,260

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1991, 4105187

Int. Cl.[5] C07C *253/14*

U.S. Cl. 558—343 **8 Claims**

1. A process for the preparation of 2,4-dichloro-5-fluorobenzonitrile, which comprises reacting 5-bromo-2,4-dichlorofluorobenzene with about 10 to about 300 mol % of copper(I) cyanide in the presence of about 10 to about 2,000 mol % of a polar aprotic solvent at temperatures from about 100 to about 250° C. to give 2,4-dichloro-5-fluorobenzonitrile.

5,187,296

CYANOHYDRINATION PROCESS

Yigal Becker, Tel Aviv; Asher Elgavi, Petach Tikva, and Youval Shvo, Arsuf, all of Israel, assignors to Bromine Compounds Limited, Beer-Sheva, Israel

Division of Ser. No. 447,095, Dec. 6, 1989, Pat. No. 5,057,477.

This application Jul. 17, 1991, Ser. No. 731,434

Claims priority, application Israel, Dec. 7, 1988, 88618

Int. Cl.[5] C07C *253/16*

U.S. Cl. 558—351 **8 Claims**

1. A process for the preparation of (s)-m-phenoxybenzaldehyde cyanohydrin, comprising contacting m-phenoxybenzaldehyde with HCN in a suitable cyanohydrination solvent with a catalytically effective amount of a catalyst which is enantiomeric cyclo(phenylalanine-histidine), absorbed on a solid support of a non-ionic polymer resin.

5,187,297

PROCESS FOR THE PRODUCTION OF 3-AMINOCROTONONITRILE

Wilhelm Quittmann, Visp; Leo Zumoberhaus, Burchen, and Peter Ruppen, Visp, all of Switzerland, assignors to Lonza Ltd., Gampel/Valais, Switzerland

Filed Nov. 1, 1991, Ser. No. 786,778

Claims priority, application Switzerland, Nov. 5, 1990, 3504/90

Int. Cl.[5] C07C *253/00, 253/30*

U.S. Cl. 558—360 **16 Claims**

1. Process for the production of 3-aminocrotononitrile by dimerization of acetonitrile comprising the reaction steps of: deprotonating the acetonitrile in the presence of sodium amide in the presence of liquid ammonia at a temperature of between −32° and −77° C.; effecting salt formation of the 3-aminocrotononitrile at a temperature between −5° and +35° C. in the presence of an inert solvent; and hydrolyzing the salt to produce the 3-aminocrotononitrile.

5,187,298

MONOMERS AND THEIR USE FOR THE PRODUCTION OF A LASER-OPTICAL RECORDING ELEMENT WHICH CAN BE REPEATEDLY ERASED AND RECORDED ON

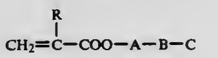
Kark-Heinz Etzbach; Gerhard Wagenblast, both of Frankenthal; Wolfgang Brox, Heidelberg; Axel Paul, Mannheim, and Volker Bach, Neustadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 18, 1990, Ser. No. 524,989

Int. Cl.[5] C07D *303/16*; C07C *69/76*

U.S. Cl. 549—555 **15 Claims**

1. A monomer of the formula I



(I)

where

R is hydrogen, chlorine or methyl,

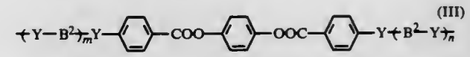
A is a flexible space-maintaining long-chain molecular moiety,

C is an optically active chiral molecular moiety and

B is a mesogenic molecular moiety which consists of three or more aromatic nuclei bonded linearly or virtually linearly to one another and which is selected from the group consisting of

i) moieties B which contain one or more naphth-2,6-ylene groups,

ii) moieties B of the formula III

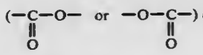


(III)

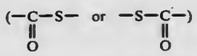
where

B^2 is a p-phenylene or a biphenyl-4,4'-diyl group

Y is an ether, methylene ether ($—CH_2—O—$ or $—O—CH_2—$), an ester



or

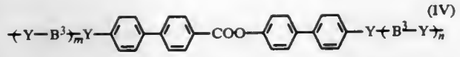


or a carbon-carbon single bond and

m and n are each 0 or an integer a 1;

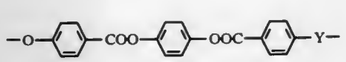
iii) moieties B of the formula IV

VOL 1147 ISS 3 FE 16 1993 UMI



(IV)

where m and n and Y have the abovementioned meanings and B^3 is selected from the group consisting of the p-phenylene, the biphenyl-4,4'-diyl

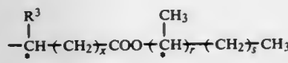


(III-1)

where Y has the abovementioned meanings; and

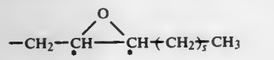
iv) moieties B, selected from the group consisting of the groups X-1 to X-7

where Y has the abovementioned meanings and the groups X-1 to X-7 are bonded via the ether group to moiety A, with the proviso that the moiety C of the molecule is exclusively selected from the group consisting of the pinan-3-yl, the camphan-2-yl and the p-menthan-3-yl group and the group of the formula VII



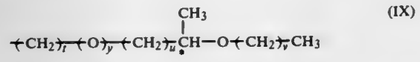
(VII)

where R^3 is methyl or trifluoromethyl, x and r independently of one another are each 0 or 1 and s is an integer from 1 to 3, the group of the formula VIII



(VIII)

where s has the abovementioned meaning, and the group of the formula IX



(IX)

where t, u and v independently of one another are each an integer of from 1 to 10, t and u independently of one another may furthermore be 0, and y is 0 or 1, whenever one of the said groups X-1 to X-7 is selected for moiety B of the molecule.

5,187,299

CYCLIC HYDROCARBONS WITH AN AMINOALKYL SIDECHAIN

Roy A. Johnson, Kalamazoo; Gordon L. Bundy, Portage; Gilbert A. Youngdale, Portage; Douglas R. Morton, Portage; Donald P. Wallach, deceased, late of Portage, and Wallach, Legal Representative, by Vera M., Richland, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

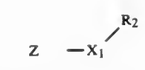
Continuation of Ser. No. 657,729, Feb. 20, 1991, abandoned, which is a division of Ser. No. 394,396, Aug. 15, 1989, abandoned, which is a division of Ser. No. 117,851, Jun. 16, 1987, Pat. No. 4,917,826, which is a continuation-in-part of Ser. No. 843,120, Mar. 24, 1986, abandoned, which is a continuation-in-part of Ser. No. 788,995, Oct. 18, 1985, abandoned. This application Nov. 13, 1991, Ser. No. 793,486

Int. Cl.[5] C07J *41/00*

U.S. Cl. 552—522 **5 Claims**

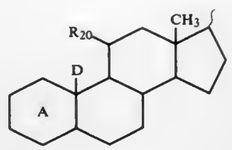
1. A compound of

Formula I



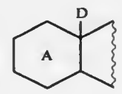
wherein R_2 is H, or C1-C4 alkyl;
wherein Z is

Formula II

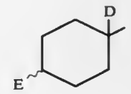


wherein

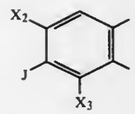
Formula III



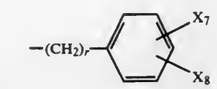
is



or



wherein D is CH_3;
wherein E is hydrogen;
wherein the 5-6 bond is saturated;
wherein X_2 is H, NO_2, NH_2, OH, OCH_3, or halogen;
wherein X_3 is H, NO_2, NH_2, OH, or halogen;
wherein J is R_5O;
wherein R_5 is C1 alkyl or $—(CH_2)_3—N(R'_{10})(R'_{11})$;
wherein R'_{10} and R'_{11} are hydrogen;
wherein R_{20} is H or OH;
wherein X_1 is NR_1;
wherein R_1 is $—(CH_2)_p—X_4$, $—(CH_2)_m—N(R_6)(R_7)$, $—(CH_2)_q—CH(NH_2)—COOR_{16}$, $—C(O)—CH(OCH_3)—CH_2—COOCH_3$, $—CH_2CH=CH_2$, $—C_1$-C_6 alkyl, or



wherein X_4 is $C(O)CH_2Cl$;
wherein R_6 is —H, $—C_1$-C_{13} alkyl $—(CH_2)_p—N(R_{10})(R_{11})$, $—(CH_2)_3OH$, OH, or $(CH_2)_3—O—(CH_2)_3—OH$;
wherein R_7 is H, $—C_1$-C_2 alkyl, $—(CH_2)_p—N(R_{10})(R_{11})$, or $CO—(CH_2)_2—CO—NH—(CH_2)_5—NOH—CO—(CH_2)_2—CO—NH—(CH_2)_5—NOH—CO—CH_3$;

wherein R_{10} and R_{11} are H, C_1-C_2 alkyl, $—(CH_2)_3—NH_2$ or $C(O)CH=CH—COOH$;
wherein R_{16} is hydrogen;
wherein X_7 and X_8 are the same or different and are hydrogen, halogen, OH, or OCH_3;
wherein m is 1-8;
wherein p is 1-8;
wherein q is 2-4;
wherein r is 1-8; and
pharmacologically acceptable salts thereof.

5,187,300

VOLATILE PRECURSORS FOR COPPER CVD

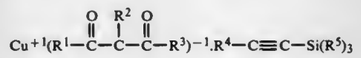
John A. T. Norman, Encinitas, Calif., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 650,332, Feb. 4, 1991, Pat. No. 5,085,731. This application Sep. 20, 1991, Ser. No. 764,566

Int. Cl.[5] C07F *1/08, 7/08*

U.S. Cl. 556—12 **7 Claims**

1. A volatile liquid or low melting volatile solid organometallic copper complex capable of selectively depositing a copper film onto metallic or other electrically conducting portions of a substrate surface under CVD conditions, said complex having the structural formula:



wherein R^1 and R^3 are each independently C_1-C_8 perfluoroalkyl, R^2 is H, F or C_1-C_8 perfluoroalkyl, R^4 is C_1-C_8 alkyl, phenyl, or $Si(R^5)_3$, and each R^5 is independently C_1-C_8 alkyl or phenyl.

5,187,301

PREPARATION OF IMINODIACETONITRILE FROM GLYCOLONITRILE

Barry A. Cullen, Lyndeboro, and Brian A. Parker, Nashua, both of N.H., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Continuation-in-part of Ser. No. 427,414, Oct. 26, 1989, abandoned. This application Oct. 11, 1990, Ser. No. 597,247

The portion of the term of this patent subsequent to Jul. 16, 2009, has been disclaimed.

Int. Cl.[5] C07C *253/30*

U.S. Cl. 558—455 **11 Claims**

1. A batchwise process for forming iminodiacetonitrile, comprising reacting preformed glycolonitrile with ammonia, ammonium slat not deleterious to the formation of said iminodiacetonitrile, or a mixture of ammonia and said ammonium salt, said ammonia, ammonium salt or mixture being added to aid glycolonitrile in a mole ratio of glycolonitrile to ammonia moiety of about 1.5-2.5:1 and at a rate sufficient to maintain he pH during the reaction in a range of from about 5 to about 7 while maintaining a reaction temperature of about 40° C. to about 150° C.

5,187,302

Patent Not Issued For This Number

5,187,303

PROCESS FOR THE PREPARATION OF OCTYL METHOXY CINNAMATE

Amihai Eisenstadt, Ramat-Hasharon, and Yehuda Keren, Kiryat Motzkin, both of Israel, assignors to IMI (TAMI) Institute for Research and Development Ltd., Haifa, Israel

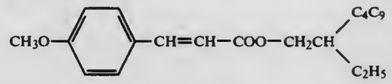
Filed Apr. 14, 1992, Ser. No. 868,042

Claims priority, application Israel, Apr. 15, 1991, 97850; Mar. 31, 1992, 101430

Int. Cl.[5] C07C *69/76*

U.S. Cl. 560—55 **14 Claims**

1. A process for the preparation of octyl methoxy cinnamate of the formula



comprising reacting p-bromoanisole with octyl-acrylate in an inert solvent, in the presence of a base and of a coupling catalyst.

5,187,304

TRIFUNCTIONAL MONOMER COMPOUNDS, POLYESTERS DERIVED THEREFROM AND THERMOSETTING COATING COMPOSITIONS CONTAINING THE POLYESTERS

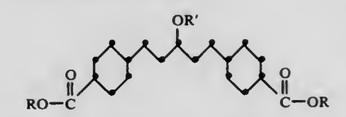
William W. Blount, Jr., and Joseph R. Zoeller, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 665,059, Mar. 6, 1991, which is a division of Ser. No. 612,154, Nov. 13, 1990, Pat. No. 5,025,086. This application May 1, 1992, Ser. No. 877,492

Int. Cl.[5] C07C *69/74, 69/003, 61/08, 61/12*

U.S. Cl. 560—118 **4 Claims**

1. A compound of Formula (1):



(I)

wherein R is hydrogen or C_1-C_6 alkyl, and R' is hydrogen or C_1-C_6 alkanoyl.

5,187,305

S-NITROSO-N-ALKONOYLPENICILLAMINES

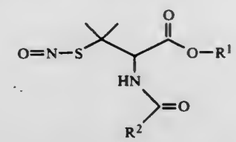
Stephen A. Thompson, Durham, and Joel E. Shaffer, Chapel Hill, both of N.C., assignors to Glaxo Inc., Research Triangle Park, N.C.

Filed Nov. 26, 1990, Ser. No. 617,826

Int. Cl.[5] C07C *69/62, 69/66*

U.S. Cl. 560—145 **10 Claims**

1. A compound of formula (I)



(I)

wherein R^1 is C_{1-8} alkyl; C_{5-8} cycloalkyl; $—(CH_2)_n—Si(CH_3)_3$, wherein n is 1 to 5; C_{2-5} alkylenyl; phenyl; naphthyl; or wherein said phenyl or naphthyl bears 1 to 3 substituents independently selected from halogen, amino, C_{1-8} alkyl mono- or disubstituted amino, C_{1-8} alkyl and C_{1-8} alkoxy; and R^2 is C_{1-8} alkyl or C_{1-8} alkoxy.

VOL 1147 ISS 3 FE 16 1993 UMI

5,187,306

PROCESS FOR PRODUCING UNSATURATED CARBAMIC ACID ESTERS

Noriyuki Tsubouiwa, Higashiosaka; Eiji Yamanaka, Suita, and Satoshi Urano, Tsuzuki, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

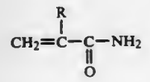
Filed Jun. 28, 1991, Ser. No. 723,271
Claims priority, application Japan, Jul. 3, 1990, 2-177180
Int. Cl.[5] C07C *269/04*
U.S. Cl. 560—157 **10 Claims**

1. A process for producing unsaturated carbamic acid esters represented by the following formula of



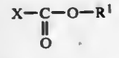
[I]

wherein R^1 denotes an alkyl, cycloalkyl, allyl, aralkyl, alkaryl, alkenyl or alkynyl group having carbon atoms in the range of 1 to 27 and 48 and their halogen substituents or R^1 denotes an alkyl, cycloalkyl, allyl, aralkyl, alkaryl, alkenyl or alkynyl group having 1 to 27 carbon atoms and a molecular weight of 15 to 800, which are replaced with other substituents directly or through a carbonyl, ether or thioether group, and wherein R denotes a hydrogen atom or a lower alkyl group, which process comprises reacting unsaturated amide compound represented by the formula:



(1)

wherein R is as defined above, with metallic bases in inert solvents, thereby forming metal salts, followed by the reaction with halogenated formic acid esters of the formula:



(2)

wherein X is a halogen atom and R^1 is as defined above.

5,187,307

SELECTIVITY IN THE OXIDATIVE DEHYDROGENATION OF ALKYL GLYCOLATE

George E. Heinsohn, Elkton, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 417,652, Oct. 4, 1989, abandoned. This application Oct. 23, 1990, Ser. No. 602,343
Int. Cl.[5] C07C *67/313, 69/67*
U.S. Cl. 560—177 **9 Claims**

1. In a process for the production of alkyl glyoxylate by the catalyzed gas phase oxidative dehydrogenation reaction of alkyl glycolates with a source of oxygen which is gaseous oxygen or air in the presence of a metallic silver catalyst, the improvement wherein the reaction is conducted in the presence of from about 500 ppm to about 5000 ppm of methylene chloride and in the absence of a catalyst promoter.

5,187,308

PROCESS FOR THE PRODUCTION OF LOW VISCOSITY COPOLYMERS FROM MALEIC ACID MONOALKYL ESTERS AND VINYL ALKYL ETHERS

Zvi Pelah, Savyion, Israel; Istvan Potencsik, Mannheim, Fed. Rep. of Germany; Werner Kopp, Harthausen, Fed. Rep. of Germany, and Ernst Urmann, Ludwigshafen, Fed. Rep. of Germany, assignors to Giulini Chemie GmbH, Ludwigshafen, Fed. Rep. of Germany

Filed Nov. 14, 1990, Ser. No. 612,389
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1989, 3937982
Int. Cl.[5] C07C *67/465*
U.S. Cl. 560—202 **5 Claims**

1. A process for producing a low viscosity copolymer of maleic anhydride and a vinyl alkyl ether comprising the consecutive steps:

a) mixing maleic anhydride with maleic acid monalkyl ester in a ratio of between 1:99 and 99:1;

b) radical precipitation polymerizing an excess of a vinyl alkyl ether as commoner with said mixture of maleic anhydride and maleic acid monoalkyl ester as another commoner, and a radical initiator, at a temperature between 20° C. and 40° C. to produce a copolymer;

c) removing excess vinyl alkyl ether from said copolymer; and

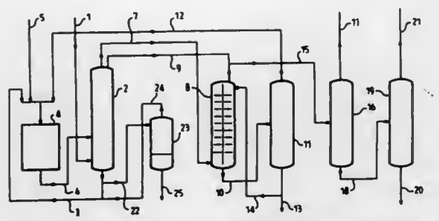
d) reacting said copolymer with a lower aliphatic alcohol of formula R—OH, wherein R is an alkyl having 1 to 4 carbons, to produce an alkyl half user of the maleic anhydride/vinyl alkyl ether copolymer.

5,187,309

PROCESS FOR THE CONTINUOUS PREPARATION OF LOWER ACRYLATES

Marc Esch, Freyming-Merlebach; Nadine Colin, Saint-Avold; Dominique Guenez, Grostenquin, and Michel Maraval, Pont-Saint-Maxence, all of France, assignors to Elf Atochem S.A., Paris, France

PCT No. PCT/FR90/00516, § 371 Date Nov. 29, 1991, § 102(e) Date Nov. 29, 1991, PCT Pub. No. WO91/01966, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 6, 1990, Ser. No. 690,911
Claims priority, application France, Aug. 3, 1989, 89/10483
Int. Cl.[5] C07C *17/48*
U.S. Cl. 560—218 **11 Claims**



1. Process for the continuous preparation of lower acrylates from an aqueous solution of acrylic acid and from a lower alcohol, the esterification reaction taking place in a liquid phase in a reactor (4), at a temperature of between 50° C. and 110° C., in the presence of at least one esterification catalyst, the reaction products leaving the reactor (4), consisting essentially of a mixture of lower acrylate, water and unreacted starting compounds, being sent to the bottom of a distillation column (2) and the lower acrylate being recovered at the head of the said column (2) and further enriched, characterised in that the aqueous solution of acrylic acid is introduced at the bottom of the said distillation column (2) where it is subjected to an azeotropic distillation, the stream obtained at the foot of the column (2), enriched in acrylic acid, then being recycled towards the reactor (4) so that at the entry of the said reactor (4) the molar ratio of acrylic acid to the lower alcohol is between 0.5 and 4.5.

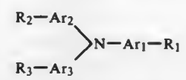
5,187,310

ORGANIC SILICON COMPOUND, METHOD OF ITS PRODUCTION, AND PHOTORECEPTOR FOR ELECTROPHOTOGRAPHY INCORPORATING IT

Masayuki Mishima; Harumasa Yamasaki; Takashi Matsuse; Tadashi Sakuma, and Hiroyasu Togashi, all of Wakayama, Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Mar. 7, 1991, Ser. No. 666,204
Claims priority, application Japan, Mar. 14, 1990, 2-64616; Mar. 14, 1990, 2-64617; Mar. 16, 1990, 2-65725
Int. Cl.[5] C07F *7/10*
U.S. Cl. 556—413 **21 Claims**

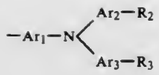
1. A compound represented by the formula (1):



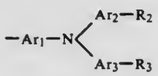
(1)

wherein Ar_1 represents an arylene group; Ar_2 and Ar_3 independently represent an aryl group or an arylene group; R_2 and R_3, which may be identical or different, independently represent a hydrogen atom or an alkyl group having a carbon number of 4 or less, or R_2 and R_3 both represent $-SiR_4R_5R_6$, wherein R_4, R_5, and R_6, which may be identical or different, independently represent an alkyl group, a substituted or unsubstituted aralkyl group or a substituted or unsubstituted aryl group;

R_1 represents $-SiR_7R_8R_9$ wherein R_7, R_8, and R_9, which may be identical or different, independently represent an alkyl group, a cycloalkyl group, a substituted or unsubstituted aralkyl group or a substituted or unsubstituted aryl group and up to two of R_7, R_8, and R_9 represent the following:



wherein Ar_1, Ar_2, Ar_3, R_2 and R_3 have the same definitions as above with the proviso that when both R_2 and R_3 are not $-SiR_4R_5R_6$, one or two of R_7, R_8 and R_9 represent the following:



wherein Ar_1, Ar_2, Ar_3, R_2 and R_3 have the same definitions as above.

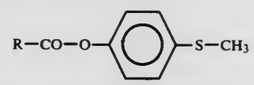
5,187,311

METHYLTHIOPHENOL DERIVATIVES AND P-METHYLTHIOPHENYL CHLOROFORMATES AND PROCESSES FOR PRODUCING THESE DERIVATIVES

Mutsuhiko Takeda; Isao Hagiwara; Fumiya Zaima, and Shuzabu Sakaguchi, all of Tokyo, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Division of Ser. No. 529,896, May 29, 1990, Pat. No. 5,075,476. This application Sep. 20, 1991, Ser. No. 764,503
Claims priority, application Japan, Jun. 7, 1989, 1-143017; Jul. 20, 1989, 1-188118
Int. Cl.[5] C07F *7/08*
U.S. Cl. 556—428 **6 Claims**

1. A novel methylthiophenol derivative represented by the general formula (I'):



(I')

wherein R is a tert-butyloxy group, a tert-amyloxy group, a p-methoxybenzyloxy group, a 2-(trimethylsilyl)ethoxy group, a 1-adamantyloxy group, a bornyloxy group, or an isobornyloxy group.

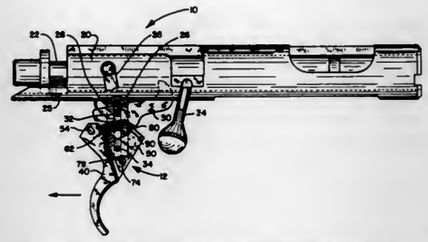
VOL
1147
ISS
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1993
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5,187,312

TWO STAGE TRIGGER ASSEMBLY

William E. Osborne, Guilford, Conn., assignor to The Marlin Firearms Company, North Haven, Conn.

Filed Oct. 16, 1991, Ser. No. 777,021
Int. Cl.[5] F41A *19/16*
U.S. Cl. 42—69.01 21 Claims



1. A trigger assembly for a firearm having a receiver comprising:

trigger means comprising a pin;

mounting means for pivotally mounting said trigger means at the underside of said receiver;

spring means for biasing said trigger means to a forward pivotal position;

searprop means pivotally mounted to said mounting means and having a distal engagement means, said searprop means comprising aperture means for defining an aperture, said pin extending through said aperture and the diameter of the pin being less than the diameter of the aperture;

sear means pivotally mounted to said mounting means and engageable by said engagement means for releaseably retaining said sear means in a cocked pivotal position;

so that during a first stage as said trigger means is pulled rearwardly from the forward cocked position against the bias of said spring means to a second pivotal position, said searprop engagement means remains in a substantially fixed relationship with said sear means, and during a second stage as said trigger means continues rearwardly from said second position, said trigger means catches said searprop means wherein said pin engages said aperture means to pivot said searprop means and said engagement means disengages from said sear means to thereby release said sear means.

5,187,313

MUSICAL TONE SYNTHESIZING APPARATUS

Toshihiro Inoue, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Aug. 2, 1990, Ser. No. 562,102
Claims priority, application Japan, Aug. 4, 1989, 1-202628; Aug. 4, 1989, 1-202629; Aug. 4, 1989, 1-202630; Aug. 4, 1989, 1-202631; Aug. 4, 1989, 1-202632; Aug. 4, 1989, 1-202633
Int. Cl.[5] G10H *1/02, 1/06, 1/16, 5/00*
U.S. Cl. 84—622 11 Claims

1. A musical tone synthesizing apparatus for simulating a wind instrument, comprising:

excitation means for producing an excitation signal based on an input signal and a reflected wave signal;

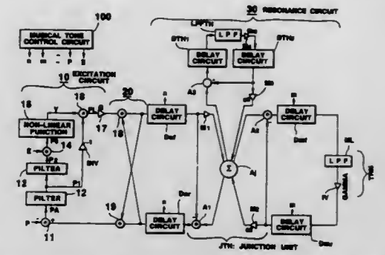
resonance means including:

(a) bi-directional transmission means having a delay time for propagating said excitation signal in a forward direction as a progressive wave signal and also propagating a signal corresponding to the excitation signal in a backward direction as said reflected wave signal,

(b) delay means located in the bi-directional transmission means for delaying at least one of the progressive wave signal and the reflected wave signal by a delay time;

(c) junction unit means located in said bi-directional transmission means for carrying out a scattering operation of said reflected wave signal based upon at least one operation coefficient; and

(d) signal transmission means, coupled to said junction unit means, said signal transmission means having a multiplier which multiplies a signal inputted thereto by a control coefficient so as to simulate a tone hole; and



control means for controlling the delay time, said at least one operational coefficient and said control coefficient in accordance with the pitch of a tone to be synthesized;

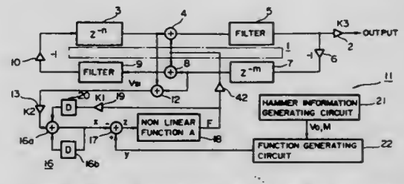
wherein a synthesized musical tone signal is output from at least one of said resonance means and said excitation means.

5,187,314

MUSICAL TONE SYNTHESIZING APPARATUS WITH TIME FUNCTION EXCITATION GENERATOR

Toshifumi Kunimoto, Hamamatsu, and Kaoru Kobayashi, Owariasahi, both of Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Dec. 26, 1990, Ser. No. 634,032
Claims priority, application Japan, Dec. 28, 1989, 1-343212
Int. Cl.[5] G10H *5/07;* G10D *00/00;* H03G *3/00*
U.S. Cl. 84—626 12 Claims



1. A musical tone synthesizing apparatus for synthesizing sound of an acoustic musical instrument, said acoustic musical instrument comprised of a tone generating element and a tone generating operator for exciting sai dtone generating element to thereby create reciprocally propagating vibration within said tone generating element, said musical tone synthesizing apparatus comprising:

(a) closed-loop means including delay means which delays a signal inputted thereto by a delay time corresponding to a period of reciprocal propagation vibration in the tone generating element of said acoustic musical instrument; and

(b) operational information generating means for generating operational information designating generation of a tone;

(c) function generating means for generating a time function, whose value varies with a lapse of time, corresponding to the operational information;

(d) modification means for receiving and modifying a feedback signal outputted from the closed-loop means; and

(e) excitation means for generating an excitation signal based on the time function and the modified feedback signal and for providing the generated excitation signal to the closed-

VOL 1147 ISS 3 FE 16 1993 UMI

loop means as an input signal, wherein the musical tone to be generated is extracted from the closed-loop means.

5,187,315

MUSICAL TONE CENTRAL PARAMETER CONTROLLER FOR A MUSICAL INSTRUMENT

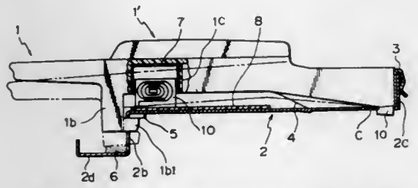
Shigeru Muramatsu; Keisuke Watanabe, and Junichi Mishima, all of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Mar. 19, 1990, Ser. No. 495,376

Claims priority, application Japan, Mar. 20, 1989, 1-68822; May 2, 1989, 1-113369

Int. Cl.[5] G10H *1/34;* **H01L** *41/08;* **H01C** *10/10*

U.S. Cl. 84—688 **14 Claims**



1. A keyboard apparatus in which a plurality of keys are swingably mounted to a fixed key support and a change in electrical inductance is induced in response to every key operation in order to control musical tone control parameters comprising:

means for inducing said change in inductance attached to one of said key and said key support, and

at least one planar coil pattern for detecting said change in inductance, said coil pattern attached to one of said key and said key support such that said coil pattern is in a face-to-face relationship with said inducing means,

wherein the mating surface area of the coil pattern with respect to said inducing means changes substantially linearly in correspondence with the key stroke of said key at key operation.

5,187,316

PASSIVE EXPLOSION PROTECTION DEVICE

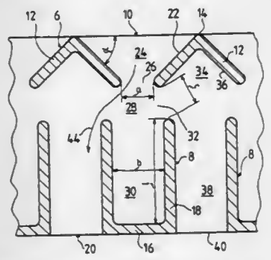
Jürg Hasler, Richterswil, and Kurt Stolz, Wädenswil, both of Switzerland, assignors to Luwa Ltd., Zurich, Switzerland

Filed Feb. 7, 1991, Ser. No. 651,770

Claims priority, application European Pat. Off., Dec. 3, 1990, 90123086

Int. Cl.[5] F41H *9/00*

U.S. Cl. 89—36.02 **12 Claims**



1. A passive explosion protection device for air passing in a shelter, comprising:

an inlet having a slot-shaped entry opening, and an outlet opening for connection to said shelter, said air flow being directed from said inlet to said outlet opening, said slot-shaped entry opening being disposed between two parallel metallic profile elements, said entry opening connecting with a connection chamber, said profile elements forming guide surfaces of an entry zone disposed before said entry opening, said guide surfaces being arranged in the direction of flow; and

an elongated reflection chamber adjoining said connection chamber, said reflection chamber having a single shorter open side and opposed longer closed sides with the single open side confronting said entry opening, said connecting chamber being continuously connected via a lateral passage with an expansion space, and said expansion space being connected to said outlet opening.

5,187,317

FIRE CONTROL SYSTEM HAVING LASER TELEMETRY ADAPTABLE FOR A MANTLET SIGHT

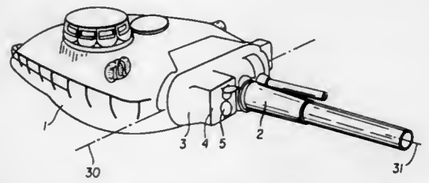
Jean-François R. Pellarin, Saint-Cyr l'Ecole, and Michel Peion, Plaisir, both of France, assignors to Giat Industries, France

Filed Oct. 26, 1990, Ser. No. 603,598

Claims priority, application France, Oct. 27, 1989, 89 14113

Int. Cl.[5] F41G *3/22*

U.S. Cl. 89—36.14 **8 Claims**



1. A fire control system adaptable for a pre-existing mantlet sight on a combat vehicle, comprising:

a stabilized mirror which defines a stabilized aiming axis, said stabilized aiming axis being correlated with a firing axis and a weapon trunnion axis of a gun of said combat vehicle;

a laser arranged to send its transmission and reception beams along said stabilized aiming axis via optical means; and

a casing welded onto said mantlet sight containing said stabilized mirror, optical means and laser.

5,187,318

AIRCRAFT ARMAMENT MOUNTING APPARATUS

Paul H. Sanderson, 2019 Cripple Creek, Lewisville, Tex. 75067, and Richard C. Serkland, 1010 Meadowlake Dr., McKinney, Tex. 75069

Continuation-in-part of Ser. No. 532,172, Jun. 4, 1990, Pat. No. 5,024,138. This application Nov. 16, 1990, Ser. No. 614,504

The portion of the term of this patent subsequent to Jun. 18, 2008, has been disclaimed.

Int. Cl.[5] F41A *23/00*

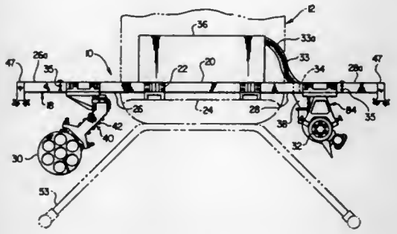
U.S. Cl. 89—37.22 **9 Claims**

1. Armament apparatus for an aircraft having a cabin area, comprising:

an elongated support plank member;

attachment means for securing a longitudinally central portion of said plank member to the aircraft, within said cabin area thereof, in a manner such that opposite outer longitudinal portions of said plank member project outwardly from opposite sides of the aircraft; and

weaponry mounting means for removably mounting on said outer longitudinal plank portions selectively variable and oriented weapon combinations selected from the weapon group consisting of rocket launchers, 7.62 mm machine guns and .50 caliber machine guns.



5,187,319

LOW VULNERABILITY COMPONENT OF EXPLOSIVE AMMUNITION AND PROCESS FOR INITIATING A CHARGE OF LOW-SENSITIVITY COMPOSITE EXPLOSIVE

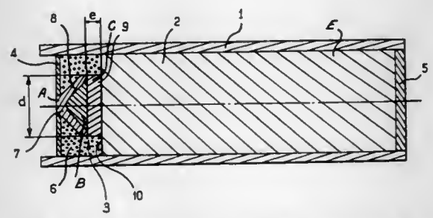
Bruno Nouguez; Yves Bigot, both of Ballancourt; Jacky Groux, Fontenay Le Vicomte, and Jean-Claude Derrien, Vert Le Petit, all of France, assignors to Societe Nationale Des Poudres et Explosifs, Paris Cedex, France

Continuation of Ser. No. 757,034, Sep. 9, 1991, abandoned. This application Aug. 5, 1992, Ser. No. 922,666

Claims priority, application France, Sep. 20, 1990, 90 11596

Int. Cl.[5] F42B *3/10;* **F42C** *19/08*

U.S. Cl. 102—202.1 **9 Claims**



1. An explosive ammunition component comprising an enclosure containing a composite explosive charge E having a detonability index lower than 90 cards as measured by the Card Gap Test and an initiating relay for said charge, said initiating relay comprising a plane wave generator having the form of a cylindroconical cap having a cavity, said cap being made of a composite explosive A and having a first base of diameter d and a second, oppositely located base of a diameter smaller than said first base, said cavity being filled with a composite explosive B, said enclosure having opposite ends and said cap being disposed with said second base at one of said ends, a reinforcer disposed adjacent said first base of said cap, said reinforcer having a thickness e and being composed of a composite explosive C, said reinforcer being disposed between said first base of said cap and said charge E, said composite explosives A, B and C having a detonability index of between 90 and 200 cards, said composite explosive E having a critical diameter and said diameter d being greater than said critical diameter, said thickness e of said reinforcer being greater than 0.1 d, said composite explosives C and E being capable of generating detonation pressures P_c and P_e, respectively, and said detonation pressure P_c being greater than the detonation pressure P_e of said composite explosive E.

5,187,320

FIBRILLATABLE PTFE IN PLASTIC-BONDED EXPLOSIVES

Malak E. Yunan, Boonton Township, Morris County, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 6, 1991, Ser. No. 803,442

Int. Cl.[5] C06B *45/10*

U.S. Cl. 102—275.8 **7 Claims**

1. In a plastic-bonded explosive composition which consists essentially of a crystalline high explosive compound and from about 2 wt. % to about 30 wt. % of a nitrocellulose binder, the improvement comprising from about 0.0025 wt. % up to a value less than 2 wt. % of polytetrafluoroethylene (PTFE) uniformly distributed throughout said composition whereby the tensile strength of the finished composition is improved.

3. An improved low energy detonating cord which includes a cap-sensitive crystalline high explosive compound selected from the group consisting of organic polynitrates and polynitramines admixed with a nitrocellulose binding agent which is not dynamite grade nitrocellulose, the improvement comprising from about 0.0025 wt. % up to a value of less than 2 wt. % of fibrillated PTFE uniformly distributed throughout the mixture.

5,187,321

PROTECTIVE DEVICE

Klaus N. Tusch, London, England, assignor to Colebrand Limited, London, England

Filed Nov. 5, 1991, Ser. No. 787,824

Claims priority, application United Kingdom, Nov. 7, 1990, 9024230; Nov. 26, 1990, 9025630

Int. Cl.[5] F42C *19/04*

U.S. Cl. 102—293 **11 Claims**



1. A protective cover for a sensing head having an external convex surface and which is sensitive to electromagnetic energy, wherein the cover comprises a flexible plastic sheet material transparent to incident electromagnetic energy to which the sensing head is responsive, and inherently resilient to achieve close-fitting contact with said sensing head,

said sheet material having a concave surface complementary in shape to said external convex surface of said sensing head, whereby, in use, said convex surface and said concave surface engage one another.

5,187,322

PROCESS FOR CONTROLLING THE DETONATION OF A MINE AND MINE WITH TRIGGERING DEVICE OPERATING IN ACCORDANCE WITH THE PROCESS

Jurgen Schloss, Oberasbach; Gunther Trummer, Baiersdorf, and Harald Wich, Schwaig, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Mar. 14, 1983, Ser. No. 475,606

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1982, 3210207

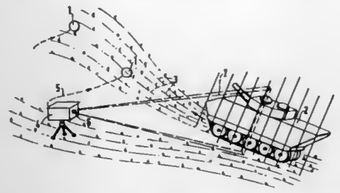
Int. Cl.[5] F42C *14/08, 13/02*

U.S. Cl. 102—427 **4 Claims**

1. A process for controlling the detonation of a mine for the combating of vehicles; upon approach to said mine; comprising an electronically triggered detonating arrangement; and a receiver connected to said detonating arrangement for triggering said arrangement upon determination of predetermined, pregiven vehicle type criteria of said vehicle, said receiver determining the infrared radiation of the vehicle and compar-

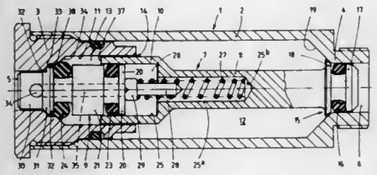
VOL 1147 ISS 3 FE 16 1993 UMI

ing the vehicle criteria with a pattern provided as a detonation criterium, said receiver determining the infrared radiation of the vehicle along strips mutually offset against the direction of



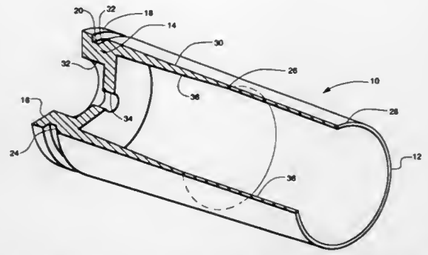
movement of the vehicle, and comparing said radiation with the characteristics of an intensity curve plot along said direction.

5,187,323
PRESSURIZED GAS CARTRIDGE AMMUNITION
Michael E. Saxby, Beresteinseweg 26, 1217 TJ Hilversum, Netherlands
Filed Feb. 14, 1992, Ser. No. 836,122
Claims priority, application Netherlands, Feb. 14, 1991, 9100257
Int. Cl.[5] F42B *5/02*
U.S. Cl. 102—440 **5 Claims**



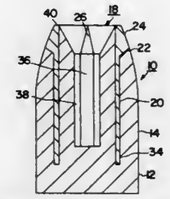
1. A pressurized gas cartridge ammunition, comprising a casing defining a gas pressure chamber, said casing having a bottom with a rear passage for pressure relief and fire pin actuation, and a front end piece with a main discharge opening, an axially guided valve stem within said casing, a valve body provided at the forward end of said stem which normally closes the main discharge opening and a valve body provided at the rearward end of said stem which normally closes said relief passage and is adapted to be actuated through said passage, said valve stem being telescopingly extendable under the action of reset spring means and comprising a forward part carrying a piston at its rearward end, which divides said gas pressure chamber into a forward main chamber surrounding said forward valve stem part and merging into the main discharge opening and a rearward auxiliary chamber merging into said rear relief passage, a rearward part of said valve stem having a cylindrical portion which is mounted for sliding against said reset spring means into a corresponding bore in the piston of the forward valve stem part, thereby providing a central chamber of variable volume within the telescoping valve stem, a bleeding passage being provided between said main and said auxiliary chambers, characterized in that said bleeding passage (**14**) is formed by the clearance that is determined by the sliding fit between the piston (**10**) and a wall (**11**) of the gas pressure chamber in said casing (**2**), whereas the cylindrical portion of the rearward valve stem part is provided with sealing means to sealingly engage the corresponding bore of said piston and said central chamber is connected to atmosphere through a passage extending axially through the valve stem.

5,187,324
9MM CARTRIDGE CASING
John A. Ricco, Sr., 1042 Pineville Rd., Pineville, Pa. 18946
Filed Mar. 27, 1992, Ser. No. 858,672
Int. Cl.[5] F42B *5/28*
U.S. Cl. 102—464 **3 Claims**



1. An improved 9 mm cartridge casing having greater strength and reliability, which cartridge casing comprises:
a substantially hollow cylindrical casing of suitable metallic material having a length of from about eight hundred ninety thousandths of an inch (0.890 in.) to about nine hundred thousandths of an inch (0.900 in.), said casing having as its external dimensions:
a first end portion extending from about forty thousandths of an inch (0.040 in.) to about fifty thousandths of an inch (0.050 in.) from the first end thereof, and having an outer diameter of from about three hundred ninety-five thousandths of an inch (0.395 in.) to about four hundred and one thousandths of an inch (0.401 in.);
a first intermediate portion extending from about twenty-one thousandths of an inch (0.021 in.) to about forty-nine thousandths of an inch (0.049 in.) from said first end portion thereof, and having an outer diameter of from about three hundred thirty-three thousandths of an inch (0.333 in.) to about three hundred forty-eight thousandths of an inch (0.348 in.);
a second intermediate portion extending from about twenty-one thousandths of an inch (0.021 in.) to about forty-nine thousandths of an inch (0.049 in.) from said first intermediate portion thereof, and having an outer wall which increases in diameter from about a diameter of from about three hundred thirty-three thousandths of an inch (0.333 in.) to about three hundred forty-eight thousandths of an inch (0.348 in.) to about a diameter of from about three hundred ninety-five thousandths of an inch (0.395 in.) to about four hundred and one thousandths of an inch (0.401 in.) at a substantially constant rate of increase of from about thirty degrees (30°) to forty degrees (40°) from the centerline of said casing; and,
a second and opposite end portion extending for the remaining length of said casing, and having an outer wall which uniformly decreases in diameter from about a diameter of from about three hundred ninety-five thousandths of an inch (0.395 in.) to about four hundred and one thousandths of an inch (0.401 in.) to a diameter of from about three hundred seventy-two thousandths of an inch (0.372 in.) to about three hundred eighty thousandths of an inch (0.380 in.);
and as its interior dimensions:
a first interior portion extending from about one hundred fifteen thousandths of an inch (0.115 in.) to about one hundred twenty-one thousandths of an inch (0.121 in.) from the first end thereof, and having an inner diameter of from about one thousand seven hundred thirty-two thousandths of an inch (0.1732 in.) to about one thousand seven hundred forty-four ten-thousands of an inch (0.1744 in.);
a second interior portion extending for a minimum of at least about forty thousands of an inch (0.040 in.), and having an inner diameter of about from seventy-nine thousandths of an inch (0.079 in.) to about eighty-three thousandths of an inch (0.083 in.);
a third interior portion extending to about from about five hundred seventy thousandths of an inch (0.570 in.) to about five hundred ninety thousandths of an inch (0.590 in.) from said first end of the casing, and having an inner diameter which increases to from about three hundred fifty-two thousandths of an inch (0.352 in.) to about three hundred fifty-six thousandths of an inch (0.356 in.); and,
a fourth interior portion extending from said third interior portion to the second and opposite end of said casing, and having a constant inner diameter of from about three hundred fifty-two thousandths of an inch (0.352 in.) to about three hundred fifty-six thousandths of an inch (0.356 in.).

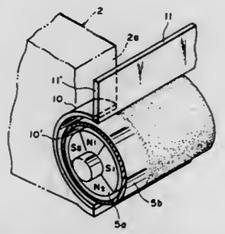
5,187,325
CYLINDRICAL BULLET
Geary L. Garvison, 13757 64th St., South Haven, Mich. 49090
Filed Aug. 15, 1991, Ser. No. 745,517
Int. Cl.[5] F42B *12/34*
U.S. Cl. 102—509 **17 Claims**



1. A hollow, pointed, cylindrical bullet comprising:
an outer portion and a base portion comprised essentially of bullet metal, and
an inner portion comprised essentially of a malleable bullet-jacketing metal portion and a bullet metal portion;
said inner and outer portions having a common cylindrical interface, an outer face of which is comprised essentially of bullet metal and an inner face of which is comprised essentially of said bullet-jacketing metal;
said jacketing metal portion having adjacent said interface axially-disposed portions of weakness separating said bullet into peel-back segments at least an upper part of which portions of weakness is composed of intact bullet-jacketing metal which tears apart on impact thereby allowing said segments to peel back to cause the bullet to mushroom;
in which an inner surface of said hollow bullet extends axially down into the body of said bullet toward said base portion on a surface of an inverted truncated cone and thereafter axially down to said base portion; and
in which said jacketing metal portion is anchored in said base portion but terminates short of the bottom of said bullet.

10. An expansion-control insert for a hollow, cylindrical bullet comprising a hollow tubular member open at both ends of malleable, bullet-jacketing metal selected from bullet-jacketing copper or bullet-jacketing copper alloy having an imperforate cylindrical outer surface and a star-shaped inner portion formed by a plurality of axially-disposed, V-shaped channels which extend the entire length of the insert, the apices of which channels are adjacent said outer cylindrical surface, thereby forming adjacent thereto axially-disposed, parallel, imperforate tear-lines separating said insert into peel-back segments, and the sides of which channels flare out to essentially equally disposed sites on the surface of an axially-disposed, cylinder which is concentric with said cylindrical outer surface, the points of said star-shaped portion being thus truncated on arcuate surfaces having a common axial center and the same radii, whereby said arcuate surfaces constitute axially-disposed, spaced-apart panels which are essentially equally spaced one from another.

5,187,326
DEVELOPING APPARATUS
Masanari Shirai, Chigasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 30, 1991, Ser. No. 767,693
Claims priority, application Japan, Sep. 28, 1990, 2-260018
Int. Cl.[5] G03G *15/09*
U.S. Cl. 118—657 **5 Claims**



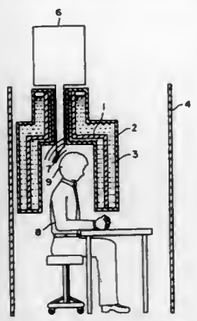
1. A developing apparatus, comprising:
a container for containing a developer comprising magnetic particles;
a rotatable developer carrying member in said container and faced to an image bearing member, for carrying the developer to a developing zone;
a magnet in said developer carrying member;
a magnetic sealing member disposed proximate to and in a rotational direction of said developer carrying member in a region inside said container and adjacent a longitudinal end of said developer carrying member, wherein said magnetic sealing member cooperates with said magnet to form a magnetic field effective to form a magnetic brush of the developer between said magnetic sealing member and said developer carrying member, and wherein an outer end, with respect to the longitudinal direction of said developer carrying member, of said magnetic sealing member is disposed in a range between 2 mm outwardly away from an end of said magnet and 1 mm inwardly away therefrom.

5,187,327
SUPERCONDUCTING MAGNETIC SHIELD
Hiroshi Ohta, Wako; Masakazu Aono, Nerima; Kazuhiko Kato, Kumagaya; Kazutomo Hoshino, Ageo; Hidefusa Takahara, Chofu; Tomonobu Nakayama, Koshigaya, and Eiichi Sudoh, Omuta, all of Japan, assignors to Mitsui Kinzoku Kogyo Kabushiki Kaisha, Tokyo and Rikagaku Kenkyusho, Saitama, both of, Japan
Filed Sep. 26, 1990, Ser. No. 588,337
Claims priority, application Japan, Sep. 29, 1989, 1-254711; Feb. 19, 1990, 2-38108
Int. Cl.[5] H05K *9/00;* **H01L** *39/00*
U.S. Cl. 174—35 R **2 Claims**

1. A superconducting magnetic shield comprising a bismuth high temperature oxide superconductor having a cylindrical parallelepiped shape opened at one end thereof and having a magnetic shielding effect of 1×10^{-5} or less as defined by the ratio of an intensity of a magnetic field at 77 K detected by a magnetic field detecting coil installed in said cylindrical paral-

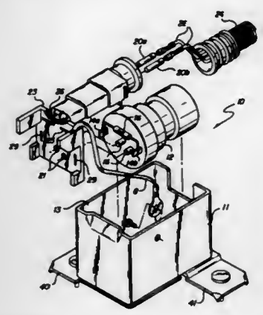
VOL 1147 ISS 3 FE 16 1993 UMI

lelepiped shield to an intensity of a magnetic field at an ambient temperature when the ratio of bore/length is less than 1 and an



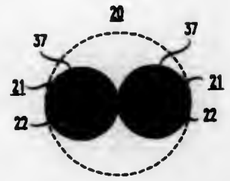
external alternating magnetic field is objective, said superconducting magnetic shield having a bore/length ratio less than 1.

5,187,328
ENVIRONMENTALLY SEALED VEHICULAR AIR BAG SENSOR
James P. Burgess, Camarillo, Calif.; Dewey Mobley, Lake Orion, and Al Vanderstuyf, Novi, both of Mich., assignors to Electro Wire Products, Inc., Rochester Hills, Mich.
Filed Nov. 28, 1990, Ser. No. 619,012
Int. Cl.[5] H05K *5/00*; G01P *15/08*
U.S. Cl. 174—52.2 **12 Claims**



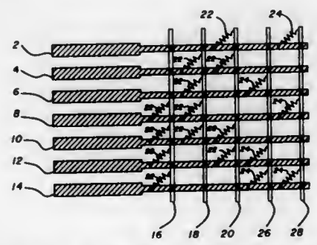
1. An environmentally sealed vehicular air bag sensor comprising:
a housing defining an interior;
first and second electrical terminals disposed in said interior and configured to engage within said interior third and fourth electrical terminals, respectively, said third and fourth terminals being associated with a wiring system of a vehicle;
an accelerometer disposed in said interior and operative to provide a detectable electrical characteristic when subjected to a deceleration force of at least a preset level, said accelerometer having fifth and sixth electrical terminals in electrical communication with said first and second terminals; and
means for sealing the interior of the housing from the ambient environment so that connection of the sensor to the wiring system is environmentally sealed.

5,187,329
TWISTED PAIRS OF INSULATED METALLIC CONDUCTORS FOR TRANSMITTING HIGH FREQUENCY SIGNALS
Larry L. Bleich, Omaha, Nebr.; Wendell G. Nutt, Dunwoody, Ga., and Stephen T. Zerbs, Gretna, Nebr., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jun. 28, 1991, Ser. No. 722,786
Int. Cl.[5] H01B *11/00*
U.S. Cl. 174—113 R **7 Claims**



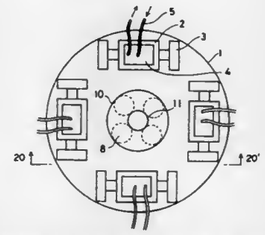
1. An electrically matched, insulated metallic conductor pair which is suitable for the transmission of relatively high frequency signals, said conductor pair comprising:
first and second insulated metallic conductors each comprising;
a metallic conductor; and
an insulation material which covers the metallic conductor;
said first insulated metallic conductor being distinguishable from said second insulated metallic conductor and the dielectric constant of the insulation material which is disposed about the metallic conductor of the first insulated metallic conductor and any identifiable marking associated therewith being substantially equal to the dielectric constant of the insulation material which is disposed about the metallic conductor of the second insulated metallic conductor and any identifiable marking associated therewith; and
further said first and second insulated metallic conductors comprising successive portions of a continuous length of metallic conductor which has been insulated in a single run on a manufacturing line.

5,187,330
POSITIONAL DETERMINATION
Brian Holcroft, High Wycombe, England, assignor to Thorn EMI plc, London, England
Filed Aug. 15, 1991, Ser. No. 745,342
Claims priority, application United Kingdom, Aug. 18, 1990, 9018201
Int. Cl.[5] G08C *21/00*
U.S. Cl. 178—18 **12 Claims**



8. A system for positional determination, the system comprising: an array of sensor electrodes capable of being activated and each for providing signals when activated; processing means for producing from the signals from each activated sensor a binary code indicative of the activated sensor, and a binary error code; and further processing means for combining, when two or more sensors are activated simultaneously, the binary codes and the binary error codes for the two or more activated sensors thereby to provide a further code uniquely defining the position of activation of the sensor electrodes in the array.

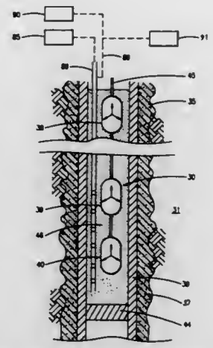
5,187,331
SH WAVE GENERATOR
Shoji Sakata, Tsukuba, Japan, assignor to Science and Technology Agency, Ibaraki, Japan
Filed Mar. 28, 1991, Ser. No. 676,418
Int. Cl.[5] G01V *1/04*
U.S. Cl. 181—121 **11 Claims**



1. An apparatus for generating SH waves comprising:
a rigid driving plate;
fixing means provided on a bottom of said driving plate for fixing said driving plate onto a surface of the earth;
a plurality of hydraulic actuators equidistantly mounted on a circumference of said driving plate, which have reaction masses and act tangentially on a same circumference from a center of said driving plate; and
driving means for reciprocating said plurality of hydraulic actuators independent of each other parallel to said surface of the earth at a controlled frequency, therein generating transverse waves.

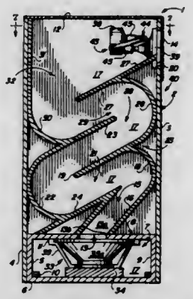
5,187,332
COUPLING AND RECOVERING SEISMIC DETECTION SENSORS
A. Wadood El-Rabaa, Plano; George P. Moeckel, Duncanville, and Malcolm K. Strubhar, Irving, all of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Feb. 10, 1992, Ser. No. 833,263
Int. Cl.[5] G01V *1/40*
U.S. Cl. 181—122 **25 Claims**

1. A system for temporarily bonding a vertical seismic sensor array to an interior surface of a borehole and coupling said sensor array to said surface for a seismic operation comprising:
a plug formed in said borehole;
means for retrievably placing said sensor array above said plug and in a predetermined orientation with respect to said surface;
means for introducing a low viscosity substance between said plug and the uppermost sensor in said sensor array, said substance having a composition formulated for stiffening in situ to provide a mechanical bond and a signal transmission coupling between said sensor array and said surface; and



means for contacting said stiffened substance with a stimulus for breaking said stiffened substance to thereby remove said bond.

5,187,333
COILED EXPONENTIAL BASS/MIDRANGE/HIGH FREQUENCY HORN LOUDSPEAKER
John F. Adair, 147 Norwood St., Shreveport, La. 71105
Filed Dec. 3, 1990, Ser. No. 620,726
Int. Cl.[5] H05K *5/00*
U.S. Cl. 181—152 **9 Claims**



1. A coiled exponential bass/midrange/high frequency horn loudspeaker comprising an enclosure having a bottom panel, side panels upward-standing from said bottom panel in spaced relationship, a front panel upward-standing from said bottom panel for closing one side of said side panels and a rear panel upward-standing from said bottom panel for closing the opposite side of said side panels and defining an open top; a flared sound chamber provided in said enclosure with said side panels defining opposite walls of said flared sound chamber and said flared sound chamber arranged in convoluted, stacked relationship and extending through said enclosure in exponentially expanding relationship; a substantially sealed air chamber provided in said enclosure adjacent to said bottom panel and a loading aperture provide in said air chamber, said air chamber communicating with the bottom end of said flared sound chamber through said loading aperture; a low frequency driver mounted in said air chamber adjacent to said loading aperture, for generating sound and projecting the sound through said loading aperture and said flared sound chamber and from said open top of said enclosure; a high frequency horn mounted in said enclosure adjacent to said open top; an acoustic delay tube

VOL 1147 ISS 3 FE 16 1993 UMI

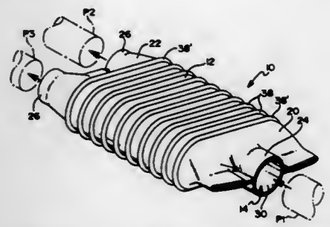
located in said enclosure, with one end of said acoustic delay tube attached to said high frequency horn; timing adjustment sleeve means slidably carried by said acoustic delay tube for finely adjusting the delay of said high frequency sound; and a high frequency driver attached to the opposite end of said acoustic delay tube, and wherein the cross-sectional area of said acoustic delay tube varies from a smaller area at said high frequency drive to a larger area at said high frequency horn, whereby high frequency sound generated by said high frequency driver is delayed in said acoustic delay tube to project from said enclosure substantially simultaneously with the sound of lower frequency generated by said low frequency horn and projecting from said open top.

5,187,334

ACOUSTIC MUFFLER WITH ONE-PIECE HOUSING

James R. Abbott, Jackson, and Benny J. Snider, Brooklyn, both of Mich., assignors to Tennessee Gas Pipeline Company, Lincolnshire, Ill.

Division of Ser. No. 546,919, Jul. 2, 1990. This application Aug. 28, 1991, Ser. No. 751,876
Int. Cl.[5] F01N *1/08*
U.S. Cl. 181—265 **68 Claims**



1. A muffler for use in a motor exhaust system, said muffler comprising a closed tubular oval-shaped shell having opposite ends and an interior chamber, and gas passage means in said interior chamber for passing exhaust gases between the ends of the shell, said passage means comprising axially elongated inlet and outlet tubes with longitudinal axes disposed in side-by-side relation, each of said tubes being formed by a metal wall having first and second end portions located at opposite ends of said shell, each of said first end portions being generally round in cross-section, the metal forming each of said second end portions being axially slotted and laterally flattened in a direction transverse to the longitudinal axis of the tube and pressed into contact whereby to complete closed the tube end and form a pair of side openings in the tube at a location axially inward of the closed tube end, said openings being sufficient to pass the exhaust gases in a direction transverse of said tube axis.

5,187,335

SWITCH WITH INTERLOCKED OPERATORS

Takahiko Fukuyama, Mino; Satosi Kozawa, Ichinomiya; Kazuyoshi Ishiguro; Toshiki Akita, both of Nagoya, and Seiji Hori, Aichi, all of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Feb. 19, 1991, Ser. No. 657,840
Claims priority, application Japan, Feb. 23, 1990, 2-17592[U]
Int. Cl.[5] H01H *9/20, 13/56*
U.S. Cl. 200—5 B **10 Claims**

1. A switch comprising:

a case;

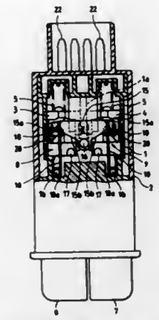
first and second manipulation members slidably disposed in said case and means for urging said members in a first direction, each of said first and second manipulation members for being pressed in a second direction, opposite from said first direction, and being movable between an actuated position and a released position;

a first switching mechanism operatively connected to said first manipulation member and a second switching mechanism operatively connected to said second manipulation member, whereby each of said first and second switching mechanisms conducts electricity when the corresponding one of said first and second manipulation members is in said actuated position;

first and second cam projections on said first and second manipulation members, respectively;

first and second locking members each swingably fixed to said case and respectively contacting said first and second cam projections of said first and second manipulation members, said first and second locking members alternately holding in said actuated position or releasing to said released position the corresponding one of said first and second manipulation members, the position of said manipulation member alternating when said manipulation member is pressed;

first and second guide grooves respectively disposed about said first and second cam projections for guiding a tip



portion of the corresponding one of said first and second locking members around the corresponding one of said first and second cams while the corresponding one of said manipulating members moves between said actuated position and said released position, each of said first and second guide grooves including a normal return path and a forced return path; and

an operating member movably secured to said case and displaced in repsonse to the pressing of one of said first and second manipulation members for forcibly moving said tip portion of said locking member corresponding to the other of said first and second manipulation members along said forced return path, thereby moving the other of said first and second manipulating members from said actuated position to said released position, wherein said tip portions are prevented from contacting said operating member when said tip portions are located in said normal return path of said first or second guide groove responsive to the pressing of the corresponding one of said first and second manipulation members.

5,187,336

SWITCH ASSEMBLY WITH TRANSFER ACTUATOR

Harold K. Lang, Wheeling, and Chockalingam Kumar, Antioch, both of Ill., assignors to The Cherry Corporation, Waukegan, Ill.

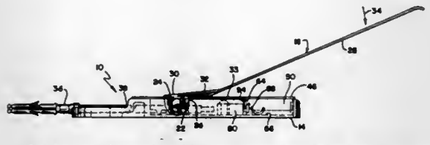
Filed May 30, 1990, Ser. No. 530,878
Int. Cl.[5] H01H *3/16*
U.S. Cl. 200—61.61 **19 Claims**

18. A switch assembly for use in combination with a cash box comprising:

a housing connected to a surface adjacent to the cash box, said housing having a flexible membrane forming a wall thereof and facing a first direction toward the cash box;

an electric switch located inside said housing and having a switch actuation member responsive to the application of force in a second direction, said second direction orthogonal to said first direction, and further in which said electrical switch has leads connected thereto that extend from the inside to the outside of said housing, and further in which said leads are connected to a remote location for monitoring the position of the cash box;

a transfer actuator member located inside said housing adjacent to said membrane, said transfer actuator member having a first portion aligned to receive a force applied



thereupon through said membrane and a second portion adapted to move in the second direction in response said force to operate said electric switch; and

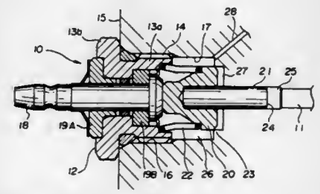
an external actuator lever pivotally connected to said housing and operably located to bear upon said membrane to apply a force to said transfer actuator member when a cash box is in position adjacent to said housing; whereby the removal of the cash box is monitored from the remote location by the measurement of at least one of the voltage across said leads and the current through said leads.

5,187,337

FLUID PRESSURE ACTUATED SWITCH FOR FLUID PUMP

Toru Fujie, and Shigeyuki Hadama, both of Kanagawa, Japan, assignors to Atsugi Unisia Corporation, Atsugi, Japan

Filed Oct. 21, 1991, Ser. No. 779,971
Claims priority, application Japan, Oct. 23, 1990, 2-110194[U]
Int. Cl.[5] H01H *35/38*
U.S. Cl. 200—82 R **9 Claims**



1. A pressure switch comprising:

a stationary terminal fixedly secured to a support base to which the pressure switch is installed;

a movable terminal which is movable relative to said support base and contactable with said stationary terminal, said movable terminal being normally kept separate from said stationary terminal;

a pressure receiving piston fixedly connected to said movable terminal and adapted to receive a pressure in a pressure circuit;

means defining a chamber in which said movable terminal and at least a part of said stationary terminal are disposed, said chamber being filled with a fluid;

means defining a pit in said chamber defining means contiguous with said chamber, a part of said movable terminal slidably fitting in said pit, a variable volume space between said pit defining means and said part of said movable terminal; and

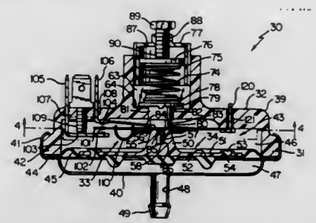
orifice means defined by said movable terminal and said pit defining means, said chamber and said space in said pit being communicable with each other through said orifice means, said fluid being flowable between said chamber and said space defined in said pit, in accordance with movement of said movable terminal.

5,187,338

FLUID PRESSURE OPERATED SWITCH AND CONTACT ASSEMBLY

William J. Kaigler, North Huntingdon, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Oct. 4, 1991, Ser. No. 771,492
Int. Cl.[5] H01H *35/24, 1/00*
U.S. Cl. 200—83 R **3 Claims**



1. In a pressure operated switch construction comprising a housing means carrying an electrical switch unit and a diaphragm assembly therein, a compression spring means carried by said housing means and being operatively associated with said switch unit and said diaphragm assembly to control the operation thereof in relation to the compressive setting of said spring means, and an actuator means carried by said housing means and being operatively associated with said spring means to set the compressive setting thereof, the improvement wherein said switch construction comprises a self-contained subassembly comprising a switchblade structure having a generally coplanar flat body means comprising a one-piece member that defines a main switch blade and a center blade and has opposed ends and having a terminal secured to one of said opposed ends and a projection secured to said one of said opposed ends in spaced relation to said terminal with said terminal and said projection respectively having parts that are respectively disposed substantially transverse to said body means and at opposite ends thereof, said housing means having two slot means therein respectively receiving said parts of said terminal and said projection therein in to self-pilot said subassembly into its proper position in said housing means as said subassembly is moved in one direction in said housing means, said terminal and said projection being secured to said housing means to hold said subassembly in its said proper position.

5,187,339

GAS INSULATED HIGH-VOLTAGE CIRCUIT BREAKER WITH PNEUMATIC OPERATING MECHANISM

Mario Lissandrin, Battaglia Terme, Italy, assignor to Merlin Gerin, France

Filed Jun. 13, 1991, Ser. No. 714,868
Claims priority, application France, Jun. 26, 1990, 90 08356
Int. Cl.[5] H01H *33/28*
U.S. Cl. 200—148 F **11 Claims**

1. A high-voltage gas-insulated circuit breaker, comprising:

a first sealed compartment filled with a high dielectric strength insulating gas at a first pressure, said first sealed compartment housing at least one breaking pole comprising stationary and movable contacts;

an arc extinguishing device housed within said first sealed compartment for extinguishing an arc formed between said stationary and movable contacts upon separation thereof;

a contact actuating rod coupled to said movable contact, said contact actuating rod extending longitudinally axially inside said first sealed compartment;

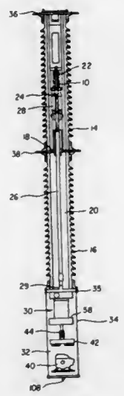
a second sealed compartment fixed to an end of said first

VOL 1147 ISS 3 FE 16 1993 UMI

sealed compartment and separated therefrom by a separating wall, said second sealed compartment filled with said high dielectric strength insulating gas at a second pressure which is lower than said first pressure;

a pneumatic operating mechanism disposed within said first sealed compartment and coupled to said contact actuating rod, said pneumatic operating mechanism comprising a fixed cylinder and a piston coupled to said contact actuating rod, said piston being able to be slidably driven within said fixed cylinder by flow of said insulating gas from said first sealed compartment into said fixed cylinder;

a first distribution means disposed within said second compartment and at one end of said fixed cylinder to allow



flow of said insulating gas from said first compartment into said fixed cylinder to drive said piston in a first direction; and

a second distribution means disposed within said second compartment and at an opposite end of said fixed cylinder to allow flow of said insulating gas from said first compartment into said fixed cylinder to drive said piston in a second direction;

wherein said insulating gas flowed into said fixed cylinder is expelled therefrom into said second sealed compartment after said piston is driven in said first direction or said second direction, said second sealed compartment thereby providing an expansion volume for said insulating gas expelled from said fixed cylinder.

5,187,340

METHOD FOR WELDING AT LEAST ONE REGION OF AN OVERLAY SHEET TO A RECEIVING SURFACE OF A CARRIER LAYER

Lothar Machule, Weissbach, and Hans R. Obermeier, Saalfdorf, both of Fed. Rep. of Germany, assignors to Konrad Hornschuch AG and HFT-Obermeier Maschinenbau GmbH, both of, Fed. Rep. of Germany

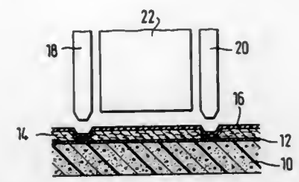
Filed May 29, 1991, Ser. No. 706,784

Claims priority, application Fed. Rep. of Germany, May 31, 1990, 4017577

Int. Cl.[5] B23K *13/02*

U.S. Cl. 219—10.53 **7 Claims**

1. A method for welding at least one region of an overlay sheet to a receiving surface of a carrier layer by means of high frequency energy, characterized by the steps of providing a carrier layer having a receiving surface and an opposite surface, and a layer of aluminum foil applied to the opposite surface of said carrier layer, placing an overlay sheet on at least a part of the receiving surface of said carrier layer, placing a high frequency electrode on and in contact with the overlay sheet in a region to be welded to the carrier layer, placing a ground electrode on a region of the overlay sheet which is not to be welded, or on a part of the receiving surface not covered by said overlay sheet, said ground electrode having a contact area greater than a contact area of the high frequency elec-



trode, and applying high frequency energy to said high frequency electrode while holding said high frequency electrode under pressure against said overlay sheet.

5,187,341

METHOD OF REDUCING THE WEAR OF THE ELECTRODE IN MACHINE TOOLS USING ELECTRO-EROSION

Alberto C. Graell, Capitán Arenas, 21-33, 08034 Barcelona, Spain

Filed Nov. 9, 1989, Ser. No. 435,016

Claims priority, application Spain, Nov. 11, 1988, 8803419

Int. Cl.[5] B23H *7/14, 7/18*

U.S. Cl. 219—69.13 **11 Claims**



1. A method for reducing electrode wear in an electro-erosion apparatus which produces an electric current discharge across a gap defined between an electrode and a workpiece, comprising the steps of:

providing a plurality of selectively actuable electric current supply elements for delivering respectively predetermined amounts of electric current for discharge across said gap;

gradually changing the current discharged across said gap by incremental steps, including selectively actuating said electric current supply elements in a desired sequence beginning with a first said electric current supply element to produce a series of electric current pulses which correspond respectively to said electric current supply elements and which each have a pulse edge which defines a respective incremental change in the electric current discharged across said gap, and controlling said actuation of said first electric current supply element such that the pulse edge associated therewith has a sloping, non-vertical configuration and said incremental current change as defined by said pulse edge is progressive over time and is completed only after a predetermined period of time has elapsed.

5,187,342

WIRE CUT ELECTRIC DISCHARGE MACHINE

Toshiyuki Aso, and Toshio Hirai, both of Oshino, Japan, assignors to Fanuc Ltd, Minamitsuru, Japan

PCT No. PCT/JP90/00682, § 371 Date Jan. 2, 1991, § 102(e) Date Jan. 2, 1991

PCT Filed May 28, 1990, Ser. No. 635,626

Claims priority, application Japan, Jun. 29, 1989, 1-165323

Int. Cl.[5] B23H *7/36, 7/02*

U.S. Cl. 219—69.14 **5 Claims**

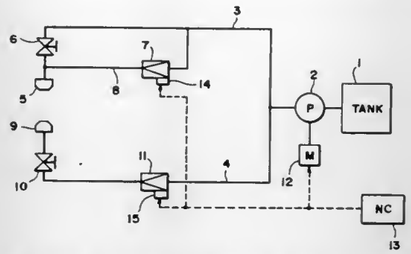
1. A wire cut electric discharge machine comprising:

a main pipe line connecting a machining fluid supply source and an upper nozzle;

a bypass pipe line connecting the machining fluid supply source and the upper nozzle;

a flow regulating valve provided in said bypass pipe line; and

control means for varying an opening of said flow regulating valve in dependence on whether or not the electric discharge machine is operated in a wire extension mode,



the opening controlled to be larger in the wire extension mode than in a mode which is not the wire extension mode, so that a sufficient amount of machining fluid is supplied to permit wire extension during a finishing operation.

5,187,343

PURGE BLOCK FOR PIPE WELDING

Thomas W. Edwards, 5301 Boy Scout Rd., Lawrence, Ind. 46226

Filed Oct. 30, 1991, Ser. No. 784,755

Int. Cl.[5] B23K *9/16*

U.S. Cl. 219—74 **1 Claim**

1. A purge block for use in establishing a localized inert atmosphere inside two abutting pipe sections in the region of a desired weld joint, comprising:

a semi-rigid elongate tube having a longitudinal axis, said semi-rigid tube having inner and outer tubing layers of silicone rubber and a middle layer of steel braid;

first and second non-inflatable, disc-like seals constructed of insulating foam rubber and removably mounted on opposite ends of said tube, each of said non-inflatable, disc-like seals defining a passageway extending therethrough along said longitudinal axis;

conduit means for supplying an inert gas from a source thereof through said passageway in said first seal and into the region of the desired weld joint;

a rigid washer positioned on said longitudinal axis adjacent each end of each of said non-inflatable, disc-like seals for support thereof, said washers between said seals being constructed of Teflon ®; and

a plurality of Teflon ® spacer rings slidably mounted on said tube and spaced apart from said non-inflatable, disc-like seals, said spacer rings each having an inner diameter sufficiently greater than the outer diameter of said tube to allow the flow of gas therebetween;

wherein said conduit means includes a first stainless steel fitting having an externally threaded inlet end with an axial opening and an internally threaded outlet end with a plurality of radial openings, said inlet end of said first stainless steel fitting mounted within said passageway through said first non-inflatable, disc-like seal;

wherein said conduit means further includes a second stainless steel fitting having an internally threaded inlet end with a plurality of radial openings and an externally threaded outlet end with an axial opening, said outlet end of said second stainless steel fitting mounted within said passageway through said second non-inflatable, disc-like seal; and

wherein said fittings each define a hollow portion extending between their respective axial openings and plurality of radial openings along said longitudinal axis.

5,187,344

APPARATUS FOR DECOMPOSING HALOGENATED ORGANIC COMPOUND

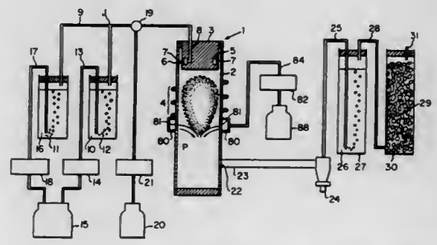
Koichi Mizuno, Ibaraki; Takeshige Wakabayashi; Yutaka Koinuma, both of Chiba; Reiji Aizawa; Satoshi Kushiyama, both of Ibaraki; Satoru Kabayashi; Hideo Ohuchi, both of Ibaraki; Toyonobu Yoshida, 2-6-2 Nishikata, Bunkyo-ku Tokyo 113; Yoshiro Kubota, Tokyo; Takanobu Amano, Tokyo; Hisashi Komaki, Tokyo, and Shoji Hirakawa, Tokyo, all of Japan, assignors to Agency of Industrial Science and Technology; Toyonobu Yoshida and JEOL Ltd., all of Tokyo, Japan

Division of Ser. No. 433,361, Nov. 7, 1989, Pat. No. 5,026,464. This application Apr. 11, 1991, Ser. No. 684,006

Claims priority, application Japan, Nov. 10, 1988, 63-284098; Aug. 31, 1989, 1-225211; Sep. 1, 1989, 1-227083; Sep. 1, 1989, 1-227084

Int. Cl.[5] B23K *9/00*

U.S. Cl. 219—121.5 **10 Claims**



1. An apparatus for decomposign a halogenated organic compound comprising:

a cylindrical tube;

a gas supply nozzle positioned at one end of said cylindrical tube;

an induction plasma torch consisting of an RF coil wound around said tube;

a first container for holding a halogenated organic compound coupled to said gas nozzle;

a second container for holding water coupled to said gas nozzle;

a gas source coupled to said gas nozzle;

said gas supply nozzle provided with an annular groove, an annular plate attached to the outside of said annular groove, and a plurality of minute holes in said annular groove to provide communication between said annular groove and said tube, wherein said annular groove is coupled to at least said gas source;

wherein liquid from said first and second containers is atomized by gas from said gas source and sprayed into the plasma.

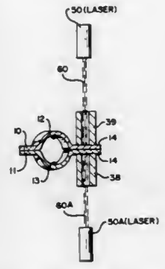
VOL 1147 ISS 3 FE 16 1993 UMI

5,187,345

METHOD OF WELDING RETAINER RINGS

Richard L. Alling, and Richard W. Shepard, both of Torrington, Conn., assignors to The Torrington Company, Torrington, Conn.

Filed Nov. 22, 1991, Ser. No. 796,189
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.63 16 Claims



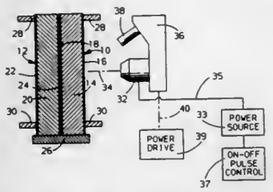
1. A method of welding bearing retainer rings comprising the steps of:
assembling two annular metal retainer rings and a plurality of bearing balls, each retainer ring having a plurality of ball pockets spaced about the ring, the ball pockets of one retainer ring being aligned with the ball pockets of the other retainer ring, a bearing ball being located within each ball pocket;
applying pressure to the retainer rings; and
exposing both retainer rings between adjacent ball pockets to a coherent high-energy beam of radiation thereby fusing the retainer rings together at a plurality of locations.

5,187,346

LASER WELDING METHOD

Umit Bilge, Mt. Clemens, and William C. Jenuwine, Marine City, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 29, 1991, Ser. No. 750,838
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.64 4 Claims



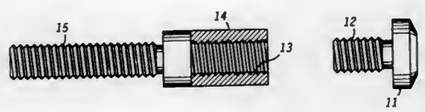
1. A method of laser lap welding two sheets of steel which have coatings of zinc on opposed sides thereof, the steps comprising, positioning said sheets in a generally vertical position and holding said sheets engaged, directing a pulsed laser beam against an outer surface of one of said sheets, and then moving said sheets and laser beam relative to each other in a vertical direction while pulsing said laser beam ON and OFF such that said pulsed laser beam melts the material of said sheets progressively in a vertical upward direction to create a cavity and such that melted molten material of said sheets flows vertically downwardly by gravity to thereby facilitate the escape of zinc vapors from said cavity caused by vaporization of said zinc by said pulsed laser beam.

5,187,347

SUSCEPTOR ELECTRODE AND METHOD FOR MAKING SAME

Anatoly Leef, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 28, 1991, Ser. No. 646,128
Int. Cl.[5] B23K *9/00*
U.S. Cl. 219—121.52 7 Claims



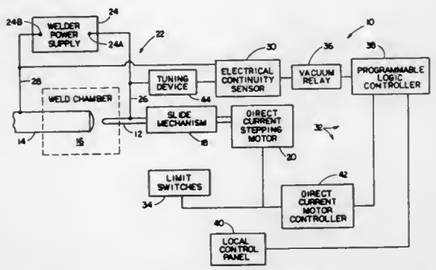
1. A composite electrode for conducting a modulated voltage to a susceptor to generate a plasma discharge in a plasma reactor comprising:
an electrically conductive non-oxidizing threaded shaft having a button contact on one end of the threaded shaft; and
an electrically conductive metallic shaft with a first and a second end, the first end having screw threads, and the second end having an opening axially aligned to the center of the shaft, with the screw threads on walls of the opening, wherein the non-oxidizing threaded shaft and the screw threads on walls of the opening are joined by the screw threads, and wherein the first end of the electrically conductive metallic shaft is joined to the susceptor.

5,187,348

WELD ELECTRODE-TO-WORKPIECE ARC GAP SETTING APPARATUS AND METHOD

Gary W. Cuba, Hopkins; Robert D. Isaacson, Columbia, and David V. Lambert, St. Matthews, all of S.C., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 30, 1991, Ser. No. 784,959
Int. Cl.[5] B23K *9/12*
U.S. Cl. 219—124.02 14 Claims



11. An apparatus for setting an arc gap between a weld electrode and a workpiece, comprising:
(a) means for supporting a weld electrode for movement toward and away from a workpiece to respectively advance and retract the electrode into and from physical contact with the workpiece;
(b) means drivingly coupled to said weld electrode supporting means and being operable in forward and reverse modes for driving said supporting means to respectively move toward and away from the workpiece and correspondingly advance and retract the electrode into and from physical contact with the workpiece;

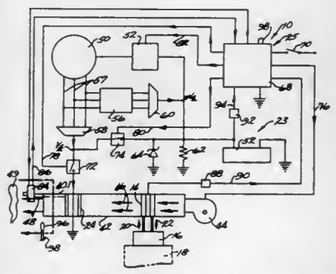
(c) means electrically connected to the weld electrode and workpiece and defining an electrical path for supply of electrical energy thereto sufficient to generate a welding arc between the electrode and workpiece;
(d) means capable of electrical connection in a short circuit fashion across said electrical path defining means and being operable for sensing electrical continuity of said electrical path, the continuity of said electrical path being closed when the electrode makes physical contact with the workpiece and being open when the electrode breaks physical contact with the workpiece, said continuity sensing means capable of generating a trigger signal in response to sensing the closing of continuity of said electrical path;
(e) control means connected to said continuity sensing means and said driving means and being actuatable for switching the operation of said driving mean between said forward and reverse modes and for controlling operation thereof in each of said modes, said control means also being manually actuatable to initiate operation of said driving means in said forward mode for driving said supporting means to advance the electrode into physical contact with the workpiece, said control means further being automatically actuatable to switch operation of said driving means from said forward mode to said reverse mode in response to receipt of said trigger signal from said continuity sensing means for driving said supporting means to retract the electrode from physical contact with the workpiece to a welding position located a predetermined distance from the workpiece, said control means further being operable to generate an output signal in response to the electrode reaching the welding position; and
(f) isolation means connected to said control means and to said electrical path defining means via said continuity sensing means for making electrical connection between said continuity sensing means and said electrical path defining means in response to actuation by said control means of said driving means in said forward mode to drive said supporting means so as to advance the electrode into physical contact with the workpiece, said isolation means also for breaking electrical connection between said continuity sensing means and said electrical path defining means in response to said output signal from said control means generated when the electrode reaches the welding position.

5,187,349

DEFROST AND PASSENGER COMPARTMENT HEATER SYSTEM

Jeffery A. Curhan, Medway; Daniel R. Pimentel, Seekonk, and Peter G. Berg, Attleboro Falls, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 22, 1990, Ser. No. 571,374
Int. Cl.[5] B60L *1/02*
U.S. Cl. 219—202 29 Claims



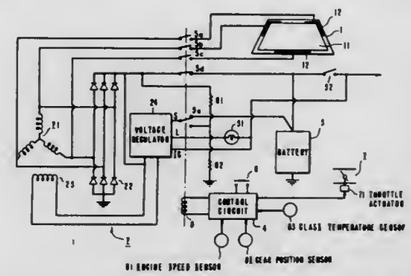
1. A system for providing heat to a vehicle defrost or a passenger compartment comprising a heater comprising a self-regulating electrical resistance heater of positive temperature coefficient of resistivity, a power source to electrically energize the heater, means directing air in heat-transfer relation to the heater to provide a heated air output to the passenger compartment, and means for varying the amount of air directed in heat-transfer relation to the heater for regulating the amount of air with respect to the self-regulated temperature of the heater to provide the air output to the passenger compartment at a temperature at least equal to the selected minimum temperature at any ambient temperature over a selected range.

5,187,350

VEHICLE WINDSHIELD HEATER UTILIZING REGULATOR OUTPUT CURRENT CONTROL WITH A VOLTAGE DIVIDER

Yoshinobu Tsuchiya, Fujisawa, Japan, assignor to Isuzu Motors Limited, Tokyo, Japan

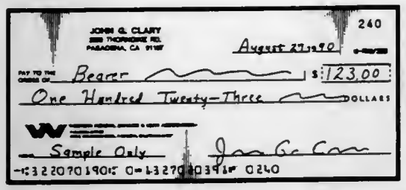
Continuation of Ser. No. 696,256, Apr. 30, 1991, abandoned, which is a continuation of Ser. No. 530,293, May 30, 1990, abandoned. This application Apr. 29, 1992, Ser. No. 877,381
Claims priority, application Japan, Jun. 6, 1989, 1-143481
Int. Cl.[5] B60S *1/02*
U.S. Cl. 219—203 4 Claims



1. An ice melting system in a motor vehicle having an engine, a generator drivable by the engine, a voltage regulator for controlling the generator, a windshield having a heater, and a battery, said ice melting system comprising:
a first switch disposed in a circuit interconnecting the generator and the heater so that AC electric energy generated by the generator is supplied to the heater when said first switch is closed;
a rectifier for rectifying AC electric energy generated by the generator into DC electric energy;
a second switch disposed in a circuit interconnecting the rectifier and the battery;
voltage dividing means for dividing a voltage produced by said rectifier at a predetermined ratio;
a third switch shiftable between a first condition in which the voltage regulator is connected to said circuit interconnecting the rectifier and the battery, and a second condition in which said voltage dividing means is connected to the voltage regulator when the heater operates;
operation command means for giving an operation command to command operation of the heater; and
a control circuit for closing said first switch, opening said second switch, and shifting said third switch to said second condition when said operation command means commands operation of the heater.

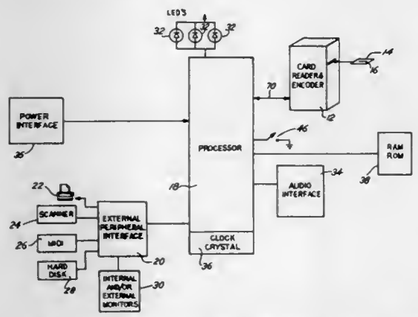
VOL 1147 ISS 3 FE 16 1993 UMI

5,187,351
PROCESSING OF BANK DOCUMENTS
John G. Clary, Pasadena, Calif., assignor to Addmaster Corporation, Monrovia, Calif.
Continuation of Ser. No. 580,276, Sep. 10, 1990, abandoned. This application Feb. 24, 1992, Ser. No. 839,712
Int. Cl.[5] G06G *15/30*
U.S. Cl. 235—379 12 Claims



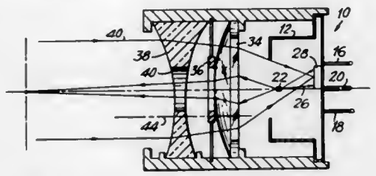
1. In the art of processing a bank document upon which characters pre-printed in magnetic ink identify both a particular bank and a particular account, and upon which ordinary numerals have also been written to specify the dollar amount of a financial transaction, the process of then preparing the document for clearing, which comprises the steps of:
under manual control, creating a first set of electronic signals which are intended to represent the dollar amount;
then, in direct response to said first set of electronic signals, printing a corresponding number representing the dollar amount on a selected are of the document both in man-readable numerals and in non-magnetic bar code;
in direct response to said first set of electronic signals, also printing the same number in man-readable numerals on a batch report;
thereafter optically reading the bar code from the document to create a second set of electronic signals which represent the same number; and
in direct response to said second set of electronic signals, printing the number on the document in Magnetic Ink Character Recognition Code.

5,187,352
MICROPROCESSOR CONTROLLED SECURITY SYSTEM FOR COMPUTERS
William Blair, 1154 W. Lunt, Apt. 302, Chicago, Ill. 60626, and Stanley J. Brooks, P.O. Box 906, Douglas, Ga. 31533
Continuation-in-part of Ser. No. 297,302, Jan. 3, 1989, abandoned. This application Oct. 15, 1990, Ser. No. 597,422
Int. Cl.[5] G06K *5/00*
U.S. Cl. 235—382 26 Claims



1. A microprocessor controlled computer security system for controlling access to components of a computer system, said security system comprising, in combination:
magnetic card reading and encoding means for reading input signals from a magnetically encoded card, said magnetically encoded card including at least one magnetically encoded data track;
microcontroller means for processing said input signals read by said magnetic card reading means and responsively providing computer system component enable and disable signals and indicator signals, wherein a component enable signal is provided in response to a first reading of an input signal by the magnetic card reading means and a component disable signal is provided in response to a subsequent reading of the same input signal by the magnetic card reading means;
component interface means for enabling and disabling at least one component of said computer system in response to said component enable and disable signals provided by said microcontroller means; and
indicator means for indicating the status of said components and said security system in response to said indicator signals.

5,187,353
BAR CODE SYMBOL SCANNER UTILIZING MONITOR PHOTODIODE OF LASER DIODE PACKAGE AS A PHOTORECEIVER
Boris Metlitsky, Stony Brook, and Mark Krichever, Hauppauge, both of N.Y., assignors to Symbol Technologies, Inc., Bohemia, N.Y.
Continuation of Ser. No. 510,979, Apr. 18, 1990, abandoned. This application May 11, 1992, Ser. No. 884,311
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—462 32 Claims

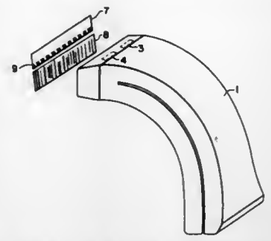


23. A bar code symbol reader, comprising,
a) a light source having a casing and operative for generating a light beam from within the casing, and optics exterior of the casing for directing the light beam along a path toward a symbol to be read; and
b) a detector for receiving reflected light from said symbol resulting from said light beam impinging upon the symbol, said detector being mounted within the casing of sad light source, said reflected light being directed to said detector by said optics, said detector also detecting a representative portion of said light beam directly from said light source.

5,187,354
HAND SCANNER FOR READING BAR CODES AND DEACTIVATING ARTICLE SURVEILLANCE TAGS
Kjell Bengtsson, Bålsta, Sweden, assignor to Esselte Meto Eas Int. AB, Bromma, Sweden
Filed Mar. 18, 1991, Ser. No. 670,430
Claims priority, application Sweden, Mar. 20, 1990, 9001003
Int. Cl.[5] G06K *7/10*; H01F *13/00*
U.S. Cl. 235—472 6 Claims

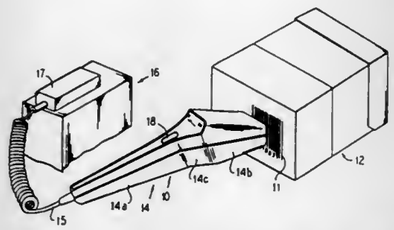
1. A hand scanner for optically reading a bar code located on an item, the item further having a magnetically actuated alarm strip attached thereto proximate said bar code and substantially parallel to the length of said bar code, comprising:
an optical bar-code reading device located in a housing so as to read said bar code through an opening in said housing, and which produces an electrical signal corresponding to said bar code when said opening is positioned over the bar code without moving of the scanner,

wherein said scanner is provided with at least one pair of permanent magnets for imposing magnetization on said alarm strip, each said pair comprising first and second magnets mounted proximate said opening such that the south pole of said first magnet is located on a magnet surface which faces in a first direction toward said bar



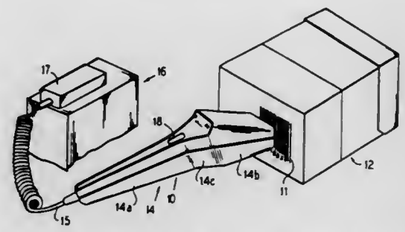
code during scanning and the south pole of said second magnet faces in a direction opposite to said first direction, whereby said first and second magnets produce a magnetic field in front of said opening and between said magnets to produce a sectional magnetization of said alarm strip during reading of the bar code.

5,187,355
INSTANT PORTABLE BAR CODE READER
George F. Chadima, Jr, Cedar Rapids, Iowa, and Vadim Laser, Cincinnati, Ohio, assignors to Norand Corporation, Cedar Rapids, Iowa
Division of Ser. No. 699,149, May 13, 1991, abandoned, which is a division of Ser. No. 523,291, May 11, 1990, Pat. No. 5,021,642, which is a continuation of Ser. No. 335,180, Apr. 7, 1989, abandoned, which is a division of Ser. No. 234,880, Aug. 19, 1988, abandoned, which is a division of Ser. No. 827,286, Feb. 7, 1986, Pat. No. 4,766,300, which is a division of Ser. No. 637,693, Aug. 6, 1984, Pat. No. 4,570,057, which is a continuation of Ser. No. 334,811, Dec. 28, 1981, abandoned. This application Feb. 24, 1992, Ser. No. 839,554
The portion of the term of this patent subsequent to Feb. 11, 2003, has been disclaimed.
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—472 102 Claims



1. A portable instant bar code reader system for reading complete lines of bar code elements, said reader comprising:
(a) a hand-held bar code reader unit having window means providing a bar code sensing region in front of said window means, said window means being arranged for receiving reflections of light from a complete line of bar code elements in the bar code sensing region,
(b) image photodetector means positioned within said hand-held bar code reader unit for sensing light rays reflected through said window means, and operable to generate a bar code image signal in accordance with a complete line of bar code elements in said bar code sensing region, and
(c) an optical system within said hand-held bar code reader unit including a light source arrangement which comprises a light source assembly for generating a sheet of light energy for illuminating a complete line of bar code elements in its entirety in said bar code sensing region so as to produce the reflected light rays representing an entire optical bar code image to be sensed simultaneously by said image photodetector means, and
(d) said optical system providing a resolution and depth of focus such that a complete line of entire bar code elements having substantial curvature can be received simultaneously for reading by said hand-held bar code reader unit, said optical system also providing bar code reading over a depth range of at least ten millimeters.

5,187,356
INSTANT PORTABLE BAR CODE READER
George E. Chadima, Jr., Cedar Rapids, Iowa, and Vadim Laser, Cincinnati, Ohio, assignors to Norand Corporation, Cedar Rapids, Iowa
Division of Ser. No. 364,704, Jun. 9, 1989, which is a division of Ser. No. 339,953, Apr. 18, 1989, Pat. No. 4,894,523, which is a continuation of Ser. No. 234,880, Aug. 19, 1988, abandoned, which is a division of Ser. No. 827,286, Feb. 7, 1986, Pat. No. 4,766,300, which is a division of Ser. No. 637,693, Aug. 6, 1984, Pat. No. 4,570,057, which is a continuation of Ser. No. 334,811, Dec. 28, 1981, abandoned. This application Mar. 26, 1990, Ser. No. 500,030
The portion of the term of this patent subsequent to Feb. 11, 2003, has been disclaimed.
Int. Cl.[5] G06K *7/10*
U.S. Cl. 235—472 73 Claims



1. A portable instant reader for reading complete lines of bar code information comprising a plurality of alternating more-reflective and less-reflective elements carried by a bar code carrier, said reader comprising
a hand-held bar code reader unit having window means providing a bar code sensing region spaced from said hand-held bar code reader unit in front of said window means for receiving a bar code data carrier, said window means for simultaneously receiving reflections of light from a complete line of bar code information comprising a plurality of alternating more-reflective and less-reflective elements disposed in the bar code sensing region,
a photodetector positioned within said hand-held bar code reader unit in the path of said reflections through said window means, said photodetector having a light sensitive region for simultaneously receiving an image of the complete line of bar code information from said bar code sensing region, said reader unit being supported without any contact between the reader unit and the bar code data carrier,
an optical system within said hand-held bar code reader unit positioned between said window means and said photodetector for simultaneously receiving a light pattern from said window means in accordance with the complete line of bar code information and focusing the same onto said sensitive region of said photodetector, and
said optical system providing a resolution and depth of focus such that the complete line of bar code information having

VOL 1147 ISS 3 FE 16 1993 UMI

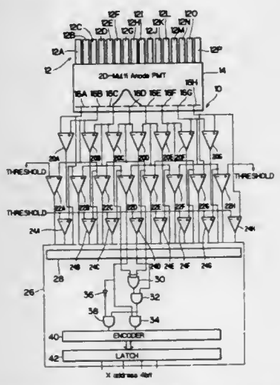
a curvature can be simultaneously read by said hand-held bar code reader unit.

5,187,357

POSITION DETECTOR USING TWO DIMENSIONAL MULTI-ANODE PHOTOMULTIPLIER TUBE AND A PLURALITY OF COMPARATORS

Mitsuo Watanabe, Hamamatsu, Japan, assignor to Hamamatsu Photonics K.K., Hamamatsu, Japan

Filed Feb. 27, 1992, Ser. No. 842,488
Claims priority, application Japan, Feb. 27, 1991, 3-55830
Int. Cl.[5] G01N *21/86*
U.S. Cl. 250—206.1 10 Claims



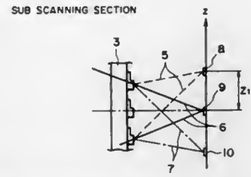
1. A position detector comprising:
a plurality of light illumination segments aligned to one another;
a plurality of photo-detectors aligned and provided in one-to-two correspondence to adjacent two of said plurality of light illumination segments, said plurality of photo-detectors having outputs;
a plurality of first comparators aligned and connected to the outputs of said plurality of photo-detectors, for comparing outputs of adjacent two photo-detectors and outputting a comparison result in the form of a binary signal from an output of each of said plurality of first comparators;
a plurality of second comparators aligned and connected to the outputs of said plurality of photo-detectors, for comparing outputs of two photo-detectors disposed one photo-detector apart and outputting a comparison result in the form of a binary signal from an output of each of said plurality of second comparators; and
an identifying circuit connected to the outputs of said plurality of first comparators and said plurality of second comparators, for identifying one of said plurality of photo-detectors which provides a different output from outputs of the remaining photo-detectors, for selecting a higher output level photo-detector from two photo-detectors adjacent to the identified photo-detector based on an output of one of said plurality of second comparators which compares the outputs of two photo-detectors adjacent to the identified photo-detector, and for identifying one of the two light illumination segments corresponding to the identified photo-detector and disposed at a side of the higher output level photo-detector as the one on which a light is incident.

5,187,358

IMAGE READING DEVICE HAVING A TELECENTRIC OPTICAL SYSTEM AND A BLAZED DIFFRACTION GRATING

Michitaka Setani, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 479,761, Feb. 9, 1990, abandoned. This application May 11, 1992, Ser. No. 884,239
Claims priority, application Japan, Feb. 15, 1989, 1-035692
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 24 Claims



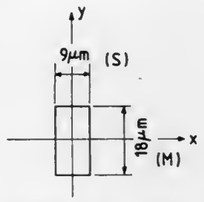
1. An image reading device according to claim 1, wherein said imaging optical system shows a telecentric property within an emerging angle range of 10°.

5,187,359

ELECTRONIC IMAGING DEVICE FOR USE WITH PHOTOGRAPHIC CAMERAS FOR MINIMIZING ASTIGMATISM

Shinichi Mihara, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1990, Ser. No. 635,951
Claims priority, application Japan, Dec. 28, 1989, 1-343525
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.1 3 Claims



1. An electronic imaging device provided with an imaging optical system comprising a photographic lens system, a thin light transmissive plate-like member obliquely intersecting with the optical axis of said photographic lens system, and an electronic image pickup means for receiving light transmitted by said plate-like member having a light receiving surface on which rectangular picture elements are arranged regularly in a lattice pattern and arranged substantially perpendicular to said optical axis, wherein said light receiving surface is located at a position I satisfying the following conditions (1) and (2):

$$\frac{(2M+S)I_S + SI_M}{2(M+S)} < I < \frac{MI_S + (M+2S)I_M}{2(M+S)} \quad (1)$$

$$I_M > I_S \quad (2)$$

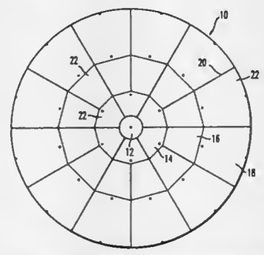
wherein the plane including the normal to said thin plate-like member and said optical axis is taken as the meridional surface, the plane perpendicular to said meridional surface is taken as the sagittal surface, the reference symbol I_M represents co-ordinates of the meridional image point of the image of an object on said optical axis formed by said photographic lens system when said optical axis is taken as the coordinate axis, the reference symbol I_S denotes co-ordinates of the sagittal image point of the image of the object on said optical axis formed by said photographic lens system when said optical axis is taken as the co-ordinate axis, the reference symbol M designates the size as measured along the meridional surface of said rectangular picture element, and the reference symbol S represents the size as measured along the sagittal surface of said rectangular picture element.

5,187,360

ASPHERIC LENS HAVING A PLURALITY OF LENSLETS DISPOSED SUBSTANTIALLY CONTIGUOUSLY IN AN ARRAY

Ian K. Pasco, Bracknell, England, assignor to Combined Optical Industries Limited, Slough, England

Filed Dec. 31, 1990, Ser. No. 633,367
Claims priority, application United Kingdom, Nov. 30, 1990, 9026069
Int. Cl.[5] H01J *40/14*
U.S. Cl. 250—208.2 7 Claims



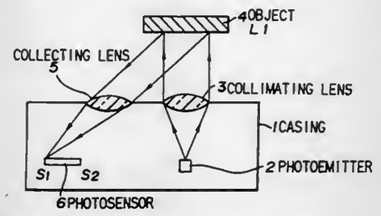
1. A lens comprising a plurality of lenslets disposed substantially contiguously in an array, each lenslet being positioned to receive radiation from a particular zone not substantially overlapping with adjacent zones, and to focus said radiation to a predetermined common point, each lenslet comprising a central portion of a lens, said lens being an optimized aspheric lens.

5,187,361

OBJECT DETECTION APPARATUS OF THE PHOTOELECTRIC REFLECTION TYPE WITH SAMPLED DATA

Takeshi Ishii, Tokyo, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Apr. 16, 1990, Ser. No. 509,402
Claims priority, application Japan, Apr. 25, 1989, 1-104878; Apr. 25, 1989, 1-104879
Int. Cl.[5] G01V *9/04*
U.S. Cl. 250—222.1 15 Claims



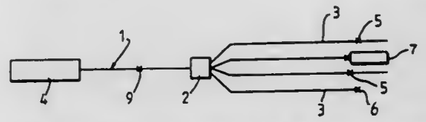
1. An object detection apparatus of the photoelectric type, comprising: an optical source for generating an optical ray; optical incident means having an optical axis extending through a sole observation zone in a direction along a limited observation range for irradiating the optical ray along the optical axis; optical collecting means for collecting the optical ray reflected back from the sole observation zone so as to focus on a given receiving area an optical spot; a single stationary photodetector disposed to cover a part of the receiving area and having an effective detection region dimensioned to determine the limits of the observation range and for receiving and detecting said optical spot to produce an electrical signal indicative of an intensity of the reflected optical ray which originates from either an object or a background, and output means for processing said electrical signal and for outputting a detection signal indicative of the moving of an object into the observation zone within the observation range, said output means including processing means for producing successively sampled data representative of an intensity of the reflected optical ray.

5,187,362

LOSS DETECTION IN A BRANCHED OPTICAL FIBER

Peter J. Keeble, Ipswich, England, assignor to British Telecommunications public limited company, London, England

PCT No. PCT/GB89/01454, § 371 Date Jun. 25, 1991, § 102(e) Date Jun. 25, 1991, PCT Pub. No. WO90/06498, PCT Pub. Date Jun. 14, 1990
PCT Filed Dec. 5, 1989, Ser. No. 688,551
Claims priority, application United Kingdom, Dec. 6, 1988, 8828408
Int. Cl.[5] H01J *5/16*; G01N *21/00*
U.S. Cl. 250—227.15 15 Claims



1. A method of detecting loss in a branched optical fibre network comprising a first optical fibre and a plurality of second optical fibres each of which is coupled to the first optical fibre, the first optical fibre constituting a main line and the second optical fibres constituting branch lines, a respective reflector being associated with each of the branch lines, the method comprising the steps of launching a pulse into the main line and monitoring the main line for attenuation of reflected signals returning from the reflectors, a monitored attenuation of a given reflected signal being indicative of loss in the branch line associated with the reflector giving rise to that reflected signal.

5,187,363

APPARATUS FOR DETECTING MINUTE QUANTITIES OF MOISTURE IN COOLANTS

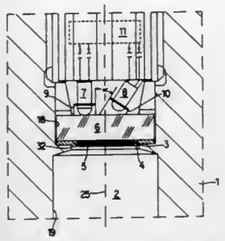
Gebhard Birkle, Constance, Fed. Rep. of Germany, assignor to Bellino GmbH & Co., Göppingen, Fed. Rep. of Germany

Filed Mar. 18, 1991, Ser. No. 671,114
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1990, 4008486
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—227.25 30 Claims

1. Apparatus for detecting the presence of minute quantities of moisture in a body of coolant, particularly for ascertaining and indicating the presence of minute quantities of water in a flow of coolant in a conditioning system, comprising a support; a supply of moisture sensitive material, said supply being confined in said support and being continuously contactible by the body of coolant and the optical properties of said material changing as a result of contact with coolant containing minute quantities of moisture; a source of radiation; means for directing radiation from said source upon the supply of moisture sensitive material so that the moisture sensitive material re-

VOL 1147 ISS 3 FE 16 1993 UMI

flects the radiation and the characteristics of reflected radiation denote the optical properties of moisture sensitive material;

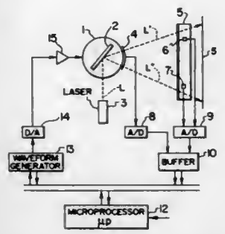


means for generating signals denoting the characteristics of reflected radiation; and means for evaluating said signals.

5,187,364
SCANNING DEVICE WITH WAVEFORM GENERATOR OPTIMIZER

Francois Blais, Orleans, Canada, assignor to National Research Council of Canada/Conseil National de Recherches du Canada, Ottawa, Canada

Continuation-in-part of Ser. No. 492,893, Mar. 13, 1990, abandoned. This application Nov. 14, 1990, Ser. No. 612,578
Claims priority, application Canada, Mar. 22, 1989, 597074
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—236 **8 Claims**



1. A scanning device having a drive system to angularly reciprocate a rotatable element about an axis in a desired waveform, reference means defining said desired waveform, a programmable waveform generator for supplying an excitation signal to the drive system in accordance with said desired waveform, a position sensor for generating a signal representing the actual waveform of reciprocation of the rotatable element, and a microprocessor having

(a) means for determining an actual error signal representing an error between the actual waveform as determined by the position sensor and the desired waveform as determined by the reference means,

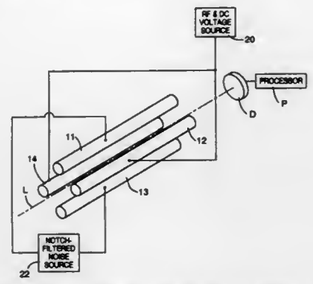
(b) means for generating a model of the scanning device for generating an attempted error signal, and

(c) a waveform optimizer for receiving said actual error signal and for delivering an excitation correction signal to the waveform generator to adjust the excitation signal from the waveform generator to cause the rotatable element to have an actual waveform substantially in accordance with the desired waveform.

5,187,365
MASS SPECTROMETRY METHOD USING TIME-VARYING FILTERED NOISE

Paul E. Kelley, San Jose, Calif., assignor to Teledyne MEC, Mountain View, Calif.

Continuation-in-part of Ser. No. 662,217, Feb. 28, 1991, Pat. No. 5,134,286. This application Nov. 6, 1991, Ser. No. 788,581
Int. Cl.[5] H01J *49/42*
U.S. Cl. 250—282 **24 Claims**



1. A mass analysis method, including the steps of:

(a) establishing a quadrupole field in a region within a quadrupole mass filter, said quadrupole mass filter having electrodes oriented substantially parallel to a central axis, and said region having a first end and a second end separated from the first end along the central axis;

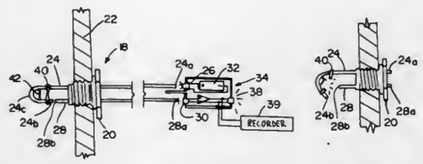
(b) after step (a), introducing ions into the region from said first end;

(c) while performing step (b), applying a timevarying filtered noise signal across a first subset of the electrodes to reject unwanted ones of the ions radially from the region, thereby allowing a selected sequence of the ions to propagate axially through the region to the second end of the region.

5,187,366
SENSORS FOR DETECTING LEAKS

Joram Hopenfeld, 1724 Yale Pl., Rockville, Md. 20850

Continuation-in-part of Ser. No. 720,229, Jun. 25, 1991. This application Nov. 27, 1991, Ser. No. 799,116
Int. Cl.[5] H01J *5/16*
U.S. Cl. 250—302 **24 Claims**



1. A sensor for detecting the presence of a particular fluid, comprising:

a first fiber optic having a first end adapted to be juxtaposed to a source of illumination and a second end;

a second fiber optic having a first end adapted to be juxtaposed to a detector of illumination and a second end;

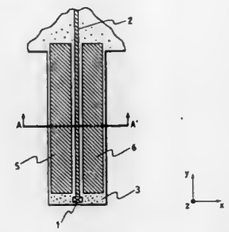
said second end of said second fiber optic being disposed in a particular efficient light-transmitting relationship with said second end of said first fiber optic in the absence of said particular fluid; and

means for moving said second ends of said first and second fiber optics with respect to one another so as to alter said particular efficient light-transmitting relationship responsive to the presence of the particular fluid.

5,187,367
CANTILEVER TYPE PROBE, SCANNING TUNNELING MICROSCOPE AND INFORMATION PROCESSING DEVICE EQUIPPED WITH SAID PROBE

Toshihiko Miyazaki, Hiratsuka; Hiroyasu Nose, Zama; Takayuki Yagi, Machida; Toshimitsu Kawase, Atsugi, and Katsuhiko Shinjo, Isehara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 8, 1991, Ser. No. 742,436
Claims priority, application Japan, Aug. 14, 1990, 2-213765; Sep. 19, 1990, 2-251452
Int. Cl.[5] G11B *9/00*
U.S. Cl. 250—306 **20 Claims**

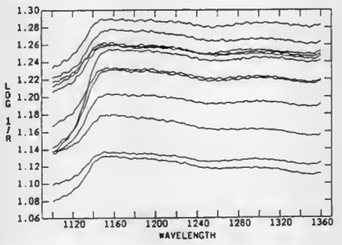


1. A cantilever type probe comprising a cantilevered-shape displacement element having two layers of piezoelectric material and first second and third pairs of driving electrodes which displace said two layers of piezoelectric material at an interface thereof and first and second surfaces of said displacement element, respectively, and each electrode of said pairs of driving electrodes being arranged separately within the same plane, and a tip for information input and output connected to a seventh electrode for drawing out information arranged separately from any of said driving electrodes at a free end of either one of said first and second surfaces of said displacement element.

5,187,368
DETECTION METHOD FOR LIQUIDS USING NEAR INFRARED SPECTRA

Leonard J. Galante, Cary, N.C., and Robert A. Lodder, Lexington, Ky., assignors to Glaxo Inc. and The University of Kentucky, RTP, N.C.

Continuation-in-part of Ser. No. 414,799, Sep. 29, 1989, abandoned. This application Sep. 12, 1990, Ser. No. 581,823
Int. Cl.[5] G01N *21/35, 21/51*
U.S. Cl. 250—341 **14 Claims**

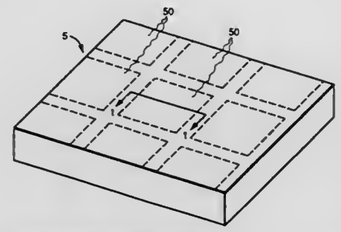


1. A method of detection of microorganisms in a liquid sample to be tested, which comprises i) obtaining near infrared spectra in the range of about 1100 to 1360 nanometers of said liquid sample at a plurality of locations within said liquid sample, ii) obtaining a near infrared spectrum in the range of about 1100 to 1360 nanometers of a standard sample and iii) comparing said liquid sample spectra to said standard sample spectrum with computer assistance.

5,187,369
HIGH SENSITIVITY, HIGH RESOLUTION, SOLID STATE X-RAY IMAGING DEVICE WITH BARRIER LAYER

Jack D. Kingsley; Robert F. Kwasnick; Ching-Yeu Wei, and Richard J. Saia, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 590,848, Oct. 1, 1990, abandoned. This application Sep. 19, 1991, Ser. No. 762,708
Int. Cl.[5] G01T *1/20, 1/202*
U.S. Cl. 250—370.11 **27 Claims**



1. A radiation image comprising:

a plurality of photodetectors arranged in an array, each of said photodetectors having an active area in which luminescence is converted to an electrical signal;

a barrier layer disposed over said active area of each of said photodetectors, said barrier layer being substantially impervious to organic solvents;

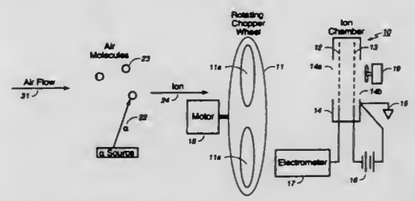
a plurality of scintillator support islands, each of said islands being disposed on said barrier layer to be substantially aligned with at least one active area of respective ones of said photodetectors, each of said support islands having a first end surface and a second end surface, said first end surface adjoining said barrier layer; and

a scintillator array comprising a plurality of individual scintillator elements, each of said individual scintillator elements having a columnar configuration and being disposed on respective ones of said support islands.

5,187,370
ALTERNATING CURRENT LONG RANGE ALPHA PARTICLE DETECTOR

Duncan W. MacArthur, and James L. McAtee, both of Los Alamos, N. Mex., assignors to University of California, Alameda, Calif.

Filed Nov. 27, 1991, Ser. No. 799,464
Int. Cl.[5] G01T *1/185*
U.S. Cl. 250—379 **9 Claims**



1. An alternating current alpha particle detector that operates by detecting air ions created by collisions with alpha particles comprising:

an electrically conductive enclosure defining first and second openings for admitting and exhausting air;

first and second electrically conductive grids insulatively mounted and spaced apart within said enclosure;

means for generating an electrical voltage, said electrical voltage having one terminal connected to said second

VOL 1147 ISS 3 FE 16 1993 UMI

electrically conductive grid and its other terminal connected to said electrically conductive enclosure, creating an electric field in said space between said first and second electrically conductive grids as well as between said first and second electrically conductive grids and said electrically conductive enclosure;

fan means mounted outside said enclosure adjacent to said second opening for drawing air containing said air ions through said first opening in said enclosure and into said space between said first and second electrically conductive grids;

ion interrupt means located outside of said conductive enclosure and near said first opening for intermittently interrupting and passing said air ions through said first opening; and

detecting means connected to said first electrically conductive grid for indicating an alternating current through said first electrically conductive grid produced by said air ions.

5,187,371

CHARGED PARTICLE BEAM APPARATUS

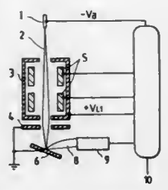
Hirooobu Matsui, An Yang, Rep. of Korea, and Mikio Ichihashi, Kodaira, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 18, 1991, Ser. No. 686,922

Claims priority, application Japan, Apr. 19, 1990, 2-101778; Apr. 19, 1990, 2-101779; Apr. 27, 1990, 2-110116

Int. Cl.[5] H01J *3/10*

U.S. Cl. 250—396 R **50 Claims**



1. A charged particle beam apparatus, comprising:

a charged particle beam generating means for generating a charged particle beam; and

a charged particle beam converging means, including at least an objective lens, for converging said charged particle beam on a sample;

wherein said objective lens is an electrostatic objective lens having a first and a second electrode operably positioned opposite to each other and having respective openings through which said charged particle beam passes;

said first electrode and said second electrode are relatively located close to said charged particle source and to said sample, respectively;

said first electrode is supplied with a more positive potential than that supplied to said second electrode when said charged particle beam is a negatively charged particle beam;

said first electrode is supplied with a more negative potential than that supplied to said second electrode when said charged particle beam is a positively charged particle beam; and

the principal plane of said electrostatic objective lens is located between said second electrode and said sample.

5,187,372

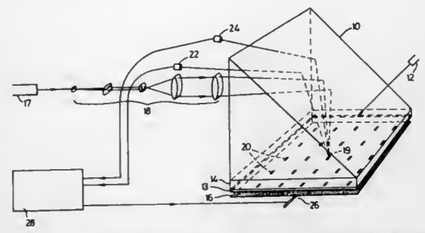
APPARATUS FOR AND A METHOD OF TRANSVERSE POSITION MEASUREMENT IN PROXIMITY LITHOGRAPHIC SYSTEMS

Francis S. M. Clube, Neuchatel, Switzerland, assignor to Holtronic Technologies Ltd., Neuchatel, Switzerland

Filed Oct. 8, 1991, Ser. No. 774,519

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—548 **21 Claims**



1. Apparatus for transverse position measurement in a proximity lithographic system including:

(a) a mask lying above, parallel and in proximity to a recording surface;

(b) a transmissive linear grating structure in the mask, the grating being accurately referenced with respect to other features in the mask;

(c) a reflective crossed grating structure on the recording surface, the crossed grating being accurately referenced with respect to other structures on the recording surface, being sited underneath the grating in the mask, and with its orientation such that the grating vector of one of its components lies substantially parallel to the grating vector of the mask grating;

(d) a laser source;

(e) optical elements for providing collimated illumination of said grating structures from said laser source at or near normal incidence, the illumination incident first on the grating in the mask;

(f) means for detecting the reflected plus and minus first diffracted orders of a first orthogonal order set emanating from the interaction, the orthogonal order set being diffracted in a direction perpendicular to the grating vector of the mask grating, the geometry of the grating system and charateristics of the illumination beam being such that the light in the detected orders has substantially avoided the grating in the mask on its outward pass there-through;

(g) means for adjusting in small increments the relative positions of the mask and recording surface gratings, each position being with respect to the intersection of the line of the illumination beam and the respective grating surface, and in the direction of the grating vector of the mask grating; and

(h) means for processing the outputs of the detecting means to generate an alignment signal corresponding to the relative positions of the mask and recording surface gratings.

5,187,373

EMITTER ASSEMBLY FOR USE IN AN OPTICAL TRAFFIC PREEMPTION SYSTEM

George A. Gregori, New Brighton, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 6, 1991, Ser. No. 756,321

Int. Cl.[5] G02B *27/00*

U.S. Cl. 250—551 **21 Claims**

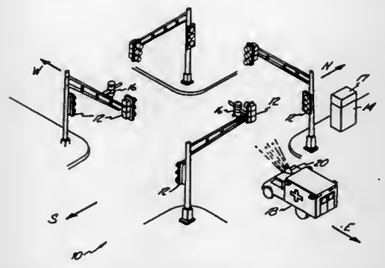
1. An optical signal emitter assembly for remotely controlling traffic signal lights and adapted to be affixed to an authorized vehicle, the optical emitter assembly comprising:

a housing;

a light source for converting a supply voltage into a power signal capable of activating the light source;

timing means coupled to the power supply and the light source, for controlling the repetition rate and duration of light pulses; and

collimating means including a honeycomb element having a plurality of cells, with each cell having an opening that extends form a front through to a rear of the cell, said



element being positioned in front of the light source, for collimating the light pulses emitted by the light source thereby resulting in a pulsed light beam capable of activating a first photodetector channel coupled to the traffic signal lights to be controlled, while not activating other photodetector channels proximate to the first photodetector channel, but coupled to other traffic signal lights which are not to be controlled.

5,187,374

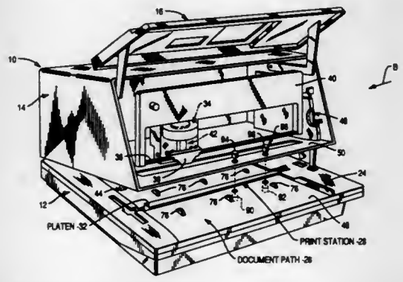
OPTICAL PAPER SENSING METHOD AND APPARATUS HAVING LIGHT SOURCE AND DETECTOR MOVEABLE IN PIVOTAL RELATION

Richard E. Rogers, Kettering; Larry D. Turvy, Jr., Bellbrook; George J. Eberhardt, Centerville, and Richard E. Loughman, Bellbrook, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Mar. 21, 1991, Ser. No. 672,800

Int. Cl.[5] G01N *21/86*

U.S. Cl. 250—561 **2 Claims**



1. An apparatus comprising:

a station having a first and second guides for guiding an item to said station; said first guide having a raised position and a lowered position and being in pivotal relation with said second guide;

a first light source and a second light source mounted in spaced relationship in said first guide;

a first detector and a second detector mounted in spaced relationship in said second guide to receive light from said first and second light sources, respectively, when said first guide is in said lowered position;

a control means including a processor and a memory storing a program controlling said apparatus after start up of said control means;

a first resistor network coupled to said first light source to vary the output thereof; and

a second resistor network coupled to said second light source to vary the output thereof;

said program being effective after every start up to compensate for misalignments between said first and second light sources of said first guide and said first and second detectors of said second guide, respectively, when said first guide is in said lowered position;

said program being effective to select a predetermined resistance value from said first resistor network so as to generate a predetermined output in said first detector and also to select a predetermined resistance value from said second resistor network so as to generate a predetermined output in said second detector.

5,187,375

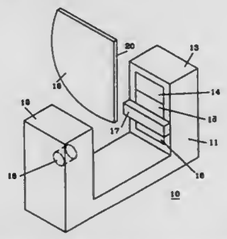
OPTICAL OBJECT EDGE DETECTOR USING PARTIALLY COVERED REFERENCE SENSOR

Billy R. Masten, Shallowater, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 11, 1990, Ser. No. 626,119

Int. Cl.[5] G01N *21/86, 9/04*

U.S. Cl. 250—561 **14 Claims**



1. An optical object edge detector, comprising:

a light source;

an edge detector sensor;

a partially covered reference light sensor to create a reference signal;

a pair of amplifiers, each connected to one of the light sensors; and

a third amplifier having it inputs connected directly to the outputs of said pair of amplifiers;

wherein light from the light source is interrupted when the leading edge of a moving object passes between the light source and the light sensors, the same edge of the object interrupting the light to both light sensors.

5,187,376

PRINT MONITORING APPARATUS WITH DATA PROCESSING

Yutaka Hashimoto, Ayase; Mitsuhiko Iida, Yokohama; Makoto Hayashi, Zama; Sizunori Kaneko, Odawara, and Masahiro Nakazato, Numazu, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1991, Ser. No. 811,010

Claims priority, application Japan, Dec. 20, 1990, 2-412429; Dec. 25, 1990, 2-414363

Int. Cl.[5] G01N *21/88*

U.S. Cl. 250—562 **10 Claims**

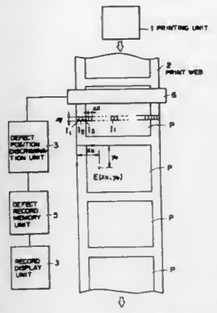
1. A print monitoring apparatus for monitoring a print transport out of a printing unit, comprising:

a defect position discrimination means for discriminating a position of a defect on a print web of the print fed from the printing unit;

a defect memory means for storing defect position informa-

VOL 1147 ISS 3 FEB 16 1993 UMI

tion given from the defect position discrimination means and record information containing defect occurrence time, a number of successive occurrence pages, a roll paper name and a number of used pages; and



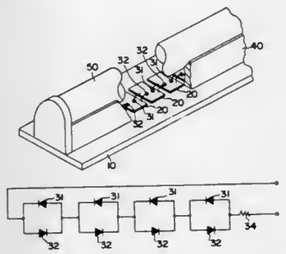
a display means for displaying the information stored in the defect memory means.

5,187,377

LED ARRAY FOR EMITTING LIGHT OF MULTIPLE WAVELENGTHS

Masaaki Katoh, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 362,055, Jun. 6, 1989, abandoned. This application Dec. 17, 1991, Ser. No. 810,366
Claims priority, application Japan, Jul. 15, 1988, 63-94388[U]
Int. Cl.[5] H01L *33/00*
U.S. Cl. 257—89 **3 Claims**



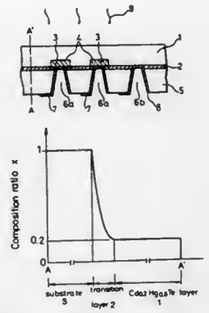
1. An LED array for use as a light source in a contact-type linear image sensor, the LED array comprising a substrate, a pair of reflection plates, a rod lens covering the reflection plates, the reflection plates and the rod lens being mounted on the substrate, a plurality of electrodes spaced at equal intervals between the pair of reflection plates, and multiple pairs of a first LED and a second LED disposed on the respective electrodes in such a manner that the first LED and the second LED are connected in parallel, the first LED and the second LED having different ranges of wavelength, the LED pairs being connected in series wherein the first LEDs and the second LEDs are arranged in opposite directions relative to each other so that currents flow through the first LEDs and the second LEDs in opposite directions whereby either the first or the second LEDs emit light depending upon the direction of current flow.

5,187,378

PHOTODETECTOR

Tohru Takiguchi, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1991, Ser. No. 739,507
Claims priority, application Japan, Aug. 7, 1990, 2-2111
Int. Cl.[5] H01L *31/02, 29/225*
U.S. Cl. 257—188 **11 Claims**



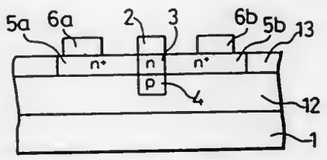
1. A photodetector comprising:
a compound semiconductor substrate comprising first and second elements and having a first energy band gap;
a first conductivity type compound semiconductor light absorbing layer comprising at least one of the first and second elements and having a second energy band gap narrower than the first energy band gap;
a transition layer having an energy band gap at least as wide as the second energy band gap and no wider than the first energy band gap disposed between and contacting the substrate and the light absorbing layer;
at least a first recess extending through the substrate and the transition layer to the light absorbing layer;
a second conductivity type region disposed in the light absorbing layer at the first recess;
a first electrode disposed in the first recess in contact with the second conductivity type region; and
a second electrode disposed in contact with the first conductivity type light absorbing layer.

5,187,379

FIELD EFFECT TRANSISTOR AND MANUFACTURING METHOD THEREFOR

Minoru Noda, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 13, 1991, Ser. No. 759,913
Claims priority, application Japan, Feb. 14, 1991, 3-44244
Int. Cl.[5] H01L *29/80, 21/265*
U.S. Cl. 257—192 **12 Claims**



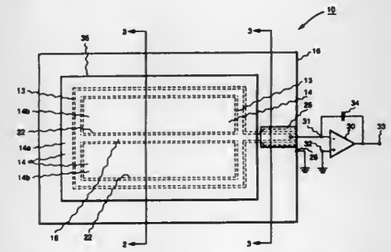
1. A field effect transistor comprising:
a semi-insulating substrate having a surface;
first conductivity type source and drain regions having a dopant concentration and disposed in said substrate at said surface;
a first conductivity type channel layer having a dopant concentration lower than the dopant concentration of said source and drain regions disposed in said substrate at said surface between and connecting said source and drain regions;
a first second conductivity type buried region disposed in said substrate adjacent to and contacting said first conductivity type channel layer but not contacting said source and drain regions;
a gate electrode disposed on said surface and said channel layer opposite said buried region; and
a source electrode electrically contacting said source region and a drain electrode electrically contacting said drain region.

5,187,380

LOW CAPACITANCE X-RAY RADIATION DETECTOR

Gerald J. Michon, Waterford; Dale M. Brown, Schenectady; Marvin Garfinkel, Niskayuna, and Dominic A. Cusano, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 9, 1992, Ser. No. 865,515
Int. Cl.[5] H01L *27/14;* **G01T** *1/24*
U.S. Cl. 257—428 **24 Claims**



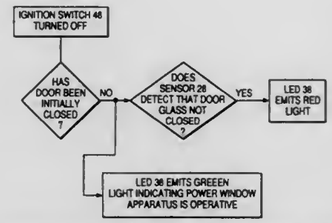
1. A low capacitance radiation detector comprising:
a monocrystalline semiconductor substrate doped to one type conductivity;
a first semiconductor layer epitaxially grown on said substrate and doped to said one type conductivity, said first semiconductor layer being more lightly doped than substrate;
a plurality of upper surface layer segments of said first semiconductor layer being doped to said one type conductivity more heavily than the remainder of said first semiconductor layer; and
a patterned region of said first semiconductor layer being heavily doped to conductivity type opposite said one type conductivity, said patterned region taking the shape of substantially parallel stripes joined at each end thereof by a respective stripe perpendicular to said parallel stripes, each of said stripes extending from the upper surface of said first semiconductor layer further than said upper surface layer segments into said remainder of said first semiconductor layer and forming a minority charge carrier-collecting PN junction therewith, said patterned region being situated between adjacent ones of said upper surface layer segments and being separated therefrom;
said first semiconductor layer exhibiting a predetermined minority charge carrier recombination diffusion length, said parallel stripes being spaced apart from each other by a distance smaller than or comparable to the minority charge carrier recombination diffusion length for said first semiconductor layer, and the thickness of said first semiconductor layer being smaller than or comparable to said minority charge carrier recombination diffusion length.

5,187,381

SWITCH DEVICE FOR USE IN A POWER DRIVEN WINDOW APPARATUS

Hiroki Iwasa; Chikao Nagasaka; Masuyuki Ueda; Shigeru Kato; Hisashi Aoki; Makoto Shibahara, and Satoshi Mori, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, Aichi, Japan

Filed Nov. 24, 1989, Ser. No. 440,120
Claims priority, application Japan, Nov. 25, 1988, 63-153267[U]
Int. Cl.[5] B60J *1/08*
U.S. Cl. 307—10.1 **15 Claims**



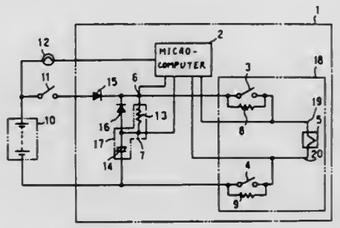
15. A switch device for use in a power window apparatus for opening and closing a window glass of a vehicle through the operation of driving means, comprising:
an operating switch for operating said driving means;
a display unit disposed in the vicinity of said operating switch;
display controlling means, operated by means of said operating switch, for displaying on said display unit whether or not said driving means is operative; and
a window glass detecting sensor for detecting whether or not said window glass is fully closed, said display controlling means being adapted to display on said display unit on the basis of an output of said window glass detecting sensor whether or not said window glass is fully closed.

5,187,382

APPARATUS FOR DETECTING THE EXISTENCE OF AN ABNORMALITY IN A VEHICLE OPERATOR PROTECTION SYSTEM

Akira Kondo, Okazaki, Japan, assignor to Nippoodenso Co., Ltd., Kariya, Japan

Filed Apr. 15, 1991, Ser. No. 684,767
Claims priority, application Japan, Apr. 16, 1990, 2-100131
Int. Cl.[5] B60L *3/00*
U.S. Cl. 307—10.1 **14 Claims**



1. An operator protection system for use with a vehicle, comprising:
a battery having a battery voltage stored therein for providing electric power and being mounted on said vehicle;
means, supplied with said electric power, for actuating an

VOL 1147 ISS 3 FE 16 1993 UMI

operator protection device at a predetermined time, said actuating means comprising:

means for detecting a collision of said vehicle; and

a squib for actuating an air bag when said collision is detected;

auxiliary power supply means, charged by said battery to attain a charging voltage, for supplying backup electric power to said actuating means when said electric power being supplied by said battery to said actuating means is interrupted, said auxiliary power supply means comprising a capacitor;

means for determining a predetermined condition of said auxiliary power supply means, comprising:

means for detecting a magnitude of said charging voltage being stored in said auxiliary power supply means and a magnitude of said battery voltage of said battery during a period when said battery is charging said auxiliary power supply means such that variations in said battery voltage do not affect said charging voltage;

means for calculating, during a predetermined period of time, a plurality of voltage differences between said magnitude of said charging voltage and said magnitude of said battery voltage; and

means for adding said voltage differences to calculate a value representing a charging capability of said auxiliary power supply means;

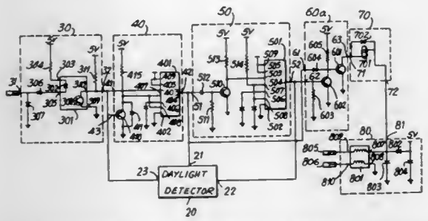
said determining means determining said predetermined condition of said auxiliary power supply means in accordance with said value.

5,187,383

HEADLIGHT ACTUATOR ASSOCIATED WITH WINDSHEILD WIPER ACTUATION HAVING DELAY CIRCUITS AND DAYLIGHT DETECTION

Alfonse Taccetta, One Bonnie Briar Rd., Yonkers, N.Y. 10710, and Anthony Fico, 22 Sheridan Ave., Apt. 5B, Mount Vernon, N.Y. 10550

Filed Nov. 6, 1990, Ser. No. 609,587
Int. Cl.[5] B60L *1/14*; B60Q *1/02*; H01H *47/24*
U.S. Cl. 307—10.8 7 Claims



7. A device for actuating headlights of an automobile, comprising:

a time delay circuit having a connector for attachment with a motor of a windshield wiper of the automobile, and an output, the time delay circuit being set to run a timing cycle for a preset time out period upon receiving a pulse from the motor of the windshield wiper of the automobile; and

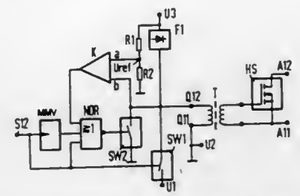
a relay circuit permitting current to the headlights if before completion of the time out period of the time delay circuit one or more additional pulses are generated by the motor of the windshield wiper, the relay circuit having an input connected to the output of the time delay circuit, and an output being connected to a switch for operating the headlights of the automobile.

5,187,384

METHOD AND CIRCUIT CONFIGURATION FOR TRIGGERING A SEMICONDUCTOR SWITCH THROUGH THE USE OF AN INDUCTIVE TRANSFORMER

Reinhard Blöckl, Unterharching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 18, 1990, Ser. No. 584,756
Claims priority, application European Pat. Off., Sep. 19, 1989, 89117326.2
Int. Cl.[5] H03K *17/56, 17/61*
U.S. Cl. 307—246 4 Claims



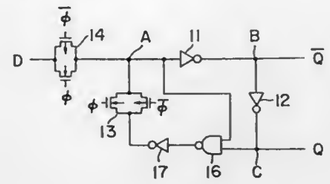
1. Circuit configuration for triggering a semiconductor switch, comprising an inductive transformer having a primary winding and having a secondary winding connected to the semiconductor switch to be triggered, a control input, and control means connected between said control input and the primary winding, said control means including a logic circuit connected to said control input, at least one controllable switch controllable by said control input and connected to the primary winding for switching a voltage with a given polarity to the primary winding, means for demagnetizing said transformer including at least one free-running element connected to the primary winding for switching a voltage with a polarity opposite said given polarity to the primary winding, switch means controllable by said logic circuit and being connected to the primary winding for short-circuiting the primary winding, and detector means having input and output connections, said input connection being connected to the primary winding for detecting when the transformer is demagnetized and said output connection being connected to the logic circuit for controlling said switch means.

5,187,385

LATCH CIRCUIT INCLUDING FILTER FOR METASTABLE PREVENTION

Hideharu Koike, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 162,149, Feb. 29, 1988, abandoned.
This application Aug. 13, 1991, Ser. No. 744,835
Int. Cl.[5] H03K *3/284, 3/286, 17/16*
U.S. Cl. 307—272.1 8 Claims



1. A latch circuit comprising;

data hold means for accepting data upon receipt of a clock signal and for holding said data until receipt of a next clock signal, said data hold means comprising an even number of logic gates, as main active elements of said data hold means, connected in series in a closed loop; and

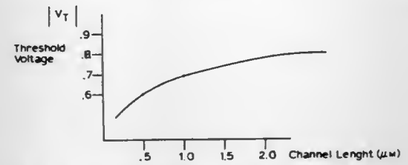
filter means for eliminating a pulse generated within said closed loop, said filter means comprising at least some of said logic gates of said data hold means.

5,187,386

LOW STANDBY CURRENT INTERMEDIATE DC VOLTAGE GENERATOR

Shuen-Chin Chang, San Jose, Calif., and Moon G. Kim, Kyung Ki-Do, Rep. of Korea, assignors to Samsung Semiconductor, Inc., San Jose, Calif.

Filed Jan. 16, 1991, Ser. No. 641,883
Int. Cl.[5] H03K *19/003*
U.S. Cl. 307—296.8 16 Claims



1. A DC voltage generator circuit for generating low standby current comprising:

a first CMOS transistor stage comprising a first transistor of a first conductivity type coupled in series with a second transistor of a second conductivity type, said first and second transistors having channel lengths, channel widths and threshold voltages associated therewith;

a first biasing means coupled to said first transistor;

a second biasing means coupled to said second transistor;

a second CMOS transistor stage coupled to said first CMOS transistor stage comprising a first set of transistors of said first conductivity type with transistors of said first set of transistors coupled in parallel, said first set of transistors coupled in series with a second set of transistors of said second conductivity type, with transistors of said second set of transistors coupled in parallel, transistors within said second stage having channel lengths, channel widths and threshold voltages associated therewith;

wherein:

channel lengths of transistors in said second stage are longer than said channel lengths of transistors of corresponding conductivity types in said first stage; and

channel widths of transistors in said second stage are narrower than said channel widths of transistors of corresponding conductivity types in said first stage.

5,187,387

OVERCURRENT DETECTING APPARATUS

Shuhei Kawauchi, Kariya, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jun. 17, 1991, Ser. No. 716,828
Claims priority, application Japan, Jun. 18, 1990, 2-160291
Int. Cl.[5] H03K *5/153*
U.S. Cl. 307—350 9 Claims

1. An overcurrent detecting apparatus comprising:

a power element;

a sampling resistor coupled to said power element for providing a sampling potential as a function of the current flowing through said power element when current flows through said power element;

a current supply circuit having first and second current outputs;

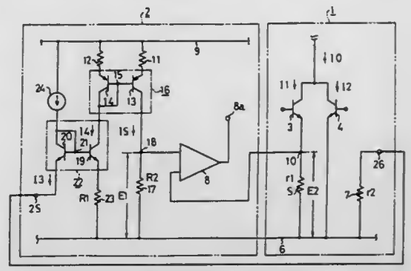
a detector resistor coupled to said first current output in series;

a comparator circuit having a first input coupled across said detector resistor and having a second input coupled across said sampling resistor;

first and second reference resistors having with respect to said sampling and detector resistors, respectively, each a constant relative resistance ratio;

said second reference resistor being coupled to said second current output in series;

a source of constant current coupled to said first reference resistor in series; and



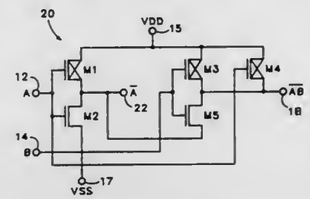
means coupled to said first reference resistor for coupling the voltage drop across said first reference resistor to said second reference resistor for varying the current through said second reference resistor.

5,187,388

COMBINED CIRCUIT CONFIGURATION FOR A CMOS LOGIC INVERTER AND GATE

Thomas H. Moy, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Oct. 21, 1991, Ser. No. 781,487
Int. Cl.[5] H03K *19/20*
U.S. Cl. 307—448 15 Claims



1. A logic circuit (20) comprising:

an inverter (M1-M2) having an input for receiving a first logic signal and an output for providing an inverted first logic signal; and

a logic gate (M3-M5, M4-M6) having a first input for receiving the first logic signal, a second input for receiving a second logic signal, a first power supply node for receiving the inverted first logic signal, a second power supply node for receiving a power supply voltage, and an output for providing a logical function of the first and second logic signals, wherein the logic gate includes

a first transistor (M3) of a first polarity type having a gate coupled to the second input, a drain coupled to the output, and a source coupled to the second power supply node;

a second transistor (M4) of a first polarity type having a gate coupled to the first input, a drain coupled to the output, and a source coupled to the second power supply node; and

a third transistor (M5) of a second polarity type having a gate coupled to the second input, a drain coupled to the output, and a source coupled to the first power supply node.

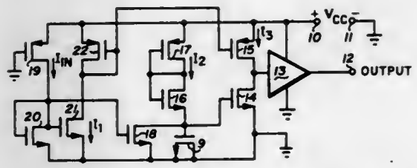
VOL 1147 ISS 3 FEB 16 1993 UMI

5,187,389

NOISE RESISTANT LOW VOLTAGE BROWNOUT DETECTOR WITH SHUT OFF OPTION

Christopher M. Hall, Redwood City, and Kenneth E. Dubowski, Sunnyvale, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 3, 1991, Ser. No. 695,487
Int. Cl.[5] H03K *5/153, 17/00*
U.S. Cl. 307—350 **3 Claims**



1. A CMOS brownout detector circuit connectable to a power supply having positive and negative rails wherein an output indication is provided when said power supply voltage drops below a predetermined brownout level, said circuit comprising:

a first N channel transistor having a gate, a source connected to said negative rail and a drain at which said output indication will appear;

a first P channel transistor having a gate, a source connected to said positive rail and a drain connected to said drain of said first N channel transistor;

a second N channel transistor having its gate connected to its drain;

a second P channel transistor having its gate connected to its drain and connected in series with said second N channel transistor with the series combination connected between said gate of said first N channel transistor and said positive rail;

a third N channel transistor having a gate, a source connected to said negative rail and a drain connected to said gate of said first N channel transistor;

a third P channel transistor having a source connected to said positive rail, a drain connected to said gate of said first P channel transistor and a gate connected to its drain;

a fourth N channel transistor having a gate and having its source returned to said negative rail and its drain connected to said drain of said third P channel transistor;

a fifth N channel transistor having a source connected to said negative rail and a gate and drain coupled together to the gates of said third and fourth N channel transistors thereby to comprise a pair of current mirrors therewith;

a fourth P channel transistor having a source connected to said positive rail, a drain coupled to said drain of said fifth N channel transistor and a gate connected to a source of bias potential that will turn said fourth P channel transistor on whereby said current flow is passed by said second N channel and said second P channel transistors when said power supply exceeds said brownout level and whereby said third N channel transistor will pull the gate of said first N channel transistor low when said power supply drops below said brownout level; and

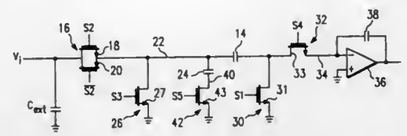
a capacitor connected to said gate of said first N channel transistor whereby said circuit displays increased noise immunity.

5,187,390

INPUT SAMPLING SWITCH CHARGE CONSERVATION

Baker P. L. Scott, III, Austin, Tex., assignor to Crystal Semiconductor Corporation, Austin, Tex.

Filed Jul. 12, 1991, Ser. No. 729,355
Int. Cl.[5] H03K *17/16;* **G11C** *27/02*
U.S. Cl. 307—353 **11 Claims**



1. A capacitor charging circuit comprising:

a) a first switch coupled between an input signal and a first terminal of the capacitor;

b) a series combination of a shunt capacitor and a second switch coupled between said first terminal and a first signal reference;

c) a third switch coupled from a second terminal of the capacitor and a second signal reference; and

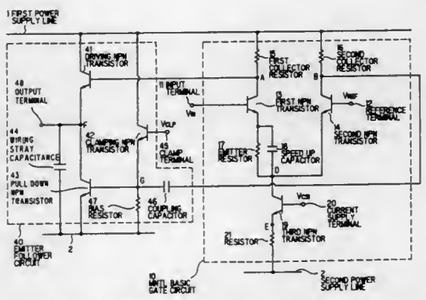
d) wherein said first and second switches are conductive when said third switch changes from a conductive to a nonconductive state, said second switch is conductive and said third switch is nonconductive when said first switch changes from a conductive to a nonconductive state, the charge on said shunt capacitor remaining essentially constant when said second switch is nonconductive.

5,187,391

MODIFIED NON-THRESHOLD LOGIC CIRCUIT

Fumihiro Kamase, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 1, 1991, Ser. No. 723,921
Claims priority, application Japan, Jun. 29, 1990, 2-173945
Int. Cl.[5] H03K *19/013*
U.S. Cl. 307—454 **3 Claims**



1. A modified non-threshold logic (MNTL) circuit comprising:

an MNTL basic gate circuit connected between a first and second power supply line and comprising first, second and third transistors, said first and second transistors becoming ON state selectively in an alternative way, said first transistor being connected to an input terminal and controlled by an input voltage applied to a base of said first transistor therefrom, said second transistor being connected to a reference terminal and controlled by a reference voltage applied to a base of said second transistor therefrom, and said third transistor being connected to a constant current supply terminal and controlled by a constant current supply voltage applied to a base of said third transistor therefrom to flow a constant current through said third transistor, an emitter resistor interconnected between an emitter of said first transistor and a collector of said third transistor, and a speed up capacitor connected in parallel to said emitter resistor between said emitter of said first transistor and said collector of said third transistor; and

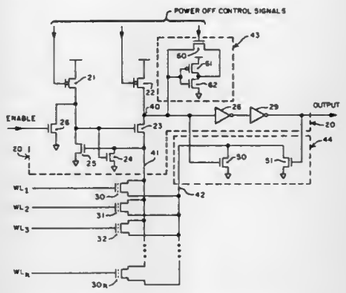
an emitter follower circuit comprising a driving transistor having a base connected to a collector of said first transistor and a collector connected to the first power supply line, a pull down transistor connected at a collector thereof to an emitter of said driving transistor, a clamping transistor connected to a base of said pull down transistor, a bias resistor connected at one end thereof to the base of said pull down transistor and at another end thereof to the second power supply line, and a coupling capacitor connected between said one end of said bias resistor and one of said first and second transistor, said driving transistor being controlled by a collector output of said first transistor of said MNTL basic gate circuit applied to the base of said driving transistor, said pull down transistor being biased at the base thereof by said clamping transistor and said bias resistor having a high resistance and being controlled by the MNTL basic gate circuit.

5,187,392

PROGRAMMABLE LOGIC DEVICE WITH LIMITED SIGNAL SWING

Michael J. Allen, Rescue, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jul. 31, 1991, Ser. No. 738,783
Int. Cl.[5] H03K *19/173, 5/00*
U.S. Cl. 307—465 **8 Claims**



1. A programmable logic device, comprising:

(a) a first bit line;

(b) a plurality of memory cells, each having a drain, a source, a floating gate, and a control gate, wherein the drain of each of the plurality of memory cells is coupled to the first bit line;

(c) a second bit line coupled to the source of each of the plurality of memory cells;

(d) a sensing amplifier coupled to the first bit line for sensing voltage level of the first bit line;

(e) current controlling means coupled to the second bit line and the first bit line for limiting current flow on the first bit line, wherein when the voltage level swings from a first voltage state to a second voltage state, the current controlling means limits the current flow on the first bit line to a predetermined current limit; and

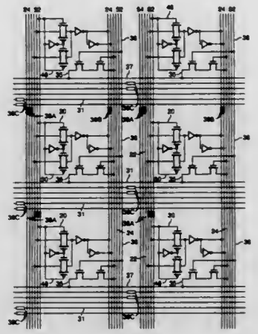
(f) means for clamping the voltage level of the first bit line to swing between the first voltage state and the second voltage state, wherein the clamping means is coupled to the first bit line, wherein when the voltage level approaches the second voltage state, the clamping means provides current to the first bit line, wherein when the voltage level approaches the first voltage state, the clamping means receives current from the first bit line.

5,187,393

RECONFIGURABLE PROGRAMMABLE INTERCONNECT ARCHITECTURE

Abbas El Gamal, Palo Alto, and Steve S. S. Chiang, Saratoga, both of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 621,452, Jan. 15, 1991, which is a division of Ser. No. 309,306, Feb. 10, 1989, Pat. No. 5,015,885, which is a continuation-in-part of Ser. No. 195,728, May 18, 1988, Pat. No. 4,873,459, which is a continuation-in-part of Ser. No. 909,261, Sep. 19, 1986, Pat. No. 4,758,745. This application Apr. 15, 1992, Ser. No. 869,488
Int. Cl.[5] H03K *19/177*
U.S. Cl. 307—465.1 **6 Claims**



1. An interconnect architecture for use in a user-programmable integrated circuit disposed on a semiconductor substrate, said integrated circuit including a plurality of logic function circuits placed in an array on said semiconductor substrate, said array arranged as a plurality of rows and columns of said logic function circuits, each of said logic function circuits including at least one input line and at least one output line, said interconnect architecture including a plurality of first interconnect conductors associated with at least one of said rows or said columns of said array, said first interconnect conductors running in a first direction, said first interconnect conductors oriented substantially parallel to one another and electrically isolated from said logic function circuits, first ones of said first interconnect conductors having a length substantially equal to the distance spanning a first selected number of adjacent ones of said logic function circuits, second ones of said first interconnect conductors having a length substantially equal to the distance spanning a second selected number of adjacent ones of said logic function circuits, third ones of said first interconnect conductors having a length substantially equal to the distance spanning a third selected number of adjacent ones of said logic function circuits, said interconnect architecture further including user-programmable interconnect elements connected between at least some of said first interconnect conductors.

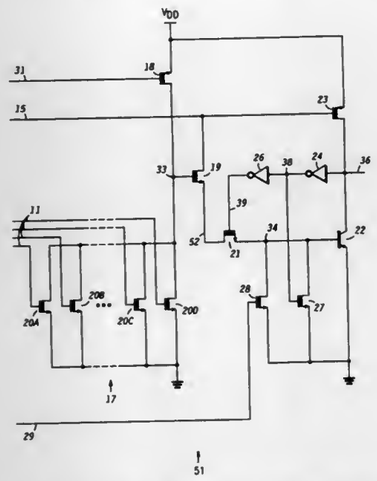
VOL 1147 ISS 3 FE 16 1993 UMI

5,187,394

CONFIGURABLE ROW DECODER DRIVER CIRCUIT

Gary W. Hoshizaki, Mesa; Glen Caby, and Robert A. Fuller, both of Gilbert, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 13, 1992, Ser. No. 819,731
Int. Cl.[5] H03K *19/01*
U.S. Cl. 307—449 13 Claims



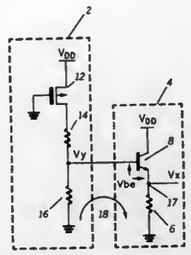
1. A configurable decode circuit for a compiled block architected static random access memory (SRAM) comprising:
a decode circuit having a plurality of address inputs for receiving a plurality of address signals, the decode circuit providing a decoded output signal which signifies a select condition when a unique binary address is received at the address inputs, all other address input combinations generate a logic state signifying a deselect condition;
a delayed clock signal wherein the delayed clock signal is delayed a predetermined amount of time after the address signals arrive at the decode circuit;
a first buffer circuit receiving the decoded output signal, receiving the delayed clock signal, and providing a first buffer output signal, the first buffer circuit buffering the decoded output signal from capacitive and resistive loads, the first buffer circuit inhibited from generating a response to the decoded output signal by the delayed clock signal allowing the decoded output signal to be in the select state prior to starting a decode sequence;
a gated transmission means receiving the first buffer output signal, receiving a delayed driver output signal, and providing a first output signal, the delayed driver output signal enables the gated transmission means for passing the first buffer output signal;
a second buffer circuit receiving the first output signal and providing a driver output signal, the second buffer circuit buffering the gated transmission means from capacitive and resistive loads, the driver output signal logic state signifies a decode select or decode deselect condition; and
a means for delaying the driver output signal, having an input coupled to the driver output signal, and providing the delayed driver output signal delayed by a predetermined amount of time, the means for delaying the driver output signal generates a pulse to the gated transmission means enabling the gated transmission means for a predetermined amount of time.

5,187,395

BIMOS VOLTAGE BIAS WITH LOW TEMPERATURE COEFFICIENT

Yolanda M. Pirez, Miami, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 4, 1991, Ser. No. 637,588
Int. Cl.[5] G06G *7/10*; H03K *17/60*
U.S. Cl. 307—491 10 Claims



1. A BiMOS voltage bias circuit, comprising:
a biasing network to provide a biasing voltage, said biasing network including a voltage divider and a MOS transistor connected in series, said voltage divider having two resistors and a tapped junction between said two resistors, said MOS transistor having a temperature coefficient and a gate electrode connected to a reference voltage for switching said MOS transistor normally ON;
a bipolar transistor voltage amplifier having a base-emitter junction voltage having a temperature coefficient that is opposite from that of said MOS transistor of said biasing network,
said bipolar transistor voltage amplifier having an output node and having its base electrode connected to said tapped junction of said biasing network to receive said biasing voltage, wherein said output node provides a voltage equal to said biasing voltage minus said base-emitter voltage to result in an overall low temperature coefficient for providing a constant output voltage for said amplifier over a predetermined temperature range, and
first resistive means for providing said constant output voltage, said first resistive means connected to the output node of said bipolar voltage transistor amplifier.

5,187,396

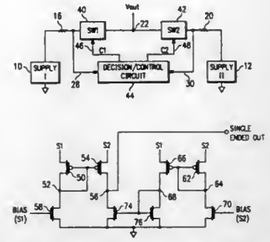
DIFFERENTIAL COMPARATOR POWERED FROM SIGNAL INPUT TERMINALS FOR USE IN POWER SWITCHING APPLICATIONS

Gene L. Armstrong, II, Garland, and Wallace E. Matthews, Richardson, both of Tex., assignors to Benchmarq Microelectronics, Inc., Carrollton, Tex.

Filed May 22, 1991, Ser. No. 704,068
Int. Cl.[5] H03K *5/22, 3/01*
U.S. Cl. 307—494 18 Claims

10. A power steering circuit for selecting the highest voltage on first and second power supplies, comprising:
a common voltage output;
a first switch for being connected between said common voltage output and the first power supply;
a second switch for being connected between said common voltage output and said second power supply;
a decision circuit having a first input for receiving the voltage from the first power supply and a second input for receiving the voltage from the second power supply, said decision circuit for detecting which of said first and second power supplies has the highest voltage;
said decision circuit powered from said first and second inputs at least during the time a decision is being made by said decision circuit; and
first and second control outputs associated with said decision

circuit for controlling the state of said first and second switches, respectively, to connect said common voltage



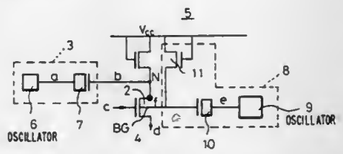
output to the one of the first and second power supplies having the highest voltage thereon.

5,187,397

INTEGRATED SEMICONDUCTOR CIRCUIT WITH IMPROVED BOOST OPERATION SPEED

Miki Nishimori, and Teruo Seki, both of Kasugai, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 18, 1992, Ser. No. 853,296
Claims priority, application Japan, Mar. 18, 1991, 3-051874
Int. Cl.[5] H03K *17/687, 19/01*
U.S. Cl. 307—578 6 Claims



1. An integrated semiconductor circuit employing a boost circuit for generating a voltage higher than a high potential power source, said boost circuit comprising:
a P-channel type transistor as a driver for driving a boosted signal(b) with a boost signal (a); and
a charge-up means for charging a back gate of said P-channel type transistor to a predetermined level in advance of the application of said boost signal to said P-channel type transistor.

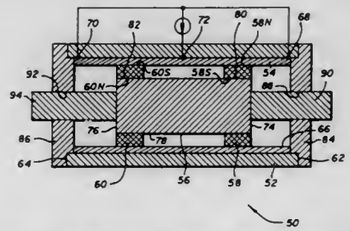
5,187,398

ELECTROMAGNETIC ACTUATOR

Keith O. Stuart, Cypress, and Dennis C. Bulgatz, Reseda, both of Calif., assignors to Aura Systems, Inc., El Segundo, Calif.

Continuation-in-part of Ser. No. 499,046, Mar. 26, 1990, Pat. No. 5,099,158, which is a continuation-in-part of Ser. No. 319,956, Mar. 7, 1989, Pat. No. 4,912,343, which is a continuation-in-part of Ser. No. 238,925, Aug. 31, 1988, abandoned. This application Mar. 23, 1992, Ser. No. 855,771
Int. Cl.[5] H02K *41/00*
U.S. Cl. 310—14 12 Claims

1. An electromagnetic actuator comprising:
a magnetic flux conductive material case having a first case end, a second case end, and an interior wall extending between said first case end and said second case end, and a chamber confined by said interior wall;
an electrical current conductive coil disposed in said chamber coextensively adjacent said wall, said coil having a first coil end disposed proximate said first case end, the second coil end disposed proximate said second case end, and a midpoint;
a magnetic flux conductive material core having a first core end, a second core end, and an exterior wall extending between said first core end and said second core end, said exterior wall having a first region adjacent said first core end and a second region spaced from said first region adjacent said second core end, said core being movably received in said chamber with motion of said core occurring between said first case end and said second case end such that said first region traverses said coil between said first coil end and said midpoint and said second region traverses said coil between said second coil end and said midpoint, said coil and said exterior wall being in a facing relationship with respect to each other;
a pair of magnetic elements, each of said elements having a first magnetic pole face of a first polarity and second magnetic pole face of a second polarity opposite said first polarity, a first one of said magnetic elements being carried by said first region with said first pole face thereof being adjacent said first region and said second pole face thereof being distal said first region in a spaced relation-



ship to said coil, a second one of said magnetic elements being carried by said second region with said first pole face thereof being distal said second region in a spaced relationship to said coil and said second pole face thereof being adjacent said second region so that magnetic flux across said coil between said first region and said interior wall is in a first direction and magnetic flux across said coil between said second region and said interior wall is in a second direction opposite said first direction, said coil being arranged so that an electrical current in said coil between said first coil end and said midpoint flows in an opposite direction with respect to the direction of said current and said coil between said second coil end and said midpoint whereby the flux current cross products of said flux in said first direction with said current and the flux current cross products of said flux in said second direction in said current are additive.

5,187,399

LEVITATED MICROMOTOR

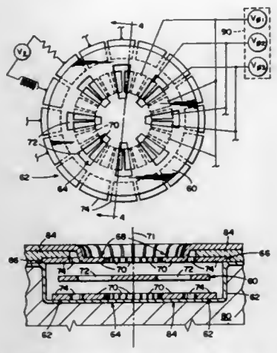
William N. Carr, Wayne, N.J.; Hong Yu, San Jose, Calif., and Dong-Il D. Cho, Princeton Junction, N.J., assignors to The Trustees of Princeton University, Princeton Junction, N.J.

Filed Dec. 19, 1991, Ser. No. 810,386
Int. Cl.[5] H02K *7/00*; H02N *1/00*
U.S. Cl. 310—40 MM 9 Claims

1. An electrostatically levitated micromotor comprising:
generally planar rotor means having an axis of symmetry and including electrically conductive portions;
torque stator means positioned adjacent said rotor means;
multiphase circuitry connected to said torque stator means for enabling rotation of said rotor means about said axis of symmetry;
levitating stator means electrically isolated from said torque stator means, including a plurality of electrode means positioned about said rotor means; and
circuit means connected to pairs of said electrode means for providing circuits that include said conductive portions of said rotor means, and exhibit natural resonant frequencies, said circuit means including power source means that energize each said circuit means at a frequency greater

VOL 1147 ISS 3 FE 16 1993 UMI

than a natural resonant frequency of each said circuit means and electrode means, whereby forces are exerted

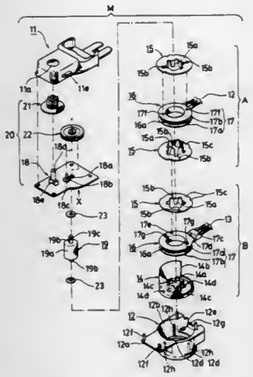


between said levitating stator means and said rotor means that stably levitate said rotor means.

5,187,400
VIBRATION-PROOF STEPPING MOTOR WITH BUILT-UP STATOR

Kazuyuki Kurata, Shizuoka, Japan, assignor to Asmo Co., Ltd., Sbizuoka, Japan

Continuation of Ser. No. 791,324, Nov. 14, 1991, abandoned. This application Jul. 7, 1992, Ser. No. 908,873
Claims priority, application Japan, Nov. 16, 1990, 2-119331[U]
Int. Cl.[5] H02K *37/00, 5/00*
U.S. Cl. 310—49 R **20 Claims**

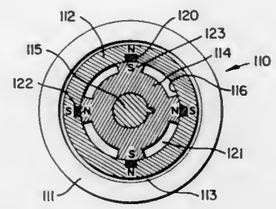


1. A vibration-proof stepping motor of the type having a stator of a built-up construction, comprising:
a lower housing having an internal space;
an upper housing disposed in confrontation to said lower housing; and
a stator and a rotor disposed between said upper and lower housings, said stator being composed of at least two stator cores disposed one above another in said internal space and each including a pair of stator core members and a coil disposed between said stator core members, said rotor being rotatably disposed in said stator and having a rotor shaft and a rotor body integral with said rotor shaft,
wherein said stator is composed of a socket-like stator core member having a plurality of upstanding magnetic poles and a plurality plug-like stator core members each having a plurality of upstanding magnetic poles, said pluglike stator core members being stacked in said socket-like stator core members with said coil disposed between each adjacent pair of said stator core members,
wherein said coil includes a bobbin, windings wound around said bobbin and a plurality of terminals electrically connected with said windings, said bobbin having opposite end flanges between which said windings are disposed, one of said end flanges having a mounting portion carrying thereon said terminals,
wherein said one end flange has a first projection and a lower damper projection, said first projection having a height larger than the thickness of the material of said plug-like stator core members,
wherein the other of said end flanges has at least one second projection having a height smaller than the thickness of the material of said stator core members, and
wherein said plug-like stator core members stacked in said socket-like stator core members together with said coils have an upper end projecting from an upper end of said socket-like stator core member.

5,187,401
COMBINATION HYSTERESIS-RELUCTANCE-PERMANENT-MAGNET MOTOR

M. Azizur Rahman, 19 Johnson Crescent, St. John's, Newfoundland, Canada

Filed Dec. 24, 1990, Ser. No. 632,892
Claims priority, application Canada, Dec. 27, 1989, 2006647
Int. Cl.[5] H02K *21/12*
U.S. Cl. 310—156 **10 Claims**

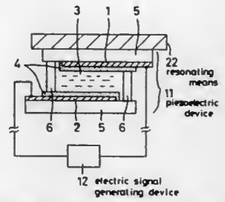


1. In an electric motor having a stator, a hysteresis cylindrical ring formed of magnetic metallic material disposed within said stator core with an annular air space between said hysteresis cylindrical ring and said stator core, and a rotor cylindrical sleeve formed of non-magnetic material relatively rotatably mounted within said hysteresis cylindrical ring on a suitable shaft, the improvement comprising: forming said hysteresis cylindrical ring with "p" longitudinally-extending generally-rectangular slots spaced 360/"p"° apart, and extending from an inner, where "p" is an even number of at least four, cylindrical sleeve with "p" longitudinally-extending, non-magnetically-retentive projections thereon, said projections being spaced 360/"p"° apart, said rotor cylindrical sleeve thereby providing a longitudinally-extending, annular air duct in each of "p" sections; thereby providing a "p"-pole, combination hysteresis-reluctance-permanent-magnet electric motor.

5,187,402
PIEZOELECTRIC DEVICE AND RELATED CONVERTING DEVICES

Masanori Fujita; Shinichi Okamoto, and Hirokazu Ono, all of Tokyo, Japan, assignors to Seikosha Co., Ltd., Tokyo, Japan

Division of Ser. No. 400,612, Aug. 30, 1989, abandoned. This application Sep. 10, 1990, Ser. No. 580,050
Claims priority, application Japan, Aug. 31, 1988, 63-217690
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—322 **8 Claims**

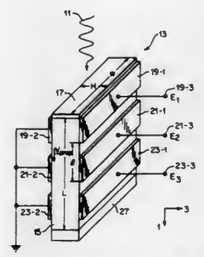


1. In a piezoelectric sound generating module comprising a piezoelectric transducer and a source of electric signals corresponding to sound to be generated by said transducer, the improvement wherein said piezoelectric transducer comprises a ferroelectric liquid crystal panel which comprises a first electrode; a second electrode disposed in opposing relation to said first electrode; a ferroelectric liquid crystal interposed between said first and second electrodes; and a first alignment layer formed between said ferroelectric liquid crystal and said first electrode; said source of electric signals being connected between said first and second electrodes; whereby said ferroelectric liquid crystal panel generates a sound responsive to said electric signals caused by a piezoelectric property thereof.

5,187,403
ACOUSTIC IMAGE SIGNAL RECEIVER PROVIDING FOR SELECTIVELY ACTIVATABLE AMOUNTS OF ELECTRICAL SIGNAL DELAY

John D. Larson, III, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 8, 1990, Ser. No. 520,681
Int. Cl.[5] H03H *9/38;* **H04R** *17/00*
U.S. Cl. 310—334 **5 Claims**

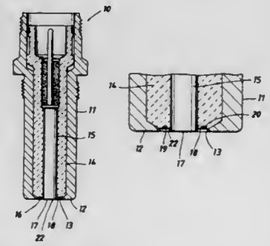


1. Apparatus for producing an electrical signal with a controllable time delay, where the electrical signal is produced by an acoustic signal that propagates from a first spatial point to a second spatial point, the apparatus comprising:
a body of piezoelectric material having a longitudinal dimension; said acoustic signal propagating within the body from the first spatial point, along the longitudinal dimension of the body, to the second spatial point; the body having a first body face and a second opposing body face that are approximately parallel to one another and that are approximately parallel to the longitudinal dimension of the body;
a plurality of pairs of spaced apart electrodes with a first member of each electrode pair being grounded and a second member of each electrode pair being electrically isolated from the first member, and said first and second members of each electrode pair being positioned on the first and second body faces, respectively; the pairs of electrodes respectively being positioned along the longitudinally dimension of the body in such a way that as the acoustical signal propagates along the longitudinal dimension, the acoustic signal consecutively passes between said plurality of pairs of spaced apart electrodes; and
a plurality of individually activatable electrical signal lines; each signal line being connected to a respective second member of a respective electrode pair, wherein activation of any one signal line produces said electrical signal on said any one signal line when said acoustic signal passes between said respective electrode pair.

5,187,404
SURFACE GAP IGNITER

Stephen W. Straub, Easley, S.C., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Aug. 5, 1991, Ser. No. 739,973
Int. Cl.[5] H01T *13/20, 13/02*
U.S. Cl. 313—131 A **6 Claims**



1. An igniter comprising:
a generally tubular shell;
an insulator mounted within said shell;
a center electrode mounted within an axial bore through said insulator, said center electrode having a firing end forming one side of a spark gap;
an annular ground electrode coaxial with said center electrode forming a second side of said spark gap;
said insulator having a firing end extending between said electrodes across said spark gap; and
at least one semiconducting layer means on said insulator firing end extending around said center electrode and spaced from both of said electrodes and not physically contacting both of said electrodes, said semiconducting layer means reducing the voltage required to establish a spark discharge across said spark gap.

5,187,405
DOUBLE FILAMENT INCANDESCENT LAMP

Bernard W. Rachel, Highland Heights; Richard C. LeCrone, Chesterland, both of Ohio, and Michael W. Bowen, Memphis, Tenn., assignors to General Electric Company, Schenectady, N.Y.

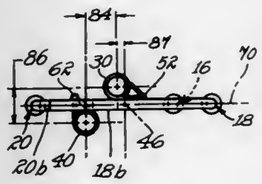
Continuation of Ser. No. 658,204, Feb. 21, 1991, abandoned. This application May 26, 1992, Ser. No. 888,301
Int. Cl.[5] H01J *1/88*
U.S. Cl. 313—316 **13 Claims**

1. An incandescent lamp comprising:
a lamp envelope constructed of a light transmissive material and having a longitudinal axis associated therewith;

VOL 1147 ISS 3 FE 16 1993 UMI

a first and a second filament constructed of a refractory metal disposed within said lamp envelope, said first and second filaments each including a respective one of first and second coils and wherein each of said first and second coils has two legs extending therefrom;

support means for supporting said first and second filaments within said lamp envelope such that the longitudinal axes associated with each filament are aligned in a substantially parallel manner to said lamp envelope longitudinal axis, said support means including a plurality of support wires which extend externally of said lamp envelope on one end such that electrical energy can be coupled to said filaments, and one the other end thereof, extend internally of



said lamp envelope such that said coil legs can be mounted thereto, said plurality of support wires including at least one support wire for providing a common electrical connection to said filaments and at least a second and third support wire for providing a separate electrical connection to each of said filaments individually; and

wherein said first and second filaments are connected to said plurality of support wires by connection joints such that said first and second coils are disposed on opposite sides of a reference plane extending parallel to said lamp envelope longitudinal axis and further wherein said legs extending from each of said coils are substantially aligned with each other and said connection joints are located on one side of said reference plane.

5,187,406

VIBRATION DRIVEN MOTOR

Hiroyuki Seki, Urawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1991, Ser. No. 750,329
Claims priority, application Japan, Aug. 28, 1990, 2-226999
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 **14 Claims**

MATERIAL		Q VALUE	RESONANCE RESISTANCE	RESONANCE FREQUENCY
SINTERING MATERIAL	Fe SERIES	1016	557(Ω)	27.45(KHz)
	Fe-C SERIES	615	652(Ω)	26.43(KHz)
	Fe-Cu-C SERIES	1025	540(Ω)	26.05(KHz)
	Cu SERIES	094	733(Ω)	10.06(KHz)
	SUS SERIES	960	587(Ω)	27.76(KHz)
METAL BY CASTING OR PLASTIC DEFORMATION PROCESS	SUS 420J2	1500	413(Ω)	31.52(KHz)

1. A vibration driven motor comprising:

a contact member having a contact surface; and

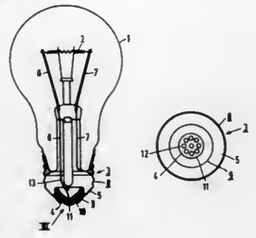
a vibration member having a surface contacting the contact surface of said contact member, for generating a vibration in response to an applied electrical signal, said vibration causing relative movement between said vibration member and said contact member, wherein said vibration member is formed of a sintering material having a porosity of 20% or less.

5,187,407

ELECTRIC LAMP

Livio Borgis; Marco V. P. Piacibello, both of Turin, Italy, and Peter C. Keim, Oostkapelle, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 20, 1991, Ser. No. 795,421
Claims priority, application Netherlands, Nov. 30, 1990, 9002619
Int. Cl.[5] H01K *1/46*
U.S. Cl. 313—318 **2 Claims**



1. An electric lamp comprising:

a. a lamp vessel containing a light source and including at least a first current supply conductor which is electrically connected to the light source and which has a portion disposed exteriorly of the lamp vessel;

b. a lamp cap attached to the lamp vessel and including a base of insulating material carrying at least a first electrical contact, said base and said first electrical contact having respective openings which collectively form a passage for the exterior portion of the first current supply conductor, said first current supply conductor passing through the passage and being affixed to the first electrical contact with solder;

c. first and second current supply conductors electrically connecting the light source to the lamp cap], said first current supply conductor passing through the [first] passage and being affixed to the first electrical contact with solder;

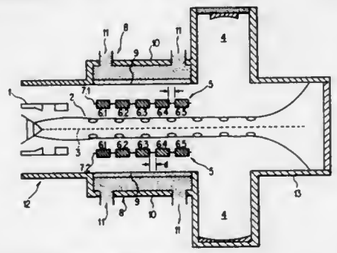
characterized in that the first electrical contact includes a girdle of holes surrounding the solder to confine said solder to a predetermined area of said contact.

5,187,408

QUASI-OPTICAL COMPONENT AND GYROTRON HAVING UNDESIRED MICROWAVE RADIATION ABSORBING MEANS

Bernd Jödicke, Unterehrendingen, and Hans-Günter Mathews, Oberehrendingen, both of Switzerland, assignors to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Jan. 2, 1991, Ser. No. 636,731
Claims priority, application Switzerland, Jan. 15, 1990, 114/90; May 29, 1990, 1819/90
Int. Cl.[5] H01J *23/54*
U.S. Cl. 315—5 **12 Claims**



11. Cyrotron, comprising:

an evacuated vessel with a gyrotron axis;

an electron gun disposed within said vessel for generating an electron beam along said gyrotron axis, said electron beam being itself a source of an unwanted microwave radiation of a certain wavelength and frequency;

within said vessel a drift system arranged along said gyrotron axis between said electron gun and a collector, comprising a beam guide for guiding said generated electron beam, said beam guide comprising an electrically conductive surface enclosing said electron beam and having openings in said conductive surface for the passage of said unwanted microwave radiation;

within said vessel a resonator arranged along said gyrotron axis between said drift system and said collector;

wherein said electron beam excites within said resonator a desired microwave radiation; and

within said vessel a cooled absorption device enclosing said beam guide such that said unwanted microwave radiation which passes through said openings is absorbed within said cooled absorption device;

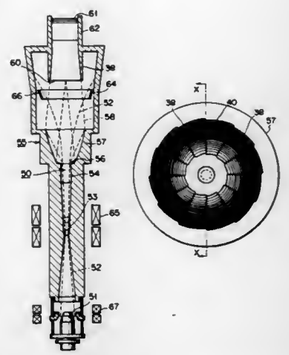
wherein said beam guide comprises a first section with a plurality of metal rings which are spaced apart from each other by a certain distance along said gyrotron axis, said spaced metal rings defining along said gyrotron axis first intermediate spaces as said openings, and said metal rings being held at said distance between each other with the aid of pins.

5,187,409

GYROTRON HAVING A QUASI-OPTICAL MODE CONVERTER

Yasuyuki Ito, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 22, 1991, Ser. No. 673,401
Claims priority, application Japan, Mar. 26, 1990, 2-73274
Int. Cl.[5] H01J *23/40*
U.S. Cl. 315—5 **14 Claims**



11. A gyrotron comprising:

an electron gun, a cavity resonator, and mode converting means for converting an electromagnetic wave mode, generated by gyration of an electron beam which is produced when the electron beam is emitted from the electron gun into the cavity resonator, into a radiated electromagnetic wave mode having an annular power distribution in a sectional plane perpendicular to an axial direction in which the electromagnetic wave mode propagates;

annular mirror means for reflecting the radiated electromagnetic wave mode which has been converted by said mode converting means; and

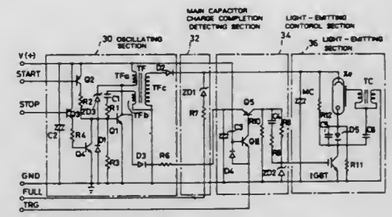
said mode converting means including a waveguide tube provided with a kerf which is located at a position spaced apart from said annular mirror means to receive the electromagnetic wave reflected by said annular mirror means.

5,187,410

ELECTRONIC FLASH DEVICE

Kazuyuki Shimizu, Tokyo; Satoshi Harada, and Masazi Yoshimura, both of Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Apr. 15, 1992, Ser. No. 868,523
Claims priority, application Japan, Apr. 18, 1991, 3-113988; Apr. 18, 1991, 3-113989
Int. Cl.[5] H05B *41/30*
U.S. Cl. 315—241 P **3 Claims**



1. An electronic flash device comprising:

a flash discharge tube;

an IGBT, connected to said flash discharge tube, for controlling light emission;

trigger means for driving said flash discharge tube;

AC voltage generating means having an oscillation transformer for generating an AC voltage from an input voltage; and

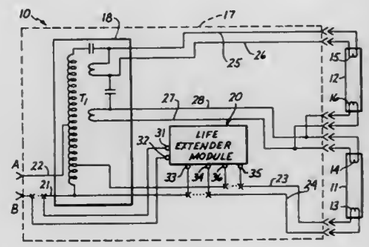
a power supply section for generating a gate drive voltage for said IGBT from a counter electromotive voltage generated at a terminal of a winding of said oscillation transformer.

5,187,411

DISCHARGE LAMP LIFE AND LAMP LUMEN LIFE-EXTENDER MODULE, CIRCUITRY, AND METHODOLOGY

Dudley G. Boyd, and Nian Chen, both of Memphis, Tenn., assignors to Systems and Service International, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 402,484, Sep. 1, 1989. This application Jul. 30, 1991, Ser. No. 738,252
Int. Cl.[5] H05B *41/16*
U.S. Cl. 315—247 **21 Claims**



3. A discharge lamp system comprising:

a ballast including a primary coil and a ballast capacitor, said ballast being adapted to be coupled to a discharge lamp for supplying to the discharge lamp a lamp arc current having a predetermined crest factor;

a waveform conditioning module including a capacitor and being coupled to the ballast in series with the ballast capacitor;

a tuned ICWC Network included in the ballast and coupled to the primary coil of the ballast; and

VOL 1147 ISS 3 FE 16 1993 UMI

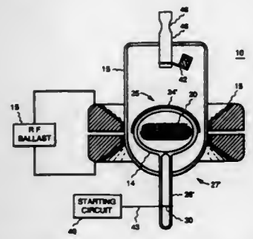
said waveform conditioning module causing the lamp arc current to have a crest factor less than the predetermined value.

5,187,412

ELECTRODELESS HIGH INTENSITY DISCHARGE LAMP

Sayed-Amr A. El-Hamamsy, Schenectady, and Harald L. Witting, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 12, 1992, Ser. No. 850,477
Int. Cl.[5] H05B *41/24*
U.S. Cl. 315—248 **12 Claims**



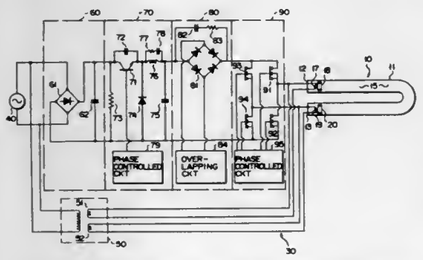
1. An electrodeless high intensity discharge lamp of the type having an excitation coil about an arc tube for exciting a plasma arc discharge therein, comprising:
a light-transmissive outer envelope disposed about said arc tube;
a continuous reflective coating disposed on the upper portion of said arc tube for reflecting light emitted by said arc discharge in a forward direction through the lower portion of said arc tube; and
an elongated support for said arc tube situated within said outer envelope, said elongated support extending in said forward direction and through the corresponding lower end of said outer envelope.

5,187,413

LOW PRESSURE DISCHARGE LAMP APPARATUS

Kenji Araki, Yokosuka; Hiroki Sasaki, Yokohama; Akihiro Ynnezawa, Yokosuka, and Youichirou Mitsuyuki, Tokyo, all of Japan, assignors to Toshiba Lighting & Technology Corporation, Tokyo, Japan

Filed Aug. 30, 1991, Ser. No. 753,066
Claims priority, application Japan, Aug. 31, 1990, 2-228468
Int. Cl.[5] H05B *37/02, 41/36*
U.S. Cl. 315—291 **7 Claims**



1. A low pressure discharge lamp apparatus comprising:
a low pressure discharge lamp having a discharge tube with a mercury/rare gas sealed therein, the discharge tube having a first and second end, the first and second ends each having electrodes, the electrodes defining a discharge space;
a lighting circuit means for lighting the low pressure discharge lamp by supplying a current with a polarity reversed for each half cycle to the electrodes of the first and second ends, the current having a waveform with a flat peak and a maximum current value of the current waveform is restricted to less than a level in which the excitation of mercury atoms is saturated, and
wherein a relation given below is established

$$1.5 \leqq I/S \leqq 6.0 \text{ (amperc/cm}^2\text{)}$$

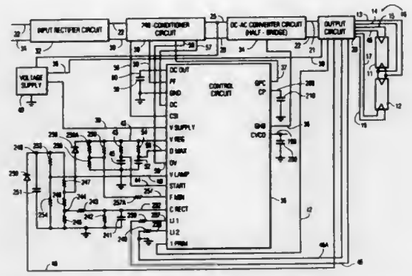
where
I (ampere): a maximum value of the current whose peak is flat; and
S (cm_2): the cross-sectional area of the discharge space.

5,187,414

FLUORESCENT LAMP CONTROLLERS

Mark W. Fellows; John M. Wong, both of Buffalo Grove, Ill.; Edmond Toy, Sunnyvale, Calif.; Robert A. Erhardt, and James A. Thomsen, both of Chicago, Ill., assignors to North American Philips Corporation, New York, N.Y.

Division of Ser. No. 746,074, Aug. 12, 1991, which is a continuation of Ser. No. 516,003, Apr. 27, 1990, which is a division of Ser. No. 219,923, Jul. 15, 1988, Pat. No. 4,952,849. This application Nov. 25, 1991, Ser. No. 797,570
The portion of the term of this patent subsequent to Aug. 28, 2007, has been disclaimed.
Int. Cl.[5] H05B *41/36*
U.S. Cl. 315—307 **4 Claims**



1. A controller for a lamp load comprising:
a DC to AC converter having an AC output for connection to the load and
a preconditioner circuit including a switched mode power supply with an output connected to supply DC voltage to the DC to AC converter and means which synchronize the DC to AC converter and the switched mode power supply to operate at the same frequency.
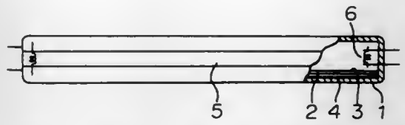
5,187,415

LOW-PRESSURE RARE GAS DISCHARGE LAMP AND METHOD FOR LIGHTING SAME

Takashi Osawa; Katsuo Murakami; Seishiro Mitsuhashi; Yujiro Kamano, and Toshihiko Kobayashi, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1990, Ser. No. 538,084
Claims priority, application Japan, Jun. 13, 1989, 1-150254; Jun. 16, 1989, 1-154214; Jul. 5, 1989, 1-173207
Int. Cl.[5] H01J *61/067*
U.S. Cl. 313—326 **2 Claims**

1. In a low-pressure rare gas discharge lamp maintained at a pressure of less than 0.1 Torr, wherein a rare gas as a light emitting gas is sealed in a bulb and light emitted from the gas by electric discharge is utilized, the improvement characterized in that the light emitting gas is substantially 100% composed of selected rare gases and an isolation film for isolation of said light emitting gas in a discharge space preventing adverse influences caused by interaction of said light emitting gas with residues in said bulb, and thereby increasing an operation life span of said rare gas discharge lamp, wherein said isolation film is provided at least on the inner surface portion of the bulb which portion surrounds a positive column.

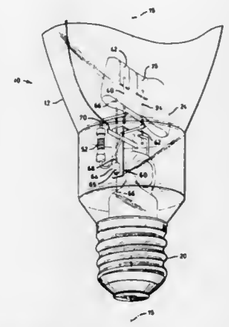


5,187,416

ARC DISCHARGE LAMP WITH A VERTICAL THERMAL SWITCH EXTENDING BETWEEN THE LAMP STEM AND INNER NECK WALL

Simone P. Bazin, Bedford, N.H., assignor to GTE Products Corporation, Danvers, Mass.

Filed Dec. 17, 1991, Ser. No. 808,995
Int. Cl.[5] H01J *7/44, 17/34*
U.S. Cl. 315—73 **11 Claims**



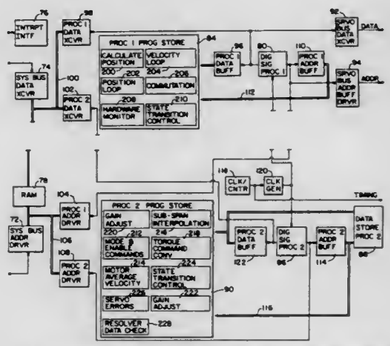
1. An arc discharge lamp comprising:
a light-transmissive lamp envelope having a central axis and a neck, said lamp envelope having a stem extending into said neck;
an arc tube mounted within said lamp envelope, said arc tube including first and second main electrodes and a starting electrode;
means including a lamp base for conducting electrical energy to said main electrodes;
a thermal switch having a longitudinal axis; and
means for mounting said thermal switch within said neck of said lamp envelope with said longitudinal axis of said thermal switch generally parallel to the central axis of said lamp envelope such that said thermal switch extends into the annular space between said lamp stem and a wall of said lamp envelope, said thermal switch electrically connecting said starting electrode to said first main electrode at and above a predetermined temperature.

5,187,417

MOTOR CONTROL APPARATUS AND METHOD

Thomas Minnich, Franklin; Alfred H. Morser, Cincinnati; Stanley L. Myers, Cincinnati, and Stephen T. Walsh, Cincinnati, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Continuation of Ser. No. 563,368, Aug. 6, 1990, abandoned. This application Oct. 3, 1991, Ser. No. 770,744
Int. Cl.[5] H02P *6/02*
U.S. Cl. 318—254 **46 Claims**



1. A method for controlling a brushless DC motor having a plurality of field coils fixed to a motor stator, a rotor rotatable relative to the stator and a position transducer for producing measured position signals representing the relative angular position of the motor rotor and motor stator, the method comprising the steps of:
a. periodically producing a velocity command signal representing a desired relative angular velocity of the motor rotor and motor stator;
b. periodically producing an actual velocity signal in response to the measured position signals, the actual velocity signals representing a measured rate of change of position of the motor rotor relative to the motor stator;
c. periodically producing in response to the velocity command signals and the actual velocity signals, at a loop closure rate defining a predetermined time interval invariant with velocity, current command signals representing a desired motor current;
d. periodically producing in response to the measured position signals and the actual velocity signals, at the loop closure rate, current commutation pattern control signals defining a pattern of conduction through the field coils and representing the instant, relative to a loop closure interval, when a change of commutation patterns is to be effected;
e. periodically producing switch control signals in response to the current command signals, the commutation pattern control signals, and measured motor current; and
f. controlling current delivered to the motor field coils in response to the switch control signals.

22. An apparatus for controlling a brushless DC motor having a plurality of field coils fixed to a motor stator, a rotor rotatable relative to the stator and a position transducer for producing measured position signals representing the relative angular position of the motor rotor and motor stator, the apparatus comprising:
a. digital signal processing means for periodically producing, at a loop closure rate defining a predetermined time interval invariant with motor velocity, current command signals representing a desired motor current and current commutation pattern control signals defining a pattern of conduction through the field coils and representing the instant, relative to a loop closure interval, when a change

VOL 1147 ISS 3 FE 16 1993 UMI

of commutation patterns is to be effected, the digital signal processing means periodically determining the rate of change of position of the motor rotor relative to the motor stator in response to the measured position signals and producing the current command signals in response to a desired rotor velocity and a measured rotor velocity and producing the commutation pattern control signals in response to the measured rotor velocity and the measured rotor position signals;

b. means responsive to the current command signals, the commutation pattern control signals, and measured motor current for producing switch control signals; and

c. switch means responsive to the switch control signals for controlling current delivered to the motor field coils.

5,187,418

METHOD OF CONTROLLING ARTICULATED ROBOT

Yoshikatsu Minami, and Masato Tanaka, both of Kitakyushu, Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Kitakyushu, Japan

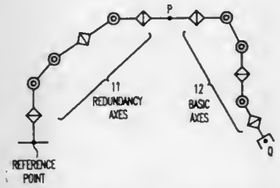
PCT No. PCT/JP91/00063, § 371 Date Sep. 23, 1991, § 102(e) Date Sep. 23, 1991, PCT Pub. No. WO91/10945, PCT Pub. Date Jul. 25, 1991

PCT Filed Jan. 21, 1991, Ser. No. 761,952

Claims priority, application Japan, Jan. 23, 1990, 2-011890

Int. Cl.[5] **G05B** *19/18, 19/415;* **B25J** *9/10*

U.S. Cl. 318—568.19 **2 Claims**



1. A method of controlling an articulated robot having more than six axes and up to twelve axes, comprising the steps of:

dividing the axes of the robot into a first group comprising six axes or less positioned on one side of a first control point on said robot which is a side of said robot where a reference point of said robot is positioned, and a second group comprising six axes or less positioned on the other side of said first control point which is a side of said robot where a robot wrist is positioned, said robot wrist defining a second control-point on said robot, said first group of axes serving as redundancy axes and said second group of axes serving as basic axes;

controlling the first control point of said robot based on said reference point by performing an interpolation calculation to provide for an interpolated motion of said first control point; and

controlling the second control point of said robot to control the robot wrist by performing a further interpolation calculation based on said first control point which serves as a further reference point to provide for an interpolated motion of said second control point.

5,187,419

ELECTRIC MOTOR CONTROL APPARATUS AND METHOD

Robert J. DeLange, St. Francis, Wis., assignor to Allen-Bradley Company, Inc., Milwaukee, Wis.

Filed May 6, 1991, Ser. No. 695,870

Int. Cl.[5] **H02F** *7/00*

U.S. Cl. 318—805 **16 Claims**

10. An apparatus for controlling an induction motor, which is supplied by a source of three-phase electricity having a voltage alternating in polarity at a first frequency, said apparatus comprising:

three bidirectional thyristor switch means, each coupling a phase of the source to one of three windings of the motor;

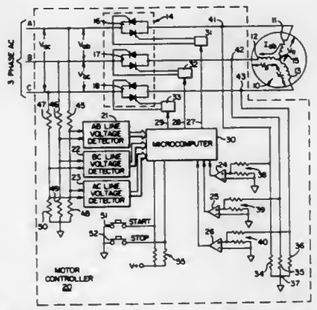
means for generating a control signal;

means for producing, during each of a plurality of consecutive half-cycles of the voltage from one phase of the source, indicia of the polarity of back emf voltage induced in each winding of the motor;

means, coupled to said means for producing, for storing a plurality of polarity indicia for each winding of the motor;

a sensing means for determining polarity of the voltage from the source;

means, responsive to said means for producing and said sensing means, for detecting when the voltage from the source and the back emf voltage have opposite polarities;



means for comparing the stored indicia to detect a predetermined relationship among a plurality of polarity indicia for each winding;

a means for operating said thyristor switch means in a first mode in which current is sent through the motor during every half-cycle of current from each phase of the source, in a second mode commencing in response to the control signal in which said thyristor switch means are operated to send current through the motor in response to detection of the voltage from the source and the back emf voltage having opposite polarities, and in a third mode commencing upon detection of the predetermined relationship in which said thyrsitor switch means are controlled to sent current through the motor at an effective second frequency that is less than the first frequency.

5,187,420

METHOD OF CALCULATING MOTOR CONTROL VOLTAGE AND MOTOR CONTROL DEVICE USING THE METHOD

Tetsuji Kajitani, Kawanishi; Yasumasa Matsuura, Nishinomiya; Hiroyuki Harada, Sakai, and Toshihiko Araki, Kobe, all of Japan, assignors to Mita Industrial Co., Ltd., Japan

Filed Jul. 10, 1992, Ser. No. 550,722

Claims priority, application Japan, Jul. 18, 1989, 1-185605; Jul. 18, 1989, 1-185608; Jul. 18, 1989, 1-185609

Int. Cl.[5] **H02P** *5/16*

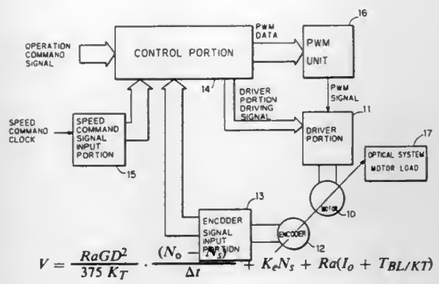
U.S. Cl. 318—823 **5 Claims**

1. A method of controlling the rotational speed of a motor with a voltage responsive control device, said method comprising the steps of:

determining a target rotational speed N_o for the motor;

determining an actual rotational speed N_s of the motor during a predetermined sampling time Δt;

calculating a control voltage V for controlling the rotational speed of the motor according to the following equation:



$$V = \frac{RaGD^2}{375\,K_T} \cdot \frac{(N_o - N_s)}{\Delta t} + K_e N_s + Ra(I_o + T_{BL/KT})$$

where,

Ra: is armature resistance [Ω]

K_T: is a torque constant [kgm/A]

K_e: is an induced voltage constant [Vrpm]

I_O: is no-load current [A]

GD^2: is the moment of inertia by load and motor [kgm^2]

T_{BL}: is sliding load [kgm]; and

applying the control voltage V to the voltage responsive control device to control the speed of the motor.

5,187,421

ELECTROSTATIC TRANSFORMER

Michiko Naito, Tokorozawa, Japan, assignor to Kabushiki Kaisha ENU-ESU, Tokyo, Japan

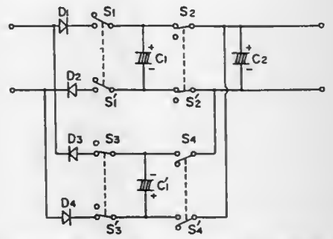
PCT No. PCT/JP89/00875, § 371 Date Apr. 23, 1990, § 102(e) Date Apr. 23, 1990, PCT Pub. No. WO90/02439, PCT Pub. Date Mar. 8, 1990

PCT Filed Aug. 29, 1989, Ser. No. 460,332

Claims priority, application Japan, Aug. 30, 1988, 63-213690; Sep. 14, 1988, 63-228381

Int. Cl.[5] **H02M** *3/07*

U.S. Cl. 320—1 **2 Claims**



1. An electrostatic transformer circuit for isolating an alternating current source from an output comprising:

first and second input terminals for connecting to said alternating current source;

first and second output terminals;

a capacitor having first and second capacitor terminals;

first switch means for simultaneously connecting said first and second capacitor terminals to said first and second input terminals, respectively;

second switch means for simultaneously connecting said first and second capacitor terminals to said first and second output terminals, respectively;

wherein said second switch means are interlocked with said first switch means for successively connecting said capacitor alternately only to each of said input terminals and said output terminals for supplying an alternating current output voltage corresponding to said alternating current source, whereby said output is isolated from said alternating current source;

a second capacitor;

third switch means for simultaneously connecting said second capacitor to said first and second input terminals;

fourth switch means for simultaneously connecting said second capacitor to said first and second output terminals;

wherein said fourth switch means are interlocked with said third switch means for successively connecting said second capacitor alternately only to each of said input terminals and said output terminals, for successively connecting said input terminals alternately to said first and second capacitors, and for successively connecting said output terminals alternately to said first and second capacitors; and

first half wave rectification means connected between first switch means and said input terminals and second half wave rectification means connected between said third switch means and said input terminals; and wherein

said first and second half wave rectification means conduct current during opposite polarity cycles of the alternating current source.

5,187,422

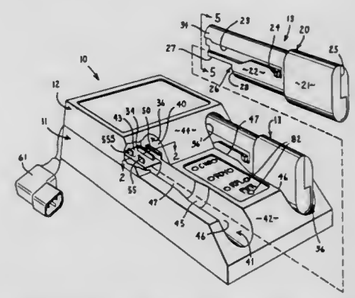
CHARGER FOR BATTERIES OF DIFFERENT TYPE

John M. Izenbaard, Vicksburg; Christopher D. Phillip, Portage, and Michael W. Steffler, Kalamazoo, all of Mich., Assignors to Stryker Corporation, Kalamazoo, Mich.

Filed Jul. 31, 1991, Ser. No. 738,526

Int. Cl.[5] **H02J** *7/00;* **H01M** *10/46*

U.S. Cl. 320—2 **6 Claims**



1. In combination, first and second rechargeable batteries of different ampere hour charge storage capability for different ones of a family of battery powered surgical tools, and a battery charger for charging said first and second batteries at different charge current flow rates, wherein:

said battery charger has first and second polarity charging contacts and sensor means having different states;

said first battery has first contact means for receiving charging current from said charging contacts, including means for causing said sensor means to be in a first said state;

said second battery having second contact means for receiving charging current from said charging contacts, including means for causing said sensor means to be in a second said state;

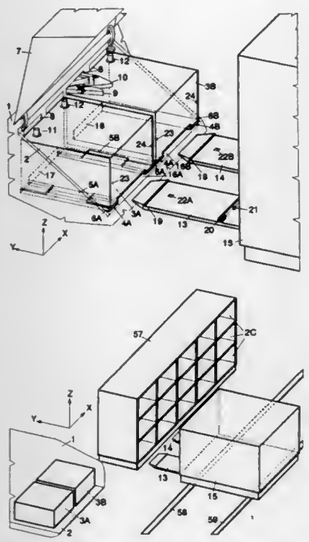
said battery charger further having means responsive to the state of said sensor means for charging said first and second batteries at said different charging current flow rates wherein, on said batteries, said first and second contact means each include a first polarity contact and a second polarity contact, said causing means on said first battery comprising a blank area adjacent said second polarity contact, said causing means on said second battery comprising an extension of said second polarity contact.

VOL 1147 ISS 3 FE 16 1993 UMI

5,187,423
SYSTEM FOR REPLENISHMENT OF ENERGY STORED IN A BATTERY ON AN ELECTRIC VEHICLE

Louis L. Marton, 401 Shirley Pl., No. 105, Beverly Hills, Calif. 90212

Filed May 15, 1991, Ser. No. 700,264
Int. Cl.[5] B60K *1/04*; H22J *7/00*
U.S. Cl. 320—2 6 Claims

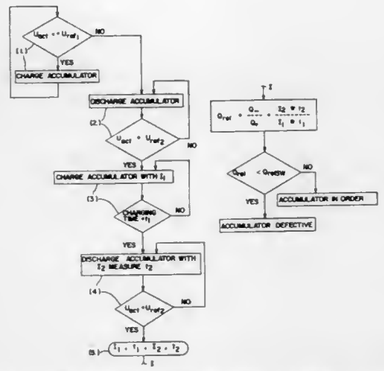


1. A system for replenishment of energy stored in a battery on electric vehicles comprising a vehicle having at least one battery compartment (**2**) at least one battery (**3A, 3B**) in each said battery compartment having two terminals (**11, 12**) protruding from a battery surface, a fork-lift type lifting means (**15**) having at least one lifting plate (**13, 14**) adapted to engage the battery surface, a charging shelf (**57**) having a plurality of compartments (**2C**) for receiving said battery for charging and storage, automatic connector means (**9, 10, 29** to **53**) in each battery compartment, each said connector means having two pairs of gripper members (**9, 10** and **29, 30**) for engaging said two terminals, each said pair of gripper means being capable of rotating around a pin (e.g., **31**) supported by an extension (**32**) of a body of said battery compartment (**2**), two pins (**36, 37** and **43, 44**) connecting each pair of said gripper members to a first end of two first struts on a far side of said members, another end of each said two first struts are connected to each other by two connecting pins (**38** and **45**), each said connecting pin pulled by a first spring (**41A** and **41B**) firming up a grip on said terminals by an arrangement of at least two of said first struts connected to each other by said connecting pins (**38** and **45**) in a first knee-joint configuration producing variable ratio with substantial amplification of a force exerted to said connecting pins (**38** and **45**) by said first spring (**41A** and **41B**), said two first struts exerting said amplified force to said gripper members gripping said terminal with growing contact pressure while said first spring moves said connecting pins (**38** and **45**) of said two first struts closer to a first line defined by said two pins (**36, 37** and **43, 44**) connecting said gripper members (**9, 10** and **29, 30**) to said two first struts on the far side of said members causing a contact pressure on said terminals (**11, 12**) to grow close to inverse proportion to a distance between said connecting pins and said first line.

5,187,424
PROCESS FOR DETERMINING THE STATE OF A BATTERY

Klemens Benz, Bellheim, and Rainer Kübler, Stuttgart, both of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 596,399, Oct. 12, 1990. This application Dec. 4, 1991, Ser. No. 801,623
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1989, 3934353
Int. Cl.[5] H01M *10/44*
U.S. Cl. 320—14 24 Claims



1. A process for determining the state of a battery comprising:

controlling a charging/discharging device to place the battery in a specific charging state in which an instantaneous terminal voltage U_{act} is equal to a predeterminable reference value U_{ref2};

generating a first signal when the battery has reached the specific charging state;

controlling the charging/discharging device as a function of the first signal such that, during a specific time period t_1, a specific current I_1 flows, the direction of the specific current I_1 corresponding to a discharging operation;

generating a second signal which controls the charging/discharging device such that a specific current I_2, the direction of the specific current I_2 corresponding to a charging operation, flows for a time period t_2 until the battery is again in the specific charging state;

measuring the time period t_2, during which the specific current I_2 flows; and

providing measured data fed to an evaluation unit in which an order of magnitude of the conversion of electrical energy into heat energy is deduced from a deviation of the time t_2 from the time t_1.

5,187,425
RECHARGEABLE BATTERY CONTROLLER

Roy K. Tanikawa, Irvine, Calif., assignor to AST Research, Inc., Irvine, Calif.

Filed Nov. 9, 1990, Ser. No. 612,218
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—31 4 Claims

1. A battery controller for controlling and monitoring a rechargeable battery comprising:

an adapter that includes a voltage source output providing a first source of DC power and a current output, said adapter further including a power available output indicating when said adapter is connected to an external source of power, said adapter further including a control input that receives a control signal, said adapter varying the level of said current output in response to said control signal;

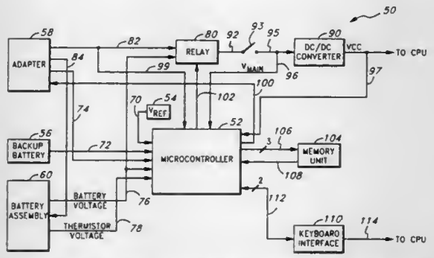
a rechargeable battery assembly, that includes said rechargeable battery, said assembly further comprising an input connected to said current output of said adapter and an output providing a second source of DC voltage, said assembly having a thermistor thermally coupled to said rechargeable battery, wherein said thermistor is responsive to the temperature of said battery;

a relay that has a first input connected to said first source of DC power and a second input connected to said second source of DC power, said relay further comprising a control input, wherein said control input selects either said first or said second source of DC power as an output;

a backup battery;

a reference voltage source; and

a microcontroller which controls and monitors the charging



operation of said rechargeable battery, said microcontroller including an input connected to said backup battery to monitor the voltage of said backup battery, an input connected to said thermistor to monitor temperature changes in said rechargeable battery, an input connected to said reference voltage source, an input connected to said power available output of said adapter to monitor the status of said adapter, and an input connected to said rechargeable battery to monitor the voltage level of said rechargeable battery, said microcontroller having a first output connected to said control input of said relay wherein said first output controls the selection of said first or said second source of DC power to said relay output, said microcontroller having a second output connected to said control input of said adapter wherein said second output controls said level of said current output connected to said rechargeable battery, thereby controlling the charging operation of said rechargeable battery.

5,187,426
DEVICE FOR LIMITING THE TERMINAL VOLTAGE IN AN ALTERNATOR

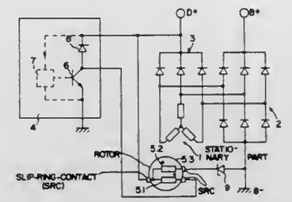
Manfred Maass; Joachim Bunke, both of Esslingen, and Martin Fritz, Rudersberg, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed Apr. 17, 1991, Ser. No. 686,375
Claims priority, application Fed. Rep. of Germany, May 23, 1990, 4016573
Int. Cl.[5] H02P *9/10*
U.S. Cl. 322—63 14 Claims

1. An arrangement for limiting the terminal voltage in an alternator having a fixed stator winding acting on rectifiers, an excitation winding which rotates with the alternator rotor, a first slip ring contact, and a controller which loads the excitation winding with excitation current as a function of the magnitude of a delivered voltage, and at least one free-wheeling valve which is conductive during a controller-side interruption of the excitation current and is connected in parallel with the excitation winding, the arrangement comprising:

an auxiliary winding on the rotor, said auxiliary winding being a continuation of the excitation winding in the same direction of winding, with the auxiliary winding and the excitation winding being connected at a first connection point;

a second slip ring contact that operatively connects the first connection point to a machine terminal supplying the excitation current;



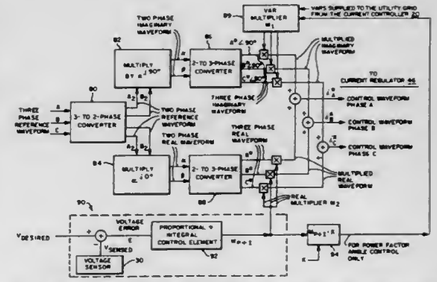
a zener diode connected in series with the auxiliary winding; and

a third slip ring contact that operatively connects the auxiliary winding via said zener diode to a ground terminal of the alternator.

5,187,427
STATIC REACTIVE POWER COMPENSATOR

William L. Erdman, Brentwood, Calif., assignor to U.S. Windpower, Inc., Livermore, Calif.

Filed Nov. 27, 1991, Ser. No. 800,643
Int. Cl.[5] G05F *1/30*
U.S. Cl. 323—207 15 Claims



1. A static VAR compensator for supplying reactive power to a polyphase electric power supply having a plurality of phase lines, said static VAR compensator comprising:

an energy storage device that stores energy at a constant voltage;

current regulation means, coupled to the energy storage device, for regulating the instantaneous current in each of the phase lines of the polyphase electric power supply, wherein said current regulation means includes an inverter;

means for providing a current control waveform to said current regulation means so that the current in each of the phase lines is regulated by the current control waveform;

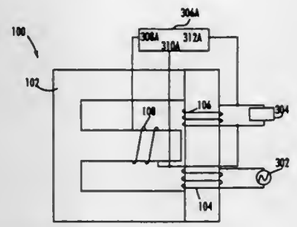
said current control waveform having a shape to provide a selected constant number of VARs to the polyphase electric power supply, said selected constant number of VARs being substantially independent of the amount of real power provided to the polyphase electric power supply from the static VAR compensator; and

voltage regulation means for regulating the voltage across the energy storage device, wherein the voltage regulation means includes:

VOL 1147 ISS 3 FEB 16 1993 UMI

means for forming a reference waveform from the voltage waveform of the utility grid;
means for applying the reference waveform to form a real waveform;
means for determining a multiplier as a function of the voltage across the energy storage device;
means for multiplying the multiplier by the real waveform to form a multiplied real waveform; and
means for including the multiplied real waveform in the current control waveform.

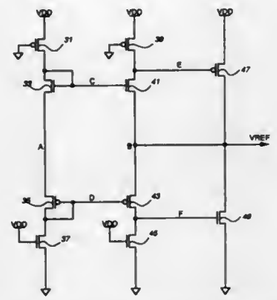
5,187,428
SHUNT COIL CONTROLLED TRANSFORMER
Richard M. Hutchison, New London, and Don J. Corrigall, Appleton, both of Wis., assignors to Miller Electric Mfg. Co., Appleton, Wis.
Filed Feb. 26, 1991, Ser. No. 661,471
Int. Cl.[5] G05F *1/325, 1/38, 5/06*
U.S. Cl. 323—250 **4 Claims**



1. A controllable transformer comprising:
a shunt magnetic core;
a shunt coil inductively coupled to said shunt magnetic core;
switch means for selectively controlling the magnitude of an output of the transformer by selectively controlling current flow through said shunt coil;
wherein said switch means comprises magnitude sensing means for sensing a magnitude difference between a first input signal applied to a first terminal and a second input signal applied to a second terminal and for selectively controlling the resistance of said switch means, and further wherein power for said switch means is derived from said magnitude sensing means;
a main magnitude core wherein a high reluctance path separates said shunt magnetic core and said main magnetic core;
wherein said main magnetic core and said shunt magnetic core are generally co-planar;
a primary coil inductively coupled to said main magnetic core, said primary coil having a first axis of symmetry; and
a secondary coil inductively coupled to said main magnetic core, said secondary coil having a second axis of symmetry, said first and second axes being generally collinear;
wherein said shunt coil comprises a shunt axis of symmetry disposed generally perpendicular to said first axis of symmetry.

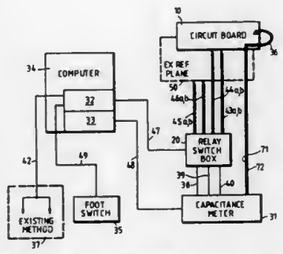
5,187,429
REFERENCE VOLTAGE GENERATOR FOR DYNAMIC RANDOM ACCESS MEMORY
Richard S. Phillips, Constance Bay, Canada, assignor to Northern Telecom Limited, Montreal, Canada
Filed Feb. 20, 1992, Ser. No. 838,172
Int. Cl.[5] G05F *3/16*
U.S. Cl. 323—314 **9 Claims**

1. A reference voltage generator comprising:
first, second and third FETs of a first channel type, each having a gate, a drain and a source;
fourth, fifth and sixth FETs of a second channel type opposite to said first channel type, each having a gate, a drain and a source;
a first resistance element connected between a first voltage terminal and the gate and drain of said first FET;
a second resistance element connected between a second voltage terminal and the gate and drain of said fourth FET;
a third resistance element connected between the first voltage terminal and the drain of said second FET; and
a fourth resistance element connected between the second voltage terminal and the drain of said fifth FET,
in which:
the sources of both first and fourth FETs are connected to each other;



the gates of said second and fifth FETs are connected to the gates of said first and fourth FETs, respectively;
the gates of said third and sixth FETs are connected to the drains of said fifth and second FETs, respectively;
the sources of said third and sixth FETs are connected to the second voltage terminal, respectively;
the sources of said second and fifth FETs and the drains of said sixth and third FETs are connected to a reference voltage output terminal; and
the resistance values of said third and fourth resistance elements are selected so that said sixth and third FETs are essentially non-conductive under balanced conditions.

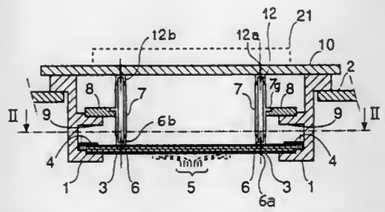
5,187,430
METHOD AND APPARATUS FOR DETERMINING NETS AMONG NODES IN A CIRCUIT BOARD
James E. Marek, Cypress, and Douglas A. Goss, Spring, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.
Filed Aug. 30, 1991, Ser. No. 752,848
Int. Cl.[5] G01R *31/02, 31/28*
U.S. Cl. 324—56 **20 Claims**



12. An apparatus for determining nets between nodes in a circuit board, comprising:

a reference conducting surface oriented with respect to the board;
means for applying an electrical stimulus to the reference conducting surface;
means for measuring a parameter of an electrical response caused by said electrical stimulus at the nodes of interest on the board; and
means coupled to said measuring means for storing said measured parameter and for determining a plurality of nets among the nodes from the measured parameter data.

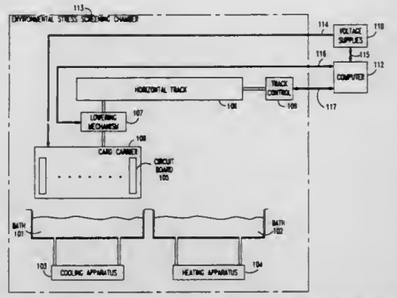
5,187,431
UNIVERSAL MULTICONTACT CONNECTION BETWEEN AN EWS PROBE CARD AND A TEST CARD OF A "TEST-ON-WAFER" STATION
Giuseppe Libretti, Milan, Italy, assignor to SGS-Thomson Microelectronics s.r.l., Milan, Italy
Filed Jun. 18, 1991, Ser. No. 716,704
Claims priority, application Italy, Jun. 19, 1990, 83623 A/90
Int. Cl.[5] G01R *1/02*
U.S. Cl. 324—158 P **12 Claims**



2. A universal multicontacts connection device for connecting an EWS probe card and a test card installed in a test-on-wafer station having a card support structure, which comprises
a first plurality of male contacts in the form of parallel pins permanently mounted on the top surface of a probe card and individually connected to a respective probe projecting from the bottom surface of said probe card;
a second plurality of male contacts in the form of parallel pins permanently mounted on the bottom face of a test card the test card being mounted in a carrier frame above the probe card
a universal connector provided with a plurality of double female contacts mounted with a certain clearance inside respective receptacles formed in a substantially isolating body;
said pluralities of contacts being disposed on their respective assembly planes in a substantially specular manner in order to make possible a reciprocal coupling among said male contacts of said probe card with respective male contacts of said test card through said double female contacts of said universal connector;
means for supporting said electrically insulating body in a coupling position between the bottom female contacts and the male contacts of said probe card.

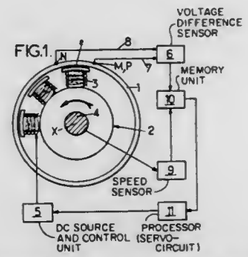
5,187,432
ENVIRONMENTAL STRESS SCREENING PROCESS
Wolfgang J. Bauernfeind, Thornton; Frank T. Beard, Westminster; Edwin Z. Brown, Westminster; Craig E. McMurray, Westminster, and Joseph E. Pigg, Firestone, all of Colo., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Oct. 28, 1991, Ser. No. 784,206
Int. Cl.[5] G01R *31/02;* **H01L** *23/44*
U.S. Cl. 324—158 R **10 Claims**

6. A process for environmental stress screening electronic circuit boards, the process comprises the steps of:
(A) mounting electronic components onto circuit boards to form electronic circuit boards;
(B) inserting the electronic circuit boards into a carrier;
(C) immersing the carrier into a cold bath of an inert liquid;
(D) applying power supply voltages to the electronic circuit boards in excess of the maximum operational voltages upon a first predefined period of time elapsing;
(E) removing the power supply voltages from the electronic circuit boards;
(f) transferring the carrier from the cold bath to a hot bath of inert liquid within a second predefined period of time;



(G) applying the power supply voltages to the electronic boards in excess of the maximum operational voltages upon the carrier being immersed into the hot bath;
(H) removing the power supply voltages of the electronic circuit boards;
(I) repeating steps A through F for a predefined number of cycles;
(J) performing a operational test on the electronic circuit boards to determine which of the electronic circuit boards are still fully operational.

5,187,433
DEVICES FOR MEASURING BRAKING TORQUES GENERATED BY ELECTROMAGNETIC RETARDERS, AND DEVICES FOR ADJUSTING SUCH TORQUES
Denis Even, Cergy, France, assignor to Labavia S.G.E., France
Filed Sep. 27, 1991, Ser. No. 766,522
Claims priority, application France, Oct. 5, 1990, 90 12320
Int. Cl.[5] H02P *5/40*
U.S. Cl. 324—158 MG **6 Claims**



1. A measuring device for measuring the braking torques C generated by a vehicle-mounted electromagnetic retarder having a fixed secondary magnetic circuit or "stator", wherein the device comprises speed measuring means for measuring the speed of rotation V of the rotor of the retarder, detecting means for detecting variations in the electrical potential difference U that is generated during operation of the retarder between two points on said stator and for producing an output A corresponding to the amplitude of the detected variations in electrical potential difference, said points being sufficiently distinct from each other with respect to the way the electrical

VOL 1147 ISS 3 FE 16 1993 UMI

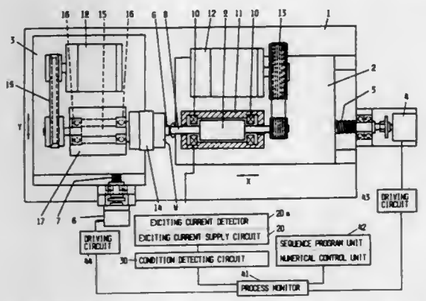
potential varies at said points during said operation, an electrical circuit, including a memory in which laws are stored which relate the amplitude A and the speed of rotation V to the braking torque C and a pair of inputs to which said speed measuring means and said detecting means are connected, for determining a value of the braking torque C for each pair of measured values of V and A and for producing an output in accordance therewith.

5,187,434

APPARATUS FOR DETECTING MACHINING CONDITIONS OF A WORKPIECE

Shigenori Ando, Narashino, Japan, assignor to Seiko Seiki Kabushiki Kaisha, Japan

Filed Nov. 26, 1990, Ser. No. 617,570
Claims priority, application Japan, Dec. 8, 1989, 1-317825
Int. Cl.[5] G01B *7/31, 21/00*
U.S. Cl. 324—207.25 **11 Claims**



1. An apparatus for detecting machining conditions of a workpiece in a machine tool comprising:

an exciting current supply circuit for generating an exciting current;

magnetic bearing means including at least one electromagnet coupled to and controlled by the exciting current supply circuit for magnetically supporting at least one of a work spindle for holding the workpiece and a tool spindle in a predetermined rotating position;

an exciting current detector included in said exciting current supply circuit for detecting the exciting current generated by said exciting current supply circuit for controlling each electromagnet of said magnetic bearing means;

a plurality of frequency band pass filters, coupled to said exciting current detector, for filtering detection signals outputted from said exciting current detector and for outputting signals corresponding to machining conditions; and

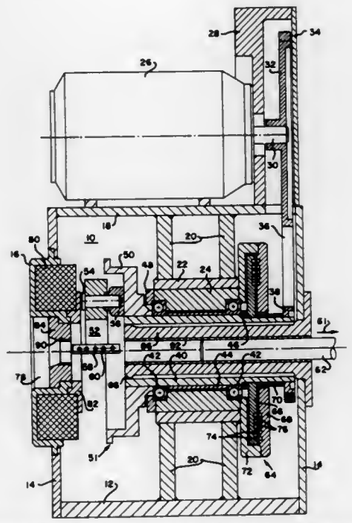
comparators, each coupled to one of said plurality of frequency band pass filters, for comparing output signals of said frequency band pass filters with respective set values dependent on a predetermined machining conditions.

5,187,435

NON-DESTRUCTIVE TEST APPARATUS WITH EDDY CURRENT TRANSDUCER ROTARY HEAD AND FIELD HOMOGENIZING CONDUCTIVE RING FOR SCANNING METAL TEST MATERIALS

Werner Geweke, Reutlingen, Fed. Rep. of Germany, assignor to Dr. Friedrich Forster Pruferatebau GmbH & Co. KG, Reutlingen, Fed. Rep. of Germany

PCT No. PCT/EP90/01696, § 371 Date Jul. 5, 1991, § 102(e) Date Jul. 5, 1991, PCT Pub. No. WO91/07656, PCT Pub. Date May 30, 1991
PCT Filed Oct. 10, 1990, Ser. No. 721,468
Int. Cl.[5] G01N *27/90*
U.S. Cl. 324—225 **9 Claims**



1. Apparatus for scanning the surface of elongated metal test material (**62**) by eddy current transducers (**60**), including a housing (**10**); a rotating rotary section (**51**) to which the eddy current transducers (**60**) are attached and which includes a hollow shaft (**40**) within the housing (**10**) for receiving the passage of the test material (**62**) therethrough; drive means (**26**) mounted on said housing (**10**) for producing rotational movement of the rotary section (**51**); and a rotary transmitter assembly (**64**) within the housing (**10**) and arranged about shaft (**40**) over which the eddy current transducers are electrically connected with an electronic evaluator unit, comprising:

means for magnetizing the test material (**62**) in the longitudinal direction thereof within a given test range mounted to housing (**10**), including a hollow magnetization coil (**80**) within which the test material (**62**) is received for generating a magnetic flux;

said eddy current transducers (**60**) arranged in sensing relation to the magnetized test material (**62**);

conductors for connecting the magnetic flux into the test material (**62**), including portions of the housing (**10**) and the hollow shaft (**40**), each being made of magnetically conductive material; and

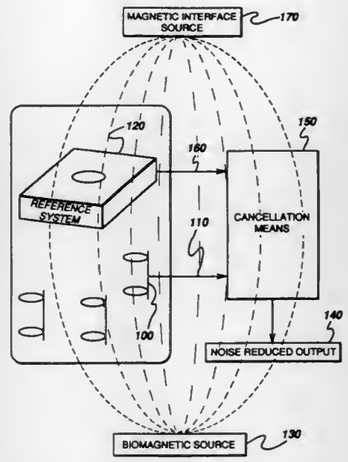
magnetic field homogenization means including a homogenization ring (**82**) of magnetically conductive material surrounding the test material (**62**) and located between the magnetization coil (**80**) and the eddy current transducers (**60**) to compensate for saturation of the eddy current transducers.

5,187,436

NOISE CANCELLATION METHOD IN A BIOMAGNETIC MEASUREMENT SYSTEM USING AN EXTRAPOLATED REFERENCE MEASUREMENT

John A. Mallick, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 13, 1992, Ser. No. 850,725
Int. Cl.[5] G01R *33/02;* **G01N** *27/72*
U.S. Cl. 324—244 **4 Claims**



1. A method for noiseless measurement of a biomagnetic field comprising the steps of:

positioning, near a biomagnetic source, at least one first order sensor gradiometer for generating a first signal representative of a magnetic field gradient;

positioning, near said gradiometer, a reference system for measuring a magnetic interference field and its first order gradients;

representing said magnetic interference field as a magnetic dipole in each of the planes x-y, x-z, and y-z in relation to said reference system;

computing an estimate of the noise due to said magnetic interference field at the coils of said gradiometer using the magnetic dipole equation

$$B(r_p) = \frac{M \times (r_p - r_q)}{4\pi |r_p - r_q|^4}$$

where $\bar{r}_p$ and $\bar{r}_q$ are the position vectors from said reference system to the coils of said gradiometer and said magnetic dipoles respectively;

performing a linear correction to said estimate using the first order gradients

$$\frac{\partial B_x}{\partial x}, \frac{\partial B_y}{\partial y}, \frac{\partial B_z}{\partial z}$$

said reference system;

calculating the magnetic noise flux at the coils of said gradiometer and generating a second signal representative of the noise flux gradient for said gradiometer; and

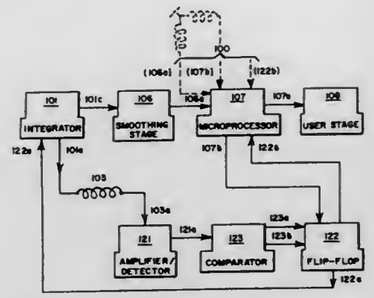
differencing said first and second signals to obtain a signal representative of a noiseless gradiometer output.

5,187,437

MAGNETIC FIELD DETECTOR FOR DETECTING EARTH'S MAGNETIC FIELD

Bertil Rydergren, Skarholmen; Jan Silfven, Saltsjo-Boo, and Roger Malmhall, Västerås, all of Sweden, assignors to Instrumentverken AB, Sweden

Filed Jan. 4, 1991, Ser. No. 637,352
Claims priority, application Sweden, Jan. 4, 1990, 9000026
Int. Cl.[5] G01R *33/00, 33/04*
U.S. Cl. 324—253 **6 Claims**



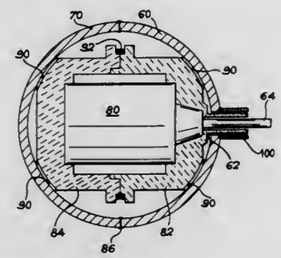
1. A magnetic field detecting device, particularly for detecting the earth's magnetic field, comprising at least one magnetic field detecting means having a sensor intended to produce an electric signal as a value of the sensed magnetic field, said sensor including an elongated member in the form of one or more magnetic, bistable amorphous wires or fibres oriented in the direction of the long axis of said member, and having a single coil surrounding said sensor for contemporary detection of the magnetic field sought for and generation of a reference magnetic field, an integrator driving said single coil by a control signal, and a flip-flop activated by the control signal superposed on a pulse signal generated by means operatively connected to the coil and responsive to the sought magnetic field, the output from the flip-flop operatively connected to said integrator for directional control of said integrator.

5,187,438

SHIELDED MAGNETOMETER

François Alcouffe, Grenoble; Jean Crescini, Domene, and Denis Duret, Grenoble, all of France, assignors to Commissariat A l'Energie Atomique, Paris, France

Filed Mar. 14, 1991, Ser. No. 669,626
Claims priority, application France, Mar. 23, 1990, 90 03739
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—301 **11 Claims**



1. A magnetometer comprising:

a magnetic resonant probe having a resonator with a sample contained therein, a magnetic resonance being exhibited by said sample at a frequency depending on a magnetic field to be measured;

VOL 1147 ISS 3 FE 16 1993 UMI

electric supply means connected to said resonator and sampling and exciting windings located around said resonator; and

a spherical electromagnetic shield surrounding said sampling and exciting windings.

5,187,439

MAGNETIC RESONANCE TOMOGRAPHY METHOD FOR GENERATING SEPARATE FAT AND WATER IMAGES, AND APPARATUS FOR PERFORMING THE METHOD

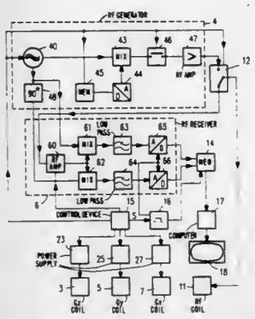
Jens D. Jensen, and Wolfgang Vollmann, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corp., New York, N.Y.

Filed Nov. 6, 1990, Ser. No. 609,962

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1989, 3937428

Int. Cl.[5] G01R *33/20*

U.S. Cl. 324—309 **7 Claims**



1. A magnetic resonance imaging method for generating separate fat and water images of at least one slice, where a number of successive sequences act on the slice in the presence of a steady magnetic field, which sequences are alternated between two groups, each sequence of each of said two groups comprising a first RF pulse (HF_1) which is followed by a phase encoding gradient (G_p) as well as measuring gradient during which a spin resonance signal generated in the slice is detected, a position in time of the measuring gradient (G_m) or of a second RF pulse (HF_2) relative to said first RF pulse (HF1) differing from one of said groups to the other, wherein an integral of the phase encoding gradient (G_p) is varied by a step from each sequence to the next, a phase angle (P_1) of one slice-selective RF pulse (HF_1) of each sequence is varied by a same amount from each sequence to the next, and a fat image and a water image (F, W) are formed by two-dimensional Fourier transformation of spin resonance signals (MR) thus obtained.

5,187,440

MEASURING RESISTIVITY CHANGES FROM WITHIN A FIRST CASED WELL TO MONITOR FLUIDS INJECTED INTO OIL BEARING GEOLOGICAL FORMATIONS FROM A SECOND CASED WELL WHILE PASSING ELECTRICAL CURRENT BETWEEN THE TWO CASED WELLS

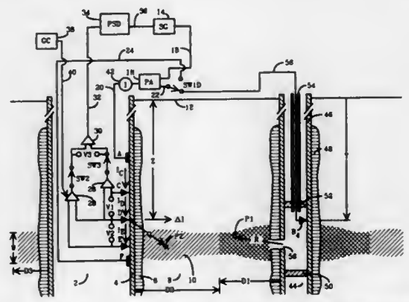
William B. Vail, III, Bothell, Wash., assignor to Para Magnetic Logging, Inc., Woodinville, Wash.

Continuation-in-part of Ser. No. 435,273, Oct. 30, 1989, Pat. No. 5,043,668, which is a continuation of Ser. No. 89,697, Aug. 26, 1987, Pat. No. 4,882,542, which is a continuation-in-part of Ser. No. 927,115, Nov. 4, 1986, Pat. No. 4,820,989. This application Aug. 23, 1991, Ser. No. 749,136

The portion of the term of this patent subsequent to Aug. 27, 2008, has been disclaimed.

Int. Cl.[5] G01V *3/20*

U.S. Cl. 324—372 **9 Claims**



6. An apparatus for measuring electronic properties of geological formations penetrated by two boreholes, wherein a first metallic pipe is positioned within a first borehole, and wherein a second metallic pipe is positioned within a second borehole, wherein said second metallic pipe possesses perforations used for injecting fluids into the geological formations, said apparatus comprising:

generating means for generating time varying electric fields on the exterior surfaces of the first and second metallic pipes whereby said electric fields have at least components which are perpendicular to the first and second metallic pipes thereby causing a total time varying current to be conducted between the metallic pipes through the geological formations between the two metallic pipes; and

measurement means for simultaneously measuring the time varying differential current conducted into the formation from a predetermined portion of the first metallic pipe adjacent to the specific portion of the formation to be measured to determine electronic properties of formations, thereby providing measurements responsive to any fluids injected into formation from said second metallic pipe.

5,187,441

PORTABLE INFORMATION APPARATUS FOR SENSING BATTERY VOLTAGE DROP

Koichi Shibata; Toshitaka Fukushima; Hiroyuki Watanabe; Shinichiro Miyahara, and Osamu Imagawa, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan

Filed Dec. 11, 1990, Ser. No. 625,861

Claims priority, application Japan, Dec. 13, 1989, 1-324511

Int. Cl.[5] G01N *27/416*

U.S. Cl. 324—426 **9 Claims**

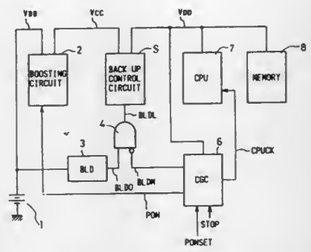
1. A portable apparatus which generates a CPU clock signal only at the time of operation of a CPU and utilizes a boosted battery voltage as a driving voltage of the apparatus, said apparatus comprising:

a battery for outputting a voltage;

boosting means for boosting the voltage of said battery;

voltage detecting means for detecting a voltage level of said battery and outputting a signal to indicate whether said voltage level is lower than a threshold voltage

clock generating means including oscillating means for generating a CPU clock signal and counting means for counting an interval from the start of the oscillation of said oscillating means to the time when said oscillation becomes stable;



a back-up control circuit connected between said boosting means and said CPU and responsive to said output signal of said voltage detecting means for applying back-up power to said CPU; and

negating means for negating said output signal of said voltage detecting means during said interval counted by said counting means, said negating means comprising means for inhibiting application of said output signal of said voltage detecting means to said CPU during said interval counted by said counting means.

5,187,442

METHOD AND APPARATUS FOR CHARGE DISTRIBUTION ANALYSIS

Friedemann Freund, 225 Sussex St., San Francisco, Calif. 94131; Francois Batllo, 1505 De Rose Way #51, San Jose, Calif. 95126, and Minoru M. Freund, 225 Sussex St., San Francisco, Calif. 94131

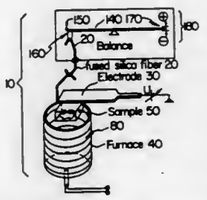
PCT No. PCT/US89/04272, § 371 Date Nov. 28, 1989, § 102(e) Date Nov. 28, 1989

Continuation of Ser. No. 499,323, Nov. 28, 1989, abandoned. This PCT application Sep. 29, 1989, Ser. No. 768,343

The portion of the term of this patent subsequent to Nov. 28, 2006, has been disclaimed.

Int. Cl.[5] G01N *27/60*

U.S. Cl. 324—452 **6 Claims**



1. A method for measuring a static dielectric constant of a material, including the steps of:

(1) placing a sample of the material on a force-measuring device;

(2) applying a nonhomogeneous electric field to a volume including the sample;

(3) measuring a force upon the sample as a function of the applied electric field; and

(4) deriving a value for the static dielectric constant of the material from the measured force.

5,187,443

MICROWAVE TEST FIXTURES FOR DETERMINING THE DIELECTRIC PROPERTIES OF A MATERIAL

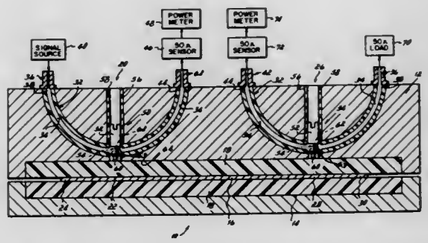
Alexander B. Bereskin, 452 Riddle Rd., Cincinnati, Ohio 45220

Continuation-in-part of Ser. No. 764,917, Sep. 24, 1991, abandoned, which is a division of Ser. No. 558,063, Jul. 24, 1990, Pat. No. 5,083,088. This application Mar. 19, 1992, Ser. No. 853,933

The portion of the term of this patent subsequent to Jan. 21, 2009, has been disclaimed.

Int. Cl.[5] G01R *27/04*

U.S. Cl. 324—632 **36 Claims**



26. A method for determining the dielectric properties of a material comprising:

confining test material surrounding an electrical conductor within an electrically shielded cavity;

coupling microwave energy into a center conductor at one end of a transmission line spaced from the cavity and extending transversely the electrical conductor in the cavity such that said center conductor is spaced from said cavity;

measuring microwave energy with power measuring equipment coupled to the center conductor at another end of the transmission line;

coupling microwave energy from a tap of the center conductor between the ends of the transmission line and into the cavity at a first location, said first location being coincident a first portion of the electrical conductor in the cavity, the power measuring equipment having a characteristic impedance to render the transmission line flat between the tap of the center conductor and the other end of the transmission line;

measuring microwave energy from a second location in the cavity, said second location being oppositely disposed from said first location and being coincident a second, oppositely disposed portion of the electrical conductor in the cavity.

5,187,444

SENSOR FOR SENSING THE PRESENCE OF ELECTROLYTE SOLUTION

Akira Kumada, Kanagawa; Eiichi Takata, and Michihiro Murata, both of Kyoto, all of Japan, assignors to Murata Mfg. Co., Ltd., Kyoto, Japan

Filed Jul. 20, 1989, Ser. No. 383,412

Claims priority, application Japan, Jul. 29, 1988, 63-190861

Int. Cl.[5] G01R *27/26*

U.S. Cl. 324—663 **4 Claims**

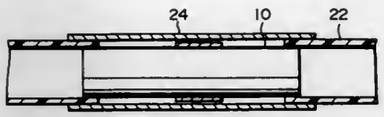
1. A liquid sensor comprising:

a partially-cutout pipeline through which an aqueous solution containing an electrolyte flows;

a ceramic pipe formed by use of a dielectric having a dielectric constant of at least 100 and inserted into a partial

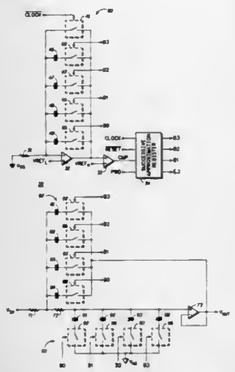
VOL 1147 ISS 3 FE 16 1993 UMI

cutout portion of said partially-cutout pipeline such that both end portions thereof are connected to the pipeline;
at least one pair of electrodes disposed on the outer surface of said pipeline;
an oscillating circuit for supplying an AC voltage at a predetermined level on said pair of electrodes; and



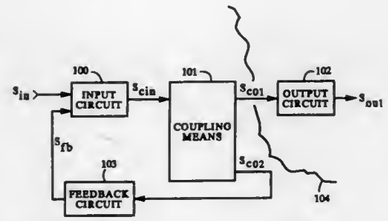
a plastic sleeve for covering joint portions of said pipeline and said ceramic pipe;
whereby a discrimination between the presence and the absence of the aqueous solution in said pipeline is made based on variation in capacitance detected by impressing an AC voltage between said electrodes.

5,187,445
TUNING CIRCUIT FOR CONTINUOUS-TIME FILTERS AND METHOD THEREFOR
H. Spence Jackson, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 28, 1991, Ser. No. 783,608
Int. Cl.[5] H03B *1/00, 1/04;* **H03K** *5/00*
U.S. Cl. 328—167 **13 Claims**



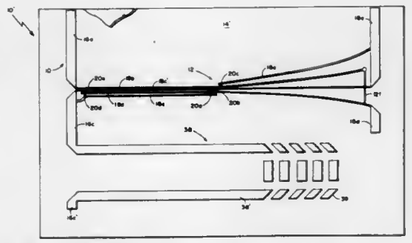
1. A tuning circuit for continuous-time filters comprising:
an operational amplifier having a positive input terminal for receiving a first reference voltage, a negative input terminal, and an output terminal;
a comparator having a positive input terminal coupled to said output terminal of said operational amplifier, a negative input terminal for receiving a second reference voltage, and an output terminal for providing an output voltage;
a successive approximation register having an input terminal coupled to said output terminal of said comparator, for providing a plurality of select signals corresponding to successively sampled values of said output signal;
resistive means coupled between a reference voltage terminal and said negative input terminal of said operational amplifier; and
capacitive means coupled between said output terminal of said operational amplifier and said negative input terminal of said operational amplifier,
one of said resistive means and said capacitive means including a plurality of components corresponding to and enabled by said plurality of select signals.

5,187,446
FEEDBACK ISOLATION AMPLIFIER
James a. Daly, Chelsea, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.
Filed Jun. 10, 1992, Ser. No. 896,282
Int. Cl.[5] H03F *3/38*
U.S. Cl. 330—10 **11 Claims**



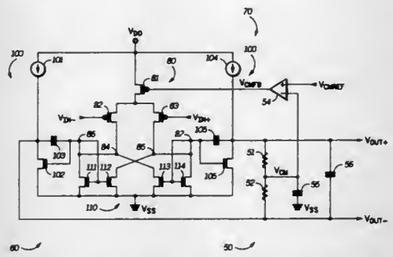
1. A feedback isolation amplifier, comprising:
an input circuit to produce at an output a difference signal representing the amplitude difference between an input signal received at a first input of said input circuit and a feedback signal received at a second input of said input circuit;
an output circuit electrically isolated from said input circuit and having an electrical input;
a feedback circuit substantially functionally identical to said output circuit and having an electrical input and an output, said output being connected to said second input of said input circuit; and
means for coupling said difference signal substantially identically to said input of said output circuit and to said input of said feedback circuit, said coupling means maintaining electrical isolation between said input circuit and said output circuit.

5,187,447
COMBINER/DIVIDER NETWORKS
Ming-Chi Tsai, Marlborough, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Nov. 25, 1991, Ser. No. 797,644
Int. Cl.[5] H03F *3/68;* **H01P** *5/18*
U.S. Cl. 330—124 R **12 Claims**



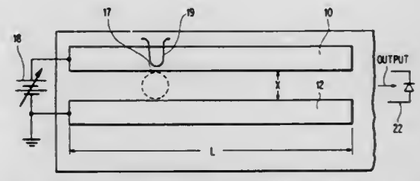
11. A radio frequency amplifier comprising:
a pair of radio frequency couplers, each comprising:
(a) a dielectric substrate having a ground plane disposed over a first surface thereof; and
(b) a plurality of strip conductors disposed on a second surface of said dielectric substrate, a first one of said plurality of strip conductors having a first end coupled to a first terminal and a second end coupled to a second terminal of the radio frequency coupler, and a second one of the plurality of strip conductors, disposed adjacent to said first strip conductor, having a first end coupled to a third terminal of the radio frequency coupler, said second strip conductor having a first portion spaced a substantially uniform distance from said first strip conductor with said first portion being coupled to said third terminal and a second portion spaced from said first strip conductor a distance which gradually increases; a third one of the plurality of strip conductors, disposed adjacent to said first strip conductor on a side thereof opposite the second strip conductor, having a first end coupled to a fourth terminal of the coupler, with said third conductor having a first portion at said end thereof spaced a distance from said first strip conductor which gradually decreases to a second portion spaced a substantially uniform distance from said first strip conductor; and
(c) a transmission line having a first end coupled to said first terminal of said radio frequency coupler;
first amplifier means, having an input coupled to a second end of said transmission line of a first one of said pair of radio frequency couplers and an output coupled to said third terminal of a second one of said pair of radio frequency couplers, for amplifying a first signal passing therethrough; and
second amplifier means, having an input coupled to said third terminal of said first one of said pair of radio frequency couplers and an output coupled to a second end of said transmission line of a second one of said pair of radio frequency couplers, for amplifying a second signal passing therethrough.

5,187,448
DIFFERENTIAL AMPLIFIER WITH COMMON-MODE STABILITY ENHANCEMENT
Todd L. Brooks, and Mathew A. Rybicki, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 3, 1992, Ser. No. 829,822
Int. Cl.[5] H03F *3/45*
U.S. Cl. 330—258 **20 Claims**



1. A differential amplifier with common-mode stability enhancement comprising:
input means for providing first and second currents respectively into first and second nodes, differential components of said first and second currents respectively proportional to positive and negative differences between first and second input signals, a common-mode component of said first and second currents proportional to a common-mode feedback signal;
differential load means coupled to said input means, for converting said differential and common-mode components of said first and second currents into differential and common-mode voltages at third and fourth nodes, respectively, and for providing a high impedance to said differential component and a low impedance to said common-mode component; and means coupled to said input means and to said differential load means, for providing first and second output voltages respectively proportional to voltages at said third and fourth nodes, and for providing said common-mode feedback signal in response to a difference between a reference voltage and a sensed common-mode component of said first and second output voltages;
said differential load means comprising:
a first transistor, having a first current electrode coupled to said first node, a control electrode coupled to said third node, and a second current electrode coupled to a power supply voltage terminal;
a second transistor having a first current electrode coupled to said second node, a control electrode coupled to said third node, and a second current electrode coupled to said power supply voltage terminal;
a third transistor having a first current electrode coupled to said first node, a control electrode coupled to said fourth node, and a second current electrode coupled to said power supply voltage terminal; and
a fourth transistor having a first current electrode coupled to said second node, a control electrode coupled to said fourth node, and a second current electrode coupled to said power supply voltage terminal.

5,187,449
COPLANAR TRANSMISSION LINE MILLIMETER RADIATION SOURCE
Paul C. May, New York, N.Y., assignor to IBM Corporation, Armonk, N.Y.
Continuation-in-part of Ser. No. 451,339, Dec. 15, 1989, abandoned. This application Feb. 6, 1992, Ser. No. 831,961
Int. Cl.[5] H03B *11/04, 11/10;* **H03K** *3/42*
U.S. Cl. 331—66 **9 Claims**



1. A system for generating millimeter wave radiation comprising:
a substrate having a thickness approximately equal to the millimeter wave radiation wavelength,
a coplanar transmission line on said substrate, and
means to produce short pulses on said transmission line which radiate into said substrate.

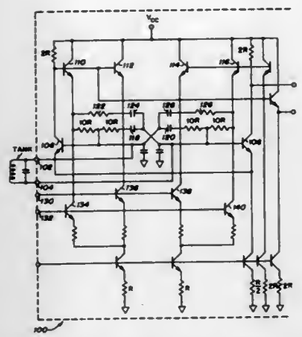
5,187,450
VOLTAGE CONTROLLED OSCILLATOR SUITABLE FOR COMPLETE IMPLEMENTATION WITHIN A SEMICONDUCTOR INTEGRATED CIRCUIT
Gary L. Wagner, Menlo Park; Eric B. Rodal, Cupertino, and Chung Y. Lau, Sunnyvale, all of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.
Filed Mar. 13, 1992, Ser. No. 851,195
Int. Cl.[5] H03B *5/12, 5/18;* **H03L** *7/099*
U.S. Cl. 331—96 **6 Claims**

1. A voltage controlled oscillator (VCO), comprising:
a single tank circuit;
a differential amplifier transistor pair having inputs coupled to the tank circuit;
a first pair of positive feedback networks having a first phase-lead reactance and with one of each of the pair cross-connected to the differential amplifier transistor pair;
a second pair of positive feedback networks having a second

VOL 1147 ISS 3 FE 16 1993 UMI

phase-lead reactance and with one of each of the pair cross-connected to the differential amplifier transistor pair;

a plurality of current-steering transistors; and



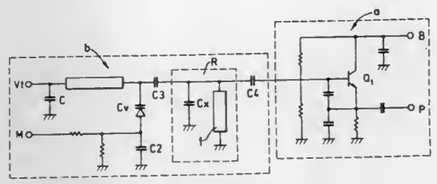
a differential input coupled to the plurality of current-steering transistors to control the mixture of positive feedback signals from the first and second pairs of positive feedback networks and the operating frequency of the VCO is controlled in relation to a difference-mode signal on the differential input.

5,187,451

OSCILLATOR USING MICROSTRIP LINE HAVING MINIMIZED LINE WIDTH AND LENGTH

Yasuhiro Nakamoto, Kokubu, and Hiroki Uemura, Miyakonojo, both of Japan, assignors to Kyocera Corporation, Kyoto, Japan

Filed Jan. 28, 1991, Ser. No. 613,721
Claims priority, application Japan, Mar. 31, 1989, 1-82075
Int. Cl.[5] H03B *5/18, 7/14;* **H03C** *3/22*
U.S. Cl. 331—99 **4 Claims**



1. An oscillation circuit comprising:

a resonant circuit having a microstrip line; and

a negative resistance circuit having an active element;

said microstrip line including a high conductivity conductor having a minimized line width and length and a low dielectric constant substrate on which said high conductivity conductor is disposed;

said microstrip line having one grounded end and another end connected to an additional capacitance component;

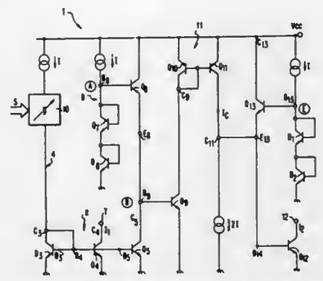
said microstrip line having a resonant frequency set at a substantially higher frequency than the oscillation frequency of the oscillation circuit, and said substantially higher resonant frequency being lowered to the proximity of the oscillation frequency of the oscillation circuit by said additional capacitance component.

5,187,452

CONTROL CIRCUIT FOR AN OSCILLATOR

Gianfranco Vai, Pavia; Maurizio Zuffada, Milan; Fabrizio Sacchi, Pavia; David Moloney, Cornaredo, and Giorgio Betti, Milan, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Milan, Italy

Filed Dec. 23, 1991, Ser. No. 813,154
Claims priority, application Italy, Dec. 28, 1990, 22551 A/90
Int. Cl.[5] H03B *5/24*
U.S. Cl. 331—113 R **7 Claims**



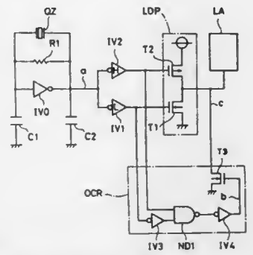
1. A control circuit for an oscillator comprising a multivibrator which comprises first and second transistors each having an emitter and a collector and arranged in a common-emitter connection and connected to be supplied by said control circuit with currents to said emitters; said control circuit comprising first and second output terminals operatively connected to a respective one of said emitters for supplying same with first and second currents, respectively, and circuit means for supplying, respectively, to said first and second output terminals a first current I1 which is proportional to a reference current I according to a predetermined parameter §, and a second current I2 which is correlated to the reference current by the following relation $I2 = I/(2-1/\S)$.

5,187,453

OSCILLATION CONTROL CIRCUIT

Fumitaka Aoyagi, and Eiichi Hasegawa, both of Tokyo, Japan, assignors to Nippon Precision Circuits Ltd., Tokyo, Japan

Filed Feb. 26, 1992, Ser. No. 843,795
Claims priority, application Japan, Mar. 20, 1991, 3-56738
Int. Cl.[5] H03B *5/00, 5/36;* **H03K** *3/00, 3/354*
U.S. Cl. 331—116 FE **5 Claims**



1. An oscillation control circuit comprising:

an oscillatory circuit having a first CMOS inverter and a quartz crystal connected in parallel with the first CMOS inverter, the first CMOS inverter having a first logic threshold voltage;

a second CMOS inverter having a logic threshold voltage lower than the first logic threshold voltage and connected to receive an oscillating signal generated by the first CMOS inverter;

a third CMOS inverter having a third logic potential voltage higher than the first logic threshold voltage and connected to receive the oscillating signal; and

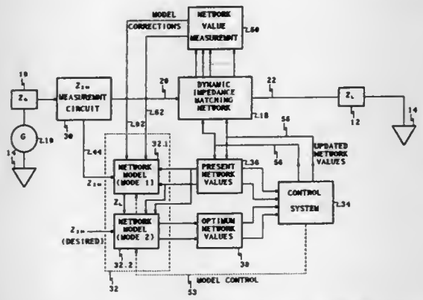
a logic output circuit connected to receive the output signals from the second and third CMOS inverters, to have an output of high impedance when the oscillation potential of the oscillating signal is between the second and third logic threshold voltage, and to produce an output signal having one of two different logic values, depending on whether the oscillation potential is lower than the second logic threshold voltage or higher than the third logic threshold voltage.

5,187,454

ELECTRONICALLY TUNED MATCHING NETWORK USING PREDICTOR-CORRECTOR CONTROL SYSTEM

Kenneth S. Collins, San Jose; John R. Trow, Santa Clara; Craig A. Roderick; Jay D. Pinson, II, both of San Jose, and Douglas A. Buchberger, II, Tracy, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Jan. 23, 1992, Ser. No. 825,658
Int. Cl.[5] H03H *11/30*
U.S. Cl. 333—17.3 **38 Claims**



1. A method for matching a generator impedance to an unknown load impedance, comprising the steps of:

(a) connecting an impedance matching network, having at least two variable impedances, between an electrical generator and an electrical load, the network having input terminals connected to the generator and output terminals connected to the load;

(b) taking electrical measurements to estimate the load impedance;

(c) computing, in a model of the network, a set of optimum network values corresponding to the variable impedances, such that there would be a desired impedance match between the generator and the load if the estimated load impedance did not change;

(d) adjusting the actual network values in a direction toward the optimum network values; and

(e) repeating steps (b), (c) and (d) until a desired degree of impedance matching is obtained.

5,187,455

DELAY LINE DEVICE WITH ADJUSTABLE TIME DELAY

Harufumi Mandai; Yoshikazu Chigodo, and Atsushi Tojo, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Jun. 13, 1991, Ser. No. 721,091
Claims priority, application Japan, Jun. 13, 1990, 2-156289
Int. Cl.[5] H01P *9/00*
U.S. Cl. 333—161 **15 Claims**

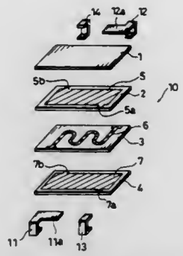
1. A delay line device for delaying signal transmission, comprising:

a dielectric layer,

a grounding electrode layer in contact with one surface of said dielectric layer,

a strip line conductor layer in contact with the other surface of said dielectric layer,

an input terminal and an output terminal electrically connected to said strip line conductor layer, and



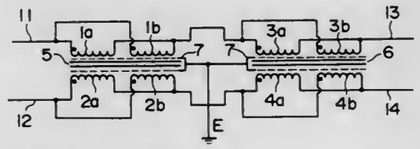
a delay time adjusting electrode connected to at least one of said input and output terminals, a capacitance of which influences a delay time being obtained between said delay time adjusting electrode and said grounding electrode layer.

5,187,456

LINE FILTER

Shinichiro Hayashi, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 24, 1990, Ser. No. 587,093
Claims priority, application Japan, Sep. 25, 1989, 1-248812
Int. Cl.[5] H03H *7/01;* **H01F** *27/28*
U.S. Cl. 333—181 **4 Claims**



1. A line filter comprising:

an iron core;

a first coil block including first and second coil conductors laminated and wound around said iron core and made of foil conductors, and a shield plate made of a foil conductor and inserted between said first and second coil conductors via an insulating material and wound around said iron core together with said coil conductors, said shield plate being grounded; and

a second coil block including third and fourth coil conductors made of foil conductors and laminated and wound around said iron core and connected to said first and second coil conductors in parallel respectively, and a shield plate made of a foil conductor and inserted between said third and fourth coil conductors via an insulating material and wound around said iron core together with said coil conductors, said shield plate being grounded and said second coil block being arranged in such a manner that the dimension, the number of turns, the winding direction and other factors being the same as those of said first coil block, so that

influences of leakage fluxes due to said first and second coil blocks upon said iron core are compensated.

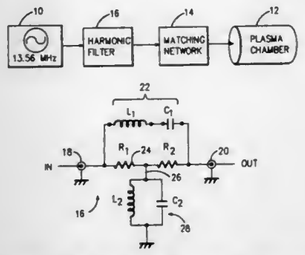
VOL 1147 ISS 3 FE 16 1993 UMI

5,187,457

HARMONIC AND SUBHARMONIC FILTER

Yogendra K. Chawla, Pittsford, N.Y., and Steven J. Smith, Redwood City, Calif., assignors to Eni Div. of Astec America, Inc., Rochester, N.Y.

Filed Sep. 12, 1991, Ser. No. 758,569
Int. Cl.[5] H03H *7/07*
U.S. Cl. 333—170 **8 Claims**



1. A harmonic and subharmonic filter coupled between a high power RF energy source and a non-linear RF load for passing said high power RF energy in a band centered on a predetermined radio frequency and blocking and attenuating energy at out-of-band frequencies which include multiples of said predetermined frequency or fractions of said predetermined frequency,

the harmonic and subharmonic filter comprising

an input terminal coupled to said source;

an output terminal coupled via an impedance matching network to said load;

a series of LC resonance path connected between said input and output terminals and tuned to said predetermined radio frequency;

a series resistive path formed of a first ohmic resistance and second ohmic resistance in series between said input and output terminals and having a junction therebetween; and

a parallel LC resonance path between said junction and a radio frequency sink, such that energy above or below said predetermined frequency is diverted through one or both of said resistances and is attenuated,

wherein at said predetermined radio frequency said series resonance path has a capacitive reactance and an inductive reactance each substantially three times the value of each of said first and second resistance, and said parallel resonance path has a capacitive reactance and an inductive reactance each substantially one third the value of each of said first and second resistances.

5,187,458

COMPOSITE LONGITUDINAL VIBRATION MECHANICAL FILTER HAVING CENTRAL FREQUENCY DEVIATION ELIMINATION MEANS AND METHOD OF MANUFACTURING SAME

Kazuo Yamashita; Yoshihiko Takeuchi, and Masahiro Watanabe, all of Tokyo, Japan, assignors to Nihon Musen Kabushiki Kaisha, Tokyo, Japan

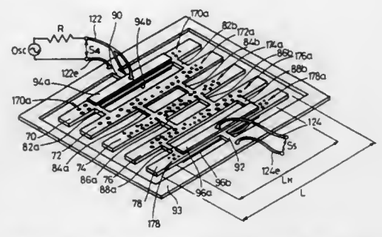
Filed Feb. 21, 1990, Ser. No. 483,454
Claims priority, application Japan, Sep. 21, 1989, 1-247396; Sep. 21, 1989, 1-247397; Sep. 21, 1989, 1-247398; Sep. 21, 1989, 1-247399; Oct. 16, 1989, 1-269808; Oct. 16, 1989, 1-269809; Oct. 16, 1989, 1-269810; Oct. 16, 1989, 1-296807
Int. Cl.[5] H03H *3/007, 9/46*
U.S. Cl. 333—197 **24 Claims**

6. A composite longitudinal vibration mechanical filter for receiving a supplied high-frequency signal at an input thereof and delivering out a high-frequency signal in a predetermined frequency range at an output thereof, said composite longitudinal vibration mechanical filter vibrating at a preselected central frequency, comprising:

a plurality of vibratable bodies, each having a predetermined length and including a high-frequency signal input vibratable body and a high-frequency output vibratable body, said input vibratable body being coupled to said input of the vibration mechanical filter, said plurality of vibratable bodies being positioned between the input and the output of the vibration mechanical filter, each of said vibratable bodies being longitudinally vibratable along said predetermined length thereof in a range close to a passband of the mechanical filter, said input vibratable body vibrating when the received high frequency signal is supplied to the input of the vibration mechanical filter;

said output vibratable body being coupled to said output;

piezoelectric members respectively superposed on said input and output vibratable bodies, said piezoelectric members having respective electrodes connected to at least one conductor;



a plurality of coupling elements for coupling said plurality of vibratable bodies to each other through flexural vibration;

supporting elements projecting respectively from said input and output vibratable bodies; and

a holder, holding a plurality of the vibratable bodies and coupling elements through said supporting elements;

central frequency deviation eliminating means, disposed in at least one of said plurality of vibratable bodies, for eliminating deviation of the central frequency of said vibration mechanical filter along the predetermined length of the at least one of the plurality of vibratable bodies, including said input and output vibratable bodies; and

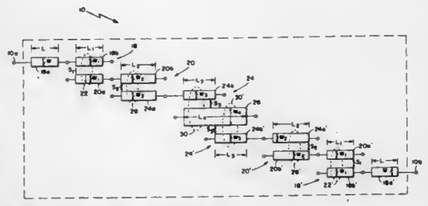
wherein said plurality of vibratable bodies, coupling elements, supporting elements, and holder are substantially flat.

5,187,459

COMPACT COUPLED LINE FILTER CIRCUIT

Mark E. Russell, Londonderry, N.H.; Anthony M. Donisi, Tewksbury, and David C. Miller, Greenfield, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Nov. 18, 1991, Ser. No. 793,919
Int. Cl.[5] H01P *1/203*
U.S. Cl. 333—204 **10 Claims**



4. A filter circuit comprising:

a substrate having first and second opposing surfaces with a ground plane conductor disposed over a first surface thereof;

a common strip conductor disposed over said second surface of said substrate and a pair of filter sections disposed symmetrically about said common strip conductor with each one of the pair of filter sections comprising:

a first pair of strip conductors disposed over a second surface of said substrate to provide a first coupled line section having a first electrical pathlength at a first frequency;

a second pair of strip conductors disposed over the second surface of said substrate to provide a second coupled line section having a second different electrical pathlength at the first frequency with a second one of said first pair of strip conductors coupled to a first one of said second pair of strip conductors; and

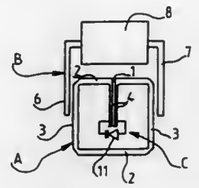
a third pair of strip conductors with one of said conductors being the common conductor disposed over the second surface of said substrate to provide a third coupled line section having a third different electrical pathlength at the first frequency with a second one of said second pair of strip conductors coupled to a first one of said third pair of strip conductors.

5,187,460

MICROSTRIP LINE RESONATOR WITH A FEEDBACK CIRCUIT

Gérard E. E. Forterre, Colombes, and Pierre Guilloo, Limoges, both of France, assignors to Tekelec Airtronic, France

Filed Mar. 7, 1991, Ser. No. 665,816
Claims priority, application France, Mar. 9, 1990, 90 03057
Int. Cl.[5] H01P *7/08, 1/203*
U.S. Cl. 333—219 **11 Claims**



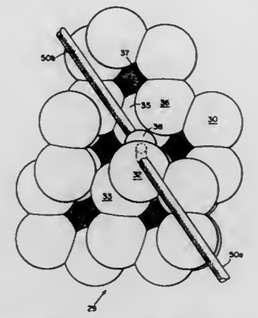
1. A dielectric resonator comprising a dielectric substrate and a first pattern comprising a metallic micro-wave strip deposited onto said substrate, the first pattern having a generally annular shape and being provided with a slot disposed transversely in a portion of the strip whereby said strip is divided into two parts by the slot, a feedback circuit comprising an active element coupled to said first pattern for providing positive feedback for injecting energy into the resonator to compensate for losses in said resonator, said feedback circuit comprising a second pattern of metallic micro-wave strips deposited on said dielectric substrate at a small distance from the micro-wave strip of said first pattern, with a portion of said feedback circuit strip extending in a parallel relationship with a portion of said first pattern strip on respective sides of said slot, at least one variable capacitance element being coupled to the first pattern strip adjacent said slot, said variable capacitance element being a voltage controlled element and further comprising a circuit for applying a voltage for controlling said variable capacitance element, said control voltage applying circuit including a part of the first pattern to which the variable capacitance element is coupled, said part of the first pattern to which the variable capacitance element is coupled being electrically connected to a control voltage source.

5,187,461

LOW-LOSS DIELECTRIC RESONATOR HAVING A LATTICE STRUCTURE WITH A RESONANT DEFECT

Karl Brommer, Box 53, Hampton Falls, N.H. 03844; Henry Mullaney, 271 Chestnut Hill Rd., Amherst, N.H. 03031; Robert Meade, 54 Berkeley St., Somerville, Mass. 02143; Andrew Rappe, 5133 Briarwood Dr., Macungie, Pa. 18062, and John Joanopoulos, 165 Oakley Rd., Belmont, Mass. 02178

Filed Feb. 15, 1991, Ser. No. 656,812
Int. Cl.[5] H01P *7/10*
U.S. Cl. 333—219.1 **13 Claims**



1. A dielectric resonator comprising:

a first dielectric material for receiving electromagnetic energy;

a lattice structure comprised of a plurality of shaped elements comprised of a second dielectric material and disposed in a multi-dimensional periodic arrangement within the first dielectric material to provide a range of frequencies over a band gap in which the electromagnetic energy within the frequency range of the band gap is prevented from propagating through the lattice structure; and

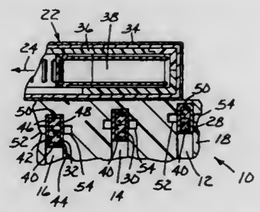
a resonant defect structure disposed within the lattice structure for introducing a lattice imperfection in the lattice structure, the resonant defect structure providing a frequency range within the band gap in which the electromagnetic energy having frequencies in the frequency range within the band gap is allowed to propagate through the lattice structure.

5,187,462

MULTIPLE MAGNET ASSEMBLY FOR USE WITH ELECTROMAGNETIC ARTICLE SURVEILLANCE MARKERS

Samuel Montean, Blaine, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 15, 1990, Ser. No. 480,253
Int. Cl.[5] H01F *13/00*
U.S. Cl. 335—284 **5 Claims**



1. An apparatus adapted for use with an electronic article surveillance system for magnetizing a magnetizable compo-

VOL 1147 ISS 3 FE 16 1993 UMI

nent of a desensitizable marker secured to an article to thereby alter the detectability of the marker,

said apparatus comprising a plurality of spaced apart permanent magnet assemblies, each including at least one section of ferromagnetic material and two parallel pole tips of opposite polarity defining a gap of substantially constant width, the length of which extends along said section for concentrating magnetic lines of flux near the gap and rapidly decreasing the intensity of flux with increasing distances away from the gap, and a housing having a surface adapted to support a said article as a said marker secured thereto moved along said surface, and having a plurality of recesses therein within each of which one of said permanent magnet assemblies is positioned such that a field of the same polarity, but of less intensity at said surface is produced by each of said assemblies successively positioned in recesses to one side of a first recess, whereby a said marker secured to an article moved along said surface from a location over said first recess toward locations over the remaining recesses is successively exposed to fields of the same polarity and progressively lower intensity, causing the magnetizable component of the marker to become magnetized.

5,187,463

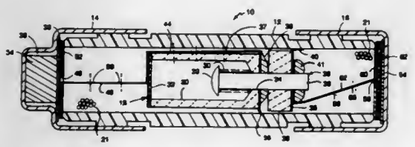
COMPACT TIME DELAY FUSE

Gary W. Di Troia, Saugus, Mass., and Paul M. Romani, Pawtucket, R.I., assignors to Gould, Inc., Eastlake, Ohio

Filed Feb. 11, 1992, Ser. No. 833,760

Int. Cl.[5] H01H *85/04*

U.S. Cl. 337—165 **16 Claims**



1. A time-delay fuse comprising

a fuse casing having openings at two ends thereof,

terminals at said two ends of said casing,

an enclosure that is within said fuse casing and is sized to leave a space between said enclosure and said casing,

a spring within said enclosure,

a plunger having a first end engaged by said spring in said enclosure and a second end extending from said enclosure,

a first solder mass engaging said plunger and restraining movement of said plunger into said enclosure, said solder melting at low overload conditions, and

a first fusible element segment extending from one side of said enclosure to the other in said space between said enclosure and said fuse casing,

said plunger and said first fusible element segment being electrically connected between said terminals,

wherein said first fusible element segment having a reduced area section.

5,187,464

EXTENDED LIFE POTENTIOMETRIC POSITION TRANSDUCER

Robert L. Forgacs, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 11, 1992, Ser. No. 880,786

Int. Cl.[5] H01C *10/24*

U.S. Cl. 338—149 **19 Claims**

1. A potentiometric position transducer comprising:

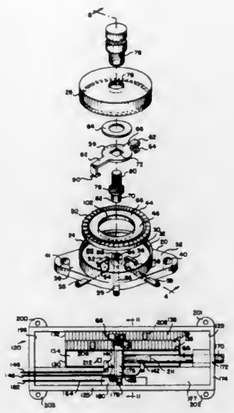
a housing;

resistive element means for providing an electrically resistive track movably mounted within the housing;

first and second electrical contact means mounted to the housing for defining first and second end points, respectively, of a potentiometer portion of the electrically resistive track, each having a contact end within the housing in sliding electrical contact with the electrically resistive track at spaced first and second locations, respectively, and each having a terminal end exterior to the housing;

position responsive electrical contact means mounted to the housing for picking up a position signal from the potentiometer portion of the electrically resistive track, having a movably mounted contact end within the housing in sliding electrical contact with the potentiometer portion of the electrically resistive track, and a terminal exterior to the housing, the position signal corresponding to the position of the movably mounted contact end on the potentiometer portion of the electrically resistive track; and

drive means for moving the electrically resistive track within the housing to change the potentiometer portion of the electrically resistive track between the contact ends of the first and second electrical contact means.



5,187,465

METHOD AND APPARATUS FOR TESTING A DUAL AIRBAG PASSIVE RESTRAINT SYSTEM

Dana A. Stonerook, Plymouth; Edward J. Abeska, Ferndale, and Jeff R. Rochette, Livonia, all of Mich., assignors to TRW Inc., Lyndhurst, Ohio

Filed Sep. 27, 1990, Ser. No. 589,456

Int. Cl.[5] B60Q *1/00*

U.S. Cl. 340—438 **19 Claims**

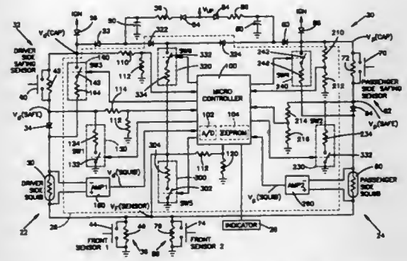
1. An apparatus for testing a dual airbag passive restraint system having two firing circuits, each one of said firing circuits having a series connection of several circuit components including at least two inertia sensors connected in series with a squib across a source of electrical energy, each one of said inertia sensors having a normally open switch and an associated parallel connected resistor, said apparatus comprising:

means for isolating at least one of the inertia sensors in at least one of the firing circuits from the other circuit components of the associated firing circuit;

means for monitoring, in said at least one firing circuit, at least one voltage value at a component connection while said at least one inertia sensor is isolated;

means for determining from the monitored voltage value a value functionally related to the resistance of at least one circuit component in said at least one firing circuit while said at least one inertia sensor is isolated;

means for comparing the determined value against predetermined limits; and



means for providing an error indication if the determined value is not within the predetermined limits.

5,187,466

METHOD OF DEACTIVATING A RESONANCE LABEL

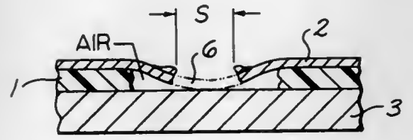
Fritz Pichl, Kilchberg, Switzerland, assignor to Kobe Properties Limited, Isle of Man, Isle of Man

Filed Jul. 22, 1991, Ser. No. 733,860

Claims priority, application Switzerland, Apr. 16, 1991, 1132/91

Int. Cl.[5] G08B *13/24*

U.S. Cl. 340—572 **13 Claims**



1. A method of producing resonance labels for use in shop burglary safety systems, said labels having metallic capacitor surfaces separated a substantially constant distance by virtue of being formed on two sides of a thermoplastic dielectric layer, said labels being prepared for deactivation in a deactivating system by short circuiting these surfaces, comprising the steps of:

deforming a local area of the dielectric layer to place the capacitor surfaces closer together at the local area to induce a short circuit between the surfaces by moving a heated metal rod against a first capacitor surface at the local area to thermally displace the dielectric layer and make conductive contact with the other capacitor surface, and

passing an electric current between the capacitor surfaces in conductive contact of enough magnitude to permanently deform the materials around the local area and leave a gap between the surfaces so that the deactivating system can melt the capacitor surfaces together at the local area to form a permanent short circuit.

5,187,467

UNIVERSAL LIGHT PEN SYSTEM

Robert L. Myers, Loveland, Colo., assignor to Hewlett Packard Company, Palo Alto, Calif.

Filed Jan. 10, 1991, Ser. No. 639,607

Int. Cl.[5] G09G *3/02*

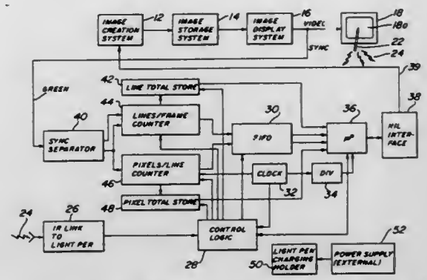
U.S. Cl. 340—707 **31 Claims**

1. A light pen system for identifying a screen location on a raster-scan display, the screen location having a first component definable by a line count and a second component definable by a pixel count, the vertical and horizontal dimensions of the display screen definable by a prescribed number of scan lines and a prescribed number of pixels per scan line, comprising:

(a) detecting means for detecting first and second sync signals to the raster-scan display;

(b) line counter means, coupled to said detecting means and responsive to said first sync signal, for providing a line count indicative of the first component, said line counter means including first storage means for determining and storing a total line count indicative of said prescribed number of scan lines; and

(c) pixel counter means, coupled to said detecting means, for providing a pixel-clock count representative of the second component, said pixel counter means including second storage means for determining and storing a total pixel-clock count representative of said prescribed number of pixels per scan line.



5,187,468

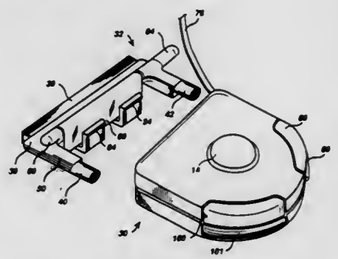
POINTING DEVICE WITH ADJUSTABLE CLAMP ATTACHABLE TO A KEYBOARD

Charlie Garthwaite, Kirkland; Bridget Cameron, Seattle; Stuart Ashmun, Seattle; Allan H. Stephan, Seattle, and Michael D. Nelson, Seattle, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Oct. 23, 1989, Ser. No. 425,527

Int. Cl.[5] G09G *3/02*

U.S. Cl. 340—709 **29 Claims**



1. A computer command apparatus for entering commands into a computer having a keyboard as a part thereof, comprising:

a housing;

a pointing device means within said housing for generating electrical signals translatable as commands to said computer;

an attachment assembly removably coupled to said housing, said attachment assembly being adapted to be removably attached to said computer with said computer supporting the entire weight of the attachment assembly and pointing

VOL 1147 ISS 3 FE 16 1993 UMI

device, said attachment assembly being removably attached to said housing having said pointing device therein to permit the removable attachment of said pointing device means to said computer, said attachment assembly including a computer attachment member which is attachable to said computer to permit removably attaching said attachment assembly directly to said computer; and

a rotatable member that is a part of said attachment assembly and is coupled to said housing and a stationary member adapted to be coupled to said computer, said rotatable member permitting said housing to be alternatively positioned in generally a horizontal orientation or in generally a vertical orientation.

5,187,469

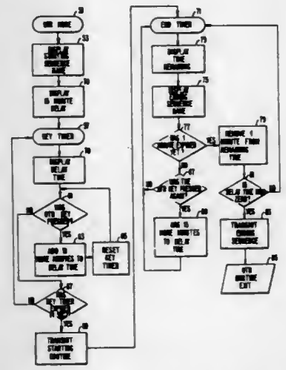
UNIVERSAL REMOTE CONTROL INCLUDING QUICK TOUCH FUNCTION

Benjamin F. Evans; Jerry J. Heep, both of Weatherford, and Peter H. Haagen, Arlington, all of Tex., assignors to Tandy Corporation, Ft. Worth, Tex.

Continuation of Ser. No. 563,224, Aug. 6, 1990, abandoned. This application Nov. 26, 1991, Ser. No. 799,913

Int. Cl.[5] H04Q *1/00*

U.S. Cl. 340—825.220 **21 Claims**



1. A method of controlling the operation of a remotely controllable device with a remote controller, said method comprising the steps of:

(a) specifying a particular operating function and a subsequent operating function to be performed by a remotely controllable device by operating a key in a remote controller;

(b) setting a timer in the remote controller in response to the operating state of the same key to specify the duration of the performance of the particular operating function;

(c) transmitting at least one command from the remote controller to the remotely controllable device to cause the device to initiate execution of the particular operating function;

(d) counting down the timer value during execution of the particular operating function by the remotely controllable device; and

(e) transmitting at least one other command from the remote controller to the remotely controllable device when the timer value has been reduced to zero to cause the device to execute said subsequent operating function.

5,187,470

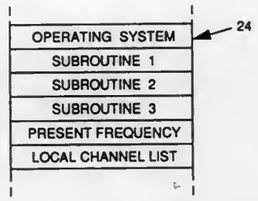
PAGING SYSTEM WITH LOCAL CHANNEL LISTS

Randolph E. King, Beaverton, and Garold B. Gaskill, Tualatin, both of Oreg., assignors to Seiko Corp. and Seiko Epson Corp., both of, Japan

Continuation of Ser. No. 367,207, Jun. 16, 1989, abandoned, which is a continuation-in-part of Ser. No. 352,635, May 12, 1989, Pat. No. 4,897,835, which is a continuation of Ser. No. 121,139, Nov. 16, 1987, abandoned, which is a continuation-in-part of Ser. No. 802,844, Nov. 27, 1985, Pat. No. 4,713,808. This application Mar. 13, 1991, Ser. No. 668,368

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 340—825.440 **5 Claims**



1. In a paging system which includes

a plurality of individually addressable mobile paging radio receivers for receiving signals containing paging messages, each of said pagers having a local channel list through which said receiver scans to find a particular channel on which it can reliably receive said paging messages, each of said receivers storing information identifying said particular channel on which said receiver is operating at any particular time, and

a plurality of transmitters, each of which transmits the same data stream including paging messages and a plurality of local channel lists, one of which includes the transmitter channel on which the particular transmitter is operating,

the method of operating said paging receivers which comprises:

receiving said plurality of transmitted local channel lists and utilizing said transmitted local channel lists in conjunction with said stored particular channel information which indicates the particular channel to which said receiver is presently tuned to permit said receiver to ignore certain local channel lists and to receiver and store one local channel list transmission relevant thereto.

5,187,471

RADIO TELECOMMUNICATION APPARATUS

Kiyoshi Wagai, Hino; Tatsuaki Sekigawa, Hachiioji; Shihoko Ohyanagi, Kokubunji, and Mitsuji Shiono, Oome, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 370,708, Jun. 23, 1989, abandoned. This application May 6, 1991, Ser. No. 698,327

Claims priority, application Japan, Jun. 24, 1988, 63-156471

Int. Cl.[5] H04Q *7/00*

U.S. Cl. 340—825.44 **27 Claims**

1. A radio telecommunication apparatus comprising:

first generating means for generating a first clock signal having a first frequency;

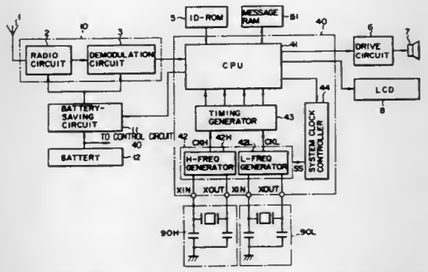
second generating means for generating a second clock signal having a second frequency which is higher in frequency than the first frequency;

receiving means for receiving signals transmitted over at least a radio channel;

control means, coupled to said first generating means, second generating means, and receiving means, for detecting a preamble word addressed to the radio telecommunication apparatus and a first signal sequence within the received signals, the first signal sequence being associated with an information indicative of the apparatus, and for

identifying a message signal sequence received in association with the first signal sequence within the received signals, said control means being supplied with the first clock signal by said first generating means so that said control means operates on the basis of the first frequency at least while said receiving means receives the first signal sequence, and being supplied with the second clock signal by said second generating means so that said control means operates on the basis of the second frequency at least while said receiving means receives the message signal sequence; and

power supply means, coupled to said control means for intermittently providing electrical power supply of a



predetermined time period to said control means and said receiving means in synchronization with the detection of the preamble word by said receiving means,

wherein the preamble word, the first signal sequence and the message signal sequence are received within the predetermined time period so that said control means and said receiving means are provided with the electrical power supply for the predetermined time period by said power supply means and operate on the basis of the first frequency at least while said receiving means receives the first signal sequence, and operate on the basis of the second frequency at least while said receiving means receives the message signal sequence.

5,187,472

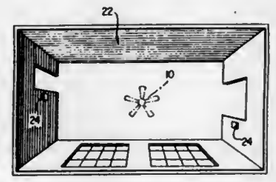
REMOTE CONTROL SYSTEM FOR COMBINED CEILING FAN AND LIGHT FIXTURE

Edward F. Hart, Yorba Linda, and William B. McDonough, Anaheim Hills, both of Calif., assignors to Casablanca Industries, Inc., City of Industry, Calif.

Division of Ser. No. 431,156, Nov. 3, 1989, Pat. No. 5,041,825. This application Apr. 2, 1991, Ser. No. 679,554

Int. Cl.[5] H04B *7/00*

U.S. Cl. 340—825.69 **6 Claims**



1. A remote control system for an electrical ceiling fan for individually controlling the ceiling fan from at least a pair of spaced locations, comprising:

a pair of control units A and B at spaced locations remote from said ceiling fan, said control units each including temperature sensitive means to generate an "automatic" speed command in response to a temperature condition, means to generate a "manual" speed command through manual entry means, an "A/B" indicator command identifying said control unit as unit A or unit B, a "manual-/automatic" indicator command identifying said speed command as an "automatic" command or a "manual" command and transmitter means for transmitting a signal incorporating one of said speed commands said "A/B" indicator command and said "manual automatic" indicator command; and

a controlled unit including receiver and processor means responsive to the transmitted signal for determining from said "manual/automatic" indicator command whether said speed command is a "manual" or an "automatic" command and, if said speed command is a "manual" command, setting a toggle to "A" or "B" to indicate whether said control unit transmitting said speed command is control unit A or control unit B, said processor means executing said speed command if it is a manual command, and, if said speed command is an automatic command, executing said speed command, only if the "A/B" indicator command matches the toggle setting.

5,187,473

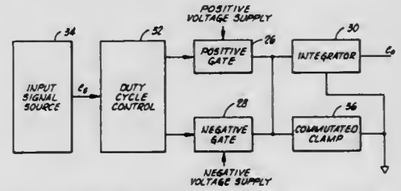
BIPOLAR SIGNAL AMPLIFICATION OR GENERATION

Robert J. Guest, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Aug. 31, 1990, Ser. No. 577,397

Int. Cl.[5] G01V *1/00*

U.S. Cl. 340—854.4 **18 Claims**



1. An apparatus for transmitting a bipolar signal, comprising:

a first polarity voltage source;

a second polarity voltage source;

a first gate switch, connected to said first polarity voltage source;

a second gate switch, connected to said second polarity voltage source;

an integrator connected to said first and second gate switches, said integrator providing an output through which a bipolar signal is transmitted;

control means, connected to said first and second gate switches, for operating said first and second gate switches so that first polarity and second polarity voltages are periodically alternately communicated through said first and second gate switches, respectively, to said integrator; and

a commutated clamp connected to said integrator so that the bipolar signal is generated in response to said control means, said commutated clamp and said integrator; and wherein said first gate switch includes a transistor comprising a first terminal connected to said first polarity voltage source, a second terminal connected to a node with said integrator and said commutated clamp, and a third electrode connected to said control means; and said second gate switch includes another transistor comprising a first electrode connected to said second polarity voltage source, a second electrode connected to said node, and a third electrode connected to said control means; and

wherein said integrator comprises an inductor having a terminal connected to said node, and having another terminal, and a capacitor having a terminal connected to

VOL 1147 ISS 3 FE 16 1993 UMI

said another terminal of said inductor, and having another terminal connected to said commutated clamp.

5,187,474

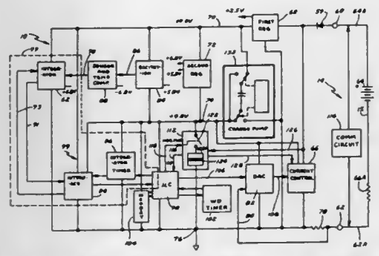
DIGITAL CONVERTER APPARATUS FOR IMPROVING THE OUTPUT OF A TWO-WIRE TRANSMITTER

John A. Kielb; Richard L. Nelson, both of Eden Prairie, and David L. Pederson, Hopkins, all of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Continuation of Ser. No. 914,648, Oct. 2, 1986, abandoned. This application Apr. 28, 1988, Ser. No. 188,110

Int. Cl.[5] G08C *19/16, 19/10*

U.S. Cl. 340—870.18 **24 Claims**



24. A method for adding a capability to a parameter value transmitter for transmitting a selected second kind of information where such a transmitter initially has, through a first set of transmitting circuits therein, a capability for transmitting, along a two-wire current carrying loop adapted for electrical connection to first and second terminals of the transmitter, a first kind of information formed by those values measured by a sensing means in the transmitter of a parameter the values of which depend on conditions in a structure to which the transmitter is affixed, the method comprising:

disconnecting and removing at least a portion of the first set of transmitter circuits which are initially electrically connected between the sensing means and the first and second terminals in the transmitter affixed to the structure;

providing in the transmitter affixed to the structure a second set of transmitting circuits electrically connected between the sensing means and the first and second terminals, the second transmitting circuits being capable of enabling the then modified transmitter to transmit both the first and second kinds of information along the two-wire loop;

providing electrical current to the transmitter through the two-wire current carrying loop which is substantially prevented in any part from flowing through at least one selected circuit component in the transmitting circuits by a switch means in the absence of a received signal on the two-wire current carrying loop;

selecting the second kind of information through a received signal selectively provided from an external source;

detecting in the transmitter receipt of a received signal on the two-wire current carrying loop;

switching the switch means upon detection of the received signal to provide a flow of electrical current through the selected circuit components in the transmitting circuit; and

switching the switch means again on termination of the detection of the information signal to thereby prevent flow of electrical current through the selected circuit components.

5,187,475

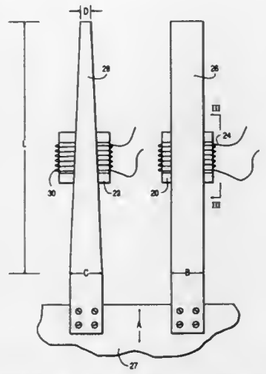
APPARATUS FOR DETERMINING THE POSITION OF AN OBJECT

Thomas J. Wagener, Eden Prairie; Paul E. Bjork, Forrest Lake, and James E. Lenz, Brooklyn Park, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 10, 1991, Ser. No. 712,863

Int. Cl.[5] G01B *7/00*

U.S. Cl. 340—870.32 **20 Claims**



20. An apparatus for determining the position of an object, comprising;

means for sensing the presence of magnetic material in a zone proximate said sensing means, said sensing means being responsive to the quantity of said magnetic material in said zone;

means for moving a quantity of said magnetic material into said zone, said moving means being attached to said object, said quantity being dependant on the position of said object;

means for determining a magnitude representative of said quantity, said determining means being connected in electrical communication with said sensing means; and

means for comparing said magnitude to stored data to determine the position of said object.

5,187,476

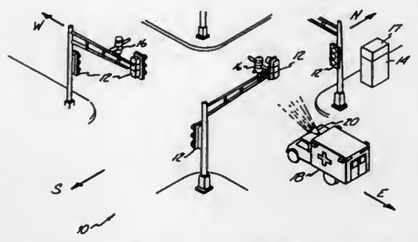
OPTICAL TRAFFIC PREEMPTION DETECTOR CIRCUITRY

Steven M. Hamer, Willernie, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 24, 1991, Ser. No. 720,894

Int. Cl.[5] G08G *1/07*

U.S. Cl. 340—906 **21 Claims**



1. A detector for receiving pulses of light from an emergency vehicle and sending an output signal to a remote phase selector, the detector comprising:

photocell means for providing an electrical signal in response to pulses of light received;

rise time filter means coupled to the photocell means for removing constant and slowly varying components from the electrical signal provided by the photocell means and allowing quickly changing pulse components of the electrical signal to pass;

band pass filter means coupled to the rise time filter means for generating a decaying packet of electrical pulses from each pulse provided by said rise time filter means; and

output means coupled to the band pass filter means for providing the output signal based upon the decaying packet pulses, whereby the amplitude of each received pulse of light is represented in said output signal as said packet of electrical pulses in which the number of successive pulses and amplitude of the final pulse in each packet represents the amplitude of the corresponding received pulse of light so that the output signal can have a relatively low maximum level consistent with integrated circuits and still be relatively immune to noise sources present in transmission lines coupling the detector to said remote phase selector.

5,187,477

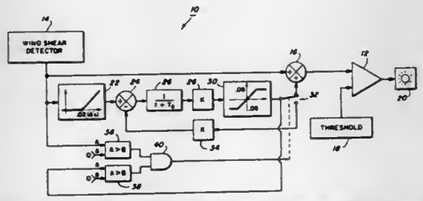
WIND SHEAR DETECTOR WITH SLOW SHEAR BIAS

J. Howard Glover, Bellevue, Wash., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Apr. 10, 1990, Ser. No. 508,311

Int. Cl.[5] G08B *23/00*

U.S. Cl. 340—968 **10 Claims**



1. A wind shear warning instrument for an aircraft, comprising:

means for providing signals representative of wind shear encountered by the aircraft;

means responsive to said providing means for integrating those wind shear representative signals which are representative of increasing performance wind shear energy and providing a signal representative of the accumulated increasing performance due to wind shear encountered by the aircraft;

means for monitoring said accumulated increasing performance representative signal and a generating an alert whenever the accumulated increasing performance representative signal exceeds a first predetermined magnitude;

means for combining the wind shear representative signals and said accumulated increasing performance representative signal to provide a combined signal, wherein said monitoring means is responsive to said combined signal for generating an alert when the combined signal exceeds a second predetermined magnitude; and

means for limiting the magnitude of the accumulated increasing performance signal applied to said combining means to a predetermined value less than said predetermined magnitude.

5,187,478

CONFIGURATION RESPONSIVE DESCENT RATE WARNING SYSTEM FOR AIRCRAFT

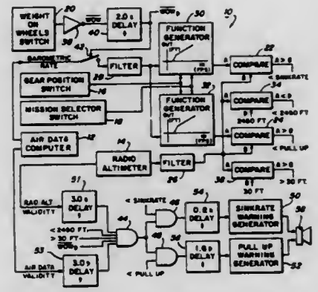
Michael M. Grove, Kirkland, Wash., assignor to Sundstrand Corporation, Rockford, Ill.

Continuation of Ser. No. 81,557, Jul. 31, 1987, Pat. No. 5,038,141, which is a continuation of Ser. No. 704,364, Feb. 22, 1985, abandoned. This application Mar. 29, 1991, Ser. No. 677,160

The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.

Int. Cl.[5] G08B *23/00*

U.S. Cl. 340—970 **13 Claims**



1. A warning system for warning the pilot of an aircraft of an unsafe flight condition, comprising:

means for receiving a signal representative of the descent rate of the aircraft;

means for receiving a signal representative of the radio altitude of the aircraft;

means for receiving a signal representative of the position of the landing gear;

means responsive to the signals representative of the radio altitude of the aircraft, the descent rate of the aircraft and the landing gear position for generating a warning if the magnitude of the descent rate of the aircraft exceeds a predetermined rate for a particular altitude at which the aircraft is flying as determined by a predetermined relationship between radio altitude and descent rate when said aircraft is flying with its landing gear up; and

means responsive to the landing gear position representative signal for changing said predetermined relationship between radio altitude and descent rate to a different predetermined relationship between radio altitude and descent rate when said aircraft is flying with its landing gear down, said different predetermined relationship being selected to cause the warning to be generated at a descent rate magnitude that is lower for the same particular altitude at which the aircraft is flying than the descent rate magnitude required to generate a warning when the landing gear is up.

5,187,479

BACKLASH COMPENSATION CIRCUIT FOR USE WITH AN INCREMENTAL ENCODER

David U. Johnson, III, New Carlisle; Charles J. Conner, Dayton, and Peter A. Wolf, Piqua, all of Ohio, assignors to AM International Incorporated, Chicago, Ill.

Filed Sep. 30, 1991, Ser. No. 769,204

Int. Cl.[5] H03M *1/22*

U.S. Cl. 341—6 **11 Claims**

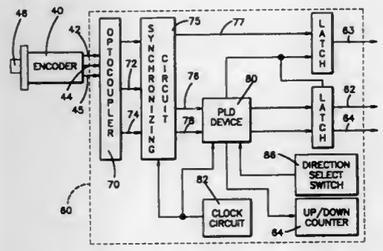
1. A circuit for electronically compensating the mechanical backlash associated with the electrical signals of an incremental encoder having a quadrature output in which one output signal is a first pulse train and the other output signal is a second pulse train, the characteristics of such output signals

VOL 1147 ISS 3 FE 16 1993 UMI

being that the first output signal leads the second output signal and, when taken in combination, a progression of four output conditions are sequentially presented to discriminating circuitry allowing same to detect a forward or reverse rotation of a shaft of the encoder, said circuit comprising:

means for providing the a rotational directional reference on which to determine forward or reverse shaft motions;

counting means for accumulating the integral number of pulses detected while the encoder is constrained to rotate in the reverse direction, and for the depletion of the accumulated counts upon said circuit detecting a resumption of forward rotation; and



control means for (i) discriminating forward and reverse rotation of the encoder shaft by the analysis of state progressions provided by the two output signals of the encoder, (ii) latching the quadrature output and index pulse of the incremental encoder upon detection of reverse rotation of the encoder shaft to those values immediately before such detection, and (iii) releasing such latched outputs of the incremental encoder upon depletion of accumulated reverse rotation pulses and an encoder output state identical to the latched state, said control means blocking passage of the first and second pulse trains and index pulse output from the incremental encoder to a pulse responsive system when the encoder shaft rotates in the reverse direction.

5,187,480

SYMBOL DEFINITION APPARATUS

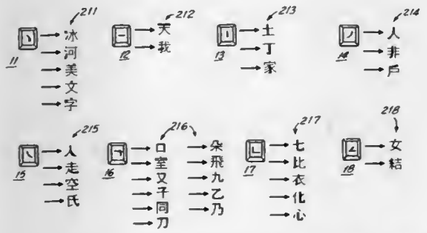
Ronald H. Thomas, Samford, and Helmut Stohr, Alderley, both of Australia, assignors to Allan Garnham, Queensland, Australia

Filed Dec. 3, 1990, Ser. No. 624,801

Claims priority, application Australia, Sep. 5, 1988, PJ0247; Mar. 19, 1990, PJ9172; Nov. 19, 1990, PK3446

Int. Cl.[5] G06F *3/00*

U.S. Cl. 341—22 **20 Claims**



1. Computer processing apparatus for assembling text in ideographic language characters, the computer processing apparatus comprising:

a memory including character stroke data storage means which stores data relevant to ideographic character stroke-type categories wherein each category is characterized by a size of a character stroke in the category and a direction of forming the character stroke in the category when hand-written, data relating to ideographic characters, and data representative of the order in which character strokes of respective ideographic characters are handwritten, and graphic data storage means from which data relevant to the graphic representations of each said ideographic character may be retrieved;

display means for displaying ideographic language characters retrieved from said graphic data storage means;

entry means providing a plurality of input entry designations including character stroke-type category entry designations designated by indicating means indicative of respective ones of the ideographic character stroke-type categories, and

selection means for selecting one of a plurality of characters displayed by said display means;

wherein said character stroke data storage means is searched by entering through the input entry designations search criteria including the entered ideographic character stroke-type categories and the order in which the character stroke-type categories are entered through the input entry designations, whereby, upon entry of the search criteria, data relevant to a graphic representation of the ideographic character or data relevant to the graphic representations of a plurality of ideographic characters which meet the search criteria is retrieved from the graphic data storage means and at least one of the graphic representations displayed by the display means.

5,187,481

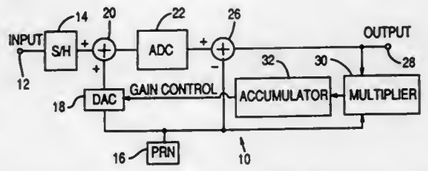
COMBINED AND SIMPLIFIED MULTIPLEXING AND DITHERED ANALOG TO DIGITAL CONVERTER

Donald R. Hiller, Lake Stevens, Wash., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 637,899, Jan. 3, 1991, and a continuation-in-part of Ser. No. 593,441, Oct. 5, 1990, Pat. No. 5,134,399. This application Jan. 7, 1992, Ser. No. 817,710

Int. Cl.[5] H03M *1/20*

U.S. Cl. 341—131 **25 Claims**



1. A method of dynamically correcting gain errors occurring during analog-to-digital conversion of an input analog signal comprising the steps:

generating a dither signal with a digital pseudo-random noise generator;

converting the dither signal to analog form with a digital-to-analog converter;

summing the dither signal and the input analog signal to yield a summed signal;

converting the summed signal into a digital output stream corresponding thereto;

subtracting the dither signal from the digital output stream;

correlating the dither signal to the digital output stream to detect residue of the dither signal remaining in the digital output stream indicative of non-unity gain of the dither signal; and

adjusting the gain of the dither signal to remove the residue.

5,187,482

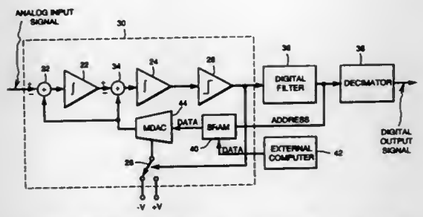
DELTA SIGMA ANALOG-TO-DIGITAL CONVERTER WITH INCREASED DYNAMIC RANGE

Jerome J. Tiemann, and Steven L. Garverick, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 2, 1992, Ser. No. 844,029

Int. Cl.[5] H03M *3/02, 3/04, 1/18*

U.S. Cl. 341—143 **9 Claims**



1. A delta sigma analog-to-digital converter comprising:

an oversampled interpolative modulator for receiving an input analog signal to be converted and generating an output digital signal;

digital filter means coupled to receive the output digital signal of said oversampled interpolative modulator for generating a filtered digital output signal; and

a decimator coupled to receive the filtered digital output signal of said digital filter for compressing the sampling rate of said filtered digital output signal;

said oversampled interpolative modulator comprising:

summing means for receiving said input analog signal and subtractively adding a voltage to generate a difference output signal;

at least one integrator coupled to said summing means for integrating said difference output signal;

comparator means coupled to said at least one integrator for generating a digital "one" or "zero" depending on whether the integrator output signal exceeds a predetermined threshold; and

a digitally controlled multiplying digitalto-analog converter coupled to the output of said digital filter means and selectively coupled to either of a positive and negative reference voltage, and being responsive to a digital control signal derived, at least in part, from an output of said digital filter means.

5,187,483

SERIAL-TO-PARALLEL TYPE ANALOG-DIGITAL CONVERTING APPARATUS AND OPERATING METHOD THEREOF

Masashi Yonemaru, Chiba, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 26, 1991, Ser. No. 798,617

Claims priority, application Japan, Nov. 28, 1990, 2-332162

Int. Cl.[5] H03M *1/14*

U.S. Cl. 341—156 **8 Claims**

1. An A/D converting apparatus for converting an analog input signal to digital data by dividing the input signal to upper bits and lower bits, comprising:

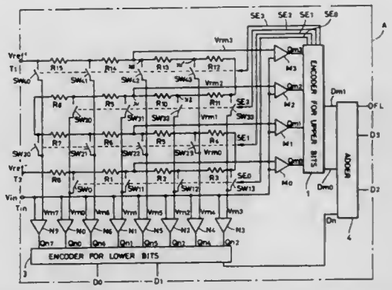
means for dividing a predetermined reference voltage for generating a plurality of first reference voltages;

means for dividing each step width of each of said plurality of first reference voltages to provide a plurality of second reference voltages;

a plurality of first comparing means for comparing each of said generated first reference voltages with said analog input signal;

means responsive to a result of comparisons from each of said first comparing means for calculating estimated values of said upper bits and for selecting a plurality of second reference voltages corresponding to a range ½ LSB above and below the LSB of the estimated values,

a plurality of second comparing means for comparing said analog input signal with each of said selected second reference voltages;



means responsive to a result of comparisons from each of said second comparing means for calculating values of lower bits; and

means for adding the most significant bit value of said calculated lower bits to the estimated values of said upper bits.

5,187,484

LINEARIZING A SWEPT-FREQUENCY RADAR

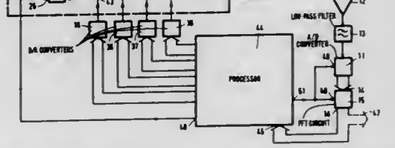
Andrew G. Stove, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 31, 1992, Ser. No. 829,790

Claims priority, application United Kingdom, Feb. 26, 1991, 9103945

Int. Cl.[5] G01S *7/03, 13/34*

U.S. Cl. 342—200 **9 Claims**



1. A method of reducing non-linearity (if any) present in the frequency-versus-time characteristic of the output signal of a swept-frequency radar transmitter, which output signal is derived from a radio-frequency source the output frequency of which is dependent on the value of a control signal applied in operation to a control signal input of said source, the output of a control signal generator being coupled to said control signal input for applying said control signal thereto to repeatedly sweep the frequency of said output signal, in which method said output signal is mixed with a delayed version thereof to yield a beat signal and said characteristic is adjusted in accordance with any variation of a frequency of this beat signal occurring during individual frequency sweeps of said output signal, characterized in that said control signal is formed by combining a time-independent component and n individually weighted time-dependent components, where n is greater than one, where the first time-dependent component is derived from the output of a single resettable analog integrator circuit which is fed from the output of a d.c. reference source and where the mth time-dependent component (m=2, . . . n) is derived from

VOL 1147 ISS 3 FEB 16 1993 UMI

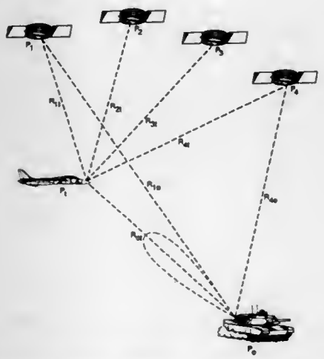
the output of a cascade combination of m resettable analog integrator circuits which is fed from the output of a d.c. reference source, in that the delayed version of the transmitter output signal is constituted by a version of this output signal which has been transmitted and reflected back by a target or targets, in that the cumulative-and-normalized-phase versus time characteristic of a specific spectral component of said beat signal is determined for an individual frequency sweep of said transmitter output signal, in that the coefficients of the first, . . . nth order terms of an nth order polynomial which fits the dependence of said control signal on said cumulative and normalized phase are determined from said cumulative-and-normalized-phase versus time characteristic and the concomitant variation of said control signal with time, and in that the coefficients so determined are used to update the weighting coefficients of the first, . . . nth said time-dependent components respectively to reduce any said non-linearity.

5,187,485

PASSIVE RANGING THROUGH GLOBAL POSITIONING SYSTEM

James B. Y. Tsui, Dayton, and Rudy L. Shaw, Huber Heights, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 6, 1992, Ser. No. 879,016
Int. Cl.[5] G01S 5/02
U.S. Cl. 342—357 **3 Claims**



1. A method for determining the distance from a target to an observation station, using four GPS satellites as radiation sources, and a GPS receiver at the observation station to form a bistatic radar system, wherein an angle of arrival (AOA) of the target to the observation station has been measured first, said method comprising:

measuring the respective delay times, t_{1to}, t_{2to}, t_{3to} and t_{4to}, of signals travelling from the four satellites to the target and then to the observation station, the signals having been scattered by the target; and

calculating the position of the target, using the following four equations which represent simultaneous nonlinear equations:

$$(x_t-x_1)^2+(y_t-y_1)^2+(z_t-z_1)^2+(x_t-x_o)^2+(y_t-y_o)^2+(z_t-z_o)^2=Ct_{1to}$$

$$(x_t-x_2)^2+(y_t-y_2)^2+(z_t-z_2)^2+(x_t-x_o)^2+(y_t-y_o)^2+(z_t-z_o)^2=Ct_{2to}$$

$$(x_t-x_3)^2+(y_t-y_3)^2+(z_t-z_3)^2+(x_t-x_o)^2+(y_t-y_o)^2+(z_t-z_o)^2=Ct_{3to}$$

$$(x_t-x_4)^2+(y_t-y_4)^2+(z_t-z_4)^2+(x_t-x_o)^2+(y_t-y_o)^2+(z_t-z_o)^2=Ct_{4to}$$

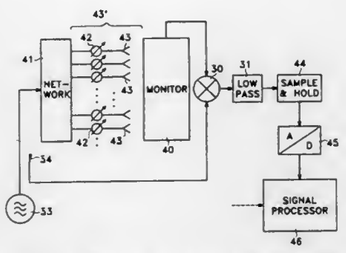
where C is the speed of light, (x_1, y_1, z_1), (x_2, y_2, z_2), (x_3, y_3, z_3) and (x_4, y_4, z_4) are respective positions of the four satellites, (x_t, y_t, z_t) is the position of the target, and (x_o, y_o, z_o) is the position of the observation station, wherein traces of the position of the target form ellipsoidal surfaces with respect to the positions of the satellites and the position of the observation station, and a point where the ellipsoidal surfaces intercept represents the position of the target.

5,187,486

METHOD OF AND APPARATUS FOR AUTOMATICALLY CALIBRATING A PHASED-ARRAY ANTENNA

Peter Kölzer, Korntal-Müchingen, Fed. Rep. of Germany, assignor to Standard Elektrik Lorenz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Apr. 12, 1991, Ser. No. 684,674
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1990, 4012101; May 4, 1990, 4014320
Int. Cl.[5] H01Q 3/00
U.S. Cl. 342—360 **16 Claims**



1. Method of calibrating an array antenna comprising a plurality of radiating elements which cooperate to produce an operational transmission having an associated far field pattern and an associated aperture illumination, and an integral monitor waveguide responsive to the combined ouput of all of said radiating elements during said operational transmission, wherein:

first signals corresponding to the far field pattern of the array antenna are derived from an output of the integral monitor waveguide during said operational transmission,

second signals corresponding to the aperture illumination of the antenna are derived from the first signals using an integral transform,

the second signals are compared with third signals stored in storage means,

a difference signal corresponding to the deviation of the second signals from the third signals is produced which is fed to a controller whose output acts on phase shifters connected to the array antenna, and

the foregoing steps are repeated until the difference signal lies within a predetermined tolerance band.

5,187,487

COMPACT WIDE TUNABLE BANDWIDTH PHASED ARRAY ANTENNA CONTROLLER

Nabeel A. Riza, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 5, 1992, Ser. No. 847,156
Int. Cl.[5] H01Q 3/22; G02B 27/10, 27/46
U.S. Cl. 342—372 **38 Claims**

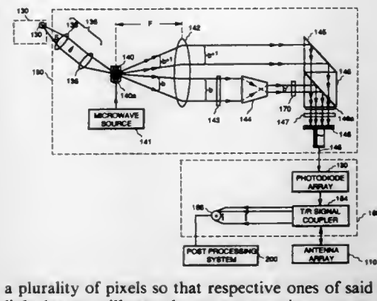
16. A phased array antenna system comprising:

a laser assembly adapted to generate beams of coherent, linearly polarized light;

an optical signal processing system optically coupled to said laser assembly, said signal processing system being adapted to produce a plurality of reference light beams and a plurality of differentially phase shifted signal light beams in a manner such that said signal light beams and said reference light beams will pass from said system along collinear and coincident paths, said optical signal processing system comprising:

an acousto-optic modulator (AOM) being disposed so that incident light beams will be Bragg matched to said AOM and so that light beams that pass therethrough will split into a diffracted beam cluster and an undiffracted beam cluster, a predetermined one of said beam clusters comprising a reference beam cluster and one of said beam clusters comprising a signal beam cluster, said AOM being adapted to be driven by a microwave source having a selected drive frequency; and

an optical phase modulating device coupled to said AOM so that the predetermined signal light beams will pass therethrough, said optical phase modulating device comprising



a plurality of pixels so that respective ones of said signal light beams will pass throug a respective corresponding pixel, each of said pixels being individually controllable to selectively change the phase of the signal light beam passing therethrough;

a transceiver module coupled to said optical signal processing system comprising a heterodyne detection array of photodiodes, each of said photodiodes being disposed to receive corresponding ones of said reference and signal light beams so as to convert said light beams into electrical beamforming signals, said corresponding reference and light beam signals being collinear and coincident; and

an antenna array electrically coupled to said transceiver module, said array comprising a plurality of antenna elements and being operable in a transmit or receive mode, each of said antenna elements being driven by a respective one of said electrical beamforming signals, said electrical beamforming signals collectively controlling the transmit and receive electromagnetic patterns of said antenna array.

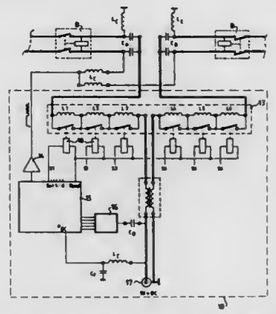
5,187,488

TUNABLE HIGH-FREQUENCY ANTENNA

Pieter A. Van Der Vis, Wassenaar, Netherlands, assignor to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Tno, The Hague, Netherlands

Filed Nov. 14, 1990, Ser. No. 612,845
Claims priority, application Netherlands, Nov. 14, 1989, 8902812
Int. Cl.[5] H01Q 9/16
U.S. Cl. 343—747 **10 Claims**

1. Tunable high-frequency antenna which has, over its length dimension, a number of built-in switches by means of which antenna sections are defined and frequency tuning takes place through antenna length matching by disconnecting and connecting said antenna sections, characterized in that each antenna section comprises a pair of parallel wire conductors, connected in series with the switches, said switches being double-pole switches, which antenna sections in series form a dipole antenna and which are used both for high-frequency



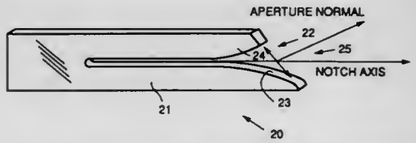
antenna current conduction and for feeding the double-pole switches, and in that the antenna is provided at its central feed point with a control circuit for tuning the frequency.

5,187,489

ASYMMETRICALLY FLARED NOTCH RADIATOR

David A. Whelan, Chatsworth, and John Fraschilla, Redondo Beach, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 26, 1991, Ser. No. 751,241
Int. Cl.[5] H01Q 13/10
U.S. Cl. 343—767 **6 Claims**



1. An asymmetrical notch radiating element comprising

a substrate;

a tapered slot disposed in the substrate and having a lower flare and an upper flare that form an aperture of the radiating element and that each extend from the aperture to a predetermined location within the radiating element wherein the lower and upper flares meet, and wherein the direction of an axis of the tapered slot lies along a preselected direction that is not collinear with the normal to the aperture of the asymmetrical notch radiating element.

5,187,490

STRIPLINE PATCH ANTENNA WITH SLOT-PLATE

Masahiko Ohta, Shimodate; Kazuo Kaneko, Yokohama; Hiroyuki Iyama, Tokyo; Seizi Kado, Shimodate; Mitisuru Hirao, Shimodate; Hironori Ishizaka, Shimodate; Kenji Ohmaru, and Takao Murata, both of Tokyo, all of Japan, assignors to Hitachi Chemical Company, Ltd., Japan

Continuation of Ser. No. 572,126, Aug. 23, 1990, abandoned.
This application Jan. 17, 1992, Ser. No. 823,598
Claims priority, application Japan, Aug. 25, 1989, 1-219488
Int. Cl.[5] H01Q 13/100, 13/080
U.S. Cl. 343—770 **32 Claims**

1. A stripline patch type antenna, comprising:

a single radiating element means for transmitting and receiving radio waves;

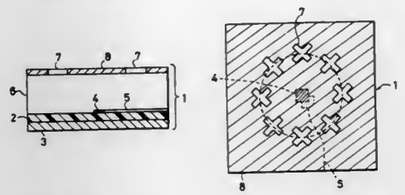
feed line means for transmitting signals to and from the radiating element means;

a dielectric substrate for supporting the radiating element means and the feed line means;

VOL
1147
ISS
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a grounding conductor located below the dielectric substrate; and

a slot plate located above the dielectric substrate, covering over the radiating element means, and having more than



four slots, all of the slots on the slot plate being arranged at regular intervals on a single circular line centered around a position directly above the radiating element means.

5,187,491

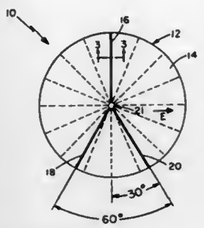
LOW SIDELOBES ANTENNA

Jack J. Schuss, Sharon; Jeffrey C. Upton; Edward A. Geyh, both of Groton, and Kaichiang Chang, Northborough, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Jan. 29, 1991, Ser. No. 647,393

Int. Cl.[5] H01Q *13/00*

U.S. Cl. 343—781 R **7 Claims**



1. An antenna comprising:

means for collimating electromagnetic energy;

means for illuminating said collimating means with said electromagnetic energy;

means for positioning said illuminating means in front of and at the center of said collimating means, said positioning means comprises three struts for supporting said illuminating means, each of said struts having an ogival cross-section for producing minimal scattering;

two lower struts of said positioning means being oriented approximately 30 degrees on each side of a vertical plane through said collimating means, said orienting of said lower struts maximizing the perpendicularity of said positioning means relative to an electric field (E) of said antenna thereby minimizing said electric field scattering and providing structural support for said illuminating feed means; and

waveguide means disposed within an upper strut of said positioning means for providing said electromagnetic energy to said illuminating means, said upper strut being perpendicular to said electric field.

5,187,492

STRUCTURE FOR MOUNTING TELESCOPIC ANTENNA FOR AUTOMOBILE

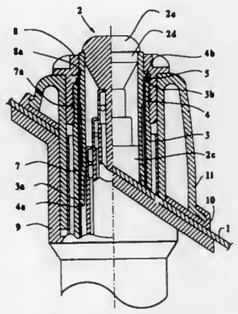
Masael Sato, Nitta, Japan, assignor tn Mitsuba Electric Manufacturing Co., Ltd., Gunma, Japan

Filed Jun. 28, 1991, Ser. No. 723,378

Claims priority, application Japan, Jul. 3, 1990, 2-070749; Jul. 3, 1990, 2-070751

Int. Cl.[5] H01Q *1/10*

U.S. Cl. 343—901 **6 Claims**



1. A structure for mounting a telescopic antenna for an automobile, said antenna having a plurality of rods of different diameters telescopically jointed so as to freely extend and contract, comprising:

a conducting pipe made of metal, loosely fitted over said antenna and provided with a contact part electrically contacting an outermost, widest rod;

a spacer pipe monolithically fitted in said conducting pipe, slidably surrounding and supporting said outermost rod;

a base pipe monolithically fitted over and supporting said conducting pipe;

a nut surrounding a top end portion of said spacer pipe and engaging with a threaded portion cut on an outside surface of the top end portion of said base pipe;

a flange and a collar provided on said conducting pipe and said spacer pipe respectively and clamped between a contact portion provided on said nut and a top rim of said base pipe; and

a flat ring positioned between said flange and said collar.

5,187,493

PEN EXCHANGING MECHANISM IN AUTOMATIC DRAFTER

Atsushi Yamada, Tokyo, Japan, assignor to Mutoh Industries Ltd., Tokyo, Japan

Filed Feb. 6, 1992, Ser. No. 831,990

Claims priority, application Japan, Feb. 6, 1991, 3-10807[U]; Mar. 25, 1991, 3-25225[U]

Int. Cl.[5] G01D *15/16*

U.S. Cl. 346—49 **3 Claims**

1. A pen exchanging mechanism for a drafting machine, comprising:

a stocker for holding a plurality of pens at a plurality of pen holding locations;

a drawing head for holding a pen currently in use; and

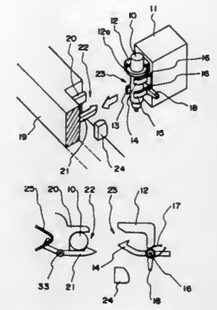
a pen exchange apparatus for delivering a pen from said stocker to said head or from said head to said stocker;

said pen exchange apparatus comprising:

at each of said pen holding locations of said stocker, at least one stationary arm member and at least one rotary arm member, for holding one of said pens;

at said drawing head, at least a pair of stationary arm members, and a pair of rotatable arm members, and a biasing element for each of said rotary arm members, a

first one of said rotary arm members including a lever arm joined to said first rotary arm member at a location proximate a pivot point thereof, and



said stocker including at least one engaging element for contacting said lever arm and rotating said first rotary arm member against the base of its biasing element as said drawing head approaches said stocker.

5,187,494

THERMAL TRANSFER RECORDING APPARATUS AND METHOD HAVING PREHEATING

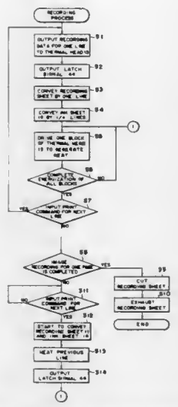
Takeshi Ono, Yokohama; Satoshi Wada, Kawasaki; Makoto Kobayashi, Tama; Takehiro Yoshida, Tokyo; Tomoyuki Takeda, Yokohama; Yasushi Ishida, Tokyo; Minoru Yokoyama, Yokohama; Akihiro Tomoda, Yokohama; Masakatsu Yamada, Yokohama, and Takashi Awai, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1990, Ser. No. 553,419

Claims priority, application Japan, Jul. 19, 1989, 1-184413

Int. Cl.[5] B41J *2/38, 17/06*

U.S. Cl. 346—76 PH **20 Claims**



1. A thermal transfer recording apparatus for recording an image on a recording medium by transferring an ink from a member for containing ink therein, comprising:

member transporting means for transporting said member;

recording medium transporting means for transporting said recording medium;

recording means for effecting said member thereby recording an image on said recording medium; and

control means adapted, in case a next recording operation is not instructed until after an image recording with said recording means, to instruct, at a start of said next recording operation, said member transportin means and said recording medium transporting means to start transporting operation and to cause said recording means to effect said member with a smaller energy than in an ordinary image recording, said smaller energy being effected while said recording medium and said member are moved.

5,187,495

IMAGE FORMING APPARATUS FOR OBTAINING IMAGE UPON SCANNING WITH LASER BEAM

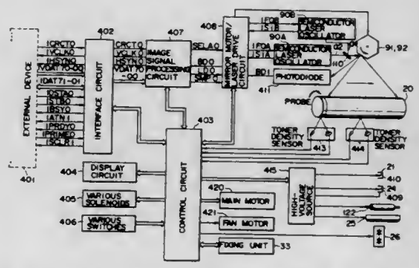
Koji Tanimoto, and Kazuo Sasama, both of Kawasaki, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 14, 1991, Ser. No. 669,595

Claims priority, application Japan, Mar. 16, 1990, 2-65858

Int. Cl.[5] G01D *15/16;* **H04N** *1/21*

U.S. Cl. 346—108 **8 Claims**



1. An optical apparatus for forming a latent image on an image bearing member, comprising:

means for generating a laser beam;

means for focusing the laser beam from the generating means with a predetermined focal length;

means for exposing the image bearing member to the laser beam focused by the focusing means so as to form the latent image thereon, the laser beam exposed on the image bearing member having a first light energy distribution; and

means for changing an optical path length of the laser beam from the generating means to the image bearing member so as to change the light energy distribution of the laser beam on the image bearing member from the first light energy distribution to a second light energy distribution different from the first light energy distribution.

5,187,496

FLEXIBLE ELECTROGRAPHIC IMAGING MEMBER

Robert C. U. Yu, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 29, 1990, Ser. No. 604,282

The portion of the term of this patent subsequent to Jan. 8, 2008, has been disclaimed.

Int. Cl.[5] G01D *9/00*

U.S. Cl. 346—135.1 **22 Claims**

1. A flexible electrographic imaging member comprising:

(a) a flexible dielectric imaging layer having a uniform thickness of between about 10 micrometers and about 50 micrometers and comprising a thermoplastic film forming polymer wherein said dielectric imaging layer is free of photoconductive material, and

(b) a flexible supporting substrate having an electrically conductive surface, said substrate comprising a single substrate layer having a uniform thickness and between about 25 micrometers and about 200 micrometers and comprising a thermoplastic film forming polymer wherein said dielectric imaging layer and said single substrate layer

VOL 1147 ISS 3 FEB 16 1993 UMI

have thermal coefficients of contraction that are substantially the same.

5,187,497

INK JET RECORDING APPARATUS HAVING GAP ADJUSTMENT BETWEEN THE RECORDING HEAD AND RECORDING MEDIUM

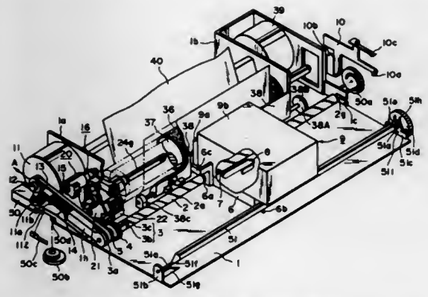
Hirofumi Hirano, Yokohama, and Yasuhiro Unosawa, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 583,308, Sep. 17, 1990, abandoned. This application Feb. 18, 1992, Ser. No. 835,061

Claims priority, application Japan, Sep. 18, 1989, 1-241078; Sep. 18, 1989, 1-241079

Int. Cl.[5] B41J *2/05*

U.S. Cl. 346—140 R **10 Claims**



5. An ink jet recording apparatus comprising:

recording means for discharging ink onto a recording material to effect recording thereon in a recording zone through which the recording material is fed;

a capping member disposed in a capping zone outside the recording zone, for capping said recording means;

reciprocating means for reciprocating said recording means between the recording zone and the capping zone;

a rotatable eccentric shaft engageable with said recording means to adjust a clearance between said recording means and the recording material by rotation of said shaft;

a guiding member having a slanted surface to which said recording means is engageable to provide a constant clearance between said recording means and said capping member regardless of a rotation angle of said shaft.

5,187,498

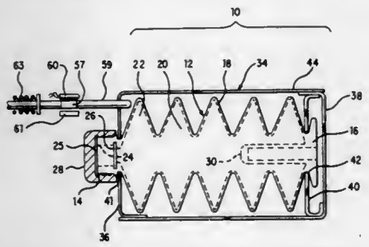
INK SUPPLY CONTAINER AND SYSTEM

William R. Burger, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 24, 1991, Ser. No. 735,233

Int. Cl.[5] B41J *2/175*

U.S. Cl. 346—140 R **25 Claims**



1. An ink supply for an ink jet printer, comprising:

a bellows filled with liquid ink, said bellows having first and second opposite end walls and a bellowed side wall attached to and extending between said first and second end walls to define a variable volume ink chamber, said bellows being movable between an extended position and a contracted position and being biased toward said contracted position, said first end wall having an outlet which, when opened, permits said ink to be expelled from said bellows; and

a rigid shell surrounding said bellows, said rigid shell having first and second end walls, said outlet extending through said first end wall of said shell, said second end wall of said bellows being releasably attached to said second end wall of said shell so that said bellows cannot contract until said second end wall of said bellows is released from said second end wall of said shell.

5,187,499

LIQUID JET RECORDING HEAD WITH PROTECTIVE LAYER HAVING AN ION EXCHANGER

Keiichi Murakami, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

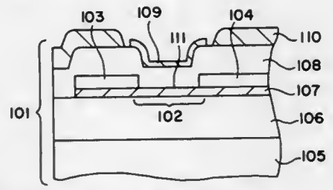
PCT No. PCT/JP91/00400, § 371 Date Oct. 22, 1991, § 102(e) Date Oct. 22, 1991, PCT Pub. No. WO91/14575, PCT Pub. Date Oct. 3, 1991

PCT Filed Mar. 27, 1991, Ser. No. 768,946

Claims priority, application Japan, Mar. 27, 1990, 2-75434

Int. Cl.[5] B41J *2/05*

U.S. Cl. 346—140 R **20 Claims**



1. A liquid jet recording head comprising:

a substrate comprising a support member, an electrothermal converting body being disposed above said support member, said electrothermal converting body including a heat generating resistor layer and electrodes being electrically connected to said heat generating resistor layer, and an upper protective layer containing an ion exchanger being disposed to cover said electrothermal converting body; and

a liquid pathway being disposed on said substrate, wherein said liquid pathway is in communication with a discharging outlet capable of discharging liquid, and said liquid pathway is disposed to correspond to a heat generating portion of said electrothermal converting body.

5,187,500

CONTROL OF ENERGY TO THERMAL INKJET HEATING ELEMENTS

Jaime H. Bohorquez, Escondido, and Brian J. Keefe, La Jolla, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 5, 1990, Ser. No. 577,911

Int. Cl.[5] B41J *2/05*

U.S. Cl. 346—140 R **5 Claims**

1. An integrated thermal ink jet printhead comprising:

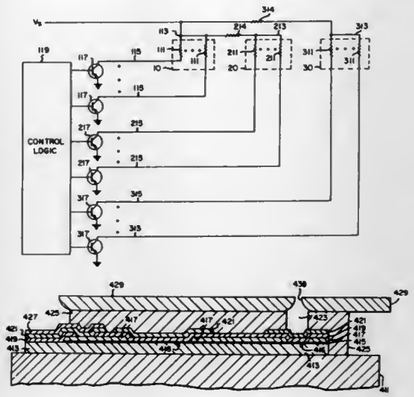
a substrate;

a resistor layer on said substrate having ink drop firing resistors of different energy requirements and energy controlling resistors defined therein;

a metallization layer adjacent said resistor layer and having metallic interconnections formed therein for providing serial energy controlling connections between predetermined ones of said ink drop firing resistors and predetermined ones of said energy controlling resistors so as to control the energy provided to said predetermined ones of said energy controlling resistors in accordance with the energy requirements thereof;

a plurality of ink containing chambers respectively formed over said metallization layer adjacent respective ones of said ink drop firing resistors; and

an orifice plate secured over said chambers and containing a



plurality of nozzles respectively associated with said chambers;

wherein said ink drop firing resistors are organized into resistor groups having respective common nodes, the resistors in a group having substantially the same energy requirements, and wherein each of said common nodes can have an energy controlling resistor connected thereto, whereby the energy provided to each of the resistors in a group is controlled by the energy controlling resistor in a return circuit for that group.

5,187,501

PRINTING SYSTEM

Walter J. Lewicki, Jr., Lancaster, Pa., and John H. Bowers, CLarksburg, N.J., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

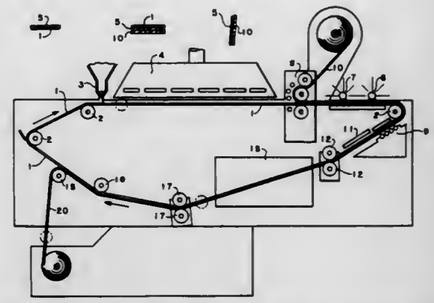
Continuation-in-part of Ser. No. 510,067, Apr. 17, 1990, and a continuation-in-part of Ser. No. 625,299, Dec. 10, 1990, Pat. No. 5,124,730. This application Oct. 1, 1991, Ser. No. 769,470

The portion of the term of this patent subsequent to Jun. 23, 2009, has been disclaimed.

Int. Cl.[5] G01D *15/06*; G03G *15/01*

U.S. Cl. 346—153.1 **28 Claims**

1. A novel printer comprising in combination a dielectric dispensing means, a conductive substrate, at least one means for directly depositing a latent electrostatic charge pattern, at least one developer station, at least one toner fixing station, and a separation station, providing in combination thereby a printing system, said dielectric dispensing means having means to provide a dielectric material upon said conductive substrate at a point in said system prior to said means for depositing a latent electrostatic charge pattern, and said separation station having



means subsequent to said toner fixing station to separate said dielectric from said conductive substrate.

5,187,502

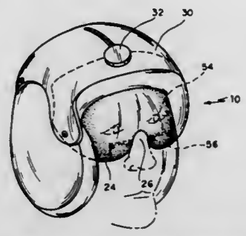
PILOT'S VISOR

Joe D. Howell, 107 Raven Rd., Greenville, S.C. 29615

Filed Sep. 10, 1991, Ser. No. 757,280

Int. Cl.[5] G02C *7/10*

U.S. Cl. 351—44 **19 Claims**



1. A visor for use by a pilot while maintaining a head's up attitude including;

a body enabling the passage of light rays and defining a compound curved bulbous configuration having an outer surface forming a convex curvature along both vertical and horizontal axes,

said body having top, bottom and side edges, said bottom edge including a medial nose bridge cut-out,

said body including an inner surface,

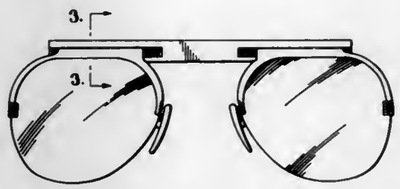
a pair of corrective lenses attached to said body inner surface, said corrective lenses each having an inner edge substantially flush with said nose bridge cut-out and body bottom edge, and

means engageable with said body to retain said body in a use position over eyes of a user, whereby

said user may view in a generally forward direction along a line of sight through said body without interference with said corrective lenses but when dropping said line of sight to a steeply inclined angle to view printed and graphical material in close proximity to said user, said line of sight passes through said pair of corrective lenses to benefit from the correction offered thereby without departing from the head's up attitude.

VOL 1147 ISS 3 FE 16 1993 UMI

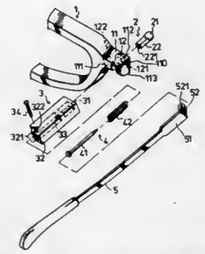
5,187,503
ADJUSTABLE EYEGLASS FRAMES
Carde T. Hilton, 41770 Margarita, No. 2092, Temecula, Calif. 92390
Filed Feb. 4, 1991, Ser. No. 650,087
Int. Cl.[5] G02C *5/04*
U.S. Cl. 351—128 **14 Claims**



1. An eyeglass frame, which comprises:
(a) a face bar with a pair of opposite ends, a front, a back, a top, and a bottom;
(b) a pair of lens subframes, each including:
(1) lens mounting means for mounting a lens;
(2) an inner side; and
(3) an outer side;
(c) a pair of nose pad assemblies each mounted on one of said face bar and a respective lens subframe in proximity to a respective lens subframe inner side;
(d) a pair of temples each mounted on a respective lens subframe outer side; and
(e) selectively adjustable lens subframe mounting means longitudinally slidably adjustably mounting said lens subframes on said face bar, said lens subframe mounting means comprising:
(1) channel means extends longitudinally with respect to said face bar and having opposite end portions each associated with a respective face bar end, said end portions being substantially longitudinally aligned with respect to each other and with respect to said face bar;
(2) each said lens subframe having a guide strip longitudinally slidably received in said channel means in proximity to a respective end portion thereof in an adjustable configuration of said eyeglass frame; and
(3) lens subframe locking means for locking said guide strip in said channel means in a permanent fixed configuration of said eyeglass frame by deforming one of said face bar and said guide strip.

5,187,504
EYEGLASS FRAME HAVING HOLLOW ADJUSTABLE CONNECTOR
Kiyomi Kanda, Yao, Japan, assignor to David Huang, Tapei, Taiwan
Filed Feb. 21, 1991, Ser. No. 658,767
Int. Cl.[5] G02C *5/08, 5/04, 5/22*
U.S. Cl. 351—153 **10 Claims**

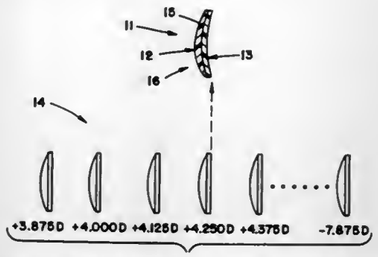
1. An eyeglass frame, comprising:
a lens frame having a pair of opposed endpieces, each of said endpieces having a front side surface, a rear side surface, an upper side surface, a lower side surface, a curved side surface extending from said rear side surface to said lower side surface, and a counterbore extending through said endpiece from said front side surface to said rear side surface, said counterbore having a generally hemispherical receiving portion adjacent to said front side surface, a thinner shaft-receiving portion extending rearwardly from said hemispherical receiving portion and up to said rear side surface, an enlarged portion extending forwardly from said hemispherical receiving portion and up to said front side surface, and a groove formed in said curved surface and communicated with the entire lengths of said shaft-receiving portion and said hemispherical receiving portion and with an end portion of said enlarged portion, said groove having a width approximate to that of said shaft-receiving portion of said counterbore;
two pivot members, each of said pivot members having a ball portion fittingly received in said hemispherical receiving portion of said counterbore of one of said endpieces and a shaft portion extending rearward from said ball portion and passing through said shaft-receiving portion of said counterbore;
two hollow connectors, each of said hollow connectors having a pair of upper and lower outwardly extending projections provided on one end thereof, said shaft portion of said pivot members extending into the other end of said hollow connectors;
biasing means associated with said hollow connectors and said pivot members to urge said hollow connectors to engage said curved side surface of said endpieces; and



two elongated bows, each of said elongated bows having a pivotable end projection rotatably hinged between said upper and lower projections of one of said hollow connectors;
whereby, said elongated bows are turnable relative to said hollow connectors between a first bow position, wherein said elongated bows are aligned with said hollow connectors, and a second bow position, wherein said elongated bows are positioned transverse to and inward of said hollow connectors, and said hollow connectors are turnable relative to said endpieces about a generally vertical plane between a first connector position, wherein said hollow connectors extend rearwardly and horizontally from said endpieces, and a second connector position, wherein said hollow connectors extend vertically downward from said endpieces.

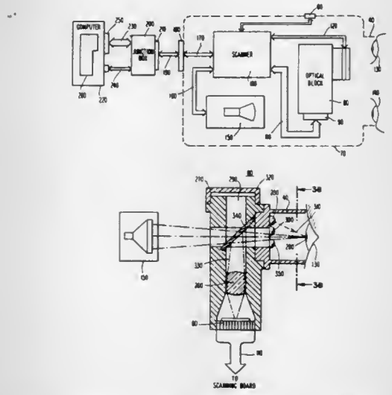
5,187,505
LAMINATED LENS WAFERS
David P. Spector, Sausalito, Calif., assignor to Pilkington Visioncare, Inc. (a CA. corp.), Menlo Park, Calif.
Filed Feb. 19, 1991, Ser. No. 656,599
Int. Cl.[5] G02C *7/02*
U.S. Cl. 351—159 **4 Claims**

1. A series of back wafers of varying power for a laminated ophthalmic lens, each back wafer having a concave back surface with a curvature that determines the power of the wafer, wherein the curvatures of the concave back surfaces of adjacent back wafers in the series differ from one another and



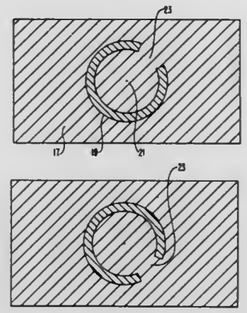
provide successive ones of the back wafers with powers that differ by at most ⅛ of a diopter.

5,187,506
METHOD AND APPARATUS FOR DETERMINING PHYSIOLOGICAL PARAMETERS BASED ON PUPIL RESPONSE
Elbert P. Carter, Wilmington, Del., assignor to Fairville Medical Optics Inc., Mendenhall, Pa.
Filed Sep. 28, 1990, Ser. No. 589,977
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—221 **23 Claims**



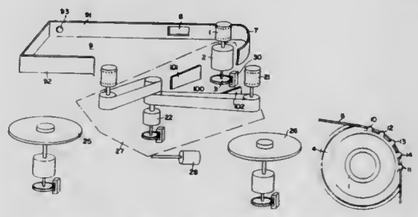
1. A portable, scanning, self-measuring pupillometer comprising:
eye orbit housing means for positioning at least one eye orbit for scanning by the pupillometer;
radiating means interfaced with the housing means for irradiating at least one eye with scanning radiation;
sensing means adapted to receive reflected radiation from the eye irradiated by the radiating means, the sensing means being further adapted to respond to a contrast between radiation reflected from the iris of the eye and radiation reflected from the pupil of the eye; and
centering means interfaced with the sensing means for presenting to a subject an image of the pupil on the sensing means as the subject is using the pupillometer, so that the subject can center the image of the pupil on the sensing means.

5,187,507
METHOD OF AND APPARATUS FOR DIAGNOSING PERIPHERAL FIELD DEFECTS AND OTHER PERIPHERAL RETINAL DAMAGE
Geoffrey B. Arden, London, England, assignor to The Institute of Opthalmology, London, England
Filed Mar. 1, 1991, Ser. No. 663,012
Int. Cl.[5] A61B *3/02*
U.S. Cl. 351—226 **13 Claims**



1. An apparatus for use in diagnosis of field defects comprising:
an image generator for generating an image comprising an annulus on a background, the annulus having an interruption in a selectable manner and being distinguishable from said background by a distinction in a visually perceivable property;
means, connected to said image generator, for changing the distinction between said annulus and said background in a graded manner in that property; and
means, connected to said image generator, for displaying said image.

5,187,508
FILM TRANSPORT DEVICE
Otto Blaschek, Aschheim, Fed. Rep. of Germany, assignor to Arnold & Richter Cine Technik & Co. Betriebs KG, Munich, Fed. Rep. of Germany
PCT No. PCT/DE89/00198, § 371 Date Sep. 25, 1990, § 102(e) Date Sep. 25, 1990, PCT Pub. No. WO89/09430, PCT Pub. Date Oct. 5, 1989
PCT Filed Mar. 25, 1989, Ser. No. 585,090
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1988, 3810814; Mar. 30, 1988, 3810815
Int. Cl.[5] G03B *21/48*
U.S. Cl. 352—180 **14 Claims**



1. Film transport device for transporting a film stepwise along a film gate within a film channel, said film having a series of frames, each said frame having an integral mark associated therewith, each film step consisting of an acceleration phase acting on the film, a braking phase, and a final-positioning phase, comprising:

VOL 1147 ISS 3 FEB 16 1993 UMI

a film transport sprocket with at least one tooth circle having teeth for engaging a film perforation with play, each of said teeth has a trailing flank and a leading flank,

a drive motor for driving said film transport sprocket, a control device for controlling said drive motor in such fashion that said film transport sprocket advances said film by one frame width at a time and then final-positions each frame at said film gate such that an integral mark of said film is always in the same position,

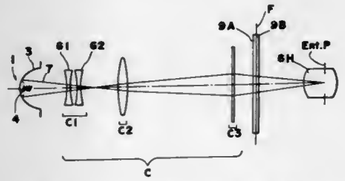
and circuitry for supplying a current pattern to said drive motor such that at the end of each film step, before final-positioning of the frame, said film overtakes the teeth of said film transport sprocket and is final-positioned by the leading flank of a tooth within the teeth in engagement with said film perforation.

5,187,509

ILLUMINATION SYSTEM FOR USE IN IMAGE PROJECTION APPARATUS

Satoshi Iwasaki, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 7, 1991, Ser. No. 666,053
Claims priority, application Japan, Mar. 7, 1990, 2-57499
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[5] G03B *3/02;* **F21V** *5/04*
U.S. Cl. 353—101 **8 Claims**



1. An illumination system for use in an image projection apparatus, the illumination system illuminating an original which retains an image to be projected, the image projection apparatus having a projection lens unit in an exchangeable manner to project the image of said original onto an image receiving plane with a different magnification, the illumination system comprising:

a light source assembly which emits convergent light to illuminate the original; and

an illumination lens group including, as arranged from the light source assembly side, a first lens unit of a negative power which is movable along the optical axis, a second lens unit of a positive power and a third lens unit of a positive power, wherein the illumination lens group fulfills the following equation,

$$\phi 1+\phi 2<0$$

where $\phi 1$ and $\phi 2$ represent the powers of said first and second lens units, respectively.

5,187,510

LIQUID CRYSTAL DISPLAY FOR PROJECTION SYSTEMS

James H. Vogeley, and Arthur W. Vogeley, both of Yorktown, Va., assignors to nView Corporation, Newport News, Va.

Continuation-in-part of Ser. No. 194,516, May 16, 1988, Pat. No. 4,976,536. This application Dec. 10, 1990, Ser. No. 625,037
Int. Cl.[5] G03B *21/00*
U.S. Cl. 353—122 **21 Claims**

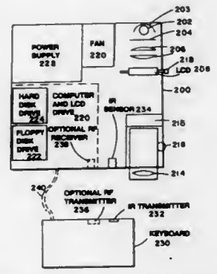
1. A compact information projector for projecting electronically generated display images on a remote surface, said projector comprising:

means for projecting a beam of light along an optical path to a viewing screen, said projecting means including a light source;

computer control means, responsive to at least one of stored commands and a keyboard input, for generating liquid crystal means energizing signals;

keyboard means for providing a keyboard input to said computer control means;

twisted nematic liquid crystal means, located along said optical path, for controlling polarization of light passing therethrough in response to localized energization and de-energization of said crystal means in accordance with said crystal means energizing signals;



means, responsive to said computer control means energizing signals, for selectively and locally energizing and de-energizing said crystal means;

back polarizing means disposed in said beam and located between said crystal means and said light source, for polarizing light passing therethrough; and

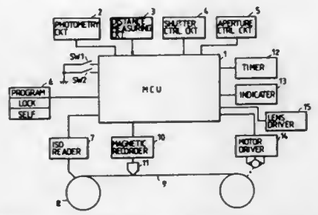
front analyzing means, located between said crystal means and said remote surface, for allowing light of a selected polarization to pass therethrough and for blocking light not having said selected polarization.

5,187,511

CAMERA USING FILM WITH A MANGETIC MEMORIZING PORTION

Kenichiro Amano, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1991, Ser. No. 687,035
Claims priority, application Japan, Apr. 20, 1990, 2-102794
Int. Cl.[5] G03B *17/24, 29/00;* **G11B** *5/09*
U.S. Cl. 354—106 **34 Claims**



1. A camera using film having a magnetic memorizing portion that includes a plurality of frames, said camera comprising:

writing means for writing the same information a plurality of times onto the same frame of the magnetic memorizing portion of the film; and

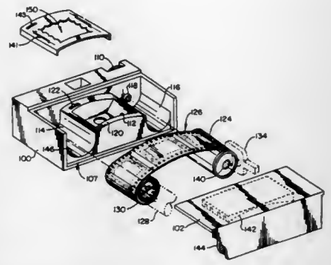
varying means for varying the number of times of writing the information by said writing means in conformity with the substance of the information.

5,187,512

FILM CASSETTE CONTAINING PRE-EXPOSED FILM

George F. Kirkendall, Cohasset, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 21, 1990, Ser. No. 780,056
Int. Cl.[5] G03B *1/00*
U.S. Cl. 354—120 **15 Claims**



1. A method for producing a composite image in a strip of negative film comprising:

(a) providing a strip of negative film comprising a plurality of exposure frames;

(b) directing a source of light toward the negative film;

(c) positioning a mask between the strip of negative film and the source of light, the mask containing opaque and non-opaque sections with the non-opaque section containing an image adapted to be photographically reproduced in each of said frames as a first latent image;

(d) energizing the source of light such that it strikes and passes through the non-opaque sections of the mask to thereby transfer the image thereon onto adjacent portions of a frame of the negative film as a first latent image while the opaque section of the mask prevents the light from exposing other adjacent portions of the frame;

(e) sequentially moving non-exposed frames of the negative film into alignment with the mask and repeating step (d) until substantially all of the frames in the negative film have been provided with a first portion containing a first latent image by being exposed to the image in the non-opaque sections of the mask, and a second unexposed portion;

(f) attaching one end of the negative film strip to a spool and forming the opposite end of the strip into a coil;

(g) forming a housing having two film holding cavities straddling an exposure frame opening, the exposure frame opening being configured to prevent the exposure of the first portion of the frames of the strip of negative film which contain the first latent image while permitting the exposure of the second unexposed portion of each of the frames;

(h) mounting the negative film strip and spool in the housing with the spool being positioned in one of the cavities and the coil in the other cavity;

(i) aligning the first frame with its second unexposed portion in alignment with the exposure frame opening such that when the first frame is subsequently subjected to image bearing light rays passing through the exposure frame opening, such light rays will strike only the unexposed portion of the first frame to provide a second latent image in the frame which is separate from the first latent image;

(j) sequentially aligning adjacent frames in the negative film strip with the exposure frame opening and exposing the unexposed portions thereof to image-bearing light rays so as to provide second latent images therein while simultaneously preventing the exposure of the first latent image to the same image bearing light rays; and

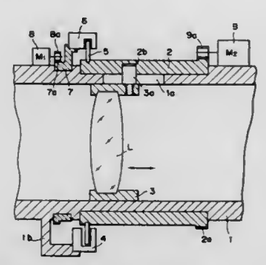
(k) simultaneously developing the first and second latent images to form a composite photograph.

5,187,513

FOCUSING APPARATUS

Hitoshi Imanari, Kawasaki, and Koshi Yoshibe, Yokohama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Oct. 21, 1991, Ser. No. 779,631
Claims priority, application Japan, Oct. 30, 1990, 2-290905
Int. Cl.[5] G03B *3/10*
U.S. Cl. 354—195.1 **2 Claims**



1. A focusing apparatus, comprising:

a rotary barrel, which is rotatable about the optical axis, for causing, by the rotating thereof, the focusing optical system to move in the direction of the optical axis;

driving amount detecting means provided with a detecting section which detects the position of the focusing optical system by detecting the rotational position of the rotary barrel and for outputting moving amount detected signals;

storage means for storing a position of the focusing optical system to be set arbitrarily;

first detecting means for detecting the arbitrarily set position and for outputting detected signals;

first instruction means for issuing an instruction for storing the focusing optical system at the set position;

first driving means for driving the storing means;

first driving control mean for controlling the first driving means in accordance with an instruction from the first instruction means and detected signals from the first detecting means;

second detecting means for detecting the set position which has already been stored and for outputting detected signals;

second instruction means for issuing an instruction for moving the focusing optical system to the set position;

second driving means for driving the focusing optical system to the set position;

second driving control means for controlling the second driving means in accordance with an instruction from the second instruction means and detected signals from the second detecting means, and

a board having a detecting section, fixed integrally to the rotary barrel and disposed in the second detecting means, for detecting a stored position, and a detecting section disposed so as to detect the amount of the movement of the focusing optical system.

5,187,514

PHOTOGRAPHIC FILM PACKAGE

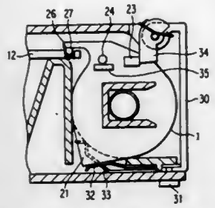
Shinpei Ikenoue, Ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 25, 1990, Ser. No. 587,911
Claims priority, application Japan, Sep. 25, 1989, 1-248498
Int. Cl.[5] G03B *17/26*
U.S. Cl. 354—275 **10 Claims**

1. A photographic film package comprising a spool having wound around it a multilayer silver halide color photographic film comprising a red-sensitive silver halide emulsion layer, a green-sensitive silver halide emulsion layer and a blue-sensitive silver halide emulsion layer; and a cartridge rotatably containing the spool carrying the photographic film, said cartridge

VOL
1147
ISS
3
FE
16
1993
UMI

having a film outlet for taking out and in the photographic film wherein said cartridge has a means for controlling the position thereof when the photographic film package is loaded in a camera such that the aforesaid film outlet is kept in the plane including the exposure stage in the camera and the direction of taking out or in the photographic film in the camera becomes



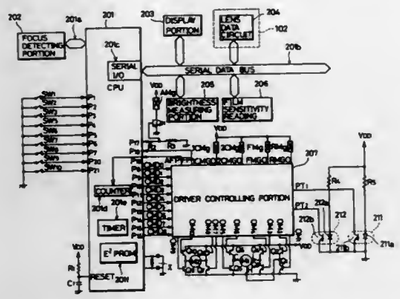
parallel to the winding direction of the photographic film in the camera, and the photographic film has light-sensitive layers having a total layer thickness of not thicker than 30 μm on one side of a transparent support and a back layer containing a hydrophilic polymer having a layer thickness of from 15% to 90% of the total layer thickness of the light-sensitive layers on the other side of the support.

5,187,515

CAMERA HAVING AUTOMATIC FOCUS ADJUSTING APPARATUS

Kenji Ishibashi; Tokuji Ishida, and Masataka Hamada, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 350,929, May 12, 1989, abandoned. This application Oct. 18, 1990, Ser. No. 599,278
Claims priority, application Japan, May 13, 1988, 63-117441
Int. Cl.[5] G03B *13/00*
U.S. Cl. 354—400 **9 Claims**



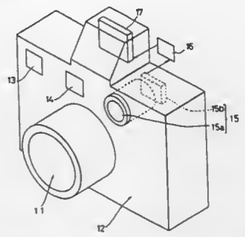
1. A camera, comprising:
(a) focus detecting means for detecting a focusing condition of a photographic lens to output a focus signal;
(b) first memory means for storing said focus signal of the last photographing operation;
(c) second memory means for storing said focus signal of the present photographing operation;
(d) a manual operating member;
(e) continuous photographing executing means for continuously carrying out photographing operation while said manual operating member is being operated; and
(f) moving object detecting means for detecting a movement of the object from outputs of said first and second memory means, when said continuous photographing operation is carried out by said continuous photographing executing means.

5,187,516

DEVICE FOR INDICATING DISTANCE MEASURING ZONE OF CAMERA

Nobuharu Suzuki, Gamagohri, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 599,080, Oct. 17, 1990, abandoned. This application Jul. 29, 1992, Ser. No. 919,386
Claims priority, application Japan, Oct. 20, 1989, 1-273432
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—403 **9 Claims**



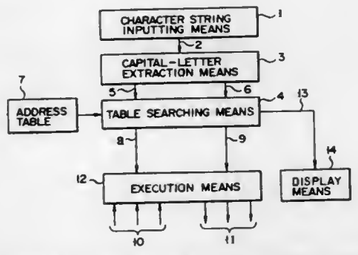
1. A device for indicating a distance measuring zone of a camera having a distance measuring device for projecting an infrared distance measuring beam onto an object and measuring an object distance based on an infrared beam reflected from the object, said infrared distance measuring beam forming a spot on the object, said device comprising:
means for sensing the infrared distance measuring beam reflected from the object and forming an electric conversion image;
means for observing the formed electric conversion image, said means for observing being sensitive to said infrared distance measuring beam, wherein the observed electric conversion image includes the spot and the object; and
imaging means for recording the formed electric conversion image, said imaging means not being sensitive to said infrared distance measuring beam, wherein said infrared distance measuring beam is not recorded on said imaging means.

5,187,517

CAMERA CONTROLLABLE WITH USE OF A CONTROL PROGRAM

Tetsuo Miyasaka, Kanagawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1991, Ser. No. 775,788
Claims priority, application Japan, Oct. 15, 1990, 2-275970; Dec. 13, 1990, 2-402069
Int. Cl.[5] G03B *17/00*
U.S. Cl. 354—412 **49 Claims**



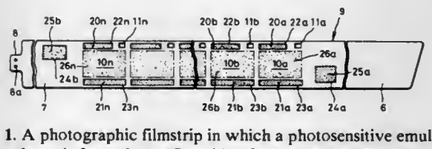
7. A camera to which a program instruction for controlling the camera operation can be inputted from outside the camera, comprising:
inputting means for inputting a character string consisting of natural language representing a program used to control the operation of each constituent element of said camera, the character string being one prepared outside the camera,
extraction means for extracting from said character string thus inputted a part of each word constituting the string as one used to constitute a symbol code,
subroutines stored in ROM for executing the individual operations of the camera,
memory means for storing, for each said symbol code, addresses of said ROM storing therein said subroutine for executing a program instruction corresponding to said symbol code,
searching means for searching an address of said subroutine corresponding to said symbol code, from said memory means, and,
executing means for executing said subroutine stored in said address thus searched.

5,187,518

PHOTOGRAPHIC FILMSTRIP

Kuniharu Kitagawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 10, 1991, Ser. No. 757,353
Claims priority, application Japan, Sep. 10, 1990, 2-240398
Int. Cl.[5] G03B *27/52*
U.S. Cl. 355—40 **13 Claims**



1. A photographic filmstrip in which a photosensitive emulsion layer is formed on a first side of a base, and a plurality of images are sequentially taken on a plurality of frames defined on the photosensitive emulsion layer, comprising:
a plurality of first recording areas positioned outside of each of said frames, information being magnetically recorded on at least one of said first recording areas; and
indicating means for allowing visual recognition of each of said first recording areas.

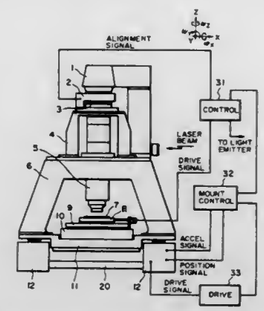
5,187,519

EXPOSURE APPARATUS HAVING MOUNT MEANS TO SUPPRESS VIBRATIONS

Yukio Takabayasbi, and Yukio Tokuda, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisba, Tokyo, Japan

Filed Oct. 4, 1991, Ser. No. 770,895
Claims priority, application Japan, Oct. 5, 1990, 2-266683; Oct. 5, 1990, 2-266684
Int. Cl.[5] G03B *27/42*
U.S. Cl. 355—53 **11 Claims**

1. An exposure apparatus for exposing a substrate with light from a light source, comprising:
a stage for moving the substrate substantially along a horizontal plane;
a base member for supporting said stage;
a frame member having at least three mounts for supporting said base member with respect to a vertical direction;
first actuator means having a plurality of first actuators provided in said mounts, respectively, for moving said base member in a direction substantially parallel to the vertical direction;
second actuator means having at least one second actuator provided in at least one of said mounts, for moving said base member substantially along the horizontal plane; and



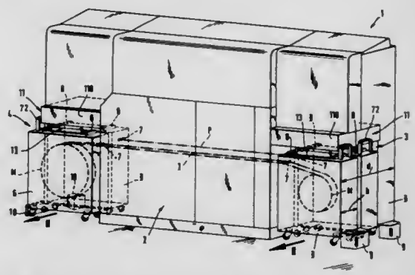
control means for controlling said first and second actuator means so as to suppress vibration of said base member.

5,187,520

PHOTOGRAPHIC COPYING APPARATUS

Kurt Müller, Weiningen, and Roberto Rupp, Brugg, both of Switzerland, assignors to Gretag Systems, Inc., Bothell, Wash.

Filed Jun. 16, 1992, Ser. No. 899,365
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1991, 91810493
Int. Cl.[5] G03B *27/58*
U.S. Cl. 355—72 **23 Claims**



1. Photographic copy apparatus for the processing of photographic copy material housed in mobile cassettes with a winding core and a cassette opening comprising: an exposure station; at least one gripping opening provided on the copy apparatus for engaging a cassette opening of a storage cassette or a winding cassette moved into a working position on either side of the exposure station; an automatic transport means for threading the copy material on an inlet side of the copy apparatus from the storage cassette into a transport path for the copy material, and for transporting copy material from an outlet side of the copy apparatus into the winding cassette, either side of the exposure station of the copy apparatus having at least two cassettes combined into a block so that cassette openings of storage cassettes on the inlet side and winding cassettes on the outlet side are approximately opposite each other in approximate alignment with the transport path for the copy material and with a parallel extending behind said transport path relative to a depth of the apparatus; and at least one transport device for moving the cassettes combined into a block on at least one of the inlet and outlet sides of the copy apparatus, said transport device being provided on the copy apparatus transversely to the transport path for the copy material so that a cassette on a given side of the copy apparatus in a rear position relative to a depth of the copy apparatus is moved into its

VOL 1147 ISS 3 FEB 16 1993 UMI

working position, while simultaneously a cassette in a front position on said given side is moved in a direction perpendicular to the transport path out of the working position.

5,187,521

MULTICOLOR IMAGE FORMING APPARATUS WITH COLOR COMPONENT DISCRIMINATION FUNCTION

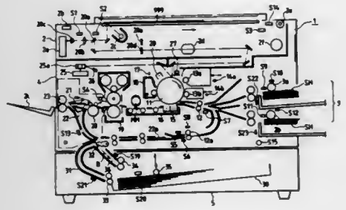
Hideaki Shimizu, and Masanori Sakai, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1991, Ser. No. 673,239

Claims priority, application Japan, Mar. 22, 1990, 2-69673; Mar. 22, 1990, 2-72644; Mar. 22, 1990, 2-72647

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—202 **18 Claims**



1. An image forming apparatus comprising:
an exposure unit for exposing an original;
a first image forming unit for forming an image on a recording medium by removing an image of a predetermined color component from an original image exposed by said exposure unit;
a second image forming unit for forming an image on said recording medium by extracting an image of said predetermined color component from said original image exposed by said exposure unit; and
processing means for making the color distribution range of said predetermined color component to be removed by said first image forming unit consistent with the color distribution range of said predetermined color component to be extracted by said second image forming unit.

5,187,522

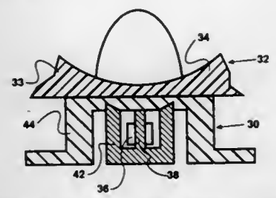
MAGNETIC MONITOR FOR MEASURING TONER CONCENTRATION

William A. Resch, III, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 5, 1991, Ser. No. 802,595

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—246 **4 Claims**



1. A monitor for sensing a concentration of toner particles in a development station of an electrostatographic machine having a development mixture sump wall with a curved, generally cylindrically shaped, inner wall surface; said monitor comprising:
a solenoid having a central coil-form with one end adapted to be positioned adjacent to the sump wall; and
a shield, made of a permeable material, at least partially surrounding the solenoid and having an end adjacent to the curved inner wall surface, wherein the surface of the end of the central coil-form and the surface of the end of the shield define a substantially cylindrical surface which conforms in shape to the curved inner wall surface of the sump wall.

5,187,523

DEVELOPING APPARATUS FOR DEVELOPING ELECTROSTATIC LATENT IMAGE USING TWO COMPONENT DEVELOPER

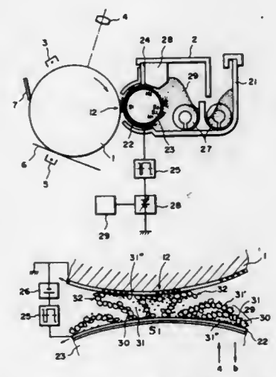
Keishi Osawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 11, 1991, Ser. No. 757,637

Claims priority, application Japan, Sep. 12, 1990, 2-243451

Int. Cl.[5] G03G *15/09*

U.S. Cl. 355—251 **12 Claims**



1. A developing apparatus for developing an electrostatic latent image on an image bearing member, comprising:
a movable developer carrying member for carrying a layer of a developer containing toner particles and magnetic carrier particles to a developing zone, said toner particles and said magnetic particles being charged to opposite polarities;
a stationarily magnet disposed on a side of said developer carrying member opposite the image bearing member, said magnet forming a magnetic brush wherein the developer is contactable to the image bearing member in the developing zone;
a voltage source for producing an oscillating electric field in the developing zone by application of an oscillating bias voltage to said developer carrying member;
wherein said oscillating bias voltage satisfies a maximum Vu1max of a potential difference Vu1 between an image portion potential of the electrostatic latent image and a potential of the developer carrying member in a transfer phase of the oscillating electric field, is larger than a maximum Vr1max of a potential different Vr1 therebetween in a back transfer phase; a time integration Iu1 of the potential difference Vu1 is larger than a time integration Ir1 of the potential difference Vr1; a maximum Vu2max of a potential difference Vu2 between a non-image portion potential of the electrostatic latent image and a potential of the developer carrying member in the transfer phase of the oscillating electric field, is not less than a maximum Vr2max of a potential difference Vr2 therebetween in the back transfer phase; and a time integration Iu2 of the potential difference Vu1 is not more than a time integration Ir2 of the potential difference Vr2.

5,187,524

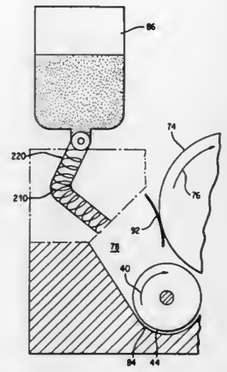
DEVELOPER DISPENSING APPARATUS WITH COMPOSITE TONER DISPENSER SPRING

Abraham Cherian, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 9, 1991, Ser. No. 742,804

Int. Cl.[5] G03G *15/06*

U.S. Cl. 355—260 **29 Claims**



1. A developer transport device comprising:
a developer transport passageway;
a helical coil rotatably disposed within said passageway, wherein said helical coil comprises a plurality of wires bound together and coated with at least one protective coating, said helical coil having at least two portions, one portion of said helical coil having a thin protective coating thereon, another portion of said helical coil having a thick protective coating thereon, said thick protective coating being thicker than said thin protective coating, said another portion of the helical coil being stiffer than said one portion of the helical coil.

5,187,525

IMAGE FORMING APPARATUS INCLUDING A DEVICE FOR SIMULTANEOUS DEVELOPING/CLEANING AND HAVING DISTRIBUTION BRUSH

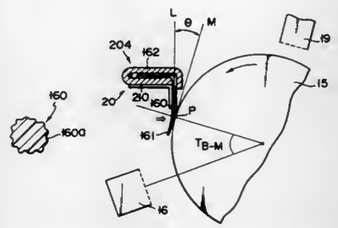
Seiichiro Fushimi, and Yoshihiko Sugiyama, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 30, 1990, Ser. No. 559,143

Claims priority, application Japan, Jul. 31, 1989, 1-196749

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—269 **12 Claims**



1. An image forming apparatus including an image carrier for forming an image on a recording medium by utilizing a developing agent, said apparatus comprising:
means for forming an electrostatic latent image on the image carrier;
means for developing the electrostatic latent image with the developing agent and removing from the image carrier the developing agent left over from a previous image forming operation, while the latent image is being developed;
means for transferring the developed image on the image carrier to the recording medium; and
means arranged between the transferring means and the developing and removing means for distributing the developing agent remaining on the image carrier, said distributing means including a bundle of electrically conductive fibers in contact with the image carrier and formed as a brush having a free end, each fiber having indentations on its peripheral surface, which indentations extend substantially continuously in the longitudinal direction of the fiber, means for applying a predetermined voltage tot he fiber bundle so that the developing agent remaining on the image carrier is attracted to the fiber bundle, and means for pressing the fiber bundle against the image carrier and preventing the fiber bundle from separating from the image carrier, said pressing means including a pressure member contacting a first lateral face of the fiber bundle facing away from the image carrier, so as to cover the first lateral face and having a free end projecting beyond the free end of the fiber bundle, said pressure member having a rigidity higher than that of the fiber bundle.

5,187,526

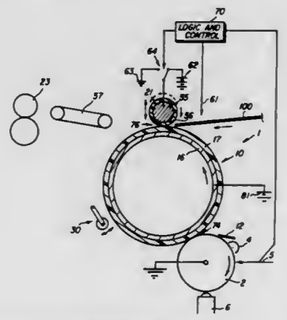
METHOD AND APPARATUS OF FORMING A TONER IMAGE ON A RECEIVING SHEET USING AN INTERMEDIATE IMAGE MEMBER

Mark C. Zaretsky, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 23, 1991, Ser. No. 764,018

Int. Cl.[5] G03G *15/16A*

U.S. Cl. 355—273 **6 Claims**

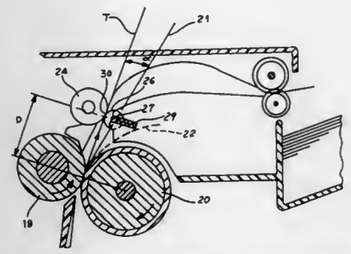


4. Image forming apparatus comprising:
means for forming an electrostatic image on a primary image member,
means for applying toner to the electrostatic image to create a toner image corresponding to said electrostatic image,
an intermediate image member having a resistivity of less than 10^9 ohm-cm,
means for applying an electric field urging the toner image from the primary image member to the intermediate image member to transfer said toner image to the intermediate image member,
a transfer backing roller having a resistivity of 10^{10} ohm-cm or greater and positioned to form a transfer nip with said intermediate image member,
means for feeding a receiving sheet into said nip, and,

VOL 1147 ISS 3 FE 16 1993 UMI

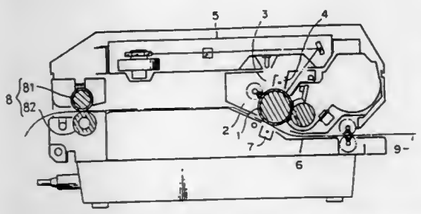
means for creating an electric field between said transfer backing roller and said intermediate image member to transfer said toner image from said intermediate image member to said receiving sheet.

5,187,527
DEVICE FOR ELIMINATING THE CURL OF SHEETS EMERGING FROM A FIXING STATION
Riccardo Forlani, and Michele Olivero, both of Turin, Italy, assignors to Olivetti-Canon Industriale S.p.A., Ivrea, Italy
Filed Nov. 6, 1991, Ser. No. 788,357
Claims priority, application Italy, Nov. 6, 1990, 67866A
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—282 **6 Claims**



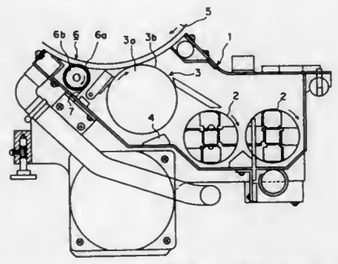
1. A device for eliminating the curl of sheets emerging from a fixing station of an image reproducing machine, comprising:
a fixing station for fixing images to sheets by pressure and heat, said sheets having a natural leaving direction from the fixing station;
a pair of straightening rolls installed downstream of said fixing station in order to apply a tension to said sheets and to forward them in a direction of advance out of line with said natural direction by an angle of correction of not less than 5°, wherein said straightening rolls are arranged away from said fixing station by a distance D given by the relation: $D \leqq V.Tr$, Tr being the characteristic time of cooling of a sheet emerging from the fixing station at speed V.

5,187,528
ELECTROPHOTOGRAPHIC IMAGE FORMING APPARATUS HAVING CONTINUOUS FROM SKEW PREVENTION
Tomoyuki Nishikawa, Matsudo, and Masahiro Kita, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 10, 1991, Ser. No. 683,546
Claims priority, application Japan, Apr. 13, 1990, 2-97880
Int. Cl.[5] G03G *15/00, 15/20*
U.S. Cl. 355—290 **6 Claims**



1. An electrophotographic image forming apparatus using a continuous form recording medium, comprising:
a photoconductive drum that is driven to rotate; and
a pair of fixing rollers, at-least-one roller of said pair of fixing rollers being driven to rotate with said recording medium positioned therebetween, whereby said recording medium is fed in response to a rotation of said at-least-one roller of said pair of fixing rollers, wherein a peripheral speed of said at-least-one roller of said pair of fixing rollers is faster than a peripheral speed of said photoconductive drum by a predetermined ratio, whereby slack of said recording medium between said photoconductive drum and said fixing rollers is prevented.

5,187,529
DEVICE FOR COLLECTING A TONER CARRIER IN AN IMAGE DEVELOPING APPARATUS
Masayuki Nakayama, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 28, 1989, Ser. No. 386,113
Int. Cl.[5] G03G *15/09, 21/00*
U.S. Cl. 355—296 **1 Claim**

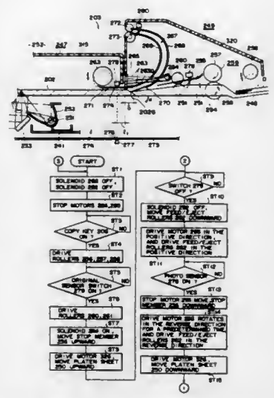


1. A device for collecting a carrier in an image developing apparatus to which a developing bias is applied, and in which a developing magnet roll having a surface to which a two-component developer composed of a toner and its carrier has been absorbed is rotated to cause said toner to develop an electrostatic latent image on a photosensitive material, said device comprising:
a carrier collecting magnet roll located close to said photosensitive material, and having a sleeve with an insulator surface and a magnet portion surrounded by said sleeve, said magnet portion being rotated in a timed pattern, and said sleeve of the carrier collecting magnet roll being stopped during developing;
a scraper contacting the surface of said carrier collecting magnet roll; and
driving means for rotating said carrier collecting magnet roll.

5,187,530
ORIGINAL SETTING DEVICE FOR IMAGE FORMING APPARATUS
Junji Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 22, 1989, Ser. No. 411,105
Claims priority, application Japan, Sep. 26, 1988, 63-240013; Sep. 26, 1988, 63-240021; Sep. 30, 1988, 63-245995
Int. Cl.[5] G03G *21/00, 15/00*
U.S. Cl. 355—308 **11 Claims**

1. An image forming apparatus comprising:
an original table on which an original is set at one end portion or the other end portion of a surface thereof;
scanning means, moved between said one end portion and said other end portion along said original table, for projecting light toward the original on said original table to be inclined from a direction perpendicular to said original table in a direction of said one end portion of said original table to scan the original on said original table; and

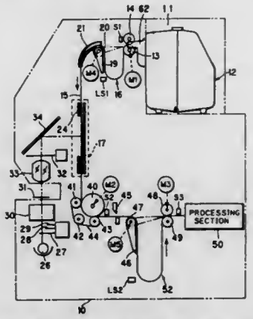
stopper means for setting the original at a position located away from the end edge of said other end portion of said original table in the direction of the end edge of said one end portion thereof by a predetermined distance at said other end portion of said original table, so that the original is set at said other end portion of the original table to fall outside a region of said other end portion where light from the scanning means is attenuated; wherein
said stopper means comprises a stopper member including a pair of arms projecting from said other end edge toward said one end edge of said original table along two side edges connecting said one end edge and said other end



edge, and a beam portion coupling projecting ends of said pair of arms and extending along said other end edge, and said stopper member being pivotal about proximal end portions of said pair of arms as fulcrums so that said beam portion is brought into contact with or separated from the position on the surface of said original table located away from said other end edge by the predetermined distance, and said beam portion of said stopper member which is brought into contact with the position on the surface of said original table located away from said other end edge by the predetermined distance constitutes a set reference of the original at said other end portion of said original table.

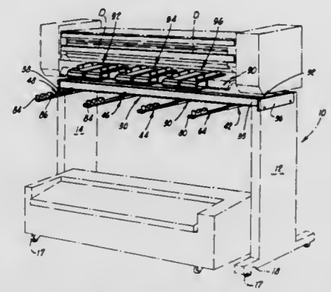
5,187,531
AUTOMATIC PAPER LOADING DEVICE AND METHOD FOR PHOTOGRAPHIC PRINTER
Yoshio Ozawa; Mitsukazu Hosoya, both of Kanagawa; Takashi Matsumoto, and Kimitoshi Saito, both of Saitama, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 13, 1992, Ser. No. 882,029
Claims priority, application Japan, May 13, 1991, 3-137181
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—308 **18 Claims**

1. An automatic paper loading system for a photographic printer comprising:
a slidable magazine table for supporting thereon a paper magazine containing a roll of photographic paper;
a first sensor positioned so as to output a first detection signal when said magazine table is slid toward a magazine final setting position;
a pair of feed rollers positioned proximate an exit of said magazine, when said paper magazine is in said final setting position, so as to nip a leading end of said photographic paper and draw said photographic paper from said paper magazine into said photographic printer, said feed rollers being adapted to be positioned in a cut-out formed in said exit of said paper magazine when said magazine table is slid into said magazine final setting position;
a motor coupled to said feed rollers so as to impart rotation thereto;
a second sensor positioned so as to output a second detection



signal when said paper leading end has passed through said feed rollers; and
a control circuit coupled to said motor, said first sensor and said second sensor so as to activate said motor in response to said first detection signal, and to stop said motor in response to said second detection signal.

5,187,532
ELECTROSTATIC DOCUMENT COPYING SYSTEM HAVING SHEET ROLLS SUPPORTED BY TELESCOPING CANTILEVERED ARMS
Thomas A. McNew, Oklahoma City, Okla., assignor to Digital Magnetic Systems, Inc., Oklahoma City, Okla.
Filed Nov. 4, 1991, Ser. No. 787,784
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—309 **19 Claims**



1. An electrostatic document copying system comprising:
an electrostatic paper copier; and
a copy paper feeding rack detachably connected to said copier, said paper feeding rack comprising:
a frame;
means for detachably connecting said frame to said copier;
a plurality of horizontally extending, horizontally spaced, substantially parallel, telescoping copy roll-supporting arms each supported as a cantilever on, and projecting from, said frame; and
means for selectively setting the length of each of said telescoping roll-supporting arms.

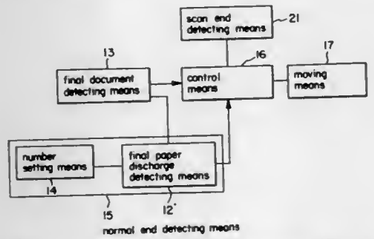
VOL 1147 ISS 3 FE 16 1993 UMI

5,187,533

AUTOMATIC DOCUMENT FEEDER FOR FEEDING DOCUMENTS BASED ON SIGNALS FROM A FINAL DOCUMENT DETECTING DEVICE AND A NORMAL END DETECTING DEVICE

Tsukasa Sugiyama, Moriguchi, and Ken Yoshizuka, Nagaokakyo, both of Japan, assignors to Mita Industrial Co. Ltd., Osaka, Japan

Filed Mar. 10, 1992, Ser. No. 848,926
Claims priority, application Japan, Mar. 11, 1991, 3-044871
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—309 **4 Claims**



1. An automatic document feeder for automatically feeding a plurality of documents on original setting means onto original mounting means of a main body of an image forming apparatus and sending the documents outside, comprising:

final document detecting means for detecting whether the document sent from the original setting means onto the original mounting means is a final document or not,

normal end detecting means for detecting whether all image forming steps have been completed normally or not as to the final document,

moving means for moving the documents, and

control means for controlling the moving means so as to send the final document outside after all image forming steps have been completed normally, and said control means controlling the moving means so as to send out documents other than the final document before all image forming step have been completed normally.

5,187,534

STAPLING DEVICE AND IMAGE FORMING APPARATUS HAVING A STAPLING DEVICE

Yasuhiro Iwata, and Shuzo Tsubo, both of Kanagawa, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 29, 1991, Ser. No. 707,334
Claims priority, application Japan, May 31, 1990, 2-142037
Int. Cl.[5] G03G *15/00*
U.S. Cl. 355—324 **5 Claims**

1. A device for stapling sheets at a stapling zone by using staples having one size, comprising:

means for conveying the sheets to collate the sheets at the stapling zone;

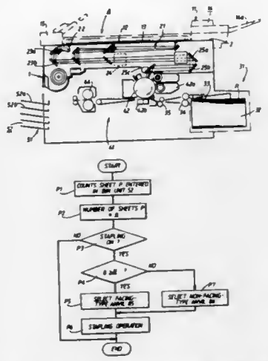
means for detecting the overall thickness of sheets conveyed by the conveying means to the stapling zone;

means for pressing the staple to pierce the sheets;

first anvil means for bending the staple inwardly, which staple is pressed and pierces the sheets by the pressing means, so that the tips of the staple face each other to staple the sheets collated at the stapling zone;

second anvil means for bending the staple, which staple is pressed and pierces the sheets by the pressing means, to form the tips of the staple in a non-facing configuration to staple the sheets collated at the stapling zone; and

means for alternatively selecting one of the first or second anvil means to cooperate with the pressing means in accordance with the overall thickness of sheets detected by the detecting means.

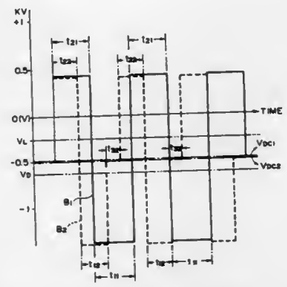


5,187,535

IMAGE FORMING APPARATUS

Hatsuo Tajima, Matsudo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1992, Ser. No. 846,067
Claims priority, application Japan, Mar. 5, 1991, 3-038662
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—326 **27 Claims**



1. An image forming apparatus, comprising:

an image bearing member movable along a first developing zone and a second developing zone downstream thereof;

a first developing device having a first developer carrying member for supplying a first color toner to said image bearing member in the first developing zone to form a first toner image;

first voltage applying means for applying to said first developer carrying member a first oscillating bias voltage which has a first phase of time period t11 for forming a first electric field applying to the first color toner a force away from said first developer carrying member toward said image bearing member and a second phase of time period t21 for forming a second electric field applying to the first color toner a force away from said image bearing member toward said first developer carrying member;

a second developing device having a second developer carrying member for supplying a second color toner to said image bearing member carrying the first toner image in the second developing zone; and

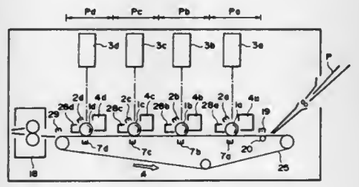
second voltage applying means for intermittently applying to said second developer carrying member a second oscillating bias voltage having a third phase of time period t12 for forming a third electric field applying to the second color toner a force away from said second developer carrying member to said image bearing member and a fourth phase of time period t22 for forming a fourth electric field applying a force to the second color toner away from said image bearing member toward said second developer carrying member, wherein $(t11+t21)>(t12+t22)$, is satisfied.

5,187,536

IMAGE FORMING APPARATUS

Takashi Hasegawa, Matsudo, and Masahiro Inoue, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 800,964, Dec. 2, 1991, abandoned. This application Jul. 6, 1992, Ser. No. 908,783
Claims priority, application Japan, Nov. 30, 1990, 2-336568
Int. Cl.[5] G03G *15/01*
U.S. Cl. 355—327 **64 Claims**



1. An image forming apparatus, comprising:

first and second image bearing members;

movable carrying means for carrying a transfer material through a first transfer position for electrostatically transferring a first image from said first image bearing member to the transfer material and through a second transfer position, downstream of the first transfer position with respect to a movement direction of said carrying means, for electrostatically transferring a second image from said second image bearing member onto the transfer material;

wherein said apparatus is operable in a first mode wherein the images are transferred onto the transfer material both at the first and second transfer positions and in a second mode wherein no image is transferred onto the transfer material at the first transfer position, and the image is transferred onto the transfer material at the second transfer position;

wherein difference in surface potentials of the transfer material immediately before and after the transfer material passes through the first transfer position in the first mode and the second transfer position in the second mode, are substantially the same.

5,187,537

VEHICLE FOLLOWING APPARATUS

Yoshiaki Asayama, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1991, Ser. No. 795,070
Claims priority, application Japan, Nov. 22, 1990, 2-318919
Int. Cl.[5] G01C *3/00*
U.S. Cl. 356—1 **6 Claims**

1. A vehicle following apparatus with a distance measuring function, said apparatus comprising:

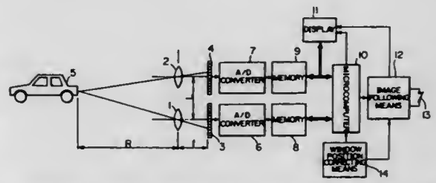
a pair of first and second image sensors including a pair of optical systems disposed at a predetermined distance from each other for optically sensing a plurality of objects including a preceding vehicle running ahead of a subject vehicle, on which said vehicle following apparatus is mounted;

a first memory for storing the images of said objects sensed by said first image sensor as first image signals;

a second memory for storing the images of said objects sensed by said second image sensor as second image signals;

a display with a screen for displaying the images of said objects as sensed by said image sensors on the screen;

image following means for defining on the screen of said display a first window containing therein an image of a preceding vehicle running ahead of the subject vehicle, and a second window adjacent said first window for catching the background of the preceding vehicle, said image following means being operable to control said first window in such a manner as to automatically follow the image of the preceding vehicle;



distance calculating means for calculating the distances to the objects in said respective first and second windows based on deviations of the images of the objects, which are sensed by said second image sensor and stored in said second memory, from corresponding reference images of the objects within said first window, which are sensed by said first image sensor and stored in said first memory; and

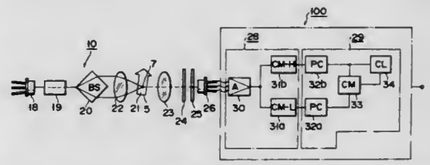
window position correcting means for correcting the position of said first window on the basis of the information on the distances calculated by said distance calculating means so that said first window can catch and follow the image of the preceding vehicle without fail.

5,187,538

LASER DOPPLER VELOCIMETER

Katsuharu Iwamoto, Yokohama, and Osamu Kawakami, Yokosuka, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 30, 1991, Ser. No. 785,077
Claims priority, application Japan, Oct. 30, 1990, 2-292692; Apr. 23, 1991, 3-091861
Int. Cl.[5] G01P *3/36;* **G01B** *9/02*
U.S. Cl. 356—28.5 **9 Claims**

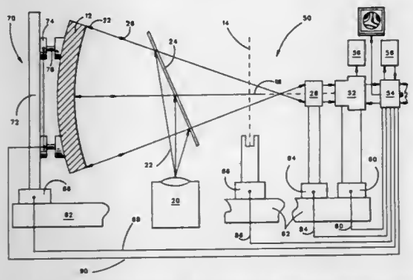


1. A laser Doppler velocimeter comprising a laser, a beam splitter for splitting a laser light beam from said laser into two laser lights, a focusing optical division for focusing said two laser lights to a region to be measured passing a particle to be measured to form interference fringes, an optical detector opposed to the interference fringes for receiving the light from the region to be measured, and a signal processor for converting the output from said optical detector into square wave according to at least two types of different voltage threshold values, judging "a normal measurement signal" only if the

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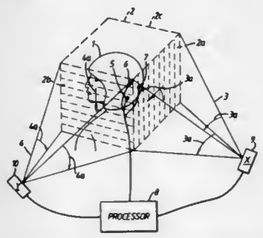
comparison result of the square wave generated from the threshold value of a high voltage with another one square wave coincides with a predetermined condition, and calculating the velocity of a particle to be measured according to the period of the square wave at that time.

5,187,539
MIRROR SURFACE CHARACTERISTIC TESTING
Iwao P. Adachi, Westminster, and Stephen B. Coffman, Anaheim Hills, both of Calif., assignors to Rockwell International Corporation, Seal Beach, Calif.
Filed Sep. 23, 1991, Ser. No. 763,784
Int. Cl.[5] G01B *11/27*
U.S. Cl. 356—124 **18 Claims**



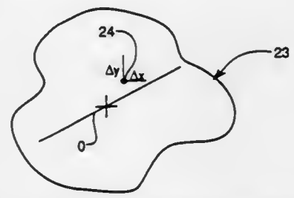
1. A method of measuring the optical surface characteristics of a mirror, comprising the steps of:
reflecting light of preselected frequency from a surface of said mirror for which optical characteristics are to be determined along an observation axis;
transferring said reflected light through a cross-grid type Ronchi grating of preselected and substantially uniform periodicity which is positioned along said observation axis so as to generate a grid type fringe pattern;
sampling said fringe pattern at predetermined coordinate locations to determine a relative fringe number for each fringe number line in said pattern;
forming a difference between adjacent fringe lines; and
generating Zernicke coefficients for said fringe pattern.

5,187,540
OPTICAL SYSTEM FOR THE REMOTE DETERMINATION OF POSITION AND ORIENTATION
John M. Morrison, Edinburgh, United Kingdom, assignor to GEC Ferranti Defence Systems Limited, Stanmore, United Kingdom
Filed Oct. 30, 1991, Ser. No. 784,218
Claims priority, application United Kingdom, Oct. 31, 1990, 9023626; Oct. 31, 1990, 9023639
Int. Cl.[5] G01B *11/26*
U.S. Cl. 356—152 **10 Claims**



1. An optical system, for the remote determination of the position and orientation of a body and a frame of reference, comprises light emitting means; beam splitting means for splitting light received from the emitting beams into two collimated substantially cylindrical beams; at least three light sensing means located on said body; scanning optic means including two divergent cylindrical lenses each operative to produce from a cylindrical beam a planar fan shaped beam diverging from its respective lens towards the frame of reference, said scanning optic means being further arranged to scan the frame of reference with the pair of planar fan-shaped beams, the planes of said two beams being inclined to each other; and signal processing means operative to provide a signal indicative of the position and orientation of the body from the time during the scan of each respective beam at which the beam is coincident with each of the said light sensing means mounted on the body.

5,187,541
SINGLE BEAM ANGULAR DEVIATION MEASUREMENT SYSTEM AND METHOD
Harry L. Task, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Jul. 5, 1991, Ser. No. 726,066
Int. Cl.[5] G01N *21/00*
U.S. Cl. 356—239 **4 Claims**

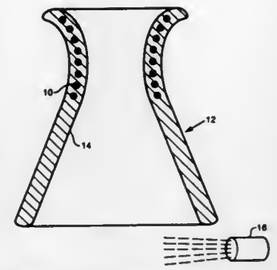


1. A system for measuring angular deviation in a transparency, comprising:
(a) a source of light;
(b) optical means for forming a large diameter collimated beam of light from said source and for transmitting said collimated beam along an optical axis;
(c) a focusing lens disposed along said axis, said focusing lens being of diameter smaller than the diameter of said collimated beam for receiving a portion of said large diameter collimated beam and form forming a focus of said portion along said axis onto a focal plane of said focusing lens;
(d) a sample region defined along said optical axis between said optical means and said focusing lens for interposing a transparency through which said large diameter collimated beam of light is transmitted in the measurement of angular deviation in said transparency; and
(e) a detector for detecting the position of said focus on said focal plane.

5,187,542
SPECTROSCOPIC WEAR DETECTOR
George C. Madzsar, North Olmsted, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washingtoo, D.C.
Filed Jun. 27, 1991, Ser. No. 722,446
Int. Cl.[5] G01J *3/00;* **G01N** *21/00, 17/00*
U.S. Cl. 356—300 **19 Claims**

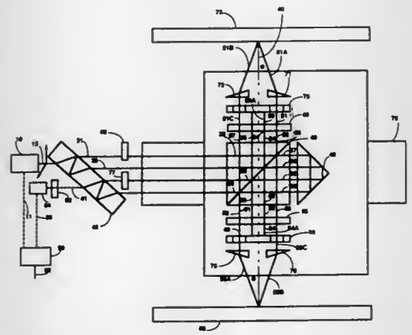
1. A nonintrusive and noncontact method of monitoring and measuring component wear resulting from material being eroded away in an apparatus emitting exhaust gasses to determine when said wear reaches a maximum allowable depth comprising

determining the elemental composition of said material from which said component is formed,
selecting an elemental species not appearing in said component,
implanting atoms of said selected elemental species in a surface of said component which is subject to wear at said depth of maximum allowable wear, and



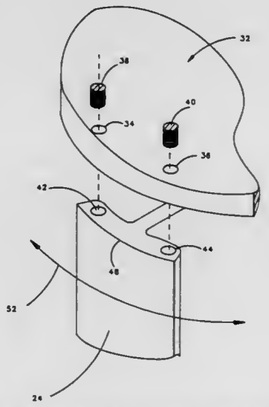
spectroscopically monitoring said exhaust gases to detect the exposure of said atoms of said selected elemental species so that said maximum allowable wear has not been reached when no atoms of said selected elemental species are detected and said maximum allowable wear has been reached when said atoms are detected.

5,187,543
DIFFERENTIAL DISPLACEMENT MEASURING INTERFEROMETER
Earl W. Ebert, Middletown, Conn., assignor to Zygo Corporation, Middlefield, Conn.
Filed Jan. 19, 1990, Ser. No. 467,652
Int. Cl.[5] G01B *9/02*
U.S. Cl. 356—349 **36 Claims**



1. A linear displacement interferometer system for accurately measuring changes in linear displacement for determining the flatness of or angle between a pair of mirrored surfaces, said interferometer having an optical axis and an axis of symmetry and comprising:
a source of a frequency stabilized input beam having two linear orthogonally polarized components;
means optically associated with said input beam for spatially separating said input beam into a reference beam and a test beam, said reference beam and said test beam each having an associated wavelength and direction and being parallel and orthogonally polarized;
means located in one of said spatially separated beams for rotating the polarization of the beam incident thereto parallel to the polarization state of the other of said spatially separated beams;
means for modifying the polarization and/or direction of said separated beams, said modifying means having an entrance face and an exit face;
wedge prism means disposed about said interferometer axis of symmetry for refracting said test beam at a predetermined deviation angle to said optical axis for forming a spot on each of said pair of mirrored surfaces, said interferometer axis of symmetry being normal to and intersecting the midpoint of said entrance and exit faces; and
stage mirror means and reference mirror means disposed along said interferometer axis of symmetry where said refracted beam crosses said interferometer axis of symmetry, said stage mirror means and said reference mirror means each comprising one of said pair of mirrored surfaces, said refracting means and said modifying means being disposed between said mirrored surfaces, said sport formed by said refracting means comprising a single area approximately the size of said test beam; whereby any ambiguity concerning the refracted beams is eliminated.

5,187,544
TUNER FOR RING LASER GYRO DITHER MECHANISM
Thomas M. Wirt, Irvine, Calif., assignor to Rockwell International Corporation, Seal Beach, Calif.
Filed Sep. 23, 1991, Ser. No. 763,775
Int. Cl.[5] G01C *19/68*
U.S. Cl. 356—350 **8 Claims**



1. A tuner for a ring laser gyro flexure with a first plurality of base mounted vanes and a second plurality of gyro mounting vanes, each base mounted vane including a base mounting end and an opposite end, the turner comprising a plurality of arms, each arm being constructed to be affixed to a respective base mounted vane opposite end.

VOL
1147
ISS
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5,187,545

INTEGRATED OPTICAL POSITION MEASURING DEVICE AND METHOD WITH REFERENCE AND MEASUREMENT SIGNALS

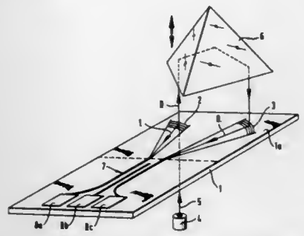
Michael Allgäuer, Stein, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

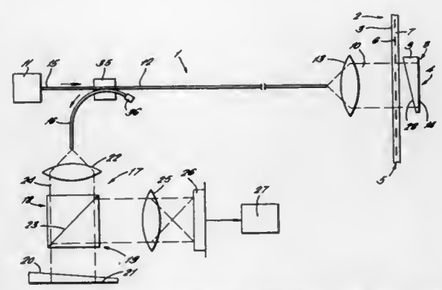
Filed Dec. 19, 1990, Ser. No. 629,842

Claims priority, application European Pat. Off., Dec. 23, 1989, 89123897.4

Int. Cl.[5] G01B *9/02*

U.S. Cl. 356—358 **16 Claims**





1. A position measuring apparatus for measuring the position of an object having an integrated optical circuit on a substrate comprising:

means for separating a beam from a light emitting source into a reference bundle and a measuring bundle;

means for coupling said reference bundle to a waveguide;

means for uncoupling said measuring bundle from the plane of said substrate, said measuring bundle directed to a reflecting element on the object wherein said measuring bundle is reflected from the object;

means for coupling said reflected measuring bundle to the substrate spatially separated from said means for coupling said reference bundle to said waveguide wherein said measuring bundle and said reference bundle interfere with each other; and means for detecting said interference and for generating phase displaced signals representative of said detected interference, wherein said means for separating said beam into said reference bundle and measuring bundle, said means for coupling said reference bundle to said waveguide and said means for uncoupling said measuring bundle from said substrate comprises a first diffraction grating.

5,187,546

DISPLACEMENT MEASUREMENT APPARATUS WITH DUAL WEDGE INTERFEROMETERS

James S. Johnston, West Sussex, United Kingdom, assignor to Rosemount Limited, West Sussex, United Kingdom

Filed Oct. 18, 1991, Ser. No. 781,035

Claims priority, application United Kingdom, Oct. 23, 1990, 9022969

Int. Cl.[5] G01B *11/02*

U.S. Cl. 356—358 **13 Claims**

1. Displacement measurement apparatus comprising an optically detectable coded track and reading means to read from the track a coded word defining the position of the reading means along the track, the reading means comprising a broad spectrum light source directing a track illuminating beam of light onto a portion of the track such that a set of adjacent code elements defining the word are illuminated, each code element being optically distinguishable as being representative of one of first and second logical states, the apparatus further comprising light guide means conducting an output beam of light encoded with the word from the reading means to a remote location and decoding means at the remote location operable to reconstruct the word to enable the position of the reading means along the track to be remotely determined, wherein the reading means includes a first interferometer having beam splitting means operable to split light from the light source into a reference beam and the track illuminating beam, the respective beams being recombined in the interferometer to form the output beam after introducing an optical path difference between recombining components of the respective beams which varies according to the position along the portion of the track at which the component of the track illuminating beam is incident, the variation in path difference being progressive in the direction in which successive code elements appear on the track such that the illuminated code elements are associated with respective optical path length differences, the optical properties of the code elements being such that only those components of the illuminating beam associated with code elements representative of a first logical state contribute to interference effects in the output beam whereby the output beam is spectrally modulated only at spectral modulation frequencies associated with respective optical path length differences corresponding to the code elements representative of the first logical state, and the decoding means being operable to detect spectral modulation frequencies in the output beam to thereby reconstruct the word defining the position of the reading means along the track.

5,187,547

LIGHT EMITTING DIODE DEVICE AND METHOD FOR PRODUCING SAME

Tatsuhiko Niina; Kiyoshi Ohta; Toshitake Nakata; Yasuhiko Matsushita; Takahiro Uetani, and Yoshiharu Fujikawa, all of Osaka, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Continuation of Ser. No. 347,444, May 4, 1989, abandoned. This application Nov. 19, 1990, Ser. No. 616,768

Claims priority, application Japan, May 18, 1988, 63-121052; Jan. 25, 1989, 63-15711; Feb. 14, 1989, 1-34282; Mar. 3, 1989, 1-52302

Int. Cl.[5] H01L *33/00, 29/161, 29/20, 23/02*

U.S. Cl. 257—77 **34 Claims**

1. A light emitting diode device comprising:

a light emitting diode element and a stem supporting said diode element, said diode element including

an n-type silicon carbide substrate having a crystallographic plane on which appears an atomic plane selected from the group consisting of a silicon atomic plane and a carbon atomic plane, the n-type silicon carbide substrate having first and second major surfaces opposite to each other, at least said first major surface being inclined from the crystallographic plane,

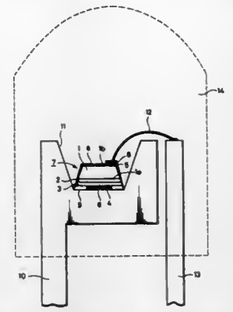
an n-type silicon carbide layer grown on said first major surface,

a p-type silicon carbide layer grown on said n-type silicon carbide layer, said p-type silicon carbide layer having a side which faces said stem,

a first ohmic electrode formed on at least a portion of said p-type silicon carbide layer, and

a second ohmic electrode formed on at least a portion of said second major surface,

said diode element having a substantially trapezoidal form in a cross section orthogonal to said first major surface, with said side of said p-type silicon carbide layer being broader than said second major surface, said stem and said side of said p-type silicon carbide layer being fixed to each other, said n-type silicon carbide substrate and said first and second ohmic electrodes cooperating with each other to enable a greater amount of light to emerge out of said diode element via said second major surface free of obstruction caused by said second ohmic electrode than emerges out of said diode element via said p-type silicon carbide layer free of obstruction caused by said first ohmic electrode, said n-type silicon carbide substrate being thicker than said p-type silicon carbide layer.



5,187,548

STACKED CAPACITOR OF A DRAM CELL WITH FIN-SHAPED ELECTRODES HAVING SUPPORTING LAYERS

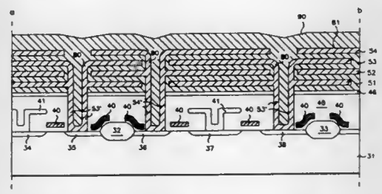
Won-Shik Baek; Kyu-Hyun Choi, and Dong-Joo Bae, all of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 28, 1990, Ser. No. 589,621

Claims priority, application Rep. of Korea, Jun. 29, 1990, 1990/9726

Int. Cl.[5] H01L *29/68, 27/02*

U.S. Cl. 257—308 **17 Claims**



1. A semiconductor memory device having a first and a second conductive regions formed on a semiconductor substrate, comprising:

a first polysilicon wall vertically extended to said semiconductor substrate together with contacting said first conductive region;

a second polysilicon layer extended in parallel to said semiconductor substrate to a given distance together with contacting said first polysilicon wall;

a fourth polysilicon silicon layer extended in the same direction as said second polysilicon layer to a given distance together with contacting the upper end of said first polysilicon wall;

a second polysilicon wall vertically extended to said semiconductor substrate together with contacting said second conductive region;

a first polysilicon layer extended in the direction opposite to said second polysilicon layer below said second polysilicon layer to a given distance together with contacting said second polysilicon wall;

a third polysilicon layer extended in the same direction as said first polysilicon layer to a given distance between said second polysilicon layer and said fourth polysilicon layer together with contacting the upper end of said second polysilicon wall;

an insulating layer formed below said first polysilicon layer and between said first and second polysilicon walls;

a plurality of supporting layers extended lengthwise of said third polysilicon layer so as to fill parts of the gaps between said first, second, third and fourth polysilicon layers and said insulating layer;

a dielectric layer formed on the surfaces of said first and second polysilicon walls, said first, second, third and fourth polysilicon layers, and said supporting layers; and

a fifth polysilicon layer covering the upper surface of said fourth polysilicon layer together with contacting the surface of said dielectric layer.

5,187,549

DYNAMIC RANDOM ACCESS MEMORY DEVICE INCLUDING STACKED CAPACITORS EACH HAVING A LOWER ELECTRODE ALIGNED WITH AN UPPER ELECTRODE WITHOUT TOLERANCE AND PROCESS OF FABRICATION THEREOF

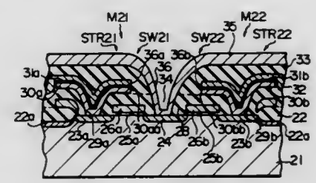
Takeo Fujii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 5, 1991, Ser. No. 651,065

Claims priority, application Japan, Feb. 5, 1990, 2-25656

Int. Cl.[5] H01L *29/68, 23/48*

U.S. Cl. 257—306 **1 Claim**



1. A random access memory device fabricated on a single semiconductor substrate and having a plurality of memory cells, each memory cell comprising:

a) a switching transistor having impurity regions formed in said semiconductor substrate, a channel forming region formed in said semiconductor substrate between said impurity regions, a gate insulating film formed on that area between said impurity regions, and a gate electrode formed on said gate insulating film, and

b) a storage capacitor having a lower electrode provided over one of said impurity regions and held in contact with said one of said impurity regions, a dielectric film structure covering said lower electrode, and an upper electrode held in contact with said dielectric film structure and having at least one side edge substantially aligned with one side edge of said lower electrode, said gate electrode is covered with a first inter-level insulating film having a contact hole, said contact hole allowing said lower electrode to be held in contact with said one of said impurity regions, said upper electrode being covered with a second interlevel insulating film, another contact hole passing through said first and second inter-level insulating films for allowing a bit line to be held in contact with the other of said impurity regions, said one side edge of said upper electrode being located over said first inter-level insulat-

VOL 1147 ISS 3 FE 16 1993 UMI

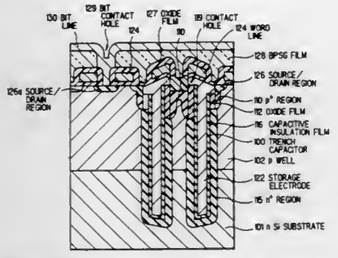
ing film and faced to said another contact hole, said upper electrode being implemented by a storage word line having another side edge substantially aligned with another side edge of said lower electrode.

5,187,550

SEMICONDUCTOR DEVICE

Masayuki Yanagisawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 27, 1992, Ser. No. 826,537
Claims priority, application Japan, Jan. 28, 1991, 3-8275
Int. Cl.[5] H01L *29/68, 29/06*
U.S. Cl. 257—301 **3 Claims**



1. A semiconductor device, comprising:

a semiconductor substrate having a first impurity region of a first conductivity type on a main surface thereof, and a second impurity region of a second conductivity type formed on said first impurity region;

an insulated gate type field effect transistor having source and drain regions of said first conductivity type formed in said second impurity region;

a trench capacitor comprising a storage electrode, a capacitive insulation film surrounding said storage electrode, and an impurity layer of said first conductivity type surrounding said capacitive insulation film excluding a predetermined upper portion of said capacitive insulation film;

wherein said trench capacitor is provided on a surface of said second impurity region of said semiconductor substrate to pass through said second impurity region;

an impurity layer of said second conductivity type extends between and physically contacts said impurity layer of said first conductivity type and one of said source and drain regions, said impurity layer of said second conductivity type being in opposing relation through an insulation film and through a portion of said capacitive insulation film to said storage electrode; and

said storage electrode is connected through a side wall aperture of said capacitive insulation film to said one of said source and drain regions.

5,187,551

THIN FILM SEMICONDUCTOR DEVICE AND LIQUID CRYSTAL DISPLAY APPARATUS THEREOF FOR PREVENTING IRRADIATED LIGHT FROM REACHING THE SEMICONDUCTOR LAYERS

Hajime Sboji, Higashiosaka; Noriko Watanabe, Nara; Hiroshi Hamada, Nara; Hiroaki Kato, Nara; Toshio Takemoto, Nara, and Toshihiko Hirobe, Sakai, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 344,609, Apr. 28, 1989, Pat. No. 5,051,800. This application Apr. 10, 1991, Ser. No. 682,942
Claims priority, application Japan, Apr. 30, 1988, 63-108697; Jul. 7, 1988, 63-169792
Int. Cl.[5] H01L *27/01*
U.S. Cl. 257—347 **4 Claims**

1. A thin film semiconductor device, comprising:

an electrically insulating substrate having a light transmitting surface and a light receiving surface opposite to each other;

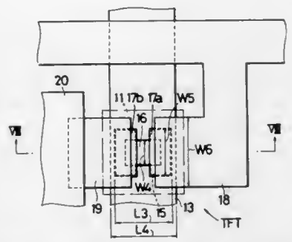
a gate electrode formed on said light receiving surface of said substrate to have an elongated shape extending in a first direction and a first width extending in a second direction perpendicular to said first direction;

a gate insulator layer formed over said gate electrode and said substrate;

a first semiconductor layer formed on a portion of said gate insulator layer having a second width extending in said second direction and a fifth width extending in said first direction;

a second insulator layer formed on a portion of said first semiconductor layer;

a second semiconductor layer formed over said second



insulator layer and said first semiconductor layer to have a third width extending in said second direction and a sixth width extending in said first direction, said first width of said gate electrode being greater than said second width of said first semiconductor layer and said third width of said second semiconductor layer so that light irradiated towards said light transmitting surface of said substrate is cut off from said first and second semiconductor layers by said gate electrode; and

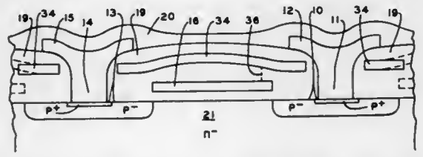
source and drain electrodes formed on said second semiconductor layer and said gate insulator layer with said source and drain electrodes being separated by a gap, said source and drain electrodes having a fourth width extending in said first direction with said fourth width being greater than or equal to said fifth and sixth widths of said first and second semiconductor layers.

5,187,552

SHIELDED FIELD-EFFECT TRANSISTOR DEVICES

Thomas E. Hendrickson, 1911 Smith Cir., Wazata, Minn. 55391, and Ronald G. Koelsch, 10615 40th Ave. N., Plymouth, Minn. 55441

Continuation of Ser. No. 896,323, Aug. 15, 1986, abandoned, which is a continuation of Ser. No. 24,840, Mar. 28, 1979, abandoned. This application Feb. 26, 1991, Ser. No. 660,978
Int. Cl.[5] H01L *29/784*
U.S. Cl. 257—408 **98 Claims**



1. A semiconductor device containing therein a first field-effect transistor device, having a source, drain, gate and substrate, and being capable of withstanding a relatively high voltage between said drain and said substrate and between said

drain and said source when in an "off" condition, said field-effect transistor device comprising:

a semiconductor material body of a first conductivity type, in at least some parts of a first portion thereof serving as said substrate, and having a major surface such that said first body portion intersects said major surface in a first major surface portion, said first body portion having a first dopant distribution therein leading to said first conductivity type;

a first drain region of a second conductivity type located in said first body portion and intersecting said first major surface portion, there being a first drain pn junction separating said first drain region and remaining parts of said first body portion, said first drain region having a second dopant distribution therein leading to said second conductivity type;

a first source region of said second conductivity type located in said first body portion and intersecting said first major surface portion, there being a first source region pn junction separating said first source region and remaining parts of said first body portion, said first source region being spaced apart from said first drain region in said first major surface portion;

a first control gate conductive means separated from said first major surface portion by a first insulating layer of a first thickness and located across said first insulating layer from that space occurring between said first drain and first source regions in said first major surface portion;

a first shield conductive means separated from said first major surface portion by a second insulating layer of a second thickness and located across said second insulating layer from substantially all of said first drain pn junction where said first drain pn junction intersects said first major surface portion, said first shield conductive means being electrically connected to said first control gate conductive means with said second thickness exceeding said first thickness;

a drain region interconnection means in electrical contact with said first drain region; and

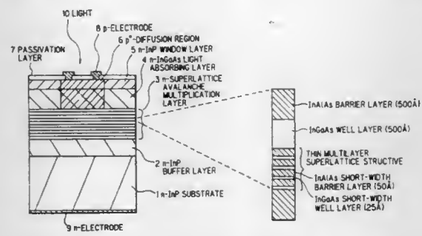
a source region interconnection means in electrical contact with said first source region.

5,187,553

AVALANCHE PHOTODIODE HAVING A THIN MULTILAYER SUPERLATTICE STRUCTURE SANDWICHED BETWEEN BARRIER AND WELL LAYERS TO REDUCE ENERGY LOSS

Kikuo Makita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 18, 1991, Ser. No. 687,346
Claims priority, application Japan, Apr. 18, 1990, 2-102454
Int. Cl.[5] H01L *27/14, 31/00*
U.S. Cl. 257—187 **3 Claims**



1. AN avalanche photodiode, comprising:

a first semiconductor layer for a light absorbing layer;

a second semiconductor layer for an avalanche multiplication layer, said second semiconductor layer comprising a superlattice multilayer structure in which each element layer consisting of alternately provided short-width well and barrier layers is sandwiched between a well layer and a barrier layer, wherein both said short-width well and barrier layers have a thickness of up to 100 Å; and

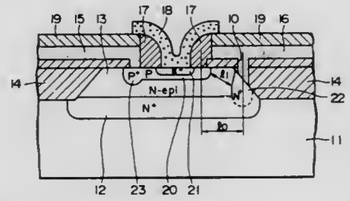
first and second electrodes coupled to said avalanche photodiode for applying a predetermined voltage across a region of said avalanche photodiode including said first and second semiconductor layers.

5,187,554

BIPOLAR TRANSISTOR

Hiroyuki Miwa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 231,672, Aug. 8, 1988, abandoned. This application Apr. 29, 1991, Ser. No. 696,301
Claims priority, application Japan, Aug. 11, 1987, 62-199006
Int. Cl.[5] H01L *29/72, 29/06, 23/48*
U.S. Cl. 307—586 **1 Claim**



1. A bipolar transistor comprising,

a substrate,

a monocrystalline semiconductor body on said substrate, said body having a surface incorporating a thick isolation region,

an epitaxially formed device forming region surrounded by said isolation region, and having a surface,

a buried collector region formed in a portion of said device forming region with said substrate,

a base region facing a portion of the surface of said device forming region,

an emitter region facing to a portion of the surface of said device forming region and surrounded by said base region,

a base contact electrode extending from said isolation region to above said device forming region and connecting to said base region on the surface of said device forming region, said base contact electrode being disposed on the surface of said isolation region and extending laterally away from said device forming region in one direction,

a collector contact electrode formed on said isolation region and arranged in symmetry with said base contact electrode with respect to said emitter region, said collector contact electrode being disposed on the surface of said isolation region and extending laterally away from said device forming region in a direction opposite to said one direction,

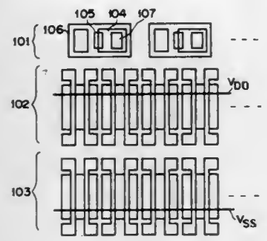
an opening formed through at least a portion of said thick isolation region in its thickness direction and interconnecting said buried collector region and the collector contact electrode,

wherein said isolation region is formed by selective oxidation and wherein said opening is formed through said isolation region, and

wherein said opening is formed to only an inclined boundary surface between said isolation region and said device forming region, said boundary surface being inclined relative to the vertical and inclined relative to the horizontal.

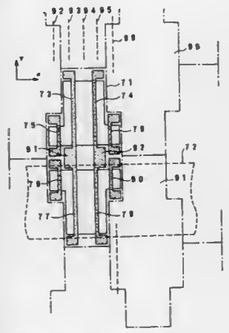
VOL 1147 ISS 3 FE 16 1993 UMI

5,187,555
SEMICONDUCTOR INTEGRATED CIRCUIT OF STANDARD CELL SYSTEM
Tadahiro Kuroda, Kawasaki, and Hiroaki Suzuki, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 26, 1991, Ser. No. 765,828
Claims priority, application Japan, Sep. 28, 1990, 2-259061
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—202 **14 Claims**



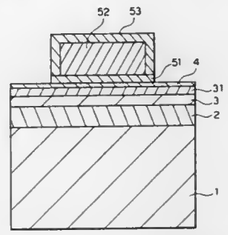
1. A semiconductor integrated circuit of a standard cell system comprising:
cell array regions and wiring regions in a standard cell layout;
transistor elements which are not wired and are previously arranged in a plurality of no-cell regions provided in part of said cell array regions according to an original layout design for standard cells; and
wiring inhibition regions for inhibiting wirings in the original layout design for standard cells, and provided for extending wirings from said no-cell regions to said wiring regions to permit said transistor elements, which are not initially wired, to be used when a design change is required in said standard cell layout.

5,187,556
CMOS MASTER SLICE
Masaaki Nariishi; Noboru Yamakawa; Osamu Ohba, and Naoyasu Seki, all of Tokyo, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan
Filed Aug. 9, 1991, Ser. No. 743,089
Claims priority, application Japan, Aug. 13, 1990, 2-214017; Aug. 17, 1990, 2-216487; Aug. 17, 1990, 2-216488
Int. Cl.[5] H01L *27/02*
U.S. Cl. 257—206 **11 Claims**



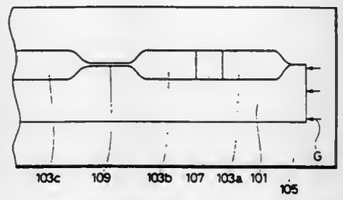
1. A CMOS master slice, comprising:
a plurality of basic cells, said basic cells arranged in at least a column direction and defining first and second portions arranged in a row direction, each basic cell having a recessed portion and a projecting portion in the column direction, said projecting portion being complimentary in shape to said recessed portion;
wherein each said basic cell comprises a group of p-channel MOS transistors and a group of n-channel MOS transistors;
each said group of p- and n-channel transistors comprising a first transistor, said first transistor having a length measured in the column direction, a width measured in the row direction and a height measured in the row direction, at least one second transistor arranged on at least one side of said first transistor in the column direction having a width measured in the row direction and a height measured in the row direction, said height of said at least one second transistor being less than said height of said first transistor;
said group of p-channel MOS transistors positioned at the first portion of said basic cell;
said group of n-channel MOS transistors positioned at the second portion of said basic cell, wherein said second portion is located in a row direction from said first portion; and
a gate of said at least one second transistor of one of said plurality of basic cells being arranged adjacent to a gate of at least one second transistor of another one of said plurality of basic cells in the row direction, wherein said basic cells are adjacent to each other in the column direction wherein the recessed portion of said one of the basic cells receives the projecting portion of said another basic cell.

5,187,557
SEMICONDUCTOR CAPACITOR WITH A METAL NITRIDE FILM AND METAL OXIDE DIELECTRIC
Masanobu Zenke, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Nov. 15, 1990, Ser. No. 613,070
Claims priority, application Japan, Nov. 15, 1989, 1-298017
Int. Cl.[5] H01L *27/02, 23/48, 29/68;* **H01G** *4/06*
U.S. Cl. 257—310 **15 Claims**



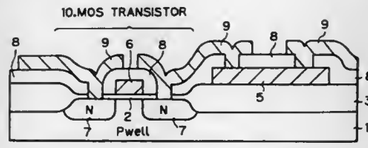
1. A semiconductor device comprising a capacitor part including:
a first electrode including a first metal nitride film;
a dielectric layer, formed on said first metal nitride film, including a metal oxide film; and
a second electrode completely surrounded by a second metal nitride film and formed on said dielectric layer.

5,187,558
STRESS REDUCTION STRUCTURE FOR A RESIN SEALED SEMICONDUCTOR DEVICE
Yuichi Nakashima; Mitsuhiro Tomikawa, and Hirohisa Yamamoto, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed May 1, 1990, Ser. No. 517,628
Claims priority, application Japan, May 8, 1989, 1-114502; Sep. 1, 1989, 1-227980
Int. Cl.[5] H01L *23/28*
U.S. Cl. 257—420 **1 Claim**



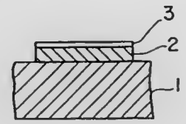
1. A semiconductor integrated circuit device comprising:
a substrate of a predetermined modulus of elasticity and having a major surface including a concave portion formed proximate the periphery of said substrate and at least one sidewall surface of said substrate, said concave portion having a central portion with substantially uniform depth;
at least one electrical element formed at said major surface of said substrate; and
a structure formed in said central portion of said concave portion of said major surface of said substrate for reducing mechanical stresses in said substrate caused by resin encapsulation, said structure comprising:
a region of material of lower modulus of elasticity than said substrate modulus of elasticity,
a field oxide region formed between said material of lower modulus of elasticity and said electrical element, and
an intermediate region positioned between and separating said material of lower modulus of elasticity and said field oxide region, said intermediate region made of a material different than that of said substrate and having a modulus of elasticity equal to or greater than said modulus of elasticity of said substrate, said intermediate region being affixed to said substrate.

5,187,559
SEMICONDUCTOR DEVICE AND PROCESS FOR PRODUCING SAME
Yoshihiko Isobe, Toyoake, and Makio Iida, Ichinomiya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan
Filed Feb. 27, 1991, Ser. No. 661,240
Claims priority, application Japan, Feb. 28, 1990, 2-50008; Nov. 27, 1990, 2-328213
Int. Cl.[5] H01L *29/04, 27/02, 29/167*
U.S. Cl. 257—538 **3 Claims**



1. A semiconductor device provided with a polycrystalline silicon resistor having an impurity in a high concentration and having a resistance adjusted by a current conduction therethrough at a current density of a threshold value or more, which comprises:
a polycrystalline silicon resistor having a first impurity comprising arsenic, having a negative value of a temperature coefficient of resistance in a high impurity concentration region of said polycrystalline silicon resistor and a second impurity comprising phosphorous, having a positive value of a temperature coefficient of resistance in said high impurity concentration region of said polycrystalline silicon resistor, said first impurity having a saturation concentration within a range in which a variation of the temperature coefficient of resistance which si saturated with respect to the impurity concentration in said high impurity concentration region, said saturation concentration of said first impurity in said high impurity concentration region is 2.7×10^{20} cm^{-3} or higher; and said second impurity having a positive temperature coefficient of resistance is at a concentration of from 2.3×10^{19} to 4.5×10^{19} cm^{-3}.

5,187,560
OHMIC ELECTRODE FOR N-TYPE CUBIC BORON NITRIDE AND THE PROCESS FOR MANUFACTURING THE SAME
Katsuhito Yoshida, and Kazuwo Tsuji, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
PCT No. PCT/JP90/01537, § 371 Date May 28, 1991, § 102(e) Date May 28, 1991, PCT Pub. No. WO91/08582, PCT Pub. Date Jun. 13, 1991
PCT Filed Nov. 28, 1990, Ser. No. 689,887
Claims priority, application Japan, Nov. 28, 1989, 1-308431
Int. Cl.[5] H01L *21/283*
U.S. Cl. 257—76 **2 Claims**



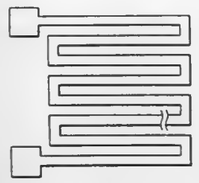
1. An ohmic electrode for n-type cBN which electrode comprises two thin films, the first being at least one alloy selected from a group consisting of Au-Si alloy, Au-Ge alloy and Au-Si-Ge alloy, and the second being at least one metallic material selected from a group consisting of Ni, Cr, Mo and Pt.

5,187,561
METAL SINGLE CRYSTAL LINE HAVING A PARTICULAR CRYSTAL ORIENTATION
Masahiko Hasunuma, Yokohama; Hisashi Kaneko, Fujisawa; Atsuhito Sawabe, Yokosuka; Takashi Kawanoue, Yokohama; Yoshiko Kohanawa, Yokohama, and Shuichi Komatsu, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jun. 29, 1990, Ser. No. 545,870
Claims priority, application Japan, Jul. 1, 1989, 1-168308; Sep. 26, 1989, 1-247938; Sep. 26, 1989, 1-247941; Sep. 26, 1989, 1-247944; Sep. 26, 1989, 1-247946; Sep. 27, 1989, 1-251355; Sep. 27, 1989, 1-251356; Sep. 27, 1989, 1-251357; Sep. 27, 1989, 1-251358; Sep. 27, 1989, 1-251360; Sep. 27, 1989, 1-251361
Int. Cl.[5] H01L *23/54*
U.S. Cl. 257—771 **28 Claims**

1. A semiconductor device comprising:
a semiconductor substrate having active regions electrically isolated from each other on a predetermined surface thereof, and
a single layer or multilayer electrode line arranged on said semiconductor substrate through an insulating layer,

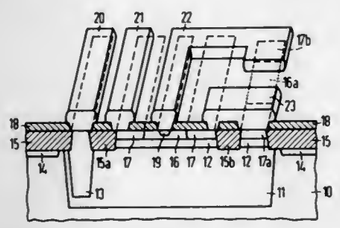
VOL 1147 ISS 3 FE 16 1993 UMI

wherein at least one layer of said electrode line is made of a metal single crystal having closed-packed planes and at least one closed-packed plane of said crystal is arranged



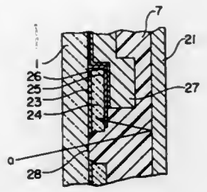
parallel to the longitudinal direction of said electrode line, said at least one closed-packed plane being present at a plane other than a surface plane of said electrode line.

5,187,562
INPUT PROTECTION STRUCTURE FOR INTEGRATED CIRCUITS
Burkhard Becker, München, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Oct. 30, 1990, Ser. No. 606,036
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1989, 89120144
Int. Cl.[5] H01L *27/02, 29/72, 29/78*
U.S. Cl. 257—539 **8 Claims**



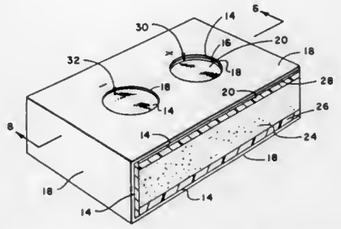
1. Input protection structure for integrated circuits to be connected between an input and a reference potential, comprising:
a resistor, at least one transistor having a collector connected to the input, a base connected through said resistor to the reference potential, and an emitter connected to the reference potential,
an integrated diode,
a semiconductor substrate of a first conductivity type, said collector being in the form of a buried collector of a second conductivity type in said semiconductor substrate, said base being in the form of at least one doped zone of the first conductivity type having a base connection, said emitter being in the form of a doped zone of the second conductivity type having an emitter connection,
said resistor being in the form of at least one further doped zone of the first conductivity type being connected to said emitter exclusively through said emitter connection and being connected to said base exclusively through said base connection, and
said integrated diode being formed by said further doped zone of the first conductivity type and said buried collector.

5,187,563
PHOTOELECTRIC CONVERSION DEVICE WITH AL/CR/TCO ELECTRODE
Shunpei Yamazaki, Tokyo, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan
Continuation-in-part of Ser. No. 742, Jan. 6, 1987, abandoned. This application Aug. 16, 1988, Ser. No. 244,992
Claims priority, application Japan, Jan. 6, 1986, 61-1006; Jan. 6, 1986, 61-1007
Int. Cl.[5] H01L *23/50, 29/46, 29/16*
U.S. Cl. 257—53 **4 Claims**



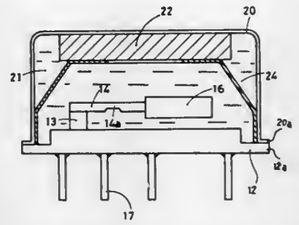
1. A semiconductor device comprising:
a non-single crystalline semiconductor layer;
a indium-tin oxide layer formed on the semiconductor layer; and
an Al electrode formed on said indium-tin oxide layer, wherein a chromium layer is interposed between the indium-tin oxide layer and the Al electrode.

5,187,564
APPLICATION OF LAMINATED INTERCONNECT MEDIA BETWEEN A LAMINATED POWER SOURCE AND SEMICONDUCTOR DEVICES
Joseph H. McCain, Plano, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.
Continuation-in-part of Ser. No. 736,412, Jul. 26, 1991, Pat. No. 5,153,710. This application Oct. 25, 1991, Ser. No. 782,570
The portion of the term of this patent subsequent to Oct. 6, 2009, has been disclaimed.
Int. Cl.[5] H01L *23/16, 23/48;* **G11C** *7/00*
U.S. Cl. 174—260 **16 Claims**



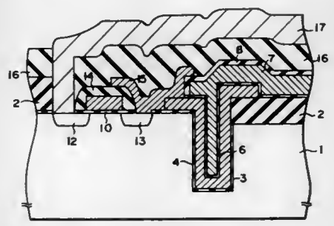
1. An interconnect media for connecting the electrodes of a power source in electrical contact with positive and negative power input terminals on a planar substrate comprising a flexible, laminated strip having a central conductive lamina sandwiched between first and second insulation laminae, with a portion of the first insulation lamina being removed, thereby exposing the surface of the conductive lamina for engaging one of the power source electrodes, and the laminated strip being intersected by a first aperture for exposing the other power source electrode, and the second insulation lamina being intersected by a second aperture, thereby exposing the conductive lamina.

5,187,565
LIQUID SEALED SEMICONDUCTOR DEVICE AND METHOD OF ASSEMBLING THE SAME
Masataka Kawai, Kawanishi, and Seiji Takemura, Itami, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 18, 1991, Ser. No. 717,069
Claims priority, application Japan, Mar. 18, 1991, 3-51962
Int. Cl.[5] H01L *23/34, 23/02*
U.S. Cl. 257—682 **9 Claims**



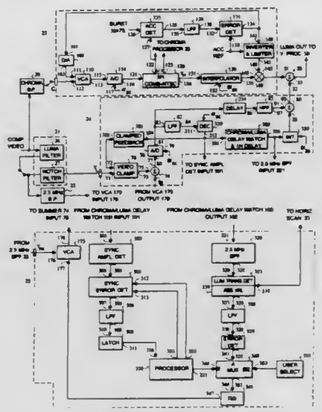
1. A liquid sealed semiconductor device, comprising:
a semiconductor element;
a base to which said element is mounted;
a cap jointed to said base to cover said semiconductor element;
liquid for filling a package which is formed by joining said base and said cap;
a closed cell foam material provided in said package; and
a fastening member for fastening said foam material to an inner wall of said package, wherein said fastening member comprises an internal cap disposed within said package, said internal cap pressing said foam material against an inner wall of said cap so that said foam material is held out of contact with the semiconductor element,
wherein said semiconductor element comprises a pedestal which is adhered onto said base, a cantilever having a fixed edge which is fixed onto said pedestal and a free edge which is allowed to move free, a weight provided at said free edge of said cantilever, and a detector provided at a middle portion of said cantilever.

5,187,566
SEMICONDUCTOR MEMORY AND METHOD OF MANUFACTURING THE SAME
Susumu Yoshikawa; Junpei Kumagai; Shizuo Sawada, all of Yokohama, Japan, and Yasuo Matsumoto, Sunnyvale, Calif., assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 314,841, Feb. 24, 1989, abandoned. This application Jan. 28, 1991, Ser. No. 646,496
Claims priority, application Japan, Feb. 26, 1988, 63-43479
Int. Cl.[5] H01L *29/68, 29/78, 29/92*
U.S. Cl. 257—301 **4 Claims**



1. A semiconductor memory comprising:
a semiconductor substrate of a first conductivity type;
a trench in said semiconductor substrate;
a first insulating film on said semiconductor substrate and on a side surface and a bottom surface of said trench;
a transfer gate MOS transistor having source and drain regions and a gate electrode;
a first conductive layer of a second conductivity type for charge storage of a memory cell capacitor in said trench, said first conductive layer having a peripheral portion which extends horizontally into said transfer gate MOS transistor and extends above said semiconductor substrate beyond said trench;
an anti-oxidant capacitor insulating film on said first conductive layer except on said peripheral portion of said first conductive layer, said anti-oxidant capacitor insulating film having a first thickness;
a second conductive layer of the second conductivity type for a capacitor elected on said capacitor insulating film;
an oxide film on said second conductive layer, said oxide film having a second thickness substantially greater than said first thickness and extending to the anti-oxidant capacitor insulating film at the peripheral portion of the first conductive layer;
a second insulating film surrounding said gate electrode of said transfer gate MOS transistor; and
a third conductive layer of the second conductivity type having an impurity species implanted therein for electrically connecting either said source or drain region of said transfer gate MOS transistor to said first conductive layer, one end of said third conductive layer extending onto said second insulating film and the other end of said third conductive layer extending onto said peripheral portion of said first conductive layer.

5,187,567
AUTOMATIC VIDEO PEAKING SYSTEM
Gopal K. Srivastava, Arlington Heights, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.
Filed Oct. 3, 1991, Ser. No. 770,502
Int. Cl.[5] H04N *9/77, 9/78*
U.S. Cl. 358—21 R **14 Claims**

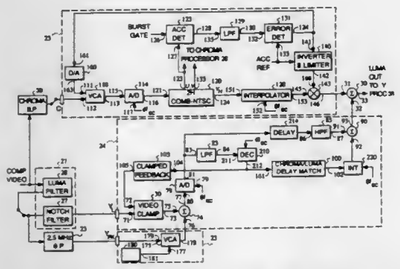


1. For use in an image display system responsive to a composite video signal having a periodic scan synchronizing signal and a luminance signal each defining amplitude transitions, automatic video peaking means comprising:
means for receiving said composite video signal;
means for detecting said amplitude transitions of said periodic scan synchronizing signal;
means for deriving a peaking gain control signal related to

VOL 1147 ISS 3 FE 16 1993 UMI

the magnitude of said amplitude transitions of said periodic scan synchronizing signal;
means for selecting a portion of said luminance signal within a predetermined frequency range for use as a video peaking signal;
means for amplifying said video peaking signal at a gain responsive to said peaking gain control signal to form an amplified peaking signal; and
means for combining said amplified peaking signal with said luminance signal to alter said amplitude transitions of said luminance signal.

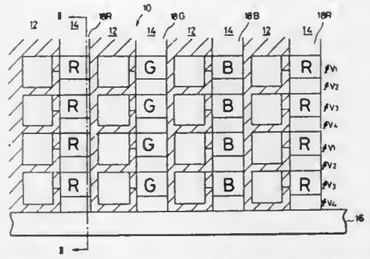
5,187,568
VIDEO PROCESSOR HAVING IMPROVED CLAMPING SYSTEM FOR COLOR TELEVISION RECEIVERS
Gopal K. Srivastava, Arlington Heights, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.
Filed Oct. 3, 1991, Ser. No. 770,511
Int. Cl.[5] H04N *9/77, 9/78*
U.S. Cl. 358—39 **11 Claims**



1. For use in an image display system responsive to a composite video signal having periodic blanking signals each defining a reference back porch and periodic sync pulses, chrominance burst signals imposed upon said reference back porch chrominance information within a chrominance band and luminance information including chrominance band luminance information within said chrominance band, video processing means comprising:
means for receiving said composite video signal;
means for selecting a portion of said composite video signal to remove said chrominance burst signals therefrom and derive and altered substantially burst-free video signal;
means for converting said altered substantially burst-free video signal to a digitally encoded altered substantially burst-free video signal at a first data rate;
means for sampling said digitally encoded altered substantially burst-free video signal during said reference back porch to produce a clamping reference; and
means for clamping said altered substantially burst-free video signal at a DC clamping level in response to said clamping reference to produce a clamped altered substantially burst-free video signal.

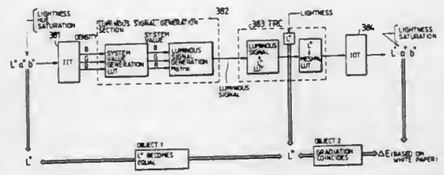
5,187,569
SOLID STATE IMAGING DEVICE AND ELECTRONIC STILL CAMERA USING SAME
Nobuhiro Tani, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 486,160, Feb. 28, 1990, abandoned.
This application May 20, 1992, Ser. No. 885,244
Claims priority, application Japan, Mar. 3, 1989, 1-517310
Int. Cl.[5] H04N *9/04*
U.S. Cl. 358—50 **29 Claims**

1. A solid state imaging device, comprising:
photosensitive portions which accumulate electrical charges corresponding to a quantity of light received, and vertical transfer portions having light receiving surfaces which accumulate electrical charges corresponding to said quantity of light received and which transfer said electrical charges accumulated by said photosensitive portions, such that said vertical transfer portions serve as photosensitive portions in addition to transferring said electrical charges accumulated in said photosensitive portions;
said photosensitive portions and said vertical transfer portions being alternately positioned in a horizontal direction;
transparent electrodes that are provided on each of said light receiving surfaces of said vertical transfer portions; and



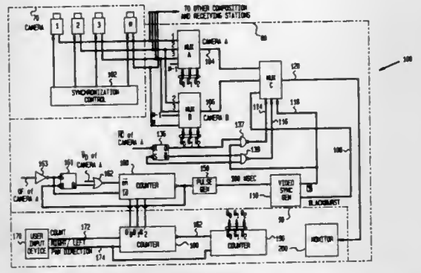
color filters of three colors which are alternately arranged in a predetermined order on one of said photosensitive portions or said vertical transfer portions to permit light of associated three colors to pass through said filters, electrical charges that are accumulated through said color filters being used as information on a color signal, while electrical charges that are not accumulated through said color filters are used as information on a luminance signal.

5,187,570
COLOR IMAGE OUTPUTTING SYSTEM FOR AN IMAGE PROCESSING APPARATUS
Yoshiharu Hibi, and Yoshihiro Terada, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Jun. 13, 1990, Ser. No. 537,623
Claims priority, application Japan, Jun. 14, 1989, 1-152778
Int. Cl.[5] H04N *1/46*
U.S. Cl. 358—80 **20 Claims**



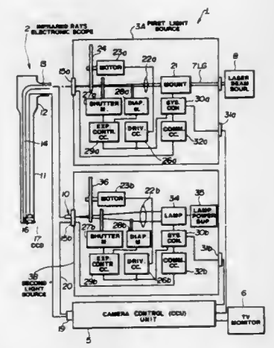
1. A monochrome image producing system for an image processing apparatus comprising:
an input section for gathering visual data signals of an original image, said input section having means for applying a color correction in response to said visual data signals, and means for converting said visual data signals into recording signals used for producing a color image;
an output section for expressing said original image in terms of at least a portion of said visual data signals, said input section having means for linearly compressing a gradation property of a data value in said input section to correspond to the gradation property of the data value in said output section; and
means for generating a luminous signal by converting said visual data signals into an equivalent neutral density.

5,187,571
TELEVISION SYSTEM FOR DISPLAYING MULTIPLE VIEWS OF A REMOTE LOCATION
David A. Braun, Denville; William A. E. Nilson, III, Bridgewater; Terence J. Nelson, New Providence, and Lanny S. Smoot, Morris Township, Morris County, all of N.J., assignors to Bell Communications Research, Inc., Livingston, N.J.
Filed Feb. 1, 1991, Ser. No. 649,025
Int. Cl.[5] H04N *7/14*
U.S. Cl. 358—85 **17 Claims**



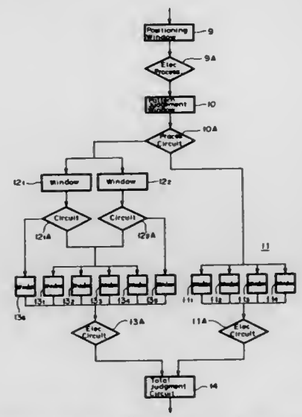
1. A television system comprising
a sending station comprising a sequence of cameras and means for optically arranging said cameras such that the individual fields of view of adjacent ones of said cameras merge contiguously to form an aggregate wide angle field of view,
a composing station comprising means for generating a composite video signal for displaying an image of an arbitrary and continuously variable subsection of said aggregate wide angle field of view, and
a receiving station comprising a monitor for displaying said image.

5,187,572
ENDOSCOPE SYSTEM WITH A PLURALITY OF SYNCHRONIZED LIGHT SOURCE APPARATUSES
Kazunari Nakamura, and Kei Takasugi, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Oct. 30, 1991, Ser. No. 785,402
Claims priority, application Japan, Oct. 31, 1990, 2-296831; Aug. 27, 1991, 3-215342
Int. Cl.[5] A61B *1/04, 1/06*
U.S. Cl. 358—98 **24 Claims**



1. An endoscope system comprising:
an electronic type endoscope having an elongated insertable part, a light guide inserted into the insertable part transmitting an illuminating light supplied to an end surface of the light guide and emitting from the other end surface, an objective optical system provided on a tip side of said insertable part and a solid state imaging device photoelectrically converting an optical image based on the objective optical system;
a first light source apparatus frame sequentially supplying a plurality of illuminating lights in different wavelength ranges to the end surface of said light guide by connecting said electronic type endoscope to the first light source apparatus;
a second light source apparatus supplying illuminating lights in different wavelength ranges from the ranges of said illuminating lights emitted from said first light source apparatus by connecting said electronic type endoscope to the second light source apparatus;
synchronizing control means generating a synchronizing signal synchronizing at least an illuminating period of the plurality of illuminating lights emitted from said first light source apparatus with at least an illuminating period of the illuminating lights emitted from said second light source apparatus;
a driving circuit applying a driving signal to said solid state imaging device at a period synchronized with said synchronizing signal and outputting a picture signal photoelectrically converted;
a video signal processing circuit processing said picture signal at a period synchronized with said synchronizing signal and producing a video signal; and a monitor means for displaying said video signal.

5,187,573
INSPECTION METHOD AND APPARATUS
Hajime Yoshida, Tokyo, Japan, assignor to Hajime Industries, Tokyo, Japan
Filed Sep. 11, 1991, Ser. No. 757,543
Claims priority, application Japan, Sep. 19, 1990, 2-249711
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—106 **22 Claims**



1. An inspection method for detecting existence or not of a defect on an inspected object in which an image of the inspected object irradiated by a light is picked by a video camera and a video signal therefrom is processed by an electronic processor comprising the steps of:
a) setting up a pattern judging window on said inspected object to thereby judge whether or not there exists a pattern on said inspected object;
b) setting up a plurality of inspection windows when it is

VOL 1147 ISS 3 FE 16 1993 UMI

judged that there is no pattern on said inspected object to thereby perform a predetermined defect inspection on portions of said inspected object within said plurality of inspection windows;

c) setting up a pattern discrimination window on said inspected object when it is judged that there exists a pattern on said inspected object to thereby discriminate a kind of said pattern; and

d) either setting up said discrimination window or another inspection window dependent on the kind of said pattern discriminated.

5,187,574

METHOD FOR AUTOMATICALLY ADJUSTING FIELD OF VIEW OF TELEVISION MONITOR SYSTEM AND APPARATUS FOR CARRYING OUT THE SAME

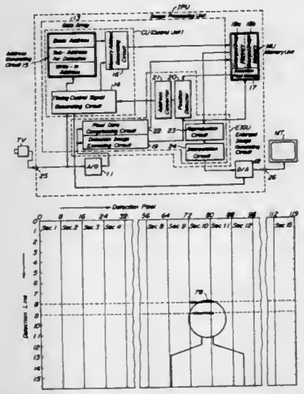
Katsura Kosemura, Atsugi, and Kazuyuki Yamamoto, Tokyo, both of Japan, assignors to Kanda Tsushin Kogyo Co., Ltd. and Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Aug. 21, 1991, Ser. No. 747,973

Claims priority, application Japan, Aug. 24, 1990, 2-223344

Int. Cl.[5] H04N *7/18*

U.S. Cl. 358—108 **16 Claims**



1. A method of automatically adjusting a field of view of a television monitor system including a television camera for picking up an image of an object to generate an image signal representing a whole image, an image processing unit for processing the image signal generated by the television camera to produce a processed image signal, and a monitor for receiving the processed image signal and displaying the image of the object on a monitor screen, comprising the steps of:

extracting detection pixels which represent a detection image, from said whole image by sampling the image signal on every n-th line (n is larger than two);

storing said detection pixels in a direction pixel memory;

comparing detection pixels of a current detection image and corresponding detection pixels of a previous detection image which are stored in said detection pixel memory;

detecting an occurrence in which more than a predetermined number of successive pixels of the current detection image differ from corresponding detection pixels of the previous detection image over a predetermined amount to detect a position of a center top of the image of the object; and

generating a start address of an enlarged image in accordance with said position of the center top of the object.

5,187,575

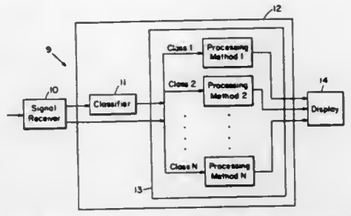
SOURCE ADAPTIVE TELEVISION SYSTEM

Jae S. Lim, Winchester, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 29, 1989, Ser. No. 459,289

Int. Cl.[5] H04N *7/01, 7/04*

U.S. Cl. 358—140 **5 Claims**



1. A television receiver for receiving and decoding a transmitted television signal comprising at least two different classes of source material, the difference between the two classes of source material being a difference in a non-program-content characteristic, wherein the television signal comprises a succession of encoded image frames, and wherein the transmitted television signal has identification information inserted therein indicating the difference in the non-program-content characteristic retained in the encoded image frames, said receiver comprising:

means for receiving said identification information; and

means for using the identification information to process the encoded image frames of said at least two different classes of source material present in the television signal based on said non-program-content characteristic.

5,187,576

STEREO RADIO FREQUENCY MODULATING SYSTEM

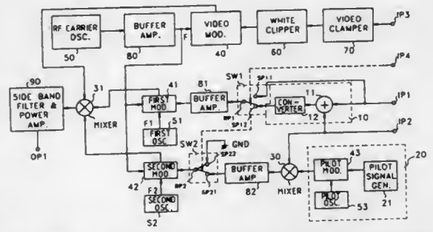
Il-gu Na, Anyang, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Apr. 26, 1991, Ser. No. 691,787

Claims priority, application Rep. of Korea, Oct. 11, 1990, 90-15544

Int. Cl.[5] H04N *7/04*

U.S. Cl. 358—144 **16 Claims**



4. A stereo radio frequency modulating system, comprising:

audio matrix means for adding a first audio channel signal and a second audio channel signal to generate a mono signal;

first switching means for generating a first selected signal, the first selected signal being one of the mono signal and the second audio channel signal in dependance upon whether the stereo radio frequency modulating system is operating in a corresponding one of a mono mode and a stereo mode, respectively;

second switching means for generating a second selected signal, the second selected signal being the first audio channel signal if the stereo radio frequency modulating system is operating in the stereo mode;

means for generating a first oscillation signal and a second oscillation signal;

a first audio modulator for generating a first modulated signal by frequency-modulating the first selected audio signal with a radio frequency carrier signal and the first oscillation signal;

a second audio modulator for generating a second modulated signal by frequency-modulating the second selected signal with the radio frequency carrier signal and the second oscillation signal; and

a second mixer for mixing the first modulated signal, the second modulated signal, and a video signal to generate a radio frequency image signal.

5,187,577

CIRCUIT FOR ELIMINATING GHOST NOISE IN IMAGE PROCESSING SYSTEM

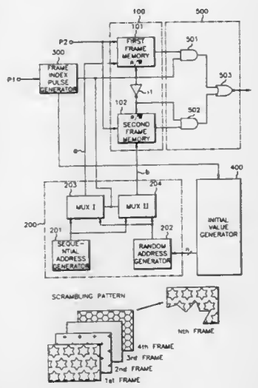
Gi-Beom Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki, Rep. of Korea

Filed Mar. 6, 1992, Ser. No. 846,712

Claims priority, application Rep. of Korea, Apr. 12, 1991, 5845

Int. Cl.[5] H04N *5/27*

U.S. Cl. 358—167 **6 Claims**



1. A circuit for eliminating a ghost noise in an image processing system, comprising:

address generator means for generating first and second address signals representing alternatively and complementarily a sequential address signal and a pseudo random address signal;

frame memory means receiving an image signal, for writing said image signal in sequence and for reading the written image signal at random, according to said first and second address signals being transmitted from said address generator means and a reading/writing control signal;

frame index pulse generator means receiving a horizontal synchronization signal, for generating said reading/writing control signal and a frame index pulse used for classifying a frame;

initial value generator means receiving said frame index pulse from said frame index pulse generator means, for establishing a plurality of initial values each being different at each frame and for transmitting respective initial value to said address generator means; and

data generator means receiving image signal read out at said frame memory means, for shaping the read image signal by said reading/writing control signal transmitted from said frame index pulse generator means.

5,187,578

TONE DISPLAY METHOD AND APPARATUS REDUCING FLICKER

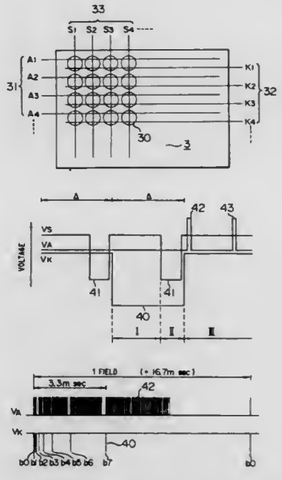
Akihiko Kohgami, Kokubunji; Shigeo Mikoshiba, Tokyo; Shinichi Shinada, and Mutsumi Suzuki, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 663,619, Mar. 4, 1991, abandoned. This application Jul. 6, 1992, Ser. No. 908,791

Claims priority, application Japan, Mar. 2, 1990, 2-49346

Int. Cl.[5] H04N *5/57*

U.S. Cl. 358—168 **34 Claims**



1. A method of controlling the brightness of a display formed on a display panel including a plurality of luminous elements, said method comprising the steps of:

dividing the time duration of a field of a television signal into a plurality of sub-fields, each sub-field having a duration corresponding to the value of a respective one of the bits of a multiple-bit binary code;

supplying the luminous elements with an energization signal including a plurality of signal portions, each signal portion having a duration corresponding to the duration of a respective one of the sub-fields; and

supplying each luminous element with a control signal to cause the luminous elements to selectively emit light during sub-fields indicated by the control signal, so that the brightness levels of the luminous elements correspond with the control signal.

9. A luminous display device comprising:

a display panel including a plurality of luminous elements, each of said luminous elements adapted for controllable light emission;

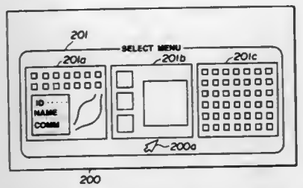
means for indicating time intervals of a plurality of sub-fields of a field of a television signal, each sub-field having a duration corresponding to the value of a respective one of the bits of a multiple-bit binary code;

means for supplying said luminous elements with an energization signal including a plurality of signal portions, each signal portion having a duration corresponding tot he duration of a respective one of the sub-fields; and

means for supplying each luminous element with a control signal to cause said luminous elements to selectively emit light during sub-fields indicated by the control signal, so that the brightness levels of said luminous elements correspond with the control signal.

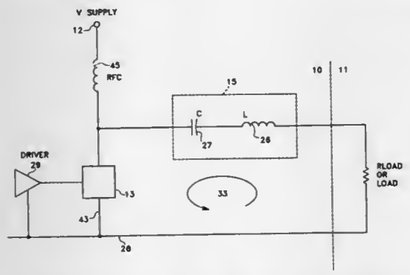
VOL 1147 ISS 3 FEB 16 1993 UMI

5,187,579
MEDICAL IMAGE DISPLAYING METHOD AND APPARATUS
Keiichi Hiyama, Akishima, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jan. 18, 1991, Ser. No. 643,248
Claims priority, application Japan, Jan. 19, 1990, 2-10228
Int. Cl.[5] H04N *7/18, 5/262*
U.S. Cl. 358—183 **15 Claims**



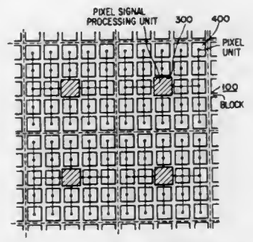
1. A medical image displaying method which retains the characteristics of images of first observed image data without varying the resolution of said first observed image data, comprising the steps of:
synthesizing other image data with the first observed image data to produce second image data having a plurality of observed image data including at least the above mentioned first observed image data, and
displaying the second image data on a displaying means capable of displaying an image having a larger amount of information than the amount of said first observed image data.

5,187,580
HIGH POWER SWITCH-MODE RADIO FREQUENCY AMPLIFIER METHOD AND APPARATUS
Robert M. Porter, Jr., Fort Collins, and Michael L. Mueller, Loveland, both of Colo., assignors to Advanced Energy Industries, Inc., Fort Collins, Colo.
Continuation of Ser. No. 650,789, Feb. 4, 1991, abandoned. This application Jul. 6, 1992, Ser. No. 908,947
Int. Cl.[5] H03F *3/217*
U.S. Cl. 330—207 A **49 Claims**



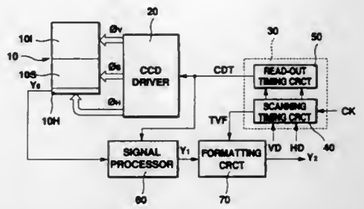
1. A method of producing high power radio frequency signals from a switch-mode power amplifier to power a load comprising:
a. providing a supply voltage to a witch having internal capacitance and capable of rapidly transitioning from a conductive state to a non-conductive state; while
b. causing said switch to rapidly transition to its conductive state and to remain conductive for a conductive time period during which said supply voltage causes current to flow through said switch; then
c. conditioning the current flowing through said switch by reactive network circuitry during said conductive time period; then
d. causing said switch to rapidly transition to its non-conductive state and remain non-conductive for a response time period during which voltage appears across said switch; then
e. creating a response voltage waveform through action of said reactive network circuitry, wherein said reactive network circuitry affirmatively utilizes the internal capacitance of said switch without being affected by a shunt capacitor, and wherein said response waveform has a time-varying voltage throughout said response time period; then again causing said switch to rapidly transition to its conductive state at a turn-on time and thus recommencing the conduction time period wherein the voltage immediately prior to said turn-on time is substantial.

5,187,581
SOLID STATE IMAGE SENSING DEVICE INCLUDING NONLINEAR CONVERSION PROCESSING OF INPUT LIGHT LEVELS
Yukio Kamatani, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 9, 1991, Ser. No. 757,047
Claims priority, application Japan, Sep. 11, 1990, 2-238885; Mar. 4, 1991, 3-37482
Int. Cl.[5] H04N *5/335*
U.S. Cl. 358—213.11 **15 Claims**



1. A solid state image sensing device comprising:
signal charge storage elements, arranged in a matrix on a semiconductor substrate, for storing a signal charge generated by photoelectric conversion;
signal charge reading elements provided adjacent each of said signal charge storage elements for reading out the signal charge from said signal charge storage elements;
a pixel signal processing unit, provided in each of a plurality of blocks obtained by dividing the matrix of said signal charge storage elements, for detecting a luminance of a light incident thereto to output a control signal corresponding to the luminance; and
signal charge extracting elements provided adjacent to each of said signal charge storage elements and controlled by the control signal obtained by said pixel signal processing unit in relation to a corresponding one of said blocks to discard an excessive part and extract a remaining part from the corresponding signal charge of said signal charge storage elements.

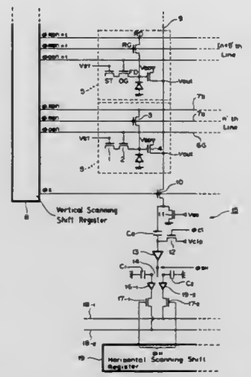
5,187,582
SOLID-STATE IMAGE PICKUP APPARATUS FOR INSERTING AN IMAGE IN A MAIN SCREEN
Yoshihito Higashitsutsumi, Motosu, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Oct. 24, 1991, Ser. No. 782,194
Claims priority, application Japan, Oct. 26, 1990, 2-289237
Int. Cl.[5] H04N *5/335*
U.S. Cl. 358—213.11 **9 Claims**



1. A solid-state image pickup apparatus for inserting a predetermined image in a part of a main screen, comprising:
(a) a solid-state image pickup element for photoelectrically converting a received image and generating a sequential of electric charges including information according to a video pattern;
(b) a drive means for transferring the electric charges vertically and outputting the vertically transferred electric charges for every horizontal line to obtain a desired inset video signal;
(c) scanning timing setting means for setting a read out timing and a display scanning timing of said solid-state image pickup element according to the television system of a main screen; and
(d) said scanning timing setting means including a display scanning signal generating circuit for generating a synchronizing signal in accordance with the television system of the main screen and fixedly setting the format of the video signal in conformity with the main screen and a read out timing signal generating circuit for generating a read operating timing of said drive means, whereby the read operating timing of said solid-state image pickup element can be adjusted based on said display scanning timing signal; wherein said display scanning timing signal generating circuit includes a horizontal synchronous counter to be controlled to synchronize with a horizontal synchronizing signal of the main screen and a vertical synchronous counter to be controlled to synchronize with a vertical synchronizing signal of the main screen.

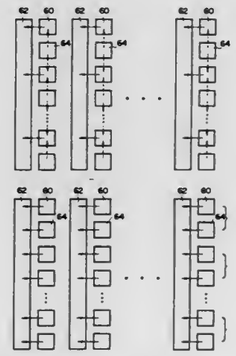
5,187,583
SOLID STATE IMAGER WHICH REDUCES THE NOISE AND IMPROVES THE SENSITIVITY
Masaharu Hamasaki, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Oct. 15, 1991, Ser. No. 776,212
Claims priority, application Japan, Oct. 17, 1990, 2-279930
Int. Cl.[5] H04N *5/335*
U.S. Cl. 358—213.15 **2 Claims**

1. A solid state imager comprising:
(a) a plurality of pixels arranged in a matrix configuration and each having an amplifying element, the output of which is connected to a corresponding vertical signal line;
(b) a vertical scanning shift register to sequentially select a horizontal line of said plurality of pixels;
(c) a horizontal scanning shift register;
(d) a plurality of noise cancel circuit, each being connected to the corresponding vertical signal line;
(e) first sample and hold means for receiving the output signal of the nth horizontal line wherein n is equal to or greater than one during horizontal blanking period through said noise cancel circuit;
(f) second sample and hold means for receiving the output signal of the (n+1)th horizontal line during horizontal blanking period through said noise cancel circuit;
(g) switching means for selectively supplying the output signal of said noise cancel circuit to said first sample and hold means or to said second sample and hold means; and



(h) a pair of horizontal gate switches connected between the output of said first and second sample and hold means and a pair of horizontal output signal lines, said horizontal gate switches being controlled by said horizontal scanning shift register so as to produce output signals independently at said pair of horizontal output signal lines wherein the output signals are used in further signal processing.

5,187,584
X-RAY FLUOROSCOPIC APPARATUS USING A SOLID-STATE IMAGING DEVICE
Masayuki Nishiki, Ootawara, and Yukio Endo, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Mar. 23, 1990, Ser. No. 497,649
Claims priority, application Japan, Mar. 29, 1989, 1-74945
Int. Cl.[5] H04N *5/335*
U.S. Cl. 358—213.18 **5 Claims**

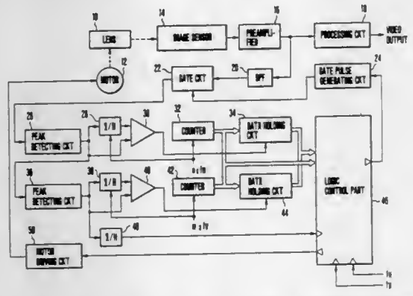


1. A solid-state imaging device for performing interlaced reading, comprising:

VOL 1147 ISS 3 FE 16 1993 UMI

light-receiving sections arranged in a two-dimensional matrix;
a vertical transfer section adjacent to a light-receiving section in each line of the light-receiving sections; and
means for reading signals in different modes during alternate fields of a frame period, including reading, in an odd-numbered field period, from said light-receiving sections in a frame storage mode, and, reading in an even-numbered field period from the light-receiving sections in a field storage mode.

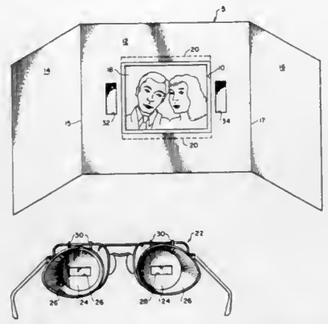
5,187,585
IMAGE SENSING APPARATUS WITH SETTABLE FOCUS DETECTION AREA
Kitahiro Kaneda, Kanagawa; Kunihiko Yamada, Tokyo; Akihiro Fujiwara, Kanagawa; Hirofumi Suda, Kanagawa, and Masamichi Toyama, Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 563,500, Aug. 6, 1990. This application Jun. 25, 1992, Ser. No. 904,881
Claims priority, application Japan, Aug. 19, 1989, 1-213921
Int. Cl.[5] H04N *5/232, 5/225, 5/238*
U.S. Cl. 358—227 **36 Claims**



1. An image sensing apparatus capable of movably setting, on an image sensing plane, a detecting area for detecting predetermined information on an image sensing conditions, comprising:
a) detecting means for detecting said predetermined information within said detecting area from an image signal produced by image sensing means, in a period of a predetermined time; and
b) area setting means for computing information of a shifting position of said detecting area by attaching weights to a plurality of pieces of said predetermined information detected at different points of time by said detecting means and averaging said plurality of pieces of said predetermined information with said weights attached thereto and for controlling a setting position of said detecting area on the basis of said shifting position.

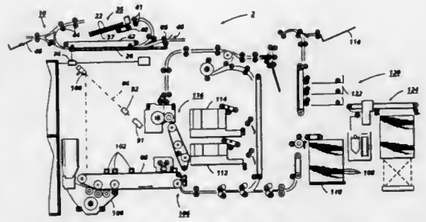
5,187,586
MOTION PICTURE ENVIRONMENT SIMULATOR FOR TELEVISION SETS
Milton Johnson, 9034 Lindblade St., Culver City, Calif. 90232
Filed Apr. 12, 1991, Ser. No. 684,115
Int. Cl.[5] H04N *5/64*
U.S. Cl. 358—254 **10 Claims**

1. A television viewing device comprising in combination a viewing screen adapted to abut the television tube, said viewing screen having an opening formed therein surrounding the television tube so the television picture can be viewed, and a pair of light obstructing spectacle frames having attached light blocking shields for preventing ambient light in the room from entering the eyes of the viewer through the sides, top and bottom of the spectacle frame, the front of said spectacle frame having front light blocking shields with a narrow slit in each light shield, means for varying the width of said narrow slit for preventing too much light from entering said spectacle frame through said narrow slit for better comfort of the viewer, said viewing screen painted black so that the ambient light in the



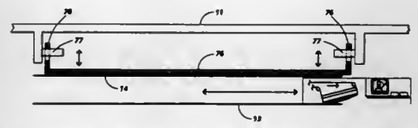
room perceptable to the viewer is substantially reduced and almost all light entering the eyes of the viewer through said slit in each light blocking shield comes from the television picture whereby the environment of a motion picture theatre is simulated.

5,187,587
HANDLING OF COPY SENSITIVE JOBS IN AN ELECTRONIC REPROGRAPHIC PRINTING SYSTEM USING UNIDIRECTIONAL AND BIDIRECTIONAL DELIVERY OF COPIES TO PLURAL BINS
Michael E. Farrell, Fairport; John C. Austin, Rochester; Carla J. Kinder, Ontario, and James F. Matysek, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Division of Ser. No. 590,134, Sep. 28, 1990, Pat. No. 5,128,772. This application Apr. 9, 1992, Ser. No. 865,537
Int. Cl.[5] B65H *39/10;* **H04N** *1/23, 1/29*
U.S. Cl. 358—296 **4 Claims**



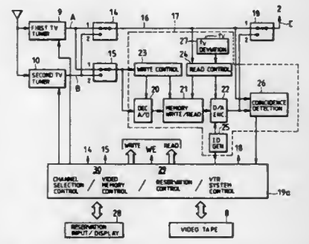
3. An apparatus for processing copy sensitive and copy insensitive jobs in an electronic reprographic printing system comprising:
scanner means for scanning a plurality of sets of original documents which comprises at least one copy sensitive job to be printed;
storage means for electronically storing in memory images of the scanned documents;
converter means for converting the images to electronic pages for printing;
printer means for printing the electronic pages;
first routing means for routing the printed pages of the at least one copy sensitive job to a bindexer having a plurality of bins, said first routing means using a unidirectional fill pattern prior to output; and
second routing means for routing the printed pages of any copy insensitive job to a bindexer having a plurality of bins, said second routing means using a bidirectional fill pattern prior to output.

5,187,588
SCANNER WITH FLOATING BACKSTOP
Denis J. Stemmle, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed May 20, 1991, Ser. No. 703,090
Int. Cl.[5] H04N *1/028, 1/10*
U.S. Cl. 358—296 **17 Claims**



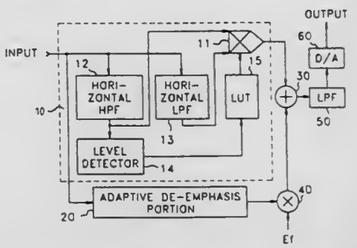
1. A scanner comprising a frame assembly for supporting a movable document reading head for scanning movement in a scanning path in a first direction, means to transport a document through said scanner, means to move said reading head across said document to read at least a portion of said document, said reading head comprising an optical imaging assembly including a frame supporting an imaging platen, said scanner including a vertically movable floating document backstop opposite and on top of said imaging platen and extending across said scanning path to precisely locate and constrain a portion of a document being imaged into a plane of best focus on said platen during an imaging operation.

5,187,589
MULTIPROGRAM VIDEO TAPE RECORDING AND REPRODUCING DEVICE
Mutsumi Kono, and Satoshi Uchiumi, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Continuation of Ser. No. 313,272, Feb. 21, 1989, abandoned. This application Oct. 29, 1991, Ser. No. 784,736
Claims priority, application Japan, Jul. 28, 1988, 63-188966; Jul. 28, 1988, 63-188967
Int. Cl.[5] H04N *5/76*
U.S. Cl. 358—335 **41 Claims**



1. A video tape recording and reproducing device comprising:
a video head;
means for receiving a plurality of video inputs corresponding to respective television programs;
means, coupled to said receiving means, for providing a plurality of recording signals, each of the recording signals corresponding to a respective one of said video inputs;
means for selecting one of said plurality of recording signals;
means for storing said plurality of recording signals except said selected recording signal, said storing means including means for attaching a digital identifier to each of the recording signals to be stored to make stored recording signals distinguishable from the selected recording signal;
means, coupled to said storing means, for reading out the stored recording signals;
multiplexing circuit means, coupled to said reading out means and said selecting means, for alternately switching between the read out recording signals and said selected recording signal to generate a multiplexed signal simultaneously representing a combined plurality of the recording signals;
means for recording said multiplexed signal on said video head;
a separating circuit, coupled to said video head, for separating one of said plurality of recording signals from a recorded multiplexed signal, said separating circuit including means for detecting the identifier in the multiplexed signal; and
an output circuit coupled to said separating circuit for providing the selected signal to an external device.

5,187,590
LUMINANCE SIGNAL RECORDING CIRCUIT AND METHOD FOR MAINTAINING COMPATIBILITY IN REPRODUCING BETWEEN DIFFERENT VIDEO SYSTEMS
Yong-je Kim, Kyunggi, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Jul. 30, 1991, Ser. No. 737,688
Claims priority, application Rep. of Korea, Oct. 31, 1990, 90-17584; Jul. 22, 1991, 91-12545
Int. Cl.[5] H04N *5/76*
U.S. Cl. 358—335 **6 Claims**



1. An adaptive folding circuit for use in a luminance signal recording circuit for maintaining compatibility of reproduction between different video systems in a video signal recording/reproducing apparatus, said adaptive folding circuit for adaptively folding high frequency luminance components of a video signal into low frequency luminance components, in order to record the video signals of a full bandwidth on a recording medium having a predetermined limited bandwidth and to record an adaptively folded luminance signal along with frequency folding information on the recording medium, said adaptive folding circuit comprising:
adaptive emphasis means for emphasizing luminance signal components of said video signal in in response to a level of a high frequency luminance signal component of the luminance signal components to output an emphasized luminance signal;
adaptive de-emphasis means for attenuating a high frequency luminance signal level of the luminance signal to output an adaptively de-emphasized luminance signal;
a modulator for modulating the adaptively de-emphasized luminance signal in response to a modulation frequency signal;
an adder for providing an adaptively folded luminance signal by adding the emphasized luminance signal output from the adaptive emphasis means and the adaptively

VOL 1147 ISS 3 FE 16 1993 UMI

de-emphasized luminance signal output from the adaptive de-emphasis means; and

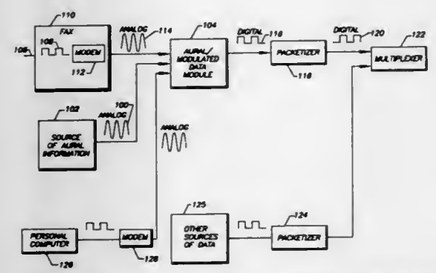
low-pass filter means for filtering said adaptively folded luminance signal for recording on the recording medium.

5,187,591

SYSTEM FOR TRANSMITTING AND RECEIVING AURAL INFORMATION AND MODULATED DATA

Kenneth R. Guy, Thousand Oaks; Andrew M. Kameya, Agoura Hills, and Herbert M. Wildfeuer, Simi Valley, all of Calif., assignors to Micom Communications Corp., Simi Valley, Calif.

Filed Jan. 24, 1991, Ser. No. 645,113
Int. Cl.[5] H04N *1/32*
U.S. Cl. 358—425 **30 Claims**



1. In combination for transmitting modulated data and aural information,

first means for providing modulated data having individual characteristics,

second means for providing aural information,

controller means operative at the position of the first and second means to identify the aural information from the second means and the modulated data from the first means and to identify the characteristics of such modulated data,

third means responsive to the identification from the controller for transforming the aural information and for processing the modulated data in accordance with the characteristics of such modulated data, and

packetizer means for packetizing individual ones of the transformed aural information and the processed modulated data and for labelling the packetized information to identify whether the information is aural or modulated data and, if modulated data, the characteristics of such modulated data.

5,187,592

IMAGE COMMUNICATION METHOD AND APPARATUS WITH SELECTION OF BINARIZATION METHOD FOR TRANSMISSION

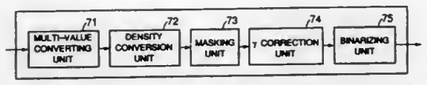
Mitsumasa Sugiyama, and Shigetada Kobayashi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 14, 1991, Ser. No. 669,587
Claims priority, application Japan, Mar. 15, 1990, 2-065434; Mar. 15, 1990, 2-065435; Mar. 15, 1990, 2-065436; Mar. 15, 1990, 2-065437; Jun. 19, 1990, 2-161906
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—430 **44 Claims**

1. An image communication method of converting m-value image data into n-value image data, and transmitting the n-value image data, comprising the step of:

transmitting data associated with a compression method upon transmission of said n-value image data,

wherein, when the data associated with the compression method is transmitted, data associated with a plurality of



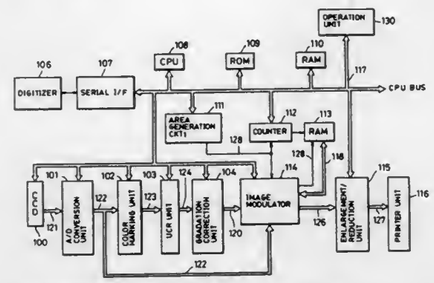
compression methods which can be processed at a transmission side is transmitted.

5,187,593

IMAGE PROCESSING APPARATUS FOR TEXTURE PROCESSING

Mitsuru Kurita; Yasumichi Suzuki, both of Tokyo, and Yoshinori Ikeda, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 1, 1990, Ser. No. 517,337
Claims priority, application Japan, May 10, 1989, 1-117013
Int. Cl.[5] H04H *1/40*
U.S. Cl. 358—434 **30 Claims**



1. An image processing apparatus comprising:

input means for inputting first image data representing a first image and second image data representing a second image which is different from the first image;

modulation means for modulating a density of the second image data in accordance with the first image data; and

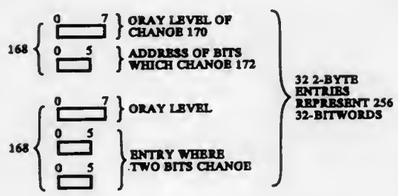
adjusting means for causing an image represented by the modulation second image data to be at a predetermined density level.

5,187,594

METHOD OF CREATING AND APPLYING HALF TONE SCREEN PATTERNS

Keith R. Deutsch, Amherst; Per H. Bjorge, Hollis, and Alan Blannin, Amherst, all of N.H., assignors to Graphic Edge, Inc., Amherst, N.H.

Filed Feb. 9, 1990, Ser. No. 477,799
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—455 **27 Claims**



1. A computer-based system for synthesizing a screened

image representation, the screened image representation consisting of an array of screen cells, and with a source image being specified as an array of pixel values specifying at which gray level a corresponding elemental area of the image is to be rendered on an output device, the system comprising:

means for providing screen parameters, the screen parameters specifying the angle and interval of half tone screened dots in a half tone screen representation;

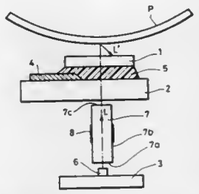
means for generating a half tone screen representation, the half tone screen representation consisting of repeat arrays, with a repeat array for each possible gray level in the screened image representation, and with each repeat array consisting of an array of screen cell values, with each screen cell including an array of device cells, with each device cell specifying how an elemental device dot is to be rendered, the repeat array specifying the representation of two or more complete adjacent half tone screened dots for the corresponding gray level, and the repeat array also specifying the representation of two or more complete half tone screen holes for the corresponding gray level.

5,187,595

PHOTOELECTRIC CONVERSION DEVICE HAVING IMPROVED ILLUMINATION AND INFORMATION PROCESSING APPARATUS MOUNTING THE DEVICE

Masashi Kitani, Yokohama; Tatsundo Kawai, Kanagawa, and Hiroo Ichihashi, Chigasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1990, Ser. No. 616,831
Claims priority, application Japan, Nov. 21, 1989, 1-302672
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—482 **21 Claims**



1. An illumination improvement device for use in a photoelectric conversion system having (a) a substrate on which a plurality of photoelectric conversion elements are disposed, and (b) a light source in which a plurality of light-emitting sources are arrayed, light emitted from the light source illuminating an original and the light reflected therefrom being received by the photoelectric conversion elements, the device comprising:

a light guiding means, through which the light passes, disposed between the original and the light source, said light guiding means having a light incident surface, a light emission surface, and a side surface; and

a correction means disposed on the side surface of said light guiding means.

5,187,596

CONTACT IMAGE SENSOR

Hag-In Hwang, Euiwang, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 29, 1990, Ser. No. 545,867
Claims priority, application Rep. of Korea, Nov. 24, 1989, 1989-17151
Int. Cl.[5] H04N *1/04*
U.S. Cl. 358—484 **7 Claims**

1. A contact image sensor, comprising:

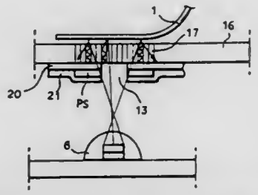
a protective plate for housing said contact image sensor;

a glass plate having a plurality of optical fiber arrays disposed vertically within said glass plate for receiving an incident light, said plurality of optical fiber array having upper and lower surfaces being polished optically;

light emitting means located proximate said lower surface of said glass plate and within said protective plate, for providing said incident light upon said plurality of optical fiber arrays;

photoelectric conversion means formed on said lower surface of said plurality of optical fiber arrays by a thin film process, for converting said incident light into an electrical signal; said photoelectric conversion means comprising:

a first conduction layer formed around a central area of said lower surface of said plurality of optical fiber arrays, for transmitting said incident light directed from an upper surface of said glass plate,



a second conduction layer formed on a surface of said first conduction layer, for reflecting said incident light emitted from said light emitting means,

a photo-sensor formed between said first conduction layer and said second conduction layer, for converting said incident light received through said first conduction layer, and

an opening formed in a central area of said first conduction layer, said photosensor and said second conduction layer, for permitting said incident light emitted from said light emitting means incident upon said plurality of optical fiber arrays; and

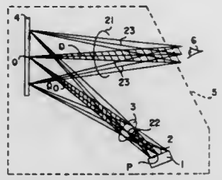
detection means coupled to said photoelectric conversion means, for detecting said electrical signal.

5,187,597

DISPLAY UNIT

Masayuki Kato; Junji Tomita; Tsuyoshi Matsumoto, all of Atsugi; Hirokazu Aritake, and Shin Eguchi, both of Isehara, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 21, 1991, Ser. No. 719,230
Claims priority, application Japan, Jun. 29, 1990, 2-170224; Feb. 4, 1991, 3-013343
Int. Cl.[5] G02B *5/32*
U.S. Cl. 359—22 **29 Claims**



1. A display unit comprising an indicator (**1**) for projecting a predetermined image, an image forming optical system (**3**) for forming a real image at a predetermined position according to the image projected by the indicator, and a transparent hologram screen (**10**) disposed at the image forming position of the image forming optical system to diffract the real image in a predetermined direction with a directivity.

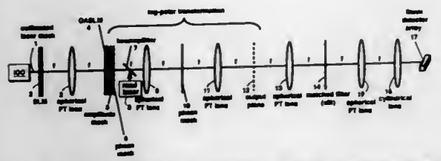
VOL
1147
ISS
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1993
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5,187,598

OPTICAL PROCESSOR FOR PULSE TRAIN IDENTIFICATION

Thomas J. Posluszny, Juno Isles, and Dennis W. Davis, Boca Raton, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 26, 1991, Ser. No. 749,752
Int. Cl.[5] G03H *1/16*; G02B *27/46*; G06E *3/00*
U.S. Cl. 359—29 5 Claims



1. An optical system for identifying a pulse train of signals present input pulse data containing a pulse train and other pulses, comprising:
- an optical source means for transmitting an optical beam along an axis in a first direction;
- a spatial light modulator means disposed along said axis or receiving said optical beam and for also receiving said input pulse data and for presenting an array of pixels in a raster display representing input pulse data, whereby said optical beam emerges from said spatial light modulator means as a modulated optical beam carrying a data pattern representative of said input pulse data;
- a first Fourier transform lens means disposed along said axis for Fourier-transforming said modulated optical beam to an optical beam carrying a Fourier data pattern;
- an OASLM means disposed along said axis for receiving said Fourier data pattern on a first side thereof and for storing said Fourier data pattern in a reflectivity pattern on a second side thereof representative of said optical beam carrying a Fourier data pattern;
- means for directing a read optical beam along said axis in a second direction opposite said first direction, whereby said read optical beam is reflected from said second side of said OASLM means with a representation of said Fourier data pattern in said first direction as a read modulated beam; and
- optical transformation means disposed along said axis in proximity to said second side of said OASLM means for performing a log-polar transformation on said Fourier data pattern, whereby pixels representing said pulse train are represented at an output plane disposed along said axis downstream of said OASLM means as a vertically oriented line of optical radiation displaced from said axis.

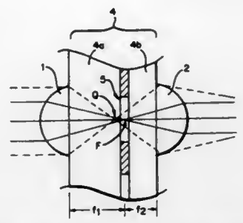
5,187,599

DISPLAY INCLUDING TWO MICROLENS ARRAYS WITH UNEQUAL FOCAL LENGTHS AND CONGRUENT FOCAL POINTS

Hiroshi Nakanishi, Tenri, and Hioroshi Hamada, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 31, 1991, Ser. No. 647,635
Claims priority, application Japan, Feb. 1, 1990, 2-22824; Oct. 9, 1990, 2-271898
Int. Cl.[5] G02F *1/1335*
U.S. Cl. 359—41 9 Claims

1. A transmissive display device comprising a first substrate and a second substrate both constituting a display panel having multiple picture elements, a first array of microlens disposed on an incident side of one of the substrates, the first array of microlenses each being disposed in correspondence to respective picture elements, a second array of microlenses disposed on an outlet side of the other substrate, the second array of microlenses each being disposed in correspondence to respective picture elements, wherein the positions of the focal points of the first array of microlenses are identical with those of the focal points of the second array of microlenses, and wherein



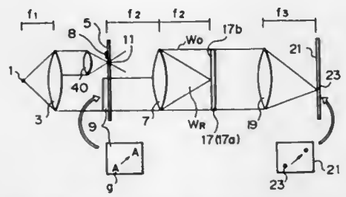
the focal length f_1 of each microlens in the first array is larger than the focal length f_2 of each microlens in the second array.

5,187,600

APPARATUS FOR SCANNING AN OPTICAL RECORDING MEDIUM WITH A BEAM OF LIGHT

Toshiharu Sato, Kawagoe, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Apr. 4, 1990, Ser. No. 503,930
Claims priority, application Japan, Apr. 7, 1989, 1-88915
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—41 13 Claims



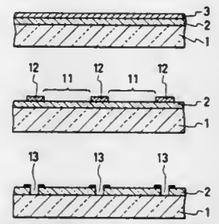
1. An optical beam scanning apparatus comprising a semiconductor laser emitting a divergent beam of light, a first lens system for receiving the divergent beam of light and converting it to a parallel beam of light having a given intensity, a two-dimensional optical modulator for receiving the parallel beam comprising a liquid crystal display for two-dimensional modulation of the intensity of the parallel beam and having a matrix of vertical and horizontal electrodes that cross each other with constitute modulating elements at the crossings of the electrodes, a second lens system for receiving the parallel beam from the modulator and converging it to a focal point of the second lens system, a spatial optical modulator located at the focal point of the second lens system for converting the converged beam to a parallel wave, and a third lens system for recieving the parallel wave and producing a beam spot from the parallel wave incident thereon at a focal point of the third lens system.

5,187,601

METHOD FOR MAKING A HIGH CONTRAST LIQUID CRYSTAL DISPLAY INCLUDING LASER SCRIBING OPAQUE AND TRANSPARENT CONDUCTIVE STRIPS SIMULTANEOUSLY

Shunpei Yamazaki, Tokyo; Takeshi Fukada, Ebina; Mitsunori Sakama, Hiratsuka; Nobumitsu Amachi; Naoya Sakamoto, both of Atsugi; Mitsufumi Codama, Atsugishi; Takashi Fuki, and Ichiro Takayama, both of Atsugi, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 318,540, Mar. 3, 1989, abandoned. This application Dec. 17, 1991, Ser. No. 807,748
Claims priority, application Japan, Mar. 7, 1988, 63-54466
Int. Cl.[5] G02F *1/1343*
U.S. Cl. 359—54 17 Claims



8. A method for forming an electrode pattern for an electro-optical device, said electrode pattern comprising a plurality of transparent conductive strips, on each of which is provided with chromium at its edge portions,

said method comprising the steps of:

forming a transparent conductive film on a substrate;

forming a plurality of opaque conductive strips comprising chromium on said transparent conductive film;

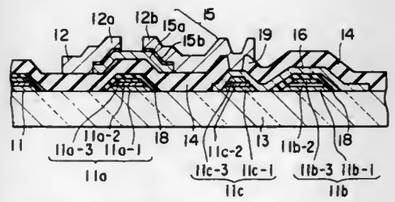
laser scribing a portion of said opaque conductive strips in order to divide each of the opaque conductive strips into two parts, wherein said transparent conductive film is patterned into said plurality of transparent conductive strips by said laser scribing simultaneously with said opaque conductive strips.

5,187,602

LIQUID CRYSTAL DISPLAY APPARATUS

Mitsushi Ikeda, Kanagawa, and Michio Murooka, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kanagawa, Japan

Filed Jul. 10, 1991, Ser. No. 727,865
Claims priority, application Japan, Jul. 12, 1990, 2-185736; May 30, 1991, 3-127716
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—59 14 Claims



1. A liquid crystal display apparatus comprising:

a transparent substrate;

driving thin film transistors disposed on said transparent substrate;

display picture elements, each connected to a respective one of said driving thin film transistors; and

storage capacitance devices, each connected in parallel with a corresponding one of said display picture elements, wherein each of said storage capacitance devices includes

a storage capacitance metallic line made of a metal containing Ta and N, said storage capacitance metallic line being disposed on said transparent substrate, and

a metal oxide film formed by anodically oxidizing the surface of said storage capacitance metallic line, and

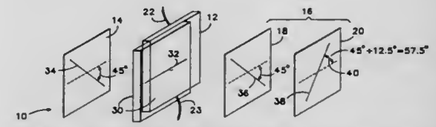
wherein the corresponding one of said display picture elements is disposed on said metal oxide film.

5,187,603

HIGH CONTRAST LIGHT SHUTTER SYSTEM

Philip J. Bos, Beaverton, Oreg., assignor to Tektronix, Inc., Wilsonville, Oreg.

Continuation of Ser. No. 546,820, Jun. 26, 1990, abandoned. This application Jan. 27, 1992, Ser. No. 826,278
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—73 10 Claims



1. A high contrast light shutter system that produces opaque and transmissive states corresponding to respective first and second states of a variable optical retarder, comprising:

variable optical retarder means for selectively providing a nonzero residual amount of retardation in the first state and an increased amount of optical retardation equal to the sum of the residual amount and half-wave retardation in the second state, the variable optical retarder having an optical thickness corresponding to the increased amount of retardation in the second state; and

first and second polarizing means between which the variable optical retarder means is positioned for polarizing light incident to them, the first polarizing means including a fixed optical retarder and a linear polarizer that cooperate to compensate for the effect of the residual amount of retardation present in both states of the variable retarder so as to maximize and minimize light transmission in the respective transmissive and opaque states.

5,187,604

MULTI-LAYER EXTERNAL TERMINALS OF LIQUID CRYSTAL DISPLAYS WITH THIN-FILM TRANSISTORS

Hideaki Taniguchi, Mobara; Hirofumi Kunitou; Ryouji Oritsuki, both of Chiba, and Akira Sasano, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 29, 1990, Ser. No. 464,191
Claims priority, application Japan, Jan. 18, 1989, 1-7615; Mar. 13, 1989, 1-62908
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—88 13 Claims

1. A thin-film device comprising: a substrate;

an external terminal for electrical connection with an external circuit;

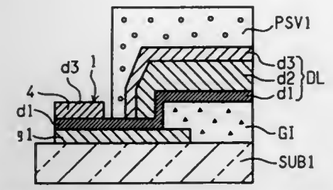
a first wiring including aluminum formed over said substrate;

an insulating layer formed over said substrate and over said first wiring to cover substantially all of said first wiring, wherein said external terminal is not covered by said insulating layer; and

a second interconnection wiring formed of a different material than said first wiring, said second wiring electrically

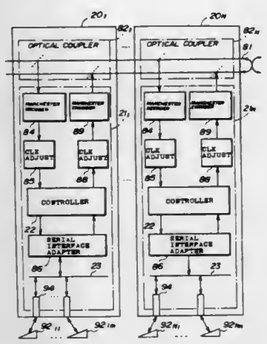
VOL 1147 ISS 3 FE 16 1993 UMI

connecting said first wiring with said external terminal, wherein said insulating layer covers a part of said second wiring so that a first portion of said second wiring is covered by said insulating layer and a second portion of



said second interconnection wiring is not covered by said insulating layer so that said first wiring is electrically connected with said external terminal via said second wiring without being exposed from said insulating layer.

5,187,605
OPTICAL TRANSCEIVER
Kiyotaka Shikata, Kawasaki, and Shinji Takao, Fukuoka, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Sep. 4, 1991, Ser. No. 754,940
Claims priority, application Japan, Sep. 6, 1990, 2-238591
Int. Cl.[5] H04B *10/00*; H04J *14/08*
U.S. Cl. 359—152 **14 Claims**



1. An optical transceiver which is coupled to a U-shaped optical bus used as a transmission line for a transmission of receiving and transmitting packets to and from the optical transceiver and also coupled to data terminals employing carrier sense multiple access with collision detection (CSMA/CD), said optical transceiver comprising:

optical bus interface means coupled to the U-shaped optical bus for matching the transmitting and receiving packets to the U-shaped optical bus;

converting means for receiving corresponding receiving packets from the U-shaped optical bus and converting the corresponding receiving packets into data to be transferred to a respective data terminal and for receiving data from a respective data terminal and converting said data into corresponding transmitting packets to be transferred to the U-shaped optical bus;

a common bus connected between said converting means and said data terminals to provide a data transfer path between said converting means and the data terminals during transmitting and receiving operations;

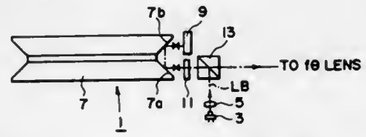
said converting means including notifying means for notifying a collision on said common bus based on an impedance of said common bus;

control means, coupled between said optical bus interface means and said converting means, for generating a transmission control signal and a reception control signal based on timings of a transmitting packet and a receiving packet being transmitted, a relationship between the transmitting packet and a corresponding receiving packet which is looped back from the U-shaped optical bus, and a collision notification supplied from said notifying means of said converting means;

transmitting packet intermission means, coupled between said optical bus interface means and said converting means, for intermitting the transmitting packets in response to said transmission control signal; and

receiving packet intermission means, coupled between said optical bus interface means and said converting means, for intermitting the receiving packets in response to said reception control signal.

5,187,606
SCANNING OPTICAL APPARATUS
Kazuyuki Kondo, Kawasaki; Masamichi Tateoka, Yokohama, and Takehiko Nakai, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 17, 1990, Ser. No. 598,965
Claims priority, application Japan, Oct. 20, 1989, 1-274654; Jul. 5, 1990, 2-178067
Int. Cl.[5] G02B *26/08*
U.S. Cl. 359—196 **28 Claims**



26. An image recording apparatus comprising:

a light source unit;

a deflector for deflecting a light beam from said light source, said deflector having a pair of reflecting surfaces orthogonal to each other;

a reflecting member having a reflecting surface for reflecting the light beam deflected by said deflector back to said deflector to be deflected again;

a photosensitive member having a surface for receiving the light beam deflected again by said deflector; and

an optical system for condensing the light beam twice deflected by said deflector on said photosensitive member, wherein said optical system has, with respect to the subscanning direction, conjugate points on the reflecting surface of said reflecting member and the surface of said photosensitive member.

5,187,607
ELECTROCHROMIC DEVICE WITH LOW RESISTANCE ELECTRICAL CONNECTIONS
Tatsuo Endo, Yokohama, and Mitsuyoshi Mizuno, Matsudo, both of Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Mar. 9, 1990, Ser. No. 491,053
Claims priority, application Japan, Mar. 13, 1989, 1-60347; Jul. 3, 1989, 1-78407[U]; Jul. 4, 1989, 1-78968[U]
Int. Cl.[5] G02F *1/155, 1/153*
U.S. Cl. 359—266 **8 Claims**

1. An electrochromic device comprising:

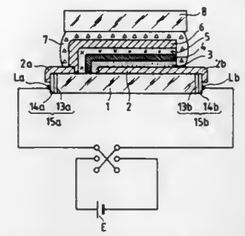
a substrate;

a first electrode layer;

an electrochromic layer;

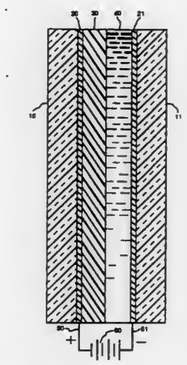
a second electrode layer, said first electrode layer, said electrochromic layer, and said second electrode layer being formed on said substrate in sequence, and at least one of said first and second electrode layers being a transparent electrode layer; and

a conductive thin film formed on an end surface of said substrate, said conductive thin film having a resistance lower than that of said transparent electrode layer, and

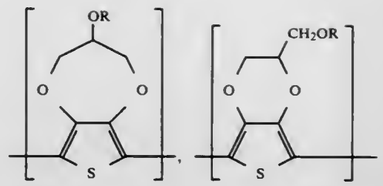


part of said transparent electrode layer overlapping said end surface and being formed on said conductive thin film such that said conductive thin film has a portion disposed between said overlapping part of said transparent electrode layer and said end surface of said substrate.

5,187,608
SUBSTITUTED 3,4-POLYMETHYLENEDIOXYTHIOPHENES, AND POLYMERS AND ELECTRO RESPONSIVE DEVICES MADE THEREFROM
Margaret L. Blohm; James E. Pickett, both of Schenectady, and Paul C. VanDort, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.
Division of Ser. No. 663,524, Mar. 4, 1991, Pat. No. 5,111,327.
This application Dec. 13, 1991, Ser. No. 806,400
The portion of the term of this patent subsequent to May 5, 2009, has been disclaimed.
Int. Cl.[5] G02F *1/01*
U.S. Cl. 359—273 **7 Claims**



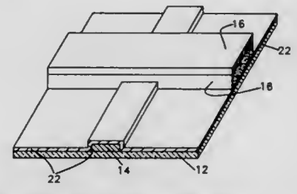
1. An electro-responsive device comprising an electrode treated with an electro-responsive polymer which is in contact with a liquid or solid electrolyte, which is in further contact with a second electrode, which electro-responsive-device is capable of repeatedly effecting an electro-response in an electro-responsive polymer to convert it from the undoped or reduced state to the doped or oxidized state, and from the doped state to the undoped state, where the electro-responsive polymer comprises polymers having repeat units of the formulas,



and copolymers comprising chemically combined repeat units thereof,

where R is hydrogen or a $C_{(1-18)}$ organic radical.

5,187,609
ELECTROPHORETIC DISPLAY PANEL WITH SEMICONDUCTOR COATED ELEMENTS
Frank J. DiSanto, 27 Par Ct., North Hills, N.Y. 11030, and Denis A. Krusos, 1 Lloyd Harbor Rd., Lloyd Harbor, N.Y. 11743
Filed Mar. 27, 1991, Ser. No. 675,733
Int. Cl.[5] G02B *26/00*; G09G *3/34*
U.S. Cl. 359—296 **20 Claims**



1. An electrophoretic display comprising:

(a) a fluid-tight envelope having a portion thereof which is at least partially transparent;

(b) an electrophoretic fluid contained within said envelope, said fluid having pigmented particles suspended therein;

(c) a plurality of elongated substantially parallel horizontal conductor members disposed within a first plane and contained within said envelope; and

(d) a plurality of elongated substantially parallel vertical conductor members contained within said envelope electrically insulated from said horizontal members and disposed within a second plane, said first and said second planes being substantially parallel, said horizontal members and said vertical members forming a matrix with a plurality of intersections when viewed along a line perpendicular to said first and said second planes, said horizontal members being insulated from said vertical members at least partially by a semiconductor coating, said horizontal members and said vertical members each being selectively electrically chargeable to induce movement of said particles within said fluid, said particles being at least partially visible through said transparent portion of said envelope.

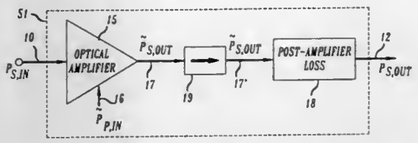
5,187,610
LOW NOISE, OPTICAL AMPLIFIER HAVING POST-AMPLIFICATION LOSS ELEMENT
Isam M. I. Habbab, Old Bridge, and Adel A. M. Saleh, Holmdel, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Dec. 19, 1991, Ser. No. 810,273
Int. Cl.[5] A01S *3/05*; G02B *6/26*
U.S. Cl. 359—341 **20 Claims**

1. Optical apparatus for amplifying an input lightwave signal

VOL 1147 ISS 3 FE 16 1993 UMI

to a desired optical power level, the optical apparatus comprising,

an optical amplifier responsive to a pump signal at a first level for producing a predetermined gain to amplify the input lightwave signal,



means coupled to the optical amplifier for pumping the optical amplifier with a pump signal at a second level greater than the first level to cause a predetermined increase of the optical amplifier gain, and

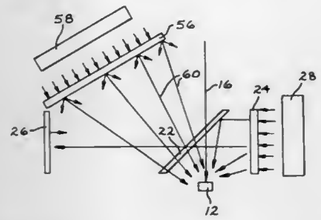
means coupled to an output of the optical amplifier for causing a loss substantially equal in magnitude to the predetermined increase of the optical amplifier gain.

5,187,611

DIFFUSE ON-AXIS LIGHT SOURCE

Timothy P. White, New Boston, N.H., and Steve M. LeBlanc, Andover, Mass., assignors to Northeast Robotics, Inc., New Boston, N.H.

Filed Aug. 27, 1991, Ser. No. 750,257
Int. Cl.[5] G02B *5/02, 27/14*
U.S. Cl. 359—599 **3 Claims**



1. A light source for use with machine vision cameras having an optical axis extending to the object to be illuminated comprising, in combination, a light reflective beam splitter obliquely located within the optical axis having first and second sides, said first side being disposed toward the machine vision camera and said second side being disposed toward the object to be illuminated, a first light diffuser disposed toward said beam splitter second side, a light trap disposed toward said beam splitter first side in non-alignment with the optical axis and in opposed relation to said first diffuser absorbing light passing through said beam splitter from said second side to said first side, a first light source supplying light to said first diffuser whereby light from said first diffuser is cast upon said beam splitter second side and reflected upon the object to be illuminated, a second light diffuser disposed toward said beam splitter first side, and a second light source supplying light to said second diffuser whereby light from said second diffuser is cast upon said beam splitter first side and passes through said beam splitter to the object to be illuminated.

5,187,612

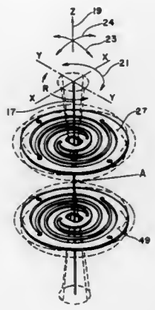
GYRATING PROGRAMMABLE SCANNER

George A. Plesko, Media, Pa., assignor to Gap Technologies, Inc., Media, Pa.

Filed Nov. 15, 1990, Ser. No. 612,983
Int. Cl.[5] G02B *26/08;* **H02K** *33/00;* **F03G** *1/02*
U.S. Cl. 359—896 **4 Claims**

1. A device for providing angular displacement of an axis in a direction selected from the x or y directions or rotational movement about the z direction with respect to said axis, comprising:

a core element for defining a z axis, said core element capable of displacements in the x and y directions, respectively, and of rotational movement about the z direction with respect to said axis;



distortion means proximate said core element for introducing a distortion force in said core element in said x and y directions or about said z axis as desired; and

mounting means for suspending said core element with respect to said distortion means, to permit relative movement therebetween in response to said desired distortion force.

5,187,613

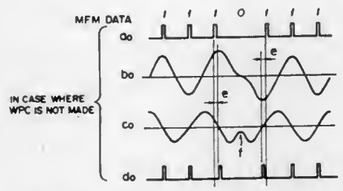
Patent Not Issued For This Number

5,187,614

WRITE DATA WRITE-PRE-COMPENSATION SYSTEM IN A FLOPPY DISK DRIVE UNIT AND APPARATUS THEREFOR

Kunihiro Hashimoto; Chiharu Tsukamoto, and Chiharu Kawakubo, all of Iruma, Japan, assignors to Ye Data Inc., Tokyo, Japan

Filed Dec. 20, 1990, Ser. No. 631,678
Claims priority, application Japan, Dec. 28, 1989, 1-338483
Int. Cl.[5] G11B *5/09*
U.S. Cl. 360—45 **6 Claims**



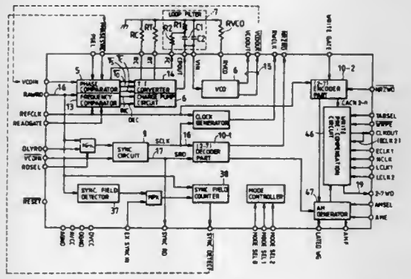
1. A write data compensation system for compensating original write data to be recorded on a low density recording disc medium, comprising means for determining a peak shift of bits of the original write data estimated to occur upon reproduction of the original write data from a disc medium, and means for correcting the original write data by displacing each bit for which a bit shift is estimated to occur in a direction coinciding with a direction of the estimated peak shift, wherein the thus corrected original write data is recorded on the low density recording disc medium.

5,187,615

DATA SEPARATOR AND SIGNAL PROCESSING CIRCUIT

Shyoichi Miyazawa; Ryutaro Horita, both of Yokohama; Kenichi Hase, Fujisawa; Satoshi Kawamura, Yokohama; Shinichi Kojima, Takasaki, and Toshiyuki Iseki, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 329,552, Mar. 28, 1989, abandoned. This application Jul. 22, 1991, Ser. No. 734,073
Claims priority, application Japan, Mar. 30, 1988, 63-74326; Apr. 27, 1988, 63-102511; Jul. 22, 1988, 63-181892
Int. Cl.[5] G11B *5/09;* **H03K** *5/13, 7/00*
U.S. Cl. 360—46 **19 Claims**



1. A data separator wherein a synchronized read signal is produced from an original read signal, comprising:

phase synchronizing means, to which said original read signal is input, for generating a clock pulse in synchronism with said original read signal; and

synchronizing means, into which said original read signal and said clock pulse produced from said phase synchronizing means are input, for producing said synchronized read signal by employing a window which has been formed based upon said clock pulse, wherein said synchronizing means includes a synchronized data generating unit for producing said synchronized read signal and a plurality of gate circuits forming two signal paths for respectively transferring said original read signal and said clock pulse to said synchronized data generating unit, a Bipolar-CMOS gate circuit being employed within at least one of said gate circuits on each signal path.

5,187,616

RECORDING APPARATUS AND DUBBING SYSTEM INCLUDING THE SAME

Norio Kimura, Kawasaki, and Yoichi Yamagishi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 26, 1989, Ser. No. 457,173
Claims priority, application Japan, Dec. 26, 1988, 63-326294; Jun. 2, 1989, 1-140745; Nov. 27, 1989, 1-308332
Int. Cl.[5] G11B *15/12*
U.S. Cl. 360—61 **15 Claims**

1. A dubbing system comprising:

a reproducing apparatus for reproducing and outputting signals recorded on a medium on which image and audio signals are capable of being recorded; and

a recording apparatus for recording given image and audio signals at a desired position on a medium;

wherein each of said reproducing apparatus and said recording apparatus comprises communication means for executing mutual communications, said reproducing apparatus and said recording apparatus cooperatively operate for a dubbing sequence through mutual communication between a plurality of said communication means and said reproducing apparatus simultaneously outputs relative

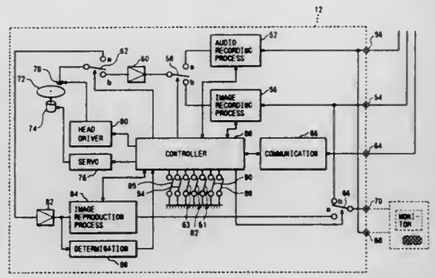


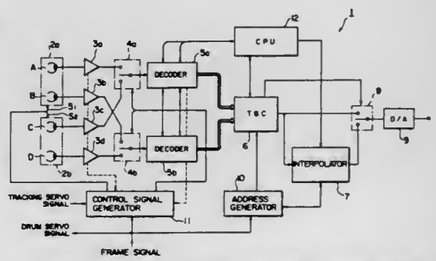
image and audio signals to said recording apparatus to maintain a predetermined relationship between the image and audio signals.

5,187,617

APPARATUS FOR REPRODUCING DIGITAL VIDEO SIGNAL

Kozo Kaminaga, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 297,394, Jan. 17, 1989, abandoned. This application Mar. 25, 1992, Ser. No. 865,803
Claims priority, application Japan, Jan. 22, 1988, 63-10738
Int. Cl.[5] G11B *15/14, 5/55, 21/02*
U.S. Cl. 360—64 **10 Claims**



1. An apparatus for reproducing digital video signals recorded on a tape in such a manner that digital video signals constituting each field of image information are divided into a plurality of sectors each being recorded on mutually different tracks, said apparatus comprising:

a rotary head drum means having at least two displaceable reproducing heads spaced apart by a predetermined angle for reproducing the recorded digital video signals of the plurality of sectors from said tracks;

means for supplying a control signal to said reproducing heads so as to reverse vertical position of the reproducing heads for each field such that a first sector of the field being scanned by one of the heads and a second sector of the field being scanned by the other head in one field are scanned in the directly following field such that the first sector is then scanned by the other head and the second sector is then scanned by the one head; and

memory means for storing the reproduced digital video signals, and means for outputting from the memory means the reproduced digital video signals in a correct sequence.

VOL
1147
ISS
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5,187,618

METHOD FOR AUTOMATICALLY PROGRAMMING AND CONTROLLING A NEXT MODE OF A VIDEO TAPE RECORDER

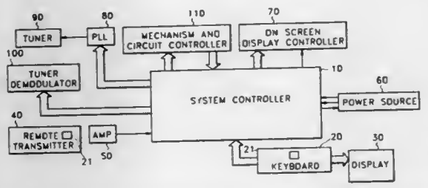
Kwon-pyo Hong, Eulwang, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 20, 1990, Ser. No. 540,687

Claims priority, application Rep. of Korea, Dec. 16, 1989, 89 18746

Int. Cl.[5] G11B *15/02*

U.S. Cl. 360—69 **19 Claims**



8. A circuit for automatic processing of a series of operating modes of an electronic device having a plurality of mode keys and a next mode selecting key, the circuit comprising:

means for detecting activation of said next mode selecting key and producing next mode signals indicative of said activation of said next mode selecting key, and for receiving user input of selected modes by detecting actuation of individual ones of said plurality of mode keys and generating a sequence of operating mode signals indicative of said activation of said individual ones of said plurality of mode keys;

control means for receiving said next mode signals, for receiving said operating mode signals, for storing said sequence of operating mode signals, and for providing said sequence of operating mode signals; and mechanism controlling means for controlling an operation of said electronic device in response to said sequence of operating mode signals provided by said control means.

5,187,619

HIGH SPEED SWITCHED AUTOMATIC GAIN CONTROL

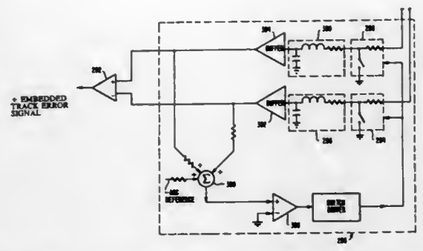
Michael D. Sidman, Colorado Springs, Colo., assignor to Digital Equipment Corporation, Maynard, Mass.

Division of Ser. No. 490,504, Feb. 28, 1990, Pat. No. 5,109,307, which is a continuation of Ser. No. 308,963, Feb. 10, 1989, abandoned, which is a continuation of Ser. No. 106,017, Oct. 1, 1987, abandoned, which is a continuation of Ser. No. 926,885, Nov. 6, 1986, abandoned, which is a continuation of Ser. No. 376,971, May 10, 1982, abandoned. This application Mar. 1, 1991, Ser. No. 502,513

Int. Cl.[5] G11B *5/596;* **H03G** *3/30*

U.S. Cl. 360—77.08 **3 Claims**

2. An automatic gain control circuit for controlling amplification of two independent input signals, said circuit including first and second attenuators connected to receive said input signals, each said attenuator being selectively switchable to vary its output between a maximum and minimum attenuation, means for summing the outputs of said attenuators, means for comparing the output of said summing means with a reference level, means responsive to the output of said comparing means to switch said attenuators according to whether said sum is greater or less than said reference level, thereby to maintain



the output voltage of said attenuators substantially at said reference level.

5,187,620

HEAD POSITION DETERMINATION CONTROL APPARATUS OF DATA RECORDING/REPRODUCING APPARATUS IN A DATA SURFACE SERVO SYSTEM

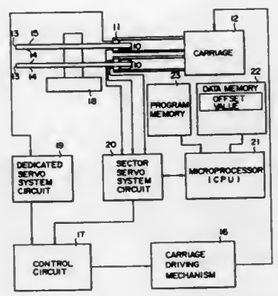
Yuichi Notake, Tokyo; Kenji Asai, and Tomihisa Ogawa, both of Oome, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 30, 1990, Ser. No. 472,670

Claims priority, application Japan, Jan. 31, 1989, 1-21010; Mar. 28, 1989, 1-76061

Int. Cl.[5] G11B *5/596*

U.S. Cl. 360—77.04 **2 Claims**



1. An apparatus for recording/reproducing information, comprising:

a plurality of magnetic recording mediums, one surface of one of said plurality of magnetic recording mediums being a servo surface on which only servo data for magnetic head positioning determination is recorded, and the other surfaces of said magnetic recording mediums excluding the servo surface being data surfaces on which servo data is partly recorded and for recording data;

a servo head, provided corresponding to the servo surface, for reading out the servo data from the servo surface;

a plurality of data heads, provided corresponding to the respective data surfaces of the respective recording mediums, for reading from or writing data into the corresponding data surfaces;

carriage means for mounting said servo head and said data heads, and for moving said servo head and said data heads on said recording mediums;

seek control means for moving by said carriage means said data heads to the target track of the respective data surfaces of said corresponding recording mediums based on the servo data read out from the servo surface by said servo head;

position offset value detecting means for obtaining the respective position offset values with respect to the center of the target track of the respective data heads based on the servo data recorded on the data surfaces of said recording mediums in order to position to the respective center of the target track the respective data heads which are moved to the target track by said seek control means;

memory means for storing respective position correction data used for the position determination processing of said respective data heads based on the position offset values obtained by said position offset value detecting means;

position determination control means for positioning, in the center of the target track, by said carriage means, said data heads sought to the target track of the data surfaces, based on the position correction data corresponding to the respective data heads stored in said memory means;

determining means for determining whether a cylinder of a track on which a first of said data heads has been positioned is identical to a cylinder of a track on which a second of said data heads is to be positioned, when a data read/write operation for the data surface corresponding to the first data head is switched to a data read/write operation for the data surface corresponding to the second data heads; and

control means for, when said determining means determines that the target tracks are located o the same cylinder, comparing the position correction data corresponding to first data head stored in said memory means with the position correction data corresponding to the second data head stored in said memory means, and for executing the data read/write operation by said second data head without executing the respective control operations by said seek control means and said position determination control means when an error as the comparison result falls within a predetermined allowable range.

5,187,622

MAGNETIC DISK DRIVE APPARATUS HAVING A PROTECTION MECHANISM FOR PROTECTING A MAGNETIC HEAD FROM COLLISION WITH A MAGNETIC DISK WHEN LOADING OR UNLOADING THE MAGNETIC DISK

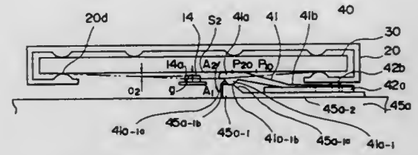
Takashi Watanabe, Ichikawa, Japan, assignor to Teac Corporation, Japan

Filed Jan. 4, 1991, Ser. No. 638,041

Claims priority, application Japan, Aug. 20, 1990, 2-218490; Sep. 21, 1990, 2-253860; Oct. 30, 1990, 2-293444

Int. Cl.[5] G11B *17/028, 5/40*

U.S. Cl. 360—99.02 **4 Claims**



1. A magnetic disk drive apparatus for recording and/or reproducing information on and from a flexible magnetic disk accommodated in a cartridge, said cartridge having a major surface parallel to a major surface of the magnetic disk on which the recording/reproducing occurs, said apparatus comprising:

a chassis;

magnetic head means for recording and/or reproducing information on and from said flexible magnetic disk;

head carriage means provided on said chassis for carrying said magnetic head means thereon, said head carriage means moving said magnetic head means along said flexible magnetic disk;

disk carriage means provided on said chassis for holding said cartridge therein, said disk carriage means being movable between a first condition and a second, different condition, said first condition being one in which said magnetic head means records and/or reproduces information on and from said magnetic disk, said second condition being one in which loading and an unloading of said cartridge on and from said disk carriage means can be carried out;

head protection means provided on said chassis for movement between a first position and a second position offset from said first position, said head protection means assuming said first position when said disk carriage means is in said first condition for disengaging said head protection means from said cartridge, said head protection means

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5,187,621

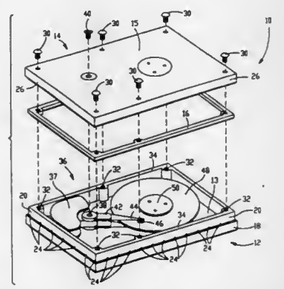
RFI/EMI REDUCTION FOR HEAD AND DISK ASSEMBLY

Thomas A. Tacklind, San Martin, Calif., assignor to Quantum Corporation, Milpitas, Calif.

Filed Mar. 25, 1991, Ser. No. 674,385

Int. Cl.[5] G11B *33/14;* **H05K** *9/00*

U.S. Cl. 360—97.02 **7 Claims**



1. Apparatus for providing improved RFI/EMI shielding within a disk drive comprising a base means and a cover means:

the base means formed of conductive material for supporting a rotating data storage disk and a voice coil actuator means for positioning a data transducer head at selected ones of a multiplicity of concentric data storage tracks defined on a storage surface of the rotating data storage disk, the base means defining a substantially continuous floor and integrally formed base sidewalls extending upwardly from the floor along a periphery thereof, the base sidewalls further defining a peripheral region extending around the periphery of the base sidewalls;

a plurality of closely spaced apart, knife-blade interference wedge means being formed along and extending outwardly from the peripheral region for engaging adjacent facing portions of the cover means when it is clamped against the base means,

the cover means defining a ceiling and integral cover sidewalls extending downwardly to fit closely over the peripheral region so that the adjacent facing portions thereof come into engagement with the knife-blade interference wedge means, and

clamping means for clamping the cover means securely to the base means such that the adjacent facing portions of the cover means are deformed by the knife-blade interference wedge means of the base means, thereby establishing a pluralty of very low electrical impedance, closely spaced apart contacts along a gap between the cover means and the base means for grounding out RFI/EMI.

VOL 1147 ISS 3 FE 16 1993 UMI

assuming said second position when said disk carriage means is in said second condition for engaging said head protection means with said major surface of said cartridge for biasing said cartridge such that an engagement between said magnetic head means and said cartridge is prohibited; and

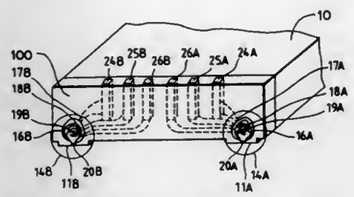
actuation means for actuating said head protection means such that said head protection means is in said first position when said disk cartridge means is in said first condition and such that said head protection means is in said second position when said disk carriage means is in said second condition.

5,187,623

THIN FILM MAGNETIC HEAD WITH SYMMETRICAL WIRE CONNECTIONS

Atsushi Ibaraki, Nakanoshima, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1991, Ser. No. 651,703
Claims priority, application Japan, May 2, 1990, 2-25572
Int. Cl.[5] G11B *5/60, 21/16*
U.S. Cl. 360—103 **1 Claim**



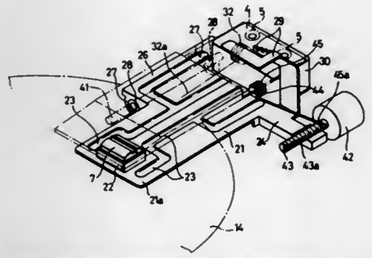
1. A thin-film magnetic head having a slider and electromagnetic transducers disposed on a side surface of said slider, said thin-film magnetic head comprising a plurality of wire connecting portions connected with said electromagnetic transducers, said wire connecting portions being arranged in a row on a first surface of said slider which is opposite to a second surface of said slider facing a magnetic recording medium, said row being adjacent to said side surface on which said electromagnetic transducers are provided so that these wire connecting portions are disposed on two adjacent slider surfaces.

5,187,624

MAGNETIC HEAD CARRIAGE WITH REINFORCING RIBS

Tatsuhiko Shigemoto, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 525,607, May 21, 1990. This application Dec. 30, 1991, Ser. No. 814,694
Claims priority, application Japan, May 25, 1989, 1-132431; May 25, 1989, 1-132432
Int. Cl.[5] G11B *5/48, 5/60*
U.S. Cl. 360—104 **4 Claims**



1. A floppy disk drive assembly having a magnetic head for recording information on and/or reproducing information from a floppy disk, comprising: a carriage for carrying the magnetic head; and drive means for driving the carriage so as to enable the magnetic head to scan a track formed on a side of the floppy disk, in which the carriage is made of a generally planar sheet metal with flat edges; the carriage including at the proximal end thereof a supporting block to which a head support arm is secured and having the magnetic head attached at the distal end of the carriage, respectively, and two, press-worked, indented ribs are formed in sheet metal carriage spaced apart from outer edges thereof, each of said ribs being bifurcated at an end thereof facing said supporting block to reinforce the carriage.

5,187,625

LAMINATED LOAD BEAM

David J. Blaeser, and Raymond R. Wolter, both of Hutchinson, Minn., assignors to Hutchinson Technology Incorporated, Hutchinson, Minn.

Filed Jan. 22, 1991, Ser. No. 644,336
Int. Cl.[5] G11B *5/596, 5/54, 21/12, 21/22*
U.S. Cl. 360—104 **16 Claims**

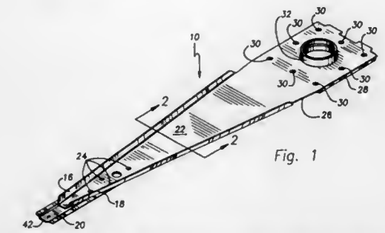


Fig. 1

1. A magnetic head suspension for attachment to a rigid arm, said head suspension comprising, in combination:

(a) a spring load beam element adapted for joining to the arm at a proximal end thereof, said load beam element comprised of a core of damping material sandwiched between a continuous top layer and a continuous bottom layer of sheet material, so that the damping material is continuous and integral with the entire spring load beam; and

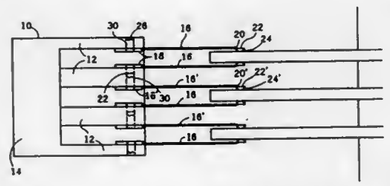
(b) flexure attached to and projecting beyond a distal apex of the load beam element.

5,187,626

DISK HEAD ASSEMBLY ATTACHMENT MEANS AND METHOD

Lionel Hopkins, San Diego; Thomas H. Kemp, Rancho Santa Fe, and Warren Coon, Poway, all of Calif., assignors to Computer & Communications Technology Corp., San Diego, Calif.

Continuation of Ser. No. 400,369, Aug. 30, 1989, abandoned. This application Apr. 22, 1991, Ser. No. 689,132
Int. Cl.[5] G11B *5/48*
U.S. Cl. 360—104 **31 Claims**



1. A paired set of load beam assemblies for use with disk drive head stack assemblies having at least one support arm having a first and a second side, comprising:

(a) a first load beam assembly attached to the first side of a support arm, and having an insert provided with an at least partially hollow boss having a generally smooth interior wall, sized to fit within a hole in a portion of the support arm; and

(b) a second load beam assembly attached to the second side of the support arm, and having an insert provided with a boss having a generally smooth exterior wall, sized to fit within the hollow portion of the boss of the first load beam assembly insert.

28. A disk head assembly including:

(a) a support arm having a first side, a second side and a staking hole having a midline, the hole being adapted to receive two bosses side-by-side;

(b) a first load beam assembly insert having a first boss having a central longitudinal axis spaced apart from the midline of the staking hole;

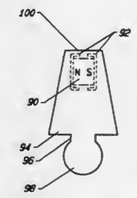
(c) a second load beam assembly insert having a second boss having a central longitudinal axis spaced apart from the midline of the staking hole; the spacing of the central longitudinal axis of the second boss being geometrically symmetrical with the spacing of the central longitudinal axis of the first boss when the first boss is inserted into the staking hole from the first side of the support arm and the second boss is inserted from the second side of the support arm, thus permitting the first boss and the second boss to fit side-by-side in the staking hole.

5,187,627

MAGNETIC LATCH AND CRASH STOP

Thomas A. Hickox, Santa Clara County, and Jeffrey P. Stram, Santa Cruz County, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Nov. 9, 1990, Ser. No. 611,412
Int. Cl.[5] G11B *5/54*
U.S. Cl. 360—105 **24 Claims**



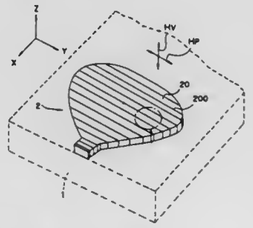
1. In a disc drive data storage device designed and specified to withstand a defined range of shock forces during non-operating conditions and comprising a base housing, a spindle motor mounted to said base housing and having a hub to which is mounted at least one disc, said disc having on at least one surface thereof a plurality of circular, concentric data tracks onto which data may written and from which data may be read, said disc drive data storage device further comprising an actuator mechanism comprising a motor under control of electronic circuitry and head mounting means to which is mounted at least one read/write head, said actuator means including a moving portion adapted to controllably move said read/write head into co-operative arrangement with said data tracks on said discs to perform said writing and reading, said moving portion of said actuator means also mounting a striker plate of magnetizable metal, said actuator means having a defined range of motion including a park position for said read/write heads at one end of said defined range of motion, an improved integrated latch mechanism and crash stop including a body formed of an elastic, resilient material and a permanent magnet of known strength in association with two flux concentrating pole pieces, said magnets and pole pieces being completely surrounded by said body, said integrated latch mechanism and crash stop including mounting means for attaching said body to a stationary point in said disc drive, said body further comprising a contact surface closely adjacent said magnet and said pole pieces and a defined thickness between said contact surface and said magnet and said pole pieces, said stationary point for mounting said integrated latch mechanism and crash being selected to bring said striker plate into co-operative arrangement with said contact surface when said moving portion of said actuator has reached said park position, said elastic, resilient body material being of sufficient thickness that the pole piece gap between the pole pieces and strike plate is within the resilient body, said material selected to absorb the impact between said striker plate and said contact surface when said actuator reaches said park position and limit said defined range of motion of said moving portion of said actuator in the direction of said integrated latch mechanism and crash stop, said defined thickness between said contact surface and said magnet and said pole pieces being selected to determine the magnetic latching force between said magnet and said pole pieces and said striker plate.

5,187,628

THIN FILM MAGNETIC HEAD HAVING MAGNETIC ANISOTROPY WITH IN-PLANE AND PERPENDICULAR COMPONENTS

Hitoshi Kanai; Michiaki Kanamine, and Kazuo Kobayashi, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 26, 1991, Ser. No. 765,742
Claims priority, application Japan, Oct. 12, 1990, 2-274513
Int. Cl.[5] G11B *5/147*
U.S. Cl. 360—126 **13 Claims**



1. A magnetic head, comprising:

a substrate;

upper and lower magnetic films forming a magnetic circuit on the substrate, the magnetic circuit having a narrow portion in width and forming a gap at the end of the magnetic circuit for interacting with a recording medium; and

a coil surrounding the magnetic circuit and buried in an insulation layer between the upper and the lower magnetic films;

each of said magnetic films further comprising a magnetic anisotropy having components of an in-plane magnetic anisotropy Hp which is parallel to the magnetic film surface, a transverse direction being defined for a width direction of the magnetic film, and a perpendicular magnetic anisotropy Hv which is vertical to the magnetic film surface.

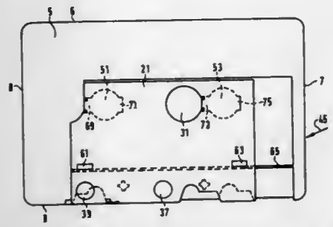
VOL 1147 ISS 3 FE 16 1993 UMI

5,187,629

CASSETTE WITH MAGNETIC TAPE ON TWO COPLANAR REELS

Norbert C. Vollmann; Jan Dewolf, both of Eindhoven, Netherlands; Günther Bernauer, St. Pölten, Austria; Anton Stöger, Vienna, Austria, and Marco V. Koningsberger, Mödling, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 11, 1991, Ser. No. 685,384
Claims priority, application Netherlands, Sep. 24, 1990, 9002082
Int. Cl.[5] G11B *23/093*
U.S. Cl. 360—132 20 Claims



1. A cassette with magnetic tape on two coplanar reels and comprising

a housing having a main wall formed with two openings for receiving reel spindles of a drive apparatus,

two coplanar rotatable reel hubs which are coaxial with the openings and having central means for cooperation with the reel spindles of the drive apparatus,

a slide cover which is slidable along the main wall of the housing between an open position, in which the openings in the main wall are not covered, and a closed position, in which the openings are covered, and

blocking members movable between a blocking position and a non-blocking operating position which cooperate with the reel hubs to inhibit their rotation in the blocking position and which do not obstruct the reel hubs to allow their rotation in the operating position, characterized in that:

the blocking members are connected to the slide cover such that in the closed position of the slide cover the blocking members are in the blocking position and in the open position of the slide cover the blocking members are in the operating position.

5,187,630

MULTI-PARAMETER VARIABLE SCALE ROTARY SWITCH

Michael T. MacKay, Vallejo; Robert Duffy, Milpitas; Lee A. Cotterill, San Jose; William Herz, Newark, and Joe McArdle, Mountain View, all of Calif., assignors to Sony Corporation of America, Park Ridge, N.J.

Filed Apr. 3, 1991, Ser. No. 679,745
Int. Cl.[5] G11B *33/00, 15/50;* H01H *13/62, 19/14*
U.S. Cl. 360—137 58 Claims

1. A variable rotary switch, comprising:

a first knob adapted to rotate about a vertical axis, said first knob having a first point of origin that rotates into a plurality of first radial positions about said vertical axis;

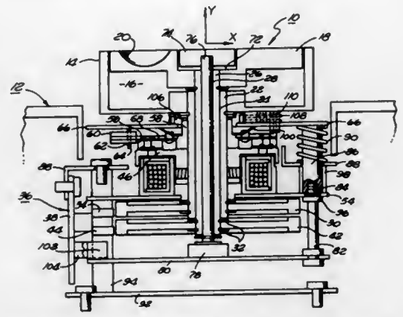
a second knob within said first knob, said second knob being adapted to rotate about said vertical axis relative to said first knob, said second knob having a second point of origin that rotates into a plurality of second radial positions about said vertical axis;

a hollow first shaft attached to said first knob that rotates with said first knob about said vertical axis, said first shaft extending along said vertical axis;

a second shaft attached to said second knob that rotates with said second knob about said vertical axis, said second shaft being coaxial with said first shaft;

first sensor means operatively connected to said first shaft for determining said first radial positions of said first point of origin of said first knob;

second sensor means operatively connected to said second



shaft for determining said second radial positions of said second point of origin of said second knob; and,

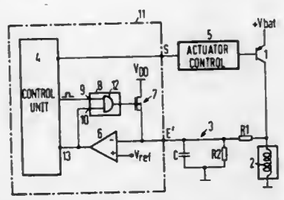
magnetic clutch means operatively connected to said first shaft and said first sensor means for engaging said first shaft and preventing rotation of said first knob when said first point of origin of said first knob is in a predetermined first radial position.

5,187,631

PRECHARGER FOR SHORT CIRCUIT DETECTOR

Brunno Y. H. Baylac, Toulouse, and Michel Castel, Aucamville, both of France, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 26, 1989, Ser. No. 357,261
Claims priority, application France, May 26, 1988, 88 07005
Int. Cl.[5] H02H *3/093;* H02J *15/00*
U.S. Cl. 361—94 17 Claims



1. A circuit for controlling the power supply of an electrical load, having a device for detecting a short-circuit of the load by comparison of a reference voltage with a voltage sampled at terminals of the load and filtered in a capacitive filter connected thereto, comprising: means for pre-charging a capacitor of the filter in order to initially establish on an output of this capacitor a voltage substantially equal to the reference voltage, the electrical load being then connected to a supply voltage by a switching means, the time constant of the charging of the capacitor by the means for pre-charging being low with respect to that which corresponds to the charging of the capacitor by a supply voltage of the load alone, the means for precharging having a connecting transistor for connecting the capacitor of the filter to a precharging voltage source that is separate from the supply voltage and a logic sub-circuit for triggering the conduction of the connecting transistor when the load is switched on;

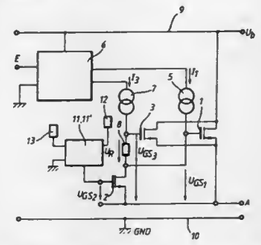
first and second inputs of a comparator respectively supplied by a source of reference voltage Vref, and by an output voltage, V_E, of the filter, and the logic sub-circuit having a logic AND gate having two inputs respectively connected to an output of the comparator and to a source of a validation signal of predetermined duration, T_O, an output of the AND gate being connected to a terminal controlling the conduction of the connection transistor, the output of the comparator supplying a signal representative of a state of short-circuit of the load when the output voltage of the filter remains below Vref at the end of the validation signal, T_O.

5,187,632

CONTROLLABLE SEMICONDUCTOR SWITCHING DEVICE HAVING INTEGRATED CURRENT LIMITATION AND OVERHEATING DISCONNECTION

Alf Blessing, Heiningen, Fed. Rep. of Germany, assignor to Daimler-Benz AG, Stuttgart, Fed. Rep. of Germany

Filed Jul. 8, 1992, Ser. No. 909,529
Claims priority, application Fed. Rep. of Germany, Jul. 9, 1991, 4122653
Int. Cl.[5] H02H *5/04*
U.S. Cl. 361—103 11 Claims



1. Controllable semiconductor switching device having integrated overload protection of a load current path, comprising:

a switching section in the load current path;

a multiplicity of main switching cells acting in parallel and having load-side terminals and non-load-side terminals including control terminals, the control terminals of the main switching cells being directly connected in a highly conducting manner among one another;

a multiplicity of auxiliary switching cells provided which carry a part of a total load current in parallel with the main switching cells in order thereby to achieve an overload protection, and having load-side terminals and non-load-side terminals, the number of auxiliary switching cells being less than the number of main switching cells, the main switching cells and the auxiliary switching cells forming the switching section;

wherein at least the load-side terminals of the main and auxiliary switching cells are directly connected in a highly conducting manner among and to one another, and the non-load-side switching terminals of the main and auxiliary switching cells are also connected directly in a highly conducting manner among and to one another;

a first semiconductor switch having a switching section connected between the non-load-side switching terminals of the main switching cells;

an element for measuring chip temperature, coupled to act on the first semiconductor switch with increasing chip temperature for turning the second semiconductor switch on, said element being disposed in the vicinity of said auxiliary switching cells at a periphery of a chip area covered by the main switching cells;

wherein at least one of the construction and a control variable of the auxiliary switching cells respectively differs from at least one of the construction and a control variable of the main switching cells in a manner such that specific current loading and specific power loss development of the auxiliary switching cells is essentially equally as great as that of the main switching cells with switching drive of the device and a load current below a permissible criterion, and such that the specific current loading and the specific power loss development of the auxiliary switching cells increasingly exceeds monotonically that of the main switching cells with switching drive of the device and constant load current exceeding said permissible criterion.

5,187,633

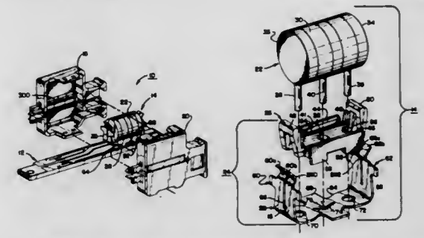
Patent Not Issued For This Number

5,187,634

FAIL-SAFE PROTECTOR

Daniel M. Pitsch, Minneapolis, and George B. Pfeffer, Minnetonka, both of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.

Continuation of Ser. No. 748,109, Aug. 21, 1991, abandoned.
This application Dec. 16, 1991, Ser. No. 811,876
Int. Cl.[5] H02H *9/04*
U.S. Cl. 361—119 13 Claims



1. A fail-safe device for an overvoltage protector element where said element includes a body having a first and second electrical contact surfaces, said element further including a tip lead, a ring lead and a ground lead extending from said body, said tip and ring leads electrically connected to said first and second surfaces, respectively, said element including means for grounding either of said tip and ring leads upon detection by said element of an overvoltage condition, said element characterized by said element attaining an elevated temperature during prolonged grounding, said fail-safe device comprising:

a base formed of a dielectric material which is deformable upon heating of said material at said elevated temperature;

an electrically conductive spring member having spaced apart first and second contact ends;

said base disposed against said element body with said base having first and second spacer ends integrally formed with said base and disposed against said first and second surfaces, respectively, of said element;

said base having a surface with raised sidewalls extending between said first and second spacer ends said surface and sidewalls sized to receive said protector element in a predetermined desired alignment between said first and second spacer ends;

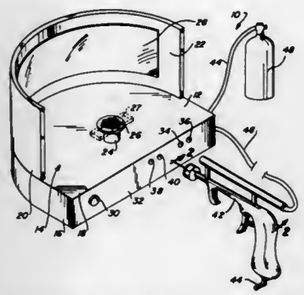
said spring member disposed against said base with said base maintaining said spring member in spaced, electrically insulated separation from said element body;

said first and second spacer ends electrically separating said first and second contact ends from said first and second surfaces, respectively, with said contact ends biased toward said surfaces with a force sufficient for said contact ends to deform said spacer ends and make electrical connection with said surfaces upon said element attaining said elevated temperature; and

electrical connection means for electrically connecting said first and second contact ends to said grounding lead.

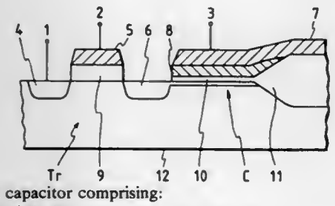
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5,187,635
SURFACE CLEANING APPARATUS AND METHOD
James E. Yehl, Boulder, Colo., assignor to American Environmental Systems, Inc., Boulder, Colo.
Continuation-in-part of Ser. No. 300,121, Jan. 23, 1989, Pat. No. 5,043,840, which is a continuation-in-part of Ser. No. 138,143, Dec. 28, 1987, Pat. No. 4,911,737. This application Jun. 7, 1991, Ser. No. 711,951
Int. Cl.[5] H05F *3/00*
U.S. Cl. 361—231 **20 Claims**



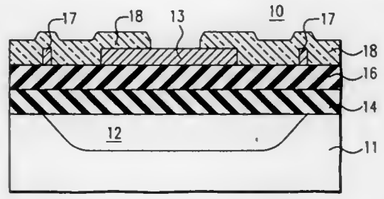
1. An apparatus for promoting cleaness of a product comprising:
voltage supply means connectable with a voltage source for selectively supplying voltage;
a surface for receipt of the product thereon and connected with said voltage supply means so that said surface is chargeable to a selected intensity and a preselected polarity;
ion producing means connected with said voltage supply means for generating a selected quantity of ions of said preselected polarity; and
electrostatic field establishing means connected with said voltage supply means for generating an electrostatic field having a selected electrostatic field intensity and a polarity opposite said preselected polarity, said electrostatic field establishing means including a collector spaced from said surface.

5,187,636
DIELECTRIC DEVICE
Hironobu Nakao, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan
Filed Apr. 21, 1992, Ser. No. 871,493
Claims priority, application Japan, Jul. 18, 1991, 3-177911
Int. Cl.[5] H01G *7/00*; H01L *27/02*
U.S. Cl. 361—313 **4 Claims**



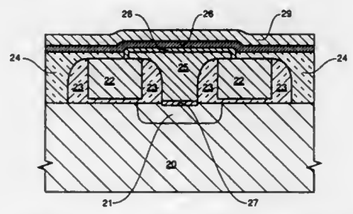
2. A capacitor comprising:
a Si substrate;
an oxide film formed on the Si substrate;
a Si-rich SiO_2 nitride film formed on the oxide film and including SiO_x regions and SiN_x regions, the SiN_x regions being formed by nitriding Si regions separated from a Si-rich SiO_2 film; and
an electrode film formed on the Si-rich SiO_2 nitride film.

5,187,637
MONOLITHIC HIGH-VOLTAGE CAPACITOR
Milton L. Embree, Muhlenberg Township, Berks County, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Feb. 14, 1992, Ser. No. 837,305
Int. Cl.[5] H01G *4/06*; H01L *27/02*
U.S. Cl. 361—313 **24 Claims**



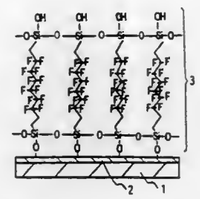
1. A capacitor having a first plate and a second plate, the second plate being formed over, and insulated from, the first plate, characterized by:
a layer of semi-insulating material disposed in contact with the second plate; and,
a conductor, separate from the first and second plates and in contact with the layer of semi-insulating material.

5,187,638
BARRIER LAYERS FOR FERROELECTRIC AND PZT DIELECTRIC ON SILICON
Gurtej S. Sandhu, and Pierre Fazan, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Filed Jul. 27, 1992, Ser. No. 919,671
Int. Cl.[5] H01L *29/78*; H01G *4/06*
U.S. Cl. 361—313 **34 Claims**



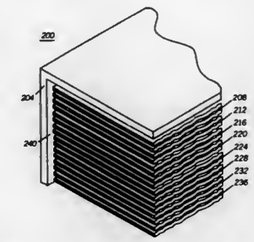
1. A capacitor for a semiconductor device constructed on a silicon substrate comprising:
a) a first conductive electrode comprising a single metal;
b) a cell dielectric material superjacent said first conductive electrode; and
c) a second conductive electrode superjacent said cell dielectric material;
wherein a conductive oxide layer exists between said metal electrode and said cell dielectric and a metal silicide contact between said metal electrode and said silicon substrate.

5,187,639
CAPACITOR AND METHOD OF MANUFACTURING THE SAME
Kazufumi Ogawa, Hirakata; Mamoru Soga, Osaka, and Norihisa Mino, Settu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jun. 11, 1992, Ser. No. 897,291
Claims priority, application Japan, Jun. 14, 1991, 3-143498
Int. Cl.[5] H01G *4/02, 7/00*; H01B *3/18*
U.S. Cl. 361—323 **14 Claims**



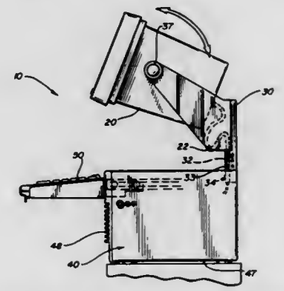
1. A capacitor comprising an electrode substrate and a siloxane-based chemically absorbed dielectric film comprising a fluorocarbon chain, wherein said chemically adsorbed film is bonded through siloxane bonds to at least one surface of the electrode substrate.

5,187,640
CAPACITIVE POWER SUPPLY
Michael P. Metroka, Algonquin, and Rolland R. Hackbart, Buffalo Grove, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 12, 1990, Ser. No. 596,253
Int. Cl.[5] H01G *1/08, 9/00*; G08B *5/22*
U.S. Cl. 361—329 **15 Claims**



1. A portable power supply for powering an electrical load element, said portable power supply having a plurality of capacitors, each capacitor of the plurality of capacitors having; a first surface forming a first energy storage surface comprised of a porous-ceramic, conductive material for collecting and storing electrical charge responsive to application of a charging current thereto, and a second surface forming a second energy storage surface, comprised of a porous-ceramic, conductive material and spaced-apart from the first energy storage surface formed by the first surface whereby a potential difference is formed across the first and the second surfaces, respectively, when the electrical charge is applied to the first and second energy storage surfaces, and wherein the first surface and the second surface spaced-apart therefrom of each capacitor of the plurality of capacitors are together of a low electrical resistance and are separated by an aqueous dielectric, the first and the second surfaces being of the low electrical resistance to minimize, thereby, resistive loss across the first and second surfaces, respectively, during discharge of the electrical charge stored upon the first and second energy storage surfaces, each of the plurality of capacitors formed thereby being connected in a series connection and stacked upon one another wherein a first surface of a first capacitor is coupled to a second surface positioned therebeneath to connect the capacitors of the plurality of capacitors, thereby, in said series connection; and a switching power supply coupled across the plurality of capacitors stacked in the series connection and to the load element, said switching power supply for generating a constant-voltage output signal during discharge of the energy stored upon the first and second energy storage surfaces of the plurality of capacitors to power the electrical load element with the constant-voltage output signal thereby.

5,187,641
PATIENT MONITORING UNIT AND CARE STATION
James M. Muskatello; Darryl Parmet, both of Tampa; George C. Lysy, Palm Harbor, and Maynard R. Ramsey, III, Tampa, all of Fla., assignors to Critikon, Inc., Tampa, Fla.
Filed Oct. 24, 1991, Ser. No. 782,020
Int. Cl.[5] H05K *7/16*
U.S. Cl. 361—380 **44 Claims**



1. A bedside data management system comprising:
a system unit;
a display means;
a mounting bracket, said mounting bracket supporting said display means and said mounting bracket integrally connected to said system unit, and wherein;
said system unit and said mounting bracket each have a planar back surface, such that said mounting bracket and said system unit may be mounted against a wall with said respective back surfaces coplanar and abutting the wall, with said display means supported by said mounting bracket.

5,187,642
LIGHTWEIGHT SEALED CIRCUIT BOARD ASSEMBLY
Ronald N. Garner, Brockton, and Robert D. Vernon, Norfolk, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.
Continuation of Ser. No. 455,463, Dec. 22, 1989, abandoned. This application Aug. 20, 1991, Ser. No. 750,447
Int. Cl.[5] H05K *7/20*
U.S. Cl. 361—386 **8 Claims**

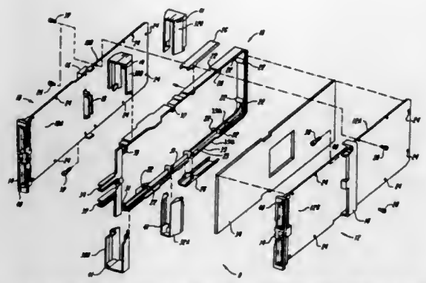
1. An integrated circuit board assembly comprising
a) a first integrated circuit board having electronic circuitry configured on a side thereof,
b) a second integrated circuit board having electronic circuitry configured on a side thereof,
c) a peripheral frame formed of a lightweight plastic material and assembled with said first and second integrated circuit boards along the peripheries of the boards to form a sealed enclosure therewith of which said integrated circuit boards form opposed sides, said integrated circuit boards being arranged so that the electronic circuitry resides within the enclosure, and
d) electrically conductive means engaged with said frame for securing said integrated circuit boards to said frame

VOL 1147 ISS 3 FE 16 1993 UMI

and for externally grounding said integrated circuit cords, includes

i. a metal rial engaging said frame,

ii. a sliding insert fitted within a channel defined by said frame, wherein said insert has a length that is less that the length of said channel, and



iii. securing means for movably sliding said insert to one side of the channel and compressing at least one said integrated circuit board against said metal rail for providing an external ground for said apparatus.

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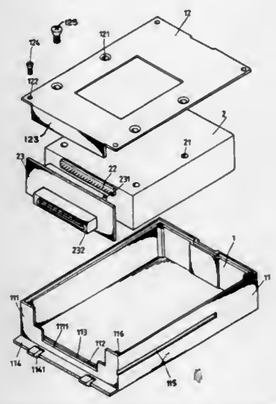
COMPUTER MOUNTING STRUCTURE FOR A DETACHABLE HARD DISK DRIVE

Tsai I-Shou, 13F, No. 409, Sec 4, Jen-Ai Rd., Taipei, Taiwan

Filed Feb. 4, 1992, Ser. No. 830,855

Int. Cl.[5] **H05K** *7/10, 5/00;* **H02B** *1/36;* **G06F** *1/00*

U.S. Cl. 361—391 **1 Claim**



1. A hard disk drive mounting structure, the improvement comprising:

a sliding box comprised of a casing and a cover, said casing including a front panel, said front panel having a stepped opening disposed thereon, a guide strip at the inside defining with said front panel a channel therebetween, a guide board extending outwards from said front panel at the bottom at right angle, said guide board having two retainer blocks spaced from each other, two sliding grooves longitudinally disposed on the outer wall surface thereof at two opposite sides, and four bolt holes vertically disposed at the inside at the four corners thereof, said cover having a first set of bolt holes on the top edge thereof and a second set of bolt holes at the four corners on the top edge thereof respectively connected to the bolt holes on said casing by screws, and a front projecting strip extending downwards from the front end thereof at a right angle and engaged in said stepped opening;

a hard disk drive fastened inside said sliding box, said hard disk drive having a plurality of bolt holes on the top edge respectively connected to said first set of bolt holes on said cover by screws, an input/output port at the front end thereof, a PC board fastened in said channel and having a first connector at one end connected to said input/output port and a second connector at an opposite end;

a mainframe having chamber at a suitable location for holding said sliding box, said chamber comprising two rails at two opposite sides, two spaced retaining slots at an inner end, and a PC board fixedly fastened at the inside and having a connector at one end and a bus line at an opposite end for connection to a mother board inside said mainframe; and

wherein said two sliding grooves on said sliding box are respectively engaged with said two rails in said chamber with the second connector of the PC board of said hard disk drive connected to the connector of the PC board in said chamber and, with said retaining blocks of said guide board of said casing respectively engaged in said retaining slots inside said chamber permitting said hard disk drive to be held inside said mainframe by said sliding box and for electrical connection to a mother board in said mainframe.

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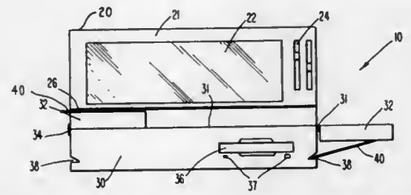
COMPACT PORTABLE COMPUTER HAVING AN EXPANDABLE FULL SIZE KEYBOARD WITH EXTENDABLE SUPPORTS

Adrian Crisan, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Nov. 14, 1991, Ser. No. 792,307

Int. Cl.[5] **H05K** *7/16;* **B41J** *5/10;* **G06F** *1/16*

U.S. Cl. 361—393 **23 Claims**



1. A portable electronic device comprising a housing including first and second opposing housing compartments therein, wherein said housing compartments are connected by first pivot means for permitting selective pivotal rotation of said housing compartments for exposing a pair of inner surface portions corresponding to each of said housing compartments, said first housing compartment comprising keyboard means and said second housing compartment comprising monitor means;

whereby said first housing compartment comprises at least a first extendable flap containing a portion of said keyboard means, said flap being capable of being substantially secured and protected between said pair of inner surface portions during transportation and storage of said device; said device further comprising movable support means which can be laterally extended upon extending said flap for supporting said flap in a position which is substantially planar with a portion of said first housing compartment.

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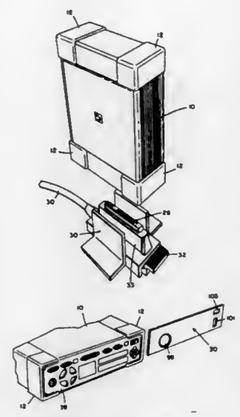
PORTABLE COMPUTER WITH DOCKING CONNECTOR FOR PERIPHERAL DEVICES

Tom J. Spalding, Gloucester; Keith E. Kowal, Marblehead; James H. Bleck, Chelmsford; Scott H. Wakefield, Andover, and John E. Thrailkill, Lowell, all of Mass., assignors to Ergo Computing, Inc., Peabody, Mass.

Filed Jun. 7, 1991, Ser. No. 711,816

Int. Cl.[5] **H05K** *7/10, 7/14, 7/20;* **H01R** *33/90*

U.S. Cl. 361—393 **28 Claims**



28. A portable computer comprising:

a) a microprocessor for processing instructions;

b) a housing containing the microprocessor;

c) a plurality of computer-peripheral-device-specific connectors in electrical communication with the microprocessor such that each of said plurality of computer-peripheral-device-specific connectors provides a computer-peripheral-device-specific data link to said microprocessors, said connectors for connecting the microprocessor to specific computer peripheral devices and being mounted on the housing; and

d) another single connector on the housing, said single connector comprising a set of pins, said set further comprising a plurality of subsets of computer-peripheral-devices-specific pins being in electrical communication with said microprocessor such that one of each of said subsets of computer-peripheral-device-specific pins provides the same computer-peripheral-device-specific data link as said each of said plurality of computer-peripheral-device-specific connectors, said single connector for making all connections from the microprocessor to said specific computer peripheral devices.

5,187,646

DATA STORAGE DEVICE WITH AN ARRANGEMENT FOR RECEIVING A TRANSPORTABLE, CARD-SHAPED OR DISK-SHAPED DATA STORAGE UNIT SO THAT THE DATA STORAGE UNIT IS INACCESSIBLE IN AN OPERATING POSITION

Siegfried Koch, Villingen-Schwenningen, Fed. Rep. of Germany, assignor to Mannesmann Kienzle GmbH, Villingen, Fed. Rep. of Germany

Continuation of Ser. No. 582,437, Sep. 13, 1990, abandoned. This application Jan. 28, 1992, Ser. No. 827,474

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1989, 3930545

Int. Cl.[5] **H05K** *7/16, 1/18;* **H01R** *9/09*

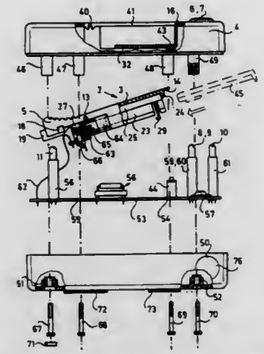
U.S. Cl. 361—395 **7 Claims**

1. A data storage device with an arrangement receiving a transportable, card-shaped or disk-shaped data storage unit by means of which the data storage unit is brought into an operating position in which it is inaccessible, the device comprising:

a front wall having an opening **41**;

a rocker member arranged as a cover **2** in the opening **41** and rotatably supported along a bearing axis at the front wall so as to be openable and closeable in a rocking manner;

holding means **22, 23, 64** holding the data storage unit, said holding means being arranged at an inner face of the cover **2** so that the data storage unit **45** is substantially parallel to the front wall when the cover **2** is in a closed position; and



gripping means **5** provided at an outer face of the cover **2** so as to facilitate rotation of the cover **2**, the bearing axis running through the rocker member so as to divide the rocker member into two sides, the holding means for the data storage unit **45** being provided on one side of the rocker member relative to the bearing axis of the rocker member, whereas another side of the rocker member relative to the bearing axis is constructed at least partially as the gripping means **5**.

5,187,647

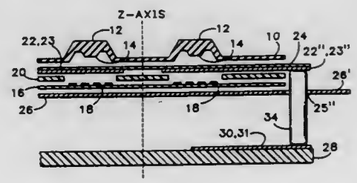
ELECTRONIC INSTRUMENT KEYPAD ASSEMBLY WITH Z-AXIS ORIENTED ELECTRICAL INTERCONNECT

Steven T. Kaneko, Seattle, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Mar. 11, 1991, Ser. No. 667,450

Int. Cl.[5] **H05K** *1/14;* **H01H** *13/70*

U.S. Cl. 361—413 **20 Claims**



15. An electronic instrument comprising:

a keypad comprising:

a stiff backing element having an opening therein;

a first membrane layer, a first side of the first membrane layer confronting the stiff backing element, a second side of the first membrane layer having shorting circuitry defined thereon;

spacing means, a first side of the spacing means confronting the second side of the first membrane layer, the

VOL 1147 ISS 3 FE 16 1993 UMI

spacing means defining apertures in the vicinity of the shorting circuitry; and

a second membrane layer, a first side of the second membrane layer confronting the spacing means and having main circuitry defined thereon, the main circuitry including an exposed portion for connection to circuitry external to the keypad;

and the instrument further comprising:

a substrate having first and second faces;

electronic circuitry defined on a first face of said substrate, said electronic circuitry having at least one exposed electrical connection; and

a conductive interconnector disposed to connect said exposed portion of the main circuitry to said at least one electrical connection on the substrate and extending through said opening so as to be adapted for Z-axis assembly.

5,187,648

GUIDE RAIL FOR A PRINTED CIRCUIT BOARD

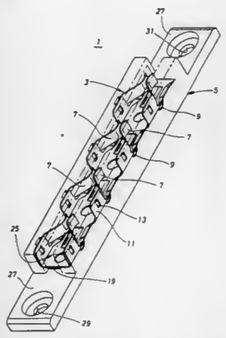
Fuminori Ito, Nagoya, Japan, assignor to Kitagawa Industries Co., Ltd., Japan

Filed Mar. 4, 1992, Ser. No. 846,530

Claims priority, application Japan, Jul. 18, 1991, 3-56197[U]

Int. Cl.[5] H05K *9/00;* **A47G** *19/08;* **H01R** *9/09*

U.S. Cl. 361—424 **17 Claims**



1. A guide rail for a printed circuit board mounted in a partially conductive housing for guiding the printed circuit board to a desired position in the housing and supporting the board therein, said guide rail comprising:

a guide member formed of conductive material having a plurality of guide fingers located on a first side thereof which are positioned to guide the printed circuit board, during insertion of the printed circuit board; and a plurality of contact members adjacent a second opposed side of said guide member which are positionable to contact the partially conductive housing; and

a securing member formed of insulative material, said securing member supporting said guide member and comprises

an inlet formed in a housing engaging surface of said securing member through which said guide member is inserted,

a receiving portion, communicating with said inlet, receiving said guide member such that said contact members project out from said inlet,

a passage, remote from said inlet, through which the printed circuit board is insertable to facilitate contact between said guide fingers and the printed circuit board, and

means for securing said guide rail to a desired surface.

5,187,649

SOLID ELECTROLYTIC CAPACITOR AND METHOD FOR MANUFACTURING THE SAME

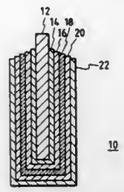
Yasuo Kudoh, Yokohama; Masao Fukuyama, Kawasaki; Toshikuni Kojima, Zama, and Norishige Nanai, Atsugi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 6, 1992, Ser. No. 863,902

Claims priority, application Japan, Apr. 5, 1991, 3-72870

Int. Cl.[5] H01G *9/00;* **B01J** *17/00*

U.S. Cl. 361—525 **7 Claims**



1. In a solid electrolytic capacitor which comprises a valve metal member having a dielectric oxide film and a conductive underlying layer formed thereon in this order, and a conductive polymer film which is formed on the conductive underlying layer by electrolytic polymerization of a polymerizable monomer, the improvement characterized in that the electrolytic polymerization is effected in an aqueous solution which comprises the polymerizable monomer, a support electrolyte and a phosphate used in an amount of not less than 0.005 moles/liter.

5,187,650

SOLID ELECTROLYTIC CAPACITORS AND METHOD FOR MANUFACTURING THE SAME

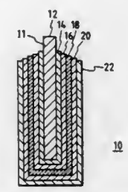
Yasuo Kudoh, Yokohama; Masao Fukuyama, Kawasaki; Toshikuni Kojima, Zama, and Norishige Nanai, Atsugi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 14, 1992, Ser. No. 868,362

Claims priority, application Japan, Apr. 15, 1991, 3-082296; Apr. 15, 1991, 3-082297

Int. Cl.[5] H01G *9/04*

U.S. Cl. 361—525 **20 Claims**



1. A solid electrolytic capacitor which comprises a valve metal member having a dielectric oxide film and a conductive underlying layer formed thereon in this order, and a conductive polymer film which is formed on the conductive underlying layer and is obtained by electrolytic polymerization of a polymerizable monomer, the electrolytic polymerization being effected in an electrolytic polymerization system which comprises, in a liquid medium, the polymerizable monomer and a support electrolyte which consists essentially of a compound having at least one nitro group.

5,187,651

SYSTEM FOR DISCHARGING ELECTRICAL POWER FROM A HIGH-VOLTAGE DIRECT CURRENT LINE TO LOCAL NETWORK

Åke Ekström, Ludvika, Sweden, assignor to Asea Brown Bourrc AB, Västerås, Sweden

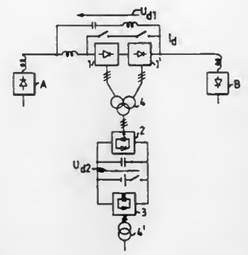
PCT No. PCT/SE90/00425, § 371 Date Nov. 19, 1991, § 102(e) Date Nov. 19, 1991, PCT Pub. No. WO90/16104, PCT Pub. Date Dec. 27, 1990

PCT Filed Jun. 15, 1990, Ser. No. 775,995

Claims priority, application Sweden, Jun. 19, 1989, 8902204

Int. Cl.[5] H02J *3/36*

U.S. Cl. 363—35 **4 Claims**



1. A system for discharging electrical power from a high-voltage direct-current (HVDC) transmission line to a local network, comprising:

a first, single-phase converter bridge comprising semiconductor switches which are energized by signals and which are de-energized solely with current zero crossing, and a first, single-phase transformer having a primary winding connected to a HVDC line and a secondary winding;

a second converter bridge connected to said secondary winding;

a secondary direct voltage network connected to said second converter bridge;

a third converter bridge connected to said secondary direct voltage network for generating an alternating current for said local network; and

said second and said third converter bridges each comprise ON/OFF controllable semiconductor switches, and said first and said second converter bridges commutate with a frequency that is 2–4 times higher than the normal frequency of said local network and said third converter bridge commutates at the normal frequency of said local network.

5,187,652

TURN-OFF CIRCUIT

Peter Steimer, Schleinikon, Switzerland, assignor to Asea Brown Boveri Ltd., Baden, Switzerland

Filed Nov. 26, 1991, Ser. No. 797,911

Claims priority, application European Pat. Off., Dec. 10, 1990, 90123735.4

Int. Cl.[5] H02M *5/44*

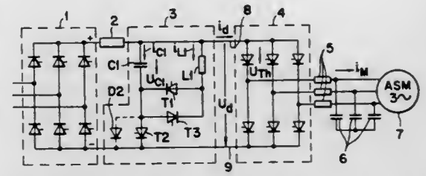
U.S. Cl. 363—37 **8 Claims**

1. A turn-off circuit for a circuit having a self-commutated electrical valve comprising:

a) a positive feed terminal and a negative feed terminal;

a first series circuit including a turn-off capacitor and a first electrical valve, a first terminal of said turn-off capacitor being connected to said positive feed terminal and an anode of said first electrical valve being connected to a second terminal of said capacitor such that said first series circuit is connected directly to the positive and negative feed terminals;

c) a second series circuit including an inductor and a controllable second electrical valve in a branch in parallel with the turn-off capacitor, a negative potential side of said second electrical valve being connected to the anode of the first electrical valve such that said turn-off capacitor and said negative potential side of said second electrical valve are connected to said negative feed terminal via said first electrical valve; and



d) a controllable third electrical valve provided in a branch in parallel with the second electrical valve, a direction of current flow of the third electrical valve being opposite to that of the second electrical valve.

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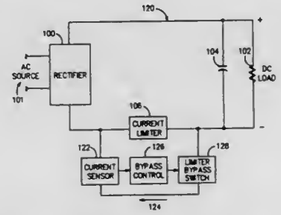
CURRENT LIMITING DEVICE

William M. Lorenz, Saugerties, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 4, 1990, Ser. No. 577,346

Int. Cl.[5] H02M *7/04*

U.S. Cl. 363—89 **7 Claims**



1. A current limiting rectifier circuit, comprising:

rectifier means for rectifying AC voltage from an AC line voltage source to produce DC voltage;

capacitance means connected across said DC voltage for smoothing said DC voltage;

current limiting means having high resistance for dissipating current surges connected in series with said capacitance means;

bypass circuit means for bypassing said current limiting means, said bypass circuit means connected in parallel with said current limiting means creating a low resistance bypass circuit;

said bypass circuit means having:

current sensor means for sensing the current level in said bypass circuit and generating a control signal when said current sensor means detects current greater than a set maximum current value or less than a set minimum value; and

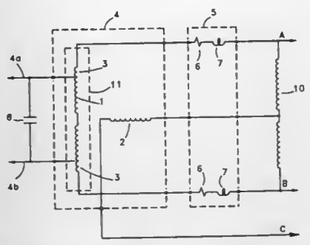
switch means connected to said current sensor means for opening and closing said bypass circuit in response to said control signal from said current sensor means, said switch means operating to open said circuit when current in said bypass circuit exceeds said maximum value and to close said circuit when said current in said bypass circuit falls below said minimum value.

VOL 1147 ISS 3 FEB 16 1993 UMI

5,187,654
ROTARY PHASE CONVERTER

Renato Felippe, Rua Rodrigo Lobato, 102, 05003 São Paulo, Brazil

Filed Feb. 5, 1991, Ser. No. 649,512
Claims priority, application Brazil, Jun. 5, 1989, 8902584
Int. Cl.[5] H02M *5/06*
U.S. Cl. 363—154 **10 Claims**



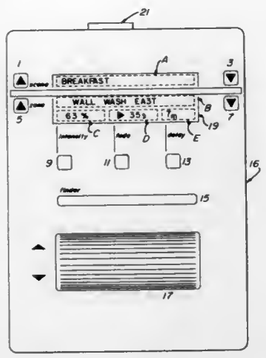
1. A phase converter for being connected to a single-phase AC power source and being adaptable for supplying at least one of: triphase current to a triphase electrical load and monophase current to a monophase electrical load, said phase converter comprising:
a biphase induction machine;
said biphase induction machine being configured to act as a rotary phase-shifter;
said biphase induction machine comprising:
a primary winding and a secondary winding;
said secondary winding for producing a voltage shift of 90 electrical degrees;
said primary winding for being connected to the single-phase AC power source;
a compensation circuit being connected between said rotary phase-shifter and the triphase electrical load, said compensation circuit comprising:
a resistor; and
means for providing at least one of:
inductive compensation; and
capacitive compensation;
an autotransformer for providing increased efficiency for the phase converter;
said autotransformer having a center tap;
said autotransformer being disposed between said compensation circuit and the triphase load; and
a capacitor being connected in parallel with said primary winding.

5,187,655
PORTABLE PROGRAMMER FOR A LIGHTING CONTROL

Robert P. Post, Allentown; Michael J. D'Aleo, Erwinna; Doug W. Keeports, Doylestown; Jonathan H. Ference, Riegelsville; David G. Luchaco, Macungie, and Joel S. Spira, Coopersburg, all of Pa., assignors to Lutron Electronic Co., Inc., Coopersburg, Pa.

Filed Jan. 16, 1990, Ser. No. 465,354
Int. Cl.[5] G05B *11/01;* **H05B** *37/02*
U.S. Cl. 364—146 **46 Claims**

2. A portable programmer for adjusting various function settings of a programmable lighting control, comprising:
a) a support housing;
b) a plurality of push-buttons disposed on a front surface of said support housing for selecting a scene and zone to be programmed and for activating one of said functions to be adjusted;
c) means for adjusting said activated function, said adjusting means including an actuator comprising a rotary encoder, mounted on said support housing, that is manually movable through a range of positions for adjusting said activated function;
d) display means on said front surface of said support housing for simultaneously identifying said selected means and zone and indicating said function settings, said display means having a plurality of individually controllable display areas aligned with said plurality of push-buttons, so that each display area corresponds to at least one button; and

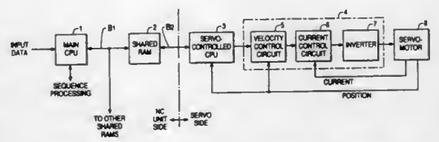


wherein said rotary encoder is cylindrically elongated along a horizontal axis and is mounted in said support housing below and substantially aligned with said display means.

5,187,656
SERVOMOTOR DRIVE CONTROL SYSTEM

Mitsuo Kurakake, Hino, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan

Continuation of Ser. No. 653,750, Feb. 11, 1991, abandoned, which is a continuation of Ser. No. 517,413, Apr. 26, 1990, abandoned, which is a continuation of Ser. No. 258,084, Oct. 14, 1988, abandoned, which is a continuation of Ser. No. 879,101, Jun. 5, 1986, abandoned. This application Nov. 22, 1991, Ser. No. 799,725
Claims priority, application Japan, Dec. 25, 1984, 59-277877
Int. Cl.[5] G05B *19/417*
U.S. Cl. 364—167.01 **3 Claims**

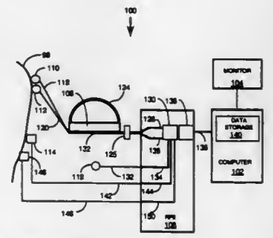


1. A servomotor drive control system in which a drive command signal and data fed back from a servomotor are processed to drive and control the servomotor, said servomotor drive control system comprising:
a numerical control unit portion including:
a main CPU for performing input data processing and sequence processing and supplying a drive command;
a servo-control CPU, connected between said main CPU and the servomotor, for storing feedback data and pulse width modulated (PWM) command data in digital form for controlling current, velocity and position of the servomotor and for receiving the drive command from said main CPU; and
a shared random access memory connected between said main CPU and said servo-control CPU;
a servo-side portion including:
data transfer means, connected to said numerical control unit portion, for receiving the PWM command data for controlling current, velocity and position of the servomotor from said servo-control CPU and feeding back the command data and detected data between said numerical control unit portion and the servo-side portion during a high speed operation; and
drive means, connected to said data transfer means, including final stage drivel elements required to effect servo-control on the servomotor in accordance with the command data.

5,187,657
CARDIAC ANALYZER WITH REM SLEEP DETECTION

A. Dean Forbes, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 5, 1990, Ser. No. 505,216
Int. Cl.[5] G06F *15/42;* **A61B** *5/04*
U.S. Cl. 364—413.06 **17 Claims**



1. A cardiac analyzer comprising:
data collection means for collecting physiological data from an individual, said data collection means having a data channel set of data channels for transmitting a first data set of said physiological data, said first data set including a first ECG data subset and a sleep state data subset from which a REM sleep state can be detected;
recording means for recording at least some of said first data set; and
a computer coupled to said data collection means and to said recording means, said computer having a state detector means to analyze said first data set for indications of said REM sleep state so that said computer causes said recording means to begin recording said first ECG data subset during said REM sleep state.

5,187,658
SYSTEM AND METHOD FOR SEGMENTING INTERNAL STRUCTURES CONTAINED WITHIN THE INTERIOR REGION OF A SOLID OBJECT

Harvey E. Cline, Schenectady, and William E. Lorensen, Ballston Lake, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 17, 1990, Ser. No. 466,526
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.13 **12 Claims**

4. A system for displaying two-dimensional images of internal structures of three-dimensional solid bodies, said system comprising:
a three-dimensional (3D) data store means adapted for storing at least two three-dimensional data sets representing the values of two different physical properties associated with said three-dimensional body at regularly spaced grid locations within said body;
b) a data sample selector adapted for selecting a plurality of values from one of the three-dimensional data sets, each of the values being identified with a particular one of said internal structures of a particular tissue type;
c) a probability calculator adapted for calculating a spatial probability distribution from the selected values, and plotting the distribution on a scatter plot diagram;
d) a feature map generator adapted for assigning all of the values of the three-dimensional data set to a unique one of the tissue types depending on a maximum value of the calculated probability distribution;

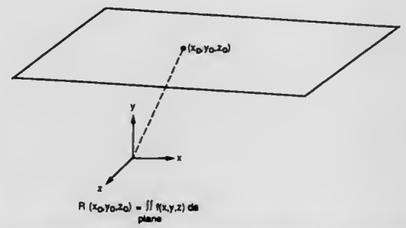


e) a connectivity calculator for identifying internal structures by grouping data values corresponding to contiguous locations within said three-dimensional solid body being assigned to the same tissue type by a connectivity algorithm; and
f) display means for displaying surfaces of desired internal structures.

5,187,659
CONE BEAM SCANNING TRAJECTORIES FOR THREE-DIMENSIONAL COMPUTERIZED TOMOGRAPHY DATA ACQUISITION WHERE OBJECT IS LARGER THAN THE FIELD OF VIEW

Jeffrey W. Eberhard, and Kwok C. Tam, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Sep. 4, 1990, Ser. No. 577,163
Int. Cl.[5] G06F *15/42*
U.S. Cl. 364—413.15 **11 Claims**



1. A scanning and data acquisition method for three-dimensional computerized tomography (CT) imaging of a portion of an object within a cylindrical field of view radially centered on a rotation axis and having an axial extent defined by two endplanes perpendicular to the rotation axis, the object being of greater axial extent than the field of view, said method comprising;
defining at least two circular source scanning trajectories centered on the rotation axis and lying respectively in the two endplanes; and

VOL 1147 ISS 3 FE 16 1993 UMI

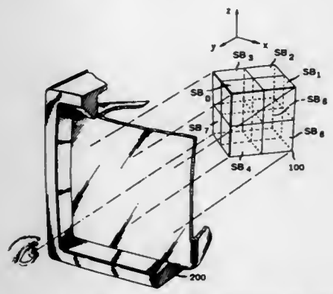
employing at least one cone beam x-ray source and at least one corresponding two-dimensional array detector positioned with reference to the source and with reference to the field of view to scan the object at a plurality of relative angular positions along the source scanning trajectories to acquire cone beam projection data, while acquiring data only from rays passing through the field of view.

5,187,660

ARRANGEMENT FOR DISPLAYING ON A DISPLAY VOLUMETRIC DATA

M. Reha Civanlar, Red Bank; Steven C. Dzik, Somerset, and Yuh-Tay Liow, Edison, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 1, 1989, Ser. No. 444,227
Int. Cl.[5] G06F *15/00*
U.S. Cl. 364—413.19 **10 Claims**



1. Apparatus for converting a three-dimensional image into a two-dimensional image for display on a display, said three-dimensional being defined by a plurality of voxels and said two-dimensional image being defined by a plurality of picture elements, said apparatus comprising

means for dividing said three-dimensional image into an plurality of sub-blocks and for supplying said sub-blocks to respective ones of a plurality of processors, and

means contained in each of said processors for transforming a predetermined one of the voxels forming the respective one of said sub-blocks into a respective first picture element and then transforming, as a function of the respective first picture element, the remaining voxels of the respective one of said sub-blocks into respective picture elements for display on said display.

5,187,661

METHOD OF DETERMINING INVADED FORMATION PROPERTIES INCLUDING RESISTIVITY DIELECTRIC CONSTANT AND ZONE DIAMETER

Paul I. Sinclair, Clear Lake Shores, Tex., assignor to Halliburton Logging Services, Inc., Houston, Tex.

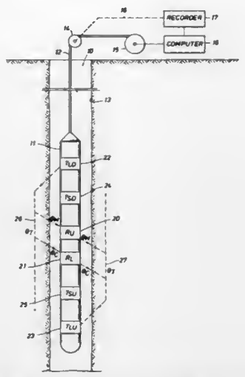
Filed Jul. 21, 1989, Ser. No. 382,591
Int. Cl.[5] G01V *3/18, 3/38*
U.S. Cl. 364—422 **10 Claims**

1. A method of conducting invaded formation investigations to determine resistivity or dielectric constant properties near a well borehole, the method comprising the steps of:

(a) transmitting, from a transmitter antenna to a receiver antenna on a sonde in a well borehole discrete emitted signal pulses having at least two separate selected frequency contents between 1 MHz and 10 MHz to form a plurality of low frequency received signals;

(b) evaluating said plurality of low frequency received signals to determine the radial diameter of the formation invaded by well drilling fluids as indicated for formation resistivity contrast in invaded zone and non-invaded zone resistivity;

(c) transmitting, from a transmitter antenna to a receiver antenna on the sonde in the well borehole, a plurality of discrete signals each of which is at higher frequencies in the range of 10 MHz to 200 MHz to form a plurality of received higher frequency signals; and



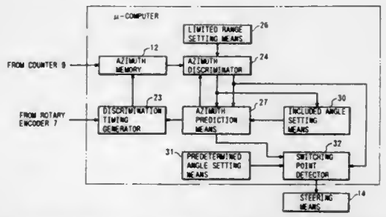
(d) with values of resistivity provided in prior steps, determining from said plurality of higher frequency received signals formation dielectric constant values at said plurality of discrete higher frequencies.

5,187,662

STEERING CONTROL SYSTEM FOR MOVING VEHICLE

Kenji Kamimura; Sadachika Tsuzuki, and Kazunori Noda, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 23, 1991, Ser. No. 644,497
Claims priority, application Japan, Jan. 24, 1990, 2-12424; Jan. 31, 1990, 2-19293
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—424.02 **12 Claims**



1. A steering control system for a moving vehicle wherein the position of the moving vehicle is detected by scanning a light beam generated at the moving vehicle in the circumferential direction around the moving vehicle and receiving light beams reflected by retroreflective means disposed at at least three reference points, the steering control system for the moving vehicle comprising:

azimuth detecting means for detecting the azimuth of each retroreflective means as viewed from the moving vehicle on the basis of incident light reflected by the retroreflective means during each scan,

means for calculating a predicted azimuth of each retroreflective means to be detected in the next scan on the basis of the azimuths previously detected in the azimuth detecting means,

means for setting a reference point discrimination direction for each direction at which the light beam scan has proceeded by a predetermined angle beyond the predicted azimuth of each retroreflective means, and

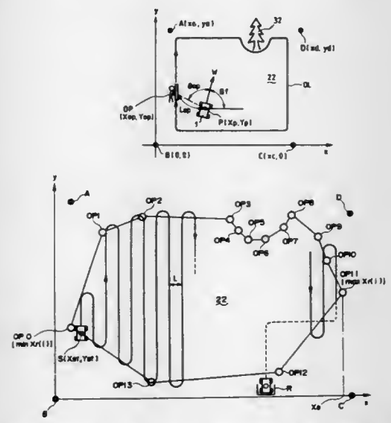
azimuth discriminating means for judging that the incident light with a directional angle nearest the predicted azimuth of the incident lights detected between the preceding reference point discrimination direction and the current reference point discrimination direction is light reflected from the reflecting means disposed at the expected reference point.

5,187,663

SYSTEM USING A MOVING LIGHT REFLECTOR FOR DEFINING THE PERIPHERAL OUTLINE OF A WORK AREA

Kenji Kamimura; Sadachika Tsuzuki, and Kazunori Noda, all of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1990, Ser. No. 592,633
Claims priority, application Japan, Oct. 25, 1989, 1-278067
Int. Cl.[5] G06F *15/50*; G01C *3/00*
U.S. Cl. 364—424.02 **10 Claims**



1. In a system of the type comprising a moving vehicle having light beam generating means thereon for scanning a light beam around said vehicle, a plurality of fixed position light reflectors located in spaced relation to one another outside of a work area for successively reflecting said light beam to a light receiver on said moving vehicle as said light beam is scanned around said vehicle, and means on said moving vehicle responsive to signals from said light receiver for controlling the steering of said moving vehicle relative to said fixed position reflectors as said vehicle moves along a traveling course in said work area to perform a working operation in said work area,

the improvement comprising a system, operable while said vehicle is stationary and prior to the commencement of said working operation, for defining the desired peripheral outline of said work area and for setting a traveling course of the moving vehicle in said work area, comprising:

movable light-reflecting means, separate from said fixed light reflectors, which is moved sequentially to successive positions along the peripheral outline of the work area to be defined, said moving light reflecting means being operative to reflect light in the direction of incidence from said light beam generating means as said light beam is scanned around the stationary vehicle,

means for detecting the distance between the moving light-reflecting means and the stationary vehicle and the azimuth of the moving light-reflecting means relative to the stationary vehicle on the basis of the light reflected from the moving light-reflecting means,

means for calculating successive positions of the moving light-reflecting means on a two-dimensional coordinate system having X and Y coordinate axes, said calculations being based on successive distances between said moving light-reflecting means and said stationary vehicle and successive azimuths of the moving light-reflecting means relative to the vehicle detected while the moving vehicle is stopped, and means for storing the successive calculated positions as a locus thereof to define the peripheral outline of the work area on said two-dimensional coordinate system, and

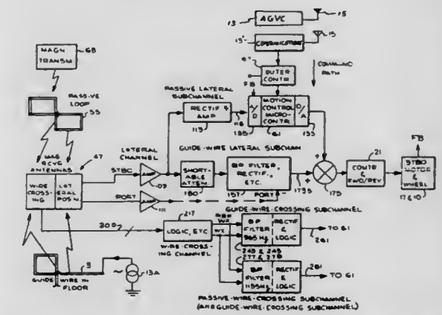
means for setting the traveling course of the moving vehicle in the work area defined on the basis of said stored locus of positions of the moving light-reflecting means.

5,187,664

PROPORTIONAL POSITION-SENSING SYSTEM FOR AN AUTOMATIC GUIDED VEHICLE

James V. Yardley, Centerville; Gary L. Whatcott, Holladay; John A. M. Petersen, Bountiful, all of Utah, and Herman P. Schutten, Milwaukee, Wis., assignors to Eaton-Kenway, Inc., Salt Lake City, Utah

Filed Nov. 27, 1990, Ser. No. 618,793
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—424.02 **40 Claims**



1. Position-sensing apparatus for an automatic guided vehicle that is controlled by command signals and position feedback signals comprising:

electrical conductor means at the floor for providing a time-varying magnetic field that extends up to the vehicle;

magnetic sensing means on the vehicle having first and second coils for sensing said magnetic field to produce first and second electrical output signals respectively from said coils;

said coils being spaced apart in the direction in which the position of the vehicle is to be measured;

said coils having axes that are horizontal and disposed in the direction in which the position of the vehicle is to be measured;

signal processing means connected for processing said first and second output signals and for outputting the resulting processed signals to be available as position feedback signals;

said apparatus further comprises means for processing signals emanating from two differing types of electrical conductor means at the floor, namely passive loop conductor means and active guide-wire conductor means; wherein said signal-processing means comprise means for connecting said first output signal to at least two separate channels for processing, and further comprise means for connecting said second output signal to at least two separate channels for processing;

VOL 1147 ISS 3 FE 16 1993 UMI

said apparatus further comprises means for selectively being responsive to signals from said passive loop conductor means and from said active guide-wire conductor means, including means for processing said signals from said passive loop conductor means, including (a) one of said two separate channels for processing said first output signal and (b) one of said two separate channels for processing said second output signal;

said means for selectively being responsive further comprising means for processing said signals from said active guide-wire conductor means, including (c) the other one of said two separate channels for processing said first output signal and (d) the other one of said two separate channels for processing said second output signal.

13. Apparatus for use with an automatic guided vehicle that has a longitudinal axis and that moves about with respect to a reference frame, comprising:

transmitting means on the vehicle for providing a time-varying primary magnetic field;

passive loop means on said reference frame, receiving said primary magnetic field to induce a current in said passive loop means, for producing a secondary magnetic field having a predetermined spatial pattern relative to said reference frame, said loop means having a longitudinal axis;

first receiving means on the vehicle receiving at least said secondary magnetic field for providing a first signal responsive to said secondary magnetic field;

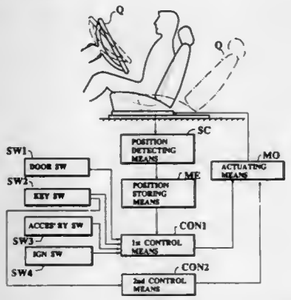
signal processing means receiving said first signal for processing it to provide a processed signal having information as to said vehicle's position relative to a desired position.

5,187,665

VEHICLE EQUIPMENT POSITION CONTROL SYSTEM AND THE METHOD THEREFOR

Toru Futami, Fujisawa; Kazuo Hirai, Yokohama, and Shigeki Tezuka, Tokyo, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 16, 1990, Ser. No. 597,671
Claims priority, application Japan, Oct. 16, 1989, 1-268532
Int. Cl.[5] G06F *15/20*
U.S. Cl. 364—424.05 **16 Claims**



1. A vehicle equipment position control system, comprising:

(a) vehicle equipment movable in position between a driving position and a getting-in/out position;

(b) actuating means for actuating said vehicle equipment between the driving position and the getting-in/out position;

(c) position detecting means for detecting vehicle equipment positions;

(d) position storing means for storing vehicle equipment positions detected by said position detecting means;

(e) door switch means for outputting a door-open signal when a vehicle door is opened and a door-close signal when closed;

(f) key switch means having:

(1) a key switch for outputting a key insertion signal when a key is inserted into the ignition key cylinder and a key-removal signal when said key is removed therefrom;

(2) an accessory switch for outputting an accessory signal when said key is set to an accessory position and a non-accessory signal when said key is not set thereto; and

(3) an ignition switch for outputting an ignition signal when said key is set to an ignition position and a non-ignition signal when said key is not set thereto; and

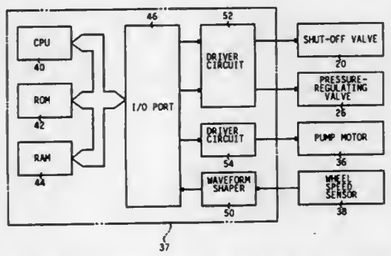
(g) first control means connected to said door switch means and said key switch means, for controlling said actuating means so that said vehicle equipment is actuated by said actuating means to the driving position or the getting-in/out position stored in said position storing means, in response to combinations of the door open/close signals, the key insertion and removal signals, the accessory signal and the ignition signal.

5,187,666

VEHICLE ANTI-LOCK BRAKE CONTROL APPARATUS INCLUDING MEANS FOR REGULATING BRAKE PRESSURE BASED ON SMOOTHED WHEEL ACCELERATION AND DETERMINED VEHICLE ACCELERATION

Masao Watanabe, Nagoya, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Feb. 21, 1991, Ser. No. 658,778
Claims priority, application Japan, Feb. 23, 1990, 2-43099
Int. Cl.[5] B60T *8/32*
U.S. Cl. 364—426.02 **26 Claims**



1. An anti-lock brake control apparatus for controlling a pressure of a brake fluid in a brake cylinder provided for braking a wheel of a vehicle, comprising:

a hydraulic power source;

a pressure-regulating valve device disposed between said hydraulic pressure source and said brake cylinder, for regulating the fluid pressure;

slip detecting means for detecting a slipping condition of said wheel; and

control means for controlling said pressure-regulating valve device based on the slipping condition of said wheel detected by said slip detecting means, so as to prevent excessive slipping of said wheel,

said slip detecting means including wheel acceleration detecting means for detecting a smoothed wheel acceleration value which is an acceleration value of said wheel smoothed by a predetermined time constant, said slip detecting means further including vehicle acceleration determining means for determining an acceleration value of said vehicle,

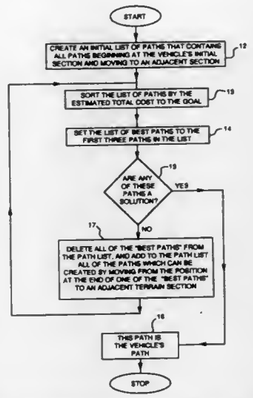
said control means including valve commanding means for generating control commands to be applied to said pressure-regulating valve device, for increasing and decreasing said fluid pressure such that a mean wheel acceleration value intermediate between adjacent minimal and maximal values of said smoothed wheel acceleration value which are successively detected by said wheel acceleration detecting means approaches said acceleration value of said vehicle determined by said vehicle acceleration determining means.

5,187,667

TACTICAL ROUTE PLANNING METHOD FOR USE IN SIMULATED TACTICAL ENGAGEMENTS

Lee O. Short, Brookly Park, Minn., assignor to Hughes Simulation Systems, Inc., Arlington, Tex.

Filed Jun. 12, 1991, Ser. No. 713,946
Int. Cl.[5] G06F *15/50*
U.S. Cl. 364—443 **6 Claims**



1. A computer-implemented method of providing for terrain evaluation and searching in simulated tactical engagements that employs a terrain database, and which determines an optimum path from a predetermined location in the terrain to a goal position, said method comprising the steps of:

dividing the terrain database into sections having uniform size and shape;

calculating a terrain cost value for each of the sections using a predefined terrain tactical evaluation function that corresponds to an estimate of the relative cost value of the terrain contained within each section;

selecting a set of paths starting with the predetermined location and ending with each of the terrain sections surrounding the predetermined location;

sorting the selected set of paths from the predetermined location to the goal position in terms of said terrain cost value;

processing each of a plurality of paths in the set of paths to determine if one of the paths has reached the goal position, and if the the goal position has been reached, computing a total cost value from the predetermined location to the goal position, and terminating the method;

if the goal position is not reached, generating a plurality of new paths by starting from the position at the end of a selected plurality of best paths to any of their adjacent terrain sections;

adding the plurality of new paths to the set of paths to create a new set of paths, and deleting the original path from the new set of paths; and

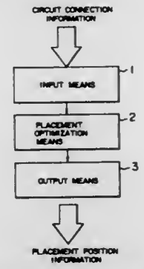
sorting the new set of paths and continuing the above steps until the optimum path from the predetermined location to the goal position is determined.

5,187,668

PLACEMENT OPTIMIZATION SYSTEM AIDED BY CAD

Hiroaki Okude; Masahiko Toyonaga, and Toshiro Akino, all of Takatsuki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 4, 1990, Ser. No. 621,893
Claims priority, application Japan, Dec. 4, 1989, 1-315619
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—468 **14 Claims**



1. A placement optimization system aided by CAD comprising:

input means for inputting circuit connection information including a plurality of placement elements;

placement optimization means for determining a degree of wiring crowdedness based on said circuit connection information and optimizing placement positions of said placement elements by conducting an evaluation of a height of a wiring region statistically approximated from a distribution of the degree of wiring crowdedness and by performing repetitive improvement of the placement positions based on said evaluation; and

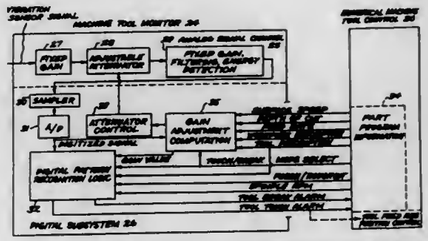
output means for outputting placement position information derived by said placement optimization means.

5,187,669

PROGRAMMABLE SURFACE SENSOR FOR MACHINING ROUGH STOCK

Douglas G. Wildes, Ballston Lake, and Steven R. Hayashi, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 16, 1990, Ser. No. 553,037
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—474.17 **10 Claims**



1. A system for continuously controlling the operation of a cutting tool during machining of a rough stock workpiece of wide tolerances comprising:

a) a sensing and amplifying means for detecting a first and a second vibration signal, rejecting said first vibration signal and amplifying said second vibration signal, wherein said first vibration signal is produced by the operation of the cutting tool and said second vibration signal is produced

VOL 1147 ISS 3 FE 16 1993 UMI

by moving contact between the cutting tool and the workpiece;

b) a rectifying and sampling means for rectifying said amplified signal and for producing a series of digital values corresponding to said rectified amplified signal;

c) an analyzing and programming means for analyzing the amplitude and the duration and the rate of change of said digital values, for comparing with preset programmed parameters for optimizing machining time; and

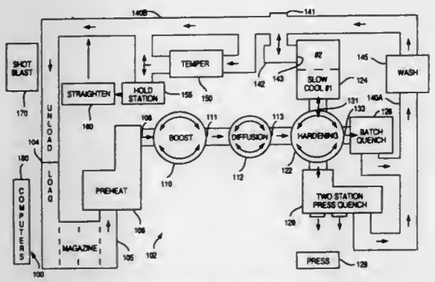
d) a controlling means for receiving an output from said analyzing and programming means for continuously controlling the operation of the cutting tool on the workpiece such that the rate of cutting is adapted to increase without overloading the tool until the ratio of metal cutting time to air-cutting time becomes infinity at which point the rate of cutting is adapted to decrease into a normal operating range, and wherein said analyzing and programming means compares the time spent cutting metal and time spent cutting air.

5,187,670

CONTROL SYSTEM FOR SCHEDULING PARTS IN A HEAT-TREATING PROCESS

Gary D. Keil, Elmwood, and Gregory S. Holloway, Metamora, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Nov. 5, 1990, Ser. No. 609,359
Int. Cl.[5] G06F *15/46*; F27D *17/00*
U.S. Cl. 364—477 **14 Claims**



1. A control system for heat-treating parts in a continuous furnace structure, comprising:

a plurality of processing chambers being interconnected and having a plurality of part positions, said processing chambers including two carburizing chambers of the rotary type adapted to expose said parts to reactive carbon gases at elevated temperatures, and discharge parts independent of the sequence of said parts entering said rotary carburizing chambers, said processing chambers being adapted to simultaneously process at least two parts having unique processing times;

memory means for storing first records representing processing times associated with each of the parts within each processing chamber, second records representing a desired processing path associated with each part, said desired processing path representing the succession of respective ones of said processing chambers a part enters for processing, and third records representing the number and location of occupied part positions within each processing chamber;

recipe means for determining a desired processing path, a predetermined case depth range of carburization between a minimum and a maximum value, and a predetermined processing time associated with the respective non-carburizing chambers in response to said desired processing path, each determination corresponding to a new part being processed in said furnace structure; and

scheduling means for calculating desired processing times associated with said rotary carburizing chambers for said new part in response to said predetermined case depth range, determining the availability of part positions in a respective processing chamber for processing of said new part in response to said desired path, recalculating said desired processing times in response to all of said part positions being occupied in the respective processing chamber, calculating arrival times associated with respective ones of said processing chambers in response to said desired processing path, said desired and predetermined processing times, and determining an entrance time for said new part to enter said furnace structure, in response to said arrival times for the respective processing chambers being calculated.

5,187,671

AUTOMATED INTERCONNECT ROUTING SYSTEM

Deborah D. Cobb, Austin, Tex., assignor to Microelectronics and Computer Technology Corporation, Austin, Tex.

Filed Aug. 24, 1990, Ser. No. 572,744
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—490 **6 Claims**



1. A method for manufacturing a routing plan for a multiple element electrical circuit interconnect substrate of the type used to interconnect a plurality of circuit element terminals comprising the steps of:

(a) providing a net list specifying the circuit terminals to be interconnected by the interconnect substrates, said net list comprising a list of terminal connections, each with an associated net number;

(b) generating an ordered FROM-TO list for routing according to connection density;

(c) subdividing the area of the substrate for routing into a set of nested rectangular regions according to density;

(d) providing an optimized routing plan for each subdivided area, proceeding from the area of highest density to lowest density; and

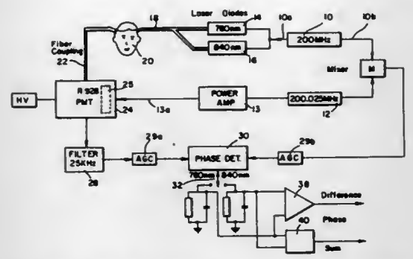
(e) merging the optimized routing plans for each subdivided area to produce a routing plan for the entire interconnect substrate.

5,187,672

PHASE MODULATION SPECTROSCOPIC SYSTEM

Britton Chance, and Jian Weng, both of Philadelphia, Pa., assignors to NIM Incorporated, Philadelphia, Pa.

Continuation-in-part of Ser. No. 578,063, Sep. 5, 1990, Pat. No. 5,122,974, which is a continuation of Ser. No. 307,066, Feb. 6, 1989, Pat. No. 4,972,331. This application Jan. 22, 1991, Ser. No. 644,090
The portion of the term of this patent subsequent to Nov. 20, 2007, has been disclaimed.
Int. Cl.[5] G06F *15/00*; A61B *5/00*
U.S. Cl. 364—550 **37 Claims**



1. A spectroscopic method for detecting at least one pathophysiological change in a subject, comprising the steps:

(a) introducing into the subject, at an input port, first and second electromagnetic signals of wavelengths sensitive to hemoglobin oxygenation, said signals being modulated by a carrier waveform of frequency on the order of 10^8 hz;

(b) measuring the phase shift of said first and second electromagnetic signals that have migrated in the subject from said input to a detection port and

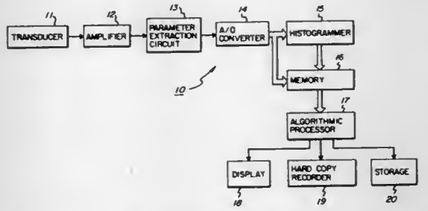
(c) determining, on the basis of said relative phase shifts of said signal that have migrated in the subject said pathophysiological change in the subject.

5,187,673

METHOD AND APPARATUS FOR DETERMINING THE DISTRIBUTION OF CONSTITUENT SUBPOPULATIONS WITHIN A POPULATION OF PARTICLES HAVING OVERLAPPING SUBPOPULATIONS

Edward L. Carver, Jr., 18 Lisa Dr., Oxford, Conn. 06483; Richard D. DeVeaux, Princeton, N.J., and David C. DeCava, Oxford, Conn., assignors to Edward L. Carver, Jr., Oxford, Conn.

Filed Feb. 5, 1991, Ser. No. 650,686
Int. Cl.[5] G06F *15/36, 15/42*; G01N *15/02*
U.S. Cl. 364—555 **13 Claims**



1. An apparatus for determining the parameters of constituent subpopulations within a sample which contains a population of particles which includes overlapping subpopulations, said apparatus comprising

a) means for generating an electrical signal for each particle in the population wherein the characteristics of the signal are related to an electrical or optical property of the particle;

b) means for amplifying the signals outputted by the signal generating means;

c) means for measuring the characteristics of the amplified signals,

d) means for digitizing the output of the measuring means; and

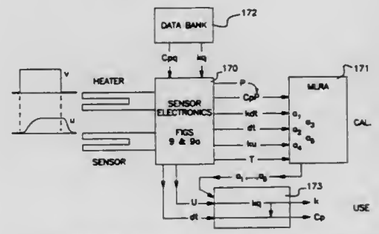
e) means for processing the digitized information in accordance with the EM algorithm so as to obtain the parameters.

5,187,674

VERSATILE, OVERPRESSURE PROOF, ABSOLUTE PRESSURE SENSOR

Ulrich Bonne, Hopkins, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 28, 1989, Ser. No. 458,062
Int. Cl.[5] G01N *9/00*
U.S. Cl. 364—558 **13 Claims**



1.) An apparatus for determining fuel gas pressure using a non membrane-based microsensor for a gas at unknown conditions comprising:

a non membrane semiconductor microbridge structure supported by a substrate having an electrically energizable heater film element thereon and resistive sensor film element(s) located proximate to the heater film element

such that said structure and substrate are so arranged and disposed so that they maintain contact. with the fuel gas of interest being immersed therein and such that when an electrical energy pulse source supplies an electrical energy pulse to said heater film element of sufficient time duration (also called pulse width) and power, the pulse causes a resulting transient temperature rise followed by a steady-state temperature (dU) in said gas of interest, to a degree detectable by said sensor element(s) such that said sensor element(s) produce an imbalance output corresponding to the voltage imbalance due to change in resistivity between said sensor element(s) and balancing resistor element(s);

W_{hc} measuring means for measuring heater power, W_{hc}, required to achieve a constant differential, dT, above ambient temperature and for producing an output representative of this value W_{hc};

S measuring circuit for measuring occurrences of changes in said imbalance output which are characteristic of the transient temperature rise signal, s, and means for determining its integral S for each occurrence and for producing an output representative of this value S;

dU measuring circuit for measuring the amplitude of the steady-state temperature signal, dU, from said imbalance output and for producing an output representative of this value dU;

T_g measuring sensor means for measuring gas temperature at the location of the structure substrate (T_g) and producing a signal representative thereof;

a computing device connected to received said signals dU, W_{hd}, T_g S, and employing signal processing circuitry, data, and processing components, said computing device

VOL 1147 ISS 3 FE 16 1993 UMI

configured to have k computing means, c_p computing means and p computing means, having;

k computing means for representing a function to compute thermal conductivity, k, of said gas of interest as a function of the measured signals representing dU, W_{hc} and T_g (gas temp.);

c_p computing means for representing a function to compute specific heat, c_p, as a function of the measured signals representing dU, W_{hc}, S, and T_g; and

p computing means for representing a function to compute pressure, P, of said gas of interest, according to a relation:

$$P=V_{mo}(T/T_o)(P_o)C_{pv}/c_p$$

where

c_p=specific heat, molar or weight -based and having been determined by said c_p computing means,

c_{pv}=volumetric specific heat, measured

V_{mo}=molar volume of ideal gases=22415 cm^3/mol @ 0° C. and 1 atm

T=sensed gas temperature in degrees K

T_o=gas temperature at the reference condition of 0° F. or 273.15°K.

P_o=gas pressure at the reference condition of 1 atm, and

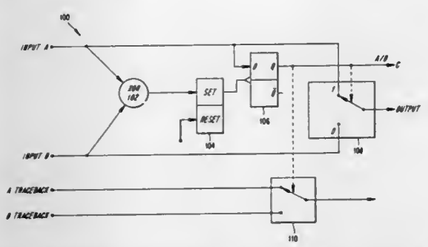
an output device connected to said computing device which outputs said electrical signals representative of at least one of said k, cp, and P values.

5,187,675

MAXIMUM SEARCH CIRCUIT

Paul W. Dent, Stehag, Sweden, and Jaap C. Haartsen, Durham, N.C., assignors to Ericsson-GE Mobile Communications Holding Inc., Paramus, N.J.

Filed Sep. 18, 1991, Ser. No. 761,380
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—715.06 **10 Claims**



1. An electronic comparator for selecting and outputting a larger of first and second electrical, binary-coded input values presented bit-serially, most-significant-bit first, comprising:

first and second input terminals;

a logical exclusive-OR gate operatively connected to the first and second input terminals for forming a signal indicating a logical exclusive-OR of the first and second input values;

a first resettable flip-flop operatively connected to the logical exclusive-OR gate, wherein an output of the first flip-flop is set from a "0" state to a "1" state when the exclusive-OR gate signal indicates the first and second input values are unequal;

a second flip-flop operatively connected to the first flip-flop and the first input terminal, wherein an output of the second flip-flop is alternatively set to ether a "0" state or a "1" state in correspondence with the first input value in response to the fist flip-flop's output changing state; and

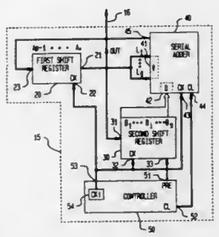
first selecting means, operatively connected to the first and second input terminals and the second flip-flop, for selecting one of the input values as an output of the comparator, wherein the first selecting means selects the first input value when the second flip-flop is set to the "1" state, and the first selecting means selects the second input value when the second flip-flop is set to the "0" state.

5,187,676

HIGH-SPEED PSEUDO-RANDOM NUMBER GENERATOR AND METHOD FOR GENERATING SAME

Charles J. DeVane, Milford, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 28, 1991, Ser. No. 724,531
Int. Cl.[5] G06F *1/02*
U.S. Cl. 364—717 **14 Claims**



1. A pseudo-random number generator comprising:

first shift register with p stages for storing and shifting a value, with a least significant bit ("LSB") being adjacent an output terminal of the first shift register;

second shift register with b stages for storing and shifting a preloaded value, with a LSB of the preloaded value being stored at the bth stage of the second shift register;

serial adder having at least l input taps with the serial adder adding a value of predetermined length from a L_1 to L_l value at the l input taps, with the L_1 to L_l value being formed from the LSB of the value stored in the first shift register being shifted out of the first shift register to the l input taps, and at least a B_j value of a B_1 to B_b value stored in the second shift register, and loading a sum output of the serial adder into the first shift register; and

controller for controlling clocking of the first and second shift registers, and the serial adder, controlling the loading of a preload value into the second shift register, and clearing of the serial adder.

5,187,677

WAVEFORM SYNTHESIZER THROUGH SIMULATING MULTIPLICATION

Albert W. Kovalick, Santa Clara, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 23, 1991, Ser. No. 749,384
Int. Cl.[5] G06F *1/02*
U.S. Cl. 364—721 **12 Claims**

1. A waveform synthesizer, generating a select output waveform, through simulating the multiplication of the components of the select output waveform, comprising:

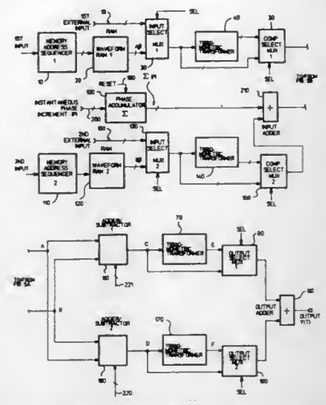
a first means for producing a first preliminary waveform;

a second means for producing a second preliminary waveform;

a first adder/subtractor receiving the first and second preliminary waveforms for producing a first intermediate waveform;

a second adder/subtractor receiving the first and second preliminary waveforms for producing a second intermediate waveform; and

a third means receiving the first and second intermediate waveforms for trigonometrically transforming the first and second intermediate waveform and selectively adding the first and second intermediate waveforms and the



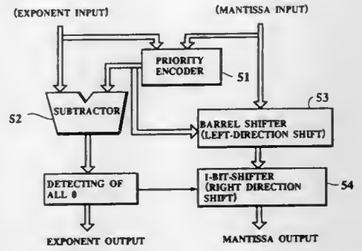
trigonometrically-transformed first and second intermediate waveforms to produce the select output waveform.

5,187,678

PRIORITY ENCODER AND FLOATING-POINT NORMALIZATION SYSTEM FOR IEEE 754 STANDARD

Chikahiro Hori, Kanagawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 28, 1990, Ser. No. 589,507
Claims priority, application Japan, Sep. 30, 1989, 1-255470
Int. Cl.[5] G06F *7/38*
U.S. Cl. 364—748 **7 Claims**



1. A floating-point normalization system, comprising:

a priority encoder having first input means and second input means for inputting data, each of said input means having a predetermined bit width, the first input means inputting a first binary information based on a binary digit, the second input means inputting a parallel information having a predetermined order, and output means having said predetermined bit width, wherein the priority encoder executes a comparison operation between a first binary number corresponding to the first binary information and a second binary number corresponding to a position of a preceding "1" observed from the left end as a most significant bit in the format of the parallel information and the output means outputs the smallest binary number in the first binary number and the second binary number as an output of the priority encoder;

shift means for shifting the parallel information towards a predetermined direction by a shift number corresponding to the output of the priority encoder;

substration means for performing a subtract operation between the output of the priority encoder for and the binary information; and

1-bit shift means for shifting a shift output from the shift means by at least one bit in a direction opposite to the predetermined direction shifted by the shift means,

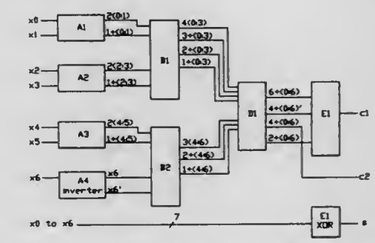
wherein the subtraction means and the shift means are operated at the same time.

5,187,679

GENERALIZED 7/3 COUNTERS

Stamatis Vassiliadis, Vestal, N.Y., and Eric M. Schwarz, Stanford, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 5, 1991, Ser. No. 711,182
Int. Cl.[5] G06F *7/50*
U.S. Cl. 364—786 **9 Claims**



1. A 7/3 counter for generating a three bit output including a sum bit (S), a first carry bit (C_1), and a second carry bit (C_2), such that C_2C_1S represents the difference between the number of positive, active bits and the number of negative, active bits in a seven-bit input including signed input bits $x_6x_5x_4x_3x_2x_1x_0$, the counter including:

EXCLUSIVE-OR means responsive to the seven-bit input for generating the sum bit according to:

$$S=x_0Vx_1Vx_2Vx_3Vx_4Vx_5Vx_6,$$

where "V" denotes the EXCLUSIVE-OR logical operation; and

logic means for combining a group of seven signed input bits to produce C_1 and C_2, the seven signed input bits having a first bit sign pattern which corresponds to a first range of possible sums of the seven bits or a second bit sign pattern which is the inverse of the first bit sign pattern and which corresponds to a second range of possible sums of the seven bits.

5,187,680

NEURAL NET USING CAPACITIVE STRUCTURES CONNECTING INPUT LINES AND DIFFERENTIALLY SENSED OUTPUT LINE PAIRS

William E. Engeler, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 366,838, Jun. 15, 1989, abandoned. This application Dec. 18, 1991, Ser. No. 810,431
Int. Cl.[5] G06G *7/12, 7/06*
U.S. Cl. 364—807 **56 Claims**

22. A processor for providing "axon" response to a plurality M in number of "synapse" input voltage signals, M being a positive integer, said processor comprising:

a plurality, M in number, of input lines respectively identified by consecutive ordinal numbers, first through M^{th}, for receiving respective ones of said input voltage signals;

a plurality, M in number, of further input lines respectively identified by consecutive ordinal numbers $(M+1)^{th}$ through $2M^{th}$;

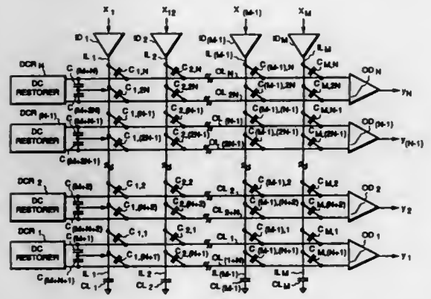
means for applying to each further input line an input signal the same in amplitude but opposite in polarity as the input

VOL 1147 ISS 3 FE 16 1993 UMI

signal received by an input line paired therewith and identified by the ordinal number lower by M;

a pair of output lines, each insulated from its surroundings and exhibiting respective capacitance respective to its surroundings;

exclusive means for connecting said first through $2M^{th}$ input lines to said pair of output lines, said means connecting said first through $2M^{th}$ input lines to said pair of output lines without any paths for substantial direct current conduction between said input and said output lines, said means maintaining substantially equal capacitances on each output line in said pair thereof, which means essentially consists of capacitive elements including



a respective set of four said capacitive elements connecting each of said $(M+1)^{th}$ through $2M^{th}$ further input lines and the one of said first through M^{th} input lines paired therewith and identified by the ordinal number lower by M to each of said output lines, wherein each of said capacitive elements has a capacitance that is programmed by a respective binary number programming signal and that can be altered responsive to a change in said respective binary number programming signal; and

means for providing a non-linear voltage response to change in the difference of charge on the respective capacitances of said pair of output lines respective to their surroundings, which non-linear voltage response is said "axon" response to said plurality M in number of input signals.

5,187,681

CONTROLLING APPARATUS FOR IMPROVING START UP TIME FOR A CONVOLVER

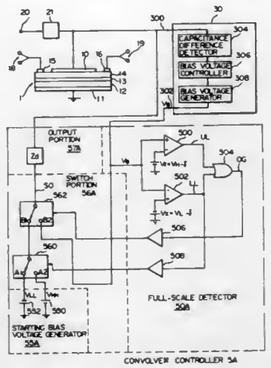
Syuichi Mitsutsuka, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1990, Ser. No. 623,294
Claims priority, application Japan, Dec. 6, 1989, 1-316646
Int. Cl.[5] G06G *7/12*
U.S. Cl. 364—821 **15 Claims**

1. A control apparatus for a convolver device including a surface acoustic wave convolver element having a gate electrode, a grounded electrode and a piezoelectric layer therebetween and a bias voltage means for applying a bias voltage variable within a predetermined range between the gate and grounded electrodes so as to cause said convolver element to operate at an optimum convolution efficiency, said control apparatus comprising:

operating mode designating means connected to receive said variable bias voltage for outputting a first mode signal when the variable bias voltage is in a first range defined by end portions of the predetermined range and a second mode signal when the variable bias voltage is in a second range defined by excluding said first range from said predetermined range; and

control means responsive to the output of said voltage for applying said variable voltage to said convolver element when said operating mode designating means outputs said second mode signal and for controlling, when said operating mode designating means outputs said first mode signal, said convolver element at an increased rate relative to a



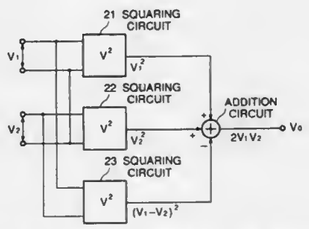
control rate when said variable bias voltage is used, thereby causing the maximum convolution efficiency to be achieved at a voltage within said predetermined range.

5,187,682

FOUR QUADRANT ANALOG MULTIPLIER CIRCUIT OF FLOATING INPUT TYPE

Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Apr. 8, 1992, Ser. No. 865,073
Claims priority, application Japan, Apr. 8, 1991, 3-73462
Int. Cl.[5] G06G *7/164*
U.S. Cl. 364—841 **5 Claims**



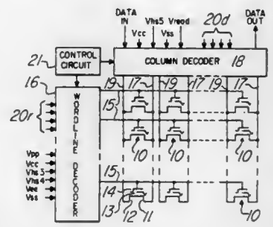
1. A four quadrant analog multiplier circuit including a first squaring circuit receiving a first input signal for squaring said first input signal, a second squaring circuit receiving a second input signal for squaring said second input signal, a third squaring circuit receiving said first and second input signals for squaring a difference between said first and second inputs, and an addition circuit, coupled to said first to third squaring circuits, for subtracting an output of said third squaring circuit from a sum of outputs of said first and second squaring circuits, each of said first to third squaring circuits being composed of first and second differential circuits each of which is formed of first and second MOS transistors having their sources connected in common to a constant current source, a gate width-to-length ratio of said second MOS transistor being larger than a gate width-to-length ratio of said first MOS transistor, a gate of said first MOS transistor of said first differential circuit being connected to a gate of said second MOS transistor of said second differential circuit, a gate of said second MOS transistor of said first differential circuit being connected to a gate of said first MOS transistor of said second differential circuit, a first input terminal for receiving said first input signal being connected to a gate of said first MOS transistor of said first differential circuit of each of said first and third squaring circuits, a second input terminal for receiving said second input signal being connected to a gate of said first MOS transistor of said first differential circuit of said second squaring circuit and a gate of said first MOS transistor of said second differential circuit of said third squaring circuit, a common input terminal being connected to said gate of said second MOS transistor of said first differential circuit of each of said first and third squaring circuits, and said addition circuit being formed by such a connection that a drain of said first MOS transistor of each of said first and second differential circuits of each of said first and second squaring circuits is connected in common to a drain of said second MOS transistor of each of said first and second differential circuits of said third squaring circuits and to a first current terminal, and a drain of said second MOS transistor of each of said first and second differential circuits of each of said first and second squaring circuits is connected in common to a drain of said first MOS transistor of each of said first and second differential circuits of said third squaring circuits and to a second current terminal.

5,187,683

METHOD FOR PROGRAMMING EEPROM MEMORY ARRAYS

Manzur Gill, Arcola; Sung-Wei Lin, and Sebastiano D'Arrigo, both of Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 31, 1990, Ser. No. 576,307
The portion of the term of this patent subsequent to Jan. 5, 2010, has been disclaimed.
Int. Cl.[5] G11C *16/04*
U.S. Cl. 365—185 **24 Claims**



1. A method for programming a selected memory cell in a semiconductor array of deselected cells and of said selected cell, said selected cell connected to at least a selected column line and a selected worline, each said deselected memory cell in said array connected to at least a deselected column line or a deselected wordline, said method comprising:

preselecting first, second, third, fourth and fifth programming voltages such that said second programming voltage is more positive than said first programming voltage and such that said third, fourth and fifth programming voltages are intermediate between said first and second programming voltages;

with said first programming voltage applied at least to said selected column line and each said deselected column line, applying said third programming voltage to said selected wordline and said fourth programming voltage to each said deselected wordline;

after a pre-charge time interval, applying said fifth programming voltage to each said deselected column line and applying said second programming voltage to said selected wordline;

after a program time interval, applying said third programming voltage to said selected wordline and applying said first programming voltage to each said deselected column line; and

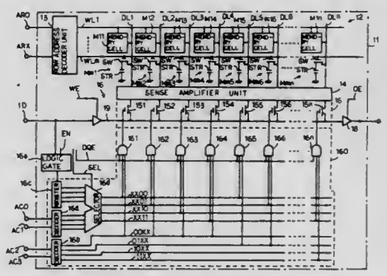
maintaining each said deselected wordline at said fourth programming voltage for a discharge time interval.

5,187,684

SEMICONDUCTOR MEMORY DEVICE WITH READ/WRITE CONTROLLING UNIT FOR CONCURRENTLY WRITING A DATA BIT INTO MEMORY CELLS

Yasuharu Hoshino, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 22, 1991, Ser. No. 673,317
Claims priority, application Japan, Mar. 27, 1990, 2-78125
Int. Cl.[5] G11C *13/00*
U.S. Cl. 365—189.05 **11 Claims**



1. A semiconductor memory device comprising:

a) a plurality of memory cells respectively storing data bits in a rewritable manner;

b) a plurality of digit lines coupled to said memory cells;

c) a column selector unit having a plurality of transfer gate transistors coupled between said digit lines and a data bus, said plurality of transfer gate transistors being associated with said plurality of digit lines, respectively; and

d) a read/write controlling unit having a register and being responsive to address bits for allowing one of said transfer gate transistors to couple said data bus to the associated digit line, said read/write controlling unit further being responsive to a predetermined bit pattern stored in said register for allowing a plurality of transfer gate transistors selected from said transfer gate transistors to couple said data bus to the associated digit lines.

5,187,685

COMPLEMENTARY MISFET VOLTAGE GENERATING CIRCUIT FOR A SEMICONDUCTOR MEMORY

Katsuyuki Sato; Hiroshi Kawamoto, both of Kodaira, and Kazumasa Yanagisawa, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 648,229, Jan. 31, 1991, abandoned, which is a division of Ser. No. 336,345, Apr. 10, 1989, which is a continuation of Ser. No. 934,666, Nov. 24, 1986, Pat. No. 4,839,865. This application Aug. 26, 1991, Ser. No. 749,851
Claims priority, application Japan, Nov. 22, 1985, 60-261154
Int. Cl.[5] G11C *7/00, 11/407*
U.S. Cl. 365—189.09 **18 Claims**

1. A semiconductor memory comprising:

a memory cell including a MISFET and a capacitor for data storage, said capacitor having one of two electrodes thereof connected to one channel side of said MISFET;

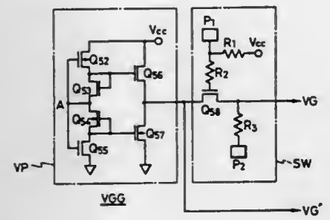
a voltage generating circuit for providing a voltage, of about one-half the magnitude of a power source voltage thereof, to be supplied to the other electrode of said capacitor;

voltage supply means for supplying any voltage to said one electrode; and

switch means adapted to allow either the voltage provided from said voltage generating circuit or voltage supplied from said voltage supply means to said other electrode,

VOL 1147 ISS 3 FEB 16 1993 UMI

wherein said voltage generating circuit comprises a voltage dividing circuit including first resistor means, a first MISFET of a first channel conductivity type configured to operates as a diode, a second MISFET of a second channel conductivity type configured to operates as a diode, and second resistor means, said first resistor means, said first MISFET, said second MISFET and said second resistor means are connected in series in that order; a first output MISFET of said first channel conductivity type having a gate connected to the common connection of



said first MISFET and said first resistor means; and a second output MISFET of said second channel conductivity type having a gate connected to the common connection of said second MISFET and said second resistor means,

wherein said first and second MISFETs have threshold voltages of absolute value smaller than that of said first and second output MISFETs, respectively, and

wherein an output voltage of about half of said power source voltage is obtained at a common source connection of said first and second output MISFETs.

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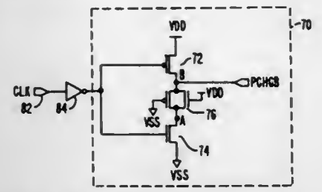
CONTROL CIRCUIT HAVING OUTPUTS WITH DIFFERING RISE AND FALL TIMES

John Tran, Sunnyvale, and Mazin Khurshid, Campbell, both of Calif., assignors to Zilog, Inc., Campbell, Calif.

Filed Feb. 14, 1990, Ser. No. 479,865

Int. Cl.[5] G11C *7/00*; **H03K** *5/12, 6/04, 17/687*

U.S. Cl. 365—189.11 **7 Claims**



1. A circuit for generating two control signals in response to an input signal, said circuit comprising:

a pull up transistor having a first and a second terminal and a gate;

a passing gate comprising an N-channel transistor and a p-channel transistor, where the N-channel transistor and the P-channel transistor define two channels; and

a pull down transistor having a first and a second terminal and a gate, where the pull-up transistor and the pull-down transistor define two transistors, the first terminals of the two transistors being connected through said passing gate, said gates of the two transistors being controlled by the input signal, wherein a first control signal at the second terminal of the pull up transistor has a fast rise time and slow fall time with respect to the input signal and a second control signal at the second terminal of the pull down transistor has a fast fall time and slow rise time with respect to the input signal.

5,187,687

PRODUCTION OF IMAGES

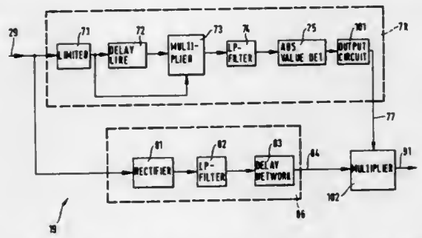
Christoph B. Burckhardt, Muttenz, and Bruno M. J. Dousse, Basle, both of Switzerland, assignors to Kontron Instruments Holding N.V., Curacao, Netherlands Antilles

Continuation of Ser. No. 873,030, Jun. 11, 1986, abandoned. This application Jul. 18, 1988, Ser. No. 220,188

Claims priority, application Switzerland, Jun. 20, 1985, 2622/85

Int. Cl.[5] G01N *29/00*; **G03B** *42/00*

U.S. Cl. 367—7 **11 Claims**



1. In a method of producing an image of an area under investigation, in which method wave pulses having at least one transmission frequency f are generated by a pulsed source of coherent waves and are transmitted into the area, echo waves reflected from reflectors in the area are received, and a corresponding electrical echo signal is generated, an improved process which reduces speckle in said echo signal wherein:

a) a first output signal related to amplitude information of an echo signal is generated by an amplitude demodulation of a signal derived from the echo signal,

b) a second output signal related to frequency or phase information of the echo signal is generated by a frequency or phase demodulation of a signal derived from the echo signal, the second output signal amplitude being a non-linear function of an absolute value of a deviation of the frequency of the echo signal from a reference frequency, the reference frequency being variable and lower than said transmission frequency f by a depth correction factor, and

c) the first and second output signals are multiplied to generate an image signal which can be displayed by a display means to produce an image of the area.

5,187,688

METHOD OF COUNTING THE NUMBER OF PASSERS-BY

Makoto Saruta, Hiratsuka, Japan, assignor to NCR Corporation, Dayton, Ohio

Filed Apr. 6, 1992, Ser. No. 864,459

Claims priority, application Japan, May 2, 1991, 3-128301

Int. Cl.[5] G01S *15/00*

U.S. Cl. 367—96 **9 Claims**

1. A method of counting the number of passers-by who pass through a predetermined region using a plurality of sensors arranged in pairs, each sensor having a sensing switch associated therewith for indicating the sensing state of each sensor, comprising the following steps:

collecting height data relating to passers-by from each sensor;

provisionally determining the condition of the sensing switches and updating peak data stored in a memory;

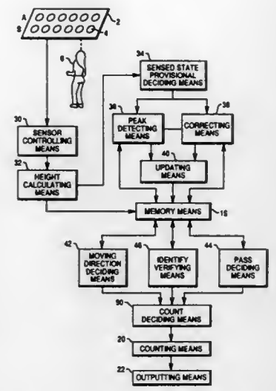
correcting the sensing state of the sensing switches and re-updating the peak data;

updating counts in the data memory;

verifying whether a newly entered sensor pair and an adjacent sensor pair sense one person or not;

updating an identity flag for an already entered sensor pair;

determining whether an entered sensor pair indicates an exit condition;



determining the number to be counted in accordance with the interrelation between adjacent sensor pairs for an exit;

counting a number in accordance with the moving direction of a passer-by; and

initializing the sensor pairs which indicate exit.

5,187,689

DEVICE FOR SELECTIVELY DETECTING A MOVING OBJECT

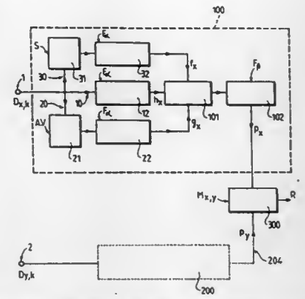
Raoul Florent, Lillers, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 28, 1991, Ser. No. 783,287

Claims priority, application France, Oct. 30, 1990, 90 13442

Int. Cl.[5] G06F *15/70*

U.S. Cl. 367—99 **7 Claims**



1. A device for outputting a selection signal indicating selective detection of physical objects on the basis of their motion, the device comprising:

first measuring means with a first output for a displacement signal representative of a measured amount of net displacement of the object during a time interval,

second measuring means with a second output for a path length signal representative of a sum of measured distances travelled by the object during respective subintervals of the time interval,

comparing means, with inputs coupled for receiving the displacement signal and the path length signal, and a selection output for outputting a selection signal which indicates selection, when a strength of the displacement signal exceeds a predetermined fraction of a strength of the path length signal.

5,187,690

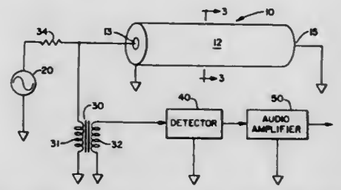
ACOUSTIC TRANSDUCER SYSTEM

Edward J. Hilliard, Jr., Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 28, 1992, Ser. No. 892,063

Int. Cl.[5] H04B *11/00*

U.S. Cl. 367—131 **4 Claims**



1. An acoustic transducer system for detecting an acoustic source in seawater comprising:

a seawater return cable having a proximal end and a terminal end and a conductor surrounded by a coaxial dielectric material;

carrier signal generator means for applying a continuous carrier wave signal to said proximal end;

a transformer means in electrical communication with said generator means; and

input impedance detector means for detecting changes in voltage amplitude of said transformer means and also for detecting a change in input impedance of the cable to said carrier wave in response to an acoustic pressure wave impinging said cable and producing an electrical output signal indicative of the pressure wave.

5,187,691

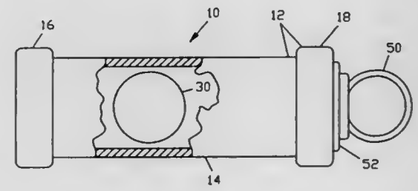
UNDERWATER SIGNALING DEVICE AND METHOD

William J. Oehme, dB Products North, 929 Cypress Dr., Delray Beach, Fla. 33483, and Donald Ammann, dB Products South, 4060 NW. 8th Ter., Oakland Park, Fla. 33309

Filed Dec. 26, 1991, Ser. No. 813,505

Int. Cl.[5] H04B *11/00*

U.S. Cl. 367—134 **11 Claims**



1. A signaling apparatus for generating an audible sound, comprising:

a housing containing a cylindrical chamber having two ends,

an end member secured over each end,

a projectile member contained within the cylindrical chamber, and wherein the projectile member has an outer diameter no less than half the inner diameter of the cylindrical chamber.

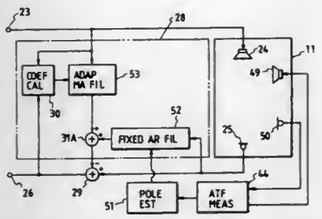
VOL 1147 ISS 3 FEB 16 1993 UMI

5,187,692

ACOUSTIC TRANSFER FUNCTION SIMULATING METHOD AND SIMULATOR USING THE SAME

Yoichi Haneda, Chofu; Shoji Makino, Muchida, and Yutaka Kaneda, Tanashi, all of Japan, assignors to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Mar. 20, 1992, Ser. No. 856,654
Claims priority, application Japan, Mar. 25, 1991, 3-60538
Int. Cl.[5] G01S *15/00*; G01K *15/00*
U.S. Cl. 367—135 13 Claims



1. An acoustic transfer function simulator comprising:

sound source means disposed in an acoustic system, for outputting an acoustic signal;

receiver means disposed at a sound receiving point in said acoustic system, for receiving said acoustic signal from said sound source means;

acoustic transfer function measuring means for measuring acoustic transfer functions between two points at a plurality of different positions in said acoustic system;

pole estimation means whereby inherent AR coefficients corresponding to physical poles inherent in said acoustic system are estimated from said plurality of measured acoustic transfer functions;

ARMA filter means composed of AR filter means and MA filter means, said AR filter means having set therein said inherent AR coefficients estimated by said pole estimation means; and

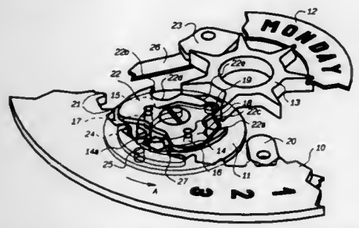
coefficient control means for controlling MA coefficients of said MA filter means so that said ARMA filter means simulates what correspond to said plurality of measured acoustic transfer functions in said acoustic system.

5,187,693

DEVICE FOR CONTROLLING AND CORRECTING THE DISPLAY OF THE DAY AND DATE FOR A WATCH, AND A WRIST WATCH FITTED WITH SUCH A DEVICE

René Besson, Geneva, Switzerland, assignor to Montres Rolex S.A., Switzerland

Filed Apr. 2, 1991, Ser. No. 679,303
Claims priority, application Switzerland, Apr. 4, 1990, 01139/90
Int. Cl.[5] G04B *19/24, 27/00*
U.S. Cl. 368—35 7 Claims



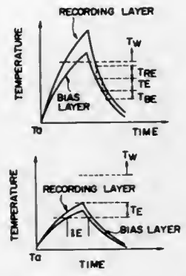
1. A device for controlling and correcting the display of the day and date for a watch, comprising at least one bi-directional electric motor, at least one mechanism coupled to this motor to drive a day disk and a date disk, and at least one electronic circuit designed to transmit impulses to control this motor, in which the mechanism comprises a drive wheel (11) coupled to the motor and two date fingers (14, 15) pivoting respectively on two axes (16, 17) borne by said drive wheel (11) to increment, or decrement respectively, the date disk, characterised in that the drive wheel (11) also bears a control wheel (22) for a day star (13) designed to increment, or decrement respectively, the day disk (12) by means of said day star (13).

5,187,694

MAGNETO-OPTICAL RECORDING MEDIUM COMPRISING RECORDING LAYER AND THERMAL BIAS LAYER, AND METHOD FOR RECORDING, ERASING AND OVERWRITING ON THE MEDIUM

Katsutaron Ichihara, Tokyo, and Hiromichi Kobori, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 637,960, Jan. 9, 1991, abandoned, and a continuation of Ser. No. 233,746, Aug. 19, 1988, abandoned.
This application May 19, 1992, Ser. No. 885,014
Claims priority, application Japan, Aug. 21, 1987, 62-207537; Jun. 9, 1988, 63-140468
Int. Cl.[5] G11B *13/04, 11/12, 11/10*
U.S. Cl. 369—13 12 Claims



1. A magneto-optical information recording medium, comprising:

a recording layer for recording information having an easy axis of magnetization extending in a direction perpendicular to a surface thereof, a magnetization reversal first temperature range in which said recording layer has a corresponding first coercive force range, a compensation temperature below said first temperature range, a magnetization reversal second temperature range below said compensation temperature and in which said recording layer has a corresponding second coercive force range; and

a bias layer having an initial uniform magnetization direction, situated above said recording layer, and for applying a temperature dependent bias magnetic field at a first recording region of said recording layer by heating a first bias region which opposes said first recording region, wherein a vector sum magnitude of a vector sum of said bias magnetic field and a static external magnetic field applied to said first recording region has a higher magnetic field value than a coercive force of said recording layer for temperatures in said second temperature range and lower values for temperature below said second temperature range;

wherein said first bias region of said bias layer, when heated to one of said first and second temperature ranges and then cooled to near room temperature, has said initial magnetization direction,

wherein:

a) said first recording region has a coercive force which is less than said vector sum magnitude for temperatures in said first temperature range and said second temperature range, and

b) a magnetization direction of said first recording region is aligned with the direction of said vector sum when said first recording region and said first bias region are at temperatures in said second range, and said magnetization direction does not change upon cooling of said first recording region to room temperature,

c) a magnetization direction of said first recording region is aligned with the direction of said vector sum when said first recording region and said first bias region are at temperatures in said first temperature range, and said magnetization direction of said first recording region reverses upon cooling of said first recording region to room temperature.

10. A method for recording and erasing information on a magneto-optical information recording medium, said medium comprising

a recording layer for recording information having an easy axis of magnetization extending in a direction perpendicular to a surface thereof, a magnetization reversal first temperature range in which said recording layer has a corresponding first coercive force range, a compensation temperature below said first temperature range, a magnetization reversal second temperature range below said compensation temperature and in which said recording layer has a corresponding second coercive force range; and

a bias layer having an initial uniform magnetization direction situated above said recording layer, for applying a temperature dependent bias magnetic field at a first recording region of said recording layer by heating a first bias region opposing said first recording region, wherein a vector sum magnitude of a vector sum of said bias magnetic field and a static external magnetic field applied to said first recording region has a higher magnetic field value than a coercive force of said recording layer for temperatures in said second magnetization temperature reversal range and a lower values for temperature below said second temperature range;

wherein said first bias region has said initial magnetization direction after being heated to one of said first and second temperature ranges and then cooled to near room temperature, wherein said first recording region has a coercive force which is less than said vector sum magnitude for temperatures in said first temperature range and said second temperature range,

comprising the steps of:

irradiating a first area of said medium comprising said first recording region and said first bias region with a laser beam, thereby heating at least a part of said first area to said second temperature range, thereby aligning a magnetization direction of said first recording region with the direction of said vector sum, wherein said magnetization direction does not change upon cooling of said first recording region to room temperature,

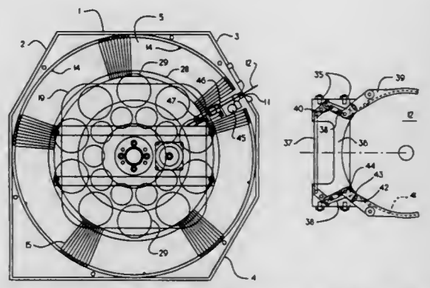
irradiating said first area with said laser beam, thereby heating at least a part of said first area to said first temperature range, thereby aligning a magnetization direction of said first recording region with the direction of said vector sum, wherein said magnetization direction of said first recording region reverses upon cooling of said first recording region to room temperature.

5,187,695

MULTIPLE COMPACT DISK PLAYER AND STORAGE DEVICE

Wolfgang Schindler, Wachterbofstr. 50, D-8011 Hohenkirchen, and Peer Mietusch, Hauptstr. 110, D-8014 Neubiberg, both of Fed. Rep. of Germany

Filed Jun. 5, 1991, Ser. No. 711,471
Claims priority, application Fed. Rep. of Germany, Jun. 5, 1990, 4018018
Int. Cl.[5] G11B *17/22, 17/30, 21/02*
U.S. Cl. 369—37 8 Claims



1. Compact disk player for storing and playing a number of compact disks, consisting of an external housing, a stationary storage magazine with a number of compartments into which the compact disks can be individually inserted, said storage magazine designed in the form of a torus and including two base plates between which individual magazine segments are clamped by means of pins, a motor plate fastened to one of said base plates and holding an eccentrically located stepper motor and a shaft, a toothed disk supported by said shaft and driven by said stepper motor by means of a toothed belt, a turntable provided with circular holes and fastened to said toothed disk, a scanner unit in which the information recorded in digital form on a compact disk can be scanned using a laser beam pivotally mounted in a center area of said storage magazine and supported by said turntable, a transfer unit by means of which the compact disk located in a specified compartment of said storage magazine can be transported to said scanner unit wherein said transfer unit includes two guide rods supported by said turntable along which a transfer sled can be moved and a transfer arm with two pivoting holding fingers suspended by a parallelogram suspension means from said transfer sled, the free ends of said holding fingers having grooves in which the compact disks to be transferred are held at two points of their outer circumference, and means for moving said scanner unit in relation to said storage magazine.

5,187,696

METHOD FOR SETTING THE LOOP GAIN IN A FOCUSING SERVO LOOP

Hidehiro Ishii; Hiroshi Takeya; Chiharu Miura, and Tatsuya Fukuda, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 28, 1989, Ser. No. 398,875
Claims priority, application Japan, Mar. 18, 1989, 1-67329
Int. Cl.[5] G11B *7/09*
U.S. Cl. 369—44.29 11 Claims

1. In a disc player of the type having an objective lens for focusing a reading light on the surface of a disc and a focusing servo loop for adjusting the height of said lens for proper focusing, said loop having a gain controlled amplifier and a focus error signal generator; a method of setting the loop gain of said servo-loop while said servo loop is open, comprising:

rotating said disc in said disc player;

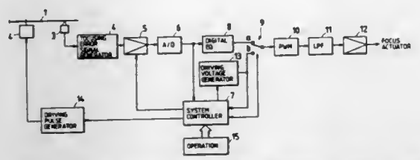
moving said objective lens repeatedly in an up-down pattern

VOL 1147 ISS 3 FE 16 1993 UMI

through the focusing point a predetermined number of times to cause said error signal generator to generate an error signal having an S-shape in the vicinity of said focusing point;

sampling the values of said S-shaped error signal during each up-down movement of the objective lens;

determining, after each upward movement and after each



downward movement, whether a sampled value of said S-shaped error signal exceeds a predetermined threshold, and

setting the loop gain based exclusively upon a maximum sampled value of a plurality of said sampled values obtained from said S-shaped error signal, wherein said plurality of sampled values only includes sample values that exceed said predetermined threshold.

5,187,697

METHOD OF READING RECORDED INFORMATION FROM INFORMATION STORAGE MEDIUM WITH TRACKS

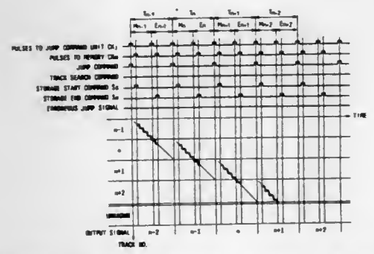
Eiji Muramatsu, and Takanori Maeda, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jun. 12, 1990, Ser. No. 536,867

Claims priority, application Japan, Jun. 12, 1989, 1-148590

Int. Cl.[5] G11B *7/007, 21/12*

U.S. Cl. 369—44.32 **6 Claims**



1. A method of reading information recorded on an information storage medium in spiral tracks on a time-series basis at a standard speed, said method comprising the steps of:

reading each of said tracks at least twice at respective reading periodic intervals while the information storage medium is being rotated at a speed which is at least twice said standard speed, and storing said reading information at periodic intervals of said speed which is at least twice the standard speed into a memory;

detecting any erroneous track jump from a first track from which information is currently being read and returning to said first track;

reading again said first track at a reading periodic interval next to the reading periodic interval in which the erroneous track jump has occurred, and storing the read information into said memory; and

reading said stored information from said memory continuously on a time-series basis at said standard speed to output information signals to a reproduction device.

5,187,698

DATA READING APPARATUS FOR IDENTIFYING POSITION OF DATA TRACKS

Kagawa Hirofumi, Tokyo, Japan, assignor to Kabushiki Kaisha CSK, Tokyo, Japan

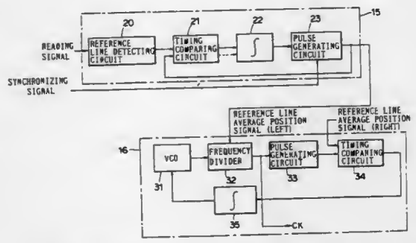
PCT No. PCT/JP89/00954, § 371 Date May 17, 1990, § 102(e) Date May 17, 1990

PCT Filed Sep. 20, 1989, Ser. No. 490,634

Claims priority, application Japan, Sep. 20, 1988, 63-235522

Int. Cl.[5] E11B *7/00*

U.S. Cl. 369—47 **4 Claims**



1. A data reading apparatus for an optical card having a data area, comprising a reading means for reading a data area on the optical card, said data area of the optical card being formed of a plurality of generally parallel data tracks aligned along a predetermined direction, each of which consists of a plurality of data bits, and at least one reference line extending perpendicular to the direction of the data tracks; detecting means for reading a reference line and ouputting an average position signal of the reference line; and a data clock generating means for generating data clock pulses which serve as a reference when the data bits are read on the basis of the average position signal of the reference line, said detecting means including a reference line detecting circuit for detecting the reference line and ouputting a detection signal, said detecting means having a circuit ouput for outputting the average position signal of the reference line, a first timing comparing means for receiving said detection signal of said reference line detecting circuit and said average position signal of said detecting means and comparing the timings of said detection signal and said average position signal and generating a first comparison signal, and first integrating means for integrating said first comparison signal of said first timing comparing means and ouputting an integrated signal to said circuit output, said data clock generating means including an oscillating circuit for ouputting timing clock pulses having a predetermined frequency, a frequency dividing circuit receiving the average position signal output from said detecting means and outputting data clock pulses having a frequency one Nth of the predetermined frequency of the timing clock pulses from said oscillating circuit in synchronism with the average position signal, a pulse generating circuit receiving said data clock pulses and ouputting a reference pulse at a position corresponding to the interval between a pair of adjacent reference lines of the data clock pulses using the average position signal as a reference, a second timing comparing means for comparing the timing between a detection signal corresponding to a reference line and said reference pulse and generating a second comparison signal, and second integrating means for integrating said second comparison signal of said second timing comparing means and feeding back an integrated signal to said oscillating circuit to set said predetermined frequency.

5,187,699

METHOD AND APPARATUS FOR SUCCESSIVELY RECORDING TWO EFM-MODULATED SIGNALS ENABLING DETECTION OF BOUNDARY CONDITION FOR TRANSITIONING BETWEEN SIGNALS

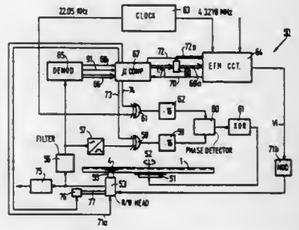
Wilhelmus P. M. Raaymakers; Johannes J. Mons, and Rudolf Roth, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 723,705, Jun. 25, 1991, abandoned, which is a continuation of Ser. No. 265,651, Nov. 1, 1988, abandoned. This application Nov. 19, 1991, Ser. No. 795,293

Claims priority, application Netherlands, Jan. 22, 1988, 8800153

Int. Cl.[5] G11B *20/12*

U.S. Cl. 369—48 **8 Claims**



1. A method of successively recording a first information signal and a second information signal on a record carrier having a recording track which is pre-recorded with track position-code signals alternating with track position-synchronizing signals, said method comprising:

(a) generating from the first of said information signals a first modulated digital signal having successive subcode frames, each subcode frame including subcode synchronizing signals and successive information frames which include time code signals;

(b) scanning said track to record said first modulated signal thereon, while controlling such recording so as to maintain a fixed phase relationship between the track position-synchronizing signals and the subcode synchronizing signals;

(c) upon completion of recording of information in the information frames of the first modulated signal, continuing recording of succeeding information frames thereof for a predetermined time interval after the last track position-synchronizing signal prior to said completion of information recording, said time interval being such that recording of the first modulated signal terminates at a boundary position on said track located after said last prior track position-synchronizing signal but before the next succeeding track position-synchronizing signal;

(d) subsequently generating from the second information signal a second modulated digital signal having the same kind of subcode frame structure as the first modulated digital signal; and

(e) commencing recording of said second modulated signal on said track at said boundary position thereon of the recorded first modulated signal.

5,187,700

APPARATUS FOR LOADING DISC RECORDS OF DIFFERENT SIZE IN A COMPACT DISC PLAYER

Seok Y. Yoon, Kyungki, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 15, 1991, Ser. No. 669,841

Claims priority, application Rep. of Korea, Mar. 15, 1990, 3050/1990

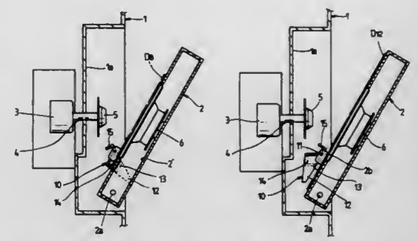
Int. Cl.[5] G11B *17/04, 25/04*

U.S. Cl. 369—75.1 **9 Claims**

1. A disc loading apparatus for use in a compact disc player, the disc loading apparatus loading a disc record into the compact disc player, the disc record being one of a small disc record and a large disc record, the disc loading apparatus comprising:

a door rotatably attached to a main body of the compact disc player, the disc record being received in the door;

a disc housing rotatably secured on the door between a first position and a second position; and



means for rotating the disc housing from the first position to the second position depending on size of the disc record inserted, the disc housing being in the first position when a small disc record is inserted and being in the second position when a large disc record is inserted;

wherein the disc housing is rotated about a housing axis and wherein the door is rotated about a door axis, the housing axis and the door axis being generally parallel.

5,187,701

DISC-RECORD PLAYER HAVING A LOADING DEVICE WITH A MOVABLE SUB-FRAME

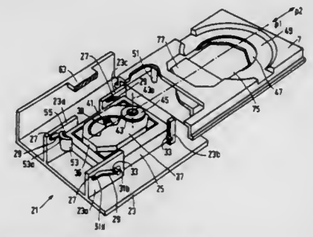
Jozef H. M. R. Verheyen, Hasselt, Belgium, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 8, 1990, Ser. No. 521,217

Claims priority, application Netherlands, May 11, 1989, 8901186

Int. Cl.[5] G11B *33/02*

U.S. Cl. 369—75.2 **17 Claims**



1. A disc-record player comprising

a device comprising a scanning unit, for inscribing and/or reading an information carrier disc,

a loading device, for loading an information carrier into the player, comprising a frame; a sub-frame movable in and relative to the frame between a rest position and an operating position; a turntable carried on the sub-frame and having an axis of rotation; a drawer which is movable relative to said frame in an inward direction and an outward direction and which has at least one supporting surface for an information carrier disc; elements of a first type having inclined guide surfaces; and elements of a second type, the elements of the two types being adapted to cooperate with each other to guide the sub-frame in movement between the rest position and the operating position, the elements of one type being arranged on and fixed directly with respect to the sub-frame; and

a disc-pressure device for engaging a disc which has been

VOL 1147 ISS 3 FE 16 1993 UMI

loaded into said turntable and moved into the operating position,

the elements of the other of said types being arranged on and fixed directly with respect to the frame, and the sub-frame being directly engaged by the drawer to move the sub-frame at least from its rest position to its operating position.

5,187,702

APPARATUS FOR MOVING AN OPTICAL SYSTEM

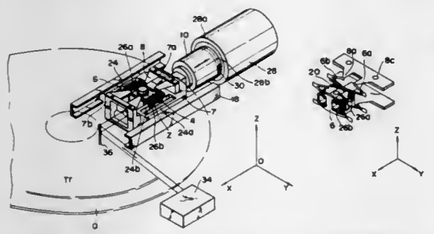
Naomasa Takahashi, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 27, 1990, Ser. No. 634,581

Claims priority, application Japan, Dec. 28, 1989, 1-344313

Int. Cl.[5] G11B *7/085, 7/00;* G02B *7/02*

U.S. Cl. 369—215 **2 Claims**



1. An optical apparatus for reading an optical disk having a recording region, the optical apparatus being provided with an optical head means, movable along the optical disk in a first direction parallel with a radial direction of the optical disk within a predetermined range of movement corresponding to the width of the recording region, for converging a light beam on the optical disk and detecting the light beam reflected from the optical disk to reproduce an information recorded on the optical disk, comprising:

means fixedly disposed for directing the light beam onto the optical disk and detecting the light beam reflected from the optical disk;

means for converging the light beam on the optical disk;

first leaf springs for supporting said converging means and movable along the radial direction of the optical disk within a predetermined distance which is equal to about ½ of the predetermined range of movement of the optical head means, each of the first leaf springs being elongated in a second direction orthogonal to the first direction and having first and second sections and a slit formed between the first and second sections and extending along the second direction, the first section being fixed to said converging means;

first means for moving said converging means supported by said first leaf springs;

means for guiding the light beam reflected from the optical disk to said directing and detecting means;

means for supporting an arrangement of said converging means, said first leaf springs, said guiding means and said first moving means, said supporting means movable along the radial direction of the optical disk within the predetermined range of movement of the optical head means and including second leaf springs, each of said first leaf springs being coupled to a corresponding one of said second leaf springs; and

second means for moving said supporting means.

5,187,703

MAGNETO-OPTICAL MULTILAYER RECORDING DISK AND METHOD OF REPRODUCING THE SAME

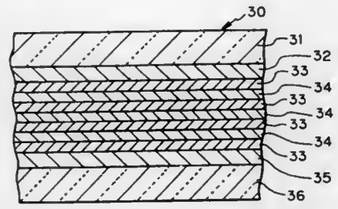
Hiroyuki Katayama, Nara; Junichiro Nakayama, Shiki; Kenji Ohta, Kita-Katsuragi, and Toshio Ishikawa, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 25, 1991, Ser. No. 660,375

Claims priority, application Japan, Feb. 28, 1990, 2-48709; Mar. 1, 1990, 2-50174

Int. Cl.[5] G11B *7/24*

U.S. Cl. 369—275.1 **10 Claims**



1. A magneto-optical recording disk, which is reproduced by two kinds of reproducing lights each having predetermined wavelength different from each other comprising:

a transparent substrate of a disk shape; and

a multiple layered structure formed on said transparent substrate, said multiple layered structure including a plurality of transparent dielectric films and a plurality of magnetic recording films,

said transparent dielectric films and said magnetic recording films being alternately layered, said multiple layered structure being so constructed that a circular dichroism effect of said multiple layered structure is enhanced with respect to one kind of said reproducing lights and a magnetic Kerr effect of said multiple layered structure is enhanced with respect to the other kind of said reproducing lights, each of refractive indexes and thicknesses of said transparent dielectric films and said magnetic recording films being prescribed as a function of said predetermined wavelengths.

5,187,704

MONITORING METHOD FOR STAND-BY CIRCUITS SUITABLE FOR A MULTIPLEXING/DEMULTIPLEXING APPARATUS

Naohiro Shimada, Tokyo; Yasushi Ohno, and Masaaki Saito, both of Miyagi, all of Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 29, 1990, Ser. No. 530,000

Claims priority, application Japan, Mar. 31, 1988, 63-80679; May 30, 1989, 1-138672; Jul. 11, 1989, 1-179302

Int. Cl.[5] H04J *1/16*

U.S. Cl. 370—13 **5 Claims**

2. A multiplexing/demultiplexing system for monitoring a stand-by device so that the stand-by device may function when an active device fails, comprising:

first and second multiplexer/demultiplexer means for multiplexing m (m>1, where m is a natural number) lower bit rate sequence channels into n (n>m, where n is a natural number) higher bit rate sequence channels and demultiplexing said n higher bit rate sequence channels into said m lower bit rate sequence channels;

monitor means comprising monitoring signal generating means for generating a monitoring signal to monitor a plurality of circuits included in said first and second multiplexer/demultiplexer means, and further comprising error detecting means for determining whether or not an error has occurred in said circuits by receiving said monitoring signal; and

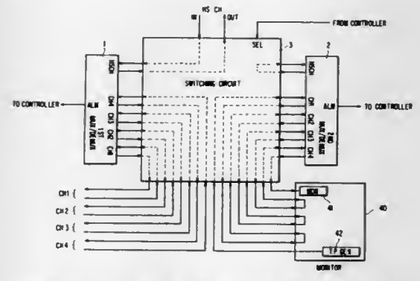
switching circuit means responsive to an external selection signal for selecting one of said first and second multiplexer/demultiplexer means as said active device and the other of said first and second multiplexer/demultiplexer means as said stand-by device and for routing said monitoring signal from said monitor means through said plurality of circuits;

said switching circuit means further comprising:

first switch means for interconnecting said m lower bit rate sequence channels and said n higher bit rate sequence channels to said active device;

second switch means for interconnecting said monitoring signal from said monitor means to a first lower bit rate sequence channel input of the stand-by device;

said second switch means comprising:



means for receiving the monitoring signal at a first lower bit rate sequence channel output and returning said first lower bit rate channel output to a second lower bit rate sequence channel input of the stand-by device, and subsequently receiving the monitoring signal at an x-th (x=2, 3, . . . , m-1) lower bit rate sequence channel input of said stand-by device and returning said monitoring signal to said monitor means through a (x+1) lower bit rate sequence channel output; and

means for feeding said (x+1) lower bit rate sequence channel output to said error detecting circuit means; and

third switch means for short-circuiting a higher bit rate sequence channel input of said stand-by device to a higher bit rate sequence channel output of said stand-by device.

5,187,705

DATA ERROR DETECTING APPARATUS FOR KEY TELEPHONE SYSTEM AND THE DETECTING METHOD THEREFOR

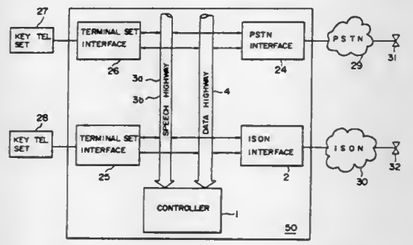
Hiroshi Mano, Hino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 16, 1991, Ser. No. 641,930

Claims priority, application Japan, Jan. 17, 1990, 2-7542

Int. Cl.[5] H04J *1/16*

U.S. Cl. 370—15 **8 Claims**



1. An apparatus for detecting data errors occurring in a key service unit of a key telephone system connectable to an ISDN, the key service unit including up-stream and down-stream speech highways each having a plurality of time slots including time slots allocated to speech channels of the ISDN, a time switch for transferring data from each time slot of the up-stream speech highway to each time slot of the down-stream speech highway, an ISDN interface unit provided between the ISDN and the up-stream and down-stream speech highways, for transmitting data received from the speech channels of the ISDN to the time slots of the up-stream speech highway allocated to the speech channels and transmitting data received from the time slots of the down-stream speech highway allocated to the speech channels to speech channels of the ISDN, which comprises:

(a) detecting means for detecting an unused speech channel of the speech channels of the ISDN;

(b) test starting means for generating a loop-back test start signal;

(c) test data outputting means responsive to the loop-back test start signal, for outputting a predetermined test data to the time slot of the down-stream speech highway allocated to the unused speech channel detected by said detecting means;

(d) loop-back route forming means responsive to the loop-back test start signal, for forming in the ISDN interface unit a loop-back route through which the test data received from the time slot of the down-stream speech highway allocated to the unused speech channel are transmitted to the time slot of the up-stream speech highway allocated to the unused speech channel;

(e) discriminating means for storing test data the same as the test data outputted from said test data outputting means and discriminating whether data error occurs or not by receiving the test data transmitted to the up-stream speech highway through the loop-back route and by comparing the received test data with the stored test data; and

(f) test stopping means for stopping the test data from being outputted to the down speech highway and releasing the formed loop-back route, upon detecting an occurrence of call processing related to the unused speech channel of the ISDN.

5,187,706

DUAL ACCESS RINGS FOR COMMUNICATIONS NETWORKS

Rise J. Frankel, Somerset, and K. S. Liu, Holmdel, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 30, 1990, Ser. No. 606,021

Int. Cl.[5] H04J *3/14;* G06F *11/00*

U.S. Cl. 370—16.1 **16 Claims**

1. Apparatus in a backup central office for restoring transport of communications traffic between a customer location and a remote central office not directly serving said customer location in a network comprised of at least said customer location, a primary central office directly serving said customer location, said backup central office and said remote central office in the event that a failure develops in any portion of said network comprising a primary route over which said communications traffic passes from said customer location through at least said primary central office to said remote central office, and said primary central office including at least means for selecting and supplying as an output one from at least two duplicates of said communications traffic and means for transmitting at least two duplicates of said communications traffic, at least one of said duplicates being transmitted without further selection in said primary central office toward said remote central office, and said remote central office including at least means for selecting one from at least two received duplicates of said communications traffic, the apparatus comprising:

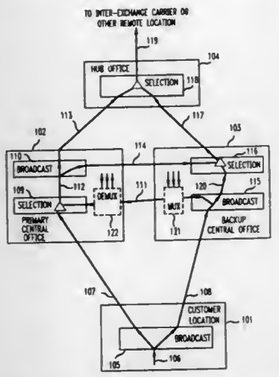
means for receiving a first duplicate of said communications traffic transmitted from said customer location;

means for continuously broadcasting a first copy of said first

VOL 1147 ISS 3 FEB 16 1993 UMI

duplicate of communications traffic received from said customer to at least said means for selection in said primary central office and a second copy of said first duplicate for potential transport to said remote central office;

means for receiving from said primary central office a signal containing at least a copy of said communications traffic;



means for selecting and supplying as an output a copy of said communications traffic from at least said copy of communications traffic received in said signal from said primary central office or said second copy for potential transport; and

means for transmitting said output of said means for selecting and supplying of said apparatus to said remote central office.

5,187,707

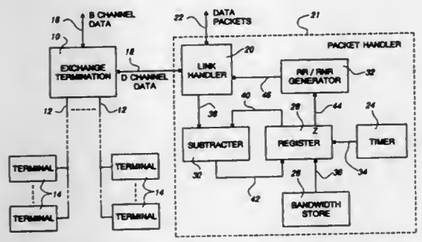
PACKET DATA FLOW CONTROL FOR AN ISDN D-CHANNEL

Matthew C. H. Chu, Kanata; Chi-Vien Ly, Nepean, and Gordon W. Coulson, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Dec. 3, 1990, Ser. No. 620,987

Int. Cl.[5] H04J *3/26*

U.S. Cl. 370—79 **10 Claims**



9. Apparatus comprising a packet handler and a plurality of terminals, each responsive to RR (receive ready) and RNR (receive not ready) messages for respectively enabling and inhibiting the transmission of data packets by the terminal, coupled to the packet handler via a multiplexed data packet transmission link, the packet handler including:

means for timing consecutive time periods;

means for storing for each terminal a number representing a number of data bytes which the respective terminal is permitted to transmit within each time period;

means for accumulating in each time period a count of the number of data bytes transmitted by each terminal within the time period;

means responsive to the accumulated count for the respective terminal reaching the stored number for the respective terminal for transmitting an RNR message via the packet handler to the respective terminal; and

means responsive to the end of each time period for transmitting an RR message via the packet handler to each terminal to which an RNR message has been transmitted in the time period.

5,187,708

COMMUNICATION DEVICE FOR LAYERED PROTOCOLS

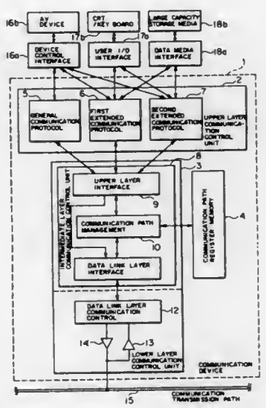
Naofumi Nakatani, Takatsuki; Reiko Ueno, Neyagawa, and Hiromasa Nakatsu, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 3, 1990, Ser. No. 592,531

Claims priority, application Japan, Oct. 6, 1989, 1-262426

Int. Cl.[5] H04J *3/02, 3/24*

U.S. Cl. 370—85.1 **5 Claims**



4. A communication device for layered protocols, comprising:

a communication path register memory for storing one of (a) a set of information pieces including an address of a communication partner device, a name of a communication path and a discriminator of an upper layer communication protocol and (b) a set of information pieces including an address of a communication partner device and a name of a communication path in order to store one or more communication paths;

an upper layer communication control unit including a plurality of upper layer communication protocols; and

a lower layer communication control unit subordinated to said upper layer communication control unit, having a function of forming an inter-upper-layer communication by transmitting data sent from said upper layer communication control unit to a communication transmission path or sending data received from said communication path to said upper layer communication control unit; and having functions of, if a request of setting a communication path for communication in accordance with the upper layer communication protocol is received from said upper layer communication control unit, sending a preamble code having a code indicative of the name of the upper layer communication protocol to be used and a discriminator of the communication path, and of, if the preamble code and the discriminator of the communication path are received, registering in said communication path register memory

discriminators of at least one of the communication partner device, the communication path and the upper layer communication protocol;

wherein a request of setting/canceling of the communication path, or a transmission request as well as designation of the communication path to be used, is performed from said upper layer communication control unit to said lower layer communication control unit, and indication of setting/canceling of the communication path, or indication of the communication path used as well as reception indication, is performed from said lower layer communication control unit to said upper layer communication control unit.

5,187,709

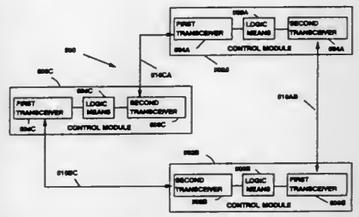
FAULT TOLERANT SERIAL COMMUNICATIONS NETWORK

Gregory L. Williamson; Larry E. Kendrick both of Peoria; Weldon L. Phelps, Dunlap, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation of Ser. No. 520,436, May 8, 1990, abandoned. This application Aug. 6, 1991, Ser. No. 742,218

Int. Cl.[5] H04J *3/02*

U.S. Cl. 370—85.3 **13 Claims**



1. A communications network, comprising:

a plurality of control modules, each having first and second transceivers, said first transceiver of each control module being connected to the second transceiver of another control module by only a single transmission line, forming a composite ring network, each control module being adapted to transmit data messages to the other control modules over said transmission lines;

wherein said control modules include detecting means for sensing the presence of a first data message on said network and producing a message signal in response thereto; and

logic means for producing a second data message at one control module, receiving said message signal and permitting transmission of said second data message simultaneously through both first and second transceivers of said one control module of said network in the absence of said message signal.

5,187,710

METHOD AND APPARATUS FOR THE BILLING OF VALUE-ADDED COMMUNICATIONS CALLS

Nga V. Chau, Middletown; Reuben D. Hauptman, Marlboro, both of N.J.; David D. Kaufman, Atlanta, Ga.; Barbara J. Kittredge, Jackson, N.J.; Pamela J. Lauber, Middletown, N.J., and Patricia Lindblad, Whitehouse Station, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 19, 1990, Ser. No. 629,912

The portion of the term of this patent subsequent to Mar. 26, 2008, has been disclaimed.

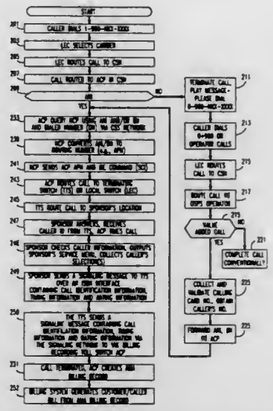
Int. Cl.[5] H04J *3/12;* **H04M** *15/04, 15/08*

U.S. Cl. 370—110.1 **36 Claims**

1. A method of billing a caller for charges incurred during a call made over a communication network to a called location, comprising the steps of

establishing an ISDN call connection between the network and the called location as part of said call,

transmitting, over said connection to the called location, information sent from the network identifying the caller's identification number, and



receiving, over said connection at the network, billing information sent from the called location specifying charges incurred by the caller during said call.

5,187,711

ERROR CORRECTION METHOD FOR MULTICARRIER RADIO TRANSMISSION SYSTEM

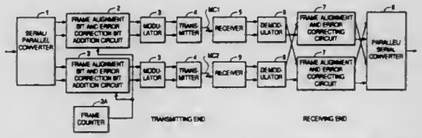
Kiyoaki Hodohara, Otawara, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 409,712, Sep. 20, 1989, abandoned. This application Jun. 3, 1992, Ser. No. 892,499

Claims priority, application Japan, Sep. 20, 1988, 63-236010

Int. Cl.[5] H04L *1/22*

U.S. Cl. 371—7 **10 Claims**



1. An error correction system in a multicarrier radio transmission system, comprising:

first means for providing a plurality of parallel data signals;

second means, operatively connected to said first means, for adding frame alignment bits and error correction bits to the data signals respectively, and outputting framed data signals;

third means, operatively connected to each of said second means, for commonly controlling the position of the frame alignment bits to the data signals;

fourth means, operatively connected to said second means, for modulating a plurality of carriers which have different frequencies from each other, by framed data signals respectively, and outputting modulated signals;

fifth means, operatively connected to said fourth means, for transmitting the modulated signals;

sixth means, operatively connected to said fifth means, for receiving the transmitted signals;

seventh means, operatively connected to said sixth means,

VOL 1147 ISS 3 FE 16 1993 UMI

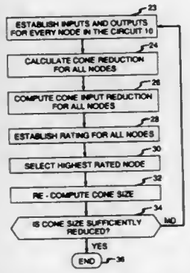
for demodulating the received signals and outputting demodulated data signals; and

eighth means, commonly connected to said seventh means, for establishing frame alignment of each demodulated data signal based on demodulated data signals on at least two of the plurality of carriers and for correcting errors in the demodulated signals using the error correction bits respectively, wherein, when frame alignment of one of the demodulated data signals is not established, error correction of the one of the data demodulated signals is performed based on frame alignment of other demodulated signals.

5,187,712
PSEUDO-EXHAUSTIVE SELF-TEST TECHNIQUE

John A. Malleo-Roach, Lambertville; Paul W. Rutkowski, Morris Plains, and Eleanor Wu, Princeton, all of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Feb. 26, 1990, Ser. No. 484,336
Int. Cl.[5] G01R *31/28*
U.S. Cl. 371—22.1 **5 Claims**



1. A method of configuring a digital integrated circuit, comprised, in part, of a plurality of interconnected combinational elements, to render the circuit capable of being pseudo-exhaustively tested, comprising the steps of:

modeling the circuit such that the combinational elements are arranged in cones, each cone having a plurality of inputs and a single output;

partitioning the cones by designating the output of at least one combinational element therein as a test point in order to establish a plurality of subcones, each having no more than a user-selected number of inputs (w) and a single output represented by each test point, said partitioning being carried out by

(a) successively examining the output of each combinational element in each cone to establish a list of primary inputs which feed the combinational element under examination and which primary outputs of the circuit are fed thereby;

(b) rating the examined combinational element on the basis of: (1) the number of cones (if any) which will have the number of their inputs reduced to no more than w if the examined node is designated as a test point and a sub-cone is established having such a test point as its output, and (2) the number of inputs reduced in those cones whose total number of inputs is not reduced to less than or equal to w;

(c) selecting the highest rated combinational element as a test point and thus creating a sub-cone which has the test point as its output;

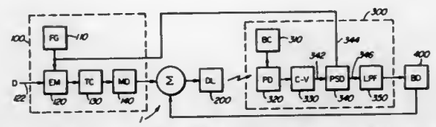
(d) repeating the steps of (a), (b), and (c) until there remains no cone having more than w inputs; and

establishing the assignment of inputs of the sub-cones for each of a set of test vectors which are to be applied thereto during pseudo-exhaustive testing such that when the test vectors of the set are applied to the inputs of each sub-cone, the test vectors are linearly independent, allowing the sub-cones to be exhaustively tested in parallel.

5,187,713
NONLINEAR DEVICE CONTROL METHODS AND APPARATUS

Peter T. H. Kwa, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jan. 30, 1992, Ser. No. 827,307
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—26 **21 Claims**



1. A method for controlling a D.C. bias point of a semiconductor diode laser, the method comprising:

applying asymmetric envelope modulation at a modulation frequency to an input signal to derive an asymmetric envelope-modulated signal;

adding a D.C. bias signal to the asymmetric envelope-modulated signal to derive a laser drive signal; and

driving a semiconductor diode laser with the laser drive signal, while;

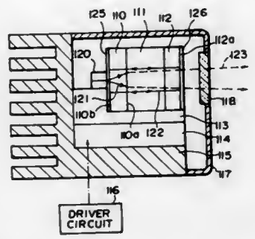
monitoring at the modulation frequency a characteristic of the laser which is nonlinear with respect to the laser drive signal; and

controlling the D.C. bias signal in response to the monitored characteristic so as to reduce the monitored characteristic at the modulation frequency.

5,187,714
LASER-DIODE-PUMPED SOLID-STATE LASER

Yoji Okazaki, and Hiroaki Hyuga, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 18, 1991, Ser. No. 779,277
Claims priority, application Japan, Oct. 19, 1990, 2-109818[U]; Dec. 6, 1990, 2-400624
Int. Cl.[5] H01S *3/04, 3/10*; H01L *23/02*
U.S. Cl. 372—36 **10 Claims**



1. A laser-diode-pumped solid-state laser comprising:

(i) a semiconductor laser for emitting a pumping laser beam;

(ii) a solid-state laser rod doped with a rare-earth element, for producing a laser beam in response to being pumped by said pumping laser beam;

(iii) a resonator for oscillating the laser beam produced by said solid-state laser rod;

(iv) wavelength converting means for converting the wavelength of the oscillated laser beam into another wavelength;

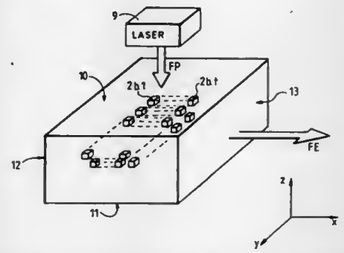
(v) common temperature regulating means for regulating the temperature of both said semiconductor laser and said resonator;

further including a heat sink and an etalon, said solid-state laser rod, said wavelength converting means, and said etalon being intimately held together and jointly serving as said resonator, said semiconductor laser and said resonator being mounted on said heat sink, said common temperature regulating means comprising a Peltier device and a driver circuit for controlling said Peltier device, said heat sink being mounted on said Peltier device.

5,187,715
QUANTUM WELL OPTICAL DEVICE

Claude Weisbuch, Paris; Philippe Bois, Cesson, and Borge Vinter, Paris, all of France, assignors to Thomson-CSF, Puteaux, France

Filed Nov. 30, 1990, Ser. No. 620,041
Claims priority, application France, Dec. 5, 1989, 89 16035
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 **24 Claims**



1. Quantum well optical device structure, comprising:

a semiconducting first material having a first band gap and a conduction band bottom at a first potential energy, so that said first material is transparent to a light wave whose energy is less than said first band gap;

at least one quantum well comprising a second material and limited in at least two dimensions which define at least one of a quantum wire and a quantum box, said at least one quantum well disposed in said first material said at least one quantum well has a potential energy at the bottom of the conduction band which is less than that of the first semiconducting material and also possesses at least one ground state allowed first energy level and a second allowed level at an energy above the ground state and below the bottom of the conduction band of said first semiconducting material; and

means for providing an electron population to the first allowed energy level.

5,187,716
EXCIMER LASER DEVICE

Kenyu Haruta; Haruhiko Nagai; Hajime Nakatani; Yoshihiko Yamamoto; Taketoshi Takemura; Takashi Eura; Shungo Tsuboi; Yoshifumi Matsushita, and Tadao Minagawa, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 3, 1991, Ser. No. 725,098
Claims priority, application Japan, Jul. 6, 1990, 2-180225; Jul. 6, 1990, 2-180226; Sep. 26, 1990, 2-254116; Sep. 26, 1990, 2-254117; Sep. 26, 1990, 2-254118; Sep. 26, 1990, 2-254119; Sep. 26, 1990, 2-254120; Sep. 26, 1990, 2-254121; Sep. 26, 1990, 2-254122; Sep. 26, 1990, 2-254123; Sep. 26, 1990, 2-254124; Sep. 26, 1990, 2-254125; Sep. 27, 1990, 2-255131; Sep. 27, 1990, 2-255132; Sep. 28, 1990, 2-256976; Apr. 22, 1991, 3-090328
Int. Cl.[5] H01S *3/22*
U.S. Cl. 372—57 **23 Claims**

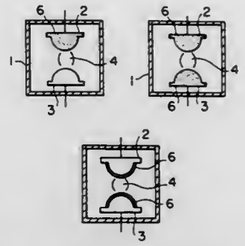
1. An excimer laser device, comprising:

a housing;

a laser medium filled in said housing and comprising a mixture of a rare gas and a halogen gas; and

a pair of main electrodes accommodated within said housing for forming an excitation discharge for said laser medium;

wherein opposing surface portions of the main electrodes are covered with an etching resistive layer more resistive to chemical etching than nickel to reduce both electrode erosion and deterioration of the laser medium, and wherein said etching resistive layer is made of a platinum

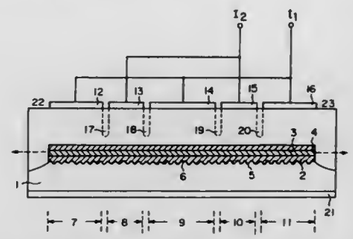


(Pt) based alloy consisting of: platinum (Pt) as a primary component and from 5% to 80% by weight of one or more elements selected from the group consisting of rhodium (Rh), ruthenium (Ru), iridium (Ir), and osmium (Os).

5,187,717
TUNABLE SEMICONDUCTOR LASER

Masayoshi Horita, Ichigayata; Katsuyuki Utaka, Tokyo, and Yuichi Matsushima, Tokorozawa, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

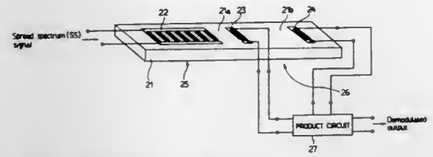
Filed Oct. 2, 1991, Ser. No. 770,170
Claims priority, application Japan, Oct. 11, 1990, 2-270522
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—96 **2 Claims**



1. A tunable distributed feedback semiconductor laser in which a diffraction grating having periodic corrugations along the direction of travel of light is formed on at least one of an active layer and layers adjacent thereto, characterized by a structure wherein an electrode on one side is separated into four or more electrodes in the direction of a cavity of said laser, nonadjoining ones of them are electrically connected to form two electrode groups, the total length of first regions corresponding to a first one of said electrode groups is larger than the total length of second regions corresponding to a second electrode group, the refractive index of each of said first regions is changed by current injection change to said first electrode group to thereby vary the lasing wavelength, and the gain of each of said second regions is controlled by current injection to said second electrode group, whereby output light of a constant output power and a variable single wavelength is produced.

VOL 1147 ISS 3 FEB 16 1993 UMI

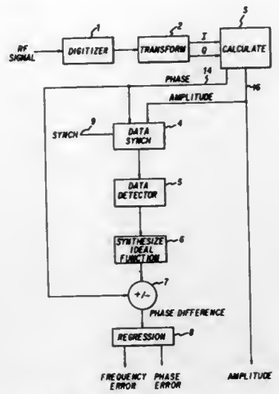
5,187,718
DEMODULATOR FOR SPREAD SPECTRUM COMMUNICATION
Kazuyuki Takehara, Okazaki, Japan, assignor to Maruyasu Industries Co., Ltd., Nagoya, Japan
Filed Jun. 4, 1991, Ser. No. 709,895
Int. Cl.[5] H04L *27/30*; H01L *41/04, 41/08*
U.S. Cl. 375—1 **1 Claim**



1. A demodulator for a spread spectrum communication system, comprising:
a piezoelectric substrate having two ends and a surface along which a surface acoustic wave is propagated when a voltage is applied to one end of the piezoelectric substrate;
an input electrode formed in an interdigital pattern corresponding to a predetermined number of bits and disposed at said one end of the piezoelectric substrate on a surface thereof, so that a matched filter is formed;
an intermediate electrode for deriving the surface acoustic wave picked up by the matched filter as an electrical signal, the intermediate electrode being formed on said surface of the piezoelectric substrate and spaced from the input electrode in the direction toward the other end of the piezoelectric substrate; and
an output electrode for obtaining an electrical signal delayed for a predetermined period of time relative to the electrical signal generated by the intermediate electrode, the output electrode being formed on said surface of the piezoelectric substrate and spaced from the intermediate electrode in the direction of the other end of the piezoelectric substrate by a distance corresponding to a time length of a waveform of a signal matched by the matched filter or one over an integer of the time length.

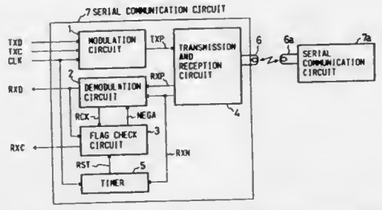
5,187,719
METHOD AND APPARATUS FOR MEASURING MODULATION ACCURACY
Raymond A. Birgenheier, and Richard P. Ryan, both of Spokane, Wasb., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Continuation-in-part of Ser. No. 297,357, Jan. 13, 1989, Pat. No. 5,001,724. This application Jul. 30, 1990, Ser. No. 559,313
Int. Cl.[5] H04B *3/46, 17/00*
U.S. Cl. 375—10 **16 Claims**

1. A method for measuring modulation accuracy of a transmitted signal that is modulated in accordance with a data signal, the method comprising the steps of:
processing the transmitted signal to obtain a digitized representation thereof;
further processing the digitized representation of the transmitted signal in a digital signal processor to detect parameters of the transmitted signal including data clock phase and data sequence;
using the detected data sequence in determining characteristics of a reference signal corresponding to the transmitted signal;
determining first signal components as functions of time for the reference signal and for the transmitted signal; and



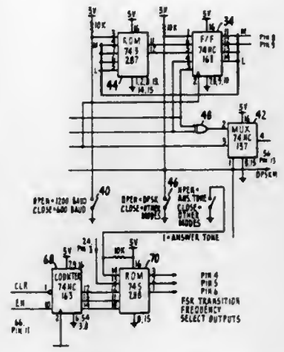
using said first signal components to compare the reference and transmitted signals so as to determine errors of the transmitted signal as a function of time.

5,187,720
SYNCHRONOUS SERIAL COMMUNICATION CIRCUIT
Koichi Shibata; Toshitaka Fukushima; Hiroyuki Watanabe; Shinichiro Miyahara, and Osamu Imagawa, all of Tokyo, Japan, assignors to Seiko Instruments Inc., Japan
Filed Dec. 17, 1990, Ser. No. 628,585
Claims priority, application Japan, Dec. 20, 1989, 1-331811
Int. Cl.[5] H04L *27/00*
U.S. Cl. 375—35 **3 Claims**



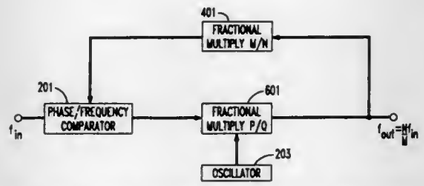
1. An apparatus for synchronous data communication by electromagnetic induction means using a pair of coils and a synchronous serial communication circuit, the synchronous serial communication circuit comprising:
a modulation circuit receptive of data to be transmitted via one coil, a transmission clock signal and a synchronous clock signal for generating a biphase signal having flag patterns added before and after the data to enable recognition of the winding direction of the one coil;
a transmission and reception circuit for transmitting the data by driving the one coil with the biphase signal, and for receiving transmitted data with the other coil;
a demodulation circuit for demodulating the transmitted data received by the transmission and reception circuit; and
a flag recognition circuit receptive of the demodulated flag patterns received with the transmitted data for determining the winding direction of the other coil.

5,187,721
FREQUENCY SHIFT KEYING MODULATOR
Hee Wong, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Division of Ser. No. 21,918, Mar. 4, 1987, Pat. No. 5,027,372. This application Jul. 8, 1991, Ser. No. 671,950
Int. Cl.[5] H03C *3/00*
U.S. Cl. 375—62 **2 Claims**



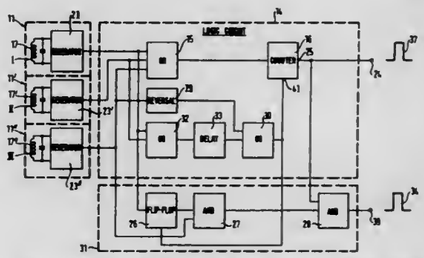
1. A frequency shift keying (FSK) modulator that receives a serial digital data input signal and generates a frequency modulated output signal representative of the input signal, the FSK modulator comprising:
(a) a waveform generator that generates a carrier waveform;
(b) a pulse generator that receives the digital data input signal and generates strobing pulses in response to transitions in the digital data input signal;
(c) an envelope generator that receives the strobing pulses and generates frequency look-up codes in response thereto;
(d) a frequency generator that includes a rate multiplier that responds to the frequency look-up codes by generating corresponding carrier frequency signals;
(e) a frequency converter that responds to the carrier frequency signal by generating a corresponding digital bit stream; and
(f) an output modulator stage that utilizes the digital bit stream to modulate the carrier waveform to provide the frequency modulated output signal.

5,187,722
FREQUENCY SYNTHESIS USING FRACTIONAL FREQUENCY MULTIPLICATION
Norman W. Petty, Boulder, Colo., assignor to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Aug. 13, 1990, Ser. No. 566,572
Int. Cl.[5] H04L *7/033*; H03D *3/24*
U.S. Cl. 375—118 **9 Claims**



9. A method of reducing phase jitter in a circuit, said method comprising the steps of
coupling an input signal to a phase-locked loop and generating a desired signal therefrom, and
multiplying a signal generated by a signal source in said phase-locked loop, said multiplying step multiplying said signal generated by said signal source by a fraction whose numerator and denominator are each greater than one, said fraction being varied by a circuitry element in said phase-locked loop.

5,187,723
APPARATUS FOR DETECTING METAL PARTS WHICH ARE MOVABLE RELATIVE TO A METAL SENSITIVE SENSOR ARRANGEMENT
Harro Mueller-Stuercken, Am Weisgraben 4, Burghaun, Fed. Rep. of Germany 6419
Filed May 31, 1991, Ser. No. 707,887
Claims priority, application Fed. Rep. of Germany, Jun. 1, 1990, 4017780
Int. Cl.[5] G06M *3/02*
U.S. Cl. 377—6 **5 Claims**



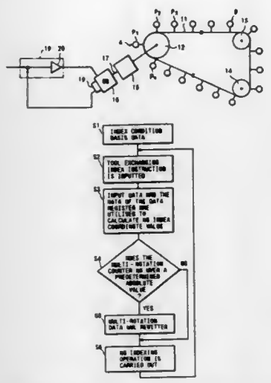
1. An apparatus for detecting and counting metal objects which comprises
a sensor, comprising a plurality of
sub-sensors, each connected to sense the motion of a metal object in proximity thereto, said sub-sensors being disposed so that the metal object to be detected passes said sub-sensors seriatim;
an electronic sensing circuit, comprising
a plurality of pulse generators, one for each sub-sensor, each said generator coupled to one said sub-sensors to generate a pulse in response to a metal object passing near said sub-sensor, each said generator containing
an oscillator coupled to said sub-sensor, connected to change frequency in response to a metal object passing near said sub-sensor;
a logic circuit, comprising
an exclusive OR-gate, having a plurality of inputs and an output, each of said inputs being coupled to one of said pulse generators; and
a counter, coupled to the output of said exclusive OR-gate, which transmits a detection signal after counting a predetermined number of pulses.

5,187,724
ABSOLUTE POSITION DETECTING DEVICE
Toshiharu Hibino, and Chihiro Higuchi, both of Gifu, Japan, assignors tu Teijin Seiki Co., Ltd., Osaka, Japan
Filed Apr. 2, 1991, Ser. No. 679,479
Claims priority, application Japan, Apr. 5, 1990, 2-90543
Int. Cl.[5] G01D *5/34*
U.S. Cl. 377—17 **10 Claims**

1. An absolute position detecting device for detecting an absolute position of a predetermined point on an object, said absolute position detecting device comprising: driving means for controllably driving said object in a circular path; a counter means for producing a count value indicative of the number of revolutions of said driving means; and a rewriting means for

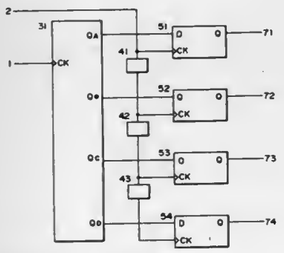
VOL 1147 ISS 3 FE 16 1993 UMI

performing a data rewriting operation wherein said count value is rewritten with a new value when said count value



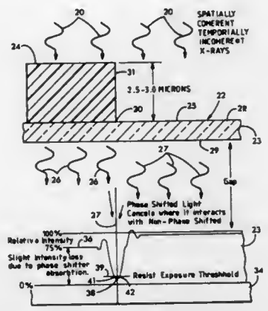
exceeds a predetermined value, said new value being less than said predetermined value.

5,187,725
DATA DETECTOR AT OUTPUT OF COUNTER
Tadashi Eguchi, Yokohama, and Satoshi Ishii, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 12, 1991, Ser. No. 714,031
Claims priority, application Japan, Jun. 28, 1990, 2-171588
Int. Cl.[5] H03K *21/40, 21/12*
U.S. Cl. 377—56 **9 Claims**



1. A data detector comprising:
a counter having a plural-bit parallel output, wherein a low order bit and a high order bit output from said counter have a relative shift in respective output times caused by a carry signal from the low order bit to the high order bit;
storage means connected to said counter having a plural-bit storage capacity for storing said bits outputted by said counter;
instruction means connected to said storage means for instructing said storage means to store said bits therein at a storage timing; and
compensation means connected to said storage means for compensating the instruction of said instruction means for said relative shift of output times of said bits.

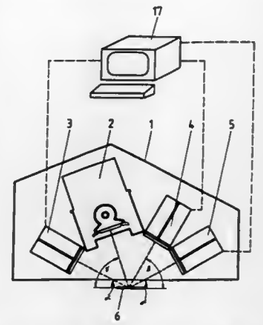
5,187,726
HIGH RESOLUTION X-RAY LITHOGRAPHY USING PHASE SHIFT MASKS
Victor E. White, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.
Filed Sep. 30, 1991, Ser. No. 767,838
Int. Cl.[5] G21K *5/00*
U.S. Cl. 378—35 **37 Claims**



1. An X-ray lithography mask comprising:
(a) a carrier of thin material which does not substantially attenuate X-rays passed therethrough and having top and bottom surfaces;
(b) at least one phase shifting feature formed on a surface of the carrier, the feature defined by a region of X-ray phase shifting material of a height selected such that a selected band of X-rays passed therethrough is phase shifted by substantially one-half wavelength of the X-rays, the feature having at least one sharply defined sidewall which is substantially upright with respect to the surface of the carrier, wherein the material forming the feature on the mask is PMMA.

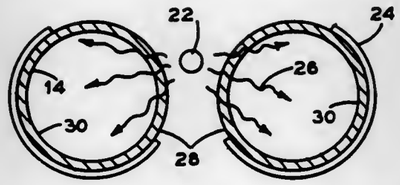
5,187,727
METHOD AND APPARATUS FOR MEASURING THE IRON CONTENT IN ZINC LAYER AND THICKNESS OF ZINC LAYER
Friedrich Vogler, Aschaffenburger Str. 37; Hanns-Werner Ortner, Agnes-Miegel-Strasse 3, and Matthias Mayerhofer, Gerhard-Hauptmann-Str. 11, all of D-8520 Erlangen, Fed. Rep. of Germany
Filed Jul. 8, 1991, Ser. No. 726,585
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1990, 4021617
Int. Cl.[5] G01B *15/02*
U.S. Cl. 378—50 **29 Claims**

1. Apparatus for measuring at least one of the iron content and thickness of a layer containing zinc, the layer disposed on a base containing iron, the iron base with the zinc layer thereon being disposed in a plane, the apparatus comprising a source of X-radiation arranged at an angle of between approximately 60° and 120° to the plane of the iron base with the zinc layer thereon and for irradiating the iron base with the zinc layer thereon with said X-radiation, at least two detectors each having selective sensitivity for detecting radiation emitted by said iron base with the zinc layer thereon in response to said X-radiation, the first detector being arranged at an angle of at most 30° to said plane and the second detector being arranged



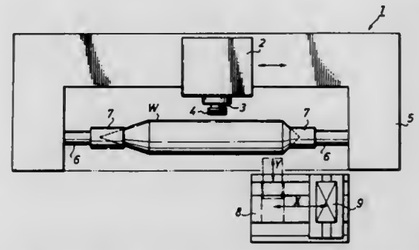
at an angle of between approximately 60° and 120° to said plane.

5,187,728
RADIOGRAPHIC INSPECTION OF TUBE WELDS IN PANEL WALLS
Henry P. Vaughn, New Harmony, Ind., assignor to The Babcock & Wilcox Company, New Orleans, La.
Continuation-in-part of Ser. No. 374,728, Jul. 3, 1989, Pat. No. 4,924,481. This application Apr. 27, 1990, Ser. No. 515,804
The portion of the term of this patent subsequent to May 8, 2007, has been disclaimed.
Int. Cl.[5] G01B *15/06*
U.S. Cl. 378—59 **20 Claims**



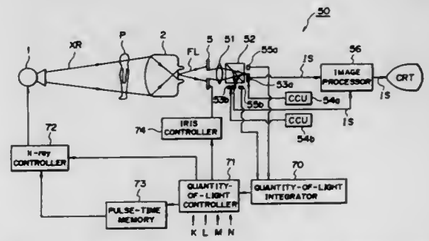
1. A radiographic method of inspecting tube welds in tubular membrane panel walls comprising the steps of:
(a) installing a radiation source intermediate an adjacent pair of tube welds in a tubular membrane panel wall, said radiation source either being centrally positioned directly between said pair of tube welds or said radiation source being offset from said centrally positioned location;
(b) securing a radiation receiver around a perimeter portion of each said tube weld thereby closely conforming to the respective perimeter portion of said tube weld and also covering at least one critical area of said tube weld, a critical area of a tube weld being that region where a tube and a membrane bar join; and,
(c) simultaneously exposing said radiation receiver to said radiation source thereby creating an image of said perimeter portion of said tube welds.

5,187,729
METHOD AND APPARATUS FOR DETECTING A CRYSTALLOGRAPHIC AXIS OF A SINGLE CRYSTAL INGOT FOR "OF" DETERMINATION
Hiroyaki Ibe, Fukui; Seiichi Terashima, and Tsumoru Masui, both of Gunma, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan
Filed Feb. 19, 1992, Ser. No. 838,046
Claims priority, application Japan, Feb. 19, 1991, 3-45458
Int. Cl.[5] G01N *23/207*
U.S. Cl. 378—73 **2 Claims**



1. A method for detecting a crystallographic axis of a single crystal ingot based on X-ray diffractometry characterized by comprising the steps of: turning the single crystal ingot about its center line at a first speed; optically detecting a crystal habit line; stopping the single crystal ingot from turning when a crystal habit line is detected; determining the rotational direction which will bring a crystallographic axis into the measurement point of the X-ray system sooner; turning the single crystal ingot in the thus determined direction at a second slower speed; and detecting the crystallographic axis by means of the X-ray system.

5,187,730
X-RAY DIAGNOSTIC SYSTEM AND METHOD OF PICKING UP X-RAY PICTURE
Shigemi Fujihara, Tochigi, Japan, assignor to Kabushiki Kaisha Toshiba, Kanagawa, Japan
Filed Jun. 24, 1991, Ser. No. 718,406
Claims priority, application Japan, Jun. 25, 1990, 2-164306
Int. Cl.[5] H05G *1/42*
U.S. Cl. 378—97 **23 Claims**



1. An X-ray diagnostic system for diagnosing a patient comprising:
an X-ray generator generating a beam of X rays comprising continuous X-ray pulses toward the patient;
an image intensifier converting the X rays which have passed through the patient into fluorescent light;
an optical system having a lens means for converging the fluorescent light and a beam splitter means for splitting the fluorescent light into a plurality of optical paths;
converting means for converting the converged, split fluo-

VOL 1147 ISS 3 FEB 16 1993 UMI

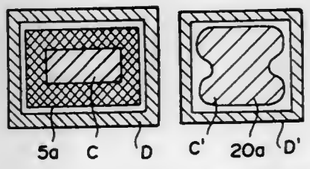
rescent light into image signals, the quantity of the fluorescent light required by the converting means being a predetermined value;
photodetecting means for detecting the quantity of the converged, split fluorescent light;
quantity-of-light judging means for judging whether the quantity of the fluorescent light detected by the photodetecting means reaches the predetermined value;
X-ray controlling means for stopping the X-ray generator from generating X rays when the quantity-of-light judging means judges that the quantity of the fluorescent light reaches the predetermined value; and
image producing means having a display unit for displaying an X-ray image in response to the image signals.

5,187,731

METHOD FOR QUANTITATIVELY ANALYZING BONE CALCIUM

Kazuo Shimura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 27, 1992, Ser. No. 858,634
Claims priority, applicatioo Japan, Mar. 28, 1991, 3-064289
Int. Cl.[5] G01N *23/04*
U.S. Cl. 378—207 **4 Claims**



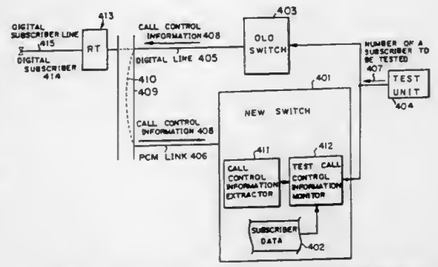
1. A method for quantitatively analyzing bone calcium, which comprises the steps of:
i) each of a plurality of recording media to one of several kinds of radiation, which have different energy distributions and have passed through an object and a bone calcium reference material, which is composed of a plurality of sections simulating amounts of bone calcium varying step-wise, the object being constituted of bones and soft tissues, whereby a plurality of radiation images are recorded on the recording media,
ii) forming a bone image, in which only the patterns of the bones of the object have been formed or emphasized, from the plurality of the radiation images,
iii) detecting background signal components, which represent a background region other than said patterns of the bones and a pattern of said bone calcium reference material in said bone image, from an image signal made up of a series of image signal components representing said bone image,
iv) calculating the value of a difference between a mean value of the values of image signal components, which represent part of the pattern of each said section of said bone calcium reference material in said bone image, and a mean value of the values of background signal components, which represent areas in the vicinity of said pattern of each said section of said bone calcium reference material in said bone image,
v) calculating the value of a difference between a mean value of the values of image signal components, which represent a pattern of a specific part of the bones in said bone image, and a mean value of the values of background signal components, which represent areas in the vicinity of said pattern of said specific part of the bones in said bone image, and
vi) determining the amount of bone calcium in said specific part of the bones by comparing the value of the difference, which has been calculated for said pattern of said specific part of the bones in said bone image, with the values of the differences, which have been calculated for the patterns of the plurality of said sections of said bone calcium reference material in said bone image.

5,187,732

BOARD-TO-BOARD TEST UNIT FOR A DIGITAL SUBSCRIBER LINE

Masayoshi Suzuki, Kawasaki, Japan, assignor to Fujitsu Limited, Tokyo, Japan

Filed Sep. 9, 1991, Ser. No. 756,412
Claims priority, application Japan, Sep. 10, 1990, 2-240465
Int. Cl.[5] H04M *3/30*
U.S. Cl. 379—5 **13 Claims**



1. A board-to-board test unit for a digital subscriber line for checking, at the replacement of an old switch with a new switch, the consistency of subscriber data stored in said new switch and of the allocation of said subscriber data to a PCM link accommodated in said new switch, said test unit comprising:
a bridging means for bridging the PCM link accommodated in said new switch and a PCM link accommodated in said old switch in the normal operating condition;
a test unit for sending the directory number of a subscriber to be tested to said old switch and said new switch;
a test call control information monitoring means for monitoring, according to said directory number of a subscriber to be tested, whether or not call control information sent by said old switch which receives said directory number of a subscriber to be tested is normally received by said new switch; and
a call control information extracting means provided in said new switch as a standard component for extracting call control information from said PCM link accommodated in said new switch.

5,187,733

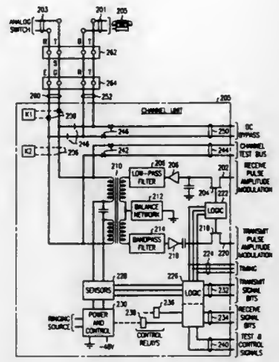
VERIFICATION OF SUBSCRIBER LINES PRIOR TO CUTOVER TO A NEW SWITCHING SYSTEM

Robert R. Beffel; Ellen R. Blood, both of Naperville; Paul R. Bufkin, Wheaton; Bernard M. Dennison, Randolph; Jerry G. Miller, Wheaton, and James L. Turner, Lemont, all of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 20, 1991, Ser. No. 811,189
Int. Cl.[5] H04M *3/22*
U.S. Cl. 379—10 **48 Claims**

43. In a channel unit (CU) that provides service to an associated subscriber line by interfacing the line to a remote terminal (RT), the CU including means for supplying battery to the line, the improvement comprising:
means for controllably inhibiting said battery supplying means from supplying battery so that the associated subscriber line does not receive battery from the CU upon connection thereto, said inhibiting means not impairing service supplied to said associated subscriber line from an existing switch system;

means for receiving a predetermined command signal via said RT;
means responsive to said command signal for generating a control signal;



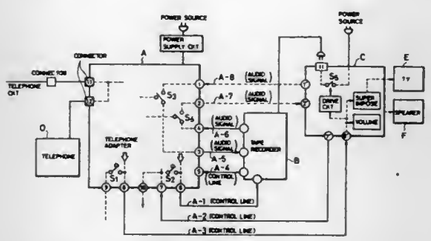
means responsive to said control signal for causing said inhibiting means to permit battery to be supplied to the associated subscriber line thereby permitting a plurality of subscriber lines to be connected to corresponding CUs without testing at the time of the initial connections.

5,187,734

TELEPHONE MESSAGE RECORDING DEVICE

Tokihiro Takahashi; Takayuki Sato; Masuo Ota, and Tatsuro Nagao, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 900,858, Aug. 27, 1986, abandoned. This application May 2, 1989, Ser. No. 815,444
Claims priority, application Japan, Aug. 27, 1985, 60-187946; Oct. 25, 1985, 60-238970; Oct. 29, 1985, 60-242521
Int. Cl.[5] H04N *5/00*
U.S. Cl. 379—79 **2 Claims**



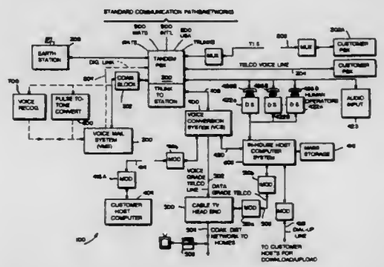
1. A telephone message system, comprising:
bell signal receiving means for receiving a bell signal from a telephone circuit;
control signal output means for producing a control signal in response to said bell signal receiving means;
a television receiver;
video signal supply means for supplying a video signal to said television receiver;
memory means for storing data notifying an incoming call; and
means for superimposing the data stored in said memory means on said video signal in response to said control signal;
a magnetic playback device comprising at least one mechanism capable of playback and at least one other mechanism capable of recording;
an amplifier to which said television receiver and a speaker system are connected; and
an adaptor connected to said telephone circuit, to said magnetic playback device, and to said amplifier through control signal lines and audio signal lines, wherein said adaptor comprises control means for replying a message tape on said magnetic playback device responsive to a bell signal detection output from said bell signal detecting circuit and for recording a caller's remarks on said magnetic playback device, and control means for displaying predetermined characters responsive to said bell signal detection output.

5,187,735

INTEGRATED VOICE-MAIL BASED VOICE AND INFORMATION PROCESSING SYSTEM

José E. Herrero Garcia, and Carlos R. Jiménez Rodriquez, both of Guaynabo, P.R., assignors to Tele Guia Talking Yellow Pages, Inc., Guaynabo, P.R.

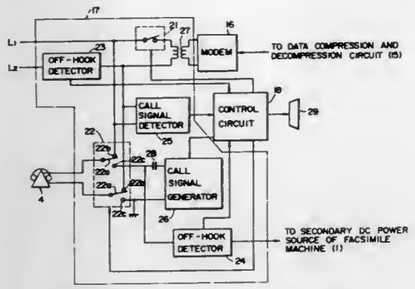
Filed May 1, 1990, Ser. No. 517,665
Int. Cl.[5] H04M *1/64*
U.S. Cl. 379—88 **18 Claims**



1. A system for economically providing telephone services to multiple users and for cooperating with a cable television network, said system including:
a telephone switch coupled to a telephone network, said telephone switch receiving and routing incoming telephone calls;
voice mail means, coupled to said telephone switch, said voice mail means for automatically answering said incoming telephone calls, for selectively providing audio prompts to incoming calls connected thereto, and for selectively storing signals representing voice information received from said incoming telephone calls;
at least one digital data storing means for storing digital data;
voice conversion means, coupled to said telephone switch and to said digital storing means, for converting between stored digital data and audible telephone line voice signals;
said telephone switch being preprogrammed to route incoming calls to said voice mail means and to route said incoming calls to said voice conversion means; and
cable television network coupling means for coupling said system to said cable television network so as to permit signals to be passed between said system and said cable television network.

VOL 1147 ISS 3 FE 16 1993 UMI

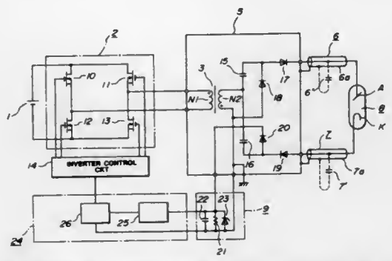
5,187,736
TELEPHONE DATA COMMUNICATION SWITCHING SYSTEM
Kazuhiro Moriizumi, Atsugi, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Continuation of Ser. No. 267,291, Nov. 4, 1988, abandoned. This application Oct. 17, 1991, Ser. No. 776,884
Claims priority, application Japan, Nov. 4, 1987, 62-280238; Feb. 8, 1988, 63-28383
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—100 **2 Claims**



1. A communication control system comprising:
a telephone unit including a main body and a handset;
a host apparatus having a communication function for carrying out communication of data with another host apparatus having a communication function at a remote place separate from said telephone unit; and
net control means in said host apparatus for controlling a connection of said telephone unit and said host apparatus to a common external transmission line, whereby said control means selectively connects either one of said telephone unit and said host apparatus to said common external transmission line, said net control means automatically supplying a call signal to said telephone unit upon completion of a current communication operation, which is being carried out by said host apparatus, if an operator sets said telephone unit in an off-hook state in order to use said telephone to place a call to a remote destination, but could not, complete said call, because said current communication operation was in progress and further when the handset is in an off-hook arrangement to place a call to a first destination while said host apparatus is in a current communication operation with a second destination, said host unit detects the off-hook state of said telephone unit and upon completion of the current communication operation of the host system with said control means, said host unit sends a calling signal to said telephone unit upon completion of said current communication operation.

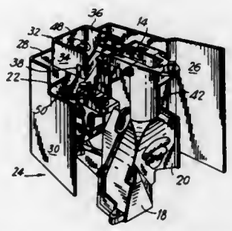
5,187,737
POWER SUPPLY DEVICE FOR X-RAY TUBE
Kiyomi Watanabe, Tokyo, Japan, assignor to Origin Electric Company, Limited, Tokyo, Japan
Filed Jul. 30, 1991, Ser. No. 737,746
Claims priority, application Japan, Aug. 27, 1990, 2-224785; Jun. 4, 1991, 3-159593
Int. Cl.[5] H05G *1/20*
U.S. Cl. 378—105 **12 Claims**

1. An X-ray device having an X-ray tube, positive and negative output terminals, and a neutral point between positive and negative output voltages which is connected with a ground, the X-ray device comprising:
a high-tension inverter;
a high-tension transformer having primary and secondary windings, said primary winding being connected with said high-tension inverter, said secondary winding having one end connected with the ground and having another end;
first and second capacitors connected in series at first ends thereof, said first ends of said first and second capacitors being connected with said another end of said secondary winding of said high-tension transformer;
third and fourth capacitors connected in series at first ends thereof, said first ends of said third and fourth capacitors being connected with the ground, said third capacitor having a second end thereof connected with the positive output terminal, said fourth capacitor having a second end thereof connected with the negative output terminal, said third capacitor including an earth capacitance of a first high-tension cable connectedly arranged between said positive output terminal and an anode of the X-ray tube, said fourth capacitor including an earth capacitance of a second high-tension cable connectedly arranged between



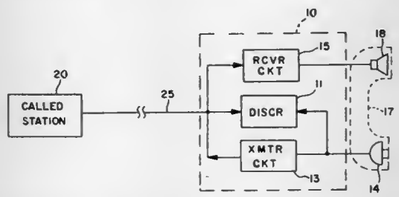
said negative output terminal and a cathode of the X-ray tube;
first and second diodes connected in series, said first diode having an anode connected with said second diode at a cathode thereof, said anode of said first diode and said cathode of said second diode being connected with a second end of said first capacitor, said first diode having a cathode connected with the positive output terminal, said second diode having an anode connected with the ground; and
third and fourth diodes connected in series, said third diode having a cathode connected with said fourth diode at an anode thereof, said cathode of said third diode and said anode of said fourth diode being connected with a second end of said second capacitor, said third diode having an anode connected with the negative output terminal, said fourth diode having a cathode connected with the ground.

5,187,738
TELEPHONE RELAY COVER
Fredrick Zausner, 50 Soundview Dr., Port Washington, N.Y. 11050
Filed Sep. 5, 1991, Ser. No. 755,339
Int. Cl.[5] B65G *11/04;* **H04M** *17/02*
U.S. Cl. 379—145 **9 Claims**



1. Apparatus for the protection of a coin return relay assembly of a coin-operated telephone, said relay having a relay armature operatively connected to a diverting plate mounted within a coin passageway through the relay assembly, said apparatus comprising front and side walls formed of a tough, penetration-resistant plate material, said front and side walls being formed into a generally U-shaped configuration; and mounting means affixed to said front wall such that said apparatus is mounted and supported upon said relay whereby said walls are in an interposed relation between said armature and diverting plate and the side walls of the telephone housing.

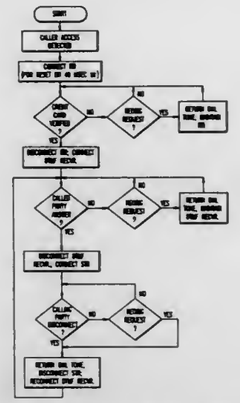
5,187,739
ANSWER SUPERVISION CIRCUIT FOR PAYSTATION TELEPHONE WITH NON-MUTED MICROPHONE
Marcus K. Davenport, Cumming; Richard K. Shipman, Woodstock; Thomas D. Young, Snellville, and Stephen H. Strode, Norcross, all of Ga., assignors to International Teleservice Corp., Melbourne, Fla.
Filed Aug. 6, 1991, Ser. No. 745,594
Int. Cl.[5] H04M *17/02*
U.S. Cl. 379—155 **11 Claims**



1. For use with a paystation telephone having a transmitter circuit through which voice signals from a paystation user are applied to a telephone line to which the paystation is connected for transmission to a called station, a method for determining whether a call placed from said paystation to the called station has been answered by the called station, comprising the steps of:
(a) monitoring the telephone line for the presence of signals that have been applied to the telephone line, including signals that ma be applied to the telephone line from the calling paystation; and
(b) discriminating, from signals monitored in step (a), signals that have bee applied to the telephone line from the calling paystation transmitter.

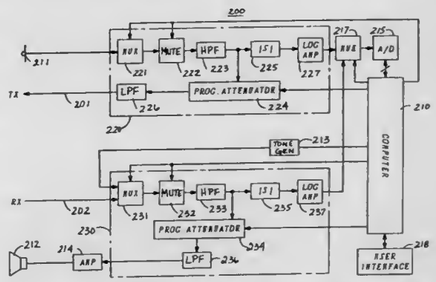
5,187,740
METHOD AND APPARATUS FOR TELEPHONE CALL REORIGINATION
Joe T. Swaim, McLean; Donald C. Heckman, Alexandria; Kenneth J. O'Grady, Annandale, all of Va., and Guido M. Eastep, Rockville, Md., assignors to MCI Communications Corporation, Washington, D.C.
Filed Oct. 1, 1991, Ser. No. 769,287
Int. Cl.[5] H04M *3/42, 17/00, 3/00*
U.S. Cl. 379—209 **12 Claims**

1. A method for telephone call reorigination wherein reoriginations following an initial entry and verification of an authorization code are accomplished by the caller entering a reorigination command for each reorigination, comprising the steps of:
(a) detecting the reorigination command during a calling time interval prior to the initial verification by using a first mode of detection;
(b) following the initial verification, detecting the reorigination command for each call during each calling time interval prior to answer by a called party by using a second mode of detection;
(c) detecting the reorigination command for each call during each calling time interval in which the caller and the



called party are in communication by using a third mode of detection.

5,187,741
ENHANCED ACOUSTIC CALIBRATION PROCEDURE FOR A VOICE SWITCHED SPEAKERPHONE
Richard H. Erving, Long Branch, and Robert R. Miller, Convent Station, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 30, 1990, Ser. No. 620,603
Int. Cl.[5] H04M *1/60*
U.S. Cl. 379—388 **23 Claims**



1. In a voice switching apparatus for processing speech signals on a communication line, the apparatus including means for switching between a receive state for receiving speech signals from the communication line and a transmit state for transmitting speech signals over the communication line, an acoustic calibration circuit for determining the type of acoustic environment in which the voice switching apparatus is employed, the calibration circuit comprising:
means for generating a tone burst signal in an environment, the tone burst signal comprising multiple frequency signals generated separately at different time intervals;
means responsive to the return of the tone burst signal to said apparatus for generating a composite representation of the acoustic response for each one of the multiple frequency signals having the largest returned amplitude level measured at each one of multiple predetermined time intervals;
scaling means for generating an echo decay parameter for

VOL 1147 ISS 3 FE 16 1993 UMI

providing an estimate for a specific time interval when the amplitude level of the acoustic response for the multiple frequency signals dissipates to a predetermined level, the echo decay parameter being indicative of the duration of echoes from the tone burst signal and providing a time-domain acoustic response of said environment; and

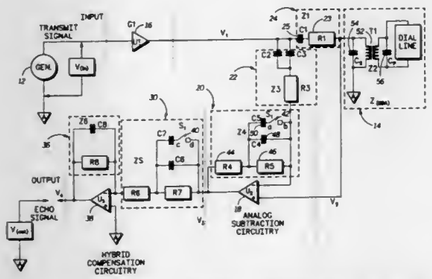
calibration means operably responsive to the scaling means for adjusting threshold switching levels at which the apparatus switches between the receive state and the transmit state.

5,187,742

CIRCUITRY FOR INTERFACING TELECOMMUNICATIONS EQUIPMENT TO A COMMUNICATION CHANNEL

John L. Moran, III, Millville, and L. Robert Schissler, Jamaica Plain, both of Mass., assignors to Codex Corporation, Mansfield, Mass.

Filed Jan. 12, 1990, Ser. No. 464,292
Int. Cl.[5] H04B *1/58*
U.S. Cl. 379—403 **7 Claims**



1. A hybrid circuit for coupling communication circuitry to the local loop of a communication channel, the length of said local loop being expressed by the value of a programming resistor, said hybrid circuit having a local loop input for receiving data from said local loop, a transmit input for accepting data to be transmitted on said local loop, and a receive output for delivering to the communication circuitry a signal representative of data received over said local loop, said hybrid circuit comprising:

an impedance matching network for matching the impedance at said local loop input to the impedance of said local loop, said matching network having a low-pass filter characteristic; and

circuitry for measuring the value of said programming resistor and varying the impedance of said impedance matching network based on the measured value wherein said impedance matching network further includes

a plurality of impedance elements,

and where said circuitry includes a switch for selecting one of said impedance elements based on the measured value of a programming resistor to compensate for the effects of the loop on a transmitted signal.

5,187,743

TELEPHONE BASE WITH A DISPLAY UNIT

Beverley W. Gumb, London; Gerd Kuhfus, Dorchester, and James N. Schmidt, London, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jan. 23, 1992, Ser. No. 824,423
Int. Cl.[5] H04M *3/00;* **G08B** *5/36*
U.S. Cl. 379—436 **7 Claims**

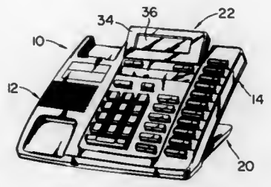
1. A telephone base comprising:

a cover;

a display unit pivotally mounted to the cover so as to be movable around a pivotal axis from one desired pivotal position to another, the display unit comprising a housing having a first side defining a viewing aperture and a second side having an outer convex surface formed with a series of parallel grooves which extend parallel to the pivotal axis; and

leaf spring means having a planar first part and a second part resiliently flexible relative to the first part;

and the cover comprising upper and lower cover parts



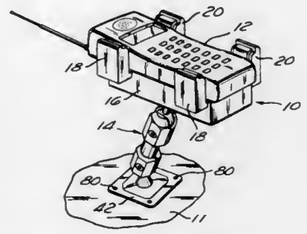
which provide opposing planar surfaces, the planar first part of the leaf spring means sandwiched and held between the planar surfaces, the second part of the spring means extending from the planar surfaces and engaged with any one of the grooves corresponding to a desired pivotal position of the display unit, the grooves and the second part of the spring means shaped to permit pivotal movement of the display unit in either pivotal direction against the force of the spring means.

5,187,744

HAND-HELD PORTABLE TELEPHONE HOLDER

Gary L. Richter, 1485 Southern Way, Sparks, Nev. 89431

Filed Jan. 10, 1992, Ser. No. 818,630
Int. Cl.[5] H04M *1/00;* **B60R** *7/00*
U.S. Cl. 379—449 **4 Claims**



1. A portable telephone holder comprising:

a generally rectangular body having an upper surface against which the portable telephone is positionable and first and second longitudinally extending side surfaces;

a pair of first fingers attached to said body and extending upwardly from said first side surface in a generally perpendicular orientation relative said upper surface, each of said first fingers being independently, laterally adjustable relative said first side surface; and

a pair of second fingers pivotally attached to said body and extending upwardly from said second side surface, each of said second fingers being spring-biased to a generally perpendicular orientation relative said upper surface and being independently pivotal outwardly relative said second side surface in a direction away from said first fingers;

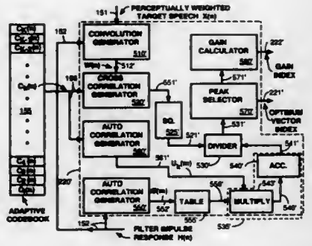
said portable telephone being disposed within said holder by pressing the telephone against the second fingers in a manner causing the second fingers to pivot away from said first fingers, and urging the telephone downwardly against the upper surface so as to capture the telephone between the first and second fingers, the lateral adjustability of the first fingers being adapted to facilitate the holding of telephones of various widths and configurations between the pairs of first and second fingers.

5,187,745

EFFICIENT CODEBOOK SEARCH FOR CELP VOCODERS

William C. Yip, and David L. Barron, both of Scottsdale, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 27, 1991, Ser. No. 722,572
Int. Cl.[5] G10L *5/00*
U.S. Cl. 381—36 **18 Claims**



1. A method for CELP coding speech by combining a first vector with a set of second vectors identified by index k, wherein the first and second vectors have values identified by indices n running from n=1 to N, comprising:

providing an N by N multiplexer having n=1 to N outputs, n=1 to N first inputs, second inputs, and n=1 to N select means, wherein a first logic level presented to n^{th} select means couples the nth output to the nth first input and a second logic level presented to the nth select means couples the nth output to the second input;

supplying n=1 to N values of the first vector to the n=1 to N first inputs of the multiplexer;

presenting n=1 to N values of the second vector of index k=1 to n=1 to N select means of the multiplexer, the second vector providing at the n=1 to N select means the first logic level for some values of n and the second logic level for other values of n;

adding together values of the first vector coupled to the multiplexer output to provide a sum;

repeating the presenting and adding steps for further values of k; and

synthesizing speech based on whichever sum identifies a second vector giving the closest match to target speech.

5,187,746

STRUCTURE OF BATTERY RECEIVING CHAMBER

Yoshiyuki Narisawa, Tokyo, Japan, assignor to Rion Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 22, 1991, Ser. No. 796,371
Claims priority, application Japan, Nov. 27, 1990, 2-125464[U]
Int. Cl.[5] H04R *25/00;* **H01M** *2/12*
U.S. Cl. 381—68.7 **8 Claims**

1. A receiving arrangement for an air cell battery (12) for use in an electronic device, comprising:

a battery receiving chamber (11) defined by a wall portion of a casing (2) of said electronic device, with an upper end of said battery receiving chamber being open;

a cover member (13) for selectively closing said open end of said battery receiving chamber;

a through-hole (31; 41) formed in one of said cover member and said wall portion of the casing for communicating said battery receiving chamber externally; and

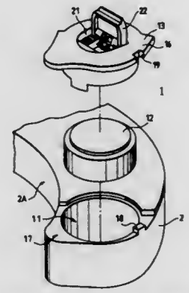
filter means (32) provided in said through-hole for repelling a water content of air supplied through said through-hole to said battery receiving chamber while allowing air to pass through,

wherein said cover member comprises:

a flange plate (16) configured to overlie the open upper end of the battery receiving chamber,

a generally central recess (21) defined in an upper surface of the flange plate,

a flap (22) pivotably mounted in said recess by a shaft (23) extending laterally across said recess, said flap being pivotally liftable from the recess,



a through slot defined in said cover member and extending from a side wall of the recess to an outer side wall of the cover member, and

e) a slide member (35) disposed in the slot and movable between an outwardly extended position and an inwardly retracted position in response to and under the control of the pivoting of the flap, a laterally outermost end (35A) of the slide member engaging an undercut (36) defined in said wall portion of the casing to lock the cover member in place in the outwardly extended position thereof, and enabling the removal of the cover member in the inwardly retracted position thereof.

5,187,747

METHOD AND APPARATUS FOR CONTEXTUAL DATA ENHANCEMENT

Richard D. Capello, 1911 Rushmore, Orange, Calif. 92667, and George R. Mabry, 1250 Longview Dr., Fullerton, Calif. 92631

Division of Ser. No. 816,865, Jan. 7, 1986, Pat. No. 4,876,726.
This application Oct. 4, 1989, Ser. No. 416,919
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—4 **19 Claims**

1. A method of enhancing intensity data for each of a plurality of data elements in an N×M matrix of data elements each including data representative of an intensity within a range of intensities and data representative of a feature flow direction or "no direction," comprising the steps of:

forming an I×I intensity enhancement window of data elements within the N×M matrix, with I<N, I<M, and having a center data element,

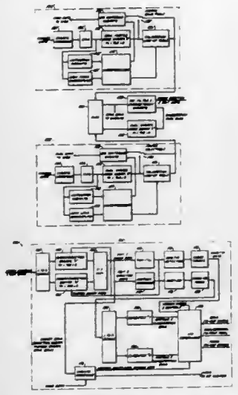
determining the mean of the intensity values of the intensity data for the data elements within the scan window;

selecting a plurality of data elements within the intensity enhancement scan window defining a direction slit having the direction represented by the feature flow direction data of the center data element;

modifying the intensity value of the intensity data of the center data element according to the relationship of the intensity data of each data element in the direction slit to

VOL 1147 ISS 3 FE 16 1993 UMI

the mean, and the relationship of the direction represented by the direction data in each data element in the direction

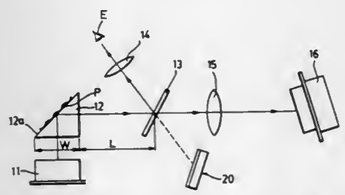


slit to the direction represented by the direction data of the center data element.

5,187,748
OPTICAL APPARATUS FOR FINGERPRINT IDENTIFICATION SYSTEM

Ho-Gyu Lee, Seoul, Rep. of Korea, assignor to Goldstar, Inc., Seoul, Rep. of Korea

Filed Jul. 19, 1991, Ser. No. 733,132
Claims priority, application Rep. of Korea, Jul. 21, 1990, 10758/1990
Int. Cl.[5] G06K *9/74*
U.S. Cl. 382—4 **1 Claim**

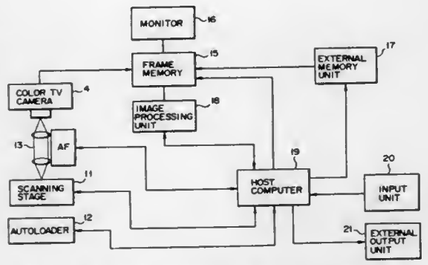


1. An optical apparatus for a fingerprint identification system comprising:
a multi-LED for emitting a light;
a prism having a slant surface to which a fingerprint being identified is contacted and in which the light from said multi-LED is absorbed at each ridge but reflected at each valley of the fingerprint creating a fingerprint image;
a cover glass functioning as a partial reflecting glass adapted to partially reflect the light representing the fingerprint image from said prism;
a target, positioned with respect to said cover glass for receiving the light from said prism and for focusing a virtual image of the fingerprint thereon facilitating proper positioning of the fingerprint on the prism by aligning the virtual image reflected by said cover glass with a reference image produced by said target, said target having,
a target case,
a blue filter covering said target case for producing a black background except for a transparent reference cross,
light means provided in said target case for illuminating the blue filter and reference cross, and
a switch adapted to selectively turn on said light means when positioning the fingerprint on the slant surface of the prism and off once the fingerprint is properly positioned;
a magnifying glass for magnifying the virtual image partially reflected by said cover glass, thereby allowing the user to easily see the virtual image;
a producing lens for producing the fingerprint image from said prism as transmitted through said cover glass; and
a CCD camera module for converting the fingerprint image produced by said producing lens into an electric signal.

5,187,749
VIRUS INFECTION EXAMINATION APPARATUS HAVING AUTOMATIC DETERMINATION FUNCTION AND METHOD THEREFOR

Yukihiro Sugimoto, Tokyo, and Toru Kakubari, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1991, Ser. No. 679,906
Claims priority, application Japan, Apr. 10, 1990, 2-94732
Int. Cl.[5] G06K *9/00*; **G06F** *15/00*
U.S. Cl. 382—6 **5 Claims**



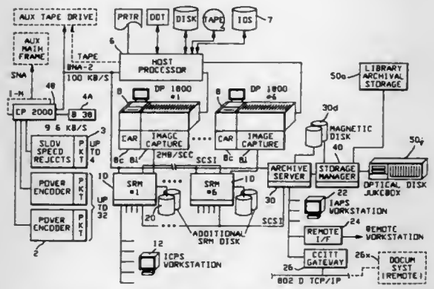
1. A virus infection examination apparatus comprising:
a microscope for observing fluorescent images of antigen positive and negative cells dyed with a fluor by an indirect fluorescent antibody method using a serum of an object to be examined;
image pickup means for converting the fluorescent images as observation images of said microscope into image data;
detecting means for processing the image data obtained by said image pickup means and detecting fluorescent luminance distributions of the antigen positive and negative cells; and
means for determining the presence/absence of a virus infection of the object on the basis of a difference between the fluorescent luminance distributions detected by said detecting means.

5,187,750
ARCHIVAL DOCUMENT IMAGE PROCESSING AND PRINTING SYSTEM

Bailochan Bebera, Farmington Hills, Mich., assignor to Unisys Corporation, Blue Bell, Pa.

Filed Mar. 15, 1991, Ser. No. 670,544
Int. Cl.[5] G06K *9/20*
U.S. Cl. 382—7 **11 Claims**

1. A system for original document image capture and storage in digital document image form, said system comprising:
(a) document processor means for capturing an electronic image of an original document and converting it to optical digital image data;
(b) storage/retrieval means for reception of, and temporary storage of, said digital image data;
(c) archival subsystem means for transferring said digital image data from said storage/retrieval means to a long-term archival storage means, said archival subsystem means including:
(c1) means to retrieve on a daily cycle, selected elements of said digital image data to eventually cover a specified period of time, such as an N-day cycle of business days, where N might be set for a monthly period of 20–25 days, said selected elements including data representing (i) date of capture of original document; (ii) customer account number; (iii) sequential document number (iv) numeric financial quantity involved in each document selected;
(c2) means to transfer and store a one-day-portion of said

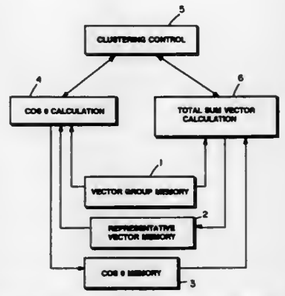


selected elements of said digital image data into a printing subsystem means;
(c3) temporary storage means for holding 2 N days worth of data on said selected elements;
(c4) means for retrieving, from said temporary storage means, 1 N days worth of data, for use of said printing subsystem means;
(d) said printing subsystem means for sorting on a daily basis, by specified indicia, said selected elements of said digital image data and enabling a printing means to print for each account number, an itemized statement of financial document transactions covering the period of a given N-day cycle.

5,187,751
CLUSTERING SYSTEM FOR OPTICAL CHARACTER READER

Hideaki Tanaka, Daito, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 22, 1991, Ser. No. 733,041
Claims priority, application Japan, Jul. 24, 1990, 2-196749
Int. Cl.[5] G06K *9/62*
U.S. Cl. 382—36 **4 Claims**

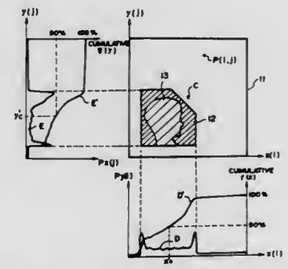


1. A clustering system for classifying data into a predetermined number of classes, comprising:
first memory means for storing feature vectors of said data;
second memory means for storing said predetermined number and representative vectors of said classes, said representative vectors being previously provided;
cosine calculating means for calculating the cosine of each of said feature vectors stored in said first memory means and each of said representative vectors stored in said second memory means;
classification means for assigning each of said feature vectors into one of said classes which indicates the largest cosine value;
third memory means for storing said largest cosine value for each of said feature vectors;
total sum vector calculating means for calculating, for each of said classes, a total sum vector from feature vectors of one of said classes, using a weight which is the largest cosine value for each of said feature vectors stored in said third memory means, and for storing said weighted total sum vector into said second means, thereby updating the contents of said second memory means; and
convergence judging means for controlling said cosine calculating means, classification means and total sum vector calculating means to operate repeatedly, until no feature vectors are exchanged between the classes as a result of the classification by said classification means.

5,187,752
METHOD FOR DETERMINING IMAGE POINTS IN OBJECT IMAGES

Hideya Takeo, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

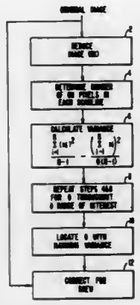
Filed Apr. 10, 1990, Ser. No. 507,423
Claims priority, application Japan, Apr. 14, 1989, 1-94909
Int. Cl.[5] G06K *9/00*
U.S. Cl. 382—41 **16 Claims**



1. A method of selecting an image point of an object image recorded on a recording medium, said selected image point representing a center of gravity of said object image and said object image being constituted of a plurality of picture elements, the method comprising the steps of:
converting said picture elements into electrical signals representative of image values of said plurality of picture elements;
differentiating said electrical signals and producing differentiated signals having absolute values corresponding to said plurality of picture elements;
weighting each picture element of said object image with its corresponding absolute value produced in said differentiating step; and
processing said weighted picture elements to obtain an average value thereof, wherein the center of gravity of said object image is represented by the picture element corresponding to said average value.

VOL 1147 ISS 3 FE 16 1993 UMI

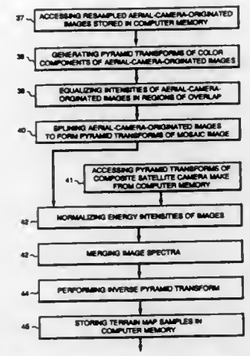
5,187,753
METHOD AND APPARATUS FOR IDENTIFICATION AND CORRECTION OF DOCUMENT SKEW
Dan S. Bloomberg, Palo Alto, and Gary E. Kopec, Belmont, both of Calif., assignors to Xerox Corporation, Rochester, N.Y.
Filed Dec. 8, 1989, Ser. No. 448,774
Int. Cl.[5] G06K *9/32, 9/38, 9/46;* **G09G** *1/06*
U.S. Cl. 382—46 **20 Claims**



1. A method of determining skew of an image in an optical character recognition device (OCR) comprising the steps of optically scanning a document to produce an image of said document, said image in the form of a digital data structure; reducing said image using a thresholded reduction, said thresholded reduction mapping N×N squares of pixels into a destination image, said destination image having an ON pixel when a number of ON pixels in said square is equal to or greater than a threshold value; determining a variance in a number of ON pixels in at least one scanline of said image as a function of document rotation angle, said variance including the sum of the number of ON pixels in said at least one scan line raised to a power greater than one, said skew located at a document rotation angle at which said variance is substantially a maximum; rotating said image about an angle of about said skew to produce a deskewed image of said document; and identifying characters in said deskewed image of said document.

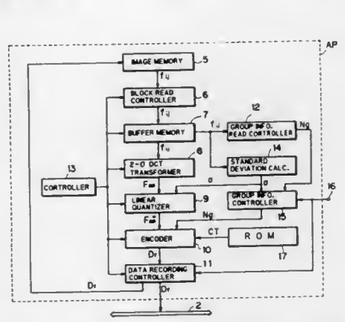
5,187,754
FORMING, WITH THE AID OF AN OVERVIEW IMAGE, A COMPOSITE IMAGE FROM A MOSAIC OF IMAGES
Bena L. Currin, Pasadena, Calif.; Aiman A. Abdel-Malek, and Richard I. Hartley, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.
Filed Apr. 30, 1991, Ser. No. 693,461
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—54 **16 Claims**

1. A method for generating a composite image, proceeding from a less-detailed overview image of a relatively large field of view and from more detailed images of relatively small fields of view, said method comprising the steps of:
combining the more detailed images to form a mosaiced detailed image in a common spatial reference frame with the overview image;
generating digitized representations of the less detailed image and the mosaiced image in electrical signal form of each of said images, each as regularly sampled in two orthogonal dimensions and referred to a common spatial frame reference;
low-pass spatially filtering the digitized representations of said overview image to generate in electrical signal form a digitized low-spatial-frequency response for said composite image;
high-pass spatially filtering the digitized representations of the regular sampling of said mosaiced image, to generate in electrical signal form digitized high-spatial-frequency response for said composite image; and



combining said high-spatial-frequency and low-spatial-frequency responses for said composite image.

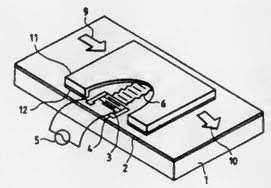
5,187,755
METHOD OF AND APPARATUS FOR COMPRESSING IMAGE DATA
Masami Aragaki, Kyoto, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Kyoto, Japan
Filed Jun. 21, 1989, Ser. No. 369,423
Claims priority, application Japan, Jun. 30, 1988, 63-165361; Dec. 19, 1988, 63-321803
Int. Cl.[5] G06K *9/36*
U.S. Cl. 382—56 **17 Claims**



1. A method of compressing image data depicting an image with respect to a pixel block having a plurality of pixels comprising the steps of scanning said pixels in each pixel block to derive image data for each pixel block and inputting said image data to be stored and processed in an electric processing means, said method further comprising the steps of:
(a) executing an orthogonal transformation operation on said image data with respect to each pixel block, to thereby obtain a coefficient table including coefficients of a series of orthogonal functions indicative of said image data for each pixel block,
(b) preparing a plurality of code tables, each of said plurality of code tables having codes arranged in a matrix, said codes indicating validation or invalidation of each coefficient in said coefficient table, to specify as valid a portion of said coefficients in said coefficient table,
(c) obtaining valid coefficients of said coefficient table with respect to each code table, each said valid coefficient being validated by each code table,

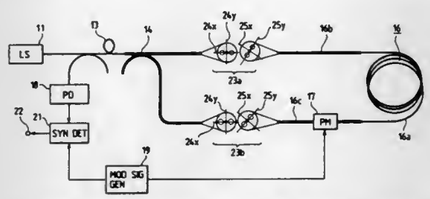
(d) selecting a most relevant code table most relevant to said coefficient table within said plurality of code tables on the basis of said valid coefficients by comparing with each other representative values calculated from said valid coefficients for each respective code table, and
(e) collecting said valid coefficients validated by said most relevant code table, to thereby form compressed data comprising said valid coefficients for each pixel block.

5,187,756
SURFACE ACOUSTIC WAVEGUIDE DEVICE AND MANUFACTURING METHOD
Masataka Shiba; Akira Inagaki; Minoru Yoshida; Kenchi Ito, and Kazumi Kawamoto, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Sep. 12, 1991, Ser. No. 758,608
Claims priority, application Japan, Sep. 12, 1990, 2-239908
Int. Cl.[5] G02B *6/10*
U.S. Cl. 385—7 **11 Claims**



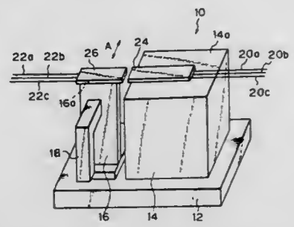
1. A surface acoustic wave element comprising:
a substrate;
an optical waveguide layer formed on said substrate for guiding laser light from a laser light source;
a surface acoustic wave portion for deflecting or modulating the laser light traveling through said optical waveguide layer;
a comb-shaped SAW electrode provided on said optical waveguide layer to generate surface acoustic wave in the said surface acoustic wave portion; and
a terminal provided on said optical waveguide layer and connected to said SAW electrode to apply a high-frequency alternating voltage thereto, wherein
a protection cover is bonded by a viscoelastic adhesive having a refractive index smaller than that of said optical waveguide to cover said SAW electrode and surface acoustic wave portion with air space in such a manner that said terminal is placed outside thereof.

5,187,757
FIBER OPTIC GYRO
Aritaka Ohno; Shinji Motohara, and Kazuo Hotate, all of Tokyo, Japan, assignors to Japan Aviation Electronics Industry Limited, Tokyo, Japan
Filed Jun. 12, 1992, Ser. No. 897,748
Claims priority, application Japan, Jun. 28, 1991, 3-158768; Aug. 2, 1991, 3-194050; Dec. 3, 1991, 3-319114
Int. Cl.[5] G02B *5/30*
U.S. Cl. 385—11 **7 Claims**



1. A fiber optic gyro wherein light from a light source is split by optical coupling means into two light beams, said light beams being provided as clockwise and counterclockwise light beams to both ends of an optical fiber coil, said clockwise and counterclockwise light beams having propagated through said optical fiber coil are caused by said optical coupling means to interfere with each other, the intensity of said interference light is converted by a photodetector to an electric signal, and an angular rate applied to said optical fiber coil about its axis is detected from said electric signal, characterized in that said optical fiber coil includes a single mode optical fiber and two polarization retaining means connected between both ends of said single mode optical fiber and said optical coupling means, respectively.

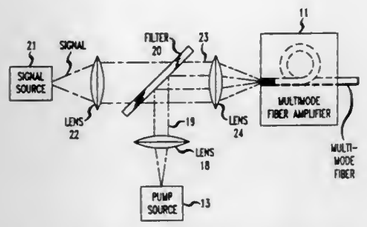
5,187,758
METHOD OF FABRICATING OPTICAL SWITCH
Masanori Ueda, Kawasaki; Hisashi Sawada, Inagi; Akira Tanaka, and Noboru Wakatsuki, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Jul. 16, 1991, Ser. No. 730,721
Claims priority, application Japan, Jul. 17, 1990, 2-187235; Sep. 19, 1990, 2-249353
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—16 **17 Claims**



1. A method of fabricating an optical switch including a stationary support member, a movable support member, and at least one pair of optical fibers having end surfaces, respectively, one of the optical fibers being supported on said stationary support member and the other of said optical fibers being supported on said movable support member so that the respective one end surfaces of said optical fibers face each other to form an optical path therebetween and the optical path between the optical fibers is changed by moving said movable support member relative to said stationary support member, said method comprising the steps of:
preparing guide means having a straight axis and a surface extending in parallel to said axis;
securing at least one optical fiber element on the surface of said guide means;
bridging said guide means between said stationary and movable support members and fixing said guide means on said stationary and movable support members; and
separating said guide means along at least a line extending between said stationary and movable support members so that said optical fiber element is separated along said line into a first part supported by said stationary support member and a second part supported by said movable support member, said first and second parts of said separated optical fiber element constituting said at least one pair of optical fibers having the respective end surfaces thereof facing each other.

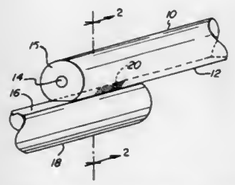
VOL
1147
ISS
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1993
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5,187,759
HIGH GAIN MULTI-MODE OPTICAL AMPLIFIER
David J. DiGiovanni, Scotch Plains; Clinton R. Giles, Middletown; Stuart A. Kramer, Fair Lawn, all of N.J.; Gerald Nykolak, Brooklyn, N.Y.; Herman M. Presby, Highland Park, and Jay R. Simpson, Fanwood, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Nov. 7, 1991, Ser. No. 788,952
Int. Cl.[5] G01S *3/30*; H01S *3/30*; G02B *6/22*
U.S. Cl. 385—27 **11 Claims**



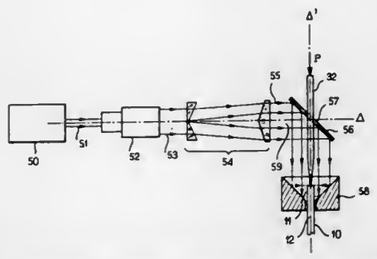
1. Apparatus for amplifying signals in a multi-mode optical fiber information transmission system, comprising:
an input multi-mode fiber for containing a multi-mode information signal;
an amplifier element comprising a length of optical fiber having a region of active ions disposed in the fiber core;
a multi-mode wavelength-selection coupler disposed between said input fiber and said amplifier element, comprising means for combining said information signal and said pump excitation energy into a single collimated beam;
a pump source of excitation energy for exciting selected ions of said active ion region;
means for connecting said pump source to said coupler, and
means for controlling the launch angle of said single collimated beam into the input end of said optical fiber amplifier element to an included angle of no greater than substantially 12 degrees in relation to the axis of said optical fiber of said amplifier.

5,187,760
WAVELENGTH SELECTIVE COUPLER FOR HIGH POWER OPTICAL COMMUNICATIONS
David R. Huber, Warrington, Pa., assignor to General Instrument Corporation, Hatboro, Pa.
Filed Jan. 23, 1992, Ser. No. 822,582
Int. Cl.[5] G02B *5/18*
U.S. Cl. 385—37 **20 Claims**



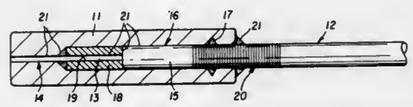
1. A wavelength selective optical fiber coupler comprising:
a first substrate having an optical input end for receiving a first optical signal;
a first grating formed in said first substrate;
a second substrate having an optical input end for receiving a second optical signal;
a second grating formed in said second substrate; and
means for joining said first and second gratings to transfer energy from said second optical signal to said first substrate for combination with said first optical signal to form a combined signal for output from an optical output end of said first substrate.

5,187,761
METHOD OF MAKING AN INLET CONE ON A CONNECTION ENDPIECE FOR OPTICAL FIBERS, AND APPARATUS FOR PERFORMING THE METHOD
Kada Mehadji, Brelevenez; André Mathern, Lannion, and René Le Penven, Ploumilliau, all of France, assignors to France Telecom, France
Filed May 20, 1991, Ser. No. 702,919
Claims priority, application France, May 22, 1990, 90 06366
Int. Cl.[5] G02B *7/00*
U.S. Cl. 385—76 **4 Claims**



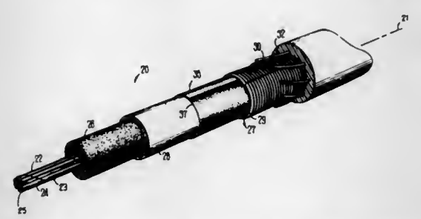
1. A connection endpiece for optical fibers, said endpiece being in the form of a cylindrical rod of outside diameter D and including an internal capillary of diameter d_i, one end of the connection endpiece being provided with a guide part constituted by a cylindrical body having formed therein: firstly a cylindrical bore of diameter substantially equal to the diameter D of the endpiece, which bore is delimited inside said cylindrical body by a wall constituting an abutment for the end of said endpiece when the endpiece is inserted into said bore; and secondly a guide hole having at least one inlet cone as a tapering portion opening to the outside of the cylindrical body with a diameter that is greater than the diameter d_i and opening into the cylindrical bore at said capillary with a diameter which is substantially equal to the diameter d_i of the capillary.

5,187,762
OPTICAL FERRULE
Masami Matsuura, Ama, and Hisakazu Okajima, Nishikasugai, both of Japan, assignors to NGK Insulators, Ltd., Japan
Filed Mar. 11, 1992, Ser. No. 849,342
Claims priority, application Japan, Mar. 18, 1991, 3-23346[U]
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—84 **4 Claims**



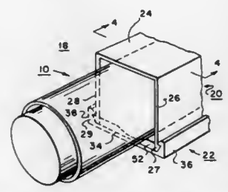
1. An optical ferrule comprising a non-metallic sleeve formed with a through bore having a small bore portion in which is inserted a bare fiber extending from a coated optical fiber and a large bore portion in which is inserted the coated optical fiber, said large bore portion having at least one groove formed in the inner surface thereof, the optical fiber having a rough surface portion formed along an outer surface of the coated optical fiber along at least a portion opposite the groove, further comprising a glass tube inserted in the large bore portion between the small bore portion and the end face of a coating of the coated optical fiber, the glass tube having an outer diameter larger than the inner diameter of the small bore portion, the glass tube having an inner diameter adapted for receiving the bare fiber therein, and an adhesive filled between the sleeve and the glass tube, between the sleeve and the bare fiber, and between the sleeve and coating of the coated optical fiber.

5,187,763
OPTICAL FIBER CABLE HAVING DRIPLESS, NON-BLEEDING AND OPTICAL FIBER COATING-COMPATIBLE WATERBLOCKING MATERIAL IN CORE THEREOF
Ching-Fang Tu, Tucker, Ga., assignor to American Telephone & Telegraph Company, New York, N.Y.
Filed Apr. 26, 1991, Ser. No. 691,770
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—100 **18 Claims**



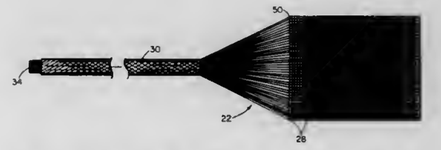
1. An optical fiber cable, said optical fiber cable comprising:
a core comprising at least one optical fiber transmission medium;
a sheath system which is disposed about said core; and
a filling composition of matter which is disposed in said core, said filling composition of matter comprising at least about 85 percent by weight of an aliphatic hydrocarbon having a molecular weight of at least about 600, a thickening system which includes an inorganic constituent and a block copolymer and a relatively high amount of an antioxidant system.

5,187,764
CONDUIT FOR FIBER OPTICAL CABLES
Kenneth L. Hixon, Dallas, and James E. Bruce, Austin, both of Tex., assignors to CableLite Corporation, Dallas, Tex.
Filed Apr. 25, 1991, Ser. No. 691,451
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—102 **20 Claims**



17. A conduit for a fiber optical cable or the like, said cable having a cladding concentrically disposed about a core, with a gap between said core and said cladding, said conduit comprising, in combination:
a retaining member defining a first channel adapted to receive said cable;
a base member defining a second channel adapted to receive said cable;
said retaining member being mountable with said base member to retain said cable within said first and second channels and to exert a compressive force on said cable to substantially eliminate said gap;
said retaining member has a top wall and first and second opposed side walls and said base member has a bottom portion and third and fourth opposed side walls, said first and second side walls being deflectable to allow respective portions of said first and second side walls to be received within said second channel, said first and second side walls yielding against the respective third and fourth side walls when said respective portions of said first and second side walls are received in said second channel, said top wall, said first and second side walls and said bottom portion cooperating to exert said compressive force on said cable; and
a resilient member, located within said second channel and adapted to be positioned between said cable and said bottom portion.

5,187,765
BACKLIGHTED PANEL
Michael M. Muehlemann, Liverpool, and Rolf H. Mueller, Auburn, both of N.Y., assignors to Fostec, Inc., Auburn, N.Y.
Filed Jul. 23, 1991, Ser. No. 734,506
Int. Cl.[5] G02B *6/04*
U.S. Cl. 385—115 **20 Claims**



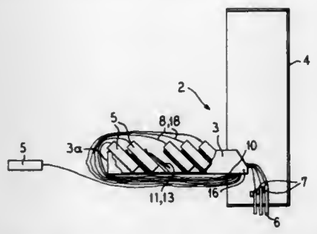
1. An optical fiber light emitting panel for providing a uniform area lighting effect which comprises:
a plurality of cladded optical fibers arranged in abutting side-by-side relationship and extending over a predetermined area;
a proximal segment of said optical fibers being formed into a bundle with the proximal end of said fibers adapted to be positioned adjacent a light source;
a plurality of openings scored through an intact cladding layer of each of said optical fibers at spaced intervals therealong over one surface of said area, said scored openings having an attribute selected from the group of depth, width and density that varies according to a gradient in an axial direction of said fibers; and
first light diffuser/emitter means mounted in close proximity to the scored optical fiber surface throughout said predetermined area
so that when the end of the bundle of optical fibers is illuminated, light will escape through said openings in the cladding and be diffused and re-emitted by said light emitter means to provide a uniform diffused light emanating from the surface of the panel.

5,187,766
OPTICAL FIBER WAVEGUIDE DIVISION RACK FOR HOLDING PLURAL CASSETTES
Lothar Finzel, Unterschleissheim, and Thomas Ruckgaber, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany
Filed Feb. 12, 1992, Ser. No. 834,204
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1991, 4106170
Int. Cl.[5] G02B *6/26*; B65D *1/34*
U.S. Cl. 385—135 **15 Claims**

1. A division rack for light waveguides comprising a cassette holder being mounted in the division rack for pivotable movement around a rotational axis at one end of the holder from a

VOL
1147
ISS
3
FE
16
1993
UMI

first position completely received in the division rack to a second position extending out of a front of the division rack, said holder having a plurality of holding devices for receiving cassette blocks, which comprise a plurality of cassettes, said holding device positioning the cassette blocks in the cassette



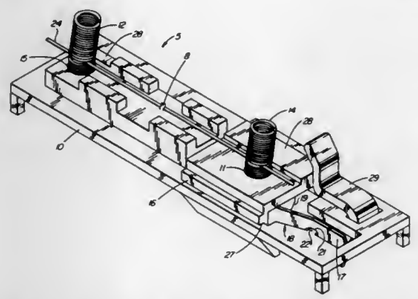
holder to extend obliquely with connecting leads of the cassettes facing toward a back of the rack with the holder in the first position and with the holder in the second position, the connecting leads of the cassette being directed obliquely upwardly toward the front.

5,187,767

OPTICAL FIBER PROOFTESTER AND METHOD FOR ITS USE

Stewart J. Hayes, and Laurence R. Noon, both of Saskatoon, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 14, 1992, Ser. No. 882,718
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—137 **10 Claims**



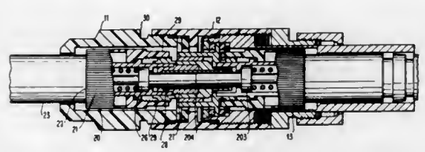
10. An apparatus for securing an optical fiber to a base member, comprising a base member and a helical extension spring fixed to the base member, the base member having a bending formation to one side of the spring, the spring comprising a plurality of coils and having a rest condition in which adjacent coils of the spring contact one another, the spring having a free end protruding from the base and extending beyond the bending formation so that lateral force exerted on the free end of the spring in the direction of the bending formation bends the spring over the bending formation to separate respective portions of two predetermined adjacent coils of the spring for insertion of an optical fiber therebetween so that the separated portions of the adjacent coils engage and grip the fiber when the spring is allowed to return toward its rest condition.

5,187,768

FIBER OPTIC VARIABLE SIGNAL ATTENUATOR

Conrad L. Ott, Lake Grove; David E. Wuestmann, Fort Salonga, and Louis Maiolo, Lake Ronkonkoma, all of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.

Filed Dec. 19, 1991, Ser. No. 810,317
Int. Cl.[5] G02B *6/38*
U.S. Cl. 385—140 **4 Claims**



1. An improved fiber optic variable signal attenuator comprising: first and second plug connector elements and an adapter element selectively interconnecting said plug connector elements in axially aligned relation; each of said first and second connector plug elements including a ferrule mounting a finished end of an optical fiber such that such finished ends are maintained in mutually aligned relation; said second plug element including a first means threadedly engaging corresponding second threaded means on said adapter element, relative movement therebetween resulting in relative axial movement between ferrules of said plug connector elements to vary the distance between said finished ends of said optical fibers; and means for selectively clamping said first means in adjusted position relative to said adapter element, said means for selectively clamping being in the form of a collet surrounding said first means; means for preventing relative rotational movement between said first and second plug connector elements during the occurrence of relative axial movement therebetween, said means including a keyed body, keyed projections on said first and second plug elements, said keyed body and adapter element defining rectangularly-shaped slots slideably engaging said projections; and a keyed alignment bushing defining rectilinear slots slideably engaging said keyed projections on said keyed body.

5,187,769

TRANSPARENT THERMOPLASTIC MOLDING COMPOSITION, PROCESS FOR ITS PREPARATION AND ITS USE

Werner Groh, Lich; Rudolf Heumüller, Rodgau; Gerald Schütze, Hofheim am Taunus; Roland Stern, Wiesbaden, and Gerhard Wieners, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 24, 1992, Ser. No. 840,324
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1991, 4105951
Int. Cl.[5] G02B *6/02*
U.S. Cl. 385—143 **7 Claims**

1. An optical fiber having a core/cladding structure, the core of which comprises a polymer of refractive index n(C) and the cladding of which comprises a polymer of refractive index n(S), in which $n(C)/n(S) > 1.01$, in which the core of the optical fiber comprises a molding composition of a polymer containing

a) 10 to 95% by weight of units which are derived from a compound of the formula (I)

$$R^1{}_2C{=}CF{-}COO{-}C(CF_3)_2{-}R^2 \qquad (I)$$

in which R^1 and R^2 are identical or different and are a hydrogen, deuterium or fluorine atom,

b) 90 to 5% by weight of units which are derived from one or more compounds of the formula (II)

$$R_2{}^3C{=}CF{-}COO{-}C(R^4)(R^5){-}R^6 \qquad (II)$$

in which R^3 is a hydrogen or deuterium atom, R^4 and R^5 are identical or different and are a hydrogen or deuterium atom, a methyl or mono-, di- or trideuteromethyl group or a trifluoro- or trichloromethyl group; R^6 is a methyl or mono-, di- or trideuteromethyl or trifluoromethyl group, a phenyl group, a pentafluorophenyl group, a mono-, di- or trihalogenophenyl group, a mono-, di- or tri(perfluoro-C_1 to C_3-alkyl)phenyl group or a CF_3-CHF-CF_2-CH_2-group, a $(CF_3)_3C$- group or an X-$(CF_2)_n$-$(CH_2)_m$- group, in which X is a hydrogen, deuterium, fluorine or chlorine atom, n is an integer from 2 to 4 and m is 0 or 1, and

c) 0 to 85% by weight of units which are derived from a compound of the formula (III)

$$R^7{}_2C{=}CF{-}COO{-}CR^8{}_3 \qquad (III)$$

in which R^7 and R^8 are identical or different and are a hydrogen or deuterium atom,

the sum of (II) and (III), based on the total amount of the polymer, being in the range from 5 to 90% by weight.

5,187,770

PHOTOSETTING RESIN COMPOSITION AND PLASTIC CLAD OPTICAL FIBER COMPRISING THE SAME

Takayuki Mishima; Yasuhiro Okuda, and Hiroaki Nishimoto, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

PCT No. PCT/JP89/01182, § 371 Date Jul. 17, 1991, § 102(e) Date Jul. 17, 1991, PCT Pub. No. WO91/07441, PCT Pub. Date May 30, 1991
PCT Filed Nov. 21, 1989, Ser. No. 721,554
Int. Cl.[5] G02B *6/00;* **G03G** *15/00;* **B05D** *5/06*
U.S. Cl. 385—145 **4 Claims**

1. A plastic clad optical fiber comprising a core made of quartz glass or optical glass and a cladding made of a plastic material having a refractive index smaller than that of the core, wherein the cladding is made of a cured material of a photosetting resin composition characterized by the absence of a compound having only one unsaturated bond in a molecule and comprising at least one compound which has at least two unsaturated bonds in a molecule and a photopolymerization initiator.

5,187,771

HEAT PROCESSING APPARATUS UTILIZING A PLURALITY OF STACKED HEATER HOLDERS

Yoshinobu Uchida, Hachioji, Japan, assignor to Tokyo Electron Sagami Limited, Kanagawa, Japan

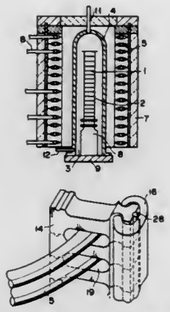
Filed Nov. 13, 1991, Ser. No. 791,134
Claims priority, application Japan, Nov. 13, 1990, 2-118791[U]
Int. Cl.[5] H01L *21/22;* **F27D** *11/02*
U.S. Cl. 392—416 **15 Claims**

1. A heat processing apparatus comprising:

a reactor tube in which objects to be heated are housed;

a wire-shaped heating unit enclosing the reactor tube;

support means for supporting the heating unit at plural positions, wherein said support means has a plurality of holders stacked one upon the others and each of said holders has recesses on those two faces thereof which are contacted with faces of its adjacent holders, and wherein when the holders are stacked one upon the others, the recesses of said two adjacent holders form a hole through which the heating unit is passed, and wherein said support means has support members each serving to support a pole of the holders stacked one upon the others, and each of the holders stacked one upon the others in a pole are engaged with their corresponding support member; and



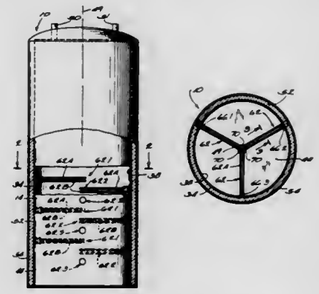
reinforcing means, which includes heat-resistant reinforcing columns each being interposed between the holders and the support member, for reinforcing each of the support members of the support means.

5,187,772

ELECTRIC WATER HEATER WITH RADIALLY EXTENDING OVERLAPPED HORIZONTAL HEATING ELEMENT ARRANGED IN VERTICALLY SPACED ALIGNED SETS

Ronald J. Rumbley, Hartsville, S.C., assignor to AOS Holding Company, Wilmington, Del.

Filed Jun. 21, 1991, Ser. No. 718,689
Int. Cl.[5] H05B *3/82;* **F24H** *1/20*
U.S. Cl. 392—449 **16 Claims**



1. A water heater comprising a tank including an inner surface defining a water chamber having a central vertical axis, and a plurality of heating elements extending into said water chamber and defining generally horizontal planes spaced apart along said central vertical axis, each of said heating elements having an outer end connected to said inner surface and an inner end spaced from said inner surface, said heating elements extending in angularly spaced planes intersecting along said axis, and the inner end of one of said heating elements being in overlapping relationship along the central vertical axis of said chamber to the inner end of another of said heating elements.

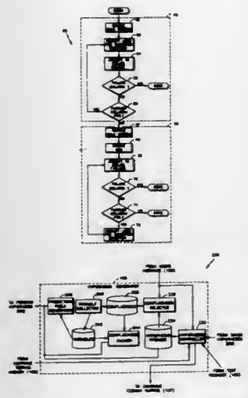
VOL
1147
ISS
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FE
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1993
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5,187,773

MACHINE FAILURE ISOLATION USING QUALITATIVE PHYSICS

Thomas P. Hamilton, South Windsor; Carol E. Jacobsen, Shelton, and Kevin J. Perveiler, Monroe, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 6, 1990, Ser. No. 549,515
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—10 **10 Claims**



1. A method of using a processor for analyzing machine signals to determine the presence of particular machine faults, comprising the steps of:
the processor receiving signals indicative of values of machine parameters;
the processor generating a plurality of pending hypotheses wherein each hypothesis has associated therewith a set of confluences describing operation of components of the machine which are assumed not to have failed, said confluences being provided by a model instance data element;
the processor propagating values indicative of said machine signals through said confluences to produce a set of predictions for values of confluence variables;
the processor discarding hypotheses which produce an inconsistent set of predictions;
the processor saving hypotheses which produce a consistent set of predictions; and
the processor indicating the presence of one or more particular machine faults in response to there remaining a single hypothesis corresponding to failure of one or more particular machine components.

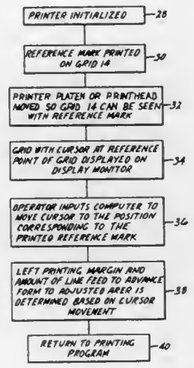
5,187,774

REFERENCE AREA USABLE WITH A FORM FOR CORRECTION OF FORM MISALIGNMENT IN A PRINTER

Richard E. Ericson, Cannon Falls, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 24, 1990, Ser. No. 469,222
Int. Cl.[5] G06K *15/00*
U.S. Cl. 395—111 **20 Claims**

7. A computer system with automated printing alignment, including:
a printer configured to receive a form having a first reference pattern with a first reference point;
a monitor;
an operator actuated cursor controller; and
a computer coupled to the printer, monitor, and curser controller, including;
first means for causing the printer to print a mark on the first reference pattern of the form in the printer, any displacement of the printed mark from the first reference point being caused by misalignment between the for and printer;
second means for causing a second reference pattern with a second reference point corresponding to the first reference pattern and point to be displayed on the monitor;
third means responsive to the cursor controller for moving a cursor on the monitor to a location on the second reference pattern corresponding to the location of the



printed mark on the first reference pattern on the form in the printer;
fourth means for providing misalignment information representative of the location of the cursor with respect to the second reference point on the second reference pattern and corresponding to the misalignment between the form and printer; and
fifth means responsive to the misalignment information for causing the printer to print in alignment on the form.

5,187,775

COMPUTER REPRESENTATION OF NUCLEOTIDE AND PROTEIN SEQUENCES

John L. Schroeder, and Michael R. Slater, both of Madison, Wis., assignors to Dnastar, Inc., Madison, Wis.

Filed Mar. 15, 1990, Ser. No. 494,023
Int. Cl.[5] G06F *15/66*
U.S. Cl. 395—155 **19 Claims**

ATGCAAACCGTTTTAGCGAAAATCGTCGCAGACAAGGCGATTTGGGTAGAAGCCCGC
Met Gln Thr Val Leu Ala Lys Ile Val Ala Asp Lys Ala Ile Trp Val Glu Ala Arg

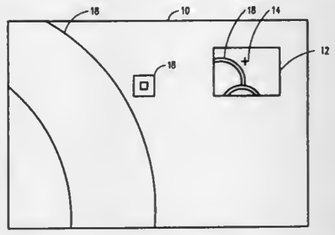
11. A system for the representation of nucleotide and amino acid sequence comprising
a programmable digital computer;
a memory device associated with the computer which may be accessed by the computer;
a set of character descriptions stored in the memory device, the set of character descriptions including a subset of single letter monospace characters corresponding to the nucleotides of a nucleotide sequence and a subset of three letter identical width characters corresponding to the three letter standard abbreviation of amino acids;
a nucleotide sequence stored in the memory device;
an amino acid sequences stored in the memory device;
a display means associated with the computer for displaying the output thereof; and
program means stored in the memory device for causing the computer to display on the display means the nucleotide sequence using the subset of single letter characters to display the nucleotide sequence and the subset of three letter characters to display the amino acid sequence, the displayed nucleotide sequence located in association with the displayed amino acid sequence with the codons formed by the nucleotide sequence being aligned with the amino acids of the amino acid sequence.

5,187,776

IMAGE EDITOR ZOOM FUNCTION

Peter C. Yanker, Portola Valley, Calif., assignor to International Business Machines Corp., Armonk, N.Y.

Filed Jun. 16, 1989, Ser. No. 367,159
Int. Cl.[5] G06F *3/14*; G09G *5/34*
U.S. Cl. 395—157 **1 Claim**



1. In a system having image display means comprising a plurality of physical pels, a method of operating an image editor in response to input from a user of the system, the method comprising the steps of:
displaying a magnified portion of a first image as a second image comprised of a plurality of logical pels having a size that is a function of a magnification level in effect, the second image having a first cursor positioned therein;
displaying within the second image a viewport containing a portion of the first image, the portion corresponding to the magnified portion, the viewport having a vertical and a horizontal dimension corresponding to a plurality of physical pels of the first image and further having a second cursor having a position that corresponds to the position of the first cursor;
responsive to the user repositioning the first cursor such that the first cursor would be located outside of the displayed second image,
shifting the second image in increments of logical pels in unison with movement of the first cursor; and
responsive to the second cursor reaching a first edge of the viewport in response to the movement of the first cursor,
shifting the viewport by a plurality of physical pels that correspond to the vertical or the horizontal dimension of the viewport such that the second cursor is positioned substantially adjacent to a second edge of the viewport that is oppositely disposed to the first edge.

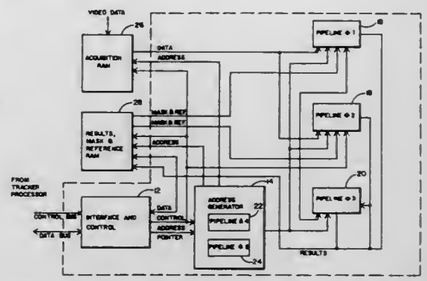
5,187,777

MULTI-FUNCTION PRE-PROCESSOR FOR TARGET TRACKING

Mark A. Conboy, Mission Viejo; Richard Y. Ichinose, Fullerton, and Ki H. Baek, El Toro, all of Calif., assignors to Lorel Aerospace Corp., New York, N.Y.

Filed Sep. 21, 1989, Ser. No. 411,426
Int. Cl.[5] G06F *15/72*
U.S. Cl. 395—163 **3 Claims**

1. A pre-processor for a target tracking device, comprising:
a) memory means for storing input image, mask and reference information, and image analysis computation results;
b) interface means for providing mode and address pointer signals from said tracking device to said pre-processor, and for conveying data between said tracking device and said pre-processor;
c) an address generator for generating, in response to a single address pointer, a series of addresses for addressing portions of said memory means;
d) a plurality of accumulator pipelines each arranged to sequentially apply selected ones of a plurality of image analysis algorithms to addressed input image information in response to said mode signals provided by said tracking device; and



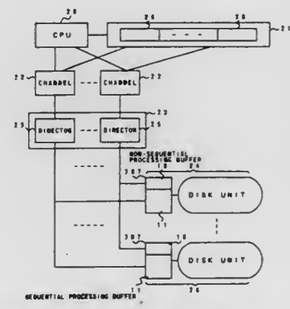
e) means for storing the results of said application of algorithms in said memory means in accordance with addresses generated by said address generator;
f) said plurality of pipelines being arranged so that said input image information is simultaneously applied to each of said plurality of said pipelines, and
g) said image analysis algorithms being so selected that said plurality of pipelines simultaneously apply different image analysis algorithms to said image information.

5,187,778

BUFFERED DISK UNIT AND METHOD OF TRANSFERRING DATA THEREIN

Akira Yamamoto, Sagamihara; Hiroyuki Kitajima, Yokohama; Akira Kurano, Odawara; Michio Miyazaki, Odawara; Masafumi Nozawa, Odawara, and Takikazu Takeuchi, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 10, 1990, Ser. No. 579,718
Claims priority, application Japan, Sep. 13, 1989, 1-237892
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—250 **42 Claims**



1. An input/output system comprising:
a controller connected to one or more disk units, said controller being connected through a channel to a processor, said one or more disk units each including a buffer, and each buffer including a first region having at least one buffer storage area for storing data for sequential data transfer and a second region having at least one buffer storage area for storing data for a non-sequential data

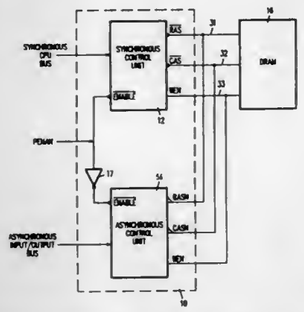
VOL
1147
ISS
3
FE
16
1993
UMI

transfer, said controller including means for effecting transfer of data between said one or more disk units and said processor by way of one of said first and second regions selected in accordance with whether a data input-/output request issued by said processor is a request for sequential data transfer or a request for non-sequential data transfer.

5,187,779
MEMORY CONTROLLER WITH SYNCHRONOUS PROCESSOR BUS AND ASYNCHRONOUS I/O BUS INTERFACES

Joseph M. Jeddeloh; Ronald J. Larson, both of Minneapolis, and Jeffry V. Herring, Bloomington, all of Minn., assignors to Micral, Inc., New Brighton, Minn.

Filed Aug. 11, 1989, Ser. No. 392,705
Int. Cl.[5] G06F *13/00, 13/14*
U.S. Cl. 395—325 **4 Claims**



1. In a microcomputer system having a microprocessor and a synchronous bus and having an asynchronous bus, said asynchronous bus having bus control signals and said microprocessor producing command signals, a memory control system for interfacing both said synchronous bus and said asynchronous bus to a single memory subsystem, said memory control system comprising:

synchronous control means coupled to said microprocessor and to said synchronous bus for producing synchronous memory address signals and synchronous write enable signals in response to command signals from said microprocessor;

asynchronous control means coupled to said asynchronous bus for producing asynchronous memory address signals and asynchronous write enable signals in response to bus control signals;

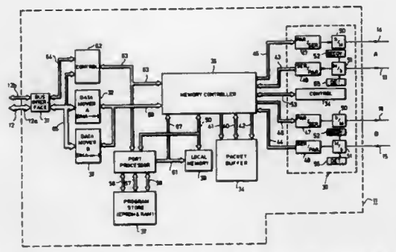
a single memory subsystem comprising a dynamic random access memory coupled to said synchronous control means and to said asynchronous control means and responding said synchronous memory address signals, said synchronous write enable signals, said asynchronous memory address signals and said asynchronous write enable signals; and

logic means coupled to said microprocessor, synchronous control means and asynchronous control means for enabling one of said control means and for disabling the other of said control means in response to a command signal from said microprocessor.

5,187,780
DUAL-PATH COMPUTER INTERCONNECT SYSTEM WITH ZONE MANAGER FOR PACKET MEMORY

Paul H. Clark, Westborough; Robert P. Hill, Marlboro, and Michael R. Wolinski, Townsend, all of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 7, 1989, Ser. No. 335,117
The portion of the term of this patent subsequent to May 28, 2008, has been disclaimed.
Int. Cl.[5] G06F *13/14*; H04L *12/56*
U.S. Cl. 395—325 **20 Claims**



9. A method of transmitting and receiving packets in a computer interconnect system between a plurality of nodes, comprising the steps of, at each one of said nodes:

a) transmitting said packets and receiving said packets upon demand over either one or both of at least two separate data paths interconnecting said plurality of nodes;

b) when receiving one or more of said packets, buffering said packets as said packets are received, including buffering packets if received over said at least two data paths simultaneously;

c) when transmitting one or more of said packets, buffering said packets before transmitting one of said packets to another of said plurality of nodes over either of said at least two data paths;

d) transferring said received buffered packets to a host processor after said step of buffering said received packets;

e) and before said step of buffering said transmitted packets transferring from said host processor said packets to be transmitted.

5,187,781
SHARED HARDWARE INTERRUPT CIRCUIT FOR PERSONAL COMPUTERS

Chester A. Heath, Boca Raton, Fla., assignor to International Business Machines Corp., Armonk, N.Y.

Continuation of Ser. No. 452,431, Dec. 19, 1989, abandoned. This application Jul. 16, 1992, Ser. No. 915,046
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—325 **1 Claim**

1. A shared hardware interrupt circuit for edge-triggered adapter cards, comprising:

(a) a power supply,

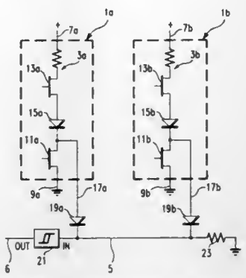
(b) an interrupt request line,

(c) an interrupt request bus,

(d) at least two I/O connectors, each for connecting an edge-triggered adapter card to said power supply and said interrupt request line,

(e) diode means located between each said I/O connector and said interrupt request line for preventing the passage of electrical current from said interrupt request line into said I/O connector,

(f) means connected between said interrupt request line and said interrupt request bus for detecting, inverting, and transmitting a signal on said interrupt request line to said interrupt request bus, said;

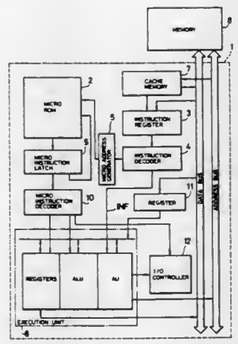


(g) pull-down means connected to said interrupt request line for providing a low level signal on said interrupt request line.

5,187,782
DATA PROCESSING SYSTEM

Ikuya Kawasaki, Kodaira; Keiichi Kurakazu, Tachikawa, and Hideo Maejima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 415,722, Oct. 2, 1989, Pat. No. 4,954,943, which is a continuation of Ser. No. 15,016, Feb. 17, 1987. This application Jul. 13, 1990, Ser. No. 552,117
Claims priority, application Japan, Feb. 26, 1986, 61-39192
The portion of the term of this patent subsequent to Jan. 30, 2007, has been disclaimed.
Int. Cl.[5] G06F *9/34*
U.S. Cl. 395—375 **20 Claims**



1. In a microprocessor formed on a chip for processing a multi-word instruction including a first word for holding operand address information and a second word for holding an operation code, said microprocessor comprising:

a decoder for decoding each of said first and second words in said multi-word instruction, wherein said decoder decodes said first word to provide an operand indicated by said operand address information before said second word is decoded by said decoder to determine an operation to be performed;

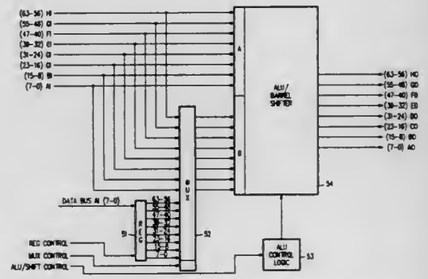
execution means for performing said operation determined by said decoder on said provided operand; and

means for controlling said execution means in accordance with an output of said decoder.

5,187,783
CONTROLLER FOR DIRECT MEMORY ACCESS

Richard M. Mansfield, Bloomington, and William F. Dohse, Plymouth, both of Minn., assignors to Micral, Inc., New Brighton, Minn.

Filed Mar. 15, 1989, Ser. No. 324,211
Int. Cl.[5] G06F *13/28*
U.S. Cl. 395—425 **5 Claims**



1. In a computer system including memory means having a plurality of storage locations for storing information and a bidirectional bus having input/output devices coupled thereto, a direct memory access apparatus comprising:

first register means coupled to a bidirectional bus for receiving blocks of data transferred from storage locations in a memory means or from storage locations in input/output devices, said data blocks having a predetermined length;

data sorter means coupled to said first register means and to said bidirectional bus responsive to control signals for sorting bytes of data received from said first register means and coupling said data bytes to said bidirectional bus for transfer to a designated destination, said data bytes coupled to said bidirectional bus in a predetermined sequence;

control means coupled to said data sorter means and to a system processor responsive to processor control signals for generating said data sorter means control signals;

said data sorter means further comprising:

a plurality of first multiplexer means coupled to said first register means, each of said first multiplexer means having a plurality of input lines for receiving said data blocks from said first register, each said data block comprising at least one byte of data, each said first multiplexer being responsive to a first control signal for outputting a selected one of said data bytes of said data block;

each of said plurality of first multiplexer means having a second register means coupled to an output line thereof, each said second register means responsive to a load signal for receiving and storing said data byte output from each said first multiplexer means coupled thereto; and

each of said plurality of first multiplexer means having a second multiplexer means coupled to said output line and to said second register means, each said second multiplexer means responsive to a second control signal for outputting a selected data byte to said bidirectional bus, said selected data byte being either the contents of said second register or the current data byte output by said first multiplexer means.

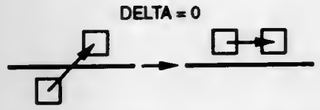
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5,187,784

INTEGRATED CIRCUIT PLACEMENT METHOD USING NETLIST AND PREDETERMINED ORDERING CONSTRAINTS TO PRODUCE A HUMAN READABLE INTEGRATED CIRCUIT SCHEMATIC DIAGRAM

James A. Rowson, Fremont, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Jan. 13, 1989, Ser. No. 297,353
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—500 **5 Claims**



1. A computer-implemented method for placing circuit elements in an inegraded circuit schematic where the circuit elements are initially represented by a netlist to produce a human-readable schematic circuit layout from the netlist, comprising computer-implemented steps of:

(a) receiving predetermined ordering constraints indicating preferred relative vertical locations in a schematic diagram of circuit elements that are represented in the netlist;

(b) partitioning the circuit elements represented in the netlist in accordance with a predetermined balancing criterion;

(c) determining a first value of a cost function associated with the partitioning produced by the partitioning step, the determined value of he cost function being dependent upon he circuit elements crossing the partitioning and the predetermined ordering constraints in the cost function;

(d) repeating step (c) to obtain a second value of the cost function associated with a different partition;

(e) comparing the first and second values;

(f) selecting the partition having the lower cost value;

(g) assigning the circuit elements to two groups such that the one group is physically above the other group in the circuit schematic; and

(h) repeating steps (b) through (f) recursively to automatically produce horizontal subpartitions of the circuit elements represented by the netlist to produce a human readable schematic circuit layout.

5,187,785

ALGORITHM FOR REPRESENTING COMPONENT CONNECTIVITY

Rasiklal P. Shah, Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 28, 1990, Ser. No. 635,450
Int. Cl.[5] G01R *31/28*
U.S. Cl. 395—575 **19 Claims**

1. A method for representing component connectivity of components which compose a system, said method comprising the steps of:

(a) creating a diagram composed of blocks representing components of the system;

(b) representing connectivity of the components on the diagram;

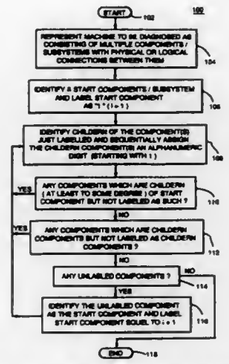
(c) selecting a first start component;

(d) assigning a first label to the start component;

(e) identifying respective children components of the start component;

(f) assigning the respective children components of the start component respective labels, the respective labels being unique for each component and representing the component connectivity;

(g) selecting another start component if any component connectivity represented in the diagram is not represented by a label subsequent to performance of step (f) and, after



selecting a second start component, returning to step (e); and

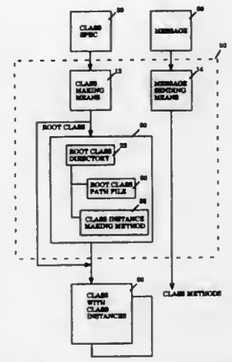
(h) storing the assigned component labels.

5,187,786

METHOD FOR APPARATUS FOR IMPLEMENTING A CLASS HIERARCHY OF OBJECTS IN A HIERARCHICAL FILE SYSTEM

Owen M. Densmore, and David S. H. Rosenthal, both of Palo Alto, Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Apr. 5, 1991, Ser. No. 681,071
Int. Cl.[5] G06F *12/08*
U.S. Cl. 395—600 **26 Claims**



1. In a computer system comprising a hierarchical file system, a method for creating and accessing a class hierarchy of objects on said computer system, said method comprising the steps of:

establishing a root class by creating a collection of hierarchical directories and files of a first type using said hierarchical file system, said first type collection of hierarchical directories and files logically comprising a search path of a first type and a root class method, said first type search path being used for locating said first type collection of hierarchical directories and files, said root class method being used for generating a class instance for a non-root class subclass to said root class;

establishing non-root classes by creating collections of hierarchical directories and files of a second type using said hierarchical file system, each of said second type collections of hierarchical directories and files logically comprising a search path of a second type, each of said second type search paths being used for locating its second type collection of hierarchical directories and files and all collections of hierarchical directories and files created to establish its non-rot class' ancestral classes including said root class, each of said second type collections of hierarchical directories and files being hierarchically subordinate to the collection of hierarchical directories and files created to establish its non-root class' super class; and

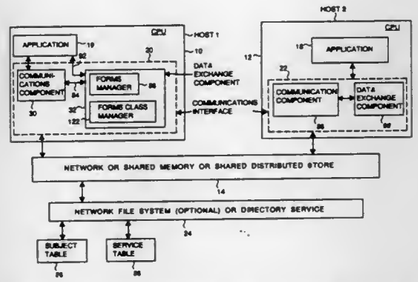
generating class instances of said non-root classes by creating collections of hierarchical directories and files of a third type using said hierarchical file system, each of said third type collections of hierarchical directories and files logically comprising a search path of a third type and at least one class instance variable value, each of said third type search paths being used for locating its third type collection of hierarchical directories and files and all collections of hierarchical directories and files created to establish its class instance's class, its class instance's class' ancestral classes including said root class, each of said third type collections of hierarchical directories and files being hierarchically subordinate to the second type collection of hierarchical directories and files created to establish its class instance's class.

5,187,787

APPARATUS AND METHOD FOR PROVIDING DECOUPLING OF DATA EXCHANGE DETAILS FOR PROVIDING HIGH PERFORMANCE COMMUNICATION BETWEEN SOFTWARE PROCESSES

Marion D. Skeen, San Francisco, and Mark Bowles, Woodside, both of Calif., assignors to Teknekron Software Systems, Inc., Palo Alto, Calif.

Filed Jul. 27, 1989, Ser. No. 386,584
Int. Cl.[5] G06F *15/16*
U.S. Cl. 395—600 **68 Claims**



1. An apparatus for facilitating data exchange between one or more data consuming and data publishing processes running on one or more computers coupled by any data exchange medium, comprising:

a first software layer for execution on said one or more computers and coupled to all said processes for implementing data distribution decoupling between said processes such that no data consuming process need include any software routine to determine the address of any particular process which is publishing data desired by said data consuming process, but may simply request desired data by subject and said subject will then be automatically mapped to the appropriate one or more data publishing processes publishing data on that subject and the appropriate one or more communication protocols necessary to communicate with said data publishing processes;

a second software layer for execution on said one or more computers and coupled to all said processes and to said first software layer for implementing service protocol decoupling between said processes such that no data consuming or data publishing process need include any software routine to implement a communication protocol necessary to communicate with any other data consuming or data publishing process, all said communication protocols being encoded in service discipline programs forming part of said second software layer, said second software layer including means for receiving information from said first software layer regarding the subject upon which data is requested, and including one or more software routines for establishing communication through said data exchange medium such that only data on said requested subject is received by said data consuming process which requested data on said subject; and

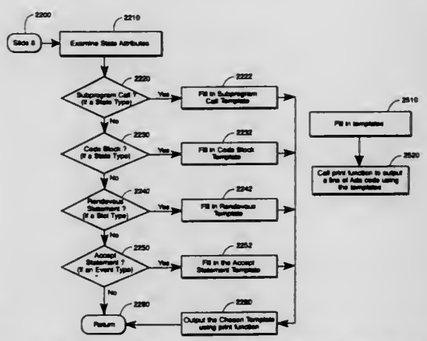
a third software layer coupled to all said processes and to said second software layer for implementing data format decoupling between said processes such that processes communicating with each other need not include software routines to translate between differing data representation formats and data record organizations used in data objects being exchanged by said communicating processes, all necessary translation from the data representation used by a data publishing process to a data representation used by the data consuming process which requested data on the subject being carried out by said third software layer.

5,187,788

GRAPHICS SYSTEM FOR AUTOMATIC COMPUTER CODE GENERATION

Robert E. Marmelstein, Huber Height, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 345,581, May 1, 1989, abandoned. This application Jun. 27, 1991, Ser. No. 725,936
Int. Cl.[5] G06F *15/21*
U.S. Cl. 395—700 **2 Claims**



1. A method of automatic code generation for the Ada programming language, which provides a User with the ability to quickly create a graphical representation of an initial program design, the graphical representation being in a form from which the Ada code is generated and then compiled;

wherein the representation provides a User with a plurality of different but consistent views of an Ada program, with graphic symbols representing objects defined as entities including constants and variables having values, wherein the objects include packages, operations, data types, states, slots, events and connections as defined for the Ada

VOL 1147 ISS 3 FE 16 1993 UMI

language, and wherein operations comprise tasks, procedures and functions;

wherein said method comprises the steps:

using a first editor for providing a first view wherein the User defines an initial Ada package specification, using a combination of graphical means and text, using a second editor for providing a second view with which the User creates and manipulates complex data structures and defines local variables, data structures and local variables being used in the Ada program, and using a third editor for providing a third view with which the User defines the control flow of a specific subprogram; and using first, second and third event handlers for the first, second and third editors respectively;

using the first editor and first event handler to create, select, edit and delete graphic symbols, including graphic symbols representing packages, and to create connections between graphic symbols which correspond to Ada with and use statements, and to create package operations and data structures, inserting graphic symbols into the data of the common data base, and updating data in the common data base for objects which have been edited and not deleted;

using the third editor and third event handler to create, select, edit and delete graphic symbols representing states, events, slots and transitions, wherein states represent actions or sequences of actions including procedure calls, function calls, code blocks, raise exception statements, and rendezvous statements, wherein events represent Ada select or accept statements, wherein slots represent paths of communication between tasks, and wherein transitions describe conditions whereby control is passed to another state, wherein transitions between states include while statements, for/in statements, loops, and unconditional flow of control, and updating data in the common data base for objects which have been edited and not deleted;

using the second editor and second event handler to create, select, edit and delete graphic symbols representing the data structure, and updating data in the common data base for objects which have been edited and not deleted;

entering a "generate Ada" command with the first editor to initiate Ada source code generation for the Ada packages defined for the Ada program, using templates which are generic structure types having a plurality of data members, there being a template for each type of object, Ada code being generated in the system by declaring specific data structures of the template types with allocation of memory, traversing said common database, extracting relevant information needed to produce the Ada code from each object in the common database and inserting the relevant information into members of the specific data structures, and executing a print function with the data members of the templates as parameters.

5,187,789

GRAPHICAL DISPLAY OF COMPILER-GENERATED INTERMEDIATE DATABASE REPRESENTATION

Kelly T. O'Hair, Livermore, Calif., assignor to Supercomputer Systems Limited Partnership, Eau Claire, Wis.

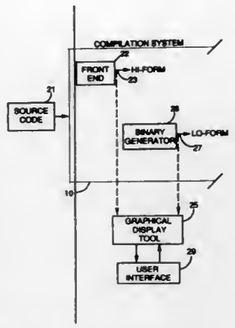
Continuation-in-part of Ser. No. 537,466, Jun. 11, 1990. This application Jan. 11, 1991, Ser. No. 640,909

Int. Cl.[5] G06F *9/06, 3/14*

U.S. Cl. 395—700 **16 Claims**

1. In a data processing system including a control unit operable in conjunction with a visual display device and a memory means for storing data and programs, a method of graphically displaying on said display device the intermediate representations of the result present in said memory means as generated by a compiler program in producing a machine code program implementation from a source code input with said compiler program establishing connections and indices for the elements of said intermediate representations and wherein a user selects a particular intermediate element for visual inspection comprising the steps of:

identifying the set of connections and indices correlating said selected intermediate element with other intermediate elements,



retrieving said set of intermediate representations from the memory means through utilization of said identified connections and indices, and

displaying said set of intermediate representations on the display device in conjunction with said identified connections and indices from said collecting step.

5,187,790

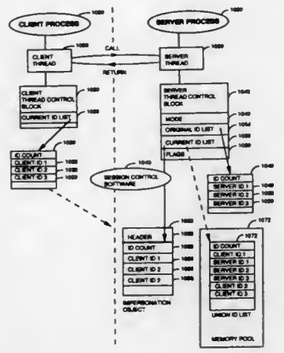
SERVER IMPERSONATION OF CLIENT PROCESSES IN AN OBJECT BASED COMPUTER OPERATING SYSTEM

Jeffrey A. East, Aptos, Calif.; James J. Walker, Redmond, Wash.; Steven M. Jenness, Redmond, Wash.; Mark C. Ozur, Redmond, Wash., and James W. Kelly, Jr., Redmond, Wash., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 373,878, Jun. 29, 1989, abandoned. This application Apr. 21, 1992, Ser. No. 873,359

Int. Cl.[5] G06F *9/44, 9/00*

U.S. Cl. 395—725 **10 Claims**



1. In a computer system, having

memory means for storing data and data structures;

a multiplicity of objects comprising data structures stored in said memory means; each of a multiplicity of said objects having an associated access control list for limiting access to said each object, each access control list including a list of entries, wherein each entry includes a conjunction of one or more identifiers required to access said each object; and

a multiplicity of processes running concurrently on said computer system; said processes including at least one server process and plurality of client processes; each of said processes having an associated identifier list denoting a set of identifiers;

a method of operating said computer system comprising the steps of:

one of said at least one server process responding to requests by one of said plurality of client processes by performing tasks on behalf of the requesting client process;

said one server process impersonating said requesting client process by adopting a set of identifiers to replace said identifier list associated with said one server process, wherein said adopted set of identifiers is said identifiers in the identifier list associated with said requesting client process when said one server process is responding to a first request by said requesting client process, and wherein said adopted set of identifiers is the union of said identifiers in said identifier list associated with said requesting client process and said identifiers in said identifier list associated with said one server process when said one server process is responding to a second request by said requesting client process; and

said one server process initiating access to a specified one of said multiplicity of objects, said system enabling access by said one server process to said one specified object when said adopted set of identifiers match the identifiers of at least one entry in said one specified object's access control list.

5,187,791

MICROPROCESSOR WITH IMPROVED INTERRUPT RESPONSE WITH DATA SAVING DEPENDENT UPON PROCESSOR STATUS USING STATUS FLAG

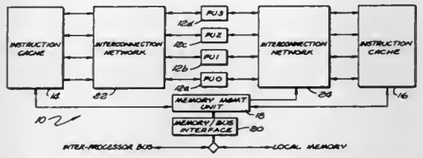
Allen J. Baum, Palo Alto, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 471,091, Jan. 26, 1990, Pat. No. 5,095,526. This application Oct. 29, 1991, Ser. No. 784,264

The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.

Int. Cl.[5] G06F *13/24*

U.S. Cl. 395—725 **6 Claims**



1. In a data processing device including a programmable processor and an interrupt program executed by said programmable processor, a method for controlling the operation of said interrupt processing program comprising the steps of:

a) providing a register for storing a processor status flag;

b) setting said processor status flag with an instruction executed in said programmable processor to a first logical state when the processor is entering an idle state and setting said processor status flag to a second logical state when the processor is not idle;

c) testing said processor status flag upon recognition of an interrupt;

d) entering said interrupt processing program at an interrupt vector address computed as a first address if said processor status flag is in the first logical state and entering said interrupt processing program at an interrupt vector address computed as a second address if said processor status flag is in the second logical state, said interrupt processing program including a state saving routine executed only if said interrupt processing program is entered at said second address so as to save processor state information if and only if the processor status flag is in said second logical state immediately prior to execution of said interrupt processing program.

5,187,792

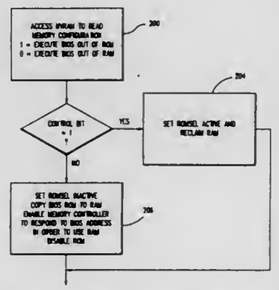
METHOD AND APPARATUS FOR SELECTIVELY RECLAIMING A PORTION OF RAM IN A PERSONAL COMPUTER SYSTEM

Richard A. Dayan; Son H. Lam, both of Boca Raton, Fla., and John P. Zimmerman, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 9, 1990, Ser. No. 521,050

Int. Cl.[5] G06F *9/46*

U.S. Cl. 395—725 **3 Claims**



1. A personal computer system compatible with application programs and operating system software, said personal computer system comprising

a high speed microprocessor coupled to a data bus;

non-volatile memory electrically coupled to the data bus, said non-volatile memory including a non-volatile operating system portion for storing operating system microcode;

volatile memory electrically responsive to the data bus, said volatile memory including a volatile operating system portion intended for use by he operating system microcode during operation of the personal computer system;

a memory controller electrically coupled to said microprocessor, said volatile memory and said non-volatile memory, said memory controller regulating communications between said volatile memory, said non-volatile memory and said high speed microprocessor; and,

enabling means for selectively authorizing said memory controller to reclaim said volatile operating system portion of said volatile memory for executing application programs, said microprocessor accessing and executing the operating system microcode from either the non-volatile portion or the volatile operating system portion based upon said enabling means.

5,187,793

PROCESSOR WITH HIERARCHAL MEMORY AND USING META-INSTRUCTIONS FOR SOFTWARE CONTROL OF LOADING, UNLOADING AND EXECUTION OF MACHINE INSTRUCTIONS STORED IN THE CACHE

John M. Keith, Washington Crossing, Pa.; Allen H. Simon, Belle Mead, N.J.; David L. Sprague; Douglas F. Dixon, both of Hopewell, N.J., and Judith A. Goldstein, Cranberry, N.J., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 9, 1989, Ser. No. 294,888

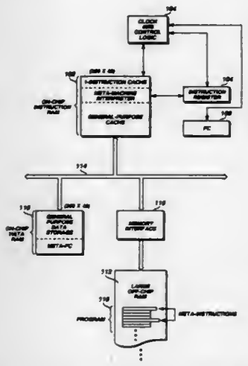
Int. Cl.[5] G06F *9/00*

U.S. Cl. 395—775 **11 Claims**

1. A hierarchical memory system for a digital data processor comprising:

VOL 1147 ISS 3 FE 16 1993 UMI

(a) a relatively large, slow main memory;
(b) a relatively small, high speed cache memory;
(c) a plurality of meta-instructions, stored in said main memory, for controlling the loading and unloading of information in the cache memory, said plurality of meta-instructions comprising:
(i) a first meta-instruction for loading a block of machine instructions from said main memory into an instruction portion of said cache memory;



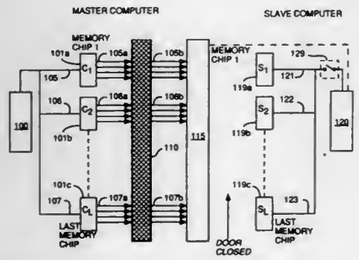
(ii) a second meta-instruction for causing the processor to execute a machine instruction at a specified location in the instruction portion of said cache memory; and
(iii) a third meta-instruction for executing a single machine instruction from said main memory;
(d) a meta-machine interpreter, comprising a machine instruction program stored in said cache memory, for executing said meta-instructions; and
(e) a special machine instruction for causing said meta-machine interpreter to execute a meta-machine at a specified location in said main memory.

5,187,794

SYSTEM FOR SIMULTANEOUSLY LOADING PROGRAM TO MASTER COMPUTER MEMORY DEVICES AND CORRESPONDING SLAVE COMPUTER MEMORY DEVICES

William A. Hall, Houston, Tex., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 15, 1989, Ser. No. 323,748
Int. Cl.[5] G06F *15/06*
U.S. Cl. 395—800 **4 Claims**



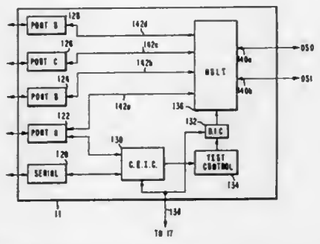
1. A multi-processing computer system comprising:
a master computer having memory means comprising a plurality of memory storage devices:
at least one slave computer each slave computer further comprising:
a microprocessor;
slave memory means comprising a plurality of slave memory storage devices corresponding in number to the plurality of memory storage devices in said master computer and electrically connected with said microprocessor;
memory communication means for connecting each said slave memory storage device with a corresponding one of the plurality of memory storage devices in the master computer;
electronic door means associated with said memory communication means for effecting a first closed condition wherein said memory communication means are blocked and a second one-way open condition wherein each slave memory device is connected with its corresponding memory storage device in the master computer,
switching means for selecting either said first closed condition or said second one-way open condition and electronically removing said electrical connection between said microprocessor and said slave memory means
whereby upon operation of said switch means to place the electronic door in said second one-way open condition and to remove said microprocessor from electrical connection with said slave memory means, loading a program into said memory storage devices of the master computer also accomplishes simultaneous loading of the program into said slave memory means.

5,187,795

PIPELINED SIGNAL PROCESSOR HAVING A PLURALITY OF BIDIRECTIONAL CONFIGURABLE PARALLEL PORTS THAT ARE CONFIGURABLE AS INDIVIDUAL PORTS OR AS COUPLED PAIR OF PORTS

Kevin D. Balmforth; Gary A. Bates, both of Fullerton; Steven P. Davies, Ontario; Hans L. Habereder, Orange; R. Loyd Harrison, Fullerton; Donald M. Hopp, Yorba Linda, and George G. Ricker, Fullerton, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jan. 27, 1989, Ser. No. 303,790
Int. Cl.[5] G06F *9/28*
U.S. Cl. 395—800 **28 Claims**



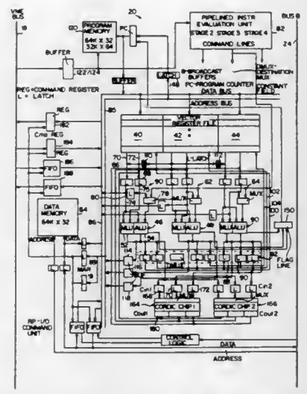
1. A signal processor comprising:
interface means having a serial control port and a plurality of bidirectional configurable parallel ports for transferring control and data signal between the signal processor and external devices, wherein the bidirectional configurable parallel ports are configurable as individual parallel ports or as a coupled pair of ports which form a port having the combined data path of the coupled pair of ports, said interface means including
serial control port means for coupling control signals between a serial input port and a control signal output port,
first parallel port means for coupling control signals between a first parallel input port and the control signal output port and for coupling data signals between the first parallel input port and a data output port,
second parallel port means for coupling data signals between a second parallel input port and the data output port, and
transfer and control means coupled to the serial and first parallel input ports and the control signal output port for controlling and selectively coupling the data signals between the first and second parallel input ports and the data output port;
arithmetic element controller means coupled to the serial control port of the interface means, the arithmetic element controller means comprising a microprogram memory and a control program memory, for loading applications programs in the control program memory and running the loaded programs, and for controlling processing of control and data signals by the signal processor;
a plurality of pipelined arithmetic elements coupled to the arithmetic element controller means and to the bidirectional configurable parallel ports of the interface means, each pipelined arithmetic element comprising a data store memory, a multiplier, and a register and arithmetic logic unit, and having the data store memory coupled to the bidirectional configurable parallel ports of the interface means for receiving and storing data signals, and coupled to the multiplier and to the register and arithmetic logic unit for performing fixed and floating point arithmetic operations on the data signals stored in the data store memory in accordance with instructions contained in the control program and the microprogram memories.

5,187,796

THREE-DIMENSIONAL VECTOR CO-PROCESSOR HAVING I, J, AND K REGISTER FILES AND I, J, AND K EXECUTION UNITS

Yulun Wang, and Partha Srinivasan, both of Goleta, Calif., assignors to Computer Motion, Inc., Goleta, Calif.

Continuation-in-part of Ser. No. 174,653, Mar. 29, 1988, Pat. No. 5,019,968. This application Jul. 16, 1990, Ser. No. 553,884
The portion of the term of this patent subsequent to May 28, 2008, has been disclaimed.
Int. Cl.[5] G06F *15/347*
U.S. Cl. 395—800 **19 Claims**



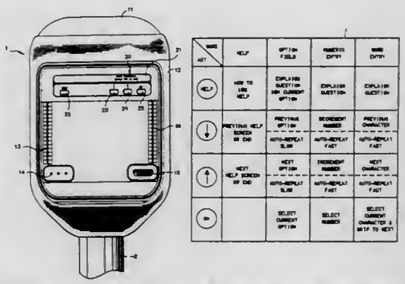
1. A processor capable of receiving and execution a series of instructions provided from a memory, for carrying out vector/vector and scalar/vector arithmetic operations, comprising,
a. a data transfer input for receiving the series of program instructions and data from the memory;
b. I, J, and K register files coupled to said said data transfer input for receiving operands therefrom, each containing a plurality of registers for storing scalar values for the three scalar components of three-dimensional vectors,
c. I, J, and K execution units coupled to said I, J, and K register files for performing arithmetic operations on operands placed in the execution units,
d. I, J, and K operand pathways connecting each I, J, and K register file, respectively, with the corresponding I, J, and K execution unit, for transferring operands stored in selected register locations to the corresponding execution units, in response to data-fetch commands carried in the program instructions,
e. first and second broadcast buffers connecting first and second pairs of operand pathways for passing operands between the two pathways in each pair of said operand pathways, in response to pathway exchange commands carried in the program instructions,
f. data-return means coupled to said I, J, and K execution unit and said I, J, and K register files for returning operands from the execution units to selected locations in the register files, in response to write-to-register commands in the program instruction,
g. a data-transfer output for passing selected operands from the processor to the memory, in response to write-to-memory commands carried in the program instruction, and
h. a program evaluation unit coupled to said I, J, and K register files for passing commands in the program instructions to the register files, the execution units, the broadcast buffers, the data-return means, and the data-transfer input and output.

5,187,797

MACHINE INTERFACE SYSTEM WITH HIERARCHAL MENUS ALLOWING USER SEQUENCING AND SELECTION OF MENU ITEMS BY ACTUATION OF THREE SWITCHES

Wyn Y. Nielsen, La Jolla; Steven C. Carlin, Spring Valley, and Dennis A. Kaiser, Escondido, all of Calif., assignors to Solatrol, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 255,156, Oct. 4, 1988, Pat. No. 5,124,942, which is a continuation-in-part of Ser. No. 250,841, Sep. 28, 1988, abandoned. This application Apr. 5, 1989, Ser. No. 334,244
Int. Cl.[5] G06F *3/02*
U.S. Cl. 395—800 **26 Claims**



15. An interface to a machine for use by a man comprising:
a display for displaying a multiplicity of datums one at a time;
a first manually actuable switch for causing the display to step-wise sequentially advance in its one-at-a-time displaying of the multiplicity of datums in a first direction;
a second manually actuable switch for causing the machine to adopt and use a currently-displayed one of the multiplicity of datums; and
a third manually actuable switch for causing the display to

VOL 1147 ISS 3 FE 16 1993 UMI

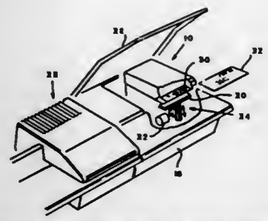
step-wise sequentially advance in its one-at-a-time displaying of the multiplicity of datums in a second direction.

5,187,798

ELECTRONIC POSTAGE METER HAVING SEPARATE FUNDS CHARGE REGISTERS AND RECREDITS FUNDS REGISTER IN PREDETERMINED AMOUNT WHEN FUNDS FALL TO PREDETERMINED LEVEL

Easwaran C. N. Nambudiri, Rye Brook, N.Y.; Arno Muller, Westport, and Wallace Kirschner, Trumbull, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 6, 1989, Ser. No. 319,456
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—800 9 Claims



1. In an electronic postage meter having a non-volatile memory, printing means, and a microcomputer for controlling printing of postage value by said printing means and accounting for postage value printed in a franking operation, the improvement comprising said non-volatile memory having at least three registers, said first register for storing postage fund information representing total meter funds available for postage printing, said first register being a descending register, said second register for storing postage fund information representing total meter funds used in postage printing, said second register being an ascending register and a third register for storing operating funds for accounting at a franking operation, and said microcomputer comprising means for increasing the fund amount stored in said third register by depositing a predetermined increment of funds withdrawn from said first descending register and incrementing said second ascending register by predetermined increment of funds when the fund amount stored in said third register falls to a predetermined level, said increment of funds being equal to the cost of least two mailpieces.

5,187,799

ARITHMETIC-STACK PROCESSOR WHICH PRECALCULATES EXTERNAL STACK ADDRESS BEFORE NEEDED BY CPU FOR BUILDING HIGH LEVEL LANGUAGE EXECUTING COMPUTERS

Anthony McAuley, Morris Plain, N.J., and Rod Goodman, Altadena, Calif., assignors to Calif. Institute of Technology, Pasadena, Calif.

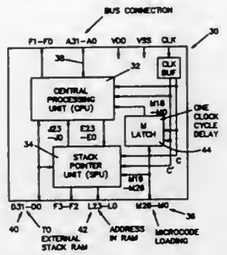
Filed May 17, 1988, Ser. No. 194,882
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—800 14 Claims

1. An Arithmetic Stack Processor (ASP) module for use in building high level language computers combining in a single chip:

a) a microprogrammable Central Processing Unit (CPU) having a plurality of code input means for sequentially loading microcode to be executed by said CPU from a source supplying the microcode, a plurality of input/output pin means for acting as a port for external data transfers to and from said CPU, a plurality of RAM pin means for reading from and writing to a stack random access memory (RAM) external to the ASP;

b) a Stack Pointer Unit (SPU) having a plurality of code input means for receiving the microcode supplied from said source and a plurality of RAM address pin means for designating addresses of said external stack RAM to be written into and read from by said CPU and a plurality of stack pointer registers for containing stack pointers to locations in said external stack RAM, said SPU comprising means for calculating from said microcode a sequence of next addresses in said external stack RAM;

c) delay means, coupled to said CPU, for receiving said microcode supplied from said source concurrently with said SPU, delaying delivery of said received microcode to



said CPU one clock cycle thereby allowing said SPU to calculate from said received microcode a sequence of next addresses in said external stack RAM one clock cycle before said CPU needs to read or write the data corresponding to each said next address; and,

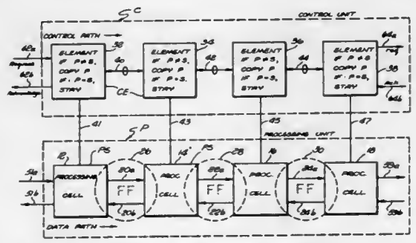
d) clock buffer means for receiving a clock signal from a source supplying the clock at an input thereof and for transmitting said clock signal to said CPU, said SPU and said delay means.

5,187,800

ASYNCHRONOUS PIPELINED DATA PROCESSING SYSTEM

Ivan E. Sutherland, Pittsburgh, Pa., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Continuation of Ser. No. 689,625, Jan. 8, 1985, abandoned, which is a continuation-in-part of Ser. No. 688,848, Jan. 4, 1985, abandoned. This application Oct. 13, 1987, Ser. No. 107,839
Int. Cl.[5] G06F *13/00*
U.S. Cl. 395—800 15 Claims



1. A data processing apparatus comprising:

a plurality of like cells connected in sequence, one cell being connected with similar predecessor and successor cells for asynchronous operation to process received data signals, said one cell including:

a processor means in said one cell;

amplifier means in said one cell, coupled to said processor means to provide a processor path in said one cell, said processor path for receiving input data signals and producing output data signals having a predetermined processed relationship to said input data signals;

switch means in said one cell for coupling said processor path to a predecessor cell as one adjacent sequential pair of cells and to a successor cell as another adjacent sequential pair of cells, whereby said one cell is controlled to selectively supply said input data signals to said predecessor cell and to selectively supply said output data signals to said successor cell whereby, as the sole storage in said processing apparatus, said adjacent sequential pairs of said cells are switchable to establish a binary storage facility with representative states as a result of cooperative interaction therebetween; and

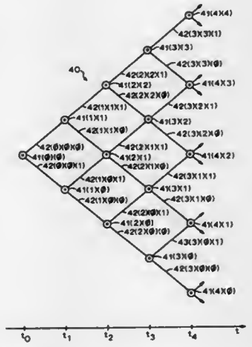
said processing apparatus further comprising control means for said switch means in said one cell to set said switch means in accordance with received data signals and a predetermined propagation pattern for said cells in said plurality of like cells in sequence connection.

5,187,801

MASSIVELY-PARALLEL COMPUTER SYSTEM FOR GENERATING PATHS IN A BINOMIAL LATTICE

Stavros A. Zenios, Marlton, N.J., and James M. Hutchinson, Cambridge, Mass., assignors to Thinking Machines Corporation, Cambridge, Mass.

Filed Apr. 11, 1990, Ser. No. 508,343
Int. Cl.[5] G06F *15/20, 15/31*
U.S. Cl. 395—800 18 Claims



1. A massively-parallel computer system for generating in parallel a plurality of paths through a binomial lattice arrangement, each binomial lattice being represented by a plurality of lattice nodes connected by path links to form a tree structure from an origin node, each path defining a sequence of path links from the origin node along a selected path link through one lattice node in each level below the origin node in the binomial lattice arrangement, said system comprising:

A. a plurality of processing elements each for performing processing operations in accordance with control signals,

B. an interconnection network connected to said processing elements for facilitating the transfer of data among the processing elements; and

C. a control arrangement for controlling the processing elements and said interconnection network comprising:

i. a configuration control elements for controlling the interconnection network to logically establish the processing elements in a two-dimensional array comprising a plurality of rows and columns, the processing elements in each row being associated with sequential ones of the lattice nodes in a path through a binomial lattice arrangement;

ii. a path link generator control element for enabling the processing elements to, in parallel, generate, a path link identifier value identifying a path link from the lattice node associated with the processing element to a lattice node associated with a successive processing element in the binomial lattice arrangement; and

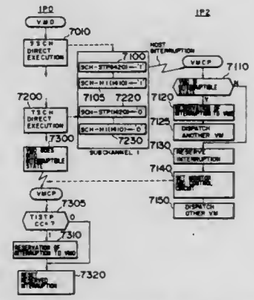
iii. a path generator element for enabling the processing elements, in parallel among the respective rows, to, within each row, generate from path link identifiers which they generated in response to the path link generator control element, lattice node identifiers, the processing elements in successive columns of each row established by said configuration control element generating a sequence of lattice node identifiers identifying sequential lattice nodes in a path in the binomial lattice.

5,187,802

VIRTUAL MACHINE SYSTEM WITH VITUAL MACHINE RESETTING STORE INDICATING THAT VIRTUAL MACHINE PROCESSED INTERRUPT WITHOUT VIRTUAL MACHINE CONTROL PROGRAM INTERVENTION

Taro Inoue, Kawasaki; Hidenori Umeno, Kanagawa; Toru Ohtsuki, Hadano, and Kiyoshi Ogawa, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 18, 1989, Ser. No. 452,240
Claims priority, application Japan, Dec. 26, 1988, 63-325802
Int. Cl.[5] G06F *13/14*
U.S. Cl. 395—800 3 Claims



1. A virtual machine system having a virtual machine, a virtual machine control program, said virtual machine selectively processing input/output (I/O) interruptions with and without intervention of said virtual machine control program when said virtual machine is set to non-interruptible and interruptible states respectively, and instruction processor means connected to main storage means, said system comprising:

hardware subchannel means included in said main storage means;

store means, provided in said hardware subchannel means, or indicating by a set condition that an I/O interruption has been accepted and reserved by a virtual machine control program regardless of whether said virtual machine is interruptible;

reset means, provided in said instruction processor means, coupled to said store means, operative when said virtual machine is set to the non-interruptible state and has processed interruption information without an intervention of the virtual machine control program, for resetting said store means;

monitor and control means, provided in said instruction processor means, coupled to said store means, for permitting the virtual machine control program to control said system when the virtual machine is set to the interruptible state and said store means indicted a set condition; and

test means, provided in said instruction processor mears, coupled to said store means, for determining whether the virtual machine has rest said store means.

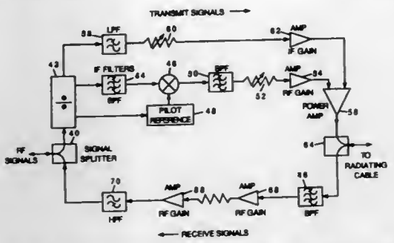
VOL 1147 ISS 3 FE 16 1993 UMI

5,187,803

REGENERATIVE RF BI-DIRECTIONAL AMPLIFIER SYSTEM

Harold K. Sohner, Richardson; Michael A. Morgan, Dallas, both of Tex., and Surinder Kumar, Saskatoon, Canada, assignors to Andrew Corporation, Orland Park, Ill.

Filed Jan. 18, 1990, Ser. No. 467,379
Int. Cl.[5] H04H *1/00*; H04B *7/14*
U.S. Cl. 455—4.1 **14 Claims**



1. In an RF communication system using a plurality of cascaded amplifier stages for amplifying signals being transmitted and received along a plurality of lengths of transmission line, the improvement wherein successive signal amplification is realized with reduced intermodulation distortion, the improvement comprising the steps of:

down-converting the transmitted RF signals to an intermediate frequency (IF) level by using a pilot signal in combination with a local oscillator signal,

applying said down-converted IF signals, in combination with said pilot signal, to said transmission line lengths,

at each of said amplifier stages, up-converting said IF signals to regenerate the original RF signals using said pilot signal,

amplifying said IF signals to a desired level,

amplifying said regenerated RF signals to a desired level and applying the signals to the lengths of transmission line at the output end of said amplifier stages, and

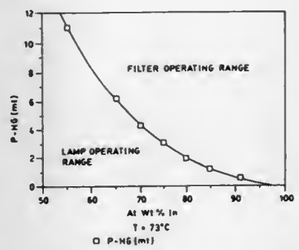
applying said amplified IF signals and said pilot signals to said output transmission line for regenerating said RF signals at the succeeding amplifier stage.

5,187,804

METHOD OF CONTROLLING THE MERCURY VAPOR PRESSURE IN A PHOTO-CHEMICAL LAMP OR VAPOR FILTER USED FOR HG^{196} ENRICHMENT

Mark W. Grossman, Belmont, Mass., assignor to GTE Products Corporation, Danvers, Mass.

Continuation of Ser. No. 352,318, May 15, 1989, abandoned.
This application May 30, 1991, Ser. No. 708,798
Int. Cl.[5] H01J *9/395, 61/24, 61/20*
U.S. Cl. 445—9 **2 Claims**



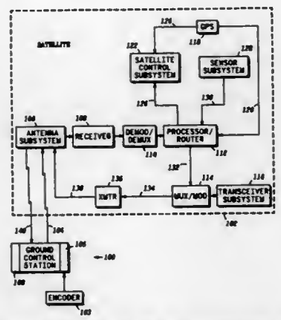
1. A process for eliminating the cold spot zones in Hg^{196} isotope enrichment lamps and filters, said process comprising replacing the liquid mercury in said lamps and filters, with a solid mercury amalgam containing from about 55 to about 80 atom weight percent indium.

5,187,805

TELEMETRY, TRACKING AND CONTROL FOR SATELLITE CELLULAR COMMUNICATION SYSTEMS

Bary R. Bertiger, Scottsdale; Raymond J. Leopold, Temper, and Kenneth M. Peterson, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 2, 1989, Ser. No. 415,842
Int. Cl.[5] H04B *7/185*
U.S. Cl. 455—12.1 **17 Claims**



1. A control system for a satellite communication system having at least one satellite with transmitters and receivers providing a plurality of user communication channels for establishing communication among a plurality of users, the control system comprising:

satellite control subsystem means on board the satellite for controlling the functions of the satellite;

ground station control means;

first means for coupling said ground station control means to one of the user communication channels for establishing communication with said satellite control subsystem, said ground station control means thereby utilizing said one of the user communication channels for transmitting commands to said satellite control subsystem means;

said satellite including:

a plurality of transmitter and receiver means for projecting a plurality of adjacent moving cells onto the earth;

each of said cells including means for transmitting and receiving said one of the user communication channels; and

hand-off means for switching said ground station control means between each of said moving cells so that said commands can continuously be provided to the satellite at least during a predetermined time period when the satellite is in the line of sight of said ground station control means; and

said satellite control subsystem means being responsive to said commands from said ground station control means to enable said commands to control a selected function of the satellite.

5,187,806

APPARATUS AND METHOD FOR EXPANDING CELLULAR SYSTEM CAPACITY

Edward R. Johnson, 1658 Swallow Dr., Sunnyvale, and Barry J. Leff, 2760 Belmont Canyon Rd., Belmont, both of Calif.

Filed Feb. 16, 1990, Ser. No. 482,226
Int. Cl.[5] H04B *7/14*; H04Q *7/02, 9/00*
U.S. Cl. 455—15 **19 Claims**

1. In a cellular system including at least one cell site located within a corresponding geographic sector, an apparatus for expanding cellular system capacity, comprising:

a cell site transceiver, located proximate to said cell site, said cell site transceiver comprising:

a) a first receiver for receiving a cell site cellular band signal directly coupled from said cell site;

b) a first converter for converting said cell site cellular band signal to a first link frequency signal;

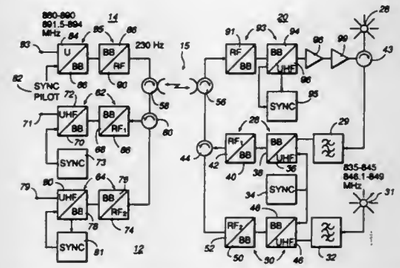
c) a first transmitter for transmitting said first link frequency signal;

d) a second receiver for receiving a second link frequency signal;

e) a second converter for converting said second link frequency signal to a remote cellular band signal; and

f) a second transmitter for transmitting said remote cellular band signal to said cell site; and

a remote site transceiver, located at a remote site from said



cell site within said geographic sector, said remote site transceiver comprising:

a) a first receiver for receiving said remote cellular band signal;

b) a first converter for converting said remote cellular band signal to said first link frequency signal;

c) a first transmitter for transmitting said first link frequency signal to said cell site transceiver;

d) a second receiver for receiving said second link frequency signal from said cell site transceiver;

e) a second converter for converting said second link frequency signal to said cell site cellular band signal; and

f) a second transmitter for transmitting said cell site cellular band signal,

whereby subdivision of said geographic sector is accomplished thereby effecting expanded cellular system capacity.

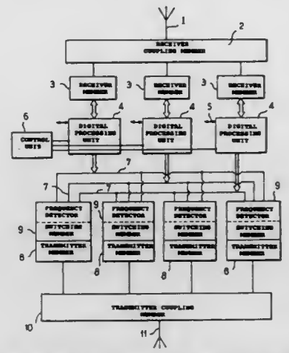
5,187,807

BASE STATION FOR A RADIOTELEPHONE COMMUNICATION SYSTEM WITH SWITCHIG MEMBERS FOR CONNECTING LINK LINES TO TRANSMITTER MEMBERS

Michel Alard, Paris, and Jean-Luc Foure, Garches, both of France, assignors to Matra Communication, Quimper, France

Filed Jun. 5, 1990, Ser. No. 533,600
Claims priority, application France, Jun. 12, 1989, 89 07722
Int. Cl.[5] H04B *7/14, 1/02*
U.S. Cl. 455—17 **5 Claims**

1. A base station for a radiotelephone communication system, the base station comprising at least one receive antenna for receiving radio signals; a receiver coupling member connected to the receive antenna; receiver members connected to the receiver coupling member; digital processing units connected to respective ones of the receiver members, to a line of a telephone network, and to a common control unit; transmitter members connected to the digital processing units; a transmitter coupling member connected to the transmitter members; and a transmit antenna connected to the transmitter coupling member, wherein the digital processing units are connected to the transmitter members via a plurality of link lines, the link lines performing parallel connections between the digital processing units and the transmitter members, wherein



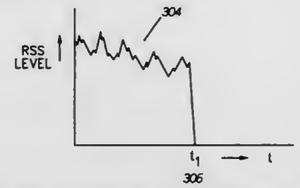
any one of the digital processing units can be connected to any one of the transmitter members via a selected link line, and wherein each one of the transmitter members includes a switching member for connecting said selected link line to an associated one of the transmitter members.

5,187,808

REPEATER SITE FAILURE DETECTOR IN COMMUNICATION SYSTEM

Michael J. Thompson, Plantation, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 5, 1990, Ser. No. 609,320
Int. Cl.[5] H04Q *7/00*
U.S. Cl. 455—33.1 **20 Claims**



1. In a radio operating in a communication system, said communication system comprising, a plurality of communication controllers, a plurality of communication units, and a central communication controller, said communication controllers transmitting information signals, a method for distinguishing between the failure of one of said plurality of communication controllers and the roaming out of range of at least one of said plurality of communication units, comprising the steps of:

receiving said information signal;

determining the signal strength of said received information signal;

monitoring the rate of change in the received signal strength;

first detecting when the signal strength of said received information signal falls below a pre-determined level

second detecting when the rate of change of the signal strength of said received information signal is lower than a pre-determined rate of change; and

accessing a second repeater of said plurality of repeaters in response to said second detecting.

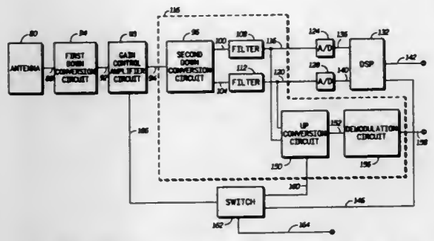
VOL 1147 ISS 3 FE 16 1993 UMI

5,187,809

DUAL MODE AUTOMATIC GAIN CONTROL

Randall W. Rich, Palatine; Rashid M. Osmani, Carol Stream; Thomas J. Walczak, Woodstock, and Stephen V. Cahill, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 572,080, Aug. 24, 1990, abandoned.
This application Jan. 8, 1992, Ser. No. 896,462
Int. Cl.[5] H04B 1/38
U.S. Cl. 455—33.1 18 Claims



1. A gain control system for controlling signal levels of a signal received by a receiver, said gain control system comprising:

first down-conversion circuitry for converting the signal received by the receiver into a first down-converted signal of an intermediate frequency and of signal level magnitudes representative of signal level magnitudes of the signal received by the receiver;

variable amplifier circuitry coupled to receive the first down-converted signal generated by the first down-conversion circuitry, said variable amplifier circuitry for generating an amplified signal of the intermediate frequency at an amplification level corresponding to a gain coefficient of the variable amplifier circuitry;

second down-conversion circuitry coupled to receive the amplified signal for converting the amplified signal of the intermediate frequency generated by said variable amplifier circuitry into a baseband signal of signal level magnitudes representative of signal level magnitudes of the signal received by the receiver;

first signal detection circuitry, coupled to receive the baseband signal generated by said second down-conversion circuitry, having means for converting the baseband signal upward in frequency to form an upconverted signal, and means, coupled to receive the upconverted signal, for determining values of the signal levels of the signal received by the receiver when said signal is comprised of a constant envelope signal and for generating a first gain control signal responsive to values of the signal levels determined thereat;

second signal detection circuitry, coupled to receive the baseband signal generated by said second down-conversion circuitry, for determining values of the signal levels of said signal received by the receiver when the signal is comprised of a non-constant envelope signal, the second signal detection circuitry formed thereby having, as a portion thereof, a digital signal processor, operative during times in which the signal received by the receiver is comprised of the non-constant envelope signal and non-operative during times in which the signal received by the receiver is comprised of the constant envelope signal, and for generating a second gain control signal responsive to values of the signal levels determined thereat; and

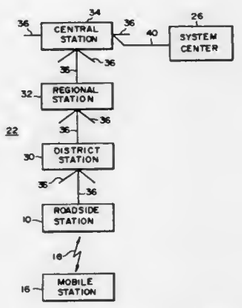
means for alternately applying either the first gain control signal or the second gain control signal to the variable amplifier circuitry thereby to adjust the gain coefficient of the variable amplifier circuitry.

5,187,810

ROUTE GUIDANCE SYSTEM FOR PROVDING A MOBILE STATION WITH OPTIMUM ROUTE DATA IN RESPONSE TO A GUIDANCE REQUEST TOGETHER WITH BASE STATION DATA INDICATIVE OF AN IDENTIFICATION OF A BASE STATION

Hiroto Yoneyama; Atushi Yashiki, and Toshiyuki Kodama, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 362,768, Jun. 7, 1989, abandoned. This application Nov. 27, 1991, Ser. No. 799,753
Claims priority, application Japan, Jun. 10, 1988, 63-141546; Jun. 10, 1988, 63-141547; Jun. 10, 1988, 63-141548; Jun. 10, 1988, 63-141549
Int. Cl.[5] H04Q 7/00; G08G 1/123, 1/09
U.S. Cl. 455—34.1 28 Claims



1. A mobile telecommunications system for communicating with at least one mobile station, the system comprising:

a plurality of base stations, each corresponding to and establishing a respective miniature zone, each base station being equipped to communicate via an electromagnetic link with the mobile station carried on a vehicle while the vehicle is located in or travelling through the corresponding miniature zone;

a system center for selecting an optimum route along which the vehicle will reach a destination to which the vehicle is directed in the substantially shortest period of time under traffic conditions presently available to said system center; and

a telecommunications network configured for bi-directional communications between said system center and said plurality of base stations;

each of said base stations having a respective first identification allotted specifically thereto and being equipped to transmit base station data including its respective first identification to mobile stations located in or travelling through the miniature zone corresponding to the base station;

said system center producing optimum route data for subsequent transmission to one or more of said plurality of base stations which the vehicle will pass as it travels along the route to said destination, said optimum route data representative of the optimum route in the form of the first identifications which correspond to said one or more of said plurality of base stations;

said mobile station being equipped, while the vehicle carrying said mobile station is located in or travelling through any of said miniature zones, to transmit mobile station data and a guidance request signal asking for said optimum route data, to receive said optimum route data, to receive said base station data from the base station corresponding to the miniature zone in which the mobile station is located or through which it is passing, to compare said optimum route data with said base station data that it has received, to transmit the guidance request signal if the comparison indicates that the vehicle has left a selected optimum route, and to output or indicate selected optimum route data so as to enable the vehicle to be guided along the selected optimum route to the destination,

each said base station being responsive to the receipt of the guidance request signal to retransmit the guidance request signal to said telecommunications network;

said telecommunications network being responsive to receipt of the guidance request signal to report the guidance request signal together with said mobile station data to said system center;

said system center selecting, in response to receipt of the guidance request signal, the optimum route for the vehicle based on the traffic conditions and the transmitted mobile station data, and transmitting or communicating said optimum route data representative of said selected optimum route to said telecommunications network for further transmission to said mobile station over said electromagnetic link, while the vehicle carrying said mobile station is located in or travelling through any said miniature zone,

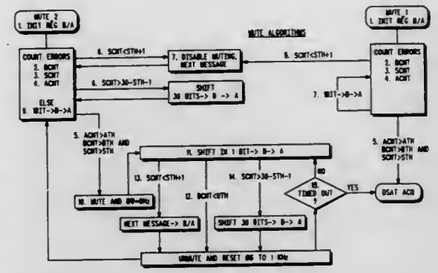
said system center also updating said optimum route data for the vehicle based on traffic conditions and transmitting the updated optimum route data to said telecommunications network for further transmission to said mobile station over said electromagnetic link while the vehicle carrying said mobile station is located in or travelling through any said miniature zone.

5,187,811

ERROR DETECTION

James C. Baker, Hanover Park; Stephen N. Levine, Itasca; Larry C. Puhl, Sleepy Hollow, and Scott N. Carney, Hoffman Estates, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 737,802, Jul. 29, 1991, abandoned, which is a continuation of Ser. No. 442,887, Nov. 29, 1989, abandoned. This application Jun. 11, 1992, Ser. No. 896,913
Int. Cl.[5] H04Q 9/02; H04B 1/10; G06F 11/08
U.S. Cl. 455—35.1 14 Claims



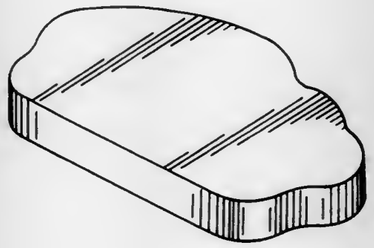
1. A method of error detection comprising:

detecting a quantity of bit errors in a first and a second set of bits as compared to a valid bit pattern;

and muting a radiotelephone in response to the detected quantity of bit errors in the first set and the second set of bits if the quantities exceed a first and a second predetermined threshold, respectively, unless one of the first and second set of bits has a quantity of errors less than a third threshold when compared to a valid alternative bit pattern.

VOL
1147
ISS
3
FE
16
1993
UMI

333,202
SHAPED FOOD PRODUCT
John Kustka, Middleton, Wis., assignor to Oscar Mayer Foods Corporation, Middleton, Wis.
Filed Mar. 4, 1991, Ser. No. 665,137
Term of patent 14 years
U.S. Cl. D1—199



333,203
REVERSIBLE TROUSERS
Anton Jones, 915 W. Irving Park Rd., #1W, Chicago, Ill. 60613
Filed Jun. 4, 1990, Ser. No. 532,507
Term of patent 14 years
U.S. Cl. D2—28



333,204
INTERCHANGEABLE SNEAKER
Shawn Terrell, 4 Latham Pl., Ronkonkoma, N.Y. 11779
Filed Oct. 30, 1990, Ser. No. 605,473
Term of patent 14 years
U.S. Cl. D2—310

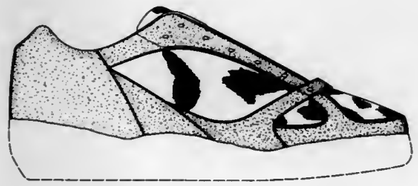


333,205
SHOE UPPER
Linda S. Zelenko, Foster, R.I., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Jan. 8, 1992, Ser. No. 817,815
Term of patent 14 years
U.S. Cl. D2—314

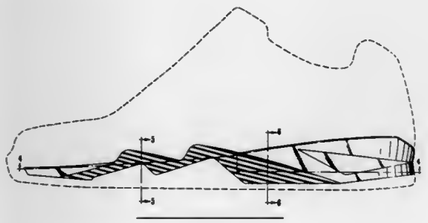


VOL
1147
ISS
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FE
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1993
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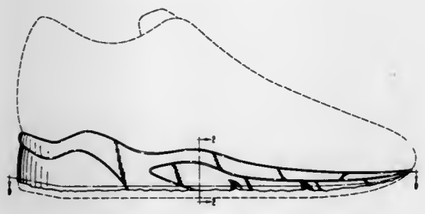
333,206
SHOE UPPER
Thomas P. Allen, Beaverton, and Robert J. Lucas, Lake Oswego, both of Oreg., assignors to Nike, Inc. and Nike International Ltd., Beaverton, Oreg.
Filed Jan. 4, 1991, Ser. No. 637,522
Term of patent 14 years
U.S. Cl. D2—314



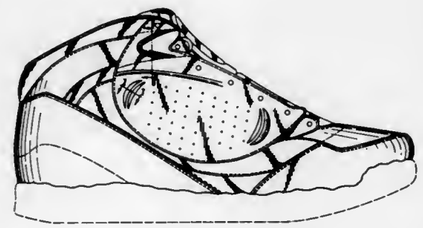
333,207
MIDSOLE OF A SHOE
Wilson W. Smith, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Aug. 5, 1991, Ser. No. 740,477
Term of patent 14 years
U.S. Cl. D2—314



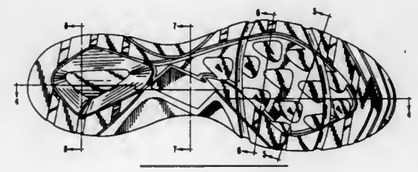
333,208
SHOE MIDSOLE PERIPHERY
Robert J. Lucas, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Feb. 25, 1992, Ser. No. 840,987
Term of patent 14 years
U.S. Cl. D2—314



333,209
SHOE UPPER
Pamela S. Greene, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed May 1, 1992, Ser. No. 877,066
Term of patent 14 years
U.S. Cl. D2—314



333,210
SHOE OUTSOLE BOTTOM
Pamela S. Greene, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed May 1, 1992, Ser. No. 877,127
Term of patent 14 years
U.S. Cl. D2—320



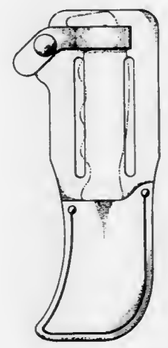
333,211
SHOE SOLE
David W. Foster, Marlboro, Mass., assignor to The Rockport Company, Inc., Marlboro, Mass.
Division of Ser. No. 819,018, Jan. 10, 1992, Pat. No. Des. 331,144. This application Jun. 29, 1992, Ser. No. 906,137
Term of patent 14 years
U.S. Cl. D2—320



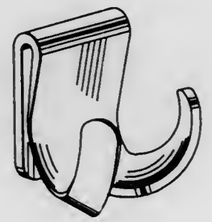
333,212
CARTOON CHARACTER FOLD-UP FAN
Joyce A. Routt, 812 Lamplight La., Hazelwood, Mo. 63042
Filed Feb. 27, 1990, Ser. No. 485,727
Term of patent 14 years
U.S. Cl. D3—3



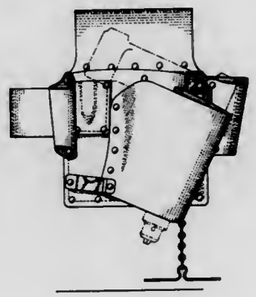
333,213
SHEATH FOR A TILE, LINOLEUM AND CARPET KNIFE
Brett P. Seber, Escondido, Calif., assignor to Buck Knives, Inc., El Cajon, Calif.
Filed Jul. 25, 1991, Ser. No. 735,468
Term of patent 14 years
U.S. Cl. D3—102



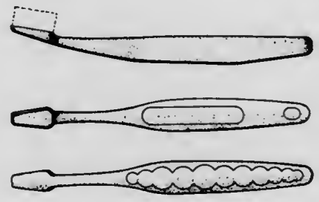
333,214
BALL HOLDER
John L. Stewart, Jr., Rte. 6, Box 590-6, Springfield, Mo. 65803, and Barry G. Dickemann, 4528 S. Fremont, Springfield, Mo. 65804
Filed Jan. 2, 1991, Ser. No. 636,950
Term of patent 14 years
U.S. Cl. D3—104



333,215
TOOL POUCH WITH HOLSTER FOR A CORDLESS DRILL
Kirk R. Brown, Santa Clarita, Calif., assignor to McGuire-Nicholas Manufacturing Co., City of Commerce, Calif.
Filed Oct. 12, 1991, Ser. No. 790,717
Term of patent 14 years
U.S. Cl. D3—105

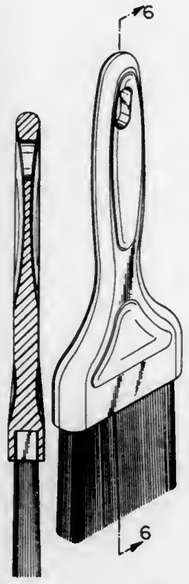


333,216
TOOTHBRUSH HANDLE
Elizabeth J. Bruns; Lawrence J. Aubert; Paul D. Fuchs, all of Cincinnati, and Daniel W. Volpenhein, Maineville, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jun. 18, 1991, Ser. No. 718,154
Term of patent 14 years
U.S. Cl. D4—104



VOL
1147
ISS
3
FE
16
1993
UMI

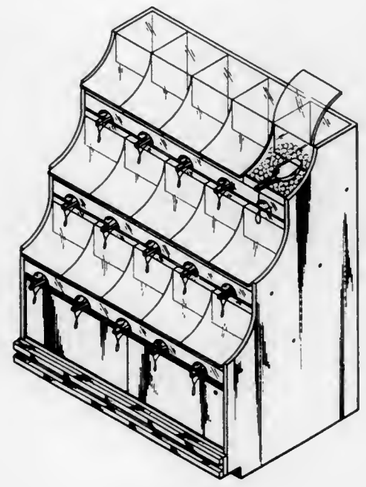
333,217
PASTRY BRUSH
Eric Gingras, Winchester, Va., assignor to Rubbermaid Commercial Products Inc., Winchester, Va.
Filed Mar. 5, 1990, Ser. No. 487,823
Term of patent 14 years
U.S. Cl. D4—135



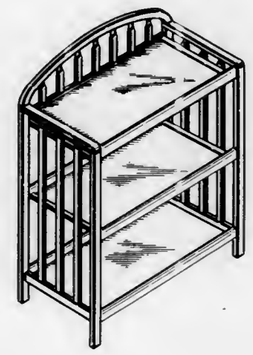
333,218
CHAIR
Edsel E. Murry, Coldwater, Miss., assignor to Chromcraft Furniture Corporation, Senatobia, Miss.
Filed May 29, 1990, Ser. No. 529,523
Term of patent 14 years
U.S. Cl. D6—366



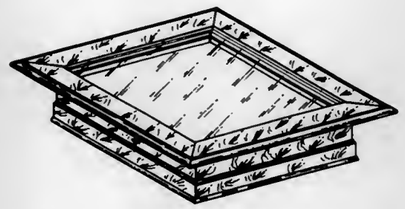
333,219
COMBINED DISPLAY AND SELF-SERVICE MERCHANDISING CABINET
Stephen A. Farber, Fishers, Ind., assignor to Golden Stream Quality Foods Co., Inc., Fishers, Ind.
Filed Jan. 31, 1991, Ser. No. 648,382
Term of patent 14 years
U.S. Cl. D6—472



333,220
DRESSING TABLE
Merlin A. Brunner, Appleton, and Harvey J. Draheim, Weyauwega, both of Wis., assignors to Simmons Juvenile Products Company, Inc., New London, Wis.
Filed Apr. 17, 1991, Ser. No. 686,803
Term of patent 14 years
U.S. Cl. D6—479



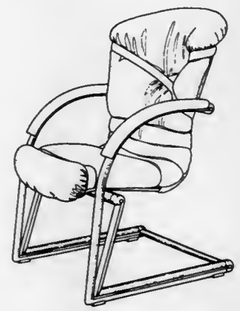
333,221
COFFEE TABLE
Michael Wurst, 6205 S. Knoll Dr., Edina, Minn. 55436
Filed Dec. 13, 1990, Ser. No. 626,864
Term of patent 14 years
U.S. Cl. D6—486



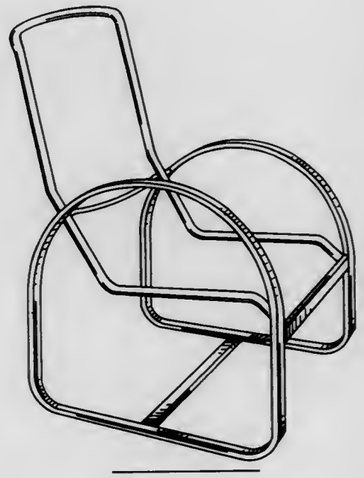
333,222
WALL MOUNTABLE JEWELRY CHEST
Mabel J. Ewing, 302 N. Main, Towanda, Pa. 18848
Filed Nov. 5, 1990, Ser. No. 608,893
Term of patent 14 years
U.S. Cl. D6—561



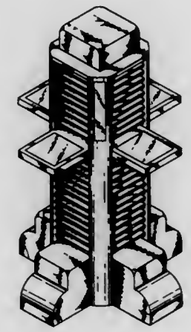
333,223
CHAIR
Andras Dozsa-Farkas, Munich, Fed. Rep. of Germany, assignor to Giroflex Entwicklungs AG, Koblenz, Switzerland
Filed Feb. 5, 1990, Ser. No. 475,426
Claims priority, application Switzerland, Sep. 20, 1989, 117704/89
Term of patent 14 years
U.S. Cl. D6—372



333,224
CHAIR FRAME
Stephen C. Hess, Birmingham, Ala., assignor to Winston Furniture Company, Inc., Birmingham, Ala.
Filed Nov. 7, 1989, Ser. No. 432,195
Term of patent 14 years
U.S. Cl. D6—373

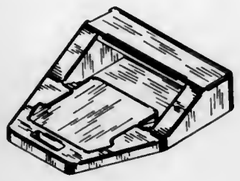


333,225
MUSIC STORAGE RACK
Jerry Robinson, 6060 Crescentville Rd. Apt. WB8, Philadelphia, Pa. 19120
Filed Jun. 21, 1990, Ser. No. 541,355
Term of patent 14 years
U.S. Cl. D6—407



VOL
1147
ISS
3
FE
16
1993
UMI

333,226
COMBINED TOY HOLDER AND PLAY AREA MODULE
Donald L. Morris, Mountain View, Calif., assignor to Magic Edge, Inc., Mountain View, Calif.
Filed Jun. 14, 1990, Ser. No. 538,193
Term of patent 14 years
U.S. Cl. D6—466



333,227
DISPLAY STAND
Alex Horvath, Sutton, Canada, assignor to Art Plastics International Inc., Ontario, Canada
Filed Feb. 6, 1991, Ser. No. 651,501
Term of patent 14 years
U.S. Cl. D6—468



333,228
TABLE
Isao Hosoe, Milan, Italy, assignor to Itoki Co. Ltd., Osaka, Japan
Filed Dec. 21, 1990, Ser. No. 631,778
Claims priority, application Japan, Aug. 29, 1990, 2-28735
Term of patent 14 years
U.S. Cl. D6—482



333,229
PEDESTAL OR SIMILAR ARTICLE
Raymond E. Bareiss, 1033 Stillman Rd., Eugene, Oreg. 97404
Filed Feb. 22, 1990, Ser. No. 482,992
Term of patent 14 years
U.S. Cl. D6—495



333,230
PEDESTAL OR SIMILAR ARTICLE
Raymond E. Bareiss, 1033 Stillman Rd., Eugene, Oreg. 97404
Filed Feb. 22, 1990, Ser. No. 482,993
Term of patent 14 years
U.S. Cl. D6—495

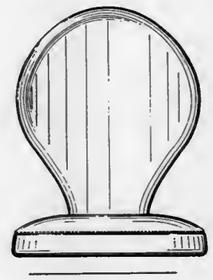
333,231
PEDESTAL OR SIMILAR ARTICLE
Raymond E. Bareiss, 1033 Stillman Rd., Eugene, Oreg. 97404
Filed Feb. 22, 1990, Ser. No. 482,994
Term of patent 14 years
U.S. Cl. D6—495



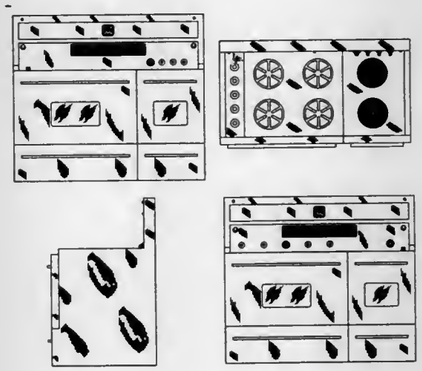
333,232
PEDESTAL
Raymond E. Bareiss, 1033 Stillman, Eugene, Oreg. 97404
Filed Dec. 4, 1990, Ser. No. 621,960
Term of patent 14 years
U.S. Cl. D6—495



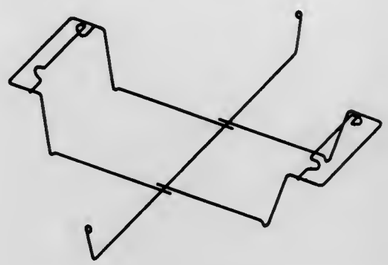
333,233
CHAIR SEAT AND BACK
George V. Oke, 6718 Kerns Rd., Falls Church, Va. 22042
Filed Jul. 25, 1990, Ser. No. 556,982
Term of patent 14 years
U.S. Cl. D6—502



333,234
STOVE
Luella V. Nichols, 250 Sky Acres Dr., Stowe, Vt. 05672
Filed Nov. 9, 1990, Ser. No. 611,155
Term of patent 14 years
U.S. Cl. D7—340



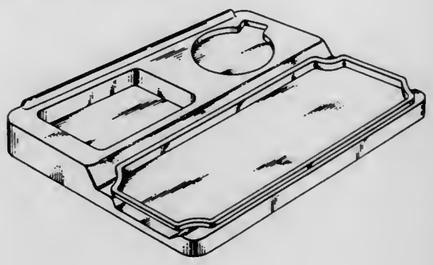
333,235
ROASTING PAN RACK
William P. Bertelsen, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Nov. 28, 1990, Ser. No. 620,587
Term of patent 14 years
U.S. Cl. D7—403



333,236
ROAST RACK
Robert B. Skerker, Buffalo, N.Y., and William Prindle, Santa Barbara, Calif., assignors to Robinson Knife Manufacturing Co., Inc., Springville, N.N.Y.
Filed Mar. 13, 1990, Ser. No. 493,375
Term of patent 14 years
U.S. Cl. D7—409

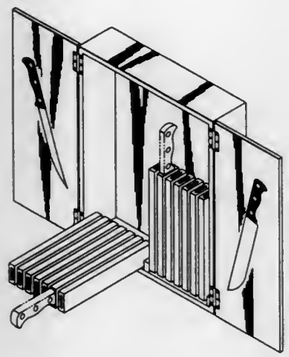


333,237
SERVING TRAY
Rudolf T. F. Plaut, Lisvane, Great Britain, assignor to Northmace Limited, Cardiff, Great Britain
Filed Aug. 26, 1988, Ser. No. 238,871
Claims priority, application United Kingdom, Feb. 26, 1988, 1048822
Term of patent 14 years
U.S. Cl. D7—553



VOL 1147 ISS 3 FEB 16 1993 UMI

333,238
RECESSED WALL MOUNTED KNIFE RACK
Kenneth E. Stead, and Jeanie Stead, both of P.O. Box 2471, Stateline, Nev. 89449
Filed Jun. 3, 1991, Ser. No. 709,414
Term of patent 14 years
U.S. Cl. D7—637



333,239
HANDLE FOR A FIXED BLADE KNIFE
Lonnie C. Pogue, San Diego, Calif., assignor to Buck Knives, Inc., El Cajon, Calif.
Filed Jul. 25, 1991, Ser. No. 735,476
Term of patent 14 years
U.S. Cl. D7—649



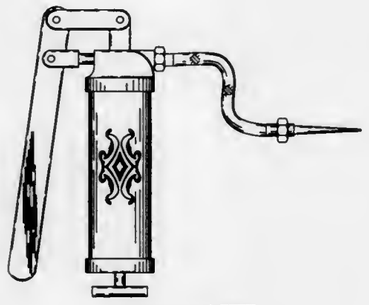
333,240
FROZEN POP CONFECTION MAKER
Dennis Kupperman, Glenview, Ill., assignor to RB Toy Development Co., Skokie, Ill.
Continuation-in-part of Ser. No. 641,071, Jan. 14, 1991. This application Aug. 19, 1991, Ser. No. 747,249
Term of patent 14 years
U.S. Cl. D7—672



333,241
CATSUP BOTTLE SCRAPER
Donald L. Elkins, 3218-A Aqueduct Dr., Lexington, Ky. 40517
Filed Feb. 15, 1991, Ser. No. 655,929
Term of patent 14 years
U.S. Cl. D7—688



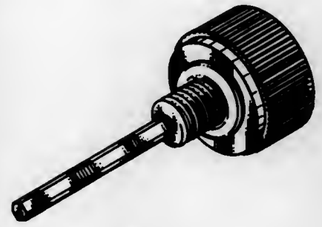
333,242
CARPET AND VINYL GLUE GUN
Robert H. Gonzales, 704 E. Juarez Ave., Odessa, Tex. 79763
Filed Mar. 14, 1991, Ser. No. 669,236
Term of patent 14 years
U.S. Cl. D8—14.1



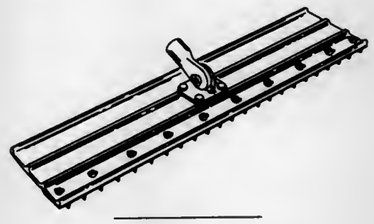
333,243
GAS VALVE WRENCH
Tom Brown, 8019 Orange St., Downey, Calif. 90242
Filed Oct. 31, 1989, Ser. No. 429,869
Term of patent 14 years
U.S. Cl. D8—21



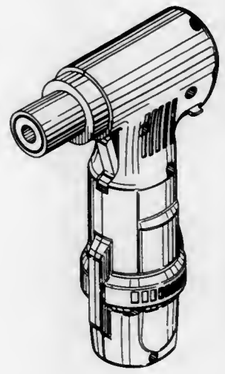
333,244
WRENCH
Richard J. Gilley, Owasso, Okla., assignor to ACCRA Manufacturing, Co., Broken Arrow, Okla.
Filed Aug. 22, 1991, Ser. No. 748,897
Term of patent 14 years
U.S. Cl. D8—29



333,245
CONCRETE FLOAT
Paul E. Griggs, 1716 N. Sabin, Wichita, Kans. 67212
Filed Dec. 24, 1990, Ser. No. 632,502
Term of patent 14 years
U.S. Cl. D8—45



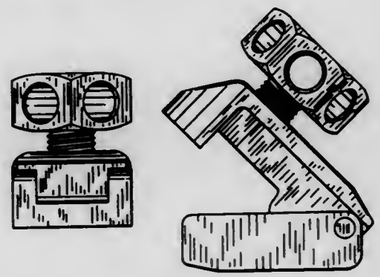
333,246
PORTABLE ELECTRIC WRENCH
Fusao Fushiya, and Hideki Tanaka, both of Anjo, Japan, assignors to Makita Electric Works, Ltd., Anjo, Japan
Filed Feb. 1, 1991, Ser. No. 649,829
Claims priority, application Japan, Aug. 6, 1990, 2-26635
Term of patent 14 years
U.S. Cl. D8—68



333,247
UNIVERSAL SOCKET ADAPTER
George P. Juliano, 2708 Robertson Ave., Pittsburgh, Pa. 15226
Filed Mar. 29, 1990, Ser. No. 501,185
Term of patent 14 years
U.S. Cl. D8—70



333,248
QUICK RELEASE DEVICE FOR CHAINSAWS
Alfred F. Harding, P.O. Box 7, Orleans, Calif. 95556
Filed Nov. 13, 1990, Ser. No. 612,247
Term of patent 14 years
U.S. Cl. D8—73



333,249
HANDGRIP FOR A HACKSAW ASSEMBLY
Theodore P. Ciccone, III, West Hartford, and Joseph P. DeCarolis, Bristol, both of Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Mar. 5, 1991, Ser. No. 664,973
Term of patent 14 years
U.S. Cl. D8—97

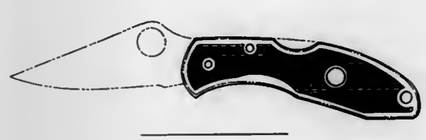


VOL 1147 ISS 3 FE 16 1993 UMI

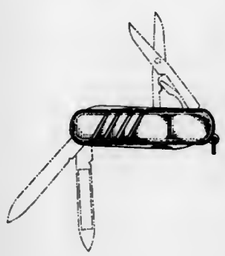
333,250
HANDGRIP FOR A HACKSAW ASSEMBLY
Theodore P. Ciccone, III, West Hartford, and Joseph P. DeCarolis, Bristol, both of Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Mar. 4, 1991, Ser. No. 663,637
Term of patent 14 years
U.S. Cl. D8—97



333,251
KNIFE HANDLE
Louis Glesser, P.O. Box 800, Golden, Colo. 80402-0800
Filed Oct. 1, 1990, Ser. No. 591,025
Term of patent 14 years
U.S. Cl. D8—99



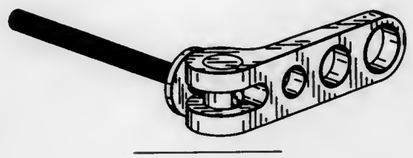
333,252
HANDLE FOR A FOLDING KNIFE
Lonnie C. Pogue, San Diego, Calif., assignor to Buck Knives, Inc., El Cajon, Calif.
Filed Jul. 25, 1991, Ser. No. 735,475
Term of patent 14 years
U.S. Cl. D8—99



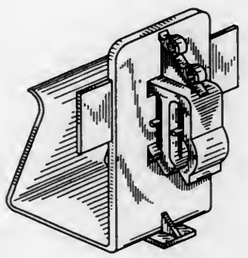
333,253
HANDLE FOR A FOLDING KNIFE
Lonnie C. Pogue, San Diego, Calif., assignor to Buck Knives, Inc., El Cajon, Calif.
Filed Jul. 25, 1991, Ser. No. 735,477
Term of patent 14 years
U.S. Cl. D8—99



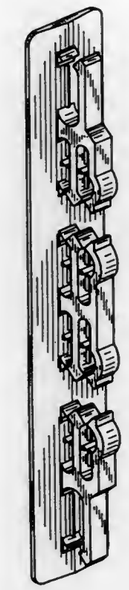
333,254
COMBINED QUICK RELEASE LEVER AND FASTENER
Geoffrey F. Ringle', 203 Afton Ave., Trenton, N.J. 08618
Filed Oct. 1, 1990, Ser. No. 591,481
Term of patent 14 years
U.S. Cl. D8—308



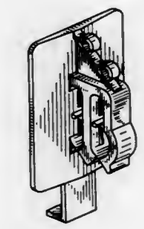
333,255
STUD CLIP FOR ELECTRICAL WIRING
Charles H. Newcomer; Alan K. Galedrige, and Richard N. Saylor, all of P.O. Box 134, Grants Pass, Oreg. 97526
Filed Aug. 1, 1991, Ser. No. 739,392
Term of patent 14 years
U.S. Cl. D8—356



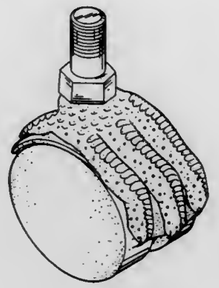
333,256
CLIP FOR SECURING ELECTRICAL WIRING
Charles H. Newcomer; Alan K. Galedrige, and Richard N. Saylor, all of P.O. Box 134, Grants Pass, Oreg. 97526
Filed Aug. 1, 1991, Ser. No. 739,394
Term of patent 14 years
U.S. Cl. D8—356



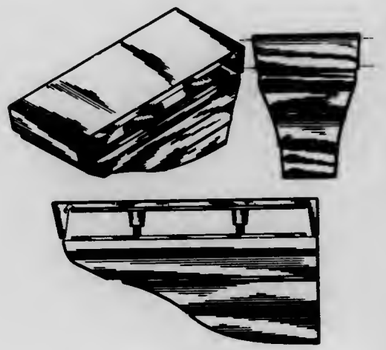
333,257
CLIP FOR SECURING ELECTRICAL WIRING
Charles H. Newcomer; Alan K. Galedrige, and Richard N. Saylor, all of P.O. Box 134, Grants Pass, Oreg. 97526
Filed Aug. 1, 1991, Ser. No. 739,395
Term of patent 14 years
U.S. Cl. D8—356



333,258
CASTER
Ruey F. Lin, 5, Lane 530, Chung Cheng N. Rd., San Chung 24103, Taipei, Taiwan
Filed Oct. 3, 1990, Ser. No. 594,220
Term of patent 14 years
U.S. Cl. D8—375



333,259
SHELF MOUNT
William C. McKeone, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 22, 1992, Ser. No. 824,489
Term of patent 14 years
U.S. Cl. D8—381

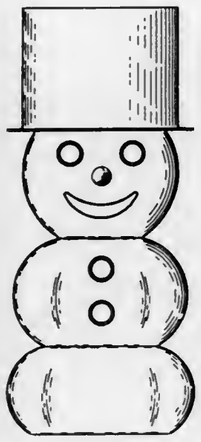


333,260
EXPANDABLE WATER-PROOF POUCH
Vincent Collaso, 89 Stillwell Corner Rd., Freehold, N.J. 07728
Filed Apr. 5, 1991, Ser. No. 681,174
Term of patent 14 years
U.S. Cl. D9—305

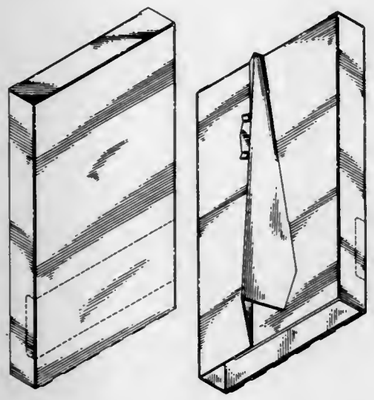


VOL 1147 ISS 3 FEB 16 1993 UMI

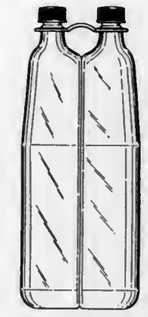
333,261
COMBINED SNOWMAN BOTTLE AND CAP
Jan A. Van Erkel, Miami, Fla., assignor to Pro Design Productions, Inc., Greenville, S.C.
Filed Aug. 21, 1990, Ser. No. 571,432
Term of patent 14 years
U.S. Cl. D9—312



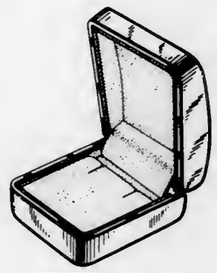
333,262
DISPENSING CARTON
Edward Zogg, Buffalo, N.Y., assignor to Bristol-Myers Squibb Company, New York, N.Y.
Filed May 10, 1991, Ser. No. 698,063
Term of patent 14 years
U.S. Cl. D9—339



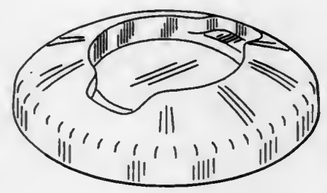
333,263
COMBINED TWO CHAMBERED BOTTLE AND CAPS
Tony Markuzov, 23 Farleigh Ave., Burwood, Victoria 3125, Australia
Filed May 16, 1991, Ser. No. 701,133
Claims priority, application Australia, Nov. 16, 1990, 3691/90
Term of patent 14 years
U.S. Cl. D9—341



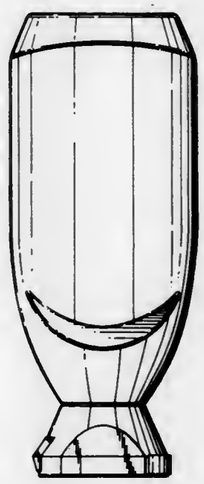
333,264
JEWELRY BOX
Myril Kaplan, Bronx, N.Y., assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 3, 1991, Ser. No. 725,260
Term of patent 14 years
U.S. Cl. D9—420



333,265
HOLDER FOR INVERTED BOTTLES
William J. Lindsey, P.O. Box 359, Balboa Island, Calif. 92662
Filed Mar. 12, 1991, Ser. No. 669,186
Term of patent 14 years
U.S. Cl. D9—455



333,266
COMBINED BOTTLE AND CAP
Huberdina J. H. M. Walravens, The Hague, Netherlands, assignor to Thomas J. Lipton Co., Division of Conopco, Inc., Englewood Cliffs, N.J.
Filed Jun. 18, 1990, Ser. No. 540,411
Claims priority, application Int'l Pat. Institute, Dec. 19, 1989, DM/015383
The portion of the term of this patent subsequent to Oct. 6, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—520



333,267
COMBINED BOTTLE AND CAP
Kerstin Krumscheid, Frankfurt am Main, Fed. Rep. of Germany, assignor to Colgate-Palmolive Company, New York, N.Y.
Continuation-in-part of Ser. No. 483,522, Feb. 22, 1990, abandoned. This application May 15, 1990, Ser. No. 524,092
Term of patent 14 years
U.S. Cl. D9—529



333,268
JAR
Robert P. Arlinghaus, Lawrenceburg, Ind.; Edward H. Meisner, Short Hills, N.J.; Roland Charriez, Peekskill, N.Y.; Daniel H. Millisor, Cincinnati, and Victor Moreno, Montgomery, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed May 31, 1991, Ser. No. 710,900
Term of patent 14 years
U.S. Cl. D9—538



333,269
COMBINED BOTTLE AND STOPPER
Michelle N. Albright, and Denise M. Paglina, both of New York, N.Y., assignors to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.
Filed Sep. 12, 1991, Ser. No. 758,945
Term of patent 14 years
U.S. Cl. D9—544

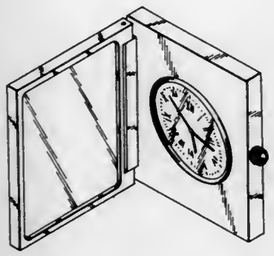


VOL 1147 ISS 3 FEB 16 1993 UMI

333,270
BOTTLE
Michelle N. Albright, and Denise M. Paglina, both of New York, N.Y., assignors to Elizabeth Arden Co., Division of Conopco, Inc., New York, N.Y.
Filed Sep. 12, 1991, Ser. No. 758,943
Term of patent 14 years
U.S. Cl. D9—566



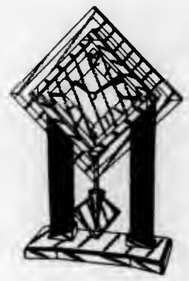
333,271
COMBINED CLOCK AND PICTURE FRAME
Janusz Erlichman, Lantan Island, Hong Kong, assignor to Janusz Erlichman, Mt Kisco, N.Y.
Filed Sep. 4, 1990, Ser. No. 576,736
Term of patent 14 years
U.S. Cl. D10—2



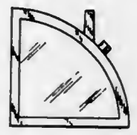
333,272
ALARM CLOCK
Richard F. M. Peersmann, ET Scheveningen, Netherlands, assignor to Pollyflame International B.V., Netherlands
Filed Jun. 15, 1990, Ser. No. 539,054
Claims priority, application United Kingdom, Jan. 12, 1990, 2003970
Term of patent 14 years
U.S. Cl. D10—15



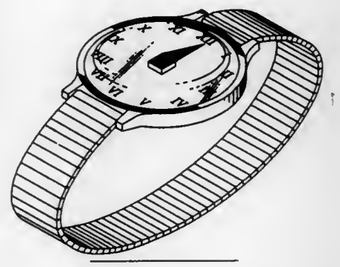
333,273
CLOCK
Masumi Mukoyama, Tokyo, Japan, assignor to Seikosha Co., Ltd., Japan
Filed Jul. 26, 1990, Ser. No. 558,843
Term of patent 14 years
U.S. Cl. D10—29



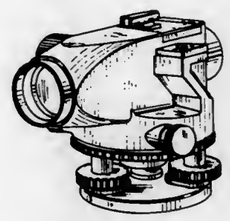
333,274
WATCH
Robert A. Brodmann, New York, N.Y., assignor to Ventura Design on Time A.G., Switzerland
Division of Ser. No. 287,988, Dec. 20, 1988. This application Jan. 15, 1992, Ser. No. 822,551
Term of patent 14 years
U.S. Cl. D10—30



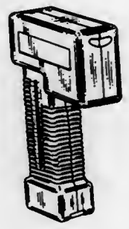
333,275
SUNDIAL WRIST WATCH
Bill O'Hare, P.O. Box 896, Mountain View, Calif. 94042
Filed Dec. 20, 1990, Ser. No. 631,043
Term of patent 14 years
U.S. Cl. D10—31



333,276
SURVEYING INSTRUMENT
Volker Donn, Königsbronn, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany
Filed Jul. 5, 1990, Ser. No. 548,759
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1990, 9000370
Term of patent 14 years
U.S. Cl. D10—66



333,277
FISHING WEIGH SCALE
Richard J. Robbins, Derby, Kans., assignor to Zebco Corporation, Tulsa, Okla.
Filed Jan. 24, 1990, Ser. No. 470,032
The portion of the term of this patent subsequent to Feb. 2, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D10—89



333,278
COMBINED RETROREFLECTOR AND DELINEATOR FOR ROADWAYS
Stephen Bezas, 91 Willow Ave., Huntington, N.Y. 11743
Filed Apr. 22, 1991, Ser. No. 688,336
Term of patent 14 years
U.S. Cl. D10—113

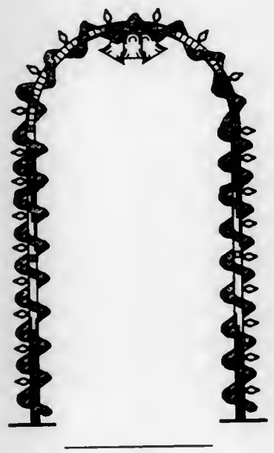


333,279
EARRING
Tony Fryklund, 10329 Cord Ave., Downey, Calif. 90241
Filed Jan. 16, 1991, Ser. No. 645,001
Term of patent 14 years
U.S. Cl. D11—43

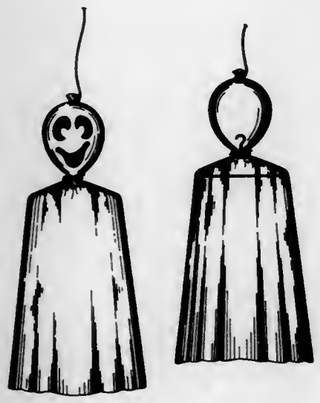


VOL 1147 ISS 3 FE 16 1993 UMI

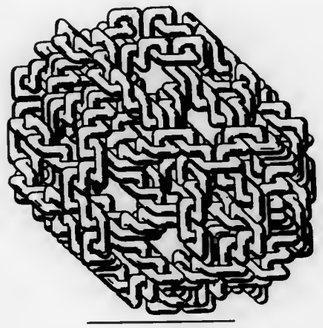
333,280
HOLIDAY ARCH
John P. Rago, 2750 Mesta St., Bethel Park, Pa. 15102, and Richard J. Rago, 1246 19th St., Hermosa Beach, Calif. 90254
Filed Apr. 22, 1991, Ser. No. 688,880
Term of patent 14 years
U.S. Cl. D11—117



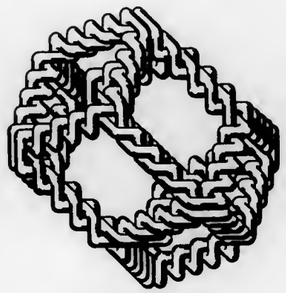
333,281
HALLOWEEN GHOST DECORATION
Neal N. Mankey, Charlotte, N.C., assignor to Allied Plastics, Inc., Gastonia, N.C.
Filed Jun. 7, 1991, Ser. No. 712,609
Term of patent 14 years
U.S. Cl. D11—121



333,282
SCULPTURE
R. Morris Fuller, 400 Park Pl., Newport News, Va. 23601
Filed Mar. 22, 1990, Ser. No. 497,576
Term of patent 14 years
U.S. Cl. D11—131



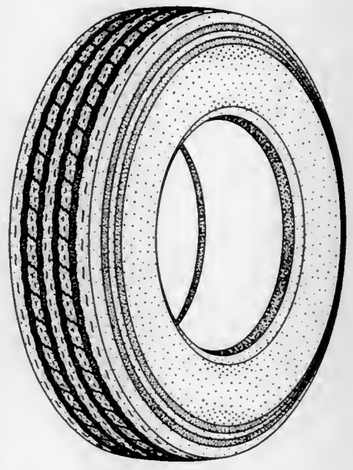
333,283
SCULPTURE
R. Morris Fuller, 400 Park Pl., Newport News, Va. 23601
Filed Sep. 25, 1990, Ser. No. 588,299
Term of patent 14 years
U.S. Cl. D11—131



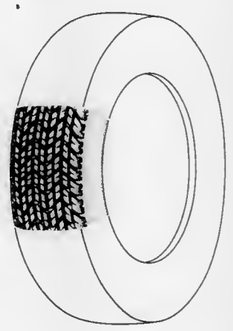
333,284
SCULPTURE
R. Morris Fuller, 400 Park Pl., Newport News, Va. 23601
Filed Sep. 25, 1990, Ser. No. 587,444
Term of patent 14 years
U.S. Cl. D11—131



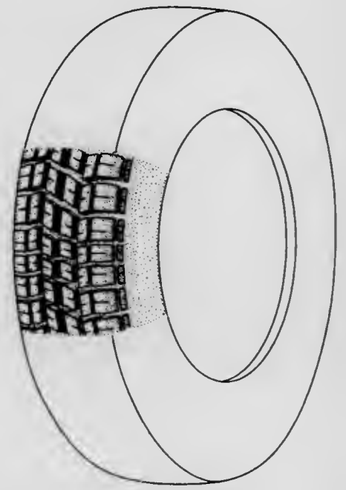
333,285
TIRE
Silvana Hinrichsen, and Alessandro Ceccarelli, both of Rome, Italy, assignors to Bridgestone/Firestone, Inc., Akron, Ohio
Filed Jun. 12, 1990, Ser. No. 537,533
Claims priority, application Italy, Dec. 20, 1989, 53567-[U]
Term of patent 14 years
U.S. Cl. D12—142



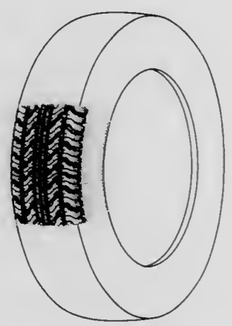
333,286
VEHICLE TIRE
Dean E. Rogers, Clinton; Neal G. Sehm, Akron; Ilya W. Veklseman, Akron, and Peter D. Yahner, Akron, all of Ohio, assignors to General Tire, Inc., Akron, Ohio
Filed Aug. 2, 1991, Ser. No. 740,191
Term of patent 14 years
U.S. Cl. D12—146



333,287
VEHICLE TIRE
Mark D. Slingluff, North Canton, and Gary P. Zolton, Richfield, both of Ohio, assignors to General Tire, Inc., Akron, Ohio
Filed Aug. 2, 1991, Ser. No. 740,202
Term of patent 14 years
U.S. Cl. D12—146

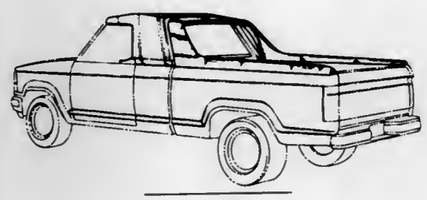


333,288
VEHICLE TIRE
Dean E. Rogers, Clinton; Neal G. Sehm, Akron; Ilya W. Veklseman, Akron, and Peter D. Yahner, Akron, all of Ohio, assignors to General Tire, Inc., Akron, Ohio
Filed Aug. 2, 1991, Ser. No. 740,203
Term of patent 14 years
U.S. Cl. D12—146



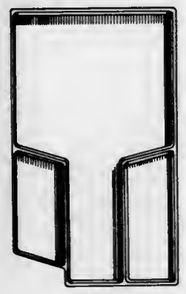
VOL 1147 ISS 3 FEB 16 1993 UMI

333,289
COMBINED CONVERTIBLE TOP AND EXTENSION TRIM FOR THE BED OF A PICKUP TRUCK
Jack W. Shirlin, 31706 Sheridan, Garden City, Mich. 48135, and Robert T. Kaiser, 32916 Avondale, Westland, Mich. 48185
Filed May 10, 1990, Ser. No. 522,369
Term of patent 14 years
U.S. Cl. D12—156



333,290
TRAY FOR SIGNS
Joseph A. Johnson, II, 1628 Lenz La., Boise, Id. 83712
Filed Sep. 12, 1989, Ser. No. 407,012
Term of patent 14 years
U.S. Cl. D12—157

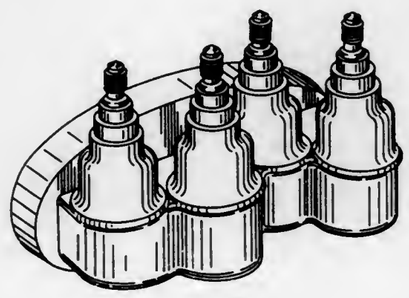




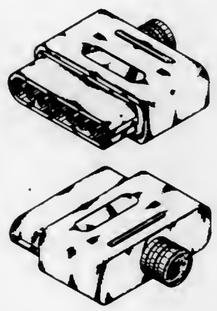
333,291
ANCHOR
Myron Burson, and David Burson, both of 15201 SW. 184th St., Miami, Fla. 33187-1718
Filed Jul. 18, 1991, Ser. No. 731,884
Term of patent 14 years
U.S. Cl. D12—215



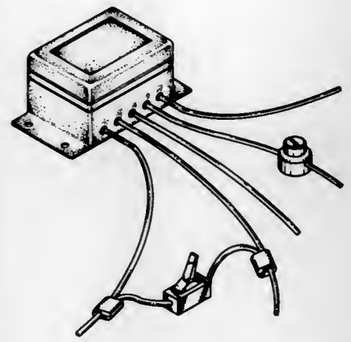
333,292
ELECTRICAL BUS CONNECTOR HOUSING
Carlo B. DeLuca, Birmingham, Ala., assignor to Square D Company, Palatine, Ill.
Filed May 14, 1991, Ser. No. 702,191
Term of patent 14 years
U.S. Cl. D13—146



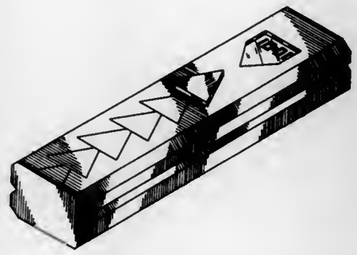
333,293
ELECTRICAL CONNECTOR FOR A VIDEO GAME SYSTEM
Ken'ichiro Ashida, Kyoto, Japan, assignor to Nintendo Co., Ltd., Kyoto, Japan
Filed Aog. 20, 1991, Ser. No. 747,757
Term of patent 14 years
U.S. Cl. D13—147



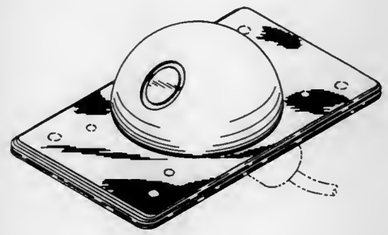
333,294
AUTOMOBILE HOT WIRE PREVENTION SWITCH
John Dossey, 4000 Georgian Dr., Ft. Worth, Tex. 76117
Filed Jun. 21, 1991, Ser. No. 718,860
Term of patent 14 years
U.S. Cl. D13—158



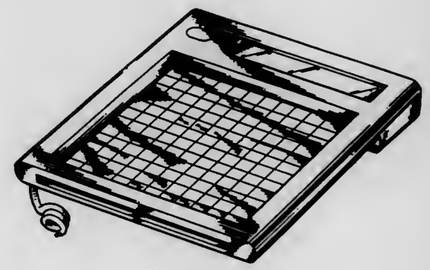
333,295
DEVICE FOR RESETTING A DIGITAL CLOCK FROM A REMOTE LOCATION
Jeanette E. Weber, 702 S. Adams St., Nevada, Mo. 64772
Filed Jan. 24, 1991, Ser. No. 645,296
Term of patent 14 years
U.S. Cl. D13—168



333,296
COMBINED PALM SWITCH HOUSING AND BASE PLATE
David M. Stedham, Reno, Nev., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Apr. 1, 1991, Ser. No. 680,290
Term of patent 14 years
U.S. Cl. D13—171



333,297
HAND HELD ORDER ENTRY TABLET
Dino M. Savio, Clearwater, Fla., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 15, 1990, Ser. No. 524,097
Term of patent 14 years
U.S. Cl. D14—100

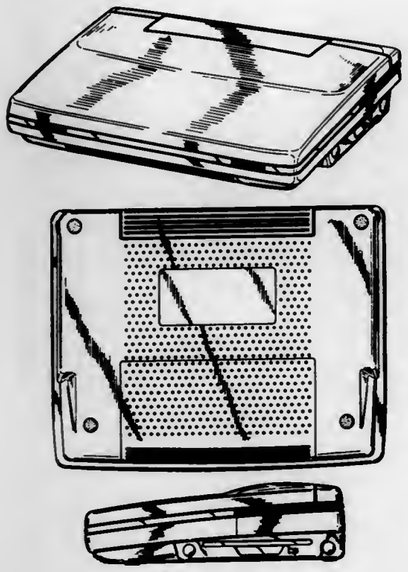


333,298
ELECTRONIC DIGITAL BUSINESS CARD
Edward Raslowsky, and Eileen Raslowsky, both of 18 Ridge Rd., Clark, N.J. 07066
Filed Jun. 26, 1990, Ser. No. 543,577
Term of patent 14 years
U.S. Cl. D14—100

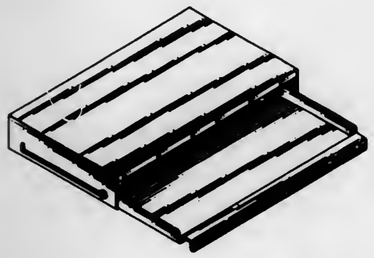


VOL 1147 ISS 3 FE 16 1993 UMI

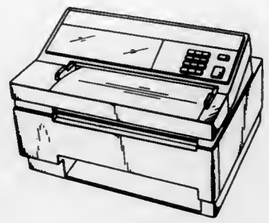
333,299
PORTABLE COMPUTER
John M. Amber, Menlo Park; Michael R. Barry, Palo Alto, and Teck Yong, Mountain View, all of Calif., assignors to Beaver Computer Corporation, San Jose, Calif.
Filed Feb. 25, 1991, Ser. No. 660,598
Term of patent 14 years
U.S. Cl. D14—106



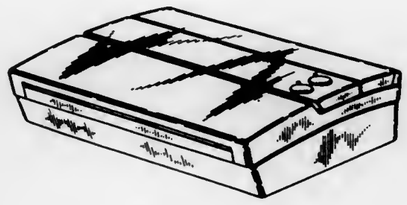
333,300
COMPUTER STAND WITH SLIDING KEYBOARD SHELF
David O. Hatcher, Williamsville, N.Y., assignor to Posting Equipment Corporation, Buffalo, N.Y.
Filed May 17, 1991, Ser. No. 703,132
Term of patent 14 years
U.S. Cl. D14—114



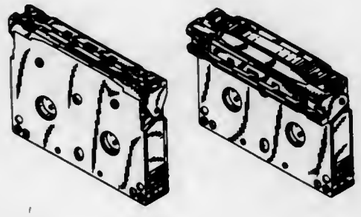
333,301
FACSIMILE TRANSMITTER/RECEIVER
Kiyotaka Morozumi, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan
Filed May 30, 1991, Ser. No. 707,398
Claims priority, application Japan, Nov. 30, 1990, 2-39870
Term of patent 14 years
U.S. Cl. D14—118



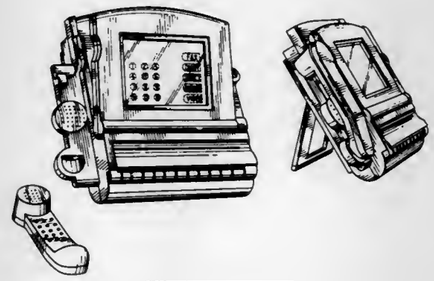
333,302
FACSIMILE TRANSCEIVER
Toru Ebihara, Higashimurayama; Atsuhiko Urushihara; Jyun Furuya, both of Kokubunji; Toshiyuki Moriya, Tokorozawa, and Shinjyu Ito, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Aug. 19, 1991, Ser. No. 752,252
Claims priority, application Japan, Jul. 31, 1991, 3-22694
Term of patent 14 years
U.S. Cl. D14—118



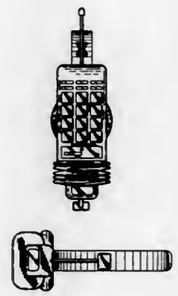
333,303
MAGNETIC TAPE CASSETTE
Masato Tanaka, and Kiyotaka Yanaka, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed May 31, 1990, Ser. No. 530,987
Claims priority, application Japan, Dec. 6, 1989, 1-44289
Term of patent 14 years
U.S. Cl. D14—121



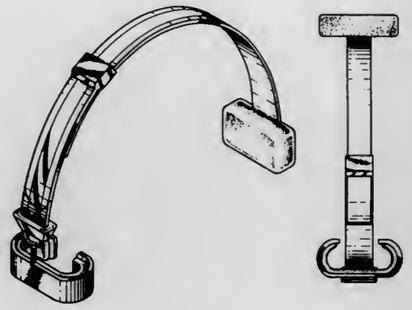
333,304
COMBINATION TELEPHONE, FACSIMILE, STILL PICTURE TELEVISION INFORMATION COMMUNICATION APPARATUS FOR HOME OR OFFICE USE
Takeshi Taniuchi; Kozo Shima, both of Kamakura, Japan; Gregory S. Breiding, Columbus, and Spencer B. Murrell, Delaware, both of Ohio, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 29, 1991, Ser. No. 677,742
Term of patent 14 years
U.S. Cl. D14—130



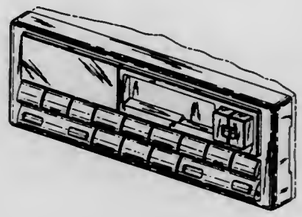
333,305
HEADSET TELEPHONE
David H. West, 353 Mammoth Rd., Apt. B, Manchester, N.H. 03103
Filed May 28, 1990, Ser. No. 705,891
Term of patent 14 years
U.S. Cl. D14—223



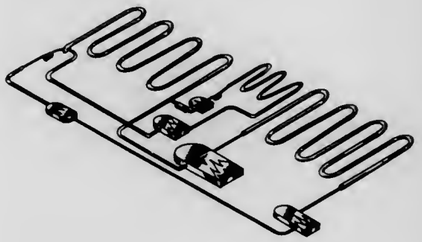
333,306
HEADGEAR TO HOLD A TELEPHONE HANDSET ON A USER
Tomas H. Ferraro, 27940 Solamint R.D. #6-204, Canyon Country, Calif. 91351
Filed May 9, 1991, Ser. No. 697,455
Term of patent 14 years
U.S. Cl. D14—251



333,307
FRONT CONTROL PANEL FOR AN AUTOMOTIVE RADIO
Stephen B. Sliper, Woodhaven; Walter A. Danilowicz, Livonia, and Soo Y. Kang, Inkster, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Jan. 22, 1991, Ser. No. 648,426
Term of patent 14 years
U.S. Cl. D14—258



333,308
HEAT PUMP ACCESSORY
Terry A. Smart, 6441 Starlite Dr., Sissonville, W. Va. 25320
Filed Oct. 10, 1990, Ser. No. 595,017
Term of patent 14 years
U.S. Cl. D15—7

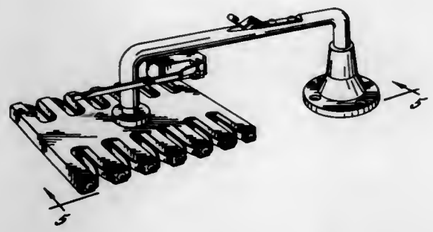


VOL 1147 ISS 3 FE 16 1993 UMI

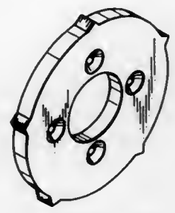
333,309
LAWN MOWER WITH BAG
Kristoffer A. Hess, Brockville; Michael G. Sirois, Ottawa; Ronald G. Hare; Ronald A. Jackson, both of Brockville, all of Canada, and Martin P. Gierke, Baltimore, Md., assignors to Black & Decker, Inc., Newark, Del.
Filed Jun. 1, 1990, Ser. No. 533,049
The portion of the term of this patent snbsequent to Oct. 13, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D15—14



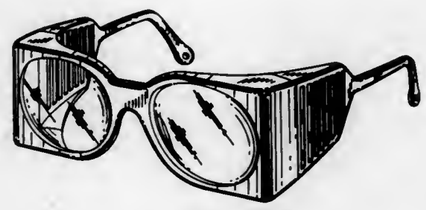
333,310
COMBINED ARM AND HOLDER USED IN APPAREL MANUFACTURE TO TRANSFER FABRIC ITEMS BETWEEN WORK STATIONS
Joseph W. A. Off, and Mahala G. Langford, both of Raleigh, both of N.C., assignors to Textile/Clothing Technology Corporation, Raleigh, N.C.
Filed Nov. 1, 1990, Ser. No. 607,482
Term of patent 14 years
U.S. Cl. D15—78



333,311
PACKAGING MACHINE POUCH PERFORATOR WHEEL
Steven D. Davis, Yuciapa, Calif., assignor to W.A. Lane, Inc., San Bernardino, Calif.
Filed Jan. 2, 1990, Ser. No. 459,582
Term of patent 14 years
U.S. Cl. D15—127



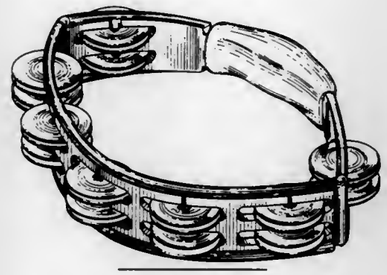
333,312
ANTI-LASER PROTECTIVE SPECTACLES
Heinz-Wilhelm Paysan, Aalen-Waldhausen; Hermann Schurle, Aalen; Wolfgang Grimm, Heidenheim, and Hans Gaiser, Reutlingen, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany
Filed Feb. 20, 1990, Ser. No. 482,359
Claims priority, application Fed. Rep. of Germany, Aug. 25, 1989, 8905961[U]
Term of patent 14 years
U.S. Cl. D16—102



333,313
MAGNIFYING GLASS
Joachim Hornschu; Volker Donn, both of Königsbronn, and Wilhelm Schmidt, Rainau-Buch, all of Fed. Rep. of Germany, assignors to Carl-Zeiss-Stiftung, Heidenheim/Brenz, Oberkochen, Fed. Rep. of Germany
Continuation of Ser. No. 10,850, Feb. 4, 1987, abandoned. This application Feb. 28, 1990, Ser. No. 486,235
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1986, MR779
Term of patent 14 years
U.S. Cl. D16—135



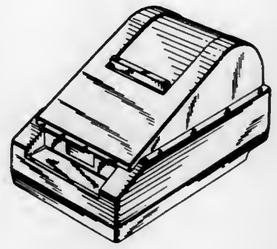
333,314
TAMBOURINE
Wayne E. Cohen, Pomona, N.Y., and Donald Kralik, Garfield, N.J., assignors to Latin Percussion, Inc., Garfield, N.J.
Filed Mar. 25, 1991, Ser. No. 674,723
Term of patent 14 years
U.S. Cl. D17—22



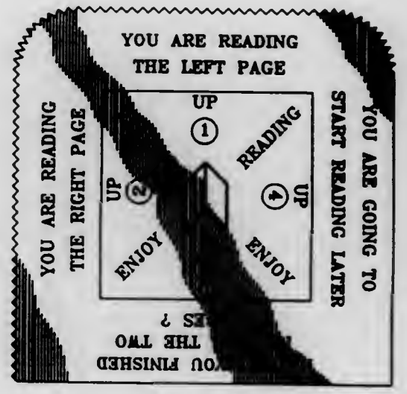
333,315
CALCULATOR CASE
Joseph C. Sereika, Parsippany, and Thomas Perelli, Stanhope, both of N.J., assignors to Monroe Systems for Business, Inc., Morris Plains, N.J.
Filed Jan. 8, 1991, Ser. No. 638,649
Term of patent 14 years
U.S. Cl. D18—7



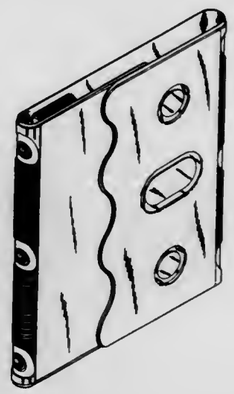
333,316
PRINTER FOR ELECTRONIC COMPUTER
Shoichi Ishizawa, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan
Filed Apr. 30, 1991, Ser. No. 693,280
Claims priority, application Japan, Nov. 1, 1990, 2-36751
Term of patent 14 years
U.S. Cl. D18—55



333,317
COMBINED BOOKMARK AND READER'S AID
Hector E. Jimenez T., 274 Irving Ave., Brooklyn, N.Y, 11237
Filed Apr. 2, 1991, Ser. No. 679,350
Term of patent 14 years
U.S. Cl. D19—32

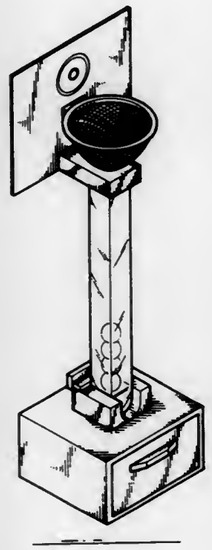


333,318
BINDER
Brian K. York, Beavercreek, Ohio, assignor to The Mead Corporation, Dayton, Ohio
Continuation-in-part of Ser. No. 555,959, Jul. 23, 1990. This application Oct. 26, 1990, Ser. No. 605,875
Term of patent 14 years
U.S. Cl. D19—26



VOL
1147
ISS
3
FE
16
1993
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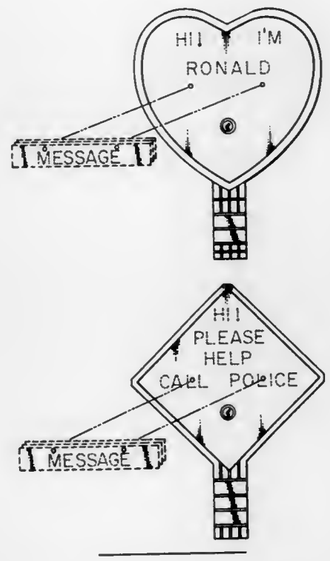
333,319
TEACHING AID FOR CHILDREN LEARNING ALGEBRAIC NUMBERS
Faa C. Hwang, No. 12, Alley 37, Lane 41, Ting Hsing Rd., Kuei Shan Hsiang, Tao Yuan Hsien, Taiwan
Filed Apr. 3, 1991, Ser. No. 679,580
Term of patent 14 years
U.S. Cl. D19—64



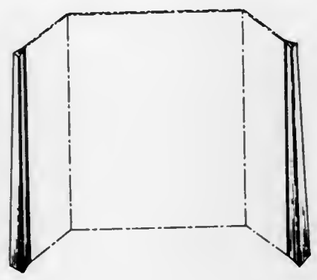
333,320
DECAL
Jack S. Chick, 3011 Vail Ave., Pueblo, Colo. 81005
Filed Jun. 3, 1991, Ser. No. 709,417
Term of patent 14 years
U.S. Cl. D20—11



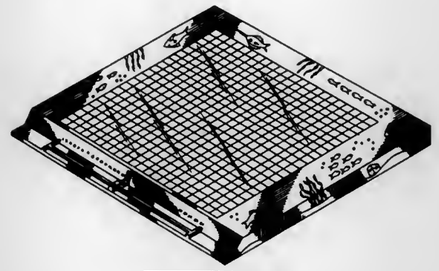
333,321
MESSAGE SIGN BOARD
Ronald P. Barros, 19116 Hamlin Ave., #7, Reseda, Calif. 91335, and James Jackson, 16432 Moor Park St., Encino, Calif. 91436
Filed Sep. 14, 1989, Ser. No. 407,031
Term of patent 14 years
U.S. Cl. D20—40



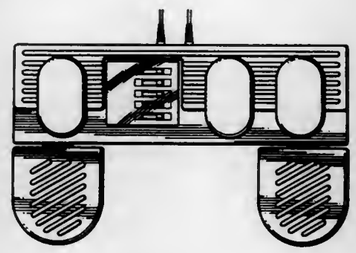
333,322
EDGE SUPPORTING BRACE FOR DISPLAY PANELS
Curtis H. Lindblom, and Gordon P. Savoie, both of Burnsville, Minn., assignors to Skyline Displays, Inc., Burnsville, Minn.
Filed Nov. 19, 1990, Ser. No. 629,342
Term of patent 14 years
U.S. Cl. D20—44



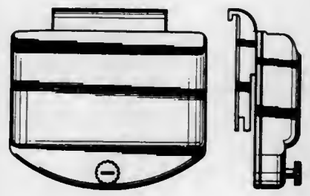
333,323
TREASURE HUNT GAME
Mark A. Nelson, and Stephen E. Isaak, both of Rt. 8 Box 214, Flagstaff, Ariz. 86004
Filed Aug. 22, 1990, Ser. No. 570,713
Term of patent 14 years
U.S. Cl. D21—25



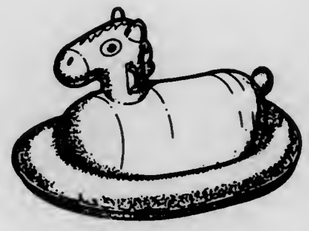
333,324
FOOT PEDAL FOR ELECTRONIC GAME
Kin-Man T. Michael, Kowloon, Hong Kong, assignor to STD Electronic International Ltd., Hong Kong
Filed Nov. 25, 1991, Ser. No. 797,277
Term of patent 14 years
U.S. Cl. D21—48



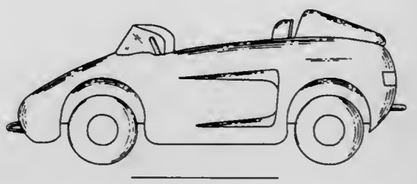
333,325
ELECTRONIC GAME CONVERTER
King-Ho So, Aberdeen, Hong Kong, assignor to Kalplus Limited, Hong Kong
Filed Dec. 19, 1991, Ser. No. 810,029
Claims priority, application United Kingdom, Aug. 9, 1991, 2016589
Term of patent 14 years
U.S. Cl. D21—48



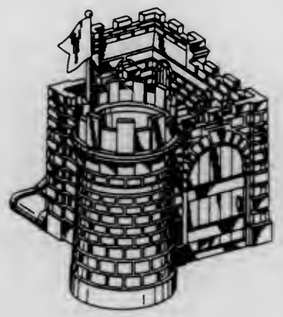
333,326
INFLATABLE ROCKING HORSE
Roger Lee, Taipei, Taiwan, assignor to Leisuretime Products Limited, Surrey, England
Filed Jun. 14, 1991, Ser. No. 715,670
Claims priority, application United Kingdom, Dec. 15, 1990, 2011740
Term of patent 14 years
U.S. Cl. D21—75



333,327
RIDE-ON TOY VEHICLE
Josaphat Plater-Zyberk, 681 Wetherby La., Devon, Pa. 19333
Filed Dec. 17, 1990, Ser. No. 628,661
Term of patent 14 years
U.S. Cl. D21—76

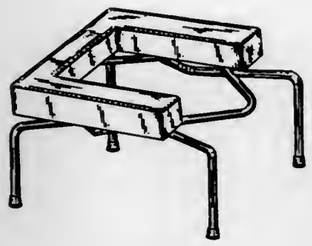


333,328
TOY CASTLE
Kevin R. Aker, Hudson, and Thomas E. Fish, Jr., Eastlake, both of Ohio, assignors to The Little Tikes Company, Hudson, Ohio
Filed Apr. 8, 1991, Ser. No. 681,383
Term of patent 14 years
U.S. Cl. D21—114

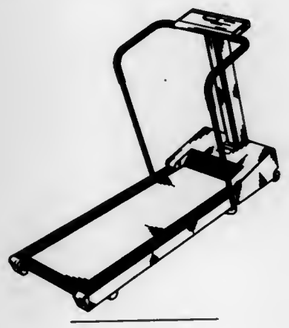


VOL 1147 ISS 3 FE 16 1993 UMI

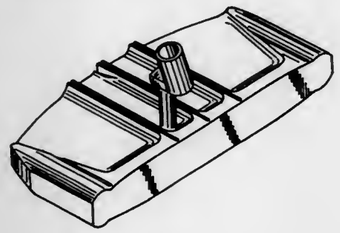
333,329
EXERCISE STOOL
Lawrence I. Jacobs, 22002 Capistrano La., Huntington Beach, Calif. 92646
Filed Apr. 23, 1991, Ser. No. 689,619
Term of patent 14 years
U.S. Cl. D21—191



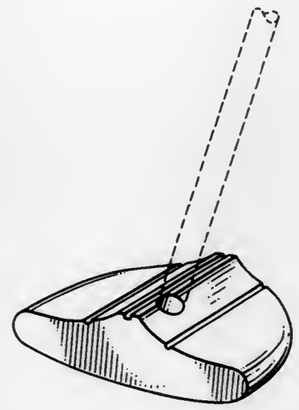
333,330
TREADMILL
William E. Clem, Bothell, Wash., assignor to Tunturi, Inc., Redmond, Wash.
Filed Apr. 1, 1991, Ser. No. 677,869
Term of patent 14 years
U.S. Cl. D21—192



333,331
GOLF PUTTER HEAD
Roger C. Evans, 661 Sabal Lake Dr., Apt. 107, Longwood, Fla. 32779
Filed Jul. 24, 1990, Ser. No. 557,497
Term of patent 14 years
U.S. Cl. D21—219



333,332
GOLF CLUB HEAD
Terrill R. McCabe, 8220 Bay Tree Ct., West Chester, Ohio 45069, and Dianne McCabe, West Chester, Ohio, assignors to Terrill R. McCabe, West Chester, Ohio
Filed Aug. 27, 1990, Ser. No. 572,799
Term of patent 14 years
U.S. Cl. D21—219



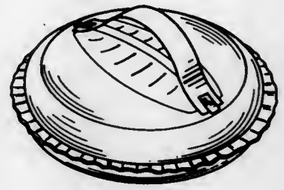
333,333
GOLF CLUB GRIP
Karsten Solheim, Phoenix, Ariz., assignor to Karsten Manufacturing Corporation, Phoenix, Ariz.
Filed Feb. 11, 1991, Ser. No. 653,102
Term of patent 14 years
U.S. Cl. D21—222



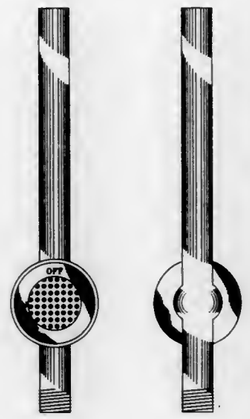
333,334
TELESCOPIC SUPPORT FOR A FIREARM
Arthur R. Davidson, 510 Hall Ave., Grand Junction, Colo. 81501
Filed Feb. 12, 1990, Ser. No. 479,046
Term of patent 14 years
U.S. Cl. D22—108



333,335
LIQUID FILLABLE BOMB BLAST INHIBITOR
Garth J. M. Barrett, Northcliff, South Africa, assignor to Cube Overseas Trading Limited
Filed May 25, 1989, Ser. No. 356,843
Term of patent 14 years
U.S. Cl. D22—112



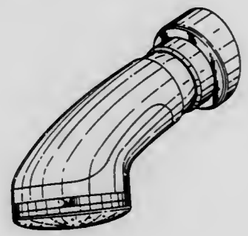
333,336
FUNNEL FOR OIL
Dave H. Rigel, P.O. Box 7233, Brookings, Oreg. 97415
Filed Apr. 5, 1991, Ser. No. 681,163
Term of patent 14 years
U.S. Cl. D23—200



333,337
WATER FILTER
William H. Harty, 1000 S. Peninsula Dr., Daytona Beach, Fla. 32118
Filed Apr. 2, 1991, Ser. No. 679,335
Term of patent 14 years
U.S. Cl. D23—209



333,338
COMBINED SHOWER AND SPRINKLER HEAD
Odo Klose, Wuppertal, Fed. Rep. of Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Fed. Rep. of Germany
Filed Aug. 26, 1991, Ser. No. 750,897
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1991, 9101317
Term of patent 14 years
U.S. Cl. D23—213



VOL 1147 ISS 3 FE 16 1993 UMI

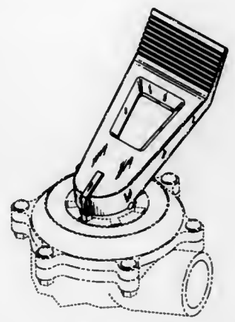
333,339
WALL MOUNTED SHOWER HOLDER
Odo Klose, Wuppertal, Fed. Rep. of Germany, assignor to Friedrich Grohe Aktiengesellschaft, Hemer, Fed. Rep. of Germany
Filed Aug. 26, 1991, Ser. No. 751,219
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1991, M 91 01 317.8
Term of patent 14 years
U.S. Cl. D23—223



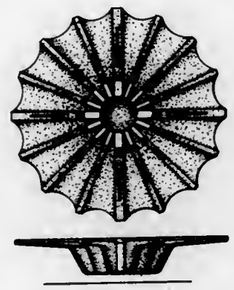
333,340
FAUCET
Philippe Charetien, Dietlikon, Switzerland, assignor to KWC AG, Unterkulm, Switzerland
Filed Jul. 16, 1990, Ser. No. 552,614
Claims priority, application Int'l Pat. Institute, Jan. 15, 1990, DM/015 590
Term of patent 14 years
U.S. Cl. D23—238



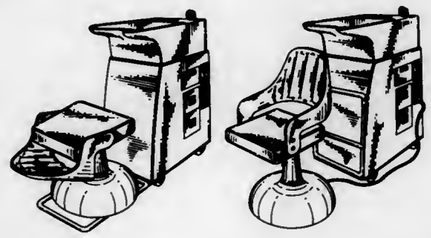
333,341
MULTI-PORT VALVE HANDLE
Samuel Tobias, Edison, N.J., and Fred Hollinger, Kings Park, N.Y., assignors to Hayward Industries, Inc., Elizabeth, N.J.
Filed Apr. 30, 1991, Ser. No. 693,410
Term of patent 14 years
U.S. Cl. D23—252



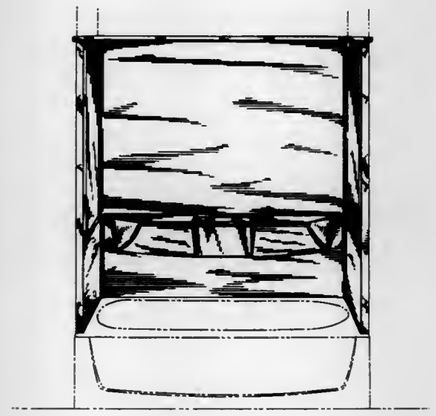
333,342
ANTI-VORTEX SAFETY COVER FOR A DRAIN
Harry L. Newhard, 2 Pebble Creek Rd., St. Louis, Mo. 63123
Filed Nov. 21, 1990, Ser. No. 617,065
Term of patent 14 years
U.S. Cl. D23—261



333,343
PORTABLE SHAMPOO AND STYLING UNIT
Samuel P. Farchione, Lakeshore Village Plz., 3900 Clark Rd., Bldg. H-2, Sarasota, Fla. 33583
Filed Sep. 26, 1990, Ser. No. 588,320
Term of patent 14 years
U.S. Cl. D23—271



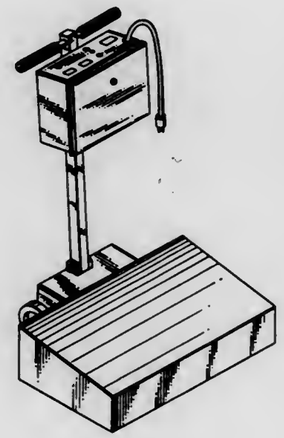
333,344
BATHING ENCLOSURE FOR A BATHTUB
Todd D. Dannenberg, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jan. 11, 1991, Ser. No. 639,960
Term of patent 14 years
U.S. Cl. D23—305



333,345
COMBINED TOILET SEAT COVER AND INFANTS SEAT
Truman Strahan, Rt. 1, Box 82-A, Bush, La. 70431
Filed Jul. 5, 1990, Ser. No. 548,744
Term of patent 14 years
U.S. Cl. D23—311



333,346
INFRARED FLOOR TILE HEATER FOR USE IN FLOOR TILE REMOVAL
William E. Uhde, Newtown, Conn., assignor to Enviromethods, Inc., Bristol, Conn.
Filed Sep. 25, 1989, Ser. No. 413,020
Term of patent 14 years
U.S. Cl. D23—317

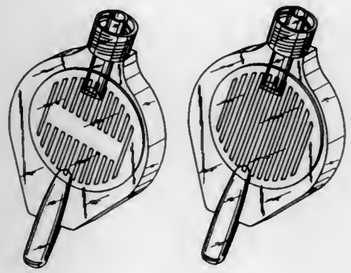


333,347
SAFETY CONTAINER FOR A HYPODERMIC SYRINGE
David R. Kemp, 2213 Richmond Rd., Paradise, Calif. 95969, and Donald J. Evans, P.O. Box 418, Forest Ranch, Calif. 95942
Filed Aug. 20, 1990, Ser. No. 569,476
Term of patent 14 years
U.S. Cl. D24—131

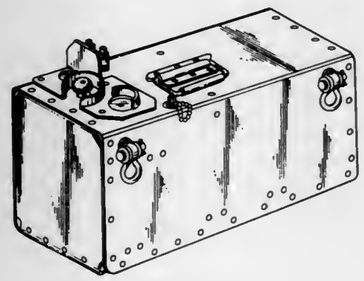


VOL 1147 ISS 3 FE 16 1993 UMI

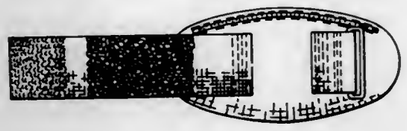
333,348
ANESTHESIA SOLUTION FILTER
Shinsuke Yokomachi, Fujinomiya, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 20, 1990, Ser. No. 556,792
Claims priority, application Japan, Jan. 25, 1990, 2-1695
Term of patent 14 years
U.S. Cl. D24—162



333,349
PORTABLE OXYGEN SYSTEM
Tomio Miya, Culver City, Calif., assignor to American Safety Flight Systems, Glendale, Calif.
Filed Aug. 20, 1990, Ser. No. 570,287
Term of patent 14 years
U.S. Cl. D24—164



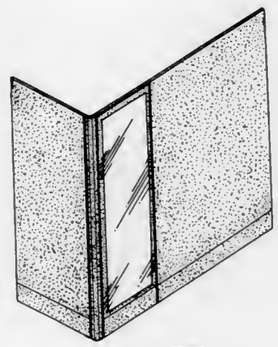
333,350
THERAPEUTIC HEAT TRANSFER WRAP
Stan Redira, Jr., Monterey, Calif., assignor to Gary Ambrosia, Pacific Grove, Calif.
Filed Apr. 30, 1990, Ser. No. 516,838
Term of patent 14 years
U.S. Cl. D24—206



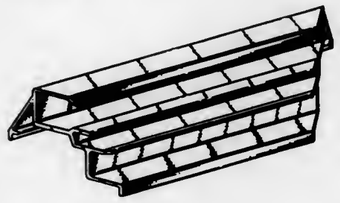
333,351
INFRARED HEAT MASSAGER
Paul Tsou, 3th Fl., 39, Tehsing E. Rd., Taipei, Taiwan
Filed Oct. 31, 1990, Ser. No. 607,077
Term of patent 14 years
U.S. Cl. D24—206



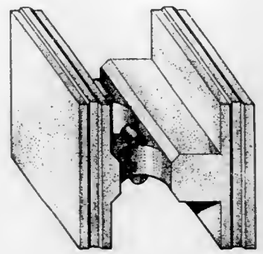
333,352
PARTITION
Charles Heidmann, Strasbourg, France, assignor to Steelcase Strafor, Strasbourg, France
Filed Nov. 10, 1988, Ser. No. 269,546
Claims priority, application France, May 13, 1988, 883236
Term of patent 14 years
U.S. Cl. D25—58



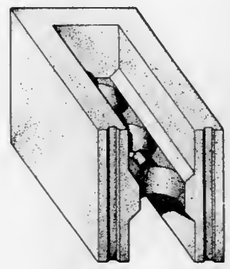
333,353
SKYLIGHT SASH MEMBER
James C. Guhl, Hudson, Wis., and David J. Weiss, Stillwater, Minn., assignors to Andersen Corporation, Bayport, Mich.
Filed Jan. 8, 1991, Ser. No. 638,646
Term of patent 14 years
U.S. Cl. D25—60



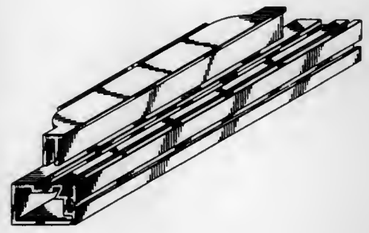
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MORTARLESS MASONRY BLOCK
Fred H. Adams, Cary, N.C., assignor to Adams Products Company, Morrisville, N.C.
Filed Jan. 30, 1991, Ser. No. 648,336
Term of patent 14 years
U.S. Cl. D25—118



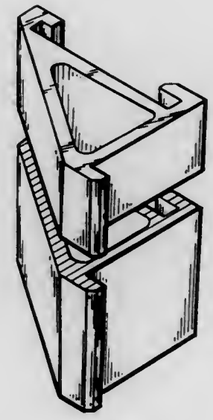
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MORTARLESS MASONRY BLOCK
Fred H. Adams, Cary, N.C., assignor to Adams Products Company, Morrisville, N.C.
Filed Jan. 30, 1991, Ser. No. 648,337
Term of patent 14 years
U.S. Cl. D25—118



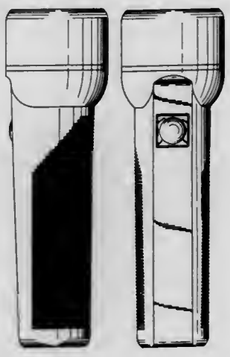
333,356
LIFT RAIL EXTRUSION FOR A WINDOW
Leon F. Slocomb, Jr., Wilmington, Del., assignor to Slocomb Industries, Wilmington, Del.
Filed Aug. 3, 1990, Ser. No. 562,145
The portion of the term of this patent subsequent to Nov. 24, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D25—124



333,357
DOOR EXTRUSION
Ronald W. Cobb, Atlanta, Ga., assignor to Apco Graphics, Inc., Atlanta, Ga.
Division of Ser. No. 575,784, Aug. 31, 1990. This application Jul. 9, 1992, Ser. No. 911,141
Term of patent 14 years
U.S. Cl. D25—124

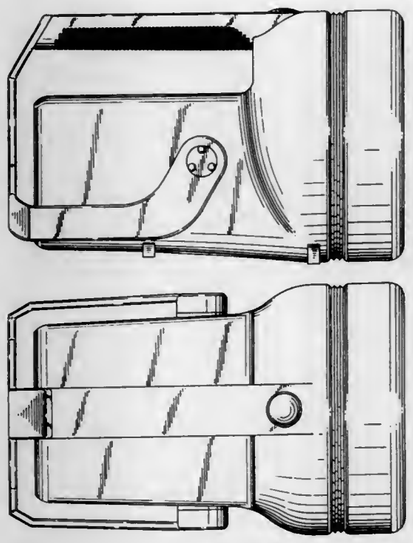


333,358
FLASHLIGHT
Bruce Burns, Portland, Oreg., assignor to Burns Bros., Inc., Portland, Oreg.
Filed Oct. 22, 1991, Ser. No. 780,313
Term of patent 14 years
U.S. Cl. D26—46

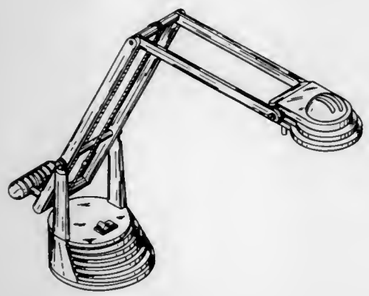


VOL
1147
ISS
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FE
16
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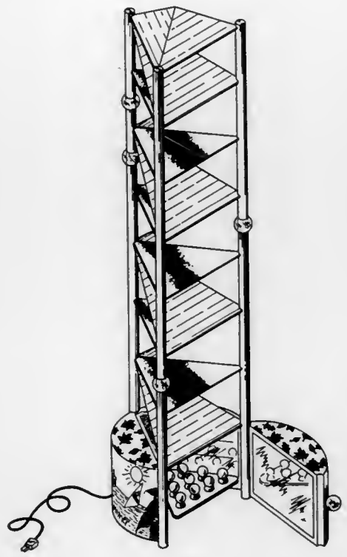
333,359
LANTERN
Bruce Burns, Portland, Oreg., and Robert McCourt, Los Angeles, Calif., assignors to Burns Bros., Inc., Portland, Oreg.
Filed Oct. 22, 1991, Ser. No. 780,318
Term of patent 14 years
U.S. Cl. D26—48



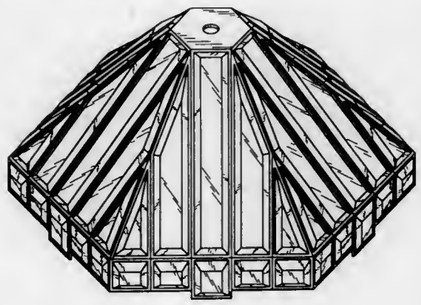
333,360
ADJUSTABLE LAMP
Soddy Huang, No. 6, Alley 9, Lane 77, Hsien Hsing St., Shulin, Taipei Hsien, Taiwan
Filed May 14, 1991, Ser. No. 699,793
Term of patent 14 years
U.S. Cl. D26—65



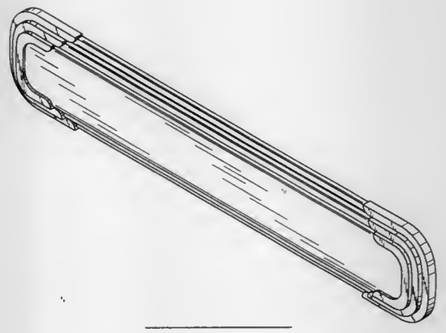
333,361
LAMP
Melvin Eddings, 1939 S. 13th Ave., Maywood, Ill. 60143
Filed Apr. 10, 1990, Ser. No. 506,871
Term of patent 14 years
U.S. Cl. D26—93



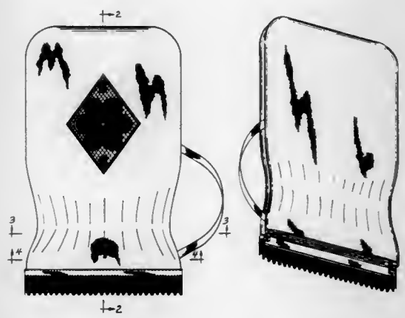
333,362
GLASS LAMP SHADE
David Porter, Chagrin Falls, Ohio, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed Jun. 27, 1991, Ser. No. 719,290
Term of patent 14 years
U.S. Cl. D26—136



333,363
WALL PLATE FOR A LIGHTING FIXTURE
Jason Lee, Vancouver, Canada, assignor to The L. D. Kichler Co., Cleveland, Ohio
Filed Mar. 12, 1991, Ser. No. 668,439
Term of patent 14 years
U.S. Cl. D26—142



333,364
MITT USED FOR BATHING
Mila Popovich, 4810 N. 76th Pl., Scottsdale, Ariz. 85251, and Vera Vujosevich, 6301 N. Sheridan Rd., Chicago, Ill. 60660
Filed May 24, 1989, Ser. No. 356,924
Term of patent 14 years
U.S. Cl. D28—63

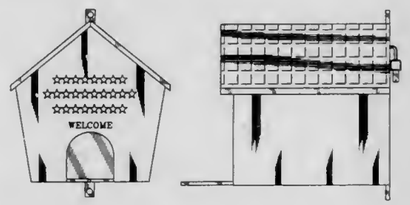


333,365
LIPSTICK CASE
Joel Desgrippes, Paris, France, assignor to Orlane S.A., Paris, France
Filed Aug. 13, 1990, Ser. No. 566,710
Claims priority, application World Int. Prop. O., Jul. 20, 1990, 017182
Term of patent 14 years
U.S. Cl. D28—85



333,366
HELMET VISOR COVER
Lance Brown, 17641 Scherzinger La., Canyon Country, Calif. 91351
Filed Jul. 20, 1990, Ser. No. 556,195
Term of patent 14 years
U.S. Cl. D29—16

333,367
DRYER FOR BIRDS
Linda M. Pirri, 1175 Marl Kress Rd., Cherry Hill, N.J. 08034
Filed Feb. 8, 1990, Ser. No. 476,639
Term of patent 14 years
U.S. Cl. D30—110

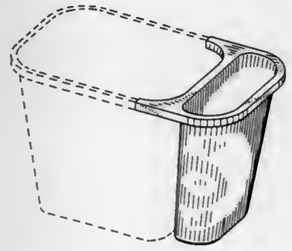


VOL 1147 ISS 3 FE 16 1993 UMI

333,368
SPONGE FOR CLEANING NURSING BOTTLE AND NIPPLE UNITS
Michael Flowers, 676 W. Mariposa St., Altadena, Calif. 91001
Filed Jul. 18, 1990, Ser. No. 553,689
Term of patent 14 years
U.S. Cl. D32—40



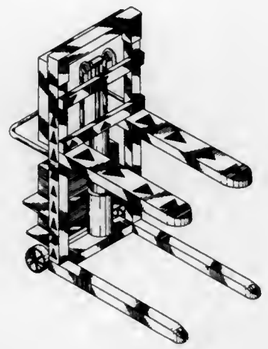
333,369
RECYCLING CONTAINER FOR MOUNTING TO A WASTEBASKET
John D. Breen, Wooster, and Thomas Scherer, Mansfield, both of Ohio, assignors to Rubbermaid Office Products Group Inc., Inglewood, Calif.
Filed Sep. 30, 1991, Ser. No. 767,935
Term of patent 14 years
U.S. Cl. D34—10



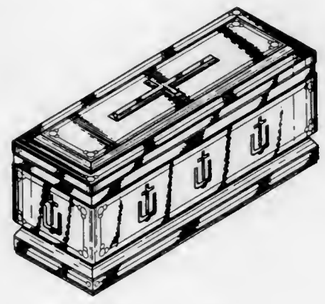
333,370
HUNTER'S CART
Thomas J. Monk, 2202 Oregon Ave., Klamath Falls, Oreg. 97601
Filed Apr. 1, 1991, Ser. No. 677,853
Term of patent 14 years
U.S. Cl. D34—12



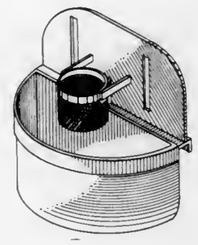
333,371
MOVABLE SKID LIFT
Thomas Schmidke, 26626 Dover, Redford, Mich. 48239
Filed Jun. 5, 1990, Ser. No. 533,695
Term of patent 14 years
U.S. Cl. D34—28



333,372
CASKET
Michael J. Feney, 9703 Legion St., Philadelphia, Pa. 19114
Filed Dec. 20, 1990, Ser. No. 630,960
Term of patent 14 years
U.S. Cl. D99—1



333,373
BELT MOUNTED COIN TARGET
Raymond Pacelli, 209 S. Pine St., Hazleton, Pa. 18201
Filed Dec. 31, 1990, Ser. No. 636,389
Term of patent 14 years
U.S. Cl. D99—37



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF FEBRUARY, 1993

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See—*
Robinson, William, 5,186,823, Cl. 210-197.000.

A.E.C. Societe de Chimie Organique et Biologique: *See—*
Sparks, Robert E.; Mason, Norbert S.; Autant, Pierre; Cartillier, Andre; and Pigeon, Raymond, 5,186,937, Cl. 424-438.000.

Abaxis, Inc.: *See—*
Burd, Tammy L.; and Schembri, Carol T., 5,186,844, Cl. 210-782.000.

Abbatte, Gerard P.: *See—*
Breads, Peter R.; Abbatte, Gerard P.; and Warunek, Stephen P., 5,186,623, Cl. 433-6.000.

Abbott, Alan D.: *See—*
Drago, Thomas E.; and Abbott, Alan D., 5,186,899, Cl. 422-104.000.

Abbott, James R.; and Snider, Benny J., to Tennessee Gas Pipeline Company. Acoustic muffler with one-piece housing. 5,187,334, Cl. 181-265.000.

Abbott Laboratories: *See—*
Brooks, Dee W.; and Rodriques, Karen E., 5,187,192, Cl. 514-445.000.

Abdel-Malek, Aiman A.: *See—*
Currin, Bena L.; Abdel-Malek, Aiman A.; and Hartley, Richard I., 5,187,754, Cl. 382-54.000.

Abe, Kimihiro, to Yazaki Corporation. Connector. 5,186,657, Cl. 439-595.000.

Abe, Kimihiro, to Yazaki Corporation. Female terminal. 5,186,664, Cl. 439-845.000.

Abe, Masaki: *See—*
Shiohara, Yukimitsu; and Abe, Masaki, 5,186,812, Cl. 205-141.000.

Abe, Masatoshi; Yamamoto, Yuichi; and Naraki, Akihiro, to Nippon Moktron Limited. Peroxide-vulcanizable, fluorine-containing elastomer composition. 5,187,222, Cl. 524-492.000.

Abe, Nobuo, to Hitachi, Ltd. Self-aligning bearing and closed-type electrically driven compressor having the same. 5,186,546, Cl. 384-206.000.

Abe, Shigetaka: *See—*
Miyake, Hiraku; Ishiguro, Mitsuo; Abe, Shigetaka; Yamaguchi, Nobuo; Hayamizu, Yutaka; and Aizawa, Satoru, 5,185,976, Cl. 52-167.0RA.

Abeska, Edward J.: *See—*
Stonerook, Dana A.; Abeska, Edward J.; and Rochette, Jeff R., 5,187,465, Cl. 340-438.000.

Abiola, Abimbola T.: *See—*
Cullimore, D. Roy; Alford, George W.; Abiola, Abimbola T.; Reihl, Jeff; and Naqvi, Karim, 5,187,072, Cl. 435-34.000.

Abney, Marvin D., Sr. Pig loading system and method thereof. 5,186,757, Cl. 134-8.000.

Abousabha, Naji G., to General Motors Corporation. Variable discharge flow attenuation for compressor. 5,186,614, Cl. 417-312.000.

Abramson, Newton L.: *See—*
King, Anthony O.; Anderson, Kevin; Karady, Sandor; Douglas, Alan W.; Abramson, Newton L.; and Shuman, Richard F., 5,187,278, Cl. 546-14.000.

Abruna, Hector D.: *See—*
Pendley, Bradford D.; and Abruna, Hector D., 5,185,922, Cl. 29-825.000.

Abtox, Inc.: *See—*
Moulton, Kern A.; Campbell, Bryant A.; and Caputo, Ross A., 5,186,893, Cl. 422-23.000.

Ackermann, Walter; and Holloway, Thomas F., to Risdon Corporation. Incremental feel cosmetic dispenser. 5,186,561, Cl. 401-78.000.

Acoustics Development Corporation: *See—*
Van Pinkerton, Stevens, Jr., 5,186,497, Cl. 281-49.000.

Actel Corporation: *See—*
El Gamal, Abbas; and Chiang, Steve S. S., 5,187,393, Cl. 307-465.100.

Acuderm, Inc.: *See—*
Yeh, Charles R.; and Huldin, Donald H., 5,186,178, Cl. 128-754.000.

Adachi, Iwao P.; and Coffman, Stephen B., to Rockwell International Corporation. Mirror surface characteristic testing. 5,187,539, Cl. 356-124.000.

Adachi, Kazuyu: *See—*
Komori, Mikio; Sato, Shuichi; Adachi, Kazuyu; and Saito, Masayoshi, 5,186,183, Cl. 131-281.000.

Adachi, Tsunenari; Akasaka, Hitoshi; and Moriyama, Yutaka, to Calsonic Corporation. Condenser provided with forced cooling means. 5,186,242, Cl. 165-110.000.

Adair, John F. Coiled exponential bass/midrange/high frequency horn loudspeaker. 5,187,333, Cl. 181-152.000.

Adamoli, Contardo: *See—*
Stevenin, Gino; and Adamoli, Contardo, 5,186,552, Cl. 400-124.000.

Adams, Allan J.: *See—*
Alexander, Michael P.; Adams, Allan J.; and Tokarz, Stephen P., 5,186,516, Cl. 296-121.000.

Adams, Gary V.; and Saderholm, Davin G., to Morton International, Inc. Driver cover integral horn switch with solid reinforcement structure. 5,186,490, Cl. 280-731.000.

Adams, Theodore C., Jr.; and Adolph, Horst G., to United States of America, Navy. Bis(2-nitro-2-azapropyl) ether. 5,186,770, Cl. 149-92.000.

Adasek, Kenneth P.; and Ostrand, James C., to General Motors Corporation. Multi-zone HVAC system with an air bypass for individual flow control. 5,186,237, Cl. 165-42.000.

ADC Telecommunications, Inc.: *See—*
Pitsch, Daniel M.; and Pfeffer, George B., 5,187,634, Cl. 361-119.000.

Addmaster Corporation: *See—*
Clary, John G., 5,187,351, Cl. 235-379.000.

Adia, Moosa M.: *See—*
Martell, Trevor J.; and Adia, Moosa M., 5,186,725, Cl. 51-293.000.

Adolph, Horst G.: *See—*
Adams, Theodore C., Jr.; and Adolph, Horst G., 5,186,770, Cl. 149-92.000.

Advanced Energy Industries, Inc.: *See—*
Porter, Robert M., Jr.; and Mueller, Michael L., 5,187,580, Cl. 330-207.00A.

Agency of Industrial Science and Technology: *See—*
Masuoka, Toshio; Hirasa, Okihiko; Onishi, Makoto; and Seita, Yukio, 5,186,835, Cl. 210-500.360.
Mizuno, Koichi; Wakabayashi, Takeshige; Koinuma, Yutaka; Aizawa, Reiji; Kushiyama, Satoshi; Kabayashi, Satoru; Ohuchi, Hideo; Yoshida, Toyonobu; Kubota, Yoshiro; Amano, Takanobu; Komaki, Hisashi; and Hirakawa, Shoji, 5,187,344, Cl. 219-121.500.
Tsuda, Nobuhiro; Yamada, Hirofumi; Kado, Hiroyuki; and Tohda, Takao, 5,186,789, Cl. 156-659.100.

Agfa-Gevaert N.V.: *See—*
Dewanckele, Jean-Marie O.; and Hofman, Emiel A., 5,187,054, Cl. 430-523.000.

Aging Technologies, Inc.: *See—*
Everhard, Paul R.; Everhard, Alan L.; and Monroe, Roy K., 5,186,282, Cl. 187-8.590.

AGIP S.p.A.: *See—*
Berti, Dario; and Chiuppani, Giovanni A., 5,186,441, Cl. 269-43.000.

Agri-Diagnostics Associates: *See—*
Petersen, Frank P.; Maybroda, Adrianna; and Miller, Sally A., 5,187,064, Cl. 435-7.310.

Aguilo, Jasime. Installation and method for carrying out metallic reinforcements. 5,185,920, Cl. 29-794.000.

Aguirrezabal, Antonio, to Tuboplast Hispania, S.A. Tubular container with non-removable working cap. 5,186,369, Cl. 222-521.000.

Ahlstrom Filtration, Inc.: *See—*
Baumgardner, John S.; and Loewen, Mark D., 5,186,843, Cl. 210-767.000.

Ahlstromforetagen Swenska: *See—*
Ryham, Rolf, 5,186,726, Cl. 55-32.000.

Aida, Masaaki, to Midori Co., Ltd. Retainer for retaining articles accomodated in a case. 5,186,320, Cl. 206-45.190.

Aina, Olaleye A.; and Martin, Eric A., to Allied-Signal Inc. Field effect transistor-bipolar transistor darlington pair. 5,187,110, Cl. 437-34.000.

Aindow, Alan M.; Cahill, Michael J.; and Dawson, John, to Molins PLC. Cigarette manufacture. 5,186,184, Cl. 131-281.000.

Air Preheater Company, Inc., The: *See—*
Bayer, Craig E.; and Blazejewski, Edward G., 5,186,901, Cl. 422-111.000.

Air Products and Chemicals, Inc.: *See—*
Norman, John A. T., 5,187,300, Cl. 556-12.000.

Airmar Technology Corporation: *See—*
Lagace, Maurice P.; Boucher, Stephen G.; Cullen, Robert M.; Noyes, Andrew L.; Willette, John; and Russell, Cynthia M., 5,186,050, Cl. 73-187.000.

Aisin AW Co., Ltd.: *See—*
Nishida, Masaaki; Kato, Naoji; and Hayakawa, Yochi, 5,186,693, Cl. 475-148.000.
Oka, Takeya; Saito, Masao; Miki, Nobuaki; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Otsubo, Hideaki; Hojo, Yasuo; and Asahara, Norimi, 5,186,204, Cl. 137-238.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Nakane, Mototaka, 5,186,077, Cl. 74-574.000.

Aizawa, Reiji: *See—*
Mizuno, Koichi; Wakabayashi, Takeshige; Koinuma, Yutaka; Aizawa, Reiji; Kushiyama, Satoshi; Kabayashi, Satoru; Ohuchi,

VOL 1147 ISS 3 FE 16 1993 UMI

Hideo; Yoshida, Toyonobu; Kubota, Yoshiro; Amano, Takanobu; Komaki, Hisashi; and Hirakawa, Shoji, 5,187,344, Cl. 219-121.500.

Aizawa, Satoru: *See—*
Miyake, Hiraku; Ishiguro, Mitsuo; Abe, Shigetaka; Yamaguchi, Nobuo; Hayamizu, Yutaka; and Aizawa, Satoru, 5,185,976, Cl. 52-167.0RA.

Aizawa, Shiro: *See—*
Maruyama, Fumio; Aizawa, Shiro; and Fujiyoshi, Kazuo, 5,186,816, Cl. 208-135.000.

Ajinomoto Co., Inc.: *See—*
Kishimoto, Tadamitsu; Hirano, Toshio; Akiyama, Yukio; Okano, Akira; Matsui, Hiroshi; and Takahara, Yoshiyuki, 5,186,931, Cl. 424-85.200.

Akada, Masanori: *See—*
Egashira, Noritaka; Sataka, Naoto; and Akada, Masanori, 5,187,002, Cl. 428-195.000.

Akasaka, Hitoshi: *See—*
Adachi, Tsunenari; Akasaka, Hitoshi; and Moriyama, Yutaka, 5,186,242, Cl. 165-110.000.

Akebono Brake Industry Co., Ltd.: *See—*
Maehara, Toshifumi, 5,186,002, Cl. 60-547.100.

Akeda, Yoshitaka: *See—*
Ebe, Kazuyoshi; Narita, Hiroaki; Taguchi, Katsuhisa; Akeda, Yoshitaka; and Saito, Takanori, 5,187,007, Cl. 428-343.000.

Akino, Toshiro: *See—*
Okude, Hiroaki; Toyonaga, Masahiko; and Akino, Toshiro, 5,187,668, Cl. 364-468.000.

Akioka, Koji: *See—*
Kobayashi, Osamu; Akioka, Koji; and Shimoda, Tatsuya, 5,186,761, Cl. 148-101.000.

Akita, Toshiki: *See—*
Fukuyama, Takahiko; Kozawa, Satosi; Ishiguro, Kazuyoshi; Akita, Toshiki; and Hori, Seiji, 5,187,335, Cl. 200-5.00B.

Akiyama, Yukio: *See—*
Kishimoto, Tadamitsu; Hirano, Toshio; Akiyama, Yukio; Okano, Akira; Matsui, Hiroshi; and Takahara, Yoshiyuki, 5,186,931, Cl. 424-85.200.

Akutagawa, Hitoshi: *See—*
Kameda, Osamu; Akutagawa, Hitoshi; Hasetoh, Sakumi; Okita, Junichi; and Hirose, Ichiro, 5,186,078, Cl. 74-606.00R.

Akzo nv: *See—*
Flasch, John R., 5,186,743, Cl. 106-38.350.
Risseeuw, Paul, 5,187,004, Cl. 428-229.000.
Sondermeijer, Pulus J. A.; Claessens, Johannes A.; and Mockett, Albert P. A., 5,187,087, Cl. 435-172.100.

Alagy, Jacques; Broutin, Paul; Busson, Christian; Gougne, Yves; and Weill, Jerome, to Institut Francais du Petrole. Method and reactor for oxidation with a pressure drop differential, and its use. 5,186,910, Cl. 422-220.000.

Alard, Michel; and Foure, Jean-Luc, to Matra Communication. Base station for a radiotelephone communication system with switchig members for connecting link lines to transmitter members. 5,187,807, Cl. 455-17.000.

Albarella, James P.; Garling, David L.; and Hatch, Robert P., to Miles Inc. Process for determining thiols using chromogenic benzoisothiazolone derivatives. 5,187,105, Cl. 436-119.000.

Albarella, James P.; Garling, David L.; and Hatch, Robert P., to Miles Inc. Chromogenic thiol indicating benzoisothiazolone compounds. 5,187,265, Cl. 534-573.000.

Albert Einstein College of Medicine of Yeshiva University: *See—*
Epstein, Adam, 5,186,711, Cl. 600-37.000.

Alcan International Ltd.: *See—*
Hammond, Donald E.; and Skibo, Michael D., 5,186,234, Cl. 164-97.000.

Alcouffe, Francois; Crescini, Jean; and Duret, Denis, to Commissariat A l'Energie Atomique. Shielded magnetometer. 5,187,438, Cl. 324-301.000.

Alexander, Michael P.; Adams, Allan J.; and Tokarz, Stephen P., to ASC Incorporated. Power latch system. 5,186,516, Cl. 296-121.000.

Alexandre, Alain: *See—*
Firmin, Jean-Luc; and Alexandre, Alain, 5,187,030, Cl. 429-120.000.

Alfa-Lavel Separation AB: *See—*
Stroucken, Klaus; and Ridderstrale, Rolf, 5,186,708, Cl. 494-41.000.

Alfaro, Rafael C., to Texas Instruments Incorporated. Method and apparatus for transducer heating in low temperature bonding. 5,186,378, Cl. 228-110.000.

Alford, George W.: *See—*
Cullimore, D. Roy; Alford, George W.; Abiola, Abimbola T.; Reihl, Jeff; and Naqvi, Karim, 5,187,072, Cl. 435-34.000.

Alfred Teves GmbH: *See—*
Burgdorf, Jochen; Klostermann, Gerd; and Henein, Nabil, 5,186,524, Cl. 303-92.000.

Algoma Steel Corporation, Limited, The: *See—*
Hunt, Patrick J.; Jonas, John J.; Yue, Stephen; Ruddle, George E.; and Pussegoda, Lakshman N., 5,186,769, Cl. 148-593.000.

Allart, Bernard R., to Poclain Hydraulics. Pressurized fluid mechanism comprising at least two distinct operational cylinder capacities. 5,186,094, Cl. 91-491.000.

Allegrini, Pietro: *See—*
Castaldi, Graziano; Allegrini, Pietro; Crisci, Luciana; and Renzi, Fiorenzo, 5,186,867, Cl. 252-586.000.

Allen-Bradley Company, Inc.: *See—*
DeLange, Robert J., 5,187,419, Cl. 318-805.000.

Allen, Michael J., to Intel Corporation. Programmable logic device with limited signal swing. 5,187,392, Cl. 307-465.000.

Allgauer, Michael, to Dr. Johannes Heidenhain GmbH. Integrated optical position measuring device and method with reference and measurement signals. 5,187,545, Cl. 356-358.000.

Allied-Signal Inc.: *See—*
Aina, Olaleye A.; and Martin, Eric A., 5,187,110, Cl. 437-34.000.
Behchaar, Mohamed L., 5,185,999, Cl. 60-404.000.
Boumarafi, Mohamed; Pondell, Carl; and DiPaola, Donald A., 5,186,495, Cl. 280-808.000.
Chang, Chin-Hsiung, 5,186,727, Cl. 55-35.000.
Niespodziany, David A.; Olson, David L.; Schebel, Ronald W.; and Wentland, Julie A., 5,186,521, Cl. 301-6.910.
Prevorsek, Dusan C.; and Harpell, Gary A., 5,187,023, Cl. 428-911.000.
Smith, Alan A.; Catmull, Paul B.; Lucas, Lonnie J.; and Johnson, Karl P., 5,185,996, Cl. 60-39.020.
Wu, Chengjiu; Nahata, Ajay; McFarland, Michael J.; Horn, Keith; and Yardley, James T., 5,186,865, Cl. 252-582.000.

Alling, Richard L.; and Shepard, Richard W., to Torrington Company, The. Method of welding retainer rings. 5,187,345, Cl. 219-121.630.

Allred, Robert G. High strength water resistant cementitious compositions. 5,186,749, Cl. 106-810.000.

Alps Electric Co., Ltd.: *See—*
Ibaraki, Atsushi, 5,187,623, Cl. 360-103.000.

Alts, Thorsten, to Matec Holding AG. Sound damping multi-layer structure. 5,186,996, Cl. 428-72.000.

Altshuler, Anatoly: *See—*
Vydra, Jacob; and Altshuler, Anatoly, 5,187,021, Cl. 428-607.000.

Aluminum Company of America: *See—*
Patrick, Edward P.; and Pajerski, A. Victor, 5,187,046, Cl. 430-278.000.
Powers, John H., 5,186,790, Cl. 156-665.000.
Rooy, Elwin L.; Petrey, Gerald R.; Weaver, James R.; Granger, Douglas A.; Richter, Raymond T.; and Reravis, H. Gray, Jr., 5,186,767, Cl. 148-552.000.

Alusuisse-Lonza Services Ltd.: *See—*
Gabathuler, Jean-Pierre; and Buxmann, Kurt, 5,186,236, Cl. 164-478.000.

ALZA Corporation: *See—*
Deters, Joseph C.; Swanson, David R.; and DeRosa, Stephen C., 5,186,942, Cl. 424-473.000.

AM International Incorporated: *See—*
Johnson, David U., III; Conner, Charles J.; and Wolf, Peter A., 5,187,479, Cl. 341-6.000.
Manley, John A.; Belvo, Aaron J.; Platt, Todd C.; Bruce, Andrew D.; and Wolf, Peter A., 5,186,443, Cl. 270-1.100.

Amachi, Nobumitsu: *See—*
Yamazaki, Shunpei; Fukada, Takeshi; Sakama, Mitsunori; Amachi, Nobumitsu; Sakamoto, Naoya; Codama, Mitsufumi; Fuki, Takashi; and Takayama, Ichiro, 5,187,601, Cl. 359-54.000.

Amano, Hiroshi: *See—*
Netsu, Shigeyoshi; Kameya, Masaki; Harada, Yasuyuki; and Amano, Hiroshi, 5,186,192, Cl. 134-68.000.

Amano, Kenichiro, to Canon Kabushiki Kaisha. Camera using film with a mangetic memorizing portion. 5,187,511, Cl. 354-106.000.

Amano, Takanobu: *See—*
Mizuno, Koichi; Wakabayashi, Takeshige; Koinuma, Yutaka; Aizawa, Reiji; Kushiyama, Satoshi; Kabayashi, Satoru; Ohuchi, Hideo; Yoshida, Toyonobu; Kubota, Yoshiro; Amano, Takanobu; Komaki, Hisashi; and Hirakawa, Shoji, 5,187,344, Cl. 219-121.500.

Amanze, Charles U. Multi-purpose sit-up device. 5,186,702, Cl. 482-145.000.

Ambs, Richard W.; and Kelchner, Steven, to Young Industries, The. Conveyor for bulk materials. 5,186,312, Cl. 198-716.000.

Amemiya, Shinji: *See—*
Yuasa, Katsuhiko; Amemiya, Shinji; and Nagamine, Akira, 5,186,662, Cl. 439-752.000.

American Cyanamid Company: *See—*
Lovell, James B., 5,187,184, Cl. 514-406.000.

American Environmental Systems, Inc.: *See—*
Yehl, James E., 5,187,635, Cl. 361-231.000.

American Home Products Corporation: *See—*
Fobare, William F.; and Strike, Donald P., 5,187,284, Cl. 549-58.000.
Hellberg, Mark R.; and Shanklin, James R., Jr., 5,187,189, Cl. 514-608.000.
Primeau, John L.; and Garrick, Lloyd M., 5,187,168, Cl. 514-259.000.

American Standard Inc.: *See—*
Kotlarek, Peter A.; Moilanen, John R.; and Harrison, Mark W., 5,186,613, Cl. 417-291.000.

American Telephone & Telegraph Company: *See—*
Tu, Ching-Fang, 5,187,763, Cl. 385-100.000.

Ameron, Inc.: *See—*
Folkers, Joie L., 5,186,500, Cl. 285-55.000.

Amit, Noah; and Cater, Miro S. Hand-actuated rotatable toothbrush. 5,186,627, Cl. 433-216.000.

Amman, Donald: *See—*
Oehme, William J.; and Amman, Donald, 5,187,691, Cl. 367-134.000.

Ammermann, Eberhard: *See—*
Wingert, Horst; Sauter, Hubert; Brand, Siegbert; Wenderoth, Bernd; Lorenz, Gisela; and Ammermann, Eberhard, 5,187,170, Cl. 514-351.000.

Amoco Corporation: *See—*
Lyzinski, David; Buttke, Robert D.; Taylor, James L.; and Hall, William M., 5,186,904, Cl. 422-130.000.
Mossman, Allen B., 5,187,294, Cl. 558-272.000.
Stahle, Arno W.; Bailey, Larry M.; and Tapp, William T., 5,187,005, Cl. 428-252.000.
Yokelson, Howard B.; Han, James H.; and Felberg, Jeff J., 5,187,254, Cl. 528-73.000.

AMP Incorporated: *See—*
Capper, Harry M., 5,186,661, Cl. 439-718.000.
Joyce, James L., Jr.; Jones, Warren C.; and MacInnes, David F., Jr., 5,186,860, Cl. 252-500.000.
Kikuchi, Shoji; and Onoue, Nobuaki, 5,186,658, Cl. 439-595.000.
Mosser, Benjamin H., III, 5,186,633, Cl. 439-79.000.
Yuasa, Katsuhiko; Amemiya, Shinji; and Nagamine, Akira, 5,186,662, Cl. 439-752.000.

Amrad Corporation Limited: *See—*
Gearing, David P.; Gough, Nicholas M.; Hilton, Douglas J.; King, Julie A.; Metcalf, Donald; Nice, Edouard C.; Nicola, Nicos A.; Simpson, Richard J.; and Willson, Tracy A., 5,187,077, Cl. 435-69.100.

Amyot, Claude V. L., to Etablissements Amyot S.A. Tool chuck for a turning machine such as a drill. 5,186,478, Cl. 279-62.000.

Analytic Power Corp.: *See—*
Kelland, James W.; and Braun, Stephan G., 5,187,025, Cl. 429-33.000.

Anderson, Kevin: *See—*
King, Anthony O.; Anderson, Kevin; Karady, Sandor; Douglas, Alan W.; Abramson, Newton L.; and Shuman, Richard F., 5,187,278, Cl. 546-14.000.

Anderson, N. Leigh: *See—*
Anderson, Norman G.; and Anderson, N. Leigh, 5,186,824, Cl. 210-198.200.

Anderson, Norman G.; and Anderson, N. Leigh, to Large Scale Biology Corporation. System for solid phase reactions. 5,186,824, Cl. 210-198.200.

Ando, Jen: *See—*
Goto, Yasuhiro; Yonezawa, Takeyuki; Ohnuma, Yoshiyuki; and Ando, Jen, 5,187,127, Cl. 501-95.000.

Ando, Shigenori, to Seiko Seiki Kabushiki Kaisha. Apparatus for detecting machining conditions of a workpiece. 5,187,434, Cl. 324-207.250.

Andoh, Hisashi: *See—*
Maeda, Yoshihito; Kaneko, Toshiki; Nagai, Masaichi; Andoh, Hisashi; Katou, Yoshimi; Ikuta, Isao; and Watanabe, Ryuji, 5,187,052, Cl. 430-495.000.

Andree, Roland; Drewes, Mark W.; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Herbicidal bisazinyl compounds. 5,186,734, Cl. 504-196.000.

Andres, Hendrik; Morimoto, Hiromi; and Williams, Philip G., to University of California, The Regents of the. Methods for tritium labeling. 5,186,868, Cl. 252-645.000.

Andrew Corporation: *See—*
Sohner, Harold K.; Morgan, Michael A.; and Kumar, Surinder, 5,187,803, Cl. 455-4.100.

Andrews, William H.; Brothers, Virginia M.; Files, James G.; Kuhn, Irene; McCaman, Michael T.; Sias, Stacey R.; Paul, Leland S.; Gore, Thomas C.; Newman, Karel Z., Jr.; and Tedesco, John L., to Solvay & Cie S.A. DNA encoding an antigenic protein derived from *Eimeria tenella* and vaccines for prevention of coccidiosis caused by *Eimeria tenella*. 5,187,080, Cl. 435-69.300.

Andros Manufacturing Corporation: *See—*
Glenday, Alan J.; and Steenhoff, Frederick C., 5,186,655, Cl. 439-583.000.

Anhorn, Robert G.: *See—*
Kennon, Douglas D.; and Anhorn, Robert G., 5,186,240, Cl. 165-95.000.

Annamalai, Nagappan K., to United States of America, Air Force. Zone melted recrystallized silicon on diamond. 5,186,785, Cl. 156-613.000.

Aoki, Hisashi: *See—*
Iwasa, Hiroki; Nagasaka, Chikao; Ueda, Masuyuki; Kato, Shigeru; Aoki, Hisashi; Shibahara, Makoto; and Mori, Satoshi, 5,187,381, Cl. 307-10.100.

Aoki, Masahiro: *See—*
Tatewaki, Masayuki; Kato, Hiromasa; Obinata, Kenichi; and Aoki, Masahiro, 5,186,994, Cl. 428-64.000.

Aoki, Shinobu: *See—*
Yamamoto, Yoshihiro; Takaki, Usaji; Aoki, Shinobu; Inoue, Yoshihisa; and Hara, Isao, 5,187,283, Cl. 548-457.000.

Aono, Masakazu: *See—*
Ohta, Hiroshi; Aono, Masakazu; Kato, Kazuhiko; Hoshino, Kazutomo; Takahara, Hidefusa; Nakayama, Tomonobu; and Sudoh, Eiichi, 5,187,327, Cl. 174-35.00R.

AOS Holding Company: *See—*
Rumbley, Ronald J., 5,187,772, Cl. 392-449.000.

Aota, Yoshikazu: *See—*
Owada, Toshinobu; Inamori, Akio; Aota, Yoshikazu; Sakamoto, Shigeo; and Takahashi, Seiichi, 5,186,297, Cl. 192-85.0CA.

Aoyagi, Fumitaka; and Hasegawa, Eiichi, to Nippon Precision Circuits Ltd. Oscillation control circuit. 5,187,453, Cl. 331-116.0FE.

Aoyama, Toshiharu: *See—*
Matsumoto, Hiroshi; Aoyama, Toshiharu; Saitoh, Mitsuhiko; and Oshima, Toshiaki, 5,186,064, Cl. 74-47.000.

Aoyama, Toshihiko; Shiomi, Haruhisa; and Ujita, Yasuhiro, to NGK Spark Plug Co., Ltd. Structure for joining a wire to a solid electrolytic element. 5,186,809, Cl. 204-421.000.

Apple Computer, Inc.: *See—*
Baum, Allen J., 5,187,791, Cl. 395-725.000.

Applied Biosystems, Inc.: *See—*
Bridgham, John; Geiser, Timothy G.; Hunkapiller, Michael W.; Kent, Stephen B. H.; Marriott, Mark P.; Ramstad, Paul O.; and Nordman, Eric S., 5,186,898, Cl. 422-102.000.
Lee, Linda G., 5,187,085, Cl. 435-91.000.

Applied Food Biotechnology, Inc.: *See—*
Gierhart, Dennis L.; and Hogan, William C., 5,186,964, Cl. 426-74.000.

Applied Materials, Inc.: *See—*
Collins, Kenneth S.; Trow, John R.; Roderick, Craig A.; Pinson, Jay D., II; and Buchberger, Douglas A., II, 5,187,454, Cl. 333-17.300.
Tepman, Avi; Grunes, Howard; Somekn, Sasson; and Maydan, Dan, 5,186,718, Cl. 29-25.010.
Toshima, Masato M.; Salzman, Phil M.; Murdoch, Steven C.; Wang, Cheng; Stenholm, Mark A.; Howard, James; Hall, Leonard; and Cheng, David, 5,186,594, Cl. 414-217.000.

Appling, William M.: *See—*
Phillips, David; and Appling, William M., 5,186,715, Cl. 604-28.000.

Appolonia, Jack; Wheeler, Clair; and Kapoor, Akhilesh, to BOC Group, Inc., The. Cryogenic freezer apparatus and method. 5,186,008, Cl. 62-63.000.

Aragaki, Masami, to Dainippon Screen Mfg. Co., Ltd. Method of and apparatus for compressing image data. 5,187,755, Cl. 382-56.000.

Arai, Hideaki: *See—*
Shinozawa, Toshiyuki; Fujita, Hiroyuki; and Arai, Hideaki, 5,186,131, Cl. 123-146.50A.

Arai, Koichi. Scraper filter system. 5,186,834, Cl. 210-413.000.

Arai, Tomohisa; Sori, Naoyuki; Sahashi, Masashi; and Tokai, Yoichi, to Kabushiki Kaisha Toshiba. Cold accumulating material and method of manufacturing the same. 5,186,765, Cl. 148-301.000.

Araki, Kenji; Sasaki, Hiroki; Yonezawa, Akihiro; and Mitsuyuki, Youichirou, to Toshiba Lighting & Technology Corporation. Low pressure discharge lamp apparatus. 5,187,413, Cl. 315-291.000.

Araki, Toshihiko: *See—*
Kajitani, Tetsuji; Matsuura, Yasumasa; Harada, Hiroyuki; and Araki, Toshihiko, 5,187,420, Cl. 318-823.000.

Arashi, Norio: *See—*
Sohma, Kenichi; Yukitake, Tugihiro; Azuhata, Shigeru; Arashi, Norio; and Tokuda, Hiroatsu, 5,186,146, Cl. 123-435.000.

Archey, Rick L.: *See—*
Lundy, Charles E.; Krishnan, Sivaram; Robbins, Gerald L.; and Archey, Rick L., 5,187,211, Cl. 524-107.000.

Arco Chemical Technology, L.P.: *See—*
Shih, T. Thomas, 5,187,287, Cl. 549-542.000.

Arden, Geoffrey B., to Institute of Opthalmology, The. Method of and apparatus for diagnosing peripheral field defects and other peripheral retinal damage. 5,187,507, Cl. 351-226.000.

Ares-Serono Research & Development Limited Partnership: *See—*
Eason, Stephen W.; Attridge, John W.; and Degroot, Simon, 5,186,897, Cl. 422-100.000.

Arison, Byron H.: *See—*
Treiber, Laszlo R.; Lingham, Russell B.; Arison, Byron H.; Colwell, Lawrence F., Jr.; Dezeny, Georgette; and Kohl, Nancy E., 5,187,074, Cl. 435-41.000.

Aritake, Hirokazu: *See—*
Kato, Masayuki; Tomita, Junji; Matsumoto, Tsuyoshi; Aritake, Hirokazu; and Eguchi, Shin, 5,187,597, Cl. 359-22.000.

Arkla Products Company: *See—*
Crow, Harvey L., Jr.; and Krosp, Charles W., 5,186,159, Cl. 126-41.00R.

Armstrong, Gene L., II; and Matthews, Wallace E., to Benchmarq Microelectronics, Inc. Differential comparator powered from signal input terminals for use in power switching applications. 5,187,396, Cl. 307-494.000.

Armstrong World Industries, Inc.: *See—*
Lenox, Ronald S.; Boyd, Kim S.; and Vought, William S., Jr., 5,187,203, Cl. 521-75.000.
Lewicki, Walter J., Jr.; and Bowers, John H., 5,187,501, Cl. 346-153.100.

Arnold, John R. Bicycle handlebar shock absorber. 5,186,074, Cl. 74-551.200.

Arnold & Richter Cine Technik & Co. Betriebs KG: *See—*
Blaschek, Otto, 5,187,508, Cl. 352-180.000.

Arzneimittel GmbH Apotheker Vetter & Co. Ravensburg: *See—*
Vetter, Helmut; and Geprags, Peter, 5,185,985, Cl. 53-299.000.

Asahara, Norimi: *See—*
Oka, Takeya; Saito, Masao; Miki, Nobuaki; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Otsubo, Hideaki; Hojo, Yasuo; and Asahara, Norimi, 5,186,204, Cl. 137-238.000.

Asahi Carbon Co., Ltd.: *See—*
Asatsuma, Keiji; Inoue, Yasuhito; and Kondo, Akitoshi, 5,187,223, Cl. 524-496.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Iriyama, Takahiko; Kobayashi, Kurima; and Imai, Hideaki, 5,186,766, Cl. 148-301.000.
Shimamura, Yasuki; and Ihata, Jyoji, 5,187,047, Cl. 430-286.000.
Shuto, Satoshi; Obara, Takumi; Itoh, Hiromichi; Koshio, Takehiro; Fujiwara, Tatsuro; and Yaso, Masao, 5,187,174, Cl. 514-261.000.

VOL 1147 ISS 3 FE 16 1993 UMI

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Nishikawa, Tomoyuki; and Kita, Masahiro, 5,187,528, Cl. 355-290.000.
Suzuki, Nobuharu, 5,187,516, Cl. 354-403.000.
Tani, Nobuhiro, 5,187,569, Cl. 358-50.000.

Asai, Katsutoshi: *See—*
Morishima, Ryuji; Asai, Katsutoshi; Fukumoto, Ryutaro; and Isomichi, Kanji, 5,186,134, Cl. 123-179.500.

Asai, Kenji: *See—*
Notake, Yuichi; Asai, Kenji; and Ogawa, Tomihisa, 5,187,620, Cl. 360-77.040.

Asami Tanaka Dental Enterprises: *See—*
Tanaka, Asami, 5,186,626, Cl. 433-180.000.

Asano, Tetsuo: *See—*
Maeno, Takashi; Fujinami, Kyouichi; Kawahara, Hiroaki; and Asano, Tetsuo, 5,185,916, Cl. 29-525.000.

Asano, Yasushi; and Kataumi, Yoshimasa, to Fujikiko Kabushiki Kaisha. Control device for automatic transmission. 5,186,069, Cl. 74-477.000.

Asanuma, Tadashi; Shiomura, Tetsunosuke; Nishimori, Yukari; and Uchikawa, Nobutaka, to Mitsui Toatsu Chemicals, Incorporated. Poly-α-olefins. 5,187,250, Cl. 526-348.600.

Asatsuma, Keiji; Inoue, Yasuhito; and Kondo, Akitoshi, to Asahi Carbon Co., Ltd. Pneumatic tires. 5,187,223, Cl. 524-496.000.

Asayama, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Vehicle following apparatus. 5,187,537, Cl. 356-1.000.

ASC Incorporated: *See—*
Alexander, Michael P.; Adams, Allan J.; and Tokarz, Stephen P., 5,186,516, Cl. 296-121.000.

Ascroft, Thomas B.: *See—*
Ives, Steven E.; Ascroft, Thomas B.; Reising, Richard F.; Hill, Robert F.; Brevick, John E.; and Schneider, Eric W., 5,186,278, Cl. 184-6.230.

Asea Brown Bourrc AB: *See—*
Ekstrom, Åke, 5,187,651, Cl. 363-35.000.

Asea Brown Boveri Ltd.: *See—*
Jodicke, Bernd; and Mathews, Hans-Gunter, 5,187,408, Cl. 315-5.000.
Steimer, Peter, 5,187,652, Cl. 363-37.000.

Ashimori Industry Co., Ltd.: *See—*
Imoto, Takayoshi; Seshimo, Masahiro; Makimoto, Futoshi; and Kitagawa, Eiji, 5,186,987, Cl. 428-34.500.

Ashmun, Stuart: *See—*
Garthwaite, Charlie; Cameron, Bridget; Ashmun, Stuart; Stephan, Allan H.; and Nelson, Michael D., 5,187,468, Cl. 340-709.000.

Ashton, Wallace T.; Hutchins, Steven M.; and MacCoss, Malcolm, to Merck & Co., Inc. Angiotensin II antagonists incorporating a substituted imidazo [1,2-b][1,2,4]triazole. 5,187,179, Cl. 514-383.000.

Askonas, Leslie J.: *See—*
Penning, Trevor M.; and Askonas, Leslie J., 5,187,187, Cl. 514-419.000.

Asmo Co., Ltd.: *See—*
Kurata, Kazuyuki, 5,187,400, Cl. 310-49.00R.
Matsumoto, Hiroshi; Aoyama, Toshiharu; Saitoh, Mitsuhiko; and Oshima, Toshiaki, 5,186,064, Cl. 74-47.000.

Aso, Toshiyuki; and Hirai, Toshio, to Fanuc Ltd. Wire cut electric discharge machine. 5,187,342, Cl. 219-69.140.

Asphalt Control Systems Inc.: *See—*
Ballenger, William T., Jr.; and Light, Terry J., Sr., 5,186,979, Cl. 427-156.000.

AST Research, Inc.: *See—*
Tanikawa, Roy K., 5,187,425, Cl. 320-31.000.

AT&T Bell Laboratories: *See—*
Bauernfeind, Wolfgang J.; Beard, Frank T.; Brown, Edwin Z.; McMurray, Craig E.; and Pigg, Joseph E., 5,187,432, Cl. 324-158.00R.
Beffel, Robert R.; Blood, Ellen R.; Bufkin, Paul R.; Dennison, Bernard M.; Miller, Jerry G.; and Turner, James L., 5,187,733, Cl. 379-10.000.
Benko, John W.; Levkoff, Jerome; Sutryn, Daniel C.; and Viriyayuthakorn, Montri, 5,186,756, Cl. 118-730.000.
Bleich, Larry L.; Nutt, Wendell G.; and Zerbs, Stephen T., 5,187,329, Cl. 174-113.00R.
Chau, Nga V.; Hauptman, Reuben D.; Kaufman, David D.; Kittredge, Barbara J.; Lauber, Pamela J.; and Lindblad, Patricia, 5,187,710, Cl. 370-110.100.
Civanlar, M. Reha; Dzik, Steven C.; and Liow, Yuh-Tay, 5,187,660, Cl. 364-413.190.
Denkmann, W. John; Dix, Willard A.; and Spitz, William T., 5,186,647, Cl. 439-395.000.
DiGiovanni, David J.; Giles, Clinton R.; Kramer, Stuart A.; Nykolak, Gerald; Presby, Herman M.; and Simpson, Jay R., 5,187,759, Cl. 385-27.000.
Embree, Milton L., 5,187,637, Cl. 361-313.000.
Erving, Richard H.; and Miller, Robert R., 5,187,741, Cl. 379-388.000.
Fortner, Larry E.; Gustin, Paul R.; Hasler, Leonard F.; Johnson, Harold E.; Maul, George R.; Reed, David L.; and Reichard, George W., Jr., 5,186,649, Cl. 439-460.000.
Frankel, Rise J.; and Liu, K. S., 5,187,706, Cl. 370-16.100.
Habbab, Isam M. I.; and Saleh, Adel A. M., 5,187,610, Cl. 359-341.000.
Jin, Sungho; and Tiefel, Thomas H., 5,187,149, Cl. 505-1.000.
Larkin, John J., 5,187,027, Cl. 429-99.000.
Malleo-Roach, John A.; Rutkowski, Paul W.; and Wu, Eleanor, 5,187,712, Cl. 371-22.100.
Mock, Robert W., Jr.; Muth, Harold F., Jr.; and Snyder, Donald Q., 5,185,966, Cl. 51-283.00R.
Petty, Norman W., 5,187,722, Cl. 375-118.000.

Atlantic Richfield Company: *See—*
Henson, Randy H.; and Baillie, Lloyd A., 5,186,265, Cl. 175-107.000.

Atochem: *See—*
Commandeur, Raymond; Berger, Noelle; Jay, Pierre; and Kervennal, Jacques, 5,186,864, Cl. 252-581.000.
Glemet, Michel, 5,187,018, Cl. 428-474.700.
Lebez, Jean, 5,187,016, Cl. 428-462.000.

Atsugi Unisia Corporation: *See—*
Fujie, Toru; and Hadama, Shigeyuki, 5,187,337, Cl. 200-82.00R.
Yamaoka, Fumiyuki; and Kakizaki, Shinobu, 5,186,043, Cl. 73-118.100.

Attridge, John W.: *See—*
Eason, Stephen W.; Attridge, John W.; and Degroot, Simon, 5,186,897, Cl. 422-100.000.

Auman, Brian C.: *See—*
Estes, William E.; Higley, David P.; Auman, Brian C.; and Feiring, Andrew E., 5,186,985, Cl. 428-1.000.

Aura Systems, Inc.: *See—*
Stuart, Keith O.; and Bulgatz, Dennis C., 5,187,398, Cl. 310-14.000.

Austin, John C.: *See—*
Farrell, Michael E.; Austin, John C.; Kinder, Carla J.; and Matysek, James F., 5,187,587, Cl. 358-296.000.

Austin, Peter W., to Imperial Chemical Industries PLC. Biocides. 5,187,172, Cl. 514-369.000.

Autant, Pierre: *See—*
Sparks, Robert E.; Mason, Norbert S.; Autant, Pierre; Cartillier, Andre; and Pigeon, Raymond, 5,186,937, Cl. 424-438.000.

Autorobot Finland Ky: *See—*
Venalainen, Teuvo O., 5,186,038, Cl. 72-457.000.

Avakian, Emik A.; and Masi, James V., to Avakian, Emik A. Method of and apparatus for motorizing manually powered vehicles. 5,186,269, Cl. 180-6.500.

Avery Dennison Corporation: *See—*
Bordoloi, Binoy K.; Plamthottan, Sebastian S.; Ozari, Yehuda; and Ham, Robert V., 5,187,235, Cl. 525-305.000.
Freedman, Melvin S., 5,186,782, Cl. 156-244.110.

Avia Group International, Inc.: *See—*
Tong, James K.; Selbiger, Lawrence; Stubblefield, Jerry D.; and Curley, Jack, 5,185,943, Cl. 36-28.000.

Awai, Takashi: *See—*
Ono, Takeshi; Wada, Satoshi; Kobayashi, Makoto; Yoshida, Takehiro; Takeda, Tomoyuki; Ishida, Yasushi; Yokoyama, Minoru; Tomoda, Akihiro; Yamada, Masakatsu; and Awai, Takashi, 5,187,494, Cl. 346-76.0PH.

Azuhata, Shigeru: *See—*
Sohma, Kenichi; Yukitake, Tugihiro; Azuhata, Shigeru; Arashi, Norio; and Tokuda, Hiroatsu, 5,186,146, Cl. 123-435.000.

Azzimonti, Giovanni, to Azzimonti Paolino S.p.A. Assembling sheets of glass to metal structures. 5,185,979, Cl. 52-235.000.

Azzimonti Paolino S.p.A.: *See—*
Azzimonti, Giovanni, 5,185,979, Cl. 52-235.000.

B. Bunch Company, Inc.: *See—*
Bunch, Earnest B., Jr., 5,186,090, Cl. 83-341.000.

Baasner, Bernd: *See—*
Fischer, Reiner; Baasner, Bernd; Hageman, Hermann; Krebs, Andreas; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; Becker, Benedikt; Schaller, Klaus; and Strang, Harry, 5,186,737, Cl. 504-283.000.

Babcock & Wilcox Company, The: *See—*
Vaughn, Henry P., 5,187,728, Cl. 378-59.000.

Bach, Volker: *See—*
Etzbach, Kark-Heinz; Wagenblast, Gerhard; Brox, Wolfgang; Paul, Axel; and Bach, Volker, 5,187,298, Cl. 549-555.000.
Etzbach, Karl-Heinz; Wagenblast, Gerhard; Brox, Wolfgang; Paul, Axel; and Bach, Volker, 5,187,248, Cl. 526-243.000.

Bachmann Industries, Inc.: *See—*
Bachmann, Lothar, 5,186,205, Cl. 137-242.000.

Bachmann, Lothar, to Bachmann Industries, Inc. Valves for use in controlling the flow of a gas stream through ducts of large cross sectional areas. 5,186,205, Cl. 137-242.000.

Bae, Dong-Joo: *See—*
Baek, Won-Shik; Choi, Kyu-Hyun; and Bae, Dong-Joo, 5,187,548, Cl. 257-308.000.

Baek, Ki H.: *See—*
Conboy, Mark A.; Ichinose, Richard Y.; and Baek, Ki H., 5,187,777, Cl. 395-163.000.

Baek, Won-Shik; Choi, Kyu-Hyun; and Bae, Dong-Joo, to Samsung Electronics Co., Ltd. Stacked capacitor of a DRAM cell with fin-shaped electrodes having supporting layers. 5,187,548, Cl. 257-308.000.

Bagge, William J., to United Technologies Corporation. Hydraulic low pitch switch for propeller pitch change system. 5,186,608, Cl. 416-37.000.

Bailey, Larry M.: *See—*
Stahle, Arno W.; Bailey, Larry M.; and Tapp, William T., 5,187,005, Cl. 428-252.000.

Bailey, Ronald L., to Young Dental Manufacturing Company. Control for dental air-polisher. 5,186,625, Cl. 433-88.000.

Baillie, Lloyd A.: *See—*
Henson, Randy H.; and Baillie, Lloyd A., 5,186,265, Cl. 175-107.000.

Bajin, Zivojin. Highrise family fire escape device. 5,186,275, Cl. 182-5.000.

Baker, Edgar C.; Stakem, Francis G.; Noshay, Allen; Lee, Kiu H.; and Marcinkowsky, Arthur E., to Union Carbide Chemicals & Plastics Technology Corporation. Process for making EPR resins. 5,187,246, Cl. 526-88.000.

Baker, Edgar C.; Moorhouse, John H.; and Noshay, Allen, to Union Carbide Chemicals & Plastics Technology Corporation. Process for making elastomeric ethylene-alpha-olefin polymers with stage-modified vanadium catalyst. 5,187,247, Cl. 526-133.000.

Baker, James C.; Levine, Stephen N.; Puhl, Larry C.; and Carney, Scott N., to Motorola, Inc. Error detection. 5,187,811, Cl. 455-35.100.

Baker, Kenneth N.: *See—*
Pfaller, Mathew A.; Baker, Kenneth N.; and Say, Richard E., 5,185,921, Cl. 29-825.000.

Baker Norton Pharmaceuticals, Inc.: *See—*
Frost, Phillip; Fishman, Jack; Hahn, Elliot; and Lu, Jing J., 5,187,163, Cl. 514-47.000.

Baker, Richard B.: *See—*
Wendt, Charles W.; Hicks, Stanley K.; and Baker, Richard B., 5,186,738, Cl. 504-192.000.

Bakke, Patrick D.; and Bowen, David C., to Molex Incorporated. Latching device for an edge connector. 5,186,643, Cl. 439-326.000.

Ball Corporation: *See—*
Chasteen, Howard; Farley, Todd; Cramer, Richard; and Lockner, Michael, 5,186,279, Cl. 184-15.100.

Ball, Peter; Christ, Josef; Frank, Albin; Marquardt, Klaus; and Selig, Manfred, to Wacker-Chemie GmbH. Process for emulsion polymerization of graft copolymers. 5,187,233, Cl. 525-267.000.

Ballenger, William T., Jr.; and Light, Terry J., Sr., to Asphalt Control Systems Inc. Method of prevention of adhesion of hot-mix asphalt to containers and equipment. 5,186,979, Cl. 427-156.000.

Balmforth, Kevin D.; Bates, Gary A.; Davies, Steven P.; Habereder, Hans L.; Harrison, R. Loyd; Hopp, Donald M.; and Ricker, George G., to Hughes Aircraft Company. Pipelined signal processor having a plurality of bidirectional configurable parallel ports that are configurable as individual ports or as coupled pair of ports. 5,187,795, Cl. 395-800.000.

Balogh, Karoly: *See—*
Nagy, Jozsef; Nagy, Istvan; Balogh, Karoly; Mile, Erzsebet; Tarpai, Gyula; Sellei nee Kulik, Katalin; Fodor, Karoly; Kecskes, Mihaly; Toth nee Juhasz, Erzsebet; and Horvath nee Petho , Zsuzsanna, 5,186,723, Cl. 47-58.000.

Banjou, Toshinobu: *See—*
Egashira, Toshiyuki; Ishizuka, Masahiro; and Banjou, Toshinobu, 5,186,719, Cl. 29-25.010.

Barberii, John K.: *See—*
Karali, Sharifa; and Barberii, John K., 5,187,260, Cl. 530-358.000.

Baria, Guy. Device for injecting sludge into an incinerator. 5,186,111, Cl. 110-238.000.

Barner, Richard; Burri, Kaspar; Cassal, Jean-Marie; Hadvary, Paul; Hirth, Georges; and Muller, Klaus, to Hoffmann-La Roche Inc. Glycerin derivatives. 5,187,293, Cl. 558-267.000.

Barnes, Bryan R.: *See—*
Barnes, Ronny L.; and Barnes, Bryan R., 5,185,990, Cl. 56-51.000.

Barnes, Ronny L.; and Barnes, Bryan R., to Gar Bar Corporation (Texas Corporation). Row follower. 5,185,990, Cl. 56-51.000.

Barron, David L.: *See—*
Yip, William C.; and Barron, David L., 5,187,745, Cl. 381-36.000.

Barta, Raymond D., to Dowbrands L.P. Electrostatic pinning in a process for gusseting film web. 5,186,707, Cl. 493-439.000.

Bartlett, Clifford R.: *See—*
Watkins, Michael I.; Bartlett, Clifford R.; Liang, Edward T.; Pocekay, John M.; and Staples, Mark A., 5,187,107, Cl. 436-505.000.

BASF Aktiengesellschaft: *See—*
Brueckmann, Ralf; Bury, Willi; Dix, Johannes P.; Herrmann, Manfred; Dlugosch, Waldemar; Kromm, Erich; Letter, Herbert; Zimmermann, Norbert; Kermer, Wolf-Dieter; and Taeger, Klaus, 5,186,846, Cl. 252-8.700.
Buerstinghaus, Rainer; Neubauer, Hans-Juergen; Hofmeister, Peter; Kuenast, Christoph; Leyendecker, Joachim; and Kardorff, Uwe, 5,187,182, Cl. 514-383.000.
Etzbach, Kark-Heinz; Wagenblast, Gerhard; Brox, Wolfgang; Paul, Axel; and Bach, Volker, 5,187,298, Cl. 549-555.000.
Etzbach, Karl-Heinz; Wagenblast, Gerhard; Brox, Wolfgang; Paul, Axel; and Bach, Volker, 5,187,248, Cl. 526-243.000.
Volkert, Otto; and Maurer, Walter, 5,187,206, Cl. 521-129.000.
Wingert, Horst; Sauter, Hubert; Brand, Siegbert; Wenderoth, Bernd; Lorenz, Gisela; and Ammermann, Eberhard, 5,187,170, Cl. 514-351.000.

BASF Corp.: *See—*
Holland, Richard J., 5,186,856, Cl. 252-143.000.
Jackson, Michael L.; and Easterle, Mark A., 5,187,204, Cl. 521-111.000.
Otten, Jay G.; and Schoene, Kenneth F., 5,187,191, Cl. 514-772.300.

Bastert, Carl-Christian; and Helgert, Armin, to Stierlen-Maquet AG. Apparatus for shifting patients to and from a bed. 5,185,894, Cl. 5-81.100.

Bates, Gary A.: *See—*
Balmforth, Kevin D.; Bates, Gary A.; Davies, Steven P.; Habereder, Hans L.; Harrison, R. Loyd; Hopp, Donald M.; and Ricker, George G., 5,187,795, Cl. 395-800.000.

Batllo, Francois: *See—*
Freund, Friedemann; Batllo, Francois; and Freund, Minoru M., 5,187,442, Cl. 324-452.000.

Battelle Memorial Institute: *See—*
Bunnell, L. Roy, 5,186,919, Cl. 423-448.000.

Battito, Frank: *See—*
Leslie, Thomas M.; Shu, Ching F.; Blatter, Karsten; DeMartino, Ronald; and Battito, Frank, 5,187,234, Cl. 525-276.000.

Bauer, Klaus: *See—*
Ort, Oswald; Willms, Lothar; Bauer, Klaus; Bieringer, Hermann; and Schulz, Arno, 5,186,736, Cl. 504-225.000.

Bauernfeind, Wolfgang J.; Beard, Frank T.; Brown, Edwin Z.; McMurray, Craig E.; and Pigg, Joseph E., to AT&T Bell Laboratories. Environmental stress screening process. 5,187,432, Cl. 324-158.00R.

Baum, Allen J., to Apple Computer, Inc. Microprocessor with improved interrupt response with data saving dependent upon processor status using status flag. 5,187,791, Cl. 395-725.000.

Baumaster, Thomas R.: *See—*
Osterday, Craig A.; Osterfeld, Douglas L.; Baumaster, Thomas R.; Welch, Timothy M.; Trego, Michael P.; and Flory, Donald M., 5,185,915, Cl. 29-525.000.

Baumgardner, John S.; and Loewen, Mark D., to Ahlstrom Filtration, Inc. Blood separation media and method for separating plasma from whole blood. 5,186,843, Cl. 210-767.000.

Baxter International Inc.: *See—*
Bliem, Rudolf F.; Oakley, Robert V.; and Taiariol, Van, 5,187,095, Cl. 435-285.000.
Raible, Donald A., 5,186,713, Cl. 604-4.000.

Bayer Aktiengesellschaft: *See—*
Andree, Roland; Drewes, Mark W.; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., 5,186,734, Cl. 504-196.000.
Fischer, Reiner; Baasner, Bernd; Hageman, Hermann; Krebs, Andreas; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; Becker, Benedikt; Schalier, Klaus; and Strang, Harry, 5,186,737, Cl. 504-283.000.
Kleefeld, Gerd; and Dutzmann, Stefan, 5,187,178, Cl. 514-383.000.
Lindner, Christian; Eichenauer, Herbert; Lutjens, Holger; and Braese, Hans-Eberhard, 5,187,231, Cl. 525-207.000.
Musch, Rudiger; Thormer, Joachim; Buding, Hartmuth; and Leibbrandt, Friedrich, 5,187,232, Cl. 525-215.000.

Bayer, Craig E.; and Blazejewski, Edward G., to Air Preheater Company, Inc., The. Regenerative bed incinerator system. 5,186,901, Cl. 422-111.000.

Baylac, Brunno Y. H.; and Castel, Michel, to Siemens Aktiengesellschaft. Precharger for short circuit detector. 5,187,631, Cl. 361-94.000.

Baylor College of Medicine: *See—*
Estes, Mary K., 5,186,933, Cl. 424-89.000.

Bazin, Simone P., to GTE Products Corporation. Arc discharge lamp with a vertical thermal switch extending between the lamp stem and inner neck wall. 5,187,416, Cl. 315-73.000.

Beakes, John M.; and Heaton, Mark T., to Globe Products Inc. Programmable lead pull method and apparatus for use with a stator winding machine. 5,186,405, Cl. 242-1.10R.

Beall, John N., III. Method of forming a concrete block. 5,186,883, Cl. 264-275.000.

Beaman, Samuel W. Method for manufacturing hollow concrete structures. 5,186,881, Cl. 264-256.000.

Beard, Frank T.: *See—*
Bauernfeind, Wolfgang J.; Beard, Frank T.; Brown, Edwin Z.; McMurray, Craig E.; and Pigg, Joseph E., 5,187,432, Cl. 324-158.00R.

Beauchamp, Charles H.; Cincotta, Manuel, Jr.; Raffa, Anthony V.; and Gauthier, Benoit G., to United States of America, Navy. Articulated fin/wing control system. 5,186,420, Cl. 244-219.000.

Becker, Benedikt: *See—*
Fischer, Reiner; Baasner, Bernd; Hageman, Hermann; Krebs, Andreas; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; Becker, Benedikt; Schaller, Klaus; and Strang, Harry, 5,186,737, Cl. 504-283.000.

Becker, Burkhard, to Siemens Aktiengesellschaft. Input protection structure for integrated circuits. 5,187,562, Cl. 257-539.000.

Becker, Martin; Kurn, Nurith; Liu, Yen P.; Patel, Rajesh D.; Houts, Thomas M.; and Olson, John D., to Syntex (U.S.A.) Inc. Methods for detecting amphiphilic antigens. 5,187,066, Cl. 435-7.360.

Becker, Yigal; Elgavi, Asher; and Shvo, Youval, to Bromine Compounds Limited. Cyanohydrination process. 5,187,296, Cl. 558-351.000.

Beckett Gas, Inc.: *See—*
Hollingshead, Wayne S., 5,186,620, Cl. 431-354.000.

Beckhusen, Gerard F.; and Mowrer, Gail S., to Fisher-Price, Inc. Toy paint applicators. 5,186,674, Cl. 446-144.000.

Becton, Dickinson and Company: *See—*
Williams, Joel L.; and Shepard, Thomas A., 5,186,972, Cl. 427-2.000.

Bedard, Robert L., to UOP. Hydrocarbon conversion processes using crystalline microporous zinc phosphate compositions. 5,186,814, Cl. 208-46.000.

Beecher, Dennis L., to Consolidated Rail Corporation. Trailer lifting foot extender. 5,186,508, Cl. 294-81.510.

Beeferman, Dennis; and Lucas, William F., to Handy & Harman. Titanium hydride coated brazing product. 5,186,380, Cl. 228-121.000.

Beffel, Robert R.; Blood, Ellen R.; Bufkin, Paul R.; Dennison, Bernard M.; Miller, Jerry G.; and Turner, James L., to AT&T Bell Laboratories. Verification of subscriber lines prior to cutover to a new switching system. 5,187,733, Cl. 379-10.000.

Behchaar, Mohamed L., to Allied-Signal Inc. Hydraulic brake booster and valve members. 5,185,999, Cl. 60-404.000.

VOL 1147 ISS 3 FE 16 1993 UMI

Behera, Bailochan, to Unisys Corporation. Archival document image processing and printing system. 5,187,750, Cl. 382-7.000.

Behringwerke Aktiengesellschaft: *See—*
Bouchee, Bernhard; and Fickenscher, Karl, 5,186,896, Cl. 422-72.000.
Cerutti, Peter A.; and Bressoud, Alberic, 5,187,060, Cl. 435-5.000.
de Villiers, Ethel-Michele; Hirsch-Behnam, Anja; and Hausen, Harald zur, 5,187,090, Cl. 435-235.100.
Hissung, Alfred R., 5,186,709, Cl. 494-43.000.

Belanger, Roger R.: *See—*
Palmatier, Roland T.; Novick, Michael A.; and Belanger, Roger R., 5,186,444, Cl. 270-52.500.

Bell Communications Research, Inc.: *See—*
Braun, David A.; Nilson, William A. E., III; Nelson, Terence J.; and Smoot, Lanny S., 5,187,571, Cl. 358-85.000.

Bellas, Gabriel A. S. Intra-vaginal prolapse diagnostic instrument. 5,186,180, Cl. 128-778.000.

Bellino GmbH & Co.: *See—*
Birkle, Gebhard, 5,187,363, Cl. 250-227.250.

Belliotti, Thomas R.; Connor, David T.; Kostlan, Catherine R.; and Miller, Steven R., to Warner-Lambert Company. 2-carbonyl substituted-5-hydroxy-1, 3-pyrimidines as antiinflammatory agents. 5,187,175, Cl. 514-269.000.

Bellis, Peter D., to Mallory, Inc. Multi-port return type pressure regulator. 5,186,147, Cl. 123-457.000.

Bello, James L.: *See—*
Sterman, Melvin D.; and Bello, James L., 5,187,259, Cl. 530-354.000.

Bellows,Richard J.: *See—*
Kaul, Bal K.; O'Bara, Joseph T.; Savage, David W.; Dennis, J. Patrick; Bellows,Richard J.; and Kantner, Edward, 5,186,819, Cl. 208-310.00Z.

Belvo, Aaron J.: *See—*
Manley, John A.; Belvo, Aaron J.; Platt, Todd C.; Bruce, Andrew D.; and Wolf, Peter A., 5,186,443, Cl. 270-1.100.

Benchmarq Microelectronics, Inc.: *See—*
Armstrong, Gene L., II; and Matthews, Wallace E., 5,187,396, Cl. 307-494.000.

Bendix Espana S.A.: *See—*
Guasch, Esteve C., 5,186,210, Cl. 137-596.170.

Bendix Europe Services Techniques: *See—*
Gautier, Jean-Pierre; Perez, Miguel; and Verbo, Ulysse, 5,186,004, Cl. 60-594.000.
Kervagoret, Gilbert, 5,186,093, Cl. 91-433.000.
Lebret, Pierre, 5,186,003, Cl. 60-555.000.
Thioux, Alain; and Levrai, Roland, 5,186,523, Cl. 303-9.630.

Bengoa, Jesus: *See—*
Romero, Richard A.; and Bengoa, Jesus, 5,186,472, Cl. 277-37.000.

Bengtsson, Kjell, to Esselte Meto Eas Int. AB. Hand scanner for reading bar codes and deactivating article surveillance tags. 5,187,354, Cl. 235-472.000.

Benko, John W.; Levkoff, Jerome; Sutryn, Daniel C.; and Viriyayuthakorn, Montri, to AT&T Bell Laboratories. MOCVD method and apparatus. 5,186,756, Cl. 118-730.000.

Bennett, Richard B., III: *See—*
Cha, Jin K.; and Bennett, Richard B., III, 5,187,279, Cl. 546-183.000.

Bentley-Harris Manufacturing Company, The: *See—*
Kite, J. Sellers, III, 5,186,992, Cl. 428-36.300.

Benz, Klemens; and Kubler, Rainer, to Mercedes-Benz AG. Process for determining the state of a battery. 5,187,424, Cl. 320-14.000.

Bereskin, Alexander B. Microwave test fixtures for determining the dielectric properties of a material. 5,187,443, Cl. 324-632.000.

Berg, Peter G.: *See—*
Curhan, Jeffery A.; Pimentel, Daniel R.; and Berg, Peter G., 5,187,349, Cl. 219-202.000.

Berg, Svein A.; and Halden, Jonas P., to Nestec S.A. Removal of free water for packaging cooked meat. 5,186,966, Cl. 426-402.000.

Berger, Noelle: *See—*
Commandeur, Raymond; Berger, Noelle; Jay, Pierre; and Kervennal, Jacques, 5,186,864, Cl. 252-581.000.

Bergfried, Dietrich: *See—*
Stecher, Gunther; Hecht, Hans; Bergfried, Dietrich; Ziegenbein, Botho; and Muehlheim, Richard, 5,186,051, Cl. 73-204.260.

Bergougnou, Maurice: *See—*
Gauthier, Thierry; Bergougnou, Maurice; Briens, Cedric; and Galtier, Pierre, 5,186,836, Cl. 210-512.100.

Bermel, Alexandra D.: *See—*
Wilson, John W.; and Bermel, Alexandra D., 5,187,037, Cl. 430-110.000.

Bernatowicz, Michael S., to Millipore Corporation. Racemization free attachment of amino acids to a solid phase. 5,187,270, Cl. 548-338.100.

Bernauer, Gunther: *See—*
Vollmann, Norbert C.; Dewolf, Jan; Bernauer, Gunther; Stoger, Anton; and Koningsberger, Marco V., 5,187,629, Cl. 360-132.000.

Berry, Elaine D.: *See—*
Hutkins, Robert W.; Berry, Elaine D.; and Liewen, Michael B., 5,186,962, Cl. 426-61.000.

Bertalan, Charles W.: *See—*
Katcher, Jay H.; and Bertalan, Charles W., 5,187,272, Cl. 536-102.000.

Berti, Dario; and Chiuppani, Giovanni A., to AGIP S.p.A. Internal centering device particularly suitable for connecting the ends of tubes. 5,186,441, Cl. 269-43.000.

Bertiger, Bary R.; Leopold, Raymond J.; and Peterson, Kenneth M., to Motorola, Inc. Telemetry, tracking and control for satellite cellular communication systems. 5,187,805, Cl. 455-12.100.

Bertolozzi, Rano J.: *See—*
Reicin, Edward E.; Bertolozzi, Rano J.; and Cortapassi, Theodore, 5,186,577, Cl. 405-52.000.

Bertram, George T.; and Krislav, Semyon, to Sealed Air Corporation. Cartridge port design for dispensing foam precursors. 5,186,905, Cl. 422-133.000.

Besson, Rene , to Montres Rolex S.A. Device for controlling and correcting the display of the day and date for a watch, and a wrist watch fitted with such a device. 5,187,693, Cl. 368-35.000.

Betti, Giorgio: *See—*
Vai, Gianfranco; Zuffada, Maurizio; Sacchi, Fabrizio; Moloney, David; and Betti, Giorgio, 5,187,452, Cl. 331-113.00R.

Betz Laboratories, Inc.: *See—*
Polizzotti, David M., 5,186,915, Cl. 423-29.000.

Beyzavi, Ali-Naghi: *See—*
Heng, Rudolf; Koch, Walter; and Beyzavi, Ali-Naghi, 5,186,920, Cl. 423-610.000.

Bhasin, Madan M.: *See—*
Thorsteinson, Erlind M.; Bhasin, Madan M.; and Seyedmonir, Seyed R., 5,187,140, Cl. 502-348.000.

Bhatti, Mohinder S.; and Kadle, Prasad S., to General Motors Corporation. Heater core. 5,186,249, Cl. 165-174.000.

Biagi, Carl; Ritchie, Steve; and Sullivan, Dwight, to Williams Electronics Games, Inc. Oscillating ball cannon. 5,186,462, Cl. 273-129.00S.

Biagi, Hugh A., Jr. Liquid transfer assembly. 5,186,362, Cl. 222-136.000.

Biblarz, Oscar: *See—*
Michael, Joseph D.; Lagushenko, Radomir; Maya, Jakob; and Biblarz, Oscar, 5,186,668, Cl. 445-9.000.

BIC Corporation: *See—*
Fuhrmann, Arthur D., III; Stevens, Craig; and Gramolini, Glenn, 5,186,564, Cl. 401-202.000.

Bieber, Allen C.: *See—*
Otto, John E.; Bieber, Allen C.; and Till, Ronald H., 5,186,352, Cl. 220-564.000.

Biedenharn, Eric C., Jr. Combination backpack and stool. 5,186,372, Cl. 224-155.000.

Bieri, Hans, to Hydrostress AG. Guide and support structure for surface cutting apparatus. 5,186,157, Cl. 125-14.000.

Bieringer, Hermann: *See—*
Ort, Oswald; Willms, Lothar; Bauer, Klaus; Bieringer, Hermann; and Schulz, Arno, 5,186,736, Cl. 504-225.000.

Bigot, Yves: *See—*
Nouguez, Bruno; Bigot, Yves; Groux, Jacky; and Derrien, Jean-Claude, 5,187,319, Cl. 102-202.100.

Bihler, Otto. Processing machine, especially automatic punching and bending machine. 5,186,037, Cl. 72-442.000.

Bilge, Umit; and Jenuwine, William C., to General Motors Corporation. Laser welding method. 5,187,346, Cl. 219-121.640.

Bio-Rad, Laboratories, Inc.: *See—*
Dower, William J., 5,186,800, Cl. 204-180.100.
Watkins, Michael I.; Bartlett, Clifford R.; Liang, Edward T.; Pocekay, John M.; and Staples, Mark A., 5,187,107, Cl. 436-505.000.

Biotage Inc.: *See—*
Simon, Ethan S.; Holland, Kevin B.; and McClanahan, Christopher, 5,186,838, Cl. 210-635.000.

Biotronik Mess- und Therapiegerate GmbH & Co.: *See—*
Schaldach, Max, 5,186,169, Cl. 128-419.0PG.

Birgenheier, Raymond A.; and Ryan, Richard P., to Hewlett-Packard Company. Method and apparatus for measuring modulation accuracy. 5,187,719, Cl. 375-10.000.

Birkle, Gebhard, to Bellino GmbH & Co. Apparatus for detecting minute quantities of moisture in coolants. 5,187,363, Cl. 250-227.250.

Birkle, Siegfried; Fischer, Jurgen; and Gehring, Johann, to Siemens Aktiengesellschaft. Device for electrolytic surface treatment of bulk material. 5,186,803, Cl. 204-201.000.

Birtwistle, David H., to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Shampoo composition. 5,186,928, Cl. 424-70.000.

Bixler, Craig A., to Molex Incorporated. Electrical connector latching system. 5,186,645, Cl. 439-358.000.

Bjorge, Per H.: *See—*
Deutsch, Keith R.; Bjorge, Per H.; and Blannin, Alan, 5,187,594, Cl. 358-455.000.

Bjork, Paul E.: *See—*
Wagener, Thomas J.; Bjork, Paul E.; and Lenz, James E., 5,187,475, Cl. 340-870.320.

Bjornson, Geir: *See—*
Stahl, Allan; Moradi-Araghi, Ahmad; Westerman, John; Hsieh, Henry L.; Hedges, James H.; and Bjornson, Geir, 5,186,257, Cl. 166-273.000.

Black Clawson Company, The: *See—*
Hatton, Derald R.; Constiner, Joseph P.; and Suica, David E., 5,186,332, Cl. 209-17.000.
Seifert, Peter; and Chupka, David E., 5,186,791, Cl. 162-56.000.

Black & Decker, Inc.: *See—*
Grossmann, Horst; and Hoser, Jurgen, 5,186,685, Cl. 464-46.000.

Blaeser, David J.; and Wolter, Raymond R., to Hutchinson Technology Incorporated. Laminated load beam. 5,187,625, Cl. 360-104.000.

Blair, John: *See—*
Foster, Brian; and Blair, John, 5,186,048, Cl. 73-155.000.

Blair, William; and Brooks, Stanley J. Microprocessor controlled security system for computers. 5,187,352, Cl. 235-382.000.

Blais, Francois, to National Research Council of Canada/Conseil National de Recherches du Canada. Scanning device with waveform generator optimizer. 5,187,364, Cl. 250-236.000.

Blannin, Alan: *See—*
Deutsch, Keith R.; Bjorge, Per H.; and Blannin, Alan, 5,187,594, Cl. 358-455.000.

Blaschek, Otto, to Arnold & Richter Cine Technik & Co. Betriebs KG. Film transport device. 5,187,508, Cl. 352-180.000.

Blatter, Karsten: *See—*
Leslie, Thomas M.; Shu, Ching F.; Blatter, Karsten; DeMartino, Ronald; and Battito, Frank, 5,187,234, Cl. 525-276.000.

Blau KG: *See—*
Scharrer, Konrad, 5,186,220, Cl. 141-59.000.

Blaylock, William R. Pecan cracker. 5,185,929, Cl. 30-120.400.

Blazejewski, Edward G.: *See—*
Bayer, Craig E.; and Blazejewski, Edward G., 5,186,901, Cl. 422-111.000.

Bleck, James H.: *See—*
Spalding, Tom J.; Kowal, Keith E.; Bleck, James H.; Wakefield, Scott H.; and Thrailkill, John E., 5,187,645, Cl. 361-393.000.

Bleich, Larry L.; Nutt, Wendell G.; and Zerbs, Stephen T., to AT&T Bell Laboratories. Twisted pairs of insulated metallic conductors for transmitting high frequency signals. 5,187,329, Cl. 174-113.00R.

Blessing, Alf, to Daimler-Benz AG. Controllable semiconductor switching device having integrated current limitation and overheating disconnection. 5,187,632, Cl. 361-103.000.

Blette, Russell E.; and Roeser, John O., to Minnesota Mining and Manufacturing Company. Pin transfer applicator and method. 5,186,982, Cl. 427-256.000.

Bliem, Rudolf F.; Oakley, Robert V.; and Taiariol, Van, to Baxter International Inc. Apparatus for culturing animal cells. 5,187,095, Cl. 435-285.000.

Blockl, Reinhard, to Siemens Aktiengesellschaft. Method and circuit configuration for triggering a semiconductor switch through the use of an inductive transformer. 5,187,384, Cl. 307-246.000.

Blohm, Margaret L.; Pickett, James E.; and VanDort, Paul C., to General Electric Company. Substituted 3,4-polymethylenedioxythiophenes, and polymers and electro responsive devices made therefrom. 5,187,608, Cl. 359-273.000.

Blood, Ellen R.: *See—*
Beffel, Robert R.; Blood, Ellen R.; Bufkin, Paul R.; Dennison, Bernard M.; Miller, Jerry G.; and Turner, James L., 5,187,733, Cl. 379-10.000.

Bloomberg, Dan S.; and Kopec, Gary E., to Xerox Corporation. Method and apparatus for identification and correction of document skew. 5,187,753, Cl. 382-46.000.

Blount, William W., Jr.; and Zoeller, Joseph R., to Eastman Kodak Company. Trifunctional monomer compounds, polyesters derived therefrom and thermosetting coating compositions containing the polyesters. 5,187,304, Cl. 560-118.000.

Blufin S.r.l.: *See—*
Sancinelli, Roberto, 5,186,740, Cl. 75-401.000.

Board of Regents, The University of Texas System: *See—*
Fair, Daryl S., 5,187,155, Cl. 514-12.000.
Farquhar, David; and Wang, Yugiang, 5,187,266, Cl. 536-6.400.
Khokhar, Abdul R.; Lopez-Berestein, Gabriel; and Perez-Soler, Roman, 5,186,940, Cl. 424-450.000.
Phillips, William; and Schwartz, Joyce G., 5,187,154, Cl. 514-12.000.

Board of Trustees, operating Michigan State University: *See—*
Raikhel, Natasha V.; Broekaert, Willem F.; Chua, Nam-Hai; and Kush, Anil, 5,187,262, Cl. 530-370.000.

BOC Group, Inc., The: *See—*
Appolonia, Jack; Wheeler, Clair; and Kapoor, Akhilesh, 5,186,008, Cl. 62-63.000.

Boche, Daniel K.: *See—*
Steindorf, Richard E.; Maeda, Katsumi; Boche, Daniel K.; and Satoh, Yoichi, 5,186,912, Cl. 422-263.000.

Bock, Paul E.: *See—*
Shore, Joseph D.; Bock, Paul E.; Olson, Steven T.; and Day, Duane E., 5,187,069, Cl. 435-13.000.

Boczkowski, Frederick A.: *See—*
Cullen, John S.; Incorvia, Samuel A.; Nigon, Christopher S.; and Boczkowski, Frederick A., 5,186,775, Cl. 156-69.000.

Bodor, Nicholas S., to University of Florida. Brain-specific drug delivery. 5,187,158, Cl. 514-13.000.

Bodwell, James R.; Harris, Stephen H.; and Dehm, David C. Propoxylated PTB coalescing agents for water-borne protective coatings. 5,186,744, Cl. 106-243.000.

Boeing Company, The: *See—*
Cech, Jay M.; and Burnett, Andrew F., 5,187,119, Cl. 437-187.000.
Fryc, Oldrich; and Olive, Ronald M., 5,186,311, Cl. 198-626.600.

Bohorquez, Jaime H.; and Keefe, Brian J., to Hewlett-Packard Company. Control of energy to thermal inkjet heating elements. 5,187,500, Cl. 346-140.00R.

Bois, Philippe: *See—*
Weisbuch, Claude; Bois, Philippe; and Vinter, Borge, 5,187,715, Cl. 372-46.000.

Bollier, Mauritius, to Sulzer Brothers Limited. Torsion rod type picking mechanism for a projectile loom. 5,186,216, Cl. 139-145.000.

Bolton, Carl W.: *See—*
Shultz, Larry D.; and Bolton, Carl W., 5,186,424, Cl. 248-179.000.

Bond, Philip A.: *See—*
van Ditzhuijzen, Gustaaf A. J. M.; and Bond, Philip A., 5,186,018, Cl. 62-374.000.

Bonda, Jacob Z. Inflatable mattress. 5,185,896, Cl. 5-118.000.

Bonham, James A.; and Rossman, Mitchell A., to Minnesota Mining and Manufacturing Company. Halomethyl-1,3,5-triazines containing a sensitizer moiety. 5,187,045, Cl. 430-275.000.

Boni, Bernard: *See—*
Carpentier, Eric; Pelletier, Bruno; and Boni, Bernard, 5,186,771, Cl. 152-158.000.

Bonis, Maurice, to France Telecom Establissement autonome de droit public. Process for fabricating an integrated circuit using local silicide interconnection lines. 5,187,122, Cl. 437-200.000.

Bonne, Ulrich, to Honeywell Inc. Versatile, overpressure proof, absolute pressure sensor. 5,187,674, Cl. 364-558.000.

Booth, Nicholas J.: *See—*
Fanning, Desmond G.; and Booth, Nicholas J., 5,186,411, Cl. 242-96.000.

Borch, Richard F.; and Schmalbach, Therese K., to University of Rochester. Method for stimulating transplanted bone marrow cells. 5,187,193, Cl. 514-476.000.

Bordoloi, Binoy K.; Plamthottan, Sebastian S.; Ozari, Yehuda; and Ham, Robert V., to Avery Dennison Corporation. Energy-curable acrylic pressure-sensitive adhesives. 5,187,235, Cl. 525-305.000.

Borgis, Livio; Piacibello, Marco V. P.; and Keim, Peter C., to U.S. Philips Corporation. Electric lamp. 5,187,407, Cl. 313-318.000.

Bornhorst, James M.; and Stacy, Timothy D., to Vari-Lite, Inc. Lighting instrument with movable filters and associated actuation mechanism. 5,186,536, Cl. 362-293.000.

Borzatta, Valerio; Scrima, Roberto; and Vignali, Graziano, to Ciba-Geigy Corporation. Piperidine-triazine compounds. 5,187,275, Cl. 544-207.000.

Bos, Philip J., to Tektronix, Inc. High contrast light shutter system. 5,187,603, Cl. 359-73.000.

Botannet, Bernard; Clavel, Jean-Louis; Corbet, Jean-Pierre; and Mulhauser, Michel, to Rhone-Poulenc Agrochimie. N-sulfomethylglycinate, use in the preparation of herbicides of the glyphosate type. 5,187,292, Cl. 558-134.000.

Bothe, Lothar: *See—*
Gribbin, John D.; Bothe, Lothar; Dinter, Peter; and Dallmann, Hermann, 5,186,974, Cl. 427-536.000.

Bouchee, Bernhard; and Fickenscher, Karl, to Behringwerke Aktiengesellschaft. Cuvette rotor. 5,186,896, Cl. 422-72.000.

Boucher, Mario: *See—*
Boucher, Paul; Boucher, Mario; Ford, John; and Stephenson, Gregg, 5,186,596, Cl. 414-395.000.

Boucher, Paul; Boucher, Mario; Ford, John; and Stephenson, Gregg. Loading and unloading apparatus. 5,186,596, Cl. 414-395.000.

Boucher, Stephen G.: *See—*
Lagace, Maurice P.; Boucher, Stephen G.; Cullen, Robert M.; Noyes, Andrew L.; Willette, John; and Russell, Cynthia M., 5,186,050, Cl. 73-187.000.

Boudreault, Steven: *See—*
Boudreault, Yvon; Boudreault, Steven; and Jalbert, Fernand, 5,186,714, Cl. 604-21.000.

Boudreault, Yvon; Boudreault, Steven; and Jalbert, Fernand, to Yab Revo-Tech Inc. Multifunctional surgical instrument. 5,186,714, Cl. 604-21.000.

Boumarafi, Mohamed; Pondell, Carl; and DiPaola, Donald A., to Allied-Signal Inc. Adjustable seat belt anchorage. 5,186,495, Cl. 280-808.000.

Bourbonais, Ed: *See—*
Perron, Peter J.; Nangrani, Khemchand; and Bourbonais, Ed, 5,187,228, Cl. 525-66.000.

Boutet, John C., to Eastman Kodak Company. Pallet for holding a cassette. 5,186,338, Cl. 211-41.000.

Bovy, Philippe R.; Collins, Joe T.; and Manning, Robert E., to G. D. Searle & Co. N-substituted (α-imidazolyl-toluyl) pyrrole compounds for treatment of circulatory disorders. 5,187,271, Cl. 548-314.700.

Bowen, David C.: *See—*
Bakke, Patrick D.; and Bowen, David C., 5,186,643, Cl. 439-326.000.

Bowen, Michael W.: *See—*
Rachel, Bernard W.; LeCrone, Richard C.; and Bowen, Michael W., 5,187,405, Cl. 313-316.000.

Bowers, John H.: *See—*
Lewicki, Walter J., Jr.; and Bowers, John H., 5,187,501, Cl. 346-153.100.

Bowles, Bobby K.: *See—*
Cole, R. Clay; and Bowles, Bobby K., 5,186,847, Cl. 252-8.551.

Bowles, Mark: *See—*
Skeen, Marion D.; and Bowles, Mark, 5,187,787, Cl. 395-600.000.

Boyce, Joseph S.; Ross, James P.; Jens, Stephen C.; and Evans, David A., to Foster-Miller, Inc. Composite laminate translaminar reinforcement apparatus and method. 5,186,776, Cl. 156-73.200.

Boyd, Dudley G.; and Chen, Nian, to Systems and Service International, Inc. Discharge lamp life and lamp lumen life-extender module, circuitry, and methodology. 5,187,411, Cl. 315-247.000.

Boyd, Kim S.: *See—*
Lenox, Ronald S.; Boyd, Kim S.; and Vought, William S., Jr., 5,187,203, Cl. 521-75.000.

Boyer, David J.; and Cottrell, Rodney J. Electric plug lock. 5,186,636, Cl. 439-133.000.

Bozzi, Eugenio, to ITI/CLM Impianti Tecnici Industriali SpA. Bridge crane with articulated rotary boom. 5,186,343, Cl. 212-206.000.

BP Chemicals (Additives) Limited: *See—*
Carlisle, William D., 5,186,853, Cl. 252-51.50A.

Bradfisch, Gregory A.: *See—*
Narva, Kenneth E.; Schwab, George E.; and Bradfisch, Gregory A., 5,186,934, Cl. 124-93.00A.

VOL 1147 ISS 3 FE 16 1993 UMI

Braese, Hans-Eberhard: *See—*
Lindner, Christian; Eichenauer, Herbert; Lutjens, Holger; and Braese, Hans-Eberhard, 5,187,231, Cl. 525-207.000.

Brambach, Johan A., to Schreiner Luchtvaart Groep B.V. Sandwich material provided with a local reinforcement. 5,186,999, Cl. 428-117.000.

Brand, Randolf W. Fuel spillage control apparatus. 5,186,222, Cl. 141-86.000.

Brand, Siegbert: *See—*
Wingert, Horst; Sauter, Hubert; Brand, Siegbert; Wenderoth, Bernd; Lorenz, Gisela; and Ammermann, Eberhard, 5,187,170, Cl. 514-351.000.

Brandon, Darrell W., Jr. Packaged hydraulic oil tank assembly and attachment kit. 5,186,324, Cl. 206-223.000.

Brandt, Inc.: *See—*
Lane, Donald, 5,186,104, Cl. 101-216.000.

Braun Aktiengesellschaft: *See—*
Messinger, Werner, 5,185,933, Cl. 30-346.510.

Braun, David A.; Nilson, William A. E., III; Nelson, Terence J.; and Smoot, Lanny S., to Bell Communications Research, Inc. Television system for displaying multiple views of a remote location. 5,187,571, Cl. 358-85.000.

Braun, Stephan G.: *See—*
Kelland, James W.; and Braun, Stephan G., 5,187,025, Cl. 429-33.000.

Breads, Peter R.; Abbatte, Gerard P.; and Warunek, Stephen P., to Great Lakes Orthodontics, Ltd. Orthodontic finishing positioner and method of construction. 5,186,623, Cl. 433-6.000.

Breg, Inc.: *See—*
Mason, Bradley R.; and Mason, Jeffrey T., 5,186,698, Cl. 482-79.000.

Brenco, Incorporated: *See—*
Sink, Danny R., 5,186,548, Cl. 384-486.000.

Bressoud, Alberic: *See—*
Cerutti, Peter A.; and Bressoud, Alberic, 5,187,060, Cl. 435-5.000.

Brevick, John E.: *See—*
Ives, Steven E.; Ascroft, Thomas B.; Reising, Richard F.; Hill, Robert F.; Brevick, John E.; and Schneider, Eric W., 5,186,278, Cl. 184-6.230.

Brew, James K., to GenCorp Inc. Resin transfer molding apparatus. 5,187,001, Cl. 425-145.000.

Brew, Kenneth. Catalytic converter accessory apparatus. 5,185,998, Cl. 60-299.000.

Bridgestone Corporation: *See—*
Minaudo, Diego, 5,186,953, Cl. 425-47.000.
Okafuji, Yukitaka; and Waki, Tatsuo, 5,186,778, Cl. 156-126.000.

Bridgestone/Firestone, Inc.: *See—*
Mauro, Roberto; and Siegenthaler, Karl J., 5,186,950, Cl. 425-28.100.
Siegenthaler, Karl J., 5,186,951, Cl. 425-28.100.

Bridgham, John; Geiser, Timothy G.; Hunkapiller, Michael W.; Kent, Stephen B. H.; Marriott, Mark P.; Ramstad, Paul O.; and Nordman, Eric S., to Applied Biosystems, Inc. Automated polypeptide synthesis apparatus. 5,186,898, Cl. 422-102.000.

Bridport Aviation Products Limited: *See—*
Newman, Alan C., 5,186,628, Cl. 434-11.000.

Briens, Cedric: *See—*
Gauthier, Thierry; Bergougnou, Maurice; Briens, Cedric; and Galtier, Pierre, 5,186,836, Cl. 210-512.100.

Briggs & Stratton Corporation: *See—*
Brunelli, Brian; and Fiorenza, John A., II, 5,186,142, Cl. 123-339.000.
Janssen, David C.; and Grimmer, Larry R., 5,186,031, Cl. 70-277.000.

Brigham & Women's Hospital: *See—*
Loscalzo, Joseph; and Cooke, John, 5,187,183, Cl. 514-400.000.
Piwnica-Worms, David R.; and Kronauge, James F., 5,186,923, Cl. 424-9.000.

Brightwell, David L.: *See—*
Young, Darryl L.; Hirmann, Josef; Rhodes, Eugene E.; and Brightwell, David L., 5,186,239, Cl. 165-81.000.

Brinkman, Donald J.: *See—*
Harwath, Frank A.; Brinkman, Donald J.; Landgraf, Glenn A.; Shah, Hasmukh; Stenstrom, Eric; Brunker, David L.; and Johnson, Richard A., 5,186,656, Cl. 439-585.000.

Brion, Francis; Buendia, Jean; Diolez, Christian; and Vivat, Michel, to Roussel Uclaf. $\Delta^{4,9(11),17(20)}$-pregnatriene-3-ones. 5,187,273, Cl. 540-4.000.

Bristol-Myers Squibb Company: *See—*
Meanwell, Nicholas A., 5,187,188, Cl. 514-374.000.

British Aerospace plc: *See—*
Deakin, Richard S., 5,186,413, Cl. 244-1.0TD.

British Petroleum Company p.l.c., The: *See—*
Smith, Kevin G., 5,187,258, Cl. 528-392.000.

British Technology Group Limited: *See—*
Warren, William E., 5,186,201, Cl. 137-38.000.

British Telecommunications public limited company: *See—*
Keeble, Peter J., 5,187,362, Cl. 250-227.150.

Broadhurst, Michael D.; Tsang, Tsze H.; and Tomko, John, to Imperial Chemical Industries PLC. Arylphosphonodiamide compounds and herbicidal compositions thereof. 5,186,733, Cl. 504-195.000.

Brockman, Thomas R.; and Dillon, Mark, to Fairborn USA Inc. Storage terminal shelter, including side curtain assembly for truck/trailer hinge gap closure. 5,185,977, Cl. 52-173.0DS.

Brody, David E. Air powered particle sprayer with air flow control means. 5,186,395, Cl. 239-654.000.

Broekaert, Willem F.: *See—*
Raikhel, Natasha V.; Broekaert, Willem F.; Chua, Nam-Hai; and Kush, Anil, 5,187,262, Cl. 530-370.000.

Bromine Compounds Limited: *See—*
Becker, Yigal; Elgavi, Asher; and Shvo, Youval, 5,187,296, Cl. 558-351.000.

Brommer, Karl; Mullaney, Henry; Meade, Robert; Rappe, Andrew; and Joanopoulos, John. Low-loss dielectric resonator having a lattice structure with a resonant defect. 5,187,461, Cl. 333-219.100.

Brookdale International Systems Inc.: *See—*
Swann, Linsey J., 5,186,165, Cl. 128-201.280.

Brooks, Dee W.; and Rodriques, Karen E., to Abbott Laboratories. Cyclobutyl derivatives having lipoxygenase inhibitory activity. 5,187,192, Cl. 514-445.000.

Brooks, Dwight D., to Motorola, Inc. Belt clip spring with E-ring fastener. 5,185,906, Cl. 24-35.000.

Brooks, Robert T.: *See—*
Wood, Edward T.; Surgnier, David H.; and Brooks, Robert T., 5,186,258, Cl. 166-387.000.

Brooks, Stanley J.: *See—*
Blair, William; and Brooks, Stanley J., 5,187,352, Cl. 235-382.000.

Brooks, Todd L.; and Rybicki, Mathew A., to Motorola, Inc. Differential amplifier with common-mode stability enhancement. 5,187,448, Cl. 330-258.000.

Broome, Frank H.: *See—*
Karabin, Tadeusz; and Broome, Frank H., 5,186,385, Cl. 236-1.00G.

Brother Kogyo Kabushiki Kaisha: *See—*
Hattori, Hiroshi; Yoshimori, Hideji; Kondoh, Kazuhiro; and Madama, Akira, 5,186,551, Cl. 400-61.000.

Brothers, Virginia M.: *See—*
Andrews, William H.; Brothers, Virginia M.; Files, James G.; Kuhn, Irene; McCaman, Michael T.; Sias, Stacey R.; Paul, Leland S.; Gore, Thomas C.; Newman, Karel Z., Jr.; and Tedesco, John L., 5,187,080, Cl. 435-69.300.

Broutin, Paul: *See—*
Alagy, Jacques; Broutin, Paul; Busson, Christian; Gougne, Yves; and Weill, Jerome, 5,186,910, Cl. 422-220.000.

Brown, Claude E.: *See—*
Gallo, John R.; Coleman, Gregory J.; and Brown, Claude E., 5,186,351, Cl. 220-563.000.

Brown, Dale M.: *See—*
Michon, Gerald J.; Brown, Dale M.; Garfinkel, Marvin; and Cusano, Dominic A., 5,187,380, Cl. 257-428.000.

Brown, Donald A.; Brown, Steven P.; and MacDonald, Barbara. Method and apparatus for dispensing flowable hair products. 5,186,359, Cl. 222-1.000.

Brown, Edwin Z.: *See—*
Bauernfeind, Wolfgang J.; Beard, Frank T.; Brown, Edwin Z.; McMurray, Craig E.; and Pigg, Joseph E., 5,187,432, Cl. 324-158.00R.

Brown, Jesse J.; Hirschfeld, Deidre A.; and Lee, K. H., to Center for Innovative Technology; and VPI & SU. Method of making in-situ whisker reinforced glass ceramic. 5,186,729, Cl. 65-33.000.

Brown Jordan Company: *See—*
Doughty, Fred C., 5,186,382, Cl. 228-135.000.

Brown, Robert J. Process for decorating a hard surface. 5,186,983, Cl. 427-261.000.

Brown, Steven P.: *See—*
Brown, Donald A.; Brown, Steven P.; and MacDonald, Barbara, 5,186,359, Cl. 222-1.000.

Brox, Wolfgang: *See—*
Etzbach, Kark-Heinz; Wagenblast, Gerhard; Brox, Wolfgang; Paul, Axel; and Bach, Volker, 5,187,298, Cl. 549-555.000.
Etzbach, Karl-Heinz; Wagenblast, Gerhard; Brox, Wolfgang; Paul, Axel; and Bach, Volker, 5,187,248, Cl. 526-243.000.

Bruce, Andrew D.: *See—*
Manley, John A.; Belvo, Aaron J.; Platt, Todd C.; Bruce, Andrew D.; and Wolf, Peter A., 5,186,443, Cl. 270-1.100.

Bruce, James E.: *See—*
Hixon, Kenneth L.; and Bruce, James E., 5,187,764, Cl. 385-102.000.

Bruce, Samuel E. Lure storage container. 5,185,952, Cl. 43-57.100.

Bruck, Martin: *See—*
Vaahs, Tilo; Kleiner, Hans-Jerg; and Bruck, Martin, 5,187,252, Cl. 528-33.000.

Brueckmann, Ralf; Bury, Willi; Dix, Johannes P.; Herrmann, Manfred; Dlugosch, Waldemar; Kromm, Erich; Letter, Herbert; Zimmermann, Norbert; Kermer, Wolf-Dieter; and Taeger, Klaus, to BASF Aktiengesellschaft. Dye dispersants: aryl sulphonic acid-formaldehyde condensate or ligninsulfonate. 5,186,846, Cl. 252-8.700.

Brunelli, Brian; and Fiorenza, John A., II, to Briggs & Stratton Corporation. Idling system for a device having a speed governor. 5,186,142, Cl. 123-339.000.

Brunker, David L.: *See—*
Harwath, Frank A.; Brinkman, Donald J.; Landgraf, Glenn A.; Shah, Hasmukh; Stenstrom, Eric; Brunker, David L.; and Johnson, Richard A., 5,186,656, Cl. 439-585.000.

Bruss, Jack: *See—*
Heiman, Jerome R.; and Bruss, Jack, 5,187,031, Cl. 429-129.000.

Bryant, Frank R.: *See—*
Chan, Tsiu C.; and Bryant, Frank R., 5,187,114, Cl. 437-52.000.

Buan, Danilo P.; and Lyga, Thomas M., to Pitney Bowes Inc. Inking system for flat-bed mail processing system. 5,186,752, Cl. 118-260.000.

Bubat, Alfred: *See—*
Haubennestel, Karl-Heinz; and Bubat, Alfred, 5,187,201, Cl. 524-31.000.

Buchberger, Douglas A., II: *See—*
Collins, Kenneth S.; Trow, John R.; Roderick, Craig A.; Pinson, Jay D., II; and Buchberger, Douglas A., II, 5,187,454, Cl. 333-17.300.

Buchmann, Bernd: *See—*
Skuballa, Werner; Buchmann, Bernd; Heindl, Josef; Frohlich, Wolfgang; and Ekerdt, Roland, 5,187,286, Cl. 549-283.000.

Buchwalter, Stephen L.; Frank, Ernest R.; O'Toole, Terrence R.; Thomas, Richard R.; and Viehbeck, Alfred, to International Business Machines Corporation. Isoimide modifications of a polyimide and reaction thereof with nucleophiles. 5,187,241, Cl. 525-420.000.

Budenbender, Bernd. Sheet metal container with attached end closures. 5,186,592, Cl. 413-2.000.

Buding, Hartmuth: *See—*
Musch, Rudiger; Thormer, Joachim; Buding, Hartmuth; and Leibbrandt, Friedrich, 5,187,232, Cl. 525-215.000.

Budry, Jacques: *See—*
Magnollay, Gilbert; Scigneur, Remy; Budry, Jacques; Clement, Jean-Claude; Jaccottet, Michel; Jaggi, Pierre-Yves; Jaun, Hans; and De Boer, Philip, 5,186,957, Cl. 425-192.00R.

Budzich, Euphemia Agnes Marshal, executrix: *See—*
Budzich, Tadeusz, deceased, 5,186,612, Cl. 417-216.000.

Budzich, Tadeusz, deceased (by Budzich, Euphemia Agnes Marshal, executrix), to Caterpillar Inc. Variable pressure inlet system for hydraulic pumps. 5,186,612, Cl. 417-216.000.

Buehler AG: *See—*
Manser, Josef; Egger, Friedrich; and Seiler, Werner, 5,186,539, Cl. 366-85.000.
Weber, Heinrich; Lehrmann, Falko; Hofer, Hermann; Vogel, Werner; and Mueller, Peter, 5,187,097, Cl. 435-313.000.

Buendia, Jean: *See—*
Brion, Francis; Buendia, Jean; Diolez, Christian; and Vivat, Michel, 5,187,273, Cl. 540-4.000.

Buerstinghaus, Rainer; Neubauer, Hans-Juergen; Hofmeister, Peter; Kuenast, Christoph; Leyendecker, Joachim; and Kardorff, Uwe, to BASF Aktiengesellschaft. N-phenoxyphenoxymethyl-triazoles and a method for controlling pests. 5,187,182, Cl. 514-383.000.

Bufkin, Paul R.: *See—*
Beffel, Robert R.; Blood, Ellen R.; Bufkin, Paul R.; Dennison, Bernard M.; Miller, Jerry G.; and Turner, James L., 5,187,733, Cl. 379-10.000.

Bugaut, Andree; Junino, Alex; and Vandenboosche, Jean J., to L'Oreal. Dyeing compositions for keratin fibres, based on 3-nitro-ortho-phenylenediamines, and certain 3-nitro-ortho-phenylenediamines used therein. 5,186,717, Cl. 8-405.000.

Bulgatz, Dennis C.: *See—*
Stuart, Keith O.; and Bulgatz, Dennis C., 5,187,398, Cl. 310-14.000.

Bullivant, Roger A. Process for forming piles and product. 5,186,582, Cl. 405-239.000.

Bulsterbaum, J. Charles; Tolles, Robert D.; and Costello, Donald A., to Sematech, Inc.; and NCR Corporation. Apparatus for servicing of semiconductor manufacturing equipment. 5,186,597, Cl. 414-469.000.

Bulters, Marcus J. H.: *See—*
Schellekens, Ronald M. A. M.; Van Dijk, Hans K.; and Bulters, Marcus J. H., 5,186,861, Cl. 252-500.000.

Bunch, Earnest B., Jr., to B. Bunch Company, Inc. Sheeting apparatus. 5,186,090, Cl. 83-341.000.

Bundy, Gordon L.: *See—*
Johnson, Roy A.; Bundy, Gordon L.; Youngdale, Gilbert A.; Morton, Douglas R.; Wallach, Donald P., deceased; and Wallach, Legal Representative, by Vera M., 5,187,299, Cl. 552-522.000.

Bunke, Joachim: *See—*
Maass, Manfred; Bunke, Joachim; and Fritz, Martin, 5,187,426, Cl. 322-63.000.

Bunn-O-Matic Corporation: *See—*
Knepler, John T.; Newton, Cloyce; and Stover, Kenneth W., 5,186,399, Cl. 241-34.000.

Bunnell, L. Roy, to Battelle Memorial Institute. Method for producing thin graphite flakes with large aspect ratios. 5,186,919, Cl. 423-448.000.

Burckhardt, Christoph B.; and Dousse, Bruno M. J., to Kontron Instruments Holding N.V. Production of images. 5,187,687, Cl. 367-7.000.

Burd, Tammy L.; and Schembri, Carol T., to Abaxis, Inc. Apparatus and method for continuous centrifugal blood cell separation. 5,186,844, Cl. 210-782.000.

Burdette, Carol J. Adjustable eyeglass frames. 5,187,503, Cl. 351-128.000.

Burgdorf, Jochen; Klostermann, Gerd; and Henein, Nabil, to Alfred Teves GmbH. Hydraulic brake system. 5,186,524, Cl. 303-92.000.

Burger, William R., to Xerox Corporation. Ink supply container and system. 5,187,498, Cl. 346-140.00R.

Burgess, James P.; Mobley, Dewey; and Vanderstuyf, Al, to Electro Wire Products, Inc. Environmentally sealed vehicular air bag sensor. 5,187,328, Cl. 174-52.200.

Burnett, Andrew F.: *See—*
Cech, Jay M.; and Burnett, Andrew F., 5,187,119, Cl. 437-187.000.

Burri, Kaspar: *See—*
Barner, Richard; Burri, Kaspar; Cassal, Jean-Marie; Hadvary, Paul; Hirth, Georges; and Muller, Klaus, 5,187,293, Cl. 558-267.000.

Burridge, Robert E.: *See—*
Mease, Richard B.; and Burridge, Robert E., 5,186,360, Cl. 222-63.000.

Bury, Willi: *See—*
Brueckmann, Ralf; Bury, Willi; Dix, Johannes P.; Herrmann, Manfred; Dlugosch, Waldemar; Kromm, Erich; Letter, Herbert; Zimmermann, Norbert; Kermer, Wolf-Dieter; and Taeger, Klaus, 5,186,846, Cl. 252-8.700.

Burzynski, Jean-Pierre: *See—*
Dang Vu, Quang; Franckowiak, Sigismond; Grehier, Alain; Vacher, Philippe; and Burzynski, Jean-Pierre, 5,186,909, Cl. 422-213.000.

Busson, Christian: *See—*
Alagy, Jacques; Broutin, Paul; Busson, Christian; Gougne, Yves; and Weill, Jerome, 5,186,910, Cl. 422-220.000.

Buttke, Robert D.: *See—*
Lyzinski, David; Buttke, Robert D.; Taylor, James L.; and Hall, William M., 5,186,904, Cl. 422-130.000.

Buxmann, Kurt: *See—*
Gabathuler, Jean-Pierre; and Buxmann, Knrt, 5,186,236, Cl. 164-478.000.

Buxton, Pierce. Ball holder. 5,186,374, Cl. 224-191.000.

BYK-Chemie GmbH: *See—*
Haubennestel, Karl-Heinz; and Bubat, Alfred, 5,187,201, Cl. 524-31.000.

CableLite Corporation: *See—*
Hixon, Kenneth L.; and Bruce, James E., 5,187,764, Cl. 385-102.000.

Caby, Glen: *See—*
Hoshizaki, Gary W.; Caby, Glen; and Fuller, Robert A., 5,187,394, Cl. 307-449.000.

Caccomo, Paul G. Rail finder. 5,186,421, Cl. 246-118.000.

Cahill, Michael J.: *See—*
Aindow, Alan M.; Cahill, Michael J.; and Dawson, John, 5,186,184, Cl. 131-281.000.

Cahill, Stephen V.: *See—*
Waynerich, Randall; Masoodosmani, Rashid; Walczak, Thomas J.; and Cahill, Stephen V., 5,187,809, Cl. 455-33.100.

Cain, Paul A.: *See—*
Outcalt, Russell J.; Timmons, Philip R.; Cramp, Susan M.; Kwiatkowski, Patricia L.; Lopes, Anibal; Cain, Paul A.; Sinodis, David N.; Hall, Lee S.; and Vors, Jean-Pierre A., 5,187,185, Cl. 514-408.000.

Caines, R. Scott. Robotic fluid-actuated muscle analogue tree trimmer. 5,185,932, Cl. 30-288.000.

Cal-West Equipment Company, Inc.: *See—*
Woodhall, Edward W.; and Kondrats, Nicholas, 5,186,978, Cl. 427-154.000.

Calbo, Leonard J.; and Coughlin, Robert D., to King Industries, Inc. Latent catalysts. 5,187,019, Cl. 428-524.000.

Caldo International, Inc.: *See—*
Campana, Patsie C., 5,186,721, Cl. 44-519.000.

Caldwell, William S.: *See—*
Lippiello, Patrick M.; and Caldwell, William S., 5,187,169, Cl. 514-343.000.

Calgene, Inc.: *See—*
Comai, Luca; and Koning, Ann J., 5,187,267, Cl. 536-23.100.

Calif. Institute of Technology: *See—*
McAuley, Anthony; and Goodman, Rod, 5,187,799, Cl. 395-800.000.

California Institute of Technology: *See—*
Clark, Douglas J.; Galica, Leo M.; Losey, Robert W.; and Suitor, Jerry W., 5,186,806, Cl. 204-265.000.

Callahan, Alvin P.: *See—*
Knapp, Furn F., Jr.; Lisic, Edward C.; Mirzadeh, Saed; and Callahan, Alvin P., 5,186,913, Cl. 423-2.000.

Callahan, Richard A.; and Tin, George W., to Vestar, Inc. Vesicle formulation for the controlled release of therapeutic agents. 5,186,941, Cl. 424-450.000.

Callis, James B.: *See—*
Gouterman, Martin P.; Kavandi, Janet L.; Gallery, Jean; and Callis, James B., 5,186,046, Cl. 73-147.000.

Calsonic Corporation: *See—*
Adachi, Tsunenari; Akasaka, Hitoshi; and Moriyama, Yutaka, 5,186,242, Cl. 165-110.000.

Calvert, John H., to Cussons (International) Limited. Container. 5,186,346, Cl. 220-212.500.

Camco Drilling Group Ltd.: *See—*
Clegg, John M., 5,186,268, Cl. 175-399.000.

Cameron, Bridget: *See—*
Garthwaite, Charlie; Cameron, Bridget; Ashmun, Stuart; Stephan, Allan H.; and Nelson, Michael D., 5,187,468, Cl. 340-709.000.

Cameron, Michael E. Baseball card storage and display device. 5,186,566, Cl. 402-79.000.

Campana, Patsie C., to Caldo International, Inc. Fuel package. 5,186,721, Cl. 44-519.000.

Campbell, Bryant A.: *See—*
Moulton, Kern A.; Campbell, Bryant A.; and Caputo, Ross A., 5,186,893, Cl. 422-23.000.

Campbell, Douglas C.: *See—*
Wood, Fred G.; Poirier, David C.; Campbell, Douglas C.; Ludwig, Howard H.; and Westphal, Patrick J., 5,186,487, Cl. 280-707.000.

Campbell, Kevin P.; Ervasti, James M.; Ohlendieck, Kay; Gaver, Mitchell G.; and Kahl, Steven D., to University of Iowa Research Foundation. Measuring non-dystrophin proteins and diagnosing muscular dystrophy. 5,187,063, Cl. 435-7.210.

Campo, Manuel; Pearson, Charles S.; and Synder, Jon H., to Dayco Products, Inc. Method of making a fastening member for a hose construction. 5,185,913, Cl. 29-453.000.

Can Do Associates: *See—*
Steiner, Joseph D., 5,186,348, Cl. 220-270.000.

VOL 1147 ISS 3 FE 16 1993 UMI

Canadian Forest Products Limited: *See—*
Chow, Suezone; and Dawes, David H., 5,187,000, Cl. 428-141.000.
Cannizzaro, Joseph S.: *See—*
Oestreich, Curtis J.; Cannizzaro, Joseph S.; and Wargo, Joseph S., 5,186,318, Cl. 206-37.000.
Canon Kabushiki Kaisha: *See—*
Amano, Kenichiro, 5,187,511, Cl. 354-106.000.
Eguchi, Tadashi; and Ishii, Satoshi, 5,187,725, Cl. 377-56.000.
Hasegawa, Takashi; and Inoue, Masahiro, 5,187,536, Cl. 355-327.000.
Hirano, Hirofumi; and Unosawa, Yasuhiro, 5,187,497, Cl. 346-140.00R.
Kadokura, Susumu, 5,186,802, Cl. 204-181.400.
Kaneda, Kitahiro; Yamada, Kunihiko; Fujiwara, Akihiro; Suda, Hirofumi; and Toyama, Masamichi, 5,187,585, Cl. 358-227.000.
Kimura, Norio; and Yamagishi, Yoichi, 5,187,616, Cl. 360-61.000.
Kitahara, Makoto, 5,186,454, Cl. 271-288.000.
Kitani, Masashi; Kawai, Tatsundo; and Ichihashi, Hiroo, 5,187,595, Cl. 358-482.000.
Kondo, Kazuyuki; Tateoka, Masamichi; and Nakai, Takehiko, 5,187,606, Cl. 359-196.000.
Kurita, Mitsuru; Suzuki, Yasumichi; and Ikeda, Yoshinori, 5,187,593, Cl. 358-434.000.
Miyazaki, Toshihiko; Nose, Hiroyasu; Yagi, Takayuki; Kawase, Toshimitsu; and Shinjo, Katsuhiko, 5,187,367, Cl. 250-306.000.
Mouri, Akihiro; Isaka, Kazuo; Fukui, Tetsuro; and Katayama, Masato, 5,187,041, Cl. 430-201.000.
Murakami, Keiichi, 5,187,499, Cl. 346-140.00R.
Ohsawa, Ichiro; Kikuchi, Yutaka; Kanoto, Masanobu; Sato, Hideki; Endo, Yoshifumi; and Kawaguchi, Hideshi, 5,186,448, Cl. 271-9.000.
Ono, Takeshi; Wada, Satoshi; Kobayashi, Makoto; Yoshida, Takehiro; Takeda, Tomoyuki; Ishida, Yasushi; Yokoyama, Minoru; Tomoda, Akihiro; Yamada, Masakatsu; and Awai, Takashi, 5,187,494, Cl. 346-76.0PH.
Osawa, Keishi, 5,187,523, Cl. 355-251.000.
Santoh, Tsuyoshi; and Mihara, Chieko, 5,187,043, Cl. 430-270.000.
Seki, Hiroyuki, 5,187,406, Cl. 310-323.000.
Setani, Michitaka, 5,187,358, Cl. 250-208.100.
Shimizu, Hideaki; and Sakai, Masanori, 5,187,521, Cl. 355-202.000.
Shirai, Masanari, 5,187,326, Cl. 118-657.000.
Sugiyama, Mitsumasa; and Kobayashi, Shigetada, 5,187,592, Cl. 358-430.000.
Tajima, Hatsuo, 5,187,535, Cl. 355-326.000.
Takabayashi, Yukio; and Tokuda, Yukio, 5,187,519, Cl. 355-53.000.
Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Katagiri, Kazuharu; Takiguchi, Takao; Shinjo, Kenji; Kitayama, Hiroyuki; and Nakamura, Shinichi, 5,186,858, Cl. 252-299.610.
Cantrell, Charles L.; and Chong, Ngee S., to Cantrell Research, Incorporated. Hydrocarbon-based fuels from biomass. 5,186,722, Cl. 44-605.000.
Cantrell Machine Company, Inc.: *See—*
Ellis, James S.; and Ellis, Julius A., 5,186,678, Cl. 452-106.000.
Cantrell Research, Incorporated: *See—*
Cantrell, Charles L.; and Chong, Ngee S., 5,186,722, Cl. 44-605.000.
Canty, George: *See—*
Prioleau, Lori-Ann S.; and Canty, George, 5,187,044, Cl. 430-271.000.
Canyon Enterprises, Inc.: *See—*
Falkenberg, E. Frank, 5,186,428, Cl. 248-284.000.
Capello, Richard D.; and Mabry, George R. Method and apparatus for contextual data enhancement. 5,187,747, Cl. 382-4.000.
Capper, Harry M., to AMP Incorporated. Lid with integral hinges. 5,186,661, Cl. 439-718.000.
Caputo, Ross A.: *See—*
Moulton, Kern A.; Campbell, Bryant A.; and Caputo, Ross A., 5,186,893, Cl. 422-23.000.
Cardis, Angeline B.: *See—*
Okorodudu, Abraham O. M.; Cardis, Angeline B.; and Kremer, Ross A., 5,186,850, Cl. 252-47.500.
Carlier, Paul R.; Filosa, Michael P.; and Lockshin, Mary P., to Polaroid Corporation. Sulfonated xanthene dyes, and photographic products and processes employing these dyes. 5,187,282, Cl. 548-455.000.
Carlin, Steven C.: *See—*
Nielsen, Wyn Y.; Carlin, Steven C.; and Kaiser, Dennis A., 5,187,797, Cl. 395-800.000.
Carlisle, William D., to BP Chemicals (Additives) Limited. Polyacrylate-modified bis-succinimide lubricant additives. 5,186,853, Cl. 252-51.50A.
Carlson, Keith R.: *See—*
Stephenson, Dwight B.; Carlson, Keith R.; and Rasmussen, Kenneth G., 5,186,211, Cl. 137-625.240.
Carlson, Ronald E., Jr.; and Paulley, David, to Commercial Resins Company. Girth weld heating and coating system. 5,186,755, Cl. 118-641.000.
Carnegie Mellon University: *See—*
Goldberg, Kenneth Y.; and Furst, Merrick L., 5,186,515, Cl. 294-119.100.
Carney, Scott N.: *See—*
Baker, James C.; Levine, Stephen N.; Puhl, Larry C.; and Carney, Scott N., 5,187,811, Cl. 455-35.100.
Carpentier, Eric; Pelletier, Bruno; and Boni, Bernard, to Hutchinson. Ring device for running with a flat tire. 5,186,771, Cl. 152-158.000.
Carr, William N.; Yu, Hong; and Cho, Dong-Il D., to Princeton University, The Trustees of. Levitated micromotor. 5,187,399, Cl. 310-40.0MM.
Carrier Corporation: *See—*
Keller, Fred J., 5,186,021, Cl. 62-511.000.
Carroll, Glenn T.; and Lindstrom, Michael J., to Elf Atochem North America, Inc. Preparing sulfur solvent compositions comprising treating a sulfide and polyalkyleneoxyamine or polyalkyleneoxypolyamine mixture with an alkylamine or alkanolamine. 5,186,848, Cl. 252-8.552.
Carter, Elbert P., to Fairville Medical Optics Inc. Method and apparatus for determining physiological parameters based on pupil response. 5,187,506, Cl. 351-221.000.
Cartillier, Andre: *See—*
Sparks, Robert E.; Mason, Norbert S.; Autant, Pierre; Cartillier, Andre; and Pigeon, Raymond, 5,186,937, Cl. 424-438.000.
Carver, Edward L., Jr.; DeVeaux, Richard D.; and DeCava, David C., to Carver, Edward L., Jr. Method and apparatus for determining the distribution of constituent subpopulations within a population of particles having overlapping subpopulations. 5,187,673, Cl. 364-555.000.
Casablanca Industries, Inc.: *See—*
Hart, Edward F.; and McDonough, William B., 5,187,472, Cl. 340-825.690.
Case Corporation: *See—*
Farley, Herbert M.; and Cooksey, William L., 5,186,683, Cl. 460-105.000.
Frisbee, Claude M.; Sealine, Ronald L.; and Werner, Ronald H., 5,186,295, Cl. 192-13.00R.
Lamela, Anthony J.; Christensen, Thomas F.; and Rach, David T., 5,186,284, Cl. 188-71.800.
Will, John H.; and Grimm, William L., 5,186,261, Cl. 172-285.000.
Cassal, Jean-Marie: *See—*
Barner, Richard; Burri, Kaspar; Cassal, Jean-Marie; Hadvary, Paul; Hirth, Georges; and Muller, Klaus, 5,187,293, Cl. 558-267.000.
Cassell, Michael L.; Jenkins, Waylon L.; and Rhodes, Gerry F., to Eastman Kodak Company. Process for the preparation of crystalline copolyesters. 5,187,216, Cl. 524-261.000.
Castaldi, Graziano; Allegrini, Pietro; Crisci, Luciana; and Renzi, Fiorenzo, to Enichem Synthesis, S.p.A. Spiro-indoline oxazine compounds with photochromatic and photosensitizing characteristics and the process for their preparation. 5,186,867, Cl. 252-586.000.
Castel, Michel: *See—*
Baylac, Brunno Y. H.; and Castel, Michel, 5,187,631, Cl. 361-94.000.
Cater, Miro S.: *See—*
Amit, Noah; and Cater, Miro S., 5,186,627, Cl. 433-216.000.
Caterpillar Inc.: *See—*
Budzich, Tadeusz, deceased, 5,186,612, Cl. 417-216.000.
Keil, Gary D.; and Holloway, Gregory S., 5,187,670, Cl. 364-477.000.
Thompson, Owen R., 5,186,262, Cl. 173-182.000.
Williamson, Gregory L.; Kendrick, Larry E.; and Phelps, Weldon L., 5,187,709, Cl. 370-85.300.
Cathey, David A.: *See—*
Doan, Trung T.; Lowrey, Tyler A.; Cathey, David A.; and Rolfson, J. Brett, 5,186,670, Cl. 445-24.000.
Catmull, Paul B.: *See—*
Smith, Alan A.; Catmull, Paul B.; Lucas, Lonnie J.; and Johnson, Karl P., 5,185,996, Cl. 60-39.020.
Cawlfield, David W.: *See—*
Ford, James M.; Cawlfield, David W.; and Woodard, Kenneth E., Jr., 5,186,804, Cl. 204-251.000.
Cech, Jay M.; and Burnett, Andrew F., to Boeing Company, The. Multichip module and integrated circuit substrates having planarized patterned surfaces. 5,187,119, Cl. 437-187.000.
Celeste, Anthony J.: *See—*
Wozney, John M.; Wang, Elizabeth A.; Rosen, Vicki A.; and Celeste, Anthony J., 5,187,076, Cl. 435-69.100.
Celette, Germain. Device for mounting a clamp for holding the bottom of a vehicle body on a repair stand intended for repairing the coachwork of this vehicle. 5,186,039, Cl. 72-457.000.
Center for Innovative Technology: *See—*
Brown, Jesse J.; Hirschfeld, Deidre A.; and Lee, K. H., 5,186,729, Cl. 65-33.000.
Cerutti, Peter A.; and Bressoud, Alberic, to Behringwerke Aktiengesellschaft. Detection of influenza a virus by polymerase chain reaction (PCR) preceded by reverse transcription of a region of the viral hemagglutinin gene. 5,187,060, Cl. 435-5.000.
Cha, Jin K.; and Bennett, Richard B., III. Synthesis of (−) swainsonine and intermediate compounds employed in such synthesis. 5,187,279, Cl. 546-183.000.
Chadima, George E., Jr.; and Laser, Vadim, to Norand Corporation. Instant portable bar code reader. 5,187,356, Cl. 235-472.000.
Chadima, George F., Jr; and Laser, Vadim, to Norand Corporation. Instant portable bar code reader. 5,187,355, Cl. 235-472.000.
Challenge Industries: *See—*
Dongelmans, Anthony A., 5,185,941, Cl. 34-242.000.
Chan, Tsiu C.; and Bryant, Frank R., to SGS-Thomson Microelectronics, Inc. Method of making SRAM cell and structure with polycrystalline P-channel load devices. 5,187,114, Cl. 437-52.000.
Chance, Britton; and Weng, Jian, to NIM Incorporated. Phase modulation spectroscopic system. 5,187,672, Cl. 364-550.000.
Chandran, Rama S.: *See—*
Iovine, Carmine P.; Chandran, Rama S.; and Leighton, John C., 5,187,238, Cl. 525-327.200.
Chang, Chin-Hsiung, to Allied-Signal Inc. Mixed-metal oxide absorbent for carbon dioxide and water removal. 5,186,727, Cl. 55-35.000.

Chang, Kaichiang: *See—*
Schuss, Jack J.; Upton: Jeffrey C.; Geyh, Edward A.; and Chang, Kaichiang, 5,187,491, Cl. 343-781.00R.
Chang, Shuen-Chin; and Kim, Moon G., to Samsung Semiconductor, Inc. Low standby current intermediate DC voltage generator. 5,187,386, Cl. 307-296.800.
Chapman, Diane M.: *See—*
Skeels, Gary W.; Chapman, Diane M.; and Flanigen, Edith M., 5,186,918, Cl. 423-718.000.
Chapman, Michael; and Sumple, Michael, to Electrostatic Components, Inc. Production of composite structures using lightweight low cost matrix extender materials. 5,186,388, Cl. 239-8.000.
Chapoteau, Eddy: *See—*
Czech, Bronislaw P.; Chapoteau, Eddy; and Kumar, Anand, 5,187,103, Cl. 436-79.000.
Chasin, Leonard. Sports game. 5,186,467, Cl. 273-298.000.
Chasteen, Howard; Farley, Todd; Cramer, Richard; and Lockner, Michael, to Ball Corporation. Method and apparatus for lubricating tab stock. 5,186,279, Cl. 184-15.100.
Chau, Nga V.; Hauptman, Reuben D.; Kaufman, David D.; Kittredge, Barbara J.; Lauber, Pamela J.; and Lindblad, Patricia, to AT&T Bell Laboratories. Method and apparatus for the billing of value-added communications calls. 5,187,710, Cl. 370-110.100.
Chaudry, Imtiaz A.: *See—*
Kogan, Patricia W.; Rudnic, Edward M.; Sequeira, Joel A.; and Chaudry, Imtiaz A., 5,186,930, Cl. 424-78.100.
Chawla, Yogendra K.; and Smith, Steven J., to Eni Div. of Astec America, Inc. Harmonic and subharmonic filter. 5,187,457, Cl. 333-170.000.
Chemical Lime Company: *See—*
Hoffman, David C.; and Hains, Norman L., 5,186,742, Cl. 75-773.000.
Chemipro Kasei Kaisha, Ltd.: *See—*
Fukuoka, Naohiko; Kubota, Kazunobu; and Iguchi, Kunitoshi, 5,187,289, Cl. 548-260.000.
Chemische Werke Huels Aktiengesellschaft: *See—*
Schluter, Herbert; Knipp, Herbert; and Wieland, Alfred, 5,187,221, Cl. 524-461.000.
Chen, Bing-Lin, to Witco Corporation. Compositions and method for reducing the blocking properties of polyolefins. 5,187,215, Cl. 524-224.000.
Chen, Li-Chiang: *See—*
Yang, Shyh-Ching; and Chen, Li-Chiang, 5,186,607, Cl. 415-183.000.
Chen, Nian: *See—*
Boyd, Dudley G.; and Chen, Nian, 5,187,411, Cl. 315-247.000.
Cheng, David: *See—*
Toshima, Masato M.; Salzman, Phil M.; Murdoch, Steven C.; Wang, Cheng; Stenholm, Mark A.; Howard, James; Hall, Leonard; and Cheng, David, 5,186,594, Cl. 414-217.000.
Cheng Shin Rubber Ind., Co., Ltd.: *See—*
Lo, Tsai J.; and Hwang, David, 5,186,952, Cl. 425-36.000.
Cherian, Abraham, to Xerox Corporation. Developer dispensing apparatus with composite toner dispenser spring. 5,187,524, Cl. 355-260.000.
Cherry Corporation, The: *See—*
Lang, Harold K.; and Kumar, Chockalingam, 5,187,336, Cl. 200-61.610.
Chesebrough-Pond's USA Co., Division of Conopco, Inc.: *See—*
Birtwistle, David H., 5,186,928, Cl. 424-70.000.
Williams, David R.; and Ryles, Christine W., 5,186,926, Cl. 424-53.000.
Chevron Research and Technology Company: *See—*
Zones, Stacey I.; Yuen, Lun T.; and Toto, Susan D., 5,187,132, Cl. 502-64.000.
Chia, Tzyh-Suenn. Numeral lock with changeable unlocking numbers. 5,186,032, Cl. 70-315.000.
Chianelli, Russell R.: *See—*
Daage, Michel; and Chianelli, Russell R., 5,186,818, Cl. 208-254.00H.
Chiang, Steve S. S.: *See—*
El Gamal, Abbas; and Chiang, Steve S. S., 5,187,393, Cl. 307-465.100.
Chiang, Yulin: *See—*
Hamer, Russell R. L.; Helsley, Grover C.; Glamkowski, Edward J.; Chiang, Yulin; Freed, Brian S.; and Kurys, Barbara E., 5,187,165, Cl. 514-307.000.
Chiba, Junji: *See—*
Kanto, Jumpei; Saito, Hitoshi; Eguchi, Hiroshi; Nakamura, Masayuki; Kafuku, Koumei; Chiba, Junji; and Suda, Kaoru, 5,187,145, Cl. 503-227.000.
Chiba, Ueru. Key arrangement for word processor or the like electrode instrument or machine. 5,186,555, Cl. 400-485.000.
Chigodo, Yoshikazu: *See—*
Mandai, Harufumi; Chigodo, Yoshikazu; and Tojo, Atsushi, 5,187,455, Cl. 333-161.000.
China Henan Light Industrial Products Import and Export Corporation: *See—*
Qing, Cai; Man, Ho Hak; Ming, Liu; and Guang, Yi X., 5,186,099, Cl. 100-35.000.
Ching An, Chiang. Container. 5,186,345, Cl. 220-23.400.
Chitrangad, to Du Pont de Nemours, E. I., and Company. Hybrid ballistic fabric. 5,187,003, Cl. 428-225.000.
Chiuppani, Giovanni A.: *See—*
Berti, Dario; and Chiuppani, Giovanni A., 5,186,441, Cl. 269-43.000.
Chlebina, Lawrence E.: *See—*
Majerus, Norbert; Magee, Arthur W.; Hickman, Michael D.; Parrish, Gary C.; Rooney, Timothy M.; and Chlebina, Lawrence E., 5,185,960, Cl. 51-104.000.
Cho, Dong-Il D.: *See—*
Carr, William N.; Yu, Hong; and Cho, Dong-Il D., 5,187,399, Cl. 310-40.0MM.
Choi, Kyu-Hyun: *See—*
Baek, Won-Shik; Choi, Kyu-Hyun; and Bae, Dong-Joo, 5,187,548, Cl. 257-308.000.
Choi, Soo Y., to Samsung Electronics Co., Ltd. Electric vacuum cleaner with an ozonizer. 5,185,903, Cl. 15-339.000.
Cholcha, Walter, to G. Pohl-Boskamp GmbH & Co. Nitroglycerin pump spray. 5,186,925, Cl. 424-43.000.
Cholewczynski, Kenneth: *See—*
Melton, Cynthia; Raleigh, Carl; Cholewczynski, Kenneth; and Moore, Kevin, 5,186,383, Cl. 228-180.200.
Chong, Ngee S.: *See—*
Cantrell, Charles L.; and Chong, Ngee S., 5,186,722, Cl. 44-605.000.
Chorne, Robert I. Golf club head. 5,186,465, Cl. 273-167.00H.
Chow, Suezone; and Dawes, David H., to Canadian Forest Products Limited. Cellulosic construction panel. 5,187,000, Cl. 428-141.000.
Christ, Josef: *See—*
Ball, Peter; Christ, Josef; Frank, Albin; Marquardt, Klaus; and Selig, Manfred, 5,187,233, Cl. 525-267.000.
Christensen, Leif L.; Joergensen, Tage W.; and Hansen, Claes-Henrik, to Slagteriernes Forskningsinstitut. Procedure and plant for the stunning of animals to be slaughtered at slaughterhouses. 5,186,677, Cl. 452-66.000.
Christensen, Thomas F.: *See—*
Lamela, Anthony J.; Christensen, Thomas F.; and Rach, David T., 5,186,284, Cl. 188-71.800.
Christopher, Kent L.: *See—*
Spofford, Bryan T.; Christopher, Kent L; and Hovanes, Michael E., 5,186,168, Cl. 128-207.290.
Christy, Paul G.; and Christy, Richard W., to RDP Company. Process for treating sewage sludge. 5,186,840, Cl. 210-709.000.
Christy, Richard W.: *See—*
Christy, Paul G.; and Christy, Richard W., 5,186,840, Cl. 210-709.000.
Christy, Thomas M.: *See—*
Kejr, Melvin P.; and Christy, Thomas M., 5,186,263, Cl. 175-20.000.
Chu, David T. Chucking device of racket stringing machine. 5,186,505, Cl. 273-73.00A.
Chu, Matthew C. H.; Ly, Chi-Vien; and Coulson, Gordon W., to Northern Telecom Limited. Packet data flow control for an isdn D-channel. 5,187,707, Cl. 370-79.000.
Chu, Wai Y.: *See—*
Vaseloff, Dennis J.; Dobrino, Gary J.; King, James A.; and Chu, Wai Y., 5,186,097, Cl. 99-330.000.
Chua, Nam-Hai: *See—*
Raikhel, Natasha V.; Broekaert, Willem F.; Chua, Nam-Hai; and Kush, Anil, 5,187,262, Cl. 530-370.000.
Chupka, David E.: *See—*
Seifert, Peter; and Chupka, David E., 5,186,791, Cl. 162-56.000.
Ciba-Geigy Corporation: *See—*
Borzatta, Valerio; Scrima, Roberto; and Vignali, Graziano, 5,187,275, Cl. 544-207.000.
Ehrenfreund, Josef, 5,187,197, Cl. 514-585.000.
Erkens, Leonardus J. H.; Schmitt, Gregor; Geurts, Herman J. J. M; and Corvers, Werner F. C. G., 5,186,748, Cl. 106-479.000.
Seltzer, Raymond; Odorisio, Paul A.; Shum, Sai P.; and Pastor, Stephen D., 5,187,213, Cl. 524-120.000.
Cincinnati Milacron Inc.: *See—*
Minnich, Thomas; Morser, Alfred H.; Myers, Stanley L.; and Walsh, Stephen T., 5,187,417, Cl. 318-254.000.
Cincotta, Manuel, Jr.: *See—*
Beauchamp, Charles H.; Cincotta, Manuel, Jr.; Raffa, Anthony V.; and Gauthier, Benoit G., 5,186,420, Cl. 244-219.000.
Citizen Watch Co., Ltd.: *See—*
Sato, Toshiharu, 5,187,600, Cl. 359-41.000.
Civanlar, M. Reha; Dzik, Steven C.; and Liow, Yuh-Tay, to AT&T Bell Laboratories. Arrangement for displaying on a display volumetric data. 5,187,660, Cl. 364-413.190.
Claar, Terry D.: *See—*
White, Danny R.; and Claar, Terry D., 5,187,128, Cl. 501-96.000.
Claessens, Johannes A.: *See—*
Sondermeijer, Pulus J. A.; Claessens, Johannes A.; and Mockett, Albert P. A., 5,187,087, Cl. 435-172.100.
Clairol, Incorporated: *See—*
DeMarco, Richard; Feinland, Raymond; and Jachowicz, Janusz, 5,186,929, Cl. 424-71.000.
Lim, Mu-Ill; and Pan, Yuh-Guo, 5,186,716, Cl. 8-405.000.
Clarion Co., Ltd.: *See—*
Mitsutsuka, Syuichi, 5,187,681, Cl. 364-821.000.
Clark, Douglas J.; Galica, Leo M.; Losey, Robert W.; and Suitor, Jerry W., to California Institute of Technology. Ceramic distribution members for solid state electrolyte cells and method of producing. 5,186,806, Cl. 204-265.000.
Clark, Paul H.; Hill, Robert P.; and Wolinski, Michael R., to Digital Equipment Corporation. Dual-path computer interconnect system with zone manager for packet memory. 5,187,780, Cl. 395-325.000.
Clark, Ross G.; and Mukku, Venkat R., to Genentech, Inc. Use of binding protein with IGF-I as an anabolic growth promoting agent. 5,187,151, Cl. 514-3.000.

VOL 1147 ISS 3 FE 16 1993 UMI

Clarke, William H.: *See—*
McDonagh, Lawrence P.; Clarke, William H.; Stinson, Jonathan D.; and Lopez, John V., 5,186,439, Cl. 267-35.000.
Clary, John G., to Addmaster Corporation. Processing of bank documents. 5,187,351, Cl. 235-379.000.
Clavel, Jean-Louis: *See—*
Botannet, Bernard; Clavel, Jean-Louis; Corbet, Jean-Pierre; and Mulhauser, Michel, 5,187,292, Cl. 558-134.000.
Clayton, Richard A. Air operated toy gun. 5,186,156, Cl. 124-59.000.
Cleary, Gary W.; and Roy, Samir D., to Cygnus Therapeutic Systems. Laminated composite for transdermal administration of fentanyl. 5,186,939, Cl. 424-448.000.
Clegg, John M., to Camco Drilling Group Ltd. Rotary drill bits. 5,186,268, Cl. 175-399.000.
Clement, Jean-Claude: *See—*
Magnollay, Gilbert; Seigneur, Remy; Budry, Jacques; Clement, Jean-Claude; Jaccottet, Michel; Jaggi, Pierre-Yves; Jaun, Hans; and De Boer, Philip, 5,186,957, Cl. 425-192.00R.
Cline, Harvey E.; and Lorensen, William E., to General Electric Company. System and method for segmenting internal structures contained within the interior region of a solid object. 5,187,658, Cl. 364-413.130.
Clinton Industries, Inc.: *See—*
Wokeck, Arthur C.; and Opuszenski, Theodore, 5,186,600, Cl. 414-793.400.
Clopton, Robert T., to Simplimatic Engineering Company. Conveyor system. 5,186,314, Cl. 198-860.200.
Clube, Francis S. M., to Holtronic Technologies Ltd. Apparatus for and a method of transverse position measurement in proximity lithographic systems. 5,187,372, Cl. 250-548.000.
Coakley, Pauline: *See—*
Woods, John; Guthrie, John; and Coakley, Pauline, 5,187,048, Cl. 430-286.000.
Cobb, Deborah D., to Microelectronics and Computer Technology Corporation. Automated interconnect routing system. 5,187,671, Cl. 364-490.000.
Coca-Cola Company, The: *See—*
Plester, George, 5,186,902, Cl. 422-112.000.
Cochran, Gene A., to Illinois Tool Works Inc. Tear-open bag having guide strips. 5,186,543, Cl. 383-203.000.
Codama, Mitsufumi: *See—*
Yamazaki, Shunpei; Fukada, Takeshi; Sakama, Mitsunori; Amachi, Nobumitsu; Sakamoto, Naoya; Codama, Mitsufumi; Fuki, Takashi; and Takayama, Ichiro, 5,187,601, Cl. 359-54.000.
Codex Corporation: *See—*
Moran, John L., III; and Schissler, L. Robert, 5,187,742, Cl. 379-403.000.
Coetzer, Johan; and Duncan, James H., to Programme 3 Patent Holdings. Electrochemical cell. 5,187,029, Cl. 429-102.000.
Coffey, Manus; and McGarry, Michael G., to Harouniya Limited. Tank and a support housing for supporting a bladder. 5,186,354, Cl. 220-720.000.
Coffman, Stephen B.: *See—*
Adachi, Iwao P.; and Coffman, Stephen B., 5,187,539, Cl. 356-124.000.
Cohen, Martin P.: *See—*
Parks, Carl R.; D'Sidocky, Richard M.; and Cohen, Martin P., 5,187,239, Cl. 525-329.300.
Cole, Eric. Variable flight toy. 5,186,457, Cl. 273-58.00K.
Cole, R. Clay; and Bowles, Bobby K., to Halliburton Company. Methods of preparing and using substantially debris-free gelled aqueous well treating fluids. 5,186,847, Cl. 252-8.551.
Colebrand Limited: *See—*
Tusch, Klaus N., 5,187,321, Cl. 102-293.000.
Coleman, Gregory J.: *See—*
Gallo, John R.; Coleman, Gregory J.; and Brown, Claude E., 5,186,351, Cl. 220-563.000.
Coleman, John H., to Plasma Physics Corp. Method of forming semiconducting materials and barriers using a dual enclosure apparatus. 5,187,115, Cl. 437-101.000.
Colin, Nadine: *See—*
Esch, Marc; Colin, Nadine; Guenez, Dominique; and Maraval, Michel, 5,187,309, Cl. 560-218.000.
Collins, Joe T.: *See—*
Bovy, Philippe R.; Collins, Joe T.; and Manning, Robert E., 5,187,271, Cl. 548-314.700.
Collins, Kenneth S.; Trow, John R.; Roderick, Craig A.; Pinson, Jay D., II; and Buchberger, Douglas A., II, to Applied Materials, Inc. Electronically tuned matching network using predictor-corrector control system. 5,187,454, Cl. 333-17.300.
Colwell, Lawrence F., Jr.: *See—*
Treiber, Laszlo R.; Lingham, Russell B.; Arison, Byron H.; Colwell, Lawrence F., Jr.; Dezeny, Georgette; and Kohl, Nancy E., 5,187,074, Cl. 435-41.000.
Comai, Luca; and Koning, Ann J., to Calgene, Inc. Plant proteins, promoters, coding sequences and use. 5,187,267, Cl. 536-23.100.
Combined Optical Industries Limited: *See—*
Pasco, Ian K., 5,187,360, Cl. 250-208.200.
Comerci, Joseph D.; and DeRoss, Robert, to Molex Incorporated. Electrical connector with plug detection switch. 5,186,639, Cl. 439-188.000.
Commandeur, Raymond; Berger, Noelle; Jay, Pierre; and Kervennal, Jacques, to Atochem. Synthesis of dielectric liquids by improved Friedel-Crafts condensation. 5,186,864, Cl. 252-581.000.
Commercial Resins Company: *See—*
Carlson, Ronald E., Jr.; and Paulley, David, 5,186,755, Cl. 118-641.000.
Commissariat A l'Energie Atomique: *See—*
Alcouffe, Francois; Crescini, Jean; and Duret, Denis, 5,187,438, Cl. 324-301.000.
Compaq Computer Corporation: *See—*
Crisan, Adrian, 5,187,644, Cl. 361-393.000.
Marek, James E.; and Goss, Douglas A., 5,187,430, Cl. 324-66.000.
Tracy, Mark S., 5,186,605, Cl. 415-119.000.
Computational Systems, Inc.: *See—*
Piety, Kenneth R.; and Nower, Daniel L., 5,185,937, Cl. 33-645.000.
Computer & Communications Technology Corp.: *See—*
Hopkins, Lionel; Kemp, Thomas H.; and Coon, Warren, 5,187,626, Cl. 360-104.000.
Computer Motion, Inc.: *See—*
Wang, Yulun; and Srinivasan, Partha, 5,187,796, Cl. 395-800.000.
ConAgra, Inc.: *See—*
Wellman, Warner, 5,186,968, Cl. 426-483.000.
Conaway, Everett T.; and Conaway, Norma L., to Conaway, Norma L. Poultry deskinning apparatus. 5,186,680, Cl. 452-125.000.
Conaway, Norma L.: *See—*
Conaway, Everett T.; and Conaway, Norma L., 5,186,680, Cl. 452-125.000.
Conboy, Mark A.; Ichinose, Richard Y.; and Baek, Ki H., to Loral Aerospace Corp. Multi-function pre-processor for target tracking. 5,187,777, Cl. 395-163.000.
Connectron, Inc.: *See—*
Norden, Alexander R., 5,186,637, Cl. 439-133.000.
Conner, Charles J.: *See—*
Johnson, David U., III; Conner, Charles J.; and Wolf, Peter A., 5,187,479, Cl. 341-6.000.
Connolly, John J.; and Kawochka, John T., to Pfizer, Inc. Bail applicator and method. 5,185,986, Cl. 53-397.000.
Connor, David T.: *See—*
Belliotti, Thomas R.; Connor, David T.; Kostlan, Catherine R.; and Miller, Steven R., 5,187,175, Cl. 514-269.000.
Conoco Inc.: *See—*
Downs, Charles E., 5,186,256, Cl. 166-272.000.
Consolidated Rail Corporation: *See—*
Beecher, Dennis L., 5,186,508, Cl. 294-81.510.
Consolidation Coal Company: *See—*
McMillion, Michael B.; Miller, Thomas R.; and Koontz, Terry L., 5,185,935, Cl. 33-1.0PT.
Constiner, Joseph P.: *See—*
Hatton, Derald R.; Constiner, Joseph P.; and Suica, David E., 5,186,332, Cl. 209-17.000.
Cook, Charles D., to Procter & Gamble Company, The. Container and closure having means for producing an audible signal when a seal has been established. 5,186,344, Cl. 215-330.000.
Cook, Robert K.; and Pelella, Mario M. A., to International Business Machines Corporation. Lateral bipolar transistor and method of making the same. 5,187,109, Cl. 437-32.000.
Cooke, John: *See—*
Loscalzo, Joseph; and Cooke, John, 5,187,183, Cl. 514-400.000.
Cooksey, William L.: *See—*
Farley, Herbert M.; and Cooksey, William L., 5,186,683, Cl. 460-105.000.
Coolbaugh, Thomas S.; Loveless, Frederick C.; and Matthews, Demetreos N., to Mobil Oil Corporation. Solid block and random elastomeric copolymers. 5,187,236, Cl. 525-314.000.
Coon, Warren: *See—*
Hopkins, Lionel; Kemp, Thomas H.; and Coon, Warren, 5,187,626, Cl. 360-104.000.
Cooper Industries, Inc.: *See—*
Holman, Michael R.; and Smith, Richard A., Jr., 5,186,669, Cl. 445-16.000.
Straub, Stephen W., 5,187,404, Cl. 313-131.00A.
Cooper, John E., to Rolls-Royce Motor Cars Limited. Differential assembly. 5,186,694, Cl. 475-230.000.
Copal Company Limited: *See—*
Ishii, Takeshi, 5,187,361, Cl. 250-222.100.
Corbet, Jean-Pierre: *See—*
Botannet, Bernard; Clavel, Jean-Louis; Corbet, Jean-Pierre; and Mulhauser, Michel, 5,187,292, Cl. 558-134.000.
Corcon (Ohio corporation): *See—*
Lyras, Gus G., 5,185,968, Cl. 51-319.000.
Cordell, Barbara; Schilling, James W.; and Katunuma, Nobuhiko, to Scios Nova Inc. Methods of treatment using alzheimer's amyloid polypeptide derivatives. 5,187,153, Cl. 514-12.000.
Cordi, Alex A., to G. D. Searle & Co. Use of a Glycine B partial agonist as an antipsychotic. 5,187,171, Cl. 514-359.000.
Corey, John C. Flow monitoring and control system for injection wells. 5,186,255, Cl. 166-250.000.
Corey, Paul F.; Michaels, Angela A.; Proud, Lois J.; Salvati, Michael; Trimmer, Robert W.; and Sommer, Ronald G., to Miles Inc. Nitro or nitroso substituted polyhalogenated phenolsulfonephthaleins as protein indicators in biological samples. 5,187,104, Cl. 436-86.000.
Corma Inc.: *See—*
Lupke, Manfred A. A., 5,186,878, Cl. 264-209.400.
Cornell Research Foundation, Inc.: *See—*
Pendley, Bradford D.; and Abruna, Hector D., 5,185,922, Cl. 29-825.000.
Cornwell, James H., to North Carolina Center for Scientific Research, Inc. Apparatus for treating indoor air. 5,186,903, Cl. 422-122.000.

Corrigall, Don J.: *See—*
Hutchison, Richard M.; and Corrigall, Don J., 5,187,428, Cl. 323-250.000.
Cortapassi, Theodore: *See—*
Reicin, Edward E.; Bertolozzi, Rano J.; and Cortapassi, Theodore, 5,186,577, Cl. 405-52.000.
Cortochiato, Michael L.; and Lumetta, Sammy C., to General Motors Corporation. Automotive fuel system. 5,186,152, Cl. 123-514.000.
Corvers, Werner F. C. G.: *See—*
Erkens, Leonardus J. H.; Schmitt, Gregor; Geurts, Herman J. J. M; and Corvers, Werner F. C. G., 5,186,748, Cl. 106-479.000.
Cosmo Oil Co., Ltd.: *See—*
Yoshinari, Tomohiro; Usui, Kazushi; Yamamoto, Yasuo; and Ohi, Mitsuru, 5,187,133, Cl. 502-66.000.
Costello, Donald A.: *See—*
Bulsterbaum, J. Charles; Tolles, Robert D.; and Costello, Donald A., 5,186,597, Cl. 414-469.000.
Cote, Donna R.; Stanasolovich, David; and Warren, Ronald A., to International Business Machines Corporation. Process for fabrication of a semiconductor structure and contact stud. 5,187,121, Cl. 437-195.000.
Cotherman, Jesse W.: *See—*
Martin, Luther W.; Smith, Richard L.; and Cotherman, Jesse W., 5,185,928, Cl. 30-92.500.
Cotterill, Lee A.: *See—*
MacKay, Michael T.; Duffy, Robert; Cotterill, Lee A.; Herz, William; and McArdle, Joe, 5,187,630, Cl. 360-137.000.
Cottrell, Rodney J.: *See—*
Boyer, David J.; and Cottrell, Rodney J., 5,186,636, Cl. 439-133.000.
Couderc, Bernard, to Salomon S.A. Ski safety binding. 5,186,484, Cl. 280-633.000.
Couderc, Rene ; Eyssautier, Bruno; Laporte, Martine; and Planard, Marie-France, to Sanofi. Process for preparing protease from *Endothia parasitica* using glucanases to reduce viscosity. 5,187,081, Cl. 435-71.100.
Coughlin, Robert D.: *See—*
Calbo, Leonard J.; and Coughlin, Robert D., 5,187,019, Cl. 428-524.000.
Coulson, Gordon W.: *See—*
Chu, Matthew C. H.; Ly, Chi-Vien; and Coulson, Gordon W., 5,187,707, Cl. 370-79.000.
Coulter Corporation: *See—*
Healy, Jr. Stephen F.; Rice, Michael L.; and Golick, Martin L., 5,187,099, Cl. 436-10.000.
Court, John J.: *See—*
Desai, Ranjit C.; Court, John J.; Hlasta, Dennis J.; and Subramanyam, Chakrapani, 5,187,173, Cl. 514-373.000.
CPC International Inc.: *See—*
Fitt, Larry E.; Pienkowski, James J.; and Wallace, Jack R., 5,187,210, Cl. 524-48.000.
Craig, Charles R. Portable hunting tree stand. 5,186,276, Cl. 182-187.000.
Cramer, Richard: *See—*
Chasteen, Howard; Farley, Todd; Cramer, Richard; and Lockner, Michael, 5,186,279, Cl. 184-15.100.
Cramp, Susan M.: *See—*
Outcalt, Russell J.; Timmons, Philip R.; Cramp, Susan M.; Kwiatkowski, Patricia L.; Lopes, Anibal; Cain, Paul A.; Sinodis, David N.; Hall, Lee S.; and Vors, Jean-Pierre A., 5,187,185, Cl. 514-408.000.
Crescini, Jean: *See—*
Alcouffe, Francois; Crescini, Jean; and Duret, Denis, 5,187,438, Cl. 324-301.000.
Crisan, Adrian, to Compaq Computer Corporation. Compact portable computer having an expandable full size keyboard with extendable supports. 5,187,644, Cl. 361-393.000.
Crisci, Luciana: *See—*
Castaldi, Graziano; Allegrini, Pietro; Crisci, Luciana; and Renzi, Fiorenzo, 5,186,867, Cl. 252-586.000.
Critikon, Inc.: *See—*
Muskatello, James M.; Parmet, Darryl; Lysy, George C.; and Ramsey, Maynard R., III, 5,187,641, Cl. 361-380.000.
Cronan, Joseph T.: *See—*
Pechulis, Joseph W.; and Cronan, Joseph T., 5,186,635, Cl. 439-89.000.
Cross, Richard H.; and Smith, Peter J. Modular rock catchment barrier. 5,186,438, Cl. 256-13.100.
Crow, Harvey L., Jr.; and Krosp, Charles W., to Arkla Products Company. Barbecue grill assembly. 5,186,159, Cl. 126-41.00R.
Crudden, Joseph J., to W. R. Grace & Co.-Conn. Process for producing a synthetic detergent soap base from n-acyl sarcosine. 5,186,855, Cl. 252-117.000.
Crystal Semiconductor Corporation: *See—*
Scott, Baker P. L., III, 5,187,390, Cl. 307-353.000.
CTC International Corporation: *See—*
Wood, Edward T.; Surgnier, David H.; and Brooks, Robert T., 5,186,258, Cl. 166-387.000.
Cuatico, Lorenzo. Internal combustion engine with offset connecting journal. 5,186,127, Cl. 123-54.00R.
Cuba, Gary W.; Isaacson, Robert D.; and Lambert, David V., to Westinghouse Electric Corp. Weld electrode-to-workpiece arc gap setting apparatus and method. 5,187,348, Cl. 219-124.020.
Cuddy, Ronald G. Metal/wood birdhouse kit construction. 5,186,123, Cl. 119-23.000.
Cues, Inc.: *See—*
Gilleland, Frank W., 5,186,215, Cl. 138-98.000.
Cullen, Barry A.; and Parker, Brian A., to W. R. Grace & Co.-Conn. Preparation of iminodiacetonitrile from glycolonitrile. 5,187,301, Cl. 558-455.000.
Cullen, John S.; Incorvia, Samuel A.; Nigon, Christopher S.; and Boczkowski, Frederick A. Method of fabrication of a container for bulk material. 5,186,775, Cl. 156-69.000.
Cullen, Robert M.: *See—*
Lagace, Maurice P.; Boucher, Stephen G.; Cullen, Robert M.; Noyes, Andrew L.; Willette, John; and Russell, Cynthia M., 5,186,050, Cl. 73-187.000.
Cullimore, D. Roy; Alford, George W.; Abiola, Abimbola T.; Reihl, Jeff; and Naqvi, Karim. Method and apparatus for the determination of fermentative analytic cultured activities. 5,187,072, Cl. 435-34.000.
Cummings, Beauregard, Jr. Electric fence pole installation apparatus. 5,186,436, Cl. 254-29.00R.
Cummings, John L.; Mason, James R.; and Trksak, Ralph M., to United States of America, Agriculture. Grazing repellent for geese and swans. 5,187,196, Cl. 514-535.000.
Cunningham, Robert A., Jr., to Glass Master Corporation. Duct forming machine. 5,186,704, Cl. 493-18.000.
Cunningham, Thomas J. Tower compression unit. 5,185,988, Cl. 53-436.000.
Curhan, Jeffery A.; Pimentel, Daniel R.; and Berg, Peter G., to Texas Instruments Incorporated. Defrost and passenger compartment heater system. 5,187,349, Cl. 219-202.000.
Curley, Jack: *See—*
Tong, James K.; Selbiger, Lawrence; Stubblefield, Jerry D.; and Curley, Jack, 5,185,943, Cl. 36-28.000.
Currin, Bena L.; Abdel-Malek, Aiman A.; and Hartley, Richard I., to General Electric Company. Forming, with the aid of an overview image, a composite image from a mosaic of images. 5,187,754, Cl. 382-54.000.
Cusano, Dominic A.: *See—*
Michon, Gerald J.; Brown, Dale M.; Garfinkel, Marvin; and Cusano, Dominic A., 5,187,380, Cl. 257-428.000.
Cussons (International) Limited: *See—*
Calvert, John H., 5,186,346, Cl. 220-212.500.
Custer, Dennis R., to Jacobs Brake Technology Corporation. Engine brake timing control mechanism. 5,186,141, Cl. 123-321.000.
Cutsforth, David L. Apparatus for truing out of round rotating components. 5,185,967, Cl. 51-289.00R.
Cyberonics, Inc.: *See—*
Terry, Reese S., Jr.; Varrichio, Anthony J.; Winstrom, William L.; and Stanislaw, Henry, 5,186,170, Cl. 128-419.00R.
Cygnus Therapeutic Systems: *See—*
Cleary, Gary W.; and Roy, Samir D., 5,186,939, Cl. 424-448.000.
Czachorski, Marek; and Kountz, Kenneth J., to Institute of Gas Technology. Refrigerant composition control system for use in heat pumps using non-azeotropic refrigerant mixtures. 5,186,012, Cl. 62-114.000.
Czech, Bronislaw P.; Chapoteau, Eddy; and Kumar, Anand, to Miles Inc. Colorimetric method and reagent for the assay of lithium in a test sample. 5,187,103, Cl. 436-79.000.
D B Industries, Inc.: *See—*
Wolner, James T.; and Engh, Duncan C., 5,186,289, Cl. 188-180.000.
D. C. Cooper Corporation: *See—*
Gullberg, Kim R.; and Leser, William A., 5,186,193, Cl. 134-105.000.
Daage, Michel; and Chianelli, Russell R., to Exxon Research and Engineering Company. Catalytic processes. 5,186,818, Cl. 208-254.00H.
Dages, Daniel: *See—*
Degeilh, Robert; and Dages, Daniel, 5,187,217, Cl. 524-297.000.
Dai-Ichi Seiko Co., Ltd.: *See—*
Katoh, Hideaki; Noguchi, Nobuhisa; Kikuchi, Yutaka; Kaneko, Isamu; and Hoshi, Teruo, 5,186,537, Cl. 362-347.000.
Dai Nippon Insatsu Kabushiki Kaisha: *See—*
Egashira, Noritaka; Sataka, Naoto; and Akada, Masanori, 5,187,002, Cl. 428-195.000.
Kanto, Jumpei; Saito, Hitoshi; Eguchi, Hiroshi; Nakamura, Masayuki; Kafuku, Koumei; Chiba, Junji; and Suda, Kaoru, 5,187,145, Cl. 503-227.000.
Daikin Industries Ltd.: *See—*
Shiraishi, Nobuo; and Kubo, Motonobu, 5,187,269, Cl. 536-56.000.
Daimler-Benz AG: *See—*
Blessing, Alf, 5,187,632, Cl. 361-103.000.
Dainippon Screen Mfg. Co., Ltd.: *See—*
Aragaki, Masami, 5,187,755, Cl. 382-56.000.
Dais, Virginia A.; and Priddy, Duane B., to Dow Chemical Company, The. Degradable B-alkoxy vinyl ketone resin composition. 5,187,249, Cl. 526-316.000.
Daito Shoji Co., Ltd.: *See—*
Ozaki, Haruo, 5,185,965, Cl. 51-283.00E.
Dal Monte, Giuseppe A., to OroAmerica, Inc. Rope chain with novel link. 5,185,995, Cl. 59-80.000.
Dale, Benton, to Dale, Benton. Professional cutlery sharpening machine. 5,185,958, Cl. 51-68.000.
D'Aleo, Michael J.: *See—*
Post, Robert P.; D'Aleo, Michael J.; Keeports, Doug W.; Ference, Jonathan H.; Luchaco, David G.; and Spira, Joel S., 5,187,655, Cl. 364-146.000.
Dallmann, Hermann: *See—*
Gribbin, John D.; Bothe, Lothar; Dinter, Peter; and Dallmann, Hermann, 5,186,974, Cl. 427-536.000.

VOL 1147 ISS 3 FE 16 1993 UMI

Daly, Andrew T.: *See—*
Richart, Douglas S.; and Daly, Andrew T., 5,187,220, Cl. 524-441.000.

Daly, James a., to Digital Equipment Corporation. Feedback isolation amplifier. 5,187,446, Cl. 330-10.000.

Dana Corporation: *See—*
Flotow, Richard A., 5,186,573, Cl. 403-300.000.

Dang Vu, Quang; Franckowiak, Sigismond; Grehier, Alain; Vacher, Philippe; and Burzynski, Jean-Pierre, to Institut Francais du Petrole. Reaction chamber comprising a calender reactor and means for bedding the flow of a heat-carrying fluid. 5,186,909, Cl. 422-213.000.

Danielewicz, Gerald C.: *See—*
Hageman, John B.; and Danielewicz, Gerald C., 5,186,292, Cl. 192-3.280.

D'Arrigo, Sebastiano: *See—*
Gill, Manzur; Lin, Sung-Wei; and D'Arrigo, Sebastiano, 5,187,683, Cl. 365-185.000.

Davenport, Marcus K.; Shipman, Richard K.; Young, Thomas D.; and Strode, Stephen H., to International Teleservice Corp. Answer supervision circuit for paystation telephone with non-muted microphone. 5,187,739, Cl. 379-155.000.

Davies, Clifford L. Firearms target. 5,186,468, Cl. 273-378.000.

Davies, Steven P.: *See—*
Balmforth, Kevin D.; Bates, Gary A.; Davies, Steven P.; Habereder, Hans L.; Harrison, R. Loyd; Hopp, Donald M.; and Ricker, George G., 5,187,795, Cl. 395-800.000.

Davis, Dennis W.: *See—*
Posluszny, Thomas J.; and Davis, Dennis W., 5,187,598, Cl. 359-29.000.

Davis, John M.; Davis, Mark E.; and Jennings, David G., to Kegel Company, Inc., The. Bowling lane maintenance machine capable of self-indexing from lane-to-lane. 5,185,901, Cl. 15-98.000.

Davis, Mark E.: *See—*
Davis, John M.; Davis, Mark E.; and Jennings, David G., 5,185,901, Cl. 15-98.000.

Davis, Patrick H.: *See—*
Sherman, Richard A.; Jaeger, Robert B.; and Davis, Patrick H., 5,186,558, Cl. 400-692.000.

Davis, Stephen M., to Exxon Research and Engineering Company. Silica modified hydroisomerization catalyst. 5,187,138, Cl. 502-255.000.

Dawes, David H.: *See—*
Chow, Suezone; and Dawes, David H., 5,187,000, Cl. 428-141.000.

Dawson, John: *See—*
Aindow, Alan M.; Cahill, Michael J.; and Dawson, John, 5,186,184, Cl. 131-281.000.

Day, Duane E.: *See—*
Shore, Joseph D.; Bock, Paul E.; Olson, Steven T.; and Day, Duane E., 5,187,069, Cl. 435-13.000.

Day Runner, Inc.: *See—*
Jack, Douglas M., 5,186,565, Cl. 402-79.000.

Dayan, Richard A.; Lam, Son H.; and Zimmerman, John P., to International Business Machines Corporation. Method and apparatus for selectively reclaiming a portion of RAM in a personal computer system. 5,187,792, Cl. 395-725.000.

Dayco Products, Inc.: *See—*
Campo, Manuel; Pearson, Charles S.; and Synder, Jon H., 5,185,913, Cl. 29-453.000.
Foster, Randy C., 5,186,357, Cl. 222-1.000.

DBJU, Inc.: *See—*
Pine, James J., 5,186,518, Cl. 297-85.000.

Deakin, Richard S., to British Aerospace plc. Stabilization systems. 5,186,413, Cl. 244-1.0TD.

Debiopharm S.A.: *See—*
Speiser, Peter; Schleuniger, Urs; Orsolini, Piero; and Heimgartner, Frederic, 5,187,150, Cl. 514-2.000.

De Boer, Philip: *See—*
Magnollay, Gilbert; Seigneur, Remy; Budry, Jacques; Clement, Jean-Claude; Jaccottet, Michel; Jaggi, Pierre-Yves; Jaun, Hans; and De Boer, Philip, 5,186,957, Cl. 425-192.00R.

Deborde, Henri C.: *See—*
Perenon, Jacques; Pichon, Maurice; Deborde, Henri C.; and Jodelet, Francois, 5,186,777, Cl. 156-79.000.

De brey, Robert J., to Timesavers, Inc. Pivotal arm belt loading device. 5,185,963, Cl. 51-148.000.

DeCava, David C.: *See—*
Carver, Edward L., Jr.; DeVeaux, Richard D.; and DeCava, David C., 5,187,673, Cl. 364-555.000.

Decker, Patrick A. Lotion container apparatus. 5,185,942, Cl. 36-11.500.

Deckman, Harry W.: *See—*
Mcbenry, James A.; Deckman, Harry W.; Lai, Wen-Yih F.; Matturro, Michael G.; Jacobson, Allan J.; and Johnson, Jack W., 5,186,833, Cl. 210-321.750.

Degeilh, Robert; and Dages, Daniel, to Saint-Gobain Vitrage. Process for the production of a plasticized polyvinyl butyral for gluing a base onto a glazing. 5,187,217, Cl. 524-297.000.

Degener, Klaus: *See—*
Hermann, Heinrich; Pelster, Gunther; and Degener, Klaus, 5,187,274, Cl. 544-186.000.

Degroot, Simon: *See—*
Eason, Stephen W.; Attridge, John W.; and Degroot, Simon, 5,186,897, Cl. 422-100.000.

Degussa AG: *See—*
Panster, Peter; and Gradl, Robert, 5,187,134, Cl. 502-158.000.

Dehlen, Bengt L. A.: *See—*
Rydberg, Bo L.; and Dehlen, Bengt L. A., 5,185,980, Cl. 52-506.000.

Dehm, David C.: *See—*
Bodwell, James R.; Harris, Stephen H.; and Dehm, David C., 5,186,744, Cl. 106-243.000.

DeJong, Jerry M.: *See—*
VandenBerge, Thomas C.; DeJong, Jerry M.; and Suman, Michael J., 5,186,512, Cl. 296-97.800.

DeLange, Robert J., to Allen-Bradley Company, Inc. Electric motor control apparatus and method. 5,187,419, Cl. 318-805.000.

Delozier, J. Clift: *See—*
Mancusi, Anthony W.; Delozier, J. Clift; Prasad, Ravi; Runkle, Charles J.; and Shuey, Harry F., 5,186,832, Cl. 210-321.800.

del Puerto, Santiago E.; and Gaschke, Paul M., to International Business Machines Corporation. Liquid film interface cooling chuck for semiconductor wafer processing. 5,186,238, Cl. 165-80.400.

Delta International Machinery Corp.: *See—*
Wixey, Barry D., 5,186,088, Cl. 82-142.000.

DeMarco, Richard; Feinland, Raymond; and Jachowicz, Janusz, to Clairol, Incorporated. Treating proteinaceous substrates with cationic copolymer. 5,186,929, Cl. 424-71.000.

DeMartino, Ronald: *See—*
Leslie, Thomas M.; Shu, Ching F.; Blatter, Karsten; DeMartino, Ronald; and Battito, Frank, 5,187,234, Cl. 525-276.000.

Demissy, Daniel, to GEC Alsthom Energie Inc. Mechanism for converting rotary motion into translation motion. 5,186,067, Cl. 74-424.600.

Dempster, Philip T.: *See—*
Mangseth, Glen; Lovas, Albert J.; and Dempster, Philip T., 5,186,695, Cl. 482-6.000.

Denker, Stanley D.; and Lehrke, Bradley H., to Doboy Packaging Machinery, Inc. Conveyor belt tracking and drive mechanism. 5,186,313, Cl. 198-806.000.

Denkmann, W. John; Dix, Willard A.; and Spitz, William T., to AT&T Bell Laboratories. High frequency electrical connector. 5,186,647, Cl. 439-395.000.

Dennis, J. Patrick: *See—*
Kaul, Bal K.; O'Bara, Joseph T.; Savage, David W.; Dennis, J. Patrick; Bellows,Richard J.; and Kantner, Edward, 5,186,819, Cl. 208-310.00Z.

Dennison, Bernard M.: *See—*
Beffel, Robert R.; Blood, Ellen R.; Bufkin, Paul R.; Dennison, Bernard M.; Miller, Jerry G.; and Turner, James L., 5,187,733, Cl. 379-10.000.

Dennstedt, Paul: *See—*
Walters, R. Jeffrey; and Dennstedt, Paul, 5,186,549, Cl. 384-505.000.

Densmore, Owen M.; and Rosenthal, David S. H., to Sun Microsystems, Inc. Method for apparatus for implementing a class hierarchy of objects in a hierarchical file system. 5,187,786, Cl. 395-600.000.

Dent, Paul W.; and Haartsen, Jaap C., to Ericsson-GE Mobile Communications Holding Inc. Maximum search circuit. 5,187,675, Cl. 364-715.060.

Denz, Helmut: *See—*
Steinbrenner, Ulrich; Denz, Helmut; and Wild, Ernst, 5,186,153, Cl. 123-519.000.

DePetris, Robert, to Leucadia, Inc. Oil sorbent products and method of making same. 5,186,831, Cl. 210-242.400.

Deplante, Patrice: *See—*
Jimenez, Antonio; and Deplante, Patrice, 5,186,116, Cl. 112-323.000.

DeRosa, Stephen C.: *See—*
Deters, Joseph C.; Swanson, David R.; and DeRosa, Stephen C., 5,186,942, Cl. 424-473.000.

DeRoss, Robert: *See—*
Comerci, Joseph D.; and DeRoss, Robert, 5,186,639, Cl. 439-188.000.

Derrien, Jean-Claude: *See—*
Nouguez, Bruno; Bigot, Yves; Groux, Jacky; and Derrien, Jean-Claude, 5,187,319, Cl. 102-202.100.

Desai, Ranjit C.; Court, John J.; Hlasta, Dennis J.; and Subramanyam, Chakrapani, to Sterling Winthrop Inc. 2-saccharinylmethyl and 4,5,6,7-tetrahydro-2-saccharinylmethyl phosphates, phosphonates and phosphinates useful as proteolytic enzyme inhibitors and compositions and method of use thereof. 5,187,173, Cl. 514-373.000.

Desco Corporation: *See—*
Hentzschel, Walter G., 5,186,571, Cl. 403-231.000.

Deshmukh, Uday V.: *See—*
Haller, Wolfgang; and Deshmukh, Uday V., 5,187,008, Cl. 428-378.000.

Detalle, Edouard. Rectilinearly moving, axially symmetrical sliding gate. 5,186,845, Cl. 222-598.000.

Deters, Joseph C.; Swanson, David R.; and DeRosa, Stephen C., to ALZA Corporation. Nicardipine therapy. 5,186,942, Cl. 424-473.000.

Deutsch, Keith R.; Bjorge, Per H.; and Blannin, Alan, to Graphic Edge, Inc. Method of creating and applying half tone screen patterns. 5,187,594, Cl. 358-455.000.

DeVane, Charles J., to Digital Equipment Corporation. High-speed pseudo-random number generator and method for generating same. 5,187,676, Cl. 364-717.000.

DeVeaux, Richard D.: *See—*
Carver, Edward L., Jr.; DeVeaux, Richard D.; and DeCava, David C., 5,187,673, Cl. 364-555.000.

de Villiers, Ethel-Michele; Hirsch-Behnam, Anja; and Hausen, Harald zur, to Behringwerke Aktiengesellschaft. Human papilloma virus type 57 and the DNA thereof. 5,187,090, Cl. 435-235.100.

Dewanckele, Jean-Marie O.; and Hofman, Emiel A., to Agfa-Gevaert N.V. Anti-sludging compounds in photographic material. 5,187,054, Cl. 430-523.000.

Dewolf, Jan: *See—*
Vollmann, Norbert C.; Dewolf, Jan; Bernauer, Gunther; Stoger, Anton; and Koningsberger, Marco V., 5,187,629, Cl. 360-132.000.

Dexter Corporation: *See—*
Perron, Peter J.; Nangrani, Khemchand; and Bourbonais, Ed, 5,187,228, Cl. 525-66.000.

DeYoung, Simon A. Strand carrier for a braiding machine. 5,186,092, Cl. 87-22.000.

Dezeny, Georgette: *See—*
Treiber, Laszlo R.; Lingham, Russell B.; Arison, Byron H.; Colwell, Lawrence F., Jr.; Dezeny, Georgette; and Kohl, Nancy E., 5,187,074, Cl. 435-41.000.

Diamond Fiber Composites, Inc.: *See—*
Vydra, Jacob; and Altshuler, Anatoly, 5,187,021, Cl. 428-607.000.

Diamonex, Incorporated: *See—*
Garg, Diwakar; Tsai, Wilman; Kimock, Fred M.; Iampietro, Robert L.; and Dyer, Paul N., 5,186,973, Cl. 427-590.000.

Diehl GmbH & Co.: *See—*
Schloss, Jurgen; Trummer, Gunther; and Wich, Harald, 5,187,322, Cl. 102-427.000.

Diehl, Rollie S. Ducted frieze vent. 5,185,974, Cl. 52-95.000.

Dietrich, Klaus, to Francotyp-Postalia GmbH. Method for identifying postage meter and monetary value stamping machines. 5,186,498, Cl. 283-67.000.

DiGiovanni, David J.; Giles, Clinton R.; Kramer, Stuart A.; Nykolak, Gerald; Presby, Herman M.; and Simpson, Jay R., to AT&T Bell Laboratories. High gain multi-mode optical amplifier. 5,187,759, Cl. 385-27.000.

Digital Equipment Corporation: *See—*
Clark, Paul H.; Hill, Robert P.; and Wolinski, Michael R., 5,187,780, Cl. 395-325.000.
Daly, James a., 5,187,446, Cl. 330-10.000.
DeVane, Charles J., 5,187,676, Cl. 364-717.000.
East, Jeffrey A.; Walker, James J.; Jenness, Steven M.; Ozur, Mark C.; and Kelly, James W., Jr., 5,187,790, Cl. 395-725.000.
Sidman, Michael D., 5,187,619, Cl. 360-77.080.

Digital Magnetic Systems, Inc.: *See—*
McNew, Thomas A., 5,187,532, Cl. 355-309.000.

Dillon, Mark: *See—*
Brockman, Thomas R.; and Dillon, Mark, 5,185,977, Cl. 52-173.0DS.

Dimmig, D. Avery. Functional exercise attachment trainer for swung athletic implements. 5,186,699, Cl. 482-111.000.

Dinter, Peter: *See—*
Gribbin, John D.; Bothe, Lothar; Dinter, Peter; and Dallmann, Hermann, 5,186,974, Cl. 427-536.000.

Diolez, Christian: *See—*
Brion, Francis; Buendia, Jean; Diolez, Christian; and Vivat, Michel, 5,187,273, Cl. 540-4.000.

DiPaola, Donald A.: *See—*
Boumarafi, Mohamed; Pondell, Carl; and DiPaola, Donald A., 5,186,495, Cl. 280-808.000.

Dirty Business Deals, Inc.: *See—*
Nelson, Robert J., 5,186,384, Cl. 229-122.000.

DiSanto, Frank J.; and Krusos, Denis A. Electrophoretic display panel with semiconductor coated elements. 5,187,609, Cl. 359-296.000.

Dismore, Gregory W.; and Rollins, Brian R. Toilet bowl sealing assembly. 5,185,890, Cl. 4-252.500.

Di Troia, Gary W.; and Romani, Paul M., to Gould, Inc. Compact time delay fuse. 5,187,463, Cl. 337-165.000.

Dix, Johannes P.: *See—*
Brueckmann, Ralf; Bury, Willi; Dix, Johannes P.; Herrmann, Manfred; Dlugosch, Waldemar; Kromm, Erich; Letter, Herbert; Zimmermann, Norbert; Kermer, Wolf-Dieter; and Taeger, Klaus, 5,186,846, Cl. 252-8.700.

Dix, Willard A.: *See—*
Denkmann, W. John; Dix, Willard A.; and Spitz, William T., 5,186,647, Cl. 439-395.000.

Dixon, Douglas F.: *See—*
Keith, John M.; Simon, Allen H.; Sprague, David L.; Dixon, Douglas F.; and Goldstein, Judith A., 5,187,793, Cl. 395-775.000.

Dixon, Merle. Gift wrapping. 5,186,988, Cl. 383-37.000.

Dlugosch, Waldemar: *See—*
Brueckmann, Ralf; Bury, Willi; Dix, Johannes P.; Herrmann, Manfred; Dlugosch, Waldemar; Kromm, Erich; Letter, Herbert; Zimmermann, Norbert; Kermer, Wolf-Dieter; and Taeger, Klaus, 5,186,846, Cl. 252-8.700.

DNA Plant Technology Corporation: *See—*
Gutterson, Neal I.; Tucker, William T.; and Wolber, Paul K., 5,187,061, Cl. 435-5.000.

Dnastar, Inc.: *See—*
Schroeder, John L.; and Slater, Michael R., 5,187,775, Cl. 395-155.000.

Doan, Trung T.; Lowrey, Tyler A.; Cathey, David A.; and Rolfson, J. Brett, to Micron Technology, Inc. Method to form self-aligned gate structures and focus rings. 5,186,670, Cl. 445-24.000.

Doboy Packaging Machinery, Inc.: *See—*
Denker, Stanley D.; and Lehrke, Bradley H., 5,186,313, Cl. 198-806.000.

Dobrino, Gary J.: *See—*
Vaseloff, Dennis J.; Dobrino, Gary J.; King, James A.; and Chu, Wai Y., 5,186,097, Cl. 99-330.000.

Dr. Friedrich Forster Pruferatebau GmbH & Co. KG: *See—*
Geweke, Werner, 5,187,435, Cl. 324-225.000.

Dr. Johannes Heidenhain GmbH: *See—*
Allgauer, Michael, 5,187,545, Cl. 356-358.000.

Dr. Wolman GmbH: *See—*
Goettsche, Reimer; and Reuther, Wolfgang, 5,186,947, Cl. 424-638.000.
Goettsche, Reimer; and Reuther, Wolfgang, 5,187,194, Cl. 514-499.000.

Doderer-Winkler, Alfred, to Winkler & Dunnebier. Method and apparatus for forming clasp envelopes. 5,186,705, Cl. 493-215.000.

Doherty, John A.: *See—*
Wise, James J.; and Doherty, John A., 5,186,396, Cl. 239-675.000.

Dohse, William F.: *See—*
Mansfield, Richard M.; and Dohse, William F., 5,187,783, Cl. 395-425.000.

Doi, Shigetoshi; and Fujiki, Tsutomu, to Mazda Motor Corporation. Apparatus for conditioning air in automotive vehicle. 5,186,387, Cl. 236-49.300.

Dompert, Wolfgang: *See—*
Seidel, Peter-Rudolf; Horstmann, Harald; Traber, Jorg; Dompert, Wolfgang; Glaser, Thomas; and Thurman, Teunis, 5,187,276, Cl. 544-295.000.

Dongelmans, Anthony A., to Challenge Industries. Dryer blower cleanout door assembly. 5,185,941, Cl. 34-242.000.

Donisi, Anthony M.: *See—*
Russell, Mark E.; Donisi, Anthony M.; and Miller, David C., 5,187,459, Cl. 333-204.000.

Donovan, William P.; Rupar, Mark J.; Slaney, Annette C.; and Johnson, Timothy B., to Ecogen Inc. *Bacillus thuringiensis* cryIIIC gene encoding toxic to coleopteran insects. 5,187,091, Cl. 435-240.400.

Doolittle, Miles G.; and Kuzinski, Frank, to Dura Mechanical Components, Inc. Parking brake operating handle attachment. 5,186,073, Cl. 74-503.000.

Doris Engineering: *See—*
Ngoc, Guy P.; and Huynh, Tuong L., 5,186,581, Cl. 405-217.000.

Dorninger, Frank: *See—*
Purstinger, Franz; and Dorninger, Frank, 5,186,876, Cl. 264-40.600.

Dorrie, Dieter: *See—*
Schwerdt, Paul; Dorrie, Dieter; and Kirschenhofer, Karl, 5,186,151, Cl. 123-506.000.

Doudement, Gerard; and Dulong, Alain, to Sidel. Transport device for removing interlocked preforms. 5,186,307, Cl. 198-454.000.

Doughty, Fred C., to Brown Jordan Company. Method of making patio chairs with metal slats. 5,186,382, Cl. 228-135.000.

Douglas, Alan W.: *See—*
King, Anthony O.; Anderson, Kevin; Karady, Sandor; Douglas, Alan W.; Abramson, Newton L.; and Shuman, Richard F., 5,187,278, Cl. 546-14.000.

Dousse, Bruno M. J.: *See—*
Burckhardt, Christoph B.; and Dousse, Bruno M. J., 5,187,687, Cl. 367-7.000.

Dow Chemical Company, The: *See—*
Dais, Virginia A.; and Priddy, Duane B., 5,187,249, Cl. 526-316.000.
Hallsby, G. Anders, 5,187,084, Cl. 435-91.000.
Kirk, Richard O., 5,187,256, Cl. 528-196.000.
Mayes, M. Dale, 5,186,206, Cl. 137-244.000.

Dowbrands Inc: *See—*
Turvey, Robert R.; Hoffman, Jeffrey S.; and Nestle, Robert J., 5,185,987, Cl. 53-429.000.

Dowbrands L.P.: *See—*
Barta, Raymond D., 5,186,707, Cl. 493-439.000.

DowElanco: *See—*
Turner, James A.; Zorner, Paul S.; and Jacks, Wendy S., 5,186,735, Cl. 504-242.000.

Dower, William J., to Bio-Rad, Laboratories, Inc. Electroporation of prokaryotic cells. 5,186,800, Cl. 204-180.100.

Downs, Charles E., to Conoco Inc. Three directional drilling process for environmental remediation of contaminated subsurface formations. 5,186,256, Cl. 166-272.000.

Downs, Robert C., to Saturn Corporation. Multi-ratio power transmission. 5,186,065, Cl. 74-331.000.

Dragerwerk Aktiengesellschaft: *See—*
Koch, Jochim; and Heim, Ulrich, 5,186,710, Cl. 600-22.000.

Drago, Thomas E.; and Abbott, Alan D. Fixture for supporting a refrigerant sampling tube in a closed system. 5,186,899, Cl. 422-104.000.

Drake, Evelyn N.: *See—*
Manalastas, Pacifico V.; Drake, Evelyn N.; Kresge, Edward N.; and Thaler, Warren A., 5,187,011, Cl. 428-402.240.

Draper, Don R.: *See—*
Stephenson, Dwight B.; and Draper, Don R., 5,186,212, Cl. 137-625.240.

Dresden, John, III: *See—*
Pankratz, William R.; Genise, Thomas A.; Dresden, John, III; and Markyvech, Ronald K., 5,186,066, Cl. 74-335.000.

Drewes, Mark W.: *See—*
Andree, Roland; Drewes, Mark W.; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., 5,186,734, Cl. 504-196.000.

Drexel University: *See—*
Zuckerman, Ralph, 5,186,173, Cl. 128-633.000.

Drori, Mordeki. Filter apparatus. 5,186,825, Cl. 210-411.000.

VOL
1147
ISS
3
FE
16
16
1993
UMI

D'Sidocky, Richard M.: *See—*
Parks, Carl R.; D'Sidocky, Richard M.; and Cohen, Martin P., 5,187,239, Cl. 525-329.300.
D. Stoddard, Robert D. Air vent toy. 5,186,675, Cl. 446-199.000.
Du Pont Merck Pharmaceutical Company: *See—*
Kettner, Charles A.; and Shenvi, Ashokkumar B., 5,187,157, Cl. 514-18.000.
Dubowski, Kenneth E.: *See—*
Hall, Christopher M.; and Dubowski, Kenneth E., 5,187,389, Cl. 307-350.000.
du Chaffaut, Benhoist A., to Institut Francais du Petrole. Device for guiding a drilling tool into a well and for exerting thereon a hydraulic force. 5,186,264, Cl. 175-27.000.
Duffy, Richard L.: *See—*
Parham, Marc E.; and Duffy, Richard L., 5,187,010, Cl. 428-398.000.
Duffy, Robert: *See—*
MacKay, Michael T.; Duffy, Robert; Cotterill, Lee A.; Herz, William; and McArdle, Joe, 5,187,630, Cl. 360-137.000.
Dulenko, Vladimir I.: *See—*
Komissarov, Igor V.; Dulenko, Vladimir I.; Voschula, Valentin N.; Kharin, Nikolai A.; Naletov, Sergei V.; and Mamonov, Alexandr B., 5,187,277, Cl. 544-362.000.
Dulong, Alain: *See—*
Doudement, Gerard; and Dulong, Alain, 5,186,307, Cl. 198-454.000.
Duncan, James H.: *See—*
Coetzer, Johan; and Duncan, James H., 5,187,029, Cl. 429-102.000.
Du Pont de Nemours, E. I., and Company: *See—*
Chitrangad, 5,187,003, Cl. 428-225.000.
Estes, William E.; Higley, David P.; Auman, Brian C.; and Feiring, Andrew E., 5,186,985, Cl. 428-1.000.
Foss, Robert P., 5,187,059, Cl. 430-627.000.
Heinsohn, George E., 5,187,307, Cl. 560-177.000.
Kuhnert, Egbert, 5,186,453, Cl. 271-270.000.
Yunan, Malak E., 5,187,320, Cl. 102-275.800.
Dura Mechanical Components, Inc.: *See—*
Doolittle, Miles G.; and Kuzinski, Frank, 5,186,073, Cl. 74-503.000.
Durden & Co. Pty. Ltd.: *See—*
McCormack, Allan, 5,186,087, Cl. 82-142.000.
Duret, Denis: *See—*
Alcouffe, Francois; Crescini, Jean; and Duret, Denis, 5,187,438, Cl. 324-301.000.
Durso, Thomas. Refrigerant power unit and method for refrigeration. 5,186,013, Cl. 62-115.000.
Dutzmann, Stefan: *See—*
Kleefeld, Gerd; and Dutzmann, Stefan, 5,187,178, Cl. 514-383.000.
Duval, Francois: *See—*
Koppe, Denis; Leruyet, Patrick; and Duval, Francois, 5,186,315, Cl. 200-48.00V.
Dye, John F., to Kendall Company, The. Compression device. 5,186,163, Cl. 128-64.000.
Dyer, Paul N.: *See—*
Garg, Diwakar; Tsai, Wilman; Kimock, Fred M.; Iampietro, Robert L.; and Dyer, Paul N., 5,186,973, Cl. 427-590.000.
Dyes GmbH Buromobelfabrik: *See—*
Keusch, Siegfried; and Korb, Daniel, 5,186,425, Cl. 248-188.100.
Dzik, Steven C.: *See—*
Civanlar, M. Reha; Dzik, Steven C.; and Liow, Yuh-Tay, 5,187,660, Cl. 364-413.190.
E. R. Squibb & Sons, Inc.: *See—*
Gordon, Eric M., 5,187,290, Cl. 548-338.100.
E-Z-EM, Inc.: *See—*
Phillips, David; and Appling, William M., 5,186,715, Cl. 604-28.000.
Eagle Affiliates, Inc.: *See—*
Meisner, Edward H.; and Park, Young C., 5,186,366, Cl. 222-158.000.
Eagle Scientific Co.: *See—*
Starcevich, Bradley K., 5,186,990, Cl. 428-35.600.
Earl's Supply Co.: *See—*
Nieczyporowicz, Alex, 5,186,033, Cl. 72-75.000.
Earth Resources Consultants, Inc.: *See—*
Gold, Jeffrey W.; and Nickens, Dan A., 5,186,219, Cl. 141-51.000.
Eason, Stephen W.; Attridge, John W.; and Degroot, Simon, to Ares-Serono Research & Development Limited Partnership. Multianalyte test vehicle. 5,186,897, Cl. 422-100.000.
East, Jeffrey A.; Walker, James J.; Jenness, Steven M.; Ozur, Mark C.; and Kelly, James W., Jr., to Digital Equipment Corporation. Server impersonation of client processes in an object based compnter operating system. 5,187,790, Cl. 395-725.000.
Eastep, Guido M.: *See—*
Swaim, Joe T.; Heckman, Donald C.; O'Grady, Kenneth J.; and Eastep, Guido M., 5,187,740, Cl. 379-209.000.
Easterle, Mark A.: *See—*
Jackson, Michael L.; and Easterle, Mark A., 5,187,204, Cl. 521-111.000.
Eastman Kodak Company: *See—*
Blount, William W., Jr.; and Zoeller, Joseph R., 5,187,304, Cl. 560-118.000.
Boutet, John C., 5,186,338, Cl. 211-41.000.
Cassell, Michael L.; Jenkins, Waylon L.; and Rhodes, Gerry F., 5,187,216, Cl. 524-261.000.
Ficcaglia, Linda I.; Guittard, Mark P.; and Neumann, Stephen M., 5,187,146, Cl. 503-227.000.
Hall, Susan C., 5,186,795, Cl. 204-129.400.
Heissler, Walter, 5,186,339, Cl. 211-74.000.
Resch, William A., III, 5,187,522, Cl. 355-246.000.
Sterman, Melvin D.; and Bello, James L., 5,187,259, Cl. 530-354.000.
Wilson, John W.; and Bermel, Alexandra D., 5,187,037, Cl. 430-110.000.
Zaretsky, Mark C., 5,187,526, Cl. 355-273.000.
Easton Aluminum, Inc.: *See—*
Easton, James L.; and Filice, Gary W., 5,186,470, Cl. 273-416.000.
Easton, James L.; and Filice, Gary W., to Easton Aluminum, Inc. Offset arrow nock. 5,186,470, Cl. 273-416.000.
Eaton Corporation: *See—*
Edler, James P.; and Lisowsky, Bohdan, 5,187,129, Cl. 501-97.000.
Gee, Thomas A., 5,186,079, Cl. 74-607.000.
Kovach, Joseph A., 5,186,135, Cl. 123-188.300.
Kovacich, John A.; Hoinsky, Christopher C.; Williams, Donald G.; and Schiesser, Robert A., 5,186,055, Cl. 73-727.000.
Pankratz, William R.; Genise, Thomas A.; Dresden, John, III; and Markyvech, Ronald K., 5,186,066, Cl. 74-335.000.
Stephenson, Dwight B.; Carlson, Keith R.; and Rasmussen, Kenneth G., 5,186,211, Cl. 137-625.240.
Stephenson, Dwight B.; and Draper, Don R., 5,186,212, Cl. 137-625.240.
Wielgos, Thaddeus S.; Killarney, Declan E.; and Schmidt, Katalin A., 5,186,660, Cl. 439-685.000.
Eaton-Kenway, Inc.: *See—*
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; and Schutten, Herman P., 5,187,664, Cl. 364-424.020.
Ebara Research Co. Ltd.: *See—*
Urata, Eizo; and Miyakawa, Shinpei, 5,186,213, Cl. 137-625.610.
Ebe, Kazuyoshi; Narita, Hiroaki; Taguchi, Katsuhisa; Akeda, Yoshitaka; and Saito, Takanori, to Lintec Corporation. Adhesive sheets. 5,187,007, Cl. 428-343.000.
Eberhard, Jeffrey W.; and Tam, Kwok C., to General Electric Company. Cone beam scanning trajectories for three-dimensional computerized tomography data acquisition where object is larger than the field of view. 5,187,659, Cl. 364-413.150.
Eberhardt, George J.: *See—*
Rogers, Richard E.; Turvy, Larry D., Jr.; Eberhardt, George J.; and Loughman, Richard E., 5,187,374, Cl. 250-561.000.
Ebert, Earl W., to Zygo Corporation. Differential displacement measuring interferometer. 5,187,543, Cl. 356-349.000.
Ecogen Inc.: *See—*
Donovan, William P.; Rupar, Mark J.; Slaney, Annette C.; and Johnson, Timothy B., 5,187,091, Cl. 435-240.400.
Ecolab, Inc.: *See—*
Steindorf, Richard E.; Maeda, Katsumi; Boche, Daniel K.; and Satoh, Yoichi, 5,186,912, Cl. 422-263.000.
Edelstein, Alan S., to United States of America, Navy. Composites having high magnetic permeability and method of making. 5,186,854, Cl. 252-62.550.
Eder, Jean M.; Lambertz, Hans-Reinhard; and Koschmieder, Hartmut, to INA Walzlager Schaeffler KG. Wiper unit for a linear bearing element. 5,186,544, Cl. 384-15.000.
Edler, James P.; and Lisowsky, Bohdan, to Eaton Corporation. Process for making silicon nitride and powders and articles made therefrom. 5,187,129, Cl. 501-97.000.
Edwards, David M.: *See—*
Shellhamer, Terry M.; Ward, James C.; and Edwards, David M., 5,186,981, Cl. 427-247.000.
Edwards, Thomas W. Purge block for pipe welding. 5,187,343, Cl. 219-74.000.
Egashira, Noritaka; Sataka, Naoto; and Akada, Masanori, to Dai Nippon Insatsu Kabushiki Kaisha. Electrothermal transfer sheet. 5,187,002, Cl. 428-195.000.
Egashira, Toshiyuki; Ishizuka, Masahiro; and Banjou, Toshinobu, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for conveying semiconductor lead frame strip using guide rails. 5,186,719, Cl. 29-25.010.
Egger, Friedrich: *See—*
Manser, Josef; Egger, Friedrich; and Seiler, Werner, 5,186,539, Cl. 366-85.000.
Egley, Bert D.; Newell, G. Richard; and Hanson, Richard A., to New SD, Inc. Temperature compensated proofmass assembly for accelerometers. 5,186,053, Cl. 73-497.000.
Egner-Walter, Bruno; and Pleiss, Eberhard, to SWF Auto-Electric GmbH. Double feed pump, in particular for windshield washer systems in motor vehicles. 5,186,606, Cl. 415-152.100.
Eguchi, Hiroshi: *See—*
Kanto, Jumpei; Saito, Hitoshi; Eguchi, Hiroshi; Nakamura, Masayuki; Kafuku, Koumei; Chiba, Junji; and Suda, Kaoru, 5,187,145, Cl. 503-227.000.
Eguchi, Shin: *See—*
Kato, Masayuki; Tomita, Junji; Matsumoto, Tsuyoshi; Aritake, Hirokazu; and Eguchi, Shin, 5,187,597, Cl. 359-22.000.
Eguchi, Tadashi; and Ishii, Satoshi, to Canon Kabushiki Kaisha. Data detector at output of counter. 5,187,725, Cl. 377-56.000.
Eguchi, Toshihiko: *See—*
Shike, Tsutomu; Eguchi, Toshihiko; Kaga, Yosimitu; and Suganuma, Kazuhiko, 5,186,618, Cl. 431-153.000.
Ehrenfreund, Josef, to Ciba-Geigy Corporation. Phenylthioureas, phenylisothioureas and phenylcarbodiimides, compositions, containing them and their use in the control of pests. 5,187,197, Cl. 514-585.000.
Eichenauer, Herbert: *See—*
Lindner, Christian; Eichenauer, Herbert; Lutjens, Holger; and Braese, Hans-Eberhard, 5,187,231, Cl. 525-207.000.

Eimei Company Ltd.: *See—*
Ishii, Yoichi; Mihara, Hisashi; Ho, Lee M.; and Kimura, Goro, 5,186,944, Cl. 424-520.000.
Eisenstadt, Amihai; and Keren, Yehuda, to IMI (TAMI) Institute for Research and Development Ltd. Process for the preparation of octyl methoxy cinnamate. 5,187,303, Cl. 560-55.000.
Eka Nobel AB: *See—*
Jaras, Sven G.; Tokarz, Marek T.; and Persson, Borje, 5,186,917, Cl. 423-239.000.
Ekerdt, Roland: *See—*
Skuballa, Werner; Buchmann, Bernd; Heindl, Josef; Frohlich, Wolfgang; and Ekerdt, Roland, 5,187,286, Cl. 549-283.000.
Ekstrom, Ake, to Asea Brown Bourrc AB. System for discharging electrical power from a high-voltage direct current line to local network. 5,187,651, Cl. 363-35.000.
Elastex, Inc.: *See—*
Tubbs, Robert W., 5,186,779, Cl. 156-161.000.
Electro Wire Products, Inc.: *See—*
Burgess, James P.; Mobley, Dewey; and Vanderstuyf, Al, 5,187,328, Cl. 174-52.200.
ElectroCom Automation L.P.: *See—*
Pippin, James M.; Flagg, Kenneth C., Jr.; and Robertson, Gary S., 5,186,336, Cl. 209-583.000.
Electrostatic Components, Inc.: *See—*
Chapman, Michael; and Sumple, Michael, 5,186,388, Cl. 239-8.000.
Elf Atochem North America, Inc.: *See—*
Carroll, Glenn T.; and Lindstrom, Michael J., 5,186,848, Cl. 252-8.552.
Elf Atochem S.A.: *See—*
Esch, Marc; Colin, Nadine; Guenez, Dominique; and Maraval, Michel, 5,187,309, Cl. 560-218.000.
El Gamal, Abbas; and Chiang, Steve S. S., to Actel Corporation. Reconfigurable programmable interconnect architecture. 5,187,393, Cl. 307-465.100.
Elgavi, Asher: *See—*
Becker, Yigal; Elgavi, Asher; and Shvo, Youval, 5,187,296, Cl. 558-351.000.
El-Hamamsy, Sayed-Amr A.; and Witting, Harald L., to General Electric Company. Electrodeless high intensity discharge lamp. 5,187,412, Cl. 315-248.000.
Eli Lilly and Company: *See—*
Hamill, Robert L.; Hunt, Ann H.; Nagarajan, Ramakrishnan; Schabel, Amelia A.; and Yao, Raymond C., 5,187,082, Cl. 435-71.300.
Ellis, James E. Fuel vapor filter. 5,186,221, Cl. 141-59.000.
Ellis, James S.; and Ellis, Julius A., to Cantrell Machine Company, Inc. Heart and liver harvesting system. 5,186,678, Cl. 452-106.000.
Ellis, Julius A.: *See—*
Ellis, James S.; and Ellis, Julius A., 5,186,678, Cl. 452-106.000.
Ellithorpe, Richard C. Adjustable column cap or base. 5,186,430, Cl. 248-354.300.
El-Rabaa, A. Wadood; Moeckel, George P.; and Strubhar, Malcolm K., to Mobil Oil Corporation. Coupling and recovering seismic detection sensors. 5,187,332, Cl. 181-122.000.
Embree, Milton L., to AT&T Bell Laboratories. Monolithic high-voltage capacitor. 5,187,637, Cl. 361-313.000.
Emhart Inc.: *See—*
Semchuck, Mario E., 5,186,427, Cl. 248-251.000.
Emmons, Floyd R., to United Technologies Corporation. Aircraft cabin pressure control for ascents and descents. 5,186,681, Cl. 454-74.000.
Emrich, Helmut; Muller, Horst; Ruwe, Walter; and Wegel, Erich, to Man Roland Druckmaschinen AG. Device for monitoring sheet movement near the lay marks of sheet-fed offset printing presses. 5,186,105, Cl. 101-217.000.
Emtec Co., Ltd.: *See—*
Ozaki, Haruo, 5,185,965, Cl. 51-283.00E.
Enderle, Heinrich; Heyse, Jorg; and Geidel, Helmut-Arnd, to MTU Motoren-und Turbinen-Union Munchen GmbH. Propelling nozzle. 5,186,390, Cl. 239-265.370.
Endo, Tatsuo; and Mizuno, Mitsuyoshi, to Nikon Corporation. Electrochromic device with low resistance electrical connections. 5,187,607, Cl. 359-266.000.
Endo, Yoshifumi: *See—*
Ohsawa, Ichiro; Kikuchi, Yutaka; Kanoto, Masanobu; Sato, Hideki; Endo, Yoshifumi; and Kawaguchi, Hideshi, 5,186,448, Cl. 271-9.000.
Endo, Yoshiyuki: *See—*
Tanino, Tadatsugu; Furuya, Yoshihiro; Takeda, Toyohiko; Endo, Yoshiyuki; and Inoue, Hayao, 5,186,956, Cl. 425-135.000.
Endo, Yukio: *See—*
Nishiki, Masayuki; and Endo, Yukio, 5,187,584, Cl. 358-213.180.
Engeler, William E., to General Electric Company. Neural net using capacitive structures connecting input lines and differentially sensed output line pairs. 5,187,680, Cl. 364-807.000.
Engh, Duncan C.: *See—*
Wolner, James T.; and Engh, Duncan C., 5,186,289, Cl. 188-180.000.
Englund, Richard L.; and Schwartz, Thomas W., to Minnesota Mining and Manufacturing Company. Compounding, glazing or polishing pad. 5,185,964, Cl. 51-281.00R.
Eni Div. of Astec America, Inc.: *See—*
Chawla, Yogendra K.; and Smith, Steven J., 5,187,457, Cl. 333-170.000.
Enichem S.p.A.: *See—*
Tizabi, Djamshid; and Fischer, Albert G., 5,186,975, Cl. 427-99.000.
Enichem Synthesis, S.p.A.: *See—*
Castaldi, Graziano; Allegrini, Pietro; Crisci, Luciana; and Renzi, Fiorenzo, 5,186,867, Cl. 252-586.000.
Enoki, Toshio: *See—*
Katto, Takayuki; Ichikawa, Yukio; Enoki, Toshio; and Katase, Kenichi, 5,187,257, Cl. 528-388.000.
Enomoto, Masahiro; Patel, Arvind; and Schafer, Jack J., to Molex Incorporated. Retention system for electrical connectors on printed circuit boards. 5,186,654, Cl. 439-570.000.
Environmental Monitoring and Technologies, Inc.: *See—*
Gray, Keith, 5,186,052, Cl. 73-215.000.
Eppig, Christopher P.: *See—*
Paspek, Stephen C.; Hauser, Jeffrey B.; and Eppig, Christopher P., 5,186,817, Cl. 208-188.000.
Epstein, Adam, to Albert Einstein College of Medicine of Yeshiva University. Hemostasis apparatus and method. 5,186,711, Cl. 600-37.000.
Erdman, William L., to U.S. Windpower, Inc. Static reactive power compensator. 5,187,427, Cl. 323-207.000.
Ergo Computing, Inc.: *See—*
Spalding, Tom J.; Kowal, Keith E.; Bleck, James H.; Wakefield, Scott H.; and Thrailkill, John E., 5,187,645, Cl. 361-393.000.
Erhardt, Robert A.: *See—*
Fellows, Mark W.; Wong, John M.; Toy, Edmond; Erhardt, Robert A.; and Thomsen, James A., 5,187,414, Cl. 315-307.000.
Ericson, Richard E., to Minnesota Mining and Manufacturing Company. Reference area usable with a form for correction of form misalignment in a printer. 5,187,774, Cl. 395-111.000.
Ericsson-GE Mobile Communications Holding Inc.: *See—*
Dent, Paul W.; and Haartsen, Jaap C., 5,187,675, Cl. 364-715.060.
Erie Scientific Company: *See—*
Sanford, David P.; Turner, Bruce R.; and Heim, Richard J., 5,186,807, Cl. 204-299.00R.
Eriksson, Jan. Driving device. 5,186,227, Cl. 144-242.00D.
Erkens, Leonardus J. H.; Schmitt, Gregor; Geurts, Herman J. J. M; and Corvers, Werner F. C. G., to Ciba-Geigy Corporation. Process for the preparation of bismuth vanadate pigments, and novel bismuth vanadate pigments of high color strength. 5,186,748, Cl. 106-479.000.
Erni, Markus: *See—*
Fritschi, Isidor; Keller, Urs; and Erni, Markus, 5,185,993, Cl. 57-281.000.
Ervasti, James M.: *See—*
Campbell, Kevin P.; Ervasti, James M.; Ohlendieck, Kay; Gaver, Mitchell G.; and Kahl, Steven D., 5,187,063, Cl. 435-7.210.
Erving, Richard H.; and Miller, Robert R., to AT&T Bell Laboratories. Enhanced acoustic calibration procedure for a voice switched speakerphone. 5,187,741, Cl. 379-388.000.
Erwin, Daniel A.: *See—*
Muntz, Eric P.; Erwin, Daniel A.; Kunc, Joseph A.; and Shiflett, Geoffrey R., 5,186,001, Cl. 60-515.000.
Esch, Marc; Colin, Nadine; Guenez, Dominique; and Maraval, Michel, to Elf Atochem S.A. Process for the continuous preparation of lower acrylates. 5,187,309, Cl. 560-218.000.
Escher, Simon: *See—*
Muller, Gebhard; and Escher, Simon, 5,186,584, Cl. 408-26.000.
Esselte Meto Eas Int. AB: *See—*
Bengtsson, Kjell, 5,187,354, Cl. 235-472.000.
Estee Lauder, Inc.: *See—*
Oestreich, Curtis J.; Cannizzaro, Joseph S.; and Wargo, Joseph S., 5,186,318, Cl. 206-37.000.
Estes, Mary K., to Baylor College of Medicine. Synthesis and immunogenicity of rotavirus genes using a baculovirus expression system. 5,186,933, Cl. 424-89.000.
Estes, William E.; Higley, David P.; Auman, Brian C.; and Feiring, Andrew E., to Du Pont de Nemours, E. I., and Company. Liquid crystal displays of high tilt bias angles. 5,186,985, Cl. 428-1.000.
Estro S.r.l.: *See—*
Willi, Marco, 5,186,096, Cl. 99-282.000.
Eszakmagyarorszagi Vegyimuuek: *See—*
Nagy, Jozsef; Nagy, Istvan; Balogh, Karoly; Mile, Erzsebet; Tarpai, Gyula; Sellei nee Kulik, Katalin; Fodor, Karoly; Kecskes, Mihaly; Toth nee Juhasz, Erzsebet; and Horvath nee Petho , Zsuzsanna, 5,186,723, Cl. 47-58.000.
Etablissements Amyot S.A.: *See—*
Amyot, Claude V. L., 5,186,478, Cl. 279-62.000.
Ethyl Corporation: *See—*
Klobucar, W. Dirk; Kolich, Charles H.; and Manimaran, Thanikavelu, 5,187,136, Cl. 502-162.000.
Kolich, Charles H.; Manimaran, Thanikavelu; and Klobucar, W. Dirk, 5,187,135, Cl. 502-162.000.
Kolich, Charles H.; Manimaran, Thanikavelu; and Klobucar, W. Dirk, 5,187,281, Cl. 556-16.000.
Stahly, G. Patrick, 5,187,285, Cl. 549-241.000.
Etzbach, Kark-Heinz; Wagenblast, Gerhard; Brox, Wolfgang; Paul, Axel; and Bach, Volker, to BASF Aktiengesellschaft. Monomers and their use for the production of a laser-optical recording element which can be repeatedly erased and recorded on. 5,187,298, Cl. 549-555.000.
Etzbach, Karl-Heinz; Wagenblast, Gerhard; Brox, Wolfgang; Paul, Axel; and Bach, Volker, to BASF Aktiengesellschaft. Monomers and their use for the production of a laser-optical recording element which can be repeatedly erased and recorded on. 5,187,248, Cl. 526-243.000.
Eugster, John R., to National Filter Media Corporation. Duplex filter cloth and method. 5,186,998, Cl. 428-102.000.

VOL 1147 ISS 3 FE 16 1993 UMI

Eura, Takashi: *See*—
Haruta, Kenyu; Nagai, Haruhiko; Nakatani, Hajime; Yamamoto, Yoshihiko; Takemura, Taketoshi; Eura, Takashi; Tsuboi, Shungo; Matsushita, Yoshifumi; and Minagawa, Tadao, 5,187,716, Cl. 372-57.000.

Evans, Benjamin F.; Heep, Jerry J.; and Haagen, Peter H., to Tandy Corporation. Universal remote control including quick touch function. 5,187,469, Cl. 340-825.220.

Evans, David A.: *See*—
Boyce, Joseph S.; Ross, James P.; Jens, Stephen C.; and Evans, David A., 5,186,776, Cl. 156-73.200.

Even, Denis, to Labavia S.G.E. Devices for measuring braking torques generated by electromagnetic retarders, and devices for adjusting such torques. 5,187,433, Cl. 324-158.0MG.

Evenson, Erik E.; Wesselski, Clarence J.; and Ruiz, Steve C., to United States of America, National Aeronautics and Space Administration. Quick-connect fasteners for assembling devices in space. 5,186,567, Cl. 403-7.000.

Everett, George, to Rollason Engineering & Mfg., Inc. Apparatus and methods for feeding container crowns and similar articles at high through-put rates. 5,186,305, Cl. 198-392.000.

Everhard, Alan L.: *See*—
Everhard, Paul R.; Everhard, Alan L.; and Monroe, Roy K., 5,186,282, Cl. 187-8.590.

Everhard, Paul R.; Everhard, Alan L.; and Monroe, Roy K., to Aging Technologies, Inc. Vertical transport apparatus. 5,186,282, Cl. 187-8.590.

Everhart, Howard R. Multi-beam liquid-drop size/rate detector apparatus. 5,186,057, Cl. 73-861.410.

Excel Corporation: *See*—
Stadler, Jeffery A., 5,186,356, Cl. 221-250.000.

Exxon Chemical Patents Inc.: *See*—
Gutierrez, Antonio; Song, Won R.; Lundberg, Robert D.; and Kleist, Robert A., 5,186,851, Cl. 252-49.006.
White, Donald A., 5,187,240, Cl. 525-351.000.

Exxon Research and Engineering Company: *See*—
Daage, Michel; and Chianelli, Russell R., 5,186,818, Cl. 208-254.00H.
Davis, Stephen M., 5,187,138, Cl. 502-255.000.
Kaul, Bal K.; O'Bara, Joseph T.; Savage, David W.; Dennis, J. Patrick; Bellows, Richard J.; and Kantner, Edward, 5,186,819, Cl. 208-310.00Z.
Manalastas, Pacifico V.; Drake, Evelyn N.; Kresge, Edward N.; and Thaler, Warren A., 5,187,011, Cl. 428-402.240.
Mchenry, James A.; Deckman, Harry W.; Lai, Wen-Yih F.; Matturro, Michael G.; Jacobson, Allan J.; and Johnson, Jack W., 5,186,833, Cl. 210-321.750.
Murphy, William J., 5,186,799, Cl. 204-157.150.

Eyssautier, Bruno: *See*—
Couderc, Rene ; Eyssautier, Bruno; Laporte, Martine; and Planard, Marie-France, 5,187,081, Cl. 435-71.100.

Fabre, Pierre; Le Tron, Xavier; and Lacoste, Philippe, to Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle. System for reducing the forces applied to the wings and particularly to the root of the wings of an aircraft in flight. 5,186,416, Cl. 244-75.00R.

Fadus, Richard F. Biodegradable multi-container carrier. 5,186,321, Cl. 206-151.000.

Fahey, Laura B.; Garten, Michael D.; and Lyke, David G., to International Business Machines Corporation. Adjustment document storage device for a document sorter. 5,186,335, Cl. 209-552.000.

Fair, Daryl S., to Board of Regents, The University of Texas System. Anticoagulant peptides. 5,187,155, Cl. 514-12.000.

Fairborn USA Inc.: *See*—
Brockman, Thomas R.; and Dillon, Mark, 5,185,977, Cl. 52-173.0DS.

Fairville Medical Optics Inc.: *See*—
Carter, Elbert P., 5,187,506, Cl. 351-221.000.

Falardeau, Leo. Scaffolding double latch locking device. 5,186,568, Cl. 403-49.000.

Falkenberg, E. Frank, to Canyon Enterprises, Inc. Depth gauge transducer retractor device. 5,186,428, Cl. 248-284.000.

Fanning, Desmond G.; and Booth, Nicholas J., to Peter Fanning and Company Proprietary Limited. Spool with holder. 5,186,411, Cl. 242-96.000.

Fanuc Ltd.: *See*—
Kurakake, Mitsuo, 5,187,656, Cl. 364-167.010.

Fanuc Ltd: *See*—
Aso, Toshiyuki; and Hirai, Toshio, 5,187,342, Cl. 219-69.140.

Farley, Herbert M.; and Cooksey, William L., to Case Corporation. Stone trap assembly for a combine. 5,186,683, Cl. 460-105.000.

Farley, Todd: *See*—
Chasteen, Howard; Farley, Todd; Cramer, Richard; and Lockner, Michael, 5,186,279, Cl. 184-15.100.

Farquhar, David; and Wang, Yugiang, to Board of Regents the University of Texas System. Antitumor aldophosphamide glycoside and dideoxyuridine derivatives. 5,187,266, Cl. 536-6.400.

Farrell, Eugene A. Plow assembly with flexible moldboard. 5,185,946, Cl. 37-231.000.

Farrell, Michael E.; Austin, John C.; Kinder, Carla J.; and Matysek, James F., to Xerox Corporation. Handling of copy sensitive jobs in an electronic reprographic printing system using unidirectional and bidirectional delivery of copies to plural bins. 5,187,587, Cl. 358-296.000.

Farros Blatter AG: *See*—
Maier, Urs, 5,185,961, Cl. 54-145.00R.

Fasolt, Eva. Hair curler. 5,186,188, Cl. 132-251.000.

Fauter, Manfred: *See*—
Heel, Helmut; Fauter, Manfred; Mohr, Peter; Friedl, Franz; and Kettel, Hans, 5,186,476, Cl. 279-2.030.

Fazan, Pierre: *See*—
Sandhu, Gurtej S.; and Fazan, Pierre, 5,187,638, Cl. 361-313.000.

Federal-Mogul Corporation: *See*—
Romero, Richard A.; and Bengoa, Jesus, 5,186,472, Cl. 277-37.000.

Feeley, Brian P.: *See*—
Liberti, Paul A.; Feeley, Brian P.; and Gohel, Dhanesh I., 5,186,827, Cl. 210-222.000.

Fein, Melvin J.: *See*—
Pfefferle, Troy; and Fein, Melvin J., 5,186,696, Cl. 482-40.000.

Feinland, Raymond: *See*—
DeMarco, Richard; Feinland, Raymond; and Jachowicz, Janusz, 5,186,929, Cl. 424-71.000.

Feiring, Andrew E.: *See*—
Estes, William E.; Higley, David P.; Auman, Brian C.; and Feiring, Andrew E., 5,186,985, Cl. 428-1.000.

Felberg, Jeff J.: *See*—
Yokelson, Howard B.; Han, James H.; and Felberg, Jeff J., 5,187,254, Cl. 528-73.000.

Felippe, Renato. Rotary phase converter. 5,187,654, Cl. 363-154.000.

Fellows, Mark W.; Wong, John M.; Toy, Edmond; Erhardt, Robert A.; and Thomsen, James A., to North American Philips Corporation. Fluorescent lamp controllers. 5,187,414, Cl. 315-307.000.

Ference, Jonathan H.: *See*—
Post, Robert P.; D'Aleo, Michael J.; Keeports, Doug W.; Ference, Jonathan H.; Luchaco, David G.; and Spira, Joel S., 5,187,655, Cl. 364-146.000.

Ferlin, William J., to Lincoln Brass Works, Inc. Gas burner. 5,186,158, Cl. 126-39.00H.

Ferretti, Joseph J.: *See*—
Malke, Horst; and Ferretti, Joseph J., 5,187,098, Cl. 435-320.100.

Ferro Corporation: *See*—
Walkowski, Timothy L., 5,187,202, Cl. 524-35.000.

Feustel, Michael; and Ritschel, Werner, deceased (by Ritschel, Maria A., nee Breunig, heir), to Hoechst Aktiengesellschaft. Use of products of the reaction of alkenyl-spiro-bislactones with amines as paraffin-dispersants. 5,186,720, Cl. 44-351.000.

Fibercast Company: *See*—
Martin, Carl E., 5,186,502, Cl. 285-133.100.

Ficcaglia, Linda I.; Guittard, Mark P.; and Neumann, Stephen M., to Eastman Kodak Company. Method for increasing adhesion of spacer beads on a dye-donor or dye-receiving element for laser-induced thermal dye transfer. 5,187,146, Cl. 503-227.000.

Fickenscher, Karl: *See*—
Bouchee, Bernhard; and Fickenscher, Karl, 5,186,896, Cl. 422-72.000.

Fico, Anthony: *See*—
Taccetta, Alfonse; and Fico, Anthony, 5,187,383, Cl. 307-10.800.

Fiddian-Green, Richard G., to Mountpelier Investments, S.A. Remote sensing tonometric catheter apparatus. 5,186,172, Cl. 128-632.000.

Fields, Scott J.: *See*—
Marin, Thomas C.; Fields, Scott J.; and Richter, Stephen B., 5,186,463, Cl. 273-138.00R.

Files, James G.: *See*—
Andrews, William H.; Brothers, Virginia M.; Files, James G.; Kuhn, Irene; McCaman, Michael T.; Sias, Stacey R.; Paul, Leland S.; Gore, Thomas C.; Newman, Karel Z., Jr.; and Tedesco, John L., 5,187,080, Cl. 435-69.300.

Filice, Gary W.: *See*—
Easton, James L.; and Filice, Gary W., 5,186,470, Cl. 273-416.000.

Filosa, Michael P.: *See*—
Carlier, Paul R.; Filosa, Michael P.; and Lockshin, Mary P., 5,187,282, Cl. 548-455.000.

Finzel, Lothar; and Ruckgaber, Thomas, to Siemens Aktiengesellschaft. Optical fiber waveguide division rack for holding plural cassettes. 5,187,766, Cl. 385-135.000.

Fiocchi, Roberto, to Sprint Filter S.r.l. Expanding device for supporting grinding sleeves. 5,185,970, Cl. 51-372.000.

Fiorenza, John A., II: *See*—
Brunelli, Brian; and Fiorenza, John A., II, 5,186,142, Cl. 123-339.000.

Firmin, Jean-Luc; and Alexandre, Alain, to SAFT. Electrochemical battery having high energy per unit mass. 5,187,030, Cl. 429-120.000.

Fischer, Albert G.: *See*—
Tizabi, Djamshid; and Fischer, Albert G., 5,186,975, Cl. 427-99.000.

Fischer, Jurgen: *See*—
Birkle, Siegfried; Fischer, Jurgen; and Gehring, Johann, 5,186,803, Cl. 204-201.000.

Fischer, Karl-Heinz; and Jentzsch, Arndt, to KBA-Planeta AG. Arrangement on transfer drum for in-registry sheet transfer. 5,186,106, Cl. 101-242.000.

Fischer, Randy S.; and Jensen, Roy A. Method for the selective control of weeds, pests, and microbes. 5,187,071, Cl. 435-32.000.

Fischer, Reiner; Baasner, Bernd; Hageman, Hermann; Krebs, Andreas; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; Becker, Benedikt; Schaller, Klaus; and Strang, Harry, to Bayer Aktiengesellschaft. Pesticidal 3-aryl-pyrrolidine-2,4-diones. 5,186,737, Cl. 504-283.000.

Fisher-Price, Inc.: *See*—
Beckhusen, Gerard F.; and Mowrer, Gail S., 5,186,674, Cl. 446-144.000.

Fishman, Jack: *See*—
Frost, Phillip; Fishman, Jack; Hahn, Elliot; and Lu, Jing J., 5,187,163, Cl. 514-47.000.

Fishman, Royce S., to Praxair Technology Inc. Magnetic resonance human medical and veterinary imaging method. 5,186,924, Cl. 424-9.000.

Fitt, Larry E.; Pienkowski, James J.; and Wallace, Jack R., to CPC International Inc. Method of making a carrier phase composition and a high-speed starch-based corrugating adhesive containing a carrier phase comprised of starch, modified starch or dextrin and polyvinyl alcohol. 5,187,210, Cl. 524-48.000.

Flachglas Consult GmbH: *See*—
Kallinich, Dietmar; Kahlert, Wolfgand; Wind, Heinz; and Lehmann, Friedrich, 5,186,217, Cl. 138-149.000.

Flagg, Kenneth C., Jr.: *See*—
Pippin, James M.; Flagg, Kenneth C., Jr.; and Robertson, Gary S., 5,186,336, Cl. 209-583.000.

Flanigen, Edith M.: *See*—
Skeels, Gary W.; Chapman, Diane M.; and Flanigen, Edith M., 5,186,918, Cl. 423-718.000.

Flasch, John R., to Akzo nv. Low volatile organic content hybrid silica binder. 5,186,743, Cl. 106-38.350.

Fleissner, Gerold, to Fleissner Maschinenfabrik AG. Device for through-flow processing of web material. 5,185,940, Cl. 34-115.000.

Fleissner Maschinenfabrik AG: *See*—
Fleissner, Gerold, 5,185,940, Cl. 34-115.000.

Florent, Raoul, to U.S. Philips Corporation. Device for selectively detecting a moving object. 5,187,689, Cl. 367-99.000.

Florida State University: *See*—
Ng, Hon-Kie; and Kilibarda-Dalafave, Snezana, 5,187,147, Cl. 505-1.000.

Flory, Donald M.: *See*—
Osterday, Craig A.; Osterfeld, Douglas L.; Baumaster, Thomas R.; Welch, Timothy M.; Trego, Michael P.; and Flory, Donald M., 5,185,915, Cl. 29-525.000.

Flotow, Richard A., to Dana Corporation. Coupling for connecting shafts. 5,186,573, Cl. 403-300.000.

Flowers, Henry C. Multi-function cart. 5,186,479, Cl. 280-47.350.

Fluck, Rene , to Sig Schweizerische Industrie-Gesellschaft. Method and apparatus for forming groups of flat items. 5,186,599, Cl. 414-792.900.

Fluidyne Corporation: *See*—
Yie, Gene G., 5,186,393, Cl. 239-583.000.

Fobare, William F.; and Strike, Donald P., to American Home Products Corporation. N-phenyl-N'-benzothienylmethyl-bis-diamino-5-methylene-1,3-dioxane-4,6-dione derivatives. 5,187,284, Cl. 549-58.000.

Fodor, Karoly: *See*—
Nagy, Jozsef; Nagy, Istvan; Balogh, Karoly; Mile, Erzsebet; Tarpai, Gyula; Sellei nee Kulik, Katalin; Fodor, Karoly; Kecskes, Mihaly; Toth nee Juhasz, Erzsebet; and Horvath nee Petho , Zsuzsanna, 5,186,723, Cl. 47-58.000.

Fogarty, A. Edward; and Fogarty, Bonnie R. Removable clothing in combination with a doll. 5,186,673, Cl. 446-98.000.

Fogarty, Bonnie R.: *See*—
Fogarty, A. Edward; and Fogarty, Bonnie R., 5,186,673, Cl. 446-98.000.

Fogelberg, Donald D. Portable tool holder. 5,186,329, Cl. 206-372.000.

Fogle, Ronald L.: *See*—
Sugiura, Ikuzo; Uchimura, Mitsuo; Kawamura, Kouichi; Fogle, Ronald L.; and Huggins, Orville C., 5,186,553, Cl. 400-242.000.

Folkers, Joie L., to Ameron, Inc. Fiberglass tubular coupling with liner. 5,186,500, Cl. 285-55.000.

Fong, James C. Folding pocket brush and shoehorn. 5,185,902, Cl. 15-105.000.

Fong, Raymond T., to Shell Oil Company. Process for removing volatile organic materials. 5,186,728, Cl. 55-90.000.

Fongeallaz, Carl: *See*—
Fongeallaz, Laura; Fongeallaz, Carl; and Weinstein, Albert, 5,186,460, Cl. 273-86.00B.

Fongeallaz, Laura; Fongeallaz, Carl; and Weinstein, Albert. Computer-controlled racing game. 5,186,460, Cl. 273-86.00B.

Forbes, A. Dean, to Hewlett-Packard Company. Cardiac analyzer with REM sleep detection. 5,187,657, Cl. 364-413.060.

Ford, James M.; Cawlfield, David W.; and Woodard, Kenneth E., Jr., to Olin Corporation. Liquid metal cathode electrochemical cell. 5,186,804, Cl. 204-251.000.

Ford, John: *See*—
Boucher, Paul; Boucher, Mario; Ford, John; and Stephenson, Gregg, 5,186,596, Cl. 414-395.000.

Ford Motor Company: *See*—
Forgacs, Robert L., 5,187,464, Cl. 338-149.000.
Helms, Jeffrey H., 5,186,813, Cl. 205-171.000.
Hickey, John C., 5,185,919, Cl. 29-602.100.
Magnan, Michael B.; Reichling, Charles A.; and Wells, Robert H., 5,186,129, Cl. 123-90.340.
McDonagh, Lawrence P.; Clarke, William H.; Stinson, Jonathan D.; and Lopez, John V., 5,186,439, Cl. 267-35.000.
Young, Darryl L.; Hirmann, Josef; Rhodes, Eugene E.; and Brightwell, David L., 5,186,239, Cl. 165-81.000.

Ford New Holland, Inc.: *See*—
McLean, Kenneth W., 5,186,271, Cl. 180-14.400.

Forensic Applications Corporation: *See*—
Jensen, Richard E.; Nichols, Donald H.; and Hemphill, D. Gary, 5,186,900, Cl. 422-104.000.

Forgacs, Robert L., to Ford Motor Company. Extended life potentiometric position transducer. 5,187,464, Cl. 338-149.000.

Forlani, Riccardo; and Olivero, Michele, to Olivetti-Canon Industriale S.p.A. Device for eliminating the curl of sheets emerging from a fixing station. 5,187,527, Cl. 355-282.000.

Forsheda AB: *See*—
von Feilitzen, Johan, 5,186,503, Cl. 285-174.000.

Fort Lock Corporation: *See*—
Myers, Gary L., 5,186,029, Cl. 70-38.00A.

Forterre, Gerard E. E.; and Guillon, Pierre, to Tekelec Airtronic. Microstrip line resonator with a feedback circuit. 5,187,460, Cl. 333-219.000.

Fortner, Larry E.; Gustin, Paul R.; Hasler, Leonard F.; Johnson, Harold E.; Maul, George R.; Reed, David L.; and Reichard, George W., Jr., to AT&T Bell Laboratories. Modular plug having enhanced cordage strain relief provisions. 5,186,649, Cl. 439-460.000.

Foss, Robert P., to Du Pont de Nemours, E. I., and Company. Silver halide emulsion containing acrylic amphoteric polymers. 5,187,059, Cl. 430-627.000.

Fostec, Inc.: *See*—
Muehlemann, Michael M.; and Mueller, Rolf H., 5,187,765, Cl. 385-115.000.

Foster, Brian; and Blair, John, to Schlumberger Technology Corporation. Method and apparatus for logging a well below a downhole pump. 5,186,048, Cl. 73-155.000.

Foster, L. Dale; and Kappers, Timothy A., to Hill-Rom Company, Inc. Pivoted power column. 5,186,337, Cl. 211-26.000.

Foster, Michael R.: *See*—
Richmond, Russel P.; and Foster, Michael R., 5,187,142, Cl. 502-439.000.

Foster-Miller, Inc.: *See*—
Boyce, Joseph S.; Ross, James P.; Jens, Stephen C.; and Evans, David A., 5,186,776, Cl. 156-73.200.

Foster, Randy C., to Dayco Products, Inc. Fuel dispensing system having a flexible hose with a static dissipater and a fuel leak detector. 5,186,357, Cl. 222-1.000.

Foure, Jean-Luc: *See*—
Alard, Michel; and Foure, Jean-Luc, 5,187,807, Cl. 455-17.000.

Fournier, Oscar A. Boat hull support. 5,186,576, Cl. 405-7.000.

Fowler-Pennington, Veronica J.: *See*—
Pennington, M. Steve; and Fowler-Pennington, Veronica J., 5,186,610, Cl. 417-61.000.

Fox, Mary M.; Heckert, David C.; and Luhrsen, Kenneth R., to Procter & Gamble Company, The. Calcium citrate malate composition. 5,186,965, Cl. 426-74.000.

Foxboro Company, The: *See*—
Garner, Ronald N.; and Vernon, Robert D., 5,187,642, Cl. 361-386.000.

Framatome: *See*—
Malaval, Claude, 5,186,888, Cl. 376-280.000.

France Telecom: *See*—
Mehadji, Kada; Mathern, Andre; and Le Penven, Rene, 5,187,761, Cl. 385-76.000.

France Telecom (CNET): *See*—
Galvier, Jean; Gayet, Philippe; and Tissier, Annie, 5,186,786, Cl. 156-626.000.
Tissier, Annie; and Teissier, Jean-Francois, 5,186,040, Cl. 73-54.010.

France Telecom Establissement autonome de droit public: *See*—
Bonis, Maurice, 5,187,122, Cl. 437-200.000.

Franckowiak, Sigismond: *See*—
Dang Vu, Quang; Franckowiak, Sigismond; Grehier, Alain; Vacher, Philippe; and Burzynski, Jean-Pierre, 5,186,909, Cl. 422-213.000.

Franco, Francis G.; and McIlveen, Nelson D., to Illinois Tool Works Inc. End connector for tubing. 5,186,572, Cl. 403-251.000.

Franconi, Cafiero; and Vrba, Jan. Radio frequency thermotherapy. 5,186,181, Cl. 128-804.000.

Francotyp-Postalia GmbH: *See*—
Dietrich, Klaus, 5,186,498, Cl. 283-67.000.

Frandsen, Aksel S. Pump arrangement for pumping liquid by means of compressed air. 5,186,611, Cl. 417-138.000.

Frank, Albin: *See*—
Ball, Peter; Christ, Josef; Frank, Albin; Marquardt, Klaus; and Selig, Manfred, 5,187,233, Cl. 525-267.000.

Frank, Ernest R.: *See*—
Buchwalter, Stephen L.; Frank, Ernest R.; O'Toole, Terrence R.; Thomas, Richard R.; and Viehbeck, Alfred, 5,187,241, Cl. 525-420.000.

Frankel, Rise J.; and Liu, K. S., to AT&T Bell Laboratories. Dual access rings for communications networks. 5,187,706, Cl. 370-16.100.

Fraschilla, John: *See*—
Whelan, David A.; and Fraschilla, John, 5,187,489, Cl. 343-767.000.

Fraser, Michael J., to Turbine Blading Limited. Method of repair of turbines. 5,185,924, Cl. 29-889.100.

Free, Stephen J.; McNally, Mark T.; and Tarawneh, Khaled A., to Research Foundation of State University of New York, The. Glucose-repressible gene for the regulated expression of proteins and expression vector therefor. 5,187,079, Cl. 435-69.100.

Freed, Brian S.: *See*—
Hamer, Russell R. L.; Helsley, Grover C.; Glamkowski, Edward J.; Chiang, Yulin; Freed, Brian S.; and Kurys, Barbara E., 5,187,165, Cl. 514-307.000.

Freedman, Melvin S., to Avery Dennison Corporation. Method for high speed labelling of deformable substrates. 5,186,782, Cl. 156-244.110.

Freeman, Gary M., to J. M. Huber Corporation. High performance sams pigments of low oil, absorption, preparation, properties and end-use applications. 5,186,746, Cl. 106-416.000.

Freeman, Mark A.; and Stringer, Timothy K. Spill-proof closure. 5,186,347, Cl. 220-254.000.

VOL
1147
ISS
3
FE
16
1993
UMI

Fresenius AG: *See—*
Otto, Veit; Weber, Wolfram; Muller-Stein, Iris; and Schiebler, Wolfgang, 5,186,826, Cl. 210-198.200.

Freund, Friedemann; Batllo, Francois; and Freund, Minoru M. Method and apparatus for charge distribution analysis. 5,187,442, Cl. 324-452.000.

Freund Inphachem Inc.: *See—*
Takei, Narimichi, 5,186,948, Cl. 425-5.000.

Freund, Minoru M.: *See—*
Freund, Friedemann; Batllo, Francois; and Freund, Minoru M., 5,187,442, Cl. 324-452.000.

Friedl, Franz: *See—*
Heel, Helmut; Fauter, Manfred; Mohr, Peter; Friedl, Franz; and Kettel, Hans, 5,186,476, Cl. 279-2.030.

Friesen, Henry G.: *See—*
Sato, Yuji; and Friesen, Henry G., 5,187,062, Cl. 435-7.940.

Frings, Albert: *See—*
Seiler, Claus-Dietrich; Schork, Reinhold; Frings, Albert; Kotzsch, Hans-Joachim; and Rauleder, Hartwig, 5,187,291, Cl. 556-442.000.

Frisbee, Claude M.; Sealine, Ronald L.; and Werner, Ronald H., to Case Corporation. Tractor pedal arrangement with anti-declutching feature. 5,186,295, Cl. 192-13.00R.

Fritschi, Isidor; Keller, Urs; and Erni, Markus, to Rieter Machine Works, Ltd. Spinning machine having a peg tray conveyor. 5,185,993, Cl. 57-281.000.

Fritz, Martin: *See—*
Maass, Manfred; Bunke, Joachim; and Fritz, Martin, 5,187,426, Cl. 322-63.000.

Fritzsche, Robert W.; and Schlager, Kenneth J., to Orbit Medical Systems, Inc. Method and apparatus for homogeneous fluorescence measurements. 5,187,106, Cl. 436-501.000.

Froehling, Peter E.: *See—*
Krijger, Louis C.; Jansen, Jozef M. A.; Hoen, Nicolaas G. M.; Steenbakkers, Laurentius W.; and Froehling, Peter E., 5,186,862, Cl. 252-512.000.

Frohlich, Wolfgang: *See—*
Skuballa, Werner; Buchmann, Bernd; Heindl, Josef; Frohlich, Wolfgang; and Ekerdt, Roland, 5,187,286, Cl. 549-283.000.

Frost, Phillip; Fishman, Jack; Hahn, Elliot; and Lu, Jing J., to Baker Norton Pharmaceuticals, Inc. Anti-viral compounds, dosage forms and methods. 5,187,163, Cl. 514-47.000.

Fryc, Oldrich; and Olive, Ronald M., to Boeing Company, The. Holddown device for articles on a conveyor. 5,186,311, Cl. 198-626.600.

Fu, Peter P. Cooking sauce dispenser and stand. 5,186,559, Cl. 401-44.000.

Fuchs, Helmut; Wilmsmann, Ute; and Fuhrmeister, Lothar, to Karl Lumberg GmbH & Co., Firma. Plug connector, especially for the releasable connection of electrical conductors. 5,186,651, Cl. 439-495.000.

Fuhrmann, Arthur D., III; Stevens, Craig; and Gramolini, Glenn, to BIC Corporation. Vented removable cap. 5,186,564, Cl. 401-202.000.

Fuhrmeister, Lothar: *See—*
Fuchs, Helmut; Wilmsmann, Ute; and Fuhrmeister, Lothar, 5,186,651, Cl. 439-495.000.

Fuji Kiko Company, Limited: *See—*
Kataumi, Yoshimasa; and Kondo, Yoshinobu, 5,186,076, Cl. 74-560.000.

Fuji Photo Film Co., Ltd.: *See—*
Hayashi, Yasuhiro, 5,187,053, Cl. 430-505.000.
Ikenoue, Shinpei, 5,187,514, Cl. 354-275.000.
Inoue, Nobuaki, 5,187,058, Cl. 430-567.000.
Ishikawa, Takatoshi, 5,187,051, Cl. 430-448.000.
Katoh, Kazunobu; Okamura, Hisashi; Okada, Hisashi; Inoue, Nobuaki; Takahashi, Toshiro; Yagihara, Morio; and Yamaguchi, Tetsuo, 5,187,042, Cl. 430-264.000.
Katsuyama, Harumi, 5,186,894, Cl. 422-56.000.
Kitagawa, Kuniharu, 5,187,518, Cl. 355-40.000.
Kobayashi, Hidetoshi; Shimada, Yasuhiro; Ichijima, Seiji; and Ishii, Yoshio, 5,187,055, Cl. 430-544.000.
Kubo, Hiroshi; and Imahuzi, Keitetsu, 5,186,976, Cl. 427-129.000.
Morita, Kiyoo; and Oishi, Kengo, 5,186,955, Cl. 425-130.000.
Okazaki, Yoji; and Hyuga, Hiroaki, 5,187,714, Cl. 372-36.000.
Ozawa, Yoshio; Hosoya, Mitsukazu; Matsumoto, Takashi; and Saito, Kimitoshi, 5,187,531, Cl. 355-308.000.
Saito, Naoki; and Mihayashi, Keiji, 5,187,056, Cl. 430-544.000.
Shimura, Kazuo, 5,187,731, Cl. 378-207.000.
Takeo, Hideya, 5,187,752, Cl. 382-41.000.
Yamada, Minoru; Toyoda, Takashi; and Yamada, Sumito, 5,187,050, Cl. 430-399.000.

Fuji Xerox Co., Ltd.: *See—*
Hibi, Yoshiharu; and Terada, Yoshihiro, 5,187,570, Cl. 358-80.000.

Fujie, Toru; and Hadama, Shigeyuki, to Atsugi Unisia Corporation. Fluid pressure actuated switch for fluid pump. 5,187,337, Cl. 200-82.00R.

Fujihara, Shigemi, to Kabushiki Kaisha Toshiba. X-ray diagnostic system and method of picking up X-ray picture. 5,187,730, Cl. 378-97.000.

Fujii, Takeo, to NEC Corporation. Dynamic random access memory device including stacked capacitors each having a lower electrode aligned with an upper electrode without tolerance and process of fabrication thereof. 5,187,549, Cl. 257-306.000.

Fujikawa, Shoji; and Haraguchi, Hideaki, to Matsushita Electric Works, Ltd. Hair cutter. 5,185,931, Cl. 30-201.000.

Fujikawa, Takao: *See—*
Someya, Nobuo; Kitazato, Tadao; Fujikawa, Takao; and Manabe, Yasuo, 5,187,125, Cl. 501-1.000.

Fujikawa, Yoshiharu: *See—*
Niina, Tatsuhiko; Ohta, Kiyoshi; Nakata, Toshitake; Matsushita, Yasuhiko; Uetani, Takahiro; and Fujikawa, Yoshiharu, 5,187,547, Cl. 257-77.000.

Fujiki, Tsutomu: *See—*
Doi, Shigetoshi; and Fujiki, Tsutomu, 5,186,387, Cl. 236-49.300.

Fujikiko Kabushiki Kaisha: *See—*
Asano, Yasushi; and Kataumi, Yoshimasa, 5,186,069, Cl. 74-477.000.

Fujimoto, Shinji, to Kabushiki Daisha Daikin Seisakusho. Damper disk. 5,186,293, Cl. 192-3.280.

Fujimoto, Yuka: *See—*
Kato, Hiromasa; Fujimoto, Yuka; Nozawa, Akiyoshi; and Kuwata, Shinichi, 5,187,101, Cl. 436-42.000.

Fujimura, Yoshiichi: *See—*
Tsuji, Tetsuo; and Fujimura, Yoshiichi, 5,186,493, Cl. 280-806.000.

Fujinami, Kyouichi: *See—*
Maeno, Takashi; Fujinami, Kyouichi; Kawahara, Hiroaki; and Asano, Tetsuo, 5,185,916, Cl. 29-525.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Matsuo, Masaaki; Hagiwara, Daijiro; and Miyake, Hiroshi, 5,187,156, Cl. 514-18.000.
Oohata, Nobutaka; Nishikawa, Motoaki; Kiyoto, Sumio; Takase, Shigehiro; Hemmi, Keiji; Murai, Hidetsugu; and Okuhara, Masakuni, 5,187,195, Cl. 514-510.000.
Sakane, Kazuo; Kawabata, Kohji; Miyai, Kenzi; and Inamoto, Yoshiko, 5,187,160, Cl. 514-202.000.

Fujita, Hiroyuki: *See—*
Shinozawa, Toshiyuki; Fujita, Hiroyuki; and Arai, Hideaki, 5,186,131, Cl. 123-146.50A.

Fujita, Masanori; Okamoto, Shinichi; and Ono, Hirokazu, to Seikosha Co., Ltd. Piezoelectric device and related converting devices. 5,187,402, Cl. 310-322.000.

Fujitsu Limited: *See—*
Hirao, Naoto, 5,186,451, Cl. 271-196.000.
Hodohara, Kiyoaki, 5,187,711, Cl. 371-7.000.
Kanai, Hitoshi; Kanamine, Michiaki; and Kobayashi, Kazuo, 5,187,628, Cl. 360-126.000.
Kato, Masayuki; Tomita, Junji; Matsumoto, Tsuyoshi; Aritake, Hirokazu; and Eguchi, Shin, 5,187,597, Cl. 359-22.000.
Nishimori, Miki; and Seki, Teruo, 5,187,397, Cl. 307-578.000.
Shikata, Kiyotaka; and Takao, Shinji, 5,187,605, Cl. 359-152.000.
Suzuki, Masayoshi, 5,187,732, Cl. 379-5.000.
Ueda, Masanori; Sawada, Hisashi; Tanaka, Akira; and Wakatsuki, Noboru, 5,187,758, Cl. 385-16.000.

Fujiwara, Akihiro: *See—*
Kaneda, Kitahiro; Yamada, Kunihiko; Fujiwara, Akihiro; Suda, Hirofumi; and Toyama, Masamichi, 5,187,585, Cl. 358-227.000.

Fujiwara, Tatsuro: *See—*
Shuto, Satoshi; Obara, Takumi; Itoh, Hiromichi; Koshio, Takehiro; Fujiwara, Tatsuro; and Yaso, Masao, 5,187,174, Cl. 514-261.000.

Fujiyoshi, Kazuo: *See—*
Maruyama, Fumio; Aizawa, Shiro; and Fujiyoshi, Kazuo, 5,186,816, Cl. 208-135.000.

Fukada, Hirotaka: *See—*
Tarekado, Kenji; Nakamura, Masanori; Hokazono, Kazuaki; Fukada, Hirotaka; and Ishikawa, Takashige, 5,186,126, Cl. 123-52.0MB.

Fukada, Takeshi: *See—*
Yamazaki, Shunpei; Fukada, Takeshi; Sakama, Mitsunori; Amachi, Nobumitsu; Sakamoto, Naoya; Codama, Mitsufumi; Fuki, Takashi; and Takayama, Ichiro, 5,187,601, Cl. 359-54.000.

Fukai, Kunio: *See—*
Nagasawa, Masakazu; Handa, Masami; Fukai, Kunio; and Hirozumi, Yasuo, 5,186,671, Cl. 445-49.000.

Fukaya, Atsushi: *See—*
Kawai, Katsunori; Fukaya, Atsushi; and Nakajima, Toshiyuki, 5,186,475, Cl. 277-181.000.

Fuki, Takashi: *See—*
Yamazaki, Shunpei; Fukada, Takeshi; Sakama, Mitsunori; Amachi, Nobumitsu; Sakamoto, Naoya; Codama, Mitsufumi; Fuki, Takashi; and Takayama, Ichiro, 5,187,601, Cl. 359-54.000.

Fukuchi, Hironao: *See—*
Miyashita, Yukio; Mifune, Hiroshi; Noguchi, Kunio; and Fukuchi, Hironao, 5,186,155, Cl. 123-685.000.

Fukuda, Tatsuya: *See—*
Ishii, Hidehiro; Takeya, Hiroshi; Miura, Chiharu; and Fukuda, Tatsuya, 5,187,696, Cl. 369-44.290.

Fukudome, Yoshio; Hamada, Yasunori; Okayama, Masao; Kako, Yutaka; Saito, Tetsuo; and Utsumi, Itsunori, to Hitachi, Ltd. Bank note handling apparatus of a recirculating type. 5,186,334, Cl. 209-534.000.

Fukuhara, Keiji, to Mazda Motor Corporation. Method of manufacturing of a novel hollow multi-layer article. 5,186,875, Cl. 264-37.000.

Fukui, Kiyoshi: *See—*
Nomoto, Masai; Sakurai, Koichi; Suzuki, Takashi; Fukui, Kiyoshi; and Okamoto, Atsuki, 5,186,768, Cl. 148-580.000.

Fukui, Tetsuro: *See—*
Mouri, Akihiro; Isaka, Kazuo; Fukui, Tetsuro; and Katayama, Masato, 5,187,041, Cl. 430-201.000.

Fukui, Wataru, to Mitsubishi Denki Kabushiki Kaisha. Ignition control system with cylinder identification evaluation. 5,186,144, Cl. 123-414.000.

Fukumi, Hiroshi; Sakamoto, Toshiaki; Sugiyama, Mitsuo; Yamaguchi, Takeshi; Oshima, Takeshi; and Iijima, Yasuteru, to Sankyo Company Limited. Thiazolidinecarboxylic acid amide derivatives having anti-allergic activity, their preparation and their use. 5,187,181, Cl. 514-318.000.

Fukumoto, Ryutaro: *See—*
Morishima, Ryuji; Asai, Katsutoshi; Fukumoto, Ryutaro; and Isomichi, Kanji, 5,186,134, Cl. 123-179.500.

Fukumoto, Takaaki: *See—*
Yanagi, Motonori; Hama, Masaharu; Fukumoto, Takaaki; and Tsukaguchi, Miki, 5,186,907, Cl. 422-186.300.

Fukunishi, Yoshiharu: *See—*
Kamachi, Mikiharu; Yamamoto, Tohei; Sato, Toshiaki; and Fukunishi, Yoshiharu, 5,187,226, Cl. 525-56.000.

Fukuoka, Hiroshi: *See—*
Sonobe, Kozo; Fukuzawa, Takashi; Takeuchi, Kohsuke; Tabata, Tatushi; Fukuoka, Hiroshi; Hisamatsu, Kunio; and Katamura, Makoto, 5,187,126, Cl. 501-65.000.

Fukuoka, Naohiko; Kubota, Kazunobu; and Iguchi, Kunitoshi, to Chemipro Kasei Kaisha, Ltd. Method of preparing 2-phenyl benzotriazoles. 5,187,289, Cl. 548-260.000.

Fukushima, Masao: *See—*
Kadomukai, Yuzo; Yamakado, Makoto; Maeda, Yuji; Nakamura, Kenichi; Fukushima, Masao; and Murakami, Kei, 5,186,136, Cl. 123-192.100.

Fukushima, Toshihiko: *See—*
Kunugi, Yoshifumi; Yanadori, Michio; Fukushima, Toshihiko; and Ohuchi, Tomihisa, 5,186,241, Cl. 165-104.120.

Fukushima, Toshitaka: *See—*
Shibata, Koichi; Fukushima, Toshitaka; Watanabe, Hiroyuki; Miyahara, Shinichiro; and Imagawa, Osamu, 5,187,441, Cl. 324-426.000.
Shibata, Koichi; Fukushima, Toshitaka; Watanabe, Hiroyuki; Miyahara, Shinichiro; and Imagawa, Osamu, 5,187,720, Cl. 375-35.000.

Fukuyama, Masao: *See—*
Kudoh, Yasuo; Fukuyama, Masao; Kojima, Toshikuni; and Nanai, Norishige, 5,187,649, Cl. 361-525.000.
Kudoh, Yasuo; Fukuyama, Masao; Kojima, Toshikuni; and Nanai, Norishige, 5,187,650, Cl. 361-525.000.

Fukuyama, Takahiko; Kozawa, Satosi; Ishiguro, Kazuyoshi; Akita, Toshiki; and Hori, Seiji, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Switch with interlocked operators. 5,187,335, Cl. 200-5.00B.

Fukuzawa, Takashi: *See—*
Sonobe, Kozo; Fukuzawa, Takashi; Takeuchi, Kohsuke; Tabata, Tatushi; Fukuoka, Hiroshi; Hisamatsu, Kunio; and Katamura, Makoto, 5,187,126, Cl. 501-65.000.

Fuller Research Corporation: *See—*
Fuller, Terry A.; Nadkarni, Vijay J.; and Peschke, John R., 5,186,870, Cl. 264-1.200.

Fuller, Robert A.: *See—*
Hoshizaki, Gary W.; Caby, Glen; and Fuller, Robert A., 5,187,394, Cl. 307-449.000.

Fuller, Terry A.; Nadkarni, Vijay J.; and Peschke, John R., to Fuller Research Corporation. Process for fabricating an IR transmitting optical fiber. 5,186,870, Cl. 264-1.200.

Funakura, Masami: *See—*
Yoshida, Yuji; Tagashira, Minoru; Nakatani, Kazuo; and Funakura, Masami, 5,186,011, Cl. 62-114.000.

Fung, Daniel Y. C.; and Yu, Linda, to Kansas State University Research Foundation. Assay for motile facultative anaerobic pathogens. 5,187,070, Cl. 435-25.000.

Furman, Gary S., Jr., to Nalco Chemical Company. Water soluble polyols in combination with glyoxlated acrylamide/diallyldimethyl ammonium chloride polymers as Yankee dryer adhesive compositions. 5,187,219, Cl. 524-377.000.

Furst, Merrick L.: *See—*
Goldberg, Kenneth Y.; and Furst, Merrick L., 5,186,515, Cl. 294-119.100.

Furukawa Electric Co., Ltd., The: *See—*
Kimura, Hitoshi; Matsumoto, Tetsuo; and Shimada, Michihiro, 5,187,009, Cl. 428-383.000.
Nishizawa, Takeshi; and Ooba, Kazuhiko, 5,186,252, Cl. 165-181.000.

Furuoya, Itsuo; Suzuki, Takashi; and Takahashi, Takeshi, to Takeda Chemical Industries, Ltd. Choline oxidase and method for producing the same. 5,187,088, Cl. 435-191.000.

Furuya, Yoshihiro: *See—*
Tanino, Tadatsugu; Furuya, Yoshihiro; Takeda, Toyohiko; Endo, Yoshiyuki; and Inoue, Hayao, 5,186,956, Cl. 425-135.000.

Fushimi, Kazuhiro, to Tokyo Electric Co., Ltd. Printer. 5,186,557, Cl. 400-691.000.

Fushimi, Seiichiro; and Sugiyama, Yoshihiko, to Kabushiki Kaisha Toshiba. Image forming apparatus including a device for simultaneous developing/cleaning and having distribution brush. 5,187,525, Cl. 355-269.000.

Futami, Toru; Hirai, Kazuo; and Tezuka, Shigeki, to Nissan Motor Co., Ltd. Vehicle equipment position control system and the method therefor. 5,187,665, Cl. 364-424.050.

Future Automation, Inc.: *See—*
Schlenker, Heinz W.; Hirbour, Louis J.; and Gramarossa, Daniel J., 5,186,797, Cl. 204-146.000.

G. D. Searle & Co.: *See—*
Bovy, Philippe R.; Collins, Joe T.; and Manning, Robert E., 5,187,271, Cl. 548-314.700.
Cordi, Alex A., 5,187,171, Cl. 514-359.000.

G. M. Piaff: *See—*
Schlondorff, Georg; Mosges, Ralph; Meyer-Ebrecht, Dietrich; and Moll, Philipp, 5,186,174, Cl. 128-653.100.

G. Pohl-Boskamp GmbH & Co.: *See—*
Cholcha, Walter, 5,186,925, Cl. 424-43.000.

Gabathuler, Jean-Pierre; and Buxmann, Kurt, to Alusuisse-Lonza Services Ltd. Process for producing a liquid-solid metal alloy phase for further processing as material in the thixotropic state. 5,186,236, Cl. 164-478.000.

Gabbert, James D., to Monsanto Company. Silver coatings. 5,186,984, Cl. 427-443.100.

Gagne, Eugene; and Wolfe, Alvin. Patient lift and transport aid. 5,185,895, Cl. 5-86.100.

Gaku, Morio; and Nozaki, Mitsuru, to Mitsubishi Gas Chemical Company, Inc. Process for producing cyanate ester resin cure product. 5,186,880, Cl. 264-236.000.

Galante, Leonard J.; and Lodder, Robert A., to Glaxo Inc.; and University of Kentucky, The. Detection method for liquids using near infrared spectra. 5,187,368, Cl. 250-341.000.

Gale, Edward L. Device for picking-up and removing animal excrement. 5,186,506, Cl. 294-1.300.

Galica, Leo M.: *See—*
Clark, Douglas J.; Galica, Leo M.; Losey, Robert W.; and Suitor, Jerry W., 5,186,806, Cl. 204-265.000.

Gallas, James M., to Photoprotective Technologies, Inc. Melanin hydrophilic contact lenses. 5,187,207, Cl. 523-106.000.

Gallery, Jean: *See—*
Gouterman, Martin P.; Kavandi, Janet L.; Gallery, Jean; and Callis, James B., 5,186,046, Cl. 73-147.000.

Gallo, John R.; Coleman, Gregory J.; and Brown, Claude E., to San Joaquin Valley Express. Slurry tank. 5,186,351, Cl. 220-563.000.

Galtier, Pierre: *See—*
Gauthier, Thierry; Bergougnou, Maurice; Briens, Cedric; and Galtier, Pierre, 5,186,836, Cl. 210-512.100.

Galvier, Jean; Gayet, Philippe; and Tissier, Annie, to France Telecom (CNET). Method for determining the complete elimination of a thin layer on a non planar substrate. 5,186,786, Cl. 156-626.000.

Gap Technologies, Inc.: *See—*
Plesko, George A., 5,187,612, Cl. 359-896.000.

Gar Bar Corporation (Texas Corporation): *See—*
Barnes, Ronny L.; and Barnes, Bryan R., 5,185,990, Cl. 56-51.000.

Garcia, Firmin, to Valois. Shutter for the outlet channel of a dispenser head for semi-liquid substances, and a dispenser head advantageously associated therewith. 5,186,368, Cl. 222-490.000.

Garcia, Roque P. Garden tool expanding assembly. 5,185,992, Cl. 56-400.040.

Garfinkel, Marvin: *See—*
Michon, Gerald J.; Brown, Dale M.; Garfinkel, Marvin; and Cusano, Dominic A., 5,187,380, Cl. 257-428.000.

Garg, Diwakar; Tsai, Wilman; Kimock, Fred M.; Iampietro, Robert L.; and Dyer, Paul N., to Diamonex, Incorporated. HFCVD method for producing thick, adherent and coherent polycrystalline diamonds films. 5,186,973, Cl. 427-590.000.

Garling, David L.: *See—*
Albarella, James P.; Garling, David L.; and Hatch, Robert P., 5,187,105, Cl. 436-119.000.
Albarella, James P.; Garling, David L.; and Hatch, Robert P., 5,187,265, Cl. 534-573.000.

Garner, Ronald N.; and Vernon, Robert D., to Foxboro Company, The. Lightweight sealed circuit board assembly. 5,187,642, Cl. 361-386.000.

Garnham, Allan: *See—*
Thomas, Ronald H.; and Stohr, Helmut, 5,187,480, Cl. 341-22.000.

Garrick, Lloyd M.: *See—*
Primeau, John L.; and Garrick, Lloyd M., 5,187,168, Cl. 514-259.000.

Garten, Michael D.: *See—*
Fahey, Laura B.; Garten, Michael D.; and Lyke, David G., 5,186,335, Cl. 209-552.000.

Garthwaite, Charlie; Cameron, Bridget; Ashmun, Stuart; Stephan, Allan H.; and Nelson, Michael D., to Microsoft Corporation. Pointing device with adjustable clamp attachable to a keyboard. 5,187,468, Cl. 340-709.000.

Garverick, Steven L.: *See—*
Tiemann, Jerome J.; and Garverick, Steven L., 5,187,482, Cl. 341-143.000.

Garvison, Geary L. Cylindrical bullet. 5,187,325, Cl. 102-509.000.

Garzaran, Jose P., to Novo Nordisk A/S. Method and a pharmaceutical preparation for treating pain. 5,187,177, Cl. 514-282.000.

Gas Research Institute: *See—*
Rockenfeller, Uwe, 5,186,009, Cl. 62-112.000.

Gaschke, Paul M.: *See—*
del Puerto, Santiago E.; and Gaschke, Paul M., 5,186,238, Cl. 165-80.400.

Gaskill, Garold B.: *See—*
King, Randolph E.; and Gaskill, Garold B., 5,187,470, Cl. 340-825.440.

Gauthier, Benoit G.: *See—*
Beauchamp, Charles H.; Cincotta, Manuel, Jr.; Raffa, Anthony V.; and Gauthier, Benoit G., 5,186,420, Cl. 244-219.000.

Gauthier, Thierry; Bergougnou, Maurice; Briens, Cedric; and Galtier, Pierre, to Institut Francais du Petrole. Co-current cyclone separator and its applications. 5,186,836, Cl. 210-512.100.

VOL
1147
ISS
3
FE
16
1993
UMI

Gautier, Jean-Pierre; Perez, Miguel; and Verbo, Ulysse, to Bendix Europe Services Techniques. Assembly consisting of a brake booster and of a master cylinder. 5,186,004, Cl. 60-594.000.
Gaver, Mitchell G.: *See—*
Campbell, Kevin P.; Ervasti, James M.; Ohlendieck, Kay; Gaver, Mitchell G.; and Kahl, Steven D., 5,187,063, Cl. 435-7.210.
Gayet, Philippe: *See—*
Galvier, Jean; Gayet, Philippe; and Tissier, Annie, 5,186,786, Cl. 156-626.000.
Gearing, David P.; Gough, Nicholas M.; Hilton, Douglas J.; King, Julie A.; Metcalf, Donald; Nice, Edouard C.; Nicola, Nicos A.; Simpson, Richard J.; and Willson, Tracy A., to Amrad Corporation Limited. Leukaemia inhibitory factor. 5,187,077, Cl. 435-69.100.
Gebhard, Albert W.: *See—*
Gebhard, Patricia A.; and Gebhard, Albert W., 5,186,563, Cl. 401-153.000.
Gebhard, Patricia A.; and Gebhard, Albert W. Fluid dispenser with applicator member. 5,186,563, Cl. 401-153.000.
GEC Alsthom Energie Inc.: *See—*
Demissy, Daniel, 5,186,067, Cl. 74-424.600.
GEC Ferranti Defence Systems Limited: *See—*
Morrison, John M., 5,187,540, Cl. 356-152.000.
Gee, Thomas A., to Eaton Corporation. Driveline torque fuse. 5,186,079, Cl. 74-607.000.
Gehring, Johann: *See—*
Birkle, Siegfried; Fischer, Jurgen; and Gehring, Johann, 5,186,803, Cl. 204-201.000.
Geidel, Helmut-Arnd: *See—*
Enderle, Heinrich; Heyse, Jorg; and Geidel, Helmut-Arnd, 5,186,390, Cl. 239-265.370.
Geiser, Timothy G.: *See—*
Bridgham, John; Geiser, Timothy G.; Hunkapiller, Michael W.; Kent, Stephen B. H.; Marriott, Mark P.; Ramstad, Paul O.; and Nordman, Eric S., 5,186,898, Cl. 422-102.000.
Gelinas, W. Robert; Leale, Arthur J.; Leitch, David J.; Mellow, John J.; Rinaudo, George; and Treff, Ernest H., to Man Roland Druckmaschinen AG. Printing machine system, especially for printing on a web of heavy or thick stock material, with interchangeable printing cylinders. 5,186,103, Cl. 101-181.000.
Gen-Tech, Inc.: *See—*
Seitz, Robert F., 5,186,110, Cl. 105-247.000.
GenCorp Inc.: *See—*
Brew, James K., 5,187,001, Cl. 425-145.000.
Genentech, Inc.: *See—*
Clark, Ross G.; and Mukku, Venkat R., 5,187,151, Cl. 514-3.000.
General Chemical Corporation: *See—*
Pennington, John H., 5,186,526, Cl. 305-39.000.
General Electric Company: *See—*
Blohm, Margaret L.; Pickett, James E.; and VanDort, Paul C., 5,187,608, Cl. 359-273.000.
Cline, Harvey E.; and Lorensen, William E., 5,187,658, Cl. 364-413.130.
Currin, Bena L.; Abdel-Malek, Aiman A.; and Hartley, Richard I., 5,187,754, Cl. 382-54.000.
Eberhard, Jeffrey W.; and Tam, Kwok C., 5,187,659, Cl. 364-413.150.
El-Hamamsy, Sayed-Amr A.; and Witting, Harald L., 5,187,412, Cl. 315-248.000.
Engeler, William E., 5,187,680, Cl. 364-807.000.
Gray, Keith N., 5,187,212, Cl. 524-114.000.
Johansson, Eric B.; and Matzner, Bruce, 5,186,891, Cl. 376-438.000.
Jordan, Therese C.; and Webb, Jimmy L., 5,187,243, Cl. 525-464.000.
Kingsley, Jack D.; Kwasnick, Robert F.; Wei, Ching-Yeu; and Saia, Richard J., 5,187,369, Cl. 250-370.110.
Mallick, John A., 5,187,436, Cl. 324-244.000.
Michon, Gerald J.; Brown, Dale M.; Garfinkel, Marvin; and Cusano, Dominic A., 5,187,380, Cl. 257-428.000.
O'Donnell, Matthew; and Thomas, Lewis J., III, 5,186,177, Cl. 128-662.060.
Otto, John E.; Bieber, Allen C.; and Till, Ronald H., 5,186,352, Cl. 220-564.000.
Rachel, Bernard W.; LeCrone, Richard C.; and Bowen, Michael W., 5,187,405, Cl. 313-316.000.
Riza, Nabeel A., 5,187,487, Cl. 342-372.000.
Sakashita, Takeshi; Shimoda, Tomoaki; Nagai, Takashi; and Kishimura, Kotarou, 5,187,242, Cl. 525-439.000.
Shah, Rasiklal P., 5,187,785, Cl. 395-575.000.
Tiemann, Jerome J.; and Garverick, Steven L., 5,187,482, Cl. 341-143.000.
Tuck, Paul B., 5,186,035, Cl. 72-208.000.
Wildes, Douglas G.; and Hayashi, Steven R., 5,187,669, Cl. 364-474.170.
General Instrument Corporation: *See—*
Huber, David R., 5,187,760, Cl. 385-37.000.
General Motors Corporation: *See—*
Abousabha, Naji G., 5,186,614, Cl. 417-312.000.
Adasek, Kenneth P.; and Ostrand, James C., 5,186,237, Cl. 165-42.000.
Bhatti, Mohinder S.; and Kadle, Prasad S., 5,186,249, Cl. 165-174.000.
Bilge, Umit; and Jenuwine, William C., 5,187,346, Cl. 219-121.640.
Cortochiato, Michael L.; and Lumetta, Sammy C., 5,186,152, Cl. 123-514.000.
Hageman, John B.; and Danielewicz, Gerald C., 5,186,292, Cl. 192-3.280.
Halstead, Gary A., 5,186,243, Cl. 165-135.000.
Halstead, Gary A., 5,186,246, Cl. 165-140.000.
Halstead, Gary A., 5,186,248, Cl. 165-173.000.
Hunt, Terry J., 5,186,034, Cl. 72-187.000.
Hynds, Ernest J.; and Marshalek, Joseph R., 5,186,486, Cl. 280-689.000.
Ives, Steven E.; Ascroft, Thomas B.; Reising, Richard F.; Hill, Robert F.; Brevick, John E.; and Schneider, Eric W., 5,186,278, Cl. 184-6.230.
Joshi, Shrikant M., 5,186,244, Cl. 165-135.000.
Joshi, Shrikant M., 5,186,251, Cl. 165-177.000.
Jozefczak, Thadius F.; and Madill, Kent W., 5,186,371, Cl. 224-42.210.
Kelly, Steven C.; Huff, Daniel H.; and Strang, William G., 5,186,665, Cl. 439-862.000.
Kushmaul, Thomas R.; and Worrell, Barry C., 5,186,075, Cl. 74-552.000.
Osterday, Craig A.; Osterfeld, Douglas L.; Baumaster, Thomas R.; Welch, Timothy M.; Trego, Michael P.; and Flory, Donald M., 5,185,915, Cl. 29-525.000.
Peters, Timothy J., 5,186,245, Cl. 165-140.000.
Petty, Jack D., 5,186,006, Cl. 60-753.000.
Richardson, Daniel J.; and Parr, Michael D., 5,186,081, Cl. 74-859.000.
Richmond, Russel P.; and Foster, Michael R., 5,187,142, Cl. 502-439.000.
Runk, Robert M., 5,186,014, Cl. 62-129.000.
Ryan, Richard P.; Halstead, Gary A.; Smith, David M.; and Joshi, Shrikant M., 5,185,925, Cl. 29-890.049.
Shafer, George G., Jr., 5,185,918, Cl. 29-598.000.
Simon, Robert C., Jr.; Mitchell, George C.; Tolkacz, Joseph M.; Polom, William G.; and Medich, Peter M., 5,186,080, Cl. 74-857.000.
Smith, Richard H., 5,186,272, Cl. 180-132.000.
Tyves, Zinovy, 5,186,509, Cl. 296-1.100.
Wood, Fred G.; Poirier, David C.; Campbell, Douglas C.; Ludwig, Howard H.; and Westphal, Patrick J., 5,186,487, Cl. 280-707.000.
Wymelenberg, Mark J. V., 5,186,663, Cl. 439-843.000.
General Resource Corporation: *See—*
Pausch, Josef, 5,186,433, Cl. 251-309.000.
Genereux, Barry E.: *See—*
Walsh, Arthur L.; and Genereux, Barry E., 5,186,540, Cl. 374-32.000.
Genetica: *See—*
Latta, Martine; Mayaux, Jean-Francois; and Sarmientos, Paolo, 5,187,261, Cl. 530-363.000.
Genetics Institute, Inc.: *See—*
Wozney, John M.; Wang, Elizabeth A.; Rosen, Vicki A.; and Celeste, Anthony J., 5,187,076, Cl. 435-69.100.
Genise, Thomas A.: *See—*
Pankratz, William R.; Genise, Thomas A.; Dresden, John, III; and Markyvech, Ronald K., 5,186,066, Cl. 74-335.000.
Gensia Pharmaceuticals: *See—*
Marangos, Paul; and Gruber, Harry E., 5,187,162, Cl. 514-46.000.
Gentri Controls, Inc.: *See—*
Paulk, Raymond C., 5,186,541, Cl. 374-124.000.
Geprags, Peter: *See—*
Vetter, Helmut; and Geprags, Peter, 5,185,985, Cl. 53-299.000.
Geurts, Herman J. J. M: *See—*
Erkens, Leonardus J. H.; Schmitt, Gregor; Geurts, Herman J. J. M; and Corvers, Werner F. C. G., 5,186,748, Cl. 106-479.000.
Geweke, Werner, to Dr. Friedrich Forster Pruferatebau GmbH & Co. KG. Non-destructive test apparatus with eddy current transducer rotary head and field homogenizing conductive ring for scanning metal test materials. 5,187,435, Cl. 324-225.000.
Geyh, Edward A.: *See—*
Schuss, Jack J.; Upton: Jeffrey C.; Geyh, Edward A.; and Chang, Kaichiang, 5,187,491, Cl. 343-781.00R.
Giaever, Ivar; and Keese, Charles R., to Rensselaer Polytechnic Institute. Cell substrate electrical impedance sensor with multiple electrode array. 5,187,096, Cl. 435-291.000.
Giat Industries: *See—*
Pellarin, Jean-Francois R.; and Peion, Michel, 5,187,317, Cl. 89-36.140.
Gierhart, Dennis L.; and Hogan, William C., to Applied Food Biotechnology, Inc. Flavor composition for pet food. 5,186,964, Cl. 426-74.000.
Giles, Clinton R.: *See—*
DiGiovanni, David J.; Giles, Clinton R.; Kramer, Stuart A.; Nykolak, Gerald; Presby, Herman M.; and Simpson, Jay R., 5,187,759, Cl. 385-27.000.
Gill, Manzur; Lin, Sung-Wei; and D'Arrigo, Sebastiano, to Texas Instruments Incorporated. Method for programming EEPROM memory arrays. 5,187,683, Cl. 365-185.000.
Gillard, John W., to Merck Frosst Canada, Inc. (Quinolin-2-ylmethoxy)Heterotetrahydrocarbazoles as inhibitors of the biosynthesis of leukotrienes. 5,187,180, Cl. 514-312.000.
Gilleland, Frank W., to Cues, Inc. Apparatus for repairing pipelines. 5,186,215, Cl. 138-98.000.
Gillespie, Charles K.: *See—*
Gillespie, John R.; and Gillespie, Charles K., 5,186,622, Cl. 432-13.000.
Gillespie, John R.; and Gillespie, Charles K., to Gillespie & Powers, Inc. Apparatus and process for removing volatile coatings from scrap metal. 5,186,622, Cl. 432-13.000.

Gillespie & Powers, Inc.: *See—*
Gillespie, John R.; and Gillespie, Charles K., 5,186,622, Cl. 432-13.000.
Gillis, Herbert R., to Imperial Chemical Industries PLC. Compatible isocyanate reactive compounds. 5,187,205, Cl. 501-129.000.
Gilmore, Michael R.; and McConnell, Anthony, to Prince Corporation. Shiftable/releasable mount. 5,186,517, Cl. 296-214.000.
Girsh, Leonard S., to Immunopath Profile, Inc. Hypoallergenic milk products and process of making. 5,186,971, Cl. 426-580.000.
Gitzel, Jorg; Wehle, Detlef; and Macholdt, Hans-Tobias, to Hoechst Aktiengesellschaft. Polymeric ammonium compounds as charge control agents. 5,187,038, Cl. 430-110.000.
Giulini Chemie GmbH: *See—*
Pelah, Zvi; Potencsik, Istvan; Kopp, Werner; and Urmann, Ernst, 5,187,308, Cl. 560-202.000.
Glamkowski, Edward J.: *See—*
Hamer, Russell R. L.; Helsley, Grover C.; Glamkowski, Edward J.; Chiang, Yulin; Freed, Brian S.; and Kurys, Barbara E., 5,187,165, Cl. 514-307.000.
Glaser, Thomas: *See—*
Seidel, Peter-Rudolf; Horstmann, Harald; Traber, Jorg; Dompert, Wolfgang; Glaser, Thomas; and Thurman, Teunis, 5,187,276, Cl. 544-295.000.
Glass Master Corporation: *See—*
Cunningham, Robert A., Jr., 5,186,704, Cl. 493-18.000.
Glaxo Inc.: *See—*
Galante, Leonard J.; and Lodder, Robert A., 5,187,368, Cl. 250-341.000.
Thompson, Stephen A.; and Shaffer, Joel E., 5,187,305, Cl. 560-145.000.
Gleasman, Keith E.: *See—*
Gleasman, Vernon E.; and Gleasman, Keith E., 5,186,692, Cl. 475-82.000.
Gleasman, Vernon E.; and Gleasman, Keith E. Hydromechanical orbital transmission. 5,186,692, Cl. 475-82.000.
Glemet, Michel, to Atochem. Fiber-reinforced thermoplastic polymer composite and process for preparation thereof. 5,187,018, Cl. 428-474.700.
Glenday, Alan J.; and Steenhoff, Frederick C., to Andros Manufacturing Corporation. RF connector. 5,186,655, Cl. 439-583.000.
Globe Products Inc.: *See—*
Beakes, John M.; and Heaton, Mark T., 5,186,405, Cl. 242-1.10R.
Globe-Union Inc.: *See—*
Heiman, Jerome R.; and Bruss, Jack, 5,187,031, Cl. 429-129.000.
Glover, J. Howard, to Sundstrand Corporation. Wind shear detector with slow shear bias. 5,187,477, Cl. 340-968.000.
Goettsche, Reimer; and Reuther, Wolfgang, to Dr. Wolman GmbH. Wood preservative based on polymeric nitrogen compounds and metal-fixing acids. 5,186,947, Cl. 424-638.000.
Goettsche, Reimer; and Reuther, Wolfgang, to Dr. Wolman GmbH. Wood preservatives containing polymeric nitrogen compounds. 5,187,194, Cl. 514-499.000.
Gohel, Dhanesh I.: *See—*
Liberti, Paul A.; Feeley, Brian P.; and Gohel, Dhanesh I., 5,186,827, Cl. 210-222.000.
Gold, Jeffrey W.; and Nickens, Dan A., to Earth Resources Consultants, Inc. Cylinder rupture vessel. 5,186,219, Cl. 141-51.000.
Goldberg, Gary J. Rings that open and close. 5,186,023, Cl. 63-15.500.
Goldberg, Kenneth Y.; and Furst, Merrick L., to Carnegie Mellon University. Low friction gripper. 5,186,515, Cl. 294-119.100.
Goldman, Jerome N.: *See—*
Phillips, Gerald A.; Wu, Chi-Liu; Goldman, Marvin A.; Goldman, Jerome N.; and Goldman, Terry I., 5,186,122, Cl. 119-15.000.
Goldman, Marvin A.: *See—*
Phillips, Gerald A.; Wu, Chi-Liu; Goldman, Marvin A.; Goldman, Jerome N.; and Goldman, Terry I., 5,186,122, Cl. 119-15.000.
Goldman, Stephen L.; and Graves, Anne C. F., to University of Toledo, The. Process for transforming gramineae and the products thereof. 5,187,073, Cl. 435-172.300.
Goldman, Terry I.: *See—*
Phillips, Gerald A.; Wu, Chi-Liu; Goldman, Marvin A.; Goldman, Jerome N.; and Goldman, Terry I., 5,186,122, Cl. 119-15.000.
Goldstar Co., Ltd.: *See—*
Yoon, Seok Y., 5,187,700, Cl. 369-75.100.
Goldstar, Inc.: *See—*
Lee, Ho-Gyu, 5,187,748, Cl. 382-4.000.
Goldstein, Judith A.: *See—*
Keith, John M.; Simon, Allen H.; Sprague, David L.; Dixon, Douglas F.; and Goldstein, Judith A., 5,187,793, Cl. 395-775.000.
Golick, Martin L.: *See—*
Healy, Jr. Stephen F.; Rice, Michael L.; and Golick, Martin L., 5,187,099, Cl. 436-10.000.
Golini, Fred: *See—*
Scott, Randy W.; Golini, Fred; and McGrogan, Michael, 5,187,089, Cl. 435-212.000.
Goodman, Rod: *See—*
McAuley, Anthony; and Goodman, Rod, 5,187,799, Cl. 395-800.000.
Goodyear Tire & Rubber Company, The: *See—*
Majerus, Norbert; Magee, Arthur W.; Hickman, Michael D.; Parrish, Gary C.; Rooney, Timothy M.; and Chlebina, Lawrence E., 5,185,960, Cl. 51-104.000.
Parks, Carl R.; D'Sidocky, Richard M.; and Cohen, Martin P., 5,187,239, Cl. 525-329.300.
Gordon, Eric M., to E. R. Squibb & Sons, Inc. Acylaminoalkanoyl urethanes or thiourethanes. 5,187,290, Cl. 548-338.100.
Gordon, Michael D.; and Massey, Darryl D. Combined electronic clinical thermometer and pacifier. 5,186,047, Cl. 73-151.000.
Gore, Thomas C.: *See—*
Andrews, William H.; Brothers, Virginia M.; Files, James G.; Kuhn, Irene; McCaman, Michael T.; Sias, Stacey R.; Paul, Leland S.; Gore, Thomas C.; Newman, Karel Z., Jr.; and Tedesco, John L., 5,187,080, Cl. 435-69.300.
Gorka, Karl; and Smith, Curt J. Beverage shader. 5,186,196, Cl. 135-16.000.
Gorlich, Uwe: *See—*
Weyermanns, Gunther; and Gorlich, Uwe, 5,186,019, Cl. 62-381.000.
Goss, David C.: *See—*
Ryder, Ronald L.; and Goss, David C., 5,186,531, Cl. 362-66.000.
Goss, Douglas A.: *See—*
Marek, James E.; and Goss, Douglas A., 5,187,430, Cl. 324-66.000.
Goto, Kiyoto; Hashimoto, Kinji; and Kanai, Kenichi, to Otsuka Pharmaceutical Factory, Inc. P-aminophenol derivatives, and processes for production of and uses for the same. 5,187,161, Cl. 514-255.000.
Goto, Yasuhiro; Yonezawa, Takeyuki; Ohnuma, Yoshiyuki; and Ando, Jen, to Kabushiki Kaisha Toshiba. Fiber-reinforced silicon nitride ceramic. 5,187,127, Cl. 501-95.000.
Gotoh, Yasuharu: *See—*
Hatano, Kazuyoshi; Ichiryu, Ken; Tamura, Morio; Kometani, Eiji; Gotoh, Yasuharu; and Hidao, Nobuyoshi, 5,187,017, Cl. 428-469.000.
Gottsleben, Bradley D., to Tresco, Inc. Dental measuring instrument and method. 5,186,624, Cl. 433-69.000.
Gough, Nicholas M.: *See—*
Gearing, David P.; Gough, Nicholas M.; Hilton, Douglas J.; King, Julie A.; Metcalf, Donald; Nice, Edouard C.; Nicola, Nicos A.; Simpson, Richard J.; and Willson, Tracy A., 5,187,077, Cl. 435-69.100.
Gougne, Yves: *See—*
Alagy, Jacques; Broutin, Paul; Busson, Christian; Gougne, Yves; and Weill, Jerome, 5,186,910, Cl. 422-220.000.
Gould, Inc.: *See—*
Di Troia, Gary W.; and Romani, Paul M., 5,187,463, Cl. 337-165.000.
Gouterman, Martin P.; Kavandi, Janet L.; Gallery, Jean; and Callis, James B., to University of Washington, Board of Regents of the. Surface pressure measurement by oxygen quenching of luminescence. 5,186,046, Cl. 73-147.000.
Govindan, Cheruthur, to PPG Industries, Inc. Quaternary ammonium antistatic polymer compositions. 5,187,214, Cl. 524-157.000.
Goyak, George M.: *See—*
Tiggelbeck, Donald D.; and Goyak, George M., 5,187,131, Cl. 502-34.000.
Gradl, Robert: *See—*
Panster, Peter; and Gradl, Robert, 5,187,134, Cl. 502-158.000.
Graell, Alberto C. Method of reducing the wear of the electrode in machine tools using electro-erosion. 5,187,341, Cl. 219-69.130.
Graf, Rudolf, to USM U. Scharer Sohne AG. Fastening device for the releasable fastening of a strut to a column, a column for holding struts, and strut for fastening to a column. 5,186,570, Cl. 403-174.000.
Gramarossa, Daniel J.: *See—*
Schlenker, Heinz W.; Hirbour, Louis J.; and Gramarossa, Daniel J., 5,186,797, Cl. 204-146.000.
Gramolini, Glenn: *See—*
Fuhrmann, Arthur D., III; Stevens, Craig; and Gramolini, Glenn, 5,186,564, Cl. 401-202.000.
Granger, Douglas A.: *See—*
Rooy, Elwin L.; Petrey, Gerald R.; Weaver, James R.; Granger, Douglas A.; Richter, Raymond T.; and Reravis, H. Gray, Jr., 5,186,767, Cl. 148-552.000.
Graphic Edge, Inc.: *See—*
Deutsch, Keith R.; Bjorge, Per H.; and Blannin, Alan, 5,187,594, Cl. 358-455.000.
Graves, Anne C. F.: *See—*
Goldman, Stephen L.; and Graves, Anne C. F., 5,187,073, Cl. 435-172.300.
Gray, Keith, to Environmental Monitoring and Technologies, Inc. Storm water flow monitoring. 5,186,052, Cl. 73-215.000.
Gray, Keith N., to General Electric Company. Flame retardant polyester blends. 5,187,212, Cl. 524-114.000.
Great Lakes Orthodontics, Ltd.: *See—*
Breads, Peter R.; Abbatte, Gerard P.; and Warunek, Stephen P., 5,186,623, Cl. 433-6.000.
Green, Christopher J.; and Johnson, Paul H., to SRI International. Cloning and expression of a variant gene of platelet factor 4 and compositions thereof to modulate immune responses. 5,187,075, Cl. 435-69.100.
Green, Jerry T., to Tuftco, Inc. Inverted tufting machine needle drive and stroke adjustment. 5,186,113, Cl. 112-80.420.
Greenlee, William J.; and Rivero, Ralph A., to Merck & Co., Inc. Angiotensin II antagonists incorporating a substituted 1,3-benzodioxole or 1,3-benzodithiole. 5,187,159, Cl. 514-81.000.
Gregori, George A., to Minnesota Mining and Manufacturing Company. Emitter assembly for use in an optical traffic preemption system. 5,187,373, Cl. 250-551.000.
Grehier, Alain: *See—*
Dang Vu, Quang; Franckowiak, Sigismond; Grehier, Alain; Vacher, Philippe; and Burzynski, Jean-Pierre, 5,186,909, Cl. 422-213.000.
Gretag Systems, Inc.: *See—*
Muller, Kurt; and Rupp, Roberto, 5,187,520, Cl. 355-72.000.

VOL 1147 ISS 3 FE 16 1993 UMI

Gribbin, John D.; Bothe, Lothar; Dinter, Peter; and Dallmann, Hermann, to Hoechst Aktiengesellschaft. Self-supporting sheet-like structure comprising a substrate and a coating, and a process for its production. 5,186,974, Cl. 427-536.000.
Griffin, George A.: *See—*
Wehr, Don H., 5,186,010, Cl. 62-112.000.
Griffith, Ronald L.: *See—*
Simons, F. Holmes; and Griffith, Ronald L., 5,186,879, Cl. 264-211.150.
Grimm, William L.: *See—*
Will, John H.; and Grimm, William L., 5,186,261, Cl. 172-285.000.
Grimmer, Larry R.: *See—*
Janssen, David C.; and Grimmer, Larry R., 5,186,031, Cl. 70-277.000.
Groh, Werner; Heumuller, Rudolf; Schutze, Gerald; Stern, Roland; and Wieners, Gerhard, to Hoechst Aktiengesellschaft. Transparent thermoplastic molding composition, process for its preparation and its use. 5,187,769, Cl. 385-143.000.
Gross, Allen W. Rodent extermination device. 5,185,953, Cl. 43-58.000.
Gross, Joseph; and Zucker, Shlomo, to S. I. Scientific Innovations Ltd. Electrolytic dispensing device. 5,186,805, Cl. 204-265.000.
Grossman, Mark W., to GTE Products Corporation. Method of controlling the mercury vapor pressure in a photo-chemical lamp or vapor filter used for Hg^{196} enrichment. 5,187,804, Cl. 445-9.000.
Grossmann, Horst; and Hoser, Jurgen, to Black & Decker, Inc. Flange mounting arrangement. 5,186,685, Cl. 464-46.000.
Grota, Allen: *See—*
Sousa, James E.; Rogers, Ronald A.; and Grota, Allen, 5,186,585, Cl. 410-9.000.
Group Dekko International: *See—*
McCoy, Phillip A., 5,186,640, Cl. 439-211.000.
Groux, Jacky: *See—*
Nouguez, Bruno; Bigot, Yves; Groux, Jacky; and Derrien, Jean-Claude, 5,187,319, Cl. 102-202.100.
Grove, Michael M., to Sundstrand Corporation. Configuration responsive descent rate warning system for aircraft. 5,187,478, Cl. 340-970.000.
Groves, Michael J., to University of Illinois, Board of Trustees of the. Packing material for treatment of infections. 5,186,936, Cl. 424-435.000.
Gruber, Harry E.: *See—*
Marangos, Paul; and Gruber, Harry E., 5,187,162, Cl. 514-46.000.
Grumman Aerospace Corporation: *See—*
Romanelli, Marcello J., 5,186,406, Cl. 242-54.00R.
Grunes, Howard: *See—*
Tepman, Avi; Grunes, Howard; Somekn, Sasson; and Maydan, Dan, 5,186,718, Cl. 29-25.010.
GTE Products Corporation: *See—*
Bazin, Simone P., 5,187,416, Cl. 315-73.000.
Grossman, Mark W., 5,187,804, Cl. 445-9.000.
Michael, Joseph D.; Lagushenko, Radomir; Maya, Jakob; and Biblarz, Oscar, 5,186,668, Cl. 445-9.000.
GTE Rotaflex Limited: *See—*
Woodgate, Terence A., 5,186,534, Cl. 362-419.000.
Guang, Yi X.: *See—*
Qing, Cai; Man, Ho Hak; Ming, Liu; and Guang, Yi X., 5,186,099, Cl. 100-35.000.
Guang, Yi Xiao: *See—*
Qing, Cai; Man, Ho Hak; Ming, Liu; and Guang, Yi X., 5,186,099, Cl. 100-35.000.
Guasch, Esteve C., to Bendix Espana S.A. Fluid pressure regulating valve. 5,186,210, Cl. 137-596.170.
Guenez, Dominique: *See—*
Esch, Marc; Colin, Nadine; Guenez, Dominique; and Maraval, Michel, 5,187,309, Cl. 560-218.000.
Guest, Leonard E.: *See—*
Kelly, John H.; and Guest, Leonard E., 5,186,796, Cl. 204-129.350.
Guest, Robert J., to Halliburton Company. Bipolar signal amplification or generation. 5,187,473, Cl. 340-854.400.
Guillon, Pierre: *See—*
Forterre, Gerard E. E.; and Guillon, Pierre, 5,187,460, Cl. 333-219.000.
Guittard, Mark P.: *See—*
Ficcaglia, Linda I.; Guittard, Mark P.; and Neumann, Stephen M., 5,187,146, Cl. 503-227.000.
Gullberg, Kim R.; and Leser, William A., to D. C. Cooper Corporation. Parts washer cleaning apparatus having pneumatic vertical agitation, stationary bearing means and platform having continuous positive support. 5,186,193, Cl. 134-105.000.
Gumb, Beverley W.; Kuhfus, Gerd; and Schmidt, James N., to Northern Telecom Limited. Telephone base with a display unit. 5,187,743, Cl. 379-436.000.
Gupta, Avinash: *See—*
Parker, Robin; Hanrahan, Robert; and Gupta, Avinash, 5,186,794, Cl. 204-98.000.
Gustafson, Gregg S.; and Kuga, Jay M., to Instrumentation Northwest, Inc. Portable groundwater sampling device. 5,186,253, Cl. 166-77.000.
Gustin, Paul R.: *See—*
Fortner, Larry E.; Gustin, Paul R.; Hasler, Leonard F.; Johnson, Harold E.; Maul, George R.; Reed, David L.; and Reichard, George W., Jr., 5,186,649, Cl. 439-460.000.
Guthrie, John: *See—*
Woods, John; Guthrie, John; and Coakley, Pauline, 5,187,048, Cl. 430-286.000.
Gutierrez, Antonio; Song, Won R.; Lundberg, Robert D.; and Kleist, Robert A., to Exxon Chemical Patents Inc. Ethylene alpha-olefin copolymer substituted mannich base lubricant dispersant additives. 5,186,851, Cl. 252-49.006.
Gutterson, Neal I.; Tucker, William T.; and Wolber, Paul K., to DNA Plant Technology Corporation. Transducing particles and methods for their production. 5,187,061, Cl. 435-5.000.
Guy, Kenneth R.; Kameya, Andrew M.; and Wildfeuer, Herbert M., to Micom Communications Corp. System for transmitting and receiving aural information and modulated data. 5,187,591, Cl. 358-425.000.
Haagen, Peter H.: *See—*
Evans, Benjamin F.; Heep, Jerry J.; and Haagen, Peter H., 5,187,469, Cl. 340-825.220.
Haartsen, Jaap C.: *See—*
Dent, Paul W.; and Haartsen, Jaap C., 5,187,675, Cl. 364-715.060.
Habbab, Isam M. I.; and Saleh, Adel A. M., to AT&T Bell Laboratories. Low noise, optical amplifier having post-amplification loss element. 5,187,610, Cl. 359-341.000.
Habereder, Hans L.: *See—*
Balmforth, Kevin D.; Bates, Gary A.; Davies, Steven P.; Habereder, Hans L.; Harrison, R. Loyd; Hopp, Donald M.; and Ricker, George G., 5,187,795, Cl. 395-800.000.
Hackbart, Rolland R.: *See—*
Metroka, Michael P.; and Hackbart, Rolland R., 5,187,640, Cl. 361-329.000.
Hacker, Heinz: *See—*
Nordmann, Jens; and Hacker, Heinz, 5,187,237, Cl. 525-326.200.
Hadama, Shigeyuki: *See—*
Fujie, Toru; and Hadama, Shigeyuki, 5,187,337, Cl. 200-82.00R.
Hadewe B.V.: *See—*
van der Werff, Jeichienus A., 5,186,285, Cl. 188-77.00W.
Hadvary, Paul: *See—*
Barner, Richard; Burri, Kaspar; Cassal, Jean-Marie; Hadvary, Paul; Hirth, Georges; and Muller, Klaus, 5,187,293, Cl. 558-267.000.
Hafner, Udo, to Robert Bosch GmbH. Method for mounting a filter on the valve. 5,186,882, Cl. 264-257.000.
Hageman, Hermann: *See—*
Fischer, Reiner; Baasner, Bernd; Hageman, Hermann; Krebs, Andreas; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; Becker, Benedikt; Schaller, Klaus; and Strang, Harry, 5,186,737, Cl. 504-283.000.
Hageman, John B.; and Danielewicz, Gerald C., to General Motors Corporation. Torque converter and clutch with compliance interface. 5,186,292, Cl. 192-3.280.
Hagihara, Koichiro: *See—*
Kikuchi, Haruhiko; Satoh, Hiroaki; Yahata, Nobuhiro; Hagihara, Koichiro; Hayakawa, Toru; Mino, Setsuko; and Yanai, Makoto, 5,187,166, Cl. 514-249.000.
Hagiwara, Daijiro: *See—*
Matsuo, Masaaki; Hagiwara, Daijiro; and Miyake, Hiroshi, 5,187,156, Cl. 514-18.000.
Hagiwara, Isao: *See—*
Takeda, Mutsuhiko; Hagiwara, Isao; Zaima, Fumiya; and Sakaguchi, Shuzabu, 5,187,311, Cl. 556-428.000.
Hagiwara, Koichi: *See—*
Sato, Makoto; Inagaki, Hiromi; Saito, Wataru; Sakurai, Kazuya; Hagiwara, Koichi; and Horiuchi, Makoto, 5,186,525, Cl. 303-113.400.
Hagiwara, Michiro: *See—*
Onofusa, Mitsuo; Hashimoto, Nobuyoshi; Tagawa, Kimiteru; and Hagiwara, Michiro, 5,186,895, Cl. 422-67.000.
Hahn, Elliot: *See—*
Frost, Phillip; Fishman, Jack; Hahn, Elliot; and Lu, Jing J., 5,187,163, Cl. 514-47.000.
Hai-Yung, Ku. Self-power-contained multipurpose plug socket. 5,186,652, Cl. 439-500.000.
Hains, Norman L.: *See—*
Hoffman, David C.; and Hains, Norman L., 5,186,742, Cl. 75-773.000.
Hajime Industries: *See—*
Yoshida, Hajime, 5,187,573, Cl. 358-106.000.
Halden, Jonas P.: *See—*
Berg, Svein A.; and Halden, Jonas P., 5,186,966, Cl. 426-402.000.
Hall, Christopher M.; and Dubowski, Kenneth E., to National Semiconductor Corporation. Noise resistant low voltage brownout detector with shut off option. 5,187,389, Cl. 307-350.000.
Hall, Lee S.: *See—*
Outcalt, Russell J.; Timmons, Philip R.; Cramp, Susan M.; Kwiatkowski, Patricia L.; Lopes, Anibal; Cain, Paul A.; Sinodis, David N.; Hall, Lee S.; and Vors, Jean-Pierre A., 5,187,185, Cl. 514-408.000.
Hall, Leonard: *See—*
Toshima, Masato M.; Salzman, Phil M.; Murdoch, Steven C.; Wang, Cheng; Stenholm, Mark A.; Howard, James; Hall, Leonard; and Cheng, David, 5,186,594, Cl. 414-217.000.
Hall, Susan C., to Eastman Kodak Company. Two-stage process for electrolytic graining of aluminum. 5,186,795, Cl. 204-129.400.
Hall, William A., to United States of America, National Aeronautics and Space Administration. System for simultaneously loading program to master computer memory devices and corresponding slave computer memory devices. 5,187,794, Cl. 395-800.000.
Hall, William M.: *See—*
Lyzinski, David; Buttke, Robert D.; Taylor, James L.; and Hall, William M., 5,186,904, Cl. 422-130.000.
Hallden-Abberton, Michael P.; and Wills, William L., to Rohm and Haas Company. Polymer blends. 5,186,993, Cl. 428-36.920.

Haller, Wolfgang; and Deshmukh, Uday V., to United States of America, Commerce. Process for the preparation of fiber-reinforced ceramic matrix composites. 5,187,008, Cl. 428-378.000.
Halliburton Company: *See—*
Cole, R. Clay; and Bowles, Bobby K., 5,186,847, Cl. 252-8.551.
Guest, Robert J., 5,187,473, Cl. 340-854.400.
Halliburton Logging Services, Inc.: *See—*
Sinclair, Paul I., 5,187,661, Cl. 364-422.000.
Hallsby, G. Anders, to Dow Chemical Company, The. Automatic air temperature cycler and method of use in polymerose chain reaction. 5,187,084, Cl. 435-91.000.
Halstead, Gary A., to General Motors Corporation. Combination condenser and radiator tank thermal gap. 5,186,243, Cl. 165-135.000.
Halstead, Gary A., to General Motors Corporation. Extruded coolant-/refrigerant tank with separate headers. 5,186,246, Cl. 165-140.000.
Halstead, Gary A., to General Motors Corporation. Extruded tank condenser with integral manifold. 5,186,248, Cl. 165-173.000.
Halstead, Gary A.: *See—*
Ryan, Richard P.; Halstead, Gary A.; Smith, David M.; and Joshi, Shrikant M., 5,185,925, Cl. 29-890.049.
Halyung, Warren P. Mobile capture and restraint device. 5,186,125, Cl. 119-99.000.
Ham, Robert V.: *See—*
Bordoloi, Binoy K.; Plamthottan, Sebastian S.; Ozari, Yehuda; and Ham, Robert V., 5,187,235, Cl. 525-305.000.
Hama, Masaharu: *See—*
Yanagi, Motonori; Hama, Masaharu; Fukumoto, Takaaki; and Tsukaguchi, Miki, 5,186,907, Cl. 422-186.300.
Hamada, Hioroshi: *See—*
Nakanishi, Hiroshi; and Hamada, Hioroshi, 5,187,599, Cl. 359-41.000.
Hamada, Hiroshi: *See—*
Shoji, Hajime; Watanabe, Noriko; Hamada, Hiroshi; Kato, Hiroaki; Takemoto, Toshio; and Hirobe, Toshihiko, 5,187,551, Cl. 257-347.000.
Hamada, Masataka: *See—*
Ishibashi, Kenji; Ishida, Tokuji; and Hamada, Masataka, 5,187,515, Cl. 354-400.000.
Hamada, Yasunori: *See—*
Fukudome, Yoshio; Hamada, Yasunori; Okayama, Masao; Kako, Yutaka; Saito, Tetsuo; and Utsumi, Itsunori, 5,186,334, Cl. 209-534.000.
Hamamatsu Photonics K.K.: *See—*
Watanabe, Mitsuo, 5,187,357, Cl. 250-206.100.
Hamanaka, Tatsuo; Hikasa, Tadashi; and Ibuki, Koichiro, to Sumitomo Chemical Company, Limited. Thermoplastic elastomer composition which has a shore a hardness of less than 45. 5,187,224, Cl. 524-505.000.
Hamasaki, Masaharu, to Sony Corporation. Solid state imager which reduces the noise and improves the sensitivity. 5,187,583, Cl. 358-213.150.
Hamer, Russell R. L.; Helsley, Grover C.; Glamkowski, Edward J.; Chiang, Yulin; Freed, Brian S.; and Kurys, Barbara E., to Hoechst-Roussel Pharmaceuticals Inc. Memory enhancing and analgesic 1,2,3,3A,8,8A-hexahydro-3A,8(and 1,3A,8)-di(and tri)methylpyrrolo[2,3-B]indoles. 5,187,165, Cl. 514-307.000.
Hamer, Steven M., to Minnesota Mining and Manufacturing Company. Optical traffic preemption detector circuitry. 5,187,476, Cl. 340-906.000.
Hamill, Robert L.; Hunt, Ann H.; Nagarajan, Ramakrishnan; Schabel, Amelia A.; and Yao, Raymond C., to Eli Lilly and Company. Process for producing A83850 antibiotics. 5,187,082, Cl. 435-71.300.
Hamilton, Paul M. Multi-purpose ornament and method of use in retaining hair. 5,186,186, Cl. 132-200.000.
Hamilton, Thomas P.; Jacobsen, Carol E.; and Perveiler, Kevin J., to United Technologies Corporation. Machine failure isolation using qualitative physics. 5,187,773, Cl. 395-10.000.
Hamlin, Michael R. Flex-duct cutters. 5,185,930, Cl. 30-131.000.
Hammond, Donald E.; and Skibo, Michael D., to Alcan International Ltd. Cast compsoite material with high silicon aluminum matrix alloy and its applications. 5,186,234, Cl. 164-97.000.
Han, Chul Won: *See—*
Min, Suk Ki; Park, Seung Chul; and Han, Chul Won, 5,186,911, Cl. 422-245.000.
Han, James H.: *See—*
Yokelson, Howard B.; Han, James H.; and Felberg, Jeff J., 5,187,254, Cl. 528-73.000.
Hanamoto, Tadayuki; and Takahashi, Norio, to Kabushiki Kaisha Komatsu Seisakusho. Apparatus for controlling direction of underground excavator. 5,186,579, Cl. 405-143.000.
Hancock, John P.; and McClelland, Ralph A., to K-Whit Tools, Inc. Refrigerant recovery device. 5,186,017, Cl. 62-292.000.
Handa, Akio: *See—*
Wakayama, Hajime; Shimakura, Toru; Watanabe, Seiji; and Handa, Akio, 5,186,423, Cl. 248-160.000.
Handa, Masami: *See—*
Nagasawa, Masakazu; Handa, Masami; Fukai, Kunio; and Hirozumi, Yasuo, 5,186,671, Cl. 445-49.000.
Handa, Susumu: *See—*
Kawakami, Takashi; and Handa, Susumu, 5,186,906, Cl. 422-180.000.
Handy & Harman: *See—*
Beeferman, Dennis; and Lucas, William F., 5,186,380, Cl. 228-121.000.
Haneda, Yoichi; Makino, Shoji; and Kaneda, Yutaka, to Nippon Telegraph and Telephone Corporation. Acoustic transfer function simulating method and simulator using the same. 5,187,692, Cl. 367-135.000.
Hanrahan, Robert: *See—*
Parker, Robin; Hanrahan, Robert; and Gupta, Avinash, 5,186,794, Cl. 204-98.000.
Hans Oetiker AG Maschinen- und Apparatefabrik: *See—*
Oetiker, Hans, 5,185,908, Cl. 24-20.00R.
Hansen, Claes-Henrik: *See—*
Christensen, Leif L.; Joergensen, Tage W.; and Hansen, Claes-Henrik, 5,186,677, Cl. 452-66.000.
Hansen, Frits P. U., to Kosan Teknova A/S. Two-step reduction valve especially for gas cylinders. 5,186,208, Cl. 137-505.120.
Hansen, John B., to Novo Nordisk A/S. Substituted urea compounds and their preparation and use. 5,187,164, Cl. 514-299.000.
Hanson, Jay L.: *See—*
Roehrich, Roland L.; and Hanson, Jay L., 5,186,015, Cl. 62-133.000.
Hanson, Richard A.: *See—*
Egley, Bert D.; Newell, G. Richard; and Hanson, Richard A., 5,186,053, Cl. 73-497.000.
Hara, Isao: *See—*
Yamamoto, Yoshihiro; Takaki, Usaji; Aoki, Shinobu; Inoue, Yoshihisa; and Hara, Isao, 5,187,283, Cl. 548-457.000.
Hara, Tsukushi: *See—*
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,187,148, Cl. 505-1.000.
Hara, Yoshihito: *See—*
Masumoto, Isamu; Mizutani, Zenpei; Yada, Hiroshi; and Hara, Yoshihito, 5,187,218, Cl. 524-317.000.
Harada, Hiroyuki: *See—*
Kajitani, Tetsuji; Matsuura, Yasumasa; Harada, Hiroyuki; and Araki, Toshihiko, 5,187,420, Cl. 318-823.000.
Harada, Mutsumi; Kato, Nobuji; Hayashi, Yoshinori; Hoshi, Toshiharu; and Iijima, Kenzaburo, to Yamaha Corporation. Magnetic recording medium for encoders. 5,187,022, Cl. 428-694.000.
Harada, Satoshi: *See—*
Shimizu, Kazuyuki; Harada, Satoshi; and Yoshimura, Masazi, 5,187,410, Cl. 315-241.00P.
Harada, Yasuyuki: *See—*
Netsu, Shigeyoshi; Kameya, Masaki; Harada, Yasuyuki; and Amano, Hiroshi, 5,186,192, Cl. 134-68.000.
Haraguchi, Hideaki: *See—*
Fujikawa, Shoji; and Haraguchi, Hideaki, 5,185,931, Cl. 30-201.000.
Hardinge Brothers, Inc.: *See—*
Wetherill, Todd N.; Walburn, Harold E.; and Sheehan, Terrence M., 5,186,086, Cl. 82-124.000.
Hargo 300-Technology, Inc.: *See—*
Uejima, Yasu, 5,186,688, Cl. 470-9.000.
Harley-Davidson, Inc.: *See—*
Hegman, Terry, 5,186,274, Cl. 180-227.000.
Harouniya Limited: *See—*
Coffey, Manus; and McGarry, Michael G., 5,186,354, Cl. 220-720.000.
Harpell, Gary A.: *See—*
Prevorsek, Dusan C.; and Harpell, Gary A., 5,187,023, Cl. 428-911.000.
Harreld, Donald R.; and Skiba, Barbara T., to Sage Products, Inc. Sponge carrier and counter. 5,186,322, Cl. 206-216.000.
Harris, Pauline. Finger nail polish protector. 5,186,189, Cl. 132-285.000.
Harris, Stephen H.: *See—*
Bodwell, James R.; Harris, Stephen H.; and Dehm, David C., 5,186,744, Cl. 106-243.000.
Harrison, Mark W.: *See—*
Kotlarek, Peter A.; Moilanen, John R.; and Harrison, Mark W., 5,186,613, Cl. 417-291.000.
Harrison, R. Loyd: *See—*
Balmforth, Kevin D.; Bates, Gary A.; Davies, Steven P.; Habereder, Hans L.; Harrison, R. Loyd; Hopp, Donald M.; and Ricker, George G., 5,187,795, Cl. 395-800.000.
Harsco Corporation: *See—*
Madison, Harry, 5,186,109, Cl. 105-215.200.
Hart, Edward F.; and McDonough, William B., to Casablanca Industries, Inc. Remote control system for combined ceiling fan and light fixture. 5,187,472, Cl. 340-825.690.
Hartley, Richard I.: *See—*
Currin, Bena L.; Abdel-Malek, Aiman A.; and Hartley, Richard I., 5,187,754, Cl. 382-54.000.
Hartman, Robert. Environmentally-friendly battery cleaning method. 5,186,758, Cl. 134-10.000.
Hartness International, Inc.: *See—*
Hartness, Thomas S.; and Hartness, Thomas P., 5,186,706, Cl. 493-316.000.
Hartness, Thomas P.: *See—*
Hartness, Thomas S.; and Hartness, Thomas P., 5,186,706, Cl. 493-316.000.
Hartness, Thomas S.; and Hartness, Thomas P., to Hartness International, Inc. Carton erecting machine. 5,186,706, Cl. 493-316.000.
Haruta, Kenyu; Nagai, Haruhiko; Nakatani, Hajime; Yamamoto, Yoshihiko; Takemura, Taketoshi; Eura, Takashi; Tsuboi, Shungo; Matsushita, Yoshifumi; and Minagawa, Tadao, to Mitsubishi Denki Kabushiki Kaisha. Excimer laser device. 5,187,716, Cl. 372-57.000.
Harwath, Frank A.; Brinkman, Donald J.; Landgraf, Glenn A.; Shah, Hasmukh; Stenstrom, Eric; Brunker, David L.; and Johnson, Richard A., to Molex Incorporated; and International Business Machines Corporation. Miniature coaxial electrical connector. 5,186,656, Cl. 439-585.000.

VOL 1147 ISS 3 FE 16 1993 UMI

Hase, Kenichi: *See—*
Miyazawa, Shyoichi; Horita, Ryutaro; Hase, Kenichi; Kawamura, Satoshi; Kojima, Shinichi; and Iseki, Toshiyuki, 5,187,615, Cl. 360-46.000.

Hasegawa, Eiichi: *See—*
Aoyagi, Fumitaka; and Hasegawa, Eiichi, 5,187,453, Cl. 331-116.0FE.

Hasegawa, Junzo: *See—*
Sawa, Ikuo; Mori, Natsuki; Maemoto, Shunichi; Kutsuki, Hidetoshi; and Hasegawa, Junzo, 5,187,094, Cl. 435-280.000.

Hasegawa, Takashi; and Inoue, Masahiro, to Canon Kabushiki Kaisha. Image forming apparatus. 5,187,536, Cl. 355-327.000.

Hasetoh, Sakumi: *See—*
Kameda, Osamu; Akutagawa, Hitoshi; Hasetoh, Sakumi; Okita, Junichi; and Hirose, Ichiro, 5,186,078, Cl. 74-606.00R.

Hashimoto, Eiji, to Toyota Jidosha Kabushiki Kaisha. Apparatus for controlling the fuel pressure in an internal combustion engine. 5,186,138, Cl. 123-198.0DB.

Hashimoto, Kazuhiko; Yamashita, Kazuhiro; and Nomura, Noboru, to Matsushita Electric Industrial Co., Ltd. Fine pattern forming method. 5,186,788, Cl. 156-643.000.

Hashimoto, Kazuto: *See—*
Tera, Isao; Kato, Kohji; Yamamoto, Makoto; Hashimoto, Kazuto; and Yasumura, Hitoshi, 5,187,227, Cl. 525-65.000.

Hashimoto, Kinji: *See—*
Goto, Kiyoto; Hashimoto, Kinji; and Kanai, Kenichi, 5,187,161, Cl. 514-255.000.

Hashimoto, Kunihiro; Tsukamoto, Chiharu; and Kawakubo, Chiharu, to Ye Data Inc. Write data write-pre-compensation system in a floppy disk drive unit and apparatus therefor. 5,187,614, Cl. 360-45.000.

Hashimoto, Masahi: *See—*
Kwon, Oh-Kyong; Malhi, Satwinder; and Hashimoto, Masahi, 5,187,020, Cl. 428-601.000.

Hashimoto, Nobuyoshi: *See—*
Onofusa, Mitsuo; Hashimoto, Nobuyoshi; Tagawa, Kimiteru; and Hagiwara, Michiro, 5,186,895, Cl. 422-67.000.

Hashimoto, Takeshi: *See—*
Suzuki, Akio; Matsumura, Masaaki; and Hashimoto, Takeshi, 5,187,014, Cl. 428-447.000.

Hashimoto, Yutaka; Iida, Mitsuhiko; Hayashi, Makoto; Kaneko, Sizunori; and Nakazato, Masahiro, to Toshiba Kikai Kabushiki Kaisha. Print monitoring apparatus with data processing. 5,187,376, Cl. 250-562.000.

Hasler, Jurg; and Stolz, Kurt, to Luwa Ltd. Passive explosion protection device. 5,187,316, Cl. 89-36.020.

Hasler, Leonard F.: *See—*
Fortner, Larry E.; Gustin, Paul R.; Hasler, Leonard F.; Johnson, Harold E.; Maul, George R.; Reed, David L.; and Reichard, George W., Jr., 5,186,649, Cl. 439-460.000.

Hasunuma, Masahiko; Kaneko, Hisashi; Sawabe, Atsuhito; Kawanoue, Takashi; Kohanawa, Yoshiko; and Komatsu, Shuichi, to Kabushiki Kaisha Toshiba. Metal single crystal line having a particular crystal orientation. 5,187,561, Cl. 257-771.000.

Hatano, Kazuyoshi; Ichiryu, Ken; Tamura, Morio; Kometani, Eiji; Gotoh, Yasuharu; and Hidao, Nobuyoshi, to Hitachi Construction Machinery Co., Ltd. Sliding member, and method and apparatus for producing the same by gas sulphonitriding. 5,187,017, Cl. 428-469.000.

Hatch, Robert P.: *See—*
Albarella, James P.; Garling, David L.; and Hatch, Robert P., 5,187,105, Cl. 436-119.000.
Albarella, James P.; Garling, David L.; and Hatch, Robert P., 5,187,265, Cl. 534-573.000.

Hatton, Derald R.; Constiner, Joseph P.; and Suica, David E., to Black Clawson Company, The. Paper stock screening apparatus having heavy rejects trap. 5,186,332, Cl. 209-17.000.

Hattori, Hiroshi; Yoshimori, Hideji; Kondoh, Kazuhiro; and Madama, Akira, to Brother Kogyo Kabushiki Kaisha; and Hitachi Software Engineering Co., Ltd. Printing apparatus for printing randomly input data in order. 5,186,551, Cl. 400-61.000.

Haubennestel, Karl-Heinz; and Bubat, Alfred, to BYK-Chemie GmbH. Coating and molding compositions containing alkyl vinyl ether polymers anduse thereof as leveling agents or antifoam agents. 5,187,201, Cl. 524-31.000.

Haugland, Richard P.: *See—*
Kang, Hee C.; and Haugland, Richard P., 5,187,288, Cl. 548-110.000.

Hauptman, Reuben D.: *See—*
Chau. Nga V.; Hauptman, Reuben D.; Kaufman, David D.; Kittredge, Barbara J.; Lauber, Pamela J.; and Lindblad, Patricia, 5,187,710, Cl. 370-110.100.

Hausen, Harald zur: *See—*
de Villiers, Ethel-Michele; Hirsch-Behnam, Anja; and Hausen, Harald zur, 5,187,090, Cl. 435-235.100.

Hauser, Jeffrey B.: *See—*
Paspek, Stephen C.; Hauser, Jeffrey B.; and Eppig, Christopher P., 5,186,817, Cl. 208-188.000.

Hayakawa, Toru: *See—*
Kikuchi, Haruhiko; Satoh, Hiroaki; Yahata, Nobuhiro; Hagihara, Koichiro; Hayakawa, Toru; Mino, Setsuko; and Yanai, Makoto, 5,187,166, Cl. 514-249.000.

Hayakawa, Yochi: *See—*
Nishida, Masaaki; Kato, Naoji; and Hayakawa, Yochi, 5,186,693, Cl. 475-148.000.

Hayamizu, Yutaka: *See—*
Miyake, Hiraku; Ishiguro, Mitsuo; Abe, Shigetaka; Yamaguchi, Nobuo; Hayamizu, Yutaka; and Aizawa, Satoru, 5,185,976, Cl. 52-167.0RA.

Hayashi, Makoto: *See—*
Hashimoto, Yutaka; Iida, Mitsuhiko; Hayashi, Makoto; Kaneko, Sizunori; and Nakazato, Masahiro, 5,187,376, Cl. 250-562.000.

Hayashi, Manabu: *See—*
Miyabayashi, Mitsutaka; and Hayashi, Manabu, 5,187,035, Cl. 429-218.000.

Hayashi, Noriki: *See—*
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,187,148, Cl. 505-1.000.

Hayashi, Shinichiro, to Mitsubishi Denki Kabushiki Kaisha. Line filter. 5,187,456, Cl. 333-181.000.

Hayashi, Steven R.: *See—*
Wildes, Douglas G.; and Hayashi, Steven R., 5,187,669, Cl. 364-474.170.

Hayashi, Yasuaki; Tomita, Tadashi; Yokoyama, Kenzo; Suzuki, Setsuji; and Uno, Yoshihito, to Toyoda Koki Kabushiki Kaisha. Constant velocity joint having cross grooves. 5,186,687, Cl. 464-144.000.

Hayashi, Yasuhiro, to Fuji Photo Film Co., Ltd. Silver halide color photographic material having improved color reproducibility and high sensitivity to red light. 5,187,053, Cl. 430-505.000.

Hayashi, Yoshinori: *See—*
Harada, Mutsumi; Kato, Nobuji; Hayashi, Yoshinori; Hoshi, Toshiharu; and Iijima, Kenzaburo, 5,187,022, Cl. 428-694.000.

Hayes, Stewart J.; and Noon, Laurence R., to Northern Telecom Limited. Optical fiber prooftester and method for its use. 5,187,767, Cl. 385-137.000.

Haynes, Joel E. Liquid mixing and dispensing nozzle. 5,186,363, Cl. 222-145.000.

Health Care Management: *See—*
Orlando, Joseph A., 5,186,397, Cl. 241-23.000.

Healy, Jr. Stephen F.; Rice, Michael L.; and Golick, Martin L., to Coulter Corporation. Control slide for immunoassay kit using a low-temperature melting paraffin. 5,187,099, Cl. 436-10.000.

Heath, Chester A., to International Business Machines Corp. Shared hardware interrupt circuit for personal computers. 5,187,781, Cl. 395-325.000.

Heaton, Mark T.: *See—*
Beakes, John M.; and Heaton, Mark T., 5,186,405, Cl. 242-1.10R.

Hecht, Hans: *See—*
Stecher, Gunther; Hecht, Hans; Bergfried, Dietrich; Ziegenbein, Botho; and Muehlheim, Richard, 5,186,051, Cl. 73-204.260.

Heckert, David C.: *See—*
Fox, Mary M.; Heckert, David C.; and Luhrsen, Kenneth R., 5,186,965, Cl. 426-74.000.

Heckman, Donald C.: *See—*
Swaim, Joe T.; Heckman, Donald C.; O'Grady, Kenneth J.; and Eastep, Guido M., 5,187,740, Cl. 379-209.000.

Hedges, James H.: *See—*
Stahl, Allan; Moradi-Araghi, Ahmad; Westerman, John; Hsieh, Henry L.; Hedges, James H.; and Bjornson, Geir, 5,186,257, Cl. 166-273.000.

Hedley Pacific Ventures, Ltd.: *See—*
Tucker, John W., deceased, 5,186,935, Cl. 424-410.000.

Hedstrom, Lars-Gunnar; and Westman, Bjorn, to Saab-Scania Aktiebolag. Transmission for a vehicle. 5,186,291, Cl. 192-3.230.

Heel, Helmut; Fauter, Manfred; Mohr, Peter; Friedl, Franz; and Kettel, Hans, to Ott Maschinentechnik GmbH. Clamping device for gripping a tool in a tool carrier. 5,186,476, Cl. 279-2.030.

Heep, Jerry J.: *See—*
Evans, Benjamin F.; Heep, Jerry J.; and Haagen, Peter H., 5,187,469, Cl. 340-825.220.

Hefner, George F. Light bulb adapter apparatus. 5,186,659, Cl. 439-643.000.

Hegman, Terry, to Harley-Davidson, Inc. Motorcycle front fender mounting system. 5,186,274, Cl. 180-227.000.

Heidelberg Harris GmbH: *See—*
Palmatier, Roland T.; Novick, Michael A.; and Belanger, Roger R., 5,186,444, Cl. 270-52.500.

Heidelberger Druckmaschinen AG: *See—*
Vits, Hilmar, 5,186,450, Cl. 271-183.000.

Heim, Richard J.: *See—*
Sanford, David P.; Turner, Bruce R.; and Heim, Richard J., 5,186,807, Cl. 204-299.00R.

Heim, Ulrich: *See—*
Koch, Jochim; and Heim, Ulrich, 5,186,710, Cl. 600-22.000.

Heiman, Jerome R.; and Bruss, Jack, to Globe-Union Inc. Anti-vibration plaque for a battery. 5,187,031, Cl. 429-129.000.

Heimgartner, Frederic: *See—*
Speiser, Peter; Schleuniger, Urs; Orsolini, Piero; and Heimgartner, Frederic, 5,187,150, Cl. 514-2.000.

Heindl, Josef: *See—*
Skuballa, Werner; Buchmann, Bernd; Heindl, Josef; Frohlich, Wolfgang; and Ekerdt, Roland, 5,187,286, Cl. 549-283.000.

Heinsohn, George E., to Du Pont de Nemours, E. I., and Company. Selectivity in the oxidative dehydrogenation of alkyl glycolate. 5,187,307, Cl. 560-177.000.

Heisei Polymer Co., Ltd.: *See—*
Tsukada, Masamitsu; Murata, Kiyoshi; Ota, Yasushi; and Watanabe, Yoshihiko, 5,186,989, Cl. 428-34.900.

Heissler, Walter, to Eastman Kodak Company. Device comprising a plurality of receptacles arranged in a single row for containers filled with a liquid. 5,186,339, Cl. 211-74.000.

Helber, Carlyle L., Jr., to Hughes Aircraft Company. Indium alloy cold weld bumps. 5,186,379, Cl. 228-116.000.

Helgert, Armin: *See—*
Bastert, Carl-Christian; and Helgert, Armin, 5,185,894, Cl. 5-81.100.

Hellberg, Mark R.; and Shanklin, James R., Jr., to American Home Products Corporation. S-aminoalkyl-s-arylsulfoximines as antiarrhythmic agents. 5,187,189, Cl. 514-608.000.

Heller, Marion E. Multi-walled drill string for exploration-sampling drilling systems. 5,186,266, Cl. 175-215.000.

Heller, Werner H., to Peerless-Winsmith, Inc. Gear reducer with backlash eliminator. 5,186,068, Cl. 74-425.000.

Helms, Jeffrey H., to Ford Motor Company. Deposition of electroactive polymers. 5,186,813, Cl. 205-171.000.

Helsley, Grover C.: *See—*
Hamer, Russell R. L.; Helsley, Grover C.; Glamkowski, Edward J.; Chiang, Yulin; Freed, Brian S.; and Kurys, Barbara E., 5,187,165, Cl. 514-307.000.

Hemmerle, Clayton. Out-rover lure. 5,185,951, Cl. 43-43.130.

Hemmi, Keiji: *See—*
Oohata, Nobutaka; Nishikawa, Motoaki; Kiyoto, Sumio; Takase, Shigehiro; Hemmi, Keiji; Murai, Hidetsugu; and Okuhara, Masakuni, 5,187,195, Cl. 514-510.000.

Hemphill, D. Gary: *See—*
Jensen, Richard E.; Nichols, Donald H.; and Hemphill, D. Gary, 5,186,900, Cl. 422-104.000.

Hendrickson, Thomas E.; and Koelsch, Ronald G. Shielded field-effect transistor devices. 5,187,552, Cl. 257-408.000.

Hendry, James W., to Milad Limited Partnership. Method of injection molding with pressurized fluid assist. 5,186,884, Cl. 264-572.000.

Henein, Nabil: *See—*
Burgdorf, Jochen; Klostermann, Gerd; and Henein, Nabil, 5,186,524, Cl. 303-92.000.

Heng, Rudolf; Koch, Walter; and Beyzavi, Ali-Naghi, to Metallgesellschaft Aktiengesellschaft. Recovering TiO_2 concentrates from TiO_2-containing substances. 5,186,920, Cl. 423-610.000.

Henry Ford Health System: *See—*
Shore, Joseph D.; Bock, Paul E.; Olson, Steven T.; and Day, Duane E., 5,187,069, Cl. 435-13.000.

Henson, Randy H.; and Baillie, Lloyd A., to Atlantic Richfield Company. Retrievable bit and eccentric reamer assembly. 5,186,265, Cl. 175-107.000.

Henthorn, Paul F.: *See—*
Nielsen, Peter A.; and Henthorn, Paul F., 5,185,945, Cl. 36-77.00R.

Hentzschel, Walter G., to Desco Corporation. Fence rail bracket. 5,186,571, Cl. 403-231.000.

Herdman, James; and Paddock, John R., Jr. Crushing machine. 5,186,401, Cl. 241-46.010.

Hermann, Heinrich; Pelster, Gunther; and Degener, Klaus, to Josef Meissner GmbH & Co. Process to avoid the formation of waste water during hexamine production. 5,187,274, Cl. 544-186.000.

Herrero Garcia, Jose E.; and Jimenez Rodriquez, Carlos R., to Tele Guia Talking Yellow Pages, Inc. Integrated voice-mail based voice and information processing system. 5,187,735, Cl. 379-88.000.

Herring, Jeffry V.: *See—*
Jeddeloh, Joseph M.; Larson, Ronald J.; and Herring, Jeffry V., 5,187,779, Cl. 395-325.000.

Herrmann, Manfred: *See—*
Brueckmann, Ralf; Bury, Willi; Dix, Johannes P.; Herrmann, Manfred; Dlugosch, Waldemar; Kromm, Erich; Letter, Herbert; Zimmermann, Norbert; Kermer, Wolf-Dieter; and Taeger, Klaus, 5,186,846, Cl. 252-8.700.

Hertel AG Werkzeuge & Hartstoffe: *See—*
Muller, Gebhard; and Escher, Simon, 5,186,584, Cl. 408-26.000.

Herz, William: *See—*
MacKay, Michael T.; Duffy, Robert; Cotterill, Lee A.; Herz, William; and McArdle, Joe, 5,187,630, Cl. 360-137.000.

Heumuller, Rudolf: *See—*
Groh, Werner; Heumuller, Rudolf; Schutze, Gerald; Stern, Roland; and Wieners, Gerhard, 5,187,769, Cl. 385-143.000.

Hewlett-Packard Company: *See—*
Birgenheier, Raymond A.; and Ryan, Richard P., 5,187,719, Cl. 375-10.000.
Bohorquez, Jaime H.; and Keefe, Brian J., 5,187,500, Cl. 346-140.00R.
Forbes, A. Dean, 5,187,657, Cl. 364-413.060.
Hiller, Donald R., 5,187,481, Cl. 341-131.000.
Kovalick, Albert W., 5,187,677, Cl. 364-721.000.
Larson, John D., III, 5,187,403, Cl. 310-334.000.
Myers, Robert L., 5,187,467, Cl. 340-707.000.
Wang, Shein-Sen M., 5,187,120, Cl. 437-192.000.

Heyse, Jorg: *See—*
Enderle, Heinrich; Heyse, Jorg; and Geidel, Helmut-Arnd, 5,186,390, Cl. 239-265.370.

HFT-Obermeier Maschinenbau GmbH: *See—*
Machule, Lothar; and Obermeier, Hans R., 5,187,340, Cl. 219-10.530.

Hibi, Yoshiharu; and Terada, Yoshihiro, to Fuji Xerox Co., Ltd. Color image outputting system for an image processing apparatus. 5,187,570, Cl. 358-80.000.

Hibino, Toshiharu; and Higuchi, Chihiro, to Teijin Seiki Co., Ltd. Absolute position detecting device. 5,187,724, Cl. 377-17.000.

Hickerson, Frederick R. Measuring device for dispensing predetermined quantities of a liquid. 5,186,367, Cl. 222-207.000.

Hickey, John C., to Ford Motor Company. Method of manufacturing a molded fuel injector. 5,185,919, Cl. 29-602.100.

Hickman, Michael D.: *See—*
Majerus, Norbert; Magee, Arthur W.; Hickman, Michael D.; Parrish, Gary C.; Rooney, Timothy M.; and Chlebina, Lawrence E., 5,185,960, Cl. 51-104.000.

Hickox, Thomas A.; and Stram, Jeffrey P., to Seagate Technology, Inc. Magnetic latch and crash stop. 5,187,627, Cl. 360-105.000.

Hicks, Stanley K.: *See—*
Wendt, Charles W.; Hicks, Stanley K.; and Baker, Richard B., 5,186,738, Cl. 504-192.000.

Hidao, Nobuyoshi: *See—*
Hatano, Kazuyoshi; Ichiryu, Ken; Tamura, Morio; Kometani, Eiji; Gotoh, Yasuharu; and Hidao, Nobuyoshi, 5,187,017, Cl. 428-469.000.

Higashitsutsumi, Yoshihito, to Sanyo Electric Co., Ltd. Solid-state image pickup apparatus for inserting an image in a main screen. 5,187,582, Cl. 358-213.110.

Hightower, John D.: *See—*
Holzschuh, Jack E.; and Hightower, John D., 5,186,414, Cl. 244-3.120.

Higley, David P.: *See—*
Estes, William E.; Higley, David P.; Auman, Brian C.; and Feiring, Andrew E., 5,186,985, Cl. 428-1.000.

Higuchi, Chihiro: *See—*
Hibino, Toshiharu; and Higuchi, Chihiro, 5,187,724, Cl. 377-17.000.

Hikasa, Tadashi: *See—*
Hamanaka, Tatsuo; Hikasa, Tadashi; and Ibuki, Koichiro, 5,187,224, Cl. 524-505.000.

Hiki, Susumu; Yanagawa, Takashi; and Uchiumi, Isao, to Kabushiki Kaisha Toshiba. Ultrasonic diagnosis apparatus. 5,186,176, Cl. 128-661.010.

Hill, Robert F.: *See—*
Ives, Steven E.; Ascroft, Thomas B.; Reising, Richard F.; Hill, Robert F.; Brevick, John E.; and Schneider, Eric W., 5,186,278, Cl. 184-6.230.

Hill, Robert P.: *See—*
Clark, Paul H.; Hill, Robert P.; and Wolinski, Michael R., 5,187,780, Cl. 395-325.000.

Hill-Rom Company, Inc.: *See—*
Foster, L. Dale; and Kappers, Timothy A., 5,186,337, Cl. 211-26.000.

Hillebrand, Bernd A., to Koenig & Bauer Aktiengesellschaft. Axially adjustable register pin. 5,186,108, Cl. 101-415.100.

Hiller, Donald R., to Hewlett-Packard Company. Combined and simplified multiplexing and dithered analog to digital converter. 5,187,481, Cl. 341-131.000.

Hilliard, Edward J., Jr., to United States of America, Navy. Acoustic transducer system. 5,187,690, Cl. 367-131.000.

Hilti Aktiengesellschaft: *See—*
Sartor, Dietmar, 5,186,724, Cl. 51-293.000.

Hilton, Douglas J.: *See—*
Gearing, David P.; Gough, Nicholas M.; Hilton, Douglas J.; King, Julie A.; Metcalf, Donald; Nice, Edouard C.; Nicola, Nicos A.; Simpson, Richard J.; and Willson, Tracy A., 5,187,077, Cl. 435-69.100.

Hirai, Hidefumi; Komiyama, Makoto; and Otaki, Michitaka. Colloidal metal dispersion, and a colloidal metal complex. 5,187,209, Cl. 523-205.000.

Hirai, Kazuo: *See—*
Futami, Toru; Hirai, Kazuo; and Tezuka, Shigeki, 5,187,665, Cl. 364-424.050.

Hirai, Toshio: *See—*
Aso, Toshiyuki; and Hirai, Toshio, 5,187,342, Cl. 219-69.140.

Hirakawa, Shoji: *See—*
Mizuno, Koichi; Wakabayashi, Takeshige; Koinuma, Yutaka; Aizawa, Reiji; Kushiyama, Satoshi; Kabayashi, Satoru; Ohuchi, Hideo; Yoshida, Toyonobu; Kubota, Yoshiro; Amano, Takanobu; Komaki, Hisashi; and Hirakawa, Shoji, 5,187,344, Cl. 219-121.500.

Hirama, Makoto; and Kumazawa, Takashi, to Kabushiki Kaisha Toshiba. Ultrasonic diagnostic apparatus. 5,186,175, Cl. 128-661.010.

Hirano, Hirofumi; and Unosawa, Yasuhiro, to Canon Kabushiki Kaisha. Ink jet recording apparatus having gap adjustment between the recording head and recording medium. 5,187,497, Cl. 346-140.00R.

Hirano, Hirosaburo: *See—*
Ouchi, Wataru; Suzuki, Katsuhisa; Tokutake, Toshinori; and Hirano, Hirosaburo, 5,186,250, Cl. 165-177.000.

Hirano, Takahisa, to Mitsubishi Jukogyo Kabushiki Kaisha. Scroll type fluid machinery with reduced pressure biasing the stationary scroll. 5,186,616, Cl. 418-55.500.

Hirano, Toshio: *See—*
Kishimoto, Tadamitsu; Hirano, Toshio; Akiyama, Yukio; Okano, Akira; Matsui, Hiroshi; and Takahara, Yoshiyuki, 5,186,931, Cl. 424-85.200.

Hirao, Mitisuru: *See—*
Ohta, Masahiko; Kaneko, Kazuo; Iyama, Hiroyuki; Kado, Seizi; Hirao, Mitisuru; Ishizaka, Hironori; Ohmaru, Kenji; and Murata, Takao, 5,187,490, Cl. 343-770.000.

Hirao, Naoto, to Fujitsu Limited. Sheet paper feed apparatus having vacuum feed rollers. 5,186,451, Cl. 271-196.000.

Hirasa, Okihiko: *See—*
Masuoka, Toshio; Hirasa, Okihiko; Onishi, Makoto; and Seita, Yukio, 5,186,835, Cl. 210-500.360.

VOL 1147 ISS 3 FE 16 1993 UMI

Hirata, Toichi; Sugiyama, Genroku; and Kajita, Yusuke, to Hitachi Construction Machinery Co., Ltd. Hydraulic drive system for construction machines. 5,186,000, Cl. 60-420.000.

Hirbour, Louis J.: *See*—
Schlenker, Heinz W.; Hirbour, Louis J.; and Gramarossa, Daniel J., 5,186,797, Cl. 204-146.000.

Hirmann, Josef: *See*—
Young, Darryl L.; Hirmann, Josef; Rhodes, Eugene E.; and Brightwell, David L., 5,186,239, Cl. 165-81.000.

Hirobe, Toshihiko: *See*—
Shoji, Hajime; Watanabe, Noriko; Hamada, Hiroshi; Kato, Hiroaki; Takemoto, Toshio; and Hirobe, Toshihiko, 5,187,551, Cl. 257-347.000.

Hirofumi, Kagawa, to Kabushiki Kaisha CSK. Data reading apparatus for identifying position of data tracks. 5,187,698, Cl. 369-47.000.

Hirose, Ichiro: *See*—
Kameda, Osamu; Akutagawa, Hitoshi; Hasetoh, Sakumi; Okita, Junichi; and Hirose, Ichiro, 5,186,078, Cl. 74-606.00R.

Hirozumi, Yasuo: *See*—
Nagasawa, Masakazu; Handa, Masami; Fukai, Kunio; and Hirozumi, Yasuo, 5,186,671, Cl. 445-49.000.

Hirsch-Behnam, Anja: *See*—
de Villiers, Ethel-Michele; Hirsch-Behnam, Anja; and Hausen, Harald zur, 5,187,090, Cl. 435-235.100.

Hirschfeld, Deidre A.: *See*—
Brown, Jesse J.; Hirschfeld, Deidre A.; and Lee, K. H., 5,186,729, Cl. 65-33.000.

Hirth, Georges: *See*—
Barner, Richard; Burri, Kaspar; Cassal, Jean-Marie; Hadvary, Paul; Hirth, Georges; and Muller, Klaus, 5,187,293, Cl. 558-267.000.

Hirzel, Suzy C. Eyebrow stencil kit with alignment members. 5,186,190, Cl. 132-319.000.

Hisamatsu, Kunio: *See*—
Sonobe, Kozo; Fukuzawa, Takashi; Takeuchi, Kohsuke; Tabata, Tatushi; Fukuoka, Hiroshi; Hisamatsu, Kunio; and Katamura, Makoto, 5,187,126, Cl. 501-65.000.

Hissung, Alfred R., to Behringwerke Aktiengesellschaft. Cuvette rotor. 5,186,709, Cl. 494-43.000.

Hitachi Automotive Engineering Co., Ltd.: *See*—
Igarashi, Shinya; and Uchiyama, Kaoru, 5,186,044, Cl. 73-118.200.

Hitachi Chemical Company, Ltd.: *See*—
Ohta, Masahiko; Kaneko, Kazuo; Iyama, Hiroyuki; Kado, Seizi; Hirao, Mitisuru; Ishizaka, Hironori; Ohmaru, Kenji; and Murata, Takao, 5,187,490, Cl. 343-770.000.

Hitachi Construction Machinery Co., Ltd.: *See*—
Hatano, Kazuyoshi; Ichiryu, Ken; Tamura, Morio; Kometani, Eiji; Gotoh, Yasuharu; and Hidao, Nobuyoshi, 5,187,017, Cl. 428-469.000.
Hirata, Toichi; Sugiyama, Genroku; and Kajita, Yusuke, 5,186,000, Cl. 60-420.000.

Hitachi, Ltd.: *See*—
Abe, Nobuo, 5,186,546, Cl. 384-206.000.
Fukudome, Yoshio; Hamada, Yasunori; Okayama, Masao; Kako, Yutaka; Saito, Tetsuo; and Utsumi, Itsunori, 5,186,334, Cl. 209-534.000.
Igarashi, Shinya; and Uchiyama, Kaoru, 5,186,044, Cl. 73-118.200.
Inoue, Taro; Umeno, Hidenori; Ohtsuki, Toru; and Ogawa, Kiyoshi, 5,187,802, Cl. 395-800.000.
Kadomukai, Yuzo; Yamakado, Makoto; Maeda, Yuji; Nakamura, Kenichi; Fukushima, Masao; and Murakami, Kei, 5,186,136, Cl. 123-192.100.
Kawasaki, Ikuya; Kurakazu, Keiichi; and Maejima, Hideo, 5,187,782, Cl. 395-375.000.
Kohgami, Akihiko; Mikoshiba, Shigeo; Shinada, Shinichi; and Suzuki, Mutsumi, 5,187,578, Cl. 358-168.000.
Kunugi, Yoshifumi; Yanadori, Michio; Fukushima, Toshihiko; and Ohuchi, Tomihisa, 5,186,241, Cl. 165-104.120.
Maeda, Yoshihito; Kaneko, Toshiki; Nagai, Masaichi; Andoh, Hisashi; Katou, Yoshimi; Ikuta, Isao; and Watanabe, Ryuji, 5,187,052, Cl. 430-495.000.
Matsui, Hironobu; and Ichihashi, Mikio, 5,187,371, Cl. 250-396.00R.
Miyazawa, Shyoichi; Horita, Ryutaro; Hase, Kenichi; Kawamura, Satoshi; Kojima, Shinichi; and Iseki, Toshiyuki, 5,187,615, Cl. 360-46.000.
Nishijima, Tsunemasa, 5,185,997, Cl. 60-39.070.
Ohashi, Masahisa; Sawada, Shusaku; Sogame, Motomu; Oomasa, Yoshiaki; and Kaneto, Kunikazu, 5,186,890, Cl. 376-434.000.
Sakai, Masanori; Ohsumi, Katsumi; Ohnaka, Noriyuki; Kikuchi, Eiji; Mabuchi, Katsumi; and Takahashi, Takuya, 5,186,798, Cl. 204-153.100.
Sato, Katsuyuki; Kawamoto, Hiroshi; and Yanagisawa, Kazumasa, 5,187,685, Cl. 365-189.090.
Sekine, Yoshihito, 5,186,150, Cl. 123-494.000.
Shiba, Masataka; Inagaki, Akira; Yoshida, Minoru; Ito, Kenchi; and Kawamoto, Kazumi, 5,187,756, Cl. 385-7.000.
Sohma, Kenichi; Yukitake, Tugihiro; Azuhata, Shigeru; Arashi, Norio; and Tokuda, Hiroatsu, 5,186,146, Cl. 123-435.000.
Taniguchi, Hideaki; Kunitou, Hirofumi; Oritsuki, Ryouji; and Sasano, Akira, 5,187,604, Cl. 359-88.000.
Yamamoto, Akira; Kitajima, Hiroyuki; Kurano, Akira; Miyazaki, Michio; Nozawa, Masafumi; and Takeuchi, Takikazu, 5,187,778, Cl. 395-250.000.

Hitachi Metals, Ltd.: *See*—
Obata, Fumio; Tanaka, Toshiaki; and Nagayoshi, Hideaki, 5,186,233, Cl. 164-58.100.

Hitachi Software Engineering Co., Ltd.: *See*—
Hattori, Hiroshi; Yoshimori, Hideji; Kondoh, Kazuhiro; and Madama, Akira, 5,186,551, Cl. 400-61.000.

Hitomi, Takeshi: *See*—
Nakazawa, Takeo; Morita, Hirofumi; Hitomi, Takeshi; and Ishizuka, Katsumi, 5,186,753, Cl. 118-410.000.

Hixon, Kenneth L.; and Bruce, James E., to CableLite Corporation. Conduit for fiber optical cables. 5,187,764, Cl. 385-102.000.

Hiyama, Keiichi, to Olympus Optical Co., Ltd. Medical image displaying method and apparatus. 5,187,579, Cl. 358-183.000.

Hlasta, Dennis J.: *See*—
Desai, Ranjit C.; Court, John J.; Hlasta, Dennis J.; and Subramanyam, Chakrapani, 5,187,173, Cl. 514-373.000.

Hlavin, Dale J., to Markers, Inc. Modular marking system for athletic fields. 5,186,119, Cl. 116-222.000.

Ho, Lee M.: *See*—
Ishii, Yoichi; Mihara, Hisashi; Ho, Lee M.; and Kimura, Goro, 5,186,944, Cl. 424-520.000.

Ho, Min-Da, to Praxair Technology, Inc. Recirculation and plug flow combustion method. 5,186,617, Cl. 431-9.000.

Hodohara, Kiyoaki, to Fujitsu Limited. Error correction method for multicarrier radio transmission system. 5,187,711, Cl. 371-7.000.

Hoechst Aktiengesellschaft: *See*—
Feustel, Michael; and Ritschel, Werner, deceased, 5,186,720, Cl. 44-351.000.
Gitzel, Jorg; Wehle, Detlef; and Macholdt, Hans-Tobias, 5,187,038, Cl. 430-110.000.
Gribbin, John D.; Bothe, Lothar; Dinter, Peter; and Dallmann, Hermann, 5,186,974, Cl. 427-536.000.
Groh, Werner; Heumuller, Rudolf; Schutze, Gerald; Stern, Roland; and Wieners, Gerhard, 5,187,769, Cl. 385-143.000.
Mueller-Hess, Waltraud; Mohr, Dieter; Kroggel, Matthias; and Rauterkus, Karl-Josef, 5,187,040, Cl. 430-157.000.
Ort, Oswald; Willms, Lothar; Bauer, Klaus; Bieringer, Hermann; and Schulz, Arno, 5,186,736, Cl. 504-225.000.
Schach, Thomas, 5,187,295, Cl. 558-343.000.
Vaahs, Tilo; Kleiner, Hans-Jerg; and Bruck, Martin, 5,187,252, Cl. 528-33.000.

Hoechst Celanese Corp.: *See*—
Leslie, Thomas M.; Shu, Ching F.; Blatter, Karsten; DeMartino, Ronald; and Battito, Frank, 5,187,234, Cl. 525-276.000.
Mancusi, Anthony W.; Delozier, J. Clift; Prasad, Ravi; Runkle, Charles J.; and Shuey, Harry F., 5,186,832, Cl. 210-321.800.
Simons, F. Holmes; and Griffith, Ronald L., 5,186,879, Cl. 264-211.150.

Hoechst-Roussel Pharmaceuticals Inc.: *See*—
Hamer, Russell R. L.; Helsley, Grover C.; Glamkowski, Edward J.; Chiang, Yulin; Freed, Brian S.; and Kurys, Barbara E., 5,187,165, Cl. 514-307.000.

Hoen, Nicolaas G. M.: *See*—
Krijger, Louis C.; Jansen, Jozef M. A.; Hoen, Nicolaas G. M.; Steenbakkers, Laurentius W.; and Froehling, Peter E., 5,186,862, Cl. 252-512.000.

Hoesch Maschinenfabrik Deutschland AG: *See*—
Schmidt, Klaus, 5,186,958, Cl. 425-193.000.

Hofer, Hermann: *See*—
Weber, Heinrich; Lehrmann, Falko; Hofer, Hermann; Vogel, Werner; and Mueller, Peter, 5,187,097, Cl. 435-313.000.

Hoffman, David C.; and Hains, Norman L., to Chemical Lime Company. Method and composition for use in recycling metal containing furnace dust. 5,186,742, Cl. 75-773.000.

Hoffman, Jeffrey S.: *See*—
Turvey, Robert R.; Hoffman, Jeffrey S.; and Nestle, Robert J., 5,185,987, Cl. 53-429.000.

Hoffmann-La Roche Inc.: *See*—
Barner, Richard; Burri, Kaspar; Cassal, Jean-Marie; Hadvary, Paul; Hirth, Georges; and Muller, Klaus, 5,187,293, Cl. 558-267.000.

Hofman, Emiel A.: *See*—
Dewanckele, Jean-Marie O.; and Hofman, Emiel A., 5,187,054, Cl. 430-523.000.

Hofmeister, Peter: *See*—
Buerstinghaus, Rainer; Neubauer, Hans-Juergen; Hofmeister, Peter; Kuenast, Christoph; Leyendecker, Joachim; and Kardorff, Uwe, 5,187,182, Cl. 514-383.000.

Hogan, William C.: *See*—
Gierhart, Dennis L.; and Hogan, William C., 5,186,964, Cl. 426-74.000.

Hoinsky, Christopher C.: *See*—
Kovacich, John A.; Hoinsky, Christopher C.; Williams, Donald G.; and Schiesser, Robert A., 5,186,055, Cl. 73-727.000.

Hojo, Yasuo: *See*—
Oka, Takeya; Saito, Masao; Miki, Nobuaki; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Otsubo, Hideaki; Hojo, Yasuo; and Asahara, Norimi, 5,186,204, Cl. 137-238.000.

Hokazono, Kazuaki: *See*—
Tarekado, Kenji; Nakamura, Masanori; Hokazono, Kazuaki; Fukada, Hirotaka; and Ishikawa, Takashige, 5,186,126, Cl. 123-52.0MB.

Hokkai Can Co., Ltd.: *See*—
Tsukada, Shinichi; Iizuka, Yoshiharu; Tamura, Hideyuki; and Sakashita, Osamu, 5,186,593, Cl. 413-19.000.

Holbrook, Russell W., to Pitney Bowes Inc. Power stacking apparatus. 5,186,452, Cl. 271-216.000.

Holcroft, Brian, to Thorn EMI plc. Positional determination. 5,187,330, Cl. 178-18.000.

Holland, Kevin B.: *See*—
Simon, Ethan S.; Holland, Kevin B.; and McClanahan, Christopher, 5,186,838, Cl. 210-635.000.

Holland, Richard J., to BASF Corp. Aqueous prewash stain remover compositions with efficacy on tenacious oily stains. 5,186,856, Cl. 252-143.000.

Holley, Carl A.: *See*—
Kotraba, Norman L.; and Holley, Carl A., 5,186,741, Cl. 75-484.000.

Hollingshead, Wayne S., to Beckett Gas, Inc. Gas burner nozzle. 5,186,620, Cl. 431-354.000.

Holloway, Gregory S.: *See*—
Keil, Gary D.; and Holloway, Gregory S., 5,187,670, Cl. 364-477.000.

Holloway, Thomas F., to Risdon Corporation. Innerbody flex tab cosmetic dispenser. 5,186,560, Cl. 401-78.000.

Holloway, Thomas F.: *See*—
Ackermann, Walter; and Holloway, Thomas F., 5,186,561, Cl. 401-78.000.

Holman, Michael R.; and Smith, Richard A., Jr., to Cooper Industries, Inc. Incandescent lamp. 5,186,669, Cl. 445-16.000.

Holtronic Technologies Ltd.: *See*—
Clube, Francis S. M., 5,187,372, Cl. 250-548.000.

Holzschuh, Jack E.; and Hightower, John D., to United States of America, Navy. Hybrid data link. 5,186,414, Cl. 244-3.120.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Inoue, Kazuo; Kubota, Osamu; Komura, Takashi; and Noda, Etsuo, 5,186,609, Cl. 416-129.000.
Kamimura, Kenji; Tsuzuki, Sadachika; and Noda, Kazunori, 5,187,662, Cl. 364-424.020.
Kamimura, Kenji; Tsuzuki, Sadachika; and Noda, Kazunori, 5,187,663, Cl. 364-424.020.
Kawashima, Makinori; and Nakamura, Minoru, 5,185,907, Cl. 24-20.00R.
Kitajima, Shinichi; and Kobayashi, Yoshihiko, 5,186,149, Cl. 123-491.000.
Kuramitsu, Masao; and Maki, Toshio, 5,186,082, Cl. 76-107.100.
Miyashita, Yukio; Mifune, Hiroshi; Noguchi, Kunio; and Fukuchi, Hironao, 5,186,155, Cl. 123-685.000.
Sato, Makoto; Inagaki, Hiromi; Saito, Wataru; Sakurai, Kazuya; Hagiwara, Koichi; and Horiuchi, Makoto, 5,186,525, Cl. 303-113.400.
Shinozawa, Toshiyuki; Fujita, Hiroyuki; and Arai, Hideaki, 5,186,131, Cl. 123-146.50A.
Wakayama, Hajime; Shimakura, Toru; Watanabe, Seiji; and Handa, Akio, 5,186,423, Cl. 248-160.000.

Honeywell Inc.: *See*—
Bonne, Ulrich, 5,187,674, Cl. 364-558.000.
Wagener, Thomas J.; Bjork, Paul E.; and Lenz, James E., 5,187,475, Cl. 340-870.320.

Hong, Kwon-pyo, to SamSung Electronics Co., Ltd. Method for automatically programming and controlling a next mode of a video tape recorder. 5,187,618, Cl. 360-69.000.

Hood, Edwin I. Fish trolling device. 5,185,950, Cl. 43-19.200.

Hoogovens Groep BV: *See*—
van Ditzhuijzen, Gustaaf A. J. M.; and Bond, Philip A., 5,186,018, Cl. 62-374.000.

Hopenfeld, Joram. Sensors for detecting leaks. 5,187,366, Cl. 250-302.000.

Hopkins, Lionel; Kemp, Thomas H.; and Coon, Warren, to Computer & Communications Technology Corp. Disk head assembly attachment means and method. 5,187,626, Cl. 360-104.000.

Hopp, Donald M.: *See*—
Balmforth, Kevin D.; Bates, Gary A.; Davies, Steven P.; Habereder, Hans L.; Harrison, R. Loyd; Hopp, Donald M.; and Ricker, George G., 5,187,795, Cl. 395-800.000.

Hori, Chikahiro, to Kabushiki Kaisha Toshiba. Priority encoder and floating-point normalization system for IEEE 754 standard. 5,187,678, Cl. 364-748.000.

Hori, Isao: *See*—
Yamamoto, Ken; Nakagawa, Kazufumi; and Hori, Isao, 5,186,689, Cl. 474-112.000.

Hori, Masayuki, to Nissan Motor Co., Ltd. Lamp arrangement for motor vehicle. 5,186,533, Cl. 362-80.100.

Hori, Seiji: *See*—
Fukuyama, Takahiko; Kozawa, Satosi; Ishiguro, Kazuyoshi; Akita, Toshiki; and Hori, Seiji, 5,187,335, Cl. 200-5.00B.

Horie, Toshiaki: *See*—
Okada, Minoru; Horie, Toshiaki; Okuyama, Hirohisa; Kasai, Syuichi; and Iwasa, Akira, 5,186,943, Cl. 424-490.000.

Horita, Masayoshi; Utaka, Katsuyuki; and Matsushima, Yuichi, to Kokusai Denshin Denwa Kabushiki Kaisha. Tunable semiconductor laser. 5,187,717, Cl. 372-96.000.

Horita, Ryutaro: *See*—
Miyazawa, Shyoichi; Horita, Ryutaro; Hase, Kenichi; Kawamura, Satoshi; Kojima, Shinichi; and Iseki, Toshiyuki, 5,187,615, Cl. 360-46.000.

Horiuchi, Makoto: *See*—
Sato, Makoto; Inagaki, Hiromi; Saito, Wataru; Sakurai, Kazuya; Hagiwara, Koichi; and Horiuchi, Makoto, 5,186,525, Cl. 303-113.400.

Horn, Keith: *See*—
Wu, Chengjiu; Nahata, Ajay; McFarland, Michael J.; Horn, Keith; and Yardley, James T., 5,186,865, Cl. 252-582.000.

Horstmann, Harald: *See*—
Seidel, Peter-Rudolf; Horstmann, Harald; Traber, Jorg; Dompert, Wolfgang; Glaser, Thomas; and Thurman, Teunis, 5,187,276, Cl. 544-295.000.

Horton, Raymond R.; Noyan, Ismail C.; Palmer, Michael J.; and Ritter, Mark B., to International Business Machines Corporation. Electronic device elastomeric mounting and interconnection technology. 5,186,632, Cl. 439-67.000.

Horvath nee Petho , Zsuzsanna: *See*—
Nagy, Jozsef; Nagy, Istvan; Balogh, Karoly; Mile, Erzsebet; Tarpai, Gyula; Sellei nee Kulik, Katalin; Fodor, Karoly; Kecskes, Mihaly; Toth nee Juhasz, Erzsebet; and Horvath nee Petho , Zsuzsanna, 5,186,723, Cl. 47-58.000.

Hoser, Jurgen: *See*—
Grossmann, Horst; and Hoser, Jurgen, 5,186,685, Cl. 464-46.000.

Hoshi, Teruo: *See*—
Katoh, Hideaki; Noguchi, Nobuhisa; Kikuchi, Yutaka; Kaneko, Isamu; and Hoshi, Teruo, 5,186,537, Cl. 362-347.000.

Hoshi, Toshiharu: *See*—
Harada, Mutsumi; Kato, Nobuji; Hayashi, Yoshinori; Hoshi, Toshiharu; and Iijima, Kenzaburo, 5,187,022, Cl. 428-694.000.

Hoshino, Kazutomo: *See*—
Ohta, Hiroshi; Aono, Masakazu; Kato, Kazuhiko; Hoshino, Kazutomo; Takahara, Hidefusa; Nakayama, Tomonobu; and Sudoh, Eiichi, 5,187,327, Cl. 174-35.00R.

Hoshino, Yasuharu, to NEC Corporation. Semiconductor memory device with read/write controlling unit for concurrently writing a data bit into memory cells. 5,187,684, Cl. 365-189.050.

Hoshinouchi, Susumu: *See*—
Ohnishi, Hiroshi; and Hoshinouchi, Susumu, 5,186,120, Cl. 118-667.000.

Hoshizaki, Gary W.; Caby, Glen; and Fuller, Robert A., to Motorola, Inc. Configurable row decoder driver circuit. 5,187,394, Cl. 307-449.000.

Hosoya, Mitsukazu: *See*—
Ozawa, Yoshio; Hosoya, Mitsukazu; Matsumoto, Takashi; and Saito, Kimitoshi, 5,187,531, Cl. 355-308.000.

Hostetler, Vernon, to Stark Forest Products Inc. Corner joint for modular assemblies. 5,185,982, Cl. 52-646.000.

Hotate, Kazuo: *See*—
Ohno, Aritaka; Motohara, Shinji; and Hotate, Kazuo, 5,187,757, Cl. 385-11.000.

Housley, Grady E. Method for preparing and cooking potatoes. 5,186,967, Cl. 426-438.000.

Houts, Thomas M.: *See*—
Becker, Martin; Kurn, Nurith; Liu, Yen P.; Patel, Rajesh D.; Houts, Thomas M.; and Olson, John D., 5,187,066, Cl. 435-7.360.

Hovanes, Michael E.: *See*—
Spofford, Bryan T.; Christopher, Kent L.; and Hovanes, Michael E., 5,186,168, Cl. 128-207.290.

Howard, James: *See*—
Toshima, Masato M.; Salzman, Phil M.; Murdoch, Steven C.; Wang, Cheng; Stenholm, Mark A.; Howard, James; Hall, Leonard; and Cheng, David, 5,186,594, Cl. 414-217.000.

Howell, Joe D. Pilot's visor. 5,187,502, Cl. 351-44.000.

Howman, Karen. Therapeutic dietary composition containing amaranth. 5,186,963, Cl. 426-72.000.

Hsiao, K. H. Structure of Y-type socket wrench. 5,186,083, Cl. 81-124.400.

Hsieh, Henry L.: *See*—
Stahl, Allan; Moradi-Araghi, Ahmad; Westerman, John; Hsieh, Henry L.; Hedges, James H.; and Bjornson, Geir, 5,186,257, Cl. 166-273.000.

Hsu, Henry C. Window shade operator. 5,186,229, Cl. 160-176.100.

Huang, David: *See*—
Kanda, Kiyomi, 5,187,504, Cl. 351-153.000.

Huang, Lien-teng. Walk exercising floor. 5,186,703, Cl. 482-148.000.

Huber, David R., to General Instrument Corporation. Wavelength selective coupler for high power optical communications. 5,187,760, Cl. 385-37.000.

Huels Aktiengesellschaft: *See*—
Wolf, Elmar, 5,187,253, Cl. 528-49.000.

Huff, Daniel H.: *See*—
Kelly, Steven C.; Huff, Daniel H.; and Strang, William G., 5,186,665, Cl. 439-862.000.

Huggins, Orville C.: *See*—
Sugiura, Ikuzo; Uchimura, Mitsuo; Kawamura, Kouichi; Fogle, Ronald L.; and Huggins, Orville C., 5,186,553, Cl. 400-242.000.

Hughes Aircraft Company: *See*—
Balmforth, Kevin D.; Bates, Gary A.; Davies, Steven P.; Habereder, Hans L.; Harrison, R. Loyd; Hopp, Donald M.; and Ricker, George G., 5,187,795, Cl. 395-800.000.
Helber, Carlyle L., Jr., 5,186,379, Cl. 228-116.000.
Rogers, Howard H.; Sernka, Richard P.; and Stadnick, Steven J., 5,187,028, Cl. 429-101.000.
Verville, Thomas J., 5,186,781, Cl. 156-169.000.
Whelan, David A.; and Fraschilla, John, 5,187,489, Cl. 343-767.000.

Hughes, Leslie R., to Imperial Chemical Industries Plc. Pharmaceutical compositions comprising quinazolin-4-one derivatives. 5,187,167, Cl. 514-259.000.

Hughes Simulation Systems, Inc.: *See*—
Short, Lee O., 5,187,667, Cl. 364-443.000.

Huldin, Donald H.: *See*—
Yeh, Charles R.; and Huldin, Donald H., 5,186,178, Cl. 128-754.000.

VOL 1147 ISS 3 FE 16 1993 UMI

Huls Aktiengesellschaft: *See—*
Seiler, Claus-Dietrich; Schork, Reinhold; Frings, Albert; Kotzsch, Hans-Joachim; and Rauleder, Hartwig, 5,187,291, Cl. 556-442.000.

Hunkapiller, Michael W.: *See—*
Bridgham, John; Geiser, Timothy G.; Hunkapiller, Michael W.; Kent, Stephen B. H.; Marriott, Mark P.; Ramstad, Paul O.; and Nordman, Eric S., 5,186,898, Cl. 422-102.000.

Hunt, Ann H.: *See—*
Hamill, Robert L.; Hunt, Ann H.; Nagarajan, Ramakrishnan; Schabel, Amelia A.; and Yao, Raymond C., 5,187,082, Cl. 435-71.300.

Hunt, Patrick J.; Jonas, John J.; Yue, Stephen; Ruddle, George E.; and Pussegoda, Lakshman N., to Algoma Steel Corporation, Limited, The. Seamless steel tube manufacture. 5,186,769, Cl. 148-593.000.

Hunt, Terry J., to General Motors Corporation. Air center machine with pitch adjustment. 5,186,034, Cl. 72-187.000.

Hustead, Russell M.: *See—*
Kelso, Jimmie J.; Hustead, Russell M.; and Miller, Walter T., 5,186,712, Cl. 604-165.000.

Hutchins, Steven M.: *See—*
Ashton, Wallace T.; Hutchins, Steven M.; and MacCoss, Malcolm, 5,187,179, Cl. 514-383.000.

Hutchinson: *See—*
Carpentier, Eric; Pelletier, Bruno; and Boni, Bernard, 5,186,771, Cl. 152-158.000.

Hutchinson, James M.: *See—*
Zenios, Stavros A.; and Hutchinson, James M., 5,187,801, Cl. 395-800.000.

Hutchinson Technology Incorporated: *See—*
Blaeser, David J.; and Wolter, Raymond R., 5,187,625, Cl. 360-104.000.

Hutchison, Richard M.; and Corrigall, Don J., to Miller Electric Mfg. Co. Shunt coil controlled transformer. 5,187,428, Cl. 323-250.000.

Hutkins, Robert W.; Berry, Elaine D.; and Liewen, Michael B., to University of Nebraska, Board of Regents of the. Composition and method for inhibiting pathogens and spoilage organisms in foods. 5,186,962, Cl. 426-61.000.

Hutt, Heinz. Paint brush and roller cleaner. 5,185,938, Cl. 34-58.000.

Huynh, Tuong L.: *See—*
Ngoc, Guy P.; and Huynh, Tuong L., 5,186,581, Cl. 405-217.000.

Hwang, David: *See—*
Lo, Tsai J.; and Hwang, David, 5,186,952, Cl. 425-36.000.

Hwang, Hag-In, to Samsung Electronics Co., Ltd. Contact image sensor. 5,187,596, Cl. 358-484.000.

Hwang, Haw C. Quick detachable electric device. 5,186,650, Cl. 439-463.000.

Hwang, Tsong-Ching. Sun shade for the windshields and windows of an automobile. 5,186,511, Cl. 296-95.100.

Hydrostress AG: *See—*
Bieri, Hans, 5,186,157, Cl. 125-14.000.

Hynds, Ernest J.; and Marshalek, Joseph R., to General Motors Corporation. Active link for a stabilizer bar. 5,186,486, Cl. 280-689.000.

Hyodou, Fumitaka: *See—*
Saeki, Shiro; Nakazato, Yukitaka; Ishizaki, Hiroyuki; Hyodou, Fumitaka; and Uotani, Kunihiro, 5,186,446, Cl. 271-3.100.

Hyuga, Hiroaki: *See—*
Okazaki, Yoji; and Hyuga, Hiroaki, 5,187,714, Cl. 372-36.000.

I-Sbou, Tsai. Computer mounting structure for a detachable hard disk drive. 5,187,643, Cl. 361-391.000.

Iampietro, Robert L.: *See—*
Garg, Diwakar; Tsai, Wilman; Kimock, Fred M.; Iampietro, Robert L.; and Dyer, Paul N., 5,186,973, Cl. 427-590.000.

Ibaraki, Atsushi, to Alps Electric Co., Ltd. Thin film magnetic head with symmetrical wire connections. 5,187,623, Cl. 360-103.000.

Ibe, Hiroyaki; Terashima, Seiichi; and Masui, Tsumoru, to Shin-Etsu Handotai Co., Ltd. Method and apparatus for detecting a crystallographic axis of a single crystal ingot for "OF" determination. 5,187,729, Cl. 378-73.000.

Ibuki, Koichiro: *See—*
Hamanaka, Tatsuo; Hikasa, Tadashi; and Ibuki, Koichiro, 5,187,224, Cl. 524-505.000.

Ichihara, Katsutarou; and Kobori, Hiromichi, to Kabushiki Kaisha Toshiba. Magneto-optical recording medium comprising recording layer and thermal bias layer, and method for recording, erasing and overwriting on the medium. 5,187,694, Cl. 369-13.000.

Ichihashi, Hiroo: *See—*
Kitani, Masashi; Kawai, Tatsundo; and Ichihashi, Hiroo, 5,187,595, Cl. 358-482.000.

Ichihashi, Mikio: *See—*
Matsui, Hironobu; and Ichihashi, Mikio, 5,187,371, Cl. 250-396.00R.

Ichijima, Seiji: *See—*
Kobayashi, Hidetoshi; Shimada, Yasuhiro; Ichijima, Seiji; and Ishii, Yoshio, 5,187,055, Cl. 430-544.000.

Ichikawa, Yataro: *See—*
Koike, Yukiya; Wakabayashi, Kenji; Sumi, Yoshihiko; and Ichikawa, Yataro, 5,187,067, Cl. 435-7.900.

Ichikawa, Yukio: *See—*
Katto, Takayuki; Ichikawa, Yukio; Enoki, Toshio; and Katase, Kenichi, 5,187,257, Cl. 528-388.000.

Ichinose, Richard Y.: *See—*
Conboy, Mark A.; Ichinose, Richard Y.; and Baek, Ki H., 5,187,777, Cl. 395-163.000.

Ichiryu, Ken: *See—*
Hatano, Kazuyoshi; Ichiryu, Ken; Tamura, Morio; Kometani, Eiji; Gotoh, Yasuharu; and Hidao, Nobuyoshi, 5,187,017, Cl. 428-469.000.

Idemitsu Kosan Co., Ltd.: *See—*
Matsuo, Shigeru, 5,187,255, Cl. 528-176.000.

Idemitsu Petrochemical Co., Ltd.: *See—*
Tera, Isao; Kato, Kohji; Yamamoto, Makoto; Hashimoto, Kazuto; and Yasumura, Hitoshi, 5,187,227, Cl. 525-65.000.

Iga, Ryuzo: *See—*
Sugiura, Hideo; Yamada, Takeshi; and Iga, Ryuzo, 5,186,750, Cl. 118-50.100.

Igarashi, Shinya; and Uchiyama, Kaoru, to Hitachi, Ltd.; and Hitachi Automotive Engineering Co., Ltd. Air flow rate measuring device for an internal combustion engine. 5,186,044, Cl. 73-118.200.

Igarashi, Yasuo: *See—*
Nakasaki, Eiji; and Igarashi, Yasuo, 5,186,772, Cl. 152-516.000.

Ignjatovic, Dragan; and Kovacevic, Miodrag. Process and apparatus for recycling a polyolefin material end product. 5,186,400, Cl. 241-39.000.

Iguchi, Kunitoshi: *See—*
Fukuoka, Naohiko; Kubota, Kazunobu; and Iguchi, Kunitoshi, 5,187,289, Cl. 548-260.000.

Ihata, Jyoji: *See—*
Shimamura, Yasuki; and Ihata, Jyoji, 5,187,047, Cl. 430-286.000.

Iida, Katsumi, to Zexel Corporation. Air conditioning system for vehicles. 5,186,682, Cl. 454-75.000.

Iida, Makio: *See—*
Isobe, Yoshihiko; and Iida, Makio, 5,187,559, Cl. 257-538.000.

Iida, Mitsuhiko: *See—*
Hashimoto, Yutaka; Iida, Mitsuhiko; Hayashi, Makoto; Kaneko, Sizunori; and Nakazato, Masahiro, 5,187,376, Cl. 250-562.000.

Iijima, Kenzaburo: *See—*
Harada, Mutsumi; Kato, Nobuji; Hayashi, Yoshinori; Hoshi, Toshiharu; and Iijima, Kenzaburo, 5,187,022, Cl. 428-694.000.

Iijima, Yasuteru: *See—*
Fukumi, Hiroshi; Sakamoto, Toshiaki; Sugiyama, Mitsuo; Yamaguchi, Takeshi; Oshima, Takeshi; and Iijima, Yasuteru, 5,187,181, Cl. 514-318.000.

Iizuka, Yoshiharu: *See—*
Tsukada, Shinichi; Iizuka, Yoshiharu; Tamura, Hideyuki; and Sakashita, Osamu, 5,186,593, Cl. 413-19.000.

Ikawa, Naoya, to Pegasus Sewing Machine Mfg. Co., Ltd. Thread tension adjusting apparatus for a sewing machine. 5,186,114, Cl. 112-254.000.

Ikeda Bussan Co., Ltd.: *See—*
Imai, Hiroshi, 5,186,489, Cl. 280-728.000.
Sakamoto, Manabu, 5,186,349, Cl. 220-331.000.
Takano, Hiroyuki, 5,186,488, Cl. 280-728.000.

Ikeda, Mitsushi; and Murooka, Michio, to Kabushiki Kaisha Toshiba. Liquid crystal display apparatus. 5,187,602, Cl. 359-59.000.

Ikeda, Nobukazu: *See—*
Nishimura, Ryutaro; Yamaji, Michio; Maeda, Hirokatsu; Ikeda, Nobukazu; and Yamamoto, Kenji, 5,186,434, Cl. 251-331.000.

Ikeda, Yoshinori: *See—*
Kurita, Mitsuru; Suzuki, Yasumichi; and Ikeda, Yoshinori, 5,187,593, Cl. 358-434.000.

Ikegami, Tatsuo: *See—*
Yoshinaga, Shigeo; Ikegami, Tatsuo; and Osaki, Seiji, 5,186,562, Cl. 401-112.000.

Ikenoue, Shinpei, to Fuji Photo Film Co., Ltd. Photographic film package. 5,187,514, Cl. 354-275.000.

Ikesu, Satoru; Kita, Hiroshi; and Kaneko, Yutaka, to Konica Corporation. Silver halide color photographic light-sensitive material and color photographic coupler. 5,187,057, Cl. 430-558.000.

Iko Industries Ltd: *See—*
Koschitzky, Henry, 5,186,980, Cl. 427-187.000.

Ikola, Kimmo J.; Stenman, Kimmo E.; and Yli-Vakkuri, Erkki P. J., to Tamglass Oy. Apparatus for grinding the edge of a glass sheet. 5,185,959, Cl. 51-72.00R.

Ikuta, Isao: *See—*
Maeda, Yoshihito; Kaneko, Toshiki; Nagai, Masaichi; Andoh, Hisashi; Katou, Yoshimi; Ikuta, Isao; and Watanabe, Ryuji, 5,187,052, Cl. 430-495.000.

Ikuta, Yoshihisa: *See—*
Ohmi, Ikuhiro; Yanagida, Yoshiaki; Matsuyama, Soichi; and Ikuta, Yoshihisa, 5,186,449, Cl. 271-10.000.

Illinois Tool Works Inc.: *See—*
Cochran, Gene A., 5,186,543, Cl. 383-203.000.
Franco, Francis G.; and McIlveen, Nelson D., 5,186,572, Cl. 403-251.000.

Imagawa, Osamu: *See—*
Shibata, Koichi; Fukushima, Toshitaka; Watanabe, Hiroyuki; Miyahara, Shinichiro; and Imagawa, Osamu, 5,187,441, Cl. 324-426.000.
Shibata, Koichi; Fukushima, Toshitaka; Watanabe, Hiroyuki; Miyahara, Shinichiro; and Imagawa, Osamu, 5,187,720, Cl. 375-35.000.

Imaginative Research Associates, Inc.: *See—*
Ramirez, Jose E.; and Vishnupad, Mohan, 5,186,857, Cl. 252-167.000.

Imahuzi, Keitetsu: *See—*
Kubo, Hiroshi; and Imahuzi, Keitetsu, 5,186,976, Cl. 427-129.000.

Imai, Hideaki: *See—*
Iriyama, Takahiko; Kobayashi, Kurima; and Imai, Hideaki, 5,186,766, Cl. 148-301.000.

Imai, Hiroshi, to Ikeda Bussan Co., Ltd. Airbag restraint system. 5,186,489, Cl. 280-728.000.

Imanari, Hitoshi; and Yoshibe, Koshi, to Nikon Corporation. Focusing apparatus. 5,187,513, Cl. 354-195.100.

IMI (TAMI) Institute for Research and Development Ltd.: *See—*
Eisenstadt, Amihai; and Keren, Yehuda, 5,187,303, Cl. 560-55.000.

Immunicon Corporation: *See—*
Liberti, Paul A.; Feeley, Brian P.; and Gohel, Dhanesh I., 5,186,827, Cl. 210-222.000.

Immunopath Profile, Inc.: *See—*
Girsh, Leonard S., 5,186,971, Cl. 426-580.000.

Imoto, Takayoshi; Seshimo, Masahiro; Makimoto, Futoshi; and Kitagawa, Eiji, to Ashimori Industry Co., Ltd. Lining material for pipe lines and a process for providing pipe lines therewith. 5,186,987, Cl. 428-34.500.

Imperial Chemical Industries PLC: *See—*
Austin, Peter W., 5,187,172, Cl. 514-369.000.
Broadhurst, Michael D.; Tsang, Tsze H.; and Tomko, John, 5,186,733, Cl. 504-195.000.
Gillis, Herbert R., 5,187,205, Cl. 501-129.000.
Hughes, Leslie R., 5,187,167, Cl. 514-259.000.
Lecount, David J., 5,187,190, Cl. 514-652.000.
Salmon, Roger; Sunley, Raymond L.; and Whittle, Alan J., 5,187,176, Cl. 514-269.000.

INA Rafinerija nafte rijeka n.sol.o, OOUR proizvodnja goriva i aromata sa.sub.o. druge: *See—*
Nikolic, Ognjen; Kralj-Baretic, Jadranka; and Koscina-Korunic, Smiljana, 5,186,837, Cl. 210-614.000.

INA Walzlager Schaeffler KG: *See—*
Eder, Jean M.; Lambertz, Hans-Reinhard; and Koschmieder, Hartmut, 5,186,544, Cl. 384-15.000.

Inagaki, Akira: *See—*
Shiba, Masataka; Inagaki, Akira; Yoshida, Minoru; Ito, Kenchi; and Kawamoto, Kazumi, 5,187,756, Cl. 385-7.000.

Inagaki, Hiromi: *See—*
Sato, Makoto; Inagaki, Hiromi; Saito, Wataru; Sakurai, Kazuya; Hagiwara, Koichi; and Horiuchi, Makoto, 5,186,525, Cl. 303-113.400.

Inagaki, Hiromichi. Zipper for closing the mouth of a bag. 5,185,909, Cl. 24-587.000.

Inamori, Akio: *See—*
Owada, Toshinobu; Inamori, Akio; Aota, Yoshikazu; Sakamoto, Shigeo; and Takahashi, Seiichi, 5,186,297, Cl. 192-85.0CA.

Inamoto, Yoshiko: *See—*
Sakane, Kazuo; Kawabata, Kohji; Miyai, Kenzi; and Inamoto, Yoshiko, 5,187,160, Cl. 514-202.000.

Incorvia, Samuel A.: *See—*
Cullen, John S.; Incorvia, Samuel A.; Nigon, Christopher S.; and Boczkowski, Frederick A., 5,186,775, Cl. 156-69.000.

Incyte Pharmaceuticals, Inc.: *See—*
Scott, Randy W.; Golini, Fred; and McGrogan, Michael, 5,187,089, Cl. 435-212.000.

Industrial Innovations, Inc.: *See—*
Urbani, William G., 5,185,899, Cl. 15-93.100.

Industrial Technology Research Institute: *See—*
Yang, Shyh-Ching; and Chen, Li-Chiang, 5,186,607, Cl. 415-183.000.

Ingersoll-Dresser Pump Company: *See—*
Nolte, Paul A., 5,186,365, Cl. 222-153.000.

Inoue, Hayao: *See—*
Tanino, Tadatsugu; Furuya, Yoshihiro; Takeda, Toyohiko; Endo, Yoshiyuki; and Inoue, Hayao, 5,186,956, Cl. 425-135.000.

Inoue, Kazuo; Kubota, Osamu; Komura, Takashi; and Noda, Etsuo, to Honda Giken Kogyo Kabushiki Kaisha. Contrarotating propeller type propulsion system. 5,186,609, Cl. 416-129.000.

Inoue, Masahiro: *See—*
Hasegawa, Takashi; and Inoue, Masahiro, 5,187,536, Cl. 355-327.000.

Inoue, Noboru: *See—*
Yoshida, Nobuo; Nishida, Kenziro; and Inoue, Noboru, 5,186,491, Cl. 280-741.000.

Inoue, Nobuaki, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,187,058, Cl. 430-567.000.

Inoue, Nobuaki: *See—*
Katoh, Kazunobu; Okamura, Hisashi; Okada, Hisashi; Inoue, Nobuaki; Takahashi, Toshiro; Yagihara, Morio; and Yamaguchi, Tetsuo, 5,187,042, Cl. 430-264.000.

Inoue, Taro; Umeno, Hidenori; Ohtsuki, Toru; and Ogawa, Kiyoshi, to Hitachi, Ltd. Virtual machine system with vitual machine resetting store indicating that virtual machine processed interrupt without virtual machine control program intervention. 5,187,802, Cl. 395-800.000.

Inoue, Toshihiro, to Yamaha Corporation. Musical tone synthesizing apparatus. 5,187,313, Cl. 84-622.000.

Inoue, Yasuhito: *See—*
Asatsuma, Keiji; Inoue, Yasuhito; and Kondo, Akitoshi, 5,187,223, Cl. 524-496.000.

Inoue, Yoshihisa: *See—*
Yamamoto, Yoshihiro; Takaki, Usaji; Aoki, Shinobu; Inoue, Yoshihisa; and Hara, Isao, 5,187,283, Cl. 548-457.000.

Insertec Systems, Inc.: *See—*
Martin, Luther W.; Smith, Richard L.; and Cotherman, Jesse W., 5,185,928, Cl. 30-92.500.

Institut Francais du Petrole: *See—*
Alagy, Jacques; Broutin, Paul; Busson, Christian; Gougne, Yves; and Weill, Jerome, 5,186,910, Cl. 422-220.000.
Dang Vu, Quang; Franckowiak, Sigismond; Grehier, Alain; Vacher, Philippe; and Burzynski, Jean-Pierre, 5,186,909, Cl. 422-213.000.
du Chaffaut, Benhoist A., 5,186,264, Cl. 175-27.000.
Gauthier, Thierry; Bergougnou, Maurice; Briens, Cedric; and Galtier, Pierre, 5,186,836, Cl. 210-512.100.

Institute of Gas Technology: *See—*
Czachorski, Marek; and Kountz, Kenneth J., 5,186,012, Cl. 62-114.000.

Institute of Opthalmology, The: *See—*
Arden, Geoffrey B., 5,187,507, Cl. 351-226.000.

Institute of Paper Science and Technology, Inc.: *See—*
Uddin, M. Rafique, 5,187,092, Cl. 435-240.450.

Instrumentation Northwest, Inc.: *See—*
Gustafson, Gregg S.; and Kuga, Jay M., 5,186,253, Cl. 166-77.000.

Instrumentverken AB: *See—*
Rydergren, Bertil; Silfven, Jan; and Malmhall, Roger, 5,187,437, Cl. 324-253.000.

Integrative Motion Systems, Inc.: *See—*
Shultz, Larry D.; and Bolton, Carl W., 5,186,424, Cl. 248-179.000.

Intel Corporation: *See—*
Allen, Michael J., 5,187,392, Cl. 307-465.000.
Keith, John M.; Simon, Allen H.; Sprague, David L.; Dixon, Douglas F.; and Goldstein, Judith A., 5,187,793, Cl. 395-775.000.

Inter-City Products Corporation (USA): *See—*
Lynch, Gregory A., 5,186,386, Cl. 236-11.000.
Schardt, David L.; Luna, Lois A.; and Jones, Ivor S., 5,186,528, Cl. 312-100.000.

Intergraph Corporation: *See—*
Rawson, Linda B.; and Kuk, Donald W., 5,186,377, Cl. 228-37.000.

International Business Machines Corporation: *See—*
Buchwalter, Stephen L.; Frank, Ernest R.; O'Toole, Terrence R.; Thomas, Richard R.; and Viehbeck, Alfred, 5,187,241, Cl. 525-420.000.
Cook, Robert K.; and Pelella, Mario M. A., 5,187,109, Cl. 437-32.000.
Cote, Donna R.; Stanasolovich, David; and Warren, Ronald A., 5,187,121, Cl. 437-195.000.
Dayan, Richard A.; Lam, Son H.; and Zimmerman, John P., 5,187,792, Cl. 395-725.000.
del Puerto, Santiago E.; and Gaschke, Paul M., 5,186,238, Cl. 165-80.400.
Fahey, Laura B.; Garten, Michael D.; and Lyke, David G., 5,186,335, Cl. 209-552.000.
Harwath, Frank A.; Brinkman, Donald J.; Landgraf, Glenn A.; Shah, Hasmukh; Stenstrom, Eric; Brunker, David L.; and Johnson, Richard A., 5,186,656, Cl. 439-585.000.
Heath, Chester A., 5,187,781, Cl. 395-325.000.
Horton, Raymond R.; Noyan, Ismail C.; Palmer, Michael J.; and Ritter, Mark B., 5,186,632, Cl. 439-67.000.
Lorenz, William M., 5,187,653, Cl. 363-89.000.
May, Paul G., 5,187,449, Cl. 331-66.000.
Nyyssonen, Diana, 5,186,041, Cl. 73-105.000.
Rohen, James E., 5,186,629, Cl. 434-114.000.
Vassiliadis, Stamatis; and Schwarz, Eric M., 5,187,679, Cl. 364-786.000.
Yanker, Peter C., 5,187,776, Cl. 395-157.000.

International Teleservice Corp.: *See—*
Davenport, Marcus K.; Shipman, Richard K.; Young, Thomas D.; and Strode, Stephen H., 5,187,739, Cl. 379-155.000.

Interpore Orthopaedics, Inc.: *See—*
Talish, Roger J.; and Lifshey, Arthur L., 5,186,162, Cl. 128-24.0AA.

Interprovincial Pipe Line Company: *See—*
Savard, Donald D., 5,186,214, Cl. 138-89.000.

Invacare Corporation: *See—*
Michaels, Gregory A., 5,186,793, Cl. 204-59.00R.

Iorio, Vincent M.; and Loy, Luke W., to United States of America, Navy. Electro-rheological disk pump. 5,186,604, Cl. 415-90.000.

Iovine, Carmine P.; Chandran, Rama S.; and Leighton, John C., to National Starch and Chemical Investment Holding Corporation. Polyether polycarboxylate compositions useful as detergent builders. 5,187,238, Cl. 525-327.200.

Iovine, Carmine P.: *See—*
Leighton, John C.; Neigel, Dennis; and Iovine, Carmine P., 5,187,006, Cl. 428-288.000.

Irie, Yoichiro: *See—*
Nakanishi, Tsugio; Irie, Yoichiro; and Nagao, Tsuyoshi, 5,186,445, Cl. 270-053.000.

Iriyama, Takahiko; Kobayashi, Kurima; and Imai, Hideaki, to Asahi Kasei Kogyo Kabushiki Kaisha. Magnetic materials containing rare earth element iron nitrogen and hydrogen. 5,186,766, Cl. 148-301.000.

Irvin, G. Daniel: *See—*
Schultz, Clifford W.; and Irvin, G. Daniel, 5,186,820, Cl. 209-164.000.

Isaacson, Robert D.: *See—*
Cuba, Gary W.; Isaacson, Robert D.; and Lambert, David V., 5,187,348, Cl. 219-124.020.

Isaka, Kazuo: *See—*
Mouri, Akihiro; Isaka, Kazuo; Fukui, Tetsuro; and Katayama, Masato, 5,187,041, Cl. 430-201.000.

Isaka, Norihisa: *See—*
Mizutani, Minoru; and Isaka, Norihisa, 5,186,554, Cl. 400-247.000.

VOL 1147 ISS 3 FE 16 1993 UMI

Iseki, Toshiyuki: *See—*
Miyazawa, Shyoichi; Horita, Ryutaro; Hase, Kenichi; Kawamura, Satoshi; Kojima, Shinichi; and Iseki, Toshiyuki, 5,187,615, Cl. 360-46.000.

Ishibashi, Kenji; Ishida, Tokuji; and Hamada, Masataka, to Minolta Camera Kabushiki Kaisha. Camera having automatic focus adjusting apparatus. 5,187,515, Cl. 354-400.000.

Ishida, Noboru; and Takashima, Hiroyuki, to Nippon Oil Co., Ltd. p,p'-dinonyldiphenylamine and composition containing the same. 5,186,852, Cl. 252-50.000.

Ishida, Tokuji: *See—*
Ishibashi, Kenji; Ishida, Tokuji; and Hamada, Masataka, 5,187,515, Cl. 354-400.000.

Ishida, Yasushi: *See—*
Ono, Takeshi; Wada, Satoshi; Kobayashi, Makoto; Yoshida, Takehiro; Takeda, Tomoyuki; Ishida, Yasushi; Yokoyama, Minoru; Tomoda, Akihiro; Yamada, Masakatsu; and Awai, Takashi, 5,187,494, Cl. 346-76.0PH.

Ishidoya, Masahiro: *See—*
Yamamoto, Toshio; Matsukura, Yoshiaki; Obe, Osamu; Ogawa, Hisao; Ishidoya, Masahiro; and Matsubara, Yoshiro, 5,187,229, Cl. 525-123.000.

Ishigaki, Isao: *See—*
Sasaki, Takashi; Ishigaki, Isao; Izuchi, Syuichi; and Noda, Tomohiko, 5,187,032, Cl. 429-192.000.

Ishiguro, Kazuyoshi: *See—*
Fukuyama, Takahiko; Kozawa, Satosi; Ishiguro, Kazuyoshi; Akita, Toshiki; and Hori, Seiji, 5,187,335, Cl. 200-5.00B.

Ishiguro, Mitsuo: *See—*
Miyake, Hiraku; Ishiguro, Mitsuo; Abe, Shigetaka; Yamaguchi, Nobuo; Hayamizu, Yutaka; and Aizawa, Satoru, 5,185,976, Cl. 52-167.0RA.

Ishii, Hidebiro; Takeya, Hiroshi; Miura, Chiharu; and Fukuda, Tatsuya, to Pioneer Electronic Corporation. Method for setting the loop gain in a focusing servo loop. 5,187,696, Cl. 369-44.290.

Ishii, Satoshi: *See—*
Eguchi, Tadashi; and Ishii, Satoshi, 5,187,725, Cl. 377-56.000.

Ishii, Takeshi, to Copal Company Limited. Object detection apparatus of the photoelectric reflection type with sampled data. 5,187,361, Cl. 250-222.100.

Ishii, Yoichi; Mihara, Hisashi; Ho, Lee M.; and Kimura, Goro, to Eimei Company Ltd. Therapeutic medicament for thrombosis. 5,186,944, Cl. 424-520.000.

Ishii, Yoshio: *See—*
Kobayashi, Hidetoshi; Shimada, Yasuhiro; Ichijima, Seiji; and Ishii, Yoshio, 5,187,055, Cl. 430-544.000.

Ishikawa, Katsukiyo: *See—*
Matsumura, Akira; Ohata, Masashi; and Ishikawa, Katsukiyo, 5,186,801, Cl. 204-181.100.

Ishikawa, Kazunori: *See—*
Oka, Takeya; Saito, Masao; Miki, Nobuaki; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Otsubo, Hideaki; Hojo, Yasuo; and Asahara, Norimi, 5,186,204, Cl. 137-238.000.

Ishikawa, Takashige: *See—*
Tarekado, Kenji; Nakamura, Masanori; Hokazono, Kazuaki; Fukada, Hirotaka; and Ishikawa, Takashige, 5,186,126, Cl. 123-52.0MB.

Ishikawa, Takatoshi, to Fuji Photo Film Co., Ltd. Method for processing a silver halide color photographic material. 5,187,051, Cl. 430-448.000.

Ishikawa, Toshio: *See—*
Katayama, Hiroyuki; Nakayama, Junichiro; Ohta, Kenji; and Ishikawa, Toshio, 5,187,703, Cl. 369-275.100.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Nakazawa, Takeo; Morita, Hirofumi; Hitomi, Takeshi; and Ishizuka, Katsumi, 5,186,753, Cl. 118-410.000.

Ishino, Renshiro; Yoshimura, Shigeo; Sunahata, Mutsumi; Saito, Taro; and Tanizaki, Yasuo, to Kubota Corporation. Torque sensor shaft. 5,186,059, Cl. 73-862.193.

Ishizaka, Hironori: *See—*
Ohta, Masahiko; Kaneko, Kazuo; Iyama, Hiroyuki; Kado, Seizi; Hirao, Mitisuru; Ishizaka, Hironori; Ohmaru, Kenji; and Murata, Takao, 5,187,490, Cl. 343-770.000.

Ishizaki, Hiroyuki: *See—*
Saeki, Shiro; Nakazato, Yukitaka; Ishizaki, Hiroyuki; Hyodou, Fumitaka; and Uotani, Kunihiro, 5,186,446, Cl. 271-3.100.

Ishizuka, Katsumi: *See—*
Nakazawa, Takeo; Morita, Hirofumi; Hitomi, Takeshi; and Ishizuka, Katsumi, 5,186,753, Cl. 118-410.000.

Ishizuka, Masahiro: *See—*
Egashira, Toshiyuki; Ishizuka, Masahiro; and Banjou, Toshinobu, 5,186,719, Cl. 29-25.010.

Isobe, Kazutaka; and Nomura, Toshio, to Sumitomo Electric Industries, Ltd. Cermet alloy containing nitrogen. 5,186,739, Cl. 75-238.000.

Isobe, Yoshihiko; and Iida, Makio, to Nippondenso Co., Ltd. Semiconductor device and process for producing same. 5,187,559, Cl. 257-538.000.

Isoda, Sadatsuyo: *See—*
Mashiko, Kimio; Isoda, Sadatsuyo; and Tateno, Atsushi, 5,186,185, Cl. 131-337.000.

Isomichi, Kanji: *See—*
Morishima, Ryuji; Asai, Katsutoshi; Fukumoto, Ryutaro; and Isomichi, Kanji, 5,186,134, Cl. 123-179.500.

Isover Saint-Gobain: *See—*
Vojtech, Strnad, 5,186,112, Cl. 110-256.000.

Isumi, Hiroshi: *See—*
Ueda, Hideaki; and Isumi, Hiroshi, 5,186,140, Cl. 123-308.000.

Isuzu Motors Limited: *See—*
Tsuchiya, Yoshinobu, 5,187,350, Cl. 219-203.000.

ITI/CLM Impianti Tecnici Industriali SpA: *See—*
Bozzi, Eugenio, 5,186,343, Cl. 212-206.000.

Ito, Fuminori, to Kitagawa Industries Co., Ltd. Guide rail for a printed circuit board. 5,187,648, Cl. 361-424.000.

Ito, Junnosuke; and Iwamoto, Minoru, to Taiyo Chuki Co., Ltd. Core and molding sand preparation apparatus with adjustable mixing blade. 5,186,538, Cl. 366-16.000.

Ito, Kenchi: *See—*
Shiba, Masataka; Inagaki, Akira; Yoshida, Minoru; Ito, Kenchi; and Kawamoto, Kazumi, 5,187,756, Cl. 385-7.000.

Ito, Yasuyuki, to Kabushiki Kaisha Toshiba. Gyrotron having a quasi-optical mode converter. 5,187,409, Cl. 315-5.000.

Itoh, Hiromichi: *See—*
Shuto, Satoshi; Obara, Takumi; Itoh, Hiromichi; Koshio, Takehiro; Fujiwara, Tatsuro; and Yaso, Masao, 5,187,174, Cl. 514-261.000.

Ives, Steven E.; Ascroft, Thomas B.; Reising, Richard F.; Hill, Robert F.; Brevick, John E.; and Schneider, Eric W., to General Motors Corporation. Oil mist separator. 5,186,278, Cl. 184-6.230.

Iwamoto, Katsuharu; and Kawakami, Osamu, to Kabushiki Kaisha Toshiba. Laser doppler velocimeter. 5,187,538, Cl. 356-28.500.

Iwamoto, Minoru: *See—*
Ito, Junnosuke; and Iwamoto, Minoru, 5,186,538, Cl. 366-16.000.

Iwamura, Kazumitsu: *See—*
Oku, Masahiro; Iwamura, Kazumitsu; and Kakumu, Kiichiro, 5,186,773, Cl. 152-531.000.

Iwasa, Akira: *See—*
Okada, Minoru; Horie, Toshiaki; Okuyama, Hirohisa; Kasai, Syuichi; and Iwasa, Akira, 5,186,943, Cl. 424-490.000.

Iwasa, Hiroki; Nagasaka, Chikao; Ueda, Masuyuki; Kato, Shigeru; Aoki, Hisashi; Shibahara, Makoto; and Mori, Satoshi, to Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Switch device for use in a power driven window apparatus. 5,187,381, Cl. 307-10.100.

Iwasaki, Hiroshi: *See—*
Nogami, Takeshi; and Iwasaki, Hiroshi, 5,187,111, Cl. 437-41.000.

Iwasaki, Satoshi, to Minolta Camera Kabushiki Kaisha. Illumination system for use in image projection apparatus. 5,187,509, Cl. 353-101.000.

Iwasaki, Yoshihisa, to Maeda Industries, Ltd. Bicycle speed change lever assembly. 5,186,071, Cl. 74-489.000.

Iwata, Yasuhiro; and Tsubo, Shuzo, to Kabushiki Kaisha Toshiba. Stapling device and image forming apparatus having a stapling device. 5,187,534, Cl. 355-324.000.

Iwatsuki, Kunihiro: *See—*
Oka, Takeya; Saito, Masao; Miki, Nobuaki; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Otsubo, Hideaki; Hojo, Yasuo; and Asahara, Norimi, 5,186,204, Cl. 137-238.000.

IXYS Corporation: *See—*
Zommer, Nathan, 5,187,117, Cl. 437-151.000.

Iyama, Hiroyuki: *See—*
Ohta, Masahiko; Kaneko, Kazuo; Iyama, Hiroyuki; Kado, Seizi; Hirao, Mitisuru; Ishizaka, Hironori; Ohmaru, Kenji; and Murata, Takao, 5,187,490, Cl. 343-770.000.

Izenbaard, John; Philipp, Christopher D.; and Steffler, Michael W., to Stryker Corporation. Charger for batteries of different type. 5,187,422, Cl. 320-2.000.

Izuchi, Syuichi: *See—*
Sasaki, Takashi; Ishigaki, Isao; Izuchi, Syuichi; and Noda, Tomohiko, 5,187,032, Cl. 429-192.000.

J. M. Huber Corporation: *See—*
Freeman, Gary M., 5,186,746, Cl. 106-416.000.

Jaccottet, Michel: *See—*
Magnollay, Gilbert; Seigneur, Remy; Budry, Jacques; Clement, Jean-Claude; Jaccottet, Michel; Jaggi, Pierre-Yves; Jaun, Hans; and De Boer, Philip, 5,186,957, Cl. 425-192.00R.

Jachmann, Jurgen; Weitemeyer, Christian; and Wewers, Dietmar, to Th. Goldschmidt AG. Curable organopolysiloxanes having epoxy groups, methods of synthesizing them and their use as curable coating materials with abhesive properties. 5,187,251, Cl. 528-15.000.

Jachowicz, Janusz: *See—*
DeMarco, Richard; Feinland, Raymond; and Jachowicz, Janusz, 5,186,929, Cl. 424-71.000.

Jack, Douglas M., to Day Runner, Inc. Sliding ring mount for a pocket binder. 5,186,565, Cl. 402-79.000.

Jacks, Wendy S.: *See—*
Turner, James A.; Zorner, Paul S.; and Jacks, Wendy S., 5,186,735, Cl. 504-242.000.

Jackson, H. Spence, to Motorola, Inc. Tuning circuit for continuous-time filters and method therefor. 5,187,445, Cl. 328-167.000.

Jackson, Michael L.; and Easterle, Mark A., to BASF Corporation. Energy absorbing, water blown, rigid polyurethane foam articles. 5,187,204, Cl. 521-111.000.

Jacobs Brake Technology Corporation: *See—*
Custer, Dennis R., 5,186,141, Cl. 123-321.000.

Jacobs, Gordon M.: *See—*
VonDelinde, Dennis J.; and Jacobs, Gordon M., 5,186,355, Cl. 221-75.000.

Jacobs, James L. Seal ring for orifice plate. 5,186,474, Cl. 277-166.000.

Jacobsen, Carol E.: *See—*
Hamilton, Thomas P.; Jacobsen, Carol E.; and Perveiler, Kevin J., 5,187,773, Cl. 395-10.000.

Jacobson, Allan J.: *See—*
Mchenry, James A.; Deckman, Harry W.; Lai, Wen-Yih F.; Matturro, Michael G.; Jacobson, Allan J.; and Johnson, Jack W., 5,186,833, Cl. 210-321.750.

Jaeger, Robert B.: *See—*
Sherman, Richard A.; Jaeger, Robert B.; and Davis, Patrick H., 5,186,558, Cl. 400-692.000.

Jaen, Juan C.; Nickell, David G.; Reynolds, Donna M.; Smith, Sarah J.; Wise, Lawrence D.; and Wustrow, David J., to Warner-Lambert Company. Substituted tetrahydropyridines and their use as central nervous system agents. 5,187,280, Cl. 546-255.000.

Jaggi, Pierre-Yves: *See—*
Magnollay, Gilbert; Seigneur, Remy; Budry, Jacques; Clement, Jean-Claude; Jaccottet, Michel; Jaggi, Pierre-Yves; Jaun, Hans; and De Boer, Philip, 5,186,957, Cl. 425-192.00R.

Jalbert, Fernand: *See—*
Boudreault, Yvon; Boudreault, Steven; and Jalbert, Fernand, 5,186,714, Cl. 604-21.000.

Janda, Kim, to Scripps Clinic and Research Foundation. Molecules with antibody combining sites that catalyze hydrolysis reactions through use of a charged hapten. 5,187,086, Cl. 435-146.000.

Janik, Leon P., to Stanadyne Automotive Corp. Fuel filter key system. 5,186,829, Cl. 210-232.000.

Jansen, Jozef M. A.: *See—*
Krijger, Louis C.; Jansen, Jozef M. A.; Hoen, Nicolaas G. M.; Steenbakkers, Laurentius W.; and Froehling, Peter E., 5,186,862, Cl. 252-512.000.

Janssen, David C.; and Grimmer, Larry R., to Briggs & Stratton Corporation. Self-destruct electrical interlock for cylinder lock and key set. 5,186,031, Cl. 70-277.000.

Japan Atomic Energy Research Institute: *See—*
Sasaki, Takashi; Ishigaki, Isao; Izuchi, Syuichi; and Noda, Tomohiko, 5,187,032, Cl. 429-192.000.

Japan Aviation Electronics Industry Limited: *See—*
Ohno, Aritaka; Motohara, Shinji; and Hotate, Kazuo, 5,187,757, Cl. 385-11.000.

Japan Electronics Industry, Ltd.: *See—*
Miyazaki, Nagao, 5,186,042, Cl. 73-118.100.

Japan Tobacco Inc.: *See—*
Komori, Mikio; Sato, Shuichi; Adachi, Kazuyu; and Saito, Masayoshi, 5,186,183, Cl. 131-281.000.
Mashiko, Kimio; Isoda, Sadatsuyo; and Tateno, Atsushi, 5,186,185, Cl. 131-337.000.

Jaras, Sven G.; Tokarz, Marek T.; and Persson, Borje, to Eka Nobel AB. Process for the removal of NO_x SO_x utilizing a particulate agent. 5,186,917, Cl. 423-239.000.

Jaun, Hans: *See—*
Magnollay, Gilbert; Seigneur, Remy; Budry, Jacques; Clement, Jean-Claude; Jaccottet, Michel; Jaggi, Pierre-Yves; Jaun, Hans; and De Boer, Philip, 5,186,957, Cl. 425-192.00R.

Jay, Pierre: *See—*
Commandeur, Raymond; Berger, Noelle; Jay, Pierre; and Kervennal, Jacques, 5,186,864, Cl. 252-581.000.

Jeddeloh, Joseph M.; Larson, Ronald J.; and Herring, Jeffry V., to Micral, Inc. Memory controller with synchronous processor bus and asynchronous I/O bus interfaces. 5,187,779, Cl. 395-325.000.

Jenkins, Alfred D., to NCR Corporation. Method for retail checkout. 5,186,281, Cl. 186-55.000.

Jenkins, Waylon L.: *See—*
Cassell, Michael L.; Jenkins, Waylon L.; and Rhodes, Gerry F., 5,187,216, Cl. 524-261.000.

Jenness, Steven M.: *See—*
East, Jeffrey A.; Walker, James J.; Jenness, Steven M.; Ozur, Mark C.; and Kelly, James W., Jr., 5,187,790, Cl. 395-725.000.

Jennings, David G.: *See—*
Davis, John M.; Davis, Mark E.; and Jennings, David G., 5,185,901, Cl. 15-98.000.

Jens, Stephen C.: *See—*
Boyce, Joseph S.; Ross, James P.; Jens, Stephen C.; and Evans, David A., 5,186,776, Cl. 156-73.200.

Jensen, Jens D.; and Vollmann, Wolfgang, to U.S. Philips Corp. Magnetic resonance tomography method for generating separate fat and water images, and apparatus for performing the method. 5,187,439, Cl. 324-309.000.

Jensen, Richard E.; Nichols, Donald H.; and Hemphill, D. Gary, to Forensic Applications Corporation. Blood collection and transportation assembly for evidentiary purposes. 5,186,900, Cl. 422-104.000.

Jensen, Roy A.: *See—*
Fischer, Randy S.; and Jensen, Roy A., 5,187,071, Cl. 435-32.000.

Jentzsch, Arndt: *See—*
Fischer, Karl-Heinz; and Jentzsch, Arndt, 5,186,106, Cl. 101-242.000.

Jenuwine, William C.: *See—*
Bilge, Umit; and Jenuwine, William C., 5,187,346, Cl. 219-121.640.

JEOL Ltd.: *See—*
Mizuno, Koichi; Wakabayashi, Takeshige; Koinuma, Yutaka; Aizawa, Reiji; Kushiyama, Satoshi; Kabayashi, Satoru; Ohuchi, Hideo; Yoshida, Toyonohu; Kubota, Yoshiro; Amano, Takanobu; Komaki, Hisashi; and Hirakawa, Shoji, 5,187,344, Cl. 219-121.500.

Jha, Mahesh C.; and McCormick, Robert L. Process for the manufacture of activated carbon from coal hy mild gasification and hydrogenation. 5,187,141, Cl. 502-432.000.

Jim Scharf Holdings Ltd.: *See—*
Scharf, James E.; and Olm, Orville, 5,186,376, Cl. 225-42.000.

Jimenez, Antonio; and Deplante, Patrice, to Mefina S.A. Sewing machine. 5,186,116, Cl. 112-323.000.

Jimenez Rodriquez, Carlos R.: *See—*
Herrero Garcia, Jose E.; and Jimenez Rodriquez, Carlos R., 5,187,735, Cl. 379-88.000.

Jin, Sungho; and Tiefel, Thomas H., to AT&T Bell Laboratories. Method of making a ribbon-like or sheet-like superconducting oxide composite body. 5,187,149, Cl. 505-1.000.

Joanopoulos, John: *See—*
Brommer, Karl; Mullaney, Henry; Meade, Robert; Rappe, Andrew; and Joanopoulos, John, 5,187,461, Cl. 333-219.100.

Jochum, Alain: *See—*
Lambert, Bernard; and Jochum, Alain, 5,186,598, Cl. 414-498.000.

Jodelet, Francois: *See—*
Perenon, Jacques; Pichon, Maurice; Deborde, Henri C.; and Jodelet, Francois, 5,186,777, Cl. 156-79.000.

Jodicke, Bernd; and Mathews, Hans-Gunter, to Asea Brown Boveri Ltd. Quasi-optical component and gyrotron having undesired microwave radiation absorbing means. 5,187,408, Cl. 315-5.000.

Joergensen, Tage W.: *See—*
Christensen, Leif L.; Joergensen, Tage W.; and Hansen, Claes-Henrik, 5,186,677, Cl. 452-66.000.

Johansson, Eric B.; and Matzner, Bruce, to General Electric Company. Swirl vanes in inconel spacer. 5,186,891, Cl. 376-438.000.

John Fluke Mfg. Co., Inc.: *See—*
Kaneko, Steven T., 5,187,647, Cl. 361-413.000.
Thompson, Bradley H., 5,186,634, Cl. 439-82.000.

Johnson, David U., III; Conner, Charles J.; and Wolf, Peter A., to AM International Incorporated. Backlash compensation circuit for use with an incremental encoder. 5,187,479, Cl. 341-6.000.

Johnson, Edward R.; and Leff, Barry J. Apparatus and method for expanding cellular system capacity. 5,187,806, Cl. 455-15.000.

Johnson, Gerald E.; McClement, Arthur; and Rivera, James A., to Otis Elevator Company. Escalator skirt and deck panel installation. 5,186,302, Cl. 198-335.000.

Johnson, Harold E.: *See—*
Fortner, Larry E.; Gustin, Paul R.; Hasler, Leonard F.; Johnson, Harold E.; Maul, George R.; Reed, David L.; and Reichard, George W., Jr., 5,186,649, Cl. 439-460.000.

Johnson, Hugh L., Jr. Channeled wall panel. 5,185,971, Cl. 52-36.000.

Johnson, Jack W.: *See—*
Mchenry, James A.; Deckman, Harry W.; Lai, Wen-Yih F.; Matturro, Michael G.; Jacobson, Allan J.; and Johnson, Jack W., 5,186,833, Cl. 210-321.750.

Johnson, Karl P.: *See—*
Smith, Alan A.; Catmull, Paul B.; Lucas, Lonnie J.; and Johnson, Karl P., 5,185,996, Cl. 60-39.020.

Johnson, Mark A. Bottle and can pcker including rotatable flexible loops. 5,185,898, Cl. 15-3.000.

Johnson, Milton. Motion picture environment simulator for television sets. 5,187,586, Cl. 358-254.000.

Johnson, Paul H.: *See—*
Green, Christopher J.; and Johnson, Paul H., 5,187,075, Cl. 435-69.100.

Johnson, Richard A.: *See—*
Harwath, Frank A.; Brinkman, Donald J.; Landgraf, Glenn A.; Shah, Hasmukh; Stenstrom, Eric; Brunker, David L.; and Johnson, Richard A., 5,186,656, Cl. 439-585.000.

Johnson, Roy A.; Bundy, Gordon L.; Youngdale, Gilbert A.; Morton, Douglas R.; Wallach, Donald P., deceased; and Wallach, Legal Representative, by Vera M., to Upjohn Company, The. Cyclic hydrocarbons with an aminoalkyl sidechain. 5,187,299, Cl. 552-522.000.

Johnson, Timothy B.: *See—*
Donovan, William P.; Rupar, Mark J.; Slaney, Annette C.; and Johnson, Timothy B., 5,187,091, Cl. 435-240.400.

Johnston, James S., to Rosemount Limited. Displacement measurement apparatus with dual wedge interferometers. 5,187,546, Cl. 356-358.000.

Jolly, Clifford D., to Umpqua Research Company. Method for removing low molecular weight contaminants. 5,186,842, Cl. 210-763.000.

Jonas, John J.: *See—*
Hunt, Patrick J.; Jonas, John J.; Yue, Stephen; Ruddle, George E.; and Pussegoda, Lakshman N., 5,186,769, Cl. 148-593.000.

Jones, Calvin B.; and Jones, Debbie A. Portable glass crushing apparatus. 5,186,403, Cl. 241-99.000.

Jones, Debbie A.: *See—*
Jones, Calvin B.; and Jones, Debbie A., 5,186,403, Cl. 241-99.000.

Jones, Ivor S.: *See—*
Schardt, David L.; Luna, Lois A.; and Jones, Ivor S., 5,186,528, Cl. 312-100.000.

Jones, Warren C.: *See—*
Joyce, James L., Jr.; Jones, Warren C.; and MacInnes, David F., Jr., 5,186,860, Cl. 252-500.000.

Jor, Wing-Fai. Method of forming noodle bundles. 5,186,969, Cl. 426-500.000.

Jordan, Therese C.; and Webb, Jimmy L., to General Electric Company. High impact, flame retardant, transparent blends of aromatic polycarbonate and poly(aryloxysiloxane). 5,187,243, Cl. 525-464.000.

Josef Meissner GmbH & Co.: *See—*
Hermann, Heinrich; Pelster, Gunther; and Degener, Klaus, 5,187,274, Cl. 544-186.000.

Joshi, Shrikant M., to General Motors Corporation. Tube design for integral radiator/condenser. 5,186,244, Cl. 165-135.000.

Joshi, Shrikant M., to General Motors Corporation. Roll formed heat exchanger tubing with double row flow passes. 5,186,251, Cl. 165-177.000.

VOL 1147 ISS 3 FE 16 1993 UMI

Joshi, Shrikant M.: *See*—
Ryan, Richard P.; Halstead, Gary A.; Smith, David M.; and Joshi, Shrikant M., 5,185,925, Cl. 29-890.049.

Joyce, James L., Jr.; Jones, Warren C.; and MacInnes, David F., Jr., to AMP Incorporated. Inert electrode comprising a conductive coating polymer blend formed of polyanisidine and polyacrylonitrile. 5,186,860, Cl. 252-500.000.

Jozefczak, Thadius F.; and Madill, Kent W., to General Motors Corporation. Spare tire carrier. 5,186,371, Cl. 224-42.210.

Junino, Alex: *See*—
Bugaut, Andree; Junino, Alex; and Vandenboosche, Jean J., 5,186,717, Cl. 8-405.000.

Just Japan Co., Ltd.: *See*—
Sasaki, Mitsuo, 5,185,978, Cl. 52-175.000.

K-Whit Tools, Inc.: *See*—
Hancock, John P.; and McClelland, Ralph A., 5,186,017, Cl. 62-292.000.

Kabayashi, Satoru: *See*—
Mizuno, Koichi; Wakabayashi, Takeshige; Koinuma, Yutaka; Aizawa, Reiji; Kushiyama, Satoshi; Kabayashi, Satoru; Ohuchi, Hideo; Yoshida, Toyonobu; Kubota, Yoshiro; Amano, Takanobu; Komaki, Hisashi; and Hirakawa, Shoji, 5,187,344, Cl. 219-121.500.

Kabushiki Daisha Daikin Seisakusho: *See*—
Fujimoto, Shinji, 5,186,293, Cl. 192-3.280.

Kabushiki Kaisha CSK: *See*—
Hirofumi, Kagawa, 5,187,698, Cl. 369-47.000.

Kabushiki Kaisha Daikin Seisakusho: *See*—
Takeuchi, Hiroshi, 5,186,298, Cl. 192-111.00A.

Kabushiki Kaisha ENU-ESU: *See*—
Naito, Michiko, 5,187,421, Cl. 320-1.000.

Kabushiki Kaisha Kobeseikosho: *See*—
Someya, Nobuo; Kitazato, Tadao; Fujikawa, Takao; and Manabe, Yasuo, 5,187,125, Cl. 501-1.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Hanamoto, Tadayuki; and Takahashi, Norio, 5,186,579, Cl. 405-143.000.

Kabushiki Kaisha Pilot: *See*—
Okutsu, Hiroyasu, 5,186,631, Cl. 434-409.000.

Kabushiki Kaisha Saginomiya Seisakusho: *See*—
Kaneko, Morio; and Tajima, Kazushige, 5,186,207, Cl. 137-495.000.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Fukuyama, Takahiko; Kozawa, Satosi; Ishiguro, Kazuyoshi; Akita, Toshiki; and Hori, Seiji, 5,187,335, Cl. 200-5.00B.
Iwasa, Hiroki; Nagasaka, Chikao; Ueda, Masuyuki; Kato, Shigeru; Aoki, Hisashi; Shibahara, Makoto; and Mori, Satoshi, 5,187,381, Cl. 307-10.100.

Kabushiki Kaisha Toshiba: *See*—
Arai, Tomohisa; Sori, Naoyuki; Sahashi, Masashi; and Tokai, Yoichi, 5,186,765, Cl. 148-301.000.
Fujihara, Shigemi, 5,187,730, Cl. 378-97.000.
Fushimi, Seiichiro; and Sugiyama, Yoshihiko, 5,187,525, Cl. 355-269.000.
Goto, Yasuhiro; Yonezawa, Takeyuki; Ohnuma, Yoshiyuki; and Ando, Jen, 5,187,127, Cl. 501-95.000.
Hasunuma, Masahiko; Kaneko, Hisashi; Sawabe, Atsuhito; Kawanoue, Takashi; Kohanawa, Yoshiko; and Komatsu, Shuichi, 5,187,561, Cl. 257-771.000.
Hiki, Susumu; Yanagawa, Takashi; and Uchiumi, Isao, 5,186,176, Cl. 128-661.010.
Hirama, Makoto; and Kumazawa, Takashi, 5,186,175, Cl. 128-661.010.
Hori, Chikahiro, 5,187,678, Cl. 364-748.000.
Ichihara, Katsutarou; and Kobori, Hiromichi, 5,187,694, Cl. 369-13.000.
Ikeda, Mitsushi; and Murooka, Michio, 5,187,602, Cl. 359-59.000.
Ito, Yasuyuki, 5,187,409, Cl. 315-5.000.
Iwamoto, Katsuharu; and Kawakami, Osamu, 5,187,538, Cl. 356-28.500.
Iwata, Yasuhiro; and Tsubo, Shuzo, 5,187,534, Cl. 355-324.000.
Kamatani, Yukio, 5,187,581, Cl. 358-213.110.
Kawakami, Takashi; and Handa, Susumu, 5,186,906, Cl. 422-180.000.
Koike, Hideharu, 5,187,385, Cl. 307-272.100.
Kuroda, Tadahiro; and Suzuki, Hiroaki, 5,187,555, Cl. 257-202.000.
Mano, Hiroshi, 5,187,705, Cl. 370-15.000.
Nigo, Toshiro, 5,186,016, Cl. 62-150.000.
Nishiki, Masayuki; and Endo, Yukio, 5,187,584, Cl. 358-213.180.
Nogami, Takeshi; and Iwasaki, Hiroshi, 5,187,111, Cl. 437-41.000.
Notake, Yuichi; Asai, Kenji; and Ogawa, Tomihisa, 5,187,620, Cl. 360-77.040.
Sekimura, Masayuki, 5,186,054, Cl. 73-724.000.
Takahashi, Naomasa, 5,187,702, Cl. 369-215.000.
Tanimoto, Koji; and Sasama, Kazuo, 5,187,495, Cl. 346-108.000.
Wagai, Kiyoshi; Sekigawa, Tatsuaki; Ohyanagi, Shihoko; and Shiono, Mitsuji, 5,187,471, Cl. 340-825.440.
Watanabe, Junji, 5,187,530, Cl. 355-308.000.
Yoshikawa, Susumu; Kumagai, Junpei; Sawada, Shizuo; and Matsumoto, Yasuo, 5,187,566, Cl. 257-301.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Kawai, Katsunori; Fukaya, Atsushi; and Nakajima, Toshiyuki, 5,186,475, Cl. 277-181.000.
Kawauchi, Shuhei, 5,187,387, Cl. 307-350.000.

Kabushiki Kaisha Yaskawa Denki Seisakusho: *See*—
Minami, Yoshikatsu; and Tanaka, Masato, 5,187,418, Cl. 318-568.190.

Kabushikigaisha Tokyo Kikai Seisakusho: *See*—
Kansaku, Toshio, 5,186,409, Cl. 242-75.440.

Kaczmarek, James S.; and Steimel, James M. Tool turntable for a manufacturing system. 5,186,304, Cl. 198-346.100.

Kadle, Prasad S.: *See*—
Bhatti, Mohinder S.; and Kadle, Prasad S., 5,186,249, Cl. 165-174.000.

Kado, Hiroyuki: *See*—
Tsuda, Nobuhiro; Yamada, Hirofumi; Kado, Hiroyuki; and Tohda, Takao, 5,186,789, Cl. 156-659.100.

Kado, Seizi: *See*—
Ohta, Masahiko; Kaneko, Kazuo; Iyama, Hiroyuki; Kado, Seizi; Hirao, Mitisuru; Ishizaka, Hironori; Ohmaru, Kenji; and Murata, Takao, 5,187,490, Cl. 343-770.000.

Kadokura, Susumu, to Canon Kabushiki Kaisha. Electro-deposition coated member and process for producing it. 5,186,802, Cl. 204-181.400.

Kadomukai, Yuzo; Yamakado, Makoto; Maeda, Yuji; Nakamura, Kenichi; Fukushima, Masao; and Murakami, Kei, to Hitachi, Ltd.; and Nissan Motor Co., Ltd. Abnormal combustion detection and vibration reduction system. 5,186,136, Cl. 123-192.100.

Kafuku, Koumei: *See*—
Kanto, Jumpei; Saito, Hitoshi; Eguchi, Hiroshi; Nakamura, Masayuki; Kafuku, Koumei; Chiba, Junji; and Suda, Kaoru, 5,187,145, Cl. 503-227.000.

Kaga, Yosimitu: *See*—
Shike, Tsutomu; Eguchi, Toshihiko; Kaga, Yosimitu; and Suganuma, Kazuhiko, 5,186,618, Cl. 431-153.000.

Kahl, Steven D.: *See*—
Campbell, Kevin P.; Ervasti, James M.; Ohlendieck, Kay; Gaver, Mitchell G.; and Kahl, Steven D., 5,187,063, Cl. 435-7.210.

Kahlert, Wolfgand: *See*—
Kallinich, Dietmar; Kahlert, Wolfgand; Wind, Heinz; and Lehmann, Friedrich, 5,186,217, Cl. 138-149.000.

Kaigler, William J., to Robertshaw Controls Company. Fluid pressure operated switch and contact assembly. 5,187,338, Cl. 200-83.00R.

Kaiser, Dennis A.: *See*—
Nielsen, Wyn Y.; Carlin, Steven C.; and Kaiser, Dennis A., 5,187,797, Cl. 395-800.000.

Kajita, Yusuke: *See*—
Hirata, Toichi; Sugiyama, Genroku; and Kajita, Yusuke, 5,186,000, Cl. 60-420.000.

Kajitani, Tetsuji; Matsuura, Yasumasa; Harada, Hiroyuki; and Araki, Toshihiko, to Mita Industrial Co., Ltd. Method of calculating motor control voltage and motor control device using the method. 5,187,420, Cl. 318-823.000.

Kakizaki, Shinobu: *See*—
Yamaoka, Fumiyuki; and Kakizaki, Shinobu, 5,186,043, Cl. 73-118.100.

Kako, Yutaka: *See*—
Fukudome, Yoshio; Hamada, Yasunori; Okayama, Masao; Kako, Yutaka; Saito, Tetsuo; and Utsumi, Itsunori, 5,186,334, Cl. 209-534.000.

Kakubari, Toru: *See*—
Sugimoto, Yukihiro; and Kakubari, Toru, 5,187,749, Cl. 382-6.000.

Kakumu, Kiichiro: *See*—
Oku, Masahiro; Iwamura, Kazumitsu; and Kakumu, Kiichiro, 5,186,773, Cl. 152-531.000.

Kallinich, Dietmar; Kahlert, Wolfgand; Wind, Heinz; and Lehmann, Friedrich, to Flachglas Consult GmbH; and Philipp Holzmann AG. Fluid-impervious structure and method of making same. 5,186,217, Cl. 138-149.000.

Kamachi, Mikiharu; Yamamoto, Tohei; Sato, Toshiaki; and Fukunishi, Yoshiharu, to Kuraray Co., Ltd. Vinyl alcohol polymer. 5,187,226, Cl. 525-56.000.

Kamada, Satoshi, to Sumitomo Wiring Systems, Ltd. Cable wire bending method and cable wire bending device. 5,186,036, Cl. 72-306.000.

Kamano, Yujiro: *See*—
Osawa, Takashi; Murakami, Katsuo; Mitsuhashi, Seishiro; Kamano, Yujiro; and Kobayashi, Toshihiko, 5,187,415, Cl. 313-326.000.

Kamase, Fumihiro, to NEC Corporation. Modified non-threshold logic circuit. 5,187,391, Cl. 307-454.000.

Kamata, Eitaro, to Shoei Kako Kabushiki Kaisha. Shield system for helmet. 5,185,889, Cl. 2-424.000.

Kamatani, Yukio, to Kabushiki Kaisha Toshiba. Solid state image sensing device including nonlinear conversion processing of input light levels. 5,187,581, Cl. 358-213.110.

Kambara USA: *See*—
Seki, Katsumichi, 5,186,496, Cl. 281-46.000.

Kameda, Osamu; Akutagawa, Hitoshi; Hasetoh, Sakumi; Okita, Junichi; and Hirose, Ichiro, to Mazda Motor Corporation. Engine unit. 5,186,078, Cl. 74-606.00R.

Kameya, Andrew M.: *See*—
Guy, Kenneth R.; Kameya, Andrew M.; and Wildfeuer, Herbert M., 5,187,591, Cl. 358-425.000.

Kameya, Masaki: *See*—
Netsu, Shigeyoshi; Kameya, Masaki; Harada, Yasuyuki; and Amano, Hiroshi, 5,186,192, Cl. 134-68.000.

Kamimura, Kenji; Tsuzuki, Sadachika; and Noda, Kazunori, to Honda Giken Kogyo Kabushiki Kaisha. Steering control system for moving vehicle. 5,187,662, Cl. 364-424.020.

Kamimura, Kenji; Tsuzuki, Sadachika; and Noda, Kazunori, to Honda Giken Kogyo Kabushiki Kaisha. System using a moving light reflector for defining the peripheral outline of a work area. 5,187,663, Cl. 364-424.020.

Kaminaga, Kozo, to Sony Corporation. Apparatus for reproducing digital video signal. 5,187,617, Cl. 360-64.000.

Kanai, Hitoshi; Kanamine, Michiaki; and Kobayashi, Kazuo, to Fujitsu Limited. Thin film magnetic head having magnetic anisotropy with in-plane and perpendicular components. 5,187,628, Cl. 360-126.000.

Kanai, Kenichi: *See*—
Goto, Kiyoto; Hashimoto, Kinji; and Kanai, Kenichi, 5,187,161, Cl. 514-255.000.

Kanamine, Michiaki: *See*—
Kanai, Hitoshi; Kanamine, Michiaki; and Kobayashi, Kazuo, 5,187,628, Cl. 360-126.000.

Kanda, Kiyomi, to Huang, David. Eyeglass frame having hollow adjustable connector. 5,187,504, Cl. 351-153.000.

Kanda Tsushin Kogyo Co., Ltd.: *See*—
Kosemura, Katsura; and Yamamoto, Kazuyuki, 5,187,574, Cl. 358-108.000.

Kanda, Yutaka; Uosaki, Youichi; Saito, Hiromitsu; Sano, Hiroshi; Kobayashi, Eiji; Morimoto, Makoto; and Nagamura, Satoru, to Kyowa Hakko Kogyo Co., Ltd. Pyrroloindole derivatives. 5,187,186, Cl. 514-410.000.

Kaneda, Kitahiro; Yamada, Kunihiko; Fujiwara, Akihiro; Suda, Hirofumi; and Toyama, Masamichi, to Canon Kabushiki Kaisha. Image sensing apparatus with settable focus detection area. 5,187,585, Cl. 358-227.000.

Kaneda, Yutaka: *See*—
Haneda, Yoichi; Makino, Shoji; and Kaneda, Yutaka, 5,187,692, Cl. 367-135.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Sawa, Ikuo; Mori, Natsuki; Maemoto, Shunichi; Kutsuki, Hidetoshi; and Hasegawa, Junzo, 5,187,094, Cl. 435-280.000.

Kaneko, Hisashi: *See*—
Hasunuma, Masahiko; Kaneko, Hisashi; Sawabe, Atsuhito; Kawanoue, Takashi; Kohanawa, Yoshiko; and Komatsu, Shuichi, 5,187,561, Cl. 257-771.000.

Kaneko, Isamu: *See*—
Katoh, Hideaki; Noguchi, Nobuhisa; Kikuchi, Yutaka; Kaneko, Isamu; and Hoshi, Teruo, 5,186,537, Cl. 362-347.000.

Kaneko, Kazuo: *See*—
Ohta, Masahiko; Kaneko, Kazuo; Iyama, Hiroyuki; Kado, Seizi; Hirao, Mitisuru; Ishizaka, Hironori; Ohmaru, Kenji; and Murata, Takao, 5,187,490, Cl. 343-770.000.

Kaneko, Morio; and Tajima, Kazushige, to Kabushiki Kaisha Saginomiya Seisakusho. Small-capacity expansion valve. 5,186,207, Cl. 137-495.000.

Kaneko, Sizunori: *See*—
Hashimoto, Yutaka; Iida, Mitsuhiko; Hayashi, Makoto; Kaneko, Sizunori; and Nakazato, Masahiro, 5,187,376, Cl. 250-562.000.

Kaneko, Steven T., to John Fluke Mfg. Co., Inc. Electronic instrument keypad assembly with Z-axis oriented electrical interconnect. 5,187,647, Cl. 361-413.000.

Kaneko, Toshiki: *See*—
Maeda, Yoshihito; Kaneko, Toshiki; Nagai, Masaichi; Andoh, Hisashi; Katou, Yoshimi; Ikuta, Isao; and Watanabe, Ryuji, 5,187,052, Cl. 430-495.000.

Kaneko, Yutaka: *See*—
Ikesu, Satoru; Kita, Hiroshi; and Kaneko, Yutaka, 5,187,057, Cl. 430-558.000.

Kanesan Manufacturing Co., Ltd.: *See*—
Kawashima, Makinori; and Nakamura, Minoru, 5,185,907, Cl. 24-20.00R.

Kaneto, Kunikazu: *See*—
Ohashi, Masahisa; Sawada, Shusaku; Sogame, Motomu; Oomasa, Yoshiaki; and Kaneto, Kunikazu, 5,186,890, Cl. 376-434.000.

Kang, Hee C.; and Haugland, Richard P., to Molecular Probes, Inc. Ethenyl-substituted dipyrromethaneboron difluoride dyes and their synthesis. 5,187,288, Cl. 548-110.000.

Kanner, Rowland W.: *See*—
Ryder, Francis E.; and Kanner, Rowland W., 5,186,317, Cl. 206-5.100.
Ryder, Francis E.; Kanner, Rowland W.; and Lisak, Stephen P., 5,186,532, Cl. 362-66.000.

Kanno, Hiroshi; Wagatsuma, Yuuki; and Takase, Toshiaki, to Ricoh Company, Ltd. Printer using a stencil. 5,186,102, Cl. 101-128.400.

Kanoto, Masanobu: *See*—
Ohsawa, Ichiro; Kikuchi, Yutaka; Kanoto, Masanobu; Sato, Hideki; Endo, Yoshifumi; and Kawaguchi, Hideshi, 5,186,448, Cl. 271-9.000.

Kansai Paint Co., Ltd.: *See*—
Nishida, Reiziro; and Tominaga, Akira, 5,187,198, Cl. 523-404.000.

Kansaku, Toshio, to Kabushikigaisha Tokyo Kikai Seisakusho. Tension control device for printing paper. 5,186,409, Cl. 242-75.440.

Kansas Creative Devices, Inc.: *See*—
Kelso, Jimmie J.; Hustead, Russell M.; and Miller, Walter T., 5,186,712, Cl. 604-165.000.

Kansas State University Research Foundation: *See*—
Fung, Daniel Y. C.; and Yu, Linda, 5,187,070, Cl. 435-25.000.

Kantner, Edward: *See*—
Kaul, Bal K.; O'Bara, Joseph T.; Savage, David W.; Dennis, J. Patrick; Bellows, Richard J.; and Kantner, Edward, 5,186,819, Cl. 208-310.00Z.

Kanto, Jumpei; Saito, Hitoshi; Eguchi, Hiroshi; Nakamura, Masayuki; Kafuku, Koumei; Chiba, Junji; and Suda, Kaoru, to Dai Nippon Insatsu Kabushiki Kaisha. Heat transfer sheets. 5,187,145, Cl. 503-227.000.

Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Watanabe, Kazuo; and Okamoto, Tosaku, 5,187,143, Cl. 503-212.000.

Kao Corporation: *See*—
Mishima, Masayuki; Yamasaki, Harumasa; Matsuse, Takashi; Sakuma, Tadashi; and Togashi, Hiroyasu, 5,187,310, Cl. 556-413.000.

Kapoor, Akhilesh: *See*—
Appolonia, Jack; Wheeler, Clair; and Kapoor, Akhilesh, 5,186,008, Cl. 62-63.000.

Kappel, Jens J. Method of laying a pipe on a sea floor for the transportation of a fluid. 5,186,580, Cl. 405-169.000.

Kappers, Timothy A.: *See*—
Foster, L. Dale; and Kappers, Timothy A., 5,186,337, Cl. 211-26.000.

Karabin, Tadeusz; and Broome, Frank H., to Majco Building Specialties, L.P. Thermally activated vent damper. 5,186,385, Cl. 236-1.00G.

Karady, Sandor: *See*—
King, Anthony O.; Anderson, Kevin; Karady, Sandor; Douglas, Alan W.; Abramson, Newton L.; and Shuman, Richard F., 5,187,278, Cl. 546-14.000.

Karali, Sharifa; and Barberii, John K. Process for the preparation of a high purity protamine-DNA complex and process for use of same. 5,187,260, Cl. 530-358.000.

Kardorff, Uwe: *See*—
Buerstinghaus, Rainer; Neubauer, Hans-Juergen; Hofmeister, Peter; Kuenast, Christoph; Leyendecker, Joachim; and Kardorff, Uwe, 5,187,182, Cl. 514-383.000.

Karl Lumberg GmbH & Co., Firma: *See*—
Fuchs, Helmut; Wilmsmann, Ute; and Fuhrmeister, Lothar, 5,186,651, Cl. 439-495.000.

Karldom Corporation: *See*—
Karliner, Rudolf R., 5,186,615, Cl. 417-387.000.

Karliner, Rudolf R., to Karldom Corporation. Diaphragm pump. 5,186,615, Cl. 417-387.000.

Kasai, Satoru: *See*—
Yamaguchi, Shuichiro; Uchida, Naoto; Kasai, Satoru; Shimomura, Takeshi; and Oyama, Noboru, 5,186,808, Cl. 204-418.000.

Kasai, Syuichi: *See*—
Okada, Minoru; Horie, Toshiaki; Okuyama, Hirohisa; Kasai, Syuichi; and Iwasa, Akira, 5,186,943, Cl. 424-490.000.

Katagiri, Kazuharu: *See*—
Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Katagiri, Kazuharu; Takiguchi, Takao; Shinjo, Kenji; Kitayama, Hiroyuki; and Nakamura, Shinichi, 5,186,858, Cl. 252-299.610.

Katamura, Makoto: *See*—
Sonobe, Kozo; Fukuzawa, Takashi; Takeuchi, Kohsuke; Tabata, Tatushi; Fukuoka, Hiroshi; Hisamatsu, Kunio; and Katamura, Makoto, 5,187,126, Cl. 501-65.000.

Kataoka, Kinichi: *See*—
Ohtsu, Ikuo; Kataoka, Kinichi; and Sano, Shoichi, 5,186,595, Cl. 414-225.000.

Katase, Kenichi: *See*—
Katto, Takayuki; Ichikawa, Yukio; Enoki, Toshio; and Katase, Kenichi, 5,187,257, Cl. 528-388.000.

Kataumi, Yoshimasa; and Kondo, Yoshinobu, to Fuji Kiko Company, Limited. Vibration proofing structure of pedal for vehicle. 5,186,076, Cl. 74-560.000.

Kataumi, Yoshimasa: *See*—
Asano, Yasushi; and Kataumi, Yoshimasa, 5,186,069, Cl. 74-477.000.

Katayama, Hiroyuki; Nakayama, Junichiro; Ohta, Kenji; and Ishikawa, Toshio, to Sharp Kabushiki Kaisha. Magneto-optical multilayer recording disk and method of reproducing the same. 5,187,703, Cl. 369-275.100.

Katayama, Masato: *See*—
Mouri, Akihiro; Isaka, Kazuo; Fukui, Tetsuro; and Katayama, Masato, 5,187,041, Cl. 430-201.000.

Katcher, Jay H.; and Bertalan, Charles W., to Kraft General Foods, Inc. Process for preparing non-hydroxypropylated, deflavored, cross-linked, pregelatinized, starch and product. 5,187,272, Cl. 536-102.000.

Kato, Hiroaki: *See*—
Shoji, Hajime; Watanabe, Noriko; Hamada, Hiroshi; Kato, Hiroaki; Takemoto, Toshio; and Hirobe, Toshihiko, 5,187,551, Cl. 257-347.000.

Kato, Hiromasa; Fujimoto, Yuka; Nozawa, Akiyoshi; and Kuwata, Shinichi, to Mitsubishi Kasei Corporation. Electrolytic solution for Karl Fischer's coulometric titration and method for measuring water content using same. 5,187,101, Cl. 436-42.000.

Kato, Hiromasa: *See*—
Tatewaki, Masayuki; Kato, Hiromasa; Obinata, Kenichi; and Aoki, Masahiro, 5,186,994, Cl. 428-64.000.

Kato, Kazuhiko: *See*—
Ohta, Hiroshi; Aono, Masakazu; Kato, Kazuhiko; Hoshino, Kazutomo; Takahara, Hidefusa; Nakayama, Tomonobu; and Sudoh, Eiichi, 5,187,327, Cl. 174-35.00R.

Kato, Kohji: *See*—
Tera, Isao; Kato, Kohji; Yamamoto, Makoto; Hashimoto, Kazuto; and Yasumura, Hitoshi, 5,187,227, Cl. 525-65.000.

Kato, Koji: *See*—
Mizuguchi, Shinichi; Ueda, Shuji; Kato, Koji; and Umehara, Noritsugu, 5,185,957, Cl. 51-59.0SS.

Kato, Masayuki; Tomita, Junji; Matsumoto, Tsuyoshi; Aritake, Hirokazu; and Eguchi, Shin, to Fujitsu Limited. Display unit. 5,187,597, Cl. 359-22.000.

VOL
1147
ISS
3
FE
16
1993
UMI

Kato, Naoji: *See*—
Nishida, Masaaki; Kato, Naoji; and Hayakawa, Yochi, 5,186,693, Cl. 475-148.000.

Kato, Nobuji: *See*—
Harada, Mutsumi; Kato, Nobuji; Hayashi, Yoshinori; Hoshi, Toshiharu; and Iijima, Kenzaburo, 5,187,022, Cl. 428-694.000.

Kato, Osamu: *See*—
Uemura, Seiichi; Souda, Yoshio; Kato, Osamu; Kouno, Takefumi; and Kihara, Tsutomu, 5,186,873, Cl. 264-29.500.

Kato, Shigeru: *See*—
Iwasa, Hiroki; Nagasaka, Chikao; Ueda, Masuyuki; Kato, Shigeru; Aoki, Hisashi; Shibahara, Makoto; and Mori, Satoshi, 5,187,381, Cl. 307-10.100.

Katoh, Hideaki; Noguchi, Nobuhisa; Kikuchi, Yutaka; Kaneko, Isamu; and Hoshi, Teruo, to Dai-Ichi Seiko Co., Ltd. Illumination device. 5,186,537, Cl. 362-347.000.

Katoh, Kazunobu; Okamura, Hisashi; Okada, Hisashi; Inoue, Nobuaki; Takahashi, Toshiro; Yagihara, Morio; and Yamaguchi, Tetsuo, to Fuji Photo Film Co., Ltd. Silver halide photographic material. 5,187,042, Cl. 430-264.000.

Katoh, Masaaki, to Sharp Kabushiki Kaisha. LED array for emitting light of multiple wavelengths. 5,187,377, Cl. 257-89.000.

Katou, Yoshimi: *See*—
Maeda, Yoshihito; Kaneko, Toshiki; Nagai, Masaichi; Andoh, Hisashi; Katou, Yoshimi; Ikuta, Isao; and Watanabe, Ryuji, 5,187,052, Cl. 430-495.000.

Katsu Manufacturing Co., Ltd.: *See*—
Tanaka, Masaru, 5,186,959, Cl. 425-215.000.

Katsuyama, Harumi, to Fuji Photo Film Co, Ltd. Dry analysis element for the analysis of iron ions. 5,186,894, Cl. 422-56.000.

Katto, Takayuki; Ichikawa, Yukio; Enoki, Toshio; and Katase, Kenichi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Thermoformed polyarylene sulfide container. 5,187,257, Cl. 528-388.000.

Katunuma, Nobuhiko: *See*—
Cordell, Barbara; Schilling, James W.; and Katunuma, Nobuhiko, 5,187,153, Cl. 514-12.000.

Kaufman, David D.: *See*—
Chau, Nga V.; Hauptman, Reuben D.; Kaufman, David D.; Kittredge, Barbara J.; Lauber, Pamela J.; and Lindblad, Patricia, 5,187,710, Cl. 370-110.100.

Kaul, Bal K.; O'Bara, Joseph T.; Savage, David W.; Dennis, J. Patrick; Bellows, Richard J.; and Kantner, Edward, to Exxon Research and Engineering Company. Benzene removal from gasoline boiling range streams. 5,186,819, Cl. 208-310.00Z.

Kavandi, Janet L.: *See*—
Gouterman, Martin P.; Kavandi, Janet L.; Gallery, Jean; and Callis, James B., 5,186,046, Cl. 73-147.000.

Kawabata, Kohji: *See*—
Sakane, Kazuo; Kawabata, Kohji; Miyai, Kenzi; and Inamoto, Yoshiko, 5,187,160, Cl. 514-202.000.

Kawabe, Shigetoshi: *See*—
Umemura, Masahiro; Namiki, Takemasa; Tobisawa, Seiichi; Kawabe, Shigetoshi; and Nakajima, Takeshi, 5,186,754, Cl. 118-411.000.

Kawaguchi, Hideshi: *See*—
Ohsawa, Ichiro; Kikuchi, Yutaka; Kanoto, Masanobu; Sato, Hideki; Endo, Yoshifumi; and Kawaguchi, Hideshi, 5,186,448, Cl. 271-9.000.

Kawahara, Hiroaki: *See*—
Maeno, Takashi; Fujinami, Kyouichi; Kawahara, Hiroaki; and Asano, Tetsuo, 5,185,916, Cl. 29-525.000.

Kawai, Katsunori; Fukaya, Atsushi; and Nakajima, Toshiyuki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Gasket having retainer element for reed valve integrally formed therewith. 5,186,475, Cl. 277-181.000.

Kawai, Masataka; and Takemura, Seiji, to Mitsubishi Denki Kabushiki Kaisha. Liquid sealed semiconductor device and method of assembling the same. 5,187,565, Cl. 257-682.000.

Kawai, Tatsundo: *See*—
Kitani, Masashi; Kawai, Tatsundo; and Ichihashi, Hiroo, 5,187,595, Cl. 358-482.000.

Kawakami, Osamu: *See*—
Iwamoto, Katsuharu; and Kawakami, Osamu, 5,187,538, Cl. 356-28.500.

Kawakami, Takashi; and Handa, Susumu, to Kabushiki Kaisha Toshiba; and Tokyo Electric Power Co., Inc., The. Apparatus for mounting a honeycomb structure impregnated with a catalyst in a flow tube. 5,186,906, Cl. 422-180.000.

Kawakubo, Chiharu: *See*—
Hashimoto, Kunihiro; Tsukamoto, Chiharu; and Kawakubo, Chiharu, 5,187,614, Cl. 360-45.000.

Kawamoto, Hiroshi: *See*—
Sato, Katsuyuki; Kawamoto, Hiroshi; and Yanagisawa, Kazumasa, 5,187,685, Cl. 365-189.090.

Kawamoto, Kazumi: *See*—
Shiba, Masataka; Inagaki, Akira; Yoshida, Minoru; Ito, Kenchi; and Kawamoto, Kazumi, 5,187,756, Cl. 385-7.000.

Kawamura, Kouichi: *See*—
Sugiura, Ikuzo; Uchimura, Mitsuo; Kawamura, Kouichi; Fogle, Ronald L.; and Huggins, Orville C., 5,186,553, Cl. 400-242.000.

Kawamura, Satoshi: *See*—
Miyazawa, Shyoichi; Horita, Ryutaro; Hase, Kenichi; Kawamura, Satoshi; Kojima, Shinichi; and Iseki, Toshiyuki, 5,187,615, Cl. 360-46.000.

Kawanoue, Takashi: *See*—
Hasunuma, Masahiko; Kaneko, Hisashi; Sawabe, Atsuhito; Kawanoue, Takashi; Kohanawa, Yoshiko; and Komatsu, Shuichi, 5,187,561, Cl. 257-771.000.

Kawasaki, Ikuya; Kurakazu, Keiichi; and Maejima, Hideo, to Hitachi, Ltd. Data processing system. 5,187,782, Cl. 395-375.000.

Kawasaki Steel Corporation: *See*—
Nariishi, Masaaki; Yamakawa, Noboru; Ohba, Osamu; and Seki, Naoyasu, 5,187,556, Cl. 257-206.000.

Kawase, Toshimitsu: *See*—
Miyazaki, Toshihiko; Nose, Hiroyasu; Yagi, Takayuki; Kawase, Toshimitsu; and Shinjo, Katsuhiko, 5,187,367, Cl. 250-306.000.

Kawase, Yoji; and Shibata, Takao, to Precision Fukuhara Works, Ltd. Apparatus and method for controlling selectable knitting machine mechanism. 5,186,028, Cl. 66-232.000.

Kawashima, Makinori; and Nakamura, Minoru, to Kanesan Manufacturing Co., Ltd.; and Honda Giken Kogyo Kabushiki Kaisha. Hose clamp assembly. 5,185,907, Cl. 24-20.00R.

Kawashima, Mitsunobu; and Omura, Ikuo, to Kuraray Co., Ltd. Method of bonding with adhesive composition containing a thiocarboxylic acid compound. 5,186,783, Cl. 156-307.300.

Kawauchi, Shuhei, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Overcurrent detecting apparatus. 5,187,387, Cl. 307-350.000.

Kawochka, John T.: *See*—
Connolly, John J.; and Kawochka, John T., 5,185,986, Cl. 53-397.000.

KBA-Planeta AG: *See*—
Fischer, Karl-Heinz; and Jentzsch, Arndt, 5,186,106, Cl. 101-242.000.

Kecskes, Mihaly: *See*—
Nagy, Jozsef; Nagy, Istvan; Balogh, Karoly; Mile, Erzsebet; Tarpai, Gyula; Sellei nee Kulik, Katalin; Fodor, Karoly; Kecskes, Mihaly; Toth nee Juhasz, Erzsebet; and Horvath nee Petho , Zsuzsanna, 5,186,723, Cl. 47-58.000.

Keeble, Peter J., to British Telecommunications public limited company. Loss detection in a branched optical fiber. 5,187,362, Cl. 250-227.150.

Keefe, Brian J.: *See*—
Bohorquez, Jaime H.; and Keefe, Brian J., 5,187,500, Cl. 346-140.00R.

Keeports, Doug W.: *See*—
Post, Robert P.; D'Aleo, Michael J.; Keeports, Doug W.; Ference, Jonathan H.; Luchaco, David G.; and Spira, Joel S., 5,187,655, Cl. 364-146.000.

Keese, Charles R.: *See*—
Giaever, Ivar; and Keese, Charles R., 5,187,096, Cl. 435-291.000.

Kegel Company, Inc., The: *See*—
Davis, John M.; Davis, Mark E.; and Jennings, David G., 5,185,901, Cl. 15-98.000.

Keil, Gary D.; and Holloway, Gregory S., to Caterpillar Inc. Control system for scheduling parts in a heat-treating process. 5,187,670, Cl. 364-477.000.

Keim, Peter C.: *See*—
Borgis, Livio; Piacibello, Marco V. P.; and Keim, Peter C., 5,187,407, Cl. 313-318.000.

Keith, John M.; Simon, Allen H.; Sprague, David L.; Dixon, Douglas F.; and Goldstein, Judith A., to Intel Corporation. Processor with hierarchal memory and using meta-instructions for software control of loading, unloading and execution of machine instructions stored in the cache. 5,187,793, Cl. 395-775.000.

Kejr Engineering, Inc.: *See*—
Kejr, Melvin P.; and Christy, Thomas M., 5,186,263, Cl. 175-20.000.

Kejr, Melvin P.; and Christy, Thomas M., to Kejr Engineering, Inc. Soil sample probe. 5,186,263, Cl. 175-20.000.

Kelch, Richard A.: *See*—
Thompson, Harold E.; and Kelch, Richard A., 5,186,732, Cl. 71-64.110.

Kelchner, Steven: *See*—
Ambs, Richard W.; and Kelchner, Steven, 5,186,312, Cl. 198-716.000.

Kelland, James W.; and Braun, Stephan G., to Analytic Power Corp. Unitized fuel cell structure. 5,187,025, Cl. 429-33.000.

Keller, Fred J., to Carrier Corporation. Bypass expansion device having defrost optimization mode. 5,186,021, Cl. 62-511.000.

Keller, Urs: *See*—
Fritschi, Isidor; Keller, Urs; and Erni, Markus, 5,185,993, Cl. 57-281.000.

Kelley, Paul E., to Teledyne MEC. Mass spectrometry method using time-varying filtered noise. 5,187,365, Cl. 250-282.000.

Kelly, James D.: *See*—
Murray, Mark J.; and Kelly, James D., 5,187,263, Cl. 530-399.000.

Kelly, James W., Jr.: *See*—
East, Jeffrey A.; Walker, James J.; Jenness, Steven M.; Ozur, Mark C.; and Kelly, James W., Jr., 5,187,790, Cl. 395-725.000.

Kelly, John H.; and Guest, Leonard E., to Stelco Inc. Method and apparatus for electrolytic etching of metals. 5,186,796, Cl. 204-129.350.

Kelly, Steven C.; Huff, Daniel H.; and Strang, William G., to General Motors Corporation. Electrical terminal. 5,186,665, Cl. 439-862.000.

Kelso, Jimmie J.; Hustead, Russell M.; and Miller, Walter T., to Kansas Creative Devices, Inc. Intravenous catheter launching device. 5,186,712, Cl. 604-165.000.

Kemp, Thomas H.: *See*—
Hopkins, Lionel; Kemp, Thomas H.; and Coon, Warren, 5,187,626, Cl. 360-104.000.

Kendall Company, The: *See*—
Dye, John F., 5,186,163, Cl. 128-64.000.

Kendrick, Larry E.: *See*—
Williamson, Gregory L.; Kendrick, Larry E.; and Phelps, Weldon L., 5,187,709, Cl. 370-85.300.

Kennedy, Paul G., to Penn Troy Maching Company, Inc. Intake manifold relief valve. 5,186,198, Cl. 137-14.000.

Kennon, Douglas D.; and Anhorn, Robert G., to King Company. Coil cleansing assembly. 5,186,240, Cl. 165-95.000.

Kent, Stephen B. H.: *See*—
Bridgham, John; Geiser, Timothy G.; Hunkapiller, Michael W.; Kent, Stephen B. H.; Marriott, Mark P.; Ramstad, Paul O.; and Nordman, Eric S., 5,186,898, Cl. 422-102.000.

Kenyeres, Peter. Three-dimensional material cutting assembly. 5,186,225, Cl. 144-2.00N.

Keren, Yehuda: *See*—
Eisenstadt, Amihai; and Keren, Yehuda, 5,187,303, Cl. 560-55.000.

Kermer, Wolf-Dieter: *See*—
Brueckmann, Ralf; Bury, Willi; Dix, Johannes P.; Herrmann, Manfred; Dlugosch, Waldemar; Kromm, Erich; Letter, Herbert; Zimmermann, Norbert; Kermer, Wolf-Dieter; and Taeger, Klaus, 5,186,846, Cl. 252-8.700.

Kervagoret, Gilbert, to Bendix Europe Services Techniques. Electrically controlled pressure-regulating system for a hydraulic circuit. 5,186,093, Cl. 91-433.000.

Kervennal, Jacques: *See*—
Commandeur, Raymond; Berger, Noelle; Jay, Pierre; and Kervennal, Jacques, 5,186,864, Cl. 252-581.000.

Kettel, Hans: *See*—
Heel, Helmut; Fauter, Manfred; Mohr, Peter; Friedl, Franz; and Kettel, Hans, 5,186,476, Cl. 279-2.030.

Kettner, Charles A.; and Shenvi, Ashokkumar B., to Du Pont Merck Pharmaceutical Company. Peptide boronic acid inhibitors of trypsin-like proteases. 5,187,157, Cl. 514-18.000.

Keusch, Siegfried; and Korb, Daniel, to Dyes GmbH Buromobelfabrik. Table support for a work table or office desk. 5,186,425, Cl. 248-188.100.

Key Pharmaceuticals, Inc.: *See*—
Sablotsky, Steven; Questel, John M.; and Thompson, James A., 5,186,938, Cl. 424-443.000.

Kharin, Nikolai A.: *See*—
Komissarov, Igor V.; Dulenko, Vladimir I.; Voschula, Valentin N.; Kharin, Nikolai A.; Naletov, Sergei V.; and Mamonov, Alexandr B., 5,187,277, Cl. 544-362.000.

Khokhar, Abdul R.; Lopez-Berestein, Gabriel; and Perez-Soler, Roman, to Board of Regents, The University of Texas System, The. Hydrophobic cis-platinum complexes efficiently incorporated into liposomes. 5,186,940, Cl. 424-450.000.

Khurshid, Mazin: *See*—
Tran, John; and Khurshid, Mazin, 5,187,686, Cl. 365-189.110.

Kidokoro, Toru: *See*—
Yoshioka, Mamoru; Sugiyama, Toshihisa; and Kidokoro, Toru, 5,186,005, Cl. 60-600.000.

Kielb, John A.; Nelson, Richard L.; and Pederson, David L., to Rosemount Inc. Digital converter apparatus for improving the output of a two-wire transmitter. 5,187,474, Cl. 340-870.180.

Kihara, Tsutomu: *See*—
Uemura, Seiichi; Souda, Yoshio; Kato, Osamu; Kouno, Takefumi; and Kihara, Tsutomu, 5,186,873, Cl. 264-29.500.

Kikuchi, Eiji: *See*—
Sakai, Masanori; Ohsumi, Katsumi; Ohnaka, Noriyuki; Kikuchi, Eiji; Mabuchi, Katsumi; and Takahashi, Takuya, 5,186,798, Cl. 204-153.100.

Kikuchi, Haruhiko; Satoh, Hiroaki; Yahata, Nobuhiro; Hagihara, Koichiro; Hayakawa, Toru; Mino, Setsuko; and Yanai, Makoto, to Nisshin Flour Milling Co., Ltd. Azabicyclo derivatives and their use as antiemetics. 5,187,166, Cl. 514-249.000.

Kikuchi, Shoji; and Onoue, Nobuaki, to AMP Incorporated. Electrical contact. 5,186,658, Cl. 439-595.000.

Kikuchi, Yutaka: *See*—
Katoh, Hideaki; Noguchi, Nobuhisa; Kikuchi, Yutaka; Kaneko, Isamu; and Hoshi, Teruo, 5,186,537, Cl. 362-347.000.
Ohsawa, Ichiro; Kikuchi, Yutaka; Kanoto, Masanobu; Sato, Hideki; Endo, Yoshifumi; and Kawaguchi, Hideshi, 5,186,448, Cl. 271-9.000.

Kilibarda-Dalafave, Snezana: *See*—
Ng, Hon-Kie; and Kilibarda-Dalafave, Snezana, 5,187,147, Cl. 505-1.000.

Killarney, Declan E.: *See*—
Wielgos, Thaddeus S.; Killarney, Declan E.; and Schmidt, Katalin A., 5,186,660, Cl. 439-685.000.

Kim, Gi-Beom, to Samsung Electronics Co., Ltd. Circuit for eliminating ghost noise in image processing system. 5,187,577, Cl. 358-167.000.

Kim, Gu S., to Samsung Electronics, Co., Ltd. Semiconductor chip bonding process. 5,186,381, Cl. 228-123.000.

Kim, Man-Hoe, to Samsung Electronics Co., Ltd. Evaporator structure for refrigerator-freezer. 5,186,022, Cl. 62-515.000.

Kim, Moon G.: *See*—
Chang, Shuen-Chin; and Kim, Moon G., 5,187,386, Cl. 307-296.800.

Kim, Yong-je, to Samsung Electronics Co., Ltd. Luminance signal recording circuit and method for maintaining compatibility in reproducing between different video systems. 5,187,590, Cl. 358-335.000.

Kimock, Fred M.: *See*—
Garg, Diwakar; Tsai, Wilman; Kimock, Fred M.; Iampietro, Robert L.; and Dyer, Paul N., 5,186,973, Cl. 427-590.000.

Kimura, Goro: *See*—
Ishii, Yoichi; Mihara, Hisashi; Ho, Lee M.; and Kimura, Goro, 5,186,944, Cl. 424-520.000.

Kimura, Hitoshi; Matsumoto, Tetsuo; and Shimada, Michihiro, to Furukawa Electric Co., Ltd., The. Rubber/plastic insulated power cables and a joint thereof and a method for manufacturing the same. 5,187,009, Cl. 428-383.000.

Kimura, Katsuji, to NEC Corporation. Four quadrant analog multiplier circuit of floating input type. 5,187,682, Cl. 364-841.000.

Kimura, Masaru; and Kochi, Hiromi, to Manac Inc. Syringe type column for chromatography. 5,186,839, Cl. 210-656.000.

Kimura, Norio; and Yamagishi, Yoichi, to Canon Kabushiki Kaisha. Recording apparatus and dubbing system including the same. 5,187,616, Cl. 360-61.000.

Kimura, Shigeru; Takahashi, Atsushi; Shibao, Masaharu; and Tomioka, Kazuyuki, to Nifco, Inc. Reservior arrangement for use in automotive fuel tank. 5,186,200, Cl. 137-15.000.

Kimura, Takayuki. Apparatus for drying rubber boots and other items. 5,185,939, Cl. 34-105.000.

Kinder, Carla J.: *See*—
Farrell, Michael E.; Austin, John C.; Kinder, Carla J.; and Matysek, James F., 5,187,587, Cl. 358-296.000.

King, Anthony O.; Anderson, Kevin; Karady, Sandor; Douglas, Alan W.; Abramson, Newton L.; and Shuman, Richard F., to Merck & Co., Inc. Trialkylsilyl trifluoromethanesulfonate mediated α-methylenic carbon functionalization of 4-aza-5α-androstan-3-one steroids. 5,187,278, Cl. 546-14.000.

King Company: *See*—
Kennon, Douglas D.; and Anhorn, Robert G., 5,186,240, Cl. 165-95.000.

King Industries, Inc.: *See*—
Calbo, Leonard J.; and Coughlin, Robert D., 5,187,019, Cl. 428-524.000.

King, James A.: *See*—
Vaseloff, Dennis J.; Dobrino, Gary J.; King, James A.; and Chu, Wai Y., 5,186,097, Cl. 99-330.000.

King, Julie A.: *See*—
Gearing, David P.; Gough, Nicholas M.; Hilton, Douglas J.; King, Julie A.; Metcalf, Donald; Nice, Edouard C.; Nicola, Nicos A.; Simpson, Richard J.; and Willson, Tracy A., 5,187,077, Cl. 435-69.100.

King, Randolph E.; and Gaskill, Garold B., to Seiko Corp.; and Seiko Epson Corp. Paging system with local channel lists. 5,187,470, Cl. 340-825.440.

Kingsley, Jack D.; Kwasnick, Robert F.; Wei, Ching-Yeu; and Saia, Richard J., to General Electric Company. High sensitivity, high resolution, solid state x-ray imaging device with barrier layer. 5,187,369, Cl. 250-370.110.

Kinoshita, Yoshio; Koshino, Shigeaki; and Sagae, Atsushi, to NSK-Warner K.K. Centering block for one-way clutch. 5,186,296, Cl. 192-41.00R.

Kirk, Richard O., to Dow Chemical Company, The. Uniform distribution polycarbonate pellet. 5,187,256, Cl. 528-196.000.

Kirkendall, George F., to Polaroid Corporation. Film cassette containing pre-exposed film. 5,187,512, Cl. 354-120.000.

Kirol, Lance D.: *See*—
Rockenfeller, Uwe; and Kirol, Lance D., 5,186,020, Cl. 62-457.900.

Kirschenhofer, Karl: *See*—
Schwerdt, Paul; Dorrie, Dieter; and Kirschenhofer, Karl, 5,186,151, Cl. 123-506.000.

Kirschner, Wallace: *See*—
Nambudiri, Easwaran C. N.; Muller, Arno; and Kirschner, Wallace, 5,187,798, Cl. 395-800.000.

Kishi, Katsunobu, to Nitto Kohki Co., Ltd. Air motor. 5,186,603, Cl. 415-80.000.

Kishimoto, Tadamitsu; Hirano, Toshio; Akiyama, Yukio; Okano, Akira; Matsui, Hiroshi; and Takahara, Yoshiyuki, to Ajinomoto Co., Inc.; and Kishimoto, Tadamitsu. Composition and method for supporting bone marrow transplantation. 5,186,931, Cl. 424-85.200.

Kishimura, Kotarou: *See*—
Sakashita, Takeshi; Shimoda, Tomoaki; Nagai, Takashi; and Kishimura, Kotarou, 5,187,242, Cl. 525-439.000.

Kita, Hiroshi: *See*—
Ikesu, Satoru; Kita, Hiroshi; and Kaneko, Yutaka, 5,187,057, Cl. 430-558.000.

Kita, Masahiro: *See*—
Nishikawa, Tomoyuki; and Kita, Masahiro, 5,187,528, Cl. 355-290.000.

Kitagawa, Eiji: *See*—
Imoto, Takayoshi; Seshimo, Masahiro; Makimoto, Futoshi; and Kitagawa, Eiji, 5,186,987, Cl. 428-34.500.

Kitagawa, Hiroji, to Kitagawa Industries Co., Ltd. Sealant compound with carbon fiber mixed therein. 5,187,225, Cl. 524-847.000.

Kitagawa Industries Co., Ltd.: *See*—
Ito, Fuminori, 5,187,648, Cl. 361-424.000.
Kitagawa, Hiroji, 5,187,225, Cl. 524-847.000.

Kitagawa, Kuniharu, to Fuji Photo Film Co., Ltd. Photographic filmstrip. 5,187,518, Cl. 355-40.000.

Kitagawa, Masahiko; Tomomura, Yoshitaka; and Nakanishi, Kenji, to Sharp Kabushiki Kaisha. Process for preparing electroluminescent device of compound semiconductor. 5,187,116, Cl. 437-105.000.

Kitahara, Makoto, to Canon Kabushiki Kaisha. Apparatus for distributing sheet members. 5,186,454, Cl. 271-288.000.

VOL 1147 ISS 3 FE 16 1993 UMI

Kitajima, Hiroyuki: *See*—
Yamamoto, Akira; Kitajima, Hiroyuki; Kurano, Akira; Miyazaki, Michio; Nozawa, Masafumi; and Takeuchi, Takikazu, 5,187,778, Cl. 395-250.000.

Kitajima, Masaichi, to Olympus Optical Co., Ltd. Probe washing vessel. 5,186,194, Cl. 134-154.000.

Kitajima, Shinichi; and Kobayashi, Yoshihiko, to Honda Giken Kogyo Kabushiki Kaisha. System for controlling fuel supply for internal combustion engine. 5,186,149, Cl. 123-491.000.

Kitani, Masashi; Kawai, Tatsundo; and Ichihashi, Hiroo, to Canon Kabushiki Kaisha. Photoelectric conversion device having improved illumination and information processing apparatus mounting the device. 5,187,595, Cl. 358-482.000.

Kitaura, Katsuya: *See*—
Nakazawa, Toru; and Kitaura, Katsuya, 5,186,477, Cl. 279-2.090.

Kitayama, Hiroyuki: *See*—
Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Katagiri, Kazuharu; Takiguchi, Takao; Shinjo, Kenji; Kitayama, Hiroyuki; and Nakamura, Shinichi, 5,186,858, Cl. 252-299.610.

Kitazato, Tadao: *See*—
Someya, Nobuo; Kitazato, Tadao; Fujikawa, Takao; and Manabe, Yasuo, 5,187,125, Cl. 501-1.000.

Kite, J. Sellers, III, to Bentley-Harris Manufacturing Company, The. Braided product and method of making same. 5,186,992, Cl. 428-36.300.

Kittredge, Barbara J.: *See*—
Chau, Nga V.; Hauptman, Reuben D.; Kaufman, David D.; Kittredge, Barbara J.; Lauber, Pamela J.; and Lindblad, Patricia, 5,187,710, Cl. 370-110.100.

Kiyohara, Masako: *See*—
Nishimura, Ryutaro; Yamaji, Michio; Maeda, Hirokatsu; Ikeda, Nobukazu; and Yamamoto, Kenji, 5,186,434, Cl. 251-331.000.

Kiyoto, Sumio: *See*—
Oohata, Nobutaka; Nishikawa, Motoaki; Kiyoto, Sumio; Takase, Shigehiro; Hemmi, Keiji; Murai, Hidetsugu; and Okuhara, Masakuni, 5,187,195, Cl. 514-510.000.

Kleefeld, Gerd; and Dutzmann, Stefan, to Bayer Aktiengesellschaft. Fungicidal substituted triazoles. 5,187,178, Cl. 514-383.000.

Klein, Richard J., II. Solar radon reduction. 5,186,160, Cl. 126-586.000.

Kleiner, Hans-Jerg: *See*—
Vaahs, Tilo; Kleiner, Hans-Jerg; and Bruck, Martin, 5,187,252, Cl. 528-33.000.

Kleist, Robert A.: *See*—
Gutierrez, Antonio; Song, Won R.; Lundberg, Robert D.; and Kleist, Robert A., 5,186,851, Cl. 252-49.006.

Klena, Thomas J., II: *See*—
Wright, Eric W.; Lecznar, Mark T.; and Klena, Thomas J., II, 5,186,492, Cl. 280-743.000.

Klinner, Wilfred E. Apparatus and method for selective crop harvesting. 5,185,991, Cl. 56-128.000.

Klobucar, W. Dirk; Kolich, Charles H.; and Manimaran, Thanikavelu, to Ethyl Corporation. Asymmetric hydrogenation of aromatic-substituted olefins using organorhenium catalyst. 5,187,136, Cl. 502-162.000.

Klobucar, W. Dirk: *See*—
Kolich, Charles H.; Manimaran, Thanikavelu; and Klobucar, W. Dirk, 5,187,135, Cl. 502-162.000.
Kolich, Charles H.; Manimaran, Thanikavelu; and Klobucar, W. Dirk, 5,187,281, Cl. 556-16.000.

Klostermann, Gerd: *See*—
Burgdorf, Jochen; Klostermann, Gerd; and Henein, Nabil, 5,186,524, Cl. 303-92.000.

Knapp, Furn F., Jr.; Lisic, Edward C.; Mirzadeh, Saed; and Callahan, Alvin P., to Martin Marietta Energy Systems, Inc. Tungsten-188/carrier-free rhenium-188 perrhenic acid generator system. 5,186,913, Cl. 423-2.000.

Knecht, Siegfried, to Maschinenfabrik Alfred Schmermund GmbH & Co. Apparatus for the automatic filling of a magazine. 5,186,447, Cl. 271-3.100.

Knepler, John T.; Newton, Cloyce; and Stover, Kenneth W., to Bunn-O-Matic Corporation. Digital control system for a coffee grinder and associated coffee brewer. 5,186,399, Cl. 241-34.000.

Knipp, Herbert: *See*—
Schluter, Herbert; Knipp, Herbert; and Wieland, Alfred, 5,187,221, Cl. 524-461.000.

Kobayashi, Eiji: *See*—
Kanda, Yutaka; Uosaki, Youichi; Saito, Hiromitsu; Sano, Hiroshi; Kobayashi, Eiji; Morimoto, Makoto; and Nagamura, Satoru, 5,187,186, Cl. 514-410.000.

Kobayashi, Hidetoshi; Shimada, Yasuhiro; Ichijima, Seiji; and Ishii, Yoshio, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 5,187,055, Cl. 430-544.000.

Kobayashi, Kaoru: *See*—
Kunimoto, Toshifumi; and Kobayashi, Kaoru, 5,187,314, Cl. 84-626.000.

Kobayashi, Kazuo: *See*—
Kanai, Hitoshi; Kanamine, Michiaki; and Kobayashi, Kazuo, 5,187,628, Cl. 360-126.000.

Kobayashi, Kurima: *See*—
Iriyama, Takahiko; Kobayashi, Kurima; and Imai, Hideaki, 5,186,766, Cl. 148-301.000.

Kobayashi, Makoto: *See*—
Ono, Takeshi; Wada, Satoshi; Kobayashi, Makoto; Yoshida, Takehiro; Takeda, Tomoyuki; Ishida, Yasushi; Yokoyama, Minoru; Tomoda, Akihiro; Yamada, Masakatsu; and Awai, Takashi, 5,187,494, Cl. 346-76.0PH.

Kobayashi, Osamu; Akioka, Koji; and Shimoda, Tatsuya, to Seiko Epson Corporation. Magnetic alloy and method of production. 5,186,761, Cl. 148-101.000.

Kobayashi, Shigetada: *See*—
Sugiyama, Mitsumasa; and Kobayashi, Shigetada, 5,187,592, Cl. 358-430.000.

Kobayashi, Toshihiko: *See*—
Osawa, Takashi; Murakami, Katsuo; Mitsuhashi, Seishiro; Kamano, Yujiro; and Kobayashi, Toshihiko, 5,187,415, Cl. 313-326.000.

Kobayashi, Yoshihiko: *See*—
Kitajima, Shinichi; and Kobayashi, Yoshihiko, 5,186,149, Cl. 123-491.000.

Kobe Properties Limited: *See*—
Pichl, Fritz, 5,187,466, Cl. 340-572.000.

Kobori, Hiromichi: *See*—
Ichihara, Katsutarou; and Kobori, Hiromichi, 5,187,694, Cl. 369-13.000.

Koch, Jochim; and Heim, Ulrich, to Dragerwerk Aktiengesellschaft. Transport incubator having an integrated energy store. 5,186,710, Cl. 600-22.000.

Koch, Siegfried, to Mannesmann Kienzle GmbH. Data storage device with an arrangement for receiving a transportable, card-shaped or disk-shaped data storage unit so that the data storage unit is inaccessible in an operating position. 5,187,646, Cl. 361-395.000.

Koch, Walter: *See*—
Heng, Rudolf; Koch, Walter; and Beyzavi, Ali-Naghi, 5,186,920, Cl. 423-610.000.

Kochi, Hiromi: *See*—
Kimura, Masaru; and Kochi, Hiromi, 5,186,839, Cl. 210-656.000.

Kodama, Toshiyuki: *See*—
Yoneyama, Hiroto; Yashiki, Atushi; and Kodama, Toshiyuki, 5,187,810, Cl. 455-34.100.

Koelsch, Ronald G.: *See*—
Hendrickson, Thomas E.; and Koelsch, Ronald G., 5,187,552, Cl. 257-408.000.

Koenig & Bauer Aktiengesellschaft: *See*—
Hillebrand, Bernd A., 5,186,108, Cl. 101-415.100.
Wieland, Erich G., 5,186,107, Cl. 101-409.000.

Kogan, Patricia W.; Rudnic, Edward M.; Sequeira, Joel A.; and Chaudry, Imtiaz A., to Schering Corporation. Sustained release oral suspensions. 5,186,930, Cl. 424-78.100.

Kohanawa, Yoshiko: *See*—
Hasunuma, Masahiko; Kaneko, Hisashi; Sawabe, Atsuhito; Kawanoue, Takashi; Kohanawa, Yoshiko; and Komatsu, Shuichi, 5,187,561, Cl. 257-771.000.

Kohara, Teiji: *See*—
Takahashi, Nobukazu; Kohara, Teiji; and Natsuume, Tadao, 5,187,012, Cl. 428-402.000.

Kohgami, Akihiko; Mikoshiba, Shigeo; Shinada, Shinichi; and Suzuki, Mutsumi, to Hitachi, Ltd. Tone display method and apparatus reducing flicker. 5,187,578, Cl. 358-168.000.

Kohl, Nancy E.: *See*—
Treiber, Laszlo R.; Lingham, Russell B.; Arison, Byron H.; Colwell, Lawrence F., Jr.; Dezeny, Georgette; and Kohl, Nancy E., 5,187,074, Cl. 435-41.000.

Kohno, Yasutaka; and Oku, Tomoki, to Mitsubishi Denki Kabushiki Kaisha. Method for producing a semiconductor device. 5,187,112, Cl. 437-41.000.

Koike, Hideharu, to Kabushiki Kaisha Toshiba. Latch circuit including filter for metastable prevention. 5,187,385, Cl. 307-272.100.

Koike, Kiyofumi, to Seiko Epson Corporation. Impact printer. 5,186,550, Cl. 400-54.000.

Koike, Takashi: *See*—
Watanabe, Takahide; Shibata, Yasuhiko; Mitsui, Shoichi; and Koike, Takashi, 5,186,133, Cl. 123-179.140.

Koike, Yukiya; Wakabayashi, Kenji; Sumi, Yoshihiko; and Ichikawa, Yataro, to Teijin Limited. Immunological determination of free human protein S and C4bp-protein S complex. 5,187,067, Cl. 435-7.900.

Koinuma, Yutaka: *See*—
Mizuno, Koichi; Wakabayashi, Takeshige; Koinuma, Yutaka; Aizawa, Reiji; Kushiyama, Satoshi; Kabayashi, Satoru; Ohuchi, Hideo; Yoshida, Toyonobu; Kubota, Yoshiro; Amano, Takanobu; Komaki, Hisashi; and Hirakawa, Shoji, 5,187,344, Cl. 219-121.500.

Koishi, Yuki: *See*—
Yoshida, Hiroyoshi; and Koishi, Yuki, 5,187,123, Cl. 437-220.000.

Koito Manufacturing Co., Ltd.: *See*—
Nagasawa, Masakazu; Handa, Masami; Fukai, Kunio; and Hirozumi, Yasuo, 5,186,671, Cl. 445-49.000.

Kojima, Shinichi: *See*—
Miyazawa, Shyoichi; Horita, Ryutaro; Hase, Kenichi; Kawamura, Satoshi; Kojima, Shinichi; and Iseki, Toshiyuki, 5,187,615, Cl. 360-46.000.

Kojima, Toshikuni: *See*—
Kudoh, Yasuo; Fukuyama, Masao; Kojima, Toshikuni; and Nanai, Norishige, 5,187,649, Cl. 361-525.000.
Kudoh, Yasuo; Fukuyama, Masao; Kojima, Toshikuni; and Nanai, Norishige, 5,187,650, Cl. 361-525.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See*—
Horita, Masayoshi; Utaka, Katsuyuki; and Matsushima, Yuichi, 5,187,717, Cl. 372-96.000.

Kolich, Charles H.; Manimaran, Thanikavelu; and Klobucar, W. Dirk, to Ethyl Corporation. Asymmetric hydrogenation of aromatic-substituted olefins using organo-cobalt catalyst. 5,187,135, Cl. 502-162.000.

Kolich, Charles H.; Manimaran, Thanikavelu; and Klobucar, W. Dirk, to Ethyl Corporation. Asymmetric hydrogenation of aromatic-substituted olefins using organoiridium catalyst. 5,187,281, Cl. 556-16.000.

Kolich, Charles H.: *See*—
Klobucar, W. Dirk; Kolich, Charles H.; and Manimaran, Thanikavelu, 5,187,136, Cl. 502-162.000.

Kolobow, Theodor, to United States of America, Health and Human Services. Catheter tip for intratracheal ventilation and intratracheal pulmonary ventilation. 5,186,167, Cl. 128-207.140.

Kolzer, Peter, to Standard Elektrik Lorenz Aktiengesellschaft. Method of and apparatus for automatically calibrating a phased-array antenna. 5,187,486, Cl. 342-360.000.

Komaki, Hisashi: *See*—
Mizuno, Koichi; Wakabayashi, Takeshige; Koinuma, Yutaka; Aizawa, Reiji; Kushiyama, Satoshi; Kabayashi, Satoru; Ohuchi, Hideo; Yoshida, Toyonobu; Kubota, Yoshiro; Amano, Takanobu; Komaki, Hisashi; and Hirakawa, Shoji, 5,187,344, Cl. 219-121.500.

Komatsu, Shuichi: *See*—
Hasunuma, Masahiko; Kaneko, Hisashi; Sawabe, Atsuhito; Kawanoue, Takashi; Kohanawa, Yoshiko; and Komatsu, Shuichi, 5,187,561, Cl. 257-771.000.

Kometani, Eiji: *See*—
Hatano, Kazuyoshi; Ichiryu, Ken; Tamura, Morio; Kometani, Eiji; Gotoh, Yasuharu; and Hidao, Nobuyoshi, 5,187,017, Cl. 428-469.000.

Komissarov, Igor V.; Dulenko, Vladimir I.; Voschula, Valentin N.; Kharin, Nikolai A.; Naletov, Sergei V.; and Mamonov, Alexandr B. DL-3-[4-[4-(2-pyridyl)-1-piperazinyl]-butyl]-1,8,8-trimethyl-3-azabicyclo[3,2,1]octane-2,4-dione having psychotropic and antiemetic effect. 5,187,277, Cl. 544-362.000.

Komiyama, Makoto: *See*—
Hirai, Hidefumi; Komiyama, Makoto; and Otaki, Michitaka, 5,187,209, Cl. 523-205.000.

Komori, Mikio; Sato, Shuichi; Adachi, Kazuyu; and Saito, Masayoshi, to Japan Tobacco Inc. Method and apparatus for detecting microholes or examining the state of micro-holes formed on each of rod-like matters. 5,186,183, Cl. 131-281.000.

Komura, Takashi: *See*—
Inoue, Kazuo; Kubota, Osamu; Komura, Takashi; and Noda, Etsuo, 5,186,609, Cl. 416-129.000.

Kondo, Akira, to Nippondenso Co., Ltd. Apparatus for detecting the existence of an abnormality in a vehicle operator protection system. 5,187,382, Cl. 307-10.100.

Kondo, Akitoshi: *See*—
Asatsuma, Keiji; Inoue, Yasuhito; and Kondo, Akitoshi, 5,187,223, Cl. 524-496.000.

Kondo, Kazuyuki; Tateoka, Masamichi; and Nakai, Takehiko, to Canon Kabushiki Kaisha. Scanning optical apparatus. 5,187,606, Cl. 359-196.000.

Kondo, Yoshinobu: *See*—
Kataumi, Yoshimasa; and Kondo, Yoshinobu, 5,186,076, Cl. 74-560.000.

Kondoh, Kazuhiro: *See*—
Hattori, Hiroshi; Yoshimori, Hideji; Kondoh, Kazuhiro; and Madama, Akira, 5,186,551, Cl. 400-61.000.

Kondrats, Nicholas: *See*—
Woodhall, Edward W.; and Kondrats, Nicholas, 5,186,978, Cl. 427-154.000.

Kone Oy: *See*—
Lindberg, Teppo, 5,186,286, Cl. 188-171.000.

Konica Corporation: *See*—
Ikesu, Satoru; Kita, Hiroshi; and Kaneko, Yutaka, 5,187,057, Cl. 430-558.000.
Nishiwaki, Akira; and Morohoshi, Yasuo, 5,186,872, Cl. 264-5.000.
Shimizu, Kazuyuki; Harada, Satoshi; and Yoshimura, Masazi, 5,187,410, Cl. 315-241.00P.
Umemura, Masahiro; Namiki, Takemasa; Tobisawa, Seiichi; Kawabe, Shigetoshi; and Nakajima, Takeshi, 5,186,754, Cl. 118-411.000.

Konig, Wolfhard: *See*—
Schobbe, Hermann; Steinhauser, Gerd; Scheerer, Hans; Opara, Andreas; Mohrmann, Werner; Steinert, Hans-Rudolf; and Konig, Wolfhard, 5,186,440, Cl. 267-220.000.

Koning, Ann J.: *See*—
Comai, Luca; and Koning, Ann J., 5,187,267, Cl. 536-23.100.

Koningsberger, Marco V.: *See*—
Vollmann, Norbert C.; Dewolf, Jan; Bernauer, Gunther; Stoger, Anton; and Koningsberger, Marco V., 5,187,629, Cl. 360-132.000.

Kono, Mutsumi; and Uchiumi, Satoshi, to Pioneer Electronic Corporation. Multiprogram video tape recording and reproducing device. 5,187,589, Cl. 358-335.000.

Konrad Hornschuch AG: *See*—
Machule, Lothar; and Obermeier, Hans R., 5,187,340, Cl. 219-10.530.

Kontron Instruments Holding N.V.: *See*—
Burckhardt, Christoph B.; and Dousse, Bruno M. J., 5,187,687, Cl. 367-7.000.

Koontz, Terry L.: *See*—
McMillion, Michael B.; Miller, Thomas R.; and Koontz, Terry L., 5,185,935, Cl. 33-1.0PT.

Kopec, Gary E.: *See*—
Bloomberg, Dan S.; and Kopec, Gary E., 5,187,753, Cl. 382-46.000.

Kopp, Werner: *See*—
Pelah, Zvi; Potencsik, Istvan; Kopp, Werner; and Urmann, Ernst, 5,187,308, Cl. 560-202.000.

Koppe, Denis; Leruyet, Patrick; and Duval, Francois, to Merlin Gerin. High voltage disconnecting switch. 5,186,315, Cl. 200-48.00V.

Korb, Daniel: *See*—
Keusch, Siegfried; and Korb, Daniel, 5,186,425, Cl. 248-188.100.

Korea Advanced Institute of Science and Technology: *See*—
Min, Suk Ki; Park, Seung Chul; and Han, Chul Won, 5,186,911, Cl. 422-245.000.

Korte-Jungermann, Hans-Werner. Process for stringing rackets for ball games and a device for carrying out the process. 5,186,459, Cl. 273-73.00A.

Kosan Teknova A/S: *See*—
Hansen, Frits P. U., 5,186,208, Cl. 137-505.120.

Koschitzky, Henry, to Iko Industries Ltd. Roofing shingles and method of making same. 5,186,980, Cl. 427-187.000.

Koschmieder, Hartmut: *See*—
Eder, Jean M.; Lambertz, Hans-Reinhard; and Koschmieder, Hartmut, 5,186,544, Cl. 384-15.000.

Koscina-Korunic, Smiljana: *See*—
Nikolic, Ognjen; Kralj-Baretic, Jadranka; and Koscina-Korunic, Smiljana, 5,186,837, Cl. 210-614.000.

Kosemura, Katsura; and Yamamoto, Kazuyuki, to Kanda Tsushin Kogyo Co., Ltd.; and Nippon Telegraph and Telephone Corporation. Method for automatically adjusting field of view of television monitor system and apparatus for carrying out the same. 5,187,574, Cl. 358-108.000.

Koshiba, Nobuharu, to Matsushita Electric Industrial Co., Ltd. Lithium secondary battery. 5,187,033, Cl. 429-194.000.

Koshino, Shigeaki: *See*—
Kinoshita, Yoshio; Koshino, Shigeaki; and Sagae, Atsushi, 5,186,296, Cl. 192-41.00R.

Koshio, Takehiro: *See*—
Shuto, Satoshi; Obara, Takumi; Itoh, Hiromichi; Koshio, Takehiro; Fujiwara, Tatsuro; and Yaso, Masao, 5,187,174, Cl. 514-261.000.

Kostlan, Catherine R.: *See*—
Belliotti, Thomas R.; Connor, David T.; Kostlan, Catherine R.; and Miller, Steven R., 5,187,175, Cl. 514-269.000.

Kotlarek, Peter A.; Moilanen, John R.; and Harrison, Mark W., to American Standard Inc. Reverse phase and high discharge temperature protection in a scroll compressor. 5,186,613, Cl. 417-291.000.

Kotraba, Norman L.; and Holley, Carl A., to Zia Patent Company. Direct reduction process in a rotary hearth furnace. 5,186,741, Cl. 75-484.000.

Kotwal, Girish; and Moss, Bernard, to United States of America, America. Gene encoding an anti-complement protein from vaccinia. 5,187,268, Cl. 536-23.720.

Kotzsch, Hans-Joachim: *See*—
Seiler, Claus-Dietrich; Schork, Reinhold; Frings, Albert; Kotzsch, Hans-Joachim; and Rauleder, Hartwig, 5,187,291, Cl. 556-442.000.

Kouno, Takefumi: *See*—
Uemura, Seiichi; Souda, Yoshio; Kato, Osamu; Kouno, Takefumi; and Kihara, Tsutomu, 5,186,873, Cl. 264-29.500.

Kountz, Kenneth J.: *See*—
Czachorski, Marek; and Kountz, Kenneth J., 5,186,012, Cl. 62-114.000.

Kovacevic, Miodrag: *See*—
Ignjatovic, Dragan; and Kovacevic, Miodrag, 5,186,400, Cl. 241-39.000.

Kovach, Joseph A., to Eaton Corporation. Valve stem topographical optimization process. 5,186,135, Cl. 123-188.300.

Kovacich, John A.; Hoinsky, Christopher C.; Williams, Donald G.; and Schiesser, Robert A., to Eaton Corporation. Hermetic mounting system for a pressure transducer. 5,186,055, Cl. 73-727.000.

Kovalick, Albert W., to Hewlett-Packard Company. Waveform synthesizer through simulating multiplication. 5,187,677, Cl. 364-721.000.

Kowal, Keith E.: *See*—
Spalding, Tom J.; Kowal, Keith E.; Bleck, James H.; Wakefield, Scott H.; and Thrailkill, John E., 5,187,645, Cl. 361-393.000.

Koyanagi, Masayoshi, to Tokyo Electric Co., Ltd. Paper sheet guide for a printer. 5,186,556, Cl. 400-642.000.

Kozawa, Satosi: *See*—
Fukuyama, Takahiko; Kozawa, Satosi; Ishiguro, Kazuyoshi; Akita, Toshiki; and Hori, Seiji, 5,187,335, Cl. 200-5.00B.

Kraft General Foods, Inc.: *See*—
Katcher, Jay H.; and Bertalan, Charles W., 5,187,272, Cl. 536-102.000.

Kralj-Baretic, Jadranka: *See*—
Nikolic, Ognjen; Kralj-Baretic, Jadranka; and Koscina-Korunic, Smiljana, 5,186,837, Cl. 210-614.000.

Kramer, Stuart A.: *See*—
DiGiovanni, David J.; Giles, Clinton R.; Kramer, Stuart A.; Nykolak, Gerald; Presby, Herman M.; and Simpson, Jay R., 5,187,759, Cl. 385-27.000.

Kranick, Gordon S.: *See*—
Orr, Larry W.; and Kranick, Gordon S., 5,186,485, Cl. 280-678.000.

Krebs, Andreas: *See*—
Fischer, Reiner; Baasner, Bernd; Hageman, Hermann; Krebs, Andreas; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; Becker, Benedikt; Schaller, Klaus; and Strang, Harry, 5,186,737, Cl. 504-283.000.

Kremen, Gennady. Method of machining keyways in shafts. 5,185,917, Cl. 29-558.000.

VOL 1147 ISS 3 FE 16 1993 UMI

Kremer, Ross A.: *See—*
Okorodudu, Abraham O. M.; Cardis, Angeline B.; and Kremer, Ross A., 5,186,850, Cl. 252-47.500.

Kresge, Edward N.: *See—*
Manalastas, Pacifico V.; Drake, Evelyn N.; Kresge, Edward N.; and Thaler, Warren A., 5,187,011, Cl. 428-402.240.

Krichever, Mark: *See—*
Metlitsky, Boris; and Krichever, Mark, 5,187,353, Cl. 235-462.000.

Krijger, Louis C.; Jansen, Jozef M. A.; Hoen, Nicolaas G. M.; Steenbakkers, Laurentius W.; and Froehling, Peter E., to Stamicarbon B.V. Plastic granulated material with non-dispersed electrically conductive fibre bundles. 5,186,862, Cl. 252-512.000.

Krishnan, Sivaram: *See—*
Lundy, Charles E.; Krishnan, Sivaram; Robbins, Gerald L.; and Archey, Rick L., 5,187,211, Cl. 524-107.000.

Krislav, Semyon: *See—*
Bertram, George T.; and Krislav, Semyon, 5,186,905, Cl. 422-133.000.

Kroggel, Matthias: *See—*
Mueller-Hess, Waltraud; Mohr, Dieter; Kroggel, Matthias; and Rauterkus, Karl-Josef, 5,187,040, Cl. 430-157.000.

Kromm, Erich: *See—*
Brueckmann, Ralf; Bury, Willi; Dix, Johannes P.; Herrmann, Manfred; Dlugosch, Waldemar; Kromm, Erich; Letter, Herbert; Zimmermann, Norbert; Kermer, Wolf-Dieter; and Taeger, Klaus, 5,186,846, Cl. 252-8.700.

Kronauge, James F.: *See—*
Piwnica-Worms, David R.; and Kronauge, James F., 5,186,923, Cl. 424-9.000.

Krosp, Charles W.: *See—*
Crow, Harvey L., Jr.; and Krosp, Charles W., 5,186,159, Cl. 126-41.00R.

Krusos, Denis A.: *See—*
DiSanto, Frank J.; and Krusos, Denis A., 5,187,609, Cl. 359-296.000.

Kubler, Rainer: *See—*
Benz, Klemens; and Kubler, Rainer, 5,187,424, Cl. 320-14.000.

Kubo, Hiroshi; and Imahuzi, Keitetsu, to Fuji Photo Film Co., Ltd. Method for producing sheet-formed recording medium. 5,186,976, Cl. 427-129.000.

Kubo, Motonobu: *See—*
Shiraishi, Nobuo; and Kubo, Motonobu, 5,187,269, Cl. 536-56.000.

Kubota Corporation: *See—*
Ishino, Renshiro; Yoshimura, Shigeo; Sunahata, Mutsumi; Saito, Taro; and Tanizaki, Yasuo, 5,186,059, Cl. 73-862.193.
Owada, Toshinobu; Inamori, Akio; Aota, Yoshikazu; Sakamoto, Shigeo; and Takahashi, Seiichi, 5,186,297, Cl. 192-85.0CA.

Kubota, Kazunobu: *See—*
Fukuoka, Naohiko; Kubota, Kazunobu; and Iguchi, Kunitoshi, 5,187,289, Cl. 548-260.000.

Kubota, Osamu: *See—*
Inoue, Kazuo; Kubota, Osamu; Komura, Takashi; and Noda, Etsuo, 5,186,609, Cl. 416-129.000.

Kubota, Takeshi; and Nakayama, Tadashi, to Nippon Steel Corporation. Process for production of non-oriented electrical steel sheet having excellent magnetic properties. 5,186,763, Cl. 148-111.000.

Kubota, Yoshiro: *See—*
Mizuno, Koichi; Wakabayashi, Takeshige; Koinuma, Yutaka; Aizawa, Reiji; Kushiyama, Satoshi; Kabayashi, Satoru; Ohuchi, Hideo; Yoshida, Toyonobu; Kubota, Yoshiro; Amano, Takanobu; Komaki, Hisashi; and Hirakawa, Shoji, 5,187,344, Cl. 219-121.500.

Kudoh, Yasuo; Fukuyama, Masao; Kojima, Toshikuni; and Nanai, Norishige, to Matsushita Electric Industrial Co., Ltd. Solid electrolytic capacitor and method for manufacturing the same. 5,187,649, Cl. 361-525.000.

Kudoh, Yasuo; Fukuyama, Masao; Kojima, Toshikuni; and Nanai, Norishige, to Matsushita Electric Industrial Co., Ltd. Solid electrolytic capacitors and method for manufacturing the same. 5,187,650, Cl. 361-525.000.

Kuenast, Christoph: *See—*
Buerstinghaus, Rainer; Neubauer, Hans-Juergen; Hofmeister, Peter; Kuenast, Christoph; Leyendecker, Joachim; and Kardorff, Uwe, 5,187,182, Cl. 514-383.000.

Kuga, Jay M.: *See—*
Gustafson, Gregg S.; and Kuga, Jay M., 5,186,253, Cl. 166-77.000.

Kuhfus, Gerd: *See—*
Gumb, Beverley W.; Kuhfus, Gerd; and Schmidt, James N., 5,187,743, Cl. 379-436.000.

Kuhn, Irene: *See—*
Andrews, William H.; Brothers, Virginia M.; Files, James G.; Kuhn, Irene; McCaman, Michael T.; Sias, Stacey R.; Paul, Leland S.; Gore, Thomas C.; Newman, Karel Z., Jr.; and Tedesco, John L., 5,187,080, Cl. 435-69.300.

Kuhnert, Egbert, to Du Pont de Nemours, E. I., and Company. Intermediate film storage device. 5,186,453, Cl. 271-270.000.

Kuhry, Anthony B. Electrotherapy device and process. 5,186,171, Cl. 128-421.000.

Kuk, Donald W.: *See—*
Rawson, Linda B.; and Kuk, Donald W., 5,186,377, Cl. 228-37.000.

Kulla, Hans; and Lehky, Pavel, to Lonza Ltd. Microorganisms useful in the process for the production of l-carnitine. 5,187,093, Cl. 435-252.100.

Kumada, Akira; Takata, Eiichi; and Murata, Michihiro, to Murata Mfg. Co., Ltd. Sensor for sensing the presence of electrolyte solution. 5,187,444, Cl. 324-663.000.

Kumagai, Junpei: *See—*
Yoshikawa, Susumu; Kumagai, Junpei; Sawada, Shizuo; and Matsumoto, Yasuo, 5,187,566, Cl. 257-301.000.

Kumar, Anand: *See—*
Czech, Bronislaw P.; Chapoteau, Eddy; and Kumar, Anand, 5,187,103, Cl. 436-79.000.

Kumar, Cbockalingam: *See—*
Lang, Harold K.; and Kumar, Chockalingam, 5,187,336, Cl. 200-61.610.

Kumar, Surinder: *See—*
Sohner, Harold K.; Morgan, Michael A.; and Kumar, Surinder, 5,187,803, Cl. 455-4.100.

Kumazawa, Takashi: *See—*
Hirama, Makoto; and Kumazawa, Takashi, 5,186,175, Cl. 128-661.010.

Kunc, Joseph A.: *See—*
Muntz, Eric P.; Erwin, Daniel A.; Kunc, Joseph A.; and Shiflett, Geoffrey R., 5,186,001, Cl. 60-515.000.

Kung, Hank F.; and Murphy, Raymond, to University of Pennsylvania, Trustees of the. Dopamine receptor ligands and image agents. 5,186,921, Cl. 424-1.100.

Kunimoto, Toshifumi; and Kobayashi, Kaoru, to Yamaha Corporation. Musical tone synthesizing apparatus with time function excitation generator. 5,187,314, Cl. 84-626.000.

Kunitou, Hirofumi: *See—*
Taniguchi, Hideaki; Kunitou, Hirofumi; Oritsuki, Ryouji; and Sasano, Akira, 5,187,604, Cl. 359-88.000.

Kunugi, Yoshifumi; Yanadori, Michio; Fukushima, Toshihiko; and Ohuchi, Tomihisa, to Hitachi, Ltd. Chemical heat pump. 5,186,241, Cl. 165-104.120.

Kuppers, Wilhelm; and Trutzschler, Hermann, to Trutzschler GmbH & Co. KG. Fiber processing roll having a helical sawtooth clothing. 5,185,905, Cl. 19-114.000.

Kurakake, Mitsuo, to Fanuc Ltd. Servomotor drive control system. 5,187,656, Cl. 364-167.010.

Kurakazu, Keiichi: *See—*
Kawasaki, Ikuya; Kurakazu, Keiichi; and Maejima, Hideo, 5,187,782, Cl. 395-375.000.

Kuramitsu, Masao; and Maki, Toshio, to Honda Giken Kogyo Kabushiki Kaisha. Ironing punch for making socket of ball-and-socket joint and method of manufacturing such ironing punch. 5,186,082, Cl. 76-107.100.

Kurano, Akira: *See—*
Yamamoto, Akira; Kitajima, Hiroyuki; Kurano, Akira; Miyazaki, Michio; Nozawa, Masafumi; and Takeuchi, Takikazu, 5,187,778, Cl. 395-250.000.

Kuraray Co., Ltd.: *See—*
Kamachi, Mikiharu; Yamamoto, Tohei; Sato, Toshiaki; and Fukunishi, Yoshiharu, 5,187,226, Cl. 525-56.000.
Kawashima, Mitsunobu; and Omura, Ikuo, 5,186,783, Cl. 156-307.300.

Kurata, Kazuyuki, to Asmo Co., Ltd. Vibration-proof stepping motor with built-up stator. 5,187,400, Cl. 310-49.00R.

Kureha Kagaku Kogyc Kabushiki Kaisha: *See—*
Katto, Takayuki; Ichikawa, Yukio; Enoki, Toshio; and Katase, Kenichi, 5,187,257, Cl. 528-388.000.

Kurihara, Tsugihiro: *See—*
Seto, Shigeo; Kurihara, Tsugihiro; Machida, Hiroshi; and Shintani, Keiji, 5,186,303, Cl. 198-345.100.

Kurita, Mitsuru; Suzuki, Yasumichi; and Ikeda, Yoshinori, to Canon Kabushiki Kaisha. Image processing apparatus for texture processing. 5,187,593, Cl. 358-434.000.

Kurn, Nurith: *See—*
Becker, Martin; Kurn, Nurith; Liu, Yen P.; Patel, Rajesh D.; Houts, Thomas M.; and Olson, John D., 5,187,066, Cl. 435-7.360.

Kuroda, Tadahiro; and Suzuki, Hiroaki, to Kabushiki Kaisha Toshiba. Semiconductor integrated circuit of standard cell system. 5,187,555, Cl. 257-202.000.

Kurys, Barbara E.: *See—*
Hamer, Russell R. L.; Helsley, Grover C.; Glamkowski, Edward J.; Chiang, Yulin; Freed, Brian S.; and Kurys, Barbara E., 5,187,165, Cl. 514-307.000.

Kurz, Jimmy D.: *See—*
Rau, Mann-Fu; Wang, Faa-Ching M.; and Kurz, Jimmy D., 5,186,784, Cl. 156-605.000.

Kusafuka, Noboru; Yoshida, Akira; Tsuyuki, Susumu; Seko, Tatsushi; Tsutsui, Yoshimitsu; Miki, Toshio; and Mouri, Ryoji, to Mitsubishi Jukogyo Kabushiki Kaisha. Auto-threading method. 5,186,407, Cl. 242-56.200.

Kush, Anil: *See—*
Raikhel, Natasha V.; Broekaert, Willem F.; Chua, Nam-Hai; and Kush, Anil, 5,187,262, Cl. 530-370.000.

Kushiyama, Satoshi: *See—*
Mizuno, Koichi; Wakabayashi, Takeshige; Koinuma, Yutaka; Aizawa, Reiji; Kushiyama, Satoshi; Kabayashi, Satoru; Ohuchi, Hideo; Yoshida, Toyonobu; Kubota, Yoshiro; Amano, Takanobu; Komaki, Hisashi; and Hirakawa, Shoji, 5,187,344, Cl. 219-121.500.

Kushmaul, Thomas R.; and Worrell, Barry C., to General Motors Corporation. Steering wheel for motor vehicle. 5,186,075, Cl. 74-552.000.

Kutsuki, Hidetoshi: *See—*
Sawa, Ikuo; Mori, Natsuki; Maemoto, Shunichi; Kutsuki, Hidetoshi; and Hasegawa, Junzo, 5,187,094, Cl. 435-280.000.

Kuwata, Shinichi: *See—*
Kato, Hiromasa; Fujimoto, Yuka; Nozawa, Akiyoshi; and Kuwata, Shinichi, 5,187,101, Cl. 436-42.000.

Kuzinski, Frank: *See—*
Doolittle, Miles G.; and Kuzinski, Frank, 5,186,073, Cl. 74-503.000.

Kwa, Peter T. H., to Northern Telecom Limited. Nonlinear device control methods and apparatus. 5,187,713, Cl. 372-26.000.

Kwasnick, Robert F.: *See—*
Kingsley, Jack D.; Kwasnick, Robert F.; Wei, Ching-Yeu; and Saia, Richard J., 5,187,369, Cl. 250-370.110.

Kweon, Young J., to Samwoo Far Infra-Red Ray Co., Ltd. Disinfectant ceramic composition. 5,187,124, Cl. 501-1.000.

Kwiatkowski, Patricia L.: *See—*
Outcalt, Russell J.; Timmons, Philip R.; Cramp, Susan M.; Kwiatkowski, Patricia L.; Lopes, Anibal; Cain, Paul A.; Sinodis, David N.; Hall, Lee S.; and Vors, Jean-Pierre A., 5,187,185, Cl. 514-408.000.

Kwon, Oh-Kyong; Malhi, Satwinder; and Hashimoto, Masahi, to Texas Instruments Incorporated. Compliant contact pad. 5,187,020, Cl. 428-601.000.

Kyocera Corporation: *See—*
Nakamoto, Yasuhiro; and Uemura, Hiroki, 5,187,451, Cl. 331-99.000.

Kyodo Oxygen Co., Ltd.: *See—*
Takano, Hideaki; Nakata, Jitsuo; and Oonishi, Toshiaki, 5,186,007, Cl. 62-22.000.

Kyoritsu Electric Corporation: *See—*
Nishi, Masahiro, 5,186,792, Cl. 162-263.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Kanda, Yutaka; Uosaki, Youichi; Saito, Hiromitsu; Sano, Hiroshi; Kobayashi, Eiji; Morimoto, Makoto; and Nagamura, Satoru, 5,187,186, Cl. 514-410.000.

Labavia S.G.E.: *See—*
Even, Denis, 5,187,433, Cl. 324-158.0MG.

Lacoste, Philippe: *See—*
Fabre, Pierre; Le Tron, Xavier; and Lacoste, Philippe, 5,186,416, Cl. 244-75.00R.

Lagace, Maurice P.; Boucher, Stephen G.; Cullen, Robert M.; Noyes, Andrew L.; Willette, John; and Russell, Cynthia M., to Airmar Technology Corporation. Marine sensor mounting mechanism. 5,186,050, Cl. 73-187.000.

Lagushenko, Radomir: *See—*
Michael, Joseph D.; Lagushenko, Radomir; Maya, Jakob; and Biblarz, Oscar, 5,186,668, Cl. 445-9.000.

Lai, Mei H. Filler injector for filling cracks in concrete. 5,186,949, Cl. 425-11.000.

Lai, Wen-Yih F.: *See—*
Mchenry, James A.; Deckman, Harry W.; Lai, Wen-Yih F.; Matturro, Michael G.; Jacobson, Allan J.; and Johnson, Jack W., 5,186,833, Cl. 210-321.750.

Lam, Son H.: *See—*
Dayan, Richard A.; Lam, Son H.; and Zimmerman, John P., 5,187,792, Cl. 395-725.000.

Lambert, Bernard; and Jochum, Alain, to Marrel, Bennes. Retractable arm loading/unloading device and vehicle comprising same. 5,186,598, Cl. 414-498.000.

Lambert, David V.: *See—*
Cuba, Gary W.; Isaacson, Robert D.; and Lambert, David V., 5,187,348, Cl. 219-124.020.

Lambertz, Hans-Reinhard: *See—*
Eder, Jean M.; Lambertz, Hans-Reinhard; and Koschmieder, Hartmut, 5,186,544, Cl. 384-15.000.

Lamela, Anthony J.; Christensen, Thomas F.; and Rach, David T., to Case Corporation. Fail safe self-adjusting disc brake. 5,186,284, Cl. 188-71.800.

Lamle, Stuart. Card dealing case. 5,186,464, Cl. 273-149.00R.

Landgraf, Glenn A.: *See—*
Harwath, Frank A.; Brinkman, Donald J.; Landgraf, Glenn A.; Shah, Hasmukh; Stenstrom, Eric; Brunker, David L.; and Johnson, Richard A., 5,186,656, Cl. 439-585.000.

Lane, Donald, to Brandt, Inc. Automatic endorser. 5,186,104, Cl. 101-216.000.

Lang, Harold K.; and Kumar, Chockalingam, to Cherry Corporation, The. Switch assembly with transfer actuator. 5,187,336, Cl. 200-61.610.

Lantech, Inc.: *See—*
Shellhamer, Terry M.; Ward, James C.; and Edwards, David M., 5,186,981, Cl. 427-247.000.

Lanxide Technology Company, LP: *See—*
Newkirk, Marc S.; Urquhart, Andrew W.; Zwicker, Harry R.; and Lesher, H. Daniel, 5,187,130, Cl. 501-97.000.
White, Danny R.; and Claar, Terry D., 5,187,128, Cl. 501-96.000.

Laporte, Martine: *See—*
Couderc, Rene ; Eyssautier, Bruno; Laporte, Martine; and Planard, Marie-France, 5,187,081, Cl. 435-71.100.

Large Scale Biology Corporation: *See—*
Anderson, Norman G.; and Anderson, N. Leigh, 5,186,824, Cl. 210-198.200.

Larkin, John J., to AT&T Bell Laboratories. Battery assemblages and batteries therefor. 5,187,027, Cl. 429-99.000.

Larson, John D., III, to Hewlett-Packard Company. Acoustic image signal receiver providing for selectively activatable amounts of electrical signal delay. 5,187,403, Cl. 310-334.000.

Larson, John E. Workplace chair. 5,186,519, Cl. 297-423.000.

Larson, Ronald J.: *See—*
Jeddeloh, Joseph M.; Larson, Ronald J.; and Herring, Jeffry V., 5,187,779, Cl. 395-325.000.

Laser, Vadim: *See—*
Chadima, George E., Jr.; and Laser, Vadim, 5,187,356, Cl. 235-472.000.
Chadima, George F., Jr; and Laser, Vadim, 5,187,355, Cl. 235-472.000.

Laszlo, Telekesi. Dispensing head for applying foamy product on a skin surface. 5,186,364, Cl. 222-153.000.

Latta, Martine; Mayaux, Jean-Francois; and Sarmientos, Paolo, to Genetica. Process for the preparation of mature human serum albumin. 5,187,261, Cl. 530-363.000.

Lau, Chung Y.: *See—*
Wagner, Gary L.; Rodal, Eric B.; and Lau, Chung Y., 5,187,450, Cl. 331-96.000.

Lauber, Pamela J.: *See—*
Chau, Nga V.; Hauptman, Reuben D.; Kaufman, David D.; Kittredge, Barbara J.; Lauber, Pamela J.; and Lindblad, Patricia, 5,187,710, Cl. 370-110.100.

Laufer, Helmut, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 5,186,143, Cl. 123-357.000.

Lauritsen, Dean K., to University Corporation for Atmospheric Research. Self guided recoverable airborne instrument module. 5,186,418, Cl. 244-138.00A.

Lavine, Edward L. Collapsible umbrella handle. 5,186,197, Cl. 135-25.400.

Leale, Arthur J.: *See—*
Gelinas, W. Robert; Leale, Arthur J.; Leitch, David J.; Mellow, John J.; Rinaudo, George; and Treff, Ernest H., 5,186,103, Cl. 101-181.000.

Lebez, Jean, to Atochem. Thermoplastic composition comprising a copolymer based on ethylene and maleic anhydride, and industrial articles obtained from such a composition. 5,187,016, Cl. 428-462.000.

LeBlanc, Steve M.: *See—*
White, Timothy P.; and LeBlanc, Steve M., 5,187,611, Cl. 359-599.000.

Lebret, Pierre, to Bendix Europe Services Techniques. Integrated pressure amplification and modulation system for a hydraulic circuit. 5,186,003, Cl. 60-555.000.

Lecount, David J., to Imperial Chemical Industries PLC. Phenoxypropanolamine compounds. 5,187,190, Cl. 514-652.000.

LeCrone, Richard C.: *See—*
Rachel, Bernard W.; LeCrone, Richard C.; and Bowen, Michael W., 5,187,405, Cl. 313-316.000.

Lecznar, Mark T.: *See—*
Wright, Eric W.; Lecznar, Mark T.; and Klena, Thomas J., II, 5,186,492, Cl. 280-743.000.

Lee, Chung-Ginn: *See—*
Shih, Jason C. H.; and Lee, Chung-Ginn, 5,186,961, Cl. 426-2.000.

Lee Craft Manufacturing Co., Inc.: *See—*
Mortun, Sorin; and Rosales, Jacob, 5,186,316, Cl. 200-527.000.

Lee, Ho-Gyu, to Goldstar, Inc. Optical apparatus for fingerprint identification system. 5,187,748, Cl. 382-4.000.

Lee, K. H.: *See—*
Brown, Jesse J.; Hirschfeld, Deidre A.; and Lee, K. H., 5,186,729, Cl. 65-33.000.

Lee, Kiu H.: *See—*
Baker, Edgar C.; Stakem, Francis G.; Noshay, Allen; Lee, Kiu H.; and Marcinkowsky, Arthur E., 5,187,246, Cl. 526-88.000.

Lee, Linda G., to Applied Biosystems, Inc. Nucleic acid sequence analysis with nucleoside-5'-O-(1-thiotriphospohates). 5,187,085, Cl. 435-91.000.

Lee Wang Industry Ltd.: *See—*
Wang, John, 5,186,700, Cl. 482-111.000.

Leef, Anatoly, to Motorola, Inc. Susceptor electrode and method for making same. 5,187,347, Cl. 219-121.520.

Leff, Barry J.: *See—*
Johnson, Edward R.; and Leff, Barry J., 5,187,806, Cl. 455-15.000.

Lehky, Pavel: *See—*
Kulla, Hans; and Lehky, Pavel, 5,187,093, Cl. 435-252.100.

Lehmann, Friedrich: *See—*
Kallinich, Dietmar; Kahlert, Wolfgand; Wind, Heinz; and Lehmann, Friedrich, 5,186,217, Cl. 138-149.000.

Lehrke, Bradley H.: *See—*
Denker, Stanley D.; and Lehrke, Bradley H., 5,186,313, Cl. 198-806.000.

Lehrmann, Falko: *See—*
Weber, Heinrich; Lehrmann, Falko; Hofer, Hermann; Vogel, Werner; and Mueller, Peter, 5,187,097, Cl. 435-313.000.

Leibbrandt, Friedrich: *See—*
Musch, Rudiger; Thormer, Joachim; Buding, Hartmuth; and Leibbrandt, Friedrich, 5,187,232, Cl. 525-215.000.

Leifeld, Ferdinand: *See—*
Windges, Bernd; and Leifeld, Ferdinand, 5,186,473, Cl. 277-81.00R.

Leighton, John C.; Neigel, Dennis; and Iovine, Carmine P., to National Starch and Chemical Investment Holding Corporation. N-allyl-N-dialkoxyethyl amide or amine emulsion binders for nonwoven fabrics. 5,187,006, Cl. 428-288.000.

Leighton, John C.: *See—*
Iovine, Carmine P.; Chandran, Rama S.; and Leighton, John C., 5,187,238, Cl. 525-327.200.

Leitch, David J.: *See—*
Gelinas, W. Robert; Leale, Arthur J.; Leitch, David J.; Mellow, John J.; Rinaudo, George; and Treff, Ernest H., 5,186,103, Cl. 101-181.000.

VOL
1147
ISS
3
FE
16
1993
UMI

Lenglet, Eric, to Procedes Petroliers et Petrochimiques, a part interest. Method of decoking an installation for steam cracking hydrocarbons, and a corresponding steam-cracking installation. 5,186,815, Cl. 208-48.00R.

Lenox, Ronald S.; Boyd, Kim S.; and Vought, William S., Jr., to Armstrong World Industries, Inc. Non-corrosive elastomeric foam for insulating copper tubes. 5,187,203, Cl. 521-75.000.

Lenz, James E.: *See—*
Wagener, Thomas J.; Bjork, Paul E.; and Lenz, James E., 5,187,475, Cl. 340-870.320.

Lenz, William R.; and Palmieri, Daniel M., to Molex Incorporated. Packaging system for electrical connectors. 5,186,328, Cl. 206-330.000.

Leopold, Raymond J.: *See—*
Bertiger, Bary R.; Leopold, Raymond J.; and Peterson, Kenneth M., 5,187,805, Cl. 455-12.100.

Le Penven, Rene: *See—*
Mehadji, Kada; Mathern, Andre; and Le Penven, Rene, 5,187,761, Cl. 385-76.000.

Leruyet, Patrick: *See—*
Koppe, Denis; Leruyet, Patrick; and Duval, Francois, 5,186,315, Cl. 200-48.00V.

Leser, William A.: *See—*
Gullberg, Kim R.; and Leser, William A., 5,186,193, Cl. 134-105.000.

Lesher, H. Daniel: *See—*
Newkirk, Marc S.; Urquhart, Andrew W.; Zwicker, Harry R.; and Lesher, H. Daniel, 5,187,130, Cl. 501-97.000.

Leslie, Thomas M.; Shu, Ching F.; Blatter, Karsten; DeMartino, Ronald; and Battito, Frank, to Hoechst Celanese Corp. Vinyl polymers exhibiting nonlinear optical response. 5,187,234, Cl. 525-276.000.

Le Tron, Xavier: *See—*
Fabre, Pierre; Le Tron, Xavier; and Lacoste, Philippe, 5,186,416, Cl. 244-75.00R.

Letter, Herbert: *See—*
Brueckmann, Ralf; Bury, Willi; Dix, Johannes P.; Herrmann, Manfred; Dlugosch, Waldemar; Kromm, Erich; Letter, Herbert; Zimmermann, Norbert; Kermer, Wolf-Dieter; and Taeger, Klaus, 5,186,846, Cl. 252-8.700.

Leucadia, Inc.: *See—*
DePetris, Robert, 5,186,831, Cl. 210-242.400.

Levine, Stephen N.: *See—*
Baker, James C.; Levine, Stephen N.; Puhl, Larry C.; and Carney, Scott N., 5,187,811, Cl. 455-35.100.

Levkoff, Jerome: *See—*
Benko, John W.; Levkoff, Jerome; Sutryn, Daniel C.; and Viriyayuthakorn, Montri, 5,186,756, Cl. 118-730.000.

Levrai, Roland: *See—*
Thioux, Alain; and Levrai, Roland, 5,186,523, Cl. 303-9.630.

Lew, Hyok S. Vortex flowmeter with dual vortex sensors. 5,186,056, Cl. 73-861.240.

Lew, Hyok S. Rotameter with float guides. 5,186,058, Cl. 73-861.560.

Lewicki, Walter J., Jr.; and Bowers, John H., to Armstrong World Industries, Inc. Printing system. 5,187,501, Cl. 346-153.100.

Lewis, Milburn. Tarpaulin deployment and retraction apparatus. 5,186,231, Cl. 160-310.000.

Leyendecker, Joachim: *See—*
Buerstinghaus, Rainer; Neubauer, Hans-Juergen; Hofmeister, Peter; Kuenast, Christoph; Leyendecker, Joachim; and Kardorff, Uwe, 5,187,182, Cl. 514-383.000.

Li, Qun. Aircraft having means for controlling the ground effect flying altitude by sensing air pressure on the surface of the wing. 5,186,415, Cl. 244-12.100.

Liang, Edward T.: *See—*
Watkins, Michael I.; Bartlett, Clifford R.; Liang, Edward T.; Pocekay, John M.; and Staples, Mark A., 5,187,107, Cl. 436-505.000.

Liberti, Paul A.; Feeley, Brian P.; and Gohel, Dhanesh I., to Immunicon Corporation. Apparatus for magnetic separation featuring external magnetic means. 5,186,827, Cl. 210-222.000.

Libretti, Giuseppe, to SGS-Thomson Microelectronics s.r.l. Universal multicontact connection between an EWS probe card and a test card of a "test-on-wafer" station. 5,187,431, Cl. 324-158.00P.

Liewen, Michael B.: *See—*
Hutkins, Robert W.; Berry, Elaine D.; and Liewen, Michael B., 5,186,962, Cl. 426-61.000.

Lifescan, Inc.: *See—*
Matzinger, David P.; Teodorczyk, Maria; and Poulos, Darwin R., 5,187,100, Cl. 436-16.000.

Lifshey, Arthur L.: *See—*
Talish, Roger J.; and Lifshey, Arthur L., 5,186,162, Cl. 128-24.0AA.

Light, Terry J., Sr.: *See—*
Ballenger, William T., Jr.; and Light, Terry J., Sr., 5,186,979, Cl. 427-156.000.

Lim, Jae S., to Massachusetts Institute of Technology. Source adaptive television system. 5,187,575, Cl. 358-140.000.

Lim, Mu-Ill; and Pan, Yuh-Guo, to Clairol Incorporated. N[1]trifluoroalkyl substituted 2-nitro-p-phenylenediamine dyes and hair dyeing compositions and methods thereof. 5,186,716, Cl. 8-405.000.

Lin, Jui C., to Taiwan Fu Hsing Industry Co., Ltd. Locking device for an auxiliary lock. 5,186,030, Cl. 70-190.000.

Lin, Kuang-Hui. Water tap with single knob hot/cold water flow control and shower switching control. 5,185,893, Cl. 4-677.000.

Lin, Sung-Wei: *See—*
Gill, Manzur; Lin, Sung-Wei; and D'Arrigo, Sebastiano, 5,187,683, Cl. 365-185.000.

Lin, Tung-Ming. Ash tray. 5,186,182, Cl. 131-241.000.

Lin, Yung-Jyi. Injection needle disposal device. 5,186,402, Cl. 241-55.000.

Lincoln Brass Works, Inc.: *See—*
Ferlin, William J., 5,186,158, Cl. 126-39.00H.

Lindberg, Teppo, to Kone Oy. Electromagnetic brake. 5,186,286, Cl. 188-171.000.

Lindblad, Patricia: *See—*
Chau, Nga V.; Hauptman, Reuben D.; Kaufman, David D.; Kittredge, Barbara J.; Lauber, Pamela J.; and Lindblad, Patricia, 5,187,710, Cl. 370-110.100.

Lindner, Bernard J.; and Lorenz, Harold, to Rexnord Corporation. Simplified motor brake. 5,186,287, Cl. 188-171.000.

Lindner, Christian; Eichenauer, Herbert; Lutjens, Holger; and Braese, Hans-Eberhard, to Bayer Aktiengesellschaft. High heat-distortion plastics. 5,187,231, Cl. 525-207.000.

Lindstrom, Michael J.: *See—*
Carroll, Glenn T.; and Lindstrom, Michael J., 5,186,848, Cl. 252-8.552.

Lingham, Russell B.: *See—*
Treiber, Laszlo R.; Lingham, Russell B.; Arison, Byron H.; Colwell, Lawrence F., Jr.; Dezeny, Georgette; and Kohl, Nancy E., 5,187,074, Cl. 435-41.000.

Linnepe, Kurt; and Linnepe, Marcus. Elongatable support. 5,186,429, Cl. 248-354.100.

Linnepe, Marcus: *See—*
Linnepe, Kurt; and Linnepe, Marcus, 5,186,429, Cl. 248-354.100.

Lintec Corporation: *See—*
Ebe, Kazuyoshi; Narita, Hiroaki; Taguchi, Katsuhisa; Akeda, Yoshitaka; and Saito, Takanori, 5,187,007, Cl. 428-343.000.

Liou, John. Belt roller adjustment device of belt sander. 5,185,962, Cl. 51-148.000.

Liow, Yuh-Tay: *See—*
Civanlar, M. Reha; Dzik, Steven C.; and Liow, Yuh-Tay, 5,187,660, Cl. 364-413.190.

Lippiello, Patrick M.; and Caldwell, William S., to R. J. Reynolds Tobacco Company. Method for treatment of neurodegenerative diseases. 5,187,169, Cl. 514-343.000.

Lisak, Stephen P.: *See—*
Ryder, Francis E.; Kanner, Rowland W.; and Lisak, Stephen P., 5,186,532, Cl. 362-66.000.

Lisco, Inc.: *See—*
Sullivan, Michael J., 5,187,013, Cl. 428-407.000.

Lisic, Edward C.: *See—*
Knapp, Furn F., Jr.; Lisic, Edward C.; Mirzadeh, Saed; and Callahan, Alvin P., 5,186,913, Cl. 423-2.000.

Lisowsky, Bohdan: *See—*
Edler, James P.; and Lisowsky, Bohdan, 5,187,129, Cl. 501-97.000.

Lissandrin, Mario, to Merlin Gerin. Gas insulated high-voltage circuit breaker with pneumatic operating mechanism. 5,187,339, Cl. 200-148.00F.

Little Caesar Enterprises, Inc.: *See—*
Miller, Danny T., 5,186,098, Cl. 99-494.000.

Liu, K. S.: *See—*
Frankel, Rise J.; and Liu, K. S., 5,187,706, Cl. 370-16.100.

Liu, Yen P.: *See—*
Becker, Martin; Kurn, Nurith; Liu, Yen P.; Patel, Rajesh D.; Houts, Thomas M.; and Olson, John D., 5,187,066, Cl. 435-7.360.

Lo, Tsai J.; and Hwang, David, to Cheng Shin Rubber Ind., Co., Ltd.; and Ming King Ind., Co., Ltd. Mold for manufacturing tires. 5,186,952, Cl. 425-36.000.

Locke, David R., to Remington Products, Inc. Multiple foil and cutting blade assembly for electric dry shavers. 5,185,926, Cl. 30-43.920.

Lockhardt, Michael A. Device providing easy extraction of video cassettes and the like from closely fitting storage jackets therefor. 5,186,527, Cl. 312-9.470.

Lockner, Michael: *See—*
Chasteen, Howard; Farley, Todd; Cramer, Richard; and Lockner, Michael, 5,186,279, Cl. 184-15.100.

Lockshin, Mary P.: *See—*
Carlier, Paul R.; Filosa, Michael P.; and Lockshin, Mary P., 5,187,282, Cl. 548-455.000.

Loctite (Ireland) Limited: *See—*
Woods, John; Guthrie, John; and Coakley, Pauline, 5,187,048, Cl. 430-286.000.

Lodder, Robert A.: *See—*
Galante, Leonard J.; and Lodder, Robert A., 5,187,368, Cl. 250-341.000.

Loewen, Mark D.: *See—*
Baumgardner, John S.; and Loewen, Mark D., 5,186,843, Cl. 210-767.000.

Lonza Ltd.: *See—*
Kulla, Hans; and Lehky, Pavel, 5,187,093, Cl. 435-252.100.
Quittmann, Wilhelm; Zumoberhaus, Leo; and Ruppen, Peter, 5,187,297, Cl. 558-360.000.

Lopes, Anibal: *See—*
Outcalt, Russell J.; Timmons, Philip R.; Cramp, Susan M.; Kwiatkowski, Patricia L.; Lopes, Anibal; Cain, Paul A.; Sinodis, David N.; Hall, Lee S.; and Vors, Jean-Pierre A., 5,187,185, Cl. 514-408.000.

Lopez-Berestein, Gabriel: *See—*
Khokhar, Abdul R.; Lopez-Berestein, Gabriel; and Perez-Soler, Roman, 5,186,940, Cl. 424-450.000.

Lopez, John V.: *See—*
McDonagh, Lawrence P.; Clarke, William H.; Stinson, Jonathan D.; and Lopez, John V., 5,186,439, Cl. 267-35.000.

Loral Aerospace Corp.: *See—*
Conboy, Mark A.; Ichinose, Richard Y.; and Back, Ki H., 5,187,777, Cl. 395-163.000.

Lord Corporation: *See—*
Staples, Frank E.; Russell, Donald D.; and Potter, James L., 5,186,686, Cl. 464-69.000.

L'Oreal: *See—*
Bugaut, Andree; Junino, Alex; and Vandenboosche, Jean J., 5,186,717, Cl. 8-405.000.

Loredan Biomedical, Inc.: *See—*
Mangseth, Glen; Lovas, Albert J.; and Dempster, Philip T., 5,186,695, Cl. 482-6.000.

Lorensen, William E.: *See—*
Cline, Harvey E.; and Lorensen, William E., 5,187,658, Cl. 364-413.130.

Lorenz, Gisela: *See—*
Wingert, Horst; Sauter, Hubert; Brand, Siegbert; Wenderoth, Bernd; Lorenz, Gisela; and Ammermann, Eberhard, 5,187,170, Cl. 514-351.000.

Lorenz, Harold: *See—*
Lindner, Bernard J.; and Lorenz, Harold, 5,186,287, Cl. 188-171.000.

Lorenz, William M., to International Business Machines Corporation. Current limiting device. 5,187,653, Cl. 363-89.000.

Loscalzo, Joseph; and Cooke, John, to Brigham & Women's Hospital. S-nitroso derivatives of ACE inhibitors and the use thereof. 5,187,183, Cl. 514-400.000.

Losey, Robert W.: *See—*
Clark, Douglas J.; Galica, Leo M.; Losey, Robert W.; and Suitor, Jerry W., 5,186,806, Cl. 204-265.000.

Loubier, Robert J. Motor driven dental floss applicator. 5,186,191, Cl. 132-322.000.

Loughman, Richard E.: *See—*
Rogers, Richard E.; Turvy, Larry D., Jr.; Eberhardt, George J.; and Loughman, Richard E., 5,187,374, Cl. 250-561.000.

Lovas, Albert J.: *See—*
Mangseth, Glen; Lovas, Albert J.; and Dempster, Philip T., 5,186,695, Cl. 482-6.000.

Loveless, Frederick C.: *See—*
Coolbaugh, Thomas S.; Loveless, Frederick C.; and Matthews, Demetreos N., 5,187,236, Cl. 525-314.000.

Lovell, James B., to American Cyanamid Company. Insecticidal and synergistic miticidal compositions. 5,187,184, Cl. 514-406.000.

Lower, William E.: *See—*
Pierson, Bruce A.; and Lower, William E., 5,186,333, Cl. 209-370.000.

Lowrey, Tyler A.: *See—*
Doan, Trung T.; Lowrey, Tyler A.; Cathey, David A.; and Rolfson, J. Brett, 5,186,670, Cl. 445-24.000.

Loy, Luke W.: *See—*
Iorio, Vincent M.; and Loy, Luke W., 5,186,604, Cl. 415-90.000.

Lu, Jing J.: *See—*
Frost, Phillip; Fishman, Jack; Hahn, Elliot; and Lu, Jing J., 5,187,163, Cl. 514-47.000.

Luca, Nicolae. Method for determination of lipid moiety and apolipoprotein expressed epitope immunoreactivity on intact lipoprotein. 5,187,068, Cl. 435-7.920.

Lucas, Lonnie J.: *See—*
Smith, Alan A.; Catmull, Paul B.; Lucas, Lonnie J.; and Johnson, Karl P., 5,185,996, Cl. 60-39.020.

Lucas, William F.: *See—*
Beeferman, Dennis; and Lucas, William F., 5,186,380, Cl. 228-121.000.

Luchaco, David G.: *See—*
Post, Robert P.; D'Aleo, Michael J.; Keeports, Doug W.; Ference, Jonathan H.; Luchaco, David G.; and Spira, Joel S., 5,187,655, Cl. 364-146.000.

Ludwig, Howard H.: *See—*
Wood, Fred G.; Poirier, David C.; Campbell, Douglas C.; Ludwig, Howard H.; and Westphal, Patrick J., 5,186,487, Cl. 280-707.000.

Luhrsen, Kenneth R.: *See—*
Fox, Mary M.; Heckert, David C.; and Luhrsen, Kenneth R., 5,186,965, Cl. 426-74.000.

Lumetta, Sammy C.: *See—*
Cortochiato, Michael L.; and Lumetta, Sammy C., 5,186,152, Cl. 123-514.000.

Luna, Lois A.: *See—*
Schardt, David L.; Luna, Lois A.; and Jones, Ivor S., 5,186,528, Cl. 312-100.000.

Lundberg, Robert D.: *See—*
Gutierrez, Antonio; Song, Won R.; Lundberg, Robert D.; and Kleist, Robert A., 5,186,851, Cl. 252-49.006.

Lundy, Charles E.; Krishnan, Sivaram; Robbins, Gerald L.; and Archey, Rick L., to Miles Inc. Gamma radiation resistant polycarbonate compositions. 5,187,211, Cl. 524-107.000.

Lupke, Manfred A. A., to Corma Inc. Improvements relating to cooling plugs in thermoplastic pipe forming apparatus and process. 5,186,878, Cl. 264-209.400.

Lurssen, Klaus: *See—*
Andree, Roland; Drewes, Mark W.; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., 5,186,734, Cl. 504-196.000.
Fischer, Reiner; Baasner, Bernd; Hageman, Hermann; Krebs, Andreas; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; Becker, Benedikt; Schaller, Klaus; and Strang, Harry, 5,186,737, Cl. 504-283.000.

Lutjens, Holger: *See—*
Lindner, Christian; Eichenauer, Herbert; Lutjens, Holger; and Braese, Hans-Eberhard, 5,187,231, Cl. 525-207.000.

Lutron Electronic Co., Inc.: *See—*
Post, Robert P.; D'Aleo, Michael J.; Keeports, Doug W.; Ference, Jonathan H.; Luchaco, David G.; and Spira, Joel S., 5,187,655, Cl. 364-146.000.

Luwa Ltd.: *See—*
Hasler, Jurg; and Stolz, Kurt, 5,187,316, Cl. 89-36.020.

Ly, Chi-Vien: *See—*
Chu, Matthew C. H.; Ly, Chi-Vien; and Coulson, Gordon W., 5,187,707, Cl. 370-79.000.

Lyga, Thomas M.: *See—*
Buan, Danilo P.; and Lyga, Thomas M., 5,186,752, Cl. 118-260.000.

Lyke, David G.: *See—*
Fahey, Laura B.; Garten, Michael D.; and Lyke, David G., 5,186,335, Cl. 209-552.000.

Lynch, Gregory A., to Inter-City Products Corporation (USA). Two stage furnace control. 5,186,386, Cl. 236-11.000.

Lynline Pty Limited: *See—*
Sheppard, Michael J., 5,186,483, Cl. 280-494.000.

Lyras, Gus G., to Corcon (Ohio corporation). Mobile separation sytem for abrasive blasting material. 5,185,968, Cl. 51-319.000.

Lysy, George C.: *See—*
Muskatello, James M.; Parmet, Darryl; Lysy, George C.; and Ramsey, Maynard R., III, 5,187,641, Cl. 361-380.000.

Lyzinski, David; Buttke, Robert D.; Taylor, James L.; and Hall, William M., to Amoco Corporation. Laboratory simulator of reactor for a petroleum refinery. 5,186,904, Cl. 422-130.000.

M & D International Enterprises, Inc.: *See—*
Mease, Richard B.; and Burridge, Robert E., 5,186,360, Cl. 222-63.000.

Maass, Manfred; Bunke, Joachim; and Fritz, Martin, to Mercedes-Benz AG. Device for limiting the terminal voltage in an alternator. 5,187,426, Cl. 322-63.000.

Mabry, George R.: *See—*
Capello, Richard D.; and Mabry, George R., 5,187,747, Cl. 382-4.000.

Mabuchi, Katsumi: *See—*
Sakai, Masanori; Ohsumi, Katsumi; Ohnaka, Noriyuki; Kikuchi, Eiji; Mabuchi, Katsumi; and Takahashi, Takuya, 5,186,798, Cl. 204-153.100.

MacArthur, Duncan W.; and McAtee, James L., to University of California. Alternating current long range alpha particle detector. 5,187,370, Cl. 250-379.000.

MacCoss, Malcolm: *See—*
Ashton, Wallace T.; Hutchins, Steven M.; and MacCoss, Malcolm, 5,187,179, Cl. 514-383.000.

MacDonald, Barbara: *See—*
Brown, Donald A.; Brown, Steven P.; and MacDonald, Barbara, 5,186,359, Cl. 222-1.000.

MacEachern, A. Walter, to Medical Parameters, Inc. Guidewire advancement system. 5,186,179, Cl. 128-772.000.

Machida, Hiroshi: *See—*
Seto, Shigeo; Kurihara, Tsugihiro; Machida, Hiroshi; and Shintani, Keiji, 5,186,303, Cl. 198-345.100.

Machinefabriek Meyn B.V.: *See—*
Meyn, Cornelis, 5,186,679, Cl. 452-117.000.

Macholdt, Hans-Tobias: *See—*
Gitzel, Jorg; Wehle, Detlef; and Macholdt, Hans-Tobias, 5,187,038, Cl. 430-110.000.

Machule, Lothar; and Obermeier, Hans R., to Konrad Hornschuch AG; and HFT-Obermeier Maschinenbau GmbH. Method for welding at least one region of an overlay sheet to a receiving surface of a carrier layer. 5,187,340, Cl. 219-10.530.

MacInnes, David F., Jr.: *See—*
Joyce, James L., Jr.; Jones, Warren C.; and MacInnes, David F., Jr., 5,186,860, Cl. 252-500.000.

MacKay, Michael T.; Duffy, Robert; Cotterill, Lee A.; Herz, William; and McArdle, Joe, to Sony Corporation of America. Multi-parameter variable scale rotary switch. 5,187,630, Cl. 360-137.000.

Madama, Akira: *See—*
Hattori, Hiroshi; Yoshimori, Hideji; Kondoh, Kazuhiro; and Madama, Akira, 5,186,551, Cl. 400-61.000.

Madill, Kent W.: *See—*
Jozefczak, Thadius F.; and Madill, Kent W., 5,186,371, Cl. 224-42.210.

Madison, Harry, to Harsco Corporation. Side shift railway guide wheel apparatus for rail/highway conversion with V-shaped automatic centering surfaces for centering vehicle relative to the rails. 5,186,109, Cl. 105-215.200.

Madou, Marc J.: *See—*
Otagawa, Takaaki; and Madou, Marc J., 5,187,034, Cl. 429-198.000.

Madzsar, George C., to United States of America, National Aeronautics and Space Administration. Spectroscopic wear detector. 5,187,542, Cl. 356-300.000.

Maeda, Hirokatsu: *See—*
Nishimura, Ryutaro; Yamaji, Michio; Maeda, Hirokatsu; Ikeda, Nobukazu; and Yamamoto, Kenji, 5,186,434, Cl. 251-331.000.

Maeda Industries, Ltd.: *See—*
Iwasaki, Yoshihisa, 5,186,071, Cl. 74-489.000.

Maeda, Katsumi: *See—*
Steindorf, Richard E.; Maeda, Katsumi; Boche, Daniel K.; and Satoh, Yoichi, 5,186,912, Cl. 422-263.000.

Maeda, Takanori: *See—*
Muramatsu, Eiji; and Maeda, Takanori, 5,187,697, Cl. 369-44.320.

VOL
1147
ISS
3
FE
16
1993
UMI

Maeda, Yoshihito; Kaneko, Toshiki; Nagai, Masaichi; Andoh, Hisashi; Katou, Yoshimi; Ikuta, Isao; and Watanabe, Ryuji, to Hitachi, Ltd. Optical recording medium. 5,187,052, Cl. 430-495.000.

Maeda, Yuji: *See—*
Kadomukai, Yuzo; Yamakado, Makoto; Maeda, Yuji; Nakamura, Kenichi; Fukushima, Masao; and Murakami, Kei, 5,186,136, Cl. 123-192.100.

Maehara, Toshifumi, to Akebono Brake Industry Co., Ltd. Fluid operated booster. 5,186,002, Cl. 60-547.100.

Maejima, Hideo: *See—*
Kawasaki, Ikuya; Kurakazu, Keiichi; and Maejima, Hideo, 5,187,782, Cl. 395-375.000.

Maekawa, Toshio: *See—*
Takaishi, Tadao; and Maekawa, Toshio, 5,186,154, Cl. 123-634.000.

Maemoto, Shunichi: *See—*
Sawa, Ikuo; Mori, Natsuki; Maemoto, Shunichi; Kutsuki, Hidetoshi; and Hasegawa, Junzo, 5,187,094, Cl. 435-280.000.

Maeno, Takashi; Fujinami, Kyouichi; Kawahara, Hiroaki; and Asano, Tetsuo, to Toyoda Gosei Co., Ltd. Method for producing cylindrical bushing with hydraulic damping. 5,185,916, Cl. 29-525.000.

Maezawa, Yoshiharu; and Nouchi, Norimoto, to Matsushita Electric Industrial Co., Ltd. Method for manufacturing functional thin film. 5,186,977, Cl. 427-132.000.

Magee, Arthur W.: *See—*
Majerus, Norbert; Magee, Arthur W.; Hickman, Michael D.; Parrish, Gary C.; Rooney, Timothy M.; and Chlebina, Lawrence E., 5,185,960, Cl. 51-104.000.

Magic Label Corporation: *See—*
Mason, Kenneth C., 5,186,499, Cl. 283-81.000.

Magnan, Michael B.; Reichling, Charles A.; and Wells, Robert H., to Ford Motor Company. Intermittent oiling system for an internal combustion engine camshaft and valve train. 5,186,129, Cl. 123-90.340.

Magnollay, Gilbert; Seigneur, Remy; Budry, Jacques; Clement, Jean-Claude; Jaccottet, Michel; Jaggi, Pierre-Yves; Jaun, Hans; and De Boer, Philip, to Nokia - Maillefer Holding SA. Extrusion line for sheathing elongated metal elements. 5,186,957, Cl. 425-192.00R.

Maier, Urs, to Farros Blatter AG. Method and apparatus for copy-grinding and finishing or cylindrical and spherical surfaces. 5,185,961, Cl. 54-145.00R.

Maiolo, Louis: *See—*
Ott, Conrad L.; Wuestmann, David E.; and Maiolo, Louis, 5,187,768, Cl. 385-140.000.

Majco Building Specialties, L.P.: *See—*
Karabin, Tadeusz; and Broome, Frank H., 5,186,385, Cl. 236-1.00G.

Majerus, Norbert; Magee, Arthur W.; Hickman, Michael D.; Parrish, Gary C.; Rooney, Timothy M.; and Chlebina, Lawrence E., to Goodyear Tire & Rubber Company, The. Tread buffing apparatus. 5,185,960, Cl. 51-104.000.

Maki, Toshio: *See—*
Kuramitsu, Masao; and Maki, Toshio, 5,186,082, Cl. 76-107.100.

Makimoto, Futoshi: *See—*
Imoto, Takayoshi; Seshimo, Masahiro; Makimoto, Futoshi; and Kitagawa, Eiji, 5,186,987, Cl. 428-34.500.

Makino, Shoji: *See—*
Haneda, Yoichi; Makino, Shoji; and Kaneda, Yutaka, 5,187,692, Cl. 367-135.000.

Makita, Kikuo, to NEC Corporation. Avalanche photodiode having a thin multilayer superlattice structure sandwiched between barrier and well layers to reduce energy loss. 5,187,553, Cl. 257-187.000.

Malaval, Claude, to Framatome. Device for recovering and cooling the core of a nuclear reactor in meltdown following. 5,186,888, Cl. 376-280.000.

Malhi, Satwinder: *See—*
Kwon, Oh-Kyong; Malhi, Satwinder; and Hashimoto, Masahi, 5,187,020, Cl. 428-601.000.

Malke, Horst; and Ferretti, Joseph J., to University of Oklahoma, Board of Regents of the. DNA encoding hybrid streptokinases with plasminogen fibrin binding domains. 5,187,098, Cl. 435-320.100.

Malks, Josh B. Temporary support pin. 5,186,591, Cl. 411-508.000.

Malleo-Roach, John A.; Rutkowski, Paul W.; and Wu, Eleanor, to AT&T Bell Laboratories. Pseudo-exhaustive self-test technique. 5,187,712, Cl. 371-22.100.

Mallick, John A., to General Electric Company. Noise cancellation method in a biomagnetic measurement system using an extrapolated reference measurement. 5,187,436, Cl. 324-244.000.

Mallinckrodt Medical, Inc.: *See—*
Verbruggen, Alfons M., 5,187,264, Cl. 534-14.000.

Mallory, Inc.: *See—*
Bellis, Peter D., 5,186,147, Cl. 123-457.000.

Malmhall, Roger: *See—*
Rydergren, Bertil; Silfven, Jan; and Malmhall, Roger, 5,187,437, Cl. 324-253.000.

Mamonov, Alexandr B.: *See—*
Komissarov, Igor V.; Dulenko, Vladimir I.; Voschula, Valentin N.; Kharin, Nikolai A.; Naletov, Sergei V.; and Mamonov, Alexandr B., 5,187,277, Cl. 544-362.000.

Man Gutehoffnungshutte AG: *See—*
Schlemenat, Alfred, 5,186,247, Cl. 165-162.000.

Man, Ho Hak: *See—*
Qing, Cai; Man, Ho Hak; Ming, Liu; and Guang, Yi X., 5,186,099, Cl. 100-35.000.

Man Roland Druckmaschinen AG: *See—*
Emrich, Helmut; Muller, Horst; Ruwe, Walter; and Wegel, Erich, 5,186,105, Cl. 101-217.000.

Gelinas, W. Robert; Leale, Arthur J.; Leitch, David J.; Mellow, John J.; Rinaudo, George; and Treff, Ernest H., 5,186,103, Cl. 101-181.000.

Manabe, Yasuo: *See—*
Someya, Nobuo; Kitazato, Tadao; Fujikawa, Takao; and Manabe, Yasuo, 5,187,125, Cl. 501-1.000.

Manac Inc.: *See—*
Kimura, Masaru; and Kochi, Hiromi, 5,186,839, Cl. 210-656.000.

Manalastas, Pacifico V.; Drake, Evelyn N.; Kresge, Edward N.; and Thaler, Warren A., to Exxon Research and Engineering Company. Composition comprising encapsulated substrate with thermoplastic polymer overcoating. 5,187,011, Cl. 428-402.240.

Mancini, Thomas, to U.S. Polychemical Corporation. High dielectric solvent. 5,186,863, Cl. 252-570.000.

Mancusi, Anthony W.; Delozier, J. Clift; Prasad, Ravi; Runkle, Charles J.; and Shuey, Harry F., to Hoechst Celanese Corporation. Spiral-wound hollow fiber membrane fabric cartridges and modules having integral turbulence promoters. 5,186,832, Cl. 210-321.800.

Mandai, Harufumi; Chigodo, Yoshikazu; and Tojo, Atsushi, to Murata Manufacturing Co., Ltd. Delay line device with adjustable time delay. 5,187,455, Cl. 333-161.000.

Mangseth, Glen; Lovas, Albert J.; and Dempster, Philip T., to Loredan Biomedical, Inc. Apparatus for controlled exercise and diagnosis of human performance. 5,186,695, Cl. 482-6.000.

Mangum, Barry O.: *See—*
Riggs, John H.; and Mangum, Barry O., 5,186,166, Cl. 128-203.150.

Maniar, Papu D., to Motorola, Inc. TEOS based spin-on-glass and processes for making and using the same. 5,186,745, Cl. 106-287.160.

Manimaran, Thanikavelu: *See—*
Klobucar, W. Dirk; Kolich, Charles H.; and Manimaran, Thanikavelu, 5,187,136, Cl. 502-162.000.
Kolich, Charles H.; Manimaran, Thanikavelu; and Klobucar, W. Dirk, 5,187,135, Cl. 502-162.000.
Kolich, Charles H.; Manimaran, Thanikavelu; and Klobucar, W. Dirk, 5,187,281, Cl. 556-16.000.

Mankin, Gary L. Paint strainer kit. 5,186,828, Cl. 210-232.000.

Manley, John A.; Belvo, Aaron J.; Platt, Todd C.; Bruce, Andrew D.; and Wolf, Peter A., to AM International Incorporated. Method of collating newspapers based upon credit card holders. 5,186,443, Cl. 270-1.100.

Mannesmann Kienzle GmbH: *See—*
Koch, Siegfried, 5,187,646, Cl. 361-395.000.

Manning, Robert E.: *See—*
Bovy, Philippe R.; Collins, Joe T.; and Manning, Robert E., 5,187,271, Cl. 548-314.700.

Mano, Hiroshi, to Kabushiki Kaisha Toshiba. Data error detecting apparatus for key telephone system and the detecting method therefor. 5,187,705, Cl. 370-15.000.

Mano, Michael E. Self locking connector. 5,186,501, Cl. 285-89.000.

Manser, Josef; Egger, Friedrich; and Seiler, Werner, to Buehler AG. Mixing kneader device and method for this production of dough, particularly for pasta. 5,186,539, Cl. 366-85.000.

Mansfield, Richard M.; and Dohse, William F., to Micral, Inc. Controller for direct memory access. 5,187,783, Cl. 395-425.000.

Marangos, Paul; and Gruber, Harry E., to Gensia Pharmaceuticals. Methods of treating neurodegenerative conditions. 5,187,162, Cl. 514-46.000.

Maraval, Michel: *See—*
Esch, Marc; Colin, Nadine; Guenez, Dominique; and Maraval, Michel, 5,187,309, Cl. 560-218.000.

Marcinkowsky, Arthur E.: *See—*
Baker, Edgar C.; Stakem, Francis G.; Noshay, Allen; Lee, Kiu H.; and Marcinkowsky, Arthur E., 5,187,246, Cl. 526-88.000.

Marek, James E.; and Goss, Douglas A., to Compaq Computer Corporation. Method and apparatus for determining nets among nodes in a circuit board. 5,187,430, Cl. 324-66.000.

Marhold, Albrecht: *See—*
Fischer, Reiner; Baasner, Bernd; Hageman, Hermann; Krebs, Andreas; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; Becker, Benedikt; Schaller, Klaus; and Strang, Harry, 5,186,737, Cl. 504-283.000.

Marin, Thomas C.; Fields, Scott J.; and Richter, Stephen B. Method of playing a lottery game. 5,186,463, Cl. 273-138.00R.

Marine Bio Co. Ltd.: *See—*
Someya, Nobuo; Kitazato, Tadao; Fujikawa, Takao; and Manabe, Yasuo, 5,187,125, Cl. 501-1.000.

Markers, Inc.: *See—*
Hlavin, Dale J., 5,186,119, Cl. 116-222.000.

Markiewicz, Richard A. Modular canopy. 5,185,972, Cl. 52-63.000.

Markson, Richard, to Markson Rosenthal & Company. Interactive shelf duo selector and shelf management system. 5,185,948, Cl. 40-506.000.

Markson Rosenthal & Company: *See—*
Markson, Richard, 5,185,948, Cl. 40-506.000.

Markyvech, Ronald K.: *See—*
Pankratz, William R.; Genise, Thomas A.; Dresden, John, III; and Markyvech, Ronald K., 5,186,066, Cl. 74-335.000.

Marlier, Jean-Pierre, to Sud Est Electro Mecanique S.E.E.M. (Sarl). Device for measuring belt tension. 5,186,060, Cl. 73-862.474.

Marlin Firearms Company, The: *See—*
Osborne, William E., 5,187,312, Cl. 42-69.010.

Marmelstein, Robert E., to United States of America, Air Force. Graphics system for automatic computer code generation. 5,187,788, Cl. 395-700.000.

Marquardt, Klaus: *See—*
Ball, Peter; Christ, Josef; Frank, Albin; Marquardt, Klaus; and Selig, Manfred, 5,187,233, Cl. 525-267.000.

Marrel, Bennes: *See—*
Lambert, Bernard; and Jochum, Alain, 5,186,598, Cl. 414-498.000.

Marriott, Mark P.: *See—*
Bridgham, John; Geiser, Timothy G.; Hunkapiller, Michael W.; Kent, Stephen B. H.; Marriott, Mark P.; Ramstad, Paul O.; and Nordman, Eric S., 5,186,898, Cl. 422-102.000.

Marshalek, Joseph R.: *See—*
Hynds, Ernest J.; and Marshalek, Joseph R., 5,186,486, Cl. 280-689.000.

Martell, Trevor J.; and Adia, Moosa M. Abrasive products. 5,186,725, Cl. 51-293.000.

Martin, Carl E., to Fibercast Company. Double-containment pipe fittings and system. 5,186,502, Cl. 285-133.100.

Martin, Eric A.: *See—*
Aina, Olaleye A.; and Martin, Eric A., 5,187,110, Cl. 437-34.000.

Martin, Luther W.; Smith, Richard L.; and Cotherman, Jesse W., to Insertec Systems, Inc. Window cutter for gas service tie overs and tie-over method. 5,185,928, Cl. 30-92.500.

Martin Marietta Energy Systems, Inc.: *See—*
Knapp, Furn F., Jr.; Lisic, Edward C.; Mirzadeh, Saed; and Callahan, Alvin P., 5,186,913, Cl. 423-2.000.

Martinez, Joaquin L., to Perfil en Frio, S.A. Abutment of insulating panels. 5,185,981, Cl. 52-578.000.

Marton, Louis L. System for replenishment of energy stored in a battery on an electric vehicle. 5,187,423, Cl. 320-2.000.

Maruyama, Fumio; Aizawa, Shiro; and Fujiyoshi, Kazuo, to Nippon Mining Co., Ltd. Method of producing high aromatic-content solvents. 5,186,816, Cl. 208-135.000.

Maruyasu Industries Co., Ltd.: *See—*
Takehara, Kazuyuki, 5,187,718, Cl. 375-1.000.

Maschinenfabrik Alfred Schmermund GmbH & Co.: *See—*
Knecht, Siegfried, 5,186,447, Cl. 271-3.100.

Mashiko, Kimio; Isoda, Sadatsuyo; and Tateno, Atsushi, to Japan Tobacco Inc. Flavoring granule for tobacco products and a preparation method thereof. 5,186,185, Cl. 131-337.000.

Masi, James V.: *See—*
Avakian, Emik A.; and Masi, James V., 5,186,269, Cl. 180-6.500.

Mason, Bradley R.; and Mason, Jeffrey T., to Breg, Inc. Ankle exercise system. 5,186,698, Cl. 482-79.000.

Mason, James R.: *See—*
Cummings, John L.; Mason, James R.; and Trksak, Ralph M., 5,187,196, Cl. 514-535.000.

Mason, Jeffrey T.: *See—*
Mason, Bradley R.; and Mason, Jeffrey T., 5,186,698, Cl. 482-79.000.

Mason, Kenneth C., to Magic Label Corporation. Erasable video cassette label kit. 5,186,499, Cl. 283-81.000.

Mason, Norbert S.: *See—*
Sparks, Robert E.; Mason, Norbert S.; Autant, Pierre; Cartillier, Andre; and Pigeon, Raymond, 5,186,937, Cl. 424-438.000.

Masoodosmani, Rashid: *See—*
Waynerich, Randall; Masoodosmani, Rashid; Walczak, Thomas J.; and Cahill, Stephen V., 5,187,809, Cl. 455-33.100.

Massachusetts Institute of Technology: *See—*
Lim, Jae S., 5,187,575, Cl. 358-140.000.
West, A. Mark T., 5,186,270, Cl. 180-6.620.

Massey, Darryl D.: *See—*
Gordon, Michael D.; and Massey, Darryl D., 5,186,047, Cl. 73-151.000.

Masten, Billy R., to Texas Instruments Incorporated. Optical object edge detector using partially covered reference sensor. 5,187,375, Cl. 250-561.000.

Masui, Tsumoru: *See—*
Ibe, Hiroyaki; Terashima, Seiichi; and Masui, Tsumoru, 5,187,729, Cl. 378-73.000.

Masumoto, Isamu; Mizutani, Zenpei; Yada, Hiroshi; and Hara, Yoshihito, to Mitsubishi Gas Chemical Company, Inc. Acetal resin composition containing a terminal-etherified polyalkylene glycol. 5,187,218, Cl. 524-317.000.

Masuoka, Toshio; Hirasa, Okihiko; Onishi, Makoto; and Seita, Yukio, to Agency of Industrial Science and Technology; and Terumo Kabushiki Kaisha. Porous hydrophilic polypropylene membrane, method for production thereof, and blood plasma separation apparatus. 5,186,835, Cl. 210-500.360.

Matec Holding AG: *See—*
Alts, Thorsten, 5,186,996, Cl. 428-72.000.

Materials Protection Company: *See—*
Pfaller, Mathew A.; Baker, Kenneth N.; and Say, Richard E., 5,185,921, Cl. 29-825.000.

Mathern, Andre: *See—*
Mehadji, Kada; Mathern, Andre; and Le Penven, Rene, 5,187,761, Cl. 385-76.000.

Mathews, Hans-Gunter: *See—*
Jodicke, Bernd; and Mathews, Hans-Gunter, 5,187,408, Cl. 315-5.000.

Matra Communication: *See—*
Alard, Michel; and Foure, Jean-Luc, 5,187,807, Cl. 455-17.000.

Matsubara, Yoshiro: *See—*
Yamamoto, Toshio; Matsukura, Yoshiaki; Ohe, Osamu; Ogawa, Hisao; Ishidoya, Masahiro; and Matsubara, Yoshiro, 5,187,229, Cl. 525-123.000.

Matsui, Fumio: *See—*
Yoshizawa, Atsushi; and Matsui, Fumio, 5,186,995, Cl. 428-64.000.

Matsui, Hironobu; and Ichihashi, Mikio, to Hitachi, Ltd. Charged particle beam apparatus. 5,187,371, Cl. 250-396.00R.

Matsui, Hiroshi: *See—*
Kishimoto, Tadamitsu; Hirano, Toshio; Akiyama, Yukio; Okano, Akira; Matsui, Hiroshi; and Takahara, Yoshiyuki, 5,186,931, Cl. 424-85.200.

Matsui, Naoyuki; and Takano, Shigemasa, to NEC Corporation. Electrophotographic photosensitive material. 5,187,036, Cl. 430-59.000.

Matsukura, Yoshiaki: *See—*
Yamamoto, Toshio; Matsukura, Yoshiaki; Ohe, Osamu; Ogawa, Hisao; Ishidoya, Masahiro; and Matsubara, Yoshiro, 5,187,229, Cl. 525-123.000.

Matsumoto, Hiroshi; Aoyama, Toshiharu; Saitoh, Mitsuhiko; and Oshima, Toshiaki, to Asmo Co., Ltd. Wiper for use in a vehicle. 5,186,064, Cl. 74-47.000.

Matsumoto, Takashi: *See—*
Ozawa, Yoshio; Hosoya, Mitsukazu; Matsumoto, Takashi; and Saito, Kimitoshi, 5,187,531, Cl. 355-308.000.

Matsumoto, Tetsuo: *See—*
Kimura, Hitoshi; Matsumoto, Tetsuo; and Shimada, Michihiro, 5,187,009, Cl. 428-383.000.

Matsumoto, Tsuyoshi: *See—*
Kato, Masayuki; Tomita, Junji; Matsumoto, Tsuyoshi; Aritake, Hirokazu; and Eguchi, Shin, 5,187,597, Cl. 359-22.000.

Matsumoto, Yasuji: *See—*
Toya, Masanori; Takahashi, Hideo; and Matsumoto, Yasuji, 5,186,849, Cl. 252-21.000.

Matsumoto, Yasuo: *See—*
Yoshikawa, Susumu; Kumagai, Junpei; Sawada, Shizuo; and Matsumoto, Yasuo, 5,187,566, Cl. 257-301.000.

Matsumura, Akira; Ohata, Masashi; and Ishikawa, Katsukiyo, to Nippon Paint Co., Ltd. Production of color filter. 5,186,801, Cl. 204-181.100.

Matsumura, Masaaki: *See—*
Suzuki, Akio; Matsumura, Masaaki; and Hashimoto, Takeshi, 5,187,014, Cl. 428-447.000.

Matsumura, Mitsuie, to Mitsubishi Denki Kabushiki Kaisha. Fuel cell generating system. 5,187,024, Cl. 429-24.000.

Matsuo, Masaaki; Hagiwara, Daijiro; and Miyake, Hiroshi, to Fujisawa Pharmaceutical Co., Ltd. Peptide compounds, processes for preparation thereof and pharmaceutical composition comprising the same. 5,187,156, Cl. 514-18.000.

Matsuo, Shigeru, to Idemitsu Kosan Co., Ltd. Method of producing a polyether copolymer. 5,187,255, Cl. 528-176.000.

Matsuoka, Hiroki; and Ono, Kenichi, to Toyota Jidosha Kabushiki Kaisha. Thermal air-flow sensor. 5,186,045, Cl. 73-118.200.

Matsuoka, Noriyuki; and Uratsuji, Kazumi, to Yamaichi Electric Co., Ltd. Connector. 5,186,642, Cl. 439-268.000.

Matsura, Yoshimasa, to Mitsubishi Jidosha Kogyo Kabushi Kaisha. Diesel engine. 5,186,139, Cl. 013723-.

Matsuse, Takashi: *See—*
Mishima, Masayuki; Yamasaki, Harumasa; Matsuse, Takashi; Sakuma, Tadashi; and Togashi, Hiroyasu, 5,187,310, Cl. 556-413.000.

Matsushima, Yuichi: *See—*
Horita, Masayoshi; Utaka, Katsuyuki; and Matsushima, Yuichi, 5,187,717, Cl. 372-96.000.

Matsushita Electric Co., Ltd.: *See—*
Mizuguchi, Shinichi; Ueda, Shuji; Kato, Koji; and Umehara, Noritsugu, 5,185,957, Cl. 51-59.0SS.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hashimoto, Kazuhiko; Yamashita, Kazuhiro; and Nomura, Noboru, 5,186,788, Cl. 156-643.000.
Koshiba, Nobuharu, 5,187,033, Cl. 429-194.000.
Kudoh, Yasuo; Fukuyama, Masao; Kojima, Toshikuni; and Nanai, Norishige, 5,187,649, Cl. 361-525.000.
Kudoh, Yasuo; Fukuyama, Masao; Kojima, Toshikuni; and Nanai, Norishige, 5,187,650, Cl. 361-525.000.
Maezawa, Yoshiharu; and Nouchi, Norimoto, 5,186,977, Cl. 427-132.000.
Nagai, Takeshi; and Tsuruda, Kunihiro, 5,186,810, Cl. 204-425.000.
Nakatani, Naofumi; Ueno, Reiko; and Nakatsu, Hiromasa, 5,187,708, Cl. 370-85.100.
Ogawa, Kazufumi, 5,186,986, Cl. 428-1.000.
Ogawa, Kazufumi; Soga, Mamoru; and Mino, Norihisa, 5,187,639, Cl. 361-323.000.
Okude, Hiroaki; Toyonaga, Masahiko; and Akino, Toshiro, 5,187,668, Cl. 364-468.000.
Seto, Shigeo; Kurihara, Tsugihiro; Machida, Hiroshi; and Shintani, Keiji, 5,186,303, Cl. 198-345.100.
Tsuda, Nobuhiro; Yamada, Hirofumi; Kado, Hiroyuki; and Tohda, Takao, 5,186,789, Cl. 156-659.100.
Yoshida, Hiroyoshi; and Koishi, Yuki, 5,187,123, Cl. 437-220.000.
Yoshida, Yuji; Tagashira, Minoru; Nakatani, Kazuo; and Funakura, Masami, 5,186,011, Cl. 62-114.000.

Matsushita Electric Works, Ltd.: *See—*
Fujikawa, Shoji; and Haraguchi, Hideaki, 5,185,931, Cl. 30-201.000.

Matsushita, Yasuhiko: *See—*
Niina, Tatsuhiko; Ohta, Kiyoshi; Nakata, Toshitake; Matsushita, Yasuhiko; Uetani, Takahiro; and Fujikawa, Yoshiharu, 5,187,547, Cl. 257-77.000.

Matsushita, Yoshifumi: *See—*
Haruta, Kenyu; Nagai, Haruhiko; Nakatani, Hajime; Yamamoto, Yoshihiko; Takemura, Taketoshi; Eura, Takashi; Tsuboi, Shungo; Matsushita, Yoshifumi; and Minagawa, Tadao, 5,187,716, Cl. 372-57.000.

VOL
1147
ISS
3
FE
16
1993
UMI

Matsuura, Haruyoshi: *See—*
Taniguchi, Masato; and Matsuura, Haruyoshi, 5,185,923, Cl. 29-888.030.
Matsuura, Masami; and Okajima, Hisakazu, to NGK Insulators, Ltd. Optical ferrule. 5,187,762, Cl. 385-84.000.
Matsuura, Yasumasa: *See—*
Kajitani, Tetsuji; Matsuura, Yasumasa; Harada, Hiroyuki; and Araki, Toshihiko, 5,187,420, Cl. 318-823.000.
Matsuyama, Soichi: *See—*
Ohmi, Ikuhiro; Yanagida, Yoshiaki; Matsuyama, Soichi; and Ikuta, Yoshihisa, 5,186,449, Cl. 271-10.000.
Mattcheck, Donald L. High temperature oven conveyor chain lubrication system. 5,186,280, Cl. 184-15.300.
Matthews, Demetreos N.: *See—*
Coolbaugh, Thomas S.; Loveless, Frederick C.; and Matthews, Demetreos N., 5,187,236, Cl. 525-314.000.
Matthews, Wallace E.: *See—*
Armstrong, Gene L., II; and Matthews, Wallace E., 5,187,396, Cl. 307-494.000.
Mattingly, Wayne T., to United Catalysts Inc. Organophilic clays preactivated with propylene carbonate. 5,186,747, Cl. 106-468.000.
Matturro, Michael G.: *See—*
Mchenry, James A.; Deckman, Harry W.; Lai, Wen-Yih F.; Matturro, Michael G.; Jacobson, Allan J.; and Johnson, Jack W., 5,186,833, Cl. 210-321.750.
Matysek, James F.: *See—*
Farrell, Michael E.; Austin, John C.; Kinder, Carla J.; and Matysek, James F., 5,187,587, Cl. 358-296.000.
Matzinger, David P.; Teodorczyk, Maria; and Poulos, Darwin R., to Lifescan, Inc. Dispersion to limit penetration of aqueous solutions into a membrane. 5,187,100, Cl. 436-16.000.
Matzner, Bruce: *See—*
Johansson, Eric B.; and Matzner, Bruce, 5,186,891, Cl. 376-438.000.
Maul, George R.: *See—*
Fortner, Larry E.; Gustin, Paul R.; Hasler, Leonard F.; Johnson, Harold E.; Maul, George R.; Reed, David L.; and Reichard, George W., Jr., 5,186,649, Cl. 439-460.000.
Maurer, Walter: *See—*
Volkert, Otto; and Maurer, Walter, 5,187,206, Cl. 521-129.000.
Mauro, Roberto; and Siegenthaler, Karl J., to Bridgestone/Firestone, Inc. Curing device. 5,186,950, Cl. 425-28.100.
May, Paul G., to International Business Machines Corporation. Coplanar transmission line millimeter radiation source. 5,187,449, Cl. 331-66.000.
Maya, Jakob: *See—*
Michael, Joseph D.; Lagushenko, Radomir; Maya, Jakob; and Biblarz, Oscar, 5,186,668, Cl. 445-9.000.
Mayaux, Jean-Francois: *See—*
Latta, Martine; Mayaux, Jean-Francois; and Sarmientos, Paolo, 5,187,261, Cl. 530-363.000.
Maybroda, Adrianna: *See—*
Petersen, Frank P.; Maybroda, Adrianna; and Miller, Sally A., 5,187,064, Cl. 435-7.310.
Maydan, Dan: *See—*
Tepman, Avi; Grunes, Howard; Somekn, Sasson; and Maydan, Dan, 5,186,718, Cl. 29-25.010.
Mayerhofer, Matthias: *See—*
Vogler, Friedrich; Ortner, Hanns-Werner; and Mayerhofer, Matthias, 5,187,727, Cl. 378-50.000.
Mayes, M. Dale, to Dow Chemical Company, The. Control valve trim. 5,186,206, Cl. 137-244.000.
Mazda Motor Corporation: *See—*
Doi, Shigetoshi; and Fujiki, Tsutomu, 5,186,387, Cl. 236-49.300.
Fukuhara, Keiji, 5,186,875, Cl. 264-37.000.
Kameda, Osamu; Akutagawa, Hitoshi; Hasetoh, Sakumi; Okita, Junichi; and Hirose, Ichiro, 5,186,078, Cl. 74-606.00R.
Tarekado, Kenji; Nakamura, Masanori; Hokazono, Kazuaki; Fukada, Hirotaka; and Ishikawa, Takashige, 5,186,126, Cl. 123-52.0MB.
McArdle, Joe: *See—*
MacKay, Michael T.; Duffy, Robert; Cotterill, Lee A.; Herz, William; and McArdle, Joe, 5,187,630, Cl. 360-137.000.
McAtee, James L.: *See—*
MacArthur, Duncan W.; and McAtee, James L., 5,187,370, Cl. 250-379.000.
McAuley, Anthony; and Goodman, Rod, to Calif. Institute of Technology. Arithmetic-stack processor which precalculates external stack address before needed by CPU for building high level language executing computers. 5,187,799, Cl. 395-800.000.
McBride, Larry D. Insulated beverage container holder. 5,186,350, Cl. 220-412.000.
McCafferty, Daniel K.; and McCafferty, Michael P. Compact disc retaining sheet. 5,186,327, Cl. 206-313.000.
McCafferty, Michael P.: *See—*
McCafferty, Daniel K.; and McCafferty, Michael P., 5,186,327, Cl. 206-313.000.
McCain, Joseph H., to SGS-Thomson Microelectronics, Inc. Application of laminated interconnect media between a laminated power source and semiconductor devices. 5,187,564, Cl. 174-260.000.
McCaman, Michael T.: *See—*
Andrews, William H.; Brothers, Virginia M.; Files, James G.; Kuhn, Irene; McCaman, Michael T.; Sias, Stacey R.; Paul, Leland S.; Gore, Thomas C.; Newman, Karel Z., Jr.; and Tedesco, John L., 5,187,080, Cl. 435-69.300.
McClanahan, Christopher: *See—*
Simon, Ethan S.; Holland, Kevin B.; and McClanahan, Christopher, 5,186,838, Cl. 210-635.000.
McClelland, Ralph A.: *See—*
Hancock, John P.; and McClelland, Ralph A., 5,186,017, Cl. 62-292.000.
McClement, Arthur: *See—*
Johnson, Gerald E.; McClement, Artbur; and Rivera, James A., 5,186,302, Cl. 198-335.000.
McClure, Delmar H., to McClure Industries, Inc. Stackable container. 5,186,330, Cl. 206-508.000.
McClure Industries, Inc.: *See—*
McClure, Delmar H., 5,186,330, Cl. 206-508.000.
McConnell, Anthony: *See—*
Gilmore, Michael R.; and McConnell, Anthony, 5,186,517, Cl. 296-214.000.
McCormack, Allan, to Durden & Co. Pty. Ltd. Wood lathe. 5,186,087, Cl. 82-142.000.
McCormick, Robert L.: *See—*
Jha, Mahesh C.; and McCormick, Robert L., 5,187,141, Cl. 502-432.000.
McCoy, Phillip A., to Group Dekko International. Wiring harness assembly. 5,186,640, Cl. 439-211.000.
McDonagh, Lawrence P.; Clarke, William H.; Stinson, Jonathan D.; and Lopez, John V., to Ford Motor Company. Friction compensating automotive suspension unit. 5,186,439, Cl. 267-35.000.
McDonough, William B.: *See—*
Hart, Edward F.; and McDonough, William B., 5,187,472, Cl. 340-825.690.
McFarland, Michael J.: *See—*
Wu, Chengjiu; Nahata, Ajay; McFarland, Michael J.; Horn, Keith; and Yardley, James T., 5,186,865, Cl. 252-582.000.
McGarry, Michael G.: *See—*
Coffey, Manus; and McGarry, Michael G., 5,186,354, Cl. 220-720.000.
McGrogan, Michael: *See—*
Scott, Randy W.; Golini, Fred; and McGrogan, Michael, 5,187,089, Cl. 435-212.000.
Mchenry, James A.; Deckman, Harry W.; Lai, Wen-Yih F.; Matturro, Michael G.; Jacobson, Allan J.; and Johnson, Jack W., to Exxon Research and Engineering Company. Composite metal-ceramic membranes and their fabrication. 5,186,833, Cl. 210-321.750.
MCI Communications Corporation: *See—*
Swaim, Joe T.; Heckman, Donald C.; O'Grady, Kenneth J.; and Eastep, Guido M., 5,187,740, Cl. 379-209.000.
McIlveen, Nelson D.: *See—*
Franco, Francis G.; and McIlveen, Nelson D., 5,186,572, Cl. 403-251.000.
McLaughlin, Raymond. Method for casting stairs within pools. 5,186,874, Cl. 264-35.000.
McLean, Kenneth W., to Ford New Holland, Inc. Swivel hitch with improved mounting of lower gearbox. 5,186,271, Cl. 180-14.400.
McManigal, Paul G.; and Vaughan, Philip A. Accurate high-flow clean regulator with input-pressure balancing. 5,186,209, Cl. 137-505.180.
McMillion, Michael B.; Miller, Thomas R.; and Koontz, Terry L., to Consolidation Coal Company. Method and apparatus for separation measurement and alignment system. 5,185,935, Cl. 33-1.0PT.
McMurray, Craig E.: *See—*
Bauernfeind, Wolfgang J.; Beard, Frank T.; Brown, Edwin Z.; McMurray, Craig E.; and Pigg, Joseph E., 5,187,432, Cl. 324-158.00R.
McMurtry, David R., to Renishaw Metrology Limited. Probe head with indexing mechanism. 5,185,936, Cl. 33-572.000.
McNally, Mark T.: *See—*
Free, Stephen J.; McNally, Mark T.; and Tarawneh, Khaled A., 5,187,079, Cl. 435-69.100.
McNew, Thomas A., to Digital Magnetic Systems, Inc. Electrostatic document copying system having sheet rolls supported by telescoping cantilevered arms. 5,187,532, Cl. 355-309.000.
McVay, Clifford R. Spout device and kit combination. 5,186,358, Cl. 222-1.000.
Meade, Robert: *See—*
Brommer, Karl; Mullaney, Henry; Meade, Robert; Rappe, Andrew; and Joanopoulos, John, 5,187,461, Cl. 333-219.100.
Meanwell, Nicholas A., to Bristol-Myers Squibb Company. Oxazole carboxylic acid derivatives. 5,187,188, Cl. 514-374.000.
Mease, Richard B.; and Burridge, Robert E., to M & D International Enterprises, Inc. Automatic soap dispenser and hand dryer unit. 5,186,360, Cl. 222-63.000.
Mec-Mor S.r.l.: *See—*
Tenconi, Riccardo, 5,186,027, Cl. 66-147.000.
Medical Parameters, Inc.: *See—*
MacEachern, A. Walter, 5,186,179, Cl. 128-772.000.
Medich, Peter M.: *See—*
Simon, Robert C., Jr.; Mitchell, George C.; Tolkacz, Joseph M.; Polom, William G.; and Medich, Peter M., 5,186,080, Cl. 74-857.000.
Mefina S.A.: *See—*
Jimenez, Antonio; and Deplante, Patrice, 5,186,116, Cl. 112-323.000.
Mehadji, Kada; Mathern, Andre; and Le Penven, Rene, to France Telecom. Method of making an inlet cone on a connection endpiece for optical fibers, and apparatus for performing the method. 5,187,761, Cl. 385-76.000.
Meisenheimer, Daniel T., Jr. Trigger means for self-closing breakaway valve assemblies. 5,186,202, Cl. 137-68.100.

Meisner, Edward H.; and Park, Young C., to Eagle Affiliates, Inc. Ground coffee dispenser utilizing a metering trap chamber. 5,186,366, Cl. 222-158.000.
Melancon, Kurt C.: *See—*
Yorkgitis, Elaine M.; and Melancon, Kurt C., 5,187,015, Cl. 428-447.000.
Melchior, Jean F. Camshaft control device. 5,186,130, Cl. 123-90.350.
Mellow, John J.: *See—*
Gelinas, W. Robert; Leale, Arthur J.; Leitch, David J.; Mellow, John J.; Rinaudo, George; and Treff, Ernest H., 5,186,103, Cl. 101-181.000.
Melton, Cynthia; Raleigh, Carl; Cholewczynski, Kenneth; and Moore, Kevin, to Motorola, Inc. Method for forming solder bump interconnections to a solder-plated circuit trace. 5,186,383, Cl. 228-180.200.
Mercedes-Benz AG: *See—*
Benz, Klemens; and Kubler, Rainer, 5,187,424, Cl. 320-14.000.
Maass, Manfred; Bunke, Joachim; and Fritz, Martin, 5,187,426, Cl. 322-63.000.
Schobbe, Hermann; Steinhauser, Gerd; Scheerer, Hans; Opara, Andreas; Mohrmann, Werner; Steinert, Hans-Rudolf; and Konig, Wolfhard, 5,186,440, Cl. 267-220.000.
Schwerdt, Paul; Dorrie, Dieter; and Kirschenhofer, Karl, 5,186,151, Cl. 123-506.000.
Merck & Co., Inc.: *See—*
Ashton, Wallace T.; Hutchins, Steven M.; and MacCoss, Malcolm, 5,187,179, Cl. 514-383.000.
Greenlee, William J.; and Rivero, Ralph A., 5,187,159, Cl. 514-81.000.
King, Anthony O.; Anderson, Kevin; Karady, Sandor; Douglas, Alan W.; Abramson, Newton L.; and Shuman, Richard F., 5,187,278, Cl. 546-14.000.
Treiber, Laszlo R.; Lingham, Russell B.; Arison, Byron H.; Colwell, Lawrence F., Jr.; Dezeny, Georgette; and Kohl, Nancy E., 5,187,074, Cl. 435-41.000.
Merck Frosst Canada, Inc.: *See—*
Gillard, John W., 5,187,180, Cl. 514-312.000.
Merlin Gerin: *See—*
Koppe, Denis; Leruyet, Patrick; and Duval, Francois, 5,186,315, Cl. 200-48.00V.
Lissandrin, Mario, 5,187,339, Cl. 200-148.00F.
Messer Griesheim GmbH: *See—*
Weyermanns, Gunther; and Gorlich, Uwe, 5,186,019, Cl. 62-381.000.
Messinger, Werner, to Braun Aktiengesellschaft. Shaving foil. 5,185,933, Cl. 30-346.510.
Metallgesellschaft Aktiengesellschaft: *See—*
Heng, Rudolf; Koch, Walter; and Beyzavi, Ali-Naghi, 5,186,920, Cl. 423-610.000.
Metcalf, Donald: *See—*
Gearing, David P.; Gough, Nicholas M.; Hilton, Douglas J.; King, Julie A.; Metcalf, Donald; Nice, Edouard C.; Nicola, Nicos A.; Simpson, Richard J.; and Willson, Tracy A., 5,187,077, Cl. 435-69.100.
Metcalf, Philip R., Jr.: *See—*
Montalvo, William W., III; and Metcalf, Philip R., Jr., 5,186,061, Cl. 73-862.632.
Metlitsky, Boris; and Krichever, Mark, to Symbol Technologies, Inc. Bar code symbol scanner utilizing monitor photodiode of laser diode package as a photoreceiver. 5,187,353, Cl. 235-462.000.
Metroka, Michael P.; and Hackbart, Rolland R., to Motorola, Inc. Capacitive power supply. 5,187,640, Cl. 361-329.000.
Meyer-Ebrecht, Dietrich: *See—*
Schlondorff, Georg; Mosges, Ralph; Meyer-Ebrecht, Dietrich; and Moll, Philipp, 5,186,174, Cl. 128-653.100.
Meyer, Robert J., to Xerox Corporation. Imaging member having roughened surface. 5,187,039, Cl. 430-126.000.
Meyn, Cornelis, to Machinefabriek Meyn B.V. Apparatus for eviscerating slaughtered poultry. 5,186,679, Cl. 452-117.000.
Miayamoto, Hideki: *See—*
Murata, Shinichi; Nakamura, Noboru; Yoshida, Michiyasu; and Miayamoto, Hideki, 5,186,128, Cl. 123-90.160.
Michael, Joseph D.; Lagushenko, Radomir; Maya, Jakob; and Biblarz, Oscar, to GTE Products Corporation. Negative glow discharge lamp. 5,186,668, Cl. 445-9.000.
Michaels, Angela A.: *See—*
Corey, Paul F.; Michaels, Angela A.; Proud, Lois J.; Salvati, Michael; Trimmer, Robert W.; and Sommer, Ronald G., 5,187,104, Cl. 436-86.000.
Michaels, Gregory A., to Invacare Corporation. Oxygen concentrator utilizing electrochemical cell. 5,186,793, Cl. 204-59.00R.
Michon, Gerald J.; Brown, Dale M.; Garfinkel, Marvin; and Cusano, Dominic A., to General Electric Company. Low capacitance X-ray radiation detector. 5,187,380, Cl. 257-428.000.
Micom Communications Corp.: *See—*
Guy, Kenneth R.; Kameya, Andrew M.; and Wildfeuer, Herbert M., 5,187,591, Cl. 358-425.000.
Micral, Inc.: *See—*
Jeddeloh, Joseph M.; Larson, Ronald J.; and Herring, Jeffry V., 5,187,779, Cl. 395-325.000.
Mansfield, Richard M.; and Dohse, William F., 5,187,783, Cl. 395-425.000.
Microelectronics and Computer Technology Corporation: *See—*
Cobb, Deborah D., 5,187,671, Cl. 364-490.000.
Microlys S.p.A.: *See—*
Stevenin, Gino; and Adamoli, Contardo, 5,186,552, Cl. 400-124.000.
Micron Technology, Inc.: *See—*
Doan, Trung T.; Lowrey, Tyler A.; Cathey, David A.; and Rolfson, J. Brett, 5,186,670, Cl. 445-24.000.
Moy, Thomas H., 5,187,388, Cl. 307-448.000.
Sandhu, Gurtej S.; and Fazan, Pierre, 5,187,638, Cl. 361-313.000.
Microsoft Corporation: *See—*
Garthwaite, Charlie; Cameron, Bridget; Ashmun, Stuart; Stephan, Allan H.; and Nelson, Michael D., 5,187,468, Cl. 340-709.000.
Midland Brake, Inc.: *See—*
Spencer, Joseph C., 5,186,522, Cl. 303-1.000.
Midori Co., Ltd.: *See—*
Aida, Masaaki, 5,186,320, Cl. 206-45.190.
Midou, Youichi: *See—*
Ohmori, Masashi; and Midou, Youichi, 5,187,118, Cl. 437-180.000.
Miehling, Wolfgang, to WNC-Nitrochemie GmbH. Method and apparatus to prepare monobasic propellant charge powders with alcohol and ether as solvents. 5,186,871, Cl. 264-3.300.
Mietusch, Peer: *See—*
Schindler, Wolfgang; and Mietusch, Peer, 5,187,695, Cl. 369-37.000.
Mifune, Hideo; Seki, Masato; and Shike, Tsutomu, to Tokai Corporation. Flow rate regulating mechanism for gas lighters and similar devices and method of producing a microcell polymer filter for use therein. 5,186,619, Cl. 431-344.000.
Mifune, Hiroshi: *See—*
Miyashita, Yukio; Mifune, Hiroshi; Noguchi, Kunio; and Fukuchi, Hironao, 5,186,155, Cl. 123-685.000.
Mihara, Chieko: *See—*
Santoh, Tsuyoshi; and Mihara, Chieko, 5,187,043, Cl. 430-270.000.
Mihara, Hisashi: *See—*
Ishii, Yoichi; Mihara, Hisashi; Ho, Lee M.; and Kimura, Goro, 5,186,944, Cl. 424-520.000.
Mihara, Shinichi, to Olympus Optical Co., Ltd. Electronic imaging device for use with photographic cameras for minimizing astigmatism. 5,187,359, Cl. 250-208.100.
Mihayashi, Keiji: *See—*
Saito, Naoki; and Mihayashi, Keiji, 5,187,056, Cl. 430-544.000.
Miki, Nobuaki: *See—*
Oka, Takeya; Saito, Masao; Miki, Nobuaki; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Otsubo, Hideaki; Hojo, Yasuo; and Asahara, Norimi, 5,186,204, Cl. 137-238.000.
Miki, Toshio: *See—*
Kusafuka, Noboru; Yoshida, Akira; Tsuyuki, Susumu; Seko, Tatsushi; Tsutsui, Yoshimitsu; Miki, Toshio; and Mouri, Ryoji, 5,186,407, Cl. 242-56.200.
Mikoshiba, Shigeo: *See—*
Kohgami, Akihiko; Mikoshiba, Shigeo; Shinada, Shinichi; and Suzuki, Mutsumi, 5,187,578, Cl. 358-168.000.
Milad Limited Partnership: *See—*
Hendry, James W., 5,186,884, Cl. 264-572.000.
Mile, Erzsebet: *See—*
Nagy, Jozsef; Nagy, Istvan; Balogh, Karoly; Mile, Erzsebet; Tarpai, Gyula; Sellei nee Kulik, Katalin; Fodor, Karoly; Kecskes, Mihaly; Toth nee Juhasz, Erzsebet; and Horvath nee Petho , Zsuzsanna, 5,186,723, Cl. 47-58.000.
Miles Inc.: *See—*
Albarella, James P.; Garling, David L.; and Hatch, Robert P., 5,187,105, Cl. 436-119.000.
Albarella, James P.; Garling, David L.; and Hatch, Robert P., 5,187,265, Cl. 534-573.000.
Corey, Paul F.; Michaels, Angela A.; Proud, Lois J.; Salvati, Michael; Trimmer, Robert W.; and Sommer, Ronald G., 5,187,104, Cl. 436-86.000.
Czech, Bronislaw P.; Chapoteau, Eddy; and Kumar, Anand, 5,187,103, Cl. 436-79.000.
Lundy, Charles E.; Krishnan, Sivaram; Robbins, Gerald L.; and Archey, Rick L., 5,187,211, Cl. 524-107.000.
Rodenhouse, Randall A., 5,187,208, Cl. 523-136.000.
Miller, Danny T., to Little Caesar Enterprises, Inc. Apparatus for buttering and applying cheese topping to bread. 5,186,098, Cl. 99-494.000.
Miller, David C.: *See—*
Russell, Mark E.; Donisi, Anthony M.; and Miller, David C., 5,187,459, Cl. 333-204.000.
Miller Electric Mfg. Co.: *See—*
Hutchison, Richard M.; and Corrigall, Don J., 5,187,428, Cl. 323-250.000.
Miller, Jerry G.: *See—*
Beffel, Robert R.; Blood, Ellen R.; Bufkin, Paul R.; Dennison, Bernard M.; Miller, Jerry G.; and Turner, James L., 5,187,733, Cl. 379-10.000.
Miller, Robert R.: *See—*
Erving, Richard H.; and Miller, Robert R., 5,187,741, Cl. 379-388.000.
Miller, Sally A.: *See—*
Petersen, Frank P.; Maybroda, Adrianna; and Miller, Sally A., 5,187,064, Cl. 435-7.310.
Miller, Steven R.: *See—*
Belliotti, Thomas R.; Connor, David T.; Kostlan, Catherine R.; and Miller, Steven R., 5,187,175, Cl. 514-269.000.
Miller, Thomas R.: *See—*
McMillion, Michael B.; Miller, Thomas R.; and Koontz, Terry L., 5,185,935, Cl. 33-1.0PT.
Miller, Walter T.: *See—*
Kelso, Jimmie J.; Hustead, Russell M.; and Miller, Walter T., 5,186,712, Cl. 604-165.000.

VOL
1147
ISS
3
FE
16
1993
UMI

Millipore Corporation: *See*—
Bernatowicz, Michael S., 5,187,270, Cl. 548-338.100.
Min, Suk Ki; Park, Seung Chul; and Han, Chul Won, to Korea Advanced Institute of Science and Technology. Single crystal growing apparatus and method. 5,186,911, Cl. 422-245.000.
Minagawa, Tadao: *See*—
Haruta, Kenyu; Nagai, Haruhiko; Nakatani, Hajime; Yamamoto, Yoshihiko; Takemura, Taketoshi; Eura, Takashi; Tsuboi, Shungo; Matsushita, Yoshifumi; and Minagawa, Tadao, 5,187,716, Cl. 372-57.000.
Minami, Yoshikatsu; and Tanaka, Masato, to Kabushiki Kaisha Yaskawa Denki Seisakusho. Method of controlling articulated robot. 5,187,418, Cl. 318-568.190.
Minaudo, Diego, to Bridgestone Corporation. Closing device for a tire curing mold. 5,186,953, Cl. 425-47.000.
Ming King Ind., Co., Ltd.: *See*—
Lo, Tsai J.; and Hwang, David, 5,186,952, Cl. 425-36.000.
Ming, Liu: *See*—
Qing, Cai; Man, Ho Hak; Ming, Liu; and Guang, Yi X., 5,186,099, Cl. 100-35.000.
Minnesota Mining and Manufacturing Company: *See*—
Blette, Russell E.; and Roeser, John O., 5,186,982, Cl. 427-256.000.
Bonham, James A.; and Rossman, Mitchell A., 5,187,045, Cl. 430-275.000.
Englund, Richard L.; and Schwartz, Thomas W., 5,185,964, Cl. 51-281.00R.
Ericson, Richard E., 5,187,774, Cl. 395-111.000.
Gregori, George A., 5,187,373, Cl. 250-551.000.
Hamer, Steven M., 5,187,476, Cl. 340-906.000.
Montean, Samuel, 5,187,462, Cl. 335-284.000.
Prioleau, Lori-Ann S.; and Canty, George, 5,187,044, Cl. 430-271.000.
Seabold, Thomas W., 5,186,542, Cl. 383-25.000.
Sher, Frank T.; and Whitcomb, David R., 5,187,049, Cl. 430-340.000.
Yorkgitis, Elaine M.; and Melancon, Kurt C., 5,187,015, Cl. 428-447.000.
Minnich, Thomas; Morser, Alfred H.; Myers, Stanley L.; and Walsh, Stephen T., to Cincinnati Milacron Inc. Motor control apparatus and method. 5,187,417, Cl. 318-254.000.
Mino, Norihisa: *See*—
Ogawa, Kazufumi; Soga, Mamoru; and Mino, Norihisa, 5,187,639, Cl. 361-323.000.
Mino, Setsuko: *See*—
Kikuchi, Haruhiko; Satoh, Hiroaki; Yahata, Nobuhiro; Hagihara, Koichiro; Hayakawa, Toru; Mino, Setsuko; and Yanai, Makoto, 5,187,166, Cl. 514-249.000.
Minolta Camera Kabushiki Kaisha: *See*—
Ishibashi, Kenji; Ishida, Tokuji; and Hamada, Masataka, 5,187,515, Cl. 354-400.000.
Iwasaki, Satoshi, 5,187,509, Cl. 353-101.000.
Mirzadeh, Saed: *See*—
Knapp, Furn F., Jr.; Lisic, Edward C.; Mirzadeh, Saed; and Callahan, Alvin P., 5,186,913, Cl. 423-2.000.
Mishima, Junichi: *See*—
Muramatsu, Shigeru; Watanabe, Keisuke; and Mishima, Junichi, 5,187,315, Cl. 84-688.000.
Mishima, Masayuki; Yamasaki, Harumasa; Matsuse, Takashi; Sakuma, Tadashi; and Togashi, Hiroyasu, to Kao Corporation. Organic silicon compound, method of its production, and photoreceptor for electrophotography incorporating it. 5,187,310, Cl. 556-413.000.
Mishima, Takayuki; Okuda, Yasuhiro; and Nishimoto, Hiroaki, to Sumitomo Electric Industries, Ltd. Photosetting resin composition and plastic clad optical fiber comprising the same. 5,187,770, Cl. 385-145.000.
Mita Industrial Co., Ltd.: *See*—
Kajitani, Tetsuji; Matsuura, Yasumasa; Harada, Hiroyuki; and Araki, Toshihiko, 5,187,420, Cl. 318-823.000.
Nakanishi, Tsugio; Irie, Yoichiro; and Nagao, Tsuyoshi, 5,186,445, Cl. 270-053.000.
Nakazawa, Toru; and Kitaura, Katsuya, 5,186,477, Cl. 279-2.090.
Ohmi, Ikuhiro; Yanagida, Yoshiaki; Matsuyama, Soichi; and Ikuta, Yoshihisa, 5,186,449, Cl. 271-10.000.
Sugiyama, Tsukasa; and Yoshizuka, Ken, 5,187,533, Cl. 355-309.000.
Mitchell, George C.: *See*—
Simon, Robert C., Jr.; Mitchell, George C.; Tolkacz, Joseph M.; Polom, William G.; and Medich, Peter M., 5,186,080, Cl. 74-857.000.
Mitchell, Randall R. Tub and shower seat. 5,185,892, Cl. 4-578.100.
Mitsuba Electric Manufacturing Co., Ltd.: *See*—
Sato, Masaei, 5,187,492, Cl. 343-901.000.
Mitsubishi Denki K.K.: *See*—
Takaishi, Tadao; and Maekawa, Toshio, 5,186,154, Cl. 123-634.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Asayama, Yoshiaki, 5,187,537, Cl. 356-1.000.
Egashira, Toshiyuki; Ishizuka, Masahiro; and Banjou, Toshinobu, 5,186,719, Cl. 29-25.010.
Fukui, Wataru, 5,186,144, Cl. 123-414.000.
Haruta, Kenyu; Nagai, Haruhiko; Nakatani, Hajime; Yamamoto, Yoshihiko; Takemura, Taketoshi; Eura, Takashi; Tsuboi, Shungo; Matsushita, Yoshifumi; and Minagawa, Tadao, 5,187,716, Cl. 372-57.000.
Hayashi, Shinichiro, 5,187,456, Cl. 333-181.000.
Kawai, Masataka; and Takemura, Seiji, 5,187,565, Cl. 257-682.000.
Kohno, Yasutaka; and Oku, Tomoki, 5,187,112, Cl. 437-41.000.
Matsumura, Mitsuie, 5,187,024, Cl. 429-24.000.
Nakashima, Yuichi; Tomikawa, Mitsuhiro; and Yamamoto, Hirohisa, 5,187,558, Cl. 257-420.000.
Nakayama, Masayuki, 5,187,529, Cl. 355-296.000.
Noda, Minoru, 5,187,379, Cl. 257-192.000.
Ohmori, Masashi; and Midou, Youichi, 5,187,118, Cl. 437-180.000.
Ohnishi, Hiroshi; and Hoshinouchi, Susumu, 5,186,120, Cl. 118-667.000.
Osawa, Takashi; Murakami, Katsuo; Mitsuhashi, Seishiro; Kamano, Yujiro; and Kobayashi, Toshihiko, 5,187,415, Cl. 313-326.000.
Takiguchi, Tohru, 5,187,378, Cl. 257-188.000.
Wataya, Seiji, 5,186,148, Cl. 123-479.000.
Yanagi, Motonori; Hama, Masaharu; Fukumoto, Takaaki; and Tsukaguchi, Miki, 5,186,907, Cl. 422-186.300.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Gaku, Morio; and Nozaki, Mitsuru, 5,186,880, Cl. 264-236.000.
Masumoto, Isamu; Mizutani, Zenpei; Yada, Hiroshi; and Hara, Yoshihito, 5,187,218, Cl. 524-317.000.
Takeda, Mutsuhiko; Hagiwara, Isao; Zaima, Fumiya; and Sakaguchi, Shuzabu, 5,187,311, Cl. 556-428.000.
Mitsubishi Jidosha Kogyo Kabushi Kaisha: *See*—
Matsura, Yoshimasa, 5,186,139, Cl. 013723-.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Murata, Shinichi; Nakamura, Noboru; Yoshida, Michiyasu; and Miayamoto, Hideki, 5,186,128, Cl. 123-90.160.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Hirano, Takahisa, 5,186,616, Cl. 418-55.500.
Kusafuka, Noboru; Yoshida, Akira; Tsuyuki, Susumu; Seko, Tatsushi; Tsutsui, Yoshimitsu; Miki, Toshio; and Mouri, Ryoji, 5,186,407, Cl. 242-56.200.
Morishima, Ryuji; Asai, Katsutoshi; Fukumoto, Ryutaro; and Isomichi, Kanji, 5,186,134, Cl. 123-179.500.
Mitsubishi Kasei Corporation: *See*—
Kato, Hiromasa; Fujimoto, Yuka; Nozawa, Akiyoshi; and Kuwata, Shinichi, 5,187,101, Cl. 436-42.000.
Shinohara, Hideo; Murata, Yukichi; and Taki, Tsutomu, 5,187,144, Cl. 503-227.000.
Mitsubishi Materials Corporation: *See*—
Nakayama, Masaaki; and Okawa, Masayuki, 5,186,583, Cl. 407-39.000.
Mitsubishi Nuclear Fuel Co.: *See*—
Yaginuma, Yoshitaka, 5,186,887, Cl. 376-248.000.
Mitsubishi Petrochemical Co., Ltd.: *See*—
Miyabayashi, Mitsutaka; and Hayashi, Manabu, 5,187,035, Cl. 429-218.000.
Mitsubishi Rayon Co.: *See*—
Sakunaga, Kenichi; and Okada, Mizuo, 5,186,780, Cl. 156-167.000.
Mitsubishi Rayon Co., Ltd.: *See*—
Sugimori, Masahiro; Takeda, Haruko; and Tone, Seiji, 5,187,244, Cl. 525-479.000.
Mitsuhashi, Seishiro: *See*—
Osawa, Takashi; Murakami, Katsuo; Mitsuhashi, Seishiro; Kamano, Yujiro; and Kobayashi, Toshihiko, 5,187,415, Cl. 313-326.000.
Mitsui Kinzoku Kogyo Kabushiki Kaisha: *See*—
Ohta, Hiroshi; Aono, Masakazu; Kato, Kazuhiko; Hoshino, Kazutomo; Takahara, Hidefusa; Nakayama, Tomonobu; and Sudoh, Eiichi, 5,187,327, Cl. 174-35.00R.
Mitsui, Shoichi: *See*—
Watanabe, Takahide; Shibata, Yasuhiko; Mitsui, Shoichi; and Koike, Takashi, 5,186,133, Cl. 123-179.140.
Mitsui Toatsu Chemicals, Incorporated: *See*—
Asanuma, Tadashi; Shiomura, Tetsunosuke; Nishimori, Yukari; and Uchikawa, Nobutaka, 5,187,250, Cl. 526-348.600.
Onofusa, Mitsuo; Hashimoto, Nobuyoshi; Tagawa, Kimiteru; and Hagiwara, Michiro, 5,186,895, Cl. 422-67.000.
Yamamoto, Yoshihiro; Takaki, Usaji; Aoki, Shinobu; Inoue, Yoshihisa; and Hara, Isao, 5,187,283, Cl. 548-457.000.
Mitsutsuka, Syuichi, to Clarion Co., Ltd. Controlling apparatus for improving start up time for a convolver. 5,187,681, Cl. 364-821.000.
Mitsuyuki, Youichirou: *See*—
Araki, Kenji; Sasaki, Hiroki; Yonezawa, Akihiro; and Mitsuyuki, Youichirou, 5,187,413, Cl. 315-291.000.
Miura, Chiharu: *See*—
Ishii, Hidehiro; Takeya, Hiroshi; Miura, Chiharu; and Fukuda, Tatsuya, 5,187,696, Cl. 369-44.290.
Miwa, Hiroyuki, to Sony Corporation. Bipolar transistor. 5,187,554, Cl. 307-586.000.
Miyabayashi, Mitsutaka; and Hayashi, Manabu, to Mitsubishi Petrochemical Co., Ltd. Electrode for secondary battery. 5,187,035, Cl. 429-218.000.
Miyagawa, Masazumi: *See*—
Takaishi, Tatsuyuki; Miyagawa, Masazumi; and Nakamura, Hitoshi, 5,186,504, Cl. 292-216.000.
Miyahara, Masaaki; and Suganuma, Masashi, to Nissei Jushi Kogyo Kabushiki Kaisha. Controller of an injection molding machine. 5,186,954, Cl. 425-130.000.
Miyahara, Shinichiro: *See*—
Shibata, Koichi; Fukushima, Toshitaka; Watanabe, Hiroyuki; Miyahara, Shinichiro; and Imagawa, Osamu, 5,187,441, Cl. 324-426.000.
Shibata, Koichi; Fukushima, Toshitaka; Watanabe, Hiroyuki; Miyahara, Shinichiro; and Imagawa, Osamu, 5,187,720, Cl. 375-35.000.
Miyai, Kenzi: *See*—
Sakane, Kazuo; Kawabata, Kohji; Miyai, Kenzi; and Inamoto, Yoshiko, 5,187,160, Cl. 514-202.000.

Miyakawa, Shinpei: *See*—
Urata, Eizo; and Miyakawa, Shinpei, 5,186,213, Cl. 137-625.610.
Miyake, Hiraku; Ishiguro, Mitsuo; Abe, Shigetaka; Yamaguchi, Nobuo; Hayamizu, Yutaka; and Aizawa, Satoru, to Takenaka Corporation. Floor vibration-damping apparatus. 5,185,976, Cl. 52-167.0RA.
Miyake, Hiroshi: *See*—
Matsuo, Masaaki; Hagiwara, Daijiro; and Miyake, Hiroshi, 5,187,156, Cl. 514-18.000.
Miyasaka, Tetsuo, to Olympus Optical Co., Ltd. Camera controllable with use of a control program. 5,187,517, Cl. 354-412.000.
Miyashita, Yukio; Mifune, Hiroshi; Noguchi, Kunio; and Fukuchi, Hironao, to Honda Giken Kogyo Kabushiki Kaisha. Air-fuel ratio control method for internal combustion engines. 5,186,155, Cl. 123-685.000.
Miyata, Tatuya: *See*—
Ogiwara, Hiroshi; Miyata, Tatuya; and Oda, Akihiro, 5,186,970, Cl. 426-512.000.
Miyazaki, Michio: *See*—
Yamamoto, Akira; Kitajima, Hiroyuki; Kurano, Akira; Miyazaki, Michio; Nozawa, Masafumi; and Takeuchi, Takikazu, 5,187,778, Cl. 395-250.000.
Miyazaki, Nagao, to Japan Electronics Industry, Ltd. Device for measuring action force of wheel and device for measuring stress of structure. 5,186,042, Cl. 73-118.100.
Miyazaki, Toshihiko; Nose, Hiroyasu; Yagi, Takayuki; Kawase, Toshimitsu; and Shinjo, Katsuhiko, to Canon Kabushiki Kaisha. Cantilever type probe, scanning tunneling microscope and information processing device equipped with said probe. 5,187,367, Cl. 250-306.000.
Miyazawa, Shyoichi; Horita, Ryutaro; Hase, Kenichi; Kawamura, Satoshi; Kojima, Shinichi; and Iseki, Toshiyuki, to Hitachi, Ltd. Data separator and signal processing circuit. 5,187,615, Cl. 360-46.000.
Mizoguchi, Junzo: *See*—
Ohya, Masami; Mizoguchi, Junzo; and Onozawa, Takashi, 5,187,078, Cl. 435-69.100.
Mizuguchi, Shinichi; Ueda, Shuji; Kato, Koji; and Umehara, Noritsugu, to Matsushita Electric Co., Ltd. Micro-abrading method and micro-abrading tool. 5,185,957, Cl. 51-59.0SS.
Mizukoshi, Yasuyoshi: *See*—
Ueyoko, Kiyoshi; Nakagawa, Tsuneyuki; and Mizukoshi, Yasuyoshi, 5,186,774, Cl. 152-539.000.
Mizuno, Koichi; Wakabayashi, Takeshige; Koinuma, Yutaka; Aizawa, Reiji; Kushiyama, Satoshi; Kabayashi, Satoru; Ohuchi, Hideo; Yoshida, Toyonobu; Kubota, Yoshiro; Amano, Takanobu; Komaki, Hisashi; and Hirakawa, Shoji, to Agency of Industrial Science and Technology; Yoshida, Toyonobu; and JEOL Ltd. Apparatus for decomposing halogenated organic compound. 5,187,344, Cl. 219-121.500.
Mizuno, Mitsuyoshi: *See*—
Endo, Tatsuo; and Mizuno, Mitsuyoshi, 5,187,607, Cl. 359-266.000.
Mizutani, Minoru; and Isaka, Norihisa, to Oki Electric Industry Co., Ltd. Ink ribbon cartridge. 5,186,554, Cl. 400-247.000.
Mizutani, Zenpei: *See*—
Masumoto, Isamu; Mizutani, Zenpei; Yada, Hiroshi; and Hara, Yoshihito, 5,187,218, Cl. 524-317.000.
Mobil Oil Corporation: *See*—
Coolbaugh, Thomas S.; Loveless, Frederick C.; and Matthews, Demetreos N., 5,187,236, Cl. 525-314.000.
El-Rabaa, A. Wadood; Moeckel, George P.; and Strubhar, Malcolm K., 5,187,332, Cl. 181-122.000.
Nemet-Mavrodin, Margaret; and Pickering, John L., Jr., 5,186,908, Cl. 422-190.000.
Okorodudu, Abraham O. M.; Cardis, Angeline B.; and Kremer, Ross A., 5,186,850, Cl. 252-47.500.
Mobley, Dewey: *See*—
Burgess, James P.; Mobley, Dewey; and Vanderstuyf, Al, 5,187,328, Cl. 174-52.200.
Mock, Robert W., Jr.; Muth, Harold F., Jr.; and Snyder, Donald Q., to AT&T Bell Laboratories. Methods of and apparatus for polishing an article. 5,185,966, Cl. 51-283.00R.
Mockett, Albert P. A.: *See*—
Sondermeijer, Pulus J. A.; Claessens, Johannes A.; and Mockett, Albert P. A., 5,187,087, Cl. 435-172.100.
Moeckel, George P.: *See*—
El-Rabaa, A. Wadood; Moeckel, George P.; and Strubhar, Malcolm K., 5,187,332, Cl. 181-122.000.
Mohr, Dieter: *See*—
Mueller-Hess, Waltraud; Mohr, Dieter; Kroggel, Matthias; and Rauterkus, Karl-Josef, 5,187,040, Cl. 430-157.000.
Mohr, Peter: *See*—
Heel, Helmut; Fauter, Manfred; Mohr, Peter; Friedl, Franz; and Kettel, Hans, 5,186,476, Cl. 279-2.030.
Mohrmann, Werner: *See*—
Schobbe, Hermann; Steinhauser, Gerd; Scheerer, Hans; Opara, Andreas; Mohrmann, Werner; Steinert, Hans-Rudolf; and Konig, Wolfhard, 5,186,440, Cl. 267-220.000.
Moilanen, John R.: *See*—
Kotlarek, Peter A.; Moilanen, John R.; and Harrison, Mark W., 5,186,613, Cl. 417-291.000.
Molecular Probes, Inc.: *See*—
Kang, Hee C.; and Haugland, Richard P., 5,187,288, Cl. 548-110.000.
Molex Incorporated: *See*—
Bakke, Patrick D.; and Bowen, David C., 5,186,643, Cl. 439-326.000.
Bixler, Craig A., 5,186,645, Cl. 439-358.000.
Comerci, Joseph D.; and DeRoss, Robert, 5,186,639, Cl. 439-188.000.
Enomoto, Masahiro; Patel, Arvind; and Schafer, Jack J., 5,186,654, Cl. 439-570.000.
Harwath, Frank A.; Brinkman, Donald J.; Landgraf, Glenn A.; Shah, Hasmukh; Stenstrom, Eric; Brunker, David L.; and Johnson, Richard A., 5,186,656, Cl. 439-585.000.
Lenz, William R.; and Palmieri, Daniel M., 5,186,328, Cl. 206-330.000.
Pawlicki, Jeffrey J.; Ponn, Timothy R.; and Premo, Thomas G., 5,186,644, Cl. 439-353.000.
Molins PLC: *See*—
Aindow, Alan M.; Cahill, Michael J.; and Dawson, John, 5,186,184, Cl. 131-281.000.
Moll, Philipp: *See*—
Schlondorff, Georg; Mosges, Ralph; Meyer-Ebrecht, Dietrich; and Moll, Philipp, 5,186,174, Cl. 128-653.100.
Moloney, David: *See*—
Vai, Gianfranco; Zuffada, Maurizio; Sacchi, Fabrizio; Moloney, David; and Betti, Giorgio, 5,187,452, Cl. 331-113.00R.
Monacelli, Umberto. Screw driving device for screws connected by a screw connecting strip. 5,186,085, Cl. 81-434.000.
Monarch Marking Systems, Inc.: *See*—
Sugiura, Ikuzo; Uchimura, Mitsuo; Kawamura, Kouichi; Fogle, Ronald L.; and Huggins, Orville C., 5,186,553, Cl. 400-242.000.
Monroe, Roy K.: *See*—
Everhard, Paul R.; Everhard, Alan L.; and Monroe, Roy K., 5,186,282, Cl. 187-8.590.
Mons, Johannes J.: *See*—
Raaymakers, Wilhelmus P. M.; Mons, Johannes J.; and Roth, Rudolf, 5,187,699, Cl. 369-48.000.
Monsanto Company: *See*—
Gabbert, James D., 5,186,984, Cl. 427-443.100.
Udipi, Kishore, 5,187,230, Cl. 525-133.000.
Montalvo Corporation, The: *See*—
Montalvo, William W., III; and Metcalf, Philip R., Jr., 5,186,061, Cl. 73-862.632.
Montalvo, William W., III; and Metcalf, Philip R., Jr., to Montalvo Corporation, The. Transducer beam and beam assembly. 5,186,061, Cl. 73-862.632.
Montean, Samuel, to Minnesota Mining and Manufacturing Company. Multiple magnet assembly for use with electromagnetic article surveillance markers. 5,187,462, Cl. 335-284.000.
Montres Rolex S.A.: *See*—
Besson, Rene , 5,187,693, Cl. 368-35.000.
Moore, Beverly L., to Oklahoma Steel & Wire Co., Inc. Laminated wiper. 5,186,751, Cl. 118-109.000.
Moore, Donal, to Polytech Netting Industries, L.P. Automotive barrier net. 5,186,587, Cl. 410-118.000.
Moore, Kevin: *See*—
Melton, Cynthia; Raleigh, Carl; Cholewczynski, Kenneth; and Moore, Kevin, 5,186,383, Cl. 228-180.200.
Moorhouse, John H.: *See*—
Baker, Edgar C.; Moorhouse, John H.; and Noshay, Allen, 5,187,247, Cl. 526-133.000.
Moradi-Araghi, Ahmad: *See*—
Stahl, Allan; Moradi-Araghi, Ahmad; Westerman, John; Hsieh, Henry L.; Hedges, James H.; and Bjornson, Geir, 5,186,257, Cl. 166-273.000.
Moran, John L., III; and Schissler, L. Robert, to Codex Corporation. Circuitry for interfacing telecommunications equipment to a communication channel. 5,187,742, Cl. 379-403.000.
Morgan, David E.: *See*—
Morgan, Jerry E.; and Morgan, David E., 5,186,480, Cl. 280-250.100.
Morgan, Jerry E.; and Morgan, David E., to Morgan Technology, Inc. Lightweight transportable wheelchair. 5,186,480, Cl. 280-250.100.
Morgan, Michael A.: *See*—
Sohner, Harold K.; Morgan, Michael A.; and Kumar, Surinder, 5,187,803, Cl. 455-4.100.
Morgan Technology, Inc.: *See*—
Morgan, Jerry E.; and Morgan, David E., 5,186,480, Cl. 280-250.100.
Mori, Kazunori, to Nissan Motor Co., Ltd. Rear wheel steering system for automotive vehicle. 5,186,273, Cl. 180-140.000.
Mori, Natsuki: *See*—
Sawa, Ikuo; Mori, Natsuki; Maemoto, Shunichi; Kutsuki, Hidetoshi; and Hasegawa, Junzo, 5,187,094, Cl. 435-280.000.
Mori, Satoshi: *See*—
Iwasa, Hiroki; Nagasaka, Chikao; Ueda, Masuyuki; Kato, Shigeru; Aoki, Hisashi; Shibahara, Makoto; and Mori, Satoshi, 5,187,381, Cl. 307-10.100.
Moriizumi, Kazuhiro, to Ricoh Company, Ltd. Telephone data communication switching system. 5,187,736, Cl. 379-100.000.
Morimoto, Hiromi: *See*—
Andres, Hendrik; Morimoto, Hiromi; and Williams, Philip G., 5,186,868, Cl. 252-645.000.
Morimoto, Makoto: *See*—
Kanda, Yutaka; Uosaki, Youichi; Saito, Hiromitsu; Sano, Hiroshi; Kobayashi, Eiji; Morimoto, Makoto; and Nagamura, Satoru, 5,187,186, Cl. 514-410.000.
Morishima, Ryuji; Asai, Katsutoshi; Fukumoto, Ryutaro; and Isomichi, Kanji, to Mitsubishi Jukogyo Kabushiki Kaisha. Spiral spring type starter apparatus for an internal combustion engine. 5,186,134, Cl. 123-179.500.

VOL
1147
ISS
3
FE
16
1993
UMI

Morita, Hirofumi: *See*—
Nakazawa, Takeo; Morita, Hirofumi; Hitomi, Takeshi; and Ishizuka, Katsumi, 5,186,753, Cl. 118-410.000.
Morita, Kiyoo; and Oishi, Kengo, to Fuji Photo Film Co., Ltd. Mold for producing a magnetic tape cassette. 5,186,955, Cl. 425-130.000.
Moriyama, Yutaka: *See*—
Adachi, Tsunenari; Akasaka, Hitoshi; and Moriyama, Yutaka, 5,186,242, Cl. 165-110.000.
Morohoshi, Yasuo: *See*—
Nishiwaki, Akira; and Morohoshi, Yasuo, 5,186,872, Cl. 264-5.000.
Morrison, John M., to GEC Ferranti Defence Systems Limited. Optical system for the remote determination of position and orientation. 5,187,540, Cl. 356-152.000.
Morser, Alfred H.: *See*—
Minnich, Thomas; Morser, Alfred H.; Myers, Stanley L.; and Walsh, Stephen T., 5,187,417, Cl. 318-254.000.
Morton, Douglas R.: *See*—
Johnson, Roy A.; Bundy, Gordon L.; Youngdale, Gilbert A.; Morton, Douglas R.; Wallach, Donald P., deceased; and Wallach, Legal Representative, by Vera M., 5,187,299, Cl. 552-522.000.
Morton International, Inc.: *See*—
Adams, Gary V.; and Saderholm, Davin G., 5,186,490, Cl. 280-731.000.
Richart, Douglas S.; and Daly, Andrew T., 5,187,220, Cl. 524-441.000.
Morton, Timothy L., to Total Racing Connection, Inc. Model racing car tire and wheel assembly. 5,186,676, Cl. 446-465.000.
Mortun, Sorin; and Rosales, Jacob, to Lee Craft Manufacturing Co., Inc. Stable-on push-push electrical switch. 5,186,316, Cl. 200-527.000.
Mosges, Ralph: *See*—
Schlondorff, Georg; Mosges, Ralph; Meyer-Ebrecht, Dietrich; and Moll, Philipp, 5,186,174, Cl. 128-653.100.
Moss, Bernard: *See*—
Kotwal, Girish; and Moss, Bernard, 5,187,268, Cl. 536-23.720.
Mosser, Benjamin H., III, to AMP Incorporated. Surface mount electrical connector with interleaved solder tails. 5,186,633, Cl. 439-79.000.
Mossman, Allen B., to Amoco Corporation. Regioselective nitration of diphenyl compounds. 5,187,294, Cl. 558-272.000.
Motohara, Shinji: *See*—
Ohno, Aritaka; Motohara, Shinji; and Hotate, Kazuo, 5,187,757, Cl. 385-11.000.
Motorola, Inc.: *See*—
Baker, James C.; Levine, Stephen N.; Puhl, Larry C.; and Carney, Scott N., 5,187,811, Cl. 455-35.100.
Bertiger, Bary R.; Leopold, Raymond J.; and Peterson, Kenneth M., 5,187,805, Cl. 455-12.100.
Brooks, Dwight D., 5,185,906, Cl. 24-35.000.
Brooks, Todd L.; and Rybicki, Mathew A., 5,187,448, Cl. 330-258.000.
Hoshizaki, Gary W.; Caby, Glen; and Fuller, Robert A., 5,187,394, Cl. 307-449.000.
Jackson, H. Spence, 5,187,445, Cl. 328-167.000.
Leef, Anatoly, 5,187,347, Cl. 219-121.520.
Maniar, Papu D., 5,186,745, Cl. 106-287.160.
Melton, Cynthia; Raleigh, Carl; Cholewczynski, Kenneth; and Moore, Kevin, 5,186,383, Cl. 228-180.200.
Metroka, Michael P.; and Hackbart, Rolland R., 5,187,640, Cl. 361-329.000.
Pirez, Yolanda M., 5,187,395, Cl. 307-491.000.
Thompson, Michael J., 5,187,808, Cl. 455-33.100.
Waynerich, Randall; Masoodosmani, Rashid; Walczak, Thomas J.; and Cahill, Stephen V., 5,187,809, Cl. 455-33.100.
Yip, William C.; and Barron, David L., 5,187,745, Cl. 381-36.000.
Moulton, Kern A.; Campbell, Bryant A.; and Caputo, Ross A., to Abtox, Inc. Plasma cycling sterilizing process. 5,186,893, Cl. 422-23.000.
Mountpelier Investments, S.A.: *See*—
Fiddian-Green, Richard G., 5,186,172, Cl. 128-632.000.
Mouri, Akihiro; Isaka, Kazuo; Fukui, Tetsuro; and Katayama, Masato, to Canon Kabushiki Kaisha. Image forming method and image forming apparatus. 5,187,041, Cl. 430-201.000.
Mouri, Ryoji: *See*—
Kusafuka, Noboru; Yoshida, Akira; Tsuyuki, Susumu; Seko, Tatsushi; Tsutsui, Yoshimitsu; Miki, Toshio; and Mouri, Ryoji, 5,186,407, Cl. 242-56.200.
Mowrer, Gail S.: *See*—
Beckhusen, Gerard F.; and Mowrer, Gail S., 5,186,674, Cl. 446-144.000.
Moy, Thomas H., to Micron Technology, Inc. Combined circuit configuration for a CMOS logic inverter and gate. 5,187,388, Cl. 307-448.000.
MPC Containment Systems, Ltd.: *See*—
Reicin, Edward E.; Bertolozzi, Rano J.; and Cortapassi, Theodore, 5,186,577, Cl. 405-52.000.
MTU Motoren-und Turbinen-Union Munchen GmbH: *See*—
Enderle, Heinrich; Heyse, Jorg; and Geidel, Helmut-Arnd, 5,186,390, Cl. 239-265.370.
Mudd, Kenneth W.: *See*—
Mudd, Michale F.; Mudd, Kenneth W.; and Mudd, Kevin, 5,186,466, Cl. 273-244.000.
Mudd, Kevin: *See*—
Mudd, Michale F.; Mudd, Kenneth W.; and Mudd, Kevin, 5,186,466, Cl. 273-244.000.
Mudd, Michale F.; Mudd, Kenneth W.; and Mudd, Kevin. Tournament fishing game apparatus. 5,186,466, Cl. 273-244.000.
Muehlemann, Michael M.; and Mueller, Rolf H., to Fostec, Inc. Backlighted panel. 5,187,765, Cl. 385-115.000.
Muehlheim, Richard: *See*—
Stecher, Gunther; Hecht, Hans; Bergfried, Dietrich; Ziegenbein, Botho; and Muehlheim, Richard, 5,186,051, Cl. 73-204.260.
Mueller-Hess, Waltraud; Mohr, Dieter; Kroggel, Matthias; and Rauterkus, Karl-Josef, to Hoechst Aktiengesellschaft. Photocurable mixture and material containing diazonium salt polycondensation product or organic azido compound photosensitive and polyurethane binder, grafted with vinyl alcohol and vinyl acetal units. 5,187,040, Cl. 430-157.000.
Mueller, Michael L.: *See*—
Porter, Robert M., Jr.; and Mueller, Michael L., 5,187,580, Cl. 330-207.00A.
Mueller, Peter: *See*—
Weber, Heinrich; Lehrmann, Falko; Hofer, Hermann; Vogel, Werner; and Mueller, Peter, 5,187,097, Cl. 435-313.000.
Mueller, Rolf H.: *See*—
Muehlemann, Michael M.; and Mueller, Rolf H., 5,187,765, Cl. 385-115.000.
Mueller-Stuercken, Harro. Apparatus for detecting metal parts which are movable relative to a metal sensitive sensor arrangement. 5,187,723, Cl. 377-6.000.
Muhl, Helmut; and Mullner, Johann, to SKF GmbH. Roller bearing and seal assembly. 5,186,547, Cl. 384-480.000.
Mukku, Venkat R.: *See*—
Clark, Ross G.; and Mukku, Venkat R., 5,187,151, Cl. 514-3.000.
Mulhauser, Michel: *See*—
Botannet, Bernard; Clavel, Jean-Louis; Corbet, Jean-Pierre; and Mulhauser, Michel, 5,187,292, Cl. 558-134.000.
Mullaney, Henry: *See*—
Brommer, Karl; Mullaney, Henry; Meade, Robert; Rappe, Andrew; and Joanopoulos, John, 5,187,461, Cl. 333-219.100.
Muller, Arno: *See*—
Nambudiri, Easwaran C. N.; Muller, Arno; and Kirschner, Wallace, 5,187,798, Cl. 395-800.000.
Muller, Gebhard; and Escher, Simon, to Hertel AG Werkzeuge & Hartstoffe. Twist drill. 5,186,584, Cl. 408-26.000.
Muller, Horst: *See*—
Emrich, Helmut; Muller, Horst; Ruwe, Walter; and Wegel, Erich, 5,186,105, Cl. 101-217.000.
Muller, Klaus: *See*—
Barner, Richard; Burri, Kaspar; Cassal, Jean-Marie; Hadvary, Paul; Hirth, Georges; and Muller, Klaus, 5,187,293, Cl. 558-267.000.
Muller, Kurt; and Rupp, Roberto, to Gretag Systems, Inc. Photographic copying apparatus. 5,187,520, Cl. 355-72.000.
Muller-Stein, Iris: *See*—
Otto, Veit; Weber, Wolfram; Muller-Stein, Iris; and Schiebler, Wolfgang, 5,186,826, Cl. 210-198.200.
Mullis, Kary B., to Specialty Laboratories, Inc. Rapid purification of DNA. 5,187,083, Cl. 435-91.000.
Mullner, Johann: *See*—
Muhl, Helmut; and Mullner, Johann, 5,186,547, Cl. 384-480.000.
Munro, Mark S. Electrical system for industrial conveyors. 5,186,308, Cl. 198-572.000.
Muntz, Eric P.; Erwin, Daniel A.; Kunc, Joseph A.; and Shiflett, Geoffrey R., to University of Southern California. Transient energy release microdevices and methods. 5,186,001, Cl. 60-515.000.
Murai, Hidetsugu: *See*—
Oohata, Nobutaka; Nishikawa, Motoaki; Kiyoto, Sumio; Takase, Shigehiro; Hemmi, Keiji; Murai, Hidetsugu; and Okuhara, Masakuni, 5,187,195, Cl. 514-510.000.
Murakami, Katsuo: *See*—
Osawa, Takashi; Murakami, Katsuo; Mitsuhashi, Seishiro; Kamano, Yujiro; and Kobayashi, Toshihiko, 5,187,415, Cl. 313-326.000.
Murakami, Kei: *See*—
Kadomukai, Yuzo; Yamakado, Makoto; Maeda, Yuji; Nakamura, Kenichi; Fukushima, Masao; and Murakami, Kei, 5,186,136, Cl. 123-192.100.
Murakami, Keiichi, to Canon Kabushiki Kaisha. Liquid jet recording head with protective layer having an ion exchanger. 5,187,499, Cl. 346-140.00R.
Muramatsu, Eiji; and Maeda, Takanori, to Pioneer Electronic Corporation. Method of reading recorded information from information storage medium with tracks. 5,187,697, Cl. 369-44.320.
Muramatsu, Shigeru; Watanabe, Keisuke; and Mishima, Junichi, to Yamaha Corporation. Musical tone central parameter controller for a musical instrument. 5,187,315, Cl. 84-688.000.
Murata, Kiyoshi: *See*—
Tsukada, Masamitsu; Murata, Kiyoshi; Ota, Yasushi; and Watanabe, Yoshihiko, 5,186,989, Cl. 428-34.900.
Murata Mfg. Co., Ltd.: *See*—
Kumada, Akira; Takata, Eiichi; and Murata, Michihiro, 5,187,444, Cl. 324-663.000.
Mandai, Harufumi; Chigodo, Yoshikazu; and Tojo, Atsushi, 5,187,455, Cl. 333-161.000.
Murata, Michihiro: *See*—
Kumada, Akira; Takata, Eiichi; and Murata, Michihiro, 5,187,444, Cl. 324-663.000.
Murata, Shinichi; Nakamura, Noboru; Yoshida, Michiyasu; and Miayamoto, Hideki, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Valve operating apparatus. 5,186,128, Cl. 123-90.160.
Murata, Takao: *See*—
Ohta, Masahiko; Kaneko, Kazuo; Iyama, Hiroyuki; Kado, Seizi; Hirao, Mitisuru; Ishizaka, Hironori; Ohmaru, Kenji; and Murata, Takao, 5,187,490, Cl. 343-770.000.

Murata, Yukichi: *See*—
Shinohara, Hideo; Murata, Yukichi; and Taki, Tsutomu, 5,187,144, Cl. 503-227.000.
Murdoch, Steven C.: *See*—
Toshima, Masato M.; Salzman, Phil M.; Murdoch, Steven C.; Wang, Cheng; Stenholm, Mark A.; Howard, James; Hall, Leonard; and Cheng, David, 5,186,594, Cl. 414-217.000.
Murooka, Michio: *See*—
Ikeda, Mitsushi; and Murooka, Michio, 5,187,602, Cl. 359-59.000.
Murphy, Charles F., III; and Murphy, Patrick, to Pitney Bowes Inc. Ink replenishing system. 5,186,101, Cl. 101-97.000.
Murphy, D. Thomas, to Murphy, D. Thomas. Wastewater treatment process with cooperating velocity equalization, aeration and decanting means. 5,186,821, Cl. 210-86.000.
Murphy, Kevin P.; and Smith, Garland Y. Conduit stopper. 5,186,199, Cl. 137-15.000.
Murphy, Patrick: *See*—
Murphy, Charles F., III; and Murphy, Patrick, 5,186,101, Cl. 101-97.000.
Murphy, Raymond: *See*—
Kung, Hank F.; and Murphy, Raymond, 5,186,921, Cl. 424-1.100.
Murphy, William J., to Exxon Research and Engineering Company. Method for improving the activity maintenance of a plasma initiator. 5,186,799, Cl. 204-157.150.
Murray, Mark J.; and Kelly, James D., to ZymoGenetics, Inc. Expression of biologically active PDGE analogs in eucaryotic cells. 5,187,263, Cl. 530-399.000.
Musch, Rudiger; Thormer, Joachim; Buding, Hartmuth; and Leibbrandt, Friedrich, to Bayer Aktiengesellschaft. Rubber compounds of polychloroprene and hydrogenated nitrile rubber. 5,187,232, Cl. 525-215.000.
Muskatello, James M.; Parmet, Darryl; Lysy, George C.; and Ramsey, Maynard R., III, to Critikon, Inc. Patient monitoring unit and care station. 5,187,641, Cl. 361-380.000.
Muth, Harold F., Jr.: *See*—
Mock, Robert W., Jr.; Muth, Harold F., Jr.; and Snyder, Donald Q., 5,185,966, Cl. 51-283.00R.
Mutoh Industries Ltd.: *See*—
Yamada, Atsushi, 5,187,493, Cl. 346-49.000.
Mycogen Corporation: *See*—
Narva, Kenneth E.; Schwab, George E.; and Bradfisch, Gregory A., 5,186,934, Cl. 124-93.00A.
Myers, Gary L., to Fort Lock Corporation. Padlock. 5,186,029, Cl. 70-38.00A.
Myers, Robert L., to Hewlett Packard Company. Universal light pen system. 5,187,467, Cl. 340-707.000.
Myers, Stanley L.: *See*—
Minnich, Thomas; Morser, Alfred H.; Myers, Stanley L.; and Walsh, Stephen T., 5,187,417, Cl. 318-254.000.
Na, Il-gu, to Samsung Electronics Co., Ltd. Stereo radio frequency modulating system. 5,187,576, Cl. 358-144.000.
Nadkarni, Vijay J.: *See*—
Fuller, Terry A.; Nadkarni, Vijay J.; and Peschke, John R., 5,186,870, Cl. 264-1.200.
Nagai, Haruhiko: *See*—
Haruta, Kenyu; Nagai, Haruhiko; Nakatani, Hajime; Yamamoto, Yoshihiko; Takemura, Taketoshi; Eura, Takashi; Tsuboi, Shungo; Matsushita, Yoshifumi; and Minagawa, Tadao, 5,187,716, Cl. 372-57.000.
Nagai, Masaichi: *See*—
Maeda, Yoshihito; Kaneko, Toshiki; Nagai, Masaichi; Andoh, Hisashi; Katou, Yoshimi; Ikuta, Isao; and Watanabe, Ryuji, 5,187,052, Cl. 430-495.000.
Nagai, Takashi: *See*—
Sakashita, Takeshi; Shimoda, Tomoaki; Nagai, Takashi; and Kishimura, Kotarou, 5,187,242, Cl. 525-439.000.
Nagai, Takeshi; and Tsuruda, Kunihiro, to Matsushita Electric Industrial Co., Ltd. Oxygen sensor. 5,186,810, Cl. 204-425.000.
Nagamine, Akira: *See*—
Yuasa, Katsuhiko; Amemiya, Shinji; and Nagamine, Akira, 5,186,662, Cl. 439-752.000.
Nagamura, Satoru: *See*—
Kanda, Yutaka; Uosaki, Youichi; Saito, Hiromitsu; Sano, Hiroshi; Kobayashi, Eiji; Morimoto, Makoto; and Nagamura, Satoru, 5,187,186, Cl. 514-410.000.
Nagano, Masahi, to Shimano, Inc. Bicycle speed control system for controlling a change speed device through a change speed wire. 5,186,072, Cl. 74-501.500.
Nagano, Mineo: *See*—
Nakamura, Tatsumi; and Nagano, Mineo, 5,187,245, Cl. 526-88.000.
Nagao, Tatsuro: *See*—
Takahashi, Tokihiro; Sato, Takayuki; Ota, Masuo; and Nagao, Tatsuro, 5,187,734, Cl. 379-79.000.
Nagao, Tsuyoshi: *See*—
Nakanishi, Tsugio; Irie, Yoichiro; and Nagao, Tsuyoshi, 5,186,445, Cl. 270-053.000.
Nagarajan, Ramakrishnan: *See*—
Hamill, Robert L.; Hunt, Ann H.; Nagarajan, Ramakrishnan; Schabel, Amelia A.; and Yao, Raymond C., 5,187,082, Cl. 435-71.300.
Nagasaka, Chikao: *See*—
Iwasa, Hiroki; Nagasaka, Chikao; Ueda, Masuyuki; Kato, Shigeru; Aoki, Hisashi; Shibahara, Makoto; and Mori, Satoshi, 5,187,381, Cl. 307-10.100.
Nagasawa, Masakazu; Handa, Masami; Fukai, Kunio; and Hirozumi, Yasuo, to Koito Manufacturing Co., Ltd. Manufacturing method of discharge lamp electrode. 5,186,671, Cl. 445-49.000.
Nagayoshi, Hideaki: *See*—
Obata, Fumio; Tanaka, Toshiaki; and Nagayoshi, Hideaki, 5,186,233, Cl. 164-58.100.
Nagy, Istvan: *See*—
Nagy, Jozsef; Nagy, Istvan; Balogh, Karoly; Mile, Erzsebet; Tarpai, Gyula; Sellei nee Kulik, Katalin; Fodor, Karoly; Kecskes, Mihaly; Toth nee Juhasz, Erzsebet; and Horvath nee Petho , Zsuzsanna, 5,186,723, Cl. 47-58.000.
Nagy, Jozsef; Nagy, Istvan; Balogh, Karoly; Mile, Erzsebet; Tarpai, Gyula; Sellei nee Kulik, Katalin; Fodor, Karoly; Kecskes, Mihaly; Toth nee Juhasz, Erzsebet; and Horvath nee Petho , Zsuzsanna, to Eszakmagyarorszagi Vegyimuuek. Process for the preparation and use of antidote-carrying maize plant parts useful for lowering the cultivated plant-damaging effect of thiolcarbamates and chloroacetanilides. 5,186,723, Cl. 47-58.000.
Nahata, Ajay: *See*—
Wu, Chengjiu; Nahata, Ajay; McFarland, Michael J.; Horn, Keith; and Yardley, James T., 5,186,865, Cl. 252-582.000.
Naito, Michiko, to Kabushiki Kaisha ENU-ESU. Electrostatic transformer. 5,187,421, Cl. 320-1.000.
Nakagawa, Kazufumi: *See*—
Yamamoto, Ken; Nakagawa, Kazufumi; and Hori, Isao, 5,186,689, Cl. 474-112.000.
Nakagawa, Tsuneyuki: *See*—
Ueyoko, Kiyoshi; Nakagawa, Tsuneyuki; and Mizukoshi, Yasuyoshi, 5,186,774, Cl. 152-539.000.
Nakai, Takehiko: *See*—
Kondo, Kazuyuki; Tateoka, Masamichi; and Nakai, Takehiko, 5,187,606, Cl. 359-196.000.
Nakajima, Takeshi: *See*—
Umemura, Masahiro; Namiki, Takemasa; Tobisawa, Seiichi; Kawabe, Shigetoshi; and Nakajima, Takeshi, 5,186,754, Cl. 118-411.000.
Nakajima, Toshiyuki: *See*—
Kawai, Katsunori; Fukaya, Atsushi; and Nakajima, Toshiyuki, 5,186,475, Cl. 277-181.000.
Nakamaru, Kazuki: *See*—
Sato, Kiyoto; and Nakamaru, Kazuki, 5,186,325, Cl. 206-232.000.
Nakamoto, Yasuhiro; and Uemura, Hiroki, to Kyocera Corporation. Oscillator using microstrip line having minimized line width and length. 5,187,451, Cl. 331-99.000.
Nakamura, Hitoshi: *See*—
Takaishi, Tatsuyuki; Miyagawa, Masazumi; and Nakamura, Hitoshi, 5,186,504, Cl. 292-216.000.
Nakamura, Katsushige, to Sahara, Kesanori. Stand apparatus for medical optical instrument. 5,186,422, Cl. 248-123.100.
Nakamura, Kazunari; and Takasugi, Kei, to Olympus Optical Co., Ltd. Endoscope system with a plurality of synchronized light source apparatuses. 5,187,572, Cl. 358-98.000.
Nakamura, Kenichi: *See*—
Kadomukai, Yuzo; Yamakado, Makoto; Maeda, Yuji; Nakamura, Kenichi; Fukushima, Masao; and Murakami, Kei, 5,186,136, Cl. 123-192.100.
Nakamura, Masanori: *See*—
Tarekado, Kenji; Nakamura, Masanori; Hokazono, Kazuaki; Fukada, Hirotaka; and Ishikawa, Takashige, 5,186,126, Cl. 123-52.0MB.
Nakamura, Masayuki: *See*—
Kanto, Jumpei; Saito, Hitoshi; Eguchi, Hiroshi; Nakamura, Masayuki; Kafuku, Koumei; Chiba, Junji; and Suda, Kaoru, 5,187,145, Cl. 503-227.000.
Nakamura, Minoru: *See*—
Kawashima, Makinori; and Nakamura, Minoru, 5,185,907, Cl. 24-20.00R.
Nakamura, Noboru: *See*—
Murata, Shinichi; Nakamura, Noboru; Yoshida, Michiyasu; and Miayamoto, Hideki, 5,186,128, Cl. 123-90.160.
Nakamura, Shinichi: *See*—
Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Katagiri, Kazuharu; Takiguchi, Takao; Shinjo, Kenji; Kitayama, Hiroyuki; and Nakamura, Shinichi, 5,186,858, Cl. 252-299.610.
Nakamura, Tatsumi; and Nagano, Mineo, to Tosoh Corporaton. Method of addition of polymerization initiator. 5,187,245, Cl. 526-88.000.
Nakane, Mototaka, to Aisin Seiki Kabushiki Kaisha. Torque variation absorbing device. 5,186,077, Cl. 74-574.000.
Nakanishi, Hiroshi; and Hamada, Hioroshi, to Sharp Kabushiki Kaisha. Display including two microlens arrays with unequal focal lengths and congruent focal points. 5,187,599, Cl. 359-41.000.
Nakanishi, Kenji: *See*—
Kitagawa, Masahiko; Tomomura, Yoshitaka; and Nakanishi, Kenji, 5,187,116, Cl. 437-105.000.
Nakanishi, Tsugio; Irie, Yoichiro; and Nagao, Tsuyoshi, to Mita Industrial Co., Ltd. Sheet handling apparatus, with sheet storage bins conveyable in a verticle and a lateral direction. 5,186,445, Cl. 270-053.000.
Nakanishi, Yasuo. Turbine and turbocharger using the same. 5,186,602, Cl. 415-75.000.
Nakao, Hironobu, to Rohm Co., Ltd. Dielectric device. 5,187,636, Cl. 361-313.000.
Nakasaki, Eiji; and Igarashi, Yasuo, to Sumitomo Rubber Industries, Ltd. Run-flat tire and rim assemblies for ATV. 5,186,772, Cl. 152-516.000.
Nakashima, Yuichi; Tomikawa, Mitsuhiro; and Yamamoto, Hirohisa, to Mitsubishi Denki Kabushiki Kaisha. Stress reduction structure for a resin sealed semiconductor device. 5,187,558, Cl. 257-420.000.

VOL
1147
ISS
3
FE
16
1993
UMI

Nakata, Jitsuo: *See*—
Takano, Hideaki; Nakata, Jitsuo; and Oonishi, Toshiaki, 5,186,007, Cl. 62-22.000.
Nakata, Toshitake: *See*—
Niina, Tatsuhiko; Ohta, Kiyoshi; Nakata, Toshitake; Matsushita, Yasuhiko; Uetani, Takahiro; and Fujikawa, Yoshiharu, 5,187,547, Cl. 257-77.000.
Nakatani, Hajime: *See*—
Haruta, Kenyu; Nagai, Haruhiko; Nakatani, Hajime; Yamamoto, Yoshihiko; Takemura, Taketoshi; Eura, Takashi; Tsuboi, Shungo; Matsushita, Yoshifumi; and Minagawa, Tadao, 5,187,716, Cl. 372-57.000.
Nakatani, Kazuo: *See*—
Yoshida, Yuji; Tagashira, Minoru; Nakatani, Kazuo; and Funakura, Masami, 5,186,011, Cl. 62-114.000.
Nakatani, Naofumi; Ueno, Reiko; and Nakatsu, Hiromasa, to Matsushita Electric Industrial Co., Ltd. Communication device for layered protocols. 5,187,708, Cl. 370-85.100.
Nakatsu, Hiromasa: *See*—
Nakatani, Naofumi; Ueno, Reiko; and Nakatsu, Hiromasa, 5,187,708, Cl. 370-85.100.
Nakayama, Junichiro: *See*—
Katayama, Hiroyuki; Nakayama, Junichiro; Ohta, Kenji; and Ishikawa, Toshio, 5,187,703, Cl. 369-275.100.
Nakayama, Masaaki; and Okawa, Masayuki, to Mitsubishi Materials Corporation. Rotary cutter. 5,186,583, Cl. 407-39.000.
Nakayama, Masayuki, to Mitsubishi Denki Kabushiki Kaisha. Device for collecting a toner carrier in an image developing apparatus. 5,187,529, Cl. 355-296.000.
Nakayama, Tadashi: *See*—
Kubota, Takeshi; and Nakayama, Tadashi, 5,186,763, Cl. 148-111.000.
Ushigami, Yoshiyuki; Nakayama, Tadashi; and Takahashi, Nobuyuki, 5,186,762, Cl. 148-111.000.
Nakayama, Tomonobu: *See*—
Ohta, Hiroshi; Aono, Masakazu; Kato, Kazuhiko; Hoshino, Kazutomo; Takahara, Hidefusa; Nakayama, Tomonobu; and Sudoh, Eiichi, 5,187,327, Cl. 174-35.00R.
Nakazato, Masahiro: *See*—
Hashimoto, Yutaka; Iida, Mitsuhiko; Hayashi, Makoto; Kaneko, Sizunori; and Nakazato, Masahiro, 5,187,376, Cl. 250-562.000.
Nakazato, Yukitaka: *See*—
Saeki, Shiro; Nakazato, Yukitaka; Ishizaki, Hiroyuki; Hyodou, Fumitaka; and Uotani, Kunihiro, 5,186,446, Cl. 271-3.100.
Nakazawa, Takeo; Morita, Hirofumi; Hitomi, Takeshi; and Ishizuka, Katsumi, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Fountain coater. 5,186,753, Cl. 118-410.000.
Nakazawa, Toru; and Kitaura, Katsuya, to Mita Industrial Co., Ltd. Drum chucking device. 5,186,477, Cl. 279-2.090.
Nalco Chemical Company: *See*—
Furman, Gary S., Jr., 5,187,219, Cl. 524-377.000.
Naletov, Sergei V.: *See*—
Komissarov, Igor V.; Dulenko, Vladimir I.; Voschula, Valentin N.; Kharin, Nikolai A.; Naletov, Sergei V.; and Mamonov, Alexandr B., 5,187,277, Cl. 544-362.000.
Nambudiri, Easwaran C. N.; Muller, Arno; and Kirschner, Wallace, to Pitney Bowes Inc. Electronic postage meter having separate funds charge registers and recredits funds register in predetermined amount when funds fall to predetermined level. 5,187,798, Cl. 395-800.000.
Namiki, Takemasa: *See*—
Umemura, Masahiro; Namiki, Takemasa; Tobisawa, Seiichi; Kawabe, Shigetoshi; and Nakajima, Takeshi, 5,186,754, Cl. 118-411.000.
Nanai, Norishige: *See*—
Kudoh, Yasuo; Fukuyama, Masao; Kojima, Toshikuni; and Nanai, Norishige, 5,187,649, Cl. 361-525.000.
Kudoh, Yasuo; Fukuyama, Masao; Kojima, Toshikuni; and Nanai, Norishige, 5,187,650, Cl. 361-525.000.
Nangrani, Khemchand: *See*—
Perron, Peter J.; Nangrani, Khemchand; and Bourbonais, Ed, 5,187,228, Cl. 525-66.000.
Naqvi, Karim: *See*—
Cullimore, D. Roy; Alford, George W.; Abiola, Abimbola T.; Reihl, Jeff; and Naqvi, Karim, 5,187,072, Cl. 435-34.000.
Naraki, Akihiro: *See*—
Abe, Masatoshi; Yamamoto, Yuichi; and Naraki, Akihiro, 5,187,222, Cl. 524-492.000.
Nariishi, Masaaki; Yamakawa, Noboru; Ohba, Osamu; and Seki, Naoyasu, to Kawasaki Steel Corporation. CMOS master slice. 5,187,556, Cl. 257-206.000.
Narisawa, Yoshiyuki, to Rion Kabushiki Kaisha. Structure of battery receiving chamber. 5,187,746, Cl. 381-68.700.
Narita, Hiroaki: *See*—
Ebe, Kazuyoshi; Narita, Hiroaki; Taguchi, Katsuhisa; Akeda, Yoshitaka; and Saito, Takanori, 5,187,007, Cl. 428-343.000.
Narva, Kenneth E.; Schwab, George E.; and Bradfisch, Gregory A., to Mycogen Corporation. *Bacillus thuringiensis* gene encoding a coleopteran-active toxin. 5,186,934, Cl. 124-93.00A.
National Filter Media Corporation: *See*—
Eugster, John R., 5,186,998, Cl. 428-102.000.
National Research Council of Canada/Conseil National de Recherches du Canada: *See*—
Blais, Francois, 5,187,364, Cl. 250-236.000.
National Semiconductor Corporation: *See*—
Hall, Christopher M.; and Dubowski, Kenneth E., 5,187,389, Cl. 307-350.000.
Wong, Hee, 5,187,721, Cl. 375-62.000.
National Starch and Chemical Investment Holding Corporation: *See*—
Iovine, Carmine P.; Chandran, Rama S.; and Leighton, John C., 5,187,238, Cl. 525-327.200.
Leighton, John C.; Neigel, Dennis; and Iovine, Carmine P., 5,187,006, Cl. 428-288.000.
Natsuume, Tadao: *See*—
Takahashi, Nobukazu; Kohara, Teiji; and Natsuume, Tadao, 5,187,012, Cl. 428-402.000.
NCR Corporation: *See*—
Bulsterbaum, J. Charles; Tolles, Robert D.; and Costello, Donald A., 5,186,597, Cl. 414-469.000.
Jenkins, Alfred D., 5,186,281, Cl. 186-55.000.
Rogers, Richard E.; Turvy, Larry D., Jr.; Eberhardt, George J.; and Loughman, Richard E., 5,187,374, Cl. 250-561.000.
Saruta, Makoto, 5,187,688, Cl. 367-96.000.
NEC Corporation: *See*—
Fujii, Takeo, 5,187,549, Cl. 257-306.000.
Hoshino, Yasuharu, 5,187,684, Cl. 365-189.050.
Kamase, Fumihiro, 5,187,391, Cl. 307-454.000.
Kimura, Katsuji, 5,187,682, Cl. 364-841.000.
Makita, Kikuo, 5,187,553, Cl. 257-187.000.
Matsui, Naoyuki; and Takano, Shigemasa, 5,187,036, Cl. 430-59.000.
Shimada, Naohiro; Ohno, Yasushi; and Saito, Masaaki, 5,187,704, Cl. 370-13.000.
Yanagisawa, Masayuki, 5,187,550, Cl. 257-301.000.
Zenke, Masanobu, 5,187,557, Cl. 257-310.000.
Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Tno: *See*—
Van Der Vis, Pieter A., 5,187,488, Cl. 343-747.000.
Neher, Paul, to SIPRA Patententwicklungs-und Beteiligungsgesellschaft mbH. Plush or pile knitted fabric and circular knitting machine for the production thereof. 5,186,025, Cl. 66-9.00R.
Neidfeld, Matthew A., to Neidfeld, Matthew A. Spackling tool with tool holders. 5,186,507, Cl. 294-3.500.
Neigel, Dennis: *See*—
Leighton, John C.; Neigel, Dennis; and Iovine, Carmine P., 5,187,006, Cl. 428-288.000.
Nelson, Michael D.: *See*—
Garthwaite, Charlie; Cameron, Bridget; Ashmun, Stuart; Stephan, Allan H.; and Nelson, Michael D., 5,187,468, Cl. 340-709.000.
Nelson, Richard L.: *See*—
Kielb, John A.; Nelson, Richard L.; and Pederson, David L., 5,187,474, Cl. 340-870.180.
Nelson, Robert J., to Dirty Business Deals, Inc. Collapsible receptacle for disposal of animal wastes. 5,186,384, Cl. 229-122.000.
Nelson, Terence J.: *See*—
Braun, David A.; Nilson, William A. E., III; Nelson, Terence J.; and Smoot, Lanny S., 5,187,571, Cl. 358-85.000.
Nemet-Mavrodin, Margaret; and Pickering, John L., Jr., to Mobil Oil Corporation. Increased conversion of C_2–C_{12} aliphatic hydrocarbons to aromatic hydrocarbons using a highly purified recycle stream. 5,186,908, Cl. 422-190.000.
Nestec S.A.: *See*—
Berg, Svein A.; and Halden, Jonas P., 5,186,966, Cl. 426-402.000.
Wadell, Lars G. A., 5,186,089, Cl. 83-56.000.
Nestle, Robert J.: *See*—
Turvey, Robert R.; Hoffman, Jeffrey S.; and Nestle, Robert J., 5,185,987, Cl. 53-429.000.
Netsu, Shigeyoshi; Kameya, Masaki; Harada, Yasuyuki; and Amano, Hiroshi, to Shin-Etsu Handotai Co., Ltd.; and Pre-Tech Co., Ltd. Apparatus for cleaning silicon wafer. 5,186,192, Cl. 134-68.000.
Neubauer, Hans-Juergen: *See*—
Buerstinghaus, Rainer; Neubauer, Hans-Juergen; Hofmeister, Peter; Kuenast, Christoph; Leyendecker, Joachim; and Kardorff, Uwe, 5,187,182, Cl. 514-383.000.
Neumann, Stephen M.: *See*—
Ficcaglia, Linda I.; Guittard, Mark P.; and Neumann, Stephen M., 5,187,146, Cl. 503-227.000.
Nevels, Leonardus M. M. Method for purifying flue-gasses. 5,186,916, Cl. 423-210.000.
New SD, Inc.: *See*—
Egley, Bert D.; Newell, G. Richard; and Hanson, Richard A., 5,186,053, Cl. 73-497.000.
Newell, G. Richard: *See*—
Egley, Bert D.; Newell, G. Richard; and Hanson, Richard A., 5,186,053, Cl. 73-497.000.
Newkirk, Marc S.; Urquhart, Andrew W.; Zwicker, Harry R.; and Lesher, H. Daniel, to Lanxide Technology Company, LP. Composite ceramic articles. 5,187,130, Cl. 501-97.000.
Newman, Alan C., to Bridport Aviation Products Limited. Portable decoy device. 5,186,628, Cl. 434-11.000.
Newman, Karel Z., Jr.: *See*—
Andrews, William H.; Brothers, Virginia M.; Files, James G.; Kuhn, Irene; McCaman, Michael T.; Sias, Stacey R.; Paul, Leland S.; Gore, Thomas C.; Newman, Karel Z., Jr.; and Tedesco, John L., 5,187,080, Cl. 435-69.300.
Newport News Shipbuilding and Dry Dock Company: *See*—
Stallard, Clinton W., III, 5,186,117, Cl. 114-330.000.
Newton, Cloyce: *See*—
Knepler, John T.; Newton, Cloyce; and Stover, Kenneth W., 5,186,399, Cl. 241-34.000.
Ng, Hon-Kie; and Kilibarda-Dalafave, Snezana, to Florida State University. Method for producing freestanding hich Tc superconducting thin films. 5,187,147, Cl. 505-1.000.

Ng, Rober: *See*—
Qing, Cai; Man, Ho Hak; Ming, Liu; and Guang, Yi X., 5,186,099, Cl. 100-35.000.
NGK Insulators, Ltd.: *See*—
Matsuura, Masami; and Okajima, Hisakazu, 5,187,762, Cl. 385-84.000.
NGK Spark Plug Co., Ltd.: *See*—
Aoyama, Toshihiko; Shiomi, Haruhisa; and Ujita, Yasuhiro, 5,186,809, Cl. 204-421.000.
Taniguchi, Masato; and Matsuura, Haruyoshi, 5,185,923, Cl. 29-888.030.
Ngoc, Guy P.; and Huynh, Tuong L., to Doris Engineering. Gravity base structure of an offshore platform resisting to icebergs. 5,186,581, Cl. 405-217.000.
Nice, Edouard C.: *See*—
Gearing, David P.; Gough, Nicholas M.; Hilton, Douglas J.; King, Julie A.; Metcalf, Donald; Nice, Edouard C.; Nicola, Nicos A.; Simpson, Richard J.; and Willson, Tracy A., 5,187,077, Cl. 435-69.100.
Nichols, Donald H.: *See*—
Jensen, Richard E.; Nichols, Donald H.; and Hemphill, D. Gary, 5,186,900, Cl. 422-104.000.
Nickell, David G.: *See*—
Jaen, Juan C.; Nickell, David G.; Reynolds, Donna M.; Smith, Sarah J.; Wise, Lawrence D.; and Wustrow, David J., 5,187,280, Cl. 546-255.000.
Nickens, Dan A.: *See*—
Gold, Jeffrey W.; and Nickens, Dan A., 5,186,219, Cl. 141-51.000.
Nicola, Nicos A.: *See*—
Gearing, David P.; Gough, Nicholas M.; Hilton, Douglas J.; King, Julie A.; Metcalf, Donald; Nice, Edouard C.; Nicola, Nicos A.; Simpson, Richard J.; and Willson, Tracy A., 5,187,077, Cl. 435-69.100.
Nieczyporowicz, Alex, to Earl's Supply Co. Apparatus and method for forming external raised beads on hollow tubing. 5,186,033, Cl. 72-75.000.
Nielsen, Peter A.; and Henthorn, Paul F., to United States of America, Navy. Universal protective shield for the foot. 5,185,945, Cl. 36-77.00R.
Nielsen, Wyn Y.; Carlin, Steven C.; and Kaiser, Dennis A., to Solatrol, Inc. Machine interface system with hierarchal menus allowing user sequencing and selection of menu items by actuation of three switches. 5,187,797, Cl. 395-800.000.
Niespodziany, David A.; Olson, David L.; Schebel, Ronald W.; and Wentland, Julie A., to Allied-Signal Inc. Wheel and drive key assembly. 5,186,521, Cl. 301-6.910.
Nifco, Inc.: *See*—
Kimura, Shigeru; Takahashi, Atsushi; Shibao, Masaharu; and Tomioka, Kazuyuki, 5,186,200, Cl. 137-15.000.
Nigo, Toshiro, to Kabushiki Kaisha Toshiba. Defrosting control method and apparatus for air conditioner. 5,186,016, Cl. 62-150.000.
Nigon, Christopher S.: *See*—
Cullen, John S.; Incorvia, Samuel A.; Nigon, Christopher S.; and Boczkowski, Frederick A., 5,186,775, Cl. 156-69.000.
Nihon Musen Kabushiki Kaisha: *See*—
Yamashita, Kazuo; Takeuchi, Yoshihiko; and Watanabe, Masahiro, 5,187,458, Cl. 333-197.000.
Niina, Tatsuhiko; Ohta, Kiyoshi; Nakata, Toshitake; Matsushita, Yasuhiko; Uetani, Takahiro; and Fujikawa, Yoshiharu, to Sanyo Electric Co., Ltd. Light emitting diode device and method for producing same. 5,187,547, Cl. 257-77.000.
Nikolic, Ognjen; Kralj-Baretic, Jadranka; and Koscina-Korunic, Smiljana, to INA Rafinerija nafte rijeka n.sol.o, OOUR proizvodnja goriva i aromata sa.sub.o. druge. Method for biological purification of wastewater with no excess sludge. 5,186,837, Cl. 210-614.000.
Nikon Corporation: *See*—
Endo, Tatsuo; and Mizuno, Mitsuyoshi, 5,187,607, Cl. 359-266.000.
Imanari, Hitoshi; and Yoshibe, Koshi, 5,187,513, Cl. 354-195.100.
Nilson, William A. E., III: *See*—
Braun, David A.; Nilson, William A. E., III; Nelson, Terence J.; and Smoot, Lanny S., 5,187,571, Cl. 358-85.000.
NIM Incorporated: *See*—
Chance, Britton; and Weng, Jian, 5,187,672, Cl. 364-550.000.
Nippon Chemical Industrial Co., Ltd.: *See*—
Sonobe, Kozo; Fukuzawa, Takashi; Takeuchi, Kohsuke; Tabata, Tatushi; Fukuoka, Hiroshi; Hisamatsu, Kunio; and Katamura, Makoto, 5,187,126, Cl. 501-65.000.
Nippon CMK Corp.: *See*—
Otani, Yasuaki; Takishima, Toichi; and Sakata, Yasuhiko, 5,186,811, Cl. 205-125.000.
Nippon Kayaku Kabushiki Kaisha: *See*—
Yoshida, Nobuo; Nishida, Kenziro; and Inoue, Noboru, 5,186,491, Cl. 280-741.000.
Nippon Mining Co., Ltd.: *See*—
Maruyama, Fumio; Aizawa, Shiro; and Fujiyoshi, Kazuo, 5,186,816, Cl. 208-135.000.
Nippon Moktron Limited: *See*—
Abe, Masatoshi; Yamamoto, Yuichi; and Naraki, Akihiro, 5,187,222, Cl. 524-492.000.
Nippon Oil Co., Ltd.: *See*—
Ishida, Noboru; and Takashima, Hiroyuki, 5,186,852, Cl. 252-50.000.
Uemura, Seiichi; Souda, Yoshio; Kato, Osamu; Kouno, Takefumi; and Kihara, Tsutomu, 5,186,873, Cl. 264-29.500.
Nippon Oil and Fats Company, Ltd.: *See*—
Yamamoto, Toshio; Matsukura, Yoshiaki; Ohe, Osamu; Ogawa, Hisao; Ishidoya, Masahiro; and Matsubara, Yoshiro, 5,187,229, Cl. 525-123.000.
Nippon Paint Co., Ltd.: *See*—
Matsumura, Akira; Ohata, Masashi; and Ishikawa, Katsukiyo, 5,186,801, Cl. 204-181.100.
Sudo, Nobuhisa, 5,187,199, Cl. 523-523.000.
Tsuboniwa, Noriyuki; Yamanaka, Eiji; and Urano, Satoshi, 5,187,306, Cl. 560-157.000.
Nippon Precision Circuits Ltd.: *See*—
Aoyagi, Fumitaka; and Hasegawa, Eiichi, 5,187,453, Cl. 331-116.0FE.
Nippon Shokubai Co., Ltd.: *See*—
Terui, Sadao; and Yokota, Yoshiyuki, 5,187,137, Cl. 502-241.000.
Nippon Steel Corporation: *See*—
Kubota, Takeshi; and Nakayama, Tadashi, 5,186,763, Cl. 148-111.000.
Ushigami, Yoshiyuki; Nakayama, Tadashi; and Takahashi, Nobuyuki, 5,186,762, Cl. 148-111.000.
Nippon Telegraph and Telephone Corporation: *See*—
Haneda, Yoichi; Makino, Shoji; and Kaneda, Yutaka, 5,187,692, Cl. 367-135.000.
Kosemura, Katsura; and Yamamoto, Kazuyuki, 5,187,574, Cl. 358-108.000.
Sugiura, Hideo; Yamada, Takeshi; and Iga, Ryuzo, 5,186,750, Cl. 118-50.100.
Nippon Thompson Co., Ltd.: *See*—
Tsuji, Takumi, 5,186,394, Cl. 239-587.400.
Nippon Zeon Co., Ltd.: *See*—
Takahashi, Nobukazu; Kohara, Teiji; and Natsuume, Tadao, 5,187,012, Cl. 428-402.000.
Tera, Isao; Kato, Kohji; Yamamoto, Makoto; Hashimoto, Kazuto; and Yasumura, Hitoshi, 5,187,227, Cl. 525-65.000.
Nippondenso Co., Ltd.: *See*—
Isobe, Yoshihiko; and Iida, Makio, 5,187,559, Cl. 257-538.000.
Kondo, Akira, 5,187,382, Cl. 307-10.100.
Sakakibara, Koji, 5,186,145, Cl. 123-425.000.
Nishi, Masahiro, to Kyoritsu Electric Corporation. Apparatus for making dry sheet-like sample of solid particles from a suspension. 5,186,792, Cl. 162-263.000.
Nishida, Kenziro: *See*—
Yoshida, Nobuo; Nishida, Kenziro; and Inoue, Noboru, 5,186,491, Cl. 280-741.000.
Nishida, Masaaki; Kato, Naoji; and Hayakawa, Yochi, to Aisin AW Co., Ltd. Automatic transmission. 5,186,693, Cl. 475-148.000.
Nishida, Reiziro; and Tominaga, Akira, to Kansai Paint Co., Ltd. Resin composition for cationically electrodepositable paint containing as crosslinking agents the reaction products of hydroxy functional alicyclic epoxy compounds and polyisocyanates. 5,187,198, Cl. 523-404.000.
Nishijima, Tsunemasa, to Hitachi, Ltd. Gas turbine system. 5,185,997, Cl. 60-39.070.
Nishikawa, Motoaki: *See*—
Oohata, Nobutaka; Nishikawa, Motoaki; Kiyoto, Sumio; Takase, Shigehiro; Hemmi, Keiji; Murai, Hidetsugu; and Okuhara, Masakuni, 5,187,195, Cl. 514-510.000.
Nishikawa, Tomoyuki; and Kita, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Electrophotographic image forming apparatus having continuous from skew prevention. 5,187,528, Cl. 355-290.000.
Nishiki, Masayuki; and Endo, Yukio, to Kabushiki Kaisha Toshiba. X-ray fluoroscopic apparatus using a solid-state imaging device. 5,187,584, Cl. 358-213.180.
Nishimori, Miki; and Seki, Teruo, to Fujitsu Limited. Integrated semiconductor circuit with improved boost operation speed. 5,187,397, Cl. 307-578.000.
Nishimori, Yukari: *See*—
Asanuma, Tadashi; Shiomura, Tetsunosuke; Nishimori, Yukari; and Uchikawa, Nobutaka, 5,187,250, Cl. 526-348.600.
Nishimoto, Hiroaki: *See*—
Mishima, Takayuki; Okuda, Yasuhiro; and Nishimoto, Hiroaki, 5,187,770, Cl. 385-145.000.
Nishimura, Ryutaro; Yamaji, Michio; Maeda, Hirokatsu; Ikeda, Nobukazu; and Yamamoto, Kenji, to Kiyohara, Masako. Fluid flow controller. 5,186,434, Cl. 251-331.000.
Nishiwaki, Akira; and Morohoshi, Yasuo, to Konica Corporation. Method for generation and collection of ultra fine particles without scatter. 5,186,872, Cl. 264-5.000.
Nishizawa, Muneo, to Takata Corporation. Trigger for spring-type pretensioner. 5,186,063, Cl. 74-2.000.
Nishizawa, Takeshi; and Ooba, Kazuhiko, to Furukawa Electric Co., Ltd. Heat transmission tube. 5,186,252, Cl. 165-181.000.
Nissan Motor Co., Ltd.: *See*—
Futami, Toru; Hirai, Kazuo; and Tezuka, Shigeki, 5,187,665, Cl. 364-424.050.
Hori, Masayuki, 5,186,533, Cl. 362-80.100.
Kadomukai, Yuzo; Yamakado, Makoto; Maeda, Yuji; Nakamura, Kenichi; Fukushima, Masao; and Murakami, Kei, 5,186,136, Cl. 123-192.100.
Mori, Kazunori, 5,186,273, Cl. 180-140.000.
Shimose, Yoshifumi, 5,186,494, Cl. 280-806.000.
Nissei Jushi Kogyo Kabushiki Kaisha: *See*—
Miyahara, Masaaki; and Suganuma, Masashi, 5,186,954, Cl. 425-130.000.

VOL
1147
ISS
3
FE
16
1993
UMI

Nisshin Flour Milling Co., Ltd.: *See*—
Kikuchi, Haruhiko; Satoh, Hiroaki; Yahata, Nobuhiro; Hagihara, Koichiro; Hayakawa, Toru; Mino, Setsuko; and Yanai, Makoto, 5,187,166, Cl. 514-249.000.
Nissin Kogyo Kabushiki Kaisha: *See*—
Sato, Makoto; Inagaki, Hiromi; Saito, Wataru; Sakurai, Kazuya; Hagiwara, Koichi; and Horiuchi, Makoto, 5,186,525, Cl. 303-113.400.
Nitto Kobki Co., Ltd.: *See*—
Kishi, Katsunobu, 5,186,603, Cl. 415-80.000.
Nitz, Larry T.; and Rees, Susan L., to Saturn Corporation. Control method for the engagement of a torque converter clutch. 5,186,294, Cl. 192-3.300.
Nitzschke, Rudiger; and Schetter, Martin, to Zahnradfabrik Friedrichshafen AG. Gear-change device for the transmission of a motor vehicle. 5,186,070, Cl. 74-477.000.
NKK Corporation: *See*—
Shiohara, Yukimitsu; and Abe, Masaki, 5,186,812, Cl. 205-141.000.
Noda, Etsuo: *See*—
Inoue, Kazuo; Kubota, Osamu; Komura, Takashi; and Noda, Etsuo, 5,186,609, Cl. 416-129.000.
Noda, Kazunori: *See*—
Kamimura, Kenji; Tsuzuki, Sadachika; and Noda, Kazunori, 5,187,662, Cl. 364-424.020.
Kamimura, Kenji; Tsuzuki, Sadachika; and Noda, Kazunori, 5,187,663, Cl. 364-424.020.
Noda, Minoru, to Mitsubishi Denki Kabushiki Kaisha. Field effect transistor and manufacturing method therefor. 5,187,379, Cl. 257-192.000.
Noda, Tomohiko: *See*—
Sasaki, Takashi; Ishigaki, Isao; Izuchi, Syuichi; and Noda, Tomohiko, 5,187,032, Cl. 429-192.000.
Nogami, Takeshi; and Iwasaki, Hiroshi, to Kabushiki Kaisha Toshiba. Method of manufacturing schottky barrier gate FET. 5,187,111, Cl. 437-41.000.
Noguchi, Kunio: *See*—
Miyashita, Yukio; Mifune, Hiroshi; Noguchi, Kunio; and Fukuchi, Hironao, 5,186,155, Cl. 123-685.000.
Noguchi, Nobuhisa: *See*—
Katoh, Hideaki; Noguchi, Nobuhisa; Kikuchi, Yutaka; Kaneko, Isamu; and Hoshi, Teruo, 5,186,537, Cl. 362-347.000.
Nokia - Maillefer Holding SA: *See*—
Magnollay, Gilbert; Seigneur, Remy; Budry, Jacques; Clement, Jean-Claude; Jaccottet, Michel; Jaggi, Pierre-Yves; Jaun, Hans; and De Boer, Philip, 5,186,957, Cl. 425-192.00R.
Nolte, Paul A., to Ingersoll-Dresser Pump Company. Fitting for emptying a container. 5,186,365, Cl. 222-153.000.
Nomoto, Masai; Sakurai, Koichi; Suzuki, Takashi; Fukui, Kiyoshi; and Okamoto, Atsuki, to Sumitomo Metal Industries, Ltd.; and Togo Seisakusyo Corporation. Flat spring hose clamp and manufacture of same. 5,186,768, Cl. 148-580.000.
Nomura, Noboru: *See*—
Hashimoto, Kazuhiko; Yamashita, Kazuhiro; and Nomura, Noboru, 5,186,788, Cl. 156-643.000.
Nomura, Toshio: *See*—
Isobe, Kazutaka; and Nomura, Toshio, 5,186,739, Cl. 75-238.000.
Noon, Laurence R.: *See*—
Hayes, Stewart J.; and Noon, Laurence R., 5,187,767, Cl. 385-137.000.
Norand Corporation: *See*—
Chadima, George E., Jr.; and Laser, Vadim, 5,187,356, Cl. 235-472.000.
Chadima, George F., Jr; and Laser, Vadim, 5,187,355, Cl. 235-472.000.
Sherman, Richard A.; Jaeger, Robert B.; and Davis, Patrick H., 5,186,558, Cl. 400-692.000.
Norden, Alexander R., to Connectron, Inc. Lockable electrical apparatus. 5,186,637, Cl. 439-133.000.
Nordman, Eric S.: *See*—
Bridgham, John; Geiser, Timothy G.; Hunkapiller, Michael W.; Kent, Stephen B. H.; Marriott, Mark P.; Ramstad, Paul O.; and Nordman, Eric S., 5,186,898, Cl. 422-102.000.
Nordmann, Jens; and Hacker, Heinz, to Siemens Aktiengesellschaft. Cross-linked epoxy resins with non-linear optical properties. 5,187,237, Cl. 525-326.200.
Norman, John A. T., to Air Products and Chemicals, Inc. Volatile precursors for copper CVD. 5,187,300, Cl. 556-12.000.
North American Philips Corporation: *See*—
Fellows, Mark W.; Wong, John M.; Toy, Edmond; Erhardt, Robert A.; and Thomsen, James A., 5,187,414, Cl. 315-307.000.
North Carolina Center for Scientific Research, Inc.: *See*—
Cornwell, James H., 5,186,903, Cl. 422-122.000.
North Carolina State University: *See*—
Shih, Jason C. H.; and Lee, Chung-Ginn, 5,186,961, Cl. 426-2.000.
Northeast Robotics, Inc.: *See*—
White, Timothy P.; and LeBlanc, Steve M., 5,187,611, Cl. 359-599.000.
Northern Telecom Limited: *See*—
Chu, Matthew C. H.; Ly, Chi-Vien; and Coulson, Gordon W., 5,187,707, Cl. 370-79.000.
Gumb, Beverley W.; Kuhfus, Gerd; and Schmidt, James N., 5,187,743, Cl. 379-436.000.
Hayes, Stewart J.; and Noon, Laurence R., 5,187,767, Cl. 385-137.000.
Kwa, Peter T. H., 5,187,713, Cl. 372-26.000.
Phillips, Richard S., 5,187,429, Cl. 323-314.000.
Nose, Hiroyasu: *See*—
Miyazaki, Toshihiko; Nose, Hiroyasu; Yagi, Takayuki; Kawase, Toshimitsu; and Shinjo, Katsuhiko, 5,187,367, Cl. 250-306.000.
Noshay, Allen: *See*—
Baker, Edgar C.; Stakem, Francis G.; Noshay, Allen; Lee, Kiu H.; and Marcinkowsky, Arthur E., 5,187,246, Cl. 526-88.000.
Baker, Edgar C.; Moorhouse, John H.; and Noshay, Allen, 5,187,247, Cl. 526-133.000.
Notake, Yuichi; Asai, Kenji; and Ogawa, Tomihisa, to Kabushiki Kaisha Toshiba. Head position determination control apparatus of data recording/reproducing apparatus in a data surface servo system. 5,187,620, Cl. 360-77.040.
Nouchi, Norimoto: *See*—
Maezawa, Yoshiharu; and Nouchi, Norimoto, 5,186,977, Cl. 427-132.000.
Nouguez, Bruno; Bigot, Yves; Groux, Jacky; and Derrien, Jean-Claude, to Societe Nationale Des Poudres et Explosifs. Low vulnerability component of explosive ammunition and process for initiating a charge of low-sensitivity composite explosive. 5,187,319, Cl. 102-202.100.
Novick, Michael A.: *See*—
Palmatier, Roland T.; Novick, Michael A.; and Belanger, Roger R., 5,186,444, Cl. 270-52.500.
Novo Nordisk A/S: *See*—
Garzaran, Jose P., 5,187,177, Cl. 514-282.000.
Hansen, John B., 5,187,164, Cl. 514-299.000.
Nower, Daniel L.: *See*—
Piety, Kenneth R.; and Nower, Daniel L., 5,185,937, Cl. 33-645.000.
Noyan, Ismail C.: *See*—
Horton, Raymond R.; Noyan, Ismail C.; Palmer, Michael J.; and Ritter, Mark B., 5,186,632, Cl. 439-67.000.
Noyes, Andrew L.: *See*—
Lagace, Maurice P.; Boucher, Stephen G.; Cullen, Robert M.; Noyes, Andrew L.; Willette, John; and Russell, Cynthia M., 5,186,050, Cl. 73-187.000.
Nozaki, Mitsuru: *See*—
Gaku, Morio; and Nozaki, Mitsuru, 5,186,880, Cl. 264-236.000.
Nozawa, Akiyoshi: *See*—
Kato, Hiromasa; Fujimoto, Yuka; Nozawa, Akiyoshi; and Kuwata, Shinichi, 5,187,101, Cl. 436-42.000.
Nozawa, Masafumi: *See*—
Yamamoto, Akira; Kitajima, Hiroyuki; Kurano, Akira; Miyazaki, Michio; Nozawa, Masafumi; and Takeuchi, Takikazu, 5,187,778, Cl. 395-250.000.
NSK-Warner K.K.: *See*—
Kinoshita, Yoshio; Koshino, Shigeaki; and Sagae, Atsushi, 5,186,296, Cl. 192-41.00R.
NTN Corporation: *See*—
Yamamoto, Ken; Nakagawa, Kazufumi; and Hori, Isao, 5,186,689, Cl. 474-112.000.
Yamamoto, Ken, 5,186,690, Cl. 474-135.000.
Nutt, Wendell G.: *See*—
Bleich, Larry L.; Nutt, Wendell G.; and Zerbs, Stephen T., 5,187,329, Cl. 174-113.00R.
nView Corporation: *See*—
Vogeley, James H.; and Vogeley, Arthur W., 5,187,510, Cl. 353-122.000.
Nyilas, Charles P.: *See*—
Zerinvary, Miklos C.; and Nyilas, Charles P., 5,186,886, Cl. 266-237.000.
Nykolak, Gerald: *See*—
DiGiovanni, David J.; Giles, Clinton R.; Kramer, Stuart A.; Nykolak, Gerald; Presby, Herman M.; and Simpson, Jay R., 5,187,759, Cl. 385-27.000.
Nynex Corporation: *See*—
Vancraeynest, Jan, 5,186,471, Cl. 273-439.000.
Nyyssonen, Diana, to International Business Machines Corporation. Microprobe-based CD measurement tool. 5,186,041, Cl. 73-105.000.
O. M. Scott & Sons Company, The: *See*—
Thompson, Harold E.; and Kelch, Richard A., 5,186,732, Cl. 71-64.110.
Oakley, Robert V.: *See*—
Bliem, Rudolf F.; Oakley, Robert V.; and Taiariol, Van, 5,187,095, Cl. 435-285.000.
O'Bara, Joseph T.: *See*—
Kaul, Bal K.; O'Bara, Joseph T.; Savage, David W.; Dennis, J. Patrick; Bellows,Richard J.; and Kantner, Edward, 5,186,819, Cl. 208-310.00Z.
Obara, Takumi: *See*—
Shuto, Satoshi; Obara, Takumi; Itoh, Hiromichi; Koshio, Takehiro; Fujiwara, Tatsuro; and Yaso, Masao, 5,187,174, Cl. 514-261.000.
Obata, Fumio; Tanaka, Toshiaki; and Nagayoshi, Hideaki, to Hitachi Metals, Ltd. Method of producing spheroidal graphite cast iron article. 5,186,233, Cl. 164-58.100.
Obermeier, Hans R.: *See*—
Machule, Lothar; and Obermeier, Hans R., 5,187,340, Cl. 219-10.530.
Obinata, Kenichi: *See*—
Tatewaki, Masayuki; Kato, Hiromasa; Obinata, Kenichi; and Aoki, Masahiro, 5,186,994, Cl. 428-64.000.
Ocean Resources Engineering, Inc.: *See*—
Tzong, Tsair-Jyh; Wu, Frank H. Y.; and Tsai, Chan-Feng, 5,186,822, Cl. 210-122.000.
Oda, Akihiro: *See*—
Ogiwara, Hiroshi; Miyata, Tatuya; and Oda, Akihiro, 5,186,970, Cl. 426-512.000.

O'Donnell, Matthew; and Thomas, Lewis J., III, to General Electric Company. Method and apparatus for applying synthetic aperture focusing techniques to a catheter based system for high frequency ultrasound imaging of small vessels. 5,186,177, Cl. 128-662.060.
Odorisio, Paul A.: *See*—
Seltzer, Raymond; Odorisio, Paul A.; Shum, Sai P.; and Pastor, Stephen D., 5,187,213, Cl. 524-120.000.
Oehme, William J.; and Amman, Donald. Underwater signaling device and method. 5,187,691, Cl. 367-134.000.
Oestreich, Curtis J.; Cannizzaro, Joseph S.; and Wargo, Joseph S., to Estee Lauder, Inc. Air tight container. 5,186,318, Cl. 206-37.000.
Oetiker, Hans, to Hans Oetiker AG Maschinen- und Apparatefabrik. Method for connecting two parts along abutting edges and connection obtained thereby. 5,185,908, Cl. 24-20.00R.
Ogawa, Hisao: *See*—
Yamamoto, Toshio; Matsukura, Yoshiaki; Ohe, Osamu; Ogawa, Hisao; Ishidoya, Masahiro; and Matsubara, Yoshiro, 5,187,229, Cl. 525-123.000.
Ogawa, Kazufumi, to Matsushita Electric Industrial Co., Ltd. Liquid crystal alignment film and method of manufacturing the same. 5,186,986, Cl. 428-1.000.
Ogawa, Kazufumi; Soga, Mamoru; and Mino, Norihisa, to Matsushita Electric Industrial Co., Ltd. Capacitor and method of manufacturing the same. 5,187,639, Cl. 361-323.000.
Ogawa, Kiyoshi: *See*—
Inoue, Taro; Umeno, Hidenori; Ohtsuki, Toru; and Ogawa, Kiyoshi, 5,187,802, Cl. 395-800.000.
Ogawa, Tomihisa: *See*—
Notake, Yuichi; Asai, Kenji; and Ogawa, Tomihisa, 5,187,620, Cl. 360-77.040.
Ogiwara, Hiroshi; Miyata, Tatuya; and Oda, Akihiro, to Yugenkaisha Matsubei. Food forming method. 5,186,970, Cl. 426-512.000.
O'Grady, Kenneth J.: *See*—
Swaim, Joe T.; Heckman, Donald C.; O'Grady, Kenneth J.; and Eastep, Guido M., 5,187,740, Cl. 379-209.000.
O'Hair, Kelly T., to Supercomputer Systems Limited Partnership. Graphical display of compiler-generated intermediate database representation. 5,187,789, Cl. 395-700.000.
Ohashi, Masahisa; Sawada, Shusaku; Sogame, Motomu; Oomasa, Yoshiaki; and Kaneto, Kunikazu, to Hitachi, Ltd. Reactor core of fast breeder reactor, components of same, and regulating method of coolant distribution of same. 5,186,890, Cl. 376-434.000.
Ohata, Masashi: *See*—
Matsumura, Akira; Ohata, Masashi; and Ishikawa, Katsukiyo, 5,186,801, Cl. 204-181.100.
Ohba, Osamu: *See*—
Nariishi, Masaaki; Yamakawa, Noboru; Ohba, Osamu; and Seki, Naoyasu, 5,187,556, Cl. 257-206.000.
Ohe, Osamu: *See*—
Yamamoto, Toshio; Matsukura, Yoshiaki; Ohe, Osamu; Ogawa, Hisao; Ishidoya, Masahiro; and Matsubara, Yoshiro, 5,187,229, Cl. 525-123.000.
Ohi, Mitsuru: *See*—
Yoshinari, Tomohiro; Usui, Kazushi; Yamamoto, Yasuo; and Ohi, Mitsuru, 5,187,133, Cl. 502-66.000.
Ohi Seisakusho Co., Ltd.: *See*—
Takaishi, Tatsuyuki; Miyagawa, Masazumi; and Nakamura, Hitoshi, 5,186,504, Cl. 292-216.000.
Ohlendieck, Kay: *See*—
Campbell, Kevin P.; Ervasti, James M.; Ohlendieck, Kay; Gaver, Mitchell G.; and Kahl, Steven D., 5,187,063, Cl. 435-7.210.
Ohmaru, Kenji: *See*—
Ohta, Masahiko; Kaneko, Kazuo; Iyama, Hiroyuki; Kado, Seizi; Hirao, Mitisuru; Ishizaka, Hironori; Ohmaru, Kenji; and Murata, Takao, 5,187,490, Cl. 343-770.000.
Ohmi, Ikuhiro; Yanagida, Yoshiaki; Matsuyama, Soichi; and Ikuta, Yoshihisa, to Mita Industrial Co., Ltd. Sheet feeder unit. 5,186,449, Cl. 271-10.000.
Ohmori, Masashi; and Midou, Youichi, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing semiconductor devices. 5,187,118, Cl. 437-180.000.
Ohnaka, Noriyuki: *See*—
Sakai, Masanori; Ohsumi, Katsumi; Ohnaka, Noriyuki; Kikuchi, Eiji; Mabuchi, Katsumi; and Takahashi, Takuya, 5,186,798, Cl. 204-153.100.
Ohnishi, Hiroshi; and Hoshinouchi, Susumu, to Mitsubishi Denki Kabushiki Kaisha. Mixture thin film forming apparatus. 5,186,120, Cl. 118-667.000.
Ohno, Aritaka; Motohara, Shinji; and Hotate, Kazuo, to Japan Aviation Electronics Industry Limited. Fiber optic gyro. 5,187,757, Cl. 385-11.000.
Ohno, Yasushi: *See*—
Shimada, Naohiro; Ohno, Yasushi; and Saito, Masaaki, 5,187,704, Cl. 370-13.000.
Ohnuma, Yoshiyuki: *See*—
Goto, Yasuhiro; Yonezawa, Takeyuki; Ohnuma, Yoshiyuki; and Ando, Jen, 5,187,127, Cl. 501-95.000.
Ohsawa, Ichiro; Kikuchi, Yutaka; Kanoto, Masanobu; Sato, Hideki; Endo, Yoshifumi; and Kawaguchi, Hideshi, to Canon Kabushiki Kaisha. Sheet feeding apparatus. 5,186,448, Cl. 271-9.000.
Ohsumi, Katsumi: *See*—
Sakai, Masanori; Ohsumi, Katsumi; Ohnaka, Noriyuki; Kikuchi, Eiji; Mabuchi, Katsumi; and Takahashi, Takuya, 5,186,798, Cl. 204-153.100.
Ohta, Hiroshi; Aono, Masakazu; Kato, Kazuhiko; Hoshino, Kazutomo; Takahara, Hidefusa; Nakayama, Tomonobu; and Sudoh, Eiichi, to Mitsui Kinzoku Kogyo Kabushiki Kaisha; and Rikagaku Kenkyusho. Superconducting magnetic shield. 5,187,327, Cl. 174-35.00R.
Ohta, Kenji: *See*—
Katayama, Hiroyuki; Nakayama, Junichiro; Ohta, Kenji; and Ishikawa, Toshio, 5,187,703, Cl. 369-275.100.
Ohta, Kiyoshi: *See*—
Niina, Tatsuhiko; Ohta, Kiyoshi; Nakata, Toshitake; Matsushita, Yasuhiko; Uetani, Takahiro; and Fujikawa, Yoshiharu, 5,187,547, Cl. 257-77.000.
Ohta, Masahiko; Kaneko, Kazuo; Iyama, Hiroyuki; Kado, Seizi; Hirao, Mitisuru; Ishizaka, Hironori; Ohmaru, Kenji; and Murata, Takao, to Hitachi Chemical Company, Ltd. Stripline patch antenna with slot plate. 5,187,490, Cl. 343-770.000.
Ohtsu, Ikuo; Kataoka, Kinichi; and Sano, Shoichi, to Toyoda Koki Kabushiki Kaisha. Apparatus for loading and unloading a workpiece. 5,186,595, Cl. 414-225.000.
Ohtsuki, Toru: *See*—
Inoue, Taro; Umeno, Hidenori; Ohtsuki, Toru; and Ogawa, Kiyoshi, 5,187,802, Cl. 395-800.000.
Ohuchi, Hideo: *See*—
Mizuno, Koichi; Wakabayashi, Takeshige; Koinuma, Yutaka; Aizawa, Reiji; Kushiyama, Satoshi; Kabayashi, Satoru; Ohuchi, Hideo; Yoshida, Toyonobu; Kubota, Yoshiro; Amano, Takanobu; Komaki, Hisashi; and Hirakawa, Shoji, 5,187,344, Cl. 219-121.500.
Ohuchi, Tomihisa: *See*—
Kunugi, Yoshifumi; Yanadori, Michio; Fukushima, Toshihiko; and Ohuchi, Tomihisa, 5,186,241, Cl. 165-104.120.
Ohya, Masami; Mizoguchi, Junzo; and Onozawa, Takashi, to Toyo Jozo Co., Ltd. Plasma-type glutathione peroxidase gene and application of the same. 5,187,078, Cl. 435-69.100.
Ohyanagi, Shihoko: *See*—
Wagai, Kiyoshi; Sekigawa, Tatsuaki; Ohyanagi, Shihoko; and Shiono, Mitsuji, 5,187,471, Cl. 340-825.440.
Oike, Tadashi, to TLV Co., Ltd. Free float steam trap. 5,186,203, Cl. 137-192.000.
Oishi, Kengo: *See*—
Morita, Kiyoo; and Oishi, Kengo, 5,186,955, Cl. 425-130.000.
Oka, Takeya; Saito, Masao; Miki, Nobuaki; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Otsubo, Hideaki; Hojo, Yasuo; and Asahara, Norimi, to Aisin AW Co., Ltd.; and Toyota Jidosha Kabushiki Kaisha. Linear solenoid valve apparatus. 5,186,204, Cl. 137-238.000.
Okada, Hisashi: *See*—
Katoh, Kazunobu; Okamura, Hisashi; Okada, Hisashi; Inoue, Nobuaki; Takahashi, Toshiro; Yagihara, Mario; and Yamaguchi, Tetsuo, 5,187,042, Cl. 430-264.000.
Okada, Minoru; Horie, Toshiaki; Okuyama, Hirohisa; Kasai, Syuichi; and Iwasa, Akira, to SS Pharmaceutical Co., Ltd. Compressed-molded preparations. 5,186,943, Cl. 424-490.000.
Okada, Mizuo: *See*—
Sakunaga, Kenichi; and Okada, Mizuo, 5,186,780, Cl. 156-167.000.
Okafuji, Yukitaka; and Waki, Tatsuo, to Bridgestone Corporation. Cylindrical member removal and transfer method. 5,186,778, Cl. 156-126.000.
Okajima, Hisakazu: *See*—
Matsuura, Masami; and Okajima, Hisakazu, 5,187,762, Cl. 385-84.000.
Okajima, Shinpei, to Shimano, Inc. Shoe having an upper formed with an inward projection in a foot arch region. 5,185,944, Cl. 36-45.000.
Okamoto, Atsuki: *See*—
Nomoto, Masai; Sakurai, Koichi; Suzuki, Takashi; Fukui, Kiyoshi; and Okamoto, Atsuki, 5,186,768, Cl. 148-580.000.
Okamoto, Shinichi: *See*—
Fujita, Masanori; Okamoto, Shinichi; and Ono, Hirokazu, 5,187,402, Cl. 310-322.000.
Okamoto, Tosaku: *See*—
Watanabe, Kazuo; and Okamoto, Tosaku, 5,187,143, Cl. 503-212.000.
Okamura, Hisashi: *See*—
Katoh, Kazunobu; Okamura, Hisashi; Okada, Hisashi; Inoue, Nobuaki; Takahashi, Toshiro; Yagihara, Morio; and Yamaguchi, Tetsuo, 5,187,042, Cl. 430-264.000.
Okaniwa, Kiyoshi: *See*—
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,187,148, Cl. 505-1.000.
Okano, Akira: *See*—
Kishimoto, Tadamitsu; Hirano, Toshio; Akiyama, Yukio; Okano, Akira; Matsui, Hiroshi; and Takahara, Yoshiyuki, 5,186,931, Cl. 424-85.200.
Okawa, Masayuki: *See*—
Nakayama, Masaaki; and Okawa, Masayuki, 5,186,583, Cl. 407-39.000.
Okayama, Masao: *See*—
Fukudome, Yoshio; Hamada, Yasunori; Okayama, Masao; Kako, Yutaka; Saito, Tetsuo; and Utsumi, Itsunori, 5,186,334, Cl. 209-534.000.
Okazaki, Yoji; and Hyuga, Hiroaki, to Fuji Photo Film Co., Ltd. Laser-diode-pumped solid-state laser. 5,187,714, Cl. 372-36.000.
Oki Electric Industry Co., Ltd.: *See*—
Mizutani, Minoru; and Isaka, Norihisa, 5,186,554, Cl. 400-247.000.
Shinozawa, Masahiko, 5,187,108, Cl. 437-31.000.
Yoneyama, Hiroto; Yashiki, Atushi; and Kodama, Toshiyuki, 5,187,810, Cl. 455-34.100.

VOL 1147 ISS 3 FE 16 1993 UMI

Okita, Junichi: *See*—
Kameda, Osamu; Akutagawa, Hitoshi; Hasetoh, Sakumi; Okita, Junichi; and Hirose, Ichiro, 5,186,078, Cl. 74-606.00R.

Oklahoma Steel & Wire Co., Inc.: *See*—
Moore, Beverly L., 5,186,751, Cl. 118-109.000.

Okorodudu, Abraham O. M.; Cardis, Angeline B.; and Kremer, Ross A., to Mobil Oil Corporation. Multifunctional ashless dispersants derived from Mannich reaction of alkyl- or alkenylsuccinimides, dimercaptothiadiazoles, and carbonyl compounds. 5,186,850, Cl. 252-47.500.

Oku, Masahiro; Iwamura, Kazumitsu; and Kakumu, Kiichiro, to Sumitomo Rubber Industries, Ltd. Pneumatic radial tire for passenger cars with specified spacing of tread and band joints. 5,186,773, Cl. 152-531.000.

Oku, Tomoki: *See*—
Kohno, Yasutaka; and Oku, Tomoki, 5,187,112, Cl. 437-41.000.

Okuda, Shigeru: *See*—
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,187,148, Cl. 505-1.000.

Okuda, Yasuhiro: *See*—
Mishima, Takayuki; Okuda, Yasuhiro; and Nishimoto, Hiroaki, 5,187,770, Cl. 385-145.000.

Okude, Hiroaki; Toyonaga, Masahiko; and Akino, Toshiro, to Matsushita Electric Industrial Co., Ltd. Placement optimization system aided by CAD. 5,187,668, Cl. 364-468.000.

Okuhara, Masakuni: *See*—
Oohata, Nobutaka; Nishikawa, Motoaki; Kiyoto, Sumio; Takase, Shigehiro; Hemmi, Keiji; Murai, Hidetsugu; and Okuhara, Masakuni, 5,187,195, Cl. 514-510.000.

Okutsu, Hiroyasu, to Kabushiki Kaisha Pilot. Magnetic display device. 5,186,631, Cl. 434-409.000.

Okuyama, Hirohisa: *See*—
Okada, Minoru; Horie, Toshiaki; Okuyama, Hirohisa; Kasai, Syuichi; and Iwasa, Akira, 5,186,943, Cl. 424-490.000.

Oldani, Gaetano. Aircraft or road vehicle transportable operating assembly adapted to be transformed into a field hospital, observation post, transmission center and the like. 5,185,973, Cl. 52-64.000.

Oldendorf, Gunter. Multipart dowel. 5,186,590, Cl. 411-45.000.

Olin Corporation: *See*—
Ford, James M.; Cawlfield, David W.; and Woodard, Kenneth E., Jr., 5,186,804, Cl. 204-251.000.

Olive, Ronald M.: *See*—
Fryc, Oldrich; and Olive, Ronald M., 5,186,311, Cl. 198-626.600.

Oliver, Scottie J.: *See*—
Strock, Charles E.; and Oliver, Scottie J., 5,186,691, Cl. 474-166.000.

Olivero, Michele: *See*—
Forlani, Riccardo; and Olivero, Michele, 5,187,527, Cl. 355-282.000.

Olivetti-Canon Industriale S.p.A.: *See*—
Forlani, Riccardo; and Olivero, Michele, 5,187,527, Cl. 355-282.000.

Olm, Orville: *See*—
Scharf, James E.; and Olm, Orville, 5,186,376, Cl. 225-42.000.

Olson, David L.: *See*—
Niespodziany, David A.; Olson, David L.; Schebel, Ronald W.; and Wentland, Julie A., 5,186,521, Cl. 301-6.910.

Olson, John D.: *See*—
Becker, Martin; Kurn, Nurith; Liu, Yen P.; Patel, Rajesh D.; Houts, Thomas M.; and Olson, John D., 5,187,066, Cl. 435-7.360.

Olson, Steven T.: *See*—
Shore, Joseph D.; Bock, Paul E.; Olson, Steven T.; and Day, Duane E., 5,187,069, Cl. 435-13.000.

Olympus Optical Co., Ltd.: *See*—
Hiyama, Keiichi, 5,187,579, Cl. 358-183.000.
Kitajima, Masaichi, 5,186,194, Cl. 134-154.000.
Mihara, Shinichi, 5,187,359, Cl. 250-208.100.
Miyasaka, Tetsuo, 5,187,517, Cl. 354-412.000.
Nakamura, Kazunari; and Takasugi, Kei, 5,187,572, Cl. 358-98.000.
Sugimoto, Yukihiro; and Kakubari, Toru, 5,187,749, Cl. 382-6.000.

Omura, Ikuo: *See*—
Kawashima, Mitsunobu; and Omura, Ikuo, 5,186,783, Cl. 156-307.300.

Onishi, Makoto: *See*—
Masuoka, Toshio; Hirasa, Okihiko; Onishi, Makoto; and Seita, Yukio, 5,186,835, Cl. 210-500.360.

Ono, Hirokazu: *See*—
Fujita, Masanori; Okamoto, Shinichi; and Ono, Hirokazu, 5,187,402, Cl. 310-322.000.

Ono, Kenichi: *See*—
Matsuoka, Hiroki; and Ono, Kenichi, 5,186,045, Cl. 73-118.200.

Ono, Takeshi; Wada, Satoshi; Kobayashi, Makoto; Yoshida, Takehiro; Takeda, Tomoyuki; Ishida, Yasushi; Yokoyama, Minoru; Tomoda, Akihiro; Yamada, Masakatsu; and Awai, Takashi, to Canon Kabushiki Kaisha. Thermal transfer recording apparatus and method having preheating. 5,187,494, Cl. 346-76.0PH.

Onofusa, Mitsuo; Hashimoto, Nobuyoshi; Tagawa, Kimiteru; and Hagiwara, Michiro, to Mitsui Toatsu Chemicals, Incorporated. Method and apparatus for automatic analysis of fluid composition involving a time-dependent variation thereof. 5,186,895, Cl. 422-67.000.

Onoue, Nobuaki: *See*—
Kikuchi, Shoji; and Onoue, Nobuaki, 5,186,658, Cl. 439-595.000.

Onozawa, Takashi: *See*—
Ohya, Masami; Mizoguchi, Junzo; and Onozawa, Takashi, 5,187,078, Cl. 435-69.100.

Ooba, Kazuhiko: *See*—
Nishizawa, Takeshi; and Ooba, Kazuhiko, 5,186,252, Cl. 165-181.000.

Oohata, Nobutaka; Nishikawa, Motoaki; Kiyoto, Sumio; Takase, Shigehiro; Hemmi, Keiji; Murai, Hidetsugu; and Okuhara, Masakuni, to Fujisawa Pharmaceutical Co., Ltd. Anthraquinone derivatives and preparation thereof. 5,187,195, Cl. 514-510.000.

Oomasa, Yoshiaki: *See*—
Ohashi, Masahisa; Sawada, Shusaku; Sogame, Motomu; Oomasa, Yoshiaki; and Kaneto, Kunikazu, 5,186,890, Cl. 376-434.000.

Oonishi, Toshiaki: *See*—
Takano, Hideaki; Nakata, Jitsuo; and Oonishi, Toshiaki, 5,186,007, Cl. 62-22.000.

Opara, Andreas: *See*—
Schobbe, Hermann; Steinhauser, Gerd; Scheerer, Hans; Opara, Andreas; Mohrmann, Werner; Steinert, Hans-Rudolf; and Konig, Wolfhard, 5,186,440, Cl. 267-220.000.

Opuszenski, Theodore: *See*—
Wokeck, Arthur C.; and Opuszenski, Theodore, 5,186,600, Cl. 414-793.400.

Orbit Medical Systems, Inc.: *See*—
Fritzsche, Robert W.; and Schlager, Kenneth J., 5,187,106, Cl. 436-501.000.

Origin Electric Company, Limited: *See*—
Watanabe, Kiyomi, 5,187,737, Cl. 378-105.000.

Oritsuki, Ryouji: *See*—
Taniguchi, Hideaki; Kunitou, Hirofumi; Oritsuki, Ryouji; and Sasano, Akira, 5,187,604, Cl. 359-88.000.

Orlando, Joseph A., to Health Care Management. Method and device for disposal of medical waste. 5,186,397, Cl. 241-23.000.

OroAmerica, Inc.: *See*—
Dal Monte, Giuseppe A., 5,185,995, Cl. 59-80.000.

Orr, Larry W.; and Kranick, Gordon S., to Paccar, Inc. Vehicle suspension. 5,186,485, Cl. 280-678.000.

Orsolini, Piero: *See*—
Speiser, Peter; Schleuniger, Urs; Orsolini, Piero; and Heimgartner, Frederic, 5,187,150, Cl. 514-2.000.

Ort, Oswald; Willms, Lothar; Bauer, Klaus; Bieringer, Hermann; and Schulz, Arno, to Hoechst Aktiengesellschaft. Heterocyclic N-acylsulfonamides and their use as herbicides or growth regulators. 5,186,736, Cl. 504-225.000.

Ortner, Hanns-Werner: *See*—
Vogler, Friedrich; Ortner, Hanns-Werner; and Mayerhofer, Matthias, 5,187,727, Cl. 378-50.000.

Osaka Gas Company Limited: *See*—
Otagawa, Takaaki; and Madou, Marc J., 5,187,034, Cl. 429-198.000.

Osaki, Seiji: *See*—
Yoshinaga, Shigeo; Ikegami, Tatsuo; and Osaki, Seiji, 5,186,562, Cl. 401-112.000.

Osawa, Keishi, to Canon Kabushiki Kaisha. Developing apparatus for developing electrostatic latent image using two component developer. 5,187,523, Cl. 355-251.000.

Osawa, Takashi; Murakami, Katsuo; Mitsuhashi, Seishiro; Kamano, Yujiro; and Kobayashi, Toshihiko, to Mitsubishi Denki Kabushiki Kaisha. Low-pressure rare gas discharge lamp and method for lighting same. 5,187,415, Cl. 313-326.000.

Osborne, William E., to Marlin Firearms Company, The. Two stage trigger assembly. 5,187,312, Cl. 42-69.010.

Oshima, Takeshi: *See*—
Fukumi, Hiroshi; Sakamoto, Toshiaki; Sugiyama, Mitsuo; Yamaguchi, Takeshi; Oshima, Takeshi; and Iijima, Yasuteru, 5,187,181, Cl. 514-318.000.

Oshima, Toshiaki: *See*—
Matsumoto, Hiroshi; Aoyama, Toshiharu; Saitoh, Mitsuhiko; and Oshima, Toshiaki, 5,186,064, Cl. 74-47.000.

Osterday, Craig A.; Osterfeld, Douglas L.; Baumaster, Thomas R.; Welch, Timothy M.; Trego, Michael P.; and Flory, Donald M., to General Motors Corporation. Pneumatic booster output rod adjustment method. 5,185,915, Cl. 29-525.000.

Osterfeld, Douglas L.: *See*—
Osterday, Craig A.; Osterfeld, Douglas L.; Baumaster, Thomas R.; Welch, Timothy M.; Trego, Michael P.; and Flory, Donald M., 5,185,915, Cl. 29-525.000.

Ostrand, James C.: *See*—
Adasek, Kenneth P.; and Ostrand, James C., 5,186,237, Cl. 165-42.000.

Ostrander, Robert F. Mechanism for operating bi-fold doors. 5,186,230, Cl. 160-206.000.

Ota, Masuo: *See*—
Takahashi, Tokihiro; Sato, Takayuki; Ota, Masuo; and Nagao, Tatsuro, 5,187,734, Cl. 379-79.000.

Ota, Yasushi: *See*—
Tsukada, Masamitsu; Murata, Kiyoshi; Ota, Yasushi; and Watanabe, Yoshihiko, 5,186,989, Cl. 428-34.900.

Otagawa, Takaaki; and Madou, Marc J., to Osaka Gas Company Limited. Permanently doped polyaniline and method thereof. 5,187,034, Cl. 429-198.000.

Otaki, Michitaka: *See*—
Hirai, Hidefumi; Komiyama, Makoto; and Otaki, Michitaka, 5,187,209, Cl. 523-205.000.

Otani, Yasuaki; Takishima, Toichi; and Sakata, Yasuhiko, to Nippon CMK Corp. Method of manufacturing printed wiring boards. 5,186,811, Cl. 205-125.000.

Otis Elevator Company: *See*—
Johnson, Gerald E.; McClement, Arthur; and Rivera, James A., 5,186,302, Cl. 198-335.000.
Rivera, James A., 5,186,301, Cl. 198-333.000.
Salmon, John K., 5,186,283, Cl. 187-20.000.
Zaharia, Vlad, 5,186,300, Cl. 198-322.000.

O'Toole, Terrence R.: *See*—
Buchwalter, Stephen L.; Frank, Ernest R.; O'Toole, Terrence R.; Thomas, Richard R.; and Viehbeck, Alfred, 5,187,241, Cl. 525-420.000.

Otsubo, Hideaki: *See*—
Oka, Takeya; Saito, Masao; Miki, Nobuaki; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Otsubo, Hideaki; Hojo, Yasuo; and Asahara, Norimi, 5,186,204, Cl. 137-238.000.

Otsuka Pharmaceutical Factory, Inc.: *See*—
Goto, Kiyoto; Hashimoto, Kinji; and Kanai, Kenichi, 5,187,161, Cl. 514-255.000.

Ott, Conrad L.; Wuestmann, David E.; and Maiolo, Louis, to Porta Systems Corp. Fiber optic variable signal attenuator. 5,187,768, Cl. 385-140.000.

Ott Maschinentechnik GmbH: *See*—
Heel, Helmut; Fauter, Manfred; Mohr, Peter; Friedl, Franz; and Kettel, Hans, 5,186,476, Cl. 279-2.030.

Otten, Jay G.; and Schoene, Kenneth F., to BASF Corp. Liquid analogs of certain polyoxyalkylene compounds having a plurality of heteric polyoxypropylene/polyoxyethylene chains as dispersants for pesticidal formulations. 5,187,191, Cl. 514-772.300.

Otto, John E.; Bieber, Allen C.; and Till, Ronald H., to General Electric Company. Compartmentalized fluid tank. 5,186,352, Cl. 220-564.000.

Otto, Veit; Weber, Wolfram; Muller-Stein, Iris; and Schiebler, Wolfgang, to Fresenius AG. Apparatus for separating at least two biological substances in solution by adsorption. 5,186,826, Cl. 210-198.200.

Ouchi, Wataru; Suzuki, Katsuhisa; Tokutake, Toshinori; and Hirano, Hirosaburo, to Showa Aluminum Kabushiki Kaisha. Tube for heat exchangers and a method for manufacturing the tube. 5,186,250, Cl. 165-177.000.

Outcalt, Russell J.; Timmons, Philip R.; Cramp, Susan M.; Kwiatkowski, Patricia L.; Lopes, Anibal; Cain, Paul A.; Sinodis, David N.; Hall, Lee S.; and Vors, Jean-Pierre A., to Rhone-Poulenc AG Company. Pesticidal 1-arylpyrroles. 5,187,185, Cl. 514-408.000.

Owada, Toshinobu; Inamori, Akio; Aota, Yoshikazu; Sakamoto, Shigeo; and Takahashi, Seiichi, to Kubota Corporation. Hydraulic clutch operating apparatus. 5,186,297, Cl. 192-85.0CA.

Oyama, Noboru: *See*—
Yamaguchi, Shuichiro; Uchida, Naoto; Kasai, Satoru; Shimomura, Takeshi; and Oyama, Noboru, 5,186,808, Cl. 204-418.000.

Ozaki, Haruo, to Daito Shoji Co., Ltd.; and Emtec Co., Ltd. Method and apparatus for grinding notches of semiconductor wafer. 5,185,965, Cl. 51-283.00E.

Ozari, Yehuda: *See*—
Bordoloi, Binoy K.; Plamthottan, Sebastian S.; Ozari, Yehuda; and Ham, Robert V., 5,187,235, Cl. 525-305.000.

Ozawa, Yoshio; Hosoya, Mitsukazu; Matsumoto, Takashi; and Saito, Kimitoshi, to Fuji Photo Film Co., Ltd. Automatic paper loading device and method for photographic printer. 5,187,531, Cl. 355-308.000.

Ozur, Mark C.: *See*—
East, Jeffrey A.; Walker, James J.; Jenness, Steven M.; Ozur, Mark C.; and Kelly, James W., Jr., 5,187,790, Cl. 395-725.000.

Paccar, Inc.: *See*—
Orr, Larry W.; and Kranick, Gordon S., 5,186,485, Cl. 280-678.000.

Paceco Corp.: *See*—
Shimizu, Yuso, 5,186,342, Cl. 212-147.000.

Paddock, John R., Jr.: *See*—
Herdman, James; and Paddock, John R., Jr., 5,186,401, Cl. 241-46.010.

Pajerski, A. Victor: *See*—
Patrick, Edward P.; and Pajerski, A. Victor, 5,187,046, Cl. 430-278.000.

Palmatier, Roland T.; Novick, Michael A.; and Belanger, Roger R., to Heidelberg Harris GmbH. Method and device for assuring orderly web travel in a folder by punching holes in a paper width direction. 5,186,444, Cl. 270-52.500.

Palmer, Michael J.: *See*—
Horton, Raymond R.; Noyan, Ismail C.; Palmer, Michael J.; and Ritter, Mark B., 5,186,632, Cl. 439-67.000.

Palmieri, Daniel M.: *See*—
Lenz, William R.; and Palmieri, Daniel M., 5,186,328, Cl. 206-330.000.

Pan, Yuh-Guo: *See*—
Lim, Mu-Ill; and Pan, Yuh-Guo, 5,186,716, Cl. 8-405.000.

Pankratz, William R.; Genise, Thomas A.; Dresden, John, III; and Markyvech, Ronald K., to Eaton Corporation. Dual pressure pressure regulator. 5,186,066, Cl. 74-335.000.

Panster, Peter; and Gradl, Robert, to Degussa AG. Formed, polymeric transition-metal complex catalysts with organosiloxane phenylphosphine ligands. 5,187,134, Cl. 502-158.000.

Para Magnetic Logging, Inc.: *See*—
Vail, William B., III, 5,187,440, Cl. 324-372.000.

Parham, Marc E.; and Duffy, Richard L., to W. R. Grace & Co.-Conn. Membrane having high affinity for low density lipoprotein-cholesterol from whole blood. 5,187,010, Cl. 428-398.000.

Park, Bo K., to Silver Star Co., Ltd. Spool braking force switching device for fishing reel. 5,186,412, Cl. 242-245.000.

Park, Seung Chul: *See*—
Min, Suk Ki; Park, Seung Chul; and Han, Chul Won, 5,186,911, Cl. 422-245.000.

Park, Young C.: *See*—
Meisner, Edward H.; and Park, Young C., 5,186,366, Cl. 222-158.000.

Parker, Brian A.: *See*—
Cullen, Barry A.; and Parker, Brian A., 5,187,301, Cl. 558-455.000.

Parker, Frank H. Method and compositions for promoting mushroom growth. 5,186,731, Cl. 71-5.000.

Parker, Robin; Hanrahan, Robert; and Gupta, Avinash, to Solar Reactor Technologies, Inc. Alkali metal hydroxide generation system and the method therefor. 5,186,794, Cl. 204-98.000.

Parks, Carl R.; D'Sidocky, Richard M.; and Cohen, Martin P., to Goodyear Tire & Rubber Company, The. Sulfur vulcanizable rubber compositions containing a methyl trialkyl ammonium salt. 5,187,239, Cl. 525-329.300.

Parmet, Darryl: *See*—
Muskatello, James M.; Parmet, Darryl; Lysy, George C.; and Ramsey, Maynard R., III, 5,187,641, Cl. 361-380.000.

Parr, Michael D.: *See*—
Richardson, Daniel J.; and Parr, Michael D., 5,186,081, Cl. 74-859.000.

Parrish, Gary C.: *See*—
Majerus, Norbert; Magee, Arthur W.; Hickman, Michael D.; Parrish, Gary C.; Rooney, Timothy M.; and Chlebina, Lawrence E., 5,185,960, Cl. 51-104.000.

Pasco, Ian K., to Combined Optical Industries Limited. Aspheric lens having a plurality of lenslets disposed substantially contiguously in an array. 5,187,360, Cl. 250-208.200.

Paspek, Stephen C.; Hauser, Jeffrey B.; and Eppig, Christopher P., to Standard Oil Company, The. Process for separating extractable organic material from compositions comprising oil-in-water emulsions comprising said extractable organic material and solids. 5,186,817, Cl. 208-188.000.

Pastor, Stephen D.: *See*—
Seltzer, Raymond; Odorisio, Paul A.; Shum, Sai P.; and Pastor, Stephen D., 5,187,213, Cl. 524-120.000.

Pate, E. Leonard: *See*—
Whitaker, Lenwood C.; Whitaker, Inge F.; and Pate, E. Leonard, 5,186,520, Cl. 297-468.000.

Patel, Arvind: *See*—
Enomoto, Masahiro; Patel, Arvind; and Schafer, Jack J., 5,186,654, Cl. 439-570.000.

Patel, Rajesh D.: *See*—
Becker, Martin; Kurn, Nurith; Liu, Yen P.; Patel, Rajesh D.; Houts, Thomas M.; and Olson, John D., 5,187,066, Cl. 435-7.360.

Patrick, Edward P.; and Pajerski, A. Victor, to Aluminum Company of America. Arc-grained lithoplate. 5,187,046, Cl. 430-278.000.

Patterson, James S. Fish alert. 5,185,949, Cl. 43-17.000.

Paul, Axel: *See*—
Etzbach, Kark-Heinz; Wagenblast, Gerhard; Brox, Wolfgang; Paul, Axel; and Bach, Volker, 5,187,298, Cl. 549-555.000.
Etzbach, Karl-Heinz; Wagenblast, Gerhard; Brox, Wolfgang; Paul, Axel; and Bach, Volker, 5,187,248, Cl. 526-243.000.

Paul, Leland S.: *See*—
Andrews, William H.; Brothers, Virginia M.; Files, James G.; Kuhn, Irene; McCaman, Michael T.; Sias, Stacey R.; Paul, Leland S.; Gore, Thomas C.; Newman, Karel Z., Jr.; and Tedesco, John L., 5,187,080, Cl. 435-69.300.

Paulk, Raymond C., to Gentri Controls, Inc. Non-contact infrared temperature sensing system. 5,186,541, Cl. 374-124.000.

Paulley, David: *See*—
Carlson, Ronald E., Jr.; and Paulley, David, 5,186,755, Cl. 118-641.000.

Pausch, Josef, to General Resource Corporation. Adjustable eccentric valve. 5,186,433, Cl. 251-309.000.

Pawlicki, Jeffrey J.; Ponn, Timothy R.; and Premo, Thomas G., to Molex Incorporated. Electrical connector system. 5,186,644, Cl. 439-353.000.

Pearson, Charles S.: *See*—
Campo, Manuel; Pearson, Charles S.; and Synder, Jon H., 5,185,913, Cl. 29-453.000.

Pechulis, Joseph W.; and Cronan, Joseph T., to United Technologies Corporation. Electrical connector assembly with EMI protection. 5,186,635, Cl. 439-89.000.

Peckels, Arganious E.; and Peckels, Timothy S. Injection molded thermoplastic measuring scale holder. 5,186,326, Cl. 206-234.000.

Peckels, Timothy S.: *See*—
Peckels, Arganious E.; and Peckels, Timothy S., 5,186,326, Cl. 206-234.000.

Pedersen, Svend A. S. Sash windows. 5,185,955, Cl. 49-216.000.

Pederson, David L.: *See*—
Kielb, John A.; Nelson, Richard L.; and Pederson, David L., 5,187,474, Cl. 340-870.180.

Pederson, William A. Connector device for computers. 5,186,646, Cl. 439-374.000.

Peerless-Winsmith, Inc.: *See*—
Heller, Werner H., 5,186,068, Cl. 74-425.000.

Pegasus Sewing Machine Mfg. Co., Ltd.: *See*—
Ikawa, Naoya, 5,186,114, Cl. 112-254.000.

Peion, Michel: *See*—
Pellarin, Jean-Francois R.; and Peion, Michel, 5,187,317, Cl. 89-36.140.

Pelah, Zvi; Potencsik, Istvan; Kopp, Werner; and Urmann, Ernst, to Giulini Chemie GmbH. Process for the production of low viscosity

VOL 1147 ISS 3 FE 16 1993 UMI

copolymers from maleic acid monoalkyl esters and vinyl alkyl ethers. 5,187,308, Cl. 560-202.000.

Pelella, Mario M. A.: *See—*
Cook, Robert K.; and Pelella, Mario M. A., 5,187,109, Cl. 437-32.000.

Pellarin, Jean-Francois R.; and Peion, Michel, to Giat Industries. Fire control system having laser telemetry adaptable for a mantlet sight. 5,187,317, Cl. 89-36.140.

Pelletier, Bruno: *See—*
Carpentier, Eric; Pelletier, Bruno; and Boni, Bernard, 5,186,771, Cl. 152-158.000.

Pelster, Gunther: *See—*
Hermann, Heinrich; Pelster, Gunther; and Degener, Klaus, 5,187,274, Cl. 544-186.000.

Pem All Fire Extinguisher Corporation: *See—*
Scofield, William A., 5,186,260, Cl. 169-65.000.

Pendley, Bradford D.; and Abruna, Hector D., to Cornell Researeh Foundation, Inc. Method of making submicrometer microelectrodes. 5,185,922, Cl. 29-825.000.

Penn-Plax, Inc.: *See—*
Phillips, Gerald A.; Wu, Chi-Liu; Goldman, Marvin A.; Goldman, Jerome N.; and Goldman, Terry I., 5,186,122, Cl. 119-15.000.

Penn Troy Maching Company, Inc.: *See—*
Kennedy, Paul G., 5,186,198, Cl. 137-14.000.

Penning, Trevor M.; and Askonas, Leslie J., to University of Pennsylvania, Trustees of the. Irreversible ligands for nonsteroidal antiinflammatory drug and prostaglandin binding sites. 5,187,187, Cl. 514-419.000.

Pennington, H. Dale, to Texas A & M University System, The. Chimney holder and injection tube mount for use in atomic absorption and plasma spectroscopy. 5,186,621, Cl. 431-354.000.

Pennington, John H., to General Chemical Corporation. One-piece crawler pad. 5,186,526, Cl. 305-39.000.

Pennington, M. Steve; and Fowler-Pennington, Veronica J. Buoyant pump assembly. 5,186,610, Cl. 417-61.000.

Pentapharm AG: *See—*
Stocker, Kurt F.; and Wenzel, Ernst, 5,187,102, Cl. 436-69.000.

Perenon, Jacques; Pichon, Maurice; Deborde, Henri C.; and Jodelet, Francois, to Skis Rossignol S.A. Process for the manufacture of a composite molded structure, and especially of a ski. 5,186,777, Cl. 156-79.000.

Perez, Miguel: *See—*
Gautier, Jean-Pierre; Perez, Miguel; and Verbo, Ulysse, 5,186,004, Cl. 60-594.000.

Perez-Soler, Roman: *See—*
Khokhar, Abdul R.; Lopez-Berestein, Gabriel; and Perez-Soler, Roman, 5,186,940, Cl. 424-450.000.

Perfil en Frio, S.A.: *See—*
Martinez, Joaquin L., 5,185,981, Cl. 52-578.000.

Perneczky, George C. Apparatus for cooling a traveling strip. 5,186,885, Cl. 266-115.000.

Perron, Peter J.; Nangrani, Khemchand; and Bourbonais, Ed, to Dexter Corporation. Stabilizer for compatibilized polycarbonate and polyamide polymer blends. 5,187,228, Cl. 525-66.000.

Perslow, Johan A., to Space Biospheres Venture. Wave generator. 5,186,578, Cl. 405-79.000.

Persson, Borje: *See—*
Jaras, Sven G.; Tokarz, Marek T.; and Persson, Borje, 5,186,917, Cl. 423-239.000.

Perveiler, Kevin J.: *See—*
Hamilton, Thomas P.; Jacobsen, Carol E.; and Perveiler, Kevin J., 5,187,773, Cl. 395-10.000.

Peschke, John R.: *See—*
Fuller, Terry A.; Nadkarni, Vijay J.; and Peschke, John R., 5,186,870, Cl. 264-1.200.

Peter Fanning and Company Proprietary Limited: *See—*
Fanning, Desmond G.; and Booth, Nicholas J., 5,186,411, Cl. 242-96.000.

Peters, Timothy J., to General Motors Corporation. Flow control baffle for radiator in-tank cooler. 5,186,245, Cl. 165-140.000.

Petersen, Frank P.; Maybroda, Adrianna; and Miller, Sally A., to Agri-Diagnostics Associates. Monoclonal antibodies and methods for fungal pathogen detection. 5,187,064, Cl. 435-7.310.

Petersen, John A. M.: *See—*
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; and Schutten, Herman P., 5,187,664, Cl. 364-424.020.

Peterson, Kenneth M.: *See—*
Bertiger, Bary R.; Leopold, Raymond J.; and Peterson, Kenneth M., 5,187,805, Cl. 455-12.100.

Petrey, Gerald R.: *See—*
Rooy, Elwin L.; Petrey, Gerald R.; Weaver, James R.; Granger, Douglas A.; Richter, Raymond T.; and Reravis, H. Gray, Jr., 5,186,767, Cl. 148-552.000.

Petroleum Energy Center: *See—*
Yoshinari, Tomohiro; Usui, Kazushi; Yamamoto, Yasuo; and Ohi, Mitsuru, 5,187,133, Cl. 502-66.000.

Petruccelli, Dom; and Petruccelli, Marc. Golf club and method of making same. 5,185,914, Cl. 29-460.000.

Petruccelli, Marc: *See—*
Petruccelli, Dom; and Petruccelli, Marc, 5,185,914, Cl. 29-460.000.

Petty, Jack D., to General Motors Corporation. Mounting for ceramic scroll. 5,186,006, Cl. 60-753.000.

Petty, Norman W., to AT&T Bell Laboratories. Frequency synthesis using fractional frequency multiplication. 5,187,722, Cl. 375-118.000.

Pfaller, Mathew A.; Baker, Kenneth N.; and Say, Richard E., to Materials Protection Company. Method of making a string of cathodic protection anodes. 5,185,921, Cl. 29-825.000.

Pfeffer, George B.: *See—*
Pitsch, Daniel M.; and Pfeffer, George B., 5,187,634, Cl. 361-119.000.

Pfefferle, Troy; and Fein, Melvin J. Doorway bar support and operating unit combination. 5,186,696, Cl. 482-40.000.

Pfizer, Inc.: *See—*
Connolly, John J.; and Kawochka, John T., 5,185,986, Cl. 53-397.000.

Pfleger, Frederick W. Dual compartment mixing container. 5,186,323, Cl. 206-221.000.

Phelps, Weldon L.: *See—*
Williamson, Gregory L.; Kendrick, Larry E.; and Phelps, Weldon L., 5,187,709, Cl. 370-85.300.

Philipp, Christopher D.: *See—*
Izenbaard, John; Philipp, Christopher D.; and Steffler, Michael W., 5,187,422, Cl. 320-2.000.

Philipp Holzmann AG: *See—*
Kallinich, Dietmar; Kahlert, Wolfgand; Wind, Heinz; and Lehmann, Friedrich, 5,186,217, Cl. 138-149.000.

Phillips, David; and Appling, William M., to E-Z-EM, Inc. Biliary drainage method. 5,186,715, Cl. 604-28.000.

Phillips, Gerald A.; Wu, Chi-Liu; Goldman, Marvin A.; Goldman, Jerome N.; and Goldman, Terry I., to Penn-Plax, Inc. Small animal living environment system. 5,186,122, Cl. 119-15.000.

Phillips Petroleum Company: *See—*
Stahl, Allan; Moradi-Araghi, Ahmad; Westerman, John; Hsieh, Henry L.; Hedges, James H.; and Bjornson, Geir, 5,186,257, Cl. 166-273.000.

Phillips, Richard S., to Northern Telecom Limited. Reference voltage generator for dynamic random access memory. 5,187,429, Cl. 323-314.000.

Phillips, Roger W.; and Willison, Kraig R. Pre-imaged high resolution hot stamp transfer foil, article and method. 5,186,787, Cl. 156-631.000.

Phillips, William; and Schwartz, Joyce G., to Board of Regents, The University of Texas System. Diagnosis and treatment of humans with diabetes or at risk to develop diabetes. 5,187,154, Cl. 514-12.000.

Photoprotective Technologies, Inc.: *See—*
Gallas, James M., 5,187,207, Cl. 523-106.000.

Piacibello, Marco V. P.: *See—*
Borgis, Livio; Piacibello, Marco V. P.; and Keim, Peter C., 5,187,407, Cl. 313-318.000.

Pichl, Fritz, to Kobe Properties Limited. Method of deactivating a resonance label. 5,187,466, Cl. 340-572.000.

Pichon, Maurice: *See—*
Perenon, Jacques; Pichon, Maurice; Deborde, Henri C.; and Jodelet, Francois, 5,186,777, Cl. 156-79.000.

Pickering, John L., Jr.: *See—*
Nemet-Mavrodin, Margaret; and Pickering, John L., Jr., 5,186,908, Cl. 422-190.000.

Pickett, James E.: *See—*
Blohm, Margaret L.; Pickett, James E.; and VanDort, Paul C., 5,187,608, Cl. 359-273.000.

Pienkowski, James J.: *See—*
Fitt, Larry E.; Pienkowski, James J.; and Wallace, Jack R., 5,187,210, Cl. 524-48.000.

Pierson, Bruce A.; and Lower, William E., to Rotex, Inc. Top cover clamp for screening machine. 5,186,333, Cl. 209-370.000.

Piety, Kenneth R.; and Nower, Daniel L., to Computational Systems, Inc. Alignment bracket assembly integrity check and sag determination. 5,185,937, Cl. 33-645.000.

Pigeon, Raymond: *See—*
Sparks, Robert E.; Mason, Norbert S.; Autant, Pierre; Cartillier, Andre; and Pigeon, Raymond, 5,186,937, Cl. 424-438.000.

Pigg, Joseph E.: *See—*
Bauernfeind, Wolfgang J.; Beard, Frank T.; Brown, Edwin Z.; McMurray, Craig E.; and Pigg, Joseph E., 5,187,432, Cl. 324-158.00R.

Pilkington Visioncare, Inc. (a CA. corp.): *See—*
Spector, David P., 5,187,505, Cl. 351-159.000.

Pimentel, Daniel R.: *See—*
Curhan, Jeffery A.; Pimentel, Daniel R.; and Berg, Peter G., 5,187,349, Cl. 219-202.000.

Pine, James J., to DBJU, Inc. Carriage mechanism for a glider/three-way recliner chair having rear drive link and rear ottoman link. 5,186,518, Cl. 297-85.000.

Pinson, Jay D., II: *See—*
Collins, Kenneth S.; Trow, John R.; Roderick, Craig A.; Pinson, Jay D., II; and Buchberger, Douglas A., II, 5,187,454, Cl. 333-17.300.

Pioneer Electronic Corporation: *See—*
Ishii, Hidehiro; Takeya, Hiroshi; Miura, Chiharu; and Fukuda, Tatsuya, 5,187,696, Cl. 369-44.290.
Kono, Mutsumi; and Uchiumi, Satoshi, 5,187,589, Cl. 358-335.000.
Muramatsu, Eiji; and Maeda, Takanori, 5,187,697, Cl. 369-44.320.
Takahashi, Tokihiro; Sato, Takayuki; Ota, Masuo; and Nagao, Tatsuro, 5,187,734, Cl. 379-79.000.
Yoshizawa, Atsushi; and Matsui, Fumio, 5,186,995, Cl. 428-64.000.

Pippin, James M.; Flagg, Kenneth C., Jr.; and Robertson, Gary S., to ElectroCom Automation L.P. Product sorting apparatus. 5,186,336, Cl. 209-583.000.

Pirez, Yolanda M., to Motorola, Inc. BIMOS voltage bias with low temperature coefficient. 5,187,395, Cl. 307-491.000.

Pitney Bowes Inc.: *See—*
Buan, Danilo P.; and Lyga, Thomas M., 5,186,752, Cl. 118-260.000.
Holbrook, Russell W., 5,186,452, Cl. 271-216.000.
Murphy, Charles F., III; and Murphy, Patrick, 5,186,101, Cl. 101-97.000.
Nambudiri, Easwaran C. N.; Muller, Arno; and Kirschner, Wallace, 5,187,798, Cl. 395-800.000.

Pitsch, Daniel M.; and Pfeffer, George B., to ADC Telecommunications, Inc. Fail-safe protector. 5,187,634, Cl. 361-119.000.

Piwnica-Worms, David R.; and Kronauge, James F., to Brigham and Womens Hospital. Enhancement of cellular accumulation of lipophilic cationic organometallic compounds by reduction of intramembrane potential. 5,186,923, Cl. 424-9.000.

Plamthottan, Sebastian S.: *See—*
Bordoloi, Binoy K.; Plamthottan, Sebastian S.; Ozari, Yehuda; and Ham, Robert V., 5,187,235, Cl. 525-305.000.

Planard, Marie-France: *See—*
Couderc, Rene ; Eyssautier, Bruno; Laporte, Martine; and Planard, Marie-France, 5,187,081, Cl. 435-71.100.

Planeta, Mirek. Machine for winding elongated strips on an axle mounted core. 5,186,408, Cl. 242-65.000.

Plasma Physics Corp.: *See—*
Coleman, John H., 5,187,115, Cl. 437-101.000.

Platt, Todd C.: *See—*
Manley, John A.; Belvo, Aaron J.; Platt, Todd C.; Bruce, Andrew D.; and Wolf, Peter A., 5,186,443, Cl. 270-1.100.

Pleiss, Eberhard: *See—*
Egner-Walter, Bruno; and Pleiss, Eberhard, 5,186,606, Cl. 415-152.100.

Pleshek, Mark, to Von Schrader Company. Liquid-applying device for cleaning wall and ceiling surfaces. 5,186,392, Cl. 239-532.000.

Plesko, George A., to Gap Technologies, Inc. Gyrating programmable scanner. 5,187,612, Cl. 359-896.000.

Plester, George, to Coca-Cola Company, The. Supply of controlled, medium-pressure CO_2 gas in simple, convenient disposable packaging. 5,186,902, Cl. 422-112.000.

Plonk, Byron J. Body supported holder for electronic devices. 5,186,375, Cl. 224-202.000.

Pocekay, John M.: *See—*
Watkins, Michael I.; Bartlett, Clifford R.; Liang, Edward T.; Pocekay, John M.; and Staples, Mark A., 5,187,107, Cl. 436-505.000.

Poclain Hydraulics: *See—*
Allart, Bernard R., 5,186,094, Cl. 91-491.000.

Poirier, David C.: *See—*
Wood, Fred G.; Poirier, David C.; Campbell, Douglas C.; Ludwig, Howard H.; and Westphal, Patrick J., 5,186,487, Cl. 280-707.000.

Polaroid Corporation: *See—*
Carlier, Paul R.; Filosa, Michael P.; and Lockshin, Mary P., 5,187,282, Cl. 548-455.000.
Kirkendall, George F., 5,187,512, Cl. 354-120.000.

Polizzotti, David M., to Betz Laboratories, Inc. Heap leaching agglomeration and detoxification. 5,186,915, Cl. 423-29.000.

Polom, William G.: *See—*
Simon, Robert C., Jr.; Mitchell, George C.; Tolkacz, Joseph M.; Polom, William G.; and Medich, Peter M., 5,186,080, Cl. 74-857.000.

Polytech Netting Industries, L.P.: *See—*
Moore, Donal, 5,186,587, Cl. 410-118.000.

Pondell, Carl: *See—*
Boumarafi, Mohamed; Pondell, Carl; and DiPaola, Donald A., 5,186,495, Cl. 280-808.000.

Ponn, Timothy R.: *See—*
Pawlicki, Jeffrey J.; Ponn, Timothy R.; and Premo, Thomas G., 5,186,644, Cl. 439-353.000.

Pope, Louis M., to U.S. Synthetic Corporation. Method of healing cracks and flaws in a previously sintered cemented carbide tools. 5,186,892, Cl. 419-53.000.

Porta Systems Corp.: *See—*
Ott, Conrad L.; Wuestmann, David E.; and Maiolo, Louis, 5,187,768, Cl. 385-140.000.

Porter, Robert M., Jr.; and Mueller, Michael L., to Advanced Energy Industries, Inc. High power switch-mode radio frequency amplifier method and apparatus. 5,187,580, Cl. 330-207.00A.

Posluszny, Thomas J.; and Davis, Dennis W., to United Technologies Corporation. Optical processor for pulse train identification. 5,187,598, Cl. 359-29.000.

Post, Robert P.; D'Aleo, Michael J.; Keeports, Doug W.; Ference, Jonathan H.; Luchaco, David G.; and Spira, Joel S., to Lutron Electronic Co., Inc. Portable programmer for a lighting control. 5,187,655, Cl. 364-146.000.

Potencsik, Istvan: *See—*
Pelah, Zvi; Potencsik, Istvan; Kopp, Werner; and Urmann, Ernst, 5,187,308, Cl. 560-202.000.

Potter, James L.: *See—*
Staples, Frank E.; Russell, Donald D.; and Potter, James L., 5,186,686, Cl. 464-69.000.

Poulos, Darwin R.: *See—*
Matzinger, David P.; Teodorczyk, Maria; and Poulos, Darwin R., 5,187,100, Cl. 436-16.000.

Powers, John H., to Aluminum Company of America. Chemical milling of aluminum-lithium alloys. 5,186,790, Cl. 156-665.000.

PPG Industries, Inc.: *See—*
Govindan, Cheruthur, 5,187,214, Cl. 524-157.000.

Prasad, Ravi: *See—*
Mancusi, Anthony W.; Delozier, J. Clift; Prasad, Ravi; Runkle, Charles J.; and Shuey, Harry F., 5,186,832, Cl. 210-321.800.

Praxair Technology Inc.: *See—*
Fishman, Royce S., 5,186,924, Cl. 424-9.000.
Ho, Min-Da, 5,186,617, Cl. 431-9.000.
Schick, Robert P., 5,186,841, Cl. 210-760.000.

Pre-Tech Co., Ltd.: *See—*
Netsu, Shigeyoshi; Kameya, Masaki; Harada, Yasuyuki; and Amano, Hiroshi, 5,186,192, Cl. 134-68.000.

Precision Fukuhara Works, Ltd.: *See—*
Kawase, Yoji; and Shibata, Takao, 5,186,028, Cl. 66-232.000.

Precision Pulley, Inc.: *See—*
Valster, Karl C., 5,186,331, Cl. 209-3.001.

Premo, Thomas G.: *See—*
Pawlicki, Jeffrey J.; Ponn, Timothy R.; and Premo, Thomas G., 5,186,644, Cl. 439-353.000.

Presby, Herman M.: *See—*
DiGiovanni, David J.; Giles, Clinton R.; Kramer, Stuart A.; Nykolak, Gerald; Presby, Herman M.; and Simpson, Jay R., 5,187,759, Cl. 385-27.000.

Prevorsek, Dusan C.; and Harpell, Gary A., to Allied-Signal Inc. Ballistic resistant fabric articles. 5,187,023, Cl. 428-911.000.

Priddy, Duane B.: *See—*
Dais, Virginia A.; and Priddy, Duane B., 5,187,249, Cl. 526-316.000.

Primeau, John L.; and Garrick, Lloyd M., to American Home Products Corporation. Substituted quinazolines as angiotensin II antagonists. 5,187,168, Cl. 514-259.000.

Prince Castle: *See—*
Vaseloff, Dennis J.; Dobrino, Gary J.; King, James A.; and Chu, Wai Y., 5,186,097, Cl. 99-330.000.

Prince Corporation: *See—*
Gilmore, Michael R.; and McConnell, Anthony, 5,186,517, Cl. 296-214.000.
Smith, Nels R., 5,186,442, Cl. 296-97.800.
VandenBerge, Thomas C.; DeJong, Jerry M.; and Suman, Michael J., 5,186,512, Cl. 296-97.800.

Princeton University, The Trustees of: *See—*
Carr, William N.; Yu, Hong; and Cho, Doug-Il D., 5,187,399, Cl. 310-40.0MM.

Prioleau, Lori-Ann S.; and Canty, George, to Minnesota Mining and Manufacturing Company. Flexographic printing plate. 5,187,044, Cl. 430-271.000.

Priorlucky Limited: *See—*
Russell, Tony A.; and Wheeler, Geoffrey C., 5,185,989, Cl. 56-13.100.

Pritchard, Robert J., to Teleflex Incorporated. Aircraft cargo control system. 5,186,417, Cl. 244-137.100.

Procedes Petroliers et Petrochimiques: *See—*
Lenglet, Eric, 5,186,815, Cl. 208-48.00R.

Procter & Gamble Company, The: *See—*
Cook, Charles D., 5,186,344, Cl. 215-330.000.
Fox, Mary M.; Heckert, David C.; and Luhrsen, Kenneth R., 5,186,965, Cl. 426-74.000.

Programme 3 Patent Holdings: *See—*
Coetzer, Johan; and Duncan, James H., 5,187,029, Cl. 429-102.000.

Proud, Lois J.: *See—*
Corey, Paul F.; Michaels, Angela A.; Proud, Lois J.; Salvati, Michael; Trimmer, Robert W.; and Sommer, Ronald G., 5,187,104, Cl. 436-86.000.

Puhl, Larry C.: *See—*
Baker, James C.; Levine, Stephen N.; Puhl, Larry C.; and Carney, Scott N., 5,187,811, Cl. 455-35.100.

Purstinger, Franz; and Dorninger, Frank, to Schaumstoffwerk Greiner Gesellschaft m.b.H. Process of making dimensionally stable section. 5,186,876, Cl. 264-40.600.

Pusch, Reinhard, to Thomas & Betts Corporation. Transportation protection and insertion device for multi-conductor cables. 5,186,638, Cl. 439-140.000.

Pussegoda, Lakshman N.: *See—*
Hunt, Patrick J.; Jonas, John J.; Yue, Stephen; Ruddle, George E.; and Pussegoda, Lakshman N., 5,186,769, Cl. 148-593.000.

Pyro Place, Inc.: *See—*
Shumock, Mark J., 5,186,161, Cl. 126-500.000.

Qing, Cai; Man, Ho Hak; Ming, Liu; and Guang, Yi X., to China Henan Light Industrial Products Import and Export Corporation; Ng, Rober; Guang, Yi Xiao; and Qing, Cai. Method of saving space occupied by toilet rolls in transportation and storage processes and related special devices. 5,186,099, Cl. 100-35.000.

Quantum Corporation: *See—*
Tacklind, Thomas A., 5,187,621, Cl. 360-97.020.

Questel, John M.: *See—*
Sablotsky, Steven; Questel, John M.; and Thompson, James A., 5,186,938, Cl. 424-443.000.

Quittmann, Wilhelm; Zumoberhaus, Leo; and Ruppen, Peter, to Lonza Ltd. Process for the production of 3-aminocrotononitrile. 5,187,297, Cl. 558-360.000.

R. J. Reynolds Tobacco Company: *See—*
Lippiello, Patrick M.; and Caldwell, William S., 5,187,169, Cl. 514-343.000.

Raaymakers, Wilhelmus P. M.; Mons, Johannes J.; and Roth, Rudolf, to U.S. Philips Corporation. Method and apparatus for successively recording two EFM-modulated signals enabling detection of boundary condition for transitioning between signals. 5,187,699, Cl. 369-48.000.

Rach, David T.: *See—*
Lamela, Anthony J.; Christensen, Thomas F.; and Rach, David T., 5,186,284, Cl. 188-71.800.

VOL 1147 ISS 3 FE 16 1993 UMI

Rachel, Bernard W.; LeCrone, Richard C.; and Bowen, Michael W., to General Electric Company. Double filament incandescent lamp. 5,187,405, Cl. 313-316.000.

Raffa, Anthony V.: *See—*
Beauchamp, Charles H.; Cincotta, Manuel, Jr.; Raffa, Anthony V.; and Gauthier, Benoit G., 5,186,420, Cl. 244-219.000.

Raghuprasad, Puthalath. Mist inhaler. 5,186,164, Cl. 128-200.140.

Rahman, M. Azizur. Combination hysteresis-reluctance-permanent-magnet motor. 5,187,401, Cl. 310-156.000.

Raible, Donald A., to Baxter International Inc. Extracorporeal blood oxygenation system and method for providing hemoperfusion during transluminal balloon angioplasty procedures. 5,186,713, Cl. 604-4.000.

Raikhel, Natasha V.; Broekaert, Willem F.; Chua, Nam-Hai; and Kush, Anil, to Board of Trustees, operating Michigan State University. cDNA encoding a polypeptide including a hevein sequence. 5,187,262, Cl. 530-370.000.

Rainer, Norman B. Process for the selective absorption of anions. 5,187,200, Cl. 524-30.000.

Rait, Joseph M. Water filtration apparatus. 5,186,830, Cl. 210-232.000.

Raleigh, Carl: *See—*
Melton, Cynthia; Raleigh, Carl; Cholewczynski, Kenneth; and Moore, Kevin, 5,186,383, Cl. 228-180.200.

Ramirez, Jose E.; and Vishnupad, Mohan, to Imaginative Research Associates, Inc. Self-foaming oil compositions and process for making and using same. 5,186,857, Cl. 252-167.000.

Ramsey, Douglas P. Self-sealing closure. 5,186,353, Cl. 220-711.000.

Ramsey, Maynard R., III: *See—*
Muskatello, James M.; Parmet, Darryl; Lysy, George C.; and Ramsey, Maynard R., III, 5,187,641, Cl. 361-380.000.

Ramstad, Paul O.: *See—*
Bridgham, John; Geiser, Timothy G.; Hunkapiller, Michael W.; Kent, Stephen B. H.; Marriott, Mark P.; Ramstad, Paul O.; and Nordman, Eric S., 5,186,898, Cl. 422-102.000.

Rappe, Andrew: *See—*
Brommer, Karl; Mullaney, Henry; Meade, Robert; Rappe, Andrew; and Joanopoulos, John, 5,187,461, Cl. 333-219.100.

Rasinski, Michael J.: *See—*
Snuttjer, Owen R.; and Rasinski, Michael J., 5,186,277, Cl. 184-6.220.

Rasmussen, Kenneth G.: *See—*
Stephenson, Dwight B.; Carlson, Keith R.; and Rasmussen, Kenneth G., 5,186,211, Cl. 137-625.240.

Rau, Mann-Fu; Wang, Faa-Ching M.; and Kurz, Jimmy D., to Texas Instruments Incorporated. Process for improved doping of semiconductor crystals. 5,186,784, Cl. 156-605.000.

Rauleder, Hartwig: *See—*
Seiler, Claus-Dietrich; Schork, Reinhold; Frings, Albert; Kotzsch, Hans-Joachim; and Rauleder, Hartwig, 5,187,291, Cl. 556-442.000.

Rauterkus, Karl-Josef: *See—*
Mueller-Hess, Waltraud; Mohr, Dieter; Kroggel, Matthias; and Ranterkus, Karl-Josef, 5,187,040, Cl. 430-157.000.

Rawson, Linda B.; and Kuk, Donald W., to Intergraph Corporation. Apparatus for stiffening a circuit board. 5,186,377, Cl. 228-37.000.

Raytheon Company: *See—*
Russell, Mark E.; Donisi, Anthony M.; and Miller, David C., 5,187,459, Cl. 333-204.000.
Schuss, Jack J.; Upton: Jeffrey C.; Geyh, Edward A.; and Chang, Kaichiang, 5,187,491, Cl. 343-781.00R.
Tsai, Ming-Chi, 5,187,447, Cl. 330-124.00R.
Walsh, Arthur L.; and Genereux, Barry E., 5,186,540, Cl. 374-32.000.

RDP Company: *See—*
Christy, Paul G.; and Christy, Richard W., 5,186,840, Cl. 210-709.000.

Redondo, Ronald E. Illuminated playing ball. 5,186,458, Cl. 273-65.0EF.

Reed, David L.: *See—*
Fortner, Larry E.; Gustin, Paul R.; Hasler, Leonard F.; Johnson, Harold E.; Maul, George R.; Reed, David L.; and Reichard, George W., Jr., 5,186,649, Cl. 439-460.000.

Rees, Susan L.: *See—*
Nitz, Larry T.; and Rees, Susan L., 5,186,294, Cl. 192-3.300.

Reichard, George W., Jr.: *See—*
Fortner, Larry E.; Gustin, Paul R.; Hasler, Leonard F.; Johnson, Harold E.; Maul, George R.; Reed, David L.; and Reichard, George W., Jr., 5,186,649, Cl. 439-460.000.

Reichling, Charles A.: *See—*
Magnan, Michael B.; Reichling, Charles A.; and Wells, Robert H., 5,186,129, Cl. 123-90.340.

Reicin, Edward E.; Bertolozzi, Rano J.; and Cortapassi, Theodore, to MPC Containment Systems, Ltd. Secondary containment system for manholes and the like. 5,186,577, Cl. 405-52.000.

Reihl, Jeff: *See—*
Cullimore, D. Roy; Alford, George W.; Abiola, Abimbola T.; Reihl, Jeff; and Naqvi, Karim, 5,187,072, Cl. 435-34.000.

Reising, Richard F.: *See—*
Ives, Steven E.; Ascroft, Thomas B.; Reising, Richard F.; Hill, Robert F.; Brevick, John E.; and Schneider, Eric W., 5,186,278, Cl. 184-6.230.

Remington Products, Inc.: *See—*
Locke, David R., 5,185,926, Cl. 30-43.920.

Renishaw Metrology Limited: *See—*
McMurtry, David R., 5,185,936, Cl. 33-572.000.

Rennex, Brian G. Bi-directional stair/treadmill/reciprocating-pedal exerciser. 5,186,697, Cl. 482-52.000.

Rensselaer Polytechnic Institute: *See—*
Giaever, Ivar; and Keese, Charles R., 5,187,096, Cl. 435-291.000.

Renzi, Fiorenzo: *See—*
Castaldi, Graziano; Allegrini, Pietro; Crisci, Luciana; and Renzi, Fiorenzo, 5,186,867, Cl. 252-586.000.

Reravis, H. Gray, Jr.: *See—*
Rooy, Elwin L.; Petrey, Gerald R.; Weaver, James R.; Granger, Douglas A.; Richter, Raymond T.; and Reravis, H. Gray, Jr., 5,186,767, Cl. 148-552.000.

Resch, William A., III, to Eastman Kodak Company. Magnetic monitor for measuring toner concentration. 5,187,522, Cl. 355-246.000.

Research Foundation of State University of New York, The: *See—*
Free, Stephen J.; McNally, Mark T.; and Tarawneh, Khaled A., 5,187,079, Cl. 435-69.100.

Reuther, Wolfgang: *See—*
Goettsche, Reimer; and Reuther, Wolfgang, 5,186,947, Cl. 424-638.000.
Goettsche, Reimer; and Reuther, Wolfgang, 5,187,194, Cl. 514-499.000.

Rexnord Corporation: *See—*
Lindner, Bernard J.; and Lorenz, Harold, 5,186,287, Cl. 188-171.000.

Reynolds, Donna M.: *See—*
Jaen, Juan C.; Nickell, David G.; Reynolds, Donna M.; Smith, Sarah J.; Wise, Lawrence D.; and Wustrow, David J., 5,187,280, Cl. 546-255.000.

Reynolds Metals Company: *See—*
Ward, Bennie R., Jr., 5,186,235, Cl. 148-552.000.

Rhodes, Eugene E.: *See—*
Young, Darryl L.; Hirmann, Josef; Rhodes, Eugene E.; and Brightwell, David L., 5,186,239, Cl. 165-81.000.

Rhodes, Gerry F.: *See—*
Cassell, Michael L.; Jenkins, Waylon L.; and Rhodes, Gerry F., 5,187,216, Cl. 524-261.000.

Rhone-Poulenc AG Company: *See—*
Outcalt, Russell J.; Timmons, Philip R.; Cramp, Susan M.; Kwiatkowski, Patricia L.; Lopes, Anibal; Cain, Paul A.; Sinodis, David N.; Hall, Lee S.; and Vors, Jean-Pierre A., 5,187,185, Cl. 514-408.000.

Rhone-Poulenc Agrochimie: *See—*
Botannet, Bernard; Clavel, Jean-Louis; Corbet, Jean-Pierre; and Mulhauser, Michel, 5,187,292, Cl. 558-134.000.

Ricco, John A., Sr. 9mm cartridge casing. 5,187,324, Cl. 102-464.000.

Rice, Michael L.: *See—*
Healy, Jr. Stephen F.; Rice, Michael L.; and Golick, Martin L., 5,187,099, Cl. 436-10.000.

Richardson, Daniel J.; and Parr, Michael D., to General Motors Corporation. Method of regulating supercharger boost pressure. 5,186,081, Cl. 74-859.000.

Richart, Douglas S.; and Daly, Andrew T., to Morton International, Inc. Thermosetting resin-based coating powders containing metal flakes. 5,187,220, Cl. 524-441.000.

Richmond, Russel P.; and Foster, Michael R., to General Motors Corporation. Catalytic converter metal monolith. 5,187,142, Cl. 502-439.000.

Richter, Gary L. Hand-held portable telephone holder. 5,187,744, Cl. 379-449.000.

Richter, Raymond T.: *See—*
Rooy, Elwin L.; Petrey, Gerald R.; Weaver, James R.; Granger, Douglas A.; Richter, Raymond T.; and Reravis, H. Gray, Jr., 5,186,767, Cl. 148-552.000.

Richter, Stephen B.: *See—*
Marin, Thomas C.; Fields, Scott J.; and Richter, Stephen B., 5,186,463, Cl. 273-138.00R.

Ricker, George G.: *See—*
Balmforth, Kevin D.; Bates, Gary A.; Davies, Steven P.; Habereder, Hans L.; Harrison, R. Loyd; Hopp, Donald M.; and Ricker, George G., 5,187,795, Cl. 395-800.000.

Ricketts, Robert M. Container resealing method and apparatus. 5,186,370, Cl. 222-545.000.

Ricoh Company, Ltd.: *See—*
Kanno, Hiroshi; Wagatsuma, Yuuki; and Takase, Toshiaki, 5,186,102, Cl. 101-128.400.
Moriizumi, Kazuhiro, 5,187,736, Cl. 379-100.000.
Saeki, Shiro; Nakazato, Yukitaka; Ishizaki, Hiroyuki; Hyodou, Fumitaka; and Uotani, Kunihiro, 5,186,446, Cl. 271-3.100.

Ridderstrale, Rolf: *See—*
Stroucken, Klaus; and Ridderstrale, Rolf, 5,186,708, Cl. 494-41.000.

Riesen, Peter, to Sulzer Brothers Limited. Gripper changer for projectile looms. 5,186,218, Cl. 139-438.000.

Rieter Machine Works, Ltd.: *See—*
Fritschi, Isidor; Keller, Urs; and Erni, Markus, 5,185,993, Cl. 57-281.000.

Riggs, John H.; and Mangum, Barry O. Powder nebulizer apparatus and method of nebulization. 5,186,166, Cl. 128-203.150.

Rikagaku Kenkyusho: *See—*
Ohta, Hiroshi; Aono, Masakazu; Kato, Kazuhiko; Hoshino, Kazutomo; Takahara, Hidefusa; Nakayama, Tomonobu; and Sudoh, Eiichi, 5,187,327, Cl. 174-35.00R.

Rinaudo, George: *See—*
Gelinas, W. Robert; Leale, Arthur J.; Leitch, David J.; Mellow, John J.; Rinaudo, George; and Treff, Ernest H., 5,186,103, Cl. 101-181.000.

Rion Kabushiki Kaisha: *See—*
Narisawa, Yoshiyuki, 5,187,746, Cl. 381-68.700.

Risdon Corporation: *See—*
Ackermann, Walter; and Holloway, Thomas F., 5,186,561, Cl. 401-78.000.
Holloway, Thomas F., 5,186,560, Cl. 401-78.000.

Rise, Leif. Water conserving toilet flapper valve control. 5,185,891, Cl. 4-324.000.

Risseeuw, Paul, to Akzo N.V. Support fabric for bulk goods. 5,187,004, Cl. 428-229.000.

Ritchie, Steve: *See—*
Biagi, Carl; Ritchie, Steve; and Sullivan, Dwight, 5,186,462, Cl. 273-129.00S.

Ritschel, Maria A., nee Breunig, heir: *See—*
Feustel, Michael; and Ritschel, Werner, deceased, 5,186,720, Cl. 44-351.000.

Ritschel, Werner, deceased: *See—*
Feustel, Michael; and Ritschel, Werner, deceased, 5,186,720, Cl. 44-351.000.

Ritter, Mark B.: *See—*
Horton, Raymond R.; Noyan, Ismail C.; Palmer, Michael J.; and Ritter, Mark B., 5,186,632, Cl. 439-67.000.

Rivera, James A., to Otis Elevator Company. Isolation of escalator step tread. 5,186,301, Cl. 198-333.000.

Rivera, James A.: *See—*
Johnson, Gerald E.; McClement, Arthur; and Rivera, James A., 5,186,302, Cl. 198-335.000.

Rivero, Ralph A.: *See—*
Greenlee, William J.; and Rivero, Ralph A., 5,187,159, Cl. 514-81.000.

Rivers, David F., to Warner-Lambert Company. Segmented guard bar with improved skin flow control. 5,185,927, Cl. 30-50.000.

Riza, Nabeel A., to General Electric Company. Compact wide tunable bandwidth phased array antenna controller. 5,187,487, Cl. 342-372.000.

Robbins, Gerald L.: *See—*
Lundy, Charles E.; Krishnan, Sivaram; Robbins, Gerald L.; and Archey, Rick L., 5,187,211, Cl. 524-107.000.

Robert Bosch GmbH: *See—*
Hafner, Udo, 5,186,882, Cl. 264-257.000.
Laufer, Helmut, 5,186,143, Cl. 123-357.000.
Stecher, Gunther; Hecht, Hans; Bergfried, Dietrich; Ziegenbein, Botho; and Muehlheim, Richard, 5,186,051, Cl. 73-204.260.
Steinbrenner, Ulrich; Denz, Helmut; and Wild, Ernst, 5,186,153, Cl. 123-519.000.

Robert, Normand A. Smoke alarm remote disconnect. 5,186,653, Cl. 439-500.000.

Roberts, Kenneth B. Hair roller. 5,186,187, Cl. 132-245.000.

Robertshaw Controls Company: *See—*
Kaigler, William J., 5,187,338, Cl. 200-83.00R.

Robertson, Gary S.: *See—*
Pippin, James M.; Flagg, Kenneth C., Jr.; and Robertson, Gary S., 5,186,336, Cl. 209-583.000.

Robillard, Francois: *See—*
Roueche, Wallace; and Robillard, Francois, 5,186,391, Cl. 239-373.000.

Robinson, William, to A. Ahlstrom Corporation. Hydrocylone apparatus for separating dense particles from a flowing liquid. 5,186,823, Cl. 210-197.000.

Rochette, Jeff R.: *See—*
Stonerook, Dana A.; Abeska, Edward J.; and Rochette, Jeff R., 5,187,465, Cl. 340-438.000.

Rockenfeller, Uwe, to Gas Research Institute. Aqueous absorption fluids. 5,186,009, Cl. 62-112.000.

Rockenfeller, Uwe; and Kirol, Lance D., to Rocky Research. Portable cooler. 5,186,020, Cl. 62-457.900.

Rockshox, Inc.: *See—*
Turner, Paul H., 5,186,481, Cl. 280-276.000.

Rockwell International Corporation: *See—*
Adachi, Iwao P.; and Coffman, Stephen B., 5,187,539, Cl. 356-124.000.
Wirt, Thomas M., 5,187,544, Cl. 356-350.000.

Rocky Research: *See—*
Rockenfeller, Uwe; and Kirol, Lance D., 5,186,020, Cl. 62-457.900.

Rodal, Eric B.: *See—*
Wagner, Gary L.; Rodal, Eric B.; and Lau, Chung Y., 5,187,450, Cl. 331-96.000.

Rodenhouse, Randall A., to Miles Inc. Polycarbonate compositions resistant to gamma radiation. 5,187,208, Cl. 523-136.000.

Roderick, Craig A.: *See—*
Collins, Kenneth S.; Trow, John R.; Roderick, Craig A.; Pinson, Jay D., II; and Buchberger, Douglas A., II, 5,187,454, Cl. 333-17.300.

Rodriques, Karen E.: *See—*
Brooks, Dee W.; and Rodriques, Karen E., 5,187,192, Cl. 514-445.000.

Roehrich, Roland L.; and Hanson, Jay L., to Thermo King Corporation. Transport refrigeration unit and method of operating same. 5,186,015, Cl. 62-133.000.

Roeser, John O.: *See—*
Blette, Russell E.; and Roeser, John O., 5,186,982, Cl. 427-256.000.

Rogers, Frances C.; and Terzian, William L., to TeeWee, Inc. Plastic carrying handles. 5,185,904, Cl. 16-125.000.

Rogers, Howard H.; Sernka, Richard P.; and Stadnick, Steven J., to Hughes Aircraft Company. Nickel-hydrogen cells. 5,187,028, Cl. 429-101.000.

Rogers, Richard E.; Turvy, Larry D., Jr.; Eberhardt, George J.; and Loughman, Richard E., to NCR Corporation. Optical paper sensing method and apparatus having light source and detector moveable in pivotal relation. 5,187,374, Cl. 250-561.000.

Rogers, Ronald A.: *See—*
Sousa, James E.; Rogers, Ronald A.; and Grota, Allen, 5,186,585, Cl. 410-9.000.

Rohen, James E., to International Business Machines Corporation. Virtual graphics display capable of presenting icons and windows to the blind computer user and method. 5,186,629, Cl. 434-114.000.

Rohm Co., Ltd.: *See—*
Nakao, Hironobu, 5,187,636, Cl. 361-313.000.

Rohm and Haas Company: *See—*
Hallden-Abberton, Michael P.; and Wills, William L., 5,186,993, Cl. 428-36.920.

Rolfson, J. Brett: *See—*
Doan, Trung T.; Lowrey, Tyler A.; Cathey, David A.; and Rolfson, J. Brett, 5,186,670, Cl. 445-24.000.

Rollason Engineering & Mfg., Inc.: *See—*
Everett, George, 5,186,305, Cl. 198-392.000.

Rollins, Brian R.: *See—*
Dismore, Gregory W.; and Rollins, Brian R., 5,185,890, Cl. 4-252.500.

Rolls-Royce Motor Cars Limited: *See—*
Cooper, John E., 5,186,694, Cl. 475-230.000.

Romanelli, Marcello J., to Grumman Aerospace Corporation. Spring actuated take-up reel for removing cable slack. 5,186,406, Cl. 242-54.00R.

Romani, Paul M.: *See—*
Di Troia, Gary W.; and Romani, Paul M., 5,187,463, Cl. 337-165.000.

Romero, Richard A.; and Bengoa, Jesus, to Federal-Mogul Corporation. Unitized radial shaft seal. 5,186,472, Cl. 277-37.000.

Ron Warner Associates: *See—*
Warner, Ronald C.; and Warner, Craig M., 5,185,900, Cl. 15-97.100.

Ronai, Christian. Truck box cover apparatus. 5,186,514, Cl. 296-100.000.

Rooney, Timothy M.: *See—*
Majerus, Norbert; Magee, Arthur W.; Hickman, Michael D.; Parrish, Gary C.; Rooney, Timothy M.; and Chlebina, Lawrence E., 5,185,960, Cl. 51-104.000.

Roost, Walter, to Standard St Sensortechnik Ag. Method of investigating the gait of a living being. 5,186,062, Cl. 73-865.400.

Rooy, Elwin L.; Petrey, Gerald R.; Weaver, James R.; Granger, Douglas A.; Richter, Raymond T.; and Reravis, H. Gray, Jr., to Aluminum Company of America. Lithoplate and method for making same. 5,186,767, Cl. 148-552.000.

Rosales, Jacob: *See—*
Mortun, Sorin; and Rosales, Jacob, 5,186,316, Cl. 200-527.000.

Rosemount Inc.: *See—*
Kielb, John A.; Nelson, Richard L.; and Pederson, David L., 5,187,474, Cl. 340-870.180.

Rosemount Limited: *See—*
Johnston, James S., 5,187,546, Cl. 356-358.000.

Rosen, Vicki A.: *See—*
Wozney, John M.; Wang, Elizabeth A.; Rosen, Vicki A.; and Celeste, Anthony J., 5,187,076, Cl. 435-69.100.

Rosenthal, David S. H.: *See—*
Densmore, Owen M.; and Rosenthal, David S. H., 5,187,786, Cl. 395-600.000.

Rosetta, James A. Protective collar for golf tees. 5,186,455, Cl. 273-32.00B.

Ross, James P.: *See—*
Boyce, Joseph S.; Ross, James P.; Jens, Stephen C.; and Evans, David A., 5,186,776, Cl. 156-73.200.

Rossman, Mitchell A.: *See—*
Bonham, James A.; and Rossman, Mitchell A., 5,187,045, Cl. 430-275.000.

Rotex, Inc.: *See—*
Pierson, Bruce A.; and Lower, William E., 5,186,333, Cl. 209-370.000.

Roth, Rudolf: *See—*
Raaymakers, Wilhelmus P. M.; Mons, Johannes J.; and Roth, Rudolf, 5,187,699, Cl. 369-48.000.

Roueche, Wallace; and Robillard, Francois. Portable sprayer. 5,186,391, Cl. 239-373.000.

Rouleau, Alain; Rouleau, Patrick; and Touret, Jean-Pierre. Fabric guiding device and process of automatic sewing. 5,186,115, Cl. 112-306.000.

Rouleau, Patrick: *See—*
Rouleau, Alain; Rouleau, Patrick; and Touret, Jean-Pierre, 5,186,115, Cl. 112-306.000.

Roussel Uclaf: *See—*
Brion, Francis; Buendia, Jean; Diolez, Christian; and Vivat, Michel, 5,187,273, Cl. 540-4.000.

Rowson, James A., to VLSI Technology, Inc. Integrated circuit placement method using netlist and predetermined ordering constraints to produce a human readable integrated circuit schematic diagram. 5,187,784, Cl. 395-500.000.

Roy, Samir D.: *See—*
Cleary, Gary W.; and Roy, Samir D., 5,186,939, Cl. 424-448.000.

Rubenzer, Peter, to SLT Labinstruments Gesellschaft m.b.H. Cleaning device for cuvettes. 5,186,760, Cl. 134-22.180.

Ruckgaber, Thomas: *See—*
Finzel, Lothar; and Ruckgaber, Thomas, 5,187,766, Cl. 385-135.000.

VOL 1147 ISS 3 FE 16 1993 UMI

Ruddle, George E.: *See—*
Hunt, Patrick J.; Jonas, John J.; Yue, Stephen; Ruddle, George E.; and Pussegoda, Lakshman N., 5,186,769, Cl. 148-593.000.

Rudnic, Edward M.: *See—*
Kogan, Patricia W.; Rudnic, Edward M.; Sequeira, Joel A.; and Chaudry, Imtiaz A., 5,186,930, Cl. 424-78.100.

Ruiz, Steve C.: *See—*
Evenson, Erik E.; Wesselski, Clarence J.; and Ruiz, Steve C., 5,186,567, Cl. 403-7.000.

Rumbley, Ronald J., to AOS Holding Company. Electric water heater with radially extending overlapped horizontal heating element arranged in vertically spaced aligned sets. 5,187,772, Cl. 392-449.000.

Rummage, Glenn E.; and Su, Philip P., to W. R. Grace & Co.-Conn. Filling system. 5,186,223, Cl. 141-91.000.

Runge, Friedrich. Spark plug for an internal combustion engine. 5,186,132, Cl. 123-169.00R.

Runk, Robert M., to General Motors Corporation. Low refrigerant charge detection system for a heat pump. 5,186,014, Cl. 62-129.000.

Runkle, Charles J.: *See—*
Mancusi, Anthony W.; Delozier, J. Clift; Prasad, Ravi; Runkle, Charles J.; and Shuey, Harry F., 5,186,832, Cl. 210-321.800.

Rupar, Mark J.: *See—*
Donovan, William P.; Rupar, Mark J.; Slaney, Annette C.; and Johnson, Timothy B., 5,187,091, Cl. 435-240.400.

Rupp, Roberto: *See—*
Muller, Kurt; and Rupp, Roberto, 5,187,520, Cl. 355-72.000.

Ruppen, Peter: *See—*
Quittmann, Wilhelm; Zumoberhaus, Leo; and Ruppen, Peter, 5,187,297, Cl. 558-360.000.

Russell, Cynthia M.: *See—*
Lagace, Maurice P.; Boucher, Stephen G.; Cullen, Robert M.; Noyes, Andrew L.; Willette, John; and Russell, Cynthia M., 5,186,050, Cl. 73-187.000.

Russell, Donald D.: *See—*
Staples, Frank E.; Russell, Donald D.; and Potter, James L., 5,186,686, Cl. 464-69.000.

Russell, Mark E.; Donisi, Anthony M.; and Miller, David C., to Raytheon Company. Compact coupled line filter circuit. 5,187,459, Cl. 333-204.000.

Russell, Tony A.; and Wheeler, Geoffrey C., to Priorlucky Limited. Mushroom harvesting. 5,185,989, Cl. 56-13.100.

Rutkowski, Paul W.: *See—*
Malleo-Roach, John A.; Rutkowski, Paul W.; and Wu, Eleanor, 5,187,712, Cl. 371-22.100.

Ruwe, Walter: *See—*
Emrich, Helmut; Muller, Horst; Ruwe, Walter; and Wegel, Erich, 5,186,105, Cl. 101-217.000.

Ryan, Richard P.; Halstead, Gary A.; Smith, David M.; and Joshi, Shrikant M., to General Motors Corporation. Method of manufacturing a tube for a heat exchanger. 5,185,925, Cl. 29-890.049.

Ryan, Richard P.: *See—*
Birgenheier, Raymond A.; and Ryan, Richard P., 5,187,719, Cl. 375-10.000.

Rybicki, Mathew A.: *See—*
Brooks, Todd L.; and Rybicki, Mathew A., 5,187,448, Cl. 330-258.000.

Rydberg, Bo L.; and Dehlen, Bengt L. A., to Trellex Aktiebolag. Wall exposed to wear and means for making it. 5,185,980, Cl. 52-506.000.

Ryder, Francis E.; and Kanner, Rowland W., to Ryder International Corporation. Lens case for contact lens disinfecting system. 5,186,317, Cl. 206-5.100.

Ryder, Francis E.; Kanner, Rowland W.; and Lisak, Stephen P., to Textron Inc. Headlamp adjusting mechanism and headlamp adjusting assembly. 5,186,532, Cl. 362-66.000.

Ryder International Corporation: *See—*
Ryder, Francis E.; and Kanner, Rowland W., 5,186,317, Cl. 206-5.100.

Ryder, Ronald L.; and Goss, David C., to Textron Inc. Headlamp adjuster. 5,186,531, Cl. 362-66.000.

Rydergren, Bertil; Silfven, Jan; and Malmhall, Roger, to Instrumentverken AB. Magnetic field detector for detecting earth's magnetic field. 5,187,437, Cl. 324-253.000.

Ryham, Rolf, to Ahlstromforetagen Swenska. Suspension deaerating process. 5,186,726, Cl. 55-32.000.

Ryles, Christine W.: *See—*
Williams, David R.; and Ryles, Christine W., 5,186,926, Cl. 424-53.000.

Ryuo, Toshihiko; and Watanabe, Toshiaki, to Shin-Etsu Chemical Co., Ltd. Oxide garnet single crystal. 5,186,866, Cl. 252-584.000.

S & C Co.,Ltd.: *See—*
Shibano, Yoshihide, 5,186,389, Cl. 239-102.200.

S. I. Scientific Innovations Ltd.: *See—*
Gross, Joseph; and Zucker, Shlomo, 5,186,805, Cl. 204-265.000.

S.McD. Murphy & Partners Ltd.: *See—*
Van De Moortele, Guido, 5,186,432, Cl. 251-16.000.

Saab-Scania Aktiebolag: *See—*
Hedstrom, Lars-Gunnar; and Westman, Bjorn, 5,186,291, Cl. 192-3.230.

Sablotsky, Steven; Questel, John M.; and Thompson, James A., to Key Pharmaceuticals, Inc. Adhesive transdermal dosage layer. 5,186,938, Cl. 424-443.000.

Sacchi, Fabrizio: *See—*
Vai, Gianfranco; Zuffada, Maurizio; Sacchi, Fabrizio; Moloney, David; and Betti, Giorgio, 5,187,452, Cl. 331-113.00R.

Saderholm, Davin G.: *See—*
Adams, Gary V.; and Saderholm, Davin G., 5,186,490, Cl. 280-731.000.

Saeki, Shiro; Nakazato, Yukitaka; Ishizaki, Hiroyuki; Hyodou, Fumitaka; and Uotani, Kunihiro, to Ricoh Company, Ltd. Recycling automatic document feeder. 5,186,446, Cl. 271-3.100.

SAFT: *See—*
Firmin, Jean-Luc; and Alexandre, Alain, 5,187,030, Cl. 429-120.000.

Sagae, Atsushi: *See—*
Kinoshita, Yoshio; Koshino, Shigeaki; and Sagae, Atsushi, 5,186,296, Cl. 192-41.00R.

Sage Products, Inc.: *See—*
Harreld, Donald R.; and Skiba, Barbara T., 5,186,322, Cl. 206-216.000.

Sahara, Kesanori: *See—*
Nakamura, Katsushige, 5,186,422, Cl. 248-123.100.

Sahashi, Masashi: *See—*
Arai, Tomohisa; Sori, Naoyuki; Sahashi, Masashi; and Tokai, Yoichi, 5,186,765, Cl. 148-301.000.

Saia, Richard J.: *See—*
Kingsley, Jack D.; Kwasnick, Robert F.; Wei, Ching-Yeu; and Saia, Richard J., 5,187,369, Cl. 250-370.110.

Saint-Gobain Vitrage: *See—*
Degeilh, Robert; and Dages, Daniel, 5,187,217, Cl. 524-297.000.

Saint-Gobain Vitrage International c/o Saint-Gobain Recherche: *See—*
Weber, M. Frederic, 5,186,730, Cl. 65-289.000.

Saito, Hiromitsu: *See—*
Kanda, Yutaka; Uosaki, Youichi; Saito, Hiromitsu; Sano, Hiroshi; Kobayashi, Eiji; Morimoto, Makoto; and Nagamura, Satoru, 5,187,186, Cl. 514-410.000.

Saito, Hitoshi: *See—*
Kanto, Jumpei; Saito, Hitoshi; Eguchi, Hiroshi; Nakamura, Masayuki; Kafuku, Koumei; Chiba, Junji; and Suda, Kaoru, 5,187,145, Cl. 503-227.000.

Saito, Kimitoshi: *See—*
Ozawa, Yoshio; Hosoya, Mitsukazu; Matsumoto, Takashi; and Saito, Kimitoshi, 5,187,531, Cl. 355-308.000.

Saito, Masaaki: *See—*
Shimada, Naohiro; Ohno, Yasushi; and Saito, Masaaki, 5,187,704, Cl. 370-13.000.

Saito, Masao: *See—*
Oka, Takeya; Saito, Masao; Miki, Nobuaki; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Otsubo, Hideaki; Hojo, Yasuo; and Asahara, Norimi, 5,186,204, Cl. 137-238.000.

Saito, Masayoshi: *See—*
Komori, Mikio; Sato, Shuichi; Adachi, Kazuyu; and Saito, Masayoshi, 5,186,183, Cl. 131-281.000.

Saito, Naoki; and Mihayashi, Keiji, to Fuji Photo Film Co., Ltd. Silver halide color photographic material. 5,187,056, Cl. 430-544.000.

Saito, Takanori: *See—*
Ebe, Kazuyoshi; Narita, Hiroaki; Taguchi, Katsuhisa; Akeda, Yoshitaka; and Saito, Takanori, 5,187,007, Cl. 428-343.000.

Saito, Taro: *See—*
Ishino, Renshiro; Yoshimura, Shigeo; Sunahata, Mutsumi; Saito, Taro; and Tanizaki, Yasuo, 5,186,059, Cl. 73-862.193.

Saito, Tetsuo: *See—*
Fukudome, Yoshio; Hamada, Yasunori; Okayama, Masao; Kako, Yutaka; Saito, Tetsuo; and Utsumi, Itsunori, 5,186,334, Cl. 209-534.000.

Saito, Wataru: *See—*
Sato, Makoto; Inagaki, Hiromi; Saito, Wataru; Sakurai, Kazuya; Hagiwara, Koichi; and Horiuchi, Makoto, 5,186,525, Cl. 303-113.400.

Saitoh, Mitsuhiko: *See—*
Matsnmoto, Hiroshi; Aoyama, Toshiharu; Saitoh, Mitsuhiko; and Oshima, Toshiaki, 5,186,064, Cl. 74-47.000.

Sakaguchi, Shuzabu: *See—*
Takeda, Mutsuhiko; Hagiwara, Isao; Zaima, Fumiya; and Sakaguchi, Shuzabu, 5,187,311, Cl. 556-428.000.

Sakai, Masanori; Ohsumi, Katsumi; Ohnaka, Noriyuki; Kikuchi, Eiji; Mabuchi, Katsumi; and Takahashi, Takuya, to Hitachi, Ltd. Solution quantitative analysis apparatus, quantitative analysis methods, and nuclear reactor water quality control system. 5,186,798, Cl. 204-153.100.

Sakai, Masanori: *See—*
Shimizu, Hideaki; and Sakai, Masanori, 5,187,521, Cl. 355-202.000.

Sakakibara, Koji, to Nippondenso Co., Ltd. Knocking control apparatus for internal combustion engine. 5,186,145, Cl. 123-425.000.

Sakama, Mitsunori: *See—*
Yamazaki, Shunpei; Fukada, Takeshi; Sakama, Mitsunori; Amachi, Nobumitsu; Sakamoto, Naoya; Codama, Mitsufumi; Fuki, Takashi; and Takayama, Ichiro, 5,187,601, Cl. 359-54.000.

Sakamoto, Manabu, to Ikeda Bussan Co., Ltd. Hinge mechanism. 5,186,349, Cl. 220-331.000.

Sakamoto, Naoya: *See—*
Yamazaki, Shunpei; Fukada, Takeshi; Sakama, Mitsunori; Amachi, Nobumitsu; Sakamoto, Naoya; Codama, Mitsufumi; Fuki, Takashi; and Takayama, Ichiro, 5,187,601, Cl. 359-54.000.

Sakamoto, Shigeo: *See—*
Owada, Toshinobu; Inamori, Akio; Aota, Yoshikazu; Sakamoto, Shigeo; and Takahashi, Seiichi, 5,186,297, Cl. 192-85.0CA.

Sakamoto, Toshiaki: *See—*
Fukumi, Hiroshi; Sakamoto, Toshiaki; Sugiyama, Mitsuo; Yamaguchi, Takeshi; Oshima, Takeshi; and Iijima, Yasuteru, 5,187,181, Cl. 514-318.000.

Sakane, Kazuo; Kawabata, Kohji; Miyai, Kenzi; and Inamoto, Yoshiko, to Fujisawa Pharmaceutical Co., Ltd. Cephem compound. 5,187,160, Cl. 514-202.000.

Sakashita, Osamu: *See—*
Tsukada, Shinichi; Iizuka, Yoshiharu; Tamura, Hideyuki; and Sakashita, Osamu, 5,186,593, Cl. 413-19.000.

Sakashita, Takeshi; Shimoda, Tomoaki; Nagai, Takashi; and Kishimura, Kotarou, to General Electric Company. Polycarbonate, polyestercarbonate resin compounds and preparing methods thereof. 5,187,242, Cl. 525-439.000.

Sakata, Shoji, to Science and Technology Agency. SH wave generator. 5,187,331, Cl. 181-121.000.

Sakata, Yasuhiko: *See—*
Otani, Yasuaki; Takishima, Toichi; and Sakata, Yasuhiko, 5,186,811, Cl. 205-125.000.

Sakuma, Tadashi: *See—*
Mishima, Masayuki; Yamasaki, Harumasa; Matsuse, Takashi; Sakuma, Tadashi; and Togashi, Hiroyasu, 5,187,310, Cl. 556-413.000.

Sakunaga, Kenichi; and Okada, Mizuo, to Mitsubishi Rayon Co. Method of manufacturing transmission type screen. 5,186,780, Cl. 156-167.000.

Sakurai, Kazuya: *See—*
Sato, Makoto; Inagaki, Hiromi; Saito, Wataru; Sakurai, Kazuya; Hagiwara, Koichi; and Horiuchi, Makoto, 5,186,525, Cl. 303-113.400.

Sakurai, Koichi: *See—*
Nomoto, Masai; Sakurai, Koichi; Suzuki, Takashi; Fukui, Kiyoshi; and Okamoto, Atsuki, 5,186,768, Cl. 148-580.000.

Saleh, Adel A. M.: *See—*
Habbab, Isam M. I.; and Saleh, Adel A. M., 5,187,610, Cl. 359-341.000.

Salmon, John K., to Otis Elevator Company. Triple-wrap traction arrangement. 5,186,283, Cl. 187-20.000.

Salmon, Roger; Sunley, Raymond L.; and Whittle, Alan J., to Imperial Chemical Industries PLC. 1-phenyl substituted pyrimidone derivatives. 5,187,176, Cl. 514-269.000.

Salomon S.A.: *See—*
Couderc, Bernard, 5,186,484, Cl. 280-633.000.

Salvati, Michael: *See—*
Corey, Paul F.; Michaels, Angela A.; Proud, Lois J.; Salvati, Michael; Trimmer, Robert W.; and Sommer, Ronald G., 5,187,104, Cl. 436-86.000.

Salzman, Phil M.: *See—*
Toshima, Masato M.; Salzman, Phil M.; Murdoch, Steven C.; Wang, Cheng; Stenholm, Mark A.; Howard, James; Hall, Leonard; and Cheng, David, 5,186,594, Cl. 414-217.000.

Salzmann, Willy E. Rocking-piston machine. 5,186,137, Cl. 123-192.200.

Samsung Electronics Co., Ltd.: *See—*
Baek, Won-Shik; Choi, Kyu-Hyun; and Bae, Dong-Joo, 5,187,548, Cl. 257-308.000.
Choi, Soo Y., 5,185,903, Cl. 15-339.000.
Hong, Kwon-pyo, 5,187,618, Cl. 360-69.000.
Hwang, Hag-In, 5,187,596, Cl. 358-484.000.
Kim, Gi-Beom, 5,187,577, Cl. 358-167.000.
Kim, Gu S., 5,186,381, Cl. 228-123.000.
Kim, Man-Hoe, 5,186,022, Cl. 62-515.000.
Kim, Yong-je, 5,187,590, Cl. 358-335.000.
Na, Il-gu, 5,187,576, Cl. 358-144.000.

Samsung Semiconductor, Inc.: *See—*
Chang, Shuen-Chin; and Kim, Moon G., 5,187,386, Cl. 307-296.800.

Samuel, David N.; and Williams, Richard S., to W. R. Grace & Co.-Conn. Container closures, sealed containers and sealing compositions for them. 5,186,991, Cl. 428-35.800.

Samwoo Far Infra-Red Ray Co., Ltd.: *See—*
Kweon, Young J., 5,187,124, Cl. 501-1.000.

San Joaquin Valley Express: *See—*
Gallo, John R.; Coleman, Gregory J.; and Brown, Claude E., 5,186,351, Cl. 220-563.000.

Sancinelli, Roberto, to Blufin S.r.l. Method for preheating scrap iron by pyrolysis of resinous residues contained therein, with total recovery of their energy content and improvement of the steelmaking cycle. 5,186,740, Cl. 75-401.000.

Sanderson, Paul H.; and Serkland, Richard C. Aircraft armament mounting apparatus. 5,187,318, Cl. 89-37.220.

Sandhu, Gurtej S.; and Fazan, Pierre, to Micron Technology, Inc. Barrier layers for ferroelectric and pzt dielectric on silicon. 5,187,638, Cl. 361-313.000.

Sanford, David P.; Turner, Bruce R.; and Heim, Richard J., to Erie Scientific Company. Electrophoresis gel slab cassettes having pull cords and methods. 5,186,807, Cl. 204-299.00R.

Sankyo Company Limited: *See—*
Fukumi, Hiroshi; Sakamoto, Toshiaki; Sugiyama, Mitsuo; Yamaguchi, Takeshi; Oshima, Takeshi; and Iijima, Yasuteru, 5,187,181, Cl. 514-318.000.

Sano, Hiroshi: *See—*
Kanda, Yutaka; Uosaki, Youichi; Saito, Hiromitsu; Sano, Hiroshi; Kobayashi, Eiji; Morimoto, Makoto; and Nagamura, Satoru, 5,187,186, Cl. 514-410.000.

Sano, Shoichi: *See—*
Ohtsu, Ikuo; Kataoka, Kinichi; and Sano, Shoichi, 5,186,595, Cl. 414-225.000.

Sanofi: *See—*
Couderc, Rene ; Eyssautier, Bruno; Laporte, Martine; and Planard, Marie-France, 5,187,081, Cl. 435-71.100.

Sanshin Kogyo Kabushiki Kaisha: *See—*
Watanabe, Takahide; Shibata, Yasuhiko; Mitsui, Shoichi; and Koike, Takashi, 5,186,133, Cl. 123-179.140.

Santel, Hans-Joachim: *See—*
Andree, Roland; Drewes, Mark W.; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., 5,186,734, Cl. 504-196.000.
Fischer, Reiner; Baasner, Bernd; Hageman, Hermann; Krebs, Andreas; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; Becker, Benedikt; Schaller, Klaus; and Strang, Harry, 5,186,737, Cl. 504-283.000.

Santoh, Tsuyoshi; and Mihara, Chieko, to Canon Kabushiki Kaisha. Optical recording medium. 5,187,043, Cl. 430-270.000.

Sanyo Electric Co., Ltd.: *See—*
Higashitsutsumi, Yoshihito, 5,187,582, Cl. 358-213.110.
Niina, Tatsuhiko; Ohta, Kiyoshi; Nakata, Toshitake; Matsushita, Yasuhiko; Uetani, Takahiro; and Fujikawa, Yoshiharu, 5,187,547, Cl. 257-77.000.

Sapper, Richard. Bicycle with folding frame. 5,186,482, Cl. 280-278.000.

Sarmientos, Paolo: *See—*
Latta, Martine; Mayaux, Jean-Francois; and Sarmientos, Paolo, 5,187,261, Cl. 530-363.000.

Sartor, Dietmar, to Hilti Aktiengesellschaft. Shaped bodies for drilling or cutting hard materials. 5,186,724, Cl. 51-293.000.

Saruta, Makoto, to NCR Corporation. Method of counting the number of passers-by. 5,187,688, Cl. 367-96.000.

Sasaki, Hiroki: *See—*
Araki, Kenji; Sasaki, Hiroki; Yonezawa, Akihiro; and Mitsuyuki, Youichirou, 5,187,413, Cl. 315-291.000.

Sasaki, Mitsuo, to Just Japan Co., Ltd. Place-on type assemblable structure. 5,185,978, Cl. 52-175.000.

Sasaki, Takashi; Ishigaki, Isao; Izuchi, Syuichi; and Noda, Tomohiko, to Yuasa Battery Co., Ltd.; and Japan Atomic Energy Research Institute. Solid polymer electrolytes. 5,187,032, Cl. 429-192.000.

Sasama, Kazuo: *See—*
Tanimoto, Koji; and Sasama, Kazuo, 5,187,495, Cl. 346-108.000.

Sasano, Akira: *See—*
Taniguchi, Hideaki; Kunitou, Hirofumi; Oritsuki, Ryouji; and Sasano, Akira, 5,187,604, Cl. 359-88.000.

Sataka, Naoto: *See—*
Egashira, Noritaka; Sataka, Naoto; and Akada, Masanori, 5,187,002, Cl. 428-195.000.

Sato, Hideki: *See—*
Ohsawa, Ichiro; Kikuchi, Yutaka; Kanoto, Masanobu; Sato, Hideki; Endo, Yoshifumi; and Kawaguchi, Hideshi, 5,186,448, Cl. 271-9.000.

Sato, Katsuyuki; Kawamoto, Hiroshi; and Yanagisawa, Kazumasa, to Hitachi, Ltd. Complementary MISFET voltage generating circuit for a semiconductor memory. 5,187,685, Cl. 365-189.090.

Sato, Kiyoto; and Nakamaru, Kazuki, to Sony Corporation. Cassette case and index sheet. 5,186,325, Cl. 206-232.000.

Sato, Makoto; Inagaki, Hiromi; Saito, Wataru; Sakurai, Kazuya; Hagiwara, Koichi; and Horiuchi, Makoto, to Honda Giken Kogyo Kabushiki Kaisha; and Nissin Kogyo Kabushiki Kaisha. Hydraulic braking pressure control system for vehicle. 5,186,525, Cl. 303-113.400.

Sato, Masaei, to Mitsuba Electric Manufacturing Co., Ltd. Structure for mounting telescopic antenna for automobile. 5,187,492, Cl. 343-901.000.

Sato, Shuichi: *See—*
Komori, Mikio; Sato, Shuichi; Adachi, Kazuyu; and Saito, Masayoshi, 5,186,183, Cl. 131-281.000.

Sato, Takayuki: *See—*
Takahashi, Tokihiro; Sato, Takayuki; Ota, Masuo; and Nagao, Tatsuro, 5,187,734, Cl. 379-79.000.

Sato, Toshiaki: *See—*
Kamachi, Mikiharu; Yamamoto, Tohei; Sato, Toshiaki; and Fukunishi, Yoshiharu, 5,187,226, Cl. 525-56.000.

Sato, Toshiharu, to Citizen Watch Co., Ltd. Apparatus for scanning an optical recording medium with a beam of light. 5,187,600, Cl. 359-41.000.

Sato, Yuji; and Friesen, Henry G., to Takeda Chemical Industries, Ltd. Method for detecting and measuring FGF. 5,187,062, Cl. 435-7.940.

Satoh, Hiroaki: *See—*
Kikuchi, Haruhiko; Satoh, Hiroaki; Yahata, Nobuhiro; Hagihara, Koichiro; Hayakawa, Toru; Mino, Setsuko; and Yanai, Makoto, 5,187,166, Cl. 514-249.000.

Satoh, Yoichi: *See—*
Steindorf, Richard E.; Maeda, Katsumi; Boche, Daniel K.; and Satoh, Yoichi, 5,186,912, Cl. 422-263.000.

Saturn Corporation: *See—*
Downs, Robert C., 5,186,065, Cl. 74-331.000.
Nitz, Larry T.; and Rees, Susan L., 5,186,294, Cl. 192-3.300.

Sauter, Hubert: *See—*
Wingert, Horst; Sauter, Hubert; Brand, Siegbert; Wenderoth, Bernd; Lorenz, Gisela; and Ammermann, Eberhard, 5,187,170, Cl. 514-351.000.

Savage, David W.: *See—*
Kaul, Bal K.; O'Bara, Joseph T.; Savage, David W.; Dennis, J. Patrick; Bellows,Richard J.; and Kantner, Edward, 5,186,819, Cl. 208-310.00Z.

Savard, Donald D., to Interprovincial Pipe Line Company. Temporary disintegratable plug for an open-ended oil pipeline. 5,186,214, Cl. 138-89.000.

Sawa, Ikuo; Mori, Natsuki; Maemoto, Shunichi; Kutsuki, Hidetoshi; and Hasegawa, Junzo, to Kanegafuchi Kagaku Kogyo Kabushiki

VOL
1147
ISS
3
FE
16
1993
UMI

Kaisha. Method for the preparation of optically active 3-hydroxypyrrolidine derivatives. 5,187,094, Cl. 435-280.000.
Sawabe, Atsuhito: *See*—
Hasunuma, Masahiko; Kaneko, Hisashi; Sawabe, Atsuhito; Kawanoue, Takashi; Kohanawa, Yoshiko; and Komatsu, Shuichi, 5,187,561, Cl. 257-771.000.
Sawada, Hisashi: *See*—
Ueda, Masanori; Sawada, Hisashi; Tanaka, Akira; and Wakatsuki, Noboru, 5,187,758, Cl. 385-16.000.
Sawada, Shizuo: *See*—
Yoshikawa, Susumu; Kumagai, Junpei; Sawada, Shizuo; and Matsumoto, Yasuo, 5,187,566, Cl. 257-301.000.
Sawada, Shusaku: *See*—
Ohashi, Masahisa; Sawada, Shusaku; Sogame, Motomu; Oomasa, Yoshiaki; and Kaneto, Kunikazu, 5,186,890, Cl. 376-434.000.
Saxby, Michael E. Pressurized gas cartridge ammunition. 5,187,323, Cl. 102-440.000.
Say, Richard E.: *See*—
Pfaller, Mathew A.; Baker, Kenneth N.; and Say, Richard E., 5,185,921, Cl. 29-825.000.
Schabel, Amelia A.: *See*—
Hamill, Robert L.; Hunt, Ann H.; Nagarajan, Ramakrishnan; Schabel, Amelia A.; and Yao, Raymond C., 5,187,082, Cl. 435-71.300.
Schach, Thomas, to Hoechst Aktiengesellschaft. Process for the preparation of 2,4-dichloro-5-fluorobenzonitrile. 5,187,295, Cl. 558-343.000.
Schafer, Jack J.: *See*—
Enomoto, Masahiro; Patel, Arvind; and Schafer, Jack J., 5,186,654, Cl. 439-570.000.
Schaldach, Max, to Biotronik Mess- und Therapiegerate GmbH & Co. Common signal transmission path cardiac pacemaker with switchable capacitors. 5,186,169, Cl. 128-419.0PG.
Schaller, Klaus: *See*—
Fischer, Reiner; Baasner, Bernd; Hageman, Hermann; Krebs, Andreas; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; Becker, Benedikt; Schaller, Klaus; and Strang, Harry, 5,186,737, Cl. 504-283.000.
Schardt, David L.; Luna, Lois A.; and Jones, Ivor S., to Inter-City Products Corporation (USA). Removable access panels for rooftop unit. 5,186,528, Cl. 312-100.000.
Scharf, James E.; and Olm, Orville, to Jim Scharf Holdings Ltd. Plastic wrap dispenser. 5,186,376, Cl. 225-42.000.
Scharrer, Konrad, to Blau KG. Filling nipple for a fuel tank. 5,186,220, Cl. 141-59.000.
Schaumstoffwerk Greiner Gesellschaft m.b.H: *See*—
Purstinger, Franz; and Dorninger, Frank, 5,186,876, Cl. 264-40.600.
Schebel, Ronald W.: *See*—
Niespodziany, David A.; Olson, David L.; Schebel, Ronald W.; and Wentland, Julie A., 5,186,521, Cl. 301-6.910.
Scheerer, Hans: *See*—
Schobbe, Hermann; Steinhauser, Gerd; Scheerer, Hans; Opara, Andreas; Mohrmann, Werner; Steinert, Hans-Rudolf; and Konig, Wolfhard, 5,186,440, Cl. 267-220.000.
Schellekens, Ronald M. A. M.; Van Dijk, Hans K.; and Bulters, Marcus J. H., to Stamicarbon B.V. Intrinsically conductive moulding compound. 5,186,861, Cl. 252-500.000.
Schembri, Carol T.: *See*—
Burd, Tammy L.; and Schembri, Carol T., 5,186,844, Cl. 210-782.000.
Schering Aktiengesellschaft: *See*—
Schirmacher, Manfred, 5,186,224, Cl. 141-387.000.
Skuballa, Werner; Buchmann, Bernd; Heindl, Josef; Frohlich, Wolfgang; and Ekerdt, Roland, 5,187,286, Cl. 549-283.000.
Schering Corporation: *See*—
Kogan, Patricia W.; Rudnic, Edward M.; Sequeira, Joel A.; and Chaudry, Imtiaz A., 5,186,930, Cl. 424-78.100.
Schetter, Martin: *See*—
Nitzschke, Rudiger; and Schetter, Martin, 5,186,070, Cl. 74-477.000.
Schick, Robert P., to Praxair Technology Inc. Cooling water ozonation system. 5,186,841, Cl. 210-760.000.
Schiebler, Wolfgang: *See*—
Otto, Veit; Weber, Wolfram; Muller-Stein, Iris; and Schiebler, Wolfgang, 5,186,826, Cl. 210-198.200.
Schiesser, Robert A.: *See*—
Kovacich, John A.; Hoinsky, Christopher C.; Williams, Donald G.; and Schiesser, Robert A., 5,186,055, Cl. 73-727.000.
Schilling, James W.: *See*—
Cordell, Barbara; Schilling, James W.; and Katunuma, Nobuhiko, 5,187,153, Cl. 514-12.000.
Schindler, Wolfgang; and Mietusch, Peer. Multiple compact disk player and storage device. 5,187,695, Cl. 369-37.000.
Schirmacher, Manfred, to Schering Aktiengesellschaft. Filling device. 5,186,224, Cl. 141-387.000.
Schissler, L. Robert: *See*—
Moran, John L., III; and Schissler, L. Robert, 5,187,742, Cl. 379-403.000.
Schlager, Kenneth J.: *See*—
Fritzsche, Robert W.; and Schlager, Kenneth J., 5,187,106, Cl. 436-501.000.
Schlemenat, Alfred, to Man Gutehoffnungshutte AG. High temperature/pressure gas tubular heat exchanger. 5,186,247, Cl. 165-162.000.
Schlenker, Heinz W.; Hirbour, Louis J.; and Gramarossa, Daniel J., to Future Automation, Inc. Method and system for removing resin bleed from electronic components. 5,186,797, Cl. 204-146.000.
Schleuniger, Urs: *See*—
Speiser, Peter; Schleuniger, Urs; Orsolini, Piero; and Heimgartner, Frederic, 5,187,150, Cl. 514-2.000.
Schlondorff, Georg; Mosges, Ralph; Meyer-Ebrecht, Dietrich; and Moll, Philipp, to G. M. Piaff. Process and device for the reproducible optical representation of a surgical operation. 5,186,174, Cl. 128-653.100.
Schloss, Jurgen; Trummer, Gunther; and Wich, Harald, to Diehl GmbH & Co. Process for controlling the detonation of a mine and mine with triggering device operating in accordance with the process. 5,187,322, Cl. 102-427.000.
Schlumberger Technology Corporation: *See*—
Foster, Brian; and Blair, John, 5,186,048, Cl. 73-155.000.
Schluter, Herbert; Knipp, Herbert; and Wieland, Alfred, to Chemische Werke Huels Aktiengesellschaft. Styrene/butadiene graft copolymer latex and heat-vulcanizable composition, containing the latter as reinforcing latex, for the production of latex foam. 5,187,221, Cl. 524-461.000.
Schmalbach, Therese K.: *See*—
Borch, Richard F.; and Schmalbach, Therese K., 5,187,193, Cl. 514-476.000.
Schmidt, James N.: *See*—
Gumb, Beverley W.; Kuhfus, Gerd; and Schmidt, James N., 5,187,743, Cl. 379-436.000.
Schmidt, Katalin A.: *See*—
Wielgos, Thaddeus S.; Killarney, Declan E.; and Schmidt, Katalin A., 5,186,660, Cl. 439-685.000.
Schmidt, Klaus, to Hoesch Maschinenfabrik Deutschland AG. Industrial equipment for manufacturing compression moldings. 5,186,958, Cl. 425-193.000.
Schmidt, Robert R.: *See*—
Andree, Roland; Drewes, Mark W.; Santel, Hans-Joachim; Lurssen, Klaus; and Schmidt, Robert R., 5,186,734, Cl. 504-196.000.
Fischer, Reiner; Baasner, Bernd; Hageman, Hermann; Krebs, Andreas; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; Becker, Benedikt; Schaller, Klaus; and Strang, Harry, 5,186,737, Cl. 504-283.000.
Schmitt, Gregor: *See*—
Erkens, Leonardus J. H.; Schmitt, Gregor; Geurts, Herman J. J. M; and Corvers, Werner F. C. G., 5,186,748, Cl. 106-479.000.
Schneider, Eric W.: *See*—
Ives, Steven E.; Ascroft, Thomas B.; Reising, Richard F.; Hill, Robert F.; Brevick, John E.; and Schneider, Eric W., 5,186,278, Cl. 184-6.230.
Schobbe, Hermann; Steinhauser, Gerd; Scheerer, Hans; Opara, Andreas; Mohrmann, Werner; Steinert, Hans-Rudolf; and Konig, Wolfhard, to Mercedes-Benz AG. Supporting mount. 5,186,440, Cl. 267-220.000.
Schoene, Kenneth F.: *See*—
Otten, Jay G.; and Schoene, Kenneth F., 5,187,191, Cl. 514-772.300.
Schork, Reinhold: *See*—
Seiler, Claus-Dietrich; Schork, Reinhold; Frings, Albert; Kotzsch, Hans-Joachim; and Rauleder, Hartwig, 5,187,291, Cl. 556-442.000.
Schreiner Luchtvaart Groep B.V.: *See*—
Brambach, Johan A., 5,186,999, Cl. 428-117.000.
Schroeder, John L.; and Slater, Michael R., to Dnastar, Inc. Computer representation of nucleotide and protein sequences. 5,187,775, Cl. 395-155.000.
Schultz, Clifford W.; and Irvin, G. Daniel, to University of Alabama. Process for separating bitumen from tar sands. 5,186,820, Cl. 209-164.000.
Schulz, Arno: *See*—
Ort, Oswald; Willms, Lothar; Bauer, Klaus; Bieringer, Hermann; and Schulz, Arno, 5,186,736, Cl. 504-225.000.
Schuss, Jack J.; Upton: Jeffrey C.; Geyh, Edward A.; and Chang, Kaichiang, to Raytheon Company. Low sidelobes antenna. 5,187,491, Cl. 343-781.00R.
Schutten, Herman P.: *See*—
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; and Schutten, Herman P., 5,187,664, Cl. 364-424.020.
Schutze, Gerald: *See*—
Groh, Werner; Heumuller, Rudolf; Schutze, Gerald; Stern, Roland; and Wieners, Gerhard, 5,187,769, Cl. 385-143.000.
Schutzer, Steven E. Method and materials for detecting lyme disease. 5,187,065, Cl. 435-7.320.
Schwab, George E.: *See*—
Narva, Kenneth E.; Schwab, George E.; and Bradfisch, Gregory A., 5,186,934, Cl. 124-93.00A.
Schwartz, Joyce G.: *See*—
Phillips, William; and Schwartz, Joyce G., 5,187,154, Cl. 514-12.000.
Schwartz, Thomas W.: *See*—
Englund, Richard L.; and Schwartz, Thomas W., 5,185,964, Cl. 51-281.00R.
Schwarz, Eric M.: *See*—
Vassiliadis, Stamatis; and Schwarz, Eric M., 5,187,679, Cl. 364-786.000.
Schwerdt, Paul; Dorrie, Dieter; and Kirschenhofer, Karl, to Mercedes-Benz AG. Device for stepping up or transmitting forces and strokes. 5,186,151, Cl. 123-506.000.
Science and Technology Agency: *See*—
Sakata, Shoji, 5,187,331, Cl. 181-121.000.

Scios Nova Inc.: *See*—
Cordell, Barbara; Schilling, James W.; and Katunuma, Nobuhiko, 5,187,153, Cl. 514-12.000.
Scofield, William A., to Pem All Fire Extinguisher Corporation. Wire-sensored residential range hood fire extinguisher system. 5,186,260, Cl. 169-65.000.
Scott, Baker P. L., III, to Crystal Semiconductor Corporation. Input sampling switch charge conservation. 5,187,390, Cl. 307-353.000.
Scott, David R. Space transfer vehicle and integrated guidance launch system. 5,186,419, Cl. 244-158.00R.
Scott, Randy W.; Golini, Fred; and McGrogan, Michael, to Incyte Pharmaceuticals, Inc. Protease nexin-I variants which inhibit elastase. 5,187,089, Cl. 435-212.000.
Scott, Ted P. Post puller including concrete base pulling means. 5,186,437, Cl. 254-30.000.
Scrima, Roberto: *See*—
Borzatta, Valerio; Scrima, Roberto; and Vignali, Graziano, 5,187,275, Cl. 544-207.000.
Scripps Clinic and Research Foundation: *See*—
Janda, Kim, 5,187,086, Cl. 435-146.000.
Scrivano, Thomas J. Battery adapter. 5,187,026, Cl. 429-96.000.
Seabold, Thomas W., to Minnesota Mining and Manufacturing Company. Tape handle for a container and method for construction thereof. 5,186,542, Cl. 383-25.000.
Seagate Technology, Inc.: *See*—
Hickox, Thomas A.; and Stram, Jeffrey P., 5,187,627, Cl. 360-105.000.
Sealed Air Corporation: *See*—
Bertram, George T.; and Krislav, Semyon, 5,186,905, Cl. 422-133.000.
Sealine, Ronald L.: *See*—
Frisbee, Claude M.; Sealine, Ronald L.; and Werner, Ronald H., 5,186,295, Cl. 192-13.00R.
See, Jackie R.: *See*—
Shell, William E.; and See, Jackie R., 5,186,922, Cl. 128-654.000.
See/Shell Biotechnology, Inc.: *See*—
Shell, William E.; and See, Jackie R., 5,186,922, Cl. 128-654.000.
Seidel, Peter-Rudolf; Horstmann, Harald; Traber, Jorg; Dompert, Wolfgang; Glaser, Thomas; and Thurman, Teunis, to Troponwerke GmbH & Co. KG. 2-pyrimidinyl-1-piperazine derivatives. 5,187,276, Cl. 544-295.000.
Seifert, Peter; and Chupka, David E., to Black Clawson Company, The. Apparatus for thickening pulp and paper stock. 5,186,791, Cl. 162-56.000.
Seigneur, Remy: *See*—
Magnollay, Gilbert; Seigneur, Remy; Budry, Jacques; Clement, Jean-Claude; Jaccottet, Michel; Jaggi, Pierre-Yves; Jaun, Hans; and De Boer, Philip, 5,186,957, Cl. 425-192.00R.
Seiko Corp.: *See*—
King, Randolph E.; and Gaskill, Garold B., 5,187,470, Cl. 340-825.440.
Seiko Epson Corp.: *See*—
King, Randolph E.; and Gaskill, Garold B., 5,187,470, Cl. 340-825.440.
Kobayashi, Osamu; Akioka, Koji; and Shimoda, Tatsuya, 5,186,761, Cl. 148-101.000.
Koike, Kiyofumi, 5,186,550, Cl. 400-54.000.
Seiko Instruments Inc.: *See*—
Shibata, Koichi; Fukushima, Toshitaka; Watanabe, Hiroyuki; Miyahara, Shinichiro; and Imagawa, Osamu, 5,187,441, Cl. 324-426.000.
Shibata, Koichi; Fukushima, Toshitaka; Watanabe, Hiroyuki; Miyahara, Shinichiro; and Imagawa, Osamu, 5,187,720, Cl. 375-35.000.
Seiko Seiki Kabushiki Kaisha: *See*—
Ando, Shigenori, 5,187,434, Cl. 324-207.250.
Seikosha Co., Ltd.: *See*—
Fujita, Masanori; Okamoto, Shinichi; and Ono, Hirokazu, 5,187,402, Cl. 310-322.000.
Seiler, Claus-Dietrich; Schork, Reinhold; Frings, Albert; Kotzsch, Hans-Joachim; and Rauleder, Hartwig, to Huls Aktiengesellschaft. Process for the simultaneous and continuous preparation of acyloxysilanes and carboxylic acid chlorides. 5,187,291, Cl. 556-442.000.
Seiler, Werner: *See*—
Manser, Josef; Egger, Friedrich; and Seiler, Werner, 5,186,539, Cl. 366-85.000.
Seita, Yukio: *See*—
Masuoka, Toshio; Hirasa, Okihiko; Onishi, Makoto; and Seita, Yukio, 5,186,835, Cl. 210-500.360.
Seitz, Robert F., to Gen-Tech, Inc. Railroad hopper car discharge gate valve. 5,186,110, Cl. 105-247.000.
Seki, Hiroyuki, to Canon Kabushiki Kaisha. Vibration driven motor. 5,187,406, Cl. 310-323.000.
Seki, Katsumichi, to Kambara USA. Display binder with removable stabilized pages. 5,186,496, Cl. 281-46.000.
Seki, Masato: *See*—
Mifune, Hideo; Seki, Masato; and Shike, Tsutomu, 5,186,619, Cl. 431-344.000.
Seki, Naoyasu: *See*—
Nariishi, Masaaki; Yamakawa, Noboru; Ohba, Osamu; and Seki, Naoyasu, 5,187,556, Cl. 257-206.000.
Seki, Teruo: *See*—
Nishimori, Miki; and Seki, Teruo, 5,187,397, Cl. 307-578.000.
Sekigawa, Tatsuaki: *See*—
Wagai, Kiyoshi; Sekigawa, Tatsuaki; Ohyanagi, Shihoko; and Shiono, Mitsuji, 5,187,471, Cl. 340-825.440.
Sekimura, Masayuki, to Kabushiki Kaisha Toshiba. Capacitive pressure sensor. 5,186,054, Cl. 73-724.000.
Sekine, Yoshihito, to Hitachi, Ltd. Method and system for measuring fluid flow rate by using fuzzy inference. 5,186,150, Cl. 123-494.000.
Seko, Tatsushi: *See*—
Kusafuka, Noboru; Yoshida, Akira; Tsuyuki, Susumu; Seko, Tatsushi; Tsutsui, Yoshimitsu; Miki, Toshio; and Mouri, Ryoji, 5,186,407, Cl. 242-56.200.
Selbiger, Lawrence: *See*—
Tong, James K.; Selbiger, Lawrence; Stubblefield, Jerry D.; and Curley, Jack, 5,185,943, Cl. 36-28.000.
Selig, Manfred: *See*—
Ball, Peter; Christ, Josef; Frank, Albin; Marquardt, Klaus; and Selig, Manfred, 5,187,233, Cl. 525-267.000.
Sellei nee Kulik, Katalin: *See*—
Nagy, Jozsef; Nagy, Istvan; Balogh, Karoly; Mile, Erzsebet; Tarpai, Gyula; Sellei nee Kulik, Katalin; Fodor, Karoly; Kecskes, Mihaly; Toth nee Juhasz, Erzsebet; and Horvath nee Petho , Zsuzsanna, 5,186,723, Cl. 47-58.000.
Seltzer, Raymond; Odorisio, Paul A.; Shum, Sai P.; and Pastor, Stephen D., to Ciba-Geigy Corporation. Stabilized copositions comprising 3,7,9-trioxa-1-aza-2,8-diphosphaspiro[4,5]decanes. 5,187,213, Cl. 524-120.000.
Sematech, Inc.: *See*—
Bulsterbaum, J. Charles; Tolles, Robert D.; and Costello, Donald A., 5,186,597, Cl. 414-469.000.
Semchuck, Mario E., to Emhart Inc. Accessories and mounting assemblies therefor. 5,186,427, Cl. 248-251.000.
Semiconductor Energy Laboratory Co., Ltd.: *See*—
Yamazaki, Shunpei, 5,187,563, Cl. 257-53.000.
Yamazaki, Shunpei; Fukada, Takeshi; Sakama, Mitsunori; Amachi, Nobumitsu; Sakamoto, Naoya; Codama, Mitsufumi; Fuki, Takashi; and Takayama, Ichiro, 5,187,601, Cl. 359-54.000.
Senra, Enrique M. Insulated wire contact clamp. 5,186,648, Cl. 439-409.000.
Sequa Corporation: *See*—
Turturro, Michael; and Sirvet, Enn, 5,186,100, Cl. 101-40.000.
Sequeira, Joel A.: *See*—
Kogan, Patricia W.; Rudnic, Edward M.; Sequeira, Joel A.; and Chaudry, Imtiaz A., 5,186,930, Cl. 424-78.100.
Serkland, Richard C.: *See*—
Sanderson, Paul H.; and Serkland, Richard C., 5,187,318, Cl. 89-37.220.
Sernka, Richard P.: *See*—
Rogers, Howard H.; Sernka, Richard P.; and Stadnick, Steven J., 5,187,028, Cl. 429-101.000.
Seshimo, Masahiro: *See*—
Imoto, Takayoshi; Seshimo, Masahiro; Makimoto, Futoshi; and Kitagawa, Eiji, 5,186,987, Cl. 428-34.500.
Setani, Michitaka, to Canon Kabushiki Kaisha. Image reading device having a telecentric optical system and a blazed diffraction grating. 5,187,358, Cl. 250-208.100.
Seto, Shigeo; Kurihara, Tsugihiro; Machida, Hiroshi; and Shintani, Keiji, to Matsushita Electric Industrial Co., Ltd. Positional deviation correcting method for subject conveyed on production line. 5,186,303, Cl. 198-345.100.
Seyedmonir, Seyed R.: *See*—
Thorsteinson, Erlind M.; Bhasin, Madan M.; and Seyedmonir, Seyed R., 5,187,140, Cl. 502-348.000.
SGS-Thomson Microelectronics, Inc.: *See*—
Chan, Tsiu C.; and Bryant, Frank R., 5,187,114, Cl. 437-52.000.
McCain, Joseph H., 5,187,564, Cl. 174-260.000.
SGS-Thomson Microelectronics s.r.l.: *See*—
Libretti, Giuseppe, 5,187,431, Cl. 324-158.00P.
Vai, Gianfranco; Zuffada, Maurizio; Sacchi, Fabrizio; Moloney, David; and Betti, Giorgio, 5,187,452, Cl. 331-113.00R.
Shafer, George G., Jr., to General Motors Corporation. Method of manufacturing a copper bar induction rotor. 5,185,918, Cl. 29-598.000.
Shaffer, Joel E.: *See*—
Thompson, Stephen A.; and Shaffer, Joel E., 5,187,305, Cl. 560-145.000.
Shah, Hasmukh: *See*—
Harwath, Frank A.; Brinkman, Donald J.; Landgraf, Glenn A.; Shah, Hasmukh; Stenstrom, Eric; Brunker, David L.; and Johnson, Richard A., 5,186,656, Cl. 439-585.000.
Shah, Rasiklal P., to General Electric Company. Algorithm for representing component connectivity. 5,187,785, Cl. 395-575.000.
Shanbrom, Edward. Blood plasma antiviral process and composition. 5,186,945, Cl. 424-529.000.
Shanklin, James R., Jr.: *See*—
Hellberg, Mark R.; and Shanklin, James R., Jr., 5,187,189, Cl. 514-608.000.
Shannon, E. Paul. Angular momentum and banking indicator acceleration-deceleration and grade indicator system. 5,186,049, Cl. 73-186.000.
Sharp Kabushiki Kaisha: *See*—
Katayama, Hiroyuki; Nakayama, Junichiro; Ohta, Kenji; and Ishikawa, Toshio, 5,187,703, Cl. 369-275.100.
Katoh, Masaaki, 5,187,377, Cl. 257-89.000.
Kitagawa, Masahiko; Tomomura, Yoshitaka; and Nakanishi, Kenji, 5,187,116, Cl. 437-105.000.
Nakanishi, Hiroshi; and Hamada, Hioroshi, 5,187,599, Cl. 359-41.000.

VOL 1147 ISS 3 FE 16 1993 UMI

Shoji, Hajime; Watanabe, Noriko; Hamada, Hiroshi; Kato, Hiroaki; Takemoto, Toshio; and Hirobe, Toshihiko, 5,187,551, Cl. 257-347.000.
Tanaka, Hideaki, 5,187,751, Cl. 382-36.000.
Yonemaru, Masashi, 5,187,483, Cl. 341-156.000.

Shaw, Rudy L.: *See—*
Tsui, James B. Y.; and Shaw, Rudy L., 5,187,485, Cl. 342-357.000.

Sheehan, Terrence M.: *See—*
Wetherill, Todd N.; Walburn, Harold E.; and Sheehan, Terrence M., 5,186,086, Cl. 82-124.000.

Shell Oil Company: *See—*
Fong, Raymond T., 5,186,728, Cl. 55-90.000.
Sie, Swan T., 5,186,859, Cl. 252-373.000.

Shell, William E.; and See, Jackie R., to See/Shell Biotechnology, Inc. Use of biodegradable microspheres labeled with imaging energy constrast materials. 5,186,922, Cl. 128-654.000.

Shellhamer, Terry M.; Ward, James C.; and Edwards, David M., to Lantech, Inc. Rollers for prestretch film overwrap. 5,186,981, Cl. 427-247.000.

Shenvi, Ashokkumar B.: *See—*
Kettner, Charles A.; and Shenvi, Ashokkumar B., 5,187,157, Cl. 514-18.000.

Shepard, Richard W.: *See—*
Alling, Richard L.; and Shepard, Richard W., 5,187,345, Cl. 219-121.630.

Shepard, Thomas A.: *See—*
Williams, Joel L.; and Shepard, Thomas A., 5,186,972, Cl. 427-2.000.

Sheppard, Michael J., to Lynline Pty Limited. Coupling arrangement. 5,186,483, Cl. 280-494.000.

Sher, Frank T.; and Whitcomb, David R., to Minnesota Mining and Manufacturing Company. Photosensitive thermally developed compositions. 5,187,049, Cl. 430-340.000.

Sherman, Richard A.; Jaeger, Robert B.; and Davis, Patrick H., to Norand Corporation. Portable printer with receptacle for data communication terminal. 5,186,558, Cl. 400-692.000.

Shiba, Masataka; Inagaki, Akira; Yoshida, Minoru; Ito, Kenchi; and Kawamoto, Kazumi, to Hitachi, Ltd. Surface acoustic waveguide device and manufacturing method. 5,187,756, Cl. 385-7.000.

Shibahara, Makoto: *See—*
Iwasa, Hiroki; Nagasaka, Chikao; Ueda, Masuyuki; Kato, Shigeru; Aoki, Hisashi; Shibahara, Makoto; and Mori, Satoshi, 5,187,381, Cl. 307-10.100.

Shibano, Yoshihide, to S & C Co.,Ltd. Spray tube ultrasonic washing apparatus. 5,186,389, Cl. 239-102.200.

Shibao, Masaharu: *See—*
Kimura, Shigeru; Takahashi, Atsushi; Shibao, Masaharu; and Tomioka, Kazuyuki, 5,186,200, Cl. 137-15.000.

Shibata, Koichi; Fukushima, Toshitaka; Watanabe, Hiroyuki; Miyahara, Shinichiro; and Imagawa, Osamu, to Seiko Instruments Inc. Portable information apparatus for sensing battery voltage drop. 5,187,441, Cl. 324-426.000.

Shibata, Koichi; Fukushima, Toshitaka; Watanabe, Hiroyuki; Miyahara, Shinichiro; and Imagawa, Osamu, to Seiko Instruments Inc. Synchronous serial communication circuit. 5,187,720, Cl. 375-35.000.

Shibata, Takao: *See—*
Kawase, Yoji; and Shibata, Takao, 5,186,028, Cl. 66-232.000.

Shibata, Yasuhiko: *See—*
Watanabe, Takahide; Shibata, Yasuhiko; Mitsui, Shoichi; and Koike, Takashi, 5,186,133, Cl. 123-179.140.

Shiflett, Geoffrey R.: *See—*
Muntz, Eric P.; Erwin, Daniel A.; Kunc, Joseph A.; and Shiflett, Geoffrey R., 5,186,001, Cl. 60-515.000.

Shigemoto, Tatsuhiko, to Sony Corporation. Magnetic head carriage with reinforcing ribs. 5,187,624, Cl. 360-104.000.

Shih, Jason C. H.; and Lee, Chung-Ginn, to North Carolina State University. Method and composition for maintaining animals on a keratin-containing diet. 5,186,961, Cl. 426-2.000.

Shih, T. Thomas, to Arco Chemical Technology, L.P. Lower alkylene oxide purification. 5,187,287, Cl. 549-542.000.

Shikata, Kiyotaka; and Takao, Shinji, to Fujitsu Limited. Optical transceiver. 5,187,605, Cl. 359-152.000.

Shike, Tsutomu; Eguchi, Toshihiko; Kaga, Yosimitu; and Suganuma, Kazuhiko, to Tokai Corporation. Gas lighter with safety device. 5,186,618, Cl. 431-153.000.

Shike, Tsutomu: *See—*
Mifune, Hideo; Seki, Masato; and Shike, Tsutomu, 5,186,619, Cl. 431-344.000.

Shimada, Michihiro: *See—*
Kimura, Hitoshi; Matsumoto, Tetsuo; and Shimada, Michihiro, 5,187,009, Cl. 428-383.000.

Shimada, Naohiro; Ohno, Yasushi; and Saito, Masaaki, to NEC Corporation. Monitoring method for stand-by circuits suitable for a multiplexing/demultiplexing apparatus. 5,187,704, Cl. 370-13.000.

Shimada, Yasuhiro: *See—*
Kobayashi, Hidetoshi; Shimada, Yasuhiro; Ichijima, Seiji; and Ishii, Yoshio, 5,187,055, Cl. 430-544.000.

Shimakura, Toru: *See—*
Wakayama, Hajime; Shimakura, Toru; Watanabe, Seiji; and Handa, Akio, 5,186,423, Cl. 248-160.000.

Shimamura, Yasuki; and Ihata, Jyoji, to Asahi Kasei Kogyo Kabushiki Kaisha. Photosensitive and heat-sensitive polymers, process for producing the same and process for recording information using the same. 5,187,047, Cl. 430-286.000.

Shimano, Inc.: *See—*
Nagano, Masahi, 5,186,072, Cl. 74-501.500.
Okajima, Shinpei, 5,185,944, Cl. 36-45.000.

Shimizu, Hideaki; and Sakai, Masanori, to Canon Kabushiki Kaisha. Multicolor image forming apparatus with color component discrimination function. 5,187,521, Cl. 355-202.000.

Shimizu, Kazuyuki; Harada, Satoshi; and Yoshimura, Masazi, to Konica Corporation. Electronic flash device. 5,187,410, Cl. 315-241.00P.

Shimizu, Yuso, to Paceco Corp. Integrated passive sway arrest system for cargo container handling cranes. 5,186,342, Cl. 212-147.000.

Shimoda, Tatsuya: *See—*
Kobayashi, Osamu; Akioka, Koji; and Shimoda, Tatsuya, 5,186,761, Cl. 148-101.000.

Shimoda, Tomoaki: *See—*
Sakashita, Takeshi; Shimoda, Tomoaki; Nagai, Takashi; and Kishimura, Kotarou, 5,187,242, Cl. 525-439.000.

Shimomura, Takeshi: *See—*
Yamaguchi, Shuichiro; Uchida, Naoto; Kasai, Satoru; Shimomura, Takeshi; and Oyama, Noboru, 5,186,808, Cl. 204-418.000.

Shimose, Yoshifumi, to Nissan Motor Co., Ltd. Passenger restraint system for use in automotive vehicle. 5,186,494, Cl. 280-806.000.

Shimura, Kazuo, to Fuji Photo Film Co., Ltd. Method for quantitatively analyzing bone calcium. 5,187,731, Cl. 378-207.000.

Shin-Etsu Chemical Co., Ltd.: *See—*
Ryuo, Toshihiko; and Watanabe, Toshiaki, 5,186,866, Cl. 252-584.000.
Suzuki, Akio; Matsumura, Masaaki; and Hashimoto, Takeshi, 5,187,014, Cl. 428-447.000.

Shin-Etsu Handotai Co., Ltd.: *See—*
Ibe, Hiroyaki; Terashima, Seüchi; and Masui, Tsumoru, 5,187,729, Cl. 378-73.000.
Netsu, Shigeyoshi; Kameya, Masaki; Harada, Yasuyuki; and Amano, Hiroshi, 5,186,192, Cl. 134-68.000.

Shinada, Shinichi: *See—*
Kohgami, Akihiko; Mikoshiba, Shigeo; Shinada, Shinichi; and Suzuki, Mutsumi, 5,187,578, Cl. 358-168.000.

Shinjo, Katsuhiko: *See—*
Miyazaki, Toshihiko; Nose, Hiroyasu; Yagi, Takayuki; Kawase, Toshimitsu; and Shinjo, Katsuhiko, 5,187,367, Cl. 250-306.000.

Shinjo, Kenji: *See—*
Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Katagiri, Kazuharu; Takiguchi, Takao; Shinjo, Kenji; Kitayama, Hiroyuki; and Nakamura, Shinichi, 5,186,858, Cl. 252-299.610.

Shinohara, Hideo; Murata, Yukichi; and Taki, Tsutomu, to Mitsubishi Kasei Corporation. Image receiving sheet for thermal transfer recording. 5,187,144, Cl. 503-227.000.

Shinozawa, Masahiko, to Oki Electric Industry Co., Ltd. Method of manufacturing a bipolar transistor. 5,187,108, Cl. 437-31.000.

Shinozawa, Toshiyuki; Fujita, Hiroyuki; and Arai, Hideaki, to Toyo Denso Kabushiki Kaisha; and Honda Giken Kogyo Kabushiki Kaisha. Distributor. 5,186,131, Cl. 123-146.50A.

Shintani, Keiji: *See—*
Seto, Shigeo; Kurihara, Tsugihiro; Machida, Hiroshi; and Shintani, Keiji, 5,186,303, Cl. 198-345.100.

Shiohara, Yukimitsu; and Abe, Masaki, to NKK Corporation. Method for manufacturing zinc-silica composite electroplated steel sheet. 5,186,812, Cl. 205-141.000.

Shiomi, Haruhisa: *See—*
Aoyama, Toshihiko; Shiomi, Haruhisa; and Ujita, Yasuhiro, 5,186,809, Cl. 204-421.000.

Shiomura, Tetsunosuke: *See—*
Asanuma, Tadashi; Shiomura, Tetsunosuke; Nishimori, Yukari; and Uchikawa, Nobutaka, 5,187,250, Cl. 526-348.600.

Shiono, Mitsuji: *See—*
Wagai, Kiyoshi; Sekigawa, Tatsuaki; Ohyanagi, Shihoko; and Shiono, Mitsuji, 5,187,471, Cl. 340-825.440.

Shionogi & Co., Ltd.: *See—*
Tanino, Tadatsugu; Furuya, Yoshihiro; Takeda, Toyohiko; Endo, Yoshiyuki; and Inoue, Hayao, 5,186,956, Cl. 425-135.000.

Shipman, Richard K.: *See—*
Davenport, Marcus K.; Shipman, Richard K.; Young, Thomas D.; and Strode, Stephen H., 5,187,739, Cl. 379-155.000.

Shirai, Masanari, to Canon Kabushiki Kaisha. Developing apparatus. 5,187,326, Cl. 118-657.000.

Shirai, Takeki, to THK Co., Ltd. Reciprocating device. 5,186,545, Cl. 384-43.000.

Shiraishi, Nobuo; and Kubo, Motonobu, to Daikin Industries Ltd. Fluorine-containing cellulose derivative. 5,187,269, Cl. 536-56.000.

Shoei Kako Kabushiki Kaisha: *See—*
Kamata, Eitaro, 5,185,889, Cl. 2-424.000.

Shoji, Hajime; Watanabe, Noriko; Hamada, Hiroshi; Kato, Hiroaki; Takemoto, Toshio; and Hirobe, Toshihiko, to Sharp Kabushiki Kaisha. Thin film semiconductor device and liquid crystal display apparatus thereof for preventing irradiated light from reaching the semiconductor layers. 5,187,551, Cl. 257-347.000.

Shore, Joseph D.; Bock, Paul E.; Olson, Steven T.; and Day, Duane E., to Henry Ford Health System. Active site labelling of plasminogen. 5,187,069, Cl. 435-13.000.

Short, Lee O., to Hughes Simulation Systems, Inc. Tactical route planning method for use in simulated tactical engagements. 5,187,667, Cl. 364-443.000.

Showa Aluminum Kabushiki Kaisha: *See—*
Ouchi, Wataru; Suzuki, Katsuhisa; Tokutake, Toshinori; and Hirano, Hirosaburo, 5,186,250, Cl. 165-177.000.

Shu, Ching F.: *See—*
Leslie, Thomas M.; Shu, Ching F.; Blatter, Karsten; DeMartino, Ronald; and Battito, Frank, 5,187,234, Cl. 525-276.000.

Shuey, Harry F.: *See—*
Mancusi, Anthony W.; Delozier, J. Clift; Prasad, Ravi; Runkle, Charles J.; and Shuey, Harry F., 5,186,832, Cl. 210-321.800.

Shultz, Larry D.; and Bolton, Carl W., to Integrative Motion Systems, Inc. Base for a human support apparatus. 5,186,424, Cl. 248-179.000.

Shum, Sai P.: *See—*
Seltzer, Raymond; Odorisio, Paul A.; Shum, Sai P.; and Pastor, Stephen D., 5,187,213, Cl. 524-120.000.

Shuman, Richard F.: *See—*
King, Anthony O.; Anderson, Kevin; Karady, Sandor; Douglas, Alan W.; Abramson, Newton L.; and Shuman, Richard F., 5,187,278, Cl. 546-14.000.

Shumock, Mark J., to Pyro Place, Inc. Modular fireplace. 5,186,161, Cl. 126-500.000.

Shuto, Satoshi; Obara, Takumi; Itoh, Hiromichi; Koshio, Takehiro; Fujiwara, Tatsuro; and Yaso, Masao, to Asahi Kasei Kogyo Kabushiki Kaisha. 6'-deoxy-6'-halo-neplanocin A and its production. 5,187,174, Cl. 514-261.000.

Shvo, Youval: *See—*
Becker, Yigal; Elgavi, Asher; and Shvo, Youval, 5,187,296, Cl. 558-351.000.

Sias, Stacey R.: *See—*
Andrews, William H.; Brothers, Virginia M.; Files, James G.; Kuhn, Irene; McCaman, Michael T.; Sias, Stacey R.; Paul, Leland S.; Gore, Thomas C.; Newman, Karel Z., Jr.; and Tedesco, John L., 5,187,080, Cl. 435-69.300.

Sidel: *See—*
Doudement, Gerard; and Dulong, Alain, 5,186,307, Cl. 198-454.000.

Sidman, Michael D., to Digital Equipment Corporation. High speed switched automatic gain control. 5,187,619, Cl. 360-77.080.

Sie, Swan T., to Shell Oil Company. Process for catalytic partial oxidation of a hydrocarbon-containing fuel using entrained catalyst. 5,186,859, Cl. 252-373.000.

Siegenthaler, Karl J., to Bridgestone/Firestone, Inc. Curing device for tires. 5,186,951, Cl. 425-28.100.

Siegenthaler, Karl J.: *See—*
Mauro, Roberto; and Siegenthaler, Karl J., 5,186,950, Cl. 425-28.100.

Siemens Aktiengesellschaft: *See—*
Baylac, Brunno Y. H.; and Castel, Michel, 5,187,631, Cl. 361-94.000.
Becker, Burkhard, 5,187,562, Cl. 257-539.000.
Birkle, Siegfried; Fischer, Jurgen; and Gebring, Johann, 5,186,803, Cl. 204-201.000.
Blockl, Reinhard, 5,187,384, Cl. 307-246.000.
Finzel, Lothar; and Ruckgaber, Thomas, 5,187,766, Cl. 385-135.000.
Nordmann, Jens; and Hacker, Heinz, 5,187,237, Cl. 525-326.200.

Sig Schweizerische Industrie-Gesellschaft: *See—*
Fluck, Rene , 5,186,599, Cl. 414-792.900.

Silfven, Jan: *See—*
Rydergren, Bertil; Silfven, Jan; and Malmhall, Roger, 5,187,437, Cl. 324-253.000.

Silicon Technology Corporation: *See—*
Steere, Robert E., Jr., 5,185,956, Cl. 51-5.00C.

Silver Star Co., Ltd.: *See—*
Park, Bo K., 5,186,412, Cl. 242-245.000.

Simmons Company: *See—*
Smith, Ruslon J., 5,186,435, Cl. 254-10.500.

Simon, Allen H.: *See—*
Keith, John M.; Simon, Allen H.; Sprague, David L.; Dixon, Douglas F.; and Goldstein, Judith A., 5,187,793, Cl. 395-775.000.

Simon, Ethan S.; Holland, Kevin B.; and McClanahan, Christopher, to Biotage Inc. Chromatographic packing material having functionalized polymeric coating on a substrate. 5,186,838, Cl. 210-635.000.

Simon, Robert C., Jr.; Mitchell, George C.; Tolkacz, Joseph M.; Polom, William G.; and Medich, Peter M., to General Motors Corporation. Engine coastdown control system. 5,186,080, Cl. 74-857.000.

Simons, F. Holmes; and Griffith, Ronald L., to Hoechst Celanese Corporation. Spinning process for producing high strength, high modulus, low shrinkage yarns. 5,186,879, Cl. 264-211.150.

Simplimatic Engineering Company: *See—*
Clopton, Robert T., 5,186,314, Cl. 198-860.200.

Simpson, Jay R.: *See—*
DiGiovanni, David J.; Giles, Clinton R.; Kramer, Stuart A.; Nykolak, Gerald; Presby, Herman M.; and Simpson, Jay R., 5,187,759, Cl. 385-27.000.

Simpson, Richard J.: *See—*
Gearing, David P.; Gough, Nicholas M.; Hilton, Douglas J.; King, Julie A.; Metcalf, Donald; Nice, Edouard C.; Nicola, Nicos A.; Simpson, Richard J.; and Willson, Tracy A., 5,187,077, Cl. 435-69.100.

Sinclair, Paul I., to Halliburton Logging Services, Inc. Method of determining invaded formation properties including resistivity dielectric constant and zone diameter. 5,187,661, Cl. 364-422.000.

Sink, Danny R., to Brenco, Incorporated. Bearing shaft seal. 5,186,548, Cl. 384-486.000.

Sinodis, David N.: *See—*
Outcalt, Russell J.; Timmons, Philip R.; Cramp, Susan M.; Kwiatkowski, Patricia L.; Lopes, Anibal; Cain, Paul A.; Sinodis, David N.; Hall, Lee S.; and Vors, Jean-Pierre A., 5,187,185, Cl. 514-408.000.

SIPRA Patententwicklungs-und Beteiligungsgesellschaft mbH: *See—*
Neher, Paul, 5,186,025, Cl. 66-9.00R.

Sirvet, Enn: *See—*
Turturro, Michael; and Sirvet, Enn, 5,186,100, Cl. 101-40.000.

Sjostrand, Uno, to Tetra Alfa Holdings S.A. Method and an apparatus for marshalling objects. 5,186,306, Cl. 198-442.000.

Skeels, Gary W.; Chapman, Diane M.; and Flanigen, Edith M., to UOP. Substitution of Cr in place of Al in the framework of molecular sieve via treatment with fluoride salts. 5,186,918, Cl. 423-718.000.

Skeen, Marion D.; and Bowles, Mark, to Teknekron Software Systems, Inc. Apparatus and method for providing decoupling of data exchange details for providing high performance communication between software processes. 5,187,787, Cl. 395-600.000.

SKF GmbH: *See—*
Muhl, Helmut; and Mullner, Johann, 5,186,547, Cl. 384-480.000.

Skiba, Barbara T.: *See—*
Harreld, Donald R.; and Skiba, Barbara T., 5,186,322, Cl. 206-216.000.

Skibo, Michael D.: *See—*
Hammond, Donald E.; and Skibo, Michael D., 5,186,234, Cl. 164-97.000.

Skis Rossignol S.A.: *See—*
Perenon, Jacques; Pichon, Maurice; Deborde, Henri C.; and Jodelet, Francois, 5,186,777, Cl. 156-79.000.

Skuballa, Werner; Buchmann, Bernd; Heindl, Josef; Frohlich, Wolfgang; and Ekerdt, Roland, to Schering Aktiengesellschaft. Leukotriene-B4 derivatives, process for their production and their use as pharmaceutical agents. 5,187,286, Cl. 549-283.000.

Slagteriernes Forskningsinstitut: *See—*
Christensen, Leif L.; Joergensen, Tage W.; and Hansen, Claes-Henrik, 5,186,677, Cl. 452-66.000.

Slaney, Annette C.: *See—*
Donovan, William P.; Rupar, Mark J.; Slaney, Annette C.; and Johnson, Timothy B., 5,187,091, Cl. 435-240.400.

Slater, John W. Wafer sealer. 5,185,983, Cl. 53-136.300.

Slater, Michael R.: *See—*
Schroeder, John L.; and Slater, Michael R., 5,187,775, Cl. 395-155.000.

SLT Labinstruments Gesellschaft m.b.H.: *See—*
Rubenzer, Peter, 5,186,760, Cl. 134-22.180.

Smith, Alan A.; Catmull, Paul B.; Lucas, Lonnie J.; and Johnson, Karl P., to Allied-Signal Inc. Gas turbine engine sensor probe. 5,185,996, Cl. 60-39.020.

Smith, Curt J.: *See—*
Gorka, Karl; and Smith, Curt J., 5,186,196, Cl. 135-16.000.

Smith, David M.: *See—*
Ryan, Richard P.; Halstead, Gary A.; Smith, David M.; and Joshi, Shrikant M., 5,185,925, Cl. 29-890.049.

Smith, Franklin L., Jr. Method of and apparatus for use in the depuration of bivalves. 5,186,121, Cl. 119-4.000.

Smith, Garland Y.: *See—*
Murphy, Kevin P.; and Smith, Garland Y., 5,186,199, Cl. 137-15.000.

Smith, Kevin G., to British Petroleum Company p.l.c., The. Process for preparing polketones with boron containing anion from substituted salicylic acid and boric acid. 5,187,258, Cl. 528-392.000.

Smith, Nels R., to Prince Corporation. Visor with double acting slide mechanism. 5,186,442, Cl. 296-97.800.

Smith, Peter J.: *See—*
Cross, Richard H.; and Smith, Peter J., 5,186,438, Cl. 256-13.100.

Smith, Richard A., Jr.: *See—*
Holman, Michael R.; and Smith, Richard A., Jr., 5,186,669, Cl. 445-16.000.

Smith, Richard H., to General Motors Corporation. Automotive power steering gear. 5,186,272, Cl. 180-132.000.

Smith, Richard L.: *See—*
Martin, Luther W.; Smith, Richard L.; and Cotherman, Jesse W., 5,185,928, Cl. 30-92.500.

Smith, Ruslon J., to Simmons Company. Apparatus for compressing a spring. 5,186,435, Cl. 254-10.500.

Smith, Sarah J.: *See—*
Jaen, Juan C.; Nickell, David G.; Reynolds, Donna M.; Smith, Sarah J.; Wise, Lawrence D.; and Wustrow, David J., 5,187,280, Cl. 546-255.000.

Smith, Steven J.: *See—*
Chawla, Yogendra K.; and Smith, Steven J., 5,187,457, Cl. 333-170.000.

Smith, Tony A. Cassette and CD wheel, and method of constructing and utilizing same. 5,186,529, Cl. 312-249.700.

Smoot, Lanny S.: *See—*
Braun, David A.; Nilson, William A. E., III; Nelson, Terence J.; and Smoot, Lanny S., 5,187,571, Cl. 358-85.000.

Snider, Benny J.: *See—*
Abbott, James R.; and Snider, Benny J., 5,187,334, Cl. 181-265.000.

Snuttjer, Owen R.; and Rasinski, Michael J., to Westinghouse Electric Corp. Generator sealing oil temperature control method and apparatus utilizing temperature matching. 5,186,277, Cl. 184-6.220.

Snyder, Donald Q.: *See—*
Mock, Robert W., Jr.; Muth, Harold F., Jr.; and Snyder, Donald Q., 5,185,966, Cl. 51-283.00R.

Social Welfare Foundation Hokkaido Rehability, The: *See—*
Yoshihiro, Ikenaga; and Takeji, Kobata, 5,186,914, Cl. 423-239.000.

Societe Anonyme dite: Aerospatiale Societe Nationale Industrielle: *See—*
Fabre, Pierre; Le Tron, Xavier; and Lacoste, Philippe, 5,186,416, Cl. 244-75.00R.

VOL 1147 ISS 3 FE 16 1993 UMI

Societe Nationale Des Poudres et Explosifs: *See—*
Nouguez, Bruno; Bigot, Yves; Groux, Jacky; and Derrien, Jean-Claude, 5,187,319, Cl. 102-202.100.

Soga, Mamoru: *See—*
Ogawa, Kazufumi; Soga, Mamoru; and Mino, Norihisa, 5,187,639, Cl. 361-323.000.

Sogame, Motomu: *See—*
Ohashi, Masahisa; Sawada, Shusaku; Sogame, Motomu; Oomasa, Yoshiaki; and Kaneto, Kunikazu, 5,186,890, Cl. 376-434.000.

Sohma, Kenichi; Yukitake, Tugihiro; Azuhata, Shigeru; Arashi, Norio; and Tokuda, Hiroatsu, to Hitachi, Ltd. Combustion evaluation apparatus and combustion controller. 5,186,146, Cl. 123-435.000.

Sohner, Harold K.; Morgan, Michael A.; and Kumar, Surinder, to Andrew Corporation. Regenerative RF bi-directional amplifier system. 5,187,803, Cl. 455-4.100.

Solar Reactor Technologies, Inc.: *See—*
Parker, Robin; Hanrahan, Robert; and Gupta, Avinash, 5,186,794, Cl. 204-98.000.

Solatrol, Inc.: *See—*
Nielsen, Wyn Y.; Carlin, Steven C.; and Kaiser, Dennis A., 5,187,797, Cl. 395-800.000.

Solvay & Cie S.A.: *See—*
Andrews, William H.; Brothers, Virginia M.; Files, James G.; Kuhn, Irene; McCaman, Michael T.; Sias, Stacey R.; Paul, Leland S.; Gore, Thomas C.; Newman, Karel Z., Jr.; and Tedesco, John L., 5,187,080, Cl. 435-69.300.

Somekn, Sasson: *See—*
Tepman, Avi; Grunes, Howard; Somekn, Sasson; and Maydan, Dan, 5,186,718, Cl. 29-25.010.

Someya, Nobuo; Kitazato, Tadao; Fujikawa, Takao; and Manabe, Yasuo, to Marine Bio Co. Ltd.; and Kabushiki Kaisha Kobeseikosho. Sintered body of calcium carbonate and process for producing same. 5,187,125, Cl. 501-1.000.

Sommer Company: *See—*
Sommer, Gordon M., 5,186,288, Cl. 188-171.000.

Sommer, Gordon M., to Sommer Company. Electro-shear brake. 5,186,288, Cl. 188-171.000.

Sommer, Ronald G.: *See—*
Corey, Paul F.; Michaels, Angela A.; Proud, Lois J.; Salvati, Michael; Trimmer, Robert W.; and Sommer, Ronald G., 5,187,104, Cl. 436-86.000.

Sondermeijer, Pulus J. A.; Claessens, Johannes A.; and Mockett, Albert P. A., to AKZO N.V. Recombinant herpesvirus of turkeys and live vector vaccines derived tbereof. 5,187,087, Cl. 435-172.100.

Song, Won R.: *See—*
Gutierrez, Antonio; Song, Won R.; Lundberg, Robert D.; and Kleist, Robert A., 5,186,851, Cl. 252-49.006.

Sonobe, Kozo; Fukuzawa, Takashi; Takeuchi, Kohsuke; Tabata, Tatushi; Fukuoka, Hiroshi; Hisamatsu, Kunio; and Katamura, Makoto, to Nippon Chemical Industrial Co., Ltd. Slag treatment material. 5,187,126, Cl. 501-65.000.

Sony Corporation: *See—*
Hamasaki, Masaharu, 5,187,583, Cl. 358-213.150.
Kaminaga, Kozo, 5,187,617, Cl. 360-64.000.
Miwa, Hiroyuki, 5,187,554, Cl. 307-586.000.
Sato, Kiyoto; and Nakamaru, Kazuki, 5,186,325, Cl. 206-232.000.
Shigemoto, Tatsuhiko, 5,187,624, Cl. 360-104.000.
Tatewaki, Masayuki; Kato, Hiromasa; Obinata, Kenichi; and Aoki, Masahiro, 5,186,994, Cl. 428-64.000.

Sony Corporation of America: *See—*
MacKay, Michael T.; Duffy, Robert; Cotterill, Lee A.; Herz, William; and McArdle, Joe, 5,187,630, Cl. 360-137.000.

Sori, Naoyuki: *See—*
Arai, Tomohisa; Sori, Naoyuki; Sahashi, Masashi; and Tokai, Yoichi, 5,186,765, Cl. 148-301.000.

Souda, Yoshio: *See—*
Uemura, Seiichi; Souda, Yoshio; Kato, Osamu; Kouno, Takefumi; and Kihara, Tsutomu, 5,186,873, Cl. 264-29.500.

Sousa, James E.; Rogers, Ronald A.; and Grota, Allen, to Sousa, James E. Wheelchair restraining system. 5,186,585, Cl. 410-9.000.

Space Biospheres Venture: *See—*
Perslow, Johan A., 5,186,578, Cl. 405-79.000.

Spalding, Tom J.; Kowal, Keith E.; Bleck, James H.; Wakefield, Scott H.; and Thrailkill, John E., to Ergo Computing, Inc. Portable computer with docking connector for peripheral devices. 5,187,645, Cl. 361-393.000.

Sparks, Robert E.; Mason, Norbert S.; Autant, Pierre; Cartillier, Andre; and Pigeon, Raymond, to A.E.C. Societe de Chimie Organique et Biologique. Composition for feeding ruminants. 5,186,937, Cl. 424-438.000.

Specialty Laboratories, Inc.: *See—*
Mullis, Kary B., 5,187,083, Cl. 435-91.000.

Spector, David P., to Pilkington Visioncare, Inc. (a CA. corp.). Laminated lens wafers. 5,187,505, Cl. 351-159.000.

Speiser, Peter; Schleuniger, Urs; Orsolini, Piero; and Heimgartner, Frederic, to Debiopharm S.A. Polyester-based composition for the controlled release of polypeptide medicinal substances. 5,187,150, Cl. 514-2.000.

Spencer, Jean L. Polymeric particles for dental applications. 5,186,927, Cl. 424-54.000.

Spencer, Joseph C., to Midland Brake, Inc. Air dryer purge line. 5,186,522, Cl. 303-1.000.

Spira, Joel S.: *See—*
Post, Robert P.; D'Aleo, Michael J.; Keeports, Doug W.; Ference, Jonathan H.; Luchaco, David G.; and Spira, Joel S., 5,187,655, Cl. 364-146.000.

Spitz, William T.: *See—*
Denkmann, W. John; Dix, Willard A.; and Spitz, William T., 5,186,647, Cl. 439-395.000.

Spofford, Bryan T.; Christopher, Kent L.; and Hovanes, Michael E. Transtracheal catheter system and method. 5,186,168, Cl. 128-207.290.

Sprague, David L.: *See—*
Keith, John M.; Simon, Allen H.; Sprague, David L.; Dixon, Douglas F.; and Goldstein, Judith A., 5,187,793, Cl. 395-775.000.

Sprint Filter S.r.l.: *See—*
Fiocchi, Roberto, 5,185,970, Cl. 51-372.000.

SRI International: *See—*
Green, Christopher J.; and Johnson, Paul H., 5,187,075, Cl. 435-69.100.

Srinivasan, Partha: *See—*
Wang, Yulun; and Srinivasan, Partha, 5,187,796, Cl. 395-800.000.

Srivastava, Gopal K., to Zenith Electronics Corporation. Automatic video peaking system. 5,187,567, Cl. 358-21.00R.

Srivastava, Gopal K., to Zenith Electronics Corporation. Video processor having improved clamping system for color television receivers. 5,187,568, Cl. 358-39.000.

SS Pharmaceutical Co., Ltd.: *See—*
Okada, Minoru; Horie, Toshiaki; Okuyama, Hirohisa; Kasai, Syuichi; and Iwasa, Akira, 5,186,943, Cl. 424-490.000.

Stacy, Timothy D.: *See—*
Bornhorst, James M.; and Stacy, Timothy D., 5,186,536, Cl. 362-293.000.

Stadler, Jeffery A., to Excel Corporation. Conveyor unloading mechanism. 5,186,356, Cl. 221-250.000.

Stadnick, Steven J.: *See—*
Rogers, Howard H.; Sernka, Richard P.; and Stadnick, Steven J., 5,187,028, Cl. 429-101.000.

Stafford, Donald C. Workbench and mountable implements. 5,186,228, Cl. 144-286.00R.

Stager, Scott A.: *See—*
Stumpf, Donald D.; and Stager, Scott A., 5,186,869, Cl. 261-30.000.

Stahl, Allan; Moradi-Araghi, Ahmad; Westerman, John; Hsieh, Henry L.; Hedges, James H.; and Bjornson, Geir, to Phillips Petroleum Company. Polymers useful in the recovery and processing of natural resources. 5,186,257, Cl. 166-273.000.

Stahle, Arno W.; Bailey, Larry M.; and Tapp, William T., to Amoco Corporation. Self-bonded nonwoven web and woven fabric composites. 5,187,005, Cl. 428-252.000.

Stahlecker, Hans, to Stahlecker, Hans. Feeding and opening device for an open-end spinning arrangement. 5,185,994, Cl. 57-412.000.

Stahly, G. Patrick, to Ethyl Corporation. Producing bis(alicyclic) thioethers. 5,187,285, Cl. 549-241.000.

Stakem, Francis G.: *See—*
Baker, Edgar C.; Stakem, Francis G.; Noshay, Allen; Lee, Kiu H.; and Marcinkowsky, Arthur E., 5,187,246, Cl. 526-88.000.

Stallard, Clinton W., III, to Newport News Shipbuilding and Dry Dock Company. Submarine steering apparatus and method. 5,186,117, Cl. 114-330.000.

Stamicarbon B.V.: *See—*
Krijger, Louis C.; Jansen, Jozef M. A.; Hoen, Nicolaas G. M.; Steenbakkers, Laurentius W.; and Froehling, Peter E., 5,186,862, Cl. 252-512.000.
Schellekens, Ronald M. A. M.; Van Dijk, Hans K.; and Bulters, Marcus J. H., 5,186,861, Cl. 252-500.000.

Stanadyne Automotive Corp.: *See—*
Janik, Leon P., 5,186,829, Cl. 210-232.000.

Stanasolovich, David: *See—*
Cote, Donna R.; Stanasolovich, David; and Warren, Ronald A., 5,187,121, Cl. 437-195.000.

Standard Elektrik Lorenz Aktiengesellschaft: *See—*
Kolzer, Peter, 5,187,486, Cl. 342-360.000.

Standard Oil Company, The: *See—*
Paspek, Stephen C.; Hauser, Jeffrey B.; and Eppig, Christopher P., 5,186,817, Cl. 208-188.000.

Standard St Sensortechnik Ag.: *See—*
Roost, Walter, 5,186,062, Cl. 73-865.400.

Stanislaw, Henry: *See—*
Terry, Reese S., Jr.; Varrichio, Anthony J.; Winstrom, William L.; and Stanislaw, Henry, 5,186,170, Cl. 128-419.00R.

Stanley Electric Co., Ltd.: *See—*
Yokoyama, Takashi, 5,186,535, Cl. 362-226.000.

Stanley, Thomas R. Marine motor drive unit mounting apparatus. 5,186,666, Cl. 440-61.000.

Staples, Frank E.; Russell, Donald D.; and Potter, James L., to Lord Corporation. Link and bearing for rotary coupling. 5,186,686, Cl. 464-69.000.

Staples, Mark A.: *See—*
Watkins, Michael I.; Bartlett, Clifford R.; Liang, Edward T.; Pocekay, John M.; and Staples, Mark A., 5,187,107, Cl. 436-505.000.

Stapp, Carroll E. Foldable pickup truck tool box. 5,186,510, Cl. 296-37.500.

Starcevich, Bradley K., to Eagle Scientific Co. Biodegradable and water soluble packaging material. 5,186,990, Cl. 428-35.600.

Stark Forest Products Inc.: *See—*
Hostetler, Vernon, 5,185,982, Cl. 52-646.000.

Stecher, Gunther; Hecht, Hans; Bergfried, Dietrich; Ziegenbein, Botho; and Muehlheim, Richard, to Robert Bosch GmbH. Device for measuring a flowing air quantity. 5,186,051, Cl. 73-204.260.

Steenbakkers, Laurentius W.: *See—*
Krijger, Louis C.; Jansen, Jozef M. A.; Hoen, Nicolaas G. M.; Steenbakkers, Laurentius W.; and Froehling, Peter E., 5,186,862, Cl. 252-512.000.

Steenhoff, Frederick C.: *See—*
Glenday, Alan J.; and Steenhoff, Frederick C., 5,186,655, Cl. 439-583.000.

Steere, Robert E., Jr., to Silicon Technology Corporation. Wafer slicing and grinding system. 5,185,956, Cl. 51-5.00C.

Steffler, Michael W.: *See—*
Izenbaard, John; Philipp, Christopher D.; and Steffler, Michael W., 5,187,422, Cl. 320-2.000.

Steimel, James M.: *See—*
Kaczmarek, James S.; and Steimel, James M., 5,186,304, Cl. 198-346.100.

Steimer, Peter, to Asea Brown Boveri Ltd. Turn-off circuit. 5,187,652, Cl. 363-37.000.

Steinbrenner, Ulrich; Denz, Helmut; and Wild, Ernst, to Robert Bosch GmbH. Tank-venting arrangement for a motor vehicle and method for checking the operability thereof. 5,186,153, Cl. 123-519.000.

Steindorf, Richard E.; Maeda, Katsumi; Boche, Daniel K.; and Satoh, Yoichi, to Ecolab, Inc. Controlled release dishwasher detergent dispenser. 5,186,912, Cl. 422-263.000.

Steiner, Joseph D., to Can Do Associates. Can end with lock open and lock closed tab operated by a pull ring. 5,186,348, Cl. 220-270.000.

Steinert, Hans-Rudolf: *See—*
Schobbe, Hermann; Steinhauser, Gerd; Scheerer, Hans; Opara, Andreas; Mohrmann, Werner; Steinert, Hans-Rudolf; and Konig, Wolfhard, 5,186,440, Cl. 267-220.000.

Steinhauser, Gerd: *See—*
Schobbe, Hermann; Steinhauser, Gerd; Scheerer, Hans; Opara, Andreas; Mohrmann, Werner; Steinert, Hans-Rudolf; and Konig, Wolfhard, 5,186,440, Cl. 267-220.000.

Stelco Inc.: *See—*
Kelly, John H.; and Guest, Leonard E., 5,186,796, Cl. 204-129.350.

Stemmle, Denis J., to Xerox Corporation. Scanner with floating backstop. 5,187,588, Cl. 358-296.000.

Stenholm, Mark A.: *See—*
Toshima, Masato M.; Salzman, Phil M.; Murdoch, Steven C.; Wang, Cheng; Stenholm, Mark A.; Howard, James; Hall, Leonard; and Cheng, David, 5,186,594, Cl. 414-217.000.

Stenman, Kimmo E.: *See—*
Ikola, Kimmo J.; Stenman, Kimmo E.; and Yli-Vakkuri, Erkki P. J., 5,185,959, Cl. 51-72.00R.

Stenstrom, Eric: *See—*
Harwath, Frank A.; Brinkman, Donald J.; Landgraf, Glenn A.; Shah, Hasmukh; Stenstrom, Eric; Brunker, David L.; and Johnson, Richard A., 5,186,656, Cl. 439-585.000.

Stephan, Allan H.: *See—*
Garthwaite, Charlie; Cameron, Bridget; Ashmun, Stuart; Stephan, Allan H.; and Nelson, Michael D., 5,187,468, Cl. 340-709.000.

Stephenson, Dwight B.; Carlson, Keith R.; and Rasmussen, Kenneth G., to Eaton Corporation. Fluid controlled having variable ancillary control functions. 5,186,211, Cl. 137-625.240.

Stephenson, Dwight B.; and Draper, Don R., to Eaton Corporation. Fluid controller having axial modulation. 5,186,212, Cl. 137-625.240.

Stephenson, Everett H., Jr., to Union Camp Corporation. Remote release device for load binders. 5,186,586, Cl. 410-100.000.

Stephenson, Gregg: *See—*
Boucher, Paul; Boucher, Mario; Ford, John; and Stephenson, Gregg, 5,186,596, Cl. 414-395.000.

Sterling Winthrop Inc.: *See—*
Desai, Ranjit C.; Court, John J.; Hlasta, Dennis J.; and Subramanyam, Chakrapani, 5,187,173, Cl. 514-373.000.

Sterman, Melvin D.; and Bello, James L., to Eastman Kodak Company. Chain extended gelatin. 5,187,259, Cl. 530-354.000.

Stern, Roland: *See—*
Groh, Werner; Heumuller, Rudolf; Schutze, Gerald; Stern, Roland; and Wieners, Gerhard, 5,187,769, Cl. 385-143.000.

Stevenin, Gino; and Adamoli, Contardo, to Microlys S.p.A. Dot matrix print head. 5,186,552, Cl. 400-124.000.

Stevens, Craig: *See—*
Fuhrmann, Arthur D., III; Stevens, Craig; and Gramolini, Glenn, 5,186,564, Cl. 401-202.000.

Stiasny, Carl-Heinz, to Viscodrive GmbH. Method and apparatus for treating plates with gas. 5,186,764, Cl. 148-206.000.

Stierlen-Maquet AG: *See—*
Bastert, Carl-Christian; and Helgert, Armin, 5,185,894, Cl. 5-81.100.

Stimson, Brian L. Concrete chute apparatus. 5,186,299, Cl. 193-2.00R.

Stinson, Jonathan D.: *See—*
McDonagh, Lawrence P.; Clarke, William H.; Stinson, Jonathan D.; and Lopez, John V., 5,186,439, Cl. 267-35.000.

Stinson, Robert K. Windage-gauging method and apparatus for hunters. 5,186,118, Cl. 116-214.000.

Stocker, Kurt F.; and Wenzel, Ernst, to Pentapharm AG. Inhibitors for the anticoagulant pretreatment of blood samples. 5,187,102, Cl. 436-69.000.

Stoger, Anton: *See—*
Vollmann, Norbert C.; Dewolf, Jan; Bernauer, Gunther; Stoger, Anton; and Koningsberger, Marco V., 5,187,629, Cl. 360-132.000.

Stohr, Helmut: *See—*
Thomas, Ronald H.; and Stohr, Helmut, 5,187,480, Cl. 341-22.000.

Stolz, Kurt: *See—*
Hasler, Jurg; and Stolz, Kurt, 5,187,316, Cl. 89-36.020.

Stonerook, Dana A.; Abeska, Edward J.; and Rochette, Jeff R., to TRW Inc. Method and apparatus for testing a dual airbag passive restraint system. 5,187,465, Cl. 340-438.000.

Stove, Andrew G., to U.S. Philips Corporation. Linearizing a swept-frequency radar. 5,187,484, Cl. 342-200.000.

Stover, Kenneth W.: *See—*
Knepler, John T.; Newton, Cloyce; and Stover, Kenneth W., 5,186,399, Cl. 241-34.000.

Stram, Jeffrey P.: *See—*
Hickox, Thomas A.; and Stram, Jeffrey P., 5,187,627, Cl. 360-105.000.

Strang, Harry: *See—*
Fischer, Reiner; Baasner, Bernd; Hageman, Hermann; Krebs, Andreas; Marhold, Albrecht; Santel, Hans-Joachim; Schmidt, Robert R.; Lurssen, Klaus; Becker, Benedikt; Schaller, Klaus; and Strang, Harry, 5,186,737, Cl. 504-283.000.

Strang, William G.: *See—*
Kelly, Steven C.; Huff, Daniel H.; and Strang, William G., 5,186,665, Cl. 439-862.000.

Straub, Stephen W., to Cooper Industries, Inc. Surface gap igniter. 5,187,404, Cl. 313-131.00A.

Strike, Donald P.: *See—*
Fobare, William F.; and Strike, Donald P., 5,187,284, Cl. 549-58.000.

Stringer, Timothy K.: *See—*
Freeman, Mark A.; and Stringer, Timothy K., 5,186,347, Cl. 220-254.000.

Strock, Charles E.; and Oliver, Scottie J. Tri-lobe sheave. 5,186,691, Cl. 474-166.000.

Strode, Stephen H.: *See—*
Davenport, Marcus K.; Shipman, Richard K.; Young, Thomas D.; and Strode, Stephen H., 5,187,739, Cl. 379-155.000.

Strother, Sander. Softshell. 5,186,513, Cl. 296-100.000.

Strougken, Klaus; and Ridderstrale, Rolf, to Alfa-Lavel Separation AB. Centrifugal separator having a rotor body with a movable wall. 5,186,708, Cl. 494-41.000.

Strubhar, Malcolm K.: *See—*
El-Rabaa, A. Wadood; Moeckel, George P.; and Strubhar, Malcolm K., 5,187,332, Cl. 181-122.000.

Stryker Corporation: *See—*
Izenbaard, John; Philipp, Christopher D.; and Steffler, Michael W., 5,187,422, Cl. 320-2.000.

Stuart, Keith O.; and Bulgatz, Dennis C., to Aura Systems, Inc. Electromagnetic actuator. 5,187,398, Cl. 310-14.000.

Stubblefield, Jerry D.: *See—*
Tong, James K.; Selbiger, Lawrence; Stubblefield, Jerry D.; and Curley, Jack, 5,185,943, Cl. 36-28.000.

Stumpf, Donald D.; and Stager, Scott A. Electronically controlled central air freshening system and method for using same. 5,186,869, Cl. 261-30.000.

Su, Philip P.: *See—*
Rummage, Glenn E.; and Su, Philip P., 5,186,223, Cl. 141-91.000.

Subramanyam, Chakrapani: *See—*
Desai, Ranjit C.; Court, John J.; Hlasta, Dennis J.; and Subramanyam, Chakrapani, 5,187,173, Cl. 514-373.000.

Sud Est Electro Mecanique S.E.E.M. (Sarl): *See—*
Marlier, Jean-Pierre, 5,186,060, Cl. 73-862.474.

Suda, Hirofumi: *See—*
Kaneda, Kitahiro; Yamada, Kunihiko; Fujiwara, Akihiro; Suda, Hirofumi; and Toyama, Masamichi, 5,187,585, Cl. 358-227.000.

Suda, Kaoru: *See—*
Kanto, Jumpei; Saito, Hitoshi; Eguchi, Hiroshi; Nakamura, Masayuki; Kafuku, Koumei; Chiba, Junji; and Suda, Kaoru, 5,187,145, Cl. 503-227.000.

Sudo, Nobuhisa, to Nippon Paint Co., Ltd. Clear coating composition and method of producing same. 5,187,199, Cl. 523-523.000.

Sudoh, Eiichi: *See—*
Ohta, Hiroshi; Aono, Masakazu; Kato, Kazuhiko; Hoshino, Kazutomo; Takahara, Hidefusa; Nakayama, Tomonobu; and Sudoh, Eiichi, 5,187,327, Cl. 174-35.00R.

Suganuma, Kazuhiko: *See—*
Shike, Tsutomu; Eguchi, Toshihiko; Kaga, Yosimitu; and Suganuma, Kazuhiko, 5,186,618, Cl. 431-153.000.

Suganuma, Masashi: *See—*
Miyahara, Masaaki; and Suganuma, Masashi, 5,186,954, Cl. 425-130.000.

Sugimori, Masahiro; Takeda, Haruko; and Tone, Seiji, to Mitsubishi Rayon Co., Ltd. Preparation process of block copolymers and resulting block copolymers. 5,187,244, Cl. 525-479.000.

Sugimoto, Yukihiro; and Kakubari, Toru, to Olympus Optical Co., Ltd. Virus infection examination apparatus having automatic determination function and method therefor. 5,187,749, Cl. 382-6.000.

Sugiura, Hideo; Yamada, Takeshi; and Iga, Ryuzo, to Nippon Telegraph and Telephone Corporation. Method and apparatus for forming semiconductor thin films. 5,186,750, Cl. 118-50.100.

Sugiura, Ikuzo; Uchimura, Mitsuo; Kawamura, Kouichi; Fogle, Ronald L.; and Huggins, Orville C., to Monarch Marking Systems, Inc. Printer and method. 5,186,553, Cl. 400-242.000.

Sugiyama, Genroku: *See—*
Hirata, Toichi; Sugiyama, Genroku; and Kajita, Yusuke, 5,186,000, Cl. 60-420.000.

Sugiyama, Mitsumasa; and Kobayashi, Shigetada, to Canon Kabushiki Kaisha. Image communication method and apparatus with selection of binarization method for transmission. 5,187,592, Cl. 358-430.000.

VOL 1147 ISS 3 FE 16 1993 UMI

Sugiyama, Mitsuo: *See—*
Fukumi, Hiroshi; Sakamoto, Toshiaki; Sugiyama, Mitsuo; Yamaguchi, Takeshi; Oshima, Takeshi; and Iijima, Yasuteru, 5,187,181, Cl. 514-318.000.

Sugiyama, Toshihisa: *See—*
Yoshioka, Mamoru; Sugiyama, Toshihisa; and Kidokoro, Toru, 5,186,005, Cl. 60-600.000.

Sugiyama, Tsukasa; and Yoshizuka, Ken, to Mita Industrial Co. Ltd. Automatic document feeder for feeding documents based on signals from a final document detecting device and a normal end detecting device. 5,187,533, Cl. 355-309.000.

Sugiyama, Yoshihiko: *See—*
Fushimi, Seiichiro; and Sugiyama, Yoshihiko, 5,187,525, Cl. 355-269.000.

Suica, David E.: *See—*
Hatton, Derald R.; Constiner, Joseph P.; and Suica, David E., 5,186,332, Cl. 209-17.000.

Suitor, Jerry W.: *See—*
Clark, Douglas J.; Galica, Leo M.; Losey, Robert W.; and Suitor, Jerry W., 5,186,806, Cl. 204-265.000.

Sullivan, Dwight: *See—*
Biagi, Carl; Ritchie, Steve; and Sullivan, Dwight, 5,186,462, Cl. 273-129.00S.

Sullivan, Michael J., to Lisco, Inc. Golf ball compositions. 5,187,013, Cl. 428-407.000.

Sulzer Brothers Limited: *See—*
Bollier, Mauritius, 5,186,216, Cl. 139-145.000.
Riesen, Peter, 5,186,218, Cl. 139-438.000.

Suman, Michael J.: *See—*
VandenBerge, Thomas C.; DeJong, Jerry M.; and Suman, Michael J., 5,186,512, Cl. 296-97.800.

Sumi, Yoshihiko: *See—*
Koike, Yukiya; Wakabayashi, Kenji; Sumi, Yoshihiko; and Ichikawa, Yataro, 5,187,067, Cl. 435-7.900.

Sumitomo Chemical Company, Limited: *See—*
Hamanaka, Tatsuo; Hikasa, Tadashi; and Ibuki, Koichiro, 5,187,224, Cl. 524-505.000.

Sumitomo Electric Industries: *See—*
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,187,148, Cl. 505-1.000.

Sumitomo Electric Industries, Ltd.: *See—*
Isobe, Kazutaka; and Nomura, Toshio, 5,186,739, Cl. 75-238.000.
Mishima, Takayuki; Okuda, Yasuhiro; and Nishimoto, Hiroaki, 5,187,770, Cl. 385-145.000.
Yoshida, Katsuhito; and Tsuji, Kazuwo, 5,187,560, Cl. 257-76.000.

Sumitomo Metal Industries, Ltd.: *See—*
Nomoto, Masai; Sakurai, Koichi; Suzuki, Takashi; Fukui, Kiyoshi; and Okamoto, Atsuki, 5,186,768, Cl. 148-580.000.

Sumitomo Rubber Industries, Ltd.: *See—*
Nakasaki, Eiji; and Igarashi, Yasuo, 5,186,772, Cl. 152-516.000.
Oku, Masahiro; Iwamura, Kazumitsu; and Kakumu, Kiichiro, 5,186,773, Cl. 152-531.000.

Sumitomo Wiring Systems, Ltd.: *See—*
Kamada, Satoshi, 5,186,036, Cl. 72-306.000.

Sumple, Michael: *See—*
Chapman, Michael; and Sumple, Michael, 5,186,388, Cl. 239-8.000.

Sun Microsystems, Inc.: *See—*
Densmore, Owen M.; and Rosenthal, David S. H., 5,187,786, Cl. 395-600.000.
Sutherland, Ivan E., 5,187,800, Cl. 395-800.000.

Sunahata, Mutsumi: *See—*
Ishino, Renshiro; Yoshimura, Shigeo; Sunahata, Mutsumi; Saito, Taro; and Tanizaki, Yasuo, 5,186,059, Cl. 73-862.193.

Sundstrand Corporation: *See—*
Glover, J. Howard, 5,187,477, Cl. 340-968.000.
Grove, Michael M., 5,187,478, Cl. 340-970.000.
Treece, William D.; and Thompson, Robert C., 5,186,601, Cl. 415-58.400.

Sunley, Raymond L.: *See—*
Salmon, Roger; Sunley, Raymond L.; and Whittle, Alan J., 5,187,176, Cl. 514-269.000.

Sunnen Products Company: *See—*
Vanderwal, Frank E., Jr., 5,185,969, Cl. 51-338.000.

Supercomputer Systems Limited Partnership: *See—*
O'Hair, Kelly T., 5,187,789, Cl. 395-700.000.

Sure Alloy Steel Corporation: *See—*
Wark, Rickey E., 5,186,404, Cl. 241-119.000.

Surgnier, David H.: *See—*
Wood, Edward T.; Surgnier, David H.; and Brooks, Robert T., 5,186,258, Cl. 166-387.000.

Sutherland, Ivan E., to Sun Microsystems, Inc. Asynchronous pipelined data processing system. 5,187,800, Cl. 395-800.000.

Sutryn, Daniel C.: *See—*
Benko, John W.; Levkoff, Jerome; Sutryn, Daniel C.; and Viriyayuthakorn, Montri, 5,186,756, Cl. 118-730.000.

Sutton, Charles W.; and Sutton, J. Wayne. Ladder rack ladder latch. 5,186,588, Cl. 410-120.000.

Sutton, J. Wayne: *See—*
Sutton, Charles W.; and Sutton, J. Wayne, 5,186,588, Cl. 410-120.000.

Suzuki, Akio; Matsumura, Masaaki; and Hashimoto, Takeshi, to Shin-Etsu Chemical Company, Limited. Method of manufacturing a product of one-piece construction wherein silicone rubber has been made to adhere. 5,187,014, Cl. 428-447.000.

Suzuki, Hiroaki: *See—*
Kuroda, Tadahiro; and Suzuki, Hiroaki, 5,187,555, Cl. 257-202.000.

Suzuki, Katsuhisa: *See—*
Ouchi, Wataru; Suzuki, Katsuhisa; Tokutake, Toshinori; and Hirano, Hirosaburo, 5,186,250, Cl. 165-177.000.

Suzuki, Masayoshi, to Fujitsu Limited. Board-to-board test unit for a digital subscriber line. 5,187,732, Cl. 379-5.000.

Suzuki, Mutsumi: *See—*
Kobgami, Akihiko; Mikoshiba, Shigeo; Shinada, Shinichi; and Suzuki, Mutsumi, 5,187,578, Cl. 358-168.000.

Suzuki, Nobuharu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Device for indicating distance measuring zone of camera. 5,187,516, Cl. 354-403.000.

Suzuki, Setsuji: *See—*
Hayashi, Yasuaki; Tomita, Tadashi; Yokoyama, Kenzo; Suzuki, Setsuji; and Uno, Yoshihito, 5,186,687, Cl. 464-144.000.

Suzuki, Takashi: *See—*
Furuoya, Itsuo; Suzuki, Takashi; and Takahashi, Takeshi, 5,187,088, Cl. 435-191.000.
Nomoto, Masai; Sakurai, Koichi; Suzuki, Takashi; Fukui, Kiyoshi; and Okamoto, Atsuki, 5,186,768, Cl. 148-580.000.

Suzuki, Yasumichi: *See—*
Kurita, Mitsuru; Suzuki, Yasumichi; and Ikeda, Yoshinori, 5,187,593, Cl. 358-434.000.

Swaim, Joe T.; Heckman, Donald C.; O'Grady, Kenneth J.; and Eastep, Guido M., to MCI Communications Corporation. Method and apparatus for telephone call reorigination. 5,187,740, Cl. 379-209.000.

Swann, Linsey J., to Brookdale International Systems Inc. Filtering canister with deployable hood and mouthpiece. 5,186,165, Cl. 128-201.280.

Swanson, David R.: *See—*
Deters, Joseph C.; Swanson, David R.; and DeRosa, Stephen C., 5,186,942, Cl. 424-473.000.

SWF Auto-Electric GmbH: *See—*
Egner-Walter, Bruno; and Pleiss, Eberhard, 5,186,606, Cl. 415-152.100.

Symbol Technologies, Inc.: *See—*
Metlitsky, Boris; and Krichever, Mark, 5,187,353, Cl. 235-462.000.

Synder, Jon H.: *See—*
Campo, Manuel; Pearson, Charles S.; and Synder, Jon H., 5,185,913, Cl. 29-453.000.

Syntex (U.S.A.) Inc.: *See—*
Becker, Martin; Kurn, Nurith; Liu, Yen P.; Patel, Rajesh D.; Houts, Thomas M.; and Olson, John D., 5,187,066, Cl. 435-7.360.

Systems and Service International, Inc.: *See—*
Boyd, Dudley G.; and Chen, Nian, 5,187,411, Cl. 315-247.000.

T. L. Products Promoting Co., Ltd.: *See—*
Ting, Charles, 5,186,319, Cl. 206-45.140.

Tabata, Tatushi: *See—*
Sonobe, Kozo; Fukuzawa, Takashi; Takeuchi, Kohsuke; Tabata, Tatushi; Fukuoka, Hiroshi; Hisamatsu, Kunio; and Katamura, Makoto, 5,187,126, Cl. 501-65.000.

Taccetta, Alfonse; and Fico, Anthony. Headlight actuator associated with windsheild wiper actuation having delay circuits and daylight detection. 5,187,383, Cl. 307-10.800.

Tachikawa Corporation: *See—*
Wada, Kouichi, 5,186,426, Cl. 248-251.000.

Tacklind, Thomas A., to Quantum Corporation. RFI/EMI reduction for head and disk assembly. 5,187,621, Cl. 360-97.020.

Taeger, Klaus: *See—*
Brueckmann, Ralf; Bury, Willi; Dix, Johannes P.; Herrmann, Manfred; Dlugosch, Waldemar; Kromm, Erich; Letter, Herbert; Zimmermann, Norbert; Kermer, Wolf-Dieter; and Taeger, Klaus, 5,186,846, Cl. 252-8.700.

Tagashira, Minoru: *See—*
Yoshida, Yuji; Tagashira, Minoru; Nakatani, Kazuo; and Funakura, Masami, 5,186,011, Cl. 62-114.000.

Tagawa, Kimiteru: *See—*
Onofusa, Mitsuo; Hashimoto, Nobuyoshi; Tagawa, Kimiteru; and Hagiwara, Michiro, 5,186,895, Cl. 422-67.000.

Taguchi, Katsuhisa: *See—*
Ebe, Kazuyoshi; Narita, Hiroaki; Taguchi, Katsuhisa; Akeda, Yoshitaka; and Saito, Takanori, 5,187,007, Cl. 428-343.000.

Taiariol, Van: *See—*
Bliem, Rudolf F.; Oakley, Robert V.; and Taiariol, Van, 5,187,095, Cl. 435-285.000.

Taiwan Fu Hsing Industry Co., Ltd.: *See—*
Lin, Jui C., 5,186,030, Cl. 70-190.000.

Taiyo Chuki Co., Ltd.: *See—*
Ito, Junnosuke; and Iwamoto, Minoru, 5,186,538, Cl. 366-16.000.

Tajima, Hatsuo, to Canon Kabushiki Kaisha. Image forming apparatus. 5,187,535, Cl. 355-326.000.

Tajima, Kazushige: *See—*
Kaneko, Morio; and Tajima, Kazushige, 5,186,207, Cl. 137-495.000.

Takabayashi, Yukio; and Tokuda, Yukio, to Canon Kabushiki Kaisha. Exposure apparatus having mount means to suppress vibrations. 5,187,519, Cl. 355-53.000.

Takahara, Hidefusa: *See—*
Ohta, Hiroshi; Aono, Masakazu; Kato, Kazuhiko; Hoshino, Kazutomo; Takahara, Hidefusa; Nakayama, Tomonobu; and Sudoh, Eiichi, 5,187,327, Cl. 174-35.00R.

Takahara, Yoshiyuki: *See—*
Kishimoto, Tadamitsu; Hirano, Toshio; Akiyama, Yukio; Okano, Akira; Matsui, Hiroshi; and Takahara, Yoshiyuki, 5,186,931, Cl. 424-85.200.

Takahashi, Atsushi: *See—*
Kimura, Shigeru; Takahashi, Atsushi; Shibao, Masaharu; and Tomioka, Kazuyuki, 5,186,200, Cl. 137-15.000.

Takahashi, Hideo: *See—*
Toya, Masanori; Takahashi, Hideo; and Matsumoto, Yasuji, 5,186,849, Cl. 252-21.000.

Takahashi, Naomasa, to Kabushiki Kaisha Toshiba. Apparatus for moving an optical system. 5,187,702, Cl. 369-215.000.

Takahashi, Nobukazu; Kohara, Teiji; and Natsuume, Tadao, to Nippon Zeon Co., Ltd. Thermoplastic materials and article made therefrom. 5,187,012, Cl. 428-402.000.

Takahashi, Nobuyuki: *See—*
Ushigami, Yoshiyuki; Nakayama, Tadashi; and Takahashi, Nobuyuki, 5,186,762, Cl. 148-111.000.

Takahashi, Norio: *See—*
Hanamoto, Tadayuki; and Takahashi, Norio, 5,186,579, Cl. 405-143.000.

Takahashi, Seiichi: *See—*
Owada, Toshinobu; Inamori, Akio; Aota, Yoshikazu; Sakamoto, Shigeo; and Takahashi, Seiichi, 5,186,297, Cl. 192-85.0CA.

Takahashi, Takeshi: *See—*
Furuoya, Itsuo; Suzuki, Takashi; and Takahashi, Takeshi, 5,187,088, Cl. 435-191.000.

Takahashi, Takuya: *See—*
Sakai, Masanori; Ohsumi, Katsumi; Ohnaka, Noriyuki; Kikuchi, Eiji; Mabuchi, Katsumi; and Takahashi, Takuya, 5,186,798, Cl. 204-153.100.

Takahashi, Tokihiro; Sato, Takayuki; Ota, Masuo; and Nagao, Tatsuro, to Pioneer Electronic Corporation. Telephone message recording device. 5,187,734, Cl. 379-79.000.

Takahashi, Toshiro: *See—*
Katoh, Kazunobu; Okamura, Hisashi; Okada, Hisashi; Inoue, Nobuaki; Takahashi, Toshiro; Yagihara, Morio; and Yamaguchi, Tetsuo, 5,187,042, Cl. 430-264.000.

Takaishi, Tadao; and Maekawa, Toshio, to Mitsubishi Denki K.K. Ignition coil device for an internal combustion engine. 5,186,154, Cl. 123-634.000.

Takaishi, Tatsuyuki; Miyagawa, Masazumi; and Nakamura, Hitoshi, to Ohi Seisakusho Co., Ltd. Door lock device. 5,186,504, Cl. 292-216.000.

Takaki, Usaji: *See—*
Yamamoto, Yoshihiro; Takaki, Usaji; Aoki, Shinobu; Inoue, Yoshihisa; and Hara, Isao, 5,187,283, Cl. 548-457.000.

Takano, Hideaki; Nakata, Jitsuo; and Oonishi, Toshiaki, to Kyodo Oxygen Co., Ltd. Controlled process for xenon concentration. 5,186,007, Cl. 62-22.000.

Takano, Hiroyuki, to Ikeda Bussan Co., Ltd. Airbag restraint system. 5,186,488, Cl. 280-728.000.

Takano, Satoshi: *See—*
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,187,148, Cl. 505-1.000.

Takano, Shigemasa: *See—*
Matsui, Naoyuki; and Takano, Shigemasa, 5,187,036, Cl. 430-59.000.

Takao, Shinji: *See—*
Shikata, Kiyotaka; and Takao, Shinji, 5,187,605, Cl. 359-152.000.

Takase, Shigehiro: *See—*
Oohata, Nobutaka; Nishikawa, Motoaki; Kiyoto, Sumio; Takase, Shigehiro; Hemmi, Keiji; Murai, Hidetsugu; and Okuhara, Masakuni, 5,187,195, Cl. 514-510.000.

Takase, Toshiaki: *See—*
Kanno, Hiroshi; Wagatsuma, Yuuki; and Takase, Toshiaki, 5,186,102, Cl. 101-128.400.

Takashima, Hiroyuki: *See—*
Ishida, Noboru; and Takashima, Hiroyuki, 5,186,852, Cl. 252-50.000.

Takasugi, Kei: *See—*
Nakamura, Kazunari; and Takasugi, Kei, 5,187,572, Cl. 358-98.000.

Takata Corporation: *See—*
Nishizawa, Muneo, 5,186,063, Cl. 74-2.000.
Tsuji, Tetsuo; and Fujimura, Yoshiichi, 5,186,493, Cl. 280-806.000.

Takata, Eiichi: *See—*
Kumada, Akira; Takata, Eiichi; and Murata, Michihiro, 5,187,444, Cl. 324-663.000.

Takayama, Hiromitsu. Combination trunk. 5,186,290, Cl. 190-108.000.

Takayama, Ichiro: *See—*
Yamazaki, Shunpei; Fukada, Takeshi; Sakama, Mitsunori; Amachi, Nobumitsu; Sakamoto, Naoya; Codama, Mitsufumi; Fuki, Takashi; and Takayama, Ichiro, 5,187,601, Cl. 359-54.000.

Takeda Chemical Industries, Ltd.: *See—*
Furuoya, Itsuo; Suzuki, Takashi; and Takahashi, Takeshi, 5,187,088, Cl. 435-191.000.
Sato, Yuji; and Friesen, Henry G., 5,187,062, Cl. 435-7.940.

Takeda, Haruko: *See—*
Sugimori, Masahiro; Takeda, Haruko; and Tone, Seiji, 5,187,244, Cl. 525-479.000.

Takeda, Mutsuhiko; Hagiwara, Isao; Zaima, Fumiya; and Sakaguchi, Shuzabu, to Mitsubishi Gas Chemical Company, Inc. Methylthiophenol derivatives and p-methylthiophenyl chloroformates and processes for producing these derivatives. 5,187,311, Cl. 556-428.000.

Takeda, Tomoyuki: *See—*
Ono, Takeshi; Wada, Satoshi; Kobayashi, Makoto; Yoshida, Takehiro; Takeda, Tomoyuki; Ishida, Yasushi; Yokoyama, Minoru; Tomoda, Akihiro; Yamada, Masakatsu; and Awai, Takashi, 5,187,494, Cl. 346-76.0PH.

Takeda, Toyohiko: *See—*
Tanino, Tadatsugu; Furuya, Yoshihiro; Takeda, Toyohiko; Endo, Yoshiyuki; and Inoue, Hayao, 5,186,956, Cl. 425-135.000.

Takehara, Kazuyuki, to Maruyasu Industries Co., Ltd. Demodulator for spread spectrum communication. 5,187,718, Cl. 375-1.000.

Takei, Narimichi, to Freund Inphachem Inc. Apparatus for manufacturing seamless capsules. 5,186,948, Cl. 425-5.000.

Takeji, Kobata: *See—*
Yoshihiro, Ikenaga; and Takeji, Kobata, 5,186,914, Cl. 423-239.000.

Takemoto, Toshio: *See—*
Shoji, Hajime; Watanabe, Noriko; Hamada, Hiroshi; Kato, Hiroaki; Takemoto, Toshio; and Hirobe, Toshihiko, 5,187,551, Cl. 257-347.000.

Takemura, Seiji: *See—*
Kawai, Masataka; and Takemura, Seiji, 5,187,565, Cl. 257-682.000.

Takemura, Taketoshi: *See—*
Haruta, Kenyu; Nagai, Haruhiko; Nakatani, Hajime; Yamamoto, Yoshihiko; Takemura, Taketoshi; Eura, Takashi; Tsuboi, Shungo; Matsushita, Yoshifumi; and Minagawa, Tadao, 5,187,716, Cl. 372-57.000.

Takenaka Corporation: *See—*
Miyake, Hiraku; Ishiguro, Mitsuo; Abe, Shigetaka; Yamaguchi, Nobuo; Hayamizu, Yutaka; and Aizawa, Satoru, 5,185,976, Cl. 52-167.0RA.

Takeno, Katsuji, to Takeno, Katsuji. Golf tee and its manufacturing method. 5,186,456, Cl. 273-33.000.

Takeo, Hideya, to Fuji Photo Film Co., Ltd. Method for determining image points in object images. 5,187,752, Cl. 382-41.000.

Takeuchi, Hiroshi, to Kabushiki Kaisha Daikin Seisakusho. Clutch cover assembly. 5,186,298, Cl. 192-111.00A.

Takeuchi, Kohsuke: *See—*
Sonobe, Kozo; Fukuzawa, Takashi; Takeuchi, Kohsuke; Tabata, Tatushi; Fukuoka, Hiroshi; Hisamatsu, Kunio; and Katamura, Makoto, 5,187,126, Cl. 501-65.000.

Takeuchi, Takikazu: *See—*
Yamamoto, Akira; Kitajima, Hiroyuki; Kurano, Akira; Miyazaki, Michio; Nozawa, Masafumi; and Takeuchi, Takikazu, 5,187,778, Cl. 395-250.000.

Takeuchi, Yoshihiko: *See—*
Yamashita, Kazuo; Takeuchi, Yoshihiko; and Watanabe, Masahiro, 5,187,458, Cl. 333-197.000.

Takeya, Hiroshi: *See—*
Ishii, Hidehiro; Takeya, Hiroshi; Miura, Chiharu; and Fukuda, Tatsuya, 5,187,696, Cl. 369-44.290.

Taki, Tsutomu: *See—*
Shinohara, Hideo; Murata, Yukichi; and Taki, Tsutomu, 5,187,144, Cl. 503-227.000.

Takiguchi, Takao: *See—*
Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Katagiri, Kazuharu; Takiguchi, Takao; Shinjo, Kenji; Kitayama, Hiroyuki; and Nakamura, Shinichi, 5,186,858, Cl. 252-299.610.

Takiguchi, Tohru, to Mitsubishi Denki Kabushiki Kaisha. Photodetector. 5,187,378, Cl. 257-188.000.

Takishima, Toichi: *See—*
Otani, Yasuaki; Takishima, Toichi; and Sakata, Yasuhiko, 5,186,811, Cl. 205-125.000.

Talish, Roger J.; and Lifshey, Arthur L., to Interpore Orthopaedics, Inc. Ultrasonic transducer device for treatment of living tissue and/or cells. 5,186,162, Cl. 128-24.0AA.

Tam, Kwok C.: *See—*
Eberhard, Jeffrey W.; and Tam, Kwok C., 5,187,659, Cl. 364-413.150.

Tamari, Yehuda. Pressure sensitive valves for extracorporeal circuits. 5,186,431, Cl. 251-5.000.

Tamglass Oy: *See—*
Ikola, Kimmo J.; Stenman, Kimmo E.; and Yli-Vakkuri, Erkki P. J., 5,185,959, Cl. 51-72.00R.

Tamura, Hideyuki: *See—*
Tsukada, Shinichi; Iizuka, Yoshiharu; Tamura, Hideyuki; and Sakashita, Osamu, 5,186,593, Cl. 413-19.000.

Tamura, Morio: *See—*
Hatano, Kazuyoshi; Ichiryu, Ken; Tamura, Morio; Kometani, Eiji; Gotoh, Yasuharu; and Hidao, Nobuyoshi, 5,187,017, Cl. 428-663.000.

Tanaka, Akira: *See—*
Ueda, Masanori; Sawada, Hisashi; Tanaka, Akira; and Wakatsuki, Noboru, 5,187,758, Cl. 385-16.000.

Tanaka, Asami, to Asami Tanaka Dental Enterprises. Metal-porcelain dental bridges. 5,186,626, Cl. 433-180.000.

Tanaka, Hideaki, to Sharp Kabushiki Kaisha. Clustering system for optical character reader. 5,187,751, Cl. 382-36.000.

Tanaka Kikinzoku Kogyo K.K.: *See—*
Watanabe, Masahiro, 5,186,877, Cl. 264-104.000.

Tanaka, Masaru, to Katsu Manufacturing Co., Ltd. Pellet making machine for producing pellets from a strand. 5,186,959, Cl. 425-215.000.

Tanaka, Masato: *See—*
Minami, Yoshikatsu; and Tanaka, Masato, 5,187,418, Cl. 318-568.190.

Tanaka, Toshiaki: *See—*
Obata, Fumio; Tanaka, Toshiaki; and Nagayoshi, Hideaki, 5,186,233, Cl. 164-58.100.

Tandy Corporation: *See—*
Evans, Benjamin F.; Heep, Jerry J.; and Haagen, Peter H., 5,187,469, Cl. 340-825.220.

VOL 1147 ISS 3 FE 16 1993 UMI

Tani, Nobuhiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Solid state imaging device and electronic still camera using same. 5,187,569, Cl. 358-50.000.

Taniguchi, Hideaki; Kunitou, Hirofumi; Oritsuki, Ryouji; and Sasano, Akira, to Hitachi, Ltd. Multi-layer external terminals of liquid crystal displays with thin-film transistors. 5,187,604, Cl. 359-88.000.

Taniguchi, Masato; and Matsuura, Haruyoshi, to NGK Spark Plug Co., Ltd. Method of making a frictionally sliding component. 5,185,923, Cl. 29-888.030.

Tanikawa, Roy K., to AST Research, Inc. Rechargeable battery controller. 5,187,425, Cl. 320-31.000.

Tanimoto, Koji; and Sasama, Kazuo, to Kabushiki Kaisha Toshiba. Image forming apparatus for obtaining image upon scanning with laser beam. 5,187,495, Cl. 346-108.000.

Tanino, Tadatsugu; Furuya, Yoshihiro; Takeda, Toyohiko; Endo, Yoshiyuki; and Inoue, Hayao, to Shionogi & Co., Ltd. Rotary powder compression molding machine. 5,186,956, Cl. 425-135.000.

Tanizaki, Yasuo: *See*—
Ishino, Renshiro; Yoshimura, Shigeo; Sunahata, Mutsumi; Saito, Taro; and Tanizaki, Yasuo, 5,186,059, Cl. 73-862.193.

Tapp, William T.: *See*—
Stahle, Arno W.; Bailey, Larry M.; and Tapp, William T., 5,187,005, Cl. 428-252.000.

Tarawneh, Khaled A.: *See*—
Free, Stephen J.; McNally, Mark T.; and Tarawneh, Khaled A., 5,187,079, Cl. 435-69.100.

Tarekado, Kenji; Nakamura, Masanori; Hokazono, Kazuaki; Fukada, Hirotaka; and Ishikawa, Takashige, to Mazda Motor Corporation. Intake apparatus for internal combustion engine. 5,186,126, Cl. 123-52.0MB.

Tarpai, Gyula: *See*—
Nagy, Jozsef; Nagy, Istvan; Balogh, Karoly; Mile, Erzsebet; Tarpai, Gyula; Sellei nee Kulik, Katalin; Fodor, Karoly; Kecskes, Mihaly; Toth nee Juhasz, Erzsebet; and Horvath nee Petho , Zsuzsanna, 5,186,723, Cl. 47-58.000.

Task, Harry L., to United States of America, Air Force. Single beam angular deviation measurement system and method. 5,187,541, Cl. 356-239.000.

Tateno, Atsushi: *See*—
Mashiko, Kimio; Isoda, Sadatsuyo; and Tateno, Atsushi, 5,186,185, Cl. 131-337.000.

Tateoka, Masamichi: *See*—
Kondo, Kazuyuki; Tateoka, Masamichi; and Nakai, Takehiko, 5,187,606, Cl. 359-196.000.

Tatewaki, Masayuki; Kato, Hiromasa; Obinata, Kenichi; and Aoki, Masahiro, to Sony Corporation. Optical disc. 5,186,994, Cl. 428-64.000.

Tavares, Wayne R. Interlocking ground slab element and method. 5,186,574, Cl. 404-73.000.

Taylor, James L.: *See*—
Lyzinski, David; Buttke, Robert D.; Taylor, James L.; and Hall, William M., 5,186,904, Cl. 422-130.000.

Taylor, John T. Connector assembly for removably holding a glove. 5,186,373, Cl. 224-183.000.

Teac Corporation: *See*—
Watanabe, Takashi, 5,187,622, Cl. 360-99.020.

Team Worldwide Corporation: *See*—
Wang, Cheng-Chung, 5,186,667, Cl. 441-129.000.

Tedesco, John L.: *See*—
Andrews, William H.; Brothers, Virginia M.; Files, James G.; Kuhn, Irene; McCaman, Michael T.; Sias, Stacey R.; Paul, Leland S.; Gore, Thomas C.; Newman, Karel Z., Jr.; and Tedesco, John L., 5,187,080, Cl. 435-69.300.

TeeWee, Inc.: *See*—
Rogers, Frances C.; and Terzian, William L., 5,185,904, Cl. 16-125.000.

Teichman, Stephen T. Horseshoe having a depression on the inside of hoof facing side. 5,186,259, Cl. 168-24.000.

Teijin Limited: *See*—
Koike, Yukiya; Wakabayashi, Kenji; Sumi, Yoshihiko; and Ichikawa, Yataro, 5,187,067, Cl. 435-7.900.

Teijin Seiki Co., Ltd.: *See*—
Hibino, Toshiharu; and Higuchi, Chihiro, 5,187,724, Cl. 377-17.000.

Teissier, Jean-Francois: *See*—
Tissier, Annie; and Teissier, Jean-Francois, 5,186,040, Cl. 73-54.010.

Tekelec Airtronic: *See*—
Forterre, Gerard E. E.; and Guillon, Pierre, 5,187,460, Cl. 333-219.000.

Teknekron Software Systems, Inc.: *See*—
Skeen, Marion D.; and Bowles, Mark, 5,187,787, Cl. 395-600.000.

Tektronix, Inc.: *See*—
Bos, Philip J., 5,187,603, Cl. 359-73.000.

Tele Guia Talking Yellow Pages, Inc.: *See*—
Herrero Garcia, Jose E.; and Jimenez Rodriquez, Carlos R., 5,187,735, Cl. 379-88.000.

Teledyne MEC: *See*—
Kelley, Paul E., 5,187,365, Cl. 250-282.000.

Teleflex Incorporated: *See*—
Pritchard, Robert J., 5,186,417, Cl. 244-137.100.

Tenconi, Riccardo, to Mec-Mor S.r.l. Circular knitting machine of the type with cylinder and dial with thread clamping and cutting device for manufacturing open fabric. 5,186,027, Cl. 66-147.000.

Tennessee Gas Pipeline Company: *See*—
Abbott, James R.; and Snider, Benny J., 5,187,334, Cl. 181-265.000.

Teodorczyk, Maria: *See*—
Matzinger, David P.; Teodorczyk, Maria; and Poulos, Darwin R., 5,187,100, Cl. 436-16.000.

Tepman, Avi; Grunes, Howard; Somekn, Sasson; and Maydan, Dan, to Applied Materials, Inc. Staged-vacuum wafer processing system and method. 5,186,718, Cl. 29-25.010.

Tera, Isao; Kato, Kohji; Yamamoto, Makoto; Hashimoto, Kazuto; and Yasumura, Hitoshi, to Nippon Zeon Co., Ltd.; and Idemitsu Petrochemical Co., Ltd. Polycarbonate resin composition. 5,187,227, Cl. 525-65.000.

Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Katagiri, Kazuharu; Takiguchi, Takao; Shinjo, Kenji; Kitayama, Hiroyuki; and Nakamura, Shinichi, to Canon Kabushiki Kaisha. Ferroelectric chiral smectic liquid crystal composition and liquid crystal device using same. 5,186,858, Cl. 252-299.610.

Terada, Yoshihiro: *See*—
Hibi, Yoshiharu; and Terada, Yoshihiro, 5,187,570, Cl. 358-80.000.

Terashima, Seiichi: *See*—
Ibe, Hiroyaki; Terashima, Seiichi; and Masui, Tsumoru, 5,187,729, Cl. 378-73.000.

Terris, George. Foldable soccer goal for easy storage. 5,186,469, Cl. 273-400.000.

Terry, Reese S., Jr.; Varrichio, Anthony J.; Winstrom, William L.; and Stanislaw, Henry, to Cyberonics, Inc. Simultaneous radio frequency and magnetic field microprocessor reset circuit. 5,186,170, Cl. 128-419.00R.

Terui, Sadao; and Yokota, Yoshiyuki, to Nippon Shokubai Co., Ltd. Catalyst and method of preparing the catalyst. 5,187,137, Cl. 502-241.000.

Terumo Kabushiki Kaisha: *See*—
Masuoka, Toshio; Hirasa, Okihiko; Onishi, Makoto; and Seita, Yukio, 5,186,835, Cl. 210-500.360.
Yamaguchi, Shuichiro; Uchida, Naoto; Kasai, Satoru; Shimomura, Takeshi; and Oyama, Noboru, 5,186,808, Cl. 204-418.000.

Terzian, William L.: *See*—
Rogers, Frances C.; and Terzian, William L., 5,185,904, Cl. 16-125.000.

Tetra Alfa Holdings S.A.: *See*—
Sjostrand, Uno, 5,186,306, Cl. 198-442.000.

Teufel, Albert, to Theodor Groz & Sohne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft. Compound needle. 5,186,026, Cl. 66-123.000.

Texas A & M University System, The: *See*—
Pennington, H. Dale, 5,186,621, Cl. 431-354.000.

Texas Instruments Incorporated: *See*—
Alfaro, Rafael C., 5,186,378, Cl. 228-110.000.
Curhan, Jeffery A.; Pimentel, Daniel R.; and Berg, Peter G., 5,187,349, Cl. 219-202.000.
Gill, Manzur; Lin, Sung-Wei; and D'Arrigo, Sebastiano, 5,187,683, Cl. 365-185.000.
Kwon, Oh-Kyong; Malhi, Satwinder; and Hashimoto, Masahi, 5,187,020, Cl. 428-601.000.
Masten, Billy R., 5,187,375, Cl. 250-561.000.
Rau, Mann-Fu; Wang, Faa-Ching M.; and Kurz, Jimmy D., 5,186,784, Cl. 156-605.000.

Textron Inc.: *See*—
Ryder, Francis E.; Kanner, Rowland W.; and Lisak, Stephen P., 5,186,532, Cl. 362-66.000.
Ryder, Ronald L.; and Goss, David C., 5,186,531, Cl. 362-66.000.

Tezuka, Shigeki: *See*—
Futami, Toru; Hirai, Kazuo; and Tezuka, Shigeki, 5,187,665, Cl. 364-424.050.

Th. Goldschmidt AG: *See*—
Jachmann, Jurgen; Weitemeyer, Christian; and Wewers, Dietmar, 5,187,251, Cl. 528-15.000.

Thaler, Warren A.: *See*—
Manalastas, Pacifico V.; Drake, Evelyn N.; Kresge, Edward N.; and Thaler, Warren A., 5,187,011, Cl. 428-402.240.

Theodor Groz & Sohne & Ernst Beckert Nadelfabrik Commandit-Gesellschaft: *See*—
Teufel, Albert, 5,186,026, Cl. 66-123.000.

Thermo King Corporation: *See*—
Roehrich, Roland L.; and Hanson, Jay L., 5,186,015, Cl. 62-133.000.

Thinking Machines Corporation: *See*—
Zenios, Stavros A.; and Hutchinson, James M., 5,187,801, Cl. 395-800.000.

Thioux, Alain; and Levrai, Roland, to Bendix Europe Services Techniques. Brake compensator for a motor vehicle. 5,186,523, Cl. 303-9.630.

THK Co., Ltd.: *See*—
Shirai, Takeki, 5,186,545, Cl. 384-43.000.

Thomas & Betts Corporation: *See*—
Pusch, Reinhard, 5,186,638, Cl. 439-140.000.

Thomas, Lewis J., III: *See*—
O'Donnell, Matthew; and Thomas, Lewis J., III, 5,186,177, Cl. 128-662.060.

Thomas, Richard R.: *See*—
Buchwalter, Stephen L.; Frank, Ernest R.; O'Toole, Terrence R.; Thomas, Richard R.; and Viehbeck, Alfred, 5,187,241, Cl. 525-420.000.

Thomas, Ronald H.; and Stohr, Helmut, to Garnham, Allan. Symbol definition apparatus. 5,187,480, Cl. 341-22.000.

Thompson, Bradley H., to John Fluke Mfg. Co., Inc. Electrical contact having spring-biased tabs for mounting to a circuit board. 5,186,634, Cl. 439-82.000.

Thompson, David B.; and Thompson, Linda L. Line-guide advancement mechanism for copyholders. 5,185,947, Cl. 40-355.000.

Thompson, Harold E.; and Kelch, Richard A., to O. M. Scott & Sons Company, The. Encapsulated slow release fertilizers. 5,186,732, Cl. 71-64.110.

Thompson, James A.: *See*—
Sablotsky, Steven; Questel, John M.; and Thompson, James A., 5,186,938, Cl. 424-443.000.

Thompson, Linda L.: *See*—
Thompson, David B.; and Thompson, Linda L., 5,185,947, Cl. 40-355.000.

Thompson, Michael J., to Motorola, Inc. Repeater site failure detector in communication system. 5,187,808, Cl. 455-33.100.

Thompson, Owen R., to Caterpillar Inc. Powered tool apparatus. 5,186,262, Cl. 173-182.000.

Thompson, Robert C.: *See*—
Treece, William D.; and Thompson, Robert C., 5,186,601, Cl. 415-58.400.

Thompson, Stephen A.; and Shaffer, Joel E., to Glaxo Inc. S-nitroso-N-alkonoylpenicillamines. 5,187,305, Cl. 560-145.000.

Thomsen, James A.: *See*—
Fellows, Mark W.; Wong, John M.; Toy, Edmond; Erhardt, Robert A.; and Thomsen, James A., 5,187,414, Cl. 315-307.000.

Thomson-CSF: *See*—
Weisbuch, Claude; Bois, Philippe; and Vinter, Borge, 5,187,715, Cl. 372-46.000.

Thormer, Joachim: *See*—
Musch, Rudiger; Thormer, Joachim; Buding, Hartmuth; and Leibbrandt, Friedrich, 5,187,232, Cl. 525-215.000.

Thorn EMI plc: *See*—
Holcroft, Brian, 5,187,330, Cl. 178-18.000.

Thorsteinson, Erlind M.; Bhasin, Madan M.; and Seyedmonir, Seyed R., to Union Carbide Chemicals & Plastics Technology Corporation. Alkylene oxide catalysts containing high silver content. 5,187,140, Cl. 502-348.000.

Thrailkill, John E.: *See*—
Spalding, Tom J.; Kowal, Keith E.; Bleck, James H.; Wakefield, Scott H.; and Thrailkill, John E., 5,187,645, Cl. 361-393.000.

Thurman, Teunis: *See*—
Seidel, Peter-Rudolf; Horstmann, Harald; Traber, Jorg; Dompert, Wolfgang; Glaser, Thomas; and Thurman, Teunis, 5,187,276, Cl. 544-295.000.

Tiefel, Thomas H.: *See*—
Jin, Sungho; and Tiefel, Thomas H., 5,187,149, Cl. 505-1.000.

Tiemann, Jerome J.; and Garverick, Steven L., to General Electric Company. Delta sigma analog-to-digital converter with increased dynamic range. 5,187,482, Cl. 341-143.000.

Tien, Li Chiu. Universal sun-path dial. 5,186,630, Cl. 434-149.000.

Tigg Corporation: *See*—
Tiggelbeck, Donald D.; and Goyak, George M., 5,187,131, Cl. 502-34.000.

Tiggelbeck, Donald D.; and Goyak, George M., to Tigg Corporation. Method for regenerating particulate adsorbents. 5,187,131, Cl. 502-34.000.

Till, Ronald H.: *See*—
Otto, John E.; Bieber, Allen C.; and Till, Ronald H., 5,186,352, Cl. 220-564.000.

Tillman, Eric L. Flexible extension for a reciprocating tool. 5,185,934, Cl. 30-392.000.

Timesavers, Inc.: *See*—
De brey, Robert J., 5,185,963, Cl. 51-148.000.

Timmons, Philip R.: *See*—
Outcalt, Russell J.; Timmons, Philip R.; Cramp, Susan M.; Kwiatkowski, Patricia L.; Lopes, Anibal; Cain, Paul A.; Sinodis, David N.; Hall, Lee S.; and Vors, Jean-Pierre A., 5,187,185, Cl. 514-408.000.

Tin, George W.: *See*—
Callahan, Richard A.; and Tin, George W., 5,186,941, Cl. 424-450.000.

Ting, Charles, to T. L. Products Promoting Co., Ltd. Transport and display case for a figurine. 5,186,319, Cl. 206-45.140.

TIR Systems, Ltd.: *See*—
Whitehead, Lorne A., 5,186,530, Cl. 362-31.000.

Tisma Machinery Corporation: *See*—
Tisma, Stevan, 5,185,984, Cl. 53-252.000.

Tisma, Stevan, to Tisma Machinery Corporation. Automatic packaging equipment. 5,185,984, Cl. 53-252.000.

Tissier, Annie; and Teissier, Jean-Francois, to France Telecom (CNET). Method for measuring the viscosity of a material. 5,186,040, Cl. 73-54.010.

Tissier, Annie: *See*—
Galvier, Jean; Gayet, Philippe; and Tissier, Annie, 5,186,786, Cl. 156-626.000.

Tizabi, Djamshid; and Fischer, Albert G., to Enichem S.p.A. Process and machinery for step-and-repeat vacuum-deposition of large-area thin-film-electronics matrix-circuits on monolithic glass panes through small perforated metal masks. 5,186,975, Cl. 427-99.000.

TLV Co., Ltd.: *See*—
Oike, Tadashi, 5,186,203, Cl. 137-192.000.

Tobisawa, Seiichi: *See*—
Umemura, Masahiro; Namiki, Takemasa; Tobisawa, Seiichi; Kawabe, Shigetoshi; and Nakajima, Takeshi, 5,186,754, Cl. 118-411.000.

Todd Motion Controls, Inc.: *See*—
Todd, William H., 5,186,095, Cl. 91-518.000.

Todd, William H., to Todd Motion Controls, Inc. Piston assembly and method. 5,186,095, Cl. 91-518.000.

Toews, Timothy R. Wire reel mechanism. 5,186,410, Cl. 242-86.50R.

Togano, Takeshi: *See*—
Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Katagiri, Kazuharu; Takiguchi, Takao; Shinjo, Kenji; Kitayama, Hiroyuki; and Nakamura, Shinichi, 5,186,858, Cl. 252-299.610.

Togashi, Hiroyasu: *See*—
Mishima, Masayuki; Yamasaki, Harumasa; Matsuse, Takashi; Sakuma, Tadashi; and Togashi, Hiroyasu, 5,187,310, Cl. 556-413.000.

Togo Seisakusyo Corporation: *See*—
Nomoto, Masai; Sakurai, Koichi; Suzuki, Takashi; Fukui, Kiyoshi; and Okamoto, Atsuki, 5,186,768, Cl. 148-580.000.

Tohda, Takao: *See*—
Tsuda, Nobuhiro; Yamada, Hirofumi; Kado, Hiroyuki; and Tohda, Takao, 5,186,789, Cl. 156-659.100.

Tojo, Atsushi: *See*—
Mandai, Harufumi; Chigodo, Yoshikazu; and Tojo, Atsushi, 5,187,455, Cl. 333-161.000.

Tokai Corporation: *See*—
Mifune, Hideo; Seki, Masato; and Shike, Tsutomu, 5,186,619, Cl. 431-344.000.
Shike, Tsutomu; Eguchi, Toshihiko; Kaga, Yosimitu; and Suganuma, Kazuhiko, 5,186,618, Cl. 431-153.000.

Tokai, Yoichi: *See*—
Arai, Tomohisa; Sori, Naoyuki; Sahashi, Masashi; and Tokai, Yoichi, 5,186,765, Cl. 148-301.000.

Tokarz, Marek T.: *See*—
Jaras, Sven G.; Tokarz, Marek T.; and Persson, Borje, 5,186,917, Cl. 423-239.000.

Tokarz, Stephen P.: *See*—
Alexander, Michael P.; Adams, Allan J.; and Tokarz, Stephen P., 5,186,516, Cl. 296-121.000.

Tokuda, Hiroatsu: *See*—
Sohma, Kenichi; Yukitake, Tugihiro; Azuhata, Shigeru; Arashi, Norio; and Tokuda, Hiroatsu, 5,186,146, Cl. 123-435.000.

Tokuda, Yukio: *See*—
Takabayashi, Yukio; and Tokuda, Yukio, 5,187,519, Cl. 355-53.000.

Tokutake, Toshinori: *See*—
Ouchi, Wataru; Suzuki, Katsuhisa; Tokutake, Toshinori; and Hirano, Hirosaburo, 5,186,230, Cl. 165-177.000.

Tokyo Electric Co., Ltd.: *See*—
Fushimi, Kazuhiro, 5,186,557, Cl. 400-691.000.
Koyanagi, Masayoshi, 5,186,556, Cl. 400-642.000.

Tokyo Electric Power Co., Inc., The: *See*—
Kawakami, Takashi; and Handa, Susumu, 5,186,906, Cl. 422-180.000.
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,187,148, Cl. 505-1.000.

Tokyo Electron Sagami Limited: *See*—
Uchida, Yoshinobu, 5,187,771, Cl. 392-416.000.

Tolkacz, Joseph M.: *See*—
Simon, Robert C., Jr.; Mitchell, George C.; Tolkacz, Joseph M.; Polom, William G.; and Medich, Peter M., 5,186,080, Cl. 74-857.000.

Tolles, Robert D.: *See*—
Bulsterbaum, J. Charles; Tolles, Robert D.; and Costello, Donald A., 5,186,597, Cl. 414-469.000.

Tomikawa, Mitsuhiro: *See*—
Nakashima, Yuichi; Tomikawa, Mitsuhiro; and Yamamoto, Hirohisa, 5,187,558, Cl. 257-420.000.

Tominaga, Akira: *See*—
Nishida, Reiziro; and Tominaga, Akira, 5,187,198, Cl. 523-404.000.

Tomioka, Kazuyuki: *See*—
Kimura, Shigeru; Takahashi, Atsushi; Shibao, Masaharu; and Tomioka, Kazuyuki, 5,186,200, Cl. 137-15.000.

Tomita, Junji: *See*—
Kato, Masayuki; Tomita, Junji; Matsumoto, Tsuyoshi; Aritake, Hirokazu; and Eguchi, Shin, 5,187,597, Cl. 359-22.000.

Tomita, Tadashi: *See*—
Hayashi, Yasuaki; Tomita, Tadashi; Yokoyama, Kenzo; Suzuki, Setsuji; and Uno, Yoshihito, 5,186,687, Cl. 464-144.000.

Tomko, John: *See*—
Broadhurst, Michael D.; Tsang, Tsze H.; and Tomko, John, 5,186,733, Cl. 504-195.000.

Tomoda, Akihiro: *See*—
Ono, Takeshi; Wada, Satoshi; Kobayashi, Makoto; Yoshida, Takehiro; Takeda, Tomoyuki; Ishida, Yasushi; Yokoyama, Minoru; Tomoda, Akihiro; Yamada, Masakatsu; and Awai, Takashi, 5,187,494, Cl. 346-76.0PH.

Tomomura, Yoshitaka: *See*—
Kitagawa, Masahiko; Tomomura, Yoshitaka; and Nakanishi, Kenji, 5,187,116, Cl. 437-105.000.

Tone, Seiji: *See*—
Sugimori, Masahiro; Takeda, Haruko; and Tone, Seiji, 5,187,244, Cl. 525-479.000.

Tong, James K.; Selbiger, Lawrence; Stubblefield, Jerry D.; and Curley, Jack, to Avia Group International, Inc. Athletic shoe having an insert member in the outsole. 5,185,943, Cl. 36-28.000.

Torrington Company, The: *See*—
Alling, Richard L.; and Shepard, Richard W., 5,187,345, Cl. 219-121.630.

VOL 1147 ISS 3 FE 16 1993 UMI

Toshiba Kikai Kabushiki Kaisha: *See*—
Hashimoto, Yutaka; Iida, Mitsuhiko; Hayashi, Makoto; Kaneko, Sizunori; and Nakazato, Masahiro, 5,187,376, Cl. 250-562.000.

Toshiba Lighting & Technology Corporation: *See*—
Araki, Kenji; Sasaki, Hiroki; Yonezawa, Akihiro; and Mitsuyuki, Youichirou, 5,187,413, Cl. 315-291.000.

Toshiba Silicone Ltd.: *See*—
Toya, Masanori; Takahashi, Hideo; and Matsumoto, Yasuji, 5,186,849, Cl. 252-21.000.

Toshima, Masato M.; Salzman, Phil M.; Murdoch, Steven C.; Wang, Cheng; Stenholm, Mark A.; Howard, James; Hall, Leonard; and Cheng, David, to Applied Materials, Inc. Dual cassette load lock. 5,186,594, Cl. 414-217.000.

Tosoh Corporaton: *See*—
Nakamura, Tatsumi; and Nagano, Mineo, 5,187,245, Cl. 526-88.000.

Total Racing Connection, Inc.: *See*—
Morton, Timothy L., 5,186,676, Cl. 446-465.000.

Toth nee Juhasz, Erzsebet: *See*—
Nagy, Jozsef; Nagy, Istvan; Balogh, Karoly; Mile, Erzsebet; Tarpai, Gyula; Sellei nee Kulik, Katalin; Fodor, Karoly; Kecskes, Mihaly; Toth nee Juhasz, Erzsebet; and Horvath nee Petho , Zsuzsanna, 5,186,723, Cl. 47-58.000.

Toto, Susan D.: *See*—
Zones, Stacey I.; Yuen, Lun T.; and Toto, Susan D., 5,187,132, Cl. 502-64.000.

Totsu, Katsuyuki. Automatic screw driver and a method for controlling the same. 5,186,084, Cl. 81-431.000.

Touret, Jean-Pierre: *See*—
Rouleau, Alain; Rouleau, Patrick; and Touret, Jean-Pierre, 5,186,115, Cl. 112-306.000.

Toy, Edmond: *See*—
Fellows, Mark W.; Wong, John M.; Toy, Edmond; Erhardt, Robert A.; and Thomsen, James A., 5,187,414, Cl. 315-307.000.

Toya, Masanori; Takahashi, Hideo; and Matsumoto, Yasuji, to Toshiba Silicone Ltd. Silicone grease composition. 5,186,849, Cl. 252-21.000.

Toyama, Masamichi: *See*—
Kaneda, Kitahiro; Yamada, Kunihiko; Fujiwara, Akihiro; Suda, Hirofumi; and Toyama, Masamichi, 5,187,585, Cl. 358-227.000.

Toyo Denso Kabushiki Kaisha: *See*—
Shinozawa, Toshiyuki; Fujita, Hiroyuki; and Arai, Hideaki, 5,186,131, Cl. 123-146.50A.

Toyo Jozo Co., Ltd.: *See*—
Ohya, Masami; Mizoguchi, Junzo; and Onozawa, Takashi, 5,187,078, Cl. 435-69.100.

Toyoda Gosei Co., Ltd.: *See*—
Maeno, Takashi; Fujinami, Kyouichi; Kawahara, Hiroaki; and Asano, Tetsuo, 5,185,916, Cl. 29-525.000.

Toyoda Koki Kabushiki Kaisha: *See*—
Hayashi, Yasuaki; Tomita, Tadashi; Yokoyama, Kenzo; Suzuki, Setsuji; and Uno, Yoshihito, 5,186,687, Cl. 464-144.000.
Ohtsu, Ikuo; Kataoka, Kinichi; and Sano, Shoichi, 5,186,595, Cl. 414-225.000.

Toyoda, Takashi: *See*—
Yamada, Minoru; Toyoda, Takashi; and Yamada, Sumito, 5,187,050, Cl. 430-399.000.

Toyonaga, Masahiko: *See*—
Okude, Hiroaki; Toyonaga, Masahiko; and Akino, Toshiro, 5,187,668, Cl. 364-468.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Hashimoto, Eiji, 5,186,138, Cl. 123-198.0DB.
Matsuoka, Hiroki; and Ono, Kenichi, 5,186,045, Cl. 73-118.200.
Oka, Takeya; Saito, Masao; Miki, Nobuaki; Ishikawa, Kazunori; Iwatsuki, Kunihiro; Otsubo, Hideaki; Hojo, Yasuo; and Asahara, Norimi, 5,186,204, Cl. 137-238.000.
Watanabe, Masao, 5,187,666, Cl. 364-426.020.
Yoshioka, Mamoru; Sugiyama, Toshihisa; and Kidokoro, Toru, 5,186,005, Cl. 60-600.000.

Traber, Jorg: *See*—
Seidel, Peter-Rudolf; Horstmann, Harald; Traber, Jorg; Dompert, Wolfgang; Glaser, Thomas; and Thurman, Teunis, 5,187,276, Cl. 544-295.000.

Tracy, Mark S., to Compaq Computer Corporation. Computer cooling fan vibration isolation apparatus. 5,186,605, Cl. 415-119.000.

Tran, John; and Khurshid, Mazin, to Zilog, Inc. Control circuit having outputs with differing rise and fall times. 5,187,686, Cl. 365-189.110.

Treece, William D.; and Thompson, Robert C., to Sundstrand Corp. Compressor shroud air bleed arrangement. 5,186,601, Cl. 415-58.400.

Treff, Ernest H.: *See*—
Gelinas, W. Robert; Leale, Arthur J.; Leitch, David J.; Mellow, John J.; Rinaudo, George; and Treff, Ernest H., 5,186,103, Cl. 101-181.000.

Trego, Michael P.: *See*—
Osterday, Craig A.; Osterfeld, Douglas L.; Baumaster, Thomas R.; Welch, Timothy M.; Trego, Michael P.; and Flory, Donald M., 5,185,915, Cl. 29-525.000.

Treiber, Laszlo R.; Lingham, Russell B.; Arison, Byron H.; Colwell, Lawrence F., Jr.; Dezeny, Georgette; and Kohl, Nancy E., to Merck & Co., Inc. Method of hydroxylation with ATCC 55086. 5,187,074, Cl. 435-41.000.

Trellex Aktiebolag: *See*—
Rydberg, Bo L.; and Dehlen, Bengt L. A., 5,185,980, Cl. 52-506.000.

Tresco, Inc.: *See*—
Gottsleben, Bradley D., 5,186,624, Cl. 433-69.000.

Trimble Navigation Limited: *See*—
Wagner, Gary L.; Rodal, Eric B.; and Lau, Chung Y., 5,187,450, Cl. 331-96.000.

Trimmer, Robert W.: *See*—
Corey, Paul F.; Michaels, Angela A.; Proud, Lois J.; Salvati, Michael; Trimmer, Robert W.; and Sommer, Ronald G., 5,187,104, Cl. 436-86.000.

Trksak, Ralph M.: *See*—
Cummings, John L.; Mason, James R.; and Trksak, Ralph M., 5,187,196, Cl. 514-535.000.

Troponwerke GmbH & Co. KG.: *See*—
Seidel, Peter-Rudolf; Horstmann, Harald; Traber, Jorg; Dompert, Wolfgang; Glaser, Thomas; and Thurman, Teunis, 5,187,276, Cl. 544-295.000.

Trow, John R.: *See*—
Collins, Kenneth S.; Trow, John R.; Roderick, Craig A.; Pinson, Jay D., II; and Buchberger, Douglas A., II, 5,187,454, Cl. 333-17.300.

Trummer, Gunther: *See*—
Schloss, Jurgen; Trummer, Gunther; and Wich, Harald, 5,187,322, Cl. 102-427.000.

Trutzschler GmbH & Co. KG: *See*—
Kuppers, Wilhelm; and Trutzschler, Hermann, 5,185,905, Cl. 19-114.000.
Windges, Bernd; and Leifeld, Ferdinand, 5,186,473, Cl. 277-81.00R.

Trutzschler, Hermann: *See*—
Kuppers, Wilhelm; and Trutzschler, Hermann, 5,185,905, Cl. 19-114.000.

TRW Inc.: *See*—
Stonerook, Dana A.; Abeska, Edward J.; and Rochette, Jeff R., 5,187,465, Cl. 340-438.000.

TRW Vehicle Safety Systems, Inc.: *See*—
Wright, Eric W.; Lecznar, Mark T.; and Klena, Thomas J., II, 5,186,492, Cl. 280-743.000.

Tsai, Chan-Feng: *See*—
Tzong, Tsair-Jyh; Wu, Frank H. Y.; and Tsai, Chan-Feng, 5,186,822, Cl. 210-122.000.

Tsai, Ming-Chi, to Raytheon Company. Combiner/divider networks. 5,187,447, Cl. 330-124.00R.

Tsai, Wilman: *See*—
Garg, Diwakar; Tsai, Wilman; Kimock, Fred M.; Iampietro, Robert L.; and Dyer, Paul N., 5,186,973, Cl. 427-590.000.

Tsang, Tsze H.: *See*—
Broadhurst, Michael D.; Tsang, Tsze H.; and Tomko, John, 5,186,733, Cl. 504-195.000.

Tsubo, Shuzo: *See*—
Iwata, Yasuhiro; and Tsubo, Shuzo, 5,187,534, Cl. 355-324.000.

Tsuboi, Shungo: *See*—
Haruta, Kenyu; Nagai, Haruhiko; Nakatani, Hajime; Yamamoto, Yoshihiko; Takemura, Taketoshi; Eura, Takashi; Tsuboi, Shungo; Matsushita, Yoshifumi; and Minagawa, Tadao, 5,187,716, Cl. 372-57.000.

Tsuboniwa, Noriyuki; Yamanaka, Eiji; and Urano, Satoshi, to Nippon Paint Co., Ltd. Process for producing unsaturated carbamic acid esters. 5,187,306, Cl. 560-157.000.

Tsuchiya, Yoshinobu, to Isuzu Motors Limited. Vehicle windshield heater utilizing regulator output current control with a voltage divider. 5,187,350, Cl. 219-203.000.

Tsuda, Nobuhiro; Yamada, Hirofumi; Kado, Hiroyuki; and Tohda, Takao, to Agency of Industrial Science and Technology; and Matsushita Electric Industrial Co., Ltd. Method of making a cantilever stylus for use in an atomic force microscope. 5,186,789, Cl. 156-659.100.

Tsui, James B. Y.; and Shaw, Rudy L., to United States of America, Air Force. Passive ranging through global positioning system. 5,187,485, Cl. 342-357.000.

Tsuji, Kazuwo: *See*—
Yoshida, Katsuhito; and Tsuji, Kazuwo, 5,187,560, Cl. 257-76.000.

Tsuji, Takumi, to Nippon Thompson Co., Ltd. Remote controlled freely pivotal nozzle. 5,186,394, Cl. 239-587.400.

Tsuji, Tetsuo; and Fujimura, Yoshiichi, to Takata Corporation. Actuating mechanism for seat belt apparatus. 5,186,493, Cl. 280-806.000.

Tsukada, Masamitsu; Murata, Kiyoshi; Ota, Yasushi; and Watanabe, Yoshihiko, to Heisei Polymer Co., Ltd. Annular article-wrapping member and method of making same. 5,186,989, Cl. 428-34.900.

Tsukada, Shinichi; Iizuka, Yoshiharu; Tamura, Hideyuki; and Sakashita, Osamu, to Hokkai Can Co., Ltd. Feeding method for work products and apparatus thereof. 5,186,593, Cl. 413-19.000.

Tsukaguchi, Miki: *See*—
Yanagi, Motonori; Hama, Masaharu; Fukumoto, Takaaki; and Tsukaguchi, Miki, 5,186,907, Cl. 422-186.300.

Tsukamoto, Chiharu: *See*—
Hashimoto, Kunihiro; Tsukamoto, Chiharu; and Kawakubo, Chiharu, 5,187,614, Cl. 360-45.000.

Tsuruda, Kunihiro: *See*—
Nagai, Takeshi; and Tsuruda, Kunihiro, 5,186,810, Cl. 204-425.000.

Tsutsui, Yoshimitsu: *See*—
Kusafuka, Noboru; Yoshida, Akira; Tsuyuki, Susumu; Seko, Tatsushi; Tsutsui, Yoshimitsu; Miki, Toshio; and Mouri, Ryoji, 5,186,407, Cl. 242-56.200.

Tsuyuki, Susumu: *See*—
Kusafuka, Noboru; Yoshida, Akira; Tsuyuki, Susumu; Seko, Tatsushi; Tsutsui, Yoshimitsu; Miki, Toshio; and Mouri, Ryoji, 5,186,407, Cl. 242-56.200.

Tsuzuki, Sadachika: *See*—
Kamimura, Kenji; Tsuzuki, Sadachika; and Noda, Kazunori, 5,187,662, Cl. 364-424.020.
Kamimura, Kenji; Tsuzuki, Sadachika; and Noda, Kazunori, 5,187,663, Cl. 364-424.020.

Tu, Ching-Fang, to American Telephone & Telegraph Company. Optical fiber cable having dripless, non-bleeding and optical fiber coating-compatible waterblocking material in core thereof. 5,187,763, Cl. 385-100.000.

Tubbs, Robert W., to Elastex, Inc. Method of making an elastic waistband with releasably secured drawstring. 5,186,779, Cl. 156-161.000.

Tuboplast Hispania, S.A.: *See*—
Aguirrezabal, Antonio, 5,186,369, Cl. 222-521.000.

Tuck, Paul B., to General Electric Company. Tube loading sleeve for pilger mill. 5,186,035, Cl. 72-208.000.

Tucker, Dianne, executrix: *See*—
Tucker, John W., deceased, 5,186,935, Cl. 424-410.000.

Tucker, Donald K. Simulated football board game. 5,186,461, Cl. 273-94.000.

Tucker, John W., deceased (by Tucker, Dianne, executrix), to Hedley Pacific Ventures, Ltd. Insecticidal bait composition and method of making same. 5,186,935, Cl. 424-410.000.

Tucker, William T.: *See*—
Gutterson, Neal I.; Tucker, William T.; and Wolber, Paul K., 5,187,061, Cl. 435-5.000.

Tuftco, Inc.: *See*—
Green, Jerry T., 5,186,113, Cl. 112-80.420.

Tung, Chen C. Multipurpose block toy. 5,186,672, Cl. 446-95.000.

Turbine Blading Limited: *See*—
Fraser, Michael J., 5,185,924, Cl. 29-889.100.

Turner, Bruce R.: *See*—
Sanford, David P.; Turner, Bruce R.; and Heim, Richard J., 5,186,807, Cl. 204-299.00R.

Turner, James A.; Zorner, Paul S.; and Jacks, Wendy S., to DowElanco. Derivatives of 4-((aryloxy)phenoxy)alkenols and their herbicidal uses. 5,186,735, Cl. 504-242.000.

Turner, James L.: *See*—
Beffel, Robert R.; Blood, Ellen R.; Bufkin, Paul R.; Dennison, Bernard M.; Miller, Jerry G.; and Turner, James L., 5,187,733, Cl. 379-10.000.

Turner, Paul H., to Rockshox, Inc. Bicycle with improved front fork wheel suspension. 5,186,481, Cl. 280-276.000.

Turturro, Michael; and Sirvet, Enn, to Sequa Corporation. Interchangeable inker having enclosed transmission. 5,186,100, Cl. 101-40.000.

Turvey, Robert R.; Hoffman, Jeffrey S.; and Nestle, Robert J., to Dowbrands Inc. Apparatus for transferring stacks of flexible products. 5,185,987, Cl. 53-429.000.

Turvy, Larry D., Jr.: *See*—
Rogers, Richard E.; Turvy, Larry D., Jr.; Eberhardt, George J.; and Loughman, Richard E., 5,187,374, Cl. 250-561.000.

Tusch, Klaus N., to Colebrand Limited. Protective device. 5,187,321, Cl. 102-293.000.

Tyson, Scott M.; and Wodek, Gary M., to United Technologies Corporation. Field oxide termination and gate oxide formation. 5,187,113, Cl. 437-42.000.

Tyves, Zinovy, to General Motors Corporation. Body side molding attachment. 5,186,509, Cl. 296-1.100.

Tzong, Tsair-Jyh; Wu, Frank H. Y.; and Tsai, Chan-Feng, to Ocean Resources Engineering, Inc. Wave powered desalination apparatus with turbine-driven pressurization. 5,186,822, Cl. 210-122.000.

Uchida, Naoto: *See*—
Yamaguchi, Shuichiro; Uchida, Naoto; Kasai, Satoru; Shimomura, Takeshi; and Oyama, Noboru, 5,186,808, Cl. 204-418.000.

Uchida, Yoshinobu, to Tokyo Electron Sagami Limited. Heat processing apparatus utilizing a plurality of stacked heater holders. 5,187,771, Cl. 392-416.000.

Uchikawa, Nobutaka: *See*—
Asanuma, Tadashi; Shiomura, Tetsunosuke; Nishimori, Yukari; and Uchikawa, Nobutaka, 5,187,250, Cl. 526-348.600.

Uchimura, Mitsuo: *See*—
Sugiura, Ikuzo; Uchimura, Mitsuo; Kawamura, Kouichi; Fogle, Ronald L.; and Huggins, Orville C., 5,186,553, Cl. 400-242.000.

Uchiumi, Isao: *See*—
Hiki, Susumu; Yanagawa, Takashi; and Uchiumi, Isao, 5,186,176, Cl. 128-661.010.

Uchiumi, Satoshi: *See*—
Kono, Mutsumi; and Uchiumi, Satoshi, 5,187,589, Cl. 358-335.000.

Uchiyama, Kaoru: *See*—
Igarashi, Shinya; and Uchiyama, Kaoru, 5,186,044, Cl. 73-118.200.

Uddin, M. Rafique, to Institute of Paper Science and Technology, Inc. Somatic embryogenesis in gymnosperms. 5,187,092, Cl. 435-240.450.

Udipi, Kishore, to Monsanto Company. Rubber-modified polymer blends of polycarbonate and PETG. 5,187,230, Cl. 525-133.000.

Ueda, Hideaki; and Isumi, Hiroshi, to Yamaha Hatsudoki Kabushiki Kaisha. Air intake system for fuel injection type four cycle engine. 5,186,140, Cl. 123-308.000.

Ueda, Masanori; Sawada, Hisashi; Tanaka, Akira; and Wakatsuki, Noboru, to Fujitsu Limited. Method of fabricating optical switch. 5,187,758, Cl. 385-16.000.

Ueda, Masuyuki: *See*—
Iwasa, Hiroki; Nagasaka, Chikao; Ueda, Masuyuki; Kato, Shigeru; Aoki, Hisashi; Shibahara, Makoto; and Mori, Satoshi, 5,187,381, Cl. 307-10.100.

Ueda, Shuji: *See*—
Mizuguchi, Shinichi; Ueda, Shuji; Kato, Koji; and Umehara, Noritsugu, 5,185,957, Cl. 51-59.0SS.

Uejima, Yasu, to Hargo 300-Technology, Inc. Method of manufacturing austenitic stainless steel drill screws. 5,186,688, Cl. 470-9.000.

Uemura, Hiroki: *See*—
Nakamoto, Yasuhiro; and Uemura, Hiroki, 5,187,451, Cl. 331-99.000.

Uemura, Seiichi; Souda, Yoshio; Kato, Osamu; Kouno, Takefumi; and Kihara, Tsutomu, to Nippon Oil Company, Limited. Process for preparing carbon/carbon composite. 5,186,873, Cl. 264-29.500.

Ueno, Reiko: *See*—
Nakatani, Naofumi; Ueno, Reiko; and Nakatsu, Hiromasa, 5,187,708, Cl. 370-85.100.

Uetani, Takahiro: *See*—
Niina, Tatsuhiko; Ohta, Kiyoshi; Nakata, Toshitake; Matsushita, Yasuhiko; Uetani, Takahiro; and Fujikawa, Yoshiharu, 5,187,547, Cl. 257-77.000.

Ueyoko, Kiyoshi; Nakagawa, Tsuneyuki; and Mizukoshi, Yasuyoshi. Heavy duty radial tire with defined carcass turnup curvature. 5,186,774, Cl. 152-539.000.

Ujita, Yasuhiro: *See*—
Aoyama, Toshihiko; Shiomi, Haruhisa; and Ujita, Yasuhiro, 5,186,809, Cl. 204-421.000.

Umehara, Noritsugu: *See*—
Mizuguchi, Shinichi; Ueda, Shuji; Kato, Koji; and Umehara, Noritsugu, 5,185,957, Cl. 51-59.0SS.

Umemura, Masahiro; Namiki, Takemasa; Tobisawa, Seiichi; Kawabe, Shigetoshi; and Nakajima, Takeshi, to Konica Corporation. Coater. 5,186,754, Cl. 118-411.000.

Umeno, Hidenori: *See*—
Inoue, Taro; Umeno, Hidenori; Ohtsuki, Toru; and Ogawa, Kiyoshi, 5,187,802, Cl. 395-800.000.

Umpqua Research Company: *See*—
Jolly, Clifford D., 5,186,842, Cl. 210-763.000.

Union Camp Corporation: *See*—
Stephenson, Everett H., Jr., 5,186,586, Cl. 410-100.000.

Union Carbide Chemicals & Plastics Technology Corporation: *See*—
Baker, Edgar C.; Stakem, Francis G.; Noshay, Allen; Lee, Kiu H.; and Marcinkowsky, Arthur E., 5,187,246, Cl. 526-88.000.
Baker, Edgar C.; Moorhouse, John H.; and Noshay, Allen, 5,187,247, Cl. 526-133.000.
Thorsteinson, Erlind M.; Bhasin, Madan M.; and Seyedmonir, Seyed R., 5,187,140, Cl. 502-348.000.

Unisys Corporation: *See*—
Behera, Bailochan, 5,187,750, Cl. 382-7.000.

United Catalysts Inc.: *See*—
Mattingly, Wayne T., 5,186,747, Cl. 106-468.000.

United States of America
Agriculture: *See*—
Cummings, John L.; Mason, James R.; and Trksak, Ralph M., 5,187,196, Cl. 514-535.000.
Air Force: *See*—
Annamalai, Nagappan K., 5,186,785, Cl. 156-613.000.
Marmelstein, Robert E., 5,187,788, Cl. 395-700.000.
Task, Harry L., 5,187,541, Cl. 356-239.000.
Tsui, James B. Y.; and Shaw, Rudy L., 5,187,485, Cl. 342-357.000.
America: *See*—
Kotwal, Girish; and Moss, Bernard, 5,187,268, Cl. 536-23.720.
Commerce: *See*—
Haller, Wolfgang; and Deshmukh, Uday V., 5,187,008, Cl. 428-378.000.
Health and Human Services: *See*—
Kolobow, Theodor, 5,186,167, Cl. 128-207.140.
National Aeronautics and Space Administration: *See*—
Evenson, Erik E.; Wesselski, Clarence J.; and Ruiz, Steve C., 5,186,567, Cl. 403-7.000.
Hall, William A., 5,187,794, Cl. 395-800.000.
Madzsar, George C., 5,187,542, Cl. 356-300.000.
Navy: *See*—
Adams, Theodore C., Jr.; and Adolph, Horst G., 5,186,770, Cl. 149-92.000.
Beauchamp, Charles H.; Cincotta, Manuel, Jr.; Raffa, Anthony V.; and Gauthier, Benoit G., 5,186,420, Cl. 244-219.000.
Edelstein, Alan S., 5,186,854, Cl. 252-62.550.
Hilliard, Edward J., Jr., 5,187,690, Cl. 367-131.000.
Holzschuh, Jack E.; and Hightower, John D., 5,186,414, Cl. 244-3.120.
Iorio, Vincent M.; and Loy, Luke W., 5,186,604, Cl. 415-90.000.
Nielsen, Peter A.; and Henthorn, Paul F., 5,185,945, Cl. 36-77.00R.

U.S. Philips Corporation: *See*—
Borgis, Livio; Piacibello, Marco V. P.; and Keim, Peter C., 5,187,407, Cl. 313-318.000.
Florent, Raoul, 5,187,689, Cl. 367-99.000.
Jensen, Jens D.; and Vollmann, Wolfgang, 5,187,439, Cl. 324-309.000.
Raaymakers, Wilhelmus P. M.; Mons, Johannes J.; and Roth, Rudolf, 5,187,699, Cl. 369-48.000.
Stove, Andrew G., 5,187,484, Cl. 342-200.000.
Verheyen, Jozef H. M. R., 5,187,701, Cl. 369-75.200.
Vollmann, Norbert C.; Dewolf, Jan; Bernauer, Gunther; Stoger, Anton; and Koningsberger, Marco V., 5,187,629, Cl. 360-132.000.

VOL
1147
ISS
3
FE
16
1993
UMI

U.S. Polychemical Corporation: *See*—
Mancini, Thomas, 5,186,863, Cl. 252-570.000.
U.S. Synthetic Corporation: *See*—
Pope, Louis M., 5,186,892, Cl. 419-53.000.
U.S. Windpower, Inc.: *See*—
Erdman, William L., 5,187,427, Cl. 323-207.000.
United Technologies Corporation: *See*—
Bagge, William J., 5,186,608, Cl. 416-37.000.
Emmons, Floyd R., 5,186,681, Cl. 454-74.000.
Hamilton, Thomas P.; Jacobsen, Carol E.; and Perveiler, Kevin J., 5,187,773, Cl. 395-10.000.
Pechulis, Joseph W.; and Cronan, Joseph T., 5,186,635, Cl. 439-89.000.
Posluszny, Thomas J.; and Davis, Dennis W., 5,187,598, Cl. 359-29.000.
Tyson, Scott M.; and Wodek, Gary M., 5,187,113, Cl. 437-42.000.
University Corporation for Atmospheric Research: *See*—
Lauritsen, Dean K., 5,186,418, Cl. 244-138.00A.
University of Alabama: *See*—
Schultz, Clifford W.; and Irvin, G. Daniel, 5,186,820, Cl. 209-164.000.
University of California, The Regents of the: *See*—
Andres, Hendrik; Morimoto, Hiromi; and Williams, Philip G., 5,186,868, Cl. 252-645.000.
MacArthur, Duncan W.; and McAtee, James L., 5,187,370, Cl. 250-379.000.
University of Florida: *See*—
Bodor, Nicholas S., 5,187,158, Cl. 514-13.000.
University of Illinois, Board of Trustees of the: *See*—
Groves, Michael J., 5,186,936, Cl. 424-435.000.
University of Iowa Research Foundation: *See*—
Campbell, Kevin P.; Ervasti, James M.; Ohlendieck, Kay; Gaver, Mitchell G.; and Kahl, Steven D., 5,187,063, Cl. 435-7.210.
University of Kentucky, The: *See*—
Galante, Leonard J.; and Lodder, Robert A., 5,187,368, Cl. 250-341.000.
University of Nebraska, Board of Regents of the: *See*—
Hutkins, Robert W.; Berry, Elaine D.; and Liewen, Michael B., 5,186,962, Cl. 426-61.000.
University of Oklahoma, Board of Regents of the: *See*—
Malke, Horst; and Ferretti, Joseph J., 5,187,098, Cl. 435-320.100.
University of Pennsylvania, Trustees of the: *See*—
Kung, Hank F.; and Murphy, Raymond, 5,186,921, Cl. 424-1.100.
Penning, Trevor M.; and Askonas, Leslie J., 5,187,187, Cl. 514-419.000.
University of Rochester: *See*—
Borch, Richard F.; and Schmalbach, Therese K., 5,187,193, Cl. 514-476.000.
University of Southern California: *See*—
Muntz, Eric P.; Erwin, Daniel A.; Kunc, Joseph A.; and Shiflett, Geoffrey R., 5,186,001, Cl. 60-515.000.
University of Toledo, The: *See*—
Goldman, Stephen L.; and Graves, Anne C. F., 5,187,073, Cl. 435-172.300.
University of Washington, Board of Regents of the: *See*—
Gouterman, Martin P.; Kavandi, Janet L.; Gallery, Jean; and Callis, James B., 5,186,046, Cl. 73-147.000.
Uno, Yoshihito: *See*—
Hayashi, Yasuaki; Tomita, Tadashi; Yokoyama, Kenzo; Suzuki, Setsuji; and Uno, Yoshihito, 5,186,687, Cl. 464-144.000.
Unosawa, Yasuhiro: *See*—
Hirano, Hirofumi; and Unosawa, Yasuhiro, 5,187,497, Cl. 346-140.00R.
UOP: *See*—
Bedard, Robert L., 5,186,814, Cl. 208-46.000.
Skeels, Gary W.; Chapman, Diane M.; and Flanigen, Edith M., 5,186,918, Cl. 423-718.000.
Uosaki, Youichi: *See*—
Kanda, Yutaka; Uosaki, Youichi; Saito, Hiromitsu; Sano, Hiroshi; Kobayashi, Eiji; Morimoto, Makoto; and Nagamura, Satoru, 5,187,186, Cl. 514-410.000.
Uotani, Kunihiro: *See*—
Saeki, Shiro; Nakazato, Yukitaka; Ishizaki, Hiroyuki; Hyodou, Fumitaka; and Uotani, Kunihiro, 5,186,446, Cl. 271-3.100.
Upjohn Company, The: *See*—
Johnson, Roy A.; Bundy, Gordon L.; Youngdale, Gilbert A.; Morton, Douglas R.; Wallach, Donald P., deceased; and Wallach, Legal Representative, by Vera M., 5,187,299, Cl. 552-522.000.
Upson, Warren S. Apparatus and method for converting side operated machine controls to be front operated. 5,185,911, Cl. 29-401.100.
Upton: Jeffrey C.: *See*—
Schuss, Jack J.; Upton: Jeffrey C.; Geyh, Edward A.; and Chang, Kaichiang, 5,187,491, Cl. 343-781.00R.
Urano, Satoshi: *See*—
Tsuboniwa, Noriyuki; Yamanaka, Eiji; and Urano, Satoshi, 5,187,306, Cl. 560-157.000.
Urata, Eizo; and Miyakawa, Shinpei, to Ebara Research Co. Ltd.; and Urata, Eizo. Hydraulic servo-valve. 5,186,213, Cl. 137-625.610.
Uratsuji, Kazumi, to Yamaichi Electric Co., Ltd. Socket for electric part. 5,186,641, Cl. 439-266.000.
Uratsuji, Kazumi: *See*—
Matsuoka, Noriyuki; and Uratsuji, Kazumi, 5,186,642, Cl. 439-268.000.
Urbani, William G., to Industrial Innovations, Inc. Apparatus for sludge removal. 5,185,899, Cl. 15-93.100.
Urmann, Ernst: *See*—
Pelah, Zvi; Potencsik, Istvan; Kopp, Werner; and Urmann, Ernst, 5,187,308, Cl. 560-202.000.
Urquhart, Andrew W.: *See*—
Newkirk, Marc S.; Urquhart, Andrew W.; Zwicker, Harry R.; and Lesher, H. Daniel, 5,187,130, Cl. 501-97.000.
Ushigami, Yoshiyuki; Nakayama, Tadashi; and Takahashi, Nobuyuki, to Nippon Steel Corporation. Process for producing grain-oriented electrical steel sheet having high magnetic flux density. 5,186,762, Cl. 148-111.000.
USM U. Scharer Sohne AG.: *See*—
Graf, Rudolf, 5,186,570, Cl. 403-174.000.
Usui, Kazushi: *See*—
Yoshinari, Tomohiro; Usui, Kazushi; Yamamoto, Yasuo; and Ohi, Mitsuru, 5,187,133, Cl. 502-66.000.
Utaka, Katsuyuki: *See*—
Horita, Masayoshi; Utaka, Katsuyuki; and Matsushima, Yuichi, 5,187,717, Cl. 372-96.000.
Utsumi, Itsunori: *See*—
Fukudome, Yoshio; Hamada, Yasunori; Okayama, Masao; Kako, Yutaka; Saito, Tetsuo; and Utsumi, Itsunori, 5,186,334, Cl. 209-534.000.
Vaahs, Tilo; Kleiner, Hans-Jerg; and Bruck, Martin, to Hoechst Aktiengesellschaft. Silazane polymers containing SiCl groups, process for their preparation, silicon nitride-containing ceramic materials which can be prepared from them, and their preparation. 5,187,252, Cl. 528-33.000.
Vacher, Philippe: *See*—
Dang Vu, Quang; Franckowiak, Sigismond; Grehier, Alain; Vacher, Philippe; and Burzynski, Jean-Pierre, 5,186,909, Cl. 422-213.000.
Vai, Gianfranco; Zuffada, Maurizio; Sacchi, Fabrizio; Moloney, David; and Betti, Giorgio, to SGS-Thomson Microelectronics S.r.l. Control circuit for an oscillator. 5,187,452, Cl. 331-113.00R.
Vail, William B., III, to Para Magnetic Logging, Inc. Measuring resistivity changes from within a first cased well to monitor fluids injected into oil bearing geological formations from a second cased well while passing electrical current between the two cased wells. 5,187,440, Cl. 324-372.000.
Vallieres, Lucien. Disinfectant with wide spectrum germicidal activity. 5,186,946, Cl. 424-613.000.
Valois: *See*—
Garcia, Firmin, 5,186,368, Cl. 222-490.000.
Valster, Karl C., to Precision Pulley, Inc. Method and apparatus for separating bottle caps from plastic bottles. 5,186,331, Cl. 209-3.001.
Vancraeynest, Jan, to Nynex Corporation. Interactive telephone gaming system. 5,186,471, Cl. 273-439.000.
Van De Moortele, Guido, to S.McD. Murphy & Partners Ltd.; and Van De Moortele, Guido. Safety valve. 5,186,432, Cl. 251-16.000.
VandenBerge, Thomas C.; DeJong, Jerry M.; and Suman, Michael J., to Prince Corporation. Rear window sliding visor. 5,186,512, Cl. 296-97.800.
Vandenboosche, Jean J.: *See*—
Bugaut, Andree; Junino, Alex; and Vandenboosche, Jean J., 5,186,717, Cl. 8-405.000.
Vanderstuyf, Al: *See*—
Burgess, James P.; Mobley, Dewey; and Vanderstuyf, Al, 5,187,328, Cl. 174-52.200.
Van Der Vis, Pieter A., to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Tno. Tunable high-frequency antenna. 5,187,488, Cl. 343-747:000.
Vanderwal, Frank E., Jr., to Sunnen Products Company. Positive retracting honing mandrel. 5,185,969, Cl. 51-338.000.
van der Werff, Jeichienus A., to Hadewe B.V. Method of, and a device for, controlling the rotation of an element about an axis by means of a wrap spring. 5,186,285, Cl. 188-77.00W.
Van Dijk, Hans K.: *See*—
Schellekens, Ronald M. A. M.; Van Dijk, Hans K.; and Bulters, Marcus J. H., 5,186,861, Cl. 252-500.000.
van Ditzhuijzen, Gustaaf A. J. M.; and Bond, Philip A., to Hoogovens Groep BV. Cooling system for cooling a moving metal strip. 5,186,018, Cl. 62-374.000.
VanDort, Paul C.: *See*—
Blohm, Margaret L.; Pickett, James E.; and VanDort, Paul C., 5,187,608, Cl. 359-273.000.
Van Laanen, Michael W. Inflatable maternity mattress. 5,185,897, Cl. 5-455.000.
Van Pinkerton, Stevens, Jr., to Acoustics Development Corporation. Rapid change directory holder. 5,186,497, Cl. 281-49.000.
van Staden, Pieter R. Borehole pumping installation. 5,186,254, Cl. 166-105.000.
Vardaro, Antonio. Interlocking modular tray structure. 5,186,340, Cl. 211-133.000.
Vari-Lite, Inc.: *See*—
Bornhorst, James M.; and Stacy, Timothy D., 5,186,536, Cl. 362-293.000.
Varrichio, Anthony J.: *See*—
Terry, Reese S., Jr.; Varrichio, Anthony J.; Winstrom, William L.; and Stanislaw, Henry, 5,186,170, Cl. 128-419.00R.
Vaseloff, Dennis J.; Dobrino, Gary J.; King, James A.; and Chu, Wai Y., to Prince Castle. Fryer controller. 5,186,097, Cl. 99-330.000.
Vassiliadis, Stamatis; and Schwarz, Eric M., to International Business Machines Corporation. Generalized 7/3 counters. 5,187,679, Cl. 364-786.000.

Vaughan, Philip A.: *See*—
McManigal, Paul G.; and Vaughan, Philip A., 5,186,209, Cl. 137-505.180.
Vaughn, Henry P., to Babcock & Wilcox Company, The. Radiographic inspection of tube welds in panel walls. 5,187,728, Cl. 378-59.000.
Venalainen, Teuvo O., to Autorobot Finland Ky. Rectifying means for a car body and procedure in rectifying same. 5,186,038, Cl. 72-457.000.
Venex Incorporated: *See*—
VonDelinde, Dennis J.; and Jacobs, Gordon M., 5,186,355, Cl. 221-75.000.
Verbo, Ulysse: *See*—
Gautier, Jean-Pierre; Perez, Miguel; and Verbo, Ulysse, 5,186,004, Cl. 60-594.000.
Verbruggen, Alfons M., to Mallinckrodt Medical, Inc. Technetium chelates to be used for determining the renal function. 5,187,264, Cl. 534-14.000.
Verheyen, Jozef H. M. R., to U.S. Philips Corporation. Disc-record player having a loading device with a movable sub-frame. 5,187,701, Cl. 369-75.200.
Vermeulen, Peter. Device for the attachment of a sheet onto a backing. 5,186,997, Cl. 428-99.000.
Vernon, Robert D.: *See*—
Garner, Ronald N.; and Vernon, Robert D., 5,187,642, Cl. 361-386.000.
Verville, Thomas J., to Hughes Aircraft Company. Application of adhesive during optical fiber canister winding. 5,186,781, Cl. 156-169.000.
Vestar, Inc.: *See*—
Callahan, Richard A.; and Tin, George W., 5,186,941, Cl. 424-450.000.
Vetter, Helmut; and Geprags, Peter, to Arzneimittel GmbH Apotheker Vetter & Co. Ravensburg. Apparatus for handling syringe bodies. 5,185,985, Cl. 53-299.000.
Viehbeck, Alfred: *See*—
Buchwalter, Stephen L.; Frank, Ernest R.; O'Toole, Terrence R.; Thomas, Richard R.; and Viehbeck, Alfred, 5,187,241, Cl. 525-420.000.
Vignali, Graziano: *See*—
Borzatta, Valerio; Scrima, Roberto; and Vignali, Graziano, 5,187,275, Cl. 544-207.000.
Vigneaux, Paul E., Jr., to Vigneaux, Paul E., Jr. Paper shredder. 5,186,398, Cl. 241-33.000.
Vinter, Borge: *See*—
Weisbuch, Claude; Bois, Philippe; and Vinter, Borge, 5,187,715, Cl. 372-46.000.
Viriyayuthakorn, Montri: *See*—
Benko, John W.; Levkoff, Jerome; Sutryn, Daniel C.; and Viriyayuthakorn, Montri, 5,186,756, Cl. 118-730.000.
Viscodrive GmbH: *See*—
Stiasny, Carl-Heinz, 5,186,764, Cl. 148-206.000.
Vishnupad, Mohan: *See*—
Ramirez, Jose E.; and Vishnupad, Mohan, 5,186,857, Cl. 252-167.000.
Vits, Hilmar, to Heidelberger Druckmaschinen AG. Apparatus for overlapping and laying down sheets cut from a web of material by a crosscutter. 5,186,450, Cl. 271-183.000.
Vivat, Michel: *See*—
Brion, Francis; Buendia, Jean; Diolez, Christian; and Vivat, Michel, 5,187,273, Cl. 540-4.000.
VLSI Technology, Inc.: *See*—
Rowson, James A., 5,187,784, Cl. 395-500.000.
Vogel, Werner: *See*—
Weber, Heinrich; Lehrmann, Falko; Hofer, Hermann; Vogel, Werner; and Mueller, Peter, 5,187,097, Cl. 435-313.000.
Vogeley, Arthur W.: *See*—
Vogeley, James H.; and Vogeley, Arthur W., 5,187,510, Cl. 353-122.000.
Vogeley, James H.; and Vogeley, Arthur W., to nView Corporation. Liquid crystal display for projection systems. 5,187,510, Cl. 353-122.000.
Vogler, Friedrich; Ortner, Hanns-Werner; and Mayerhofer, Matthias. Method and apparatus for measuring the iron content in zinc layer and thickness of zinc layer. 5,187,727, Cl. 378-50.000.
Vojtech, Strnad, to Isover Saint-Gobain. Method and apparatus for melting materials containing inorganic material fibers by the supply of oxygen rich gas. 5,186,112, Cl. 110-256.000.
Volkert, Otto; and Maurer, Walter, to BASF Aktiengesellschaft. Production of cellular plastics by the polyisocyanate polyaddition process, and low-boiling, fluorinated or perfluorinated, tertiary alkylamines as blowing agent-containing emulsions for this purpose. 5,187,206, Cl. 521-129.000.
Vollmann, Norbert C.; Dewolf, Jan; Bernauer, Gunther; Stoger, Anton; and Koningsberger, Marco V., to U.S. Philips Corporation. Cassette with magnetic tape on two coplanar reels. 5,187,629, Cl. 360-132.000.
Vollmann, Wolfgang: *See*—
Jensen, Jens D.; and Vollmann, Wolfgang, 5,187,439, Cl. 324-309.000.
Von Schrader Company: *See*—
Pleshek, Mark, 5,186,392, Cl. 239-532.000.
VonDelinde, Dennis J.; and Jacobs, Gordon M., to Venex Incorporated. Coil position adjustment device for vending machines. 5,186,355, Cl. 221-75.000.
von Feilitzen, Johan, to Forsheda AB. Device for connecting a thin-walled hose with a tubular element. 5,186,503, Cl. 285-174.000.
Vors, Jean-Pierre A.: *See*—
Outcalt, Russell J.; Timmons, Philip R.; Cramp, Susan M.; Kwiatkowski, Patricia L.; Lopes, Anibal; Cain, Paul A.; Sinodis, David N.; Hall, Lee S.; and Vors, Jean-Pierre A., 5,187,185, Cl. 514-408.000.
Voschula, Valentin N.: *See*—
Komissarov, Igor V.; Dulenko, Vladimir I.; Voschula, Valentin N.; Kharin, Nikolai A.; Naletov, Sergei V.; and Mamonov, Alexandr B., 5,187,277, Cl. 544-362.000.
Vought, William S., Jr.: *See*—
Lenox, Ronald S.; Boyd, Kim S.; and Vought, William S., Jr., 5,187,203, Cl. 521-75.000.
VPI & SU: *See*—
Brown, Jesse J.; Hirschfeld, Deidre A.; and Lee, K. H., 5,186,729, Cl. 65-33.000.
Vrba, Jan: *See*—
Franconi, Cafiero; and Vrba, Jan, 5,186,181, Cl. 128-804.000.
Vydra, Jacob; and Altshuler, Anatoly, to Diamond Fiber Composites, Inc. Coated and whiskered fibers for use in composite materials. 5,187,021, Cl. 428-607.000.
W. R. Grace & Co.-Conn.: *See*—
Crudden, Joseph J., 5,186,855, Cl. 252-117.000.
Cullen, Barry A.; and Parker, Brian A., 5,187,301, Cl. 558-455.000.
Parham, Marc E.; and Duffy, Richard L., 5,187,010, Cl. 428-398.000.
Rummage, Glenn E.; and Su, Philip P., 5,186,223, Cl. 141-91.000.
Samuel, David N.; and Williams, Richard S., 5,186,991, Cl. 428-35.800.
Wacker-Chemie GmbH: *See*—
Ball, Peter; Christ, Josef; Frank, Albin; Marquardt, Klaus; and Selig, Manfred, 5,187,233, Cl. 525-267.000.
Wada, Kouichi, to Tachikawa Corporation. Rail attachment structure. 5,186,426, Cl. 248-251.000.
Wada, Satoshi: *See*—
Ono, Takeshi; Wada, Satoshi; Kobayashi, Makoto; Yoshida, Takehiro; Takeda, Tomoyuki; Ishida, Yasushi; Yokoyama, Minoru; Tomoda, Akihiro; Yamada, Masakatsu; and Awai, Takashi, 5,187,494, Cl. 346-76.0PH.
Waddle, Richard L., Sr. Pet portal device. 5,185,954, Cl. 49-168.000.
Wadell, Lars G. A., to Nestec S.A. Apparatus and process for cutting foodstuffs. 5,186,089, Cl. 83-56.000.
Wagai, Kiyoshi; Sekigawa, Tatsuaki; Ohyanagi, Shihoko; and Shiono, Mitsuji, to Kabushiki Kaisha Toshiba. Radio telecommunication apparatus. 5,187,471, Cl. 340-825.440.
Wagatsuma, Yuuki: *See*—
Kanno, Hiroshi; Wagatsuma, Yuuki; and Takase, Toshiaki, 5,186,102, Cl. 101-128.400.
Wagenblast, Gerhard: *See*—
Etzbach, Kark-Heinz; Wagenblast, Gerhard; Brox, Wolfgang; Paul, Axel; and Bach, Volker, 5,187,298, Cl. 549-555.000.
Etzbach, Karl-Heinz; Wagenblast, Gerhard; Brox, Wolfgang; Paul, Axel; and Bach, Volker, 5,187,248, Cl. 526-243.000.
Wagener, Thomas J.; Bjork, Paul E.; and Lenz, James E., to Honeywell Inc. Apparatus for determining the position of an object. 5,187,475, Cl. 340-870.320.
Wagner, Gary L.; Rodal, Eric B.; and Lau, Chung Y., to Trimble Navigation Limited. Voltage controlled oscillator suitable for complete implementation within a semiconductor integrated circuit. 5,187,450, Cl. 331-96.000.
Wakabayashi, Kenji: *See*—
Koike, Yukiya; Wakabayashi, Kenji; Sumi, Yoshihiko; and Ichikawa, Yataro, 5,187,067, Cl. 435-7.900.
Wakabayashi, Takeshige: *See*—
Mizuno, Koichi; Wakabayashi, Takeshige; Koinuma, Yutaka; Aizawa, Reiji; Kushiyama, Satoshi; Kabayashi, Satoru; Ohuchi, Hideo; Yoshida, Toyonobu; Kubota, Yoshiro; Amano, Takanobu; Komaki, Hisashi; and Hirakawa, Shoji, 5,187,344, Cl. 219-121.500.
Wakatsuki, Noboru: *See*—
Ueda, Masanori; Sawada, Hisashi; Tanaka, Akira; and Wakatsuki, Noboru, 5,187,758, Cl. 385-16.000.
Wakayama, Hajime; Shimakura, Toru; Watanabe, Seiji; and Handa, Akio, to Honda Giken Kogyo Kabushiki Kaisha. Fallable type pole supporting device. 5,186,423, Cl. 248-160.000.
Wakefield, Scott H.: *See*—
Spalding, Tom J.; Kowal, Keith E.; Bleck, James H.; Wakefield, Scott H.; and Thrailkill, John E., 5,187,645, Cl. 361-393.000.
Waki, Tatsuo: *See*—
Okafuji, Yukitaka; and Waki, Tatsuo, 5,186,778, Cl. 156-126.000.
Walburn, Harold E.: *See*—
Wetherill, Todd N.; Walburn, Harold E.; and Sheehan, Terrence M., 5,186,086, Cl. 82-124.000.
Walczak, Thomas J.: *See*—
Wayneerich, Randall; Masoodosmani, Rashid; Walczak, Thomas J.; and Cahill, Stephen V., 5,187,809, Cl. 455-33.100.
Walker, James J.: *See*—
East, Jeffrey A.; Walker, James J.; Jenness, Steven M.; Ozur, Mark C.; and Kelly, James W., Jr., 5,187,790, Cl. 395-725.000.
Walkowski, Timothy L., to Ferro Corporation. Concentrates for imparting a simulated stone effect to thermoplastic substrates. 5,187,202, Cl. 524-35.000.
Wall, Bernard W. Apparatus for rinsing chemical containers. 5,186,195, Cl. 134-170.000.
Wallace, Jack R.: *See*—
Fitt, Larry E.; Pienkowski, James J.; and Wallace, Jack R., 5,187,210, Cl. 524-48.000.

VOL 1147 ISS 3 FE 16 1993 UMI

Wallach, Donald P., deceased: *See—*
Johnson, Roy A.; Bundy, Gordon L.; Youngdale, Gilbert A.; Morton, Douglas R.; Wallach, Donald P., deceased; and Wallach, Legal Representative, by Vera M., 5,187,299, Cl. 552-522.000.

Wallach, Legal Representative, by Vera M.: *See—*
Johnson, Roy A.; Bundy, Gordon L.; Youngdale, Gilbert A.; Morton, Douglas R.; Wallach, Donald P., deceased; and Wallach, Legal Representative, by Vera M., 5,187,299, Cl. 552-522.000.

Walsh, Arthur L.; and Genereux, Barry E., to Raytheon Company. Power measurement calorimeter. 5,186,540, Cl. 374-32.000.

Walsh, Stephen T.: *See—*
Minnich, Thomas; Morser, Alfred H.; Myers, Stanley L.; and Walsh, Stephen T., 5,187,417, Cl. 318-254.000.

Walsh, Thomas J., Jr. Low pressure 3D extrusion. 5,186,960, Cl. 425-376.100.

Walters, R. Jeffrey; and Dennstedt, Paul. Flexible mounting device for furniture products and the like. 5,186,549, Cl. 384-505.000.

Wang, Cheng: *See—*
Toshima, Masato M.; Salzman, Phil M.; Murdoch, Steven C.; Wang, Cheng; Stenholm, Mark A.; Howard, James; Hall, Leonard; and Cheng, David, 5,186,594, Cl. 414-217.000.

Wang, Cheng-Chung, to Team Worldwide Corporation. Floating hammock. 5,186,667, Cl. 441-129.000.

Wang, Elizabeth A.: *See—*
Wozney, John M.; Wang, Elizabeth A.; Rosen, Vicki A.; and Celeste, Anthony J., 5,187,076, Cl. 435-69.100.

Wang, Faa-Ching M.: *See—*
Rau, Mann-Fu; Wang, Faa-Ching M.; and Kurz, Jimmy D., 5,186,784, Cl. 156-605.000.

Wang, John, to Lee Wang Industry Ltd. Pedaling exercise device. 5,186,700, Cl. 482-111.000.

Wang, Shein-Sen M., to Hewlett-Packard Company. Selective deposition of metal on metal nitride to form interconnect. 5,187,120, Cl. 437-192.000.

Wang, Tian-Wang. Woodworking machine with means for providing 3-dimensional cutting tool movement. 5,186,226, Cl. 144-144.00R.

Wang, Yugiang: *See—*
Farquhar, David; and Wang, Yugiang, 5,187,266, Cl. 536-6.400.

Wang, Yulun; and Srinivasan, Partha, to Computer Motion, Inc. Three-dimensional vector co-processor having I, J, and K register files and I, J, and K execution units. 5,187,796, Cl. 395-800.000.

Ward, Bennie R., Jr., to Reynolds Metals Company. Homogenization of aluminum coil. 5,186,235, Cl. 148-552.000.

Ward, James C.: *See—*
Shellhamer, Terry M.; Ward, James C.; and Edwards, David M., 5,186,981, Cl. 427-247.000.

Wargo, Joseph S.: *See—*
Oestreich, Curtis J.; Cannizzaro, Joseph S.; and Wargo, Joseph S., 5,186,318, Cl. 206-37.000.

Wark, Rickey E., to Sure Alloy Steel Corporation. Adjustable flow rate device for rotating vane pulverizer. 5,186,404, Cl. 241-119.000.

Warner, Craig M.: *See—*
Warner, Ronald C.; and Warner, Craig M., 5,185,900, Cl. 15-97.100.

Warner-Lambert Company: *See—*
Belliotti, Thomas R.; Connor, David T.; Kostlan, Catherine R.; and Miller, Steven R., 5,187,175, Cl. 514-269.000.
Jaen, Juan C.; Nickell, David G.; Reynolds, Donna M.; Smith, Sarah J.; Wise, Lawrence D.; and Wustrow, David J., 5,187,280, Cl. 546-255.000.
Rivers, David F., 5,185,927, Cl. 30-50.000.

Warner, Ronald C.; and Warner, Craig M., to Ron Warner Associates. Apparatus for removing coatings from fingernails. 5,185,900, Cl. 15-97.100.

Warren, Ronald A.: *See—*
Cote, Donna R.; Stanasolovich, David; and Warren, Ronald A., 5,187,121, Cl. 437-195.000.

Warren, William E., to British Technology Group Limited. Check valves. 5,186,201, Cl. 137-38.000.

Warunek, Stephen P.: *See—*
Breads, Peter R.; Abbatte, Gerard P.; and Warunek, Stephen P., 5,186,623, Cl. 433-6.000.

Watanabe, Hiroyuki: *See—*
Shibata, Koichi; Fukushima, Toshitaka; Watanabe, Hiroyuki; Miyahara, Shinichiro; and Imagawa, Osamu, 5,187,441, Cl. 324-426.000.
Shibata, Koichi; Fukushima, Toshitaka; Watanabe, Hiroyuki; Miyahara, Shinichiro; and Imagawa, Osamu, 5,187,720, Cl. 375-35.000.

Watanabe, Junji, to Kabushiki Kaisha Toshiba. Original setting device for image forming apparatus. 5,187,530, Cl. 355-308.000.

Watanabe, Kazuo; and Okamoto, Tosaku, to Kanzaki Paper Manufacturing Co., Ltd. Heat sensitive recording material. 5,187,143, Cl. 503-212.000.

Watanabe, Keisuke: *See—*
Muramatsu, Shigeru; Watanabe, Keisuke; and Mishima, Junichi, 5,187,315, Cl. 84-688.000.

Watanabe, Kiyomi, to Origin Electric Company, Limited. Power supply device for X-ray tube. 5,187,737, Cl. 378-105.000.

Watanabe, Masahiro, to Tanaka Kikinzoku Kogyo K.K.; and Watanabe, Masahiro. Process of preparing electrode for fuel cell. 5,186,877, Cl. 264-104.000.

Watanabe, Masahiro: *See—*
Yamashita, Kazuo; Takeuchi, Yoshihiko; and Watanabe, Masahiro, 5,187,458, Cl. 333-197.000.

Watanabe, Masao, to Toyota Jidosha Kabushiki Kaisha. Vehicle anti-lock brake control apparatus including means for regulating brake pressure based on smoothed wheel acceleration and determined vehicle acceleration. 5,187,666, Cl. 364-426.020.

Watanabe, Mitsuo, to Hamamatsu Photonics K.K. Position detector using two dimensional multi-anode photomultiplier tube and a plurality of comparators. 5,187,357, Cl. 250-206.100.

Watanabe, Noriko: *See—*
Shoji, Hajime; Watanabe, Noriko; Hamada, Hiroshi; Kato, Hiroaki; Takemoto, Toshio; and Hirobe, Toshihiko, 5,187,551, Cl. 257-347.000.

Watanabe, Ryuji: *See—*
Maeda, Yoshihito; Kaneko, Toshiki; Nagai, Masaichi; Andoh, Hisashi; Katou, Yoshimi; Ikuta, Isao; and Watanabe, Ryuji, 5,187,052, Cl. 430-495.000.

Watanabe, Seiji: *See—*
Wakayama, Hajime; Shimakura, Toru; Watanabe, Seiji; and Handa, Akio, 5,186,423, Cl. 248-160.000.

Watanabe, Takahide; Shibata, Yasuhiko; Mitsui, Shoichi; and Koike, Takashi, to Sanshin Kogyo Kabushiki Kaisha. Fuel enrichment arrangement for marine propulsion unit. 5,186,133, Cl. 123-179.140.

Watanabe, Takashi, to Teac Corporation. Magnetic disk drive apparatus having a protection mechanism for protecting a magnetic head from collision with a magnetic disk when loading or unloading the magnetic disk. 5,187,622, Cl. 360-99.020.

Watanabe, Toshiaki: *See—*
Ryuo, Toshihiko; and Watanabe, Toshiaki, 5,186,866, Cl. 252-584.000.

Watanabe, Yoshihiko: *See—*
Tsukada, Masamitsu; Murata, Kiyoshi; Ota, Yasushi; and Watanabe, Yoshihiko, 5,186,989, Cl. 428-34.900.

Wataya, Seiji, to Mitsubishi Denki Kabushiki Kaisha. Abnormality detecting device for an automobile engine. 5,186,148, Cl. 123-479.000.

Waters, Dorothy P.: *See—*
Waters, Lester C., Jr., 5,186,024, Cl. 63-32.000.

Waters, Lester C., Jr., to Waters, Dorothy P. High brilliance step-cut stone and method of making same. 5,186,024, Cl. 63-32.000.

Watkins, Michael I.; Bartlett, Clifford R.; Liang, Edward T.; Pocekay, John M.; and Staples, Mark A., to Bio-Rad Laboratories, Inc. B_{12} enzyme imunoassay and sample pretreatment. 5,187,107, Cl. 436-505.000.

Waynerich, Randall; Masoodosmani, Rashid; Walczak, Thomas J.; and Cahill, Stephen V., to Motorola, Inc. Dual mode automatic gain control. 5,187,809, Cl. 455-33.100.

Weaver, James R.: *See—*
Rooy, Elwin L.; Petrey, Gerald R.; Weaver, James R.; Granger, Douglas A.; Richter, Raymond T.; and Reravis, H. Gray, Jr., 5,186,767, Cl. 148-552.000.

Webb, Jimmy L.: *See—*
Jordan, Therese C.; and Webb, Jimmy L., 5,187,243, Cl. 525-464.000.

Weber, Heinrich; Lehrmann, Falko; Hofer, Hermann; Vogel, Werner; and Mueller, Peter, to Buehler AG. Composting system and composting method. 5,187,097, Cl. 435-313.000.

Weber, M. Frederic, to Saint-Gobain Vitrage International c/o Saint-Gobain Recherche. Device having final frame which doubles a blank frame, for bending glass sheets. 5,186,730, Cl. 65-289.000.

Weber, Wolfram: *See—*
Otto, Veit; Weber, Wolfram; Muller-Stein, Iris; and Schiebler, Wolfgang, 5,186,826, Cl. 210-198.200.

Wegel, Erich: *See—*
Emrich, Helmut; Muller, Horst; Ruwe, Walter; and Wegel, Erich, 5,186,105, Cl. 101-217.000.

Wehle, Detlef: *See—*
Gitzel, Jorg; Wehle, Detlef; and Macholdt, Hans-Tobias, 5,187,038, Cl. 430-110.000.

Wehr, Don H., to Williams, Darrel H.; and Griffin, George A. Absorbent-refrigerant solution. 5,186,010, Cl. 62-112.000.

Wei, Ching-Yeu: *See—*
Kingsley, Jack D.; Kwasnick, Robert F.; Wei, Ching-Yeu; and Saia, Richard J., 5,187,369, Cl. 250-370.110.

Weill, Jerome: *See—*
Alagy, Jacques; Broutin, Paul; Busson, Christian; Gougne, Yves; and Weill, Jerome, 5,186,910, Cl. 422-220.000.

Weinberger, Morris J. Portable communication device. 5,186,684, Cl. 462-17.000.

Weinstein, Albert: *See—*
Fongeallaz, Laura; Fongeallaz, Carl; and Weinstein, Albert, 5,186,460, Cl. 273-86.00B.

Weisbuch, Claude; Bois, Philippe; and Vinter, Borge, to Thomson-CSF. Quantum well optical device. 5,187,715, Cl. 372-46.000.

Weitemeyer, Christian: *See—*
Jachmann, Jurgen; Weitemeyer, Christian; and Wewers, Dietmar, 5,187,251, Cl. 528-15.000.

Welch, Timothy M.: *See—*
Osterday, Craig A.; Osterfeld, Douglas L.; Baumaster, Thomas R.; Welch, Timothy M.; Trego, Michael P.; and Flory, Donald M., 5,185,915, Cl. 29-525.000.

Wellman, Warner, to ConAgra, Inc. Process for milling cereal grains. 5,186,968, Cl. 426-483.000.

Wells, Robert H.: *See—*
Magnan, Michael B.; Reichling, Charles A.; and Wells, Robert H., 5,186,129, Cl. 123-90.340.

Wenderoth, Bernd: *See—*
Wingert, Horst; Sauter, Hubert; Brand, Siegbert; Wenderoth, Bernd; Lorenz, Gisela; and Ammermann, Eberhard, 5,187,170, Cl. 514-351.000.

Wendt, Charles W.; Hicks, Stanley K.; and Baker, Richard B. Vanadyl compositions and methods for applying the compositions to promote plant growth. 5,186,738, Cl. 504-192.000.

Weng, Jian: *See—*
Chance, Britton; and Weng, Jian, 5,187,672, Cl. 364-550.000.

Wentland, Julie A.: *See—*
Niespodziany, David A.; Olson, David L.; Schebel, Ronald W.; and Wentland, Julie A., 5,186,521, Cl. 301-6.910.

Wenzel, Ernst: *See—*
Stocker, Kurt F.; and Wenzel, Ernst, 5,187,102, Cl. 436-69.000.

Werner, Ronald H.: *See—*
Frisbee, Claude M.; Sealine, Ronald L.; and Werner, Ronald H., 5,186,295, Cl. 192-13.00R.

Wesselski, Clarence J.: *See—*
Evenson, Erik E.; Wesselski, Clarence J.; and Ruiz, Steve C., 5,186,567, Cl. 403-7.000.

West, A. Mark T., to Massachusetts Institute of Technology. Omnidirectional vehicle. 5,186,270, Cl. 180-6.620.

Westerman, John: *See—*
Stahl, Allan; Moradi-Araghi, Ahmad; Westerman, John; Hsieh, Henry L.; Hedges, James H.; and Bjornson, Geir, 5,186,257, Cl. 166-273.000.

Western Rock Bit Company Limited: *See—*
White, Kenneth M., 5,186,267, Cl. 175-371.000.

Westfalia Becorit Industritechnik GmbH: *See—*
Wleklinski, Bernhard, 5,186,309, Cl. 198-606.000.

Westinghouse Electric Corp.: *See—*
Cuba, Gary W.; Isaacson, Robert D.; and Lambert, David V., 5,187,348, Cl. 219-124.020.
Snuttjer, Owen R.; and Rasinski, Michael J., 5,186,277, Cl. 184-6.220.
Zerinvary, Miklos C.; and Nyilas, Charles P., 5,186,886, Cl. 266-237.000.

Westman, Bjorn: *See—*
Hedstrom, Lars-Gunnar; and Westman, Bjorn, 5,186,291, Cl. 192-3.230.

Westphal, Patrick J.: *See—*
Wood, Fred G.; Poirier, David C.; Campbell, Douglas C.; Ludwig, Howard H.; and Westphal, Patrick J., 5,186,487, Cl. 280-707.000.

Wetherill, Todd N.; Walburn, Harold E.; and Sheehan, Terrence M., to Hardinge Brothers, Inc. Finished parts catcher for an automatic machine. 5,186,086, Cl. 82-124.000.

Wewers, Dietmar: *See—*
Jachmann, Jurgen; Weitemeyer, Christian; and Wewers, Dietmar, 5,187,251, Cl. 528-15.000.

Weyermanns, Gunther; and Gorlich, Uwe, to Messer Griesheim GmbH. Device to freeze free-flowing and pourable substances. 5,186,019, Cl. 62-381.000.

Whatcott, Gary L.: *See—*
Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; and Schutten, Herman P., 5,187,664, Cl. 364-424.020.

Wheeler, Clair: *See—*
Appolonia, Jack; Wheeler, Clair; and Kapoor, Akhilesh, 5,186,008, Cl. 62-63.000.

Wheeler, Geoffrey C.: *See—*
Russell, Tony A.; and Wheeler, Geoffrey C., 5,185,989, Cl. 56-13.100.

Whelan, David A.; and Fraschilla, John, to Hughes Aircraft Company. Asymmetrically flared notch radiator. 5,187,489, Cl. 343-767.000.

Whitaker, Inge F.: *See—*
Whitaker, Lenwood C.; Whitaker, Inge F.; and Pate, E. Leonard, 5,186,520, Cl. 297-468.000.

Whitaker, Lenwood C.; Whitaker, Inge F.; and Pate, E. Leonard. Force activated tethering device for use with a child safety seat in an automobile. 5,186,520, Cl. 297-468.000.

Whitcomb, David R.: *See—*
Sber, Frank T.; and Whitcomb, David R., 5,187,049, Cl. 430-340.000.

White, Danny R.; and Claar, Terry D., to Lanxide Technology Company, LP. Process for preparing self-supporting bodies. 5,187,128, Cl. 501-96.000.

White, Donald A., to Exxon Chemical Patents Inc. Process for preparing N-halothiosulfonamide-modified non-rubbery thermoplastic olefins. 5,187,240, Cl. 525-351.000.

White, Kenneth M., to Western Rock Bit Company Limited. Journal bearing type rock bit. 5,186,267, Cl. 175-371.000.

White, Timothy P.; and LeBlanc, Steve M., to Northeast Robotics, Inc. Diffuse on-axis light source. 5,187,611, Cl. 359-599.000.

White, Victor E., to Wisconsin Alumni Research Foundation. High resolution X-ray lithography using phase shift masks. 5,187,726, Cl. 378-35.000.

Whitehead, Lorne A., to TIR Systems, Ltd. Lighting structure having variable transmissivity internal light guide illumination. 5,186,530, Cl. 362-31.000.

Whittle, Alan J.: *See—*
Salmon, Roger; Sunley, Raymond L.; and Whittle, Alan J., 5,187,176, Cl. 514-269.000.

Wich, Harald: *See—*
Schloss, Jurgen; Trummer, Gunther; and Wich, Harald, 5,187,322, Cl. 102-427.000.

Wieland, Alfred: *See—*
Schluter, Herbert; Knipp, Herbert; and Wieland, Alfred, 5,187,221, Cl. 524-461.000.

Wieland, Erich G., to Koenig & Bauer Aktiengesellschaft. Drum for transporting sheets. 5,186,107, Cl. 101-409.000.

Wielgos, Thaddeus S.; Killarney, Declan E.; and Schmidt, Katalin A., to Eaton Corporation. Bi-level wiring harness connector. 5,186,660, Cl. 439-685.000.

Wieners, Gerhard: *See—*
Groh, Werner; Heumuller, Rudolf; Schutze, Gerald; Stern, Roland; and Wieners, Gerhard, 5,187,769, Cl. 385-143.000.

Wild, Ernst: *See—*
Steinbrenner, Ulrich; Denz, Helmut; and Wild, Ernst, 5,186,153, Cl. 123-519.000.

Wildes, Douglas G.; and Hayashi, Steven R., to General Electric Company. Programmable surface sensor for machining rough stock. 5,187,669, Cl. 364-474.170.

Wildfeuer, Herbert M.: *See—*
Guy, Kenneth R.; Kameya, Andrew M.; and Wildfeuer, Herbert M., 5,187,591, Cl. 358-425.000.

Wilkinson, William T. Aerobic resistance exercise garment. 5,186,701, Cl. 482-125.000.

Will, John H.; and Grimm, William L., to Case Corporation. On-land plow assembly with a plurality of adjustable plow units. 5,186,261, Cl. 172-285.000.

Willette, John: *See—*
Lagace, Maurice P.; Boucher, Stephen G.; Cullen, Robert M.; Noyes, Andrew L.; Willette, John; and Russell, Cynthia M., 5,186,050, Cl. 73-187.000.

Willi, Marco, to Estro S.r.l. Coffee brewing machine. 5,186,096, Cl. 99-282.000.

Williams, Darrel H.: *See—*
Wehr, Don H., 5,186,010, Cl. 62-112.000.

Williams, David R.; and Ryles, Christine W., to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Flavor for peroxide-bicarbonate oral compositions. 5,186,926, Cl. 424-53.000.

Williams Dispenser Corporation: *See—*
Williams, John E., 5,186,361, Cl. 222-95.000.

Williams, Donald G.: *See—*
Kovacich, John A.; Hoinsky, Christopher C.; Williams, Donald G.; and Schiesser, Robert A., 5,186,055, Cl. 73-727.000.

Williams Electronics Games, Inc.: *See—*
Biagi, Carl; Ritchie, Steve; and Sullivan, Dwight, 5,186,462, Cl. 273-129.00S.

Williams, Joel L.; and Shepard, Thomas A., to Becton, Dickinson and Company. Method for lubricating articles. 5,186,972, Cl. 427-2.000.

Williams, John E., to Williams Dispenser Corporation. Spray dispenser having manual actuator for generating and storing product-expelling energy. 5,186,361, Cl. 222-95.000.

Williams, Philip G.: *See—*
Andres, Hendrik; Morimoto, Hiromi; and Williams, Philip G., 5,186,868, Cl. 252-645.000.

Williams, Richard S.: *See—*
Samuel, David N.; and Williams, Richard S., 5,186,991, Cl. 428-35.800.

Williamson, Gregory L.; Kendrick, Larry E.; and Phelps, Weldon L., to Caterpillar Inc. Fault tolerant serial communications network. 5,187,709, Cl. 370-85.300.

Willison, Kraig R.: *See—*
Phillips, Roger W.; and Willison, Kraig R., 5,186,787, Cl. 156-631.000.

Willms, Lothar: *See—*
Ort, Oswald; Willms, Lothar; Bauer, Klaus; Bieringer, Hermann; and Schulz, Arno, 5,186,736, Cl. 504-225.000.

Wills, William L.: *See—*
Hallden-Abberton, Michael P.; and Wills, William L., 5,186,993, Cl. 428-36.920.

Willson, Tracy A.: *See—*
Gearing, David P.; Gough, Nicholas M.; Hilton, Douglas J.; King, Julie A.; Metcalf, Donald; Nice, Edouard C.; Nicola, Nicos A.; Simpson, Richard J.; and Willson, Tracy A., 5,187,077, Cl. 435-69.100.

Wilmsmann, Ute: *See—*
Fuchs, Helmut; Wilmsmann, Ute; and Fuhrmeister, Lothar, 5,186,651, Cl. 439-495.000.

Wilson, John W.; and Bermel, Alexandra D., to Eastman Kodak Company. Toners and developers containing ester-containing quaternary ammonium salts as charge control agents. 5,187,037, Cl. 430-110.000.

Winchester, Donald M. Vertical lift conveyor. 5,186,310, Cl. 198-626.500.

Wind, Heinz: *See—*
Kallinich, Dietmar; Kahlert, Wolfgand; Wind, Heinz; and Lehmann, Friedrich, 5,186,217, Cl. 138-149.000.

Windges, Bernd; and Leifeld, Ferdinand, to Trutzschler GmbH & Co. KG. Device for sealing a gap between two relatively moving surfaces. 5,186,473, Cl. 277-81.00R.

Wingert, Horst; Sauter, Hubert; Brand, Siegbert; Wenderoth, Bernd; Lorenz, Gisela; and Ammermann, Eberhard, to BASF Aktiengesellschaft. Thiocarboxylic esters and fungicides containing them. 5,187,170, Cl. 514-351.000.

Winkler & Dunnebier: *See—*
Doderer-Winkler, Alfred, 5,186,705, Cl. 493-215.000.

Winstrom, William L.: *See—*
Terry, Reese S., Jr.; Varrichio, Anthony J.; Winstrom, William L.; and Stanislaw, Henry, 5,186,170, Cl. 128-419.00R.

VOL 1147 ISS 3 FE 16 1993 UMI

Wirt, Thomas M., to Rockwell International Corporation. Tuner for ring laser gyro dither mechanism. 5,187,544, Cl. 356-350.000.

Wirtgen, Reinhard. Planing device for planing down road surfaces. 5,186,575, Cl. 404-96.000.

Wisconsin Alumni Research Foundation: *See*—
White, Victor E., 5,187,726, Cl. 378-35.000.

Wise, James J.; and Doherty, John A. Apparatus for spreading granular and liquid materials. 5,186,396, Cl. 239-675.000.

Wise, Lawrence D.: *See*—
Jaen, Juan C.; Nickell, David G.; Reynolds, Donna M.; Smith, Sarah J.; Wise, Lawrence D.; and Wustrow, David J., 5,187,280, Cl. 546-255.000.

Witco Corporation: *See*—
Chen, Bing-Lin, 5,187,215, Cl. 524-224.000.

Witting, Harald L.: *See*—
El-Hamamsy, Sayed-Amr A.; and Witting, Harald L., 5,187,412, Cl. 315-248.000.

Wixey, Barry D., to Delta International Machinery Corp. Wood lathe with sliding, horizontally-rotatable headstock and variable speed drive. 5,186,088, Cl. 82-142.000.

Wleklinski, Bernhard, to Westfalia Becorit Industritechnik GmbH. Transfer station for transferring material between conveyors in a mine working. 5,186,309, Cl. 198-606.000.

WNC-Nitrochemie GmbH: *See*—
Miehling, Wolfgang, 5,186,871, Cl. 264-3.300.

Wodek, Gary M.: *See*—
Tyson, Scott M.; and Wodek, Gary M., 5,187,113, Cl. 437-42.000.

Wokeck, Arthur C.; and Opuszenski, Theodore, to Clinton Industries, Inc. Garment stacker apparatus. 5,186,600, Cl. 414-793.400.

Wolber, Paul K.: *See*—
Gutterson, Neal I.; Tucker, William T.; and Wolber, Paul K., 5,187,061, Cl. 435-5.000.

Wolf, Elmar, to Huels Aktiengesellschaft. Method of manufacturing polyetherurethane urea amines, and use of same. 5,187,253, Cl. 528-49.000.

Wolf, Michael. Sheeting slitter. 5,186,091, Cl. 83-649.000.

Wolf, Peter A.: *See*—
Johnson, David U., III; Conner, Charles J.; and Wolf, Peter A., 5,187,479, Cl. 341-6.000.
Manley, John A.; Belvo, Aaron J.; Platt, Todd C.; Bruce, Andrew D.; and Wolf, Peter A., 5,186,443, Cl. 270-1.100.

Wolfe, Alvin: *See*—
Gagne, Eugene; and Wolfe, Alvin, 5,185,895, Cl. 5-86.100.

Wolinski, Michael R.: *See*—
Clark, Paul H.; Hill, Robert P.; and Wolinski, Michael R., 5,187,780, Cl. 395-325.000.

Wolner, James T.; and Engh, Duncan C., to D B Industries, Inc. Retractable lifeline safety device. 5,186,289, Cl. 188-180.000.

Wolter, Raymond R.: *See*—
Blaeser, David J.; and Wolter, Raymond R., 5,187,625, Cl. 360-104.000.

Wong, Hee, to National Semiconductor Corporation. Frequency shift keying modulator. 5,187,721, Cl. 375-62.000.

Wong, John M.: *See*—
Fellows, Mark W.; Wong, John M.; Toy, Edmond; Erhardt, Robert A.; and Thomsen, James A., 5,187,414, Cl. 315-307.000.

Wood, Edward T.; Surgnier, David H.; and Brooks, Robert T., to CTC International Corporation. Horizontal inflation tool. 5,186,258, Cl. 166-387.000.

Wood, Fred G.; Poirier, David C.; Campbell, Douglas C.; Ludwig, Howard H.; and Westphal, Patrick J., to General Motors Corporation. Selectable damping vehicle suspension control responsive to engine torque. 5,186,487, Cl. 280-707.000.

Woodard, Kenneth E., Jr.: *See*—
Ford, James M.; Cawlfield, David W.; and Woodard, Kenneth E., Jr., 5,186,804, Cl. 204-251.000.

Woodford, Richard L. Tooth cleaning toy for cats and method for its manufacture. 5,186,124, Cl. 119-29.000.

Woodgate, Terence A., to GTE Rotaflex Limited. Light fitting. 5,186,534, Cl. 362-419.000.

Woodhall, Edward W.; and Kondrats, Nicholas, to Cal-West Equipment Company, Inc. Protective coating and method of using such coating. 5,186,978, Cl. 427-154.000.

Woods, John; Guthrie, John; and Coakley, Pauline, to Loctite (Ireland) Limited. Photoresists formed by polymerization of di-unsaturated monomers. 5,187,048, Cl. 430-286.000.

Worrell, Barry C.: *See*—
Kushmaul, Thomas R.; and Worrell, Barry C., 5,186,075, Cl. 74-552.000.

Wozney, John M.; Wang, Elizabeth A.; Rosen, Vicki A.; and Celeste, Anthony J., to Genetics Institute, Inc. DNA sequences encoding BMP-6 proteins. 5,187,076, Cl. 435-69.100.

Wright, Eric W.; Lecznar, Mark T.; and Klena, Thomas J., II, to TRW Vehicle Safety Systems, Inc. Air bag module. 5,186,492, Cl. 280-743.000.

Wu, Chengjiu; Nahata, Ajay; McFarland, Michael J.; Horn, Keith; and Yardley, James T., to Allied-Signal Inc. Electro-optical materials and light modulator devices containing same. 5,186,865, Cl. 252-582.000.

Wu, Chi-Liu: *See*—
Phillips, Gerald A.; Wu, Chi-Liu; Goldman, Marvin A.; Goldman, Jerome N.; and Goldman, Terry I., 5,186,122, Cl. 119-15.000.

Wu, Chia L. Chain connector. 5,186,569, Cl. 403-154.000.

Wu, Eleanor: *See*—
Malleo-Roach, John A.; Rutkowski, Paul W.; and Wu, Eleanor, 5,187,712, Cl. 371-22.100.

Wu, Frank H. Y.: *See*—
Tzong, Tsair-Jyh; Wu, Frank H. Y.; and Tsai, Chan-Feng, 5,186,822, Cl. 210-122.000.

Wuestmann, David E.: *See*—
Ott, Conrad L.; Wuestmann, David E.; and Maiolo, Louis, 5,187,768, Cl. 385-140.000.

Wustrow, David J.: *See*—
Jaen, Juan C.; Nickell, David G.; Reynolds, Donna M.; Smith, Sarah J.; Wise, Lawrence D.; and Wustrow, David J., 5,187,280, Cl. 546-255.000.

Wymelenberg, Mark J. V., to General Motors Corporation. Electrical female terminal. 5,186,663, Cl. 439-843.000.

Xerox Corporation: *See*—
Bloomberg, Dan S.; and Kopec, Gary E., 5,187,753, Cl. 382-46.000.
Burger, William R., 5,187,498, Cl. 346-140.00R.
Cherian, Abraham, 5,187,524, Cl. 355-260.000.
Farrell, Michael E.; Austin, John C.; Kinder, Carla J.; and Matysek, James F., 5,187,587, Cl. 358-296.000.
Meyer, Robert J., 5,187,039, Cl. 430-126.000.
Stemmle, Denis J., 5,187,588, Cl. 358-296.000.
Yu, Robert C. U., 5,187,496, Cl. 346-135.100.

Yab Revo-Tech Inc.: *See*—
Boudreault, Yvon; Boudreault, Steven; and Jalbert, Fernand, 5,186,714, Cl. 604-21.000.

Yacobellis, Tom. Method for cleaning and removing harmful microorganisms from an air conditioning systems. 5,186,759, Cl. 134-21.000.

Yada, Hiroshi: *See*—
Masumoto, Isamu; Mizutani, Zenpei; Yada, Hiroshi; and Hara, Yoshihito, 5,187,218, Cl. 524-317.000.

Yagi, Takayuki: *See*—
Miyazaki, Toshihiko; Nose, Hiroyasu; Yagi, Takayuki; Kawase, Toshimitsu; and Shinjo, Katsuhiko, 5,187,367, Cl. 250-306.000.

Yagihara, Morio: *See*—
Katoh, Kazunobu; Okamura, Hisashi; Okada, Hisashi; Inoue, Nobuaki; Takahashi, Toshiro; Yagihara, Morio; and Yamaguchi, Tetsuo, 5,187,042, Cl. 430-264.000.

Yaginuma, Yoshitaka, to Mitsubishi Nuclear Fuel Co. Apparatus for inspecting peripheral surfaces of nuclear fuel pellets. 5,186,887, Cl. 376-248.000.

Yahata, Nobuhiro: *See*—
Kikuchi, Haruhiko; Satoh, Hiroaki; Yahata, Nobuhiro; Hagihara, Koichiro; Hayakawa, Toru; Mino, Setsuko; and Yanai, Makoto, 5,187,166, Cl. 514-249.000.

Yamada, Atsushi, to Mutoh Industries Ltd. Pen exchanging mechanism in automatic drafter. 5,187,493, Cl. 346-49.000.

Yamada, Hirofumi: *See*—
Tsuda, Nobuhiro; Yamada, Hirofumi; Kado, Hiroyuki; and Tohda, Takao, 5,186,789, Cl. 156-659.100.

Yamada, Kunihiko: *See*—
Kaneda, Kitahiro; Yamada, Kunihiko; Fujiwara, Akihiro; Suda, Hirofumi; and Toyama, Masamichi, 5,187,585, Cl. 358-227.000.

Yamada, Masakatsu: *See*—
Ono, Takeshi; Wada, Satoshi; Kobayashi, Makoto; Yoshida, Takehiro; Takeda, Tomoyuki; Ishida, Yasushi; Yokoyama, Minoru; Tomoda, Akihiro; Yamada, Masakatsu; and Awai, Takashi, 5,187,494, Cl. 346-76.0PH.

Yamada, Minoru; Toyoda, Takashi; and Yamada, Sumito, to Fuji Photo Film Co., Ltd. Method for automatic processing of silver halide photographic material. 5,187,050, Cl. 430-399.000.

Yamada, Sumito: *See*—
Yamada, Minoru; Toyoda, Takashi; and Yamada, Sumito, 5,187,050, Cl. 430-399.000.

Yamada, Takeshi: *See*—
Sugiura, Hideo; Yamada, Takeshi; and Iga, Ryuzo, 5,186,750, Cl. 118-50.100.

Yamagishi, Yoichi: *See*—
Kimura, Norio; and Yamagishi, Yoichi, 5,187,616, Cl. 360-61.000.

Yamaguchi, Nobuo: *See*—
Miyake, Hiraku; Ishiguro, Mitsuo; Abe, Shigetaka; Yamaguchi, Nobuo; Hayamizu, Yutaka; and Aizawa, Satoru, 5,185,976, Cl. 52-167.0RA.

Yamaguchi, Shuichiro; Uchida, Naoto; Kasai, Satoru; Shimomura, Takeshi; and Oyama, Noboru, to Terumo Kabushiki Kaisha. Film-coated sensor. 5,186,808, Cl. 204-418.000.

Yamaguchi, Takeshi: *See*—
Fukumi, Hiroshi; Sakamoto, Toshiaki; Sugiyama, Mitsuo; Yamaguchi, Takeshi; Oshima, Takeshi; and Iijima, Yasuteru, 5,187,181, Cl. 514-318.000.

Yamaguchi, Tetsuo: *See*—
Katoh, Kazunobu; Okamura, Hisashi; Okada, Hisashi; Inoue, Nobuaki; Takahashi, Toshiro; Yagihara, Morio; and Yamaguchi, Tetsuo, 5,187,042, Cl. 430-264.000.

Yamaha Corporation: *See*—
Harada, Mutsumi; Kato, Nobuji; Hayashi, Yoshinori; Hoshi, Toshiharu; and Iijima, Kenzaburo, 5,187,022, Cl. 428-694.000.
Inoue, Toshihiro, 5,187,313, Cl. 84-622.000.
Kunimoto, Toshifumi; and Kobayashi, Kaoru, 5,187,314, Cl. 84-626.000.
Muramatsu, Shigeru; Watanabe, Keisuke; and Mishima, Junichi, 5,187,315, Cl. 84-688.000.

Yamaha Hatsudoki Kabushiki Kaisha: *See*—
Ueda, Hideaki; and Isumi, Hiroshi, 5,186,140, Cl. 123-308.000.

Yamaichi Electric Co., Ltd.: *See*—
Matsuoka, Noriyuki; and Uratsuji, Kazumi, 5,186,642, Cl. 439-268.000.
Uratsuji, Kazumi, 5,186,641, Cl. 439-266.000.

Yamaji, Michio: *See*—
Nishimura, Ryutaro; Yamaji, Michio; Maeda, Hirokatsu; Ikeda, Nobukazu; and Yamamoto, Kenji, 5,186,434, Cl. 251-331.000.

Yamakado, Makoto: *See*—
Kadomukai, Yuzo; Yamakado, Makoto; Maeda, Yuji; Nakamura, Kenichi; Fukushima, Masao; and Murakami, Kei, 5,186,136, Cl. 123-192.100.

Yamakawa, Noboru: *See*—
Nariishi, Masaaki; Yamakawa, Noboru; Obba, Osamu; and Seki, Naoyasu, 5,187,556, Cl. 257-206.000.

Yamamoto, Akira; Kitajima, Hiroyuki; Kurano, Akira; Miyazaki, Michio; Nozawa, Masafumi; and Takeuchi, Takikazu, to Hitachi, Ltd. Buffered disk unit and method of transferring data therein. 5,187,778, Cl. 395-250.000.

Yamamoto, Hirohisa: *See*—
Nakashima, Yuichi; Tomikawa, Mitsuhiro; and Yamamoto, Hirohisa, 5,187,558, Cl. 257-420.000.

Yamamoto, Kazuyuki: *See*—
Kosemura, Katsura; and Yamamoto, Kazuyuki, 5,187,574, Cl. 358-108.000.

Yamamoto, Ken; Nakagawa, Kazufumi; and Hori, Isao, to NTN Corporation. Autotensioner. 5,186,689, Cl. 474-112.000.

Yamamoto, Ken, to NTN Corporation. Autotensioner. 5,186,690, Cl. 474-135.000.

Yamamoto, Kenji: *See*—
Nishimura, Ryutaro; Yamaji, Michio; Maeda, Hirokatsu; Ikeda, Nobukazu; and Yamamoto, Kenji, 5,186,434, Cl. 251-331.000.

Yamamoto, Makoto: *See*—
Tera, Isao; Kato, Kohji; Yamamoto, Makoto; Hashimoto, Kazuto; and Yasumura, Hitoshi, 5,187,227, Cl. 525-65.000.

Yamamoto, Takahiko: *See*—
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, 5,187,148, Cl. 505-1.000.

Yamamoto, Tohei: *See*—
Kamachi, Mikiharu; Yamamoto, Tohei; Sato, Toshiaki; and Fukunishi, Yoshiharu, 5,187,226, Cl. 525-56.000.

Yamamoto, Toshio; Matsukura, Yoshiaki; Ohe, Osamu; Ogawa, Hisao; Ishidoya, Masahiro; and Matsubara, Yoshiro, to Nippon Oil and Fats Company, Ltd. Pigment dispersing agent. 5,187,229, Cl. 525-123.000.

Yamamoto, Yasuo: *See*—
Yoshinari, Tomohiro; Usui, Kazushi; Yamamoto, Yasuo; and Ohi, Mitsuru, 5,187,133, Cl. 502-66.000.

Yamamoto, Yoshihiko: *See*—
Haruta, Kenyu; Nagai, Haruhiko; Nakatani, Hajime; Yamamoto, Yoshihiko; Takemura, Taketoshi; Eura, Takashi; Tsuboi, Shungo; Matsushita, Yoshifumi; and Minagawa, Tadao, 5,187,716, Cl. 372-57.000.

Yamamoto, Yoshihiro; Takaki, Usaji; Aoki, Shinobu; Inoue, Yoshihisa; and Hara, Isao, to Mitsui Toatsu Chemicals, Inc. Process for the preparation of indigo compounds. 5,187,283, Cl. 548-457.000.

Yamamoto, Yuichi: *See*—
Abe, Masatoshi; Yamamoto, Yuichi; and Naraki, Akihiro, 5,187,222, Cl. 524-492.000.

Yamanaka, Eiji: *See*—
Tsuboniwa, Noriyuki; Yamanaka, Eiji; and Urano, Satoshi, 5,187,306, Cl. 560-157.000.

Yamaoka, Fumiyuki; and Kakizaki, Shinobu, to Atsugi Unisia Corporation. Load sensor. 5,186,043, Cl. 73-118.100.

Yamasaki, Harumasa: *See*—
Mishima, Masayuki; Yamasaki, Harumasa; Matsuse, Takashi; Sakuma, Tadashi; and Togashi, Hiroyasu, 5,187,310, Cl. 556-413.000.

Yamashita, Kazuhiro: *See*—
Hashimoto, Kazuhiko; Yamashita, Kazuhiro; and Nomura, Noboru, 5,186,788, Cl. 156-643.000.

Yamashita, Kazuo; Takeuchi, Yoshihiko; and Watanabe, Masahiro, to Nihon Musen Kabushiki Kaisha. Composite longitudinal vibration mechanical filter having central frequency deviation elimination means and method of manufacturing same. 5,187,458, Cl. 333-197.000.

Yamashita, Masataka: *See*—
Terada, Masahiro; Togano, Takeshi; Yamashita, Masataka; Katagiri, Kazuharu; Takiguchi, Takao; Shinjo, Kenji; Kitayama, Hiroyuki; and Nakamura, Shinichi, 5,186,858, Cl. 252-299.610.

Yamazaki, Shunpei, to Semiconductor Energy Laboratory Co., Ltd. Photoelectric conversion device with Al/Cr/TCO electrode. 5,187,563, Cl. 257-53.000.

Yamazaki, Shunpei; Fukada, Takeshi; Sakama, Mitsunori; Amachi, Nobumitsu; Sakamoto, Naoya; Codama, Mitsufumi; Fuki, Takashi; and Takayama, Ichiro, to Semiconductor Energy Laboratory Co., Ltd. Method for making a high contrast liquid crystal display including laser scribing opaque and transparent conductive strips simultaneously. 5,187,601, Cl. 359-54.000.

Yanadori, Michio: *See*—
Kunugi, Yoshifumi; Yanadori, Michio; Fukushima, Toshihiko; and Ohuchi, Tomihisa, 5,186,241, Cl. 165-104.120.

Yanagawa, Takashi: *See*—
Hiki, Susumu; Yanagawa, Takashi; and Uchiumi, Isao, 5,186,176, Cl. 128-661.010.

Yanagi, Motonori; Hama, Masaharu; Fukumoto, Takaaki; and Tsukaguchi, Miki, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for treating organic waste gas. 5,186,907, Cl. 422-186.300.

Yanagida, Yoshiaki: *See*—
Ohmi, Ikuhiro; Yanagida, Yoshiaki; Matsuyama, Soichi; and Ikuta, Yoshihisa, 5,186,449, Cl. 271-10.000.

Yanagisawa, Kazumasa: *See*—
Sato, Katsnyuki; Kawamoto, Hiroshi; and Yanagisawa, Kazumasa, 5,187,685, Cl. 365-189.090.

Yanagisawa, Masayuki, to NEC Corporation. Semiconductor device. 5,187,550, Cl. 257-301.000.

Yanai, Makoto: *See*—
Kikuchi, Haruhiko; Satoh, Hiroaki; Yahata, Nobuhiro; Hagihara, Koichiro; Hayakawa, Toru; Mino, Setsuko; and Yanai, Makoto, 5,187,166, Cl. 514-249.000.

Yang, Shyh-Ching; and Chen, Li-Chiang, to Industrial Technology Research Institute. Swirl generator with axial vanes. 5,186,607, Cl. 415-183.000.

Yanker, Peter C., to International Business Machines Corp. Image editor zoom function. 5,187,776, Cl. 395-157.000.

Yao, Raymond C.: *See*—
Hamill, Robert L.; Hunt, Ann H.; Nagarajan, Ramakrishnan; Schabel, Amelia A.; and Yao, Raymond C., 5,187,082, Cl. 435-71.300.

Yardley, James T.: *See*—
Wu, Chengjiu; Nahata, Ajay; McFarland, Michael J.; Horn, Keith; and Yardley, James T., 5,186,865, Cl. 252-582.000.

Yardley, James V.; Whatcott, Gary L.; Petersen, John A. M.; and Schutten, Herman P., to Eaton-Kenway, Inc. Proportional position-sensing system for an antomatic guided vehicle. 5,187,664, Cl. 364-424.020.

Yashiki, Atushi: *See*—
Yoneyama, Hiroto; Yashiki, Atushi; and Kodama, Toshiyuki, 5,187,810, Cl. 455-34.100.

Yaso, Masao: *See*—
Sbuto, Satoshi; Obara, Takumi; Itoh, Hiromichi; Koshio, Takehiro; Fujiwara, Tatsuro; and Yaso, Masao, 5,187,174, Cl. 514-261.000.

Yasumura, Hitoshi: *See*—
Tera, Isao; Kato, Kohji; Yamamoto, Makoto; Hashimoto, Kazuto; and Yasumura, Hitoshi, 5,187,227, Cl. 525-65.000.

Yazaki Corporation: *See*—
Abe, Kimihiro, 5,186,657, Cl. 439-595.000.
Abe, Kimihiro, 5,186,664, Cl. 439-845.000.

Ye Data Inc.: *See*—
Hashimoto, Kunihiro; Tsukamoto, Chiharu; and Kawakubo, Chiharu, 5,187,614, Cl. 360-45.000.

Yeh, Charles R.; and Huldin, Donald H., to Acuderm, Inc. Crescent shaped biopsy punch. 5,186,178, Cl. 128-754.000.

Yehl, James E., to American Environmental Systems, Inc. Surface cleaning apparatus and method. 5,187,635, Cl. 361-231.000.

Yie, Gene G., to Fluidyne Corporation. On-off valves and pressure regulators for high-pressure fluids. 5,186,393, Cl. 239-583.000.

Yip, William C.; and Barron, David L., to Motorola, Inc. Efficient codebook search for CELP vocoders. 5,187,745, Cl. 381-36.000.

Yli-Vakkuri, Erkki P. J.: *See*—
Ikola, Kimmo J.; Stenman, Kimmo E.; and Yli-Vakkuri, Erkki P. J., 5,185,959, Cl. 51-72.00R.

Yokelson, Howard B.; Han, James H.; and Felberg, Jeff J., to Amoco Corporation. Amide-imide resin having phthalic anhydride moieties. 5,187,254, Cl. 528-73.000.

Yokota, Yoshiyuki: *See*—
Terui, Sadao; and Yokota, Yoshiyuki, 5,187,137, Cl. 502-241.000.

Yokoyama, Kenzo: *See*—
Hayashi, Yasuaki; Tomita, Tadashi; Yokoyama, Kenzo; Suzuki, Setsuji; and Uno, Yoshihito, 5,186,687, Cl. 464-144.000.

Yokoyama, Minoru: *See*—
Ono, Takeshi; Wada, Satoshi; Kobayashi, Makoto; Yoshida, Takehiro; Takeda, Tomoyuki; Ishida, Yasushi; Yokoyama, Minoru; Tomoda, Akihiro; Yamada, Masakatsu; and Awai, Takashi, 5,187,494, Cl. 346-76.0PH.

Yokoyama, Takashi, to Stanley Electric Co., Ltd. Device for mounting lamp on lamp mount. 5,186,535, Cl. 362-226.000.

Yonemaru, Masashi, to Sharp Kabushiki Kaisha. Serial-to-parallel type analog-digital converting apparatus and operating method thereof. 5,187,483, Cl. 341-156.000.

Yoneyama, Hiroto; Yashiki, Atushi; and Kodama, Toshiyuki, to Oki Electric Industry Co., Ltd. Route guidance system for provding a mobile station with optimum route data in response to a guidance request together with base station data indicative of an identification of a base station. 5,187,810, Cl. 455-34.100.

Yonezawa, Akihiro: *See*—
Araki, Kenji; Sasaki, Hiroki; Yonezawa, Akihiro; and Mitsuyuki, Youichirou, 5,187,413, Cl. 315-291.000.

Yonezawa, Takeyuki: *See*—
Goto, Yasuhiro; Yonezawa, Takeyuki; Ohnuma, Yoshiyuki; and Ando, Jen, 5,187,127, Cl. 501-95.000.

Yoon, Seok Y., to Goldstar Co., Ltd. Apparatus for loading disc records of different size in a compact disc player. 5,187,700, Cl. 369-75.100.

Yorkgitis, Elaine M.; and Melancon, Kurt C., to Minnesota Mining and Manufacturing Company. Ice release composition, article and method. 5,187,015, Cl. 428-447.000.

Yoshibe, Koshi: *See*—
Imanari, Hitoshi; and Yoshibe, Koshi, 5,187,513, Cl. 354-195.100.

Yoshida, Akira: *See*—
Kusafuka, Noboru; Yoshida, Akira; Tsuyuki, Susumu; Seko, Tatsushi; Tsutsui, Yoshimitsu; Miki, Toshio; and Mouri, Ryoji, 5,186,407, Cl. 242-56.200.

Yoshida, Hajime, to Hajime Industries. Inspection method and apparatus. 5,187,573, Cl. 358-106.000.

Yoshida, Hiroyoshi; and Koishi, Yuki, to Matsushita Electric Industrial Co., Ltd. Method for bonding a semiconductor device to a lead frame die pad using plural adhesive spots. 5,187,123, Cl. 437-220.000.

VOL
1147
ISS
3
FE
16
1993
UMI

Yoshida, Katsuhito; and Tsuji, Kazuwo, to Sumitomo Electric Industries, Ltd. Ohmic electrode for n-type cubic boron nitride and the process for manufacturing the same. 5,187,560, Cl. 257-76.000.
Yoshida Kogyo K. K.: *See*—
Yunoki, Akio, 5,185,912, Cl. 29-408.000.
Yoshida, Michiyasu: *See*—
Murata, Shinichi; Nakamura, Noboru; Yoshida, Michiyasu; and Miayamoto, Hideki, 5,186,128, Cl. 123-90.160.
Yoshida, Minoru: *See*—
Shiba, Masataka; Inagaki, Akira; Yoshida, Minoru; Ito, Kenchi; and Kawamoto, Kazumi, 5,187,756, Cl. 385-7.000.
Yoshida, Nobuo; Nishida, Kenziro; and Inoue, Noboru, to Nippon Kayaku Kabushiki Kaisha. Auto ignition device. 5,186,491, Cl. 280-741.000.
Yoshida, Noriyuki; Takano, Satoshi; Okuda, Shigeru; Hayashi, Noriki; Hara, Tsukushi; Okaniwa, Kiyoshi; and Yamamoto, Takahiko, to Sumitomo Electric Industries; and Tokyo Electric Power Company, Inc., The. Apparatus for preparing oxide superconducting film. 5,187,148, Cl. 505-1.000.
Yoshida, Takehiro: *See*—
Ono, Takeshi; Wada, Satoshi; Kobayashi, Makoto; Yoshida, Takehiro; Takeda, Tomoyuki; Ishida, Yasushi; Yokoyama, Minoru; Tomoda, Akihiro; Yamada, Masakatsu; and Awai, Takashi, 5,187,494, Cl. 346-76.0PH.
Yoshida, Toyonobu: *See*—
Mizuno, Koichi; Wakabayashi, Takeshige; Koinuma, Yutaka; Aizawa, Reiji; Kushiyama, Satoshi; Kabayashi, Satoru; Ohuchi, Hideo; Yoshida, Toyonobu; Kubota, Yoshiro; Amano, Takanobu; Komaki, Hisashi; and Hirakawa, Shoji, 5,187,344, Cl. 219-121.500.
Yoshida, Yuji; Tagashira, Minoru; Nakatani, Kazuo; and Funakura, Masami, to Matsushita Electric Industrial Co., Ltd. Refrigerant cycling apparatus. 5,186,011, Cl. 62-114.000.
Yoshihiro, Ikenaga; and Takeji, Kobata, to Social Welfare Foundation Hokkaido Rehability, The. Process for removing NO_x and SO_2 utilizing activated carbon. 5,186,914, Cl. 423-239.000.
Yoshikawa, Susumu; Kumagai, Junpei; Sawada, Shizuo; and Matsumoto, Yasuo, to Kabushiki Kaisha Toshiba. Semiconductor memory and method of manufacturing the same. 5,187,566, Cl. 257-301.000.
Yoshimori, Hideji: *See*—
Hattori, Hiroshi; Yoshimori, Hideji; Kondoh, Kazuhiro; and Madama, Akira, 5,186,551, Cl. 400-61.000.
Yoshimura, Masazi: *See*—
Shimizu, Kazuyuki; Harada, Satoshi; and Yoshimura, Masazi, 5,187,410, Cl. 315-241.00P.
Yoshimura, Shigeo: *See*—
Ishino, Renshiro; Yoshimura, Shigeo; Sunahata, Mutsumi; Saito, Taro; and Tanizaki, Yasuo, 5,186,059, Cl. 73-862.193.
Yoshinaga Corporation: *See*—
Yoshinaga, Shigeo; Ikegami, Tatsuo; and Osaki, Seiji, 5,186,562, Cl. 401-112.000.
Yoshinaga, Shigeo; Ikegami, Tatsuo; and Osaki, Seiji, to Yoshinaga Corporation. Elongate handwriting implement with rotatable decoration on rear end. 5,186,562, Cl. 401-112.000.
Yoshinari, Tomohiro; Usui, Kazushi; Yamamoto, Yasuo; and Ohi, Mitsuru, to Cosmo Oil Co., Ltd.; and Petroleum Energy Center. Catalyst composition for hydrotreating of hydrocarbons and hydrotreating process using the same. 5,187,133, Cl. 502-66.000.
Yoshioka, Mamoru; Sugiyama, Toshihisa; and Kidokoro, Toru, to Toyota Jidosha Kabushiki Kaisha. Internal combustion engine with a dual turbocharger system. 5,186,005, Cl. 60-600.000.
Yoshizawa, Atsushi; and Matsui, Fumio, to Pioneer Electronic Corporation. Optical disk. 5,186,995, Cl. 428-64.000.
Yoshizuka, Ken: *See*—
Sugiyama, Tsukasa; and Yoshizuka, Ken, 5,187,533, Cl. 355-309.000.
Young, Darryl L.; Hirmann, Josef; Rhodes, Eugene E.; and Brightwell, David L., to Ford Motor Company. Heat exchanger with thermal stress relieving zone. 5,186,239, Cl. 165-81.000.
Young Dental Manufacturing Company: *See*—
Bailey, Ronald L., 5,186,625, Cl. 433-88.000.
Young Industries, The: *See*—
Ambs, Richard W.; and Kelchner, Steven, 5,186,312, Cl. 198-716.000.
Young, Thomas D.: *See*—
Davenport, Marcus K.; Shipman, Richard K.; Young, Thomas D.; and Strode, Stephen H., 5,187,739, Cl. 379-155.000.
Youngdale, Gilbert A.: *See*—
Johnson, Roy A.; Bundy, Gordon L.; Youngdale, Gilbert A.; Morton, Douglas R.; Wallach, Donald P., deceased; and Wallach, Legal Representative, by Vera M., 5,187,299, Cl. 552-522.000.
Yu, Hong: *See*—
Carr, William N.; Yu, Hong; and Cho, Dong-Il D., 5,187,399, Cl. 310-40.0MM.
Yu, Linda: *See*—
Fung, Daniel Y. C.; and Yu, Linda, 5,187,070, Cl. 435-25.000.
Yu, Robert C. U., to Xerox Corporation. Flexible electrographic imaging member. 5,187,496, Cl. 346-135.100.
Yuasa Battery Co., Ltd.: *See*—
Sasaki, Takashi; Ishigaki, Isao; Izuchi, Syuichi; and Noda, Tomohiko, 5,187,032, Cl. 429-192.000.
Yuasa, Katsuhiko; Amemiya, Shinji; and Nagamine, Akira, to AMP Incorporated. Double locking-type electrical connector. 5,186,662, Cl. 439-752.000.
Yue, Stephen: *See*—
Hunt, Patrick J.; Jonas, John J.; Yue, Stephen; Ruddle, George E.; and Pussegoda, Lakshman N., 5,186,769, Cl. 148-593.000.
Yuen, Lun T.: *See*—
Zones, Stacey I.; Yuen, Lun T.; and Toto, Susan D., 5,187,132, Cl. 502-64.000.
Yugenkaisha Matsubei: *See*—
Ogiwara, Hiroshi; Miyata, Tatuya; and Oda, Akihiro, 5,186,970, Cl. 426-512.000.
Yukitake, Tugihiro: *See*—
Sohma, Kenichi; Yukitake, Tugihiro; Azuhata, Shigeru; Arashi, Norio; and Tokuda, Hiroatsu, 5,186,146, Cl. 123-435.000.
Yunan, Malak E., to Du Pont de Nemours, E. I., and Company. Fibrillatable PTFE in plastic-bonded explosives. 5,187,320, Cl. 102-275.800.
Yunoki, Akio, to Yoshida Kogyo K. K. Method and guide device for slide fastener chain with cloth pieces attached. 5,185,912, Cl. 29-408.000.
Zaharia, Vlad, to Otis Elevator Company. Starting circuit and method for escalators and moving walks. 5,186,300, Cl. 198-322.000.
Zahner, David. Accessory. 5,186,232, Cl. 160-330.000.
Zahnradfabrik Friedrichshafen AG: *See*—
Nitzschke, Rudiger; and Schetter, Martin, 5,186,070, Cl. 74-477.000.
Zaima, Fumiya: *See*—
Takeda, Mutsuhiko; Hagiwara, Isao; Zaima, Fumiya; and Sakaguchi, Shuzabu, 5,187,311, Cl. 556-428.000.
Zaretsky, Mark C., to Eastman Kodak Company. Method and apparatus of forming a toner image on a receiving sheet using an intermediate image member. 5,187,526, Cl. 355-273.000.
Zausner, Fredrick. Telephone relay cover. 5,187,738, Cl. 379-145.000.
Zeid, Michael R. Support system for hanging items. 5,186,341, Cl. 211-204.000.
Zenios, Stavros A.; and Hutchinson, James M., to Thinking Machines Corporation. Massively-parallel computer system for generating paths in a binomial lattice. 5,187,801, Cl. 395-800.000.
Zenith Electronics Corporation: *See*—
Srivastava, Gopal K., 5,187,567, Cl. 358-21.00R.
Srivastava, Gopal K., 5,187,568, Cl. 358-39.000.
Zenke, Masanobu, to NEC Corporation. Semiconductor capacitor with a metal nitride film and metal oxide dielectric. 5,187,557, Cl. 257-310.000.
Zerbs, Stephen T.: *See*—
Bleich, Larry L.; Nutt, Wendell G.; and Zerbs, Stephen T., 5,187,329, Cl. 174-113.00R.
Zerinvary, Miklos C.; and Nyilas, Charles P., to Westinghouse Electric Corp. Composite nozzle assembly for conducting a flow of molten metal in an electromagnetic valve. 5,186,886, Cl. 266-237.000.
Zexel Corporation: *See*—
Iida, Katsumi, 5,186,682, Cl. 454-75.000.
Zia Patent Company: *See*—
Kotraba, Norman L.; and Holley, Carl A., 5,186,741, Cl. 75-484.000.
Ziaylek, Michael P.: *See*—
Ziaylek, Theodore, Jr.; and Ziaylek, Michael P., 5,185,910, Cl. 24-650.000.
Ziaylek, Theodore, Jr.; and Ziaylek, Michael P., to Ziaylek, Theodore, Jr.; and Ziaylek, Michael P. Reversibly releasable latching apparatus. 5,185,910, Cl. 24-650.000.
Ziegenbein, Botho: *See*—
Stecher, Gunther; Hecht, Hans; Bergfried, Dietrich; Ziegenbein, Botho; and Muehlheim, Richard, 5,186,051, Cl. 73-204.260.
Zilog, Inc.: *See*—
Tran, John; and Khurshid, Mazin, 5,187,686, Cl. 365-189.110.
Zimmerman, John P.: *See*—
Dayan, Richard A.; Lam, Son H.; and Zimmerman, John P., 5,187,792, Cl. 395-725.000.
Zimmermann, Norbert: *See*—
Brueckmann, Ralf; Bury, Willi; Dix, Johannes P.; Herrmann, Manfred; Dlugosch, Waldemar; Kromm, Erich; Letter, Herbert; Zimmermann, Norbert; Kermer, Wolf-Dieter; and Taeger, Klaus, 5,186,846, Cl. 252-8.700.
Zoeller, Joseph R.: *See*—
Blount, William W., Jr.; and Zoeller, Joseph R., 5,187,304, Cl. 560-118.000.
Zommer, Nathan, to IXYS Corporation. Single diffusion process for fabricating semiconductor devices. 5,187,117, Cl. 437-151.000.
Zones, Stacey I.; Yuen, Lun T.; and Toto, Susan D., to Chevron Research and Technology Company. Preparation of borosilicate zeolites. 5,187,132, Cl. 502-64.000.
Zorner, Paul S.: *See*—
Turner, James A.; Zorner, Paul S.; and Jacks, Wendy S., 5,186,735, Cl. 504-242.000.
Zucker, Shlomo: *See*—
Gross, Joseph; and Zucker, Shlomo, 5,186,805, Cl. 204-265.000.
Zuckerman, Ralph, to Drexel University. Method for in vivo measurement of oxygen concentration levels. 5,186,173, Cl. 128-633.000.
Zuffada, Maurizio: *See*—
Vai, Gianfranco; Zuffada, Maurizio; Sacchi, Fabrizio; Moloney, David; and Betti, Giorgio, 5,187,452, Cl. 331-113.00R.
Zumoberhaus, Leo: *See*—
Quittmann, Wilhelm; Zumoberhaus, Leo; and Ruppen, Peter, 5,187,297, Cl. 558-360.000.
Zwicker, Harry R.: *See*—
Newkirk, Marc S.; Urquhart, Andrew W.; Zwicker, Harry R.; and Lesher, H. Daniel, 5,187,130, Cl. 501-97.000.
Zygo Corporation: *See*—
Ebert, Earl W., 5,187,543, Cl. 356-349.000.
ZymoGenetics, Inc.: *See*—
Murray, Mark J.; and Kelly, James D., 5,187,263, Cl. 530-399.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF FEBRUARY, 1993

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Davco Manufacturing Corporation: *See*—
Davis, Leland L., Re. 34,178, Cl. 123-557.000.
Davis, Leland L., to Davco Manufacturing Corporation. Fuel processor apparatus for diesel powered vehicles. Re. 34,178, Cl. 123-557.000.
Eccleston, Larry E., to John Fluke Mfg. Co., Inc. Temperature controlled hybrid assembly. Re. 34,179, Cl. 307-310.000.
Grab, George P.: *See*—
Nemeth, Bela J., deceased; and Grab, George P., Re. 34,180, Cl. 428-547.000.
Imperial Chemical Industries PLC: *See*—
Smallwood, Peter V., Re. 34,181, Cl. 524-312.000.
John Fluke Mfg. Co., Inc.: *See*—
Eccleston, Larry E., Re. 34,179, Cl. 307-310.000.
Kennametal Inc.: *See*—
Nemeth, Bela J., deceased; and Grab, George P., Re. 34,180, Cl. 428-547.000.
Nemeth, Bela J., deceased (by Nemeth, Nancy A., executrix); and Grab, George P., to Kennametal Inc. Preferentially binder enriched cemented carbide bodies and method of manufacture. Re. 34,180, Cl. 428-547.000.
Nemeth, Nancy A., executrix: *See*—
Nemeth, Bela J., deceased; and Grab, George P., Re. 34,180, Cl. 428-547.000.
Smallwood, Peter V., to Imperial Chemical Industries PLC. Treatment of aqueous suspension of vinyl chloride polymers. Re. 34,181, Cl. 524-312.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Eka Nobel AB: *See*—
Norell, Maria, B1 5,002,746, Cl. 423-479.000.
Marum, Steven F.: *See*—
Wise, Janet L.; and Marum, Steven F., B1 4,975,603, Cl. 307-542.000.
Norell, Maria, to Eka Nobel AB. Process for the production of chlorine dioxide. B1 5,002,746, 2-16-93, Cl. 423-479.000.
Texas Instruments Incorporated: *See*—
Wise, Janet L.; and Marum, Steven F., B1 4,975,603, Cl. 307-542.000.
Thunderbird Technologies, Inc.: *See*—
Vinal, Albert W., B1 5,030,853, Cl. 307-451.000.
Vinal, Albert W., to Thunderbird Technologies, Inc. High speed logic and memory family using ring segment buffer. B1 5,030,853, 2-16-93, Cl. 307-451.000.
Wise, Janet L.; and Marum, Steven F., to Texas Instruments Incorporated. Method and circuitry for compensating for negative internal ground voltage glitches. B1 4,975,603, 2-16-93, Cl. 307-542.000.

LIST OF DESIGN PATENTEES

ACCRA Manufacturing, Co.: *See*—
Gilley, Richard J., 333,244, Cl. D8-29.000.
Adams, Fred H., to Adams Products Company. Mortarless masonry block. 333,354, 2-16-93, Cl. D25-118.000.
Adams, Fred H., to Adams Products Company. Mortarless masonry block. 333,355, 2-16-93, Cl. D25-118.000.
Adams Products Company: *See*—
Adams, Fred H., 333,354, Cl. D25-118.000.
Adams, Fred H., 333,355, Cl. D25-118.000.
Aker, Kevin R.; and Fish, Thomas E., Jr., to Little Tikes Company, The. Toy castle. 333,328, 2-16-93, Cl. D21-114.000.
Albright, Michelle N.; and Paglina, Denise M., to Elizabeth Arden Co., Division of Conopco, Inc. Combined bottle and stopper. 333,269, 2-16-93, Cl. D9-544.000.
Albright, Michelle N.; and Paglina, Denise M., to Elizabeth Arden Co., Division of Conopco, Inc. Bottle. 333,270, 2-16-93, Cl. D9-566.000.
Allen, Thomas P.; and Lucas, Robert J., to Nike, Inc.; and Nike International Ltd. Shoe upper. 333,206, 2-16-93, Cl. D2-314.000.
Allied Plastics, Inc.: *See*—
Mankey, Neal N., 333,281, Cl. D11-121.000.
Amber, John M.; Barry, Michael R.; and Yong, Teck, to Beaver Computer Corporation. Portable computer. 333,299, 2-16-93, Cl. D14-106.000.
Ambrosia, Gary: *See*—
Redira, Stan, Jr., 333,350, Cl. D24-206.000.
American Safety Flight Systems: *See*—
Miya, Tomio, 333,349, Cl. D24-164.000.
Andersen Corporation: *See*—
Guhl, James C.; and Weiss, David J., 333,353, Cl. D25-60.000.
Apco Graphics, Inc.: *See*—
Cobb, Ronald W., 333,357, Cl. D25-124.000.
Arlinghaus, Robert P.; Meisner, Edward H.; Charriez, Roland; Millisor, Daniel H.; and Moreno, Victor, to Procter & Gamble Company, The. Jar. 333,268, 2-16-93, Cl. D9-538.000.
Art Plastics International Inc.: *See*—
Horvath, Alex, 333,227, Cl. D6-468.000.
Ashida, Ken'ichiro, to Nintendo Co., Ltd. Electrical connector for a video game system. 333,293, 2-16-93, Cl. D13-147.000.
Aubert, Lawrence J.: *See*—
Bruns, Elizabeth J.; Aubert, Lawrence J.; Fuchs, Paul D.; and Volpenhein, Daniel W., 333,216, Cl. D4-104.000.
Bareiss, Raymond E. Pedestal or similar article. 333,229, 2-16-93, Cl. D6-495.000.
Bareiss, Raymond E. Pedestal or similar article. 333,230, 2-16-93, Cl. D6-495.000.
Bareiss, Raymond E. Pedestal or similar article. 333,231, 2-16-93, Cl. D6-495.000.
Bareiss, Raymond E. Pedestal. 333,232, 2-16-93, Cl. D6-495.000.
Barrett, Garth J. M., to Cube Overseas Trading Limited. Liquid fillable bomb blast inhibitor. 333,335, 2-16-93, Cl. D22-112.000.
Barros, Ronald P.; and Jackson, James. Message sign board. 333,321, 2-16-93, Cl. D20-40.000.
Barry, Michael R.: *See*—
Amber, John M.; Barry, Michael R.; and Yong, Teck, 333,299, Cl. D14-106.000.
Beaver Computer Corporation: *See*—
Amber, John M.; Barry, Michael R.; and Yong, Teck, 333,299, Cl. D14-106.000.
Bertelsen, William P., to Reynolds Metals Company. Roasting pan rack. 333,235, 2-16-93, Cl. D7-403.000.
Bezas, Stephen. Combined retroreflector and delineator for roadways. 333,278, 2-16-93, Cl. D10-113.000.

VOL
1147
ISS
3
FE
16
1993
UMI

Black & Decker, Inc.: *See—*
Hess, Kristoffer A.; Sirois, Michael G.; Hare, Ronald G.; Jackson, Ronald A.; and Gierke, Martin P., 333,309, Cl. D15-14.000.
Breen, John D.; and Scherer, Thomas, to Rubbermaid Office Products Group Inc. Recycling container for mounting to a wastebasket. 333,369, 2-16-93, Cl. D34-10.000.
Breiding, Gregory S.: *See—*
Taniuchi, Takeshi; Shima, Kozo; Breiding, Gregory S.; and Murrell, Spencer B., 333,304, Cl. D14-130.000.
Bridgestone/Firestone, Inc.: *See—*
Hinrichsen, Silvana; and Ceccarelli, Alessandro, 333,285, Cl. D12-142.000.
Bristol-Myers Squibb Company: *See—*
Zogg, Edward, 333,262, Cl. D9-339.000.
Brodmann, Robert A., to Ventura Design on Time A.G. Watch. 333,274, 2-16-93, Cl. D10-30.000.
Brown, Kirk R., to McGuire-Nicholas Manufacturing Co. Tool pouch with holster for a cordless drill. 333,215, 2-16-93, Cl. D3-105.000.
Brown, Lance. Helmet visor cover. 333,366, 2-16-93, Cl. D29-16.000.
Brown, Tom. Gas valve wrench. 333,243, 2-16-93, Cl. D8-21.000.
Brunner, Merlin A.; and Draheim, Harvey J., to Simmons Juvenile Products Company, Inc. Dressing table. 333,220, 2-16-93, Cl. D6-479.000.
Bruns, Elizabeth J.; Aubert, Lawrence J.; Fuchs, Paul D.; and Volpenhein, Daniel W., to Procter & Gamble Company, The. Toothbrush handle. 333,216, 2-16-93, Cl. D4-104.000.
Buck Knives, Inc.: *See—*
Pogue, Lonnie C., 333,239, Cl. D7-649.000.
Pogue, Lonnie C., 333,252, Cl. D8-99.000.
Pogue, Lonnie C., 333,253, Cl. D8-99.000.
Seber, Brett P., 333,213, Cl. D3-102.000.
Burns Bros., Inc.: *See—*
Burns, Bruce, 333,358, Cl. D26-46.000.
Burns, Bruce; and McCourt, Robert, 333,359, Cl. D26-48.000.
Burns, Bruce, to Burns Bros., Inc. Flashlight. 333,358, 2-16-93, Cl. D26-46.000.
Burns, Bruce; and McCourt, Robert, to Burns Bros., Inc. Lantern. 333,359, 2-16-93, Cl. D26-48.000.
Burson, David: *See—*
Burson, Myron; and Burson, David, 333,291, Cl. D12-215.000.
Burson, Myron; and Burson, David. Anchor. 333,291, 2-16-93, Cl. D12-215.000.
Carl-Zeiss-Stiftung, Heidenheim/Brenz: *See—*
Donn, Volker, 333,276, Cl. D10-66.000.
Hornschu, Joachim; Donn, Volker; and Schmidt, Wilhelm, 333,313, Cl. D16-135.000.
Paysan, Heinz-Wilhelm; Schurle, Hermann; Grimm, Wolfgang; and Gaiser, Hans, 333,312, Cl. D16-102.000.
Ceccarelli, Alessandro: *See—*
Hinrichsen, Silvana; and Ceccarelli, Alessandro, 333,285, Cl. D12-142.000.
Charriez, Roland: *See—*
Arlinghaus, Robert P.; Meisner, Edward H.; Charriez, Roland; Millisor, Daniel H.; and Moreno, Victor, 333,268, Cl. D9-538.000.
Chick, Jack S. Decal. 333,320, 2-16-93, Cl. D20-11.000.
Chretien, Philippe, to KWC AG. Faucet. 333,340, 2-16-93, Cl. D23-238.000.
Chromcraft Furniture Corporation: *See—*
Murry, Edsel E., 333,218, Cl. D6-366.000.
Ciccone, Theodore P., III; and DeCarolis, Joseph P., to Stanley Works, The. Handgrip for a hacksaw assembly. 333,249, 2-16-93, Cl. D8-97.000.
Ciccone, Theodore P., III; and DeCarolis, Joseph P., to Stanley Works, The. Handgrip for a hacksaw assembly. 333,250, 2-16-93, Cl. D8-97.000.
Clem, William E., to Tunturi, Inc. Treadmill. 333,330, 2-16-93, Cl. D21-192.000.
Cobb, Ronald W., to Apco Graphics, Inc. Door extrusion. 333,357, 2-16-93, Cl. D25-124.000.
Cohen, Wayne E.; and Kralik, Donald, to Latin Percussion, Inc. Tambourine. 333,314, 2-16-93, Cl. D17-22.000.
Colgate-Palmolive Company: *See—*
Krumscheid, Kerstin, 333,267, Cl. D9-529.000.
Collaso, Vincent. Expandable water-proof pouch. 333,260, 2-16-93, Cl. D9-305.000.
Cube Overseas Trading Limited: *See—*
Barrett, Garth J. M., 333,335, Cl. D22-112.000.
Danilowicz, Walter A.: *See—*
Sliper, Stephen B.; Danilowicz, Walter A.; and Kang, Soo Y., 333,307, Cl. D14-258.000.
Dannenberg, Todd D., to Kohler Co. Bathing enclosure for a bathtub. 333,344, 2-16-93, Cl. D23-305.000.
Davidson, Arthur R. Telescopic support for a firearm. 333,334, 2-16-93, Cl. D22-108.000.
Davis, Steven D., to W.A. Lane, Inc. Packaging machine pouch perforator wheel. 333,311, 2-16-93, Cl. D15-127.000.
DeCarolis, Joseph P.: *See—*
Ciccone, Theodore P., III; and DeCarolis, Joseph P., 333,249, Cl. D8-97.000.
Ciccone, Theodore P., III; and DeCarolis, Joseph P., 333,250, Cl. D8-97.000.
DeLuca, Carlo B., to Square D Company. Electrical bus connector housing. 333,292, 2-16-93, Cl. D13-146.000.
Desgrippes, Joel, to Orlane S.A. Lipstick case. 333,365, 2-16-93, Cl. D28-85.000.
Dickemann, Barry G.: *See—*
Stewart, John L., Jr.; and Dickemann, Barry G., 333,214, Cl. D3-104.000.
Donn, Volker, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Surveying instrument. 333,276, 2-16-93, Cl. D10-66.000.
Donn, Volker: *See—*
Hornschu, Joachim; Donn, Volker; and Schmidt, Wilhelm, 333,313, Cl. D16-135.000.
Dossey, John. Automobile hot wire prevention switch. 333,294, 2-16-93, Cl. D13-158.000.
Dozsa-Farkas, Andras, to Giroflex Entwicklungs AG. Chair. 333,223, 2-16-93, Cl. D6-372.000.
Draheim, Harvey J.: *See—*
Brunner, Merlin A.; and Draheim, Harvey J., 333,220, Cl. D6-479.000.
Ebihara, Toru; Urushihara, Atsuhiko; Furuya, Jyun; Moriya, Toshiyuki; and Ito, Shinjyu, to Hitachi, Ltd. Facsimile transceiver. 333,302, 2-16-93, Cl. D14-118.000.
Eddings, Melvin. Lamp. 333,361, 2-16-93, Cl. D26-93.000.
Elizabeth Arden Co., Division of Conopco, Inc.: *See—*
Albright, Michelle N.; and Paglina, Denise M., 333,269, Cl. D9-544.000.
Albright, Michelle N.; and Paglina, Denise M., 333,270, Cl. D9-566.000.
Elkins, Donald L. Catsup bottle scraper. 333,241, 2-16-93, Cl. D7-688.000.
Enviromethods, Inc.: *See—*
Uhde, William E., 333,346, Cl. D23-317.000.
Erlichman, Janusz, to Erlichman, Janusz. Combined clock and picture frame. 333,271, 2-16-93, Cl. D10-2.000.
Evans, Donald J.: *See—*
Kemp, David R.; and Evans, Donald J., 333,347, Cl. D24-131.000.
Evans, Roger C. Golf putter head. 333,331, 2-16-93, Cl. D21-219.000.
Ewing, Mabel J. Wall mountable jewelry chest. 333,222, 2-16-93, Cl. D6-561.000.
Farber, Stephen A., to Golden Stream Quality Foods Co., Inc. Combined display and self-service merchandising cabinet. 333,219, 2-16-93, Cl. D6-472.000.
Farchione, Samuel P. Portable shampoo and styling unit. 333,343, 2-16-93, Cl. D23-271.000.
Fenney, Michael J. Casket. 333,372, 2-16-93, Cl. D99-1.000.
Ferraro, Tomas H. Headgear to hold a telephone handset on a user. 333,306, 2-16-93, Cl. D14-251.000.
Fish, Thomas E., Jr.: *See—*
Aker, Kevin R.; and Fish, Thomas E., Jr., 333,328, Cl. D21-114.000.
Flowers, Michael. Sponge for cleaning nursing bottle and nipple units. 333,368, 2-16-93, Cl. D32-40.000.
Ford Motor Company: *See—*
Sliper, Stephen B.; Danilowicz, Walter A.; and Kang, Soo Y., 333,307, Cl. D14-258.000.
Foster, David W., to Rockport Company, Inc., The. Shoe sole. 333,211, 2-16-93, Cl. D2-320.000.
Friedrich Grohe Aktiengesellschaft: *See—*
Klose, Odo, 333,338, Cl. D23-213.000.
Klose, Odo, 333,339, Cl. D23-223.000.
Fryklund, Tony. Earring. 333,279, 2-16-93, Cl. D11-43.000.
Fuchs, Paul D.: *See—*
Bruns, Elizabeth J.; Aubert, Lawrence J.; Fuchs, Paul D.; and Volpenhein, Daniel W., 333,216, Cl. D4-104.000.
Fuller, R. Morris. Sculpture. 333,282, 2-16-93, Cl. D11-131.000.
Fuller, R. Morris. Sculpture. 333,283, 2-16-93, Cl. D11-131.000.
Fuller, R. Morris. Sculpture. 333,284, 2-16-93, Cl. D11-131.000.
Furuya, Jyun: *See—*
Ebihara, Toru; Urushihara, Atsuhiko; Furuya, Jyun; Moriya, Toshiyuki; and Ito, Shinjyu, 333,302, Cl. D14-118.000.
Fushiya, Fusao; and Tanaka, Hideki, to Makita Electric Works, Ltd. Portable electric wrench. 333,246, 2-16-93, Cl. D8-68.000.
Gaiser, Hans: *See—*
Paysan, Heinz-Wilhelm; Schurle, Hermann; Grimm, Wolfgang; and Gaiser, Hans, 333,312, Cl. D16-102.000.
Galedrige, Alan K.: *See—*
Newcomer, Charles H.; Galedrige, Alan K.; and Saylor, Richard N., 333,255, Cl. D8-356.000.
Newcomer, Charles H.; Galedrige, Alan K.; and Saylor, Richard N., 333,256, Cl. D8-356.000.
Newcomer, Charles H.; Galedrige, Alan K.; and Saylor, Richard N., 333,257, Cl. D8-356.000.
General Tire, Inc.: *See—*
Rogers, Dean E.; Sehm, Neal G.; Veklseman, Ilya W.; and Yahner, Peter D., 333,286, Cl. D12-146.000.
Rogers, Dean E.; Sehm, Neal G.; Veklseman, Ilya W.; and Yahner, Peter D., 333,288, Cl. D12-146.000.
Slingluff, Mark D.; and Zolton, Gary P., 333,287, Cl. D12-146.000.
Gierke, Martin P.: *See—*
Hess, Kristoffer A.; Sirois, Michael G.; Hare, Ronald G.; Jackson, Ronald A.; and Gierke, Martin P., 333,309, Cl. D15-14.000.
Gilley, Richard J., to ACCRA Manufacturing, Co. Wrench. 333,244, 2-16-93, Cl. D8-29.000.
Gingras, Eric, to Rubbermaid Commercial Products Inc. Pastry brush. 333,217, 2-16-93, Cl. D4-135.000.
Giroflex Entwicklungs AG: *See—*
Dozsa-Farkas, Andras, 333,223, Cl. D6-372.000.
Glesser, Louis. Knife handle. 333,251, 2-16-93, Cl. D8-99.000.
Golden Stream Quality Foods Co., Inc.: *See—*
Farber, Stephen A., 333,219, Cl. D6-472.000.

Gonzales, Robert H. Carpet and vinyl glue gun. 333,242, 2-16-93, Cl. D8-14.100.
Greene, Pamela S., to Nike, Inc. Shoe upper. 333,209, 2-16-93, Cl. D2-314.000.
Greene, Pamela S., to Nike, Inc. Shoe outsole bottom. 333,210, 2-16-93, Cl. D2-320.000.
Griggs, Paul E. Concrete float. 333,245, 2-16-93, Cl. D8-45.000.
Grimm, Wolfgang: *See—*
Paysan, Heinz-Wilhelm; Schurle, Hermann; Grimm, Wolfgang; and Gaiser, Hans, 333,312, Cl. D16-102.000.
Guhl, James C.; and Weiss, David J., to Andersen Corporation. Skylight sash member. 333,353, 2-16-93, Cl. D25-60.000.
Harding, Alfred F. Quick release device for chainsaws. 333,248, 2-16-93, Cl. D8-73.000.
Hare, Ronald G.: *See—*
Hess, Kristoffer A.; Sirois, Michael G.; Hare, Ronald G.; Jackson, Ronald A.; and Gierke, Martin P., 333,309, Cl. D15-14.000.
Harty, William H. Water filter. 333,337, 2-16-93, Cl. D23-209.000.
Hatcher, David O., to Posting Equipment Corporation. Computer stand with sliding keyboard shelf. 333,300, 2-16-93, Cl. D14-114.000.
Hayward Industries, Inc.: *See—*
Tobias, Samuel; and Hollinger, Fred, 333,341, Cl. D23-252.000.
Heidmann, Charles, to Steelcase Strafor. Partition. 333,352, 2-16-93, Cl. D25-58.000.
Hess, Kristoffer A.; Sirois, Michael G.; Hare, Ronald G.; Jackson, Ronald A.; and Gierke, Martin P., to Black & Decker, Inc. Lawn mower with bag. 333,309, 2-16-93, Cl. D15-14.000.
Hess, Stephen C., to Winston Furniture Company, Inc. Chair frame. 333,224, 2-16-93, Cl. D6-373.000.
Hinrichsen, Silvana; and Ceccarelli, Alessandro, to Bridgestone/Firestone, Inc. Tire. 333,285, 2-16-93, Cl. D12-142.000.
Hitachi, Ltd.: *See—*
Ebihara, Toru; Urushihara, Atsuhiko; Furuya, Jyun; Moriya, Toshiyuki; and Ito, Shinjyu, 333,302, Cl. D14-118.000.
Hollinger, Fred: *See—*
Tobias, Samuel; and Hollinger, Fred, 333,341, Cl. D23-252.000.
Honeywell Inc.: *See—*
Stedham, David M., 333,296, Cl. D13-171.000.
Hornschu, Joachim; Donn, Volker; and Schmidt, Wilhelm, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Magnifying glass. 333,313, 2-16-93, Cl. D16-135.000.
Horvath, Alex, to Art Plastics International Inc. Display stand. 333,227, 2-16-93, Cl. D6-468.000.
Hosoe, Isao, to Itoki Co. Ltd. Table. 333,228, 2-16-93, Cl. D6-482.000.
Huang, Soddy. Adjustable lamp. 333,360, 2-16-93, Cl. D26-65.000.
Hwang, Faa C. Teaching aid for children learning algebraic numbers. 333,319, 2-16-93, Cl. D19-64.000.
International Business Machines Corporation: *See—*
Savio, Dino M., 333,297, Cl. D14-100.000.
Isaak, Stephen E.: *See—*
Nelson, Mark A.; and Isaak, Stephen E., 333,323, Cl. D21-25.000.
Ishizawa, Shoichi, to Seiko Epson Corporation. Printer for electronic computer. 333,316, 2-16-93, Cl. D18-55.000.
Ito, Shinjyu: *See—*
Ebihara, Toru; Urushihara, Atsuhiko; Furuya, Jyun; Moriya, Toshiyuki; and Ito, Shinjyu, 333,302, Cl. D14-118.000.
Itoki Co. Ltd.: *See—*
Hosoe, Isao, 333,228, Cl. D6-482.000.
Jackson, James: *See—*
Barros, Ronald P.; and Jackson, James, 333,321, Cl. D20-40.000.
Jackson, Ronald A.: *See—*
Hess, Kristoffer A.; Sirois, Michael G.; Hare, Ronald G.; Jackson, Ronald A.; and Gierke, Martin P., 333,309, Cl. D15-14.000.
Jacobs, Lawrence I. Exercise stool. 333,329, 2-16-93, Cl. D21-191.000.
Jimenez T., Hector E. Combined bookmark and reader's aid. 333,317, 2-16-93, Cl. D19-32.000.
Johnson, Joseph A., II. Tray for signs. 333,290, 2-16-93, Cl. D12-157.000.
Jones, Anton. Reversible trousers. 333,203, 2-16-93, Cl. D2-28.000.
Juliano, George P. Universal socket adapter. 333,247, 2-16-93, Cl. D8-70.000.
Kaiser, Robert T.: *See—*
Shirlin, Jack W.; and Kaiser, Robert T., 333,289, Cl. D12-156.000.
Kalplus Limited: *See—*
So, King-Ho, 333,325, Cl. D21-48.000.
Kang, Soo Y.: *See—*
Sliper, Stephen B.; Danilowicz, Walter A.; and Kang, Soo Y., 333,307, Cl. D14-258.000.
Kaplan, Myril, to Sony Corporation. Jewelry box. 333,264, 2-16-93, Cl. D9-420.000.
Karsten Manufacturing Corporation: *See—*
Solheim, Karsten, 333,333, Cl. D21-222.000.
Kemp, David R.; and Evans, Donald J. Safety container for a hypodermic syringe. 333,347, 2-16-93, Cl. D24-131.000.
Klose, Odo, to Friedrich Grohe Aktiengesellschaft. Combined shower and sprinkler head. 333,338, 2-16-93, Cl. D23-213.000.
Klose, Odo, to Friedrich Grohe Aktiengesellschaft. Wall mounted shower holder. 333,339, 2-16-93, Cl. D23-223.000.
Kohler Co.: *See—*
Dannenberg, Todd D., 333,344, Cl. D23-305.000.
McKeone, William C., 333,259, Cl. D8-381.000.
Kralik, Donald: *See—*
Cohen, Wayne E.; and Kralik, Donald, 333,314, Cl. D17-22.000.
Krumscheid, Kerstin, to Colgate-Palmolive Company. Combined bottle and cap. 333,267, 2-16-93, Cl. D9-529.000.
Kupperman, Dennis, to RB Toy Development Co. Frozen pop confection maker. 333,240, 2-16-93, Cl. D7-672.000.
Kustka, John, to Oscar Mayer Foods Corporation. Shaped food product. 333,202, 2-16-93, Cl. D1-199.000.
KWC AG: *See—*
Chretien, Philippe, 333,340, Cl. D23-238.000.
L. D. Kichler Co., The: *See—*
Lee, Jason, 333,363, Cl. D26-142.000.
Porter, David, 333,362, Cl. D26-136.000.
Langford, Mahala G.: *See—*
Off, Joseph W. A.; and Langford, Mahala G., 333,310, Cl. D15-78.000.
Latin Percussion, Inc.: *See—*
Cohen, Wayne E.; and Kralik, Donald, 333,314, Cl. D17-22.000.
Lee, Jason, to L. D. Kichler Co., The. Wall plate for a lighting fixture. 333,363, 2-16-93, Cl. D26-142.000.
Lee, Roger, to Leisuretime Products Limited. Inflatable rocking horse. 333,326, 2-16-93, Cl. D21-75.000.
Leisuretime Products Limited: *See—*
Lee, Roger, 333,326, Cl. D21-75.000.
Lin, Ruey F. Caster. 333,258, 2-16-93, Cl. D8-375.000.
Lindblom, Curtis H.; and Savoie, Gordon P., to Skyline Displays, Inc. Edge supporting brace for display panels. 333,322, 2-16-93, Cl. D20-44.000.
Lindsey, William J. Holder for inverted bottles. 333,265, 2-16-93, Cl. D9-455.000.
Little Tikes Company, The: *See—*
Aker, Kevin R.; and Fish, Thomas E., Jr., 333,328, Cl. D21-114.000.
Lucas, Robert J., to Nike, Inc. Shoe midsole periphery. 333,208, 2-16-93, Cl. D2-314.000.
Lucas, Robert J.: *See—*
Allen, Thomas P.; and Lucas, Robert J., 333,206, Cl. D2-314.000.
Magic Edge, Inc.: *See—*
Morris, Donald L., 333,226, Cl. D6-466.000.
Makita Electric Works, Ltd.: *See—*
Fushiya, Fusao; and Tanaka, Hideki, 333,246, Cl. D8-68.000.
Mankey, Neal N., to Allied Plastics, Inc. Halloween ghost decoration. 333,281, 2-16-93, Cl. D11-121.000.
Markuzov, Tony. Combined two chambered bottle and caps. 333,263, 2-16-93, Cl. D9-341.000.
McCabe, Dianne: *See—*
McCabe, Terrill R.; and McCabe, Dianne, 333,332, Cl. D21-219.000.
McCabe, Terrill R.; and McCabe, Dianne, to McCabe, Terrill R. Golf club head. 333,332, 2-16-93, Cl. D21-219.000.
McCourt, Robert: *See—*
Burns, Bruce; and McCourt, Robert, 333,359, Cl. D26-48.000.
McGuire-Nicholas Manufacturing Co.: *See—*
Brown, Kirk R., 333,215, Cl. D3-105.000.
McKeone, William C., to Kohler Co. Shelf mount. 333,259, 2-16-93, Cl. D8-381.000.
Mead Corporation, The: *See—*
York, Brian K., 333,318, Cl. D19-26.000.
Meisner, Edward H.: *See—*
Arlinghaus, Robert P.; Meisner, Edward H.; Charriez, Roland; Millisor, Daniel H.; and Moreno, Victor, 333,268, Cl. D9-538.000.
Michael, Kin-Man T., to STD Electronic International Ltd. Foot pedal for electronic game. 333,324, 2-16-93, Cl. D21-48.000.
Millisor, Daniel H.: *See—*
Arlinghaus, Robert P.; Meisner, Edward H.; Charriez, Roland; Millisor, Daniel H.; and Moreno, Victor, 333,268, Cl. D9-538.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Taniuchi, Takeshi; Shima, Kozo; Breiding, Gregory S.; and Murrell, Spencer B., 333,304, Cl. D14-130.000.
Miya, Tomio, to American Safety Flight Systems. Portable oxygen system. 333,349, 2-16-93, Cl. D24-164.000.
Monk, Thomas J. Hunter's cart. 333,370, 2-16-93, Cl. D34-12.000.
Monroe Systems for Business, Inc.: *See—*
Sereika, Joseph C.; and Perelli, Thomas, 333,315, Cl. D18-7.000.
Mopozumi, Kiyotaka, to Ricob Company, Ltd. Facsimile transmitter/-receiver. 333,301, 2-16-93, Cl. D14-118.000.
Moreno, Victor: *See—*
Arlinghaus, Robert P.; Meisner, Edward H.; Charriez, Roland; Millisor, Daniel H.; and Moreno, Victor, 333,268, Cl. D9-538.000.
Moriya, Toshiyuki: *See—*
Ebihara, Toru; Urushihara, Atsuhiko; Furuya, Jyun; Moriya, Toshiyuki; and Ito, Shinjyu, 333,302, Cl. D14-118.000.
Morris, Donald L., to Magic Edge, Inc. Combined toy holder and play area module. 333,226, 2-16-93, Cl. D6-466.000.
Mukoyama, Masumi, to Seikosha Co., Ltd. Clock. 333,273, 2-16-93, Cl. D10-29.000.
Murrell, Spencer B.: *See—*
Taniuchi, Takeshi; Shima, Kozo; Breiding, Gregory S.; and Murrell, Spencer B., 333,304, Cl. D14-130.000.
Murry, Edsel E., to Chromcraft Furniture Corporation. Chair. 333,218, 2-16-93, Cl. D6-366.000.
Nelson, Mark A.; and Isaak, Stephen E. Treasure hunt game. 333,323, 2-16-93, Cl. D21-25.000.
Newcomer, Charles H.; Galedrige, Alan K.; and Saylor, Richard N. Stud clip for electrical wiring. 333,255, 2-16-93, Cl. D8-356.000.
Newcomer, Charles H.; Galedrige, Alan K.; and Saylor, Richard N. Clip for securing electrical wiring. 333,256, 2-16-93, Cl. D8-356.000.

VOL
1147
ISS
3
FE
16
1993
UMI

Newcomer, Charles H.; Galedrige, Alan K.; and Saylor, Richard N. Clip for securing electrical wiring. 333,257, 2-16-93, Cl. D8-356.000.
Newhard, Harry L. Anti-vortex safety cover for a drain. 333,342, 2-16-93, Cl. D23-261.000.
Nichols, Luella V. Stove. 333,234, 2-16-93, Cl. D7-340.000.
Nike, Inc.: *See—*
Allen, Thomas P.; and Lucas, Robert J., 333,206, Cl. D2-314.000.
Greene, Pamela S., 333,209, Cl. D2-314.000.
Greene, Pamela S., 333,210, Cl. D2-320.000.
Lucas, Robert J., 333,208, Cl. D2-314.000.
Smith, Wilson W., 333,207, Cl. D2-314.000.
Nike International Ltd.: *See—*
Allen, Thomas P.; and Lucas, Robert J., 333,206, Cl. D2-314.000.
Nintendo Co., Ltd.: *See—*
Ashida, Ken'ichiro, 333,293, Cl. D13-147.000.
Northmace Limited: *See—*
Plaut, Rudolf T. F., 333,237, Cl. D7-553.000.
Off, Joseph W. A.; and Langford, Mahala G., to Textile/Clothing Technology Corporation. Combined arm and holder used in apparel manufacture to transfer fabric items between work stations. 333,310, 2-16-93, Cl. D15-78.000.
O'Hare, Bill. Sundial wrist watch. 333,275, 2-16-93, Cl. D10-31.000.
Oke, George V. Chair seat and back. 333,233, 2-16-93, Cl. D6-502.000.
Orlane S.A.: *See—*
Desgrippes, Joel, 333,365, Cl. D28-85.000.
Oscar Mayer Foods Corporation: *See—*
Kustka, John, 333,202, Cl. D1-199.000.
Pacelli, Raymond. Belt mounted coin target. 333,373, 2-16-93, Cl. D99-37.000.
Paglina, Denise M.: *See—*
Albright, Michelle N.; and Paglina, Denise M., 333,269, Cl. D9-544.000.
Albright, Michelle N.; and Paglina, Denise M., 333,270, Cl. D9-566.000.
Paysan, Heinz-Wilhelm; Schurle, Hermann; Grimm, Wolfgang; and Gaiser, Hans, to Carl-Zeiss-Stiftung, Heidenheim/Brenz. Anti-laser protective spectacles. 333,312, 2-16-93, Cl. D16-102.000.
Peersmann, Richard F. M., to Pollyflame International B.V. Alarm clock. 333,272, 2-16-93, Cl. D10-15.000.
Perelli, Thomas: *See—*
Sereika, Joseph C.; and Perelli, Thomas, 333,315, Cl. D18-7.000.
Pirri, Linda M. Dryer for birds. 333,367, 2-16-93, Cl. D30-110.000.
Plater-Zyberk, Josaphat. Ride-on toy vehicle. 333,327, 2-16-93, Cl. D21-76.000.
Plaut, Rudolf T. F., to Northmace Limited. Serving tray. 333,237, 2-16-93, Cl. D7-553.000.
Pogue, Lonnie C., to Buck Knives, Inc. Handle for a fixed blade knife. 333,239, 2-16-93, Cl. D7-649.000.
Pogue, Lonnie C., to Buck Knives, Inc. Handle for a folding knife. 333,252, 2-16-93, Cl. D8-99.000.
Pogue, Lonnie C., to Buck Knives, Inc. Handle for a folding knife. 333,253, 2-16-93, Cl. D8-99.000.
Pollyflame International B.V.: *See—*
Peersmann, Richard F. M., 333,272, Cl. D10-15.000.
Popovich, Mila; and Vujosevich, Vera. Mitt used for bathing. 333,364, 2-16-93, Cl. D28-63.000.
Porter, David, to L. D. Kichler Co., The. Glass lamp shade. 333,362, 2-16-93, Cl. D26-136.000.
Posting Equipment Corporation: *See—*
Hatcher, David O., 333,300, Cl. D14-114.000.
Prindle, William: *See—*
Skerker, Robert B.; and Prindle, William, 333,236, Cl. D7-409.000.
Pro Design Productions, Inc.: *See—*
Van Erkel, Jan A., 333,261, Cl. D9-312.000.
Procter & Gamble Company, The: *See—*
Arlinghaus, Robert P.; Meisner, Edward H.; Charriez, Roland; Millisor, Daniel H.; and Moreno, Victor, 333,268, Cl. D9-538.000.
Bruns, Elizabeth J.; Aubert, Lawrence J.; Fuchs, Paul D.; and Volpenhein, Daniel W., 333,216, Cl. D4-104.000.
Rago, John P.; and Rago, Richard J. Holiday arch. 333,280, 2-16-93, Cl. D11-117.000.
Rago, Richard J.: *See—*
Rago, John P.; and Rago, Richard J., 333,280, Cl. D11-117.000.
Raslowsky, Edward; and Raslowsky, Eileen. Electronic digital business card. 333,298, 2-16-93, Cl. D14-100.000.
Raslowsky, Eileen: *See—*
Raslowsky, Edward; and Raslowsky, Eileen, 333,298, Cl. D14-100.000.
RB Toy Development Co.: *See—*
Kupperman, Dennis, 333,240, Cl. D7-672.000.
Redira, Stan, Jr., to Ambrosia, Gary. Therapeutic heat transfer wrap. 333,350, 2-16-93, Cl. D24-206.000.
Reebok International Ltd.: *See—*
Zelenko, Linda S., 333,205, Cl. D2-314.000.
Reynolds Metals Company: *See—*
Bertelsen, William P., 333,235, Cl. D7-403.000.
Ricoh Company, Ltd.: *See—*
Mopozumi, Kiyotaka, 333,301, Cl. D14-118.000.
Rigel, Dave H. Funnel for oil. 333,336, 2-16-93, Cl. D23-200.000.
Ringle', Geoffrey F. Combined quick release lever and fastener. 333,254, 2-16-93, Cl. D8-308.000.
Robbins, Richard J., to Zebco Corporation. Fishing weigh scale. 333,277, 2-16-93, Cl. D10-89.000.
Robinson, Jerry. Music storage rack. 333,225, 2-16-93, Cl. D6-407.000.
Robinson Knife Manufacturing Co., Inc.: *See—*
Skerker, Robert B.; and Prindle, William, 333,236, Cl. D7-409.000.
Rockport Company, Inc., The: *See—*
Foster, David W., 333,211, Cl. D2-320.000.
Rogers, Dean E.; Sehm, Neal G.; Vekiseman, Ilya W.; and Yahner, Peter D., to General Tire, Inc. Vehicle tire. 333,286, 2-16-93, Cl. D12-146.000.
Rogers, Dean E.; Sehm, Neal G.; Vekiseman, Ilya W.; and Yahner, Peter D., to General Tire, Inc. Vehicle tire. 333,288, 2-16-93, Cl. D12-146.000.
Routt, Joyce A. Cartoon character fold-up fan. 333,212, 2-16-93, Cl. D3-3.000.
Rubbermaid Commercial Products Inc.: *See—*
Gingras, Eric, 333,217, Cl. D4-135.000.
Rubbermaid Office Products Group Inc.: *See—*
Breen, John D.; and Scherer, Thomas, 333,369, Cl. D34-10.000.
Savio, Dino M., to International Business Machines Corporation. Hand held order entry tablet. 333,297, 2-16-93, Cl. D14-100.000.
Savoie, Gordon P.: *See—*
Lindblom, Curtis H.; and Savoie, Gordon P., 333,322, Cl. D20-44.000.
Saylor, Richard N.: *See—*
Newcomer, Charles H.; Galedrige, Alan K.; and Saylor, Richard N., 333,255, Cl. D8-356.000.
Newcomer, Charles H.; Galedrige, Alan K.; and Saylor, Richard N., 333,256, Cl. D8-356.000.
Newcomer, Charles H.; Galedrige, Alan K.; and Saylor, Richard N., 333,257, Cl. D8-356.000.
Scherer, Thomas: *See—*
Breen, John D.; and Scherer, Thomas, 333,369, Cl. D34-10.000.
Schmidke, Thomas. Movable skid lift. 333,371, 2-16-93, Cl. D34-28.000.
Schmidt, Wilhelm: *See—*
Hornschu, Joachim; Donn, Volker; and Schmidt, Wilhelm, 333,313, Cl. D16-135.000.
Schurle, Hermann: *See—*
Paysan, Heinz-Wilhelm; Schurle, Hermann; Grimm, Wolfgang; and Gaiser, Hans, 333,312, Cl. D16-102.000.
Seber, Brett P., to Buck Knives, Inc. Sheath for a tile, linoleum and carpet knife. 333,213, 2-16-93, Cl. D3-102.000.
Sehm, Neal G.: *See—*
Rogers, Dean E.; Sehm, Neal G.; Vekiseman, Ilya W.; and Yahner, Peter D., 333,286, Cl. D12-146.000.
Rogers, Dean E.; Sehm, Neal G.; Vekiseman, Ilya W.; and Yahner, Peter D., 333,288, Cl. D12-146.000.
Seiko Epson Corporation: *See—*
Ishizawa, Shoichi, 333,316, Cl. D18-55.000.
Seikosha Co., Ltd.: *See—*
Mukoyama, Masumi, 333,273, Cl. D10-29.000.
Sereika, Joseph C.; and Perelli, Thomas, to Monroe Systems for Business, Inc. Calculator case. 333,315, 2-16-93, Cl. D18-7.000.
Shima, Kozo: *See—*
Taniuchi, Takeshi; Shima, Kozo; Breiding, Gregory S.; and Murrell, Spencer B., 333,304, Cl. D14-130.000.
Shirlin, Jack W.; and Kaiser, Robert T. Combined convertible top and extension trim for the bed of a pickup truck. 333,289, 2-16-93, Cl. D12-156.000.
Simmons Juvenile Products Company, Inc.: *See—*
Brunner, Merlin A.; and Draheim, Harvey J., 333,220, Cl. D6-479.000.
Sirois, Michael G.: *See—*
Hess, Kristoffer A.; Sirois, Michael G.; Hare, Ronald G.; Jackson, Ronald A.; and Gierke, Martin P., 333,309, Cl. D15-14.000.
Skerker, Robert B.; and Prindle, William, to Robinson Knife Manufacturing Co., Inc. Roast rack. 333,236, 2-16-93, Cl. D7-409.000.
Skyline Displays, Inc.: *See—*
Lindblom, Curtis H.; and Savoie, Gordon P., 333,322, Cl. D20-44.000.
Slingluff, Mark D.; and Zolton, Gary P., to General Tire, Inc. Vehicle tire. 333,287, 2-16-93, Cl. D12-146.000.
Sliper, Stephen B.; Danilowicz, Walter A.; and Kang, Soo Y., to Ford Motor Company. Front control panel for an automotive radio. 333,307, 2-16-93, Cl. D14-258.000.
Slocomb Industries: *See—*
Slocomb, Leon F., Jr., 333,356, Cl. D25-124.000.
Slocomb, Leon F., Jr., to Slocomb Industries. Lift rail extrusion for a window. 333,356, 2-16-93, Cl. D25-124.000.
Smart, Terry A. Heat pump accessory. 333,308, 2-16-93, Cl. D15-7.000.
Smith, Wilson W., to Nike, Inc. Midsole of a shoe. 333,207, 2-16-93, Cl. D2-314.000.
So, King-Ho, to Kalplus Limited. Electronic game converter. 333,325, 2-16-93, Cl. D21-48.000.
Solheim, Karsten, to Karsten Manufacturing Corporation. Golf club grip. 333,333, 2-16-93, Cl. D21-222.000.
Sony Corporation: *See—*
Kaplan, Myril, 333,264, Cl. D9-420.000.
Tanaka, Masato; and Yanaka, Kiyotaka, 333,303, Cl. D14-121.000.
Square D Company: *See—*
DeLuca, Carlo B., 333,292, Cl. D13-146.000.
Stanley Works, The: *See—*
Ciccone, Theodore P., III; and DeCarolis, Joseph P., 333,249, Cl. D8-97.000.
Ciccone, Theodore P., III; and DeCarolis, Joseph P., 333,250, Cl. D8-97.000.
STD Electronic International Ltd.: *See—*
Michael, Kin-Man T., 333,324, Cl. D21-48.000.

Stead, Jeanie: *See—*
Stead, Kenneth E.; and Stead, Jeanie, 333,238, Cl. D7-637.000.
Stead, Kenneth E.; and Stead, Jeanie. Recessed wall mounted knife rack. 333,238, 2-16-93, Cl. D7-637.000.
Stedham, David M., to Honeywell Inc. Combined palm switch housing and base plate. 333,296, 2-16-93, Cl. D13-171.000.
Steelcase Strafor: *See—*
Heidmann, Charles, 333,352, Cl. D25-58.000.
Stewart, John L., Jr.; and Dickemann, Barry G. Ball bolder. 333,214, 2-16-93, Cl. D3-104.000.
Strahan, Truman. Combined toilet seat cover and infants seat. 333,345, 2-16-93, Cl. D23-311.000.
Tanaka, Hideki: *See—*
Fushiya, Fusao; and Tanaka, Hideki, 333,246, Cl. D8-68.000.
Tanaka, Masato; and Yanaka, Kiyotaka, to Sony Corporation. Magnetic tape cassette. 333,303, 2-16-93, Cl. D14-121.000.
Taniuchi, Takeshi; Shima, Kozo; Breiding, Gregory S.; and Murrell, Spencer B., to Mitsubishi Denki Kabushiki Kaisha. Combination telephone, facsimile, still picture television information communication apparatus for home or office use. 333,304, 2-16-93, Cl. D14-130.000.
Terrell, Shawn. Interchangeable sneaker. 333,204, 2-16-93, Cl. D2-310.000.
Terumo Kabushiki Kaisha: *See—*
Yokomachi, Shinsuke, 333,348, Cl. D24-162.000.
Textile/Clothing Technology Corporation: *See—*
Off, Joseph W. A.; and Langford, Mahala G., 333,310, Cl. D15-78.000.
Thomas J. Lipton Co., Division of Conopco, Inc.: *See—*
Walravens, Huberdina J. H. M., 333,266, Cl. D9-520.000.
Tobias, Samuel; and Hollinger, Fred, to Hayward Industries, Inc. Multi-port valve handle. 333,341, 2-16-93, Cl. D23-252.000.
Tsou, Paul. Infrared heat massager. 333,351, 2-16-93, Cl. D24-206.000.
Tunturi, Inc.: *See—*
Clem, William E., 333,330, Cl. D21-192.000.
Uhde, William E., to Enviromethods, Inc. Infrared floor tile heater for use in floor tile removal. 333,346, 2-16-93, Cl. D23-317.000.
Urushihara, Atsuhiko: *See—*
Ebihara, Toru; Urushihara, Atsuhiko; Furuya, Jyun; Moriya, Toshiyuki; and Ito, Shinjyu, 333,302, Cl. D14-118.000.
Van Erkel, Jan A., to Pro Design Productions, Inc. Combined snowman bottle and cap. 333,261, 2-16-93, Cl. D9-312.000.
Vekiseman, Ilya W.: *See—*
Rogers, Dean E.; Sehm, Neal G.; Vekiseman, Ilya W.; and Yahner, Peter D., 333,286, Cl. D12-146.000.
Rogers, Dean E.; Sehm, Neal G.; Vekiseman, Ilya W.; and Yahner, Peter D., 333,288, Cl. D12-146.000.
Ventura Design on Time A.G.: *See—*
Brodmann, Robert A., 333,274, Cl. D10-30.000.
Volpenhein, Daniel W.: *See—*
Bruns, Elizabeth J.; Aubert, Lawrence J.; Fuchs, Paul D.; and Volpenhein, Daniel W., 333,216, Cl. D4-104.000.
Vujosevich, Vera: *See—*
Popovich, Mila; and Vujosevich, Vera, 333,364, Cl. D28-63.000.
W.A. Lane, Inc.: *See—*
Davis, Steven D., 333,311, Cl. D15-127.000.
Walravens, Huberdina J. H. M., to Thomas J. Lipton Co., Division of Conopco, Inc. Combined bottle and cap. 333,266, 2-16-93, Cl. D9-520.000.
Weber, Jeanette E. Device for resetting a digital clock from a remote location. 333,295, 2-16-93, Cl. D13-168.000.
Weiss, David J.: *See—*
Guhl, James C.; and Weiss, David J., 333,353, Cl. D25-60.000.
West, David H. Headset telephone. 333,305, 2-16-93, Cl. D14-223.000.
Winston Furniture Company, Inc.: *See—*
Hess, Stephen C., 333,224, Cl. D6-373.000.
Wurst, Michael. Coffee table. 333,221, 2-16-93, Cl. D6-486.000.
Yahner, Peter D.: *See—*
Rogers, Dean E.; Sehm, Neal G.; Vekiseman, Ilya W.; and Yahner, Peter D., 333,286, Cl. D12-146.000.
Rogers, Dean E.; Sehm, Neal G.; Vekiseman, Ilya W.; and Yahner, Peter D., 333,288, Cl. D12-146.000.
Yanaka, Kiyotaka: *See—*
Tanaka, Masato; and Yanaka, Kiyotaka, 333,303, Cl. D14-121.000.
Yokomachi, Shinsuke, to Terumo Kabushiki Kaisha. Anesthesia solution filter. 333,348, 2-16-93, Cl. D24-162.000.
Yong, Teck: *See—*
Amber, John M.; Barry, Michael R.; and Yong, Teck, 333,299, Cl. D14-106.000.
York, Brian K., to Mead Corporation, The. Binder. 333,318, 2-16-93, Cl. D19-26.000.
Zebco Corporation: *See—*
Robbins, Richard J., 333,277, Cl. D10-89.000.
Zelenko, Linda S., to Reebok International Ltd. Shoe upper. 333,205, 2-16-93, Cl. D2-314.000.
Zogg, Edward, to Bristol-Myers Squibb Company. Dispensing carton. 333,262, 2-16-93, Cl. D9-339.000.
Zolton, Gary P.: *See—*
Slingluff, Mark D.; and Zolton, Gary P., 333,287, Cl. D12-146.000.

VOL
1147
ISS
3
FE
16
1993
UMI

LIST OF PLANT PATENTEES

Austin, David C. H., to David Austin Roses. Rose plant—'Auscat'. 8,141, 2-16-93, Cl. 1.000.
Austin, David C. H., to David Austin Roses. Rose plant—'Ausfin'. 8,142, 2-16-93, Cl. 1.000.
Austin, David C. H., to David Austin Roses. Rose plant—'Ausreef'. 8,143, 2-16-93, Cl. 1.000.
David Austin Roses: *See*—
Austin, David C. H., 8,141, Cl. 1.000.
Austin, David C. H., 8,142, Cl. 1.000.
Austin, David C. H., 8,143, Cl. 1.000.
Fides Beheer B.V.: *See*—
van der Knapp, Jacques C. M., 8,149, Cl. 77.000.
van der Knapp, Jacques C. M., 8,150, Cl. 82.200.
van der Knapp, Jacques C. M., 8,151, Cl. 82.200.
van der Knapp, Jacques C. M., 8,152, Cl. 82.200.
Holtkamp, Reinhold, Sr. African violet plant named Tokyo. 8,144, 2-16-93, Cl. 69.100.
Holtkamp, Reinhold, Sr. African violet planted named Little Aztec Girl. 8,145, 2-16-93, Cl. 69.100.
Holtkamp, Reinhold, Sr. African violet plant named Little Cheyenne Girl. 8,146, 2-16-93, Cl. 69.200.
Holtkamp, Reinhold, Sr. African violet plant named Rumiko. 8,147, 2-16-93, Cl. 69.200.
Holtkamp, Reinhold, Sr. African violet plant named Carmen. 8,148, 2-16-93, Cl. 69.200.
van der Knapp, Jacques C. M., to Fides Beheer B.V. Chrysanthemum plant — Jannel cultivar. 8,149, 2-16-93, Cl. 77.000.
van der Knapp, Jacques C. M., to Fides Beheer B.V. Chrysanthemum plant — Touch cultivar. 8,150, 2-16-93, Cl. 82.200.
van der Knapp, Jacques C. M., to Fides Beheer B.V. Chrysanthemum plant — Buttercup cultivar. 8,151, 2-16-93, Cl. 82.200.
van der Knapp, Jacques C. M., to Fides Beheer B.V. Chrysanthemum plant — Lierway cultivar. 8,152, 2-16-93, Cl. 82.200.

CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 16, 1993

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
424 5,185,889

CLASS 4
252.5 5,185,890
324 5,185,891
578.1 5,185,892
677 5,185,893

CLASS 5
81.1 5,185,894
86.1 5,185,895
118 5,185,896
455 5,185,897

CLASS 8
405 5,186,716
5,186,717

CLASS 15
3 5,185,898
93.1 5,185,899
97.1 5,185,900
98 5,185,901
105 5,185,902
339 5,185,903

CLASS 16
125 5,185,904

CLASS 19
114 5,185,905

CLASS 24
20 R 5,185,907
5,185,908
35 5,185,906
587 5,185,909
650 5,185,910

CLASS 29
25.01 5,186,718
5,186,719
401.1 5,185,911
408 5,185,912
453 5,185,913
460 5,185,914
525 5,185,915
5,185,916
558 5,185,917
598 5,185,918
602.1 5,185,919
794 5,185,920
825 5,185,921
5,185,922
888.03 5,185,923
889.1 5,185,924
890.049 5,185,925

CLASS 30
43.92 5,185,926
50 5,185,927
92.5 5,185,928
120.4 5,185,929
131 5,185,930
201 5,185,931
288 5,185,932
346.51 5,185,933
392 5,185,934

CLASS 33
1 PT 5,185,935
572 5,185,936
645 5,185,937

CLASS 34
58 5,185,938
105 5,185,939
115 5,185,940
242 5,185,941

CLASS 36
11.5 5,185,942
28 5,185,943
45 5,185,944
77 R 5,185,945

CLASS 37
231 5,185,946

CLASS 40
355 5,185,947
506 5,185,948

CLASS 42
69.01 5,187,312

CLASS 43
17 5,185,949
19.2 5,185,950
43.13 5,185,951
57.1 5,185,952
58 5,185,953

CLASS 44
351 5,186,720
519 5,186,721
605 5,186,722

CLASS 47
58 5,186,723

CLASS 49
168 5,185,954
216 5,185,955

CLASS 51
5 C 5,185,956
59 SS 5,185,957
68 5,185,958
72 R 5,185,959
104 5,185,960
148 5,185,962
5,185,963
281 R 5,185,964
283 E 5,185,965
283 R 5,185,966
289 R 5,185,967
293 5,186,724
5,186,725
319 5,185,968
338 5,185,969
372 5,185,970

CLASS 52
36 5,185,971
63 5,185,972
64 5,185,973
95 5,185,974
167 RA 5,185,976
173 DS 5,185,977
175 5,185,978
235 5,185,979
506 5,185,980
578 5,185,981
646 5,185,982

CLASS 53
136.3 5,185,983
252 5,185,984
299 5,185,985
397 5,185,986
429 5,185,987
436 5,185,988

CLASS 54
145 R 5,185,961

CLASS 55
32 5,186,726
35 5,186,727
90 5,186,728

CLASS 56
13.1 5,185,989
51 5,185,990
128 5,185,991
400.04 5,185,992

CLASS 57
281 5,185,993
412 5,185,994

CLASS 59
80 5,185,995

CLASS 60
39.02 5,185,996
39.07 5,185,997
299 5,185,998
404 5,185,999
420 5,186,000
515 5,186,001
547.1 5,186,002
555 5,186,003
594 5,186,004
600 5,186,005
753 5,186,006

CLASS 62
22 5,186,007
63 5,186,008
112 5,186,009
5,186,010
114 5,186,011
5,186,012
115 5,186,013
129 5,186,014
133 5,186,015
150 5,186,016
292 5,186,017
374 5,186,018
381 5,186,019
457.9 5,186,020
511 5,186,021
515 5,186,022

CLASS 63
15.5 5,186,023
32 5,186,024

CLASS 65
33 5,186,729
289 5,186,730

CLASS 66
9 R 5,186,025
123 5,186,026
147 5,186,027
232 5,186,028

CLASS 70
38 A 5,186,029
190 5,186,030
277 5,186,031
315 5,186,032

CLASS 71
5 5,186,731
64.11 5,186,732

CLASS 72
75 5,186,033
187 5,186,034
208 5,186,035
306 5,186,036
442 5,186,037
457 5,186,038
5,186,039

CLASS 73
54.01 5,186,040
105 5,186,041
118.1 5,186,042
5,186,043
118.2 5,186,044
5,186,045
5,186,046
147 5,186,047
151 5,186,048
155 5,186,049
186 5,186,050
187 5,186,051
204.26 5,186,052
215 5,186,053
497 5,186,054
724 5,186,055
727 5,186,056
861.24 5,186,057
861.41 5,186,058
861.56 5,186,059
862.193 5,186,060
862.474 5,186,061
862.632 5,186,062
865.4

CLASS 74
2 5,186,063
47 5,186,064
331 5,186,065
335 5,186,066
424.6 5,186,067
425 5,186,068
477 5,186,069
5,186,070
489 5,186,071
501.5 5,186,072
503 5,186,073
551.2 5,186,074
552 5,186,075
560 5,186,076
574 5,186,077
606 R 5,186,078
607 5,186,079
857 5,186,080
859 5,186,081

CLASS 75
238 5,186,739
401 5,186,740
484 5,186,741
773 5,186,742

CLASS 76
107.1 5,186,082

CLASS 81
124.4 5,186,083
431 5,186,084
434 5,186,085

CLASS 82
124 5,186,086
142 5,186,087
5,186,088

CLASS 83
56 5,186,089
341 5,186,090
649 5,186,091

CLASS 84
622 5,187,313
626 5,187,314
688 5,187,315

CLASS 87
22 5,186,092

CLASS 89
36.02 5,187,316
36.14 5,187,317
37.22 5,187,318

CLASS 91
433 5,186,093
491 5,186,094
518 5,186,095

CLASS 99
282 5,186,096
330 5,186,097
494 5,186,098

CLASS 100
35 5,186,099

CLASS 101
40 5,186,100
97 5,186,101
128.4 5,186,102
181 5,186,103
216 5,186,104
217 5,186,105
242 5,186,106
409 5,186,107
415.1 5,186,108

CLASS 102
202.1 5,187,319
275.8 5,187,320
293 5,187,321
427 5,187,322
440 5,187,323
464 5,187,324
509 5,187,325

CLASS 105
215.2 5,186,109
247 5,186,110

CLASS 106
38.35 5,186,743
243 5,186,744
287.16 5,186,745
416 5,186,746
468 5,186,747
479 5,186,748
810 5,186,749

CLASS 110
238 5,186,111
256 5,186,112

CLASS 112
80.42 5,186,113
254 5,186,114
306 5,186,115
323 5,186,116

CLASS 114
330 5,186,117

CLASS 116
214 5,186,118
222 5,186,119

CLASS 118
50.1 5,186,750
109 5,186,751
260 5,186,752
410 5,186,753
411 5,186,754
641 5,186,755
657 5,187,326
667 5,186,120
730 5,186,756

CLASS 119
4 5,186,121
15 5,186,122
23 5,186,123
29 5,186,124
99 5,186,125

CLASS 123
52 MB 5,186,126
54 R 5,186,127
90.16 5,186,128
90.34 5,186,129
90.35 5,186,130
146.5 A 5,186,131
169 R 5,186,132
179.14 5,186,133
179.5 5,186,134
188.3 5,186,135
192.1 5,186,136
192.2 5,186,137
198 DB 5,186,138
308 5,186,140
321 5,186,141
339 5,186,142
357 5,186,143
414 5,186,144
425 5,186,145
435 5,186,146
457 5,186,147
479 5,186,148
491 5,186,149
494 5,186,150
506 5,186,151
514 5,186,152
519 5,186,153
557 Re.34,178
634 5,186,154
685 5,186,155

CLASS 124
59 5,186,156
93 A 5,186,934

CLASS 125
14 5,186,157

CLASS 126
39 H 5,186,158
41 R 5,186,159
500 5,186,161
586 5,186,160

CLASS 128
24 AA 5,186,162
64 5,186,163
200.14 5,186,164
201.28 5,186,165
203.15 5,186,166
207.14 5,186,167
207.29 5,186,168
419 PG 5,186,169
419 R 5,186,170
421 5,186,171
632 5,186,172
633 5,186,173
653.1 5,186,174
654 5,186,922
661.01 5,186,175
5,186,176
662.06 5,186,177
754 5,186,178
772 5,186,179
778 5,186,180
804 5,186,181

CLASS 131
241 5,186,182
281 5,186,183
5,186,184
337 5,186,185

CLASS 132
200 5,186,186
245 5,186,187
251 5,186,188
285 5,186,189
319 5,186,190
322 5,186,191

CLASS 134
8 5,186,757
10 5,186,758
21 5,186,759
22.18 5,186,760
68 5,186,192
105 5,186,193
154 5,186,194
170 5,186,195

CLASS 135
16 5,186,196
25.4 5,186,197

CLASS 137
14 5,186,198
15 5,186,199
5,186,200
38 5,186,201
68.1 5,186,202
192 5,186,203
238 5,186,204
242 5,186,205
244 5,186,206
495 5,186,207
505.12 5,186,208
505.18 5,186,209
596.17 5,186,210
625.24 5,186,211
5,186,212
625.61 5,186,213

CLASS 138
89 5,186,214
98 5,186,215
149 5,186,217

CLASS 139
145 5,186,216
438 5,186,218

CLASS 141
51 5,186,219
59 5,186,220
5,186,221
86 5,186,222
91 5,186,223
387 5,186,224

CLASS 144
2 N 5,186,225
144 R 5,186,226
242 D 5,186,227
286 R 5,186,228

CLASS 148
101 5,186,761
111 5,186,762
5,186,763
206 5,186,764
301 5,186,765
5,186,766
552 5,186,235
5,186,767
580 5,186,768
593 5,186,769

CLASS 149
92 5,186,770

CLASS 152
158 5,186,771
516 5,186,772
531 5,186,773
539 5,186,774

CLASS 156
69 5,186,775
73.2 5,186,776

VOL 1147 ISS 3 FE 16 1993 UMI

79 5,186,777
126 5,186,778
161 5,186,779
167 5,186,780
169 5,186,781
244.11 5,186,782
307.3 5,186,783
605 5,186,784
613 5,186,785
626 5,186,786
631 5,186,787
643 5,186,788
659.1 5,186,789
665 5,186,790

CLASS 160

176.1 5,186,229
206 5,186,230
310 5,186,231
330 5,186,232

CLASS 162

56 5,186,791
263 5,186,792

CLASS 164

58.1 5,186,233
97 5,186,234
478 5,186,236

CLASS 165

42 5,186,237
80.4 5,186,238
81 5,186,239
95 5,186,240
104.12 5,186,241
110 5,186,242
135 5,186,243
5,186,244
140 5,186,245
5,186,246
162 5,186,247
173 5,186,248
174 5,186,249
177 5,186,250
5,186,251
181 5,186,252

CLASS 166

77 5,186,253
105 5,186,254
250 5,186,255
272 5,186,256
273 5,186,257
387 5,186,258

CLASS 168

24 5,186,259

CLASS 169

65 5,186,260

CLASS 172

285 5,186,261

CLASS 173

182 5,186,262

CLASS 174

35 R 5,187,327
52.2 5,187,328
113 R 5,187,329
260 5,187,564

CLASS 175

20 5,186,263
27 5,186,264
107 5,186,265
215 5,186,266
371 5,186,267
399 5,186,268

CLASS 178

18 5,187,330

CLASS 180

6.5 5,186,269
6.62 5,186,270
14.4 5,186,271
132 5,186,272
140 5,186,273
227 5,186,274

CLASS 181

121 5,187,331
122 5,187,332
152 5,187,333
265 5,187,334

CLASS 182

5 5,186,275
187 5,186,276

CLASS 184

6.22 5,186,277
6.23 5,186,278
15.1 5,186,279
15.3 5,186,280

CLASS 186

55 5,186,281

CLASS 187

8.59 5,186,282
20 5,186,283

CLASS 188

71.8 5,186,284
77 W 5,186,285
171 5,186,286
5,186,287
5,186,288
180 5,186,289

CLASS 190

108 5,186,290

CLASS 192

3.23 5,186,291
3.28 5,186,292
5,186,293
3.3 5,186,294
13 R 5,186,295
41 R 5,186,296
85 CA 5,186,297
111 A 5,186,298

CLASS 193

2 R 5,186,299

CLASS 198

322 5,186,300
333 5,186,301
335 5,186,302
345.1 5,186,303
346.1 5,186,304
392 5,186,305
442 5,186,306
454 5,186,307
572 5,186,308
606 5,186,309
626.5 5,186,310
626.6 5,186,311
716 5,186,312
806 5,186,313
860.2 5,186,314

CLASS 200

5 B 5,187,335
48 V 5,186,315
61.61 5,187,336
82 R 5,187,337
83 R 5,187,338
148 F 5,187,339
527 5,186,316

CLASS 204

59 R 5,186,793
98 5,186,794
129.35 5,186,796
129.4 5,186,795
146 5,186,797
153.1 5,186,798
157.15 5,186,799
180.1 5,186,800
181.1 5,186,801
181.4 5,186,802
201 5,186,803
251 5,186,804
265 5,186,805
5,186,806
299 R 5,186,807
418 5,186,808
421 5,186,809
425 5,186,810

CLASS 205

125 5,186,811
141 5,186,812
171 5,186,813

CLASS 206

5.1 5,186,317
37 5,186,318
45.14 5,186,319
45.19 5,186,320
151 5,186,321
216 5,186,322
221 5,186,323
223 5,186,324
232 5,186,325
234 5,186,326
313 5,186,327
330 5,186,328
372 5,186,329
508 5,186,330

CLASS 208

46 5,186,814
48 R 5,186,815
135 5,186,816
188 5,186,817
254 H 5,186,818
310 Z 5,186,819

CLASS 209

3.001 5,186,331
17 5,186,332
164 5,186,820
370 5,186,333
534 5,186,334
552 5,186,335
583 5,186,336

CLASS 210

86 5,186,821
122 5,186,822
197 5,186,823
198.2 5,186,824
5,186,826
222 5,186,827
232 5,186,828
5,186,829
5,186,830
242.4 5,186,831
321.75 5,186,833
321.8 5,186,832
411 5,186,825
413 5,186,834
500.36 5,186,835
512.1 5,186,836
614 5,186,837
635 5,186,838
656 5,186,839
709 5,186,840
760 5,186,841
763 5,186,842
767 5,186,843
782 5,186,844

CLASS 211

26 5,186,337
41 5,186,338
74 5,186,339
133 5,186,340
204 5,186,341

CLASS 212

147 5,186,342
206 5,186,343

CLASS 215

330 5,186,344

CLASS 219

10.53 5,187,340
69.13 5,187,341
69.14 5,187,342
74 5,187,343
121.5 5,187,344
121.52 5,187,347
121.63 5,187,345
121.64 5,187,346
124.02 5,187,348
202 5,187,349
203 5,187,350

CLASS 220

23.4 5,186,345
212.5 5,186,346
254 5,186,347
270 5,186,348
331 5,186,349
412 5,186,350
563 5,186,351
564 5,186,352
711 5,186,353
720 5,186,354

CLASS 221

75 5,186,355
250 5,186,356

CLASS 222

1 5,186,357
5,186,358
5,186,359
63 5,186,360
95 5,186,361
136 5,186,362
145 5,186,363
153 5,186,364
5,186,365
158 5,186,366
207 5,186,367
490 5,186,368
521 5,186,369
545 5,186,370
598 5,186,845

CLASS 224

42.21 5,186,371
155 5,186,372
183 5,186,373
191 5,186,374
202 5,186,375

CLASS 225

42 5,186,376

CLASS 228

37 5,186,377
110 5,186,378
116 5,186,379
121 5,186,380
123 5,186,381
135 5,186,382
180.2 5,186,383

CLASS 229

122 5,186,384

CLASS 235

379 5,187,351
382 5,187,352
462 5,187,353
472 5,187,354
5,187,355
5,187,356

CLASS 236

1 G 5,186,385
11 5,186,386
49.3 5,186,387

CLASS 239

8 5,186,388
102.2 5,186,389
265.37 5,186,390
373 5,186,391
532 5,186,392
583 5,186,393
587.4 5,186,394
654 5,186,395
675 5,186,396

CLASS 241

23 5,186,397
33 5,186,398
34 5,186,399
39 5,186,400
46.01 5,186,401
55 5,186,402
99 5,186,403
119 5,186,404

CLASS 242

1.10 R 5,186,405
54 R 5,186,406
56.2 5,186,407
65 5,186,408
75.44 5,186,409
86.5 R 5,186,410
96 5,186,411
245 5,186,412

CLASS 244

1 TD 5,186,413
3.12 5,186,414
12.1 5,186,415
75 R 5,186,416
137.1 5,186,417
138 A 5,186,418
158 R 5,186,419
219 5,186,420

CLASS 246

118 5,186,421

CLASS 248

123.1 5,186,422
160 5,186,423
179 5,186,424
188.1 5,186,425
251 5,186,426
5,186,427
284 5,186,428
354.1 5,186,429
354.3 5,186,430

CLASS 250

206.1 5,187,357
208.1 5,187,358
5,187,359
208.2 5,187,360
222.1 5,187,361
227.15 5,187,362
227.25 5,187,363
236 5,187,364
282 5,187,365
302 5,187,366
306 5,187,367
341 5,187,368
370.11 5,187,369
379 5,187,370
396 R 5,187,371
548 5,187,372
551 5,187,373
561 5,187,374
5,187,375
562 5,187,376

CLASS 251

5 5,186,431
16 5,186,432
309 5,186,433
331 5,186,434

CLASS 252

8.551 5,186,847
8.552 5,186,848
8.7 5,186,846
21 5,186,849
47.5 5,186,850
49.006 5,186,851
50 5,186,852
51.5 A 5,186,853
62.55 5,186,854
117 5,186,855
143 5,186,856
167 5,186,857
299.61 5,186,858
373 5,186,859
500 5,186,860
5,186,861
512 5,186,862
570 5,186,863
581 5,186,864
582 5,186,865
584 5,186,866
586 5,186,867
645 5,186,868

CLASS 254

10.5 5,186,435
29 R 5,186,436
30 5,186,437

CLASS 256

13.1 5,186,438

CLASS 257

53 5,187,563
76 5,187,560
77 5,187,547
89 5,187,377
187 5,187,553
188 5,187,378
192 5,187,379
202 5,187,555
206 5,187,556
301 5,187,550
5,187,566
306 5,187,549
308 5,187,548
310 5,187,557
347 5,187,551
408 5,187,552
420 5,187,558
428 5,187,380
538 5,187,559
539 5,187,562
682 5,187,565
771 5,187,561

CLASS 261

30 5,186,869

CLASS 264

1.2 5,186,870
3.3 5,186,871
5 5,186,872
29.5 5,186,873
35 5,186,874
37 5,186,875
40.6 5,186,876
104 5,186,877
209.4 5,186,878
211.150 5,186,879
236 5,186,880
256 5,186,881
257 5,186,882
275 5,186,883
572 5,186,884

CLASS 266

115 5,186,885
237 5,186,886

CLASS 267

35 5,186,439
220 5,186,440

CLASS 269

43 5,186,441

CLASS 270

1.1 5,186,443
52.5 5,186,444
053 5,186,445

CLASS 271

3.1 5,186,446
5,186,447
9 5,186,448
10 5,186,449
183 5,186,450
196 5,186,451
216 5,186,452
270 5,186,453
288 5,186,454

CLASS 273

32 B 5,186,455
33 5,186,456
58 K 5,186,457
65 EF 5,186,458
73 A 5,186,459
5,186,505
86 B 5,186,460
94 5,186,461
129 S 5,186,462
138 R 5,186,463
149 R 5,186,464
167 H 5,186,465
244 5,186,466
298 5,186,467
378 5,186,468
400 5,186,469
416 5,186,470
439 5,186,471

CLASS 277

37 5,186,472
81 R 5,186,473
166 5,186,474
181 5,186,475

CLASS 279

2.03 5,186,476
2.09 5,186,477
62 5,186,478

CLASS 280

47.35 5,186,479
250.1 5,186,480
276 5,186,481
278 5,186,482
494 5,186,483
633 5,186,484
678 5,186,485
689 5,186,486
707 5,186,487
728 5,186,488
5,186,489
731 5,186,490
741 5,186,491
743 5,186,492
806 5,186,493
5,186,494
808 5,186,495

CLASS 281

46 5,186,496
49 5,186,497

CLASS 283

67 5,186,498
81 5,186,499

CLASS 285

55 5,186,500
89 5,186,501
133.1 5,186,502
174 5,186,503

CLASS 292

216 5,186,504

CLASS 294

1.3 5,186,506
3.5 5,186,507
81.51 5,186,508
119.1 5,186,515

CLASS 296

1.1 5,186,509
37.5 5,186,510
95.1 5,186,511
97.8 5,186,442
5,186,512
100 5,186,513
5,186,514
121 5,186,516
214 5,186,517

CLASS 297

85 5,186,518
423 5,186,519
468 5,186,520

CLASS 301

6.91 5,186,521

CLASS 303

1 5,186,522
9.63 5,186,523
92 5,186,524
113.4 5,186,525

CLASS 305

39 5,186,526

CLASS 307

10.1 5,187,381
5,187,382
10.8 5,187,383
246 5,187,384
272.1 5,187,385
296.8 5,187,386
310 Re.34,179
350 5,187,387
5,187,389
353 5,187,390
448 5,187,388
449 5,187,394
451 B1 5,030,853
454 5,187,391

465 5,187,392
465.1 5,187,393
491 5,187,395
494 5,187,396
542 B1 4,975,603
578 5,187,397
586 5,187,554

CLASS 310

14 5,187,398
40 MM 5,187,399
49 R 5,187,400
156 5,187,401
322 5,187,402
323 5,187,406
334 5,187,403

CLASS 312

9.47 5,186,527
100 5,186,528
249.7 5,186,529

CLASS 313

131 A 5,187,404
316 5,187,405
318 5,187,407
326 5,187,415

CLASS 315

5 5,187,408
5,187,409
73 5,187,416
241 P 5,187,410
247 5,187,411
248 5,187,412
291 5,187,413
307 5,187,414

CLASS 318

254 5,187,417
568.19 5,187,418
805 5,187,419
823 5,187,420

CLASS 320

1 5,187,421
2 5,187,422
5,187,423
14 5,187,424
31 5,187,425

CLASS 322

63 5,187,426

CLASS 323

207 5,187,427
250 5,187,428
314 5,187,429

CLASS 324

66 5,187,430
158 MG 5,187,433
158 P 5,187,431
158 R 5,187,432
207.25 5,187,434
225 5,187,435
244 5,187,436
253 5,187,437
301 5,187,438
309 5,187,439
372 5,187,440
426 5,187,441
452 5,187,442
632 5,187,443
663 5,187,444

CLASS 328

167 5,187,445

CLASS 330

10 5,187,446
124 R 5,187,447
207 A 5,187,580
258 5,187,448

CLASS 331

66 5,187,449
96 5,187,450
99 5,187,451
113 R 5,187,452
116 FE 5,187,453

CLASS 333

17.3 5,187,454
161 5,187,455
170 5,187,457
181 5,187,456
197 5,187,458
204 5,187,459
219 5,187,460
219.1 5,187,461

CLASS 335

284 5,187,462

CLASS 337

165 5,187,463

CLASS 338

149 5,187,464

CLASS 340

438 5,187,465
572 5,187,466
707 5,187,467
709 5,187,468
825.220 5,187,469
825.44 5,187,471
825.440 5,187,470
825.69 5,187,472
854.4 5,187,473
870.18 5,187,474
870.32 5,187,475
906 5,187,476
968 5,187,477
970 5,187,478

CLASS 341

6 5,187,479
22 5,187,480
131 5,187,481
143 5,187,482
156 5,187,483

CLASS 342

200 5,187,484
357 5,187,485
360 5,187,486
372 5,187,487

CLASS 343

747 5,187,488
767 5,187,489
770 5,187,490
781 R 5,187,491
901 5,187,492

CLASS 346

49 5,187,493
76 PH 5,187,494
108 5,187,495
135.1 5,187,496
140 R 5,187,497
5,187,498
5,187,499
5,187,500
153.1 5,187,501

CLASS 351

44 5,187,502
128 5,187,503
153 5,187,504
159 5,187,505
221 5,187,506
226 5,187,507

CLASS 352

180 5,187,508

CLASS 353

101 5,187,509
122 5,187,510

CLASS 354

106 5,187,511
120 5,187,512
195.1 5,187,513
275 5,187,514
400 5,187,515
403 5,187,516
412 5,187,517

CLASS 355

40 5,187,518
53 5,187,519
72 5,187,520
202 5,187,521
246 5,187,522
251 5,187,523
260 5,187,524
269 5,187,525
273 5,187,526
282 5,187,527
290 5,187,528
296 5,187,529
308 5,187,530
5,187,531
309 5,187,532
5,187,533
324 5,187,534
326 5,187,535
327 5,187,536

CLASS 356

1 5,187,537
28.5 5,187,538
124 5,187,539
152 5,187,540
239 5,187,541
300 5,187,542
349 5,187,543
350 5,187,544
358 5,187,545
5,187,546

CLASS 358

21 R 5,187,567
39 5,187,568
50 5,187,569
80 5,187,570
85 5,187,571
98 5,187,572
106 5,187,573
108 5,187,574
140 5,187,575
144 5,187,576
167 5,187,577
168 5,187,578
183 5,187,579
213.11 5,187,581
5,187,582
213.15 5,187,583
213.18 5,187,584
227 5,187,585
254 5,187,586
296 5,187,587
5,187,588
335 5,187,589
5,187,590
425 5,187,591
430 5,187,592
434 5,187,593
455 5,187,594
482 5,187,595
484 5,187,596

CLASS 359

22 5,187,597
29 5,187,598
41 5,187,599
5,187,600
54 5,187,601
59 5,187,602
73 5,187,603
88 5,187,604
152 5,187,605
196 5,187,606
266 5,187,607
273 5,187,608
296 5,187,609
341 5,187,610
599 5,187,611
896 5,187,612

CLASS 360

45 5,187,614
46 5,187,615
61 5,187,616
64 5,187,617
69 5,187,618
77.04 5,187,620
77.08 5,187,619
97.02 5,187,621
99.02 5,187,622
103 5,187,623
104 5,187,624
5,187,625
5,187,626
105 5,187,627
126 5,187,628
132 5,187,629
137 5,187,630

CLASS 361

94 5,187,631
103 5,187,632
119 5,187,634
231 5,187,635
313 5,187,636
5,187,637
5,187,638
323 5,187,639
329 5,187,640
380 5,187,641
386 5,187,642
391 5,187,643
393 5,187,644
5,187,645
395 5,187,646
413 5,187,647
424 5,187,648
525 5,187,649
5,187,650

CLASS 362

31 5,186,530
66 5,186,531
5,186,532
80.1 5,186,533
226 5,186,535
293 5,186,536
347 5,186,537
419 5,186,534

CLASS 363

35 5,187,651
37 5,187,652
89 5,187,653
154 5,187,654

CLASS 364

146 5,187,655
167.01 5,187,656
413.06 5,187,657
413.13 5,187,658
413.15 5,187,659
413.19 5,187,660
422 5,187,661
424.02 5,187,662
5,187,663
5,187,664
424.05 5,187,665
426.02 5,187,666
443 5,187,667
468 5,187,668
474.17 5,187,669
477 5,187,670
490 5,187,671
550 5,187,672
555 5,187,673
558 5,187,674
715.06 5,187,675
717 5,187,676
721 5,187,677
748 5,187,678
786 5,187,679
807 5,187,680
821 5,187,681
841 5,187,682

CLASS 365

185 5,187,683
189.05 5,187,684
189.09 5,187,685
189.11 5,187,686

CLASS 366

16 5,186,538
85 5,186,539

CLASS 367

7 5,187,687
96 5,187,688
99 5,187,689
131 5,187,690
134 5,187,691
135 5,187,692

CLASS 368

35 5,187,693

CLASS 369

13 5,187,694
37 5,187,695
44.29 5,187,696
44.32 5,187,697
47 5,187,698
48 5,187,699
75.1 5,187,700
75.2 5,187,701
215 5,187,702
275.1 5,187,703

CLASS 370

13 5,187,704
15 5,187,705
16.1 5,187,706
79 5,187,707
85.1 5,187,708
85.3 5,187,709
110.1 5,187,710

CLASS 371

7 5,187,711
22.1 5,187,712

CLASS 372

26 5,187,713
36 5,187,714
46 5,187,715
57 5,187,716
96 5,187,717

CLASS 374

32 5,186,540
124 5,186,541

CLASS 375

1 5,187,718
10 5,187,719
35 5,187,720
62 5,187,721
118 5,187,722

CLASS 376

248 5,186,887
280 5,186,888
434 5,186,890
438 5,186,891

CLASS 377

6 5,187,723
17 5,187,724
56 5,187,725

CLASS 378

35 5,187,726
50 5,187,727
59 5,187,728
73 5,187,729
97 5,187,730
105 5,187,737
207 5,187,731

CLASS 379

5 5,187,732
10 5,187,733
79 5,187,734
88 5,187,735
100 5,187,736
145 5,187,738
155 5,187,739
209 5,187,740
388 5,187,741
403 5,187,742
436 5,187,743
449 5,187,744

CLASS 381

36 5,187,745
68.7 5,187,746

CLASS 382

4 5,187,747
5,187,748
6 5,187,749
7 5,187,750
36 5,187,751
41 5,187,752
46 5,187,753
54 5,187,754
56 5,187,755

CLASS 383

25 5,186,542
37 5,186,988
203 5,186,543

CLASS 384

15 5,186,544
43 5,186,545
206 5,186,546
480 5,186,547
486 5,186,548
505 5,186,549

CLASS 385

7 5,187,756
11 5,187,757
16 5,187,758
27 5,187,759
37 5,187,760
76 5,187,761
84 5,187,762
100 5,187,763
102 5,187,764
115 5,187,765
135 5,187,766
137 5,187,767
140 5,187,768
143 5,187,769
145 5,187,770

CLASS 392

416 5,187,771
449 5,187,772

CLASS 395

10 5,187,773
111 5,187,774
155 5,187,775
157 5,187,776
163 5,187,777
250 5,187,778
325 5,187,779
5,187,780
5,187,781
375 5,187,782
425 5,187,783
500 5,187,784
575 5,187,785
600 5,187,786
5,187,787
700 5,187,788
5,187,789
725 5,187,790
5,187,791
5,187,792
775 5,187,793
800 5,187,794
5,187,795
5,187,796
5,187,797
5,187,798
5,187,799
5,187,800
5,187,801
5,187,802

CLASS 400

54 5,186,550
61 5,186,551
124 5,186,552
242 5,186,553
247 5,186,554
485 5,186,555
642 5,186,556
691 5,186,557
692 5,186,558

CLASS 401

44 5,186,559
78 5,186,560
5,186,561
112 5,186,562
153 5,186,563
202 5,186,564

CLASS 402

79 5,186,565
5,186,566

CLASS 403

7 5,186,567
49 5,186,568
154 5,186,569
174 5,186,570
231 5,186,571
251 5,186,572
300 5,186,573

CLASS 404

73 5,186,574
96 5,186,575

CLASS 405

7 5,186,576
52 5,186,577
79 5,186,578
143 5,186,579
169 5,186,580
217 5,186,581
239 5,186,582

CLASS 407

39 5,186,583

CLASS 408

26 5,186,584

CLASS 410

9 5,186,585
100 5,186,586
118 5,186,587
120 5,186,588

CLASS 411

45 5,186,590
508 5,186,591

CLASS 413

2 5,186,592
19 5,186,593

CLASS 414

217 5,186,594
225 5,186,595
395 5,186,596
469 5,186,597
498 5,186,598
792.9 5,186,599
793.4 5,186,600

CLASS 415

58.4 5,186,601
75 5,186,602
80 5,186,603
90 5,186,604
119 5,186,605
152.1 5,186,606
183 5,186,607

CLASS 416

37 5,186,608
129 5,186,609

CLASS 417

61 5,186,610
138 5,186,611
216 5,186,612
291 5,186,613
312 5,186,614
387 5,186,615

CLASS 418

55.5 5,186,616

CLASS 419

53 5,186,892

CLASS 422

23 5,186,893
56 5,186,894
67 5,186,895
72 5,186,896
100 5,186,897
102 5,186,898
104 5,186,899
5,186,900
111 5,186,901
112 5,186,902
122 5,186,903
130 5,186,904
133 5,186,905
180 5,186,906

VOL 1147 ISS 3 FEB 16 1993 UMI

186.3 5,186,907
190 5,186,908
213 5,186,909
220 5,186,910
245 5,186,911
263 5,186,912

CLASS 423

2 5,186,913
29 5,186,915
210 5,186,916
239 5,186,914
5,186,917
448 5,186,919
479 B1 5,002,746
610 5,186,920
718 5,186,918

CLASS 424

1.1 5,186,921
9 5,186,923
5,186,924
43 5,186,925
53 5,186,926
54 5,186,927
70 5,186,928
71 5,186,929
78.1 5,186,930
85.2 5,186,931
89 5,186,933
410 5,186,935
435 5,186,936
438 5,186,937
443 5,186,938
448 5,186,939
450 5,186,940
5,186,941
473 5,186,942
490 5,186,943
520 5,186,944
529 5,186,945
613 5,186,946
638 5,186,947

CLASS 425

5 5,186,948
11 5,186,949
28.1 5,186,950
5,186,951
36 5,186,952
47 5,186,953
130 5,186,954
5,186,955
135 5,186,956
145 5,187,001
192 R 5,186,957
193 5,186,958
215 5,186,959
376.1 5,186,960

CLASS 426

2 5,186,961
61 5,186,962
72 5,186,963
74 5,186,964
5,186,965
402 5,186,966
438 5,186,967
483 5,186,968
500 5,186,969
512 5,186,970
580 5,186,971

CLASS 427

2 5,186,972
99 5,186,975
129 5,186,976
132 5,186,977
154 5,186,978
156 5,186,979
187 5,186,980
247 5,186,981
256 5,186,982
261 5,186,983
443.1 5,186,984
536 5,186,974
590 5,186,973

CLASS 428

1 5,186,985
5,186,986
34.5 5,186,987
34.9 5,186,989
35.6 5,186,990
35.8 5,186,991
36.3 5,186,992
36.92 5,186,993
64 5,186,994
5,186,995
72 5,186,996
99 5,186,997
102 5,186,998
117 5,186,999
141 5,187,000
195 5,187,002
225 5,187,003
229 5,187,004
252 5,187,005
288 5,187,006
343 5,187,007
378 5,187,008
383 5,187,009
398 5,187,010
402 5,187,012
402.24 5,187,011
407 5,187,013
447 5,187,014
5,187,015
462 5,187,016
469 5,187,017
474.7 5,187,018
524 5,187,019
547 Re.34,180
601 5,187,020
607 5,187,021
694 5,187,022
911 5,187,023

CLASS 429

24 5,187,024
33 5,187,025
96 5,187,026
99 5,187,027
101 5,187,028
102 5,187,029
120 5,187,030
129 5,187,031
192 5,187,032
194 5,187,033
198 5,187,034
218 5,187,035

CLASS 430

59 5,187,036
110 5,187,037
5,187,038
126 5,187,039
157 5,187,040
201 5,187,041
264 5,187,042
270 5,187,043
271 5,187,044
275 5,187,045
278 5,187,046
286 5,187,047
5,187,048
340 5,187,049
399 5,187,050
448 5,187,051
495 5,187,052
505 5,187,053
523 5,187,054
544 5,187,055
5,187,056
558 5,187,057
567 5,187,058
627 5,187,059

CLASS 431

9 5,186,617
153 5,186,618
344 5,186,619
354 5,186,620
5,186,621

CLASS 432

13 5,186,622

CLASS 433

6 5,186,623
69 5,186,624
88 5,186,625
180 5,186,626
216 5,186,627

CLASS 434

11 5,186,628
114 5,186,629
149 5,186,630
409 5,186,631

CLASS 435

5 5,187,060
5,187,061
7.21 5,187,063
7.31 5,187,064
7.32 5,187,065
7.36 5,187,066
7.9 5,187,067
7.92 5,187,068
7.94 5,187,062
13 5,187,069
25 5,187,070
32 5,187,071
34 5,187,072
41 5,187,074
69.1 5,187,075
5,187,076
5,187,077
5,187,078
5,187,079
69.3 5,187,080
71.1 5,187,081
71.3 5,187,082
91 5,187,083
5,187,084
5,187,085
146 5,187,086
172.1 5,187,087
172.3 5,187,073
191 5,187,088
212 5,187,089
235.1 5,187,090
240.4 5,187,091
240.45 5,187,092
252.1 5,187,093
280 5,187,094
285 5,187,095
291 5,187,096
313 5,187,097
320.1 5,187,098

CLASS 436

10 5,187,099
16 5,187,100
42 5,187,101
69 5,187,102
79 5,187,103
86 5,187,104
119 5,187,105
501 5,187,106
505 5,187,107

CLASS 437

31 5,187,108
32 5,187,109
34 5,187,110
41 5,187,111
5,187,112
42 5,187,113
52 5,187,114
101 5,187,115
105 5,187,116
151 5,187,117
180 5,187,118
187 5,187,119
192 5,187,120
195 5,187,121
200 5,187,122
220 5,187,123

CLASS 439

67 5,186,632
79 5,186,633
82 5,186,634
89 5,186,635
133 5,186,636
5,186,637
140 5,186,638
188 5,186,639
211 5,186,640
266 5,186,641
268 5,186,642
326 5,186,643
353 5,186,644
358 5,186,645
374 5,186,646
395 5,186,647
409 5,186,648
460 5,186,649
463 5,186,650
495 5,186,651
500 5,186,652
5,186,653
570 5,186,654
583 5,186,655
585 5,186,656
595 5,186,657
5,186,658
643 5,186,659
685 5,186,660
718 5,186,661
752 5,186,662
843 5,186,663
845 5,186,664
862 5,186,665

CLASS 440

61 5,186,666

CLASS 441

129 5,186,667

CLASS 445

9 5,186,668
5,187,804
16 5,186,669
24 5,186,670
49 5,186,671

CLASS 446

95 5,186,672
98 5,186,673
144 5,186,674
199 5,186,675
465 5,186,676

CLASS 452

66 5,186,677
106 5,186,678
117 5,186,679
125 5,186,680

CLASS 454

74 5,186,681
75 5,186,682

CLASS 455

4.1 5,187,803
12.1 5,187,805
15 5,187,806
17 5,187,807
33.1 5,187,808
5,187,809
34.1 5,187,810
35.1 5,187,811

CLASS 460

105 5,186,683

CLASS 462

17 5,186,684

CLASS 464

46 5,186,685
69 5,186,686
144 5,186,687

CLASS 470

9 5,186,688

CLASS 474

112 5,186,689
135 5,186,690
166 5,186,691

CLASS 475

82 5,186,692
148 5,186,693
230 5,186,694

CLASS 482

6 5,186,695
40 5,186,696
52 5,186,697
79 5,186,698
111 5,186,699
5,186,700
125 5,186,701
145 5,186,702
148 5,186,703

CLASS 493

18 5,186,704
215 5,186,705
316 5,186,706
439 5,186,707

CLASS 494

41 5,186,708
43 5,186,709

CLASS 501

1 5,187,124
5,187,125
65 5,187,126
95 5,187,127
96 5,187,128
97 5,187,129
5,187,130
129 5,187,205

CLASS 502

34 5,187,131
64 5,187,132
66 5,187,133
158 5,187,134
162 5,187,135
5,187,136
241 5,187,137
255 5,187,138
348 5,187,140
432 5,187,141
439 5,187,142

CLASS 503

212 5,187,143
227 5,187,144
5,187,145
5,187,146

CLASS 504

192 5,186,738
195 5,186,733
196 5,186,734
225 5,186,736
242 5,186,735
283 5,186,737

CLASS 505

1 5,187,147
5,187,148
5,187,149

CLASS 514

2 5,187,150
3 5,187,151
12 5,187,153
5,187,154
5,187,155
13 5,187,158
18 5,187,156
5,187,157
46 5,187,162
47 5,187,163
81 5,187,159
202 5,187,160
249 5,187,166
255 5,187,161
259 5,187,167
5,187,168
261 5,187,174
269 5,187,175
5,187,176
282 5,187,177
299 5,187,164
307 5,187,165
312 5,187,180
318 5,187,181
343 5,187,169
351 5,187,170
359 5,187,171
369 5,187,172
373 5,187,173
374 5,187,188
383 5,187,178
5,187,179
5,187,182
400 5,187,183
406 5,187,184
408 5,187,185
410 5,187,186
419 5,187,187
445 5,187,192
476 5,187,193
499 5,187,194
510 5,187,195
535 5,187,196
585 5,187,197
608 5,187,189
652 5,187,190
772.3 5,187,191

CLASS 521

75 5,187,203
111 5,187,204
129 5,187,206

CLASS 523

106 5,187,207
136 5,187,208
205 5,187,209
404 5,187,198
523 5,187,199

CLASS 524

30 5,187,200
31 5,187,201
35 5,187,202
48 5,187,210
107 5,187,211
114 5,187,212
120 5,187,213
157 5,187,214
224 5,187,215
261 5,187,216
297 5,187,217
312 Re.34,181
317 5,187,218
377 5,187,219
441 5,187,220
461 5,187,221
492 5,187,222
496 5,187,223
505 5,187,224
847 5,187,225

CLASS 525

56 5,187,226
65 5,187,227
66 5,187,228
123 5,187,229
133 5,187,230
207 5,187,231
215 5,187,232
267 5,187,233
276 5,187,234
305 5,187,235
314 5,187,236
326.2 5,187,237
327.2 5,187,238
329.3 5,187,239
351 5,187,240
420 5,187,241
439 5,187,242
464 5,187,243
479 5,187,244

CLASS 526

88 5,187,245
5,187,246
133 5,187,247
243 5,187,248
316 5,187,249
348.6 5,187,250

CLASS 528

15 5,187,251
33 5,187,252
49 5,187,253
73 5,187,254
176 5,187,255
196 5,187,256
388 5,187,257
392 5,187,258

CLASS 530

354 5,187,259
358 5,187,260
363 5,187,261
370 5,187,262
399 5,187,263

CLASS 534

14 5,187,264
573 5,187,265

CLASS 536

6.4 5,187,266
23.1 5,187,267
23.72 5,187,268
56 5,187,269
102 5,187,272

CLASS 540

4 5,187,273

CLASS 544

186 5,187,274
207 5,187,275
295 5,187,276
362 5,187,277

CLASS 546

14 5,187,278
183 5,187,279
255 5,187,280

CLASS 548

110 5,187,288
260 5,187,289
314.7 5,187,271
338.1 5,187,270
5,187,290
455 5,187,282
457 5,187,283

CLASS 549

58 5,187,284
241 5,187,285
283 5,187,286
542 5,187,287
555 5,187,298

CLASS 552

522 5,187,299

CLASS 556

12 5,187,300
16 5,187,281
413 5,187,310
428 5,187,311
442 5,187,291

CLASS 558

134 5,187,292
267 5,187,293
272 5,187,294
343 5,187,295
351 5,187,296
360 5,187,297
455 5,187,301

CLASS 560

55 5,187,303
118 5,187,304
145 5,187,305
157 5,187,306
177 5,187,307
202 5,187,308
218 5,187,309

CLASS 600

22 5,186,710
37 5,186,711

CLASS 604

4 5,186,713
21 5,186,714
28 5,186,715
165 5,186,712

D1— 199 333,202
D2— 28 333,203
310 333,204
314 333,205
333,206
333,207
333,208
333,209
320 333,210
333,211
D3— 3 333,212
102 333,213
104 333,214
105 333,215
D4— 104 333,216
135 333,217
D6— 366 333,218
372 333,223
373 333,224
407 333,225
466 333,226
468 333,227
472 333,219
479 333,220
482 333,228
486 333,221
495 333,229
333,230
333,231
333,232
502 333,233
561 333,222
D7— 340 333,234
403 333,235
409 333,236
553 333,237
637 333,238
649 333,239
672 333,240
688 333,241
D8— 14.1 333,242
21 333,243
29 333,244
45 333,245
68 333,246
70 333,247
73 333,248
97 333,249
333,250
99 333,251
333,252
333,253
308 333,254
356 333,255
333,256
333,257
375 333,258
381 333,259
D9— 305 333,260
312 333,261
339 333,262
341 333,263
420 333,264
455 333,265
520 333,266
529 333,267
538 333,268
544 333,269
566 333,270
D10— 2 333,271
15 333,272
29 333,273
30 333,274
31 333,275
66 333,276
89 333,277
113 333,278
D11— 43 333,279
117 333,280
121 333,281
131 333,282
333,283
333,284
D12— 142 333,285
146 333,286
333,287
333,288
156 333,289
157 333,290
215 333,291
D13— 146 333,292
147 333,293
158 333,294
168 333,295
171 333,296
D14— 100 333,297
333,298
106 333,299
114 333,300
118 333,301
333,302
121 333,303
130 333,304
223 333,305
251 333,306
258 333,307
D15— 7 333,308
14 333,309
78 333,310
127 333,311
D16— 102 333,312
135 333,313
D17— 22 333,314
D18— 7 333,315
55 333,316
D19— 26 333,318
32 333,317
64 333,319
D20— 11 333,320
40 333,321
44 333,322
D21— 25 333,323
48 333,324
333,325
75 333,326
76 333,327
114 333,328
191 333,329
192 333,330
219 333,331
333,332
222 333,333
D22— 108 333,334
112 333,335
D23— 200 333,336
209 333,337
213 333,338
223 333,339
238 333,340
252 333,341
261 333,342
271 333,343
305 333,344
311 333,345
317 333,346
D24— 64 333,319
131 333,347
162 333,348
164 333,349
206 333,350
333,351
D25— 48 333,324
58 333,352
60 333,353
118 333,354
333,355
124 333,356
333,357
D26— 46 333,358
48 333,359
65 333,360
93 333,361
136 333,362
142 333,363
D28— 63 333,364
85 333,365
D29— 16 333,366
D30— 110 333,367
D32— 40 333,368
D34— 10 333,369
12 333,370
28 333,371
D99— 1 333,372
37 333,373

CLASSIFICATION OF PLANTS

P.— 1 8,141
8,142
69.1 8,143
8,144
69.2 8,145
8,146
8,147
8,148
77 8,149
82.2 8,150
8,151
8,152

VOL
1147
ISS
3
FE
16
1993
UMI

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01 : 5,186,049
5,186,317
5,186,377
5,186,403
5,186,532
5,186,820
5,187,234
02 : 5,186,222
04 : 5,185,974
5,185,996
5,186,090
5,186,124
5,186,781
5,187,347
5,187,394
5,187,745
5,187,805
05 : 5,186,159
5,186,350
06 : 5,185,891
5,185,896
5,185,899
5,185,911
5,185,930
5,185,945
5,185,953
5,185,995
5,186,001
5,186,033
5,186,047
5,186,057
5,186,156
5,186,190
5,186,209
5,186,234
5,186,274
5,186,342
5,186,351
5,186,360
5,186,361
5,186,363
5,186,374
5,186,379
5,186,382
5,186,415
5,186,419
5,186,424
5,186,427
5,186,437
5,186,458
5,186,470
5,186,501
5,186,506
5,186,513
5,186,559
5,186,565
5,186,566
5,186,578
5,186,591
5,186,594
5,186,601
5,186,695
5,186,698
5,186,713
5,186,714
5,186,718
5,186,728
5,186,733
5,186,735
5,186,787
5,186,797
5,186,800
5,186,806
5,186,822
5,186,828
5,186,844
5,186,869
5,186,893
5,186,898
5,186,922
5,186,934
5,186,939
5,186,941
5,186,942
5,186,945
5,186,978
5,187,026
5,187,028
5,187,034
5,187,061
5,187,066
5,187,068
5,187,075
5,187,080
5,187,083
5,187,085
5,187,086
5,187,089
5,187,095
5,187,100
5,187,107
5,187,117
5,187,120
5,187,132
5,187,151
5,187,153
5,187,162
5,187,235
5,187,300
5,187,328
5,187,351
5,187,365
5,187,386
5,187,389
5,187,392
5,187,393
5,187,398
5,187,403
5,187,423
5,187,425
5,187,427
5,187,442
5,187,450
5,187,454
5,187,472
5,187,489
5,187,500
5,187,503
5,187,505
5,187,539
5,187,544
5,187,586
5,187,591
5,187,621
5,187,626
5,187,627
5,187,630
5,187,657
5,187,677
5,187,686
5,187,721
5,187,747
5,187,753
5,187,754
5,187,776
5,187,777
5,187,784
5,187,786
5,187,787
5,187,789
5,187,790
5,187,791
5,187,795
5,187,796
5,187,797
5,187,806
08 : 5,185,947
5,186,010
5,186,056
5,186,058
5,186,168
5,186,195
5,186,279
5,186,395
5,186,418
5,186,468
5,186,481
5,186,499
5,186,563
5,186,795
5,187,113
5,187,141
5,187,196
5,187,432
5,187,467
5,187,580
5,187,619
5,187,635
5,187,722
09 : 5,185,926
5,185,927
5,186,101
5,186,103
5,186,141
5,186,202
5,186,230
5,186,283
5,186,300
5,186,301
5,186,302
5,186,321
5,186,452
5,186,560
5,186,561
5,186,564
5,186,635
5,186,681
5,186,716
5,186,752
5,186,829
5,186,857
5,186,905
5,186,926
5,186,929
5,187,019
5,187,188
5,187,312
5,187,345
5,187,543
5,187,673
5,187,773
10 : 5,186,680
5,187,059
5,187,130
5,187,157
5,187,506
12 : 5,185,901
5,185,906
5,185,951
5,186,023
5,186,091
5,186,178
5,186,215
5,186,277
5,186,288
5,186,305
5,186,384
5,186,576
5,186,637
5,186,648
5,186,673
5,186,759
5,186,794
5,186,884
5,186,938
5,187,071
5,187,099
5,187,147
5,187,158
5,187,163
5,187,395
5,187,598
5,187,641
5,187,691
5,187,781
5,187,792
5,187,808
13 : 5,185,900
5,185,966
5,185,971
5,185,988
5,186,219
5,186,299
5,186,370
5,186,586
5,186,678
5,186,746
5,186,967
5,187,005
5,187,092
5,187,739
5,187,763
15 : 5,186,414
5,186,821
16 : 5,186,670
17 : 5,185,898
5,185,928
5,185,949
5,185,984
5,186,012
5,186,013
5,186,029
5,186,052
5,186,097
5,186,110
5,186,171
5,186,193
5,186,199
5,186,225
5,186,228
5,186,261
5,186,284
5,186,322
5,186,328
5,186,383
5,186,399
5,186,462
5,186,480
5,186,531
5,186,572
5,186,577
5,186,626
5,186,639
5,186,643
5,186,644
5,186,645
5,186,656
5,186,660
5,186,683
5,186,696
5,186,727
5,186,870
5,186,885
5,186,904
5,186,936
5,186,990
5,187,192
5,187,210
5,187,219
5,187,254
5,187,294
5,187,336
5,187,352
5,187,414
5,187,567
5,187,568
5,187,388
5,187,638
5,185,898

VOL 1147 ISS 3 FEB 16 1993 UMI

5,187,640 5,187,512 5,187,783 5,185,998 5,186,676 5,186,744
5,187,670 5,187,575 28 : 5,185,934 5,186,014 5,186,779 5,186,767
5,187,709 5,187,642 5,186,372 5,186,034 5,186,832 5,186,790
5,187,733 5,187,645 5,186,486 5,186,041 5,186,860 5,186,818
5,187,809 5,187,676 5,186,518 5,186,068 5,186,879 5,186,827
5,187,811 5,187,742 29 : 5,185,969 5,186,086 5,186,891 5,186,840
18 : 5,185,918 5,187,780 5,186,357 5,186,100 5,186,903 5,186,843
5,185,999 5,187,804 5,186,497 5,186,122 5,186,961 5,186,848
5,186,006 26 : 5,185,919 5,186,522 5,186,198 5,186,972 5,186,886
5,186,017 5,185,972 5,186,622 5,186,229 5,186,985 5,186,915
5,186,021 5,185,987 5,186,625 5,186,232 5,187,169 5,186,921
5,186,191 5,186,065 5,186,937 5,186,238 5,187,185 5,186,971
5,186,324 5,186,066 5,186,964 5,186,243 5,187,305 5,186,973
5,186,337 5,186,073 5,186,984 5,186,245 5,187,368 5,186,992
5,186,385 5,186,079 5,187,171 5,186,246 5,030,853 5,186,993
5,186,521 5,186,080 5,187,271 5,186,248 39 : 5,185,915 5,187,046
5,186,573 5,186,081 30 : 5,186,266 5,186,249 5,185,941 5,187,091
5,186,640 5,186,098 5,186,519 5,186,316 5,185,960 5,187,131
5,186,647 5,186,118 31 : 5,185,892 5,186,327 5,185,968 5,187,187
5,186,649 5,186,123 5,186,624 5,186,338 5,185,977 5,187,203
5,187,001 5,186,129 5,186,962 5,186,353 5,185,982 5,187,211
5,187,082 5,186,152 5,186,968 5,186,397 5,186,075 5,187,220
5,187,104 5,186,158 5,187,329 5,186,406 5,186,092 5,187,236
5,187,105 5,186,177 32 : 5,186,009 5,186,421 5,186,119 5,187,287
5,187,212 5,186,237 5,186,020 5,186,431 5,186,135 5,187,324
5,187,265 5,186,239 5,186,147 5,186,438 5,186,280 5,187,338
5,187,343 5,186,272 5,186,358 5,186,461 5,186,281 5,187,501
5,187,728 5,186,278 5,186,396 5,186,464 5,186,292 5,187,612
19 : 5,186,160 5,186,294 5,186,510 5,186,465 5,186,332 5,187,637
5,186,331 5,186,304 5,187,744 5,186,467 5,186,333 5,187,655
5,186,558 5,186,308 33 : 5,186,050 5,186,471 5,186,344 5,187,672
5,187,063 5,186,341 5,186,444 5,186,507 5,186,405 5,187,760
5,187,355 5,186,356 5,186,527 5,186,614 5,186,443 5,187,793
5,187,356 5,186,371 5,186,785 5,186,617 5,186,455 5,187,800
20 : 5,185,942 5,186,404 5,186,807 5,186,623 5,186,549 43 : 5,187,735
5,186,263 5,186,439 5,186,855 5,186,627 5,186,612 44 : 5,186,388
5,186,347 5,186,442 5,187,301 5,186,632 5,186,659 5,186,420
5,186,712 5,186,472 5,187,416 5,186,655 5,186,663 5,187,690
5,187,070 5,186,479 5,187,459 5,186,674 5,186,665 45 : 5,185,932
21 : 5,186,262 5,186,487 5,187,461 5,186,692 5,186,668 5,186,223
5,186,276 5,186,492 5,187,594 5,186,699 5,186,684 5,186,255
5,186,282 5,186,495 5,187,611 5,186,711 5,186,721 5,186,600
5,186,314 5,186,512 34 : 5,185,956 5,186,775 5,186,732 5,186,706
5,186,362 5,186,516 5,186,162 5,186,814 5,186,782 5,186,741
5,186,466 5,186,517 5,186,260 5,186,830 5,186,791 5,186,983
5,186,747 5,186,529 5,186,318 5,186,841 5,186,793 5,187,348
5,186,981 5,186,543 5,186,323 5,186,899 5,186,817 5,187,404
22 : 5,186,187 5,186,587 5,186,366 5,186,901 5,186,965 5,187,502
5,186,206 5,186,630 5,186,367 5,186,918 5,187,021 5,187,772
5,186,474 5,186,653 5,186,401 5,186,960 5,187,073 47 : 5,185,929
5,186,757 5,186,702 5,186,460 5,187,037 5,187,202 5,185,937
5,187,135 5,186,707 5,186,508 5,187,039 5,187,214 5,186,109
5,187,136 5,186,743 5,186,726 5,187,065 5,187,239 5,186,113
5,187,138 5,186,813 5,186,756 5,187,079 5,187,374 5,186,365
5,187,281 5,186,856 5,186,819 5,187,096 5,187,405 5,186,386
5,187,285 5,187,069 5,186,831 5,187,103 5,187,417 5,186,528
5,187,333 5,187,084 5,186,833 5,187,109 5,187,443 5,186,669
23 : 5,185,890 5,187,129 5,186,850 5,187,115 5,187,479 5,186,804
5,186,061 5,187,142 5,186,851 5,187,121 5,187,485 5,186,913
5,186,121 5,187,175 5,186,863 5,187,146 5,187,541 5,187,215
5,186,205 5,187,191 5,186,865 5,187,173 5,187,542 5,187,216
24 : 5,186,167 5,187,204 5,186,874 5,187,193 5,187,788 5,187,279
5,186,375 5,187,249 5,186,908 5,187,213 40 : 5,186,256 5,187,304
5,186,604 5,187,262 5,186,924 5,187,241 5,186,373 5,187,411
5,186,697 5,187,280 5,186,930 5,187,243 5,186,502 48 : Re.34,178
5,186,701 5,187,299 5,187,006 5,187,259 5,186,588 5,185,921
5,186,770 5,187,325 5,187,011 5,187,260 5,186,610 5,185,952
5,186,824 5,187,334 5,187,023 5,187,272 5,186,751 5,185,990
5,186,963 5,187,346 5,187,027 5,187,353 5,186,755 5,186,024
5,187,008 5,187,422 5,187,064 5,187,369 5,186,847 5,186,164
5,187,110 5,187,464 5,187,074 5,187,380 5,187,473 5,186,170
5,187,128 5,187,465 5,187,106 5,187,383 5,187,532 5,186,257
5,187,268 5,187,730 5,187,149 5,187,412 41 : 5,185,943 5,186,258
5,187,307 27 : 5,185,963 5,187,159 5,187,436 5,185,950 5,186,265
5,187,366 5,185,964 5,187,165 5,187,449 5,186,074 5,186,310
25 : 5,186,163 5,185,967 5,187,168 5,187,457 5,186,330 5,186,336
5,186,172 5,186,211 5,187,179 5,187,482 5,186,410 5,186,378
5,186,179 5,186,212 5,187,184 5,187,487 5,186,496 5,186,500
5,186,186 5,186,240 5,187,238 5,187,496 5,186,842 5,186,536
5,186,197 5,186,289 5,187,240 5,187,498 5,187,288 5,186,567
5,186,244 5,186,326 5,187,246 5,187,522 5,187,470 5,186,597
5,186,251 5,186,329 5,187,247 5,187,524 5,187,603 5,186,605
5,186,269 5,186,355 5,187,278 5,187,526 42 : Re.34,180 5,186,621
5,186,469 5,186,433 5,187,284 5,187,587 5,185,910 5,186,704
5,186,540 5,186,542 5,187,290 5,187,588 5,186,008 5,186,722
5,186,541 5,186,615 5,187,320 5,187,608 5,186,015 5,186,738
5,186,574 5,186,646 5,187,399 5,187,609 5,186,088 5,186,742
5,186,585 5,186,900 5,187,571 5,187,653 5,186,104 5,186,745
5,186,608 5,186,912 5,187,610 5,187,658 5,186,161 5,186,784
5,186,715 5,186,982 5,187,660 5,187,659 5,186,173 5,186,881
5,186,776 5,187,015 5,187,706 5,187,669 5,186,196 5,186,933
5,186,923 5,187,044 5,187,710 5,187,679 5,186,259 5,186,940
5,186,927 5,187,045 5,187,712 5,187,680 5,186,271 5,186,979
5,187,010 5,187,049 5,187,741 5,187,738 5,186,312 5,187,020
5,187,013 5,187,373 5,187,759 5,187,765 5,186,348 5,187,114
5,187,025 5,187,462 5,187,799 5,187,768 5,186,352 5,187,154
5,187,076 5,187,474 5,187,801 5,187,785 5,186,417 5,187,155
5,187,183 5,187,475 35 : 5,185,992 5,187,798 5,186,428 5,187,186
5,187,230 5,187,476 5,187,370 37 : 5,186,035 5,186,435 5,187,189
5,187,270 5,187,552 36 : 5,185,904 5,186,095 5,186,463 5,187,207
5,187,282 5,187,625 5,185,917 5,186,166 5,186,515 5,187,228
5,187,349 5,187,634 5,185,922 5,186,189 5,186,633 5,187,256
5,187,446 5,187,667 5,185,925 5,186,335 5,186,636 5,187,266
5,187,447 5,187,674 5,185,946 5,186,436 5,186,661 5,187,318
5,187,463 5,187,774 5,185,948 5,186,520 5,186,686 5,187,332
5,187,491 5,187,779 5,185,986 5,186,629 5,186,691 5,187,375

5,187,390 4,975,603 5,186,729 5,186,221 5,187,468 5,186,142
5,187,396 49 : 5,186,457 5,186,758 5,186,231 5,187,477 5,186,287
5,187,430 5,186,490 5,186,838 5,186,253 5,187,478 5,186,295
5,187,445 5,186,675 5,186,854 5,186,311 5,187,481 5,186,313
5,187,448 5,186,749 5,186,988 5,186,393 5,187,647 5,186,380
5,187,469 5,186,892 5,187,003 5,186,485 5,187,719 5,186,392
5,187,564 5,186,998 5,187,200 5,186,634 54 : 5,185,935 5,186,613
5,187,644 5,187,664 5,187,510 5,186,883 5,186,571 5,187,031
5,187,661 51 : 5,185,913 5,187,740 5,186,919 5,187,140 5,187,419
5,187,671 5,185,954 53 : Re.34,179 5,187,119 55 : 5,185,897 5,187,428
5,187,683 5,186,117 5,186,235 5,185,958 5,187,263 5,185,983 5,187,726
5,187,764 5,186,398 5,186,046 5,187,267 5,186,031 5,187,775
5,187,794 5,186,548 5,186,053 5,187,440 5,186,055 56 : 5,186,526
5,187,803

DESIGN PATENTS

01 : 333,224 333,321 333,240 333,260 333,287 333,247
333,292 333,329 333,361 333,298 333,288 333,280
04 : 333,323 333,347 18 : 333,219 333,315 333,318 333,327
333,333 333,349 333,268 333,341 333,328 333,372
333,364 333,350 20 : 333,245 333,367 333,332 333,373
06 : 333,213 333,366 333,277 36 : 333,204 333,362 44 : 333,205
333,215 333,368 21 : 333,241 333,236 333,369 48 : 333,242
333,226 08 : 333,251 22 : 333,345 333,262 40 : 333,244 333,294
333,229 333,320 25 : 333,211 333,264 41 : 333,206 50 : 333,234
333,230 333,334 26 : 333,289 333,269 333,207 51 : 333,217
333,231 09 : 333,249 333,307 333,270 333,208 333,233
333,232 333,250 333,371 333,274 333,209 333,235
333,239 333,346 27 : 333,221 333,278 333,210 333,282
333,243 10 : 333,356 333,322 333,300 333,255 333,283
333,248 12 : 333,261 28 : 333,218 333,314 333,256 333,284
333,252 333,291 29 : 333,212 333,317 333,257 53 : 333,330
333,253 333,297 333,214 333,281 333,336 54 : 333,308
333,265 333,331 333,295 37 : 333,310 333,358 55 : 333,202
333,275 333,337 333,342 333,354 333,359 333,220
333,279 333,343 32 : 333,238 333,355 333,370 333,259
333,299 13 : 333,357 333,296 333,216 333,222 333,344
333,306 16 : 333,290 33 : 333,305 39 : 333,286 42 : 333,225 333,353
333,311 17 : 333,203 34 : 333,254

VOL
1147

ISS
3

FE
16

1993

UMI

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ISS
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VOL
1147

ISS
3

FE
16

1993

UMI

VOL
1147

ISS
3

FE
16

1993

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Ronald H. Brown, *Secretary*

PATENT AND TRADEMARK OFFICE
Douglas B. Comer, *Acting Commissioner*

UMI

VOL
1147

ISS
4

FE
23

1993

UMI

Vol. 1147 Number 4

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VOL
1147
ISS
4
FE
23
1993
UMI

OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE
February 23, 1993 Volume 1147 Number 4

CONTENTS

	Page
Patent and Trademark Office Notices	
Patent Cooperation Treaty (PCT) Information	1147 OG 68
Patent Cooperation Treaty (PCT) Update	1147 OG 68
Notice of Maintenance Fees Payable	1147 OG 73
Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees	1147 OG 74
Reissue Applications Filed	1147 OG 80
Requests for Reexaminations Filed	1147 OG 80
Errata	1147 OG 81
Removal from Register	1147 OG 81
Consolidated Listing of O.G. Notice	1147 OG 81
Status of PTO Services	1147 OG 87
Helpful Hints	1147 OG 87
Certificates of Correction	1147 OG 89
Disclaimers	1147 OG 89
Disclaimer and Dedication	1147 OG 89
Special Boxes for Mail	1147 OG 90
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	1147 OG 91
Patent Examining Corps	1147 OG 93
Reexaminations	1781
Reissue Patents Granted (34,182)	1785
Plant Patents Granted (8,153)	1787
Patents Granted	
General and Mechanical (5,187,812)	1789
Chemical (5,188,639)	2075
Electrical (5,189,235)	2249
Design Patents Granted (333,374)	2421
Index of Patentees	PI 1
Indices of Reissue, Reexamination, Design and Plant Patents	PI 85
Classification of	
Patents (Including Reissues and Reexaminations)	PI 91
Designs, and Plants Applications	PI 95
Geographical Index of Residence of Inventors	
Patents (Including Reissues and Reexaminations)	PI 97
Designs and Plant Applications	PI 100
Change of Address Form	PI 101
Subscription Order Form	PI 103

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VOL
1147
ISS
4
FE
23
1993
UMI

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1142 O.G. 66, on Sept. 29, 1992.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on Sept. 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987 and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was changed on Oct. 1, 1992, due to changes both in the amount of the international search fee charged by the European Patent Office and in the exchange rate of the U.S. dollar to the German mark, and was announced in the *Official Gazette* at 1142 O.G. 20, on Sept. 8, 1992.

International fees, effective on Dec. 1, 1992, due to changes in the exchange rate of the U.S. dollar with regard to the Swiss franc, were announced in the *Official Gazette* at 1143 O.G. 62, on Oct. 27, 1992.

Certain domestic PCT fees and charges for International Search and Preliminary Examination have been changed effective Oct. 1, 1992 and were announced in the *Official Gazette* at 1141 O.G. 68 on Aug. 25, 1992.

The current schedule of PCT fees (in U.S. dollars) is as follows:

Transmittal fee:	200.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
—No corresponding prior U.S. national application filed	620.00
—Corresponding prior U.S. national application filed	410.00
—Supplemental search fee, per additional invention	170.00
European Patent Office as ISA	1635.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
—Search fee paid to USPTO as ISA	450.00
—Additional examination fee, per additional invention	140.00
—ISA not the USPTO	670.00
—Additional examination fee, per additional invention	230.00
International fees	
Basic fee	593.00
Basic Supplemental fee (for each page over 30)	12.00
Designation fee per country or region for the first 10 national or regional offices	144.00
Designation fee for 11th and subsequent designations	No Charge
Handling fee	181.00

U.S. National Stage fees	Small Entity	Regular
USPTO was IPEA	320.00	640.00
USPTO was ISA but not IPEA	355.00	710.00
USPTO was neither ISA nor IPEA	475.00	950.00
Filing with an EPO or JPO search report	415.00	830.00
USPTO was IPEA and all claims presented satisfied provisions of PCT Article 33(2) to (4)	45.00	90.00
—For each independent claim in excess of 3	37.00	74.00
—For each claim in excess of 20	11.00	22.00
—For each application containing a multiple dependent claim	115.00	230.00
—Surcharge for filing national fee or oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
—Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

Nov. 8, 1992

DOUGLAS B. COMER,
Acting Assistant Secretary and Acting Commissioner of Patents and Trademarks.

Patent Cooperation Treaty Update
Accession by Viet Nam

The United States Patent and Trademark Office received notification from the World Intellectual Property Organization (WIPO) that Viet Nam deposited its instrument of accession to the Patent Cooperation Treaty (PCT) on Dec. 10, 1992. Viet Nam will become the 54th Contracting State of the PCT on Mar. 10, 1993. Consequently, nationals and residents of Viet Nam are entitled to file international applications on and after Mar. 10, 1993, and from the same date it is possible to file international applications designating and electing Viet Nam.

Declaration of Continuation by the Czech Republic and the Slovak Republic

The United States Patent and Trademark Office received notification from the World Intellectual Property Organization (WIPO) that, on Dec. 18, 1992, the Czech Republic deposited a declaration the effect of which is that the Patent Cooperation Treaty (PCT) continues, as from Jan. 1, 1993, to be applicable as far as the Czech Republic is concerned. On Dec. 30, 1992, the Slovak Republic deposited a declaration the effect of which is that the PCT continues, as from Jan. 1, 1993, to be applicable as far as the Slovak Republic is concerned.

Consequently, as from Jan. 1, 1993, nationals and residents of the Czech Republic and nationals and residents of the Slovak Republic are entitled to file international applications under the PCT, and the Czech Republic and the Slovak Republic may be designated and elected in international applications filed on or after Jan. 1, 1993. A designation of Czechoslovakia is no longer possible in international applications filed on or after Jan. 1, 1993.

The effects of an international application whose filing date falls in the period starting on Jan. 1, 1993, and ending on Feb. 21, 1993, and which does not specifically designate the Czech Republic, may be extended to the Czech Republic under the provisions of Rule 32 of the Regulations under the PCT. The effect of an international application whos international filing date falls in the period starting Jan. 1, 1993, and ending on Mar. 6, 1993, and which does not specifically designate the Slovak Republic, may be extended to the Slovak Republic under the provisions under that Rule. The applicant in respect of each international application concerned will receive a notification from the International Bureau of WIPO informing the applicant of the possibility to request such an extension and of the acts required to be performed under the provisions of Rule 32.

As regards any international application whose international filing date is prior to Jan. 1, 1993, and in which Czechoslovakia is specifically designated, the "national filing effect" of any such application will, subject to the fulfillment of certain conditions, be recognized in the Czech Republic and in the Slovak Republic (provided that the international application had not lost its effect in Czechoslovakia by Dec. 31, 1992).

Details concerning the applicable procedure under Rule 32 and concerning the conditions under which international applications designating Czechoslovakia will continue to have effect in the Czech Republic and in the Slovak Republic are found in two further announcements also furnished by WIPO. The announcements are reproduced below.

Accession by Niger

The United States Patent and Trademark Office received notification from the World Intellectual Property Organization (WIPO) that, on Dec. 21, 1992, Niger deposited its instrument of accession to the Patent Cooperation Treaty (PCT). Niger will become the 56th Contracting State of the PCT on Mar. 21, 1993.

Consequently, as from Mar. 21, 1993, nationals and residents of Niger are entitled to file international applications under the PCT. Furthermore, in any international application filed on or after Mar. 21, 1993, Niger, as a member of the African Intellectual Property Organization (OAPI), may be designated and elected for an OAPI patent. No national patent is available.

Listing of PCT Member Countries

	Country	Instrument		Deposit of Instrument		Entry into Force[1]
(1)	Central African Republic[2]	Accession	15	September 1971	24	January 1978
(2)	Senegal[2]	Ratification	08	March 1972	24	January 1978
(3)	Madagascar	Ratification	27	March 1972	24	January 1978
(4)	Malawi	Accession	16	May 1972	24	January 1978
(5)	Cameroon[2]	Accession	15	March 1973	24	January 1978
(6)	Chad[2]	Accession	12	February 1974	24	January 1978
(7)	Togo[2]	Ratification	28	January 1975	24	January 1978
(8)	Gabon[2]	Accession	06	March 1975	24	January 1978
(9)	United States of America	Ratification	26	November 1975	24	January 1978
(10)	Germany, Federal Republic of[3]	Ratification	19	July 1976	24	January 1978
(11)	Congo[2]	Accession	08	August 1977	24	January 1978
(12)	Switzerland[3]	Ratification	14	September 1977	24	January 1978
(13)	United Kingdom[3]	Ratification	24	October 1977	24	January 1978
(14)	France[3]	Ratification	25	November 1977	24	February 1978
(15)	Russian Federation	Ratification	29	December 1977	29	March 1978
(16)	Brazil	Ratification	09	January 1978	09	April 1978
(17)	Luxembourg[3]	Ratification	31	January 1978	30	April 1978
(18)	Sweden[3]	Ratification	17	February 1978	17	May 1978
(19)	Japan	Ratification	01	July 1978	01	October 1978
(20)	Denmark[3]	Ratification	01	September 1978	01	December 1978
(21)	Austria[3]	Ratification	23	January 1979	23	April 1979
(22)	Monaco[3]	Ratification	22	March 1979	22	June 1979
(23)	Netherlands[3]	Ratification	10	April 1979	10	July 1979
(24)	Romania	Ratification	23	April 1979	23	July 1979
(25)	Norway	Ratification	01	October 1979	01	January 1980
(26)	Liechtenstein[3]	Accession	19	December 1979	19	March 1980
(27)	Australia	Accession	31	December 1979	31	March 1980
(28)	Hungary	Ratification	27	March 1980	27	June 1980
(29)	Democratic People's Republic of Korea (North Korea)	Accession	08	April 1980	08	July 1980
(30)	Finland	Ratification	01	July 1980	01	October 1980
(31)	Belgium[3]	Ratification	14	September 1981	14	December 1981
(32)	Sri Lanka	Accession	26	November 1981	26	February 1982
(33)	Mauritania[2]	Accession	13	January 1983	13	April 1983
(34)	Sudan	Accession	16	January 1984	16	April 1984
(35)	Bulgaria	Accession	21	February 1984	21	May 1984
(36)	Republic of Korea (South Korea)	Accession	10	May 1984	10	August 1984
(37)	Mali[2]	Accession	19	July 1984	19	October 1984
(38)	Barbados	Accession	12	December 1984	12	March 1985
(39)	Italy[3]	Ratification	28	December 1984	28	March 1985
(40)	Benin[2]	Accession	26	November 1986	26	February 1987
(41)	Burkina Faso[2]	Accession	21	December 1988	21	March 1989
(42)	Spain[3]	Accession	16	August 1989	16	November 1989
(43)	Canada	Ratification	02	October 1989	02	January 1990
(44)	Greece[3]	Accession	09	July 1990	09	October 1990
(45)	Poland	Accession	25	September 1990	25	December 1990
(46)	Cote d'Ivoire[2]	Ratification	31	January 1991	30	April 1991
(47)	Guinea[2]	Accession	27	February 1991	27	May 1991
(48)	Mongolia	Accession	27	February 1991	27	May 1991
(49)	Czech Republic	Declaration[4]	18	December 1992	01	January 1993
(50)	Ireland[3]	Ratification	01	May 1992	01	August 1992
(51)	Portugal[3]	Accession	24	August 1992	24	November 1992
(52)	New Zealand	Accession	01	September 1992	01	December 1992

Country	Instrument	Deposit of Instrument	Entry into Force[1]
(53) Ukraine	Declaration[4] 21	September 1992 25	December 1991
(54) Viet Nam	Accession 10	December 1992 10	March 1993
(55) Slovak Republic	Declaration [4] 30	December 1992 01	January 1993
(56) Niger[2]	Accession 21	December 1992 21	March 1993

[1]Although the PCT entered into force on January 24, 1978, the Assembly of the PCT Union fixed June 1, 1978, as the date from which international applications could be filed and demands for international preliminary examination could be submitted.

[2]Members of African Intellectual Property Organization (OAPI) regional patent system. Only regional patent protection is available for OAPI countries. A designation of any country is an indication that all OAPI countries have been designated. Only one designation fee is due regardless of the number of OAPI member countries designated.

[3]Member of European Patent Convention (EPC) regional patent system. Either national or European patents for member countries are available through PCT, except for France, Belgium, Italy, Ireland and Greece for which only European patents are available if PCT is used. Note: Only one PCT designation fee is due if European regional patent protection is sought for one, several or all EPC member counreis under the PCT.

[4] Declaration of continued application.

Jan 28, 1993

DOUGLAS B. COMER
Acting Assistant Secretary and Acting Commissioner of Patent and Trdemarks

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Regarding Industrial Property Protection in the Czech Republic and the Slovak Republic

The following announcements concerning industrial property protection in the Czech Republic and the Slovak Republic were furnished by the World Intellectual Property Organization (WIPO).

Announcement on the Protection of Industrial Property in the Czech Republic

In view of the fact that Czechoslovakia ceased to exist on Dec. 31, 1992, and that the Czech Republic and the Slovak Republic became independent States on Jan. 1, 1993, the situation of industrial property protection in the Czech Republic is summarized below.

I. *Legal Basis*

(1) The respective legal acts on the protection of industrial property of Czechoslovakia remain applicable in the Czech Republic.

II. *Applications for Industrial Property Rights Filed with the Federal Office for Inventions of Czechoslovakia and Industrial Property Rights Granted by that Office,*

(2) Applications for industrial property rights filed with the Federal Office for Inventions of Czechoslovakia and industrial property rights granted by that Office maintain their legal effect in both the Czech Republic and the Slovak Republic, it being understood that the next fees which are to be paid must be paid, for protection in both the Czech Republic and the Slovak Republic, to both the Industrial Property Office of the Czech Republic and the Industrial Property Office of the Slovak Republic.

III. *International Treaties*

(3) The Czech Republic has deposited, with effect on Jan. 1, 1993, a declaration the effect of which is that all those treaties administered by WIPO to which Czechoslovakia was party continue to be applicable as far as the Czech Republic is concerned. Those treaties are: the Convention Establishing the World Intellectual Property Organization, the Paris Convention for the Protection of Industrial Property, the Madrid Agreement for the Repression of False or Deceptive Indications of Source on Goods, the Madrid Agreement Concerning the International Registration of Marks, the Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks, the Lisbon Agreement for the Protection of Appellations of Origin and their International Registration, the Locarno Agreement Establishing an International Classification for Industrial Designs, the Patent Cooperation Treaty (PCT), the Strasbourg Agreement Concerning the International Patent Classification, the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, the Berne Convention for the Protection of Literary and Artistic Works, and the Treaty on the International Registration of Audiovisual Works.

IV. *Effects in the Czech Republic of International Applications under the Patent Cooperation Treaty (PCT)*

(4)(a) Pursuant to the deposit of the declaration of continuation referred to in paragraph (3), above, nationals and residents of the Czech Republic can file international applications, and the Czech Republic can be designated and elected in international applications filed, on or after Jan. 1, 1993.

(b) Rules 32.1 and 32.2 of the Regulations under the PCT permit the extension of international applications to the Czech Republic.

(c) For the purpose of determining the status of international applications with respect to the Czech Republic, one has to distinguish between

(i) international applications specifically[1] designating Czechoslovakia which were filed prior to Jan. 1, 1993(see(d), below);

(ii) international applications not specifically[1] designating the Czech Republic—irrespective of the other designations they contain—filed between Jan. 1, 1993, and Feb. 21, 1993 (see (e) to (g) below);

(iii) international applications specifically[1] designating the Czech Republic filed on or after Jan. 1, 1993 (see (h) below).

(d) As regards any international application whose *international filing date* is *prior to Jan. 1, 1993*, and in which *Czechoslovakia* is specifically *designated*, the "national filing effect" of any such application under Article 11(4) of the PCT will, pursuant to the deposit by the Czech Republic of its declaration of continuation, be recognized in the Czech Republic (provided that the international application had not lost its effect in Czechoslovakia by Dec. 31, 1992). The conditions under which any such international application, or any patent resulting therefrom and granted by the Federal Office for Inventions of Czechoslovakia, may continue to have effect in the Czech Republic are the following:

(i) if a patent has been granted by the Federal Office for Inventions of Czechoslovakia on the basis of the international applications, paragraph (2), above, is applicable;

(ii) if the applicant has entered the national phase before the Federal Office for Inventions of Czechoslovakia but a patent for invention has not been granted by the Office without the application having been rejected by it, paragraph (2), above, is applicable;

(iii) if the applicant has not entered the national phase before the Federal Office for Inventions of Czechoslovakia and the time limit for entering the national phase had not expired on Dec. 31, 1992, the applicant must, before the expiration of the applicable time limit under PCT Article 22 or 39(1), furnish to the Industrial Property Office of the Czech Republic a translation of the international application into the Czech language and pay the prescribed fee.

(e) As regards any international application whose *international filing date* is *later than Dec. 31, 1992, and earlier than Feb. 22, 1993*,[2] and in which the *Czech Republic is not* specifically *designated*, its effects may be extended to the Czech Republic (irrespective of the other designations it contains) through the performance by the applicant of the following acts:

(i) filing with the International Bureau of the World Intellectual Property Organization (WIPO) a request for extension;

(ii) paying to the International Bureau of WIPO an extension fee of 185 Swiss francs, payable in Swiss francs.

(f) The applicant in respect of each and every international application referred to in (e), above, or his agent or common representative if there is one, will receive a written notification from the International Bureau of WIPO calling his attention to the fact that he can, by filing a written request for extension, extend the effects of the international application to the Czech Republic. The notification will, in particular, specify the modes of payment of the extension fee of 185 Swiss francs. The request for extension must contain the identification of the international application by its international application number. A form which may be used for the purpose of requesting the extension to the Czech Republic will be attached to the notification. The request for extension must be in English or French, and may be sent by telefax or telex. The request for extension and the corresponding payment must reach the International Bureau of WIPO before the expiration of three months from the date of the notification sent by the International Bureau of WIPO; if either the request or the fee is received later, the request will be refused. It is recommended that applicants await the notification from the International Bureau of WIPO and use the form attached to it, but requests and payments may be made without waiting for the notification from the International Bureau of WIPO.

(g) If the condition described in (e) and (f), above, are fulfilled, the Czech Republic will be considered as having been designated in the international application on its international filing date. For entering the national phase before the Industrial Property Office of the Czech Republic, the applicant must furnish to that Office a translation of the international application into the Czech language and pay the prescribed fee within three months from the date of the request for extension or, if it expires later, within the following time limit:

(i) before the expiration of 21 months from the priority date if the Czech Republic is not elected under Chapter II of the PCT within 19 months from the priority date;

(ii) before the expiration of 30 months from the priority date if the Czech Republic is elected under Chapter II of the PCT within 19 months from the priority date.

(h) As regards any international application whose *international filing date* is *later than Dec. 31, 1992*, and in which the *Czech Republic* is specifically *designated*, the applicant, in order to enter the national phase before the Industrial Property Office of the Czech Republic, must furnish to that Office a translation of the international application into the Czech language and pay the prescribed fee to that Office within the following time limit:

(i) before the expiration of 21 months from the priority date if the Czech Republic is not elected under Chapter II of the PCT within 19 months from the priority date;

(ii) before the expiration of 30 months from the priority date if the Czech Republic is elected under Chapter II of the PCT within 19 months from the priority date.

V. *Effects in the Czech Republic of International Registrations under the Madrid Agreement Concerning the International Registration of Marks.*

(5)(a) Pursuant to the deposit of the declaration of continuation referred to in paragraph (3), above, and pursuant to Rule 38 of the Regulations under the Madrid Agreement, any international registration with a territorial extension to Czechoslovakia effective from a date prior to Jan. 1, 1993, may have effect in the Czech Republic subject to the following conditions:

(i) the filing with the International Bureau of the World Intellectual Property Organization (WIPO) of a request;

(ii) the payment to the International Bureau of WIPO of a fee, the amount of which is 62 Swiss francs per international registration.

(b) The owner of each and every international registration concerned, or his representative (if the owner has a representative whose name appears in the International Register), will receive a written notice from the International Bureau of WIPO calling his attention to the fact that he can, by filing a written request, obtain a continuation of the effect of the international registration in the Czech Republic. The notice will contain a request form (in French) and specify the modes of payment of the fee. The request must contain the identification of the international registration concerned by its international registration number. The request must be made in English or French, and may be sent by telefax or telex. The request and the corresponding payment must reach the International Bureau of WIPO before the expiration of six months from the date of the notice sent by the International Bureau of WIPO; if either the request or the fee is received later, the request will be refused. Requests and payments may be made without waiting for the notice of the International Bureau of WIPO.

(c) If the conditions described above are fulfilled, the international registration concerned will, with respect to the Czech Republic, have effect as from the effective date of territorial extension to Czechoslovakia and benefit from any priority validly claimed in regard to such extension.

(d) For each international registration which has no territorial extension to Czechoslovakia or whose international registration date is later than Dec. 31, 1992, protection in the Czech Republic can only be obtained by filing, through the intermediary of the national Office of the country of the owner, a request for territorial extension under Rule 20 of the Regulations under the Madrid Agreement. It is to be noted that requests for territorial extension to the Czech Republic are possible at present.

VI. *New Applications for Industrial Property Rights*

(6) Applications for industrial property rights filed from Jan. 1, 1993, with the Industrial Property Office of the Czech Republic have no effect in the Slovak Republic. However, unless it is clear that the applicant does not seek protection in the Slovak Republic, the Industrial Property Office of the Czech Republic will, during a transitory period of a few months, invite the applicant to specify, within a time limit which will be fixed in the invitation, whether he wants to obtain protection in the Czech Republic only or both in the Czech Republic and in the Slovak Republic. In the latter case, the Industrial Property Office of the Czech Republic will transmit a copy of the application to the Industrial Property Office of the Slovak Republic and the filing date of the application with the Industrial Property Office of the Czech Republic will be recognized by the Industrial Property Office of the Slovak Republic.

(7) Applications requesting protection in the Czech Republic must be filed in the Czech language.

VII. *General Provisions*

(8) The fees to be paid to the Industrial Property Office of the Czech Republic are of the same amount as the fees which were payable to the Office of Czechoslovakia before Jan. 1, 1993.

(9) If an applicant does not have his ordinary residence or principle place of business in the Czech Republic, he must authorize a representative in the Czech Republic, and all applications to be filed with the Industrial Property Office of the Czech Republic must be filed through the intermediary of such a representative. The list of persons who can act as representatives is available at the Industrial Property Office of the Czech Republic.

[1] In this announcement, an international application is regarded as "specifically" designating a State either if that State has been designated under Rule 4.9(a) of the Regulations under the PCT or if the designation of that State has been confirmed under Rule 4.9(c) of those Regulations.

[2]With the exception of any international application whose international filing date is later than Dec. 31, 1992, and in which the Czech Republic is specifically designated: in such a case, the procedure described in (e) to (g) is not applicable, and the procedure described in (h) is applicable.

VOL 1147 ISS 4 FE 23 1993 UMI

VIII. *Address of the Industrial Property Office of the Czech Republic*

Industrial Property Office of the Czech Republic
Revolucni ulice 7
11346 Prague 1
Czech Republic
Tel.: (2) 28 96 (operator service)
Fax.: (2) 231 92 30
Teleprinter: 123 109 FUV

Announcement on the Protection of Industrial Property In the Slovak Republic

In view of the fact that Czechoslovakia ceased to exist on Dec. 31, 1992, and that the Czech Republic and the Slovak Republic became independent States on Jan. 1, 1993, the situation of industrial property protection in the Slovak Republic is summarized below.

I. *Legal Basis*

(1) Pending the enactment of new legislation, the respective legal acts on the protection of industrial property of Czechoslovakia remain applicable in the Slovak Republic.

II. *Applications for Industrial Property Rights Filed with the Federal Office for Inventions of Czechoslovakia and Industrial Property Rights Granted by that Office*

(2) Applications for industrial property rights filed with the Federal Office for Inventions of Czechoslovakia and industrial property rights granted by that Office maintain their legal effect in both the Czech Republic and the Slovak Republic, it being understood that the next fees which are to be paid must be paid, for protection in both the Czech Republic and the Slovak Republic, to both the Industrial Property Office of the Czech Republic and the Slovak Republic.

III. *International Treaties*

(3) The Slovak Republic has deposited, with effect on Jan. 1, 1993, a declaration the effect of which is that all those treaties administered by WIPO to which Czechoslovakia was party continue to be applicable as far as the Slovak Republic is concerned. Those treaties are: the Convention Establishing the World Intellectual Property Organization, the Paris Convention for the Protection of Industrial Property, the Madrid Agreement for the Repression of False or Deceptive Indications of Source on Goods, the Madrid Agreement Concerning the International Registrations of Marks, the Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks, the Lisbon Agreement for the Protection of Appellations of Origin and their International Registration, the Locarno Agreement Establishing an International Classification for Industrial Designs, the Patent Cooperation Treaty (PCT), the Strasbourg Agreement Concerning the International Patent Classification, the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure, the Berne Convention for the Protection of Literary and Artistic Works, and the Treaty on the International Registration of Audiovisual Works.

IV. *Effects in the Slovak Republic of International Applications under the Patent Cooperation Treaty (PCT)*

(4)(a) Pursuant to the deposit of the declaration of continuation referred to in paragraph (3), above, national and residents of the Slovak Republic can file international applications, and the Slovak Republic can be designated and elected in international applications filed, on or after Jan. 1, 1993.

(b) Rules 32.1 and 32.2 of the Regulations under the PCT permit the extension of international applications to the Slovak Republic.

(c) For the purpose of determining the status of international applications with respect to the Slovak Republic, one has to distinguish between

(i) international applications specifically[1] designating Czechoslovakia which were filed prior to Jan. 1, 1993 (see (d), below);

(ii) international applications not specifically[1] designating the Slovak Republic—irrespective of the other designations they contain—filed between Jan. 1, 1993 and Mar. 6, 1993 (see (e) to (g), below);

(iii) international applications specifically[1] designating the Slovak Republic filed on or after Jan. 1, 1993 (see (h), below).

(d) As regards any international application whose *international filing date is prior to Jan. 1, 1993*, and in which *Czechoslovakia* is specifically *designated*, the "national filing effect" of any such application under Article 11(4) of the PCT will, pursuant to the deposit by the Slovak Republic of its declaration of continuation, be recognized in the Slovak Republic (provided that the international application had not lost its effect in Czechoslovakia by Dec. 31, 1992). The conditions under which any such international application, or any patent resulting therefrom and granted by the Federal Office for Inventions of Czechoslovakia, may continue to have effect in the Slovak Republic are the following:

(i) if a patent has been granted by the Federal Office for Inventions of Czechoslovakia on the basis of the international application, paragraph (2), above, is applicable;

(ii) if the applicant has entered the national phase before the Federal Office for Inventions of Czechoslovakia but a patent for invention has not been granted by the Office without the application having been rejected by it, paragraph (2), above, is applicable;

(iii) if the applicant has not entered the national phase before the Federal Office for Inventions of Czechoslovakia and the time limit for entering the national phase had not expired on Dec. 31, 1992, the applicant must, before the expiration of the applicable time limit under PCT Article 22 or 39(1), furnish to the Industrial Property Office of the Slovak Republic a translation of the international application into the Slovak language and pay the proscribed fee.

(e) As regards any international application whose *international filing date* is *later than Dec. 31, 1992, and earlier than Mar. 7, 1993*,[2] and in which the *Slovak Republic is not* specifically *designated*, its effects may be extended to the Slovak Republic (irrespective of the other designations it contains) through the performance of the following acts:

(i) filing with the International Bureau of the World Intellectual Property Organization (WIPO) a request for extension;

(ii) paying to the International Bureau of WIPO an extension fee of 185 Swiss francs, payable in Swiss francs.

(f) The applicant in respect of each and every international application referred to in (e), above, or his agent or common representative if there is one, will receive a written notification from the International Bureau of WIPO calling his attention to the fact that he can, by filing a written request for extension, extend the effects of the international application to the Slovak Republic. The notification will, in particular, specify the modes of payment for the extension fee of 185 Swiss francs. The request for extension must contain the identification of the international application by its international application number. A form which may be used for the purpose of requesting the extension to the Slovak Republic will be attached to the notification. The request for the extension must be in English or French, and may be sent by telefax or telex. The request for extension and the corresponding payment must reach the International Bureau of WIPO before the expiration of three months from the date of the notification sent by the International Bureau of WIPO; if either the request or the fee is received later, the request will be refused. It is recommended that applicants await the notification from the International Bureau of WIPO and use the form attached to it, but requests and payments may be made without waiting for the notification from the International Bureau of WIPO.

(g) If the condition described in (e) and (f), above, are fulfilled, the Slovak Republic will be considered as having been designated in the international application on its international filing date. For entering the national phase before the Industrial Property Office of the Slovak Republic, the applicant must furnish to that Office a translation of the international application into the Slovak language and pay the proscribed fee within three months from the date of the request for the extension or, if it expires later, within the following time limit:

(i) before the expiration of 21 months from the priority date if the Slovak Republic is not elected under Chapter II of the PCT within 19 months from the priority date;

(ii) before the expiration of 30 months from the priority date if the Slovak Republic is elected under Chapter II of the PCT within 19 months from the priority date.

(h) As regards any international application whose *international filing date* is *later than Dec. 31, 1992*, and in which the *Slovak Republic* is specifically *designated*, the applicant, in order to enter the national phase before the Industrial Property Office of the Slovak Republic, must furnish to that Office a translation of the international application into the Slovak language and pay the prescribed fee to that Office within the following time limit:

(i) before the expiration of 21 months from the priority date if the Slovak Republic is not elected under Chapter II of the PCT within 19 months from the priority date;

(ii) before the expiration of 30 months from the priority date if the Slovak Republic is elected under Chapter II of the PCT within 19 months from the priority date.

V. *Effects in the Slovak Republic of International Registrations under the Madrid Agreement Concerning the International Registration of Marks*

(5)(a) Pursuant to the deposit of the declaration of continuation referred to in paragraph (3), above, and pursuant to Rule 38 of the Regulations under the Madrid Agreement, any international registration with a territorial extension to Czechoslovakia effective from a date prior to Jan. 1, 1993, may have effect in the Slovak Republic subject to the following conditions:

(i) the filing with the International Bureau of the World Intellectual Property Organization (WIPO) of a request;

(ii) the payment to the International Bureau of WIPO of a fee, the amount of which is 62 Swiss francs per international registration.

(b) The owner of each and every international registration concerned, or his representative (if the owner has a representative whose name appears in the International Register), will receive a written notice from the International Bureau of WIPO calling his attention to the fact that he can, by filing a written request, obtain a continuation of the effect of the international registration in the Slovak Republic. The notice will contain a request form (in French) and specify the modes of payment of the fee. The request must contain the identification of the international registration concerned by its international registration number. The request must be made in English or French, and may be sent by telefax or telex. The request and the corresponding payment must reach the International Bureau of WIPO before the expiration of six months from the date of the notice sent by the International Bureau of WIPO; if either the request or the fee is received later, the request will be refused. Requests and payments may be made without waiting for the notice of the International Bureau of WIPO.

(c) If the conditions described above are fulfilled, the international registration concerned will, with respect to the Slovak Republic, have effect as from the effective date of the territorial extension to Czechoslovakia and benefit from any priority validly claimed in regard to such extension.

(d) For each international registration which has no territorial extension to Czechoslovakia or whose international registration date is later than Dec. 31, 1992, protection in the Slovak Republic can only be obtained by filing, through the intermediary of the national Office of the country of the owner, a request for territorial extension under Rule 20 of the Regulations under the Madrid Agreement. It is to be noted that requests for territorial extension to the Slovak Republic are possible at present.

VI. *New Applications for Industrial Property Rights*

(6) From Jan. 1, 1993, it is possible to file applications for industrial property rights with the Industrial Property Office of the Slovak Republic. Applications filed with the Industrial Property Office of the Czech Republic have no effect in the Slovak Republic. However, the following procedure will apply, during a transitory period of a few months, to applications filed with the Industrial Property Office of the Czech Republic: unless it is clear that the applicant does not seek protection in the Slovak Republic, the Industrial Property Office of the Czech office will invite the applicant to specify, within a time limit which will be fixed in the invitation, whether he wants to obtain protection in the Czech Republic only or both in the Czech Republic and the Slovak Republic. In the latter case, the Industrial Property Office of the Czech Republic will transmit a copy of the application to the Industrial Property Office of the Slovak Republic and the filing date of the application with the Industrial Property Office of the Czech Republic will be recognized by the Industrial Property Office of the Slovak Republic.

(7) Applications requesting protection in the Slovak Republic must be filed in the Slovak language.

VII *General Provisions*

(8) The fees to be paid to the Industrial Property Office of the Slovak Republic are of the same amount as the fees which were payable to the Office of Czechoslovakia before Jan. 1, 1993.

(9) If an applicant does not have his ordinary residence or principal place of business in the Slovak Republic, he must authorize a representative in the Slovak Republic, and all applications to be filed with the Industrial Property Office of the Slovak Republic must be filed through the intermediary of such a representative. The list of persons who can act as representatives is available at the Industrial Property Office of the Slovak Republic.

VIII. *Address of the Industrial Property Office of the Slovak Republic*

Industrial Property Office of the Slovak Republic
Nam. Slobody 29
81312 Bratislava
Slovakia
Tel: (7) 33 00 57
Fax.: (7) 31 44 61

Jan. 28, 1993

DOUGLAS B. COMER
Acting Assistant Secretary and Acting Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d) provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on application filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the maintenance fee is not paid in a patent requiring such payment the patent will expire on the 4th, 8th or 12th anniversary of the patent.

Attention is drawn to the patents which were issued on February 20, 1990 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,901,370 through 4,903,344
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on February 18, 1986 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,570,266 through 4,571,740
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

[1] In this announcement, an international application is regarded as "specifically" designating a State either if that State has been designated under Rule 4.9(a) of the Regulations under the PCT or if the designation of that State has been confirmed under Rule 4.9(c) of those Regulations.

[2] With the exception of any international application whose international filing date is later than Dec. 31, 1992, and in which the Czech Republic is specifically designated: in such a case, the procedure described in (e) to (g) is not applicable, and the procedure described in (h) is applicable.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after December 12, 1980, but before August 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months and seven years and six months and eleven years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1992, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after after Dec. 12, 1980 , in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9f) $465.00
By other than a small entity $930.00

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9f) $935.00
By other than a small entity $1,870.00

(g) For maintaining an original or reissue patent except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity(§ 1.9(f)) $1,410.00
By other than a small entity $2,820.00

The amounts of the surcharges for paying the maintenance fee during the grace period or after the expiration of the patent are set forth in 37 CFR 1.20(h), and (i), which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months , seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980

By a small entity (§ 1.9f) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been

(1) unavoidable $620.00
(2) unintentional $1,500.00

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fees

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th, or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED DECEMBER 13, 1992
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Serial Number	Issue Date
4,486,902	06/454,639	12/11/84
4,486,904	06/473,890	12/11/84
4,486,907	06/531,062	12/11/84
4,486,908	06/259,600	12/11/84
4,486,910	06/371,132	12/11/84
4,486,911	06/557,244	12/11/84
4,486,913	06/423,998	12/11/84
4,486,916	06/311,639	12/11/84
4,486,918	06/489,892	12/11/84
4,486,919	06/444,463	12/11/84
4,486,922	06/397,403	12/11/84
4,486,924	06/492,879	12/11/84
4,486,925	06/424,015	12/11/84
4,486,928	06/281,584	12/11/84
4,486,930	06/436,559	12/11/84
4,486,931	06/412,086	12/11/84
4,486,934	06/338,434	12/11/84
4,486,937	06/367,913	12/11/84
4,486,945	06/456,081	12/11/84
4,486,948	06/506,798	12/11/84
4,486,949	06/431,917	12/11/84
4,486,951	06/414,615	12/11/84
4,486,953	06/393,328	12/11/84
4,486,954	06/286,928	12/11/84
4,486,955	06/488,747	12/11/84
4,486,956	06/456,839	12/11/84
4,486,957	06/460,486	12/11/84
4,486,958	06/468,964	12/11/84
4,486,959	06/565,421	12/11/84
4,486,960	06/434,323	12/11/84
4,486,961	06/476,669	12/11/84
4,486,963	06/425,926	12/11/84
4,486,966	06/559,309	12/11/84
4,486,967	06/562,075	12/11/84
4,486,971	06/532,875	12/11/84
4,486,972	06/323,233	12/11/84
4,486,973	06/394,589	12/11/84
4,486,974	06/424,304	12/11/84
4,486,976	06/406,221	12/11/84
4,486,977	06/407,331	12/11/84
4,486,979	06/497,502	12/11/84
4,486,980	06/572,762	12/11/84
4,486,985	06/281,312	12/11/84
4,486,986	06/473,694	12/11/84
4,486,987	06/450,548	12/11/84
4,486,988	06/423,253	12/11/84
4,486,989	06/397,671	12/11/84
4,486,992	06/519,188	12/11/84
4,486,995	06/365,629	12/11/84
4,486,996	06/379,707	12/11/84
4,487,000	06/368,669	12/11/84
4,487,002	06/502,719	12/11/84
4,487,003	06/471,264	12/11/84
4,487,008	06/425,041	12/11/84
4,487,009	06/469,670	12/11/84
4,487,012	06/452,802	12/11/84
4,487,013	06/468,112	12/11/84
4,487,017	06/408,133	12/11/84
4,487,022	06/413,865	12/11/84
4,487,024	06/475,822	12/11/84
4,487,025	06/485,805	12/11/84
4,487,026	06/357,360	12/11/84
4,487,029	06/467,602	12/11/84
4,487,030	06/521,189	12/11/84
4,487,034	06/519,798	12/11/84
4,487,036	06/532,109	12/11/84
4,487,039	06/534,127	12/11/84
4,487,048	06/374,147	12/11/84
4,487,049	06/290,009	12/11/84
4,487,056	06/427,258	12/11/84
4,487,061	06/450,597	12/11/84
4,487,064	06/494,206	12/11/84
4,487,065	06/473,144	12/11/84
4,487,066	06/242,320	12/11/84
4,487,067	06/520,797	12/11/84
4,487,068	06/502,771	12/11/84
4,487,072	06/407,295	12/11/84
4,487,075	06/485,153	12/11/84
4,487,076	06/436,426	12/11/84
4,487,078	06/425,035	12/11/84

Patent Number	Serial Number	Issue Date
4,487,079	06/468,204	12/11/84
4,487,080	06/502,363	12/11/84
4,487,084	06/347,978	12/11/84
4,487,085	06/220,421	12/11/84
4,487,086	06/240,505	12/11/84
4,487,088	06/362,920	12/11/84
4,487,091	06/344,886	12/11/84
4,487,092	06/448,710	12/11/84
4,487,094	06/463,748	12/11/84
4,487,095	06/554,053	12/11/84
4,487,096	06/469,177	12/11/84
4,487,097	06/430,533	12/11/84
4,487,100	06/597,655	12/11/84
4,487,102	06/510,040	12/11/84
4,487,104	06/295,602	12/11/84
4,487,107	06/318,569	12/11/84
4,487,108	06/422,362	12/11/84
4,487,110	06/448,847	12/11/84
4,487,113	06/373,369	12/11/84
4,487,115	06/513,251	12/11/84
4,487,116	06/496,486	12/11/84
4,487,117	06/540,104	12/11/84
4,487,118	06/331,968	12/11/84
4,487,122	06/548,640	12/11/84
4,487,126	06/472,003	12/11/84
4,487,128	06/432,588	12/11/84
4,487,129	06/539,142	12/11/84
4,487,130	06/456,908	12/11/84
4,487,134	06/404,363	12/11/84
4,487,135	06/394,458	12/11/84
4,487,137	06/459,816	12/11/84
4,487,140	06/577,350	12/11/84
4,487,141	06/614,581	12/11/84
4,487,144	06/426,954	12/11/84
4,487,145	06/404,335	12/11/84
4,487,146	06/467,989	12/11/84
4,487,147	06/528,139	12/11/84
4,487,148	06/426,049	12/11/84
4,487,149	06/598,542	12/11/84
4,487,155	06/404,698	12/11/84
4,487,156	06/361,991	12/11/84
4,487,163	06/448,999	12/11/84
4,487,164	06/393,926	12/11/84
4,487,165	06/572,174	12/11/84
4,487,167	06/341,764	12/11/84
4,487,169	06/418,028	12/11/84
4,487,170	06/421,332	12/11/84
4,487,171	06/497,203	12/11/84
4,487,172	06/468,708	12/11/84
4,487,173	06/414,433	12/11/84
4,487,175	06/338,057	12/11/84
4,487,178	06/444,792	12/11/84
4,487,179	06/436,835	12/11/84
4,487,183	06/488,945	12/11/84
4,487,184	06/482,327	12/11/84
4,487,186	06/323,795	12/11/84
4,487,187	06/462,360	12/11/84
4,487,189	06/477,783	12/11/84
4,487,191	06/550,788	12/11/84
4,487,194	06/522,963	12/11/84
4,487,196	06/440,193	12/11/84
4,487,201	06/443,062	12/11/84
4,487,204	06/433,672	12/11/84
4,487,208	06/459,741	12/11/84
4,487,211	06/490,787	12/11/84
4,487,212	06/282,773	12/11/84
4,487,213	06/416,163	12/11/84
4,487,214	06/303,477	12/11/84
4,487,220	06/522,443	12/11/84
4,487,224	06/361,544	12/11/84
4,487,225	06/442,246	12/11/84
4,487,226	06/534,321	12/11/84
4,487,229	06/503,419	12/11/84
4,487,233	06/483,526	12/11/84
4,487,234	06/365,549	12/11/84
4,487,237	06/459,974	12/11/84
4,487,239	06/330,093	12/11/84
4,487,241	06/420,165	12/11/84
4,487,242	06/239,188	12/11/84
4,487,243	06/380,947	12/11/84
4,487,247	06/403,354	12/11/84
4,487,250	06/367,994	12/11/84
4,487,252	06/521,772	12/11/84
4,487,253	06/318,581	12/11/84
4,487,254	06/484,223	12/11/84
4,487,255	06/527,779	12/11/84
4,487,256	06/282,259	12/11/84
4,487,257	06/307,132	12/11/84
4,487,260	06/584,980	12/11/84
4,487,262	06/452,163	12/11/84
4,487,263	06/453,166	12/11/84
4,487,264	06/394,685	12/11/84
4,487,265	06/333,439	12/11/84
4,487,268	06/462,351	12/11/84
4,487,269	06/487,796	12/11/84
4,487,271	06/348,609	12/11/84
4,487,273	06/469,576	12/11/84
4,487,274	06/400,233	12/11/84
4,487,275	06/468,369	12/11/84
4,487,277	06/416,324	12/11/84
4,487,278	06/525,884	12/11/84
4,487,281	06/438,554	12/11/84
4,487,283	06/428,468	12/11/84
4,487,284	06/441,296	12/11/84
4,487,285	06/455,947	12/11/84
4,487,286	06/485,372	12/11/84
4,487,289	06/353,181	12/11/84
4,487,290	06/490,011	12/11/84
4,487,293	06/478,592	12/11/84
4,487,294	06/407,780	12/11/84
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4,487,297	06/415,427	12/11/84
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VOL
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Patent Number	Serial Number	Issue Date
4,487,387	06/374,179	12/11/84
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Patent Number	Serial Number	Issue Date
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Patent Number	Serial Number	Issue Date
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4,790,111	07/118,531	12/13/88
4,790,118	07/037,631	12/13/88
4,790,121	07/080,954	12/13/88
4,790,122	07/080,067	12/13/88
4,790,124	07/084,997	12/13/88
4,790,125	07/045,946	12/13/88
4,790,127	07/028,171	12/13/88
4,790,137	07/074,802	12/13/88
4,790,138	07/010,359	12/13/88
4,790,139	07/066,973	12/13/88
4,790,149	06/231,525	12/13/88
4,790,151	07/102,621	12/13/88
4,790,159	07/167,263	12/13/88
4,790,162	07/092,894	12/13/88
4,790,163	07/174,151	12/13/88
4,790,171	07/079,244	12/13/88
4,790,180	07/156,069	12/13/88
4,790,181	06/768,857	12/13/88
4,790,187	07/046,194	12/13/88
4,790,197	06/079,104	12/13/88
4,790,198	07/096,518	12/13/88
4,790,201	07/041,280	12/13/88
4,790,203	07/106,607	12/13/88
4,790,205	06/941,877	12/13/88
4,790,207	06/931,362	12/13/88
4,790,216	07/089,470	12/13/88
4,790,219	06/908,727	12/13/88
4,790,220	07/161,785	12/13/88
4,790,222	07/114,663	12/13/88
4,790,232	07/142,422	12/13/88
4,790,234	06/931,125	12/13/88
4,790,237	06/835,227	12/13/88
4,790,244	07/024,377	12/13/88
4,790,251	07/095,381	12/13/88
4,790,255	07/064,559	12/13/88
4,790,260	06/825,716	12/13/88
4,790,265	07/074,220	12/13/88
4,790,293	06/578,949	12/13/88
4,790,304	06/690,323	12/13/88
4,790,309	07/036,800	12/13/88
4,790,311	07/005,120	12/13/88
4,790,313	06/906,062	12/13/88
4,790,314	07/168,683	12/13/88
4,790,328	07/097,636	12/13/88
4,790,330	06/930,349	12/13/88
4,790,332	06/769,679	12/13/88
4,790,335	07/049,932	12/13/88
4,790,340	07/152,986	12/13/88
4,790,354	07/112,455	12/13/88
4,790,355	07/029,522	12/13/88
4,790,357	07/082,803	12/13/88
4,790,358	07/123,376	12/13/88
4,790,359	07/043,148	12/13/88
4,790,361	06/890,399	12/13/88
4,790,362	06/933,318	12/13/88
4,790,370	07/193,144	12/13/88
4,790,376	06/935,819	12/13/88
4,790,377	06/069,289	12/13/88
4,790,386	07/150,810	12/13/88
4,790,390	07/147,704	12/13/88
4,790,391	06/911,251	12/13/88
4,790,411	07/000,194	12/13/88
4,790,414	07/020,349	12/13/88
4,790,424	07/005,669	12/13/88
4,790,427	07/087,698	12/13/88
4,790,432	07/051,414	12/13/88
4,790,434	06/882,134	12/13/88
4,790,435	07/111,511	12/13/88
4,790,440	06/925,710	12/13/88
4,790,442	07/184,690	12/13/88
4,790,445	07/174,216	12/13/88
4,790,457	07/075,130	12/13/88
4,790,459	07/070,294	12/13/88
4,790,460	07/083,178	12/13/88
4,790,462	07/076,152	12/13/88
4,790,475	06/397,358	12/13/88
4,790,477	07/005,594	12/13/88
4,790,481	07/140,586	12/13/88
4,790,482	07/024,448	12/13/88
4,790,494	06/926,988	12/13/88
4,790,498	07/167,023	12/13/88
4,790,499	06/925,290	12/13/88
4,790,500	07/081,044	12/13/88
4,790,505	07/173,735	12/13/88
4,790,508	06/935,925	12/13/88
4,790,509	07/051,391	12/13/88
4,790,512	07/124,322	12/13/88
4,790,514	07/150,237	12/13/88
4,790,515	07/078,398	12/13/88
4,790,527	06/939,792	12/13/88
4,790,535	06/878,013	12/13/88
4,790,539	07/135,201	12/13/88

Patent Number	Serial Number	Issue Date
4,790,541	07/159,162	12/13/88
4,790,546	07/181,032	12/13/88
4,790,548	07/056,249	12/13/88
4,790,549	07/043,943	12/13/88
4,790,552	07/115,904	12/13/88
4,790,558	07/085,753	12/13/88
4,790,565	07/026,439	12/13/88
4,790,575	07/115,345	12/13/88
4,790,576	07/164,850	12/13/88
4,790,579	07/151,557	12/13/88
4,790,584	07/115,270	12/13/88
4,790,585	06/534,698	12/13/88
4,790,591	07/098,886	12/13/88
4,790,596	07/067,314	12/13/88
4,790,600	07/003,866	12/13/88
4,790,602	07/098,917	12/13/88
4,790,609	06/390,908	12/13/88
4,790,611	06/919,797	12/13/88
4,790,616	06/857,998	12/13/88
4,790,623	07/016,609	12/13/88
4,790,629	06/913,012	12/13/88
4,790,634	07/093,039	12/13/88
4,790,645	07/015,844	12/13/88
4,790,660	07/101,455	12/13/88
4,790,674	07/069,034	12/13/88
4,790,677	06/783,768	12/13/88
4,790,684	07/074,260	12/13/88
4,790,685	07/003,475	12/13/88
4,790,689	07/074,741	12/13/88
4,790,699	07/040,162	12/13/88
4,790,708	06/886,372	12/13/88
4,790,710	06/861,552	12/13/88
4,790,711	07/182,169	12/13/88
4,790,717	07/132,773	12/13/88
4,790,718	06/844,564	12/13/88
4,790,719	07/037,143	12/13/88
4,790,722	06/943,647	12/13/88
4,790,730	07/155,231	12/13/88
4,790,731	07/128,047	12/13/88
4,790,732	07/122,517	12/13/88
4,790,742	06/909,840	12/13/88
4,790,744	07/026,142	12/13/88
4,790,748	07/038,312	12/13/88
4,790,754	07/131,654	12/13/88
4,790,755	07/018,810	12/13/88
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4,790,772	07/137,513	12/13/88
4,790,789	07/052,918	12/13/88
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4,790,811	07/126,805	12/13/88
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4,790,819	07/088,743	12/13/88
4,790,824	07/064,762	12/13/88
4,790,834	07/074,051	12/13/88
4,790,835	07/056,887	12/13/88
4,790,840	07/109,672	12/13/88
4,790,841	06/445,372	12/13/88
4,790,844	07/008,816	12/13/88
4,790,845	07/089,061	12/13/88
4,790,856	06/873,486	12/13/88
4,790,867	07/015,993	12/13/88
4,790,870	07/044,675	12/13/88
4,790,877	07/083,972	12/13/88
4,790,882	07/021,643	12/13/88
4,790,887	07/044,849	12/13/88
4,790,892	06/836,398	12/13/88
4,790,894	07/046,515	12/13/88
4,790,912	06/931,176	12/13/88
4,790,916	07/086,561	12/13/88
4,790,922	07/072,775	12/13/88
4,790,923	07/070,813	12/13/88
4,790,926	07/061,583	12/13/88
4,790,933	06/932,053	12/13/88
4,790,934	07/124,778	12/13/88
4,790,936	07/090,423	12/13/88
4,790,944	07/029,698	12/13/88
4,790,951	07/061,939	12/13/88
4,790,953	07/045,242	12/13/88
4,790,957	07/106,390	12/13/88
4,790,959	07/004,856	12/13/88
4,790,960	06/824,326	12/13/88
4,790,972	06/863,753	12/13/88
4,790,974	07/126,322	12/13/88
4,790,986	06/918,911	12/13/88
4,790,988	07/010,603	12/13/88
4,790,991	07/161,541	12/13/88
4,790,993	07/014,505	12/13/88
4,790,994	07/103,883	12/13/88
4,791,000	06/883,726	12/13/88
4,791,003	07/068,065	12/13/88
4,791,007	06/923,888	12/13/88
4,791,010	07/083,163	12/13/88
4,791,011	06/927,376	12/13/88
4,791,012	07/006,173	12/13/88
4,791,017	06/947,991	12/13/88
4,791,018	06/837,982	12/13/88
4,791,019	07/157,872	12/13/88
4,791,022	06/684,175	12/13/88
4,791,024	06/463,833	12/13/88
4,791,038	06/917,455	12/13/88
4,791,058	06/732,489	12/13/88
4,791,063	06/758,064	12/13/88
4,791,064	06/744,098	12/13/88
4,791,083	07/062,492	12/13/88
4,791,086	07/068,463	12/13/88
4,791,092	06/796,707	12/13/88
4,791,103	06/771,590	12/13/88
4,791,105	06/684,873	12/13/88
4,791,115	07/002,055	12/13/88
4,791,116	06/936,204	12/13/88
4,791,127	06/913,319	12/13/88
4,791,138	06/878,116	12/13/88
4,791,141	06/928,655	12/13/88
4,791,143	07/158,487	12/13/88
4,791,147	07/121,497	12/13/88
4,791,150	06/913,311	12/13/88
4,791,154	07/126,534	12/13/88
4,791,155	07/076,719	12/13/88
4,791,156	06/407,591	12/13/88
4,791,171	06/948,330	12/13/88
4,791,181	07/153,596	12/13/88
4,791,186	07/140,521	12/13/88
4,791,191	07/126,120	12/13/88
4,791,194	06/890,769	12/13/88
4,791,205	07/052,783	12/13/88
4,791,212	06/947,667	12/13/88
4,791,216	06/938,249	12/13/88
4,791,218	06/866,546	12/13/88
4,791,222	06/636,326	12/13/88
4,791,229	06/922,635	12/13/88
4,791,234	06/917,644	12/13/88
4,791,249	06/858,642	12/13/88
4,791,251	07/054,415	12/13/88
4,791,252	07/086,182	12/13/88
4,791,255	07/131,692	12/13/88
4,791,257	06/484,804	12/13/88
4,791,274	07/021,496	12/13/88
4,791,275	06/848,583	12/13/88
4,791,278	07/106,643	12/13/88
4,791,280	07/026,699	12/13/88
4,791,283	06/870,005	12/13/88
4,791,293	06/915,745	12/13/88
4,791,294	07/105,250	12/13/88
4,791,327	06/887,151	12/13/88
4,791,332	07/063,996	12/13/88
4,791,340	07/044,460	12/13/88
4,791,343	07/091,676	12/13/88
4,791,365	06/898,283	12/13/88
4,791,381	07/144,608	12/13/88
4,791,407	07/081,235	12/13/88
4,791,412	07/149,579	12/13/88
4,791,419	06/812,374	12/13/88

VOL 1147 ISS 4 FE 23 1993 UMI

Patent Number	Serial Number	Issue Date
4,791,424	07/000,586	12/13/88
4,791,431	07/096,913	12/13/88
4,791,434	06/897,007	12/13/88
4,791,441	07/113,071	12/13/88
4,791,456	07/038,742	12/13/88
4,791,461	06/894,176	12/13/88
4,791,478	06/783,422	12/13/88
4,791,480	07/095,267	12/13/88
4,791,481	07/063,316	12/13/88
4,791,482	07/011,988	12/13/88
4,791,506	06/943,742	12/13/88
4,791,509	07/079,829	12/13/88
4,791,513	07/161,349	12/13/88
4,791,517	07/103,107	12/13/88
4,791,520	07/023,414	12/13/88
4,791,521	07/035,345	12/13/88
4,791,526	07/085,369	12/13/88
4,791,532	07/058,472	12/13/88
4,791,535	07/145,831	12/13/88
4,791,536	07/142,937	12/13/88
4,791,544	07/169,606	12/13/88
4,791,548	06/853,555	12/13/88
4,791,578	06/947,612	12/13/88
4,791,589	06/925,354	12/13/88
4,791,600	06/890,192	12/13/88
4,791,611	06/774,981	12/13/88
4,791,620	06/842,822	12/13/88
4,791,621	07/019,658	12/13/88
4,791,635	07/013,437	12/13/88
4,791,641	06/907,671	12/13/88
4,791,644	06/815,325	12/13/88
4,791,659	06/925,712	12/13/88
4,791,664	06/906,395	12/13/88
4,791,673	06/937,728	12/13/88
4,791,675	06/815,476	12/13/88

Reissue Applications Filed

Notice under 37 CFR 1.11 (b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21 (b)).

4,528,610, Re. S.N. 07/957,796, Filed Oct. 8, 1992, Cl. 361/92, SHORT CIRCUIT FAULT ISOLATION MEANS FOR ELECTRICAL CIRCUIT ARRANGEMENTS, Roger D. Payne, Owner of Record: *Appolo Fire Detector Ltd., Hampshire, England,* Attorney or Agent: R. Lewis Gable, Ex. Gp.: 2104

4,661,575, Re. S.N. 07/991,723, Filed Dec. 15, 1992, Cl. 526, DICYCLOPENTACLIENE POLYMER PRODUCT, Glenn M. Tom, Owner of Record: *Hercules Inc., Wilmington, Del.*, Attorney or Agent: Neil F. Greemblum, Ex. Gp.: 1505

4,723,260, Re. S.N. 07/994,500, Filed Dec. 21, 1992, Cl. 474/135, BRAKE TENSIONER WITH SPRING ACTUATED BAND BRAKE DAMPING, Jack S. Komorowski, et. al., Owner of Record: *Litens Automotive Partnership, Markham, Canada*, Attorney or Agent: Raymond F. Lippitt, Ex. Gp.: 3506

4,759,749, Re. S.N. 07/979,434, Filed Nov. 20, 1992, Cl. 604, HEATER FOR PHYSIOLOGICAL FLUIDS, Wesley H. Verkaart, Owner of Record: *Level 1 Technologies, Inc., Plymouth, Mass.*, Attorney or Agent: Conrad J. Clark, Ex. Gp.: 3306

4,822,623, Re. S.N. 07/991,455, Filed Dec. 16, 1992, Cl. 426, PROCESS OF USING RENNET CASEIN FOR PRODUCING IMITATION CHEESE, Jerry L. Middleton, Owner of Record: *International Cheese Co., Inc., Hinesburg, Vt.*, Attorney or Agent: George H. Solveson, Ex. Gp.: 1808

4,824,421, Re. S.N. 07/994,495, Filed Dec. 21, 1992, Cl. 474/135, BELT TENSIONER WITH RELEASABLE BELT LOAD DAMPING, Jack S. Komorowski, Owner of Record: *Litens Automotive Partnership, Markham, Canada,* Attorney or Agent: Raymond F. Lippitt, Ex. Gp.: 3506

4,938,611, Re. S.N. 07/908,419, Filed July 6, 1992, Cl. 384/133, BEARING APPARATUS, Katsutoshi Nii, Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Stanley A. Wal, Ex. Gp.: 2405

4,961,214, Re. S.N. 07/955,958, Filed Oct. 2, 1992, Cl. 378/197, X-RAY EXAMINATION APPARATUS COMPRISING A BALANCED SUPPORTING ARM, Johannes G. Endscot, et. al., Owner of Record: *U.S. Phillips Corp., New York, N.Y.*, Attorney or Agent: Jack D. Slobod, Ex. Gp.: 2506

4,965,363, Re. S.N. 07/965,109, Filed Oct. 22, 1992, Cl. 548/561, PROCESS FOR THE PREPARATION OF 3-CYANO-4-ARYL-PYRROLES, Detlef Wollweber, Owner of Record: *Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany,* Attorney or Agent: Leonard Horn, Ex. Gp.: 1202

4,977,811, Re. S.N. 07/992,442, Filed Dec. 17, 1992, Cl. 84/600, ANGLE SENSOR FOR MUSICAL TONE CONTROL, Hideo Suzuki, et. al., Owner of Record: *Yamaha Corp., Hamatsu-Shi, Japan,* Attorney or Agent: David L. Fehrman, Ex. Gp.: 2101

4,982,324, Re. S.N. 07/995,678, Filed Dec. 22, 1992, Cl. 364/200, METHOD AND SYSTEM FOR USING DEVICE DRIVERS TO COUPLE THE COMMUNICATION AND DATA STORAGE OF REMOTE COMPUTER SYSTEMS, John M. McConaughy, et. al., Owner of Record: *International Business Machines Corp., Armonk, N.Y.*, Attorney or Agent: Stanley B. Green, Ex. Gp.: 2302

5,115,870, Re. S.N. 07/995,130, Filed Dec. 22, 1992, Cl. 172/15, FLEXIBLE FLAIL TRIMMER WITH COMBINED GUIDE AND GUARD, Steven E. Byrne, Owner of Record: *Inventor,* Attorney or Agent: Kevin G. Rooney, Ex. Gp.: 3501

Requests for Reexamination Filed

Notice under 37 CFR 1.11 (c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19 (a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,911,138, Reexam. No. 90/002,928, Requested Dec. 24, 1992, Cl. 514/746, ARTIFICIAL BLOOD AND METHOD FOR SUPPORTING OXYGEN TRANSPORT IN ANIMALS, Leland C. Clark, Jr., Owner of Record: *Children's Hospital Medical Center, Cincinnati, Ohio,* Attorney or Agent: David J. Josephic, Wood, Herron & Evans, Cincinnati, Ohio, Ex. Gp.: 1205, Requester: Owner

4,116,728, Reexam. No. 90/002,931, Requested Jan. 8, 1993, Cl. 148/108, TREATMENT OF AMORPHOUS MAGNETIC ALLOYS TO PRODUCE A WIDE RANGE OF MAGNETIC PROPERTIES, Joseph J. Becker, et. al., Owner of Record: *General Electric Co., Schenectady, N.Y.,* Attorney or Agent: Marvin Snyder, General Electric Co., Schenectady, N.Y., Ex. Gp.: 1101, Requester: Dann, Dorman, Herrell and Skillman, Philadelphia, Pa.

4,262,233, Reexam. No. 90/002,932, Requested Jan. 8, 1993, Cl. 315/248, TREATMENT OF AMORPHOUS MAGNETIC ALLOYS TO PRODUCE A WIDE RANGE OF MAGNETIC PROPERTIES, Joseph J. Becker, et. al., Owner of Record: *General Electric Co., Schenectady, N.Y.,* Attorney or Agent: Marvin Snyder, General Electric Co., Schenectady, N.Y., Ex. Gp.: 2502, Requester: Dann, Dorman, Herrell and Skillman, Philadelohia, Pa.

4,743,239, Reexam. No. 90/002,929, Requested Jan. 4, 1993, Cl. 604/385.1, DISPOSABLE BRIEF HAVING AN AREA OF RELATIVELY THIN ABSORBANT MATERIAL AND AN AREA OF RELATIVELY THICK ABSORBENT MATERIAL, Shelly K. Cole, Owner of Record: *Inventor, Glendale, Ariz.,* Attorney or Agent: H. Gordon Shields, Phoenix, Ariz., Ex. Gp.: 3308, Requester: Owner

Errata

"All reference to Patent No. B1 3,956,273 (1740th) to Kenneth B. Guiseley, Union, Maine for MODIFIED AGAROSE AND AGAR AND METHOD OF MAKING SAME, appearing in the *Official Gazette* of July, 14, 1992 should be deleted since no certificate was granted."

"All reference to Patent No. 5,182,365 to Hermann Oppermann, et. al., Medway, Mass., for OSTEOGENIC PROTEINS, appearing in the *Official Gazette* of Jan. 26, 1993 should be deleted since no patent was granted."

"All reference to Patent No. 5,182,637 to Kiyoharu Yoshioka, et. al., Yokohama, Japan, for COLOR FACSIMILE APPARATUS, appearing in the *Official Gazette* of Jan. 26, 1993 should be deleted since no patent was granted."

The following registration numbers were inadvertently listed as cancelled in the "Trademark Registration Cancelled, Section 8" and "Index of Registrants" sections of the *Official Gazette*:

TM 260, TMI 7	1328089	11/19/91
TM 239, TMI 27	1332565	12/17/91
TM 201, TMI 22	1246292	11/27/90
TM 300, TMI 22	1234165	10/10/89
TM 319, TMI 7	1349083	2/18/92
TM 222, TMI 21	1368607	12/24/91
TM 260, TMI 5	1348036	2/11/92
TM 307, TMI 10	1356085	3/10/92
TM 385, TMI 25	1363390	4/28/92
TM 227, TMI 16	1302099	9/03/91
TM 476, TMI 30	1385238	5/26/92
TM 445, TMI 12	1348027	7/07/92
TM 185, TMI 13	1173185	4/30/91
TM 297, TMI 32	1475865	3/27/90
TM 234, TMI 45	379160	1/14/92
TM 486, TMI 23	1372070	7/21/92
TM 177, TMI 26	1402393	4/25/89
TM 472, TMI 14	1352285	5/26/92
TM 446, TMI 15	1388680	7/07/92
TM 338, TMI 15	1348205	4/21/92
TM 584, TMI 9	1371276	6/16/92
TM 359, TMI 17	1364150	9/15/92
TM 202, TMI 29	1295400	5/07/91
TM 337, TMI 41	1353700	4/07/92
TM 684, TMI 9	1405940	6/09/92
TM 363, TMI 2	1379041	11/24/92
TM 339, TMI 4	1358204	3/31/92
TM 397, TMI 9	1401608	11/03/92
TM 467, TMI 17	1380755	12/15/92
TM 437, TMI 158	1342841	12/15/92
TM 203, TMI 19	1310794	5/07/91
TM 334, TMI 29	1411572	11/17/92
TM 312, TMI 5	925127	1/31/78

Consequently, the above-identified registrations are still active.

Jan. 21, 1993

DAVID E. BUTCHER
Director of Trademark Examining Groups

The following registration numbers were inadvertently listed as cancelled in the "Trademark Registration Cancelled, Section 18" sections of the *Official Gazette*:

1169053	3/22/92
1534395	1/10/90
647997	8/08/90

Consequently, the above-identified registrations are still active.

Jan. 21, 1993

DAVID E. BUTCHER
Director of Trademark Examining Groups

Removal from Register

Pursuant to the provisions of 37 CFR §10.11(b), a letter was directed on Dec. 18, 1992 to John H. Faro, Faro & Associates, 1800 Corporate Blvd., Suite 202, Boca Raton, Fl. 33431, the last post office address furnished by him to the Office of Enrollment and Discipline. No reply was received within the period of twenty (20) days therein set.

Accordingly, his name is being removed from the Register of Attorneys and Agents.

Jan. 29, 1993

CAMERON WEIFFENBACH
Director, Office of Enrollment and Discipline

Consolidated Listing of Official Gazette Notice

The index appearing at 1146 OG 673-677 in the Official Gazette of Jan. 5, 1993 contained several errors and omissions. The corrected index is being reprinted below.

INDEX

	Items
A	
Abandonments:	
Express	98, 129
Notice of	99
Address:	
Office mailing	1
Allowance, errors in notice of	143
Amendments:	
Under 37 CFR 1.116	106, 107
Animals, Patentability	126
Appeals	25, 150-153
Appeal hearings	154,155
Application:	
Receipt Acknowledgement	9
Apostille	82
Arbitration awards, notices of	59
Arbitration of Patent Interference cases	168
Assignments:	
Pre 1955/1957 Records	36
Recording Foreclosures	35
Rules	32
Uniformity in submitting assignee names	34
Attorney qualifications for admission to practice before PTO	172-177 182
B	
Biological material deposit	119-124
Biotechnology, Special Status	128
Box numbers	2-5
Budapest Treaty	119-123
C	
Certificate of correction	
Forms	23
To perfect claim for priority under 35 USC 119	116
Certification of deposits under Budapest Treaty	122
Certificate of mailing	59
Claims:	
Markush-type	92
Objected-to	151
Closing of PTO	13-16
Common ownership of application and/or patent	147
Computer programs, patenting	127, 191
Conduct on PTO Premises	20
Continuation application under 37 CFR 1.60. .	44, 59 76, 145
Continuing application procedure	44, 129
Copyright notices in patents	73, 74
Correction of inventorship	59
Correspondence:	
Group number of	2
Identify with Issue Batch No	7
Necessary information on papers	6, 7, 70, 74
Post card receipts	8, 9
Relating to interferences	3
With Solicitor	25-29
Court papers served on Commissioner	25-26
D	
Declaration:	
Information necessary to comply with 37 CFR 1.63	59, 71
Deposit accounts:	
Address for remittances	64
General authorizations	62
Issue Fee Charges	63
Statutory fee charges	61
Use of restricted for electronic ordering of copies	65
Depositions, examiner	170
Deposits of microorganisms	119-124
Diligence in Petitions to Revive	103
Disclosure Document Program	169
Drawings:	
Changes in drafting practice	18, 19 74, 80
Color in utility applications	74, 77, 80
Correction procedures	18, 59, 80, 146
Requirements	78-80
Duty of disclosure	44, 58 111, 134
E	
Electronic Filing	194
Establishing common ownership of application/patent	147
Examples, simulated or prophetic	83
Express abandonments	98, 129
Express mail	44, 59
Extensions of time:	
Limit	110
Reexamination proceedings	113
To file continuing application	100
Under 37 CFR 1.136	44
F	
Facilities use regulations	20
Facsimile Transmissions	30, 31
Fees	
Assignments in applications of joint inventors	51
Automated Search System	53, 54
Codes Posting	68
Deposit accounts	60
Document supply	48, 49, 52
Fee address	39, 46
Filing	49-51, 53
Issue	49-51, 53 64
Maintenance	38, 45, 47 48-50, 192
Miscellaneous	48-50, 52
Processing	48-50
Refunds	61, 52
Retention	44
Rules, effective Oct. 1, 1982	40-43
Unpaid fee check	67
File wrapper continuing application procedure	44, 59 129, 145
Filing receipts	10
FOIA	183
Foreclosures, Recordability	35
Foreign filing license procedures	135-137
Foreign language:	
References, translations of	88
Foreign patent documents, storage, retention, availability	39
G	
Government Employee Inventions	178, 179
GPO subscription service	24
Graphical illustrations in specification	72
Group numbers on papers	2
Guidelines:	
Extension of Patent Term for New Animal Drugs or Veterinary Biological Products Under 35 U.S.C. 156 as Amended	140
Implementing changes in 35 USC 103, 116, 120	144
Patent Term Extension	138

H	
H. R. 6260, Legislative history	57
Hague Convention accession	82
Hearings, appeal	154, 155
Holidays	12-16
Hours of Operation	6
I	
Incorporation by Reference	193
Indentifiable Records, requests for	184
Identifying information on papers	2, 7, 74
Independent inventor, definition	42
Information disclosure statement	60, 97, 112
Interference practice	131-133 158-166
International preliminary examination	94
Interference settlement agreements	157
Interviews, record of	108
Interviews, viewing of video tape during	109
Iraqi Sanctions Regulations	17
J	
Joint Inventors	144, 145
L	
Label removal	21
Legislative history (H.R. 6260)	57
License for foreign filling	135-137
M	
Mail:	
Express	59
Mailing address, PTO	1-5
Maintenance fees	38, 45-48 105, 145, 146
Markush practice	92
Mask work notices in patents	73, 74
Mathematical Algorithms	127, 191
Metric equivalents	69
Microorganisms	118-124
N	
Non-profit organization, definition	42
Notarial certification	82
O	
Oath:	
Information necessary to comply with 37 CFR 1.63	59, 71
Obviousness	87
Official Gazette subscriptions	24
Order of examination	145
Out-of-town requests for files	22
P	
Passes to enter PTO	20
Patent Action Survey Results	95
Patent Cooperation Treaty:	
Chapter II	76, 96 186-188
Member states	185
Miscellaneous amendments	144-146
National stage acceptance	186
PatentIn Computer Program	86
Patent Reinstatement	192
Patent term extension	138-140
Rules for	139-141
Payor numbers	38
Plant patents	87, 125 171, 172
Post card receipt	8, 9
Practice Before the PTO	173-177 181, 182
Prior Art:	
Citation of	55, 58, 130
Unpublished	144, 145
Priority:	
Based on 35 U.S.C. 120	144, 145
Based on Inventor's Certificates	44
Using certificate of correction to perfect 35 USC 119 claim	59, 116
Processing and retention fees	44
Prophetic examples	83
Public Law 96-517	55
Public Law 97-247	56
Report	57
Public Law 98-622	144
Q	
Quality Reinforcement Program report	96
R	
Receipts, post card	8, 9
Receipts, filing	10
Reexamination:	
Certificate wording	114
Clarification of practice	114
Duty of Disclosure	111
Extensions of time in reexam proceedings	113
Failure to respond timely	55
Public Law 96-517	55
Rules re Reexamination Proceedings	58
Refunds	44, 61, 74
Registration to practice before PTO	173, 174
Reinstatement of Patents	192
Rejections under 35 U.S.C. 102(f) or (g)/103	144, 145
Report on Public Law 97-247	57
Report on Quality Reinforcement Program	96
Requests for files, out-of-town	22
Response after final rejection	106, 107
Response when filing continuing application	100
Restriction and election	89-92
In international applications	93, 94
Revival of abandoned applications	93, 94, 102 103, 104
Russian Federation Notice Regarding Patent and Trademark Rights	190
Rule changes:	
Application filing practices, effective Jan. 16, 1990	75
Arbitration of patent interference cases, effective May 27, 1987	168
Assignment Practice	32, 33
Automated Search System Fees, effective Nov. 13, 1990	54, 55
Changes in Practice Relating to Filing Patent Applications	76
Changes in Signature and Filing Requirements in Correspondence(Proposed)	70
Communications with Office of Solicitor	28
Deposit of biological materials, effective Jan. 1, 1990	124
Duty of Disclosure	111
Electronic Filing of PTO Applications (Advance Notice of Proposed)	194
Fees, effective Oct. 1, 1982	40-43
Fees, effective Oct. 5, 1985	48
Fees, effective Apr. 17, 1989	49
Fees, effective Nov. 5, 1990	50
Fees effective Dec. 16, 1991	51
Fees effective Oct. 1, 1992	52
File wrapper continuing application	44, 129
Foreign filing license, effective June 1, 1984	135, 136

VOL
1147
ISS
4
FE
23
1993
UMI

Foreign filing amendments 137
Government Employee Invention 177-184
Interference proceedings, effective Feb. 11, 1985 159
Interference Proceeding (effective Sept. 27, 1991) 162
Judicial Review, effective Aug. 20, 1989 153
Maintenance fee, effective Nov. 1, 1984 45
Miscellaneous changes in patent practice effective Jan. 1, 1989 74
Miscellaneous examining and appeal, effective 1977, and Sept. 12, 1988 150
Miscellaneous, effective Apr. 1, 1984 44
Miscellaneous patent provisions of PL 98-620 and 98-622, effective May 8, 1985 145
Patent procedure, effective Feb. 27, 1983 59
Patent Cooperation Treaty Provisions (Proposed) 188
Patent term extension 139
For Animal Drug Products effective May 26, 1981 141
Practice before the PTO 174-176
183
Presidential proclamation semiconductor chips effective Aug 1, 1988 142
Reinstatement of Patents, Interim Rules, effective Oct. 23, 1992 192
Reexamination Litigation Policy 115
Reexamination proceedings, effective July 1, 1981 58
Request for identifiable records, effective Dec. 30, 1988 184
Revival of Patent applications and Reinstatement of Patents (Proposed) 104
Sequence disclosures 87-88
Service of Process and Testimony of Employees 170
Unity of invention and PCT Chapter II, effective July 1, 1987 ..... 93, 94
Variety naming requirements for plant patent applications 87

S

Sanction, Iraqi 17
Search facilities in PTO:
Hours of operation 20
Regulations 20
Violations 20
Search fees, PTO automated 53
Security labels, removal of 21
Semiconductor chip protection 142
Service of court papers 25, 26
Sequence disclosure requirements 85, 86
Simulated or predicted test results 83
Small business, definition 43
Small entity:
Definition 42
Funding agreement with Federal Government 44
Verified statement 42, 44
Special box numbers 2, 3
25
Special Status, biotechnology 130
Specification:
Graphical illustrations 72
Status inquiries 11
Statutory Invention Registration 144, 145
Subscriptions to Government publications 24
Superconductivity 148, 149
Survey of 1991 Patent action (Summary of Results) 95
Survey on citation by applicants in information disclosure statement 97
Symbols in applications 81

T

Test results, simulated or predicted 82
Testimony, examiner 170
Title of invention 37
Translations of foreign references 88
Trademarks:
Actions by Assignee 272
Advisory Committee for Patents and Trademarks; Establishment 280
Amended Applications, Examining Procedure for 196
Amendment to Interrogatory Practices 293
Appeal Procedures (PTO), Review of 294, 295
Appeals to the Federal Circuit from PTO 239
Application Filing Requirements, Questions and Answers 209
Appropriate Parties to Sign Request for Extension of Time to File Statement of Use 208
Assignee, Actions by 272
Assignee, Issuance of Certificates of Registrations in Name of 272
Assignment Practice (Patent and Trademark), Changes in 273
Automated Search System Fees 253, 254
Availability of Patent and Trademarks Style Manual 262
Availability of Trademark Status Line 225
"Blackout Period" in Effect for "Intent-to-Use" Applications, TRAM Status Codes Indicating 228
Calendar Table of Official Gazette Volume Numbers: 1872-1990 283
Certificate of Mailing 240, 241
Certified Copies of Trademark Applications/Registrations 282
Change in Legal Holidays 284
Change in Official Gazette Entry to Show Cancellation of Fewer Than All Classes 259
Change of Correspondence Address in Trademark Applications 235
Changes in Format for Publishing Trademarks for Opposition 258
Changes in How Papers May be Filed in the Patent and Trademark Office 246
Changes in Patent and Trademark Assignment Practice 273
Changes in Signature and Filing Requirements for Correspondence Filed in the PTO 247
Claim of Bona Fide Intention to Use Mark in Commerce Required for Receipt of a Filing Date Under Section 44 210
Clarification of Office Policy Regarding Actions by Assignee and Issuance of Certificates of REgistrations in Name of Assignee 272
Code of Federal Regulations (C.F.R.) Rule 1.8, 37 C.F.R. 1.8, Error in 268
Conduct on Patent and Trademark Premises, Rules Concerning 291
Correspondence Filed in the PTO, Signature and Filing Requirements for ... 247
Deposit Account Status Line 230, 231
Dissemination of Trademark Information ... 223
Drawing Requirements 206
Drawings 204, 205, 206
Drawings, Typed 205
Electronic Data Dissemination Policies and Guidelines 255
Electronic Ordering of Patent and Trademark Copies, Use of Restricted Deposit Account for 236
Error in *Code of Federal Regulations* (C.F.R.) Rule 1.8, 37 C.F.R. 1.8 268
Examination Guide 207
Expedited Service for Certified Copies of Trademark Registrations 216

Facsimile Transmission, Filing of Certain Trademark Papers and Authorizations to Charge Deposit Accounts by 242, 243, 244
Fees, Revision of 275
Filing of a Notice of Appeal to the Court of Appeals for the Federal Circuit in the Patent and Trademark Office 237
Filing of Certain Trademark Papers and Authorizations to Charge Deposit Accounts by Facsimile Transmission 242, 243. 244
Filing of Papers During Unscheduled Closings of the Patent and Trademark Office 285
Filing of Petition Does Not Stay Period for Filing Further Extension Request of Statement of Use 208
Filing Receipt for Application 251
Flexible Working Hours 274
Helpful Hints from PTO 217, 232, 240, 241, 249
Inadvertently Issued Registration Numbers 261
Information Contacts (PTO) 221
Initial Processing of Applications 222
Interlocutory Decisions by the Trademark Trial and Appeal Board 292
International Protection of Government Emblems and Seals 270
International Trademark Classification 199
Interrrogatory Practices, Amendment to 293
Interviews Involving Applications 195
Iraqi Sanctions Regulations 296
Issuance of Certificates of Registrations in Name of Assignee 272
Late-Filed Renewal Fees 213
Mail, Trademark 245
Move of Trademark Office and Restructuring of Trademark Examining Operation 287
New Numbers for Filing of Certain Trademark Papers and Authorizations to Charge Deposit Accounts by Facsimile Transmission 243
New Telephone Numbers for PTO Organizations Located in North and South Tower Buildings 288
New Telephone Numbers for Trademark Status Line 226
Notices of Abandonment 234
Notice to Subscribers 264
Notification of Errors in Trademark Official Gazette 265
Patent and Trademark Office (PTO) Information Contacts 221
Patent and Trademark Rights in the Russan Federation 297
Performance Review Board 281
Petition, Filing Does Not Stay Period for Filing Further Extension Request or Statement of Use 208
Petition to Make Applications Special 198
Post Registration 217
Postal Service Interruption and Emergency in South Florida 256
Powers of Attorney in Registered Files 220
Printing of Use in Another Form Claims 267
Procedures for Enforcement of the Regulations Relating to the Use of Patent and Trademark Office Records or Search Facilities 290
Proposed Records Control Schedule 277
Public Advisory Committee for Trademark Affairs 278, 279
Published Trademark Applications 233
Receipt of Filing Date Under Section 44—Claim of Bona Fide Intention to Use MArk in Commerce Required 210
Recording of Documents Affecting Title 269
Recording of "Territorial Assignments" 271
Regulations Relating to the Use of Patent and Trademark Office Records or Search Facilities 271
Renewal Applications and Section 8 Affidavits 214
Renewal of Trademark Registrations 219
Request for Extension of Time to File Statement of Use, Appropriate Parties to Sign 208
Responsibility to Diligently Monitor Applications and Registration 224
Retention Schedule for Trademark Records 276
Review of Patent and Trademark Office Appeal Procedures 294, 295
Revised Rules of Practice, Reminders 211
Revision of Patent and Trademark Fees 275
"Revivals" and "Reinstatements" 202
Rule 2.165 Requirements for Section 8 212
Rules Concerning Conduct on Patent and Trademark Premises 291
Russian Federation, Patent and Trademark Rights in 297
Section 8 Requirements for Trademark Registrations 218
Section 7 Requests 215
Separation of the Patent and Trademark Sections of the Official Gazette 257
Service of Court Papers on the Commissioner of Patents and Trademarks 238
Service of Process and Testimony of Employees of the Patent and Trademark Office and Production of Documents in Legal Proceedings 252
Single Copies of the Trademark Official Gazette 260
Special Grant Covers Commemorating the Bicentennial of the United States Constitution 286
Standardized Disclaimers 201
Status Line, Deposit Account 230, 231
Status Line, Trademark 225, 226, 227
Staus of Trademark Application and Registrations, Responsibility to Diligently Monitor 224
Subscription Pricing Information 266
T-Search Printouts as Section 2(d) References 203
Telephone Changes for Deposit Account Status Line 231
Trademark Drawing Requirements 206
Trademark Examining Operation 215
Trademark Examining Procedure for Amended Applications 196
Trademark Mail 245
Trademark Office Actions 197
Trademark Status Information Available on the Trademark Status Line 227
Trademark Status Line, Availability of 225
Trademark Status Line, New Telephone Numbers for 226
Trademark Status Line, Status Information Available on 227
TRAM Status Codes Indicating "Blackout Period" in Effect for "Intent-to-Use" Trademark Applications 228
Transmittals for Use of Deposit Accounts .. 229
Typed Drawings in Trademark Applications 205
United States Postal Service Interruption and Emergency in South Florida 256
Unpaid Fee Checks 247
USTA Publications of Looseleaf Rules of Practice 263
Use of Restricted Deposit Account for Electronic Ordering of Patent and Trademark Copies 236
Weekly Summaries TTAB Final Decisions 250
Wording in Verification or Declaration 200

VOL
1147
ISS
4
FE
23
23
1993
UMI

U

Unity of invention practice in international applications 93,94
Unpaid fee check 67
UPOV convention 171, 172
Use of facilities regulations 20
User passes 20

V

Viewing of video tapes during interview 109
Visitor passes and regulations 20

W

Waiver of one year time period requirement in 36 CFR 1.137(b), 1.555(c) and 1.316(c) 100
Withdrawal of attorney 181, 182

Status of PTO Services

The following is an update of the status of PTO services for Jan. 1992:

Service Item	FY 1993 Goal (Calendar Days)*	Monthly Average (Calendar Days)*
Filing Receipts:		
Patents	22	38
Trademarks	30	60
Patent/Trademark Copies:		
Special Window Coupons	24 Hours	5 Hours
Window Coupons	5	2
Mail Coupons	12	9
Letter Orders	16	19
Electronic Ordering Service (EOS)	11	2
Certified Copies:		
Trademark Registrations	21	20
Patent Applications-As-Filed	17	19
Patent Applications Expedited	7	8
Patent File-Wrapper/Contents	N/A	23
TM Applications-As-Filed	17	7
TM Applications Expedited	7	5
Patent Copies	17	9
Trademark Search Library:		
Filing Pending Marks	23	51
Filing Reg. Certificates	Issue Date + 2 days	Issue + 2
Filing Temp. Drawings	8	28
Assignments:		
Recording Patents-New Applications	20	37
Recording Patents-Mail Room Recpts.	20	32
Return Patents-New Applications	34	42
Return Patents-Mail Room Recpts.	34	45
Recording Trademarks	20	31
Returning Trademark Documents	34	52
Avg. Days from Issue Fee Payment to Issue Date	90-100	114
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	On Time
Patent Copies Available	95% on Issue Date	99% on Issue Date
Trademark Copies Available	95% on Issue Date	99% on Issue Date

*Unless otherwise noted.

Jan. 29, 1993

THERESA A. BRELSFORD
Assistant Commissioner for Public Services and Administration

HELPFUL HINTS

Use of Fax
The capability exists to use facsimile transmission for certain requests or submissions of information as follows:

Assignment Processing
•(703) 308-7124 for status inquires and responses to questions from Conveyance Examiners about assignments in process.

Certified Copies
•(703) 308-9759 for orders for certified copies of office documents, other than 1) TM registrations showing title and status and 2) certified copies of assignments and certified copies of abstracts of title (FOR DEPOSIT ACCOUNT CUSTOMERS ONLY). This number can also be used for status inquires for orders.
•(703) 308-0120 for orders for certified copies of assignments of abstracts of title only (FOR DEPOSIT ACCOUNT CUSTOMERS ONLY). The number can also be used for status inquires for orders.

Deposit Accounts
•(703) 308-3491 for deposit account inquires.

Filing Receipts
•(703) 308-2840 for requests for corrected filing receipts, questions about communications received regarding missing parts or incomplete applications, and status inquires.

Patent Copies
•(703) 305-8759 for orders for copies of U.S. Patents (FOR DEPOSIT ACCOUNT CUSTOMERS ONLY).

Patent Appeals Correspondence
•(703) 557-8642 in accordance with 1108 OG 15 (Nov. 14, 1989)

Patent Examining Corps Correspondence
The following fax numbers may be used in accordance with 1096 OG 30 (Nov. 15, 1988)
•(703) 308-4227 (Groups 120, 150 and 180 - CMI)
•(703) 305-7687 (Groups 250 and 310 - CP2)
•(703) 305-9508 (Group 260 - PK2)
•(703) 308-3718/3721 (All other Patent Examining Groups)

A new proposed practice was published in 1142 OG 8 (Sept. 1, 1992)

Patent Maintenance Fees
(703) 308-7110 for maintenance fee payments (FOR DEPOSIT ACCOUNT CUSTOMERS ONLY), status inquires, and general information requests regarding maintenance fees.

Refunds
•(703) 305-8007 for request for refunds or refund documentation.

Trademark Examining Corps Correspondence
•(703) 308-9099 in accordance with 1123 OG 18 (Feb. 12, 1991)

Jan. 29, 1993

THERESA A. BRELSFORD
Assistant Commissioner for Public Services and Administration

PATENT NOTICES

Certificates of Correction For Week of February 23, 1993

Des. 315,999	5,008,567	5,039,699	5,055,186
Des. 317,289	5,010,418	5,039,729	5,055,499
Des. 319,530	5,010,424	5,039,760	5,055,656
Des. 320,688	5,010,649	5,039,945	5,055,691
Re. 33,690	5,010,689	5,040,000	5,056,160
3,864,676	5,011,297	5,040,144	5,056,175
4,452,888	5,012,103	5,040,281	5,056,250
4,687,474	5,013,206	5,040,990	5,056,301
4,709,094	5,013,549	5,041,391	5,056,808
4,807,166	5,013,627	5,041,438	5,056,875
4,814,992	5,013,655	5,041,538	5,056,920
4,816,570	5,013,702	5,041,583	5,057,285
4,826,778	5,014,219	5,041,791	5,057,293
4,831,033	5,015,017	5,041,916	5,057,296
4,833,422	5,015,999	5,041,923	5,057,348
4,846,736	5,016,931	5,042,216	5,057,455
4,867,279	5,018,157	5,042,262	5,057,848
4,868,826	5,018,266	5,042,273	5,057,880
4,878,097	5,018,864	5,042,335	5,057,910
4,885,235	5,018,989	5,042,470	5,058,005
4,898,863	5,019,002	5,043,087	5,058,012
4,902,811	5,019,464	5,043,093	5,058,129
4,907,754	5,021,240	5,043,197	5,058,139
4,916,318	5,022,205	5,043,297	5,058,197
4,921,067	5,022,287	5,043,342	5,058,455
4,923,805	5,022,497	5,043,401	5,058,470
4,932,960	5,022,777	5,043,695	5,058,508
4,933,166	5,022,909	5,043,868	5,058,523
4,939,092	5,022,927	5,044,004	5,058,597
4,943,212	5,023,066	5,044,258	5,058,660
4,947,213	5,023,697	5,044,260	5,058,912
4,952,567	5,024,427	5,044,386	5,058,924
4,953,612	5,024,680	5,044,662	5,059,183
4,954,960	5,024,883	5,044,779	5,059,459
4,958,284	5,024,921	5,044,852	5,059,728
4,957,741	5,024,953	5,044,873	5,059,907
4,962,412	5,025,034	5,045,041	5,059,940
4,963,045	5,025,151	5,045,105	5,060,004
4,967,904	5,025,188	5,045,195	5,050,100
4,970,038	5,026,276	5,045,340	5,060,112
4,970,148	5,027,061	5,045,400	5,060,134
4,972,348	5,027,577	5,045,596	5,060,146
4,974,621	5,028,041	5,045,646	5,060,379
4,976,066	5,028,616	5,046,488	5,060,393
4,976,773	5,028,736	5,046,886	5,060,480
4,979,256	5,029,261	5,046,971	5,060,551
4,979,483	5,029,758	5,047,218	5,060,561
4,982,064	5,030,462	5,047,408	5,060,606
4,982,151	5,030,638	5,047,636	5,060,798
4,982,482	5,030,702	5,047,860	5,061,298
4,983,623	5,030,735	5,048,373	5,061,373
4,986,420	5,030,900	5,048,640	5,061,434
4,988,859	5,030,981	5,048,780	5,061,499
4,989,962	5,031,192	5,048,967	5,062,057
4,990,247	5,031,194	5,049,052	5,062,124
4,991,940	5,032,581	5,049,079	5,062,197
4,992,208	5,032,866	5,049,087	5,062,325
4,992,232	5,032,975	5,049,303	5,063,271
4,993,775	5,033,266	5,049,383	5,063,597
4,994,120	5,033,855	5,049,499	5,063,598
4,994,443	5,033,940	5,049,575	5,063,654
4,994,731	5,034,183	5,050,013	5,063,817
4,994,841	5,034,291	5,050,240	5,064,074
4,994,960	5,034,530	5,050,589	5,064,088
4,997,371	5,034,698	5,050,815	5,064,486
4,997,900	5,034,744	5,050,947	5,064,732
4,998,798	5,034,842	5,051,182	5,065,278
4,999,513	5,034,983	5,051,245	5,066,949
5,000,444	5,035,139	5,051,330	5,071,638
5,000,491	5,037,581	5,051,519	5,083,535
5,004,346	5,037,674	5,054,126	5,091,913
5,004,871	5,038,625	5,054,360	5,103,155
5,005,076	5,038,925	5,054,445	5,125,902
5,006,081	5,038,989	5,054,712	5,133,819
5,006,323	5,039,234	5,054,747	5,136,642
5,007,095	5,039,254	5,054,929	
5,007,678	5,039,386	5,055,067	

Disclaimer

B1-4,381,056—*Jurg Eberle*, Hinwil, Switzerland. CONVEYOR APPARATUS ESPECIALLY FOR PRINTED PRODUCTS. Patent dated July 25, 1989. Disclaimer filed May 1, 1992, by the assignee, Ferag, AG.

Hereby enters this disclaimer to claims 12 and 20 of said patent.

4,784,132—*Kenneth R. Fox*, Arlington, Va.; *Arthur Coster*, Alexandria, Va. METHOD OF AND APPARATUS FOR LASER TREATMENT OF BODY LUMENS. Patent dated Nov. 15, 1988. Disclaimer filed Aug. 26, 1992, by the assignee, Pillco Ltd. Partnership.

Hereby enters this disclaimer to claims 16 and 17 of said patent.

4,943,762—*W. Carroll Campbell*; *Michael W. Evans*, both of Longmont; *Edward A. Browning, Jr.*, Louisville; *Robert* J. Stone, Longmont, all of Colo. POWER SUPPLY SYSTEM. Patent dated July 24, 1990. Disclaimer filed Sept. 28, 1992, by the assignee, Codar Technology, Inc.

Hereby enters this disclaimer to all claims of said patent.

4,960,409—*Marc L. Catalano*, Miramar, Fla. METHOD OF USING BILUMEN PERIPHERAL VENOUS CATHETER WITH ADAPTER. Patent dated Oct. 2, 1990. Disclaimer filed Oct. 19, 1992, by the inventor.

Hereby enters this disclaimer to claims 5, 6, 7 or 8 of said patent.

5,069,335—*Jonathan T. Beales*, Philadelphia, Pa. MODULAR ARTICLE CARRIER. Patent dated Dec. 3, 1991. Disclaimer filed Oct. 27, 1992, by the assignee, International Paper Co.

Hereby enters this disclaimer to claim 1 of said patent.

Disclaimer and Dedication

4,992,213— *G. Troy Mallett*, Lafayette, La.; *Edward E. Friloux*, Lafayette, La.; *David I. Foster*, Lake Charles, La. CLEANING COMPOSITION, OIL DISPERSANT AND USE THEREOF. Patent dated Feb. 12, 1991. Disclaimer and Dedication filed Nov. 9, 1992, by the inventors.

Hereby disclaims and dedicates to the public the entire term of said patent.

VOL 1147 ISS 4 FE 23 1993 UMI

VOL
1147
ISS
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FE
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1993
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GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500 — A.L. SMITH, Director	308-1021	2/04/92

*A communication from the examiner should have been received in most applications filed prior to this date.

Expiration of Patents: The patents within the range of numbers indicated below expire during January 1993 except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151

Patents ..... Numbers 3,930,271 to 3,935,595 inclusive
Plant Patents ..... 3,824 to 3,827

VOL 1147 ISS 4 FEB 23 1993 UMI

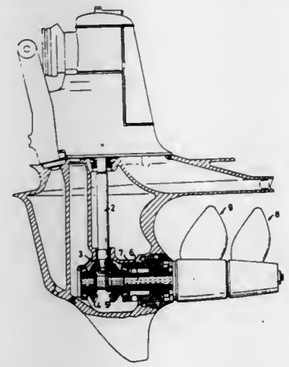
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1147
ISS
4
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23
1993
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REEXAMINATIONS

FEBRUARY 23, 1993

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,619,584 (1929th)
DOUBLE PROPELLER DRIVE FOR BOATS
Lennart Brandt, Fjärås, Sweden, assignor to AB Volve Penta Gatherburg, Sweden
Reexamination Request No. 90/001,984, Apr. 6, 1990.
Reexamination Certificate for Patent No. 4,619,584, issued Oct. 28, 1986, Ser. No. 576,150, Feb. 2, 1984.
Continuation of Ser. No. 354,769, Mar. 4, 1982, abandoned
Claims priority, application Sweden, Mar. 5, 1981, 8101423
Int. Cl.[5] B63H *5/10*
U.S. Cl. 416—129



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **10–17** is confirmed.

Claim **1** is determined to be patentable as amended.

Claims **2–9**, dependent on an amended claim, are determined to be patentable.

New claims **18** and **19** are added and determined to be patentable.

1. In a steerable double propeller outboard drive unit for a boat having a transom, *an engine having an output shaft rotating in a predetermined direction,* and means mounting said unit on said transom for steering said unit about a generally upright steering axis, said unit including a first propeller having a plurality of blades, a first propeller shaft drivingly connected to said first propeller, and a second propeller having a plurality of blades, a second propeller shaft mounted concentrically with said first shaft and drivingly connected to said second propeller, power means including a substantially vertical output drive shaft coupled to said first and second shafts for rotation of said first and second propellers in opposite directions, the improvement comprising the after propeller of said first and second propellers being of a perdetermined diameter smaller than the diameter of the fore propeller, [and] said after propeller including at least one blade more than said fore propeller so that said first and second propellers provide approximately equal thrust to minimize the reaction steering moments on said unit, *and said after propeller rotating in the same direction as the engine output shaft.*

19. A steerable double propeller outboard drive unit for a boat having a transom, an engine having an output shaft rotating in a predetermined direction, and means mounting said unit on said transom for steering said unit about an inclined steering axis, said unit comprising:

a forward propeller having a plurality of blades;

a first propeller shaft drivingly connected to said forward propeller;

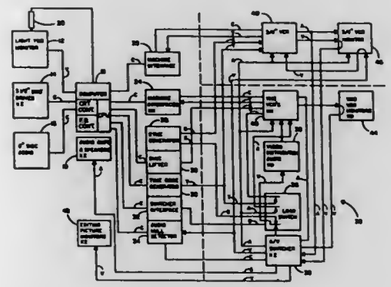
an after propeller having a plurality of blades, said after propeller being of a predetermined diameter smaller than the diameter of the forward propeller and including at least one blade more than said forward propeller;

a second propeller shaft mounted concentrically with said first shaft and drivingly connected to said after propeller; and

power means including a substantially vertical output drive shaft coupled to said first and second shafts for rotation of said forward and after propellers in opposite directions,

said forward and after propellers providing approximately equal thrust and said after propeller rotating in the same direction as the engine output shaft.

B1 4,746,994 (1930th)
COMPUTER-BASED VIDEO EDITING SYSTEM
Adrian B. Ettlinger, Hastings-on-Hudson, N.Y., assignor to Cinedco, Inc., Glendale, Calif.
Reexamination Request No. 90/002,183, Oct. 29, 1990.
Reexamination Certificate for Patent No. 4,746,994, issued May 24, 1988, Ser. No. 768,491, Aug. 22, 1985.
Int. Cl.[5] H04N *5/782*
U.S. Cl. 360—13



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–17** is confirmed.

1. A computer-based video editing system of the type having a master video storage machine and a plurality of video playback machines, each such video playback machine having a duplicate copy of the material transferred from media in the master machine, each such copy, including the original copy in the master machine, having a selection of takes, including both picture and sound components of an artistic work such as a dramatic work consisting of the performance of a plurality of lines of dialogue, the system also having a system computer for uniquely designating picture and sound track segments in each take for selection of a sequence of segments of picture and sound track from the available takes of the work; the system comprising:

means for numerically correlating said picture and sound track segments to respective lines of dialogue in the written script of the work being edited,

means for selectively switching picture and sound track

segments from said playback machines onto blank media in said master machine for generating an edited version of said work, and

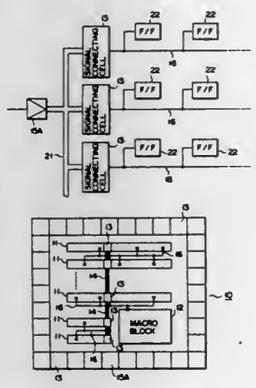
means for generating a complete data file corresponding to the edited version of said work which may be used for preparation of a final version of said dramatic work in the medium in which it is to be published.

B1 4,883,980 (1931st)

SEMICONDUCTOR IC (INTEGRATED CIRCUITS) DEVICE

Toshiki Morimoto, Kawasaki, and Seiji Watanabe, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Reexamination Request No. 90/002,577, Feb. 12, 1992.
Reexamination Certificate for Patent No. 4,883,980, issued Nov. 28, 1989, Ser. No. 238,229, Aug. 26, 1988.
Claims priority, application Japan, Aug. 27, 1987, 62-213545
Int. Cl.[5] H01L *27/10, 23/50, 23/52;* **H03K** *3/01*
U.S. Cl. 307—465.1



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–5** are determined to be patentable as amended.

1. A semiconductor integrated circuit device comprising:

a plurality of cell rows each including a plurality of standard cells;

signal connection cells provided one [at] *in* each of [said] *the* cell rows and located on a straight line perpendicular to the [respective] cell rows;

[a connection line] *signal lines* for cell rows [which is] connected to [said] *the* signal connection cells to allow a signal which is propagated via the signal connection [cell] *cells* to be supplied to the [cell] *cells* in the *respective* cell [row] *rows*; and

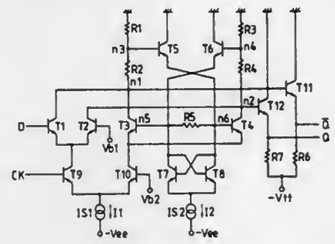
[cell-to-cell connection] *row-to-row signal* lines each connected between the signal connection cells and *supplying the signal to said signal connection cells, said row-to-raw signal lines* having a *width* greater [width] than that of [an ordinary connection line] *said signal lines for cell rows.*

B1 4,940,905 (1932nd)

ECL FLIP-FLOP WITH IMPROVED X-RAY RESISTANT PROPERTIES

Tohru Kobayashi, Iruma; Masato Hamamoto, Ohme, and Toshio Yamada, Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Reexamination Request No. 90/002,567, Jan. 31, 1992.
Reexamination Certificate for Patent No. 4,940,905, issued Jul. 10, 1990, Ser. No. 426,047, Oct. 24, 1989.
Continuation of Ser. No. 256,863, Oct. 12, 1988, Pat. No. 4,891,531
Claims priority, application Japan, Oct. 20, 1987, 62-264541
The portion of the term of this patent subsequent to Jul. 10, 2007, has been disclaimed.
Int. Cl.[5] H03K *3/013, 3/037, 3/287, 19/086*
U.S. Cl. 307—278



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **4** are cancelled.

Claims **2, 5, 6, 13** and **16** are determined to be patentable as amended.

Claims **3, 7–12, 14, 15, 17–19** and **20**, dependent on an amended claim, are determined to be patentable.

5. A semiconductor integrated circuit device [according to claim **4**] *including a flip-flop circuit, said flip-flop circuit comprising:*

a first differential bipolar transistor;

a second differential bipolar transistor coupled to said first differential bipolar transistor to form differential switching means;

input means coupled to said first differential bipolar transistor for supplying the collector of said first differential bipolar transistor with a potential in accordance with input data; and

feedback means coupled to said first and second differential bipolar transistors and including resistor means coupled in series between the respective bases of said first and second differential bipolar transistors, first bias means for supplying the base of said second differential bipolar transistor with a potential in accordance with a potential at the collector of said first differential bipolar transistor, second bias means for supplying the base of said first differential bipolar transistor with a potential in accordance with a potential at the collector of said second differential bipolar transistor, and first switching means coupled to the bases of said first and second differential bipolar transistors and to a predetermined potential point for selectively coupling the base of either said first or second differential bipolar transistor to said predetermined potential point in accordance with a potential at the collector of each of said first and second differential bipolar transistors,

wherein said resistor means includes a resistor coupled between the bases of said first and second differential bipolar transistors, and

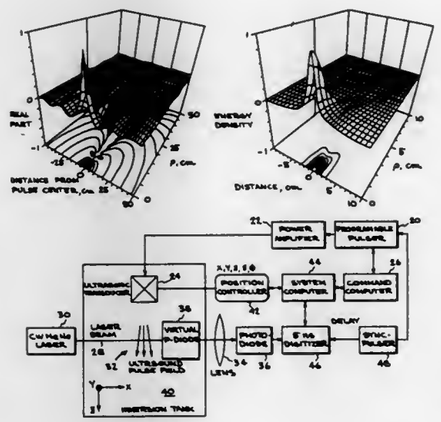
further including a current circuit coupled to the emitters of said first and second differential bipolar transistors in common.

B1 4,959,559 (1933rd)

ELECTROMAGNETIC OR OTHER DIRECTED ENERGY PULSE LAUNCHER

Richard W. Ziolkowski, Livermore, Calif., assignor to The United States of America as represented by the Secretary of the Department of Energy, Washington, D.C.

Reexamination Request No. 90/002,582, Feb. 14, 1992.
Reexamination Certificate for Patent No. 4,959,559, issued Sep. 25, 1990, Ser. No. 331,141, Mar. 31, 1989.
Int. Cl.[5] H01Q *3/26;* **H04B** *1/12;* **H01S** *3/23, 3/20*
U.S. Cl. 307—425



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–20** is confirmed.

1. A method of producing a localized packet of wave energy which travels substantially large distances compared to the Rayleigh length without substantial divergence, comprising:

independently driving each element of a finite array of radiating elements with a drive function determined by

$$f(r,t) = \int_0^\infty \Phi_k(r,t)F(k)dk$$

where $\Phi_k(r,t)$ is a basis function which is an exact or approximate non-separable space-time solution of the relevant wave propagation equation and $F(k)$ is a spectrum function which satisfies

$$\int_0^\infty dk\ |F(k)|^2\, e^{2ksc}\, E_1(2kx_0) <$$

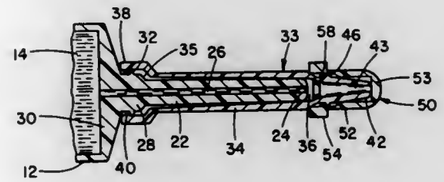
$$\frac{1}{2x_0}\int_0^\infty dk\ |F(k)|^2\,\frac{1}{k} < m.$$

B1 4,981,472 (1934th)

CANNULA ASSEMBLY FOR SYRINGE

James F. Ennis, III, Preston, Conn., and Mark Anderson, R.R. 2, Elmwood, Wis. 54740, assignors to Mark Anderson, Elmwood, Wis.

Reexamination Request No. 90/002,385, Jul. 9, 1991.
Reexamination Certificate for Patent No. 4,981,472, issued Jan. 1, 1991, Ser. No. 439,180, Nov. 20, 1989.
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—117



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **7–11** is confirmed.

Claims **1** and **12** are determined to be patentable as amended.

Claims **2–6** and **13–16**, dependent on an amended claim, are determined to be patentable.

1. A cannula assembly for a syringe adapted for discharging medicinal fluid *different selected distances* into a *central canal of* a teat of an animal being treated, *said canal having an imperforate, axial, lateral wall in said teat,* comprising:

a first cannula having an elongated body of predetermined axial length terminating in a first free open *blunt* end *for safely entering said central canal without piercing said axial, lateral wall thereof and* for discharging said fluid therefrom *into said canal;*

a tubular jacket enclosing said cannula in axial alignment therewith;

first *threadless* means on said cannula and said jacket for *quickly* detachably engaging together said cannula and said jacket;

a second cannula integral with said jacket and extending axially forward of said open *blunt* end of said first cannula in axial alignment therewith for receiving said fluid from said first cannula, said second cannula having an elongated body substantially different in axial length [than] *from* that of said first cannula and having a second free open *blunt* end *for safely entering said central canal without piercing said axial, lateral wall thereof and* for discharging said fluid therefrom *into said canal;*

a tubular cap having opposite closed and open ends, said cap enclosing *said open blunt end of* said second cannula when *said open blunt end of* said second cannula is axially inserted into said cap through said open end of said cap; and

second *threadless* means on said second cannula and said cap for *quickly* detachably engaging together said second cannula and said cap;

whereby a user can select said second cannula for discharging said fluid *only into said central canal of said teat without piercing said axial, lateral wall of said canal,* by detaching said cap from said second cannula, and whereby said user can select said first cannula for discharging said fluid *only into said central canal of said teat without piercing said axial, lateral wall of said canal,* by detaching said jacket from said first cannula.

B1 5,063,304 (1935th)

INTEGRATE CIRCUIT WITH IMPROVED ON-CHIP POWER SUPPLY CONTROL

Narasimhan Iyengar, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Reexamination Request No. 90/002,589, Feb. 18, 1992.
Reexamination Certificate for Patent No. 5,063,304, issued Nov. 5, 1991, Ser. No. 515,977, Apr. 27, 1990.
Int. Cl.[5] H02J *7/00;* **G05F** *1/56, 5/08;* **H03K** *3/027*
U.S. Cl. 307—296.6

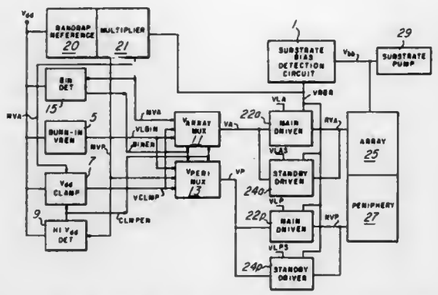
AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **2** and **11** are cancelled.

Claims **1, 3, 8, 10** and **12** are determined to be patentable as amended.

Claims **4–7, 9** and **13–16**, dependent on an amended claim, are determined to be patentable.

1. An integrated circuit, comprising:
functional circuitry biased at a bias node;
a terminal for receiving a power supply voltage; and
a circuit, coupled to said terminal, for biasing said bias node of said functional circuitry with a clamped voltage responsive to said power supply voltage at said terminal exceeding a first limit *wherein said circuit includes:*
a high power supply voltage detection circuit coupled to said terminal, for indicating at its output that said power supply voltage has exceeded said first limit; and
a clamp circuit coupled to said terminal, to said output of said high power supply voltage detection circuit and to said bias



node, for biasing said bias node with said clamped voltage responsive to said output of said high power supply voltage detection circuit indicating that said power supply voltage has exceeded said first limit.

REISSUES

FEBRUARY 23, 1993

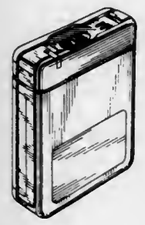
Matter enclosed in heavy brackets **[ ]** appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 34,182

RADIO PAGER

Sigeki Hayasaka, and Mamoru Takahashi, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Original No. D.304,192, dated Oct. 24, 1989, Ser. No. 152,608, Feb. 5, 1988. Application for reissue Jul. 24, 1991, Ser. No. 735,217
Claims priority, application Japan, Aug. 6, 1987, 62-32235
U.S. Cl. D14—191 **1 Claim**

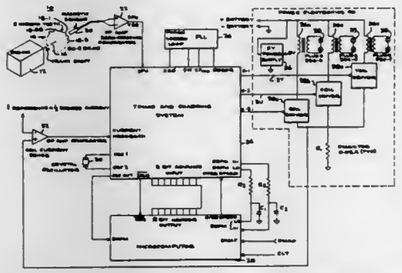


Re. 34,183

IGNITION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES WITH SIMPLIFIED CRANKSHAFT SENSING AND IMPROVED COIL CHARGING

David I. Wilens, Herndon, and Alexander Loug, III, Oakton, both of Va., assignors to Electromotive Inc., Chantilly, Va.

Original No. 4,787,354, dated Nov. 29, 1988, Ser. No. 826,331, Feb. 5, 1986. Application for reissue Nov. 23, 1990, Ser. No. 617,087
Int. Cl.[5] F02P *5/145*
U.S. Cl. 123—414 **123 Claims**



56. A single crankshaft sensor distributorless electronic ignition system for electrical coupling to a spark generator for controlling ignition instants of combustion, in an internal combustion engine system of the type including at least one cylinder with a piston disposed therein, said piston capable of reciprocally travelling within said cylinder, said piston being mechanically coupled to rotatably drive a rotatable engine crankshaft in response to combustion within said cylinder, said cylinder also having an electrically actuatable spark generator operatively coupled thereto, said spark generator producing electrical sparks which trigger combustion within said cylinder, said electronic ignition system comprising:

a rotor mechanically coupled to rotate with said crankshaft, said rotor defining plural points separated from one another by equal angular spacings, sensible rotor structures being defined by said rotor at said points, said rotor defining a reference point disposed in predefined fixed positional relationship with respect to said plural points, said reference point indicating said crankshaft angular position and piston have a predefined positional relationship with respect to said cylinder;

a single crankshaft sensor operatively coupled to said rotor, said single crankshaft sensor sensing said sensible rotor structures and arranged to generate successive electrical sensor pulses in response to rotation of said rotor structures past said sensor;

a pulse generator for producing a train of repetitive pulses at a rate in excess of the pulse repetition rate of said electrical pulses produced by said single crankshaft sensor;

a reference point detecting circuit electrically coupled to said pulse generator, said reference point detecting circuit detecting, in response to said electrical sensor pulses, rotation of said reference point past said sensor and producing a detection output signal in response to said detection;

a counter coupled to receive and count said successive electrical sensor pulses, said counter being synchronized with said rotor rotation in response to said detection output signal;

an engine speed determining circuit electrically coupled to said single crankshaft sensor and connected to receive said electrical sensor pulses, said engine speed determining circuit determining the speed of rotation of said crankshaft, said engine speed determining circuit continually updating said determined speed in response to said electrical sensor pulses;

an ignition advance angle specifying circuit coupled to said counter and to said engine speed determining circuit, said ignition advance angle specifying circuit specifying a spark advance angle for said cylinder in response to said determined speed and at least one further engine parameter;

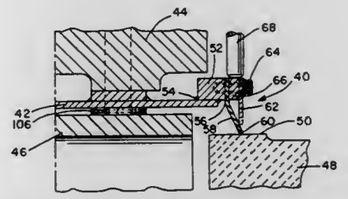
a spark instant actuating circuit, operatively coupled to said counter and to said ignition advance angle specifying circuit, said spark instant actuating circuit generating a spark instant control signal adapted for controlling the timing of sparks produced by said spark generator, said spark instant actuating circuit capable of generating said spark instant control signal at timings other than those corresponding to occurrence of said electrical sensor pulses, said spark instant actuating circuit producing said spark instant control signal at a timing specified by said specified spark advance angle in response to (a) said count, and (b) the occurrence of a pulse in said pulse train produced by said pulse generator.

Re. 34,184

RETROFIT COKE OVEN DOOR SEAL

Billy C. Baird, and William R. Baird, both of Sturgis, Ky., assignors to Saturn Machine & Welding Co. Inc., Sturgis, Ky.

Original No. 4,919,764, dated Apr. 24, 1990, Ser. No. 309,223, Feb. 13, 1989. Application for reissue Nov. 7, 1991, Ser. No. 790,193
Int. Cl.[5] C10B *25/16*
U.S. Cl. 202—248 **8 Claims**



4. A retrofit coke oven door seal assembly in combination with a coke oven door having a diaphragm plate supported from a door

body, said plate having an interior surface with refractories supported therefrom and a peripheral edge, said seal assembly comprising a support member mounted peripherally around the peripheral edge of the diaphragm plate, a pressure leaf spring and a seal attached to the support member for engagement with a door jamb surface peripherally of the coke oven door, said seal including an angled portion for engaging a door jamb surface in angular relation to enable flexing of the angled portion without maintaining the plane of the angled portion while maintaining sealing engagement with a door jamb, said angled portion including an inclined outer surface, said pressure leaf spring including an edge engaging the outer surface of the angled portion of the seal to provide continual pressure against the angled portion of the seal, said pressure leaf spring being straight throughout its length and width, said seal and pressure leaf spring having parallel opposed surfaces spaced from each other, a spacer bar positioned between and engaged with the opposed surfaces on said seal and pressure leaf spring, and fastener bolts extending through the seal, pressure leaf spring and spacer bar into the support member to removably secure the seal, pressure leaf spring and spacer bar to the support member.

Re. 34,185

STABILIZATION OF NON-AQUEOUS SOLUTIONS OF 3-ISOTHIAZOLONES

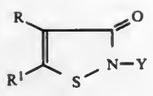
David R. Amick, Chalfont, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Original No. 4,824,957, dated Apr. 25, 1989, Ser. No. 80,933, Aug. 3, 1987. Continuation-in-part of Ser. No. 709,755, Mar. 8, 1985, abandoned. Application for reissue Oct. 31, 1990, Ser. No. 606,222

Int. Cl.[5] **C07D** *275/03;* **A01N** *43/80*

U.S. Cl. 548—213 **9 Claims**

7. A method for stabilizing a 0.5 to about 10% by weight solution of an isothiazolone of the formula:

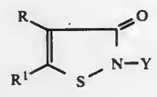


I

wherein

Y is an unsubstituted alkyl of 1 to 8 carbon atoms, an unsubstituted or halo substituted alkenyl or alkynyl of 2 to 8 carbon atoms, an unsubstituted cycloalkyl of 5 to 8 carbon atoms, benzyl, aralkyl selected from 3,4-dichlorobenzyl, 4-methoxybenzyl or 4-chlorobenzyl or substituted aryl selected from 3,4-dichlorophenyl or 4-methoxyphenyl; R^1 is halo; R is hydrogen, halogen or (C_1–C_4) alkyl which consists of formulating a solution of the isothiazolone by dissolving the isothiazolone in from about 90 to about 99% by weight of dipropylene glycol, polypropylene glycol, 1,5-pentadiol or benzyl alcohol.

13. A method for stabilizing a 0.5 to about 10% by weight solution of an isothiazolone of the formula:



wherein

Y is an unsubstituted alkyl of 1 to 8 carbon atoms, an unsubstituted or halo substituted alkenyl or alkynyl of 2 to 8 carbon atoms, an unsubstituted cycloalkyl of 5 to 8 carbon atoms, benzyl, aralkyl selected from 3,4-dichlorobenzyl, 4-methoxybenzyl or 4-chlorobenzyl or substituted aryl selected from 3,4-dichlorophenyl or 4-methoxyphenyl; R^1 is halo; R is hydrogen, halogen or (C_1–C_4) alkyl which consists of formulating a solution of the isothiazolone by dissolving the isothiazolone in from about 90 to about 99% by weight of a solvent selected from the group consisting of ethylene glycol, dipropylene glycol, polypropylene glycol, 1,5-pentanediol, propylene glycol, diethylene glycol, and triethylene glycol, in the absence of water.

PLANT PATENTS

GRANTED FEBRUARY 23, 1993

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

8,153

ROSE PLANT — 'AUSLEAP'

David C. H. Austin, Albrighton, England, assignor to David Austin Roses, Wolverhampton, England

Filed Dec. 6, 1990, Ser. No. 623,287

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of rose plant of the shrub class, characterised as to novelty by its fully double flowers of an overall apricot coloring, with abundant and continual blooming and the unusual blend of coloring and shaping of the flower being substantially as shown and described.

8,154

ROSE PLANT—'AUSCRIM'

David C. H. Austin, Albrighton, England, assignor to David Austin Roses, Albrighton, England

Filed Dec. 6, 1990, Ser. No. 623,288

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of rose plant of the shrub class, characterized as to novelty by its fully double flowers of scarlet/deep red, with abundant and continual blooming and shaping of the flower being substantially as shown and described.

8,155

ROSE PLANT — 'AUSREN'

David C. H. Austin, Albrighton, England, assignor to David Austin Roses, Wolverhampton, England

Filed Dec. 6, 1990, Ser. No. 623,305

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of rose plant of the shrub class, characterized as to novelty by its fully double flowers giving the effect of lilac pink coloring, with abundant and continual blooming and shaping of the flower being substantially as shown and described.

8,156

ROSE PLANT—'AUSRAM'

David C. H. Austin, Albrighton, England, assignor to David Austin Roses, Wolverhampton, England

Filed Dec. 6, 1990, Ser. No. 623,306

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of rose plant of the shrub class, characterized as to novelty by its fully double flowers of faintish yellowish white and pale yellow/faint pink giving an overall white coloring with abundant and continual blooming and the unusual shaping of the flower being substantially as shown and described.

8,157

ROSE PLANT—'AUSMIT'

David C. H. Austin, Albrighton, England, assignor to David Austin Roses, Albrighton, England

Filed Dec. 6, 1990, Ser. No. 623,308

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct variety of rose plant of the shrub class, characterised as to novelty by its fully double flowers of a pale creamy apricot coloring, with abundant and continual blooming and the unusual shaping of the flower being substantially as shown and described.

8,158

ASTER PLANT NAMED SUNSHIR

Klara Dehan, Holon, Israel, assignor to Danziger - "Dan" Flower Farm, Post Belt Dagan, Israel

Filed Apr. 19, 1991, Ser. No. 687,161

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of aster plant named Sunshir, as illustrated and described.

8,159

ASTER PLANT NAMED SUNTOP

Klara Dehan, Holon, Israel, assignor to Danziger - "Dan" Flower Farm, Post Belt Dagan, Israel

Filed Apr. 19, 1991, Ser. No. 687,162

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of aster plant named Suntop, as illustrated and described.

8,160

ASTER PLANT NAMED SUNJOY

Klara Dehan, Holon, Israel, assignor to Danziger - "Dan" Flower Farm, Post Belt Dagan, Israel

Filed Apr. 19, 1991, Ser. No. 687,163

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of aster plant named Sunjoy, as illustrated and described.

8,161

GAZANIA PLANT CALLED "MOORPARK YELLOW"

Janet N. Egger, Wilsonville, Oreg., assignor to Mitsuwa Nursery, Inc., Moorpark, Calif.

Filed Aug. 14, 1991, Ser. No. 745,459

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—87.14 **1 Claim**

1. A new and distinct cultivar of Gazania as described and illustrated, particularly characterized by its large yellow banded flowers, green foliage, vigorous growth and trailing habit.

8,162

MIDLAWN BERMUDAGRASS

Ray A. Keen, Manhattan, Kans., assignor to Kansas State University Research Foundation, Manhattan, Kans.

Filed May 28, 1991, Ser. No. 706,273

Int. Cl.[5] **A01H** *5/00*

U.S. Cl. Plt.—90 **1 Claim**

1. A new and distinct variety of Bermudagrass as shown and described.

VOL
1147
ISS
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23
1993
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PATENTS

GRANTED February 23, 1993

ERRATA

For CLASS	See PATENT NO.
004-313	5,187,816
492-059	5,187,849
062-195	5,187,953
476-010	5,187,995
474-175	5,188,573
504-136	5,188,655
504-246	5,188,656
504-212	5,188,657
525-070	5,188,751
435-052	5,188,976
428-195	5,188,981
252-182	5,189,105
514-058	5,189,149
360-063	5,189,326
315-111	5,189,446
257-079	5,189,496
257-216	5,189,498
257-215	5,189,499
359-072	5,189,500
257-647	5,189,501
257-759	5,189,502
257-310	5,189,503
257-422	5,189,504
257-419	5,189,505
257-752	5,189,506
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257-049	5,189,508
257-718	5,189,509
455-195	5,189,593
257-295	5,189,594

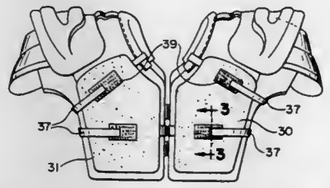
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GRANTED FEBRUARY 23, 1993

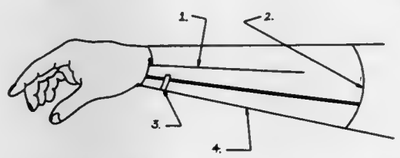
GENERAL AND MECHANICAL

5,187,812
FOOTBALL SHOULDER PAD WITH OUTER PADS
Mark Neuhalfen, Hillside, Ill., assignor to Wilson Sporting Goods Co., River Grove, Ill.
Continuation-in-part of Ser. No. 502,797, Apr. 2, 1990, Pat. No. 5,060,313. This application Oct. 24, 1991, Ser. No. 781,866
The portion of the term of this patent subsequent to Oct. 29, 2008, has been disclaimed.
Int. Cl.[5] A41D *13/00*
U.S. Cl. 2—2 **12 Claims**



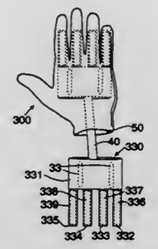
1. A football shoulder pad comprising a pair of relatively rigid arch portions, each of the arch portions being generally U-shaped and having a rear portion shaped to extend over a portion of the back of a wearer, and a pair of compressible and resilient outer pads removably attached to the rear portions of the arch portions, each of the outer pads covering at least a portion of the outer surface of one of the arch portions, and means on the outer pads for removably attaching the outer pads to the arch portions.

5,187,813
COMBINATION NAPKIN AND SLEEVE/FOREARM PROTECTOR (CUFF-NAP)
Levrette L. Klein, 5725 Painters St., New Orleans, La. 70122, assignor to Levrette Lee Klein, New Orleans, La.
Filed May 15, 1990, Ser. No. 523,478
Int. Cl.[5] A41D *13/08*
U.S. Cl. 2—16 **3 Claims**



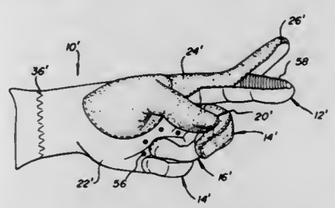
1. A combination napkin and sleeve protector comprised of an absorbent and flexible paper or cloth sheet rectangular in shape when laid out flat in a stretched condition and having been pleated at a narrow edge thereof thereby creating a trapezoidally shaped sheet with the narrower edge placed at the wrist of a wearer, encompassing the forearm in a tubular fashion and fastenened by tape tabs or hook and loop type fasteners located on opposite sides of the sheet adjacent the pleated edge so as to allow the fastening of the sheet around the forearm without restricting the hands or the fingers.

5,187,814
GLOVE WITH ATTACHED HEATER PACK
Danny Gold, 27 Barker Road, Apt. E-2, Hong Kong, Hong Kong
Filed Jul. 17, 1991, Ser. No. 731,431
Int. Cl.[5] A41D *19/00*
U.S. Cl. 2—160 **14 Claims**



1. A heated garment for heating at least a portion of a body part with a heater pack comprising:
garment means for covering at least a portion of a body part, said garment means having at least one opening for insertion of the body part;
chamber means coupled to the inside of the garment means for creating an elongated chamber in the garment means accessible through the opening
pocket means coupled to the garment means for receiving the heater pack and adapted to be removably inserted into the elongated chamber wherein the pocket means includes a two walled pouch with an opening for receiving the heater pack and a strap having a first end coupled to the pouch and a second end coupled to the garment means;
whereby the insertion of the pocket means with the heater pack into the elongated chamber of the garment transmits heat to the wearer's covered body part portion.

5,187,815
NEEDLESTICK PROTECTIVE GLOVE
Joseph A. Stern, Hampton; Stephen L. Green, Newport News; Charles B. King, Hampton, all of Va., and Sharon B. May, San Antonio, Tex., assignors to Medev Corporation, Newport News, Va.
Continuation-in-part of Ser. No. 289,246, Dec. 23, 1988, Pat. No. 4,942,626. This application Jun. 25, 1990, Ser. No. 542,873
Int. Cl.[5] A41D *19/00*
U.S. Cl. 2—161 R **30 Claims**



1. A glove for use by medical personnel to protect them from accidental injuries when handling needles which is adapted to cover substantially the entire hand from the wrist to the fingertips which comprises:
a first discrete layer of a flexible material having a pore size which is smaller than the diameter of a needle and which forms a glove including index, middle, third and pinky finger stalls and a thumb stall;

VOL 1147 ISS 4 FE 23 1993 UMI

a second discrete layer of flexible material having a pore size which is smaller than the diameter of a needle, said second layer being permanently sewn to selected areas of said first layer of material to provide said selected areas with sufficient thickness to prevent needle penetration under normal conditions encountered when handling needles, said selected areas comprising all of said thumb stall and lateral sides of both said index finger stall and said middle finger stall, said second discrete layer for each finger stall covering said lateral sides extending across the fingertip and being sewn to said first layer across a fingernail region of said finger stall wherein a fingerprint area of said finger stall up to the finger nail region is not covered by said second layer; and

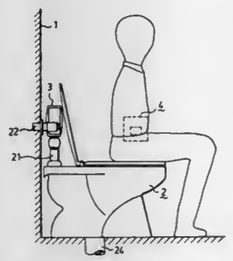
a third discrete layer formed of a corrugated metal foil provided between said first and second layers of said thumb stall and of the adjacent lateral side of said index finger stall.

5,187,816

AUTOMATIC FLUSHING DEVICE

Tzeng-Shyang Chiou, Kaohsiung, Taiwan, assignor to Chen Chi Electro Chemical Co., Ltd., Kaohsiung, Taiwan

Filed Nov. 20, 1991, Ser. No. 795,015
Int. Cl.[5] E03D *5/10*
U.S. Cl. 4—313 **9 Claims**



1. An automatic flushing device for controlling the flow of water from a water inlet pipe to a flushing conduit of a plumbing fixture, comprising:

an electromagnetic valve unit connected to said water inlet pipe and to said flushing conduit; and

a control unit to control the opening and closing action of said electromagnetic valve unit, said control unit including: a programmed central processing unit; a transmitter circuit connected to and controlled by said central processing unit so as to transmit a set of coded electrical signals; a detecting unit to detect the presence of a person using said plumbing fixture, including a signal emitting unit connected to said

transmitter circuit and generating a signal corresponding to said set of coded electrical signals, and a sensing unit for generating a first electrical signal corresponding to a received signal reflected by the person using said plumbing fixture; a receiver circuit connected to said central processing unit and to said sensing unit so as to transmit said first electrical signal from said sensing unit to said central processing unit; and a valve control circuit connected to said central processing unit and to said electromagnetic valve unit, said valve control circuit being actuated by said central processing unit so as to open or close said electromagnetic valve unit;

said central processing unit including a first programmed means for actuating said valve control circuit so as to open said electromagnetic valve unit for a predetermined first time period when said first electrical signal from said sensing unit corresponds to said coded electrical signals transmitted by said transmitter circuit, and further including a second programmed means for actuating said valve control circuit so as to open said electromagnetic valve unit for a predetermined second time period when generation of said first electrical signal is terminated, indicating that the person using said plumbing fixture has departed;

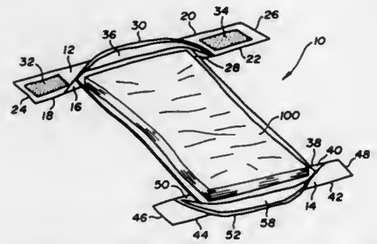
said sensing unit generating a second electrical signal corresponding to a received signal reflected by a hand placed directly in front of said detecting unit; said receiver circuit being able to distinguish if a received electrical signal from said sensing unit is said first electrical signal or said second electrical signal, said central processing unit further including a third programmed means for actuating said valve control circuit so as to open said electromagnetic valve unit upon reception of said second electrical signal and to close said electromagnetic valve unit when reception of said second electrical signal is terminated, indicating that the hand that was placed directly in front of said detecting unit has been removed.

5,187,817

DETACHABLE WAISTBAND FOR A GARMENT

Bernard P. Zolner, 419 Heffernan Dr., Edmonton, Alberta, Canada T6R 1W4

Filed Oct. 15, 1991, Ser. No. 775,859
Claims priority, application Canada, Oct. 24, 1990, 2028431
Int. Cl.[5] A41B *9/00*
U.S. Cl. 2—400 **5 Claims**



1. A detachable waistband for a garment, comprising:

a) a first band formed of two parallel elongate strips of conjoined material, the first band having a first exterior surface, a second exterior surface, a first end, a second end, and a pair of opposed interior surfaces accessible through a flap-like opening positioned intermediate the first end and the second end and extending for substantially the length of the first band, exterior fastening means being affixed to one of the exterior surfaces of the first band adjacent both the first end and the second end, interior fastening means being affixed to one of the interior surfaces of the band;

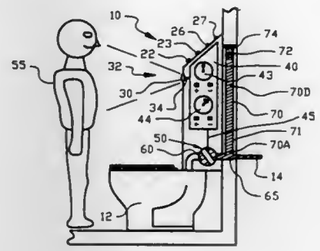
b) a second band formed of two parallel elongate strips of conjoined material, the second band having a first exterior surface, a second exterior surface, a first end, a second end, and a pair of opposed interior surfaces accessible through a flap-like opening positioned intermediate the first end and the second end and extending for substantially the length of the second band, exterior fastening means being affixed to one of the exterior surfaces of the second band adjacent both the first end and the second end, interior fastening means being affixed to one of the interior surfaces of the band, exterior fastening means of the second band matingly engaging the exterior fastening means of the first band thereby securing the first band and second band around a person's waist, the interior surfaces of the first band and the interior surfaces of the second band being arranged to receive a portion of a garment, such that the garment is secured to the first band and the second band by the interior fastening means and a clamping force exerted by the two strips of material which form each band when the first band and second band are secured to a person's waist.

5,187,818

FLUSHING SYSTEM FOR A WATER CLOSET

John P. Barrett, Sr., 879 Harbor Island, Clearwater, Fla. 33515; Daniel M. Thorsen, 3367 Brian Rd. North, Palm Harbor, Fla. 34685, and John H. Johnson, Rte. 8, Box 274, DeFuniak Springs, Fla. 32433

Filed May 14, 1991, Ser. No. 699,955
Int. Cl.[5] E05D *1/00, 1/14*
U.S. Cl. 4—313 **18 Claims**



1. An improved flushing system for flushing a water closet with a flow of water from a pressurized water line after use by a person, comprising:

a sensor mounted relative to the water closet for sensing an arrival of the person within a zone and a departure of the person from said zone, said zone being located in a preselected proximity relative to the water closet;

a controller connected to said sensor for determining the existence of a short-flush condition and the existence of a long-flush condition;

said short-flush condition existing when said departure is sensed by said sensor, and an elapsed time between said arrival and said departure is less than a preselected time interval;

said long-flush condition existing when said departure is sensed by said sensor, and said elapsed time is greater than said preselected time interval;

a valve interposed between the pressurized water line and the water closet;

said valve having an open position for enabling the flow of water into the water closet and having a closed position for inhibiting the flow of water into the water closet;

an actuator connected to said valve and said controller for moving said valve into said open position for a first duration when said controller determines the existence of said short-flush condition, and for then returning said valve into said closed position; and

said actuator for moving said valve into said open position for a second duration when said controller determines the existence of said long-flush condition, and for then returning said valve to said closed position.

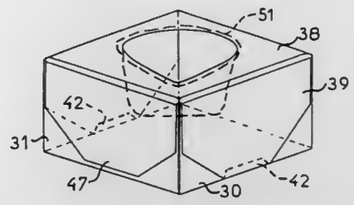
5,187,819

TOILET POTS

Jane Grimes, Greenbanks, Linersh Wood Bramley, NR., Guildford, Surrey, England

Continuation-in-part of Ser. No. 573,487, Aug. 27, 1990, abandoned. This application Jul. 22, 1991, Ser. No. 733,713
Int. Cl.[5] A47K *11/04*
U.S. Cl. 4—483 **3 Claims**

1. A toilet pot comprising a structure including four rigid or semi-rigid upright structure walls, the upright structure walls comprising two side structure walls opposing each other, with each side structure wall formed of at least two panels hingedly connected together for folding inwardly, and a front structure wall and a rear structure wall opposing each other, the upright structure walls together defining a generally rectangular cavity, the opposing front and rear structure walls being pivotably connected together with the opposing side structure walls, a seat member hingedly connected to the upper edge of the rear structure wall for overlying the generally rectangular cavity, the seat member being provided with side support walls hingedly connected thereto and capable of folding down alongside of the side structure walls and engaging with the



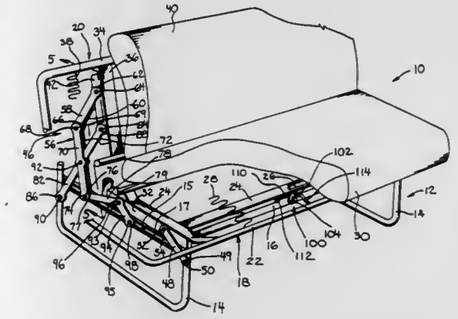
panels of the side structure walls such as to hold the side structure walls open while the toilet pot is in use, and a removable fluid impermeable lining bag being provided for insertion within the generally rectangular cavity defined by the upright structure walls.

5,187,820

CONVERTIBLE SEAT-BED

Andrew Froutzis, P.O. Box 4110, Elkhart, Ind. 46514

Filed Mar. 10, 1992, Ser. No. 848,857
Int. Cl.[5] A47C *17/17*
U.S. Cl. 5—37.1 **10 Claims**

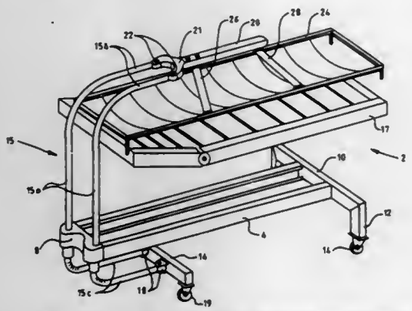


1. In a convertible seat-bed including a support frame, a seat support pivotally connected to said frame, a back support pivotally connected between said seat support and said frame, linkage means connecting said seat support and back support to said frame for relative movement between a seat position and a bed position, the improvement wherein said linkage means includes a first elongated link pivotally connected between said frame and said back support, a second link pivotally connected to said back support, and a third link pivotally connected between said frame and said second link wherein said first and third links form a scissors configuration, said second link includes first and second parallel link members arranged in a substantially co-linear configuration, and said third link includes first and second link members pivotally connected to said second link first and second link members.

5,187,821
HOSPITAL BED

Matti O. Nieminen, Oulu, and Kari Olkkonen, Kauttua, both of Finland, assignors to A. Ahlstrom Corporation, Noormarkku, Finland

PCT No. PCT/FI90/00244, § 371 Date May 18, 1992, § 102(e) Date May 18, 1992, PCT Pub. No. WO91/05532, PCT Pub. Date May 2, 1991
PCT Filed Oct. 18, 1990, Ser. No. 848,997
Claims priority, application Finland, Oct. 19, 1989, 894970
Int. Cl.[5] A61C *7/10*
U.S. Cl. 5—83.1 **8 Claims**



1. An apparatus for transferring a patient supported on a transfer underlay comprising:

a pair of horizontally spaced parallel bearer rods having vertically extending middle portions defining spaced vertical axes, horizontal upper arm portions and horizontal lower arm portions, said bearer rods being movable between a first position and a second position, both said upper arm portions and said lower arm portions in said first position, being substantially parallel to the longitudinal axes of the transfer underlay;

a bearer beam having a transverse support portion pivotally connected to said upper arm portions of said pair of bearer rods for allowing said pair of parallel bearer rods to pivot around said vertical axes of said middle portions of said bearer rods from said first position to a second position, and means for supporting said transfer underlay;

a lower transverse support connected to said lower arm portions for allowing said bearer rods to pivot around said vertical axes; and

a body frame extending substantially longitudinally of the axes of the transfer underlay, said body frame including a first end connectable with said parallel bearer rods for allowing said bearer rods to pivot around said vertical axes.

5,187,822
PORTABLE PATIENT CRANE

Donald D. Merry, Fenton, Mich., assignor to Anodyne Corporation, Whitmore Lake, Mich.

Filed Nov. 14, 1991, Ser. No. 792,359
Int. Cl.[5] A61G *7/10*
U.S. Cl. 5—86.1 **32 Claims**

1. A portable element patient lifting assembly (10) of the type for lifting and transporting a patient comprising:

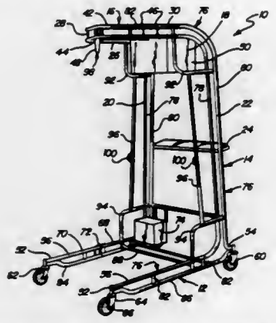
a moveable base (12);

an upstanding support member (14) rigidly fixed to said base (12) and extending generally vertically upwardly and over said base

a cantilevered support member (16) extending in cantilevered fashion from said upstanding support member (14);

said upstanding support member including a first leg (20) extending in a substantially straight line between said base (12) and said cantilevered support member, and a second leg (22) spaced apart from said first leg extending in a substantially straight line between said base and said cantilevered support member, said first and second legs (20,22) extending toward each other as said legs rise vertically from said base (12) whereby said first and second legs define an "A" shaped frame extending above said base;

said cantilevered support including a first arm (26) extending horizontally out over said base (12) from said first leg (20) to a patient suspending end (28), and a second arm (30) extending horizontally out over said base (12) from said second leg (22) to said patient suspending end (28), said first and second arms (26,30) converging at said patient suspending end (28);



said base (12) including a first foot extending horizontally from said first leg and a spaced apart second foot extending horizontally from said second leg and parallel to said first foot, said first and second feet defining a space for receiving a hospital chair therebetween;

a rigid connection for rigidly interconnecting said upstanding support member (14) and said cantilevered support member (16) for preventing any movement therebetween;

said assembly further including lifting means (18) for raising and lowering a patient to and from said cantilevered support (16).

5,187,823
COMBINATION BLANKET AND TOTE BAG

Michael J. Ferguson, and Stephen E. Paterson, both of 171 Centre Street, London, Ontario, Canada N6J 1T7

Filed Jul. 23, 1992, Ser. No. 917,302
Int. Cl.[5] A47G *9/06*; B65D *30/10, 33/12*
U.S. Cl. 5—417 **2 Claims**

1. A combination blanket and carrying bag comprising:

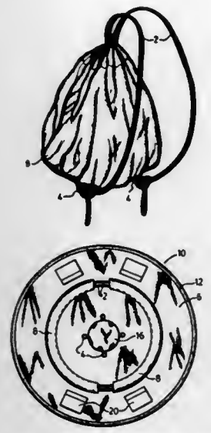
a fabric piece having an upper surface and a lower surface and an outer edge;

two opposing arcuate fabric channel halves secured to said lower surface, facing each other and positioned in a distance from the outer edge of said fabric piece and defining a generally circular channel with the center of a circle enclosed by the circular channel corresponding generally to the center of the fabric piece, said circular channel having opposing gaps therein between opposing ends of said fabric channel halves;

two continuous ropes passing through said channel, being exposed at said gaps;

a generally circular central portion of said fabric piece, having at least two retaining loops located at the circumference thereof and spaced apart from each other around the circumference and secured to said lower surface;

whereby a carrying bag may be formed by folding those portions of said fabric piece which are outside said channel upwardly and in towards the center of the fabric piece, thereby exposing said two ropes in said gaps, by then pulling said two ropes to bunch said fabric channel halves thereon, and by then routing said pulled ropes through two of said at least two retaining loops and tying said ropes to said retaining loops to define two carrying loops, with one carrying loop adapted to go over one shoulder of

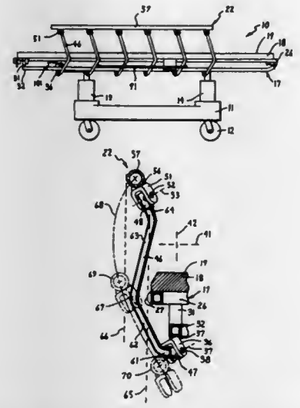


a person, and the other carrying loop adapted to go over the other shoulder of the person, whereby the combination blanket and carrying bag can take on a backpack configuration.

5,187,824
ZERO CLEARANCE SUPPORT MECHANISM FOR HOSPITAL BED SIDERAIL, IV POLE HOLDER, AND THE LIKE

Martin W. Stryker, Kalamazoo, Mich., assignor to Stryker Corporation, Kalamazoo, Mich.

Filed May 1, 1992, Ser. No. 877,545
Int. Cl.[5] A47C *21/08, 21/00*; A61G *7/00*
U.S. Cl. 5—430 **25 Claims**

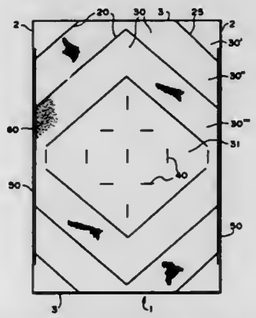


1. An apparatus comprising: a patient support having an upwardly facing patient support surface and having an approximately horizontally extending edge portion, an arm having first and second ends, means cooperable with said first end of said arm for supporting said arm for pivotal movement with respect to said edge portion about a pivot axis oriented at an acute angle to a horizontal reference plane, said second end of said arm being spaced radially from said pivot axis, and a member supported on said arm at said second end thereof, said arm being pivotal between operational and retracted positions in which said member is respectively higher than and lower than said patient support surface; wherein said pivot axis forms an acute angle with respect to a vertical reference plane extending perpendicular to said edge portion; and wherein said pivot axis forms an acute angle with respect to a further reference plane which is perpendicular to each of said horizontal and vertical reference planes.

5,187,825
QUILTED BED BLANKET

Gunter Tesch, Avenue Jean-Marie-Musy 15, Fribourg, Switzerland CH-1700

PCT No. PCT/EP88/00964, § 371 Date Oct. 31, 1989, § 102(e) Date Oct. 31, 1989, PCT Pub. No. WO89/06508, PCT Pub. Date Jul. 27, 1989
PCT Filed Oct. 26, 1988, Ser. No. 415,289
Claims priority, application Switzerland, Jan. 12, 1988, 84/88
Int. Cl.[5] A47G *9/02*
U.S. Cl. 5—502 **9 Claims**



1. A quilted blanket comprising first and second substantially rectangular covering sheets and a loosely packed filling material made of aggregates of spherically wrapped fibers, said covering including at least one closeable opening through which the covering can be filled with filling material, wherein the opening of the covering can be closed by means of an easily openable fastener and wherein a large chamber is arranged approximately in the middle of the blanket in which spaced, dot-like stitchings, spaced far apart from another, are arranged, said stitchings forming differently shaped chambers in the blanket.

5,187,826
CONVERTIBLE CRADLE

John V. Mariol, Cincinnati, Ohio, assignor to James F. Mariol, Cincinnati, Ohio

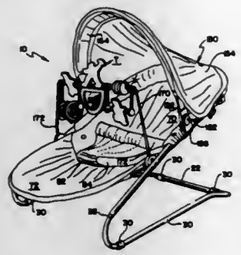
Filed Feb. 24, 1992, Ser. No. 840,407
Int. Cl.[5] A47D *1/00, 9/00*
U.S. Cl. 5—655 **16 Claims**

1. A cradle for an infant, the cradle comprising

(a) a stationary structure having a lower section structured to resist movement on a floor and also having an upper section,

(b) a pivotable structure having a back portion and a front portion, the pivotable structure being mounted to the stationary structure and extending forwardly and rearwardly about a transverse axis so as to permit pivotal movement of the pivotable structure about the transverse axis between a seat position wherein the rearwardly extending back portion of the pivotable structure is raised and the forwardly extending front portion of the pivotable structure is lowered and a bed position wherein the rearwardly extending back portion of the pivotable structure

is lowered and the forwardly extending front portion of the pivotable structure is raised, the pivotable structure providing a seat for an infant in the seat position and providing a bed for an infant in the bed position, and



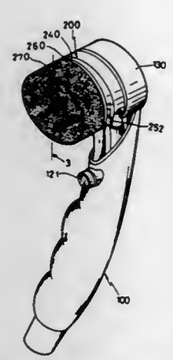
(c) a cover attached to the upper section of the stationary structure and the rearwardly extending back portion of the pivotable structure only in back of the transverse axis, the cover being arranged to provide a barrier against drafts at least in the bed position of the pivotable structure.

5,187,827

MULTIPURPOSE CLEANING DEVICE

Chih-Yen Wei, No. 225, She Chung Street, Shihlin District, Taipei, Taiwan

Filed Feb. 19, 1991, Ser. No. 657,394
Int. Cl.[5] A46B *13/06*
U.S. Cl. 15—22.1 **4 Claims**



1. A multipurpose cleaning device comprising:

a handle assembly including (1) a hollow handle having a water supply tube adapted to connect to a supply of water and a detergent supply tube adapted to connect to a supply of detergent extending therethrough, (2) a holder plate carried by a top portion of said handle, and (3) a protective plate coupled to said holder plate by a plurality of elastic elements extending therebetween for enabling displacement of said protective plate relative to said holder plate;

a seat assembly coupled to said handle assembly, said seat assembly including a seat member affixed to said protective plate, said seat member having a receiving trough formed in a center portion thereof and a stepped post projecting therefrom, said seat member having (1)a detergent inlet connector in fluid communication with said receiving trough for connecting said detergent supply tube to said receiving trough, and (2) a water inlet connector in fluid communication with said receiving trough for connecting said water supply tube to said receiving trough, said seat assembly further including (1) a rotor disposed within said receiving trough and rotatably mounted to said stepped post by a bearing unit for rotation about an axis thereof, said rotor having a non uniform weight distribution relative to said rotational axis and having a plurality of teeth formed about a perimeter edge thereof, whereby said rotor is driven to rotate responsive to water flowing through said water inlet connector striking said teeth, said nonuniform weight distribution inducing a vibration of said seat assembly responsive to rotaion of said rotor, (2) a fixed wheel coupled to said stepped post for substantially enclosing said receiving trough, said fixed wheel having a plurality of elongated first radial slots formed therein through which a mixture of water and detergent can flow from said receiving chamber, (3) a control plate pivotally coupled to said stepped post overlying said fixed wheel, said control plate having a plurality of elongated second radial slots formed therein, and (4) a contact plate mounted on said stepped post overlying said control plate and being fixedly coupled to said fixed wheel, said contact plate having a plurality of elongated third radial slots formed therein, each of said plurality of elongated third radial slots being in substantial alignment with a respective one of said plurality of elongated first radial slots;

a cleaning element having a first side coupled to said contact plate for use in cleaning operations, said cleanig element having a plurality of small holes formed therein for passage of said mixture therethrough; and

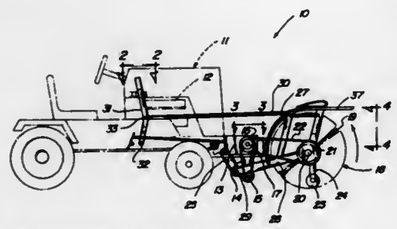
wherein said control plate has a control knob defined by a tab formed thereon, said tab extending through a slotted opening formed in a peripheral portion of said fixed wheel for rotatively displacing said control plate relative to said fixed wheel to vary alignment between said plurality of elongated second radial slots and said elongated first radial slots respectively, thereby controlling flow of said mixture passed therethrough into said cleaning element and a resulting intensity of said vibration.

5,187,828

TRACTOR POWER BROOM APPARATUS

Gerald W. Hoffmann, W939 CTY-FF, and John Van der Male, 3746 Koehler Dr., both of Sheboygan, Wis. 53083

Filed Jun. 29, 1992, Ser. No. 905,449
Int. Cl.[5] E01H *1/05*
U.S. Cl. 15—82 **3 Claims**



1. A tractor power broom apparatus, comprising,

a tractor, the tractor including a tractor drive motor, and

a transmission drive housing in operative communication with a drive motor, and

the transmission housing including an output pulley, and

the tractor member having spaced side walls, with a broom central axle, and the broom central axle positioned forwardly of the tractor member orthogonally oriented relative to the parallel sides, and the broom central axle including a cylindrical broom mounted fixedly thereabout, wherein the cylindrical broom includes a matrix of radially oriented bristles directed into the broom central axle, with the broom central axle including a central axle pulley, with the transmission output pulley in operative communication with the central axle pulley, and

first link member having a first link member first end pivotally mounted about a first pivot axle to the tractor member, the first link member including a first link member second end, and

a second link member, the second link member including a second link member first end pivotally mounted to the first link member about a second pivot axle, and

the second link member projecting forwardly of the first link member having a second link member forward end mounted to the broom central axle, and

third link member fixedly mounted to the second link member, with the third link member including a third link member upper distal end spaced from the second link member, and

a fourth link member, with the fourth link member forward end pivotally mounted to the third link member upper distal end, and

a fifth link member pivotally mounted to the tractor at a fifth link member lower distal end, and the fourth link member including a pivot junction, and the fourth link member including a fourth link member rear distal end pivotally mounted to the fifth link member at the pivot junction, and

a positioning bracket mounted to the tractor assembly, with the positioning bracket including a first recess spaced from a second recess, and

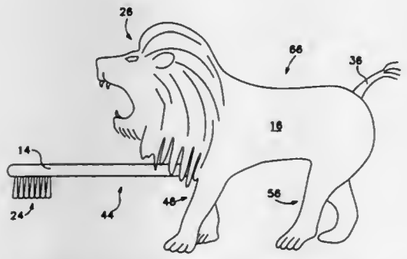
drive means in operative communication between the transmission output pulley and the central axle pulley, wherein positioning of the fifth member within the first recess effects tensioning of the drive belt and positioning of the fifth link member within the second recess effects slackening of the drive belt.

5,187,829

TOOTHBRUSH CONSTRUCTION

Marie B. Atkins, 7070 Goodwood Ave., Baton Rouge, La. 70806

Filed May 4, 1990, Ser. No. 519,418
Int. Cl.[5] A46B *9/04*
U.S. Cl. 15—167.1 **4 Claims**



1. A toothbrush construction which comprises:

(a) a handle portion; and

(b) a brush head portion having bristles extending at an angle therefrom,

said toothbrush construction being further characterized in that:

(c) said handle portion is in the form simulating an animal and includes

(i) a generally horizontal body (trunk) portion which includes an upper part and a lower part, said body portion adapted to be manually encircled and grasped by the hand with the thumb extending under and around the lower part of the body portion and with the palm and finger extending over and around the upper part of the body portion as in a fist,

(ii) a head/neck portion attached to said body portion,

(iii) a front leg portion attached to said body portion,

(iv) a rear leg portion attached to said body portion, and

(v) a downwardly extending tail portion attached to said body portion;

(d) at least one of (ii) and (iii) extends outwardly relative to said body portion to form a first restraining member, and at least one of (iv) and (v) extends outwardly relative to said body portion to form a second restraining member spaced apart from the first restraining member;

(e) said restraining members are disposed on said handle portion such that when said body portion is grasped as in a fist as hereinbefore described, one of said restraining members is adapted to be proximate or adjacent to the thumb and forefinger side of the hand of the user and the other of said restraining members is adapted to be proximate or adjacent to the fourth finger side of the hand of the user;

(f) said brush head portion extends substantially longitudinally from said handle portion;

(g) said handle portion is adapted to support the toothbrush, when not in use, on a flat supporting surface with the bristles of said brush head portion remotely spaced from such supporting surface and with said body portion spaced from said flat supporting surface by a sufficient distance to enable the hand of the user to encircle and grasp said body portion between said restraining members with the thumb of said hand extending under and around the lower part of said body portion and with the palm and fingers of said hand extending over and around the upper part of said body portion as in a fist;

(h) said first restraining member and said second restraining member each extends outwardly relative to said body portion a sufficient distance to prevent the hand of the user from sliding over either of said restraining members while the hand of the user encircles and grasps said body portion between said restraining members with the thumb of said hand extending under and around the lower part of said body portion and with the palm and fingers of said hand extending over and around the upper part of said body portion as in a fist; and

(i) said rear leg portion of the animal comprises a downwardly extending pair of limbs such that said portion of said handle portion adapted to support the toothbrush, when not in use, on a flat supporting surface is comprised of the downwardly extending pair of limbs and the downwardly extending tail portion to thereby provide three individual supports for the construction on such supporting surface, as in a tripod.

5,187,830

WASHING, DRYING AND SCRUBBING PAD

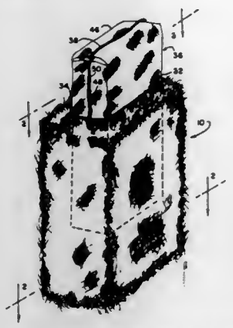
Michael A. Giallourakis, Tarpon Springs, Fla., assignor to Sponge Fishing Co., Inc., Tarpon Springs, Fla.

Filed Nov. 25, 1991, Ser. No. 796,786
Int. Cl.[5] A47L *17/08*
U.S. Cl. 15—244.3 **20 Claims**

1. Cleaning apparatus, comprising a generally rectangular washing sheet having first and second spaced parallel longitudinal edges and spaced first and second end edges at ends of the longitudinal edges, a generally rectangular drying sheet having first and second spaced parallel longitudinal edges and spaced first and second end edges at opposite ends of the longitudinal edges, stitches joining the sheets together along the first and second spaced longitudinal edges and first end edges of both sheets, a first open pocket formed between the sheets within the sewn longitudinal edges and the sewn first end edges of the sheets, an opening formed along the second end edges of the sheets for providing access to the first pocket, a resilient rectangular sponge block for fluid expulsion when being squeezed and fluid absorption when being released, a stiff mesh material overlying and surrounding the block and having edges stitched together, forming a second closed pocket for receiving and holding the block and forming with the sponge block a scrubber block which readily absorbs and expels water, a pull handle connected to the scrubber block, the scrubber block being

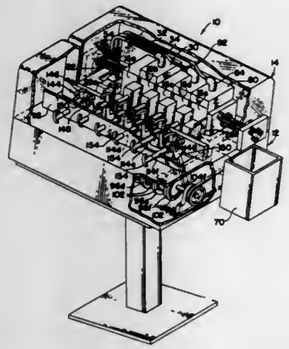
VOL 1147 ISS 4 FE 23 1993 UMI

placed in the first pocket formed by a washing sheet and a chamois sheet, with the handle being exposed through the opening of the first pocket for partially or fully withdrawing of the scrubber block from the first pocket while using the washing sheet for washing or the drying sheet for drying when



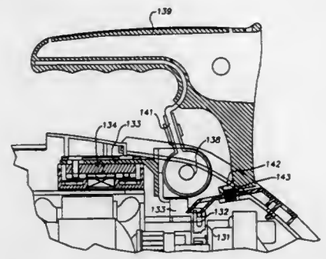
encountering a spot requiring action of the scrubber block, the scrubber block being received within the first pocket in a friction fit for holding the scrubber block in the first pocket during use of the washing sheet or drying sheet, and for partially holding the scrubber block in the first pocket during use of the scrubber block.

5,187,831
PARTS WASHER
Scott H. French, Rockford, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sep. 3, 1991, Ser. No. 752,355
Int. Cl.[5] B08B *3/02*
U.S. Cl. 15—302 **5 Claims**



1. A parts washer comprising a compartmentalized wash enclosure having a wash chamber, a dry chamber, a conveying means for moving parts through said chambers, and slideable partitions for isolating said chambers during a washing operation, said wash chamber having an inlet, an outlet, and communication with a cleaning medium supply for supplying a cleaning medium to a series of nozzles disposed within said chamber, said nozzles oriented to spray said cleaning medium onto a part to be cleaned thereby removing contaminants therefrom, said dry chamber having an inlet for receiving parts from said wash chamber, an outlet, and communication with an air distribution means for supplying air to a series of nozzles disposed within said chamber, said nozzles oriented to release air onto a part to be dried following cleaning in said wash chamber, said slideable partitions being disposed at said inlet and outlet of said chambers and operably connected to connecting rods for sequentially driving said partitions, said connecting rods reciprocably operated by pivot arms having followers integral therewith which are operated on by cams positioned on a motor driven camshaft, said cams having profiles which act upon said followers to move said partitions in a predetermined sequence to admit a part into a chamber, isolate the part during a cleaning operation, and release the part following said operation.

5,187,832
CONVERTIBLE SELF-PROPRELLED VACUUM CLEANER
Robert B. Meyer, Middleburg Hts.; John R. Lackner, Westlake, and Hans J. Matuschek, Parma, all of Ohio, assignors to The Scott Fetzer Company, Cleveland, Ohio
Division of Ser. No. 708,735, May 31, 1991, Pat. No. 5,115,537, which is a division of Ser. No. 442,615, Nov. 29, 1989, abandoned. This application Apr. 20, 1992, Ser. No. 870,918
Int. Cl.[5] A47L *5/24*
U.S. Cl. 15—329 **6 Claims**

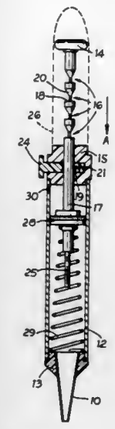


1. A vacuum cleaner adapted to be used in an upright mode or, alternatively, in a portable mode, comprising power transmission means for self-propelling the vacuum cleaner when used in the upright mode, first handle means usable during operation in the upright mode, control means arranged to energize the transmission in response to manually applied pulling or pushing forces on the first handle means, and second handle means usable during operation in the portable mode and arranged to prevent said control means from energizing said transmission during operation in the portable mode.

5,187,833
SOLDER REMOVAL TOOLS
Zdzislaw Bieganski, Harpenden, England, assignor to ZB New Products Limited, United Kingdom
Filed Dec. 16, 1991, Ser. No. 807,234
Claims priority, application United Kingdom, Jan. 17, 1991, 9101060; Feb. 2, 1991, 9102278
Int. Cl.[5] A47L *5/04*
U.S. Cl. 15—341 **15 Claims**

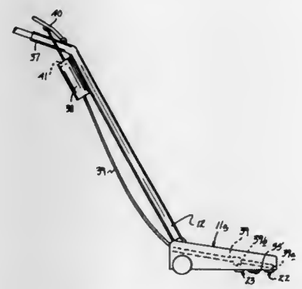
1. A suction pump comprising a barrel having two ends; a nozzle at one of said ends; a sealing piston slideably accommodated in said barrel for movement axially thereof; a rod connected to said piston for moving the latter axially of said barrel from an initial position to an adjusted position between the ends of said barrel; biasing means acting on said piston for returning said piston from said adjusted position to said initial position at a velocity and through a distance sufficient to effect

the generation of suction through said nozzle; and means for varying the value of the suction generated in response to said



movement of said piston, said biasing means being substantially unstressed when said piston is in said initial position.

5,187,834
VACUUM CLEANER APPARATUS
Arthur E. Stark, 3708 Lost Oasis Hollow, Austin, Tex. 78703
Filed Nov. 21, 1991, Ser. No. 797,449
Int. Cl.[5] A47L *9/06*
U.S. Cl. 15—398 **1 Claim**

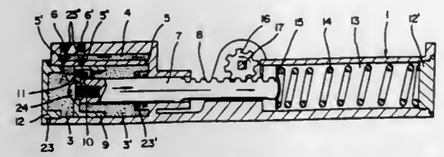


1. A vacuum cleaner brush housing for operative association with a vacuum cleaner, wherein the brush housing comprises,
a brush housing front wall, a brush housing rear wall, spaced brush housing side walls, and a brush housing top wall, with the brush housing top wall including a connection conduit directed into the brush housing top wall, wherein the connection conduit is in pneumatic communication interiorly of the brush housing,
and
the brush housing including a first brush member within the brush housing positioned coextensively between the side walls and in contiguous communication with the front wall,
and
a second brush member spaced from the first member extending coextensively between the side walls and in pneumatic sealed communication with the rear wall,
and
the first brush member and the second brush member defining a central entrance opening directed between the first brush member and the second brush member positioned below the connection conduit, with the first brush member including a first brush bristle matrix extending below the front wall and the side walls, and the second brush member including a second brush bristle matrix extending below the side walls and the rear wall,
and
the first brush bristle matrix is canted rearwardly towards the central entrance opening, and the second brush bristle matrix is canted forwardly towards the central brush bristle matrix,
and
the first brush member includes a first brush member base mounting the first brush member matrix, and the second brush member includes a second brush member base mounted to the second brush bristle matrix, and first brush bristles of said first brush bristle matrix define a forty-five degree included angle between the first brush bristles and the first brush member base, and second brush bristles of the second brush bristle matrix define an acute included angle between the second brush bristles and the second brush member base,
and
said acute angle defines essentially forty-five degrees,
and
the top wall includes a plurality of first openings adjacent the front wall, and includes a plurality of second openings positioned adjacent the rear wall, and the first brush member includes a plurality of first brush member bosses, wherein the first brush member bosses are received within the first openings, and the second brush member includes a plurality of second brush member bosses, wherein the second brush member bosses are received within the second openings,
and
the connection conduit includes a plurality of spring fingers, the spring fingers include a lower threaded end portion, and an internally threaded cap securable about the threaded portion for securement of the conduit to a further conduit,
and
the spring fingers define a conical configuration,
and the central entrance opening includes an agitator brush rotatably mounted therewithin extending coextensively between the first brush member and the second brush member, and the agitator brush includes a helical brush member mounted thereon, and the brush is rotatably directed to include a drive motor to effect rotation of the agitator brush,
and
the connection conduit includes a deodorizing fluid reservoir, and pump handle mounted to the connection conduit, wherein the pump handle includes a pump handle piston received within the reservoir for effecting pressurizing of the reservoir, and a reservoir conduit directed from the reservoir into the brush housing, the reservoir conduit including a first outlet positioned above the first brush member and the reservoir conduit including a second outlet positioned above the second brush member to direct a deodorizing fluid onto the first brush member and the second brush member.

5,187,835
DOOR CLOSER WITH RACK AND PINION, SPRING, AND SPRING MOUNTING PLATE
Sang U. Lee, Seoul, Rep. of Korea, assignor to Dong Kwang Corporation, Seoul, Rep. of Korea
Filed May 24, 1991, Ser. No. 705,546
Claims priority, application Rep. of Korea, Jul. 31, 1990, 11361/90
Int. Cl.[5] E05F *3/10*
U.S. Cl. 16—52 **18 Claims**

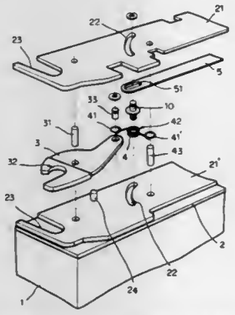
1. A door closer comprising:
a body having a closed, fluid-filled cylinder;

a piston slidably mounted in said cylinder and having an actuating rod with rack gearing;
a pinion rotatably mounted on said body for meshing with the rack gearing of said actuating rod to axially move said piston, said rack and said pinion being located outside said cylinder;
valve means for bypassing fluid past said piston to regulate its motion, said valve means being located in said cylinder;



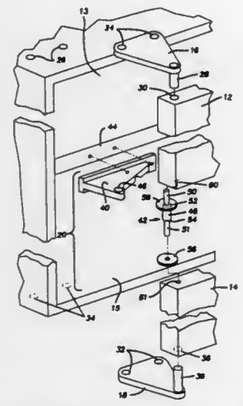
a spring mounted outside said cylinder for applying a balanced, substantially axial force to said actuating rod for axially urging said piston, said spring and said actuating rod being mounted end to end; and
a support plate mounted between said spring and said actuating rod for transmitting force therebetween, said support plate having a central depression for receiving the end of said actuating rod distal to said cylinder, and for maintaining alignment and accommodating imbalances caused by said spring.

5,187,836
DOOR HINGE ARRANGEMENT FOR OPENING THE DOOR AT EITHER SIDE
Yong M. Kim, and Jeh S. Oh, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Jun. 19, 1990, Ser. No. 540,329
Claims priority, application Rep. of Korea, Jun. 20, 1989, 1989-8464
Int. Cl.[5] E05D *15/50*
U.S. Cl. 16—231 **11 Claims**



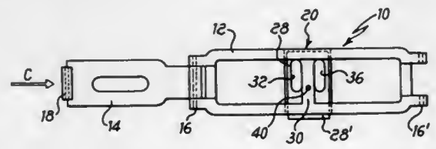
1. A door hinge arrangement enabling a door to be opened from either side, said door having the door hinge arrangement being mounted on its top edge and another of said door hinge arrangements mounted on its bottom edge, comprising:
a holder mountable to an edge of said door;
a lower plate having grooves and holes in each end thereof, said lower plate having symmetrical end portions;
an upper plate having grooves and holes in each end thereof to match the grooves and the holes of said lower plate, said upper plate also having symmetrical ends;
first and second hinge plate means pivotally mounted and sandwiched between and at respective ends of said lower plate and said upper plate;
connecting means for operably connecting said first hinge plate means to said second hinge plate means; and
means disposed to travel within a first pair of said grooves at opposite ones of said end portions, for guiding said linking means as one of said hinge plate means travels between a first position enclosing a corresponding one of a second pair of said grooves and a second position opening said corresponding one of said second pair of said grooves.

5,187,837
DOOR HINGE ASSEMBLY
Rick L. Gunderson, Greenville, and David J. Donaghy, Gowen, both of Mich., assignors to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Nov. 14, 1991, Ser. No. 791,363
Int. Cl.[5] E05D *11/06, 5/10*
U.S. Cl. 16—375 **11 Claims**



1. A refrigerator cabinet comprising upper and lower storage compartments, each of said upper and lower storage compartments being provided with hingeably mounted doors to sealably close said upper and lower storage compartments; and,
hinge means fastened to said cabinet for pivotally mounting said upper door and said lower door on said cabinet, said hinge means providing means for transferring substantially all weight of said upper door to said lower door.

5,187,838
JOINTED POCKET-BOOK TYPE CLOSING DEVICE FOR WATCH BANDS, BRACELETS, JEWELS AND THE LIKE
Fernando Fontana, Sesto Calende, Italy, assignor to G.T.F. S.r.l., Sesto Calende, Italy
Filed Mar. 23, 1992, Ser. No. 855,291
Claims priority, application Italy, Dec. 23, 1991, MI91A003449
Int. Cl.[5] A44C *5/00*
U.S. Cl. 24—71 J **2 Claims**

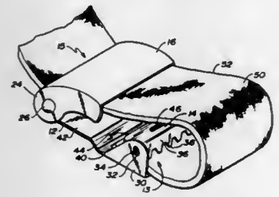


1. A closing device for watch bands, bracelets, jewels and the like comprising a supporting frame (**12**) for supporting a bolt (**20**), opposite arms (**14**) hinged to said frame, each of said arms having a hook (**18,18'**) at the end thereof, said bolt (**20**) consisting of a base (**24**), integral with one side of the frame (**12**), whereby a box container is formed, a movable plate (**28**) located in said container, said plate having a projecting end (**28'**) for movement, said movable plate (**28**) being bounded below by base (**24**) and above by cross-piece (**30**), said plate being retained in said container by a screw or pin in a seat (**40**), said screw or pin being inserted through the frame (**12**) in the base (**24**), said plate (**28**) having first openings (**32**), (**36**) with countersunk bevel (**38**) and a second central opening (**34**) of reduced extension arranged parallel to said two first openings, a spring (**42**) located in said central second opening, said spring meeting said screw or pin and holding said plate in elastic tension, said hooks (**18,18'**) being inserted in said two first openings.

strained between said clamp and said front of said frame, when said clamp is in said closed orientation a force towards said frame exerted on an edge of said clamp farthest from the center of said frame will not rotate said clamp to said open orientation of said clamp.

5,187,839
SUSPENDER LOOP BUCKLE
Walter Collins, San Francisco, Calif., assignor to Suspended Animation, Inc., South San Francisco, Calif.
Filed Apr. 7, 1992, Ser. No. 864,948
Int. Cl.[5] A44B *11/00*
U.S. Cl. 24—170 **11 Claims**



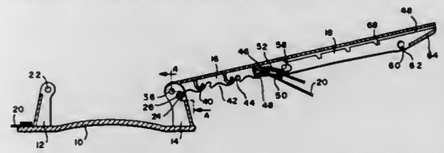


1. A buckle for forming an adjustable loop from a strap of flexible material, comprising:
a) a frame having a back and a front;
b) a latch pivotally attached near a latch end of said frame, said latch being rotatable between an open orientation wherein said strap can be easily inserted between said latch and said frame, and a closed orientation wherein said strap positioned between said latch and said frame is wedged and thereby restrained between said latch and said front of said frame, when said latch is in said closed orientation a force towards said frame exerted on an edge of said latch farthest from the center of said frame will rotate said latch to said open orientation of said latch; and
c) a clamp pivotally attached near the end of said frame opposed to said latch end, said clamp being rotatable between an open orientation wherein said strap can be easily inserted between said clamp and said frame, and a closed orientation wherein said strap positioned between said clamp and said frame is wedged and thereby re-

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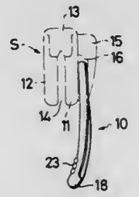
5,187,840
CLASP WITH A TAPE FOR BINDING, FIXING, AND TIGHTENING
Wladyslaw Kaczorowski, 19-21 Menahan St., Ridgewood, N.Y. 11385
Filed Nov. 26, 1990, Ser. No. 617,638
Int. Cl.[5] A44B *21/00*
U.S. Cl. 24—273 **17 Claims**

oveable between an open and a closed position, such



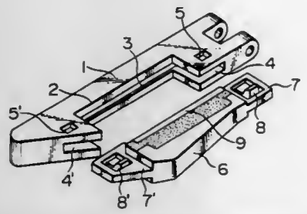
that in the closed position, said arm overlies the bed plate;
said arm including, a plurality of supporting and guiding means spaced apart along said arm for adjustably and removably mounting thereon means for tightening and clamping the opposite end of the securing member at a selected position along said arm to thereby adjust tension of the tightening of said securing member;
said arms also including, near the end most distal from the point of attachment of said arm to the first bed plate column, means for pivotally attaching a lever for actuating said arm between said open and closed position; and
means for maintaining the clasp means in a closed position.

5,187,841
PULL TAB FOR SLIDE FASTENER
Chiharu Takemura, and Yoshiyuki Horita, both of Toyama, Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan
Filed Jun. 3, 1992, Ser. No. 892,984
Claims priority, application Japan, Jun. 3, 1991, 3-72585
Int. Cl.[5] A44B *19/26*
U.S. Cl. 24—429 **3 Claims**



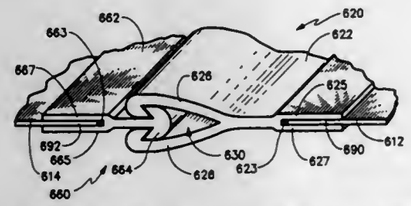
1. A pull tab for a slider of a slide fastener applied to and covered by a garment strip, said pull tab having a connecting end portion for pivotal connection to said slider and a free terminal end portion and comprising a gripping section formed by oppositely disposed first and second longitudinal edge portions defining therebetween a web portion which is thinner than said first and second longitudinal edge portions, said first edge portion being thicker than said second edge portion, presenting a cross-sectional profile conforming with the contour of palmar fingers of the user.

5,187,842
SLIDER PULL TAB FOR SLIDE FASTENER
Shunji Akashi, Toyama, and Yasushi Watanabe, Chiba, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan
Filed Mar. 6, 1992, Ser. No. 846,705
Claims priority, application Japan, Mar. 6, 1991, 3-19730
Int. Cl.[5] A44B *19/00*
U.S. Cl. 24—431 2 Claims



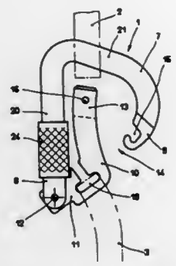
1. A slider pull tab for a slide fastener, comprising:
(a) a main plate of metal having a cutout extending form its one edge to its center; and
(b) an ornamental plate of synthetic resin to be received and resiliently locked in said cutout of said main plate,
said main plate having a hollow portion contiguous to at least a part of the cutout edge and communicating with said cutout, said main plate also having a locking hole through one of opposite side walls defining said hollow portion, and
said ornamental plate having a plug portion to be inserted into said hollow portion of said plate, said plug portion having a locking claw to be resiliently locked with said locking hole.

5,187,843
RELEASABLE FASTENER ASSEMBLY
James P. Lynch, 13 S. Field, Lakewood, Colo. 80226
Filed Jan. 17, 1991, Ser. No. 642,634
Int. Cl.[5] A41F *1/00*
U.S. Cl. 24—576 20 Claims



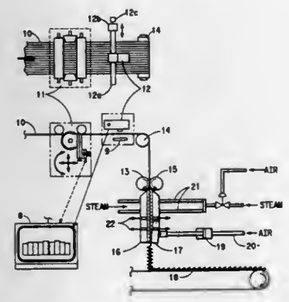
1. A fastener assembly operative to releasably join first and second objects to one another, comprising:
(a) a female piece formed of a stiff, resilient material, said female piece including a first web for attachment to a first object and a pair of opposed locking flanges connected to said first web at a juncture and extending from the juncture in spaced-apart relation to one another to define a locking channel having an interior, said flanges having opposed interior faces and each terminating in an inwardly turned hook portion opposite said juncture to form an entryway into said locking channel, each said hook portion having a first locking face disposed interiorly of the channel and oriented at an acute angle ϕ with respect to the respective interior face thereof; and
(b) a male piece formed of a stiff, resilient material and configured to releasably engage said female piece in a mated state, said male piece including a male rib sized for insertion into the locking channel and a second web portion connected to said male rib for attachment to a second object, said second web portion having a pair of opposite side surfaces with said male rib sized so that pair of outwardly projecting shoulders are disposed on either side of said second web with each of said shoulders having a second locking face oriented at an acute angle θ with respect to its associated said side surface whereby said male piece and said female piece may be locked together by advancing said male rib through said entryway and into said locking channel, said male rib sized to have a larger transverse dimension than said entryway so that, upon advancement into said locking channel, said male rib deflects said flanges apart from one another after which said flanges resiliently return to engulf said male rib with said first and second locking faces releasably engaging one another and whereby said male piece and said female piece permit non-sliding disengagement from one another by advancing said rib toward said juncture to spread said flanges apart from one another after which said first and second webs may be pivoted with respect to one another so that said male rib is cammed out of said locking channel, said material forming said first and second webs having of sufficient stiffness so that sufficient torsional force may be applied to said flanges and said male rib to cause non-sliding disengagement of said male rib from said locking channel.

5,187,844
SELF-LOCKING SNAP-HOOK
Ludger Simond, Les Bossons, France, assignor to Etablissements Ludger Simond, Société Anonyme, Chamonix Mont Blanc, France
Filed Jun. 13, 1991, Ser. No. 714,614
Claims priority, application France, Jun. 20, 1990, 90 07898
Int. Cl.[5] A44B *13/02*
U.S. Cl. 24—599.5 7 Claims



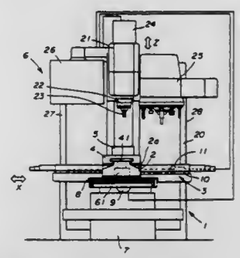
1. A snap-hook having the general shape of a closed ring, the ring defining an opening in a plane, the snap-hook transmitting a tractive load between a first traction element and a second traction element passing through the opening of the ring, the snap-hook comprising:
a body in the form of a rod curved between a first pivot end and a second free coupling end;
a closure finger, whose first end is pivoted on the first pivot end of the body, in a pivoting zone, by a transverse pin, and whose second end comes opposite the second free coupling end of the body in a coupling zone;
wherein the finger may be pivoted about its pivot pin between an open position, in which its second end is spaced away from the second free coupling end of the body towards the inside of the ring, and a closed position in which its second end is in contact with the second free coupling end of the body so as to form a closed ring;
wherein the second end of the finger and the second free coupling end of the body comprise interlocking shapes fitting one into the other so that, in the closed position, the interlocking shapes prevent the finger from pivoting outwards of the ring and prevent the second respective ends of the finger and of the body from moving relatively axially away from each other;
wherein the snap-hook comprises load guidance means so that the tractive load transmitted by the first traction element is applied on an intermediate zone of the body whereas the tractive load transmitted by the second traction element is applied to an intermediate zone of the finger, the tractive force between the first traction element and the second traction element thus taking place in a favored traction direction passing through the plane of the ring between the pivoting zone and the coupling zone of the finger and the body, so that application of the tractive load tends to bring the body and the finger back into their respective closed positions;
wherein the snap-hook has the general shape of a ring elongate in a favored traction direction passing through two opposite ends, said opposite ends forming first and second tractive force application ends;
wherein the body comprises said first tractive force application end;
wherein the closure finger comprises said second tractive force application end, so that, during application of a tractive force between a first traction element and a second traction element, the snap-hook tends naturally to be oriented so that its largest dimension is substantially parallel to the direction of the tractive force, the first traction element being hooked on to the body and the second traction element being hooked on to the finger;
wherein the snap-hook comprises unlockable locking means for selectively immobilizing the finger on the body in the closed position of the snap-hook, and then preventing the finger from pivoting towards its open position;
wherein said unlockable locking means comprises a locking ring mounted on a rectilinear portion of the snap-hook and returned by a spring towards its locked position in which it immobilizes two respective body and finger ends, with respect to each other, in the closed position, so as to prevent the finger from pivoting towards its open position;
wherein the locking ring is mounted on a body portion adjacent its pivot end.

5,187,845
METHOD FOR HEATING CRIMPED FIBERS AND PRODUCT THEREOF
Joseph J. Duffy, Newark; Jerry F. Potter, Seaford; Elwood A. Roth, Seaford; Kalika R. Samant, Seaford, all of Del., and Maurice C. Todd, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 532,847, Jun. 1, 1990, abandoned. This application Apr. 11, 1991, Ser. No. 682,331
Int. Cl.[5] D02G *1/12, 1/00;* D01G *37/00*
U.S. Cl. 28—267 2 Claims



1. A method for producing crimped polyamide fiber tow comprising: continuously feeding tow from a draw machine against an adjustable counter pressure means in an elongated crimping chamber defined by opposed walls at a denier loading of from 200,000 to 270,000 per inch of crimping chamber width and discharging the tow, the improvement comprising: sensing and controlling the average predetermined thickness across the tow band as the tow advances to the crimping chamber; feeding the tow to the crimping chamber at a speed in the range of from 200 yards per minute to above 600 yards per minute at a temperature of from about 65° C. to about 95° C.; and heating the tow in the crimping chamber with steam at a pressure of less than 20 psig and at a controlled rate of 0.02 to about 0.10 pounds of steam per pound of tow, said tow having a 4 to 8 percent moisture level and a temperature of from about 100° C. to about 130° C., whereby the difference in percent shrinkage along the length of tow is less than about 0.2 percent as determined by thermal analysis and the reflectance difference along the length of the tow when dyed with a structural sensitive Milling Blue "B" dye is less than 5%.

5,187,846
PALLET CHANGER
Koichiro Kitamura, and Shigeru Yamada, both of Takaoka, Japan, assignors to Kitamura Machinery Co., Ltd., Japan
Filed Jul. 2, 1991, Ser. No. 722,327
Claims priority, application Japan, Jul. 12, 1990, 1-182745
Int. Cl.[5] B23Q *5/22;* B65G *35/00*
U.S. Cl. 29—33 P 11 Claims



1. A pallet changer system comprising:
at least one pallet for holding a workpiece;
first guide means for receiving and holding said pallet;
first support means for supporting said first guide means;
second guide means for receiving and holding the pallet;
second support means for supporting said second guide means;
a first linear motor carried by said first guide means; and
a second linear motor carried by said second guide means;
wherein said one pallet is made of a conductive material so as to serve as a secondary conductor for the first linear and second linear motors for pallet changing between said first and second guide means in a first direction; and
wherein said first support means comprises moving means for moving said first guide means in a second direction perpendicular to said first direction so as to align said first linear motor with said second linear motor.

5,187,847
TOOL TURRET WITH PNEUMATIC LOCKING SYSTEM
Helmut Thumm, and Friedrich Handel, both of Metzingen, Fed. Rep. of Germany, assignors to Sauter Feinmechanik GmbH, Metzingen, Fed. Rep. of Germany
Filed May 21, 1992, Ser. No. 886,253
Claims priority, application Fed. Rep. of Germany, May 23, 1991, 4116774
Int. Cl.[5] B23B *29/32;* B23Q *17/00*
U.S. Cl. 29—48.5 A 17 Claims

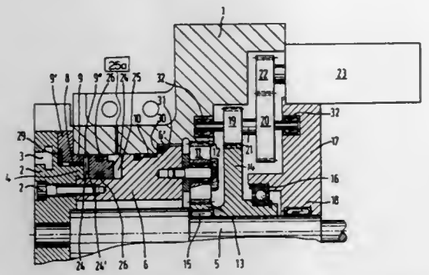
1. A tool turret, comprising:
a turret housing;

VOL 1147 ISS 4 FE 23 1993 UMI

a turret head mounted in said turret housing for rotation about a rotary axis;

first and second toothed rims mounted concentrically about said rotary axis and arranged radially relative to one another, said first toothed rim being fixed relative to said turret head, said second toothed rim being fixed relative to said turret housing, each of said toothed rims having teeth facing in an a axial direction relative to said rotary axis;

a position locking member arranged in an axial direction adjacent to and coaxial to said teeth of said first and second toothed rims, said locking member including teeth and an axially slidable piston for moving said locking member between a locking position in which the locking



member teeth engage the first and second toothed rim teeth without play and a release position in which the locking member teeth disengage at least one of the first and second toothed rim teeth;

pneumatic pressure means coupled to said piston for forcing said locking member toward said locking position; and

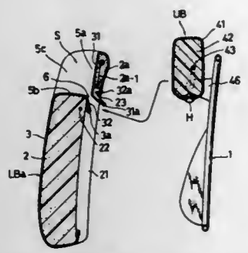
flanks at each side of said teeth of said locking member and said first and second rims defining an included angle less than 60° such that an axial component of a tool reaction force applied on said teeth peripherally around said turret head is smaller than a sum of an axial force produced by said piston and an axial force effected by the friction between said teeth.

5,187,848

METHOD OF ASSEMBLING A SEAT BACK

Masaaki Yokota, Akishima, Japan, assignor to Tachi-S Co. Ltd., Tokyo, Japan

Filed Oct. 22, 1991, Ser. No. 780,367
Int. Cl.[5] B68G *7/00*
U.S. Cl. 29—91.1 **3 Claims**



1. A method of assembling a split-type seat back, in which said seat back includes an upper seat-back section and a lower seat-back section, which are formed independently of each other, said method comprising the steps of:

connecting an upper seat-back frame to a lower seat-back frame in such a manner as to be rotatable forwardly and backwardly relative thereto;

attaching a first padding over said upper seat-back frame;

stretching a first covering member over said first padding, so as to form said upper seat-back section;

providing a second padding for said lower seat-back frame, said second padding having a cut-away, recessed part formed at an upper frontal side of said second padding, with an opening being formed in said cut-away, recessed part;

attaching a second covering member over said second padding, said second covering member being formed with an opening identical to said opening of said second padding, so as to produce an upholstery unit having said recessed part in which an opening is defined by said two openings;

then placing said upholstery unit over said lower seat-back frame by way of bringing said lower seat-back frame towards a rear side of said upholstery unit and inserting said upper seat-back section through said opening onto said cut-away recessed part; and

thereafter, securing said upholstery unit to said lower seat-back frame, to thereby define said lower seat-back section, whereby said upper and lower seat-back sections are assembled together to form said seat back.

5,187,849

FIXING ROLL FOR ELECTROPHOTOGRAPHY HAVING AN OUTER FLUORO-RESIN COATING

Naofumi Kobayashi, Fuji, Japan, assignor to Nitto Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 566,922, Aug. 14, 1990. This application Jun. 25, 1992, Ser. No. 904,298
Claims priority, application Japan, Aug. 24, 1989, 1-215997
Int. Cl.[5] B21B *31/08*
U.S. Cl. 29—132 **13 Claims**

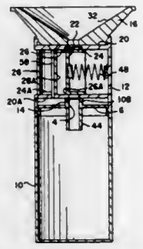
1. A fixing roll for electrophotography in which a fluoro-resin layer having a surface roughness Rz of not greater than 3.5 μm a gloss of not greater than 50% and an angle of contact with water of not less than 115° is coated on the outer surface of a core.

5,187,850

NEEDLE DISPOSAL SYSTEM

John W. McCammon, 104 Killinchy Rd., Comber BT23 5NE, and Trever L. Moffet, 106 Donaghadee Rd., Newtownards, County Down BT 23 3QP, both of Northern Ireland

Continuation of Ser. No. 630,798, Dec. 24, 1990, abandoned, which is a continuation of Ser. No. 306,017, Apr. 22, 1988, abandoned. This application May 29, 1992, Ser. No. 892,711
Claims priority, application United Kingdom, Apr. 22, 1987, 8709453
Int. Cl.[5] B65F *1/08*
U.S. Cl. 29—235 **17 Claims**



1. A needle disposal system comprising: p1 an assembly to e hand held, the assembly having at least two sequentially-arranged components in the form of

a first cap having an aperture, and

a head unit having a passage extending therethrough, the head unit being formed as a cylinder and having

top and bottom spaced plates in which aligned apertures are respectively provided to define the passage and

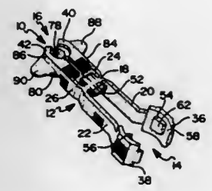
a trigger mechanism movable between the top and bottom spaced plates and said trigger mechanism having a passageway alignable with the aligned apertures, the aperture of the first cap and the aligned apertures of the head unit being in alignment when assembled together, the passageway of the trigger mechanism being biased to a first position out-of-alignment with said aperture of the first cap and aligned apertures of the head unit and movable to a position in alignment with said aperture of the first cap and aligned apertures of the head unit.

5,187,851

O.D. - I.D. COMBINATION RELEASE TOOL

Gary Klinger, Allen Park, Mich., assignor to ITT Corporation, New York, N.Y.

Filed Dec. 13, 1991, Ser. No. 807,533
Int. Cl.[5] F16L *35/00*; B23P *19/04*
U.S. Cl. 29—237 **30 Claims**



1. A tool adapted for releasing a male fitting from a mating female connector coupled together by a retaining element disposed within said female connector and releasably interlocking said fitting and connector through a system of axially facing abutment surfaces, said retaining element externally radially accessible through opposed radial openings within the female connector and axially accessible through a male fitting receiving end opening within the female connector, said tool comprising:

first manipulator means operable to penetrate said radial openings to radially displace said retaining element in a first direction to selectively disengage said male fitting and retaining element from said female connector; and

second manipulator means operable to penetrate said end opening to radially displace said retaining element in a second direction to selectively disengage said female connector and retaining element from said male fitting.

5,187,852

APPARATUS FOR ATTACHING A BUNGEE CORD TO A FASTENER

Johnny T. Stanley, Raleigh, and Brian W. Roberts, Apex, both of N.C., assignors to Delaware Capital Formation, Inc., Apex, N.C.

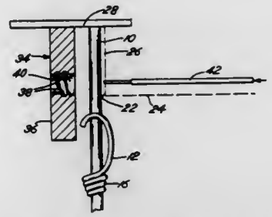
Filed Oct. 15, 1991, Ser. No. 776,792
Int. Cl.[5] B23P *11/00*; B65B *61/14*
U.S. Cl. 29—243.57 **5 Claims**

1. A bungee cord clipper comprising, in combination:

a clipper including a support frame, a die plate on the frame, a die in the die plate, a piston driven punch mounted on the plate for driving a U-shaped metal clip into engagement with the die for forming the clip a throat through the die plate for receipt of material to be clipped, said throat comprising an opening through the plate with the sides of the opening defined by the legs of a U-shaped metal clip driven by the punch for engagement with the die;

a bungee cord jig assembly adjacent one side of the clipper throat, said jig assembly including a bungee cord guide member having a passage for receipt of the end of a bungee cord, said passage extending beyond both sides of the throat opening and adjacent the throat opening, said passage being open on the side adjacent the throat;

a bungee cord punch transverse to the passage and opposite the throat; and



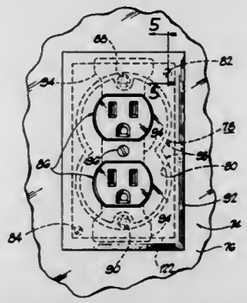
means for driving the bungee cord punch into engagement with a bungee cord extending into the passage to fold over the end of the cord and position the folded end into the throat, whereby the bungee cord punch is then withdrawn and the clipper punch engages a clip and effects attachment of the clip onto the folded end of the cord.

5,187,853

ELECTRICAL JUNCTION AND SWITCH BOXES

George A. Bardaville, 3201 Townline Rd., Traverse City, Mich. 49684

Division of Ser. No. 640,286, Jan. 11, 1991, Pat. No. 5,143,238. This application Jan. 15, 1992, Ser. No. 898,325
Int. Cl.[5] B23Q *17/00*
U.S. Cl. 29—407 **8 Claims**



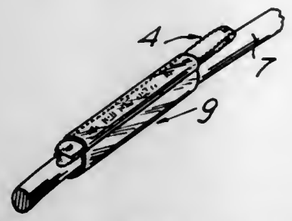
1. A method for installing an electrical service housing into a wall facing member comprising the steps of forming the electrical service housing to have a longitudinally extending body comprised of a plurality of longitudinally extending body portions each of a generally arcuate outer configuration when viewed in transverse cross-section of said longitudinally extending body portions, cutting a plurality of holes through said wall facing member in a manner whereby adjacent holes overlap each other thereby resulting in a receiving-hole in said wall facing member having a periphery comprised of a plurality of arcuate portions corresponding to the number of said plurality of longitudinally extending body portions, and slidably inserting said longitudinally extending body into said receiving-hole as to have said plurality of longitudinally extending body portions respectively juxtaposed to said plurality of arcuate portions of said receiving-hole.

5,187,854

CODING METHOD FOR ELECTRIC CABLE

Daniele Bossi, Milan, Italy, assignor to CO.E.P.T.E. Costruzioni Elettromeccaniche per Trazione Elettrica S.r.l., Milan, Italy

Division of Ser. No. 440,560, Nov. 20, 1989, Pat. No. 5,111,605.
This application Apr. 20, 1992, Ser. No. 870,854
Claims priority, application Italy, Aug. 9, 1989, 21480 A/89
Int. Cl.[5] B21D *39/00*; G09F *3/20*
U.S. Cl. 29—451 2 Claims



1. A method for coding electric cables, comprising the steps of:

attaching a supporting element to an electric cable which has a longitudinal extension, said supporting element having a channel-like seat extending, when said supporting element is attached to said cable, along the longitudinal extension of said cable, said channel-like seat having an internal partition arranged near the cable and a transparent external partition arranged away from the cable when said supporting element is attached to said cable; and

inserting an identification strip inside said supporting element, said identification strip having a first end and a second end, said identification strip having a longitudinal extend which extends from said first end of said second end and a transverse extend which is perpendicular to said longitudinal extend, said strip having a first portion arranged at a said first end and a second portion arranged at said second, said first portion of said strip defining a region provided with identifying information, said second portion being narrower in said transverse extend than said first portion;

the step of inserting said identification strip inside said supporting element comprising:

slidably inserting said second portion of said strip into and through said channel-like seat;

pulling said second portion and lodging said first potion of said strip inside said channel-like seat so that said region thereof with identifying information faces said transparent external partition;

bending said strip in a middle portion thereof defined between said first end and said second end and folding said second portion substantially 180 degrees; and

reinserting said second portion back into said channel-like seat and lodging said second portion between said first portion of said strip and said internal partition of said channel-like seat.

5,187,855

EXPANSION METHOD BY APPLYING PLURAL PRESSURE SYSTEMS

Helmut Swars, and Wolfgang Maus, both of Bergisch Gladbach, Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 452,617, Dec. 18, 1989, Pat. No. 5,115,654. This application Dec. 18, 1991, Ser. No. 809,666
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1988, 3842589
Int. Cl.[5] B21D *26/02*
U.S. Cl. 29—523 7 Claims

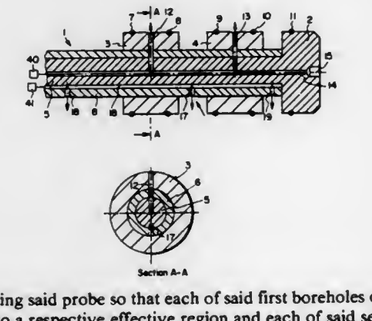
1. A process for attaching to a tubular member a plurality of elements which surround said member in longitudinally spaced relation by radially expanding longitudinally spaced portions of said tubular member which are respectively surrounded by said elements, the process comprising the steps of:

providing said tubular member and said elements;

locating said elements on said tubular member to surround said portions thereof;

inserting into the tubular member a pressure agent probe having separate first and second internal channels each having an open end and a closed end and extending longitudinally of the probe and a plurality of first boreholes and a plurality of second boreholes extending from the first and second internal channels respectively to the external surface of the probe;

sealing the probe to the internal surface of the tubular member at a plurality of longitudinally spaced positions by seals carried by said probe to provide a plurality of sealed regions between the probe and the tubular member, said sealed regions comprising effective regions each aligned with a respective one of said portions and intermediate and end regions between said effective regions and between single seals at the ends of the probe and the effective regions adjacent to said ends, respectively;



locating said probe so that each of said first boreholes opens into a respective effective region and each of said second boreholes opens into a respective intermediate region;

admitting hydraulic fluid into said effective regions via said first channel and said first boreholes;

generating a high effective pressure in the hydraulic fluid in said effective regions;

deforming said tubular member beyond its elastic limit at said portions by said high effective pressure and elastically deforming said surrounding elements by said deformation of said portions, thus attaching said elements to said tubular member;

admitting hydraulic fluid into said intermediate regions via said second channel and said second boreholes;

generating a counter pressure in said intermediate regions, said counter pressure being lower than that required to deform said tubular member beyond its elastic limit but greater than ambient pressure, said counter pressure being held in said intermediate regions at least while said high effective pressure is held in said effective regions;

decreasing said high effective and counter pressures after said deformation of said portions; and

withdrawing said probe from said tubular member.

5,187,856

ARMATURE WINDING APPARATUS

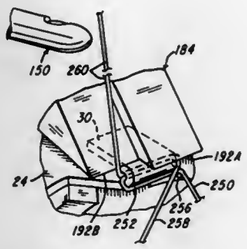
Nathan A. Corey, Fairborn; Carl L. Clark, Dayton, and Patrick A. Dolgas, Milford, all of Ohio, assignors to Globe Products Inc., Huber Heights, Ohio

Filed Mar. 17, 1992, Ser. No. 851,730
Int. Cl.[5] H01R *43/06*
U.S. Cl. 29—564.6 7 Claims

1. In an armature winding machine for winding an armature having an armature shaft, a core having coil-receiving slots

mounted on said shaft, and a commutator mounted on said shaft, said commutator having coil lead-receiving tangs, said armature winding machine having a winding station, means for holding an armature in said winding station, at least one wire guiding flier for winding coils of wire in said coil-receiving slots, a commutator shield assembly comprising an inner shield having at least one notch for exposing a commutator tang to enable wire leading from said flier to be hooked around said exposed tang, and an outer shield movable between a first, extended position in which it covers said notch and a second, retracted position wherein it uncovers said notch,

wire clamp means actuated to grip a stretch of wire extending from said flier at the end of the winding of one armature in said winding station until the commencement of the winding of the next armature in said winding station, and drive means for moving said wire clamp means, the improvement comprising:



a wire trimming blade having a sharp edge,

a blade mounting bracket;

means for pivotally mounting said wire trimming blade on said mounting bracket in a position wherein said wire trimming blade is closely adjacent the outer periphery of said inner shield and substantially parallel to the longitudinal axis of an armature in said winding station for rocking movement about a pivot axis extending transversely through said blade and intermediate its ends, and

means for pivoting said blade about said pivot axis to move said blade from a first position in which said sharp edge is located closely adjacent a tang and radially nearer the armature shaft than the outer edge of said last mentioned tang when said outer shield is retracted and located sufficiently remote from said tang when said outer shield is extended that it would not interfere with the removal of said armature from said winding station.

5,187,857

APPARATUS FOR MANUFACTURING ELECTRONIC PARTS WRAPPED WITH CONDUCTIVE FOIL

Akira Nakao, Nara; Toyofusa Endo, Takarazuka, and Takeshi Ikeda, Tokyo, all of Japan, assignors to Hitachi Zosen Corporation, Osaka and Takeshi Ikeda, Tokyo, both of, Japan

Filed Mar. 27, 1992, Ser. No. 859,584
Claims priority, application Japan, Mar. 29, 1991, 3-65821
Int. Cl.[5] H01G *13/00*
U.S. Cl. 29—564.7 4 Claims

1. An apparatus for manufacturing electronic parts wrapped with conductive foil, wherein, using a lead frame which is continuously provided with a number of individual-unit lead wire members each comprising three lead wires being disposed in parallel with each other by way of branching out another lead wire from a predetermined lead wire among said three lead wires, said apparatus manufactures electronic parts by arranging a conductive foil tape having one surface or both surfaces of said conductive foil being adhered with an insulation tape or a pair of insulation tapes to be wound on an end of said lead-wire member, wherein comprising the following:

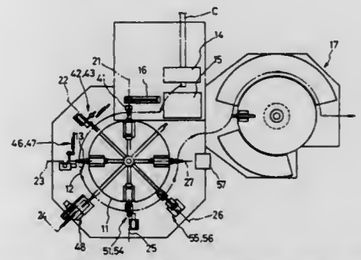
a holding unit which freely holds and releases the other end of said lead-wire member and is rotatable by means of a rotating unit;

means for intermittently shifting said holding unit along a plurality of work stations each executing predetermined functional operation;

a bending unit which is provided for the first work station in order to bend a lead wire branched out from said individual-unit lead-wire member cut off by a cutting unit provided for said first work station;

a connection unit which is provided for a second work station in order to conductively connect the first conductive foil tape drawn out of a reel to a predetermined lead wire of said lead-wire member, and a cutting unit which cuts off said first conductive foil tape at a predetermined position;

another connection unit which is provided for a third work station in order to conductively connect a second conductive foil tape drawn out of a reel to those lead wires other



than the one conductively connected by said second work station; and a cutting unit which cuts off said second conductive foil tape;

a correction unit which is provided for a fourth work station in order to straighten said lead wire branched out from said lead-wire member having an end being wrapped with said first and second conductive foil tapes by effect of the rotation of said holding unit; and a connection unit which conductively connects either of said conductive foil tapes which are conductively connected to either of said lead wires to said branched lead wire;

a pressing unit which is provided for a fifth work station in order to press said lead-wire member having an end being wrapped with an insulation tape by effect of the rotation of said holding unit; and a cutting unit which cuts off said insulation tape into a predetermined length; and

a delivery unit which is provided for a sixth work station in order to receive said lead-wire member from said holding unit and then delivers it to the following processing line.

5,187,858

METHOD OF PRODUCING A STATOR FOR A ROTARY MACHINE

Toshiichi Murakoshi, Neyagawa; Hiroshi Kawazoe, Hirakata; Toshihiro Takahata, Minoo; Shigeki Nishimura, Tajimi, and Yoshiyuki Haruta, Nagoya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd. and Matsushita Seiko Co., Ltd., both of Osaka, Japan

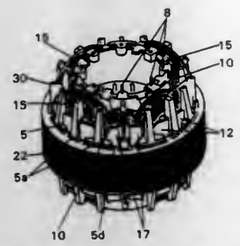
Continuation of Ser. No. 536,857, Jun. 12, 1990, abandoned.
This application Oct. 8, 1991, Ser. No. 772,635
Claims priority, application Japan, Jun. 14, 1989, 1-151859
Int. Cl.[5] H02K *15/14*
U.S. Cl. 29—596 3 Claims

1. A method of producing a stator for a rotary machine, comprising the steps of:

mounting a plurality of terminal pins to one end of a main core unit which has teeth radially protruding from its outside;

winding the beginning part of a coil wire around a single one of said terminal pins, and then winding said coil wire

around a plurality of adjoining teeth to form a coil and repeating the steps for formation of a coil until a predetermined number of additional coils are obtained on the outside of said main core unit, and thereafter winding the ending part of said coil wire around a single one of the other terminal pins;



inserting wedge members made of an insulating material between an outside portion of said coils and protrusions formed on outer ends of said teeth, thereby closing openings between the teeth; and

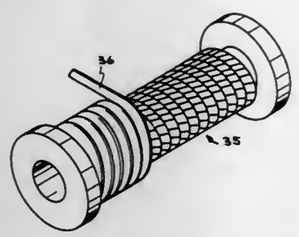
fitting a ring unit on the outside of said main core unit.

5,187,859

METHOD OF PRELOADING SUPERCONDUCTING COILS BY USING MATERIALS WITH DIFFERENT THERMAL EXPANSION COEFFICIENTS

Joseph R. Heim, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 23, 1990, Ser. No. 571,361
Int. Cl.[5] H01L *39/24*
U.S. Cl. 29—599 **19 Claims**



1. A method of manufacturing a superconducting coil, comprising the steps of:

surrounding wire which becomes superconducting upon subsequent heating with a first reinforcing material with a thermal expansion rate;

surrounding the wire and first reinforcing material with electrical insulation;

winding the wire surrounded by first reinforcing material and electrical insulation on a winding means thereby providing a first plurality of layers with an outer layer;

winding a cable of a second reinforcing material, with a thermal expansion rate greater than the thermal expansion rate of the first reinforcing material, around the outer layer of the first plurality of layers so that a first layer of the cable of the second reinforcing material is formed around the first plurality of layers;

winding a layer of the wire surrounded by first reinforcing material and electrical insulation around the first layer of cable of the second reinforcing material;

winding a second layer of the second reinforcing material around the layer of wire around the first layer of cable of the second reinforcing material;

whereby a coil is formed;

heating the coil to a temperature greater than 300° C. thereby making the wire superconducting; and

cooling the coil to a temperature equal to or less than room temperature;

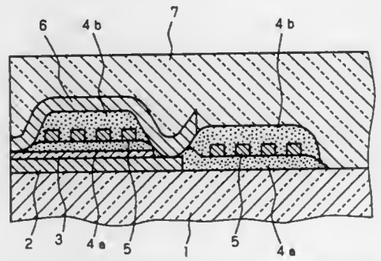
whereby the coil is radially preloaded.

5,187,860

METHOD OF MANUFACTURING THIN FILM MAGNETIC HEAD

Shinji Horibata; Yuzo Odoi, both of Amagasaki, and Syoji Futami, Kamakura, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jul. 11, 1991, Ser. No. 728,623
Claims priority, application Japan, Jul. 12, 1990, 2-186492
Int. Cl.[5] G11B *5/42*
U.S. Cl. 29—603 **4 Claims**



1. A method of manufacturing a thin film magnetic head having a substrate, a lower core of magnetic film, a first insulation layer situated on top of the lower core, a second insulation layer and an upper core of magnetic film situated on top of the second insulation layer, comprising steps of:

sequentially laminating the lower core, the first insulation layer, the second insulation layer, and the upper core, on the substrate;

laminating a protective film on the second insulation layer and the upper core; and

heating the laminate, formed in the previous steps, after forming the protective film, to a heating temperature that is higher than a softening point and lower than a decomposition point of the first and second insulation layers for a sufficient time so that the stress of the upper and lower core is absorbed and alleviated and wiggle noise is reduced.

5,187,861

WIRE INSERTION HAND TOOL WITH REMOVABLE BENCH MOUNTING ACCESSORIES

Larry A. Hillegonds, New Lenox; George H. Jue, Tinley Park, and John J. Bulanda, New Lenox, all of Ill., assignors to Pandult Corp., Tinley Park, Ill.

Filed Sep. 10, 1991, Ser. No. 757,425
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—751 **7 Claims**

1. A wire insertion tool for inserting individual wires into an insulation displacement contact of an electrical connector, comprising:

a wire insertion head including a finger grip;

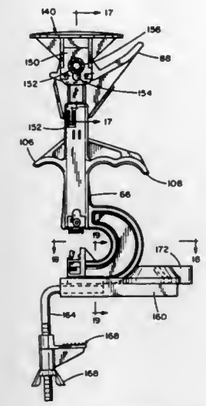
a palm handle;

a wire insertion punch disposed on a forward end of the palm handle;

means for mounting the palm handle to the wire insertion head such that the punch can be reciprocated towards and away from the wire insertion head;

a connector positioning means for positioning a connector opposite the wire insertion punch; and

a removable mounting block having means for securing the mounting block to a mounting surface and bench mounting means extending along a distal edge of the wire insertion head for engaging a structural feature of the removable mounting block to secure the wire insertion tool to



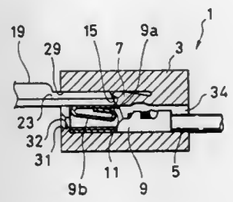
the mounting surface and wherein the bench mounting means includes a mounting flange and the structural feature includes a tool mounting slot having a contour complementary to the mounting flange for locking engagement therewith.

5,187,862

DISENGAGING TOOL FOR TERMINAL AND WIRE CONNECTOR

Hideki Ohsumi, Shizuoka, Japan, assignor to Yazaki Corporation, Japan

Filed Jul. 30, 1991, Ser. No. 738,149
Claims priority, application Japan, Aug. 2, 1990, 2-203808
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—764 **6 Claims**



1. A disengaging tool for disengaging a terminal from a connector comprising a terminal housing chamber, an elastic engaging arm for engaging the terminal, and an opening with a guide groove for insertion of the disengaging tool, said disengaging tool comprising:

a rod member for insertion into the opening;

a generally T-shaped guide portion formed on said rod member to be inserted into the guide groove, said guide portion extending along an axis of said rod member to guide said rod member to an inner part of the connector when said rod member is inserted into the opening; and

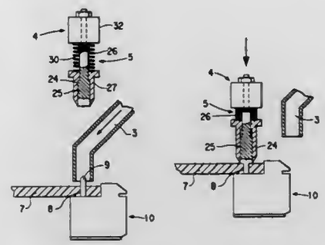
a sloped portion formed on the tip of said rod member to contact the elastic engaging arm, bending the elastic engaging arm to disengage the elastic engaging arm from the terminal.

5,187,863

METHOD AND DEVICE FOR CONNECTING A CONNECTOR TO A BOARD

Henricus L. Wittens, Oisterwijk, Netherlands, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 25, 1992, Ser. No. 857,524
Claims priority, application Netherlands, Mar. 27, 1991, 9100546
Int. Cl.[5] H01R *9/14*; B23P *19/00*
U.S. Cl. 29—845 **9 Claims**



1. A device for fixing a connector having pins on a printed circuit board by inserting the pins through holes in the board and deforming heads of the pins, comprising:

a base frame;

a first carrier having a first end and a second end, the first end bearing heating heads for contactlessly heating the pins, the second end supported on the base frame in such a way that the first carrier can slide with respect to the base frame;

means for providing a hot air flow through the heating heads;

a pair of arms having first ends and second ends, the first ends hingedly fixed to a second end of the first carrier and the second ends of the arms hingedly fixed to the base frame;

a second carrier having a first end and a second end, the first end bearing pressure heads for deforming the heated pin heads, the second carrier second end hingedly connected to the base frame; and

a control arm having a first end and a second end, the control arm hingedly connected to the base frame,

whereby the first carrier can be pushed to a first position towards the connector pins extending through the printed circuit board where the heating heads are positioned to allow the heating means to heat the pins, then a force can be applied downwards on the first end of the control arm causing the first carrier to move away from the pins and the second carrier to move towards the pins in such a way that the pressure heads come into contact with the pins and deform the heads of the pins fixing the connector on the board.

8. A method for fixing a connector on a printed circuit board, comprising:

inserting heads of pins on the connector through holes in the board;

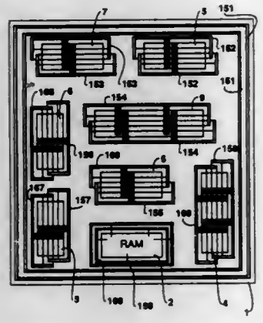
sliding a first carrier bearing heating heads to a fixing position;

providing a hot air flow through the heating heads to contactlessly heat the pin heads; and

applying a downward force on a control arm causing the first carrier to move away from the pins to a retracted position and moving a second carrier bearing low temperature pressure heads towards the pins in such a way that the pressure heads come into contact with the pins and deform the pin heads cooling the pin heads while the pin heads are being deformed and fixing the connector on the board.

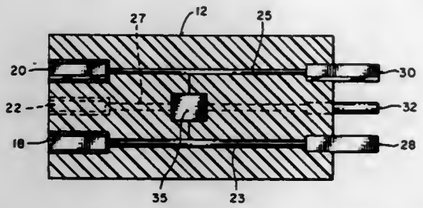
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5,187,864
ADAPTABLE TOPOLOGIES USED IN ROUTING OF GROUND AND POWER NETWORKS ON INTEGRATED CIRCUITS
Daniel R. Brasen, San Francisco, and Dale M. Wong, San Francisco, both of Calif., assignors to VLSI Technology, Inc., San Jose, Calif.
Filed Jul. 26, 1991, Ser. No. 736,666
Int. Cl.[5] H05K *3/00*
U.S. Cl. 29—846 **6 Claims**



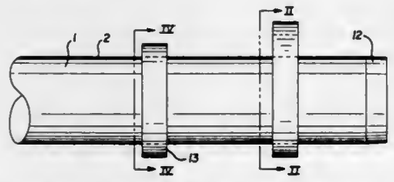
4. A method for performing global routing of a line network on an integrated circuit, the method comprising the steps of:
(a) placing pre-formed segments of the line network adjacent to functional blocks of the integrated circuit wherein for functional blocks which are functional blocks of standard cells the pre-formed segments of the line network are three-sided segments opening towards a first side of the integrated circuit and are three-sided segments oepning towards a second side of the integrated circuit;
(b) connecting lines of the functional blocks to the pre-formed segments of the line network; and,
(c) connecting together the pre-formed segments of the line network.

5,187,865
METHOD OF COUPLING LF SIGNALS BY MEANS OF POWER LINE COMMUNICATIONS COUPLER
Robert A. Dolin, Jr., Menlo Park, Calif., assignor to Intel Corporation, Santa Clara, Calif.
Division of Ser. No. 679,153, Mar. 26, 1991, which is a continuation of Ser. No. 540,584, Jun. 19, 1990, abandoned. This application Jan. 3, 1992, Ser. No. 819,367
Int. Cl.[5] H01R *43/00*
U.S. Cl. 29—868 **19 Claims**



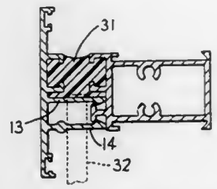
1. A method for electrically coupling high frequency communication signals between a first power line and a second power line comprising the steps of:
a) providing an outlet, said outlet having a first receiving slot electrically connected to said first power line and a second receiving slot electrically connected to said second power line;
b) making electrical connection to said first power line by inserting a first power prong into said first power prong receiving slot;
c) making electrical connection to said second power line by inserting a second power prong into said second power prong receiving slot; and,
d) electrically coupling said first and said second power prong such that said communications signals comprising high frequency alternating current pass at low impedance and low frequency alternating current passes at high impedance between said first and said second power lines.

5,187,866
METHOD OF MAKING A CAM SHAFT
John P. Rhoades, Mansfield, Ohio, assignor to Copperweld Corporation, Pittsburgh, Pa.
Filed Sep. 3, 1991, Ser. No. 753,726
Int. Cl.[5] B23C *3/08*
U.S. Cl. 29—888.1 **4 Claims**



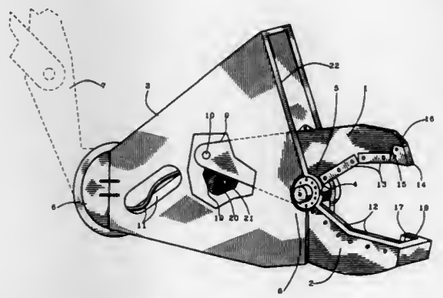
1. The method of making a cam shaft comprising
forming shaft stock by drawing a first tube through a die and over a mandrel to form a tube having a closely controlled outside diameter,
forming cam stock by drawing a second tube through a die and over a mandrel to form a tube having an equivalent round to the cam section,
then drawing the second tube through a forming die and over a mandrel to form a tube having a cam cross-section including a partial inner diameter which is closely sized to the outside diameter of the shaft stock,
positioning a length of cam stock at each place on the length of shaft stock where it is desired to have a cam, and
permanently attaching each length of cam stock to the length of shaft stock.

5,187,867
MANUFACTURE OF THERMAL BREAK FRAME SECTIONS
David E. Rawlings, Cheltenham, United Kingdom, assignor to Azon Systems, Inc., Kalamazoo, Mich.
Filed Jul. 26, 1991, Ser. No. 736,221
Claims priority, application United Kingdom, Jul. 28, 1990, 9016629
Int. Cl.[5] B23P *11/02*
U.S. Cl. 29—897.312 **15 Claims**



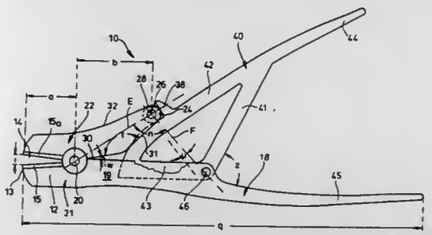
1. A method of making an architectural thermal barrier component, comprising the steps of: fabricating an elongate first heat-conductive part having spaced first and second projections which project outwardly in substantially the same direction transversely of said first heat-conductive part, said first heat-conductive part having a first retaining portion thereon; fabricating an elongate second heat-conductive part having a flange which projects outwardly in a direction transversely of said second heat-conductive part, said second heat-conductive part having thereon first and second surface portions which are disposed on opposite sides of said flange and which face in the direction in which said flange projects outwardly from said second heat-conductive part, and having a second retaining portion thereon; orienting said first and second heat-conductive parts so that said first and second projections on said first heat-conductive part extend toward said second heat-conductive part and said flange on said second heat-conductive part extends towards said projections on said first heat-conductive part; thereafter moving said heat-conductive parts toward each other until said flange moves into the region between said first and second projections so that outer ends of said first and second projections move into engagement with said first and second surface portions and so that said first and second retaining portions move into cooperating engagement with each other, said cooperating engagement between said first and second retaining portions resisting movement of said first and second heat-conductive parts away from each other and maintaining said outer ends of said first and second projections in firm engagement with said first and second surface portions; thereafter applying to said first and second heat-conductive parts a thermal barrier material which extends lengthwise thereof and which extends transversely between and is fixedly coupled to each of said first and second heat-conductive parts; and thereafter machining away a central portion of each of said first and second projections at a location between the ends thereof.

5,187,868
METAL DEMOLITION SHEAR
Charlie R. Hall, P.O. Box 190, Wadley, Ga. 30477
Filed Jun. 16, 1992, Ser. No. 899,253
Int. Cl.[5] B25F *3/00*; B26B *15/00*; A01D *55/00*
U.S. Cl. 30—134 **22 Claims**



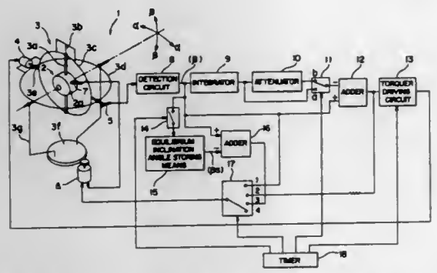
1. A demolition shear comprising:
a shear housing having a walled interior,
an attachment base on a proximal end of the shear jaw housing sized and shaped for attachment of the demolition shear in standard manipulatable mode to an operative end of a boom of a mobile machine such as a backhoe, a power shovel or a tractor which has a hydraulic power mechanism and related hydraulic lines,
a stationary cutter jaw extended from a distal end portion of the shear housing,
a pivot axle positional in a fulcrum portion of the shear housing proximate a proximal end of the stationary cutter jaw,
a pivotal cutter jaw having a pivot orifice at a fulcrum portion of the pivotal cutter jaw through which the pivot axle is insertable and a jaw actuation lever on an opposite side of the pivot axle from the pivotal cutter jaw,
a hydraulic actuation means in standard hydraulically powered relationship between hydraulic controls on the mobile machine and standard hydraulically powered actuation of the pivotal cutter jaw by actuation of the jaw actuation lever with a lever action in which the pivot axle is a fulcrum for pivotal travel of the pivotal cutter jaw in shearing relationship to the stationary cutter jaw,
a linear thrust bearing positional on the pivot axle between opposite sides of the pivotal cutter jaw and internal wall surfaces of the shear housing,
a machine thread means in selective linear positioning relationship of the pivotal cutter jaw between internal wall portions of the shear jaw housing,
selective linear distance of the pivotal cutter jaw from the stationary cutter jaw for optimum shearing relationship being achieved by means of linearly positioning opposite thrust bearings between opposite sides of the pivotal cutter jaw and internal wall surfaces of the jaw housing,
a bolt-on replaceable cutter tip positional selectively on a distal end of the pivotal cutter jaw,
at least one cutter blade positional between a distal portion and a proximal portion of the stationary cutter jaw,
at least one cutter blade positional between the replaceable cutter tip and the pivotal portion of the pivotal cutter jaw,
a steady rest bearing member on the pivotal cutter jaw in movable contact with a steady rest bearing surface of the shear housing, and
a means for adjustment of distance between the steady rest member and the steady rest bearing.

5,187,869
NIPPER INSTRUMENT FOR CUTTING SURGICAL NAILS, WIRES OR THE LIKE
Jürgen K. Heiss, Wilhelm-Hauff-Weg 5, 7200 Tuttlingen, Fed. Rep. of Germany
Filed Apr. 25, 1991, Ser. No. 691,548
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1990, 9004793[U]
Int. Cl.[5] B26B *17/02*
U.S. Cl. 30—189 **13 Claims**



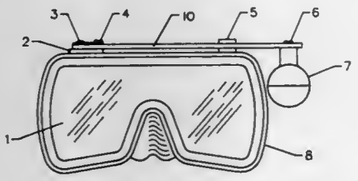
1. A nipper instrument comprising two cutting means at one end thereof defining a cutting mouth, pivotably interconnected nipper arms having two handle ends at the other end of said nipper instrument, one of said cutting means being provided on a pivotable jaw, said pivotable jaw being pivotably connected to one of said nipper arms carrying the other cutting means, the other nipper arm having a cam portion for bearing against a free end of said pivotable jaw wherein the free end of the pivotable jaw is provided with shaft means for carrying a roller which bears against the cam portion characterised in that an abutment surface is provided at the end of the cam portion as a travel limiting means for said pivotable jaw.

5,187,870
GYRO COMPASS
Atsushi Abe, Suita, and Yoshio Sakai, Kobe, both of Japan, assignors to Furuno Electric Company, Limited, Hyogo, Japan
Continuation of Ser. No. 613,870, Dec. 5, 1990, abandoned. This application Jun. 26, 1992, Ser. No. 905,201
Claims priority, application Japan, Apr. 14, 1989, 1-95854
Int. Cl.[5] G01C *19/38*
U.S. Cl. 33—324 14 Claims



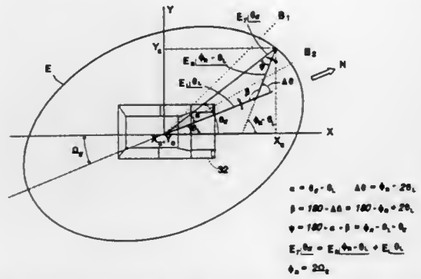
8. A device for adjusting a tilt angle of a rotor of a gyro compass comprising:
equilibrium tilt angle storing means for storing an inclination angle of the rotor at a time when said gyro compass is in an equilibrium state and
tilt adjustment control means, operatively connected to said equilibrium tilt angle storing means, for utilizing the stored inclination angle, upon reinitiation of said gyro compass, to bring said gyro compass to said equilibrium state.

5,187,871
UNDERWATER NAVIGATION DEVICE
Damien McDermott, 196 Phillips Dr., Hampstead, Md. 21074
Filed Jan. 27, 1992, Ser. No. 826,467
Int. Cl.[5] G01C *17/08, 9/12, 23/00*
U.S. Cl. 33—354 26 Claims



1. A navigational device for personal use, comprising:
a) a face mask with a transparent window for binocular vision when said device is worn by a user;
b) a directional indicator for attachment to said face mask;
c) a multiplicity of symbols displayed on said indicator to identify the directional orientation of said indicator and said mask; and
d) a means for attaching said directional indicator to said mask at a stable location and distance from said mask to permit a user to focus his eyes upon said directional indicator for continuous availability of direct binocular viewing of said directional symbols.

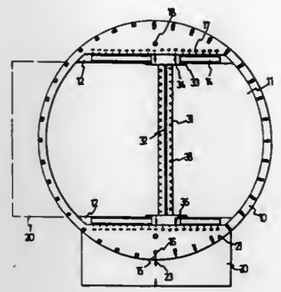
5,187,872
AUTOMATIC CALIBRATION OF MAGNETIC COMPASSES
Martial J. Dufour, Kanata, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of Communications, Ottawa, Canada
Filed Apr. 2, 1992, Ser. No. 862,024
Int. Cl.[5] G01C *17/38*
U.S. Cl. 33—356 48 Claims



1. A method of calibrating a magnetic compass comprising sensor means operable to supply signals representing the magnitude of a sensed magnetic field comprising an earth magnetic field component and a magnetic field distortion component, and means responsive to said signals for providing a heading as the angular displacement of an alignment axis of the compass relative to magnetic north, the method comprising the steps of:
as the compass is displaced angularly, storing measured values of the magnitude of the sensed magnetic field for different discrete orientations of the alignment axis of the compass:
if said measured values have been stored for more than a predetermined number, but not all, of said directions, interpolating, using estimated coordinates for said origin, values of the sensed magnetic field for directions for which measured values have not been accumulated to provide a complete set of values (X_i, Y_i) corresponding to a complete rotation of the alignment axis, said set of values defining a substantially elliptical locus of a vector (E_T) representing the sensed magnetic field;
deriving from said set of values new estimated coordinates for said origin and adjusting the stored measured values to take account of differences, if any, between the previous estimated origin coordinates and the new estimated origin coordinates; and
deriving said heading taking into account ellipticity of said locus due to said local magnetic field distortion.

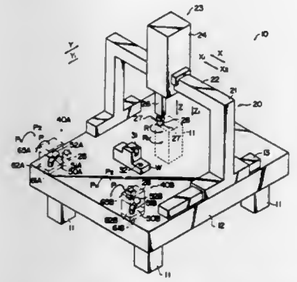
5,187,873
STUDENTS MULTI-FUNCTION PROTRACTOR
Bill C. B. Jeng, No. 12, Shanhsi E. St., Taichung City, Taiwan, and Chiang-Ming Chen, No. 3, Lane 50 Chung Nan, Kuang Hsing Rd., Taiping Hsiang, Taichung Hsien, Taiwan
Filed Jan. 29, 1992, Ser. No. 827,348
Int. Cl.[5] B43L *13/08*
U.S. Cl. 33—435 3 Claims

1. A protractor comprising a base having a curved surface formed therein, a disc including a circular outer peripheral surface for slidable engagement with said curved surface of said base, said disc including an opening formed therein which includes a pair of flanges formed in parallel therein, and a slide including an upper surface having a rib longitudinally formed in a middle portion thereof and including two end portions slidably engaged with said flanges of said disc respectively so that said slide is guided to slid along said flanges, each of said end portions of said slide including an end plate and an extension forming a ninety degree included angle with each other for slidable engagement with said flanges of said disc, a metal strip disposed on an upper surface of each of said flanges, and a magnet disposed on a bottom of each of said extensions of said slide for attracting said metal strip of said flanges so that



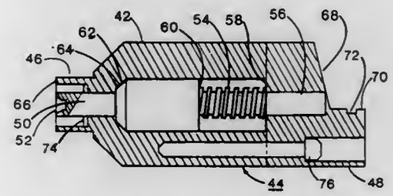
said slide is retained in place relative to said disc, whereby various geometric figures can be drawn when said disc rotates relative to said base and when said slide slides along said flanges.

5,187,874
COORDINATE MEASURING MACHINE WITH PROTECTED ORIGIN POINT BLOCKS
Keizo Takahashi, and Masakazu Matsumoto, both of Utsunomiya, Japan, assignors to Mitutoyo Corporation, Tokyo, Japan
PCT No. PCT/JP90/00551, § 371 Date Feb. 8, 1991, § 102(e) Date Feb. 8, 1991, PCT Pub. No. WO90/13791, PCT Pub. Date Nov. 15, 1990
PCT Filed Apr. 27, 1990, Ser. No. 651,419
Claims priority, application Japan, Apr. 28, 1989, 1-111800
Int. Cl.[5] G01B *21/04*
U.S. Cl. 33—502 4 Claims



1. A coordinate measuring machine, comprising:
a base plate for facilitating the placement of an object to be measured thereon;
origin point block means provided on said base plate for defining an origin of measurement;
a detector;
moving means for moving said detector to said origin point block means to set the origin of measurement and thereafter moving in horizontal and vertical directions until contact with the object to be measured occurs for detecting the dimensions and configuration of the object; and
at least one removable cover device for covering and occasionally exposing each of said origin point block means, said removable cover device including a box having space inside for enclosing said origin point block means, an openable and closeable cover having a shape conforming to said box, and drive means which is connected to said box and said cover for effecting an opening and closing motion of said cover.

5,187,875
FLUSH PIN GAUGE
Guenter F. Kuehling, Berwyn, Ill., and Jeffrey L. Carmain, Aptos, Calif., assignors to Daniels Manufacturing Corporation, Orlando, Fla.
Filed Mar. 20, 1992, Ser. No. 854,849
Int. Cl.[5] G01B *5/00*
U.S. Cl. 33—541 8 Claims

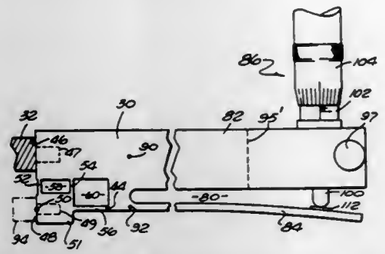


1. A flush pin gauge for checking the position of a center pin in a coaxial connector, the connector having an insulator spaced from and encircling the center pin and a conductive outer shield circumscribing the insulator, the gauge comprising:
a housing;
a fitting attached to one end of the housing, the fitting being adapted for slidingly engaging the conductive outer shield of the connector;
a gauge pin slidingly restrained in the housing, one end of the gauge pin extending generally centrally of the fitting and terminating adjacent an outer end of the fitting, another end of the gauge pin extending from another end of the housing generally opposite the one end; and
gauging means coupled to the another end of the housing adjacent the another end of the gauge pin for determining the relative position of the another end of the gauge pin, the gauge pin being slidingly pushed through the housing when the fitting is pressed into an operative measuring position on the outer shield of the connector, the position of the center pin with respect to an outer end of the outer shield being indicated by the position of the another end of the gauge pin with respect to the gauging means, the gauging means comprising means extending from the another end of the housing and aligned with the gauge pin, the extending means having a marker of preselected width extending transverse to a direction of sliding motion of the gauge pin, the marker being positioned to align with the another end of the gauge pin when the gauge is operatively coupled to a coaxial connector having a properly positioned center pin.

5,187,876
PRECISION MOTION TRANSDUCER
Alson E. Hatheway, 595 E. Colorado Blvd., Suite 400, Pasadena, Calif. 91101
Continuation of Ser. No. 700,080, May 3, 1991, abandoned, which is a continuation of Ser. No. 389,709, Aug. 4, 1989, abandoned. This application Dec. 12, 1991, Ser. No. 807,789
Int. Cl.[5] B23Q *16/00*
U.S. Cl. 33—568 11 Claims

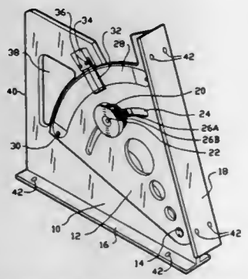
1. A motion transducer, comprising:
an elastic body;
foundation means for supporting the elastic body;
means supported by the elastic body for producing an input force or displacement;
means on said elastic body for receiving said input force or displacement to create strain within said elastic body and

for counterbalancing said strain to prevent force and displacement components from said strain from entering said foundation means from said elastic body; and



means for directing and controlling said strain within said elastic body into at least one single, repeatable output deflection of said elastic body with respect to said foundation means.

5,187,877
CRAFTSMAN'S ADJUSTABLE ANGLE INSTRUMENT
John Jory, 11339 Chenault St., Los Angeles, Calif. 90049, and Lawrence W. Fay, 17945 Via La Cresta, Chino, Calif. 91709
Filed Jun. 29, 1992, Ser. No. 905,673
Int. Cl.[5] B27G *23/00*
U.S. Cl. 33—640 **12 Claims**



1. An adjustable angle instrument, especially suited to set up power saws and to guide workpieces in operations such as woodworking, comprising in combination;

a first sector part formed as a flat plate having a generally sector-shaped outline defining a pair of straight edges forming a 45 degree angle converging toward an apex region, one of said edges being formed along its full length as a double flange extending perpendicularly from the plate in both opposite directions so as to define a T-shaped cross section along the flanged edge, said first sector part being configured to have, at an end thereof opposite the apex region, a further extended flat region defining an edge perpendicular to the flanged edge, the extended flat region including an opening for use as a clamping region and as a hand grip for grasping the instrument;

a second sector par d as a flat plate having a substantially sector-shaped outline defining a pair of straight edges forming a 45 degree angle converging toward an apex region, one of said edges being formed along its full length as a double flange extending perpendicularly from the plate in both opposite directions so as to define a T-shaped cross section along the flanged edge;

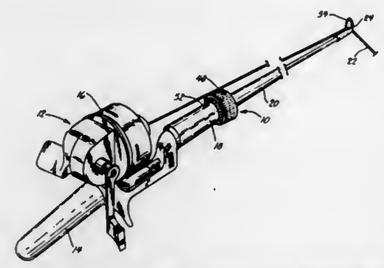
pivot means, traversing said first sector part and said second sector part at a designated pivot point in the apex region of each of said sector parts, adapted to captivate said sector parts together in a pivoted assembly forming an adjustable sector shape such that the two flanged edges are caused to define an adjustable angle which may be varied within an adjustment range from 45 to 90 degrees;

locking means adapted to lock said first and second sector parts together releasably at any angle selected within the adjustment range;

an arcuate scale attached to said second sector part disposed concentrically relative to the pivot point in a region substantially removed from the apex region and marked in a manner to provide readings of the adjustable angle between the two flanged edges, and of the adjustable angle between the perpendicular edge of said first sector part and the flanged edge of said second sector part;

a transparent cursor, marked with a hairline, disposed adjacent to said scale, secured to said first sector part by cursor mounting means, and configured to cooperate with said scale in a manner to provide the visual angle readings.

5,187,878
ANGULAR DEPTH GAUGE
James P. Kuttner, 10138 W. Kenyon Ave., Denver, Colo. 80235
Filed Jul. 24, 1992, Ser. No. 919,291
Int. Cl.[5] G01B *5/18*; A01K *91/20*
U.S. Cl. 33—719 **19 Claims**



1. A angular depth gauge for determining the depth of a lure on an attached fishing line when such line is angularly offset from vertical, adapted for use in combination with a rod having the line extending therefrom, comprising:

a depth chart displaying a plurality of indicia of line depths corresponding to combinations of at least a preselected line length and a plurality of preselected angular offsets at which a line might be disposed, the chart carrying each indicia in an angularly offset position on the chart such that the approximately proper depth indicia is indicated when the chart is rotated to said predetermined angle; and

a mounting means for associating said depth chart with an elongated rod such that said chart is positionable about the longitudinal axis of the rod and rotatable with the rod.

5,187,879
FABRIC DRYER WITH ROTARY MICROWAVE CHOKE SEAL
Melvin Holst, 215 SW. 14th St., Gresham, Oreg. 97080
Filed Apr. 27, 1992, Ser. No. 874,541
Int. Cl.[5] F26B *3/34*
U.S. Cl. 34—1 DD **3 Claims**

1. A fabric dryer comprising:

(a) a drying chamber for receiving fabric laden with moisture;

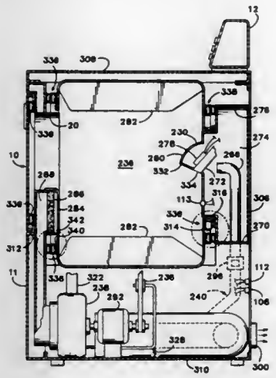
(b) an air intake duct for conducting air from the atmosphere into said drying chamber;

(c) an air exhaust duct for conducting said air and moisture from said drying chamber into the atmosphere;

(d) a source of microwave energy for generating heating energy to heat said moisture in said drying chamber;

(e) means for rotating said drying chamber relative to said air intake duct and air exhaust duct, said drying chamber having a rotating external surface and at least one of said ducts having a stationary external surface associated therewith in generally opposed, spaced-apart relationship to said rotating external surface of said drying chamber;

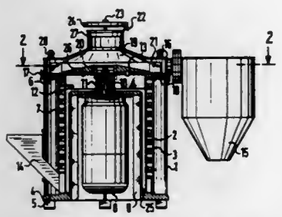
(f) a microwave choke in sliding contact with a first one of said external surfaces and attached yieldably to the second one of said external surfaces so as to be urged toward



sliding contact with said first one of said external surfaces; and

(g) a flexible, microwave-opaque material sealingly interconnecting said microwave choke with said second one of said external surfaces so as to flexibly permit yieldable movement of said microwave choke with respect to said second one of said external surfaces.

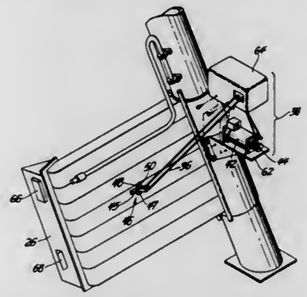
5,187,880
CENTRIFUGAL DRYER FOR SEPARATION OF SURFACE WATER FROM PLASTIC GRANULES
Joachim Rudolph, Weilder Stadt, Fed. Rep. of Germany, assignor to Werner & Pfleiderer GmbH, Stuttgart, Fed. Rep. of Germany
Filed Jan. 15, 1992, Ser. No. 821,487
Claims priority, application Fed. Rep. of Germany, Feb. 28, 1991, 4106248
Int. Cl.[5] F25B *5/08*
U.S. Cl. 34—8 **13 Claims**



1. A centrifugal dryer for separation of surface water from plastic granules comprising a vertically arranged tubular housing, a rotor rotatably supported vertically in said housing, a strainer basket surrounding said rotor, conveyor blade means on the rotor for conveying moist plastic granules upwardly in the housing, a lower product inlet in said housing to supply moist plastic granules to the conveyor blade means, a product discharge unit at the top of the housing for discharge of dried granules to a product outlet, a plurality of fans each having respective conveyor blade, means for releasably connecting a respective fan to the rotor within said product discharge unit, said product discharge unit having adjustable air input slot means for regulating air flow into the product discharge unit,

said conveyor blades of the plurality of fans having properties of length and outer diameter which are different for different blades so that by connection of a selected fan in said product discharge unit by the releasable connecting means different pressure changes can be produced in the dryer for the same rotor whereby to change the residence time of the plastic granules in said housing.

5,187,881
NON-CONTACTING AUTOMOTIVE DRYER RELEASABLE CONNECTION
Lucian G. McElroy, 3315 Brocker Rd., Metamora, Mich. 48455
Filed Nov. 14, 1991, Ser. No. 792,170
Int. Cl.[5] B60S *3/06*; F26B *19/00*; B08B *5/02*
U.S. Cl. 34—22 **6 Claims**



6. A method of stripping fluids from the surface of an object as the object is conveyed relatively along a path including the steps of:

directing air under pressure through a nozzle;

detecting the distance of the nozzle from the surface;

controllably retracting and extending the nozzle by a link member connected to the nozzle in response to the detection, and

releasing the control of the nozzle by disconnecting the link member in response to a predetermined force applied against the nozzle.

5,187,882
SYSTEM FOR CURING CONCRETE ARTICLES
Christopher B. Leach, Deceased, Audrey A. Leach, Representative, both of Lowell, Mich., assignor to Cam Sales, Inc., Ludington, Mich.
Continuation of Ser. No. 312,118, Feb. 17, 1989, Pat. No. 5,089,198. This application Feb. 18, 1992, Ser. No. 837,039
Int. Cl.[5] F26B *21/06*
U.S. Cl. 34—46 **4 Claims**

1. Apparatus for maintaining a desirable humidity and temperature in an atmospheric pressure enclosure for curing concrete products comprising:

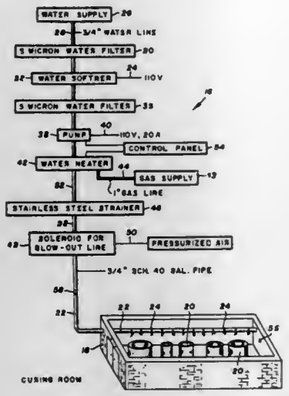
pump means for receiving water from a water source and discharging the water through an outlet under an elevated pressure;

nozzle means having an outlet in communication with the interior of the enclosure, the nozzle means receiving the pressurized water and producing a fine spray of water particles in the enclosure, the water pressure and nozzle means size being such that the spray is sufficiently fine to create a fine mist of water particles in the enclosure that surrounds the articles being cured;

piping means for conveying the pressurized water from the outlet of the pump means to the nozzle means;

heater means connected in the piping means between the pump means and nozzle means for heating the water while under pressure to a temperature above the atmospheric boiling point of the water, the temperature and pressure

being such that the water is maintained in its liquid state while it is maintained under the pressure; and



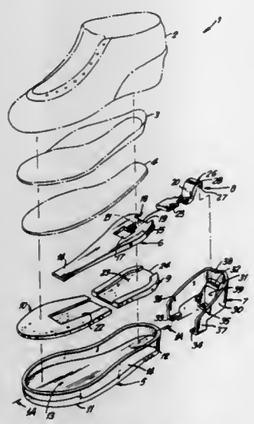
automatic control means responsive to the temperature in the enclosure for operating the heating means to the extent necessary to maintain a selected temperature range in the enclosure that is conducive to concrete curing.

5,187,883

INTERNAL FOOTWEAR CONSTRUCTION WITH A REPLACEABLE HEEL CUSHION ELEMENT

Richard Penney, 55 W. 16th St., New York, N.Y. 10011

Filed Aug. 10, 1990, Ser. No. 565,347
Int. Cl.[5] A43B *13/28*
U.S. Cl. 36—35 R **11 Claims**



1. An internal construction for use in footwear including an outer sole having a heel region and a forefoot region, comprising:

a platform for providing support to a user's foot and extending from said forefoot region into at least a portion of said heel region and above said outer sole, said platform being displaceable relative to said outer sole and having a platform attachment means;

a support frame extending about a substantial portion of said heel region and extending substantially perpendicular to said outer sole, said support frame further including a support frame attachment means provided to an upper portion of said support frame;

a substantially planar forefoot portion disposed over at least a portion of said forefoot region, and a resilient heel insert disposed beneath at least a portion of said platform and over at least a portion of said heel region, said platform being substantially planar and connected to said substantially planar forefoot portion;

at least one elastic element extending between said platform and said support frame above said heel region, said elastic element extending from said support frame at a point on said support frame which is at least equal to the height at which said elastic element extends from said platform, said elastic element having first and second end portions and extending between said platform and said support frame along a direction defined between said heel region and said forefoot region of said outer sole,

said platform attachment means including an aperture formed in said platform portion and said first end portion of said elastic element being releasably attached through said aperture, and said support frame attachment means having a cavity formed in said upper portion of said support frame and said second end portion of said elastic element being releasably attached to said cavity;

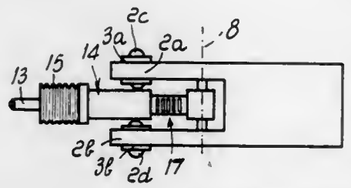
whereby said elastic element is permitted to undergo elongation in response to displacement of said platform toward said outer sole when force produced by the weight of said user's foot is applied against said platform.

5,187,884

CLOSURE LEVER DEVICE

Giorgio Baggio, San Martino Di Lupari, and Claudio Zorzi, Silea, both of Italy, assignors to Nordica S.p.A., Montebelluna, Italy

Filed Mar. 25, 1991, Ser. No. 673,930
Claims priority, application Italy, Apr. 5, 1990, 82547 A/90
Int. Cl.[5] A43B *11/00*; A43C *11/00*
U.S. Cl. 36—50 **12 Claims**



1. A closure lever device, particularly for ski boots, comprising:

a lever body having a pair of wings between which is defined a space;

means for pivotally connecting said pair of wings of said lever body to a boot;

a central body having an open end in which is provided a longitudinal threaded seat;

means for pivotally connecting said central body to said lever body, said central body being arranged at least partially in said space between said pair of wings of said lever body; and

a traction element having a threaded pawl end which is screwed within said longitudinal threaded seat of said central body;

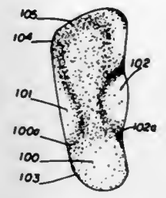
wherein the closure lever device further comprises a cover element which is slidingly connected to said central body and which covers said open end thereof, said cover element being freely pivotally connected to said traction element and moving translationally therewith when said traction element is rotated.

5,187,885

GOLF SHOE INSERT

John T. Murphy, 1979-H NW 4th Ave., Boca Raton, Fla. 33432

Filed Jul. 19, 1990, Ser. No. 555,938
Int. Cl.[5] A43B *5/00, 13/38*
U.S. Cl. 36—127 **1 Claim**



1. An integral insert (**100**) for a golf shoe having an outer edge (**100*a*, 200*a***) corresponding to the outside portion of the user's foot and an inner edge (**102*a*, 202*a***) corresponding to the inside portion of the user's foot comprising:

(a) a base member (**100, 200**) shaped to fit over the inner sole of the shoe and having a flat heel section, a middle section and a toe section;

(b) a first resilient raised portion (**101, 201**) tapering inwardly from the outer edge (**100*a*, 200*a***) of the insert and extending longitudinally from the inner end of the heel section, through the middle section, to the forward edge of the toe section, widening so as to cover the toe portions of the third, fourth, and fifth metatarsal joints; and

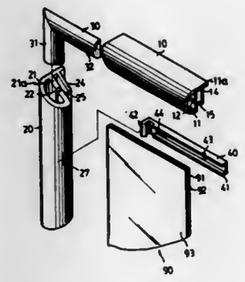
(c) a second resilient raised portion (**102, 202**) in the middle section of the base member, tapering inwardly from the inner edge (**102*a*, 202*a***) of the insert and extending longitudinally from the inner end of the heel section to the inner end of the toe section.

5,187,886

PICTURE FRAME

Chii-Chong Wu, No. 389, Sec. 3, Fuhsing Rd., and Der-Shing Wang, No. 14, Lane 349, Minchuean Rd., both of Taichung, Taiwan

Filed Sep. 9, 1991, Ser. No. 756,801
Int. Cl.[5] A47G *1/06*
U.S. Cl. 40—152.1 **4 Claims**



4. A picture frame comprising:

a pair of horizontal bars and a pair of vertical bars, each including a wall and two end portions, each end portion being cut with a 45-degree slope so that said end portions of said vertical bars and said horizontal bars abut each other to form four corner areas;

a space formed in each of said end portions of said vertical bars and said horizontal bars;

a rib longitudinally formed on each of said vertical bars and said horizontal bars and arranged such that a gap is formed between said rib and said wall for engagement with an object to be displayed, each of said ribs of said vertical bars including an orifice formed therein;

a coupler provided in each of said four corner areas, each of said couplers including two legs perpendicular to each other and formed integral with each other, said legs being received in said spaces of said vertical bars and said horizontal bars so as to couple said vertical bars and said horizontal bars together;

a strip including two ends each having a hook portion formed thereon, said hook portions of said strip being engaged in said orifices of said ribs of said vertical bars so as to couple said vertical bars together;

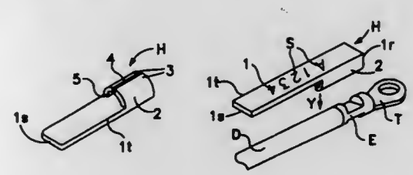
wherein said strip has a substantially C-shaped cross section and includes a pair of flanges formed thereon and arranged for pressing said object so that said object can be retained in place.

5,187,887

ELECTRIC WIRE IDENTIFYING TAB AND A BAND THEREOF

Katsuhisa Mori, Osaka; Keiji Sonoda, Nara; Hideo Miyata, Neyagawashi, and Yukinobu Okazaki, Daitoshi, all of Japan, assignors to Nichifu Terminal Manufacture Co., Ltd., Osaka, Japan

Filed Jan. 15, 1991, Ser. No. 641,134
Claims priority, application Japan, Jan. 30, 1990, 2-8285[U]; Jan. 30, 1990, 2-8286[U]; Feb. 2, 1990, 2-9903[U]; Feb. 7, 1990, 2-11200[U]; Mar. 1, 1990, 2-21040[U]; May 25, 1990, 2-54549[U]
Int. Cl.[5] G09F *3/00*
U.S. Cl. 40—316 **6 Claims**



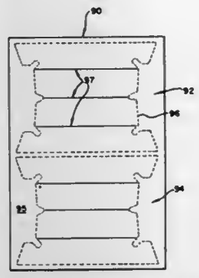
4. An electric wire-identifying tab comprising a flat main plate (**1**) made of flexible plastic and having a front surface, a back surface, a front end and an aft end, a pair of oppositely disposed expansible lugs (**2**) each having a cross-sectional inner surface having a shape of a partial arc, the lugs (**2**) protruding substantially parallel with each other from opposite sides of the back surface of the main plate, the lugs having first and second edges, respectively (**3, 3'**) disposed, substantially parallel with each other, whereby said first edges is (**3**) cut on an angle and positioned overlapping said second edge (**3'**), a constrictable clearance (**4**) formed between the first and second edges and a tapered expansible cutout region (**5**) formed at an aft end portion of the lugs (**2**) such that the tapered expansible cutout region (**5**) at the aft end portion extends from the back surface of the main plate (**1**) downwardly and forwardly toward the constrictable clearance (**4**) in a manner such that a distance between the first and second edges (**3, 3'**) of the lugs gradually decreases towards the front end portion of the first and second edges (**3, 3'**).

5,187,888

INDEX TABS FOR HANGING FILE FOLDERS HAVING PRESSURE SENSITIVE ADHESIVE AND LUGS FOR INSERTION IN FOLDER SLOTS

Karen M. O'Brien, Bellingham, and Lee A. Carlson, Southboro, both of Mass., assignors to Dennison Manufacturing Company, Pasadena, Calif.

Continuation of Ser. No. 317,255, Feb. 28, 1989, abandoned. This application Aug. 14, 1990, Ser. No. 566,848
Int. Cl.[5] B42F *21/00*
U.S. Cl. 40—359 8 Claims



1. An index tab stock, for supplying an index tab for labelling a hanging file folder having a series of spaced slots for holding in place an inserted tab projecting upwardly from the folder, said index tab stock comprising

a release sheet; and

at least one tab comprising a foldable sheet material in two portions separated by a fold line, each portion including a message section proximate the fold line, said message section's exposed face accepting directly imprinted indicia, and a base section including opposing lugs configured to engage slots of the hanging file folder; said tab being removably adhered to said release sheet by pressure sensitive adhesive;

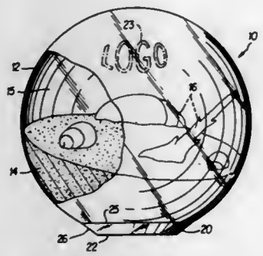
wherein in use said tab is removed from the release sheet; the tab is folded along said fold lines; said portions are adhered to each other with the opposing lugs aligned; and said lugs are inserted into two slots of said hanging file folder.

5,187,889

SCENIC DISPLAY ITEM

Louis J. Kraselsky, 4785 Velasquez, Pensacola, Fla. 32504, and Kathryn L. Massel, 34 Randall Ave., Stamford, Conn. 06903

Continuation of Ser. No. 463,342, Jan. 10, 1990, abandoned. This application Nov. 20, 1991, Ser. No. 794,699
Int. Cl.[5] G09F *19/00*
U.S. Cl. 40—407 9 Claims



1. A novelty item comprising:

a transparent container, said container having a substantially spherical shape that is truncated at one end to define a substantially circular opening;

flowable solid material loosely held in said container, said flowable solid material comprising a plurality of individual solid particles;

at least one sea shell loosely held in said container, wherein said flowable solid material and said at least one sea shell together create a decorative scene; and

a cap attached to said container such that said cap sealingly covers said opening, said cap having a substantially flat outer surface and a bevelled side surface that substantially continues the spherical contour of said container, said cap providing a stand for supporting said container;

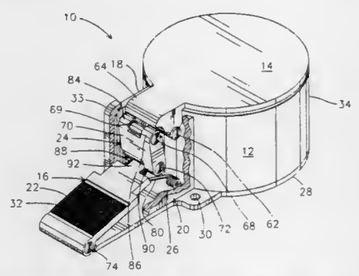
whereby movement of the container causes corresponding movement of said flowable solid material and said at least one sea shell such that the orientation of the material and the sea shell is changed, thereby producing a different decorative scene within the container.

5,187,890

DEVICE FOR APPLYING SCENT TO FISHING LURES

Clarence P. Johnston, P.O. Box 578, Pennington Gap, Va. 24277

Continuation-in-part of Ser. No. 524,722, May 17, 1990, Pat. No. 5,097,616. This application Jan. 13, 1992, Ser. No. 820,078
Int. Cl.[5] A01K *97/06*
U.S. Cl. 43—4 16 Claims



1. An apparatus for treating fishing components with a topical treating liquid without contact of a user's hands or clothing, said apparatus comprising:

a body member defining a cavity having a peripheral rim, said body member further having a base member and bracket members extending from an exterior surface of said body member;

a cover member for closing said cavity of said body member, said cover member having a lower surface for engaging said peripheral rim, said cover member having an extension for overlying said upper edge of said bracket members;

a resilient and absorbent pad means contained in said cavity for retaining said topical treating liquid;

a second resilient and absorbent pad means attached to said lower surface of said cover member for retaining said topical treating liquid, said second absorbent pad means substantially contacting said absorbent pad means within said cavity when said lower surface of said cover member is in contact with said peripheral rim whereby said absorbent pad means and said second absorbent pad means substantially enclose said fishing components when placed within said cavity;

first pivot means at a distal end of said cover extension journaled in said bracket members to provide a fixed pivot position for said cover member;

second pivot means at a distal end of a web member rigidly attached to said distal end of said cover extension;

a linkage arm having a first end and a second end, said first end pivotally connected to said second pivot means;

a foot pedal means having a first end and a second end, said first end pivotally connected to said second end of said linkage arm at a third pivot means and said second end pivotally connected with a distal end of said body base member at a fourth pivot means, whereby pressure applied to said foot pedal means causes axial movement of said linkage arm to cause pivoting of said distal end of said cover extension around said fixed pivot position thereby raising said cover member up to a position at least ninety degrees from a closed position; and

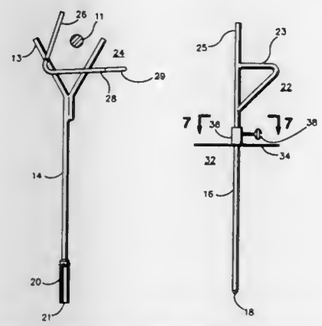
spring biasing means to close said cover member against said peripheral rim when pressure is removed from said foot pedal means.

5,187,891

STILL FISHING ROD STAND AND EASY RELEASE LATCH AND STOP PLATE

Joseph F. Stanishewski, R.D. #1, Box 303D, Millmont, Pa. 17845

Filed Dec. 9, 1991, Ser. No. 806,012
Int. Cl.[5] A01K *97/10*
U.S. Cl. 43—21.2 15 Claims



1. A fishing rod stand, comprising in combination:

a shaped member comprised of two arms intersecting at an apex;

upper rod section, one end of which is attached to said shaped member at the apex thereof;

coupling sleeve attached to the other end portion of said upper rod section, said coupling sleeve having a rod receiving opening therein;

a lower rod section having a point on one end thereof, the other end portion of said lower rod section positioned within said rod receiving opening;

a foot bar member, attached to said lower rod section and extending outwardly therefrom;

a latch member pivotally connected to said shaped member;

a cross bar member, pivotally attached to one of said arms and extending to the other of said arms;

a descending member attached to said cross bar member having a shaped end section thereon adapted to clamp upon said upper rod section.

5,187,892

FISHING ROD HOLDER AND STAND

Manuel Gutierrez, 1273 Meadow Sweet Rd., Golden, Colo. 80401

Continuation-in-part of Ser. No. 649,677, Feb. 1, 1991, Pat. No. 5,088,224. This application Jan. 17, 1992, Ser. No. 822,634
Int. Cl.[5] A01K *97/10*; A45F *3/44*
U.S. Cl. 43—21.2 5 Claims

1. A vertically adjustable stand for supporting a fishing rod holder, wherein said stand comprises:

(a) an elongated strip member having upper and lower ends; wherein said upper end includes a ledge member and said lower end includes a lip member which is perpendicular to the longitudinal axis of said strip member; wherein said lip member includes openings therethrough; wherein said strip member has a non-circular cross-section;

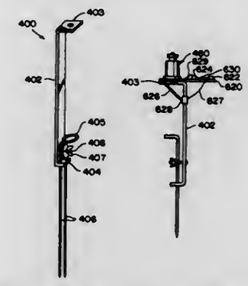
(b) two elongated leg members carried by said strip member and slidably received in said openings in said lip member; wherein said leg members are parallel to said strip member;

(c) attachment means for securing said leg members to said strip member; wherein said attachment means comprises a bolt carried by said strip member for engaging said leg members;

(d) a step member secured to said leg members and extending outwardly from said leg members.

4. A vertically adjustable stand for supporting a load, wherein said stand comprises:

(a) an elongated body member having upper and lower ends; wherein said upper end includes a ledge member;



(b) at least one elongated leg member carried by said body member;

(c) attachment means for securing said leg member to said body member;

(d) an alarm system comprising:

(i) an electrically insulating plate member secured to said body member;

(ii) battery means carried by said plate member;

(iii) alarm means carried by said plate member;

(iv) contact means carried by said body member;

(v) a contact arm carried by said plate member and extending in close proximity to said contact means;

wherein said battery means, alarm means, contact means and contact arm are connected in series in a manner such that when said contact arm makes electrical contact with said contact means said alarm means is activated to provide a signal.

5,187,893

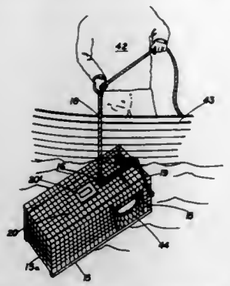
WIRE MESH LOBSTER TRAP LAUNCH STEADYING DEVICE

Richard S. Knight, P.O. Box 944, Ogunquit, Me. 03907

Filed Feb. 7, 1991, Ser. No. 652,138
Int. Cl.[5] A01K *69/00*
U.S. Cl. 43—100 10 Claims

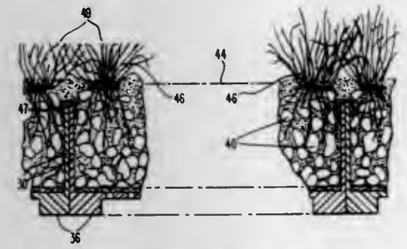
1. In combination, a metal wire mesh lobster trap having a mesh top, bottom and end portions and a warp rope means attached to one of the end portions by which the trap is launched into the sea and pulled therefrom, and a snap-clip device secured to the top portion intermediate its length and adapted to releasable retain the warp rope in central location

removed from its connection with the end portion and to steady the trap in a upright position while being launched from



a boat to the sea bottom and to ensure its landing with its bottom resting thereon.

5,187,894
TURFING SYSTEMS FOR STADIA
Thomas L. Ripley, Sr., Chalfont, Pa., and Henry Indyk, Somerset, N.J., assignors to The Greenway Services, Inc., Horsham, Pa.
Filed Oct. 9, 1990, Ser. No. 594,355
Int. Cl.[5] A01G *9/02*
U.S. Cl. 47—86 **5 Claims**



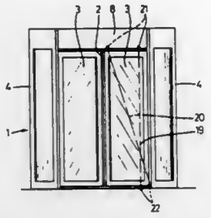
1. A transportable, natural turf activity surface comprising a plurality of transportable turf units comprising a growing pan having walls and being adapted for containing plant growing medium together with growing, substantially entire, turf plants;

said turf units having fastening means for removably attaching said plurality together;

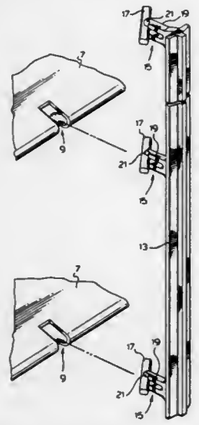
the turf plants being maintained at a level above the level of the walls of the turf units to provide a substantially flat, substantially continuous turf surface.

5,187,895
REVOLVING DOOR, PARTICULARLY FOR THE PROTECTION OF THE ACCESS TO A ROOM
Jacob R. A. Huber, Edam, Netherlands, assignor to Boon Edam B.V., Edam, Netherlands
Filed Dec. 19, 1991, Ser. No. 810,657
Claims priority, application Netherlands, Dec. 21, 1990, 9002849
Int. Cl.[5] E05D *15/02*
U.S. Cl. 49—42 **1 Claim**

1. Revolving door, particularly for the protection of the access to a room, comprising a rotating shaft, a number of door wings spaced around it and mounted thereto, a pair of opposite panels bordering the door wings and defining a partly closed zone with a first and a second opening, a drive motor for the shaft and a control unit for the drive motor, which revolving door is provided with a detection means for detecting a person authorized or unauthorized to access the room, and a first sensor for detecting an unauthorized person entering the zone through the first or the second opening respectively, the control unit turning off the drive motor in response to the first sensor, wherein a second sensor is adapted to detect the presence of an unauthorized person outside said zone in or close to the first or second opening respectively, the control unit turning off the drive motor in response to said second sensor, and said second sensor being in operation only if one of the door wings is present in an area of the first or the second opening respectively, which area, seen in the direction of rotation of the door wings, precedes a panel and has along the path of the door wings a length of arc of at most 80 cm, preferably 40 cm.

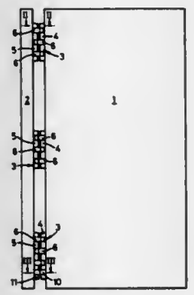


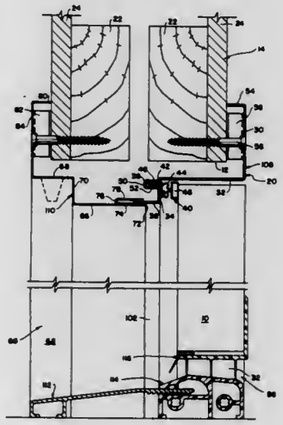
5,187,896
PIVOT ROD CONNECTOR FOR MOVEABLE SHUTTERS
Alan Ross, Ontario, Canada, assignor to Dominion Plastics Inc., Woodbridge, Canada
Filed Mar. 30, 1992, Ser. No. 859,652
Int. Cl.[5] E05F *17/00*
U.S. Cl. 49—74 L **4 Claims**



1. A louvre assembly comprising a louvre having a louvre recess and a louvre control bar with a connector attached to said louvre at said recess, said connector comprising first and second connector portions with said first connector portion being secured to said second connector portion and said second connector portion secured to said control bar, said connector portions normally assuming a connection position in which said first and second connector portions are out of alignment relative to one antoher to the extent that said second connector is not fittable into said louvre, said first connector being bendable to a louvre insertion position in which said first and second connector portions are at least generally in alignment with respect to one another and in which said first connector portion is fitted into said louvre while remaining secured to said second connector portion, said first connector being biased to return to said connecting position after fitting and trapping said second connector portion in said louvre recess thereby connecting said control bar to said louvre.

5,187,897
SWING DOORS
Robert A. M. Maidment, Haverhill, United Kingdom, assignor to Courier Products Limited, United Kingdom
Filed Mar. 9, 1992, Ser. No. 848,385
Claims priority, application United Kingdom, Mar. 14, 1991, 9105445
Int. Cl.[5] E05D *7/06*; E05F *1/14*
U.S. Cl. 49—236 **9 Claims**





1. A door and door frame construction in which the door is hinged to the frame by one or more hinged structures, each hinged structure comprising a convex-surfaced support associated with the door and a convex-surfaced support associated with the door frame, at least two resilient strip-like S-shaped hinge members passing partially round each support and together with the other member forming a letter x or FIG. 8 configuration as seen in a direction along the supports, respective means being provided fastening together the ends of the members alongside each support so that the members are tensioned round the supports, wherein towards the lower end of the construction each support is provided with a surface raised from the general surface of the support and in contact with the raised surface on the other support.

5,187,898
ADJUSTABLE DOOR FRAME
H. Smith McKann, Fredericksburg, Va., assignor to General Products Company, Inc., Fredericksburg, Va.
Filed Mar. 27, 1992, Ser. No. 858,515
Int. Cl.[5] E06B *1/04*
U.S. Cl. 49—505 **20 Claims**

1. An adjustable door frame, comprising: a first member unitarily formed of sheet metal, said first member including

a first flange section for overlying a wall surface adjacent a doorway opening in a wall,

a first inside section extending substantially perpendicularly from said first flange section for extending into the doorway opening,

a first door abutment section extending substantially perpendicularly from said first inside section at an end thereof remote from said first flange section in a direction parallel to and opposite to said first flange section, and

a tongue section extending substantially perpendicularly from said first abutment section at an end thereof remote from said first inside section in a direction parallel to and opposite to said first inside section; and

a second member unitarily formed of sheet metal, said second member including

a second flange section for overlying a wall surface adjacent an opposite side of the doorway opening in the wall,

a second inside section extending substantially perpendicularly form said second flange section for extending into the doorway opening toward and adjacent to said first inside section, and

a folded back section extending from said second inside section at an end thereof remote from said second flange section and defining a slot receiving and frictionally engaging said tongue section;

whereby engagement of said tongue section in said slot provides an adjustable connection of said first and second members to compensate for varying wall thickness.

5,187,899
HIGH FREQUENCY VIBRATIONAL POLISHING
Lawrence J. Rhoades, Pittsburgh, Pa., assignor to Extrude Hone Corporation, Irwin, Pa.
Continuation-in-part of Ser. No. 305,768, Feb. 3, 1989, abandoned, which is a continuation-in-part of Ser. No. 166,502, Mar. 10, 1988, abandoned, which is a continuation of Ser. No. 928,355, Nov. 10, 1986, abandoned. This application Dec. 21, 1989, Ser. No. 454,290
Int. Cl.[5] B24B *1/04*
U.S. Cl. 51—59 SS **19 Claims**

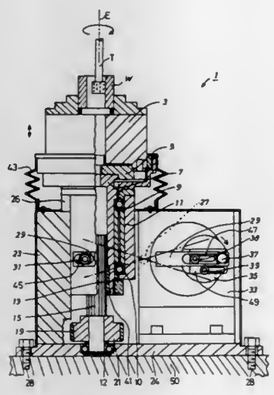
1. The method of working a workpiece surface having a configuration preformed therein to remove a very thin and uniform layer of material from the workpiece surface without adversely effecting the configuration detail and resolution, the steps comprising:

A. forming a blank tool from a material that is more ultrasonically abradable than the workpiece;

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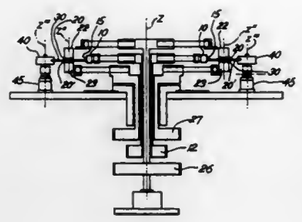
B. mounting said tool in a vibratable relationship to said workpiece;
C. applying a liquid abrasive slurry between said tool and said workpiece;
D. causing a relative vibratory motion between said tool and said workpiece at a frequency and amplitude sufficient to abrade and shape said tool into relative mating conformity with said configuration on the surface of said workpiece;
E. continuing said vibratory motion as will continue to abrade said tool as said tool continues to reform and maintain said relative conformity with the surface configuration of said workpiece while at the same time imparting a relatively minor working action on the surface of said workpiece; and
F. stopping said vibratory motion when the surface of the workpiece has been abraded to the degree desired.

5,187,900
AUXILIARY DEVICE FOR A MACHINE TOOL
Yuji Miwa, Chita, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Sep. 26, 1991, Ser. No. 765,816
Claims priority, application Japan, Nov. 26, 1990, 2-321833
Int. Cl.[5] B24B *5/06, 47/10*
U.S. Cl. 51—95 WH **8 Claims**



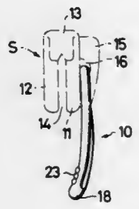
1. An auxiliary device for a machine tool, comprising:
a machining table;
holding means for holding a workpiece;
a hollow main shaft connected to said holding means;
a rotary shaft partially enclosed by said hollow main shaft;
first support means mounted to said machining table for reciprocally supporting said hollow main shaft in an axial direction thereof;
first drive means for reciprocating said main shaft in an axial direction thereof;
second support means for rotatably supporting said hollow main shaft;
second drive means for rotating said rotary shaft; and
connecting means for transferring rotation from said rotary shaft to said hollow main shaft.

5,187,901
CIRCUMFERENTIAL PATTERN FINISHING MACHINE
Chris E. Karlsrud, Chandler, Ariz., assignor to Speedfam Corporation, Des Plaines, Ill.
Filed Feb. 2, 1990, Ser. No. 473,894
Int. Cl.[5] B24B *5/02*
U.S. Cl. 51—132 **12 Claims**



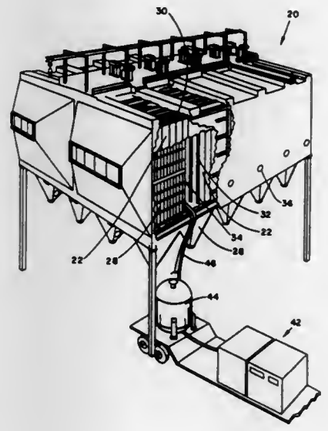
1. A machine for grinding and polishing a plurality of disc-shaped work pieces having a frame work, a polishing assembly, the polishing assembly including an annular lower platen perpendicularly connected to a first spindle, an annular upper platen perpendicularly connected to a second spindle, a center driving ring having an outer edge perpendicularly connected to a third spindle, a plurality of roller stanchions, a stationary guide roller and a clamping guide roller perpendicularly attached to each of the plurality of roller stanchions to define a plurality of stationary guide rollers and a plurality of clamping guide rollers, the center driving ring, a stationary guide roller, and a clamping guiding roller frictionally contacting a disc-shaped work piece between the upper and lower annual platens, at least one motor able to rotate the first, second, and third spindles, the first, second, and third spindles rotating about the same axis.

5,187,902
CLEANING CARTRIDGE FOR COMPUTER AND VIDEO GAMES
Louis J. Bakanowsky, III, Fitchburg, Mass., assignor to Curtis Manufacturing Company, Inc., Jaffrey, N.H.
The portion of the term of this patent subsequent to Sept. 8, 2008, has been disclaimed.
Continuation-in-part of Ser. No. 721,163, Jun. 26, 1991, Pat. No. 5,144,775. This application Jun. 18, 1992, Ser. No. 900,417
Int. Cl.[5] B24B *29/06*
U.S. Cl. 51—205 R **10 Claims**



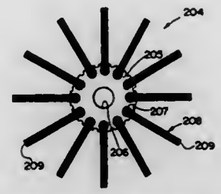
1. A cleaning cartridge device for cleaning electrical contacts within a computer video game receptacle, which device comprises:
a) a cartridge composed of one or more sections, said cartridge having an elongated opening on a first side for mounting within the computer video game receptacle adjacent to the electrical contacts therein;
b) means to secure releasably the cartridge together;
c) a removable planar board means, a portion of which is positioned within the cartridge, said planar board means capable of being slidably moved therein between a cleaning and non-cleaning position;
d) means to provide for the slidable movement of the planar board means between a cleaning and non-cleaning position which comprises generally spaced apart, parallel, raised ridges on the planar board means and adjacent vertical slides on an inside surface of the cartridge;
e) a cleaning surface at one end and a handle means at the other end of the planar board means, said handle means projecting rearward of said cartridge through an elongated slot on a second side of said cartridge opposite said first side; and
f) stop means in the cartridge and on the planar board means to prevent the movement of the planar board means past the cleaning and non-cleaning positions, whereby the electrical contacts are cleaned by the movement of the cleaning surface when the planar board means is moved between the cleaning and non-cleaning positions.

5,187,903
METHOD FOR REMOVING ACCUMULATED ASH FROM PRECIPITATORS
William D. Holm, Houston, Tex., assignor to Aliwaste, Inc., Tex.
Filed Apr. 2, 1992, Ser. No. 862,079
Int. Cl.[5] B24C *1/00*
U.S. Cl. 51—320 **11 Claims**



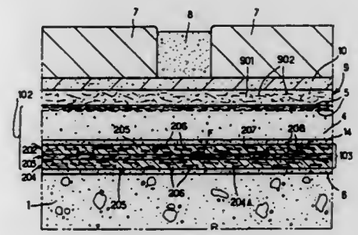
9. A method of removing accumulated ash from a precipitator, which comprises
the step of blasting the precipitator with air entrained with a particulate comprising a sintered iron ore.

5,187,904
ABRASIVE FINISHING ELEMENTS, TOOLS MADE FROM SUCH ELEMENTS, AND METHODS OF MAKING SUCH TOOLS
James B. Tyler, Westlake; Alfred F. Schelder, Orange, and R. Brown Warner, Westlake, all of Ohio, assignors to Jason, Inc., Cleveland, Ohio
Division of Ser. No. 471,385, Jan. 29, 1990, Pat. No. 5,155,945. This application Jan. 22, 1992, Ser. No. 824,156
Int. Cl.[5] B24D *9/00*
U.S. Cl. 51—330 **12 Claims**



1. An abrasive tool comprising an axially rotatable arbor, an abrasive containing non-elastomeric synthetic plastic strip secured to one end of said arbor and extending symmetrically transversely of said arbor, said strip containing abrasive material embedded therein homogeneously throughout, said strip being provided with scoring extending transversely of said rotatable arbor, and extending to the transverse edges of said strip.

5,187,905
COMPLEX SOUND-INSULATING MATERIAL AND FLOORING
Jean-Jacques Pourtau, and Thierry E. Pourtau, both of Croissy sur Seine, France, assignors to Tomecanic, Aubergenville, France
Filed Mar. 29, 1991, Ser. No. 677,138
Claims priority, application France, Apr. 2, 1990, 0 04199
Int. Cl.[5] E04B *1/82*
U.S. Cl. 52—144 **47 Claims**



1. Complex sound-insulating material comprising a first lower sub-assembly, at least one layer of a bituminous product, and a second upper layer which covers said first lower sub-assembly, wherein said first lower sub-assembly comprises a first upper layer, a first intermediate layer and a first lower layer and
a) each of the first upper and first lower layers of the first lower sub-assembly are made of oxidized bitumen reinforced with first fibers and has a surface mass of between 500 and 1000 g/m^2;
b) the first intermediate layer of the first lower sub-assembly is made of an inorganic binding agent, such as bitumen,

and by second fibers which are embedded in said binding agent and are in a non-woven form;

c) the second upper layer is made of an elastic foam, and the layer of bituminous product adheres the first lower sub-assembly to the second upper layer.

5,187,906

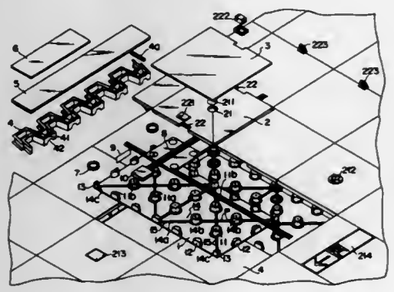
Patent Not Issued For This Number

5,187,907

INTERIOR PANEL UNIT FOR PERMITTING ARRANGEMENT OF CABLES AND DEVICES ON ROOM FLOOR

Fumio Takeda, Tokyo; Yoshio Kojima, Yokohama; Tsuneo Kaneko, Narashino; Yutaka Ishibashi, Tokyo; Naoto Sasaki, Yokohama, and Isako Tsushima, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 429,552, Oct. 31, 1989, Pat. No. 5,090,169.
This application Oct. 11, 1991, Ser. No. 775,031
Claims priority, application Japan, Oct. 31, 1988, 63-142055[U]; Oct. 31, 1988, 63-275609; Oct. 31, 1988, 63-275610; Oct. 31, 1988, 63-275614; Oct. 31, 1988, 63-275617; Oct. 31, 1988, 63-275618; Oct. 31, 1988, 63-275619; Oct. 31, 1988, 63-275620
Int. Cl.[5] E04B *5/48*
U.S. Cl. 52—221 **1 Claim**



1. An interior panel unit for permitting an arrangement of cables and devices on a room floor, comprising:

floor base member installed on a foundation floor surface defining a space of a room floor;

a floor panel member brought into contact with and supported by an upper surface of each of said floor base member to form a surface of the room floor and to cooperate with said floor base member so as to define an internal space for receiving the cables and the devices;

a plurality of strip-like boarder fundamental members having a wave-like shape in a widthwise direction of a boarder area and arranged in the boarder area defined by the edge of said floor base member and a side wall portion of the room which continues from an edge of the room floor; and

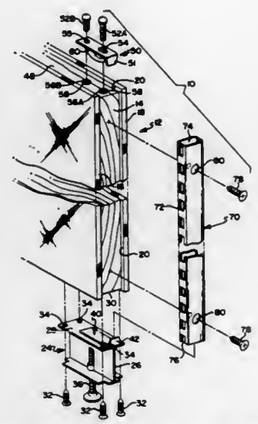
a boarder floor panel member supported by said plurality of boarder fundamental members to constitute the same plane as that of an upper surface of said floor panel member in the boarder area.

5,187,908

MODULAR WALL PANEL INTERCONNECTION APPARATUS AND METHOD

Charles I. Losensky, Grand Rapids, Mich., assignor to La-Z-Boy Chair Company, Monroe, Mich.

Filed Oct. 22, 1990, Ser. No. 602,424
Int. Cl.[5] E04B *1/38*
U.S. Cl. 52—239 **31 Claims**



1. A modular divider system for subdividing an interior space into work areas having a desired spacial pattern comprising:

a plurality of wall panels;

a plurality of mounting frames having a lower open end and an upper open end, each of said mounting frames having first and second opposing sides and front and rear faces therebetween, each of said front and rear faces having support means for supporting at least one accessory component therefrom; and

panel interconnection means for interconnecting any two of said plurality of wall panels in side-by-side relation such that one of said plurality of mounting frames is disposed between said two wall panels, said first and second opposing sides of said one mounting frame disposed between complimentary vertical sides of said two wall panels for exposing said support means, said panel interconnection means including locator means associated with a lower portion of each of said complimentary vertical sides of said two wall panels for locating said lower open end of said mounting frame relative thereto, and bracket means associated with an upper portion of each of said complimentary vertical sides of said wall panels for capturing said upper end of said mounting frame thereby interlocking said two wall panels, said bracket means having biasing means for normally biasing said bracket means to a first position away from said wall panels and fastener means for urging and retaining said bracket means in a second position adjacent said wall panels for capturing sand securing said upper open end of said mounting frame to said wall panels.

5,187,909

GLASS BLOCK WINDOW SYSTEM

Ronald H. Olson, Park Ridge, Ill., assignor to Glashaus Incorporated, Arlington Heights, Ill.

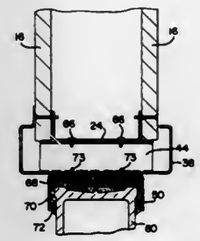
Filed Sep. 3, 1991, Ser. No. 753,725
Int. Cl.[5] E06B *1/04;* **E04B** *2/58*
U.S. Cl. 52—308 **12 Claims**

1. A glass block window system for installation in a gypsum board wall, said window system comprising:

a wall opening defined by a window frame comprising a sill stud, a header stud and first and second jamb studs;

a hollow metal frame defining a window opening, said frame including frame members comprising a sill member, a header member, and first and second jamb members joining said sill member and said header member;

means for securing said hollow metal frame to said window frame, wherein said means for securing said hollow metal frame to said window frame comprises a plurality of generally z-shaped anchors;



a metal channel comprising a sill channel, a header channel and first and second jamb channels, said sill channel, header channel and first and second jamb channels secured to respective ones of said sill member, first and second jamb members and header member; and

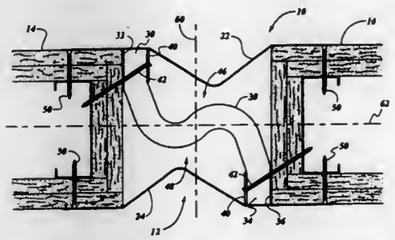
a plurality of contiguous glass blocks forming a window unit, said window unit having a peripheral window surface secured within said metal channel.

5,187,910

FIRE BARRIER SYSTEM

John D. Nicholas, Lawrenceville, and Randy L. Hensley, Duluth, both of Ga., assignors to MM Systems Corporation, Tucker, Ga.

Filed Oct. 2, 1989, Ser. No. 415,644
Int. Cl.[5] E04B *1/94*
U.S. Cl. 52—317 **8 Claims**



1. A fire barrier for preventing a fire from spreading through a dynamic joint of a building, said joint being defined by adjacent walls capable of relative movement such that said joint is capable of opening and closing, and said joint being elongated in a direction of elongation, said fire barrier comprising:

a single thermally insulating blanket having mutually opposing first and second sides, said blanket spanning said joint and being anchored to each of said adjacent walls;

a first cover disposed on the first side of said blanket and having a portion spaced apart therefrom, said first cover spanning said joint and being anchored to each of said adjacent walls; and

a second cover disposed on the second side of said blanket and having a portion spaced apart therefrom, said second cover spanning said joint and being anchored to each of said adjacent walls;

said fire barrier being symmetrical in both pairs of opposing quadrants defined by a first axis parallel to and midway between said adjacent walls and transverse to said direction of elongation and a second axis transverse to said first axis and to said direction of elongation, and

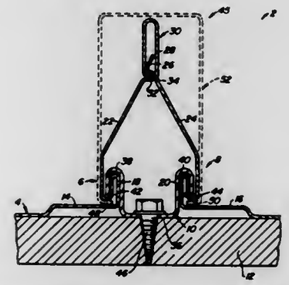
said insulating blanket and said first and second covers being flexible to accommodate movement of said dynamic joint, said first barrier remaining symmetrical in said both pairs of opposing quadrants as said joint opens and closes.

5,187,911

STANDING SEAM ROOFING/CLADDING SYSTEM

Donald P. Cotter, Livermore Falls, Me., assignor to Cotterco, Inc., Livermore Falls, Me.

Filed Apr. 12, 1991, Ser. No. 685,258
Int. Cl.[5] E04D *1/34, 1/36*
U.S. Cl. 52—469 **1 Claim**



1. A standing seam roofing/cladding system for mounting to a support structure comprising:

a plurality of elongate pans having first and second lateral edges;

a channel bracket, securable to the structure, including a base and first and second U-shaped arms defining first and second cavities opening towards the support structure;

the first and second lateral edges including first and second hems extending away from the support structure and first and second legs extending from the first and second hems away from the support structure at first and second positions respectively, the first and second hems being captured within the first and second cavities;

the first and second legs including first and second upper portions configured to engage one another to create a mechanically interlocked standing seam; and

a batten cap including sides with lower ends and opposed lips at the lower ends sized and positioned to engage beneath the first and second positions to cover the standing seam.

5,187,912

PARTITION FRAME ELEMENTS

Jen S. Hsueh, No. 2-1, Lane 59, Ming Shiang Street, Chung-Ho, Taipei, Taiwan

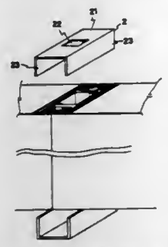
Filed Nov. 4, 1991, Ser. No. 787,393
Claims priority, application China, Dec. 10, 1990, 90224774.3
Int. Cl.[5] E04B *1/38*
U.S. Cl. 52—584 **4 Claims**

1. A pair of partition frame elements, each of which comprises:

a base member (1) made of an elongated shape through the process of extrusion and having a first elongated flat base wall (11), two first vertical side walls (12) upstanding from said base wall at two opposite sides, a rib (13) spaced from said base wall and transversely connected between said two vertical side walls, said rib, said first base wall and said two first vertical side walls defining therebetween a gap, a tenon (15) longitudinally connected to said rib and

parallel to said two vertical side walls, and two spaced projecting strips (16) longitudinally disposed on said rib between said tenon and one vertical side wall, said two spaced projecting strips defining therebetween an elongated groove (17) in longitudinal direction,

cover elements each comprising two second vertical side walls (23) projecting from a second elongated flat base



member at two opposite sides, said second base member of said cover elements having an opening thereon; and

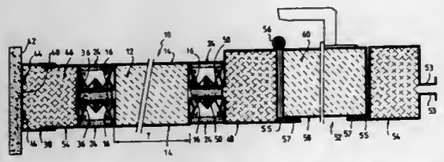
wherein the frame elements of said pair are assembled together, with the tenon of either base member being inserted into the groove on the other base member, and being secured in place by two said cover elements at two opposite ends.

5,187,913

INSULATING AND FIRE-RETARDANT PARTITIONING PANEL

Jean-Claude Leveau, 6, impasse Calmette, 78350 Jouy en Josas, France

Filed Dec. 12, 1990, Ser. No. 626,214
Claims priority, application France, Dec. 13, 1989, 89 16487
Int. Cl.[5] E04B *2/32*; E04C *2/34*
U.S. Cl. 52—584 **4 Claims**



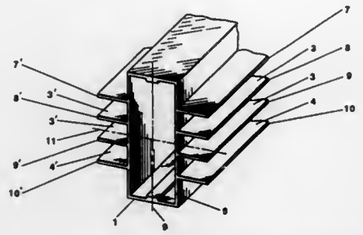
1. An insulating, fire-retardant partitioning panel including a core of cellular glass between two facings to form a composite sandwich-type structure with edges, characterized in that the cellular glass core is joined to the two facings by an adhesive, each of the facings being a half-shell of sheet metal including a planar rectangular sheet with four sides having borders folded over the edges of the panel, two respective folded-over borders of the two half-shells, located on the same edge of the panel, comprising means or assembling the panel to an adjacent panel, each of the folded-over borders including a first part perpendicular to the sheet of the corresponding half-shell, folded over onto the corresponding panel edge and having a width less than one-half the thickness of the core, a second part folded perpendicular to the first part, and a third part folded perpendicular to the second part, the two folded-over borders located on the same edge of the panel being arranged to cooperate with the two similar folded-over borders of an adjacent panel, two clip sections of U-shaped cross section including a central section parallel to the plane of the adjacent panels and two flanges that press against the two first parts of cooperating folded-over borders of adjacent panels, and a spring pressing said flanges against the corresponding first parts.

5,187,914

CURVED TUBULAR PROFILE

Henri G. Leurent, Tourcoing, France, assignor to Brelan S.A., Luxembourg

Continuation of Ser. No. 312,858, Feb. 17, 1989, Pat. No. 5,024,040. This application Mar. 8, 1991, Ser. No. 666,589
Claims priority, application France, Feb. 18, 1988, 88 01913
The portion of the term of this patent subsequent to Jun. 18, 2008, has been disclaimed.
Int. Cl.[5] E04B *1/32*
U.S. Cl. 52—738 **6 Claims**



1. An extruded metal profile for forming arches used in covering structures, comprising:

a curvilinearly extending tubular central bearing body having opposed sides and having, in a transverse cross sectional view, a vertical axis of symmetry, said curvilinearly extending body being obtained by bending a tubular extrusion; and

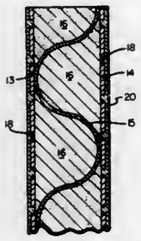
a plurality of fins arranged one above the other and together defining at least three grooves on each side of said body for receiving flexible sheets, said fins extending from each of said opposed sides of said body and, being perpendicular to said vertical axis, wherein each of said fins extends from the body to an end and exhibits, in a transverse cross sectional view, a straight top edge extending from the body to the end and a straight bottom edge extending from the body to the end, said top and bottom edges each extending perpendicular to the vertical axis and wherein said profile comprises a single piece.

5,187,915

MOISTURE-IMPERVIOUS PANEL CAPABLE OF DELAYED, RAPID HYDRATION

William Alexander, 242 Terrance, Naperville, Ill. 60540

Division of Ser. No. 481,442, Feb. 14, 1990, abandoned. This application May 29, 1991, Ser. No. 706,655
The portion of the term of this patent subsequent to Jan. 19, 2010, has been disclaimed.
Int. Cl.[5] E02D *3/14*
U.S. Cl. 52—742 **9 Claims**



1. A method of preventing water from contacting a structure comprising installing a multilayer article of manufacture against said structure;

said multilayer article including first and second sheet material layers having a layer of water-swellable clay therebetween, such that said first sheet material layer is disposed against the structure and the second sheet material layer faces outwardly from said structure, said second sheet material layer being water-penetrable and including a coating layer of material covering essentially the entire exterior surface of the second sheet material layer removable by water contact; and thereafter

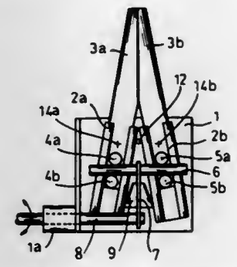
disposing an overlayer of material against said coating layer of said article during installation to sandwich the multilayer article between said structure and the overlayer of material, such that water and the overlayer of material, such that water penetrating said overlayer of material will remove the penetrating said overlayer of material will remove the coating layer to thereafter permit water to penetrate the second sheet material layer and contact the water-swellable clay causing the clay to hydrate and prevent substantial water contact with the structure.

5,187,916

GRIPPER FOR PLASTIC FILM AUTOMATIC MACHINE

Franca Errani, and Marino Missirini, both of Bologna, Italy, assignors to Derifan S.p.A., Montecorvino Pugliano, Italy

Filed Jun. 7, 1991, Ser. No. 714,149
Claims priority, application Italy, Jun. 8, 1990, 4842/90[U]
Int. Cl.[5] B65B *41/04*
U.S. Cl. 53—389.2 **5 Claims**



1. A gripper for an automatic plastic film wrapping machine, said machine comprising:

a support;

a horizontal shaft mounted on said support and oscillating about the longitudinal shaft axis;

a support rod spaced radially from and rotatably fixed with said shaft to vertically move as result of said shaft oscillation, said rod having a rod axis extending parallel to said shaft axis;

a pair of spaced apart guide plates mounted swingably about respective parallel oscillatory axes extending horizontally perpendicular to said shaft axis on said support and formed with respective tops and bottoms;

a pair of gripping jaws mounted slidably on said guides and formed with respective upper and lower ends, said upper ends projecting over tops of said guides and gripping a film therebetween in a gripping position of the jaws and releasing the film in an open position of said jaws and said lower ends slidably engaging said rod so that said gripper jaws vertically move with said rod; and

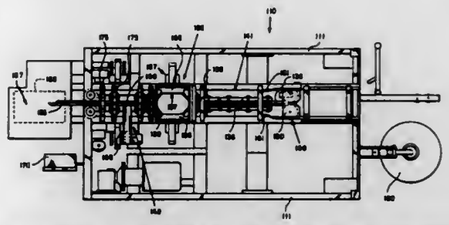
an upwardly narrowing wedge fixed rotationally with said shaft to swing along an arcuate path and engageable between said guide plates to converge said tops in a position thereof corresponding to said gripping position of the jaws, said plates being parallel to one another in another position thereof corresponding to said open position of said jaws upon removal of said wedge from between the guide plates along said path.

5,187,917

AUTOMATIC PACKAGING APPARATUS AND METHOD AND FLEXIBLE POUCH THEREFOR

Laurie G. Mykleby, Palos Park, Ill., assignor to CVP Systems, Inc., Downers Grove, Ill.

Continuation-in-part of Ser. No. 605,038, Oct. 29, 1990, abandoned. This application Sep. 18, 1991, Ser. No. 762,330
Int. Cl.[5] B65B *31/06*
U.S. Cl. 53—434 **16 Claims**



16. A method for automatically packaging goods comprising the steps of:

(a) automatically feeding a continuous sheet forming a plurality of flexible pouches between two driven transfer belts, with each said flexible pouch having an open end at an upper portion of said flexible pouch;

(b) separating two adjacent overlap portions at said open end of each said flexible pouch at a loading station;

(c) inserting a load into each said pouch at said loading station;

(d) positioning an elongated snorkel having a flattened cross section between said transfer belts and said adjacent overlap portions and injecting a first fluid into each said pouch, at a fluid transfer station positioned downline form said loading station;

(e) temporarily sealing said open end of each said flexible pouch by forcing together said transfer belts as each said flexible pouch is conveyed from said fluid transfer station to a sealing station which is positioned downline, with respect to a direction of travel of said continuous sheet, from said fluid transfer station;

(f) forming a permanent gas-tight seal with respect to each said flexible pouch at said sealing station;

(g) controlling said feeding of said continuous sheet so that a top edge of said flexible pouches is precisely positioned above and fixed with respect to said transfer belts as said continuous sheet is transferred from said loading station to said sealing station; and

(h) continuously forcing together said transfer belt across said fluid transfer station and said sealing station and thereby compressing opposing webs of each said flexible pouch together and maintaining a temporary gas-tight seal until each said flexible pouch is conveyed from said fluid transfer station to said sealing station and is sealed with said permanent gas-tight seal at said sealing station.

5,187,918

SLIDE MOUNTER WITH BRIDGING FILM ADVANCE

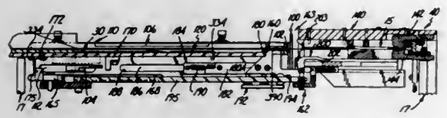
Wilbur Gerrans, Marysville, Wash., assignor to Pakon, Inc., Minnetonka, Minn.

Filed Jan. 15, 1992, Ser. No. 822,188
Int. Cl.[5] B65B *5/04, 63/00, 61/06*
U.S. Cl. 53—435 **17 Claims**

1. A slide mounter apparatus for preparing photographic slides containing individual film transparencies of a photographic film web, the apparatus being of a type having a knife assembly including upper and lower knife blades which operate between an opened receiving position and a closed cutting position for severing individual film transparencies from the film web, in which the film web is longitudinally supported along a film plane aligned with the knife assembly and longitu-

dinally advanced across a support gap defined at the upper and lower knife blades to align a trailing edge of a leading film transparency with the upper and lower knife blades of the knife assembly so that the leading film transparency can be severed from the film web by the knife assembly, an improvement comprising:

a shuttle bridging mechanism for longitudinally supporting the film web in the film plane, the shuttle bridging mechanism operably supported relative to a frame to longitudinally move between a retracted position, out of alignment with the knife blades, and an advanced position extending across the support gap of the knife blades to support the film thereacross;



means for longitudinally moving the shuttle bridging mechanism toward the knife assembly from the retracted position to the advanced position when the upper and lower blades are separated in opened receiving position;

means for longitudinally advancing the film web toward the knife assembly to align the trailing edge of the leading film transparency with the upper and lower knife blades; and

means for longitudinally moving the shuttle bridging mechanism away from the knife assembly from the advanced position to the retracted position, when the trailing edge of the leading film transparency is aligned with the upper and lower knife blades, to permit operation of the knife assembly in the closed cutting position.

5,187,919

PROCESS FOR FILLING CONTAINERS WITH PRODUCTS IN A PREDETERMINED DISTRIBUTION

Agustin D. Guardiola, Badalona, Spain, assignor to Talleres Daumar S.A., Badalona, Spain

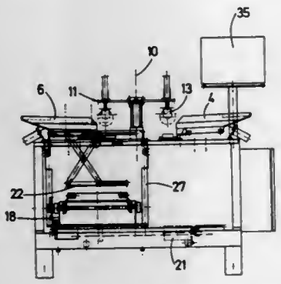
Filed Dec. 20, 1990, Ser. No. 633,064

Claims priority, application Spain, Dec. 27, 1989, 9000187

The portion of the term of this patent subsequent to Mar. 17, 2009, has been disclaimed.

Int. Cl.[5] B65B *5/10, 39/14*

U.S. Cl. 53—443 **4 Claims**



1. A method for automatically filling a plurality of containers with products arranged therein in rows in one layer or a plurality of superposed layers in a pre-programmed geometric pattern comprising the steps of;

delivering empty containers in N rows to a corresponding container filling station for said N rows of containers, automatically transporting the products loaded from an element rotatable about a vertical axis to said container-filling station and loading them one-by-one onto N supports corresponding to the number of rows of containers, applying a vacuum suction to individual products on said supports and raising them higher than tops of the containers in relatively spaced and fixed relative positions, while said products are held raised effecting an angular rotation of the products jointly in said relatively spaced fixed relative positions preparatory for lowering and depositing the individual products in respective predetermined positions each in a given row within a corresponding container, simultaneously with the raising of products automatically positioning said containers by advancing incrementally the containers in said N rows at said product-filling station in a longitudinal direction corresponding to the longitudinal direction in which said rows are formed in respective containers and automatically moving the containers in said N rows at said product-filling station incrementally transversely of said direction to pre-programmed positions for positioning the individual containers of said N rows at said product-filling station to receive the products in proper positions in respective rows for forming said rows of any one layer in said pre-programmed geometric pattern, lowering vertically the raised products simultaneously into respective individual containers of said N rows at said product-filling station when the individual containers are in position to receive the products to define said rows therein in said pre-programmed geometric pattern, and inserting into each container barrier means to partition each row of products; cyclically repeating for additional rows the operations of delivery of empty containers for filling thereof at said product-filling station, transporting products to said supports, applying a vacuum suction to said products on said supports, raising upwardly said products while held by said vacuum suction, effecting said angular rotation, positioning incrementally said containers in said longitudinal direction, and transversely thereof to pre-programmed positions so the containers are in positions for receiving the products, lowering the products vertically into said containers, and repeating each of the said operations until the individual containers are filled at said product-filling station, and discharged from the filled containers therefrom.

5,187,920

PACK FOR CIGARETTES OR THE LIKE AND PROCESS AND APPARATUS FOR THE PRODUCTION THEREOF

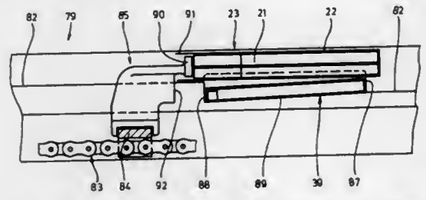
Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., (GmbH & Co.), Verden, Fed. Rep. of Germany

Filed Apr. 19, 1991, Ser. No. 690,186

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1990, 4013264

Int. Cl.[5] B65B *61/20*

U.S. Cl. 53—447 **10 Claims**



1. A process for introducing filling pieces and cigarette blocks into packs, each pack containing a cigarette block whose dimensions are smaller in depth than a depth of the pack, comprising the following steps:

a) conveying the filling pieces (**39**) along a filling piece track (**78**) in a tight arrangement;

b) folding said filling pieces into three dimensional shapes that correspond in size to the difference between the depths of the pack and the cigarette block;

c) continuously conveying the cigarette blocks (**23**) in a conveying direction along a longitudinally extending block path (**79**) in a spaced arrangement and in a plane of movement;

d) holding ready each filing piece (**39**) below the plane of movement of the cigarette blocks (**23**);

e) moving each filling piece (**39**) into the block path (**79**) in a direction transverse to the block path (**79**), so that the filling piece is taken along by a cigarette block (**23**), thus forming a unit consisting of a cigarette block (**23**) and a filling piece (**39**); and

conveying the unit into a box (**20**).

5,187,921

METHOD AND APPARATUS FOR FILLING CAVITIES

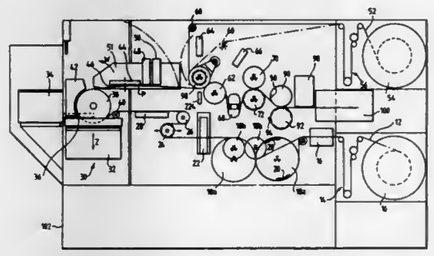
Alan A. Wilson, Bishops Stortford; Peter J. Brand, Royston; David R. Judd, Buntingford, and Stanley G. Bonney, Nr. Ware, all of United Kingdom, assignors to Glaxo Group Limited, Middlesex, England

Filed Sep. 3, 1991, Ser. No. 753,895

Claims priority, application United Kingdom, Sep. 4, 1990, 9019270.9; Jul. 15, 1991, 9115210.8

Int. Cl.[5] B65B *1/06, 1/10, 1/36, 1/46*

U.S. Cl. 53—453 **36 Claims**



1. A method of filling a blind cavity with a quantity of powder, which comprises urging the cavity, with its open side facing at least partially downwards, into a reservoir of powder, withdrawing therefrom the cavity having the quantity of powder therein while the open side continues to face at least partially downwards, and subsequently applying a lid to cover the cavity having the powder therein.

5,187,922

APPARATUS AND METHOD FOR TRANSFERRING SIGNATURES TO A WRAPPING MACHINE

Monte N. Mast, Eagle, Wis., assignor to Quad/Tech, Inc., Sussex, Wis.

Filed Apr. 8, 1992, Ser. No. 865,214

Int. Cl.[5] B65B *11/10*

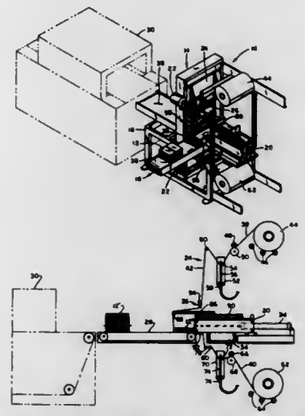
U.S. Cl. 53—466 **12 Claims**

1. An apparatus for transferring at least one signature into a wrapping machine having a continuous, vertically oriented packaging film defined by an upper film portion, a lower film portion and a central film portion about which said at least one signature is wrapped, the apparatus comprising:

conveyor means for transporting said signature(s) along a path spaced from said packaging film;

first pushing means engageable with said signature(s), for advancing the same transversely across said conveyor means and into said packaging film; and

second pushing means mounted on and in substantially parallel relationship with said first pushing means, said second pushing means being selectively engageable with the central film portion of said packaging film in response to the predetermined height of each said signature(s) and selectively extendable ahead of said signature(s) having said predetermined height for adjusting the tension of said



packaging film to prevent distortion of said signature(s) during wrapping thereof.

5,187,923

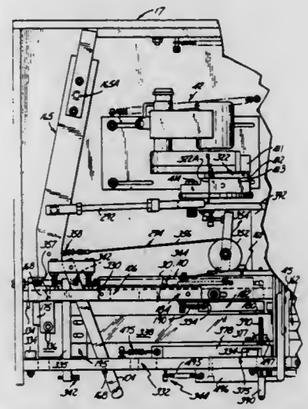
SLIDE MOUNTER WITH POSITIVE STOP FILM PLACEMENT

Wilbur Gerrans, Marysville, Wash., assignor to Pakon, Inc., Minnetonka, Minn.

Filed Jan. 15, 1992, Ser. No. 822,029

Int. Cl.[5] B65B *5/04, 63/00, 61/06*

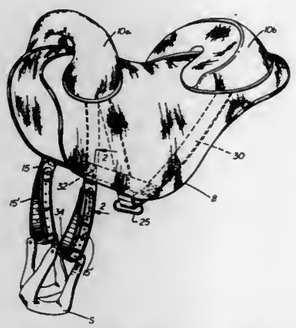
U.S. Cl. 53—520 **10 Claims**



1. A slide mounter apparatus for preparing photographic film slides for individual film transparencies from a photographic film web of the type having a knife assembly aligned with the film web for severing individual film transparencies from the film web for insertion into a slide mount ejected from a slide magazine and advanced to an insertion station, the slide mount being formed of upper and lower frame sections to form a pocket therebetween and including an insertion opening between the upper and lower frame sections, wherein consecutive film transparencies are severed by the knife assembly and inserted into slide mounts through the insertion opening at the insertion station, the apparatus comprising:

a frame;
means for separating the upper and lower frame sections at the insertion station for introducing a film transparency into the pocket of the slide mount;
an insertion mechanism for inserting the severed film transparency through the insertion opening into the pocket of the slide mount, the insertion mechanism being operable connected to the frame and movable between a retracted position and an insertion position to the insert the film transparency severed by the knife assembly into an ejected slide mount;
a drive assembly operably connected to the insertion mechanism for operating the insertion mechanism between the retracted position and the insertion position;
positive stop means operably associated with the frame and the drive assembly for defining an insertion position for the insertion mechanism; and
motion absorbing means associated with the drive assembly absorbing mechanical motion produced by the drive assembly after the positive stop means restricts movement of the insertion mechanism beyond the insertion position.

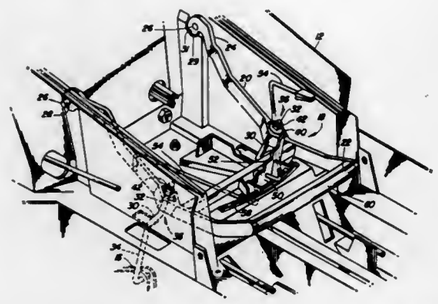
5,187,924
SADDLE
Robert L. Marshall, Rte. 2, Box 306B, Salem, Ky. 42078
Filed Jan. 29, 1991, Ser. No. 647,279
Int. Cl.[5] B68C *1/02*
U.S. Cl. 54—44.5 **3 Claims**



1. A saddle comprising an upper portion and a lower portion secured together as an integral unit in intimate contact with the back of a horse, webbing straps disposed between said upper portion and said lower portion, and spaced apart front and rear tree sections each having a base connected to said upper portion and defining a seating portion therebetween, where said front and rear tree sections act independently, serving to emulate movement of said horse.

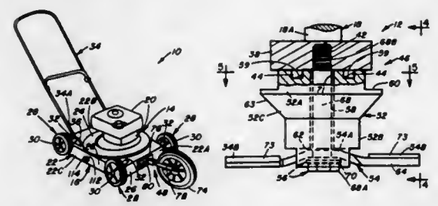
5,187,925
MOWER DECK LIFT HANDLE MECHANISM
Jon M. Patterson, Wauwatosa; Richard D. Teal, Horicon, both of Wis.; James H. Weitz, Ridgewood, N.J., and Steven C. Wasson, Midland, Mich., assignors to Deere & Company, Moline, Ill.
Filed Jun. 14, 1991, Ser. No. 715,173
Int. Cl.[5] A01D *34/74*
U.S. Cl. 56—17.1 **20 Claims**

19. A mechanism for selectively adjusting the cutting height of a mower deck carried by a vehicle having a frame, said mechanism comprising:
a lift handle formed of a plastic material and having a first end portion engagable by the operator's hand and a second end portion pivotally coupled with the vehicle for pivoting motion about a generally horizontal and laterally extending axis as the operator lifts the first end portion;
a grip formed integral with the first end portion of the lift handle for engagement with the hand of the operator;
peg members formed integral with the lift handle and received by openings formed in the frame, said peg members defining the axis about which the lift handle pivots,
a generally spherical socket formed integral with the lift handle between the lift handle's first and second end portions;
a ball member pivotally supported by the socket;



a link member having a first portion received by a hole formed in the ball member, said link member having a second portion pivotally coupled with the mower deck for vertically shifting the deck relative to the vehicle as the lift handle pivots.
threads formed in the link member; and
a nut adjustably carried by the threads of the link member and in abutment with the ball member to support the link member vertically within the hole, said nut being adjustable to selectively vary the vertical position of the portion of the deck coupled with the link member.

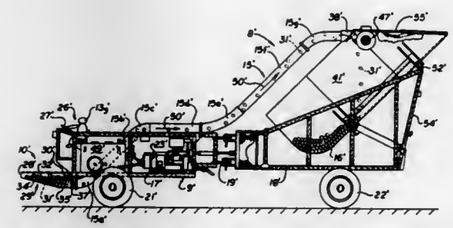
5,187,926
GRASS LINE MOWING APPARATUS
James F. Rhoads, 1525 Judson Dr., Boulder, Colo. 80303
Filed Sep. 16, 1991, Ser. No. 760,732
Int. Cl.[5] A01D *34/67, 34/74*
U.S. Cl. 56—16.7 **21 Claims**



19. In combination with a carriage apparatus including a mobile chassis having a housing with a top deck spaced above the ground, a vertical rotary shaft mounted to said housing deck for rotation relative to said housing and extending below said deck, said rotary shaft having mounting means on a lower end portion thereof, and power means mounted on said housing deck and drivingly coupled to said rotary shaft and being operable to cause rotation of said rotary shaft, a grass line mowing apparatus, comprising:
(a) a line cutting blade assembly including a line cutting blade capable of cutting a swath of grass of a desired width for defining a desired boundary line of a game playing field and means for removably fastening said line cutting blade assembly to said mounting means of said rotary shaft; and

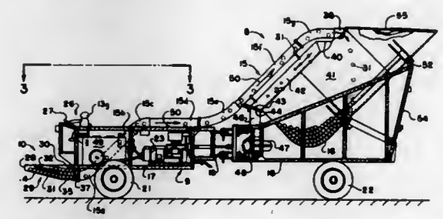
(b) gauge means mounted to a front end of said housing and extending forwardly therefrom for assisting an operator in visually guiding said carriage apparatus in alignment with the desired boundary line, said gauge means including a gauge wheel, a bracket attached to a front end of said carriage apparatus, and a yoke pivotally mounted at a rear end to said bracket and extending forwardly therefrom, said yoke at an opposite forward end rotatably mounting said gauge wheel.

5,187,927
TRAY FOR FRUIT HARVESTING SYSTEM
Frank J. McKenna, Jr., Shaker Hts., Ohio 44120, Richard K. Horst; James F. Horst, both of Orrville, all of Ohio; Charles S. Wright, Leesburg; John D. Matthew, Melbourne, both of Fla., assignors to Frank J. McKenna, Jr., Shaker Hts., Ohio
Division of Ser. No. 802,362, Dec. 4, 1991, which is a continuation-in-part of Ser. No. 572,153, Aug. 23, 1990. This application May 5, 1992, Ser. No. 879,184
Int. Cl.[5] A01D *46/24*
U.S. Cl. 56—328.1 **4 Claims**



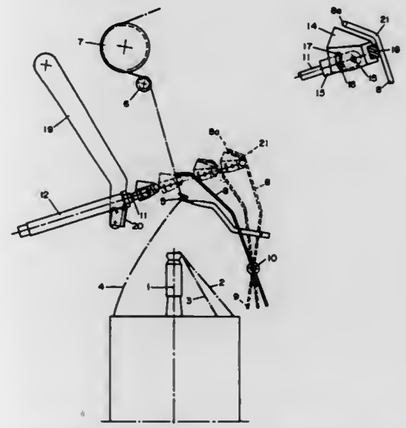
1. A fruit harvesting apparatus comprising a vehicle having a front end and a back end; means for moving the vehicle along the ground; a tray, located at the front end of the vehicle, for receiving picked fruit; a pivotable hopper, mounted to the back end of said vehicle, for temporarily storing the picked fruit; and a pneumatic transfer system for transferring the picked fruit from said tray to said hopper;
said hopper including a blower which creates a vacuum within said hopper, said blower being attached to an upper portion of said hopper.

5,187,928
HARVESTING APPARATUS AND METHOD
Frank J. McKenna, Shaker Heights; Richard K. Horst; James F. Horst, both of Orrville, all of Ohio; Charles S. Wright, Leesburg, and John D. Matthews, Melbourne, both of Fla., assignors to Kathleen McKenna, Shaker Hts., Ohio
Continuation of Ser. No. 572,153, Aug. 23, 1990, Pat. No. 5,125,223. This application Jun. 29, 1992, Ser. No. 906,060
Int. Cl.[5] A01D *46/24*
U.S. Cl. 56—328.1 **9 Claims**



1. A fruit harvesting apparatus comprising a vehicle, means to move that vehicle along the ground, a tray which is mounted to the vehicle adjacent the ground to receive picked fruit, said tray including a sloped bottom wall which conveys the received fruit to a first end of a transfer system, a conveyor which conveys the fruit from said first end of said transfer system to a second end of said transfer system, said second end of said transfer system depositing the fruit to said hopper carried by said vehicle;
wherein the hopper is pivotally connected to the vehicle adjacent the back end thereof and may be selectively moved about that pivotal connection to remove the fruit temporarily stored therein; and
wherein the vehicle has a rear vertically movable frame assembly, the hopper being carried by the rear vertically movable frame assembly to allow the hopper to be selectively elevated for universal compatibility with fruit transfer trailers of various sizes.

5,187,929
AUTOMATIC DEVICE FOR RESETTING A MECHANICAL YARN FEELER IN A TEXTILE MACHINE
Roberto Meroni; Umberto Gerin, both of Pordenone; Fabio Lancerotto, Milan, and Vittorio Colussi, Pordenone, all of Italy, assignors to Savio S.p.A., Pordenone, Italy
Continuation of Ser. No. 509,577, Apr. 16, 1990, abandoned. This application Apr. 2, 1992, Ser. No. 863,328
Claims priority, application Italy, Apr. 21, 1989, 20254 A/89
Int. Cl.[5] D01H *13/16*
U.S. Cl. 57—80 **7 Claims**



1. An automatic device for resetting a mechanical yarn feeler in a textile machine, wherein the yarn feeler has an end, said automatic device comprising:
means for moving the yarn feeler from a rest position out of contact with the yarn to a working position in which an end of the yarn feeler bears against the yarn, wherein said means for moving comprises:
an extendable and retractable arm including a support plate and a magnet,
means for extending said arm to bring said magnet into engagement with the yarn feeler, and
means for retracting said arm to cause the yarn feeler to rotate while adhering to the magnet through a portion of the movement from the rest position to the working position, said means for retracting thereafter releasing the yarn feeler from engagement with said magnet and supporting the yarn feeler with said support plate until the yarn feeler bears against the yarn.

5,187,930

ARRANGEMENT FOR SPINNING STAPLE FIBERS INTO A YARN

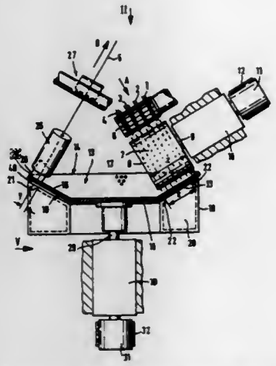
Fritz Stahlecker, Bad Überkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker, Fed. Rep. of Germany

Filed Jun. 5, 1991, Ser. No. 710,564

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1990, 4018702

Int. Cl.[5] D01H *4/02*

U.S. Cl. 57—400 **22 Claims**



1. An arrangement for spinning staple fibers into a yarn, comprising:

a feeding and opening device which opens up fiber material supplied in the form of a silver into individual fibers,

a bowl-shaped collecting element which receives the separated yarns and has a rotatable air permeable collecting surface which is aligned approximately tangentially with respect to an opening roller of the feeding and opening device,

apparatus for rotating the collecting surface,

and a suction device assigned to the collecting surface on a side facing away from the opening roller and facing the collecting surface by means of a suction slot which tapers in the circumferential direction to a withdrawal point which is followed by a twisting element and a withdrawal device,

wherein the bowl-shaped collecting element is provided with a truncated-cone-shaped edge area which ascends toward the outside and which si constructed as an annularly extending bowl shaped fiber collecting surface on the radial inside of said edge area,

wherein the suction device is disposed at the opposite side of said edge area and wherein said yarn is withdrawn from the collecting surface in a direction substantially parallel tot he travel direction of the collecting surface at the withdrawal point.

5,187,931

COMBUSTOR INNER PASSAGE WITH FORWARD BLEED OPENINGS

Jack R. Taylor, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Oct. 16, 1989, Ser. No. 422,165

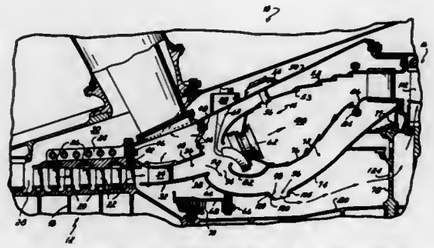
Int. Cl.[5] F02C *6/18*

U.S. Cl. 60—39.07 **2 Claims**

1. An apparatus for delivering high pressure cooling air to the rotor blades of a turbine in a turbo-machine, said turbomachine having a compressor with an aft discharge end and a combustor located between the compressor and turbine, comprising:

an annular inner wall and an annular outer wall spaced from said annular inner wall forming a combustor inner passage therebetween, said combustor inner passage having a forward end formed with an inlet communicating with the aft discharge end of the compressor for receiving a high pressure air stream therefrom, said air stream being initially in contact with said annular outer wall of said combustor inner passage but separated from said inner wall thereof immediately downstream from said inlet to said combustor inner passage;

said annular inner wall of said combustor inner passage being formed with a number of circumferentially spaced, forward bleed openings at said forward end thereof downstream from said inlet of said combustor inner passage, said annular inner wall being formed with an annular aft-facing step which forms the forward portion of each of said circumferentially spaced, forward bleed openings, the transverse dimension of said combustor inner passage



being less upstream from said aft-facing step than downstream thereof, said forward bleed openings being effective to withdraw at least a portion of said air stream from said combustor inner passage and to cause said air stream to extend from said annular outer wall into contact with said annular inner wall of said combustor inner passage at an attachment point on said annular inner wall located between said forward bleed openings and said inlet of said combustor inner passage so that turbulence and pressure losses within said combustor inner passage are reduced; and

means communicating with said forward bleed openings in said annular inner wall of said combustor inner passage to direct said portion of said air stream flowing therethrough to the rotor blades of the turbine for cooling.

5,187,932

STORED ENERGY COMBUSTOR

Jack R. Shekleton, San Diego, Calif., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 19, 1990, Ser. No. 615,052

Int. Cl.[5] F23R *3/54*

U.S. Cl. 60—39.23 **20 Claims**

1. A stored energy combustor, comprising:

a vessel having a wall defining spaced apart inlet and outlet ends interconnected by a combustion chamber;

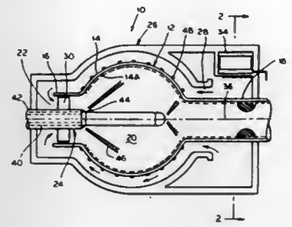
an oxidant inlet port upstream of said combustion chamber for directing oxidant into said combustion chamber;

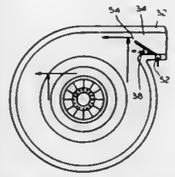
fuel injection means upstream of said combustion chamber for directing fuel into said combustion chamber;

a housing substantially surrounding said vessel in spaced relation to said wall from said inlet end to said outlet end, said housing and said wall defining an oxidant flow path therebetween, said oxidant flow path being in communication with said oxidant inlet port upstream of said combustion chamber; and

means for directing oxidant from a source into said oxidant flow path at a point adjacent said outlet end of said vessel, said oxidant directing means being adapted to direct all of said oxidant into said oxidant flow path so as to have a substantial tangential velocity component as all of said oxidant flows from said outlet end to said inlet end of said

vessel and into said oxidant inlet port, and including means for controlling the velocity of said oxidant entering said





oxidant flow path adjacent said outlet end of said vessel dependent upon operating conditions.

5,187,933

VARIABLE DISPLACEMENT PUMP WITH HYDRAULIC ADJUSTMENT FOR CONTROLLING THE DELIVERY RATE AND/OR THE PRESSURE WITH RESPECT TO AT LEAST TWO CONSUMERS

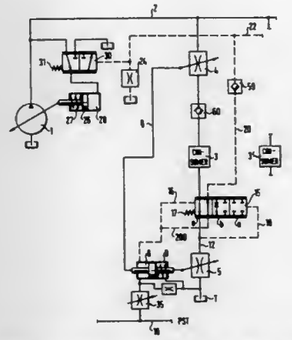
Heinrich Nikolaus, Hamburg, Fed. Rep. of Germany, assignor to Mannesmann Rexroth GmbH, Lohr/Main, Fed. Rep. of Germany

Filed Dec. 29, 1989, Ser. No. 458,577

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1988, 3844401

Int. Cl.[5] F16D *31/02*

U.S. Cl. 60—452 **30 Claims**



1. A hydraulic control system for a variable displacement pump having a hydraulic adjustment for controlling the delivery of fluid from said variable displacement pump to at least two consumers, each of said consumers being supplied with fluid pressure from said pump through a respective circuit having a metering throttle which communicates with the respective circuit and is located within said hydraulic control system for selectively controlling the flow in a portion of the respective circuit and an automatic control valve which communicates with the respective circuit and is located within said hydraulic control system for maintaining pressure at a point in the respective circuit, the improvement comprising each of said automatic control valves being operable to a single, particular and unique position to provide a control signal for operating said hydraulic pump whereby the control signal is provided to the hydraulic adjustment which, in turn, controls the hydraulic pump; and wherein each of said automatic control valves are not operable for providing said control signal when not located at said single, particular and unique position.

5,187,934

TANDEM TYPE MASTER CYLINDER

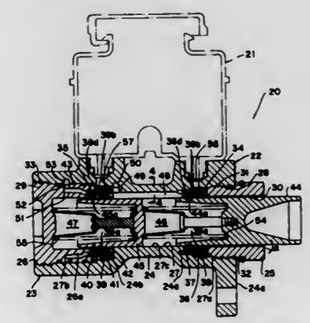
Kobei Mori, Higashimatsuyama, Japan, assignor to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1991, Ser. No. 758,882

Claims priority, application Japan, Sep. 28, 1990, 2-259382

Int. Cl.[5] B60T *11/20;* **F16J** *15/18*

U.S. Cl. 60—562 **7 Claims**



1. A tandem type master cylinder comprising:

a housing having a through-bore defining a first open end portion and a second open end portion interconnected together by an intermediate bore portion, the diameters of said first and second end portions being larger than the diameter of said intermediate portion;

the juncture between said first end portion and said intermediate portion defining a first step part and the juncture between said second end portion and said intermediate portion defining a second step part;

a first seal assembly having a through-bore positioned in said first end portion of said housing;

a second seal assembly having a through-bore positioned in said second end portion of said housing;

a first plug having a through-bore removably secured within said first end portion of said housing;

a second plug removably secured within said second end portion of said housing for closing said end portion;

said first seal assembly being positioned between said first plug and said first step part and said second seal assembly being positioned between said second plug and said second step part;

a primary piston and a secondary piston each disposed for guided movement from a initial rest position to a displaced position along said intermediate bore portion of said housing;

said secondary piston being inserted through said first end portion of said housing for movement along said intermediate portion and through the bore of said second seal assembly, said secondary piston adapted to be withdrawn from said housing through the first end portion thereof without removal of said second plug;

said primary piston also being inserted through said first end portion of said housing and through the bore of said first plug and the bore of said first seal assembly for movement along said intermediate portion;

a first compression spring interposed between said primary

piston and said secondary piston for urging said primary piston to its initial rest position; and

a second compression spring interposed between said secondary piston and said second plug for urging said secondary piston to its initial rest position.

5,187,935

ENGINE CONTROL DEVICE

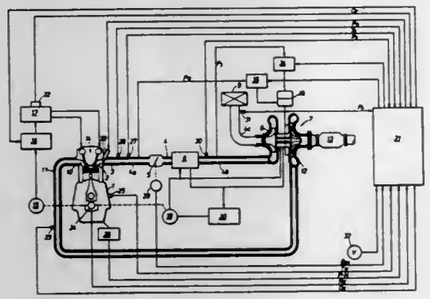
Eitetsu Akiyama, and Noriyuki Kishi, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 457,233, Dec. 26, 1989, abandoned. This application Feb. 19, 1992, Ser. No. 839,063

Claims priority, application Japan, Dec. 26, 1988, 63-328551

Int. Cl.[5] F02D *23/00*

U.S. Cl. 60—602 **7 Claims**



1. An engine control system, comprising:

a variable valve actuating mechanism for actuating at least two intake valves of an internal combustion engine, said mechanism being provided with valve actuating condition varying means for varying at least an open period of said intake valves between a high speed mode and a low speed mode in such a manner that said intake valves open earlier and close later in said high speed mode than in said low speed mode;

a supercharger for supplying supercharged intake air to said internal combustion engine, said supercharger being provided with capacity varying means for varying a supercharge pressure output of said supercharger;

detecting means for detecting an engine operating condition including at least a rotational speed of said engine; and

control means for supplying control signals to said valve actuating condition varying means and said capacity varying means according to an output from said detecting means;

said control means supplying a supercharger control signal to said capacity varying means so that said supercharge pressure output may be increased by a certain increment when said control means supplies a valve actuating control signal to said valve actuating condition varying means so as to switch over said valve actuating mechanism from said low speed mode to said high speed mode.

5,187,936

CONTINUOUS FLOW FUEL CIRCULATION SYSTEM

Kevin H. Kast, Cincinnati, and William J. Myers, Jr., West Chester, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 17, 1990, Ser. No. 599,171

Int. Cl.[5] F02C *1/00*

U.S. Cl. 60—734 **5 Claims**

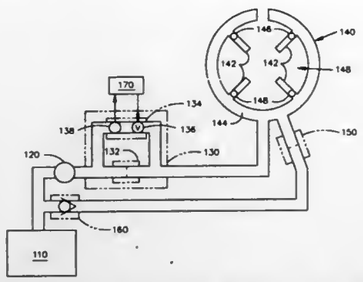
1. A continuous flow fuel system comprising:

a fuel source;

a main fuel pump connected to said fuel source;

a flow control means connected to said main fuel pump, said flow control means including a controllable valve in parallel with a first flow restrictor means;

a fuel disbursement means connected to said flow control means, said disbursement means including a plurality of



fuel nozzles connected to a main manifold of said disbursement means through pressure actuated valves; and

a second flow restrictor means connected between said fuel disbursement means and an inlet of said main fuel pump.

5,187,937

GAS TURBINE ENGINE COMBUSTORS

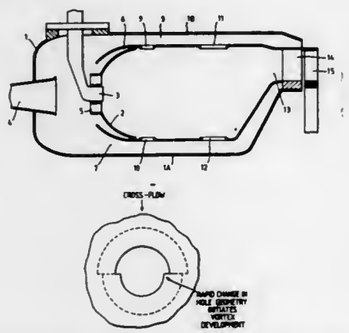
Stanley J. Stevens, Leicestershire, and Jonathan F. Carrotte, Leics, both of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

PCT No. PCT/GB88/00476, § 371 Date Feb. 19, 1991, § 102(e) Date Feb. 19, 1991, PCT Pub. No. WO89/12788, PCT Pub. Date Dec. 28, 1989

PCT Filed Jun. 22, 1988, Ser. No. 659,353

Int. Cl.[5] F23R *3/04*

U.S. Cl. 60—752 **7 Claims**



1. A gas turbine engine combustor having a longitudinal axis extending between an upstream end and a downstream end, the combustor comprising:

a combustion liner having an interior and an exterior;

an air casing positioned around the exterior of the combustion liner and spaced therefrom;

an air duct between the combustion liner and the air casing, and during operation of the combustor, air flows along the air duct in a generally downstream direction;

said combustion liner including an array of through-holes comprising air inlets communicating between the air duct and the interior of the combustion liner through which air passes into the interior of the combustion liner as jets which meet a generally downstream flow of combustion gases; and

each air inlet is provided with a respective vortex generator means which comprises a pair of upstream-facing trip surfaces, each of said trip surfaces projecting inwardly from a respective lateral edge of the air inlet relative to the longitudinal axis of the combustor, wherein each of the trip surfaces of an air inlet establishes in the flow through the air inlet a respective vortical flow to create a vortex pair associated with each air inlet, the respective vortical flows in a vortex pair being of opposite rotational sense to each other and having a sense of rotation such that each vortex is reinforced by interaction with the flow of combustion gases.

5,187,938

METHOD AND A DEVICE FOR PRECOOLING THE HELIUM TANK OF A CRYOSTAT

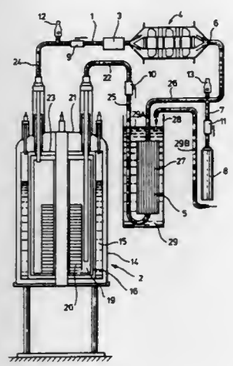
Beat Mraz, Hombrechtikon; Christoph Notzli, Schwerzenbach; Ernst Ungricht, Uster, and Daniel Marek, Hegnau, all of Switzerland, assignors to Spectrospin AG, Switzerland

Filed May 15, 1990, Ser. No. 523,747

Claims priority, application Fed. Rep. of Germany, May 18, 1989, 3916212

Int. Cl.[5] F25B *19/00*

U.S. Cl. 62—51.1 **21 Claims**



1. A method for precooling the helium tank of a cryostat comprising the steps of cooling helium gas to the temperature of boiling nitrogen in a closed circuit, circulating the cooled helium through the helium tank, causing heating of the helium, and thereafter cooling the heated helium gas down to the temperature of boiling nitrogen.

5,187,939

RAPID COOLDOWN DEWAR

Matthew M. Skertic, Chatsworth; Joseph L. Hlava, Woodland Hills; Arthur A. Eneim, and Nevil Q. Maassen, both of Goleta, all of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 3, 1991, Ser. No. 709,929

Int. Cl.[5] F25B *19/02*

U.S. Cl. 62—51.2 **8 Claims**

1. A dewar assembly, comprising:

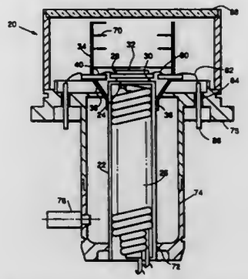
a dewar bore tube;

a dewar bore tube end cap that closes one end of the dewar bore tube, the dewar bore tube end cap having an outwardly facing external surface;

a sensor mounted to the external surface of the dewar bore tube end cap;

a cold shield partially surrounding the sensor; and

a cold shield support bracket that supports the cold shield, said support bracket engaging said bore tube at a location on the dewar bore tube displaced longitudinally along the



length of the dewar bore tube from the dewar bore tube end cap.

5,187,940

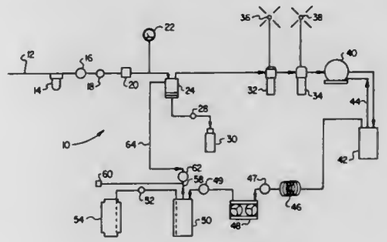
REFRIGERANT RECOVERY AND PURIFICATION SYSTEM

Russell Paxton, Azle, Tex., assignor to Standard Motor Products, Inc., Grapevine, Tex.

Filed Feb. 19, 1991, Ser. No. 657,138

Int. Cl.[5] F25B *45/00*

U.S. Cl. 62—77 **19 Claims**



16. A method of recovering and purifying refrigerant in a refrigeration unit comprising:

(a) pumping the refrigerant from the refrigeration unit into a refrigeration and purification system;

(b) removing particulate matter from the refrigerant;

(c) separating oil from the refrigerant;

(d) removing the moisture from the refrigerant;

(e) condensing the refrigerant;

(f) removing the non-condensible gas from the liquified refrigerant including the steps of drawing out the liquified refrigerant and purging the non-condensible gases, said purging step includes applying the non-condensible gases to the recovery and purification system before the compressor to equalize the pressure in the refrigerant recovery and purification system; and

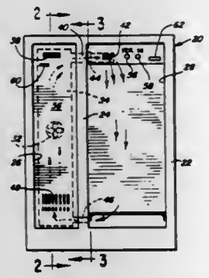
(g) storing the liquified refrigerant.

5,187,941

METHOD FOR CONTROLLING A REFRIGERATOR IN LOW AMBIENT TEMPERATURE CONDITIONS

Andrew T. Tershak, Center Township; Charles G. Fellwock, Scott Township, both of Vanderburgh County, Ind., and Michael D. Thieneman, Lincoln Township, Berrien County, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 588,304, Mar. 12, 1984, Pat. No. 4,834,169.
This application Dec. 9, 1988, Ser. No. 281,643
Int. Cl.[5] G05D *23/32*; F25B *41/00, 17/04*
U.S. Cl. 62—89 **7 Claims**



1. A method of controlling a refrigeration apparatus having juxtaposed above-freezing and below-freezing compartments, refrigeration means for supplying cooling to the compartments, a first sensor for sensing temperature within the below-freezing compartment and a second sensor for sensing temperature within the above-freezing compartment, the method comprising;

controlling the operation of the refrigeration means in response to the temperature of the below-freezing compartment as sensed by the first sensor;

determining a length of time since the refrigeration means has been operated to supply cooling to the compartments;

monitoring the temperature within the above-freezing compartment as sensed by said second sensor and detecting if the monitored temperature is below a preselected temperature and the length of time is above a preselected length of time, such conditions representing an undesirable temperature condition; and

controlling the operation of the refrigeration means in response to the temperature of the above-freezing compartment as sensed by said second during periods when the undesirable temperature condition is detected.

5,187,942

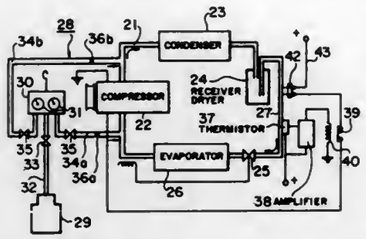
REFRIGERANT OVERCHARGE PREVENTION SYSTEM

Syunji Komatsu, Isesaki; Masaru Kuribara, Tatebayashi, and Kazumitsu Kobayashi, Iseaki, all of Japan, assignors to Sanden Corporation and Japan Electronic Control Systems Company, Ltd., both of, Japan

Filed Nov. 27, 1991, Ser. No. 799,538
Claims priority, application Japan, Nov. 30, 1990, 2-337066
Int. Cl.[5] F25B *45/00*
U.S. Cl. 62—149 **20 Claims**

1. In a refrigerant charging apparatus which has a refrigerant supply source and a refrigerant supply path connected to a refrigerant circuit of a cooling apparatus and which charges refrigerant stored in said refrigerant supply source into said refrigerant circuit through said refrigerant supply path while activating a compressor provided in said refrigerant circuit, a refrigerant overcharge prevention system comprising:

refrigerant charge determining means, provided in a high-pressure side path of said refrigerant circuit, for determining whether the amount of charged refrigerant has reached a target level by sensing a change of state of refrigerant present in said refrigerant circuit from a mixing state of liquid and vapor phases to a liquid phase; and



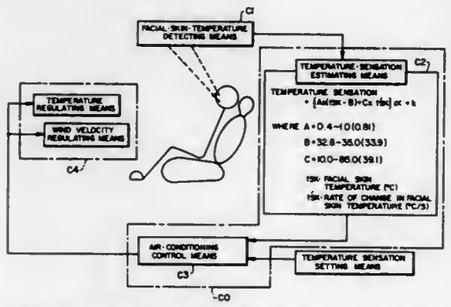
compressor deactivating means, coupled to said refrigerant charge determining means, for deactivating said compressor in response to determination of said refrigerant charge determining means.

5,187,943

CONTROL APPARATUS FOR AIR-CONDITIONER

Yousuke Taniguchi, Nagoya; Tadayuki Miyawaki, Kagoshima; Hisashi Tanaka, and Motohiro Kitada, both of Anjo, all of Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyosho, Nagakute and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed Aug. 21, 1991, Ser. No. 747,943
Claims priority, application Japan, Aug. 24, 1990, 2-223321
Int. Cl.[5] F25D *17/00*
U.S. Cl. 62—180 **14 Claims**



1. A control apparatus for an air-conditioner, comprising:

facial-skin-temperature detecting means for detecting a skin temperature of a human face; and

control means for controlling said air-conditioner on the basis of a temperature sensation value TS expressed numerically by the following formula:

$$TS=\{A(t_{SK}-B)+C\cdot t'_{SK}\}\alpha+K$$

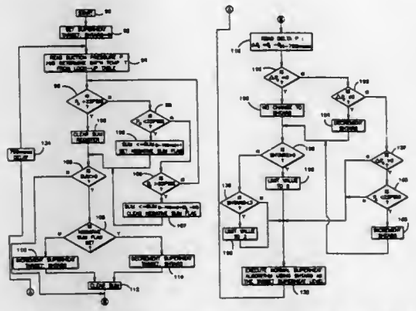
where A is a coefficient in the range of 0.4–1.0 indicating a difference in a temperature sensation value with respect to a difference in the skin temperature of the face; B is a coefficient in the range of 32.8–35.0 for making the facial skin temperature and the temperature sensation value correspond to the difference in the temperature sensation value determined by the coefficient A; C is a coefficient in the range of 10.0–85.0 indicating a contribution of the rate of change in the skin temperature to the temperature sensation value; t_{SK} is a facial skin temperature; t'_{SK} is a rate of change in the facial skin temperature; α is a value corresponding to an interval between adjacent temperature sensation values; and K is a reference value of the temperature sensation value.

5,187,944

VARIABLE SUPERHEAT TARGET STRATEGY FOR CONTROLLING AN ELECTRICALLY OPERATED REFRIGERANT EXPANSION VALVE

George W. Jarosch, Elk Grove, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Apr. 10, 1992, Ser. No. 866,601
Int. Cl.[5] F25B *41/00*
U.S. Cl. 62—225 **3 Claims**



1. A method of controlling refrigerant flow in a refrigeration system of the type having an energizable pump for circulating refrigerant through a condenser, an expansion valve, an evaporator and for return to the pump, said method comprising:

(a) energizing said pump;

(b) measuring the pressure P_e of the refrigerant returning to said pump;

(c) determining from a look-up table for said refrigerant the saturation temperature T_s for said measured P_e;

(d) summing the difference between said values of P_e and a reference pressure and incrementing said sum with a constant when said measured P_e is less than a predetermined value;

(e) summing the difference between said measured values of P_e and a reference pressure and incrementing said sum with the amount by which P_e exceeds said predetermined value when P_e is greater than said predetermined value;

(f) incrementing said superheat target when said sum exceeds a predetermined limit and said sum is incremented with a constant;

(g) decrementing said superheat target when said sum exceeds said limit and said sum is not incremented with a constant;

(h) measuring the rate of change of P_e and decrementing said superheat target when said rate of charge is negative and incrementing said superheat when said rate of change is positive and P_e is less than a predetermined value; and,

(i) generating a control signal in accordance with a predetermined algorithm as a function of a refrigerant vapor superheat and electrically controlling said expansion valve with said signal to achieve a target value of superheat.

5,187,945

REFRIGERATED CONTAINER

David A. Dixon, Kentfield, Calif., assignor to Reefco Manufacturing Corporation, Mill Valley, Calif.

Filed May 13, 1991, Ser. No. 699,002
Int. Cl.[5] F25D *3/08*
U.S. Cl. 62—234 **13 Claims**

1. A refrigerated container having a top, bottom, two oppositely disposed vertically extending sidewalls, an end wall and a closed entrance positioned opposite said end wall to thereby form an elongated enclosure for containing products while maintaining the products within a desired temperature range, the container comprising:

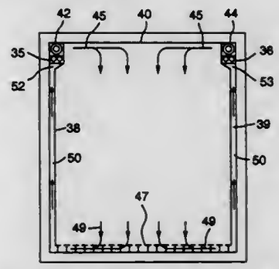
(a) an air channelling means comprising:

i. a diffuse air intake means positioned at the bottom of the container;

ii. a first duct means for drawing air from the diffuse air intake means and for directing the air along a first one of the sidewalls to an air output positioned at a junction of the first sidewall and the top;

iii. a second duct means for drawing air from the diffuse air intake means and for directing the air along a second one of the sidewalls to an air output positioned at a junction of the second sidewall and the top;

(b) refrigeration means mounted to the container including,



a first and a second evaporator coil each operatively connected to said refrigeration means and each extending longitudinally within said container along a different sidewall and within a different duct thereof; and

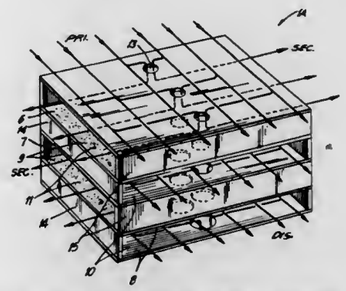
(c) a first and second plurality of centrifugal blowers; each plurality positioned within said container along a respective different sidewall thereof and mounted adjacent a junction of said sidewalls and said top for drawing air through said evaporator coils and directing cooled air transversely of said container.

5,187,946

APPARATUS & METHOD FOR INDIRECT EVAPORATIVE COOLING OF A FLUID

Yefim Rotenberg, 38 Voorhis Dr., Old Bethpage, N.Y. 11804, and Mitchel T. Wolfe, Roger Canoe Hollow Rd., Mill Neck, N.Y. 11765

Filed Sep. 24, 1991, Ser. No. 765,920
Int. Cl.[5] F25D *7/00*
U.S. Cl. 62—314 **10 Claims**



1. An apparatus for cooling a stream of ambient air by a secondary stream of air comprising:

(a) a dry channel for cooling the ambient air stream and for conducting the ambient air stream in a straight path from the atmosphere to the user;

(b) a wet channel in a heat exchange relationship with said dry channel;

(c) means interposed between said wet and dry channels for progressive and sequentially redirecting a portion of the ambient air stream between said wet and dry channels and

for creating a secondary air stream which moves into and through said wet channel, said wet channel including a discharge port at its end for discharging the secondary air stream to the atmosphere;

(d) wetting means for keeping said wet channel wet so that as the secondary air stream flows through said wet channel, the secondary air stream can absorb moisture therefrom; and

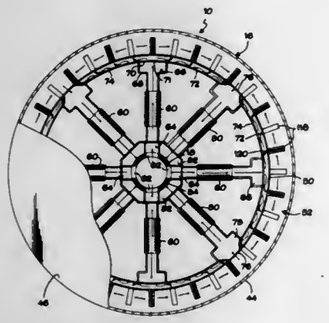
(e) air supply means for supplying air to the apparatus so that as the ambient air stream passes through said dry channel, the ambient air stream is cooled by the dry channel and said dry channel is cooled by the secondary air passing through and absorbing moisture from said wet channel.

5,187,947

WHEEL TYPE FREEZER AND METHOD FOR RAPID, LOW TEMPERATURE FREEZING

Timothy A. Breunig, and Gary H. Anders, both of Hutchinson, Kans., assignors to Doskocil Companies Incorporated, South Hutchinson, Kans.

Filed Oct. 16, 1991, Ser. No. 776,997
Int. Cl.[5] A25D *25/04*
U.S. Cl. 62—346 **33 Claims**



1. A freeze wheel comprising:

a circumferential skin for receiving a substance to be chilled or frozen;

a chamber formed between the skin and a circumferential wall spaced from the skin;

a plurality of nozzles protruding into the chamber for directing a refrigerant fluid from the chamber onto the skin; and

a port in the circumferential wall for removing the refrigerant fluid from the chamber.

5,187,948

CLEAR CUBE ICE MAKER

Edwin H. Frohbieter, Lincoln Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 31, 1991, Ser. No. 815,970
Int. Cl.[5] F25C *1/12*
U.S. Cl. 62—351 **33 Claims**

1. An ice maker for making clear ice bodies comprising:

a support arranged to have an ice body formed thereon;

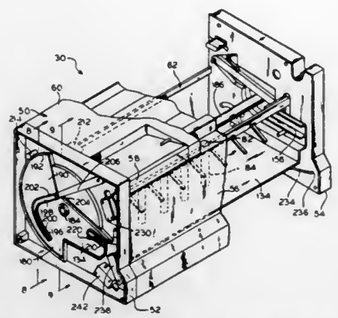
means for refrigerating said support to a below freezing temperature;

a container adapted to hold a body of water;

means for moving the container to move liquid water contained therein uniformly about said support between a top dip position and a bottom dip position suitable to cause a clear substantially symmetrical ice body to build up outwardly on the refrigerated support, the ice body being at least partly immersed in the container during movement of the container between the dip positions, said movement polishing the ice body while it is freezing and mixing the liquid water in the container to maintain uniform water temperature;

means for causing repositioning of the container to withdraw the water in the container from adjacent the support upon completion of build up of the ice body; and

means for causing harvesting of the ice body from the support.

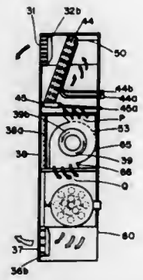


5,187,949

AIR CONDITIONER HAVING A SELECTABLE AIR DISCHARGE

Seo Jung-Il, and Kewon Han-Oh, both of Kyonggi, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 29, 1991, Ser. No. 736,787
Claims priority, application Rep. of Korea, Jul. 28, 1990, 90-11188
Int. Cl.[5] F25D *17/06*
U.S. Cl. 62—411 **8 Claims**



1. An air conditioner for selectively heating and cooling air circulated therethrough, comprising:

a housing including upper and lower ends, air inlet means located between said upper and lower ends, and air outlet means including an upper outlet located adjacent said upper end, and a lower outlet located adjacent said lower end;

blower means located in said housing adjacent said air inlet means and between said upper and lower air outlets for circulating air into said air inlet means and out of said air outlet means, said blower means including a central portion, an impeller disposed within said central portion, and upper and lower ducts;

a cooling heat-exchanger located between said blower and said upper outlet means for cooling the circulated air, said cooling heat exchanger communicating with said upper duct;

a heating heat-exchanger located between said blower and said lower outlet means for heating the circulated air, said heating heat exchanger communicating with said lower duct; and

air directing means comprising a plate movably disposed in said central portion and being adjustable between a first position for directing the circulated air from said blower means upwardly through said cooling heat-exchanger and out of said upper outlet, and

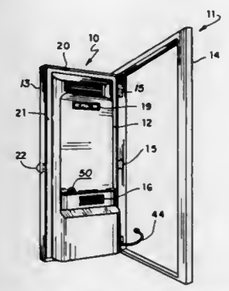
a second position of adjustment for directing the circulated air from said blower means downwardly through said heating heat-exchanger and out of said lower outlet.

5,187,950

DOOR MOUNTED COOLING APPARATUS

Mark P. Weldon, 4938 Look Kinney Cir., Liverpool, N.Y. 13088

Filed Feb. 28, 1992, Ser. No. 843,223
Int. Cl.[5] F25D *19/00*
U.S. Cl. 62—449 **6 Claims**



1. A door mounted apparatus for the cooling of air within an enclosed space accessible by means of said door, said apparatus including components comprising:

at least a refrigerant compressor, refrigerant condensor and evaporator coils, thermostatic switch, accumulator, refrigerant, and electrical connecting means for said apparatus;

a bracket secured to an inner surface of said door, said bracket providing for the support and attachment of at least said compressor, said condenser and evaporator coils, and said accumulator to said door inner surface;

at least one electrical fan providing for the circulation of air through said evaporator coil and said enclosed space;

at least one electrical fan providing for the intake of air outside said enclosed space and the exhaust of air heated by said condensor coil;

passage means through said door defining both an inlet for outside air and an outlet for said heated air, whereby said apparatus is mounted to said door and actuated to provide cooled air within said enclosed space; and

said door includes a prefabricated frame, said frame being installable in an opening provided therefore.

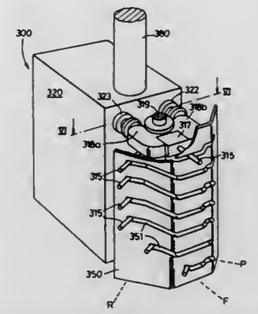
5,187,951

CIRCULAR KNITTING MACHINES

Edward C. Stroud, Kenilworth, and John D. Griffith, Sunderland, both of England, assignors to Bentley Group Limited, Leicester, England

Filed Jul. 9, 1991, Ser. No. 725,792
Claims priority, application United Kingdom, Jul. 10, 1990, 9015204
Int. Cl.[5] D04B *9/10*; F01B *7/00*
U.S. Cl. 66—14 **10 Claims**

1. A cam actuator for selectively moving cam elements axially between distinct operative positions, the actuator including a body having a stepped bore to define a series of piston cylinders, each piston cylinder housing a piston so as to provide a series of adjacent pistons arranged to be extended and retracted along the axial line of displacement of said cam element, stop means for limiting the axial stroke of each piston in the direction of extension, each piston co-operating with adjacent pistons in the series such that displacement of a given piston in the extend direction causes the remaining pistons in the series located between the cam element and the given piston to be displaced in the extend direction by the stroke length undergone by the given piston, each piston having a head portion in sealing engagement with its associated cylinder and having a reduced diameter body portion projecting in the extend direction to abut against the next adjacent piston in the series, the stop means for each piston being defined by a shoulder in said bore which defines the axial end of its associated cylinder, the reduced diameter body portion of a given piston being smaller than the diameter of the next adjacent cylinder in the series of piston cylinders such that on projection of said reduced diameter portion into said adjacent cylinder a fluid chamber is formed between said given piston and the next adjacent piston, and a fluid source for pressurizing in sequence each fluid chamber defined by each reduced diameter body portion and adjacent cylinder.



5,187,952

STRETCHABLE STITCHBONDED FABRIC

Dimitri P. Zafiroglu, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 26, 1991, Ser. No. 768,129
Int. Cl.[5] D04B *21/14*
U.S. Cl. 66—192 **2 Claims**

1. A stretchable stitchbonded fabric having a length direction and a direction transverse thereto, the fabric comprising a layer of substantially nonbonded fibers of textile decitex, the layer being multi-needle stitched with elastic thread to form spaced apart, parallel rows of stitches extending along the length direction of the fabric, the improvement comprising

the fabric having at least a first stitchbonded region and a second stitchbonded region, each region extending along the length direction of the fabric, the first stitchbonded region having a stretchability in one of said directions that is at least 1.5 times as great as the stretchability of the second region in the one said direction and the stretchability of at least one of the regions being at least 150%.

5,187,953

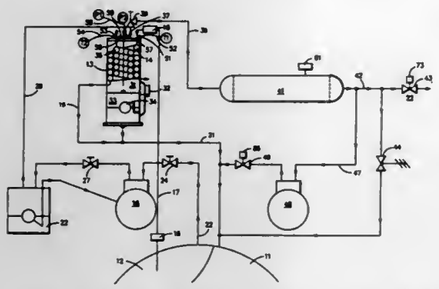
FAIL-SAFE APPARATUS FOR PURGE SYSTEM

Gordon L. Mount, 8289 Gulf Bridge Rd., West Monroe, N.Y. 13167

Filed Apr. 20, 1992, Ser. No. 871,153
Int. Cl.[5] F25B *43/04*
U.S. Cl. 62—195 **14 Claims**

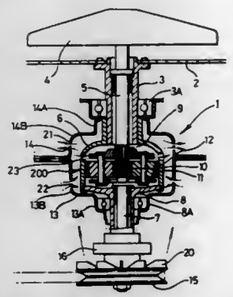
1. An improved purge recovery system of a type having a purge chamber, a refrigerant condensing coil in the purge chamber by way of a cooling medium passing through the coil, and a vent circuit for removing non-condensable gases from the purge chamber, wherein the improvement comprises:

means for sensing when the temperature of the coil reaches a predetermined temperature limit indicative of an inadequate supply of cooling medium to the coil; and



switching means responsive to said temperature sensing means for turning off the purge recovery system when said predetermined temperature limit is exceeded.

5,187,954
COOLING DEVICE FOR WASHING MACHINE TRANSMISSION
Hyung S. Kim, and Kyoung H. Kim, both of Seoul, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suweon, Rep. of Korea
Filed Nov. 12, 1991, Ser. No. 790,173
Claims priority, application Rep. of Korea, Nov. 15, 1990, 90-18485
Int. Cl.[5] D06F *37/00*
U.S. Cl. 68—3 R **12 Claims**

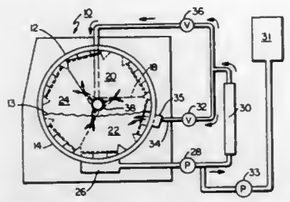


1. Washing machine having a tub, a basket enclosed by said tub, an agitator mounted in said basket, a transmission for producing rotation of said basket and rotary oscillation of said agitator, a motor, a first shaft for transmitting a driving force of said motor to said transmission, a second shaft for transmitting said driving force from said transmission to said agitator, said transmission including gears and an outer housing surrounding said gears, and a cooling mechanism comprising:

passive cooling means for enabling heat generated during operation to move away from said transmission and including said outer housing of said transmission in which a plurality of openings are formed; and

active cooling means for forcing air through said plurality of openings to remove heat generated by said transmission and including a plurality of blades mounted for rotation with said first shaft such that upon rotation of said shaft, said blades force air toward and into at least one of said openings and out at least one other of said openings to remove heat generated during operation.

5,187,955
CENTER SHAFT DYE INJECTION APPARATUS
Daniel M. Hertig, and Grzegorz Osinski, both of Syracuse, N.Y., assignors to G. A. Braun, Inc., Syracuse, N.Y.
Filed Sep. 20, 1991, Ser. No. 763,279
Int. Cl.[5] D06B *5/24*
U.S. Cl. 68—58 **4 Claims**



1. An apparatus for dyeing a wide variety of goods comprising:

a liquid containing chamber, generally cylindrical in shape;

a perforated basket member rotatably mounted within said liquid containing chamber, said perforated basket member including a plurality of radially disposed perforated partitions that longitudinally divide the basket into a plurality of compartments,

a spray means positioned along the center axis of said perforated basket member, the length of said spray means contained within the basket being fixed relative to said plurality of perforated partitions so that said perforated basket and said spray means rotate together in unison;

first nozzle means located at spaced intervals along said spray means contained within the basket, said first nozzle means being positioned to direct fluid into each compartment of the basket along said perforated partitions;

means for rotating said perforated basket and said spray means within said liquid containing chamber;

a fluid distribution means mounted in the lower portion of said liquid containing chamber and extending along the length of the chamber, said fluid distributing means having a plurality of spaced apart second nozzle means for directing fluid at the perforated basket; and

pump means for circulating liquid containing dye material through said spray means and said fluid distribution means and for maintaining the liquid level in the chamber below said spray means and above said fluid distribution means.

5,187,956
PREVENTING CLOGGING IN PRESSURE DIFFUSERS
Joseph R. Phillips; Peter E. T. Warloff; John Hefele; Victor L. Bilodeau; Ronald G. Bain, and Mark Barrett, all of Glens Falls, N.Y., assignors to Kamyr, Inc., Glens Falls, N.Y.
Filed Jun. 20, 1991, Ser. No. 718,294
Int. Cl.[5] D21D *5/04*
U.S. Cl. 68—181 R **19 Claims**

1. A pulp treating apparatus comprising:

a generally upright, liquid-tight, pressurized vessel defining a first interior volume for containing pulp to be treated under pressure;

a pulp inlet to the bottom of the vessel;

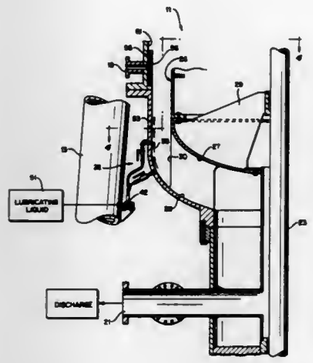
a pulp outlet from the top of the vessel, the pulp flowing generally vertically between said pulp inlet and said pulp outlet;

a screen defining a surface of revolution upstanding within the vessel and defining, in part, said first interior volume containing pulp, said screen located centrally in said vessel and having a top and bottom;

extraction means for withdrawing liquid from the pulp, through said screen, and including means defining a second interior volume within the vessel for receiving the extracted liquid;

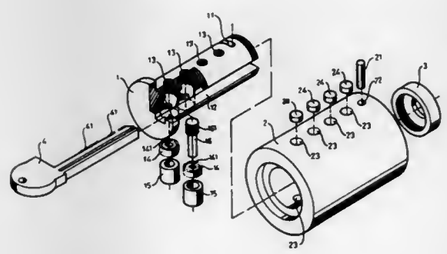
a stationary, closed bottom, support for the bottom of said screen, having an exterior surface;

a first inner wall section of said vessel just above said pulp inlet and defining with the exterior surface of said bottom support an annular passageway that decreases in cross-sectional area in the direction from said pulp inlet toward said pulp outlet; and



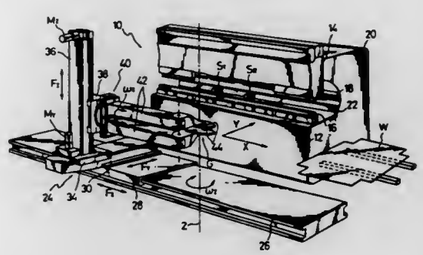
means for introducing lubricating fluid into said annular passageway between said first inner wall section and the pulp flowing in the passageway so that the friction between the pulp and said first inner wall section is minimized, and so therefore is the tendency of said passageway to clog.

5,187,957
PIN TUMBLER LOCKING MECHANISM
Cherng-Lin Yang, No. 30, Yen-Shern Rd., Long-Chuan Village, Nei-Pu Shiang, Ping Tong Hsien, Taiwan
Filed May 7, 1992, Ser. No. 879,337
Int. Cl.[5] E05B *27/04*
U.S. Cl. 70—493 **6 Claims**



1. A pin tumbler locking mechanism comprising an inner cylinder rotatably fitted in an outer cylinder, said inner cylinder having a lengthwise key hole for a key, having a lengthwise rack formed thereon, to extend therein and a plurality of crosswise pin holes intersecting the key hole, said pin holes having a female threaded portion adapted to threadably receive a male threaded portion in each of a plurality of radial pins being movably fitted in said pin holes, a plurality of gears placed in the pin holes and protruding into the key hole, each of said pins being engaged with a respective one of said gears for rotation therewith, wherein when a lengthwise rack carrying key is inserted in or pulled out of the key hole such that the rack engages the gears to rotate the gears, which then rotate the pins at the same time, said pins are raised up or lowered down by the engagement of the male threads of said pins and the female threads in said pin holes so that said pins will become recessed within the pin holes or protrude into aligned pin holes provided in the outer cylinder.

5,187,958
METHOD OF POSITIONING A METAL SHEET FOR A SHEETMETAL WORKING MACHINE
Gianpaolo Prunotto, and Franco Sartorio, both of Turin, Italy, assignors to Amada Company, Limited, Japan
Filed Aug. 28, 1991, Ser. No. 752,494
Claims priority, application Italy, Dec. 29, 1989, 68189 A/89
Int. Cl.[5] B21D *5/04, 43/00*
U.S. Cl. 72—9 **7 Claims**



1. A method of positioning a metal sheet which is initially flat between a pair of linear tools in which the metal sheet is manipulated by a movable gripping member of a manipulator robot controlled by a programmer according to a working program for positioning successive lines of working of the metal sheet in correspondence with the tools, comprising steps of:

a) establishing a preliminary, physically-detectable, virtual working line on the metal sheet;

b) providing the programmer with a spatial and angular coordinate of a theoretical engagement point at which the gripping member is to engage the metal sheet;

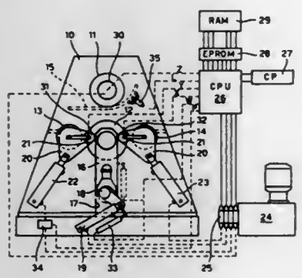
c) gripping the metal sheet by said gripping member;

d) moving the metal sheet by said gripping member so that the virtual working line is brought into parallel with the tools;

e) comparing the position of the actual engagement point of the gripping member with that of the theoretical engagement point when the virtual working line is in parallel with the tools, thereby deriving and storing a first position error;

f) rotating the gripping member and the metal sheet by a predetermined angle so as to bring a first actual working line into coincidence with the tools;
g) comparing the position of the actual engagement point of the gripping member with that of the theoretical engagement point, thereby deriving and storing a second position error;
h) correcting the first position error by means of corresponding movement of the gripping member and the metal sheet;
i) holding the metal sheet between the tools without working it and releasing the gripping member from the metal sheet;
j) moving the gripping member to the theoretical engagement point according to the first and second position error; and
k) carrying out the working program starting with the first actual working line.

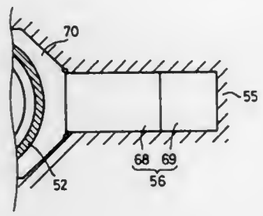
5,187,959
PROGRAMMABLE PLATE BENDING MACHINE
Orazio M. Davi, Cesena, Italy, assignor to Promau S.r.l., Cesena, Italy
Filed Sep. 18, 1991, Ser. No. 761,464
Claims priority, application Italy, Sep. 28, 1990, 14726/90[U]; Aug. 12, 1991, MI91A 002247
Int. Cl.[5] B21D *5/14*
U.S. Cl. 72—9 **16 Claims**



1. A programmable automatically controlled plate bending machine comprising:
an upper and a lower gripping roll mounted for rotation with a metal plate passing therebetween, said lower gripping roll being supported by slide members and a pressure sensing means for said lower gripping roll;
lateral rolls placed on either side of said gripping rolls, each of said lateral rolls being mounted for a rotational movement on pivotable arms and a drive means connected to said pivotable arms to move said lateral rolls with respect to said upper gripping roll of the bending machine;
a position sensing means connected to the pivotable arms to provide position control signals for said lateral rolls and pressure sensing means for said lateral rolls to provide spring-back signals from the metal plate at the start of a bending operation of the bending machine;
the machine further comprising a curvature sensing device to continuously sense a radius of curvature of the bending metal plate at an exit side of the upper and the lower gripping rolls;
and a central processing unit, whose input signals includes a position signal and a pressure signal provided by said position and said pressure sensing means, said processing unit comprising a program memory for storing a general operating program of the bending machine, and a memory programmable with a main working program defining predetermined working positions for said lateral rolls, and means to modify said main working program according to data signals received from said position and said pressure sensing means at the start of a working cycle of the bending machine, and to continuously modify said program according to curvature control signals continuously received by said curvature sensing device, during the working cycle of the bending machine.

5,187,960
APPARATUS FOR SUPPORTING REDUCTION ROLLS IN A ROLLING MILL
Ichizo Taguchi, Sakai, Japan, assignor to Hitachi Zosen Corporation, Osaka, Japan
Filed Sep. 30, 1991, Ser. No. 768,806
Claims priority, application Japan, Oct. 3, 1990, 2-267098
Int. Cl.[5] B21B *31/02*; G01L *5/00*
U.S. Cl. 72—19 **3 Claims**

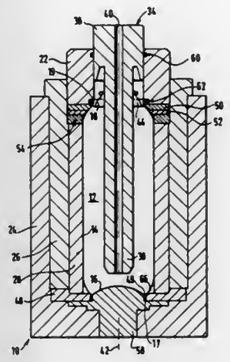
1. An apparatus for supporting a plurality of reduction rolls in a rolling mill comprising:
a mill housing,
support structures disposed within the mill housing for individually supporting the reduction rolls,
load cell means disposed between one of the support structures and the mill housing,
support element means disposed between each of the other support structures and the mill housing and accommodated in recess means formed in said mill housing, said



support element means comprising two plate members different in Young's moduli and longitudinally disposed in series to equalize an overall rigidity of
a first support system consisting of said one of said support structures and the load cell means to an overall rigidity of
a second support system consisting of said each of said other support structures and said support element means.

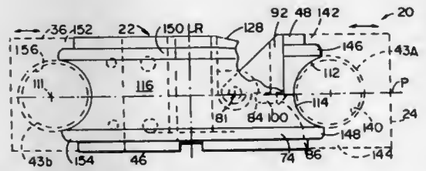
5,187,961
Patent Not Issued For This Number

5,187,962
APPARATUS AND METHOD FOR RESHAPING CONTAINERS
John P. Bilko; Stephen R. Arnell, both of Swindon; Andrew J. Boyd, Oxon, and Perry A. Goodwin, High Wycombe, all of United Kingdom, assignors to CMB Foodcan PLC, United Kingdom
Filed Jun. 23, 1992, Ser. No. 903,219
Claims priority, application United Kingdom, Jul. 4, 1991, 9114444
Int. Cl.[5] B21D *26/02*
U.S. Cl. 72—62 **14 Claims**



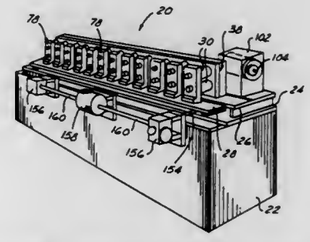
10. A method of reshaping a hollow container having first and second ends, at least one of said first and second ends being open, said container comprising a body member and at least one end member joined to the body member by a double seam, said method comprising the steps of placing the container in a mold having an inner surface which defines a chamber for accommodating the mold, clamping the container at said first end thereof with respect to the mold, clamping the container at said second end thereof with respect to the mold, sealing the or each open end of the container, supplying a fluid under pressure to the interior of the container so as to expand the container outwardly onto the inner surface of the mold, and preventing the or each double seam from deforming during expansion of the container.

5,187,963
TUBE BENDING DIE
Fredrick E. Sutton, Jr., Walker, and Robert N. Winegar, Sparta, both of Mich., assignors to Moiron, Sparta, Mich.
Filed Jun. 12, 1992, Ser. No. 897,885
Int. Cl.[5] B21D *7/04*
U.S. Cl. 72—159 **22 Claims**



15. A bending die comprising:
a center die having opposing sides and a bend-forming end;
a shiftable block movably mounted to the center die, the shiftable block being movable between a bend-forming position wherein the shiftable block is located along one of the opposing sides and a tube-release position wherein the shiftable block is removed from the one opposing side;
a groove defined in the center die and the shiftable block extending around the opposing sides and the end, the groove being useful for supporting a tube while forming a bend in the tube, the groove defining a plane that divides the groove into a first portion and a second portion;
the shiftable block defining the first portion along the one opposing side and also a part of the first portion on the end so that, with the shiftable block in the bend-forming position, a tube bent around the center die is trapped in the plane, but with the shiftable block in the tube-release position and the bent tube moved a short distance off the end of the center die, the bent tube can be released out of the plane generally in the direction of the shiftable block; and
clamp means for holding the shiftable block in the bend-forming position, the clamp means being releasable so that the shiftable block can be moved.

5,187,964
VARIABLE WIDTH ROLLER FORMING MACHINE
Roger Levy, Bloomfield Hills, Mich., assignor to Tishken Products Co., Detroit, Mich.
Filed Oct. 15, 1991, Ser. No. 777,686
Int. Cl.[5] B21D *5/08*
U.S. Cl. 72—181 **9 Claims**



1. An improved roll forming machine including, in combination:
a machine base;
a mounting plate mounted to said machine base;
a fixed base plate mounted to said mounting plate;
a movable base plate mounted to said mounting plate;
a drive means mounted to said machine base;
a transmission means mounted to said fixed base plate and connected to said drive means for operation;
a first plurality of vertically aligned, longitudinally-spaced, pairs of complimentary roller receiving shafts arranged in longitudinal pairs and mounted to said fixed base, driven by said transmission means, each pair of complimentary roller receiving shafts defining an upper and lower roller receiving shaft;
a second, equal, plurality of vertically aligned, longitudinally-spaced, pairs of complimentary roller receiving sleeves axially aligned with their respective roller receiving shafts arranged in longitudinal pairs, each roller receiving sleeve being axially movable with respect to and driven by said respective shaft and mounted to said movable plate for lateral movement on and along the axis of said shaft, each pair of complimentary roller receiving sleeves defining an upper and lower roller receiving sleeve;
base drive means to drive said movable base, and thereby said sleeves, toward and away from said fixed base, whereby the width of the stock which can be passed through said roll forming machine is varied;
each pair of complimentary roller receiving shafts being supportively received and journaled for rotation in a main block mounted upon said fixed base plate;
each pair of complimentary roller receiving sleeves being

mounted in one of a plurality of longitudinal-spaced, upright, stands arranged in a row spaced from and parallel to said main block on said movable base plate, each of said roller receiving sleeves having a flange;

each of said upper and lower roller receiving sleeves receiving rollers between said flange and a lock nut threadably attached to an end of a roller receiving portion;

a key way provided in said roller receiving portion of said lower roller receiving sleeve to fix and attach rollers to said sleeves;

said upper roller receiving shaft and said lower roller receiving shaft each include a reduced diameter portion, a lock nut receiving portion, and a roller receiving portion, said reduced diameter portion located at an end of each roller receiving shaft with the reduced diameter portion of each roller receiving shaft interfitted with a respective roller receiving sleeve;

said lock nut receiving portion of said roller receiving shaft having a lock nut threadably attached thereto for retaining rollers on said roller receiving portion of said shaft such that the roller can be changed to arrive at different roller configurations;

said roller receiving portion of each of said pairs of roller receiving shafts having a key way and a key provided therein to accept and attach rollers to said roller receiving shaft, and

said interfitting of each roller receiving shaft with a respective roller receiving sleeve being such that the lock nut on the roller receiving shaft faces the lock nut on the roller receiving sleeve.

5,187,965

ROLL STAND FOR A PLANETARY ROLLING MILL

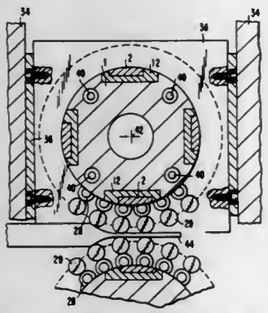
Dieter Figge, and Peter Fink, both of Essen, Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 12, 1991, Ser. No. 714,277

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1990, 4019562

Int. Cl.[5] B21B *13/20*

U.S. Cl. 72—190 11 Claims



1. A roll stand for a planetary rolling mill comprising:

a housing;

first and second circular support bodies forming a shaping zone therebetween having parallel axes and being mounted within said housing;

at least one rolling segment within said shaping zone of said support bodies;

a plurality of intermediate rolls and a plurality of working rolls mounted for rotation around said first and second support bodies, said intermediate rolls being supported on said rolling segment;

a plurality of hardened segment inserts within said rolling segment, each having a rear side facing said axis of said first of said support bodies and a front surface facing the second of said support bodies, said front surface of said segment inserts forming a rolling surface having a rolling direction and, within said shaping zone, a flattened cross-sectional shape differing from said circular shape of said support bodies; and

means at said first of said support bodies for displacing said segment inserts and for displacing at least one of said rolling surfaces relative to said first of said support bodies and in a direction perpendicular to said axes of said support bodies along said rolling direction, comprising a first wedge surface at said rear side of each of said segment inserts and a second wedge surface at said first of said support bodies facing said first wedge surface, said first and second wedge surfaces each having an incline toward a direction and facing one another for sliding displacement against each other along said rolling direction.

5,187,966

METHOD AND DEVICE FOR DRAWING CONTAINERS OF FRUSTOCONICAL SHAPE AND A CONTAINER DRAWN THEREBY

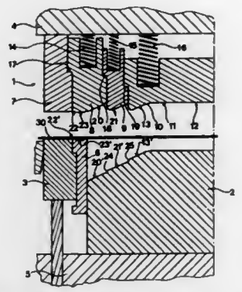
Jean-Francois Seconde, Metz, and Gerard Heurteboust, Roussy Le Village, both of France, assignors to Sollac, Puteaux, France

Continuation of Ser. No. 624,311, Dec. 4, 1990, abandoned. This application Jun. 5, 1992, Ser. No. 895,142

Claims priority, application France, Dec. 11, 1989, 89 16445

Int. Cl.[5] B21D *22/26*

U.S. Cl. 72—329 21 Claims



1. A method for drawing a substantially flat sheet metal blank to manufacture, in one stroke, a container having a generally frustoconical shape, said method comprising:

providing a draw tool including:

a punch having a frustoconically shaped punch surface;

a die having a die surface positioned to face and cooperate with said frustoconically shaped punch surface of said punch when said die is in a fully operative position, to form the container; and

a peripheral blank holder surrounding the punch;

positioning said sheet metal blank between said frustoconically shaped punch surface of said punch and the die surface of said die, said sheet metal blank having a principal plane and a peripheral edge portion;

forming the die surface of said die by positioning a plurality of movable concentric annular rings, including an innermost annular ring and an outermost annular ring, so that a top surface of each of said concentric annular rings faces a respective corresponding portions of said punch surface of said punch;

said plurality of movable concentric annular rings being movable respectively in a direction perpendicular to the principal plane of said sheet metal blank and toward said punch surface;

deforming said sheet metal blank in a succession of progressively larger concentric annular zones by successively pressing the annular zones of said sheet metal blank

toward said punch surface by moving each of said concentric annular rings, commencing with the innermost concentric annular ring, toward said frustoconically shaped punch surface;

enabling said peripheral edge portion of said sheet metal blank to slide between the die and the blank holder during the deforming of said sheet metal blank;

contouring the top surface of each of said concentric annular rings to provide said die surface with an overall shape that is substantially complementary to that of the frustoconically shaped punch surface when said die surface presses said sheet metal blank against the punch surface;

maintaining the pressing of each of said zones of said sheet metal blank toward said frustoconically shaped punch surface from a moment when each of said concentric annular zones contacts said punch until the drawing of the container is completed; and

urging a concentric annular ring to bear against a given annular zone of said sheet metal blank to deform said given annular zone as long as an adjacent inner annular zone adjacent said given annular zone remains separated from the frustoconically shaped punch surface,

whereby the thus formed container is substantially completely supported by the punch surface and the die surface at the end of the drawing of the container, thereby preventing wrinkling of the container.

5,187,967

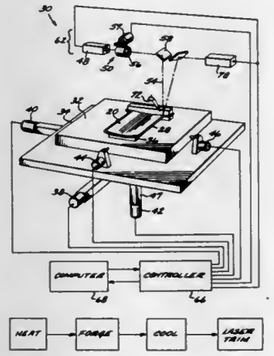
LASER TRIMMING OF FORGINGS

Jogender Singh, West Chester; Sulekh C. Jain, Cincinnati, both of Ohio; Thomas W. Lloyd, Chrewsbury, Vt.; Leroy A. Bates, Hampstead, N.H.; Denis Lacroix, Granby, Canada; Ernest B. Cooper, Jr.; Seetharamaiah Mannava, both of Cincinnati, Ohio, and Serge B. Couture, Granby, Canada, assignors to General Electric Company, Cincinnati, Ohio

Filed Sep. 16, 1991, Ser. No. 760,656

Int. Cl.[5] B21D *53/78;* D23K *26/00*

U.S. Cl. 72—340 19 Claims



1. A process for producing a forging having a preselected final profile, comprising the steps of:

furnishing a forging blank;

heating the forging blank to an elevated temperature;

forging the forging blank at the elevated temperature between closed dies, to produce a forging of about the preselected profile of the final forging, but having flashing thereon;

cooling the forging having flashing thereon to a uniform temperature less than the forging temperature;

furnishing a laser trimming apparatus having

means for accurately positioning the forging,

tooling to support the forging having flashing in the laser trimming apparatus,

a trimming laser having a beam with sufficient power to cut through the thickness of the flashing at all points on the periphery where flashing is found,

a laser beam focus and directional control system for a laser beam,

a controller containing a programmed trimming sequence for the forging, and

a post treating laser having a beam with sufficient energy to remove heat affected zone in the trimmed forging caused by the trimming laser, the post treating laser being mounted so that its beam is directed to a location adjacent that of the trimming laser;

mounting the forging having flashing on the periphery thereof in the tooling of the laser trimming apparatus;

trimming the flashing from the forging by passing the trimming laser beam through the flashing along the preselected final profile of the forging; and

post treating the forging by passing the post treating laser beam along the portion of the forging immediately adjacent the preselected final profile of the forging, after the trimming laser has passed along the preselected profile to trim the flashing, to remove heat affected zone caused by the trimming laser so that the metallurgical microstructure of the trimmed forging is substantially uniform.

5,187,968

CRIMP TOOL FOR PRESSING END SLEEVES FOR STRANDS

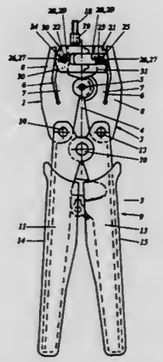
Horst Beetz, Stadtallendorf, and Kurt Battenfeld, Ebsdorfergrund, both of Fed. Rep. of Germany, assignors to WEZAG GmbH Werkzeugfabrik, Stadtallendorf, Fed. Rep. of Germany

Filed Nov. 12, 1991, Ser. No. 791,581

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1990, 4039435

Int. Cl.[5] H01R *43/042*

U.S. Cl. 72—410 10 Claims



1. A crimp tool for compressing the end sleeves of wire strands, comprising:

a pair of jaws, with each jaw including a driven end and a clamp end;

a pivot bearing connecting said jaws together intermediate their ends;

a drive attached to said driven end of each of said jaws for moving said clamp ends of said jaws between an open position and a closed position;

said jaws each including at its clamp end a rigid area and a resilient area movable with respect to said rigid area;

a pair of cheek plates, with each cheek plate moveably mounted to the clamp end of one of said jaws adjacent said rigid and resilient areas and movable with the movement of said jaws toward each other for engaging the end sleeves of wire strands, said cheek plates defining therebe-

tween a pressing zone for compressing the end sleeves of wire strands;

a first stop and a counter-stop formed between each of said cheek plates and said resilient areas of said jaws and a second stop and counter-stop positioned between each of said cheek plates and said rigid areas of said jaws, with said first and second stops dimensioned with respect to their counter-stops such that said first stops are moved to engage their counter-stops during crimping and said second stops are moved to engage their counter-stops only during crimping of the end sleeves of wires having a maximum cross-sectional area to transmit an additional pressing force through said rigid areas without overstressing said jaws; and

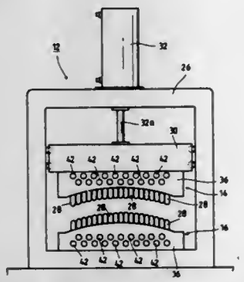
each resilient area of said jaws is formed as a spring jaw positioned adjacent said first stops so as to engage said first stops under exertion of an initial tension on said jaws.

5,187,969

LEAF SPRING CAMBERING METHOD AND APPARATUS

Motoo Morita, Komaki, Japan, assignor to Morita and Company Co. Ltd., Nagoya, Japan

Filed Jun. 12, 1990, Ser. No. 536,917
Claims priority, application Japan, Feb. 13, 1990, 2-32020
Int. Cl.[5] B21D *37/02*; B21J *13/00*; B23P *13/00*
U.S. Cl. 72—413 **22 Claims**



16. Apparatus for cambering a leaf spring, comprising:

a pair of opposed molds movably disposed toward and away from each other;

a plurality of mold fingers defining a mold surface within each one of said opposed molds and which can be individually advanced and retracted relative to the opposite mold along a longitudinal axis defined within each one of said mold fingers;

a plurality of drive means connected to said plurality of mold fingers for individually advancing and retracting said mold fingers to predetermined extents in order to define said opposed mold surfaces; and

control means for storing predetermined data corresponding to a predetermined camber to be imparted to said leaf spring and for transmitting control commands to said drive means, in accordance with said stored predetermined data characteristic of said predetermined camber to be imparted to said leaf spring, so as to advance and retract said mold fingers to said predetermined extents so that free end portions of said mold fingers together form said mold surface having said predetermined camber to be imparted to said leaf spring;

each of said plurality of mold fingers having an aperture defined therein and extending transversely with respect to said longitudinal axis thereof; and

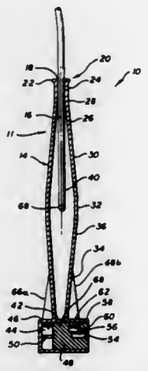
said plurality of drive means each comprises a treaded rod, and nut means threadedly engaged upon said threaded rod and operatively engaged within said aperture of said mold finger, such that upon actuation of said drive means by said control means, rotation of said threaded rods of said drive means about longitudinal axes defined within said threaded rods causes translational advancement or retraction of said nut means along said threaded rods, and corresponding advancement or retraction of said mold fingers along said longitudinal axes thereof as a result of said operative engagement defined between said nut means and said mold fingers.

5,187,970

CALIBRATION CUVETTE

Jamil Ahmad, Vista, and Samuel D. Riccitelli, Murrieta, both of Calif., assignors to Puritan-Bennett Corporation, Carlsbad, Calif.

Division of Ser. No. 565,463, Aug. 10, 1990. This application Dec. 16, 1991, Ser. No. 808,813
Int. Cl.[5] G01D *18/00*
U.S. Cl. 73—1 G **1 Claim**



1. A method of calibrating a sensor formed on a distal portion of an optical fiber, which comprises the steps of:

forming a generally cylindrical chamber having a diameter which is larger in the central portion than in respective ends thereof;

providing valve means at a lower end of said chamber to selectively introduce a gas into said chamber;

introducing an optical fiber sensor into said chamber so that a distal end of said sensor is located in the portion of the chamber with the largest diameter;

filling said chamber with a fluid; and

introducing a quantity of gas into said chamber, through said valve means.

5,187,971

CALIBRATION CUVETTE

Jamil Ahmad, Vista, and Samuel D. Riccitelli, Murrieta, both of Calif., assignors to Puritan-Bennett Corporation, Carlsbad, Calif.

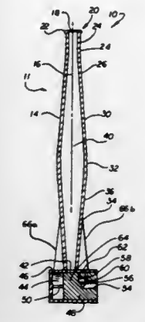
Filed Aug. 10, 1990, Ser. No. 565,463
Int. Cl.[5] G01D *18/00*; G01N *21/03*
U.S. Cl. 73—1 G **34 Claims**

1. A calibration cuvette apparatus having a housing adapted to contain a calibration fluid and to receive a chemical sensor, said calibration cuvette apparatus comprising:

a generally tubular cuvette section having a longitudinal axis formed in said housing, said cuvette section having a hollow chamber with upper, middle and lower portions, said upper and lower portions having a relatively smaller inner diameter than said middle portion, said upper end portion having an opening for receiving said sensor;

a valve section formed in said housing integrally with said cuvette section for introducing gas into said cuvette chamber, said valve section having first and second longitudinal end portions, a gas communication port extending between said cuvette chamber and an inner valve chamber extending between said valve section end portions; and

a valve plug slidable within said valve chamber between a first sealing position and a second gas communication position, said valve plug having first and second longitudinal ends and an outer circumference portion, and said valve plug having a gas communication channel with an inlet port at one of said valve plug ends and a gas outlet port at said outer circumference portion adapted to be aligned to be in communication with the cuvette gas communication port when said valve plug is in said gas communication position.

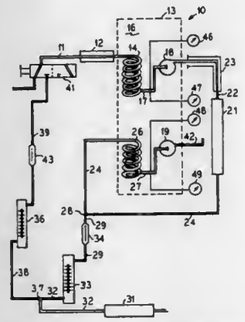


5,187,972

GAS MONITOR

Herbert H. DeFriez, Carpinteria, Calif., assignor to Clean Air Engineering, Inc., Palatine, Ill.

Filed Jan. 17, 1992, Ser. No. 822,294
Int. Cl.[5] G01N *30/00*
U.S. Cl. 73—23.2 **41 Claims**



1. A method for identifying the amount of a component portion of a sample gas comprising the steps of:

(a) first pumping said sample gas at a first predetermined volumetric flow rate into a processing zone;

(b) removing in said processing zone a component portion from said sample gas;

(c) admixing a make-up gas with the remaining sample gas to produce a gas mixture while concurrently

(1) secondly pumping said gas mixture at a second predetermined volumetric flow rate that is constant relative to said first predetermined volumetric flow rate, and

(2) measuring the flow rate at which said make-up gas is so admixed; and

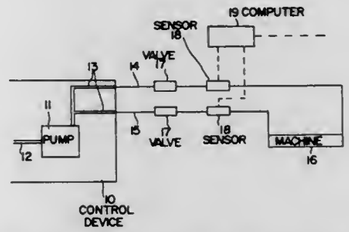
(d) comparing said so measured make-up gas flow rate with said first predetermined volumetric flow rate.

5,187,973

LEAK MONITOR FOR HYDRAULIC DRIVE SYSTEMS

Hans-Jurgen Kunze, Bottrop-Kirchhellen, and Josip Francuz, Moers, both of Fed. Rep. of Germany, assignors to Silvia Kunze, Bottrop-Kirchhellen, Fed. Rep. of Germany

PCT No. PCT/EP90/00809, § 371 Date Mar. 18, 1991, § 102(e) Date Mar. 18, 1991, PCT Pub. No. WO90/14584, PCT Pub. Date Nov. 29, 1990
PCT Filed May 18, 1990, Ser. No. 640,398
Claims priority, application Fed. Rep. of Germany, May 19, 1989, 3916382; Jul. 18, 1989, 8908692[U]
Int. Cl.[5] G01M *3/28*
U.S. Cl. 73—40.5 R **20 Claims**



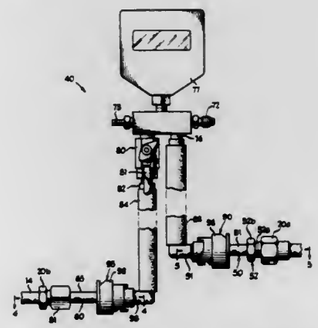
1. Method of operating a hydraulic machine unit which is selectively connected by means of at least one conduit to a tank or a pump, said conduit being under a residual pressure when connected to the tank during idling of the machine, characterized in that the residual pressure in the conduit is set to a desired value, that an actual value of the residual pressure in the conduit is measured and is compared with the desired value of the residual pressure and that a leak is indicated when the actual value of the residual pressure sinks below the desired value thereof.

5,187,974

VEHICULAR PRESSURE-TESTING APPARATUS

Kirk E. Mellits, Racine; Robert D. Braun, and Gary S. Wollert, both of Kenosha, all of Wis., assignors to Snap-on Tools Corporation, Kenosha, Wis.

Filed Aug. 29, 1991, Ser. No. 751,757
Int. Cl.[5] G01M *3/26*
U.S. Cl. 73—49.7 **15 Claims**



1. Pressure-testing apparatus for a vehicular fuel system which includes an injection structure, a tank structure, a pump structure, fuel lines between these structures, and a plurality of couplers interconnecting the fuel lines and the associated struc-

VOL 1147 ISS 4 FE 23 1993 UMI

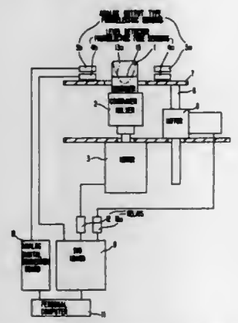
tures, said testing apparatus being adapted to be applied to a selected coupler which has been broken, said testing apparatus comprising a pair of adapters for respectively attaching to the broken coupler, a manifold having at least three ports, two conduits respectively coupled to two of said ports, two quick connectors attached respectively to said conduits, said quick connectors having means for respective application to said adapters, and a valve between one of said ports and the associated conduit.

5,187,975

APPARATUS FOR EXAMINING AND DETERMINING THE VISCOSITY OF A LIQUID IN A CONTAINER

Yuho Chiba, and Takao Tomita, both of Higashimurayama, Japan, assignors to Meiji Milk Products Co., Ltd., Tokyo, Japan

Filed Sep. 4, 1990, Ser. No. 578,005
Claims priority, application Japan, Dec. 26, 1989, 1-336908
Int. Cl.[5] G01N *11/02*
U.S. Cl. 73—54.01 **1 Claim**



1. An apparatus for the examination of a package comprising a permeable container and fluid content to be examined to determine whether there has been any unacceptable alteration of the viscosity of the fluid content, said apparatus comprising:

a. means for supporting a package constituted by a permeable container and fluid content to be examined so that it can be rotated;

b. means for rotating said supporting means and a package supported thereon for applying a centrifugal force to a fluid content;

c. sensor holding plate shiftable in its vertical direction provided around the said supporting means;

d. level-detection photoelectric tube sensor disposed on said sensor holding plate;

e. means for shifting said sensor holding plate connected through its input to the output of said level-detection photoelectric tube sensor;

f. analog output type photoelectric sensor disposed on said sensor holding plate at right angles to said level-detection photoelectric tube sensor;

g. means for converting an output from analog output type photoelectric sensor into an output voltage; and

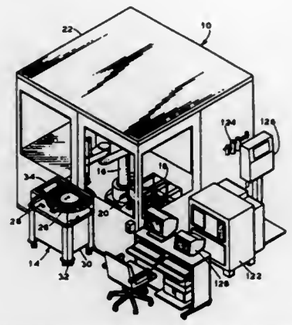
h. data processing means for detecting the level of said output voltage and the lapse of time measured from the beginning of the rotation of said rotating means and comparing the detected output voltage level and a reference lapse of time for a package the viscosities of the fluid contents of which are unaltered and producing an output signal when a package the fluid contents of which has been unacceptably altered is detected.

5,187,976

MASS-MOMENT WEIGHING BEAM

E. Thomas Gossler, and Michael A. Paul, both of Lynchburg, Va., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Aug. 16, 1991, Ser. No. 746,375
Int. Cl.[5] G01M *1/12*; G01G *19/00, 13/00*
U.S. Cl. 73—65.01 **11 Claims**



1. An apparatus for determining the mass-moment of a blade comprising:

a) an elongated weighing beam having a fulcrum knife edge and a scale knife edge, said knife edges being positioned a known, set distance from each other along said beam;

b) gripping means secured to said beam for securing the blade to said beam adjacent said scale knife edge;

c) a first fulcrum block upon which said fulcrum knife edge rests, said first fulcrum block generally being fixed in position;

d) a second scale fulcrum block upon which said scale knife edge rests, said scale fulcrum block being secured to a weighing scale which is used to measure the force applied to said scale fulcrum block by the blade;

e) lifting means for selectively raising said beam above both said fulcrum blocks and for selectively lowering said beam upon both said fulcrum blocks; and,

f) control means in communication with said weighing scale for determining the mass-moment of the blade.

5,187,977

DEVICE FOR RECOGNITION OF DRIVING ON A GRADE

Ralf Koscborek, Hanover; Gerd Krüger, Seelze; Hartmut Rosendahl, Hanover, and Johann Rothen, Sarstedt, all of Fed. Rep. of Germany, assignors :o WABCO Westinghouse Fahrzeugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Mar. 28, 1991, Ser. No. 676,892
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1990, 4010073
Int. Cl.[5] E01C *23/01*
U.S. Cl. 73—146 **18 Claims**

1. An apparatus for recognition of inclined grades during driving comprising

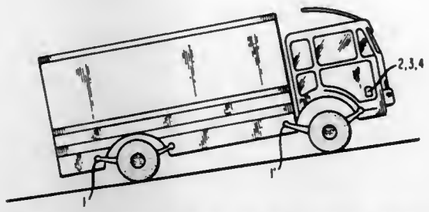
a front axle disposed at a vehicle;

a rear axle disposed at the vehicle, wherein the front axle and the rear axle form vehicle axles;

a device disposed at the vehicle for measuring vehicle acceleration;

a sensor for determining an axle load of one of the vehicle axles; and

an electronic control device connected to the sensor and to the device for measuring the vehicle acceleration, wherein signals of the sensor and of the acceleration-measuring device are fed to the electronic control device, and wherein the electronic control device determines, based



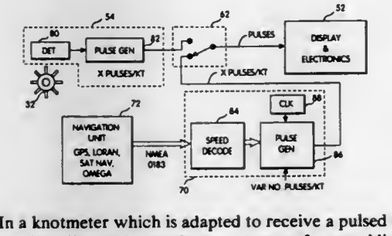
on the fed-in signals, that an axle load transfer is caused by an uphill grade or by a downhill grade.

5,187,978

KNOTMETER IMPELLER ELIMINATOR SYSTEM

Robert K. Tendler, 19 Lawrence Ave., Chestnut Hill, Mass. 02167

Filed Jun. 12, 1991, Ser. No. 713,789
Int. Cl.[5] G01C *21/10*
U.S. Cl. 73—187 **5 Claims**



1. In a knotmeter which is adapted to receive a pulsed input from an impeller-type transducer, a system for providing an input to said knotmeter utilizing the output of a navigation unit having as an output thereof a digitally encoded signal corresponding to calculated speed comprising:

means adapted to be coupled to said navigation unit for decoding said digitally encoded signal and for generating pulses at a rate proportional to decoded speed as an output thereof; and,

means for coupling said pulses to the input of said knotmeter.

5,187,979

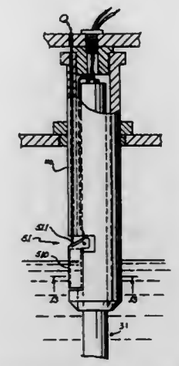
MULTI-SENSOR PROBE ASSEMBLY AND METHOD FOR FUEL STORAGE SYSTEM INCLUDING OVERFLOW PROTECTION MEANS

Karl W. Edmark, III, 8502 E. Cavecreek Rd., Unit #2, Carefree, Ariz. 85377

Filed Apr. 26, 1991, Ser. No. 692,295
Int. Cl.[5] G01F *23/26*
U.S. Cl. 73—304 C **45 Claims**

1. A probe assembly including a plurality of sensors for respectively measuring predetermined attributes of a fluid located in a container, the probe assembly comprising:

first sensor means for determining the dielectric constant of the fluid; second sensor means spaced from said first sensor means for providing an indication of the level of the fluid in the container using the knowledge of the dielectric constant of the fluid; and mechanical liquid level overflow cutoff device means spaced from both said first and second sensor means and located within said container near a top portion thereof for generating an electrical signal to



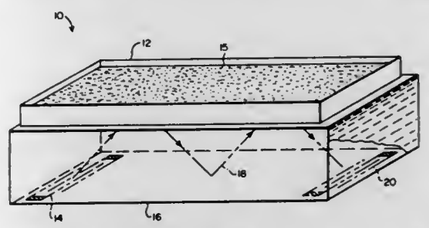
indicate an overflow condition of said fluid within said container.

5,187,980

METHOD AND APPARATUS FOR ACOUSTIC PLATE MODE LIQUID-SOLID PHASE TRANSITION DETECTION

Dianna S. Blair, Albuquerque; Gregory C. Frye, Cedar Crest; Robert C. Hughes, Albuquerque; Stephen J. Martin, Albuquerque, and Antonio J. Ricco, Albuquerque, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 31, 1990, Ser. No. 531,492
Int. Cl.[5] G01N *9/24*; G08B *19/02*
U.S. Cl. 73—599 **2 Claims**



1. A method of detecting the adhesion of a solid material to a particular surface comprising:

a) providing an acoustic plate mode detecting element capable of generating a high-frequency mechanical wave and positioning the element so that it can be contacted by a material to be detected with regard to degree of adhesion;

b) contacting the acoustic plate mode detecting element with the material to be detected with regard to degree of adhesion;

c) generating a high-frequency mechanical wave through said acoustic plate mode detecting element which is attenuated to a degree dependent on the adhesion of the material to be detected in contact with the detecting element;

d) measuring the attenuation of said high frequency mechanical wave caused by the adhesion of the material with the detecting element;

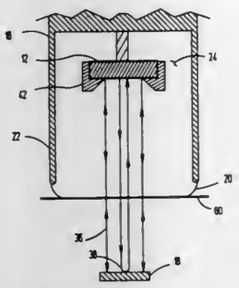
e) and using the measure of attenuation to determine the adhesion between the material to be detected and the detecting element.

5,187,981

ULTRASOUND TRANSDUCER

James N. C. Chen, Chelmsford, and Susan Ostrowski, Stoneham, both of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 12, 1991, Ser. No. 667,858
Int. Cl.[5] G01N *29/24;* A61B *8/14*
U.S. Cl. 73—642 **2 Claims**



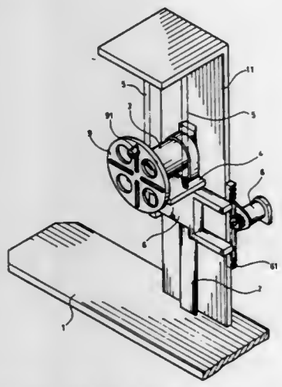
1. An ultrasonic transducer assembly for illuminating a target with a sector shaped beam of ultrasonic energy comprising, in combination:
a transducer housing open at one end;
an ultrasound transducer coupled to said housing, capable of illuminating a target with a sector shaped beam pattern of ultrasonic energy and receiving reflections of ultrasonic energy from said target;
a stand-off assembly for holding said transducer a predetermined distance from said target; and
means for attenuating the ultrasonic energy generated by said transducer, said attenuating means comprising an apodizing structure have a ring-like shape, said structure covering the periphery, but not the center region of said transducer, whereby said attenuation is greater at the periphery of said transducer than at its center.

5,187,982

VIBRATION CONTROLLED EXPERIMENTING DEVICE PROVIDED WITH A MOTOR WITH AN IMBALANCED ROTOR

Cheng Chu, No. 1, Ln. 24, Kuei-Feng St., Tai-Shan Hsiang, Taipei Hsien, Taiwan

Filed Apr. 26, 1991, Ser. No. 691,990
Int. Cl.[5] G01N *3/32*
U.S. Cl. 73—666 **2 Claims**



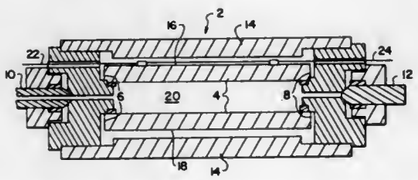
1. A controlled vibration experimenting device having a vibration model structure to simulate actual mechanical vibration, comprising,
(a) a base;
(b) a supporting frame perpendicularly mounted onto the base, having an L-shaped portion at the top end thereof;
(c) a T-shaped sliding rail disposed on said base;
(d) a connecting plate moveable along said T-shaped rail in a generally vertical direction;
(e) a geared strip attached to the connecting plate;
(f) a servo motor mounted to the connecting plate by a fixing seat;
(g) a plurality of springs suspending the connecting plate from the L-shaped portion of said supporting frame;
(h) a disc connected to the a rotatable shaft of the servo motor by a connecting head;
(i) a centrifugal member mounted on said disc; and,
(j) decoder means operatively associated with the connecting plate by a gear engaging the geared strip so as to convert the movement of the geared strip into an electric signal.

5,187,983

FIBER-OPTIC STRAIN GAUGE MANOMETER

Wojtek J. Bock, Gloucester, Canada; Tomasz R. Wolinski, and Roland Wisniewski, both of Warsaw, Poland, assignors to Université du Québec à Hull, Hull, Canada

Filed Sep. 4, 1991, Ser. No. 754,894
Int. Cl.[5] G01B *11/18;* G01L *1/24, 9/00*
U.S. Cl. 73—705 **18 Claims**



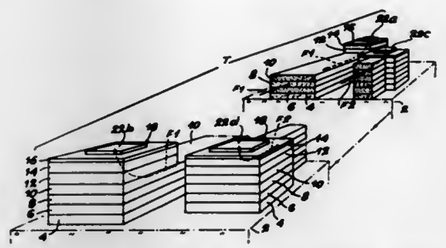
1. A fiber-optic strain gauge manometer for measuring pressure of a fluid, to be respectively connected to a light source and a measurement apparatus, said manometer comprising:
a cylindrical hollow body of predetermined length and acting as a pressure transducer, said hollow body having a central axis, cylindrical inner and outer surfaces, an end, and an opposite end provided with an inlet by which said fluid can get inside said hollow body, said ends being free to move longitudinally with respect to said central axis such that longitudinal and circumferential strains are generated in said hollow body when said pressure is applied on said inner surface, thereby producing a dilatation of said hollow body; and
a highly birefringent optical fiber which can maintain only some polarization states, said birefringent optical fiber having a sensing portion bonded with bonding means to said outer surface of said hollow body along a longitudinal path such that birefringence of said sensing portion changes when said sensing portion is subjected to said dilation of the hollow body, said sensing portion having a length smaller than said length of the hollow body, which is selected in function of a desired sensitivity;
wherein a polarized light beam is generated by said light source and transmitted in a form of two polarization eigenstates each parallel to one of two parallel principal birefringence axes of said birefringent optical fiber, the state of polarization of the input light beam being strain-modulated after a passage in said sensing portion, the stain-modulated output light beam being collected by said measurement apparatus for detecting and measuring change in said birefringence as a function of said dilatation, thereby giving indication of said pressure inside said hollow body.

5,187,984

HYDROSTATIC PRESSURE TRANSDUCER

Vincent Mosser, Vanves; Jean-Louis Robert, Le Cres, and Sylvie Contreras, Gignac, all of France, assignors to Schlumberger Industries, Montrouge, France

Filed Apr. 26, 1991, Ser. No. 691,906
Claims priority, application France, Apr. 27, 1990, 90 05371
Int. Cl.[5] G01L *9/06, 19/04*
U.S. Cl. 73—708 **12 Claims**



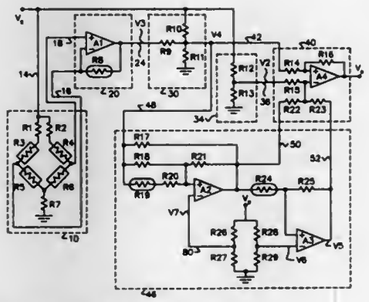
1. A monolithic pressure and/or temperature transducer comprising at least two sensitive semiconductor layers of III-V material are sensitive to pressure and to temperature, and which are supported by a common substrate of III-V material, said at least two sensitive layers comprising:
a first layer doped with donor type impurities at a first concentration and having a first resistivity as a function of pressure and of temperature; and
a second layer doped with donor type impurities at a second concentration different from the first concentration, said second concentration being at least one order of magnitude greater than said first concentration and having a second resistivity as a function of pressure and of temperature, which second resistivity depends on temperature in a different manner than the first resistivity, wherein said first and second pressure and temperature sensitive layers are of substantially the same composition.

5,187,985

AMPLIFIED PRESSURE TRANSDUCER

Richard W. Nelson, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 19, 1991, Ser. No. 762,286
Int. Cl.[5] G01L *7/08, 9/06, 19/04*
U.S. Cl. 73—708 **20 Claims**



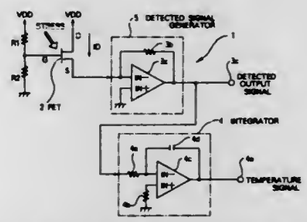
20. A pressure transducer, comprising:
a sensor device comprising a plurality of piezoresistors arranged in a bridge network which is connected between a voltage source and a ground potential, said sensor device having first and second outputs;
a first amplifier network comprising a first operational amplifier and a first temperature sensitive resistor connected between an inverting input and an output of said first operational amplifier, said inverting input of said first operational amplifier being connected to said first output of said sensor device, a noninverting input of said operational amplifier being connected to said second output of said sensor device;
an attenuation network comprising a plurality of trimmable resistors connected between said voltage source and said ground potential, said attenuation network being connected to said output of said first operational amplifier;
a compensation circuit comprising second and third operational amplifiers and second and third temperature sensitive resistors, said second temperature sensitive resistor being connected to a inverting input of said second operational amplifier, said third temperature sensitive resistor being connected to an inverting input of said third operational amplifier, said second temperature sensitive resistor being connected to said output of said first operational amplifier, said third temperature sensitive resistor being connected to an output of said second operational amplifier, said compensation circuit comprising a first means for providing a first reference voltage connected to a noninverting input of said second operational amplifier and a second means for providing a second reference voltage connected to a noninverting input of said third operational amplifier;
a second amplifier network comprising a fourth operational amplifier, a noninverting input of said fourth operational amplifier being connected to an output of said third operational amplifier and said output of said second operational amplifier, an inverting input of said fourth operational amplifier being connected to said output of said attenuation network; and
a null set network comprising a plurality of trimmable resistors, an output of said null set network being connected to said noninverting input of said fourth operational amplifier, said first, second and third temperature sensitive resistors being disposed in a common semiconductor material with said plurality of piezoresistors.

5,187,986

SEMICONDUCTOR SENSOR

Katsuhiko Takebe, and Satoshi Hiyama, both of Tokyo, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 6, 1991, Ser. No. 651,131
Claims priority, application Japan, Feb. 6, 1990, 2-26420
Int. Cl.[5] G01B *7/16*
U.S. Cl. 73—766 **13 Claims**



1. A semiconductor sensor for detecting a physical quantity applied thereto, comprising:
a semiconductor substrate having a portion which is exposed to a physical quantity imposed on the substrate;
a sole field-effect transistor, said transistor being disposed on said exposed portion of said semiconductor substrate;
biasing means for applying a gate bias voltage to said field-effect transistor;
a detected signal generator for generating a signal representing a change in a drain output of said field-effect transistor

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in response to a stress which is applied to said field-effect transistor due to imposition of the physical quantity on said semiconductor substrate; and

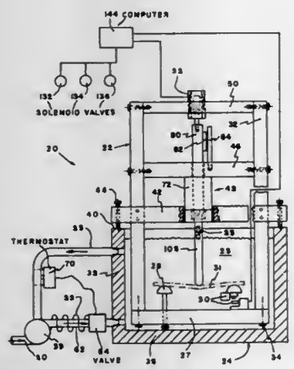
an integrator for generating a signal representing an integral of said drain output.

5,187,987

BENDING BEAM CREEP TEST DEVICE WITH PISTON HAVING A GAS BEARING

David A. Anderson; John G. Witzel; Don Christensen, and Hussain Bahia, all of State College, Pa., assignors to The Pennsylvania Research Corporation, University Park, Pa.

Filed Nov. 19, 1991, Ser. No. 794,539
Int. Cl.[5] G01N *3/20*
U.S. Cl. 73—852 **16 Claims**



1. Apparatus for measuring creep stiffness of a specimen composed of viscoelastic material having a flexural modulus greater than approximately 1,000 psi comprising:

a basin containing liquid coolant into which the specimen to be tested is immersed for maintaining the specimen at a predetermined temperature and for uniformly buoying the specimen;

first and second support means for supporting the specimen at spaced apart finite locations within the liquid coolant;

actuator means including:

a loading head for imparting a bending load to the specimen intermediate said support means;

a piston integral with said loading head;

gas bearing means supporting said piston for substantially frictionless movement as said loading head is moved between an advanced position and a retracted position; and

a source of pressurized gas for moving said piston between said advanced position and said retracted position;

first transducer means for measuring the deflection load imparted to the specimen; and

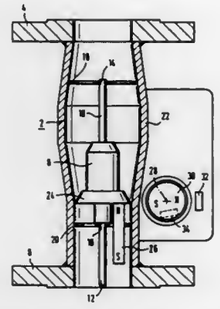
second transducer means for measuring the deflection sustained by the specimen as a result of the imparted load.

5,187,988

APPARATUS FOR MEASURING THE FLOW OF A FLUID MEDIUM

Hans J. Dettmer, Göttingen; Jorg Herwig, Kassel; Joachim Hagemann, Göttingen; Werner Marchewka, Eichenberg, and Michael Ützfeld, Kassel, all of Fed. Rep. of Germany, assignors to Fischer & Porter Company, Warminster, Pa.

Filed Mar. 26, 1991, Ser. No. 675,504
Claims priority, application Fed. Rep. of Germany, Mar. 28, 1990, 4009959
Int. Cl.[5] G01F *1/24*
U.S. Cl. 73—861.53 **17 Claims**



1. Flow measuring apparatus comprising:

a vertically disposed tube section;

a body suspended within said tube section and movable vertically within said tube section in response to fluid flowing through said tube section, the vertical position of said body dependent upon the flow rate of said fluid flowing through said tube section;

a magnet attached to said body and movable within said tube section with said body;

sensing means positioned externally of said tube section and including:

(a) a rotatably mounted magnet movable in response to said magnet movable with said body, and

(b) a Hall sensor responsive to movement of said rotatably mounted magnet for developing a sensor signal representative of the position of said magnet movable with said body;

and electronic evaluation circuit means responsive to said sensor signal and having means for linearizing said sensor signal for developing an output signal representative of said flow rate of said fluid flowing through said tube section.

5,187,989

APPARATUS FOR DETECTING ROTATION OF A ROTARY ELEMENT SUCH AS THE SPINNER OF A WATER METER

Serge Bulteau, Charnay-les-Macon, France, assignor to Schlumberger Industries, Montrouge, France

Filed Jul. 17, 1991, Ser. No. 731,684
Claims priority, application France, Jul. 20, 1990, 90 09277
Int. Cl.[5] G01F *1/10*
U.S. Cl. 73—861.78 **11 Claims**

1. A device for detecting the rotation of a rotary element about an axis XX', the device comprising:

a) m proximity detectors situated in a plane perpendicular to the axis XX' on m radial directions;

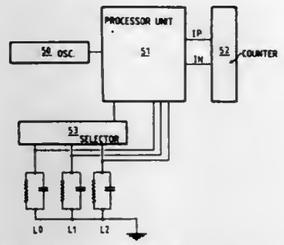
b) a mark fixed to said element eccentrically relative to the axis XX', said mark being suitable for modifying the response of the proximity detectors when said element is rotating;

c) a power supply for powering said proximity detectors;

d) selection means for selecting a series of m−1 proximity detectors to be powered; and

e) processor means firstly for observing changes in the signals delivered by each of the detectors in said series using parameters representative of such changes, thereby identifying the passage of the mark past one of the detectors situated at the end of said series, and secondly, as soon as such a passage has been identified, for:

deducing therefrom the number of revolutions;



actuating the selection means so as to cause it to select a new series of m−1 proximity detectors excluding the detector at which passage of the mark has just been identified; and

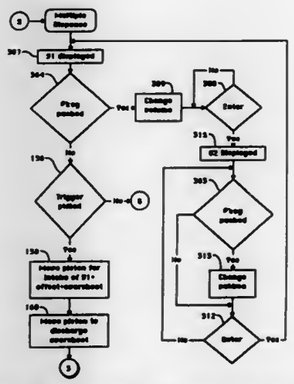
reinitializing said parameters in readiness for observing changes in the forthcoming signals from said new series, in such a manner that the parameters reinitialized in this manner are representative of the fact that at that time the mark cannot be at one of the detectors of said new series.

5,187,990

METHOD FOR DISPENSING LIQUIDS WITH A PIPETTE WITH COMPENSATION FOR AIR PRESSURE AND SURFACE TENSION

Magnussen, Jr. Haakon T., Orinda; Stephen J. Ruskewicz, Kensington; Gary L. Smith, Walnut Creek, and Anthony K. Wingo, San Leandro, all of Calif., assignors to Rainin Instrument Co., Inc., Emeryville, Calif.

Continuation of Ser. No. 488,729, Mar. 5, 1990, abandoned, which is a division of Ser. No. 59,644, Jun. 8, 1987, Pat. No. 4,905,526, which is a continuation-in-part of Ser. No. 580,587, Feb. 16, 1984, Pat. No. 4,671,123. This application Apr. 16, 1992, Ser. No. 869,843
Int. Cl.[5] B01L *3/02*
U.S. Cl. 73—864.18 **43 Claims**



1. A method for accurately dispensing selected volumes of liquids with a pipette having an electrically driven microprocessor controlled linear actuator and, connected to and controlled by the linear actuator, a displacement assembly including a displacing piston moveable within one end of a displacement cylinder having a displacement chamber and having another end with an aperture in communication with a tip communicable with the liquid, comprising:

programming the microprocessor control of the linear actuator to move the piston in the cylinder to an initial position and then from the initial position to retract the piston into the cylinder a first distance that will compensate for air pressure and surface tension effects associated with a volume or range volumes of the liquid to be drawn into the tip;

selecting a volume of liquid to be drawn into the tip by the pipette;

entering the selected volume into the microprocessor;

actuating the microprocessor control of the linear actuator to retract the piston from the initial position the first distance and a second distance that will draw into the tip the selected volume of liquid;

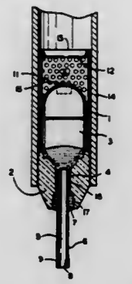
whereby the total volume of liquid taken into the tip is the selected volume and is less than the total displacement of the piston in the cylinder.

5,187,991

DEVICE FOR WITHDRAWING SAMPLES FROM MOLTEN METALS

Christiaan E. E. Baerts, Beringen-Paal, Belgium, assignor to Electro-Nite International N.V., Antwerp, Belgium

Filed Aug. 17, 1990, Ser. No. 569,055
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1989, 8910869[U]
Int. Cl.[5] G01N *1/14*
U.S. Cl. 73—864.56 **3 Claims**



1. A device for withdrawing samples from molten metals comprising a sample container formed from two metallic half dishes which fit together to form a shallow sampling chamber and arranged in the hollow space of a carrying tube, the sample container being provided with a neck-shaped inlet orifice for the molten metal and an externally projecting small quartz pipe which runs into said orifice, the improvement comprising the hollow space (**10**) surrounding the sample container (**3**) being substantially filled with granules (**11**) comprising a refractory material, the hollow space (**10**) being bordered on sides thereof by a cardboard tube (**1**) inserted into the carrying tube (**14**) and, on an end thereof opposite an inlet end thereof, by a layer (**12**) made of a porous, refractory material, over which a perforated cover plate (**13**) is arranged.

VOL 1147 ISS 4 FEB 23 1993 UMI

5,187,992

ROTARY TO LINEAR MOTION CONVERTER

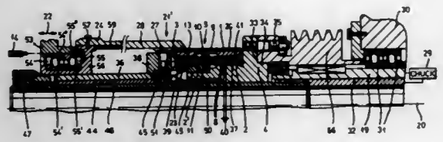
Brigitte Bald, Bad Berleburg, Fed. Rep. of Germany, assignor to Gedib Ingenieurburo Und Innovations-Beratung GmbH, Bad Berleburg, Fed. Rep. of Germany

Filed Oct. 31, 1991, Ser. No. 784,307

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1990, 4034595

Int. Cl.[5] F16H *27/02*

U.S. Cl. 74—89.15 8 Claims



1. In combination with

an input element rotatable about an element axis, and

an output element displaceable axially relative to the input element, a rotary/linear motion converter comprising:

an axially nondisplaceable support provided with a first external screwthread of predetermined diameter, pitch, and hand centered on the axis;

a second external screwthread provided on the output element centered on the axis and of the same diameter and pitch as the first screwthread but of opposite hand;

a roller having respective first and second ridged portions respectively meshing with the screwthreads;

means including a mechanical coupling between the first and second roller portions for maintaining the roller portions aligned axially with each other; and

formations between the first and second roller portions axially coupling them to each other and to the rotary input element, whereby on rolling of the roller portions on the screwthreads the roller portions and input element are displaced axially a predetermined distance relative to the support and the output element is displaced through twice this distance.

5,187,993

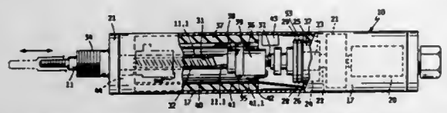
ACTUATOR FOR REMOTE CONTROL

John P. Nicholson, Shoreview, and Timothy J. Nicholson, Roseville, both of Minn., assignors to ADDCO Manufacturing, Inc., St. Paul, Minn.

Filed Aug. 12, 1991, Ser. No. 743,682

Int. Cl.[5] F16H *25/20*

U.S. Cl. 74—89.15 7 Claims



1. A linear actuator for remote operation of a machine control, comprising

an elongate frame portion and a reciprocally traveling carriage portion thereon to move forth and back along the elongate frame portion, the carriage portion comprising a threaded nut portion movable forth and back with the carriage portion, a push-pull rod portion attached to the carriage portion for movement therewith and for connection to such a machine control for forth and back movement,

and a releasable drive portion on the frame to produce said forth and back movement of the carriage portion, and said drive portion comprising an elongate rotary screw portion driving the carriage portion, the threaded nut portion and the screw portion defining a reversible driving connection whereby to accommodate driving the carriage portion in forth and back directions as the screw portion is rotated in opposite directions, and to also accommodate moving of the carriage in forth and back directions under influence of the machine control when the screw portion is released to freely turn, an incrementally movable and reversible motor portion and control means therefor, the reversible motor portion rotating the screw portion and producing travel of the carriage portion alternately in opposite forth and back directions as the motor is reversed, and an electromagnetically engageable and releasable clutch portion connected between the motor portion and the screw portion, the clutch portion being engageable to cause the screw portion to rotate in either direction and to stop and to thereby move the carriage portion and machine control forth and back as the motor portion and screw portion are reversed and also to thereby stop the carriage portion and machine control as the motor is stopped, and the clutch portion being releasable when electrical power is removed from the clutch portion as to release the screw portion to turn freely and thereby allow the carriage portion to freely move in either or both forth and back directions under influence of the machine control and thereby allow the machine control to operate independently of the motor portion.

5,187,994

ROTARY MOTION TO LONGITUDINAL MOTION CONVERTING MECHANISM

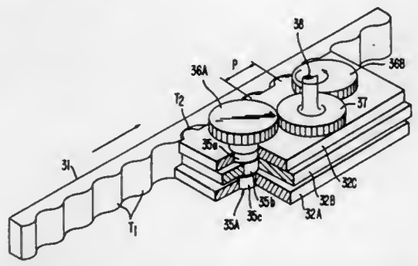
Masanori Hirai; Hiroyuki Takenaka, both of Gifu; Hidekazu Yokoi, Tokyo; Tsuyoshi Nachi, Gifu, and Kiyoshi Ando, Ogaki, all of Japan, assignors to Teijin Seiki Co., Ltd., Osaka, Japan

Filed Oct. 21, 1991, Ser. No. 777,717

Claims priority, application Japan, Oct. 23, 1990, 2-286260; Dec. 13, 1990, 2-401984; Dec. 13, 1990, 2-401985; Jun. 3, 1991, 3-130145

Int. Cl.[5] F16H *29/20*

U.S. Cl. 74—120 7 Claims



1. A rotary motion to longitudinal motion converting mechanism comprising:

a passive rack with a plurality of teeth having a predetermined pitch;

a plurality of active racks respectively having a plurality of teeth having said predetermined pitch and meshing with said passive rack; and

a plurality of rotatable crankshafts respectively having eccentric circular portions different in phase from one another and respectively having said active racks supported on said eccentric circular portions in such a manner that said passive rack is moved in its longitudinal direction through said active racks by rotary motions of said plurality of rotatable crankshafts.

5,187,995

SHIFT CONTROL SYSTEM FOR CONTINUOUSLY VARIABLE TRACTION ROLLER TRANSMISSION

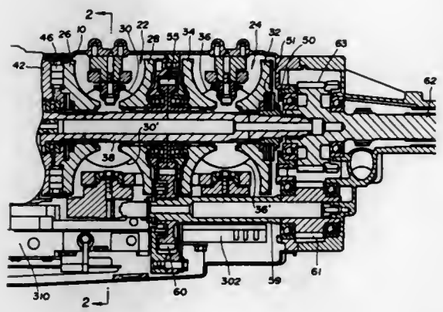
Masaki Nakano, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 12, 1992, Ser. No. 850,281

Claims priority, application Japan, Mar. 26, 1991, 3-087821

Int. Cl.[5] F16H *15/08*

U.S. Cl. 476—10 2 Claims



1. A shift control system for a continuously variable traction roller transmission, the continuously variable traction roller transmission including input and output disks, a pair of roller support members for a pair of traction rollers, each roller support member having rotation shanks and being rotatable therewith and movable in an axial direction thereof, and a hydraulic cylinder apparatus arranged to move each of the pair of roller support members in the axial direction of the rotation shanks, the shift control system comprising:

a cam mounted to one of the pair of roller support members for unitary rotation therewith;

a link arranged to be swingable with a rotation of said cam, said link having a first end in contact with said cam and a second end; and

control valve means for adjusting a hydraulic pressure to be supplied to the hydraulic cylinder apparatus, said control valve means including a sleeve, a spool fitted therein, a stepper motor having a rotational position determined in response to a speed ratio as commanded, and a drive member driven by said stepper motor in an axial direction of said control valve means,

said sleeve being connected to the second end of said link so as to be movable in accordance with a rotational displacement of the rotation shanks in said axial direction of said control valve means, said spool being connected to said drive member so as to be movable therewith in said axial direction of said control valve means,

wherein when said rotational displacement of the rotation shanks corresponds to said speed ratio, a relative positional relationship between said sleeve and said spool falls in a normal state wherein said hydraulic pressure is adjusted to provide a force to the rotation shanks in the axial direction of the rotation shanks so as to maintain said rotational displacement of the rotation shanks,

wherein when said relative positional relationship is out of said normal state, said hydraulic pressure is adjusted to change said force so that said rotational displacement of the rotation shanks corresponds to said speed ratio.

5,187,996

INDUSTRIAL ARTICULATED ROBOT PROVIDED WITH A DRIVING LINKAGE

Nobutoshi Torii, Hachiojo; Yasuo Naito, and Satoshi Kinoshita, both of Yamanashi, all of Japan, assignors to Fanuc, Ltd., Yamanashi, Japan

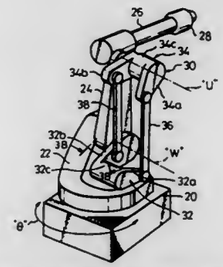
PCT No. PCT/JP91/00186, § 371 Date Oct. 15, 1991, § 102(e) Date Oct. 15, 1991, PCT Pub. No. WO91/12117, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 15, 1991, Ser. No. 768,757

Claims priority, application Japan, Feb. 15, 1990, 2-32356

Int. Cl.[5] G05G *11/00*; B25J *9/06, 17/00*

U.S. Cl. 74—479 4 Claims



1. A vertical-type industrial articulated robot including at least:

a first robot arm of a single member having first arm base point thereof and a first opposite point thereof, and supported for swing action in a first vertical plane about said first arm base point;

a second robot arm of a single member having a second arm base point thereof pivotally joined to said first opposite point of said first robot arm and a second opposite point thereof, and supported for swing motion in a second vertical plane in parallel with said first vertical plane about said second arm base point;

a robot wrist supported on said second opposite point of said second robot arm, and having an end thereof for mounting an end-effector thereon; and

a driving linkage mean for transmitting a drive torque from a drive source means arranged adjacent to said first arm base point of said first robot arm to said second robot arm, wherein said driving linkage means comprises a first linkage and a second linkage, said first and second linkage having pivotal supporting points in common at two positions substantially coinciding respectively with said first and second arm base points of said first and second robot arms to transmit the drive torque of said drive source means to said second robot arm through at least one of said first and second linkages.

5,187,997

VEHICLE STEERING COLUMN COUPLING

Nicholas Henry-Moore, Northamptonshire, England, assignor to The Torrington Company, Torrington, Conn.

Filed Nov. 20, 1991, Ser. No. 795,364

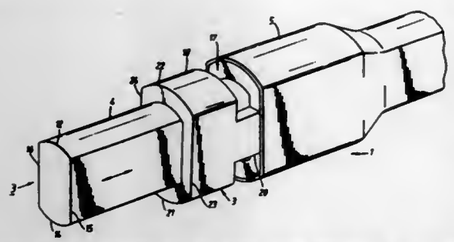
Claims priority, application United Kingdom, Feb. 20, 1991, 9103518

Int. Cl.[5] B62D *1/18*; F16D *3/64*

U.S. Cl. 74—493 19 Claims

1. A vehicle steering column having a coupling between two portions of the steering column, which coupling incorporates means for providing preloaded torque resistance to inhibit transmission of rotational backlash through the steering column, the coupling comprising a torsion bushing having inte-

gral first, second and third zones contiguous with each other, the first and second zones being flexibly connected by the third



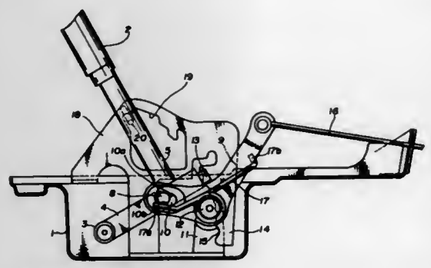
zone and the first and second zones being angularly offset one from the other.

5,187,998

SHIFT LEVER FOR AUTOMATIC TRANSMISSION

Yasushi Asano, and Norio Togano, both of Shizuoka, Japan, assignors to Fuji Kiko Co., Ltd., Japan

Filed Mar. 18, 1991, Ser. No. 671,112
Claims priority, application Japan, Mar. 22, 1990, 2-29244[U]
Int. Cl.[5] B60K *20/00*; G05G *1/04*; F16H *21/44*
U.S. Cl. 74—523 **2 Claims**



1. A shift mechanism comprising:

a casing which is adapted for connection to a vehicle chassis;

a shift lever arrangement which is supported on the casing so as to be pivotal about a first shaft, said shift lever arrangement having a pin which extends therefrom at a predetermined distance from a first axis about which the first shaft is pivotal;

a bell crank which is supported on the casing so as to be pivotal about a second shaft, the second shaft being pivotal about a second axis which is located at a level higher than the first axis, one end of the bell crank being adapted to be connected to a control wire, the other end of the bell crank being formed with an elongate slot in which the pin on the shift lever arrangement is slidably received;

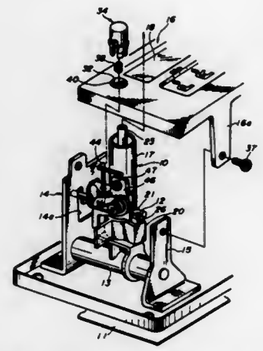
means for biasing the pin into constant engagement with a predetermined side of the elongate slot wherein said biasing means comprises a torsion spring, said torsion spring having a coiled portion which is disposed about the second shaft and first and second leg portions, the first leg portion engaging said pin and the second leg portion engaging the bell crank at a location between the second shaft and a location for connection of a control wire.

5,187,999

MANUALLY OPERABLE PARK LOCK RELEASING MECHANISM FOR AUTOMATIC TRANSMISSION SHIFT CONTROL DEVICE

Satoshi Kobayashi, Hiratsuka; Yasushi Asano, Shizuoka; Hiroshi Yamazaki, and Takumi Watanabe, both of Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd; Fuji Kiko Co., Ltd. and Ohi Seisakusho Co., Ltd., all of, Japan

Continuation-in-part of Ser. No. 571,486, Aug. 22, 1990, abandoned. This application Jun. 30, 1992, Ser. No. 906,721
Claims priority, application Japan, Aug. 31, 1989, 1-226916
Int. Cl.[5] G05G *5/06, 11/00*
U.S. Cl. 74—528 **12 Claims**



1. An automatic transmission shift control device for a vehicle, comprising:

a selector lever movable into a plurality of gear positions including a parking position;

a gear position indicator and top panel assembly for indicating a selected one of said gear positions and for concealing the inside of the automatic transmission shift control device from view;

said gear position indicator and top panel assembly being formed with a slot for allowing movement of said selector lever therein;

park lock means disposed inside of said gear position indicator and top panel assembly for preventing shifting of said selector lever out of said parking position position unless a foot brake of a vehicle is applied;

said park lock means having a position plate formed with a plurality of detents defining said gear positions, a position pin movably installed on said selector lever and engageable with said detents for positioning said selector lever at one of said gear positions, and a bushing installed on said selector lever and rotatable between a first position where it permits disengagement of said position pin from a parking position defining detent and a second position where it prevents disengagement of said position pin from said parking position defining detent;

manually operable park lock releasing means generally disposed inside of said gear position indicator and top panel assembly for enabling said selector lever to be shifted out of said parking position without applying a foot brake of the vehicle;

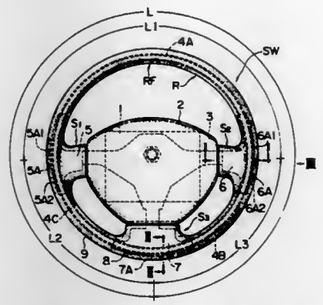
said park lock releasing means having a release button installed on said gear position indicator and top panel assembly for up-and-down movement, an intermediate member, and a release lever pivotally installed on said selector lever adjacent to said bushing and operatively connected through said intermediate member to said release button for driving said bushing into said first position when said release button is pushed downward, said intermediate member being so shaped as to enable said release button to be offset from said release lever in a vehicle width direction.

5,188,000

STEERING WHEEL HAVING AN AIR BAG UNIT

Kouichi Kaga, Inazawa, Japan, assignor to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Oct. 28, 1991, Ser. No. 783,255
Claims priority, application Japan, Oct. 30, 1990, 2-294205
Int. Cl.[5] B62D *1/04*
U.S. Cl. 74—552 **5 Claims**



1. A steering wheel adapted for use with an air bag unit, wherein ring core segments of a ring core are supported on spoke cores, and wherein a front ring core segment has the largest span, the steering wheel comprising:

a plurality of spoke cores, wherein each of the spoke cores is a die cast molding and includes a distal end portion mounted around the ring core, thus forming the ring core segments; and

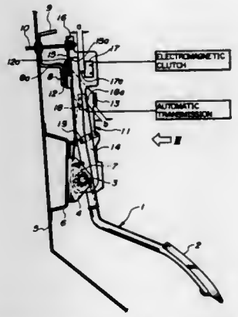
said distal end portion of two of said spoke cores which support the front ring core segment having a first part and a second part, extending along a circumference of the ring core, the first part having a vertical thickness larger than a radial thickness of the first part in a radial direction of the steering wheel, wherein said first part is disposed toward the front ring core segment and said second part is disposed away from the front ring core segment.

5,188,001

ACCELERATOR PEDAL DEVICE

Kazumi Sukeshita, Sagamihara; Takayuki Tomikawa, Zama, and Yasuyuki Ikegami, Kosai, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Fuji Kiko Co., Ltd., Tokyo, both of, Japan

Filed Nov. 26, 1991, Ser. No. 798,317
Claims priority, application Japan, Nov. 30, 1990, 2-338764
Int. Cl.[5] G05G *1/14*
U.S. Cl. 74—560 **13 Claims**



1. An accelerator pedal device for use with a fixed member, said device comprising:

a support bracket mounted on said fixed member;

a stopper member mounted to said fixed member;

a pedal lever having a pivot shaft, said pivot shaft being rotatably supported by said support bracket;

biasing means for biasing said pedal lever in such a given direction that an upper part of said pedal lever approaches said stopper member;

a first auxiliary lever pivotally supported by said pivot shaft, said first auxiliary lever having a first upper portion which is located between said stopper member and said upper part of said pedal lever;

a second auxiliary lever pivotally supported by said pivot shaft, said second auxiliary lever having a second upper portion which is located between said first upper portion and said upper part of said pedal lever;

first lost-motion means which provides a lost-motion of a first given angle between said pedal lever and said second auxiliary lever;

second lost-motion means which provides a lost-motion of a second given angle between said second and first auxiliary levers;

a first switch which is actuated when an intersection angle between said pedal lever and said second auxiliary lever becomes smaller than said first given angle; and

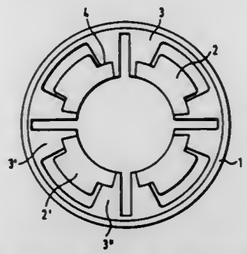
a second switch which is actuated when an intersection angle between said second and first auxiliary levers becomes smaller than said second given angle.

5,188,002

TORSIONAL VIBRATION DAMPER

Franz J. Wolf, and Hubert Pletsch, both of Bad Soden-Salmünster, Fed. Rep. of Germany, assignors to WOCO Franz-Josef Wolf & Co., Fed. Rep. of Germany

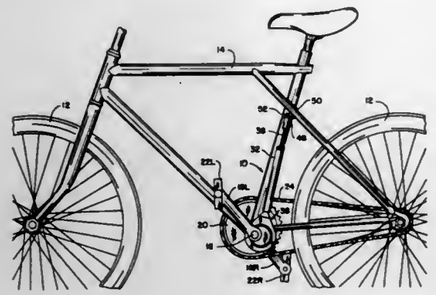
Continuation of Ser. No. 382,936, Jul. 21, 1989, abandoned. This application Dec. 16, 1991, Ser. No. 807,660
Claims priority, application Fed. Rep. of Germany, Jul. 25, 1988, 3825258
Int. Cl.[5] F16F *15/12*
U.S. Cl. 74—574 **12 Claims**



1. A torsional vibration damper having a spring characteristic curve which is dependent on the rotational speed of a shaft adapted to be connected to and damped with said damper, comprising a radially outer ring-type support means, a segmented radially inner ring-type centrifugal mass means having at least one centrifugally movable mass segment and a segmented ring-type spring means for connecting and coupling the inner and outer ring-type means to each other, wherein the ring-type spring means includes circumferentially spaced spring member portions which are functionally independent from one another, wherein at least one of the spring member portions supports said centrifugal mass segment at the ring-type support means.

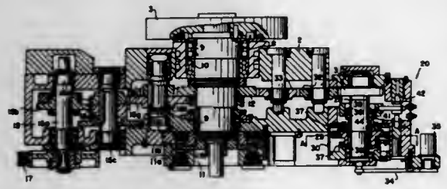
VOL 1147 ISS 4 FE 23 1993 UMI

5,188,003
POWER ASSIST DEVICE FOR A DRIVE MECHANISM
Earl M. Trammell, Jr., Chesterfield, Mo., assignor to Equi-Cycle Corporation, Chesterfield, Mo.
Filed Jan. 3, 1992, Ser. No. 816,220
Int. Cl.[5] G05G *1/14*
U.S. Cl. 74—594.3 **19 Claims**



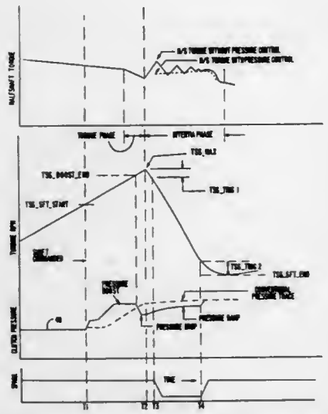
1. A power assist device for a crank-operated drive mechanism including a pair of crank arms extending from opposite ends of a shaft mounted for rotation on a frame, the crank arms being adapted to rotate the shaft about an axis with the crank arms revolving about the axis, the device comprising energy storing means, means for mounting said energy storing means on the frame, and means for connecting said energy storing means to the shaft, said connecting means being adapted to transmit motion between said energy storing means and the shaft, said energy storing means storing energy during a first portion of a revolution of the crank arms, releasing energy during a second portion of the revolution of the crank arms to assist in driving the rotation of the shaft, storing energy during a third portion of the revolution of the crank arms, and releasing energy during a fourth portion of the revolution of the crank arms to assist in driving the rotation of the shaft, the first through fourth portions occurring consecutively and one after another during a single revolution of the crank arms.

5,188,004
TURNTABLE APPARATUS FOR UNIVERSAL MACHINE TOOL
Hiroshi Kitagawa, Fukui, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Jun. 14, 1991, Ser. No. 690,891
Claims priority, application Japan, Dec. 21, 1988, 63-320469
Int. Cl.[5] B23B *23/24*
U.S. Cl. 74—813 R **2 Claims**



1. A turntable apparatus having a turntable in combination with an indexing mechanism for use in a universal machine tool, the turntable having a spindle, comprising:
- a turntable driving system for driving the turntable;
- a driving system for the indexing machine for separately driving said turntable, and which is separate from said turntable driving system, said driving system for the indexing mechanism having an indexing shaft;
- first means for clamping the main spindle of said turntable;
- second means for clamping said indexing shaft of said indexing mechanism driving system; and
- means for eliminating backlash in each of the turntable driving system and the driving system for the indexing mechanism;
- wherein the turntable is rotated by said driving system for said indexing mechanism so as to conduct an indexing of the turntable in a condition wherein an output torque developed by said turntable driving system is limited to a relatively low level;
- and wherein, after positioning of said turntable, the main spindle of said turntable and an indexing shaft of the indexing mechanism driving system are clamped at the same time in a condition wherein the backlash in each of the driving systems has been eliminated by said means for eliminating backlash.

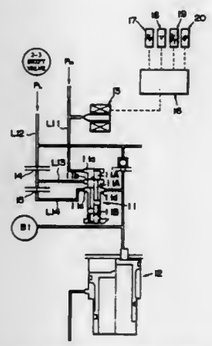
5,188,005
METHOD AND SYSTEM FOR IMPROVING SMOOTHNESS OF SHIFTS IN AN AUTOMATIC TRANSMISSION
Bak G. Sankpal, Rochester, and John F. Carnago, Trenton, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Sep. 14, 1990, Ser. No. 582,444
Int. Cl.[5] B60K *41/02, 41/06*
U.S. Cl. 74—866 **14 Claims**



1. In an automatic vehicle driveline comprising a multiple speed ratio automatic transmission having a frictional element associated with a specified speed ratio, an internal combustion engine, a torque input shaft for coupling the engine and the transmission, and a fluid pressure control system including fluid pressure generating means for generating a fluid pressure, a method for increasing shift smoothness when shifting from a currently engaged speed ratio of the specified speed ratio, the shift includes a torque phase and an inertia phase, the control system further including control means for controlling the fluid pressure generating means such that the level of the fluid pressure generated by the fluid pressure generating means is supplied to the frictional element during the torque the inertia phases in accordance with a pressure schedule to initiate and progressively increase the torque transmission therethrough, the method comprising the steps of:
- generating a speed signal based on the instantaneous speed of the input shaft during the torque and inertia phases, the value of the speed signal changing during the torque and inertia phases;
- generating a shift signal to indicate a desired shift from the currently engaged speed ratio to the specified speed ratio;

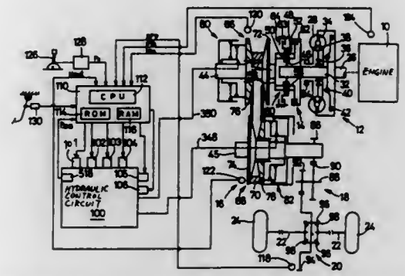
- correlating the shift signal to the pressure schedule so that the level of flui.. pressure controlled by the control means increases at the start to of the torque phase to quickly complete the torque phase;
- correlating the speed signal of the pressure schedule so that the level of fluid pressure controlled by the control means decreases immediately before the completion of the torque phase and to reduce the torque bump in the inertia phase; and
- estimating the completion of the torque phase wherein the step of estimating includes the steps of comparing the change in the speed signal with a predetermined value of the speed signal during the torque phase.

5,188,006
SHIFT CONTROL APPARATUS FOR AUTOMATIC TRANSMISSIONS
Shigeki Goto, Kariya, and Masato Shimei, Nagoya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Oct. 29, 1990, Ser. No. 604,503
Claims priority, application Japan, Oct. 31, 1989, 1-281798
Int. Cl.[5] B60K *41/06*
U.S. Cl. 74—867 **7 Claims**



1. A shift control apparatus for an automatic transmission, comprising:
- a kickdown orifice control valve for changing over two hydraulic pressure supply systems which supply engaging hydraulic pressure to friction engaging elements on an engaging side via at least one orifice by sliding a spool between a first position at which the spool is urged by a spring and a second position at which the spool is urged by changeover hydraulic pressure acting in a direction opposite the spring;
- a solenoid valve mounted at a point along a line which introduces the changeover hydraulic pressure;
- control means for controlling opening and closing of said solenoid valve; and
- said control means includes duty control means for controlling the duty of said solenoid valve based on a duty ratio corresponding to vehicle velocity and throttle opening.

5,188,007
HYDRAULIC CONTROL APPARATUS FOR BELT-AND-PULLEY TYPE CONTINUOUSLY VARIABLE TRANSMISSION, INCORPORATING MEANS FOR INCREASING BELT TENSIONING PRESSURE UPON REVERSAL OF ROTATING DIRECTION OF PULLEYS
Yuji Hattori; Yoshinobu Soga; Masami Sugaya, and Nobuyuki Kato, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Dec. 11, 1991, Ser. No. 805,041
Claims priority, application Japan, Dec. 28, 1990, 2-416146
Int. Cl.[5] B60K *41/12*
U.S. Cl. 74—867 **4 Claims**



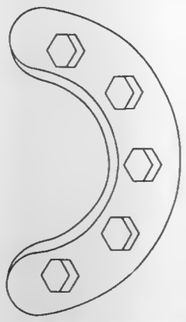
1. A hydraulic control apparatus for controlling a hydraulically operated continuously variable transmission of a motor vehicle having a reversing gear device and a shift lever, said transmission including a first and a second shaft, a pair of variable-diameter pulleys provided on said first and second shafts, respectively, a transmission belt connecting the pair of pulleys, and a pair of hydraulic actuators for changing effective diameters of said pulleys for continuously variably changing a speed ratio of the transmission, one of said pair of hydraulic acutators receiving a belt tensioning pressure for controlling a tension of said transmission belt, said transmission receiving power from said engine through the reversing gear device for selecting a forward or a reverse running of the vehicle, said reversing gear device having an output shaft which is rotated in opposite directions depending upon an operating position of the shift lever of the vehicle, said hydraulic control apparatus comprising:
- reversal detecting means for determining whether a rotating direction of said variable-diameter pulleys has been reversed or not; and
- pressure increasing means responsive to said reversal detecting means for temporarily increasing said belt tensioning pressure when said reversal detecting means detects reversal of the rotating direction of said variable-diameter pulleys.

5,188,008
CLUSTER NUT TOOL
Ronald States, 12 Arlington St., West Medford, Mass. 02155
Continuation of Ser. No. 425,482, Oct. 23, 1989, abandoned. This application Dec. 29, 1990, Ser. No. 619,814
Int. Cl.[5] B25B *9/00*
U.S. Cl. 81—13 **2 Claims**

1. A cluster nut tool comprising a crescent-shaped body having a plurality of equidistant hexagonal holes formed therein arrayed in seriatim, the holes adapted to engage corre-

VOL
1147
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sponding hexagonal nuts to prevent movement thereof when a torque is applied to a fastener of which the hexagonal nut is an



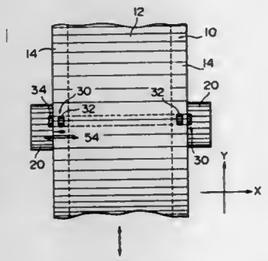
integral part, said body solely absorbing the torque forces when the tool is used.

5,188,009

METHOD FOR CHANGING THE DIRECTION OF A CUTTER EDGE OF A CUTTING PLOTTER

Ichiro Sunohara, and Tatsuji Ikeda, both of Nagano, Japan, assignors to Mimaki Engineering Co., Ltd., Nagano, Japan

Filed Jan. 10, 1991, Ser. No. 638,522
Claims priority, application Japan, Jul. 11, 1989, 1-178461
Int. Cl.[5] B26D *5/30*
U.S. Cl. 83—13 **9 Claims**



1. A method of preparing to cut a predetermined pattern in a sheet which is mounted on a recording plane of a cutting plotter such that the sheet includes an effective plotting area and such that a non-use area is defined on the recording plane outside of the effective plotting area, the cutting plotter including a pen carriage, and a cutter having a holder and a knife blade rotatably mounted in the holder for rotation about a central axis thereof, the knife blade including a knife edge extending diagonally upwardly from a cutting tip, said method comprising the steps of:

moving the pen carriage so as to press the cutting tip of the knife edge against the recording plane in the non-use area;

with the cutting tip of the knife edge pressed against the recording plane in the non-use area, moving the cutter in the non-use area relative to the recording plane until the knife edge is aligned in a first predetermined direction;

raising the pen carriage so that the cutting tip of the knife edge is raised above the recording plane;

moving the pen carriage relative to the sheet to a position over the effective plotting area in which the cutting tip of the knife edge is positioned directly above a starting point of a predetermined prospective cut which will extend from the starting point in a second predetermined direction;

lowering the pen carriage so that the cutting tip of the knife edge processes against the sheet at the starting point; and

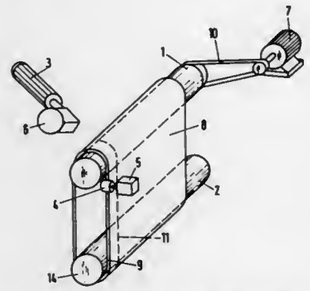
with the cutting tip of the knife edge pressed against the sheet at the starting point, moving the pen carriage relative to the sheet such that the cutting tip of the knife edge will remain at the starting point and the knife edge will pivot about the starting point with the cutting tip as a pivot until the knife edge becomes aligned in the second predetermined direction.

5,188,010

ARRANGEMENT FOR CUTTING THIN-WALLED BELTS FROM A CLOSED BAND OF RUBBER

Horst Borchardt; Peter Barkowsky, both of Burgdorf, and Jörg-Richard Friedrich, Nordstemmen, all of Fed. Rep. of Germany, assignors to Hermann Berstorff Maschinenbau GmbH, Hannover, Fed. Rep. of Germany

Filed Dec. 13, 1991, Ser. No. 806,358
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1990, 4039944
Int. Cl.[5] B26D *7/14*
U.S. Cl. 83—175 **6 Claims**



1. An arrangement for cutting thin-walled belts of rectangular cross section from a closed band of rubber, the arrangement comprising:

a first roller defining a first longitudinal axis;

roller drive means for driving said first roller about said first longitudinal axis;

a second roller rotatably journalled so as to be rotatable about a second longitudinal axis;

said first and second rollers being positioned with respect to each other to permit the closed band of rubber to be pushed over said rollers and be rotated in a continuous movement over said rollers when said first roller is driven by said roller drive means;

said first and second rollers having respective longitudinal forward ends and longitudinal rearward ends;

cutting means mounted adjacent said rollers near said forward ends for cutting said belts from the closed band;

pivot means for pivoting one of said rollers about a pivot axis disposed near the forward end thereof thereby imparting a movement to said closed band toward said forward ends of said rollers corresponding to an incremental displacement of the closed band equal to the width of the belt to be cut from said closed band thereby placing said band into position for cutting the next belt therefrom;

the closed band having a lateral edge facing toward said forward ends of said rollers when the closed band is mounted on said rollers;

stop means for contact engaging said band at said lateral edge to prevent said movement of said closed band from exceeding said incremental displacement;

said stop means being mounted at a fixed position near said forward ends of said rollers;

force sensor means connected to said stop means for sensing the force applied by said closed band to said stop means;

drive means for driving said pivot means to pivot said one roller about said pivot axis; and,

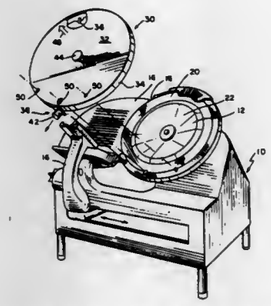
a control unit connected between said drive means and said sensor means for forming a drive signal to enable said drive means to cause said pivot means to deflect said one roller through an angle about said pivot axis to ensure a reliable surface contact of said lateral edge against said stop means thereby providing a smooth running of the closed band over said rollers as a belt is cut therefrom while at the same time imparting a deformation to said closed band which is substantially constant during the entire time the belt is cut from the closed band.

5,188,011

TEMPORARY COVER FOR THE SLICING KNIFE OF A SLICING MACHINE

Hardev S. Somal, and Daniel Keehn, both of LaPorte, Ind., assignors to Berkel Incorporated, LaPorte, Ind.

Filed Jun. 17, 1991, Ser. No. 716,533
Int. Cl.[5] B26D *7/22*
U.S. Cl. 83—478 **10 Claims**



1. A cover for a slicing knife having a peripheral cutting edge, comprising:

a cover section having a radial dimension greater than said slicing knife;

a flange extending from a peripheral edge of said cover section about substantially the entire circumference of said cover section;

a non-magnetic attachment means for removably retaining said cover to said slicing knife;

wherein said flange extends below said peripheral cutting edge of said slicing knife when said cover is removably retained to said slicing knife;

said non-magnetic attachment means includes a retention pin inwardly extending from said flange, said retention pin is positioned to removably retain said peripheral cutting edge of said slicing knife between said cover section and said retention pin;

said non-magnetic attachment means includes a plunger inwardly extending from said flange, said plunger is positioned to removably retain said peripheral cutting edge of said slicing knife between said cover section and said plunger; and

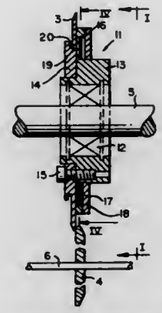
said plunger includes a spring which retains said plunger in said inwardly extending position and a handle which allows the force of said spring to be overcome and thus move said plunger to a second position radially outward of said inwardly extending position.

5,188,012

SUBSTRATE MACHINING DEVICE HAVING IMPROVED BLADE CONTACT

Georg Emich, Roesdorf, Fed. Rep. of Germany, assignor to Maschinenfabrik Goebel GmbH, Darmstadt, Fed. Rep. of Germany

Filed Apr. 30, 1991, Ser. No. 693,802
Claims priority, application Fed. Rep. of Germany, May 4, 1990, 4014238
Int. Cl.[5] B26D *1/24*
U.S. Cl. 83—496 **7 Claims**



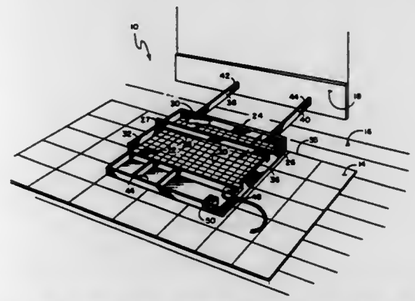
1. A device for machining sheet like material, particularly a continuous web, said device comprising a first substantially circular knife mounted on a hub body, said hub body being mounted on a first shaft for rotation about an axis of the first shaft, magnetic means located within said hub body, and a second substantially circular knife mounted on a second shaft for rotation about an axis of the second shaft, wherein said first and second knives each have a peripheral cutting edge, said cutting edges being angled with respect to each other and which contact each other at a cutting point to provide a scissor-like cutting action during operation, the two cutting edges being forced into contact with each other by said magnetic means within the hub body of said first knife, said magnetic means magnetically attracting said first knife in a direction toward said second knife thus maintaining the peripheral edges of the first and second knives in continuous contact during operation.

5,188,013

VINYL TILE MEASURING AND CUTTING DEVICE

Douglas Cardinale, 6 Intervale Ter., Randolph, Mass. 02368

Filed Sep. 3, 1991, Ser. No. 754,508
Int. Cl.[5] B28D *1/22*
U.S. Cl. 83—879 **2 Claims**



1. A vinyl tile spacing gauge and cutter for measuring and scoring of an edge flooring tile to be installed in a space defined

VOL 1147 ISS 4 FE 23 1993 UMI

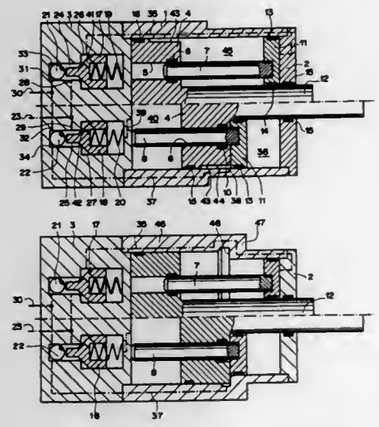
between the outer edge of a central array of tiles installed on a floor and an adjacent wall, comprising:
a base larger than said tile and having a base edge;
a heated plate surface on said base, said surface having a measurement grid delineated thereon;
first and second extendable measuring arms extending from said base when said base edge is aligned with the outer edge of said array of floor tiles, said measuring arms extending over to contact said wall, each of said measuring arms further including a scale thereon in the same measurement units as the measurement grid on said heated plate surface; and
scoring means adjustable in location disposed above said heated plate surface to score a tile placed thereunder on said heated plate surface, said scoring means being operable in parallel relationship to said base edge and adjustable to various distances away from said base edge, said vinyl tile once heated on said heated plate surface and scored by said scoring means to be broken along said scored line for insertion in said space between said outer edge of said central array of tiles on said floor and said wall.

5,188,014

HYDRAULIC CYLINDER WITH PRESSURE TRANSMISSION

Dionizy Simson, Oberseenerstrasse 78, 8405 Winterthur, Switzerland

Continuation of Ser. No. 652,669, Feb. 8, 1991, abandoned. This application Feb. 18, 1992, Ser. No. 835,089
Claims priority, application Switzerland, Feb. 14, 1990, 476/90
Int. Cl.[5] F01B *25/04*
U.S. Cl. 91—10 **13 Claims**



1. A hydraulic cylinder with pressure transmission comprising:
a cylinder jacket;
a piston-rod guide flange;
a cylinder bottom;
a primary piston having at least two bores;
a piston rod associated with said primary piston;
a secondary piston;
at least two plungers, each connected at one end thereof to said secondary piston and each having a free end adapted respectively to enter a corresponding one of said at least two bores;
a first chamber defined by said cylinder bottom, said cylinder jacket and said primary piston;
a first supply duct for introducing hydraulic fluid into said first chamber;
a second chamber defined between said secondary piston and said guide flange;
a second supply duct for introducing hydraulic fluid into said second chamber;
an intermediate chamber defined between said primary piston and said secondary piston; and
a third supply duct for introducing hydraulic fluid into said intermediate chamber.

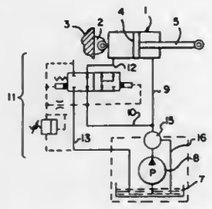
6. A hydraulic cylinder with pressure transmission comprising:
a cylinder jacket;
a piston-rod guide flange;
a cylinder bottom;
a primary piston having at least two bores;
a piston rod associated with said primary piston;
a secondary piston;
at least two plungers connected to said secondary piston and adapted respectively to enter said two bores;
two check valves disposed in said cylinder bottom, two springs respectively biasing said check valves, and means for opening said check valves.

5,188,015

AUTOMATICALLY SEQUENCED HYDRAULIC CYLINDER MECHANISM

Martin P. Hageman, Mequon, Wis., assignor to Kelley Company, Inc., Milwaukee, Wis.

Filed Dec. 26, 1991, Ser. No. 814,007
Int. Cl.[5] F01B *7/18*; F15B *15/17*
U.S. Cl. 91—321 **7 Claims**



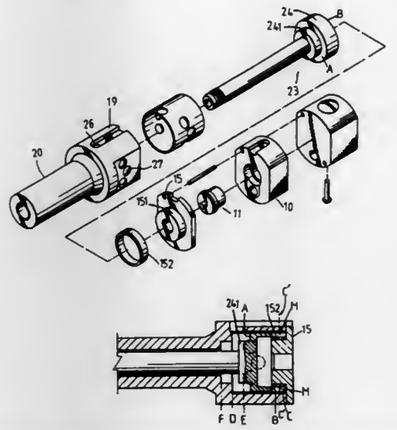
1. A hydraulic mechanism comprising a valve body defining a first chamber and a second chamber and having a passage providing communication between said first and second chambers, inlet means communicating with said first chamber for introducing hydraulic fluid to said first chamber, port means communicating with said first chamber for discharging hydraulic fluid from said first chamber and including a first port communicating with a working member and a second port connected to a reservoir for said fluid, first valve means disposed in said first chamber and having a first position connecting said inlet means with said first port whereby fluid will be supplied to said working member and having a second position connecting said first port with said second port whereby fluid will be returned from said working member to said reservoir, first biasing means for biasing said first valve means to said first position, second valve means disposed in said second chamber for opening and closing said passage, second biasing means for biasing the second valve means to a closed position, said first valve means having a pair of opposed ends and having a longitudinal bore including orifice means, said first valve means being constructed and arranged such that the pressure of said fluid introduced through said inlet means acts through said bore and on said opposite ends of said first valve means to maintain said first valve means in said first position, an increase in pressure in said hydraulic system exceeding the force of said second biasing means on said second valve means acting to open said second valve means and the subsequent flow of fluid through said orifice means creating a pressure differential to enable said first biasing means to urge said first valve means to said second position.

5,188,016

CYLINDER STRUCTURE FOR A PNEUMATICALLY OPERATED TOOL

Fung-Eng Tung, No. 46, Lane 1181, Fung Shih Road, Pu Tze Li, 1 Lin, Fung Yuan City, Taichung Hsien, Taiwan

Filed Mar. 25, 1992, Ser. No. 857,157
Int. Cl.[5] F15B *15/22*
U.S. Cl. 91—408 **1 Claim**



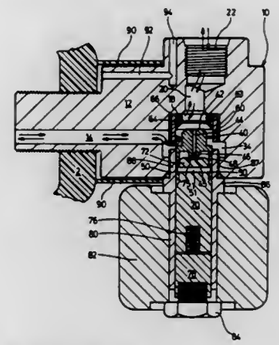
1. An improved cylinder structure for use in a pneumatically operated tool, said improved cylinder structure comprising:
a valve body (10) having a valve (11) slidably engaged along the axis of said valve body (10) for opening and closing a passage in said valve body (10);
said valve body (10) having air inlets and air outlets to actuate the opening and closing of said valve (11);
a cylinder head plate (15) having a first cylindrical protrusion (151) on a first side, a flat second side engaged to said valve body (10), and a passage (16) communicating with said passage in said valve body (10);
a cylinder assembly (18) engaged to said first side of said cylinder head plate (15);
said cylinder assembly (18) having a tubular cylinder portion (19) and a guide tube (20) integrally connected to said tubular cylinder portion (19);
said tubular cylinder portion (19) having a first cylindrical recess and air inlets and air outlets communicating with said air inlets and air outlets of said valve body;
a piston assembly (24) housed in said cylinder assembly (18) and said valve body (10) for reciprocal movement actuated by air pressure through said air inlets and said air outlets;
said piston assembly (24) having a cylindrical piston head slidably engaged in said first cylindrical recess of said tubular cylinder portion and a connection rod slidably engaged in said guide tube;
said piston head having a second cylindrical recess on a first side facing said first cylindrical protrusion (151);
said second cylindrical recess having a diameter substantially equal to a diameter of said first cylindrical protrusion (151);
wherein, during an expansion stroke of said piston assembly (24) said piston head slidably creates an air tight damper chamber (M) with said tubular cylinder portion (19) and said first cylindrical protrusion (151);
said piston head having a second cylindrical protrusion on a second side;
said second cylindrical protrusion having a diameter less than a diameter of said first cylindrical recess and substantially equal to a diameter of an extended end portion of said first cylindrical recess;
wherein, during a compression stroke of said piston assembly (24) said second cylindrical protrusion slidably creates an air tight damper chamber (N) within said extended end portion of said first cylindrical recess.

5,188,017

NATURAL GAS CYLINDER FITTING AND SOLENOID VALVE

Michael D. Grant, Toronto, and Michael A. Treymayne, Newmarket, both of Canada, assignors to The Consumers' Gas Company, Ltd., Toronto, Canada

Filed Jun. 18, 1991, Ser. No. 717,043
Int. Cl.[5] F15B *13/044*; F16K *31/02, 35/00*
U.S. Cl. 91—459 **15 Claims**



1. A cylinder fitting having
a valve body comprising a valve cavity, means for connecting the valve body to gas cylinder including a passage in communication with the valve cavity, and means for connecting a gas line in communication with the valve cavity;
a gasket comprising an O-ring engaged against a floor of the valve cavity by an annular flange depending from a collar engaged in the valve cavity, and
a solenoid-actuated poppet comprising a rounded or chamfered head cooperating with the gasket to selectively prevent or permit gas to flow between the valve cavity and the gas line,
such that the force of gas injected into the gas line to fill the cylinder unseats the poppet while the gasket remains engaged against the floor of the valve cavity by the annular flange.

5,188,018

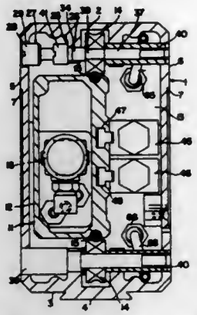
LINEAR UNIT WITH DISPLACEABLE BALL BEARING ASSEMBLY

Albrecht Treuner, Langendorf, Switzerland, assignor to Montech AG, Derendingen, Switzerland

Filed Jul. 29, 1991, Ser. No. 737,442
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1990, 4027122
Int. Cl.[5] F01B *25/26, 11/02*; F16J *15/18*
U.S. Cl. 92—5 R **18 Claims**

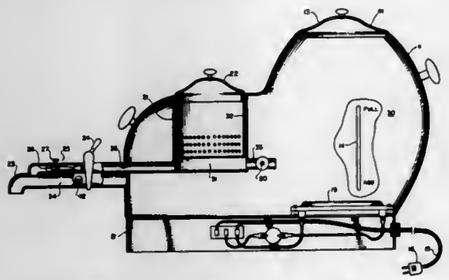
1. A linear unit, especially an apparatus for the machining, transportation and manipulation of workpieces, which comprises: a housing; a carriage slidably mounted in the housing and movable out of the housing and to which a handling appliance for the workpiece can be fixed; wherein the carriage is designed as a box section with an approximately rectangular closed section portion; ball bearings arranged in the housing and spaced from each other between which the box section is

mounted; guide rods associated with the box section and interacting with the ball bearings for the slidable mounting of the



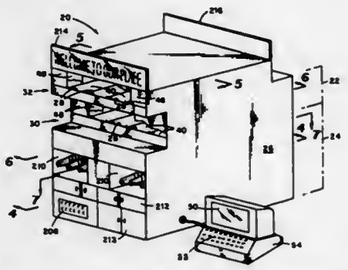
box section; wherein at least one of the ball bearings is displaceable.

5,188,019
AUTOMATIC TEA MAKER
Abdolvahab K. Vahabpour, 14315 Moorpark St., Apt. 110, Sherman Oaks, Calif. 91423
Filed Mar. 30, 1992, Ser. No. 859,972
Int. Cl.[5] A47J *31/00*
U.S. Cl. 99—285 **1 Claim**



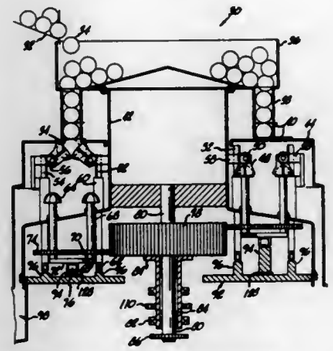
1. A beverage making apparatus comprising:
a container for holding a quantity of water;
means carried on said container for heating said quantity of water;
a tank within said container for holding a quantity of tea leaves;
piping operably interconnecting said tank and said container;
valve means selectively connecting said quantity of water with said tank via said piping to soak and steep said tea leaves to extract flavor ingredient from said tea leaves into surrounding water;
a dispensing nozzle connected with said container and said tank whereby water from said container and tea from said tank combine for common discharge via said nozzle;
selector valve means operably disposed on said dispensing nozzle for selectively discharging tea from said tank and water from said container;
said valve means is a flip type ON/OFF manually operated valve;
said selector valve means comprises a movable member disposed through a first conduit between said tank and said nozzle for controlling passage of tea from said tank to said nozzle;
a second conduit connecting said container to said nozzle for conducting water from said container to said nozzle;
a strainer removably mounted in said tank for holding said tea leaves;
said container includes an opening closed by a removable lid;
said lid having a vent means capable of whistling when said container water has reached boiling;
control means coupled to said heating means for determining ON/OFF and temperature selection;
indicator means disposed on said container for visually indicating water level in said container; and
said selector valve means includes a ramp means within said first conduit having an open-ended tapered passageway movably mounting said movable member.

5,188,020
FOOD SHELVING AND CYCLING SYSTEM
Kamal M. Buchnag, P-4, 3700 Sutherland Ave., Knoxville, Tenn. 37919
Filed Oct. 11, 1991, Ser. No. 775,775
Int. Cl.[5] A47F *1/00*; B65G *60/00*; G07F *11/00*
U.S. Cl. 99—468 **17 Claims**



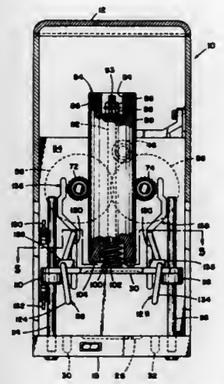
1. A shelving and cycling system for a wrapped food item comprising:
a frame;
an elongated shelf for storing a wrapped food item and including an entrance end through which a wrapped food item is placed into the shelf and an exit end through which a wrapped food item is removed from the shelf, the shelf being supported by the frame in a canted orientation so that a wrapped food item placed onto the shelf through the entrance end is gravitationally directed toward the exit end of the shelf;
a gate assembly associated with the shelf including a gate movably mounted adjacent the exit end of the shelf for movement between a closed position at which the gate prevents the food item for gravitationally exiting the shelf through the exit end thereof and an opened position at which the food item is permitted to gravitationally move through the exit end of the shelf and means for moving the gate between the opened and closed positions;
means associated with the gate moving means for initiating movement of the gate to its opened position upon the occurrence of a predetermined event to permit the food item to gravitationally exit the exit end of the shelf; and
sensor means associated with the shelf for sensing the presence of a food item positioned within the shelf, and the associated means is connected to the sensor means for monitoring the period of time that a food item is positioned within the shelf and for initiating the movement of the gate to its opened position upon the passage of the prescribed period of time.

5,188,021
FRUIT JUICE AND PULP EXTRACTOR
Ronald C. Bushman, Brea; L. Bruce Alexander, San Marino, and William E. Harris, Jr., Glendora, all of Calif., assignors to Brown International Corporation, Covina, Calif.
Filed May 15, 1991, Ser. No. 700,621
Int. Cl.[5] A23N *1/00*
U.S. Cl. 99—502 **24 Claims**



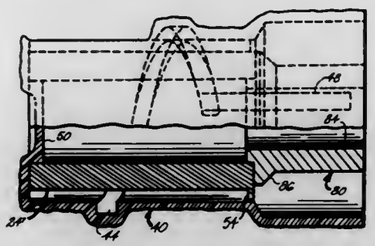
1. A rotary fruit juice extractor comprising:
a frame;
a plurality of pairs of holding cups pivotally mounted on the frame;
means for pivoting the cups;
a plurality of pairs of reamers with each reamer in fixed alignment with a corresponding cup; and
means for relatively moving the reamers and cups substantially straight towards and away from each other.

5,188,022
COUNTERTOP CAN CRUSHER
John D. Benson, 3935 Nokomis Ave. South, Minneapolis, Minn. 55406, and Ivan B. Erickson, Minneapolis, Minn., assignors to John D. Benson, Minneapolis, Minn.
Continuation-in-part of Ser. No. 426,112, Oct. 24, 1989, abandoned. This application Oct. 2, 1991, Ser. No. 771,326
Int. Cl.[5] B30B *15/14, 1/24, 9/32*
U.S. Cl. 100—52 **4 Claims**



1. An apparatus for crushing a workpiece such as a can, comprising:
a housing having an opening defined therein for receiving a workpiece, said housing including an internal support member having a guide track defined therein;
a compression member mounted for movement along a linear path within said housing;
drive means for moving said compression member along the linear path;
means for sensing compressive force between said compression member and said drive means and for generating a compressive signal representative of the compressive force thereat;
means within said housing which is adapted for initially crimping the workpiece, said crimping means being mounted for movement with said compression member and including means for engaging said guide track, said guide track being configured so as to urge said crimping means into the workpiece at an upper portion of the downward movement of said compression member, thereby reducing the amount of force which is needed to crush the workpiece;
means for controlling said drive means so that, upon actuation, said compression member is caused to move from an initial position downwardly to a lower limit position, and then upwardly to the initial position, whereby a can or like object which is positioned within the opening may be crushed;
said means for controlling including means for receiving said compressive signal and for causing movement of said compression member upwardly toward the initial position if, after said drive means is actuated and said compression member is moved at least partially downwardly, said compressive signal represents a compressive force greater than a predetermined amount.

5,188,023
CAST FORMED BI-METALLIC WORM ASSEMBLY AND METHOD
Peter W. Mansfield, Holmes Beach, Fla., and Frank N. Dupps, Germantown, Ohio, assignors to The Dupps Company, Germantown, Ohio
Filed Oct. 30, 1991, Ser. No. 784,981
The portion of the term of this patent subsequent to Mar. 5, 2008, has been disclaimed.
Int. Cl.[5] B30B *3/00*; B22D *19/16*
U.S. Cl. 100—145 **10 Claims**

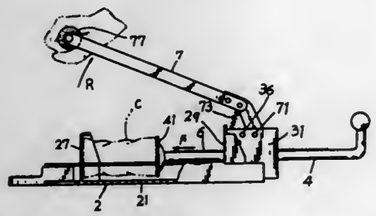


1. A cast formed bi-metallic worm assembly in a mechanical screw press having a rotary drive shaft in driving engagement with said worm assembly comprising:
a precast inner hub having a uniform cylindrical outer surface and a hollow interior surface structured for slidable engagement around and in driving communication with the drive shaft, said inner hub formed of a first rigid homogeneous cast material;
an outer flight body cast formed in place around and over substantially the entire length of, said inner hub outer surface, said flight body also having an integrally cast helical flight extending radially therefrom, said outer flight body formed of a second homogeneous cast material;
said second cast material harder than said first cast material;

VOL 1147 ISS 4 FE 23 1993 UMI

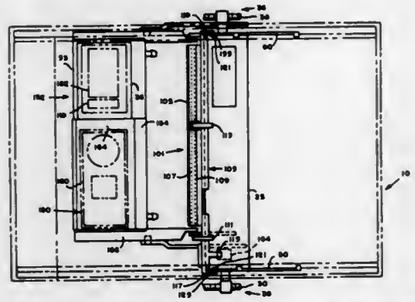
said flight body in rotational driving engagement with said inner hub outer surface held thusly only by metallurgically bonding which results from cast forming said outer flight body around said precast inner hub.

5,188,024
CAN CRUSHER
Liang-Kun Li, c/o Hung Hsing Patent Service Center P.O. Box 55-1670, Taipei (10477), Taiwan
Filed Jan. 6, 1992, Ser. No. 817,322
Int. Cl.[5] B30B *9/32, 1/04*
U.S. Cl. 100—274 **3 Claims**



1. A can crusher comprising:
a base including a bottom plate defining a first end portion and a second end portion on two opposite end portions of said bottom plate and having a squeezing chamber formed in said base;
a driving box secured on said base;
a squeezing means including a ratchet bar having ratchet teeth formed on said bar and reciprocatively held on said base and said driving box, having a piston member fixed on a first end portion of the ratchet bar and having a ratchet bar handle formed on a second end portion of said bar opposite to said piston member;
a lever means pivotally secured on said driving box having a first pawl pivotally secured on a lower portion of said lever means and normally engageable with said ratchet teeth of said ratchet bar, said first pawl operatively urging a ratchet tooth of said ratchet bar frontwardly towards said first end portion of said bottom plate and preventing a rearward retraction of said ratchet bar;
a second pawl engageable with said ratchet tooth of said ratchet bar preventing a rearward retraction of said ratchet bar;
said base including said bottom plate generally formed as rectangular shape having a plurality of fixing holes formed in the bottom plate for fixing the base on a wall by screws, a pair of longitudinal side walls longitudinally formed on two opposite sides of the bottom plate and protruding upwardly from the bottom plate, a holding plate portion secured with a holding platform formed on the first end portion of the bottom plate, a compression end plate formed on the first end portion of the bottom plate perpendicular to the bottom plate and adjacent to the holding platform having an upper extension of said compression end plate bent downwardly in a direction towards the second end portion of said bottom plate from said first end portion of said bottom plate for insertably retaining a can in the base, a retraction end plate formed on a second end portion of the bottom plate and secured with said driving box, said retraction end plate being opposite to the compression end plate and perpendicular to the bottom plate, and said squeezing chamber being confined by the bottom plate, the two side walls, the compression end plate and the retraction end plate; and
said driving box including a box casing secured on said second end portion of the bottom plate and secured with the retraction end plate having a socket recessed in the casing, and a pair of bar holes longitudinally formed through the casing for reciprocatively engaging said ratchet bar in said two bar holes; whereby upon an upward pulling of said lever means to allow said first pawl to urge said ratchet bar frontwardly towards said first end portion of said bottom plate, said piston member will be pushed frontwardly to crush a can inserted in said squeezing chamber of said base means, and upon a lowering of said lever means, said first pawl will be slipped away from said ratchet teeth to be operatively re-engaged with another ratchet tooth ready for a next crushing operation.

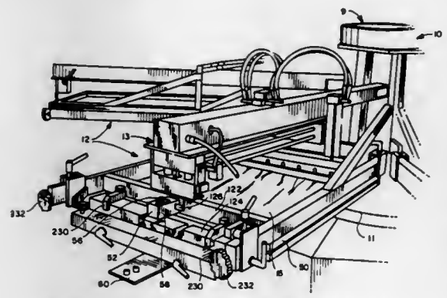
5,188,025
APPARATUS FOR CLEANING POSTAGE METER PRINTING INDICIA
Charles F. Murphy, III, Fairfield; William A. Salancy, Norwalk; Morton Silverberg, Westport, and Steven A. Supron, Norwalk, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.
Filed Dec. 23, 1991, Ser. No. 812,548
Int. Cl.[5] B41L *47/46*
U.S. Cl. 101—91 **4 Claims**



1. An improved combination of a postage meter insertable into and removable from a receptacle, said postage meter having a shutter bar slidably mounted to said meter such that in a first position said shutter bar is located opposite and blocking external access to an indicia plate of said meter and in a second position said shutter bar is laterally positioned from said indicia plate,
said receptacle being mounted in a base and having a shutter bar locking mechanism for engaging said indicia plate in said shutter bar's first position and for slidably positioning said shutter ar between the first and the second position,
wherein said improvement comprises:
a brush assembly having an elongated base pivotally mounted to said shutter bar,
said base having a brush having a plurality of bristles mounted longitudinally therealong, said brush being fixably mounted to said base such that the bristles extend in the vertical direction of said indicia plate, and,
biasing means for biasing said bristles into sweeping communication with said indicia plate when said shutter bar is reciprocally displaced between its first and second positions by said shutter bar locking mechanism.

5,188,026
PIN REGISTER SYSTEM FOR SCREEN PRINTERS
Rick L. Fuqua, Chicago, and Phil Motev, Deerfield, both of Ill., assignors to Advance Process Supply Company, Chicago, Ill.
Filed Oct. 3, 1991, Ser. No. 770,518
Int. Cl.[5] B41M *1/12*
U.S. Cl. 101—129 **16 Claims**

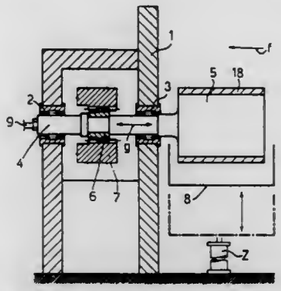
1. A method for registration of a plurality of images on screens on screen frames in a screen printer having a succession of screen printing stations at which are located printing heads for printing successive images on a workpiece carried by a pallet carrier through the successive printing stations, said method comprising the steps of:
providing a support for securing each of the screens to one of a plurality of image positives;
positioning each of the image positives on the support relative to a first and second registration means on the support so that each image positive is registered with respect to the first and second registration means;
bringing each of the screen frames in succession to the support and registering a registration portion of each screen frame with the first and second registration means on the support;
securing each of the screen frames on the support in a position where the image positives and the registration portions of the screen frames are in a known fixed relationship to one another;
exposing the image positives while on the screen frames to provide an image on each screen frame;
providing a calibration means on the pallet carrier of the screen printer having first and second portions located at



positions corresponding to the registration portions on the screen frames;
positioning the calibration means on the pallet carrier at a first printing station and adjusting first and second calibration members on the printing head into aligned positions with the first and second portions of the calibration means;
advancing the calibration means and the pallet carrier through its normal printing advancement to the next printing station and adjusting the first and second calibration members on the printing head at the second printing station into alignment with the first and second portions of the calibration means;
bringing each of the screen frames to its respective printing station and aligning the registration portions on each screen frame with the first and second calibration members on the respective printing heads that have been previously aligned by the calibration means on the pallet carrier; and
securing the screen frames to the printing heads after such alignment.

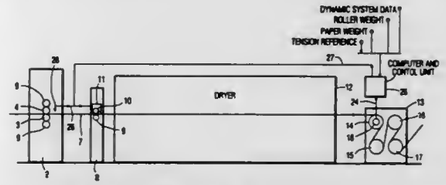
5,188,027
PRINTING APPARATUS WITH QUICKLY CHANGEABLE PRINTING PLATE
Giuseppe Fantoni, Ozzano, Italy, assignor to Office Meccaniche G. Cerutti S.p.A., Casale Monferrato, Italy
Filed Jun. 28, 1990, Ser. No. 545,477
Claims priority, application Italy, Jun. 30, 1989, 21044 A/89
Int. Cl.[5] B41F *5/00*
U.S. Cl. 101—216 **3 Claims**

1. A printing apparatus comprising:
a frame including first and second opposed and spaced side walls;
roller bearings mounted in each said side wall;
an impression cylinder having opposite ends and bearing shaft extending from only one end thereof, said bearing shaft being rotatably mounted in said roller bearings to support said impression cylinder in a projecting cantilever-like manner from one of said side walls of said frame with the other of said ends of the impression cylinder completely free and open to permit a printing plate to be



mounted and dismounted from said impression cylinder by sliding said printing plate over said other end of the impression cylinder; and
drive means disposed between said side walls of said frame in driving engagement with said bearing shaft for driving said impression cylinder in rotation.

5,188,028
PRINTING MACHINE DAMAGE CONTROL SYSTEM, AND DAMAGE CONTROL METHOD
Klaus T. Reichel, Augsburg, Fed. Rep. of Germany, assignor to Man Roland Druckmaschinen Ag, Offenbach am Main, Fed. Rep. of Germany
Filed Oct. 16, 1991, Ser. No. 778,392
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1990, 4039108
Int. Cl.[5] B41F *5/04, 13/22*
U.S. Cl. 101—228 **20 Claims**

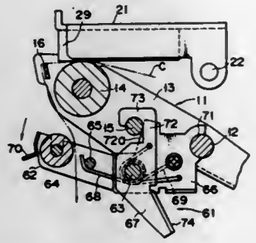


1. Printing machine damage control system for a web-type printing machine,
wherein said printing machine includes, sequentially in the running direction of the web, a printing station (2), a dryer unit (12) and a cooling unit (13), and said cooling unit has a cooling roller or cylinder (14), the web being at least partly looped about the cooling roller or cylinder, and
means (9, 10, 11; 28) located upstream of the printing station for separating a torn web from the printing station (2),
said system comprising, in accordance with the invention,
web tension sensing means (18, 23) operatively coupled to the cooling roller or cylinder (14) of the cooling unit (13) and generating a web tension signal representative of the tension of the web as it passes around the cooling roller;
control means (26) responsive to the web tension signal and determining whether the web tension signal is below a predetermined web tension level and hence indicative of a web tear, or damage, or incipient web tear; and
connection means (27, 29) connected to and controlled by said control means to control said torn web separating means to separate the web from said printing station (2)

VOL 1147 ISS 4 FEB 23 1993 UMI

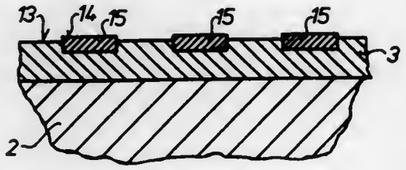
upon determination by said control means that the web tension signal is below said predetermined level.

5,188,029
LABEL PRINTER
Kazuaki Sugimoto, Numazu; Satoshi Kitahara; Akio Yamamoto, both of Mishima, and Ikuzo Sugiura, Sagamihara, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed Mar. 26, 1991, Ser. No. 675,981
Claims priority, application Japan, Mar. 30, 1990, 2-83949
Int. Cl.[5] B41F *1/08*
U.S. Cl. 101—288 **14 Claims**



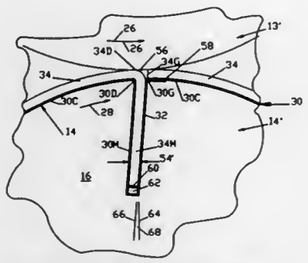
1. A label printer comprising:
a body having a pair of supporting portions facing each other;
printing means arranged between the supporting portions, for printing desired information on labels which are pasted on an elongated base and arranged side by side along the longitudinal direction of the base;
first and second mounting shafts extending substantially parallel to each other between the supporting portions so as to adjoin the printing means;
a separating device removably mounted on the first and second mounting shafts, for separating printed labels from the base, said separating device including:
a supporting shaft extending substantially parallel to the first and second mounting shafts,
a pair of supporting members mounted on the supporting shaft and spaced apart from each other, each of the supporting members having a supporting surface and an engaging recess separated by a predetermined distance from their respective supporting surface, the first mounting shaft being removably fitted in the engaging recesses so that the supporting members are rotatable around the first mounting shaft between a hold position, in which the supporting surfaces engage the second mounting shaft so that the supporting members are held on the first and second mounting shafts, and an off position, in which the supporting surfaces are off the second mounting shaft,
a hook member having a hook portion and mounted on the supporting shaft to be movable between a locked position, in which the hook portion engages the second mounting shaft to lock the supporting members in the hold position, and a release position, in which the hook portion is disengaged from the second mounting shaft to allow the supporting members to rock,
urging means for urging the hook member to the locked position,
a mounting member supported on the supporting shaft, and
separating means mounted on the mounting member, for pulling the base, having passed the printing means, in the direction to be separated from the printed labels;
said printing means including a platen roller extending parallel to the first and second mounting shafts between the pair of supporting portions, and a print head for printing the desired information on the labels on the base passed between the print head and the platen roller; and
said separating means including a separating roller rotatably supported by the mounting member and extending substantially parallel to the platen roller, the separating roller being in contact with the platen roller on the opposite side thereof to the print head so that the base having passed the print head is held between the platen roller and the separating roller.

5,188,030
INKING ROLLER FOR A LITHOGRAPHIC PRINTING MACHINE
Helmut Puschnerat, Worms; Walter Reutter, Frankenthal, and Walter Unverzagt, Grünstadt, all of Fed. Rep. of Germany, assignors to Albert-Frankenthal Aktiengesellschaft, Wurzburg, Fed. Rep. of Germany
Filed Apr. 24, 1992, Ser. No. 873,174
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1991, 4113903
Int. Cl.[5] B41F *31/26*
U.S. Cl. 101—348 **3 Claims**



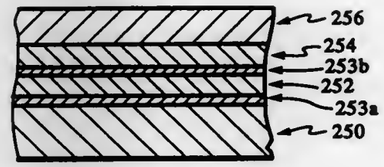
1. A screened surface ink roller for a printing machine, said roller comprising:
a roller having an outer metallic surface;
a layer of an oleophilic metal secured to said outer metallic surface;
a plurality of recesses in an outer transport surface of said oleophilic metal layer;
a hydrophilic material carried in said recesses, said hydrophilic material having an outer hydrophilic transport surface, said hydrophilic transport surface being at a higher level than said outer transport surface of said oleophilic metal layer.

5,188,031
PRINTING PRESS BLANKET CYLINDER ASSEMBLY, SUBASSEMBLIES AND METHOD OF USING SAME
Louis S. Depa, Downers Grove, and Robert L. Fisher, Chicago, both of Ill., assignors to Rockwell International Corporation, El Segundo, Calif.
Filed Jun. 27, 1991, Ser. No. 722,039
Int. Cl.[5] B41F *1/28*
U.S. Cl. 101—415.1 **15 Claims**



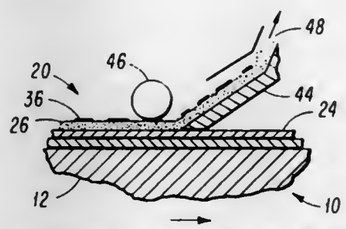
1. A printing blanket assembly, comprising:
a resilient backing plate having a body preformed into the shape of a split cylinder, with a pair of adjacent, opposed, parallel edges, and a mounting member extending inwardly from one of the pair of edges toward the interior of the cylinder for receipt within a mating mounting slot of a blanket cylinder;
a resilient printing blanket coextensively covering substantially the entire body including at least part of the inwardly extending mounting member; and
means for securing the resilient blanket to substantially the entire resilient backing plate including at least part of the inwardly extending mounting member to hold the blanket snugly against the backing plate in the same cylindrical shape as the split cylinder shape with the inwardly extending mounting member, in which the mounting member extends inwardly in a nonradial direction and backwardly away from the one of the pair of edges form which the mounting member extends.

5,188,032
METAL-BASED LITHOGRAPHIC PLATE CONSTRUCTIONS AND METHODS OF MAKING SAME
Thomas E. Lewis, E. Hampstead, N.H., and Michael T. Nowak, Gardner, Mass., assignors to Presstek, Inc., Hudson, N.H.
Continuation-in-part of Ser. No. 661,526, Feb. 25, 1991, which is a continuation-in-part of Ser. No. 442,317, Nov. 28, 1989, Pat. No. 5,109,771, which is a continuation-in-part of Ser. No. 234,475, Aug. 19, 1988, Pat. No. 4,911,075. This application Nov. 18, 1991, Ser. No. 741,099
Int. Cl.[5] B41N *1/14*
U.S. Cl. 101—453 **39 Claims**



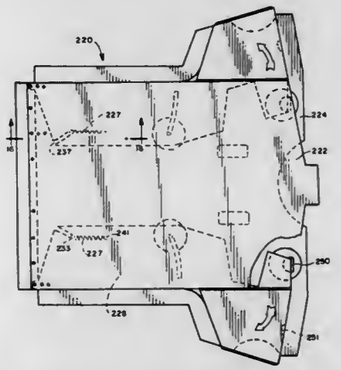
1. A lithographic plate whose affinity for ink may be altered by ablation of one or more layers, said plate being a layered structure including a metal substrate, a current-limiting layer laminated to the metal substrate, a conductive layer disposed on the current-limiting layer, and an ink-adhesive polymeric coating overlying the conductive layer.

5,188,033
DIRECT-TO-PRESS IMAGING SYSTEM FOR USE IN LITHOGRAPHIC PRINTING
Thomas A. Fadner, LaGrange, Ill., assignor to Rockwell International Corporation, El Segundo, Calif.
Continuation of Ser. No. 726,614, Jul. 8, 1991, Pat. No. 5,129,321. This application Apr. 30, 1992, Ser. No. 875,909
The portion of the term of this patent subsequent to Jul. 14, 2009, has been disclaimed.
Int. Cl.[5] B41C *1/10*
U.S. Cl. 101—467 **3 Claims**



3. A direct-to-press imaging process for use in lithographic printing methods wherein a master-image printing device is used with separate water and ink application to a surface of said device in order to enable repetitive conveyance of image-formatted ink films onto a substrate for printing purposes, said image process comprising the steps of:
forming a printing image structure having separate hydrophilic and oleophilic areas corresponding to non-image and image areas on the surface of said master-image printing device by depositing hydrophilic and oleophilic materials directly on the surface of said device in an image-formatted pattern; and
removing said printing structure including both said hydrophilic and oleophilic material off of the surface of said device and returning said device to its original condition so that a new printing image structure can be formed on the surface of said master-image printing device.

5,188,034
SHIRT PALLET WITH RETRACTABLE ARMS BIASED TOWARD EXTENDED POSITION
Alex Iaccino, Mount Prospect; Phil Motev, Deerfield, and Rick L. Fuqua, Chicago, all of Ill., assignors to Advance Process Supply Company, Chicago, Ill.
Continuation-in-part of Ser. No. 746,652, Aug. 16, 1991. This application Oct. 9, 1991, Ser. No. 773,321
Int. Cl.[5] B41F *15/18*
U.S. Cl. 101—474 **5 Claims**



5. A pallet for supporting shirts during printing thereupon, comprising:
a lower panel;
an upper panel having lateral sides and pivotally connected to the lower panel for movement between a raised position in which the upper panel is substantially spaced from the lower panel and a lowered position in which the upper panel rests upon the lower panel;
a pair of sleeve panels each pivotally connected to the upper panel for independent pivotal movement between a retracted position in which the sleeve panels are positioned between the lateral sides of the upper panel, and an extended position in which the sleeve panels extend beyond the lateral sides of the upper panel to provide support to the shirt sleeves during printing thereon;
biasing means for biasing said sleeve panels to their extended position; and
selectively operable restraining means operable in a first position for restraining the sleeve panels in their retracted position and operable to a release position allowing the sleeve panels to move automatically to their extended position under the influence of the biasing means.

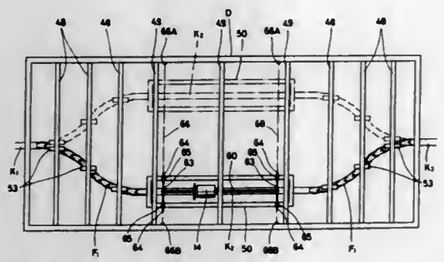
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5,188,035

HORIZONTALLY FLEXIBLE CONVEYOR

Hideyuki Sakai, Okazaki, Japan, assignor to Nichidai Industrial Co. Ltd., Aichi and Daiwa Paint Trading Co. Ltd., Nagoya, both of, Japan

Division of Ser. No. 689,327, Apr. 23, 1991. This application May 18, 1992, Ser. No. 884,002
Claims priority, application Japan, Apr. 24, 1990, 2-108220
Int. Cl.[5] B61B *3/00*
U.S. Cl. 104—89 **9 Claims**



1. A flexible conveyor comprising

a nonflexible rail (K_2) which is movable in a horizontal plane,

a first outer nonflexible rail (K_1) which is immovable,

a second outer nonflexible rail (K_3) which is immovable,

a first horizontally-flexible rail connected between the outer nonflexible rail (K_7) and the central nonflexible rail (K_2),

a second horizontally-flexible rail connected between the central nonflexible rail (K_2) and the outer nonflexible rail (K_3),

lateral guide rails **(49)** for suspending the central nonflexible rail (K_2),

lateral guide rails **(48)** for suspending the flexible rails,

trolleys **(41)** which run suspended from the nonflexible and flexible rails, and

means (M) for moving the central nonflexible rail (K_2) transversely in a horizontal plane,

each of the first and second horizontally-flexible rails comprising

(i) rail pieces (R_0–R_n) which are in contact with each other, intermediate ones (R_1–R_{n-1}) of the rail pieces each having a concave front end face and a convex rear end face and being in contact with adjacent rail pieces at its concave front end face and its convex rear end face, respectively,

a foremost one (R_0) of the rail pieces having a straight and flat front end face and a convex rear end face and being in contact with the adjacent rail piece (R_1) at its convex rear end face, and

a rearmost one (R_n) of the rail pieces having a concave front end face and a straight and flat rear end face and being in contact with the adjacent rail piece (R_{n-1}) at its concave front end face,

(ii) connecting plates S_0–S_n) for connecting the rail pieces (R_0–R_n) together,

each of the connecting plates (S_1–S_n) except a foremost one (S_0) bridging adjacent rail pieces,

(iii) means for fixing each of the connecting plates (S_1–S_n) except the foremost connecting plate (S_0) on a top of one of adjacent rail pieces,

(iv) pivotal connecting means (P_1–P_n) located along a longitudinal centerline of the flexible rail for connecting each of the connecting plates (S_1–S_n) to the other one of the adjacent rail pieces such that the connecting plate, together with the rail piece to which the connecting plate is fixed, can move in an arc, in a horizontal plane, relative to the other one of the adjacent rail pieces, and

the pivotal connecting means thus connecting the adjacent rail pieces together for relative arcing motion,

(v) means for fixing the foremost connecting plate (S_0) on a top of the foremost rail piece (R_0),

(vi) arcing-motion limiting means for limiting the arcing motion of the connecting plate to a relatively small range,

(vii) the convex rear end face of each of the intermediate rail pieces (R_1–R_n) and the concave front end face of the adjacent rail piece which is in contact therewith, coinciding with a curved line produced by drawing a circle with a predetermined radius round a center of an opening of the rail piece into which the pivotal connecting means connecting the adjacent rail pieces together is inserted,

(viii) the convex rear end face of the foremost rail piece (R_0) and the concave front end face of the rail piece (R_1) located immediately behind the foremost rail piece (R_0), coinciding with a curved line produced by drawing a circle with a first given radius round a center of an opening of the foremost rail piece into which the pivotal connecting means connecting the foremost rail piece and the rail piece (R_1) together is inserted, and

said first given radius being equal to said predetermined radius, and

(ix) the concave front end face of the rearmost rail piece (R_n) and the convex rear end face of the rail piece (R_{n-1}) located immediately in front of the rearmost rail piece, coinciding with a curved line produced by drawing a circle with a second given radius round a center of an opening of the rail piece (R_{n-1}) into which the pivotal connecting means connecting the rearmost rail piece and the rail piece (R_{n-1}) together is inserted, and

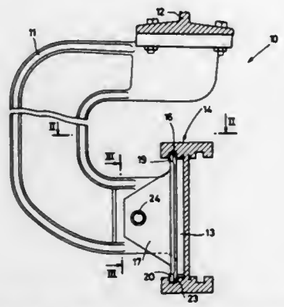
said second given radius being equal to said predetermined radius.

5,188,036

SUSPENSION DEVICE FOR OVERHEAD TRACKS WITH L-SHAPED ELASTIC CLAMPS FOR ENGAGING GROOVES ON THE RAILS AND CLAMPING THE RAILS TO THE SUSPENSION DEVICE

Gaetano Di Rosa, Pino Torinese, Italy, assignor to Fata Automation S.p.A., Turin, Italy

Filed Dec. 3, 1991, Ser. No. 800,323
Int. Cl.[5] E01B *25/24*
U.S. Cl. 104—111 **6 Claims**



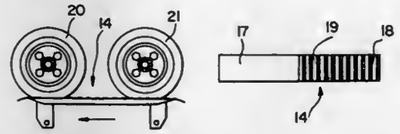
1. An assembly for supporting suspended elements having a substantially vertical web with two parallel spaced horizontal flanges extending perpendicular thereto and having a pair of longitudinally extending, oppositely facing upper and lower grooves in the flanges on at least one side of the web, said assembly comprising a hanger having a lower end that terminates in a vertical plate normal thereto, said plate having a front and rear surface and an upper and lower edge, said upper edge of the plate being insertable into the upper groove of the pair of grooves in the flanges of a suspended element so that the web of said element will rest against the front surface of said plate, a pair of L-shaped members located on opposite sides of the hanger adjacent the plate, each member having a first arm extending substantially parallel to said hanger and a second arm extending perpendicular thereto and away from said hanger substantially parallel to said plate, each of said second arms having an upper and lower edge engagable with said upper and lower grooves, respectively, in the flanges of a suspended element and fastening means for securing said first arms of the L-shaped members to opposite sides of the hanger, whereby tightening of the fastening means causes the second arms of the L-shaped members to draw the web of a suspended element tightly against the front surface of the plate on the lower end of the hanger.

5,188,037

CHAIRLIFT OR GONDOLA-LIFT HAVING A FRICTION-BASED DRIVING DEVICE FOR CHAIRS OR CARS

Jean-Francois Mugnier, Fontaine, France, assignor to Pomagalski S.A., France

Filed Mar. 17, 1992, Ser. No. 852,645
Claims priority, application France, Apr. 2, 1991, 91 04081
Int. Cl.[5] B61B *13/00*
U.S. Cl. 104—168 **8 Claims**



1. An overhead cable transport installation, comprising:

a closed-looped cable extending between two transfer rails, one side of said loop defining an uphill side and an opposite side of said loop defining a downhill side, each of said two transfer rails disposed at an opposite end of said closed-looped cable between said uphill and downhill sides;

a plurality of carriages each supporting a chair, each of said carriages comprising a detachable grip for de-coupling said chair from said closed-loop cable, support wheels to allow said carriage to roll along each of said two transfer rails, and a friction plate extending lengthwise along a carriage travel direction, said friction plate having a friction face;

a grip actuation device to de-couple said grip from said closed-loop cable so that said carriage may roll along each of said two transfer rails; and

a plurality of friction sheaves spaced along opposite ends of each of sid two transfer rails to frictionally engage said friction face of said friction to drive said carriage along each of said two transfer rails, said sheaves being spaced apart a predetermined distance, and said friction plate being longer than said predetermined distance;

wherein said friction face comprises at least one low friction coupling zone and a high friction coupling zone, said high friction coupling zone extending along said friction face a distance shorter than said predetermined distance.

5,188,038

RAILROAD CAR DERAILMENT SAFETY DEVICE

Thomas E. Shanley, 14 DeForest St., Binghamton, N.Y. 13901

Continuation-in-part of Ser. No. 653,219, Feb. 11, 1991, abandoned. This application Mar. 9, 1992, Ser. No. 848,519
Int. Cl.[5] B60T *17/00*
U.S. Cl. 105—216 **20 Claims**

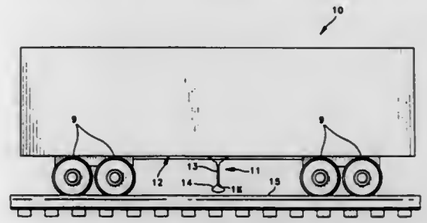
1. A railway safety device in operative engagement with a railway car air-brake system for actuating the air-brake system upon derailment of said railway car, and for gradually decreasing air pressure in said air-brake system, comprising:

an elongated extension disposed below a railway car and operatively disposed within an air pressure conduit of an air-brake safety system of said railway car;

a gradual, controlled air release trip valve mechanism disposed within said air pressure conduit, said trip valve mechanism being movable between a sealed position within said air pressure conduit and an unsealed position for gradually releasing air in said air pressure conduit at a predetermined, controlled rate of flow;

biasing means disposed adjacent said gradual, controlled air release trip valve mechanism for urging said gradual, controlled air release trip valve mechanism into its sealed position; and

guide means for guiding said elongated extension into contact with said gradual, controlled air release trip valve mechanism for forcing said gradual, controlled air release trip valve mechanism into its unsealed position to gradually release air pressure in said air pressure conduit at a predetermined rate of flow when the railway car is caused to derail and said elongated extension is caused to contact a rail.

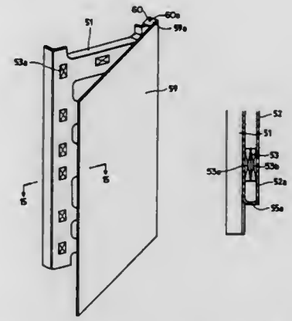


5,188,039

METHOD OF FIXING INSIDE PANEL OF CAR AND STRUCTURE FOR FIXING THE SAME

Keiji Ohmura; Sumio Okuno; Kentaro Masai; Hideshi Ooba; Senzoo Hida, all of Kudamatsu, and Seiichi Okamoto, Chiba, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 29, 1991, Ser. No. 752,014
Claims priority, application Japan, Aug. 29, 1990, 2-225322; Sep. 19, 1990, 2-247538
Int. Cl.[5] B61D *17/18*
U.S. Cl. 105—423 **9 Claims**



7. A structure for fixing an inside panel of a car comprising:

an outside structure of the car;

an inside frame fixed to said outside structure, and having a plurality of first fasteners disposed on a surface of a center inside of a passenger room of the car;

said inside panel having a plurality of second fasteners disposed thereon, said second fasteners corresponding to said first fasteners and being disposed in positions facing said first fasteners; and

VOL 1147 ISS 4 FE 23 1993 UMI

said first fasteners and said second fasteners being adapted to be joined to fix said inside panel to said inside frame,

wherein a portion of said inside frame being disposed in a position facing a lower end of said inside panel is folded toward an inside of the passenger room of the car, and

wherein said lower end of said inside panel is placed on said folded portion of said inside frame for supporting said inside panel on said folded portion of said inside frame.

5,188,040

DOOR OR WALL REINFORCING FILLER ASSEMBLY AND METHOD

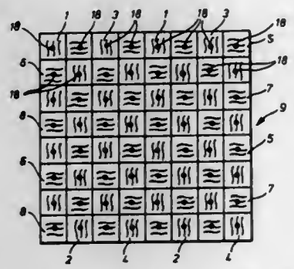
Erich Döring, In Holzeli, CH-9442 Berneck, Switzerland

Filed Nov. 28, 1989, Ser. No. 441,998

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1988, 3840497

Int. Cl.[5] E06B *9/00*

U.S. Cl. 109—49.5 **4 Claims**



1. A method of reinforcing a door or wall, comprising the steps of:

forming used motor vehicle tires into a plurality of tire tread strips;

securing the strips together to form a filler panel of predetermined thickness for reinforcing a door or wall; and

securing the filler panel to the door or wall frame.

5,188,041

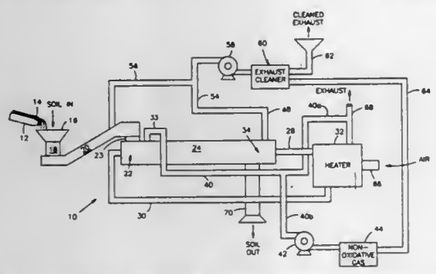
APPARATUS AND METHOD FOR LOW TEMPERATURE THERMAL STRIPPING OF VOLATILE ORGANIC COMPOUNDS FROM SOIL AND WASTE MATERIALS WITH NON-OXIDATIVE CO-CURRENT GASES

John Noland, and Michael Cosmos, both of West Chester, Pa., assignors to Roy F. Weston, Inc., West Chester, Pa.

Filed Dec. 17, 1991, Ser. No. 812,057

Int. Cl.[5] A47J *36/00, 36/24*

U.S. Cl. 110—246 **16 Claims**



1. A method for removing organic contaminants from contaminated material comprising:

a) transporting and placing the contaminated material into a hopper, said hopper being substantially sealed from the atmosphere to prevent fugitive emissions of said contaminants from escaping into the atmosphere;

b) conveying the material under sealed conditions into a heated vapor stripping conveyor;

c) conveying the material under substantially sealed conditions along the vapor stripping conveyor to heat the material and thereby cause moisture in the material and the contaminants to be stripped from the material;

d) streaming non-oxidizing gases at controlled temperature over the material, in the direction of travel of the material, beginning at a point downstream of and adjacent to the introduction point of the material into the vapor stripping conveyor to carry the contaminants and moisture away from the material; and

e) maintaining the rate of flow and temperature of said gases to prevent undue surface drying of the material as the material passes through the conveyor.

5,188,042

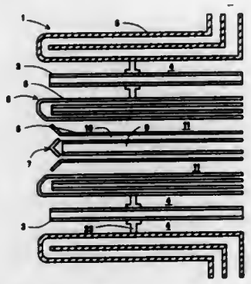
FLUID WASTE BURNER SYSTEM

Eddy J. Lauwers, Kalmthout, Belgium, assignor to Praxair Technology, Inc., Danbury, Conn.

Continuation of Ser. No. 686,950, Apr. 18, 1991, Pat. No. 5,129,335. This application Jul. 2, 1992, Ser. No. 907,541

Int. Cl.[5] F23G *7/04*

U.S. Cl. 110—346 **4 Claims**



1. A process for incinerating fluid waste in a combustion zone which comprises; providing a burner system having at least one oxygen/fuel burner which uses an oxidant having at least about 28% oxygen concentration and a plurality of nozzle means, said plurality of nozzle means being placed within an annulus which is formed by a housing means surrounding said at least one oxygen/fuel burner, dispersing the fluid waste via said plurality of nozzle means and providing oxidant annularly around said fluid waste through said annulus.

5,188,043

PROCESS AND APPARATUS FOR INCINERATING WASTE

Pierre Trepaud, Paris, France, assignor to Trepaud S.A., Paris, France

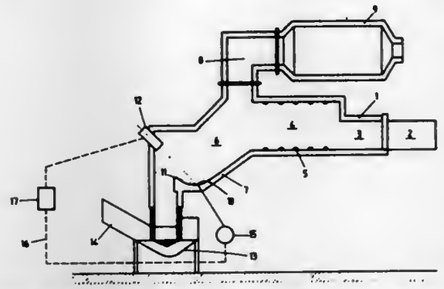
Filed Dec. 17, 1991, Ser. No. 809,020

Claims priority, application France, Jan. 14, 1991, 91 00322

Int. Cl.[5] F23G *5/00*

U.S. Cl. 110—346 **9 Claims**

1. Process for incinerating waste by burning it in a furnace at a temperature of about 1000° to 1300° C. in order to obtain smoke and ash and unburnt material, and passing the ash and unburnt material into a bath of ash and unburnt material maintained in the molten state by the heat released by an electroburner.



5,188,044

FOLDING DEVICE FOR SEWING A SECOND WORKPIECE ONTO A FIRST WORKPIECE IN AN AUTOMATIC SEWING MACHINE

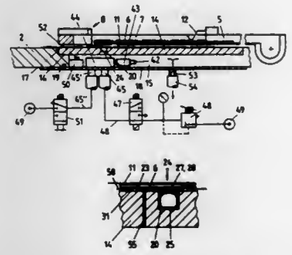
Joachim Brockmann, Enger, Fed. Rep. of Germany, assignor to Dürkopp Adler Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 20, 1992, Ser. No. 839,092

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1991, 4105859

Int. Cl.[5] D05B *21/00*

U.S. Cl. 112—121.15 **17 Claims**



15. A folding device for an automatic sewing machine for sewing a second material workpiece onto a first material workpiece, the folding device comprising:

support plate means for receiving the first workpiece;

sword means for receiving the second workpiece;

bend-over means for engaging an edge portion of said second workpiece and thereby folding said edge portion of the second workpiece around the sword means, and for subsequently disengaging from said edge portion;

the sword means being movably mounted between a lower working position on the support plate means, and an upper working position above the support plate means;

holding means at the support plate means for holding the first and second workpieces on the support plate means so as to prevent said edge portion from unfolding when said bend-over means disengages from said edge portion; and

said holding means being configured and operatively positioned such that force exerted thereby for holding the first and second workpieces on the support plate is concentrated at said edge portions in positions occupied thereby after folding thereof by said bend-over means.

5,188,045

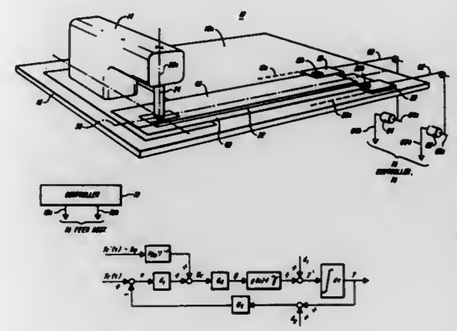
SYSTEM FOR JOINING LIMP MATERIAL SEGMENTS WITH EASING

Donald C. Fyler, Wellesley, Mass., and Layton G. Hale, Livermore, Calif., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Jan. 12, 1991, Ser. No. 711,712

Int. Cl.[5] D05B *19/00, 27/06*

U.S. Cl. 112—121.26 **6 Claims**



1. System for forming a seam joining a first limp material segment to a second limp material segment, said seam extending along a first predetermined path from a start point to an end point on said first segment, and extending along a second predetermined path from a start point to an end point on said second segment, comprising:

A. a support surface including means for supporting said first and second limp material segments in an overlapping relation and in a segment locus substantially parallel to a workpiece support plane;

B. a sewing machine including:

i. an elongated needle extending along a needle axis, said needle axis being substantially perpendicular to said workpiece support plane;

ii. means for selectively driving said needle in a reciprocal motion in a needle locus extending along said needle axis and intersecting with said support plane; and

iii. a differential feed assembly, said feed assembly including means responsive to a first feed signal and a second feed signal for selectively, independently advancing said first and second limp material segments, respectively, in the direction of a feed axis parallel to said support plane and past the intersection of said needle locus with said support plane;

C. separator means for frictionally decoupling the adjacent surfaces of said overlapping segments upstream of said needle locus;

D. first tracker means for generating a first end point position signal representative of the position along said feed axis of said end point on said first segment;

E. second tracker means for generating a second end point position signal representative of the position along said feed axis of said end point on said second segment; and

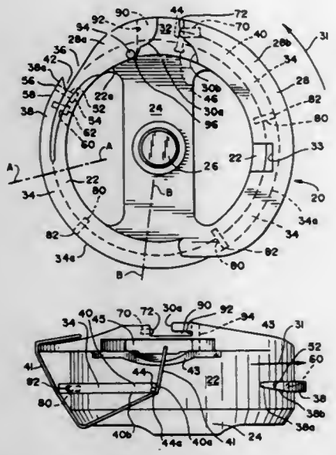
F. a controller including generator means responsive to said first end point signal and said second end point signal to generate said first feed signal and said second feed signal and for controlling said needle, whereby said seam is established with said first and second paths substantially having a predetermined positional relation.

VOL 1147 ISS 4 FE 23 1993 UMI

5,188,046
PLASTIC BOBBIN BASKET WITH DAMAGE RESISTANT MEMBERS

Paul Badillo, Littleton, Colo., assignor to Bakron Corp., Buffalo Grove, Ill.

Filed Jan. 29, 1991, Ser. No. 647,343
Int. Cl.[5] D05B *57/26*
U.S. Cl. 112—231 **29 Claims**



17. A bobbin basket for use with a rotary loop taker in a lock-stitch sewing machine, which basket comprises:

a cylindrical side wall, a crosswise support member for the cylindrical side wall extending across the bottom of the bobbin basket, a bobbin spool support post extending axially from said crosswise support member into the space defined by said cylindrical side wall, and

a flange extending radially outward from the top portion of said cylindrical side wall, two portions of said flange forming first and second oppositely facing side walls that are positioned generally radially to form a rotation-restraining notch in the top surface of the flange,

an annular bearing rib extending radially outward from said cylindrical side wall and extending substantially around the periphery of the bobbin basket except for a minor portion of said annular rib that is omitted to provide two oppositely facing rib end portions that define a needle thread pick-up and release area,

one of said oppositely facing rib end portions being located adjacent said rotation-restraining notch to form a needle thread stop at the upstream end, relative to the direction of rotation of the rotary loop taker with which the bobbin basket is adapted to be used, of the needle thread pick-up and release area,

characterized in that:

(a) the bobbin basket, including said cylindrical side wall, said outwardly extending flange and said outwardly extending bearing rib, is integrally formed of plastic, and

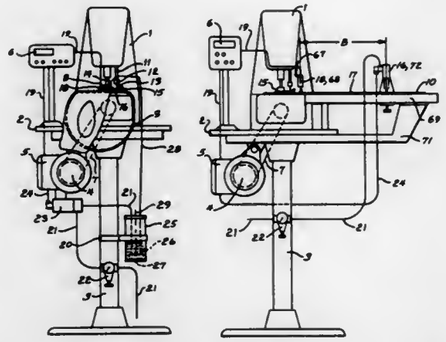
(b) said bearing rib includes means for reducing wear on said rib end portion that forms the aforesaid needle thread stop at the upstream end of the needle thread pick-up and release area, as the needle thread loop comes into contact with said stop and the thread is pulled forcefully across the stop to tighten the loop around the bobbin thread,

the area occupied by said means for reducing wear on said needle thread stop falling in the range from a small fraction of the potential area of wear at that location to the entire area of potential wear at that location.

5,188,047
PRODUCTION OF CIRCULAR SEAMS ON A WORKPIECE

Gunter Rohr, Hemmingen, and Wolfgang Norz, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Union Special GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 24, 1990, Ser. No. 469,661
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1989, 3902333
Int. Cl.[5] D05B *19/00, 81/00*
U.S. Cl. 112—262.2 **17 Claims**



1. A method of producing circular seams with overlapped ends on a workpiece using a sewing machine driven in a controlled manner, comprising the steps of:

applying a mark to the workpiece in the region of the seam;

sewing the workpiece

detecting the mark using a sensor,

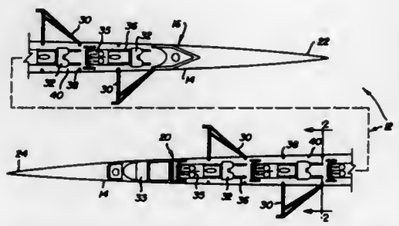
sewing a particular number of oversewn stitches in response to detection of the mark, and

terminating sewing operation.

5,188,048
FOUR MAN ROWING SHELL

Michael Vespoli, 604 W. Lake Ave., Guilford, Conn. 06437; Bruce Nelson, 4604 Alhambra St., San Diego, Calif. 92107, and Carl Scragg, 1861 Montgomery Ave., Cardiff by the Sea, Calif. 92007

Filed Nov. 27, 1991, Ser. No. 799,176
Int. Cl.[5] B63B *1/00*
U.S. Cl. 114—56 **14 Claims**



1. A rowing shell comprising an elongated hull having a bow and stern and a smoothly tapered hull surface therebetween, said hull surface having a waterline length between about 41.4 and 44.8 feet and the following cross-section areas, in square feet, below the waterline at stations spaced along the hull waterline when the shell is normally loaded:

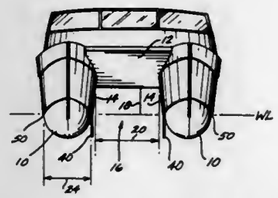
station 0	0.000	
station 0.5	0.052	±5%
station 1	0.147	±5%
station 2	0.355	±5%
station 3	0.505	±5%
station 4	0.587	±5%
station 5	0.617	±5%
station 6	0.589	±5%
station 7	0.497	±5%
station 8	0.348	±5%
station 9	0.159	±5%
station 9.5	0.060	±5%
station 10	0.000	

wherein station 0 signifies the fore-most point of the hull, and station 10 signifies the aft-most point of the hull, along the waterline, and wherein a unit station spacing is one-tenth of the waterline length.

5,188,049
CATAMARAN BOAT

Lawrence J. Graf, 9716 Wall St., Snohomish, Wash. 98290

Filed Jan. 14, 1992, Ser. No. 820,991
Int. Cl.[5] B63B *1/12*
U.S. Cl. 114—61 **7 Claims**



1. A powered catamaran boat which displaces water up to a water line when at design load in a body of water, the boat comprising two symmetric, nonplaning, displacement hulls connected together with a deck structure forming a tunnel between the hulls, the ratio of the minimum distance from the water line to the bottom of the deck structure to the minimum width of the tunnel being between approximately 1.0:2.0 to 1.0:2.5, each hull having first and second sides connected so as to form a bow having a half angle of between approximately 5° to 12° at and below the water line, and each hull having a ratio of the length of each hull at the water line to the maximum beam of each hull at the water line between approximately 9.88:1.0 and 10.92:1.0.

5,188,050
CONVERTIBLE MAST ASSEMBLY

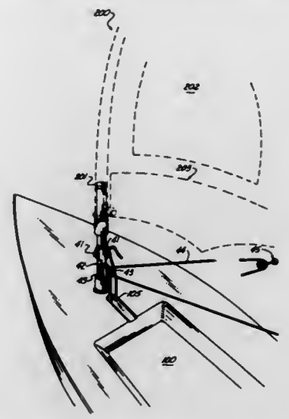
Steven B. Latham, 145 Bellevue Loop, Fayetteville, Ga. 32014

Filed Oct. 21, 1991, Ser. No. 779,782
Int. Cl.[5] B63H *9/00*
U.S. Cl. 114—90 **5 Claims**

1. A convertible mast assembly to accommodate a conventional windsurfing sail assembly including the sail, boom and hollow mast onto a sailboat normally equipped with a drop-in mast receptacle and without standing rigging wherein the convertible mast assembly comprises:

a receptacle unit including a cylindrical receptacle member having: an open top; a closed bottom, which is dimensioned to be received within said drop-in mast receptacle; and, a flanged intermediate portion having a greater diameter than the diameter of the drop-in mast receptacle; and,

an elongated generally cylindrical adaptor member having: a lower portion dimensioned to be received in the interior of said receptacle member; an intermediated portion equipped with a block and cleat assembly; and, an upper

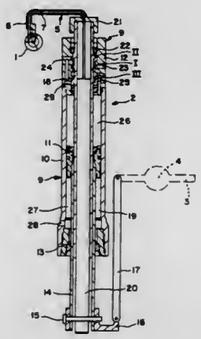


portion dimensioned to be received within the hollow mast of said conventional windsurfing sail assembly.

5,188,051
POWER STEERING MECHANISM FOR VEHICLES, PARTICULARLY MOTOR BOATS

Gerhard Huber, Frankenhofen, Fed. Rep. of Germany, assignor to Hoerbiger Hydraulik GmbH, Schongau, Fed. Rep. of Germany

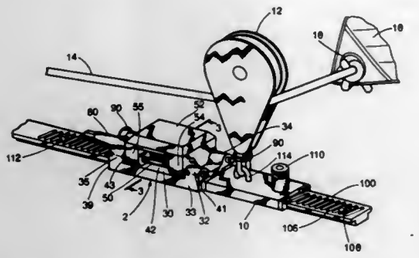
Filed Dec. 19, 1990, Ser. No. 630,253
Claims priority, application Austria, Dec. 21, 1989, 2908/89
Int. Cl.[5] B63H *25/22*
U.S. Cl. 114—150 **13 Claims**



1. A power steering mechanism for vehicles, in particular motor boats, with a control wheel, a cable which is attached thereto and has a core and a sheath, and a lever system which is connected to the core and is drive-connected to a control unit of the vehicle or motor boat, wherein the sheath of the cable is braced at one end thereof at the control wheel and is attached at an opposite end thereof to an adjustable control member of a control valve which controls a hydraulic operating cylinder whose power piston also acts on the lever system;

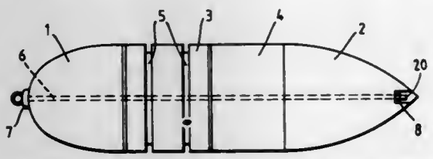
said operating cylinder being arranged coaxially with the control valve in adjusting direction of the control member and the power piston of the operating cylinder is connected to the cord of the cable that penetrates the control member in an axial direction.

5,188,052
TRANSPORTER UNIT FOR ADJUSTING A GENOA LEAD BLOCK AND CAR
Rudi A. Brener, 2601 Palma Drive, No. 8, Ventura, Calif. 93003
Filed Feb. 15, 1991, Ser. No. 656,311
Int. Cl.[5] B63H *9/10*
U.S. Cl. 114—204 **7 Claims**



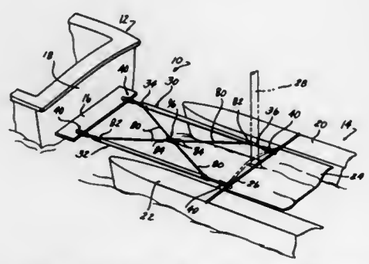
1. A transporter unit comprising:
a slidable carriage having a top, a bottom, a pair of sides, and a pair of transverse ends;
an openable and closable housing pivotably secured to said top of said carriage, and having a mounting means for mounting a rotatable shaft;
pivot pin means for pivotally securing said openable and closable housing to one of said sides of said slidable carriage;
a rotatable shaft positioned in said mounting means on said openable and closable housing;
worm gear means having a concentric bore, said worm gear means being positioned on said rotatable shaft by having said shaft aligned in said concentric bore of said worm gear means;
means for securing said worm gear means to said rotatable shaft so that both can rotate in unison;
locking and release pin means for locking said openable and closable housing to said carriage when said transporter unit is in operation, and for releasing said housing for rapid adjustment of the transporter unit;
an opening in said top of said carriage having sufficient dimensions to allow said worm gear means access to an area below said transporter unit.

5,188,053
ARRANGEMENT IN A BUOYANCY TOWED BODY MEANS
Einar Gjestrum, Baerum Verk; Oddbjørn Hjelle, Sjoholt; Øyvind Hogsnes, Hof; Gunnar F. Valle, Stavanger, and Øyvind Sorbotten, Haugesund, all of Norway, assignors to Geco A.S., Stavanger, Norway
Filed Aug. 8, 1990, Ser. No. 564,067
Claims priority, application Norway, Aug. 10, 1989, 893225
Int. Cl.[5] B63B *21/56*
U.S. Cl. 114—242 **14 Claims**



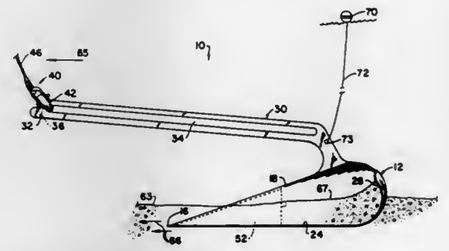
1. In a towed buoyant body towed in the sea by a vessel and used as a buoyancy body for supporting marine seismic survey equipment, the improvement comprising:
at least two buoyant modules comprising a head module and a tail module;
at least one end face on each module for mutually abutting relationship with an end face on an adjacent module;
retaining means for releasably retaining said modules together end-to-end with said end faces of adjacent modules in mutually abutting relationship in assembled position to form a unitary buoyant body, said modules being shaped so that said unitary buoyant body has a homogeneous smooth outer surface;
protruding means protruding from one of each of said mutually abutting end faces of adjacent modules;
recess means in the other of each of said mutually abutting end faces of said adjacent modules for receiving respective protruding means in said assembled position to prevent relative rotation between said modules; and
supporting means in at least one of said modules for supporting sad survey equipment.

5,188,054
WATERCRAFT TOWING APPARATUS
John F. Jacobs, Jr., 16169 Anstell Ct., Mt. Clemens, Mich. 48044
Filed Nov. 25, 1991, Ser. No. 797,394
Int. Cl.[5] B63B *21/56*
U.S. Cl. 114—250 **31 Claims**



1. An apparatus for towing a towed watercraft by a towing watercraft comprising:
first and second spaced, rigid, tubular members; and
separable, swivable quick-disconnect connector means, each including first and second separable connector members, each first connector member mounted on each end of the first and second tubular members and each second connector member mounted on each of the towed and towing watercraft, for separable connection of the first and second tubular members to the towed and towing watercraft to maintain the towed and towing watercraft at a fixed longitudinal spacing while allowing substantially independent movement of each of the towed and towing watercraft along multiple axes of movement with respect to each other, the quick-disconnect connector means including:
a ball and socket swivel connector wherein the first connector member is a socket fixedly connected to each end of the first and second tubular members and the second connector member is a ball mounted on the towed and towing watercraft and swivably connectible to the socket, the ball and socket swivel connector further comprising:
a tubular housing having first and second ends;
the socket being formed in the first end of the tubular housing; and
means for connecting the second end of the housing to the ends of the first and second tubular members; the means for connecting the second end of the housing comprises:
a first threaded bore formed in the second end of the tubular housing;
a threaded rod threadingly mounted in the bore and extending outward therefrom;
a second threaded bore formed in each end of the first and second tubular members;
the threaded rod threadingly engaging the threaded bore in the ends of the first and second tubular members to fixedly connect the housing to the ends of the first and second tubular members; and
spring-biased clip means concentrically mounted about the housing of the socket for releasably securing the socket about the ball, the clip means being movable against the bias of a spring to a position opening the socket for insertion and removal of the ball therefrom.

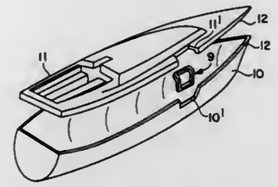
5,188,055
ADJUSTABLE BOAT ANCHOR
Gary P. Kershner, P.O. Box 638, Bokeelia, Fla. 33922
Filed Jan. 8, 1992, Ser. No. 817,762
Int. Cl.[5] B63B *21/32*
U.S. Cl. 114—299 **20 Claims**



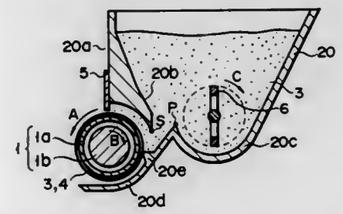
1. A boat anchor comprising:
a substantially one piece, plow-type fluke having a relatively pointed tip portion and a relatively broad tail portion disposed rearwardly of said tip portion; and
a substantially once piece shank fixedly attached to said fluke rearwardly of said tip portion and being immovable relative to said fluke; said shank extending forwardly of said tip portion to a distal end and including a generally longitudinal slot that extends from a first end proximate said distal end of said shank to an opposite second end located rearwardly of the anchor's center of gravity; said slot being slidably engageable by an anchor line and allowing said anchor line to slide between said first end of said slot, wherein force may be exerted on said line to embed said tip portion of said fluke into the ground, and said second end of said slot, wherein force may be exerted on said line to pull said tip portion of said anchor out of the ground.

5,188,056
PLEASURE BOAT WITH SAILS OR MOTOR
Claude Bonnet, 42 Rue des Vals 42160, Andrezieux Boutheon, France
PCT No. PCT/FR90/00505, § 371 Date Mar. 11, 1991, § 102(e) Date Mar. 11, 1991, PCT Pub. No. WO91/00821, PCT Pub. Date Jan. 24, 1991
PCT Filed Jul. 4, 1990, Ser. No. 659,419
Claims priority, application France, Jul. 11, 1989, 89 0966
Int. Cl.[5] B63B *8/10, 3/00, 7/04, 5/24*
U.S. Cl. 114—355 **10 Claims**

1. A pleasure boat comprising a hull and deck separated by a parting line, wherein the periphery of the parting line has at least one profiled notch defining, in combination, by the bringing together and assembly of the hull and deck, an opening to take components forming a frame and fitted out so as to make up a porthole.



5,188,057
DEVELOPING APPARATUS
Masaaki Ishikawa, Hino; Michihisa Iguchi, Hachioji; Hiroshi Hashizume, Hino; Yasuo Fujii, Hachioji; Tetsuya Nakamura; Hirotaka Fukuyama, both of Hino; Seiji Arai, Hachioji; Koichiro Sato, Hino; Toshio Takagi, Higashihiroshima; Shuji Nishina, Kofu; Jiro Hukasawa, Shirane; Masatoshi Maruta, and Seiichi Koizumi, both of Yamanashi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki; Shindengen Electric Manufacturing Co., Ltd., Tokyo and Yamanashi Electronics Co., Ltd., Yamanashi, all of, Japan
Filed Sep. 17, 1990, Ser. No. 583,555
Claims priority, application Japan, Sep. 18, 1989, 1-239902; Sep. 19, 1989, 1-242830; Sep. 17, 1990, 2-243892
Int. Cl.[5] G03G *15/08, 15/00*
U.S. Cl. 118—657 **18 Claims**



1. A developing apparatus comprising: hopper means for storing toner and carrier including:
a front wall,
an opposing rear inclined wall, and
a bottom wall extending from
the rear inclined wall towards the front wall and forming an opening between a bottom edge of the front wall and an edge of the bottom wall;
carrier/toner roller means disposed in the opening such that part of the carrier/toner roller means extends into the hopper means for transferring toner and carrier, said carrier/toner roller means comprising:
an inner rotary magnet, and
an outer rotary sleeve member coaxially provided on the inner rotary magnet;
a carrier stopper provided on the front wall proximate the opening, said carrier stopper having an arced surface concentrically opposing an upper portion of the part of the carrier/toner roller means extending into the hopper means across a blend layer space, and a flat inclined surface opposing the arced surface descending from the front wall at a predetermined angle sufficient to direct toner impacting the inclined surface towards the bottom wall;
a blend layer volume formed in the blend layer space between the carrier stopper and the carrier/toner roller means for storing a blended layer of carrier and toner,

wherein the carrier stopper prevents carrier from scattering outside the blend layer volume and the conjuctional effect of rotating the rotary sleeve member and magnetic force of the rotary magnet blends the carrier and toner stored in the blended layer; and

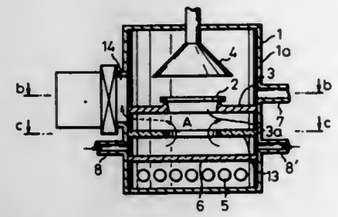
a sub-hopper formed between the carrier stopper and the bottom wall proximate the blend layer volume, for storing toner to be provided to the blended layer.

5,188,058

UNIFORM GAS FLOW CVD APPARATUS

Satoshi Nakai, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 22, 1992, Ser. No. 902,661
Claims priority, application Japan, Jun. 20, 1991, 3-148755
Int. Cl.[5] C23C *16/46*
U.S. Cl. 118—719 **12 Claims**



1. A CVD apparatus comprising:

a reaction chamber having an axis and a peripheral wall around the axis;

a susceptor plate extending perpendicular to the axis in the reaction chamber and attached to the peripheral wall for supporting a substrate to be treated;

first gas supply means for supplying a first gas in the reaction chamber from above the substrate supported on the susceptor plate;

a source of infrared light for heating the substrate from below the substrate supported on the susceptor plate;

an infrared light transparent window arranged between the source of infrared light and the susceptor plate for separating the reaction chamber from an environment;

a plurality of circumferentially spaced gas exits arranged in the peripheral wall in the reaction chamber at a level so that the first gas is exhausted uniformly from the gas exits;

second gas supply means for supplying a second gas in the reaction chamber below the susceptor plate; and

a plurality of circumferentially spaced gas passages arranged at the juncture of the susceptor plate and the peripheral wall of the reaction chamber for allowing the second gas to flow from a portion of the reaction chamber below the susceptor plate to the gas exits through the gas passages and coordinated with the gas exits so that the flow of the first gas is/less disturbed by the flow of the second gas.

5,188,059

AMUSEMENT DEVICE AND BED FOR CATS

Gillian S. Rice, 350 Detroit, Denver, Colo. 80206

Filed May 22, 1989, Ser. No. 354,768
Int. Cl.[5] A01K *1/035, 29/00*
U.S. Cl. 119—28.5 **20 Claims**

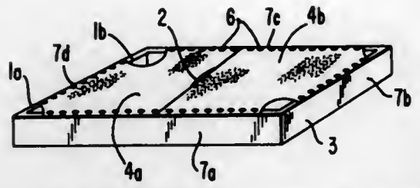
1. A bed and amusement device for cats, comprising:

(a) a rigid base including a contiguous sidewall, a closed bottom and an open top; and

(b) a covering of non-rigid fabric stretched across said open top of the base, wherein said covering has defined therein:

(i) a middle opening of a size to permit insertion of a cat's paw therethrough; and

(ii) one or more cut-out portions adjacent the sidewall of the base, said one or more cut-out portions each being of a size to permit insertion of the cat's paw therethrough; and



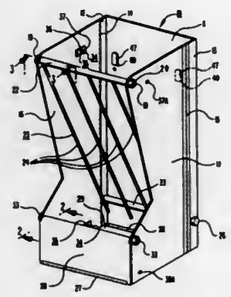
(c) means for attaching said covering to the top of said base along the contiguous sidewall.

5,188,060

PORTABLE AND COLLAPSIBLE LIVESTOCK FEEDER

Stephen W. Johnson, 1805 West 8660 South, West Jordan, Utah 84088

Filed Apr. 22, 1992, Ser. No. 872,053
Int. Cl.[5] A01K *5/00*
U.S. Cl. 119—58 **9 Claims**



1. A portable and collapsible livestock feeder including, in combination, an upstanding back panel having opposite sides, a top edge, and a bottom; right and left side panels hingedly secured to said back panel at said opposite sides; a bottom panel hingedly secured to said back panel at said bottom; a front panel hingedly secured to said bottom panel and provided with means for releasable securement of said front panel, in erect position, to said side panels; a feeder grate in installed condition angulating upwardly and forwardly relative to said back panel, said feeder grate having a lower portion fixedly maintained in pivotal securement to said back panel and also an upper portion releasably secured to said side panels; said right and left side panels, and the combination of said bottom and front panels, being constructed to collapse inwardly toward said feeder grate, thereby forcing said feeder grate to pivot inwardly against said back panel and thus retain said feeder grate against said back panel, when said feeder grate upper portion is freed from securement with said right and left side panels; and means for securing said panels in collapsed condition whereby to condition said feeder for transport and storage.

5,188,061

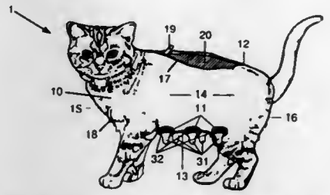
PET AND ANIMAL NURSER

Diane F. Lombardi, 171 Hichborn St., Revere, Mass. 02151

Filed Feb. 22, 1991, Ser. No. 659,224
Int. Cl.[5] A01K *9/00*
U.S. Cl. 119—71 **6 Claims**

1. An improved pet and animal nurser comprising: a stuffed

cushion with an outer surface and an externally accessible internal cavity with a plurality of apertures leading to said outer surface; and a nursing assembly, positioned within said cushion internal cavity, comprised of a liquid holding container with a plurality of hollow stems protruding through said plurality of apertures; and a plurality of nipples for attachment to said stems, said cushion has a top, bottom, two sides, front



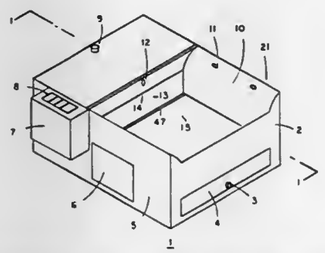
and back and an external surface comprised of a soft, resilient, fur-like material, said interior cavity is accessed by a longitudinal opening in the cushion top, fastener means for securing said longitudinal opening, said plurality of apertures begin in said interior cavity and extend through said cushion bottom, and said interior cavity has an interior wall and a plurality of straps attached thereto for holding said nursing assembly in place within said cavity.

5,188,062

AUTOMATIC LITTER BOX FOR SMALL ANIMALS

Gerald T. Joy, 129 Ashfield Dr., Brockton, Mass. 02402, and Edla C. Wilson, 111, 25 Crane St., Avon, Mass. 02322

Filed Apr. 6, 1992, Ser. No. 863,189
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—164 **4 Claims**



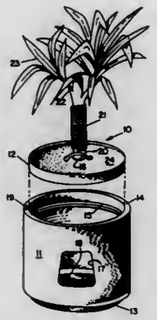
1. An automatic litter box comprising a litter compartment having a bottom panel, two opposing side walls and a pair of opposing end walls to form an open top litter compartment, a motor compartment is adjacently attached to said litter compartment, a disposable litter container is attached to said litter compartment and communicates with said motor compartment, a plurality of litter layers formed into a single litter sheet are positioned and foldedly stacked on top of each other in a zig-zag fashion within said litter compartment, and a distal end of said single sheet is rotationally joined to a motorized rotational device, wherein a motor within said motor compartment causes said rotational device to rotate and to cause one of said litter layers to slidably move into said disposable litter container.

5,188,063

COMBINATION SIMULATED PLANTER AND CAT LITTER ENCLOSURE

Ronald G. Evans, 18139 Erik Ct., #252, Canyon Country, Calif. 91351

Filed Jun. 19, 1992, Ser. No. 901,202
Int. Cl.[5] A01K *29/00*
U.S. Cl. 119—165 **10 Claims**



1. A combination simulated planter and cat litter enclosure comprising:

a hollow container portion having a side wall, a bottom wall and an open top;

an opening through said side wall leading into the interior of said container portion; and

a removable lid closing off the top of said container portion, said lid having a simulated tree trunk extending generally vertically upwardly therefrom in a direction away from said container portion, and simulated foilage associated with the terminal ends of said trunk.

5,188,064

CLUMPING CAT LITTER

Roy F. House, Houston, Tex., assignor to Venture Innovations, Inc., Lafayette, La.

Filed Oct. 7, 1991, Ser. No. 772,142
Int. Cl.[5] A01K *1/015*
U.S. Cl. 119—172 **16 Claims**

1. A method of enhancing the sorption capacity of a smectite clay which exhibits osmotic swelling and which has a particle size such that at least about 95% of its particles pass through a 2000 micron screen which comprises mixing with the smectite clay a particulate cellulosic material having a particle size distribution such that at least about 95% of its particles pass through a 2000 micron screen, wherein the weight ratio of the cellulosic material to the smectite clay is in the range from about 0.05 to about 3.0.

5,188,065

WATER PUMP

Richard Lyndhurst, 2885 Miguel La., Costa Mesa, Calif. 92626, and John D. Drake, 24632 Saturna Dr., Mission Viejo, Calif. 92691

Filed Mar. 5, 1992, Ser. No. 846,574
Int. Cl.[5] F01P *5/10*
U.S. Cl. 123—41.44 **13 Claims**

1. A water pump assembly for use on an internal combustion engine comprising

a) a rotor assembly, including an impeller having a hub affixed to a shaft to be rotated about an axis, and a carrier for said impeller,

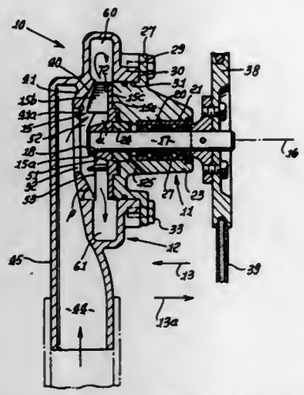
b) a body defining a recess and having wall means defining a frusto-conical taper at an angle β extending toward an eye, the body defining two outer volute sections opening toward the periphery of said recess, the body also forming

VOL 1147 ISS 4 FEB 23 1993 UMI

a water inlet passage extending in registration with said eye, which defines a water inlet port,

c) the rotor assembly received in said recess so that said hub is centered relative to said eye and projects into proximity to said eye, but is spaced therefrom when said carrier is attached to said body, the impeller having blades rotating in proximity to said frusto-conical wall means, and in outwardly spaced relation to said hub,

d) whereby water received in said eye from said inlet passage flows between the rotating hub and said frusto-conical wall means and between said blades in an outward direction to said volute sections as the impeller rotates,



e) and wherein said body wall means projects axially and annularly convergently into said inlet passage to form and locate said eye in said passage, the hub having a frusto-conical surface also tapering at an angle α toward said eye and in inwardly spaced relation to the blades whereby the hub tapered surface directs water flow from the eye outwardly to said blades, the body wall means taper substantially exceeding the taper of said hub frusto-conical surface, the hub terminating in axially spaced relation to said eye and to said inlet passage, the angle β being substantially in excess of 45° and the angle α being substantially less than 45°, relative to said axis,

f) said volute sections defining a plane intersecting said hub and said passage.

5,188,066

INTERNAL COMBUSTION ENGINE

Alvar Gustavsson, Skärblacka, Sweden, assignor to Skarblacka Bil & Motor AB, Skarblacka, Sweden

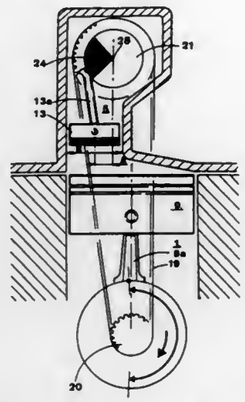
PCT No. PCT/SE90/00439, § 371 Date Dec. 5, 1991, § 102(e) Date Dec. 5, 1991, PCT Pub. No. WO90/15919, PCT Pub. Date Dec. 27, 1990

PCT Filed Jun. 19, 1990, Ser. No. 777,564

Int. Cl.[5] F02B *75/04*

U.S. Cl. 123—48 A **13 Claims**

1. Arrangement for an internal combustion engine of the kind which has a number of working cylinders, a corresponding number of auxiliary cylinders, each of which communicates with an associated working cylinder, and in each working cylinder a working piston which is so arranged as to execute a reciprocating motion inside the working cylinder and which, via a connecting rod, is operatively connected to a first crankshaft, in each auxiliary cylinder an auxiliary piston which is so arranged as to execute a reciprocating motion inside the auxiliary cylinder and which, in a similar fashion to the working piston, is operatively connected to a second crankshaft, and a device acting between the aforementioned crankshafts to ensure that the reciprocating motion of the auxiliary piston occurs at a frequency related to the frequency of the reciprocating motion of the working piston, and to provide angular displacement between the shafts, with a wherein a compression ratio in the respective working cylinders and auxiliary cylinders is dependent upon the loading on the engine at any given time, characterized in that the aforementioned devices are so arranged as to transmit energy originating from the effect of the combustion on the respective auxiliary piston from the second crankshaft to the first crankshaft, and in that the operative connection between the respective auxiliary piston and the second crankshaft, is so arranged so to allow the expansion motion of the auxiliary piston, that is to say its motion away from the working piston, to extend over more than 180° of the rotation of the second crankshaft, and to reduce the lateral forces of the auxiliary piston against the wall of the auxiliary cylinder, which generate frictional losses.



5,188,067

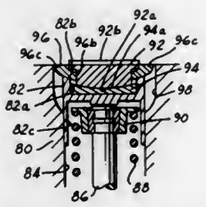
ADJUSTABLE VALVE SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Dominic Fontichiaro, Dearborn Hts., and Daniel M. Kabat, Oxford, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 695,127, May 3, 1991, Pat. No. 5,159,906. This application Jun. 30, 1992, Ser. No. 905,692

Int. Cl.[5] F01L *1/34, 1/14*

U.S. Cl. 123—90.18 **4 Claims**



1. An adjustable valve system for an engine, comprising:

an axially shiftable camshaft having a plurality of cam lobes for actuating engine valves, with at least one of said lobes having a profile which varies as a function of the axial position of said lobe; and

a bucket tappet displaceable by said axially variable cam lobe, with said tappet comprising:

a generally cylindrical body adapted to be slidably received in a bore within said engine, with said body having a first longitudinal bore for housing a valve spring, a valve spring retainer and valve stem;

a pivot pad housed within a second longitudinal bore formed in said cylindrical body and opposing the first longitudinal bore, with said pivot pad having arm arcuate bearing surface recessed within the second bore;

a cradle slidably mounted to the end of said cylindrical body adjacent the second bore and having an arcuate bearing surface in contact with a mating arcuate bearing surface formed in the annular surface defined by the second bore in the outer wall of the cylindrical body, with said cradle having an aperture extending therethrough; and

a camshaft contact button mounted through said aperture and having a first end for contacting a lobe of the camshaft and a second end having a mating arcuate surface for contacting the arcuate surface of the pivot pad, whereby said contact button and said cradle will be allowed to pivot in response to the axial shifting of said camshaft.

5,188,068

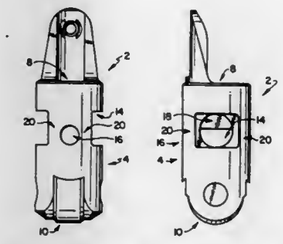
ROLLER TAPPET

William C. Gaterman, III, and William A. Pohle, both of Daytona Beach, Fla., assignors to Crane Cams, Daytona Beach, Fla.

Continuation of Ser. No. 649,969, Feb. 4, 1991, abandoned. This application May 6, 1992, Ser. No. 879,722

Int. Cl.[5] F01L *1/14*

U.S. Cl. 123—90.35 **3 Claims**



1. A valve tappet for internal combustion engines, adaptable to reciprocating movement within a bore formed in an engine block, comprising:

a first cylindrical body portion having first and second longitudinal ends and being adaptable for connection to a valve lifter at said first longitudinal end;

a second cylindrical body portion having first and second longitudinal ends; and

a central portion connecting said second longitudinal end of said first body portion and said first longitudinal end of said second body portion said central portion including

a first bore,

a second bore disposed perpendicularly to said first bore,

planar cutout portions spaced from and parallel to said first bore and intersecting said second bore, and

said second bore having a maximum diameter greater than a maximum diameter of said first bore, whereby a salient portion is defined above said first bore and intersects a portion of said second bore;

said first and second cylindrical body portions having substantially the same maximum outer radius and at least a portion of central portion having a radially outer surface having an outer radius substantially equal to said maximum outer radius of said cylindrical body portions extending along substantially the entire length thereof.

5,188,069

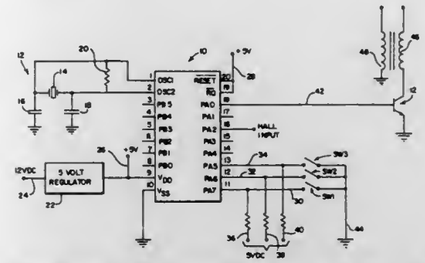
SAFETY INTERLOCK FOR A DEVICE

John A. Fiorenza, II, Slinger, Wis., assignor to Briggs & Stratton, Milwaukee, Wis.

Filed Nov. 13, 1991, Ser. No. 791,978

Int. Cl.[5] B60R *25/04;* **F02B** *77/08*

U.S. Cl. 123—146.50 B **29 Claims**



1. An interlock that prevents the starting of a device, said device having at least one switch, comprising:

determining means for determining whether said switch has been properly operated through at least one operational cycle of said switch before said device is started, said operational cycle including the opening and the closing of said switch; and

means for preventing the starting of said device if said determining means determines that said switch has not been properly operated through said at least one cycle.

5,188,070

SYSTEM FOR STARTING AN INTERNAL COMBUSTION ENGINE FOR POWERING VEHICLES

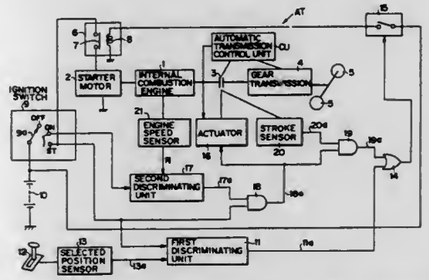
Masuhiro Otsuka, and Hiromi Kohno, both of Higashimatsuyama, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Sep. 10, 1991, Ser. No. 757,000

Claims priority, application Japan, Sep. 11, 1990, 2-240641

Int. Cl.[5] F02N *11/10*

U.S. Cl. 123—179.23 **7 Claims**



1. A system for starting an internal combustion engine powering a vehicle with an automatic transmission system which has a clutch engaged/disengaged by the use of an actuator and operates in an automatic gear-shifting mode selected by a selector, said system comprising:

a starter motor;

detecting means for detecting whether the engine has stalled for a reason other than that an ignition switch has been turned off;

disengagement control means for supplying a disengagement control signal for disengaging the clutch to the actuator when the ignition switch is turned to its start position in the case where it is detected by said detecting means that the engine has stalled;

VOL 1147 ISS 4 FEB 23 1993 UMI

disengagement detecting means for detecting that the clutch has been disengaged; and

current control means responsive to said disengagement control means and said disengagement detecting means for providing a start current for activating said starter motor only when the clutch is disengaged in response to the disengagement control signal and the ignition switch is switched to the start position.

5,188,071

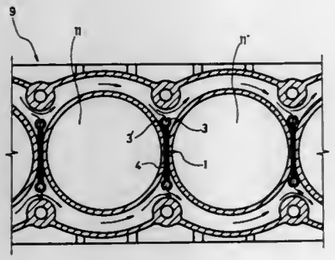
CYLINDER BLOCK STRUCTURE

Ki B. Han, Suwon, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Jan. 27, 1992, Ser. No. 826,122

Int. Cl.[5] F02F *7/00*

U.S. Cl. 123—195 R **7 Claims**



1. Cylinder block structure comprising:

a body with a number of cylinder bores arranged immediately adjacent to one another and an upper end;

water jackets with cores arranged in said body on the left and right sides of said cylinder bores;

a hollow member having a number of arc guide pieces on both ends inserted into said upper end between said cylinder bores so as to form a cooling water passage by burying both ends of said hollow member in one of said water jacket cores; and

insert pins inserted in the guide pieces at both ends of said hollow member communicating with said water jackets to prevent grains of sand from flowing into said hollow member when said one water jacket core is manufactured.

5,188,072

FUEL PUMP DESIGNED AS ROTOR PUMP

Albert Nolte; Joachim Altdorf, and Paul Scheffler, all of Cologne, Fed. Rep. of Germany, assignors to Kloeckner-Humboldt-Deutz AG, Cologne, Fed. Rep. of Germany

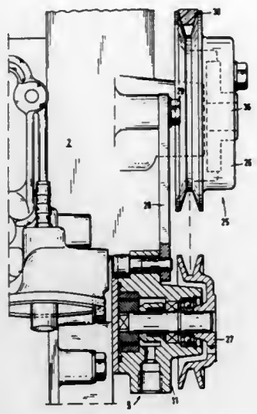
Filed Jun. 27, 1990, Ser. No. 544,658

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1989, 3921245

Int. Cl.[5] F02B *77/00*; F01C *1/10*

U.S. Cl. 123—198 C **6 Claims**

1. A fuel pump arrangement for an internal-combustion engine of the type having a camshaft (1), in which the fuel pump (5) is hydraulically connected between a mixture-forming means or an injecting means and a fuel tank, comprising a fuel pump (5) in the form of a rotor pump driven by and arranged in axial prolongation of said camshaft (1), said rotor pump including a rotor pump case (11) at one end of said camshaft (1) and having an internal pump space (12) at its axial side away from said one end of said camshaft (10, a fluid tight cover (15) closing said pump space (12), a journal bearing (19) in said rotor pump case (11), an inner gear (13) and an outer gear (14) disposed in said pump space (12), said outer gear (14) being driven by said inner gear (13), a central recess (7) in said camshaft (1), a rotor pump shaft (9) supported in said central recess (7) and said journal bearing (19) and a seal ring (20, 22) in sealing relation with and between said rotor pump shaft (9) and said rotor pump case (11), said seal ring (20, 22) surrounding said rotor pump shaft (9) at a location between said recess (7) and said journal bearing (19).



5,188,073

FLUID CONTROL VALVE, VALVE SUPPORT MEMBER THEREFOR AND IDLING AIR AMOUNT CONTROL APPARATUS FOR AUTOMOBILE USING THE FLUID CONTROL VALVE

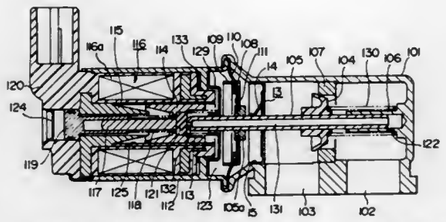
Yuki Ejiri, Katsuta; Tsutomu Okazaki, Ryugasaki; Koichiro Yamada, Mito; Chiaki Niida, Katsuta, all of Japan; Hiroaki Saeki, West Bloom Field, Mich., and Hideki Honma, Katsuta, Japan, assignors to Hitachi Ltd., Tokyo and Hitachi Automotive Engineering Co., Ltd., Ibaraki, both of, Japan

Continuation of Ser. No. 680,744, Apr. 5, 1991, abandoned. This application Jul. 7, 1992, Ser. No. 909,682

Claims priority, application Japan, Apr. 6, 1990, 2-90349

Int. Cl.[5] F02D *41/16*; F16K *31/02, 41/00*

U.S. Cl. 123—339 **18 Claims**



1. An apparatus for controlling an amount of idling air of an automobile comprising an idle running speed control valve of an internal combustion engine, said control valve being located in a bypass passage which connects the upstream side and the downstream side of a suction throttle valve provided in a suction conduit of the internal combustion engine, said control valve supporting a rod-like valve shaft provided with a valve body in such a manner that said valve shaft can be moved in its axial direction, and displacing the valve body in the axial direction in accordance with an amount of power supply to a solenoid so as to change an area of said bypass passage and control an amount of air flowing through said bypass passage, said apparatus further including pressing means which press said shaft provided with the valve body in a direction perpendicular to the shaft to such an extent that displacement of said valve body is not interfere with.

5,188,074

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

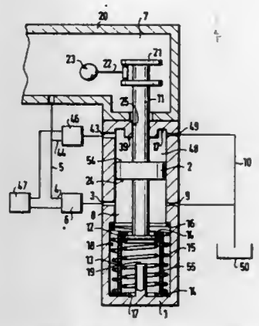
Manfred Kraemer, Schwieberdingen, and Gerold Schultheiss, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 8, 1992, Ser. No. 910,599

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1991, 4126695

Int. Cl.[5] F02D *33/02*

U.S. Cl. 123—357 **4 Claims**



1. A fuel injection pump for internal combustion engines having an adjuster that is actuatable by an adjusting mechanism, the adjusting mechanism includes an adjusting piston (2) that is coupled to the adjuster, the adjusting piston is displaceable in a cylinder (1), and defines a first work chamber (8), below said piston and a second work chamber (48) above said piston, the piston is adjustable counter to a restoring force by a pressure fluid that is delivered to the first work chamber (8) via a pressure fluid supply line (4) and an electrically controlled valves in the pressure fluid supply line (4), the valves (6) and (46) are controlled by an electrical control device, and the adjusting piston (2) is placed in an outset position by the restoring force, the adjusting piston (2) is secured on a piston rod coaxially in a cylinder (1), the lower and upper work chambers act in opposite directions upon the adjusting piston (2) when separately controlled via respective pressure fluid supply lines (4, 44) containing the electrically controlled valves (6, 46) and the lower and upper work chambers are relieved separately via respective throttles (9, 49), and the adjusting piston (2) is held in a middle outset location by a spring arrangement.

5,188,075

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Max Straubel, Stuttgart, and Karl Kellermann, Ditzingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

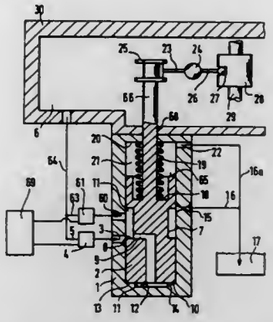
Filed Jun. 22, 1992, Ser. No. 902,347

Claims priority, application Fed. Rep. of Germany, Aug. 13, 1991, 4126697

Int. Cl.[5] F02D *31/00*

U.S. Cl. 123—357 **23 Claims**

1. A fuel injection pump for internal combustion engines, having a cylinder (1), an adjuster that is actuatable by an adjusting mechanism in said cylinder, said adjusting mechanism has an adjusting piston (2) coupled to the adjuster and displaceable in the cylinder (1), said piston defines a work chamber (11) with one end of said cylinder and is adjustable counter to a restoring force by a pressure fluid, said pressure fluid is delivered to the work chamber via a pressure fluid supply line (5) having an electrically controlled valve (4), the valve (4) is controlled by an electric control device and the adjusting piston (2) is forced by the restoring force to an outset position defined by a stop, the pressure fluid supply line (5) discharges via an inlet opening (3) in a cylindrical wall of the cylinder (1), and in the outset position of the adjusting piston (2), the inlet opening (3) communicates with a second inlet opening of a connecting line (9), which is in the adjusting piston and leads into the work chamber (11), said work chamber is defined by a first face end (10) of the adjusting piston (2) and a first end wall (12) of the cylinder (1), the first and second inlets are provided with limiting edges which form control edges, and after these edges overtake one another, communication between the work chamber (11) and the inlet opening (3) of the pressure fluid supply line (5 is interrupted and the work chamber (11) communicates continuously with a relief chamber (17) via a throttle (15).



5,188,076

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

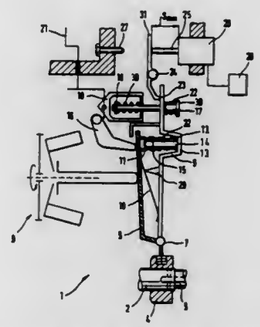
Carlos Alvarez-Avila, Freiberg/N; Karl-Friedrich Ruesseler, Renningen; Helmut Tschoeke, Ostfildern, and Karl Konrath, Freiberg/Neckar, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 14, 1992, Ser. No. 883,003

Claims priority, application Fed. Rep. of Germany, May 27, 1991, 4117267

Int. Cl.[5] F02D *31/00*

U.S. Cl. 123—357 **20 Claims**



1. A fuel injection pump for internal combustion engines having a fuel quantity adjusting device that is adjustable via an adjusting governor, wherein the adjusting device (6, 9) is adjustable by an rpm-dependent force (8) counter to the force of a governor spring (20) and by means of an adjustable second stop (23), on which the adjusting device is retained by the force of a tensioning spring (22) and which with its adjusted position determines the maximum quantity of fuel attaining injection, wherein the adjustable second stop (23) is adjustable by step-

VOL 1147 ISS 4 FEB 23 1993 UMI

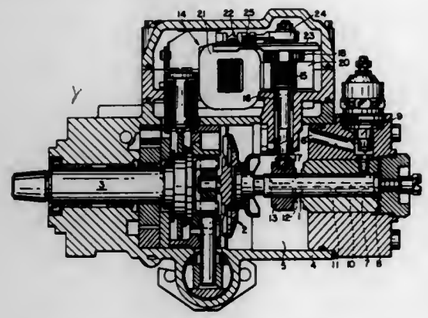
ping motor (26) controlled in accordance with engine operating parameters, the stepping motor (26), and the adjustable second stop (23) serves not only to limit the full-load injection quantity and to adjust the starting quantity but also to govern an idling injection quantity.

5,188,077

APPARATUS FOR A DIESEL ENGINE

Richard Bauder, Neckarsulm, Fed. Rep. of Germany, assignor to Audi A.G., Ingolstadt, Fed. Rep. of Germany

Continuation of Ser. No. 210,118, Jun. 22, 1988, abandoned.
This application Oct. 29, 1991, Ser. No. 784,132
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1987, 3720695
Int. Cl.[5] F02D *31/00*; F02B *77/00*
U.S. Cl. 123—359 **7 Claims**



1. An electronically controlled fuel injection pump for a diesel engine, having a high-pressure fuel chamber and a low-pressure fuel chamber and a passage connecting said chambers, a piston reciprocable within said high-pressure fuel chamber and comprising and internal bore having first and second ends opening respectively into the high-pressure and low-pressure fuel chambers, a sleeve sliding on said piston for controlling said second end, a rotary magnet for displacing said sleeve in dependence on signals received from a electronic control unit determining the rate of fuel delivered from said high-pressure fuel chamber to a fuel injection line in dependence on engine parameters, a mechanical arm associated with said rotary magnet for recognizing the angle of rotation of said rotary magnet and, therewith, the amount of displacement of said sleeve and the amount of fuel injected, and electrically actuable safety valve movable between open and closed positions in which it respectively permits and prevents flow of fuel through said passage, said valve being arranged to assume its open position upon energization and its closed position upon deenergization, and a switch disposed in an electric line leading to said valve said switch being directly actuable by said arm if the angle of rotation of said rotary magnet exceeds a predetermined value to deenergize said valve.

5,188,078

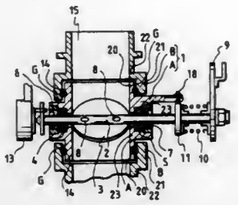
THROTTLE VALVE ASSEMBLY

Shigeo Tamaki, Katsnta, Japan, assignor to Hitachi, Ltd., Tokyo and Hitachi Engineering Co., Ltd., Ibaraki, both of, Japan

Filed Jan. 29, 1992, Ser. No. 827,746
Claims priority, application Japan, Jan. 29, 1991, 3-9274
Int. Cl.[5] F02D *9/10*
U.S. Cl. 123—403 **10 Claims**

1. A throttle valve assembly comprising a throttle valve, a throttle valve shaft for supporting the throttle valve along a radius direction of the throttle valve and a throttle body which installs the throttle valve and the throttle valve shaft in an inside thereof, wherein

said throttle body comprises a first body which supports said throttle valve shaft and is made by a light metal and a second body which is connected coaxially to the first body and is made by a synthetic resin, and



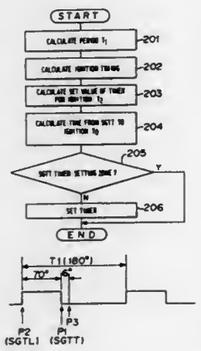
a seal member is inserted to a gap which is formed between said first body and said second body for absorbing thermal expansions by said first and second bodies.

5,188,079

ELECTRONIC CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Katsuhiko Kondo, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1992, Ser. No. 835,586
Claims priority, application Japan, Mar. 20, 1991, 3-56775; Mar. 20, 1991, 3-56779
Int. Cl.[5] F02P *5/15*
U.S. Cl. 123—414 **2 Claims**



1. An electronic control device for an internal combustion engine which comprises:

means of detecting a first crank angle position (SGTT) and a second crank angle position (SGTL) provided at a position on advance ignition angle side of the first crank angle position;

means of calculating a target ignition timing at every SGTL;

means of setting the target ignition timing at every SGTL or at every SGTT depending on a setting condition; and

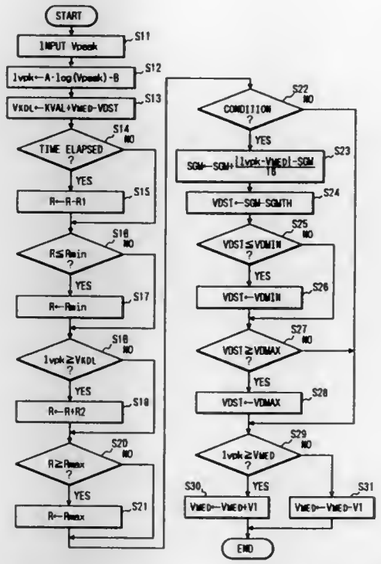
means of correcting the target ignition timing based on a time interval between a first detecting timing of the SGTL and a second detecting timing of the SGTT.

5,188,080

KNOCKING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Koji Sakakibara, Hekinan, and Koichi Kamabora, Tokoname, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 24, 1992, Ser. No. 825,382
Claims priority, application Japan, Jan. 25, 1991, 3-007859
Int. Cl.[5] F02P *5/15*
U.S. Cl. 123—425 **7 Claims**



1. A knocking control system for an internal combustion engine, comprising:

a knock sensor for outputting signals in correspondence with intensities of knocks generated in said engine;

knock intensity detecting means for detecting a signal of the output signals of said knock sensor which is indicative of the intensity of the knock generated in a predetermined interval of a combustion cycle of said engine;

logarithmic conversion means for performing a logarithmic conversion of the knock intensity signal detected by said knock intensity detecting means;

central value determining means for determining a central value in a distribution of the logarithmic conversion values obtained by said logarithmic conversion means;

suppression amount determining means for determining, on the basis of a standard deviation of the logarithmic conversion value distribution, a suppression amount which is used for suppressing a knock decision level which is used for deciding whether said engine is in a knocking state;

knock decision level determining means for determining said knock decision level on the basis of a deviation between the central value of said logarithmic conversion values and said suppression amount;

knock occurrence decision means for comparing said knock decision level with said logarithmic conversion means to decide whether the knock occurs or not; and

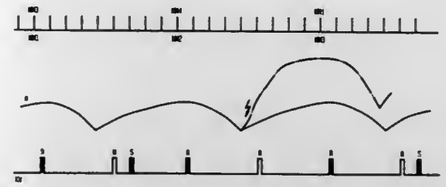
adjusting means for adjusting an operation state of said engine in accordance which the decision result of said knock occurrence decision means so as to reduce the knocking state.

5,188,081

CONTROL SYSTEM FOR A FUEL PUMP

Manfred Birk, Oberriexingen; Gerhard Engel, Stuttgart; Wilhelm Eyberg, Stuttgart; Thomas Henze, Stuttgart, and Alfred Schmitt, Ditzingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Dec. 13, 1991, Ser. No. 808,192
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1990, 4040828
Int. Cl.[5] F02M *51/00*; F02D *31/00*
U.S. Cl. 123—479 **15 Claims**



1. A control system for a fuel pump for an internal-combustion engine, the engine having a crankshaft, a camshaft, a plurality of cylinders, and a plurality of solenoid valves, comprising:

at least one pulse transmitter mounted on the crankshaft or camshaft for generating a plurality of pulses which include at least one reference pulse establishing the beginning of fuel injection into the individual cylinders of the engine, the pulses being used to detect rotational speed;

a controlling device for determining the quantity of fuel to be injected based on the pulses received from the pulse transmitter;

means for activating the controlling device to inject fuel into a predetermined cylinder of the engine and to synchronize fuel injection; and

means for detecting whether fuel was injected into a proper cylinder based upon a reaction of the engine to the injection of fuel.

5,188,082

FUEL INJECTION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE

Hiroshi Udo; Hatsuo Nagaishi; Tadaoki Takasaki, and Kou Ido, all of Kanagawa, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Mar. 5, 1992, Ser. No. 846,665
Claims priority, application Japan, Mar. 8, 1991, 3-043433
Int. Cl.[5] F02M *51/00*
U.S. Cl. 123—491 **10 Claims**

1. A fuel injection control system for an internal combustion engine having an air flow sensor and a fuel injector valve, said fuel injection control system comprising:

means for detecting an intake air flow amount in accordance with a signal generated by the air flow sensor;

means for calculating a fuel injection amount in accordance with said intake air flow amount;

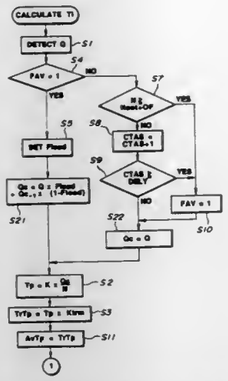
means for controlling a fuel injection from the fuel injector valve in accordance with said fuel injection amount;

means for applying a compensation for time LAG in a process of calculation for obtaining said fuel injection amount;

means for detecting a rising engine speed during a time

VOL 1147 ISS 4 FEB 23 1993 UMI

period from an engine starting to a time immediately after the engine starting; and



means for reducing an effect of said compensation for time LAG until said engine speed has reached a predetermined value.

5,188,083

FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

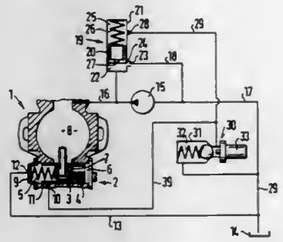
Berni Reisser, Notzingen; Hannes Pflug, Weilderstadt; Mohammad-Ali Khosrawi, Ludwigsburg; Michael Scharf, Brunswick; Helmut Simon, Goeppingen; Christian Taudt, Winnenden-Schelmenholz; Wolfgang Goll, Ilsfeld; Paul Wuetherich, Schwieberdingen; Thomas Fortenbacher, Gerlingen, and Karl Konrath, Freiberg/Neckar, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 29, 1992, Ser. No. 890,427

Claims priority, application Fed. Rep. of Germany, May 31, 1991, 4117813

Int. Cl.[5] F02M *37/04*

U.S. Cl. 123—502 **1 Claim**



1. A fuel injection pump for internal combustion engines, having an injection adjuster (2) that has an adjusting piston (4) that is displaceable in a cylinder (3), said adjusting piston on one face end encloses a work chamber (6), exposed to a control pressure controlled as a function of rpm, in the cylinder (3) and on the other face end defines a restoring chamber (9), which contains a spring (5) acting upon the adjusting piston (4) with a restoring force, and which chamber is relieved via a return line (13); to a fuel tank a feed pump (15) driven in synchronism with the fuel injection pump, the feed pressure of said feed pump is controlled as a control pressure by a pressure control valve (19), which has a wall, acted upon by the control pressure, said wall is adjustable counter to a restoring spring (26), the adjustable wall divides a pressure chamber (22) from a restoring chamber (25) that receives the restoring spring (26) and communicates continuously with the pressure chamber (22) via a throttle bore (27), whereupon with the control motion of the adjustable wall in the pressure control valve (19), an outflow line (23) from the pressure chamber (22) to a relief chamber is controlled and the restoring chamber (25) is relieved via a pressure holding valve (30) with temperature-dependent actuation and via a pressure limiting valve, said pressure limiting valve has a control piston acted upon by the control pressure and is adjustable counter to a restoring spring, by means of said control piston, the flow cross section of a relief line communicating with the restoring chamber is controllable, acting as the control piston of the pressure limiting valve for the relief of the pressure control valve restoring chamber (25) of the feed pump (15) is an adjusting piston (4) of the injection adjuster (2), said adjusting piston has a control opening on a jacket face, the opening being defined by a control edge and communicating with the restoring chamber (9), said control opening communicates with the relief line (29) of the restoring chamber (25) beyond a predetermined displacement position of the adjusting piston which discharges into the cylinder (3).

5,188,084

APPARATUS FOR CONTROLLING FUEL INJECTION TIMING IN A FUEL INJECTION PUMP

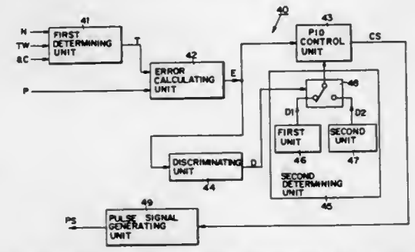
Akira Sekiguchi, Higashimatsuyama, Japan, assignor to Zexel Corporation, Tokyo, Japan

Filed Jan. 8, 1992, Ser. No. 818,257

Claims priority, application Japan, Jan. 25, 1991, 3-23865

Int. Cl.[5] F02M *37/04*

U.S. Cl. 123—502 **4 Claims**



1. A fuel injection timing control apparatus for a fuel injection pump which has a pressure response type timer for regulating a position of a regulating member for regulating fuel injection timing in the fuel injection pump, said apparatus comprising:

first determining means for determining a target fuel injection time;

detecting means for detecting a actual fuel injection time;

discriminating means responsive to said first determining means and said detecting means for discriminating which is advanced between the actual fuel injection time and the target fuel injection time at the instant of fuel injection;

second determining means for determining in accordance with the result discriminating by said discriminating means a control constant for a PID control operation of the position of the regulating member so as to avoid the influence of a reaction force which is caused by fuel injection of the fuel injection pump and applied to the timer; and,

control means responsive to said first determining means and said detecting means for controlling the timer to make the actual injection time substantially equal to the target injection time through PID control using the control constant determined by said second determining means.

5,188,085

DEVICE FOR MEASURING CONCENTRATION/FLOW RATE OF A MIXTURE DRAWN INTO AN INTERNAL COMBUSTION ENGINE AND AIR-FUEL RATIO CONTROL SYSTEM OF THE ENGINE INCORPORATING THE DEVICE

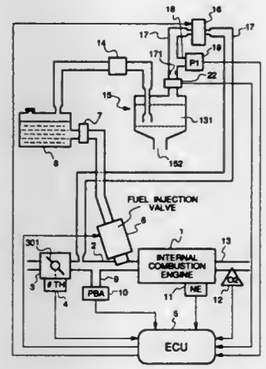
Masayuki Habaguchi; Toyohei Nakajima; Fumio Hosoda; Sachito Fujimoto; Masakazu Kitamoto; Hideo Moriwaki, and Takefumi Nakamura, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 18, 1992, Ser. No. 853,289

Claims priority, application Japan, Mar. 19, 1991, 3-80726

Int. Cl.[5] F02M *25/08*; F02D *41/04*

U.S. Cl. 123—520 **10 Claims**



1. In a device for measuring a flow rate of a mixture of evaporative fuel and air supplied to an internal combustion engine, said engine having an intake passage, a fuel tank, a canister for absorbing evaporative fuel generated from said fuel tank, and a purging passage connecting between said canister and said intake passage for purging said mixture of evaporative fuel and air therethrough into said intake passage, the improvement comprising:

a plurality of flowmeters arranged in said purging passage, said flowmeters having different output characteristics relative to concentration of said evaporative fuel in said mixture; and

detecting means for detecting at least one of the concentration of said evaporative fuel in said mixture and a volumetric flow rate of said mixture, based on outputs from said flowmeters.

5,188,086

EXHAUST GAS RECIRCULATION COUPLER AND DIFFERENTIAL VENTURI

Delbert L. Adkins; Raymond R. Brauckmiller, both of Mount Clemens, and Dennis C. Soles, Rochester Hills, all of Mich., assignors to Bundy Corporation, Warren, Mich.

Filed Apr. 6, 1992, Ser. No. 863,804

Int. Cl.[5] F02M *25/07*

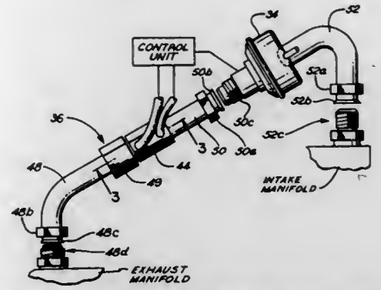
U.S. Cl. 123—568 **12 Claims**

1. An exhaust recirculation pressure differential coupler and venturi comprising:

a coupler body having ends adapted to be connected between an exhaust manifold and an inlet manifold of an internal combustion engine for receiving exhaust gases flowing from the exhaust manifold;

an angular inlet tube having a first end connected to one end of said coupler body and adapted to be connected at a second end to the exhaust manifold;

an outlet tube having a first end connected to the other end of said coupler body and a second end adapted to be mounted to the inlet manifold; and



adjusting means to adjust the axial length of the coupler and the angular orientation of said inlet tube with respect to said coupler body.

5,188,087

METHOD FOR CONTROLLING AN EXHAUST GAS RECIRCULATION SYSTEM OF A FLEXIBLE FUEL VEHICLE ENGINE

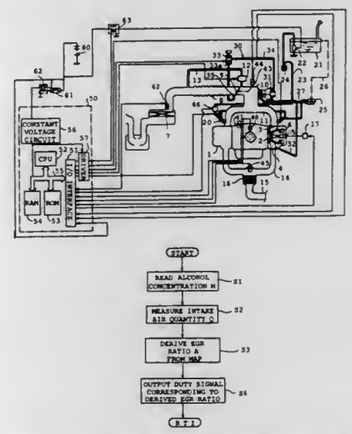
Yoichi Saito, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1992, Ser. No. 835,247

Claims priority, application Japan, Feb. 27, 1991, 3-53620

Int. Cl.[5] F02M *25/07*

U.S. Cl. 123—571 **6 Claims**



3. A method for controlling an EGR system of an FFV engine having an alcohol concentration sensor provided in a fuel system for sensing concentration of alcohol in fuel, detecting means for detecting engine operating conditions, an EGR valve provided in an EGR pipe connected between an exhaust port and an intake passage of the engine, and electronic control means for controlling an exhaust gas recirculation ratio, comprising the steps of:

setting the exhaust gas recirculation ratio to a decreasing function of alcohol concentration, and

opening the EGR valve in an intermediate engine load range so as to provide a larger exhaust gas recirculation ratio than that of other load ranges.

VOL
1147
ISS
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23
1993
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5,188,088

ELECTRONIC IGNITION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Klaus Stamm, Wolfsburg, and Siegbert Graf vom Hagen, Bensheim, both of Fed. Rep. of Germany, assignors to Volkswagen AG, Wolfsburg, Fed. Rep. of Germany

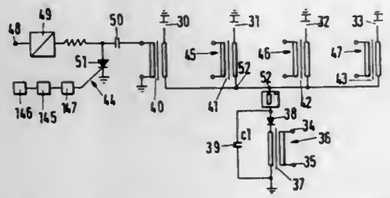
PCT No. PCT/EP90/01192, § 371 Date Jan. 28, 1992, § 102(e) Date Jan. 28, 1992, PCT Pub. No. WO91/02153, PCT Pub. Date Feb. 21, 1991

PCT Filed Jul. 20, 1990, Ser. No. 828,914

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1989, 3924985

Int. Cl.[5] F02P *3/08*

U.S. Cl. 123—620 **20 Claims**



1. An electronic ignition system for an internal combustion engine having a plurality of spark plugs comprising a plurality of high-voltage condenser ignition devices (HCVIs) having output transformers and switches controlled by signals of an ignition distributor, each HVCI assigned to a corresponding spark plug to provide a precisely timed spark energy source, at least one common ignition device comprising a programmable transistor ignition system (PTI) connected in series with the individual HVCIs and common to at least one group of spark plugs as in ignition energy generator influenceable by engine parameters, the PTI including a direct-current voltage source, an output transformer and an electronic switch having a switching frequency which is a multiple of the firing frequency of each spark plug and which is effective to provide pulsewise cut-in of the direct-current voltage source to its output transformer during predetermined intervals of time through timing elements which are controllable as a function of operating and environmental parameters.

5,188,089

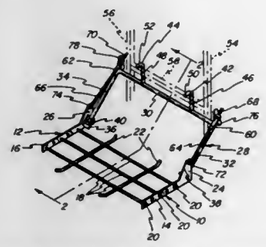
BARBECUE GRILL SUPPORT

James J. Hamilton, Arcanum, Ohio, assignor to J. J. Hamilton Enterprises, Inc., Arcanum, Ohio

Filed Jun. 24, 1991, Ser. No. 720,267

Int. Cl.[5] A47J *37/07;* **F24C** *1/16*

U.S. Cl. 126—30 **14 Claims**



1. A barbecue grill support structure comprising:
a support platform having a planar support section for engaging a lower surface of a grill, said platform having a front portion and a rear portion;
elongated cantilever means having a first end for attachment to a support member and a second end supported in cantilever relationship to said first end;
pivot means connecting said second end to said rear portion whereby said front portion may pivot relative to said cantilever means about said pivot means;
tensile means attached to said support platform at a first attachment point in spaced relationship to said pivot means and attached to said cantilever means at a second attachment point adjacent to said first end of said cantilever means, said support platform applying a tensile force to said tensile means when a downward force is applied to said front portion of said platform;
adjustment means formed on said tensile means for varying the distance between said first and second attachment points whereby the angle between said support platform and said cantilever means may be varied; and
wherein said support platform includes a pivot lever portion extending from said rear portion in substantially orthogonal relationship to said planar support section, said first attachment point for said tensile means being located on said pivot lever portion.

5,188,090

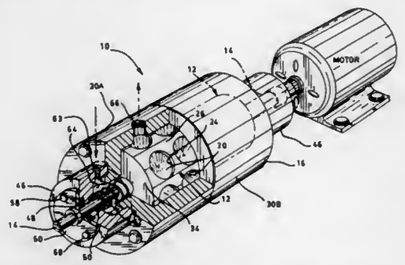
APPARATUS FOR HEATING FLUIDS

James L. Griggs, Powder Springs, Ga., assignor to Hydro Dynamics, Inc., Cartersville, Ga.

Filed Apr. 8, 1991, Ser. No. 682,003

Int. Cl.[5] F24C *9/00*

U.S. Cl. 126—247 **14 Claims**



1. Apparatus for converting energy, comprising:
(a) a shaft for connection to a motive means;
(b) a cylindrical rotor rigidly connected to the shaft, the cylindrical surface of the rotor featuring a plurality of bores whose depth exceeds their diameter;
(c) a pair of seals, each attached to the shaft on opposite sides of the rotor;
(d) a housing bell surrounding the cylindrical surface and one end surface of the rotor, the housing bell generally C-shaped in axial cross section, having an interior surface which conforms closely with the cylindrical and end surfaces of the rotor, and having an axial bore sufficient in diameter to accommodate the shaft and one of the seals with additional space for fluid flow;
(e) a disc shaped housing plate connected to the housing bell in sealing relationship to complete a housing surrounding the rotor, having an interior surface conforming closely with the end surface of the rotor, and having an axial bore sufficient in diameter to accommodate the shaft and one of the seals with additional space for fluid flow;
(f) a first bearing plate connected to the housing bell, featuring a bore adapted in size to accommodate the shaft, a seated O-ring against which one of the seals abuts, a bearing for supporting the shaft, and a hollowed portion adapted in size to accommodate the shaft and one of the seals with additional space for fluid flow;
(g) a second bearing plate connected to the endplate, featuring a bore adapted in size to accommodate the shaft, a seated O-ring against which one of the seals abuts, a bearing for supporting the shaft, and a hollowed portion adapted in size to accommodate the shaft and one of the seals with additional space for fluid flow;
(h) at least one inlet port to allow flow of fluid into the apparatus; and
(i) at least one exit port formed in the housing to allow exhaust of fluid which has been heated by the rotating shaft and rotor acting in concert with the stationary housing and bearing plates.

5,188,091

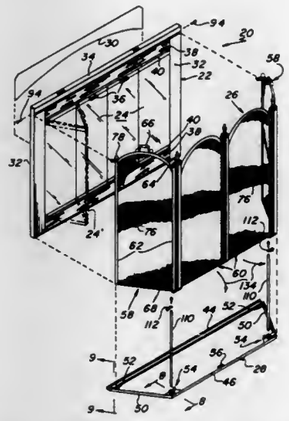
FIREPLACE ENCLOSURE

Maxwell Gardner, 34 New England Dr., Wallingford, Conn. 06492

Filed Feb. 12, 1992, Ser. No. 834,420

Int. Cl.[5] F24B *1/192*

U.S. Cl. 126—548 **22 Claims**



1. A fireplace enclosure comprising a frame adapted to be mounted on the hearth in front of a fireplace, said frame comprising a front leg and side legs projecting from said front leg, all of said legs lying in a horizontal plane, said legs being adapted to rest on said hearth, a screen assembly adapted to be secured to said frame, said screen assembly comprising a plurality of screen panels, with at least one of said screen panels being pivotable relative to another of said screen panels, and means for securing said screen assembly to said frame.

5,188,092

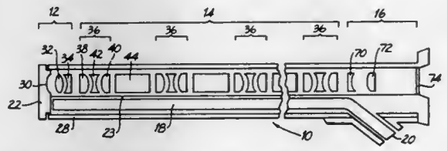
DISPOSABLE RIGID ENDOSCOPE

Jeffrey S. White, Ridgefield, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Dec. 13, 1990, Ser. No. 626,847

Int. Cl.[5] A61B *1/00*

U.S. Cl. 128—4 **26 Claims**



19. An endoscope imaging system comprising:
an illumination source;
an endoscope comprising:
means for transmitting illumination from said illumination source to a distal field;
distal objective lens means;
a relay lens system proximal of said objective lens means including at least two molded glass curved surface triplet lens assemblies separated by at least one rod lens, each said triplet lens assemblies including first and second positive curved thin lenses separated by a negative curved surface thin lens; and
imaging lens means proximal of said relay lens system for focusing an image of the illuminated field, said image transmitted to said imaging lens means by said objective lens means and said relay lens system;
means for detecting said focussed image; and
means for displaying said detected image.

5,188,093

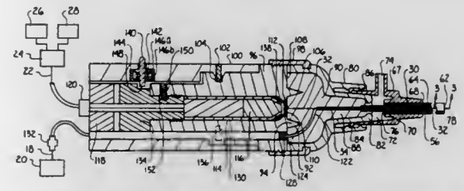
PORTABLE ARTHROSCOPE WITH PERISCOPE OPTICS

Michael Lafferty, Leucadia; Daniel Kline, Carlsbad, and Charles S. Slemon, Encinitas, all of Calif., assignors to Citation Medical Corporation, Reno, Nev.

Filed Feb. 4, 1991, Ser. No. 650,066

Int. Cl.[5] A61B *1/06*

U.S. Cl. 128—6 **11 Claims**



1. A hand-held diagnostic arthroscope for examining an internal structure of a body, which comprises:
a camera assembly with a light focusing means;
an image guide having a distal end and a proximal end, said image guide defining a first axis;
a hollow tubular needle surrounding said image guide;
an illuminating means joined with said image guide to establish a probe rotatably mounted on said camera assembly for insertion into the body;
a lens attached to said distal end of said image guide for gathering light from said illuminating means, said lens defining an optical axis oriented at an oblique angle relative to said first axis;
a camera head positioned in said camera assembly in light communication with said proximal end of said image guide for generating a visual display signal of the internal structure of the body illuminated by said illuminating means; and
a scope assembly attached to an end of said camera assembly for supporting said probe and connecting said probe to said camera assembly said image guide extending through said scope assembly and juxtaposed with said focusing means.

5,188,094

HEAT STERILIZABLE ELECTRONIC VIDEO ENDOSCOPE

Edwin L. Adair, 2800 S. University Blvd., Denver, Colo. 80210

Filed Sep. 30, 1991, Ser. No. 769,120

Int. Cl.[5] A61B *1/06*

U.S. Cl. 128—6 **6 Claims**

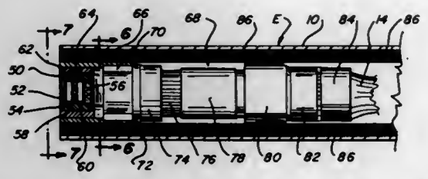
1. A heat sterilizable electronic video endoscope comprising:
an endoscope tubular housing having a distal end and a proximate end;
a plurality of lenses, forming an objective lens system;
a lens conversion tube having a diameter less than that of said tubular housing and heat resistant metal spacers solely supporting said lenses in spaced position and centrally

VOL 1147 ISS 4 FE 23 1993 UMI

locating said lenses within said tube at said distal end of said tubular housing when receiving a light image during use and during heat sterilization;

a CCD centrally mounted in said tubular housing at the image plane of said objective lens system for sensing an image;

circuitry connected to said CCD upstream thereof and provided with a connector;



a CCD electrical cable in a heat resistant sheath having a connector releasably connected to said circuitry connector and extending axially along said tubular housing and through said distal end thereof; and

light transmitting glass fibers completely surrounding said lens conversion tube, said CCD, said circuitry and said CCD electric cable, protecting all of them from the heat of sterilization.

5,188,095

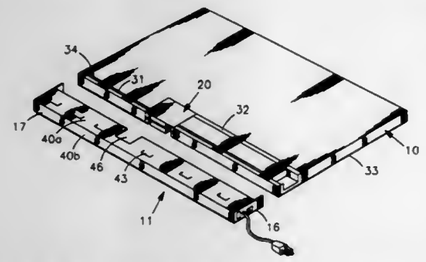
PORTABLE VIBRATING PLATFORM

Charles D. Healy, Irvine, Calif., assignor to C.S. Technology, Santa Ana, Calif.

Continuation of Ser. No. 492,617, Mar. 12, 1990, abandoned. This application Jun. 3, 1991, Ser. No. 710,252

Int. Cl.[5] A61H *1/00*

U.S. Cl. 128—32 **9 Claims**



1. A vibrating platform comprising

a rigid base member for providing a supporting platform of sufficient size to allow a person to stand thereon,

an electromagnet mounted in a cavity formed in the rigid base member,

an elongated metal rod disposed adjacent the electromagnet, the elongated metal rod being acted upon directly by a magnetic flux generated by the electromagnet, and being sized and dimensioned to resonantly vibrate at a desired frequency when the electromagnet is electrically energized, and

elongated channel means fixed to the ends of the elongated metal rod for mounting the elongated metal rod closely adjacent the electromagnet, the elongated channel means being attached to the rigid base member for coupling vibrations of the elongated metal rod to the rigid base member.

5,188,096

MASSAGE APPARATUS

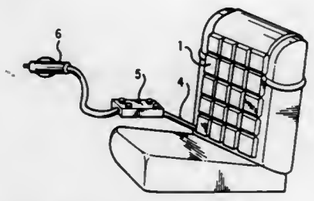
Young-Yoon Yoo, 198 Nakwon-dong, Jongro-ku, Seoul 110-320, Rep. of Korea

Filed Mar. 7, 1991, Ser. No. 666,513

Claims priority, application Rep. of Korea, Mar. 15, 1990, 2977/1990; Feb. 23, 1991, 2972/1991

Int. Cl.[5] A61H *1/00*

U.S. Cl. 128—33 **6 Claims**



1. A massage apparatus, comprising:

a massage mat including a plurality of flexibly connected massage cells arranged in an array of adjoining horizontal and vertical rows, said massage cells each having supporter means for defining an interior massage cell cavity, a motor fixed in said cavity, and an eccentric weight drivable by said motor for vibrating said massage cells when the motor is operated; and

control means for regulating the vibration of said massage cells, including:

a rotor formed by alternately joining a plurality of round insulating boards having a certain thickness and a plurality of round metal boards having a slightly smaller diameter than said round insulating boards, said round metal boards having a plurality of protrusions of differing lengths around their circumferences, said protrusions spaced around the circumferences of the metal boards at varying intervals,

a reduction motor having a shaft affixed to the center of the rotor,

a plurality of first contact terminals mounted to the control means to slide flexibly around the circumference of each round metal board and a part of each round insulating board and electrically connected to the massage cells, and

a second contact terminal mounted to the control means to slide flexibly on a side of the outermost round metal board of said rotor, said contact terminal electrically connected to a terminal of a power supply.

5,188,097

CAPILLARY MASSAGE APPARATUS

Carlos F. G. Hansen, Salguero 2567 - 12 "B", (1425) Buenos Aires, Argentina

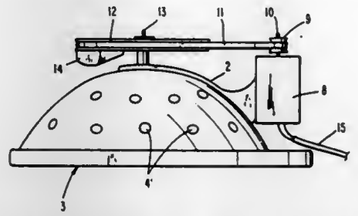
Filed Jul. 17, 1991, Ser. No. 731,065

Claims priority, application Argentina, Jul. 19, 1990, 317406; Jun. 3, 1991, 319845

Int. Cl.[5] A61H *1/00, 7/00*

U.S. Cl. 128—36 **10 Claims**

1. A device for capillary massage, in the form of a helmet, which comprises a helmet shell and an inner liner, said helmet shell and inner liner being attached together, said inner liner having attached thereto an elastic harness which secures it to a user, the inner liner being provided on its outer surface with an anti-slip cover and on its inner surface, arranged inside the helmet shell, with an electric motor connected to eccentric wheel means, said eccentric wheel means being mounted for free rotational movement around a shaft which is affixed firmly to said inner liner, said rotational movement around said shaft and said elasticity of said harness providing an asymmetrical



motion to at least said helmet shell, inner liner and said anti-slip cover to provide a capillary massaging effect.

5,188,098

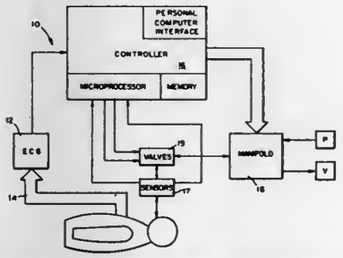
METHOD AND APPARATUS FOR ECG GATED VENTILATION

Eric A. Hoffman, Narberth, and C. William Hanson, III, Philadelphia, both of Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Nov. 4, 1991, Ser. No. 787,635

Int. Cl.[5] A61M *16/00*

U.S. Cl. 128—204.23 **16 Claims**



1. Apparatus for maximizing the volume of blood pumped by a heart, wherein the lungs associated with said heart are ventilated by a respirator, wherein said respirator causes ventilation of said lungs in response to a control signal, said apparatus comprising:

a first monitor for generating a heart signal representative of the action of said heart;

a second monitor for generating a flow rate signal representative of the rate of flow of air into and out of said lungs;

a third monitor for generating a pressure signal representative of the air pressure in said lungs; and

a controller, connected to receive said heart signal, said flow rate signal, said pressure signal and to said respirator, for generating said control signal in response to said heart signal, said flow rate signal and said pressure signal, whereby blood being pumped from the heart is assisted by the ventilation of said lungs.

5,188,099

THERAPEUTIC EXERCISE CHAMBER WITH CONTROLLED OZONATED ENVIRONMENT

Carlo Todeschini, Via per Maggiana, 11 - 22054 Mandello Del Lario - Como, and Gabriella Togni, Via C. Battisti, 11 - 22066 Mariano Comense - Como, both of Italy

Filed Jun. 13, 1990, Ser. No. 537,960

Claims priority, application Italy, Jun. 13, 1989, 20857 A/89

Int. Cl.[5] A62B *31/00;* **A61M** *15/02;* **A61G** *10/00;* **A61H** *33/14*

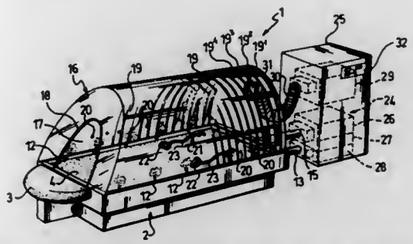
U.S. Cl. 128—205.26 **3 Claims**

1. An apparatus for practicing gymnastics under a controlled atmosphere, comprising:

a base;

a hood provided over the base and having an opening of a selected size, and defining an enclosure in cooperation with the base;

a gymnastic device within said enclosure which is designed for allowing an individual to exercise while in said enclosure;



a delivery means for delivering heated air into said enclosure, said delivery means including an ozonizer device for ozonizing the heated air flow entering said enclosure; and

a humidifier for introducing steam into said enclosure;

wherein said ozonizer device comprises a plurality of ozonizing lamps having an ozone capacity of 20 mg/hour and an oxygen concentrator is located upstream of the ozonizer device for supplying oxygen-enriched air to said enclosure.

5,188,100

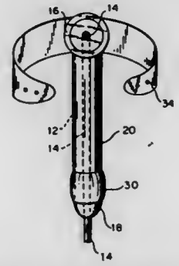
APPARATUS FOR FACILITATING TRACHEOSTOMY TUBE REPLACEMENT

Richard Miles, and Stephen G. Rothstein, both of New York, N.Y., assignors to New York University, New York, N.Y.

Filed Sep. 9, 1991, Ser. No. 756,681

Int. Cl.[5] A61M *16/04*

U.S. Cl. 128—207.14 **4 Claims**



1. An obturator for use with a tracheostomy tube to facilitate replacement of the tracheostomy tube, comprising:

a substantially cylindrical body having a distal end, intended to extend from the distal end of the tracheostomy tube when in use, and a proximal end, intended to extend from the proximal end of the tracheostomy tube when in use, said body being sufficiently flexible to permit it to easily assume the shape of the tracheostomy tube with which the obturator is intended to be used;

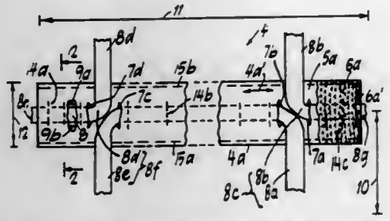
a blunt, rounded, atraumatic tip disposed at the distal end of said body;

a flange disposed at the proximal end of said body, the length of said body being selected such that when said flange abuts the proximal end of the tracheostomy tube with which the obturator is intended to be used, said tip extends from the distal end of the tracheostomy tube far enough to effectively form a blunt, rounded, atraumatic end to the tracheostomy tube;

VOL 1147 ISS 4 FE 23 1993 UMI

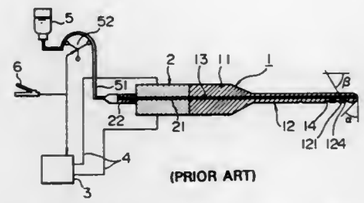
wherein a central longitudinal opening extends throughout said cylindrical obturator body, including said tip and said flange, such that, when in use, a guide tube can be inserted through the obturator by means of said opening.

5,188,101
PREMATURE BABY HEADBAND FOR SUPPORTING NASAL CANNULAS AND OXYGEN FEED TUBES
Jean S. Tumolo, 12 Ash St., Basking Ridge, N.J. 07920
Filed Nov. 15, 1991, Ser. No. 792,609
Int. Cl.[5] A61M *15/08, 11/00*; A62B *7/00*; A42B *1/22*
U.S. Cl. 128—207.18 **30 Claims**



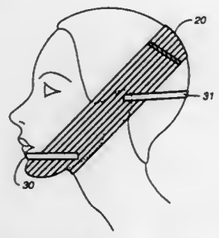
1. A premature baby headband device for supporting nasal cannulas and opposite oxygen feed tubes, comprising in combination: headband means having a longitudinal length for exerting a predetermined degree of stretchable and retractable elasticity, said headband means including first and second mateable securing means, the headband means being an elongated substantially flat-faced band having opposite first and second ends, the first end mounting said first mateable securing means, the second end mounting said second mateable securing means, the first and second mateable securing means being intermittently alternately secureable to and releasable from one-another, said first and second securing means having alternately available positions for securing said opposite first and second ends and securing and releasing said first and second ends alternately at said alternately available positions, said headband means having at-least a minor amount of flexibility for resilient alternate stretch and retraction during mounting of the headband means on and circumscribingly around an upper head and forehead of a premature patient child, said headband means having an elongated axis along said longitudinal length, stretch-limiting means having an elongated shape for mounting along said longitudinal length, said stretch-limiting means being mounted on and secured to said headband means at multiple points along said longitudinal shape and said longitudinal length such that said stretch-limiting means is further for preventing the headband means from excessive stretching beyond a predetermined degree and amount of permissive stretching along said longitudinal length whereby excessive band tightness during band resilient retraction is avoided when mounted on a baby's head, and tube securing means for intermittent securing and releasing each of at-least two spaced-apart oxygen-providing tubes connected to nasal cannulas, said tube securing means being mounted on said headband means, said headband means including an elastic bandage and an intermediate binding composition laminating the elastic bandage and forming as a laminated elastic bandage, said stretch-limiting means consisting essentially of at-least two spaced-apart, close-knitted, elongated, ribbon-like strips embodied within said laminated elastic bandage, and said tube securing means including each of said at-least two spaced-apart opposite loose-ends of said spaced-apart elongated ribbon-like strips each exterior to said laminated elastic bandage, said loose-ends being of predetermined lengths sufficient for paired-ones of said loose-ends to jointly envelope and be tied-together such that each paired-ones are secureable on one of paired spaced-apart nasal cannulas, one of said paired-ones being positioned to be mounted adjacent on one side of a baby's head and a remaining one of said paired-ones being positioned on an other side of a baby's head when the band means is mounted on a premature baby's head.

5,188,102
SURGICAL ULTRASONIC HORN
Morito Idemoto, and Yasuo Noguchi, both of Yokohama, Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan
Filed May 10, 1991, Ser. No. 698,229
Claims priority, application Japan, May 11, 1990, 2-048599[U]; May 11, 1990, 2-048600[U]; Jun. 21, 1990, 2-064952[U]
Int. Cl.[5] A61B *17/00, 17/32*
U.S. Cl. 128—24 AA **21 Claims**



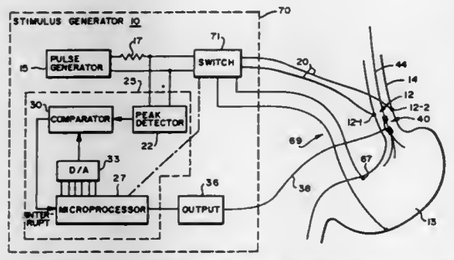
1. A surgical ultrasonic horn adapted to be driven by an ultrasonic oscillation source, comprising:
a horn body extending along an axis and having a proximal end and a distal end, said proximal end being adapted to be connected to the ultrasonic oscillation source;
a plate-like working portion ext ending from the distal end of said horn body, said working portion being provided along a first edge with a first cutting portion and along an end thereof with a second cutting portion;
a first recess being provided in said first cutting portion;
a passageway extending through said horn body and said working portion, and adapted to be communicated with a liquid source for the passage therethrough of liquid; and
a first bore communicating with said passageway and opening by a jet angle of 5° to 90° in respect of the axis of said horn body, said first bore constituting means for spraying liquid passing from said passageway.

5,188,103
FACIAL BANDAGE WITH THERMAL TREATMENT POUCH
Veronica C. Smith, 2951 60th Ave., Oakland, Calif. 94605
Continuation-in-part of Ser. No. 597,883, Oct. 12, 1990, abandoned. This application Jul. 29, 1991, Ser. No. 736,861
Int. Cl.[5] A61F *7/00*
U.S. Cl. 128—380 **2 Claims**



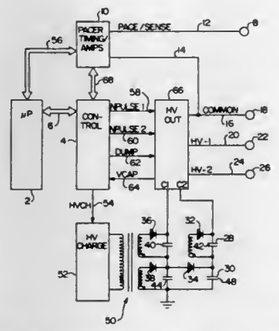
1. A medical treatment garment comprising:
a pouch assembly including a container for holding a thermal reservoir which is covered on a first side with a hook tape covering; and
a band being adapted to encircle a face (head or neck) in one of a plurality of various positions, wherein said hook tape covering is removably attachable to any location along said band; and
a strap separate from said band, said strap having two ends, each of said ends being removably attachable with any location along said band, said strap connecting a set of any two points of said band around only one side of such an encircled face (head or neck).

5,188,104
TREATMENT OF EATING DISORDERS BY NERVE STIMULATION
Joachim F. Wernicke, League City; Reese S. Terry, Jr., and Ross G. Baker, Jr., both of Houston, all of Tex., assignors to Cyberonics, Inc., Webster, Tex.
Filed Feb. 1, 1991, Ser. No. 649,618
Int. Cl.[5] A61N *1/05*
U.S. Cl. 128—419 R **19 Claims**



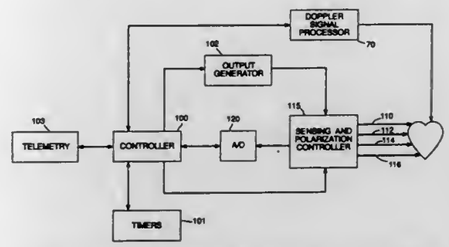
1. A method of treating patients with eating disorders by use of a therapy which alleviates a symptom of the disorder, which comprises the steps of:
detecting a preselected event indicative of an imminent need for treatment of the specific eating disorder of interest, and
responding to the detected occurrence of the preselected event by applying a predetermined stimulating signal to the patient's vagus nerve appropriate to alleviate said symptom of the eating disorder of interest.

5,188,105
APPARATUS AND METHOD FOR TREATING A TACHYARRHYTHMIA
John G. Keimel, New Brighton, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Filed Nov. 14, 1990, Ser. No. 612,761
Int. Cl.[5] A61N *1/39*
U.S. Cl. 128—419 D **12 Claims**



1. In a cardiovertor/defibrillator comprising means for detecting fibrillation, means for detecting tachyarrhythmia and means for generating high energy cardioversion and defibrillation pulses, including capacitor means and means for charging said capacitor means upon detection of a tachyarrhythmia by said tachyarrhythmia detecting means, for delivery to the heart, the improvement comprising:
defibrillation pulse synchronization means for triggering said pulse generating means to deliver a defibrillation pulse in response to detection of fibrillation by said fibrillation detecting means, said defibrillation pulse synchronization means comprising means for sensing heart rhythm, means for defining a first set of requirements for said heart rhythm and means for triggering delivery of said defibrillation pulse when said first set of requirements are met; and
cardioversion pulse synchronization means for triggering said pulse generating means to deliver a cardioversion pulse in response to detection of tachyarrhythmia by said tachyarrhythmia detecting means, said cardioversion pulse synchronization means comprising means for sensing heart rhythm, means for defining a second set of requirements differing from said first set of requirements, and means for triggering delivery of said cardioversion pulse when said second set of requirements are met, wherein said cardioversion pulse synchronization means comprises:
means for defining at least two synchronization intervals following charging of said capacitor means;
means for detecting of R-waves during said synchronization intervals; and
triggering means responsive to the detection of R-waves during two successive ones of said synchronization intervals for triggering delivery of said cardioversion pulse synchronized to the detection of said R-wave during the second of said two successive synchronization intervals.

5,188,106
METHOD AND APPARATUS FOR CHRONICALLY MONITORING THE HEMODYNAMIC STATE OF A PATIENT USING DOPPLER ULTRASOUND
Tibor A. Nappholz, Englewood; Harry L. Valenta, Jr., Aurora; Steven M. Maas, and Ken Koestner, both of Englewood, all of Colo., assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.
Filed Mar. 8, 1991, Ser. No. 675,639
Int. Cl.[5] A61N *1/362*
U.S. Cl. 128—419 PG **22 Claims**



1. A hemodynamic control apparatus for determining a patient's hemodynamic status and adjusting the hemodynamic output of the patient's heart to correspond to the patient's metabolic needs, comprising:
means for generating electrical stimulation pulses,
ultrasonic means implanted within the patient's cardiovascular system for monitoring at least one parameter corresponding to the volume of blood flow per unit of time within the cardiovascular system,
means for determining cardiac performance based on said at least one monitored parameter, and

VOL 1147 ISS 4 FE 23 1993 UMI

means for adjusting said pulse generating means as a function of said cardiac performance,

characterized in that said ultrasonic means is adapted to be implanted within the patient's right heart and fixably positioned therein to ensonify the patient's ascending aorta with ultrasonic energy such that said ultrasonic means detects returning ultrasonic energy predominantly reflected from blood cells within the ascending aorta and monitors said at least one volume of blood flow parameter.

5,188,107

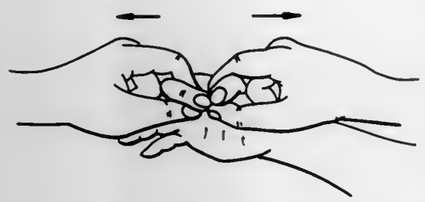
BI-DIGITAL O-RING TEST FOR IMAGING AND DIAGNOSIS OF INTERNAL ORGANS OF A PATIENT

Yoshiaki Omura, 800 Riverside Dr., Apt. 8-1, New York, N.Y. 10032

Continuation of Ser. No. 113,394, Oct. 22, 1987, abandoned, which is a continuation of Ser. No. 785,495, Oct. 8, 1985, abandoned. This application Feb. 13, 1990, Ser. No. 479,195

Int. Cl.[5] A61B *5/00*

U.S. Cl. 128—630 **15 Claims**



1. A method of imaging an internal organ of a patient for purposes of medical diagnosis, comprising the steps of:

having the patient form an O-Ring shape with one of his hands by placing the fingertips of his thumb and one of his remaining fingers together;

placing a sample of tissue of an internal organ on or about the close vicinity of the patient's other hand; and

non-invasive external probing of the patient with probing means, the internal organ being the same type of organ as that of the sample and simultaneously attempting to pull apart the O-Ring shape by means of a tester placing his thumb and one of his remaining fingers of each of his hands within the O-Ring shape of the patient to form interlocking O-Rings to form interlocking O-Rings and pulling the thumb and the finger of the patient apart whereby an electromagnetic field of the tissue of the sample interacts with an electromagnetic field of the internal organ being probed and this interaction is detected by the ability to pull apart the O-Ring shape by the tester's O-Rings of compatible strength thereby permitting imaging of the boundaries of the internal organ being probed.

5,188,108

SENSOR, APPARATUS AND METHOD FOR NON-INVASIVE MEASUREMENT OF OXYGEN SATURATION

Herbert Secker, Stuttgart, Fed. Rep. of Germany, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 23, 1991, Ser. No. 645,042

Claims priority, application European Pat. Off., Feb. 15, 1990, 90102954.6

Int. Cl.[5] A61B *5/00*

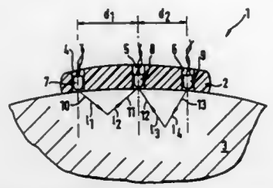
U.S. Cl. 128—633 **36 Claims**

36. A sensor for noninvasive measurement of oxygen saturation by irradiating human tissue with electromagnetic waves and measuring the intensity of the reflected waves comprising:

carrier means;

transmitter means for emitting electromagnetic waves of different wavelengths into said human tissue and mounted on said carrier means; and

receiver means disposed on said carrier means for receiving electromagnetic waves of said different wavelengths re-



flected from said human tissue, said transmitter means and receiver means mounted on said carrier means at distances from each other such that the lengths of the electromagnetic wave paths through the human tissue at both said different wavelengths are substantially equal.

5,188,109

ARTIFICIAL DENTAL ROOT

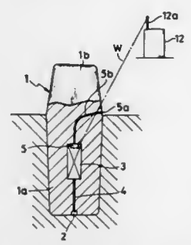
Shigeru Saito, No. 8-17-40, Zushi-shi, Kanagawa-ken, Japan

Filed May 30, 1991, Ser. No. 707,134

Claims priority, application Japan, May 30, 1990, 2-140785

Int. Cl.[5] A61B *5/05*

U.S. Cl. 128—635 **4 Claims**



1. An implant for transmitting body conditions of a living animal to an external receiver comprising an artificial dental root having a lower end adapted to be implanted in a jawbone of the animal and an exposed upper end, a sensor mounted in said root adapted to be in contact with body fluids of the animal, and radio transmitting means mounted in said artificial dental root connected with said sensor for transmitting body condition signals obtained by said sensor to an external receiver, said transmitting means including a means for transmitting signals representing physical values of the body fluid obtained by the sensor.

5,188,110

METHOD AND APPARATUS FOR SETTING MULTI-SLICE IMAGING CONDITIONS IN COMPUTED TOMOGRAPHIC IMAGING SYSTEMS

Hiroshi Sugimoto, Nasu, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation-in-part of Ser. No. 378,623, Jul. 12, 1989, abandoned. This application Jan. 28, 1991, Ser. No. 646,930

Claims priority, application Japan, Jul. 13, 1988, 63-174380

Int. Cl.[5] A61B *6/03*

U.S. Cl. 128—653.1 **12 Claims**

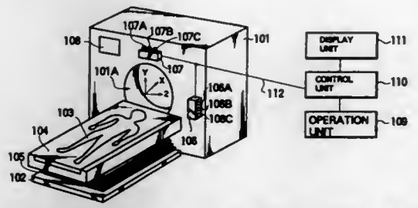
1. An apparatus for setting multi-slice imaging conditions in a computed tomographic imaging system, comprising:

projector means for illuminating an object to be imaged within at least one projection area defined along at least one projection plane, said projection plane and said projection area corresponding to an imaging region;

projection area changing means for changing the projection area;

projection area detecting means for detecting the projection area;

input means for specifying one of the multi-slice imaging



conditions including an imaging time interval, a slice thickness, and a number of slices; and

processing means for determining unspecified ones of the multi-slice imaging conditions in accordance with the one of the multi-slice imaging conditions specified by the input means and the detected projection area.

5,188,111

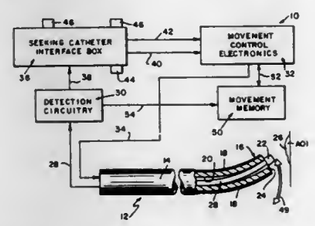
DEVICE FOR SEEKING AN AREA OF INTEREST WITHIN A BODY

David C. Yates, Indianapolis, and William C. McCoy, Zionsville, both of Ind., assignors to Catheter Research, Inc., Indianapolis, Ind.

Filed Jan. 18, 1991, Ser. No. 642,882

Int. Cl.[5] A61M *25/00*

U.S. Cl. 128—657 **20 Claims**



1. An assembly for seeking an area of interest within a body, the assembly comprising

an elongated directable member having a distal end for insertion into the body, the distal end including a tip portion,

deflecting means coupled to the directable member for deflecting the distal end of the directable member to direct the directable member within the body,

sensing means located in close proximity to the tip portion of the directable member for sensing an area of interest within the body, and generating an indicator signal upon detection of the area of interest, and

controlling means coupled to the deflecting means for controlling deflection of the distal end of the directable member by the deflecting means and generating a control signal to drive the deflecting means, the controlling means including means for stopping deflection of the distal end of the directable member by the deflecting means in response to the indicator signal generated by the sensing means upon detection of the area of interest.

5,188,112

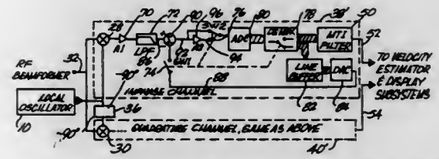
ULTRASONIC DOPPLER IMAGING SYSTEMS WITH IMPROVED FLOW SENSITIVITY

Michael R. Sturgill, Phoenix; Bradley K. Herres, deceased late of Scottsdale, Muriel Herres, legal representative; of Ariz., assignors to Acoustic Imaging Technologies Corporation, Phoenix, Ariz.

Continuation-in-part of Ser. No. 527,565, May 23, 1990, abandoned, which is a continuation-in-part of Ser. No. 441,861, Nov. 27, 1989, abandoned. This application Nov. 16, 1990, Ser. No. 614,258

Int. Cl.[5] A61B *8/06*

U.S. Cl. 128—661.09 **40 Claims**



1. An ultrasonic Doppler flow measuring and imaging system comprising:

(a) ultrasonic wave transmitting and receiving means for sequentially transmitting a series of at least three ultrasonic waves toward and into a living body at a selected angle over a predetermined time interval and for receiving a corresponding series of reflected echo signals, wherein each reflected echo signal in the series has a stationary component representative of reflection from essentially stationary tissue and a Doppler component representative of reflection from a moving part of the body;

(b) means for processing the series of reflected echo signals, the signal processing means including (i) means for subtracting one of the reflected echo signals from each of the other reflected echo signals to cancel the stationary component from the reflected echo signals, leaving Doppler signals representative of the Doppler component of the reflected echo signals, and (ii) means for thereafter amplifying the Doppler signals to produce a succession of output signals representative of the Doppler components of the reflected echo signals; and

(c) means for processing the output signals to generate therefrom Doppler flow image data signals for use in imaging the moving part of the body.

5,188,113

ULTRASONIC DIAGNOSIS APPARATUS

Takeshi Sato, Tochigi, and Sumiko Saito, Ootawara, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 3, 1991, Ser. No. 680,163

Claims priority, application Japan, Apr. 4, 1990, 2-89808; Oct. 11, 1990, 2-270478

Int. Cl.[5] A61B *8/12*

U.S. Cl. 128—661.09 **19 Claims**

1. An ultrasonic diagnosis apparatus comprising:

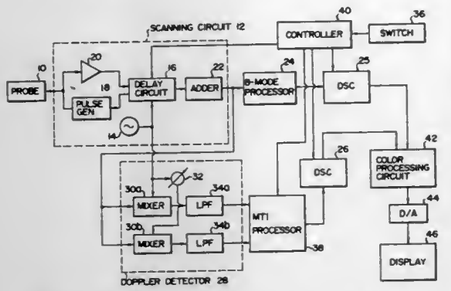
ultrasonic wave transmitting/receiving means for scanning a subject with ultrasonic waves, and receiving reflected ultrasonic waves, the ultrasonic waves being transmitted several times in each direction relating to a pulse ultrasonic wave;

image producing means for detecting an intensity and Doppler shift of the reflected ultrasonic waves and producing color flow mapping images at a given interval by coloring a blood flow portion in a tomogram of the subject in accordance with a value and polarity of the Doppler shift;

detecting means for detecting an aliasing on the basis of a change in the Doppler shift in the color flow mapping images of two frames; and

VOL
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interpolating means, connected to said detecting means, for interpolating an intermediate frame between two frames of the color flow mapping images produced by said image producing means, thereby producing an interval between



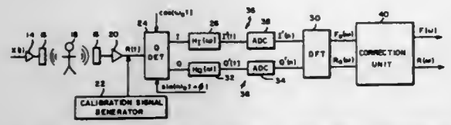
frames which is shorter than the given interval, wherein a value of the Doppler shift included in the two frames used for the frame-interpolating processing is compensated for when aliasing is detected by said detecting means.

5,188,114

METHOD AND APPARATUS FOR ELIMINATION OF MIRRORING IN SIGNAL PROCESSING SYSTEM

Karl E. Thiele, Derry, N.H.; Tomohiro Hasegawa, Andover, and Richard B. Smith, Tewksbury, both of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 31, 1990, Ser. No. 606,808
Int. Cl.[5] A61B *8/06*
U.S. Cl. 128—661.09 **22 Claims**



1. A medical ultrasound system comprising: transmitter means for transmitting ultrasound energy into a target region of a patient;

receiver means for receiving ultrasound energy that was transmitted into the target region of the patient by said transmitter means and providing a received signal;

an in-phase channel for extracting from the received signal an in-phase signal representative of velocities in the target region;

a quadrature channel for extracting from the received signal a quadrature signal representative of velocities in the target region;

discrete Fourier transform means for converting said in-phase signal and said quadrature signal to an observed forward velocity spectrum and an observed reverse velocity spectrum; and

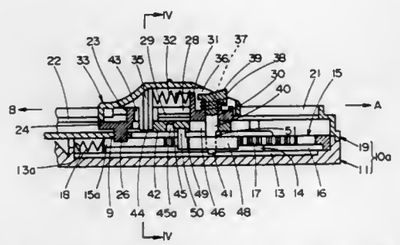
correction means for adjusting said observed forward velocity spectrum by a first correction function to provide a corrected forward velocity spectrum, said first correction function comprising $M_1(\omega)/T_1(\omega)$, where $M_1(\omega)$ represents a mirrored velocity spectrum and $T_1(\omega)$ represents a true velocity spectrum obtained when a first calibration signal containing one or more frequencies representative of only reverse velocities is applied to said system, and for adjusting said observed reverse velocity spectrum by a second correction function to provide a corrected reverse velocity spectrum, said second correction function comprising $M_2(\omega)/T_2(\omega)$, where $M_2(\omega)$ represents a mirrored velocity spectrum and $T_2(\omega)$ represents a true velocity spectrum obtained when a second calibration signal containing one or more frequencies representative of only forward velocities is applied to said system, said first and second correction functions being representative of mismatches between said in-phase channel and said quadrature channel.

5,188,115

RATCHETING MECHANISM FOR TIGHTENING CUFF OR BLOOD PRESSURE MONITOR

Haruhide Otani, Matsusaka, Japan, assignor to Omron Corporation, Kyoto, Japan

Filed Jan. 11, 1991, Ser. No. 639,860
Claims priority, application Japan, Jan. 11, 1990, 2-5299; Jun. 19, 1990, 2-160726
Int. Cl.[5] A61B *5/022*
U.S. Cl. 128—677 **6 Claims**



1. A ratcheting device for use in tightening the cuff of a blood pressure monitor, comprising:

a lever;

lever mounting means for mounting the lever so that the lever can be moved in a given direction or a direction opposite the given direction;

an elastic body disposed between the lever and the lever mounting means so as to transmit a force applied to the lever into the lever mounting means by elastic deformation of the elastic body;

interdental spaces between saw teeth provided on an inner surface of a cam, the interdental spaces extending in the given and opposite directions in which the lever moves;

a ratchet provided with pawls thereon which can engage with the interdental spaces; and

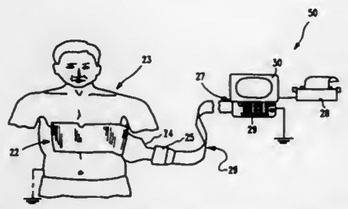
immobilizing means for immobilizing the ratchet so that the pawls engage in the interdental spaces when a pressure applied to the lever exceeds a given value.

5,188,116

ELECTROCARDIOGRAPHIC METHOD AND DEVICE

Mark R. Pommrehn, Eden Prairie; James E. Brewer, Maplewood, and Mark W. Kroll, Minnetonka, all of Minn., assignors to Vital Heart Systems, Inc., Beverly, Mass.

Filed Feb. 28, 1991, Ser. No. 662,578
Int. Cl.[5] A61B *5/04*
U.S. Cl. 128—696 **12 Claims**



1. A method of analyzing electrocardiographic activity for detecting coronary artery disease in a human being, comprising the steps of:

a) collecting and storing electrocardiographic signals from the body, each said electrocardiographic signal having a plurality of cycles;

b) establishing an aggregate cycle for each said electrocardiographic signal;

c) for each said electrocardiographic signal, determining the level of variability in said electrocardiographic signal which is due to breathing by:

i) detecting and storing amplitude characteristics of said signal cycles;

(ii) detecting and storing amplitude characteristics of said signal aggregate cycle;

iii) adjusting said signal cycles and said aggregate cycles so that their respective said amplitude characteristics match;

iv) calculating a variance by: i') comparing each said adjusted signal cycle to said adjusted aggregate cycle, and ii') combining said comparisons;

d) calculating the total variability for all electrocardiographic signals based on said calculated variances;

e) outputting said calculated total variability, whereby the effect of variability due to breathing on myocardial variability detection is attenuated; and

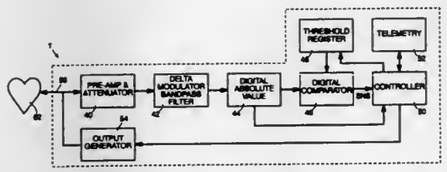
f) quantifying the magnitude of coronary artery disease, whereby an increase in said total variability is proportional to the magnitude of coronary artery disease.

5,188,117

NOTCH FILTER NOISE REJECTION SYSTEM IN A CARDIAC CONTROL DEVICE

Bruce M. Steinhaus, Parker, and Richard M. T. Lu, Highlands Ranch, both of Colo., assignors to Telectronics Pacing Systems, Inc., Englewood, Colo.

Filed Oct. 25, 1991, Ser. No. 782,586
Int. Cl.[5] A61B *5/0456*
U.S. Cl. 128—708 **28 Claims**



1. A physiological event signal sensing system in a cardiac medical device, comprising:

means for sensing a cardiac signal, said cardiac signal including a physiological component and including a noise component which is produced by power line interference;

means for sampling the instantaneous amplitude values of said cardiac signal at a sampling frequency of Fs;

means for combining said amplitude values for n consecutive samples to derive a notch filter output signal retaining said physiological component while attenuating said power line noise component, wherein n is preselected so that Fs/n defines the frequency of the power line noise component and wherein said amplitude values are combined according to a predetermined notch filter function;

means for comparing said notch filter output signal with a predetermined threshold level; and,

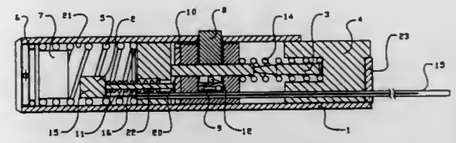
means responsive to said notch filter output signal exceeding the predetermined threshold level for determining the occurrence of a heartbeat.

5,188,118

AUTOMATIC BIOPSY INSTRUMENT WITH INDEPENDENTLY ACTUATED STYLET AND CANNULA

Richard A. Terwilliger, 1489 Casa Vallencita, Alamo, Calif. 94507

Continuation-in-part of Ser. No. 610,006, Nov. 7, 1990. This application Apr. 24, 1991, Ser. No. 690,628
Int. Cl.[5] A61B *10/00*
U.S. Cl. 128—753 **18 Claims**



1. An automatic biopsy instrument including:

a body;

a cavity defined in said body;

a cannula piston movably mounted in said cavity;

means for biasing said cannula piston relative to said cavity;

first means for urging said cannula piston against the biasing means;

an elongate cannula with an elongate inner bore;

means for securing said cannula to said cannula piston so that the cannula can move with the cannula piston;

an elongate stylet positioned in said inner bore of the cannula; and

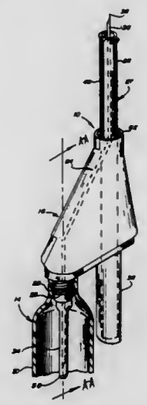
second means for urging the stylet away from said cannula piston in a direction opposite to the direction of the motion of the cannula as caused by the biasing means so as to allow capture of biopsy tissue in said cannula when said stylet is in a relatively retracted position.

5,188,119

BLOOD COLLECTION TUBE HOLDER SAFETY GUARD

Richard A. Sunderland, Creve Coeur, Mo., assignor to Sherwood Medical Company, St. Louis, Mo.

Continuation of Ser. No. 389,018, Aug. 3, 1989, Pat. No. 5,000,167. This application Oct. 29, 1990, Ser. No. 605,208
Int. Cl.[5] A61B *5/00*
U.S. Cl. 128—763 **13 Claims**



1. A medical device, comprising

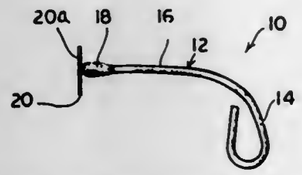
an elongate nonlinear needle having a skin piercing needle point and a needle housing thereon, and

a protective shield operatively associated with said needle and adapted to be slidably movable through at least a

VOL 1147 ISS 4 FE 23 1993 UMI

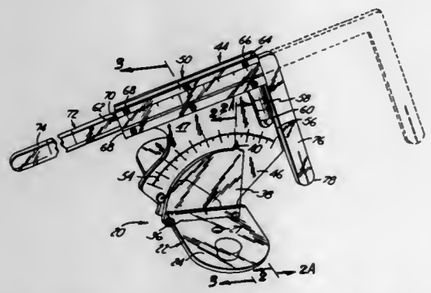
portion of said needle housing between a retracted position wherein said needle point is exposed and an extended position wherein said needle point is protected.

5,188,120
MEASURING DEVICE FOR MEASURING THE DIAMETER OF THE HYMENAL ORIFICE
Susanne T. White, New Orleans, La.; Pauline R. Lyna, Cary, and W. Joy Fay, Lillington, both of N.C., assignors to Child Sexual Abuse Team, Wake AHEC, Raleigh, N.C.
Filed Mar. 16, 1992, Ser. No. 852,108
Int. Cl.[5] A61B *5/03*
U.S. Cl. 128—778 **10 Claims**



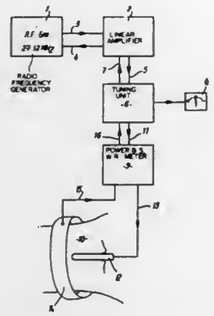
1. A measuring device for measuring the hymenal orifice diameter of a female patient, comprising:
a) a main body member comprised of a handle portion and an extended portion having a first end and a second end, wherein the first end of the extended portion attaches to the handle portion, and wherein the extended portion extends at an angle from the handle portion;
b) a transparent measuring member attached to the second end of the extended portion, said measuring member including a face section, and wherein the face section is positionable adjacent to the hymenal orifice during measurement of the hymenal orifice diameter; and
c) a plurality of demarcations associated with the face section of the measuring member and spaced at predetermined intervals for measuring the diameter of the hymenal orification when the measuring members disposed adjacent to the hymenal orifice.

5,188,121
RANGE OF MOTION INSTRUMENTS FOR THE SPINE
Gordon N. Hanson, 958 Lydia Dr., Roseville, Minn. 55113
Filed Dec. 18, 1990, Ser. No. 629,232
Int. Cl.[5] A61B *5/103*
U.S. Cl. 128—781 **19 Claims**



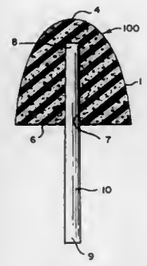
1. An apparatus for measuring a range of angular body motion including:
a base having a first portion with means for engaging a body of a subject providing a first reference point for measurement, and a second portion extending outward from the first portion generally perpendicular to an axis of rotation;
a measurement member adjacent to the second portion of the base rotatably mounted to the base at the first reference point, the measurement member moving in a plane of rotation relative to the second portion of the base as the measurement member is pivoted about the axis;
a slide arm slidably mounted on the measurement member for sliding movement along a plane substantially parallel to the plane of rotation of the measurement member and having an outer end slidably movable to positions spaced from the measurement member for engaging a body engaged by the base at a second reference point on an opposite side of the axis from the first reference point to cause pivotal movement of the measurement member as the body is moved through an angular range of motion; and
means for determining the amount of pivotal movement of the measurement member relative to the second portion of the base.

5,188,122
ELECTROMAGNETIC ENERGY GENERATION METHOD
Jeffrey H. Phipps, Broughton Ashley, and Stanley B. Field, London, both of United Kingdom, assignors to Rocket of London Limited, Watford, England
Filed Jun. 20, 1990, Ser. No. 540,614
Claims priority, application United Kingdom, Jun. 20, 1989, 8914118.8; Jun. 29, 1989, 8914933.0; Dec. 15, 1989, 8928347.7
Int. Cl.[5] A61N *5/00*
U.S. Cl. 128—788 **5 Claims**



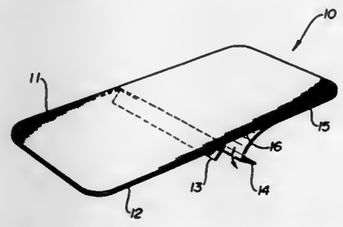
1. A method of causing endometrial destruction in a patient, the method comprising:
inserting a first electrode into a uterine cavity of the patient;
generating radio-frequency electromagnetic energy;
coupling said radio-frequency electromagnetic energy to said first electrode; and
emitting said radio-frequency electromagnetic energy from said first electrode
wherein the method includes the step of extending the uterine cavity by said first electrode when said first electrode is inserted into the uterine cavity so that a majority of the inside surface of the uterine cavity contacts said first electrode; and
wherein the uterine cavity has an endometrium and said first electrode radiates said radio-frequency electromagnetic energy into the uterine cavity and increases the temperature of cells of the endometrium adjacent to said first electrode above the normal cell temperature to destroy the cells of the endometrium.

5,188,123
HEARING PROTECTIVE EARPLUG HAVING ALTERNATIVE MODES OF INSERTION
Ross Gardner, Jr., Indianapolis, Ind., assignor to Cabot Safety Corporation, Southbridge, Mass.
Continuation of Ser. No. 570,348, Aug. 20, 1990, abandoned. This application Jan. 9, 1992, Ser. No. 819,614
Int. Cl.[5] A61F *11/00*
U.S. Cl. 128—864 **16 Claims**



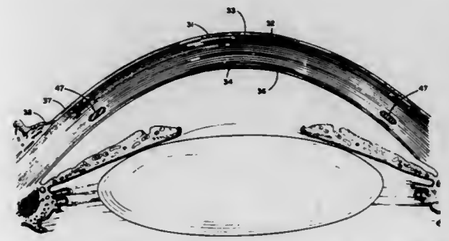
1. A hearing protective earplug comprising: a soft, resilient, polymeric foam body comprising a smoothly contoured viscoelastic main body element having a rounded nose end, and a maximum cross sectional dimension along its length of about 13.73 mm, said foam body comprising a base end opposite said nose end of said main body element;
an elongate stem having two ends, one end thereof being embedded in and secured to the interior of the nose end portion of said main body element, said stem extending axially and rearwardly from said nose end portion and through said base end, the other end of said stem terminating at a point exterior said base end, said stem being sufficiently stiff as to allow manipulation of said main body element into an ear canal whether in a precompressed or uncompressed condition;
said viscoelastic main body element of said earplug having a 90% recovery rate of between 2 and 120 seconds and is capable of being inserted into an ear canal in either a precompressed or uncompressed condition.

5,188,124
LOW FRICTION FILM DRESSING
Ronald M. Feret, Hamilton Square, N.J., assignor to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.
Continuation of Ser. No. 595,339, Oct. 10, 1990, abandoned, which is a continuation of Ser. No. 382,526, Jul. 19, 1989, Pat. No. 5,012,801. This application Feb. 19, 1992, Ser. No. 839,733
The portion of the term of this patent subsequent to May 7, 2008, has been disclaimed.
Int. Cl.[5] A61F *13/00*
U.S. Cl. 128—889 **9 Claims**



1. A thin film, self-adhesive dressing for the prevention and treatment of skin friction blisters comprising an embossed elastomeric film coated on one surface with a pressure-sensitive adhesive, said film having a thickness of from about 0.5 to 10 mils, a moisture vapor transmission rate of more then about 100 g/M^2/day, and a coefficient of friction on the adhesive free surface of less than about 1.0.

5,188,125
METHOD FOR CORNEAL CURVATURE ADJUSTMENT
Lauren G. Kilmer, and Alvin E. Reynolds, both of Tulsa, Okla., assignors to Keravision, Inc., Santa Clara, Calif.
Division of Ser. No. 357,700, May 26, 1989, Pat. No. 4,961,744, which is a continuation of Ser. No. 62,790, Jun. 15, 1987, abandoned, which is a continuation-in-part of Ser. No. 336,919, Jan. 4, 1982, Pat. No. 4,452,235, and a continuation-in-part of Ser. No. 579,480, Feb. 13, 1984, Pat. No. 4,671,276, and a continuation-in-part of Ser. No. 10,400, Feb. 3, 1987, Pat. No. 4,766,895. This application Oct. 5, 1990, Ser. No. 594,379
The portion of the term of this patent subsequent to Jun. 5, 2001, has been disclaimed.
Int. Cl.[5] A61B *17/00*
U.S. Cl. 128—898 **6 Claims**



1. A method for correcting vision by adjusting the curvature of the cornea of an eye, comprising the steps of:
incising a stroma portion of said cornea;
positioning and temporarily retaining, at said incision, a forward dissecting end of a corneal adjustment ring at an angle corresponding to the slope of the corneal arc of said cornea, said ring having a trailing end;
rotating said forward dissecting end of said corneal adjustment ring into said stroma portion of said cornea in a circular manner; and
affixing the distance between said forward end and said trailing end of said corneal adjustment ring according to the desired curvature.

5,188,126
SURGICAL IMPLEMENT DETECTOR UTILIZING CAPACITIVE COUPLING
Carl E. Fabian, 577 NE. 96th St., Miami Shores, Fla. 33138, and Philip M. Anderson, 37 Winding Way, Madison, N.J. 07940
Continuation of Ser. No. 698,187, May 6, 1991, Pat. No. 5,105,829, which is a continuation of Ser. No. 437,178, Nov. 16, 1989, abandoned. This application Mar. 25, 1992, Ser. No. 857,222
The portion of the term of this patent subsequent to Apr. 28, 2009, has been disclaimed.
Int. Cl.[5] A61B *19/00*
U.S. Cl. 128—899 **7 Claims**

1. An apparatus for detecting a surgical implement in human or animal tissue, comprising:
(a) a marker secured to a surgical implement adapted to be positioned adjacent tissue within a surgical wound, said marker being battery powered and including a starting means having a receiver means for receiving a first signal and a switch connected to said battery for activating said marker;
(b) detection means having (i) an interrogator means for generating and transmitting said first signal to said starting means, (ii) a signal processor means for receiving a second signal and (iii) an antenna adapted to be disposed in close proximity of said tissue, said antenna being a single and

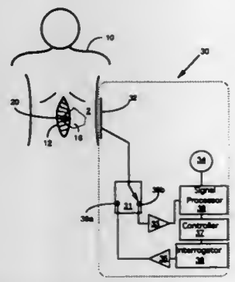
VOL 1147 ISS 4 FE 23 1993 UMI

lead end being alternately connected to said interrogator means and said signal processor means for generating said first signal and receiving said second signal to detect said marker;

(c) means for capacitive coupling of said marker to said tissue;

(d) means for capacitive coupling of said antenna to said tissue;

(e) field generating means for transmitting an electromagnetic field having a predetermined frequency band within said tissue; and



(f) signal generating means activated by said starting means in response to receipt of said first signal to cause said field generating means to transmit said electromagnetic field, providing said marker with signal identity, said starting means operating in response to said first signal to close said switch, connecting said signal generating means with said battery, said electromagnetic field being said second signal, said field generating means being a single end lead, and said frequency band being contained within a range of 10 MHz to about 1 GHz.

5,188,127

APPARATUS FOR FEEDING TOBACCO TO DISTRIBUTORS OF ROD MAKING MACHINES

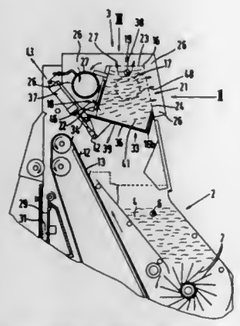
Uwe Heitmann, Hamburg, Fed. Rep. of Germany, assignor to Körber AG, Hamburg, Fed. Rep. of Germany

Filed Aug. 15, 1991, Ser. No. 745,521

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1990, 4027409

Int. Cl.[5] A24C *5/18, 5/39*

U.S. Cl. 131—108 **10 Claims**



1. A tobacco rod making machine comprising a distributor and an apparatus for separating shredded tobacco from at least one stream of a gaseous carrier medium, said apparatus comprising a tobacco collecting container having an inlet for the at least one stream and the tobacco therein, at least one outlet in communication with said inlet for evacuation of carrier medium from the container in a plurality of directions, gas-permeable tobacco intercepting means in said at least one outlet, and at least one opening for evacuation of collected tobacco from the container into said distributor.

5,188,128

APPARATUS FOR CLASSIFYING PARTICLES OF TOBACCO AND THE LIKE

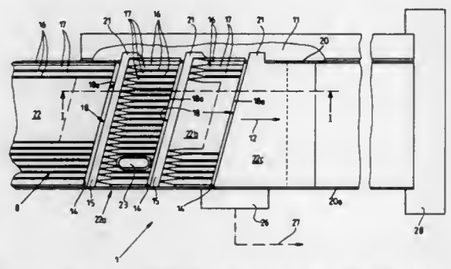
Stephan Studt, Hamburg, Fed. Rep. of Germany, assignor to Körber AG, Hamburg, Fed. Rep. of Germany

Filed Aug. 23, 1991, Ser. No. 749,154

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1990, 4027748

Int. Cl.[5] A24B *3/16*

U.S. Cl. 131—110 **18 Claims**



1. Apparatus for classifying particles of fibrous material in a stream which contains a mixture of randomly distributed longer and shorter particles, comprising a vibratory conveyor including at least one elongated vibratory trough having a stream receiving end, a discharge end for longer particles and a bottom with a plurality of depressions extending in a direction from said receiving end toward said discharge end and arranged to receive and align the particles of the stream which is delivered at said receiving end and the particles of which advance toward said discharge end, said bottom having at least one slot extending transversely of at least two of said depressions and of said direction to permit entry and descent of at least some shorter particles.

5,188,129

TRICYCLIC ETHER-SUBSTITUTED ACETIC ACID, TOBACCO FLAVORING USE THEREOF AND PROCESS FOR PREPARING SAME

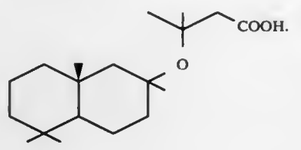
Mohamad I. Farbood, Holmdel; James A. Morris, Howell; Arthur E. Downey, Linden, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 519,439, May 4, 1990, which is a continuation-in-part of Ser. No. 399,826, Aug. 28, 1989, Pat. No. 4,970,163. This application Sep. 13, 1991, Ser. No. 759,992

Int. Cl.[5] A24B *15/30*

U.S. Cl. 131—276 **3 Claims**

2. A smoking tobacco composition comprising smoking tobacco and intimately admixed therewith, an aroma or taste augmenting, enhancing or imparting quantity of a tricyclic ether-substituted acetic acid having the structure:



second opposite ends, said first rod portion intersecting said second rod portion at a junction spaced from both of said first and second ends, so that bristles are situated on opposite sides of said junction.



5,188,130

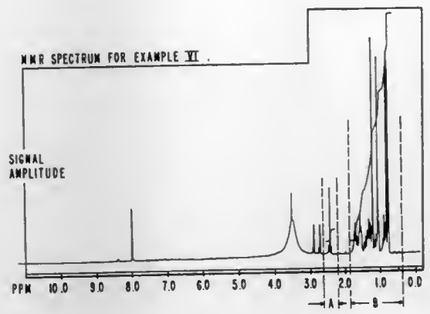
CHEMICAL HEAT SOURCE COMPRISING METAL NITRIDE, METAL OXIDE AND CARBON

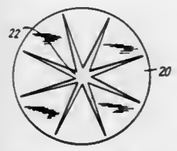
Mohammad R. Hajaligol, Richmond; Seetharama C. Deevi; Sarojini D. Ariprala, both of Midlothian; Donald B. Losee, Richmond; Bruce E. Waymack, Prince George, and Michael L. Watkins, Richmond, all of Va., assignors to Philip Morris, Incorporated, New York, N.Y.

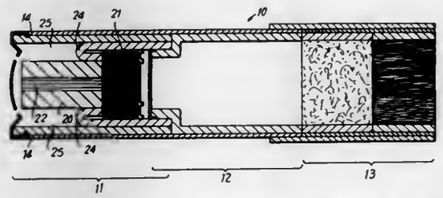
Filed Nov. 29, 1989, Ser. No. 443,636

Int. Cl.[5] A24B *15/00*

U.S. Cl. 131—359 **56 Claims**







1. A method of making metal nitride, comprising the steps of:

a) mixing a metal species and a carbon source to form a mixture;

b) supplying heat to the mixture; and

c) contacting the mixture with a nitriding material to form metal nitride.

5,188,131

EYELASH MASCARA CASE AND APPLICATOR

Charlotte Toll, 312 S. Bedford Dr., Beverly Hills, Calif. 90212

Filed Dec. 16, 1991, Ser. No. 808,238

Int. Cl.[5] A45D *40/26*

U.S. Cl. 132—218 **15 Claims**

1. An eyelash mascara applicator comprising a wand and a handle attached to said wand, said wand including a first rod portion extending from said handle, and a second rod portion extending transversely relative to said first rod portion, bristles projecting outwardly around the outer circumference of said second rod portion, said second rod portion including first and second opposite ends, said first rod portion intersecting said second rod portion at a junction spaced from both of said first and second ends, so that bristles are situated on opposite sides of said junction.

5,188,132

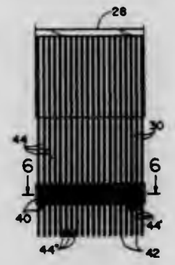
COMB FOR APPLYING HAIR COLORING DYE

Philip Barkus, 407 Cartwright Blvd., Massapequa Park, N.Y. 11762

Filed Jul. 13, 1992, Ser. No. 912,481

Int. Cl.[5] A45D *24/00*

U.S. Cl. 132—219 **1 Claim**

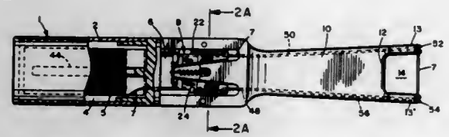


1. A comb for transferring hair coloring dye to the user's hair comprising an operative arrangement of plural adjacently spaced-apart teeth for said comb of plastic construction material to provide flexing in said individual teeth in said clearances therebetween, a U-shaped bracket disposed in encircling relation about a length portion of the base of said teeth to provide a partial enclosure to prevent leakage of hair coloring dye deposited on said base of said teeth by gravity flow transversely thereof while permitting gravity flow of said deposited hair coloring dye lengthwise of said teeth, and spacer means affixed to said teeth in said clearances therebetween at a selected distance spaced from the free ends of said teeth so as to maintain said free ends of adjacent teeth in spaced relation from each other and also a selected distance spaced below the base of said teeth so as to bound therefrom extending to said spacer means of a compartment between each adjacent pair of teeth to receive therein said gravity flowing hair coloring dye, whereby the hair strands of the user are effective in initially wedging into said spaces at said teeth ends and subsequently moving upwardly along said teeth to wipe therefrom said hair coloring dye in each said compartment above said spacer

VOL 1147 ISS 4 FE 23 1993 UMI

means incident to causing the transfer of said hair coloring dye to said hair strands.

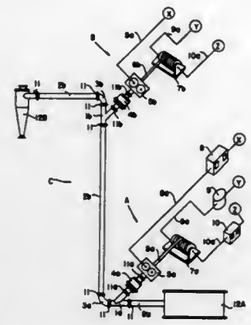
5,188,133
DENTAL FLOSSING TOOL
Thomas W. Romanus, 14804 Werris Creek La., San Diego, Calif. 92128
Filed Feb. 7, 1992, Ser. No. 832,232
Int. Cl.[5] A61C *15/00*
U.S. Cl. 132—325 **13 Claims**



1. A dental cleaning device to facilitate the insertion of floss between a pair of teeth comprising:
- a handle comprising an elongated and substantially hollow body;
- a forked extension extending from said handle having a pair of prongs and grooves for guiding said floss to span a space between said pair of prongs;
- a first releasable locking mechanism to inhibit a first motion of said floss away from a floss source and to allow said floss to advance away from said floss source when feeding is desired;
- a second releasable locking mechanism to inhibit a second motion of said floss toward a floss exhaust and to allow said floss to advance toward said floss exhaust when exhausting is desired;
- a joining means for releasably joining said first releasable locking mechanism and said second releasable locking mechanism, said joining means permitting partially independent movement and release of said first and second releasable locking mechanisms; and
- wherein said floss is stretched across said pair of prongs with sufficient tension to insert said floss between said pair of teeth.

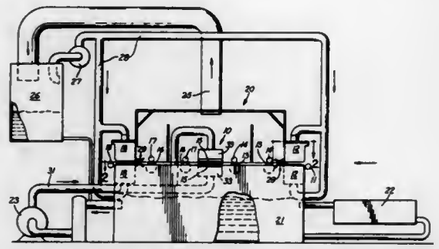
5,188,134
AUTOMATIC INNER PIPELINE SURFACE WASHING APPARATUS
Katsuhiko Satoh, Kawanishi; Itsuo Muto, Shijyonawate; Shigeki Takeda, Takaishi, and Mamoru Miyamoto, Itami, all of Japan, assignors to Kabushiki Kaisha POWREX and Kabushiki Kaisha Arikawa Seisakusbo, both of, Japan
Filed Sep. 10, 1991, Ser. No. 757,397
Claims priority, application Japan, Jun. 21, 1991, 3-149113
Int. Cl.[5] B08B *9/04*
U.S. Cl. 134—57 R **4 Claims**

1. An automatic inner pipeline surface washing apparatus comprising:
- an openable and closable pinch valve unit connected branchwise to a pipeline to be washed;
- a rotatable nozzle unit for spouting a washing fluid rearwardly and circumferentially while rotating;
- a washing hose having said nozzle unit connected to a front end thereof; and
- an autofeeder unit operatively connected to said washing hose so as to control advance and retraction movement of said washing hose with a predetermined thrust and at a predetermined speed, wherein during a washing operation said nozzle unit enters the pipeline through said pinch valve unit now opened to wash an inner surface of the pipeline by spouting the washing fluid fed through said washing hose and during nonwashing period said nozzle is



retracted and completely isolated from the pipeline by said pinch valve unit now closed.

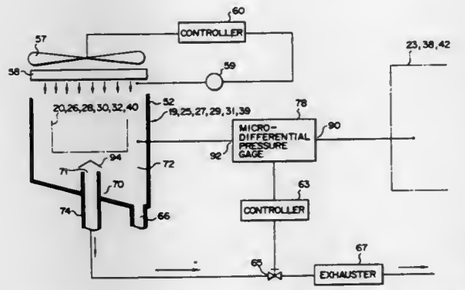
5,188,135
METHOD AND APPARATUS FOR PROCESSING SHEET METAL BLANKS AND CONTINUOUS STRIP
John W. Neumann, and J. Scott Neumann, both of Birmingham, Mich., assignors to Neumann Industries, Inc., Madison Heights, Mich.
Continuation-in-part of Ser. No. 484,511, Feb. 23, 1990, abandoned. This application Sep. 28, 1990, Ser. No. 590,558
Int. Cl.[5] B08B *3/02*
U.S. Cl. 134—64 R **55 Claims**



1. A moving sheet metal surface processing station comprising a stationary enclosure with brushless liquid vortex diffuser means, means for moving said sheet metal surface past said vortex diffuser means in adjacent proximity, means for establishing pressurized fluid vortex discharge impingement on said passing sheet metal surface, and means for confining the discharged fluid within said enclosure.

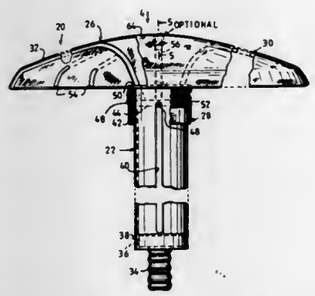
5,188,136
CLEANING DEVICE
Yoshio Kumagai, Kofu, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan
Filed Nov. 15, 1991, Ser. No. 792,917
Claims priority, application Japan, Nov. 17, 1990, 2-312476
Int. Cl.[5] B08B *3/08, 15/00*
U.S. Cl. 134—066 **9 Claims**

1. A cleaning device comprising:
- a plurality of cleaning chambers each for cleaning objects to be cleaned and each having an opening for entrance and exit of the objects;
- air curtain generating means for shielding an internal atmosphere of each of the cleaning chambers from an external atmosphere of each of the cleaning chambers by an air curtain;
- mechanical shutters each provided at the opening of each cleaning chamber and capable of freely opening and closing for mechanically shielding the internal atmosphere of each cleaning chamber from the external atmosphere of each cleaning chamber;
- transport means each for carrying the objects to be cleaned into and out of some of the cleaning chambers while crossing the air curtain when the mechanical shutter is opened;



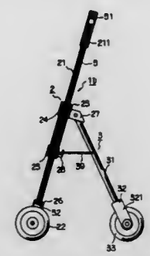
transport chambers, each adjacent to some of the cleaning chambers and each having one of the transport means;
- first decompression means for decompressing an interior of each transport chamber to keep it lower in pressure than an exterior of the cleaning device for preventing an internal atmosphere of each transport chamber from escaping to the exterior of the cleaning device; and
- second decompression means for decompressing an interior of each cleaning chamber to keep it lower in pressure than the interior of each transport chamber for preventing an internal atmosphere of each cleaning chamber from escaping to the interior of each transport chamber.

5,188,137
UMBRELLA
Anthony F. Simonelli, 111 Waldron Ave., Cranston, R.I. 02910
Filed Aug. 26, 1991, Ser. No. 749,674
Int. Cl.[5] A45B *13/00*
U.S. Cl. 135—19.5 **10 Claims**



1. An improved umbrella which comprises:
- a) an elongated hollow shaft having an open top, said elongated hollow shaft includes a handle member having a connector portion for attachment to the distal end of said elongated hollow shaft opposite from said collapsible canopy so that a person can grip said handle and hold said elongated hollow shaft upright with said canopy placed over the person in an opened position;
- b) a collapsible canopy carried on said elongated hollow shaft, said collapsible canopy includes a plurality of radially spaced apart flexible ribs and a fabric covering affixed to said ribs; and
- c) means for operating said canopy so that when said canopy is placed in a closed position it will be stored within the open top of said elongated hollow shaft and when said canopy is placed in an opened position said canopy will extend outwardly from the open top over said elongated hollow shaft, said operating means includes said elongated hollow shaft having a plurality of longitudinal spaced apart slots, a runner sized to slide on said elongated hollow shaft, a base member sized to slide within said elongated hollow shaft with the distal ends of said flexible ribs secured to said base member through the open top of said elongated hollow shaft, and a plurality of spaced apart fingers extending from said base member to said runners with said elongated hollow shaft so that when said runner is pulled down on said elongated hollow shaft said canopy will collapse and enter the top of said elongated hollow shaft and when said runner is pushed up on said elongated hollow shaft said canopy will open up and extend over the top of said elongated hollow shaft.

5,188,138
WALKING STICK WITH WHEELS
Yoshikiyo Yamasaki, Sakai, and Shinichiro Fujimoto, Osaka, both of Japan, assignors to Kabushiki Kaisha Japan Health and Kabushiki Kaisha Fuji Iryoki, both of Osaka, Japan
Filed Jul. 10, 1991, Ser. No. 728,175
Int. Cl.[5] A45B *1/00*
U.S. Cl. 135—65 **11 Claims**



1. A walking stick with wheels comprising a hollow support bar which has a U-shaped or L-shape handle part at an upper end thereof, a connecting member rotatably mounted on a central part of the support bar between collars fixed at upper and lower ends of the central part, a first bracket joined at a lower end of said hollow support bar, said first bracket having a pair of spaced legs, a forward wheel rotatably installed between said legs, a hollow assistant bar having an upper end pivotally connected to an upper part of said connecting member, said assistant bar being about half the length of said hollow support bar, a second bracket having a pair of spaced legs, said second bracket being mounted on a lower end of the hollow assistant bar, a back wheel rotatably installed between the legs of said second bracket, a fastening bar disposed at the center of the assistant bar with a wheel and a hook disposed at a lower part of the connecting member for releasable connection with said fastening bar.

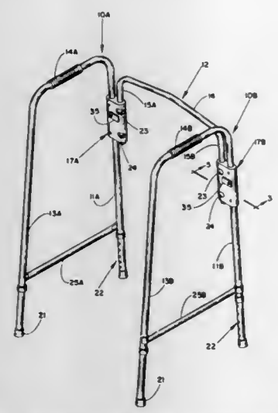
5,188,139
FOLDABLE SUPPORT DEVICE
Richard J. Garelick, Minneapolis, Minn., assignor to Garelick Mfg. Co., St. Paul Park, Minn.
Filed Nov. 8, 1991, Ser. No. 789,175
Int. Cl.[5] A61H *3/00*
U.S. Cl. 135—67 **4 Claims**

1. A portable foldable weight-supporting device, comprising:
- a pair of spaced-apart side supports, each of said side sup-

ports comprising rigid, tubular, vertical, weight-supporting front and back legs joined together at their upper ends by a horizontal rigid member;

a rigid tubular elongated cross-member between the front legs of said side supports, said cross-member having a generally horizontal section terminating with a vertical section at each end, each vertical section parallel to and adjacent a side support front leg;

a pair of couplings, each of said couplings pivotably joining one of said side support front legs to the adjacent cross-member vertical section;



each of said couplings comprising a housing having a pair of parallel spaced-apart tubular passageways, a side support front leg fixedly engaged in one of said passageways and the adjacent cross-member vertical section movably engaged in the other of said passageways; and

means for preventing said cross-member vertical section from moving lengthwise in said other passageway while permitting said cross-member vertical section to be rotated in said other passageway whereby said side support can be pivotably swung about said cross-member vertical section.

5,188,140

BREATHER VALVE

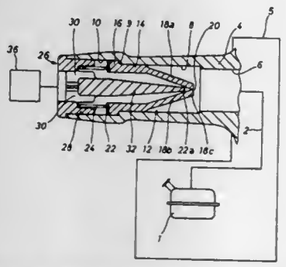
Michio Kosaka, Nagoya, Japan, assignor to Taiyo Giken Kogyo Co., Ltd., Japan

Filed May 25, 1992, Ser. No. 888,194

Claims priority, application Japan, May 28, 1991, 3-038562[U]

Int. Cl.[5] F16K *17/196*

U.S. Cl. 137—12 **18 Claims**



18. A method of compensating for internal pressure variations of a sealed container via a breathing passage connected to the sealed container, said breathing valve comprising a valve casing; a valve bore extending through said valve casing and communicating with the breathing passage; a valve element slidably received within said valve bore; an elastic portion, supported by an end of said valve element adjacent the breathing passage, tapering away from said valve element, and a suction and exhaust slit being formed in the tapered end of said elastic portion, said suction and exhaust slit opening, due to plastic deformation, when pressure inside the sealed container is at a pressure lower than that of the atmosphere thereby to allow communication between the breathing passage and the atmosphere; spring means for biasing said valve element toward the breathing passage; and a needle member being at least partially positioned inside said valve bore adjacent an end remote from said breathing passage, said needle member extending toward but being spaced from said suction and exhaust slit, said needle member extending though and at least partially opening said suction and exhaust slit when the internal pressure of the sealed container increases sufficiently so as to force said valve member to slide within said valve bore, against the bias of said spring means, toward said needle member;

said method comprising the steps of:

connecting said breathing valve to a breathing passage;

allowing said suction and exhaust slit to open when pressure inside the sealed container is at a pressure lower than that of atmospheric thereby to allow communication between the breathing passage and the atmosphere;

allowing said valve element to slide within said valve bore, against the bias of said spring means toward said needle member, when the internal pressure of the sealed container increases sufficiently so that said needle member extends through and at least partially opening said suction and exhaust slit and allows communication between the breathing passage and the atmosphere.

5,188,141

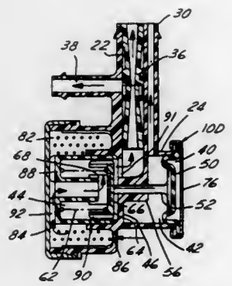
VACUUM BOOST VALVE

John E. Cook; Murray F. Busato, and William C. Gillier, all of Chatham, Canada, assignors to Siemens Antomotive Limited, Chatham, Canada

Filed Dec. 3, 1991, Ser. No. 801,986

Int. Cl.[5] F16K *11/10, 31/365*

U.S. Cl. 137—112 **10 Claims**



1. A vacuum boost valve that is responsive to an incipient drop in the intensity of a variable intensity vacuum input to the valve below a threshold level for providing, during the ensuing time that the intensity of the vacuum input remains within a certain range immediately below such threshold level, an intensity of vacuum output that is at least as great as the intensity of vacuum input, and is in fact greater than it otherwise would be without the vacuum boost thus provided, vacuum being measured relative to a reference pressure, said vacuum boost valve comprising:

an inlet port that receives the variable intensity vacuum input;

an outlet port that delivers the vacuum output;

a flow path that extends from a source of pressure higher than the pressure at said inlet port to said inlet port and that comprises a shut-off valve and a venturi in series;

said venturi comprising a low pressure zone at which vacuum is created by certain flow from said source of pressure through said flow path to said inlet port;

a tap at said venturi's low pressure zone that is communicated to said outlet port;

a movable wall and a spring that control said shut-off valve, said spring biasing said shut-off valve open, said movable wall comprising opposite faces that are communicated respectively to a pressure that is correlated with said reference pressure and to said inlet port respectively;

means operatively relating said movable wall, said spring and said shut-off valve such that said shut-off valve is maintained closed by said movable wall so long as the intensity of vacuum at said inlet port is greater than said threshold level, and such that said shut-off valve is maintained open by said spring so long as the intensity of vacuum at said inlet port is less than said threshold level;

and means operatively relating said source of pressure, said shut-off valve, and said venturi in said flow path such that when said shut-off valve is closed, there is no flow through said flow path and the pressure at said tap is essentially equal to the intensity of vacuum at said inlet port, and such that when said shut-off valve is open, there is flow through said flow path that is effective to create at said tap a vacuum whose intensity is at least as great as that of the vacuum input, and is in fact greater than it would otherwise be without the boost that is provided by the venturi.

5,188,142

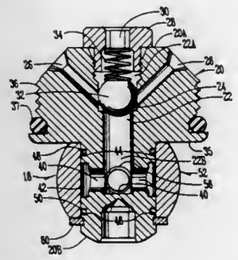
SWIVEL VALVE

John R. Lind, Burnsville, and Robert L. Swanson, Blaine, both of Minn., assignors to Survival Engineering, Inc., Burnsville, Minn.

Filed Jan. 27, 1992, Ser. No. 826,106

Int. Cl.[5] F16K *15/20*

U.S. Cl. 137—223 **3 Claims**



1. A swivel valve, comprising,

a valve body having an elongated bore, with said valve body and said bore having first and second ends,

a gas port in said first end of said valve body in communication with said first end of said bore,

a first passageway extending from the second end of said bore and terminating in an annular groove extending around the outer surface of said second end of said valve body,

a swivel connection rotatably mounted on said second end of said valve body, and having a second passageway in communication with said annular groove, whereupon gas can move between said second passageway and said bore through said annular groove and said first passageway,

sealing means on opposite sides of said annular groove to prevent the escape of gas from said annular groove to the atmosphere between said swivel connection and said second end of said valve body, and to balance the gas pressure exerted on said swivel connection to neutralize movement of said swivel connection with respect to said annular groove, so as to permit said swivel connection to freely rotate with respect to said second end of said valve body, when gas under high pressure is moving through said bore and said swivel connection,

said valve body being connected to the interior of an inflatable life saving device,

and said second passageway in said swivel connection is connected to a source of releasable gas under pressure.

5,188,143

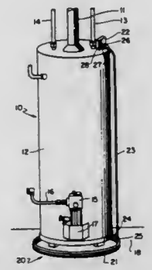
WATER LEAKAGE DETECTION DEVICE

Robert G. Krebs, 725 N. Irena Ave., #1, Redondo Beach, Calif. 90277

Filed Mar. 9, 1992, Ser. No. 848,078

Int. Cl.[5] H01H *29/06;* **G08B** *21/00;* **F16K** *31/02*

U.S. Cl. 137—312 **6 Claims**



1. A water leakage detector comprising:

an elongated flexible sensor having a pair of band conductors separated in fixed spaced-apart parallel relationship and further having two opposite ends adapted to be overlapped to provide a continuous sensor;

said conductors encased in insulative material with a portion of each conductor exposed to contact leakage water;

an audible alarm coupled to said sensor flexible band conductors at any desired location along said continuous sensor responsive to leakage water contact of said exposed conductor portions to initiate an audible signal; and

a low voltage battery source of power selectively coupled between said audible alarm and said sensor.

5,188,144

PLUG VALVE

Sergio Radossi, Cresskill, N.J., assignor to Hoke Incorporated, Cresskill, N.J.

Filed Aug. 29, 1991, Ser. No. 751,525

Int. Cl.[5] F16K *25/00, 43/00*

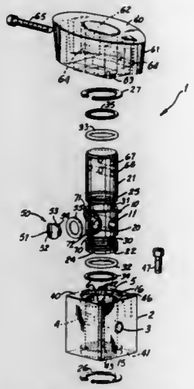
U.S. Cl. 137—315 **28 Claims**

1. A plug valve comprising a body having an inlet and an outlet, said body having a plug-receiving opening therein intersecting said inlet and outlet, a plug mounted in said opening, said plug having an outer wall and an orifice extending therethrough, said plug movable from an operative position in which the orifice is connected to the inlet and the outlet to allow fluid to pass from the inlet to the outlet to an inoperative position in which the orifice is disconnected from the inlet and the outlet to prevent fluid from passing from the inlet to the outlet, seal-receiving means in the plug outer wall spaced from said orifice, a seal retainer assembly removably mounted on said seal-receiving means, a seal interposed betwen said seal-receiving means and at least a portion of said sealing retainer assembly to form a seal, said seal retainer assembly having a top portion and body portion, the seal-receiving means in the plug wall comprising a cavity therein in non-communicating relationship to said orifice and a seal-receiving groove having an angled wall surface to accommodate a seal, the body por-

VOL 1147 ISS 4 FEB 23 1993 UMI

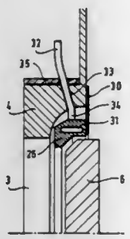
VOL 1147 ISS 4 FEB 23 1993 UMI

tion of the seal retainer assembly being narrower than the top portion to form a ledge at the juncture between the body and top portions to receive the seal, said body portion being removably mounted in said cavity and movable therein, said seal being interposed at least partially between the ledge and the angled wall surface of the seal-receiving groove and in contact with both, said seal retainer assembly being on substantially the



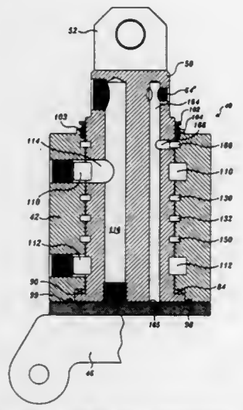
same level as said inlet and outlet whereby when the plug is moved to its inoperative position the top portion of the seal retainer assembly will be in axial alignment with said inlet and outlet, whereby fluid from said inlet will strike the seal-retainer assembly moving it within said cavity to cause it to compress the seal between the ledge and the angled wall surface to effectively seal the entire cavity to prevent any leakage therethrough.

5,188,145
VALVE
Luc Mathieu, Annecy le Vieux, France, assignor to Alcatel Cit, Paris, France
Filed Jan. 23, 1992, Ser. No. 824,342
Claims priority, application France, Jan. 25, 1991, 91 00877
Int. Cl.[5] F16K *49/00*
U.S. Cl. 137—340 **4 Claims**



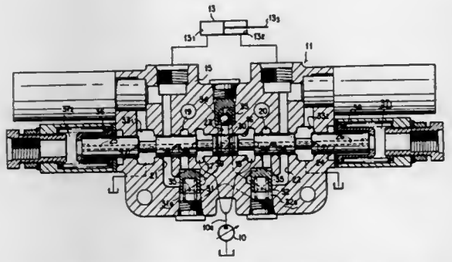
1. In a valve comprising a valve body (1) having two axially aligned openings (2, 3) each fitted with a flange (4, 5) for connection to pipework, and a moving valve member (6) mounted on said valve body for movement into overlying position with one of said valve body openings for closing of one of the two openings (3), said one opening including a valve seat member (26) having a profile which corresponds to that of the valve member, said valve member (6) further including means (14, 8, 9, 24) for displacing the valve member towards its seat member to close the valve, the improvement wherein one of said members is made of a shape memory metal alloy having a reversible shape memory effect, said one member (6, 26) made of said shape memory metal alloy includes at least one channel (27, 31) and means for feeding fluids of preselected temperatures for changing the state of said member by heating or cooling said one member to thereby cause said one member (6, 26) made of said shape memory metal alloy to change state and to expand or contract to increase or decrease sealing between said valve member and said valve seat.

5,188,146
HYDRAULIC SWIVEL
Harold T. Cook, Jr., Bainbridge Island; Donn B. Furlong, Bellevue; Robert A. Svendsen, and Allan P. Rustad, both of Seattle, all of Wash., assignors to Marco Seattle, Inc., Seattle, Wash.
Filed Jun. 11, 1991, Ser. No. 713,167
Int. Cl.[5] F16L *39/04*
U.S. Cl. 137—580 **8 Claims**



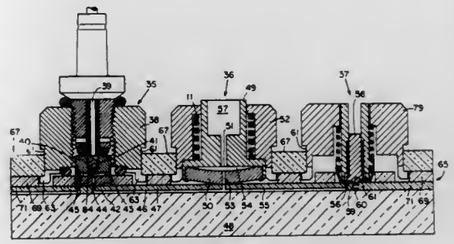
1. A hydraulic swivel manifold comprising:
a housing having a cylindrical spool bore therethrough, said spool having an axis, said spool bore having an inside wall, said housing having at least one set of pressure and return channels therein, said pressure and return channels communicating between external ports on said housing and internal ports opening onto said inside wall;
a spool mounted for rotation in said spool bore and means for retaining said spool in said spool bore to maintain it in a substantially fixed axial position relative thereto, said spool having an outside wall that is located in mutually opposing relationship with said inside wall of said housing, said spool having at least one end portion accessible from the exterior of said housing, said spool having at least one set of pressure and return channels therein, said channels individually communicating between external ports on said one end portion and internal ports opening onto said outside wall, said internal ports for said pressure channels being mutually aligned in axial relationship and being placed in fluid communication by an annular passage formed in at least one of the inside and outside walls, said internal ports for said return channels being mutually aligned in axial relationship and being placed in fluid communication by an annular passage formed in at least one of the inside and outside walls; and
said spool further having at least one spool drain channel, said spool drain channel communicating between an external port and a first internal spool drain port on said outside wall, said first internal spool drain port positioned between said one end of said spool and said annnular passages coupling the respective pressure and return ports, at least one of said spool and said housing having an annular drain passage formed in a respective inside or outside wall communicating with said first spool drain internal port, said spool drain channel further communicating with a second internal drain port, said second internal drain port being positioned at a location between the other end of the housing and the annular passages coupling the respective pressure and return ports.

5,188,147
PRESSURE COMPENSATING TYPE HYDRAULIC VALVE
Kiyoshi Shirai; Kazuo Uehara; Koichi Morita; Takahide Takiguchi, and Naoki Ishizaki, all of Kawasaki, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan
Filed Nov. 13, 1990, Ser. No. 611,499
Int. Cl.[5] F15B *13/08*
U.S. Cl. 137—596 **2 Claims**



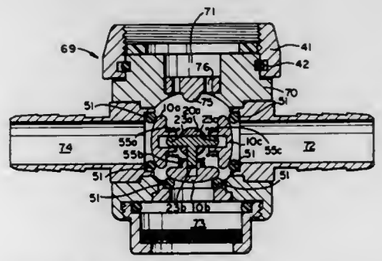
1. A pressure compensating type hydraulic valve provided in a hydraulic circuit for selectively supplying fluid under pressure discharged by a hydraulic pump into either one of pressure receiving chambers defined on both sides of a hydraulic actuator and draining the fluid within the other pressure receiving chamber, the hydraulic valve comprising: a spool slidably mounted in a valve hole formed in the valve body so as to selectively supply fluid under pressure discharged by the hydraulic pump into either one of a first actuating port and a second actuating port connected with said pressure receiving chambers, respectively, and selectively connect the other actuating port with a fluid tank; a pair of left-hand and right-hand first and second pumping ports formed between the spool and said valve hole and which are connected with a discharge passage of the hydraulic pump; a pair of left-hand and right-hand first and second outlet ports formed in the valve hole and arranged to be connected with or disconnected from these pumping ports through the intermediary of said spool; a pair of left-hand and right-hand first and second check valves mounted in the valve body so as to control connection or disconnection of these outlet ports with or from said first and second actuating ports, respectively; and a load pressure sensing port formed in said valve hole at a position substantially corresponding to the central portion of said spool when it is located at its neutral position, and arranged to communicate through a shuttle valve with back pressure chambers of said first and second check valves, respectively, characterized in that movement of said spool is controlled so as to allow either one of said first and second actuating ports to be selectively connected with or disconnected from said load pressure sensing port through the intermediary of a pair of left-hand and right-hand central holes formed in the spool so as to extend axially and substantially along the center line thereof and a plurality of drilled holes formed at predetermined intervals along the spool so as to extend from the outer peripheral surface thereof to the central holes.

5,188,148
CONDUIT PLATE FOR FLUID DELIVERY SYSTEM
Brevard S. Garrison, Reading, Mass., assignor to Millipore Corporation, Bedford, Mass.
Continuation-in-part of Ser. No. 633,713, Dec. 21, 1990. This application Feb. 14, 1991, Ser. No. 655,012
Int. Cl.[5] F16K *27/00*
U.S. Cl. 137—606 **16 Claims**



1. In a system for directing a plurality of fluids in sequence to a treatment reservoir a plate means which comprises:
a first layer having first holes with a periphery comprising a plurality of first flanges alternating with a plurality of first slots to accommodate a housing having second flanges and second slots,
a second layer contacting said first layer having second holes axially positioned relative to said first holes to communicate with said first holes,
stop means within said second layer which permit positioning said second flanges against said first flanges thereby to retain said second flanges within said second layer,
a plurality of third flanges adjacent the periphery of said second holes, axially positioned so as to position a plurality of said second flanges inserted through said first holes in contact with said first flanges and said third flanges,
a third layer contacting said second layer,
a plurality of first passageways extending through said third layer, each of said first passageways being in fluid communication with a channel adjacent said third layer,
and means adjacent said third layer for sealing said passageways to permit fluid flow through said first passageways and said channels.

5,188,149
DIVERTER VALVE
Richard T. Williams, P.O. Box 39, Uwchland, Chester County, Pa. 19480
Filed Jun. 6, 1991, Ser. No. 711,083
Int. Cl.[5] F16K *11/06*
U.S. Cl. 137—625.47 **18 Claims**

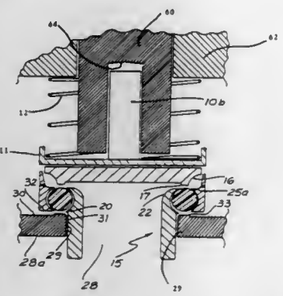


1. A diverter valve comprising
a valve body having a cavity therein, an IN port for receiving water from a source and first and second OUT ports,

VOL 1147 ISS 4 FE 23 1993 UMI

a rotor having a stem projecting into said cavity and a control knob projecting outside said valve body,
a pin mounted on said rotor stem and projecting therefrom,
a mushroom shaped closure element having a domed head and a hub portion having a bore, said closure element being so positioned that the center axis of said hub portion coincides with the center axis of said pin mounted on said rotor stem, said pin projecting into said hub bore,
said closure element being movable from one OUT port to the other OUT port by rotational movement of said rotor,
whereby when water pressure is applied to said IN port and said closure element is positioned at one of said OUT ports, water pressure serves to maintain the closure element over said one OUT port while water exits at the other.

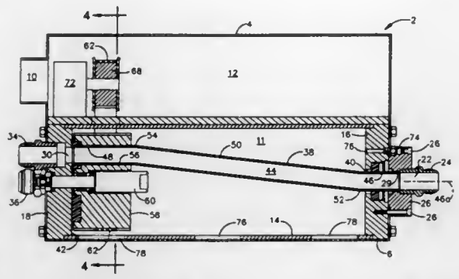
5,188,150
VALVE ASSEMBLY
Trevor T. Esplin, 1/1 Prior Avenue, Cremorne, Australia 2090
PCT No. PCT/AU89/00251, § 371 Date Dec. 7, 1990, § 102(e) Date Dec. 7, 1990, PCT Pub. No. WO89/12192, PCT Pub. Date Dec. 14, 1989
PCT Filed Jun. 9, 1988, Ser. No. 634,221
Claims priority, application Australia, Jun. 9, 1988, PI8710; Jul. 19, 1988, PI9346; Oct. 7, 1988, PJ0831; May 26, 1989, PJ4386
Int. Cl.[5] F16K *1/44*
U.S. Cl. 137—630.14 **16 Claims**



1. A valve assembly for control of fluid flow in pipes, comprising, a valve body member,
a valve seat member and an annular sealing member which is arranged to be located around the periphery of the valve seat member, when in use the annular sealing member being arranged to form a seal with the valve body member and a valve seat, when the valve body member is forced against the annular sealing member,
wherein the valve seat member comprises a retainer ring which is arranged to fit tightly around the outer circumference of the annular sealing member, and
the retaining ring comprises a lip on its top surface which lip is arranged to extend beyond the outer periphery of the valve body when in use.

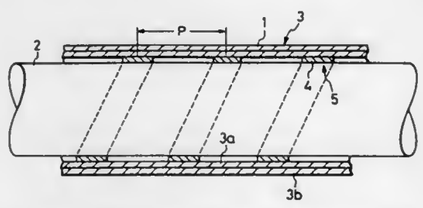
5,188,151
FLOW DIVERTER VALVE
Frederick C. Young, Maineville, and D. Lee Garbutt, Jr., Cincinnati, both of Ohio, assignors to Cold Jet, Inc., Loveland, Ohio
Filed Oct. 22, 1991, Ser. No. 781,326
Int. Cl.[5] F16K *3/00*
U.S. Cl. 137—874 **16 Claims**

1. A flow diverter comprising:
(a) an inlet;
(b) an exit end cap having a generally planar first surface;
(c) a plurality of outlets, said outlets being formed in said exit end cap;
(d) a tube defining an internal passageway, said tube having a first end in fluid communication with said inlet, and having a second end which is alternatively alignable in fluid communication with each of said plurality of outlets, said second end being spaced apart from said exit end cap first surface;
(e) a seal plate having a generally planar first surface, said seal plate first surface being disposed adjacent said exit end cap first surface, said seal plate including a bore



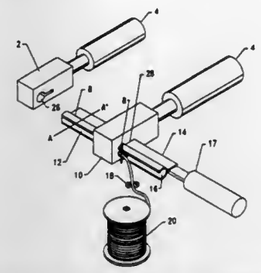
formed therethrough, said second tube end being disposed at least partially in said bore;
(f) first means for sealing between said exit end cap and said seal plate;
(g) second means for sealing between said second tube end and said seal plate; and
(h) means for urging said seal plate against said exit end cap first surface.

5,188,152
TUBULAR STRUCTURES FOR FISHING RODS OR THE LIKE
Kazunobu Ogawa, Tokyo, Japan, assignor to Ryobi Ltd., Hiroshima, Japan
Continuation-in-part of Ser. No. 152,388, Feb. 4, 1988, abandoned. This application Dec. 20, 1989, Ser. No. 451,974
Claims priority, application Japan, Feb. 5, 1987, 62-16367[U]
Int. Cl.[5] F16L *9/16*
U.S. Cl. 138—129 **9 Claims**



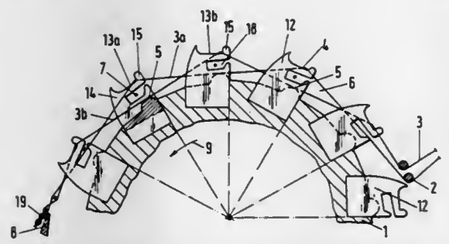
1. A multilayered tubular structure for manufacturing for instance fishing rods comprising:
a tube formed of a prepregnated sheet; and
an amorphous long fiber layer formed on a belt of an amorphous metal long fiber tape having at least one side thereof roughened and being continuously wound on said tube along the length thereof at a predetermined pitch without overlapping adjacent turns to provide a continuous surface contact with said prepregnated sheet so that said amorphous long fiber tape and said prepregnated sheet are joined together with high adherence and define a winding angle in a spiral or crosswise configuration.

5,188,153
FILL YARN INSERTION AND BEATUP USING INFLATABLE MEMBRANE
Gary L. Farley, Yorktown, Va., assignor to The United States of America as represented by the Administration of the National Aeronautics and Space Administration, Washington, D.C.
Filed Sep. 26, 1991, Ser. No. 766,597
Int. Cl.[5] D03D *47/14*
U.S. Cl. 139—11 **17 Claims**



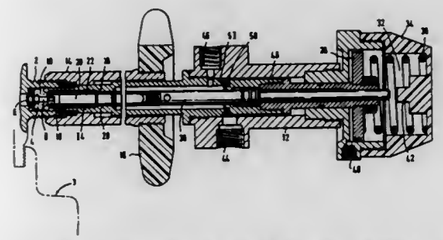
1. An apparatus for inserting fill yarns and performing yarn beatup as a single process, comprising:
(a) a rapier with means for holding a strand of yarn;
(b) a flexible and inflatable means to cover the means for holding a strand of yarn; and
(c) means for inflating the flexible and inflatable means.

5,188,154
WEAVING ROTOR COMB FIN DESIGN FOR SERIES-SHED LOOM
Marcel Christe; Walter Koch, and Peter Grimm, all of Rüti, Switzerland, assignors to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Mar. 9, 1992, Ser. No. 848,801
Claims priority, application Switzerland, May 21, 1991, 01500/91
Int. Cl.[5] D03C *13/00*
U.S. Cl. 139—28 **9 Claims**



1. A series-shed loom with a weaving rotor (1) and laying-in members (2) which lay warp threads (3) into high points and low points on the weaving rotor (1) to form sheds (6), while the weaving rotor (1) combs through the sheds so formed, beating-up weft yarns (7), which have meanwhile been inserted in the sheds, against a beater bar (8), the weaving rotor (1) including gaps (11) and fins (12) forming said high points and low points in combs (10) transversely to the direction of rotor rotation (9), characterized in that at least one warp thread (3, 3*a*, 3*b*) is laid in each gap (11), the low points (5) of a warp thread (3) lying in gaps (11) which are aligned in the direction of rotation (9), the high points (4) for another warp thread (3, 3*a*, 3*b*) being formed in each case on a fin (12), the high points being defined by longitudinal saddles (13, 13*a*, 13*b*) formed by the fins, the saddles extending in the direction of rotation (9) of the weaving rotor (1) and including a saddle point (20) between a beater nose (14) and a holder nose (15) of each fin, the beater noses and the holder noses being aligned in the direction of rotation (9), the warp thread (3, 3*a*, 3*b*) from one gap (11) being laid in over a longitudinal saddle (13, 13*a*, 13*b*) and about the holder noses (15) of fins (12) aligned with one another in the direction of rotation (9) and assigned to that warp thread.

5,188,155
DEVICE FOR NEUTRALIZING A RESIDUAL-PRESSURE VALVE OF A GAS BOTTLE
Paul Kremer, Walferdange, Luxembourg, assignor to Ceodeau S.A., Lintgen, Luxembourg
Filed May 6, 1991, Ser. No. 696,139
Claims priority, application Luxembourg, Jun. 20, 1990, 87748
Int. Cl.[5] B65B *3/04*
U.S. Cl. 147—65 **8 Claims**



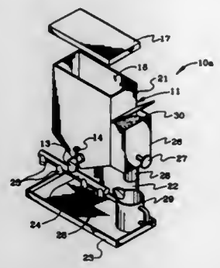
1. A device adapted for use with a gas bottle having a connection piece with a bore having a seat and containing a residual-pressure valve, said valve having a valve member and having a calibrated spring urging said valve member in a closing direction against said seat and counter to the action of the pressure of gas in the bottle, said valve including a rod attached to said valve member and extending axially outwardly through said spring, said device being adapted to selectively move said valve member in an opening direction and comprising a tubular housing having fastening means adapted to secure said housing sealingly to said connection piece, said housing having a first lateral connector adapted for connection to a source of gas and having means for conducting gas from said lateral connector to said bottle, a gripper slidable axially in said housing, biasing means in said housing and adapted to bias said gripper into said connection piece and into an operative position around said rod when said housing is secured to said connection piece means for displacing said gripper axially in opposition to said biasing means, and closing means in said housing and responsive to axial displacement of said gripper for closing said gripper on said rod thereby to cause said gripper to move said valve member in said opening direction.

5,188,156
WASTE OIL RECYCLING APPARATUS
Mike Littlepage, 2809 Woodbridge Ct., Modesto, Calif. 95355
Filed Dec. 23, 1991, Ser. No. 811,962
Int. Cl.[5] B65B *39/00*; B67C *11/04*
U.S. Cl. 141—98 **3 Claims**

1. A waste oil recycling apparatus, comprising,
a storage container, a storage container including a container bottom wall,
and
spaced side walls, including a first side wall and a second side wall,
and
the storage container defining a container cavity therewithin, and a conduit directed through the container adjacent the bottom wall in fluid communication with the container cavity, the container cavity defined by a predetermined width and a predetermined height,

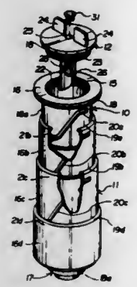
VOL 1147 ISS 4 FE 23 1993 UMI

and
a container lid selectively securable to an upper distal end of the container,
and
a fluid-receiving pan container defined by a predetermined pan width, wherein the predetermined pan width is less than the predetermined height, and said pan container is removably received within said container cavity,
and
the conduit includes a conduit valve to permit selective fluid flow through the conduit,



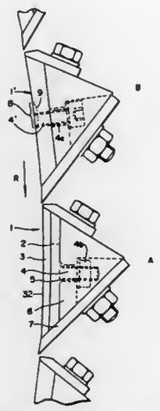
and
the storage container further includes a storage container rear wall, the storage container rear wall includes a mounting flange coplanar with and directed downwardly relative to the storage container bottom wall, and the mounting flange having a lower distal end and including a support tray orthogonally mounted to the lower distal end of the mounting flange, wherein the support tray is positioned below the storage container bottom wall.

5,188,157
EXTENSIBLE OIL CAP
Albert Lee, 232 Margate Rd., Timonium, Md. 21093
Filed Oct. 30, 1991, Ser. No. 785,267
Int. Cl.[5] B67C *11/02*
U.S. Cl. 141—338 **8 Claims**



1. An extensible oil cap comprising:
an extensible telescoping funnel coupled to an oil inlet-port of conventional engines, said extensible telescoping funnel including:
a plurality of cylindrical sections, said plurality of cylindrical sections defining an uppermost section, middle sections, and a lowermost section,
a " "-shaped and channeled recess dispose on the outer surface of said uppermost section and said middle sections,
a raised portion disposed on the upper portion of the inner surface of said middle sections and said lowermost section,
an uppermost cover extending from said uppermost section, said uppermost cover and said uppermost section being provided with a funnel screw disposed on the inner surface thereof,
a funnel rubber ring slidably attached to said uppermost cover, and
an extended flange covered on a tubular passage extending from said lowermost section, and
a closure having a closure screw disposed on the inner surface of the lower portion thereof for closing to and separating from said extensible telescoping funnel by screwing together of said funnel screw and said closure screw, said closure including:
a closure rubber ring slidably attached to the upper portion of said closure screw,
a pair of handles disposed on the top thereof;
a valve aperture disposed between said pair of handles for receiving a pressure crankshaft case valve adapter, and
a tubular cutter communicated with said valve aperture, whereby upon rotating upwardly and downwardly the closure, the extensible oil cap can be stably extended and collapsed so as to pour a motor oil from an oil can into the conventional engines and close the oil inlet port.

5,188,158
EXCHANGEABLE ELEMENT SUBJECT TO WEAR
Manfred Gstettner, Bohlerwerk, and Alois Wimmer, Rosenau, both of Austria, assignors to Böhler Ybbstalwerke GmbH, Böhlerwerk, Austria
Filed Oct. 16, 1991, Ser. No. 777,141
Claims priority, application Austria, Oct. 17, 1990, 2091/90
Int. Cl.[5] B27C *1/00;* **B02C** *17/14*
U.S. Cl. 144—162 R **22 Claims**



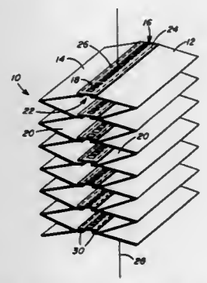
1. An exchangeable wear-resistant element for the protection of a structural part against abrasive wear, comprising:
a base part formed of a tough material;
a support part formed of a material possessing high wear resistance;
the base part having a connection face;
the support part having a connection face;
the connection face of the base part and the connection face of the support part confronting one another at an interface between the base part and the support part and being interconnected to define a connection surface;
an attachment element provided for the base part; and
the attachment element serving for the releasable connection of the wear-resistant element with a structural part.

5,188,159
WEDGE
Craig L. Lush, 8148 Cliffview Ave., Springfield, Va. 22153
Filed Jul. 31, 1990, Ser. No. 560,778
Int. Cl.[5] B27L *7/00;* **A47J** *49/02*
U.S. Cl. 144—193 D **1 Claim**



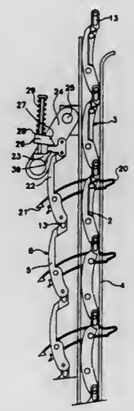
1. A wedge for splitting wood or the like, including:
a. a wedge body having a bore concentric with the longitudinal centerline of said wedge body and extending therethrough,
b. a penetrating rod positioned within said bore of said wedge body,
c. a retaining pin located perpendicularly through the centerline and extending on both sides of said penetrating rod,
d. a spring means within said wedge body for urging said penetrating rod into a retracted position,
e. a washer positioned between one end of said spring and said retaining pin.

5,188,160
HONEYCOMBED SHADE
Ralph Jelic, Valencia, Pa., assignor to Verosol USA Inc., Pittsburgh, Pa.
Filed Apr. 27, 1992, Ser. No. 874,525
Int. Cl.[5] A47H *5/00*
U.S. Cl. 160—84.1 **14 Claims**



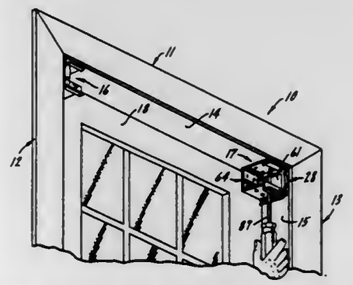
1. A honeycomb structure comprising:
a first material having a plurality of transverse pleats;
a second material having a plurality of transverse pleats in which each pleat of said second material is directed towards a corresponding pleat of said first material, each pleat of said first material and corresponding pleat of said second material further being spaced a selected distance apart; and
a plurality of elongated ribbons, one of each said ribbons connecting one pleat of said first material to a corresponding pleat of said second material, in which a first portion of each said ribbon is affixed to a pleat of said first material and a second portion of each said ribbon is affixed to a corresponding pleat of said second material, each said ribbon further having a plurality of adjacent perforations disposed between the first portion and the second portion so that a lift cord can be threaded through a selected one of a number of perforations in each ribbon.

5,188,161
LOUVERABLE ROLLING SHUTTER
Gunther Erber, Feldgasse 31, A-9065 Ebental (Karnten), Austria
Filed Jun. 24, 1991, Ser. No. 719,914
Int. Cl.[5] E06B *9/08*
U.S. Cl. 160—133 **15 Claims**



1. Louverable rolling shutter comprising: a number of louverable, leaf-like shutter slats, each slat (1) having an upper zone and a lower zone, said slats being articualted at their upper zones to pull chain links (2) and at their lower zones to adjusting chain links (5), and also being constrained laterally in fixed guide profiles (4), wherein guidance in the guide profiles (4) is effected by the pull chain links (2), each of said pull chain links (2) being arranged with an associated adjusting chain link (5) and louverable shutter slat (1) in side-by-side relationship and in alignment with respect to one another.

5,188,162
MINI BLIND SYSTEM AND VALANCE ASSEMBLY THEREFOR
Terry L. Simon, South Bend, Ind., and Gordon R. Erickson, Freeport, Ill., assignors to Newell Operating Company, Freeport, Ill.
Filed Dec. 18, 1991, Ser. No. 810,643
Int. Cl.[5] E06B *9/26*
U.S. Cl. 160—166.1 **11 Claims**



1. A mini blind system, said mini blind system comprising:

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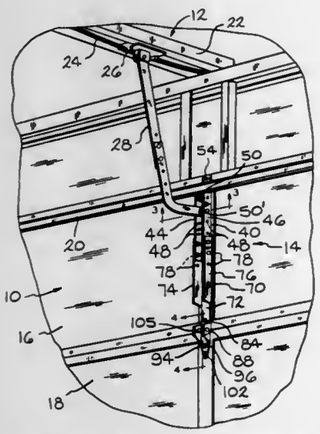
a mini blind having a head rail assembly,
first and second head rail assembly supporting means for supporting the mini blind in a fixed position which precludes displacement of the mini blind from said fixed position under the displacing forces encountered in the operation of said mini blind, each of said first and second head rail assembly supporting means including
a bracket assembly having top wall means, rear wall means and a head rail assembly supporting means beneath and vertically spaced from the top wall means,
the head rail assembly supporting means being a bottom wall means,
means for securing the bracket assembly to a base structure associated with at least one of the top or rear wall means,
means for spacing the head rail assembly away from at least one of the top or rear wall means by which the bracket assembly is secured to a base structure,
means for precluding the head rail assembly, when supported in alignment with the top and rear wall means, from moving outwardly away from the rear wall means under the impact of forces encountered during use of the mini blind, said means for precluding the head rail assembly from moving outwardly from the rear wall means includes abutment means carried by an outer end portion of the bottom wall means and an outer end portion of the top wall means.

5,188,163

BRACKET ASSEMBLY FOR AN OVERHEAD DOOR

Donald Schwartzengraber, Defiance, Ohio, and Robert G. Schram, Beaconsfield, Canada, assignors to Napoleon Spring Works, Inc., Archbold, Ohio

Filed Mar. 27, 1992, Ser. No. 858,628
Int. Cl.[5] E06B *3/48*
U.S. Cl. 160—229.1 **13 Claims**



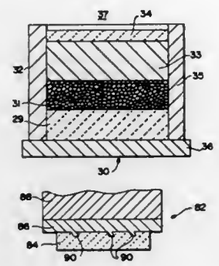
1. A bracket assembly for an overhead door comprising, in combination:
a first portion, said first portion having a first base, said first base having means for attaching said first portion to a panel of an overhead door, said base portion having means for attaching said first portion to an arm of an overhead door system;
a second portion, said second portion having a second base, said second base having means for attaching said second portion to said panel of said overhead door, said second portion having means to attach said second portion to said first portion;
a third portion, said third portion having a third base, said third base having means for attaching said third portion to a second panel of said overhead door, said second portion having means to attach said third portion to said second portion.

5,188,164

METHOD OF FORMING MACROCOMPOSITE BODIES BY SELF-GENERATED VACUUM TECHNIQUES USING A GLASSY SEAL

Robert C. Kantner, Newark, and Ratnesh K. Dwivedi, Wilmington, both of Del., assignors to Lanxide Technology Company, LP, Newark, Del.

Continuation-in-part of Ser. No. 383,935, Jul. 21, 1989, abandoned. This application Jul. 31, 1990, Ser. No. 560,746
Int. Cl.[5] B22D *19/14*
U.S. Cl. 164—97 **20 Claims**



1. A method of making a macrocomposite body comprising the steps of:
(a) forming a reaction system comprising: (1) an impermeable container, (2) a matrix metal comprising at least one material selected from the group consisting of aluminum, bronze, copper, magnesium and cast iron, (3) a permeable mass of filler material or a preform, (4) at least one second or additional body adjacent to said permeable mass, and (5) a reactive atmosphere;
(b) at least partially sealing the reaction system, the sealing being provided by an extrinsic seal comprising a glassy material;
(c) heating the at least partially sealed reaction system to a temperature above the melting point of the matrix metal to create a self-generated vacuum within said impermeable container and to permit infiltration of the molten matrix metal into the permeable mass of filler material or preform and to cause the molten matrix metal to contact at least a portion of said at least one second or additional body, wherein a pressure differential is created between said reactive atmosphere within said at last partially sealed reaction system and an ambient atmosphere; and
(d) cooling the at least partially sealed reaction system to a temperature below the melting point of the matrix metal, after the molten matrix metal has infiltrated the permeable mass of filler material or preform, to form said macrocomposite body.

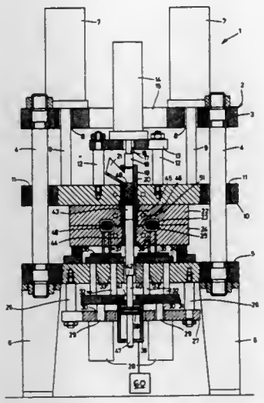
5,188,165

METHOD AND DEVICE FOR PRESSURE DIE CASTING

Hans Ivansson, Herrljunga, Sweden, assignor to Tour & Andersson AB, Sweden

PCT No. PCT/SE89/00331, § 371 Date Dec. 12, 1990, § 102(e) Date Dec. 12, 1990, PCT Pub. No. WO89/12518, PCT Pub. Date Dec. 28, 1989
PCT Filed Jun. 12, 1989, Ser. No. 623,758
Claims priority, application Sweden, Jun. 13, 1988, 8802190
Int. Cl.[5] B22D *17/12*
U.S. Cl. 164—113 **20 Claims**

1. A method of die casting an article in an apparatus having a lower piston (43) guided by a stationary lower mold part (24), a upper machine table (10) with an upper mold part (22), cooperating with the lower mold part (24), mounted on a bottom surface thereof moveable vertically relative to the lower mold part (24), a filling chamber (20) carried by the upper mold part for containing a desired quantity of molten metal (49), the lower piston (43), when engaged with the filling chamber, forming a base portion of the filling chamber for temporarily supporting the molten metal, said method comprising the steps of:
moving the lower piston (43) relative to the filling chamber to a variable initial starting position prior to supplying the molten metal to the filling chamber, the variable initial starting position of the lower piston (43) being selected so that the quantity of molten metal to be contained within the filling chamber is equivalent to a contemplated casting plus a required excess amount,



after supplying the molten metal to the filling chamber, moving an upper piston (18) into contact with a top surface of the molten metal, without any substantial air-entrapment in the filling chamber, for pressure feeding the molten metal into the mold (22, 24),
displaying jointly the lower piston, the molten metal and the upper piston vertically downward until the molten metal is in communication with the feeding duct,
stopping further downward motion of the lower piston, upon the molten metal communicating with the feeding duct, while continuing further downward motion of the upper piston to pressure feed the molten metal into the mold parts and subject the molten metal to continued pressure until the casting operation is completed, and
ejecting the cast article from at least one of the mold parts by an ejector mechanism (29–37).

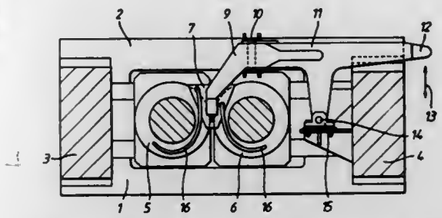
5,188,166

ROTARY STRIP CASTER EDGE CONTAINMENT

Robert M. Perry, Hensingham, Great Britain, assignor to Davy (Distington) Limited, Cumbria, England

PCT No. PCT/GB90/00722, § 371 Date Dec. 18, 1991, § 102(e) Date Dec. 18, 1991, PCT Pub. No. WO90/13376, PCT Pub. Date Nov. 15, 1990
PCT Filed May 10, 1990, Ser. No. 776,307
Claims priority, application United Kingdom, May 12, 1989, 8910906
Int. Cl.[5] B22D *11/06*
U.S. Cl. 164—416 **8 Claims**

1. A twin roll strip casting machine having a pair of rotatable rolls each of which has a roll barrel, said rolls being arranged with the roll barrels in side-by-side spaced apart relation with their axes of rotation horizontal;
a first edge containment assembly located at one end of the roll barrel of one roll and at the corresponding end of the roll barrel of the other roll;
a second edge containment assembly located at the opposite end of the roll barrel of said one roll and at the corresponding end of the roll barrel of the other roll;
each of said assemblies comprising a face portion of refractory material supported by a backing plate;
means for urging the first edge containment assembly towards the ends of the roll barrels such that the face portion is in abutting relation with said ends of the roll barrels;



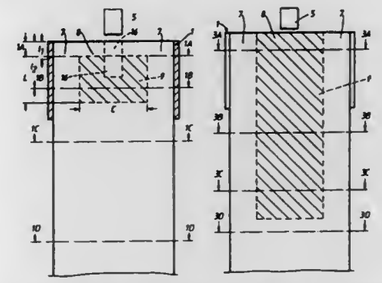
means for urging the second edge containment assembly towards the opposite ends of the roll barrels such that the face portion is in abutting relation with said ends of the roll barrels;
said roll barrels and the edge containment assemblies defining a reservoir for receiving molten metal to flow downwardly between the rolls to form a thin strip casting; and
means for oscillating the containment assemblies upwardly and downwardly with the face portions remaining in contact with the ends of the roll barrels.

5,188,167

CONTINUOUS CASTING MOULD

Robert M. Perry, Whitehaven, and Timothy Reynolds, Cockermouth, both of England, assignors to Davy (Distington) Limited, Great Britain

PCT No. PCT/GB89/00677, § 371 Date Jan. 29, 1991, § 102(e) Date Jan. 29, 1991, PCT Pub. No. WO89/12516, PCT Pub. Date Dec. 28, 1989
PCT Filed Jun. 16, 1989, Ser. No. 623,754
Claims priority, application United Kingdom, Jun. 16, 1988, 8814331
Int. Cl.[5] B22D *11/04*
U.S. Cl. 164—418 **9 Claims**



1. A continuous casting mould having a cavity of substantially uniform width extending in a lengthwise direction from an inlet end to an outlet end of the mould, said cavity having a cross-section normal to the lengthwise direction which comprises two rectangular side regions of generally constant width and breadth separated by a central region of generally constant width; at the inlet end of the cavity, the central region constitutes a pouring region and, at the pouring region, the opposite

VOL 1147 ISS 4 FE 23 1993 UMI

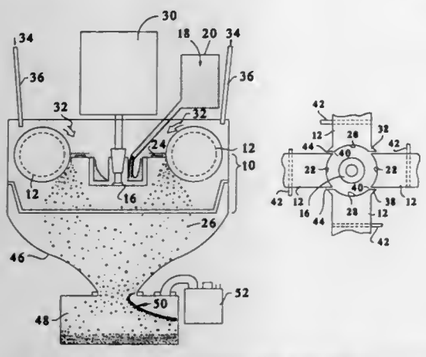
walls of the central region which separate the side regions are of arcuate form; and for at least part of the length of the central region in the direction towards the outlet end, the radii of curvature of the arcuate walls progressively increase to reduce the breadth of the central region and constitute as deformation region which serves to deform a workpiece case in the mould as it moves therethrough in the direction towards the outlet end.

5,188,168

CHILL BLOCK MELT SPINNING APPARATUS

Robert B. Pond, Westminster, Md., assignor to Marvalaud, Inc., Westminster, Md.

Filed Aug. 2, 1991, Ser. No. 739,656
Int. Cl.[5] B22D *11/06*
U.S. Cl. 164—479 **17 Claims**



1. An apparatus for manufacturing ultra fine flakes comprising:

a substantially circular member of a predetermined radius for receiving a molten material and rotating to centrifugally force said molten material radially outward in a substantially horizontal plane; and

a plurality of rotatable chill cylinders radially spaced around said circular member, said cylinders having concave outer longitudinal surfaces, all points on said concave outer surfaces being substantially radially equidistant from said circular member, said cylinders having a ratio of maximum cylinder radius to a minimum cylinder radius less than 2.5.

9. A method of producing ultra fine metal flakes comprising:

discharging a stream of molten material into a rotating member having a substantially circular periphery;

driving said rotating member at a high rotational velocity sufficient to centrifugally force said molten material radially from the rotating member in a stream which forms individual droplets which contact with a plurality of rotating chill cylinders located around said rotating member, said cylinders having curved outer surfaces substantially equally radially spaced from said rotating member and having a maximum cylinder radius to minimum cylinder radius ration of less than 2.5.

15. An apparatus for manufacturing ultra fine flakes comprising:

a substantially circular member of a predetermined radius for receiving a molten material and rotating to centrifugally force said molten material radially outward in a substantially horizontal plane; and

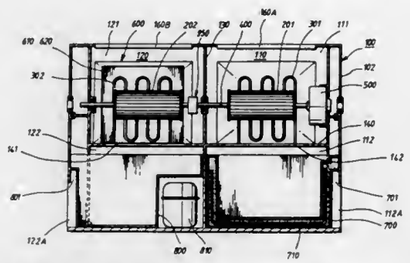
a plurality of rotatable chill cylinders radially spaced around said circular member, said cylinders having concave outer longitudinal surfaces, essentially all points on said concave outer surfaces being substantially radially equidistant from said circular member, at least one of said rotatable chill cylinders including at least one protrusion on at least one lateral edge to substantially block radial exits of droplets between adjacent said cylinders.

5,188,169

HEATER-HUMIDIFIER-DEHUMIDIFIER UNIT

Gui Y. Lim, Kyungki, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suweon, Rep. of Korea

Filed Jan. 30, 1992, Ser. No. 828,121
Claims priority, application Rep. of Korea, Jan. 31, 1991, 91-1695
Int. Cl.[5] F24F *3/147*
U.S. Cl. 165—20 **5 Claims**



1. An air treating unit comprising:

a housing having air inlet means and air outlet means;

motor-driven air circulating means for circulating air through said housing;

air treating means in said housing including air heating means, air humidifying means, and air dehumidifying means;

said housing having an interior partitioned into a plurality of compartments;

said air humidifying means and said air dehumidifying means being disposed in separate ones of said compartments; and

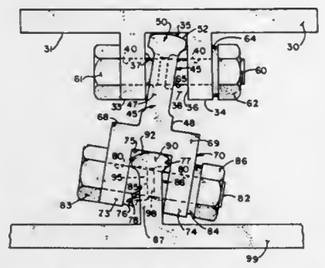
said air circulating means comprising selectively actuable fans disposed in respective ones of said compartments.

5,188,170

ROCKER CONNECTION

Melbourne F. Giberson, 5 Spring Mill La., Haverford, Pa. 19041

Filed Sep. 9, 1992, Ser. No. 943,412
Int. Cl.[5] F28F *9/00*; F22B *37/24*
U.S. Cl. 165—67 **13 Claims**



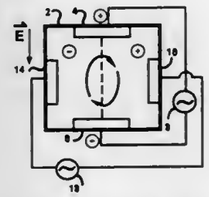
1. A mounting device for an elongated member subject to expansion and contraction, comprising a first channel member extending transversely of said elongated member, said first channel member having a channel defined by spaced parallel side walls and an intervening web; a first rail extending along said first channel, said first rail having a head with an outer surface crowned on a radius transverse to the long dimension of the first rail and bearing upon an inner surface of said first channel web; a second channel member oriented in the same direction as the first channel member, also having a channel defined by spaced parallel side walls and an intervening web; said second channel member being fixedly connected to said first rail along an exterior surface of said second channel web, a second rail extending along said second channel, said second rail having a head with an outer surface crowned on a radius transverse to the long dimension of said second rail and bearing upon said second channel web, and means for restraining said rails within said channels, said first channel member being fixedly mounted on one of a pedestal or said elongated member and said second rail being fixedly mounted to the other of said elongated member or pedestal.

5,188,171

LIQUID-CRYSTAL HEAT VALVE CONTROLLED WITH MULTIPLE ELECTRODE PAIRS

Michael E. Stefanov, Lynn Haven, Fla.; Rand R. Biggers, Fairborn, Ohio; Jeff W. Rish, III, Lynn Haven, Fla.; Girardeau L. Henderson, and Chuong N. Pham, both of Panama City, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 22, 1992, Ser. No. 902,201
Int. Cl.[5] F28F *13/00*
U.S. Cl. 165—96 **3 Claims**



1. An improved liquid crystal heat valve, comprising

A. a mass of liquid-crystal material situated in a liquid-crystal heat valve for control of heat flow through the valve, and

B. a plurality of pairs of electrically separate electrodes arranged about the periphery of the mass of liquid-crystal material, and adapted to apply an electric field across the mass of liquid-crystal material in a plurality of directions.

5,188,172

AUTOMATIC DOWNHOLE WELL SHUT-IN CONTROL VALVE

Curtis G. Blount, Wasilla, and John C. Braden, Anchorage, both of Ak., assignors to Atlantic Richfield Company, Los Angeles, Calif.

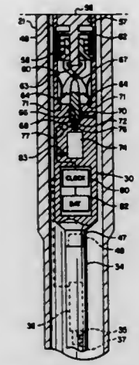
Filed Aug. 30, 1991, Ser. No. 752,706
Int. Cl.[5] E21B *34/08, 49/00*
U.S. Cl. 166—64 **4 Claims**

1. A fluid control valve for disposition in a well to shut off the flow of fluid within said well at a predetermined time, sad valve comprising:

a body member including means defining fluid flow port means therein;

a piston type closure member disposed in said body member and movable between an open position and a closed position covering said port means, said closure member being movable to close over said port means under the urging of a biasing spring disposed in said body member;

actuator means for moving said closure member between open and closed positions, said actuator means including latch means for latching said closure member in an open position and movable to release said closure member to move to a valve-closed position under the urging of said biasing spring; and



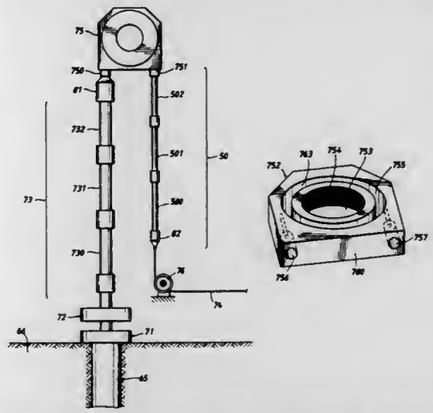
clock means for effecting operation of said actuator means at a predetermined time.

5,188,173

PRESSURE CONTROL SYSTEM AND CABLE GUIDING DEVICE FOR USE IN DRILLING WELLS

David L. Richardson, Gretna; Robert A. Grubba, New Orleans; Timothy P. McLaughlin, Metairie, and David B. Parran, New Orleans, all of La., assignors to Schlumberger Technology Corporation, Houston, Tex.

Filed May 21, 1991, Ser. No. 703,564
Int. Cl.[5] E21B *19/08*
U.S. Cl. 166—77 **15 Claims**



1. A pressurized sheave wheel for use in a well system for the control of fluid pressure coming from a well and for accommodating cable-connected logging or completion operations in said well, comprising:

a housing having a central axial opening therethrough;

an annular chamber in said housing coaxial with and surrounding said central opening;

a first conduit through said housing, said first conduit opening into said annular chamber, said first conduit being essentially tangential to said annular chamber;

a second conduit through said housing, said second conduit opening into said annular chamber, said second conduit entering said housing from the same face as said first

VOL 1147 ISS 4 FE 23 1993 UMI

conduit, being diametrically opposed thereto and essentially tangential to said annular chamber;

bearing means located within said annular chamber and coaxial therewith, said bearing means comprising a circular housing including a groove on the periphery thereof for receiving and guiding a cable therearound, said groove being larger than said cable to be received therein;

sealing means within said annular chamber for sealing said annular chamber;

cap means mating with said central axial opening in said housing and secured to said housing for retaining said bearing means and said sealing means within said annular chamber; and

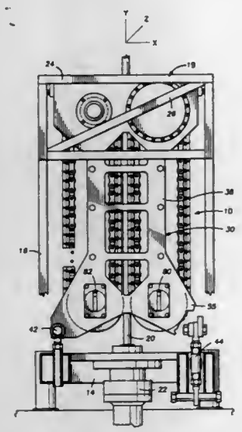
means for pressurizing a volume of said annular chamber wherein said pressurized volume is defined by the annulus between said cable and said groove.

5,188,174

APPARATUS FOR INSERTING AND WITHDRAWING COIL TUBING INTO A WELL

William L. Anderson, Jr.; Marvin R. Jones, both of Houston, Tex., assignors to Stewart & Stevenson Services, Inc., Houston, Tex.

Filed Apr. 3, 1991, Ser. No. 679,733
Int. Cl.[5] E21B *19/00*
U.S. Cl. 166—77 **34 Claims**



1. Apparatus for injecting and withdrawing a substantially continuous length of flexible tubing into and from a well, comprising:

a frame;

a pair of opposed endless flexible conveyor members supported on said frame and having opposed elongated parallel runs spaced apart to form a path for engagement of the tubing by gripper means on said conveyor members;

roller means reciprocally disposed on said frame adjacent that side of said opposed elongated parallel runs opposite said path and adapted for engagement with said gripper means;

hydraulic means having a fluid pressure source and having push rams adapted to engage said roller means to move said roller means into engagement with said gripper means upon actuation of fluid pressure;

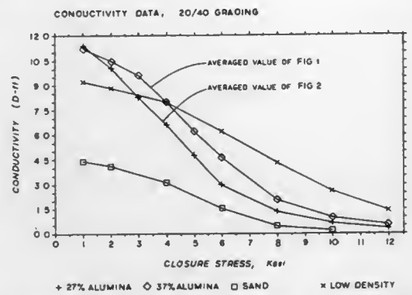
said roller means including at least two sets of rollers, each set applying a variable load against said gripper means whereby said gripper means grips that portion of the tubing along said path adjacent the well with less force than that portion of the tubing along said path further away from the well.

5,188,175

METHOD OF FRACTURING A SUBTERRANEAN FORMATION WITH A LIGHTWEIGHT PROPPING AGENT

Larrie Sweet, New Iberia, La., assignor to Carbo Ceramics Inc., Dallas, Tex.

Continuation of Ser. No. 393,598, Aug. 14, 1989, abandoned.
This application Oct. 2, 1991, Ser. No. 769,584
Int. Cl.[5] E21B *43/267*
U.S. Cl. 166—280 **4 Claims**



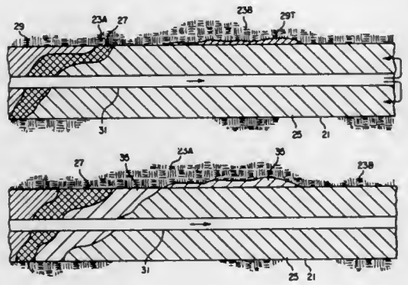
1. A method of fracturing a subterranean formation having a closure stress less than 8,000 psi which comprises injecting a hydraulic fluid into the formation at a rate and pressure sufficient to open a fracture therein, injecting into said fracture a fluid containing sintered, spherical pellets having an alumina content of between 25% and 40% distributed homogeneously throughout said pellets, a specific gravity of between 2.20 and 2.60 and a conductivity greater than the conductivity of sand.

5,188,176

CEMENT SLURRIES FOR DIVIATED WELLS

Robert B. Carpenter, Hurst, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 8, 1991, Ser. No. 790,652
Int. Cl.[5] E21B *33/14*
U.S. Cl. 166—285 **2 Claims**



1. In a method of cementing downhole in a wellbore in which a drilling fluid will have been used to drill the well, at least a portion or which is deviated more than a 55 angle of inclination; the improvement comprising:

a. emplacing at a desired depth in the well a plurality of cement slurries, at least one of which is less dense than the drilling fluid employed to drill the well or current wellbore fluid, and

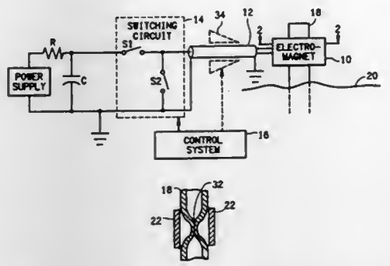
b. allowing the cement to set up in the well to provide zonal isolation and bonding of equipment in the wellbore.

5,188,177

MAGNETIC-PULSE SEALING OF OIL-WELL-HEAD PIPE

Randy D. Curry, Pleasanton, Calif., assignor to The Titan Corporation, San Diego, Calif.

Filed Jul. 16, 1991, Ser. No. 730,668
Int. Cl.[5] E21B *33/02*
U.S. Cl. 166—297 **10 Claims**



1. A method of sealing an oil-well-head pipe having a metal casing, comprising the steps of

(a) placing an electromagnet around an exposed portion of the well-head pipe, with the electromagnet being disposed to radially apply a magnetic field to the pipe; and

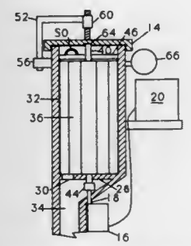
(b) radially applying a high-energy magnetic pulse to the pipe with the electromagnet to plastically deform the metal of the pipe casing to form the metal into a seal that caps the well-head pipe.

5,188,178

METHOD AND APPARATUS FOR AUTOMATIC WELL STIMULATION

Jonathan C. Noyes, Pleasanton, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Aug. 1, 1991, Ser. No. 738,755
Int. Cl.[5] E21B *43/00*
U.S. Cl. 166—310 **12 Claims**



1. An apparatus for stimulating production from a hydrocarbon producing well comprising:

a housing adapted to be mounted above a well and connected thereto through a check value, said housing defining a chamber;

a magazine mounted in said chamber and accommodating a plurality of well stimulant sticks;

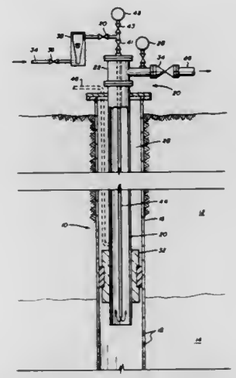
means to sequentially advance said magazine to allow individual sticks of stimulant to be dispensed into said well causing the stimulation of the contents thereof for increased productivity.

5,188,179

DYNAMIC POLYSULFIDE CORROSION INHIBITOR METHOD AND SYSTEM FOR OIL FIELD PIPING

Richard J. Gay, 10810 Concho, Houston, Harris County, Tex. 77072; Charles C. Gay, 108 F. M. 1456, Bellville, Tex. 77418; Veronique M. Matthews, 4221 Red Cloud, Austin, Tex. 78759; Francoise E. M. Gay, c/o Chantal Dufour Bencze at 10611 Clematus, Houston, Tex. 77035, and Valerie Chase, 9723 Willowwood, Houston, Tex. 77086

Filed Dec. 23, 1991, Ser. No. 813,195
Int. Cl.[5] E21B *41/02*; C23F *11/16, 11/18*
U.S. Cl. 166—310 **20 Claims**



1. In a method of inhibiting a pipe against corrosion as may be caused by corrodents, the steps comprising:

(a) continually passing a fluid carrying corrodents through a pipe, said corrodents being at least one of the group consisting essentially of an aqueous phase of hydrogen sulfide, carbon dioxide, and sodium chloride;

(b) continually bringing a polysulfide into said fluid;

(c) continually bringing elemental ferrous iron into reaction with said polysulfide to form a precipitated film comprising an effectively amorphous iron disulfide on the interior surface of said pipe as corrosion inhibitor which tends to be continually dissolved away by said fluid while being continually replenished by the continuing precipitation from the continuing reaction of said polysulfide and said ferrous iron.

14. A system for continuously forming a corrosion protective film of substantially amorphous iron disulfide on the walls of oil filled pipe, comprising:

(a) means causing continuous flow a fluid including corrodents through a pipe;

(b) means for continuously injecting a reactant material into said pipe to continuously mix with said fluids and continuously react within said fluid to cause iron disulfide to form as a reaction product which is continuously precipitated as a corrosion protective film of iron disulfide on the walls of said pipe.

5,188,180

HYDRAULIC CIRCUIT FOR A WELL TOOL

Charles E. Jenniogs, Houston, Tex., assignor to ABB Vetco Gray Inc., Houston, Tex.

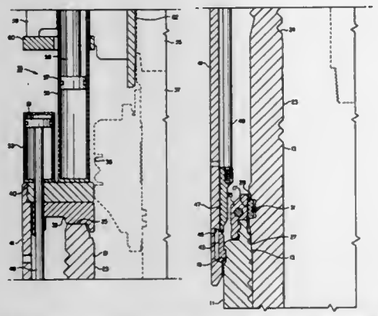
Filed Aug. 13, 1991, Ser. No. 744,146
Int. Cl.[5] E21B *23/04*
U.S. Cl. 166—338 **15 Claims**

1. A tool adapted to be secured to conduit and lowered from a drilling rig into a well assembly, comprising in combination:

connecting means for releasably connecting the tool to the well assembly;

first cylinder means for performing a first function;

second cylinder means for performing a second function;
pump cylinder means for supplying hydraulic fluid pressure in response to axial movement of the conduit in a first direction after the tool is connected to the well assembly;
a control valve having an input line connected to the pump cylinder means, a first output line connected to the first cylinder means and a second output line connected to the second cylinder means, the control valve having a first position connecting the input line with the first output line and a second position connecting the input line to the second output line;
an accumulator connected to the input line;
pressure valve means connected between the input line and the accumulator for allowing hydraulic fluid to flow into and be stored in the accumulator only when a selected pressure is reached;



check valve means located between the input line and the accumulator for preventing hydraulic fluid in the accumulator from flowing back into the input line, causing the accumulator pressure to exceed the input line pressure when the pump cylinder means and conduit are moved in a direction opposite to the first direction after the selected pressure has been reached; and
pilot means having one line connected to the input line and one line connected to the accumulator, for retaining the control valve in the first position until the pressure in the accumulator exceeds the pressure in the input line by a selected amount, then for shifting the control valve to the second position, so that subsequent axial movement by the conduit moves the pump cylinder means and supplies hydraulic fluid to the second cylinder means for performing the second function.

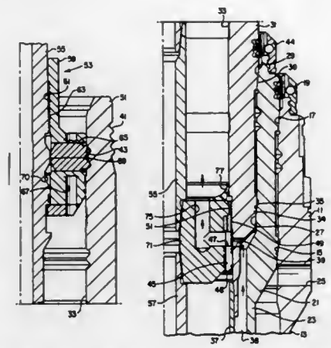
5,188,181

ANNULUS SHUTOFF DEVICE FOR A SUBSEA WELL

Norman Brammer, Fyvie Turiff, Scotland, and Philippe C. Nobileau, Paris, France, assignors to ABB Vetco Gray Inc., Houston, Tex.

Filed Dec. 20, 1991, Ser. No. 811,518
Int. Cl.[5] E21B *33/14, 43/10*
U.S. Cl. 166—344 **13 Claims**

1. A subsea well assembly of a type having an outer wellhead housing secured to the upper end of a string of outer casing, an inner wellhead housing being secured to a string of inner casing and having a bore and an external landing shoulder, the improvement comprising in combination:
an intermediate wellhead housing, having an external landing shoulder that lands in the outer wellhead housing and an internal landing shoulder that engages and supports the external landing shoulder of the inner wellhead housing, the intermediate wellhead housing being secured to a string of intermediate casing, defining an annulus between the string of inner casing and the string of intermediate casing;
a port extending through the inner wellhead housing below the external landing shoulder of the inner wellhead housing, communicating the annulus with the bore of the inner wellhead housing; and
a sleeve mounted to the inner wellhead housing for move-



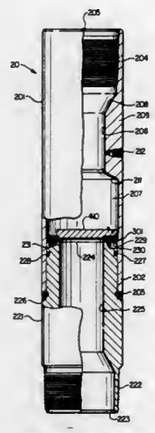
ment relative to the inner wellhead housing between an open position opening the port to allow cement returns up the annulus and through the bore of the inner wellhead housing, and a closed position closing the port once cementing has been completed.

5,188,182

SYSTEM CONTAINING EXPENDIBLE ISOLATION VALVE WITH FRANGIBLE SEALING MEMBER, SEAT ARRANGEMENT AND METHOD FOR USE

Ralph H. Echols, III, Carrollton; Joseph L. Pearce, Dallas, both of Tex., and Daniel L. Patterson, Brunei Darussalam, Malaysia, assignors to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 552,109, Jul. 13, 1990, abandoned. This application May 10, 1991, Ser. No. 698,449
Int. Cl.[5] E21B *43/04, 34/06*
U.S. Cl. 166—376 **29 Claims**



1. A retrievable expendible isolation valve comprising, in combination:
an upper housing having an upper box connector and a fluid bore therethrough threadedly and sealingly connected to a lower housing having a lower pin connector and a fluid bore therethrough, said fluid bores being in flow registration with each other,

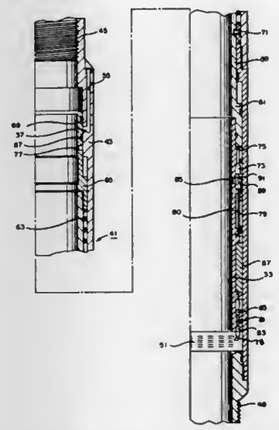
said upper housing being secured against rotation with reference to said lower housing,
said upper fluid bore having a reduced diameter forming a thickened upper housing wall intermediate said box connector and a radially outwardly sloping shoulder, said radially outwardly sloping shoulder increasing said diameter of said fluid bore to form a sealing element chamber therein,
said lower housing having a upper shoulder upon which is fixedly and sealingly mounted an extrusion resistant valve seat assembly in flow registration with the bore thereof and a hinge bracket means mounted thereon,
an extrusion resistant valve seat comprising a resilient seal member landed in a support groove formed in the annulus of said valve seat and supported by a shoulder formed in said resilient seal means in cooperation with a shoulder formed by one wall of said support groove,
a machinable, frangible flapper means having integrally molded frangible hinge means, said element being rotatably attached to said hinge bracket means by a hinge pin which passes through a bore in said hinge means, said sealing element being rotatable between an open position and a closed position and being biased to said closed position by a spring wound around said hinge means and said hinge pin means, a protector tube mounted within said fluid bores of said housings by shearable means, said protector tube having a fluid bore therethrough, a pulling neck at one end thereof and a no-go shoulder formed within said fluid bore, said protector tube restraining said machinable, frangible sealing element in the open position and protecting said sealing element from cuts, abrasions or destruction during run in, and
a work string comprising in part a no-go locator mounted below said no-go shoulder in said protector tube.

5,188,183

METHOD AND APPARATUS FOR CONTROLLING THE FLOW OF WELL BORE FLUIDS

Mark Hopmann, Alvin; Steve L. Jennings, and Daniel E. Dinhoble, both of Houston, all of Tex., assignors to Baker Hughes Incorporated, Houston, Tex.

Filed May 3, 1991, Ser. No. 695,262
Int. Cl.[5] E21B *33/12, 29/02*
U.S. Cl. 166—387 **16 Claims**



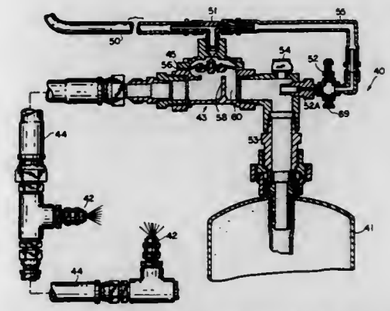
1. A method for controlling the flow of well bore fluids from a production zone located within a subterranean formation adjacent a well bore to the well surface, the method comprising the steps of:
making up a well tool including a plug in a tubing string having an internal bore with a predetermined minimum internal diameter, the internal bore of the tubing string being initially closed off by the plug at a selected location, the well tool which is made up within the tubing string also carrying an external well packer;
running the well tool on the tubing string to a selected depth within the well bore;
setting the well packer in the well bore to isolate a production interval of the well bore;
providing actuating means associated with the plug for dislocating the plug upon receipt of a triggering signal transmitted from the well surface; and
triggering the actuating means by transmitting a triggering signal from the well surface to thereby dislocate the plug from the internal bore of the tubing string and allow the dislocated plug to flow to the well surface as fluids in the surrounding earthen formation are allowed to flow up the tubing string to the well surface.

5,188,184

FIRE SUPPRESSION SYSTEMS

Barry W. Northill, New South Wales 2830, Australia, assignor to Noelene M. Northill, Dubbo, Australia, a part interest

Filed Sep. 18, 1991, Ser. No. 763,658
Claims priority, application Australia, Sep. 18, 1990, PK2359
Int. Cl.[5] A62C *37/36, 37/00, 35/00*
U.S. Cl. 169—22 **9 Claims**

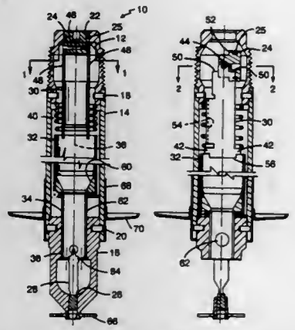


1. A fire suppression system comprising a reservoir to contain a fire suppressant material, said reservoir having an outlet, at least one nozzle from which the suppressant is delivered;
a valve joining the reservoir outlet and said at least one nozzle, said valve including a movable valve member and a seat cooperating therewith, said valve member being movable from a closed position with respect to said seat preventing communication between said reservoir and said at least one nozzle, to an open position permitting the flow of said material from said reservoir to said at least one nozzle;
an actuator operatively associated with said valve to selectively cause movement of said valve member from said closed position to said open position, and wherein said actuator maintains a fluid under pressure to maintain said valve member in said closed position, said actuator being operable to vent said fluid to lower the pressure therein and permitting said valve member to move to said open position,
said valve being a diaphragm valve having a diaphragm member operatively associated with said seat, one side of said diaphragm member being exposed to said fluid under pressure to maintain the diaphragm valve in a closed position with respect to said seat, the other side of said diaphragm member being partly exposed to said fluid under pressure, coupling means joining said reservoir outlet with said valve, and duct means joining said coupling with said actuator so that said coupling receives said fluid under pressure,

VOL 1147 ISS 4 FE 23 1993 UMI

and a check valve disposed between said duct means and said coupling means preventing flow from said coupling means in a reverse direction towards said actuator.

5,188,185
DRY SPRINKLER
James W. Mears, Warwick, R.I., assignor to Grinnell Corporation, Exeter, N.H.
Filed Jun. 19, 1991, Ser. No. 717,640
Int. Cl.[5] A62C *37/09*
U.S. Cl. 169—37 **15 Claims**



1. A dry sprinkler for mounting on a piping system in a fire protection installation comprising

an outer tube structure having an inlet end with an inlet opening, an outlet end having an outlet opening, and a tube axis that passes through said inlet opening and along said tube structure,

said tube structure including an elongated tube between said inlet opening and outlet opening

a connecting structure that is mounted for movement along said tube axis within said tube structure,

a thermally responsive component supported by said tube structure at said outlet end and supporting said connecting structure under normal temperature conditions and releasing said connecting structure during abnormal temperature conditions to permit it to move,

a seal member that is located within said tube structure and is caused by said connecting structure to seal said inlet opening under normal temperature conditions when said connecting structure is supported by said thermally responsive component,

coupling means for attaching said seal member to said connecting structure and for facilitating movement of said seal member with respect to said connecting structure when said connecting structure moves along said axis,

said seal member being constrained to move away from said tube axis towards said outer tube structure on one side of axis when said connecting structure is released and moves along said tube axis in order to provide a relatively large unobstructed flow area to permit passage of foreign matter on the opposite side of said axis.

5,188,186
BARRICADE FOR ISOLATING OPEN AREAS FROM SPREADING FIRE OR SMOKE
Dale K. Nash, 970 W. 3925 North, Pleasant View, Utah 84414
Filed Nov. 16, 1990, Ser. No. 614,257
Int. Cl.[5] A62C *2/10, 2/24, 2/18*
U.S. Cl. 169—48 **16 Claims**

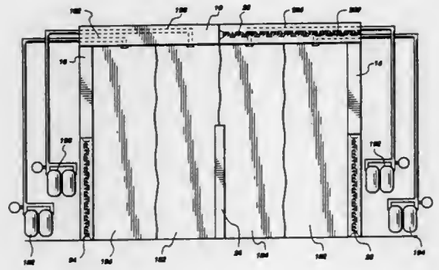
1. An apparatus for isolating portions of a confined open area from other portions of such area, said open area being confined by a roof, side walls and a floor comprising:

a substantially horizontal hollow housing, said hollow housing having a first end and a second end;

a first, substantially vertical brace member having an upper end connected to said first end of said horizontal hollow housing and a lower end supported by the floor;

a second substantially vertical brace member having an upper end connected to said second end of said horizontal hollow housing and a lower end supported by said floor, said horizontal hollow housing, first, and second vertical brace members forming a structural frame which circumscribes an opening therebetween;

an expandable hollow curtain attached and positioned proximate to said horizontal hollow housing, said expandable hollow curtain being structured to block completely said frame opening when said expandable hollow curtain is deployed and in an expanded condition;



conduit structure including a trough housed within said horizontal hollow housing and a hose having at least one nozzle associated therewith, said conduit being in fluid communication with said expandable hollow curtain;

container means for containing flowable material for expanding said expandable hollow curtain, said container means being in communication with said expandable hollow curtain; and

activating means connected to said container means for causing said container means to release said flowable material for expanding said expandable hollow curtain, said activating means being activated by an appropriate stimulus.

5,188,187
ELECTRICAL GROUNDING ROD DRIVING BIT
James O. Mumper, Tiffin, Ohio, assignor to E & J Demark, Inc., Wauseon, Ohio
Filed Oct. 9, 1991, Ser. No. 754,456
Int. Cl.[5] B25D *1/00, 1/02*
U.S. Cl. 173—128 **2 Claims**

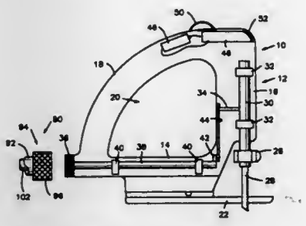
1. An electrical grounding rod driving tool to drive a grounding rod for use with an externally powered hammer comprising a first shaft portion for insertion into a tool receiving chuck of said hammer, a stop collar capable of cooperating with said chuck to retain said shaft portion in said chuck after

its insertion therein and a base portion having an elongated inwardly extending conical bore with a truncated interior



terminus which is capped with a concave surface in tangential contact with said truncated terminus.

5,188,188
LIGHTWEIGHT POWER TOOLS
Suzanne P. Mars, 23649 Duffield Rd., Shaker Hts., Ohio 44122
Filed Apr. 16, 1990, Ser. No. 509,572
Int. Cl.[5] B27B *19/09*
U.S. Cl. 173—171 **12 Claims**



5. A lightweight power tool, comprising:

a housing, the housing having a handle and an implement projecting from the housing;

a flexible power transmission line having two ends, the line being connected at the first end to the housing;

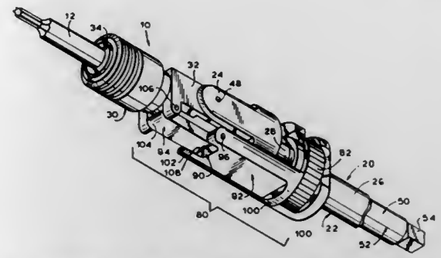
a power source to which the second end of the line is connected, the power source being spaced from the housing;

transmitter means included as part of the housing for sending an on-off signal to the power source, the transmitter means being in the form of an infrared signal generator;

receiving means included as part of the power source for receiving the on-off signal generated by the transmitter means; and

drive means disposed within the housing, the drive means being connected to the implement for moving the implement relative to the housing, the drive means being connected to the power transmission line for receiving drive power therefrom.

5,188,189
ADJUSTABLE UNIVERSAL DRIVER
Scott Hummel, Denville, N.J., assignor to Hummel Machine and Tool Company, Kearny, N.J.
Filed Sep. 11, 1991, Ser. No. 757,835
Int. Cl.[5] B25B *23/00*
U.S. Cl. 173—213 **12 Claims**



1. An adjustable universal driver useful in transmitting rotary motion useful for driving screws and drilling holes, comprising:

(A) a sleeve unit including:

(i) a hollow grip sleeve having a linking end and a free end,

(ii) a hollow nose sleeve having a linking end and a free end, and

(iii) sleeve linkage means connecting said linking ends of said grip sleeve and said nose sleeve to permit pivoting of one of said sleeve relative to the other of said sleeves about a transverse axis of said sleeve linkage means;

(B) a drive shaft unit rotatable relative to said sleeve unit, including:

(i) a grip shaft extending at least partially through said grip sleeve and being rotatable relative thereto, said grip shaft defining a driving end adapted to be rotated and a driven end,

(ii) a nose shaft extending at least partially through said nose sleeve and being rotatable relative thereto, said nose shaft defining a driving end and a driven end, and

(iii) a single universal joint operatively connecting said driven end of said grip shaft and said driving end of said nose shaft for rotation as a drive shaft unit relative to said sleeve unit; and

(C) means for adjusting and retaining the angle formed by said nose sleeve and nose shaft relative to said grip sleeve and grip shaft, said adjusting and retaining means including a rotatable member for actuating the adjusting of the angle by rotation of said rotatable member.

5,188,190
METHOD FOR OBTAINING CORES FROM A PRODUCING WELL
Eric W. Skaalure, Anchorage, Ak., assignor to Atlantic Richfield Company, Los Angeles, Calif.
Filed Aug. 30, 1991, Ser. No. 752,308
Int. Cl.[5] E21B *7/06, 25/16*
U.S. Cl. 175—58 **6 Claims**

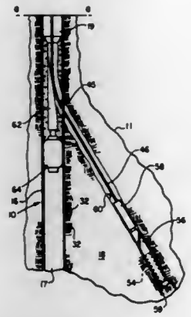
1. A method of acquiring a core sample from an earth formation through a well, said well having a wellhead, a tubing string, and means for injection a length of tubing into the well through said tubing string, said method comprising the steps of:

providing said length of tubing with core acquisition means connected thereto, inserting said core acquisition means and said length of tubing into said well through said tubing string and drilling into said formation with said core acquisition means to obtain a core sample from said formation;

reducing the pressure in the wellbore in the vicinity of the

VOL 1147 ISS 4 FEB 23 1993 UMI

point of entry of said core acquisition means into said formation below the nominal formation pressure so as to minimize the invasion of fluids into said core sample during the acquisition thereof; and



withdrawing said core acquisition means and said core sample from said well.

5,188,191

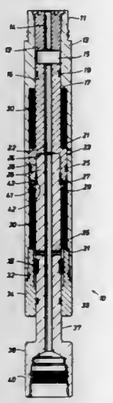
SHOCK ISOLATION SUB FOR USE WITH DOWNHOLE EXPLOSIVE ACTUATED TOOLS

Martin L. Tomek, Houston, Tex., assignor to Halliburton Logging Services, Inc., Houston, Tex.

Filed Dec. 9, 1991, Ser. No. 803,881

Int. Cl.[5] E21B *17/07*

U.S. Cl. 175—321 **18 Claims**



1. A shock absorber for use serially with an oil tool assembly to protect the oil tool against shock waves in the well borehole comprising:

(a) an elongate outer mandrel;

(b) an elongate inner mandrel moveably positioned in the upper end of said outer mandrel and having a first cross sectional area;

(c) an elongate inner mandrel moveably positioned in the lower end of said outer mandrel and having a second cross sectional area;

(d) separate upper and lower shock absorbing means formed of means for absorbing shock waves, said shock absorbing means being deployed between said upper and lower inner mandrels and said outer mandrel to enable shock waves to be absorbed during propagation along the well borehole, and said shock absorbing means has a third cross sectional area, said third cross sectional area equaling the sum of said first and second cross sectional areas to enable maintenance of a pressure balance across said shock absorber.

5,188,192

MECHANISM FOR VARYING AN INCLINATION ANGLE OF THE STEERING WHEEL RELATIVE OF THE VEHICLE

Franco Sbarro, Les Tuileries-de- Grandson, Switzerland, assignor to SM Sbarro Mottas Engineering S.A., Switzerland

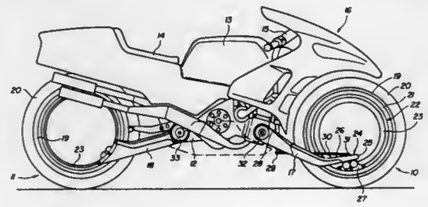
PCT No. PCT/CH90/00018, § 371 Date Sep. 28, 1990, § 102(e) Date Sep. 28, 1990, PCT Pub. No. WO90/08687, PCT Pub. Date Aug. 9, 1990

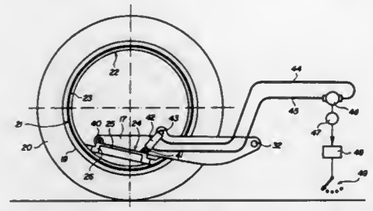
PCT Filed Jan. 29, 1990, Ser. No. 582,976

Claims priority, application France, Jan. 30, 1989, 89 01323

Int. Cl.[5] B62K *21/00*

U.S. Cl. 180—219 **8 Claims**





1. A vehicle for traveling on a desired road surface, said vehicle having a base structure and comprising at least two wheels with at least one of said at least two wheels being a steering wheel, each of said at least two wheels comprising an inner portion connected to said base structure and a peripheral portion concentric with and rotating about said inner portion, each said peripheral portion supporting means for engaging the road surface upon which the vehicle will travel, said inner portion and said peripheral portion of each wheel being interconnected with one another by a first ring shaped bearing comprising an interior annular element forming said inner portion, and an exterior annular element concentric with said interior annular element and connected with said peripheral portion, and said interior annular element of each of said at least two wheels being connected to said base structure of the vehicle at at least one connection point which is off-center of the wheel;

wherein a second bearing connects said steering wheel to said base structure at the off-center connection point, said second bearing is disposed in a plane substantially perpendicular to a plane defined by said first bearing and comprises an interior element and an exterior element, one of said interior and said exterior elements of said second bearing is connected to said interior annular element of said first bearing and the other of said interior and said exterior elements of said second bearing is ad connected to said base structure of the vehicle via a pivot axis which is the substantially horizontal and transverse of said base structure, and means for causing said second bearing to pivot about said pivot axis so as to vary inclination of said second bearing, during vehicle use, relative to the road surfaces.

5,188,193

DRIVE ARRANGEMENT FOR EARTH MOVING MACHINES

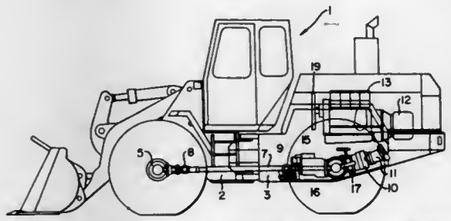
Klaus Schroeder, Kirchdorf/Iller, Fed. Rep. of Germany, assignor to Liebherr-Werk Bischofshofen Ges.m.b.H., Bischofshofen, Austria

Continuation of Ser. No. 504,319, Apr. 3, 1990, abandoned. This application Aug. 1, 1991, Ser. No. 739,793

Claims priority, application Fed. Rep. of Germany, Apr. 3, 1989, 3910748

Int. Cl.[5] B60K *17/06, 17/356;* E02F *9/20*

U.S. Cl. 180—242 **14 Claims**



1. In an improved drive arrangement for an earth moving machine having front and rear wheel driving axles provided with differentials having universal joints which are connected together by a universal joint shaft, a brake system, a steering system, an internal combustion engine having a fluid power pump which is driven by said engine, the improvement comprising:

a controlled hydrostatic motor connected to said universal joint shaft.

said pump connected to said controlled hydrostatic motor,

a drive shaft connected between said pump and said universal joint shaft.

5,188,194

DRIVE ASSEMBLY FOR A FOUR WHEEL DRIVE VEHICLE

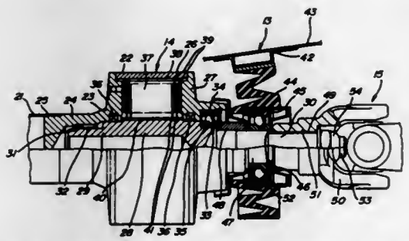
Christian Gasch, Lohmar, Fed. Rep. of Germany, assignor to Viscodrive GmbH, Lohmar, Fed. Rep. of Germany

Filed May 14, 1991, Ser. No. 700,528

Claims priority, application Fed. Rep. of Germany, May 15, 1990, 4015552

Int. Cl.[5] B60K *17/344;* F16C *3/00*

U.S. Cl. 180—248 **15 Claims**



1. A drive assembly for driving the wheels of a four wheel drive vehicle, comprising:

a propeller shaft connecting a drive of permanently driven wheels with an input of an intermediate differential, a viscous coupling having a coupling housing, coupling hub, and coupling plates arranged in an inner space formed between the coupling housing and hub, said plates non-rotatingly connected in a desired sequence to one of the coupling housing and hub and a viscous medium at least partially filling the remaining inner space;

first joints arranged at ends of said propeller shaft for connecting said shaft to the drive and the input of the intermediate differential;

said propeller shaft including several propeller shaft portions connected to each other via a second joint;

an intermediate bearing supporting the propeller shaft on a floor assembly of the vehicle, said bearing having two ends and being arranged adjacent said second joint connecting two of the propeller shaft portions;

said viscous coupling being arranged adjacent the end of the intermediate bearing facing away from the second joint, one of the coupling housing and hub being provided with a journal supported in said intermediate bearing, said journal projecting in the direction of the second joint subsequently arranged at the other end of the intermediate bearing, said second joint being non-rotatingly attached to the projecting journal of said one of the coupling housing and hub and the other coupling housing and hub being non-rotatingly connected to the shaft portion, and said other coupling housing and hub arranged at the end of the intermediate bearing facing away from the second joint immediately adjacent the intermediate bearing.

5,188,195

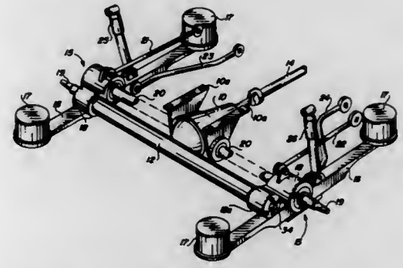
VEHICLE DRIVING WHEEL SUSPENSION SYSTEM

Norman E. Haustein, 2329 Longboat Dr., Naples, Fla. 33942

Filed Nov. 12, 1991, Ser. No. 790,539

Int. Cl.[5] B60K *17/04;* B60G *11/46, 11/34*

U.S. Cl. 180—353 **2 Claims**



1. A driving wheel suspension system for a vehicle, the vehicle having a body with a floor, a pair of spaced apart driving wheels, a differential located beneath the body's floor and supported by the body midway between the driving wheels, a rotatable drive shaft one end of which is connected to the differential, and a pair of rotatable live axles each having one of its ends connected to the differential, the driving wheel suspension system comprising

a pair of wheel support assemblies each including a leaf spring lying parallel to the vehicle's drive shaft, springs mounted on each end of the leaf spring and connected to the vehicle's body, and a wheel spindle within a housing mounted on the center of the leaf spring,

the opposite ends of the pair of live axles each being connected to the wheel spindle within the wheel spindle housing of a wheel support assembly, and

a straight dead axle whose opposite ends are connected to one of the wheel spindle housings by a pair of spaced apart conical bearings journalled in the wheel spindle housing at the end of the straight dead axle,

whereby the conical bearings supporting the dead axle prevent torsional loads being imposed on the dead axle caused by vertical displacements of the pair of spaced apart driving wheels as the vehicle is driven over uneven terrain.

VOL 1147 ISS 4 FE 23 1993 UMI

5,188,196
SYSTEM FOR RECOVERING THE LUBRICATING OIL FOR THE BEARINGS OF A CENTRIFUGAL COMPRESSOR WITH LABYRINTH SEALS

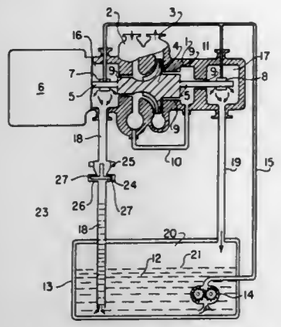
Vasco Mezzedimi, Poggibonsi, Italy, assignor to Nuovopignone-Industrie Meccaniche e Fonderia SpA, Florence, Italy

Filed Jan. 22, 1992, Ser. No. 823,868

Claims priority, application Italy, Jan. 29, 1991, MI 91 A-000210

Int. Cl.[5] F01M *1/00*

U.S. Cl. 184—6.16 **3 Claims**



1. A system for recovering the lubricating oil for the bearings of a centrifugal compressor having a suction side chamber and a delivery side chamber with respective sets of lubricated bearings therein with labyrinth seals, comprising a pump, a sealed collection vessel for accommodating a free oil surface therein and for feeding the lubricating oil under pressure into the chamber with the bearing situated on the suction side of the compressor and into the chamber with the bearing situated on the delivery side of the compressor, at least two separate discharge pipes, one of said discharge pipes communicating with the chamber on the delivery side of the compressor and said sealed collection chamber above said free oil surface to enable gravity flow thereto of the lubricating oil from the delivery side compressor chamber, another of said discharge pipes communicating with the chamber on the suction side of the compressor and said sealed collection vessel to further establish a vapor barrier between said free oil surface and the suction side chamber that stops gas and oil vapor flow from the suction side bearing chamber to the compressor, and a duct for establishing compressor suction pressure at the delivery side of the compressor to prevent oil flow into the suction side thereof to establish a bearing lubricating oil recovery system that is independent of and without communication with the environment external to the system.

5,188,197
CENTRAL-LUBRICATION ASSEMBLY

Johannes Meuer; Dieter Todtenhaupt, and Dieter Schönherr, all of Berlin, Fed. Rep. of Germany, assignors to Willy Vogel AG, Berlin, Fed. Rep. of Germany

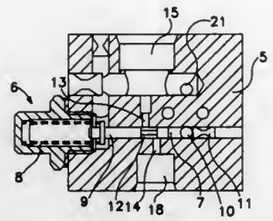
Filed Jan. 9, 1992, Ser. No. 819,337

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1991, 4100723

Int. Cl.[5] F16N *27/00*

U.S. Cl. 184—7.4 **2 Claims**

1. A single-line central-lubrication assembly for vehicles, with a lubricant reservoir, with a lubricant pump, an inlet side of said lubricant pump being connected to said lubricant reservoir and an outlet side of said lubricant pump being connected to at least one lubricant distributor, and with a valve for the pressure relief of the lubricant distributor and for limiting the pressure built up by the lubricant pump, said valve having a piston which is displaceable counter to the effect of a return spring in a bore of a housing, wherein the bore (7) is connected via a first channel (10) to the lubricant pump (1) between the piston (9) and a closed end located opposite to said piston (9), the piston being provided with a single annular groove (12) which, in a first position of the piston, directly connects the lubricant reservoir (2) via a second channel (13) and a third channel (14) with the lubricant distributor (3) when the lubricant pump (1) is not working, and wherein in a second position of the piston (9) due to the pressure of the lubricant pumped by



the pump (1) the direct connection between the lubricant reservoir (2) and the distributor (3) is cut off while at the same time the lubricant reservoir (2) is connected to the distributor (3) via the pump (1) and said first and third channels (10, 14), and wherein in a third position of the piston (9) due to an enlarged pressure of the lubricant pump by the pump (1) said first, second and third channels (10, 13, 14) are connected to the bore (7) between its closed end and the piston (9).

5,188,198
POWER SPRING DRIVE APPARATUS

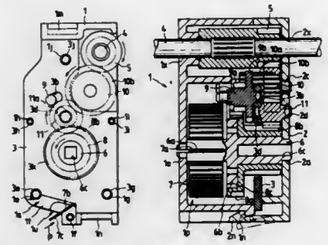
Kenji Muramatsu, and Hiroyuki Iwashita, both of Nagano, Japan, assignors to K.K. Sankyo Seiki Seisakusho, Nagano, Japan

Continuation of Ser. No. 537,716, Jun. 14, 1990, abandoned. This application Jan. 28, 1992, Ser. No. 825,835

Claims priority, application Japan, Jun. 16, 1989, 1-70447

Int. Cl.[5] F03G *1/00*; A63H *29/00*

U.S. Cl. 185—39 **3 Claims**



1. A power spring drive apparatus comprising:

(a) a synthetic resin case having a first case and a second case fastened together, said resin case defining:

(i) a power spring housing section;

(ii) a power spring pull up window hole formed by opposed sections of said first and second cases when said first and second cases are fastened together, said window hole having a power spring fastening section, wherein said power spring fastening section includes first and second fastening stage sections;

(b) fastening pin and fastening hole means in the vicinity of said window hole for connecting together said first and second cases such that a free end of one of said cases is in contact with a wall surface of the other of said cases so as to absorb a portion of force applied to said power spring fastening section, wherein said first and second fastening stage sections are connected together by said fastening pin and fastening hole means;

(c) an output shaft disposed within said resin case and extending outside said resin case;

(d) a power spring wind up shaft disposed in said resin case;

(e) a power spring located in said power spring housing section and having one end connected to said power spring wind up shaft;

(f) a wind up system one-way tension transfer means for transferring a rotating force of said output shaft to said power spring, via said power spring wind up shaft to wind up said power spring; and

(g) a releasing system one-way tension transfer means for transferring a rotating force of said power spring via said power spring wind up shaft to said output shaft;

(h) said wind up system one-way tension transfer means and said releasing system one-way tension transfer means being positioned in said resin case between said output shaft and said power spring wind-up shaft; and

(i) said power spring having a lug section and a neck section pulled through said window hole and fastened to said power spring fastening section, said lug section engaging each of said first and second fastening stage sections.

5,188,199
WAREHOUSING TRAVELING CRANE

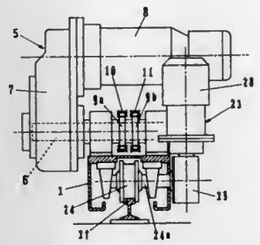
Yoji Shirai, Suita, Japan, assignor to Daifuku Co., Ltd., Osaka, Japan

Filed Nov. 13, 1991, Ser. No. 791,975

Claims priority, application Japan, May 13, 1991, 3-138241

Int. Cl.[5] B66B *7/02*

U.S. Cl. 187—95 **2 Claims**



1. A traveling crane, comprising an upper frame, a lower frame, and elongated guide post between said upper and lower frames, an elevating platform adapted to move up and down along said guide post, means for moving said elevating platform, and a load transfer device mounted on said elevating platform, the guide post being a hollow aluminum extrusion being formed with at least two integral grooves throughout its length, on opposite sides of the guide post and reinforcing means disposed within said guide post between the interior walls of said grooves, a guide roller attached to the edge of said elevating platform for rolling within said groove as said elevating platform moves up and down along said guide post, said means for moving including a drive chain attached to said elevating platform for suspending, raising, and lowering said platform, a motor, and means for transferring the rotation of the motor to move said chain, the chain being threaded through the interior of said hollow guide post.

5,188,200
DEVICE FOR OBTAINING THE OPERATING SYMMETRY OF A BICYCLE BRAKE

Domenico Modolo, Conegliano, Italy, assignor to Modolo Technologie Avanzate S.R.L., Treviso, Italy

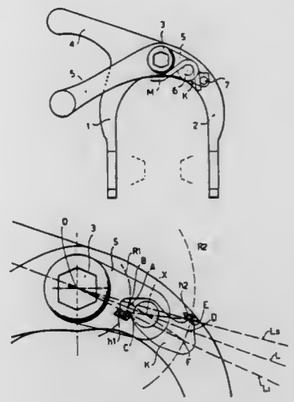
PCT No. PCT/IT90/00010, § 371 Date Aug. 2, 1991, § 102(e) Date Aug. 2, 1991, PCT Pub. No. WO90/09305, PCT Pub. Date Aug. 23, 1990

PCT Filed Feb. 6, 1990, Ser. No. 730,935

Claims priority, application Italy, Feb. 10, 1989, 19380 A/89

Int. Cl.[5] B62L *1/00, 1/12*

U.S. Cl. 188—24.11 **7 Claims**



1. Device suitable for generating the synchronism of actuation of the two calipers (1, 2) of a bicycle brake fulcrumed onto the bicycle frame by means of a pivot bolt (3), characterized in that said device is provided with a rocker lever (K) fulcrumed about a stud (6) integral with said brake pivot bolt (3), and urged by elastic means (M) to act, with respective points (C, E) diagonally opposite to each other relatively to the centre (X) of the fulcrum stud (6), against respective points (h1, h2) of the calipers (1, 2).

5,188,201
DISC BRAKE

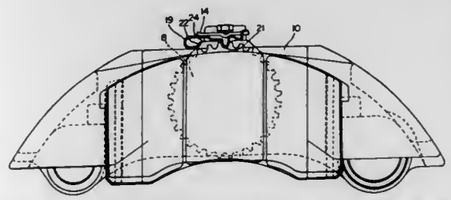
Jean-Claude Monteillet, Drancy, France, assignor to Bendix Europe Services Techniques, Drancy, France

Filed Jun. 19, 1990, Ser. No. 540,655

Claims priority, application France, Jul. 3, 1989, 89 08868

Int. Cl.[5] F16D *65/56, 65/52*

U.S. Cl. 188—71.9 **9 Claims**

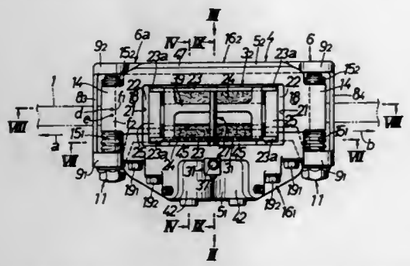


1. A disk brake comprising a rotary disc having an axis and a caliper straddling the disc, the caliper mounted on a stationary support so as to be movable, during operation, in one direction parallel to the axis of the disc, the caliper carrying two friction elements which are arranged on either side of the disc and of which a first bears on the caliper and a second bears, by way of a rigid counterplate, on a threaded pusher having threadedly connected with a device for the automatic

VOL 1147 ISS 4 FE 23 1993 UMI

compensation of friction element wear, the threaded pusher having a head interacting with a retention member which engages the head in order to prevent any rotation of said head, said head assuming the form of a notched wheel, and pre-stressed elastic means being fixed to the caliper in order to bias said friction elements and to force a projecting element of said retention member into interaction with at least one notch of said wheel.

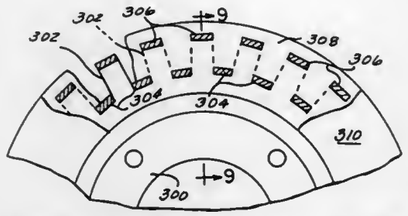
5,188,202
REACTION FORCE TYPE DISK BRAKE
Hideyuki Terashima, Nagano, Japan, assignor to Nissin Kogyo Kabushiki Kaisha, Nagano, Japan
Filed Apr. 19, 1991, Ser. No. 687,655
Claims priority, application Japan, Apr. 20, 1990, 2-42181[U]
Int. Cl.[5] F16D *65/20*
U.S. Cl. 188—73.45 **12 Claims**



1. A reaction force type disk brake comprising a brake disk, a first and a second friction pad which are opposed to opposite faces of said brake disk, a brake caliper including a first and a second clamping arm for clamping said friction pads, a gapless frame-shaped stationary bracket for supporting opposite ends of said brake caliper in a circumferential direction of the brake disk through respective slide pins outside an outer periphery of said brake disk so as to permit the brake caliper to slide in a direction of a rotational axis of said brake disk, an urging member mounted on said first clamping arm for urging said first friction pad against said brake disk, an urging center of the urging member being at a central location of said first friction pad in the circumferential direction of the brake disk, a braking-torque supporting portion provided on said bracket for supporting a braking torque of said first friction pad, and a braking-torque supporting portion provided on said brake caliper for supporting a braking torque of said second friction pad, the urging center and a rotational center of the brake disk being set on a first straight line, said bracket being fixed to a fixing member at a pair of fixed points on both sides of the first straight line, the fixed points being located on a second straight line intersecting a first straight line at a location closer to the rotational center than the urging center on a face side of said brake disk, wherein a pair of slide pin supporting points of said bracket are located in a region extending from said second straight line to a third straight line which passes said urging center in parallel with said second straight line.

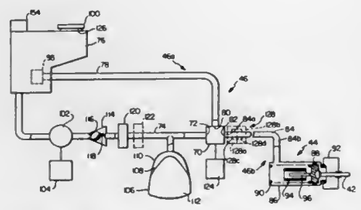
5,188,203
WEIGHT REDUCED BRAKE ROTOR
Klaus Winter, Troy, Mich., assignor to ITT Corporation, New York, N.Y.
Filed Sep. 26, 1990, Ser. No. 588,229
Int. Cl.[5] F16D *65/12, 65/847*
U.S. Cl. 188—218 XL **16 Claims**

1. In a disc brake rotor including a pair of plate like annular braking members lying in spaced parallel general planes and a plurality of web like fins fixed to and extending between said members to fixedly support said members in axially spaced relationship to each other on a common axis normal to said general planes;
the improvement wherein said plurality of fins comprises only a first group and a second group of fins, the first group of fins uniformly circumferentially spaced from each other along a first circle at a first radius from said common axis, the second group of fins uniformly circumferentially spaced from each other along a second circle at



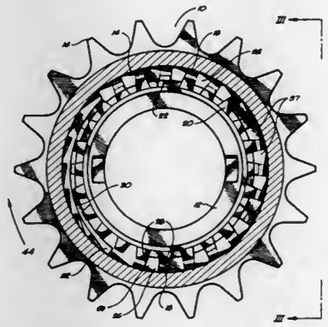
a second radius from said common axis greater than said first radius, each fin of said first and second groups of fins having a cross-section in a plane normal to said common axis of a substantially rectangular configuration elongated tangentially with respect to said common axis, each fin of said first group of fins symmetrically arranged on opposite sides of a radial line bisecting a space between two adjacent fins of said second group of fins.

5,188,204
PRE-FILLED POWER HYDRAULIC SYSTEM
David R. Arrowsmith, Leamington; David Parsons, and Alastair J. Young, both of Kenilworth, all of United Kingdom, assignors to Automotive Products plc, England
PCT No. PCT/GB89/00092, § 371 Date Sep. 13, 1990, § 102(e) Date Sep. 13, 1990, PCT Pub. No. WO89/08786, PCT Pub. Date Sep. 21, 1989
PCT Filed Feb. 1, 1989, Ser. No. 753,148
Claims priority, application United Kingdom, Mar. 17, 1988, 8806292
Int. Cl.[5] F15B *21/00*; F16D *25/12*; B60K *17/10*
U.S. Cl. 192—3.58 **9 Claims**



1. A motor vehicle power hydraulic system, said system comprising: a reservoir of hydraulic fluid; and accumulator; a pump; a hydraulic actuator; a control valve having first, second and third inlet ports, the first inlet port connected by a first conduit means to the reservoir whereby hyarulid fluid may be supplied directly to the control valve and returned therefrom to the reservoir, the second inelt port being connected to the reservoir by a second conduit means including therein the accumulator for the storing therein of hydraulic fluid under pressure and supplying hydraulic fluid to the control valve and the pup which delivers hydraulic fluid from the reservoir to the accumulator and the control valve, and the third inlet port is connected to the hydraulic actuator by piping for conveying hydraulic fluid between the actuator and the third inlet port of the control valve; and a coupling having a first part connected to said third inlet port and a second part connected to said actuator the arrangement being such that when the first and second parts of the coupling are connected together they define a fluid path through said connected coupling parts which is opened so that the control valve can communicate with the actuator through the piping and the coupling,
wherein the system is assembled and filled with hydraulic fluid which is retained within the system during at least one of subsequent transportation and storage prior to the filled system being mounted in the vehicle.

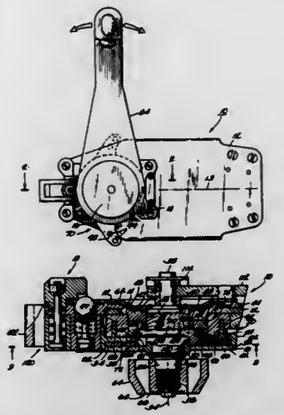
5,188,205
ONE WAY CLUTCH
Stefan Karp, 37 Glenfield Rd., Luton, Beds, England LU3 2HZ , and Stuart C. Burgess, Flat 34, Refectory Hall, Runnymede Campus, Coopers Hill, Egham, Surrey, England TW20 0JZ
PCT No. PCT/GB89/00661, § 371 Date Jan. 28, 1991, § 102(e) Date Jan. 28, 1991, PCT Pub. No. WO90/00688, PCT Pub. Date Jan. 25, 1990
PCT Filed Jun. 13, 1989, Ser. No. 635,583
Claims priority, application United Kingdom, Jul. 5, 1988, 8815929
Int. Cl.[5] F16D *41/32*
U.S. Cl. 192—46 **6 Claims**



6. A ratchet assembly comprising:
an outer wheel having ratchet teeth on an inner surface;
an inner wheel coaxial with the outer wheel;
two rows of radially extending teeth on the other circumference of the inner wheel; and
a ring disposed between the two rows and having a plurality of spaced-apart, wedge-shaped pawls extending axially from the ring, each pawl between adjacent teeth in a rows of teeth.

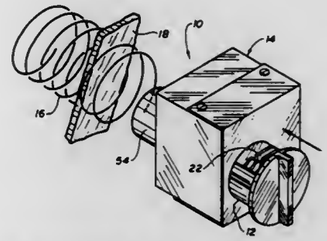
5,188,206
SINGLE LEVER CONTROL
Anthony P. Prince, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.
Continuation-in-part of Ser. No. 573,368, Aug. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 272,544, Nov. 17, 1988, Pat. No. 4,951,520. This application Jul. 29, 1991, Ser. No. 737,388
Int. Cl.[5] B60K *41/00*; F16D *23/00*; G05G *11/00*
U.S. Cl. 192—0.098 **60 Claims**

1. A single lever control for operating a throttle and a clutch, said control comprising a housing, a shaft pivotally supported by said housing, shift means operably connected to said shaft, adapted to actuate the clutch and including a shift actuating member pivotably supported by said housing to effect clutch actuation relative to a neutral position, a throttle actuating member operably connected to the shaft and adapted to be operably connected to the throttle, warm-up means for permitting operation of said throttle means without operation of said shift means and including a warm-up member movable transversely of said shaft between a first position and a second position, and releasable locking means operable selectively and alternatively for affording rotation of said shift actuating member relative to said warm-up member when said warm-up member is in said first position to permit clutch actuation and



for preventing rotation of said shift actuating member relative to said neutral position when said warm-up member is not in said first position.

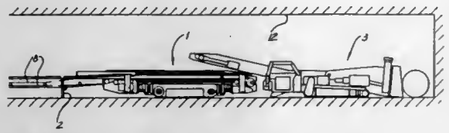
5,188,207
VENDING MACHINE COIN MECHANISM
Arlan J. Hoffman, 5137 Coldbrook Dr., Mantua, Ohio 44255
Filed Dec. 20, 1991, Ser. No. 811,718
Int. Cl.[5] G07F *5/04, 11/36*
U.S. Cl. 194—236 **17 Claims**



1. A coin mechanism for a vending machine comprising: a rotatable coin receiver cylinder, movable along its longitudinal axis and containing slots for receiving predetermined purchase coins;
a housing having a cylindrical passageway therein adapted to receive said cylinder and allow it to be moved from a first position where said slots are located outside said housing to a second position where said cylinder is substantially fully inserted into said housing; and
blocking means within said housing for preventing the rotation of said cylinder until the proper purchase coins have been placed in said slots,
wherein only after said cylinder has been substantially fully inserted into said housing with the predetermined coins therein can said cylinder be rotated, said blocking means being unblocked by said predetermined coins during rotation of said cylinder, and the rotation of said cylinder causing the operation of product release means, releasing product from said machine, and causing said predetermined coins to be released from said mechanism into a secure area.

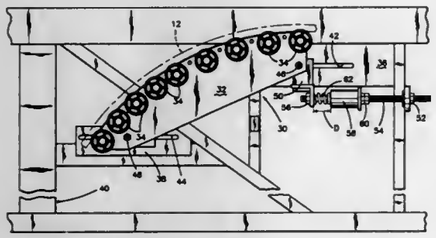
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5,188,208
BELT CONVEYOR ADVANCING AND/OR RETREATING RETURN END
Kevin Hall, Wollongong, Australia, assignor to Meco Australia Pty Limited, Australia
Filed Feb. 10, 1992, Ser. No. 843,989
Claims priority, application Australia, Feb. 13, 1991, PK4584
Int. Cl.[5] B65G *65/02*
U.S. Cl. 198—312 **9 Claims**



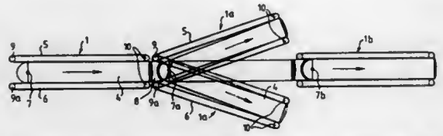
1. A belt conveyor advancing and/or retrating return end comprising:
a crawler frame;
ground engaging traction means mounted to the crawler frame;
a main frame supported by the crawler frame, with the main frame having a conveyor end support for supporting a conveyor end on the main frame: and
a pair of slewing means, one located at each longitudinal opposing end of the crawler frame and connecting the crawler frame to the main frame to effect lateral/pivotal movement of the main frame relative to the crawler frame in a nominally horizontal plane.

5,188,209
HANDRAIL ROLLER BOW ADJUSTMENT
Gerald E. Johnson, Farmington; James A. Rivera, Bristol, both of Conn., and Arthur McClement, Bloomington, Ind., assignors to Otis Elevator Company, Farmington, Conn.
Filed Jul. 21, 1992, Ser. No. 918,303
Int. Cl.[5] B65G *15/00*
U.S. Cl. 198—336 **7 Claims**



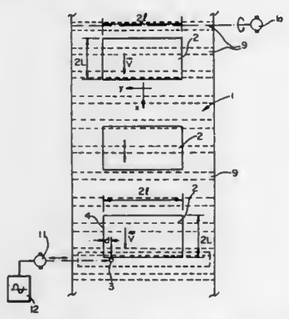
1. An escalator or moving walkway assembly comprising:
a) a truss;
b) means mounted on said truss for defining a closed loop path of travel for a moving handrail;
c) a handrail mounted on said means for defining;
d) handrail tensioning means mounted on said truss and engaging said handrail;
e) first adjustment means for moving said tensioning means against said handrail so as to remove substantially all handrail slack from the closed loop, said first adjustment means forming a first sensible indication of a slack-free handrail condition; and
f) complementary adjustment means for moving said tensioning means to a preferred handrail-slackened position, said complementary adjustment means being operable to form a second sensible indication of a preferred handrail slackened condition wherein optimal friction is created by movement of said handrail along said closed loop path of travel.

5,188,210
MODULAR CONVEYOR
Siegmar Malow, Constance, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs GmbH, Frankfurt am Main, Fed. Rep. of Germany
PCT No. PCT/EP90/01508, § 371 Date May 15, 1991, § 102(e) Date May 15, 1991, PCT Pub. No. WO91/04211, PCT Pub. Date Apr. 4, 1991
PCT Filed Sep. 7, 1990, Ser. No. 688,955
Claims priority, application Fed. Rep. of Germany, Sep. 15, 1989, 3930963
Int. Cl.[5] B65G *47/46*
U.S. Cl. 198—369 **16 Claims**



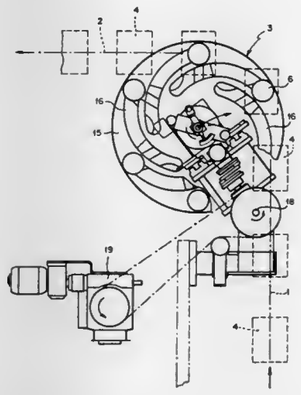
1. A modular conveyor arrangement comprising: at least two aligned conveyor modules attached to a base frame, with each said conveyor module including a rack, a floor conveyor means mounted on said rack and extending from a front to a rear thereof, means for mounting said rack on said base frame for movement relative to said frame and the other conveyor modules for discharging goods out of the respective conveyor module, and two lateral guide conveyor means normally extending along the respective lateral edges of said floor conveyor means and mounted for rotation about a front axis disposed on said rack adjacent a front end thereof and about a fixed rear axis; and, means for forming a continuous conveying path between adjacent aligned conveyor modules including an intermediate segment disposed between adjacent modules and means, disposed on said racks of adjacent said modules, for abutting said intermediate member while permitting said movement.

5,188,211
APPARATUS FOR ORIENTATING LOAD ON A LINEAR CONVEYOR
Jean-Marc Ringot, Carnin, and Henri Sauvaige, Lille, both of France, assignors to Cartonneries de la Lys-Ondulys, Lomme, France
Filed Sep. 4, 1991, Ser. No. 754,603
Int. Cl.[5] B65G *47/24*
U.S. Cl. 198—411 **10 Claims**



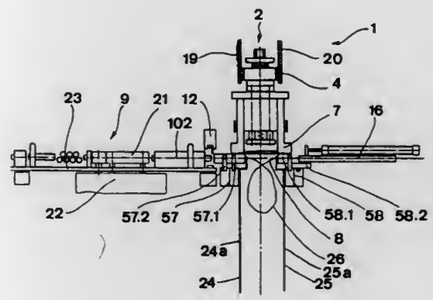
1. Apparatus for orienting loads on a linear conveyor comprising:
(a) a motorized linear conveyor on which loads to be oriented are adapted to be positioned, said motorized linear conveyor being capable of creating a linear advance movement of the loads on the conveyor;
(b) at least one movable stop capable of being transversely displaced with respect to linear advance movement of the conveyor, said at least one movable stop projecting through said motorized linear conveyor; and
(c) means for controlling the transverse displacement of said at least one movable stop in order to produce a rotational movement of the load, said at least one movable stop being controlled to follow the rotational movement of the load as the load follows the linear advance movement of the conveyor, and to contact the load at substantially a fixed point.

5,188,212
ROTATING TRANSPORT APPARATUS
Klaus Munsch, Neuwied, Fed. Rep. of Germany, assignor to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei KG, Neuwied, Fed. Rep. of Germany
Filed Apr. 14, 1992, Ser. No. 868,628
Claims priority, application Fed. Rep. of Germany, May 27, 1991, 4117296
Int. Cl.[5] B65G *47/26*
U.S. Cl. 198—457 **11 Claims**



11. A rotating transport apparatus for transporting objects from a first conveyor to a second conveyor, each conveyor having a longitudinally extending central axis, comprising:
a swivel arm with an axis;
a rotary plate rotatably mounted on said swivel arm axis and extending at least partially over the first and second conveyors;
drive means for rotating said rotary plate; and
a plurality of carriers fixably mounted beneath said rotary plate in regular intervals along the periphery of said rotary plate, said plurality of carriers having gripping means for consecutively gripping the objects conveyed by the first conveyor, transporting the objects and placing the objects on the second conveyor, wherein the operating radius between the center of said rotary plate and each of said plurality of carriers is variable.

5,188,213
APPARATUS FOR TRANSPORTING CABLE LENGTHS OR SECTIONS
Max Koch, Meggen, Switzerland, assignor to TTC Technology Trading Company, Meggen, Switzerland
Filed Oct. 22, 1991, Ser. No. 780,483
Claims priority, application Switzerland, Oct. 29, 1990, 3436/90
Int. Cl.[5] B65G *25/00*
U.S. Cl. 198—470.1 **11 Claims**



1. The apparatus for transporting cable sections in a direction substantially perpendicular to the lengthwise axis of each of the cable sections, comprising:
a machine frame;
at least one intermittently driven revolving endless transport element defining a single endless transport element having deflection locations and an outer periphery arranged upon the machine frame;
a plurality of work stations for processing the cable sections arranged along the single endless transport element;
double grippers arranged behind one another at substantially the same spacing from one another at the region of the outer periphery of the transport element;
means for rotatably mounting each of the double grippers to the single endless transport element;
each of the double grippers being movable from an open position into a closed position;
spring means for closing the double grippers so as to assume the closed position in order to grasp both oppositely situated ends of an associated cable section at the region of one deflection location of the transport element;
a cable feed device for delivering the cable sections to the double grippers of the single endless transport element;
a cable processing device arranged at the region of another one of the deflection locations;
the double grippers retaining the cable sections, moving the retained cable sections past the work stations, and at the region of the other deflection location of the transport element the double grippers transfer the previously grasped cable sections to the cable processing device during the intermittent revolving motion of the single endless transport element; and
spring means for selectively retaining each associated double gripper in a first work position or a second work position rotated through an angle of approximately 180° with respect to the first position where each cable end of a grasped cable section is retained in a plane which extends substantially parallel to a movement plane of the single endless transport element in a direction towards the cable work stations.

VOL 1147 ISS 4 FE 23 1993 UMI

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END SEAL FOR IDLER ROLLER

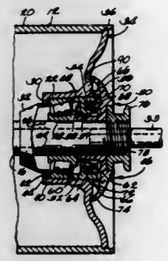
Russell H. C. Uttke, and Edward J. Carney, both of Greendale, Wis., assignors to Rexnord Corporation, Milwaukee, Wis.

Continuation of Ser. No. 433,420, Nov. 7, 1989, Pat. No. 4,972,939, and a continuation of Ser. No. 187,473, Apr. 28, 1988, abandoned. This application Sep. 21, 1990, Ser. No. 586,558

The portion of the term of this patent subsequent to Nov. 27, 2007, has been disclaimed.

Int. Cl.[5] B65G *39/00*

U.S. Cl. 198—501 **4 Claims**



1. An idler roller comprising:

a shaft having opposite ends;

a roller body surrounding the shaft and journaled for rotation around the shaft;

the roller body including an end disc having a central aperture, the end disc forming one end of the roller body, the end disc surrounding the shaft, and the end disc including an outer roller end surface, the outer roller end surface including an annular coined surface surrounding the shaft concentrically, and spaced radially outwardly from said shaft;

an outer seal member mounted on the shaft and the outer seal member including an outer peripheral edge, the outer peripheral edge of said outer seal member being positioned in closely spaced opposed relationship to said annular coined surface of the end disc and defining a narrow gap therebetween, and the outer seal including an inner end surface; and

an inner seal member mounted to said end disc in said central aperture and adapted to rotate with said roller body relative to the shaft, the inner seal member including an outer end surface positioned in closely adjacent facing relation to the inner end surface of the outer seal member;

said inner seal member being adapted to rotate relative to said outer seal member and said outer end surface and said inner end surface forming therebetween a labyrinth passageway extending from the interface between said outer peripheral edge and said annular coined surface to the interface between said inner seal member and the shaft.

5,188,215

APPARATUS FOR THE TRANSPORTATION OF GOODS TO BE CONVEYED

Wendelin Riezler, Mindelheim, Fed. Rep. of Germany, assignor to Grob Werke GmbH & Co. KG, Mindelheim, Fed. Rep. of Germany

Filed Feb. 13, 1992, Ser. No. 834,846

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1991, 4118778

Int. Cl.[5] B65G *13/06*

U.S. Cl. 198—781 **12 Claims**

1. An apparatus for the transportation of goods to be conveyed, comprising:

a frame;

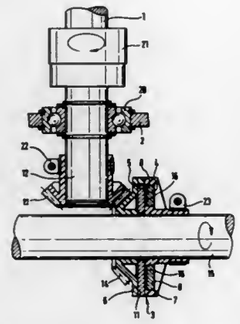
a plurality of roller shafts arranged in parallel to one another in said frame;

a common drive mechanism for driving said roller shafts; and

a respective friction clutch between the drive mechanism and each said individual roller shaft for transmitting drive from said drive mechanism to each said roller shaft;

and the friction clutch including:

a) first and second clutch elements, having opposing friction surfaces; and



b) a pressure device comprising at least one permanent magnet and a cooperating magnetically operating counterpart for urging the friction surfaces of the clutch elements against one another;

said magnetically cooperating counterpart being a permanent magnet, and said permanent magnets having like poles facing one another and arranged between an abutment and one of said clutch elements for urging said clutch element friction surfaces against one another.

5,188,216

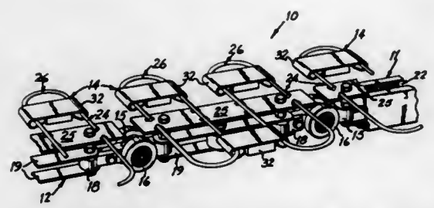
MAGNETIC GRID

Stephen R. Smith, 3531 Castlehill Way, Tucker, Ga. 30084, and Geri G. Walker, 58 Hampton Way, Carrollton, Ga. 30117

Filed Jul. 9, 1990, Ser. No. 549,734

Int. Cl.[5] B65G *15/46*

U.S. Cl. 198—803.6 **6 Claims**



1. A magnet unit adapted to be mounted on the support grid of a conveyor to support ferromagnetic dough receptacles thereon where such support grid includes at least one pair of spaced apart sections of non-magnetic support rod generally parallel to each other, said magnet unit including:

a non-magnetic housing sized to fit between the spaced apart sections of support rod;

a permanent magnet mounted in said housing; and,

a pair of non-magnetic, spaced apart clip means carried by said housing and adapted to encircle the sections of support rod to mount said magnet unit on said sections of support rod so that the ferromagnetic dough receptacles will be magnetically attracted to said magnet unit and thus to the support grid.

5,188,217

DEVICE FOR THE RECEIVING AND SYNCHRONIZED TRANSFERRING OF VARIOUS ARTICLES

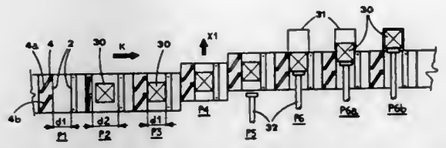
Righi Bruno, Bologna, Italy, assignor to O.A.M S.p.A, Bologna, Italy

Filed Feb. 4, 1992, Ser. No. 830,701

Claims priority, application Italy, Feb. 7, 1991, 000091 A/91

Int. Cl.[5] B65G *47/86*

U.S. Cl. 198—803.9 **5 Claims**



1. In a closed loop conveyor located between a single article dispensing machine and a packing machine said conveyor comprising two lateral chains connected with each other by a plurality of couples of transversal stems, each couple of stems supporting a gliding slide having a first roll running inside a first guide, so that said slide is made to translate in a direction normal to an advancement direction of said conveyor; a device for receiving and synchronized transferring various articles, this device comprising a unit for holding at least one article, said unit including at least one panel fastened to said slide, two walls, positioned in the upper part of said panel, with normal attitude in respect to said advancement direction of said conveyor, with at least one of these walls being mobile in accordance with said advancement direction, and means for regulating the mutual distance between said walls, said regulating means including:

a second guide bound to a fixed structure of said conveyor at a side of said first guide;

at least one first arm journaled with one end to said mobile wall and with the other end, fitted to a first pin, rotatably supported by said panel, said first pin passing through said panel so as to extend downwards with one end;

at least one first toothed sector fitted on said end of said first pin extending below from said panel;

a second toothed sector keyed onto a second pin rotatably fastened to internal surface of said panel, said second toothed sector engaging with said first toothed sector;

a second arm fixed to said second toothed sector, said second arm supporting a second roll engaging with said second guide;

elastic means acting on an end of said second arm opposite to said second roll.

5,188,218

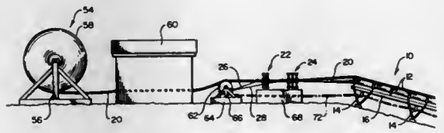
METHOD AND APPARATUS FOR INSTALLATION OF LARGE CONVEYOR BELTS

Larry J. Kuzik, 7576 Morrison Cr., Langley, B.C., Canada V3A 6Y3

Filed Feb. 4, 1992, Ser. No. 830,615

Int. Cl.[5] B65G *15/60*

U.S. Cl. 198—812 **23 Claims**



1. A method for deploying a belt on a conveyor belt system which extends down a slope, said method comprising the steps of:

positioning a run of said belt at an upper position along said slope;

engaging said run of said belt with controllable brake means, said controllable brake means being configured to permit selective adjustment of braking force which is exerted by said brake means on said run of said belt;

lowering said run of said belt along said conveyor belt system using the weight of said run, so that a leading end of said run advances from said upper position along said slope to a lower position along said slope; and

controlling the rate at which said run of said belt advances along said conveyor belt system by selectively adjusting said braking force which is exerted by said brake means.

14. An apparatus for deploying a run of belt on a conveyor belt system which extends down a slope, said apparatus comprising:

means for lowering said run of belt along said conveyor belt system using the weight of said run of belt;

controllable brake means for engaging said run of belt at an upper position along said slope, said brake means being configured to permit selective adjustment of braking force which is exerted thereby on said run of belt;

tension means for applying tension to a leading end of said run of belt at a lower position along said slope; and

means for selectively adjusting said braking force which is exerted by said brake means so as to control the rate at which said run of belt advances down said slope along said conveyor belt system.

5,188,219

HORIZONTAL ROTARY TRANSFER APPARATUS

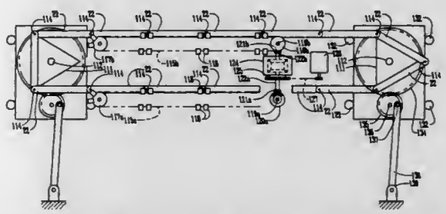
Takayasu Mitsumoto, 1-26-5 Take, Yokosukashi, Kanagawaken, Japan

Division of Ser. No. 763,176, Sep. 20, 1991, and a continuation-in-part of Ser. No. 500,540, Mar. 28, 1990, abandoned. This application Jun. 10, 1992, Ser. No. 896,572

Claims priority, application Japan, Mar. 31, 1989, 1-36386

Int. Cl.[5] B65G *23/06*

U.S. Cl. 198—834 **2 Claims**



1. A link position correcting device in a horizontal rotary transfer apparatus using a pair of regular triangular rotors, in which a plurality of links of a unit length corresponding to the length of sides of a pair of regular triangular rotors each being rotatably mounted on a pair of vertical axes respectively rae connected with one after another to form a pair of endless link trains so that said endless link trains may be circulated, characterized by comprising:

a pair of transferring platforms each of which supports each of said vertical axes for said respective rotors and are disposed movably to a direction perpendicular to the travelling direction of said link trains; and

a pair of driving means each of which synchronizingly and reciprocally moves each of said transferring platforms with rotation of said respective rotors at a period of one reciprocal movement per one third rotation of said rotor, and with a stroke corresponding to a differential distance between a distance from the rotational center of said regular triangular rotor to the apex of said rotor and that of from a side of said triangle; whereby positional devia-

tion to the travelling direction side of said link train resulting from the rotation of said triangular rotor is cancelled by the movements of said transferring platforms to travel said link trains along a constant course.

5,188,220

ILLUMINATED PUSH-BUTTON SWITCH

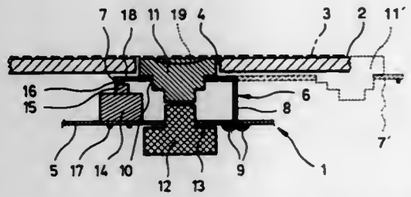
Stefan Schmitt-Walter, Jägerstrasse 7b, 8024 Diesenhofen, Fed. Rep. of Germany

Filed Jan. 31, 1991, Ser. No. 649,010

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1990, 9001186[U]

Int. Cl.[5] H01H *9/00, 13/70*

U.S. Cl. 200—313 **12 Claims**



1. An illuminated push-button switch for rear mounting in an operating panel, comprising a support plate, which has arranged thereon a switching means for triggering a switching operation, a touch element for operating said switching means and a light source for checking said switching operation, wherein the touch element is a lever which is an L-shaped angled member provided with one shorter arm and with one longer arm, the touch element being adapted to be moved relative to the support plate and wherein the shorter arm is supported on said support plate, and that the light source is arranged below the longer arm, said touch element being provided with a light exit opening arranged in the longer arm above the light source and a transparent push-button arranged in said light exit opening whereby at least the light source can be exchanged from the back of the support plate and wherein the push-button projects beyond the surface of the longer arm above the light exit opening and in comparison with said light exit opening said push-button has a larger, especially circular cross-section, and below the light exit opening, said push button fully covers the light source.

5,188,221

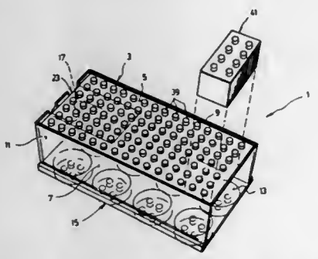
DISPLAY PACKAGING WITH RETRACTABLE HOOK

Victor J. Bertrand, Ile Bizard, Canada, assignor to The Ritvik Group Inc., Québec, Canada

Filed Mar. 16, 1992, Ser. No. 851,519

Int. Cl.[5] B65D *5/42;* **A63H** *33/08*

U.S. Cl. 206—44 R **8 Claims**



1. A display packaging comprising in combination:
a box-shaped container made of a rigid material, said container having an opening to give access thereto and at least two flat walls perpendicular to each other;
a cover detachably fixable to said container to close said opening;
a flat hook slidably mounted inside said container onto one of said two flat walls near the other one of said two flat walls;
guiding means integral to said one flat wall for holding said hook flat onto said one flat wall while allowing said hook to be slid in a direction perpendicular to said other flat wall between a retracted position where said hook is located within said container and an extended position where said hook extends outwardly of said container through a slot provided for this purpose in said other flat wall, and
retaining means to prevent said hook from sliding out of said guiding means in both of said retracted and extended positions, said retaining means being strong enough to allow said display packaging and its content to be hung by means of said hook whenever desired.

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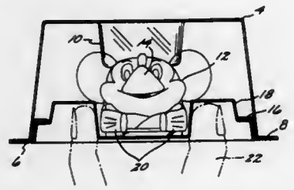
ANTI-THEFT DISPLAY PACKAGE FOR ANIMATED TALKING TIME PIECES

Harold D. Pierce, Westlake Village, Calif., assignor to Sounds Fun, Inc., Northridge, Calif.

Filed Oct. 11, 1991, Ser. No. 775,309

Int. Cl.[5] B65D *25/00, 73/00*

U.S. Cl. 206—45.34 **9 Claims**



1. A package and display system for displaying an animatable object having a switch for operating the object, comprising:
an essentially planar molded base, said base including at least one recess to receive the object and to provide access to the switch of the object to be displayed within said package;
a molded transparent cover, including means to restrain and space away said cover from an object to be displayed;
fastening means about the periphery of said cover and said base for securely fastening said cover to said base; and
means to fasten an object to be displayed to said base.

5,188,223

FOLDING BOX

Werner Brose, Halle, and Martin Augustin, Bielefeld, both of Fed. Rep. of Germany, assignors to Storck Einkauf + Service GmbH, Halle, Fed. Rep. of Germany

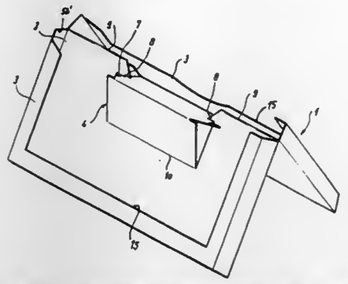
Filed Mar. 11, 1992, Ser. No. 850,403

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1991, 9103091

Int. Cl.[5] B65D *5/50*

U.S. Cl. 206—45.150 **6 Claims**

1. A folding box; comprising:
a front side provided with a removable window cover;
a backside provided with a central bending fold extending across said backside; and
flap means provided in said backside in the area of said bending fold for locking the folding box in position and for outwardly tilting an article contained in the folding box to facilitate grasping thereof, said flap means including a flap hingedly connected with said backside and bendable along a groove which is spaced from said bending fold so as to automatically swing out toward said frontside when bending said front side and said backside along said bending fold.



5,188,224

COTTON BALES AND METHOD OF PRODUCING SAME

Tsukasa Kinoshita; Masahiko Yamada, and Hirokazu Matsueda, all of Aichi, Japan, assignors to Takemoto Yushi Kabushiki Kaisha, Aichi, Japan

Filed Jul. 9, 1991, Ser. No. 727,830

Claims priority, application Japan, Jul. 27, 1990, 2-200985; Nov. 8, 1990, 2-305709

Int. Cl.[5] B65D *81/22*

U.S. Cl. 206—83.5 **7 Claims**

1. In a cotton bale comprising baled lint cotton, the improvement wherein linear polyorganosiloxane which has 10–6000 siloxane units and is insoluble or dispersive in water is adhesively attached to said baled lint cotton by 0.03–2.0 weight %.

5,188,225

CARRIER FOR A GROUP OF CONTAINERS AND CARDBOARD BLANK THEREFOR

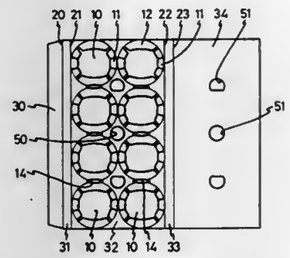
José Jorba, Rubio, 10, Igualada (Barcelona), Spain 08700

Continuation of Ser. No. 673,061, Mar. 22, 1991, abandoned. This application Jul. 20, 1992, Ser. No. 915,397

Claims priority, application Spain, Mar. 22, 1990, 9000836

Int. Cl.[5] B65D *75/00*

U.S. Cl. 206—145 **14 Claims**



1. A carrier for supporting a group of containers, said carrier comprising:
a lower panel for retention of containers, said lower panel defining at least one row of a plurality of circular retention openings, the peripheries of said circular retention openings being located tangentially with respect to one another in each said row;
respective groups of first flanges extending radially inwardly from the periphery of each of the circular retention openings, said respective groups of first flanges being located diametrically opposite one another with respect to the circular retention opening, and each of said flanges having a free end terminating at an edge;
a pair of second unitary flanges extending radially inwardly from the periphery of each of the circular retention openings, each of said second unitary flanges being interposed between said respective groups of said first flanges in the circumferential direction of the circular retention opening, each of said second unitary flanges having a free end terminating at a concave edge approximately in the shape of a circular arc when lying flat in the same plane as the circular retention opening, and each of said second unitary flanges having a length as taken along the edge at said free end thereof that is greater than that of each of said first flanges for each of said openings;
said lower panel having recesses therein extending into respective ones of said second unitary flanges at location where said second unitary flanges would otherwise extend radially inwardly from the periphery of each of the circular retention openings, thereby facilitating the lifting of said respective ones of said second unitary flanges as hinges about the periphery of the circular retention opening; and
a flat upper panel connected to said lower panel and spaced therefrom over said circular retention openings so as to cover tops of containers when retained in the openings, said upper panel having a substantially rectangular shape in plan.

5,188,226

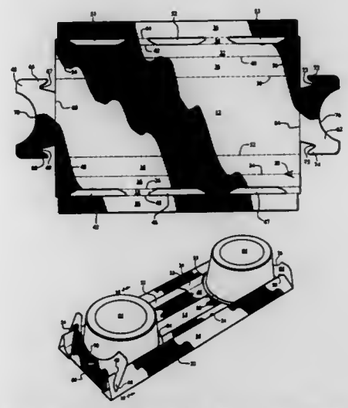
MULTIPLE PRODUCT CONTAINER CARTON

Ronald Platt, Chicago, Ill., assignor to The Packaging House, Inc., Chicago, Ill.

Filed May 14, 1992, Ser. No. 883,943

Int. Cl.[5] B65D *75/00*

U.S. Cl. 206—153 **9 Claims**

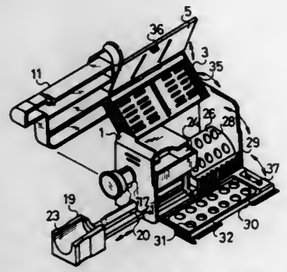


1. A multiple product container carton comprising:
an elongated rectangular base portion;
substantially triangular shaped opposing side walls having an outer edge hingedly connected to, integrally formed with and coterminous with the outer edges of the base portion;
spaced multiple slots formed in that portion of each triangular side wall facing the opposing triangular side wall such that each opposing pair of slots receives a first portion of a product container therein;
an end wall hingedly attached to each end of the base portion, each end wall having a downwardly facing notch on each side thereof formed by downwardly extending arms; and
a corresponding upwardly facing notch formed inwardly of

each end of each triangular shaped side wall such that folding said end walls upwardly enables the end wall notches to engage corresponding side wall notches to lock said end walls in their upward position, thereby forming a multiple product container carton.

5,188,227
STATIONERY BOX IN THE SHAPE OF A VIDEO CAMERA

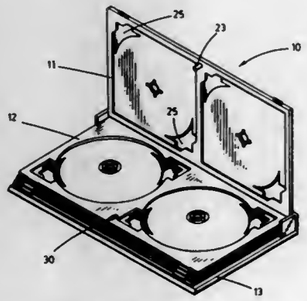
Teng L. Ho, P.O. Box 372, Hsin Chu, Taiwan
Filed Nov. 4, 1991, Ser. No. 786,938
Int. Cl.[5] A45C *11/34*
U.S. Cl. 206—214 **6 Claims**



1. A stationery box made in the shape of a video camera, comprising a rectangular casing, a rectangular top cover pivoted to said casing at the top, a rectangular side cover pivoted to said casing at one side, a side box movably secured to said rectangular casing at an opposite side, an inner case fastened inside said casing at one side, a pen holder fastened inside said casing at an opposite side for holding pens and pencils, a sliding seat movably set in a hole on said casing, and a rotary crayon holder mounted on said sliding seat and retained in said inner case inside said casing, and characterized in that said rotary crayon holder comprises a cylindrical body having a plurality of elongated grooves longitudinally disposed around the peripheral surface thereof for holding crayons; said sliding seat has a stop bar at one end and moved, when said sliding seat is drawn out of said casing, to push a crayon away from said rotary crayon holder out of a hole on said casing.

5,188,228
COMPACT DISK HOLDER

Michael P. Barrett, 504 Carl Ct., Prospect Heights, Ill. 60070
Continuation-in-part of Ser. No. 561,330, Jul. 31, 1990, abandoned. This application Nov. 26, 1991, Ser. No. 799,715
Int. Cl.[5] B65D *85/30*
U.S. Cl. 206—310 **11 Claims**

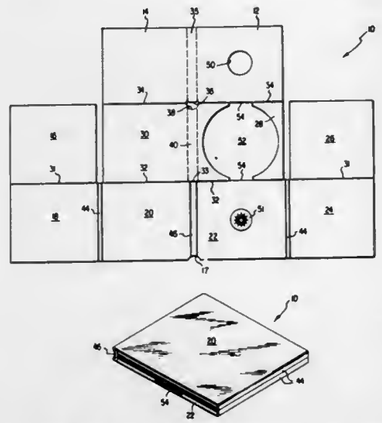


1. A storage device for storing both a compact disk and its accompanying identification label comprising

(a) a base;
(b) a lid; and
(c) at least one disk holder page;
the base having at least one circular holding pad and a foot,
the holding pad being centrally located on the base and comprising a recessed portion for receiving the compact disk and a hub for retaining the compact disk,
the foot having two upwardly extending side walls and an upwardly extending back wall, the side walls each having at least two pivot points aligned diagonally upwardly outward such that the topmost pivot point is nearest the back wall,
the lid having openings on diagonally opposed corners to receive an identification label and being pivotally attached to the foot at the topmost pivot points such that when the lid is in an opened position the lid is supported by the foot back wall,
the disk holder page having a topside and an underside, the topside having a holding pad centrally located and comprising a recessed portion for receiving the compact disk and a hub for retaining the compact disk, the disk holder page having openings on diagonally opposed corners to receive in its underside an identification label and being pivotally attached to the foot at any pivot points other than the topmost pivot points.

5,188,229
COMPACT DISC PACKAGE

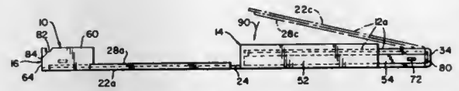
Linda A. Bernstein, Campbell Hall, N.Y., assignor to International Paper Company, Purchase, N.Y.
Filed Apr. 5, 1991, Ser. No. 680,962
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—312 **20 Claims**



1. A unitary paperboard blank construction for making a compact disc package, the blank including a first pair of generally rectangular panels foldably joined to each other in a lower, first row by a foldable joint, a second pair of generally rectangular panels in an upper, second row connected to each other by a first frangible connection, the panels in the second pair foldably joined to respective panels in the first row along common collinear edges of said first and second pair of panels, a third pair of generally rectangular panels in a third row, above said row, connected to each other by a second frangible connection, said third pair of panels foldably joined to said second pair of panels about a fold axis defined by two collinear edges of said second panel pair, said first and second frangible connections and said foldable joint being aligned, at least one panel of said pairs of panels having means to receive and position thereon a compact disc.

5,188,230
COMPACT DISC STORAGE PACK

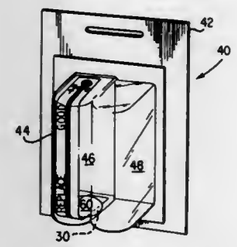
Patrick J. O'Brien, Hackensack, and Herbert Friedman, Fort Lee, both of N.J., assignors to Ivy Hill Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 807,477, Dec. 12, 1991, which is a continuation-in-part of Ser. No. 698,201, May 10, 1991. This application Jan. 8, 1992, Ser. No. 817,897
Int. Cl.[5] B65D *85/57*
U.S. Cl. 206—312 **23 Claims**



1. A storage package for a recording medium comprising:
(A) a plurality of panels including, a pair of end panels said plurality of panels being movable between an open orientation enabling access to the contents of the package and a collapsed orientation for storage purposes, each of said plurality of panels having a pair of opposed lateral sidewalls;
(B) a holder formed of plastic disposed on one of said end panels for receiving and maintaining a recording medium thereon, said holder having one end thereof remote from the other of said end panels when said plurality of panels are in said open orientation; and
(C) an end cap formed of plastic, one end of said end cap being directly pivotally secured to said one end of said holder, said end cap having a portion thereof spaced from said one end thereof adapted to releasably engage said holder at a portion thereof spaced from said one end of said holder when said plurality of panels is in said collapsed orientation and to maintain said plurality of panels in said collapsed orientation, thereby to preclude accidental movement of said plurality of panels out of said collapsed orientation.

5,188,231
BATTERY PACKAGE WITH REMOVABLE VOLTAGE INDICATOR MEANS

Larry Kivell, Milton, Canada; Robert L. Milanese, Brookfield; Charles E. Kiernan, Westport, both of, and Lorne Tittel, Thornhill, Canada, assignors to Duracell Inc., Bethel, Conn.
Filed May 31, 1991, Ser. No. 708,324
Int. Cl.[5] B65D *85/20*
U.S. Cl. 206—333 **10 Claims**



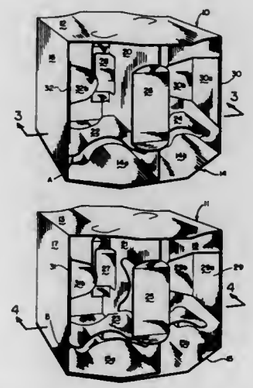
1. A package for the sale and display of batteries and a voltage tester associated with and removable from the package comprising a holding means for holding at least one battery and the voltage tester in side-by side arrangement; said tester comprising a receptacle and a voltage indicator means integrally associated therewith, said receptacle having two end portions, a front wall portion and two side wall portions connected between said end portions so that said receptacle has an open back, and said indicator means comprising a pair of electrical contacts positioned for alignment with the terminals of a battery placed in the receptacle.

8. A blister card package for the sale and display of batteries and a voltage tester removable from said package, said package comprising a backing member and a bubble member attached thereto and adapted to hold at least one battery and the voltage tester therebetween in side-by-side arrangement, said voltage tester comprising a receptacle shaped for closely holding a single battery therein and a voltage indicating strip attached to a surface of the receptacle; said voltage indicating strip comprising a substrate, a resistive element located on one side of the substrate, a thermochromic material located on the opposite side of the substrate in thermal contact with the resistive element, and a pair of electrical contacts disposed so as to make electrical contact to the terminals of a battery placed in the receptacle, and wherein said strip is attached to the inside surface of the receptacle with said thermochromic material facing the inside surface of the receptacle; whereby, when the electrical contacts make simultaneous connection to the terminals of a battery, current will flow through the voltage indicating strip to visually indicate the magnitude of the voltage of the battery.

10. A blister card package for the sale and display of batteries and a voltage tester removable from said package, said package comprising a backing member and a bubble member attached thereto and adapted to hold at least one battery and the voltage tester therebetween, said voltage tester comprising a receptacle shaped for closely holding a single battery therein and a voltage indicating strip attached to a surface of the receptacle and having a pair of electrical contacts disposed so as to make electrical contact to the terminals of a battery placed in the receptacle, whereby, when the electrical contacts make simultaneous connection to the terminals of a battery, current will flow through the voltage indicating strip to visually indicate the magnitude of the voltage of the battery; wherein at least two batteries and the tester are held in the package with one battery being inside the tester and said battery filled tester is in side-by-side arrangement with the other battery, and further comprising at least one insulating means located between one battery terminal and the electrical contact of the voltage tester juxtaposed thereto.

5,188,232
DISPLAY CARRIER WITH DIVIDING MEMBER

Robert G. Carver, Ashland, Ohio, assignor to Coburn, Inc., Ashland, Ohio
Filed Aug. 22, 1991, Ser. No. 748,533
Int. Cl.[5] B65D *85/44*
U.S. Cl. 206—426 **15 Claims**



1. A collapsible carrier for articles, said carrier being formed

VOL 1147 ISS 4 FE 23 1993 UMI

from a sheet of foldable material and being movable between a collapsed condition for shipping and storage and an erect condition for receiving and holding articles, said carrier comprising:

horizontal top and bottom walls and first and second vertical sidewalls hingedly connected to form a carrier sleeve having opposed open ends;

a vertical partition wall in said sleeve hingedly connected to said top and bottom walls to define adjacent interior compartments within said sleeve;

each of said walls having opposed end edges at the open ends of said carrier sleeve;

a substantially horizontal dividing member in said sleeve extending between said sidewalls and through said partition wall, said dividing member being disposed parallel to said bottom wall and spaced vertically therefrom, and securing means for holding said dividing member free of contact with the side walls of the carrier and substantially parallel to said bottom wall when said carrier is in the erect condition.

5,188,233

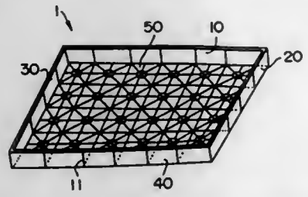
BEVERAGE CONTAINER CARRIER

Roy Hammett, Tampa, Fla., assignor to International Container Systems, Inc., Tampa, Fla.

Filed Aug. 27, 1990, Ser. No. 573,936

Int. Cl.[5] B65D *65/00*

U.S. Cl. 206—427 **7 Claims**



1. A carrier for supporting a plurality of deformable containers, comprising:

a base comprising a plurality of areas, wherein each of said areas supports one deformable beverage container and wherein each of said areas further comprises a plurality of disk members;

a plurality of side walls connected to said base along a substantial portion of the perimeter of said base, wherein each of said side walls comprises an upper rail and a plurality of ribs extending from said base to said upper rail; and

an upwardly projecting member extending from each of said areas on said base, each said member comprising a central portion and peripheral portions, said peripheral portions being downwardly tapered to conform to the shape of the bottom surface of a container supported on said carrier thereby preventing the container from deforming.

5,188,234

LUNCHBOX WITH CARRYING POUCH

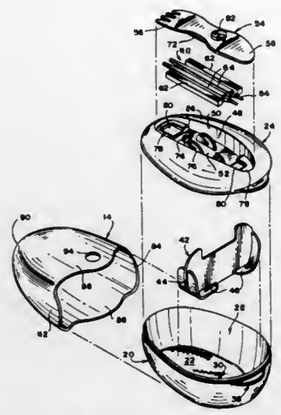
Takeshi Fukuda, Osaka, Japan, and Augusto A. Picozza, Orlando, Fla., assignors to Dart Industries Inc., Deerfield, Ill.

Filed Mar. 6, 1992, Ser. No. 847,538

Int. Cl.[5] A45C *11/20*

U.S. Cl. 206—541 **20 Claims**

1. A kit including a lunchbox and a carrying pouch; said lunchbox comprising a container and a cover selectively mounted in overlying relation to and closing said container; said pouch defining a pocket with an open forward end; said lunchbox, including said container with said cover mounted thereon, being selectively received within said pocket through said open forward end, ejection means for forcible outward movement of said lunchbox relative to said pocket through said open end, and latch means engaged between said lunchbox and said pouch for releasably retaining said lunchbox in said



pocket and precluding outward movement of said lunchbox by said ejection means.

5,188,235

BAG PACK

Larry W. Pierce, Spring; Steve F. Zeigler, Dallas, and Jacobo Bazbaz, Houston, all of Tex., assignors to Superbag Corp., Houston, Tex.

Filed Feb. 28, 1991, Ser. No. 662,453

Int. Cl.[5] B65D *33/14*

U.S. Cl. 206—554 **19 Claims**

15. In a bag construction of the type comprising front and rear bag walls, a closed bottom, and a top portion, said top portion having a pair of laterally spaced handles, said handles comprising integral extensions of said front and rear bag walls, said front and rear bag walls, between said handles defining an open bag mouth, each said handle extending above the bag mouth from a lower handle portion defining the lateral extent of said bag mouth to an upper handle portion defining a hand grip, the improvement comprising front and rear mounting apertures formed in said front and rear bag walls and adapted for cooperation with a support hook of a rack for mounting said bag and a weakened portion defining a severance line in at least one of said front and rear bag walls extending from said mounting aperture to the top portion of said bag wall defining said bag mouth, whereby when said bag is mounted on said rack with said support hook of said rack engaging said mounting apertures, said bag wall having said severance line will sever along said severance line as said bag wall is moved forwardly of said mounting hook, so that said bag may be removed from said bag rack without leaving any portion of said wall having said severance line on said hook.

5,188,236

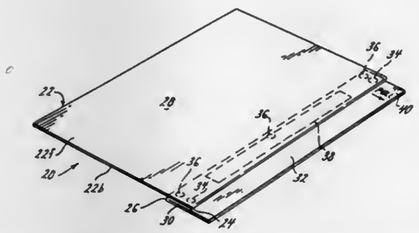
SCENT SAMPLER CONSTRUCTION

Herbert M. Sayers, 9904 Old Warson Rd., St. Louis, Mo. 63124, and William E. Mirgain, St. Louis, Mo., assignors to Herbert M. Sayers, St. Louis, Mo.

Filed Nov. 21, 1990, Ser. No. 616,407

Int. Cl.[5] B65D *69/00, 79/00;* **G09F** *00/00*

U.S. Cl. 206—527 **8 Claims**



1. An improved scent sampler construction of the type comprising a burstable scent sample between two opposing segments of a panel, for providing a sample of a scent, the improvement comprising:

the scent sampler having a generally z-shaped configuration, formed by two oppositely facing folds which define a first segment, a second segment, and a third segment, in the panel, one face of the second segment overlapping a portion of one face of the first segment, and the other face of the second segment overlapping a portion of one face of the third segment, and wherein the burstable scent sample is located entirely between facing portions of the second segment and the third segment, the panel being folded so that the first segment is wider than the third segment, and the third segment is wider than the second segment.

5,188,237

DEVICE FOR THE SEPARATION OF POWDERS INTO COARSE AND FINE COMPONENTS

K. H. Schwamborn, Bonn, Fed. Rep. of Germany, assignor to Hosokawa Mikropul Gesellschaft für Mahlund Staubtechnik mbH, Cologne, Fed. Rep. of Germany

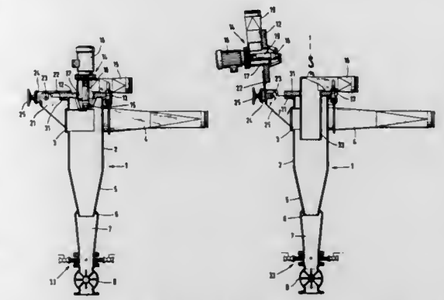
Filed Apr. 19, 1991, Ser. No. 687,990

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1991, 9101419[U]

Int. Cl.[5] B07B *9/00;* **B04C** *3/00*

U.S. Cl. 209—23 **8 Claims**

1. A device for the separation of a powder into a coarse component and a fine component comprising: a housing (**1**), a material feed (**3, 4**) into the housing for the material to be fed and a coarse material discharge (**8**) for the housing and a fines discharge (**19**) for the housing, the housing (**1**), the material feed (**3, 4**) as well as the material discharges (**8, 19**) forming a cyclone separator, and a sifter (**14**) being positioned between the material feed (**3, 4**) and the fines discharge (**19**) in which the housing includes a flange **11** and which device includes a plate **12** and in which the sifter (**14**) is mounted on the plate (**12**) together with the fines discharge (**19**), which plate **12** is fastened to the flange (**11**) of the housing in a releasable manner, in which the housing (**1**) includes a mounting block (**21**), which bears the plate (**12**) with attached support (**22**) in a manner such that it can be pivoted, which device includes a hand wheel (**25**) and a gear unit (**24**) for pivoting the support (**22**) out of the housing (**1**), which device includes, when the plate (**12**) supporting the sifter (**14**) pivots out of the housing (**1**), a further plate (**31**) with a plunger tube (**32**) attached to the flange (**11**) on housing (**1**).



5,188,238

SEPARATOR FOR SEPARATING SOLIDS COMPONENTS OF LIQUID MIXTURES AND METHOD OF USING THE SAME

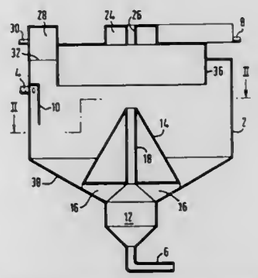
Robert P. M. Smisson, and Timothy J. Lamb, both of Clevedon, United Kingdom, assignors to Hydro International Limited, United Kingdom

Continuation of Ser. No. 541,015, Jun. 20, 1990, abandoned. This application Dec. 16, 1991, Ser. No. 807,731

Claims priority, application United Kingdom, Jun. 21, 1989, 8914215

Int. Cl.[5] B04C *5/102*

U.S. Cl. 209—211 **5 Claims**

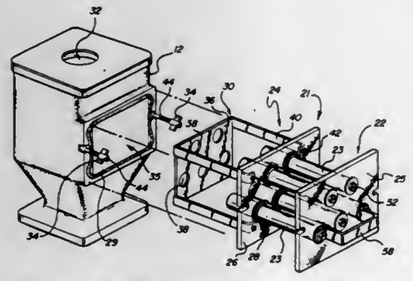


1. A separator for operating at low energy levels for classifying a particulate material carried in suspension by a liquid, comprising (a) a vessel having a cylindrical outer wall and a base at one end, (b) a conical body which is provided within the vessel and which defines with the base an annular opening spaced from the outer wall, the lower peripheral edge of said conical body terminating at a position approximately halfway between the central axis of the vessel and said outer wall, (c) an annular dip plate, disposed in an upper region of the vessel, extending downwardly towards said base and spaced from the outer wall of the vessel, for stabilising flow patterns in the vessel, (d) an inlet for introducing the liquid carrying the particulate material into the vessel, (e) an axially unobstructed outlet in an upper region of the vessel interiorly of the annular dip plate for removing from the vessel liquid carrying a component of the particulate material having a settlement velocity below a predetermined level, (f) a solids collection region centrally disposed on the base for collecting particulate mate-

VOL 1147 ISS 4 FE 23 1993 UMI

rial having a settlement velocity above said predetermined level and (g) means for promoting a rotational movement of the liquid and suspended solids within the vessel which is sufficient to cause or enhance an inward sweeping effect towards the annular opening on solids accumulated at the base of the vessel, and which is of sufficiently low energy that settlement of the particulate material having a settlement velocity above said predetermined level is brought about primarily by gravity so as to enable separation of such particulate material with respect for particulate material which has a settlement velocity below said predetermined level; the arrangement of the separator being such that the liquid carrying the particulate material which has a settlement velocity below said predetermined level flows, in use, upwardly to the top of the vessel toward the outlet in a substantially axial direction.

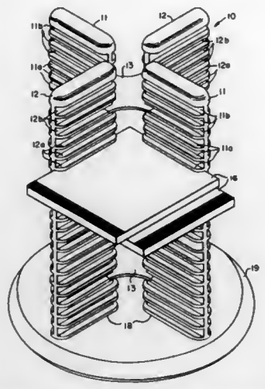
5,188,239
TRAMP METAL SEPARATION DEVICE
Michael W. Stowe, Boyne City, Mich., assignor to Industrial Magnetics, Inc., Boyne City, Mich.
Filed Jun. 17, 1991, Ser. No. 716,049
Int. Cl.[5] B03C *1/00*
U.S. Cl. 209—223.1 **16 Claims**



1. An improved removable tramp metal separation device adapted to be removably inserted through a side opening of a housing which directs granular raw material therethrough and to separate tramp metal contaminants therefrom, the improvement comprising said device being formed of a drawer frame having wiper means and a magnet unit, slidably interconnected such that upon removal of the device from the housing the drawer frame can slide relative to the magnet unit to wipe tramp metal from the surface thereof.

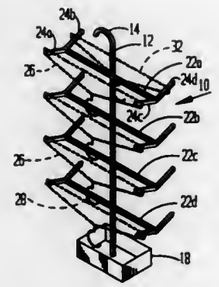
5,188,240
STORAGE UNIT FOR RECORDING-MEDIA BOXES
Peter C. Marino, Denver, Colo.; Robert K. Hanson, P.O. Box 1392, Cambridge, Ohio 43725, and Joseph C. Marino, Denver, Colo., assignors to Robert K. Hanson, Cambridge, Ohio
Filed Jul. 5, 1991, Ser. No. 726,237
Int. Cl.[5] A47G *19/08*
U.S. Cl. 211—41 **27 Claims**

1. A storage unit for supporting recording-media boxes in parallel spaced relationship from each other by engaging only two adjacent side edges of each box, said unit comprising:
(A) at least one first wall member lying in a first plane;
(B) at least one second wall member lying in a second plane which intersects at a common axis with and is perpendicular to the first plane and said axis is upwardly extending from a horizontal plane; and
(C) connecting means fastening all of the wall members together in fixed angular relationship to each other;
(D) each adjacent pair of said first and second wall members forming at least one corner support section for said recording-media boxes;
(E) at least one face of each wall member having a series of alternate transversely extending parallel ribs and grooves;
(F) the ribs and grooves on each first wall member lying in a plurality of parallel planes which are common to the planes of the ribs and grooves on an adjacent second wall member wherein each of said grooves on each said first wall member is aligned in one of the common planes with one of the grooves on the second wall member and one end of each of the grooves on the first wall member is adjacent to one end of one of the grooves on the second wall member so that each such pair of aligned grooves forms a substantially L-shaped groove configuration in



which both grooves of the pair face toward each other in one of the said corner support sections so as to receive and support a pair of adjacent sidewall edges of a recording-media box in a plane parallel to other media boxes similarly supported by other pairs of grooves in the wall members, and whereby each adjacent pair of first and second wall members covers two adjacent sidewall edges of any recording-media box placed in the storage unit while leaving the two remaining sidewall edges of each media-box exposed for viewing.

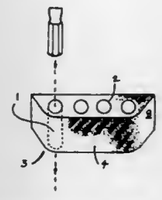
5,188,241
HANGER RECYCLER
David L. Kobza, 12 Tyler Rd., Smithtown, N.Y. 11787, and Victoria Katz, 19 Millbrook Rd., Stony Brook, N.Y. 11790
Filed Oct. 24, 1991, Ser. No. 781,917
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—59.1 **4 Claims**



1. Apparatus for the collection and dispensing of and in combination with clothing hangers each wire hanger having an extended rung and a pair of side elements extending from the end of each rung and coming together to form a hook for suspending said clothes hanger, said apparatus comprising a vertically extending column having hook means on the top for the suspension thereof and tray means at the bottom thereof for

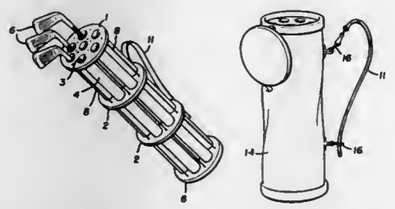
collecting sundry items, a plurality of spaced horizontally arranged branches mounted on said column, each branch attached at its middle to said column and having free ends, each branch having mounted on each free end thereof a pair of fingers, each finger attached at one end to said branch and extending out at right angles to the length of its branch at an angle above horizontal, the pair of fingers at one end of said branch being parallel to the pair of fingers at the other end of said branch and all oppositely facing pairs of fingers being of the same length, the distance between the pairs of fingers at opposite ends of each branch being less than the length of the rungs on said hangers, said hangers being suspended by having the rungs thereof rest on each pair of parallel fingers located at opposite ends of said branches.

5,188,242
SELF-ADHESIVE BIT HOLDER
David J. Smith, 5714 Seaview St., Tacoma, Wash. 98407
Filed Nov. 1, 1991, Ser. No. 786,545
Int. Cl.[5] A47F *7/00*
U.S. Cl. 211—69 **3 Claims**



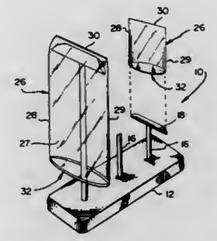
1. A tool holder for carrying fastener bits, said holder comprising:
(A) a resilient base:
(B) a plurality of holes evenly spaced and on the same plane extending vertically through said resilient base, said tool receiving holes being completely circumvented between opposed first and second surfaces, creating a retaining force on fastener bits, and
(C) means for securing said holder to a tool box, drill or other supporting surface.

5,188,243
GOLF CLUB HOLDER
Carlos D. Ruiz, 520 NW. 103rd Ter., Pembroke Pines, Fla. 33026
Filed Jul. 29, 1991, Ser. No. 736,942
Int. Cl.[5] A63B *55/00*
U.S. Cl. 211—70.2 **2 Claims**



1. A golf club holder in combination with a golf bag for receiving said golf club holder comprising a plurality of substantially parallel tubes for receiving golf club handles, bundling means for bundling said tubes, and carrying means for carrying said golf club holder; a plurality of perforated tube separators in said bundling means spaced in axial direction of the tubes, each disposed perpendicularly to the axial direction of said tubes, said separators having axially aligned holes distributed across said separators for receiving said tubes, wherein said tubes have an outside diameter, and said axially aligned holes have a diameter greater than the outside diameter of said tubes for loosely receiving said tubes; a plurality of connecting rods disposed perpendicularly to the planes of said separators, each of said connecting rod rigidly attached to each of said separators for maintaining said separators in axially spaced positions; wherein said carrying means include two short straps, and an eye ring on said other short strap, a removable carrying strap attached to said short straps; said golf bag including attachment means for said carrying strap whereby said carrying strap is removable from the golf club holder and attachable to said attachment means of said golf bag.

5,188,244
DRYING RACK FOR FREEZER BAGS AND LIKE ARTICLES
Jerome E. Hollstegge, 225 E, 79th St., New York, N.Y. 10021
Filed Mar. 16, 1992, Ser. No. 851,571
Int. Cl.[5] A47G *29/00*
U.S. Cl. 211—71 **3 Claims**



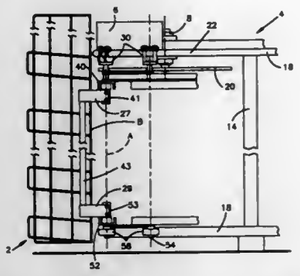
1. A drying rack in combination with at least one-size bag suitable for frozen food storage, said rack being adapted for accommodating a plurality of different size food storage bags in an inverted position for drainage and air drying, said rack comprising a plurality of rod members corresponding in length to the depth dimensions of different size bags, at least one head member, said head member being releasably attachable to one of said rod members at an upper end of the rod member and positioned perpendicular to a longitudinal axis of the rod member, said head member having a length dimension corresponding to a width dimension of the bag with the mouth of said bag being placeable over the head member to expand the interior volume of the bag, a base member having a plurality of aperture means for receiving a lower end of the rod member and for securing the rod member in a substantially vertical orientation with the mouth of the bag positioned above the base member, whereby the rod members and at least one head member are selectively interconnected and have readily releasable connections adapted for ready knockdown and construction of the rack.

5,188,245
FULL HEIGHT CARRIER FOR HORIZONTAL CAROUSEL
Gerald B. Mabrey, Barrington, Ill., assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Jun. 5, 1991, Ser. No. 710,544
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—122 **16 Claims**

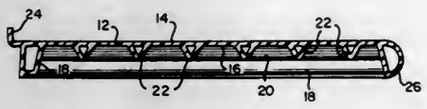
1. A rotary carousel comprising:
upper and lower guide means;
a carrier guided by said upper and lower guide means in a closed path;
drive means to drive said carrier along said closed path;
said carrier having at least three guidance points on said upper and lower guide means, said three guidance points being other than in a straight line to establish a first generally vertical plane;

VOL 1147 ISS 4 FE 23 1993 UMI

said carrier having a generally planar vertical rear wall, said rear wall defining a second generally vertical plane, said second vertical plane being generally parallel to but outwardly displaced from said first vertical plane, said carrier having an upper terminal portion which extends above said upper guide means.



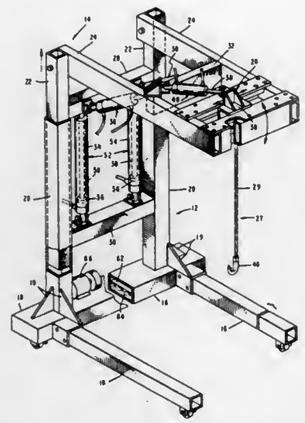
5,188,246
SHELF
John Maxworthy, North Merrick, N.Y., assignor to International Visual Corporation, Port Washington, N.Y.
Continuation of Ser. No. 706,983, May 29, 1991, Pat. No. 5,097,969. This application Mar. 23, 1992, Ser. No. 855,753
The portion of the term of this patent subsequent to Mar. 24, 2009, has been disclaimed.
Int. Cl.[5] A47F *5/00*
U.S. Cl. 211—153 **15 Claims**



1. A one-piece injection-molded plastic shelf comprising a top surface for supporting goods thereon, an opposite bottom surface, and a plurality of ribs formed on said bottom surface integral therewith for reinforcing the same, each of said plurality of ribs having a longitudinal bore extending therethrough and each rib intersecting at least one other rib with the bore of each said rib communicating with the bore of said other rib so that the bores of said plurality of ribs form a network of communicating bores.

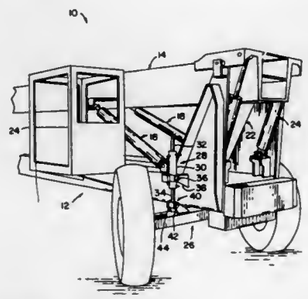
5,188,247
LIFTING APPARATUS
Keith Jastrow, 28314 Hillfield La., Canyon County, Calif. 91351
Filed Nov. 4, 1991, Ser. No. 787,812
Int. Cl.[5] B60P *1/48*
U.S. Cl. 212—140 **14 Claims**

1. A lifting apparatus for lifting an object, comprising:
(a) a base assembly including;
(i) a pair of spaced apart, longitudinally extending members;
(ii) a transverse member connected to said longitudinally extending members; and
(iii) a pair of spaced apart, generally vertically extending members connected to said transverse member;
(b) a top assembly operably associated with said base assembly, said top assembly comprising:
(i) a pair of generally vertically extending members connected to said base assembly for movement between first and second positions;
(ii) a pair of top members extending outwardly from and pivotally connected to said generally vertically extending members;
(iii) a carriage carried by said top members for transverse movement between first and second positions;
(iv) connector means connected to said carriage for interconnection with the object to be lifted; and
(v) means for imparting pivotal movement to said top members relative to said generally vertically extending members; and



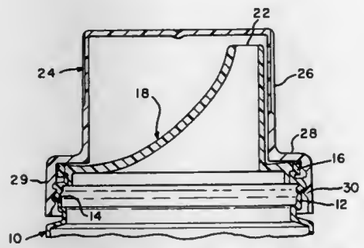
(c) lifting means connected to said base assembly for controllably lifting said top assembly; and
(d) drive means for imparting transverse movement to said carriage, said drive means comprising a hydraulic means mounted on said top members and operably interconnected with said carriage for moving said carriage between said first and second positions.

5,188,248
STABILIZING CYLINDER FOR A ROUGH TERRAIN FORKLIFT
Martin F. Dohnalik, Yankton, S. Dak., assignor to Gehl Company, West Bend, Wis.
Filed Apr. 27, 1990, Ser. No. 516,334
Int. Cl.[5] B66C *22/88*
U.S. Cl. 212—189 **14 Claims**



1. An apparatus, comprising:
a frame;
a boom pivotably mounted to said frame for pivoting vertical movement relative to said frame;
an axle assembly having a pair of ground-engaging wheels rotatably mounted at its ends for supporting said frame above the ground, said axle assembly being pivotably mounted to said frame; and
damping means interposed between said axle assembly and said frame for damping oscillation between said axle assembly and said frame, said damping means including means for varying the degree of damping provided thereby responsive to the vertical angle of said boom relative to said frame.

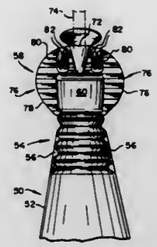
5,188,249
PLASTIC BOTTLE HAVING A LINERLESS CLOSURE WITH COLLAPSIBLE FLANGE AND METHOD
David W. Cargile, Lancaster, Pa., assignor to Graham Packaging Corporation, York, Pa.
Filed Sep. 11, 1991, Ser. No. 757,711
Int. Cl.[5] B65D *1/02*
U.S. Cl. 215—31 **14 Claims**



1. A combination bottle, insert and cap for sealing the contents of the bottle comprising:
a. an integral blow molded plastic bottle having a body with a neck at the top of the body, said neck having an exterior thread, an annular collar having a smaller diameter than the said exterior thread and vertical interior and exterior walls, an annular groove mold-formed in the upper portion of the exterior wall of the annular collar between the interior and exterior walls, and a circumferential flange on the outside of the top of the collar, said flange having a formed upper surface and a lower surface opening into the mold-formed groove, both such surfaces extending inwardly and downwardly from the free end of the flange;
b. a spout insert fitted within the interior of the neck and engaging the interior wall of the collar; and
c. a cap having an interior thread with which the said exterior thread of the neck threadably engages thereby permitting the cap to be held downwardly on the bottle, and a circumferential horizontal sealing surface which circumferentially engages the upper surface of the flange thereby sealing the contents of the bottle.

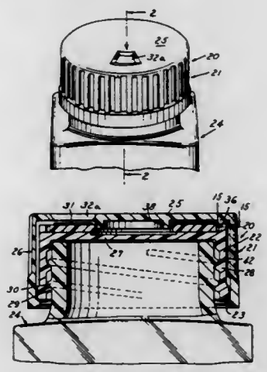
5,188,250
PLASTIC BEVERAGE BOTTLE WITH TWIST-OFF CLOSURE
Theodore J. Kovacic, Bedford; Richard H. Kaufman, Chappaqua, both of N.Y.; Martin M. Bostwick, Norwalk, Conn.; Donald C. Crescenzi, Killingsworth, Conn.; William H. Valls, Harwinton, Conn., and Thomas Bucaccio, Westmount, Canada, assignors to Kraft General Foods, Inc., Northfield, Ill.
Filed Jun. 5, 1992, Ser. No. 893,612
Int. Cl.[5] A61J *1/06*
U.S. Cl. 215—32 **22 Claims**

1. A one-piece plastic beverage bottle comprising:
an upstanding main bottom portion in which a beverage is contained;
a circular top extending upwardly from said main portion and centered about a central vertical axis, said top including a top end having a small, central aperture which extends through said top end; and
a closure for said central aperture of said top end, said closure including
a short neck piece extending upwardly from said top end and surrounding said aperture,
a vertical extension of said neck piece, and



planar wings extending laterally from said vertical extension on opposite sides thereof and extending vertically downwards from said vertical extension so as to be below said top end and laterally adjacent said top whereby said wings are twisted about the vertical axis to shear said neck piece and hence to open said aperture for drinking of the beverage in said main portion.

5,188,251
CHILD RESISTANT REMINDER CLOSURE
Maximillian Kusz, Waterville, Ohio, assignor to Owens-Illinois Closure Inc., Toledo, Ohio
Continuation-in-part of Ser. No. 878,647, May 5, 1992. This application Jul. 2, 1992, Ser. No. 907,954
Int. Cl.[5] B65D *55/02*
U.S. Cl. 215—220 **12 Claims**



1. A child resistant reminder closure comprising
an outer closure member having a base wall and a peripheral skirt,
an inner closure member having a base wall and a peripheral skirt,
means on the outer closure member retaining the inner closure member against axial outward movement relative to the outer closure member,
an indicator disk having an opening and being provided on the outer surface of the base wall of the inner closure member and being rotatable relative to the outer and inner closure members,
said outer closure member having radial lugs on the undersurface of the base wall thereof,
a first set of flexible radial ratcheting means extend radially inwardly into the opening from the indicator disk and

engage said radial lugs on the undersurface of the base wall of the outer closure member,

said inner closure member having circumferentially spaced lugs on the upper surface thereof,

a second set of flexible radial ratcheting means extend radially from the indicator disk and engage said circumferentially spaced lugs on the upper surface of the inner closure member, interengaging means on the inner closure member adapted to engage means on a containers by relative rotation of said inner closure member and a container.

axially interengageable means on the outer closure member and the inner closure member which are interengaged to remove the closure or to apply the closure to a container thereby providing a child resistant function,

inhibiting means between the outer closure member and the inner closure member operable to permit relative rotation between the outer closure member and the inner closure member upon rotation of the outer closure member in a direction to remove the closure from a container and operable to transmit force from the outer closure member to the inner closure member when the outer closure member is rotated in a direction to apply the closure to a container,

said outer closure member, said inner closure member and said indicator disk being constructed and arranged to maintain engagement of the indicator disk with the outer closure member and the inner closure member,

a window in the outer closure member,

said indicator disk having indicia thereon visible through said window to indicate the circumferential position of said indicator disk relative to the outer closure member.

5,188,252

FREIGHT CONTAINER

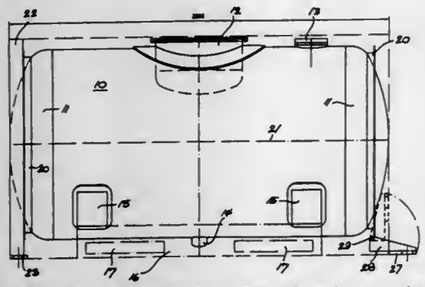
Helmut Gerhard, Weitefeld, Fed. Rep. of Germany, assignor to Eisenwerk Gerhard GmbH, Fed. Rep. of Germany

Filed Jun. 17, 1992, Ser. No. 899,922

Claims priority, application Fed. Rep. of Germany, Jun. 17, 1991, 9107448[U]

Int. Cl.[5] B65D *19/00*

U.S. Cl. 220—1.5 **7 Claims**



1. A freight container having a first axis and a second axis extending perpendicularly to said first axis and comprising two fittings, which are disposed at those two ends of the container that are opposite each other along said first axis, each fitting having openings for simultaneously engaging a pair of locking members provided on a vehicle loading area at a spacing of substantially 280 mm in the direction of said second axis, wherein the centre spacing between openings of those two fittings, which are opposite each other in the direction of said first axis, is substantially 2259 mm, and wherein at least one of said fittings is foldable about a pivot axis, which extends parallel to said second axis, between a locking position, in which said one fitting is capable of engaging a locking member, and a rest position, in which said one fitting is inside the outer container dimension measured in the direction of said first axis.

5,188,253

CONTAINER AND METHOD OF MANUFACTURING THE SAME

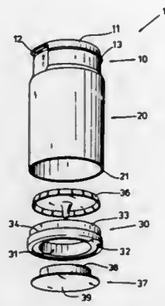
Cyril Poore, New Malden, and Bernard Sams, London, both of England, assignors to Duma AB, Sweden

Filed Feb. 6, 1991, Ser. No. 651,461

Claims priority, application Sweden, Feb. 6, 1990, 9000410

Int. Cl.[5] B65D *1/06, 25/10, 51/26*

U.S. Cl. 220—212 **9 Claims**



1. A sealed plastic container for tablets or the like, comprising:

a cylindrical casing having, an outer diameter, an inner diameter defining an inside region, a longitudinal axis, a first circular opening at one end and a second circular opening and integrally formed sealing means at the other end, the sealing means including a lid sealed with an original seal to the casing, said lid after breaking of the original seal forming a replaceable closure for the second opening, said second opening providing access to the inside region of the casing;

a substantially cylindrical bottom piece having an outer diameter defining a periphery disposed within the first opening of the casing and permanently secured at its periphery to the casing; and

volume defining means arranged inside and substantially perpendicular to the longitudinal axis of the casing such that part of the casing extends from the volume defining means towards the sealing means, which volume defining means together with the part of the casing extending from said volume defining means towards the sealing means defining a volume inside of the casing for holding tablets or the like.

5,188,254

BAG HOLDING SYSTEM FOR RECYCLABLES

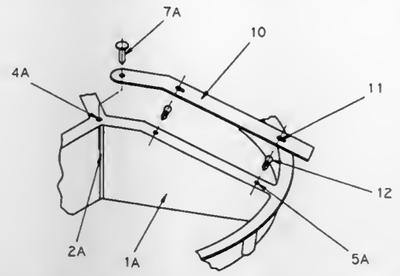
Harold A. Evans, 10 Merrymount Dr., Swampscott, Mass. 01907

Filed Apr. 21, 1992, Ser. No. 872,164

Int. Cl.[5] B65D *1/24*

U.S. Cl. 220—404 **20 Claims**

1. A container top which is segmented into a multitude of segments by dividing rib means joined at a central point and extending radially to the rim of a trash container, each said dividing rib containing a plurality of projecting means, and each rib overlaid by a flexible strip containing gripping means interacting with said projecting means, each said flexible strip being attached at said central point, and where a portion of the top edge of a plastic bag is placed between said flexible strip and said dividing rib attaching plastic bags to said dividing ribs such that when said portion of the top edge of said plastic bags are placed over one said dividing rib, it hangs into the space defined by two adjacent ribs and the outer periphery of said container, and is gripped between said projections and said gripping means in said flexible strip.



5,188,255

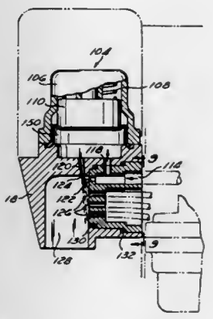
METHOD AND APPARATUS FOR FACILITATING THE CLEANING OF A SPRAY APERTURE IN A MIXING CHAMBER OF A NOZZLE

Benjamin R. Du, 32392 Via Antibes, South Laguna, Calif. 92677

Continuation of Ser. No. 579,888, Sep. 7, 1990. This application Jun. 26, 1992, Ser. No. 904,945

Int. Cl.[5] B67D *1/08*

U.S. Cl. 222—1 **6 Claims**



1. A method for mixing and dispensing first and second fluids, said method comprising the steps of:

spraying a first fluid from a first aperture into a mix chamber of a nozzle;

spraying a second fluid form a second aperture into the mix chamber of the nozzle in a direction wherein the second fluid is incident upon said first aperture; and

wherein the spraying of the second fluid such tat it is incident upon said first aperture facilitates the cleaning of the first aperture.

5,188,256

METHOD OF HEATING AND DISPENSING HOT MELT MATERIALS THAT EMPLOYS MICROWAVE ENERGY

John R. Nottingham; John Spirk, both of Moreland Hills; Craig M. Saunders, Rocky River, and Paul E. Brokaw, Euclid, all of Ohio, assignors to Nottingham-Spirk Design Associates, Inc., Cleveland, Ohio

Filed Aug. 6, 1990, Ser. No. 562,518

Int. Cl.[5] B67B *7/00;* **B67D** *5/62;* **B23K** *15/10*

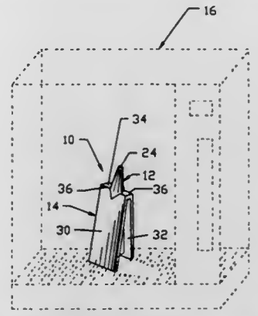
U.S. Cl. 222—1 **1 Claim**

1. A method of applying a mass of hot melt adhesive to an object, comprising the steps of:

(i) providing a container with said mass of hot melt adhesive and a susceptor enclosed therein, said mass of hot melt adhesive being in a substantially solid state, and said susceptor being in a heat transfer relationship with said mass of hot melt adhesive,

(ii) subjecting said container with said mass of hot melt adhesive and said susceptor disposed therein to a source of microwaves for a period of time sufficient to heat said susceptor to at least a predetermined temperature and to transfer sufficient heat from said susceptor to said mass of hot melt adhesive to change said mass of hot melt adhesive from said substantially solid state to a flowable, tacky state, and

(iii) causing said flowable, tacky mass of hot melt adhesive to flow from said container onto said object.



5,188,257

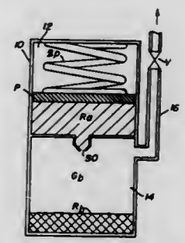
SUPPLY OF CONTROLLED, MEDIUM-PRESSURE CARBON DIOXIDE GAS IN SIMPLE, CONVENIENT DISPOSABLE PACKAGING

George Plester, Essen, Fed. Rep. of Germany, assignor to The Coca-Cola Company, Atlanta, Ga.

Division of Ser. No. 525,067, May 18, 1990, which is a continuation-in-part of Ser. No. 423,697, Oct. 17, 1989, Pat. No. 5,102,627, which is a continuation of Ser. No. 108,921, Oct. 15, 1987. This application Oct. 31, 1991, Ser. No. 785,769

Int. Cl.[5] B67B *7/00*

U.S. Cl. 222—1 **12 Claims**



1. A method of dispensing a product in an atomized state from a sealed container while maintaining a predetermined head space pressure therein, comprising the steps of:

filling a container with a predetermined amount of product to be dispensed, said container including dispensing apparatus coupled to a dispensing tube adapted to extend into said predetermined amount of product to be dispensed;

inserting a delayed pressurizing CO_2 gas generator in said container and wherein said CO_2 gas generator is comprised of a body having at least one part for defining first and second reagent chambers on opposite sides thereof, said partition having at least one opening formed therein

VOL 1147 ISS 4 FEB 23 1993 UMI

for permitting the passage of reagent between said chambers, a first reagent in one of said chambers, and a second reagent in the other of said chambers, said first reagent and said second reagent chemically reacting to generate CO_2 gas upon contact with each other;

opening a CO_2 output conduit of said CO_2 gas generator;

sealing said container with said CO_2 gas generator inside; and

feeding said CO_2 subsequently generated by said CO_2 gas generator into said container for maintaining the head space pressure at a predetermined level initially and during subsequent dispensing operations.

5. An article of manufacture for dispensing a product in an atomized state comprising:

a sealed container having a gas head space region and a product holding region and including a dispensing apparatus coupled to a dispensing tube extending into said product holding region;

a CO_2 gas generator located in said container for generating and maintaining a predetermined gas pressure in said head space, said gas generator including a body member having at least one partition for defining first and second reagent chambers on opposite sides thereof, said partition having at least one opening formed therein for permitting the passage of reagent between said chambers;

a first reagent in one of said chambers and a second reagent in the other of said chambers, said first reagent and said second reagent chemically reacting to generate CO_2 gas upon contact with each other;

said other chamber including a region for holding the CO_2 gas generated; and

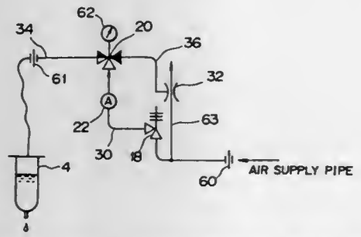
means for applying a predetermined pressure to said first reagent following the start of a reaction between said first and second reagents to urge said first reagent into contact with said second reagent in opposition to a force caused by a pressure exerted by said CO_2 gas generated against the first reagent.

5,188,258

APPARATUS REPONSIVE TO PRESSURE OF A MEDIUM WHICH EFFECTS FLUID DISCHARGE FOR CONTROLLING THE PRESSURE OF THE MEDIUM AND THE TIME THE MEDIUM ACTS ON THE FLUID

Isao Iwashita, Tokyo, Japan, assignor to Iwashita Engineering, Ltd., Tokyo, Japan

Filed Mar. 29, 1991, Ser. No. 677,771
Claims priority, application Japan, Apr. 7, 1990, 2-92723
Int. Cl.[5] B65D *83/14*
U.S. Cl. 222—61 **11 Claims**



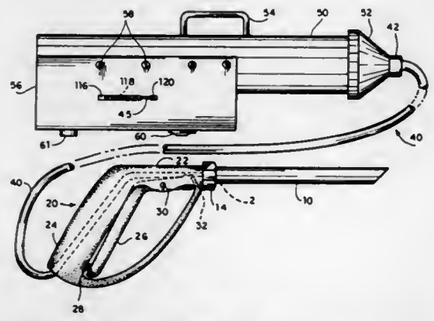
1. In combination, a quantitative fluid discharge device having fluid within a container and means responsive to pressurization of the fluid in the container for discharging the fluid from a discharge side of the container at a predetermined rate, and a dispense control apparatus for controlling a pressure change type fluid discharge rate of the quantitative discharge device, said dispense control apparatus including a keyboard for inputting signals, a microcomputer for receiving said signals from said keyboard, an interface for receiving a digital pressure command signal from said microcomputer, an electropneumatic regulator for receiving an analog pressure command signal from said interface, a solenoid valve disposed in a middle part of an air channel of said electropneumatic regulator, and a pressure sensor for detecting discharge air pressure acting on the fluid, said pressure sensor being disposed at a location which permits detection of said discharge air pressure at the time when the fluid is being discharged from said quantitative discharge device, and said dispense control apparatus including means for simultaneously controlling said electropneumatic regulator and said solenoid valve so as to synchronously control both the pressure and duration of the discharge air pressure acting on the fluid being discharged.

5,188,259

CAULKING GUN WITH BELT WORN CARTRIDGE

Jeffrey D. Petit, Rte. 10, Box 312 Thomas Rd., Canton, Ga. 30114

Filed Feb. 1, 1991, Ser. No. 649,498
Int. Cl.[5] B67D *5/08, 5/64, 5/42*
U.S. Cl. 222—63 **1 Claim**



1. A portable caulker comprising:

a housing to accept therein a cylindrical caulking cartridge, the housing including attachment means for attaching the housing to a belt worn by a caulker user;

electrically operated expulsion means attached to the housing for forcing caulking from the cartridge;

power means for activating the expulsion means;

a flexible tube having one end removably attached to the housing at a point where the caulking extrudes from the housing upon activation of the expulsion means, the tube being attached at said one end to accept internally the extruded caulking from said cartridge;

a gun, for controlled dispensing of caulking, attached to the other end of the flexible tube, the gun including a nozzle removably attached to the gun, for applying caulking, a valve to control passage of the caulking through the nozzle, and a trigger actuating the valve; whereby

caulking forced from the cartridge by the expulsion means passes through the flexible tube and the valve to be dispensed from the nozzle when the user pulls the trigger to open the valve;

electrical pressure detection means and electrical switching means responsive to said electrical pressure detection means for activating the expulsion means to maintain a pressure level at the one end of the flexible tube attached to the housing, the expulsion means including an electric motor, a telescoping jack contained within the housing for pushing on one end of a cartridge, and means for mechanically connecting the electric motor to the telescoping jack for extending the telescoping jack upon operation of the electric motor;

the housing and the gun each including fittings to sealingly engage said one end and said other end of said flexible tube, whereby the flexible tube may be cut from a stock tubing to any desired length;

said nozzle being formed of plastic material which may be cut to any desired length and orifice angle, whereby said nozzle may be replaced with a similarly configured nozzle in the event the caulking becomes hardened within said nozzle, and may also be replaced by a differently configured nozzle depending upon different caulking requirements; and

a heater for warming caulking within the housing.

5,188,260

DISPENSING DEVICE HAVING A WALL MADE FROM A SHRINK PLASTIC MATERIAL

David S. Bettinger, 8030 Coventry, Grosse Ile, Mich. 48138

Filed Jun. 3, 1991, Ser. No. 709,219
Int. Cl.[5] B65D *35/28*
U.S. Cl. 222—95 **10 Claims**



1. A dispensing device comprising:

a container having a container wall;

a flowable charge disposed within said container;

said container having at least one closeable dispensing outlet through which said flowable charge is dispensed; and

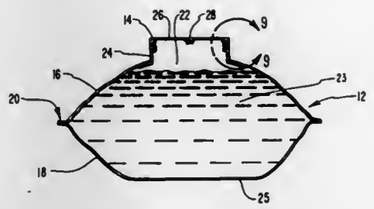
wherein said container wall is made of a shrink plastic material which when activated results in a reduction in the interior volume of said container forcing said flowable charge through said dispensing outlet.

5,188,261

COLLAPSIBLE DRINK DISPENSER

Scott W. Butters, Bountiful, Utah, assignor to InoTec Corporation, Salt Lake City, Utah

Continuation of Ser. No. 465,798, Jan. 12, 1990, abandoned. This application Feb. 14, 1992, Ser. No. 837,656
Int. Cl.[5] B65D *35/08;* **B67D** *5/60*
U.S. Cl. 222—107 **34 Claims**



1. A collapsible beverage container comprising:

a container pouch body comprising:

a substantially flat first body member lying in a horizontal plane, the first body member having an aperture; and

a substantially flat second body member lying in a parallel horizontal plane sealed to the first body member at or near the perimeter of the body members such that when empty the container pouch lies flatly collapsed upon itself in a horizontal plane; and

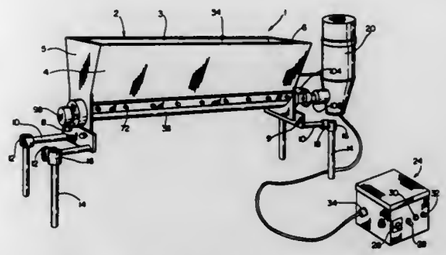
an access member defining an opening therein permitting continual passage of air in or out of the container such that the access member may rise and fall during use, the access member being sealed about the aperture of the first body member and extending upwardly during use from the first body member.

5,188,262

APPARATUS FOR DISPENSING MOIST POWDER MATERIALS

Randy L. Fielding, Fremont, Ohio, assignor to Christy Machine Company, Fremont, Ohio

Filed Apr. 29, 1991, Ser. No. 693,325
Int. Cl.[5] A45D *24/22;* **B65D** *83/00*
U.S. Cl. 222—185 **18 Claims**



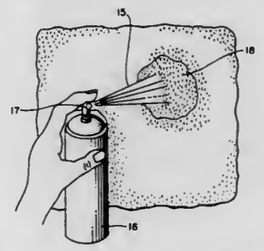
1. A material dispensing apparatus comprising a hopper having a flexible apertured bottom, and agitator bar means mounted for rotation within said hopper into and out of contact with said apertured bottom to cause said apertured bottom to flex such that material contained in said hopper is dispensed through openings in said apertured bottom, said hopper having downwardly converging side walls, and plural studs extending outwardly from said side walls along bottoms of said side walls, said flexible apertured bottom comprising an elongate arcuate member containing said openings, said arcuate member having holes along edges of said arcuate member insertable over said studs, and clamp means on said side walls for releasably clamping said edges of said arcuate member to said side walls for ease of removal and replacement of said arcuate member.

5,188,263

SPRAY-ON WALL SURFACE TEXTURE DISPENSER

John R. Woods, 5182 Topanga Canyon, Woodland Hills, Calif. 91634, assignor to John R. Woods, Woodland Hills, Calif.

Filed Jul. 22, 1991, Ser. No. 733,849
The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.
Int. Cl.[5] B65D *83/00*
U.S. Cl. 222—394 **8 Claims**



1. Dispensing means for applying a hardenable flowable liquid to the surface of a patch surrounded by a drywall surface of irregular surface texture comprising the combination of:

a fluidtight container having a quantity of hardenable fluid intended to be dispensed;

means carried on said container selectively in communication for releasing said hardenable fluid in the form of a spray;

said hardenable fluid comprising a mixture of a base emul-

VOL 1147 ISS 4 FEB 23 1993 UMI

sion together with an adhesive binder and a pressurized carrier of compressed gaseous characteristics;

said hardenable fluid further characterized as having a bumpy, irregular surface texture after application and curing that is matched with and compatible with the surrounding drywall path; and

said emulsion is comprised of a base, a binder and a filler wherein said base is selected from a group consisting of:

1. polyvinyl
2. solvent base suspension
3. water base suspension
4. a mixture thereof and wherein said binder is selected from a group consisting of:

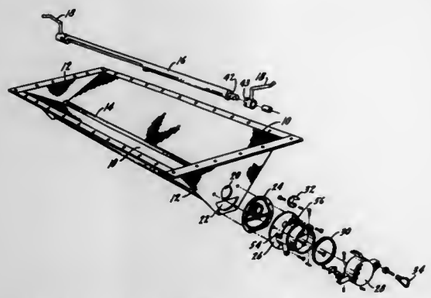
1. a natural polymer
2. a synthetic polymer
3. a mixture thereof.

5,188,264

RAILROAD HOPPER CAR DISCHARGE GATE VALVE

James C. Parkow, Geneva, and Robert F. Seitz, Batavia, both of Ill., assignors to Gen-Tech, Inc., North Anrora, Ill.

Filed Sep. 9, 1991, Ser. No. 756,478
Int. Cl.[5] B65G *53/46*
U.S. Cl. 222—554 **3 Claims**



1. A discharge gate for a railroad hopper car including slope sheets, each terminating in a longitudinally extending lip, said lips being spaced, and a trough secured to the slope sheets beneath the space between the lips, a rotatable longitudinal discharge valve shaft extending between the spaced lips of the slope sheets and positioned to control flow from the gate interior above the slope sheets to the discharge trough,

an operating handle for each end of said shaft, said handles each being movable between a position in which the handle is locked on the shaft and a position in which the shaft is rotatable relative to the handle, stops positioned adjacent each handle for limiting rotation thereof,

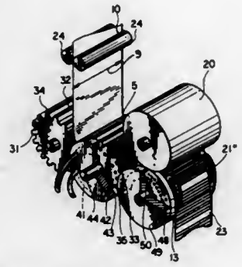
said shaft having a pair of axially spaced and axially extending recessed areas, said recessed areas being circumferentially non-aligned, but in part circumferentially overlapping, said handle stops limiting rotation of said shaft by operation of one handle only and without unlocking of said handle from said shaft between a full closed position in which neither recessed area connects the gate interior with the discharge trough; two partially open positions in which one or the other of said recessed areas connects the gate interior with the discharge trough, and a cleanout position in which one of said recessed areas is fully open to connect the gate interior with the discharge trough and the other recess is partially open to connect the gate interior partially with the discharge trough, when in said fully closed position the longitudinal edges of each recessed area being substantially circumferentially beyond and beneath the terminating spaced lips of the slope sheets.

5,188,265

CONTINUOUS SHEET PLEATING DEVICE FOR MAKING OVERLAPPING PLEATS AND ARRANGEMENTS FOR MAKING AREAS WITH NO PLEATS AND METHOD OF MAKING PLEATS

Gilbert Capy, La Botte 69640, Jarnioux, France, assignor to Gilbert Capy and Akiva Buchberg, both of, France

Filed Apr. 18, 1991, Ser. No. 687,384
Claims priority, application France, Apr. 30, 1990, 90 05747; Jun. 26, 1990, 90 08304
Int. Cl.[5] A41H *43/00*
U.S. Cl. 223—32 **24 Claims**



1. A sheet pleating device comprising:

a first tooth wheel having a plurality of forming teeth disposed preferably on the tooth wheel and rotating at a first speed;

conforming means cooperating with said tooth wheel to continuously conform a sheet to said forming teeth to form folds spaced at a first distance; and

pleat gathering means for collecting folds and including a member moving at a speed different from said first speed to collect said folds and space them at a second distance different from said first distance to produce a continuous ribbon of pleats, wherein said pleat gathering means further includes flattening means for flattening said folds side by side in an overlapping relationship.

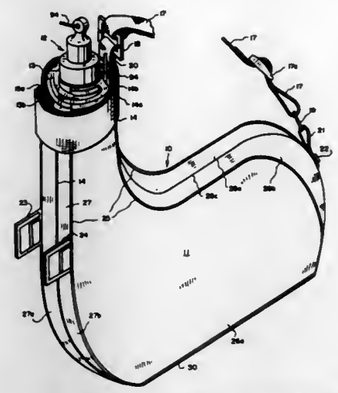
5,188,266

PORTABLE BEVERAGE CONTAINER

Kris P. Loulias, 581 Park St., Midvale, Utah 84047

Continuation-in-part of Ser. No. 378,171, Jul. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 944,823, Dec. 19, 1986, abandoned. This application Mar. 4, 1991, Ser. No. 664,629
Int. Cl.[5] A45F *5/00*
U.S. Cl. 224—148 **20 Claims**

1. A container for liquids, comprising a flexible inner vessel having a relatively narrow neck portion opening into a larger and relatively deep storage portion to recieve and store liquid therein; a substantially rigid inner vessel neck means separate from and adapted to be removably and sealably received in said narrow neck portion of the inner vessel with an end thereof extending from the inner vessel; a cap assembly adapted to be removably secured to the end of the neck means extending from the inner vessel for closing the inner vessel; an outer casing having a relatively narrow neck portion opening into a larger and relatively deep portion, and sized and configured to enclose said inner vessel; and releasable clamping means secured to the neck portion of said outer casing to hold said substantially rigid neck means in releasable engagement with the clamping means when such neck means is received in



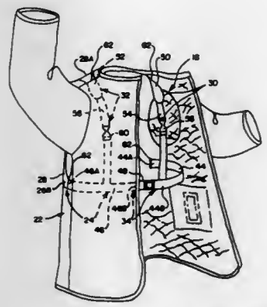
said neck portion of the inner vessel to securely hold such neck means in a fixed position with respect to the outer casing.

5,188,267

SUPPORT ARRANGEMENTS FOR FIREFIGHER'S SELF-CONTAINED BREATHING APPARATUS

Dennis Sargent, Salt Lake, Utah; Donald Aldridge, New Carlisle, Ohio, and Bill McKenney, Winchester, Ky., assignors to Lion Apparel, Inc., Dayton, Ohio

Filed Jul. 25, 1991, Ser. No. 735,789
Int. Cl.[5] A45F *3/04*
U.S. Cl. 224—215 **20 Claims**



1. In a coat including an outer protective shell and a removable inner liner, an arrangement for supporting a self-contained breathing apparatus, said arrangement comprising:

(a) a vest-type garment being composed of a back panel, shoulder straps and a waist strap wherein said shoulder straps and said waist strap each include first ends attached to said back panel and second ends remote from said back panel, and means for detachably connecting said second ends of said respective shoulder and waist straps together to tightly secure said garment on a wearer, said back panel being secured to said coat such that said shoulder and waist straps of said garment extend through said removable inner liner of said coat; and

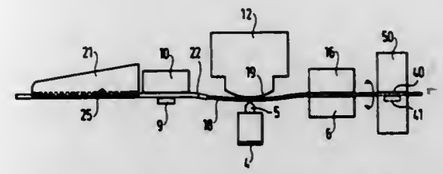
(b) means on an exterior back portion of said outer protective shell of said coat for holding an air tank of the breathing apparatus, said air tank holding means being attached to said back panel of said garment.

5,188,268

DEVICE FOR CUTTING AN OPTICAL FIBER OBLIQUELY

Roland Hakoun, Domont; Michel Reslinger, Bondoufle, and Joan Galopin, Saint Leger en Yvelines, all of France, assignors to Alcatel Fibres Optiques, Bezons Cedex, France

Filed Apr. 30, 1991, Ser. No. 693,481
Claims priority, application France, May 3, 1990, 90 05571
Int. Cl.[5] B26F *3/00*; C03B *37/16*
U.S. Cl. 225—96.5 **5 Claims**



1. A device for cutting an optical fiber obliquely, the device comprising:

first, second, and third means constituting fixing means for fixing an optical fiber at three respective points that are in alignment; the third fixing means including means for rotating the axis of the fiber relative to the first fixing means to twist the fiber while maintaining the fiber on said axis after it has been fixed in the first and third fixing means and before it has been fixed in the second fixing means;

a convex anvil situated between the first and second fixing means;

a diamond cutter;

fourth means for applying the anvil against the fiber in order to tension it between the first fixing means and the second fixing means after it has been twisted by rotation of the third fixing means;

fifth means for applying the cutter against the fiber where it overlies the anvil; and

sixth means for guiding the fiber while it is being installed in the first and third fixing means; and

wherein the first, second, third, fourth, and fifth means each include at least one part mounted to rotate about an axis parallel to the axis of the fiber.

5,188,269

SHEET FEEDING DEVICE HAVING A PAPER PRESSER PLATE TO WHICH A VARIABLE BENDING MOMENT IS APPLIED

Norihito Nakano, Ohbu, Japan, assignor to Tokai Kogyo Kabushiki Kaisha, Ohbu, Japan

Filed Feb. 5, 1991, Ser. No. 650,967
Claims priority, application Japan, Aug. 22, 1990, 2-87525[U]
Int. Cl.[5] B65H *20/20*
U.S. Cl. 226—74 **4 Claims**

1. A sheet feeding device for feeding paper in a predetermined direction while pressing the edges of the paper, which comprises:

a frame;

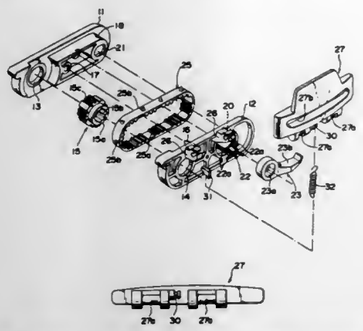
a feeding mechanism positioned in said frame;

a paper presser plate connected to said frame; and

means for applying a bending moment to said presser plate

VOL 1147 ISS 4 FE 23 1993 UMI

wherein said paper presser plate has a thickness which varies corresponding to the distribution of bending moment applied to said paper presser plate and has an upper surface which is curved in said feeding direction.



5,188,270

SHEET CONVEYOR HAVING RETRACTABLE PINS HELD IN A WHEEL FOR OPENINGS IN A SHEET

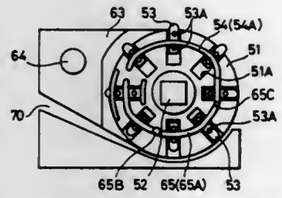
Soichi Hiramatsu, Tokyo, and Kenichiro Hashimoto, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 555,809, Jul. 23, 1990, abandoned, which is a continuation of Ser. No. 328,815, Mar. 24, 1989, abandoned, which is a continuation of Ser. No. 883,748, Jul. 9, 1986, abandoned. This application Mar. 6, 1992, Ser. No. 845,840

Claims priority, application Japan, Jul. 15, 1985, 60-154181; Jul. 15, 1985, 60-154182; Oct. 16, 1985, 60-230393

Int. Cl.[5] B65H *20/20*

U.S. Cl. 226—76 **46 Claims**



1. An apparatus including a sheet conveyor for causing an engaging member to engage an opening formed in a sheet and to convey the sheet, said conveyor comprising:

holding means for holding said engaging member in such a manner that said engaging member is movable between an operative position in which said engaging member engages the opening formed in the sheet and a retracted position retracted from said operative position in which said engaging member is out of engagement with the opening formed in the sheet, said holding means rotating with said engaging member;

drive means for driving and rotating said holding means; and

moving means provided along a rotation route of said engaging member so as to engage with said engaging member and guide and move said engaging member between said operative position and said retracted position in response to the rotation of said engaging member, said moving means having a fixed portion for guiding and keeping said engaging member at said operative position when said engaging member moves at a first position on the rotation route and a movable portion movable to guide and keep said engaging member at either said operative position or said retracted position when said engaging member moves at a second position on the rotation route.

5,188,271

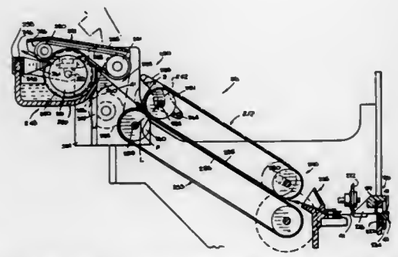
SEGMENTED TAPE TRANSPORT AND MOISTENING SYSTEM

Hugh St. L. Dannatt, Bethel, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Division of Ser. No. 291,468, Dec. 28, 1988, Pat. No. 5,007,370. This application May 24, 1990, Ser. No. 527,972

Int. Cl.[5] B65H *20/00, 20/06*

U.S. Cl. 226—102 **1 Claim**



1. An advancing system for selectively advancing generally flat material in first or second directions, comprising:

(a) a conveyer including at least one moving surface which advances material in contact therewith to an exit of said conveyer;

(b) a motor means for driving said moving surface;

(c) a diverter means disposed at the exit of said conveyer for selectively directing said material in said first and second directions, said diverter including a first exit roller and a second exit roller for receiving said material therebetween, said first exit roller being movable between a first position and a second position relative to said second exit roller, said diverter means directing said material in said first direction when said first exit roller is in said first position, said diverter means directing said material in said second direction when said first exit roller is in said second position;

(d) first means coupling said motor shaft to said diverter for moving said first exit roller between said first and second positions each time said motor reverses the direction of rotation of said shaft;

said first exit roller supports a first moving surface and said second exit roller supports a second moving surface, said material being received between said first and second moving surfaces;

(e) a finger, said finger being mounted for pivotal motion between a first finger position and a second finger position;

(f) second means coupling said motor shaft to said finger for pivoting said finger between said first finger position and said second finger position each time said motor reverses the direction of rotation of said shaft;

said first exit roller being rotatably mounted on a roller shaft; and

said second coupling means comprises a camming slot in said finger, said slot receiving said roller shaft so that said roller shaft ridges in said slot when said first exit roller moves from said first position to said second position, thereby pivoting said finger from said first finger position to said second finger position.

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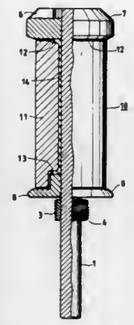
GUIDE ROLLER WITH METAL CYLINDER AND RESIN PORTION

Hiroyuki Kanbe, and Kazunori Okamura, both of Tokyo, Japan, assignors to Nippon Chemi-Con Corporation, Tokyo, Japan

Continuation of Ser. No. 668,367, Mar. 13, 1991, abandoned, which is a continuation of Ser. No. 431,065, Nov. 3, 1989, abandoned. This application Jan. 24, 1992, Ser. No. 825,406

Int. Cl.[5] B65H *20/00*

U.S. Cl. 226—190 **9 Claims**



1. A guide roller for guiding a tape adapted to traverse said guide roller and adapted for attachment to a base, comprising:

a shaft;

means for attenuating vibration of said tape as said tape traverses said guide roller, said means comprising a rotary body fitted around the shaft coaxially thereto, including a metal cylinder and a resin portion between a circumferential surface of the shaft and an inner surface of the metal cylinder, said metal cylinder being rotated as said tape is moved in contact with an outer circumferential surface of said metal cylinder and said metal cylinder having a larger specific gravity than said resin portion to increase an inertial moment of said rotary body;

a first flange secured to an upper end of the shaft;

a second flange having a through-hole for accommodating the shaft, wherein said resin portion contacts said first and second flanges and wherein said metal cylinder is out of contact with said first and second flanges when said resin portion contacts said first and second flanges, wherein said first and second flanges restrict a position of said tape being moved in contact with said roller, and a position of said rotary body; and

an attaching ring fixed to the shaft coaxially thereto and adapted to be coupled to said base such that said second flange is spaced a predetermined distance from said base.

5,188,273

EXPANDER ROLLER FOR WEBS OF PAPER AND THE LIKE

Helmuth Schmoock, Buchener Weg 121, D-2058 Lauenburg-/Elbe, Fed. Rep. of Germany

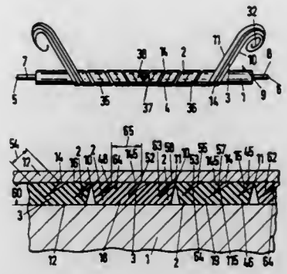
Continuation of Ser. No. 473,284, Jan. 21, 1990, abandoned. This application Nov. 7, 1991, Ser. No. 790,130

Claims priority, application Fed. Rep. of Germany, Feb. 3, 1989, 3903161

Int. Cl.[5] B65H *23/26;* **D06C** *3/06*

U.S. Cl. 226—190 **35 Claims**

1. An expander roller comprising a substantially cylindrical core having a peripheral surface; and an outer layer surrounding said peripheral surface and including at least one helically convoluted strip, said outer layer including a substantially cylindrical external surface having a profile composed of at least one helical groove provided in said at least one strip and extending from said external surface toward said peripheral surface, said at least one strip having at least one lip adjacent said at least one groove and being deformable in response to engagement with a running web of material which is to be expanded as a result of engagement with said external surface whereby said at least one lip reduces the dimensions of said at least one groove, said at least one strip further having two lateral surfaces substantially parallel to said at least one groove, extending between said peripheral surface and said external surface and abutting each other at least at said external surface.



5,188,274

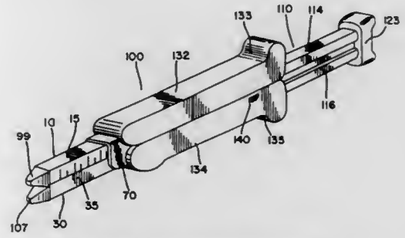
SEMI-DISPOSABLE SURGICAL STAPLER

Manssour H. Moeinzadeh, 2012 Byrnebruk Rd., Champaign, Ill. 61821; Lawrence M. Kaplan, 1021 Arlington Blvd. #312E, Arlington, Va. 22209, and Jeffrey A. Gurosh, 15031 Chicago Rd., Dolton, Ill. 60419

Continuation of Ser. No. 522,583, May 14, 1990, Pat. No. 5,111,987, which is a continuation-in-part of Ser. No. 300,387, Jan. 23, 1989, abandoned. This application Mar. 11, 1992, Ser. No. 850,688

Int. Cl.[5] A61B *17/04*

U.S. Cl. 227—180 **10 Claims**



1. A surgical stapling instrument comprising:

(a) an upper elongate frame member for receiving a staple holder, said upper elongate frame member further comprising a forward section defining an elongate upper jaw member;

(b) a lower elongate frame member, said lower elongate frame member further comprising a forward section defining an elongate lower jaw member, said elongate lower jaw member comprising an anvil section;

(c) hinge means, attaching said upper and lower elongated frame members at their respective rearward extremities, to enable said anvil section to be positioned directly opposed to said staple holder;

(d) a locking means, for substantially maintaining said upper and lower elongate frame members in fixed relative positive;

wherein said upper and lower elongate frame members are in contact along substantially their entire lengths rearward of said elongate upper and lower jaw members when said upper and lower elongate frame members are locked in fixed relative position, whereby deflections of the elon-

VOL 1147 ISS 4 FEB 23 1993 UMI

gate upper and lower jaw members are minimized, said contact of said upper and lower elongate frame members along substantially their entire lengths comprising contact between projections extending downward from said upper elongate frame member and said lower elongate frame member.

5,188,275

FRICTION BONDING CLAMP FOR A ROTOR BLADE

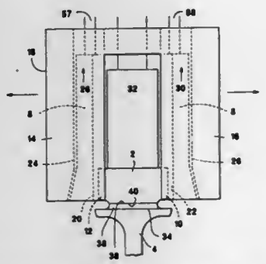
John W. Daines, Bristol, England, assignor to Rolls-Royce plc, London, United Kingdom

Continuation of Ser. No. 703,872, May 22, 1991, abandoned. This application Jul. 17, 1992, Ser. No. 913,757

Claims priority, application United Kingdom, May 24, 1990, 9011605

Int. Cl.[5] B23K *20/12;* **B23P** *15/04;* **B25B** *5/14*

U.S. Cl. 228—2 **5 Claims**



1. In an apparatus for performing a non-rotational friction bonding operation to bond a blade member defining a longitudinal direction to a disc rotor assembly, a clamping means for clamping the blade member laterally during the bonding operation, the clamping means comprising:

a generally U-shaped frame member defined in part by a pair of longitudinally extending limb members, each limb member having a channel extending longitudinally from its distal end and facing the corresponding channel of the other limb member, each channel being shaped to have a tapering cross-section as it proceeds longitudinally from its respective distal end;

a pair of jaw pieces, each jaw piece being adapted to slide longitudinally within the channel of a respective limb member, having gripping means adapted to positively grip a side of the blade member when the blade member is located between the jaw pieces; and

a means for moving the jaw pieces longitudinally along their respective channels, wherein each jaw piece is so structured that when the jaw piece is moved longitudinally in its respective channel in a direction away from the distal end of the limb member, the jaw piece cooperates with the tapering channel so as to cause the gripping means to grip the blade member more positively.

5,188,276

METHOD AND APPARATUS FOR MANUFACTURING MOTORCAR DOOR

Hiroyuki Furuya, and Keizaburo Ohtaki, both of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1991, Ser. No. 789,499

Claims priority, application Japan, Nov. 30, 1990, 2-128689[U]; Nov. 30, 1990, 2-128690[U]; Nov. 30, 1990, 2-336476

Int. Cl.[5] B23K *37/047*

U.S. Cl. 228—6.1 **5 Claims**

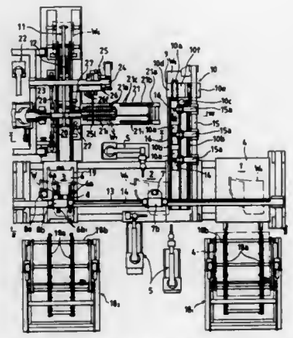
1. An apparatus for manufacturing a door for a motorcar in which a door inner member is assembled by combining accessory parts a beam is combined to the door inner member and thereafter the door inner member is assembled to an outer panel, said apparatus comprising in a working line:

a tack-welding station having disposed therein a welding jig for supporting and tack-welding the inner panel and the accessory parts;

a reinforcing-welding station having disposed therein welding robots;

an assembling station having disposed therein an outer panel setting jig for supporting the outer panel, said tack-welding station through said assembling station being arranged in the order as described from a starting end of said working line;

a first transfer apparatus which is provided with a transfer jig for holding the door inner member and which transfers said inner member by hanging from said tack-welding station to said reinforcing-welding station;



a second transfer apparatus which is provided with a transfer jig for holding the door inner member and which said inner member by hanging from said reinforcing-welding station to said assembling station to assemble the door inner member to the outer panel held on said outer panel setting jig;

a beam charging apparatus which is reciprocated between said reinforcing-welding station and a beam setting station which is provided on a side of said reinforcing-welding station; and

a beam setting jig which is mounted on said beam charging apparatus for holding a beam, such that the door inner member can be handed over among said beam setting jig and said transfer jig of each of said transfer apparatuses.

5,188,277

METHOD OF JOINING TRANSFORMER COIL CONDUCTORS

Ramsis S. Girgis, Muncie, Ind., and Paul W. Martincic, Hermitage, Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 633,938, Dec. 26, 1990, Pat. No. 5,104,028, which is a continuation-in-part of Ser. No. 458,516, Dec. 28, 1989, abandoned. This application Mar. 13, 1992, Ser. No. 851,214

Int. Cl.[5] B23K *20/10;* **H01L** *21/607*

U.S. Cl. 228—111 **13 Claims**

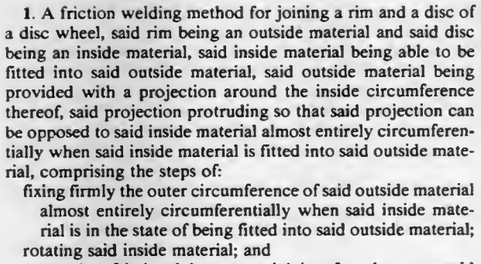
1. A method of joining conductors comprising the steps of:

staggering the ends of cable elements of a first insulated rectangular cable and the ends of cable elements of a second insulated rectangular cable, said staggering step including the steps of:

staggering said ends of said cable elements of said first insulated rectangular cable along the longitudinal axis of said first insulated rectangular cable, and

staggering said ends of said cable elements of said second insulated rectangular cable along the longitudinal axis of said second insulated rectangular cable;

aligning said ends of said cable elements of said first insulated rectangular cable with said ends of said cable elements of said second insulated rectangular cable; and



joining said cable element ends of said first insulated rectangular cable with said cable element ends of said second insulated rectangular cable to form a staggered joint of substantially the same cross-sectional area as said cable elements of said first and said second insulated rectangular cables.

5,188,278

FRICTION WELDING METHOD FOR JOINING A RIM AND A DISC OF A DISC WHEEL AND THE APPARATUS THEREFOR

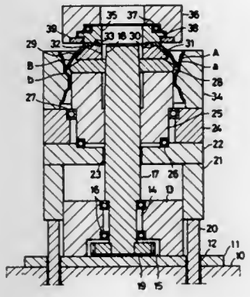
Tsutomu Amao, Tokyo, Japan, assignor to A & S Corporation, Tokyo, Japan

Filed Jun. 3, 1991, Ser. No. 710,199

Claims priority, application Japan, Nov. 22, 1990, 2-315992

Int. Cl.[5] B23K *20/12*

U.S. Cl. 228—112 **17 Claims**



1. A friction welding method for joining a rim and a disc of a disc wheel, said rim being an outside material and said disc being an inside material, said inside material being able to be fitted into said outside material, said outside material being provided with a projection around the inside circumference thereof, said projection protruding so that said projection can be opposed to said inside material almost entirely circumferentially when said inside material is fitted into said outside material, comprising the steps of:

fixing firmly the outer circumference of said outside material almost entirely circumferentially when said inside material is in the state of being fitted into said outside material;

rotating said inside material; and

generating frictional heat at a joining face between said outside material and said inside material by pressurizing said inside material to said outside material from the inside of said inside material so as to ensure that both of said outside material and said inside material can be pressurized uniformly via said projection almost entirely circumferentially, while said inside material is rotated.

5,188,279

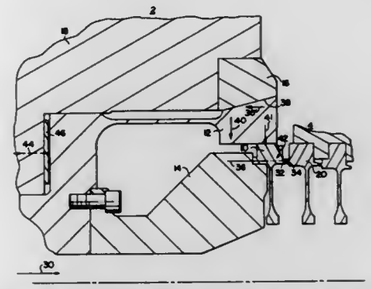
INERTIA BONDING UTILIZING ALTERNATIVE AXIAL LOAD PATHS

Michael J. Joyce, West Hartford, Conn.; Warren M. Boley, Palm Beach Gardens, Fla., and James L. Deal, Amston, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 15, 1991, Ser. No. 745,643

Int. Cl.[5] B23K *20/12*

U.S. Cl. 228—113 **4 Claims**



1. An inertia welding machine which includes a headstock, a flywheel, and a headstock collet, wherein the improvement comprises a means for limiting the radial clamping force on a component placed in said headstock collet by limiting the axial travel of said headstock collet to a distance which provides a gripping force great enough to prevent slippage of said component during said inertia welding operation, but not great enough to cause excessive distortion in said component.

5,188,280

METHOD OF BONDING METALS, AND METHOD AND APPARATUS FOR PRODUCING SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE USING SAID METHOD OF BONDING METALS

Takashi Nakao, Tokyo; Yoshiaki Emoto, Higashiyamato; Koichiro Sekiguchi, Tokyo; Masayuki Iketani, Kasugai; Kunizo Sahara, Hamura; Ikuo Yoshida, Musashimurayama; Akiomi Kohno, Tomobe; Masaya Horino, Chiyoda; Hideaki Kamohara, Katsuta; Shouichi Irie, Yokohama; Hiroshi Akasaki, Akishima, and Kanji Otsuka, Higashiyamato, all of Japan, assignors to Hitachi Ltd. and Hitachi VLSI Engineering Corp., both of Tokyo, Japan

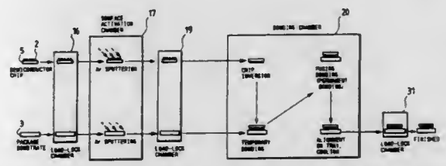
Continuation of Ser. No. 514,943, Apr. 26, 1990, Pat. No. 5,090,609. This application Dec. 23, 1991, Ser. No. 812,024

Claims priority, application Japan, Apr. 28, 1989, 1-107649; May 17, 1989, 1-123353; Nov. 29, 1989, 1-309922

The portion of the term of this patent subsequent to Feb. 25, 2009, has been disclaimed.

Int. Cl.[5] H01L *21/70;* **B23K** *1/20*

U.S. Cl. 228—123 **31 Claims**

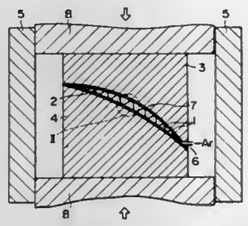


1. A method of bonding a set of members which comprises the steps of:

VOL 1147 ISS 4 FE 23 1993 UMI

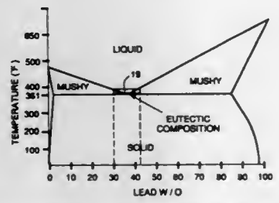
irradiating respective bonding surfaces of a pair of members with an atomic beam;
transferring said members into an inert gas atmosphere; and
pressing said bonding surfaces of said members against each other in the inert gas atmosphere.

5,188,281
BRAZING PROCEDURE IN INERT ATMOSPHERE
Chikara Fujiwara; Takashi Onda, and Akira Fukushima, all of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 17, 1991, Ser. No. 701,827
Claims priority, application Japan, May 30, 1990, 2-138389
Int. Cl.[5] B23K *1/00*
U.S. Cl. 228—189 **17 Claims**



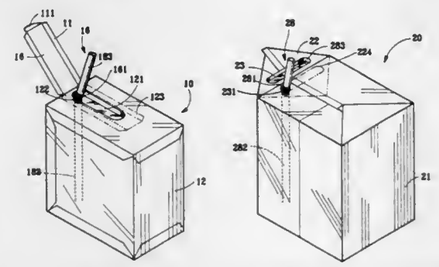
1. A brazing process for brazing a hollow workpiece in the inside thereof comprising:
providing a die having at least two die parts relatively moveable toward and away from each other, said die parts having die surfaces conforming to the external shape of the finished workpiece and forming a die cavity;
providing brazing material on at least one interior section of a hollow workpiece to be brazed;
positioning said hollow workpiece in said die cavity;
pressing said die parts toward each other in a press so that said die surfaces conform to the desired external configuration of the finished workpiece;
injecting an inert gas into the interior of said hollow workpiece at a pressure sufficient to urge said workpiece against said die surfaces;
heating said workpiece to effect said brazing; and
maintaining said pressure of said inert gas sufficient to urge said workpiece against said die surfaces and prevent inward deformation of said workpiece during said brazing.

5,188,282
VAPOR PHASE FLASH FUSING OF PRINTED WIRING BOARDS
Kirk E. Johnson, Diamond Bar, and Edward Modzelewski, Chino Hills, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jan. 28, 1991, Ser. No. 646,589
Int. Cl.[5] B23K *1/015, 31/02*
U.S. Cl. 228—242 **19 Claims**



7. A method of fusing a tin and lead solder alloy deposited on a copper plated circuit board having a plurality of holes formed therein, the method maintaining sufficient solder alloy at the rim of holes in the printed circuit board, the method comprising the steps of:
depositing a tin-lead mixture on a formed copper surface of a circuit board to coat the copper with the tin-lead mixture;
flash fusing the board in the vapor of a heated fluid having a boiling point just above the fusion point of the tin-lead mixture for a time sufficient for the mixture to form a solder alloy but which is insufficient for the alloy to form a flowable fluid; and
rapidly cooling the board to solidify the solder alloy.

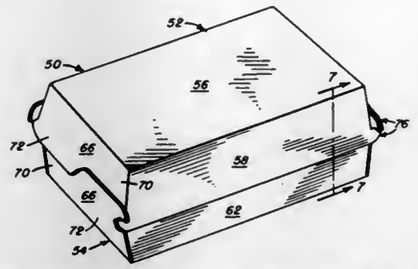
5,188,283
BEVERAGE CONTAINER WITH CONCEALED STRAW
Huan-Lung Gu, Hsinchu Hsien, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu Hsien, Taiwan
Filed Jan. 21, 1992, Ser. No. 823,778
Int. Cl.[5] A47G *19/22*
U.S. Cl. 229—103.1 **1 Claim**



1. A beverage container with concealed straw comprising:
(a) a container to hold a liquid, said container having a plurality of top tuck flaps, which include at least first and second top tuck flaps, for closing said container in a sealed manner by folding said top tuck flaps and applying a sealing material therebetween;
(b) said first top tuck flap having a flat surface and a round hold therethrough;
(c) a concealed straw having a diameter similar to that of said round hole in said first top tuck flap, said straw having a pleated section which penetrates through said round hole, a lower section below said pleated section, and an upper section above said pleated section, whereby said pleaded section allows said upper section to be folded against said flat surface of said first top tuck flap; and
(d) said second top tuck flap having a recessed groove for receiving said upper section of said concealed straw when said second top tuck flap is folded to close said container, and said upper section of said straw will be unconcealed when said second top tuck flap is unfolded.

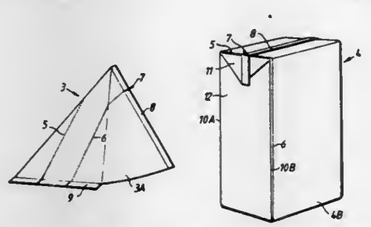
5,188,284
CARTON WITH LUG LOCKED TRAY AND COVER
Larry Eisman, Elkins Park, Pa., assignor to Dopaco, Inc., Downingtown, Pa.
Filed Feb. 10, 1992, Ser. No. 833,114
Int. Cl.[5] B65D *5/22, 5/66*
U.S. Cl. 229—110 **7 Claims**

1. A carton comprising a tray, and a cover selectively movable to a position overlying and closing said tray; said tray including a bottom panel with a plurality of generally planar upstanding peripheral walls having adjacent ends defining corners spaced about said tray, at least one tray locking lug formed generally coplanar with a first one of said walls and extending outwardly at an angle across a second adjacent one of said tray walls at a defined corner therebetween; said cover including a top panel with a plurality of generally planar depending peripheral walls having adjacent ends defining corners spaced about said cover, at least one corner locking lug formed generally coplanar with a first one of said cover walls and extending outwardly at an angle across a second adjacent one of said cover walls at a defined corner therebetween; said cover locking lug being releasably interlocked with said tray locking lug when said cover is in said position closing said tray,



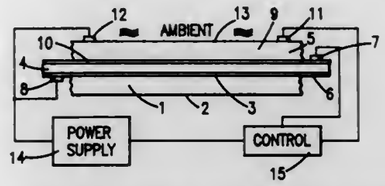
said interlocked cover and tray lugs extending at an angle across each other, one of said walls of said tray and one of said walls of said cover being integrally joined along a fold line defining a common outer edge for a pivotal movement of said cover between said position overlying and closing said tray and a second position outwardly pivoted from said tray.

5,188,285
OPENING DEVICE FOR PACKAGING CONTAINERS
Bo Nilsson; Doriano Ottocan, both of Lund, Sweden, and Per Sponholtz, Gentofte, Denmark, assignors to Tetra Alfa Holdings S.A., Pully, Switzerland
Filed Oct. 3, 1991, Ser. No. 770,323
Claims priority, application Sweden, Oct. 24, 1990, 9003397
Int. Cl.[5] B65D *5/54*
U.S. Cl. 229—242 **16 Claims**



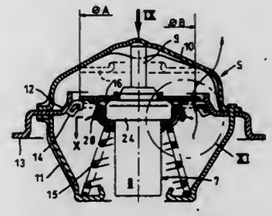
1. A packaging container with an opening device, comprising:
a packaging container manufactured from a continuous strip of material, the continuous strip of material being formed into a tube having an inner surface, said tube being cut at first and second transverse seams at right angles to a longitudinal direction of the strip of material, the first transverse seem being closed so that the inner surface of the tube is sealed to itself and the second transverse seam being closed on itself to form the packaging container, the first and second closed transverse seams being positioned at opposite ends of the packaging container;
an opening device manufactured with the packaging container from the continuous strip of material, the opening device being formed by two continuous perforation lines extending, in a direction on the packaging container corresponding to the longitudinal direction of the continuous strip of material, to the first and second closed transverse seams on the packaging container such that the packaging container may be opened from the first closed transverse seam to the second closed transverse seam, the two perforation lines coinciding at a point at the first closed transverse seam.

5,188,286
THERMOELECTRIC PIEZOELECTRIC TEMPERATURE CONTROL
William E. Pence, IV, Tarrytown, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 18, 1991, Ser. No. 809,351
Int. Cl.[5] G05D *23/00*
U.S. Cl. 236—1 F **12 Claims**



1. A temperature regulating structure for a heat radiating material comprising:
a piezoelectric layer on a surface of said heat radiating material,
a thermoelectric cooler on said piezoelectric layer, and,
control means operable in response to a signal from said piezoelectric layer to alter the cooling function of said thermoelectric cooler.

5,188,287
THERMOSTAT ACTUATED BY AN EXPANDING WAX CAPSULE AND INCORPORATING A SAFETY DEVICE
Jean-Pierre Chamot, Arpajon, France, assignor to Procedes Vernet, Ollainville, France
Filed Oct. 31, 1991, Ser. No. 784,209
Claims priority, application France, Nov. 5, 1990, 90 13669
Int. Cl.[5] F01P *7/16*
U.S. Cl. 236—34.5 **13 Claims**



1. Thermostat actuated by a wax capsule comprising a wax capsule including a casing, a piston, and wax in said casing, which said wax capsule by virtue of relative movement between said casing and said piston caused by thermal expansion of said wax is adapted in normal operation to open a main valve disposed in a fluid circuit immediately after the temperature of said wax capsule exceeds a predetermined first threshold to allow fluid flow through said thermostat, said main valve being closed against fluid flow below said threshold, said thermostat incorporating a safety means adapted not to contribute to the flow of fluid through said thermostat if the temperature is below a second threshold slightly greater than said first threshold but to allow the flow of fluid through the thermostat if the second threshold is exceeded irrespective of the opening of said main valve by said wax capsule, wherein said safety means incorporated in said thermostat includes a moving means made from a single-acting memory alloy for irreversibly moving as a result of a memory of said memory alloy from a first position to a second position at a transformation temperature of said memory alloy approximately equal to said second threshold and which movement thus allows fluid flow through said thermostat.

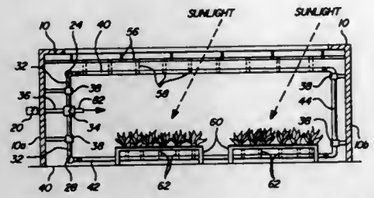
VOL 1147 ISS 4 FEB 23 1993 UMI

5,188,288

GREENHOUSE HEATING SYSTEM

Paul A. DeMerritt, Rochester Hills, Mich., and Don J. Amo, San Andreas, Calif., assignors to Combustion Research Corporation, Rochester Hills, Mich.

Filed Jun. 10, 1991, Ser. No. 713,435
Int. Cl.[5] A01G *9/24;* F24D *5/08, 19/02;* F24H *3/02*
U.S. Cl. 237—70 43 Claims



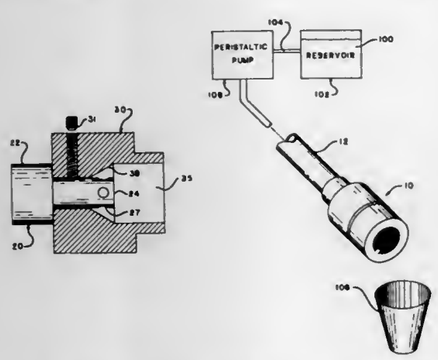
1. A radiant heating system including a burner and a tubular energy-emitting conduit extending through an area to be heated and connected at one end thereof to the burner to receive the burner output, characterized in that the conduit comprises a length of tubing formed from a gas impermeable plastic material.

5,188,289

DRIPLESS, SPLASHLESS NOZZLE

Stephen W. Pesho, Dalton, Ohio, assignor to Euclid Spiral Paper Tube Co., Apple Creek, Ohio

Filed Jun. 20, 1991, Ser. No. 718,190
Int. Cl.[5] B05B *17/00*
U.S. Cl. 239—1 1 Claim



1. A process for precisely dispensing an aliquot of a fluid, said process comprising:

a. placing in a reservoir an amount of said fluid comprising a plurality of said aliquots, said reservoir connected by tubing to a peristaltic pump, which is in turn connected by tubing to a nozzle assembly comprising: i) a generally cylindrical tubing terminator having first and second ends with a central bore from said first end terminating short of said second end, with at least one radial orifice bored therethrough proximate to the second end, said first end provided with means for engaging an end of said tubing; ii) a nozzle body having first and second ends and a central bore therethrough, said central bore having first and second portions of differing constant diameters, the first portion having an inner radius slightly larger than the outer diameter of said tubing terminator and the second portion having an inner diameter larger than said first portion, said first and second portions communicated by a third portion having an inner diameter which increases smoothly from the diameter of said first portion to the diameter of said second portion, said nozzle body provided at its first end with means for engaging said tubing terminator such that each said radial orifice is juxtaposed with the third portion of the central bore of the nozzle body; and iii) a nozzle head having first and second ends with a central bore therethrough, said first end provided with means for attaching said nozzle head to the second end of said nozzle body and the central bore at said second end provided with a screen means; and

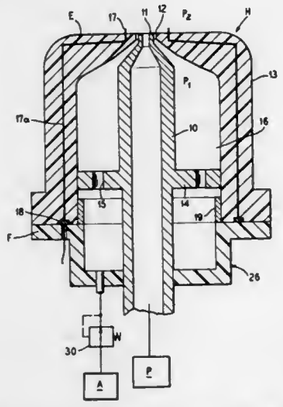
b. repeatedly energizing said peristaltic pump to dispense, in a splashless manner, a single aliquot of said fluid into a container positioned proximate to the second end of said nozzle head.

5,188,290

ELECTROSTATIC COMPRESSED AIR PAINT SPRAY GUN

Gerhard Gebauer, Bermatingen, Fed. Rep. of Germany, and Johann Gruber, Rebstein, Switzerland, assignors to J. Wagner GmbH, Fed. Rep. of Germany

Filed Feb. 12, 1991, Ser. No. 654,342
Claims priority, application European Pat. Off., Feb. 16, 1990, 90103066.8
Int. Cl.[5] B05B *5/03*
U.S. Cl. 239—3 19 Claims



16. A method for using an electrostatic compressed air material spray gun having a spray head which receives material and compressed air, said spray head having a liquid material discharge nozzle connected to a liquid material delivery conduit, a compressed air discharge opening arranged concentrically surrounding the liquid material discharge nozzle and connected to a compressed air delivery conduit, said compressed air discharge opening capable of discharging a sufficient continuous quantity of compressed air adjacent to the liquid material discharge nozzle for atomizing and transporting said liquid material during spraying, said spray head also having an electrode arrangement, connected to a high voltage supply, and arranged adjacent to the liquid material discharge opening, the method comprising the steps of:

delivering said liquid material directly to the atmosphere in front of said spray head;

delivering said compressed air directly to the atmosphere in front of said spray head to atomize said liquid material in front of said spray head;

during spraying, maintaining the ratio of the absolute air pressure prevailing immediately upstream of the compressed air discharge opening to the absolute air pressure prevailing downstream of the compressed air discharge opening to less than 2:1;

maintaining a flow rate of said sufficient continuous quantity of compressed air through said compressed air discharge opening; and

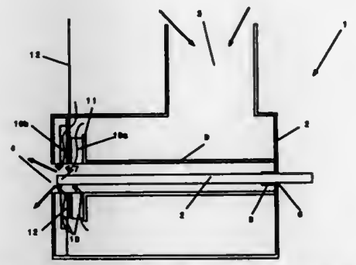
maintaining said electrode arrangement at a sufficient voltage to adequately charge said liquid material to be sprayed.

5,188,291

FLUID DISTRIBUTION DEVICE

David J. Cross, Mamaku, New Zealand, assignor to Her Majesty the Queen in right of New Zealand, New Zealand

Filed May 29, 1990, Ser. No. 529,886
Int. Cl.[5] B05B *5/04*
U.S. Cl. 239—3 12 Claims



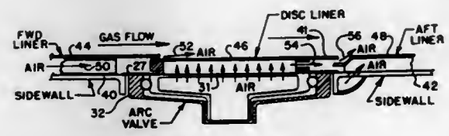
1. A nozzle assembly for a fluid distribution device including a fluid conduit with a first end and a second end, the fluid conduit having a flexible element enabling the first end of the fluid conduit to move with respect to the second end of the fluid conduit, the second end being connectable to a fluid supply, the nozzle assembly being characterized in that there is sufficient space around the first end of the fluid conduit to allow gas flow introduced into the nozzle assembly to emerge coincident with fluid emerging from the first end of the conduit, and the gas flow introduced into the nozzle assembly directly moves the first end of the fluid conduit sufficiently so that said centrifugal force from the movement of the conduit by the gas flow breaks up fluid from the fluid conduit as it emerges through the first end, and the gas flow past the first end of the fluid conduit is sufficient to cause a shearing effect on the fluid emerging from the first end of the conduit, and wherein means for creating an electrostatic charge of the fluid emerging from the first end of the fluid conduit is situated in the vicinity of the first end of the fluid conduit; the first end of the conduit being moveable fast enough to prevent arcing by the electrostatic means.

5,188,292

THERMAL SHIELDS FOR ROTATING MEMBERS IN A GAS FLOW PATH

Luther R. Frey, Peck, Kans., and Francis L. DeTolla, Jupiter, Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 28, 1991, Ser. No. 724,309
Int. Cl.[5] F02K *1/12;* B64C *15/02;* B64D *33/04*
U.S. Cl. 239—127.3 9 Claims



1. In a gas turbine engine having a propulsion nozzle, in an aperture, in a wall near said nozzle, at least two members, an inner member and an outer member, rotatably and concentrically mounted in the wall aperture, and in the path of hot combustion gases flowing through said nozzle, the improvement comprising:

a) a first heat shield liner mounted on said wall downstream of the concentric members,

b) a second heat shield liner mounted on the inner concentric member so as to extend downstream over the outer concentric member and overlapping said first liner,

c) said outer concentric member being recessed relative to said second liner and

d) a third liner mounted on said wall upstream of said concentric members and extending downstream over the outer concentric member, to effectively submerge same and overlapping said second liner,

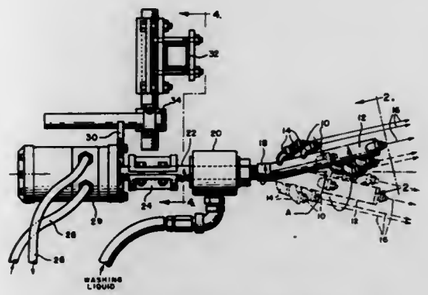
said liners being mounted in shingle-style overlap over said members including the submerged outer concentric member to thermally shield same.

5,188,293

FLUID APPLICATING AND VEHICLE WASHING APPARATUS

Forrest R. Burton, Green Bay, Wis., assignor to P.D.Q. Manufacturing Inc., Green Bay, Wis.

Continuation of Ser. No. 514,006, Apr. 25, 1990, abandoned.
This application Feb. 10, 1992, Ser. No. 833,809
Int. Cl.[5] B05B *3/06, 3/12*
U.S. Cl. 239—227 25 Claims



1. A vehicle washing apparatus comprising:

a) a plurality of fluid delivery nozzles directed to spray fluid in a clustered pattern in parallel directions towards the vehicle and,

b) a first means for rotating said plurality of nozzles about an axis generally parallel to, but at an angle with, the direction of fluid delivery from the nozzles, thus

changing said direction of spray relative to the vehicle being washed.

5,188,294

APPARATUS FOR DISPENSING/APPLYING A MATERIAL

J. Michael Sealy, 7808 Southwestern, Dallas, Tex. 75225, and Roger C. Sharlow, 1417 Judy Dr., Plano, Tex. 75074

Continuation of Ser. No. 579,832, Sep. 10, 1990, Pat. No. 5,133,498. This application Apr. 23, 1991, Ser. No. 872,827
The portion of the term of this patent subsequent to Jul. 23, 2009, has been disclaimed.
Int. Cl.[5] B05B *7/30*
U.S. Cl. 239—310 21 Claims

21. An apparatus for dispensing a mixture of water and a material, comprising:

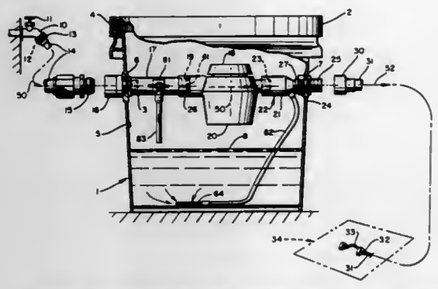
a container having a base and at least one sidewall which defines an interior of said container, said sidewall having a

VOL 1147 ISS 4 FE 23 1993 UMI

water inlet and a liquid mixture outlet formed therein, said container being adapted to be partially filled with water from partial filling means operatively associated with said container for mixing with a material to be deposited in said interior of said container;

a first internal liquid conduit connected between said water inlet and said liquid mixture outlet for permitting the flow of liquids therebetween;

a second internal liquid conduit having a first, open, end positioned within said interior of said container and a



second end connected to said first internal liquid conduit, whereby the flow of water through said first internal liquid conduit draws a mixture of water and said material through said second internal liquid conduit and into said first internal liquid conduit; and

a lockable lid mated with said container sidewall to limit access to said first and second internal liquid conduits, said lockable lid defining an access barrier relative to said partial filling means preventing actuation of said partial filling means to fill said interior of said container with water.

5,188,295

MANUALLY ADJUSTABLE SPRAY APPLICATOR

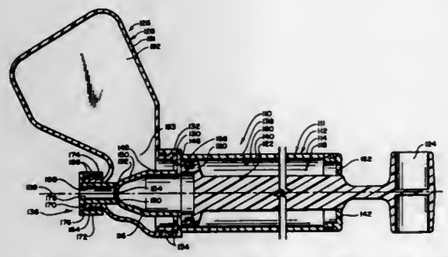
Donald J. Stern; Jeff S. Heaton, both of Bellingham; James A. Tryon, Seattle, and Brett A. Bartholmey, Bellingham, all of Wash., assignors to DJS & T Limited Partnership, Bellingham, Wash.

Continuation-in-part of Ser. No. 560,424, Jul. 31, 1990, Pat. No. 5,069,390, which is a continuation of Ser. No. 321,759, Mar. 10, 1989, Pat. No. 4,955,545. This application Dec. 2, 1991, Ser. No. 801,959

The portion of the term of this patent subsequent to Sep. 11, 2007, has been disclaimed.

Int. Cl.[5] B05B *7/24*

U.S. Cl. 239—320 **20 Claims**



1. A spray applicator to discharge a fluid material in a spray pattern by means of pressurized air, said applicator comprising:

a. a fluid discharge section comprising:

i. a mounting portion;

ii. a forwardly positioned fluid nozzle portion providing a fluid discharge nozzle means which is located on a longitudinally extending discharge axis;

iii. said fluid discharge section defining a fluid discharge region located adjacent to and rearwardly of said fluid discharge nozzle means;

iv. a fluid containing portion mounted to said mounting portion and adapted to contain said fluid material, said containing portion having a fluid discharge opening positioned to deliver said fluid material into said discharge region;

b. an air pressurizing and supply section connected to said fluid discharge section and comprising:

i. a housing defining an air chamber;

ii. an air nozzle portion positioned at a forward end of said housing and providing an air discharge nozzle means which is located at said fluid discharge region rearwardly of said fluid discharge nozzle means;

iii. a manually operable pressurizing member mounted in said housing for motion on a pressurizing stroke to provide pressurized air in said air chamber which is discharged through said air nozzle means to cause fluid material in said discharge region to be discharged through said fluid discharge nozzle means, and also for a return stroke;

c. at least a portion of said fluid discharge section being arranged for forward and rear movement relative to said air pressurizing and supply section in a manner that said fluid discharge nozzle means moves toward and away from said air discharge nozzle means in a manner to control discharge of said fluid material through said fluid discharge opening means, each of said air pressure and supply section and at least said portion of said fluid discharge section being configured to be manually grasped so as to facilitate manually initiated movement toward and away from one another.

5,188,296

PULP DISPERSION LANCE

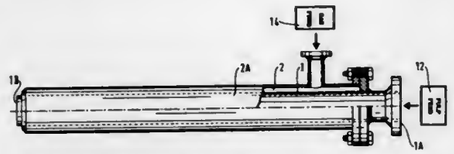
Christian Duez, Voisins Les Bretoaneux; Jean-Claude Semedard, Paris, and Jean-Xavier Morin, Neuville Aux Bois, all of France, assignors to Stein Industrie, Velizy-Villacoublay, France

Filed Apr. 2, 1991, Ser. No. 679,495

Claims priority, application France, Apr. 2, 1990, 90 04200

Int. Cl.[5] B05B *7/10*

U.S. Cl. 239—403 **8 Claims**



1. In a pulp dispersion lance comprising:

a central tube (1) extending longitudinally without reduction in section along a lance axis (1C) having a pulp inlet (1A) formed at an upstream end of the central tube and a lance outlet (1B) formed at a downstream end of the central tube;

pulp feed means (12) for feeding pulp to said pulp inlet;

a sleeve extending concentrically about said central tube and spaced therefrom and defining with said central tube a longitudinally extending gas duct (2);

gas feed means (14) opening to said sleeve at an upstream end of said gas duct for injecting a driving gas under pressure into an upstream portion of said gas duct; and

dispersion orifices (3, 4) passing through a wall of the central tube to inject the driving gas into the tube from the gas duct to disperse and accelerate the pulp so that said pulp forms a jet on leaving the central tube lense outlet 1B;

the improvement wherein at least some of the dispersion orifices constitute a series of circumferentially distributed rotation-imparting orifices (4) of sufficient length to form rotation-imparting jets of the driving gas, said jets being directed and centered on axes (4A) of said orifices which extend obliquely and have components in transverse planes of the lance which slope sufficiently relative to radial directions of the lance for a circumferential component of the rotation-imparting jets to cause the pulp to rotate rapidly inside said central tube (1) up to said downstream end (1B), the series of rotation-imparting orifices (4) being at an axial distance from said downstream end (1B) lying in the range of 60% to 200% of an inside radius of said central tube, and wherein said dispersion orifices include a break-up series constituted by break-up orifices (3) pierced at a distance from the lance outlet (1B) such that the driving gas forms break-up jets in the direction towards the lance axis (1C), and said rotation-imparting series formed downstream from the break-up series.

5,188,297

PRESSURE TIGHT INJECTOR

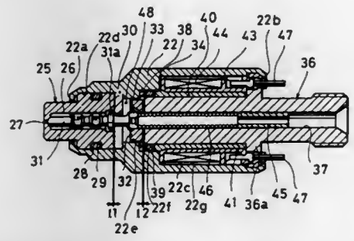
Hitoshi Asano, Obu, Japan, assignor to Aisan Kogyo Kabushiki Kaisha, Obu, Japan

Filed Feb. 14, 1992, Ser. No. 835,407

Claims priority, application Japan, Feb. 28, 1991, 3-017656[U]

Int. Cl.[5] F02M *51/06*

U.S. Cl. 239—585.3 **7 Claims**



1. An injector including:

a casing having a through-hole extending along the axis thereof from a front end surface thereof to a rear end surface thereof;

a valve housing inserted in said through-hole through the front end surface and adapted for slidably guiding a valve;

a fuel pipe inserted in said through-hole through the rear end surface; and

a solenoid coil disposed in a space defined between the outer peripheral surface of the fuel pipe and the inner peripheral surface of the casing; said injector characterized in:

said through-hole of said casing including an enlarged-diameter portion opening to said rear end surface, an intermediate-diameter portion provided in front of said enlarged-diameter portion and a reduced-diameter portion provided in front of said intermediate-diameter portion;

said fuel pipe being inserted at least to a position where it reaches said intermediate-diameter portion, a cylindrical block being fitted on a portion of said fuel pipe to be inserted in said casing;

a sealing ring being disposed in a compressed manner in an annular space defined by a rear end surface of said reduced-diameter portion, an inner peripheral surface of said intermediate-diameter portion, a front end surface of said cylindrical block and an outer peripheral surface of said fuel pipe; and

the inside of said reduced-diameter portion being separated from the inside of said enlarged-diameter portion so as to prevent leakage of fuel.

5,188,298

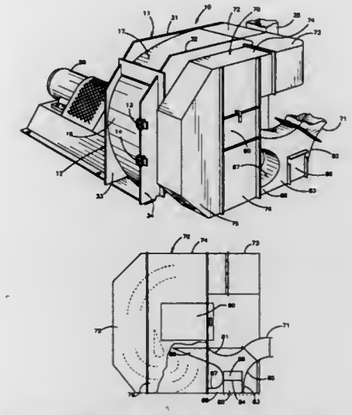
METHOD AND APPARATUS FOR FIBERIZING

Milton Gerber, Ossian, Ind., assignor to Advanced Fiber Technology, Inc., Bucyrus, Ohio

Filed Oct. 30, 1991, Ser. No. 785,029

Int. Cl.[5] B02C *23/08*

U.S. Cl. 241—5 **26 Claims**



17. A method for comminuting feed stock to form a low density, product comprising:

feeding said feed stock entrained in a fluid stream to a central portion of a cylindrical rotor chamber;

separating undesirably heavy components of said fed stock via grate means disposed generally parallel to the path of said fluid stream prior to said components reaching a centrifugal rotor having radial vanes;

driving said centrifugal rotor at relatively high speed in said chamber to generate a high velocity air flow with said feed stock entrained therein to force said organic material radially outward in said rotor chamber at relatively high velocity;

forcing said resulting fluid flow radially outward through perforations in a cylindrical screen surrounding said rotor at a fluid stream velocity of at least 1,000 feet per minute through the perforations in said screen to comminute said feed stock; and

discharging the comminuted product.

5,188,299

APPARATUS AND METHOD FOR RECYCLING ASPHALT MATERIALS

Arthur N. Hendrickson, Coram, N.Y.; Lawrence C. Hanlon, South Portland, Me., and Russell W. Anderson, Mahwah, N.J., assignors to Rap Process Machinery Corp., Ramsey, N.J.

Filed Oct. 7, 1991, Ser. No. 772,488

Int. Cl.[5] B02C *13/02*

U.S. Cl. 241—23 **16 Claims**

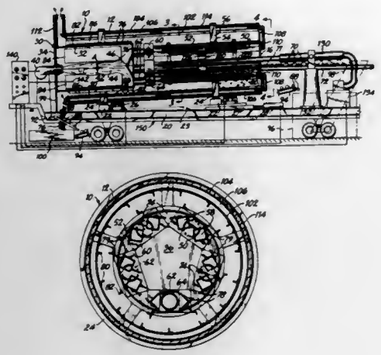
1. The method for processing recyclable asphalt material received from the field in relatively large pieces for delivery in a mass containing desired smaller aggregate-sized pieces for reuse, the method comprising:

introducing the relatively large pieces of recyclable asphalt material directly into a cage-like array of breaker members, the breaker members having an axial length and being tubular, with each breaker member having an interior extending along the axial length of the breaker member, the breaker members being spaced apart from one another circumferentially, the circumferential spacing between adjacent breaker members being selected such that only the desired aggregate-sized pieces of recyclable

VOL 1147 ISS 4 FE 23 1993 UMI

asphalt material will pass between adjacent breaker members; and

heating the breaker members through the interior of each breaker member while rotating the cage-like array and



moving the recyclable asphalt material axially along the breaker members such that the desired aggregate-sized pieces of recyclable asphalt material are delivered through the circumferential spacing between the breaker members.

5,188,300

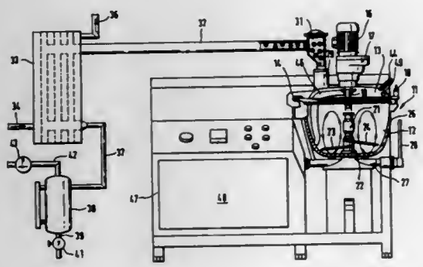
METHOD FOR DISPOSING OF FILTER CARTRIDGES

Joachim Wolf, Malmsheimer Strasse 67, 7252 Weil der Stadt, Fed. Rep. of Germany

Filed Jun. 7, 1991, Ser. No. 712,155

Int. Cl.[5] B02C *23/00*

U.S. Cl. 241—23 **9 Claims**



1. Method for disposing of filter inserts that contain solvent residues comprising

a) grinding filter inserts, together with solvent residues in a sealable vessel;

b) heating said filter inserts together with said solvent residues;

c) drawing gaseous solvent from said sealable vessel into a solvent condenser by a negative pressure pump connected to said solvent condenser; and

d) feeding condensate that has precipitated in said solvent condenser to a condensate collecting tank.

5,188,301

DISPOSAL DEVICE FOR PAPER DOCUMENTS

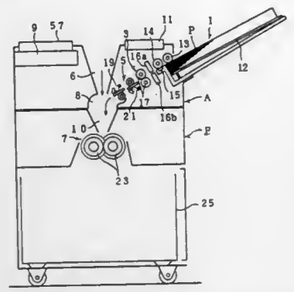
Takanori Hasegawa, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed Mar. 12, 1992, Ser. No. 850,132

Claims priority, application Japan, Mar. 13, 1991, 3-48456; Feb. 7, 1992, 4-22325

Int. Cl.[5] B02C *7/14*

U.S. Cl. 241—33 **2 Claims**



1. A device for disposing paper and other information carrying media, comprising:

means for feeding paper individually for each sheet;

information read out means for reading information carried by each sheet of paper fed by said paper feeding means;

information storage means for storing said information obtained by said information read out means so as to be reproduced as required;

paper shredding means for shredding said paper after said information is read there from; and

a manual inlet for feeding paper directly into said paper shredding means.

5,188,302

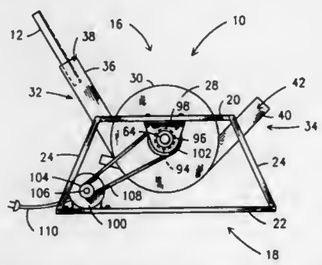
HAMMER MILL APPARATUS

Oscar E. Alvarez, Apartment 701, 5700 Mariner South, Tampa, Fla. 33609

Continuation-in-part of Ser. No. 833,792, Feb. 12, 1992. This application Jul. 27, 1992, Ser. No. 919,846

Int. Cl.[5] B02C *9/02*

U.S. Cl. 241—189.1 **12 Claims**



1. A hammer mill apparatus to shred and chip pallets fed therethrough comprising a shredding rotor assembly rotatably disposed within a rotor housing including an entry portion and an exit portion formed therein, said shredding rotor assembly includes at least two rotor disc assemblies being operatively connected to a rotor drive assembly, each said rotor disc assembly comprises a plurality of hammer elements mounted in a corresponding plurality of slots formed in the periphery of a corresponding rotor disc, said rotor discs are disposed in spaced relationship relative to each other by at least one spacer element, said rotor drive assembly including a drive motor and a rotatable rotor drive shaft to rotate said rotor disc assemblies whereby the outer end of each said hammer element engages pallets in said entry portion to shred and chip such pallets entering said rotor housing and discharges the reduced material from said exit portion.

5,188,303

APPARATUS FOR PROTECTING DISKS OF A HAMMER-CRUSHER ROTOR WITH A PROTECTIVE SHIELD

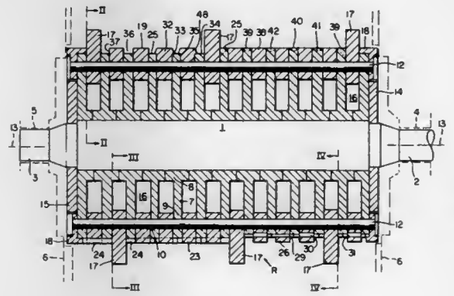
Erhard Hoof, Eschweiler, Fed. Rep. of Germany, assignor to Albert Hoffmann KG, Eschweiler, Fed. Rep. of Germany

Filed Feb. 21, 1990, Ser. No. 482,562

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1989, 3905492

Int. Cl.[5] B02C *13/04*

U.S. Cl. 241—194 **33 Claims**



1. An apparatus for protecting radially outward faces of spacer disks against wear and tear in a hammer-crusher rotor having a rotational axis, comprising a protective shield including at least one protective filler body constructed for placement in an axial gap between neighboring spacer disks, each protective filler body having a radially inner portion with axially facing side surfaces spaced from each other to fit at least partly into said gap and a radially outer portion with a circumferential surface having a contour substantially concentric with said rotational axis, said radially inner portion of said protective filler body and said radially outer portion with said circumferential surface of said protective filler body having substantially the same axial width, so that said radially outward faces of said spacer disks are substantially free of said protective filler body, each protective filler body having at least one mounting hole extending in parallel to said rotational axis, said apparatus further comprising mounting means including at least one axle rod passing through said at least one mounting hole in parallel to said rotational axis for positioning said radially outer circumferential surface contour of said protective filler body relative to said radially outward faces of said spacer disks so that said spacer disks are protected by said filler body without substantially covering said radially outward faces of said spacer disks.

5,188,304

DEVICE AND PROCESS FOR THE HANDLING AND THE CONTROL OF THE THREAD ON A CONER MACHINE DURING THE OPERATION OF SPOOL CHANGE AND OF THREAD JOINING

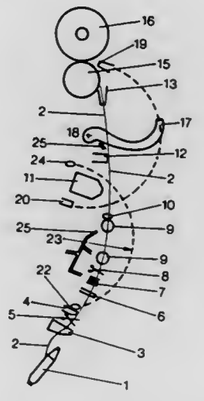
Luigi Colli, and Roberto Badiali, both of Pordenone, Italy, assignors to Savio S.p.A., Pordenone, Italy

Continuation-in-part of Ser. No. 691,689, Apr. 25, 1991, abandoned, which is a continuation of Ser. No. 436,957, Nov. 15, 1989, abandoned, which is a continuation of Ser. No. 158,608, Feb. 22, 1988, abandoned. This application Dec. 2, 1991, Ser. No. 800,764

Claims priority, application Italy, Feb. 27, 1987, 19511 A/87

Int. Cl.[5] B65H *54/22*

U.S. Cl. 242—35.6 R **11 Claims**



1. A device for rejoining a thread end from a spool and a thread end from a cone through a thread tensioning means obtained from a thread passing from the spool to the cone in a continuous thread path comprising:

a) a thread feeler member positioned proximate to the spool for detecting the absence of the thread along said continuous thread path and for activating changing the spool when said absence is detected;

b) nozzle means for catching and holding the spool thread end and the cone thread end and for bringing said ends in a thread rejoining position;

c) further nozzle means for catching the thread coming from the spool, said further nozzle means being movable transverse to the thread path from a rest position adjacent the thread path into a first position away from said thread path in which said further nozzle means cleans by suction at least said tensioning means and intakes by suction free thread portions, and into a second position away from said thread path in which said further nozzle means keeps in said thread path rejoining the position said spool thread end caught and held by said nozzle means, said further nozzle means being further movable from said second position into said rest position together with the thread for preventing the formation of loops when the thread ends are joined and the passage of thread from the spool to the cone is resumed;

d) a thread joining member for receiving the spool and cone thread ends from said catching and holding means and rejoining said received spool and cone thread ends; and

e) detecting means proximate to said thread joining member for detecting the absence of the thread along the continuous thread path and for activating said catching and holding means when said detecting means detects that the thread is broken.

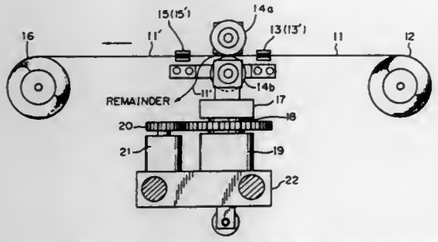
VOL 1147 ISS 4 FEB 23 1993 UMI

5,188,305

APPARATUS FOR CUTTING WINDING STRIPS FOR USE IN A WOUND CORE

Fumio Kitamura, Chino, Japan, assignor to Kitamura Kiden Co., Ltd., Chino, Japan

Continuation of Ser. No. 788,249, Nov. 5, 1991, abandoned, which is a continuation of Ser. No. 409,432, Sep. 19, 1989, Pat. No. 5,115,703. This application Jul. 30, 1992, Ser. No. 924,416
Claims priority, application Japan, Sep. 27, 1988, 63-239728
Int. Cl.[5] B26D *1/24;* **H01F** *41/02*
U.S. Cl. 242—56.2 **1 Claim**



1. An apparatus used for cutting a plurality of winding strips for strip material for use in a wound core, comprising:

slitter blade means for cutting said material among predetermined curves so that each one of said plurality of winding strips is in direct continuous contact with another adjacent one of said plurality of winding strips, each one of said winding strips comprises a series of maximum and minimum material width positioned at predetermined intervals along the length of said winding strip, each maximum width position and each minimum width position of each one of said winding strips substantially corresponds to minimum width position and each maximum width position of an adjacent one of said winding strips, respectively; said slitter blade means including an upper slitter biased and a lower slitter blade;

a base supporting said slitter blades;

a pivot shaft having a rotational axis extending through and orthogonally to the rotational axes of said slitter blades and supporting said base in parallel with said material;

guide rollers for sandwiching said material;

an adjusting mechanism for rotating said pivot shaft and moving said base in a plane parallel to the plane in which the material lies and in a direction perpendicular to the flow of said material; and

a temporary winding frame for winding a cut plurality of wing strips.

5,188,306

SELF-ADVANCING FILM CASSETTE INCLUDING AN AUXILIARY ROTATION TRANSMITTANCE STRUCTURE

Hideaki Kataoka; Kazuo Okutsu; Koichi Takahashi, and Kazunori Mizuno, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 27, 1990, Ser. No. 618,554
Claims priority, application Japan, Nov. 27, 1989, 1-307054; Dec. 4, 1989, 1-314547; Dec. 11, 1989, 1-320942
Int. Cl.[5] B65H *75/28, 16/10, 20/26;* **G03B** *1/00*
U.S. Cl. 242—71.1 **2 Claims**

1. A self-advancing film cassette comprising:

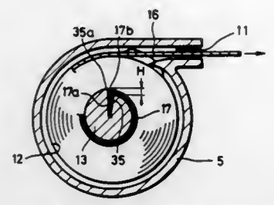
a cassette housing;

a spool disposed within said cassette housing, said cassette housing including a film passage mouth, wherein a film leader on the periphery of a roll of film coiled on said spool advances through said film passage mouth when the spool is rotated in an unwinding direction; and

auxiliary rotation transmittance means for transmitting the force of rotation of said spool to inner turns of said roll of film;

wherein said roll of film further comprises a film trailer which is fixed to said spool;

wherein said film trailer is bent by approximately 90 degrees in the vicinity of an end thereof along a sharp bending line extending in a width direction thereof; and



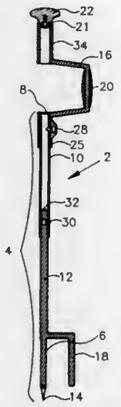
further wherein said auxiliary rotation transmittance means includes a slit extending int he axial direction of said spool for inserting said bent film trailer end, and a step portion formed at an inlet of said slit for pushing said bent film trailer end along said sharp bending line when said spool is rotated in the unwinding direction.

5,188,307

TOOL FOR COILING FIRE HOSES AND A METHOD OF USE THEREFOR

Brian D. Miller, Kitchener, Canada, assignor to Cobra Fire Corporation, Guelph, Canada

Filed Feb. 4, 1991, Ser. No. 650,288
Int. Cl.[5] B65M *75/40*
U.S. Cl. 242—86 **12 Claims**



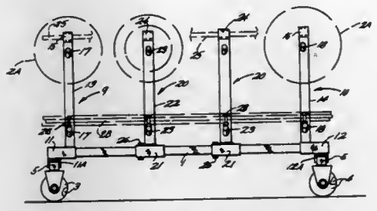
1. A tool for coiling a fire hose lying on a stationary supporting surface, said hose having a coupling at each end thereof, said tool comprising an elongated member with an upper termination and a lower termination, said lower termination having retention means to releasably retain said hose in an area located between said couplings, said lower termination terminating at a pivot point, said upper termination having turning means to rotate said elongated member about said pivot point when said pivot point contacts said supporting surface, said elongated member having at least two concentrically mounted sections that are sized relative to one another so that the elongated member is longitudinally collapsible, said retention means rotating with said elongated member thereby causing the hose to slide on the supporting surface and to coil about the lower termination of the elongated member, said tool being portable and being operable without being connected to additional components.

5,188,308

WIRE CART FOR OPTIONAL USE AS A CONDUIT CART

Norman P. Tussing, 1365 SE. 10th, Warrenton, Oreg. 97146

Filed Oct. 15, 1991, Ser. No. 775,427
Int. Cl.[5] B65H *49/32*
U.S. Cl. 242—86.5 OR **5 Claims**



1. A cart for use by electricians for transporting wire reels and electrical conduit at a job site, said cart comprising,

an undercarriage including pairs of wheels,

a longitudinal member supported by said undercarriage,

multiple post assemblies one each on the ends of said longitudinal member each including a tubular member in place on said longitudinal member, a post secured at its lower end to said tubular member, a sleeve at the upper end of said post to receive a spindle on which a wire reel may be carried and arms on said post, and

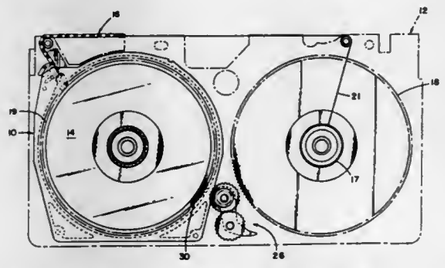
a detachable post assembly for optional use located intermediate said post assemblies at each end of said longitudinal member and including a supplemental post, a base at the post lower end for disposition on the longitudinal member in a manner spaced from said post assemblies at each end of said longitudinal member, detachable fastener means engageable with said base and said longitudinal member for attaching said detachable post assembly to said longitudinal member, and arms on the supplemental post.

5,188,309

TETHER KEEPER FOR VIDEOTAPE CARTRIDGE ADAPTOR

Jerrold K. Weeks, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 24, 1991, Ser. No. 690,626
Int. Cl.[5] G11B *23/087, 23/00, 17/00*
U.S. Cl. 242—199 **4 Claims**



1. A two-piece videocassette of the type formed by the insertion of a cartridge (**10**) into an adaptor (**12**), said cartridge containing a rotatable supply reel of magnetic tape (**14**), characterized by the feature that:

said adapter (**12**) having an adaptor housing (**13**), said adaptor housing having a fixed adaptor housing surface (**81**) for receiving a tether band (**10**) into engagement;

said adaptor (**12**) having a cartridge cavity (**9**) for receiving said cartridge (**10**);

said adaptor (**12**) having a take-up reel (**18**) mounted for rotation within said adaptor housing (**13**);

said tether band (**16**) coupled to said take-up reel (**18**) and extending from the location of said take-up reel (**18**) to a position proximate said cartridge cavity (**9**) for coupling said tape to said take-up reel;

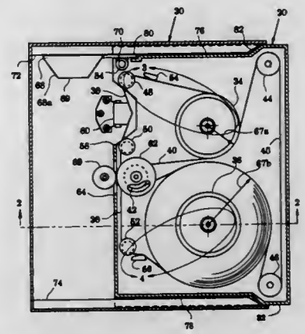
said adaptor (**12**) having a tether connector keeper assembly (**22**) located proximate said cartridge cavity (**9**), said tether connector keeper assembly (**22**) for engaging said tether band (**16**) with said fixed adaptor housing surface (**81**) when said cartridge (**10**) is outside of said adaptor (**12**) defining a first keeper position, and for releasing said tether band (**16**) when said cartridge (**10**) is inside said cartridge cavity (**9**), defining a second keeper position.

5,188,310

UNIDIRECTIONAL TAPE TENSION ELEMENT AND METHOD OF USE THEREOF

Gerhard Rotter, Mission Viejo, Calif., assignor to Athana Incorporated, Torrance, Calif.

Filed Mar. 1, 1991, Ser. No. 663,737
Int. Cl.[5] B65H *23/00*
U.S. Cl. 242—199 **11 Claims**



1. A tape cartridge, comprising:

a shell having an opening;

first and second reels rotatably mounted in said shell for bi-directional convolute winding of a magnetic tape therebetween;

first and second guides mounted in said shell on opposite sides of said opening for guiding the magnetic tape across a transducer head inserted in said opening; and

tensioning means, mounted between each reel and each guide, for increasing tension on said tape when said tape moves past it toward said opening, said tensioning means including:

a first tensioning element fixedly mounted between said first reel and said first guide, said first tensioning element having a surface defining a tape path and including a first portion located closer to said first reel and a second portion located closer to said first guide, said first portion having a smaller radius of curvature than said second portion, said first tensioning element being positioned so that said tape describes a minimum wrap angle around said first tensioning element when there is a minimum amount of tape on said first reel and a maximum wrap angle around said first tensioning element when there is a maximum amount of tape on said first reel; and

a second tensioning element fixedly mounted between said second reel and said second guide, said second tensioning element having a surface defining a tape path and including a first portion located closer to said second reel and a second portion located closer to said second guide, said

VOL 1147 ISS 4 FEB 23 1993 UMI

first portion having a smaller radius of curvature than said second portion, said second tensioning element being positioned so that said tape describes a minimum wrap angle around said tensioning element when there is a minimum amount of tape on said second reel and maximum wrap angle around said second tensioning element when there is a maximum amount of tape on said second reel.

5,188,311

APPARATUS FOR CONTROLLING REEL BRAKE OPERATION OF TAPE RECORDER

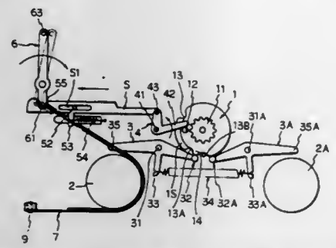
Hwan Y. Choi, Suweon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 4, 1991, Ser. No. 637,647

Claims priority, application Rep. of Korea, Jan. 6, 1990, 90-112

Int. Cl.[5] G11B *15/18*

U.S. Cl. 242—204 **10 Claims**



1. An apparatus for controlling reel brake operation of a tape recorder comprising a deck, a first reel and a second reel rotatably mounted on said deck, and a tape loading motor, said apparatus comprising:

a control cam rotated by power transmitted from said tape loading motor and comprising a camming surface including a projection, recesses, and a stepped part each formed at predetermined circumferential positions, said camming surface being axially divided into a first track and a second track with said stepped part being positioned only in said second track;

a first brake arm and a second brake arm each having an interlocking pin engaging said camming surface of said control cam, said interlocking pins having different lengths so that only the longer interlocking pin engages said stepped part, said first brake arm and said second brake arm for respectively braking said first reel and said second reel simultaneously and selectively;

a crank pivoted by rotation of said control cam;

a slide lever, connected with one end of said crank, to reciprocate horizontally in response to pivoting of said crank;

a tension arm engaged with slide lever to pivot in response to reciprocation of said slide lever; and

a tension band, actuated by said tension arm, for braking said first reel.

5,188,312

FISHING REEL WITH REAR POSITIONED THUMB REST AND CLUTCH CONTROL MEMBER

Jun Sato, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan

Continuation of Ser. No. 596,046, Oct. 11, 1990. This application Jun. 30, 1992, Ser. No. 908,601

Claims priority, application Japan, Oct. 13, 1989, 1-266868

Int. Cl.[5] A01K *89/02*

U.S. Cl. 242—261 **5 Claims**

1. A baitcasting reel, comprising:

first and second side members, a front line payoff end and an opposite rear end;

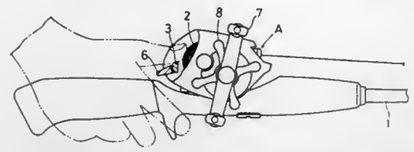
a spool shaft rotatably supported between said first and second side members, and a spool mounted on said spool shaft;

a handle rotatably attached to one of said side members;

transmission means for transmitting rotary force from said handle to said spool shaft, said transmission means including an engageable and disengageable clutch, wherein said spool shaft is operatively connected to said handle when said clutch is engaged, and wherein said spool shaft is rotatable with respect to said handle when said clutch is disengaged;

a thumb rest element having a first thumb rest surface fixedly supported between said side members and behind said spool;

clutch disengaging means for disengaging said clutch, said clutch disengaging means including a control member which is movable between upper and lower positions, wherein movement of said control member to said lower



position causes said clutch to be disengaged, and wherein said control member has a second thumb rest surface positioned between said side members and behind said first thumb rest surface; and

retaining means for retaining said control member in said lower position, said retaining means having a toggle spring mechanism that selectively urges said control member toward both said upper and lower positions; and

wherein said second thumb rest surface is positioned above said first thumb rest surface when said control member is in said upper position, and wherein said second thumb rest surface is positioned below said first thumb rest surface when said control member is in said lower position and retained by said retaining means, and wherein said first and second thumb rest surfaces are substantially parallel to each other, and wherein said first and second thumb rest surfaces are adjacent to each other.

5,188,313

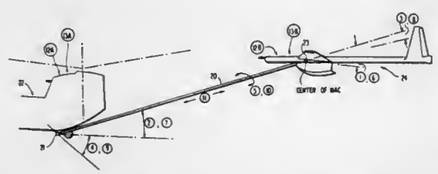
GLIDER AIRCRAFT TOW CONTROL SYSTEM

Frank N. Piasecki, Haverford, Pa., assignor to Piasecki Aircraft Corporation, Essington, Pa.

Filed Jan. 3, 1992, Ser. No. 816,721

Int. Cl.[5] B64C *37/02*; B64D *3/00, 39/00*

U.S. Cl. 244—3 **7 Claims**



4. In a glider towing system for controlling the spatial relationship of a glider aircraft having aerodynamic control surfaces and a powered towing aircraft interconnected by a rigid tow frame having a first pivotal connection to the towing aircraft at one end and another pivotal connection to the glider at the other end, sensor means associated with said tow frame and aircraft sensing parameter values indicative of the spatial relationship existing between said glider and towing aircraft and glider flight path control means operable by changes in parameter values sensed by said sensor means from corresponding parameter values indicative of a selected spatial relationship between said aircraft for positioning said glider control surfaces as reestablishes said aircraft selected spatial relationship, the improvement wherein:

said sensor means includes a first unit sensing a first parameter value of the vertical elevation angle defined between the longitudinal axes of said tow frame and towing aircraft at said first connection,

said glider control surfaces including downwardly extendible wing flaps and upwardly extended wing spoilers and

said glider control means includes comparator means determinative of a change in said elevation angle first parameter value from said corresponding first parameter value indicative of said selected aircraft spatial relationship and operable in (1) establishing an extension of said flaps when said determined first parameter elevation angle change is in the direction of an angular decrease of a positive elevation angle and an angular increase of a negative elevation angle and (2) establishing an upward extension of said spoilers when said determined first parameter elevation angle change is in the direction of an angular increase of a positive elevation angle and an angular decrease of a negative elevation angle.

5,188,314

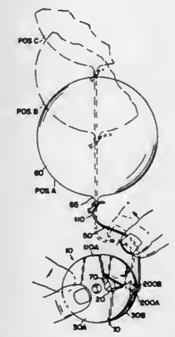
BALLOON HOLDING DEVICE

William H. Peters, P.O. Box 814, County Rd. I-50, West Unity, Williams County, Ohio 43570

Filed Apr. 8, 1991, Ser. No. 681,931

Int. Cl.[5] B64B *1/50*; A63H *27/10*

U.S. Cl. 244—31 **4 Claims**



1. A holder for the end of a balloon string for an inflatable balloon having a stem, such device comprising:

(a) a spool member having an internal spindle of cylindrical configuration, such spool member having a barrel and a first end and a second end, with such spool member having a first circular rim and a second circular rim member integrally and concentrically joined respectively to said first end and said second end of the barrel of said spool member, with each such rim member being larger in diameter than the barrel of said spool member, and wherein each said rim member has an inner surface and an outer surface, as well as each rim member having an outer circumference with the barrel of said spool member being adapted to have a longitudinally extending string wrapped therearound in a concentrically spiralling manner;

(b) string retardent means, comprising at least one pair of opposing projecting teeth integrally affixed to the respective opposing inner surfaces of the first and second rim member, and wherein said respective opposing teeth members are discrete members that extend integrally around a portion of the respective first circular rim member and second circular rim member in a circumferential manner less than the full circumferential distance of each of the first circular rim member and second circular rim member.

5,188,315

SUBMUNITION UNIT INCLUDING A ROTARY PARACHUTE

Roland Foitzik, Mettmann; Karl-Friedrich Doherr, Brunswick; Dieter Münscher, Brunswick, and Christos Saliaris, Brunswick, all of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 23, 1992, Ser. No. 917,288

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1991, 4124960

Int. Cl.[5] B64D *17/14*

U.S. Cl. 244—152 **8 Claims**



1. In a submunition unit including a rotary parachute disposed at a tail of said unit underneath a releasable cover and provided with rigging lines, and means for connecting the free ends of said rigging lines to said unit; the improvement comprising: a respective reef loop provided for each of said rigging lines between said parachute and an associated said free end; and a releasable holding means, mounted on said unit, for normally engaging said reef loops, so that said rotary parachute, after being deployed, is initially in a reefed state and acts as a deceleration parachute, and for releasing said reef loops after a predetermined period of time to permit the parachute to fully open.

5,188,316

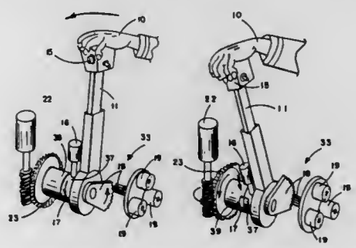
AIRCRAFT AUTOTHROTTLE SYSTEM

Jim Dressler, Santa Ana; Bill Johnston, Santa Fe Springs; Gerald Loftis, Colton; Mark Salierno, Corona; Gordon Solt, Lake Elsinore; Jeff Spira, Huntington Beach, and Manual Tarsha, Irvine, all of Calif., assignors to Dover Corporation, Yorba Linda, Calif.

Filed Dec. 30, 1991, Ser. No. 814,594

Int. Cl.[5] B64C *13/04*

U.S. Cl. 244—234 **4 Claims**



1. In a throttle control system for an aircraft having a throttle control lever and automatic control means for automati-

VOL 1147 ISS 4 FEB 23 1993 UMI

cally controlling the positioning of said lever wherein the improvement comprises means for alternatively connecting said lever to said automatic control means or control of the throttle thereby or disconnecting said lever from said automatic control means to enably manual control of said lever comprising:

a first plate member connected to said control lever,

a second plate member connected to said automatic control means,

a clutch mechanism for alteratively either connecting said first and second plate members together or disconnecting said plate members from each other, said clutch mechanism including wedge member means having a surface which abuts against one of said plate members, roller member means which abuts against the other of said plate members, said wedge member means having a wedge shaped surface positioned directly opposite said roller member means, and

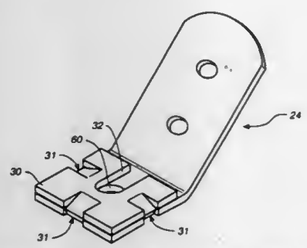
means responsive to manual actuation for alternatively engaging or disengaging said clutch mechanism by driving said wedge member means, said roller member means and said first and second plate members into locking engagement with each other to interconnect the control lever and the automatic control means or releasing the driving of said plate members and said wedge and roller member means from locking engagement thereby disconnecting the control lever from said automatic control means to permit manual control thereof.

5,188,317

SEISMIC CONNECTOR WITH RETAINING CLIP

Steven A. Roth, 2891 Danville Blvd., Alamo, Calif. 94507

Filed Dec. 6, 1991, Ser. No. 802,651
Int. Cl.[5] E21F *17/02*
U.S. Cl. 248—59 **5 Claims**



1. A device to provide lateral bracing between a support element and a structure, said device comprising a lateral brace extending from said support element toward means to connect said lateral brace to said structure, said lateral brace including a first opening intersecting an edge thereof, said first opening dimensioned to receive and partly surround said support element,

a closure element having a second opening intersecting an edge thereof, said second opening dimensioned to receive and partly surround said support element,

first interlocking means on said lateral brace and second interlocking means on said closure element, said first interlocking means being engagable with said second interlocking means to prevent relative motion between said lateral brace and said closure element when said lateral brace opening and said closure element opening are positioned to surround said support element, and

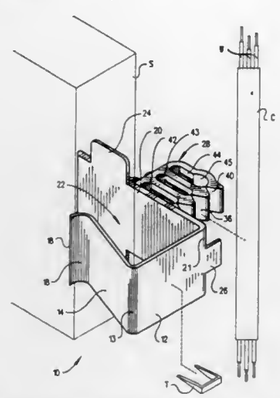
means to hold said lateral brace and said closure element with their respective interlocking means engaged.

5,188,318

STUD ENGAGING ELECTRICAL WIRING CLIP

Charles H. Newcomer; Alan K. Galedrige, and Richard N. Saylor, all of P.O. Box 134, Grants Pass, Oreg. 97526

Continuation-in-part of Ser. No. 722,245, Jun. 27, 1991, and Ser. No. 739,395, Aug. 1, 1991, and Ser. No. 739,394, Aug. 1, 1991, and Ser. No. 739,392, Aug. 1, 1991. This application Aug. 15, 1991, Ser. No. 745,173
Int. Cl.[5] F16L *3/22*
U.S. Cl. 248—68.1 **36 Claims**



1. A clip for securing electrical cables and/or wires to a framing member, comprising:

a front wall;

a first inclined side wall obliquely connected to said front wall;

a second side wall connected substantially perpendicularly to said front wall;

said front wall, said first inclined side wall and said second side wall defining an open channel dimensioned to receive a framing member;

said first inclined side wall being sufficiently resilient so as to provide a frictional clamping force for securing said clip to the framing member; and

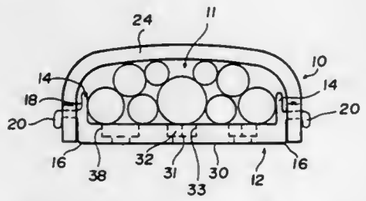
an electrical cable and wire engaging clip body formed on an outer surface of said second side wall, said clip body including a plurality of slots formed therein and dimensioned for insertion of electrical cables and/or wires.

5,188,319

CLAMP FOR HOSES, TUBING AND/OR ELECTRICAL HARNESSES

Suheal N. Hawash, and Terry E. Hively, both of Fort Wayne, Ind., assignors to Navistar International Transportation Corp., Chicago, Ill.

Filed Jan. 27, 1992, Ser. No. 825,688
Int. Cl.[5] F16L *3/00*
U.S. Cl. 248—68.1 **8 Claims**



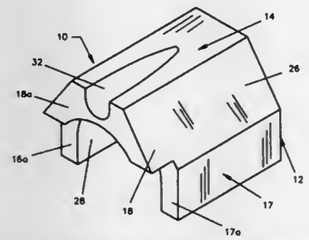
1. A clamp for securely clamping together a plurality of structures of differing cross-sectional sizes, the clamp comprising a base member, said base member including an elongate planar portion having an upright terminal flange disposed at each longitudinal end thereof and extending upwardly therefrom to a distal end, said planar portion and said flanges defining a trough for containing said structures, each flange including a clasp element disposed on an intermediate portion of an outer surface thereof and projecting laterally outwardly therefrom, and an elongated elastic strap member including an opening in each longitudinal end thereof, said strap element openings being engaged respectively over said clasp elements and the intermediate portion of said strap being stretched under tension between and over the distal ends of flanges in a manner overlying the planar base portion therebetween.

5,188,320

NURSING BOTTLE HOLDER

John G. Polka, 1355 Margate, Libertyville, Ill. 60048

Filed May 6, 1991, Ser. No. 695,989
Int. Cl.[5] A47D *15/00*
U.S. Cl. 248—103 **6 Claims**



1. A nursing bottle holder for holding a nursing bottle having a nipple at one end comprising in combination,

a body member formed of a unitary piece of resilient material having a central section and two opposing side sections,

said side sections having distal ends, and said side sections being positioned relative to said central section such that said distal ends of said side sections snugly fit against the sides of a reclining infant when said central section is positioned against the chest of said reclining infant, and

said central section has a longitudinal extension which extends beyond said side sections and between the shoulders of said reclining infant when said distal ends of said side sections are fitted against the sides of said reclining infant, and

said central section having an inclined groove therein for frictionally retaining a nursing bottle such that said bottle will be inclined with said nipple angled downwardly and be positioned near said infant's mouth when said distal ends of said side sections are positioned against said sides of said infant.

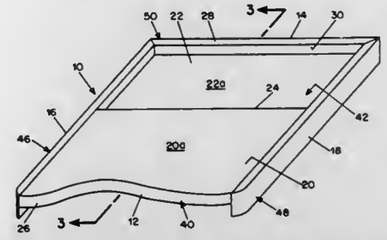
5,188,321

KEYBOARD STAND

Bernard Hirschenson, and Joanna Hardin, both of New York, N.Y., assignors to Compucube, Inc., New York, N.Y.

Filed Jul. 19, 1991, Ser. No. 732,791
Int. Cl.[5] A47B *21/00*
U.S. Cl. 248—118 **3 Claims**

1. A keyboard stand comprising substantially rigid plate-like member having a front edge, a rear edge, and side edges, said front edge having a center midway between said side edges and a notched part offset from said center, said notched part shaped and positioned to receive an operator's lower front torso, an upper armrest surface of a size and shape such as to be adapted to support substantially all of but forearms of a keyboard operator from the elbows to the wrists when the operator's hands are positioned to operate a keyboard, the upper armrest surface being bounded by the front edge and front parts of the side edges of the member, and an upper keyboard-supporting surface of a size and shape such as to be adapted to support a keyboard, the upper keyboard-supporting surface being bounded by the rear edge and rear parts of the side edges of the member and adjoining the upper armrest surface along a juncture at a location intermediate the front and rear edges of



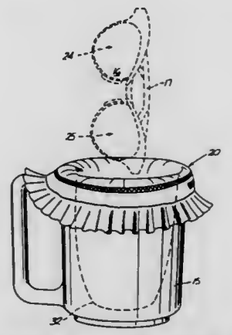
the member, the upper keyboard-supporting surface being recessed below the upper armrest surface such that the frontmost part of the housing of the keyboard does not extend substantially above the upper armrest surface and the member having a shoulder at said juncture adapted to be engaged by the front edge of the keyboard housing.

5,188,322

EYEGLASS HOLDER

Patricia M. Kinstrey, P.O. Box 195, Esopus, N.Y. 12429

Filed Oct. 24, 1991, Ser. No. 782,102
Int. Cl.[5] A47G *23/00*
U.S. Cl. 248—146 **2 Claims**

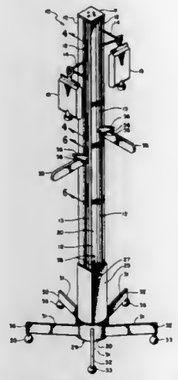


2. Eyeglass holder apparatus for storing and protecting eyeglasses when not in use comprising in combination:

a protective removable insert, closed-bottom liner fitting, a cylindrical drinking receptacle of a shape, diameter and length for positioning eyeglasses to extend partly within the receptacle with the fitting held in place by extending over the receptacle outer rim thereby to receive, pad, and guide said eyeglasses loosely into the fitting in a position with bows closed to stand substantially upright therein and lean against the rim with part of the bows extending from the mouth of the receptacle for grasping while cushioning eyeglasses contact with the receptacle upon entering and leaving.

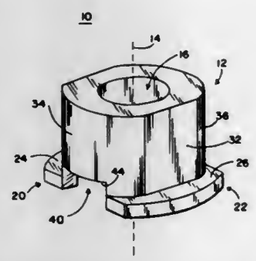
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5,188,323
AMBULATORY SUPPORT APPARATUS
Henry B. David, Glendale, Calif., assignor to Melco Wire Products Co., San Fernando, Calif.
Filed Feb. 10, 1992, Ser. No. 833,380
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—158 **6 Claims**



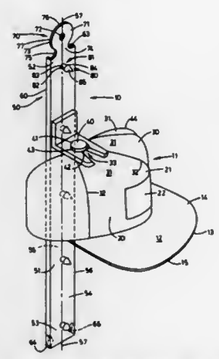
1. An ambulatory supporting apparatus for movably supporting heavy loads comprising:
(a) a central standard comprising a plurality of vertically disposed, parallel tracks;
(b) a base including a hub coupled to said central standard, at least five supporting legs extending outwardly and upwardly from said hub and being uniformly spaced about said hub, and ambulatory means coupled to each of said supporting legs for movement over a horizontal surface;
(c) hanger means for supporting the loads, said hanger means being slidably coupled within each of said parallel tracks;
(d) a positioning arm slidably coupled within each of said parallel tracks; and
(e) force transfer means coupled intermediate each of said load supporting hanger means and a respective positioning arm for moving said hanger means within said track in an inverse response to the movement of said positioning arm.

5,188,324
SELF-RETAINING MOUNTING BLOCK
Michael L. Joseph, Nashau, N.H.; Steven G. Boulay, Shrewsbury, and Ronald W. Nasman, Winchendon, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.
Filed Apr. 16, 1992, Ser. No. 870,438
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—222.3 **9 Claims**



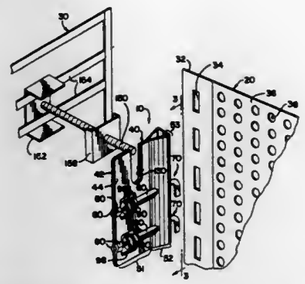
1. A mounting block for insertion and retention in a double-D aperture in a panel comprising:
a body having a center axis and two pairs of opposing external body surfaces extending parallel to the center axis, one pair of body surfaces being planar and parallel to each other, the other pair of body surfaces being convex and extending parallel to each other, the body size and shape conforming to the aperture;
a ledge extending away from each of the planar body surfaces, each ledge having a ledge retaining surface extending generally normal to the center axis of the body, the ledge retaining surfaces being co-planar;
a rectilinear notch formed in each of the convex sides, the notches extending between the ends of the ledges, each of the notches exposing a notch surface in the body at each of the convex body surfaces, the notch surfaces being in parallel spaced apart facing relation with the ledge retaining surfaces and offset therefrom, the notch surfaces being approximately coplanar, the ledge retaining surfaces and the notch surfaces being effective to engage opposing major surfaces of the panel upon insertion of the body into the aperture and rotation of the mounting block approximately one quarter turn about the center axis into the rotated retention position.

5,188,325
CLOTHING SUSPENSION APPARATUS
Calvin A. Hilty, Strathmore, Calif.; Larry J. Raid, Denmark, Iowa, and George G. Grigel, Grafton, Wis., assignors to Calvin's Cap Racks, Strathmore, Calif.
Filed Mar. 1, 1991, Ser. No. 662,849
Int. Cl.[5] A47F *7/00*
U.S. Cl. 248—224.4 **22 Claims**



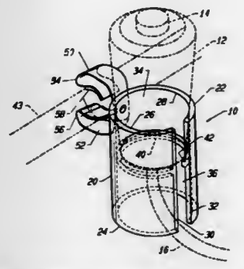
1. A clothing suspension apparatus for supporting a cap having a button affixed on a crown thereof, comprising:
a support member having a longitudinal axis and opposite first and second ends, and wherein the first end is a male end and the second end is a female end, and wherein a plurality of support members may be connected in substantially coaxial alignment by releasably interconnecting the first end of one support member to the second end of an adjoining support member; and
a plurality of cap engagement assemblies disposed in predetermined spaced relation substantially along the longitudinal axis of the support member, and wherein each of the cap engagement assemblies include a pair of legs which are spaced apart to define a channel which slidably receives the button of a cap therebetween for supporting the cap, the cap engagement assembly being rotatable with respect to the support member such that the cap may be supported in a plurality of angular orientations relative to the support member.

5,188,326
ADJUSTABLE ADAPTER BRACKET
Jerrold R. Zich, Hoffman Estates, Ill., assignor to Colony, Incorporated, Hanover Park, Ill.
Filed Jan. 4, 1991, Ser. No. 638,315
Int. Cl.[5] A47B *96/00*
U.S. Cl. 248—225.2 **4 Claims**



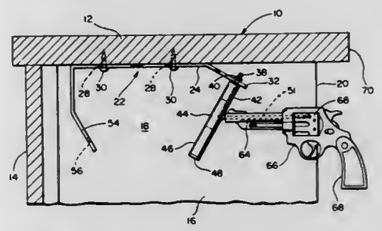
1. An adjustable adapter bracket suitable for providing support at a selected elevation on a support member defining apertures, said adjustable adapter bracket comprising:
a body defining a load bearing region;
hook means carried by said body and movable relative to said body to project beyond said body for entering into one of said apertures and engaging said support member; and
adjustment means cooperating with said body and hook means for adjusting the orientation and amount of projection of said hook means relative to said body;
said body comprising two mating body sections that have mirror image symmetry and that are connected together along a plane of symmetry;
each said section being of unitary construction and including: (a) a generally planar first wall, (b) a generally planar second wall extending from said first wall at an oblique angle, and (c) a generally planar third wall extending from said second wall in an orientation generally perpendicular to said first wall;
each said third wall defining a flat engagement surface for engaging said support member adjacent said apertures; and
said hook means including a hook element projecting from said third wall engagement surface of each said body section.

5,188,327
HOLDER FOR ATTENDANT SIGNALLING DEVICE
Marlin S. White, 3020 Rockville Rd., Suisun City, Calif. 94585
Filed Feb. 20, 1992, Ser. No. 837,904
Int. Cl.[5] A47B *96/06*
U.S. Cl. 248—231.8 **4 Claims**



1. Holder apparatus independently releasably mountable on the rail of a bed for releasably holding a patient communication device having a communicator body, a call button, and an electric cord extending from the bottom of the communicator body, said apparatus comprising, in combination:
a housing having upper and lower ends, said housing being wholly formed of electrically non-conductive plastic material and including first and second wall elements defining a passageway extending between said upper and lower ends, said wall element first and second wall elements each having a distal end, said distal ends being spaced from one another, positioned in a common plane, and defining a slot extending along the length of said housing between the upper and lower ends thereof and being in communication with said passageway, said housing being of a size and configuration to support said communicator body with a portion of said communicator body suspended within said passageway, said slot having sufficient width to allow for the free passage of said electric cord therethrough when the communication device is being positioned in said holder apparatus or being removed therefrom; and
mounting means connected to said housing and extending outwardly therefrom, said mounting means comprising a pair of resilient clamp members defining an opening for receiving a bed rail, said opening being smaller than said bed rail whereby said resilient clamp members are temporarily deformed by said bed rail when said holder apparatus is being mounted on or removed from said bed rail, said housing additionally comprising a protrusion extending from at least one of said wall elements into said passageway at a location between said housing upper and lower ends, said protrusion and said housing upper end comprising alternative supports for different sized communicator bodies, said protrusion comprising a rib extending substantially about the inner periphery of each of said wall elements, said rib having an upper support surface engageable by the communicator body of a patient communicator device having a communicator body which is too small to be supported by the upper end of said housing, and said rib being wholly formed of electrically non-conductive plastic material, extending in a plane substantially perpendicular to said common plane, and having opposed rib ends terminating at said slot.

5,188,328
UNDERCOUNTER REVOLVER SUPPORT
Thomas O. Thompson, 75 H. C. Walton Dr., Jackson, Tenn. 38301
Filed Jan. 13, 1992, Ser. No. 819,820
Int. Cl.[5] A47F *7/00*
U.S. Cl. 248—309.2 **11 Claims**



1. A mount for a pistol of the type including a forwardly opening barrel, said mount including an elongated horizontal mounting portion for mounting parallel to a horizontal mounting surface, one end of said mounting portion including a depending, inclined pivot shaft downwardly tilted toward the other end of said mounting position, a horizontal support rod having a base end and a free end, mounting means mounting said support rod at its base end from said pivot shaft for free gravity angular displacement about said pivot shaft, said rod

VOL 1147 ISS 4 FE 23 1993 UMI

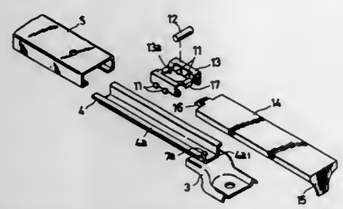
being disposed in generally horizontal position when in its gravity biased position, said rod being adapted to support a pistol therefrom with the barrel of said pistol loosely telescoped over the free end of said rod.

5,188,329

STRUCTURE FOR COVERING SLIDE RAIL IN SEAT ADJUSTER

Masatoshi Takahara, Akishima, Japan, assignor to Tachi-S Co. Ltd., Tokyo, Japan

Filed Oct. 23, 1991, Ser. No. 780,948
Int. Cl.[5] B60N *2/06*
U.S. Cl. 248—430 **8 Claims**



1. A structure for covering a slide rail in a seat adjuster, in which said slide rail includes an upper rail on which is mounted a seat and a lower rail fixed on a floor side, said upper rail being slidably fitted to said lower rail, said structure comprising:
   a retaining means for retaining a rolling element, said retaining means being interposed between said upper and lower rails; and
   a cover member slidably provided over said lower rail such as to be slidable in a longitudinal direction thereof, said cover member being for covering a rearward side of said lower rail and operatively coupled to said retaining means.

5,188,330

PLANT SUPPORT STRUCTURE

Grant B. Curtis, Jr., 1566 Brianwood Rd., Decatur, Ga. 30033

Filed Jul. 3, 1991, Ser. No. 725,503
Int. Cl.[5] F16M *13.00*
U.S. Cl. 248—519 **11 Claims**



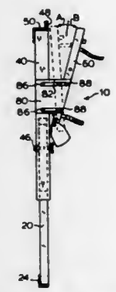
1. A free standing structure for supporting a plant through its base and a point on its trunk above the center of mass of the plant on a supporting surface area, said structure comprising:
   a base support adapted to rest on the supporting surface area and defining an upwardly facing support surface thereon;
   an elongate substantially rigid staff member having a longitudinal axis, a prescribed length, an attachment end and an opposed projecting end;
   trunk attachment means for releasably and flexibly connecting the projecting end of said staff member to the trunk of the plant while the base of the trunk is movably supported on said base support; and,
   staff mounting means for mounting said staff member on said base support so that the longitudinal axis of said staff member is fixedly located with respect to said upwardly facing support surface and angles inwardly from the intersection point at which said staff member intersects said support surface to an attachment position located directly above a prescribed locating position on said support surface spaced from said intersection point, said attachment located at a prescribed height above said support surface and above the center of mass of the plant so that the weight of the plant tends to move the plant toward its upright more stable condition and so that the longitudinal axis of said staff member passes substantially through the single point of attachment of said trunk attachment means with the trunk of the plant whereby the force moment around said staff member tending to destabilize the plant is minimized when the point of attachment on the plant trunk shifts around said staff member.

5,188,331

UMBRELLA SUPPORT BRACKET

Gurney D. Baines, P.O. Box 297, Pinehurst, N.C. 28374

Filed Dec. 6, 1991, Ser. No. 802,869
Int. Cl.[5] A01K *97/10*
U.S. Cl. 248—538 **13 Claims**



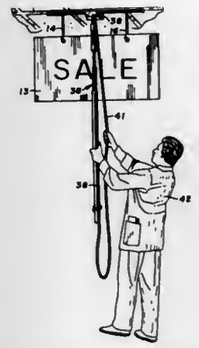
1. A bracket for supporting on the trunk portion of a vehicle having a trunk and a trunk lid an umbrella having a canopy supported by a shaft and a handle, comprising:
   (a) a post extending between upper and lower ends and formed at the upper end with means for engaging an outer edge portion of a raised trunk lid of said vehicle when the lower end of the post formed as a support base rests on the floor of the trunk of the vehicle and adapted for being maintained in a substantially vertical position when so positioned; and
   (b) support means mounted intermediate the length of and on the post and including releasable clamping means adapted to receive and hold a portion of an umbrella shaft at some selected angle relative to the post such that an umbrella canopy mounted on an upper portion of the umbrella shaft may reside above the trunk lid and in a position suitable to shelter an individual adjacent the trunk.

5,188,332

SIGN HOLDER

Mike T. Callas, 5701 Camelback Dr., Edina, Minn. 55436

Continuation-in-part of Ser. No. 500,278, Mar. 28, 1990, Pat. No. Des. 322,634. This application Feb. 19, 1991, Ser. No. 656,675
Int. Cl.[5] F16M *13/00*
U.S. Cl. 248—544 **37 Claims**



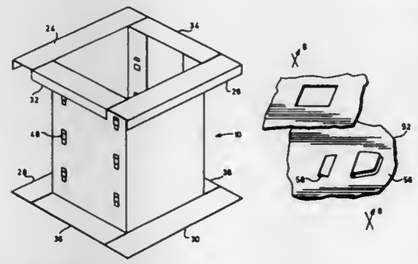
1. A holder for suspending sheet material from a ceiling surface comprising: an elongate member having body means, at least one hook means slidably mounted on the body means for suspending sheet material from the body means, and magnet means mounted on the member, the magnet means releasably attachable to magnetic holding material to retain the member on the magnetic holding material.

5,188,333

SUPPORT FOR AIR CONDITIONING UNIT

J. Gunther Schumacher, and Maurizio Lattanzio, both of Richmond Hill, Canada, assignors to Spinnaker Industries Inc., Concord, Canada

Filed Jul. 15, 1991, Ser. No. 731,108
Int. Cl.[5] F16M *3/00*
U.S. Cl. 248—676 **13 Claims**



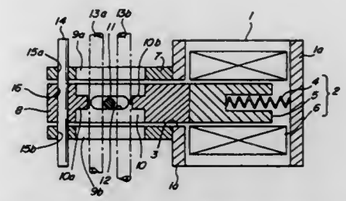
1. A frame comprising:
   a) a plurality of substantially flat walls having portions overlapping with portions of the other walls; and
   b) a plurality of spaced apart fastener means integral to the walls and located on the overlapping portions, said fastener means comprising a slot, a tongue adapted to slip into the slot and overlie a portion of the wall adjacent to the slot, and a latching member adapted to lock into the slot when the tongue overlies a portion of the wall adjacent to the slot, the fastener means being adapted to hold the walls together such that the walls define the frame.

5,188,334

PINCH VALVE ASSEMBLY WITH A STORAGE MODE

Takao Yoshii; Narihiro Oku, both of Kyoto; Yoshio Horii, Yasu, and Kunio Terada, Ohtsu, all of Japan, assignors to Horiba, Ltd., Kyoto, Japan

Filed Nov. 22, 1991, Ser. No. 796,473
Claims priority, application Japan, Nov. 24, 1990, 2-123083[U]
Int. Cl.[5] F16K *7/04*
U.S. Cl. 251—7 **1 Claim**



1. An improved pinch valve assembly for opening and closing flexible tubular conduits, comprising:
   a housing member having aligned openings on opposite sides;
   an engagement member mounted in the housing member for reciprocating movement, the engagement member having a first upper elongated opening extending therethrough in a first direction and a second side elongated opening therethrough in a second direction, intersecting the first direction, the second elongated opening defining a pressing edge member at each end of the opening along the second direction;
   a receiving rod member having a curved pressing surface positioned intermediate the respective pressing edge members, fixedly connected to the housing member and extending through the second opening, to intersect the first direction;
   a pair of flexible tubular conduits extending through the first opening and the respective aligned openings in the housing member, the first opening having a configuration of sufficient size relative to the flexible tubular conduits to permit a degree of movement between the engageable member and the receiving rod member without closing a passageway through the flexible tubular conduits;
   means for driving the engagement member in a first direction relative to the housing member, including a solenoid;
   means for biasing the engagement member in a second direction relative to the housing member including a spring, one end of the engagement member being operatively connected to the spring, whereby a pressing edge member on the engagement member can either open or close a passageway through a flexible tubular conduit by pressing the flexible tubular conduit against a side of the receiving rod member, the engagement member further having means for receiving a removable stop member, and
   a stop member for removable engagement with the receiving means which can hold the engagement member in a release position of opening the flexible tubular conduit against the biasing means, whereby the flexible tubular conduit is protected during storage and transportation.

5,188,335

BALL VALVE WITH LOCKABLE SECURITY DEVICE

Giuseppe Pettinaroli, Novara, Italy, assignor to Fratelli Pettinaroli S.p.A., Italy

Filed Jun. 2, 1992, Ser. No. 893,312
Int. Cl.[5] F16K *35/06*
U.S. Cl. 251—95 **5 Claims**

1. A ball valve comprising a body (10) having a valve chamber (20), inlet (18) and outlet (14) ports communicating with said valve chamber (20), a rotatable ball element (22) disposed

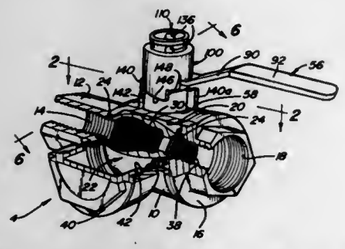
within the valve chamber (20), said ball element (22) including means (26,27,28) defining a conduit therethrough, said ball element (22) having a rotatable shaft (54) for rotating the ball element (22) between a valve open position and a valve closed position, a control lever (56) being connected to the ball element (22) rotatable shaft (54), said control lever (56) having a downwardly depending lip (94) at the end thereof for engaging first and second stop protrusions (140,142*a*) integrally formed on the valve body (10), when the ball element (22) is in said open and closed positions respectively, characterized by:

(a) a rotatable cylinder (110) being rotatably mounted on the ball element shaft (54) and having an upper end;

(b) a retainer member (118) releasably securing said rotatable cylinder (110) to said ball element (54);

(c) each of said stop protrusions (140,142*a*) extending upwardly from the valve body and having a top end;

(d) a locking cylinder (100) having a lower end surface (146) and being telescopically mounted on said rotatable cylinder (110) and being manually slidable longitudinally on said rotatable cylinder (110) and slightly rotatable so as to permit the lower end surface (146) of the locking cylinder



(100) to slidably engage the top end surface of said first stop protrusion (140), and interconnected with said control lever (56) to restrict rotational movement of the locking cylinder (100) relative to the rotatable cylinder (110) while allowing slidable longitudinal movement of the locking cylinder (100) relative to the rotatable cylinder; and,

(e) a spring means (102) having one end engaged with the locking cylinder (100) and the other end engaged with the rotatable cylinder (110) to maintain a constant longitudinal bias on the locking cylinder (100) relative to the rotatable cylinder (110) to slide the locking cylinder (100) downward longitudinally from a raised position, when the locking cylinder (100) is in a valve open position and the control lever (56) is aligned with and seated in slot means (144,152) in the locking cylinder (100), and into a positive locking engagement with said first stop protrusion (140) on the valve body (10) when the control lever (56) is moved from a valve open position to a valve closed position to lock the control lever (56) and the ball element (22) in non-rotative positions.

5,188,336

MAGNET SYSTEM FOR A VALVE

Juergen Graner, Ludwigsburg, and Hans Kubach, Korntal-Muenchingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

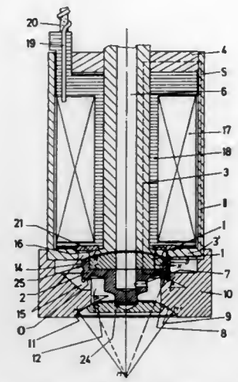
Filed Mar. 2, 1990, Ser. No. 487,576

Claims priority, application Fed. Rep. of Germany, Jun. 28, 1989, 3921151

Int. Cl.[5] F16K *31/08;* **F02M** *51/06;* **H01F** *7/13*

U.S. Cl. 251—129.16 **23 Claims**

1. A magnet system for an outwardly opening magnet valve having an outward axially extending jacket (5) connected with an outer pole (3') and surrounding a core winding (17), an inner axially extending pole (3) arranged inwardly in said core winding (17) and formed by a central tube, an armature (2), a valve body carried by said armature, a permanent magnet (1) disposed symmetrically with respect to the winding (17), wherein the closed magnet circuit of the electromagnet and the permanent magnet (1) partly overlap, a ring (21) of ferromagnetic material in the magnet circuit of the electromagnet, said ring (21) is associated with the permanent magnet (1) and magneti-



cally connects said jacket (5) with said inner and outer poles, said ring (21) reduces a flux (1) of the permanent magnet (1) to one-half of its total flux output, and the magnet circuit for the electromagnet is reduced to one-half of the permanent flux of sad permanent magnet.

5,188,337

CONTROL VALVE WITH PRESSURE EQUALIZATION

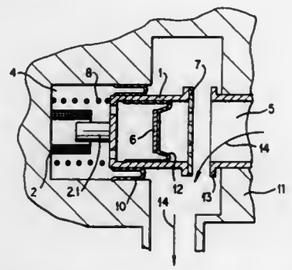
Klaus Mertens, Hemsbach, and Andreas Sausner, Frankfurt, both of Fed. Rep. of Germany, assignors to Carl Freudenberg, Weinheim/Bergstr., Fed. Rep. of Germany

Filed Nov. 7, 1991, Ser. No. 788,981

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1990, 4039766

Int. Cl.[5] F16K *31/06*

U.S. Cl. 251—129.17 **13 Claims**



1. A flow control valve for a fluid medium comprising

a housing having a valve seat,

a hollow piston defining a cavity therein, said piston being movable in said housing along an axis toward and away from said valve seat,

a dividing wall transverse to said axis in said cavity, said dividing wall being movable along said axis relative to said piston,

first sealing means between said piston and said housing,

second sealing means between said piston and said dividing wall,

a closed chamber formed by said housing, said piston, said dividing wall, and said first and second sealing means opposite from said valve seat, said closed chamber having an incompressible hydraulic fluid therein, and

adjusting means for controlling the position of said piston relative to said valve seat.

5,188,338

FLUID FLOW CONTROLLER

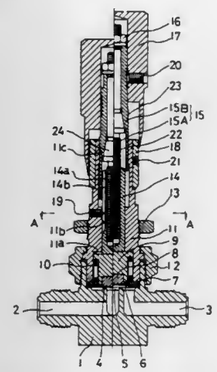
Shigeru Itoi, Mie, Japan, assignor to Masako Kiyohara, Kumamoto, Japan

Filed Dec. 23, 1991, Ser. No. 821,386

Claims priority, application Japan, Jan. 11, 1991, 3-3854

Int. Cl.[5] F16K *31/50*

U.S. Cl. 251—265 **6 Claims**



1. A fluid flow control valve comprising a casing having a recess, a fluid inlet and a fluid outlet formed therein, said fluid inlet and fluid outlet connecting with said recess, a valve bonnet, a diaphragm, a bonnet nut for tightening said valve bonnet on said casing to thereby clamp an edge portion of said diaphragm against said casing to seal said recess, a valve seat in said recess, and means for moving said diaphragm toward said valve seat to block flow of a fluid between said inlet and outlet, said means comprising a slide stem non-rotationally slidable in said bonnet, said slid stem having an internally threaded coupling screw part, a rotatable stem having a first externally threaded coupling screw part engaging said internally threaded coupling screw part and a second externally threaded coupling screw part engaging an internally threaded coupling screw part of said valve bonnet.

5,188,339

SHEET METAL HOUSING FOR VALVES

Manfred Bartoschek, Frankenthal, Fed. Rep. of Germany, and Primo Lovisetto, Vicenza, Italy, assignors to KSB Aktiengesellschaft, Frankenthal/Pfalz, Fed. Rep. of Germany

PCT No. PCT/EP90/00037, § 371 Date Jul. 22, 1991, § 102(e) Date Jul. 22, 1991, PCT Pub. No. WO90/08280, PCT Pub. Date Jul. 26, 1990

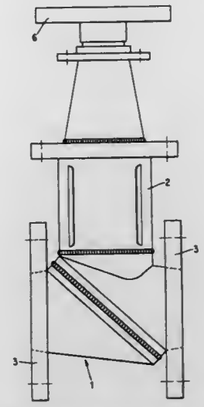
PCT Filed Jan. 9, 1990, Ser. No. 730,864

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1989, 3901698

Int. Cl.[5] F16K *51/00*

U.S. Cl. 251—367 **18 Claims**

1. A valve having a housing, said housing comprising a first shell having two sections which are inclined, and seamlessly connected, to one another, one of said first shell sections having a first plane end face; and a second shell having two sections which are inclined, and seamlessly connected, to one another, one of said second shell sections having a second plane end face which confronts said first plane end face; and a



seam of fused and hardened material bonding said plane end faces to one another.

5,188,340

WEED EXTRACTION DEVICE

William J. Green, Salt Lake City, Utah, assignor to Colleen A. Green, Salt Lake City, Utah

Filed Nov. 4, 1991, Ser. No. 787,519

Int. Cl.[5] B66F *3/00*

U.S. Cl. 254—132 **6 Claims**



1. A weed extraction device for digging, cutting, twisting and pulling weeds from the ground, comprising:

(a) a rod member having upper and lower portions and a laterally extending foot step joining said upper and lower portions,

(b) a handle provided said upper portion, and

(c) a vertically oriented, downwardly tapered, root trap formed essentially as a conical sector and secured to said lower portion and extending downwardly therefrom, said root trap having a serrated side forming weed-cutting teeth.

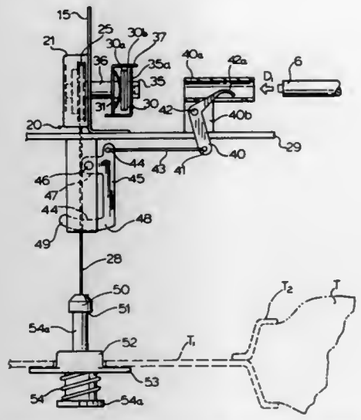
VOL 1147 ISS 4 FE 23 1993 UMI

5,188,341

SAFETY LATCH FOR A TIRE CARRIER

Jeffrey Greaves, Windsor, Canada, assignor to Fabricated Steel Products, Division of Indal Limited, Windsor, Canada

Filed Jan. 10, 1991, Ser. No. 639,542
Int. Cl.[5] B66D *1/00*
U.S. Cl. 254—323 15 Claims



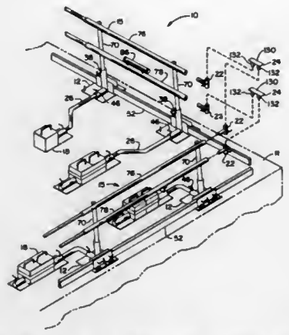
1. A safety device for a winch assembly, the assembly including a winch affixed by means for mounting the winch proximate a stored position for a load, he winch by the operation of handle means for letting out and taking up a length of a member affixed at one end to the winch, which letting out and taking up of the member moves the load from a confined stored position, to an unconfined accessible position remote the stored position, the safety device comprising a carrier for carrying the load, h carrier including a first portion and second portion, the first portion for supporting the load, and the second portion being integral with the first portion and affixed with the other end of the member remote the winch, the second portion of the carrier including a detent portion, the safety device having means or engaging said handle means, the means for engaging said handle means being affixed with the means or mounting the winch proximate the stored position and having a portion having means for levering means for latching the detent portion associated therewith, the means for levering means for latching the detent portion being moveably affixed with respect to the means for mounting the winch, the safety device having resiliently biased means for latching the detent portion moveably affixed with respect to the means for mounting the winch, the means for levering means for latching the detent portion being interconnected with the means for latching the detent portion and being moveable from a first position when the handle means does not engage the means for engaging said handle means to a second position whereat the handle means engages the means for engaging said handle means, the means for latching the detent portion having detent means disposed therewith and moveable with the means for latching the detent portion by the means for levering the latching means for the detent portion from a third position whereat the load is in the confined position, and the detent means of the means for latching detent portion is disposed proximate the detent portion of he second portion of the carrier to retain the carrier in the stored position and preclude the loss of the load should the member break, to a fourth position whereat the load is unconfined and free to move by the letting out or taking up of the member by the operation of the winch to and from the accessible position.

5,188,342

PORTABLE SAFETY RAIL SYSTEM

Kevin D. Ouellette, Andover, and John Rexroad, Lyme, both of Conn., assignors to SINCO Incorporated, East Hampton, Conn.

Filed Jan. 15, 1992, Ser. No. 820,844
Int. Cl.[5] E04H *17/14*
U.S. Cl. 256—65 15 Claims



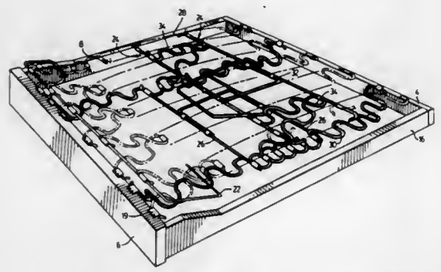
1. A base support for a safety rail system for roof edge protection or the like comprising:
base plate means;
first shoe means mounted to said base plate means, said first shoe means defining a first receiving socket having a central axis generally parallel to said plate means;
first locking means for compressively locking a member received in said first socket with said first shoe means;
second shoe means mounted to said base plate means and oriented in a generally upright disposition at an oblique angle relative to said first shoe means axis, said second shoe means defining a second receiving socket;
second locking means for compressively locking a member received in said second socket with said second shoe means;
saddle means comprising a pair of generally parallel transversely spaced plates for receiving a toeboard; and third locking means for compressively locking a toeboard to said saddle means.

5,188,343

SPRING SYSTEM FOR UPHOLSTERED FURNITURE

Joseph M. Galea, Seagrave, Canada, assignor to Sklar-Peppler Furniture Corporation, Whitby, Canada

Filed May 24, 1991, Ser. No. 705,604
Claims priority, application Canada, Apr. 30, 1991, 2041488
Int. Cl.[5] A47C *23/00*
U.S. Cl. 267—103 6 Claims



1. A spring assembly for the seat portion of upholstered

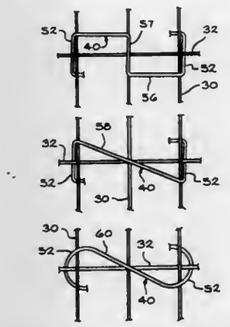
furniture, said assembly having at least one spring sub-assembly comprising:
(a) a frame having a front and back rails, and
(b) side rails; and
a series of interconnected springs substantially independently supported within said frame, said series of interconnected springs comprising at least three different types of springs including a plurality of upper elongated sinuous wire springs arranged generally parallel to one another and transversely bridging in a uniform manner the front and back rails, quad-shaped spring means located centrally within said spring assembly, and Z-shaped spring means located centrally between said front and back rails on each side of said quad-shaped spring means between said quad-shaped spring means and said side rails, each of said spring type being capable of exerting a different level of firmness and each being sequentially engaged in order of increasing firmness in response to the application of a person's weight and to provide local support for a user sitting on said spring assembly between said Z-shaped spring means while substantially isolating said user from users sitting in any adjacent sub-assemblies comprising said spring assembly.

5,188,344

FORMED WIRE BOX SPRING WITH GRID LOCK SYSTEM

Upton R. Dabney, Georgetown, Ky., assignor to Hoover Group, Inc., Alpharetta, Ga.

Continuation of Ser. No. 606,506, Oct. 31, 1990, abandoned.
This application Mar. 27, 1992, Ser. No. 858,581
Int. Cl.[5] F16F *3/00*
U.S. Cl. 267—103 5 Claims



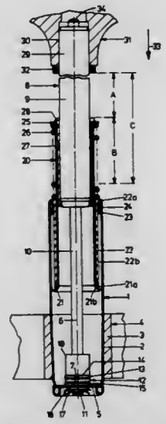
1. A box spring assembly comprising a generally horizontal frame having a generally horizontal welded wire grid disposed a predetermined distance above said frame, said grid including a plurality of straight wires arranged criss-cross fashion, some of said wires extending lengthwise as longwires of said grid and other of said wires extending crosswise as crosswires of said grid, and a border wire supporting said lengthwise and crosswise wires, said border wire being of generally rectangular shape having side sections and end sections; a plurality of grid support springs arranged between and secured to said grid and said frame so as to yieldably support said grid on said frame, each of said grid support springs being mounted at its upper end on a grid crosswire and including an upper grid attaching section which includes a pair of horizontally spaced end bard and a connecting wire section extending therebetween, said end bars extending generally transversely of and engaging at their mid-sections the under side of said cross wire and said upper grid attaching section being firmly engaged with the top side of at least one of said grid longwires at a position between said end bars so as to clamp said crosswire to said spring attaching section, each of said end bars merging into said connecting wire section at a merger portion of said upper grid attaching section and in at least some of said springs at least one of said merger portions being positioned adjacent to and engageable with the top side of one of said grid longwires to limit side-to-side movement of said grid relative to said frame, said end bars being non-parallel to said longwires to avoid contact between said end bars and said longwires except for the engagement of said merger portions with one of said longwires.

5,188,345

LOCKABLE ELEVATING MECHANISM FOR THE CONTINUOUS ADJUSTMENT OF CHAIR SEATS

Helge Siegner; Ludwig Stadelmann, both of Altdorf, and Herbert Wolf, Nürnberg, all of Fed. Rep. of Germany, assignors to Suspa Compart Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 30, 1992, Ser. No. 876,143
Claims priority, application Fed. Rep. of Germany, May 1, 1991, 4114227; Mar. 10, 1992, 4207470
Int. Cl.[5] A47C *3/30;* A47B *9/10*
U.S. Cl. 267—131 8 Claims



1. A lockable elevating mechanism for the continuous adjustment of chair seats comprising
a guide tube (1) to be connected with a pedestal (4) and having a bottom plate (5)
a longitudinally adjustable, lockable gas spring (8), which has a central longitudinal axis (6) and a piston rod (10), which in a direction of said axis (6) is tightly, but releasably connected with said bottom plate (5) of said guide tube (1), and which gas spring (8) has a housing (9), which is guided in said guide tube (1) and which in the direction of said axis (6) is tightly connectable with a chair seat (31) at an end opposite to said piston rod (10), and which housing (9) is displaceably guided in the direction of said common longitudinal axis (6) and is guided in said guide tube (1) without substantial play radially to the direction of said common longitudinal axis (6),
wherein a first guide bush (27) is arranged between said housing (9) and an additional tube (20), so that said housing (9) is supported for displacement relative to said additional tube (20) in the direction of said longitudinal axis (6),
wherein a second guide bush (22) is arranged between said additional tube (20) and said guide tube (1) and is arrested in relation to said guide tube (1) in the direction of said longitudinal axis (6) so that said additional tube (20) is in turn displaceable while axially guided in relation to said guide tube (1), and
wherein a mechanical helical compression spring (26, 26*a*) is provided between said additional tube (20) and said guide

VOL 1147 ISS 4 FE 23 1993 UMI

tube (1) and acts upon said additional tube (20) in a direction away from said bottom plate (5) of said guide tube (1) to said housing (9).

5,188,346

FLUID-FILLED ELASTIC MOUNT HAVING TWO PRESSURE-RECEIVING CHAMBERS COMMUNICATING WITH EQUILIBRIUM CHAMBER THROUGH RESPECTIVE ORIFICE PASSAGES

Masaaki Hamada, Komaki, and Takashi Yoshida, Kasugai, both of Japan, assignors to Tokai Rubber Industries, Ltd., Japan

Filed Oct. 2, 1990, Ser. No. 592,305
Claims priority, application Japan, Oct. 2, 1989, 1-257487
Int. Cl.[5] F16F *13/00*; F16M *1/02*
U.S. Cl. 267—140.12 **10 Claims**



1. A fluid-filled elastic mount for flexibly connecting two members, comprising:

an inner and an outer sleeve which are radially spaced apart from each other and which are fixed to said two members;

an elastic body interposed between said inner and outer sleeves, for elastically connecting the inner and outer sleeves;

said elastic body at least partially defining a first pressure-receiving chamber which is filled with a non-compressible fluid and which is disposed between said inner and outer sleeves such that a pressure in said fluid in said first pressure-receiving chamber changes due to elastic deformation of said elastic body upon application of a vibrational load between said inner and outer sleeves;

partition means for partially defining a second pressure-receiving chamber between said inner and outer sleeves and separating said first and second pressure-receiving chambers from each other such that said second pressure-receiving chamber is disposed outwardly of said first pressure-receiving chamber in a radial direction of said inner and outer sleeves, said second pressure-receiving chamber being filled with said fluid;

said partition means including a flexible layer which is displaceable to thereby permit a pressure change in said first pressure-receiving chamber to be transmitted to said second pressure-receiving chamber;

a flexible diaphragm partially defining two separate sections of a variable-volume equilibrium chamber between said inner and outer sleeves, said equilibrium chamber being spaced apart from said first and second pressure-receiving chambers in a circumferential direction of said inner and outer sleeves and filled with said non-compressible fluid;

means for defining a first orifice passage for fluid communication between said first pressure-receiving chamber and one of said two separate sections of said equilibrium chamber; and

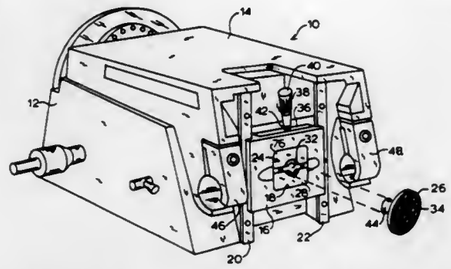
means for defining a second orifice passage for fluid communication between said second pressure-receiving chamber and the other of said two separate sections of said equilibrium chamber, a ratio of a transverse cross sectional area to a length of said second orifice passage being larger than that of said first orifice passage.

5,188,347

COMPRESSIBLE MICROTOME OBJECT HOLDER

Jack E. Hunnell, Durham, and John E. Hunnell, New Bern, both of N.C., assignors to Triangle Biomedical Sciences, Inc., Durham, N.C.

Continuation-in-part of Ser. No. 409,459, Sep. 19, 1989, Pat. No. 5,082,254. This application Nov. 18, 1991, Ser. No. 793,586
Int. Cl.[5] B25B *1/24*
U.S. Cl. 269—258 **8 Claims**



1. An object holder for use in a microtome having a clamping means for clamping a portion of an object holder, said object holder comprising:

(a) a specimen plate having a grooved planar surface and a second surface generally parallel to the plane of the grooved surface; and

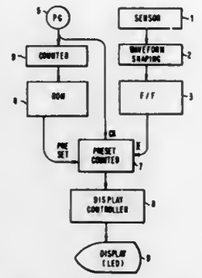
(b) at least one grippable portion extending from the specimen plate, said grippable portion being compressible when clamped by the microtome.

5,188,348

SIGNATURE INSPECTION DEVICE FOR FOLDER OF WEB PRINTING PRESS

Takashi Fuseki, c/o Komori Corporation Toride Plant 5-1, Higashi 4-chome, Toride-shi, Ibaragi-ken, Japan

Filed Oct. 1, 1991, Ser. No. 769,542
Claims priority, application Japan, Oct. 8, 1990, 2-105246[U]
Int. Cl.[5] B42C *1/00*; B31B *1/00*
U.S. Cl. 270—45 **2 Claims**



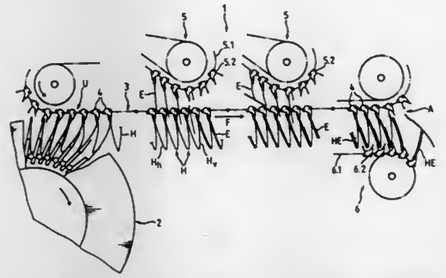
1. A signature inspection device comprising a sensor for detecting signatures flowing in a folder, a timing signal generator for the folder, a comparator for comparing signals from said sensor and said timing signal generator to obtain a phase difference between the signature and the folder, and an indicator for displaying a deviation based on the phase difference in a plurality of grades according to its magnitude.

5,188,349

METHOD AND APPARATUS FOR INSERTING PRINTED PRODUCTS IN A FOLDED MAIN PRODUCT

Werner Honegger, Tann Rüti, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed May 29, 1992, Ser. No. 890,102
Claims priority, application Switzerland, Oct. 7, 1991, 2971/91; May 29, 1992, 1730/92
Int. Cl.[5] B65H *5/30*
U.S. Cl. 270—55 **30 Claims**



1. Method for inserting printed products (insert products E) in folded printed products (main products H), in which the main products (H) folded in two folding parts are conveyed into an acceptance station (U) and from there via an insertion section (1) to a delivery station (A) and along the insertion section (1) the insert products (E) are inserted, characterized in that the folded main products (H) are conveyed with the fold directed at right angles to the conveying direction (F) into the acceptance station (U), that at the acceptance station (U,U') the two folding parts of each main product (H) are gripped in the vicinity of the edges facing the fold by two conveying means spaced from one another in the conveying direction (F) and that the main products (H) are conveyed by said conveying means over the insertion section with a freely downwardly hanging fold, the insertion products (E) being inserted from above between the conveying means into the main products (H).

14. Apparatus for inserting printed products characterized in that it has a supply means (2,90/91/92) for folded main products (H) guiding the folded main products in open form to an acceptance station (U,U'), that it has an insertion section (1) leading away from the acceptance station (U,U') with at least one pulling member (3,3') and grippers (4,4') and further supply means (5) for insert products (E) directed from above against the insertion section (1) and that the supply means (2) for the main products (H) and the grippers (4,4') of the insertion section (1) are so matched to one another that the grippers (4) and the centres of the main products (H) are displaced relative to one another at the acceptance station (U).

5,188,350

PAPER FEEDER WITH STATIONARY AND FREE PAPER FEED ROLLERS

Takayuki Hayashi, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 6, 1991, Ser. No. 803,455
Claims priority, application Japan, Feb. 12, 1991, 3-19051
Int. Cl.[5] B65H *3/06*
U.S. Cl. 271—114 **20 Claims**

14. A sheet feeder comprising:

a holding means for holding a stack of sheets;

a rotatable member mounted adjacent the holding means;

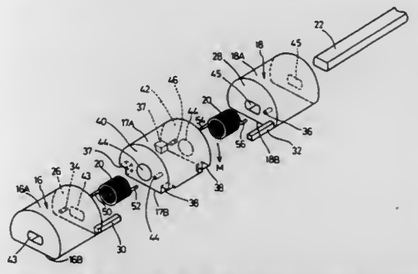
means for driving the rotatable member;

a first sheet engaging member mounted on the rotatable member for rotation with the rotatable member;

a second sheet engaging member mounted on the rotatable member for rotation with respect to the rotatable member about the axis of rotation of the rotatable member;

the first sheet engaging member having a peripheral surface formed of a curved sheet engaging portion and a relief portion extending from one end of the curved portion to an opposite end of the curved portion, said relief portion being spaced from the uppermost sheet in the stack when facing the stack;

the second sheet engaging member having a peripheral surface formed of a curved sheet engaging portion in the shape of a part of a circle and a relief portion extending from one end of the circular portion to an opposite end of said circular portion, said relief portion being spaced from the uppermost sheet in the stack when facing the stack;



a lost motion drive means coactive between the first sheet engaging member and the second sheet engaging member; and

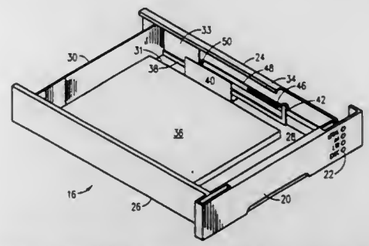
a rotational drive energy storing member coactive between the first sheet engaging member and the second sheet engaging member.

5,188,351

MULTI-SIZE PAPER CASSETTE HAVING A SHEET SIZE INDICATOR

Peter Gysling, Boise, Id., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 4, 1991, Ser. No. 771,635
Int. Cl.[5] B65H *1/00*
U.S. Cl. 271—171 **9 Claims**



1. A paper cassette for a printer of the like which includes a front wall having paper size indicia thereon, a movable back wall, a floor member extending between said front and back walls, and cam operated means mechanically coupled between said back wall and said front wall for responding to movement of said back wall for indicating the user the correct paper size on said front wall and for simultaneously electrically indicating to the printer said paper size, and said back wall has a shelf member extending therefrom which is slidably received by said floor member of said cassette, said shelf member having a contoured slot operatively receiving a paper width adjustment member therein which moves said paper width adjustment perpendicularly to the edge of paper loaded into said cassette, said cam operated means includes a cammed shaft member

VOL 1147 ISS 4 FE 23 1993 UMI

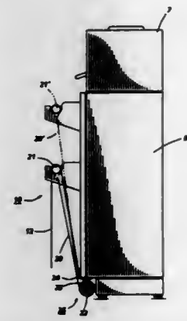
having a predefined contoured slot therein and being pivotally mounted on an upstanding side wall of said cassette, said cammed shaft member having an end face thereof aligned with a plurality of indicia marked openings in said front wall and operative to receive a driver pin in said contoured slot, whereby the horizontal motion of said driver pin in said contoured slot during a paper size setting for said paper cassette will produce a pivotal rotation of said cammed shaft member to thereby move the end face of said cammed shaft member to a desired one of said indicia marked openings to thereby visually indicate the size of paper in the cassette.

5,188,352

COPY OUTPUT STACKER FOR ENGINEERING SIZE COPIES

David A. Bartman; Daniel L. Morris, both of Webster, and Albert E. Andrews, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1992, Ser. No. 861,669
Int. Cl.[5] B65H *29/54*
U.S. Cl. 271—175 **5 Claims**



1. A copy output stacker for a wide format machine, comprising:
an upstanding front portion of the machine;
at least one pair of orthogonally extending support brackets connected to said upstanding front portion of the machine and positioned at a predetermined height with respect to the base of the machine; and
a roller assembly connected to the machine at a predetermined position below said at least one pair of support brackets, said roller assembly including web and a spring tensioned roller support member for supporting said web in a scrolled up position wound around said roller support member, and wherein said web includes a web support bar that is positionable with respect to said at least one pair of support brackets such that said web is extended at an angle with respect to the front of the machine in order to create a pocket to catch copies exiting the machine.

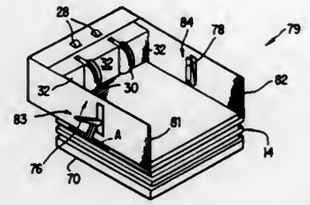
5,188,353

DISK STACKER INCLUDING TAMPING MECHANISM CAPABLE OF CROSS-DIRECTION OFFSETTING

Bruce Parks, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 568,722, Aug. 17, 1990, abandoned. This application Nov. 19, 1991, Ser. No. 794,762
Int. Cl.[5] B65H *29/00*
U.S. Cl. 271—184 **20 Claims**

1. An apparatus for cross direction offsetting of sheets on a stack, comprising:
receiving means for receiving sheets to form a stack of sheets, said receiving means including first and second opposed substantially vertical registration walls spaced apart from each other so that a sheet can be received therebetween; and
a tamping mechanism comprising first and second tampers located adjacent said first and second registration walls, respectively, each of said tampers being individually movable through apertures located in said first and second registration walls, respectively, between an active position wherein the tamper is extended through its respective registration wall aperture and located above a surface of the sheet stack for being oscillated to tamp incoming sheets against the opposed registration wall, and an inactive position wherein the tamper is retracted behind its respective registration wall out of an area between said first and second registration walls;



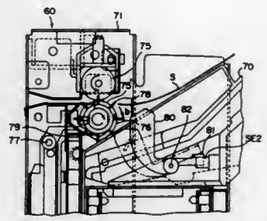
each of said first and second tampers including, respectively, at least one tamping finger and oscillating means for oscillating said at least one tamping finger when said tamper is in the active position;
wherein said tamping fingers tamp the sheets against the opposed registration wall without stopping downward movement of the sheets; and
means for moving said first and second tampers between said active and inactive positions, said means for moving said first and second tampers alternately placing said first tamper in the active position while placing said second tamper in the inactive position and placing said first tamper in the inactive position while placing said second tamper in the active position for selectively offsetting sheets.

5,188,354

PAPER STORAGE DEVICE

Kiyoshi Emori, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 18, 1991, Ser. No. 643,184
Claims priority, application Japan, Jan. 20, 1990, 2-11478
Int. Cl.[5] B65H *31/10*
U.S. Cl. 271—217 **9 Claims**



1. A paper storage device for receiving recording papers successively discharged from an image forming apparatus and for accommodating the recording papers in a stacked fashion, which comprises:
a tray for accommodating the recording papers;
a drive means for driving the tray up and down;
means for detecting an arrival of a top face of the recording papers on the tray at a predetermined height;

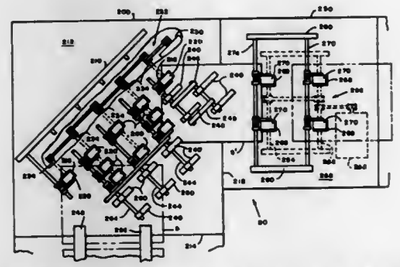
a control means for lowering the tray on the basis of an output from the detecting means;
means for counting the number of the recording papers delivered onto the lowered tray from the image forming apparatus; and
means for determining that a position of the tray is improper when the number of the recording papers counted by the counting means reaches a predetermined value and the top face of the recording papers on the tray has not yet reached the predetermined height.

5,188,355

APPARATUS FOR CONVEYING SHEETS FROM LANDSCAPE TO PORTRAIT ARRANGEMENT

Kenneth W. Lowell, Farmington; Karen P. Synnett, Seymour, and Karel J. Janatka, Southbury, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 30, 1991, Ser. No. 816,442
Int. Cl.[5] B65H *5/00*
U.S. Cl. 271—225 **7 Claims**



1. An apparatus for changing the direction of travel of of sheets of paper being conveyed seriatim along a paper path without changing the orientation of the sheets with respect to a first direction of travel, comprising:
a deck having an upstream end for receiving a sheet being conveyed along a paper path in a first direction;
a plurality of first roller pairs operatively coupled to said deck and disposed in a second direction for seizing a first leading edge of the sheet and conveying the sheet in said second direction along said deck, said second direction forming an acute angle of at most 45° with the first direction;
guide means operatively coupled to said first roller pairs for preventing portions of the sheet from raising off said deck when said portions are not controlled by said first roller pairs; and
a plurality of second roller pairs operatively coupled to said deck and disposed in a third direction for seizing a second leading edge of the sheet and conveying the sheet in said third direction along said deck, said third direction forming a right angle with said first direction.

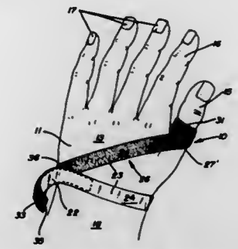
5,188,356

BASKETBALL SHOOTING AID DEVICE

Guy H. Furr, 215 Wood St., Apt. 242, Athens, Tex. 75751, and Lonnie C. Furr, Rte. 2, Box 158, Murray, Ky. 42071

Continuation-in-part of Ser. No. 428,771, Oct. 30, 1989, abandoned. This application Oct. 1, 1990, Ser. No. 591,398
Int. Cl.[5] A63B *69/00*; A61F *5/37*
U.S. Cl. 273—1.5 A **8 Claims**

1. A basketball shooting aid device adapted to be worn on the weak, non-shooting hand of a basketball player, the non-shooting hand having digital extremities, namely, a thumb and a plurality of fingers, including a forefinger, comprising:
(a) an elongated tape member having a first end portion, an opposite second end portion, an intermediate portion between the first and second end portions, an outer surface and an inner surface,
(b) said first end portion comprising a loop member large enough to receive the thumb of the weak hand of a basketball player,
(c) said tape member being long enough to wrap around the wrist of the weak hand of a basketball player when said loop member receives the thumb of said weak hand, in an operative confined position proximate to the adjacent forefinger,



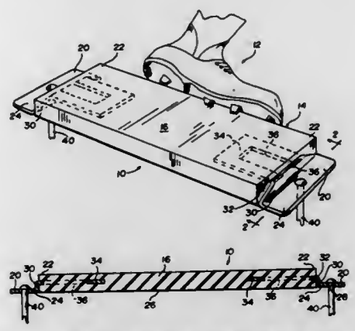
(d) said tape member being made of an inextensible material causing said loop member to immobilize said thumb against lateral movement away from said forefinger in said operative confined position,
(e) a first fastener device on said second end portion,
(f) a second fastener device on said intermediate portion, and
(g) said first fastener device cooperating with said second fastener device to secure said second end portion to said intermediate portion in said operative confined position.

5,188,357

PITCHING RUBBER

Stephen J. Barnum, 925 Patriot, Hoffman Estates, Ill. 60195

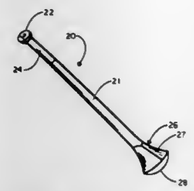
Filed Nov. 4, 1991, Ser. No. 787,001
Int. Cl.[5] A63B *71/00*
U.S. Cl. 273—25 **18 Claims**



1. A portable pitching rubber for use in playing ball comprising a block of hard rubber having mounting flanges engaged thereto, a section of each flange extending longitudinally from and lying against a surface underlying, the rubber block, said block being approximately ¾ inch high, and having a width between 3 inches and 7 inches and a length between 16 inches and 26 inches.

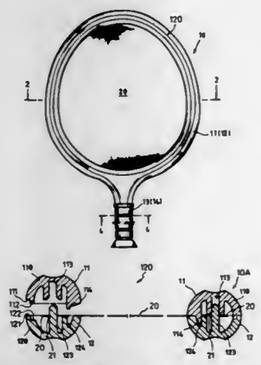
VOL 1147 ISS 4 FE 23 1993 UMI

5,188,358
LAWN GAME MALLET
Philip E. Glass, 7207 Belding Rd., Rockford, Mich. 49341
Division of Ser. No. 525,884, May 17, 1990, Pat. No. 5,060,956.
This application Oct. 25, 1991, Ser. No. 782,398
Int. Cl.[5] A63B *59/00*
U.S. Cl. 273—67 R **9 Claims**



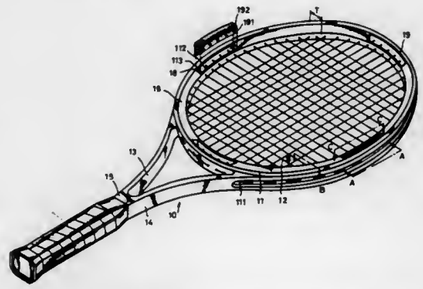
3. An elongate mallet for use in striking objects, comprising an upper end and an opposing lower end, a handle portion at the upper end, a head portion at the lower end, and a shaft portion extending between the handle portion and the head portion, the head portion occupying less than one-fourth of the length of the mallet and having a bottom surface and a striking surface flaring downwardly and progressively outwardly from the shaft portion to intersect the bottom surface in an outer edge circumscribing the head portion at the widest transverse extent of the mallet.

5,188,359
DRUM BEAT SOUNDING RACKET
Chui-Li Wu, No. 22, Lane 1046, Sec. 1, Kuo-Chi Road, Tao Yuan City, Taiwan
Filed Apr. 8, 1992, Ser. No. 865,103
Int. Cl.[5] A63B *59/18*
U.S. Cl. 273—67 R **5 Claims**



1. An article of play comprising a racket including a handle portion and a hitting portion integrally formed together,
said hitting portion including a hollow annular frame body and a hitting surface firmly secured in and highly tensioned by said hollow annular frame body, said frame body comprised of a male frame member and a female frame member secured thereto,
said male frame member having a substantially semicircular cross-section and having a plurality of insert pins located substantially at the central portion thereof, said female frame member also having a substantially semicircular cross-section and having a plurality of insert holes located at a central portion thereof corresponding to said insert pins of said male frame member,
said hitting surface having a plurality of fixing holes at the peripheral portion thereof corresponding to said insert pins of said male member; and wherein
between said insert holes and an inner periphery of said female frame member, at least one inward extending annular protrusion is formed on said female member, and at least one annular groove is formed along an inner periphery of said male frame member corresponding to said annular protrusion of said female member; wherein
said hitting surface is laid over said male frame member with said fixing holes fitted over said insert pins, said female frame member being secured to said male frame member by means of said at least one annular protrusion of said female frame member fitting into said at least one said annular groove of said male frame member, so that
said hitting surface is evenly clamped and highly tensioned by and firmly secured in said hollow annular frame body, forming a highly tensioned said hitting surface.

5,188,360
STRUCTURE OF RACKET WITH IMPROVED WEIGHT DISTRIBUTION ADJUSTING MECHANISM
Dennis Chen, 293 Pei Tun Road, Taichung, Taiwan
Filed Aug. 29, 1990, Ser. No. 574,593
Int. Cl.[5] A63B *49/00*
U.S. Cl. 273—73 R **1 Claim**



1. A racket comprising:
a head frame having a catgut string laterally and longitudinally inserted therethrough to form a striking surface;
at least one vertical hole passing through the upper and lower edges of said frame to divide said frame into an inner frame portion and an outer frame portion permitting said catgut to transversely insert therethrough;
a racket handle extending from said head frame for grasping in the hand;
at least one elastic counter weight for releasably fastening in said vertical hole having a plurality of through-holes thereon and spaced apart from one another at an interval corresponding to the mesh of said striking surface for the insertion vertically therethrough of said catgut string;
said counter weight having a plurality of narrow openings on one side and extending from said through-holes, each of said narrow openings formed in a size slightly smaller than the diameter of said catgut string;
wherein said counter weight is permitted to snap fit into and release from said vertical holes.

5,188,361
PIVOTING GOLF PUTTER APPARATUS
Douglas C. Coombe, 3464 S. River Ter., Edgewater, Md. 21037
Filed Dec. 13, 1991, Ser. No. 806,202
Int. Cl.[5] A63B *53/02, 53/08*
U.S. Cl. 273—81.3 **1 Claim**

1. A pivoting golf putter apparatus, comprising,
a golf putter, the golf putter including a golf putter shank, the golf putter shank including a head mounted at a lower distal end thereof, and

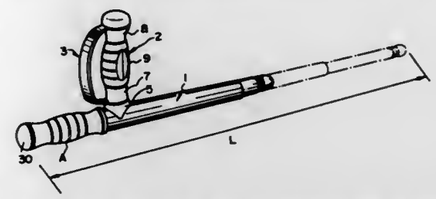
a handle formed about an upper portion of the golf putter shank, and
further including a support handle, the support handle including a bifurcated lower distal end, the bifurcated lower distal end includes coaxially aligned lower distal end bores formed on opposed sides of a handle slot defined by the bifurcated lower distal end, and
an axle medially directed through the slot and the lower distal end bores, and
the putter handle including at least one putter handle bore received within the support handle slot, with the axle directed through the at least one putter handle bore and the lower distal end bores to pivotally secure the upper distal end of the putter handle within the support handle slot, and
the putter handle upper distal end includes a bifurcated upper distal end, and the bifurcated upper distal end de-



fines a putter handle slot, and the axle includes a first pin leg orthogonally oriented relative to a second pin leg, wherein the first pin leg and the second pin leg are integrally mounted relative to one another, and the second pin leg is directed through the lower distal end bores, and the bifurcated upper distal end defines a putter handle slot, the putter handle slot defining an additional putter handle bore in cooperation with the at least one putter handle bore to receive the first pin leg therethrough, and
the support handle includes an externally threaded conical collar mounted about an upper portion of the support handle, and an extension tube telescopingly mounted within the support handle, and an internally threaded lock ring mounted about the conical collar, wherein tightening of the lock ring about the conical collar effects securement of the extension tube in a predetermined orientation relative to the support handle.

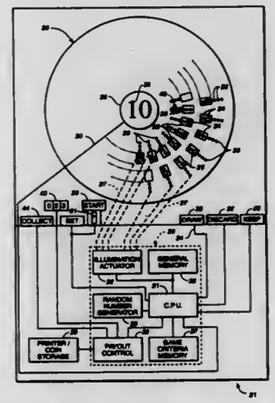
5,188,362
POLICE BATON WITH CROSSHANDLE AND HANDGUARD
Hideyuki Ashihara, 360-1, Samban-cho 8-chome, Matsuyama, Ehime-ken, Japan
Filed Jun. 17, 1991, Ser. No. 718,326
Claims priority, application Japan, Jun. 20, 1990, 2-161848
Int. Cl.[5] F41B *15/02*
U.S. Cl. 273—84 R **12 Claims**

1. A police baton with crosshandle, comprising:
a baton main body;
a crosshandle branched perpendicular from the baton main body at a position longitudinally localized from a center to one end of the baton main body; and
a handle guard disposed to traverse a substantial length of the crosshandle and rotatably mounted relative to the



baton main body so as to be rotatable around an axial center of the crosshandle.

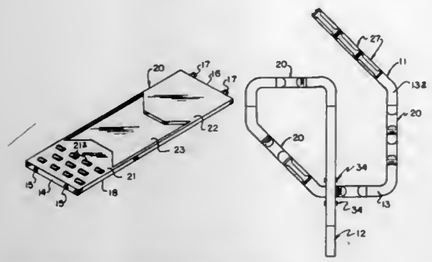
5,188,363
WHEEL OF FORTUNE POKER GAME APPARATUS AND METHOD
Anthony A. Marnell, II, Las Vegas; Jayme D. Sevigny, Henderson, and Cary A. Reha, Las Vegas, all of Nev., assignors to Rio Properties, Inc., Las Vegas, Nev.
Filed Dec. 30, 1991, Ser. No. 814,434
Int. Cl.[5] A63F *9/24, 5/00, 1/00*
U.S. Cl. 273—85 CP **30 Claims**



1. An electronic game apparatus for play of a poker game comprising:
(a) a display assembly having a plurality of visually perceptible card representations arranged in a substantially circular array on said display assembly to concurrently display each card contained in a deck of cards;
(b) a plurality of lights mounted on said display assembly with at least one of said lights positioned adjacent each of said card representations for selective identification of individual card representations;
(c) control means electrically connected to said plurality of lights and producing intermittent identification of each of said card representations by momentary lighting of each of said lights in a continuing random sequence, said control means preventing user anticipation of the occurrence identification of a particular card representation; and
(d) user-actuable input means electrically connected to said control means, said control means being responsive to actuation of said input means to interrupt said random sequence by identifying a particular card representation in said random sequence to thereby select a card for a hand in the play of said poker game.

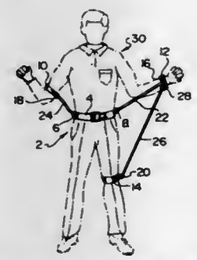
VOL 1147 ISS 4 FE 23 1993 UMI

5,188,364
AMUSEMENT GAME
Carmine L. Falzarano, 8 6th Ave., Atwater, Calif. 95301
Filed Jun. 1, 1992, Ser. No. 890,859
Int. Cl.[5] A63F *3/00*
U.S. Cl. 273—126 R **10 Claims**



1. An amusement game, comprising,
a serpentine game path, the serpentine game path including a first category of segments and a second category of segments, each segment including a first end and a second end, with each first end including a plurality of parallel bores spaced apart a predetermined spacing, and each second end including a plurality of segment projections spaced apart said predetermined spacing, wherein said segment projections are arranged for reception within adjacent parallel bores, and
each first category of segment and each second category of segment include planar bottom surfaces, and
each first category of segments are of a rectilinear configuration, and the second category of segments are of a curvilinear configuration, and
token discs arranged for positioning upon the game path, and
a locomotion tool arranged for impacting the token discs, and
a token advance device arranged for effecting a numerical designation for utilization of the locomotion tool against said token discs.

5,188,365
GOLF SWING TRAINING HARNESS
Richard Picard, Langley, Canada, assignor to Rachel-Mae Industries Inc., Langley, Canada
Filed Aug. 19, 1991, Ser. No. 746,927
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—189 R **9 Claims**



1. A golf swing training harness for wear by a golfer who has a waist, a leading arm, a following arm and a leading leg during a golf swing comprising:
(a) waist fitting means adapted to be fitted to the waist of the golfer;
(b) elbow means for releaseably securing to an elbow of the following arm of the golfer;
(c) wrist means for releaseably securing to a wrist of the leading arm of the golfer;
(d) adjustable length first elastic means for releaseably securing the elbow means to a first location on the waist fitting means proximate to the following arm; and
(e) adjustable length second elastic means for releaseably securing the wrist means to a second location on the waist fitting means proximate to the leading arm.

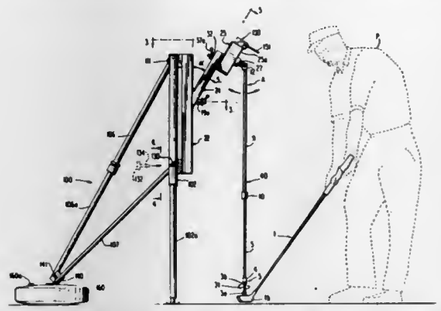
5,188,366
ADJUSTABLE GOLF SWING TRAINING DEVICE
Dennis R. Dorotinsky, 23241 Prospect, Farmington, Mich. 48336, and Kenneth G. Lesson, 7002 Timberview Trail, W. Bloomfield, Mich. 48322
Filed Dec. 23, 1991, Ser. No. 812,735
Int. Cl.[5] A63B *69/36, 21, 04, 21/12*
U.S. Cl. 273—188 R **4 Claims**



1. A golf swing training device to be affixed between a golfer and a ground mass for guiding a golfer from an address position to a back swing and through a down swing consisting essentially of:
an adjustable belt for encircling said golfer's waist and rotatably movable with said golfer during a golf swing;
a ground anchoring stake for affixing said training device to said ground mass;
a resilient cord having a first end affixed to said stake and a second end adjustably affixable to the belt to set a first bias thereon when said golfer is in said address position, the resilient cord being stretchable during said back swing to create a second bias on the belt sufficient to guide said golfer through said down swing with proper hip turn and body rotation, and fastening means for enabling said golfer to adjustably engage and removably fasten said resilient cord to said waist encircling belt at different locations circumferentially of the golfer's waist and adjacent a hip to adjust sad first bias on said cord when said stake is affixed to said ground mass and while said golfer is in said address position and without modifying said golfer's stance or the position of said stake.

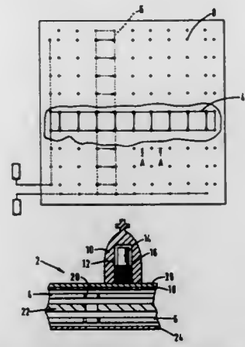
5,188,367
GOLF TRAINING-EXERCISE APPARATUS
Thomas A. Gipe, Beltsville, Md., and Steve R. Yoder, Gordonville, Pa., assignors to Pear Tree Mfg., A Corporation of Pennsylvania, Gordonville, Pa.
Continuation-in-part of Ser. No. 728,481, Jul. 11, 1991, abandoned. This application Apr. 21, 1992, Ser. No. 872,943
Int. Cl.[5] A63B *69/36*
U.S. Cl. 273—191 R **24 Claims**

1. An apparatus for developing a player's golf swing by guiding the swing of a golf club to emulate the swing of an expert player, said apparatus comprising:
a vertical support, a first guide means mounted on said vertical support above the shoulder height of said player, a second guide means comprising a generally rigid club suspension rod supported solely from said first guide means at an upper end thereof and being of a length such that an opposite, lower end thereof is at substantially the same level at which a head of said golf club engages a teed golf ball,
a universal connection means carried by the lower end of said suspension rod for connecting said suspension rod lower end to said golf club having said head thereon, and coupling means for rotatably coupling said upper end of said suspension rod to a drive member for rotation of said drive member about an axis disposed at an angle to the axis of said suspension rod and means carried by said first guide means and responsive to rotation of the drive member about said axis by said golf club for shifting the coupling means substantially horizontally in fore and aft directions parallel to the flight path of the ball upon impact therewith by the golf club head during swinging of the golf club by the player depending upon the direction of rotation of said coupling means by said suspension rod about said axis such that the golf club is subjected to an elliptical motion during the backward and forward swings, thereby permitting the player to effect a full shoulder turn allowing the club to attain a position parallel to the flight path at the conclusion of the back swing and a transition of the swing plane allowing a proper "inside-out" down swing and follow through of the golf club.



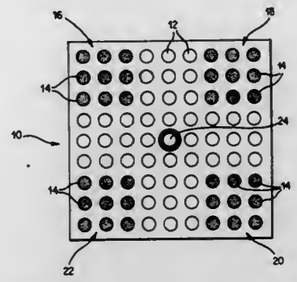
5,188,368
ELECTRONIC GAME APPARATUS
Paul T. Ryan, Cambridgeshire, Great Britain, assignor to Saitek Limited, Kowloon, Hong Kong
PCT No. PCT/GB90/01641, § 371 Date Jun. 25, 1991, § 102(e) Date Jun. 25, 1991, PCT Pub. No. WO91/06352, PCT Pub. Date May 16, 1991
PCT Filed Oct. 25, 1990, Ser. No. 691,028
Claims priority, application European Pat. Off., Oct. 25, 1989, 89311024.7
Int. Cl.[5] A63F *3/02*
U.S. Cl. 273—237 **10 Claims**

1. An electronic game apparatus comprising:
a plurality of playing pieces each including an electrical resonant circuit;
means forming at least one surface and having a plurality of transmit and receive coils beneath the surface defining a number of discrete playing positions for the playing pieces on the surface;
means for selecting a transmit and a receive coil and hence a unique playing position, an amplifying circuit being connected between the transmit and receive coils whereby a



resonant signal is generated when a playing piece is positioned on a selected playing position; and
means for detecting the generated resonant signal.

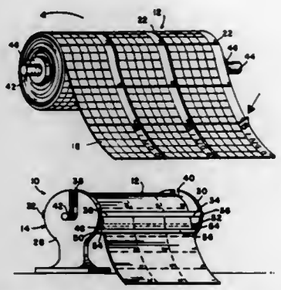
5,188,369
BOARD-TYPE GAME
Edward Loewenton, P.O. Box HC132, Morrisville, Vt. 05661
Filed Aug. 16, 1991, Ser. No. 745,828
Int. Cl.[5] A63F *3/02*
U.S. Cl. 273—258 **20 Claims**



1. A method for players to play a game, the game played according to rules including a first set of predetermined rules of movement of playing pieces of the game and a second set of predetermined rules of movement of playing pieces of the game, said first and second set of rules of movement being different, the method comprising:
(a) providing a game apparatus comprising a plurality of defined positions, a plurality of playing pieces positioned on a portion of the total number of said defined positions, and a primary place positioned among said defined positions, said first set of predetermined rules effective prior to a playing piece moving onto the primary place to end a player's turn; and
(b) moving a playing piece onto the primary place to end a player's turn,
wherein said second set of predetermined rules are effective upon said moving of the playing piece onto the primary place.

VOL 1147 ISS 4 FE 23 1993 UMI

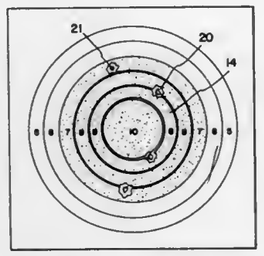
5,188,370
GAME CARDS IN MULTIPLE FORM AND A CONTAINER/DISPENSER DEVICE
Mary E. Vlahos, 4 Nicholas Rd., Plaistow, N.H. 03865
Filed Dec. 27, 1990, Ser. No. 634,743
Int. Cl.[5] A63F *3/06*
U.S. Cl. 273—269 **1 Claim**



1. In combination, an elongated flexible sheet member comprising a plurality of bingo game cards;
said sheet member having a plurality of spaced horizontal and spaced vertical perforation means for separating said game cards, said perforation means defining the peripheral edges of adjacent bingo game cards;
said game cards having upper and lower surfaces;
the upper surface of each card having indicia thereon in final bingo game form ready for use by players;
the peripheral edges of laterally adjacent game cards being adapted to be detached from each other along the perforation means whereby a selected number of the game cards can be detached as a unitary group structure;
a reel means;
said flexible sheet member being sufficiently flexible and elongated whereby said sheet member is rolled about said reel means;
a horizontal elongated dispensing container;
said dispensing container comprising a pair of support members positioned in spaced parallel relationship adjacent the opposing ends of said dispensing container;
means associated with said support members to retain said reel means and the flexible sheet member rolled about said reel means in rotatable movement within said container;
said container having a dispensing opening through which the lateral section of said flexible sheet member of bingo game cards can be drawn from said reel means; and
a cutting edge means attached to said dispensing opening to enable a selected number of laterally juxtaposed game cards to be severed as a unitary group structure.

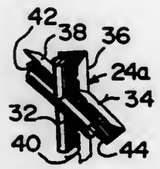
5,188,371
REUSABLE PROJECTILE IMPACT REFLECTING TARGET FOR DAY OR NIGHT USE
A. W. Edwards, 10161 Wales Loop #218, Bonita Springs, Fla. 33923
Filed May 29, 1992, Ser. No. 890,091
Int. Cl.[5] F41J *5/00*
U.S. Cl. 273—378 **14 Claims**

1. A reusable projectile impact reflecting target for day or night use comprising in combination:
a target base and a primary target label,
said target base comprising sheet of backing material substantially forming an overall shape, said target base having an outer surface with a target outline imprinted thereon,
said primary target label comprising a bottom paper layer and a top plastic film layer,
said bottom paper layer comprising a sheet of paper having a forward and a rear surface, said rear surface adapted to be releasably mounted within said target outline, said forward surface having a colored photoreflective ink thereon,
said plastic film layer comprising a transparent strip of plastic having a front and back surface, said back surface, adapted to be mounted on said forward surface of said paper layer, said front surface defining a target image of contrasting colored image contrasting in color to the color of said photoreflective ink, said contrasting ink



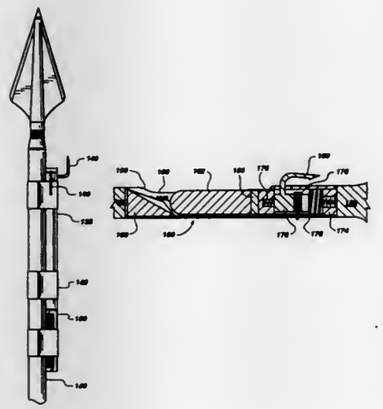
being adhered to said front surface but not being permanently bonded thereto,
whereby when said primary target label is releasably mounted on said target base, the penetration of a projectile causes said contrasting colored ink to be removed from the plastic film layer front surface point of penetration exposing a clear area larger than the penetration point of the projectile, thereby exposing the photoreflective ink paper layer.

5,188,372
DART BOARD WIRE
John Tadej, 675 Hanson Ave., Perth Amboy, N.J. 08861
Filed Jan. 21, 1992, Ser. No. 823,338
Int. Cl.[5] F41J *3/00*
U.S. Cl. 273—408 **1 Claim**



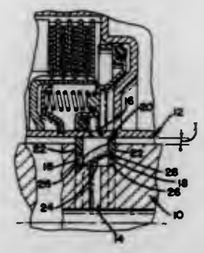
1. An improved dart board wire for a dart board which comprises:
a) an elongated slender rod attached to the front surface of the dart board in various positions to indicate point scoring areas on the dart board, said elongated slender rod being fabricated out of a durable metal material, said elongated slender rod being completely curved about its circumference; and
b) means on said elongated slender rod for deflecting a point of a needle on a dart onto the dart board to stick thereto when the point of the needle on the dart strikes said means after being thrown thereto, said deflecting means include a cover member having a tapered narrow angular shaped front edge and said cover member being fabricated out of a durable metal material, and said deflecting means further including means for attaching said cover member to the front surface of the dart board over said elongated slender rod so that the point of the needle on the dart would turn aside and enter the dart board when striking said tapered narrow angular shaped front edge on said cover members, said attaching means includes a plurality of spaced apart pointed prongs extending downwardly from each bottom edge on said cover member to stick into the dart board, each of said pointed prongs being fabricated out of a durable metal material, said cover member and said pointed prongs are fabricated out of the same durable metal material, said cover member and said pointed prongs are integral and being made as one complete homogeneous unit, so as to fit over said elongated slender rod and be attached to the front surface of the dart board.

5,188,373
HUNTING ARROW WITH SIGNAL GENERATING MEANS
Michael D. Ferguson, Rexburg, and Ronnie R. Capson, St Anthony, both of Id., assignors to Sure Trak, Rexburg, Id.
Continuation of Ser. No. 448,016, Dec. 7, 1989, abandoned, which is a continuation-in-part of Ser. No. 357,906, May 30, 1989, abandoned, which is a continuation-in-part of Ser. No. 205,478, Jun. 13, 1988, Pat. No. 4,858,935. This application Sep. 4, 1990, Ser. No. 577,085
Int. Cl.[5] F42B *6/04*
U.S. Cl. 273—421 **7 Claims**



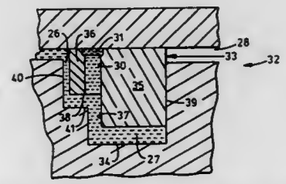
1. A hunting arrow having a signal generating transmitter releasably affixed to an external surface of the arrow with tape, said tape having a shear strength less than a force generated by impact of the transmitter with a target animal, and means to affix the transmitter to the animal.
3. A hunting arrow comprising:
a. a broadhead;
b. an arrow extension threadably engaged with the broadhead;
c. signal generating means having an elongate flexible antenna located within a window provided in the extension;
d. a forward-facing barbed hook attached to a forward portion of the signal generating means to securely affix the signal generating means to the hide of a target animal;
e. an arrow portion threadably engaged with the extension;
f. a compression means within the extension bearing against the signal generating means; and
g. a spring-loaded pin inserted through the signal generating means frictionally engaging a cooperating aperture in the arrow extension.

5,188,374
ONE-PIECE SEAL FOR ROTATING ANNULAR INTERFACE
Michael J. Gorman, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Jun. 1, 1992, Ser. No. 891,073
Int. Cl.[5] F16J *9/06*
U.S. Cl. 277—35 **2 Claims**



1. A seal means for transmitting pressurized fluid from a feed passage across an annular interface of predetermined radial width formed between the outer cylindrical surface of an inner member and the inner cylindrical surface of a generally coaxial outer member, comprising,
a trough cut into the cylindrical surface of one of said coaxial members so as to overlie said feed passage and open into said interface, said trough having a pair of axially spaced annular side walls disposed generally square to said central axis,
a one-piece blocking seal comprising a pair of annular side rails having a free state outer diameter substantially equal to the cylindrical surface of the other of said members and a radial thickness greater than the radial width of said interface, so as to be engageable simultaneously both with said side walls and with said other cylindrical surface, and,
a resilient, discrete bridging section interconnecting said side rails so as to maintain said side rails axially spaced apart, in a free state, by just slightly more than said side walls,
whereby said blocking seal may be installed as a single unit into said trough, with said side rails being preloaded against said walls by compression of said resilient bridging section, after which the introduction of pressurized fluid into said trough forces said side rails more strongly into said side walls, thereby maintaining the axial continuity of said seal.

5,188,375
SQUEEZE FILM DAMPER PISTON RING SEAL
Adam N. Pope, and Melvin Bobo, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio
Filed Feb. 19, 1991, Ser. No. 657,034
Int. Cl.[5] F16J *15/16*
U.S. Cl. 277—58 **8 Claims**



1. In a squeeze film damper employing spaced apart annular piston ring seals to seal an annular squeeze film space therebetween with a damper sump space oppositely thereby, the improvement of a combined step ring and step groove therefore comprising in combination

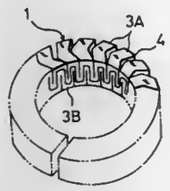
VOL 1147 ISS 4 FE 23 1993 UMI

(a) said damper including spaced apart annular grooves therein,
(b) said grooves having axially opposite sidewalls and a cross-section with a step therein adjacent one sidewall at the bottom of the groove,
(c) and a step ring in each said grooves,
(d) said step rings having a radially outer circumferential sealing face surface and an inner circumferential surface with axially opposite sidewalls and a reverse step cross-section between the squeeze film space side wall of the ring and the inner circumferential surface of the ring to define a main section and an appended overhang section with a ring groove interface wall axially opposite said overhang section,
(e) said overhang section including a radial fluid flow passage therein extending through said outer sealing surface and said overhang section,
(f) said ring groove interface wall comprising a planar surface extending from the sealing face of said ring to said inner circumferential surface thereof,
(g) said rings being received in said grooves such that
(i) the squeeze film space side wall of said ring is separated from said groove by a fluid filled step side space, and
(ii) said inner circumferential surface of said ring is separated from said groove by a fluid filled bottom gland space, and
(h) wherein said ring groove interface wall includes a circular flow groove concentrically therein, said circular flow groove dividing said interface wall into an inner annular region in sealing engagement with the adjacent groove wall, and an outer annular region, said outer annular region incorporating therein a circumferentially spaced array of radial fluid flow grooves radially extending from and through said circular flow groove through said radially outer circumferential sealing surface thereby interconnecting said circular flow groove with said sump space in open fluid flow relationship, wherein said radial fluid flow grooves and said circular flow groove assist in axially seating said interface wall of said ring against the adjacent groove wall.

5,188,376
GLAND PACKING AND METHOD OF PRODUCING SAME

Takahisa Ueda; Shuzo Konaka, and Takeshi Miyoshi, all of Sanda, Japan, assignors to Nippon Pillar Packing Co., Ltd., Osaka, Japan

Filed Feb. 5, 1991, Ser. No. 650,940
Claims priority, application Japan, Feb. 26, 1990, 2-46558
Int. Cl.[5] F16J *15/20*
U.S. Cl. 277—227 **5 Claims**

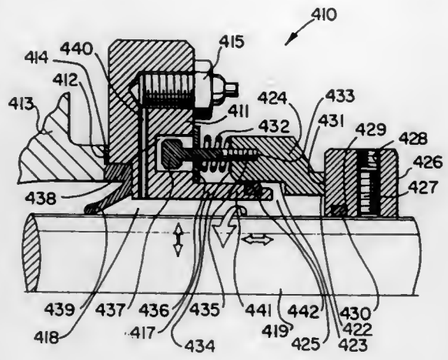


1. A packing comprising a string-like body formed of an elongated tape-like packing material having at least one layer repeatedly folded in a direction at a right angle to the longitudinal direction thereof in a zigzag manner with peak portions and valley portions alternately formed; and bent in a dogleg manner in a direction transverse to the longitudinal direction, said tape-like packing material comprising one of expanded graphite, mica and polytetrafluoroethylene fiber.

5,188,377
EXTERNALLY-MOUNTED, STATIONARY-DESIGN, SELF-ALIGNING ROTARY FACE SEAL

Kevin R. Drumm, Hamilton, Canada, assignor to Nuraseal Company, Limited, Ontario, Canada

Continuation of Ser. No. 621,458, Dec. 4, 1990, abandoned. This application Jul. 6, 1992, Ser. No. 908,727
Claims priority, application Canada, Dec. 5, 1989, 2004636
Int. Cl.[5] F16J *15/34*
U.S. Cl. 277—81 S **8 Claims**

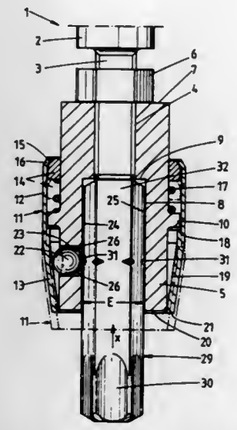


1. An externally-mounted, stationary-design, self-aligning, rotary face-seal for securement to a rotatable shaft member extending through a housing of equipment containing a media which is to be sealed therein, said seal, when secured to said rotatable shaft member, comprising:
(i) a mounting plate having an inboard face and an outboard face, said mounting plate having a plurality of spaced-apart recesses in the outboard face thereof, said mounting plate being secured with its inboard face abutting said housing of said equipment in sealed relation therewith and with said rotatable shaft member extending through the mounting plate and projecting exteriorly of said housing into an ambient environment;
(ii) a diametrically-split stator having an inboard face and an outboard face, said stator being disposed in said ambient environment and being fitted with a plurality of spaced-apart anti-rotation guide pins projecting from said inboard face of said stator, the projecting ends of said guide pins being disposed within associated recesses in the outboard face of said mounting plate, and a resilient spring member captured on each associated guide pin, one end of said spring member abutting said inboard face of said stator, each said spring member being retained on said associated pin and being presented from entering said recess, thereby providing a pre-assembled unit comprising said stator, said guide pins and said resilient spring members; and
(iii) a diametrically-split rotor having an inboard face and an outboard face, fluid-tightly fitted and secured onto said exteriorly projecting rotatable shaft member, said rotor being disposed in said ambient environment, and said inboard face being in sealing contact with said outboard face of said stator;
each said resilient spring member which is captured on each associated said guide pin thereby being disposed between said outboard face of said mounting plate and said inboard face of said stator, said resilient spring members thereby urging said outboard face of said stator axially into tight sealing contact with said inboard face of said rotor both when said rotatable shaft is not rotating and during rotation of said rotatable shaft.

5,188,378
CHUCK FOR POLYGONAL SHANK ENDS OF TOOLS

Gerd Erlenkeuser, Mettmann, Fed. Rep. of Germany, assignor to Wera Werk Hermann Werner GmbH & Co., Wuppertal, Fed. Rep. of Germany

PCT No. PCT/EP91/00033, § 371 Date Aug. 21, 1991, § 102(e) Date Aug. 21, 1991, PCT Pub. No. WO91/10541, PCT Pub. Date Jul. 25, 1991
PCT Filed Jan. 11, 1990, Ser. No. 752,660
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1990, 9000245[U]
Int. Cl.[5] B23B *31/22*
U.S. Cl. 279—22 **4 Claims**

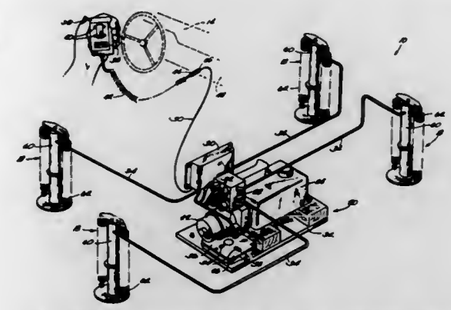


1. A chuck for a polygonal shank end of a tool, comprising
a bushing for transmission of a driving force, the bushing having a cavity corresponding in shape to the polygonal cross section of the shank end;
a ball, the bushing having a window-shaped opening in which the ball is disposed to serve as pressing member which acts on the shank upon insertion of the shank into the cavity;
an actuating sleeve encircling the bushing and enclosing the window-shaped opening and being displaceable against spring action;
wherein the diameter of the ball is greater than the thickness of a wall of the bushing;
the actuating sleeve has an internal inclined clamped surface which presses against the ball upon activation of the sleeve;
the window-shaped opening has a first set and a second set of support shoulders for engagement with the ball, all of said support shoulders being located at an edge of said window-shaped opening face said cavity, the window-shaped opening communication with the chamber at one polygonal edge thereof;
the shank end has a recess for receiving the ball, the recess being located at a polygonal edge of the shank end, the recess having a V-shape with two triangular sidewalls, each sidewall having a vertex opposite a groove of the recess for engaging the ball;
the ball extends partially into the cavity and lies with two-point applicatin against the vertices of the sidewalls of the recess; and
a diameter of the ball is less than half a diameter of the shank end and more than twice as large as a spacing between the vertices of the sidewalls of the recess, the groove of the recess extending in a plane perpendicular to an axis of the tool.

5,188,379
AUTOMATIC LEVELING SYSTEM FOR RECREATIONAL VEHICLES

Hans H. Krause, Mequon, and Ralph O. Krause, Milwaukee, both of Wis., assignors to Applied Mechanis, Inc., Lannon, Wis.

Filed Oct. 19, 1990, Ser. No. 600,759
Int. Cl.[5] B60S *9/12*
U.S. Cl. 280—6.12 **18 Claims**



1. An automatic leveling system for a recreational vehicle comprising:
a plurality of hydraulic jacks;
means for mounting said hydraulic jacks adjacent the underside of the recreational vehicle;
means for extending each of said jacks until each of said jacks contacts the ground below the recreational vehicle with a first predetermined pressure;
a level sensor for sensing a level condition;
means responsive to said level sensor for further extending selected ones of said jacks until said level sensor senses a level condition; and
means responsive to the achievement of said level condition for actuating any of said jacks that do not then exert a predetermined minimum pressure on the ground to ensure thereby that each of said jacks is in contact with the ground following establishment of the level condition.

5,188,380
GENERAL UTILITY CHILD SEAT APPARATUS

Kevin B. Tucek, 6442 S. Holland Ct., Littleton, Colo. 80123

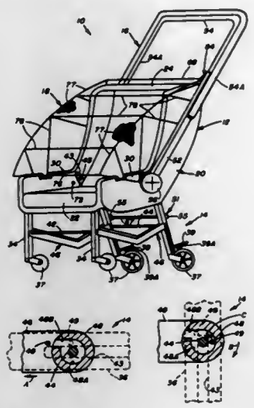
Filed Aug. 13, 1991, Ser. No. 744,444
Int. Cl.[5] B62B *7/12*
U.S. Cl. 280—30 **15 Claims**

1. A general utility child seat apparatus, comprising:
(a) a child seat body having a seat portion and back portion integrally formed in an inclined relation to said seat portion;
(b) a mobile carriage assembly mounted to said child seat body for movement between erected and collapsed conditions, said carriage assembly having a base stationarily mounted to said child seat body, front legs pivotally attached at upper ends to laterally-spaced locations on a front end of said base, rear legs pivotally attached at upper ends to laterally-spaced locations on a rear end of said base, a plurality of rotatable wheels respectively mounted to lower ends of said legs, a front transverse member extending between and interconnecting said front, a rear transverse member extending between and interconnecting said rear legs, and first and second longitudinal members extending between and pivotally connected with said respective front and rear legs and being disposed along respective opposite sides of said base so as to cause said front and rear legs to pivot together in unison between erected and collapsed positions relative to said base to

move said carriage assembly between said erected and collapsed conditions; and

(c) a handle assembly attached to opposite sides of said child seat body;

(d) said base of said carriage assembly including a pair of



laterally spaced side members and a front member extending between and rigidly interconnecting said side members, said side members and said front member being attached to said seat body, said front and rear legs being pivotally attached to respective opposite ends of said side members of said base.

5,188,381

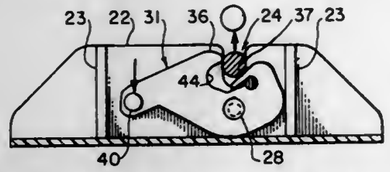
WHEEL HOLDING BRACKET ASSEMBLY FOR SUITCASES

Dick T. Kho, P.O. Box 34454, West Los Angeles, Calif. 90034

Continuation-in-part of Ser. No. 512,426, Apr. 23, 1990, abandoned. This application Feb. 25, 1991, Ser. No. 660,067

Int. Cl.[5] B62B *1/12*

U.S. Cl. 280—37 **3 Claims**



1. An axle retaining bracket for holding a wheel and axle assembly on a suitcase comprising a planar support and spaced transverse portions each terminating in an edge, each of said transverse portions having a first axle receiving slot formed therein, each first axle receiving slot having an entrance at said edge of said transverse portion with generally parallel walls connected by a bottom wall, said parallel walls spaced far enough apart to receive the axle of a wheel assembly, a lever pivotally mounted on the transverse portion of each bracket, each lever having a first portion and a second portion, said first portion of each lever elongated with opposite ends and a lever edge, a handle formed on one end of said lever, a curved first cam formed on said lever edge at the opposite end of said lever, said first cam projecting into the said entrance to each slot partially blocking the entrance to the slot, said edge of said first cam reversing direction and curving back and around to define the second portion of said lever and a second axle receiving slot formed between the said first and a second portions of said lever, a thin elongated flexing member, said thin elongated flexing member having a distal end, said distal end of said thin elongated member positioned near the bottom wall of said first axle receiving slot and shaped to form a second cam, said second cam positioned so contact with an axle entering the slot causes the thin elongated member to flex, said thin elongated member close enough to said bottom wall so that the flexure of said thin elongated member is limited by the bottom wall of said slot and is below its breaking limit whereby said thin elongated member is not affected by the weight carried by the suitcase, said first cam shaped in such a way that when an axle is inserted in said slot it encounters said first cam at the entrance to said first axle receiving slot thereby pivoting said lever in one direction causing said first cam to move away from the entrance to said slot to permit said axle to enter said slot, said second cam positioned so when an axle moves toward the bottom wall of said slot it encounters said second cam at the distal end of said thin elongated member, said second cam positioned so the engagement of an axle with said second cam pivots said lever in a direction opposite to said one direction causing said first cam to completely cover the entrance to said slot whereby the axle is locked in said first and second axle receiving slots, the pivot of said lever at the center line of said axle receiving slots between said parallel walls whereby force directed against said first cam has no pivotal effect on said lever, said handle positioned so when force is exerted on said handle in said one direction the lever rotates in a said one direction which opens the entrance to said first slot so the axle can move completely out of said first slot and separate from said bracket.

5,188,382

MOTOR VEHICLE STEERING KNUCKLE

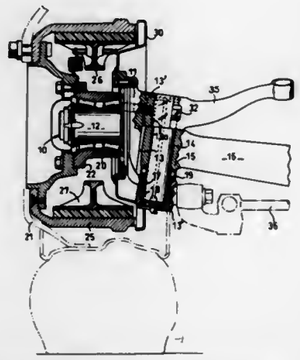
Christian Seiler, Villeurbanne, France, assignor to Renault Vehicules Industriels, Lyons, France

Filed Nov. 8, 1990, Ser. No. 610,755

Claims priority, application France, Nov. 10, 1989, 89 14768

Int. Cl.[5] B62D *7/18*

U.S. Cl. 280—96.1 **5 Claims**



1. A vehicle steering knuckle comprising:

a body;

a knuckle shaft for supporting a wheel and extending from said body; and

a yoke having upper and lower legs extending from said body in a direction opposite said knuckle shaft, wherein said upper leg of said yoke comprises:

a) a fastening flange separate from said body, said fastening flange including a bore formed entirely in said fastening flange and through which a pivot pin can pass, and a steering lever extending from said fastening flange, and

b) means for releasably fastening said fastening flange to said body,

whereby a head end of an axle can fit between said upper and lower legs and a pivot pin can be inserted through said yoke and the axle to form a knuckle joint, and whereby said fastening flange may be released from said body to gain access to said knuckle joint.

5,188,383

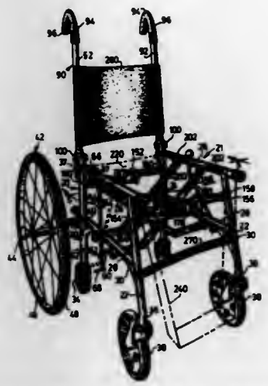
USER-COLLAPSIBLE WHEELCHAIR

Josephine M. Thompson, Somerset House, 5600 Wisconsin Ave., Chevy Chase, Md. 20815

Filed Oct. 3, 1991, Ser. No. 770,477

Int. Cl.[5] B62M *1/14*

U.S. Cl. 280—250.1 **10 Claims**



1. A lightweight, multi-purpose, user-collapsible wheelchair comprising:

a first side frame;

a second side frame spaced from the first side frame by a collapsible locking brace, each of the first and second side frames mounted on an in-line roller and a rotatable front caster;

a first back handle pivotally and rotatably attached to the first side frame by a first pivot latch;

a second back handle privotally and rotatably attached to the second side frame by a second pivot latch;

a first drive wheel;

means for attaching the first drive wheel removably to the first side frame;

a second drive wheel;

means for attaching the second drive wheel removably to the second side frame;

a seat web attached to the first and second side frames to form a seat;

a back web attached to the first and second back handles to form a seat back; and

a leg web attached to the first and second side frames to form a leg support, whereby the wheelchair user can remove the drive wheels and fold the wheelchair into a compact configuration without assistance even while seated.

5,188,384

BICYCLE FRAME

Joris van Raemdonck, Bazel, Belgium, assignor to Look S.A., Nevers cedex, France

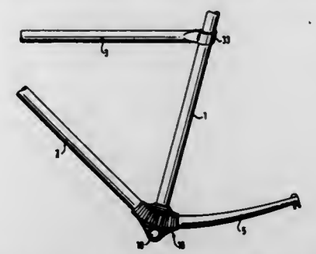
Filed Nov. 15, 1990, Ser. No. 614,175

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1989, 3938509

Int. Cl.[5] B62K *19/16, 19/18*

U.S. Cl. 280—281.1 **7 Claims**

1. A bicycle frame comprising a saddle frame tube, an upper frame tube and a lower frame tube, a steering head tube joined to the upper and lower frame tubes as well as rear fork tubes projecting from a junction zone between the saddle frame tube and the lower frame tube and a crank axle bracket disposed in the junction zone, at least the saddle tube, the lower and upper frame tubes and the rear fork tubes being made of fiber or fabric reinforced plastics, notably by the use of carbon fiber material, the lower frame tube being formed by at least two sheathed separate tubes, the separate tubes being bent away from each other in the manner of a fork before surrounding the saddle tube and forming the rear fork tubes beyond the junction zone between the saddle tube and the lower frame tube, the junctions between the tubes being made of fiber and/or



fabric reinforced plastics and being produced by means of coiled bands of fiber and/or fabric reinforced plastics, which can be hardened into a form, together with the tubes under the action of heat and pressure, and the crank axle bracket being disposed beneath the two separate tubes and being joined to the saddle tube by means of a coiled band arrangement and disposed directly adjacent to or in the forking area of the rear fork tubes, and the crank axle bracket being surrounded by the joined coiled bands of the saddle tube, of the lower frame tube and of the rear fork tubes and integrated in the thus formed coiled band arrangement.

5,188,385

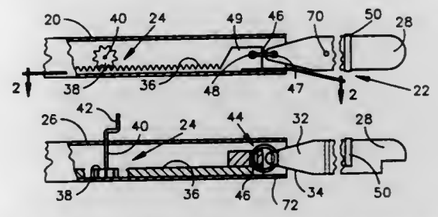
AUTOMATIC LOCKING PROXIMITY TRAILER HITCH

Harold L. Wilson, Rte. 2, Box 394, Pevely, Mo. 63070

Filed Jul. 2, 1991, Ser. No. 724,868

Int. Cl.[5] B60D *1/00, 1/16*

U.S. Cl. 280—477 **19 Claims**



1. A trailer hitch for connecting a vehicle to a trailer through a hitch ball connected to said vehicle and a ball socket connected to said trailer, said hitch comprising an adjustable hitch member connected to a tongue of said trailer at a rear portion and the ball socket at a forward portions adjustment means for adjusting said hitch member to provide universal vertical and horizontal movement and longitudinal movement of the ball socket for alignment of the ball socket from unaligned positions to a registry position with the hitch ball and tongue advancing means for moving said tongue toward said hitch member to a locked position within said tongue.

VOL 1147 ISS 4 FE 23 1993 UMI

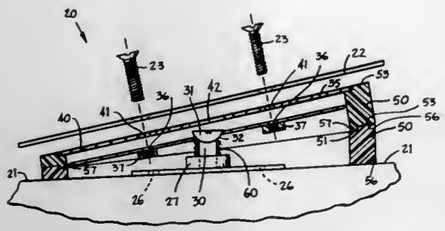
VOL 1147 ISS 4 FEB 23 1993 UMI

5,188,386

BINDING MOUNTING APPARATUS

Russell J. Schweizer, 954 W. Grace, Chicago, Ill. 60613

Filed Feb. 26, 1992, Ser. No. 842,881
Int. Cl.[5] A63C *5/03*
U.S. Cl. 280—607 **16 Claims**



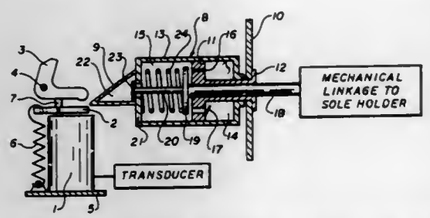
1. A binding mounting apparatus comprising:
a baseplate, mount means for mounting said baseplate to a board surface, a pivot stem having an enlarged head portion, securement means for securing said pivot stem to said baseplate;
a mounting plate having at least one mounting through hole and a stem through hole, said pivot stem positioned within said stem through hole, said stem through hole sized large enough for said pivot stem to fit within said stem through hole, said stem through hole sized small enough for said enlarged head to prevent said mounting plate from traveling over said enlarged head; and
a primary riser ring, a face plate mounted on said primary riser ring, said face plate having at least one face plate through hole each alignable with each corresponding said mounting through hole, said mounting plate positioned within said primary riser ring.

5,188,387

SKI BINDING INCORPORATING BOTH ELECTRONIC AND MECHANICAL RELEASE SYSTEMS

Piero G. Ruffinengo, 820 Edgehill Rd., Salt Lake City, Utah 84103

Filed Oct. 2, 1990, Ser. No. 591,814
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1989, 3932892
Int. Cl.[5] A63C *9/088*
U.S. Cl. 280—612 **14 Claims**



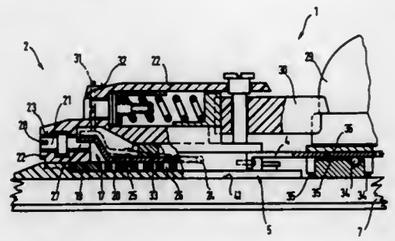
1. A ski binding release mechanism for a ski having dual release functionality comprising:
electronic binding release means, and
mechanical binding release means,
said electronic means and said mechanical means both being simultaneously activated and act upon and thereby adapted to unlatch a bootsole latch of a ski binding incorporating said mechanism when the binding is subjected to a predetermined threshold force in a selected direction,
wherein, however, said mechanical release means includes a mechanical delay means providing sufficient time for said electronic release means to function before said mechanical release means can function, so that if said electronic release means fails to function, said mechanical release means functions.

5,188,388

SKI BINDING WITH A HOLDING MECHANISM FOR THE FRONT AND HEEL JAWS

Alois Rohrmoser, Wagrain, Austria, assignor to Varpat Patentverwertungs AG, Littau, Switzerland

Continuation of Ser. No. 483,122, Feb. 22, 1990, abandoned. This application May 8, 1992, Ser. No. 883,057
Claims priority, application Austria, Feb. 22, 1989, 397/89
Int. Cl.[5] A63C *9/00*
U.S. Cl. 280—633 **7 Claims**



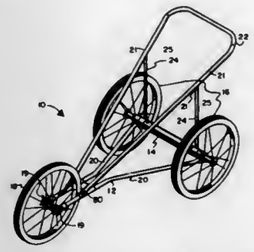
1. A ski binding for a longitudinally extending ski comprising:
a toe clamp with an adjustable release mechanism mounted on the ski;
a heel clamp with a second adjustable release mechanism mounted on the ski in operative relationship to said toe clamp;
connection means for altering the position of at least one of said clamps with respect to the other of said clamps, including
a notched track fastenable on the ski,
an arresting device including a swivel arm having two ends and a central portion thereof, said swivel arm extending parallel to the longitudinal direction of the ski and being pivotably connected to at least one of the clamps, said swivel arm being pivotal in a plane perpendicular to the top side of the ski about an axis which is generally parallel to the top surface of the ski and generally perpendicular to the longitudinal direction of the ski, the pivot axis being located at one end of said swivel arm;
an actuating member formed as a cylindrical cam having an end with a cutout for engaging said swivel arm at the end opposite the pivot axis and pivoting said swivel arm between two terminal positions including a locked position in which said at least one clamp is fixed with respect to said track and an unlocked position in which said at least one clamp can be moved along said track, in the locked position said central portion of said swivel arm being removably engaged with said noticed track, said cylindrical cam rotatably mounted with the clamp and being rotatable about its central axis which is generally parallel to the longitudinal direction of the ski and said swivel arm, the release mechanism being accessible and adjustable independently of the position of said pin and said swivel arm; and
spring means for continuously biasing said swivel arm toward the locked position in the direction of said notched track and the ski, the cutout of said cylindrical cam providing a surface in each terminal position where said spring means and said swivel arm exert force on said end of said cylindrical cam in a direction transverse to its direction of rotation so that said swivel arm does not effect the moment of said cylindrical cam and is maintained in the terminal position until external actuation of said cylindrical cam.

5,188,389

FOLDABLE BABY STROLLER AND AXLE ASSEMBLY THEREFOR

Philip A. Baechler, Yakima, and Timothy O. Armstrong, Issaquah, both of Wash., assignors to Racing Strollers Inc., Yakima, Wash.

Filed Apr. 6, 1992, Ser. No. 862,981
Int. Cl.[5] B62B *7/06*
U.S. Cl. 280—650 **28 Claims**



1. An axle assembly for a foldable baby stroller having first and second frame members and a rear wheel mounted on a stub axle, comprising:
a tubular rear axle having a first end portion;
a first coupler having first and second end portions and a first support connector, with the first end portion being received within the first end portion of the tubular axle and held against rotation relative to the tubular axle, and the first support connector being fixedly attached to the first frame member;
a second coupler having first and second end portions and a second support connector, with the first end portion being rotatably mated to the second end portion of the first coupler for rotation of the first coupler relative to the second coupler about a common axis, and the second support connector being fixedly attached to the second frame member; and
a connector member holding the second coupler in position adjacent to the first coupler, and releasably receiving the stub axle to allow selective removal of the stub axle and rear wheel.

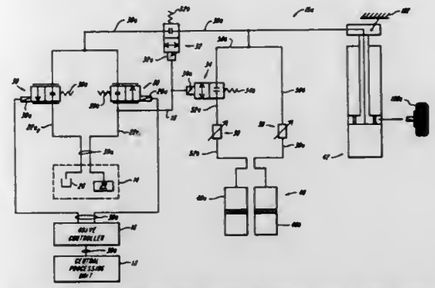
5,188,390

SUSPENSION SYSTEM HAVING ACTIVE AND PASSIVE MODES

William M. Clark, West Bloomfield Township, Oakland County, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 16, 1991, Ser. No. 808,317
Int. Cl.[5] B60G *11/26*
U.S. Cl. 280—707 **25 Claims**

1. A suspension unit having active and passive modes for a vehicle suspension system having a fluid source for providing a pressurized fluid, said suspension unit comprising:
a fluid actuator;
a fluid spring;
mode selection means coupled to said fluid actuator and said fluid spring for responsively selecting said mode of said suspension unit;
first valve means coupled to said mode selection means for restricting fluid communication between said fluid spring and said fluid actuator when said suspension unit is in said active mode; and
second valve means coupled to said fluid spring and said fluid actuator for restricting fluid communication between



said fluid spring and said fluid actuator when said suspension unit is in said passive mode.

5,188,391

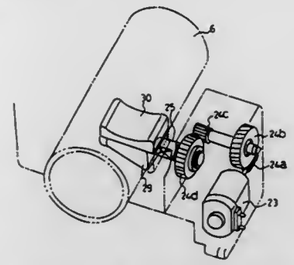
Patent Not Issued For This Number

5,188,392

STEERING SYSTEM

Akio Sugiki, Kariya; Masanobu Ishikawa, Nagoya; Nobuhiro Yoshida; Haruhiko Tanahashi, both of Toyota, and Kiyokatsu Miura, Gamagori, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation-in-part of Ser. No. 797,167, Nov. 26, 1991, abandoned, which is a continuation of Ser. No. 582,076, Sep. 14, 1990, abandoned. This application Feb. 26, 1992, Ser. No. 841,187
Claims priority, application Japan, Sep. 19, 1989, 1-109500[U]; Feb. 27, 1991, 3-32771
Int. Cl.[5] B62D *1/18*
U.S. Cl. 280—775 **4 Claims**



1. A steering system for a vehicle having a body, the system comprising:
a fixed body secured to the vehicle body;
a fixed shaft rotatably supported by the fixed bracket;
a movable bracket connected for relative axial movement to the fixed bracket;
a movable shaft rotatably supported by the movable bracket and connected to the shaft so as to be axially movable relative to the fixed shaft and rotatable as one unit with the fixed shaft;
a driving mechanism disposed on the fixed bracket and connected to move the movable bracket and the movable shaft axially relative to both the fixed bracket and the fixed shaft; and
a control mechanism for controlling the level of the frictional force acing between the fixed bracket and the mov-

VOL
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able bracket, the control mechanism normally maintaining the frictional force at a level to ensure rigidity between the fixed and movable brackets, but operable, upon actuation of the driving mechanism, to reduce the frictional force and thereby decrease resistance to relative axial movement of the fixed and movable brackets.

5,188,393

CONTROL MECHANISM FOR PRETENSIONERS IN A SAFETY BELT SYSTEM OR FOR A GAS BAG RESTRAINING SYSTEM

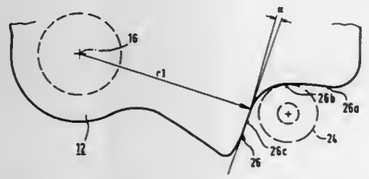
Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to TRW Repa GmbH, Alfdorf, Fed. Rep. of Germany

Filed Apr. 16, 1991, Ser. No. 685,906

Claims priority, application European Pat. Off., Apr. 17, 1990, 90107274

Int. Cl.[5] B60R *22/36*

U.S. Cl. 280—806 **13 Claims**



1. A control mechanism for a pretensioner in a safety belt restraining system or in a gas-bag restraining system for motor vehicles, comprising:

a housing;

an actuating member for actuating the pretensioner, said actuating member being mounted in said housing for movement between a non-actuating position and an actuating position to actuate the pretensioner;

a vehicle-sensitive inertia mass movable under the influence of vehicle deceleration forces exceeding a predetermined value; and

a release member coupled to said inertia mass for movement with said inertia mass, said release member being mounted in said housing for pivotal movement about an axis between a ready position blocking movement of said actuating member into the actuating position and a release position enabling movement of said actuating member into the actuating position;

first spring means for biasing said actuating member toward the actuating position and for biasing said release member toward the release position;

said release member having a concave cam surface;

said actuating member having a roller rollable on said concave cam surface of said release member during movement of said actuating member between the non-actuating position and the actuating position;

said cam surface on said release member having a first end portion, a second end portion, and a concave portion between said first and second end portions, said concave portion of said cam surface being defined by a radial distance from the axis of said release member which radial distance increases towards each of said first and second end portions, said cam surface also having a step portion adjoining said second end portion at which the radial distance from the axis of said release member suddenly decreases;

said concave portion of said cam surface acting on said roller to hold said actuating member in the non-actuating position when deceleration forces at the inertia mass are less than a predetermined value;

under the action of deceleration forces at the inertia mass having a magnitude exceeding the predetermined value and, integrated over time, corresponding to a velocity loss less than a predetermined velocity loss, said release member being movable with said inertia mass against the bias of said spring means out of the ready position toward the release position and said roller rolling on said cam surface in a first direction and then rolling on said cam surface in a second direction opposite to said first direction to return to the ready position when the deceleration forces decrease; and

under the action of deceleration forces at the inertia mass having a magnitude exceeding the predetermined value and, integrated over time, corresponding to a predetermined velocity loss, said release member being movable with said inertia mass against the bias of said spring out of the ready position toward the release position and said roller rolling on said cam surface in a first direction toward said second end portion and beyond said step portion, and said release member suddenly moving to the release position to release said actuating member for movement to the actuating position to actuate said pretensioner.

5,188,394

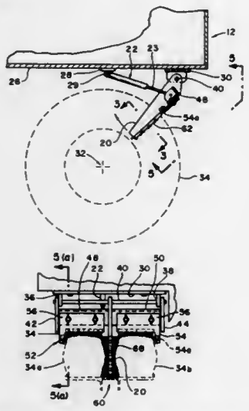
POSITIONABLE TIRE SCRAPER FOR DUAL TIRES

Mortimer P. Roche, 8516 Blounts La., Fulton, Md. 20759, and Ademar Scarpelli, 4910 Riverton La., Bowie, Md. 20715

Filed Jul. 30, 1991, Ser. No. 737,490

Int. Cl.[5] B60S *1/68*

U.S. Cl. 280—856 **11 Claims**



1. A tire scraper for removing mud from a vehicle having dual tires, comprising:

a scraper element;

a pivotal support member mounted on the vehicle adjacent the dual tires, the pivotal support member including a pivot pin having a pivot axis parallel to a rotation axis of the dual tires and being mounted above the dual tires, the pivot pin rotatably mounted between a pair of support arms connected with and extending downward from a frame member of the vehicle, the scraper element including means for detachably coupling a portion thereof to the pivotal support member; and

an expandable length actuator arm having a first end connected to the vehicle above the dual tires and a second end connected to the pivotal support member, whereby the pivotal support member and thus the scraper element are pivoted between a first, retracted position and a second, deployed position when the length of the actuator arm is expanded.

5,188,395

WATERPROOF RECORDING MATERIAL HAVING GROUND PATTERNS AND ITS MANUFACTURING METHOD

Hiroshi Kawahara; Noriaki Okunaka; Mitsuru Kobayashi; Isao Tokuno, and Shuzo Ohara, all of Osaka, Japan, assignors to Goyo Paper Working Co., Ltd., Osaka, Japan

Filed Dec. 19, 1989, Ser. No. 452,667

Claims priority, application Japan, Dec. 21, 1988, 63-323939; Oct. 4, 1989, 1-91267

Int. Cl.[5] B42D *15/00*

U.S. Cl. 283—113 **5 Claims**



1. A waterproof recording material having visual effect background patterns, the material including a film of a resin composition comprising a thermoplastic synthetic resin and a filler, a surface of the film having the visual effect background patterns thereon which are luster differences produced by irregularities of not more than 40 um on the surface of the film.

5,188,396

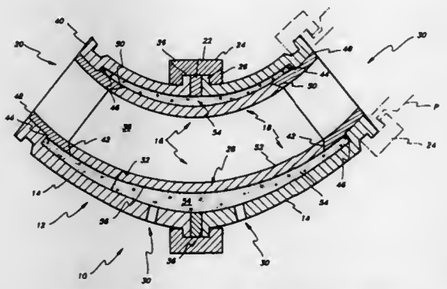
REBUILDABLE SLURRY CONDUIT ELBOW

Vaughn Calvin, P.O. Box 3908, Bryan, Tex. 77805

Filed Feb. 26, 1992, Ser. No. 841,847

Int. Cl.[5] F16L *55/18*

U.S. Cl. 285—16 **8 Claims**



1. A rebuildable conduit elbow assembly comprising:

an inner replaceable element, hereinafter referred to as a liner, having a wear surface, said liner comprising an integral member forming a monolithic arcuate tube defining conduit means therein, said arcuate tube extending throughout substantially most of a bend being traversed by said conduit elbow assembly, said liner further comprising at least two mating replaceable members, whereby a loose fit and a plurality of said mating replaceable members combine to enable adjustment of at least one of said mating replaceable members, thus allowing said conduit elbow assembly to be adjustably connected to piping, and

an outer housing comprising at least two mating sections having juxtaposed faces, each of said mating sections having a flange projecting radially therefrom, and both said flanges being located at said juxtaposed faces such that said flanges are juxtaposed one another and means for maintaining said flanges wherein fluent material is conducted through said liner within said conduit elbow assembly.

5,188,397

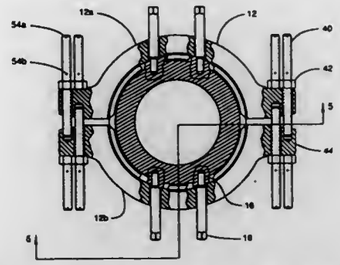
CLAMP AND CLAMP SUPPORTING APPARATUS

Joseph H. Hynes, Houston, Tex., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Dec. 4, 1990, Ser. No. 621,776

Int. Cl.[5] F16L *17/00*

U.S. Cl. 285—24 **4 Claims**



1. A clamping apparatus of the type used in the oilfield industry in which abutting tubular member having enlarged end portions with tapered backfaces, are held in sealing engagement by clamp halves with a complementary internal profile which engages said backfaces, comprising:

a pair of clamp halves with a lug at each end,

a bolting means disposed on each lug cooperating with a lug of said opposite clamp half to secure said end portions in abutting sealed relationship,

a support means for maintaining said clamp halves in a planar position when said clamp halves are disengaged from said enlarged end portions, and

a sealing means disposed between said hubs,

wherein said bolting means includes:

a plurality of threaded studs engaging threaded holes in said lugs,

said studs disposed in staggered relationship on said lugs to minimize spacing between adjacent studs,

said lugs having mating holes in complementary staggered relationship to the studs of a mating lug,

said mating holes receiving said studs when said clamp halves are in clamping engagement with said enlarged end portions, and

said clamp halves are retained in clamping engagement by threaded nuts engaging said studs.

5,188,398

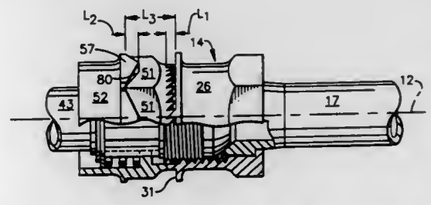
REDUNDANTLY LOCKED FLUID COUPLING

Thomas N. Parimore, Jr., and Christopher R. Koss, both of West Chester, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jan. 2, 1992, Ser. No. 815,998

Int. Cl.[5] F16L *35/00*

U.S. Cl. 285—39 **3 Claims**



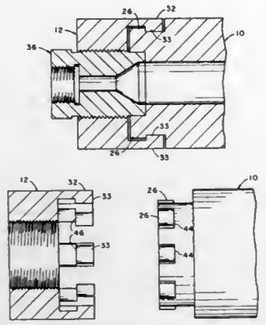
1. A coupling having a longitudinal axis, said coupling comprising:

(a) a first coupling element, comprising:

(i) an inner member having a first end including a seat; and
(ii) a coupling nut having a threaded internal portion, a first end, and an annular surface extending radially outward substantially adjacent said first end, said coupling nut being coupled to said first coupling element inner member such that said coupling nut may move axially and circumferentially with respect to said first coupling element inner member; and
(b) a second coupling element, comprising:
(i) an inner member having a first end, a sealing portion adapted to sealingly engage said first coupling element inner member seat, a threaded portion adapted to engage said coupling nut threaded internal portion, and axial spline means;
wherein said first coupling element and said coupling nut have coacting abutment means wherein said coupling nut is threadedly engageable with said second coupling element inner member and rotatable in a tightening direction such that said abutment means engage and said seat engages said sealing portion to achieve a fluid tight seal;
(ii) an outer ring having a first end, at least two wrench flats, an annular flange extending outward substantially adjacent said wrench flats with a wrench lead-in chamfer extending axially towards said outer ring first end, wherein said wrench flats are located between said annular flange and said first end, and spline means complementary to and axially aligned with said second coupling element inner member spline means such that said outer ring is coupled to said second coupling element inner member in axially sliding and circumferentially fixed engagement; and
(iii) biasing means coupled to said second coupling element inner member and outer ring urging said second coupling element outer ring axially in the direction of said second coupling element inner member first end;
wherein said first end of said coupling nut and said first end of said outer ring include intermeshing ratcheting teeth allowing rotation of said coupling nut in a tightening direction and preventing rotation of said coupling nut in a loosening direction by said biasing means perssing said outer ring ratcheting teeth into interference with said coupling nut ratcheting teeth when a fluid tight seal has been achieved; and
wherein when a fluid tight seal has been achieved said biasing means may be compressed to allow sufficient axial movement of said outer ring away from said second coupling element inner member first end to permit said coupling nut to be rotated in a loosening direction;
whereby a wrench engaging said outer ring wrench flats would disengage said ratcheting teeth by sides of the wrench engaging said wrench lead-in chamfer and said coupling nut annular surface, forcing said outer ring annular flange away from said coupling nut annular surface, and would retain such disengagement to allow rotation of said coupling nut.

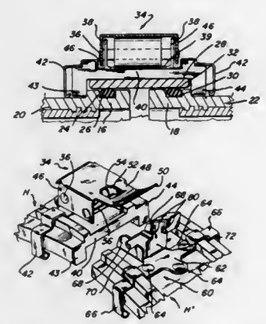
5,188,399
PIPE COUPLING DEVICE AND METHOD
Michael F. Durina, Poland, Ohio, assignor to Spirex Corporation, Younstown, Ohio
Filed Dec. 31, 1990, Ser. No. 636,234
Int. Cl.[5] F16L *21/08*
U.S. Cl. 285—91 **9 Claims**

1. A detachable assembly comprising a barrel having a cylindrical outer shell, a cylindrical inset element and an externally threaded adapter, said barrel having an outer surface at one end provided with circumferentially spaced-apart radial cogs forming a series of alternating cogs and notches, said insert element having a plurality of circumferentially spaced apart forwardly projecting arms, the terminus of said projecting arms comprising an elbow forming an inturned arm, said projecting arms positioned circumferentially relative to said notches so that said projecting arms can be inserted into said notches, said inturned arms positioned relative to said cogs so that after insertion of said projecting arms into said notches said inset element can be rotated relative to said barrel so that said inturned arms face said cogs along facing radial surfaces on said cogs and inturned arms respectively, said adapter



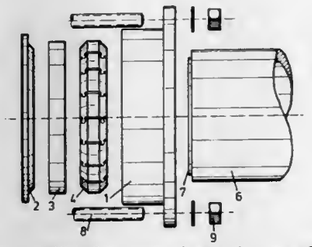
screwed into said insert element at the internally threaded end of said inset element remote from said barrel so that the facing surfaces of said inturned arms are drawn tightly against the corresponding facing surfaces of said cog.

5,188,400
SPRING LOADED COUPLING WITH POSITIVE SPRING LATCH
John J. Riley, Denver, and Jerome E. Opila, Littleton, both of Colo., assignors to Stanley Aviation Corporation, Aurora, Colo.
Filed Sep. 17, 1991, Ser. No. 761,271
Int. Cl.[5] F16L *27/113*
U.S. Cl. 285—233 **9 Claims**



1. A spring loaded coupling device for releasably interconnecting confronting ends of first and second fluid carrying conduits wherein an annular flange is attached to each of the confronting ends, each flange having a sealing ring extending therearound said device comprising:
a sleeve for circumferentially surrounding the sealing rings and the flanges;
a pair of symmetrical arcuate coupling halves pivotally joined together at first adjacent ends for circumferentially surrounding said sleeve, each of said coupling halves including an arcuate circumferential wall having an outer surface and a pair of spaced ribs extending inwardly from opposite circumferential edges of said outer surface for engaging the outside of said flanges;
a latch mounted on said outer surface of said wall adjacent said opposite end of one of said halves, said latch including a flange having a slot opening outwardly and an outwardly extending flat spring lock terminating in an end surface;
a toggle having a first end pivotally mounted on said outer surface of said wall adjacent said opposite end of the other of said halves and having a second end extendable longitudinally beyond said opposite end of said other of said halves, said toggle includes a locking pin adjacent said second end of said toggle engagable with said slot, when said coupling halves are closed around said sleeve, and a toggle spring urging said toggle to pivot in a direction to move said locking pin into said recess; and
cam means, on one of said latch and said toggle, for rotating said toggle against the force of said toggle spring as said coupling halves are closed to cause said locking pin to clear said flange to drop into said slot to form a primary lock as said coupling halves are closed around said sleeve.

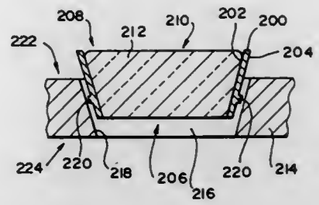
5,188,401
PIPE COUPLING WITH INTERLOCKED AND SEGMENTED GRIP RING
Graeme Staniforth, Skelmersdale, United Kingdom, assignor to WASK-RMF Ltd., England .
PCT No. PCT/GB89/01514, § 371 Date Aug. 15, 1991, § 102(e) Date Aug. 15, 1991, PCT Pub. No. WO90/07671, PCT Pub. Date Jul. 12, 1990
PCT Filed Dec. 20, 1989, Ser. No. 688,560
Claims priority, application United Kingdom, Dec. 23, 1988, 8830202
Int. Cl.[5] F16L *47/00*
U.S. Cl. 285—322 **10 Claims**



1. A pipe coupling for connecting a pipe to a fitting, the coupling comprising an annular assembly incorporating a gripping ring for insertion into a radial gap between the pipe and the fitting, and means for applying an axial load to the annular assembly so that the gripping ring is biased radially against the pipe, wherein the gripping ring is defined by a plurality of segments, adjacent segments of the gripping ring having circumferentially spaced interlocking means for directly and releasably interlocking said segments with each other, said interlocking means providing resistance to separation of any adjacent two of said segments in the gripping ring as a result of tension in the gripping ring, and at least a plurality of said segments being gripping segments which are dimensioned such that when the annular assembly is axially compressed the gripping segments are biased against the pipe.

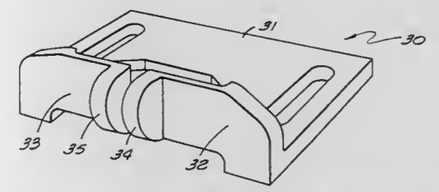
5,188,402
GASKET APPARATUS AND HERMETICALLY SEALED JOINTS EMPLOYING SAID GASKET APPARATUS
Samuel O. Colgate, and Grant M. Schrag, both of Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.
Filed Jan. 31, 1989, Ser. No. 304,178
Int. Cl.[5] F16L *35/00*
U.S. Cl. 285—332 **41 Claims**

1. A gasket for use in a tapered joint, the joint comprising a tapered male member, a tapered female member and said gasket, said gasket comprising a separable element from said male and female members, said gasket having a longitudinal extent and having a first and a second aperture end, said first aperture end being larger in cross-section than said second aperture end, said gasket having an inner surface adapted to engage said male member and an outer surface adapted to engage said female member, said gasket further having means for concentrating



sealing forces of said joint at a predetermined circumferential portion of said gasket, said portion extending along only a part of said longitudinal extent to produce a substantially leak proof seal at said predetermined portion.

5,188,403
CATCH FOR DOOR LATCH
John P. Anderson, Norco, Calif., assignor to The Hartwell Corporation, Placentia, Calif.
Filed Apr. 26, 1991, Ser. No. 692,205
Int. Cl.[5] E05C *19/02*
U.S. Cl. 292—17 **5 Claims**



1. A catch for a door latch or the like for use with a strike for latching a door, said catch comprising a single piece having
a planar base for mounting at a door or door frame, with first and second perpendicular axes in the plane of said base,
a lever fixed to said base, with said lever projecting from said base perpendicular to said plane of said base and parallel to said first axis, and
a tang carried on said lever and having a normal position and a latching position, with said tang projecting from said lever perpendicular to said plane of said base and parallel to said second axis,
with said lever urging said tang to said normal position and with said tang deflectable to said latching position for passing a ramp of a strike, and
with said lever having first and second ends, with said first end of said lever carried at said base and with said tang carried at said second end of said lever.

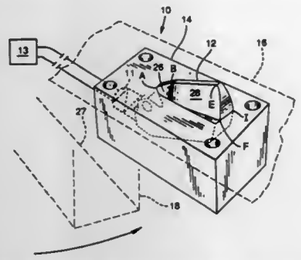
5,188,404
LOCK BOLT WITH A WARPED CONTACT SURFACE
Gary R. Orendorff, Beaverton, Oreg., assignor to W.S.A., Inc., Bloomington, Minn.
Continuation of Ser. No. 678,528, Mar. 28, 1991, abandoned. This application Apr. 6, 1992, Ser. No. 864,123
Int. Cl.[5] E05C *1/08*
U.S. Cl. 292—194 **9 Claims**

1. A lock bolt movable into a retracted position when displaced by a door edge having a length, the bolt comprising:
a body;

VOL 1147 ISS 4 FEB 23 1993 UMI

mounting means for mounting the body for rotation about an axis, the body being rotatable within a first plane perpendicular to the axis, the bolt being rotatable about the axis between an extended and a retracted position;

a contact surface formed on the body, the contact surface warped out of a plane, the contact surface being shaped so that the door edge moves along the contact surface to



force the bolt from the extended into the retracted position, the contact surface shaped so that the edge of the door continuously contacts the contact surface along a length of the edge as the moving edge contacts the contact surface to force the bolt into the retracted position, and so that the smallest angle defined by the intersection of any plane that is parallel to the first plane with the contact surface is greater than 40 degrees.

5,188,405

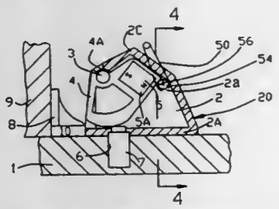
LOCKING DEVICE FOR A LATCH

Marco Maccaferri, Louisville, Ky., assignor to Rev-A-Shelf, Inc., Jeffersontown, Ky.

Filed Mar. 6, 1991, Ser. No. 665,324

Int. Cl.[5] E05C *3/22*

U.S. Cl. 292—204 **4 Claims**



1. An improvement in a latch comprising:

An abutment for latching said latch; a pivotable latching means having an abutment engaging portion for latching engagement with said abutment; pivot means for pivotally mounting said latching means to a support therefore; the improvement comprising: a lock pivotally attached to said support, said lock including locking means to engage with said latching means to prevent movement of said latching means when the latching means is in a disengaged position with said abutment, said locking means being a U-shaped member with turnable ends pivotally attached to said support, said turnable ends including friction engaging means to engage with said latching means in a locking position, said locking means includes a pair of spaced inwardly extending bearings at the turnable ends of said U-shaped member, said pair of spaced friction engaging means extending inwardly from said bearings.

5,188,406

MOTOR-VEHICLE DOOR LATCH

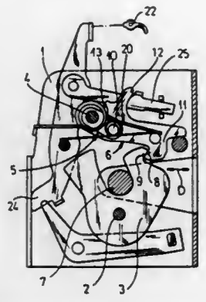
Horst W. Sterzenbach, Ratingen, and Frank Kleefeldt, Heiligenhaus, both of Fed. Rep. of Germany, assignors to Kiekert GmbH & Co. Kommanditgesellschaft, Heiligenhaus, Fed. Rep. of Germany

Filed Jan. 17, 1992, Ser. No. 822,467

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1991, 4102049

Int. Cl.[5] E05C *3/26*

U.S. Cl. 292—216 **9 Claims**



1. A motor-vehicle door latch comprising:

a housing provided with a pivot defining a main latch-ing-lever axis;

a latch fork pivotal on the housing about a latch-fork axis substantially parallel to the main-lever axis, engageable in a latched position with a door bolt to retain same and lock the door, and having a latching surface offset from the latch-fork axis;

a main latching lever pivotal on the pivot of the housing adjacent the fork about the main-lever axis;

a secondary latching lever pivotal on the main lever about a second-lever axis substantially parallel to the latchfork axis and having an outer end formed with a surface engaging the latch-fork surface in the latched position;

a pair of stops formed on the second lever, coacting with the pivot, and defining for the latching levers in the latched position of the latch fork

a normal position with the surfaces in surface contact and an actuated position with the surfaces only in line contact; and

actuating means for opening the latch by pivoting the main lever from the normal position to the actuated position and thereafter for sliding the latching-lever surface off the latchfork surface.

5,188,407

MAGNETIC-STRIP DOOR PROTECTOR FOR AUTOMOBILES

James W. Villaveces, 88 Eugenia Dr., Ventura, Calif. 93003, and Gordon Muma, Las Vegas, Nev., assignors to James Villaveces, Ventura, Calif.

Filed Jan. 21, 1992, Ser. No. 822,745

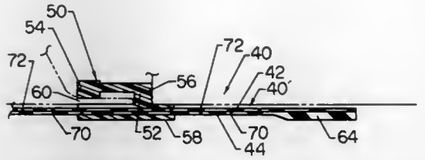
Int. Cl.[5] B60R *19/42*

U.S. Cl. 293—128 **19 Claims**

1. In a magnetic, car-door protector comprising an elongated strip having a first end and a second end, and at least partially made of magnetic material for attachment to a vehicle door for protecting the vehicle door against nicks and scratches, the improvement comprising:

a theft-protection member operatively associated with said elongated strip, said theft-protection member being received between an edge of the vehicle door and a vehicle frame for preventing theft of the protector;

said elongated strip comprising a front surface-face and a rear surface-face, and a plurality of grooves formed in each said surface-face, in order to provide additional



flexibility to said elongated strip for better storage thereof, and for relieving strain in said strip during storage.

5,188,408

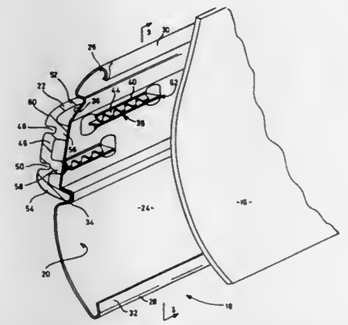
MECHANICAL LOCK FOR VEHICLE TRIM PANELS AND THE LIKE

Karl Berdan, Lot 14 P.O. Box 175, Midland, Canada L4R 4K8 , and Louis Mendes, 8424 E. 12 Mile Rd., Warren, Mich. 48093

Filed Aug. 8, 1991, Ser. No. 741,809

Int. Cl.[5] B60R *19/42*

U.S. Cl. 293—155 **7 Claims**



1. A vehicle body side molding comprising a trim plate for placement against a vehicle body panel; a rub strip extending over at least a portion of said trim plate on a side of the trim plate opposite to that nearest the body panel, said trim plate having a plurality of apertures formed therein each receiving a respective one of a plurality of tabs integrally formed with said rub strip, said tabs extending from an abutment surface formed on said rub strip and having a generally uniform cross section and a pair of generally planar flanks, said abutment surface being engageable with said trim plate adjacent to respective one of said apertures to limit movement of said rub strip toward said plate; and locking means acting between each said tab and respective ones of said apertures to secure said rub strip to said trim plate, said locking means including resilient fingers extending from the periphery of each said aperture toward and into engagement with said planar flanks of respective ones of said tabs, said fingers being flexed by insertion of respective ones of said tabs into respective ones of said apertures and being maintained flexed by respective ones of said tabs when said abutment surface engages said trim plate, said fingers converging in a direction toward said vehicle body panel to inhibit removal of respective ones of said tabs from respective ones of said apertures.

5,188,409

GOLF BALL RETRIEVER

Daniel J. Forey, 2190 Willow La., Lakewood, Colo. 80215

Continuation of Ser. No. 606,874, Oct. 31, 1990, abandoned. This application Jun. 18, 1992, Ser. No. 902,433

Int. Cl.[5] A63B *47/02*

U.S. Cl. 294—19.2 **7 Claims**



1. A golf ball retriever device adapted for removable attachment to a golf club for retrieving a golf ball wherein said golf club includes a shaft and a golf club gripping handle having a smaller diameter portion and a larger diameter portion, said device comprising a rod having a base and a ball-receiving end, a scoop-type ball retriever element on said ball-receiving end, and said rod having a plurality of telescoping tubular members slidable between an extended position and a retracted position, and securing means on said base for securing said base to said gripping handle of the golf club, said securing means including an elongated tubular, substantially rigid body having an internal diameter greater than that of said shaft of the golf club and less than that of said larger diameter portion of said gripping handle, said tubular body being elongated in a direction parallel to said rod and including golf club shaft receiving means in the form of an open slot extending the length of said body, said receiving means receiving said shaft of the golf club by lateral movement of said shaft through said open slot into said body and advancing said body along said shaft and toward said larger diameter portion of said gripping handle until said body fits tightly on said gripping handle with said rod extending axially beyond said handle whereby said telescoping tubular members may be slidably advanced to the extended position to cooperate with said golf club in defining an extended ball-retrieving member of substantial length.

5,188,410

DEFORMABLE BALL RETRIEVING, RETAINING AND DISPENSING DEVICE

Michael E. Summers, 11 Woodbine Dr., Wesley Chapel, Fla. 34249

Filed Dec. 9, 1991, Ser. No. 804,299

Int. Cl.[5] A63B *47/02*

U.S. Cl. 294—19.2 **2 Claims**

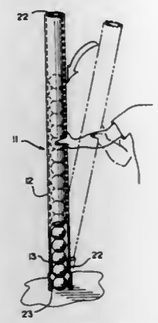
1. An improved deformable ball retrieving, retaining and dispensing device, including an elongated tubular member having an upper end forming a dispensing opening adapted to discharge retained balls when the tubular member is inverted, a lower end and an internal passage connecting each of the ends and of slightly greater dimension than the diameter of the balls to be contained therein; and retaining means for receiving a deformable ball and preventing retractive movement of the ball once the ball has been received within the tubular member, said retaining means adapted such that a ball or the retaining means must be deformed to allow passage of the ball into said tubular member, the improvement comprising:

a tubular retaining element having a first end adapted to be slidably inserted within the tubular member, and a second end forming a retrieving opening adapted to accommodate the retaining means, whereby the retaining means is

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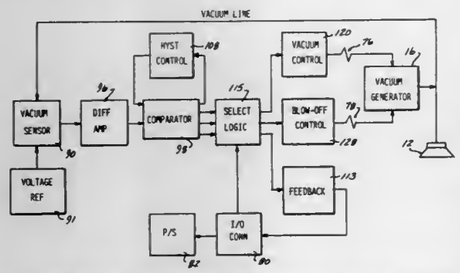
positioned entirely within, is arranged around, and projects inwardly of, the internal perimeter of said retrieving opening, and forms no jagged edges or sharp surfaces therein, said tubular member includes at least first and second separate tubular housings being substantially the same circumference as each other and aligned end to end;

said separate tubular housings being joined together by a tubular connecting insert, being of a shape substantially identical to said retaining element, having first and second ends;



whereby said first end of said tubular connecting insert is adapted to slidably insert within one end of said first tubular housing, and an end of said second tubular housing is adapted to slidably insert within said second end of said tubular connecting insert permitting passage of a ball through said first and second tubular housings; said retaining element being connected to a distal end of said first tubular housing which is not connected to said tubular connecting.

5,188,411
VACUUM CUP CONTROL APPARATUS
Michael J. Golden, Sterling Heights, Mich., assignor to John A. Blatt, Grosse Pointe Shores, Mich.
Filed Jan. 24, 1991, Ser. No. 645,135
Int. Cl.[5] B25J *15/06*; F04F *5/48*
U.S. Cl. 294—64.2 **8 Claims**



1. A vacuum cup control apparatus for applying and releasing vacuum to a vacuum cup engaging a workpiece, the vacuum cup control apparatus comprising:

a housing;

a first flow passage extending through the housing between a first inlet connected to a source of air under pressure and an outlet vented to atmosphere;

venturi means including a throat section disposed in the first passage for producing a subatmospheric pressure in the throat section on the flow of air through the first passage;

a control port in the housing opening at one end in fluid flow communication with the vacuum cup;

a second flow passage formed in the housing and extending from the first flow passage to the control port;

a one-way valve disposed in the second passage and allowing flow in one direction from the control port through the second passage to the first passage;

a third flow passage in the housing connected to a source of air under pressure and to the control port for supplying air under pressure to the vacuum cup to release vacuum in the vacuum cup;

sensor means, mounted in the housing and disposed in fluid flow communication with the control port, for sensing the vacuum pressure at the control port in the housing;

connector means for receiving electrical signals specifying the application and release of vacuum in the vacuum cup; and

control means, mounted in the housing and responsive to the sensor means and the connector means, for controlling the selective application of vacuum to the vacuum cup, the application of pressure air to the vacuum cup and the reapplication of vacuum to the vacuum cup in the event of a decrease in vacuum in the vacuum cup below a predetermined level after vacuum is applied to the vacuum cup and prior to the application of pressurized air to the vacuum cup, the control means including:

valve means for controlling the flow of air to the first and third passages in the housing;

first comparator means, responsive to the sensor means and a first reference signal specifying a predetermined vacuum level connected to a reference signal input of the first comparator means, for comparing the output of the sensor means with the first reference signal;

the first comparator means generating an output signal when the vacuum level sensed by the sensor means reaches a predetermined level established by the first reference signal;

first driver means for energizing the valve means to apply vacuum to the vacuum cup;

first logic means, responsive to the first comparator means and the connector means, for activating the first driver means to apply vacuum to the vacuum cup and to deactivate the first driver means when a predetermined vacuum is present in the vacuum cup; and

hysteresis control means, connected between the output and the reference signal input of the first comparator means, for lowering the first reference signal input to the first comparator means to a predetermined level less than the first reference signal after an output signal is generated by the first comparator means until the vacuum level sensed by the sensor means falls blow the predetermined level set by the hysteresis control means.

5,188,412
MODULAR RECYCLING CONTAINER
Friedrich Maier, Weikersbergstrasse 71, D-7923 Königsbronn-Zang, Fed. Rep. of Germany
Filed Aug. 29, 1990, Ser. No. 575,002
Int. Cl.[5] B65D *51/00*; B65F *1/12*
U.S. Cl. 294—68.24 **7 Claims**

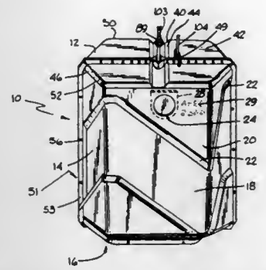
1. A recycling container comprising:

(a) a top with a peripheral edge; and a plurality of side panels with top edges and bottom edges, the side panel top edges being attached to said top peripheral edge, and whereby the bottom edges define a bottom opening in the container;

(b) a first door having a first edge being hingedly attached to the bottom edge of a first side panel, and a second edge being substantially opposite said first door first edge, and at least one other edge extending between said first door first and second edges;

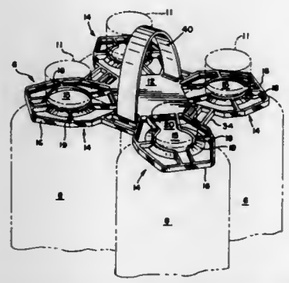
(c) a second door with a first edge being hingedly attached to the bottom edge of a second side panel on substantially the opposite side of the container from the first side panel, said second door having a first edge being hingedly attached to the bottom edge of said second side panel, and a second edge being substantially opposite said second door first edge, and at least one other edge extending between said second door first and second edges;

(d) a plunger slidably extending through said top, a first cable with one end attached to the first door and a second cable with one end attached to said second door and a cable carrier attached to said plunger, said cable carrier having sides extending away from said plunger and toward said side panels, and the other ends of said cables being attached to said cable carrier sides; and



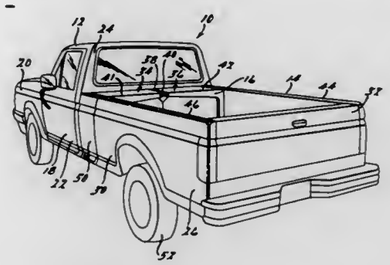
(e) spring clips mounted to the top for clipping to the cable carrier for releasably attaching said cable carrier to the top of said container, whereby said cable carrier contacts and is held by said spring clips when the plunger and cable carrier are raised relative to the container by hoisting the container, and said cable carrier releases from said spring clips when the doors draw the plunger and cable carrier downward relative to the container when the container contents are dumped.

5,188,413
BOTTLE CARRIER ASSEMBLY
Walter Nathan, Chicago, Ill., assignor to RTC Industries, Inc., Chicago, Ill.
Filed Apr. 8, 1992, Ser. No. 865,057
Int. Cl.[5] B66C *1/10*; B65D *71/00*
U.S. Cl. 294—87.2 **3 Claims**



1. A plastic bottle carrier assembly for supporting a plurality of bottles by their necks comprising a central support member, a plurality of uniformly spaced spit collar assemblies disposed about and connected to said support member, each collar assembly consists of a frame member and resiliently supported tapered conical sections that permit the conical sections to be spaced apart for receiving and supporting therein the necks of bottles, means connecting the conical sections to the central support member and frame member, frame means for interconnecting adjacent collar assemblies consisting of a channel-shaped brace that is spaced form said central support member and defines therewith openings disposed on opposite sides of said central support member, the openings receiving end portions of a handle assembly, the end portions contacting said channel-shaped brace and central support member to secure said handle assembly relative to said carrier assembly during transport.

5,188,414
PICK-UP TRUCK WITH AUXILIARY LOAD COMPARTMENT
Robert E. Burnham, Novi, and Roy E. Bonnett, Bloomfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Dec. 23, 1991, Ser. No. 812,545
Int. Cl.[5] B60R *11/06*
U.S. Cl. 296—37.6 **21 Claims**



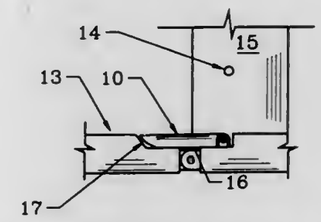
1. A pick-up truck comprising:

a cab having a pair of vertically arrayed longitudinally extending side walls and a vertically arrayed laterally extending rear wall;

a load box defining a vertically arrayed, laterally extending front wall longitudinally spaced from the cab rear wall and having vertically arrayed, longitudinally extending side walls arranged in substantially flush planar relationship with the cab side walls; and

an auxiliary load compartment carried between the cab and the load box and including a pair of laterally spaced closure members, and each having side walls positionable to define vertically extending side surfaces in planar flush relationship with the cab and the load box side walls.

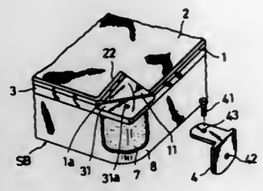
5,188,415
PIVOTABLE TAILGATE CONNECTOR
Mark E. Wagner, 206 Oak Forest La., Trinity, N.C. 27370
Filed Apr. 13, 1992, Ser. No. 867,780
Int. Cl.[5] B62D *33/02*
U.S. Cl. 296—57.1 **14 Claims**



1. A pivotable tailgate connector for a vehicle having a swingable tailgate connected to the rear of the vehicle bed, said connector to span the gap between the vehicle bed and the tailgate when the tailgate is lowered, said connector comprising: a relatively flat rigid member having a front and a rear edge, means to hinge said connector, said hinge means joined to said connector front edge, said connector positioned at the rear of the vehicle bed contiguous to said tailgate whereby said connector will pivot from a horizontal to a vertical position as said tailgate is swung from a lowered to a raised posture.

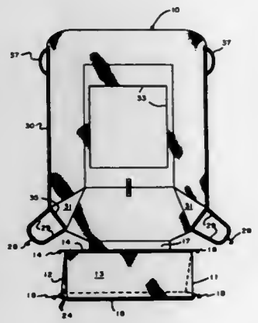
VOL 1147 ISS 4 FE 23 1993 UMI

5,188,416
STRUCTURE FOR ATTACHING A CARPET TO A FORWARDLY FOLDABLE SEAT BACK
Takashi Kato, Akishima, Japan, assignor to Tachi S. Co. Ltd., Akishima, Japan
Filed Apr. 21, 1992, Ser. No. 871,398
Int. Cl.[5] B60R *5/00*
U.S. Cl. 296—65.1 **9 Claims**



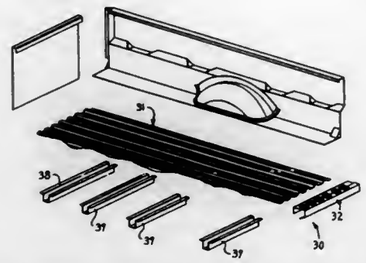
1. A structure for attaching a carpet to a seat back of a type rotatable forwardly relative to a seat cushion, in a seat, in which said seat back is rotatably connected, via a pivot means, to a part of the cabin of the automobile and an area of the seat cushion side, with said carpet being adhesively attached to a back board of said seat back, and said pivot means is covered with a part of said carpet, characterized in that a plate means of a hard material is fixed to a reverse side of said carpet part covering said pivot means, and said plate means is provided separately from said back board.

5,188,417
CAR COVER AND ANCHORING ASSEMBLY
Donald B. Curchod, 345 Eleanor Dr., Woodside, Calif. 94062, assignor to Donald B. Curchod, Sunnyvale, Calif.
Filed Sep. 26, 1991, Ser. No. 766,327
Int. Cl.[5] B60J *11/00*
U.S. Cl. 296—136 **1 Claim**



1. A vehicle cover including a flexible panel carried at one end thereof and a plurality of attachment means coupled to said panel for supporting said panel in confronting relation to the underside of the trunk lid of the vehicle to form a pouch for receiving the cover stored therein.

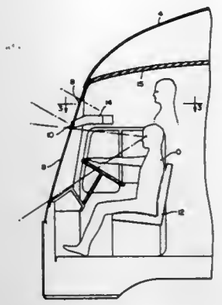
5,188,418
TRUCK BED AND METHOD OF MANUFACTURE
Tom M. Walworth, Jr., Grosse Pointe Farms; Joseph J. Jurica, Mt. Clemens; Donald E. Wellemann, Romeo, and Joseph Turner, Bloomingdale, all of Mich., assignors to Pullman Industries, Inc., Pullman, Mich.
Filed Apr. 7, 1992, Ser. No. 864,741
Int. Cl.[5] B62D *25/20*
U.S. Cl. 296—183 **20 Claims**



1. In a vehicle bed assembly having a horizontally-enlarged one-piece monolithic floor pan member constructed from a thin metal sheet and having a plurality of generally parallel and sidewardly-spaced stiffening ribs extending longitudinally thereof, said stiffening ribs being of generally downwardly-opening channel-like cross sections which are deformed so as to project upwardly from the sheet, and a horizontally elongated sill member having a top wall positioned at least partially under and fixedly secured to a transversely extending rear portion of said pan member, said rear sill member being elongated in a direction generally perpendicularly with respect to the longitudinal direction of said pan member, comprising the improvement wherein said stiffening ribs project longitudinally throughout the entire length of said pan member so as to terminate at front and rear free edges of said pan member, said front and rear free edges of said pan member each having a corrugated configuration, said rear sill member having a plurality of rib-end projections projecting upwardly from the top wall thereof, said rib-end projections being disposed in a row extending in the elongated direction of the rear sill member and spaced apart at intervals corresponding to the spacing between adjacent ribs on said floor pan member, the transversely extending rear portion of said floor pan member being positioned on the top wall of said rear sill member so that rear free edges of said ribs align with and substantially abut the respective rib-end projections on the sill member for closing off said ribs.

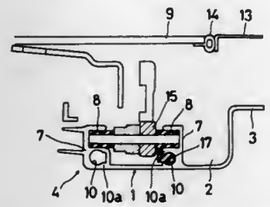
5,188,419
APPARATUS FOR PROVIDING INTERIOR LIGHT TO A VEHICLE
Thomas R. Liethen, Renton, Wash., assignor to Paccar Inc., Bellevue, Wash.
Filed Jan. 8, 1992, Ser. No. 817,766
Int. Cl.[5] B62D *27/00*
U.S. Cl. 296—190 **15 Claims**

1. An apparatus for providing increased daylight illumination to the interior of a vehicle cab having an operator compartment with an operator's seat, the cab having a front surface at least partially defined by a front windshield, the apparatus comprised of:
- a light transmissive window above the windshield directing daylight into the cab, said window forming part of the cab front surface;
- a header located below the window, within the cab and overlying the operator's seat so that daylight does not shine directly onto an operator seated in the operator's seat;



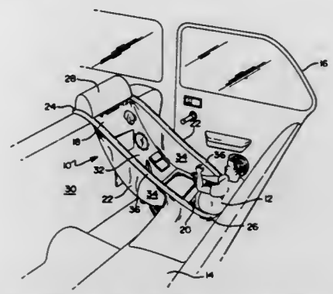
whereby the daylight illuminates the operator compartment but is shielded from striking the eyes of an operator.

5,188,420
GUIDE RAIL DEVICE OF SUN-ROOF
Kenji Maeda, Kariya; Kenichiro Hayashi, Okazaki; Mitsuyoshi Masuda, Nagoya; Hirofumi Nishikawa, Okazaki, and Katsuhiro Suzuki, Aichi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Dec. 26, 1991, Ser. No. 813,542
Claims priority, application Japan, Dec. 28, 1990, 2-402692
Int. Cl.[5] B60J *7/057*
U.S. Cl. 296—223 **4 Claims**



3. A guide rail device for a run-roof and formed by an extruded metal member bent into a U-shaped configuration and cut at one or more portions thereof, said device comprising:
- a metal guide rail having a U-shaped configuration to establish a first longitudinal portion, a second longitudinal portion, a connecting portion perpendicular to the first and second longitudinal portions, a first corner portion for connecting one end of the first longitudinal portion and one end of the connecting portion, and a second corner portion for connecting one end of the second longitudinal portion and the other end of the connecting portion; and
- a pair of mutually opposed continuous guide conduits for guiding a roof panel supporting slidable shoe member, each of said guide conduits having a pair of tapered portions diverging in the direction of the other of the pair of guide conduits and ending in an upstanding closure wall, one guide conduit receiving a portion of the slidable shoe member and a cable connected thereto, the upstanding closure wall of said one guide conduit being cut out along a sliding range of the shoe, the other guide conduit being closed by the upstanding closure wall thereof for the sliding range of the shoe having a portion received in said one guide conduit.

5,188,421
ENTERTAINMENT AND FEEDING DEVICE FOR USE BY CHILDREN IN AUTOMOBILES
Barbara Arseneault, 13123 Peninsula Dr., Traverse City, Mich. 49684
Filed Apr. 29, 1991, Ser. No. 693,156
Int. Cl.[5] A47D *15/00*
U.S. Cl. 297—182 **5 Claims**

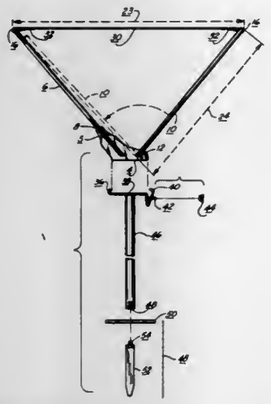


1. An entertainment and feeding device for use by a child occupant of a rear seat of an automobile having a front seat head rest, said device comprising:
- a flexible sheet having a rectangular portion with a forward end and a rearward end, said flexible sheet having oppositely disposed arc-shaped side portions attached to said rectangular portion and extending the entire length of said rectangular portion between said forward and rearward ends, said flexible sheet having an upper surface, said flexible sheet being adapted to cover and protect said rear seat and interior of said automobile;
- rearward fastening means attached to said rearward end, said rearward fastening means being adapted to fasten around the waist of said child;
- forward fastening means attached to said forward end, said forward fastening means being adapted to be fastened to said front automobile seat head rest;
- said arc-shaped side portions extending upwardly between said forward and rearward ends to provide sidewalls to said flexible sheet, each of said arc-shaped side portions having a curved side and a straight side each said straight side having a top edge and being attached to said rectangular portion along the entire length of said curved side wherein said sidewalls have reinforcing edges at said top edge extending substantially continuously from said rearward fastening means to said forward fastening means so that the device between the forward and rearward ends may be suspended from the reinforcing edges.
- at least one entertainment device attached to said upper surface of said sheet,
- a food tray means for accommodating food, said food tray means being located on said upper surface and adjacent said rearward end of said flexible sheet,
- said food tray means having food compartments on a top surface and being flat on an oppositely disposed bottom surface, said food tray means being removable from said flexible sheet such that said food tray means provides a flat surface when said food tray means is overturned and replaced on said upper surface.
- wherein said child's entertainment and feeding device forms a portable carrying bag when said forward and rearward fastening means are detached from said front seat head rest and the child, and when the child's entertainment and feeding device is folded in half, and the forward and rearward fastening means are placed together to form a carrying handle, a portable carrying bag is formed which can contain the clutter and food mess created by the child sot hat the mess can be easily contained, removed and

VOL 1147 ISS 4 FEB 23 1993 UMI

cleaned before reinstalling, thereby leaving the automobile interior clean.

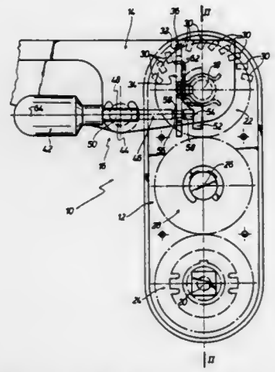
5,188,422
FIELD SEAT
Roger L. Montgomery, 2817 Pleasant Dr., Pascagoula, Miss. 39567
Filed Jun. 9, 1989, Ser. No. 364,261
Int. Cl.[5] B60N *2/38*
U.S. Cl. 297—195 **4 Claims**



1. A portable seat comprising:
a base plate member having a supporting area for ground support of a seat;
a first and a second vertically arising frame support member, each affixed to said base plate member;
a first such frame support member being angularly affixed to said base plate member;
the second said frame support member being pivotally affixed, free to pivot with respect to first said frame support member;
a substantially rectangular flexible seat member attached along a top end of the first said frame support member, extending to and attached along a top end of the second said frame support member, distal said base plate member;
said frame support members defining a front and a rear of said seat member;
said seat member being of a modified rectangular configuration, having two elongate parallel nonsupported sides;
being attached along two, shorter supported sides; said supported sides defining the shape of the top end of the frame support members;
the supported sides curvingly diverging from each other, defining thereby an outwardly extending portion around a mid point of the top end of each frame support member.

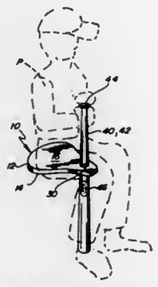
5,188,423
ARMREST ARRANGEMENT FOR A SEAT
Hermann Meiller, Amberg, and Walter Mertel, Sulzbach-Rosenberg, both of Fed. Rep. of Germany, assignors to Grammer AG, Amberg, Fed. Rep. of Germany
Filed Aug. 22, 1991, Ser. No. 748,539
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1990, 4042105
Int. Cl.[5] A47C *7/54*
U.S. Cl. 297—412 **6 Claims**

1. An armrest arrangement for a seat comprising an armrest support means, an armrest pivotably connected at a first mounting axis to the armrest support means, the armrest support means having a plurality of openings disposed at spacings from each other along an arc which is concentric with said first mounting axis, means for pivotably mounting the armrest support means to a said seat at a second mounting axis which is spaced from and parallel to said first mounting axis, first, second and third gears rotatably mounted on the armrest support means, the first gear being disposed at said first mounting axis and having an aperture therethrough, the second gear being disposed at said second mounting axis and the third gear being disposed between the first and second gears and meshing therewith, and an adjusting and retaining means operatively disposed between the armrest and the armrest support means for parallel adjustment in respect of height of the armrest in



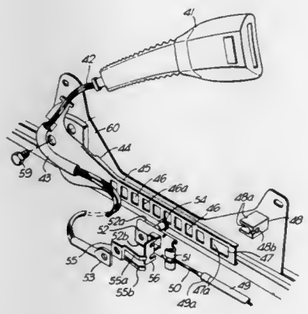
any angular position of the armrest support means and for pivotal movement of the armrest in relation to the armrest support means, the adjusting and retaining means comprising a retaining lever disposed on the first gear displaceably between an arresting position of fixing the first gear relative to the armrest support means and a release position, the retaining lever having a retaining portion which in said release position projects only into said aperture in the first gear while in said arresting position said retaining portion extends through said aperture in said first gear into a respective one of said openings in the armrest support means.

5,188,424
PORTABLE SEAT
Donald F. Herron, Rte. 1, Dent, Minn. 56528
Filed Jan. 13, 1992, Ser. No. 819,290
Int. Cl.[5] A47C *1/10*
U.S. Cl. 297—440 **4 Claims**



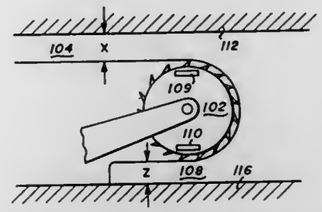
1. A portable bat seat supported by the ground and extending upwardly, the seat being adapted to receive and support a human posterior to permit the human to take a balanced seated position thereon above and off the ground, comprising:
(a) a ball bat having a handle knob end, an intermediate hitting surface of a diameter that continuously becomes larger with respect to the handle knob end and a blunt end;
(b) a substantially planar base with a peripheral edge thereabout defining a central seating surface and having a completely flat bottom surface; and
(c) an aperture through the base adjacent the edge, the aperture being of a size that is at least as large as the handle knob end and smaller than the largest diameter of the intermediate hitting surface so as to receive the handle knob and a portion of the hitting surface of the bas upright and vertically therethrough and to grip the bat at the hitting surface above the ground to provide the base as the portable seat for the seated human to balance the bat and the base on the blunt end of the bat resting on the ground.

5,188,425
PRETENSIONING LATCHING MECHANISM
Howard J. Foster; Ian A. Gordon, and Martin Palliser, all of Carlisle, Great Britain, assignors to B.S.R.D. Limited, Carlisle, Great Britain
Filed Apr. 3, 1991, Ser. No. 680,178
Claims priority, application United Kingdom, Apr. 3, 1990, 9007502; Jul. 14, 1990, 9015536
Int. Cl.[5] B60R *22/18*
U.S. Cl. 297—473 **12 Claims**



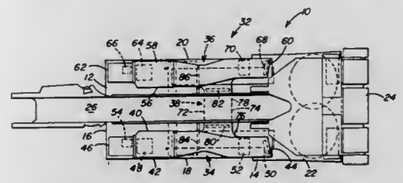
1. A pretensioning latching mechanism for a safety restraint system, the mechanism comprising an elongated first member (2;45) guidingly carrying a second member (5; 52) for movement over a range of latching positions relative to the first member, said first member having a succession of abutments (3*b*, 46*a*) and the second member having a latching member (13; 35; 56*b*) lockingly engageable with said succession of abutments means (5, 37, 52*a*, 52*b*) guiding the second member for free movement along an exterior surface of the first member comprising downwardly and inwardly extending side edges on the second member which slidably engage edges of the first member, said second member connected at one end to a safety restraint connection means (21; 51) and connected at another end to a pretensioning means acting on said second member to move the second member relative to the first member to a position in which the safety restraint connection means is placed in tension so that subsequent tension in the safety restraint connection means is reacted by engagement of said latching member with one of said succession abutments.

5,188,426
METHOD FOR CONTROLLING THE THICKNESS OF A LAYER OF MATERIAL IN A SEAM
Larry G. Stolarczyk; Gerald L. Stolarczyk, and David L. Baldridge, all of Raton, N. Mex., assignors to Stolar, Inc., Raton, N. Mex.
Division of Ser. No. 400,351, Aug. 30, 1989. This application Sep. 11, 1991, Ser. No. 757,560
Int. Cl.[5] E21C *35/24*
U.S. Cl. 299—1.2 **3 Claims**



1. A method for controlling the thickness of a layer of material in a seam comprising the steps of:
a. positioning a cutting drum relative to a seam of a material;
b. positioning a microstrip antenna on the cutting drum such that an input conductance of the microstrip antenna are substantially affected by said seam;
c. measuring an empirical value of said input conductance of said microstrip antenna while said cutting drum is positioned relative to said seam;
d. comparing the value of said input conductance to a control value for said parameter input conductance; and
e. repositioning the cutting drum in response to said comparison made in step d.

5,188,427
TWIN SCRUBBER AND AIR DIFFUSER FOR A CONTINUOUS MINER AND METHOD OF VENTILATION
Maurice K. LeBegue, Fairmont, W. Va., and Julius N. Hornyak, Oakland, Md., assignors to Tamrock World Corporation N. V., Curacao, Netherlands
Filed Jun. 13, 1991, Ser. No. 714,680
Int. Cl.[5] E21C *35/22;* **E21F** *5/20*
U.S. Cl. 299—12 **20 Claims**



11. A method for ventilating the face of an underground mine comprising the steps of:
positioning a mining machine adjacent to a mine face,
positioning a pair of passageways of ductwork on the mining machine to extend longitudinally on opposite sides of the mining machine,
conveying air through the pair of passageways of the ductwork between an inlet at one end of each passageway adjacent to the mine face and an outlet an opposite end of each passageway removed from the mine face,
selectively directing the flow of air through each passageway of the pair of passageways in a preselected direction between said inlet and said outlet to exhaust pollutant laden air from the mine face in a first mode and supply fresh air to the mine face in a second mode, and

VOL 1147 ISS 4 FEB 23 1993 UMI

conveying pollutant laden air in the first mode away from the mine face through a selected one of the passageways from the inlet to the outlet thereof while simultaneously conveying air substantially free of pollutants in the second mode through the other of the passageways from the outlet to the inlet thereof toward the mine face.

5,188,428

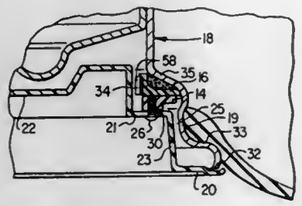
DECORATIVE SIMULATED WHEEL COVER RETENTION SYSTEM

George A. Carter, III, 6614 Lakeshore Dr., Garland, Tex. 75042

Continuation-in-part of Ser. No. 496,339, Mar. 20, 1990, Pat. No. 5,046,784. This application Feb. 12, 1991, Ser. No. 655,328

Int. Cl.[5] B60B *7/06*

U.S. Cl. 301—37.1 **47 Claims**



1. A retention system for removably securing a decorative wheel cover to an original equipment steel automotive wheel, the wheel cover having an annular rim portion and the automotive wheel having an annular wall portion with an annular bead lock area along the annular wall portion, said retention system comprising:

second engaging means comprising a bondable member having a side portion adapted to be positioned and be permanently adhesively bonded at the bead lock area of the annular wall portion of said automotive wheel, said bondable member including means for releasable engagement with a retainer member;

first engaging means comprising a retainer member having an outside surface for securing a decorative wheel cover, the wheel cover being securable to said outside surface of the retainer member along said annular rim portion of the wheel cover, said retainer member including means for releasable engagement with the means for releasable engagement of said bondable member whereby the first and second engaging means may be interengaged;

wherein said wheel cover is secured to the wheel by adhesively bonding said bondable member at the annular bead lock area along the annular wall portion of said wheel and the retainer member being removably secured to the bondable member upon interengagement of said first and second engaging means.

5,188,429

FABRICATED WHEEL HAVING A RADIALLY INWARDLY EXTENDING DISC FACE

Thomas E. Heck, Monroe, and Joseph J. Plaza, Dearborn, both of Mich., assignors to Kelsey-Hayes Company, Romulus, Mich.

Filed Feb. 22, 1991, Ser. No. 660,464

Int. Cl.[5] B60B *3/14*

U.S. Cl. 301—63.1 **6 Claims**

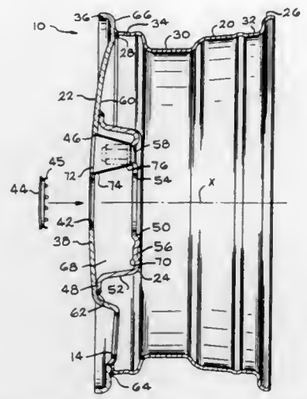
1. A wheel for a vehicle comprising:

a circular rim defining an axis;

a disc face having an outer portion secured to said rim;

a mounting pad secured to a back face of said disc face having a centrally located pilot aperture and a plurality of lug receiving apertures circumferentially spaced around said pilot aperture and defining lug nut mounting seats; and

said disc face including an inner portion extending radially inwardly for at least in part covering a portion of a front face of said mounting pad, said inner portion having a plurality of lug access apertures axially aligned with said



lug receiving apertures formed in said mounting pad, the entire portion of said disc face which is located radially inward of said lug access apertures being axially spaced from said front face of said mounting pad.

5,188,430

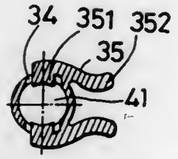
STRUCTURE FOR A GOLF CART WHEEL SHAFT

Hsiu-Hui Chiu, Tainan Hsien, Taiwan, assignor to Sunshon Molding Co., Ltd., Tainan Hsien, Taiwan

Filed Dec. 24, 1991, Ser. No. 813,096

Int. Cl.[5] B60B *37/00*

U.S. Cl. 301—111 **1 Claim**



1. A golf cart wheel axle structure for rotatable coupling of a hub of said wheel to said axle, comprising:

an axle shaft having a pair of recess openings formed on opposing sides adjacent one end thereof;

first bushing means for coupling to said hub of said wheel, said first bushing means includes a pair of first bushing members, each of said pair of first bushing members having plurality of annular projections for respective engagement within a plurality of annular grooves formed in opposing ends of a central through bore formed in said hub; and

second bushing means for rotatable coupling with said pair of first bushing members and releasable locking coupling with said axle shaft, said second bushing means includes (1) a longitudinally extended tubular bushing member, said tubular bushing member having a tubular wall defining a central through bore for receiving said axle shaft therein, (2) an annular ring projection from an exterior surface of said tubular bushing member, said annular ring being formed adjacent a first end of said tubular bushing member for contact with an outer end surface of a respective one of said pair of first bushing members, (3) a plurality of resilient finger-like members extending longitudinally from a second end of said tubular bushing member, each of said plurality of resilient fingers having a sloped projection formed on a distal end thereof for engagement with an outer end surface of a respective other of said pair of first bushing members, and (4) a pair of resilient clamping members integrally formed with said tubular bushing member in one-piece formation, each of said pair of clamping members having a projecting tip passing through a respective opening formed through said tubular bushing wall for engagement with a respective one of said pair of recess openings of said axle shaft, each of said pair of clamping members having a lever portion for displacing said projecting tip from said engagement with a respective recess opening of said axle shaft responsive to an externally applied force thereto, whereby said first and second bushing means coact to provide rotatable coupling between said wheel and said axle shaft.

5,188,431

BRAKE SYSTEM WITH DUAL VACUUM BOOSTERS HAVING INTERCONNECTED CHAMBERS AND DUAL MASTER CYLINDERS HAVING INTERCONNECTED HYDRAULIC CIRCUITS

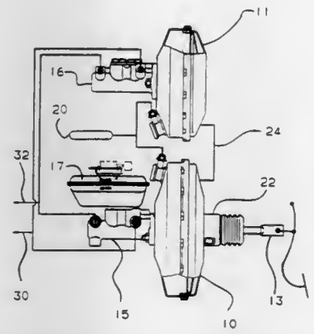
Jean-Pierre Gautier, Aulnay Sous Bois, France, assignor to Bendix Europe Services Techniques, Drancy, France

Filed Jan. 11, 1991, Ser. No. 639,868

Claims priority, application France, Jan. 31, 1990, 90 01121

Int. Cl.[5] B60T *13/563, 13/565*

U.S. Cl. 303—4 **1 Claim**



1. A booster brake system, comprising a first tandem master cylinder controlling the pressure in a first pair of hydraulic circuits and controlled by means of a piston of a respective first vacuum booster, a second tandem master cylinder controlling the pressure in a second pair of hydraulic circuits and controlled by means of a piston of a respective second vacuum booster, each of said vacuum boosters comprising a respective first chamber and second chamber, one of said vacuum boosters being controlled by means of a pedal and comprising valve means that generate a difference between pressures prevailing in the respective first and second chambers of said one vacuum booster, and a reservoir for feeding brake fluid to thy hydraulic circuits, the first and second chambers of said one vacuum booster communicating respectively with the first and second chambers of the other vacuum booster, and the first pair of hydraulic circuits controlled by the first tandem master cylinder communicating respectively and directly with the second pair of hydraulic circuits controlled by the second tandem master cylinder.

5,188,432

METHOD OF REGULATING THE BRAKING PRESSURE IN AN ANTILOCK VEHICLE BRAKE SYSTEM

Hubert Schmitt, Ochtendung, and Wolfgang Kampemann, Moselkern, both of Fed. Rep. of Germany, assignors to Lucas Industries public limited company, Birmingham, England

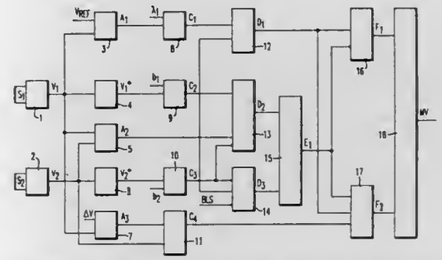
PCT No. PCT/EP89/01204, § 371 Date Jun. 5, 1990, § 102(e) Date Jun. 5, 1990, PCT Pub. No. WO90/03904, PCT Pub. Date Apr. 19, 1990

PCT Filed Oct. 12, 1989, Ser. No. 499,254

Claims priority, application Fed. Rep. of Germany, Oct. 14, 1988, 3835095

Int. Cl.[5] B60T *8/82*

U.S. Cl. 303—96 **4 Claims**



1. Method of regulating the braking pressure in an anti-lock vehicle brake system of the type in which during normal braking the rotational behavior of a wheel is measured and, in dependence upon its angular retardation exceeding at least one predetermined threshold value (−b), the braking pressure of said wheel is automatically reduced and then increased, said method comprising:

1) comparing the rotational velocity of one wheel on one side of a vehicle with another wheel on the other side of the vehicle;

2) comparing the angular deceleration of said one wheel and said other wheel with said predetermined threshold value (−b);

3) storing the compared values of said velocities and decelerations;

4) preventing reduction of pressure in said one wheel when:

a) the angular deceleration of said one wheel exceeds said predetermined threshold value (−b); and

b) the angular deceleration of said other wheel is less than said predetermined threshold value (−b); and

c) the rotational velocity of said one wheel is greater than that of said other wheel; and

thereafter reducing the pressure in said one wheel when its rotational velocity has fallen to at least a predetermined amount (Δv) smaller than that of said other wheel.

5,188,433

ANTI-LOCK HYDRAULIC BRAKE SYSTEM

Hans Reinartz, Frankfurt; Helmut Steffes, Hattersheim; Peter Volz, Darmstadt, and Erhard Beck, Weilburg, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt, Fed. Rep. of Germany

PCT No. PCT/EP90/01215, § 371 Date May 28, 1991, § 102(e) Date May 28, 1991, PCT Pub. No. WO91/04893, PCT Pub. Date Apr. 18, 1991

PCT Filed Jul. 25, 1990, Ser. No. 690,912

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1989, 3932531

Int. Cl.[5] B60T *8/32, 13/16*

U.S. Cl. 303—100 **12 Claims**

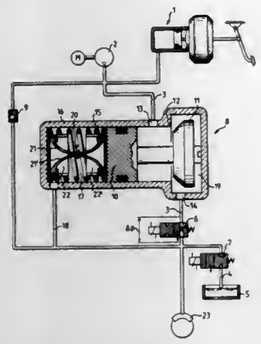
1. An anti-lock hydraulic brake system comprising:

a hydraulic pressure source interconnected with at least one wheel brake through a pressure conduit including an inlet

VOL 1147 ISS 4 FE 23 1993 UMI

valve, said wheel brake interconnected to a return conduit through an outlet valve;

a differential pressure limiting means connected within said pressure conduit intermediate said pressure source and inlet valve, said pressure limiting means responsive to



wheel brake pressure to switch from an open condition to a closed condition at a predetermined pressure threshold value; and

temperature responsive means operative to change said pressure threshold value as a function of a hydraulic fluid temperature.

5,188,434

PROCESS FOR INCREASING THE CONTROLLABILITY OF A VEHICLE

Wolf-Dieter Ruf, Waldstetten; Uwe Hartmann, Stuttgart; Friedrich Kost, Kornwestheim, and Anton Van Zanten, Ditzingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

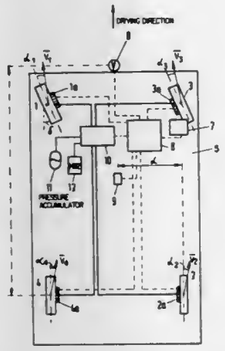
PCT No. PCT/EP89/01380, § 371 Date Jun. 3, 1991, § 102(e) Date Jun. 3, 1991, PCT Pub. No. WO90/06251, PCT Pub. Date Jun. 14, 1990

PCT Filed Nov. 16, 1989, Ser. No. 687,877

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1988, 3840456

Int. Cl.[5] B60T *8/24*

U.S. Cl. 303—111 **8 Claims**



1. Method of stabilizing a vehicle having a front axle with two wheels, a rear axle with two wheels, and means for controlling brake pressure at each wheel, each wheel exhibiting an instantaneous brake slip and an angle of inclination, said method comprising

determining the instantaneous brake slip for each wheel,

comparing the instantaneous slip at each wheel to a desired slip value,

determining the angle of inclination for at least one wheel of each axle,

varying the desired slip value for each wheel in dependence upon the angles of inclination, and

controlling the brake pressure at each wheel so that the instantaneous brake slip for each wheel conforms to the desired slip value for the respective wheel.

5,188,435

HYDRAULIC ANTI-LOCK MULTICIRCUIT BRAKE SYSTEM, FOR MOTOR VEHICLES

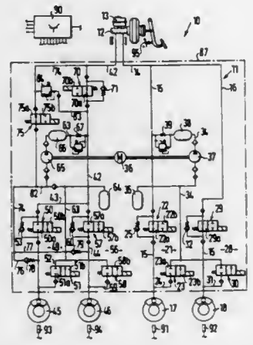
Karl-Heinz Willmann, Freiberg/N, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 16, 1991, Ser. No. 760,783

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1990, 4034112

Int. Cl.[5] B60T *8/34*

U.S. Cl. 303—113.2 **3 Claims**



1. A hydraulic anti-lock multicircuit brake system, for motor vehicles having a front and rear axle which comprises;

a pedal-actuable master brake cylinder (**12**);

a brake line (**42, 43**) extending between the master brake cylinder (**12**) and at least one wheel brake (**45**) of the rear axle;

an electromagnetically actable first multiposition valve (**50**) disposed in the brake line (**42, 43**), for brake pressure modulation with switching positions for opening and blocking fluid flow;

a brake-tripping one-way valve (**53**) is connected in parallel to the first multiposition valve (**50**);

a bypass line (**74**) extending parallel to the brake line (**42, 43**) is connected to the brake line (**42, 43**) at the side of the master brake cylinder (**12**);

an electromagnetically actuable second multiposition valve (**75**) disposed in the bypass line (**74**) and having switching positions for opening and blocking fluid flow;

said bypass line (**74**) terminates at the brake line (**42, 43**) between the first multiposition valve (**50**) and the wheel brake (**45**) and has a spring-loaded one-way check valve (**78**), disposed between the second multiposition valve (**75**) and the wheel brake (**45**) of the rear axle, as a brake pressure reducing valve assembly;

a pump (**65**) that feeds pressure fluid into the brake line (**42, 43**) between the master brake cylinder (**12**) and the brake pressure modulating first multiposition valve (**50**);

said pump (**65**) is connected on the inlet side to the bypass line (**74**) between the second multiposition valve (**75**) and the brake pressure reducing valve assembly (check valve **78**) and is switched on upon the occurrence of drive slip;

an electromagnetically actuable third multiposition valve (**70**) is disposed between the connection of the bypass line (**74**) with the brake line (**42, 43**) at one side of the master brake cylinder (**12**) and the outlet side of the pump (**65**); said third multiposition valve (**70**), upon the occurrence of drive slip is switched out of an open position (**70*a***) into a blocking position (**70*b***) to prevent pressure fluid flow from the pump (**65**) into the bypass line (**74**);

the brake pressure modulating first multiposition valve (**50**) in the brake line (**42, 43**) assumes its blocking position (**50*a***) when it is without current, and the second multiposition valve (**75**) in the bypass line (**74**) assumes its open position (**75*a***) when it is without current.

5,188,436

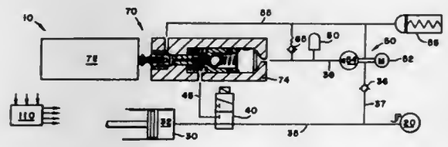
LINEAR VARIABLE PRESSURE ADAPTIVE BRAKING AND TRACTION CONTROL SYSTEM

Jeffrey E. Devall, South Bend, Ind., assignor to Allied-Signal Inc., Morris County, N.J.

Filed Aug. 17, 1990, Ser. No. 569,883

Int. Cl.[5] B60T *8/32*

U.S. Cl. 303—113.2 **12 Claims**



1. A linear variable pressure control valve, comprising a valve body having therein a bore, the bore communicating with first, second, and third passages in the valve body, a linearly operable and axially slidable valve member extending into said bore, the valve member having a longitudinal passage extending from a first valve seat at one valve end to a valve member opening within said valve member, the valve member opening communicating with said third passage, seal means disposed about said valve member in order to separate said third passage from said second passage, slidable piston means disposed within said bore and having a seal located thereabout, the seal and piston means separating said first passage from said second passage, the piston means having an interior opening communicating with a through end opening of the piston means, valving means disposed within said interior opening and biased by resilient means into engagement with a piston valve seat which controls fluid flow through said end opening, the valving means engaging the first valve seat of the valve member to control fluid flow at said longitudinal passage, and spring means disposed within said bore and biasing said piston means toward said first passage, so that axial displacement of said valve member causes selectively one of a displacement of said valving means from said piston valve seat and a displacement of the first valve seat away from said valving means, and a fluid pressure differential within said bore able to cause said piston means to move slidably to effect one of said valve member moving said valving means away from said piston valve seat and said piston valve seat moving said valving means away from said first valve seat.

5,188,437

BRAKE PRESSURE CONTROL APPARATUS FOR AN ALL WHEEL DRIVE VEHICLE HAVING ABS AND ASR

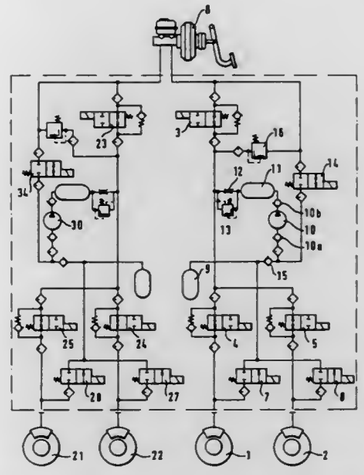
Karl-Heinz Willmann, Freiberg, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 27, 1992, Ser. No. 842,918

Claims priority, application Fed. Rep. of Germany, Apr. 4, 1991, 4112759

Int. Cl.[5] B60T *13/14*

U.S. Cl. 303—113.2 **4 Claims**



1. Brake pressure control apparatus for an all-wheel drive vehicle having two axles, two wheels on each axle, and two brake circuits including ABS and ASR, each circuit depending on a master cylinder and controlling two wheels, said apparatus comprising

inlet valve means for each wheel for admitting brake fluid at each wheel to increase brake pressure at said wheel,

outlet valve means for each wheel for releasing brake fluid at each wheel to decrease brake pressure in case of ABS,

a self priming pump in each circuit for returning brake fluid released by said outlet valve means to a point in said circuit, said pump having an inlet connected to said outlet valve means and an outlet connected to said point in said circuit,

a changeover valve in each circuit between the master cylinder and the point where brake fluid is returned by the pump, said changeover valve being closed in case of ASR,

a check valve in parallel with each changeover valve, said check valve opening in the direction of the point where fluid is returned,

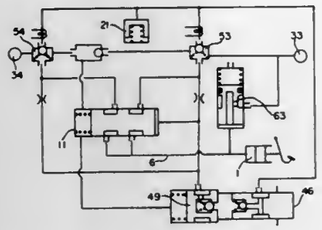
a loading valve in each circuit connected between the input of the pump and a point in the circuit between the master cylinder and the changeover valve, said loading valve being open in case of ASR,

means for determining which wheel has the highest brake pressure, and

a control circuit for controlling said inlet valve means, said outlet valve means, said pumps, said changeover valves, and said loading valves so that in case of ASR, the brake pressure at the wheel with the highest brake pressure on at least one axle is modulated by the changeover valve and the loading valve in the circuit controlling that wheel and the brake pressure of at least one other wheel is modulated by the outlet valve means, and so that in case of control by ABS, the ASR is shut off.

VOL 1147 ISS 4 FEB 23 1993 UMI

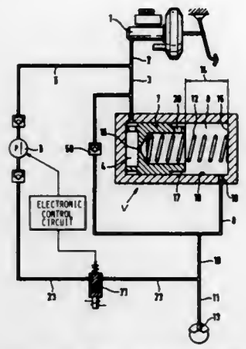
5,188,438
ANTI-SKID SYSTEM FOR A MOTOR VEHICLE
Pierre Lebret, Le Chesnay, France, assignor to Bendix Europe Services Techniques, Drancy, France
Filed Dec. 5, 1991, Ser. No. 803,000
Claims priority, application France, Dec. 20, 1990, 90 16025
Int. Cl.[5] B60T *13/16, 8/32*
U.S. Cl. 303—116.2 **4 Claims**



1. An anti-skid system for the driving wheels of a motor vehicle, a braking system of which comprises two hydraulic sub-circuits each connecting a driving wheel and a free wheel to a working chamber of a master cylinder connected to a general reservoir of fluid under low pressure and includes a wheel braking anti-lock device comprising, for each of the wheels, a three-way solenoid valve normally opening communication between an inlet of fluid under pressure and a brake motor associated with the respective wheel, while, in an expansion phase of the anti-lock device, the solenoid valve closes the communication and connects the brake motor to a reservoir of fluid under low pressure specific to each sub-circuit, and, for each sub-circuit, a switching slide isolating the brake motors from the working chamber of the master cylinder during the functioning of a pump associated with the anti-lock device, in the anti-lock mode said pump sucking the fluid from said reservoir specific to the sub-circuit, said anti-skid system further comprising a control slide which, at rest, puts in direct communication the brake motor of a free wheel and the associated working chamber of said master cylinder and which interrupts such communication while putting in communication a delivery outlet of the pump and said associated working chamber when the pressure of the fluid in the brake motor of said free wheel is higher than a particular value.

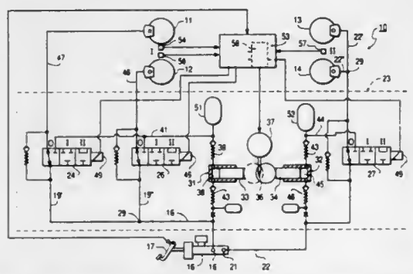
5,188,439
BRAKE PRESSURE CONTROL
Jochen Burgdorf, Offenbach-Rumpenheim; Helmut Steffes, Hattersheim; Peter Volz, Darmstadt; Erhard Beck, Weilburg, and Dalibor Zaviska, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Alfred Teves GmbH, Frankfurt Am Main, Fed. Rep. of Germany
Filed May 24, 1991, Ser. No. 705,677
Claims priority, application Fed. Rep. of Germany, May 25, 1990, 4016746
Int. Cl.[5] B60T *8/40, 8/42*
U.S. Cl. 303—116.1 **23 Claims**

10. A method of controlling the application of fluid pressure from a source to a brake operating wheel cylinder in an automotive fluid actuated brake system including an automatic control system adapted to automatically vary the pressure in said wheel cylinder, said method including the steps of:
interposing an inlet valve between said source and said wheel cylinder so as to direct all flow to said wheel cylinder to be through said inlet valve;
defining a first and second chamber in a housing of said inlet valve with either side of an element movable in said housing;
placing said first chamber in communication with said source;
placing said second chamber in communication with said wheel cylinder;
subjecting said movable element to fluid pressure from said source while in all positions of said movable element in said housing requiring all flow from said source to said wheel cylinder to pass through a restrictive passage in said element extending from said first chamber to said second chamber;



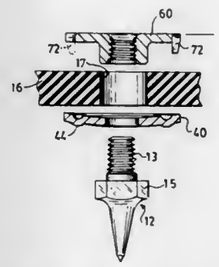
resisting movement of said movable element by application of a countering force to cause said movable element to shift correspondingly to the magnitude of said pressure to which said movable element is subjected; and,
modulating the flow from said second chamber to said wheel cylinder in correspondence to the shifted position of said element.

5,188,440
CONTROL STAGE FOR ACTUATION OF RECIRCULATING PUMP UNIT DRIVE MOTOR OF AN ANTILOCK BRAKING SYSTEM (ABS)
Armin Müller, Backnang; Richard Zimmer, Fellbach, and Andreas Faulhaber, Weinstadt, all of Fed. Rep. of Germany, assignors to Mercedes-Benz AG, Fed. Rep. of Germany
Filed Jul. 15, 1991, Ser. No. 729,538
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1990, 4022407
Int. Cl.[5] B60T *13/20*
U.S. Cl. 303—116.2 **11 Claims**



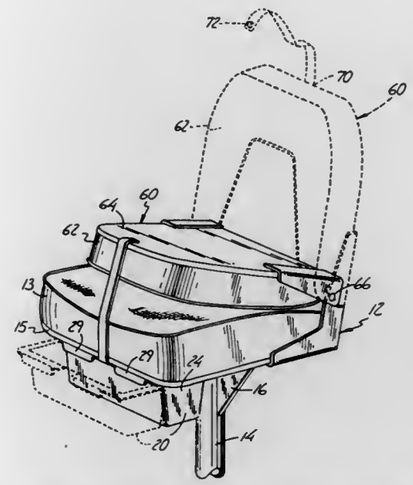
1. A control stage for drive control of a recirculation-principle of an antilock braking system recirculating pump unit device for a road vehicle with static brake circuits, the antilock braking system having a brake pressure control valve controlled by a pressure reduction signal of an electronic antilock braking system control unit into a pressure reduction position, for draining brake fluid at a wheel brake subjected to automatic control during a pressure reduction phase through a return line into a low-pressure accumulator, the brake fluid being pumped back by at least one recirculating pump into a main brake line of a respective brake circuit connected thereto and, as a result, a quantity of brake fluid corresponding to the drained quantity is recirculated into a brake booster, a drive motor of the at least one recirculation pump being activated for at least the duration of the pressure reduction phase and being constituted by an electric motor whose speed is proportional to an operating voltage, wherein, from the onset of a pressure reduction signal, the control stage generates the operating voltage for the drive motor which rises with increasing duration of the pressure reduction signal and, after a predetermined rising time, is able to reach a maximum value correlated with maximum speed of the drive motor and then is held at this value at least until the pressure reduction signal dies out, or otherwise rises up to that value which is reached within the pressure-reduction signal duration, and in that the control stage controlling one of a constant and stepwise reduction of the operating voltage of the drive motor, commencing upon dropping of the pressure reduction signal, until standstill of said drive motor, such that the time integral of the operating voltage over the reduction of the operating voltage is equal to or greater than the time integral of the operating voltage over the rising time of the operating voltage.

5,188,441
DIRECTIONAL FASTENER ASSEMBLY
Edward R. Rubel, 68 S. Landing Rd., Rochester, N.Y. 14610
Filed Jun. 28, 1991, Ser. No. 723,331
Int. Cl.[5] B62D *55/26*
U.S. Cl. 305—54 **18 Claims**



1. A directional fastener assembly for securing a threaded stud to a rotatable flexible track, comprising:
(a) a directional backing plate having a non-circular periphery defined by a major axis for alignment perpendicular to the direction of rotation of the track and a perpendicular minor axis for alignment parallel to the direction of rotation of the track, wherein the minor axis is shorter than the major axis, the backing plate including an aperture sized to receive a portion of the stud;
(b) a directional threaded T-nut having a non-circular periphery defined by a major axis and a perpendicular minor axis, wherein the minor axis is shorter than the major axis, the nut including a threaded aperture sized to cooperatively engage a portion of the threaded stud such that upon securing the stud to the track, the track is between the backing plate and the nut;
(c) engaging means for engaging the directional threaded T-nut with the track, the engaging means including a pair of prongs depending from the directional threaded T-nut and substantially aligned colinear with the major axis.

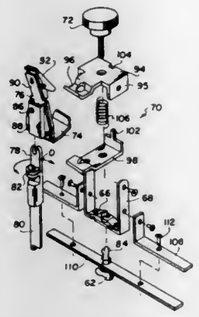
5,188,442
DRAWER ASSEMBLY FOR FISHERMAN'S CHAIR SEAT
Douglas E. Harty, Cannon Falls, and Bill J. Parsons, Northfield, both of Minn., assignors to Plastic Innovation, Inc., Cannon Falls, Minn.
Filed Jan. 3, 1991, Ser. No. 637,337
Int. Cl.[5] A47B *83/00*
U.S. Cl. 312—235.8 **10 Claims**



1. A drawer assembly attached to a chair seat having an upper sitting surface, a lower generally flat, generally horizontal bottom surface and a hinged seat back movable between an upright condition and a forwardly folded condition, the chair seat being supported at a sitting height by support means which leaves a drawer support area adjacent a front edge portion of the chair seat bottom surface clear of obstruction; the drawer assembly including:
(a) a box-like open-top drawer having front, back and side walls terminating at the top of the drawer in a common horizontal plane, the drawer also having a pair of drawer support flanges, each flange extending horizontally and outwardly from a top edge portion of one of the side walls and extending horizontally rearwardly beyond the drawer back wall;
(b) a pair of drawer slides adapted to be fixedly positioned on the chair seat bottom surface, each slide, when so positioned, being adapted to support one of the drawer support flanges to permit movement of the drawer between an open position with a top edge of said back wall located adjacent to and below a front edge of the chair seat and a closed position with a top edge of said front wall located adjacent to and below said front edge of said seat;
(c) wherein the drawer support flanges extend rearwardly beyond the back wall of the drawer for a sufficient distance to firmly support the drawer in the drawer slides when the drawer is in said open position;
(d) wherein means is provided to limit forward movement of the drawer beyond said open position;
(e) wherein means is provided to limit rearward movement of the drawer passed said closed position; and
(f) wherein a releasable means is provided for cooperation with the seat back, when the seat back is in the forwardly folded condition, and the chair seat bottom surface to temporarily prevent movement of the drawer from its closed position toward its open position.

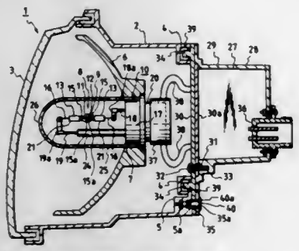
VOL 1147 ISS 4 FE 23 1993 UMI

5,188,443
SHADOW CONTROL SYSTEM
Ross Lowell, Katonah, and Apiruk Pronputhsri, Long Island City, both of N.Y., assignors to Lowel-Light Manufacturing, Inc., Brooklyn, N.Y.
Division of Ser. No. 701,496, May 16, 1991, Pat. No. 5,138,530, which is a division of Ser. No. 537,411, Jun. 13, 1990, Pat. No. 5,072,350. This application Mar. 9, 1992, Ser. No. 848,012
Int. Cl.[5] G03B *15/02*; E04G *3/00*
U.S. Cl. 362—18 **10 Claims**



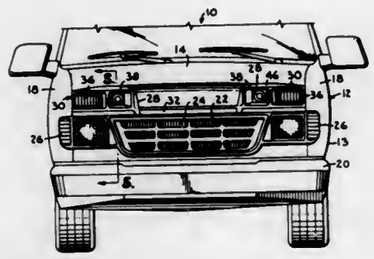
1. A clamp arrangement comprising:
a fork having a base and a pair of legs extending from said base, an outer clamp arm pivotally mounted between said legs, an inner clamp arm, a screw connected between said inner and outer clamp arms for moving said clamp arms toward each other to close a pocket formed between said clamp arms, one of said clamp arms having an anti-rotation recess and the other of said clamp arms having an anti-rotation post slidably engaged in side anti-rotation recess with movement of said clamp arms toward each other.

5,188,444
VEHICULAR HEADLAMP
Hiroyuki Makita, and Shuichi Kochi, both of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan
Filed Oct. 11, 1991, Ser. No. 775,132
Claims priority, application Japan, Oct. 15, 1990, 2-275943; Mar. 19, 1991, 3-54595; Sep. 13, 1991, 3-234786
Int. Cl.[5] B60Q *1/00*
U.S. Cl. 362—80 **22 Claims**



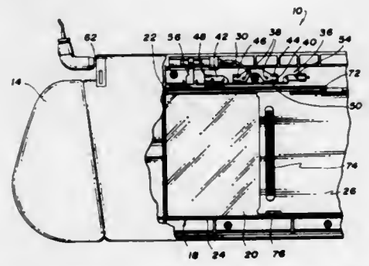
1. A vehicular headlamp, comprising:
a lamp housing having a front opening and a rear opening;
a lens covering said front opening of said lamp housing;
a reflector mounted in said lamp housing;
a discharge lamp mounted on said reflector;
a lighting circuit comprising an ignitor for said discharge lamp, said lighting circuit being secured to said lamp housing in such a manner as to cover said rear opening;
a casing accommodating said lighting circuit, said casing being made of a material having an electromagnetic shielding effect selected from the group consisting of a material comprising a synthetic resin containing conductive particles, and a material comprising a synthetic resin coated with an electrically conductive paint; and
lead wires connecting said discharge lamp to said lighting circuit.

5,188,445
VEHICLE HAVING WARNING UNITS MOUNTED WITHIN HOOD CUTOUTS
Harold Haun, Longwood; Herschel W. Davis, Altamonte Springs, and Robert D. Koger, Orlando, all of Fla., assignors to Wheeled Coach Corporation, Winter Park, Fla.
Filed Apr. 28, 1992, Ser. No. 875,048
Int. Cl.[5] B60Q *1/26*
U.S. Cl. 362—80 **15 Claims**



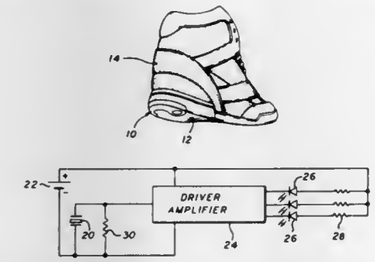
1. An emergency response vehicle comprising:
a chassis;
an engine supported on said chassis and positioned within an engine compartment;
a radiator mounted in front of the engine;
a grill positioned forwardly of the radiator and constructed to permit an air stream to flow through the grill and to the radiator for cooling thereof;
a hood positioned in covering relation to at least a portion of the engine compartment, said hood being mounted for raising and lowering to provide access to the engine compartment;
a cutout provided at a forward position in the hood; and
a warning unit comprising a flashing light and a siren coupled with the vehicle chassis and positioned within said cutout in the hood.

5,188,446
CIRCUIT ASSEMBLY FOR ILLUMINATED VISOR
Douglas C. Miller, Hersey, Mich., assignor to Plasta Fiber Industries Corp., Marlette, Mich.
Filed Aug. 9, 1991, Ser. No. 743,107
Int. Cl.[5] B60R *1/12*
U.S. Cl. 362—83.1 **22 Claims**



1. In combination with a vehicle visor having a mirror, a lamp positioned so as to illuminate objects located in front of the mirror, a panel slidably movable with respect to the mirror for covering and uncovering the mirror and an electrical circuit assembly for selectively illuminating the lamp in response to the slidable movement of the panel, the circuit assembly comprising:
an electrically conductive support for the lamp adapted for electrical connection in a power supply circuit of the vehicle;
an electrically conductive member between the support and the panel and moveable by the panel and including lost motion means in cooperation with the panel so that the panel has limited movement without moving the member when the panel is moved for covering and uncovering the mirror;
the conductive member being movable into direct electrical contact with the support when the panel is moved for uncovering the mirror; and
means adapted for electrical connection in the power supply circuit and cooperating with the conductive member to complete the power supply circuit for the lamp in accordance with the movement of the panel.

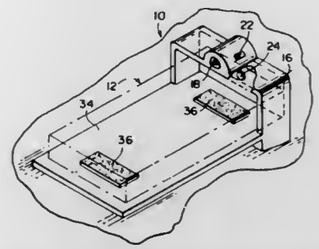
5,188,447
ILLUMINATING SYSTEM
Lee Chiang, Slymar, and William R. Ratcliffe, Thousand Oaks, both of Calif., assignors to Marpole International Inc., Tsimshatsui, Hong Kong
Filed Jan. 21, 1992, Ser. No. 822,742
Int. Cl.[5] F21L *15/08*
U.S. Cl. 362—103 **20 Claims**



1. In combination for providing a visual display,
first means having properties of being impacted against an object and of withstanding each impact of the first means against the object,
second means disposed in the first means and having properties of generating a signal upon each impact of the first means against the object,
third means disposed in the first means and responsive to each signal generated by the second means for amplifying such signal, and
fourth means disposed in the first means responsive to each amplified signal generated by the third means for providing an illumination indicating each impact of the first means against the object.

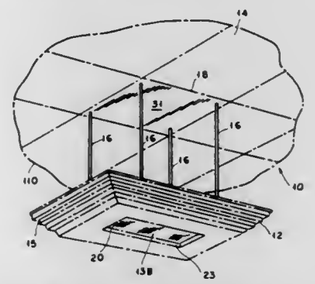
5,188,448
TV, VCR, STEREO, CD NIGHT LIGHT
Anita Siriani, P.O. Box 72, Montauk, N.Y. 11954, and George Spector, 233 Broadway RM 3815, New York, N.Y. 10007
Filed Jun. 29, 1992, Ser. No. 905,671
Int. Cl.[5] F21J *33/00*
U.S. Cl. 362—109 **5 Claims**

1. An illumination device for a remote control unit having a plurality of keys which comprises:
a) a housing sized to receive a portion of the remote control unit inserted therein;
b) a lamp located on said housing and positioned to shine a light upon the keys of the remote control unit;
c) a battery located within said housing and electrically connected to said lamp for supplying power to said lamp;
d) an on/off switch located on said housing and electrically connected between said lamp and said battery; and



e) a normally opened push button switch located within said housing and electrically connected between said battery and said on/off switch, so that when the remote control unit is inserted into said housing it will close said push button switch, thereby said on/off switch can be manually turned on to energize said lamp and shine the light upon the keys of the remote control unit allowing a person to operate the keys in a dark environment.

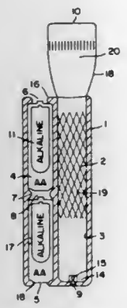
5,188,449
LIGHTING FIXTURE ASSEMBLY
Scott A. Davis, Kingstown, and Jan W. Uryase, Coventry, both of R.I., assignors to Architectural Lighting Systems Inc., Taunton, Mass.
Filed Jan. 24, 1991, Ser. No. 645,125
Int. Cl.[5] F21S *3/04*
U.S. Cl. 362—148 **52 Claims**



1. A lighting fixture assembly, comprising:
a light fixture having an opening formed therein;
a light fixture fitting adapted to be mounted below said light fixture having an upwardly extending inner frame defining an aperture for receipt within said light fixture opening;
means for supporting said fixture fitting when said inner frame of said fixture fitting is received within said light fixture opening comprising means for releasably securing said light fixture to said inner frame of said fixture fitting, said securing means comprising slide means integrated with said light fixture for sliding in a direction toward said light fixture opening from a first non-securing position to a second securing position.

VOL 1147 ISS 4 FE 23 1993 UMI

5,188,450
CUSHION GRIP AND SPARE BATTERY HOLDER FOR FLASHLIGHT
George Anderson, 1002 14th St., SW., Sidney, Mont. 59270
Filed Sep. 24, 1991, Ser. No. 764,639
Int. Cl.[5] F21L 7/00, 15/06
U.S. Cl. 362—194 9 Claims



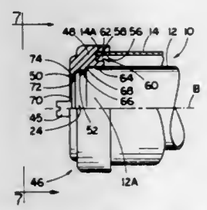
1. A flashlight holder having a cushion grip and spare battery holder comprising a single member made of a non-electrically conducting material having elastic characteristics, said single member defining a first receptacle and a second receptacle,

said first receptacle having a shape substantially corresponding to that of the outside surface of a flashlight and a size slightly smaller than the outside surface of the flashlight, such that the elastic material would retain the flashlight within the receptacle by friction, said first receptacle further having an opening through which the flashlight is inserted;

said second receptacle having a shape substantially corresponding to that of the outside surface of at least one battery used to power the flashlight and a size slightly smaller than that of the battery such that the elastic material would retain the battery within the receptacle by friction;

said second receptacle having a first opening and a second opening through which said battery is inserted into the second receptacle.

5,188,451
ONE-PIECE SPACER END CAP FOR AN ELONGATED JACKETED DISCHARGE LAMP
Bruce E. Shanks, Circleville, Ohio, assignor to General Electric Company, Schenectady, N.Y.
Filed Apr. 1, 1992, Ser. No. 861,692
Int. Cl.[5] F21V 25/00
U.S. Cl. 362—223 14 Claims



1. A one-piece, thermally insulating spacer end cap for mounting to an end of an elongated jacketed discharge lamp to thermally insulate the end portions of said lamp from the environment, said spacer end cap comprising:

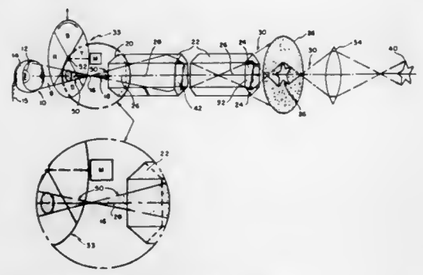
(a) a one-piece body of thermally insulating material having a central longitudinal axis and an annular ring-shaped side portion and an annular disk-shaped end portion integrally-connected therewith, said annular side and end portions disposed symmetrically about said longiudinal axis;

(b) said annular side portion having an annular interior wall surface defining a central cavity capable of receiving and frictionally engaging at least a periphery of a base on an end of an envelope tube of the jacketed discharge lamp;

(c) said annular side portion also has a spaced pair of outer and inner annular wall surfaces defining an annular groove therebetween capable of receiving and seating one end of an outer sleeve which surrounds the envelope tube of the jacketed lamp, said outer annular wall surface of said annular side portion capable of surrounding and frictionally engaging the exterior of the one end of the outer sleeve as said inner annular wall surface is spaced radially inwardly from the interior of the end of the outer sleeve away from frictional engagement therewith;

(d) said annular end portion defining a central aperture through which protrudes an annular contact-shielding housing projecting from the base on the envelope tube end, wherein said annular interior wall surface of said annular side portion defining said central cavity includes first and second tandemly-arranged annular interior wall surface portions, said first annular interior wall surface portion capable of surrounding and frictionally engaging the periphery of the one end of the envelope tube, said second annular interior wall surface portion capable of surrounding and frictionally engaging the periphery of the base on the one end of the envelope tube, and wherein said first annular interior wall portion is greater in diameter than said second annular interior wall portion.

5,188,452
COLOR MIXING LIGHTING ASSEMBLY
John T. Ryan, Riverdale, N.Y., assignor to Altman Stage Lighting Co., Inc., Yonkers, N.Y.
Filed Sep. 27, 1991, Ser. No. 766,787
Int. Cl.[5] F21V 9/00
U.S. Cl. 362—293 8 Claims



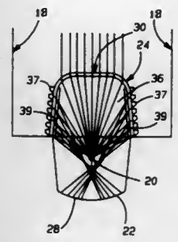
1. Light assembly comprising:

(a) means for providing a point light source;

(b) an elongate, longitudinally extending peripherally enclosed light mixing channel having a longitudinal axis and a continuous highly reflective inner surface, said channel being open at each of its longitudinally opposed ends and positioned to receive light rays from said point light source at one of said longitudinally opposed ends and to transmit additively mixed light rays from said source at the other of said longitudinally opposed ends; and

(c) objective lens means positioned to receive said additively mixed light rays and provide a focused image thereof.

5,188,453
INTERNALLY ILLUMINATED SIGN
Gregory J. Subisak, Gahanna, Ohio, and Douglas S. Hammond, Vicksburg, Miss., assignors to Holophane Company, Inc., Newark, Ohio
Filed Jan. 28, 1991, Ser. No. 646,917
Int. Cl.[5] F21V 5/00
U.S. Cl. 362—329 16 Claims



1. In a sign having at least two spatially separated translucent faces adapted to be illuminated by light received between said at least two spatially separated translucent faces, the improvement comprising:

a luminaire for providing light uniformly illuminating said at least two translucent faces, said luminaire including a housing mountable to the periphery of said sign, a lamp mounted in said housing, a reflector positioned in said housing adjacent said lamp and having a parabolic contoured bottom such that said reflector reflects light rays between said at least two translucent faces and further reflects light from said lamp in a fan-shaped pattern extending laterally between said at least two translucent faces, a refractor attached to said housing positioned on the side of said lamp opposite said reflector, said refractor extending into the interior of said sign between said at least two translucent faces, said refractor including side portions positioned adjacent said at least two translucent faces, said side portions of said refractor having prisms disposed on their outside surfaces for blocking a reflecting most of the light incident on said side portions from said lamp, wherein the luminaire eliminates bright spots and uniformly illuminates said at least two translucent faces.

5,188,454
LAMP HANDLE COVER SYSTEM FOR SURGICAL LAMPS
Roberto Quintanilla, and Alberto Quintanilla, both of El Paso, Tex., assignors to Transmedical Corporation, San Antonio, Tex.
Continuation of Ser. No. 585,290, Sep. 19, 1990, Pat. No. 5,036,446, which is a continuation of Ser. No. 235,978, Aug. 27, 1988, abandoned. This application Apr. 30, 1991, Ser. No. 693,697
Int. Cl.[5] F21L 15/12
U.S. Cl. 362—399 16 Claims

1. A lamp handle cover system for providing aseptic means to manipulate a surgical lamp, comprising:

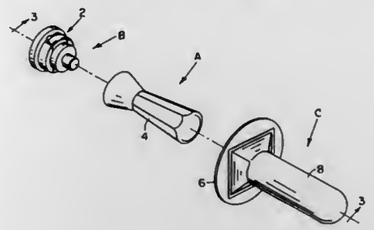
a handle for manipulating the surgical lamp;

a disposable cover for covering said handle to provide a sterile gripping surface for an operator to manipulate the lamp:

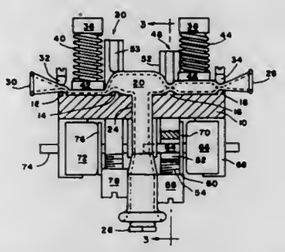
a sleeve portion of flexible material having an open first end and a second end; and

a collar portion of relatively rigid material, said collar means being connected around the edge of the opening therein to the first end of the sleeve portion such that said opening in said collar means and the open first end of said sleeve portion are substantially aligned; and

locking means for locking the cover to the handle, said locking means comprising means on said handle for lockingly engaging the inner edge of said collar portion of said disposable handle cover when said cover is moved into operative position about said handle.



5,188,455
APPARATUS FOR REMOTE MIXING OF FLUIDS
Roy H. Hammerstedt, Boalsburg, Pa., assignor to The Pennsylvania Research Corporation, University Park, Pa.
Filed Nov. 13, 1990, Ser. No. 612,644
Int. Cl.[5] B01F 15/02
U.S. Cl. 366—150 12 Claims



1. An apparatus for mixing fluids comprising:

a flexible, tubular member having opposed closed ends;

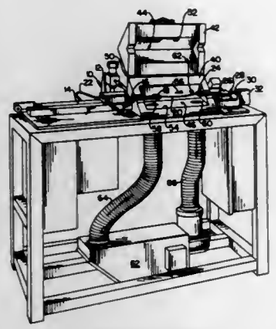
a clamp means positioned adjacent each said opposed closed end for creating a sealed chamber adjacent each said opposed, closed end of said tubular member, each chamber containing a reagent fluid, said chambers separated by a central mixing chamber;

spring biased means bearing upon said sealed chambers to continually pressurized reagents therein; and

control means coupled to each said clamp means for selectively enabling movement of a clamp means to open a channel between a reagent containing chamber and said central mixing chamber, whereby reagent in a said reagent containing chamber positioned adjacent the enabled clamp means, is forced through said channel into said central mixing chamber by a one-time movement of said spring biased means, operation of all said clamp means enabling mixing of said reagents in said central mixing chamber, said central mixing chamber sealed so as to prevent outflow of said mixed reagents.

VOL 1147 ISS 4 FEB 23 1993 UMI

5,188,456
APPARATUS FOR THERMOMECHANICAL TESTING OF FIBERS
Richard A. Burke; James R. Goodall, both of Charlotte; Michael D. Melton, Mooresville; Roy S. Osborne, Charlotte, all of N.C., and Carl D. Patterson, Rock Hill, S.C., assignors to Hoechst Celanese Corporation, Somerville, N.J.
Filed Nov. 29, 1991, Ser. No. 800,292
Int. Cl.[5] H01N *3/18*
U.S. Cl. 374—50 **20 Claims**



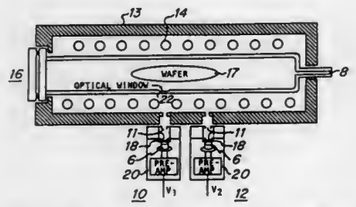
1. A fiber testing apparatus comprising:
a linear step motor including a forcer arranged for controlled linear movement along a stationary platen;
a first fiber gripping means coupled to said forcer and arranged for linear motion along a predetermined linear path in correspondence with the linear motion of the forcer;
a second fiber gripping means spaced from said first fiber gripping means and positioned in linear relationship with said predetermined linear path of said first fiber gripping means;
force measuring means coupled to said second fiber gripping means for measuring force applied to said second fiber gripping means; and
control means connected to said linear step motor for controlling the linear motion of said forcer, said control means also receiving position signals from said forcer and being connected to said force measuring means for receiving signals from said force measuring means.

5,188,457
MEASUREMENT OF THE MAXIMUM TEMPERATURE ATTAINED BY AN ARTICLE
Kevin S. O'Hara, Boxford, Mass., assignor to General Electric Company, Cincinnati, Ohio
Filed Mar. 11, 1992, Ser. No. 849,724
Int. Cl.[5] G01K *11/00*
U.S. Cl. 374—104 **18 Claims**



1. A method for determining a maximum temperature attained by an article, comprising the steps of:
furnishing an article made of a material that undergoes a transition from a two-phase, particle plus matrix structure to a single phase structure with increasing temperature in a transition temperature range characteristic of the material;
heating the article with a temperature profile including a maximum temperature within the transition temperature range;
cooling the article to ambient temperature to produce a distribution of coarse particles and fine particles in a matrix;
measuring the fraction of coarse particles present in the article; and
comparing the measured fraction of coarse particles with a predetermined calibration plot of the equilibrium fraction of particles as a function of temperature, to determine the maximum temperature reached by the article.

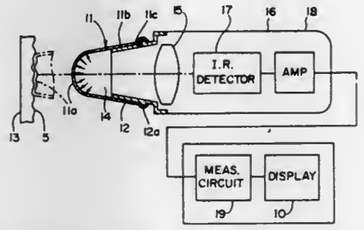
5,188,458
PYROMETER APPARATUS AND METHOD
Thomas E. Thompson, Los Altos, and Eugene R. Westerberg, Palo Alto, both of Calif., assignors to A G Processing Technologies, Inc., Sunnyvale, Calif.
Division of Ser. No. 652,459, Feb. 7, 1991, Pat. No. 5,061,084, which is a continuation of Ser. No. 186,556, Apr. 27, 1988, abandoned. This application Sep. 9, 1991, Ser. No. 756,536
Int. Cl.[5] G01J *5/06*
U.S. Cl. 374—121 **5 Claims**



1. A method for sensing the temperature of a remote object that is heated within a chamber by a source of radiation that is supplied to the object from outside the chamber, where a boundary wall of the chamber includes quartz that transmits the radiation having wavelengths to a selected wavelength, the method comprising the steps of:
selectively supplying radiation from the source having wavelengths to the selected wavelength through the quartz of the boundary wall of the chamber to the object therewithin;
forming a window in the boundary wall in alignment with the remote object therein, said window being formed of quartz having different transmissivity than the quartz in the boundary wall of the chamber through which radiation from said source is supplied to the object within the chamber, said window having different transmissivity to radiation in a waveband that is segregated from said selected wavelength; and
sensing radiation from the remote object within the chamber through the window within the waveband that is segregated from said selected wavelength for providing an output indication of the temperature of the remote object.

4. Apparatus for sensing the temperature of a remote object, comprising:
chamber means having boundary walls disposed about the object therewithin, the material of said boundary walls including quartz that is substantially transparent to radiation having wavelengths to approximately 3.9 microns for supplying radiation to the object within the chamber means from a source means of radiation having wavelengths to approximately 3.9 microns;
the source means of radiation disposed outside the chamber means for heating the object therewithin with radiation having wavelengths to approximately 3.9 microns supplied to the object through the material of the boundary walls;
said chamber means having a window in one of the boundary walls that is formed of quartz having different transmissivity than the quartz in the boundary walls and that is disposed in alignment with the remote object within the chamber means, said window having transmissivity to radiation having wavelengths to approximately 4.7 microns that is different than the transmissivity of the quartz in the boundary walls of the chamber means to radiation having wavelengths to approximately 3.9 microns; and
sensing means for sensing radiation from the remote object within the chamber means through the window within a waveband of approximately 4.3 to 4.7 microns for providing an output indication therefrom of the temperature of the remote object.

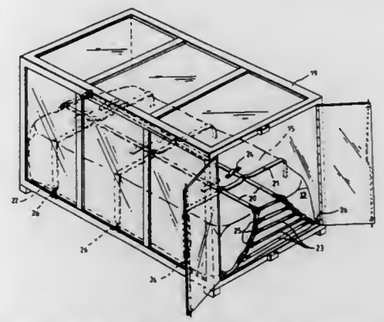
5,188,459
PROTECTIVE SHIELD ACCESSORY FOR MEASUREMENT INSTRUMENT
Kazuo Mino, Kitakatsuragi; Toshiyuki Nomura, and Yuiji Tsujioka, both of Nishigyo, all of Japan, assignors to Horiba, Ltd., Kyoto and Tasco Japan Co., Ltd., Osaka, both of, Japan
Filed Nov. 26, 1991, Ser. No. 797,906
Claims priority, application Japan, Nov. 29, 1990, 2-333566
Int. Cl.[5] G01K *1/08*
U.S. Cl. 374—158 **19 Claims**



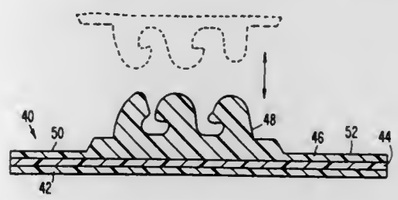
1. In an improved radiation thermometer assembly having a detector mounted in a housing with an entrance aperture for receiving radiation and means for determining a temperature of an object from the detected radiation, the improvement comprising:
securing means about the entrance aperture for securing an accessory attachment, and
a protective shield member, as the accessory attachment connected to the securing means, the protective shield member is resilient and air tight and has a distal portion and a circumferential portion configured to sealingly attach to the securing means to capture air at a pressure above ambient in the distal portion as the protective shield member is mounted on the securing portion so that he distal portion is displaced forward of the radiation thermometer assembly for contacting an object to be measured offset from a plane containing the entrance aperture.

5,188,460
LIQUID STORAGE BAG
John R. Dorse, Pietermaritzburg, South Africa, assignor to BTR Dunlop Limited, Natal, South Africa
Continuation of Ser. No. 317,399, Mar. 1, 1989, abandoned. This application Sep. 13, 1990, Ser. No. 581,421
Claims priority, application South Africa, Mar. 2, 1988, 88/1469
Int. Cl.[5] B65D *30/10, 33/02, 33/14*
U.S. Cl. 383—18 **5 Claims**

1. A storage bag of flexible sheet material, said bag being of generally rectangular configuration, said bag comprising:
a planar base section;
opposed upwardly directed side wall sections;
a generally planar roof section;
opposed upwardly directed end wall sections, said end wall sections being constituted by part sections which fold towards one another from the side wall sections or alternatively from said roof and base sections to define a truncated triangular end wall section, said part sections being of unequal length with respect to each other; and
a reinforcing harness comprising a plurality of strap elements having free ends securable to the interior of a container.



5,188,461
PACKING, METHOD OF MANUFACTURING SAME, AND STRIP MATERIAL THEREFOR
Leif B. Sorensen, St. Joseph, Mo., assignor to Schurpack, Inc., St. Joseph, Mo.
Continuation of Ser. No. 472,281, Jan. 30, 1990, abandoned, which is a continuation of Ser. No. 267,279, Nov. 4, 1988, Pat. No. 4,925,318. This application Mar. 2, 1992, Ser. No. 842,766
Claims priority, application Denmark, Oct. 17, 1988, 5768/88
The portion of the term of this patent subsequent to May 15, 2007, has been disclaimed.
Int. Cl.[5] B65D *33/25, 33/34*
U.S. Cl. 383—63 **20 Claims**



1. A packing comprising first and second opposed surfaces in a closure area of the packing, said opposed surfaces including at least one profiled portion secured to and extending over each of said opposed surfaces in the closure area, said profiled portions being adapted to be releasably interlocked to permit connection and disconnection of said opposed surfaces in the closure area of the packing, at least one of said first and second opposed surfaces being formed by a strip material with at least one of said profiled portions being formed integrally with the strip material, said strip material being pell seal welded with the other opposed surface of said first and second opposed surfaces with a pell seal weld having a bond strength of not more than 1/5 the strength in tension to start elongation of said strip material, and said strip material being secured to a packing sheet material of said packing by means of a non-peel seal type of connection.

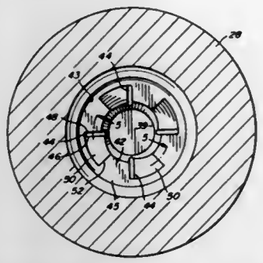
VOL 1147 ISS 4 FEB 23 1993

5,188,462

LUBRICANT SYSTEM FOR A ROTARY CONE ROCK BIT

Michael E. Hooper, Spring, Tex., and Donald F. Wilcock, Schenectady, N.Y., assignors to Smith International Inc., Houston, Tex.

Filed Mar. 2, 1990, Ser. No. 487,468
Int. Cl.[5] F16C *32/06*; E21B *10/22*
U.S. Cl. 384—93 **3 Claims**



1. A thrust bearing lubrication means for a rotary cone rock bit comprising:

a rock bit body, said body forming a first pin end and a second cutting end, said body further forming at least one leg having a main journal being cantilevered from a cutting end of the leg, said bearing forming at least a cylindrical radial bearing surface and an axial thrust bearing surface,

a rotary cone adapted to rotate on said bearing, said cone forming at least a radial bearing surface and an axial thrust bearing surface,

at least one substantially radially disposed groove is formed in one of said axial thrust bearing surfaces formed by said cantilevered journal bearing and said rotary cone, said groove communicates with a lubrication orifice formed in said leg, said orifice serves as a conduit for a source of lubricant contained in a lubricant reservoir formed in said leg, and

a ramp formed in one of said axial bearing surfaces, said ramp extends from a trailing edge said groove gradually converging with a planar bearing surface of said axial bearing, said ramp is formed by stamping said ramp with a die thereby forming said ramp through plastic deformation, said die forming rounded edges that define said ramp, said ramp serves to develop hydrodynamic pressure between thrust bearing surfaces hen said cone is rotated on said main bearing thereby distributing a film of lubricant between axial thrust bearing surfaces.

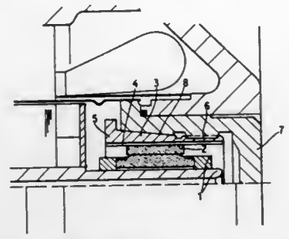
5,188,463

BEARING FOR THE SHAFT OF A CANNED MOTOR PUMP

Hansjörg Heinrich, Leinburg, and Peter Rupprecht, Bayreuth, both of Fed. Rep. of Germany, assignors to KSB Aktiengesellschaft, Frankenthal/Pfalz, Fed. Rep. of Germany

Filed Apr. 15, 1991, Ser. No. 671,780
Int. Cl.[5] F16C *23/02*
U.S. Cl. 384—441 **5 Claims**

1. Bearing for the shaft of a canned motor pump, comprising a first annular member for receiving a portion of the shaft; and a second annular member which surrounds and carries said first annular member, said second annular member having means for releasably connecting said second annular member with the housing of the motor pump and centering said second annular member, and said connecting and centering means including a thread on a first section of said second annular



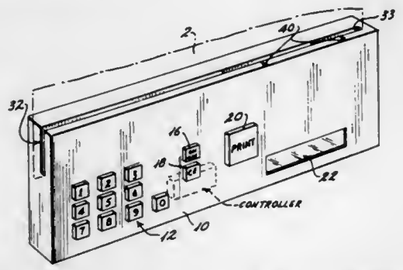
member, and a conical surface on a second suction of said second annular member.

5,188,464

HAND-HELD BAR CODE PRINTER FOR ENVELOPES AND LABELS

Nancy A. Aaron, 3345 Pursell La., Pensacola, Fla. 32526

Filed Dec. 10, 1991, Ser. No. 804,988
Int. Cl.[5] B41J *5/00*
U.S. Cl. 400—103 **10 Claims**



1. A hand held device for printing selectively different numerical zip codes or the like on articles of mail in a bar code corresponding to numbers of said zip code and comprising:

a case having a power supply, a bar code printing module, a display module, a keypad module, and controller means for communicating with and controlling said modules in accordance with a set of instructions;

said keypad module comprising a power switch means for selectively energizing said device, key means for entering numbers of said zip code into said device selectively, and means for initiating printing of said bar code;

said display module having means for displaying each number of said zip code as said numbers are entered into the device viz said key means;

said printing module having means for printing said bar code upon actuation of said printing initiating means; and

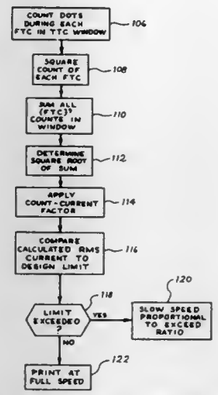
said case having means for receiving envelopes and labels, individually and interchangeably, as said articles of mail and for guiding said articles to a print station, said article receiving and guiding means comprising a slot in said case with said printing elements situated adjacent to and in communication with said slot and near one end of said slot, and means for locating a specific portion of each of said articles in relation to said printing means so as to ensure that said bar coded zip code is printed on said specific portion of each said article, said means for locating said articles comprising, at said one end of said slot, first stop means for abutting a first edge of said article of mail and second stop means for abutting a second edge of said article which is generally perpendicular to said first edge.

5,188,465

RMS POWER CONTROLLER FOR DOT-MATRIX PRINTERS

William M. Johnson, Lexington, and George K. Parish, Winchester, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 1, 1991, Ser. No. 662,648
Int. Cl.[5] B41J *2/30*
U.S. Cl. 400—121 **15 Claims**



1. A method of controlling heat dissipation in apparatus supplying or controlling power to a printhead having a plurality of selectable dot producing devices each energizable by a known amount of electrical power, said method including the steps of:

separately counting the dots printed, or to be printed, during a plurality of equal time intervals to produce a plurality of dot counts, with the duration of each said time interval being dependent upon an effective filter time constant characteristic of the power supplying or controlling apparatus, wherein said equal time intervals each have a duration which is within 50% of the effective filter time constant of the power supplying apparatus;

processing said dot counts to obtain a RMS value indicative of the RMS current required to supply or control the dot producing device over a time period equal to the total time of said plurality of equal time intervals;

comparing the RMS value with a predetermined limit value; and

decreasing the effective rate at which the printhead forms dots when the comparison indicates that the RMS value exceeds, or will exceed, the limit value.

5,188,466

MATRIX PIN PRINT HEAD WITH REBOUND CONTROL

Horst M. Kasper, Warren, N.J., assignor to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Jun. 27, 1991, Ser. No. 722,519
Int. Cl.[5] B41J *2/27*
U.S. Cl. 400—124 **32 Claims**

1. A matrix print head comprising

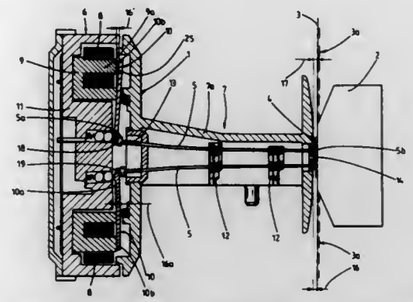
electromagnetic drive means;

a clapper armature magnetically associated with and driven by the electromagnetic drive means and including a spherical segment element disposed near an end of the clapper armature;

a print pin for contacting an end of the clapper armature to be advanced from a rearward position to a forward position by the driven clapper armature;

a spring engaged with the print pin and furnished with energy by transforming part of the drive energy of the clapper armature into elastic energy of the spring and storing this energy for providing a recoil energy to the print pin and to the clapper armature;

a first spherical segment body disposed neighboring to said spherical segment element near said end of the clapper armature on a side of the clapper armature opposite to the side where the print pin is disposed relative to the clapper



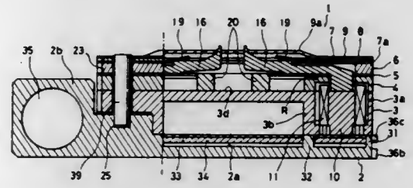
armature for being impacted and accelerated by the recoiling print pin and clapper armature resulting in an acceleration of the first spherical segment body relative to the print head and for receiving the linear momentum and the kinetic energy of the recoiling print pin and clapper armature.

5,188,467

PRINT HEAD WITH ENERGIZING AND RETURN LEAF SPRINGS

Tetsuya Yamamoto, Higashimurayama; Yukio Endoh, Kawagoe; Akio Segawa, Saitama; Kenji Matsumoto, Tokyo, and Takeo Komiyama, Hoya, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jun. 11, 1991, Ser. No. 713,211
Claims priority, application Japan, Jun. 16, 1990, 2-63866[U]; Jun. 16, 1990, 2-63867[U]
Int. Cl.[5] B41J *9/36*
U.S. Cl. 400—157.2 **8 Claims**



1. A print head, comprising:

a plurality of armatures each having a stylus and a plunger at opposite ends and a fulcrum provided therebetween to enable rotation of the armature thereat;

a first flat spring body, having a plurality of leaf portions for respectively attaching to one of said armatures in the vicinity of the corresponding fulcrum thereof, each leaf portion being disposed to elastically return the corresponding armature to a hitting position thereof for printing thereby;

a second flat spring body, having a plurality of second leaf portions, each of said second leaf portions being disposed to coact with a respective one of said armatures so as to elastically bias the same away from the hitting position thereof to a standby position; and

a plurality of solenoids disposed and actuable for independently attracting a corresponding one of said armatures to the hitting position thereof.

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VOL 1147 ISS 4 FEB 23 1993 UMI

5,188,468

TRANSPORT DEVICE

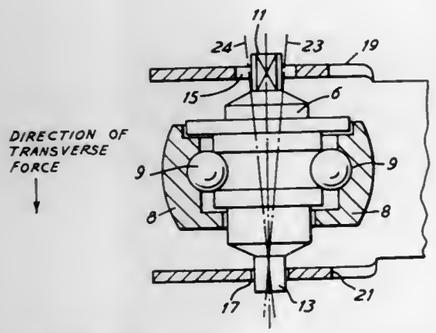
Norman A. Dykes, Glastonbury, England, assignor to Thorn EMI Electronics Limited, Middlesex, England

Filed Feb. 20, 1990, Ser. No. 481,327

Claims priority, application United Kingdom, Feb. 21, 1989, 8903919

Int. Cl.[5] B41J *13/03*

U.S. Cl. 400—579 5 Claims



1. A planar member transport device comprising:

(a) a drive roller, the drive roller having a first axis of rotation about which the roller may rotate,

(b) a follower roller having defined within it a second axis of rotation, the follower roller being rotatable about the second axis of rotation by rotation action of said drive roller and

(c) a spring follower arm which carriers a mount for said follower roller, urges said follower roller against said drive roller and resiliently permits tilting of said second axis of rotation about a point of contact between said follower roller and said drive roller, said mount permitting pivoting of said second axis of rotation between first and second positions by rotation action of said drive roller, said pivoting being about a point situated asymmetrically with respect to said follower roller, said first and second positions being respective positions in which said second axis of rotation is skewed in mutually opposite senses relative to said first axis of rotation, such that when said follower roller is rotated by rotation action of said drive roller and a planar member is inserted between said drive roller and said follower roller, the planar member experiences a force having a component in a direction parallel to said first axis of rotation, said direction being the same regardless of the direction in which said follower roller is rotated, said follower roller having a periphery which is convex and arcuate in a plane containing said second axis of rotation, wherein said mount comprises: a bracket means, two lugs, and two mounting means, each mounting means having defined within it a respective aperture, each lug being mounted within a respective one of said apertures, each mounting means being defined within one of said follower roller and said bracket means, the respective lug mounted within said mounting means being carried on the other of said follower roller and said bracket means, the aperture defined within one of the mounting means being substantially greater in dimension in a direction joining said first and second positions than the aperture defined within the other of said mounting means, so as to permit a transverse movement of the lug mounted in said aperture of greater dimension, thereby enabling said pivoting of said second axis of rotation.

5,188,469

TAPE FEED CASSETTE WITH TAPE CUTTER AND GUIDE

Yoshiaki Nagao, Tsushima; Atsuhiro Kobayashi, Nagoya, and Mikio Sakuma, Ichinomiya, all of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Aichi, Japan

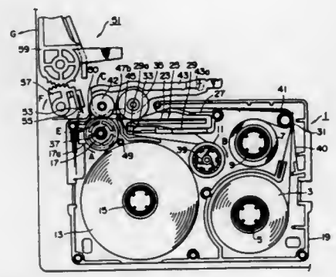
Continuation of Ser. No. 421,976, Oct. 16, 1989, abandoned. This application Jul. 29, 1991, Ser. No. 737,927

Claims priority, application Japan, Oct. 14, 1988, 63-260173

The portion of the term of this patent subsequent to May 22, 2007, has been disclaimed.

Int. Cl.[5] B41J *15/24*

U.S. Cl. 400—615.2 10 Claims



1. A tape feed mechanism comprising a tape feed device and a tape holding case;

said tape holding case including: means to detachably mount said case to said tape feed device; a wound printing tape and a wound double sided adhesive tape, said tapes being disposed for movement within said case along respective paths, said paths joining at a common point at which said tapes are overlapped and and adhesive layer on a surface of said adhesive tape is adhesively secured to said printing tape, said adhesive tape having an exfoliate sheet on a surface opposite the surface that contacts said printing tape;

said tape feed device including means for moving said tapes; a tape print member along the path of movement of said printing tape for printing on a surface of said printing tape and a cutting member downstream of said common point; and

guide member means provided on said tape holding case for restricting widthwise displacement of said printing tape, for guiding said two tapes to overlap and for pressing said adhesive tape against said printing tape.

5,188,470

PRINTER CONTROL SYSTEM FOR A SHEET CUTTER

Motoki Matsubara, Kishiwada; Setsuo Sasabe, Osaka; Takayasu Hongo, Kobe, and Kenichi Fujii, Osaka, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1991, Ser. No. 752,027

Claims priority, application Japan, Aug. 31, 1990, 2-230841; Sep. 18, 1990, 2-249861

Int. Cl.[5] B41J *11/70, 11/42*

U.S. Cl. 400—621 3 Claims

1. A printer including a stepping motor for feeding a web, a printing head for printing out on a surface provided by the web, and a cutter placed at a distance downstream of the web fed from the printing head, the cutter being adapted to cut out a preceding one of continuous sheet divisions defined on the web each having a predetermined length after printing the preceding one division when stopping the feeding of the web and stopping operation of the printing head, said printer comprising:

storage means for storing a data edition program, a printing control program and a cutter control program, said storage means having a random access memory for storing

said predetermined length of the sheet division arranged on the web to be cut out, the total length of a printing zone for each sheet division and the length of a blank area between adjacent printing zones of the sheet divisions;

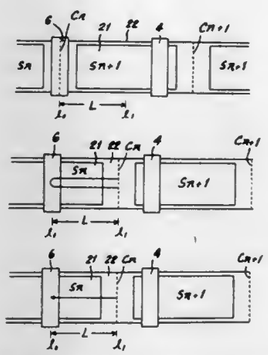
a central processing unit including means for executing a cutting operation of the cutter for the sheet division according to the data and the programs read out from said storage means, to cut out the sheet division in the predetermined length with the printed zone, wherein said central processing unit precalculates a travel length L of the web from a travel reference position, where any predetermined point in the sheet or a subsequent sheet division is placed in a predetermined relative position to the printer after printing of said printed zone, to a travel end position where a rear edge of the sheet division is aligned with a cutting line of the cutter;

said central processing unit further includes selection means for selectively executing any one of three programmed printing operations,

wherein the first programmed printing operation comprises:

(a) printing a first sheet completely by said printing head and then moving said first sheet until a second sheet is aligned under said printing head;

(b) moving said first sheet while said second sheet is printing until the rear edge of said first sheet reaches a predetermined position 1, which is a distance L from said cutter, wherein said central processing unit activates the web,



feeding said first sheet the distance L while said second sheet is printing;

(c) completing feeding of said first sheet the distance L and interrupting the printing of said second sheet, cutting said first sheet under the cutter; and

(d) resuming printing of said second sheet after said cutting of the first sheet;

wherein the second programmed printing operation comprises:

(a) printing a first sheet completely by said printing head;

(b) moving said first printed sheet until the rear edge of said first sheet reaches a predetermined position 1, which is a distance L from said cutter, wherein said central processing unit activates the web, feeding said first sheet the distance L;

(c) completing feeding of said first sheet the distance L, cutting said first sheet under the cutter; and

(d) restoring the web to its original position, a distance L from said cutter, and

(e) beginning printing of a second sheet after said cutting of the first sheet; and

wherein the third programmed printing operation comprises:

(a) printing a first sheet completely by said printing head;

(b) moving said first printed sheet until the rear edge of said first sheet reaches a predetermined position 1, which is a distance L from said cutter, wherein said central processing unit activates the web, feeding said first sheet the distance L;

(c) completing feeding of said first sheet the distance L, cutting said first sheet under the cutter; and

(d) beginning printing of a second sheet after said cutting of the first sheet; and

level switching means for manually selecting one of said programmed operations.

5,188,471

PRINTER HAVING DOCUMENT TRANSFER DEVICE WITH PLATE-SHAPED STOP MEANS

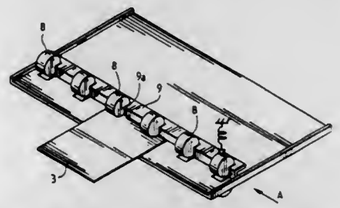
Reijo Mattila, Helsinki, Finland, assignor to ICL Personal Systems Oy, Helsinki, Finland

Filed Mar. 16, 1992, Ser. No. 851,949

Claims priority, application Finland, Mar. 25, 1991, 911428

Int. Cl.[5] B41J *13/28*

U.S. Cl. 400—630 2 Claims



1. A printer for printing on a document, comprising:

a print head;

a paper path for the document to be printed, said paper path including a lower support surface; and

a document transfer device arranged in connection with said paper path, said document transfer device comprising: a plurality of drive pulleys arranged in parallel for gripping an underside of the document and positioned in at least two sequential rows; and a plurality of spring-actuated pressure rollers arranged in parallel along their rotational axes and disposed transversely with respect to said paper path in first and second rows sequentially above said drive pulleys so as to form pairs of drive pulleys and pressure rollers, with said pressure rollers pressing the document from above against said drive pulleys;

said document transfer device further comprising: a plate-shaped stop means operative to move up and down with respect to said paper path for straightening the document, wherein said stop means is arranged between a line passing through the rotational axes of said pressure rollers positioned in the first row of the pairs of said drive pulleys and said pressure rollers and a line touching a rear portion of said pressure rollers, said stop means being positioned above said lower support surface of said paper path, wherein said stop means extends between said pressure rollers of the first row of pressure rollers and forms a continuous bar across said paper path.

5,188,472

SHOE POLISH APPLICATION KIT

Albert J. Sgro, 24450 Union Cir., Beachwood, Ohio 44122

Filed Sep. 5, 1991, Ser. No. 755,565

Int. Cl.[5] A46B *11/00, 17/00*

U.S. Cl. 401—124 8 Claims

1. A shoe care kit comprising a cylindrical enclosure one end of which is adapted to clamp over the lid of a conventional shoe polish container and become as one therewith, a hollow brush applicator handle having a bottom and a cylindrical exterior wall extending upwardly therefrom forming a container for a shoe buffing implement, and the lower portion of the cylindrical exterior wall adapted to close the opposite end of said enclosure, and a removable cover on said handle includ-

VOL 1147 ISS 4 FE 23 1993 UMI

ing a cover cylindrical wall which in combination with the handle cylindrical wall is adapted to be gripped by the hand of the user and adapted to enclose within said handle said shoe buffing implement said handle and cover forming a cylindrical



continuation of said enclosure, said handle and cover having a telescoping fit with each other, and said handle and cylindrical enclosure also having a telescoping fit with each other, to form such cylindrical continuation.

5,188,473

BAR ANCHOR ARRANGEMENT

Robert Danz, Cheruskerstr. 13, 7036 Schöaich, Fed. Rep. of Germany

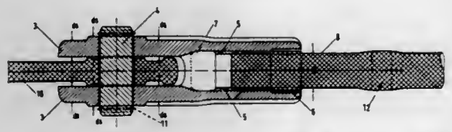
PCT No. PCT/EP90/01132, § 371 Date Dec. 4, 1991, § 102(e) Date Dec. 4, 1991, PCT Pub. No. WO91/00433, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 25, 1990, Ser. No. 778,072

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1989, 3922070

Int. Cl.[5] B25G *3/00*

U.S. Cl. 403—27 **9 Claims**



1. In a bar anchor arrangement for bars subjected to tensile stress, consisting of a bar anchor having an anchor body with a bore including an internal thread and two spaced parallel eye plates oriented parallel to the longitudinal axis of the adjoining anchor body and integral with said anchor body and accommodating an eye bar, and a tension bar provided with an external thread screwed into the internal thread of the bore, the improvement wherein the bore of the anchor body comprises a first smooth, unthreaded tolerance compensating section, said internal thread adjoining said first tolerance compensating section, and a second smooth, unthreaded tolerance compensating section adjoining said internal thread, wherein both tolerance compensating sections have a slightly larger diameter than the diameter of the external thread of the tension bar, and wherein the length of the external thread of the tension bar corresponds substantially to the minimum screw-in length of the tension bar plus the length of one of the tolerance compensating sections.

5,188,474

YOKE FOR UNIVERSAL JOINT

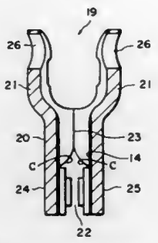
Kiyoshi Ohkubo, Maebashi, and Hiroshi Sekine, Takasaki, both of Japan, assignors to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1991, Ser. No. 681,777

Claims priority, application Japan, Apr. 12, 1990, 2-38525[U]

Int. Cl.[5] F16D *3/00*

U.S. Cl. 403—57 **3 Claims**



1. A universal joint yoke comprising:

a generally cylindrical connecting part made by press-forming a metal plate and having internal peripheral serrations, a first end portion at which edges of the metal plate are brought into abutment to form a tubular abutting part, a second end portion with a pair of flanges disposed at opposite sides of an axial gap and facing one another substantially in parallel, and a pair of reentrant cut-outs with a respective one of said cut-outs being disposed between each flange and said abutting part, and

a pair of diametrically opposed connecting arms integrally formed with said first end portion of said connecting part and extending axially outwardly from said first end portion of said connecting part, and

wherein one of said flanges is provided with a tapped hole and the other of said flanges is provided with a through-hole coaxial with said tapped hole for passing a bolt to be screwed into said tapped hole, and each connecting arm is provided with a respective through-hole, with the respective through-holes of said connecting arms being coaxial.

5,188,475

CONNECTOR FOR HANDLES AND SHOULDER BELTS OF BAGS, LADIES HANDBAGS, SUITCASES OR OTHER TRAVELING CONTAINERS

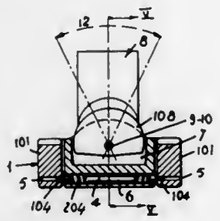
Pietro Mannato, Bologna, Italy, assignor to Finduck S.r.L., Bologna, Italy

Filed Mar. 12, 1991, Ser. No. 668,985

Claims priority, application Italy, Mar. 16, 1990, 4772/90

Int. Cl.[5] F16D *3/00;* **A44C** *5/18*

U.S. Cl. 403—58 **6 Claims**



1. A connector for a carrying member of a traveling container comprising:

a base member having an exposed face with lateral ends, a engaging face opposite to said exposed face, a respective protrusion extending orthogonally away from said exposed face at each respective said lateral end of said exposed face, and a tranverse hole in each said protrusion;

a securing means for securing said base member to the traveling container with said engaging face engaging the traveling container and hence said protrusions extending away from the traveling container;

a spindle having a longitudinal axis which said spindle is mounted between said lateral ends in said transverse holes thereof;

a body member which is mounted for 180° oscillation about said spindle, said body member including a distal end radially distant from said spindle in which said distal end a planar recess is provided with a central plane of said recess including the longitudinal axis of said spindle;

a stem having a hollow proximal end in which the carrying member is attached to said stem and a distal end which is flattened and which is received in said recess of said body member; and

a mounting means for pivotally mounting said distal end of said stem in said distal end of said body member such that said stem and hence said carrying member are rotatable about an axis which is orthogonal to the central plane of said planar recess.

5,188,476

BALL JOINT

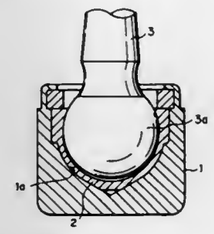
Izuru Mori, Aichi, Japan, assignor to TRW Steering & Industrial Products (Japan) Co., Ltd., Tokyo, Japan

Filed Apr. 10, 1992, Ser. No. 867,136

Claims priority, application Japan, Apr. 12, 1991, 3-80241

Int. Cl.[5] F16C *11/00*

U.S. Cl. 403—133 **3 Claims**



1. A ball joint comprising:

a socket and a ball stud which are pivotable relative to each other;

said socket having a wall defining a chamber, said chamber having a central axis;

said ball stud including a shank portion and a ball portion located at one end of said shank portion, said ball portion being received within said chamber for pivotal movement therein; and

a bearing located between said wall of said socket and said ball portion of said ball stud, said bearing having a central axis parallel to said central axis of said chamber, said bearing having an outer circumferential surface facing said wall of said socket;

said bearing including protrusions on said outer circumferential surface, said protrusions being spaced along the central axis of said bearing, each protrusion contacting said wall of said socket and deforming when a load is applied urging the protrusion against said wall of said socket.

5,188,477

BALL JOINT

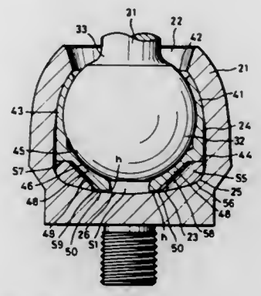
Hidetaka Idosako, and Masao Takayama, both of Hamamatsu, Japan, assignors to Kabushiki Kaisha Somic Ishikawa, Tokyo, Japan

Filed Mar. 17, 1992, Ser. No. 852,796

Claims priority, application Japan, Apr. 17, 1991, 2-085146

Int. Cl.[5] F16C *11/00*

U.S. Cl. 403—133 **6 Claims**



1. A ball joint comprising:

a housing;

an inner chamber in said housing having a bottom at a first inner end thereof and an aperture at second end thereof;

a ball stud;

said ball stud including a ball head portion, and a stud portion connected to each other;

a bearing seat in said inner chamber;

said bearing seat enveloping a substantial portion of said ball head portion, and slidably securing said ball head portion therein, with said stud portion extending from said aperture;

a load bearing portion of said bearing seat facing said bottom;

an elastic member between said bearing seat and an inner surface of said housing;

said elastic member being effective to resiliently urge said bearing seat such that said load bearing portion is urged out of contact with said bottom and a bearing preload is applied to said ball head portion; and

said elastic member being compressible under a compression load to permit said load bearing portion to contact said bottom, whereby compression forces are transferred to said bottom.

5,188,478

FORCE-TRANSMITTING, CONE-SHAPED PRESS-FIT CONNECTION

Harald Bitsch, Witten, and Heinz Schmidt, Dortmund, both of Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Filed Aug. 23, 1990, Ser. No. 572,014

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1989, 3928438; Jan. 17, 1990, 4001659

Int. Cl.[5] B25G *3/34*

U.S. Cl. 403—267 **30 Claims**

1. A force-transmitting, funnel-shaped press-fit connection comprising

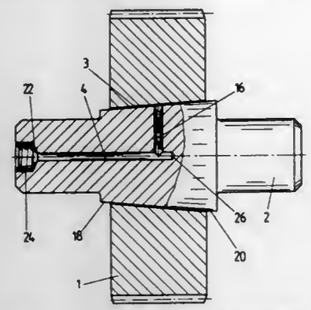
a shaft member having an outer conical rotation-symmetrical surface, thus forming a rotation-symmetrical seat;

a hub member having an inner conical rotation-symmetrical surface matched to the outer rotation-symmetrical surface of the shaft member, wherein the hub member and the shaft member are placed into a mutually engaged position thereby forming an intermediate space of a joint slot;

an anaerobic adhesive disposed in residual roughness present

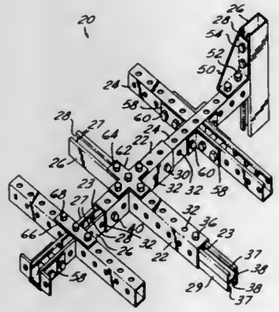
VOL 1147 ISS 4 FE 23 1993 UMI

at the intermediate space of the joint slot adjoining the pressed-in rotation-symmetrical seat having an oversize



thereby forming an integral joint between the shaft member and the hub member.

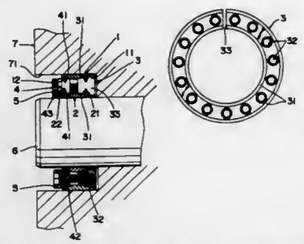
5,188,479
TUBULAR FRAMING SYSTEM
Charles O. Nehls, Allen Park, Mich., assignor to Unistrut International Corp., Ann Arbor, Mich.
Filed Apr. 30, 1992, Ser. No. 876,248
Int. Cl.[5] B25G *3/00*
U.S. Cl. 403—306 **14 Claims**



1. A framing system comprising:
a first closed tubular member having a generally polygonal cross-section with closed sides along the majority of its length defining a bore; and
an open channel member received within said first closed tubular member and having a polygonal cross-section with closed sides along the majority of its length and at least one open side along the majority of its length defining a channel to receive an infinitely adjustable securement member.

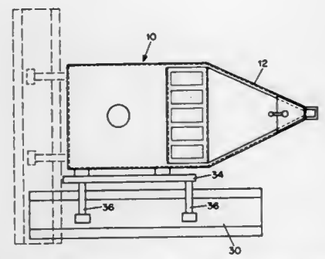
5,188,480
COUPLING FIXTURE
Toshikazu Okuno, 5-10, 1-chome, Chihara-cho, Izumiohtsu-shi, Osaka, Japan
Filed Apr. 22, 1991, Ser. No. 692,467
Claims priority, application Japan, Jun. 28, 1990, 2-68995[U]
Int. Cl.[5] F16B *2/14*
U.S. Cl. 403—369 **2 Claims**

1. A coupling fixture for fixing a coupled member mainly to a shaft member, said fixture comprising:
a) an outer ring having an inner peripheral surface and an outer peripheral surface and provided with a tapered surface at the inner peripheral surface, said outer ring having a generally radially extending cut therethrough;
b) an inner ring having an inner peripheral surface and an outer peripheral surface and provided with a tapered surface at the outer peripheral surface, said inner ring having a generally radially extending cut therethrough;
c) a wedge-like-shaped ring nut wedged into a space between the inner peripheral surface of said outer ring and the outer peripheral surface of said inner ring and having tapered surfaces abutting against said tapered surfaces respectively and a plurality of threaded bores circumferentially disposed therein; and
d) screw bolts screwable into said threaded bores of said ring nut so as to allow said ring nut to wedge into the space between the inner peripheral surface of said outer ring and the outer peripheral surface of said inner ring, thereby expanding said outer ring in diameter and contracting said inner ring in diameter;
said coupling fixture being characterized in that



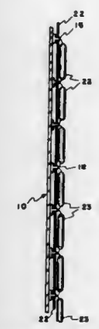
e) said ring nut is radially cut to have an open gap at a circumferential part thereof, said gap creating circumferential edges on said ring nut being directly adjacent one another such that said circumferential edges are capable of coming into contact when said ring nut is contracted radially inwardly, so that in a case where the ring nut is wedged into said space between the outer ring and the inner ring and one of the outer and inner rings is sufficiently pressed against a corresponding coupled member while the other of the outer and inner rings is insufficiently pressed against a corresponding coupled member, said gap allows the ring nut to move along the tapered peripheral surface of said sufficiently pressed ring to be further wedged into the space between the outer and inner rings so as to be displaced radially outwardly or inwardly based on the tapered peripheral surface of said sufficiently pressed ring.

5,188,481
ASPHALT HEATING UNIT
William J. O'Brien, P.O. Box 143, Goshen, Mass. 01032
Filed Jul. 22, 1991, Ser. No. 734,363
Int. Cl.[5] E01C *23/14*
U.S. Cl. 404—95 **7 Claims**



1. A movable asphalt heating unit for use in heating asphalt, comprising:
a movable frame with wheels, said frame having a front, two opposite sides and a rear;
a heating chamber for generating heat for heating asphalt pavement; and
means for holding said heating chamber on said frame and for rotating said heating chamber to at least two positions, including a first position at which the chamber is positioned entirely along one side of the frame, and a second position at which the chamber is positioned entirely along the other side of the frame, whereby the asphalt heating unit can heat asphalt pavement on at least two sides of the frame.

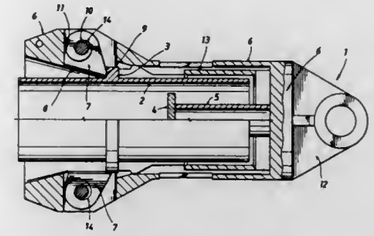
5,188,482
OIL CONFINEMENT DEVICE
Henry D. Braun, 2421 84th Ave., S.E., Calgary, Alta., Canada T2C 0K7
Filed Jul. 3, 1991, Ser. No. 737,669
Int. Cl.[5] E02B *15/04*
U.S. Cl. 405—70 **6 Claims**



1. A device for confining oil floating upon the surface of a large body of water, said device comprised of:
a) an elongated continuous wall of pliable oil-resistant material having interior and exterior surfaces, and substantially parallel upper and lower edges,
b) a multiplicity of rigid support members having upper and lower extremities and a plurality of mounting apertures, said support members being affixed to said exterior surface in uniformly spaced apart relationship and orthogonal to said upper and lower edges, said support members having a T-cross section configuration comprising a flat base portion and a center vane perpendicularly emergent from said base portion,
c) non-extendable tether means extending in joinder between adjacent support members in parallel disposition in said upper and lower edges and adapted to limit the spacing of said support members and thereby relieve longitudinal stresses along said wall,
d) float means adapted to engage said apertures at varying elevations upon said support members, causing said upper edges to rise a height above the oil level, and
e) sinker means adapted to engage said support members adjacent their lower extremities, and thereby maintain said wall in a vertical disposition.

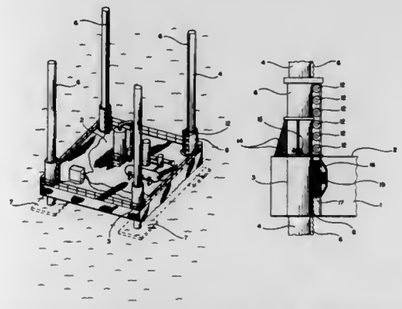
5,188,483
SUBSEA PIPELINE RECOVERY CLAMP
Frans Kopp, Houston; Joe O. Esparza, Katy, and Thomas E. Long, Montgomery, all of Tex., assignors to Shell Oil Company, Houston, Tex.
Filed Jul. 25, 1991, Ser. No. 735,505
Int. Cl.[5] F16L *1/04*
U.S. Cl. 405—191 **13 Claims**

1. A pipe clamp for attaching a lifting means to a subsea pipe which is severed in the vicinity of a raised circumferential ridge, the clamp comprising:
an aligning means which is capable of surrounding an open end of the severed subsea pipe;



at least one latching means which is connected to the aligning means and, when the aligning means is placed over the pipeline end, is capable of sliding over the circumferential ridge, and latching against the circumferential ridge to prevent the clamp from sliding off the pipeline; and
a means for attaching the clamp to the lifting means.

5,188,484
JACK-UP TYPE OFFSHORE OIL AND GAS PRODUCTION PLATFORM AND METHOD
George T. White, Belle Chasse, La., assignor to Self Installing Platforms, Inc., Belle Chasse, La.
Filed May 13, 1991, Ser. No. 699,017
Int. Cl.[5] E02B *17/08*
U.S. Cl. 405—198 **5 Claims**



1. An improved jack-up type platform for offshore processing of hydrocarbons, comprising:
(a) a liquid tight hull having a generally flat deck suitable for installation of hydrocarbon processing equipment thereon, wherein said hull has a generally void interior suitable for containing ballast water and has a plurality of vertically disposed liquid tight, generally sleeved penetrations through the hull;
(b) generally cylindrical support legs slidably disposed through each of said sleeved hull penetrations, wherein each of said support legs has a longitudinally disposed, external gear rack and a horizontally disposed footpad on the lower extremity of each said support leg;
(c) generally cylindrical jacking towers removably affixed to the deck of said hull which cooperate with the gear rack of each support leg through motorized pinion means, to elevate or lower each support leg as required; and,
(d) reversibly engagable locking means which cooperates between the gear rack of each support leg and said hull, to lock each leg at any position along its vertical path.

VOL
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5,188,485

FOUNDATION PILE OF REINFORCED CONCRETE

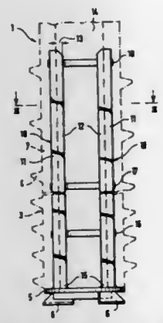
Richard F. Forster, Schwaig, and Friedemann A. Rudersdorf, Neumarkt, both of Fed. Rep. of Germany, assignors to Pfleiderer Verkehrstechnik GmbH, Neumarkt, Fed. Rep. of Germany

Filed Jun. 18, 1991, Ser. No. 717,239

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1990, 4020757

Int. Cl.[5] **E02D** *5/30, 5/56, 7/22, 7/28*

U.S. Cl. 405—232 **17 Claims**



1. A pile adapted to be driven into the ground by a pile driving rod, comprising an elongated cast structure having a longitudinal bottom end portion and a longitudinal top end portion, said bottom end portion going into the ground first, said cast structure having an internal elongated passage extending the axial extent of said cast structure and which receives said driving rod, said cast structure having external threads extending along the axial extent of said bottom end portion, metal engaging means embedded in said bottom end portion of said cast structure and extending the axial extent of said bottom end portion such that said metal engaging means is disposed radially inwardly of said external threads, said metal engaging means comprising at least two elongated and diametrically opposed flat metal bars extending partially into said internal passage along the axial extent of said bottom end portion of said cast structure and engageable by said driving rod to enable said driving rod to apply a torque to said pile and thereby drive said pile into the ground.

5,188,486

QUIK-LOC END ARRANGEMENT FOR PNEUMATIC OUTLET GATES

Wayne A. Rhodes, Rte. 1, Box 43, Luray, Tenn. 38352, and James W. Johnson, 151 Claiborne Dr., Jackson, both of Tenn. 38305

Filed May 12, 1992, Ser. No. 882,074

Int. Cl.[5] **B65G** *53/24, 53/46*

U.S. Cl. 406—145 **6 Claims**

6. A system for use with unloading gates on a hopper car or truck operated by control rods extending through a panel which comprises:

a connection tube having a collar secured to said panel, there being an annular seal on said collar, the periphery of said collar containing a locking slot;

an end cap;

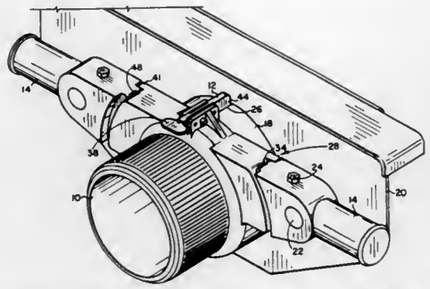
a bracket on said end cap;

a locking lever supported from said bracket and having a locking head which is biased to enter said locking slot on said collar when aligned therewith;

two spaced apart locking lugs secured to said end cap each of said locking lugs having a protruding locking rim and a locking convex surface;

at least two spaced apart operating handles each secured to a separate one of said control rods, each of said operating handles having a handle locking lug with a concave locking surface and a locking shoulder adjacent said concave locking surface; and

wherein the locking rims of said end cap are sized to fit against th shoulders of said at least two handles on a side adjacent said panel so that said end cap when in this position cannot be axially moved and the locking lug convex



surfaces of said end cap are of a size to closely match the size of said locking concave surfaces of said handle lugs so that said handles cannot rotate when said end cap is in this position, and further said locking lever of said end cap engages the locking slot of said connection tube collar and comprises means for preventing rotation of said cap with respect to said collar.

5,188,487

BALL END MILL

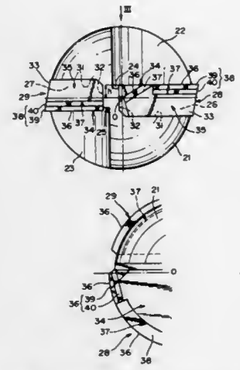
Masayuki Okawa, Ibaraki, and Yasunori Murakami, Gifu, both of Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed May 21, 1992, Ser. No. 886,409

Claims priority, application Japan, May 22, 1991, 3-36454[U]

Int. Cl.[5] **B23C** *5/10, 5/18, 5/20*

U.S. Cl. 407—34 **4 Claims**



1. A ball end mill comprising:

a tool body having an axis of rotation therethrough and having a forward end portion; and

a cutting edge provided on said forward end portion of said tool body and having an arcuate shape as viewed in a direction opposite to the direction of rotation of said tool body, said cutting edge being comprised of a radially inner portion disposed adjacent to said axis of rotation of said tool body and extending radially inwardly of said tool body in a direction opposite to the direction of rotation of said tool body, and a radially outer portion extending from said inner portion radially outwardly and axially rearwardly of said tool body;

each of said inner and outer portions of said cutting edge being formed of a two-layered composite sintered complex having a base layer of cemented carbide and an upper layer of sintered super hardened compact disposed on said base layer and containing at least one constituent selected from the group consisting of cubic boron nitride and diamond, said composite sintered complex defining said outer portion of said cutting edge being arranged such that said upper layer is directed in the direction of rotation of said tool body while said composite sintered complex defining said inner portion of said cutting edge is arranged such that said upper layer is directed forwardly of said tool body.

5,188,488

END MILL

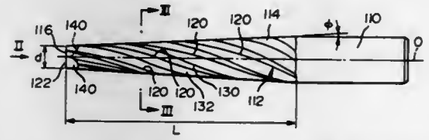
Masaaki Nakayama; Masayuki Okawa, and Keiichi Nishiyama, all of Tokyo, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Continuation of Ser. No. 697,969, May 10, 1991, abandoned. This application Jul. 10, 1992, Ser. No. 911,810

Claims priority, application Japan, May 11, 1990, 2-49489[U]; May 11, 1990, 2-49490[U]

Int. Cl.[5] **B23C** *5/10*

U.S. Cl. 407—54 **10 Claims**



1. An end mill comprising a tool body having a shaft-like shape, said tool body having a cutting edge portion formed on one end thereof, said cutting edge portion having an end cutting edge formed at a front end of said one end of said tool body, said cutting edge portion having a plurality of circumferential cutting edges formed on the circumference thereof along a longitudinal axis of said tool body,

said cutting edge portion having a circumferential surface thereof comprising rake faces and flanks, each of said rake faces adjoining one of two adjacent circumferential cutting edges, each of said flanks intersecting one of said rake faces at one end and adjoining the other of said two adjacent circumferential cutting edges at the other end, said rake faces having a rake angle arranged between a range of −45° to 5° at a cross section perpendicular to said axis of said tool body, said flanks having a relief angle arranged between a range of 20° to 45° at a cross section perpendicular to said axis of said tool body,

said circumferential cutting edges directly adjoining the flanks.

5,188,489

COATED CUTTING INSERT

Anakkavur T. Santhanam, Monroeville, and Rajendra V. Godse, Greensburg, both of Pa., assignors to Kennametal Inc., Latrobe, Pa.

Filed May 31, 1991, Ser. No. 708,422

Int. Cl.[5] **B23C** *5/20;* **B23B** *27/16*

U.S. Cl. 407—119 **21 Claims**

1. A cutting insert for wet and dry milling of cast irons, comprising:

a flank face;

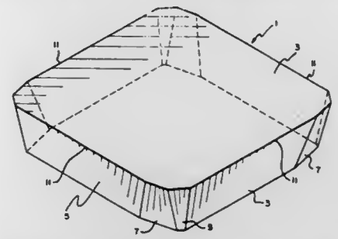
a rake face;

a cutting edge at the juncture of said rake and said flank faces, for said wet and dry milling of cast irons;

a substrate and a coating, wherein said coating is adherently bonded to said substrate;

a cemented tungsten carbide based composition forming said substrate;

said cemented tungsten carbide based composition having about 5.7 to about 6.4 weight percent (w/o) cobalt,



about 2.9 to about 3.6 w/o tantalum, wherein tantalum is present as a tantalum-tungsten carbide;

said coating having a first coating of titanium carbonitride;

a second coating of alumina;

and wherein the total average thickness of the coating is about 2 to 5 μm.

5,188,490

TOOL WITH ADJUSTABLE INTERCHANGEABLE CARTRIDGE

Werner Muendlein, Bietigheim-Bissingen, and Gerhard Scheer, Loechgau, both of Fed. Rep. of Germany, assignors to Komet Stahlhalter-und Werkzeugfabrik Robert Breuning GmbH, Besigheim, Fed. Rep. of Germany

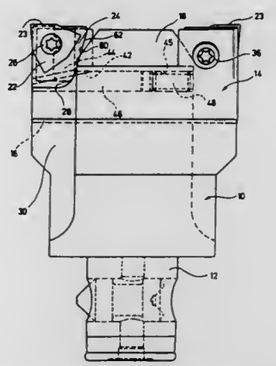
PCT No. PCT/EP90/00769, § 371 Date Nov. 1, 1991, § 102(e) Date Nov. 1, 1991, PCT Pub. No. WO90/14186, PCT Pub. Date Nov. 29, 1990

PCT Filed May 12, 1990, Ser. No. 773,569

Claims priority, application Fed. Rep. of Germany, May 20, 1989, 3916564

Int. Cl.[5] **B23B** *51/00*

U.S. Cl. 408—146 **19 Claims**



1. In a tool for use in machine tools with a rotatably supported cutting head and at least one interchangeable cartridge releasably fastenable on the cutting head and carrying a planar interchangeable insert, which interchangeable cartridge is, with the aid of an adjustment mechanism, adjustable on the cutting head in a direction parallel to an axis of rotation of the cutting head, the improvement wherein the adjustment mechanism includes a tapered ram movable along a guide means on the cutting head, which guide means is aligned parallel with respect to a plane containing the planar interchangeable insert and substantially transversely with respect to the axis of rota-

VOL
1147
ISS
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FE
23
1993
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tion, wherein the tapered ram has an inclined tapered surface, which defining an acute angle with a longitudinal direction of movement thereof in said guide means, said inclined tapered surface resting flat against an inclined shoulder on the interchangeable cartridge, which inclined shoulder deviates, in direction of the inclined tapered surface, from a right angle with respect to the axis of rotation, and wherein the inclined shoulder and the opposing tapered surface, transversely with respect to the inclined tapered surface, define an interlock means between the interchangeable cartridge and the tapered ram for absorbing forces applied to said interchangeable insert.

5,188,491

METHOD FOR CUTTING THE FLANKS OF AN INFEED WORM AND WORM MILLING MACHINE

Otto Meichel, Neutraubling, Fed. Rep. of Germany, assignor to Krones AG Hermann Kronseder Maschinenfabrik, Neutraling, Fed. Rep. of Germany

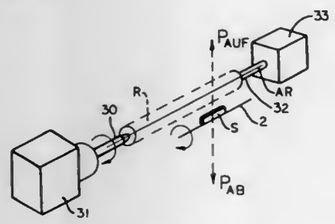
PCT No. PCT/EP89/00456, § 371 Date Oct. 23, 1990, § 102(e) Date Oct. 23, 1990, PCT Pub. No. WO89/10225, PCT Pub. Date Nov. 2, 1989

PCT Filed Apr. 26, 1989, Ser. No. 598,612

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1988, 3814241

Int. Cl.[5] B23G *1/32, 1/36*

U.S. Cl. 409—66 **11 Claims**



1. A method of milling the flanks of feed screws comprising the steps of:

rotating a feed screw blank about its longitudinal axis at a relatively low rotational speed,

rotating a milling tool at a substantially higher rotational speed about an axis of rotation which is parallel to the longitudinal axis of the feed screw blank and bringing the milling tool into contact with the blank while concurrently causing relative movement between the feed screw blank and the milling tool at a variable speed in the direction of the longitudinal axis, and

concurrently oscillating the rotating milling tool perpendicularly to the longitudinal axis of the lead screw blank.

4. A feed screw milling machine comprising:

means supporting a feed screw blank for rotating about its longitudinal axis,

a first shaft and means for driving the first shaft rotationally about its longitudinal axis,

a milling tool mounted on said shaft and the axis of the shaft is positioned for being in parallelism with the longitudinal axis of a feed screw blank,

a first carriage on which said first shaft is supported for rotation and a guide on said machine for guiding the first carriage to oscillate up and down perpendicular to said axis of the feed screw blank, and

means for oscillating said first carriage.

5,188,492

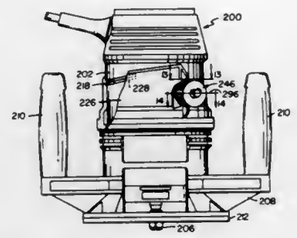
SPLIT RING CLAMPING ARRANGEMENT

Robert E. McCracken, Easley, S.C., assignor to Ryobi Motor Products Corporation, Easley, S.C.

Continuation-in-part of Ser. No. 661,619, Feb. 28, 1991, Pat. No. 5,074,724. This application Nov. 5, 1991, Ser. No. 788,189

Int. Cl.[5] B27C *5/10;* **F16B** *37/00*

U.S. Cl. 409—182 **12 Claims**



1. A router comprising:

a motor housing having an external cylindrical portion:

a base having a cylindrical bore for slidably receiving therein said motor housing cylindrical portion;

an adjustment ring including means for releasably engaging said motor housing and said base to secure them together at various axial positions, said adjustment ring being split forming an opening between two opposed ends; and

clamp means for releasably securing said adjustment ring to said motor housing so as to maintain the position of said base relative said motor housing, including;

a threaded member cooperating with the opposed ends of the adjustment ring;

a clamp knob threadingly cooperating with the threaded member and rotatable relative thereto in a first direction causing the adjustment ring to tighten and a second direction causing the adjustment ring to loosen, said clamp knob including tab means for limiting the torque which can be applied to the knob by a user in the first direction thereby preventing overtightening and enabling a relatively higher torque to be applied in the second direction to ensure the user can always release the adjustment ring.

5,188,493

TOOL HOLDER OF MODULAR CONSTRUCTION FOR DRIVEN TOOLS

Helmut Heel, Lengenwang, and Hans Kettel, Kempten, both of Fed. Rep. of Germany, assignors to Ott Maschinentechnik GmbH, Kempten, Fed. Rep. of Germany

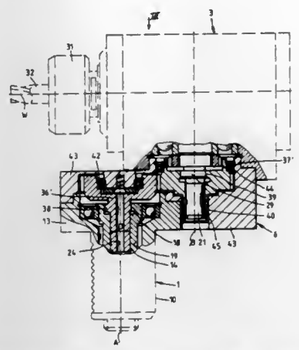
Filed Aug. 8, 1991, Ser. No. 742,619

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1990, 9012522[U]

Int. Cl.[5] B23C *7/00*

U.S. Cl. 409—230 **12 Claims**

1. In a tool holder of modular construction for driven tools having a base holder with a fixing shank adapted to fit in a receptacle of a tool machine, said base holder having an attachment flange arranged coaxially with the fixing shank, a drive shaft rotatably mounted in the attachment flange and the fixing shank, a plurality of different modules interchangeably connectable with the attachment flange, each module comprising a housing having means defining at least one rotatable receptacle and a driven shaft therefor in driving connection therewith, rotatably mounted in the housing, and coupling means on mutually facing ends of the drive shaft and the driven shaft for fixedly connecting together the drive and driven shafts, the improvement wherein the driven shaft is provided at an input end thereof facing the attachment flange with a support pin freely projecting beyond the coupling means to the respectively adjoining module, and wherein the drive shaft is provided, in the region of the attachment flange and at an end



thereof facing the module, with a coaxial support bore into which is received the support pin.

5,188,494

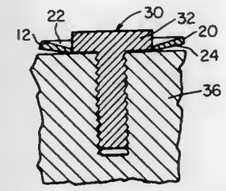
TORQUE INDICATOR DEVICE AND METHOD FOR USE WITH A THREADED FASTENER

Donald T. Hatin, Ft. Wayne, Ind., assignor to ITT Corporation, New York, N.Y.

Filed Apr. 21, 1992, Ser. No. 871,847

Int. Cl.[5] F16B *31/02*

U.S. Cl. 411—10 **14 Claims**



1. A device for indicating whether a desired torque has been applied between a threaded fastener and a corresponding component, in which said threaded fastener is threadably engaged, comprising:

an indicator member positionable between said threaded fastener and said corresponding component, said indicator member having a displacement means formed thereon for completely displacing said indicator member from between said threaded fastener and said corresponding component as said desired torque is applied, without adversely reducing said desired torque between said threaded fastener and said corresponding component.

5,188,495

FASTENER ASSEMBLY USEFUL AS DRAIN PLUG

James D. Jones, Jr., Southfield, Mich., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Feb. 28, 1992, Ser. No. 843,204

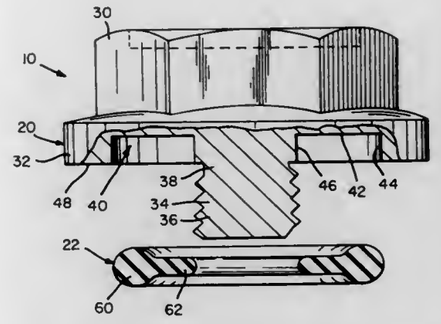
Int. Cl.[5] F16B *33/00, 43/02*

U.S. Cl. 411—369 **10 Claims**

1. A fastener assembly, to be mounted upon a workpiece having a sealing surface and a threaded aperture extending from said sealing surface and through said workpiece, comprising:

a screw having a head portion, and a shank portion integral with said head portion, said shank portion defining a longitudinal axis through said screw and being threaded for threaded engagement within said threaded aperture of said workpiece, and said head portion having an annular recess portion defined within a bearing surface portion thereof, for engaging said sealing surface of said workpiece, and surrounding said shank portion of said screw, said annular recess portion having a predetermined volume, a predetermined axial depth as defined from said bearing surface portion of said head portion to an axially recessed sealing surface of said recess portion, an outer peripheral surface, and an inner peripheral surface; and

an annular sealing ring having an annular sealing portion and an annular web portion projecting radially from said annular sealing portion, said annular sealing ring having a volume which is less than said predetermined volume of said recess portion of said head portion of said screw so as to be capable of being entirely housed within said recess portion of said head portion of said screw when said screw is fully threadedly engaged within said workpiece, said annular sealing portion and said annular web portion of said annular sealing ring having peripheral portions which are disposed in contact with said inner and outer peripheral surfaces of said annular recess portion of said head portion of said screw such that said annular sealing ring is able to be seated and retained within said annular recess portion of said head portion of said screw prior to said



fastener assembly being threadedly engaged within said workpiece, said annular sealing portion of said annular sealing ring having an axial depth which is greater than said predetermined axial depth of said annular recess portion of said head portion of said screw so as to project axially outwardly from said annular recess portion of said head portion of said screw prior to said screw being fully threadedly engaged within said workpiece as defined by said bearing surface portion of said head portion of said screw engaging said sealing surface of said workpiece, and therefore prior to said annular sealing portion of said annular sealing ring being disposed in a compressed state between said sealing surface of said workpiece and said sealing surface of said recess portion of said head portion of said screw, while said annular web portion of said annular sealing ring has an axial depth which is less than said predetermined axial depth of said recess portion of said head portion of said screw so as to define an expansion space within said recess portion of said head portion of said screw into which said annular sealing portion of said annular sealing ring can expand when said screw is fully threadedly engaged within said workpiece and said annular sealing portion of said annular sealing ring is disposed in said compressed state so as to define a seal with said sealing surface of said workpiece.

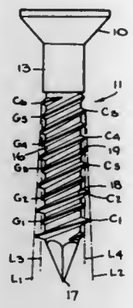
VOL 1147 ISS 4 FE 23 1993 UMI

5,188,496

SELF-TAPPING SCREW-TYPE MASONRY ANCHOR

Louis N. Giannuzzi, 59 Dingletown Rd., Greenwich, Conn. 06830

Filed Jul. 13, 1992, Ser. No. 912,478
Int. Cl.[5] F16B *25/00, 39/30*
U.S. Cl. 411—386 **10 Claims**



1. A self-tapping, screw-type masonry anchor insertable in a hole having a predetermined diameter bored in a masonry structure to secure an object thereto, said anchor being fabricated of a metal whose hardness is such that when it rubs against a masonry surface it is abraded and worn thereby, said anchor comprising:

(a) an enlarged head engageable by a torque-producing tool to rotate the anchor; and

(b) a shank integral with the head and extending therefrom, said shank including a root section having a leading end and a trailing end, and a helical cutting thread surrounding the root section formed by a series of convolutions having sharp crests running from the leading to the trailing end, said crests having diameters greater than that of the hole and decreasing progressively from the leading to the trailing end to create a reverse taper, whereby when the tool acts to rotate the anchor to cause the cutting thread to tap its way into the wall of the hole, the sharp crests of the cutting thread then experience a degree of wear and blunting that diminishes progressively from the leading end toward the trailing end to effectively erase the reverse taper to create on the shank a male thread whose crests are of substantially uniform diameter and to create on the wall of the hole a complementary internal female thread resulting in high resistance to loosening of the anchor.

5,188,497

GUIDE FOR STACK OF DISK-SHAPED ELEMENTS

Rolf Hantelmann, Cremlingen, and Hartmut Schwark, Brunswick, both of Fed. Rep. of Germany, assignors to Schmalbach-Lubeca AG, Brunswick, Fed. Rep. of Germany

PCT No. PCT/EP90/00504, § 371 Date Dec. 7, 1990, § 102(e) Date Dec. 7, 1990
PCT Filed Mar. 30, 1990, Ser. No. 634,147
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1989, 3910452
Int. Cl.[5] B65G *19/18*
U.S. Cl. 413—45 **8 Claims**

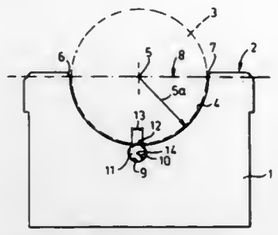
1. A transport system for a stack of like disks, the system comprising:

an elongated guide formed with

a generally semicircular groove having a radius of curvature generally corresponding to that of the disks, and

a substantially circular-section passage having a predetermined passage diameter and extending parallel to and opening partially at a fulllength slot into the groove, the slot having a predetermined transverse width substantially smaller than the passage diameter; and

a substantially circular-section elongated guide strand in and generally filling the passage and projecting therefrom through the slot into the groove, the guide strand having a diameter greater than the transverse width of the slot,



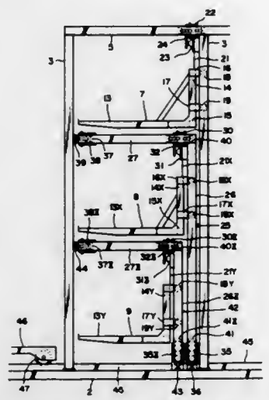
the strand being longitudinally displaceable in the passage and engaging the stack of disks standing in the groove to displace the disks along the guide.

5,188,498

CARGO DOCKING DEVICE

Takasi Matsuura, Tokyo, Japan, assignor to Matsura Kenkyusho Kabushiki Kaisha, Tokyo, Japan

Filed May 2, 1991, Ser. No. 699,507
Int. Cl.[5] E04H *6/22*
U.S. Cl. 414—331 **1 Claim**



1. A cargo docking device having a frame body having at least two lateral rows, at least two longitudinal rows, at least two stages in height, and multiple entrance sections located along a full lateral length of a front side of said frame body, said device comprising:

self-propelled trucks for transporting cargo arranged at each of said entrance sections;

tracks extending from each said entrance into each longitudinal row of said at least two longitudinal rows, on a lowest stage of said at lest two stages of said frame body;

said trucks being movable on said tracks into each longitudinal row;

a transfer frame arranged in said frame body and movable parallel to said at least two lateral rows;

a first forklift movably engaged to said frame body; first cable means for moving said first forklift up and down in a vertical direction;

said first forklift having a right fork and a left fork spaced apart to allow a truck of said self-propelled trucks to move therebetween on said tracks;

said first forklift located above said transfer frame in an upper stage of said two stages of said frame body when storing cargo;

a second forklift having a right fork and a left fork spaced apart to allow a truck of said self-propelled trucks to move therebetween on said tracks;

said second forklift movably engaged to said transfer frame; second cable means for moving said second forklift up and down in a vertical direction;

upper lateral rows and upper longitudinal rows of said at least two lateral rows and said at least two longitudinal rows located in said upper stage of said at least two stages of said frame body having first multiple spaces formed and defined by said frame body;

an identical said first forklift provided within each of said first multiple spaces;

lower lateral rows and lower longitudinal rows of said at least two lateral rows and said at least two longitudinal rows below said upper stage having second multiple spaces formed and defined by said frame body and having guide rails for moving said transfer frame;

an identical said transfer frame and said second forklift provided within all said second multiple spaces other than one space in each of said lower lateral rows to permit movement of each said transfer frame on said guide rails;

a lateral width of each of said trucks being narrower than a clearance between said right fork and said left fork of each of said first forklift and said second forklift;

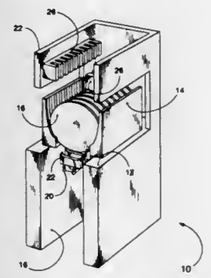
wherein each truck of said trucks is movable on said tracks between said right fork and said left fork of each of said first forklift and said second forklift to transfer cargo between said trucks and said right and left forks of said first and second forklifts.

5,188,499

METHOD AND APPARATUS FOR VARYING WAFER SPACING

Jawhorng Tarng, Garland, and John I. Lau, Dallas, both of Tex., assignors to Mactronix, Dallas, Tex.

Filed Dec. 14, 1990, Ser. No. 627,327
Int. Cl.[5] B65G *65/00*
U.S. Cl. 414—404 **4 Claims**



1. An apparatus for transporting wafers and varying the spacing therebetween, comprising:

a platform;

a first wafer carrier having a plurality of first wafer holders, each of said first wafer holders for holding one of a plurality of wafers in a substantially parallel relationship and at a first wafer spacing, each of said first wafer holders having at least two edge support members for supporting an associated wafer on an edge thereof in an upright configuration, such that a portion on a lower edge of the wafer is exposed to the platform through a bottom of said first wafer carrier;

an intermediate transport mechanism having a plurality of intermediate wafer holders, each of said intermediate wafer holders disposed beneath said platform and operable to move upward through the bottom of said first wafer carrier to contact and secure the lower exposed edge of the associated wafer to remove the wafers disposed therein at the first wafer spacing;

an intermediate retaining mechanism having a plurality of retaining wafer holders, each of said retaining wafer holders disposed above said platform and operable to receive from said intermediate transport mechanism to associated wafers at a second wafer spacing for retention thereof, said second wafer spacing different from said first wafer spacing;

a wafer spacing mechanism for urging each of the wafers and associated intermediate wafer holders from said first wafer spacing to said second wafer spacing while the wafers are disposed in said intermediate transport mechanism prior to transfer to said intermediate retaining mechanism from said intermediate transport mechanism;

a second wafer carrier having a plurality of second wafer holders, each of said second wafer holders for holding one of the plurality of wafers in a substantially parallel relationship and at said second wafer spacing, said second wafer carrier operable to be disposed on said platform, each of said second wafer holders having at least two edge support members for supporting the associated wafer on the edge thereof in an upright configuration, such that a portion on the lower edge of the wafer is exposed to the platform through the bottom of said second wafer carrier;

said intermediate transport mechanism operable to be urged upward through the bottom of said second wafer carrier when disposed on said platform and toward said intermediate retaining mechanism to remove the wafers therefrom; and

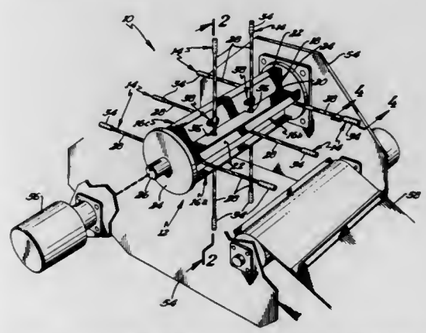
said intermediate transport mechanism operable to be moved downward with the wafers removed form said intermediate retaining mechanism such that the wafers at said second wafer spacing are disposed in said second wafer carrier, said intermediate transport mechanism moved downward through the bottom of said second wafer carrier to dispose the wafers therein at the second wafer spacing.

5,188,500

DEVICE FOR TEARING REFUSE BAGS

Russel L. Eide, Columbia Heights, Minn.; Eric P. Eide, and Russel L. Eide, II, both of Mondovi, Wis., assignors to Light Work Inc., New Underwood, S. Dak.

Filed Jun. 18, 1991, Ser. No. 717,475
Int. Cl.[5] B65G *65/04*
U.S. Cl. 414—412 **20 Claims**



1. Device for tearing bags containing material such as refuse comprising, in combination: a plurality of elongated flails; means for rotating the flails in planes and about an axis generally perpendicular to the flails; and means for delivering the bags to the flails with the bags being unsupported and having generally unrestricted passage in planes perpendicular to the

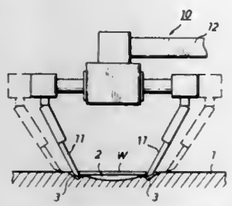
VOL
1147
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23
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axis and parallel to the planes of rotation of the flails when the flails strike the bags.

5,188,501
WAFER TRANSFER SYSTEM

Munenori Tomita, and Junichiro Takei, both of Annaka, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Apr. 26, 1991, Ser. No. 692,289
Claims priority, application Japan, Apr. 27, 1990, 2-110612
Int. Cl.[5] B65H *3/22*
U.S. Cl. 414—416 **11 Claims**

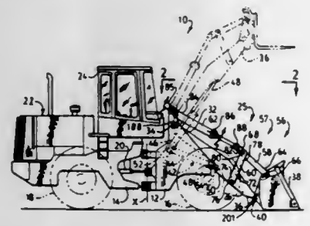


1. In a wafer transfer system including automatic robot claws and a susceptor having circularly bounded and round-bottomed concavities for receiving wafers, an improvement comprising at least three trenches made across the circumference of each concavity and arranged equiangularly about the center of each concavity; each trench being formed such that, when a wafer is set in the concavity, that portion of the edge of the wafer which is disposed in the trench defines under itself a space in communication with the portion of the space defined by the trench which is outside the circumference of the wafer; and said automatic robot claws each having as many nails as the number of the trenches of each concavity and capable of opening and closing the nails which are designed to engage with the wafer in the concavity by inserting the nail tips into the respective space defined under the edge of the wafer.

5,188,502
LINKAGE ARRANGEMENT FOR A MULTI-PURPOSE VEHICLE

Andrew J. Tonsor, East Peoria, Ill.; Wilton E. Quant, St. Augustine, Fla.; Javad Hosseini, Peoria, Ill.; Michael F. Hopkins, Aurora, Ill., and William E. Allen, Peoria, Ill., assignors to Caterpillar, Inc., Peoria, Ill.

Filed Dec. 24, 1990, Ser. No. 632,839
Int. Cl.[5] B66C *23/00*
U.S. Cl. 414—700 **25 Claims**



1. A linkage arrangement adapted for connecting a work implement to a frame of a vehicle comprising:

a pair of lift arms having a first end portion connected to the vehicle frame and a second end portion connected to the work implement, said lift arms being positioned in spaced, parallel relation to each other on opposite sides of a longitudinal centerline defined by the vehicle;

a lifting means for providing movement of the lift arms about the first end portions thereof in a generally vertical plane, said lifting means being positioned in generally vertical alignment with each of the respective lift arms;

a pair of first tilt links having a first end portion pivotally mounted to the work implement and a second end portion, said first tilt links being positioned in substantially the same vertical plane as that of the respective lift arms;

a pair of second tilt links having a first end portion pivotally connected to the respective lift arms and a second end portion pivotally mounted to the first tilt links at a location that is intermediate the first and second end portions of the first tilt links, said second tilt links being positioned in substantially the same vertical plane as that of the respective lift arms;

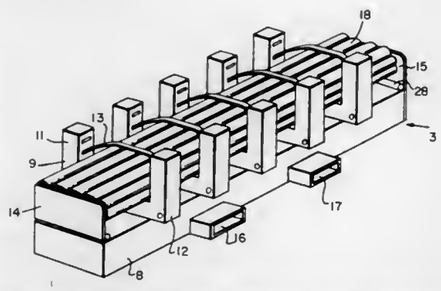
a tilting means for providing rotation of the work implement about its mounting to the lift arms, said tilting means having a pair of fluid actuated cylinders pivotally connected directly between the respective second end portions of the first tilt links and the vehicle frame and positioned in substantially the same vertical plane as that of the respective lift arms; and

electronic control means for measuring the actual angular relationship of the work implement with respect to the lift arms, calculating the variance between said actual angular relationship of the work implement to that of a predetermined angular relationship of the work implement with respect to the vehicle and controlling the tilting means to achieve and maintain said predetermined angular relationship of the work implement throughout the movement of the lift arms.

5,188,503
MAGAZINE FOR STORING AND TRANSFERRING METAL RODS

Bengt Appelberg, Lidköping, Sweden, assignor to Bas Teknik AB, Lidkoping, Sweden

Filed Jun. 11, 1991, Ser. No. 713,108
Int. Cl.[5] B65G *57/18*
U.S. Cl. 414—745.1 **9 Claims**

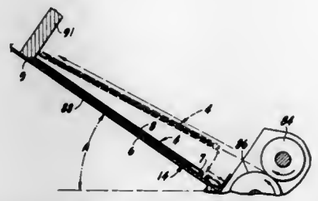


1. A magazine for storing and transporting elongated articles comprising a generally rectangular flat base having a length dimension much greater than the width, a plurality greater than two of open, rigid, U-shaped members fixed to said base along the length thereof in spaced, parallel relationship perpendicular to the length dimension, each U-shaped member including two upstanding legs of equal length joined by a rectangular horizontal member formed of top, bottom and side planar surfaces, the top surfaces of said plurality of U-shaped members collectively forming a support surface for said elongated articles, said collective support surface being spaced from said base by said side surfaces, the spaces between each U-shaped member being open in a direction facing away from said base, an end wall pivotally mounted to said base at each end portion thereof to be movable from an open level position to a closed vertical position to prevent axial sliding of said elongated elements; and means insertable in the spaces between said U-shaped members to raise and lower said elongated articles with respect to said collective support surface.

5,188,504
ENVELOPE OPENER AND LOAD SEPARATOR

Larry L. Nelson, Sacramento, Calif., assignor to Systems Mailing Research, Inc., Folsom, Calif.

Division of Ser. No. 457,652, Dec. 27, 1989, Pat. No. 5,096,360, which is a division of Ser. No. 229,880, Aug. 8, 1988, Pat. No. 4,921,388, which is a continuation of Ser. No. 882,333, Jul. 7, 1986, abandoned. This application Nov. 15, 1991, Ser. No. 792,829
Int. Cl.[5] B43M *7/02*
U.S. Cl. 414—786 **7 Claims**



1. A method for shifting a load within an envelope having a longitudinal leading edge fold, a longitudinal trailing edge fold and transverse end folds, the longitudinal trailing edge fold being severed subsequent to the load shifting in the envelope, the method comprising:

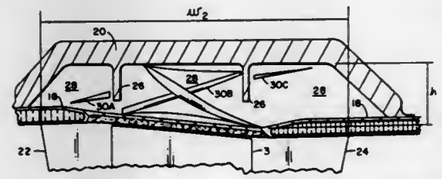
a. providing a horizontally extending and transversely inclined shelf, said shelf having a lower margin, an upper margin, and an upper surface therebetween, an upstanding ledge along said lower margin of said shelf, and a barrier wall upstanding from said shelf along said upper margin;

b. throwing the envelope with its leading edge fold substantially parallel to said barrier wall over said ledge to impact said leading edge fold against said barrier wall, the impact shifting a leading edge of the load into abutment with an inside portion of said leading edge fold and providing a space between a trailing edge of the load and an inside portion of said trailing edge fold of the envelope, the envelope thereafter dropping onto said upper surface and sliding downwardly until said trailing edge fold falls against said upstanding ledge.

5,188,505
STRUCTURAL RING MECHANISM FOR CONTAINMENT HOUSING OF TURBOFAN

Jan C. Schilling, Middletown; James W. Tucker, and Carl C. Koch, both of Cincinnati, all of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 7, 1991, Ser. No. 772,302
Int. Cl.[5] F01D *25/24*
U.S. Cl. 415—9 **10 Claims**



1. A containment system for containing failed blades and broken blade fragments of a turbofan gas turbine engine, said system comprising:

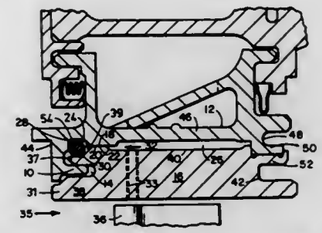
a containment housing which forms a nesting area for storing broken blade fragments; and

at least one structural ring formed integral to the containment housing for breaking large blade fragments into smaller blade fragments, said at least one structural ring forming part of the nesting area.

5,188,506
APPARATUS AND METHOD FOR PREVENTING LEAKAGE OF COOLING AIR IN A SHROUD ASSEMBLY OF A GAS TURBINE ENGINE

Clifford S. Creevy, Maineville, and Terry T. Eckert, Fairfield, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Aug. 28, 1991, Ser. No. 750,991
Int. Cl.[5] F01D *11/08*
U.S. Cl. 415—115 **8 Claims**



5. An assembly for preventing leakage of cooling air from an annular plenum region located in a gas turbine engine, said assembly comprising:

a plurality of circumferentially connected shroud supports;

a plurality of circumferentially connected shrouds which are connected to said plurality of shroud supports so as to form the annular plenum region and an annular gap, and wherein said plurality of shrouds are so connected that said annular gap extends form the annular plenum region to an annular cavity;

sealing means for preventing the leakage of cooling air form the annular plenum region to the annular cavity, said sealing means contacting the plurality of shroud supports and the plurality of shrouds;

wherein said sealing means causes the cooling air to be directed from the annular plenum region through a plurality of film holes in each of said shrouds, said film holes extending through an axially extending mid-section region of each of said shrouds which results in an interior of each of said shrouds being convectively cooled;

wherein each of said film holes have an inlet at a radially outward and radially facing surface of one of said shrouds, said outward surface forming a portion of a boundary of the annular plenum region, and an outlet at a radially inward and radially facing surface of said one of said shrouds, said inward surface being adjacent a gas path of the gas turbine engine; and

wherein each of said shrouds includes a forward region, said forward region including a radially inner portion and a radially outer portion forming an axially extending groove therebetween, said groove engaging a forward hook of one of said shroud supports, said radially outer portion including a forward facing step for accepting said sealing means, said step being radially outward of said groove.

7. A method of assembling a gas turbine engine, the gas turbine engine including a plurality of circumferentially connected shroud supports which are connected to a plurality of circumferentially connected shrouds, the plurality of shroud supports and the plurality of shrouds forming an annular plenum for accommodating cooling air, the plurality of shroud supports and the plurality of shrouds being so connected that an annular gap extends form the annular plenum to an annular cavity, each of the shrouds having a plurality of film holes extending through an axially extending mid-section region of the shroud, each of the film holes having an inlet at a radially outward and radially facing surface of the shroud which forms a portion of a boundary of the annular plenum and an outlet at a radially inward and radially facing surface of the shroud adjacent a gas path of the gas turbine engine, each of the shrouds including a forward region, said forward region in-

VOL 1147 ISS 4 FE 23 1993 UMI

cluding a radially inner portion and a radially outer portion forming an axially extending groove therebetween, said groove engaging a forward hook of one of the plurality of shroud supports, the method comprising the steps of:

forming a forward facing step in the radially outer portion of each of the shrouds, at a location radially outward of the groove, for creating a portion of the annular cavity;

filling the annular cavity with a sealing means for preventing the cooling air for leaking from the annular plenum to the annular cavity; and

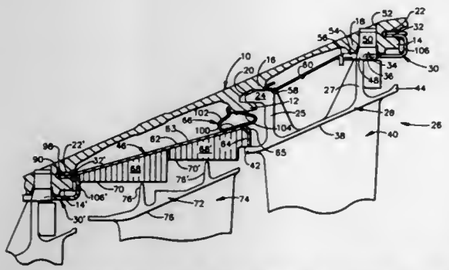
causing the cooling air to be directed form the annular plenum through the plurality of film holes for convectively cooling an interior of each of the shrouds.

5,188,507

LOW-PRESSURE TURBINE SHROUD

Derek J. Sweeney, Dublin, Ireland, assignor to General Electric Company, Cincinnati, Ohio

Filed Nov. 27, 1991, Ser. No. 799,528
Int. Cl.[5] F01D *11/08*
U.S. Cl. 415—173.1 **19 Claims**



1. A turbine shroud for incorporation in a turbine of a gas turbine engine, comprising a plurality of butted shroud segments circumferentially arrayed to form a ring, each pair of adjacent shroud segments having opposing abutments with axial and radial seals arranged therebetween, each of said shroud segments comprising a radially extending annular flange and a backing sheet, wherein said backing sheet comprises a substantially conical segment and an annular curved segment connecting the radially outer periphery of said radially extending annular flange with the portion of said substantially conical segment of said backing sheet having the maximum radius of curvature thereof, said radially extending annular flange, said substantially conical segment and said annular curved segment all forming part of a continuous sheet of metal, and each of said abutments having first slot means for receiving said axial seal and second slot means for receiving said radial seal.

5,188,508

COMPACT FAN AND IMPELLER

Peter D. Scott, Port Ewen, and Peter Bushnell, Skaneateles, both of N.Y., assignors to Comair Rotron, Inc., Saugerties, N.Y.

Filed May 9, 1991, Ser. No. 698,000
Int. Cl.[5] F01D *1/02*
U.S. Cl. 415—206 **28 Claims**

16. A centrifugal fan providing a fluid flow path, the fan comprising:

an open annular channel, having a central axis, for axial flow entry of fluid into the fan;

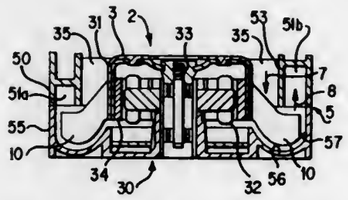
a conduit, disposed concentrically outside of the channel, providing a circumferential flow path, having an inlet coupled to the channel and an a outlet providing exit flow of fluid transverse to the axis, and having an axial dimension that increases along the circumferential flow path and an outer radial dimension that is substantially constant along the flow path;

a motor disposed concentrically inside the channel;

a cylindrical impeller hub attached to the motor and rotatable about the central axis, such that the hub forms a boundary to the annular channel; and

a plurality of blades disposed around the hub, each blade having a root region disposed proximally to the hub, where the flow has a forward axial flow component and a circumferential flow component, and a tip region disposed distally from the hub, where the flow has a reverse axial flow component and a circumferential flow component, such that the tip region passes through a portion of the conduit, the outer edge of the tip region shaped to conform to the outer radial dimension of the conduit,

wherein the tip region of each blade is also axially displaced from the root region, so that the tip region extends axially beyond the hub, in the direction of forward axial flow,



wherein the root region of each blade includes a generally triangular portion configured so that the distance from the central axis to the outer edge of such portion increases approximately linearly in the direction of forward axial flow,

wherein the channel has a surface that has a curved cross section where forward axial flow ends and reverse axial flow begins and wherein the edge of the tip region of the blade proximal thereto is shaped to conform with such surface,

wherein the each blade is disposed at an angle with respect to a normal to the surface of the hub where the blade is disposed such that the tip region trails the root region, and wherein the tip region is disposed in approximately the same plane as is the root region, and

wherein the tip region has leading and trailing faces and the blade is curved in such a way that the leading face is slightly concave.

5,188,509

WATER PUMP FOR INTERNAL COMBUSTION ENGINE

Shizuo Shimanuki, Anjo; Yoshitomo Nakai, and Masamichi Itakura, both of Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 22, 1991, Ser. No. 733,868
Claims priority, application Japan, Jul. 31, 1990, 2-81267[U]
Int. Cl.[5] F04D *29/70*
U.S. Cl. 415—208.1 **7 Claims**

1. A water pump for an internal combustion engine, comprising:

a body;

a driving shaft held rotatably in said body;

an impeller fixed on said driving shaft;

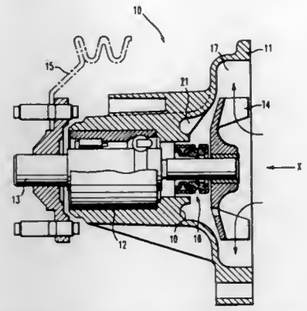
means for rotating said driving shaft such that the impeller is rotated in a rotating direction;

a volute chamber formed in said body and including a deflecting portion adapted for introducing a coolant to an outlet port;

a chamber formed in said body on a back side of said impeller and including an inner circumferential portion and an outer circumferential portion; and

at least two ribs disposed in said chamber, one of the ribs

being disposed adjacent to said deflecting portion of said volute chamber, whereby inhibiting foreign matters contained in said coolant from being left in a space formed



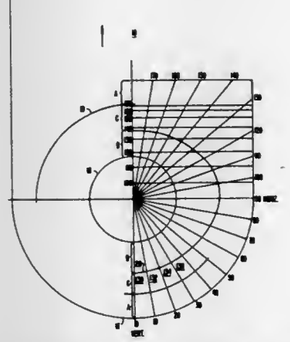
between said inner circumferential portion and said outer circumferential portion of said chamber, wherein each of said ribs is radially outwardly sloped in the rotating direction.

5,188,510

METHOD AND APPARATUS FOR ENHANCING GAS TURBO MACHINERY FLOW

Thomas R. Norris, 15 Patricia Rd., Orinda, Calif. 94563; Hanford N. Lockwood, Jr., San Mateo, and J. Alan Watts, Glendale, both of Calif., assignors to Thomas R. Norris, Orinda, Calif., a part interest

Filed Nov. 21, 1990, Ser. No. 616,027
Int. Cl.[5] F01D *9/04*
U.S. Cl. 415—208.1 **16 Claims**



1. A flow enhancement system for turbine exhaust in the combination of:

a generally tubular sectioned turbine discharge duct having a forward smaller end for receiving gas flow from a turbine and a larger discharge end for discharging said gas received from said turbine;

a central turbine shaft housing disposed approximately concentrically on the central axis of said generally tubular turbine discharge duct extending through the discharge end of said duct;

a collector housing having a front, a rear, sides, and an bottom, therebetween, and a collector outlet overlying said bottom;

a collector inlet defined in said front about said discharge end of said turbine discharge duct whereby turbine exhaust discharged from said discharge duct enters said housing;

said collector outlet defined by said front, sides, and rear, said collector outlet requiring a turn in fluid flow from said collector inlet to outlet to permit the discharge of said turbine exhaust gas from said collector housing away from said shaft housing;

said rear of collector housing having said central turbine shaft housing connected thereto for permitting a central turbine shaft housing to pass outwardly of said housing for the extraction of power from a shaft;

the flow enhancement system within said collector housing for creating at least one low pressure zone downstream of said turbine discharge duct to vent any stall gas away from said turbine discharge duct and prevent stall formation comprising in combination:

a first flow deflector mounted adjacent said bottom of said collector housing;

said flow deflector extending at least partially around said central shaft housing and having an arcuate radial cross section with a first side of said deflector forming a concave side disposed to and toward the discharge end of said turbine discharge duct and a second convex surface disposed to said collector rear;

said flow deflector defining a gas dividing lip, said lip being non-circular with respect to said shaft housing for intersecting and dividing at varying radials around said turbine discharge duct gas flowing from said discharge end to distribute gas between said collector front and said collector rear on a varying area proportion as a function of angular position with respect to said central shaft housing with differing fractions of gas flowing adjacent the exterior surface of said turbine discharge duct being diverted to the concave portion of said flow deflector at varying radials whereby said diverted gas flows adjacent said concave wall of said deflector proximate to said front of said collector housing and out said collector outlet through to a low pressure zone;

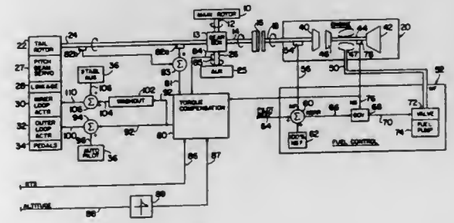
said gas dividing lip further forming a central turbine exhaust flow path between the exterior of said turbine shaft housing and said flow deflector for permitting said turbine exhaust gas to pass over said flow deflector to and toward said rear of said collector housing whereby said gas flowing over said convex side of said flow deflector is diverted to said collector housing outlet along said rear of said housing.

5,188,511

HELICOPTER ANTI-TORQUE DEVICE DIRECT PITCH CONTROL

Frederick J. Ebert, Westport, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Aug. 27, 1991, Ser. No. 750,389
Int. Cl.[5] F04D *29/18*
U.S. Cl. 416—25 **8 Claims**



1. A helicopter comprising:

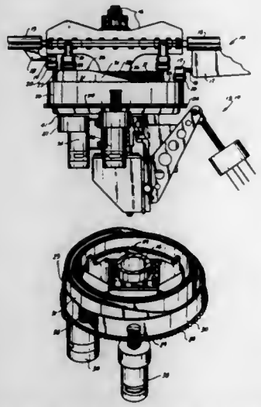
a main rotor;

a tail rotor;

VOL 1147 ISS 4 FEB 23 1993 UMI

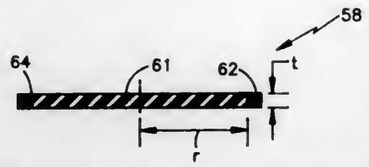
an engine for driving said main rotor and said tail rotor;
a closed loop fuel control for maintaining the rotor speed constant by providing a fuel rate signal in response to an engine speed signal; and
tail rotor pitch control means for providing a tail rotor pitch command signal indicative of the tail rotor pitch required to maintain yaw;
characterized by:
tail rotor torque indicating means for providing a tail rotor torque signal indicative of engine torque coupled to said tail rotor;
auxiliary torque indicating means for providing an auxiliary torque signal indicative of engine torque coupled to helicopter auxiliaries;
engine torque indicating means for providing an engine torque signal indicative of engine torque;
main rotor torque indicating means responsive to sad tail rotor torque signal, said auxiliary torque signal and said engine torque signal for providing a main rotor torque signal indicative of engine torque in excess of torque coupled to said tail rotor and torque coupled to said auxiliaries; and
said tail rotor pitch control means comprising means responsive to said main rotor torque signal for providing said tail rotor pitch command signal to compensate for torque coupled to said main rotor.

5,188,512
HELICOPTER BLADE PITCH CONTROL SYSTEM
William S. Thornton, 204 Ella St., Lafayette, La. 70506
Filed Jun. 10, 1991, Ser. No. 712,948
Int. Cl.[5] B63H *3/00*
U.S. Cl. 416—112 **7 Claims**



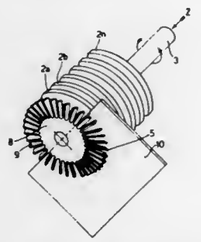
1. A helicopter blade pitch control apparatus comprising:
a) rotating hub means having an axis of rotation and supporting multiple helicopter blades;
b) a plurality of helicopter blades, each having a blade axis that falls along a radial line from the center of rotation of the hub means, each blade having a blade portion with upper and lower surfaces that can pivot about the blade axis to change blade pitch, the rotating blades and their axes defining a blade plane of rotation;
c) cylindrical runway means extends around the center of rotation including a variable elevational surface;
d) tracking means mounted on each blade for changing blade pitch and including roller means for engaging the runway means; and
e) means for changing the elevation of the variable elevation surface relative to the blade plane of rotation and comprising a pair of cylindrically shaped member, threadably connected to one another so that rotation of one member with respect to the otehr causes a change in elevation of one member with respect to the other; and
f) motor drive means for rotating one cylindrically shaped member with respect to the other during operation.

5,188,513
SNUBBER-BEARING WITH COMBINED ELASTOMER LAMINATES
Francis E. Byrnes, White Plains, N.Y., assignor to United Technologies Corporation, Hartford, Conn.
Continuation of Ser. No. 628,269, Dec. 17, 1990, abandoned.
This application Jul. 1, 1992, Ser. No. 908,770
Int. Cl.[5] B64C *27/35*
U.S. Cl. 416—134 A **12 Claims**



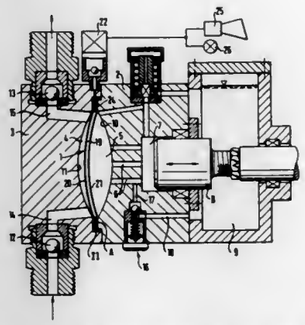
1. A flat damping laminate adapted to be compression loaded in a direction perpendicular to the flat direction, the laminate comprised to a continuous center portion formed from a first elastomer material having a first allowable shear strain, and a peripheral portion encompassing said center portion, said peripheral portion formed from a second elastomer material having a second allowable shear strain, wherein the second allowable shear strain is greater than the first allowable shear strain, wherein said center portion and said peripheral portion are joined to form a continuous laminate, and wherein the second allowable shear strain is equal to or greater than the shear strain in the peripheral portion caused by the compression load.

5,188,514
PROCESS FOR MANUFACTURING AN IMPELLER BY ELECTRICAL DISCHARGE MACHINING AND ARTICLES SO OBTAINED
Dario Inserra, Collegno; Marco Marzio, Torino, and Paolo Pellizzari, Settimo Torinese, all of Italy, assignors to Varian Associates, Inc., Palo Alto, Calif.
Filed Nov. 1, 1990, Ser. No. 608,141
Claims priority, application Italy, Nov. 3, 1989, 67938 A/89
Int. Cl.[5] F01D *5/14;* **B23H** *7/30;* **B23P** *15/02*
U.S. Cl. 416—223 A **8 Claims**



1. A rotor for a turbine pump manufactured by preparing a workpiece having at least one disk, placing said workpiece within an apparatus for electrical discharge machining in such a manner as to act as an electrode thereof, passing said at least one disk through a tool acting as the other electrode with a combined motion of rotation and translation, said tool comprising at least one plate in which radial slits are formed along and equally spaced in an arc of a semicircumference, said slits opening into a hollow area defined as a semicircular recess formed on a side of said plate, so that an impeller blade is produced for each of said slits in said tool as a result of said combined motion of rotation and translation of said at least one disk through said tool.

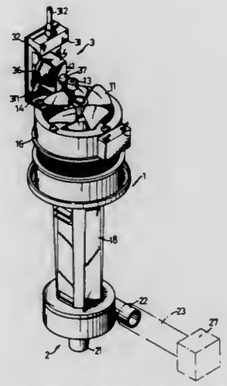
5,188,515
DIAPHRAGM FOR AN HYDRAULICALLY DRIVEN DIAPHRAGM PUMP
Waldemar Horn, Wimsheim, Fed. Rep. of Germany, assignor to Lewa Herbert Ott GmbH & Co., Fed. Rep. of Germany
Filed Jun. 3, 1991, Ser. No. 709,648
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1990, 4018464
Int. Cl.[5] F04B *21/00*
U.S. Cl. 417—63 **12 Claims**



1. A diaphragm for an hydraulically driven diaphragm pump provided with a device for indicating diaphragm rupture wherein the diaphragm clamped at the margin between pump housing and pump cover comprises at least two individual layers which are only mechanically coupled during the pressure stroke and between which is formed a diaphragm interspace which is connected with the indicator device and in which, in the event of a rupture of one of the diaphragm layers, the fluid pressure penetrates and propagates diaphragm layers (20, 21) for the mechanical coupling also during the intake stroke are connected with each other through a multiplicity of connecting areas (27, 30) which are made as small as possible with the formation of interspaced free areas or free spaces, respectively, of maximum size.

5,188,516
HYDRAULIC/PNEUMATIC PUMP
Yuh T. Huang, No. 2, Lane 177, Chungcheng N. Rd., Yungkang Hsiang, Tainan Hsien, Taiwan
Filed Sep. 20, 1991, Ser. No. 763,208
Int. Cl.[5] F04B *23/08, 23/14, 33/10*
U.S. Cl. 417—199.1 **5 Claims**

1. A hydraulic/pneumatic pump for an aquarium comprising:
a motor having a first output shaft enclosed by a first casing and a second output shaft enclosed by a second casing;
a hydraulic pump assembly including an inlet pipe, an output pipe, a water chamber in fluid communication with said inlet and outlet pipes, and a blade means drivable by said first output shaft for sucking water of the aquarium to be filtered to a filter means via said inlet pipe, said water chamber, and said outlet pipe;
a pneumatic pump assembly including an impinging member drivable by said second output shaft, a mount plate securely mounted on said casing, and a body securely mounted to said mount plate, thereby defining an air chamber therebetween, said body having a seat member separating said air chamber into a first chamber and a second chamber, an inlet opening being formed in said body for communicating said first chamber with atmosphere, an outlet opening being formed in said body for communicating said second chamber with an outlet pipe through which outlet air is flowable into water of the aquarium, an air bag being mounted to an outer side of said body around said seat member and defining a variable chamber between said seat member and said air bag, said seat member having a first recess facing said variable chamber and fluidly communicating with said first chamber via a first channel in said seat member, a first check means being provided in said first recess, such that air is only flowable from said first chamber into said variable chamber via said first channel, said seat member having a second recess facing said second chamber and fluidly communicating with said variable chamber via a second channel in said seat member, a second check means being provided in said second chamber, such that air is only flowable from said variable chamber into said second chamber via said second channel, an actuating pin being securely attached to said air bag and being supported by a support, a return spring having a first end mounted to said support and a second end mounted to said actuating pin, whereby
air is sucked into said variable chamber via said inlet opening, said first chamber, and said first channel when said impinging member disengages with said actuating pin to release said air bag by said return spring, and the intaken air in said variable chamber is exhausted to said outlet pipe via said second channel, said second chamber, and said outlet opening when said air bag is compressed upon impingement of said impinging member on said actuating pin.

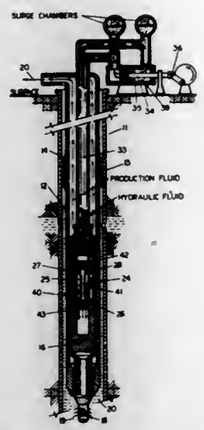


5,188,517
PUMPING SYSTEM
Charles H. Koster, 2015 Clarinda Ave., Wichita Falls, Tex. 76308-1310
Filed Feb. 5, 1992, Ser. No. 831,684
Int. Cl.[5] F04B *35/00, 35/02*
U.S. Cl. 417—393 **8 Claims**

1. Means for extracting production fluid from a well having casing means and tubing means disposed therein comprising;
1) a downhole hydraulically driven pump communicating with said production fluid
2) first conduit means for delivering said production fluid from said pump to the surface
3) hydraulic pump means on the surface connected by
4) second conduit means therefrom to said downhole hydraulic pump means whereby hydraulic fluid from said

VOL 1147 ISS 4 FE 23 1993 UMI

surface pump means delivered to said downhole pump means activates said downhole pump means and pumps said production fluid to the surface, said tubing means



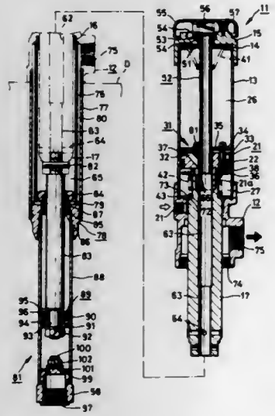
comprising said first conduit means, each of said surface pump means and said downhole pump means being a double acting cylinder connected in closed circuit by said second conduit means.

5,188,518

PUMPING DEVICE DRIVEN BY A FLUID DRIVEN RECIPROCATING ACTUATOR

Seiji Saita, Hachioji, Japan, assignor to Kabushiki Kaisha Yamada Corp., Tokyo, Japan

Filed Nov. 20, 1991, Ser. No. 794,961
Claims priority, application Japan, Nov. 30, 1990, 341030
Int. Cl.[5] F04B *9/12*
U.S. Cl. 417—403 **6 Claims**



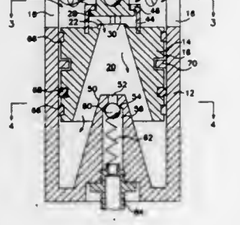
1. A pumping device comprising:
a reciprocating actuator driveable by a pressurized working fluid;
a reciprocating pump;
means for connecting said reciprocating actuator and said reciprocating pump for concerted movement;
said means for connecting including a working rod connecting a working piston of said reciprocating actuator to a pump rod of said reciprocating pump;
an exhaust tube in said reciprocating actuator;
said exhaust tube being concentrically disposed within said working rod and extending along substantially an entire length of a working cylinder;
said exhaust tube fitting through a center of a working piston of said reciprocating pump and into an inner hole in said working rod;
a pump piston in said reciprocating pump connected to said pump rod;
said pump piston having a diameter that is different from a diameter of said working piston;
a pumped substance output port;
a pumped substance elevating passage communicating between said reciprocating pump and a pumped substance output port; and
means for permitting pumped substance from said reciprocating pump to pass into said pumped substance elevating passage, whereby pumped substance is discharged from said pumping device.

5,188,519

SATURATED FLUID PUMPING APPARATUS

Ivars S. Spulgis, Columbus, Ohio, assignor to CVI Incorporated, Columbus, Ohio

Filed Jul. 11, 1991, Ser. No. 728,461
Int. Cl.[5] F04B *7/00*
U.S. Cl. 417—511 **11 Claims**



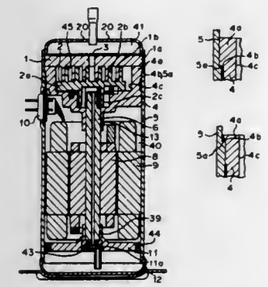
1. A pump for saturated and near-saturated liquids, comprising:
cylinder means having liquid inlet means and liquid outlet means, piston means reciprocally movable within the cylinder means and generally intermediate the liquid inlet means and liquid outlet means, the piston means having a liquid flow conduit therethrough generally co-axial with the cylinder, the liquid flow conduit having an inlet end in liquid communication with the cylinder means liquid inlet means and an outlet end in liquid communication with the cylinder means liquid outlet means,
piston rod means reciprocally movable generally along the axis of the cylinder means in a direction toward the cylinder means liquid outlet means and in a reciprocal direction, and
inlet valve means operatively associated with and intermediate the piston rod means and the piston means liquid flow conduit inlet end comprising a valve disk freely movable on one end of the piston rod means, the valve disk alternately opening and closing the inlet end to liquid flow, the inlet valve closing said liquid flow conduit to liquid flow when the piston rod means moves said piston means in the direction toward the cylinder means liquid outlet means, and the inlet valve opening said conduit to liquid flow when the piston rod means is moved in the reciprocal direction.

5,188,520

SCROLL TYPE COMPRESSOR WITH FRAMES SUPPORTING THE CRANKSHAFT

Toshiyuki Nakamura; Takashi Yamamoto; Hiroshi Ogawa; Noribide Kobayashi; Fumiaki Sano; Masahiko Oide; Katsuyoshi Wada, and Minoru Ishii, all of Shizuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1991, Ser. No. 721,140
Claims priority, application Japan, Jul. 13, 1990, 2-186181
Int. Cl.[5] F04C *18/04*
U.S. Cl. 418—55.1 **2 Claims**



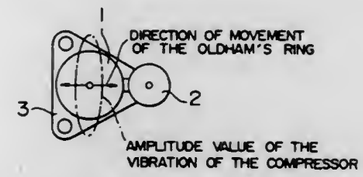
1. A scroll type compressor comprising:
a fixed scroll and an orbiting scroll which have respective base plates provided with wraps thereon, the wraps being combined to form a compression chamber therebetween;
a frame for fixedly supporting the fixed scroll, the frame having a bearing at a central portion;
a crankshaft supported by the frame bearing to be rotatable, and having an electric motor rotor to give torque to the orbiting scroll;
a subframe having a central portion provided with a bearing for supporting a lower end of the crankshaft;
a center shell having a terminal member and an electric motor stator, having an inner peripheral surface formed with a stepped portion to be engaged with a stepped portion formed on an outer peripheral surface of the frame, the center shell having the frame fixed thereto by shrinkage fit at at least one of a location above the stepped portion and a location below the stepped portion of the center shell, such that a radial force is provided which urges the outer peripheral surface of the frame and the inner peripheral surface of the shell against each other at the shrinkage fit, and wherein said shrinkage fit is immediately adjacent said stepped portion such that the shrinkage fit is provided at least one of immediately above and immediately below the stepped portion of the center shell, the center shell also having the subframe fixed to a lower end thereof; and
concentric assemblage jig mounting portions formed in the frame and the subframe, respectively, to be concentric with the bearings.

5,188,521

SCROLL COMPRESSOR WITH REDUCED VIBRATION RESULTING FROM THE OLDHAM'S RING

Sadao Kawahara, Otsu; Michio Yamamura, Kusatsu; Jiro Yuda, Ikoma; Yoshinori Kojima, Kusatsu; Shuichi Yamamoto, Otsu; Manabu Sakai, Toyonaka; Shigeru Muramatsu, and Osamu Aiba, both of Kusatsu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP90/01422, § 371 Date Sep. 3, 1991, § 102(e) Date Sep. 3, 1991, PCT Pub. No. WO91/06774, PCT Pub. Date May 16, 1991
PCT Filed Nov. 2, 1990, Ser. No. 688,580
Claims priority, application Japan, Nov. 2, 1989, 1-287020
Int. Cl.[5] F04C *18/04, 29/00*
U.S. Cl. 418—55.3 **1 Claim**



1. A scroll compressor, comprising:
a closed vessel;
a motor disposed in said vessel;
a compression mechanism disposed in said vessel and driven by said motor, said compression mechanism including a fixed scroll, an orbital scroll arranged to mesh with said fixed scroll so as to form a plurality of compression spaces, an Oldham's ring reciprocating and preventing rotation of said orbital scroll, and a crank shaft transmitting a rotational driving force from said motor to said orbital scroll;
an accumulator disposed outside of said closed vessel and connected to said closed vessel through a piping means; and
a balance weight means, driven to rotate by said motor, at a radius from the center of rotation of said crank shaft for causing a resultant force of an unbalanced inertial force of said Oldham's ring and an unbalanced inertial force of said balance weight means driven by said motor to be transmitted to said vessel, in a direction perpendicular to or almost perpendicular to a connecting direction of said vessel and said accumulator via said piping means.

5,188,522

VANE PUMP WITH A THROTTLING GROOVE IN THE ROTOR

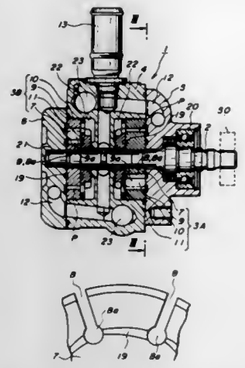
Masahiko Hara, Kanagawa, Japan, assignor to Atsugi Unisia Corporation, Atsugi, Japan

Filed Oct. 23, 1991, Ser. No. 781,399
Claims priority, application Japan, Oct. 25, 1990, 2-111073[U]
Int. Cl.[5] F04C *2/00, 2/30, 2/32*
U.S. Cl. 418—77 **19 Claims**

1. A vane pump, comprising:
body means defining a space which has mutually opposed surfaces;
a cam ring tightly disposed in said space;
a rotor having a plurality of radially extending vane mounting grooves, said rotor being rotatably disposed in said cam ring having both sides thereof slidably contacting with said opposed surfaces of the body means, said rotor being constructed of a material whose hardness is higher than that of said body means; and
a plurality of vanes slidably disposed in said vane mounting grooves in such a manner that heads of the vanes slidably contact with an inner surface of said cam ring,
wherein said rotor is formed at at least one side thereof with a throttle groove to which bottom portions of said vane

VOL 1147 ISS 4 FE 23 1993 UMI

mounting grooves are exposed, and wherein said throttle groove includes a plurality of throttled groove portions



each connecting bottom portions of neighboring vane mounting grooves, each throttled groove portion tapering from an enlarged end to a smaller end.

5,188,523

INTERNAL GEAR MACHINE HAVING A FILLER PIECE WITH PIVOT PINS AND A SEPARATING GAP

Jacek Zatrieb, Eggingen, and Clemens Dörflinger, Birkendorf, both of Fed. Rep. of Germany, assignors to Bucher GmbH, Maschinenfabrik, Klettgau, Fed. Rep. of Germany

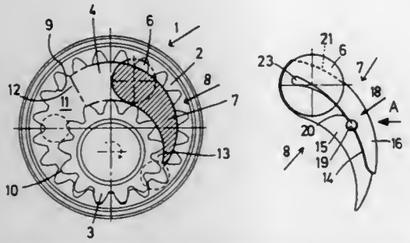
PCT No. PCT/EP91/00312, § 371 Date Oct. 18, 1991, § 102(e) Date Oct. 18, 1991, PCT Pub. No. WO91/12430, PCT Pub. Date Aug. 22, 1991

PCT Filed Feb. 19, 1991, Ser. No. 768,229

Claims priority, application Switzerland, Feb. 19, 1990, CH522/90

Int. Cl.[5] F01C *21/02*

U.S. Cl. 418—126 **20 Claims**



1. An internal gear machine comprising a ring gear having internal teeth, a pinion gear disposed within said ring gear to define a sickle-shaped chamber therebetween having a low pressure suction end and a high pressure discharge end and having external teeth meshing with said internal teeth of said ring gear, a substantially sickle-shaped sealing member disposed in said chamber, said sealing member comprising a one-piece sickle-shaped filler member and at least pivot pin projecting axially from a side thereof at an end of said sealing member directed toward the low pressure end of said chamber, said filler member having a substantially circumferentially disposed gap therein extending from a portion of the filler member directed towards said high pressure end of the chamber to define an inner leg and an outer leg, said inner and outer legs contacting at least partially the crests of the gear teeth of said pinion and ring gears respectively, said gap extending substantially to an end of said filler member directed toward said low pressure end at least into that portion of the filler member within an axial projection of the periphery of said pivot pin.

5,188,524

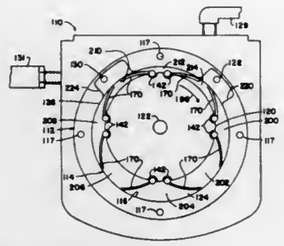
PIVOTING VANE ROTARY COMPRESSOR

Stuart Bassine, 1800 Marina Cir., N. Fort Myers, Fla. 33903

Filed Mar. 27, 1992, Ser. No. 858,900

Int. Cl.[5] F04C *18/44*

U.S. Cl. 418—152 **7 Claims**



I. A rotary compressor comprising:

a housing having a generally cylindrical chamber;

a generally cylindrical rotor mounted eccentrically in said chamber to define about said rotor a main chamber region, which narrows to a constricted chamber region; said rotor including a circumferential surface having a generally uniform radius and a plurality of axially parallel and circumferentially spaced apart channels formed therein;

an intake port formed in said housing for introducing air into said main chamber region;

an exhaust port formed in said housing for discharging air from said constricted chamber region;

at least one pair of vane elements, each vane element being pivotably engaged with a respective one of said channels and extending therefrom into said chamber to cover at least a portion of said circumferential surface of said rotor; said vane elements of each said pair including respective arcuate portions that extend in generally opposite directions from respective channels, about said rotor; said constricted region having a sufficient width to permit said vane elements to pivot away from said rotor; and

means for rotatably driving said rotor in a single direction such that each said vane element releasably engages the wall of said chamber and said vane elements define compartments that transmit air from said main chamber region to said constricted chamber region, whereby said air is compressed and discharged through said exhaust port,

each vane element including a distal portion that is spaced apart from said circumferential surface of said rotor during the entire rotation of said rotor.

5,188,525

FUEL CONVERTER FOR GASOLINE POWERED LANTERNS

Marvin Porter, San Antonio, Tex., assignor to Texas Trunk Company, Inc., San Antonio, Tex.

Filed Jan. 2, 1992, Ser. No. 816,769

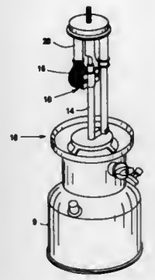
Int. Cl.[5] F21H *1/00*

U.S. Cl. 431—107 **1 Claim**

1. In a gasoline fueled lantern having a base defining a fuel reservoir, pump means for producing a super ambient pressure in said reservoir, a tubular fuel generator extending upwardly from said fuel reservoir and having a nozzle therein for effecting vaporization of fuel forced upwardly thorough said generator, an expansion chamber communicating with said nozzle and a source of air, and mantles mounted in depending relation to said expansion chamber for effecting the burning of said mixture of gasoline vapor and air produced in said expansion chamber, the improvement comprising:

means for heating the vapor passing upwardly through said tubular fuel generator by the heat generated by said burning of gasoline vapor in said mantle;

said heating means comprising a pair of identical metallic plates each having a semi-cylindrical medial portion, whereby said plates are mountable on said tubular vaporizer with said semi-cylindrical portions disposed in surrounding relation thereto and the end portions of said



plates being disposed in juxtaposed adjacent relation to said mantles to be heated thereby;

means for securing the end portions of said plates together to effect a clamping engagement of said semi-cylindrical portions against said tubular fuel generator;

thereby permitting the burning of non-leaded regular gasoline in said lantern with minimal deposits of residue in said nozzle.

5,188,526

JET BURNER CONSTRUCTION, HEATING APPARATUS UTILIZING THE JET BURNER CONSTRUCTION AND METHOD OF MAKING THE SAME

Fred Riehl, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

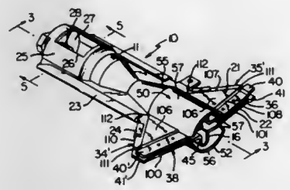
Division of Ser. No. 710,658, Jun. 5, 1991, Pat. No. 5,131,839.

This application May 8, 1992, Ser. No. 880,725

The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.

Int. Cl.[5] F23D *14/58*

U.S. Cl. 431—286 **18 Claims**



1. In a method of making a jet burner construction comprising a burner body means having a chamber means therein and having an inlet means leading to said chamber means for directing fuel from a fuel source therein and an outlet means leading from said chamber means and defining an outlet opening means through which said fuel is adapted to issue from said chamber means to burn externally to said burner body means, said burner body means having wing-like extensions respectively disposed on opposite sides thereof for respectively interconnecting with adjacent wing-like extensions of adjacent burner constructions, said wing-like extensions each being separated from the other wing-like extension by said burner body means and having a side edge means and an elongated outlet slot means extending along said side edge means thereof and interconnecting with said outlet opening means and through which fuel is adapted to issue so as to burn external to said wing-like extensions, each said slot means having a certain height throughout the elongated length thereof, each said wing-like extension having a chamber therein that interconnects with said chamber means of said body means and is adapted to feed fuel from said chamber means to the respective said slot means thereof along a major portion of said elongated length thereof, the improvement comprising the step of forming each said chamber to have a height throughout substantially the entire area thereof that is greater than said certain height of its respective slot means.

5,188,527

METHOD OF AND SYSTEM FOR CLEANING THE SURFACE OF FURNACE ROLLERS OF A ROLLER HEARTH FURNACE

Sahibzada S. R. Laiquddin, Dorsten, and Lenzel Franz J., Neuss, both of Fed. Rep. of Germany, assignors to Ruhrgas Aktiengesellschaft, Essen, Fed. Rep. of Germany

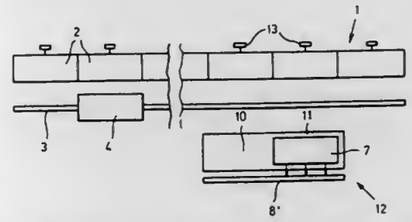
PCT No. PCT/EP88/00925, § 371 Date Jul. 19, 1990, § 102(e) Date Jul. 19, 1990, PCT Pub. No. WO89/03967, PCT Pub. Date May 5, 1989

PCT Filed Oct. 15, 1988, Ser. No. 457,818

Claims priority, application Fed. Rep. of Germany, Oct. 23, 1987, 3735949

Int. Cl.[5] F27D *1/16*

U.S. Cl. 432—3 **10 Claims**



4. In a roller-hearth furnace having a plurality of hearth rollers and defining a working temperature and a centerline, a system for cleaning the surfaces of the hearth rollers, the system comprising:

a plurality of detachably coupled furnace sections, each of the furnace sections having at least one hearth roller,

at least one rail substantially adjacent to the roller-hearth furnace and running substantially parallel to the centerline of the roller-hearth furnace, and

a car configured to carry at least one furnace section on the rail.

5,188,528

METHOD AND APPARATUS FOR LINING THE INTERIOR SURFACE OF A HIGH TEMPERATURE CHAMBER WITH HEAT INSULATION MATERIAL

James P. Rast, 9510 Herring Hill Rd., Millington, Tenn. 38053

Division of Ser. No. 496,004, Mar. 20, 1990, Pat. No. 5,067,420.

This application Nov. 5, 1991, Ser. No. 788,126

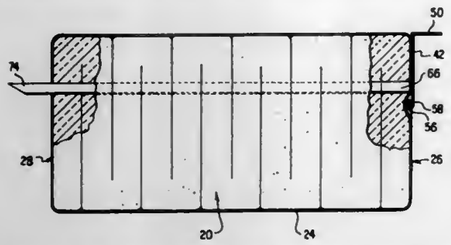
Int. Cl.[5] F27D *1/00*

U.S. Cl. 432—248 **9 Claims**

1. The method of lining the interior surface of a high temperature chamber with heat insulation material, comprising providing a plurality of blankets of heat insulation material each of which is folded upon itself to form a body means of pleated configuration having opposite sides and being surrounded by a retaining means to retain the body in its pleated configuration, providing a plurality of hanger means each of which includes a support portion having elongated prong means extending therefrom, inserting the prong means of each of said hanger means through one of said body means to form a plurality of modules each of which has the support portion of the associated hanger means disposed adjacent one of said opposite sides

VOL 1147 ISS 4 FE 23 1993 UMI

of the associated body means with the outer end portion of the prong means extending outwardly beyond the other of said opposite sides of the associated body means, supporting a plurality of said modules from said interior surface by supporting the hanger means of the modules on said surface with pairs of adjacent modules having certain ones of said opposite sides



in abutting relationship and the outer end portion of the prong means of one of a pair of adjacent modules directly engaging the support portion of the other one of said pair of modules to stabilize the adjacent modules and ensure that they are accurately located and maintained in operative position to thereby line said interior surface.

5,188,529

DEVICE FOR STATIC FIXATION OF THE JAW RELATION

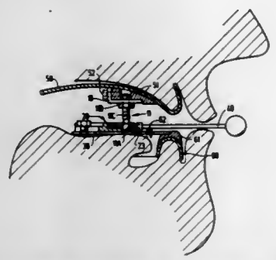
Stefan Lüth, Munich, Fed. Rep. of Germany, assignor to Girrbach Dental GmbH, Pforzheim, Fed. Rep. of Germany

Filed May 10, 1991, Ser. No. 698,272

Claims priority, application Fed. Rep. of Germany, May 10, 1990, 4014975

Int. Cl.[5] A61C *19/04*

U.S. Cl. 433—68 **10 Claims**



1. In a recording instrument set for static fixation of the relation between the upper and lower jaws of a patient in intraoral registration, the set comprising a pin holder with a vertically adjustable stylus for placement in a defined position relative to one jaw, a writing plate for placement in a defined position relative to the other jaw so that the stylus can contact the writing plate, and an alignment clamp mounted on the writing plate, the improvement comprising first locking means disposed for locking said stylus in a defined vertical position relative to said pin holder, and second locking means disposed for locking said stylus in said alignment clamp in a stationary position associated with an ascertained jaw relation, and wherein said alignment clamp is displaceable relative to said writing plate, is fixable in a selected position relative to said writing plate, and has an opening for receiving said stylus so that when said stylus is locked in said alignment clamp, said stylus contacts said writing plate at a point corresponding to the ascertained jaw relation.

5,188,530

PROCESS AND DEVICE FOR PREVENTING MALFUNCTION OF A DENTAL EVACUATION SYSTEM

Werner Trawoger, Höttinger Au 60, A-6020 Innsbruck, and Bruno Pregenzer, Huebe 30, A-6173 Oberperfuss, both of Austria

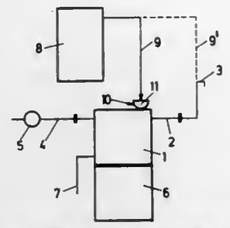
PCT No. PCT/AT89/00073, § 371 Date Feb. 25, 1991, § 102(e) Date Feb. 25, 1991, PCT Pub. No. WO90/01909, PCT Pub. Date Mar. 8, 1990

PCT Filed Aug. 23, 1989, Ser. No. 635,119

Claims priority, application Austria, Aug. 25, 1988, 2096/88

Int. Cl.[5] A61C *17/06*

U.S. Cl. 433—92 **14 Claims**



1. A process for preventing functional breakdowns in a dental suction unit by preventing the build-up of foam in the suction unit during dental treatment, comprising:

a) inserting a suction nozzle of a suction line into a patient's mouth whereby said suction line has a first and a second section, wherein said suction nozzle is in said first section,

b) creating a negative pressure in said suction line through the attachment o said second section to a suction pump,

c) aspirating the contents of a patient's mouth into said first section whereby said contents contain a mixture of solids and liquid material,

d) routing said mixture from said first section to a separator dividing said first and second sections of said suction line, whereby said separator comprises an air separating chamber and a mixture separating chamber,

e) separating air from said mixture through said air separating chamber,

f) collecting said mixture in said mixture separating chamber,

g) adding at definite intervals to said mixture aspirated through said first section of said suction line, a free-flowing additive containing an anti-foaming agent,

h) repeating steps a)–f) without risk of unit malfunction due to the accumulation of substances in the unit.

5,188,531

METHOD AND EQUIPMENT FOR TREATMENT OF PERIODONTAL DISEASE

Lloyd Von Sutfin, R.R. #2, Box 63C, Norwich, Vt. 05055

Continuation of Ser. No. 91,969, Sep. 2, 1987, abandoned, which is a continuation-in-part of Ser. No. 906,242, Sep. 12, 1986, abandoned. This application Apr. 1, 1992, Ser. No. 863,342

Int. Cl.[5] A61C *1/07, 3/03, 3/00, 5/00*

U.S. Cl. 433—188 **35 Claims**

1. In a vibrational dental instrument for the treatment of periodontal disease comprising a prong disposed at an obtuse angle β with respect to a shank and adapted to provide sufficient energy to fracture and remove disease affected tissue surrounding a tooth, the improvement comprising said prong being substantially conical in shape and tapering into a blunt pointed tip and said prong having at least one longitudinal channel on an exterior surface thereof for conducting coolant



along the surface from a coolant tube in the direction of said blunt pointed tip.

5,188,532

VAPORIZING TARTAR AND CALCULUS AROUND A TOOTH ROOT

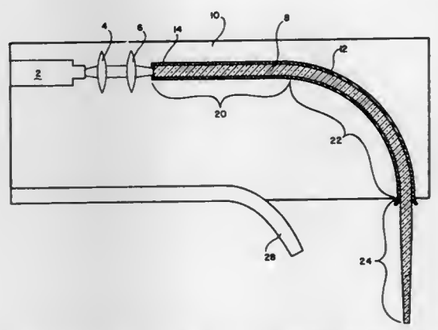
Guy Levy, Tustin, Calif., assignor to Endo Technic Corporation, San Clemente, Calif.

Continuation of Ser. No. 784,979, Oct. 30, 1991, abandoned, which is a division of Ser. No. 615,789, Nov. 20, 1990, Pat. No. 5,092,773, which is a continuation-in-part of Ser. No. 299,472, Jan. 19, 1989, Pat. No. 5,020,995, and a continuation-in-part of Ser. No. 351,203, May 15, 1989, which is a continuation-in-part of Ser. No. 335,245, Apr. 10, 1989, abandoned. This application Mar. 11, 1992, Ser. No. 850,240

Claims priority, application France, Dec. 21, 1988, 88 17549

Int. Cl.[5] A61C *15/00*

U.S. Cl. 433—216 **2 Claims**



1. A method of vaporizing tartar or calculus around a tooth root comprising: producing laser radiation at a wavelength which is absorbed more strongly by hydroxyapatite than by water; applying the radiation to the location of tartar or calculus adjacent the tooth root for a time sufficient to vaporize the tartar and calculus; and, simultaneously with said step of applying, directing a stream of cooling liquid at the tartar or calculus in the region of application of the laser beam for preventing charring of tooth tissue by the radiation.

5,188,533

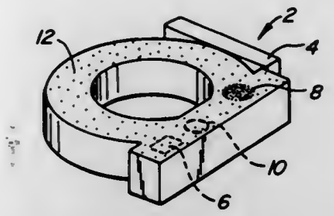
SPEECH SYNTHESIZING INDICIA FOR INTERACTIVE LEARNING

Michael C. Wood, 746 Augusta Dr., Morage, Calif. 94556

Continuation-in-part of Ser. No. 531,824, Jun. 1, 1990, abandoned. This application Sep. 5, 1991, Ser. No. 754,989

Int. Cl.[5] G09B *5/00*

U.S. Cl. 434—169 **16 Claims**



1. An article of manufacture comprising:

an indicia bearing unit having a three-dimensional configuration representing the language symbol of a phoneme, the indicia bearing unit comprising:

a touch-sensitive surface switch;

a voice synthesis chip electrically coupled to the touch sensitive surface switch, the chip activated by said switch and configured to produce a preselected electrical signal corresponding to the alphabetic letter represented by the indicia bearing unit;

an amplifier electrically coupled to the chip and configured to receive the preselected electrical signal and generate a frequency signal; and

a speaker coupled to the amplifier and adapted to receive the frequency signal and convert the frequency signal into audible sounds.

5,188,534

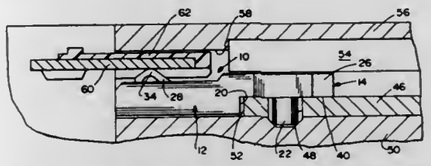
SURFACE MOUNT CONNECTOR WITH CLIP ENGAGING CONTACTS

Dominique Bertho, Himiko Court, Singapore; Peter Roche, Corbally Limerick, and Paddy McNamara, Tipperary, both of Ireland, assignors to Molex Incorporated, Lisle, Ill.

Filed Mar. 19, 1992, Ser. No. 854,508

Int. Cl.[5] H01R *9/09*

U.S. Cl. 439—79 **5 Claims**



1. A low profile surface mount electrical connector to electrically connect conductive elements on a planar surface of a first electrical component in close proximity with and parallel to a planar surface of a second electrical component, comprising:

an insulating housing having top and bottom surfaces and means for mounting a spring contact from the bottom surface of said housing including a plurality of grooves projecting into the housing from the bottom housing surface and a plurality of slots projecting into the housing from the top housing surface and communicating with said grooves where said grooves and slots are located in a plane perpendicular to said top and bottom housing surfaces, and means for mounting the housing on the first component planar surface with the top and bottom hous-

VOL 1147 ISS 4 FE 23 1993 UMI

ing surfaces parallel to the first component planar surface; and

a generally elongated spring contact mounted in the spring contact mounting means of the housing having the plane of the spring contact generally perpendicular to said first component planar surface and including a contact pad at one end exposed at the bottom of the housing for engaging a conductive element on the first component planar surface, a mounting post directed toward the top surface of said housing into a mounting aperture to which the mounting post is secured, and a contact cusp at an opposite end projecting from the top of the housing for engagement by a conductive element on the second component planar surface.

5,188,535

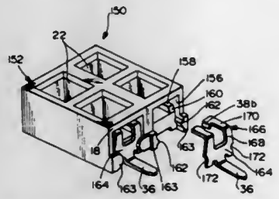
LOW PROFILE ELECTRICAL CONNECTOR

Dominique Bertho, Himiko Ct., Singapore; Jerry D. Kachlic, Milpitas, Calif., and Yap Y. Teck, Cashew Heights, Singapore, assignors to Molex Incorporated, Lisle, Ill.

Continuation-in-part of Ser. No. 793,771, Nov. 18, 1991, Pat. No. 5,145,386. This application May 14, 1992, Ser. No. 882,782

Int. Cl.[5] H01R *9/09*

U.S. Cl. 439—83 **19 Claims**



1. In an electrical connector which includes a dielectric housing having a plurality of terminal-receiving passages, each defining a terminal-insertion axis for receiving a mating male terminal member, and a plurality of stamped and formed sheet metal female contact members, each having a contact end disposed in the passage and a tail portion for securing to a circuit element, the improvement comprising:

said housing having top and bottom walls, with the terminal-receiving passages extending in a direction therebetween, and with a cavity in a side wall of the housing communicating with each passage; and

said contact end of each contact member being inserted into one of the cavities and being generally planar and having a terminal-receiving slot, with the plane of the contact end being disposed generally transverse to its respective terminal-insertion axis, each said contact member further including an intermediate portion between said contact end and said tail portion, said intermediate portion includes a pair of first spaced apart arms disposed at an angle to the contact end.

5,188,536

SPACE-SAVING INSULATION DISPLACEMENT TYPE INTERCONNECT DEVICE FOR ELECTRICALLY COUPLING A RIBBON CONNECTOR TO A PRINTED CIRCUIT BOARD

James J. Ganthier, and Kirk D. Ulery, both of Spring, Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Mar. 16, 1992, Ser. No. 851,839

Int. Cl.[5] H01R *9/09*

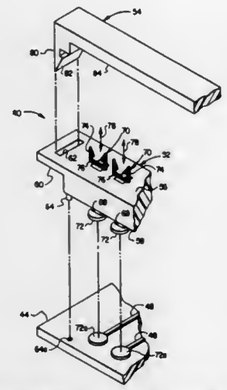
U.S. Cl. 439—83 **15 Claims**

1. A surface mountable, insulation displacement type connector device for electrically coupling a spaced series of contact pads formed on a side surface of a printed circuit board to an end portion of a connector ribbon having an outer insulation portion in which a spaced series of wires are embedded and extend parallel to the length of said outer insulation portion, said connector device comprising:

a base portion having a first side surface positionable over said contact pads, a second side surface, and a spaced series of openings extending transversely through said base portion from said first side surface to said second side surface;

a spaced series of electrically conductive connector pin members each having:

a longitudinally intermediate body portion received in one of said base portion openings, said longitudinally intermediate body portions of said connector pin members being slightly longer than the distance between said first and second side surfaces of said base portion and being slidably but nonrotatably received in said base portion openings,



a transversely enlarged connector section formed on one end of the pin body portion, projecting outwardly beyond said first side surface of said base portion, and being engageable with and conductively bondable to one of said contact pads, and

a bifurcated, transversely enlarged barbed portion formed on the opposite end of the pin body portion, projecting outwardly beyond said second side surface of said base portion, and adapted to pierce the insulation portion of the connector ribbon and conductively engage one of the wires embedded therein; and

clamping means for inwardly clamping the connecting ribbon end portion inwardly onto said bifurcated, barbed end portions of said connector pin members in a manner causing them to pierce the outer insulation portion of said connector ribbon and conductively engage end portions of the wires embedded therein.

5,188,537

SLIPPAGE PREVENTER FOR AN IGNITION TERMINAL CABLE

Hiroyuki Itoh, Mie, Japan, Yuji Kawai, deceased, late of Mie, Japan by Fumio Kawai, legal representative*, assignors to Sumitomo Wiring Systems, Ltd., Mie, Japan

Filed May 27, 1992, Ser. No. 889,468

Claims priority, application Japan, May 27, 1991, 47828/91[U]

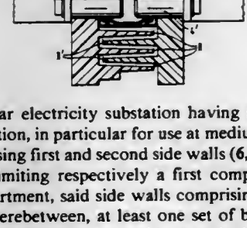
Int. Cl.[5] H01R *13/44*

U.S. Cl. 439—127 **1 Claim**

1. A slippage preventer for an ignition cable terminal which serves to couple a reverse L-shaped grommet attached to an end of said ignition cable to an ignition tower of an internal combustion engine, comprising:

a holder cap for covering a head of said grommet;

a holder body having an opening into which said grommet is inserted and for covering a lower hanging portion, said holder cap being rotatably supported on said holder body; and



locking means provided on said holder body for engaging with a fitting portion provided on said ignition tower so that said holder body is secured to said ignition tower.

5,188,538

ELECTRICAL CONNECTION, IN PARTICULAR FOR A MODULAR, MEDIUM-TENSION ELECTRICITY SUBSTATION

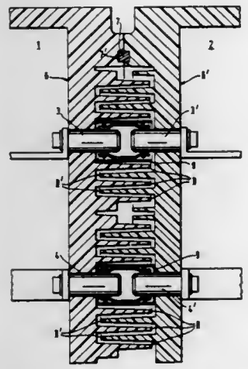
Bernard Joveux-Bouillon, Bage Le Chatel, and Jean Maineult, Ceyzeriat, both of France, assignors to GEC Alsthom SA, Paris, France

Filed Jan. 31, 1992, Ser. No. 829,775

Claims priority, application France, Feb. 1, 1991, 91 01154

Int. Cl.[5] H01R *13/52*

U.S. Cl. 439—271 **7 Claims**



1. A modular electricity substation having a casing under gaseous insulation, in particular for use at medium tension, said casing comprising first and second side walls (6, 6') facing each other and delimiting respectively a first compartment and a second compartment, said side walls comprising means forming a space therebetween, at least one set of busbars for said substation, said at least one set of busbars including a pair of contacts passing through respective side walls, and an electrical link member within said space and connecting the ends of respective busbar contacts and forming an electrical connection between said at least one set of busbars, and wherein the side walls (6, 6') of said casing are made of insulating material, and a peripheral sealing gasket (7) connecting said side walls together at the periphery of the side walls and guaranteeing said space between the side walls is filled with dry air, thereby forming an insulating arrangement protecting said electrical connection between said at least one set of busbars.

5,188,539

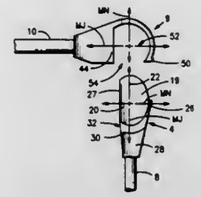
QUICK ATTACH/DETACH CONNECTOR

Robert S. Langdon, Bedford, N.H., assignor to Langdon Enterprises, Inc., Bedford, N.H.

Continuation-in-part of Ser. No. 774,585, Oct. 10, 1991, abandoned. This application Mar. 26, 1992, Ser. No. 857,770

Int. Cl.[5] H01R *4/50*

U.S. Cl. 439—341 **24 Claims**



1. A connector comprising mating male and female connector members for releasably interconnecting transmission means supported by each said connector member;

said female connector member defining a cavity, of generally oval cross-section, defining a major axis, a minor axis and a longitudinal axis, having an opening thereto remote from said major axis and said longitudinal axis, the oval cross-section subtending an angle in excess of 180° about said longitudinal axis; and

said male connector member defining a body portion, of generally oval cross-section, defining a major axis, a minor axis and a longitudinal axis, shaped to intimately fit within said generally oval cavity of said female connector member, the opening being narrower than the dimension of the body portion along its major axis;

wherein when said body portion of said male connector member is passed through the opening of the female connector member into said generally oval cavity and rotated so that their major axes are substantially aligned with one another, said male connector member is resiliently retained by the female connector member with said transmission means of said female and male connector members in engagement with one another thereby forming said releasably interconnection between said transmission means of said female and male connector members.

5,188,540

HEARING AID HAVING ELECTRICAL CONTACT MEANS ARRANGED IN A BATTERY COMPARTMENT

Christof Haertl, Neunkirchen, and Jochen Mueller, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 17, 1992, Ser. No. 852,950

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1991, 4109306

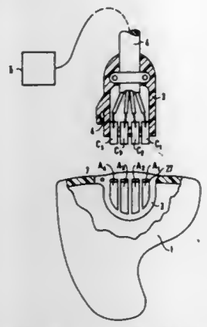
Int. Cl.[5] H01R *13/00*

U.S. Cl. 439—500 **8 Claims**

1. A hearing aid comprising:

a plurality of electrical contact means arranged inside a battery compartment for two-pole electrical contact with a battery and to hearing aid component parts, one of said plurality of contact means being positioned in said compartment for making a mechanical and electrical connection with an input, insertable in said compartment, of an external programming device, said plurality of contact means being insulated from one another in the battery

compartment in a region of a surface lying opposite a battery pole; and



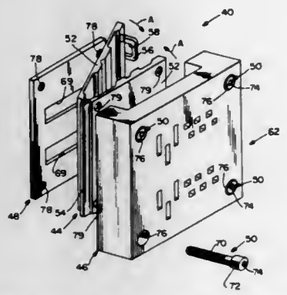
said one of said plurality of contact means being electrically connected to a programmable hearing aid part.

5,188,541

ELECTRICAL CABLE TAP SYSTEM

Joseph D. Comerci, Elmhurst; Robert DeRoss; Michael J. O'Connell, both of Naperville, all of Ill., and John E. Templeton, Jr., Tuscon, Ariz., assignors to Molex Incorporated, Lisle, Ill.

Filed Dec. 10, 1991, Ser. No. 804,573
Int. Cl.[5] H01R *13/40*
U.S. Cl. 439—596 **14 Claims**



1. A cable tap system for selectively connecting a plurality of tap terminals to a plurality of conductors in a multi-conductor electrical cable, comprising:

a closable cable clamp assembly for clamping onto the cable;

a terminal holder positionable against one side of the cable clamp assembly and mounting a plurality of tap terminals for interconnection to the conductors of the cable;

a backing member positionable against an opposite side of the cable clamp assembly; and

fastening means operatively associated between the terminal holder and the backing member for sandwiching the cable clamp assembly therebetween and maintaining the tap terminals interconnected with the conductors of the cable.

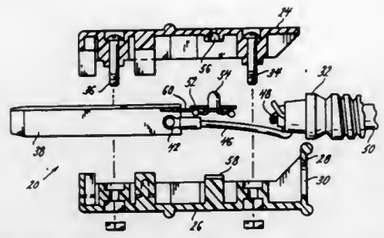
5,188,542

ELECTRICAL CONNECTOR WITH INTEGRAL STRAIN RELIEF AND MOUNT, AND OVERTEMPERATURE INDICATOR

Gray Ballman, 20419 Wildcat Run Dr., Estero, Fla. 33928

Filed Dec. 5, 1991, Ser. No. 803,181
Int. Cl.[5] H01R *13/66*
U.S. Cl. 439—620 **22 Claims**

13. An electrical plug-in connector, said connector including means for sensing an overtemperature condition as said connector is connected to a source of electrical power, and means for indicating the sensed occurrence of said overtemperature condition, said indication means including means for maintaining said indication despite a reduction of temperature of said connector below said overtemperature condition.

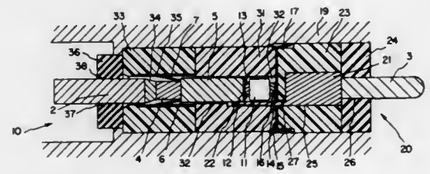


5,188,543

ELECTRICAL CONNECTOR INCLUDING A REMOVABLE CIRCUIT COMPONENT

Peter R. Swift, Toronto, Canada, assignor to Amphenol Corporation, Wallingford, Conn.

Filed Aug. 15, 1991, Ser. No. 745,176
Int. Cl.[5] H01R *13/66*
U.S. Cl. 439—620 **21 Claims**



1. An electrical connector, comprising:

a rear contact having a principal longitudinal axis including, at a rear end, means for mating said rear contact with a corresponding electrical conductor in a first electrical device and, at a front end, a termination section on which is mounted an electrical component having a ground electrode and a live electrode arranged in axial alignment with the rear contact, said live electrode being electrically connected to said rear contact;

means for removably retaining said rear contact within said electrical connector;

a front contact including, at a front end, means for mating said front contact with a corresponding electrical conductor in a second electrical device, and a feedthrough member extending rearwardly from the front contact for establishing an electrical connection between the front contact and the rear contact; and

grounding means for electrically connecting said electrical component to a shell of said connector,

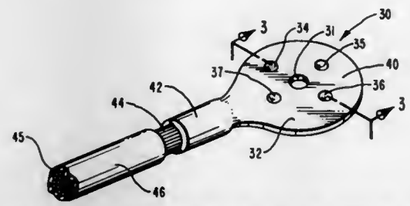
wherein said grounding means includes an electrode contact surface which contacts a ground contact surface of said ground electrode, said contact surfaces being substantially perpendicular to said principal longitudinal axis.

5,188,544

ELECTRICAL CONDUCTOR TERMINAL APPARATUS AND METHOD

Tsuyoshi Mukai, 3-16-306 Tomobuchicho, 1-chome, Miyakojima-ku, Osaka-shi, Japan

Continuation-in-part of Ser. No. 443,804, Nov. 29, 1989, abandoned, which is a continuation of Ser. No. 276,221, Nov. 23, 1988, abandoned. This application Mar. 7, 1991, Ser. No. 665,814
Claims priority, application Japan, Nov. 30, 1987, 62-183568
Int. Cl.[5] H01R *11/01*
U.S. Cl. 439—777 **17 Claims**



1. A terminal system for electrically and mechanically connecting a first electrical conductor to a second electrical conductor in a non rotational relationship comprising:

a first terminus for said first electrical conductor comprising:

a diametrally enlarged first metal disc having a face and a back, said first metal disc comprising a first engagement means for mechanically engaging said first terminus to a second terminus in a non rotational engagement while electrically coupling said first terminus to said second terminus, said first metal disc being fabricated from a sheet metal and having a generally circular profile;

first connector means extending from a periphery of said first metal disc, said first connector means electrically connecting said first terminus to said first electrical conductor; and

first detent means in said first metal disc, said first detent means comprising first detents formed as uniformly spaced deformations of said first metal disc around the periphery of said first metal disc to create said first detent means on said face and said back of said first metal disc;

said second terminus comprising;

a diametrally enlarged second metal disc having a face and a back, said second metal disc comprising a second engagement means for mechanically engaging said second terminus to said first terminus in said non-rotational engagement while electrically coupling said second terminus to said first terminus, said second metal disc being fabricated from said sheet metal and having a generally circular profile;

second connector means extending from a periphery of said second metal disc, said second connector means electrically connecting said second terminus to said second electrical conductor; and

second detent means in said second metal disc, said second detent means comprising second detents formed as uniformly spaced deformations of said second metal disc around the periphery of said second metal disc to create said second detent means on said face and said back of said second metal disc, said second detent means cooperating in nesting relationship, said first detent means in a face to back relationship, said first detent means and said second detent means thereby mechanically resisting angular rotation of said first terminus relative to said second terminus; and

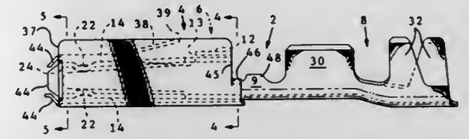
nesting means for nesting said first detent means with said second detent means comprising a fastener means for fastening said first terminus to said second terminus to form said terminal system with said first metal disc stacked against said second metal disc in a back-to-back relationship with said first detent means in nesting relationship with said second detent means, said terminal system being characterized by the absence of a washer between said first terminus and said second terminus.

5,188,545

ELECTRICAL SOCKET TERMINAL

Jurgen Hass, Erzhausen; Gheorghe Hotea, Greisheim, and Guenter Siegel, Niederdorffelden, all of Fed. Rep. of Germany, assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. No. 696,259, Apr. 30, 1991, abandoned, which is a continuation of Ser. No. 533,633, Jun. 5, 1990, abandoned. This application Mar. 16, 1992, Ser. No. 852,485
Int. Cl.[5] H01R *13/11*
U.S. Cl. 439—851 **10 Claims**



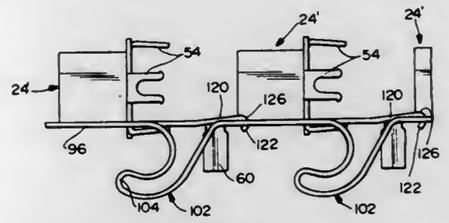
3. An electrical socket terminal having an elongate stamped and formed metal socket comprising a tubular base having a forward end, and first and second elongate cantilever contact springs projecting forwardly from the forward end of the base, each contact spring comprising two planar parts defining an angle between them, and a hinge extending longitudinally of the socket and connecting the forward ends of two planar parts of the contact spring for resilient angular movement about said hinge, the planar parts of each contact spring being separate from each other between the respective hinge and the base, each of the planar parts being connected to said forward end of the base, at the rearward end of said planar part, the planar parts being resiliently angularly displaceable by an electrical pin when introduced between the contact springs from their forward ends.

5,188,546

CONTINUOUS CARRIER WEB MEMBER AND METHOD OF FABRICATING SHEET METAL COMPONENTS FOR ELECTRICAL CONNECTORS

Kenneth D. Ballard, Wheaton, Ill.; Ronald E. Bottino, Bristol; Mark K. Labbe, Burlington, both of Conn.; John E. Lopata, Naperville, Ill.; Tom Malinski, Terryville, Conn.; Wilhelm Meier, Manchester, Conn.; Lou Morelli, Terryville, Conn.; Michael G. Pacyga, Downers Grove, Ill.; Mitch Primorac, Chicago, Ill.; Bernardus Roodnat, Winfield, Ill., and Shawn Simpson, Unionville, Conn., assignors to Molex Incorporated, Lisle, Ill.

Filed Feb. 25, 1992, Ser. No. 841,927
Int. Cl.[5] H02R *3/00*
U.S. Cl. 439—885 **30 Claims**



1. A continuous carrier means of sheet metal material for carrying a plurality of components of an electrical connector through various manufacturing processes, each component ultimately being formed into a three-dimensional configuration

VOL 1147 ISS 4 FE 23 1993 UMI

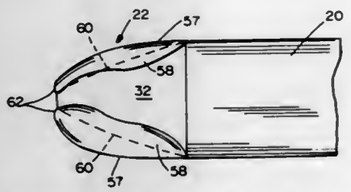
and retained on said carrier means with a predetermined distance between adjacent components, said carrier means including at least one carrier web member extending between adjacent components, said web member including a three-dimensional pitch reducing section for reducing the distance between adjacent components, at least a portion of said pitch reducing section being formed out of the original plane of said sheet metal material, wherein the improvement comprises:

said carrier web member further including retaining means separate from said pitch reducing section and integrally formed with said carrier means to resist expansion of said predetermined distance between adjacent components.

5,188,547
ELECTRICAL TERMINAL PIN

Daniel A. Dixon, Naperville; Frederick J. Gierut, Tinley Park; Joe Lawniczak, Schaumburg; Arvind Patel, Naperville, and Michael Primorac, Chicago, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed May 7, 1992, Ser. No. 879,637
Int. Cl.[5] H01R *13/02*
U.S. Cl. 439—886 **4 Claims**



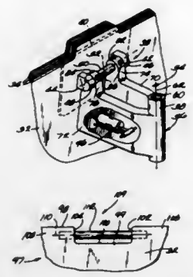
1. In an electrical terminal pin having a pin tip for insertion into a mating electrical female terminal, a hole in a printed circuit board or the like, wherein the pin has an electrically conductive core of a generally rectangular configuration, the core being plated with an electrically conductive layer on four sides thereof, and the pin tip being of a generally rounded pyramidal configuration defining four sightly curved convex sides thereof joined at four edges converging at a pin end, wherein the improvement comprises two opposite sides of the pin tip being non-plated and the other two opposite sides of the pin tip being plated with said conductive layer, portions of the conductive layer overlapping the edges of the pin tip of a smooth configuration to eliminate any sharpness thereof.

5,188,548
MARINE PROPULSION DEVICE MOUNTING ARRANGEMENT

Arthur R. Ferguson, Northbrook, and Edgar Rose, Glencoe, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 638,387, Jan. 4, 1991, abandoned. This application Nov. 22, 1991, Ser. No. 799,729
Int. Cl.[5] B63H *5/12*
U.S. Cl. 440—61 **31 Claims**

1. A mounting apparatus for mounting an outboard motor propulsion unit on a boat hull having a generally horizontal tilt pivot pin with a longitudinal axis, said mounting apparatus comprising a mounting bracket including means for supporting the propulsion unit for pivotal movement about a generally vertical steering axis, means for mounting said mounting bracket on the tilt pivot pin for pivotal movement about the longitudinal axis, said mounting means including a first pivot cap cooperating with said mounting bracket to define a first passage adapted to pivotally receive the tilt pivot pin, and

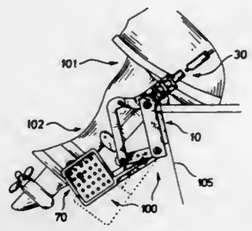


means for releaseably fastening said first pivot cap on said mounting bracket.

5,188,549
AUXILIARY TRIM SYSTEM FOR FISHING BOATS

Guy R. Kozubski, McGehee, Ark., assignor to Kozubski & Denton, McGehee, Ak.

Filed Apr. 13, 1992, Ser. No. 867,346
Int. Cl.[5] B63H *5/12*
U.S. Cl. 440—63 **11 Claims**



1. An auxiliary trim mechanism adapted to be disposed upon the transom of a boat for trimming an adjacent outboard motor, said mechanism comprising:

rigid base means for mounting said mechanism to said boat, said base means comprising a rigid plate adapted to be secured to said transom;

lever means for activating said mechanism, said lever means pivotally associated with said base means and comprising an elongated handle adapted to be manipulated by a user for activating said mechanism and an extension deflected by said handle;

foot means for tilting said outboard motor, said foot means pivotally associated with said base means, said foot means comprising a generally rectangular surface comprising a plurality of separate, spaced-apart, user selectable orifices and pin means adapted to be user-secured to a selected one of said orifices for contacting and deflecting the motor;

linkage means for coupling said foot means to said lever means, said linkage means adapted to be user adjusted to vary the resultant mechanical advantage;

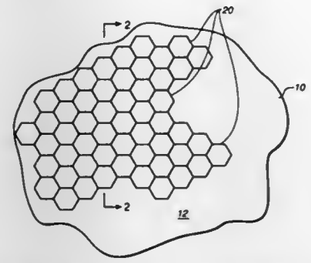
wherein said pin means can be selectively mounted upon selected orifices within said foot means such that motor deflection may be varied without changing said resultant mechanical advantage, or the mechanical advantage established by said mechanism may be changed without varying the distance between said pin and said motor; and,

switch means for yieldably locking said mechanism in a lifted position to prevent dropping of said motor while permitting further upward deflections in response to underwater obstacles or obstructions.

5,188,550
APPARATUS AND METHOD FOR CREATING A FLOATABLE THERMAL AND EVAPORATION BARRIER

Wynn W. Oliver, 525 Los Cerros Dr., Greenbrae, Calif. 94904

Filed Jun. 3, 1991, Ser. No. 709,209
Int. Cl.[5] F24J *3/02*
U.S. Cl. 441—1 **8 Claims**



1. In a buoyant device for use with a plurality of similarly formed buoyant devices to produce a floating barrier, said device having a plurality of substantially vertically extending planar sides, with the number of said sides being selected to produce contiguous gapless packing of said buoyant devices when floating in side-by-side relation, the improvement comprising:

a buoyant body being formed as a relatively rigid member converging from said sides to an apex;

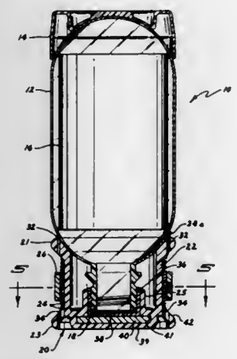
weight means positioned proximate said apex; and

said side walls each being substantially parallel to each other and polygonal in shape with a substantial height dimension, and said side walls intersecting along common edges having a substantial height dimension so that side walls of adjacent buoyant devices of similar shape will remain in substantially gapless engagement around the periphery of said buoyant device during relative vertical displacements.

5,188,551
MARKER BODY

Cyril N. Keller, Rte. 3, Box 405, Fergus Falls, Minn. 56537

Filed Jun. 1, 1991, Ser. No. 724,122
Int. Cl.[5] B63B *22/20*
U.S. Cl. 441—6 **3 Claims**



1. A marker buoy comprising:

a transparent, hollow body member of elongated, cylindrical shape having an attachment neck portion on one end thereof;

a line receiving spool of generally cylindrical configuration having an inner connection portion formed integrally therewith and containing connection means secured to said attachment neck portion of said hollow body member;

a bottom closure wall on said spool extending generally normal to the direction of extent of said neck portion of said hollow body member in closely spaced, opposing juxtaposition thereto;

a counterweight contained within said spool between said bottom closure wall and said inner connection portion of said spool, whereby said elongated body member assumes an upright position when floating on a body of water;

a length of line wound on said spool;

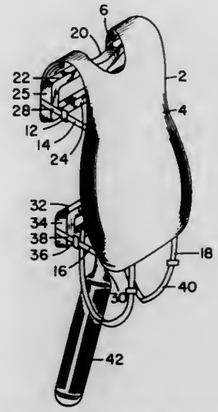
an anchor weight connected to the free end of said line; and

a retroreflective sheet of material rolled inside of said body member coextensive with the side walls of said body member and inwardly spaced therefrom to enhance the visibility of said marker buoy.

5,188,552
SWIMMING AID

Daryoush Keyvani, 321 S. Sherbourne Dr., No. 109, Los Angeles, Calif. 90048

Filed Oct. 8, 1990, Ser. No. 598,481
Claims priority, application Israel, Jun. 22, 1990, 94849
Int. Cl.[5] A63B *31/00*; **B63C** *9/13*
U.S. Cl. 441—116 **21 Claims**



5. A swimming aid to be worn on the body of a person comprising:

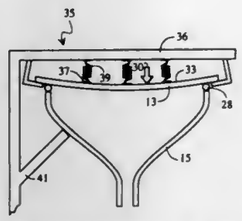
a lower torso buoyancy device attachable to the back of a person's lower torso having a lower stabilizing member for placement proximate a person's lower torso and being a rigid member extending substantially across the body of the user and a buoyancy device being a rigid member rigidly attached to the lower stabilizing member and extending below the lower stabilizing member and the buoyancy device being attached to a person's body by means for attaching the lower stabilizing member to the lower portion of a person's torso whereby buoyancy is imparted to the lower torso to enable a more effective swimming position.

5,188,553

FLAT FRONT PANEL CRT BULB PRE-STRESSED PRIOR TO FINAL EVACUATION AND METHOD OF MAKING SAME

Lawrence W. Dougherty, Sleepy Hollow, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Apr. 5, 1991, Ser. No. 681,220
Int. Cl.[5] H01J *9/26*
U.S. Cl. 445—8 **16 Claims**



1. A method of manufacturing a CRT having a flat face panel which results in reduced panel-to-funnel seal area stress, comprising, in order:

a) abutting a flat CRT front panel to a CRT funnel without rigid connection therebetween;

b) deflecting the panel inwardly of the funnel without substantially stressing the funnel seal land; and,

c) rigidly connecting the panel to the funnel at the seal land while the panel is deflected to produce a CRT bulb in which the funnel seal area is pre-stressed counter to atmospheric loading.

13. A CRT bulb comprising:

a panel rigidly affixed to a funnel, the funnel having a funnel seal area encompassing the funnel material adjacent the seal, the funnel seal area being constructed and arranged to have a permanent stress in the seal area which is counter to a stress on the funnel resulting from a substantially axial atmospheric load placed on the panel when the bulb is evacuated to make a finished CRT.

5,188,554

METHOD FOR ISOLATING ARC LAMP LEAD-IN FROM FRIT SEAL

Richard A. Snellgrove, Danvers, and Elliot F. Wyner, Peabody, both of Mass., assignors to GTE Products Corporation, Danvers, Mass.

Division of Ser. No. 194,060, May 13, 1988, abandoned. This application Dec. 19, 1989, Ser. No. 453,337
Int. Cl.[5] H01J *9/26*
U.S. Cl. 445—26 **1 Claim**

1. A method for fabricating an arc tube for a high pressure metal vapor discharge lamp, said method comprising:

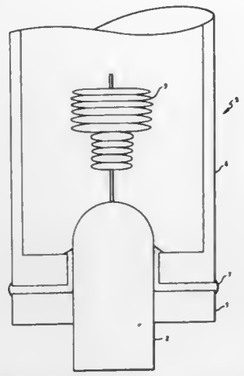
forming fritless seals between ceramic seal buttons and feedthrough members for each end of an arc tube envelope;

permanently affixing an electrode to the feedthrough member of each fritless ceramic seal button/feedthrough member assembly;

sealing a first fritless ceramic seal button/feedthrough member assembly having the electrode attached thereto to one end of the ceramic arc tube envelope using frit material;

depositing a chemical fill into the ceramic arc tube envelope sealed at one end; and

sealing a second fritless ceramic seal button/feedthrough member assembly having the electrode attached thereto to



the other end of the ceramic arc tube envelope using frit material.

5,188,555

MAGNETIC NOVELTY

Joseph H. Zbegner, 1129 11th St., #6, Boulder, Colo. 80302

Filed Jan. 6, 1992, Ser. No. 817,055
Int. Cl.[5] A63H *33/26*
U.S. Cl. 446—133 **19 Claims**



1. A magnetic novelty item comprising:

a container having first and second ends;

a first magnetic unit secured at said first end of said container;

a second magnetic unit secured at said second end of said container; and

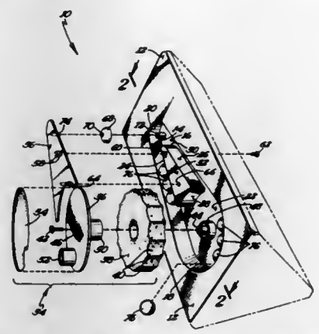
a third magnetic unit having a north pole and a south pole and received in said container in such a way that each of said poles remains substantially oriented toward, and in a repelling relationship with, a different one of said first and second magnetic units, said third magnetic unit being movable between said ends of said container.

5,188,556

BALL ROLLING TOY

Mark Hartelius, 18084 S. Shore La. West, Eden Prairie, Minn. 55348, and Randy Randleman, White Bear Lake, Minn., assignors to Mark Hartelius, Eden Prairie, Minn.

Filed Dec. 13, 1991, Ser. No. 806,491
Int. Cl.[5] A63H *29/08, 29/00*
U.S. Cl. 446—172 **16 Claims**



1. Toy comprising, in combination: a ball having a diameter; at least a first wall having a first extremity and a second extremity, having a height which is substantial with respect to the ball, and having a generally semicircular shape between the first and second extremities; a track for rolling receipt of the ball having a first end adjacent the first extremity of the first wall and a second end adjacent the second extremity of the first wall; compressible material having a longitudinal axis and a cylindrical periphery of a diameter less than that of the semicircular shape of the first wall, with the compressible material being concentric to the first wall; a second, semicircular wall having a diameter generally equal to the diameter of the compressible material, with the semicircular wall extending between the first and second ends of the track and concentric to the compressible material and the first wall, with the first and second walls including lower edges; a bottom connected to the lower edges of the first and second walls; a disc, with the compressible material secured to the disc; a boss upstanding from the bottom along the longitudinal axis of the compressible material; and a screw extending through the disc and the compressible material and threadably received in the boss with the compressible material rotatable about the longitudinal axis for capturing the ball located at the second end of the track between the compressible material and the first wall for moving the ball between the first and second extremities of the first wall with the compressible material to the first end of the track, with the compressible material being in a compressed condition by the ball captured between the compressible material and the first wall and providing a spring-like force to the ball due to the expansion of the compressible material from its compressed condition at the first end of the track.

5,188,557

TOY ROCKET APPARATUS

Randall L. Brown, Rte. 1, Box. 1278, Paul, Id. 83347

Filed Jan. 13, 1992, Ser. No. 819,967
Int. Cl.[5] A63H *27/26, 29/00;* **F41B** *11/08;* **B64F** *1/04*
U.S. Cl. 446—212 **5 Claims**

1. A toy rocket apparatus, comprising,

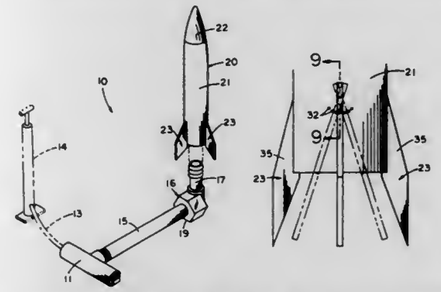
a rocket launcher, the rocket launcher including a pneumatic connector nipple directed into the rocket launcher at a first distal end thereof, and

a socket member pivotally mounted to the rocket launcher at a second distal end of the rocket launcher, wherein the socket members include a mounting tube positioned thereon, and

a pneumatic conduit in pneumatic communication between the connector nipple and the socket member, and

a rocket member arranged for receiving the mounting tube therewithin, the rocket member including a lower cylindrical body and an upper conical body mounted to an upper distal end of the lower cylindrical body coaxially aligned with the lower cylindrical body, the lower cylindrical body including a floor, the floor including a nozzle opening directed therethrough, and the nozzle opening arranged for reception of the mounting tube therewithin, and

the pneumatic conduit mounted in pneumatic communication with a pneumatic pressure delivery source to direct pneumatic pressure through the rocket launcher into the rocket member to project the rocket member from the



mounting tube upon pressurizing of the rocket member interiorly thereof through the mounting tube, and

the rocket launcher includes a first conduit base tube formed along a first axis, and a second conduit tube formed along a second axis, with the first axis obliquely oriented relative to the second axis, and the first axis and the second axis in a coplanar relationship, and the swivel socket including a plurality of mounting flats formed to a periphery of the swivel socket, wherein each of the mounting flats are arranged in a parallel equal radial spacing relative to the second axis, and

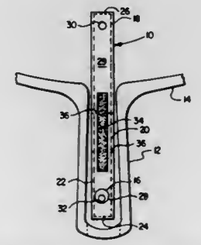
the mounting tube includes a plurality of parallel ribs mounting adjacent the upper distal end of the mounting tube to enhance frictional engagement of the mounting tube within the rocket member through the nozzle opening.

5,188,558

SELF-SEALING REFILLABLE PLASTIC BALLOON VALVE

Leslie W. Barton, 2818 Westridge, Carrollton, Tex. 75006, and Andrew J. Barton, 7885 Seawall, Huntington Beach, Calif. 92648

Continuation-in-part of Ser. No. 636,766, Jan. 2, 1991, abandoned. This application Nov. 6, 1991, Ser. No. 787,772
Int. Cl.[5] A63H *27/10*
U.S. Cl. 446—224 **10 Claims**



1. A self-sealing balloon valve capable of multiple self-seal-

VOL
1147
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ing and refillable cycles, for use with a non-latex balloon having a neck portion and a body, said valve comprising:

an elongated, flexible plastic valve, the valve formed by register and overlay of at least two sheets of flexible plastic material of equal length having sealed edges, said flexible plastic sheets being formed to define a two sided valve channel from an inlet end portion to an outlet end poriton, said inlet end poriton being sealed at its outermost end and having an inlet opening in one side of the valve for fluid intake, said inlet opening being positioned inwardly from the outermost sealed end of the inlet portion end, and said outlet end poriton having an outlet opening;

the valve channel having at least one interior surface portion coated with a non-sealable material which prevents the sheets from sealing together and closing the channel when the valve is positioned and heat sealed onto the neck portion of the balloon, said non-sealable material extending longitudinally and inwardly from the inlet opening;

the valve having at least one self-sealing means along the channel between the inlet opening and outlet opening comprised of a coating of a reusable adhesive element to at least one of the interior surfaces of the said channel which, when compressed together, seals said channel interior surfaces, the adhesive seal capable of multiple reopen and closure modes between the adhesive element and the opposite interior channel surface;

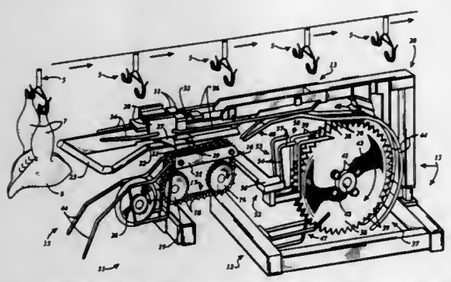
the self-sealing means being adapted to be sealed by filled fluid pressure from the balloon upon withdrawal of fill pressure from the valve.

5,188,559

METHOD AND APPARATUS FOR SEPARATING THE LEGS FROM THE BACK OF A POULTRY CARCASS

Jacobus E. Hazenbroek, Burg de Zeeuwstraat 52, Numansdorp, Netherlands

Filed Sep. 16, 1991, Ser. No. 760,567
Int. Cl.[5] A22C *21/00*
U.S. Cl. 452—167 **19 Claims**



1. For use along a poultry processing line of the type having a spaced array of overhead shackles mounted for movement along a processing path with the shackles being configured to suspend poultry carcasses by their legs and convey the suspended carcasses along the path for processing, an apparatus for separating the legs from the back portions of poultry carcasses from which the entrails and breasts have previously been removed, said apparatus comprising:

a frame disposed beneath and generally along the path of movement of the spaced array of shackles;

a cutting station on said frame with said cutting station being adapted to receive a poultry carcass being conveyed along the processing path and effect at least one incision in the carcass substantially at the location of a thigh joint thereof;

a separating station on said frame with said separating station being positioned to receive a poultry carcass being conveyed along the processing path subsequent to movement of the carcass through said cutting station, said separating station being adapted to grasp the back portion of the poultry carcass and pull the grasped back portion away from the legs of the carcass to separate the legs from the back portion at the thigh joints of the carcass; and

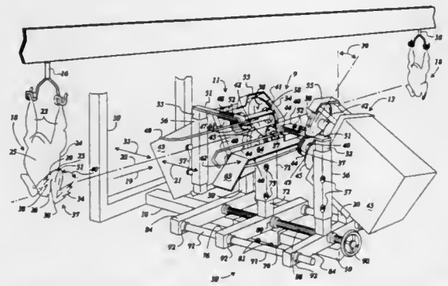
means disposed between said cutting station and said separating station for rotating the back portion of a poultry carcass relative to the legs thereof through an arc sufficient to dislodge the balls and sockets of the thigh joints so that the back portion of the carcass can be separated cleanly at the thigh joints from the legs of the carcass at said separating station.

5,188,560

WING TIP CUTTER

Jacobus E. Hazenbroek, Burg de Zeeuwstraat 52, Numansdorp, Netherlands

Filed Jan. 22, 1992, Ser. No. 823,719
Int. Cl.[5] A22C *21/00*
U.S. Cl. 452—169 **19 Claims**



1. A cutting assembly for a poultry carcass cut-up processing line for removing the wing tip segment from the mid-wing segment of the wings of poultry carcasses comprising:

a rotary disc cutter having a peripheral cutting edge;

a peripherally slotted rotary guide disc having its peripheral slot receiving the peripheral cutting edge of said rotary disc cutter so that the cutting edge of said rotary disc cutter intersects the periphery of said slotted guide disc;

a rotary brush disc coaxial with said slotted guide disc and rotatable in unison with said slotted guide disc; and

guide means for guiding a joint of the poultry carcass wing toward the intersection of said rotary disc cutter and said slotted guide disc and for guiding the wing tip of the poultry carcass toward said rotary brush disc,

so that the rotary brush disc brushes the wing tip segment of the poultry wing in a direction generally past the rotary disc cutter and restrains the wing tip segment from unfolding about the rotary disc cutter, and the wing tip joint is guided toward the intersection of the rotary disc cutter and the slotted guide disc where the wing tip segment is severed from the remainder of the poultry wing.

5,188,561

AIR CONDITIONING GRILL

Nissim Nissimoff, 5 Bat Yiftach Street, Zahala, and Jacob Nissimoff, 19 Hapodim Street, Ramat Gan, both of Israel

Filed Aug. 1, 1991, Ser. No. 739,197
Int. Cl.[5] F24F *13/10*
U.S. Cl. 454—256 **8 Claims**

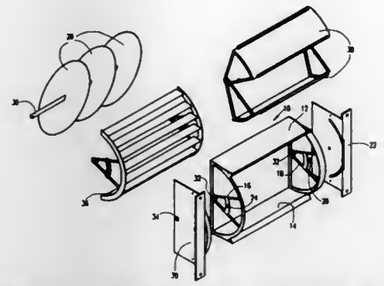
1. An airconditioning outlet grill for installation in static structures comprising:

a plurality of modular grill units;

means for interconnecting the plurality of modular grill units in a desired grid arrangement, and wherein

each of said modular grill units comprises:

first and second arrays of vanes extending generally perpendicularly to each other, each array being directable independently of the other and being operative for selectably directing an outlet air flow without changing the volume of the air flow;



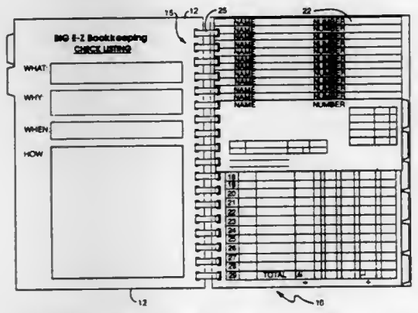
a selectably positionable rotatable cover assembly for automatically preventing or limiting outlet air flow, said cover assembly being disposed downstream of said first and second arrays and having a fully retracted position which is outside of the outlet air flow.

5,188,562

ACCOUNTING DEVICE FOR SIMPLIFIED BOOKKEEPING

Michelle Carley, Livonia, Mich., assignor to Big E-Z Bookkeeping Company, Livonia, Mich.

Filed Dec. 30, 1991, Ser. No. 815,830
Int. Cl.[5] B42D *15/00, 12/00;* **B41L** *3/02*
U.S. Cl. 462—54 **5 Claims**



1. An accounting device for simplified bookkeeping comprising:

a spiral binder;

a check ledger insertable in said binder and divided into a plurality of vertically disposed columns and a plurality of horizontally disposed lines to create a plurality of data recording spaces thereon;

a plurality of checks overlying said disposed in shingled fashion thereon, each of said checks having a plurality of apertures formed along one end edge thereof for insertion into said spiral binder and a plurality of perforations disposed proximate said edge medially from said apertures to form a tear strip, each of said checks including a plurality of spaced, data recording blanks aligned along an axis transverse said edge and a strip o transfer material underlying said plurality of blanks, said checks being disposed in said binder such that data recorded on said plurality of blanks for each successive check will transfer to the spaces formed on successive lines of said check ledger;

a plurality of spreadsheet forms insertable in said binder and each providing means for recording a plurality of entries pertaining to a specified category of business transactions;

individual, alpha-numerically labeled matchup boxes disposed on said ledger and said spreadsheet forms for recording sums representing a total derived from data manipulation of said plurality of entries for said specified categories of business transactions; and

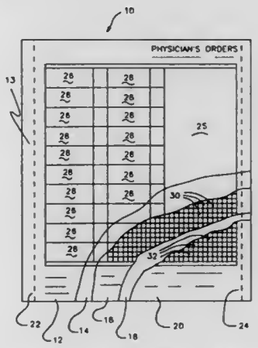
a profit/loss summary form insertable in said binder and including a plurality of alpha-numerically labeled matchup boxes for transferring sums recorded in correspondingly labeled individual matchup boxes, whereby profit/loss for a given calendar period may be easily determined.

5,188,563

MEDICAL FORM

Lisa E. Hanauer, Centerville, Ohio, assignor to Med-Pass, Incorporated, Dayton, Ohio

Filed Aug. 3, 1992, Ser. No. 924,178
Int. Cl.[5] B42D *15/00*
U.S. Cl. 462—56 **7 Claims**



1. A medical form comprising a Physician's Orders Sheet, a Medication Administration Record, a Treatment Administration Record and pressure transfer means, all releasibly bound in mutual registration;

said Physician's Orders Sheet being arranged on top of both of said records for direct entry of physician's orders and having a front face which is printed to display a vertically extending column of medication instruction blocks for insertion of medication orders and a vertically extending column of treatment instruction blocks for insertion of treatment orders;

said Medication Administration Record having a front face which is printed to display a vertically extending column of medication instruction blocks in registration with the like-named blocks on said Physician's Orders Sheet and a series of vertically extending columns of medication record cells, said columns of medication record cells and said column of medication instruction blocks having an aggregate horizontal width which is substantially equal to the full width of the front face of said Medication Administration Record;

said Treatment Administration Record having a front face which is printed to display a vertically extending column of treatment instruction blocks in registration with the like-named blocks on said Physician's Orders Sheet and a series of vertically extending columns of treatment record cells, said columns of treatment record cells and said column of treatment instruction blocks having an aggregate width which is substantially equal to the full width of the front face of said Treatment Administration Record;

said columns of medication instruction blocks and said column of treatment instruction blocks being placed in non-

VOL 1147 ISS 4 FE 23 1993 UMI

overlapping areas of said form, and said columns of record cells being horizontally placed to occupy areas which are non-occupied by their associated instruction blocks;

said pressure transfer means being arranged for pressure actuated transfer of physician's orders from the medication instruction blocks on said Physician's Orders Sheet to the like-named blocks on said Medication Administration Record and pressure actuated transfer of physician's orders from the treatment instruction blocks on said Physician's Orders Sheet to the like-named blocks on said Treatment Administration Record; and

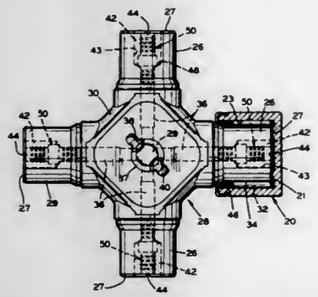
said pressure transfer means being further arranged to avoid pressure actuated transfer of markings onto any of said columns of medication record cells or any of said columns of treatment record cells.

5,188,564

LUBRICATION DEVICE FOR UNIVERSAL JOINT ASSEMBLY

Thomas J. Keller, Cridersville, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Mar. 28, 1991, Ser. No. 676,676
Int. Cl.[5] F16C *1/24*; F16J *15/02*
U.S. Cl. 464—14 **11 Claims**



1. A lubrication device for a universal joint assembly, said device comprising an elongate tubular body defining first and second ends spaced along an axis, at least one of said ends being adapted for insertion into a journal lubrication passage of a universal joint cross member, said body comprising at least one deformable annular protuberance on said one end, said protuberance extending radially about said one end, said body further comprising a radially extending positioning flange intermediate said ends, said flange limiting the extent of insertion of said body into said passage, wherein said flange is axially spaced from said protuberance.

5,188,565

NOVELTY DEVICE AND METHOD OF USING SAME

Lane T. Hauck, 5346 Bragg St., San Diego, Calif. 92122

Filed Apr. 11, 1991, Ser. No. 683,861
Int. Cl.[5] A63J *23/00*
U.S. Cl. 472—51 **13 Claims**

1. Novelty device, comprising:

a housing;

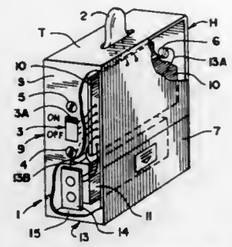
means mounted to said housing for generating an attention attracting signal;

apparent switch means coupled to said attention attracting means for preparing to activate it controllably by the user in an open and observable manner when it is in its activated condition;

surreptitious switch means coupled to said attention attracting means for preparing to actuate it controllably by the user in a surreptitious manner so that said attention attracting means is actuated when both said apparent and surreptitious switch means are actuated by the user;

disabling means coupled to said attention attracting means for causing another user to be unable to re-activate said attention attracting means;

means coupled to said disabling means for resetting said novelty device in a surreptitious manner to permit the first



mentioned user to re-activate said attention attracting means thereafter; and

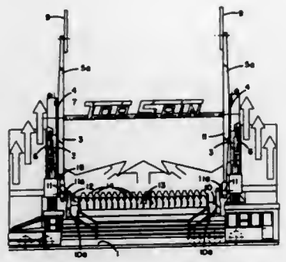
means responsive to said apparent switch means in its deactuated condition for causing said disabling means to de-actuate said attention attracting means.

5,188,566

LOOPING SWING WITH PARALLEL ROWS OF SEATS

Karl Böhme, Bremen, Fed. Rep. of Germany, assignor to Huss Maschinenfabrik GmbH & Co., KG, Bremen, Fed. Rep. of Germany

Filed Oct. 15, 1990, Ser. No. 597,729
Int. Cl.[5] A63G *1/08, 31/16*
U.S. Cl. 472—45 **8 Claims**



1. A mechanical swing for carrying passengers comprising:

a platform (**1**) with vertical supports (**2, 3**), the vertical supports having top portions;

two parallel outriggers (**5**) having first and second ends, the parallel outriggers being journaled in rotatable fashion proximate the top portions of the vertical supports (**2, 3**) so that motor (**6**) rotates the outriggers (**5**) about an axle (**7**);

a passenger gondola (**10**) suspended by pendulum arms (**10***a*) from the first ends of the parallel outriggers (**5**) to rotate about a swing axis (**11**);

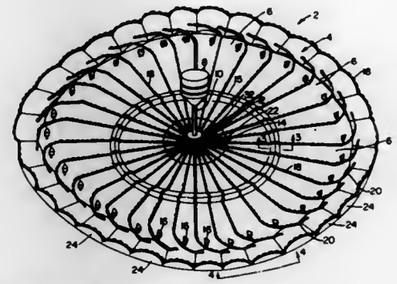
a front and back row of generally adjacent passenger seats (**13**) terraced at different heights in the passenger gondola (**10**) and arranged so that the passengers are facing in a direction generally perpendicular to the swing axis (**11**), the seats (**13**) having head rests (**14**) and the front and back rows of passenger sets being arranged so that the head rests (**14**) are proximate the swing axis (**11**) such that the horizontal distance from the head rests (**14**) on the back row of seats to the swing axis (**11**) on the front row of seats to the swing axis (**11**).

5,188,567

RACETRACK

Eduard Volkov, 147 N. Broad St., Trenton, N.J. 08608

Filed Aug. 13, 1991, Ser. No. 744,289
Int. Cl.[5] A63K *1/00*
U.S. Cl. 472—85 **19 Claims**



1. A multi-event racetrack, comprising:

a substantially circular outer track;

a substantially circular centrally located area; and

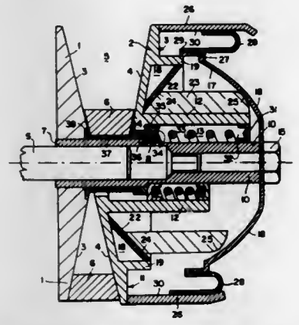
a plurality of substantially radially aligned juxtaposed racing lanes extending from within said centrally located area to said outer track for permitting racers to race between said centrally located area, said lanes, and said outer track, each racer being assigned a particular one of said lanes.

5,188,568

SPEED VARIATOR PULLEY PROVIDED WITH A REDUCED FRICTION, REMOVABLE RINGS

Eric Gourdon, Treize Vents, France, assignor to Powerbloc IBC Canada Inc., Drumondville, Canada

Filed Jan. 23, 1991, Ser. No. 644,552
Claims priority, application France, Jan. 25, 1990, 90 01033
Int. Cl.[5] F16H *59/00*
U.S. Cl. 474—13 **8 Claims**



1. A variable speed transmission pulley comprising:

two coaxial cheeks having frustoconical sidewalls facing one another to define between them a V groove in which a belt of trapezoidal cross section is disposed, one of the cheeks being a fixed cheek secured on one end of a hub which is integral with a shaft, and the other cheek being a movable cheek capable of axially sliding on the hub; and a disconnection ring provided for freely rotating around the hub at the bottom of the groove of the pulley, the disconnection ring being formed with a groove having a profile complementary to that of the inner periphery of the belt, wherein

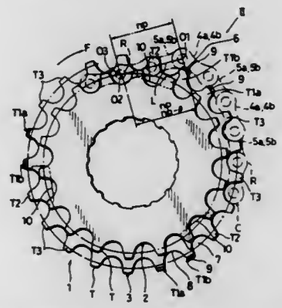
the movable cheek is slidably mounted on the hub via a first slide ring fixed from movement with respect to the movable cheek and a second slide ring fixed from movement with respect to the hub, the second slide ring bearing on one side of the disconnection ring, each of the first and second slide rings supporting the movable cheek on the hub and comprising a circular groove which faces the other of the first and second slide rings and which has a bottom on which bears a helicoidal spring axially mounted around the hub wherein said first and second slide rings are separate members not rigidly attached to any contacting surfaces, the movable cheek being bored with an axial hole which slidably receives the disconnection ring when the movable cheek slides toward the fixed cheek.

5,188,569

MULTIPLE SPROCKET ASSEMBLY FOR BICYCLE

Jun Kobayashi, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan

Filed Feb. 28, 1992, Ser. No. 843,429
Claims priority, application Japan, Mar. 29, 1991, 3-93037
Int. Cl.[5] F16H *55/30*
U.S. Cl. 474—160 **9 Claims**



1. A bicycle multiple sprocket assembly comprising at least two adjacent sprockets which include a diametrically smaller sprocket and a diametrically larger sprocket, each sprocket having teeth alternate with furrows for engagement with a chain, each tooth having an apex, each furrow having a bottom;

wherein the teeth of the larger sprocket includes a first easily disengageable chain supporting tooth, a second easily disengageable chain supporting tooth immediately following the first chain supporting tooth with respect to a forward rotational direction of the sprocket assembly, and at least one easily disengageable chain non-supporting tooth immediately following the second chain supporting tooth with respect to the forward rotational direction,

wherein the apex of each chain supporting tooth is offset away from the smaller sprocket, said each chain supporting tooth having a chain supporting portion on the side thereof closer to the smaller sprocket, the chain supporting portion being located radially inwardly from the apex of said each chain supporting tooth but radially outwardly from the furrow bottom; and

wherein the entirety of the chain non-supporting tooth is offset away from the smaller sprocket.

5,188,570

AUTOMATIC TRANSMISSION HAVING HYDRAULIC SERVO DEVICE FOR BAND BRAKE

Tatsuo Wakahara, Kanagawa, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jan. 14, 1992, Ser. No. 820,337
Claims priority, application Japan, Jan. 29, 1991, 3-28049
Int. Cl.[5] F16H *3/44*
U.S. Cl. 475—143 **16 Claims**

1. An automatic transmission comprising: a low clutch

VOL 1147 ISS 4 FEB 23 1993 UMI

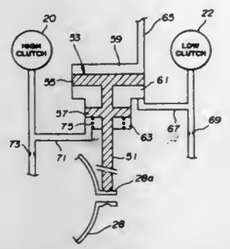
which assumes a released condition when, due to shifting to a given gear, a hydraulic pressure is released from a hydraulically working chamber of said low clutch;

a hydraulically operated band brake;

a hydraulic servo device for actuating said band brake, said servo device including:

a body;

a servo piston axially slidably disposed in a bore formed in said body, said piston applying said band brake when



moved in a first direction but releasing said band brake when moved in a second direction;

first means for defining in said bore oil chambers which are incorporated with said servo piston to move the same, said oil chambers being so arranged that when a hydraulic pressure is released from a given one of the oil chambers, said servo piston is moved in said first direction; and

second means for providing a fluid communication between the given oil chamber and said hydraulically working chamber of said low clutch.

5,188,571

JOINTED FITTING FOR VEHICLE SEATS, IN PARTICULAR MOTOR VEHICLE SEATS

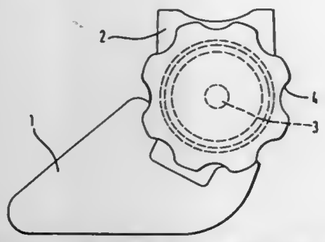
Wolfgang Boltze, Rockenhausen, and Werner Wittig, Winnweiler, both of Fed. Rep. of Germany, assignors to Keiper Recaro GmbH & Co., Fed. Rep. of Germany

Filed Oct. 31, 1991, Ser. No. 785,925

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1990, 4034843

Int. Cl.[5] F16H *1/00*

U.S. Cl. 475—162 **16 Claims**



1. Jointed fitting for vehicle seats, in particular motor vehicle seats, comprising a planetary gear enabling the two fitting parts joined by a joint axle to be pivoted relative to each other, said planetary gear having a first gear wheel with an internal toothing and a second gear wheel with an external toothing engaging said first gear wheel, both gear wheels having an involute toothing, at least the teeth of said first gear wheel having a rounded-off head and the number of teeth of said second gear wheel being slightly less than that of said first gear wheel, wherein;

a) that point on the tooth flanks of said first gear wheel at which the flank section extending along an involute passes into the flank section formed by the rounding-off of the head lies on a circle, the diameter of which is selected so as to be at least approximately the same as the base circle diameter of said first gear wheel, and

b) the top circle diameter of said first gear wheel is smaller than its base circle diameter.

5,188,572

INTERNALLY MESHING PLANETARY GEAR STRUCTURE

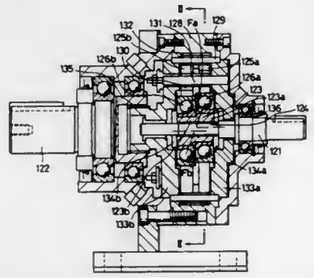
Katsuyoshi Yamaguchi, Nagoya; Masatoshi Kondoh, Ohbu; Shigeo Hayashi, Ohbu; Masayoshi Sonokawa, Ohbu; Shoichi Matsuzawa, Ohbu, and Atsushi Takahashi, Ohbu, all of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Nov. 25, 1991, Ser. No. 797,748

Claims priority, application Japan, Nov. 27, 1990, 2-123616[U]; Nov. 27, 1990, 2-123617[U]; Nov. 27, 1990, 2-123618[U]; Nov. 27, 1990, 2-123619[U]; Nov. 27, 1990, 2-123620[U]; Dec. 26, 1990, 2-402047[U]

Int. Cl.[5] F16H *1/32*

U.S. Cl. 475—168 **14 Claims**



1. An internally meshing planetary gear structure which has a first shaft, an eccentric body mounted on the circumference of the first shaft, a plurality of external-toothed gears which are mounted eccentrically on said first shaft by means of said eccentric body, an internal-toothed gear which meshes internally with said external-toothed gears, and a second shaft coupled to said external-toothed gears through a means which transmits only the rotational component of said external-toothed gears about an input axis, comprising:

a coupling between said first shaft and said eccentric body, which allows radial displacement to an extent of not impairing a function of an internally meshing rotation of said external-toothed gears, and

positioning members mounted on said first shaft and positioned adjacent to said eccentric body, said positioning members being located to restrict an axial movement of said eccentric body relative to the first shaft and to receive any moment which tends to incline said eccentric body relative to an axis line of the first shaft.

5,188,573

PULLEY CONSTRUCTION

Jeffrey K. Leicht, Sheboygan, Wis., assignor to Eclipse Manufacturing Co., Sheboygan, Wis.

Filed Jan. 8, 1992, Ser. No. 818,062

Int. Cl.[5] F16H *55/36*

U.S. Cl. 474—175 **9 Claims**

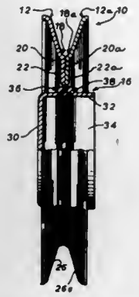
1. A pulley, comprising:

a first pulley half having a hub portion defining an inner surface and an outer surface and having an opening extending therethrough;

a second pulley half having a hub portion defining an inner surface and an outer surface and having an opening extending therethrough;

wherein the first and second pulley halves face each other such that the hub portion inner surfaces abut each other and the hub portion openings are aligned;

a hub member extending through the hub portion openings and having one or more peripheral side walls, wherein portions of the side walls are deformed outwardly to engage the outer surface of the hub portion of each pulley half adjacent the opening therethrough to sandwich the hub portions of the pulley halves therebetween to secure the pulley halves together; and



an interlocking arrangement provided on the hub member and the pulley halves for preventing relative rotational movement between the pulley halves when the pulley haves are secured together by the hub member, wherein the interlocking arrangement comprises one or more apertures formed in each pulley half hub portion, and wherein the outwardly deformed portions of the hub member side wall are disposed within the one or more apertures to interlock the hub member and the pulley halves.

5,188,574

POWER TRAIN FOR AUTOMOTIVE VEHICLE

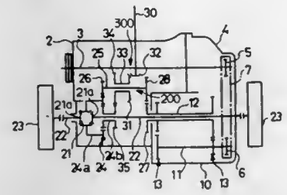
Mitsuji Echigo; Naomune Moriyama, both of Yokohama; Hideaki Akahoshi, Hiroshima; Osamu Kameda, Hiroshima, and Hitoshi Akutagawa, Hiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Jun. 12, 1991, Ser. No. 712,887

Claims priority, application Japan, Jun. 12, 1990, 2-153109; Jun. 12, 1990, 2-153110; Feb. 1, 1991, 3-012223

Int. Cl.[5] B60K *17/344*

U.S. Cl. 475—206 **28 Claims**



1. A power train for transmitting engine output, from an engine having a crankshaft, extending in a transverse direction of a vehicle, to drive wheels, said power train comprising:

a transmission, having transmission shafts with axes of rotation parallel to said crankshaft;

a wheel drive shaft connected to each drive wheel, an axis of rotation of said wheel drive shaft being aligned with said axes of rotation of said transmission shafts;

first differential means, having first differential input and output shafts with axes of rotation which intersect each other perpendicularly, for differentially driving said drive wheels through said wheel drive shaft, an axis of rotation of the first differential output shaft being in alignment with at least one of said axes of rotation of said transmission shafts and being connected to said wheel drive shaft;

second differential means for differentially driving each wheel drive shaft, an axis of rotation of second differential input and output shafts of the second differential means being in alignment with said at least one of said axes of rotation of said transmission shafts; and

speed reduction gear means, disposed between said transmission shafts and the second differential input shaft, for reducing a speed of rotation of said second differential input shaft in relation to a speed of rotation of said transmission shafts, said speed reduction gear means and having an input gear, having an axis of rotation which is placed parallel to said axes of rotation of said transmission shafts.

5,188,575

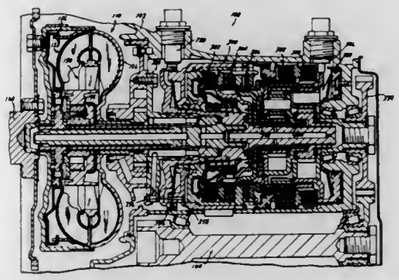
AUTOMATIC FOUR-SPEED TRANSMISSION WITH INTERCONNECTED CLUTCHES

Maurice B. Leising, 877 Key West Dr., Clawson, Mich. 48017; Thomas D. Nogle, 3782 Horseshoe Dr., Troy, Mich. 48084; Howard L. Benford, 2055 Bootmaker La., Bloomfield Hills, Mich. 48013; Gerald L. Helbrook, 866 Downhill La., Rochester Hills, Mich. 48063; James R. Klotz, 24431 Sherwood Forest Dr., Mt. Clemens, Mich. 48043; Berthold Martin, 6793 Guildford Dr., Utica, Mich. 48087; Steven A. Mikel, 30112 Wicklow Rd., Farmington Hills, Mich. 48018, and William Nortman, 700 St. Clair, Grosse Pointe, Mich. 48230

Continuation of Ser. No. 496,071, Feb. 27, 1990, abandoned, which is a continuation of Ser. No. 187,751, Apr. 29, 1988, abandoned. This application Apr. 17, 1991, Ser. No. 686,897

Int. Cl.[5] F16D *25/10*

U.S. Cl. 475—280 **3 Claims**



1. A vehicle transmission assembly having at least four forward speeds and at least one reverse speed, comprising:

a transmission housing;

a rotatable input member;

an output member;

a gear assembly for changing the ratio of torque between said input member and said output member;

not more than three clutch assemblies to selectively couple said rotatable input member to predetermined gears of said gear assembly and not more than two brake assemblies to selectively couple predetermined gears of said gear assembly to the transmission housing;

a piston member having a non-applied position and being movable axially in one direction to apply a first clutch assembly and movable axially in an opposite direction to apply a second adjacent clutch assembly;

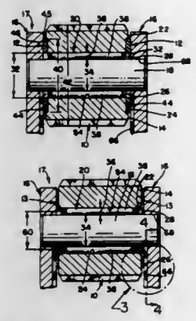
said gear assembly comprising a first planetary gearset and a second planetary gearset axially spaced from said first planetary gearset;

said first planetary gearset comprising a first sun gear, a first annulus gear and a first planet carrier having a plurality of circumferentially spaced first pinion gears disposed between said first sun gear and said first annulus gear;

said second planetary gearset comprising a second sun gear,

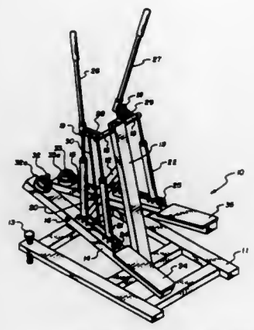
a second annulus gear and a second planet carrier having a plurality of circumferentially spaced second pinion gears disposed between said second sun gear and said second annulus gear;
first means for allowing said first annulus gear and said second planet carrier to rotate at the same time;
second means for allowing said first planet carrier and said second annulus gear to rotate at the same time;
wherein a first clutch assembly selectively couples said input member to said second sun gear, a second clutch assembly selectively couples said input member to said first planet carrier, a third clutch assembly selectively couples said input member to said first sun gear, a first brake assembly selectively couples said first sun gear to said transmission housing, and a second brake assembly selectively couples said first planet carrier and said second annulus gear to said transmission housing; and
an output member connected to said second planet carrier to rotate at the same time.

5,188,576
SELF-PILOTING THRUST WASHERS
Joel M. Maguire, Dearborn, and Arlis Hall, Rochester Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Jan. 13, 1992, Ser. No. 819,909
Int. Cl.[5] F16H *3/44, 57/04*
U.S. Cl. 475—348 **5 Claims**



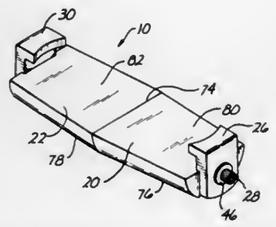
1. A thrust washer and a planet gear and a planet gear carrier, in combination, the planet gear rotatively supported by a shaft, the shaft supported by a pair of carrier flanges of the planet gear carrier, the gear disposed between the carrier flanges, a needle roller bearing radially disposed between the shaft and the gear, the thrust washer concentric with the gear and the shaft, the thrust washer being axially disposed between the gear and one of the carrier flanges, comprising:
the planet gear having a plurality of circumferentially located engaging teeth, an inside diameter bearing surface contiguous with the needle roller bearing, and having a washer pilot cylindrical recess including an inside diameter surface;
the thrust washer having a washer pilot outside diameter surface complementary to the washer pilot inside diameter surface of the planet gear, the washer pilot outside diameter surface of the thrust washer rotatively disposed within the washer pilot inside diameter surface of the planet gear, the washer pilot outside diameter surface having a piloting relationship with the washer pilot inside diameter surface of the planet gear and being located therein; and
the thrust washer having a minimum inside diameter approximately equal to an outside diameter of the shaft plus a diameter of a needle roller of the needle roller bearing wherein an axially extending surface of the outside diameter surface of the washer is located within an overall axial extention of said gear.

5,188,577
APPARATUS FOR TOTAL BODY EXERCISE
Gary B. Young, 148 N. 3rd West; Jack N. Young, 497 Oak Crest Dr.; Steven R. Young, 249 N. 1st West, and Franklin E. Young, 1149 N. Main, all of Monticello, Utah 84535
Filed Jul. 13, 1992, Ser. No. 913,607
Int. Cl.[5] A63B *22/04*
U.S. Cl. 482—53 **8 Claims**



1. A full body exercise apparatus, comprising in combination:
a horizontal base member;
an upright support frame attached at its lower end to said base member;
a pair of elongate foot pedals pivotally attached approximately midway thereof respectively to said support frame;
a pair of support pegs for free weights disposed on the upper side of said food pedals at the rearward ends thereof;
a cross member attached to the upper end of said support frame;
a pair of elongate, straight arm handles pivotally attached to said cross member;
a pair of actuating rods pivotally attached at one end thereof respectively to said arm handles and at the other end respectively to said foot pedals, and;
two pair of elongate tensioning means pivotally attached at one end thereof to said cross member and at the other end thereof respectively to each of said foot pedals.

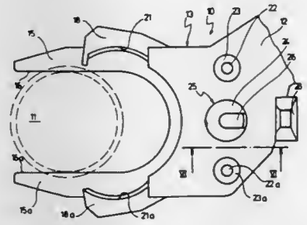
5,188,578
SKIIING SIMULATOR AND TRAINING DEVICE
Bruce S. Voigt, 42677 Cedar, Big Bear Lake, Calif. 92315
Filed Jan. 13, 1992, Ser. No. 819,788
Int. Cl.[5] A63B *69/18*
U.S. Cl. 482—71 **20 Claims**



1. A device for attaching to a ski boot comprising:

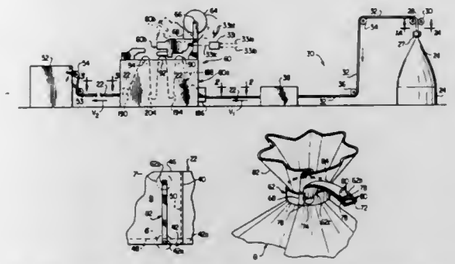
a first body having a top surface sized and shaped to mate against the sole of a ski boot;
said first body having an arcuate bottom surface;
a second body having a top surface sized and shaped to mate against the sole of a ski boot;
said second body having an arcuate bottom surface;
the bottom surface of each of said first and said second bodies being essentially arcuate about an axis that is essentially parallel with a heel to toe axis of said ski boot and at least a portion of the bottom surfaces of each of said first and said second bodies is essentially tapered about an axis that is essentially perpendicular to said heel to toe axis of said ski boot and passes from side to side through said ski boot;
connecting means for movably connecting said first body to said second body; and
attaching means for attaching said connected first and second bodies to a ski boot.

5,188,579
MACHINE TOOL AND METHOD FOR OPENING AND CLOSING A GRIPPER
Eugen Rüschle, Mülheim, and Rudolf Haninger, Seitingen-Oberflacht, both of Fed. Rep. of Germany, assignors to Chiron-Werke GmbH & Co. KG, Fed. Rep. of Germany
Filed Nov. 14, 1991, Ser. No. 791,997
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1990, 4036915
Int. Cl.[5] B23Q *3/157;* **B25J** *15/02*
U.S. Cl. 483—1 **13 Claims**



13. A method for opening and closing a gripper provided on a tool changer for exchanging tools of a machine tool, said gripper being provided with at least one movable jaw for a form-locking engagement of said tools, and being, further, provided with an axially displaceable actuating means opening and closing, respectively, said jaw in response to an axial movement of said actuating member, the method comprising the steps of:
moving said gripper against a stationary stopper element of said machine tool to actuate a coupling means, whereby said actuating means is coupled with said stationary stopper element by moving said gripper against said stationary stopper element, for transferring said actuating means into a first axial end position for opening said jaw;
moving said gripper away from said stationary stopper element and pulling said actuating means with said stationary stopper element coupled to it, into a second axial end position thereof, by moving said gripper away from said stationary stopper element, for closing said jaw; and
disconnecting said actuating means in its second axial end position from said stationary stopper element by moving said gripper further away from said stationary stopper element.

5,188,580
PLASTIC FILM BAG MANUFACTURING APPARATUS AND ASSOCIATED METHODS, AND PLASTIC FILM BAGS PRODUCED THEREBY
Gary L. Rutledge, and Edgar R. Pitcher, both of Dallas, Tex., assignors to John C. Marrelli, Tustin, Calif.
Continuation-in-part of Ser. No. 117,209, Nov. 4, 1987, Pat. No. 4,854,735. This application Aug. 4, 1989, Ser. No. 389,757
Int. Cl.[5] B31B *23/74, 23/90*
U.S. Cl. 493—225 **37 Claims**



19. A machine for attaching closure tie elements to the longitudinally successive, separable individual bag portions of a plastic film web being longitudinally delivered at an essentially constant linear speed from a bag forming station to a web receiving mechanism spaced apart from the bag forming station and adapted to forcibly capture the web being discharged from the bag forming station, each of the individual bag portions, when separated from the plastic film web, having an openable end, said machine comprising:
a web handling portion including:
a support structure,
roller means, carried by said support structure, for drivingly engaging the plastic film web being discharged from the bag forming station and moving it generally toward the web receiving mechanism, said roller means including an inlet drive roller, an outlet drive roller spaced laterally apart from said inlet drive roller, toward the web receiving mechanism, in a generally parallel relationship with said inlet drive roller, and a central drive roller positioned between said inlet and outlet drive rollers in a laterally spaced, generally parallel relationship therewith,
drive means for rotationally driving said inlet, outlet and central drive rollers in a manner such that first and second slack portions of the plastic film web are respectively formed between said inlet drive roller and said central drive roller, and between said central drive roller and said outlet drive roller,
vacuum means for exerting a yielding vacuum force on said first and second slack portions to respectively form therefrom first and second plastic film web loops each having a length and extending generally transversely to said inlet, outlet and central drive rollers, and
control means for regulating said drive means in a manner such that said inlet and outlet drive rollers are continuously driven at rotational speeds corresponding to said linear speed, and said central drive roller is alternately stopped, to engage and stationarily position a selected portion of one of the individual bags thereon, thereby causing the length of said first plastic film web loop to increase and the length of said second plastic film web loop to decrease, and then started and driven at a rotational speed higher than that of said inlet and outlet drive rollers until a corresponding selected portion of the next adjacent individual bag is engaged by said central drive roller and said first and second plastic film web loops are respectively shortened and lengthened essentially to the

VOL 1147 ISS 4 FE 23 1993 UMI

lengths thereof which existed prior to the stoppage of said central drive roller; and

a tie element attachment portion positioned adjacent said inlet, outlet and central drive rollers and including:

means for successively positioning a flexible tie element adjacent the openable end of each individual bag sequentially stopped at said central drive roller, and

means for firmly securing an end portion of each tie element member to a side edge portion of its associated bag adjacent the openable end of the bag, the secured tie elements each being adapted to be wrapped around its associated bag in a manner tightly closing its openable end.

5,188,581

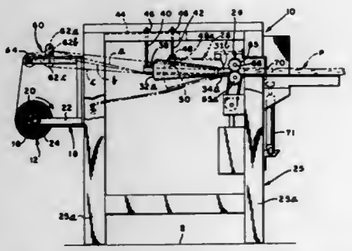
METHOD FOR PRODUCING A NARROW WIDTH CUSHIONING PAPER PRODUCT

Bruno H. Baldacci, Novelty, Ohio, assignor to Ranpak Corp., Ohio

Division of Ser. No. 412,784, Sep. 26, 1989, Pat. No. 5,061,543, which is a division of Ser. No. 140,734, Jan. 19, 1988, Pat. No. 4,884,999. This application Jul. 23, 1991, Ser. No. 734,512

Int. Cl.[5] B31F *1/10*

U.S. Cl. 493—381 **8 Claims**



1. A method for producing, from sheet-like stock material such as paper, a narrow width pad-like cushioning dunnage product comprising a lengthwise oriented generally central coined portion extending transversely of the product for a major portion of the transverse dimension of the product but terminating adjacent laterally spaced non-coined edge portions extending lengthwise of the product, the product being in the order of approximately three and one-half to four inches in width, and approximately one to one and one-fourth inches in thickness at the non-coined edge portions of the produced pad-like product, said method comprising the steps of:

providing a known paper dunnage converter which utilizes a funnel-like member coacting with a paper former disposed interiorly of the funnel-like member and adapted to cause inward rolling of lateral edges of a sheet-like stock material and movement thereof into generally abutting relation at an exit end of the funnel-like member to form generally longitudinal rolled edge portions which meet at a rolled edge juncture prior to being coined at the rolled edge juncture to hold the rolled edge portions coupled to one another and form a full-size cushioning dunnage pad-like product having a width and thickness substantially greater than the width and thickness of the narrow-width pad-like cushioning product,

providing a conversion kit for said converter to enable the converter to produce from the sheet-like stock material the narrow-width pad-like cushioning dunnage product,

removing said paper former and said funnel-like member and then removably installing said conversion kit to enable said converter to produce said narrower width and lesser thickness dunnage product, said removal/installation being performed in such a manner that upon removal of said kit said converter may be reconverted back to the production of full size cushioning dunnage product upon reinstalling said paper former and said funnel-like member.

5,188,582

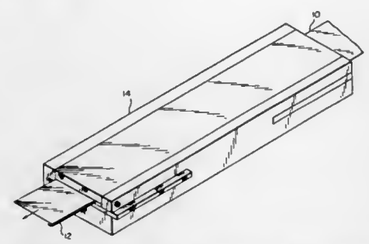
APPARATUS FOR FORMING TEAR TAB LINING MATERIAL

Myron Ullman, Canfield, Ohio, assignor to Boardman Molded Products, Inc., Youngstown, Ohio

Filed May 31, 1991, Ser. No. 708,647

Int. Cl.[5] B65H *45/12*

U.S. Cl. 493—440 **8 Claims**



1. An apparatus producing a first fold and a second fold forming a continuous "z" edge on a continuous web of thin material as it is pulled therethrough, comprising:

a first station for first folding said web material at a line parallel to an edge thereof in a first direction with respect to a first plane of said web material at a first angle with respect to a second plane defined by an unfolded portion of said web material;

a second station for second folding said web material at a second angle at a location on said first plane of said web material which is parallel to said edge and wherein said second fold is in a direction opposite to said first direction of said first fold;

a third station for continuously and gradually decreasing the angle of said first fold and said second fold until said web material forms a flat "z" shaped edge fold;

wherein said third station comprises angular sides forming different planes each progressing in a direction that said web material is pulled through said apparatus and each working on a different plane of said material; and

wherein said third station has an upstream cross section in the form of a "v" and a downstream cross section in the form of a "z" and wherein there is a gradual transition from said "v" cross section to said "z" cross section; and an apex of said "v" cross section faces said unfolded portion.

5,188,583

APPARATUS FOR SEPARATING TWO PHASES OF A SAMPLE OF HETEROGENEOUS LIQUID BY CENTRIFUGING, THE APPARATUS BEING PARTICULARLY SUITABLE FOR SEPARATING PLASMA FROM WHOLE BLOOD

Jean Guigan, 5, rue des Ursulines, 75005 Paris, France

Filed Aug. 2, 1991, Ser. No. 739,542

Claims priority, application France, Aug. 3, 1990, 90 09982

Int. Cl.[5] B04B *11/06*

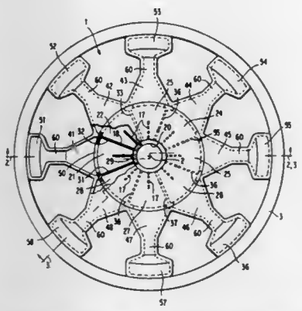
U.S. Cl. 494—43 **4 Claims**

1. Apparatus for separating two phases of a sample of heterogeneous liquid by centrifuging, the apparatus being particularly suitable for separating plasma from whole blood, wherein the apparatus comprises a closed assembly about an axis of revolution and comprising:

a distributor-divider disposed centrally and provided with n compartments delimited by radial partitions, the first compartment communicating firstly with the outside via a well for receiving a sample of whole blood and secondly with the second compartment via an overflow, the second compartment similarly communicating with a third via an overflow, and so on to the n-th compartment which does not communicate with the first compartment, all of the overflows being situated at the same height, and said distributor-divider being filled progressively merely under gravity;

a ring separator situated around said distributor-divider and incorporating n receptacles respectively communicating:

with n compartments via respective orifices situated at a height which is significantly greater than that of said overflows to ensure that the blood contained in said compartments pours into said receptacles only under the effect of centrifuging;



via respective restrictions with n outer separation cells for storing red corpuscles, the ratio of the volume to be contained in each cell relative to the volume of said associated compartment being not less than the volume ratio of red corpuscles relative to whole blood, thereby ensuring that the interface between the red corpuscles and the plasma which is established in each cell when centrifuging stops lies below said restriction;

in between, a common bottom portion narrowing into a funnel; and

a removable plasma collector situated centrally beneath said funnel.

5,188,584

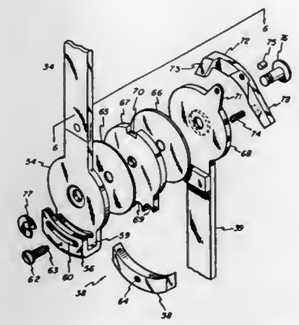
ORTHOSIS FOR ASSISTANCE IN WALKING

Jerrold S. Petrofsky, El Toro; Wes Piotrowski, and Jannike Petrovska, both of Los Angeles, all of Calif., assignors to Petrofsky Research, Inc., Laguna Hills, Calif.

Division of Ser. No. 565,773, Aug. 10, 1990, Pat. No. 5,054,476, which is a division of Ser. No. 328,417, Mar. 24, 1989, Pat. No. 4,969,452. This application Oct. 4, 1991, Ser. No. 771,484

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—16 **3 Claims**



1. In an orthosis for stimulated walking comprising a leg brace and a riser extending upwardly from said leg brace, an improved hip joint comprising:

(a) a bolt,

(b) a support member for rotatably supporting said leg brace on said bolt,

(c) a support member for rotatably supporting said riser on said bolt,

(d) a lock plate rotatably mounted on said bolt and provided with a locking recess and a plurality of angularly spaced grooves,

(e) a locking arm rotatably mounted on one of said support members and comprising:

(i) a lock finger for reaching into said locking recess and releasibly locking said lock plate against said one of said support members,

(ii) spring means for urging said lock finger into said locking recess, and

(iii) manually operable release means for urging said lock finger out of said locking recess and unlocking said lock plate to enable a wearer of said orthosis to assume a sitting position, and

(f) means mounted on the other one of said support members for engaging a selected one of said grooves and locking said lock plate against said other one of said support members at a rotational position which produces a desired stance angle for a wearer of said orthosis.

5,188,585

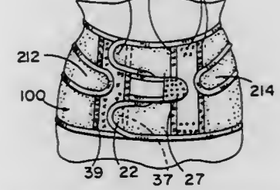
LUMBO-SACRAL ORTHOPEDIC SUPPORT

Helena Peters, Bromma, Sweden, assignor to Camp International, Inc., Jackson, Mich.

Filed Apr. 26, 1991, Ser. No. 692,111

Int. Cl.[5] A61F *5/00*

U.S. Cl. 602—19 **21 Claims**



1. A lumbo-sacral orthopedic device adapted to encircle the torso comprising, in combination:

a flexible, resilient, primary band member having an intermediate region having upper and lower edges defining therebetween an intermediate section of said band that is of sufficient width and composition to provide support to the back in the lumbar and sacrum areas of the back, said primary band member having end portions that extend in opposite direction about the torso, and overlap attaching means on the overlapping end portions for adjustably attaching said ends together for accommodating torsos of different girth dimensions;

a compression band formed of a flexible, resilient material and of substantially less width than the said width of said intermediate section of said primary band member; said compression band being of sufficient length to provide ends which extend at least from the back to the front of the torso, means for securing the ends at the front of the torso;

means for causing said compression band, when extended from the back to the front of the torso ad secured at the front of the torso, to exert increased compression said primary band member, such compression being transmitted to predetermined areas of the back;

said compression band being vertically movable relative to

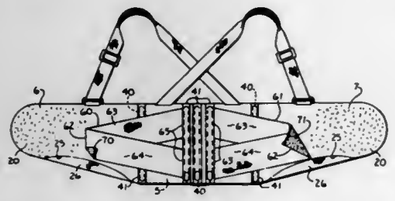
VOL 1147 ISS 4 FEB 23 1993 UMI

said intermediate region of said primary band member to different positions between said upper and lower edges of said primary band member whereby compression of said primary band member on selected areas of the back in the lumbar or sacrum areas can be selectively increased by said compression band.

5,188,586
BACK SUPPORT BELT

John C. Castel; Dawn S. Castel, and Michael R. Hall, all of Topeka, Kans., assignors to The Smith Truss Company, Topeka, Kans.

Filed Oct. 4, 1991, Ser. No. 771,505
Int. Cl.[5] A61F *5/00*; A61G *15/00*
U.S. Cl. 602—19 **17 Claims**



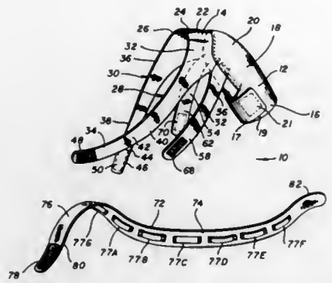
1. A brace for preventing back injuries to a wearer of the brace during lifting activities; said brace comprising:
(a) a back section adapted to generally extend across the lumbosacral region of the back of the wearer;
(b) a left side section and a right side section secured to opposite ends of said back section such that said left side section is adapted to extend around the left side of the wearer and the right side section is adapted to extend around the right side of the wearer during use;
(c) adjustable fastening means for adjustably fastening said left side section to said right side section such that said brace encircles the wearer and such that the fit of the brace with respect to the wearer may be adjusted;
(d) at least one belt loop secured to an inner side of said brace during use and adapted to receive a pant supporting belt worn by a wearer of the brace for preventing said brace from being substantially advanced upward out of a preselected position; and
(e) a lower edge of said left and right side sections being contoured so as to form a cutout portion in the left side section and the right side section; each of said cutout portions adapted to conform to the shape of an upper leg of a wearer in a squatting position.

5,188,587
ACTIVE SHOULDER BRACE

Robert R. McGuire, 42192 Stonewood Rd., Apt. 12D, Temecula, Calif. 92390, and James Weber, 26078 Charing Cross Rd., Valencia, Calif. 91355

Filed Jun. 7, 1991, Ser. No. 713,236
Int. Cl.[5] A61F *5/00*
U.S. Cl. 602—20 **17 Claims**

1. A shoulder brace comprising:
a resilient shoulder means conformable to the shoulder and upper arm of a wearer, said shoulder means including an adjustable sleeve portion having a means for adjustably attaching said sleeve portion to the upper arm and a shoulder member attached to said sleeve portion and covering the shoulder and extending downward therefrom;
a plurality of resilient torso straps each having a shoulder end fixedly attached to said shoulder means and an anchor end;
a plurality of resilient side straps each having a sleeve end fixedly attached to said shoulder means and a waist end; and

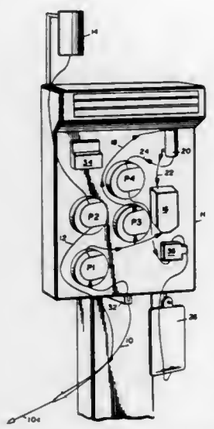


a belt means for engaging each of said anchor ends and said waist ends.

5,188,588
SINGLE NEEDLE CONTINUOUS HEMAPHERESIS APPARATUS AND METHODS

Donald W. Schoendorfer, Santa Ana, and Paul R. Prince, Fountain Valley, both of Calif., assignors to Baxter Internatonal Inc., Deerfield, Ill.

Continuation of Ser. No. 348,166, May 2, 1989, abandoned, which is a continuation of Ser. No. 125,102, Nov. 25, 1987, abandoned. This application Dec. 20, 1989, Ser. No. 455,794
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—6 **58 Claims**

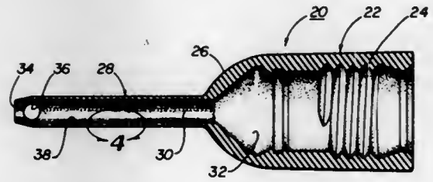


1. A harness set for a hemapheresis instrument comprising:
a separation device for processing blood fluid;
a housing defining a reservoir having discrete first and a second compartments separated by a partition wall and including means on the wall defining a port for establishing communication between the two compartments, the reservoir having first and second outlet ports generally located at the lower end of the first and second compartments, respectively, as well as first and second inlet ports generally located at the upper ends of the first and second compartments, respectively;
a venepuncture needle;
first means for establishing blood fluid communication between said needle and the first inlet port located in said first compartment of said reservoir;
second means for establishing blood fluid communication between the first outlet port located in said first compartment of said reservoir and said separator;
third means for establishing blood fluid communication between said separator and the second inlet port located in said second compartment of said reservoir; and
fourth means for establishing blood fluid communication between the second outlet port located in said second compartment and said venepuncture needle, whereby blood fluid may be collected from a donor in the first reservoir compartment and returned to the needle from the second reservoir compartment while blood fluid is simultaneously and continuously supplied from said first reservoir compartment to said separation device.

5,188,589
TEXTURED IRRIGATING SLEEVE

Peter Wypych, Irvine, and Stephen W. Haines, Santa Ana, both of Calif., assignors to Alcon Surgical, Inc., Fort Worth, Tex.

Filed Oct. 10, 1991, Ser. No. 774,406
Int. Cl.[5] A61B *17/20*
U.S. Cl. 604—22 **18 Claims**

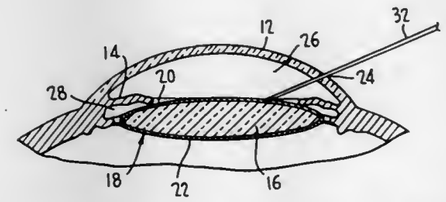


1. An irrigating sleeve for use in combination with a cutting tip of a phacoemulsification handpiece, comprising:
a) a base having a nose, a hollow interior and a means for connecting the base to the handpiece;
b) a tube connected to the base at the nose having an interior surface, an open end opposite the nose and a longitudinal bore in communication with the hollow interior of the base that receives the cutting tip; and
c) a means for randomly and nonlinearly reducing the amount of surface contact between the cutting tip and the interior surface of the tube during tube compression and for bathing the cutting tip continuously in a lubricant.

5,188,590
BUFFER-CONTAINING DEVICES FOR PREVENTING CLOUDING OF POSTERIOR CAPSULE AFTER EXTRACAPSULAR CATARACT EYE SURGERY AND METHOD OF PERFORMING CATARACT SURGERY

Seymour Dubroff, 3806 Thornapple St., Chevy Chase, Md. 20815

Continuation-in-part of Ser. No. 483,719, Feb. 12, 1990, Pat. No. 5,080,647, which is a continuation-in-part of Ser. No. 173,625, Mar. 25, 1988, Pat. No. 4,909,784. This application Mar. 26, 1991, Ser. No. 674,895
Int. Cl.[5] A61B *17/20*
U.S. Cl. 604—22 **41 Claims**

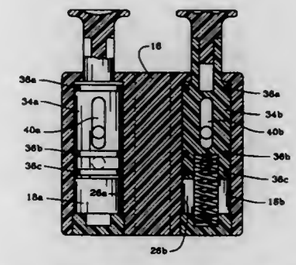


1. A method of performing cataract surgery on an eye to prevent capsule clouding after the surgery comprising the steps of injecting a buffer-containing hypotonic solution between an anterior capsule and a natural lens, said solution having properties to kill undifferentiated epithelial cells.

5,188,591
IRRIGATION CONTROL VALVE FOR ENDOSCOPIC INSTRUMENT

James H. Dorsey, III, 901 E. Sample Rd., Suite C, Pompano Beach, Fla. 33064

Filed Jan. 26, 1990, Ser. No. 470,771
Int. Cl.[5] A61M *1/00*; F16K *11/00*
U.S. Cl. 604—33 **4 Claims**



1. An improved irrigation control valve assembly comprising a bilaterally symmetrical housing defining a plurality of valve chambers, each such valve chamber comprising an elongate cylinder, a piston and means for reciprocating movement of said piston within said valve chamber,
each said valve chamber being further provided with an inlet orifice connected to a source of vacuum or irrigation fluid and a second orifice, axially offset from the inlet orifice, connected to a common conduit,
the piston for each chamber of the valve assembly being of a defined length relative to the length of such valve cylinder to allow for reciprocating movement of each said piston within said cylinder, each said piston being further provided with an elongate aperature, the size and shape of which being determined by the relative distance between the orifices within the valve cylinder wall and controlled flow of fluid, upon reciprocating movement of said piston, within said cylinder thereby allowing for communication between the orifices in said cylinder wall through the elongate aperature in said piston; and
a common conduit formed at right angles relative to the cylinders of said valve body and communicating with each cylinder in said valve body through the second orifice in the cylinder wall, the common conduit being provided with a fitting adapted for connection to a probe, said valve being further characterized as having at least one (1) pair of chambers within a housing that is symmetrical about a plane containing a wall that separates the valve chambers, said housing being adapted for attachment of a probe to the valve housing at either one of two positions to accommodate clinician preference.

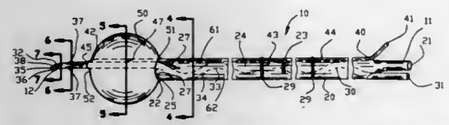
5,188,592
DYNAMIC PRESSURIZED CATHETER WITH SIMULTANEOUS OXYGEN DELIVERY AND SUCTION

Sam I. Hakki, 8601 State Rd. 39 North, Plant City, Fla. 33565

Filed Jun. 24, 1991, Ser. No. 719,479
Int. Cl.[5] A61M *1/00*
U.S. Cl. 604—35 **13 Claims**

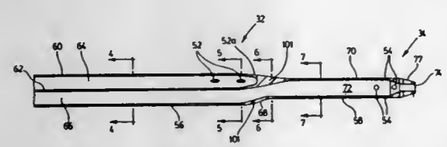
1. Apparatus for removing material from a bronchial cavity of a lung and for simultaneously aerating the lung, comprising:
a suction tube having a first end and a second end with a suction tube lumen extending therebetween;

said suction tube being sufficiently flexible and sufficiently small in diameter to enter the bronchial cavity of the lung;
said suction tube defining a plurality of suction tube openings proximate said second end of said suction tube;
an oxygen tube having a first end a second end with an oxygen tube lumen extending therebetween;
said oxygen tube being disposed within said suction tube lumen and being secured to said suction tube lumen;
said oxygen tube defining an oxygen tube opening proximate said second end of said oxygen tube;
an inflatable balloon secured to said suction tube between said suction tube opening and said oxygen tube opening for engaging a surface in the lung;



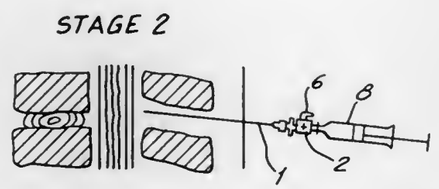
said inflatable balloon being adapted to physically dislodge tenacious material from the surface in the lung upon a movement of said inflatable balloon relative to the surface in the lung;
means for connecting said first end of said suction tube to a source of vacuum for conveying material out of the lung by suction;
means for connecting said first end of said oxygen tube to a source of oxygen for simultaneously conveying oxygen into the lung; and
each of said plurality of suction tube openings has a general shape of a teardrop for facilitating the entry of tenacious material from the surface of the lung.

5,188,593
DUAL LUMEN CATHETER
Geoffrey S. Martin, Mississauga, Canada, assignor to Vas-Cath Incorporated, Mississauga, Canada
Continuation of Ser. No. 543,692, Jun. 26, 1990, Pat. No. 5,057,073, which is a division of Ser. No. 184,529, Apr. 21, 1988, Pat. No. 4,961,809. This application Aug. 7, 1991, Ser. No. 742,071
Int. Cl.[5] A61M *3/00*
U.S. Cl. 604—43 **8 Claims**



1. A dual lumen catheter for use in a vein to remove blood and to return treated blood to the vein comprising:
a flexible elongate body having first and second portions;
the first portion having a first cross-sectional area, a distal end, a proximal end, an outer wall and a continuous septum extending internally between spaced points on the outer wall to define D-shaped first and second passageways;
the second portion being tubular and having a second cross-sectional area smaller than said first cross-sectional area, a distal end with a cross-sectional area that reduces gradually to form a tip having an end opening, a proximal end, and an outer wall;
the distal end of the first portion being merged smoothly with the proximal end of the second portion at a transition portion which converges in cross-section from the first portion to the second portion;
the first passageway being closed at the transition portion to form a first lumen having a distal end at the transition portion;
at least one intake aperture at the distal end of the first lumen in the outer wall of the first portion providing access for blood into the first lumen;
the second passageway meeting the tubular portion at the transition portion to form a second lumen which terminates at said end opening to permit treated blood to be returned to the vein, and the second portion defining at least one blood return aperture in the same side of the catheter as the intake aperture and adjacent said end opening; and
means coupled to the proximal end of the first portion to draw through the blood intake aperture and receive blood through the first lumen, and to return treated blood to the second lumen for flow into the vein through the blood return aperture and through the end opening.

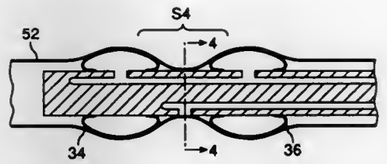
5,188,594
METHOD OF ADMINISTERING MEDICATION INTO EPIDURAL SPACE
Michael Zilberstein, 3 trescott Path, Fort Salonga, N.Y. 11768
Filed Jul. 22, 1991, Ser. No. 733,675
Int. Cl.[5] A61M *31/00*
U.S. Cl. 604—51 **2 Claims**



1. A method of administering medication into an epidural space, comprising the steps of introducing a front end of a hollow needle into a chosen space; connecting a rear end of the hollow needle with a valve having a first opening connectable with the rear end of the needle, a second opening and a third opening; attaching an elastic member to said second opening of said valve; supplying air by an air supplying element into said third opening and then through the first and second openings and advancing the needle so that when the needle does not reach the epidural space the elastic element is inflated and forms a balloon and when the needle reaches the epidural space the balloon is deflected due to the communication of said valve with the epidural space; removing the air supplying element from the third opening of the valve when the balloon is deflected; connecting a medicine administering element to the third end of the valve, and supplying a medicine through the third end and the first end of the valve into the needle and then into the epidural space.

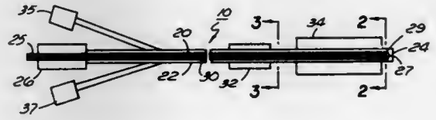
5,188,595
METHOD FOR ENHANCED RETENTION OF BALLOON CATHETER IN BODY CAVITY
Roger P. Jacobi, San Jose, Calif., assignor to Laserscope, San Jose, Calif.
Filed Jun. 28, 1991, Ser. No. 722,339
Int. Cl.[5] A61M *31/00, 5/32*
U.S. Cl. 604—53 **8 Claims**

1. A method for securing a catheter in a body vessel, said catheter comprising a length of flexible tubing having first and second ends, said tubing including a plurality of axial lumens running therethrough, said tubing further including first and second inflatable balloons circumferentially disposed about the outside of said tubing located proximate to said first end thereof, said first and second balloons separated by a selected distance and communicating with at least one of said plurality of lumens, at least one of said plurality of lumens terminating in a first aperture located on the outer wall of said tubing between said first and second balloons, said method including the steps of:
inserting said catheter into a body vessel;



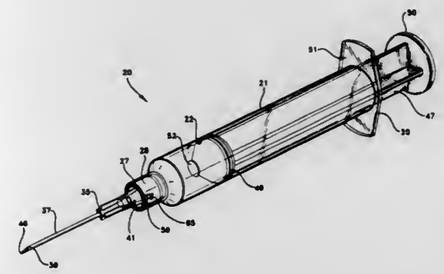
inflating said balloons;
pulling a vacuum in a volume defined between said balloons and inside a wall defining said body vessel; and
partially collapsing said wall of said body vessel between said balloons in said volume to more securely position said catheter in said body vessel.

5,188,596
TRANSPARENT PROSTATE DILATION BALLOON AND SCOPE
Dennis E. Condon, Santa Barbara; Robert S. Bley, Goleta, and Bobby K. Purkait, Santa Barbara, all of Calif., assignors to Mentor Corporation, Santa Barbara, Calif.
Filed Sep. 27, 1990, Ser. No. 589,048
Int. Cl.[5] A61M *29/00*
U.S. Cl. 604—101 **13 Claims**



1. A system for dilation of the prostate urethra comprising:
a urinary catheter for insertion in the prostate urethra, said catheter having proximal and distal sections, said catheter being partially transparent;
a flexible, resilient, transparent dilation balloon mounted on said catheter;
a first filling means operatively connected to said dilation balloon for inflating said dilation balloon;
a flexible, resilient, transparent fixation balloon mounted on said catheter;
a second filling means operatively connected to said balloon for inflating said fixation balloon;
an elongate flexible scope means extending through said catheter for viewing at said proximal section of said catheter, said scope means having a first scope end at said proximal section of said catheter and a second scope end at said distal section of said catheter, said scope means including:
illumination means for illuminating objects in the vicinity of said first scope end;
imaging means adjacent said first end thereof for providing an image of objects in the vicinity of said first end of said scope means; and
conveying means for conveying the image provided by said imaging means to the second end of said scope for viewing when said scope is inserted into said catheter, whereby said scope means may provide a viewing capability through the transparent portion of the catheter.

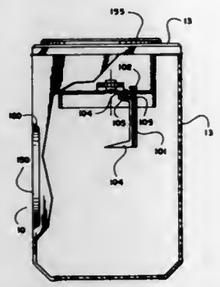
5,188,597
SAFETY NEEDLE SYRINGE
Niall Sweeney, Rutherford; Michael Nagy, New Milford, and Richard Eisenring, Ringwood, all of N.J., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Filed Apr. 13, 1992, Ser. No. 867,934
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—110 **14 Claims**



1. A safety needle syringe comprising:
an elongate barrel having an inside surface defining a chamber, an open proximal end and a distal end;
a movable needle carrier positioned in fluidtight engagement with said inside surface of said barrel at said distal end of said barrel, said carrier having a distal end, a proximal end, and a passageway therethrough in fluid communication with said chamber;
a needle cannula projecting outwardly from said distal end of said carrier, said cannula having a distal end and lumen therethrough in fluid communication with said passageway;
plunger means slidably positioned in fluidtight engagement with said inside surface of said barrel, said plunger means having a distal end and a proximal end extending outwardly from said open end of said barrel;
engagement means for allowing said distal end of said plunger means to engage said carrier for allowing distally and proximally directed forces applied to said proximal end of said plunger means to be transmitted to said carrier; and
control means for helping to prevent movement of said carrier with respect to said barrel during normal use of said syringe while said control means is in a first locked position, and allowing said carrier to be moved proximally into said chamber through forces applied to said plunger means while said control means is in a second unlocked position, transition between said first locked position and said second unlocked position and withdrawing said cannula into said barrel being accomplished by at least two motions of said plunger means with respect to said barrel while said distal end of said plunger means engages said carrier, said first motion being distally directed to force said carrier in a distal direction with respect to said barrel followed by a second motion proximally directed to move said carrier into said barrel far enough so that said distal end of said cannula does not extend beyond said distal end of said barrel.

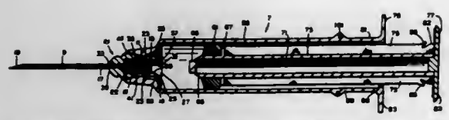
VOL 1147 ISS 4 FE 23 1993 UMI

5,188,598
APPARATUS AND METHOD FOR SAFELY DISPOSING CONTAMINATED NEEDLES
William H. Thead, and John C. Evans, both of Atlanta, Ga., assignors to Post Medical, Inc., Atlanta, Ga.
Continuation-in-part of Ser. No. 248,470, Sep. 23, 1988, Pat. No. 4,986,811. This application Nov. 1, 1990, Ser. No. 607,553
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—110 **33 Claims**



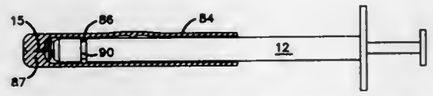
1. An apparatus for removing needles of the type received in syringe bodies, comprising:
means for disengaging said needle from said syringe body;
a container associated with said disengaging means, for confining said needle after disengagement from said syringe body; and
means responsive to an accumulation of said needles in said container for preventing disengagement of additional needles.

5,188,599
RETRACTABLE NEEDLE SYSTEM
Michael J. Botich, Oxnard, and Thor Halseth, Simi Valley, both of Calif., assignors to Med-Design, Inc., Simi Valley, Calif.
Continuation-in-part of Ser. No. 378,275, Jul. 11, 1989, Pat. No. 4,994,034. This application Feb. 15, 1991, Ser. No. 656,305
The portion of the term of this patent subsequent to Feb. 19, 2008, has been disclaimed.
Int. Cl.[5] A61M *5/24*
U.S. Cl. 604—110 **26 Claims**



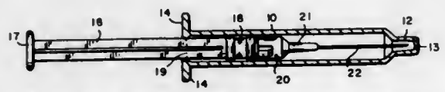
1. A hypodermic syringe system comprising:
(a) a syringe barrel including a nose section disposed at one end,
(b) a syringe plunger including an interior cavity and a frangible end adjacent thereto an, said syringe plunger sized to be received within and slide through said syringe barrel,
(c) an injection needle, and
(d) a spring holding means readily associable and attachable to said syringe barrel, for holding said injection needle and selectively retracting said injection needle into said interior cavity of said syringe plunger when said syringe plunger abuts against and moves beyond a portion of said syringe barrel, causing breakage of said frangible end, and allowing said frangible end of said syringe plunger to separate, wherein said spring holding means comprises; a holder for holding said injection needle; and a spring means for exerting an expansive force between said holder and said spring holding means, wherein said spring holding means selectively holds said holder and said spring means therebetween while allowing said injection needle to extend through said spring holding means in an assembled condition wherein said holder has a lip, said spring holding means has extending resilient fingers with interior and inferiorly positioned hooks to retain said lip of said holder in an assembled condition wherein, said fragible end of said syringe plunger has an engaging and complementing surface which abuts up against said hooks of said extending resilient fingers, spreading said extending resilient fingers radially outwardly to release said lip against the expansive force of said spring means when said syringe plunger moves beyond said portion of said syringe barrel, and wherein said spring holding means attachable to said syringe barrel and lockable thereto, preventing removal of said spring holding means from said syringe barrel.

5,188,600
SYRINGE GUARD APPARATUS
Robert G. Jullien, 2904 Graham Road, Falls Church, Va. 22042
Division of Ser. No. 402,894, Sep. 5, 1989, Pat. No. 5,002,533, which is a continuation-in-part of Ser. No. 360,585, Jun. 2, 1989, Pat. No. 5,015,234. This application Feb. 27, 1991, Ser. No. 661,242
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—110 **10 Claims**



1. An assembly for injecting fluid into or drawing fluid from a substrate, said assembly comprising:
a barrel adapted to contain said fluid and having a needle mounted thereon for transmitting said fluid between said barrel and said substrate;
tubular guard means for telescopically receiving said needle and at least a portion of said barrel via a first, open end thereof, said guard means being slidable with respect to said barrel between an extended position in which said first end is proximal said portion of said barrel and a retracted position in which said portion of said barrel is proximal a second, closed end of said guard means; and
locking means between said guard means and said barrel for locking said guard means and said barrel in said retracted position;
wherein said needle is destructively crushed between said second end of said guard means and said barrel as said guard means is slid from said extended position and locked in said retracted position.

5,188,601
DISPOSABLE SAFETY SYRINGE
Richard J. King, 113 Commodore Dr., Jupiter, Fla. 33477
Filed Nov. 6, 1991, Ser. No. 787,915
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—110 **17 Claims**



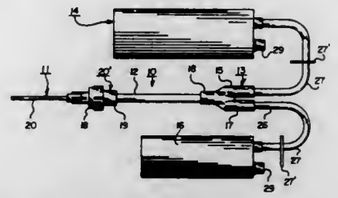
1. A disposable safety syringe assembly comprising:
(a) a substantially elongated barrel assembly, said barrel assembly having a forward end, a rearward end, an exterior surface and an Interior surface, with the interior surface defining an interior space, and wherein the barrel assembly is open ended in its rearward end, and wherein the forward end is provided with a constricted neck portion having a bore extending at least partially therethrough, and a needle breakable seal at the end thereof;
(b) a backward and forward slidable needle assembly, disposed within said barrel assembly, said needle assembly including a substantially cylindrical hub member having a forward end and a rearward end, wherein the rearward end is provided with a locking member, and the forward end is provided with a constricted neck portion, said hub member further having a bore therethrough for communicating with the interior space of the barrel assembly; and
wherein said constricted neck portion of said needle assembly is of a size and shape to removably wedge fit within the constricted neck portion of said barrel assembly, and
wherein said needle assembly further includes a hollow needle mounted within the forward end of said hub member and passing through said constricted neck portion; and
(c) a plunger assembly including a rod portion movable with respect to the syringe barrel assembly, said rod portion including a gasket member mounted on the rod near its forward end, and terminating with a locking member at its forward end, said locking member being capable of locking and unlocking with the locking member of the needle assembly;
(d) wherein said locking member on said needle assembly consists of the female half of a ¼-turn "T" mechanism.

5,188,602
METHOD AND DEVICE FOR DELIVERING HEAT TO HOLLOW BODY ORGANS
Colin J. Nichols, Fremont, Calif., assignor to Interventional Thermodynamics, Inc., Mountain View, Calif.
Continuation of Ser. No. 551,971, Jul. 12, 1990, abandoned. This application Jun. 8, 1992, Ser. No. 895,579
Int. Cl.[5] A61F *7/12*
U.S. Cl. 604—113 **45 Claims**



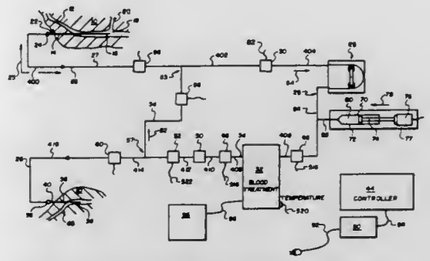
1. A catheter for heating a hollow body organ, said catheter comprising:
a first flexible elongate member having a proximal end, a distal end, and an axial lumen extending between said proximal and distal ends;
a second flexible elongate member slidably disposed within the axial lumen of the first flexible elongate member;
means disposed externally near the distal end of the first flexible elongate member for heating an environment surrounding the catheter; and
means on the second flexible elongate member for sealing a region connecting with the hollow body organ.

5,188,603
FLUID INFUSION DELIVERY SYSTEM
Vincent L. Vaillancourt, 14 Bunyan Dr., Livingston, N.J. 07039
Filed Jan. 3, 1991, Ser. No. 637,061
Int. Cl.[5] A61M *37/00*
U.S. Cl. 604—131 **20 Claims**



1. A fluid infusion delivery system comprising
an IV catheter for placement in a vein;
a fluid line extending from said catheter for delivery of a fluid thereto;
a disposable primary pump connected to said fluid line for delivery a predetermined dose of fluid into said line within a predetermined pressure range; and
a disposable secondary pump connected to said fluid line for delivery a second fluid into said line under a continuous positive pressure less than said pressure range to maintain said catheter patent in the absence of the delivery of fluid from said primary pump.

5,188,604
EXTRA CORPOREAL SUPPORT SYSTEM
Jeffrey L. Orth, Salt Lake City, Utah, assignor to Rocky Mountain Research, Inc., Salt Lake City, Utah
Division of Ser. No. 414,780, Sep. 29, 1989, Pat. No. 5,062,775. This application May 2, 1990, Ser. No. 518,033
Int. Cl.[5] A61M *5/14*
U.S. Cl. 604—153 **23 Claims**



1. An extra corporeal support system comprising:
inlet means positioned to receive blood from a patient;
conduit means for transporting said blood throughout said extra corporeal support system;
roller pump means having said conduit means extending therethrough, said roller pump means being configured for pumping blood through said conduit means, said roller pump means including motor means connected for driving said roller pump means;
inlet detecting means interconnected in said conduit means between said inlet means and said roller pump means for measuring the pressure of said blood ins aid conduit means and supplying a signal reflective of said inlet blood pressure ins aid conduit means;
blood treatment means interconnected in said conduit means downstream of said pump means to receive blood, to treat said blood and to supply said blood at its output;
outlet means connected to conduit means downstream of

VOL 1147 ISS 4 FE 23 1993 UMI

said blood treatment means to receive blood therefrom and positioned to return blood to said patient;

control means connected to said inlet detecting means to receive said signal reflective of said inelt blood pressure, and to said motor means to supply operation signals thereto to vary the motor speed between zero upon the receipt of a signal reflective of a preselected low inlet blood pressure and a preselected high speed upon receipt of a signal reflective of a preselected high inlet blood pressure;

an air detector interconnected in said conduit means between said blood treatment means and said outlet means to detect the presence of air in said conduit means and generate a signal reflective thereof, said control means being connected to receive said signal reflective of air in said conduit means to generate an alarm signal indicative thereof;

a shunt interconnected in said conduit means at one end of said shunt between said inlet means and said inlet detecting means and at the other end of said shunt between said air detector and said outlet means;

a first solenoid valve means connected to said conduit means between said inlet means and said shunt and operable between an open fluid-flow position and a closed fluid-flow inhibiting position;

a second solenoid valve means connected to said shunt and operable between an open fluid-flow position and a closed fluid-flow inhibiting position;

a third solenoid valve means connected to said conduit means between said outlet means and said shunt and operable between an open fluid-flow position and a closed fluid-flow inhibiting position;

wherein said first, second and third solenoid valve means are each connected to said control means to receive operating signals therefrom; and

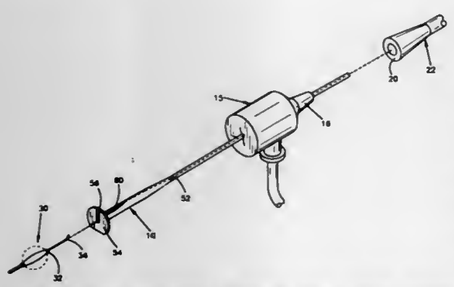
wherein said control means generates and sends operating signals to said first, second and third solenoid valve means upon receipt of signals reflective of air in said conduit means to cause said first and third solenoid valves to operate and move to their respective fluid-flow inhibiting position and said second solenoid valve to operate and move to its fluid-flow position.

5,188,605

SEPARABLE INSERTION TOOL

Richard F. Sleep, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed May 8, 1991, Ser. No. 697,114
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—158 **3 Claims**



1. Apparatus for inserting a catheter into a guide catheter comprising:

a. an elongated polyethylene tube having a slit along its length that extends through a wall of the elongated polyethylene tube;

b. an enlarged polyethylene tube having a notch for accepting a catheter's distal tip and routing the distal tip through the elongated polyethylene tube into the guide catheter; said notch narrowing to a slit that extends through a wall of said enlarged polyethylene tube along a tapered region at a distal end where the enlarged polyethylene tube narrows to a reduced diameter and is connected to the elongated polyethylene tube; and

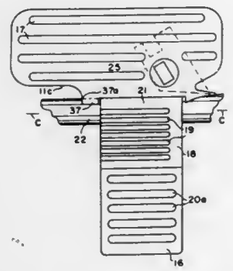
c. a polyethylene manipulator attached to a proximal end of the enlarged polyethylene tube having a slot extending from its outer circumference to a center region that opens into the notch in the enlarged polyethylene tube.

5,188,606

MULTIPLE SIZE INTRODUCER SLITTER

Thomas J. Maloney, and Eugene J. Champeau, both of Plymouth, Minn., assignors to Medamicus, Inc., Minneapolis, Minn.

Filed Sep. 11, 1991, Ser. No. 757,715
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—161 **18 Claims**



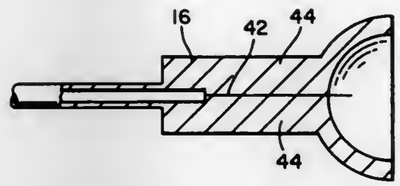
1. An introducer slitter for facilitating the removal of an introducer from a catheter or pacer lead of one of a number of different outer diameters and extends through the introducer without sliding the introducer over the proximal end of the catheter wherein the catheter and introducer each has an axially elongated tubular portion with inner and outer peripheral walls, comprising a handle section that has a front edge portion and includes an axially elongated handle member having an axially extending lower edge and an axially extending arcuate section joined to the handle member lower edge and having a radial inner surface for abutting against the catheter outer peripheral surface, a clamp member having a front edge and clamp means for clampingly abutting against the catheter outer peripheral surface generally diametrically opposite the arcuate section, hinge means connecting the handle section to the clamp member for hinging movement relative to the handle section between a catheter clamping position that the arcuate section and clamp member cooperatively clamping engage the catheter to retain the catheter in a axially fixed clamped position relative to the slitter and a catheter release position, and mean defining a cutting edge joined to one of the clamp member and the handle section to extend forwardly of the axially adjacent part of the respective one of the clamp member and the handle section front edge portion to which the cutting edge defining means is joined and extending radially outwardly of the arcuate section radial inner surface when the handle section and clamp member are in their clamping position, the one of the handle section and clamp member which has the cutting edge defining means joined thereto having a front nose portion extending axially forwardly of the cutting edge for entering between the introducer inner wall and the catheter outer peripheral wall as the introducer is pulled rearwardly relative to the catheter tubular portion whereby the cutting edge slits the introducer is pulled in a proximal direction.

5,188,607

VALVE CATHETER CONNECTOR ASSEMBLY

Thomas Wu, 74 Huntersfield Rd., Delmar, N.Y. 12054

Filed Nov. 12, 1991, Ser. No. 791,482
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—167 **4 Claims**



1. A valve catheter connector assembly system for preventing blood pooling and retrograde blood flow comprising:

a catheter adapted to receive a needle therethrough, said catheter having a distal end from which said needle may extend, the proximal end of said catheter mating with a valve system further comprising;

a base portion from which the catheter protrudes;

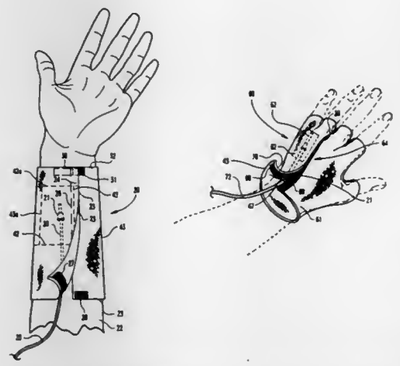
a sleeve valve extending from said base portion, the entire sleeve valve being made of resilient material, said sleeve valve having opposing walls which form a passageway through said sleeve which extends from the proximal end of the catheter through the length of said sleeve, said opposing walls pressing against each other along substantially their entire length to compress and seal said passageway when said sleeve valve is in its quiescent state such that said passageway is completely closed along its length thereby virtually eliminating any dead space within the sleeve valve, said passageway opening along its length forming a direct unobstructed passageway through the sleeve to the proximal end of the catheter upon insertion of a male connector, the proximal end of the valve system adapted to receive the male connector into the passageway, whereby said passageway is opened along its entire length only by the complete insertion of said male connector to a point substantially adjacent to the proximal end of the catheter.

5,188,608

PROTECTIVE STABILIZING SLEEVE FOR IV NEEDLE

Mark A. Fritts, 2112 S. 24th St., Terre Haute, Ind. 47802

Filed Apr. 2, 1992, Ser. No. 862,464
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—179 **10 Claims**



1. A protective stabilizing sleeve for an intravenous needle inserted into a vein in a patient's arm, said needle being connected to a supply of liquid by a tube, said protective stabilizing sleeve comprising:

an uninterrupted outer fabric panel having proximal and distal ends and an exterior surface therebetween, said outer fabric panel being arranged when wrapped around said arm to cover said needle and a portion of said tube, the tube exiting from beneath said proximal end, said exterior surface being free of any structural members and said panel being free of any opening, said panel tapering from the proximal end to the distal end;

an inner layer of gauze attached to the outer fabric panel and positioned for placement over the needle location; and

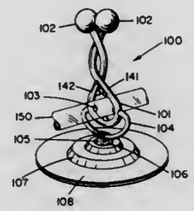
securement means disposed only at the proximal and distal ends of said outer fabric panel for securing said sleeve around the arm and stabilizing the exiting tube.

5,188,609

SWIVEL CLIP MEDICAL TUBE HOLDER

Brian Bayless, Huntington Beach, and Russell R. Lyon, Ramona, both of Calif., assignors to Bryman Medical Inc., Fullerton, Calif.

Filed Jul. 8, 1991, Ser. No. 726,947
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—180 **11 Claims**



1. A tubing holder comprising,

deformable retainer means for retaining tubing,

said deformable retainer means comprises a relatively thin strip of flexible material,

said strip is reversed upon itself to form a clip having a closed end and a pair of spaced apart, elongated arms,

said pair of elongated arms are arranged to be selectively engaged with each other thereby to close said clip,

base means, and

connector means for movably joining said deformable means to said base means,

said connector means is shorter than said deformable retainer means whereby said deformable retainer means is maintained in close proximity to said base means,

said connector means includes a loop means spaced apart from said deformable retainer means adjacent to the closed end thereof,

interlocking means adapted to encompass a portion of said loop means and engage said base means,

said interlocking means comprises a U-shaped strap which engages said loop means,

said U-shaped strap includes enlarged free ends for slidably engaging said base means.

5,188,610

FLUID DISPENSING APPARATUS

John R. Rains, Dalhart, Tex., assignor to Vetrisystems, Inc., Dalhart, Tex.

Filed Oct. 18, 1991, Ser. No. 779,268
Int. Cl.[5] A61M *5/178*
U.S. Cl. 604—183 **12 Claims**

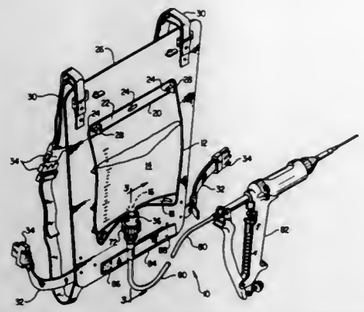
1. Apparatus for dispensing a fluid, comprising:

a flexible, collapsible fluid container having an opening;

a neck sealingly engaged with said opening;

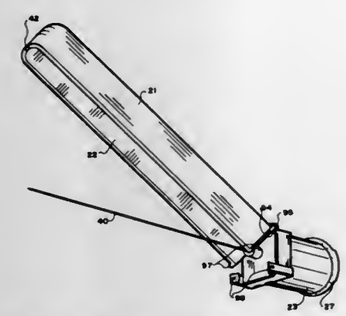
VOL 1147 ISS 4 FEB 23 1993 UMI

puncturably resealable means for preventing fluid flow from said fluid container through said neck, said preventing means being sealingly engaged within said neck; and



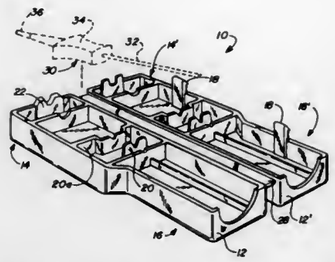
fluid dispensing means comprising a gun-type hypodermic syringe or a drench gun, said fluid dispensing means having means for fluid communication with said fluid container.

5,188,611
SAFETY SHEATH FOR NEEDLES, SHARP INSTRUMENTS AND TOOLS
Peter A. Orgain, Alger Brook Rd., So. Strafford, Vt. 05070
Continuation-in-part of Ser. No. 530,997, May 31, 1990, abandoned. This application Oct. 30, 1990, Ser. No. 605,568
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 **3 Claims**



1. A safety sheath assembly for use with a surgical instrument having a sharp end, the assembly comprising:
a. a collar disposed on the instrument in advance of the sharp end;
b. a sheath integral with the collar, having an anterior portion hingedly affixed to the collar, and having a posterior portion with an axial slot wider than the sharp end of the instrument,
wherein
c. the posterior portion of the sheath fixedly but removably engages the collar or the instrument upon closure of the sheath over instrument by means of flanges on the sheath that fit within complementary catches on the collar or instrument;
d. the posterior portion of the sheath disengages the collar or instrument upon application thereto of a pinching force and is thereafter urged to an open position with respect to the instrument; and
e. the posterior portion of the sheath extends beyond the sharp end of the instrument.

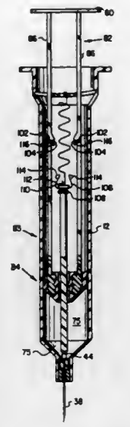
5,188,612
PHLEBOTOMIST PROTECTOR APPARATUS
Eldridge P. Herrington, Jr., West Covina, and Richard Spielberg, Alameda, both of Calif., assignors to Miles Inc., Elkhart, Ind.
Filed Oct. 28, 1991, Ser. No. 783,742
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—192 **24 Claims**



1. Apparatus for enclosing a used needle assembly, having a cannula with a needle handle and tubing attached thereto, said apparatus comprising:
an opposed pair of complementary housing elements that form a substantially hollow housing when in an engaged, closed position; each said housing element including
A. an end section having:
(i) a tubing inset element for receiving said tubing,
(ii) handle receiving means, distal to said tubing inset element, for receiving said needle handle, and
(iii) at least one cannula inset means for engaging at least a portion of said cannula, and
B. an elongate section, integral at one end with said end section, for receiving said cannula once it is engaged in said cannula inset means, said elongate section including a substantially concave portion at the other end that, when said pair of housing elements are joined in said closed position, defines an aperture of a predetermined area, whereby at least one of said housing elements includes a lock element for securing one said housing element to said opposing complementary housing element.

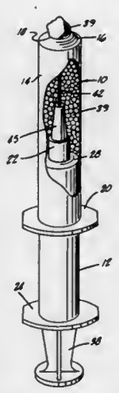
5,188,613
NONREUSABLE SYRINGE WITH SAFETY INDICATOR
Thomas J. Shaw, 1510 Hillcrest, Little Elm, Tex. 75068
Continuation-in-part of Ser. No. 679,627, Apr. 3, 1991, Pat. No. 5,120,310. This application Mar. 6, 1992, Ser. No. 843,479
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—195 **26 Claims**

1. A syringe having a retractable needle for injecting fluid into a body comprising:
(a) a hollow tubular body member providing a cavity for the fluid, having an open end for insertion of a plunger;
(b) a plunger disposed partially within the tubular member having piston means in slidable sealed contact with the inner walls of the tubular member to define a chamber for the fluid at one end of the tubular member;
(c) a needle assembly within said tubular member having a needle in sealed contact with one end of the tubular member and extending therethrough to inject the fluid, the needle assembly including a rod having one end extending in sealed contact through said piston means and another end connected to said needle;
(d) resilient means disposed behind the piston means and connected to said one end of the rod, biased to retract the needle into the tubular member;
(e) lock means to lock the needle assembly in place with the needle extended from the tubular member;
(f) warning indicia on the plunger covered by an extension of the needle assembly when the plunger is inserted, the warning indicia being permanently uncovered when the plunger is withdrawn to fill the chamber with fluid to be injected; and



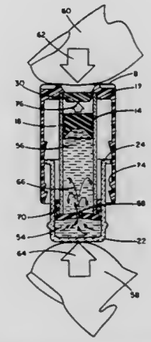
(g) release means to unlock the needle assembly and allow the resilient means to retract the needle after the plunger is fully depressed to inject the fluid in the chamber through the needle.

5,188,614
HYPODERMIC SYRINGE NEEDLE CONTAINMENT ASSEMBLY
Charles Hart, Laguna Beach, Calif., assignor to Prac-Tech-Cal, Laguna Beach, Calif.
Filed Apr. 4, 1991, Ser. No. 680,347
Int. Cl.[5] A61M *5/32*
U.S. Cl. 604—197 **32 Claims**



30. A hypodermic syringe needle containment assembly for preventing accidental needle sticks after fluid has been ejected from the syringe, said assembly comprising:
a hypodermic syringe having a barrel portion, a gripping flange proximate one end of said barrel portion and a needle projecting from the other end of said barrel portion;
a hollow cylindrical casing defining a forward end wall having an opening therein, a rearward open end and an annular gripping flange adjacent said rearward end, said casing being adapted to be disposed about said barrel portion of said syringe such that the syringe is reciprocally translatable therein, said needle projects through said opening in said forward end wall and said gripping flange is axially spaced from the gripping flange on said syringe barrel;
expandable means disposed in said casing adjacent said forward end wall thereof, said means being activated to an expanded state upon being compressed by the syringe between the syringe and said forward end wall of said casing; and
collapsible means carried by said casing and abutting a portion of said syringe upon said casing being disposed about said syringe, preventing said syringe from compressing said expandable means prior to and during ejection of fluid from said syringe and collapsing upon the application of addition force being exerted upon said syringe subsequent to such ejection, allowing said syringe to compress and activate said expandable means, whereby said expandable means expands within said casing between the forward end wall thereof and said syringe, forcing said syringe rearwardly within said casing and drawing the syringe needle into said casing.

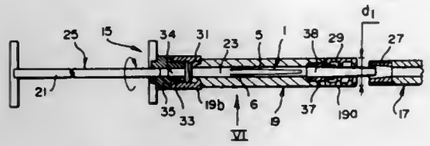
5,188,615
MIXING VIAL
Terry M. Haber, Lake Forest; Clark B. Foster, Laguna Niguel, and William H. Smedley, Lake Elsinore, all of Calif., assignors to Habley Medical Technology Corp., Laguna Hills, Calif.
Continuation-in-part of Ser. No. 615,610, Nov. 19, 1990, Pat. No. 5,114,411. This application Aug. 7, 1991, Ser. No. 741,780
The portion of the term of this patent subsequent to May 19, 2009, has been disclaimed.
Int. Cl.[5] A61M *5/24, 37/00*
U.S. Cl. 604—203 **28 Claims**



1. A multi-chambered vial, comprising:
a compressible, air tight, telescoping vessel, said vessel having an open end and a closed end and comprising a first chamber and a second chamber, the first chamber and the second chamber coupled by an aperture filled with an air tight and fluid tight rupturable seal, the open end of the vessel made air tight by a displaceable piston disposed in the open end of said telescoping vessel and forming an air tight seal sealing the vessel from ambient air; and
wherein when said telescoping vessel is compressed, pressure builds in the second chamber until the seal separating the first chamber and the second chamber is ruptured and the contents of the second chamber enter into the first chamber and turbulently mix with the contents of the first chamber, thereby increasing the volume in the first chamber by driving the piston towards the open end.

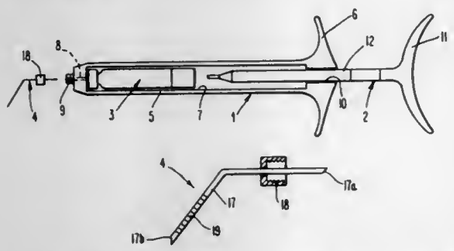
VOL 1147 ISS 4 FEB 23 1993 UMI

5,188,616
SYRINGE WITH DOUBLE PLUNGER
Guy Nadal, Poitiers, France, assignor to Celsa L.G. (Societe Anomyne), Chasseneuil Du Pointou, France
Filed Oct. 16, 1991, Ser. No. 777,660
Claims priority, application France, Oct. 23, 1990, 90 13105
Int. Cl.[5] A61M *5/315*
U.S. Cl. 604—218 **10 Claims**



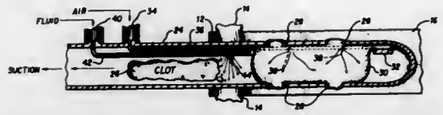
1. A syringe comprising:
a tubular syringe body having a first and a second opened end;
said first and said second opened end being opposite one another;
a first plunger insertable into said first end of said syringe body and slidable therethrough;
a second plunger insertable into said second end of said syringe body and slidable therethrough; and
fail-safe safety means provided on said first and said second plungers and on said syringe body for allowing exclusively a one of:
the insertion of said first plunger into said first end of said syringe body; and
the insertion of said second plunger into said second end of said syringe body.

5,188,617
APPARATUS AND A METHOD FOR TAKING SAMPLES FROM GUM POCKETS
Lars Linder, Stockholm, Sweden, assignor to Triple L. Laboratories AB, Stockholm, Sweden
Filed Oct. 16, 1990, Ser. No. 598,168
Claims priority, application Sweden, Oct. 17, 1989, 8903422
Int. Cl.[5] A61M *5/00*
U.S. Cl. 604—232 **1 Claim**



1. An apparatus for taking samples from gum pockets, including;
a holder and an ampoule detachably inserted therein,
a cannula connected to the holder and insertable at one end into the ampoule and at the other end into a gum pocket, said cannula having a graduated scale that indicates the distance that the cannula has been inserted into the gum pocket, said cannula forming an angle of from approximately 30° to about 60° with respect to the longitudinal axis of said holder;
said ampoule comprising a rigid tube sealed at one end by a penetrable diaphragm, and at the other end by an elastic cover inserted into the rigid tube such that it is displaceable therein and seals against the inner walls thereof thereby forming a liquidproof space with said penetrable diaphragm,
a manually operated element cooperating with the holder and adapted to displace the elastic cover whereby liquid contained in said space will be fed out through said cannula, and liquid external to said space in said gum pocket can be drawn in through said cannula and said diaphragm for retention in said space.

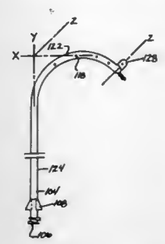
5,188,618
THROMBUS-MOBILIZING THORACOSTOMY TUBE
Bruce W. Thomas, 304-D Queensdale, York, Pa. 17403
Filed May 3, 1991, Ser. No. 695,468
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—267 **9 Claims**



1. A thrombus-mobilizing thoracostomy tube comprising:
an elongated tube means having a proximal end and a closed distal end inserted into a thoracic cavity in a user's body through a surgical incision in a chest wall, said elongated tube means including a plurality of fenestration means located near said closed distal end of said elongated tube means to enable drainage of blood and other fluids from said thoracic cavity;
balloon means disposed internally of said elongated tube means being attached to said elongated tube means at said closed distal end of said elongated tube means and inflatable from said closed distal end of said elongated tube means towards said proximal end of said elongated tube means so as to dislodge and move a blood clot when formed;
first tube means including a first inlet port means and a first outlet port means located within said elongated tube means and connected to said balloon means to enable said balloon means to be inflated; and
second tube means including a second inlet port means and a second outlet port means located within said elongated tube means and extending to a proximal end of said balloon means, said second tube means for receiving a flushing fluid when said balloon means is inflated to enable said flushing fluid to be introduced into said elongated tube means between said inflated balloon means and said blood clot; whereby
a blood clot when formed in said elongated tube means may be dislodged and flushed out of said elongated tube means without removing said elongated tube means from said user's body, thereby reducing the risk of contamination and maintaining a sterile condition.

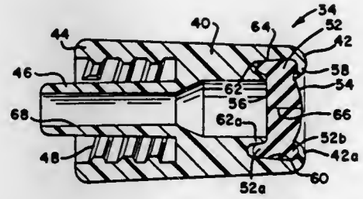
5,188,619
INTERNAL THORACTIC ARTERY CATHETER
Gene E. Myers, Sarasota, Fla., assignor to Gene E. Myers Enterprises, Inc., Sarasota, Fla.
Filed Apr. 24, 1991, Ser. No. 690,848
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—280 **5 Claims**

1. A catheter for selectively entering and visualizing normal and geriatrically displaced branch vessels of the arch of the aorta and internal thoracic artery origins comprising:
a catheter shaft having outer walls defining a central lumen, said outer walls comprising a first portion having a substantially linear shape in an X axis, a second portion extending at an angle toward a Y axis in a curved manner from said first portion and suitable for providing ease of passage for the catheter from a patient's aortic arch into one of the aortic arch branch vessels and a sub-branch of that vessel, and a third portion extending only toward a



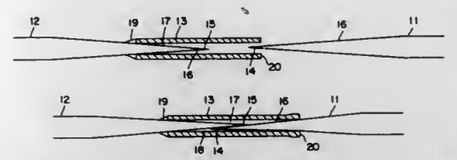
Z-axis at an out of plane angle relative to said first and second portions, into portion Z-axis orientation permitting hooked engagement of an internal thoracic artery origin.

5,188,620
PRE-SLIT INJECTION SITE AND ASSOCIATED CANNULA
Steve C. Jepson, and Thomas E. Dudar, both of Palatine, Ill., assignors to Baxter International Inc., Deerfield, Ill.
Continuation of Ser. No. 147,414, Jan. 25, 1988, abandoned. This application Jun. 14, 1990, Ser. No. 539,278
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—283 **17 Claims**



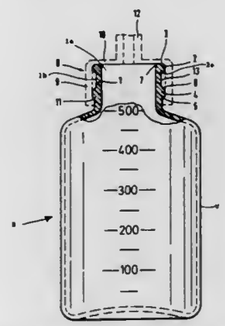
1. A two piece coupling system for coupling first and second fluid flow members together comprising:
an injection site affixed to the first fluid flow member, said site including
a housing with a fluid flow path therein, said housing having a first end with end members, defining a tapered interior surface which terminates in an annular channel having a void and a second end,
a sealing member of elastomeric material having a side peripheral surface integrating with said interior surface of said housing, an exterior peripheral surface and a resealable opening, carried by said housing having sufficient radial and axial forces to maintain said opening in a sealed condition and forcing a portion of said exterior surface into a raised surface and said annular channel permitting the deformation of said sealing member into said void upon opening of said resealable opening,
a blunt cannula affixed to the second fluid flow member with fluid flow path therethrough for engaging and extending through said opening, thereby placing the two fluid flow members into a hermetically sealed fluid flow communication; and
said system further including a locking means for releasably locking said site and said cannula together, said locking means including an engageable portion on the exterior of said site housing and an engaging portion on said cannula.

5,188,621
EXTENDABLE GUIDEWIRE ASSEMBLY
Gene Samson, Milpitas, Calif., assignor to Target Therapeutics Inc., Fremont, Calif.
Filed Aug. 26, 1991, Ser. No. 750,558
Int. Cl.[5] A61M *25/00*
U.S. Cl. 604—283 **7 Claims**



1. An extendable guidewire assembly for use within a patient's vasculature comprising in combination:
(a) a guidewire having a distal end that is adapted to be fed into said vasculature and a tapered proximal end;
(b) an extension wire having a proximal end and a tapered distal end; and
(c) a polymeric sleeve having first and second ends and a lumen extending therebetween, said first end being fixedly attached concentrically about one of either the proximal end of the guidewire or the distal end of the extension wire, such that said one end extends partly through the lumen of the sleeve, said second end being adapted to receive the other of the proximal end of the guidewire or the distal end of the extension wire, said lumen having a diameter that is smaller than the diameter of the wire to which the sleeve is not fixedly attached and wherein said lumen expands radially when the sleeve is under axial compression and contracts radially when the sleeve is under axial tension.

5,188,622
VACUUM BOTTLE FOR COLLECTION OF BODY FLUIDS
Walter Müller, Kestenholz; Silvan Nützi, Wolfwil, and Alessandro Born, Oensingen, all of Switzerland, assignors to Genossenschaft Vebo, Solothurnische Eingliederungsstatte fur Behinderte, Oensingen, Switzerland
Filed Aug. 23, 1991, Ser. No. 749,138
Claims priority, application Switzerland, Aug. 29, 1990, 2811/90
Iot. Cl.[5] A61M *1/00*
U.S. Cl. 604—319 **15 Claims**



1. A vacuum bottle for collection of body fluids, comprising a vessel having a neck with an outlet, said neck having an external surface and including a collar surrounding said outlet and having a plane end face engageable by a substantially cupped cover which is to seal said outlet during collection of

VOL 1147 ISS 4 FE 23 1993 UMI

a body fluid in said vessel, said collar extending outwardly beyond said external surface, and said neck further comprising at least one substantially annular projection extending beyond said external surface, said at least one projection having a shoulder which faces away from said collar and is engageable by an internal shoulder of the cover, and at least said vessel consisting of a pressure- and temperature-resistant material to withstand suction and thermal sterilization without significant deformation.

5,188,623

STOMAL STOP WITH BAG

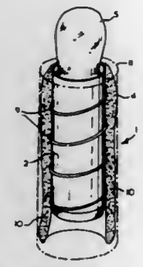
Cornelis J. M. Kok, deceased, late of Amsterdam, and by Sietze L. Kornelis, executrix, Rhijnvis Feithstraat 44/hs 1054 VA, Amsterdam, both of Netherlands

Continuation of Ser. No. 710,364, Jun. 3, 1991, abandoned, which is a continuation of Ser. No. 272,574, Nov. 17, 1988, abandoned. This application Jan. 29, 1992, Ser. No. 827,459

Claims priority, application Netherlands, Nov. 23, 1987, 87.02802; Mar. 9, 1988, 88.00585

Int. Cl.[5] A61F *5/44*

U.S. Cl. 604—328 **14 Claims**



1. A stomal channel comprising:

a support, said support being substantially circular in cross-section and having oppositely situated open ends, one end of said support configured to be received within a stoma;

a bag at least partially surrounded by said support such that material entering said stomal channel from said stoma is substantially deposited within said bag;

wherein said support further comprises a means for attaching said support to said stoma, said attachment means comprising a material which expands through the action of at least one of heat, fluid, and pressure, said attachment means being disposed at least partly around said support; and

a spongy material substantially surrounding at least a portion of said support, said spongy material comprising a fluid-absorbing material which expands upon absorption of fluid to seal said stoma.

5,188,624

ABSORBENT ARTICLE WITH SUPERABSORBENT PARTICLE CONTAINING INSERT PAD AND LIQUID DISPERSION PAD

Richard H. Young, Sr., Puyallup; Michael R. Hansen, Everett; E. Peter Lancaster, Gig Harbor; Haresh R. Mehta, Federal Way, and Christel Brunoenkant, Seattle, all of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed Jan. 16, 1990, Ser. No. 467,797

Int. Cl.[5] A61F *13/15, 13/20*

U.S. Cl. 604—378 **33 Claims**

1. An absorbent article comprising;

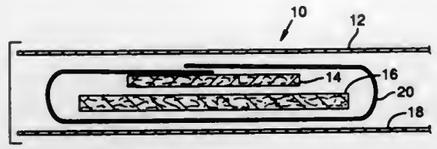
a liquid impermeable backing sheet;

a relatively liquid permeable facing sheet;

a composite absorbent pad positioned between the backing sheet and the facing sheet, the composite pad comprising a liquid dispersion pad and a substantially bonded insert pad, the insert pad being positioned between the facing sheet and overlying the liquid dispersion pad so as to permit flow of liquid to the insert pad without passage through the liquid dispersion pad;

the liquid dispersion pad comprising fibers and assisting in dispersing liquid passing through the facing sheet; and

the insert pad including fibers at least partially coated with a



binder material, the fibers being bound together by the binder material to form the substantially bonded insert pad, the fibers also having superabsorbent particles adhered to the fibers by the binder material, the insert pad having a dry weight, the superabsorbent particles being present in a range of from about ten percent to about eighty percent of the dry weight of the insert pad.

5,188,625

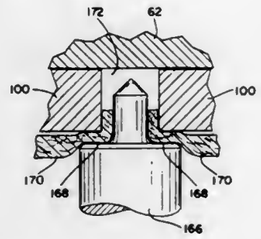
SANITARY NAPKIN HAVING A COVER FORMED FROM A NONWOVEN WEB

Thomas P. Van Iten, Neenah; Howard A. Whitehead, Appleton, and Julie A. Schindel, Oshkosh, all of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 61,844, Jun. 11, 1987, which is a continuation of Ser. No. 774,252, Sep. 9, 1985, abandoned. This application Aug. 17, 1990, Ser. No. 569,317

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—383 **14 Claims**



1. A sanitary napkin comprising:

a) an absorbent; and

b) a fluid-permeable cover positioned over at least one surface of said absorbent, said cover formed from a nonwoven web having a network of essentially unbroken thermoplastic fibers, said web having a plurality of apertures formed therethrough which extend completely through said cover and expose said absorbent, said apertures being located in a predetermined area representing less than about 80% of the surface area of said cover, and each of said apertures being surrounded by a consolidated ring formed of thermally set thermoplastic fibers, which in turn is surrounded by a raised area, wherein said apertures occupy about 30% to 55% of said predetermined area.

5,188,626

DISPOSABLE DIAPERS

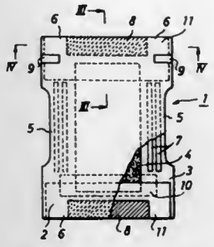
Harumitsu Toyoda, Utsunomiya; Masamichi Senoo, Ichikai, and Keiji Abe, Mouka, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Aug. 31, 1990, Ser. No. 575,619

Claims priority, application Japan, Dec. 26, 1989, 1-337066; Mar. 20, 1990, 2-70360

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—385.1 **5 Claims**



1. A disposable diaper having a liquid pervious topsheet, a liquid impervious and vapor pervious backsheet and an absorbent core interposed between the topsheet and the backsheet, with an inside surface of the core adjacent the topsheet and an outside surface of the core adjacent the backsheet, said disposable diaper comprising:

liquid impervious and vapor pervious barrier sheets interposed between the topsheet and the backsheet, one of said barrier sheets being extended from a front edge of the backsheet of the diaper and a second one of said barrier sheets being extended from a rear edge of the backsheet of the diaper to a front edge and rear edge of the inside surface of the absorbent core respectively, thereby forming waist barrier parts covering the front edge and the rear edge of the absorbent core, and said barrier sheets being prestretched in a lateral direction of the diaper; such that a strength in a lateral direction of the diaper is higher than a strength in a longitudinal direction of the diaper.

5,188,627

DISPOSABLE GARMENTS OF PANTS TYPE

Takamitsu Igaue, Kawanoe; Hironori Nomura, Iyomishima; Taiji Shimakawa, Kanonji, and Tohru Sasaki, Kawanoe, all of Japan, assignors to Uni-Charm Corporation, Ehime, Japan

Filed Mar. 5, 1991, Ser. No. 665,426

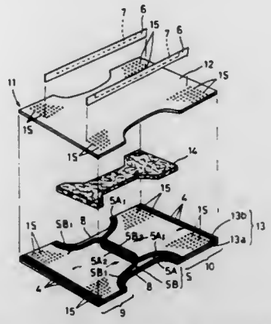
Claims priority, application Japan, Mar. 12, 1990, 2-60768; Sep. 27, 1990, 2-259834

The portion of the term of this patent subsequent to Oct. 8, 2008, has been disclaimed.

Int. Cl.[5] A61F *13/15*

U.S. Cl. 604—385.2 **5 Claims**

1. Disposable garments of pants type having a waist-opening provided with a first elastic member and a pair of leg-openings provided with ring-like second elastic members, wherein there are provided a pair of cuff members inwardly spaced from said second elastic members, respectively, and these cuff members are adapted to rise against the user's skin under a contractile force of third elastic members contained in these cuff members, respectively, wherein, with the garments unfolded and respective opposed side edges of front and rear bodies thereof being still not bonded together, said second elastic members for the respective leg-openings are positioned to be curved inward while said third elastic members for the cuff members are positioned substantially in parallel to the longitudinal axis of the garments so that, once put on the user's body, elastically stretchable lines defined by said second elastic members partially intersect elastically stretchable lines defined by said third



elastic members so as to bias said cuff members against the user's skin.

5,188,628

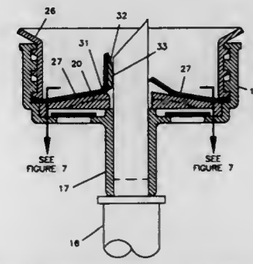
CLOSURE DEVICE FOR ENTERAL FLUID CONTAINERS

Robert G. Rani, Roseville, and Douglas E. Hahn, Plymouth, both of Minn., assignors to Sandoz Ltd., Basel, Switzerland

Filed Nov. 6, 1990, Ser. No. 609,676

Int. Cl.[5] A61M *5/32*

U.S. Cl. 604—405 **11 Claims**



1. A closure device for connection to a fluid container having a container opening for receiving the device comprising;

a base section sealably covering said container opening, said base section having a spike receiving opening passing there through, and at least one aperture spaced from said spike receiving opening;

an air filter component associated with said aperture;

an internal cover adjoining said base section, and covering said aperture; said covering having a pierceable portion which is a weakened area in alignment with said spike receiving opening of said base section, said pierceable portion comprising a hinge and flap when pierced by a spike.

5,188,629

CLOSING APPLIANCE USED IN FLEXIBLE TUBE

Keitaro Shimoda, Kusatsu, Japan, assignor to Nissho Corporation, Osaka, Japan

Filed Jun. 19, 1991, Ser. No. 717,593

Claims priority, application Japan, Jun. 21, 1990, 2-65600[U]

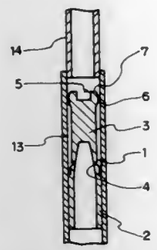
Int. Cl.[5] A61M *5/14*

U.S. Cl. 604—412 **1 Claim**

1. A closing appliance used in a flexible tube for passing fluid, comprising:

VOL 1147 ISS 4 FE 23 1993 UMI

(a) a communicating tube having an outer diameter slightly larger than an inner diameter of the flexible tube,
(b) a column-like portion formed integrally with the communicating tube and having an outer diameter smaller than that of the communicating tube,
(c) a thin-walled portion formed between the column-like portion and the communicating tube, and having a thickness less than that of the communicating tube wherein the column-like portion has two wings at an end opposite to



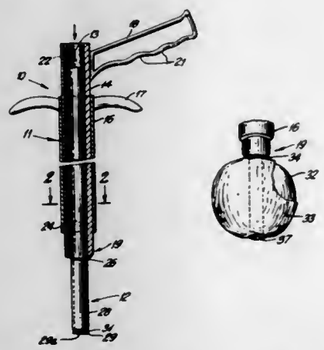
the thin-walled portion, the wings face to each other and have an arcuately rounded surface on the side of an inner surface of the flexible tube, wherein a curvature of the rounded surface corresponds to a portion of the inner surface of the flexible tube, a maximum diameter of the column-like portion including the wings is smaller than the inner diameter of the communicating tube, and a total lateral sectional area of the two wings is from 25 to 50% of a sectional area of a hollow portion of the flexible tube.

5,188,630

CHRISTOUDIAS ENDOSPONGESTICK PROBE

George C. Christoudias, 331 River Rd., New Milford, N.J. 07649

Filed Mar. 25, 1991, Ser. No. 674,470
Int. Cl.[5] A61M *29/00*
U.S. Cl. 606—1 **8 Claims**



1. A spongestick for endoscopic procedures used in conjunction with endoscopic instruments comprising:
a main rigid stem comprising an elongated cylinder having an axial aperture extending therethrough, an outer cylinder surface having a longitudinal groove extending along said outer surface, an upper cylinder portion having a handle projecting outwardly from said upper portion and a lower cylinder portion;
a retractable cylindrical sheath slidably mounted about the stem cylinder having an upper portion and at least one handle extending outwardly from the upper portion thereof;
a central tube for insertion of endoscopic instruments therethrough mounted within the stem aperture and extending outwardly therefrom, said tube including an upper circumferential groove adjacent the stem and a lower tube portion having a lower circumferential groove; and
a balloon and a tubular gauze member surrounding the balloon at the lower portion of the central tube and having upper and lower elastic bands which mount in the respective circumferential tube grooves securing said balloon and gauze member in position, said balloon having an elongated inflation tube extending upwardly along the longitudinal groove to the upper portion of the stem cylinder, and wherein the balloon and gauze member include axial apertures through which the tube extends.

5,188,631

METHOD FOR OPTHALMOLOGICAL SURGERY

Francis A. L'Esperance, Jr., Englewood, N.J., assignor to VISX, Incorporated, Sunnyvale, Calif.

Continuation of Ser. No. 891,169, Jul. 31, 1986, abandoned, and a continuation-in-part of Ser. No. 780,335, Sep. 26, 1985, abandoned, and a continuation-in-part of Ser. No. 740,276, Jun. 3, 1985, abandoned, and a continuation-in-part of Ser. No. 552,983, Nov. 17, 1983, abandoned. This application Mar. 14, 1990, Ser. No. 493,337
Int. Cl.[5] A61N *5/06*
U.S. Cl. 606—5 **8 Claims**





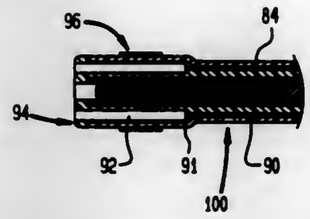
1. The method of effecting an optically correcting change within a predetermined area of the anterior surface of the cornea of an eye, from an initial curvature requiring hyperopia correction to a subsequent curvature having improved optical properties, which method comprises using ultraviolet laser radiation in a program of selective ablation of the anterior surface of the cornea by photodecomposition, with penetration into the stroma and volumetric sculpturing removal of corneal tissue to such penetration depth and profile as to characterize the anterior surface with said subsequent curvature, said sculpturing removal being via laser radiation which is characterized by a circular spot wherein flux density increases radially outward at least to the perimeter of said predetermined area, said program being for a time predetermined to achieve a desired hyperopia-correcting change, said circular spot being peripherally contiguous to and within an outer annular area of laser radiation, with flux density decreasing radially outward in said annular area.

5,188,632

GUIDANCE AND DELIVERY SYSTEM FOR HIGH-ENERGY PULSED LASER LIGHT

Tsvi Goldenberg, Irvine, Calif., assignor to Advanced Interventional Systems, Inc., Irvine, Calif.

Continuation of Ser. No. 218,907, Jul. 14, 1988, abandoned, which is a continuation-in-part of Ser. No. 51,382, May 19, 1987, Pat. No. 4,830,460, which is a continuation-in-part of Ser. No. 860,241, May 6, 1986, Pat. No. 4,799,754, which is a continuation-in-part of Ser. No. 779,844, Sep. 25, 1985, Pat. No. 4,732,448, which is a continuation-in-part of Ser. No. 679,538, Dec. 7, 1984, Pat. No. 4,641,912. This application Oct. 3, 1990, Ser. No. 593,485
Int. Cl.[5] A61M *5/06*
U.S. Cl. 606—7 **38 Claims**



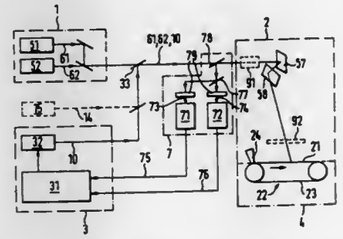
1. An angioplasty system for providing radiant energy to a remote site at an energy level that is sufficient to ablate biological tissue, comprising:
a source of pulsed ultraviolet laser energy; and
optical means comprising at least one optical fiber that is silica and substantially free of metallic impurities disposed within a jacket made from a material that is not degraded by ultraviolet light substantially more than polytetrafluoroethylene would be degraded, for conducting laser energy from said source to said remote site;
wherein each pulse of energy has an energy density of at least 50 mJ/mm^2 at a proximal end of said optical means.

5,188,633

DEVICE FOR SELECTIVE DESTRUCTION OF CELLS

Michael Kratzer, Leopoldstrasse 56, D-8000 Munchen 40, and Eberhard Unsöld, Dr. Hofmeisterstrasse 16a, D-8042 Oberschleissheim, both of Fed. Rep. of Germany

Continuation of Ser. No. 167,211, Mar. 11, 1988, Pat. No. 5,035,693. This application Jul. 26, 1991, Ser. No. 736,379
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1987, 3708511
The portion of the term of this patent subsequent to Jul. 30, 2008, has been disclaimed.
Int. Cl.[5] A61N *5/01*
U.S. Cl. 606—12 **12 Claims**



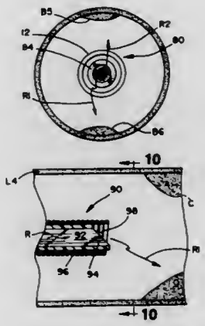
1. A system for selective destruction or inactivation of cells, wherein planar arrays of cells are successively illuminated with a lower powered light beam produced by at least one light source and the radiation of particular cells responsive to said illumination enables a higher powered beam routed via a substantially common optical path to accomplish said destruction or inactivation, said system comprising:
(a) means defining an image plane for groups of cells;
(b) means for feeding the cells to the image plane;
(c) at least one laser light source for producing at least a first light beam to illuminate groups of cells positioned in said image plane;
(d) scanning means for directing said at least first light beam within said image plane to successively illuminate said groups of cells in the image plane;
(e) at least one optical detector for sensing predetermined radiation occurring from a particular cell of said groups of cells at a particular point of said scanning means in response to said illumination, and for producing at least one detector signal responsive to said sensed predetermined radiations;
(f) control means operating in response to said detector signal to enable a second light beam to be directed through said scanning means to said particular point, wherein the power level of said second light beam is sufficient to destroy or inactivate said particular cell;
(g) said control means effecting activation of said second light beam before scanning means has moved appreciably from said particular point; and,
(h) herein said scanning means comprises mirrors for deflecting said light beams in X-Y directions of a Cartesian coordinate system in said image plane.

5,188,634

ROTATABLE LASER PROBE WITH BEVELED TIP

Hany M. G. Hussein, Costa Mesa; Marvin Loeb, Huntington Beach, and Kenneth M. Galt, Seal Beach, all of Calif., assignors to Trimedyne, Inc., Irvine, Calif.

Filed Jul. 13, 1990, Ser. No. 553,450
Int. Cl.[5] A61B *17/36*
U.S. Cl. 606—14 **10 Claims**



5. An apparatus as in claim 1 including a guide wire carried within said housing.

VOL
1147
ISS
4
FE
23
1993
UMI

5,188,635

CATHETER FOR PERCUTANEOUS SURGERY OF BLOOD VESSELS AND ORGANS USING RADIANT ENERGY

Wolfgang Radtke, Eislebenstrasse 17, D-2800 Bremen, Fed. Rep. of Germany

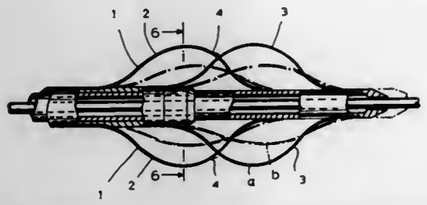
PCT No. PCT/EP89/00005, § 371 Date Aug. 2, 1990, § 102(e) Date Aug. 2, 1990, PCT Pub. No. WO89/06935, PCT Pub. Date Aug. 10, 1989

PCT Filed Jan. 5, 1989, Ser. No. 573,021

Claims priority, application Fed. Rep. of Germany, Feb. 8, 1988, 3803697

Int. Cl.[5] A61B *17/22*

U.S. Cl. 606—14 **14 Claims**



1. A catheter for percutaneous surgery of blood vessels and organs using radiant energy such as laser or radio frequency radiation, preferably for percutaneous valvotomy and for incision of membranous obstructions in blood vessels and hollow organs, especially in cardiac cavities comprising:

at least one energy conductor for transmission of said energy radiation from its source to the point of emission of said radiation close to the distal catheter end,

said catheter including a positioning mechanism by means of which said distal catheter end can anchor reversibly, removably and form fitting on one of said vessels or organ parts, said distal catheter end protruding into the lumen of said vessel or hollow organ while leaving a throughput opening in said vessel or hollow organ;

said positioning mechanism including:

at least one pair of wires, the wires of which extend substantially parallel to the axis of said catheter and

said wires being spreadable at the distal end of said catheter from a ground position flat and closely adherent to the surface of said catheter,

said wires forming two convex elastically flexible wire arches radially extending over said catheter surface,

said wires being axially displaced against each other and said wires intersecting each other,

said wires forming an indentation at the intersection of said wire arches for form fitting anchoring of said catheter on said vessel or organ part.

5,188,636

PURSE STRING SUTURE INSTRUMENT

Vladimir Fedotov, Moscow, U.S.S.R., assignor to Ethicon, Inc., Somerville, N.J.

Filed May 7, 1992, Ser. No. 880,943

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—144 **34 Claims**

1. A surgical instrument for applying purse string sutures to tissue, comprising:

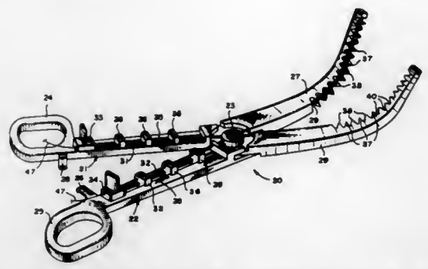
a pair of jaws each having a plurality of teeth for clamping the tissue therebetween;

a needle passage formed in each of said jaws and extending through the teeth on each jaw;

a pair of needles mounted on said jaws for movement through said passages;

a purse string suture attached to each of said needles;

means for advancing said needles along said jaws to move said purse string sutures through said needle passages and into said tissue; and



means on each of said jaws for capturing said needles after advancement of said needles through said needle passages.

5,188,637

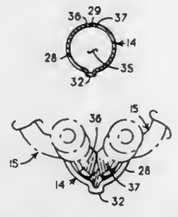
CLIP FOR ELASTOMERIC LIGATION TUBING

Legrand D. Wadsworth, Rt. #1, Box 168, St. Ignatius, Mont. 59865

Filed May 21, 1992, Ser. No. 886,141

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—151 **4 Claims**



1. A deformable clip to fasten two adjacent portions of elastic ligation tubing thereon, comprising in combination,

a peripherally defined tubular body having first and second ends and an internal channel to accept two portions of ligation tubing in side-by-side relationship, said body further having

an elongate slit defined through the body and extending from the first end to the second end,

indexing means to determine the rotary position of the body relative to a deforming tool and

slots, spacedly distant from the slit and on each side thereof to hold tubing and aid the deformation of each body portion between the slot and the slit to a position substantially adjacent the opposed body portion on the same side of a diameter through the slit.

5,188,638

APPARATUS AND METHOD FOR PREFORMING ANASTOMOSIS FASTENER SECUREMENT OF HOLLOW ORGANS

Andreas G. Tzakis, 505 Amberson Ave., Pittsburgh, Pa. 15232

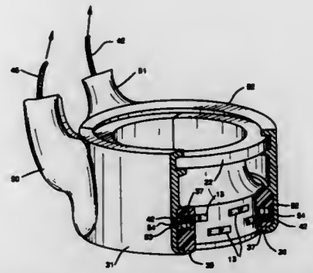
Filed Feb. 6, 1992, Ser. No. 831,937

Int. Cl.[5] A61B *17/00*

U.S. Cl. 606—153 **23 Claims**

1. Apparatus for performing anastomosis on hollow organs comprising: an annular hollow sleeve shaped fastener securing anvil formed in size and shape to annularly encompass the outer periphery of a first hollow organ adjacent a severed end thereof to be anastomosed to a severed end or side of a second hollow organ, said anvil having a plurality of prepositioned and annularly disposed fastener securing means on the exterior thereof; an anastomotic surgical fastener driving instrument

unattached to said anvil and having opposing clamp jaws, the interior annular combined contours of said jaws when clamped together form an annulus, and conform to outer annular contours of said anvil for annularly confining therebetween for anastomosis a cuff portion formed from a first hollow organ end everted over said anvil in intimal coaptation with an end or side portion of a second hollow organ positioned over the cuff formed on the first organ end; guide means on said anvil and jaw for keying said jaws, when clamped, in predetermined alignment with said anvil; fastener cartridge means retained in at least one of said jaws with fasteners prepositioned along the inside thereof for cooperation with said fastener securing means on said anvil for securing said fasteners when driven inwardly toward said anvil; and fastener driving means on said instrument for driving said fasteners inwardly through intimal



coaptating hollow organ portions for securing by said fastener securing means on said anvil.

VOL
1147
ISS
4
FE
23
1993
UMI

5,188,639

PRODUCT FOR IMPROVED PERMANENT WAVING OF HAIR AND SIMULTANEOUSLY COLORING AND PERMANENTLY WAVING HAIR AND METHOD THEREFOR

Thomas M. Schultz, Ridgefield, Conn.; Jitendra Patel, Coon Rapids, Minn., and Stephanie Wong, Bridgeport, Conn., assignors to Shiseido Co., Ltd., Tokyo, Japan

Division of Ser. No. 612,227, Nov. 13, 1990, Pat. No. 5,094,662. This application Mar. 6, 1992, Ser. No. 847,788

Int. Cl.[5] **A61K** *7/13*

U.S. Cl. 8—405 **5 Claims**

1. A process for permanently waving hair while simultaneously coloring the hair comprising the steps of:

A. preparing the hair for the application of a permanent wave solution in the conventional manner;

B. mixing the hair coloring and permanent waving solution just prior to its application to the hair by combining a fluoroscein-based dye with a permanent waving solution comprising one selected from the group consisting of an ester of thioglycolic acid, an ester of thiolactic acid, and an amide of 2-aminothiol;

C. adjusting the pH of the composition to be between about 2.5 and 4.5;

D. applying the hair dyeing and coloring composition to the hair in the conventional manner; and

E. completing the permanent waving process in a conventional manner.

5,188,640

USE OF 1-AMINO-2,7-DI-[5'-((2''-CHLORO-4''-SUBSTITUTED AMINO-1,3,5-TRIAZIN-6-YLAMINO)-2'-SULFO-PHENYLAZO]-8-HYDROXYNAPHTHALENE-3,6-DISULFONIC ACIDS FOR DYEING AND PRINTING

Hans von Tobel, Riehen, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

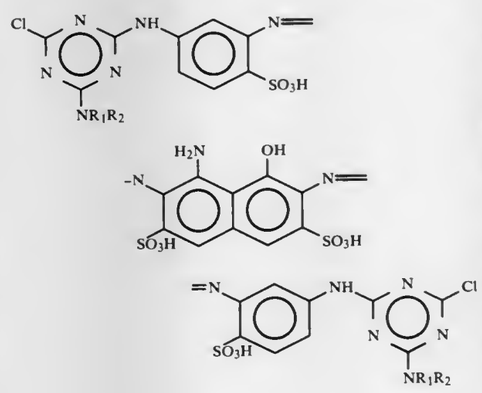
Division of Ser. No. 219,422, Jul. 14, 1988, Pat. No. 5,095,101, which is a continuation of Ser. No. 17,665, Feb. 24, 1987, abandoned, which is a continuation-in-part of Ser. No. 677,962, Dec. 4, 1984, abandoned. This application Feb. 11, 1992, Ser. No. 834,017

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1983, 3344718

Int. Cl.[5] **D06P** *1/382, 3/66, 3/24, 3/32*

U.S. Cl. 8—549 **20 Claims**

1. A process for dyeing or printing an hydroxy group- or nitrogen-containing organic substrate comprising applying to an hydroxy group- or nitrogen-containing organic substrate, as a dyeing or printing agent, a compound of the formula



or a salt thereof, or a mixture of such compounds each of which is in free acid form or salt form, wherein

each R_1 is C_{2-4}alkyl substituted by one or two hydroxy groups or by one —OR_3 group, wherein R_3 is C_{1-4}alkyl or C_{2-4}hydroxyalkyl, and

each R_2 is hydrogen, C_{2-4}hydroxyalkyl or —CH_2CH_2CN, with the provisos that (i) both —NR_1R_2 groups are identical and (ii) when each R_2 is —CH_2CH_2CN, each R_1 must be —$CH_2CH_2OCH_2CH_2OH$.

5,188,641

COLORED POLYMERS FROM AZO DYE MONOMERS CONTAINING OLEFINIC GROUPS

Brian Parton, Bury, England, assignor to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 428,439, Oct. 30, 1989, abandoned, which is a continuation of Ser. No. 216,402, Jul. 8, 1988, abandoned, which is a continuation of Ser. No. 870,543, Jun. 4, 1986, abandoned. This application Jan. 9, 1992, Ser. No. 819,583

Claims priority, application United Kingdom, Jun. 12, 1985, 8514906

Int. Cl.[5] **C09B** *69/10;* **C08F** *20/34;* **C08L** *33/14*

U.S. Cl. 8—647 **17 Claims**

1. A coloured polymer obtained by the co-polymerisation of at least one uncoloured polymerisable olefin and at least one azo dye which is free from water-solubilising groups and contains at least one polymerisable olefinically unsaturated group and has the formula:

A—N=N—E

wherein:

A represents the residue of a carbocyclic diazotisable amine containing at least one electron-withdrawing substituent; and

E represents the residue of a heterocyclic coupling component of the aminopyrazole, 2,6-diaminopyridine, 2,6-dihydroxypyridine or aminopyrimidine series; or

A represents the residue of a heterocyclic diazotisable amine containing at least one electron-withdrawing substituent; and

E represents the residue of a heterocyclic coupling component of the aminopyrazole, 2,6-diaminopyridine, 2,6-dihydroxypyridine or aminopyrimidine series; or

A represents the residue of a heterocyclic diazotisable amine containing at least one electron-withdrawing substituent; and

E represents the residue of a carbocyclic coupling component, the or each polymerisable group being attached to a carbon atom forming part of residue A or E.

5,188,642

GLYPHOSATE-RESISTANT PLANTS

Dilip M. Shah, Creve Coeur, Mo.; Stephen G. Rogers, Brussels, Belgium; Robert B. Horsch, St. Louis, Mo., and Robert T. Fraley, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 879,814, Jul. 7, 1986, Pat. No. 4,940,835, which is a continuation-in-part of Ser. No. 792,390, Oct. 29, 1985, abandoned, which is a continuation-in-part of Ser. No. 763,482, Aug. 7, 1985, abandoned. This application Feb. 12, 1990, Ser. No. 478,794

The portion of the term of this patent subsequent to Jul. 10, 2007, has been disclaimed.

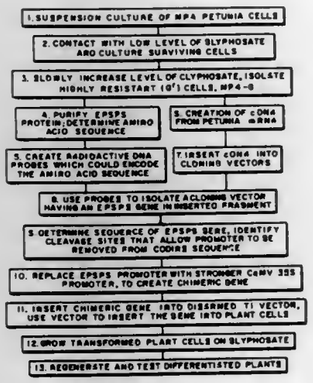
Int. Cl.[5] **A01H** *1/00, 5/10;* **C12P** *21/00, 21/04;* **C12N** *15/00, 9/00;* **A01N** *57/00*

U.S. Cl. 47—58 **23 Claims**

1. A method for selectively controlling weeds in a field containing a crop of planted crop seeds or plants which method comprises the steps of:

a) planting said crop seeds or plants which are glyphosate resistant as a result of a chimeric gene being inserted into said crop seed or plant, said chimeric gene having

i) a promoter sequence which functions in plant cells,
ii) a coding sequence which causes the production of RNA, encoding a chloroplast transit peptide/5-enolpyruvylshikimate-3-phosphate synthase fusion polypeptide, which chloroplast transit peptide permits the fusion polypeptide to be imported into a chloroplast of a plant cell, and
iii) a 3' non-translated region which encodes a polyadenylation signal which functions in plant cells to cause the

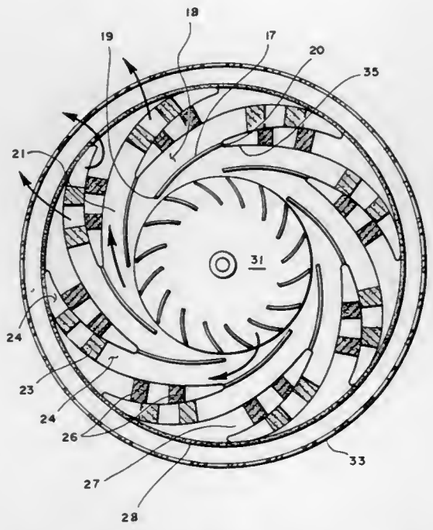


addition of polyadenylate nucleotides to the 3' end of the RNA,
where the promoter is heterologous with respect to the coding sequence and adapted to cause sufficient expression of the fusion polypeptide to enhance the glyphosate resistance of a plant cell transformed with said gene; and
b) applying to said crop and weeds in said field a sufficient amount of glyphosate to control said weeds without significantly affecting said crop.

5,188,643
METHOD OF APPLYING METAL COATINGS ON CUBIC BORON NITRIDE AND ARTICLES MADE THEREFROM
Dominic C. Iacovangelo, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Aug. 1, 1991, Ser. No. 738,758
Int. Cl.[5] B24D *3/00*
U.S. Cl. 51—293 **19 Claims**

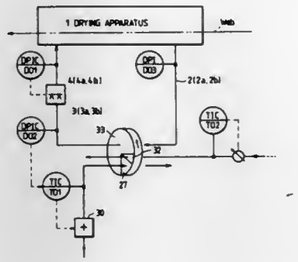
1. A method of improving adhesion of a metal alloy coat to a surface of a cubic boron nitride article comprising the steps of:
contacting said article for an effective time with an electroless plating bath for plating said surface of said article to a desired thickness, said bath comprising a compound of said metal and a compound of an element selected from the group consisting of boron, molybdenum, titanium, niobium and chromium;
gradually heating said electrolessly plated article in a non-oxidizing atmosphere from a first temperature to a desired heat treatment temperature of about 400° C. to about 900° C. at a rate of less than about 20° C. per minute; and
maintaining said electrolessly plated article at said desired heat treatment temperature until a desired degree of adhesion between said surface and said metal alloy coat is attained.

5,188,644
FILTER, BAG AND METHOD
Keith Landy, #225, 6175 NW. 153rd St., Miami Lakes, Fla. 33014
Continuation-in-part of Ser. No. 593,851, Oct. 5, 1990, Pat. No. 5,120,331, which is a continuation-in-part of Ser. No. 474,989, Feb. 6, 1990, abandoned. This application Nov. 27, 1991, Ser. No. 799,037
Int. Cl.[5] B01D *46/02, 53/04*
U.S. Cl. 55—17 **23 Claims**



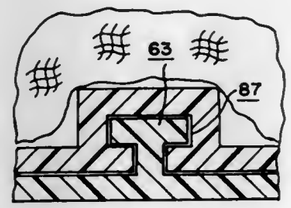
1. The method of filtering particulates from ambient air by utilizing a blower and a housing and means for powering the blower to convert the ambient air into blown ambient air, comprising the steps of:
blowing ambient air into a plurality of infuser wings positioned to encircle the blower having edges and ends for forming the discharging from the blower into curvilinear spiral like paths and impacting large particles which lose their momentum and fall thereby achieving a pre-filter effect,
encapsulating the edge portions of the infuser wings with adjacent pairs of filtering material closed on both edges and at the end portion defining a bag thereof for receiving said blown ambient air and further filtering the same,
and positioning spacers outside and inside of the bag to separate all walls from each other.
5. A filtering unit comprising, in combination,
a housing,
a manifold interiorly of said housing,
blower means communicating with the interior portion of said manifold for moving a fluid centrifugally outwardly,
a plurality of infuser wings spaced peripherally around said manifold interior portion which are proportioned and located to generate paths of fluid being discharged from the blower means,
and a plurality of bag like members communicating with adjacent pairs of said infuser wings to define a dead end filter bag for receiving the discharge from the blower and infuser wings,
said filter bag like members all having a particulate and/or gas capturing content.

5,188,645
METHOD AND APPARATUS FOR DEW POINT ADJUSTMENT USING DRY DEHUMIDIFIER
Shinji Fukuhori, and Naoyuki Iwasaki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Jun. 3, 1991, Ser. No. 709,570
Claims priority, application Japan, Jun. 28, 1990, 2-168273
Int. Cl.[5] B01D *53/06*
U.S. Cl. 55—20 **12 Claims**



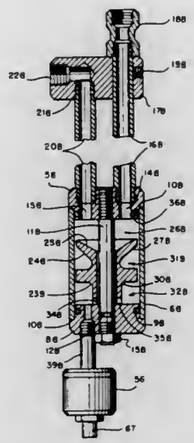
7. A method for adjusting a dew point of air supplied to a drying apparatus, comprising the steps of:
(1) prior to the drying apparatus reaching a steady operating state:
(a) receiving air to be adjusted from the drying apparatus;
(b) drying the received air to a dew point below a desired steady-state dew point to produce dried air;
(c) humidifying the dried air to a dew point equal to the desire steady-state dew point to produce adjusted air; and
(d) supplying the adjusted air to the drying apparatus, and
(2) after the drying apparatus reaches said steady operating state:
(a) receiving air to be adjusted from the drying apparatus;
(b) drying the received air to a desired steady-state dew point; and
(c) supplying the adjusted air to the drying apparatus.

5,188,646
ADJUSTABLE AIR FILTER
Edward F. Nolen, Jr., Memphis, Tenn., assignor to Air Kontrol, Inc., Batesville, Miss.
Filed Mar. 5, 1992, Ser. No. 846,605
Int. Cl.[5] B03C *3/02*
U.S. Cl. 55—155 **10 Claims**



1. An air filter for use in heating, ventilating, cooling, and forced air systems, said air filter including an adjustable frame having four sides, said frame comprising:
(a) at least one female section having at least one channel-shaped leg;
(b) at least one male section having at least one channel-shaped leg telescopingly mated with said female section to establish one of said sides of said frame;
(c) coacting means on said leg of said female section and on said leg of said male section for permitting lengthwise telescoping movement of said leg of said male section and said leg of said female section relative to one another and yet preventing inward separation of said leg of said female section from said leg of said male section, said coacting means including a T-shaped projection attached to said male section and extending longitudinally of said male section and a slot in said female section extending longitudinally of said female section, said slot being complementary shaped and sized relative to said projection for closely telescopically receiving said projection; and
(d) locking means for locking said leg of said female section and said leg of said male section in a fixed assembled position relative to one another.

5,188,647
DROP LEGS FOR COMPRESSED AIR LINES
Richard A. Brookfield, Largo, and Leonard I. Walle, Clearwater, both of Fla., assignors to Compressed Air Filter Technologies, Inc., Clearwater, Fla.
Continuation-in-part of Ser. No. 715,487, Jun. 14, 1991. This application Feb. 5, 1992, Ser. No. 831,159
Int. Cl.[5] B01D *45/08*
U.S. Cl. 55—462 **13 Claims**



1. A drop leg to be incorporated in a compressed air line, said water leg including a housing having top and bottom ends, the top end having an inlet and an outlet, the bottom end having a drain, an impingement plate within the housing and spaced from the top end to establish a separating chamber and directly exposed to the inlet and outlet, the upper surface of the impingement plate downwardly and inwardly inclined towards the center thereof, the inlet and outlet ports located on opposite sides of said center and the inclination of said surface such that the air stream through the inlet after striking said surface rebounds generally towards the outlet, and the impingement plate has a water drain adjacent the center thereof and in communication with the drain in the bottom end.

VOL 1147 ISS 4 FE 23 1993 UMI

VOL
1147
ISS
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FE
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1993
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METHOD OF MANUFACTURING OPTICAL FIBRES

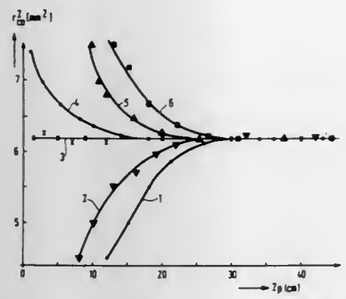
Peter E. E. Geittner; Hans-Jürgen Hagemann, both of Aachen, Fed. Rep. of Germany, and Jacques P. M. Warnier, Eijsden, Netherlands, assignors to U.S. Philips Corp., New York, N.Y.

Continuation of Ser. No. 520,992, May 9, 1990, abandoned, which is a continuation of Ser. No. 143,219, Jan. 11, 1988, abandoned, which is a continuation of Ser. No. 879,775, Jun. 27, 1986, abandoned. This application Oct. 16, 1991, Ser. No. 779,119

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1985, 3525979

Int. Cl.[5] **C03C** *25/02;* **C03B** *37/023*

U.S. Cl. 65—3.12 **5 Claims**



1. A method of manufacturing an optical fiber, said method comprising the steps of:

heating a glass tube to a temperature between 1100° C. and 1300° C., said tube having an inside wall, a longitudinal section, and two ends attached thereto, one of said ends being a gas inlet end of the tube, the other of said ends being connected to the longitudinal section remote from the gas inlet end;

passing a reactive gas mixture at a pressure between 1 and 30 hectopascal through the glass tube, said gas mixture being introduced into the tube t the gas inlet end of the tube;

forming a nonisothermal plasma inside the tube to react the gas mixture to deposit glass from a gas phase in layers directly on the inside wall of the glass tube by a non-isothermal method of plasma chemical vapor deposition of glass without the formation of glass soot in the gas phase;

reciprocating the plasma between first and second reversal points inside the tube, the first reversal point being nearer to the gas inlet end of the tube than the second reversal point which is located near the other end of the tube, to deposit a plurality of layers of glass on the inside wall of the tube, said tube having an entrance taper length adjacent to the first reversal point on the gas inlet side and a homogeneous plateau region wherein the optical and geometrical properties of the deposited glass are constant, said plateau region being connected to the entrance taper length and being the region between the entrance taper length and the second reversal point at the other end of the tube;

heat collapsing the glass tube to form a solid preform; and

drawing an optical fiber from the preform;

wherein each time the plasma reaches the reversal point nearer to the gas inlet end of the tube, the movement of the plasma is interrupted while glass deposition continues, the entrance taper being minimized by such interruption of the plasma movement, the length of time during which the plasma movement is interrupted being t least 0.1 second and sufficient to result in an entrance taper length that is less than 20% of the preform length but less than a length of time that will result in an entrance taper length that exceeds 20% of the preform length.

5,188,649

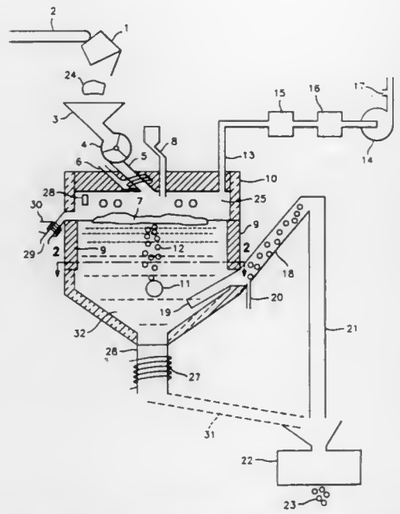
PROCESS FOR VITRIFYING ASBESTOS CONTAINING WASTE, INFECTIOUS WASTE, TOXIC MATERIALS AND RADIOACTIVE WASTE

Pedro B. Macedo, 6100 Highboro Dr., Bethesda, Md. 20817, and Robert K. Mohr, Washington, D.C., assignors to Pedro Buarque de Macedo, Bethesda and Theodore Aaron Litovitz, Annapolis, both of, Md.

Filed Aug. 7, 1991, Ser. No. 741,301

Int. Cl.[5] **C03B** *5/187, 19/10*

U.S. Cl. 65—21.3 **56 Claims**



1. A process for Vitrifying materials into a silicate, comprising:

heating a silicate melt within an electrical glass melting furnace by passing an electric current through the melt between at least two electrodes so as to maintain the melt at a temperature above the decomposition temperature of the materials;

generating a curtain of gas bubbles in the melt across a substantial portion of the current path between the at least two electrodes to increase the power density of the melt in the region of the curtain of gas bubbles;

supplying materials to the furnace above the melt so that the materials fall onto the melt and the materials are melted to silicate; and

withdrawing molten silicate from the furnace at a temperature of at least 900° C.

24. A process for converting waste materials into a silicate, comprising:

heating a silicate melt within an electrical glass melting furnace by passing an electric current through the melt between at least two electrodes so as to maintain the melt at a temperature above the decomposition temperature of the waste materials;

supplying waste materials to the furnace above the melt so that the waste materials fall onto the melt and the waste materials are melted to silicate;

withdrawing molten silicate from the furnace at a temperature of at least 900° C.; and

shaping the withdrawn molten silicate into spherical shape having at least two sizes in which the diameter of the smaller spheres is less than half the diameter of the larger spheres.

5,188,650

PRESS MOLDING METHOD FOR AN OPTICAL ELEMENT AND APPARATUS THEREFOR

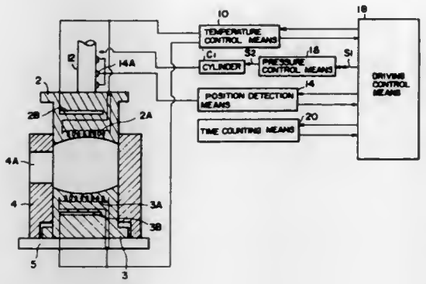
Takeshi Nomura, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1991, Ser. No. 807,509

Claims priority, application Japan, Dec. 28, 1990, 2-415473; Nov. 25, 1991, 3-335475

Int. Cl.[5] **C03B** *23/00*

U.S. Cl. 65—64 **5 Claims**



1. A process of heating and pressing a glass material to thereby mold an optical element, comprising:

preparing an upper mold member and a lower mold member provided with heating means, while said upper mold and said lower mold are being heated to a final molding temperature;

preparing a preheated glass material and putting it between said upper mold member and said lower mold member;

a first pressing step of closing said mold members and pressing said glass material with an initial pressing pressure in a state in which a temperature of a central portion said glass material is lower than a molding temperature at which said glass material is molded into a final shape;

a second pressing step of applying a pressing greater than the initial pressing pressure at said first pressing step and holding said mold members in a final closed position when after said first pressing step, the temperature of the entirety of said glass material reaches the final molding temperature range; and

the step of holding said mold members in the final closed position and cooling a molded article between said mold members to a predetermined temperature.

5,188,651

METHOD AND APPARATUS FOR HEAT TREATING GLASS SHEETS

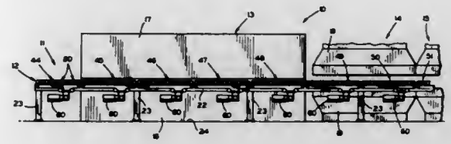
Dennis M. Csehi, Oregon, Ohio, assignor to Libbey-Owens-Ford Co., Toledo, Ohio

Filed Dec. 18, 1991, Ser. No. 809,404

Int. Cl.[5] **C03B** *27/04*

U.S. Cl. 65—114 **20 Claims**

1. A method of conveying a glass sheet load on a series of separately driven roller conveyor segments disposed end-to-end and defining a path for the load through loading, heating and thermal conditioning zones, comprising placing the load on a conveyor segment in the loading zone, activating selected ones of the conveyor segments to advance the load into the heating zone, oscillating the load back and forth within the heating zone so that the distance travelled on each forward stroke and each reverse stroke is different from the distance travelled on any other stroke whereby the lines of contact of the rollers upon the glass load upon reversal in direction are distributed over the glass load and, upon completion of oscillation, activating selected ones of the conveyor segments to advance the heated glass load out of the heating zone and into and through the thermal conditioning zone.



5,188,652

MACHINE FOR MOLDING OPTICAL ELEMENT

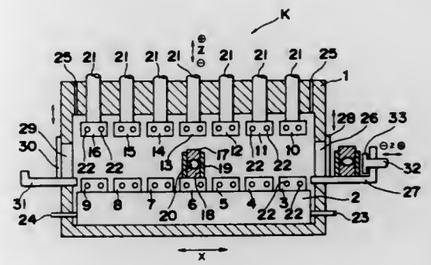
Shoji Nakamura; Takasi Inoue, both of Hirakata; Masaaki Sunohara, Nishinomiya, and Tadao Shioyama, Sakurai, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 24, 1991, Ser. No. 782,363

Claims priority, application Japan, Oct. 26, 1990, 2-288688; Jun. 4, 1991, 3-132583; Jul. 10, 1991, 3-169949

Int. Cl.[5] **C03B** *11/08*

U.S. Cl. 65—319 **11 Claims**



1. An optical element molding machine adapted for use with a molding block having upper and lower molding dies with a glass blank placed therebetween and a sleeve die supporting the upper and lower molding dies, comprising:

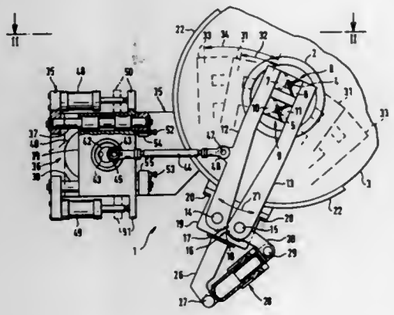
a chamber having an inlet for loading the molding block thereinto, and an outlet for discharging the molding block therefrom;
an inlet shutter for opening and closing said inlet;
an outlet shutter for opening and closing said outlet;
gas supply means for introducing nonoxidizing gas into said chamber;
a plurality of lower heating plates mounted in said chamber;
a plurality of upper heating plates mounted in said chamber opposite said plurality of lower heating plates, respectively, to form a plurality of heating plate pairs, one of said upper and lower heating plates of each of said heating plate pairs being movably mounted in said chamber for movement relative to the other of said upper and lower heating plates of each of said heating plates pairs, respectively;
wherein each of said upper and lower heating plates has a molding block pressing portion for contacting a respective one of the upper and lower molding dies of the molding block;
wherein heat insulating plate means are mounted on each of said plurality of upper and lower heating plates for covering substantially all surfaces of said upper and lower heating plates except for said molding block pressing portions thereof;
wherein a heating zone is defined in said chamber by a first plurality of said heating plate pairs, a cooling zone is defined in said chamber by a second plurality of said heating plate pairs, and a deformation zone is defined in said chamber by at least one other of said heating plate pairs; and
wherein a transport means is provided for sequentially moving the molding block through said heating zone, said deformation zone, and said cooling zone.

5,188,653

APPARATUS FOR SEVERING GOBS FROM GLASS STREAMS

Hermann Bögert, Auetal, and Hans-Georg Seidel, Rinteln, both of Fed. Rep. of Germany, assignors to Hermann Heye, Obernkirchen, Fed. Rep. of Germany

Filed Sep. 19, 1991, Ser. No. 762,447
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1990, 4033381
Int. Cl.[5] C03B *7/10*
U.S. Cl. 65—334 **8 Claims**



1. Apparatus for severing gobs from one or more streams of molten glass comprising:
at least one pair of shear blades for severing each gob of molten glass;
a pair of pivotally mounted elongated shear arms, the individual shear blades of each shear blade pair being mounted on separate ones of said shear arms;
means for pivoting said shear arms, pivotal movement being produced by drive means actuating one of the shear arms, said means for pivoting said shear arms including a crank driven by said drive means, an eccentric crank pin on said crank, a coupling rod coupled to the crank pin and to said one shear arm, and gear means for synchronizing the pivotal movements of said shear arms; and
a carriage for supporting said drive means, and means for displacing said carriage in a direction substantially transverse to the length direction of said one shear arm for adjusting the overlap of the shear blades of each pair.

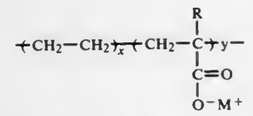
5,188,654

COATINGS WITH IONICALLY AND COVALENTLY CROSSLINKED NEUTRALIZED CARBOXYLATED POLYMERS

Pacifico V. Manalastas, Edison; Evelyn N. Drake, Bernardsville; Warren A. Thaler, Flemington; Edward N. Kresge, Watchung; Chester W. Elspass, Alpha, all of N.J.; Albert J. Geiger, Fort Saskatchewan, Canada, and Vijay Swarup, Clinton, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Mar. 28, 1991, Ser. No. 676,606
Int. Cl.[5] C05C *9/00*; C05G *3/10*
U.S. Cl. 71—28 **8 Claims**

1. A composite comprising:
(a) a urea substrate; and
(b) a polymeric coating adhered to at least one surface of said substrate, said polymer coating having a thickness of about 1 to about 100 micrometers, wherein said polymer coating comprises an ionically and covalently crosslinked, neutralized carboxylated polymer having a carboxylate content of about 5 to about 300 meq. per 100 grams of said covalently crosslinked, neutralized carboxylated polymer, wherein the carboxylated polymer is characterized by the structure:



wherein y is about 0.1 to about 30 mole percent, and x+y equals 100 mole percent; R is methyl; M^+ is a Group IA metal.

5,188,655

PLANT GROWTH ENHANCING COMPOSITIONS USING GIBBERELLINS, INDOLEACETIC ACID AND KINETIN

Travis R. Jones, 3244 Southern, Memphis, Tenn. 38111, and E. Robert Gates, 6381 Massey Hill, Memphis, Tenn. 38119

Continuation-in-part of Ser. No. 146,484, Jan. 21, 1988, abandoned. This application Nov. 2, 1989, Ser. No. 446,012
Int. Cl.[5] A01N *43/08, 43/38*
U.S. Cl. 504—136 **13 Claims**

1. A composition for enhancing the growth of plants comprising a growth enhancing effective amount of a mixture of:
(a) 35–45 percent by weight of gibberellins,
(b) 35–45 percent by weight of indole-3-acetic acid, and
(c) 15–25 percent by weight of 6-(4-hydroxy-3-methyl-2-trans-betenylamino) purine.

5,188,656

Patent Not Issued For This Number

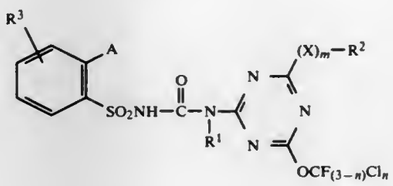
5,188,657

HERBICIDAL SULFONYLUREAS AND THEIR USE

Gerhard Hamprecht, Weinheim; Horst Mayer, Ludwigshafen; Karl-Otto Westphalen, Speyer; Helmut Walter, Obrigheim; Matthias Gerber, Mutterstadt; Klaus Grossmann, and Wilhelm Rademacher, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 2, 1991, Ser. No. 739,443
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1990, 4024754
Int. Cl.[5] C07D *251/46, 401/12, 413/12*; A01N *43/66*
U.S. Cl. 504—212 **6 Claims**

I. A member selected from the group consisting of a substituted sulfonylurea of the formula I



where
n is 1 and m is 0 or 1 and the substituents have the following meanings:
R^1 is hydrogen, C_1–C_4-alkyl, C_3–C_6-alkenyl or C_3–C_6-alkynyl;
R^2 is halogen or trifluoromethyl when m is 0, or C_1–C_4-alkyl, C_3–C_6-alkenyl or C_3–C_6-alkynyl when m is 1, or trifluoromethyl or chlorodifluoromethyl when X is O or S and m is 1;
X is O, S or N-R^4, where R^4 is hydrogen or C_1–C_4-alkyl;
R^3 is hydrogen, halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl or C_1–C_4-alkoxy;
A is C_1–C_4-haloalkyl, halogen, CN, NO_2, C_1–C_4-alkoxy, C_1–C_4-alkylthio;
C_1–C_4-alkylsulfinyl- or -sulfonyl or a radical



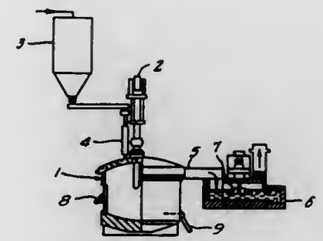
where
B is oxygen or an alkylimino group N-R^6;
R^5 is hydrogen, C_1–C_6-alkyl which may carry up to three of the following radicals: halogen, C_1–C_4-alkoxy, C_1–C_4-alkylthio, C_1–C_4-haloalkoxy, C_2–C_4-alkoxy-C_1–C_2-alkoxy, C_3–C_7-cycloalkyl and/or phenyl;
C_5–C_7-cycloalkyl which may carry up to three C_1–C_4-alkyl groups;
C_3–C_6-alkenyl or C_3–C_6-alkynyl, and
R^6 is hydrogen or C_1–C_6-alkyl, or, together with R^5, forms tetramethylene, pentamethylene, hexamethylene, ethyleneoxyethylene, or ethylene-N-methyliminoethylene, and environmentally compatible salts thereof.

5,188,658

METHOD FOR RECOVERING ZINC FROM ZINC-CONTAINING WASTE MATERIALS

Jan A. Aune, Enebakk; Inger J. Eikeland, and Thor Pedersen, both of Oslo, all of Norway, assignors to Elkem Technology A/S, Kingdom, Norway

Filed Dec. 14, 1990, Ser. No. 628,573
Claims priority, application Norway, Dec. 22, 1989, 895250
Int. Cl.[5] C22B *4/02*
U.S. Cl. 75—10.31 **20 Claims**



1. In a process for treating zinc containing materials with a carbonaceous reducing material in a gas tight closed electrothermic smelting furnace wherein said furnace has a molten bath of metal at a temperature between 1200° to 1700° C. so as to produce an inert slag phase, a liquid metal phase and a gas phase containing zinc wherein said zinc is recovered by means of condensation, the improvement comprising:
agglomerating said zinc containing material with a carbonaceous binder which, at a temperature below 700° C., cracks to form carbon black; and maintaining a volume ratio of CO_2:CO in the gas phase in said furnace at below 0.3.

5,188,659

SINTERED MATERIALS AND METHOD THEREOF

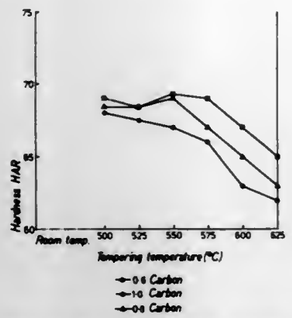
Charles G. Purnell, Coventry, England, assignor to Brico Engineering Limited, Coventry, England

Filed Aug. 15, 1990, Ser. No. 567,766
Claims priority, application United Kingdom, Sep. 20, 1989, 8921260
Int. Cl.[5] B22F *9/00*; C22C *38/24*
U.S. Cl. 75—246 **13 Claims**

1. A sintered ferrous material, the material having a compo-

VOL 1147 ISS 4 FEB 23 1993 UMI

sition expressed in weight % lying within the ranges: C 0.7–1.3/Si 0.3–1.3/Cr 1.9–5.3/Mo 0.5–1.8/V 0.1–1.5/Mn



0.6max/Fe balance apart from incidental impurities, and having a microstructure comprising a tempered martensitic matrix containing fine spheroidal alloy carbides.

5,188,660

PROCESS FOR MAKING FINELY DIVIDED PARTICLES OF SILVER METALS

Guray Tosun, and Howard D. Glicksman, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 16, 1991, Ser. No. 777,735
Int. Cl.[5] B22F *9/24*; C22B *3/44*
U.S. Cl. 75—370 **11 Claims**

1. A method for making finely divided silver metal particles comprising the sequential steps of

(1) forming a dilute aqueous silica sol and heating the sol to 70°–90° C.;

(2) while maintaining the temperature of the sol at 70°–90° C. and agitating the sol, slowly adding to the sol separately and simultaneously dilute aqueous solutions of a silver salt and formate which coreact to effect precipitation of finely divided silver particles capable of adsorbing silica, the agitation being sufficient to keep the precipitated particles in suspension;

(3) discontinuing addition of the aqueous solutions and for a period of at least one hour maintaining the suspension at 80°–100° C. with sufficient agitation to keep in suspension the precipitated particles;

(4) discontinuing both agitation and heating of the suspension and holding the suspension for a period of at least 5 hours to effect cooling of the suspension and settling of the precipitated particles;

(5) separating supernatant liquid from the settled particles and with agitation resuspending the particles in water containing a nonionic surfactant;

(6) separating the surfactant-containing water from the particles and washing the particles with additional water until the conductivity of the wash liquid is less than 20 micromhos;

(7) suspending the washed particles in an aqueous alkaline solution, heating the suspension to a temperature of 40° C.±1° C. while agitating the suspension to maintain the particles in suspension and holding the suspension for a period of at least 2 hours to effect hydrolysis and removal of the adsorbed silica from the particles;

(8) separating the aqueous alkaline solution from the particles and washing the particles with water until the conductivity of the wash liquid is less than 20 micromhos; and

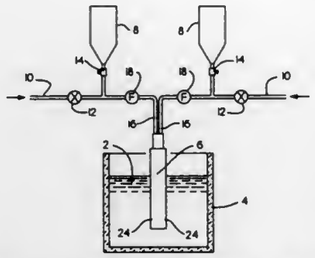
(9) drying the washed silver particles from which the adsorbed silica has been removed.

5,188,661

DUAL PORT LANCE AND METHOD

Donald R. Cook, 5406 W. 155th Ave., Lowell, Ind. 46356, and Joseph A. Macri, R.D. 1, Pulaski, Pa. 16143

Filed Nov. 12, 1991, Ser. No. 790,555
Int. Cl.[5] C21C *5/32*
U.S. Cl. 75—387 **12 Claims**



1. An improved apparatus for treatment of molten metal contained in a vessel by injection of powdered reagent below the surface of said molten metal, including an elongated lance body having an upper and lower end and containing at least a pair of longitudinal conduits having an entry and exit port for delivery of said powdered reagent below the surface of said molten metal, the improvement comprising:

a first reagent supply means for delivering the reagent in a pressure stream into the entry port of one of said at least a pair of longitudinal conduits and out of the exit port of the one of said at least a pair of longitudinal conduits;

a second reagent supply means for delivering the reagent in a pressure stream into the entry port of another of said at least a pair of longitudinal conduits and out of the exit port of said another of said at least a pair of longitudinal conduits; and

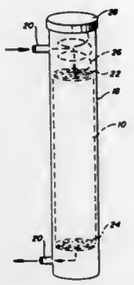
control means for independently regulating the separate flow rates of said reagent through each of said at least a pair of longitudinal conduits.

5,188,662

SILVER RECOVERY PROCESS

Hugh G. McGuckin, and John S. Badger, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 28, 1991, Ser. No. 724,577
Int. Cl.[5] C22B *3/46*
U.S. Cl. 75—713 **9 Claims**



1. A process for recovering silver from a photographic developer solution containing silver ions, said process comprising contacting said solution with a silver recovery element, said element comprising an inert substrate having thereon a hydrophilic colloid layer containing physical development nuclei for physical development of complexed silver ion from the developer solution; and said contacting being for a time sufficient to reduce the concentration of silver in said solution to a desired level.

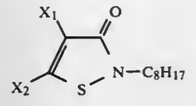
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AQUATIC ANTIFOULING COMPOSITION

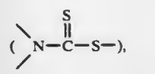
Hirotake Ikari, Ciba, and Teruyoshi Takahashi, Kawaguchi, both of Japan, assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Sep. 16, 1991, Ser. No. 760,319
Int. Cl.[5] C09C *5/14*
U.S. Cl. 106—18.33 **9 Claims**

1. An aquatic antifouling composition comprising (A) at least one 4-isothiazolin-3-one compound represented by the general formula:



where X_1 and X_2 respectively represent a hydrogen atom or a halogen atom, and (B) at least one insoluble dithiocarbamic acid derivative possessing a dithiocarbamyl group



selected from the group consisting of divalent and higher heavy metal salts of ethylenebisdithiocarbamic acid, linear or branched propylenebisdithiocarbamic acid, linear or branched butylenebisdithiocarbamic acid, N-substituted ethylenebisdithiocarbamic acid, N,N′-substituted ethylenebisdithiocarbamic acid, N-substituted propylenebisdithiocarbamic acid, N,N′-substituted propylene-bisdithiocarbamic acid, N-substituted butylenebisdithiocarbamic acid, and N,N′-substituted butylenebisdithiocarbamic acid said (A) and (B) being present in an effective antifouling amount.

5,188,664

ANTI-COALESCENT INK COMPOSITION AND METHOD FOR MAKING THE SAME

Raymond J. Adamic, and Theresa A. Gibney, both of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Nov. 26, 1991, Ser. No. 798,463
Int. Cl.[5] C07D *11/02*
U.S. Cl. 106—22 R **17 Claims**

6. An ink composition having a reduced surface tension and an increased drop mass per firing comprising:

at least one chemical dye; and

at least one polyether polyol combined with said chemical dye in order to produce said ink composition, said polyether polyol having physical characteristics sufficient to enable said ink composition to have a reduced surface tension and increased drop mass per firing compared with an ink composition produced in the absence of said polyether polyol.

5,188,665

LIGNIN AMINE SALT-BASED BINDERS FOR WATER-BASED BLACK INK FORMULATIONS

Peter Schilling, Charleston, S.C., assignor to Westvaco Corporation, New York, N.Y.

Filed Jan. 24, 1992, Ser. No. 825,533
Int. Cl.[5] C09D *11/14*; C08L *97/00*; C07G *1/00*
U.S. Cl. 106—26 R **8 Claims**

1. An improved lignin amine salt binder resin composition comprising a lignin amine salt prepared by the steps comprising:

(a) lowering the pH of a black liquor residue of the kraft pulping process to a pH of about 9.5 to precipitate the lignin material therefrom;

(b) acidifying the lignin precipitate in aqueous slurry to an acidic pH level above about 5;

(c) washing the acidified lignin precipitate with water to remove inorganic salts and other impurities therefrom; and

(d) adding an organic amine to an aqueous slurry of the washed lignin to form a lignin amine salt solution having a pH in excess of 5;

wherein the improvement comprises replacing 10 to 60% by weight of the lignin amine salt resin with acrylic resin, rosin resin, or a combination thereof.

5,188,666

PAINT REMOVING COMPOSITIONS AND METHODS FOR THE MANUFACTURE AND USE THEREOF

Victor N. Boccardo, 200 Colwick Rd., Cherry Hill, N.J. 08002

Continuation of Ser. No. 142,312, Dec. 29, 1987, abandoned, which is a continuation of Ser. No. 509,859, Jun. 30, 1983, abandoned. This application Oct. 17, 1989, Ser. No. 425,342
Int. Cl.[5] C08L *1/08*
U.S. Cl. 106—190 **10 Claims**

1. A method for removing paint from a painted surface as a dry, substantially solvent free frangible mass which comprises the steps of:

a. applying to a painted surface an improved paint remover composition comprising, in percent by weight of the total,;

(i) from about 70 to about 82 percent methylene chloride;

(ii) from about 1.5 to about 4 percent paraffin refined wax;

(iii) from about 1 to about 5 percent mineral spirits

(iv) from about 0 to about 6 percent denatured ethyl alcohol;

(v) from about 0 to about 8 percent aqua ammonia;

(vi) from about 1 to about 4 percent hydroxypropyl methyl cellulose;

(vii) from about 1 to about 8 percent methanol;

(viii) from about 3 to about 10 percent frangible mass forming inert absorbent particulate;

b. allowing said composition to lift the paint from the painted surface and form a dry, substantially solvent free, frangible mass of removed paint and particulate; and

c. removing said frangible mass by physical means.

5,188,667

TUNGSTIC OXIDE-STANNIC OXIDE COMPOSITE SOL AND METHOD OF PREPARING THE SAME

Yoshitane Watanabe, and Keitaro Suzuki, both of Funabashi, Japan, assignors to Nissan Chemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 605,424, Oct. 30, 1990, Pat. No. 5,094,691. This application Nov. 21, 1991, Ser. No. 795,678
Claims priority, application Japan, Nov. 7, 1989, 1-289410; Nov. 7, 1989, 1-289542
The portion of the term of this patent subsequent to Mar. 10, 2009, has been disclaimed.
Int. Cl.[5] C09D *1/00*
U.S. Cl. 106—286.4 **19 Claims**

14. A method of preparing a stable metal oxide sol comprising the steps of:

blending a sol of colloidal particles of metal oxide with a sol of colloidal particles of tungstic oxide and stannic oxide, wherein said sol of colloidal particles of oxide is present in a concentration of 0.5 to 50% by weight, and said sol of colloidal particles of tungstic oxide and stannic oxide is present in a concentration of 0.5 to 40% by weight, and optionally further condensing the resulting sol obtained by the blending operation.

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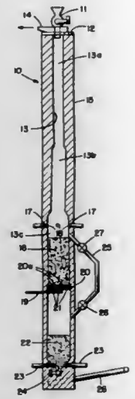
CEMENT ADVANCED FURNACE AND PROCESS

Anthony F. Litka, Hanover, Mass., and Sidney M. Cohen, Allentown, Pa., assignors to Gas Research Institute, Chicago, Ill.

Division of Ser. No. 741,104, Aug. 6, 1991, Pat. No. 5,118,288. This application Mar. 12, 1992, Ser. No. 850,651

Int. Cl.[5] C04B *7/36*

U.S. Cl. 106—739 **8 Claims**



1. Process for producing discrete clinkered cement particles from discrete pellets of cement-forming batch material without melting and fusing said pellets into agglomerates, which comprises introducing said discrete pellets into the top area of a furnace having an upper suspension shaft section for preheating and at least partially calcining said pellets, an intermediate fluidized bed section containing an air-permeable, clinker-impermeable support for receiving and forming a fluidized bed for the clinkering of said pellets, and a lower cooling section for receiving and cooling clinkers therein; introducing a continuous supply of a fuel into said fluidized bed section, and introducing a continuous supply of combustion-supporting coolant gas at the base of said furnace for movement up through said lower cooling section, and up through the air-permeable support into said fluidized bed section and up through said suspension shaft section, and regulating the upstream force of said coolant gas to cool clinkers in said cooling section while heating the cooling gas, to sustain combustion of said fuel in said fluidized bed section, to maintain turbulent particle suspension within said fluidized bed of said pellets being clinkered, and to regulate the dwell time of pellets falling through said suspension shaft section, to control the calcining thereof prior to entry of the calcined pellets into said fluidized bed section; clinkering said pellets while they are turbulently suspended in said fluidized bed; discharging the clinkered pellets from the top of said fluidized bed through a discharge conduit into a clinker bed in said cooling section to cool said clinkers therein, and withdrawing cooled clinkers from said cooling section.

5,188,669

CIRCUIT BOARD COATING APPARATUS WITH INVERTING PALLET SHUTTLE

William E. Donges, Wellington, Ohio, and Jacques Mycke, Mettmann, Fed. Rep. of Germany, assignors to Nordson Corporation, Westlake, Ohio

Filed Feb. 22, 1991, Ser. No. 659,855

Int. Cl.[5] B05C *13/00*

U.S. Cl. 118—503 **20 Claims**

1. An apparatus for coating both sides of a two-sided circuit board, comprising:

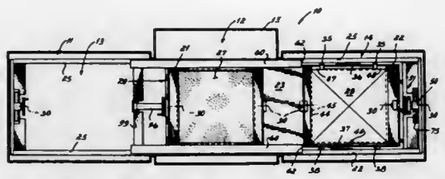
a frame;

a coating station supported on the frame and having at least one coating dispensing device thereat;

at least one handling station positioned on the frame spaced from the coating station;

a shuttle mounted on the frame and having at least two pallets rotatably mounted thereon, the shuttle being moveable to a plurality of positions, each to bring at least one of the pallets to the coating station;

the pallets being spaced on the shuttle such that, when one of



the pallets is at the coating station, another of the pallets is at a handling station;

each of the pallets having means for supporting at least one circuit board thereon with one side thereof in a coating orientation facing the at least one dispensing device when at the coating station; and

the pallets each being independently rotatable, when at a handling station, to alternately bring either one of the opposite sides of a circuit board held thereon to the coating orientation.

5,188,670

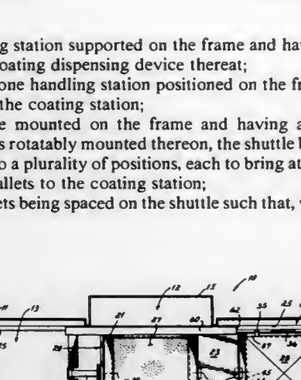
APPARATUS FOR HYDROXYAPATITE COATINGS OF SUBSTRATES

Brent Constantz, Scotts Valley, Calif., assignor to Norian Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 504,941, Apr. 5, 1990. This application Apr. 17, 1991, Ser. No. 686,525

Int. Cl.[5] B05C *3/109*

U.S. Cl. 118—667 **4 Claims**



1. An apparatus for preparing a strong adhering hydroxyapatite coating to a substrate, said apparatus comprising:

a coating trough;

a distribution tank;

a solution preparation tank;

means for circulating a coating medium in a continuous manner in a circuit from said coating trough to said distribution tank to said coating trough;

heating and pH control means for controlling the temperature and pH of said circulating medium;

means for transferring solutions from said solution preparation tank to said circulating means;

individual source means for adding calcium, phosphate, and neutralizing base, wherein said calcium and phosphate sources feed into said coating trough, where in the direction of flow in relation to said substrate, said calcium source is proximal to said substrate while said phosphate source and neutralizing base source are respectively more distal from said substrate, whereby small calcium phosphate particles are formed proximal to said substrate; and

means for holding and changing the position of said substrate in said trough to the direction of flow.

5,188,671

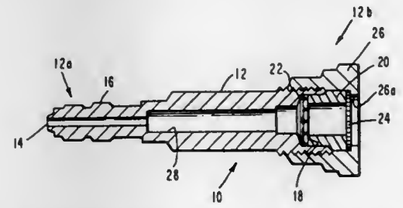
MULTICHANNEL PLATE ASSEMBLY FOR GAS SOURCE MOLECULAR BEAM EPITAXY

Jennifer J. Zinck, Calabasas, and James P. Baukus, Westlake Village, both of Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Filed Aug. 8, 1990, Ser. No. 564,802

Int. Cl.[5] C23C *16/00, 16/48*

U.S. Cl. 118—715 **9 Claims**



1. A uniform collimated multichannel gas source cell for enhancing a growth rate of films in gas source molecular beam epitaxy comprising:

an elongated body having a channel for the passage of source gas therethrough;

a pressure reducing orifice at one end of said body for optimizing effusive flow conditions and a gas outlet at an opposite end;

a diffuser plate located near said outlet end for reducing beaming effects resulting from reducing gas pressure from a first value outside said cell to a second, lower value in said channel; and

an interchangeable microchannel plate array located at said outlet end for producing a collimated, high intensity, uniform source gas on said substrate surface, wherein said cell is mounted inside a molecular beam epitaxy chamber on an internal translation device for adjusting a distance between said outlet end of said cell and a substrate surface to enhance the film growth rate.

5,188,672

REDUCTION OF PARTICULATE CONTAMINANTS IN CHEMICAL-VAPOR-DEPOSITION APPARATUS

James V. Rinnovatore, Nazareth, Pa., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Jun. 28, 1990, Ser. No. 545,425

Int. Cl.[5] C23C *16/00*

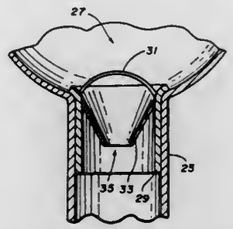
U.S. Cl. 118—715 **9 Claims**

1. In a chemical-vapor-deposition (CVD) apparatus of the type employing a reaction chamber for confining a reactive gaseous atmosphere in contact with a substrate, the combination comprising:

a reaction chamber having a gas outlet for exhausting a gaseous atmosphere from said reaction chamber when desired, and having a gas inlet for connection to a source of a desired reactive gaseous atmosphere for filling said chamber;

said gas outlet comprising an outlet conduit of a first cross-sectional area, said outlet conduit being joined to a wall portion of said reaction chamber in gas flow communication with the interior of said reaction chamber at a point of junction between said wall portion and said outlet conduit; and,

particle restrictor means located at said junction for restricting reverse flow of particulate contaminants from said



outlet conduit into said reaction chamber, said particle restrictor means comprising a baffle positioned at said junction and extending transversely across said outlet conduit thereat, said baffle defining an aperture therethrough, said aperture having a second cross sectional area less than said first cross-sectional area of said outlet conduit, said baffle being convex on the face thereof facing into said outlet conduit.

5,188,673

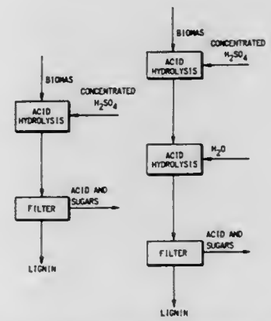
CONCENTRATED SULFURIC ACID PROCESS FOR CONVERTING LIGNOCELLULOSIC MATERIALS TO SUGARS

Edgar C. Clausen, 2425 Sharon St., and James L. Gaddy, 964 Arlington Ter., both of Fayetteville, Ark. 72701

Continuation-in-part of Ser. No. 50,624, May 15, 1987, abandoned. This application Oct. 12, 1988, Ser. No. 256,716

Int. Cl.[5] C13K *1/02*

U.S. Cl. 127—37 **13 Claims**



1. A method of converting lignocellulosic materials to sugars comprising the steps of:

combining a lignocellulosic material with sulfuric acid in a reaction vessel such that the resulting combination of lignocellulosic material and sulfuric acid has a lingnocellulosic material solids content of 2% to about 10% by weight and the sulfuric acid has a concentration of at least 30% by weight;

mixing said lignocellulosic material and sulfuric acid combination at a temperature of less than 100° C. to cause an hydrolysis reaction to convert said lignocellulosic material to sugars and allowing such hydrolysis reaction to

VOL 1147 ISS 4 FE 23 1993 UMI

continue until such conversion of lignocellulosic material to sugars is substantially complete; and

separating the sulfuric acid and sugars from the product of such reaction.

5,188,674

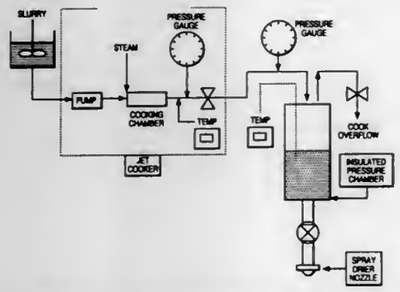
CONTINUOUS COUPLED JET-COOKING/SPRAY-DRYING PROCESS AND NOVEL PREGELATINIZED HIGH AMYLOSE STARCHES PREPARED THEREBY

James J. Kasica, Somerville, and James L. Eden, East Millstone, both of N.J., assignors to National Starch and Chemical Investment Holding Corporation, Wilmington, Del.

Division of Ser. No. 242,657, Sep. 12, 1988. This application May 8, 1991, Ser. No. 697,659

Int. Cl.[5] C08B *30/00;* **C08F** *16/06, 8/00;* **C08G** *68/91*

U.S. Cl. 127—65 **32 Claims**



1. A continuous coupled process for jet-cooking and spray-drying an inherently water-dispersible or water-soluble crystalline polymer, which comprises the steps of:

(a) forming a polymer slurry or a polymer paste comprising the polymer and water;

(b) jet-cooking the polymer slurry or the polymer paste in a jet cooker with steam at about 93°–177° C., the temperature being sufficient to form a polymer solution or a polymer dispersion;

(c) conveying and introducing at a temperature of about 93°–177° C. and a pressure of about 20–150 psig the jet-cooked dispersion or solution into a nozzle of a spray-dryer chamber;

(d) atomizing the jet-cooked polymer dispersion or the jet-cooked polymer solution through the nozzle of the spray-dryer chamber;

(e) drying the atomized mist within the spray-dryer chamber at a temperature sufficient to dry the dispersed or the solubilized polymer; and

(f) recovering the dried polymer as a water-dispersible or a water soluble powder.

5,188,675

PAINT SYSTEM FOR REMOVING PAINT

Michael I. Dormon-Brailsford, Dorton Hill House, Chilton, Nr. Aylesbury, Bucks, HP18 9ND, United Kingdom

Continuation of Ser. No. 624,610, Dec. 10, 1990, abandoned. This application Nov. 22, 1991, Ser. No. 799,686

Claims priority, application United Kingdom, Sep. 14, 1990, 9020117

Int. Cl.[5] B08B *7/00*

U.S. Cl. 134—4 **12 Claims**

1. A process for removing coats of paint and varnish from a cured surface, comprising:

applying a stripper composition onto the surface to decompose the coats of paint and varnish on the surface, wherein said stripper composition includes an aliphatic dibasic acid ester in an amount between about twenty and about eighty percent by volume of said stripper composition, N-Methyl-2-Pyrrolidone in an amount between about five and about sixty percent by volume of said stripper composition, an ether selected from the group consisting of propylene glycol methyl ether, dipropylene glycol methyl ether and a blend of propylene glycol methyl and dipropylene glycol methyl ether in an amount between about five and about seventy percent by volume of said stripper composition, and a latex paint in an amount between about three and about twenty-five percent by volume of said stripper composition, wherein the latex paint contains on an average about twenty-three percent acrylic polymer and about thirty percent titanium dioxide, and wherein said stripper composition has a rheology the same as that of a thixotropic paint;

applying means for covering said stripper composition and the cured surface, said covering means including laminated paper tissue coated with either polyethylene or wax, said covering means having a face portion that is applied directly onto said stripper composition; and

removing the decomposed coats of paint and varnish from the cured surface by lifting at least a portion of said covering means,

whereby the lifted portion of said covering means has attached thereto at least a portion of the decomposed coats.

5,188,676

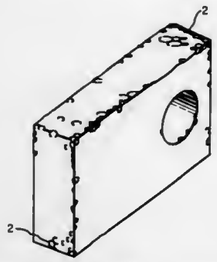
METHOD FOR ANNEALING ZIRCALOY TO IMPROVE NODULAR CORROSION RESISTANCE

Dale F. Taylor, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 23, 1991, Ser. No. 749,052

Int. Cl.[5] C22F *1/00*

U.S. Cl. 148—217 **8 Claims**



1. A method for annealing a Zircaloy member having a cold worked or beta quenched crystal structure to mitigate the reduction in nodular corrosion resistance caused by the anneal comprising,

annealing the member to form an adherent black oxide thereon, in an atmosphere consisting essentially of an effective amount of oxygen to form the black oxide and the balance an inert atmosphere.

5,188,677

METHOD OF MANUFACTURING A MAGNETIC DISK SUBSTRATE

Hideaki Fukai; Hiroyoshi Suenaga, and Kuninori Minakawa, all of Tokyo, Japan, assignors to NKK Corporation, Tokyo, Japan

Division of Ser. No. 536,701, Jun. 12, 1990, Pat. No. 5,120,615. This application Jun. 21, 1991, Ser. No. 719,331

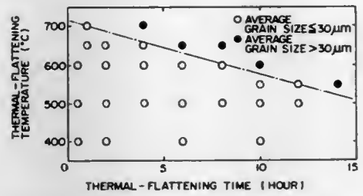
Claims priority, application Japan, Jun. 16, 1989, 1-153855; Mar. 9, 1990, 2-56449

Int. Cl.[5] C21D *11/00*

U.S. Cl. 148—501 **17 Claims**

1. A method of manufacturing a titanium alloy magnetic disk substrate comprising

(a) cold-rolling an alloy plate at a rolling ratio of no less than 30%, the alloy plate comprising 0.5 wt. % to 1.0 wt. % of Mo and containing oxygen, nitrogen and carbon in amounts such that $O+2N+0.75C$ is from 0.03 wt. % to 0.5 wt. % of the titanium alloy, and the balance being Ti, wherein O is the wt. % of oxygen, N is the wt. % of nitrogen and C is the wt. % of C, to form a magnetic disk substrate material and then



(b) thermal-flattening the magnetic substrate material from step (a) under a temperature and time condition defined as follows:

$$500 \leqq T \leqq -(150/11)\cdot t + 7{,}850/11 \quad 1 \leqq t$$

where T represents a thermal-flattening temperature in ° C., and t represents a thermal-flattening time in hours.

5,188,678

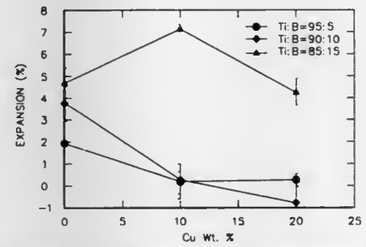
MANUFACTURE OF NET SHAPED METAL CERAMIC COMPOSITE ENGINEERING COMPONENTS BY SELF-PROPAGATING SYNTHESIS

Jainagesh A. Sekhar, Cincinnati, Ohio; Sarit B. Bhaduri, Moscow, Id.; Hung P. Li, and Necip S. Canarslan, both of Cincinnati, Ohio, assignors to University of Cincinnati, Cincinnati, Ohio

Continuation of Ser. No. 567,367, Aug. 15, 1990, abandoned. This application Mar. 20, 1992, Ser. No. 855,151

Int. Cl.[5] C22C *1/05, 1/09*

U.S. Cl. 148—514 **12 Claims**



12. A method of producing a net shaped metal ceramic composite having an intended final shape comprising preparing a mixture of:

(a) a combustible substance containing titanium and boron, the weight ratio of said titanium to said boron in said substance being in the range of 85:15, plus or minus about 13%;

(b) copper present in an amount such that the overall weight ratio of said titanium to said boron to said copper in said mixture is about 68:12:20; and

(c) at least one ceramic reinforcement selected from the group consisting of:

borides of titanium, zirconium, niobium, tantalum, molybdenum, hafnium, chromium, and vanadium;

carbides of titanium, hafnium, boron, aluminum, tantalum, silicon, tungsten, zirconium, niobium, and chromium;

nitrides of titanium, zirconium, boron, aluminum, silicon, tantalum, hafnium, and niobium;

silicides of molybdenum, titanium, zirconium, niobium, tantalum, tungsten, and vanadium;

oxides of iron, aluminum, chromium and titanium; and

phosphides of nickel and niobium;

forming said mixture into said intended final shape and igniting said mixture so as to produce a distortion-free net shaped metal ceramic composite by combustion synthesis having an expansion or contraction of not more than about 7% from said intended final shape.

5,188,679

METAL COMPRESSION-SPRING GEMSTONE MOUNTINGS

Steven D. Kretchmer, 16837 Magnolia Blvd., Encino, Calif. 91316

Continuation-in-part of Ser. No. 601,472, Oct. 19, 1990, Pat. No. 5,084,108, which is a continuation-in-part of Ser. No. 555,127, Jul. 19, 1990, abandoned. This application Jan. 15, 1992, Ser. No. 820,766

The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.

Int. Cl.[5] C21D *9/00*

U.S. Cl. 148—538 **10 Claims**



1. A method for forming compression spring a mounting structure, which comprises:

forming a quantity of heat-treatable metal into a gemstone mounting having first and second ends, with the first end being spaced from the second end for retaining one or more gemstones therebetween;

annealing the gemstone mounting;

heat-treating the formed mounting to increase the yield strength thereof; and

cooling the heat-treated mounting to obtain a compression spring gemstone mounting capable of securely retaining one or more gemstones therein.

5,188,680

METHOD OF MAKING TOOTH POINT

Frederick C. Hahn, Aloha; Andrew H. Ulven, Silverton, and James W. Huiras, Canby, all of Oreg., assignors to ESCO Corporation, Portland, Oreg.

Filed Nov. 15, 1990, Ser. No. 614,253

Int. Cl.[5] C21D *8/00, 8/10*

U.S. Cl. 148—593 **30 Claims**

1. A method of manufacturing an excavating tooth point comprising:

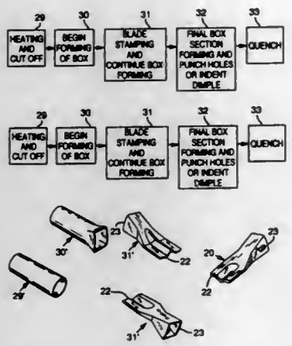
heating a relatively elongated tube of steel having a pair of ends to about its upper critical temperature,

inserting a forming die into one tube end,

applying jaw dies radially thereof to said one tube end to start forming a rectangular configuration constituting a point box section,

die-shaping the other end of said tube to a blade configuration,

shaping the box section to final configuration, and



quenching the tube after it has been formed into a tooth point shape.

5,188,681

PROCESS FOR MANUFACTURING THIN STRIP OR SHEET OF CR-NI-BASE STAINLESS STEEL HAVING EXCELLENT SURFACE QUALITY AND MATERIAL QUALITY

Shinichi Teraoka; Masanori Ueda, both of Kitakyushu, and Toshiyuki Suehiro, Hikari, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

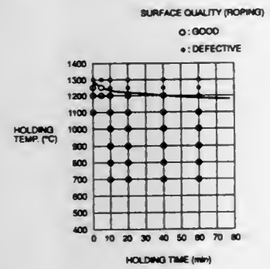
PCT No. PCT/JP91/00042, § 371 Date Sep. 12, 1991, § 102(e) Date Sep. 12, 1991, PCT Pub. No. WO91/10517, PCT Pub. Date Jul. 25, 1991

PCT Filed Jan. 17, 1991, Ser. No. 761,920

Claims priority, application Japan, Jan. 17, 1990, 2-6371; Mar. 31, 1990, 2-83024

Int. Cl.[5] C21D *8/02*

U.S. Cl. 148—603 **5 Claims**



1. A process for manufacturing a thin strip or sheet of a Cr-Ni-base stainless steel having an excellent surface quality and material quality, which comprises casting a cast strip having a thickness of 6 mm or less from a Cr-Ni-base stainless steel including 18%Cr-8%Ni steel by a continuous casting wherein a casting mold is moved synchronously with the cast strip, and directly subjecting the cast strip to cold-rolling without hot-rolling to form a thin sheet product, wherein the cast strip immediately after the casting is coiled at a temperature of 800° to 1200° C. and subjected to cold-rolling and final annealing to form a thin sheet product.

5,188,682

PROPELLENT MEDIUM FOR HYBRID WEAPON

Gunther Lochner, Altdorf, and Wolfgang Schwarz, Nuremberg, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nürnberg, Fed. Rep. of Germany

Filed Aug. 14, 1989, Ser. No. 409,503

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1988, 3830902

Int. Cl.[5] C06B *47/00;* **F41F** *1/00*

U.S. Cl. 149—1 **12 Claims**

1. Propellent medium for a barreled weapon with electrically-supported liquid propulsion, especially for chemical-electrical hybrid drives with injection of a regenerative organic compounds of a combination of carbon and hydrogen including one or more reactive groups at a ratio which facilitates the splitting off of molecules or atoms of lower molecular mass at a good exothermic reaction of the propellant medium (hydrocarbon).

5,188,683

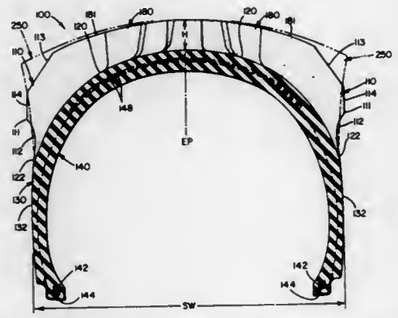
PNEUMATIC TIRE FOR AGRICULTURAL OR LOGGING USE

Mark L. Bonko, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 22, 1991, Ser. No. 688,213

Int. Cl.[5] B60C *11/00*

U.S. Cl. 152—209 B **16 Claims**



10. An improved pneumatic tire for agricultural or logging use having a casing, the casing including a pair of sidewalls having axially outermost surfaces defining the maximum section width of the tire, a minimum of eight carcass plies, and at least two steel belts, an inner tread surface radially outward of the casing, the inner tread surface having a pair of lateral edges, at least two but not more than four rows of circumferentially spaced tread lugs radially extending outwardly from the inner tread surface to a ground contacting surface, the tread having a net-to-gross ratio in the range of 25% to 45%, at least one row of lateral-edge lugs extending circumferentially and axially inwardly from each lateral edge, wherein the improvement comprises:

the lateral-edge lugs each having a projection extending from the lug axially outward of the tire's maximum section width to an axially outer limit of the projection, the projection being radially inward of the ground contacting surface of the lug and radially outward of the inner tread surface, the projection extending axially inwardly and radially outwardly from the axially-outer limit to the ground contacting surface of the tread lug and extending generally axially and radially inwardly from the axially-outer limit of the projection to the lateral edge of the inner tread surface from which the lug extends, the portion of the projection which extends axially and radially inwardly from the axially outer limit to the lateral edge has a surface which extends at least partially axially inward of the tire's maximum section width, and wherein the lug has a radial height measured perpendicularly from the inner tread surface to the radially outer ground contacting surface of the lug, the height being a distance H at a location midway between the section width of the tire and between 100% and 150% of H at any other axial location and the contact area of the lug decreases in width as it extends toward the lateral edge.

5,188,684

PNEUMATIC RADIAL TIRES

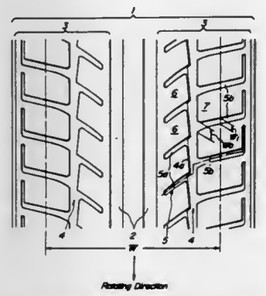
Yasuo Himuro, Tokyo, Japan, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Apr. 10, 1991, Ser. No. 683,159

Claims priority, application Japan, Apr. 13, 1990, 2-96318

Int. Cl.[5] B60C *11/11*

U.S. Cl. 152—209 R **5 Claims**



1. A unidirectional pneumatic radial tire comprising; at least one circumferential groove extending circumferentially of the tire at one end portion in widthwise direction of a tread, plural slant grooves arranged at approximately equal intervals in the circumferential direction of the tire and extending diagonally across the circumferential groove, each of said slant grooves being inclined in a direction toward a central portion of the tread in a preferred rotational direction of the tire, a circumferential width of a first portion of each of said slant grooves located axially outward from the circumferential groove toward a tread end and opening into the circumferential groove is within a range of 1.5–3.0 of a circumferential width of a second slant groove portion at a position of ground contact axially outward of said first portion, said slant grooves defining island units at both sides of said circumferential groove, a kicking-out side corner of an island unit located at an outside of the tread end being approximately aligned in an axial direction of said tread to a stepping-in side corner of an island unit located at a side of the central portion of the tread whereby a portion of said slant groove located at the tread end side is shifted from a portion of said slant groove portion located at the central portion side of the tread by an amount corresponding to approximately a width of said second slant groove portion in the circumferential direction of the tire; wherein said circumferential groove has a groove wall on the tread end side and extends straight in the circumferential direction of the tire and the groove wall on the side of the central portion of the tread is extended substantially in a sawtooth in the circumferential direction of the tire with said slant groove located at the central portion of said tread opening into said circumferential groove at a bent portion of said sawtooth groove wall.

5,188,685

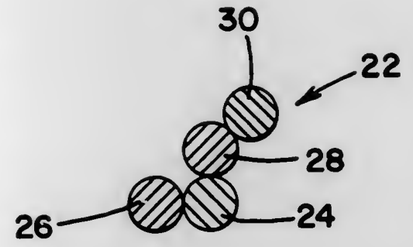
PNEUMATIC RADIAL TIRE INCLUDING STEEL BELT CORDS OF 2+2X.30HT CONSTRUCTION

Mark V. Cherveny, Mogadore; Keith C. Trares, Akron; Terry J. Waibel, Wadsworth; William M. Hopkins, Hudson; Italo M. Sinopoli, Canton, and Ray A. Young, East Sparta, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 7, 1989, Ser. No. 432,650

Int. Cl.[5] B60C *9/20, 9/18, 9/00*

U.S. Cl. 152—451 **12 Claims**



1. A load range C pneumatic radial tire with a carcass having radial cords, two sidewalls spaced apart a distance, which in the axial direction, determines the width of the tire section, two beads each one of which around which are turned up, from the inside toward the outside, the ends of the cords of the carcass, and a belt structure that is circumferentially inextensible interposed between the tread and the carcass, the belt structure having a width that is substantially equal to that of the tread and having at least two radially overlapped layers of elastomeric fabric reinforced with metallic cords, the metallic cords being parallel to each other in each layer at a density of 12 to 18 EPT (4.7 to 7.1 ends per centimeter) and crossed with the cords of the facing layer and inclined at an angle of between 16° and 30° with respect to the equatorial plane of the tire, comprising the gauge of the gum between two facing cords, on the plane of a cross section of the tire being between 0.05 cm (0.020 inches) and 0.080 cm (0.03 inches) throughout the entire width of the belt structure, the metallic cords being two twisted filaments twisted with two parallel filaments all filaments of 0.30 mm diameter high tensile steel.

7. A load range D pneumatic radial tire with a carcass having radial cords, two sidewalls spaced apart a distance, which in the axial direction, determines the width of the tire section, two beads each one of which around which are turned up, from the inside toward the outside, the ends of the cords of the carcass, a tread disposed on the crown of the carcass, and a belt structure that is circumferentially inextensible interposed between the tread and the carcass, the belt structure having a width that is equal to that of the tread and having at least two radially overlapped layers of elastomeric fabric reinforced with metallic cords, the metallic cords being parallel to each other in each layer at a density of 14 to 18 EPI (5.5 to 7.1 ends per centimeter) and crossed with the cords of the facing layer and inclined at an angle of between 16° and 30° with respect to the equatorial plane of the tire, comprising the gauge of the gum between two facing cords, on the plane of a cross section of the tire being between 0.05 cm (0.020 inches) and 0.080 cm (0.03 inches) throughout the entire width of the belt structure, the metallic cords being two twisted filaments twisted with two parallel filaments all filaments of 0.30 mm high tensile steel.

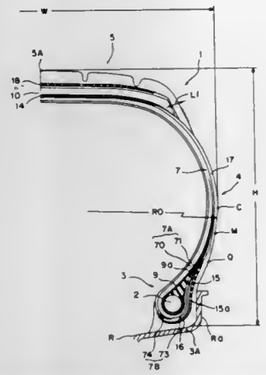
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5,188,686

HIGH SPEED TIRE FOR HEAVY DUTY VEHICLES INCLUDING BEAD PART WITH SIDE PACKING RUBBER

Kiyoshi Ueyoko, Osaka; Hideaki Yoshikawa, Kobe, and Mikio Takatsu, Takarazuka, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Dec. 27, 1990, Ser. No. 634,596
Claims priority, application Japan, Dec. 29, 1989, 1-341267
The portion of the term of this patent subsequent to Nov. 3, 2009, has been disclaimed.
Int. Cl.[5] B60C *3/00, 3/04, 15/06*
U.S. Cl. 152—454 **1 Claim**



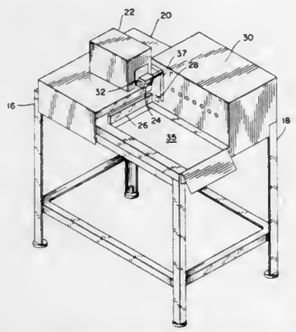
1. A high speed tire for heavy duty vehicles comprising
a carcass (7) in radial structure composed of a plurality of inner plies and a plurality of outer plies, said inner plies having a main body part (70) extending from a tread part (5) through a pair of side wall parts (4) to a bead core (2) in each of two bead parts (3) and a pair of folded-back parts (71), one of said pair of folded-back parts being folded back at each edge of the main body part (70) around each of the bead cores (2) from axially inside to outside, said outer plies having a main body (73) extending from the tread part (5) through said pair of side wall parts (4) to each of said bead cores (2) and a pair of wrapping parts (74), one of said pair of wrapping parts being folded back at each edge of the main body (73) to enclose one of the folded-back parts (71) around each of the bead cores (2) from axially outside to inside;
a belt layer (10) disposed radially outside said carcass (7);
a pair of tapered bead apex rubbers (9), one of said pair of apex rubbers (9) being disposed to extend outward in the radial direction from each of the bead cores (2) between the main body part (70) and each of the folded-back parts (71);
a pair of side packing rubbers (15), one of said pair of side packing rubbers (15) extending along an outside surface of the main body (73) outward in the radial direction from each of said bead cores (2);
a pair of reinforcement fillers (16), one of said pair of reinforcement fillers (16) being disposed on a radially bottom surface of each of said pair of wrapping parts (74) and extending axially outward and then radially outward to terminate at a lower end of said side packing rubber; and
a pair of side wall rubbers (17), one of said pair of side wall rubbers covering an axially outer surface of each of said pair of said packing rubbers (15) from each of said bead parts (3) to one of the pair of side wall parts (4) so as to form an outside surface of the tire;
wherein, in a profile of the outer circumference of a tire on the tire section including the tire axis when the tire is mounted on a normal rim and inflated with a normal internal pressure,
the maximum width and radius ratio (Ro/W) of the radius (Ro) of curvature of the arc which passes through the maximum width point (C) where the tire width is the maximum (W), the reference point (Q) being radially outward from the bead bottom line by the length of 0.2 times the sectional height (H) of the tire, and the intermediate height point (M) which has intermediate height between the maximum width point (C) and the reference point (Q), to the tire maximum width (W) is not more than 0.54, and
the 100% modulus MP of the side packing rubber (15) is 53 to 95 kg/cm^2,
the 100% modulus MA of the bead apex rubber (9) is 78 to 120 kg/cm^2,
the 100% modulus MS of the side wall rubber (17) is 14 to 50 kg/cm^2, and
said modulus MP, MA, and MS are in the relationship of MS<MP<MA.

5,188,687

LABEL PICKUP AND APPLICATOR ASSEMBLY AND METHOD

Morton S. Baum, Hollywood, Fla., assignor to Labelmatic, Inc., Hollywood, Fla.

Filed Mar. 6, 1991, Ser. No. 665,037
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—64 **21 Claims**



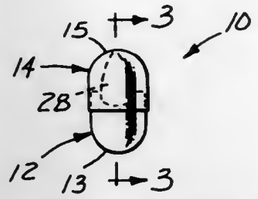
21. A method for automatically applying a price-printed label onto a series of random weight packages each having a shaped outer surface, said method comprising:
a) disposing each package in a predetermined position within a label application work station,
b) sensing the presence of each package disposed in the label application work station,
c) supporting label printing means including label dispensing means with a label dispensing peeling bar that defines a home position for label transport means having an applicator head that receives a label as it is peeled from the label dispensing peeling bar after a package is weighed,
d) moving said label transport means toward a package to transport a price-printed label from the home position at the label printing means to a random distance label-applying position contiguous the outer surface of the package,
e) stopping movement of the label transport means toward the package when the label transport means has reached a lower random limit which varies from package to package in said series of packages to apply the price-printed label to the outer surface of the package, and
f) returning the label transport means from said lower random limit to said home position.

5,188,688

METHOD OF SEALING A GELATIN CAPSULE

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Filed Jul. 20, 1990, Ser. No. 556,816
Int. Cl.[5] B65B *7/00*
U.S. Cl. 156—69 **20 Claims**



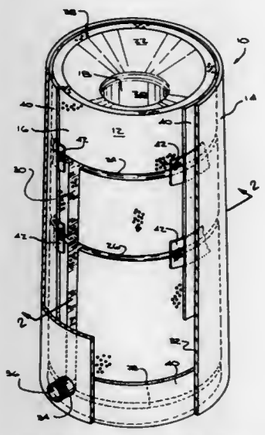
1. A method for sealing mateable first and second vesicular capsule sections to form an eccentrically and internally sealed gelatin capsule, comprising:
(a) placing sealant, comprising a water-soluble, amide-containing polymer adhesive in a volatile, essentially non-aqueous solvent, on less than 360° of a perimeter of the first capsule section, said perimeter defining an opening;
(b) placing the second capsule section over said perimeter of said first capsule section and into an overlapping relationship with said first capsule section thereby spreading said sealant at the overlap;
(c) evaporating the solvent from said sealant to eccentrically and internally seal the first and second capsule sections in the form of a gelatin capsule.

5,188,689

METHOD OF FORMING A POROUS REFRACTORY IMMERSION NOZZLE

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Division of Ser. No. 652,462, Feb. 7, 1991, Pat. No. 5,100,035, which is a continuation of Ser. No. 346,397, May 1, 1989, abandoned. This application Nov. 27, 1991, Ser. No. 800,539
Int. Cl.[5] B32B *31/00*
U.S. Cl. 156—89 **10 Claims**



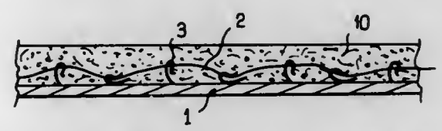
1. A method of forming an immersion nozzle comprising:
a. forming a porous, refractory nozzle having channels formed in the outer surface thereof, said channels having a predetermined width and being in communication with each other,
b. forming a metal housing having an inner surface dimensioned to conform to the outer profile of said porous refractory nozzle, said housing adapted to receive said nozzle with a slight spacing therebetween and having an orifice through a side thereof,
c. jacketing said channels in said nozzle with a positionally stable barrier, and
d. inserting said refractory nozzle into said housing with a wet cementitious refractory mortar disposed between said nozzle and said housing, and with said orifice in said housing being aligned with one of said channels in said nozzles,
e. securing said housing to said refractory nozzle by drying said mortar, said channels remaining open and not obstructed by mortar.

5,188,690

METHOD FOR APPLYING A COVERING ON A SUBSTRATE, A DEVICE FOR CARRYING OUT THE METHOD AND A COVERING OBTAINED BY MEANS OF SAID METHOD

André Daussan; Gérard Daussan, both of Longeville-Les-Metz, and Jean-Charles Daussan, Metz, all of France, assignors to Daussan et Compagnie, Woippy, France

Filed Aug. 19, 1991, Ser. No. 746,890
Claims priority, application France, Aug. 24, 1990, 90 10641
Int. Cl.[5] B32B *7/14*
U.S. Cl. 156—91 **6 Claims**



1. A method for applying a covering on a substrate, wherein a reinforcement is embedded in the covering, comprising the following steps:
fastening on the substrate a plurality of spaced fastening devices, which are curved U-shaped hooks, with the hooks fastened to the substrate at a plurality of different places along the length of various ones of the hooks, so that different hooks are fastened to the substrate at various parts of the hooks;
inserting a reinforcement in the hooks, the reinforcement extending between the hooks and being spaced from the substrate; and
covering the substrate and the hooks and the reinforcement with a heat-resistant substance a portion of which is disposed between the reinforcement and the substrate.

5,188,691

APPARATUS AND METHOD FOR PRODUCING AIR CUSHION PRODUCT

Gary L. Caputo, 464 Riverside Ave., Rutherford, N.J. 07070

Continuation of Ser. No. 382,579, Jun. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 213,254, Jun. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 78,385, Jul. 27, 1987, abandoned. This application Apr. 26, 1991, Ser. No. 692,178
Int. Cl.[5] B32B *31/12*
U.S. Cl. 156—145 **20 Claims**

1. In an on-demand apparatus for producing air-cushioning dunnage from two sources of flexible thermoplastic film, said flexible film of the type which may be combined to provide isolated fully air-filled cells, said apparatus comprising:
a means for holding a source of a first film, said first film being a thermoplastic material having at least thermo-

VOL 1147 ISS 4 FE 23 1993 UMI

forming and heat-welding properties when heated to a predetermined temperature;

a means for holding a source of a second film, said second film being a thermoplastic material having at least heat-welding properties when heated to a predetermined temperature;

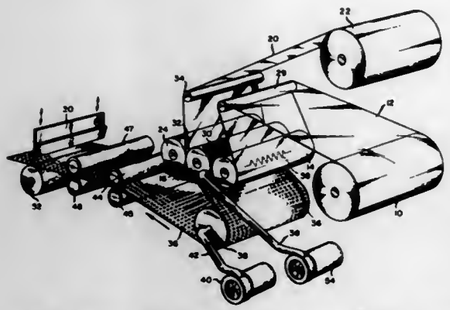
means for independently feeding a web of said first film and a web of said second film to said apparatus;

means for softening a preselected portion of said first film to a temperature sufficient to provide said first film with said thermoforming properties;

a forming roller of a selected diameter, said forming roller including a central core and an outer surface, said outer surface having a plurality of selectively shaped and spaced cavities therein, said forming roller being adapted to receive said heat-softened portion of said first film at a first point with respect to said forming roller, said forming roller being made of a conductive material and further adapted for being fully and constantly cooled to a predetermined cold temperature at its central core first and conducting said cold temperature to its outer surface;

means for creating a vacuum within said cavities located within a forming portion of said forming roller, said created vacuum being sufficient to draw said heat-softened portion of said first film into said cavities, said drawn first film taking a shape similar to the shape of said cavities within said forming portion of said forming roller;

a heated pressure roller selectively positioned adjacent to



said forming roller, said heated pressure roller being adapted to receive said second film so that said first film and said second film are in contact at a contact portion of said adjacent rollers, said contact portion being located at a second point with respect to said forming roller, heat generating from said heated pressure roller conducts through said second film and said first film in a direction towards said core of said forming roller, said heated pressure roller further adapted for heating said second film substantially to a heat-weld temperature prior to said second film supply reaching said contact portion of said heated pressure roller;

a thermo-resistive layer including silica particles dispersed in a rubber base for providing a predetermined conductivity, said thermo-resistive layer having a predetermined thickness, said thermo-resitive layer selectively covering said outer surface of said forming roller around said cavities, said thermo-resistive layer being fixedly attached while simultaneously being in full contact with said outer surface around said cavities said thermo-resistive layer being such that said conduction of said generated heat energy from said adjacent heated pressure roller toward said cold core of said forming roller is delayed for a predetermined duration at said thermo-resistive layer on said outer surface of said forming roller around said cavities, said duration of said heat conduction delay being controlled by the thickness and conductivity of said thermo-resistive layer, said duration being sufficient to heat any undrawn portions of said first film to said heat-weld temperature so that said first film is heat-welded to said second film substantially at said contact portion of said adjacent rollers, said duration of said delay ending after said heat-weld is rotated by and with said forming roller for a predetermined distance beyond said contact point, said conductivity of said thermo-resistive layer thereafter allowing residual heat energy in said heat weld to continue towards said cold core of said forming roller;

said predetermined thickness of said thermo-resistive layer providing for a major portion of said shape of said drawn portion of said first film to be only in contact with the shape of its associated cavity of said plurality of shaped and spaced cavities in said forming roller;

wherein said first point is sufficiently distant from said second point for cooling only said drawn portion of said first film and air interior of said cells formed in said first film to substantially a cold condition, as and when said major portion of said shape of said drawn portion is in contact with said cavity, said cold condition providing for more dense air to fill said cells and subsequently providing a fully inflated air cell;

means for driving said forming roller and said heated pressure roller at a selected rate of rotation;

means for said fully cooling of said forming roller to said predetermined cold temperature, said fully cooling means adapted for constantly cooling said air in said cells, said fully cooling means further adapted for subsequently cooling said thermo-resistive layer and said heat-welded portion of said first film and said second film to a temperature sufficient to easily remove said dunnage from said forming roller; and

a second cooling means for removing any residual heat from a major exposed surface of said second film of said finished cushioning dunnage subsequent to said easy removal and prior to exiting the apparatus, said second cooling means providing for the minimizing of any thermal distortion of said second film.

14. A method for producing a fully air-filled cushioning dunnage from two sources of flexible thermoplastic films, said method including:

providing a substantially continuous source of a first film, said first film having at least thermoforming and heat welding properties;

providing a substantially continuous source of a second film, said second film having at least heat welding properties;

independently and simultaneously feeding a web of said first film and a web of said second film;

softening said first film substantially to a predetermined thermoforming temperature;

rotating a forming roller and a heated pressure roller at a predetermined like peripheral velocity, said forming roller having a central core, and an outer surface, said outer surface being selectively covered with a thermo-resistive layer, said thermo-resistive layer including silica particles in a rubber base and being fixedly attached while being in full contact with said outer surface of said forming roller;

maintaining said central core and said outer surface at a predetermined cold temperature by and with a cooling means communicating with said central core;

receiving said softened first film onto said rotating forming roller at a first point with respect to the forming roller;

thermoforming said first film into a plurality of cavities formed into said outer surface of said forming roller by applying a vacuum to selected cavities, said thermoforming brining a major portion of said thermoformed first film into substantially full contact with its associated cavity of said plurality of cavities;

cooling only said major portion of said thermoformed portions of said first film and air contained within said thermoformed portions in said cavities by maintaining said application of said vacuum while simultaneously carrying said thermoformed first film on said forming roller from said first point to a sufficiently distant second point, said cavities being maintained below a predetermined cold temperature while simultaneously maintaining unformed portions of said first film at an elevated temperature, by contacting said thermo-resistive layer;

heating said second film substantially to a heat welding temperature by wrapping said second film around a heated pressure roller for a selected arc of contact;

simultaneously abutting and heat welding said second film to said first film substantially at said second point by applying a contact pressure by and with said heated pressure roller while simultaneously delaying the conduction of the welding heat at said thermo-resistive layer by providing said thermo-resistive layer with predetermined thickness and conduction properties;

allowing said heat welded portions of said second film and said first film to set by carrying said dunnage on said forming roller for a predetermined distance beyond said second point;

cooling said heat welded portions of said dunnage to a predetermined temperature sufficient for easy removal of said dunnage from said forming roller by carrying said dunnage beyond said set point while simultaneously allowing any residual heat in said thermo-resistive layer to conduct into said cold forming roller; and

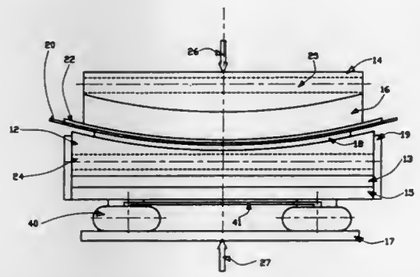
removing said dunnage from said forming roller by and with a chill roller while simultaneously cooling any exposed major surface of said second film by wrapping said major surface around and maintaining contact with said chill roller for a predetermined arc.

5,188,692

METHOD FOR APPLYING ANTI-LACERATIVE FILM TO GLASS

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Filed Nov. 5, 1990, Ser. No. 608,850
Int. Cl.[5] B29C *55/18*; B32B *1/10*
U.S. Cl. 156—212 **11 Claims**



1. A method of laminating a layer of non-oriented polymer plastic to a precast layer of glass, comprising the steps of:

(a) obtaining a precast layer of glass, said glass having a first face and second face;

(b) placing said precast layer of glass on a saddle such that said first face of said precast layer of glass contacts an upper face of said saddle, which upper face is contoured to substantially the identical contour of said first face of said precast layer of glass, and which saddle is adapted to transmit heat to and absorb heat from said precast layer of glass;

(c) disposing a polymer plastic film at a distance away from said second face of said glass;

(d) introducing a contoured ram and an intermediate layer of hard flexible material above said polymer plastic film, said ram having a lower surface that is contoured to substantially the identical contour of said second face of said precast layer of glass, said intermediate layer having a surface initially more convexly contoured than the lower surface of the ram and placed below said lower surface of said ram so as to face said polymer plastic film;

(e) closing the distance between said contoured ram and said polymer plastic film, such that a central portion of said initially convexly contoured layer of hard flexible material first contacts a central portion of said polymer plastic film and then continues to stretch and force said polymer plastic film into initial contact with a central portion of said second face of said precast layer of glass and resultingly applying a pressure thereto;

(f) increasing the pressure between said ram and said precast layer of glass so as to stretch and force the plastic film into increasingly greater contact area with said precast layer of glass whereby the contour of the intermediate layer increasingly conforms to the contour of the lower surface of the ram;

(g) increasing the pressure between said ram and said precast layer of glass up to a predetermined level, and maintaining the pressure at that level;

(h) heating said combination of the precast layer of glass and the polymer plastic film to a predetermined temperature, and maintaining said combination of the precast layer of glass and the polymer plastic film at least at that temperature for at least a predetermined period of time;

(i) thereafter, cooling said combination of the precast layer of glass and the polymer plastic film to at least a predetermined temperature;

(j) thereafter, releasing the pressure of said ram against the by then laminated polymer plastic film and precast glass; and

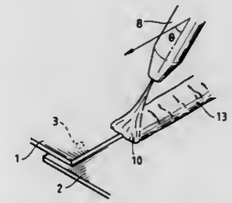
(k) thereafter, removing the laminated plastic and precast glass composite structure from said saddle.

5,188,693

PROCESS FOR APPLYING POLYVINYL CHLORIDE SEALING MATERIAL HAVING LOW THIXOTROPIC INDEX

Nobuyuki Nagata, Okazaki; Itsuro Tsutsui, Anjyou; Koji Ota; Hirofumi Hashimoto, both of Toyota, and Haruji Shibata, Okazaki, all of Japan, assignors to Aishin Kakou K.K. and Toyota Jidosha K.K., both of Aichi, Japan

Continuation of Ser. No. 310,017, Feb. 13, 1989, abandoned, which is a continuation of Ser. No. 39,870, Apr. 20, 1987, abandoned. This application Jul. 5, 1991, Ser. No. 725,924
Claims priority, application Japan, Apr. 18, 1986, 61-90820; Apr. 18, 1986, 61-90821; Apr. 18, 1986, 61-90822
Int. Cl.[5] B29C *65/54*
U.S. Cl. 156—244.11 **15 Claims**



1. A process for applying sealing material for sealing a gap in a substrate for forming a joint zone having a width ranging from 6 to 15 mm, comprising:

(a) selecting and combining a polyvinyl chloride resin as a major ingredient, a plasticizer, a thixotroping agent, a powdery filler, an adhesive promoter and a heat stabilizer to form the sealing material having viscosity at 20° C. of 12,000 to 20,000 cps at a shearing speed of 62 sec.$^{-1}$, and also having a ratio of the viscosity at the shearing speed of 62 sec.$^{-1}$ to the viscosity at the shearing speed of 860 sec.$^{-1}$ of 1.5 to 2.5 at 20° C., and

(b) applying the sealing material for sealing the gap by causing extrusion of said material from a nozzle of a sealing

VOL 1147 ISS 4 FE 23 1993 UMI

gun by means of a robot operated system, at a fixed distance from the substrate upon which the joint zone is to be formed,

wherein the distance from the nozzle of the sealing gun to the substrate upon which the joint zone is being formed is increased in order to increase the width of the joint zone, the speed at which the gun nozzle is moved along the joint zone is the same regardless of the width of the joint zone, and the nozzle aperture is the same regardless of the width of the joint zone.

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SHEET PERFORATING APPARATUS

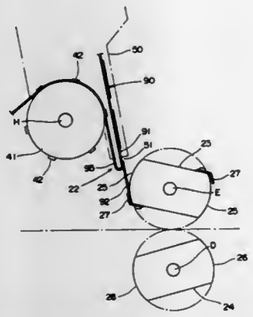
Yoshisuke Hashida, Hino; Hideo Takaoka, Tokyo, and Yoshiharu Kamei, Urawa, all of Japan, assignors to Sun Seiki Co., Ltd., Japan

Continuation of Ser. No. 599,112, Oct. 17, 1990, abandoned. This application Sep. 13, 1991, Ser. No. 759,647

Claims priority, application Japan, Oct. 18, 1989, 1-269102

Int. Cl.[5] B26D *5/00*

U.S. Cl. 156—353 **6 Claims**



1. A sheet perforating apparatus comprising a sheet transfer mechanism; a perforating section for boring at least one filing hole in a sheet transferred; and a sticking section for sticking a reinforcing pad on the sheet about the periphery of the filing hole,

said perforating section comprising a punch cutter for boring the filing hole in the sheet being transferred, and

said sticking section comprising a delivery part for delivering a reinforcing pad-carrying sheet comprising a releasable base sheet and annular reinforcing pads each having a central aperture reinforcing pads each having a central aperture of a size at least equal to the size of the filing hole, and adhesive layer on one side and releasably secured by said adhesive layer on the releasable base sheet at predetermined intervals; a peeling part for acutely bending and reversely turning the reinforcing pad-carrying sheet from the delivery part to peel one of the reinforcing pads gradually from its front end; a rotatable catcher having a holding part for holding the reinforcing pad separated by the peeling part, said holding part having an arcuate convex surface and a holding blade spaced from said convex surface to engage the adhesive layer provided on the reinforcing pad in such a manner that the adhesive layer faces outwardly from said convex surface, said catcher being adapted to move the holding part to a sticking region; and a backing pad to be moved with movement of the holding part of the catcher and having a flexible backing face to retain the sheet in contact with the holding part.

5,188,695

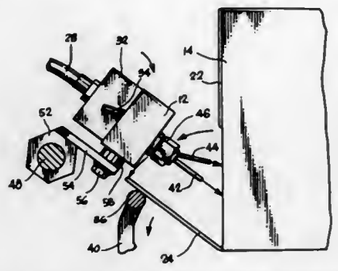
ARTICULATING APPLICATOR HEAD FOR FLAP SEALING UPON CYCLE STOP

Douglas E. Colton, Salinas, Calif., assignor to Slautterback Corporation, Monterey, Calif.

Filed Mar. 13, 1991, Ser. No. 668,861

Int. Cl.[5] B65B *7/00*

U.S. Cl. 156—356 **13 Claims**



1. A carton sealing apparatus for use on an automated assembly line having a plurality of cartons moving past an adhesive application site to a downstream first means for closing a first hinged flap on said cartons, said apparatus comprising,

outlet means at said application site for projecting pressurized adhesive onto said cartons progressing along said automated assembly line,

means coupled to said outlet means for terminating projection of pressurized adhesive from said outlet means upon discontinuance of movement of said cartons past said application site,

second means for closing said first hinged flap on a carton at said application site, said first closing means being utilized during normal operation of said automated assembly line and said second closing means operative upon discontinuance of movement of said cartons past said application site, said outlet means disposed within the path of said first hinged flap closed by said second closing means, said outlet means and said second closing means being mounted to pivot along axes generally parallel to the direction of said cartons progressing along said automated assembly line, and

means for displacing said outlet means from said path of said first hinged flap for a closure by said second closing means, said displacing means being operatively associated with said second closing means in that said outlet means and said second closing means are pivoted upon said discontinuance of carton movement.

5,188,696

WRAP AROUND LABELING MACHINE

Kenneth W. Good, Jr., 11524 K-Tel Dr., Minnetonka, Minn. 55343

Filed Jul. 31, 1991, Ser. No. 738,662

Int. Cl.[5] B65C *9/00*

U.S. Cl. 156—361 **19 Claims**

1. A machine for the application of pressure sensitive wrap around labels to containers which comprises:

(A) a rotatable product table to hold and transport containers to be labeled,

(B) a plurality of rotatable container holding stations around the periphery of said product table,

(C) means for sequentially feeding containers to be labeled to said product table and means for sequentially removing labeled containers therefrom,

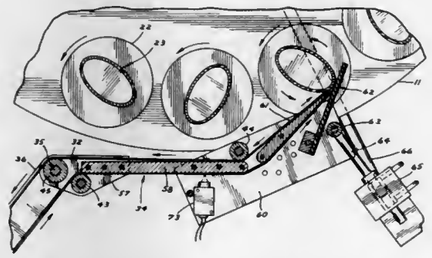
(D) means for rotating said product table and said container holding stations in times coordination with said feeding and removing means,

(E) a plurality of spaced apart label applicator stations positioned adjacent said product table between said feeding and removing means, each applicator station including:

(1) a supply reel of pressure sensitive label face stock carried on a releasable backing web and a takeup reel for said backing web,

(2) an articulated pivoted reciprocating label applying shuttle arm having guide means for directing the path of travel of said label stock and backing web between said supply and takeup reels,

(3) means adjacent the end of said shuttle arm for extending the end of the arm into the path of travel of said container holder stations in pressure engagement with



containers held therein, and retracting the arm away therefrom,

(4) drive means for transporting said web in intermittent times coordination with said shuttle arm and rotation of the container holding stations comprising:

(a) a drive roller engageable by said web,

(b) a stepping motor for intermittently driving said roller, and

(c) means for actuating said motor in times coordination with reciprocation of the shuttle arm and rotation of the container holder station, and

(5) means for reciprocating said shuttle arm in times coordination with rotation of said product table.

5,188,697

PROCESS AND DEVICE FOR WELDING OF TUBULAR PLASTIC PARTS

Albert Lueghamer, Bad Hall, Austria, assignor to agru Alois Gruber GmbH, Bad Hall, Austria

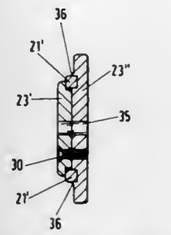
PCT No. PCT/EP88/00216, § 371 Date Apr. 21, 1989, § 102(e) Date Apr. 21, 1989, PCT Pub. No. WO88/06966, PCT Pub. Date Sep. 22, 1988

Continuation-in-part of Ser. No. 283,276, Apr. 21, 1989, abandoned. This PCT application Mar. 17, 1988, Ser. No. 789,807

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1987, 3708705

Int. Cl.[5] B29C *65/20, 65/30*

U.S. Cl. 156—499 **9 Claims**



1. A device for joining tubular parts made from plastic, said tubular parts exhibiting about the same diameter, said device comprising a heating element for contacting with and for softening an end surface of at least one tubular part which is intended to abut a corresponding softened end surface of another tubular part, after being joined together said softened end surfaces of said tubular parts forming a surface of abutment; wherein said heating element includes a contact surface for coming into contact with said end surface of said at least one tubular part, which surface of said heating element is designed to correspond to an undercut or recessed end surface of said at least one tubular part whereby the extent to which a bead of material formed between said tubular parts after joining extends inwardly beyond the inner walls of said tubular parts is minimized and wherein a circular or disk-shaped lug is provided on said heating element, said lug including a heating ring and an alignment disk which are both made from metal for holding therebetween a heat-resistant plastic ring, said plastic ring being sized and positioned to serve as said contact surface.

5,188,698

RESIN-SANDWICHED METAL LAMINATE, PROCESS AND APPARATUS FOR PRODUCING THE SAME AND PROCESS FOR THE PRODUCING RESIN FILM FOR THE RESIN-SANDWICHED METAL LAMINATE

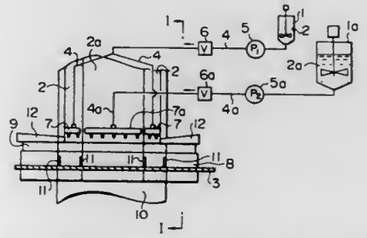
Ryuusuke Imai; Michio Nashiwa; Yasuhiro Oomura; Ryouichi Matsuda; Michio Satou, and Tamayuki Takeuchi, all of Toukai, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Division of Ser. No. 777,722, Oct. 16, 1991, which is a division of Ser. No. 461,125, Jan. 4, 1990, Pat. No. 5,084,357. This application Mar. 27, 1992, Ser. No. 859,096

Claims priority, application Japan, Jan. 23, 1989, 1-11980; Oct. 12, 1989, 1-263884; Oct. 12, 1989, 1-263885; Nov. 17, 1989, 1-297642

Int. Cl.[5] B32B *31/06*

U.S. Cl. 156—500 **4 Claims**



1. An apparatus for producing a resin-sandwiched metal laminate by applying a resin to one side of one metal sheet, placing another metal sheet on the surface of the applied resin and press-bonding the resin between the metal sheets, the apparatus having a resin-applying means which comprises:

resin supply passages formed by dividing a resin supply passage into a center region and side edge regions on a resin table in the width direction of the resin table,

a resin tank for supplying an electroconductive filler-containing resin to one of the resin supply passages through an electroconductive filler-containing resin line,

another resin tank for supplying an electroconductive filler-free resin to the remaining resin supply passage through an electroconductive filler-free resin line,

the resin table for selectively supplying the electroconductive filler-containing resin and the electroconductive filler-free resin to a resin coater roll through a pick-up roll,

the resin coater roll for coating the selectively supplied resins to one side of one metal sheet,

a resin receiver for recovering excess resin supplied to the resin supply passage formed in the center region on the resin table,

resin receivers for recovering excess resin supplied to the

VOL 1147 ISS 4 FE 23 1993 UMI

resin supply passages formed in side edge regions on the resin table, and

separators for providing separation between the electroconductive filler-containing resin and the electroconductive filler free resin supplied in excess to the pickup roll and the coater roll without intermixing of the resins, provided at boundary positions of the resins.

5,188,699

THIN FILM ADHERING APPARATUS

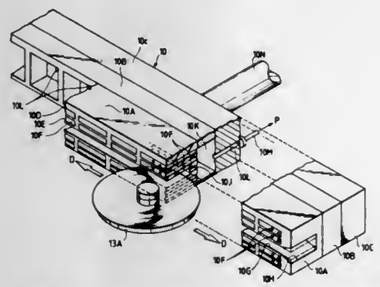
Syouzi Senda, Osaka, Japan, assignor to Somar Corporation, Tokyo, Japan

Continuation of Ser. No. 414,354, Sep. 29, 1989. This application Dec. 18, 1991, Ser. No. 810,358

Claims priority, application Japan, Sep. 30, 1988, 63-248843

Int. Cl.[5] B32B *31/00*

U.S. Cl. 156—521 **2 Claims**



1. A thin film adhering apparatus wherein a continuous thin film is gradually adhered from its leading edge onto a thin film adhering side of a substrate from a leading to a trailing end of said substrate, where during the adhering of said thin film, said continuous thin film is cut at a cutting position to a length corresponding to the length of said substrate in the direction of feed of said substrate;

the improvement comprising:

cutting means comprising a film holding member provided at said thin film-cutting position in a path of feed of said continuous thin film and operative to hold said thin film in a thin film-cutting position, said film holding member having a guide groove having a predetermined width dimension along substantially its entire length and film suction grooves provided on both sides of said guide groove;

a cutter having a cutting blade disposed in opposed relation to said groove of said film holding member, said thin film being interposed between said holding member and said cutter; and

a vacuum suction system connected to both said guide groove and said film suction grooves so as to suction and hold the film on said film holding member and to suction chips produced from said thin film when said thin film is cut;

wherein:

said predetermined width of said guide groove of said film holding member is close to a thickness of said cutting blade of said cutter;

multiple chip suction holes are provided in an interior of said guide groove, where said multiple chip suction holes are connected to said vacuum suction system;

said guide groove is provided with an inlet opening at the end of the guide groove so as to allow for smooth entrance of said cutting blade into the guide groove;

said multiple chip suction holes are disposed in line at essentially the same level as said cutting blade; and

said cutter comprises a disk-shaped cutting member having a thin cutting blade, where said cutter is movable in a direction intersecting the direction of feed of said continuous thin film so as to cut off said thin film.

5,188,700

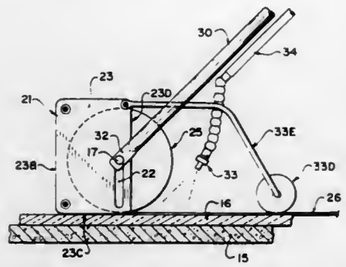
APPARATUS FOR LAYING LINES IN AN ICE RINK

Robert R. Gilkes, 39 Jonathan Crescent, Winnipeg, Manitoba, Canada R2R 1Z3

Filed Feb. 13, 1991, Ser. No. 654,526

Int. Cl.[5] B44C *7/00;* **B32B** *31/00*

U.S. Cl. 156—575 **9 Claims**



1. Apparatus for laying colouring materials on an ice surface comprising a support member having an axle for supporting a reel of a wound layer of a coloured strip material and means supporting the axle such that the reel can roll on the surface of the ice to allow unwinding of the layer, said support member including at least one side guide plate extending from the axle downwardly to a position in contact with the ice surface and forwardly to a position forward of the reel such that said plate engages an outside layer of the material at the side of the reel as it rolls toward contact with the ice surface and means mounting the axle relative to the plate for vertical movement relative to the plate to accommodate different diameter of material remaining on the reel a handle member for applying manual force to the support member to propel the support member in a forward direction in the required path, and water spray jet nozzle means mounted rearwardly of the reel for movement with the support member across the ice surface for spraying liquid water onto the layer as it is unrolled, said spray jet nozzle means being mounted closely adjacent the reel rearwardly of the reel and oriented to spray in a spray direction forwardly and downwardly onto the layer immediately after the layer is placed upon the ice surface, an area between the layer on the ice surface, the spray jet nozzle means and the reel being uninterrupted to allow water spray impacting upon the layer on the ice to engage also the outside layer of the material on the reel, and guide means for cooperating with the ice surface for guiding the support member in a required path of travel across the ice surface.

5,188,701

METHOD OF FABRICATING SEMICONDUCTOR DEVICE

Yoshio Hirano, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 3, 1991, Ser. No. 752,357

Claims priority, application Japan, Sep. 5, 1990, 2-236541

Int. Cl.[5] B44C *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—626 **8 Claims**

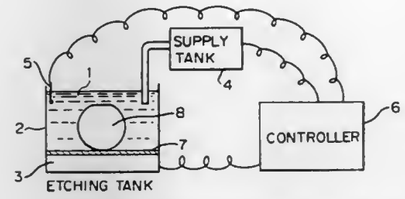
1. A method of fabricating a semiconductor device, said method including the step of etching a layer of silicon nitride formed on the semiconductor device by immersing the semiconductor device in a hot phosphoric acid solution contained in an etching tank and heated by a heating means, the hot phosphoric acid solution being controlled to be within a predetermined concentration range, characterized in that the etching step comprises the steps of:

preparing a means for supplying a low concentration phosphoric acid solution having a predetermined concentration lower than the predetermined concentration range of the hot phosphoric acid solution in the etching tank;

detecting a temperature of the hot phosphoric acid solution in the etching tank;

starting a supply of the low concentration phosphoric acid solution to the etching tank at a predetermined point after the detected temperature of the hot phosphoric acid solution in the etching tank becomes higher than a first predetermined temperature; and

stopping the supply of the low concentration phosphoric acid solution to the etching tank when the detected temperature of the hot phosphoric acid solution in the etching tank becomes lower than a second predetermined temperature which is lower than the first predetermined temperature.



5,188,702

PROCESS FOR PRODUCING AN ANISOTROPIC CONDUCTIVE FILM

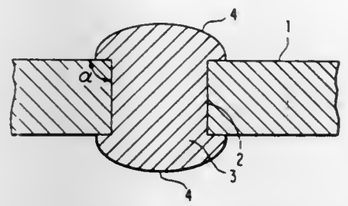
Yoshinari Takayama; Amane Mochizuki; Atsushi Hino; Kazuo Ouchi, and Masakazu Sugimoto, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan

Division of Ser. No. 629,897, Dec. 19, 1990, Pat. No. 5,136,359. This application Apr. 23, 1992, Ser. No. 872,504

Claims priority, application Japan, Dec. 19, 1989, 1-330052

Int. Cl.[5] B44C *1/22;* **B29C** *37/00;* **C23F** *1/00*

U.S. Cl. 156—630 **2 Claims**



1. A process for producing an anisotropic conductive film, which comprises:

(1) a step in which fine through-holes are provided in only an insulating film of a laminated film comprising said insulating film and a conductive layer, or a conductive layer is laminated on an insulating film previously having fine through-holes therein);

(2) a step in which said conductive layer positioned at the bottom of said through-holes is etched to form a rivet-like dent;

(3) a step in which a metallic substance is filled in said fine through-holes and said rivet-like dent, and further deposited to form bump-like projections by plating; and

(4) a step in which said conductive layer laminated on said insulating film is removed by chemical etching or electrolytic corrosion.

5,188,703

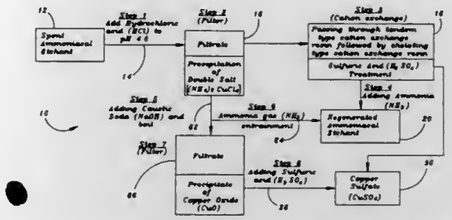
METHOD AND APPARATUS FOR RECOVERING COPPER AND REGENERATING AMMONIACAL ETCHANT FROM SPENT AMMONIACAL ETCHANT

Bernard Greenberg, Brooklyn, N.Y., assignor to Diversified Recycling Technology, Encino, Calif.

Filed Jan. 27, 1992, Ser. No. 826,132

Int. Cl.[5] B44C *1/22;* **C23F** *1/00*

U.S. Cl. 156—642 **27 Claims**



1. A method for recovering copper (Cu) and regenerating ammoniacal etchant from a spent ammoniacal etchant containing copper (Cu), comprising:

a. adding an adequate amount of hydrochloric acid (HCl) into a spent ammoniacal etchant containing copper ions (Cu^{2+}), ammonium ions (NH_4^+) and chloride ions (Cl^-) to produce an acidified spent ammoniacal etchant having a pH value in the range of between approximately 3 and approximately 6 and having increased concentrations of the ammonium ions (NH_4^+) and the chloride ions (Cl^-) substantially stoichiometrically equivalent to that of the copper ions (Cu^{2+}), so that all copper (Cu) contained in the acidified spent ammoniacal etchant is substantially precipitated as double salt copper ammonium chloride $[(NH_4)_2CuCl_{4(s)}]$;

b. separating said double salt copper ammonium chloride $[(NH_4)_2CuCl_{4(s)}]$ from said acidified spent ammoniacal etchant;

c. recovering copper (Cu) from said separated double salt copper ammonium chloride $[(NH_4)_2CuCl_{4(s)}]$; and

d. regenerating ammoniacal etchant from said separated spent ammoniacal etchant.

5,188,704

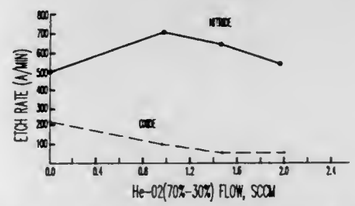
SELECTIVE SILICON NITRIDE PLASMA ETCHING

Wayne T. Babie, Poughkeepsie; Kenneth L. Devries, Hopewell Junction; Bang C. Nguyen, Wappingers Falls, and Chau-Hwa J. Yang, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 424,473, Oct. 20, 1989, abandoned. This application May 9, 1991, Ser. No. 700,871

Int. Cl.[5] B44C *1/22;* **C03C** *15/00, 25/06*

U.S. Cl. 156—643 **27 Claims**



1. A method of etching a layer of a first material including silicon nitride coated on its surface with a film including a second material containing oxygen impurities, said method comprising the steps of:

(1) first, etching said oxygen impurities in said second material from the surface of said layer of said first material

VOL 1147 ISS 4 FEB 23 1993 UMI

using a plasma free from said second material to provide a cleaned surface of said layer of said first material, said cleaned surface being substantially free from said oxygen impurities, and

(2) second, etching said cleaned layer including said silicon nitride with a different etchant including oxygen.

12. A method of etching a silicon nitride layer on a substrate, said substrate coated on its surface with a silicon oxide layer, coated on its surface with a silicon nitride layer, coated on its surface with an oxide or oxynitride containing film, said method comprising: performing in a plasma reactor the steps on said substrate as follows:

(1) a breakthrough step of employing a plasma of oxygen free etchant gases to break through and to remove said oxide or oxynitride containing film from said surface of said silicon nitride layer wherein said etchant gases include a halogen or a halide, and

(2) a main step of etching the newly exposed surface of said silicon nitride layer with etchant gases having high selectivity with respect to said silicon oxide underlying said silicon nitride wherein said etchant gases include a halogen or a halide and an oxygen containing gas.

5,188,705

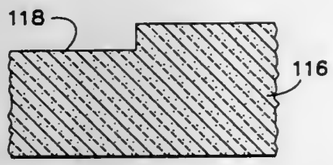
METHOD OF SEMICONDUCTOR DEVICE MANUFACTURE

Lynwood W. Swanson, and John M. Lindquist, both of Portland, Oreg., assignors to FEI Company, Beaverton, Oreg.

Filed Apr. 15, 1991, Ser. No. 685,844

Int. Cl.[5] H01L *21/306*

U.S. Cl. 156—643 **14 Claims**



8. The process of shaping features of a semiconductor device comprising the steps of:

positioning said device on a stage within a substantially gas tight chamber of a focused ion beam system,

positioning solid iodine within said chamber and heating said iodine to a temperature in excess of 30° C. for generating iodine vapor,

directing said iodine vapor towards a region of said device where machining is desired for enabling chemical reaction between iodine and material from which said device is formed,

generating a focused ion beam by means of said focused ion beam system and directing said ion beam toward said region of said device where machining is desired while scanning said beam in a raster pattern over said region for removal through ion beam sputtering of at least a portion of said region, and

removing reaction products of iodine and material from which said device is formed by evacuating said chamber.

5,188,706

METHOD OF MANUFACTURING AN X-RAY EXPOSURE MASK AND DEVICE FOR CONTROLLING THE INTERNAL STRESS OF THIN FILMS

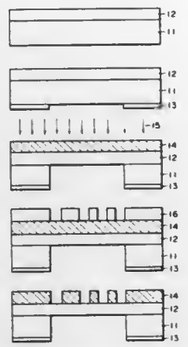
Masaru Hori, and Masamitsu Itoh, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 16, 1990, Ser. No. 494,397

Claims priority, application Japan, Mar. 18, 1989, 1-67092; Nov. 22, 1989, 1-304192

Int. Cl.[5] G03F *9/00*

U.S. Cl. 156—643 **17 Claims**



1. A method of manufacturing an X-ray msk comprising the steps of:

(a) forming an X-ray transmitting thin film on a mask support;

(b) form an X-ray absorber thin film on said X-ray transmitting thin film;

(c) patterning said X-ray absorbe thin film with a desired pattern to from an X-ray absorber pattern: and

(d) ion-implanting, prior to step (c), at least one inert element with an atomic number greater than that of neon in only a surface layer of said X-ray absorber thin film.

5,188,707

PROCESS FOR CHEMICALLY HARDENING WOOD

John Gordy, 10720 Dennis Crescent, Richmond, B.C., Canada V7A 3S1

Continuation of Ser. No. 512,514, Apr. 19, 1990, abandoned, which is a continuation of Ser. No. 136,947, Dec. 23, 1987, abandoned. This application Dec. 26, 1991, Ser. No. 818,429

Int. Cl.[5] D21J *1/12*

U.S. Cl. 162—11 **8 Claims**

1. A method of hardening wood, which comprises the steps of:

a) applying onto a wood sample a cellular densification solution which contains a complex component of depolymerized lignin and is obtained by subjecting wood to a vapor phase pressure treatment with a pulping agent under heat and pressure conditions and for a period of time sufficient to allow vapors of said pulping agent to permeate the wood and cause a lignin depolymerization reaction, said pulping agent comprising the reaction product of a loweralkanolamine with a compound produced by electrolytic oxidation of the loweralkanolamine in an aqueous alkaline solution containing an acid addition salt of the loweralkanolamine;

b) heat pressing the wood sample obtained in step (a) to cause said solution to vaporize and permeate the wood; and

c) allowing the pressed wood to cool while maintaining same in a compressed state until cooled.

5,188,708

PROCESS FOR HIGH CONSISTENCY OXYGEN DELIGNIFICATION FOLLOWED BY OZONE RELIGNIFICATION

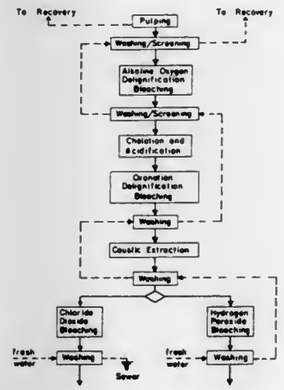
Bruce F. Griggs, Columbia, S.C.; Thomas P. Gandek, Trenton, N.J.; Michael A. Pikulin, Bound Brook, N.J., and Allen Rosen, Lawrenceville, N.J., assignors to Union Camp Patent Holding, Inc., Wilmington, Del.

Division of Ser. No. 525,808, May 2, 1990, abandoned, and a continuation-in-part of Ser. No. 686,062, Apr. 16, 1991, which is a continuation-in-part of Ser. No. 489,845, Mar. 3, 1991, Pat. No. 5,085,734, which is a continuation-in-part of Ser. No. 311,669, Feb. 15, 1989, abandoned. This application Aug. 26, 1991, Ser. No. 751,359

The portion of the term of this patent subsequent to Feb. 4, 2009, has been disclaimed.

Int. Cl.[5] D21C *9/14, 9/147, 9/153, 9/18*

U.S. Cl. 162—40 **25 Claims**



1. A process for delignifying and bleaching a lignocellulosic material which comprises:

forming a brownstock pulp having a K No. of from about 10–24 by Kraft pulping, Kraft-AQ pulping or extended delignification of a lignocellulosic material;

decreasing the consistency of said pulp to about 1 to 4.5% by weight;

treating the decreased consistency pulp with a quantity of alkaline material in an aqueous alkaline solution having a concentration of alkaline material of between about 20 and 120 g/l by uninterrupted mixing for a time of between about 1 and 15 minutes such that the concentration of alkaline material in the decreased consistency pulp during this treating step ranges from about 6.5 to 13 g/l, so as to complete a substantially uniform distribution of the alkaline material throughout the pulp;

increasing the consistency of the alkaline treated pulp to between about 20 to 35% by weight to generate pressate while retaining at least about 1.4% by weight based on oven dry pulp of alkaline material on the increased consistency pulp, said pulp fibers containing the alkaline material being directly passed from the combining step to the consistency increasing step;

recycling a substantial portion of the pressate to the pulp treating step; and

subjecting the increased consistency pulp to high consistency oxygen delignification to obtain enhanced delignification of the pulp without a corresponding decrease in pulp viscosity compared to pulp which is not treated with alkaline material at low consistencies;

directing the partially delignified pulp to ozone delignification without any intervening delignification or bleaching steps;

further delignifying said oxygen delignified pulp with an effective amount of ozone for a sufficient time to obtain a substantially delignified pulp having a second K No. of about 5 or less, a second viscosity of greater than about 10 cps and a GE brightness of at least about 50% prior to any additional bleaching steps;

combining the substantially delignified pulp with an effective amount of alkaline material in an aqueous alkaline solution for a predetermined time and at a predetermined temperature correlated to the quantity of alkaline material to solubilize a substantial portion of any lignin which remains in the pulp;

extracting a portion of aqueous alkaline solution so as to remove substantially all of the solubilized lignin therefrom and form a substantially lignin-free pulp; and

bleaching the substantially lignin-free pulp to raise the GE brightness thereof to at least about 70%.

5,188,709

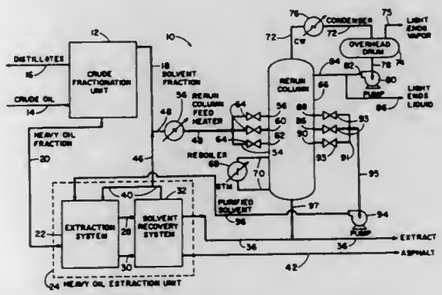
CRUDE OIL PROCESSING APPARATUS FOR HEAVY OIL EXTRACTION

Richard D. Kuerston, and Ronald E. Brown, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 502,504, Mar. 30, 1990, Pat. No. 4,992,162. This application Nov. 5, 1990, Ser. No. 609,264

Int. Cl.[5] C10G *21/14*

U.S. Cl. 196—14.52 **8 Claims**



1. A crude oil processing apparatus, comprising:

first fractional distillation means for fractionating a crude oil, said crude oil including a fresh solvent fraction and a heavy oil fraction, to provide said fresh solvent fraction and said heavy oil fraction;

crude oil conduit means for conducting said crude oil to said first fractional distillation means;

solvent extraction means for obtaining a deasphalted heavy oil extract from said heavy oil fraction;

first conduit means for conducting said heavy oil fraction from said first fractional distillation means to said solvent extraction means;

solvent recovery means for recovering solvent from said deasphalted heavy oil extract to provide a solvent recycle stream and a rerun solvent stream;

extract conduit means for conducting said deasphalted heavy oil extract from said solvent extraction means to said solvent recovery means;

solvent recycle conduit means for conducting said solvent recycle stream from said solvent recovery means to said solvent extraction means;

second fractional distillation means for fractionating said fresh solvent fraction and said rerun solvent stream to produce a purified extraction solvent;

second conduit means for conducting said fresh solvent fraction from said first fractional distillation means to said second fractional distillation means;

third conduit means for conducting said rerun solvent stream

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from said solvent recovery means to said second fractional distillation means; and

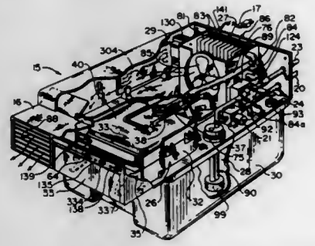
fourth conduit means for conducting said purified extraction solvent from said second fractional distillation means to said solvent extraction means.

5,188,710

CONTINUOUS WATER DISTILLATION SYSTEM

Thomas J. Weber, Oak Creek, Wis.; Dale L. Garrison, Antioch, Ill.; Richard E. Forrest, and William F. Strutz, both of Racine, Wis., assignors to Emerson Electric Co., Racine, Wis.

Filed Jan. 18, 1991, Ser. No. 643,029
Int. Cl.[5] B01D *3/42*; C02F *1/04*
U.S. Cl. 202—185.3 **22 Claims**



1. A continuous water distillation system comprising:

a steam chamber assembly including a heating element operable in an inactive mode, during which temperature conditions within the assembly are below those required to convert water into steam, and an active mode, during which temperature conditions within the assembly are maintained to convert water into steam, the steam chamber assembly including undistilled water delivery means for conveying undistilled water from an external source to the assembly for conversion into steam when the assembly is in its active mode and for blocking the conveyance of undistilled water to the assembly when the assembly is in its inactive mode,

a condenser assembly for continuously receiving steam from the steam chamber assembly and for continuously condensing the received steam into purified water when the steam chamber assembly is being operated in its active mode, the condenser assembly including a holding tank for collecting the purified water,

purified water dispensing assembly communicating with the holding tank and including

dispensing means operable by a user for demanding purified water from the holding tank,

purified water delivery means operable in an active mode for conveying purified water from the holding tank to the dispensing means in response to user demand and an inactive mode for preventing the conveyance of purified water from the holding tank to the dispensing means despite user demand, and

water level sensing means for continuously sensing the quantity of purified water in the holding tank within a range of positions between a predetermined low level position and a predetermined high level position, and

control means for coordinating the operation of the steam chamber assembly and the purified water delivery means in their respective active and inactive modes, the system control means including

first control means for continuously operating the purified water delivery means in its inactive mode when the water level sensing means assumes its low level position and for continuing to operate the purified water delivery means in its inactive mode for a predetermined time period after the water level sensing means moves from its low level position toward its high level position, the first control means being further operative for continuously operating the purified water delivery means in its active mode after the predetermined time period and while the water level sensing means remains between its low level position and its high level position, and

second control means for continuously operating the steam chamber assembly in its active mode when the water level sensing means is below its high level position and for continuously operating the steam chamber assembly in its inactive mode when the water level sensing means assumes its high level position.

5,188,711

ELECTROLYTIC PROCESS FOR MAKING ALLOYS OF RARE EARTH AND OTHER METALS

Frank H. Feddrix, Westlake, Ohio, assignor to Eveready Battery Company, Inc., St. Louis, Mo.

Filed Apr. 17, 1991, Ser. No. 686,894
Int. Cl.[5] C25C *3/36*
U.S. Cl. 204—71 **14 Claims**

1. A process for making alloys of rare earth metal and other metals comprising contacting a lanthanum salt with nickel under conditions sufficient to form a liquid mixture, placing an anode and a cathode in contact with the mixture and placing an electrical potential between the anode and cathode so that an alloy of lanthanum and nickel forms at one of the electrodes.

5,188,712

DIAPHRAGM FOR USE IN CHLOR-ALKALI CELLS

Colonel R. Dilmore, Jeannette, and Bernard A. Maloney, Murrysville, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jan. 3, 1991, Ser. No. 637,107
Int. Cl.[5] C25B *1/16, 13/04*
U.S. Cl. 204—98 **32 Claims**

1. A liquid-permeable diaphragm for use in an electrolytic chlor-alkali cell having an anolyte compartment containing an anode, a catholyte compartment containing a permeable cathode, and a non-asbestos diaphragm on said cathode which separates said anolyte and catholyte compartments, said diaphragm being prepared by:

(a) providing on said cathode a layer of asbestos-free diaphragm material comprising fibrous synthetic polymeric material resistant to the cell environment,

(b) depositing on a surface of the diaphragm material facing the anode a first topcoat of;

(i) water-insoluble, inorganic, particulate refractory material selected from the group consisting of silicon carbide, the oxides, borides, carbides, silicates or nitrides of valve materials selected from the group consisting of vanadium, chromium, zirconium, niobium, molybdenum, hafnium, tantalum, titanium and tungsten, and mixtures of such particulate refractory materials, and

(ii) zirconia fibers or organic perfluorinated polymeric fibrous material resistant to the cell environment,

(c) impregnating the resultant topcoated diaphragm with an aqueous solution of water-soluble, hydrolyzable inorganic zirconium-containing compound,

(d) hydrolyzing thus impregnated zirconium-containing compound, thereby to precipitate and form hydrous oxide of zirconium in the interstices of the topcoat and diaphragm material, and

(e) drying the topcoated, hydrous zirconium oxide-containing diaphragm at temperatures below the sintering or melting point of fibrous material of which the diaphragm is formed, thereby to form solid particulate zirconia in the interstices of the topcoat and diaphragm material.

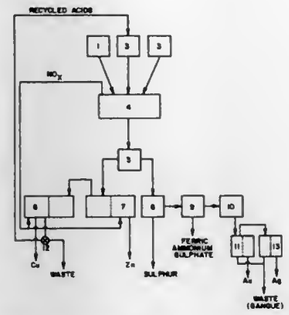
19. In the process of electrolyzing sodium chloride in an electrolytic diaphragm cell having an anolyte compartment containing an anode, a catholyte compartment containing a cathode, and a liquid permeable diaphragm that separates said anolyte and catholyte compartments, wherein the improvement comprises using as the diaphragm a diaphragm defined by claims **1**, **15**, **17** or **18**.

5,188,713

PROCESS FOR RECOVERY OF METAL

Robert N. O'Brien, and Thomas D. McEwan, both of Victoria, Canada, assignors to Envirochip Technologies Ltd., Victoria, Canada

Filed Mar. 5, 1991, Ser. No. 665,016
Int. Cl.[5] C25C *1/12*
U.S. Cl. 204—106 **22 Claims**



1. A process for recovery of metal from a feedstock comprising copper and at least one metal selected from the group consisting essentially of iron, zinc, silver and gold, the process comprising the steps of:

(a) contacting the feedstock with an aqueous mixture comprising ammonium nitrate having a concentration greater than about 1.5M and sulphuric acid having a concentration greater than about 6M at a temperature of from about 105° C. to about 130° C., to produce a first residue comprising a cuprous salt and a leachate comprising copper;

(b) separating the residue from the leachate;

(c) electrowinning copper from the leachate;

(d) liquefying the first residue whereby sulphur is vaporized and a second residue results consisting essentially of the cuprous salt;

(e) dissolving the cuprous salt in a suitable solvent;

(f) disporportionating the cuprous salt to produce soluble cupric ion and metallic copper;

(g) separating the soluble cupric ion from the metallic copper; and

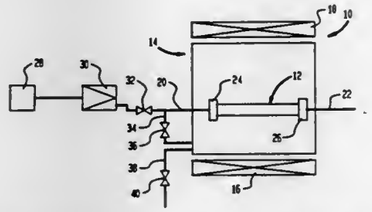
(h) recovering the soluble cupric ion as a cupric salt.

5,188,714

STAINLESS STEEL SURFACE PASSIVATION TREATMENT

Jeffrey Davidson, Millburn; Robert Sherman, New Providence, both of N.J., and Richard Paciei, Lansdale, Pa., assignors to The BOC Group, Inc., New Providence, N.J.

Continuation-in-part of Ser. No. 695,476, May 3, 1991. This application Nov. 12, 1991, Ser. No. 790,952
Int. Cl.[5] C25F *3/24*; C21D *1/74*; C23C *11/00*
U.S. Cl. 204—129.35 **9 Claims**



1. A method of surface passivating an article fabricated from stainless steel and having a surface oxide layer at the surface to be passivated, said method comprising:

flushing the surface to be passivated with an essentially dry, gaseous fluid chemically non-reactive with the stainless steel and containing essentially no oxygen;

during the flushing of the surface to be passivated,

baking the article at a predetermined temperature and for a predetermined time period such that, within the surface oxide layer, the chromium content increases and adsorbed moisture and hydroxide content decrease, and

cooling the article.

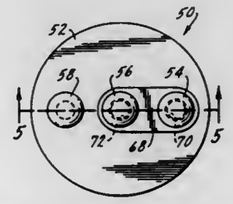
2. The method of claim **1**, further comprising electropolishing the article at the surface to be passivated.

5,188,715

CONDENSATE CORROSION SENSOR

Tzu-Yu Chen, and Martin R. Godfrey, both of Naperville, Ill., assignors to Nalco Chemical Company, Naperville, Ill.

Filed Sep. 16, 1991, Ser. No. 760,546
Int. Cl.[5] G01N *27/417*
U.S. Cl. 204—153.11 **11 Claims**



10. A method of measuring corrosion rate of a predetermined metal in a solution comprising:

a) providing a probe, including a counter electrode, a reference electrode, and a working metal electrode in close proximity to each other and electrically insulated one from another, said working metal electrode comprising the predetermined metal of which corrosion rate is being measured;

b) disposing an electrically insulating but ion conducting material between at least the reference electrode and the working metal electrode for transmitting ions between them, said ionic conducting material comprising a polymeric perfluorinated material including polypropylene oxide side chain branches terminating in a group chosen from sulfonic acid and carboxylic acid;

c) contacting the probe to the test solution;

d) measuring the potential between the reference and working metal electrodes;

e) analyzing the potential to determine a value of the polarization resistance between the working metal electrode and the reference electrode; and

f) calculating the corrosion rate from the value of polarization resistance obtained in step e.

5,188,716

HEAT-CURABLE COATING COMPOSITION FOR CATHODIC ELECTROCOATING

Thomas Schwerzel, Meckenheim; Hans Schupp, Worms; Klaus Huemke, Ludwigshafen; Dieter Faul, Bad Durkheim, and Ulrich Heimann, Muenster, all of Fed. Rep. of Germany, assignors to BASF Lack + Farben Aktiengesellschaft, Münster, Fed. Rep. of Germany

Filed Feb. 8, 1990, Ser. No. 476,881
Int. Cl.[5] C25D *13/04*
U.S. Cl. 204—181.7 **8 Claims**

1. A heat-curable coating composition for cathodic electrocoating which becomes water-thinnable on protonation with an acid, containing

(A) 50–95% by weight of a polycondensation or polyaddi-

tion product having an average molecular weight $\overline{M}_n$ of from 500 to 20,000 and containing primary and/or secondary hydroxyl groups and primary, secondary and/or tertiary amino groups, and

(B) 5–50% by weight of a crosslinking agent obtain by reacting

a) an aliphatic polyhydroxy compound and

b) an aromatic polyhydroxy compound with

c) an aliphatic and/or cycloaliphatic polyisocyanate and

d) a blocking agent.

5,188,717

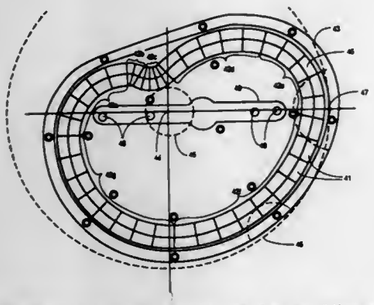
SWEEPING METHOD AND MAGNET TRACK APPARATUS FOR MAGNETRON SPUTTERING

Eliot K. Broadbent, San Jose, and Kenneth C. Miller, Mountain View, both of Calif., assignors to Novellus Systems, Inc., San Jose, Calif.

Filed Sep. 12, 1991, Ser. No. 760,027

Int. Cl.[5] C23C *14/34*

U.S. Cl. 204—192.12 **21 Claims**



1. A magnetron sputtering apparatus for providing a magnetic flux over an essentially planar surface, comprising:

a magnet track having essentially the form of a planar closed curve in the shape of a kidney bean, said magnet track being suitable for achieving a substantially uniform magnetic flux dwell time in an annular region of said surface when rotated about a predetermined axis of rotation perpendicular to said surface;

means for rotating said magnet track behind said planar surface about said axis of rotation, the plane of said magnet track being parallel to said planar surface; and

means for simultaneously provided said magnet track with an oscillatory motion between a swept in extreme and a swept out extreme, said closed curve surrounding said axis of rotation when said magnet track is at said swept out extreme.

5,188,718

APPARATUS FOR ELECTROLYTIC SURFACE COATING OF POURABLE MATERIAL

Siegfried Birkle, Höchstadt/Aisch; Johann Gehring, Spardorf, and Waldemar Nippe, Erlangen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

PCT No. PCT/EP90/00294, § 371 Date Nov. 6, 1991, § 102(e) Date Nov. 6, 1991, PCT Pub. No. WO90/10738, PCT Pub. Date Sep. 20, 1990

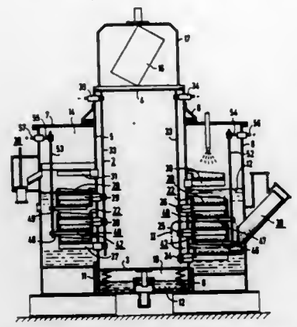
PCT Filed Feb. 21, 1990, Ser. No. 752,673

Claims priority, application European Pat. Off., Mar. 6, 1989, 89103919.0

Int. Cl.[5] C25D *17/28*

U.S. Cl. 204—201 **13 Claims**

1. An apparatus for electrolytic surface coating of a pourable material, comprising: a vibrator conveyor having a conveying trough serving as a cathodic track, the conveying trough being disposed spirally around a central pipe, the central pipe partially dipping into a vessel for holding a source of electrolyte and the central pipe being provided with an oscillatory drive; a granulate anode associated with the conveying trough, the granulate anode comprising a granulate of the material pro-



vided for the surface coating, and the granulate anode being movably mounted in a perforated anodic track having about equal curvature to the cathodic track and at least substantially constant distance from the cathodic track.

5,188,719

ELECTROLYTIC PROCESSING SYSTEM

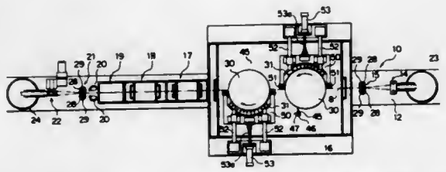
Masaaki Akanuma, Saitama, and Akira Hasegawa, Toyama, both of Japan, assignors to Yoshida Kogyo K. K., Tokyo, Japan

Filed Sep. 11, 1991, Ser. No. 757,643

Claims priority, application Japan, Sep. 11, 1990, 2-238995

Int. Cl.[5] C25D *17/00*

U.S. Cl. 204—206 **11 Claims**



1. An electrolytic processing system for continuously performing an electrolytic process to discrete conductors or conductive objects having a large electrical resistance, comprising:

(a) a plurality of cylindrical intermediate rollers mounted in an electrolytic bath, each of said intermediate rollers being rotatable in a horizontal plane about a vertical shaft and being capable of applying a current;

(b) a plurality of arc electrodes mounted in said electrolytic bath and positioned in a manner so as to confront part of outer circumferential surfaces of said intermediate rollers, each of said arc electrodes including nozzles for ejecting a processing liquid; and

(c) means for guiding the objects to be processed on each of said intermediate rollers through an area thereof where each of said intermediate rollers confronts each of said arc electrodes.

5,188,720

INSTALLATION AND PROCESS FOR ELECTROLYTIC COATING OF A METAL STRIP

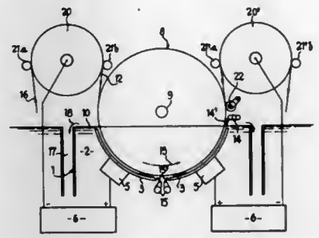
Gerard Colin, and Jacques Keller, both of Florange, France, assignors to Sollac, Paris, France

Filed Oct. 26, 1990, Ser. No. 604,675

Claims priority, application France, Oct. 27, 1989, 89 14167

Int. Cl.[5] C25D *17/00*

U.S. Cl. 204—206 **8 Claims**



1. Installation or electrolytic coating of a metal strip (16) and, in particular, installation for electrogalvanizing a steel strip comprising at least one cell (25) constituted by a tank (1) containing electrolytic liquid (2), a horizontal axis rotating drum (8, 8') completely coated on its outer lateral surface with an electrically insulating material and partially submerged in the electrolytic liquid (2), a set of soluble anodes (3) made from coating metal in the form of ring segments arranged opposite the outer cylindrical surface of the drum (8, 8') in its submerged part with which the metal strip (16) to be coated is kept in contact, a means (6) of supplying the anodes (3) with electric current, means (14, 15) for injecting electrolytic liquid between the anodes (3) and the metal strip (16) in contact with the drum (8), in a counter-current sense with respect to the direction of circulation of the strip (16) and electrical conducting roller sets (20, 21) in contact with the strip (16) in a zone situated above the upper level (10) of the electrolytic liquid (2) in the tank (1) which are electrically connected to a means (6) ensuring a circulation of the electric current in the metal strip (16) and the setting of this strip (16) to a cathodic potential relative to the soluble anodes (3), characterized in that the electrical conducting roller sets (20, 21) are constituted, for each of the cells (25), by two electrically conducting deflector rollers (20) each mounted rotatably about an axle parallel to the axle of the drum (8, 8') on either side of the drum (8, 8') and arranged, at least in part, below the upper level of the drum (8, 8') close to its outer surface, and two support rollers (21*a*, 21*b*) associated with each of the deflector rollers (20, 20') ensuring the holding of the strip (16) against the deflector roller (20, 20') over a substantial part of its periphery and as far as a zone close to the part of the outer surface of the drum (8, 8') which is submerged in the electrolytic liquid.

5,188,721

PLATE ANODE HAVING BIAS CUT EDGES

Gerald R. Pohto, Mentor, and Lawrence J. Gestaut, Chagrin Falls, both of Ohio, assignors to Eltech Systems Corporation, Boca Raton, Fla.

Continuation-in-part of Ser. No. 309,518, Feb. 10, 1989, abandoned. This application Jan. 10, 1990, Ser. No. 457,920

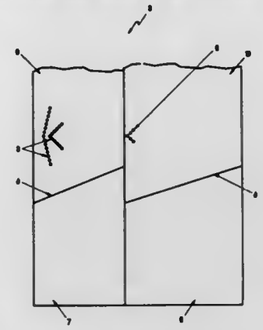
Int. Cl.[5] C25D *17/12*

U.S. Cl. 204—280 **13 Claims**

1. In an at least substantially broad faced and inflexible anode structure containing fixed anode means having at least one face adapted for use in the electrodepositing of a coating on a moving cathode in sheet or strip form, which fixed anode means comprises anode segments in plate form, each segment having width and length dimensions, said anode segments in plate form combining together to provide a broad anode face for facing relationship with said moving sheet or strip cathode, wherein the improvement comprises:

(a) anode plates for said anode segments, with a segment having

(b) at least one first anode plate having at least one bias cut metal edge extending in a continuous line completely across the width dimension of said first anode plate, with,



(c) an adjacent, second anode plate having a bias cut metal edge extending in a continuous line completely across the width dimension of said second anode plate, and opposite the bias cut edge of said first anode plate, with

(d) each bias cut edge being bias cut in relation to the direction of travel of said cathode.

5,188,722

Patent Not Issued For This Number

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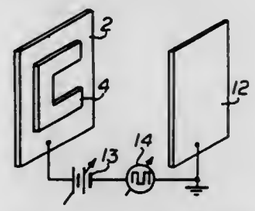
SELECTIVE ELECTRO-DEPOSITION AND CIRCUIT PATTERNING TECHNIQUE

Chris C. Yu; Gurtej S. Sandhu, and Terry Gilton, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Apr. 13, 1992, Ser. No. 867,345

Int. Cl.[5] C25D *5/02*

U.S. Cl. 205—125 **12 Claims**



1. A method for selectively electro-depositing a material having a reduction potential upon a first surface while nullifying deposition of the metal over a second surface adjacent to the first surface, which comprises:

placing the first surface at a first potential and the second surface at a second potential; and

electro-depositing the material over said first and second surfaces under a modulated voltage having a positive duty cycle and a negative duty cycle wherein said potentials and voltage are adjusted to remove during said negative duty cycle any material deposited on the second surface during said positive duty cycle.

VOL 1147 ISS 4 FEB 23 1993 UMI

VOL 1147 ISS 4 FEB 23 1993 UMI

5,188,724

OLEFIN POLYMER POUR POINT DEPRESSANTS

William J. Heilman, and Bruce E. Wilburn, both of Houston, Tex., assignors to Pennzoil Products Company, Houston, Tex.

Filed Feb. 6, 1991, Ser. No. 651,698
Int. Cl.[5] C10G 71/00
U.S. Cl. 208—18 7 Claims

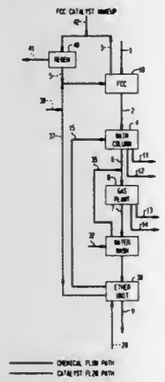
3. A lubricating oil composition comprising a wax-containing hydrocarbon lubricating oil, said lubricating oil containing a sufficient amount of a pour point depressant to reduce the Federal Stable pour point to −35° C., said pour point depressant comprising a pour point depressant effective amount of an lefin terpolymer which contains alkyl side chains wherein the average alkyl side chain length in the terpolymer is 10.5 to 12.0, and wherein said olefin terpolymer is prepared by the polymerization of three monomers selected from the group consisting of C_{10}, C_{14} and C_{16} olefin hydrocarbons, and wherein each monomer is present in the polymerization in an amount of at lest about 10 wt.%.

5,188,725

FLUIDIZED CATALYST PROCESS FOR PRODUCTION AND ETHERIFICATION OF OLEFINS

Mohsen N. Harandi, Lawrenceville, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Mar. 15, 1991, Ser. No. 669,720
Int. Cl.[5] C10G 57/02
U.S. Cl. 208—67 19 Claims



1. A continuous multi-stage process for increasing octane quality and yield of liquid hydrocarbons from an integrated fluidized catalytic cracking unit and etherification reaction zone comprising:

contacting heavy hydrocarbon feedstock in a primary fluidized bed reaction stage with cracking catalyst comprising particulate solid large pore acid aluminosilicate zeolite catalyst at conversion conditions to produce a hydrocarbon effluent comprising gas containing C_2–C_6 olefins, intermediate hydrocarbons in the gasoline and distillate range, and cracked bottoms;

regenerating primary stage zeolite cracking catalyst in a primary stage regeneration zone and returning at least a portion of regenerated zeolite cracking catalyst to the primary reaction stage;

reacting an olefinic stream containing at least one iso-olefin with alkanol in a secondary fluidized bed etherification reactor stage in contact with a closed fluidized bed of acid zeolite catalyst particles comprising solid acid zeolite under etherification reaction conditions to effectively convert said iso-olefin to alkyl ether;

adding fresh acid zeolite particles to the secondary stage reactor in an amount sufficient to maintain average equilibrium catalyst particle activity for effective ether reaction without regeneration of the secondary catalyst bed;

withdrawing a portion of equilibrium catalyst from the secondary fluidized bed reactor stage; and

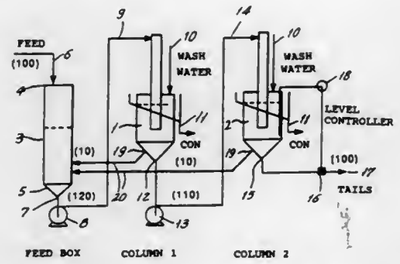
passing said withdrawn catalyst portion to the primary fluidized bed reaction stage for contact with the petroleum feedstock.

5,188,726

METHOD OF OPERATING A PLURALITY OF MINERALS SEPARATION FLOTATION CELLS

Graeme J. Jameson, New Lambton, Australia, assignor to University of Newcastle Research Associates Ltd., Australia

PCT No. PCT/AU09/00313, § 371 Date May 3, 1991, § 102(e) Date May 3, 1991, PCT Pub. No. WO91/01809, PCT Pub. Date Feb. 21, 1991
PCT Filed Jul. 26, 1990, Ser. No. 679,060
Claims priority, application Australia, Jul. 26, 1989, PJ5448
Int. Cl.[5] B03D 1/02, 1/14
U.S. Cl. 209—164 5 Claims



1. A method of operating and controlling the level of pulp in a plurality of minerals separation flotation cells (1,2) each having a feed inlet (9,14), a values outlet (11), and a gangue outlet (12,15), and each flotation cell being located at substantially the same level, said method comprising the steps of providing a feed box (3) located alongside the flotation cells and adapted to receive feed liquid over a predetermined range of flow rates and to contain feed liquid over the operating height level range of the flotation cells, feeding said feed liquid to said feed box at a rate within said predetermined range of flow rates, connecting the flotation cells in series such that the outlet (7) from the feed box is connected via a pump (8) to the feed inlet (9) of a first of said flotation cells, the gangue outlet (12) from the first flotation cell (1) is connected via a pump (13) to the feed inlet (14) of the next flotation cell and so on until all of said flotation cells are connected in series, operating each pump at a capacity greater than the highest predetermined flow rate of feed liquid to said feed box and recycling a predetermined proportion of the material flowing through each flotation cell to the feed box (3) through a recycle outlet (19) located at the lower part of each flotation cell.

5,188,727

WATER FILTER UNIT

Mark Kurth; Andrew Alger, and Lew Blahuta, all of Chicago, Ill., assignors to Omni Corporation, Hammond, Ind.

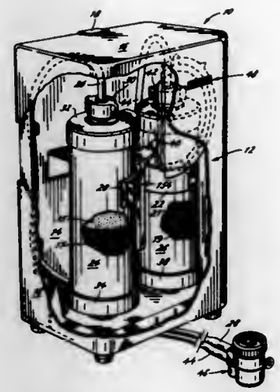
Continuation of Ser. No. 555,076, Jul. 18, 1990, abandoned. This application Mar. 10, 1992, Ser. No. 849,782
Int. Cl.[5] B01D 24/10, 27/00
U.S. Cl. 210—85 8 Claims

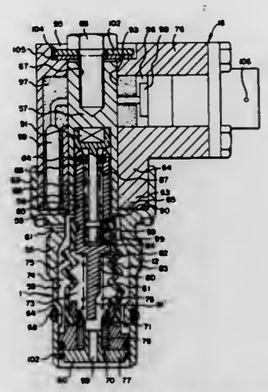
1. A water filter unit for use with a water source, comprising:

at least a first and a second water filter cartridge connected in series by a manifold, said first water filter cartridge having a water inlet at one end and an outlet at the opposite end constructed and arranged to be threadably connected to said manifold, said second water filter cartridge having a water inlet at one end constructed and arranged to be threadably connected to said manifold and a water outlet at the opposite end, and being different in filtration media from said first water filter cartridge;

a unit casing comprising a base portion and a rear wall portion, the wall portion having bracket arms for holding the water cartridges;

said manifold integrally formed in said casing base portion with a threaded inlet threadably connected to said first water filter cartridge outlet and a separate threaded outlet threadably connected to said second water filter cartridge inlet and a single passageway connecting the threaded inlet and outlet, the threaded inlet and outlet being of a different diameter to ensure proper cartridge placement;





and each of said water filter cartridges are threadably engageably respectively in said manifold threaded inlet and outlet;

a detachable cover having front, side and top walls secured with tabs or clips attached to said casing for easy detachment and re-attachment for enclosing said water filter cartridges in said casing;

a water faucet connector having a faucet connector inlet for connecting to the water source, a faucet connector outlet and at least two flexible tubes, the first tube connecting the faucet connector inlet and the water inlet of the first water filter cartridge and the second tube connecting the water outlet of the second water filter cartridge and the faucet connector outlet; and clip means mounted on the casing for holding the tubes.

5,188,728

CLOGGING DISPLAY WITH SHAPE MEMORY ALLOY SPRING ACTUATOR

Jean-Michel Traonvoez, Bouffemont; Philippe Pottier, Carrieres-sur-Seine, and Dominique Tertre, Croissy-sur-Seine, all of France, assignors to Le Bozec et Gautier, Courbevoie, France

PCT No. PCT/FR90/00790, § 371 Date Jul. 19, 1991, § 102(e) Date Jul. 19, 1991, PCT Pub. No. WO91/06357, PCT Pub. Date May 16, 1991
PCT Filed Oct. 31, 1990, Ser. No. 688,590
Claims priority, application France, Oct. 31, 1989, 89 14301; Mar. 1, 1990, 90 02595
Int. Cl.[5] G01L 19/04
U.S. Cl. 210—90 21 Claims

1. A clogging display comprising a case (1) made of a non-magnetic material, having a piston (80) which can move inside a suitable housing (58–59) in said case (91), a magnet (91) mounted on the piston (80) in a magnet holder (88), and a detector means for sensing the position of the magnet (91), said clogging display being characterized in that the magnet (91) is joined to a head (82) of the piston (80) and can move relative to said piston as a function of the opposing forces of two springs, of which one, a shape memory alloy (SMA) spring (87) is stiff above a specified temperature and compliant below, while the other spring (92) is made of a conventional alloy and has a force less than that of the SMA spring (87) when the SMA spring is hot but larger than the force exerted by the SMA spring (87) when the SMA spring is cold, and means for so arranging the springs that when hot, the SMA spring (87) rigidly joins the magnet holder (88) to the piston (80) whereas when the SMA spring is cold, the other spring (92) repels the magnet holder (88) against the bottom of the housing (59).

2. A filter clogging display as defined in claim 1, wherein said housing (58–59) opens downward, a piston (80) which can slide inside the housing, the magnet (91) affixed to the head of the piston (80) is arranged to point toward the housing bottom, and further comprises a means (75) dividing the housing (58–59) into two chambers (73–74), a low chamber (73) communicating with a filter downstream side and a high chamber (74) communicating with a filter upstream side in such manner that when the pressure in the high chamber (74) exceeds that in the low chamber (73), a pressure differential is generated which may exceed a given magnitude, whereupon the piston (80) is displaced, and wherein said detector means comprises at least one glass bulb (99) of flexible reeds sensitive to magnetic flux, said detector means being connected to a suitable electric device.

5,188,729

SLUDGE COLLECTION APPARATUS FOR A WATER CLARIFIER

Milos Krofta, Lenox, Mass., assignor to Lenox Institute For Research, Inc., Lenox, Mass.

Continuation of Ser. No. 525,890, May 17, 1990, Pat. No. 5,078,861, which is a continuation of Ser. No. 241,384, Sep. 7, 1988, Pat. No. 4,931,175. This application Sep. 6, 1991, Ser. No. 755,697
The portion of the term of this patent subsequent to Jun. 5, 2007, has been disclaimed.
Int. Cl.[5] C02F 1/24
U.S. Cl. 210—104 4 Claims

1. In apparatus for clarifying raw water containing particulate contaminants where the apparatus includes (i) a cylindrical flotation tank, (ii) an inlet means to the flotation tank for raw water, (iii) an inlet means for aerated water that also feeds the flotation tank, (iv) means for controlling the water level within the tank, (v) means for removing floated sludge from the surface of the water held in the tank which is formed by a flow of rising air bubbles released from the aerated water in the tank which coalesce with particulate contaminants from the raw water and with a flocculation agent introduced into the flota-

VOL 1147 ISS 4 FE 23 1993 UMI

tion tank, and (vi) clarified water outlet means for directing the clarified water with contaminants thus removed from the flotation tank, wherein said floated sludge removal means comprises,

a sludge collection compartment,

a rotating scoop that extends radially over said flotation tank, said scoop including

a central conduit with openings to receive sludge that is inclined toward said sludge collection compartment,

at least one blade mounted on said conduit, and



means for rotating said blade whereby the blade scoops floated sludge from the top of said flotation tank and directs it to the interior of said conduit, and

a screw mounted for rotation within and extending substantially the entire length of said conduit, and means for rotating said screw with respect to said conduit to advance said scooped, floated sludge along said conduit to said collection compartment, said screw and said scoop rotating in opposite directions and said screw rotating at a greater speed than said scoop.

5,188,730

MULTIPART CHROMATOGRAPHY COLUMN CONNECTION

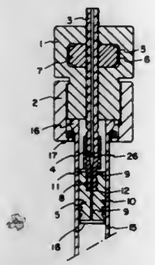
Klaus Kronwald, Sinsheim, Fed. Rep. of Germany, assignor to Kronwald Separationstechnik GmbH, Sinsheim, Fed. Rep. of Germany

Filed May 7, 1991, Ser. No. 695,811

Claims priority, application Fed. Rep. of Germany, May 7, 1990, 4014605

Int. Cl.[5] B01D *15/08*

U.S. Cl. 210—198.2 **10 Claims**



1. A multipart chromatography column connection having a two-part screwed union anchored on a bead of a column body or on a thread of a metal column or its surrounding jacket, comprising

an upper part having a window in which a nut is arranged for free turning;

a bushing having an external thread which meshes with the nut;

an adaptor screwed to a lower end of the bushing;

a capillary held in sealing compression between the adaptor and the bushing; and

a sealing insert screwed to the free end of the adaptor, wherein the adaptor and sealing insert have mutually-aligned bores which are connected to the capillary and which have sealing surfaces bearing against one another.

5,188,731

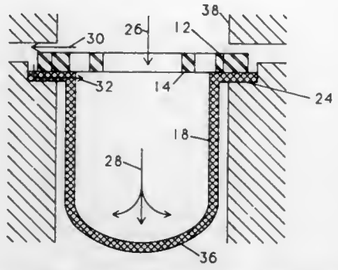
FILTER APPARATUS WITH A FLEXIBLE COLLAR

John Lapoint, Jr., 17 Foss Rd., Lewiston, Me. 04240

Filed Oct. 4, 1990, Ser. No. 592,922

Int. Cl.[5] B01D *29/11, 27/00*

U.S. Cl. 210—232 **6 Claims**



1. A liquid filter apparatus for pressure vessel comprising:

an annular flexible collar having top and bottom surfaces, outer and inner diameters, with said inner diameter forming an opening for the liquid to pass into said pressure vessel;

a bag member formed of porous flexible filter material having outer and inner surfaces and a top edge defining an opening surrounded by an integral, annular, radially extending flange portion, said filter material having effective pore size corresponding to the liquid being filtered; and

means attaching said flange portion of said filter bag to said bottom surface of said collar with the circumferential edge of the filter material being closely adjacent to the outer diameter of said collar to form a gasket and filter seal when said collar is positioned in the pressure vessel; wherein said gasket and filter seal allow radial passage of fluid which normally bypasses the filter through the filter material forming said gasket and seal, whereby the majority of the fluid to be filtered passes through the filter bag from the inner to the outer surfaces.

5,188,732

ION EXCHANGE RESIN HOLDER

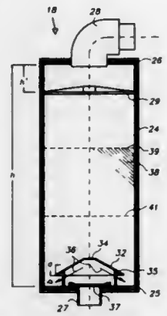
Marc A. De Niel, Brussels; Dirk F. de Ruijter, Deurne; Leo N. Vackier, Gravenwezel, and Bart J. Verlinden, Tongeren, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Feb. 7, 1992, Ser. No. 832,308

Claims priority, application European Pat. Off., Mar. 6, 1991, 91200482.7

Int. Cl.[5] B01D *24/48*

U.S. Cl. 210—285 **14 Claims**



1. An ion-exchange resin holder (**18**) to recover silver from rinsing water of a photographic processing apparatus (**10**),

comprising a mantle (**24**) with a bottom and a top wall, the bottom wall (**25**) being provided with an inlet connection (**27**) and the top wall (**26**) with an outlet connection (**28**) for the rinsing water, the diameter of said connections being smaller than the diameter of the mantle, and separate perforate inlet (**37**) and outlet (**29**) resin restrainers between which a mass (**38**) of ion-exchange resin is restrained in the holder, wherein a liquid restrainer (**32**) is provided in said holder in the proximity of inlet opening (**27**) which has a shape for deflecting part of the incoming water towards the bottom wall and the lower end of the mantle, and which has a central opening (**34**) for allowing another part of said incoming water to pass undeflectedly towards the outlet opening, and wherein the surface of the inlet resin restrainer (**37**) is smaller than the cross-sectional surface of the holder.

5,188,733

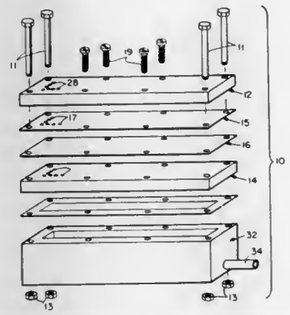
APPARATUS AND PROCESS FOR EFFECTING SEQUENTIAL PEPTIDE SYNTHESES

Zhengxin Wang, Boston, and Richard A. Laursen, Newton, both of Mass., assignors to Trustees of Boston University, Boston, Mass.

Filed Feb. 26, 1992, Ser. No. 841,943

Int. Cl.[5] B01D *69/00*

U.S. Cl. 210—321.84 **8 Claims**



1. Apparatus for effecting a plurality of independent chemical syntheses which comprises:

a first template having a first set of through-holes positioned in a pattern,

a second template having a second set of through-holes positioned in and aligned with said pattern,

a chemically modified porous polymeric membrane positioned between said first and said second template,

sealing means positioned between said first set of through-holes and second set of through-holes,

means for applying differential pressure to effect fluid flow from said first set of holes to said second set of holes

and means for preventing collapse of said membrane during application of said differential pressure,

said chemically modified membrane having a first chemical moiety which permits covalent binding thereof with a second chemical moiety having a reactive carboxyl group.

5,188,734

ULTRAPOROUS AND MICROPOROUS INTEGRAL MEMBRANES

Robert F. Zepf, San Diego, Calif., assignor to Memtec America Corporation, Timonium, Md.

Division of Ser. No. 674,907, Mar. 26, 1991. This application Feb. 21, 1992, Ser. No. 838,694

Int. Cl.[5] B01D *29/00*

U.S. Cl. 210—490 **3 Claims**

1. An asymmetric integral skinned polymer membrane comprising:

A. a pourous skin having skin pores with a controlling diameter within the range of from about 0.001 micrometers to about 0.5 micrometers, and a standard deviation of pore diameter, as determined by the bubble point methods, of less than 3,

B. a support region having a highly asymmetric spinodal structure,



C. said membrane having a standard deviation of flow rate of less than about 100 and a flow rate covariance of less than about 6.

5,188,735

SEPARATION OF RARE EARTH VALUES BY LIQUID/LIQUID EXTRACTION

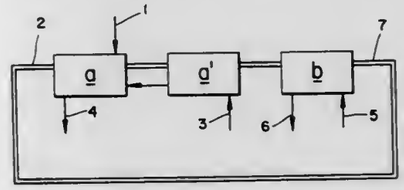
Thierry Delloye, Villeparisis, and Jean-Louis Sabot, Maisons Laffitte, both of France, assignors to Rhone-Poulence Chimie, Courbevoie, France

Continuation of Ser. No. 172,316, Mar. 23, 1988, abandoned. This application Feb. 21, 1991, Ser. No. 657,985

Claims priority, application France, Mar. 23, 1987, 87 03959

Int. Cl.[5] B01D *11/04*

U.S. Cl. 210—634 **36 Claims**



1. A process for the separation of rare earth values from an aqueous solution of the nitrates of at least two rare earth elements, comprising liquid/liquid extracting such aqueous nitrate solution with a liquid organic phase capable of containing high concentrations of the rare earth values which comprises a solvating organophosphorus extractant having the formula (I):



(I)

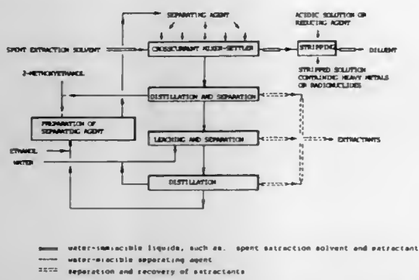
in which R_1, R_2 and R_3, which may be identical or different, are each a hydrogen atom or a substituted or unsubstituted linear or branched chain, or cyclic, saturated or unsaturated hydrocarbon radical, with the proviso that the total number of carbon atoms in the radicals R_1, R_2 and R_3 is at least 12, and at least two of said radicals are different.

5,188,736

PROCESS FOR THE SEPARATION AND RECOVERY OF EXTRACTANT FROM SPENT SOLVENT

Ben-Li Pen; Dah-Ping Wang; Ying-Chu Hoh, and Kuo-Hao Tsao, all of Tao Yuan, Taiwan, assignors to Institute of Nuclear Energy Research, Taiwan

Filed Aug. 27, 1991, Ser. No. 750,311
Int. Cl.[5] B01D *11/00, 11/04*
U.S. Cl. 210—634 **7 Claims**



1. A process for separating an extractant from a diluent in a spent extraction solvent and recovering same by using a polar solution or mixed polar solution as a separating agent, wherein said extractant comprises di(2-ethylhexyl) phosphoric acid, tri n-octyl-phosphine oxide, 2-ethylhexyl phosphoric acid, or mixtures thereof, wherein said separating agent comprise 2-methoxy ethanol, ethylene glycol or mixtures thereof, wherein the diluent comprises toluene, cyclohexane, kerosene or mixtures thereof, and wherein said process comprises the steps of:

(1) selecting said separating agent comprised of said polar solution or mixed polar solution to produce a first water-miscible and a water-immiscible phase when combined with said solvent;

(2) mixing said separating agent and said spent extraction solvent to produce said first water-miscible and water-immiscible phases, which separate into two layers upon settling, and whereby this mixing and settling step is repeated several times;

(3) removing said first water-immiscible phase and extracting metal ions contained therein;

(4) distilling said first water-miscible phase at a temperature between the boiling points of said polar solution and said extractant, whereby the polar solution is evaporated from a remaining second water-miscible phase and collected separately;

(5) adding water to said remaining second water-miscible phase, then stirring and allowing the solution to stand for a sufficient period of time for said extractant to separate from said second water-miscible phase and collecting said extractant; and

(6) removing water from the second water-miscible phase of step (5) and combining the resulting product with the distillate polar solution of step (4) for re-use in a recovery process.

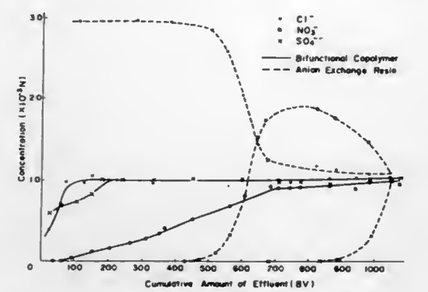
5,188,737

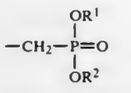
METHOD OF REMOVING NITRATE ION FROM A SOLUTION CONTAINING NITRATE AND OTHER ANIONS

Yoshio Sato, Toride; Katsuo Murayama, Urawa, and Toshihiro Nakai, Toride, all of Japan, assignors to Agency of Industrial Science and Technology, Japan

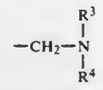
Filed Feb. 28, 1992, Ser. No. 843,158
Claims priority, application Japan, Mar. 12, 1991, 3-70301
Int. Cl.[5] B01D *15/04*
U.S. Cl. 210—638 **6 Claims**

1. A method of treating a solution containing nitrate ion and other anions for the removal of the nitrate ion, comprising a step of contacting the solution with an adsorbent which is a three-dimensional polymer having a skeletal structure of a styrene-divinylbenzene three-dimensional copolymer and containing (a) phosphonate-containing groups directly bonded to the benzene rings of said skeletal structure and having the following formula:





wherein R^1 and R^2 stand, independently from each other, for a hydrocarbyl group and (b) amino-containing groups directly bonded to the benzene rings of said skeletal structure and having the following formula:



wherein R^3 and R^4 stand, independently from each other, for hydrogen or an alkyl group with the proviso that R^3 and R^4 do not represent hydrogen at the same time, so that the nitrate ion is selectively adsorbed by said adsorbent.

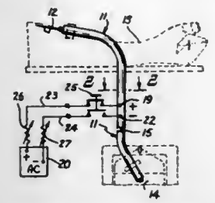
5,188,738

ALTERNATING CURRENT SUPPLIED ELECTRICALLY CONDUCTIVE METHOD AND SYSTEM FOR TREATMENT OF BLOOD AND/OR OTHER BODY FLUIDS AND/OR SYNTHETIC FLUIDS WITH ELECTRIC FORCES

Steven Kaali, 88 Ashford Ave., Dobbs Ferry, N.Y. 10522, and Peter M. Schwolsky, 4101 Cathedral Ave., NW., Washington, D.C. 20016

Continuation-in-part of Ser. No. 562,721, Aug. 6, 1990, abandoned. This application Nov. 16, 1990, Ser. No. 615,437
The portion of the term of this patent subsequent to Aug. 18, 2009, has been disclaimed.
Int. Cl.[5] B01D *35/06;* **A61K** *41/00*
U.S. Cl. 210—748 **31 Claims**

18. A fluid treatment process for attentuating bacteria, and/or virus, and/or parasites, and/or fungus, existing in blood and/or other body fluids and/or synthetic fluids within a treatment vessel having only biologically compatible internal and conductive electrode surfaces therein contacting fluid being treated thereby maintaining the biological usefulness of the blood or other fluids being treated comprising subjecting the fluid within the treatment vessel to low voltage, low alternating current electric field forces within non-biologically damaging electric field forces for producing a biologically compatible current flow through the blood or other fluids for a predetermined period of time sufficient to attenuate bacteria and/or virus, and/or parasites and/or fungus contained in the blood or other fluids to thereby render them ineffective while maintaining the biological usefulness of the fluids being treated.



5,188,739

DISPOSAL OF SEWAGE SLUDGE

Motasimur R. Khan, Wappingers Falls, N.Y.; Richard B. Zang, Sandy Hook, Conn., and Christine C. Albert, Peekskill, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 2, 1991, Ser. No. 801,326
Int. Cl.[5] B01D *37/00*
U.S. Cl. 210—770 **26 Claims**

1. A process for disposing of sewage sludge comprising:

(1) concentrating an aqueous slurry of sewage sludge having a solids content in the range of about 0.5 to 20 wt. % by removing water therefrom by means of (a) a first conventional belt filter press whereby said slurry of sewage sludge is carried on a continuous belt and a surface pressure in the range of about 20 to 100 psi is applied to said sewage sludge at a temperature in the range of about ambient to 300° F. for a period in the range of about ½ to 60 minutes; and (b) with or without additional pressing of the material from the first belt filter press in (a) in a conventional high intensity continuous belt filter press operating with a surface pressure in the range 100 to 250 psi for a period in the range of about ½ to 60 minutes, such as about 1 to 30 minutes, and at a temperature in the range of about ambient to 300° F.; wherein a dewatered slurry of sewage sludge is produced having a total solids content in the range of about 10 to 55 wt. %;

(2) pumping by means of a conventional positive displacement pump said dewatered slurry of sewage sludge from (1) into a hydrothermal treating reactor wherein by said pumping the viscosity of said dewatered slurry is reduced to less than about 5,000 centipoise when measured at about 180° F.;

(3) heat treating said dewatered slurry of sewage sludge from (2) in said hydrothermal treating zone in the absence of air and at a temperature in the range of about 120° F. to 550° F. and at a pressure which is at or above the vapor pressure of water at said heat treating temperature in the following two stages; (a) heating at a temperature in the range of about 120° F. to 325° F. in the absence of air for a residence time of about 1 to 10 minutes; followed by (b) heating at a temperature in the range of about 325° F. to 550° F. in the absence of air for a residence time of about 2 to 20 minutes;

(4) holding the heated sewage sludge from (3) at a temperature in the range of about 450° F. to 550° F. in the absence of air for a residence time of about 2 to 120 minutes and at a pressure which is at or above the vapor pressure of water at said holding temperature, to produce a pumpable aqueous slurry of sewage sludge having a viscosity of less than about 600 centipoise when measured at about 180° F.;

(5) cooling the heat treated slurry of sewage sludge from (4) to a temperature in the range of about ambient to less that about 200° F.; thereby providing a highly pumpable aqueous slurry of dewatered sewage sludge having a solids content in the range of about 10 to 55 wt. %, and a higher heating value (HHV) in the range of about 6,000 to 8,000 BTU/LB;

(6) shearing the slurry of sewage sludge from (5) in a shearing means at a temperature in the range of about ambient to 212° F. in the absence of air for a period in the range of about 10 seconds to 180 minutes to produce a sheared highly pumpable fluid sewage sludge having a viscosity in the range of about 50 centipoise to 600 centipoise when measured at about 180° F.;

(7) grinding together the sheared sewage sludge from (6) with a solid carbonaceous fuel in a grinding means thereby producing a pumpable slurry of sewage sludge and solid carbonaceous fuel having a solids content in the range of about 45 to 70 wt. %, a wt. ratio in the range of about 3–7 parts by wt. of sewage sludge to 3–7 parts by wt. of solid carbonaceous fuel and a viscosity of less than about 2000 centipoise when measured at about 180° F.; and

(8) burning said pumpable slurry of sewage sludge and solid carbonaceous fuel from (7) in a partial oxidation gasifier, furnace, boiler, or incinerator to produce a hot raw effluent gas stream.

5,188,740

PROCESS FOR PRODUCING PUMPABLE FUEL SLURRY OF SEWAGE SLUDGE AND LOW GRADE SOLID CARBONACEOUS FUEL

Motasimur R. Khan, Wappingers Falls, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 2, 1991, Ser. No. 801,160
Int. Cl.[5] B01D *37/00*
U.S. Cl. 210—770 **25 Claims**

1. A process for disposing of sewage sludge comprising:

(1) concentrating an aqueous slurry of sewage sludge having a solids content in the range of about 0.5 to 20 wt. % by removing water therefrom by means of (a) a first conventional belt filter press whereby said slurry of sewage sludge is carried on a continuous belt and a surface pressure in the range of about 20 to 100 psi is applied to said sewage sludge at a temperature in the range of about ambient to 300° F. for a period in the range of about ½ to 60 minutes; and (b) with or without additional pressing of the material from the first belt filter press in (a) in a conventional high intensity continuous belt filter press operating with a surface pressure in the range 100 to 250 psi for a period in the range of about ½ to 60 minutes, such as about 1 to 30 minutes, and at a temperature in the range of about ambient to 300° F.; wherein prior to and/or after said concentrating step (a) and/or (b) particles of low grade solid carbonaceous fuel are mixed or ground with the slurry of sewage sludge; and wherein a dewatered slurry of sewage sludge and low grade solid carbonaceous fuel is produced having a total solids content in the range of about 35 to 55 wt. % and comprising about 30 to 50 wt. % of low grade solid carbonaceous fuel and the remainder of the solids substantially comprising sewage sludge;

(2) pumping by means of a conventional positive displacement pump said dewatered slurry of sewage sludge and low grade solid carbonaceous fuel from (1) into a hydrothermal treating reactor wherein by said pumping action the viscosity of said dewatered slurry is reduced to less than about 6,000 centipoise when measured at about 180° F;

(3) heat treating said dewatered slurry of sewage sludge and low grade solid carbonaceous fuel from (1) in a hydrothermal reaction zone in the absence of air, at a temperature in the range of about 200° F. to 700° F., and at a pressure which is at or above the vapor pressure of water at the heat treating temperature, in the following two stages; (a) heating at a temperature in the range of about 120° F. to 325° F. in the absence of air for a residence time of about 1 to 10 minutes; (b) followed by heating at a temperature in the range of about 400° F. to 700° F. in the absence of air for a residence time of about 5 to 120 minutes;

VOL 1147 ISS 4 FEB 23 1993 UMI

(4) holding the heated slurry of sewage sludge and low grade solid carbonaceous fuel from (3) at a temperature in the range of about 475° F. to 700° F. in the absence of air for a residence time of about 3 to 90 minutes and at a pressure which is at or above the vapor pressure of water at said holding temperature, to produce a pumpable aqueous slurry of sewage sludge and low grade solid carbonaceous fuel having a viscosity of less than 700 centipoise when measured at about 180° F.;

(5) separating excess water from the heat treated and dewatered slurry of sewage sludge and low grade solid carbonaceous fuel from (4) by (a) reducing the pressure and corresponding temperature of the heat treated dewatered slurry of sewage sludge and low grade solid carbonaceous fuel from (4) in a flash evaporization zone to a pressure in the range of about atmospheric pressure to the saturated vapor pressure of water at the temperature in said flash evaporation zone in the range of about 200° F. to 400° F., thereby evaporating and separating water from said slurry, and/or (b) cooling the slurry of sewage sludge and low grade solid carbonaceous fuel to a temperature in the range of about ambient to 165° F. followed by centrifuging; thereby providing a pumpable aqueous slurry of dewatered sewage sludge and low grade solid carbonaceous fuel having a solids content in the range of about 45 to 70 wt. % and having a higher heating value (HHV) in the range of about 6,000 to 12,000 BTU/LB;

(6) shearing the slurry of sewage sludge and low grade solid carbonaceous fuel from (5) in a shearing means at a temperature in the range of about ambient to 212° F. in the absence of air for a period in the range of about 10 seconds to 120 minutes thereby producing a pumpable slurry of sewage sludge and low grade solid carbonaceous fuel having a solids content in the range of about 45 to 70 wt. %, a wt. ratio in the range of about 3–7 parts by wt. of sewage sludge to 3–7 parts by wt. of low grade solid carbonaceous fuel; and a viscosity of less than about 2000 centipoise when measured at about 180° F.; and

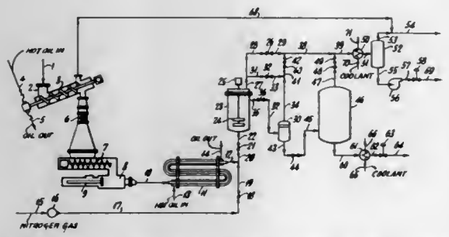
(7) burning said pumpable slurry of sewage sludge and low grade solid carbonaceous fuel from (6) in a partial oxidation gasifier, furnace, boiler, or incinerator to produce a hot raw effluent gas stream.

5,188,741

TREATMENT OF SEWAGE SLUDGE

Richard B. Zang, Sandy Hook, Conn., and Motasimur R. Khan, Wappingers Falls, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 1, 1992, Ser. No. 861,733
Int. Cl.[5] B01D *35/18*
U.S. Cl. 210—774 **17 Claims**



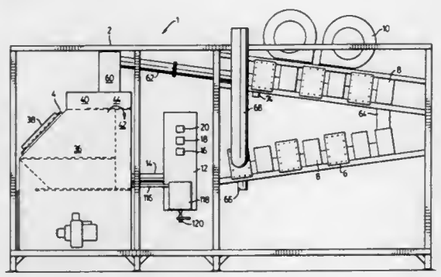
1. An improved process for treating sewage sludge comprising the steps of: (1) simultaneously conveying and preheating an aqueous sludge slurry feed having a solids content in the range of about 3 to 35 wt. % to a temperature in the range of about 100° F. to 200° F.; (2) mascerating the sewage sludge from (2); (3) pumping by means of a reciprocating positive displacement pump the mascerated sewage sludge from (2) through an indirect heat exchanger to raise said sludge to a temperature in the range of about 400° F. to 600° F.; (4) hydrothermally treating the heated sewage sludge from (3) in a closed reaction vessel under a blanket of nitrogen at a temperature in the range of about 400° F. to 600° F. and a pressure in the range of about 700 to 800 psig and above the vapor pressure of water at the reaction temperature to break down the fiber and gel structure of said sludge and to liberate trapped water; (5) dewatering and cooling the hydrothermally treated sludge from (4) in a first multi-step flash evaporation zone where the pressure is dropped from about 700 to 800 psig to a value in the range of about 25 to 75 psig and the saturation temperature falls to a value in the range of about 300° F. to 400° F. in two or more flash evaporation steps; and then in a second flash evaporation zone the pressure is dropped to a value in the range of about 10 psig to 50 psig and the saturation temperature falls to about 200° F. to 300° F. in one or more flash evaporation steps; (6) cooling the vapor from said first and second flash evaporation zones and separating out condensed liquids and uncondensed gases; and (7) removing a dewatered pumpable slurry of sludge from (5) having a solids content in the range of about 5 to 50 wt. % and a reduced amount of pathogens.

5,188,742

APPARATUS AND METHOD FOR REMOVING CONTAMINANTS FROM WATER

Edward C. Shurtleff, R.R. #1, St. George, N.B., Canada E0G 2L0

Filed Jun. 10, 1991, Ser. No. 712,758
Int. Cl.[5] B01D *35/18*
U.S. Cl. 210—774 **19 Claims**



1. An apparatus, for removing contaminants from water, the apparatus comprising:

a chamber including means for supplying combustion air to the chamber and an exhaust outlet;

heating means comprising a burner having air and fuel supply inlets, located within the chamber to heat the interior of the chamber to a temperature sufficient to vaporize water and cause combustion of any contaminants present;

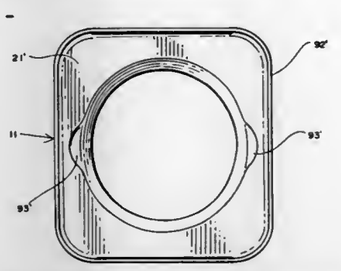
an evaporation vessel located above the chamber, which evaporation vessel includes an inlet for contaminated water, and is arranged to discharge water vapor and vaporized contaminants into the combustion chamber, and means for supplying contaminated water to the inlet of the evaporation vessel.

5,188,743

PLATE, CHANGER, PLATE AND METHOD

Patrick D. King, Rantoul, Ill., assignor to Flo-Con Systems, Inc., Champaign, Ill.

Continuation-in-part of Ser. No. 319,410, Mar. 3, 1989, abandoned, and a continuation-in-part of Ser. No. 693,915, Apr. 29, 1991, which is a continuation of Ser. No. 494,779, Mar. 16, 1990, Pat. No. 5,052,598, and a continuation-in-part of Ser. No. 591,067, Oct. 1, 1990, Pat. No. 5,044,533. This application Aug. 30, 1991, Ser. No. 753,387
Int. Cl.[5] B22D *41/38*
U.S. Cl. 222—590 **28 Claims**



5. A plate for use with a plate changer for mounting to a vessel having a means for controlling the flow of molten metal from the vessel and in which at least two plates are in compressive face-to-face relationship, and having a stationary plate communicating to said means for controlling the flow of molten metal, means to sequentially convey a plate through the plate change along an axis of insertion, said plate changer having means for moving a pusher in the loading area to load plates into the plate changer,

a plate having an upstream face portion,

said plate having a downstream portion of reduced dimensions to accommodate loading apparatus and pressure sealing apparatus,

lateral edges between the upstream and downstream portions of the plate,

said upstream face portion having a substantially rectangular plan view,

the length of said face being parallel to the axis of insertion and the width being perpendicular to the length,

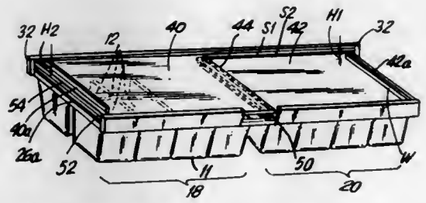
said face portion having a width greater than length by at least seven millimeters.

5,188,744

ICE CUBE DISPENSER TRAY

Ethan E. Silverman, 45 W. 67th St., Apt. 7G, New York, N.Y. 10023

Filed Feb. 10, 1992, Ser. No. 833,335
Int. Cl.[5] B28B *7/24*; F25C *1/24*
U.S. Cl. 249—121 **15 Claims**



1. An ice cube dispenser tray, comprising:

an elongate ice cube tray body having separate ice cube compartments arranged successively along the long direction of said tray,

a pair of compartment cover panels, and

means associated with said tray body for guiding said pair of cover panels for sliding movement just above said ice cube compartments so that ice cubes are dispensed out of the tray body only from those compartments that are exposed by movement of said cover panels.

5,188,745

VITON SEAL COMPATIBLE DISPERSANT AND LUBRICATING OIL COMPOSITION CONTAINING SAME

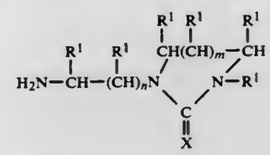
Cyril A. Migdal, Croton-on-Hudson, and Theodore E. Nalesnik, Wappingers Falls, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 23, 1991, Ser. No. 812,485
Int. Cl.[5] C10M *145/10*
U.S. Cl. 252—47 **12 Claims**

1. An additive reaction product prepared by the steps comprising:

(A) reacting a polymer prepared from ethylene and at least one C_3–C_{10} alpha-monoolefin and, optionally, a polyene selected from non-conjugated dienes and trienes comprising from about 15 to 80 mole percent of ethylene, from about 20 to 85 mole percent of said C_3–C_{10} alpha-monoolefin, and from about 0 to 15 mole percent of said polyene and having an average molecular weight ranging from about 5,500 to 500,000 with at least one olefinic carboxylic acid acylating agent to form one or more acylating reaction intermediates characterized by having a carboxylic acid acylating function within their structure, and

(B) reacting said reaction intermediate in (A) with an amine-substituted imidizolidone compound represented by the formula:



in which R^1 in each instance is the same or different and may be H or a branched or straight chain radical having 1 to 24 carbon atoms selected from the group consisting of alkyl, alkenyl, alkoxyl or aralkyl, alkaryl radicals, n has a value from 0 to 12, m has a value of 0 to 3, and X is either O or S.

5,188,746

ANTIWEAR/ANTIOXIDANT ADDITIVES BASED ON DIMERCAPTO DERIVATIVES OF ACRYLATES AND METHACRYLATES POLYMERS AND AMINE REACTION PRODUCTS THEREOF

Robert H. Davis, Pitman, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Nov. 1, 1990, Ser. No. 607,950
Int. Cl.[5] C10M *135/36*; C07D *285/12*
U.S. Cl. 252—47.5 **8 Claims**

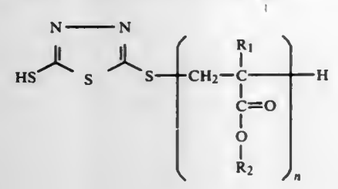
1. A product capable of imparting multifunctional antiwear-/EP and antioxidation properties to a lubricant which is zinc and phosphorus free, comprising an adduct of a primary or secondary amine and a reaction product of a free radical reaction of components comprising (a) and (b), wherein

(a) is 2,5-dimercapto-1,3,4-thiadiazole and

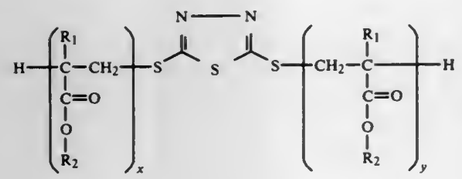
(b) is $H_2C{=}C(R_1)C(O)OR_2$ or an oligomer thereof, wherein R_1 and R_2 are as defined below

VOL 1147 ISS 4 FE 23 1993 UMI

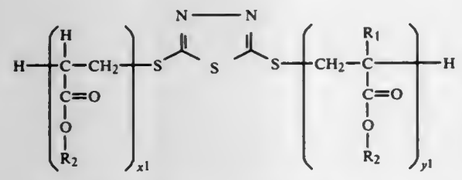
wherein the reaction product of said free radical reaction comprises a compound of the formula



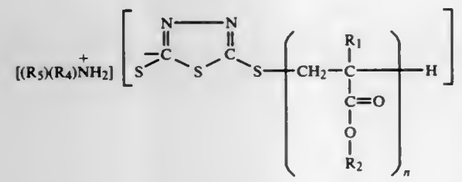
or



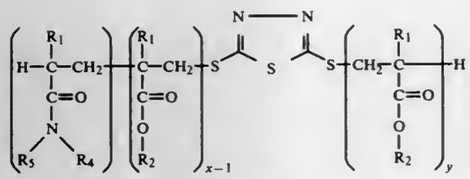
or



and wherein said adduct comprises at least one compound of the formula



or



wherein R_1 is hydrogen or methyl,
wherein R_2 is hydrogen or a hydrocarbyl of 1 to 30 carbon atoms,
wherein N is nitrogen;
wherein x and y is a whole number, x is at least 1 and n is at least 1,
wherein each of x^1 and y^1 is 0 or a whole number but x^1+y^1 is greater than 1,
wherein R_4 is hydrogen or a hydrocarbon group of 1 to 60 carbon atoms and R_5 is a hydrocarbon group of 1 to 60 carbon atoms wherein the hydrocarbon group is selected from the group consisting of alkyl, alkylene, cycloalkyl, aralkyl, aryl hydrocarboxyhydrocarbylene group, and a derivative of said alkyl, alkylene, aralkyl, aryl, and cycloalkyl containing an element selected from the group consisting of oxygen, sulfur and nitrogen.

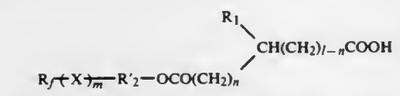
5,188,747

FLUORINE-CONTAINING LUBRICANT COMPOUNDS

Yoshiaki Kai, Neyagawa, and Takashi Suzuki, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 20, 1991, Ser. No. 672,447
Claims priority, application Japan, Sep. 4, 1990, 2-234883; Sep. 28, 1990, 2-260898; Nov. 30, 1990, 2-337983
Int. Cl.[5] C10M *105/54*
U.S. Cl. 252—54 **20 Claims**

1. A fluorine-containing compound represented by the formula (II):



(II)

wherein R_f is a fluoroalkyl ether end group having 5 to 50 carbon atoms, R_1 is an aliphatic alkyl end group or an aliphatic alkenyl end group, R'_2 is an aliphatic alkylene group or an aliphatic polyalkylene oxide group, X is a connecting group selected from the group consisting of

—$COOR_5$—and —$CON(R_6)$—,

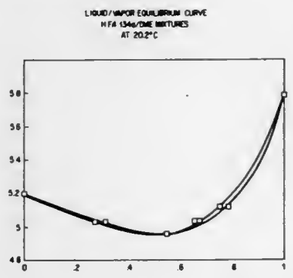
R_5 is an aliphatic alkylene group having no or one or more carbon atoms, R_6 is hydrogen or an aliphatic alkyl group having 1 to 12 carbon atoms and each of m and n is zero or 1.

5,188,748

AZEOTROPIC MIXTURES OF DIMETHYL ETHER AND OF 1,1,1,2-TETRAFLUOROETHANE AND THEIR USE

Didier Arnaud, Courbevoie, and Jean-Claude Tanguy, Sannois, both of France, assignors to Societe Atochem, Puteaux, France

Filed Feb. 20, 1991, Ser. No. 658,271
Claims priority, application France, Feb. 20, 1990, 90 02012
Int. Cl.[5] C09K *5/04, 3/30*
U.S. Cl. 252—67 **4 Claims**



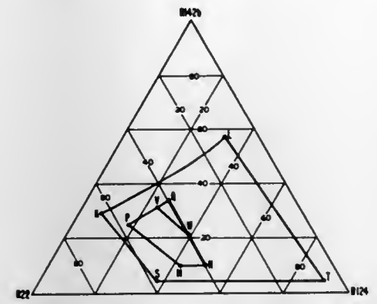
1. An azeotropic mixture of dimethyl ether and 1,1,1,2-tetrafluoroethane which, at 1.013 bar, boils at about −22.4° C. and consists of about 62.3 mass % of 1,1,1,2-tetrafluorethane and 37.7 mass % of dimethyl ether.

5,188,749

R22/R124/R142B REFRIGERANT BLENDS

Richard M. Crooker, Fogelsville, Pa., assignor to Elf Atochem North America, Inc., Philadelphia, Pa.

Filed Jul. 15, 1991, Ser. No. 729,974
Int. Cl.[5] C09K *5/04*
U.S. Cl. 252—67 **3 Claims**



1. A ternary refrigerant mixture consisting essentially of monochlorodifluoromethane, 2-chloro-1,1,1,2-tetrafluoroethane, and 1-chloro-1,1-difluoroethane, said mixture having a composition falling within the area of a polygon KLTS defined by points, in weight percent, K (64, 7, 29), L (10, 33, 57), T (5.5, 89.5, 5), and S (58, 37, 5) in the FIGURE.

5,188,750

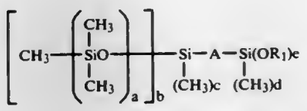
ANTI-ICING COMPOSITION AND METHOD OF PREVENTING ICING

Hideo Kogure, Atsugi; Heihachi Murase, Kanagawa, and Koichi Tamura, Hiratsuka, all of Japan, assignors to Kansai Paint Company, Limited, Amagasaki, Japan

Continuation of Ser. No. 442,048, Nov. 28, 1989, abandoned. This application Nov. 13, 1991, Ser. No. 790,088
Claims priority, application Japan, Nov. 29, 1988, 63-303507
Int. Cl.[5] C09K *3/18*
U.S. Cl. 252—70 **7 Claims**

1. An anti-icing composition comprising at least two resins, the first resin being a moisturecurable film-forming resin, and the second resin being a silicone resin which is at least one comb-shaped condensate having hydrophobic dimethylsiloxane chains as side chains, said condensate being selected from the group consisting of:

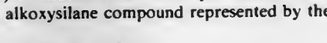
(i) a condensate of an alkoxydimethylsiloxane compound represented by the formula



(I)

wherein R_1 is a methyl group or an ethyl group, A is an oxygen atom, an ethylene group or a 1,3-propylene group, a is an integer of 5 to 150, b is an integer of 1 to 3, e is an integer of 2 or 3, c is an integer of 3-b, and d is an integer of 3-e,

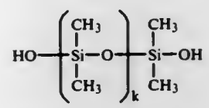
(ii) a condensate of the compound of the formula (I) and an alkoxysilane compound represented by the formula



(II)

wherein R_2 is a methyl group or an ethyl group, R_3 is an alkyl group having 1 to 8 carbon atoms, h is an integer of 0 to 3 and j is an integer of 4-h,

(iii) a condensate of the compound of the formula (I) and a dihydroxydimethylsiloxane compound represented by the formula



(III)

wherein k is an integer of 10 to 200, and

(iv) a condensate of the compound of the formula (I), the alkoxysilane compound of the formula (II) and the dihydroxydimethylsiloxane compound of the formula (III), the amount of said first resin being at least 2% by weight, and the amount of said second resin being at most 98% by weight, based on the combined amount of the first and second resins.

5,188,751

VINYL CHLORIDE RESIN COMPOSITION

Toshiyuki Mori, Takasago; Akira Takaki, Kobe; Hirokazu Iguchi, Akashi; Satoshi Suzuki; Hiroto Mori, both of Takasago, and Hideki Hosoi, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 22, 1990, Ser. No. 497,365
Claims priority, application Japan, Mar. 24, 1989, 1-73347; Jan. 30, 1990, 2-21030
Int. Cl.[5] C08G *63/48, 63/91;* C08L *27/06*
U.S. Cl. 525—70 **9 Claims**

1. A vinyl chloride resin composition which comprises

(A) 3 to 30 parts by weight of a graft copolymer having a butadiene content of at least 60% by weight prepared by reacting (i) 0.1 to 3 parts by weight of a monomer which is a crosslinking agent selected form the group consisting of divinyl benzene, diacrylate compounds and dimethacrylate compounds, and (ii) 0 to 3 parts by weight of at least one of an alkyl acrylate and an alkyl methacrylate in the presence of (b) 85 to 65 parts by weight of a butadiene polymer of 82 to 100% by weight of butadiene and 18 to 0% by weight of other vinyl monomers copolymerizable therewith, said other vinyl monomers containing less than 1% of a crosslinking agent, and then emulsion polymerizing the reaction product with (a) 15 to 35 parts by weight of a monomer mixture of 50 to 95% by weight of an aromatic vinyl monomer, 0.1 to 40% by weight of a vinyl cyanide monomer and 0 to 40% by weight of other vinyl monomer copolymerizable therewith, the total of said butadiene polymer (b) and said monomer mixture (a) being 100 parts by weight and the amounts of the components (i) and (ii) being based on 100 parts by weight of the total of the components (a) and (b), such that said crosslinking agent serves to polymerize said graft component primarily on a surface of said butadiene polymer, and

(b) 97 to 70 parts by weight of a vinyl chloride resin.

5,188,752

LINEAR VISCOELASTIC AUTOMATIC DISHWASHER COMPOSITIONS CONTAINING A CROSSLINKED METHYL VINYL ETHER/MALEIC ANHYDRIDE COPOLYMER

Michael Prencipe, E. Windsor; Elizabeth F. McCandlish, Highland Park, both of N.J., and Frank J. Loprest, Langhorne, Pa., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Apr. 22, 1991, Ser. No. 688,794
The portion of the term of this patent subsequent to Nov. 12, 2008, has been disclaimed.
Int. Cl.[5] C11D *9/42, 9/10, 9/22*
U.S. Cl. 252—96 **7 Claims**

1. A linear viscoelastic aqueous liquid gel automatic dishwasher detergent composition comprising water; 0.01 to about

VOL 1147 ISS 4 FE 23 1993 UMI

2% by weight of long chain fatty acid or salt thereof, said long chain fatty acid or said salt thereof causing an increase in the apparent viscosity of said linear viscoelastic aqueous gel composition; from about 0 to 5% by weight of low foaming, non soap, chlorine stable organic detergent; from about 5 to 40% by weight of alkali metal detergent builder salt, said builder salt being selected from the group consisting essentially of carbonates, phosphates, borates and alumino silicates; a chlorine bleach compound in an amount to provide 0.2 to 4% by weight of available chlorine; and 0.1 to 5.0% of a crosslinked copolymer of methyl vinyl ether and maleic anhydride which is crosslinked with at least about 0.5 wt % of a crosslinking agent selected from the group consisting essentially of an aliphatic diene having about 6 to about 20 carbon atoms and substituted aliphatic dienes having ester, ether or hydroxyl groups and having 6 to 20 carbon atoms, said composition having a G''/G'' value of less than one.

5,188,753

DETERGENT COMPOSITION CONTAINING COATED PERFUME PARTICLES

Diane G. Schmidt, Cincinnati, Ohio; Howard J. Buttery, Newport, and Robert J. Norbury, Cottage Grove, both of Minn., assignors to The Procter & Gamble Company, Cincinnati, Ohio and Minnesota Mining & MAanufacturing Company, Minneapolis, Minn.

Continuation of Ser. No. 350,434, May 11, 1989, abandoned. This application Jun. 21, 1991, Ser. No. 719,057

Int. Cl.[5] C11D *9/44, 3/37, 3/50*

U.S. Cl. 252—132 **7 Claims**

1. A detergent composition, comprising one or more detersive surfactants selected from the group consisting of soap, alkyl benzene sulfonates, ethoxylated alcohols, alkyl surfates, and alkyl ethyloxylate sulfate, optionally, one or more builders, and perfume particles which comprise form about 5% to about 70% of a perfume dispersed in from about 30% to about 95% of a solid core comprising water-insoluble polymeric carrier material selected from the group consisting of polyethylenes, polyamides, polystyrene, polyisoprenes, polycarbonates, polyesters, polyacrylates, vinyl polymers, polyurethanes and mixtures thereof, said solid core polymeric carrier material having a molecular weight of from about 100 to about 30,000, a melting point of from about 37° C. to about 190° C., and a hardness value of from about 0.1 to about 15, said particles being encapsulated by having a friable coating on their outer surfaces, wherein said friable coating is the reaction product of an amine slected from urea and melamine or mixtures thereof and an aldehyde selected form formaldehyde, acetaldehyde, glutaraldehyde or mixtures thereof said coated, solid core particles having an average size less than about 350 microns.

5,188,754

CLEANING FORMULATION AND METHOD THAT ALLEVIATES CURRENT PROBLEMS

Henry J. Weltman, and Tony L. Phillips, both of Fort Worth, Tex., assignors to General Dynamics Corporation, Fort Worth, Tex.

Continuation-in-part of Ser. No. 686,180, Apr. 16, 1991, abandoned. This application Aug. 9, 1991, Ser. No. 743,258

Int. Cl.[5] C09D *9/00;* **C11D** *7/22, 7/50*

U.S. Cl. 252—162 **19 Claims**

1. A non-aqueous cleaning formulation for applying on a rag for removal of dirt constituents without aggravating problems of smog, ozone layer depletion and the like comprising:

a. A major and effective amount of propylene glycol methyl ether acetate present in a first proportion comprising a major portion of the formulation; and

b. a minor and effective amount of at least one second ingredient in a second proportion of no more than 40 percent by volume of the volume of the formulation, said second ingredient being selected from the group consisting of propylene glycol methyl ether, methyl isoamyl ketone, isoparaffins, and n-butyl acetate; said formulation having a solvent capability for the soil to be removed; and having a TLV-TWA toxicity of at least 100 parts per million exposure limit.

5,188,755

SURFACE ERODIBLE CONTROLLED RELEASING, FREE STANDING CLEANSING BLOCK AND CLEANING METHOD FOR THE DOMESTIC WATER CLOSET

Tiang-Shing Chang, Westfield, N.J., assignor to Block Drug Company, Jersey City, N.J.

Filed Oct. 10, 1991, Ser. No. 774,477

Int. Cl.[5] C11D *17/00, 3/48, 1/66*

U.S. Cl. 252—174 **17 Claims**

1. A surface erodible, controlled releasing, free standing cleansing block for domestic water closets which releases its active ingredients uniformly and continuously to the water to inhibit the formation of mineral stains on porcelain and to continuously provide a mild acidic environment to thereby give the water a sparkling appearance for an extended period of time of about 1 to 5 months which comprises

about 2 to 35% of controlled releasing agent selected from the group consisting of hydroxypropyl cellulose having a molecular weight of about 500,000 to 1,500,000, polyethyleneoxide having a molecular weight from about 2 million to 6 million and mixtures thereof,

about 1 to 25% by weight of erosion rate modifier selected from the group consisting of polyalkoxylated cetyl alcohol, polyalkoxylated stearyl alcohol and mixtures thereof, containing about 2 to 8 alkyleneoxy units per molecule and a molecular weight of about 360 to 650,

about 0.5 to 30% of processing aid which is a polyoxypropylene-polyoxyethylene block copolymer having a molecular weight of about 2,000 to 16,000,

about 10 to 60% of a chelating and pH control agent selected from the group consisting of fumaric acid, L-aspartic acid, citric acid and mixtures thereof,

about 0.05 to 8% of an internal lubricant selected from the group consisting of isobornyl acetate, silicon oil and mixtures thereof, and optionally up to about 35% of a neutral pH salt as density modifier, said block having a density of about 1.2 to 1.8 g/ml and an aqueous solution of 10 ppm of said block having a pH between about 4.0 and 7.

5,188,756

TOPICAL CLEANSING AND CONDITIONING COMPOSITION

Christopher G. Baker, Port Jervis, N.Y., and Elliott S. Zucker, Shohola, Pa., assignors to Kolmar Laboratories, Inc., Port Jervis, N.Y.

Filed Aug. 7, 1991, Ser. No. 741,554

Int. Cl.[5] C11D *3/08*

U.S. Cl. 252—174.15 **8 Claims**

1. A cleansing and condition composition for topical application, comprising by weight from 10% to 40% of a low irritancy cosmetically acceptable surfactant, 1% to 15% of an emollient, 0.5% to 5.0% of a cationic material having a net positive charge and selected from the group consisting of oleyl palmityl palmitoleyl keratin hydroxypropyl dimonium chloride lactate, wheatgerm-amidopropyl dimethylamine hydrolyzed wheat protein, guar hydroxypropyl trimonium chloride, and mixtures thereof, 0.5% to 2.5% of a cosmetically acceptable film former, 0.05% to 1.00% of polyamino sugar condensate, and the balance water.

5,188,757

PRECURSOR COMPOSITIONS FOR CONVERSION TO BORON NITRIDE

Robert T. Paine, Jr., Albuquerque, N. Mex.; Chaitanya K. Narula, Dearborn, Mich., and Riley O. Schaeffer, Los Alamos, N. Mex., assignors to University of New Mexico, Albuquerque, N. Mex.

Division of Ser. No. 312,881, Feb. 17, 1989, Pat. No. 4,971,779. This application Oct. 15, 1990, Ser. No. 598,372

Int. Cl.[5] C09K *3/00*

U.S. Cl. 252—183.11 **22 Claims**

1. A composition suitable for pyrolytic conversion to boron nitride, the composition comprising:

a B-aminoborazine compound having a general formula selected from the group consisting of $(ClB)_2(BNR_2)(NH)_3$, $(ClB)_2[BN(H)R](NH)_3$ and $(ClB)_2[BN(SiR_3)_2](NH)_3$, and wherein each R is a member selected from the group consisting of alkyl groups and aryl groups;

a solvent; and

a cross-linking agent.

5,188,758

ELECTROOPTICAL DISPLAY ELEMENT USING A SUPERTWIST LIQUID CRYSTAL HAVING SPECIFIED ELASTIC CONSTANTS

Günter Baur, Freiburg, Fed. Rep. of Germany; Bernhard Scheuble, Yokohama, Japan, and Waltraud Fehrenbach, Emmendingen, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschraenkter Haftung, Darmstadt, Fed. Rep. of Germany

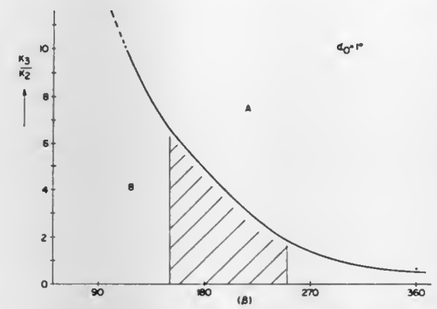
Continuation-in-part of Ser. No. 257,565, Oct. 14, 1988, abandoned, which is a division of Ser. No. 130,388, Nov. 17, 1987, Pat. No. 4,799,774. This application May 15, 1989, Ser. No. 352,533

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1986, 3609141

The portion of the term of this patent subsequent to Jan. 24, 2006, has been disclaimed.

Int. Cl.[5] C09K *19/52, 19/34;* **G02F** *1/13*

U.S. Cl. 252—299.01 **23 Claims**



1. An electrooptical display element which can be multiplexed, has improved contrast effect, has two support plates which, with an edging, form a cell containing a nematic liquid crystal material with positive dielectric anisotropy and at least one chiral additive; has a characteristic line of the transmission of light through the display element as a function of voltage applied across the cell, and has a small surface tilt angle and a twist angle with a value between 150° and 250°, wherein the ratio of the elastic constants for bending and twisting K_3/K_2 of the liquid crystal material and the twist angle are such that when using a liquid crystal material with a ratio of the elastic constants K_3/K_1 for bending and spreading which is on the order of the maximum possible, the steepness of the characteristic line is improved but the characteristic line is bistable, or when using a liquid crystal material with a ratio of the elastic constants K_3/K_1 for bending and spreading being small enough the steepness of the characteristic line is improved but the characteristic line remains stable.

5,188,759

HALOACETYLENE DERIVATIVES

Ekkehard Bartmann, Erzhausen; Reinhard Hittich, Modautal; Herbert Plach, Darmstadt, and Ulrich Finkenzeller, Plankstadt, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Feb. 1, 1991, Ser. No. 648,627

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1990, 4003340; Aug. 30, 1990, 4027458

Int. Cl.[5] C09K *19/52, 19/32, 19/30;* **C07C** *69/76*

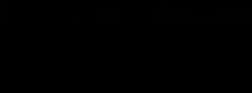
U.S. Cl. 252—299.01 **7 Claims**

1. In a liquid-crystalline medium having at least two components, the improvement wherein at least one component is a haloacetylene derivative of formula I:

$$R^1-A^1-Z^1-(A^2-Z^2)_m-A^3-C\equiv C-X$$

wherein:

R^1 is an alkyl or alkenyl radical having up to 15 carbon atoms which is unsubstituted or mono-substituted by CN, halogen or CF_3, or such a radical wherein one or more CH_2 groups is replaced, in each case independently of one another, by —S—, —O—,



—CO—, —CO—O—, —O—CO, or —O—OC—O— in such a manner that sulfur and/or oxygen atoms are not linked directly to one another,

A^1, A^2 and A^3, in each case independently of one another, are

(a) a trans-1,4-cyclohexylene radical or such a radical in which one or more non-adjacent CH_2 groups is replaced by —O— and/or —S—,

(b) a 1,4-phenylene radical

(c) 1,3-cyclohexenylene, 1,3-bicyclo(1,1,1) pentylene, 1,4-cyclohexylene, 1,4-bicyclo(2,2,2,)octylene, naphthalene-2,6-diyl, decahydronaphthalene-2,6-diyl and 1,2,3,4-tetrahydronaphthalene-2,6-diyl,

or a radical in (a) or (b) substituted by CN or halogen,

Z^1 and Z^2 independently of one another, are $—CH_2CH_2—$, —C=C, $—CH_2O—$, $—OCH_2—$, —CO—O—, —O—CO—, —CH=N, —N=CH—, $—CH_2S—$, $—SCH_2—$, a single bond or an alkylene group having 3 to 6 carbon atoms in which one CH_2 group may be replaced by —O—, —CO—O—, —O—CO—, —CHhalogen— or —CHCN—,

X is F, Cl, —NCS, Br, $—OCF_3$ or $—SCF_3$, and

m is 0, 1 or 2.

5,188,760

LIQUID CRYSTALLINE MATERIAL AND DISPLAY CELL CONTAINING SAID MATERIAL

Rifat A. M. Hikmet, Eindhoven, Netherlands, and Dirk J. Broer, Wilmington, Del., assignors to U. S. Philips Corporation, New York, N.Y.

Filed Apr. 3, 1991, Ser. No. 679,981

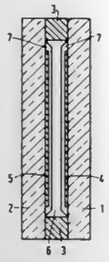
Claims priority, application Netherlands, Apr. 6, 1990, 9000808

Int. Cl.[5] C09K *19/52, 19/12, 19/20, 19/22*

U.S. Cl. 252—299.01 **24 Claims**

1. A liquid crystalline material in the form of an anisotropic gel consisting of a polymerized liquid crystalline material a)

and a non-polymerizable low-molecular weight liquid crystalline material b), characterized in that the polymerized material



a) forms a permanently oriented network in the non-polymerizable low-molecular weight liquid crystalline material b).

5,188,761

FERROELECTRIC LIQUID CRYSTAL COMPOSITION AND LIGHT SWITCHING ELEMENT COMPRISING THE SAME

Kanetsugu Terashima, Ichihara; Makoto Kikuchi, Kisarazu, and Katsuyuki Murashiro, Ichihara, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Apr. 5, 1990, Ser. No. 505,154

Claims priority, application Japan, Apr. 7, 1989, 1-86715

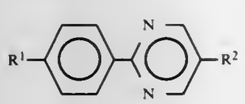
The portion of the term of this patent subsequent to Jun. 4, 2008, has been disclaimed.

Int. Cl.[5] C09K *19/34, 19/12, 19/20*

U.S. Cl. 252—299.61 **15 Claims**

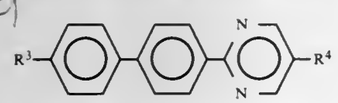
1. A ferroelectric liquid crystal composition comprising three components A, B and C in respective amounts of 75 to 95% by weight, 3 to 9% by weight and 3 to 12% by weight based on the total amount of the components A, B and C and having a phase sequence series of an isotropic liquid, a cholesteric phase, a smectic A phase and a chiral smectic C phase proceeding in that order from the high temperature side and a spontaneous polarization value of 30 nC/cm^2 or less,

said component A being at least one compound selected from the group consisting of compounds represented by the general formula (I):



(I)

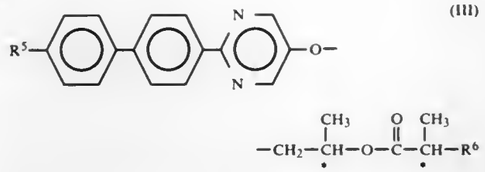
wherein R^1 and R^2 which may be the same or different are each a straight-chain or branched alkyl, alkoxy or alkanoyloxy group having 1 to 18 carbon atoms, and compounds represented by the general formula (II):



(II)

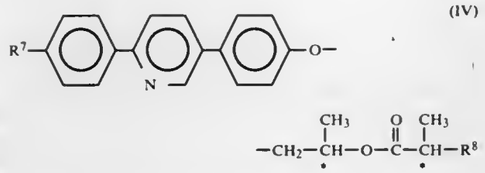
wherein R^3 and R^4 which may be the same or different are each a straight-chain or branched alkyl or alkoxy group having 1 to 18 carbon atoms,

said component B being at least one compound selected from the group consisting of compounds represented by the general formula (III):



(III)

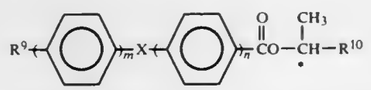
wherein R^5 is a straight-chain or branched alkyl or alkoxy group having 1 to 18 carbon atoms, R^6 is a straight-chain or branched alkyl group having 2 to 18 carbon atoms or a straight-chain or branched alkoxy group having 1 to 18 carbon atoms and * represents an asymmetric carbon atom, and compounds represented by the general formula (IV):



(IV)

wherein R^7 is a straight-chain or branched alkyl or alkoxy group having 1 to 18 carbon atoms, R^8 is a straight-chain or branched alkyl group having 2 to 18 carbon atoms or a straight-chain or branched alkoxy group having 1 to 18 carbon atoms and * represents an asymmetric carbon atom,

said component C being at least one compound selected from the group consisting of compounds represented by the general formula (V):



(V)

wherein R^9 is a straight-chain or branched alkyl or alkoxy group having 1 to 18 carbon atoms, R^{10} is a straight-chain or branched alkyl group having 2 to 18 carbon atoms, X is $-OCH_2-$ or $-CH_2O-$, m and n are each 1 or 2, provided that m+n=3 and * represents an asymmetric carbon atom.

5,188,762

MESOMORPHIC COMPOUND, LIQUID CRYSTAL COMPOSITION, LIQUID CRYSTAL DEVICE, DISPLAY APPARATUS AND DISPLAY METHOD

Takashi Iwaki, Machida; Takao Takiguchi, Tokyo; Takeshi Togano, Yokohama; Yoko Yamada, and Shinichi Nakamura, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

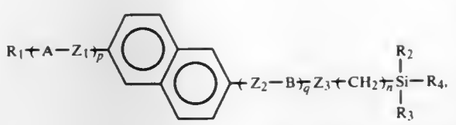
Filed May 20, 1991, Ser. No. 702,320

Claims priority, application Japan, May 23, 1990, 2-134674

Int. Cl.[5] C09K *19/32;* **G02F** *1/13;* **C07F** *7/08*

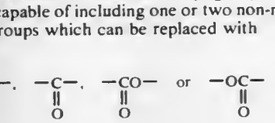
U.S. Cl. 252—299.62 **36 Claims**

1. A mesomorphic compound represented by the following formula (I):

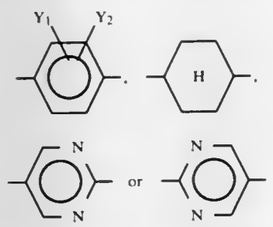


(I)

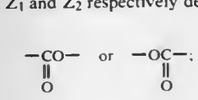
wherein R_1 denotes a linear or branched alkyl group having 2-16 carbon atoms capable of including one or two non-neighboring methylene groups which can be replaced with



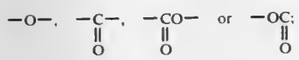
and capable of including fluorine substituted for hydrogen; A denotes $-A_1-$ or $-A_1-A_2-$ and B denotes $-B_1-$ or $-B_1-B_2-$ wherein A_1, A_2, B_1 and B_2 respectively denote



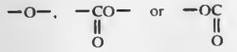
wherein Y_1 and Y_2 respectively denote H, F, Cl, Br, $-CH_3$, $-CN$ or $-CF_3$; Z_1 and Z_2 respectively denote



Z_3 denotes



R_2, R_3 and R_4 respectively denote a linear or branched alkyl group having 1-16 carbon atoms including a methylene group which can be replaced with



with proviso that it is not adjacent to the silicon atom; p and q are respectively 0 or 1 with proviso that p+q is 0 or 1; and n is an integer of 1-12.

5,188,763

METHOD FOR PREPARING ZINC ORTHOSILICATE PHOSPHOR

Charles F. Chenot, Towanda, and Henry B. Minnier, Dushore, both of Pa., assignors to GTE Products Corporation, Danvers, Mass.

Division of Ser. No. 762,153, Sep. 17, 1991, abandoned, which is a continuation of Ser. No. 662,335, Feb. 25, 1991, abandoned, which is a continuation of Ser. No. 587,587, Sep. 24, 1990, abandoned, which is a continuation of Ser. No. 902,265, Aug. 29, 1986, abandoned. This application Apr. 9, 1992, Ser. No. 865,732

Int. Cl.[5] C09K *11/59, 11/68*

U.S. Cl. 252—301.5 **5 Claims**

1. A method for preparing a manganese-activated zinc orthosilicate fluorescent lamp phosphor having the empirical formula:

$$Zn_{(2.00-x-y)}Mn_xSiO_{(4.00-y)}(WO_3)_z$$

wherein:

$0.04 \leqq x \leqq 0.15$;

$0 \leqq y \leqq 0.05$; and

$0 \leqq z \leqq 0.002$,

wherein all of said manganese activator is present as manganese (II) and occupies zinc (II) sites whereby said phosphor has improved white bodied coloration and improved brightness due to the absence of unreacted manganese containing second phases which result in discoloration and reduced brightness, comprising the steps of:

blending a zinc source, a manganese (II) source, a silicon source, and a tungsten source in amounts in accordance with said formula with NH_4Cl and NH_4F in an amount of up to about 2 weight percent NH_4Cl and up to about 0.2 weight percent NH_4F to form a relatively uniform admixture, said zinc source consisting essentially of zinc oxide or zinc carbonate, said manganese source consisting essentially of manganese (II) oxide or manganese (II) carbonate, said silicon source consisting essentially of silicic acid, and said tungsten source consisting essentially of tungsten trioxide;

firing said admixture in a closed container under an inert non-oxidizing atmosphere to promote retention of manganese in the plus two valance state whereby oxidation of manganese to a higher valence state is avoided, the NH_4Cl and NH_4F being in an amount sufficient to purge the closed container of residual air and/or O_2 and the NH_4F being in an amount sufficient to effect a larger size phosphor particle than said method, absent NH_4F, said firing comprising increasing the temperature from about 700 degrees Centigrade to about 1,250 degrees Centigrade over time period of about 30 minutes, heating the admixture at a temperature of about 1,250 degrees Centigrade for about 2 to about 3 hours, and decreasing the temperature to about 700 degrees Centigrade over a time period of about one hour to form a precursor lamp phosphor containing substantially all of said manganese in the plus two valance state and including unreacted manganese;

milling and washing said precursor lamp phosphor in an aqueous citric acid solution to remove substantially all of said unreacted manganese to form said fluorescent lamp phosphor, said citric acid solution comprises from about 0.2 to about 0.4 weight percent citric acid;

rinsing the citric acid washed lamp phosphor with ammonium hydroxide;

drying the rinsed phosphor; and sieving the dried phosphor through a 200-mesh to 400-mesh screen.

5,188,764

ORGANOSOL OF FLUORINE-CONTAINING POLYMER

Tetsuo Shimizu, Osaka, and Seitaro Yamaguchi, Minou, both of Japan, assignors to Daikin Industries Ltd., Osaka, Japan

Filed Dec. 12, 1989, Ser. No. 448,872

Claims priority, application Japan, Dec. 12, 1988, 63-314626

Int. Cl.[5] B01J *13/00;* **B32B** *27/00;* **C08F** *14/26*

U.S. Cl. 252—308 **4 Claims**

1. An organosol composition comprising composite fluorine-containing colloidal particles having an average particle size of 0.05 to 1.0 micrometer, each of which particles comprise a core made of a copolymer comprising 99-100% by weight of tetrafluoroethylene and 0 to 1% by weight of a fluorine-containing olefin which is copolymerizable with tetrafluoroethylene and a shell made of at least one thermoplastic polymer resin selected from the group consisting of ethylene/tetrafluoroethylene base copolymers, ethylene/chlorotrifluotoisobutene base copolymers and vinylidene fluoride/hexafluoroisobutene base copolymers.

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5,188,765

FLOW AGENT-DISPERSANT COMPOSITION

Gerry H. Ehrhardt, Adel, Iowa, assignor to Frederic S. Cluthe, Short Hills, N.J.

Continuation of Ser. No. 475,852, Feb. 6, 1990, abandoned. This application Sep. 5, 1991, Ser. No. 755,607

Int. Cl.[5] B01J *8/00;* C09D *189/00, 191/08*

U.S. Cl. 252—363.5 9 Claims

1. A discrete lecithin modified montan wax dispersant-flow agent product for inclusion in mixtures of finely divided solid materials in liquifiable carrier vehicles to enhance the hardness and oil retention properties thereof, comprising the solidified residue of the reaction product of reagents consisting essentially of agitated molten montan wax with 3 to 10% of introduced lecithin dispersed therewithin.

6. A method of forming an improved, lecithin modified montan wax dispersant-flow agent product for inclusion in mixtures of finely divided solid materials in liquifiable carrier vehicles to enhance the hardness and oil retention properties thereof, consisting essentially of the steps of

maintaining montan wax in a liquid condition at a temperature between 220° and 350° F. with continuous agitation thereof,

adding from 3 to 10% of lecithin to said continuously agitated montan wax; and

continuously agitating and maintaining the temperature of said liquified intermixture within said temperature range of 220° and 350° F. during lecithin addition and thereafter for a period of time sufficient to permit interreaction of the added lecithin with said montan wax,

whereby said lecithin modified montan wax dispersant-flow agent product is a reaction product from reagents consisting essentially of lecithin and said montan wax.

5,188,766

ELECTRICALLY CONDUCTIVE POLYMER COMPOSITIONS, PROCESSES AND POLYMERS USEFUL FOR PREPARING THE POLYMER COMPOSITIONS

Jürgen Eiffler, Stade, Fed. Rep. of Germany, assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 245,879, Sep. 16, 1988, abandoned. This application Mar. 8, 1990, Ser. No. 490,794

Claims priority, application United Kingdom, Mar. 8, 1989, 89053391

Int. Cl.[5] H01B *00/01*

U.S. Cl. 252—500 12 Claims

1. A process for preparing an electrically conductive polymer composition comprising contacting one or more oxidatively polymerizable aromatic compounds selected from the group consisting of pyrroles, thiophenes and anilines with a polymer b) having ammonium, phosphonium or sulfonium groups in the polymer chain(s) and containing a polydentate, anionic complex which has a redox potential sufficient for enabling oxidative polymerization of said aromatic compound(s) at the conditions present during contact.

5,188,767

ELECTROCONDUCTIVE RESIN PASTE CONTAINING MIXED EPOXY RESIN AND ELECTROCONDUCTIVE METAL POWDER

Mitsuo Yamazaki, Hitachi; Nobuo Ichimura, Takahagi; Yasuo Miyamoto, Hitachi; Koei Fujita, Hitachi, and Masao Kawasumi, Hitachi, all of Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 17, 1991, Ser. No. 686,674

Claims priority, application Japan, Apr. 27, 1990, 2-112131

Int. Cl.[5] H01B *1/22*

U.S. Cl. 252—512 9 Claims

1. An electroconductive resin paste comprising

(A) a mixture of a phenolic novolac epoxy resin and an epi-bis epoxy resin,

(B) a phenolic novolac resin and/or phenol aralkyl resin,

(C) tetraphenylborate,

(D) a diluent containing a silane compound having one glycidyl group as at least one component therein, the silane compound in a range of 20–100% by weight based on the total quantity of diluent, and

(E) an electroconductive metal powder, wherein the quantity of said diluent (D) blended is in the range of 5 to 800 parts by weight and the quantity of said electroconductive metal powder (E) blended is in the range of 100 to 1,000 parts by weight based upon the total 100 parts by weight of the mixture of (A) and the phenolic novolac resin and/or phenol aralkyl resin (B).

5,188,768

SOLID FORM ELECTROLYTE COMPOSITES

Tadashi Sotomura, Kashiwara, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 29, 1991, Ser. No. 706,988

Claims priority, application Japan, May 30, 1990, 2-140934; May 30, 1990, 2-140935; May 30, 1990, 2-140936; May 30, 1990, 2-140937

Int. Cl.[5] H01B *1/00, 1/06;* H01M *4/88*

U.S. Cl. 252—518 4 Claims

1. A solid form electrolyte comprising: from 1 to 50 percent by weight of an ion-exchanging layered compound, from 1 to 50 percent by weight of an ionic material expressed by MX where M is a mono-, di- or tri-valent metallic ion, proton, or ammonium ion which moves in the solid form electrolyte under an applied electric field and X is an anion of strong acid, and at least one compound selected from the group consisting of:

(a) from 0.5 to 20 percent by weight of a cationic surface active agent containing polyalkylene-oxide chains selected from the group consisting of 20 to 500 ethylene-oxide, propylene-oxide units and mixtures thereof in all per one mole of said cationic surface active agent,

(b) from 0.5 to 20 percent by weight of a cationic surface active agent containing polyalkylene-oxide chains consisting of 20 to 500 ethylene-oxide and a butylene-oxide units in all per one mole of said cationic surface active agent,

(c) from 1 to 20 percent by weight of a polyether compound obtained by adding an alkylene oxide selected from the group consisting of ethylene-oxide, propylene-oxide and mixtures thereof to polyamine compound in an amount of 2 to 150 of ethylene-oxide, propylene-oxide and mixtures thereof per one active hydrogen of the polyamine compound, and

(d) from 1 to 20 percent by weight of a polyether compound obtained by adding ethylene-oxide and butylene-oxide to polyamine compound in an amount of 2 to 150 of ethylene-oxide and butylene-oxide units in all per one active hydrogen of the polyamine compound.

5,188,769

PROCESS FOR REDUCING THE LEVELS OF FATTY ACID CONTAMINANTS IN POLYHYDROXY FATTY ACID AMIDE SURFACTANTS

Daniel S. Connor; Jeffrey J. Scheibel; Bruce P. Murch; Mark H. Mao; Eugene P. Gosselink, and Roland G. Severson, Jr., all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 26, 1992, Ser. No. 857,853

Int. Cl.[5] C07C *231/02;* C07H *7/02;* C11D *1/52, 3/04*

U.S. Cl. 252—548 12 Claims

1. In a process for preparing a primary reaction product comprising a polyhydroxy fatty acid amide surfactant, said reaction product containing undesirable amounts of free fatty acids or nascent source of fatty acids, said process comprising a primary reaction between a sugar-derived or glyceraldehyde-derived polyhydroxy amine and a fatty acid ester, said primary reaction being carried out at a temperature below about 100° C. so as to minimize formation of cyclized by-products in said reaction product, the improvement which comprises running the primary reaction under substantially water-free conditions, whereby the formation of free fatty acids and soaps is minimized, and adding to said primary reaction product an amine reaction which is a member selected from the group consisting of ammonia, short-chain alkyl amines and short-chain hydroxyalkyl amines and subjecting said reaction product to a secondary reaction, whereby the total level of residual nascent and free fatty acid present in said primary reaction product is reduced to below about 1%, by weight.

9. In a process for preparing a detergent composition containing a source of calcium ions, magnesium ions, or mixtures thereof, said detergent composition comprising a polyhydroxy fatty acid amide surfactant which is prepared by reacting a fatty acid ester and a sugar-derived or glyceraldehyde-derived polyhydroxy amine to provide a polyhydroxy fatty acid amide surfactant reaction product which is undersirably contaminated with interfering amounts of residual fatty acids or nascent fatty acids, the improvement which comprises adding to said detergent composition the polyhydroxy fatty acid amide surfactant prepared according to claim 1 which is substantially free of said residual fatty acids or nascent fatty acids, whereby undesirable interactions between said calcium or magnesium ions and said residual fatty acid are minimized.

5,188,770

VISCOSITY INDEX IMPROVER HAVING DETERGENT PROPERTIES

Horst Pennewiss, Darmstadt, Fed. Rep. of Germany, assignor to R hm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Aug. 31, 1990, Ser. No. 576,670

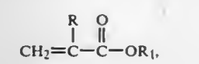
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1989, 3930142

Int. Cl.[5] C10M *157/00, 145/14*

U.S. Cl. 252—56 S 17 Claims

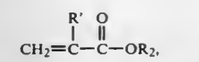
1. A method for making a concentrated emulsion comprising a polyalkyl acrylate or polyalkyl methacrylate copolymer and an olefin copolymer suitable for improving the viscosity index, in a liquid oil-compatible vehicle for use an oil additive having improved dispersant and detergent effect in diesel and gasoline engines, which method comprises polymerizing, in said oil-compatible liquid vehicle, from 80 to 99.5 parts by weight of

(I) at least one member selected from the group consisting of alkyl acrylates and alkyl methacrylates of the formula

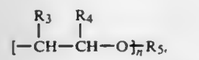


wherein R is hydrogen or methyl and R_1 is alkyl having from 6 to 24 carbon atoms, from 0.5 to 20 parts by weight of

(II) at least one monomer selected from the group consisting of functionalized alkyl acrylates or methacrylates of the formula

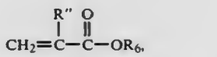


wherein R' is hydrogen or methyl and R_2 is alkyl having from 2 to 6 carbon atoms which is substituted with at least one OH group, or is a polyalkoxylated group of the formula

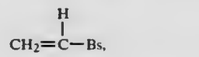


wherein R_3 and R_4 are hydrogen or methyl, R_5 is hydrogen or alkyl having from 1 to 40 carbon atoms, and n is an integer from 1 to 60, from 0 to 20 parts by weight of

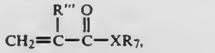
(III) at least one member selected from the group of alkyl acrylates and alkyl methacrylates of the formula



wherein R'' is hydrogen or methyl and R_6 is alkyl having from 1 to 5 carbon atoms, and from 0 to 20 parts by weight of at least one member selected from the group of compounds (11B) having the formula



wherein Bs is a five- or six-membered heterocycle, and compounds (IIA) having the formula



wherein R''' is hydrogen or methyl, X is oxygen or —NH— or —NR'$_6$— where R'$_6$ is alkyl having from 1 to 5 carbon atoms, and R_7 is linear or branched alkyl having from 2 to 20 carbon atoms which is substituted with at least one NR_8 R_9 group, R_8 and R_9 taken alone being, independently of each other, alkyl having from 1 to 20 carbon atoms, and R_8 and R_9 taken together forming, together with the nitrogen atom, a five- or six-membered ring, or such a ring containing a further nitrogen or oxygen atom, or such rings substituted with C_1–C_6 alkyl, in the presence of from 1 to 30 percent, by weight of the total of the monomers and polymers present, of a member selected from the group consisting of olefin copolymers (OCP), hydrogenated isoprene, hydrogenated butadiene-styrene copolymers (HSD), hydrogenated polyisoprene, and hydrogenated polybutadiene.

5,188,771

METHOD AND APPARATUS FOR TREATING A GAS OR LIQUID

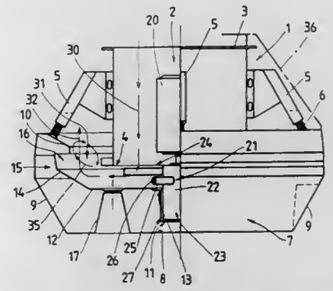
James J. De Witt, Johannesburg, South Africa, assignor to Aquafan (Proprietary) Limited, Johannesburg, South Africa

Filed Nov. 29, 1990, Ser. No. 620,546

Claims priority, application South Africa, Nov. 30, 1989, 89/9138

Int. Cl.[5] B01F *3/04, 5/20*

U.S. Cl. 261—25 5 Claims



1. A method of treating a gas or a liquid comprising introducing a liquid into a rotating head having a liquid outlet means around it, rotating the head in a housing to discharge the liquid generally radially outwardly from the head towards the

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housing wall and to cause the liquid to be partially dispersed, and by movement of the discharged liquid, drawing a gas into the housing axially along a tubular gas inlet so as to be in contact with the dispersed and discharged liquid substantially normal to the radial liquid flow, to thereby cause at least one of the liquid or gas to be treated, the gas being driven further radially by the discharged liquid to exit from an outlet,

the liquid being drawn into the rotating head from a sump, and then collected and returned to the sump after being discharged from the rotating head,

the liquid also being discharged from the head through outlets which are axially staggered relative to the rotational axis of the head,

the liquid being discharged from tubular outlets extending radially from the head.

5,188,772

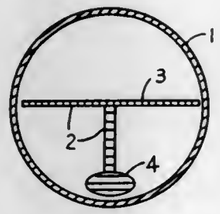
VAPOR-LIQUID CONTACTOR

Kaung M. Yu, 4211 Green Hills Cir., Sugarland, Tex. 77479

Filed Dec. 27, 1991, Ser. No. 813,769

Int. Cl.[5] B01F *3/04, 5/24*

U.S. Cl. 261—94 **9 Claims**



1. A vapor-liquid contactor for promoting mass transfer between a vapor and a liquid, comprising:

a spherical cage for providing mechanical and structural strength of the contactor, and openings for the vapor and liquid flow passage,

a packing assembly positioned inside said cage, said packing assembly being movable relative to said cage comprising:

(1) a disk means having a diameter smaller than the inside diameter of said cage,

(2) means defining a weight attached to the underside of said disk and formed an outward protrusion from the underside of said disk; the center of gravity of said weight being located approximately on the axis of said disk; in response to an upward force exerted by the vapor flow, said weight co-acting with said disk to move the center of gravity of said weight to the lowest position inside said cage and resulted in said disk being in the horizontal position, whereby the liquid falling on the top of said disk can be spread laterally across said disk and achieving a better liquid distribution and a good vapor-liquid contact.

5,188,773

TOWER PACKING WITH SMALL AND LARGE LOUVERS AND MIXING METHOD

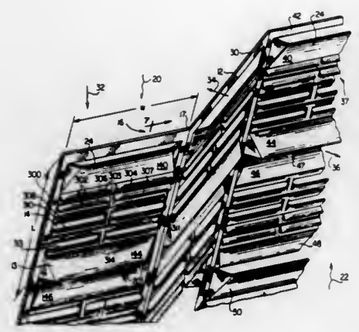
Gilbert K. Chen, Farmers Branch; Robert McKelvy, Dallas; Jorge A. Bonilla, Dallas; Don Glaspie, Dallas, and George De Bruyn, Irving, all of Tex., assignors to Glitsch, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 618,724, Nov. 27, 1990, Pat. No. 5,057,250, and Ser. No. 618,725, Nov. 27, 1990, Pat. No. 5,080,836. This application Aug. 19, 1991, Ser. No. 747,184

Int. Cl.[5] B01F *5/00, 3/04*

U.S. Cl. 261—112.2 **32 Claims**

1. A tower packing for contacting a first mobile phase movable in a first stream with a second mobile phase moveable in a second stream comprising a plurality of vertically oriented corrugated sheets in face-to-face contact with opposed corrugations inclined oppositely to one another, each of said sheets having fold lines therein establishing ridges and valleys separated by flat areas, said ridges, valleys, and flat areas defining said corrugated configuration of said sheets, said flat areas being provided with a plurality of laterally extending louvers



thereon, substantially all of said louvers terminating adjacent, but short of, said fold lines, some of said louvers being of a first kind extending substantially from a point adjacent one fold line to a point adjacent the next fold line, and the balance of said louvers being of a second kind extending for a distance less than the lateral distance between fold lines.

5,188,774

AROMATIC POLYESTER FILM AND PROCESS FOR PRODUCING THE SAME

Shozo Nitta; Hideshi Kurihara, both of Sagamihara; Kazuyuki Sanenobu; Tetsuo Ichihashi, both of Matsuyama, and Norio Takagi, Zama, all of Japan, assignors to Teijin Limited, Osaka, Japan

PCT No. PCT/JP90/00016, § 371 Date Sep. 10, 1990, § 102(e) Date Sep. 10, 1990, PCT Pub. No. WO90/48171, PCT Pub. Date Jul. 26, 1990

PCT Filed Jan. 10, 1990, Ser. No. 576,492

Claims priority, application Japan, Jan. 10, 1989, 1-2030

Int. Cl.[5] B29C *41/26*

U.S. Cl. 264—22 **21 Claims**

1. A process for producing a film of an aromatic polyester, which comprises extruding a molten film of a thermoplastic aromatic polyester having a bifunctional carboxylic acid component onto a surface of a rotating cooling drum, said molten film having a surface, and allowing said film to adhere onto said rotating cooling drum to cool the molten film, wherein

said aromatic polyester is an aromatic polyester which contains in the polymer chain 0.1–45 mmol %, based on the bifunctional carboxylic acid component, of a quaternary phosphonium sulfonate having ester-forming functional group(s) and which has an AC volume resistivity of 6.5×10^8 Ω-cm or less as a molten film, and

electric charges are applied onto the surface of the molten film of the aromatic polyester in a non-contact state vicinal to the rotating cooling drum right before the molten film reaches the surface of the drum.

5,188,775

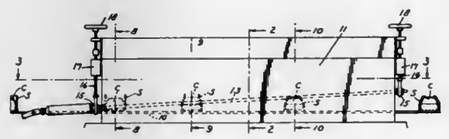
METHOD AND APPARATUS FOR SHRINKING A FOAM SLEEVE ON A TAPER WALL CONTAINER

Roger W. Hornback, New Haven, Ky., and John E. Burtch, Curtice, Ohio, assignors to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Continuation of Ser. No. 583,540, Sep. 17, 1990, abandoned. This application Sep. 10, 1991, Ser. No. 759,185

Int. Cl.[5] B29C *61/02*

U.S. Cl. 264—25 **7 Claims**



1. A method of shrinking foamed sleeves onto containers, each container having a body which includes a body portion and a tapered portion that progressively decreases in diameter which comprises

applying a sleeve of shrinkable material to successive containers such that a portion of each said sleeve surrounds the body portion and another portion of said sleeve is spaced from said tapered portion of said container,

progressively moving said containers with sleeves thereon by a conveyor through a heated oven having two rows of infrared heaters associated therewith along the sides of the oven to direct infrared heat onto the sides of the containers as they are moved through the oven,

positioning a pipe having longitudinally spaced orifices along the length thereof in at least a portion of said oven between at least one row of said infrared heaters and the path of said containers, such that the orifices face the containers as the containers are moved through the oven; the end of said pipe adjacent the inlet of the containers to the oven is adjacent the body portion of the container having the largest diameter as the containers are moved adjacent thereto; the pipe is inclined in the direction of travel such that the orifices at the other end of the pipe are adjacent the portion of the sleeve spaced from the tapered portion of the container as the containers are moved adjacent thereto; and the orifices progressively face the containers as they are moved alongside the pipe,

providing a source of air under pressure separate from the atmosphere of said oven,

heating said air from said source to provide heated air under pressure,

applying said heated air under pressure to the pipe such that the heated air emanates from said orifices; and such that the infrared heaters direct radiation against said containers; and said pipe simultaneously directs heated air onto each said container having a sleeve thereon as it is moved through the oven such that heated air under pressure from said orifices is first directed at the sleeve adjacent the body portion of the container and heated air from said orifices is thereupon progressively directed toward the sleeve adjacent the tapered portion of the container thereby causing the shrinkage to occur uniformly and smoothly from the body portion of the container and progressively along the tapered portion so that the sleeve smoothly conforms with the body portion and tapered portion.

5,188,776

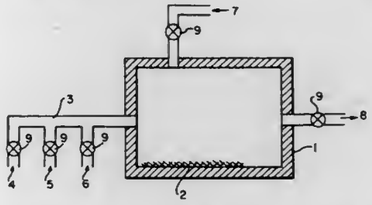
CERAMIC MICROTUBULAR MATERIALS AND METHOD OF MAKING SAME

Horst Witzke, Flemington, and Bernard H. Kear, Whitehouse Station, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 232,078, Aug. 15, 1988, abandoned. This application Oct. 7, 1991, Ser. No. 771,823

Int. Cl.[5] D01D *5/00*

U.S. Cl. 264—29.2 **14 Claims**



1. A method for producing a three-dimensional random weave of thin ceramic tubes, which method comprises: contacting a metallic catalyst, consisting of a solid solution of nickel and copper, for growing multi-directional carbon fibers with one or more gaseous hydrocarbons in a mold at a temperature sufficient to form filamentary carbon and insufficient to cause the pyrolytic deposition of carbon, depositing a conformal coating consisting of a ceramic or ceramic forming material on the carbon fibers, heating the coated fibers in an oxygen containing atmosphere for a time sufficient to volatilize, by oxidation, all or substantially all of the carbon to form ceramic tubes.

5,188,777

OPAQUE FILM AND METHOD FOR ITS PREPARATION

Burdette L. Joesten, Bridgewater, and Tien-Kuei Su, Belle Meade, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 788,061, Nov. 5, 1991, Pat. No. 5,134,173. This application Jul. 15, 1992, Ser. No. 913,325

Int. Cl.[5] B29D *9/00;* **C08J** *9/00*

U.S. Cl. 264—41 **4 Claims**

1. A process for preparing a biaxially oriented opaque film comprising;

a) providing a resin combination comprising a thermoplastic polymer matrix having dispersed therein as distinct phases a multiplicity of small spherical solid particles of cross-linked polystyrene;

b) forming an unoriented film of said resin combination; and

c) biaxially orienting said film to an extent sufficient to opacify the same and the formation of voids therein.

5,188,778

PROCESS FOR THE SURAFCE ENHANCEMENT OF ARTICLES OF FIBRE REINFORCED PLASTICS MATERIAL

Peter L. Wallace, Buckinghamshire, and David G. Jeffs, Cornwall, both of England, assignors to The Wiggins Teape Group Limited, Basingstoke, England

Filed Jul. 20, 1990, Ser. No. 554,868

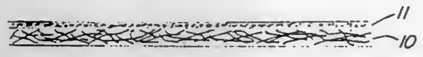
Claims priority, application United Kingdom, Jul. 24, 1989, 8916875; Jul. 28, 1989, 8917335

Int. Cl.[5] B29C *43/00*

U.S. Cl. 264—45.1 **10 Claims**

1. A process for preparing a permeable sheet of glass fibre reinforced thermoplastic material suitable for subsequent heating and molding into a shaped product having an improved

surface finish, said process comprising binding to a permeable sheet of glass fibre reinforced thermoplastic material a permeable surface layer of particulate material with or inert to the thermoplastic content of said sheet.

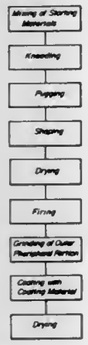


5,188,779

PRODUCTION OF CERAMIC HONEYCOMB STRUCTURAL BODIES

Osamu Horikawa, Toyoake, and Toshihiko Hijikata, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 19, 1991, Ser. No. 672,107
Claims priority, application Japan, Mar. 27, 1990, 2-75602
Int. Cl.[5] C04B *41/61*
U.S. Cl. 264—62 **5 Claims**



1. A process for producing a ceramic honeycomb structural body, comprising the steps of:

obtaining a ceramic honeycomb fired body by shaping a ceramic material by extrusion, and drying and firing the shaped body;

removing deformed through-hole cells from a peripheral portion of the ceramic honeycomb fired body by working to provide a worked ceramic honeycomb fired body; and

forming an outer wall portion around the outer peripheral portion removed by working.

5,188,780

METHOD FOR PREPARATION OF DENSE CERAMIC PRODUCTS

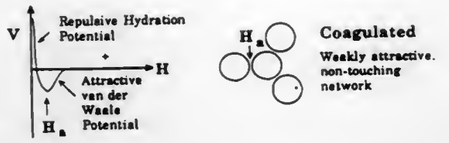
Frederick F. Lange, Santa Barbara, Calif., and Bhaskar V. Velamakanni, Woodbury, Minn., assignors to Regents of the University of California, Oakland, Calif.

Filed Apr. 18, 1991, Ser. No. 687,251
Int. Cl.[5] C04B *35/64*
U.S. Cl. 264—63 **17 Claims**

1. A method of preparing a dense ceramic product, comprising:

(1) forming a coagulated network of ceramic powder particles in water by adjustment of the pH of a dispersed slurry of said ceramic powder particles in water to a pH that produces a net surface charge and addition of a sufficient amount of a salt to the dispersed slurry to form said coagulated network;

(2) treating said coagulated network of ceramic powder particles in water to increase the volume fraction of said powder particles, thereby forming a water saturated powder compact; and



(3) firing the compact to provide said dense ceramic product.

5,188,781

SILICON NITRIDE CERAMIC AND A PROCESS FOR ITS PREPARATION

Marcellus Peuckert, Hofheim am Taunus, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 404,689, Sep. 8, 1989, abandoned. This application Oct. 7, 1991, Ser. No. 772,595
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1988, 3830851
Int. Cl.[5] C04B *325/58*; F04D *29/26*
U.S. Cl. 264—65 **1 Claim**

1. An improved process for the preparation of a silicon nitride ceramic, Si_3N_4, of high strength of at least 554 MPa at room temperature and of at least 422 MPa at 1200° C., which comprises:

mixing with every 100 grams of α-Si_3N_4 powder, 0.02 to 0.2 mol of at least one rare earth element Sm. Tb, Dy or Ho, or 0.12 to 0.2 mol of Y, as an oxide or oxide precursor;

shaping the mixture; and

sintering the shaped body under pressures of at least 1 to 100 bar in a nitrogen atmosphere at temperature of 1750° to 2000° C., wherein the improvement comprises:

heating the sintered body at temperatures of 1200° to 1400° C. for at least 10 hours in an inert gas atmosphere to form a crystalline apatite of the formula $A_{4+x}(SiO_4)_3N_x$ wherein A is said rare earth element or Y added as an oxide or oxide precursor and x is a number which is greater than 0 and not more than 1; and

cooling said sintered body.

5,188,782

PRODUCTION OF PREFORMS FROM CERAMIC OR METALLIC FIBERS

Knut Bittler, Speyer; Johan H. H. Ter Maat, Mannheim, and Hans-Josef Sterzel, Dannstadt-Schauernheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 3, 1990, Ser. No. 596,543
Claims priority, application Fed. Rep. of Germany, Oct. 24, 1989, 3935276; Feb. 3, 1990, 4003219
Int. Cl.[5] C04B *38/04*
U.S. Cl. 264—82 **6 Claims**

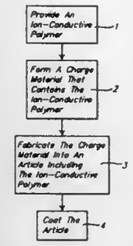
1. A process for producing a preform from ceramic or metallic fibers by shaping a mixture containing the fibers and a thermoplastic binder by injection molding or extrusion and removing the binder, wherein the binder used is polyoxymethylene and it is removed after the shaping by treatment in a gaseous acid-containing atmosphere or in a gaseous BF_3-containing atmosphere.

5,188,783

METHOD OF MAKING ARTICLES CONTAINING AN ION-CONDUCTIVE POLYMER

Brian M. Pierce, Moreno Valley, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Feb. 20, 1990, Ser. No. 481,546
Int. Cl.[5] B29C *43/02, 45/00*
U.S. Cl. 264—104 **17 Claims**



1. A method of preparing an ion-conductive structural member or panel, said method comprising the steps of:

(a) doping a base polymer with ions to form an ion-conductive polymer;

(b) mixing said ion-conductive polymer and a non-ion-conductive polymer to form a composite charge material;

(c) fabricating said charge material into an ion-conductive member or panel; and

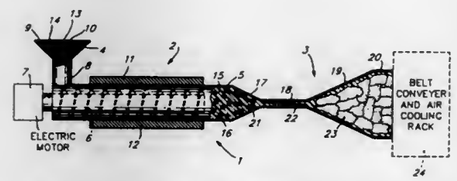
(d) electrostatically coating said member or panel.

5,188,784

PROCESS FOR LAMINAR POLLYMER EXTRUSION

Musa R. Kamal, Westmount, Canada; Gunter Lohfink, Brussels, Belgium; Laurent Arghyris, and Sassan Hozhabr-Ghelichi, both of Montreal, Canada, assignors to The Royal Institution for the Advancement of Learning (McGill University), Montreal, Canada

Filed Oct. 16, 1990, Ser. No. 597,695
Int. Cl.[5] B29C *47/06, 47/14*
U.S. Cl. 264—108 **4 Claims**



1. A process for producing a laminar polymer extrusion, comprising the steps of:

preparing a molten blend including bodies of a first polymer phase dispersed in a matrix polymer phase incompatible with the said first phase;

extruding the molten blend to produce the said extrusion, said molten blend being extruded through a die unit structure to produce a flow of said molten blend that lengthens, during extrusion, the dispersed bodies of the first polymer phase both in a first direction and in a second direction transversal to said first direction to produce in the extrusion a laminar structure including overlapping layers of said first polymer phase dispersed in the said matrix phase; and

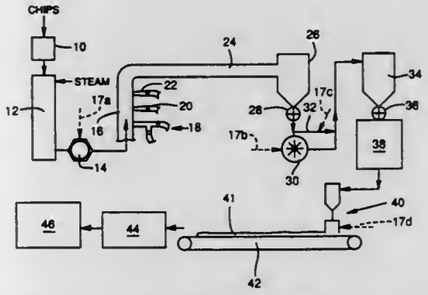
solidifying the extruded blend sufficiently rapidly to preserve the laminar structure.

5,188,785

APPARATUS AND METHOD OF MANUFACTURING SYNTHETIC BOARDS INCLUDING FIRE-RETARDANT BOARDS

Ted J. Bauer, Medford; David M. Harmon, Phoenix, both of Oreg.; Gordon Treliving, deceased, late of Kilcash by Roberta Treliving, legal representative , and Rory G. Kirwan, Dungarvan, both of Ireland, assignors to Medite Corporation, Medford, Oreg.

Continuation-in-part of Ser. No. 326,226, Mar. 20, 1989, Pat. No. 5,093,058. This application Mar. 12, 1991, Ser. No. 668,068
Claims priority, application Ireland, Mar. 14, 1990, 910/90
The portion of the term of this patent subsequent to Mar. 3, 2009, has been disclaimed.
Int. Cl.[5] B27N *1/02*
U.S. Cl. 264—115 **23 Claims**



1. An apparatus for producing synthetic fire-retardant boards from a cellulosic material comprising:

refining means for extracting fibers from a cellulosic material;

conduit means connected to the refiner means for conveying the fibers along the fiber flow path;

binder application means for mixing a binder and a diluent to form a binder/diluent mixture and immediately mixing the binder/diluent mixture with the fibers in the fiber flow path;

dryer means for partially dewatering the fiber/binder mixture;

forming means for creating a mat of the dewatered fiber/-binder mixture;

liquid fire-retardant application means for introducing fire-retardant liquid onto the cellulosic material located upstream of the forming means; and

heated pressing means for compressing the fibers and curing the binder in the mat for forming a consolidated fire-retardant board product.

5. A method of producing fire-retardant synthetic boards from a cellulosic material, comprising the steps of:

extracting hot and wet fibers from a cellulosic material;

transporting the hot and wet fibers in a first stream;

transporting separate second and third streams comprising a binder and a diluent, respectively, generally toward the first stream;

merging the second and third streams to form a fourth stream;

emulsifying the binder and the diluent in the fourth stream;

immediately after emulsifying, applying the binder/diluent emulsion in the fourth stream to the hot and wet fibers in the first stream to form a fiber/binder mixture;

partially dewatering the hot and wet fibers;

introducing fire-retardant liquid onto the cellulosic material;

forming the partially dewatered fibers into a mat; and

compressing the mat in a heated press to cure the binder to form a consolidated board product.

VOL 1147 ISS 4 FE 23 1993 UMI

5,188,786

CONTINUOUS GRANULATION PROCESS

Elmar Wilms, Dormagen, and Frank Wiemer, Erkrath, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

PCT No. PCT/EP89/01205, § 371 Date Jun. 27, 1991, § 102(e) Date Jun. 27, 1991, PCT Pub. No. WO90/07375, PCT Pub. Date Jul. 12, 1990

PCT Filed Oct. 12, 1989, Ser. No. 720,468

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1988, 3844025

Int. Cl.[5] B29B *9/08*

U.S. Cl. 264—117 **18 Claims**

1. A process for continuous granulation of a mixture containing at least one solid and at least one liquid, wherein the mixture forms a gel, which comprises: forming a liquid mixture of a solid with a liquid having no tendency to gel, the mixture forming a gel, in a static mixer, wherein the mean residence time of the mixture in the static mixer is less than the gel time of the mixture; gelling the liquid mixture in an agitated mixing zone, wherein the mean residence time in the agitated mixing zone is sufficiently long to form a gelled mixture; and mixing the gelled mixture with at least one solid to form granules in a granulation zone.

5,188,787

PROCESS FOR THE INJECTION MOULDING OF MULTI-LAYERED ARTICLES

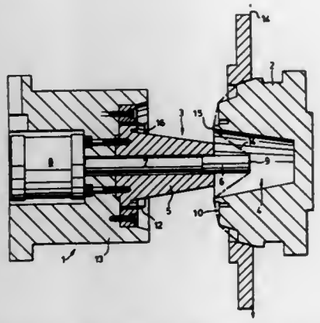
David C. King, Bath; Rupert M. Lillis, and George White, both of Glenburnie, all of Canada, assignors to Du Pont Canada Inc., Mississauga, Canada

Continuation of Ser. No. 603,277, Oct. 25, 1990, abandoned, which is a continuation-in-part of Ser. No. 299,533, Jan. 19, 1989, abandoned. This application Jul. 17, 1992, Ser. No. 913,961

Claims priority, application United Kingdom, Jan. 25, 1988, 8801599

Int. Cl.[5] B29C *33/14, 45/14, 45/16*

U.S. Cl. 264—153 **3 Claims**



1. A process for the injection moulding of a multi-layered container having barrier properties using injection moulding apparatus, said container having a depth:width ratio of at least 0.75:1, said apparatus having a mould block with a core that is adapted to be inserted into a cavity of the mould block in a spaced-apart relationship related to the thickness and shape of the container to be moulded, said core having a tip that is comprised of an outer core and a centrally located plunger that moves independently of the outer core, the surfaces of the outer core and of the plunger forming the surface of the core when the core is located within the mould block, comprising the steps of:

(a) clamping a self-supporting thermoplastic film over the cavity of the mould block said film being selected from (1) PVDC-coated polyethylene, (2) laminates of polyethylene/PVDC/polyethylene, (3) laminates of polyethylene/ethylene-vinyl alcohol/polyethylene, (4) laminates of polyethylene/polyvinyl alcohol/polyethylene, (5) laminates of polyethylene/PVDC/ethylene-vinyl acetate copolymer, (6) laminates of polyethylene/polyvinyl alcohol/ethylene-vinyl acetate copolymer, and (7) laminates of polyethylene/ethylene-vinyl alcohol/ethylene-vinyl acetate copolymer and further being capable of being stretched to conform to the shape of the core that is to be inserted into the mould block.

(b) substantially uniformly stretching the film by sequentially stretching the film in two stages within the mould block using the core, with the plunger preceding the outer core into the mould block, such that (i) the plunger stretches the thermoplastic film, and (ii) the outer core further stretches the film, the plunger retracting into the outer core as the outer core enters the cavity of the mould block, thereby forming the surface of the core in the mould block;

(c) closing the mould block and core, with excess film, being trimmed off substantially simultaneously therewith using a serrated blade, the serrated blade located on the core and entering a recess in the mold block upon closure;

(d) injecting molten thermoplastic polyolefin into the mould between the film and the surface of the mould cavity, said polyolefin being bonded to the film such that the container is formed with polyolefin on its outer surface thereof and the polyethylene of the film on its inner surface thereof;

(e) allowing the container so moulded to cool to below the heat distortion temperature of the moulded container; and

(f) opening the mould block and core and removing the moulded container; said film having different barrier properties than the thermoplastic polyolefin with respect to at least one of oxygen, hydrocarbon liquids, and water.

5,188,788

PROCESS FOR PRODUCING CELLULOSE TRIACETATE FILMS

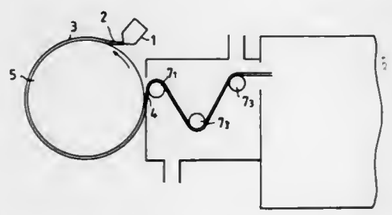
Yuji Suzuki, and Takeshi Yamazaki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 26, 1991, Ser. No. 736,342

Claims priority, application Japan, Jul. 30, 1990, 2-199086

Int. Cl.[5] B29C *41/26, 41/44*

U.S. Cl. 264—169 **9 Claims**



1. In a process for producing a cellulose triacetate film that comprises the steps of casting a solution of cellulose triacetate onto a support having its surface cooled at 20° C. or below, drying and cooling the solution cast onto the support to solidify the cast solution, separating the subsequently solidified film from the support, and transporting the film while it dries on transport rollers, the improvement wherein, the average weight proportion of the solvents in the film as separated from the support is at least 40 wt % and the surface of said transport rollers is made of a material having a surface energy of no more than 80 dynes/cm at 20° C., thereby suppressing deposits of foreign matter on said transport rollers.

5,188,789

PRODUCING A PHOTOGRAPHIC SUPPORT

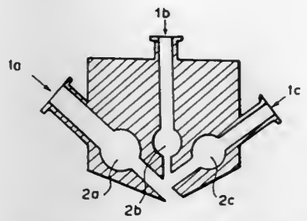
Yosuke Nishiura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 13, 1991, Ser. No. 759,290

Claims priority, application Japan, Sep. 14, 1990, 2-245227

Int. Cl.[5] B29C *47/06*

U.S. Cl. 264—171 **6 Claims**



1. A process for producing a photographic support in a stripe co-flow-extending die, comprising co-extruding plural dope liquids through a co-flow-extending die having plural manifolds, wherein the cross section of at least one slit connecting a manifold to a liquid joining portion of the die has a comb-like form, wherein the process further comprises sending a dope liquid containing a cellulose ester through a main manifold and sending a dope liquid containing a magnetic substance through a subordinate manifold.

5,188,790

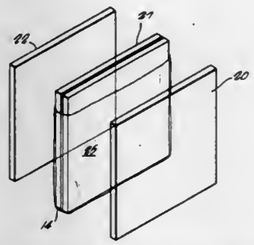
CASTING METHOD FOR FORMING A GEL MATRIX

Gary P. Magnant, Andover, Mass., assignor to Owl Scientific Plastics, Inc., Cambridge, Mass.

Filed Apr. 30, 1991, Ser. No. 693,627

Int. Cl.[5] B01D *57/02*; B29C *33/40*; B32B *31/06*

U.S. Cl. 264—219 **4 Claims**



1. A method for forming a gel matrix, comprising the steps of:

providing an apparatus consisting essentially of a first and second plate, each said plate having a flat surface, a top edge, a bottom edge and two side edges therebetween, and a spacer, wherein said spacer is positioned between said flat surfaces of said two plates and said flat surfaces are located in close proximity to each other with a gap therebetween from said top edges of said plates to said bottom edges of said plates;

placing said apparatus into a liquid impermeable bag having one top open end, a bottom end, and a connecting side wall therebetween, with said bottom edges of said plates adjacent said bottom end of said bag;

fixing said apparatus firmly within said bag;

pouring a gelling solution into said gap between said plates; and

allowing said solution to gel to form said gel matrix.

5,188,791

CONCRETE COMPOSITION FOR THE MANUFACTURE OF MOULDS, MOULD AND PROCESS FOR THE MANUFACTURE OF A MOULD

Jacques Thiery, Essey lès Nancy, and Jacques Schoennahl, Villeurbanne, both of France, assignors to Savoie Refractaires, France

Filed Apr. 1, 1991, Ser. No. 677,932

Claims priority, application France, Apr. 2, 1990, 90 04193

Int. Cl.[5] B29C *33/40*; B22C *15/20*; B28B *7/36*; C04B *14/48*

U.S. Cl. 264—226 **11 Claims**

1. Process for the manufacture of a mould consisting of two half-moulds made of metallized concrete, comprising the following stages:

production of master models of the said half-moulds, using a resin

metallisation of the said master models

casting a concrete composition comprising (1) a binder which comprises from 10 to 30% of an alkaline-earth mineral substance selected from the group consisting of calcium aluminate or calcium silicoaluminate metallurgical slags, aluminous cements of the calcium monoaluminate and calcium dialuminate types, silico-aluminous cements, calcium or barium silicates and alkaline-earth metal oxides which have been calcined beforehand, of the magnesia, dolomite, lime and barytes group, from the group consisting of 14 to 54% of a constituent made up of fine particles of a compound other than an oxide, 90% of which have a particle size of between 1 and 150 μm with a median diameter of between 3 and 20 μm, these fine particles comprising particles of a substance which has a thermal conductivity higher than approximately 30 W/mK, selected from silicon carbides, silicon carbonitrides, silicon nitrides, boron carbides, titanium carbides and tungsten carbides, and from 14 to 54% of a constituent made up of ultrafine particles at least 70% of which have a particle size smaller than 1 μm with a median diameter of between 0.3 and 0.8 μm, (2) water in a ratio water/-binder lower than 0.20, with the addition of a dispersant, and (3) fillers comprising from 200 to 300 parts in weight of metal granulates for 100 parts in weight of the said alkaline-earth mineral substance and from 600–800 parts in weight of metal fibers for 200 parts in weight of the said alkaline-earth mineral substance, wherein the concrete composition has a thermal conductivity at 200° C. which is equal to or higher than 5 W/mK,

allowing the concrete to set,

heat treating the concrete, and

recovering the said two half-moulds after cooling.

5,188,792

POST TREATMENT OF POLYURETHANE FOAM

Jerry L. Drye, Trinity, and Glen C. Cavenaugh, High Point, both of N.C., assignors to Trinity American Corp., Trinity, N.C.

Filed Feb. 10, 1992, Ser. No. 834,147

Int. Cl.[5] B29C *67/20*

U.S. Cl. 264—232 **19 Claims**

1. A process for post treating cellular foam having gaseous reactant products therein comprising the steps of:

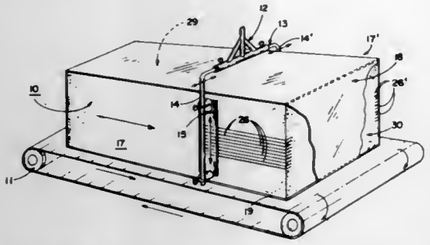
(1) simultaneously slitting opposing faces of the foam by relative movement between the foam and a blade assembly;

(2) passing air through the slits;

(3) directing the air through the foam; and

VOL 1147 ISS 4 FE 23 1993 UMI

(4) withdrawing air through one of the opposing faces to remove and evenly distribute the reactant products



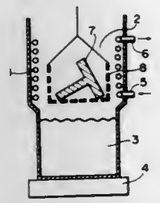
throughout the foam to achieve desirable compression-set qualities.

5,188,793

DEWAXING METHOD OF METAL OR CERAMIC MOLDED BODY

Hiroaki Nisbio, Tokyo, Japan, assignor to NKK Corporation, Tokyo, Japan

Filed Aug. 8, 1990, Ser. No. 564,492
Claims priority, application Japan, Aug. 8, 1989, 1-203905
Int. Cl.[5] C04B *41/53*
U.S. Cl. 264—344 **4 Claims**



1. A method for removing a dispersion medium from a metal, ceramic, or metal-ceramic molded body which contains said dispersion medium and which molded body has been formed through a plastic molding, which method comprises:
introducing said molded body containing said dispersion medium into a boiling zone of a boiling solvent which extracts said dispersion medium contained in the molded body;
after said extracting of said dispersion medium, introducing said thus extracted molded body into a zone wherein said solvent is being condensed, and permitting said thus extracted molded body to dry in said condensing zone wherein said solvent is being condensed, whereby a molded body substantially completely free from dispersion medium is obtained.

5,188,794

METHOD FOR COVERING A METALLURGICAL VESSEL WITH A PURIFYING LINING AND COMPOSITION RELATING TO SAID METHOD, AND PROTECTIVE LINING THUS OBTAINED

Jean-Charles Daussan, Metz; Gérard Daussan, and André Daussan, both of Longeville-les-Metz, all of France, assignors to Daussan et Compagnie, Woippy, France

PCT No. PCT/FR90/00263, § 371 Date Nov. 20, 1990, § 102(e) Date Nov. 20, 1990, PCT Pub. No. WO90/11853, PCT Pub. Date Oct. 18, 1990
PCT Filed Apr. 11, 1990, Ser. No. 613,622
Claims priority, application France, Apr. 12, 1989, 89 04822
Int. Cl.[5] B22D *41/02*
U.S. Cl. 266—44 **15 Claims**

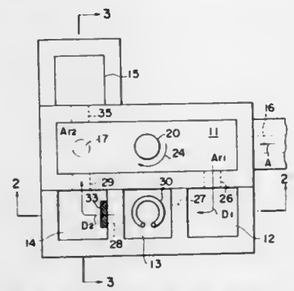
1. Method for covering the internal wall of a metallurgical vessel to form a purifying lining having a base of oxide of an alkaline-earth metal, said method comprising the steps of:
applying on said internal wall a lining of composition containing at least one carbonate of alkaline-earth metal in admixture with granular oxide refractory material, said composition being capable of sintering when in contact with molten metal poured into said vessel,
heating said lining in order to eliminate CO_2 as well as any water, thereby to obtain a layer of alkaline-earth metal oxide having a porous structure,
said predetermined proportion of refractory material being sufficient to endow the lining when sintered with resistance to erosion by molten metal subsequently poured into the vessel, said composition having the following composition by weight:
alkaline-earth carbonate: 30 to 95%
oxide refractory material: 70 to 5%
binder: 0 to 15%
carbon: 0 to 5%
flux: 0 to 10%.

5,188,795

METALLIC VAPOR CONDENSER CAPABLE OF CIRCULATING A LIQUID METAL

Toshio Matsuoka, Ehime, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Mar. 22, 1991, Ser. No. 673,302
Claims priority, application Japan, Aug. 30, 1990, 2-226637
Int. Cl.[5] C22B *19/30*
U.S. Cl. 266—202 **11 Claims**



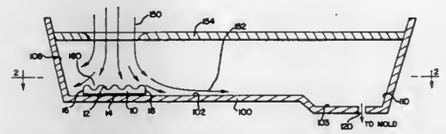
1. A metallic vapor condenser for use in recovering metallic vapor of a predetermined metal in the form of a liquid metal, said metallic vapor condenser comprising:
a splash chamber responsive to said metallic vapor for accommodating a metal bath to absorb said metallic vapor into said metal bath;
a rotor located in said splash chamber for agitating said metal bath in said splash chamber and causing a flow of the liquid metal tc occur together with impurities in a rotational direction so that said impurities are gathered at predetermined areas;
a skimming sump connected to said splash chamber at one of said predetermined areas for skimming said impurities to attain an impurity-free liquid metal;
a cooling sump for cooling said impurity-free liquid metal to obtain a cooled liquid metal;
a casting bath for reserving said cooled liquid metal; and
means for circulating said cooled liquid metal to said splash chamber so that said flow of the liquid metal caused by the rotor circulates from the splash chamber to the skimming sump, from the skimming sump to the cooling sump, from the cooling sump to the casting bath and from the casting bath to the splash chamber.

5,188,796

TUNDISH IMPACT PAD

Madjid Soofi, St. Charles, Ill., assignor to Magneco/Metrel, Inc., Addison, Ill.

Continuation of Ser. No. 530,164, May 29, 1990. This application Jul. 8, 1991, Ser. No. 726,868
The portion of the term of this patent subsequent to Jul. 21, 2009, has been disclaimed.
Int. Cl.[5] B22D *41/02*
U.S. Cl. 266—275 **13 Claims**



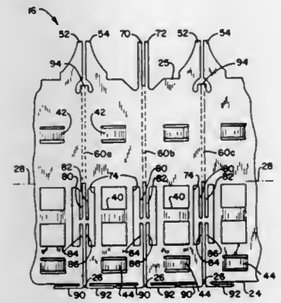
1. In a tundish vessel used in the iron and steel industry having a horizontal floor, a back wall, a front wall, two side walls, a region of impact and a drain, the improvement comprising an impact pad having an upper surface which includes a plurality of rectilinear curved protrusions located on the floor of the tundish vessel in the region of impact, the curved protrusions being configured such that substantially the entire upper surface is curved by the protrusions in the region of impact.

5,188,797

EXTENDED WELD TAB FOR FUEL ASSEMBLY GRID

William J. Bryan, Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 679,784, Apr. 3, 1991. This application May 2, 1991, Ser. No. 694,807
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—438 **14 Claims**



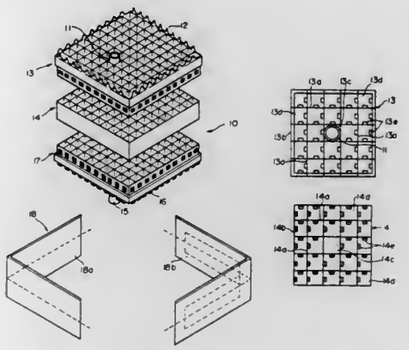
1. A grid strip for constructing a nuclear fuel assembly grid comprising:
a panel of substantially uniform thickness having opposed first and second edges and a medial centerline thereto;
slot means for defining a plurality of locking slots extending from said first edge to approximately said centerline, said slots being substantially parallel and equidistantly spaced;
weld tab means comprising at least one weld tab associated with at lest one slot and integrally extending from said panel, said at least one tab being disposed adjacent said slot, said weld tab having an elongated strip-like configuration defined by a pair of substantially parallel edges extending substantially the longitudinal length thereof and having a longitudinal dimension which is at least equal to one-fourth the distance between adjacent slots.

5,188,798

GRID FOR NUCLEAR FUEL ASSEMBLY

Shinobu Okuyama, and Kojiro Wakana, both of Ibaraki, Japan, assignors to Mitsubishi Nuclear Fuel Co., Tokyo, Japan

Division of Ser. No. 437,082, Nov. 16, 1989, Pat. No. 5,104,609.
This application Jan. 17, 1992, Ser. No. 822,203
Claims priority, application Japan, Nov. 16, 1988, 63-289498
Int. Cl.[5] G21C *3/34*
U.S. Cl. 376—442 **7 Claims**



1. A grid for a nuclear fuel assembly, comprising:
at least one grid member with springs having a plurality of straps each in the form of a thin plate, said straps intersecting each other to form a plurality of grid cells and at least two grid members with dimples having a plurality of straps each in the form of a thin plate, said straps of the grid members with dimples intersecting each other to form a plurality of grid cells, the grid cells of said grid members with dimples including a thimble cell, said grid member with springs and said grid members with dimples being alternately arranged in such a manner that a plane on which the dimples of said grid members with dimples are disposed is positioned so as to be parallel to and opposed to a plane on which the springs of said grid member with springs are disposed, and that the grid cells in said grid member with springs and the grid cells in said grid members with dimples are in alignment with each other; and
a sleeve mounted on one of said at least one grid member with springs and said grid members with dimples, and a guide thimble fixed to said sleeve, whereby said grid member with springs and said grid members with dimples are shiftable relative to each other in a lateral direction.

5,188,799

WEAR-RESISTANT COPPER-BASE ALLOY

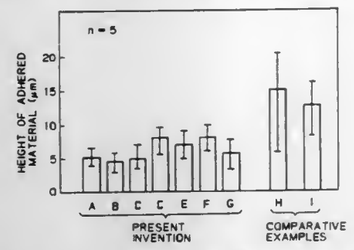
Kazuhiko Mori, Okazaki; Minoru Kawasaki, Toyota; Shin Yoshida, Toyota; Hiroyuki Murase, Toyota; Takashi Saito, Aichi; Kouji Tanaka, Aichi, and Yoshio Shimura, Aichi, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha and Kabushiki Kaisha Toyota Chuo Kenkyusho, both of, Japan

Filed Mar. 19, 1992, Ser. No. 854,557
Claims priority, application Japan, Mar. 20, 1991, 3-130737
Int. Cl.[5] C22C *9/00*
U.S. Cl. 420—469 **5 Claims**

1. A wear-resistant copper-base alloy having a superior self-lubricity consisting essentially of, by weight %,
Ni: 10.0 to 30.0%;
Si: 0.5 to 5.0%:
Co: 2.0 to 15.0%;
at least one metal selected from the group consisting of Mo, W, Nb and V:
2.0 to 15.0%; and
the balance being Cu and unavoidable impurities, and having

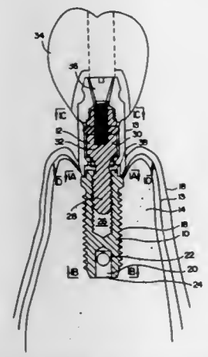
VOL 1147 ISS 4 FE 23 1993 UMI

a structure in which hard phase grains containing not less than 5 vol % of silicide of at least one metal selected from



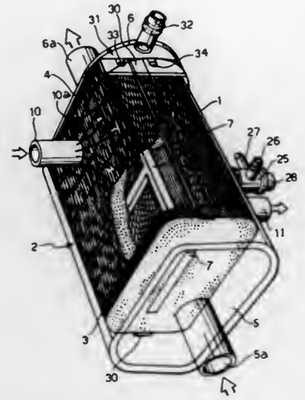
the group consisting of Mo, W, Nb and V are uniformly distributed in an amount of 10 to 60 vol % in a copper-rich matrix.

5,188,800
DENTAL IMPLANT SYSTEM
Ralph E. Green, Jr., Lexington, Mass.; Ronald H. Jones, South Burlington, Vt.; Leland J. Peters, Georgetown, and Peter J. Withol, Natick, both of Mass., assignors to Implant Innovations, Inc., West Palm Beach, Fla.
Divisinn of Ser. No. 205,606, Jun. 3, 1988, Pat. No. 5,071,351. This application Oct. 10, 1991, Ser. No. 775,292
Int. Cl.[5] A61L *2/00*
U.S. Cl. 422—23 **18 Claims**



1. A method of cleaning and sterilizing a biocompatible implant, comprising the steps of:
placing the implant in a plasma cleaning device;
securing the implant to the device with a holding means;
subjecting the implant to a flow of substantially pure gas; and
continually removing gas from the plasma cleaning device so as to maintain a vacuum in the plasma cleaning device in the range of about 20 to about 5,000 microns of vacuum and continuing the flow and the vacuum for a period of time sufficient to clean and sterilize the implant and until a surface of the implant develops a surface contact angle of about 20 degrees or less.

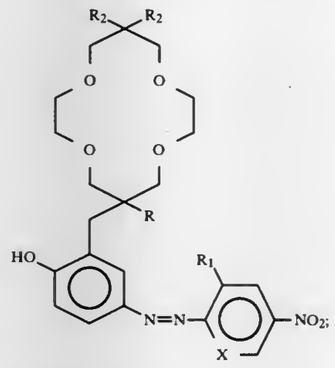
5,188,801
DEVICE FOR THE TREATMENT OF BLOOD
Massimo Fini, Mirandola, Italy, assignor to Cortek S.p.A., Mirandola, Italy
Continuation of Ser. No. 360,214, Jun. 2, 1989, abandoned. This application Jan. 16, 1991, Ser. No. 641,807
Claims priority, application Italy, Jun. 7, 1988, 20881 A/88
Int. Cl.[5] A61M *1/14*
U.S. Cl. 422—48 **10 Claims**



1. A blood treating device comprising:
(i) a housing within which blood flows for treatment by diffusion using porous hollow fibers located within the housing,
(ii) fluid inlet means defining space and fluid outlet means defining space that are oppositely located along a longitudinal axis of said housing,
(iii) a fluid inlet opening into the fluid inlet means defining space and a fluid outlet opening into the fluid outlet means defining space,
(iv) an inlet and outlet chamber oppositely placed in said housing, each lateral of said fluid inlet and fluid outlet means defining spaces,
(v) a blood inlet and a blood outlet connected to said housing, the blood inlet opening into the inlet chamber and the blood outlet opening into the outlet chamber,
(vi) one or more frames, constructed and arranged to allow blood to pass therethrough, located in the housing between opposing walls thereof and between the chambers, with ends thereof facing the fluid inlet and fluid outlet means defining spaces, wherein a width and length of each frame is essentially equal to a width and length of each of the inlet and outlet chambers,
(vii) bands of hollow fibers wrapped around each frame so that portions of the bands are located on the sides of each frame facing said inlet and outlet chambers and the opposing walls of the housing, and defining open ends at the ends of the frame facing the fluid inlet and fluid outlet means defining spaces, which bands comprise a plurality of superposed layers of hollow fibers wherein each alternating layer of the hollow fibers is inclined at a different angle relative to the longitudinal axis of the housing,
(viii) fibers, at one end of the frame facing the fluid inlet means defining space, are openly connected to that space and fibers, at the other end of the frame facing the fluid outlet means defining space, are openly connected to that space, and
(ix) a blood flow path from the inlet chamber, around and between fibers of the superposed layers of hollow fibers between the opposing walls and into the outlet chamber.

5,188,802
DRY ANALYTICAL ELEMENT FOR LITHIUM ASSAY
James R. Schaeffer, Penfield; Ronald H. Engebrecht, Victor; Robert F. Winterkorn, Rochester; Harold C. Warren, III, Rush, and Thomas R. Welter, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed May 28, 1991, Ser. No. 706,434
Int. Cl.[5] G01N *21/00, 33/20*
U.S. Cl. 422—56 **6 Claims**

1. A multilayer dry analytical element for quantitatively assaying lithium comprising a spreading layer, and a reagent layer wherein sufficent buffer is present above the reagent layer to establish a pH of at least 9 and the reagent layer comprises a 14-Crown-4-ether derivative according to structure I.



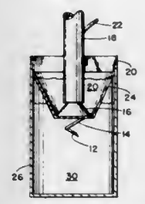
I

wherein said derivative is selected from the group consisting of dye numbers 1–7 according to table 1

TABLE 1

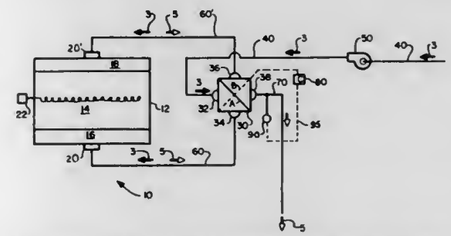
Dye No.	R	R_1	R_2	X
t	$n\text{-}C_{12}H_{25}$	SO_2CH_3	CH_3	CH
2	$n\text{-}C_{12}H_{25}$	NO_2	CH_3	CH
3	CH_3	$SO_2N(n\text{-}C_6H_{13})_2$	CH_3	CH
4	$CH_2C_6H_5$	$SO_2N(n\text{-}C_6H_{13})_2$	CH_3	CH
5	$CH_2C_6H_5$	$SO_2N(CH_3)\text{-}n\text{-}C_{18}H_{37}$	CH_3	CH
6	CH_3	NO_2	$n\text{-}C_7H_{15}$	CH
7	$n\text{-}C_{12}H_{25}$	H	CH_3	N

5,188,803
DEVICE FOR PREPARING A MEDICAL SENSOR FOR USE
Howard M. Hochberg, Woodinville, Wash., assignor to Abbott Laboratories, Abbott Park, Ill.
Filed Dec. 1, 1988, Ser. No. 278,610
Int. Cl.[5] B01L *11/00*
U.S. Cl. 422—99 **13 Claims**



1. A device for storing and calibrating a medical sensor while preventing contamination thereof, said medical sensor including a needle portion, comprising:
a container open at one end, said container including a first chamber capable of holding a first calibrating fluid;
a stopper sized to fit in said open end of said container, said stopper having an opening therethrough to receive the medical sensor, and sized so that the medical sensor can be moved rotatably and perpendicularly in relation to said stopper while a fluid-tight seal between said stopper and said medical sensor is maintained; and
an elastomeric material formed into a wall that defines a second chamber within said container, proximate said stopper and said open end of the container, said second chamber being capable of holding a second calibrating fluid, said wall separating the first and second calibrating fluids and being flexible and puncturable by the needle portion of the medical sensor, for self-sealing around said needle portion and resealing after said needle portion is withdrawn.

5,188,804
REGENERATIVE BED INCINERATOR AND METHOD OF OPERATING SAME
Darr C. Pace; Craig E. Bayer; Mark T. Casagrande, all of Wellsville; Craig R. Johnson, Cuba; Danny K. Hall, and Andrew W. Nolan, both of Wellsville, all of N.Y., assignors to The Air Prebeater Company, Inc., Wellsville, N.Y.
Filed Dec. 26, 1989, Ser. No. 456,896
Int. Cl.[5] B01D *53/36*
U.S. Cl. 422—111 **3 Claims**



1. A method of operating a regenerative gas permeable bed incinerator system for treating a process exhaust stream having a combustible contaminants therein so as to incinerate said contaminants, comprising:
a. passing the contaminated process exhaust stream to be treated through a gas permeable bed of heated particulate material having heat-accumulating and heat-exchanging properties thereby preheating the contaminated process exhaust stream and cooling the first bed;
b. combusting the preheated contaminated process exhaust stream so as t incinerate a substantial portion of the combustible contaminants therein;
c. passing the incinerated process exhaust stream to be treated through a gas permeable bed of cool particulate material having heat-accumulating and heat-exchanging properties thereby cooling the incinerated process exhaust stream and preheating the second bed;
d. exhausting the cooled incinerated process exhaust stream discharging from the gas cooling bed;
e. selectively reversing the direction of flow of process exhaust gases through said regenerative bed incinerator system at spaced time intervals, said step of selectively reversing the direction of flow comprising the substeps of:
continuously sensing the temperature of the exhausted cooled incinerated process exhaust stream; establishing a set point representative of the sensed temperature of the exhausted cooled incinerated process exhaust stream shortly after each reversal in the direction of flow of process exhaust gases through said regenerative

VOL 1147 ISS 4 FE 23 1993 UMI

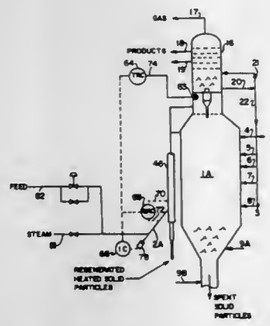
bed incinerator system; thereafter continuously comparing the sensed temperature of the exhausted cooled incinerated process exhaust stream to the set point and determining the difference therebetween; and whenever said determined temperature difference exceeds a preselected upper limit of desired temperature differential reversing the direction of flow of process exhaust gases through said regenerative bed incinerator system.

5,188,805

CONTROLLING TEMPERATURE IN A FLUID HYDROCARBON CONVERSION AND CRACKING APPARATUS AND PROCESS COMPRISING A NOVEL FEED INJECTION SYSTEM

Craig Y. Sabottke, Morris Township, Morris County, N.J., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Jul. 3, 1990, Ser. No. 548,476
Int. Cl.[5] G05D *7/00*
U.S. Cl. 422—111 **16 Claims**



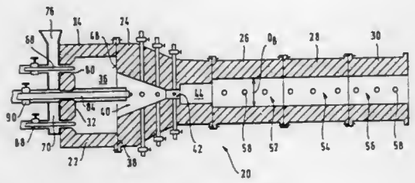
1. An apparatus comprising:
a reactor vessel including a riser connected thereto for fluid hydrocarbon conversion and cracking a hydrocarbonaceous feed;
a means for introducing a fluidizing medium into said riser;
a means for introducing catalyst in a particulate form into said riser;
a means for removing from said reactor vessel said particulate catalyst for regeneration;
a means for removing conversion products from said reactor vessel;
a plurality of feed injectors for injecting a hydrocarbonaceous feed into said reactor vessel, said feed injectors having an inlet end and an outlet end, which feed injectors are sealingly connected through a wall of said riser such that the outlet end protrudes into the interior of the reactor vessel, which injectors are comprised of a nozzle having an internal throat section in fluid communication with the interior of the reactor vessel and the source of the feed, wherein the cross-sectional flow area of said throat section can be varied by movement of a throat insert member therein;
a means for monitoring the temperature within the reactor vessel;
a means for generating a first signal based on said reaction temperature; and
a controller means for responding to said first signal by adjusting the feed atomization by movement of the throat insert member of said injectors.

5,188,806

METHOD AND APPARATUS FOR PRODUCING CARBON BLACK

Gerhard Kuehner, Hanau; Karl Vogel, Alzenau, both of Fed. Rep. of Germany; Juan D. Rodriguez, Dublin, and Charles D. Clement, Pickerington, both of Ohio, assignors to Degussa AG, Postfach, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 635,890, Jan. 4, 1991, abandoned. This application Jun. 28, 1991, Ser. No. 721,765
Int. Cl.[5] C09C *1/00*; C01B *31/00*
U.S. Cl. 422—151 **38 Claims**



1. A carbon black reactor, comprising:
a casing having formed therein a reaction flow passage which extends in an upstream to downstream direction, said casing including a central longitudinal axis and said reaction flow passage extending along said central longitudinal axis, said reaction flow passage including, in an upstream to downstream direction, a combustion chamber, a tapering passageway, and a quenching chamber, said casing including a forward wall defining an upstream end of said combustion chamber and a ledge extending inwardly towards said central longitudinal axis in a direction essentially transverse to said central longitudinal axis, said ledge defining a downstream end of said combustion chamber and an upstream opening in said tapering passageway, the tapering passageway constricting in an upstream to downstream direction, and said forward wall having means defining a plurality of apertures which open into said combustion chamber and are arranged circumferentially at a first radius from the central longitudinal axis, and the opening in the upstream end of said tapering passageway being of a second radius from the central axis with the second radius being smaller than said first radius.

5,188,807

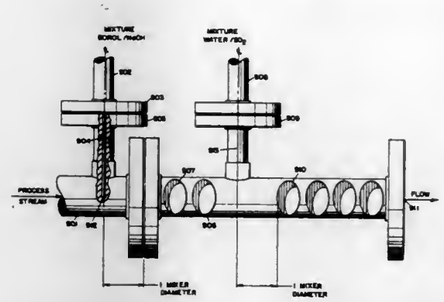
APPARATUS FOR PRODUCING HIGH YIELD SODIUM HYDROSULFITE

Jeremy Ko, Boston, and Steven H. Levis, Haverhill, both of Mass., assignors to Morton Thiokol, Inc., Chicago, Ill.

Division of Ser. No. 609,129, Nov. 1, 1990, Pat. No. 5,094,833, which is a continuation of Ser. No. 294,076, Jan. 5, 1989, abandoned. This application Sep. 24, 1991, Ser. No. 764,752
The portion of the term of this patent subsequent to Nov. 29, 2005, has been disclaimed.
Int. Cl.[5] B01F *5/00*
U.S. Cl. 422—224 **25 Claims**

1. An apparatus for producing sodium hydrosulfite by reacting, in an aqueous solution, sodium borohydride, sodium hydroxide, sulfur dioxide and sodium bisulfite, which comprises:
(a) means for establishing a process flow stream comprising an aqueous mixture of at least sodium hydrosulfite and sodium bisulfite;
(b) input means for introducing a first reaction mixture comprising sodium borohydride, sodium hydroxide and water into said process flow stream;
(c) input means for introducing a solution consisting essentially of sodium hydroxide into said flow stream; and
(d) input means for introducing a second reaction mixture

comprising water and sulfur dioxide into said flow stream downstream from both the (b) and (c) input means so that



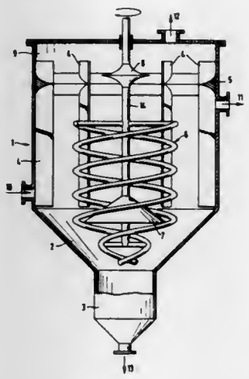
introduced mixtures react to form an aqueous solution of sodium hydrosulfite in an increased pH environment.

5,188,808

METHOD FOR MIXING LIQUID, SOLIDS AND GAS AND FOR SIMULTANEOUSLY SEPARATING GAS OR GAS AND SOLIDS FROM THE LIQUID

Launo L. Lilja; Valto J. Mäkitalo; Stig-Erik Hultholm, all of Pori, and Bror G. Nyman, Ulvila, all of Finland, assignors to Outokumpu Oy, Espoo, Finland

Filed Mar. 26, 1991, Ser. No. 675,444
Claims priority, application Finland, Apr. 4, 1990, 901692
Int. Cl.[5] B01F *7/00*
U.S. Cl. 422—229 **6 Claims**



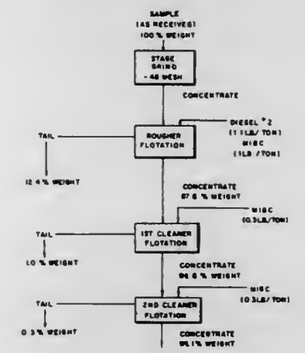
1. An apparatus for maintaining continuous mixing in a liquid containing solids and gas, and for simultaneously separating gas or gas and solids from the liquid, which apparatus comprises a substantially vertically disposed, generally cylindrical reactor having a top part and a bottom part; a helical impeller installed inside the reactor and rotatable about a generally vertical axis of the reactor, said helical impeller comprising at least two spiraling tubes, a bottom part of which helical impeller is provided with a protective cone extending downwardly and outwardly from the axis of the reactor, and a top part of which helical impeller is provided with a flow reverser comprising two cones arranged vertically base to base around the reactor axis to; baffles arranged on inner walls of the reactor; at least one inwardly projecting zone division ring attached to the reactor inner walls at about the same vertical location as the flow reverser with respect to the reactor; and the top part of the reactor further having means for discharging gas; said helical impeller having a diameter which is 0.5–0.75 times the diameter of the reactor in the same horizontal plane.

5,188,809

METHOD FOR SEPARATING COKE FROM A FEED MIXTURE CONTAINING ZIRCONIUM AND RADIOACTIVE MATERIALS BY FLOTATION PROCESS

William A. Crocker, Salem; John C. Haygarth, Corvallis; Jon A. Riesen, Albany, and John R. Peterson, Salem, all of Oreg., assignors to Teledyne Industries, Inc., Albany, Oreg.

Continuation-in-part of Ser. No. 558,464, Jul. 27, 1990, abandoned, which is a continuation of Ser. No. 318,162, Mar. 2, 1989, abandoned. This application Aug. 31, 1990, Ser. No. 575,817
Int. Cl.[5] C01G *43/00*; C01F *13/00, 15/00*
U.S. Cl. 423—2 **3 Claims**



1. In a process of separating a feed mixture of zircon, coke and trace amounts of radioactive materials employing a plurality of flotation cells the improvement which comprises the steps of:
a) grinding said feed mixture;
b) slurring said ground feed mixture with water;
c) treating said slurry with a flotation agent and a collector for the coke;
d) in a first cell, agitating the slurry and sparging said agitated slurry with air and providing a first underflow and a first overflow in said first cell;
e) removing the first underflow of said slurry substantially free of coke;
f) removing the first overflow to a second cell, agitating and air sparging said overflow, wherein a second underflow is created and added to the feed of the first cell and a second overflow is created
g) removing the second overflow to a third cell, agitating and air sparging said second overflow creating a third underflow and overflow, which overflow is filtered to collect substantially zircon-free coke for further processing and whose underflow is added to the feed of the second cell; and
h) removing radioactive materials including Ra, U, and Th where Ra is present in the coke after flotation at less than about 5.0 pCi/gm.

5,188,810

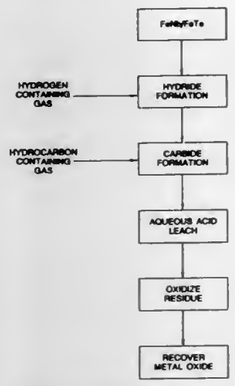
PROCESS FOR MAKING NIOBIUM OXIDE

James A. Sommers, Albany, Oreg., assignor to Teledyne Industries, Inc., Albany, Oreg.

Continuation of Ser. No. 721,888, Jun. 27, 1991, abandoned. This application Apr. 2, 1992, Ser. No. 863,485

Int. Cl.[5] C01G *33/00, 31/00, 35/00;* **C01B** *33/113*

U.S. Cl. 423—62 **12 Claims**



1. A process for the preparation of metal oxides from ferrometal and nickel metal alloys comprising the steps of:

a) providing a ferrometal or nickel metal alloy containing an oxide-forming metal use in the process;

b) contacting the ferrometal or nickel metal alloy with a hydrogen-containing gas;

c) reacting the alloy selected with the hydrogen initially at ambient temperature and at about 3 psig to about 15 psig of hydrogen gas, to form a hydride product;

d) subdividing the hydrided product into particle sizes suitable for reaction with a hydrocarbon-containing gas;

e) carbiding the subdivided hydride product by contacting the subdivided hydride product with a hydrocarbon-containing gas at a temperature above about 500° C., for a sufficient period of time to substantially completely react the hydrocarbon-containing gas with the hydride product to form carbides of the alloy constituents;

f) subsequent to carbide formation in the carbiding reaction, contacting the carbides produced with an aqueous acid leach solution for a sufficient period of time to dissolve the iron or nickel carbide formed during the carbiding in the leach solution; and

g) separating the acid soluble carbides or other soluble compounds in the leach solution from the acid insoluble carbides; and

h) reacting the acid insoluble carbides with oxygen at a sufficiently elevated temperature and for a sufficient period of time to form the metal oxide of the acid insoluble metal carbide.

5,188,811

MOLYBDENUM-BASED ADDITIVES TO MIXED-METAL OXIDES FOR USE IN HOT GAS CLEANUP SORBENTS FOR THE CATALYTIC DECOMPOSITION OF AMMONIA IN COAL GASES

Ranl E. Ayala, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 26, 1992, Ser. No. 841,947

Int. Cl.[5] C01B *15/16, 31/20*

U.S. Cl. 423—230 **5 Claims**

1. A method for reducing an amount of hydrogen sulfide and ammonia in a hot coal using a molybdenum-based sorbent-catalyst, wherein said method is comprised of the steps of:

combining at least two metal oxides in a combination of up to three parts zinc oxide to one part titanium oxide to form a mixed-metal oxide mixture;

adding a binder to said mixed metal oxide mixture;

adding up to 5% by weight of a molybdenum-based material to said mixed-metal oxide mixture and said binder to create a base mixture;

calcinating said base mixture to a temperature of up to 1400°–1800° for at least one hour;

activating said base mixture with a gas containing approximately 1% hydrogen sulfide by volume at a temperature of approximately 1000° F. for at least one hour and

contacting said activated base mixture with hot coal gases in order to substantially reduce the amount of hydrogen sulfide and ammonia in said hot coal gases.

5,188,812

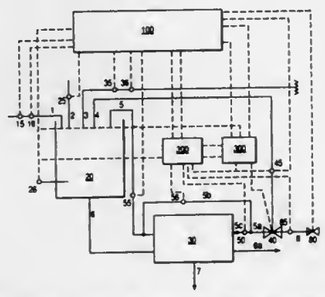
AUTOMATIC CONTROL SYSTEM FOR A PHOSACID ATTACK TANK AND FILTER

Stephen W. Hilakos, Valrico, Fla., assignor to IMC Fertilizer, Inc., Northbrook, Ill.

Filed Nov. 13, 1991, Ser. No. 791,654

Int. Cl.[5] C01B *25/16*

U.S. Cl. 423—320 **14 Claims**



1. A method for controlling the phosphic acid product concentration in a continuous phosphoric acid recovery process comprising:

(a) supplying phosphate ore in aqueous slurry to an attack tank in which the ore is subjected to attack in an acidic solution containing sulfuric acid and phosphoric acid;

(b) producing from the attack tank a product slurry comprising an aqueous phosphoric acid solution and calcium sulfate;

(c) separating the calcium sulfate and aqueous phosphoric acid solution by filtration to form an aqueous phosphoric acid solution and a calcium sulfate filter cake;

(d) rinsing said filter cake with water to recover phosphoric acid therefrom and to form a phosphoric acid solution which is returned to the attack tank;

(e) controlling the quantity of water supplied to the attack tank from the addition of aqueous sulfuric acid, returned phosphoric acid solution, and water added directly to the attack tank, wherein said control comprises:

(i) calculating a theoretical quantity of water which, when added to the attack tank, maximizes the recovery of phosphoric acid;

(ii) controlling the quantity of rinse water to maximize the recovery of the returned phosphoric acid solution from the cake by pulsing the flow rate of the rinse water a plurality of times in a predetermined minor amount relative to the rinse water flow for a predetermined interval to determine the quantity of rinse water required to maximize the recovery of phosphoric acid from the cake;

(iii) measuring the amount of rinse water delivered to the attack tank in the returned phosphoric acid solution; and

(iv) adjusting the quantity of water added to the attack tank to achieve addition of the theoretical quantity required in step (e(i)) by controlling the sulfuric acid concentration, the quantity of rinse water from step (e(ii)) and the amount of water delivered to the attack tank measured in step (e(iii)), and the quantity of water added directly to the attack tank.

5,188,813

METAL FABRICS

Norman R. Fairey, Carshalton, and Robert D. Hatton, London, both of United Kingdom, assignors to Johnson Matthey Public Limited Company, Great Britain

Continuation of Ser. No. 418,583, Oct. 10, 1989, abandoned. This application Mar. 17, 1992, Ser. No. 883,521

Claims priority, application United Kingdom, Oct. 12, 1988, 8823956; Jan. 4, 1989, 8900087

Int. Cl.[5] C01B *21/26;* **D04B** *21/12, 21/14, 21/16*

U.S. Cl. 423—403 **3 Claims**



1. A knitted precious metal fabric, consisting essentially of interlocking loops of fibres of a precious metal selected from the group consisting of platinum group metals, gold, silver, and alloys thereof.

5,188,814

METHOD OF BLEACHING

Pia Hellström, Lilla Edet; Ivan Dalin, Kungälv, both of Sweden, and Steen Linderström-Lang, Lyngby, Denmark, assignors to Eka Nobel AB, Bohus, Sweden and Faxe Kalk, Köpenhamn, Denmark

Filed Oct. 28, 1991, Ser. No. 783,146

Claims priority, application Sweden, Oct. 29, 1990, 9003440

Int. Cl.[5] C01G *21/14;* **C09C** *1/02*

U.S. Cl. 423—430 **12 Claims**

1. A method for bleaching a composition containing calcium carbonate, comprising contacting the composition with an aqueous solution containing hydrogen peroxide and at an initial pH of above about 6.5 and below 8 said contacting step having a length of time sufficient for bleaching the calcium carbonate in said composition.

5,188,815

THERMOCHROMIC MIXTURES

David Coates; Ian C. Sage, and John A. Jenner, all of Dorset, Great Britain, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP89/00965, § 371 Date Oct. 4, 1989, § 102(e) Date Oct. 4, 1989, PCT Pub. No. WO90/02161, PCT Pub. Date Mar. 8, 1990

PCT Filed Aug. 16, 1989, Ser. No. 424,264

Claims priority, application United Kingdom, Aug. 31, 1988, 8820581; Jan. 11, 1989, 8900598

Int. Cl.[5] A61K *49/00, 7/021, 7/035;* **C09K** *19/34*

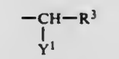
U.S. Cl. 424—7.1 **23 Claims**

1. A thermochromic liquid crystalline composition comprising at least two components wherein at least one of said two components is an optically active compound of the formula

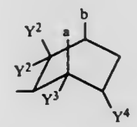


wherein

R^1 and R^2 are each independently groups of formulae II or III



(II)



(III)

wherein

R^3 is a substituted or unsubstituted aryl or aralkyl residue with 6 to 19 C atoms or an alkyl or an alkenyl residue, each with up to 16 C atoms, wherein one or two non-adjacent CH_2 groups of these residues may be replaced by —O—, —S—, —CO—O—, and/or —O—CO;

Y^1 is a normal or branched alkyl group with up to 6 C atoms and is different from R^3;

Y^2, Y^3, and Y^4 are each independently H or a normal or branched alkyl group with up to 6 C atoms; and

a and b are either H or an alkylene bridging group with 1 or 2 C atoms;



denotes a 1,4-phenylene group optionally substituted by fluorine;

X^1 and X^2 are each independently O or NH; and

n is 1, 2 or 3,

the other of said at least two components comprises at least one liquid crystal compound.

5,188,816

USING POLYAZAMACROCYCLIC COMPOUNDS FOR INTRACELLULAR MEASUREMENT OF METAL IONS USING MRS

A. Dean Sherry, Dallas; Istvan Lazar, Richardson, both of Tex.; Erno Brucher, Debrecen, Hungary, and Ravichandran Ramasamy, Dallas, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

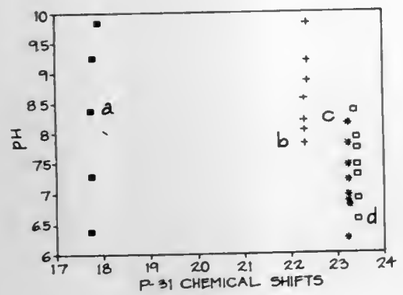
Division of Ser. No. 615,619, Nov. 19, 1990, which is a continuation-in-part of Ser. No. 357,193, May 25, 1989, abandoned, and a continuation-in-part of Ser. No. 291,053, Dec. 28, 1988, Pat. No. 4,983,376, which is a continuation-in-part of Ser. No. 7,729, Jan. 27, 1987, abandoned, which is a continuation-in-part of Ser. No. 662,075, Oct. 18, 1984, Pat. No. 4,639,365. This application Nov. 26, 1991, Ser. No. 798,599

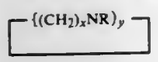
Int. Cl.[5] G01N *24/08;* **A61K** *31/675*

U.S. Cl. 424—9 **7 Claims**

1. A method for assessing intracellular concentration of a divalent metal ion, the method comprising treating cells with a diagnostically effective amount of polyazamacrocyclic compound or a salt thereof, the compound having the formula

VOL 1147 ISS 4 FE 23 1993 UMI





where

x is 2, 3 or a combination of p 2(s) and q 3(s) where p+q=y;

y is 3;

R is $(CH_2)_zP(=O)R^1R^2$;

R^1 is R^3 or OR^3 where R^3 is H, alkyl, cycloalkyl or aryl;

R^2 is H, alkyl, OR^4 or



where R^4 is H, alkyl, cycloalkyl or aryl; and

z is 1 to 3;

and measuring changes in the ^{31}P NMR spectrum from divalent metal ion chelation, said changes being proportional to intracellular divalent metal concentration.

5,188,817

METHOD OF TREATMENT FOR PERIODONTITIS

Julius Ozick, 2 Parkview Ave., New Rochelle, N.Y. 10805

Continuation-in-part of Ser. No. 329,342, Mar. 27, 1989, abandoned. This application Aug. 31, 1990, Ser. No. 575,854

Int. Cl.[5] A61K *7/16, 9/68, 31/07*

U.S. Cl. 424—49 **11 Claims**

1. A method of treating a patient suffering from periodontitis comprising topically administering to an affected periodontal tissue area for an effective period of time an effective periodontal tissue protective amount of a pharmaceutical composition containing at least one retinoid compound selected from the group consisting of Vitamin A aldehyde, Vitamin A esters, etretinate, acitretin, and combinations thereof, wherein said pharmaceutical composition is substantially free of Vitamin A and Vitamin A acid.

5,188,818

TOOTHPASTE COMPOSITION CONTAINING STRONTIUM SALT OF MALEIC ANHYDRIDE-METHYL VINYL ETHER COPOLYMER

John J. Merianos, Middletown; Paul Garelick, South Plainfield, and Herbert A. Lieberman, Livingston, all of N.J., assignors to ISP Investments Inc., Wilmington, Del.

Filed Mar. 30, 1992, Ser. No. 859,786

Int. Cl.[5] A61K *7/16*

U.S. Cl. 424—49 **4 Claims**

1. A toothpaste composition containing about 1-20% by weight of the strontium salt of the copolymer of maleic anhydride and methyl vinyl ether.

5,188,819

MANUFACTURE OF ALUMINUM-BASED ANTICARIOGENIC COMPOSITIONS

Carl J. Kleber, and Mark S. Putt, both of Fort Wayne, Ind., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Feb. 21, 1992, Ser. No. 840,734

Int. Cl.[5] A61K *7/16*

U.S. Cl. 424—49 **16 Claims**

1. In a method for manufacturing a palatable, aluminum-based anticariogenic composition comprising a water-soluble aluminum salt, water, humectant, flavor oil, surfactant, and sweetener in a blended emulsion, the improvement which comprises the steps of

preparing an aqueous solution comprising the aluminum salt and at least a portion of the humectant in a minimum amount of water,

adjusting the pH of the solution to about 3.2 to about 4.0 by addition of a food-acceptable base, and thereafter

blending the pH-adjusted aqueous solution with the remaining composition ingredients.

5,188,820

METHOD OF INHIBITING PLAQUE ON TEETH BY APPLYING AN ORAL COMPOSITION

Diane Cummins, West Kirby, and Franciscus J. van der Ouderaa, Neston, both of England, assignors to Chesebrough-Pond's USA Co., Dividion of Conopco, Inc., Greenwich, Conn.

Continuation of Ser. No. 592,421, Oct. 3, 1990, abandoned. This application Sep. 27, 1991, Ser. No. 769,142

Claims priority, application United Kingdom, Oct. 5, 1989, 8922434

Int. Cl.[5] A61K *7/16, 7/18*

U.S. Cl. 424—49 **3 Claims**

1. A method for inhibiting plaque on teeth comprising applying to said teeth an oral composition comprising:

(i) from 0-75% by weight of the composition of an abrasive cleaning agent selected from the group consisting of milled particulate aluminas, unmilled particulate aluminas, silica xerogels, silica hydrogels, silica aerogels, precipitated particulate silicas, insoluble sodium metaphosphate, calcium carbonate, dicalcium orthophosphate, particulate hydroxyapatite, and mixtures thereof; and

(ii) an anti-plaque active system comprising a mixture of:

(a) 0.01-10% by weight, based on the total composition, of a stannous salt selected from the group consisting of stannous fluoride, stannous pyrophosphate, and mixtures thereof; and

(b) 0.05-5% by weight, calculated as zinc ion, based on the total composition, of a zinc salt which is zinc citrate trihydrate.

5,188,821

ANTIBACTERIAL ANTIPLAQUE ORAL COMPOSITION MOUTHWASH OR LIQUID DENTIFRICE

Abdul Gaffar, Princeton; Nuran Nabi, North Brunswick; John Afflitto, Brookside, all of N.J., and Orum Stringer, Yardley, Pa., assignors to Colgate-Palmolive Company, Piscataway, N.J.

Continuation-in-part of Ser. No. 291,712, Dec. 29, 1988, Pat. No. 4,894,220, and a continuation-in-part of Ser. No. 346,258, May 1, 1989, Pat. No. 5,043,154, which is a continuation of Ser. No. 8,901, Jan. 30, 1987, abandoned, said Ser. No. 291,712, is a continuation-in-part of Ser. No. 8,901,. This application Aug. 28, 1989, Ser. No. 398,592

The portion of the term of this patent subsequent to Jan. 16, 2007, has been disclaimed.

Int. Cl.[5] A61K *7/16, 7/18*

U.S. Cl. 424—52 **21 Claims**

1. In a method of preparing an oral composition mouthwash or liquid dentifrice wherein delivery and retention of a plaque-inhibiting antibacterial agent is enhanced by attaching, adhering or bonding to oral tooth and gum surfaces comprising an aqueous vehicle, an effective amount in the range of about 0.15-5% by weight of substantially water insoluble noncationic antibacterial agent and at least one of a surface active agent, a flavoring oil or a non-toxic alcohol, the improvement comprising employing in said composition about 0.05-4% by weight of a water-soluble or swellable antibacterial-enhancing agent, which contains at least one delivery-enhancing functional group and at least one organic retention-enhancing group, wherein said delivery-enhancing group enhances delivery of said antibacterial agent to oral tooth and gum surfaces and said retention-enhancing group enhances attachment, adherence or bonding of said antibacterial agent on oral tooth and gum surfaces, wherein said oral composition is free of polyphosphate anticalculus agent in an effective anticalculus amount.

5,188,822

ORAL COMPOSITIONS CONTAINING AN AMINOSILICONE AND A LIPOPHILIC COMPOUND

John P. Viccaro, Whitestone, N.Y.; John S. Bajor, Cliffside Park, and Alla Tartakovsky, West Orange, both of N.J., assignors to Chesebrough-Pond's USA Co., Division of Conopco Inc., Greenwich, Conn.

Filed Aug. 7, 1991, Ser. No. 741,697

Int. Cl.[5] A61K *7/18, 31/695;* **A01N** *55/00*

U.S. Cl. 424—52 **24 Claims**

1. An oral composition comprising an oil-in-water emulsion comprising:

(a) an oil phase comprising a noncyclic, hydrophobic aminoalkyl silicone and an orally acceptable lipophilic compound, the lipophilic compound being soluble in the aminoalkyl silicone and selected from the group consisting of an antimicrobial compound, a flavorant and mixtures thereof; and

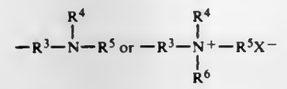
(b) an aqueous phase comprising an emulsifier, wherein the aminoalkyl silicone is employed in the amount effective to form a hydrophobic layer on the teeth surface and the lipophilic compound is present in an amount to provide a benefit selected from the group consisting of plaque and-/or calculus formation inhibition, prolonged flavor perception, malodor masking benefit, sustained breath refreshing benefit and combinations thereof

wherein the aminoalkylsilicone is comprised of two basic units:

(1) $R^1)_m—(R)_n—SiO_{(4-m-n)/2}$ wherein m+n is 1, 2 or 3; n is 1, 2, or 3; m is 0, 1, or 2; and

(2) $(R^1)_a(R^2)_bSiO_{(4-a-b)/2}$ wherein a+b is 1, 2, or 3, and a and b are integers

wherein R^1 and R^2 are hydrocarbons or fluorinated hydrocarbons of 1 to 10 carbons, hydroxyl, alkoxyl, hydrogen or acetoxy, and R is



wherein R^3 is a divalent alkylene of 1-20 carbon atoms or a hydrocarbon of 1-20 carbon atoms containing oxygen atoms, R^4, R^5 and R^6 may be different or the same and are selected from the group consisting of H, hydrocarbons of 1-20 carbons, and hydrocarbons of 1-20 carbons containing N and/or O atoms, and X^- is a monovalent anion, said aminoalkyl silicone including 60% or fewer by repeat unit of unit (1).

5,188,823

ANTIPERSPIRANT FORMULATIONS

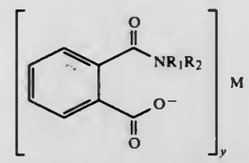
Irene Shapiro, Buffalo Grove, and Branko Sajic, Chicago, both of Ill., assignors to Stepan Company, Northfield, Ill.

Filed Feb. 7, 1991, Ser. No. 651,960

Int. Cl.[5] A61K *7/34, 7/38, 9/10*

U.S. Cl. 424—65 **19 Claims**

1. An antiperspirant composition comprising an effective amount of a volatile silicone fluid, an effective amount of an antiperspirant salt, and an effective emulsifying and suspending amount of a compound of the formula



R_1 and R_2 are independently selected from the group consisting of H, C_1-C_{40} linear alkyl, C_1-C_{40} branched alkyl, cycloalkyl, C_1-C_{40} linear alkylene, C_1-C_{40} branched alkylene, alkaryl, aryl and R_3-O-R_4, with R_3 and R_4 being independently selected from the group consisting of C_1-C_{22} linear alkyl, C_1-C_{22} branched alkyl, cycloalkyl, C_1-C_{22} linear alkylene, C_1-C_{22} branched alkylene, alkaryl and aryl; y is integer of a value satisfying the valency of M; and M is a cation, consisting of H+, Na+, K+, Ba++, Ca++, Mg++, Al+++, Ti+++, Zn++, NH_4+, $R_5R_6R_7N$+H wherein R_5, R_6 and R_7 are the same or different and are selected from the group consisting of H, C_1-C_{20} linear alkyl, C_1-C_{20} branched alkyl, C_1-C_{20} linear alkylene, C_1-C_{20} branched alkylene, aryl, C_1-C_{40} straight chain alkyl, C_1-C_{40} branched chain alkyl, C_1-C_{40} straight chain alkylene, C_1-C_{40} branched chain alkylene and R_8-O-R_9 with R_8 and R_9 being independently selected from the group consisting of C_1-C_{22} linear alkyl, C_1-C_{22} branched alkyl, cycloalkyl, C_1-C_{22} linear alkylene, C_1-C_{22} branched alkylene, alkaryl and aryl, and mixtures thereof.

5,188,824

STABLE CONCENTRATES AND EMULSIONS OF WATER-INSOLUBLE ORGANIC PESTICIDES

Ritchie A. Wessling, Berkeley, Calif.; Dale M. Pickelman, Auburn, and Dennis G. Wujek, Midland, both of Mich., assignors to DowElanco, Indianapolis, Ind.

Division of Ser. No. 400,418, Aug. 30, 1989, Pat. No. 5,089,259, which is a continuation-in-part of Ser. No. 286,569, Dec. 19, 1988, abandoned. This application Sep. 23, 1991, Ser. No. 763,791

Int. Cl.[5] A61K *31/74, 31/78;* **A01N** *27/00, 29/00*

U.S. Cl. 424—78.1 **11 Claims**

1. A water dilutable emulsion concentrate of a water-insoluble organic pesticide said concentrate comprising an admixture of (1) a water insoluble organic pesticide and (2) a water based structured particle latex composed of nonionic particle cores to which is bound a stabilizing layer containing stabilizing pH independent ionic groups chemically bound at or near the surface of the polymer particle cores wherein the pesticide is present in a weight ratio of from about 1:50 to about 10:1 in terms of the pesticide to the particles of the structured particle latex.

VOL 1147 ISS 4 FE 23 1993 UMI

5,188,825

FREEZE-DRIED DOSAGE FORMS AND METHODS FOR PREPARING THE SAME

Martin C. Iles, 7 Cartwright Drive, Shaw, Swindon, Wiltshire; Angela D. Atherton, 170, Windsor Drive, Chelsfield, Orpington, Kent, and Neil M. Copping, 8 Lautrec Way, Haydon Hill, Aylesbury, Bucks, all of United Kingdom

Filed Dec. 28, 1989, Ser. No. 458,311
Int. Cl.[5] A61K *31/74, 9/68, 9/14;* A01N *25/08*
U.S. Cl. 424—78.1 9 Claims

1. A method of preparing a freeze-dried solid dosage form for oral administration containing an effective unit dosage amount of a water soluble bioactive agent comprising the following step: freeze-drying an aqueous suspension consisting essentially of a) a substantially water insoluble bound bioactive agent complex consisting essentially of the bioactive agent bound to an ion exchange resin and b) an aqueous carrier compatible with the bioactive agent consisting essentially of water and a bulk-forming agent selected from the group consisting of gelatin, polyvinylpyrrolidone, polyethylene glycol, polysaccharides, and combinations thereof.

5,188,826

TOPICAL OPHTHALMIC SUSPENSIONS

Santosh K. Chandrasekaran, Moraga; Margaret J. Reents, Alameda, both of Calif.; John C. Babcock, Olga, Wash.; Lyle M. Bowman, Pleasanton; Roy D. Archibald, Fremont, both of Calif., and Joseph R. Robinson, Madison, Wis., assignors to InSite Vision Incorporated, Alameda, Calif.

Continuation-in-part of Ser. No. 544,518, Jun. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 537,005, Jun. 12, 1990, abandoned, which is a continuation of Ser. No. 301,114, Jan. 25, 1989, abandoned, which is a continuation-in-part of Ser. No. 153,762, Feb. 8, 1988, abandoned, and a continuation-in-part of Ser. No. 429,770, Oct. 31, 1989, abandoned. This application Jul. 6, 1990, Ser. No. 549,093
Int. Cl.[5] A61K *9/08;* A01N *25/02*
U.S. Cl. 424—78.04 29 Claims

1. A sustained release topical, aqueous ophthalmic gel suspension for dry eye applications which is administrable to the eye in drop form as a gel and which releases water and one or more ophthalmic demulcents or ophthalmic vasoconstrictors contained therein, comprising water, and from about 0.1% to about 6.5% by weight, based on the total weight of the suspension, of a lightly cross-linked carboxyl-containing polymer having a particle size of not more than about 30 μm in equivalent spherical diameter, at least about 60% by weight of the polymer having been prepared by suspension or emulsion polymerizing at least about 50% by weight of one or more carboxyl-containing monoethylenically unsaturated monomers and from about 0.01% to about 5% by weight of a non-polyalkenyl polyether difunctional cross-linking agent, the weight percentages of monomers being based on the total weight of monomers polymerized, and from about 0.01% to about 4% by weight, based on the total weight of the suspension, of at least one ophthalmic demulcent, or from about 0.01% to about 0.2% by weight, based on the total weight of the suspension, of at least one ophthalmic vasoconstrictor, or a mixture of at least one ophthalmic demulcent and at least one ophthalmic vasoconstrictor from which the above-stated ranges, the suspension being at a pH of from about 6.6 to about 8.0, and an osmolality of from about 50 to about 400 mOsM and having a viscosity of from about 500 to about 4,000 centipoises.

5,188,827

USE OF INTERLEUKIN-4- FOR LOWERING BLOOD-CHOLESTEROL LEVELS

Hugh E. Black, Sparta, N.J., assignor to Schering Corporation, Kenilworth, N.J.

PCT No. PCT/US89/05532, § 371 Date Jun. 10, 1991, § 102(e) Date Jun. 10, 1991
PCT Filed Dec. 18, 1989, Ser. No. 688,615
Int. Cl.[5] A61K *45/05*
U.S. Cl. 424—85.2 10 Claims

1. A method of treatment for lowering the blood serum cholesterol level in a mammal comprising administering to said mammal a serum cholesterol lowering effective amount of IL-4.

5,188,828

INTERLEUKIN-6 TO STIMULATE ERYTHROPOIETIN PRODUCTION

Mark A. Goldberg, and William C. Faquin, both of Boston, Mass., assignors to Brigham and Women's Hospital, Boston, Mass.

Filed Nov. 8, 1990, Ser. No. 610,221
Int. Cl.[5] A61K *45/05;* C07K *13/00*
U.S. Cl. 424—85.2 8 Claims

1. A method of enchancing erythropoietin production wherein said enhancing is effected by the administration of interleukin-6 under hypoxic conditions.

5,188,829

RAPIDLY ACTING PROUROKINASE

Yo-ichi Kobayashi, Odawara; Muneki Omori, Toshima, and Chikako Yamada, Ebina, all of Japan, assignors to Sagami Chemical Research Center, Tokyo; Central Glass Company, Limited, Yamaguchi; Hodogaya Chemical Co., Ltd., Tokyo; Nippon Soda Company, Limited, Tokyo; Nissan Chemical Industries, Limited, Tokyo and Tosoh Corporation, Yamaguchi, all of, Japan

PCT No. PCT/JP88/00815, § 371 Date Apr. 10, 1989, § 102(e) Date Apr. 10, 1989, PCT Pub. No. WO89/01513, PCT Pub. Date Feb. 23, 1989
PCT Filed Aug. 18, 1988, Ser. No. 340,007
Claims priority, application Japan, Aug. 19, 1987, 62-204149
Int. Cl.[5] A61K *37/547;* C12N *9/72, 15/52*
U.S. Cl. 424—94.63 4 Claims

1. A human prourokinase-like polypeptide having the following amino acid sequence:

(Met)-Ser[1].....$X^{156}.Y^{157}.Z^{158}$—

wherein Met is an optionally present methionine; Ser^1 is the first N-terminal serine; X^{156} .19 Y^{157} .Z^{158} is an amino acid sequence from the 156th amino acid to the 158th amino acid and is selected from the group consisting of Arg.Pro.Lys, Arg.Pro.Arg, and Cln,Pro.Arg; the dotted line represents an amino acid sequence from the second amino acid to the 155th amino acid of native human prourolinase wherein the 135th Lys is cptionally replaced by an amino acid selected from the group consisting of Asn and Gln,; and the solid line represents an amino acid sequence from the 159th amino acid to the C-terminal of the native human prourokinase; or substantially the same amino acid sequence as the above-mentioned amino acid sequence.

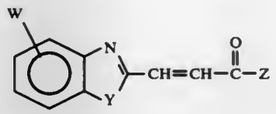
5,188,830

METHODS FOR THROMBOLYTIC THERAPY

Joseph G. Atkinson, Montreal, Canada; David A. Claremon, Audubon, Pa.; John J. Baldwin, Gwynedd Valley, Pa.; Paul A. Friedman, Rosemont, Pa.; David C. Remy, North Wales, Pa., and Andrew M. Stern, Gwynedd Valley, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 32,123, Mar. 27, 1987, abandoned. This application Apr. 2, 1990, Ser. No. 517,915
Int. Cl.[5] A61K *37/547, 37/54, 31/41*
U.S. Cl. 424—94.63 14 Claims

1. A method for lysing clots in thrombotic patients which comprises intravenously administering a therapeutically effective amount of a composition comprising a Factor XIIIa inhibitor compound, said Factor XIIIa inhibitor compound being a heteroarylacrylic acid compound represented by the formula



and its pharmaceutically acceptable salts wherein
Y is —NH, —NR_2, —S—, —O—, where R_2 is lower alkyl;
W is hydrogen, lower alkyl, halo or lower alkoxy; and
Z is —OR_3 or —NR_4R_5 wherein R_3 is hydrogen or lower alkyl and R_4 and R_5 are independently hydrogen or lower alkyl.

5,188,831

SUNSCREENS CONTAINING BOTH WATER AND OIL DISPERSIBLE TITANIUM DIOXIDE PARTICLES

Gregg A. Nicoll, Dumont, N.J.; Ann C. Ojo-Osagie, Bedford, and Ian R. Scott, Wellingborough, both of England, assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed May 10, 1991, Ser. No. 698,432
Claims priority, application United Kingdom, May 10, 1990, 9010526
Int. Cl.[5] A61K *7/45*
U.S. Cl. 424—401 9 Claims

1. A composition for topical application to human skin to provide protection from excessive exposure to ultra-violet rays, which comprises:
(a) an effective amount of a sunscreen comprising a mixture of water-dispersible titanium dioxide exhibiting a hydrophilic surface and an oil-dispersible titanium dioxide exhibiting a hydrophobic surface, each of said titanium dioxides having an average particle size of less than 100 nm in total amount said titanium dioxides being present from 3 to 7% by weight and said water-dispersible and oil-dispersible titanium dioxides being present in a respective ratio of 1:2 to 2:1; and
(b) a cosmetically acceptable vehicle for said sunscreen.

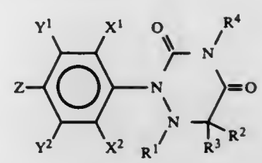
5,188,832

AGENTS DIRECTED AGAINST PARASITES OF FISHES AND INSECTS

Heinz Mehlhorn, Neuss-Uedesheim; Horst Taraschewski; Günter Schmahl, both of Bochum; Wolfgang Raether, Dreieich, and Manfred Rösner, Eppstein/Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 14, 1990, Ser. No. 480,158
Claims priority, application Fed. Rep. of Germany, Feb. 16, 1989, 3904593; Mar. 11, 1989, 3908030
Int. Cl.[5] A01N *43/66, 31/53*
U.S. Cl. 424—405 11 Claims

1. A method which comprises treating insects or productive, breeding, aquarium or ornamental fishes infested with parasitic protozoa or metazoa by administering an effective amount of a compound of the formula (I)



(I)

in which
R^1 represents together with R^2 a chemical bond or hydrogen, straight-chain or branched C_1–C_{12}-alkyl, C_3–C_8-cycloalkyl, benzyl which can be substituted in the phenyl ring by 1–3 radicals from the group comprising halogen and C_1–C_4-alkyl, or C_1–C_{12}-alkanoyl which can be substituted 1 to 3 times by halogen, or benzoyl which can be substituted by 1 to 3 radicals from the group comprising halogen and C_1–C_4-alkyl, R^2 represents together with R^1 a chemical bond or hydrogen, R^3 represents hydrogen, C_1–C_{12}-alkyl or C_3–C_8-cycloalkyl, R^4 represents hydrogen, straight-chain or branched C_1–C_{12}-alkyl, C_3–C_8-cycloalkyl, benzyl which can be substituted by 1 to 3 radicals from the group comprising halogen and C_1–C_4-alkyl, X^1, X^2, Y^1, Y^2 and Z represent, independently of one another,
a) hydrogen, halogen, trifluoromethyl, C_1–C_6-alkyl, C_3–C_6-cycloalkyl, C_1–C_6-alkoxy, C_1–C_6-alkylthio, C_1–C_6-alkylsulfinyl, C_1–C_6-alkylsulfonyl, benzylthio, benzylsulfinyl, benzylsulfonyl, nitro, cyano, amino, C_1–C_{12}-alkylamino, di-(C_1–C_{12}-alkyl)-amino, N-(C_1–C_{12}-alkyl)-aminomethyl, N,N-di-(C_1–C_{12}-alkyl)-aminomethyl, piperidino, morpholino, thiomorpholino, 1-pyrrolidinyl, 4-methyl-1-piperazinyl or C_1–C_6-acylamino or
b) a phenoxy, phenylthio, phenylsulfinyl, phenylsulfonyl, benzoyl, benzoylamino, phenylamnio, N,N-phenyl-(C_1-C_6-alkyl)-amino, 1-cyano-1-phenyl-methyl, 1-cyano-1,1-diphenylmethyl, 1-cyano-1-phenyl-1-(C_1–C_6-alkyl)-methyl, 1-cyano-1-phenyl-1-(C_3–C_6-cycloalkyl)-methyl, thienyl or naphthyl radical, each of which is unsubstituted or substituted a total of 1, 2 or 3 times in the phenyl ring by radicals mentioned under a),
or else their physiologically tolerated salts in the case where R^4=H, by causing said fishes or insects to ingest said compound, or by introducing said compound into the habitat the fishes or insects, or by contacting the insects with the compound.

5,188,833

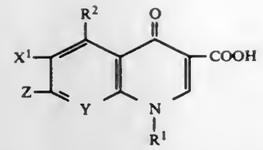
FREEZE-DRIED PHARMACEUTICAL PREPARATIONS FOR PARENTERAL USE

Shinji Kamijo, Tokyo; Jun Imai, Kanagawa, and Hiromichi Kodaira, Tochigi, all of Japan, assignors to Kyorin Seiyaku Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 291,244, Dec. 28, 1988, abandoned. This application Jan. 22, 1991, Ser. No. 644,686
Claims priority, application Japan, Dec. 28, 1987, 62-334923
Int. Cl.[5] A01N *25/02, 43/54;* A61K *31/505*
U.S. Cl. 424—405 13 Claims

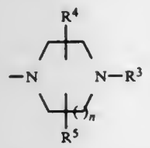
1. A freeze-dried pharmaceutical preparation containing the compound of the following formula (I),

VOL 1147 ISS 4 FEB 23 1993 UMI

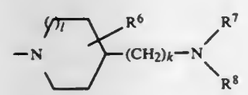


(I)

wherein R^1 represents a cycloalkyl group having 3 to 6 carbon atoms, straight or branched alkyl group having 1 to 3 carbon atoms, lower haloalkyl group, lower alkenyl group, lower hydroxyalkyl group, lower alkylamino group having 1 to 3 carbon atoms or phenyl group which may be substituted by fluorine atoms; R^2 represents a hydrogen atom, halogen atom, nitro group or amino group; X^1 represents a halogen atom; Y represents CX^2, (wherein X^2 represents a halogen atom, or lower alkyl or alkoxy group), Z represents



(wherein n is 1 or 2; R^3 represents a hydrogen atom or alkyl group having 1 or 3 carbon atoms, R^4 and R^5 each represent independently a hydrogen atom, alkyl group having 1 to 3 carbon atoms, lower aminoalkyl group, lower hydroxyalkyl group or phenyl group or



wherein k is 0 or 1, l is 0, 1 or 2, R^6 represents a hydrogen atom, halogen atom, alkyl group having 1 to 3 carbon atoms or hydroxy group, R^7 represents a hydrogen atom, alkyl group, having 1 to 3 carbon atoms, lower haloalkyl group or lower hydroxyalkyl group; R^8 represents a hydrogen atom or alkyl group having 1 to 3 carbon atoms; the hydrates or the pharmaceutically acceptable acid addition or alkali salts thereof.

5,188,834
METHOD OF PREPARING A BIOLOGICAL IMPLANTATION MATERIAL

Michael Grimm; Elisabeth Eybl; Andrea Griesmacher; Martin Grabenwoger; Mathias M. Muller, and Ernst Wolner, all of Vienna, Austria, assignors to Sorin Biomedica S.p.A., Vercelli, Italy

Filed May 30, 1990, Ser. No. 530,634
Claims priority, application Austria, May 31, 1989, 1323/89
Int. Cl.[5] A61F *2/02;* **A61K** *31/115, 31/195*
U.S. Cl. 424—422 **7 Claims**

1. A method of preparing a fixed biological implantation material, comprising:
a) fixing a biological implantation material with an aldehyde, wherein said aldehyde is selected from the group consisting of glutaldenyde, formaldehyde, and glyoxal; and
b) treating the fixed biological implantation material with an aminodicarboxylic acid in an acidic medium in the presence of a buffered medium, wherein the pH of said acidic medium is from 3 to 5, and wherein the concentration of said aminocarboxylic acid is from 0.001 M to 2.0 M.

5,188,835
INTRAVAGINAL DEVICES

Inga M. Lindskog, Helsingborg; Bengt C. H. Sjögren, Viken, and Sven-Börje Andersson, ÖdÅkra, all of Sweden, assignors to Kabi Pharmacia AB, Uppsala, Sweden

Continuation of Ser. No. 337,074, Apr. 12, 1989, abandoned, which is a continuation of Ser. No. 60,833, Jun. 12, 1987, Pat. No. 4,871,543. This application Nov. 12, 1991, Ser. No. 793,484
Claims priority, application Sweden, Jun. 16, 1986, 8602666-3
Int. Cl.[5] A61F *6/14*
U.S. Cl. 424—432 **6 Claims**

1. An intravaginal device for use by hypoestrogenic women comprising 17 beta-estradiol incorporated within a supporting elastomeric matrix in such a way that the 17 beta-estradiol will, for at least a month, be continuously released from the elastomeric matrix at an essentially constant rate of about 0.5 to about 25 μg per 24 hours.

5,188,836
SUSTAINED RELEASE FORMULATIONS

Nouman Muhammad, Long Valley; Wayne Boisvert, Hopatcong; Michael Harris, Hackettstown, and Jay Weiss, East Brunswick, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jul. 27, 1990, Ser. No. 559,221
Int. Cl.[5] A61K *47/00*
U.S. Cl. 424—431 **8 Claims**

1. A process for the preparation of a biologically active material as a semi-enteric, sustained release formulation, characterized by a two-tiered solubility profile in the human digestive tract such that initial dissolution begins in the stomach with complete dissolution and absorption of the composition in the intestine, comprising the steps of:
a) mixing said active with a water soluble bulking agent and a flowability agent,
b) drying said mixture as a layer or film about an inert core material,
c) coating said layered core with an aqueous dispersion consisting of a water insoluble methacrylic acid polymer, a water soluble sugar alcohol, a food grade acid and a plasticizer and,
d) curing said coated active cores so as to effect a substantially hard shell thereon.

5,188,837
LIPSOPHERES FOR CONTROLLED DELIVERY OF SUBSTANCES

Abraham J. Domb, Baltimore, Md., assignor to Nova Pharmaceutical Corporation, Baltimore, Md.

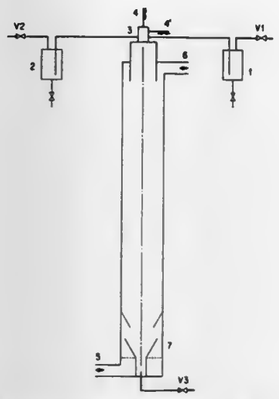
Continuation of Ser. No. 435,546, Nov. 13, 1989, abandoned. This application Oct. 3, 1991, Ser. No. 770,706
Int. Cl.[5] A61K *31/47;* **A01N** *25/00*
U.S. Cl. 424—450 **21 Claims**

1. A liposphere comprising
a core formed of a hydrophobic material existing as a solid at a temperature of at least 30° C., and
a phospholipid coating surrounding the core, wherein the hydrophobic ends of the phospholipid are embedded in the solid core and the hydrophilic ends of the phospholipid are exposed on the surface of the liposphere,
the combination forming a spherical structure having an average particle diameter of between 0.3 and 250 microns.

5,188,838
PROCESS FOR THE PREPARATION OF MEDICATIONS IN THE FORM OF PEARLS

Michel Deleuil, Antony; Pierre Labourt-Ibarre, Lyon; Robert Rona, Saint-Germain-En-Laye, and Eraclis Statiotis, Villette D'Anthon, all of France, assignors to Rhone-Poulenc Sante, France

Filed Jan. 18, 1991, Ser. No. 642,947
Claims priority, application France, Jan. 19, 1990, 90 00623
Int. Cl.[5] A61K *9/48*
U.S. Cl. 424—451 **12 Claims**



1. Process for preparing medications in the form of pearls based on a pharmaceutical active substance exhibiting an indefinite crystallization point, wherein the active substance is a propionic acid derivative, said process comprising mixing the active substance in molten form with a pharmaceutical excipient promoting solidification of the active substance, forcing the melt to pass through a nozzle which is subjected to a vibration, permitting the pearls formed to fall in a tower countercurrently to a gas, and collecting the pearls formed in the bottom of the tower.

5,188,839
PHARMACEUTICAL COMPOSITIONS OF CIMETIDINE

Kevin E. Pearmain, Hitchin, England, assignor to Smith Kline & French Laboratories Ltd., Hertfordshire, United Kingdom

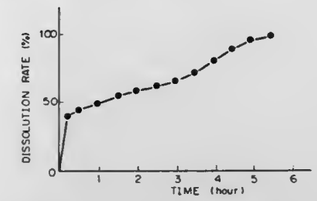
PCT No. PCT/GB88/00349, § 371 Date Jan. 4, 1989, § 102(e) Date Jan. 4, 1989, PCT Pub. No. WO88/08703, PCT Pub. Date Nov. 17, 1988
PCT Filed May 4, 1988, Ser. No. 295,190
Claims priority, application United Kingdom, May 8, 1987, 8710965; May 8, 1987, 8710966
Int. Cl.[5] A61K *9/16, 9/20*
U.S. Cl. 424—464 **5 Claims**

1. A solid pharmaceutical dosage form comprising pharmaceutical granules which comprise an effective amount of cimetidine and about 2–20% w/w relative to the cimetidine of a co-polymer of dimethylaminoethyl-methacrylate and neutral methacrylic acid esters wherein the co-polymer functions as a granulating and binding agent and is in admixture with the cimetidine and wherein the granules are compressed into a tablet.

5,188,840
SLOW-RELEASE PHARMACEUTICAL AGENT

Yoshimitsu Iida, Saitama, and Shuji Sumida, Tokyo, both of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1986, Ser. No. 906,959
Claims priority, application Japan, Sep. 26, 1985, 60-213277
Int. Cl.[5] A61K *9/22*
U.S. Cl. 424—468 **38 Claims**



1. A slow-release pharmaceutical agent which consists essentially of fumaric acid and/or DL-tryptophan in addition to one or more pharmacologically active substances, provided that the combination of Nicorandil and fumaric acid is excluded, wherein said slow-release pharmaceutical agent is a layered table consisting of a layer containing a pharmacologically active substance and a layer which does not contain any pharmaceutically active substance.

5,188,841
SUSTAINED RELEASE PHARMACEUTICAL FORMULATIONS

Gordon T. Simpkin, Ingatestone, England, and Isabelle Husson, Chevreuse, France, assignors to Rhone-Poulenc Sante, Antony, France

Filed Jun. 18, 1990, Ser. No. 539,193
Claims priority, application United Kingdom, Jun. 16, 1989, 8913889
Int. Cl.[5] A61K *9/16*
U.S. Cl. 424—495 **17 Claims**

1. Granules, each of which comprises a core comprising ketoprofen and microcrystalline cellulose wherein the amount of ketoprofen is 60 to 80% w/w of the weight of the core and a coating comprising a water-soluble and a water-insoluble cellulose derivative wherein the coating comprises 90 to 60% w/w of ethylcellulose.

5,188,842
EDIBLE PLASTIC COMPOSITIONS

Johannes Visser, and Marinus Bakker, both of Maassluis, Netherlands, assignors to Van den Bergh Foods Co., Division of Conopco, Inc., Lisle, Ill.

Filed Jun. 16, 1989, Ser. No. 367,069
Claims priority, application European Pat. Off., Jun. 16, 1988, 88201237.0
Int. Cl.[5] A61K *35/20;* **A23J** *3/22*
U.S. Cl. 424—535 **12 Claims**

1. A process for the preparation of a plastic food composition comprising successively heating and concentrating an aqueous composition comprising less than 15% by weight of water of heat denaturable protein in order to at least partly denature said protein and to at least double the protein concentration of the aqueous denatured protein composition and they remove at least part of any remaining undenatured protein present to provide a plastic composition comprising at least 5 wt. % of heat denatured prtein in the form of non-aggregated protein-based microcolloidal particles, wherein the composition is subjected to less than 500 reciprocal seconds of shear during the process.

VOL
1147
ISS
4
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23
1993
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5,188,843

Patent Not Issued For This Number

5,188,844

COLOR MODIFIED MELANINS AND METHODS FOR THEIR PREPARATION AND USE

Ago B. Ahene, Newark, and Miles Chedekel, Vacaville, both of Calif., assignors to Advanced Polymer Systems, Inc., Redwood City, Calif.

Continuation of Ser. No. 523,089, May 14, 1990, abandoned. This application May 7, 1992, Ser. No. 883,226
Int. Cl.[5] A61K *35/36*
U.S. Cl. 424—574 14 Claims

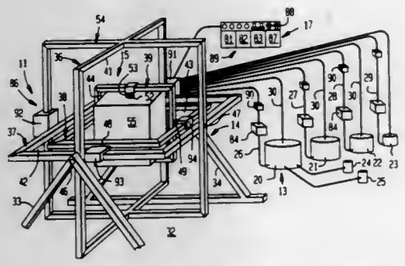
1. A method for color modification of synthetic melanin or melanin which has bene isolated from natural sources, said method comprising:
combining a naturally dark melanin with a color modification agent selected from the group consisting of oxidizing agents and reducing agents in an aqueous medium, whereby a color modification reaction is initiated;
stopping the color modification reaction after the melanin has been lightened sufficiently so that the color is color-compatible with a human skin color; and
extracting the modification agent from the melanin.

5,188,845

MULTIAXIS ROTATIONAL MOLDING APPARATUS

LeRoy Payne, 3300 Nicholas La., Molt, Mont. 59057

Continuation-in-part of Ser. No. 417,502, Oct. 5, 1989, Pat. No. 5,022,838, which is a continuation-in-part of Ser. No. 271,686, Nov. 16, 1988, Pat. No. 4,956,133, which is a continuation-in-part of Ser. No. 202,267, Jun. 6, 1988, Pat. No. 4,956,135, which is a continuation-in-part of Ser. No. 890,742, Jul. 30, 1986, Pat. No. 4,749,533, which is a division of Ser. No. 766,498, Aug. 19, 1985, Pat. No. 4,671,753. This application May 30, 1991, Ser. No. 707,656
Int. Cl.[5] B29C *45/33*
U.S. Cl. 425—4 R 15 Claims



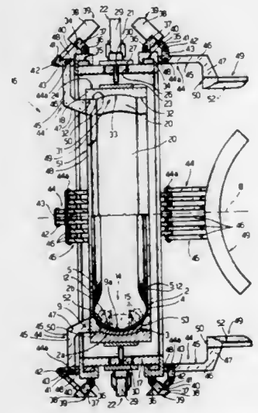
1. Multiaxis rotational molding apparatus including a raw material supplying portion, a supporting portion, a molding portion, a mixing portion and a control portion; said raw material supplying portion including a plurality of reservoirs, said reservoirs being connected independently with said mixing portion through conduits; said supporting portion including a base surface with generally parallel spaced upstanding end sections, a plurality of frame members each with a large open central area disposed between said upstanding end sections and rotatably supported thereon; said molding portion being rotatably supported within said frame members, said molding portion including at least one rotatable mold assembly, said mold assembly including at least two separable mold sections and a mold section orientor therefor, said mold sections including at least one monitor including at least two optical fiber elements extending through said mold sections with one end of each optical fiber element terminating at a mold cavity forming surface of a mold section and an end of each optical fiber element terminating at a remote second surface thereof, a signal generator disposed adjacent a remote surface end of one optical fiber element; a signal sensor disposed adjacent a remote surface end of another optical fiber element; said mixing portion including a through flow mixing chamber mounted adjacent said molding portion, a continuous raw material mixer disposed within said chamber; said control portion including circuitry transmitting signals from said sensor to a coordinator for comparison with programmable memory and activation of an actuator to control a mold assembly rotator in a preselected multiaxis mold rotational profile.

5,188,846

TIRE INNERSTITCHING MOLD

Karl J. Siegenthaler, Roma-Ostia, Italy, assignor to Bridgestone/Firestone, Inc., Akron, Ohio

Filed Feb. 6, 1992, Ser. No. 832,112
Claims priority, application Italy, Mar. 26, 1991, T901A 000213
Int. Cl.[5] B29B *9/00*
U.S. Cl. 425—11 8 Claims



1. A tire innerstitching mold, characterized by the fact that it comprises an annular gripping body for receiving and retaining an outer tread belt; and two annular shoulders located on opposite sides of said annular gripping body and defining, with same, a concave annular stitching surface negatively matching the outer shoulder and tread surface of a finished smooth-tread green tire; at least one of said two annular shoulders being movable in relation to said annular gripping body.

5,188,847

Patent Not Issued For This Number

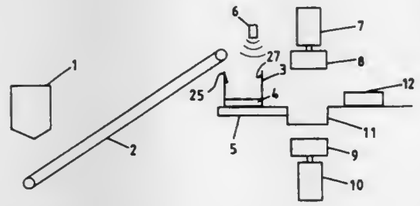
5,188,848

DEVICE FOR MAKING EARTHEN BLOCKS

Virgile S. Taddei, Avenue Van Volxem 180, 1190, Brussels, Belgium

Filed Sep. 12, 1990, Ser. No. 581,519
Claims priority, application Belgium, Sep. 13, 1989, 08900971
Int. Cl.[5] B29C *31/00, 43/00*
U.S. Cl. 425—147 14 Claims

1. An apparatus for making earthen blocks, said apparatus comprising:
a hopper;
a filling means for loading the hopper with a compactible material to a predetermined level, said filling means including a means for verifying that said hopper is filled to said predetermined level;
a means for moving the hopper to a mold cavity and for emptying said hopper in said mold cavity;



a first press including a first punch and a first drive means for guidingly moving the first punch forcibly and reciprocatively along a first line into and out of the mold cavity to compress a compactible material contained therein;
said first drive means including a means for selectively exerting a) a precompression force, b) a first compression force in excess of the precompression force, and c) a second compression force in excess of the precompression force;
a second press including a second punch surrounding a fixed base and a second drive means for guidingly moving the second punch along a second line substantially parallel to the first line,
there being means for holding the first and second punches during the application of the precompression force and the first compression force and enabling a movement of said second punch during application of said second compression force in a corresponding direction as the first punch,
said first punch and said second punch respectively forming a first wall and lateral walls of said mold cavity, said fixed base forming a second wall situated in facing relationship, with said first wall said lateral walls circumscribing said second wall; and
cooperating means on said first punch for engaging the second punch during said second compression, said first drive means and said first punch urging said compressible material against said second wall and said lateral walls to create an entrainment force, said cooperating means and said entrainment force engaging said second punch and said lateral walls and driving said second punch and said lateral walls when said second compression force is applied,
wherein said verifying means includes a signal generator means and signal receiver means both located above said hopper, the generator means for sending an ultrasonic signal towards said hopper, the receiver means for receiving a reflected ultrasonic signal, said verifying means including a timer for measuring a duration between the sending of the ultrasonic signal by the generator means and the receipt of the signal by the receiver means, said verifying means including means for generating a second control signal in the event that said duration exceeds a predetermined value corresponding to said predetermined level.

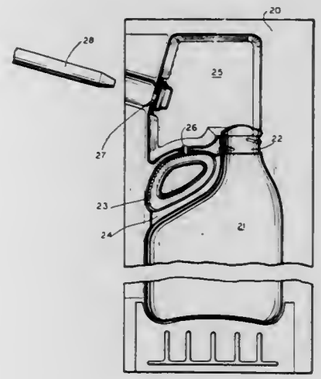
5,188,849

APPARATUS FOR MAKING A MULTI-LAYER PLASTIC BOTTLE WITH A HANDLE

Thomas J. Krall, Toledo, and Robert A. Myers, Perrysburg, both of Ohio, assignors to Owens-Illinois Plastic Products Inc., Toledo, Ohio

Division of Ser. No. 489,122, Mar. 5, 1990, Pat. No. 5,087,406. This application Dec. 6, 1991, Ser. No. 804,826
Int. Cl.[5] B29C *49/42*
U.S. Cl. 425—525 1 Claim

1. An apparatus for making a plastic container with a handle comprising



mirror image mold sections positioned to close about a hollow prison,
each said mold section including a hollow portion positioned to define the body of the container, a generally semi-circular portion positioned to define the finish of the container, a continuous groove for defining part of the handle, a shallow groove for defining a wall surrounded by the handle, and upper cavity for defining part of a moil portion and a groove for providing a passage in the blown container between the moil cavity and the grooves which cooperates to define the handle, said mold further including a guide portion for receiving a blow pipe for supplying gaseous pressure to the moil portion such that when the mold sections are closed about a hollow parison of molten plastic material at a blow molding temperature, a portion

VOL
1147
ISS
4
FE
23
1993
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of the hollow parison is pinched between the mold sections to form a hollow moil portion, an integral neck portion and a body forming portion with the moil portion communicating with the body portion through the neck portion and forming an integral hollow handle portion during the pinching of a first integral double layer wall portion, the first integral double wall layer portion isolating the handle portion from the body portion and forming a second integral double layer wall portion connecting the handle portion to the moil portion and having a hollow passage between the layers of the second double layer wall portion extending between the moil portion and the handle portion and such that when the parison is expanded by applying gaseous pressure through a blow piece received in the guide portion, the gaseous pressure passes from the moil portion to the neck portion then through the neck portion to the body portion to form the container and through the moil portion to the passage in the second wall portion to the handle portion to expand the handle portion, wherein gaseous pressure is applied to the handle portion only from the passage in the handle portion.

5,188,850

CLAMPING APPARATUS FOR MOLDING MACHINE

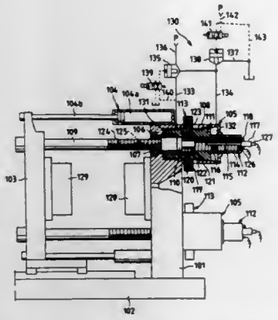
Hisakazu Hirata; Kazuyuki Okubo, and Motomi Kitamura, all of Nagano, Japan, assignors to Nissie Jushi Kogyo K.K., Nagano, Japan

Division of Ser. No. 731,849, Jul. 17, 1991. This application Dec. 30, 1991, Ser. No. 814,178

Claims priority, application Japan, Jul. 27, 1990, 2-200593; Aug. 31, 1990, 2-230273; Aug. 31, 1990, 2-230274; Aug. 31, 1990, 2-230275; Aug. 31, 1990, 2-230276

Int. Cl.[5] B29C *45/64*

U.S. Cl. 425—589 **6 Claims**



1. A clamping apparatus for a molding machine comprising:
a base;
a fixed board disposed on said base;
a movable board movable relative to said fixed board;
a plurality of mold clamping cylinders disposed in predetermined positions on one of said fixed board and said movable board, said mold clamping cylinders each having a mold clamping piston with a tie bar reception hole and a tie bar connection device disposed on said mold clamping piston;
a plurality of tie bars with a thread at one end thereof, said tie bars being disposed in correspondence with said mold clamping cylinder on the other of said fixed board and said movable board, said one end being insertable into each of said reception holes;
a plurality of mold opening/closing cylinders for moving said movable board toward and away from said fixed board; and
a differential circuit connected between a front oil chamber and a rear oil chamber of each of said plurality of mold clamping cylinders for moving said piston in a mold opening direction or a mold closing direction, said circuit including:
a first hydraulic line communicating with said front oil chamber;
a second hydraulic line communicating with said rear oil chamber;
pump means for supplying pressurized oil to said first and second lines through an input line; and
selecting means for selectively communicating said input line with said first and second lines and for communicating said first and second lines with each other.

5,188,851

FEED COMPOSITION FOR FISH BREEDING INCLUDING MONONUCLEOTIDES

Katsuhiro Mamoto, Matsudo; Yasuyuki Nakamura; Akiyoshi Kawaoka, both of Iwakuni, and Masahiko Tabata, Otake, all of Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1990, Ser. No. 616,074

Claims priority, application Japan, Nov. 21, 1989, 1-300841

Int. Cl.[5] A01K *61/00;* **A23L** *2/26, 1/325;* **C07H** *19/00*

U.S. Cl. 426—2 **8 Claims**

1. In a feed composition for fish breeding containing fish meal, the improvement wherein said feed composition contains an amount of 5'-guanylic acid, 5'-cytidylic acid, 5'-uridylic acid, and 5'-adenylic acid or 5'-inosinic acid effective to synergistically improve the feeding preference of fish for said feed composition, wherein said feed composition comprises
(a) 0.03–1 wt. % of each of 5'-guanylic acid, 5'-cytidylic acid, 5'-uridylic acid, and 5'-adenylic acid or 5'-inosinic acid,
(b) 0.1–20 wt. % of an extract from yeast containing 0.5–10 wt. % of each of 5'-guanylic acid, 5'-cytidylic acid, 5'-uridylic acid, and 5'-adenylic acid or 5'-inosinic acid, or
(c) 0.1–20 wt. % of an extract from yeast containing 0.5–10 wt. % of each of 5'-guanylic acid, 5'-cytidylic acid, and 5'-adenylic acid or 5'-inosinic acid and 10–45 wt. % of an oligopeptide.

5,188,852

PROCESS FOR PRODUCING YEAST EXTRACT

Akira Origane, and Takasi Sato, both of Osaka, Japan, assignors to Oriental Yeast Co., Ltd., Tokyo, Japan

PCT No. PCT/JP90/00118, § 371 Date Oct. 14, 1990, § 102(e) Date Oct. 14, 1990, PCT Pub. No. WO91/11116, PCT Pub. Date Aug. 8, 1991

PCT Filed Feb. 1, 1990, Ser. No. 602,246

Int. Cl.[5] A23L *1/28*

U.S. Cl. 426—60 **6 Claims**

1. A process for producing yeast extract which comprises;
adding chitosan to a mixture of live yeast and water to make a ratio of 0.01 to about 3% by weight of chitosan to live yeast;
allowing the yeast to autolyse in a pH range of 2.5 to 7.5, at about 30° to about 54° C. and for about 10 to about 20 hours to form an autolysate;
separating solids from the autolysate to obtain a supernatant; and, concentrating or drying the supernatant.

5,188,853

METHOD FOR CONTINUOUSLY TEMPERING A MASS CONTAINING COCOA BUTTER OR SIMILAR FATS

Helmut Sollich, Rabenkirchen, Fed. Rep. of Germany, assignor to Sollich GmbH, Bad Salzuflen, Fed. Rep. of Germany

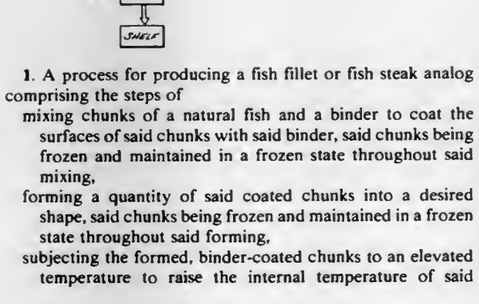
Filed Aug. 28, 1991, Ser. No. 751,870

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1990, 4027429

Int. Cl.[5] A23G *1/00*

U.S. Cl. 426—231 **12 Claims**

1. A method for continuously tempering a mass containing cocoa butter or similar fats, in a tempering machine with first and second cooling stories (6, 7) having cooling surfaces (13, 14) and at least one subsequent heating story (8) having a heating surface (15), comprising the steps of: pumping the mass having a mass input temperature via a pump through mass chambers (9, 11) of the first and second cooling stories (6, 7) and the heating story (8), cooling the mass in the first and second cooling stories (6, 7) and reheating the mass in the heating story (8), while the mass is cooled and heated, moving



a cooling medium through the cooling chambers (10) adjacent the cooling surfaces (13, 14) of the first and second cooling stories, and moving a heating medium through the heating chambers (12) adjacent the heating surface (15) of said heating story (8), and maintaining the temperature of the cooling surfaces (14) of the second cooling story (7) adjacent the heating story (8) at a constant value in at least one crystallization area at the end of the second cooling story (7) for crystallizing the mass independent of changing mass input temperatures and mass throughput amounts.

5,188,854

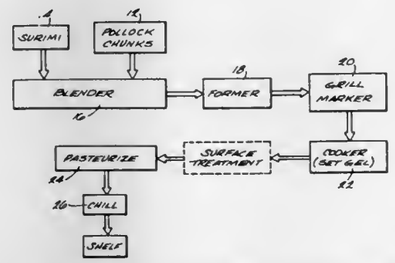
PROCESS FOR PREPARING A FISH ANALOG

William J. Hartman, Duluth, Minn., and Robert F. Delahunt, Gordon, Wis., assignors to Tyson Holding Company, Wilmington, Del.

Filed Sep. 18, 1991, Ser. No. 762,868

Int. Cl.[5] A23L *1/325*

U.S. Cl. 426—272 **26 Claims**



1. A process for producing a fish fillet or fish steak analog comprising the steps of
mixing chunks of a natural fish and a binder to coat the surfaces of said chunks with said binder, said chunks being frozen and maintained in a frozen state throughout said mixing,
forming a quantity of said coated chunks into a desired shape, said chunks being frozen and maintained in a frozen state throughout said forming,
subjecting the formed, binder-coated chunks to an elevated temperature to raise the internal temperature of said chunks to a predetermined level sufficient to cook said chunks and set said binder, and
subjecting said formed and cooked binder coated chunks to pasteurization.

5,188,855

PROCESS FOR MAKING COATED EXPANDED SNACK PRODUCT

Donald B. Bernacchi, Chicago; Donna L. Immel, Green Oaks, both of Ill., and Carol A. Yuknis, Highland, Ind., assignors to Griffith Laboratories Worldwide, Inc., Alsip, Ill.

Continuation of Ser. No. 308,146, Feb. 8, 1989, abandoned. This application Aug. 7, 1990, Ser. No. 563,482

Int. Cl.[5] A23L *1/10, 1/216*

U.S. Cl. 426—273 **23 Claims**

1. A method of making a coated expanded snack product comprising:
obtaining an expanded farinaceous material containing up to about 20% by weight moisture which maintains its integrity on immersion in a liquid precoat mixture;
battering the expanded farinaceous material in the liquid precoat mixture;
applying a breading to the battered expanded farinaceous material;
baking the batter and breaded expanded farinaceous material; and
frying the battered, breaded and baked expanded farinaceous material.

5,188,856

METHOD OF DRYING LUMPY AGRICULTURAL PRODUCTS

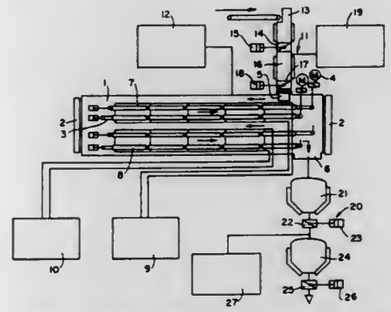
Wolfgang Hinz, Baden, and Ernst Gass, Herznach, both of Switzerland, assignors to Swag Zschokke Wartmann AG, Dottingen, Switzerland

Filed Apr. 1, 1991, Ser. No. 678,137

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1990, 4010594

Int. Cl.[5] A23B *7/00*

U.S. Cl. 426—465 **8 Claims**



1. A method of treating a chunky agricultural product comprising the steps of subjecting said product to a heat treatment while maintaining an overpressure of a gaseous medium selected from the group consisting of a insert gas, dry air, carbon dioxide and mixtures thereof, and thereafter releasing said gaseous medium to vacuum at a pressure difference Δp which is at least higher than about 1 bar while drying said product at vacuum conditions, whereby the cells of the product are expanded when released to vacuum and the product to dewatered during vacuum drying.

VOL 1147 ISS 4 FE 23 1993 UMI

5,188,857

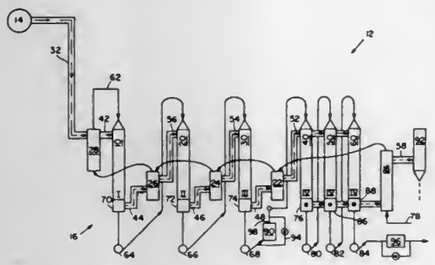
CITRUS JUICE CONCENTRATE METHOD

Philip M. Grant, Norcross, Ga., assignor to APV Gaulin, Inc., Everett, Mass.

Continuation of Ser. No. 399,171, Aug. 28, 1989, abandoned, which is a continuation-in-part of Ser. No. 46,346, May 1, 1987, Pat. No. 4,886,574. This application Jan. 2, 1991, Ser. No. 635,397

Int. Cl.[5] A23L *2/02*; B01D *1/26*

U.S. Cl. 426—519 8 Claims



1. A method of processing citrus juice concentrate in an interrelated homogenization and evaporation steps, the steps comprising:

providing citrus juice which decreases in viscosity with homogenization and has a tendency to gel at brix levels of about 72° to about 75°;

in an evaporator, evaporating the citrus juice preheated to a final temperature of about 210° F. in a multistage, multieffect evaporator to form a viscous citrus product; and

decreasing viscosity of the citrus product in an amount defined as a function of position of a homogenizer with respect to the evaporator, said decreasing viscosity including homogenizing the viscous citrus product at one of an intermediate position and output end of the multistage, multieffect evaporator, said homogenizing at one of an intermediate position and output end of the evaporator further aiding flow throughout the evaporator by providing uniform flow of the citrus product throughout the evaporator.

5,188,858

PROPYLENE GLYCOL DIESTERS OF MEDIUM CHAIN AND LONG CHAIN SATURATED FATTY ACIDS USEFUL AS REDUCED CALORIE COCOA BUTTER SUBSTITUTES AND HARD BUTTERS

Gordon K. Stipp, Cincinnati, and Bernard W. Kluesener, Harrison, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 18, 1991, Ser. No. 644,042

Int. Cl.[5] A23L *1/00*; A23G *3/00*; C09F *5/08*

U.S. Cl. 426—531 42 Claims

31. A process for preparing a flavored reduced calorie confectionery product, which comprises the steps of:

(I) forming a fluid flavored confectionery mass which comprises:

(A) a flavor-enhancing amount of a flavor component;

(B) from about 25 to about 45% of a fat component comprising:

(1) at least about 60% of a reduced calorie propylene glycol diester composition having a peak melt point of from about 27° to about 37° C. that crystallizes into a stable β' solid form and comprising:

(a) at least about 90% ML/LM propylene glycol diesters, up to about 10% MM propylene glycol diesters and up to about 10% LL propylene glycol diesters, wherein M are medium chain saturated fatty acid radicals selected from the group consisting of caprylic and capric fatty acid radicals, and mixtures thereof, and wherein L are long chain saturated fatty acid radicals selected from the group consisting of arachidic, behenic, and lignoceric fatty acid radicals, and mixtures thereof;

(b) the medium chain radicals comprising from 0 to 100% caprylic radicals and from 0 to 100% capric radicals; and

(c) the long chain radicals comprising from about 30 to about 95% behenic radicals, from about 5 to about 70% arachidic radicals and from about 0 to about 5% lignoceric radicals;

(2) up to about 25% milkfat;

(3) up to about 15% cocoa butter; and

(C) from about 55 to about 75% other nonfat confectionery ingredients;

(II) holding the fluid mass of step (I) at a temperature of from about 78° to about 83° F. (from about 25.6° to about 28.3° C.) for a period of at least about 10 minutes to form an effective amount of β' seed crystals from a portion of the diester composition;

(III) cooling the fluid mass of step (II) to a temperature of about 50° F. (10° C.) or less for a period of at least about 15 minutes; and

(IV) warming the cooled mass of step (III) to a temperature of about 70° F. (21.1° C.) or higher to provide a flavored confectionery product wherein the diester composition is fully crystallized into the β' phase.

5,188,859

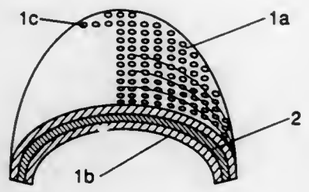
LOW FAT SNACK

Richard W. Lodge, and Charles H. Allen, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 25, 1990, Ser. No. 603,580

Int. Cl.[5] A23L *1/10*, *1/217*

U.S. Cl. 426—560 26 Claims



1. A process for making a low fat farinaceous snack having from about 10% to about 25% fat, comprising the steps of:

(a) forming a dough comprising:

(1) from about 50% to about 80% of a source of starch based flour;

(2) from 0% to about 5% emulsifier;

(3) from about 20% to about 50% added water;

(b) forming the dough into a thin snack piece;

(c) coating said snack pieces with about 10% to about 25% oil; and

(d) cooking said snack pieces in an apertured heat conductive mold to a moisture content of from about 4% to about 10% using superheated steam at a temperature of from about 300° F. (148° C.) to about 450° F. (232° C.).

5,188,860

PROCESS FOR THE PRODUCTION OF A FIBER CONTAINING CEREAL PRODUCT

Donald R. Hemann, Kirkwood, and Arthur C. Hamilton, Sr., Flordell Hills, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Nov. 7, 1991, Ser. No. 789,250

Int. Cl.[5] A23L *1/164*

U.S. Cl. 426—560 20 Claims

1. A process for the production of a fiber containing cereal product comprising:

(a) moistening grain particles and cooking said particles;

(b) adding an unhydrated fiber source to the cooked grain particles during pelletization of the particles to form a fiber containing mixture; and

(c) pelletizing and forming said mixture into a high fiber cereal product of improved texture and appearance.

5,188,861

PROCESS FOR PREPARING A DRIED FRUIT PRODUCT

Jack G. Mazin, Maple, and Amir Lalji, Weston, both of Canada, assignors to Royal Domaine Inc., Concord, Canada

Filed May 31, 1990, Ser. No. 530,863

Int. Cl.[5] A23L *1/212*

U.S. Cl. 426—640 7 Claims

1. A process for preparing a flavored dried fruit product said process comprising:

(a) treating a dried fruit with an acidulant being selected from the group consisting of tartaric acid, malic acid, citric acid, ascorbic acid, phosphoric acid and fumaric acid, in an amount and for a period of time which is sufficient to substantially remove the natural flavor of the dried fruit;

(b) dehydrating the treated dried fruit to obtain a desired moisture content; and,

(c) treating the dried fruit during step (a) or after step (b) with a flavoring agent having a flavor which does not substantially correspond to the natural flavor of the dried fruit, said flavoring agent being employed in an amount and for a period of time which is sufficient to impart to the dried fruit a flavor which is substantially the same as the flavoring agent;

and so forming a flavored dried fruit product having a flavor which is substantially the same as the flavor of the flavoring agent and having an outer surface which is substantially non-sticky whereby the flavored dried fruit product may be easily handled.

5,188,862

MICROWAVE PLASMA GENERATING APPARATUS AND PROCESS FOR THE PREPARATION OF DIAMOND THIN FILM UTILIZING SAME

Ryohei Itatani, Kyoto, and Kazuyuki Fukumoto, Sodegaura, both of Japan, assignors to Idemitsu Petrochemical Company Limited, Tokyo, Japan

Filed Sep. 24, 1990, Ser. No. 587,130

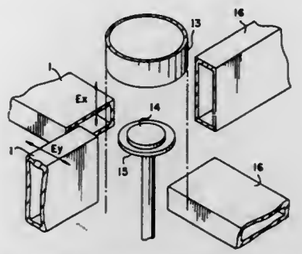
Claims priority, application Japan, Sep. 26, 1989, 1-249830

Int. Cl.[5] C23C *16/48*, *16/50*

U.S. Cl. 427—570 9 Claims

9. A process for preparing a diamond thin film by radiating microwaves into a space in which electric discharge is performed and into which a carbon source gas is filled, comprising:

a plurality of microwaves having perpendicular directions of electric fields to each other are radiated simultaneously



onto the carbon source gas filled in the space in which electric discharge is performed.

5,188,863

DIRECT EFFECT MASTER/STAMPER FOR OPTICAL RECORDING

Martinus J. M. de Graaf, Veldhoven, Netherlands; Michael G. Fickes, Kennett Square, Pa.; George H. Johnson, Wilmington, and Howard E. Simmons, III, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 375,099, Jun. 30, 1989, abandoned. This application Dec. 18, 1990, Ser. No. 628,889

Int. Cl.[5] B05D *3/14*, *5/06*

U.S. Cl. 427—512 24 Claims

1. A method for making an optical recording medium having a basic structure of (a) an optically transparent, dimensionally stable substrate, (b) a solid polymeric informating layer having optically readable information embossed therein, and (c) a light-reflective layer overlying the information layer comprising the steps of:

A. Forming an information master recording which is directly usable as a stamper (master/stamper) by writing a relief track of optically readable information in the form of a series of solid bumps by action of a laser beam upon a recording medium comprising (1) a dimensionally stable planar substrate having adhered to a surface thereof, (2) an active recording layer comprising (a) a lower polymeric expansion layer adhered directly to a surface of the substrate, the expansion layer having a low thermal conductivity, high thermal coefficient of expansion (TCE) and T_g below 50° C., and having a colorant dispersed therein; and (b) bonded to the expansion layer an upper retention layer comprising a solid non-elastic polymer having low thermal conductivity, low TCE and T_g above 70° C.;

B. Forming a hardenable soft polymeric layer on one side of a dimensionally stable planar optically transparent substrate, the layer having a creep viscosity of at least 20 megapoise and a thickness of at least 0.1 micron;

C. Optionally forming a reflective layer on the exposed surface of the hardenable polymeric layer prior to following embossing step D;

D. Embossing the hardenable polymeric layer with an image of the relief information track by applying the bump-containing surface of the master/stamper to the hardenable layer under pressure;

E. Hardening the hardenable polymeric layer;

F. Separating the master/stamper from the embossed polymeric layer; and

G. Forming a reflective layer on the embossed surface of the hardened polymeric layer if none was formed prior to embossing step D.

VOL
1147
ISS
4
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23
23
1993
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5,188,864

ADHESION PROMOTER FOR UV CURABLE SILOXANE COMPOSITIONS AND COMPOSITIONS CONTAINING SAME

Chi-long Lee, and Michael A. Lutz, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 425,657, Oct. 23, 1989, abandoned, which is a division of Ser. No. 232,204, Aug. 15, 1988, Pat. No. 4,921,880. This application Apr. 2, 1991, Ser. No. 679,365

Int. Cl.[5] B05D *3/06*

U.S. Cl. 427—515 **8 Claims**

1. A method of improving the adhesion of a ultraviolet radiation curable siloxane composition to a substrate consisting essentially of

blending to form a mixture of an ultraviolet radiation curable siloxane composition and an adhesion promoter which is a combination consisting of

(A) an alkoxysilicon compound having a general formula

$$(RO)_3Si—X—Si(OR)_3$$

in which R is methyl or ethyl and X is a divalent radical selected from the group consisting of $—(CH_2)_n—$ where n has a value of from 1 to 10 inclusive and $—O(R'_2SiO)_m—$ where each R′ is independently selected from a group consisting of RO—, an aliphatic hydrocarbon radical, and an aromatic hydrocarbon radical, where m has a value of from 0 to 20 inclusive, and

(B) a compound capable of catalyzing a reaction between two ≡SiOR groups in the presence of atmospheric moisture or between ≡SiOR and a hydroxyl group on a substrate,

applying the resulting mixture to a substrate, and then

exposing the resulting product to sufficient ultraviolet radiation to cure the mixture.

5,188,865

PRODUCTION OF A MAGNETIC RECORDING MEDIUM

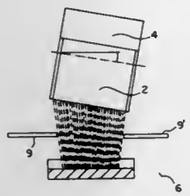
Hans J. Richter, St. Martin; Hartmut Hibst, Schriesheim, and Gerd Fischer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Magnetics GmbH, Mannheim, Fed. Rep. of Germany

Filed Apr. 10, 1992, Ser. No. 866,587

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1991, 4112094

Int. Cl.[5] B05D *5/12*

U.S. Cl. 427—128 **2 Claims**



1. A process for the production of a magnetic recording medium, consisting essentially of a polymeric, web-like substrate and a coherent thin layer of a ferromagnetic material, in a chamber under reduced pressure by producing a vapor jet of the ferromagnetic material from an evaporator unit provided with said material and depositing the vapor jet on the substrate guided over a cylindrical drum, the vapor jet striking the substrate at angles differing from 90°, wherein the axis of rotation of the cylindrical drum guiding the web-like substrate is inclined relative to the plane of the evaporator unit.

5,188,866

PROCESS OF MAKING A MAGNETIC RECORDING MEDIUM

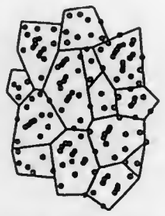
Yuzo Yamamoto, Wakayama; Katsunori Nomoto, and Tsutomu Isobe, both of Tochigi, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Division of Ser. No. 292,533, Dec. 30, 1988, Pat. No. 5,080,982. This application Nov. 14, 1991, Ser. No. 791,390

Claims priority, application Japan, Jan. 4, 1988, 63-199

Int. Cl.[5] B05D *5/12*

U.S. Cl. 427—132 **16 Claims**



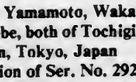
1. A process for preparing a magnetic recording medium which comprises a substrate and a recording layer coated on the substrate comprising:

immersing a substrate into an aqueous solution comprising a ferromagnetic metal ion, a reducing agent for the metal ion, a complexing agent for the metal ion, a pH buffer, an adjuster and 0.005 to 100 g per liter of an aromatic organic polymer (B′) and

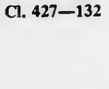
co-depositing and continuously forming onto the substrate, a thin film of a ferromagnetic metal, and being contained in the film, 0.001 to 30 percent by weight, based on the film, of an aromatic organic polymer (B′) having a weight-average molecular weight of 1,000 to 1,000,000 and comprising at least one aromatic ring and 1 to 10 hydroxyl groups (—OH) on the average based on 500 units of the molecular weight and further, as an indispensable component, 0.1 to 4 sulfone groups ($—SO_3$) or 0.1 to 6 groups on the average, based on 500 units of the molecular weight, of at least one polar group selected from the group consisting of a phosphate group represented by the formula



a phosphite group represented by the formula



a phosphonate group represented by the formula



a phosphonite group represented by the formula

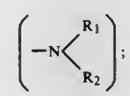
a phosphinate group represented by the formula



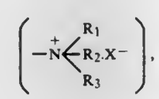
a phosphinite group represented by the formula



a tertiary amino group represented by the formula



and a quaternary ammonium group represented by the formula



wherein R is a hydrogen atom or a hydrocarbon group, R_1, R_2, and R_3 which may be the same or different are each a straight-chain group, a branched alkyl group, a hydroxyalkyl group or an aromatic group, and X is a counter anion, a carboxyl group)—COOH), or a nitro group, wherein said aromatic rings are linked to each other through a main chain comprising at least one member selected from a C—C, C=C, or ether (C—O—C) bond.

5,188,867

LOW COEFFICIENT OF FRICTION MATERIAL AND PLASTIC FILMS COATED THEREWITH

Shaw-Chang Chu, West Winsor, N.J., and Kevin A. Kirk, Macedon, N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Division of Ser. No. 303,897, Jan. 30, 1989, abandoned. This application Mar. 27, 1991, Ser. No. 676,020

Int. Cl.[5] B32B *27/08*

U.S. Cl. 427—173 **14 Claims**

1. A method of making a coated plastic film having a low coefficient of friction, comprising the steps of:

(a) passing a thermoplastic film through a machine direction orienter;

(b) coating the machine oriented film with a coating material comprising (i) a copolymer of acrylic acid comprising 2 to 20 parts by weight of an α, β-monoethelenically unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid and mixtures thereof and 98 to 80 parts by weight of neutral monomer ester, said neutral monomer esters comprising an alkyl acrylate ester, and an alkyl methacrylate ester, (ii) a slip agent consisting of a finely divided wax in the amount of 30 to 150% by weight based on the total weight of the acrylic copolymer, and (iii) a finely divided inorganic solid material in an amount of 5 to 25% by weight based on the total weight of the acrylic copolymer; and

(c) passing the coated plastic film through a transverse direction orienter.

5,188,868

METHOD FOR COATING SURFACES OF A POWDERED MATERIAL BY DIRECTING COATING MATERIAL INTO COANDA SPIRAL FLOW OF POWDERED MATERIAL

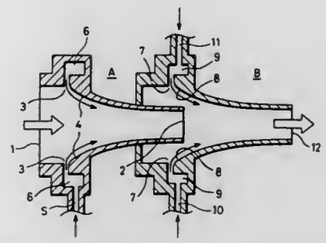
Kiyoshi Horii, Tokyo, and Hiroaki Sawazaki, Fukui, both of Japan, assignors to Fukuvi Chemical Industry Co., Ltd., Fukui, Japan

Filed Sep. 10, 1990, Ser. No. 579,323

Claims priority, application Japan, Dec. 28, 1989, 1-342347

Int. Cl.[5] B05D *7/00*

U.S. Cl. 427—212 **2 Claims**



1. A method for coating surfaces of a powdered material, comprising:

forming a Coanda flow or a Coanda spiral flow of a powdered material by flowing the powdered material through a Coanda flow forming passage or a Coanda spiral flow forming passage by introducing a pressurized gas into the flow forming passage through a Coanda slit therearound;

supplying the thus formed Coanda flow or Coanda spiral flow of powdered material into a further Coanda spiral flow forming passage; and

atomizing a liquid coating material with a pressurized gas and then directing the atomized liquid coating material into the Coanda flow or Coanda spiral flow of powdered material through a Coanda slit in the further Coanda spiral flow forming passage.

5,188,869

PROCESS FOR BURNISHING ANODE CURRENT COLLECTORS

Dale R. Getz, North Ridgeville, and John C. Nardi, Brunswick, both of Ohio, assignors to Eveready Battery Company, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 566,925, Aug. 14, 1990. This application Aug. 23, 1991, Ser. No. 749,022

Int. Cl.[5] B05D *3/12*

U.S. Cl. 427—242 **15 Claims**

1. A process for burnishing anode current collectors for electrochemical cells, comprising the steps of:

a) adding current collectors to a container that contains a burnishing material and a solution comprised of soluble indium ions; and

b) agitating the collectors in the presence of the solution for a time effective to burnish the collectors and for the indium to be distributed on the surface of the collectors.

5,188,870

HIGH-RESOLUTION, PASSIVELY CONTROLLED LIQUID CRYSTAL DISPLAY

Stefan Brosig, Stuttgart, Fed. Rep. of Germany, assignor to Nokia (Deutschland) GmbH, Fed. Rep. of Germany

Filed May 17, 1991, Ser. No. 702,059

Claims priority, application Fed. Rep. of Germany, May 17, 1990, 4015869

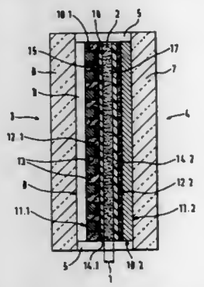
Int. Cl.[5] G02F *1/1337*

U.S. Cl. 428—1 **5 Claims**

1. A high-resolution, passively controlled liquid crystal display comprising:

a first substrate plate (3) made of glass and coated on one side with a transparent and structured electrode (10.1), an equalization and insulation layer (12.1) and a mechanically oriented orientation layer (14.1);

a second substrate plate (4) made of glass and coated on one side with a transparent and structured electrode (10.2), an equalization and insulation layer (12.2) and a mechanically oriented orientation layer (14.2); and



a frame (5) joining the two substrate plates (3,4) along their coated surfaces in such a way as to prevent the entry of air; and a liquid crystal (2) contained in the space (1) formed by the two substrate plates (3,4) and the frame (5), wherein the orientation layer (14.1, 14.2) of at least one of the two substrate plates (3,4) is made of a transparent, highly fluorated, soluble amorphous, aliphatic polymer.

5,188,871

AUTHENTICATABLE SECURITY PAPER

Peter Collings, High Wycombe, England, assignor to The Wiggins Teape Group Limited, Hampshire, England

Filed Mar. 14, 1990, Ser. No. 493,344

Claims priority, application United Kingdom, Mar. 14, 1989, 8905810; Apr. 21, 1989, 8909134

Int. Cl.[5] B44F *1/10;* **D21H** *21/46*

U.S. Cl. 428—29 **18 Claims**

1. A security paper authenticating system comprising, in combination, a security paper carrying both starch and an iodate salt, and an authenticating composition comprising an acidic solution of an iodide salt, the system being such that on applying the authenticating composition to authentic security paper, iodine is generated from the reaction of the iodate salt and the acidic solution of the iodide salt and a characteristic starch-iodine coloration is produced.

5,188,872

COMPOSITE STRUCTURAL MEMBER WITH HIGH BENDING STRENGTH

Peter A. Quigley, Cataumet, Mass., assignor to Fiberspar, Inc., West Wareham, Mass.

PCT No. PCT/US90/03439, § 371 Date Dec. 13, 1991, § 102(e) Date Dec. 13, 1991

Continuation-in-part of Ser. No. 366,464, Jun. 14, 1989, Pat. No. 5,048,441. This PCT application Jun. 14, 1990, Ser. No. 793,434

Int. Cl.[5] B32B *5/06;* **B29D** *22/00;* **B63B** *15/00;* **B31C** *00/00*

U.S. Cl. 428—36.2 **18 Claims**

1. A tubular composite structural member having a plurality of plies, each ply being defined by a fiber component disposed within a polymer matrix, said composite member having the improvement comprising

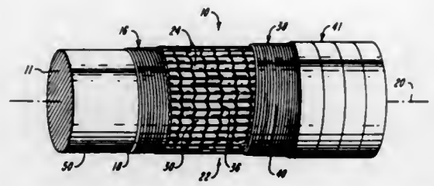
A. at least one inner ply having circumferentially extending fibers,

B. at least one outer ply having circumferentially extending fibers, and

C. at least one intermediate ply having

i) first axially extending fibers in circumferentially-spaced sets with circumferential gaps between each set of the first fibers, and

ii) second axially extending fibers in circumferentially-spaced sets disposed in said circumferential gaps, each



said second fiber being interwoven with helically oriented fibers,

said inner, outer and intermdiate plies forming a tubular, elongate composite structural member.

5,188,873

POLYOLEFIN-BASED MOULDABLE COMPOSITIONS AND ARTICLES MADE FROM THESE COMPOSITIONS

Vincent Delannoy, Mons, Belgium, assignor to Solvay, Brussels, Belgium

Filed Oct. 28, 1991, Ser. No. 782,250

Claims priority, application Belgium, Oct. 26, 1990, 09001022

Int. Cl.[5] C08L *23/06, 23/10*

U.S. Cl. 428—36.92 **7 Claims**

1. A mouldable composition (C) based on at least one polyolefin (X) chosen from high-density ethylene homopolymers and copolymers whose density is greater than 0.935 or propylene homopolymers and copolymers, additionally comprising at least one vinylidene fluoride homopolymer or copolymer (Y) present in an amount between about 0.001 and 3 percent by weight, and at least one low-density polyethylene homopolymer or copolymer (Z) whose density is less than or equal to 0.935, present in an amount between about 0.5 and 6by weight.

5,188,874

HYBRID FLOOR COVERING

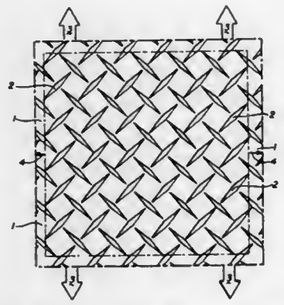
William J. Kauffman; George L. Lilley, both of Manheim, and David E. Ruch, Lancaster, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Division of Ser. No. 304,645, Feb. 1, 1989, Pat. No. 5,080,944. This application Sep. 26, 1991, Ser. No. 765,878

The portion of the term of this patent subsequent to Jan. 14, 2009, has been disclaimed.

Int. Cl.[5] B32B *3/14, 3/10;* **D06N** *1/00;* **E04F** *15/16*

U.S. Cl. 428—47 **25 Claims**



1. A resilient floor covering comprising a reinforcing layer and a continuous layer of matrix material wherein said reinforcing layer is covered by said matrix material, said reinforcing layer having a first region and a second region, the relaxed compressive stiffness and the relaxed tensile stiffness of the first region being different than the relaxed compressive stiffness and the relaxed tensile stiffness of the second region, the relaxed compressive stiffness and the relaxed tensile stiffness of the first and second regions being such that the floor covering will elongate under tension and resist bending during compression, said regions being formed by a pattern of physical disruptions having the shape of line segments in said reinforcing layer, said pattern comprising a plurality of substantially parallel and linearly spaced first line segments and a plurality of substantially parallel and linearly spaced second line segments, said first and second line segments being nonintersecting and interacting so as to form pivot points, said reinforcing layer being elongated in at least one dimension, said floor covering being perimeter bonded to a wooden subfloor.

5,188,875

INFORMATION RECORDING MEDIUM AND ADHESIVE COMPOSITION THEREFOR

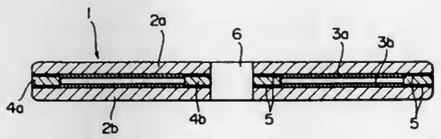
Hideo Yamaoka; Mitsuyuki Kuroiwa; Hirosi Nanbu, and Akira Todo, all of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Aug. 24, 1990, Ser. No. 571,874

Claims priority, application Japan, Aug. 25, 1989, 1-219277; Sep. 5, 1989, 1-229695

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—64 **29 Claims**



1. An information recording medium formed by adhering, with an adhesive composition, two disk substrates to each other, at least one of the two disk substrates having a recording layer on at least one surface of a transparent thermoplastic resin substrate thereof and the adhesive composition comprising the following components (A) to (D):

(A) 1 to 68% by weight of an α-olefin polymer, said α-olefin polymer being a mixture containing 1 to 60% by weight of an ethylene/propylene copolymer, 1 to 60% by weight of a propylene polymer and 1 to 30% by weight of an isobutylene polymer,

(B) 1 to 30% by weight of an ethylene/(meth)acrylate copolymer,

(C) 1 to 30% by weight of a styrene-type polymer, and

(D) 30 to 95% by weight of a tackifier provided that at least one of the components (A) to (D) is modified with an unsaturated carboxylic acid or a derivative thereof.

5,188,876

SURFACE COVERING WITH INORGANIC WEAR LAYER

Robert D. Hensel, Millersville; Leonard N. Ray, Jr., Lancaster; Joseph F. Reuwer, Jr., Lancaster; Jeffrey S. Ross, Lancaster, and Jerome D. Wisnosky, Lancaster, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

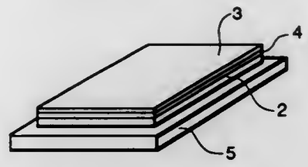
Continuation-in-part of Ser. No. 507,875, Apr. 12, 1990, Pat. No. 5,077,112. This application Apr. 2, 1991, Ser. No. 679,306

The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.

Int. Cl.[5] B32B *3/00*

U.S. Cl. 428—76 **17 Claims**

1. A surface covering comprising a polymeric support layer and a substantially homogeneous wear layer deposited directly on said polymeric support layer by a reduced pressure environment technique, said wear layer being from 1 to 25 microns in thickness, said wear layer comprising a hard inorganic material selected from the group consisting of aluminum oxide, aluminum nitride, silicon nitride, aluminum oxynitride and silicon oxynitride.



5,188,877

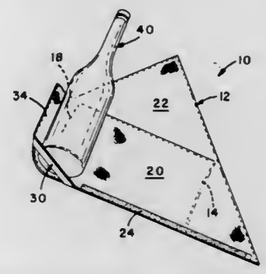
THERMAL DEVICE

Steven B. Magaro, 606 Magaro Rd., Enola, Pa. 17025-1912

Filed Mar. 7, 1991, Ser. No. 666,061

Int. Cl.[5] F25D *3/08;* **B32B** *3/06*

U.S. Cl. 428—80 **4 Claims**



1. A thermal device for use in maintaining the temperature of the contents of a bottle over a period of time, said device comprising;

a triangular-shaped wrapper with one end truncated and being of a suitable, supple material having a pouch on an inside surface and a strap attached at spaced apart locations on one edge so that when said wrapper is rolled into a cylindrical shape, said strap crosses an opening at one end thereof;

holding means adapted to hold said wrapper in said cylindrical shape; and

insulative means removably positioned in said pouch to prevent heat migration thru said wrapper.

5,188,878

UNIDIRECTIONAL THIN GLASS PREPREG

Makoto Takezawa; Makiji Miyao; Shinkichi Murakami, and Akihiro Atsumi, all of Tokyo, Japan, assignors to Tonen Corporation, Tokyo, Japan

Continuation of Ser. No. 615,772, Nov. 19, 1990, abandoned. This application Apr. 29, 1992, Ser. No. 876,814

Claims priority, application Japan, Nov. 24, 1989, 1-306211

Int. Cl.[5] B32B *5/12*

U.S. Cl. 428—114 **4 Claims**

1. A flexible, unidirectional thin glass prepreg having a thickness of 50 to 150 μm, said glass prepreg comprising:

(a) glass fiber monofilaments which are formed by spreading glass rovings without being doubled and which are simultaneously arranged in one direction in a thin layer,

(b) each of said glass rovings, without being doubled, is manufactured by a single converging operation of glass diver monofilaments into a roving form, each of said fiber monofilaments having a diameter of 10 to 20 μm, and

(c) a matrix resin which is impregnated between the fiber monofilaments and then partially cured.

VOL 1147 ISS 4 FE 23 1993 UMI

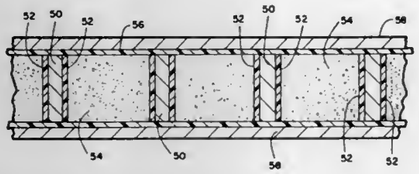
VOL 1147 ISS 4 FE 23 1993 UMI

5,188,879

POLYIMIDE FOAM FILLED STRUCTURES

Francis U. Hill, San Diego, Calif.; Paul F. Schoenzart, Leverkusen, and Werner P. Frank, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Sorrento Engineering Corporation, National City, Calif.

Filed Jul. 15, 1991, Ser. No. 729,596
Int. Cl.[5] B32B *3/12*
U.S. Cl. 428—117 8 Claims



1. A polyimide foam-filled multi-cell structure made by a method which comprises the steps of:

providing a quantity of thermally foamable polyimide precursor powder;

foaming said precursor powder at the condensation temperature of said precursor;

heating the resulting foam sufficiently to pre-cure the resulting foam to a substantially inflexible, stiff state;

trimming said foam to a selected thickness;

providing a multi-cell honeycomb structure having interior side walls;

coating at least a portion of the interior side walls of the multi-cell honeycomb structure with an adhesive;

pressing said multi cell honeycomb structure having said interior side walls, into said foam whereby said foam is cut by said walls and said foam substantially fills said cells; and

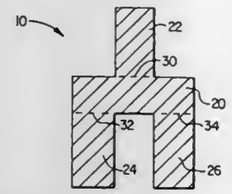
heating the resulting assembly of the honeycomb structure and foam to the curing temperature of said foam and maintaining said assembly at that temperature for a period sufficient to substantially fully cure said foam and allow said adhesive to bond said foam to said interior side walls.

5,188,880

VOID FILL MATERIAL

Russell W. Tether, 18625 Midway Rd., #1502, Dallas, Tex. 75287

Filed Dec. 11, 1991, Ser. No. 804,995
Int. Cl.[5] B32B *3/08*; B65D *81/02, 81/12*
U.S. Cl. 428—120 13 Claims



1. A void fill material for use within a container around a product comprising:

(a) a primary section defining a primary plane;

(b) a first finger extending from one side of the primary section;

(c) a second and third finger extending from the opposite side of the primary section from the first finger; and,

wherein the void fill material is made of a corrugated material.

5,188,881

THERMOSENSITIVE STENCIL PAPER

Shoichi Sugiyama, Gotenba; Fumiaki Arai, Mishima; Masayasu Nonogaki; Yuji Natori, both of Numazu; Hideyuki Yamaguchi, Shizuoka; Hitoshi Ueda, Numazu; Hiroshi Tomita, and Kotaro Kato, both of Sagamihara, all of Japan, assignors to Ricoh Company, Ltd., Tokyo and Teijin Ltd., Osaka, both of, Japan

Filed Jun. 20, 1991, Ser. No. 717,908
Claims priority, application Japan, Jun. 21, 1990, 2-161408
Int. Cl.[5] B41M *5/26*
U.S. Cl. 428—143 10 Claims

1. A thermosensitive stencil paper comprising a substrate and a thermoplastic resin film formed thereon, which thermoplastic resin film has projections in the surface portion thereof, with a printing roughness (R_p) of 2.2 to 5.0 μm, which is a physical quantity proportional to the average depth of the depressions in the surface portion thereof pressed against a standard surface.

5,188,882

MULTILAYERED MOLDING

Akira Uchiyama; Naoaki Jimbo, and Shizuo Shimizu, all of Ichihara, Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Division of Ser. No. 593,499, Oct. 4, 1990, Pat. No. 5,096,652, which is a continuation of Ser. No. 302,456, Jan. 27, 1989, abandoned. This application Dec. 10, 1991, Ser. No. 804,591
Claims priority, application Japan, Jan. 29, 1988, 63-19316; Jan. 29, 1988, 63-19317
Int. Cl.[5] B32B *3/26*
U.S. Cl. 428—159 6 Claims

1. A multilayered molding in which the surface of its base molding body made of polyolefin resin is layered with a surface layer, the surface layer of the multilayered molding comprising:

(1) an outer layer formed by a thermoplastic elastomer, which is constituted by a partial crosslinking type substance A obtained from polyolefin resin and ethylene-α-olefin copolymer rubber, a mixture B of polyolefin resin and ethylene-α-olefin copolymer rubber partial crosslinking type substance or both,

(2) an intermediate foamed layer made of flexible foaming material formed of a polyolefin resin foam body; and

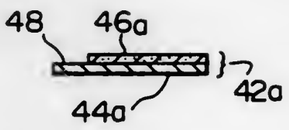
(3) a protective film layer mainly composed of a thermoplastic elastomer which is either a partial crosslinking type substance A obtained from polyolefin resin and ethylene-α-olefin copolymer rubber or a mixture B of polyolefin and ethylene-α-olefin copolymer rubber partial crosslinking type substance sandwiched between the base molding body and the intermediate foamed layer.

5,188,883

COMPOSITE TAPE STRUCTURES

Michael G. Rawlyk, Saskatoon, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Division of Ser. No. 498,257, Mar. 22, 1990, Pat. No. 5,039,197. This application Jun. 3, 1991, Ser. No. 709,469
Int. Cl.[5] B05D *1/36*; B32B *7/12, 7/14, 33/00, 15/08*; C09J *7/02*
U.S. Cl. 428—189 7 Claims



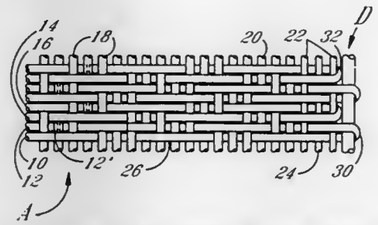
1. A composite tape structure comprising a metal tape layer and a layer of swellable water blocking material, the metal tape layer having two major surfaces, and the two layers bonded together with the tape layer of water swellable blocking material extending along one of the major surfaces of the metal tape layer.

5,188,884

WOVEN PAPERMAKING FABRIC HAVING LOW PROFILE SEAM

Richard W. Smith, Greenville, S.C., assignor to Wangner Systems Corporation, Greenville, S.C.

Filed Jul. 8, 1991, Ser. No. 726,755
Int. Cl.[5] B32B *23/02*
U.S. Cl. 428—193 14 Claims



1. A papermaking fabric formed of warp and weft yarns woven endless in a multi-layer uneven weave pattern and heat set to produce set floats in said warp yarns of one length which appear on one surface of said fabric and set floats of a different length which appear on a second surface of said fabric;

a low profile seam is provided for joining opposite ends of said fabric to form said endless papermaking fabric;

said seam including warp yarns turned back and rewoven lengthwise into opposite respective of ends with said weft yarns to present appropriate ones of said floats on appropriate fabric surfaces and to form loops along said ends which are spaced by non-loop areas, the improvement comprising;

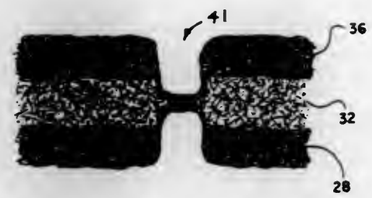
providing a plurality of undersized weft yarns adjacent said ends which are woven with said warp yarns to provide longitudinal space along said warp yarns and between said undersized weft yarns, whereby small loops are formed at said ends by crowding said small weft yarns.

5,188,885

NONWOVEN FABRIC LAMINATES

Terry K. Timmons, Marietta; Steve R. Stopper, Doraville, both of Ga.; Norman K. Fox, Appleton, Wis.; Dennis S. Everhart, Alpharetta, Ga.; William Conn, Stone Mountain, Ga., and Lori A. Morell, Alpharetta, Ga., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 404,804, Sep. 8, 1989, abandoned. This application Mar. 29, 1990, Ser. No. 501,202
Int. Cl.[5] B32B *27/44*
U.S. Cl. 428—198 64 Claims



1. A nonwoven fabric laminate consisting essentially of a first layer of spunbonded thermoplastic filaments formed from a first thermoplastic polymer and a second layer of discrete meltblown thermoplastic fibers formed from a second thermoplastic polymer, wherein the layers are positioned in laminar surface-to-surface relationship, wherein the layers are heat bonded in discrete areas, and wherein the thermoplastic polymer in at least said first layer is an olefin copolymer having a crystallinity of less than 45%.

5,188,886

METAL OXIDE DIELECTRIC DENSE BODIES, PRECURSOR POWDERS THEREFOR, AND METHODS FOR PREPARING SAME

Ryan W. Dupon; Mark S. Thompson, both of San Carlos; Gary H. Wiseman, San Francisco; Douglas J. Musolf, Mountain View, and Adam C. Tanous, Woodside, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 483,597, Feb. 22, 1990, Pat. No. 5,070,050, which is a continuation-in-part of Ser. No. 258,272, Oct. 14, 1988, abandoned, and Ser. No. 258,277, Oct. 14, 1988, abandoned, and Ser. No. 258,278, Oct. 14, 1988, abandoned. This application Sep. 27, 1991, Ser. No. 767,296
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—209 12 Claims

1. A multilayer substrate for a semiconductor device, at least two layers thereof having thereon a conductor pattern and being electrically connected to each other by metallized vias, the substrate being made of a metal oxide dielectric dense body consisting essentially of

(I) crystalline grains having a predominant crystalline phase selected from the group consisting of cordierite, magnesium oxide, mullite, mullite-silica, willemite, and silica, and

(II) between about 1 and about 20 atom % bismuth as bismuth oxide, discontinuously located at the boundaries of the crystalline grains or as inclusions in the crystalline grains, the atom %'s based on the total atoms of bismuth in the bismuth oxide and silicon, magnesium, aluminum, and zinc in the cordierite, magnesium oxide, mullite, mullite-silica, willemite, or silica;

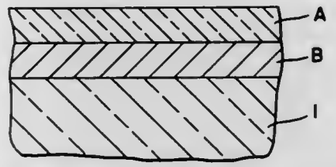
the dense body having a density which is at least 95% of theoretical.

5,188,887

HEAT TREATABLE SPUTTER-COATED GLASS

Philip J. Linge, Lambertville, and Raymond Nalepka, Westland, both of Mich., assignors to Guardian Industries Corp., Northville, Mich.

Continuation of Ser. No. 590,508, Sep. 27, 1990, abandoned, which is a continuation of Ser. No. 418,959, Oct. 10, 1989, abandoned, which is a continuation-in-part of Ser. No. 321,060, Mar. 9, 1989, abandoned. This application May 18, 1992, Ser. No. 884,009
Int. Cl.[5] B32B *17/06*
U.S. Cl. 428—216 8 Claims



1. A coated glass article capable of being formed into an automotive or architectural window which includes being heat treated at a temperature of from about 1150° F.–1450° F. for from about 2–30 minutes without significant degradation of color, durability, chemical resistance, emissivity, reflectance and transmittance as these characteristics are defined in terms of an automotive or architectural window, said coating system consisting of a metallic oxide overcoat layer consisting essentially of stoichiometric tin oxide, and an intermediate metallic layer consisting essentially of nickel or a Ni—Cr—Fe alloy having bout 70–90% by weight nickel.

VOL 1147 ISS 4 FE 23 1993 UMI

5,188,888
COMPOSITE PAPER REINFORCED THERMOPLASTIC ARTICLE
Kent B. McReynolds, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 436,525, Nov. 14, 1989, Pat. No. 5,068,139, which is a continuation-in-part of Ser. No. 273,546, Nov. 21, 1988, Pat. No. 4,937,145. This application Jul. 1, 1991, Ser. No. 723,876
The portion of the term of this patent subsequent to Nov. 26, 2008, has been disclaimed.
Int. Cl.[5] B32B *5/16*
U.S. Cl. 428—220 11 Claims

1. A highly filled, non-woven fibrous sheet material which comprises, on a total weight basis, (a) from about 1 to about 30 weight percent of a water dispersible organic fiber, (b) from about 2 to about 30 weight percent of water insoluble, film forming organic polymer, (c) from about 60 to about 95 weight percent of a particulate, non-fibrous inorganic filler and (d) from about 3 to about 30 weight percent of a normally solid thermoplastic polymer in particulate or fibrous form.

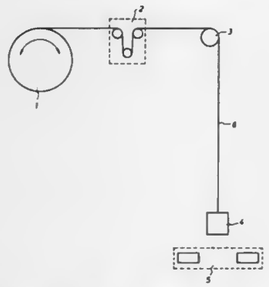
5,188,889
INORGANIC BOARD AND METHOD OF MANUFACTURE THEREOF
Wakatsu Nagatomi, and Kazuhiko Takai, both of Aichi, Japan, assignors to Nichiha Corporation, Nagoya, Japan
PCT No. PCT/JP91/00071, § 371 Date Sep. 17, 1991, § 102(e) Date Sep. 17, 1991, PCT Pub. No. WO91/11406, PCT Pub. Date Aug. 8, 1991
PCT Filed Jan. 23, 1991, Ser. No. 761,850
Claims priority, application Japan, Jan. 23, 1990, 2-14614
Int. Cl.[5] B32B *9/00*
U.S. Cl. 428—304.4 3 Claims

1. An inorganic board comprising a pair of surface layers consisting of a hardened mixture of 30 to 60% by weight of cement, 30 to 60% by weight of a silica-containing material, 0 to 15% by weight of pearlite and 5 to 25% by weight of a reinforcing material selected from the group consisting of wood flake and wood powder; and a porous core layer consisting of a hardened mixture of 30 to 60% by weight of cement, 30 to 60% by weight of silica-containing material, 0 to 15% by weight of pearlite, 5 to 25% by weight of wood-fiber bundle, and 0.5 to 5% by weight of expandable plastic beads.

5,188,890
METALLIZED POROUS FLOURINATED RESIN AND PROCESS THEREFOR
Kazuhiko Ohashi; Hiroshi Kato, and Takayuki Wani, all of Okayama, Japan, assignors to Japan Gore-Tex, Inc., Tokyo, Japan
Filed Sep. 30, 1991, Ser. No. 768,049
Claims priority, application Japan, Mar. 15, 1991, 3-76824
Int. Cl.[5] B32B *3/06*
U.S. Cl. 428—306.6 3 Claims

1. A metallized fluorinated polymer comprising:
(a) porous fluorinated polymer having an average pore diameter of 100 microns or less;
(b) a hydrophilic polymer film, comprising a copolymer of a fluorinated monomer and a monomer containing hydrophilic groups, coated on at least the inside pore surface of said fluorinated polymer; and
(c) at least one layer of metal film coating the hydrophilic polymer film surfaces inside said pores of said porous fluorinated polymer.

5,188,891
MAGNETIC RECORDING MEDIUM COMPRISING A POLYESTER FILM SUBSTRATE, A MAGNETIC COATING AND A SPECIFIED BACK COAT LAYER
Naohiro Takeda, Yokohama; Yuzo Otani, Tokyo; Nariaki Okajima, Yokohama; Yoshihiko Ito, Yokohama; Shin-ichi Kinoshita, Yokohama; Masashi Inagaki, Machida, and Takashi Harada, Yokohama, all of Japan, assignors to Diafoil Company, Limited, Tokyo, Japan
Continuation of Ser. No. 288,280, Dec. 22, 1988, abandoned.
This application Jun. 25, 1991, Ser. No. 719,072
Claims priority, application Japan, Dec. 25, 1987, 62-329251; Apr. 19, 1988, 63-96146; Sep. 8, 1988, 63-225070
Int. Cl.[5] G11B *5/00*
U.S. Cl. 428—323 4 Claims

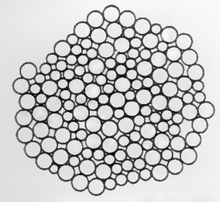


1. A magnetic recording medium comprising a biaxially stretched polyester film layer, a coating magnetic layer on one side of said polyester film layer, and a back-coat layer formed by an in-line coating method on the other side of said polyester film layer, which is prepared from a composition comprising an aqueous polymer containing 10–60 wt. % of at least one type of fine particle having an average particle diameter of 0.01 to 0.5 μm, selected from the group consisting of carbon black particle, aqueous fluorine polymer particle and synthetic calcium carbonate particle; the thickness of said back-coat layer being 0.2 to 1.5 μm, the center line average roughness (Ra) of said back-coat layer being 0.015 to 0.10 μm; wherein the average particle diameter of said carbon black particle is 0.01 to 0.20 μm; wherein the average particle diameter of said aqueous fluorine polymer particle, when present, is 0.05 to 0.3 μm; wherein the content of said carbon black particle in said back-coat layer, when present, is 10 to 50 wt. %; and wherein the content of said aqueous fluorine polymer particle, when present, in said back-coat layer is 0.1 to 20 wt. %.

5,188,892
SPUN TEXTILE YARNS
Teddy H. Grindstaff, Charleston, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 758,426, Sep. 3, 1991, abandoned, and a continuation of Ser. No. 368,844, Jun. 20, 1989, abandoned, and a continuation-in-part of Ser. No. 266,712, Nov. 3, 1988, abandoned, and a continuation-in-part of Ser. No. 212,301, Jun. 27, 1988, abandoned, Division of Ser. No. 925,640, Oct. 13, 1986, abandoned, and a continuation-in-part of Ser. No. 794,128, Oct. 15, 1991, and a continuation-in-part of Ser. No. 607,208, Oct. 31, 1990, abandoned, and a continuation-in-part of Ser. No. 266,712, Nov. 3, 1988, abandoned, and a continuation-in-part of Ser. No. 925,640, Oct. 31, 1986, abandoned. This application Mar. 25, 1992, Ser. No. 857,175
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—59 6 Claims

1. A spun textile yarn consisting essentially of a blend of intimately mixed polyester staple fibers of low shrinkage, wherein the polyester fibers are uniformly the same color, of boil-off shrinkage about 1% or less, of uniform cut length about 1 to 3 inches, and of average denier up to about 3 but

consisting essentially of polyester fibers of larger denier randomly mixed with polyester fibers of smaller denier, the degree

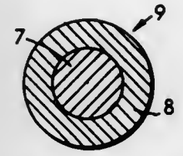


of filament intermingling (DFI) being at least about 90%, the larger denier being about twice the smaller denier.

5,188,893
STABILIZED AND CARBONACEOUS EXPANDED FIBERS
Kyung W. Suh, Granville; William G. Stobby, Johnstown, both of Ohio, and Francis P. McCullough, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Filed Jul. 19, 1990, Ser. No. 554,778
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—362 10 Claims

1. Non-flammable expanded fibers comprising non-graphitic carbonaceous polymeric asymmetric porous hollow fibers, said fibers having an LOI valve greater than 40, a char percentage value greater than 65, a thermal conductivity less than 1 BTU ft/hr ft^2 °F., an elemental carbon content of less than 85 percent, and having a low electrical conductivity and electrostatic dissipating characteristics.

5,188,894
COMPOSITE CARBON FIBER AND PROCESS FOR PREPARING SAME
Yasuhiro Yamada, Saga; Hidemasa Honda, Tokyo; Haruki Yamasaki, Kanagawa, and Susumu Shimizu, Tokyo, all of Japan, assignors to Tanaka Kikinzoku Kogyo K.K. and The Agency of Industrial Science and Technology, Japan
Filed Aug. 31, 1990, Ser. No. 575,955
Claims priority, application Japan, Aug. 31, 1989, 1-226511; Nov. 10, 1989, 1-293457
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—370 4 Claims



1. A melt-spun composite carbon fiber which is comprised of an optically isotropic carbon fiber joined to an optically anisotropic carbon fiber, having been separately formed by melt-spinning and being continuously brought into surface contact with each other.

5,188,895
SPLIT FIBERS, INTEGRATED SPLIT FIBER ARTICLES AND METHOD FOR PREPARING THE SAME
Kazunari Nishino; Shuzo Sasagawa, both of Kuga; Hirofumi Katsurayama, Inabe; Takamitsu Igaue, and Tsutomu Kido, both of Kawanoe, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo and Uni Charm Corporation, Kawanoe, both of, Japan
Filed Aug. 29, 1990, Ser. No. 574,137
Claims priority, application Japan, Aug. 31, 1989, 1-225765
Int. Cl.[5] B32B *27/14;* B29D *9/00;* D01D *5/42*
U.S. Cl. 428—373 4 Claims

1. A split fiber composite synthetic resin film comprising a three layer structure having a polypropylene layer and a polyethylene layer on either surface of the polypropylene layer, wherein said polypropylene layer comprises a mixture of 70 to 95% by weight of a polypropylene having a melt flow rate of 0.5 to 10 grams/10 minutes and 30 to 5% by weight of a polyethylene having a density of 0.93 to 0.96 g/cm^3 and said polyethylene layer comprises a polyethylene having a density of 0.93 to 9.96 g/cm^3 and a melt flow rate of at least 13 grams/10 minutes.

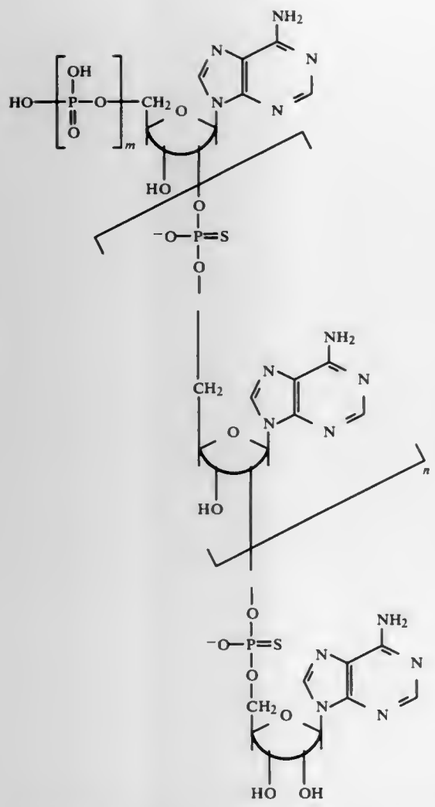
5,188,896
BATTING THERMAL INSULATION WITH FIRE RESISTANT PROPERTIES
Kyung W. Suh, Granville, Ohio; Burton D. Brubaker, Midland, Mich.; William G. Stobby, Johnstown, Ohio; Francis P. McCullough, Lake Jackson, and R. Vernon Snelgrove, Damon, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.
Continuation-in-part of Ser. No. 554,778, Jul. 19, 1990. This application Aug. 20, 1990, Ser. No. 569,678
Int. Cl.[5] D02G *3/00*
U.S. Cl. 428—397 11 Claims

1. A fibrous thermal insulation comprising an intimate blend of A) about 20 to 75% by weight of non-graphitic polymeric carbonaceous fibers having an LOI value greater than 40, a carbon content of less than 85 percent, a percent char value greater than 65, and a thermal conductivity less than 1 BTU ft/hr ft^2° F. for providing a synergistic improvement in fire resistance, and B) crazed hollow thermoplastic fibers.

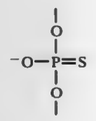
5,188,897
ENCAPSULATED 2',5'-PHOSPHOROTHIOATE OLIGOADENYLATES
Robert J. Suhadolnik, Roslyn, Pa., and Wolfgang Pfleiderer, Constance, Fed. Rep. of Germany, assignors to Temple University of the Commonwealth System of Higher Education, Philadelphia, Pa.
Division of Ser. No. 112,591, Oct. 27, 1987, Pat. No. 4,924,624. This application Mar. 26, 1990, Ser. No. 499,109
The portion of the term of this patent subsequent to May 18, 2007, has been disclaimed.
Int. Cl.[5] A61K *9/127;* C07H *21/02*
U.S. Cl. 428—402.2 27 Claims

1. A composition comprising a compound which is an optical isomer of the formula:

VOL 1147 ISS 4 FEB 23 1993 UMI



substantially free of contamination by other optical isomers of the same formula, where m is zero, 1, 2, or 3, n is 1 or 2, and at least one of the internucleotide phosphorothioate groups



is of the Sp configuration, or water-soluble salt thereof, said compound contained in a capsule.

5,188,898

FERROMAGNETIC METAL PARTICLES AND PREPARATION PROCESS THEREOF

Kimiteru Tagawa, Setagaya; Seiichi Takahashi, Yokohama; Noritoshi Utsuno, Yokohama; Hideki Umehara, Yokohama; Fujio Hayashi, Fujisawa; Shigeo Kiba, Yokohama, and Satoru Suda, Kamakora, all of Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Japan

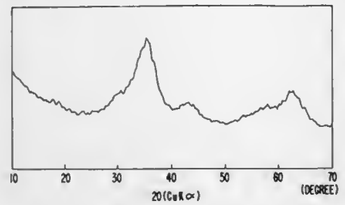
PCT No. PCT/JP90/01011, § 371 Date Apr. 4, 1991, § 102(e) Date Apr. 4, 1991, PCT Pub. No. WO91/02366, PCT Pub. Date Feb. 21, 1991

PCT Filed Aug. 8, 1990, Ser. No. 667,401

Claims priority, application Japan, Aug. 9, 1989, 1-204852

Int. Cl.[5] B32B *5/16*

U.S. Cl. 428—403 **16 Claims**



1. Ferromagnetic metal particles comprising a coating of a ferrite compound having a spinel structure composed of iron and at least one metal selected from cobalt, zinc, manganese, aluminum, chromium, nickel and copper having a different valency than the iron.

5,188,899

SILICA-CORE SILICONE-SHELL PARTICLES, EMULSION CONTAINING THE SAME DISPERSED THEREIN, AND PROCESS FOR PRODUCING THE EMULSION

Makoto Matsumoto, and Junichiro Watanabe, both of Tokyo, Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Nov. 30, 1990, Ser. No. 620,122

Claims priority, application Japan, Dec. 18, 1989, 1-327686; Jun. 26, 1990, 2-170829

Int. Cl.[5] B32B *21/02*

U.S. Cl. 428—405 **3 Claims**

1. Colloidal silica-core silicone-shell particles comprising

(A) from 99.9 to 5% by weight of cores which are colloidal silica particles, and

(B) from 0.1 to 95% by weight of shells which are a polyorganosiloxane comprising a condensate of an organosilicon compound (a) represented by the formula:

$$R^3{}_bSi(OR^4)_{4-b} \quad \text{(III)}$$

wherein the R^3 groups, which may be the same or different, each represents a substituted or unsubstituted monovalent hydrocarbon group having 1 to 8 carbon atoms, R^4 represents an alkyl group having 1 to 6 carbon atoms, and b is an integer of 1 to 3, and polyorganosiloxane (b) having 2 to 10 silicon atoms and not containing a hydroxyl group, containing a structural unit represented by the average composition formula:

$$R_c{}^5SiO_{\frac{4-c}{2}} \quad \text{(IV)}$$

wherein the R^5 groups, which may be the same or different, each represents a substituted or unsubstituted monovalent hydrocarbon group, and c is the number of 0.3 to 3.0, wherein the molar content of component (b) is greater than the molar content of component (a), said colloidal silica particles are in the form of a dispersion in water of the silica particles, the core-shell particles have an average particle diameter of from

4 to 400 nm, and from 0.02 to 100 mol% of the sum of the R^3 and R^5 groups contain a reactive unsaturated group.

5,188,900

SUBSTRATES HAVING AN ABRASION-RESISTANT COATING FORMED THEREON

Anthony Revis, Saginaw County, and Levi J. Cottington, Midland County, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 423,159, Oct. 18, 1989, Pat. No. 5,126,394. This application Apr. 2, 1992, Ser. No. 862,384

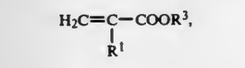
Int. Cl.[5] B32B *27/36*

U.S. Cl. 428—412 **5 Claims**

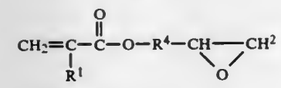
1. A solid substrate having a coating formed on at least one portion of its surface, said coating being formed from the cured formulation consisting essentially of:

(A) at least one multifunctional acrylate monomer;

(B) an acrylic monomer selected from the group consisting of



and



and mixtures thereof wherein:

R^1 is hydrogen or a monovalent hydrocarbon radical;

R^2 and R^4 are selected from an alkyl or alkenyl group having 1 to 10 carbons, an aryl, alkaryl, and aralkyl group containing 6 to 10 carbons; any of said groups optionally containing one or more ether oxygen atoms within aliphatic segments thereof and optionally containing one or more functional substituents; and

R^3 is selected from the group consisting of hydrogen, a monovalent hydrocarbon radical having from 1 to 6 carbon atoms and containing at least one hydroxy group; and

(C) aqueous dispersion of colloidal silica.

5,188,901

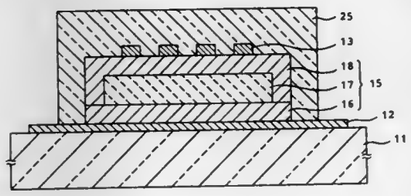
ELECTROLUMINESCENT PANEL HAVING A FLUOROESIN LAYER

Yasumoto Shimizu, Tokyo, Japan, assignor to Hoya Corporation, Tokyo, Japan

Continuation of Ser. No. 175,167, Mar. 30, 1988, abandoned. This application Nov. 13, 1989, Ser. No. 436,550

Int. Cl.[5] B32B *9/00;* **H01J** *1/62*

U.S. Cl. 428—421 **5 Claims**



1. An electroluminescent panel comprising:

a transparent substrate of an insulative material having a principal surface;

a transparent electrode member on said principal surface;

a back electrode member opposite said transparent electrode member;

an electroluminescent laminate block between said transparent electrode member and said back electrode member and which comprises an electroluminescent layer and at least one diaelectric layer, said electroluminescent laminate block being on said transparent electrode member and said back electrode member being on said electroluminescent block, and

a fluoresin layer coated on the entire extent of the exposed surface of said electroluminescent laminate block and said back electrode by sputtering,

said electroluminescent block having lateral surfaces formed by said at least one dielectric layer, said fluororesin layer extending over said lateral surfaces of said dielectric layer to said transparent electrode.

5,188,902

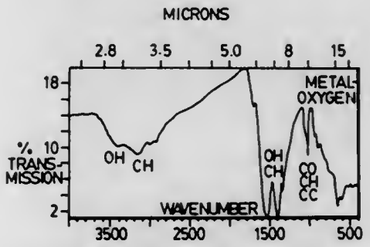
PRODUCTION OF PT/PZT/PLZI THIN FILMS, POWDERS, AND LASER 'DIRECT WRITE' PATTERNS

Chhiu-Tsu Lin, DeKalb, Ill., assignor to Northern Illinois University, DeKalb, Ill.

Filed May 30, 1991, Ser. No. 707,800

Int. Cl.[5] B23B *9/00*

U.S. Cl. 428—426 **3 Claims**



1. An article of manufacture comprising a solid surface having a thin ferroelectric film on a portion of the surface wherein the ferroelectric film is formed by annealing lead titantate, lead zirconate titanate, and lead lanthanum zirconate titanate to the solid surface with a laser.

5,188,903

SILOXANE-CONTAINING GLYCIDYL ESTERS, CURABLE COMPOSITIONS AND CURED PRODUCTS

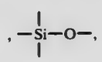
Zeng K. Liao, and James L. Bertram, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 30, 1991, Ser. No. 737,627

Int. Cl.[5] B32B *9/04*

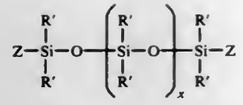
U.S. Cl. 428—447 **10 Claims**

1. A compound containing at least one glycidyl ester group and at least one organosiloxane moiety

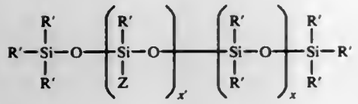


per molecule represented by the following general formulas V, VI, VII, or VIII

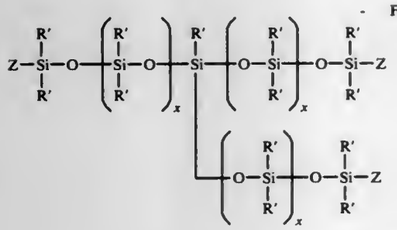
Formula V



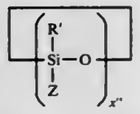
Formula VI



Formula VII



Formula VIII



wherein each R′ is independently a hydrocarbyl group or hydrocarbyl group substituted with N or F containing groups, said hydrocarbyl group having from 1 to about 20 carbon atoms; each Z is an aliphatic or cycloaliphatic group containing a glycidyl ester moiety represented by the general formula $-X-R^5-(COOR^4)_{n'}$, with the proviso that the Z group is attached directly to a silicon atom; R^5 is an aliphatic or cycloalilphatic or aromatic group or a S, N or P containing heterocyclic group having from 1 to about 50 carbon atoms; R^4 is a glycidyl group or lower alkyl (C_{1-4}) substituted glycidyl group; n′ has a value from 1 to about 20; each X is independently a divalent aliphatic or a divalent cycloaliphatic group having from 2 to about 30 carbon atoms; each x independently has a value from zero to about 500; each x′ independently has a value from 2 to about 500; x″ has a value from 3 to about 50; and the sum of x and x′ is from about 2 to about 1000.

5,188,904

SOLUTION-APPLIED LAMINATE RELEASE FOR TAM BLADDERS

Daniel F. Graves, Clinton, Ohio, assignor to Bridgestone Corporation, Tokyo, Japan

Filed Mar. 4, 1991, Ser. No. 663,514

Int. Cl.[5] B32B *9/04*; B05D *3/02*

U.S. Cl. 428—447 **22 Claims**

1. A cured bladder for tire assembly machines (TAMs) having a solution-applied release laminate adhered thereto said laminate comprising:

(a) a primer system adhered to the bladder, said primer system comprising 1) at least one layer of a treating agent selected from the group consisting of N-halohydantoin, N-haloamide, N-haloimide or combinations thereof residing on said bladder, and 2) at least one layer of an organic silane residing on an adhering to said treating agent layer, and

(b) an organic silicone release coating residing on and bonded to said organic silane layer, said organic silicone release coating comprising a mixture of an acyloxy terminated polysiloxane and an oxime terminated polysiloxane, and an optional catalyst.

5,188,905

COATED STEEL SHEETS

Yoshio Shindou, and Fumio Yamazaki, both of Kimitsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation of Ser. No. 350,032, May 10, 1989, abandoned. This application Jan. 17, 1991, Ser. No. 642,541

Claims priority, application Japan, May 17, 1988, 63-118118; May 17, 1988, 63-118119; Jun. 7, 1988, 63-138319; Jul. 29, 1988, 63-191521; Sep. 19, 1988, 63-232265; Sep. 19, 1988, 63-232266

Int. Cl.[5] B32B *15/04*

U.S. Cl. 428—626 **14 Claims**

12. A coated steel sheet having a primer coating, directly on the steel sheet, comprising Cr and an iron-group metal in a total amount not more than 30% by weight, with Cr being in an amount not less than 5% by weight, and the iron-group metal being in a range from 1/10 to ½ of the Cr content, and 0.005 to 5% by weight of cation polymer, with the balance being Zn, wherein the primer coating is present on the steel sheet in an amount of not less than 10 g/m^2, a chromate film formed on the primer coating inn an amount of 10 to 150 mg/m^2 in total chromium, and an organic coating formed on the chromate film in a thickness of 0.3 to 3 μ.

5,188,906

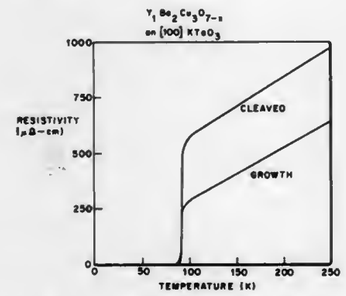
SUBSTRATES SUITABLE FOR DEPOSITION OF SUPERCONDUCTING THIN FILMS

Roeland Feenstra, and Lynn A. Boatner, both of Oak Ridge, Tenn., assignors to Martin Marietta Energy Systems, Inc., Oak Ridge, Tenn.

Division of Ser. No. 269,410, Nov. 10, 1988, Pat. No. 5,110,790. This application Feb. 4, 1992, Ser. No. 831,028

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—688 **4 Claims**



1. A substrate on which a high temperature superconducting material of the Y123 and Y248 type may be epitaxially deposited comprising a (100) surface of a single crystal substrate selected from the composition $KTa_{1-z}Nb_zO_3$, where z has the value of 0 to 1.

5,188,907

MAGNETIC RECORDING MEDIUM

Setsuko Kawahara; Yasushi Nakano; Yuji Shimizu, and Yasuhisa Yamauchi, all of Hino, Japan, assignors to Konica Corporation, Tokyo, Japan

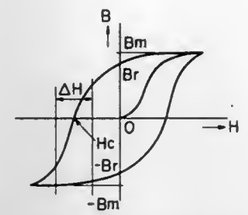
Continuation-in-part of Ser. No. 637,224, Jan. 3, 1991, abandoned. This application Jul. 24, 1991, Ser. No. 734,912

Int. Cl.[5] G11B *23/00*

U.S. Cl. 428—694 **4 Claims**

1. A magnetic recording medium comprising a first magnetic layer and a second magnetic layer provided on a support in this order from said support wherein said first magnetic layer has an SFD value of from 0.38 to 0.60 and said second magnetic layer has an SFD value of from 0.30 to 0.45, wherein SFD is defined as follows:

$$SFD = \Delta H / Hc$$



where ΔH is a half-width of magnetic field at the maximum value of a differential curve of a magnetic induction-magnetic field hysterisis curve, and Hc is a coercive force of a magnetic material.

5,188,908

AL_2O_3 BASED CERAMICS

Akio Nishiyama; Takashi Koyama; Yasutaka Aikawa; Hideo Ohshima, all of Omiya; Yuichiro Terao, Tokyo; Munenori Kato, Tokyo, and Akio Sakai, Tokyo, all of Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Filed Feb. 22, 1991, Ser. No. 658,914

Claims priority, application Japan, Feb. 23, 1990, 2-42979; Apr. 5, 1990, 2-90783; Sep. 4, 1990, 2-234125; Nov. 26, 1990, 2-321463

Int. Cl.[5] C04B *35/56, 35/58*

U.S. Cl. 428—698 **10 Claims**

1. An Al_2O_3-based ceramic consisting essentially of:

5% to 50% by weight of a hard dispersed phase composed of at least one compound which is selected from the group consisting of metal carbide, metal nitride, metal carbonitride, metal oxy-carbide, metal oxynitride and metal carbo-oxynitride, and is represented by M(CNO), wherein M is at least one metal selected from the group consisting of Ti, Zr and Hf;

no greater than 25% by weight of ZrO_2; and

balance Al_2O_3 matrix containing an additive dissolved in the Al_2O_3 grains so as to form a solid solution therewith, said additive being contained in an amount of 0.01% to 12% by weight with respect to the Al_2O_3 matrix and being composed of at least one oxide of an element selected from the group consisting of Y, Mg, Cr, Ni, Co and rare earth elements;

said Al_2O_3 grains having an average grain size of no larger than 1.0 μm while said hard phase constituent has an average grain size of no larger than 0.6 μm, wherein said hard phase constituent is present at the grain boundary of and within the Al_2O_3 grains and the resulting Al_2O_3-based ceramic having a three-point bending strength of at least 112 kg/mm^2.

5,188,909

ELECTROCHEMICAL CELL WITH CIRCUIT DISCONNECT DEVICE

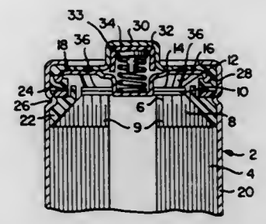
Christopher S. Pedicini, Marietta, Ga., assignor to Eveready Battery Co., Inc., St. Louis, Mo.

Filed Sep. 12, 1991, Ser. No. 758,649

Int. Cl.[5] H01M *10/50, 2/02*

U.S. Cl. 429—7 **20 Claims**

1. An electrochemical cell comprising an electrode assembly containing at least one positive electrode and at least one negative electrode; a housing containing the electrode assembly; a cover for the housing and an insulating member for insulating the cover from the housing; a means within the housing for placing the cover in electronic contact with one of the electrodes; a conductive member placed over the exterior of and electronically connected to and secured to said cover using a heat fusible conductive material so that said conductive member is an external terminal for said one electrode; means for exerting a force against said conductive member to separate said conductive member from said cover but said heat fusible conductive material providing a stronger securement of said conductive member to said cover; and wherein said heat fusible conductive material is selected to melt when the temperature at the area of the heat fusible conductive material exceeds a predetermined level whereupon said means exerting a force against said conductive member will separate said conductive member from said cover thereby breaking the electronic contact between said conductive member and said cover.



5,188,910

SOLID OXIDE FUEL CELLS

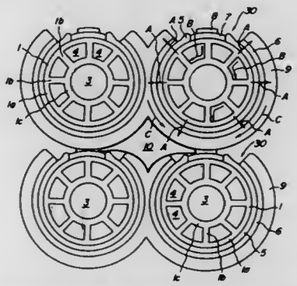
Takeshi Ishihara, and Hidenobu Misawa, both of Toyoake, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Mar. 18, 1991, Ser. No. 671,078

Claims priority, application Japan, Mar. 26, 1990, 2-73194

Int. Cl.[5] H01M *8/10*

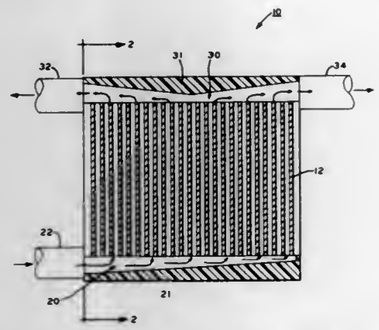
U.S. Cl. 429—31 **5 Claims**



1. A solid oxide fuel cell comprising a plurality of cylindrical solid oxide fuel cell elements, each of said solid oxide fuel cell elements at least comprising a fuel electrode, a solid electrolyte and an air electrode, and a multi-contact point current-collecting member contacting the fuel electrodes, the fuel electrode of a first solid oxide fuel cell element being electrically connected to the air electrode of an adjacent solid oxide fuel cell element through the multi-contact point current-collecting member and an interconnector, wherein said multi-contact point current-collecting member contacts the entire surfaces of the fuel electrodes.

VOL 1147 ISS 4 FE 23 1993 UMI

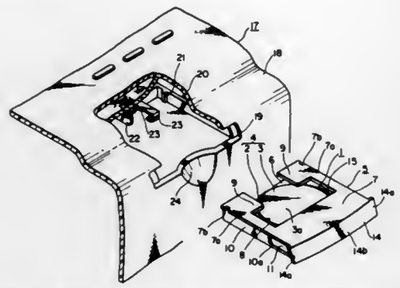
5,188,911
TAPERED MANIFOLD FOR BATTERIES REQUIRING FORCED ELECTROLYTE FLOW
Robert W. Downing, and Donald V. Conte, both of Fort Wayne, Ind., assignors to Magnavox Electronic Systems Company, Fort Wayne, Ind.
Filed Feb. 25, 1991, Ser. No. 659,647
Int. Cl.[5] H01M *2/40, 6/34*
U.S. Cl. 429—70 **5 Claims**



1. In a battery of the type employing a forced flow of electrolyte and having a stack of a plurality of parallel, closed spaced apart cell plates, an inlet manifold comprising:
(a) an elongate channel having an inlet end and extending along one side of said stack orthogonal to the planes of said plates so as to permit electrolyte entering said inlet end to flow between the spaces between said plates; and
(b) said channel having a cross-sectional area tapering from a large cross-section at said inlet end to a first small cross-section interior to said battery, and
an outlet manifold comprising:
(a) an elongate outlet channel extending along the length of the stack and having a first and second opposed outlet ends, the elongate outlet channel extending along one side of said stack orthogonal to the planes of said plates so as to permit electrolyte flowing from the spaces between said plates to exit said battery via said outlet ends; and
(b) said channel having a cross-sectional area tapering from large cross-sections at each of said outlet ends to a second small cross-section interior to said battery near the midpoint of said outlet channel.

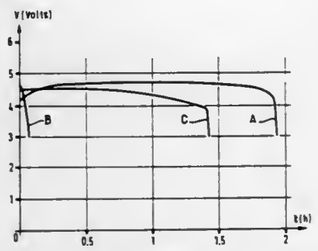
5,188,912
BUTTON BATTERY HOLDER
Tokoyuki Katoh, and Nobuhito Ebine, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Apr. 17, 1991, Ser. No. 686,356
Claims priority, application Japan, Apr. 18, 1990, 2-102670
Int. Cl.[5] H01M *2/10*
U.S. Cl. 429—96 **3 Claims**

1. A holder for holding a button battery, said holder being adapted to be mounted into an electronic equipment in a direction parallel to opposite electrode surfaces of said button battery, said holder comprising:
a top plate having an opening;
a bottom plate;
a pair of side walls connecting said top plate with said bottom plate at their opposite side portions;
a closed rear end wall connecting said top plate and said bottom plate with said side walls at their rear end portions, said pair of side walls being formed by an inner surface having a pair of right and left curved portions with a shape corresponding to a sectional shape of a side wall portion of a positive electrode shell of said button battery and a pair of right and left stepped portions having a shape corresponding to a sectional shape of a projecting portion of a negative electrode shell of said button battery, said projecting portion projecting upwardly from said side wall portion of said positive electrode shell;
an open front end portion forming a button battery insert opening for introducing said button battery in the direction parallel to the electrode surfaces of said button battery; and



a button battery accommodating portion surrounded by said top plate, said bottom plate and said side walls so as to be continued from said open front end portion, for accommodating said button battery inserted from said button battery insert opening.

5,188,913
LITHIUM/BROMINE TRIFLUORIDE ELECTROCHEMICAL CELL DESIGNED TO BE DISCHARGED AFTER BEING ACTIVATED AND STORED
Gilles Crepy, Evry, and Jean-Pierre Buchel, Lisses, both of France, assignors to Alcatel Alsthom Compagnie Generale D'Electricite, Paris, France
Filed Mar. 25, 1992, Ser. No. 857,490
Claims priority, application France, Mar. 26, 1991, 91 03646
Int. Cl.[5] H01M *4/36, 6/14*
U.S. Cl. 429—101 **2 Claims**

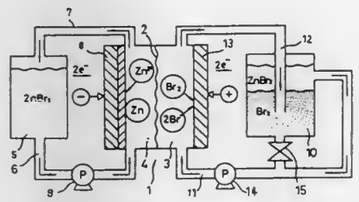


1. A lithium and bromine trifluoride electrochemical cell designed to be discharged after being activated and stored, the cell comprising an anode made of lithium or a lithium alloy, a positive current collector made of carbon black and a catholyte comprising bromine trifluoride as a main component, said catholyte further containing at least one compound that is soluble in bromine trifluoride in a concentration of from 10^{-2} to 1 mole per liter selected from the group consisting of sulfonates, and said sulfonate is capable of stabilizing the passivation layer of the anode and of blocking corrosion of the anode during storage.

5,188,914
LOW TEMPERATURE MOLTEN COMPOSITIONS COMPRISED OF QUATERNARY ALKYL PHOSPHONIUM SALTS
George E. Blomgren, Lakewood, and Steven D. Jones, North Ridgeville, both of Ohio, assignors to Eveready Battery Company, Inc., St. Louis, Mo.
Filed Oct. 9, 1991, Ser. No. 773,825
Int. Cl.[5] H01M *6/16*
U.S. Cl. 429—112 **19 Claims**

9. An electrochemical cell comprising
a) an anode,
b) a cathode,
c) a separator, and
d) a molten electrolyte composition comprising a mixture of an inorganic halide salt and a quaternary alkyl phosphonium halide salt, wherein the alkyl groups are short chains of from 1 to 4 carbons.

5,188,915
ELECTROLYTE FOR ZINC BROMIDE BATTERY
Takafumi Hashimoto, Tokyo, Japan, assignor to Kabushiki Kaisha Meidensha, Tokyo, Japan
Filed Aug. 1, 1990, Ser. No. 561,164
Claims priority, application Japan, Aug. 2, 1989, 1-200818
Int. Cl.[5] H01M *4/58*
U.S. Cl. 429—199 **5 Claims**



1. An electrolyte for a zinc bromide secondary battery comprising:
a first solution including zinc bromide and a complexing agent having bromide ions which forms a bromide complex reacted with said zinc bromide and precipitates said complex in said electrolyte; and
a second solution of a zinc compound selected from groups of compounds which are decomposable at a higher voltage than said zinc bromide decomposes during battery charging, the concentration of said first and second solutions being regulated to provide a total concentration of zinc ions generated therefrom at least 0.5 mol/l higher than that of bromide ions contained in the first solution.

5,188,916
ELECTROPHOTOGRAPHIC PHOTORECEPTOR HAVING A ZIRCONIUM AND SILICON-CONTAINING UNDERLAYER
Masahiko Hodumi; Koji Bando; Takahiro Suzuki; Shigeto Hashiba; Yoshiyuki Ono; Sadao Okano; Seiji Ashiya, and Masanori Murase, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Sep. 9, 1991, Ser. No. 757,028
Claims priority, application Japan, Oct. 8, 1990, 2-268315; Oct. 26, 1990, 2-287232
Int. Cl.[5] G03G *5/14*
U.S. Cl. 430—65 **4 Claims**

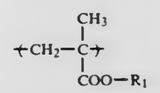
1. An electrophotographic photoreceptor comprising an undercoating layer provided on an electrically conductive substrate having thereon a light-sensitive layer, wherein said undercoating layer is obtained by coating a solution of a composition comprising zirconium and silicon or a solution of a mixture of a zirconium acetyl acetonate compound and a silane coupling agent, the silicon content in said composition comprising zirconium and silicon being in the range of 5 to 35 mol % based on the total amount of zirconium and silicon, and said undercoating layer obtained from said zirconium acetyl acetonate compound and silane coupling agent being a layer having a hardening degree of 1.2 or less.

5,188,917
ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL
Eiichi Kato, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed May 23, 1991, Ser. No. 704,743
Claims priority, application Japan, May 25, 1990, 2-133962
Int. Cl.[5] G03G *5/08*
U.S. Cl. 430—96 **13 Claims**

1. An electrophotographic light-sensitive material comprising a support having provided thereon a photoconductive layer containing at least an inorganic photoconductive substance and a binder resin, wherein the binder resin comprises (1) at least one AB block copolymer (Resin (A)) having a weight average molecular weight of from 1×10^3 to 2×10^4 and composed of an A block comprising at least one polymer component containing at least one acidic group selected from $-PO_3H_2$, —COOH, $-SO_3H$, a phenolic hydroxy group,

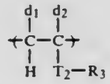


(wherein R represents a hydrocarbon group or —OR' (wherein R' represents a hydrocarbon group)) and a cyclic acid anhydride-containing group, and a B block containing at least a polymer component represented by the following general formula (I):



(I)

wherein R_1 represents a hydrocarbon group; and (2) at least one resin (Resin (B)) having a weight average molecular weight of 5×10^4 or more, containing a repeating unit represented by the general formula (III) described below, as a copolymer component, and having a crosslinked structure made before the preparation of a dispersion for forming the photoconductive layer:



(III)

wherein T_2 represents —COO—, —OCO—, $-CH_2OCO-$, $-CH_2COO-$, —O—, or $-SO_2-$; R_3 represents a hydrocarbon group having from 1 to 22 carbon atoms; and d_1 and d_2, which may be the same or different, each represents a hydrogen atom, a halogen atom, a cyano group, a hydrocarbon group having from 1 to 8 carbon atoms, $-COOZ_4$, or $-COOZ_4$ bonded through a hydrocarbon group having from 1 to 8 carbon atoms, wherein Z_4 represents a hydrocarbon group having from 1 to 18 carbon atoms.

VOL 1147 ISS 4 FE 23 1993 UMI

5,188,918

TONER AND DEVELOPER COMPOSITIONS COMPRISING FULLERENE

Ronald F. Ziolo, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 3, 1991, Ser. No. 709,734
Int. Cl.[5] G03G *9/09*
U.S. Cl. 430—106 **18 Claims**

1. A toner composition comprised of resin particles and pigment particles comprised of a fullerene or fullerenes wherein the fullerene or fullerenes are comprised of C_{60} carbon, C_{70} carbon, C_{84} carbon, C_{234} carbon, C_{340} carbon, or mixtures thereof.

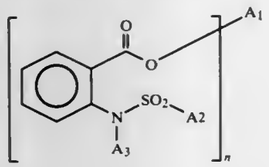
5,188,919

PARTICULATE TONER MATERIAL CONTAINING CHARGE CONTROLLING COMPOUND

Jean-Marie O. Dewanckele, Drongen; Serge M. Tavernier, and Jean-Pierre A. Ghekiere, both of Lint, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Aug. 13, 1991, Ser. No. 744,410
Claims priority, application European Pat. Off., Aug. 22, 1990, 90202254.0
Int. Cl.[5] G03G *9/097*
U.S. Cl. 430—106 **12 Claims**

1. Particulate toner material for use in the development of latent electrostatic images, wherein said particulate toner material is capable of acquiring by triboelectric contact electrification a net negative charge and contains thermoplastic resin(s) as binder in combination with a compound capable of imparting a negative charge to the particulate toner material in contact electrification, characterized in that the latter compound corresponds to the following general formula (A):



wherein:

A_1 is hydrogen, a counter ion or a mono- or polyvalent cyclic or acyclic aliphatic, aromatic or mixed aliphatic-aromatic hydrocarbongroup;

n is 1 when A_1 is hydrogen or a monovalent hydrocarbon group or is an integer corresponding to the valency of the counter ion when A_1 is a counter ion or corresponding to the valency of the polyvalent hydrocarbon group when A_1 is such polyvalent hydrocarbon group;

A_2 is an aryl, alkyl or aralkyl group, or substituted aryl, alkyl or aralkyl group, and

A_3 is hydrogen or an aryl, alkyl, or aralkyl group.

7. Particulate toner material according to claim **1**, wherein a colorant is dissolved or dispersed in the thermoplastic resin.

8. Particulate toner material according to claim **7**, wherein the colorant is an organic pigment or dye selected from the group consisting of phthalocyanine dyes, quinacridone dyes, triaryl methane dyes, sulphur dyes, acridine dyes, azo dyes and fluoresceine dyes.

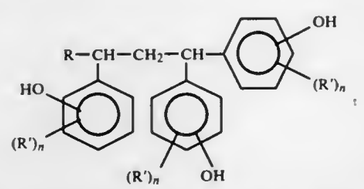
5,188,920

POSITIVE RESIST COMPOSITION CONTAINING 1,2-QUINONE DIAZIDE COMPOUND, ALKALI-SOLUBLE RESIN AND POLYHYDROXY PHENOL ADDITIVE COMPOUND

Hiroshi Moriuma, Nara; Haruyoshi Osaki, Toyonaka; Takeshi Hioki, Tondabayashi, and Yasunori Uetani, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 10, 1991, Ser. No. 712,729
Claims priority, application Japan, Jun. 14, 1990, 2-156877
Int. Cl.[5] G03F *7/023*; G03C *1/61*
U.S. Cl. 430—191 **10 Claims**

1. A radiation-sensitive positive resist composition comprising, in admixture, a 1,2-quinone diazide compound, an alkali-soluble resin and a phenol compound of the formula:



(I)

wherein R is a hydrogen atom, a lower alkyl group or a phenyl group, R' is an alkyl group or an alkoxy group, and n is a number of 0 to 3, wherein an amount of said 1,2-quinone diazide compound and an amount of said phenol compound are from 5 to 100 parts by weight and from 4 to 40 parts by weight, respectively, per 100 parts by weight of a total amount of said phenol compound and said alkali-soluble resin.

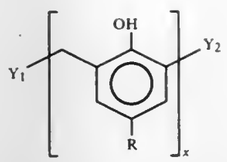
5,188,921

SELECTED BLOCK COPOLYMER NOVOLAK BINDER RESINS IN RADIATION-SENSITIVE RESIST COMPOSITIONS

Alfred T. Jeffries, III, Providence; Kenji Honda, Barrington, both of R.I.; Andrew J. Blakeney, and Sobhy Tadros, both of Seekonk, Mass., assignors to OCG Microelectronic Materials, Inc., Cheshire, Conn.

Continuation of Ser. No. 404,139, Sep. 7, 1989, abandoned. This application Jun. 4, 1991, Ser. No. 711,351
Int. Cl.[5] G03F *7/023, 7/32*
U.S. Cl. 430—192 **15 Claims**

1. A radiation-sensitive composition comprising an admixture of at least one o-quinonediazide compound sensitizer and a block copolymer novolak resin composition comprising at least one unit of the reaction product of (1) an alkali-soluble phenolic moiety having at least two phenolic ring nuclei and made by reacting a phenolic monomer precursor with an aldehyde source, said phenolic monomer precursor selected from the group consisting of m-cresol, o-cresol, 3,4-xylenol, 2,3-xylenol, 2,5-xylenol, 3,5-xylenol, 2-methoxyphenol, 3-methoxyphenol, 2-chlorophenol, 3-chlorophenol, 2-chloro-3-methylphenol, 2-chloro-5-methylphenol, 3-chloro-5-methylphenol, 2-ethylphenol, 3-ethylphenol, hydroquinone, resorcinol, 4-chlororesorcinol, 4-ethylresorcinol, 5-methylresorcinol, 2-methylresorcinol, and with (2) a reactive ortho, ortho bonded oligomer having the formula:



(I)

wherein x is from 2 to 4;

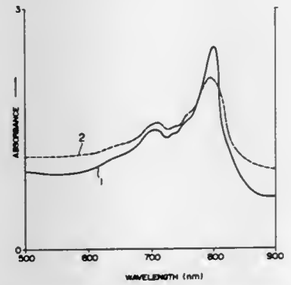
wherein R is selected from hydrogen, a lower alkyl group or lower alkoxy group having 1–4 carbon atoms and a halogen group; and Y_1 is either a hydroxyl group, and alkoxy group or a halogen group; and Y_2 is hydrogen, alkyl, alkoxy, halogen, hydroxyl, $—CH_2OH$, $—CH_2$-halogen, or $—CH_2$-alkoxy group; and wherein the amount of said o-quinonediazole compound or compounds being about 5% to about 40% by weight and the amount of said binder resin being about 60% to 95% by weight, based on the total solids content of said radiation-sensitive composition.

5,188,922

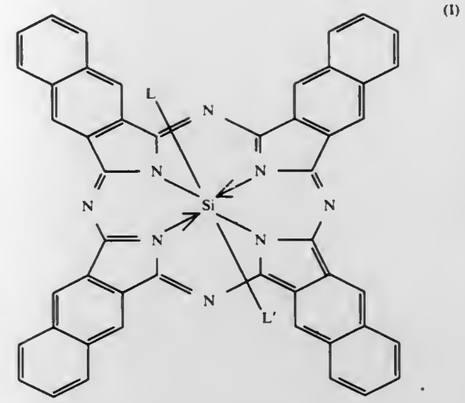
OPTICAL RECORDING MEDIUM

Shigeru Hayashida, and Seiji Tai, both of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd. and Hitachi, Ltd., both of Tokyo, Japan

Continuation of Ser. No. 596,427, Oct. 11, 1990, abandoned, which is a continuation of Ser. No. 325,963, Mar. 20, 1989, abandoned, which is a continuation of Ser. No. 76,483, Jul. 22, 1987, abandoned. This application May 17, 1991, Ser. No. 703,056
Claims priority, application Japan, Jul. 23, 1986, 61-173394
Int. Cl.[5] G03C *1/72*; G03F *7/26*
U.S. Cl. 430—270 **2 Claims**



1. A vapor deposited optical recording medium of a pyrolytic type having on a substrate a recording layer on which information can be recorded to form pits and read directly afterwards by means of a laser providing light of a predetermined frequency, said information is the relative reflection between the recording layer in which pits have not been formed and these areas in which pits have been formed in the recordation of information, said recording layer comprising an organic thin film containing a silicon naphthalocyanine compound represented by the following general formula (I):



(I)

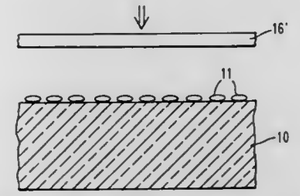
wherein L and L' independently represent a siloxy group represented by general formula $R_1R_2R_3SiO—$; R_1, R_2 and R_3 independently representing an alkyl group having 1 to 3 carbon atoms.

5,188,923

OPTICAL STORAGE MEDIA WITH DISCONTINUOUS THIN METALLIC FILMS

Kie Y. Ahn, Chappaqua; Harold N. Lynt, Jr., Cold Spring, and Victor B. Jipson, Mahopac, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 430,053, Oct. 30, 1989, abandoned, which is a continuation of Ser. No. 796,482, Nov. 6, 1985, abandoned, which is a continuation of Ser. No. 507,314, Jun. 23, 1983, abandoned, which is a continuation-in-part of Ser. No. 336,525, Dec. 31, 1981, abandoned. This application Mar. 12, 1990, Ser. No. 492,187
Int. Cl.[5] G03B *1/72*
U.S. Cl. 430—273 **17 Claims**



1. An optical storage medium for storing binary data by printing coding spots in a uniform medium adapted to be written upon by a focussed high intensity energy beam, said medium consisting essentially of

a substrate transparent to said energy beam, having low thermal conductivity and a low melting point

said substrate having a surface carrying a discontinuous thin layer of particles,

said discontinuous thin layer of particles being substantially of a single thickness and form separate islands of an energy absorbing material of a metal selected from the group consisting of Au, Ag, Cu, Pt, Pd, and Rh,

whereby said separate islands of particles are juxtaposed with each other with small spacings therebetween,

such that focussed energy can be directed to heat a spot containing a plurality of said particles to cause a change in the reflectivity of said medium to record information at the sites where heating has occurred.

5,188,924

PATTERN FORMING METHOD UTILIZING MATERIAL WITH PHOTORESIST FILM UNDERLAYER AND CONTRAST ENHANCEMENT OVERLAYER CONTAINING PHOTOSENSITIVE DIAZONIUM SALT

Kunihiro, Ikari, deceased, late of Kamakura, Japan by Masataka Miyamura, legal representative ; Hirokazu Niki, Yokohama; Makoto Nakase, Tokyo, and Toshiaki Shinozaki, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 406,892, Sep. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 62,339, Jun. 9, 1987, abandoned, which is a continuation of Ser. No. 732,717, May 10, 1985, abandoned. This application Oct. 16, 1991, Ser. No. 777,449

Claims priority, application Japan, May 14, 1984, 59-94603; Nov. 19, 1984, 59-242281; Dec. 17, 1984, 59-264450

Int. Cl.[5] **G03F** *7/30, 7/021*

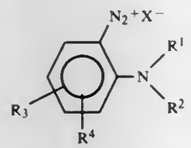
U.S. Cl. 430—312 **21 Claims**

1. A pattern forming method for forming a minute pattern on a substrate, consisting essentially of the steps of:

(a) providing a photoresist film on a substrate;

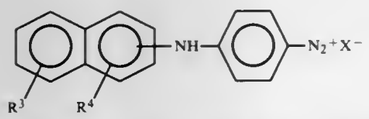
(b) providing a photosensitive film consisting essentially of a resin binder and a photosensitive diazonium salt in an amount of at least 2 mmole per gram of the resin binder on the photoresist film, said diazonium salt being represented by a formula selected from the group consisting of

(I)



wherein R^1 and R^2 may be either identical or different and represent alkyl groups, or R^1 and R^2 taken together may be cyclized through a carbon, oxygen or nitrogen atom; R^3 and R^4 may either be identical or different and each represent a hydrogen atom, an alkyl group, an aryl group, an aralkyl group, an alkoxy group, an alkylmercapto group, an alkylmercapto group, an acyl group, a halogen atom, a sulfo group or a carboxyl group; and X represents a halogen ion or an anion constituted of a halide of bron, aluminum, iron, zinc, arsenic, antimony or phosphorus, and

(II)



wherein R^3, R^4, and $X^{\ominus}$ are the same as defined above,

(c) subjecting said composite to a single pattern exposure by use of a light to which both said photoresist film and said photosensitive diazonium salt are sensitive, thereby forming an exposed composite which has an exposure pattern; and then

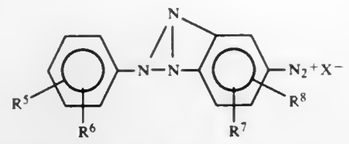
(d) subjecting said exposed composite to a treatment such that said photosensitive film is removed and said photoresist film is developed to form a minute pattern, which corresponds to said exposure pattern, of 2 μm or less in said photoresist film.

4. A pattern forming method for forming a minute pattern on a substrate, consisting essentially of the steps of:

(a) providing a photoresist film on a substrate;

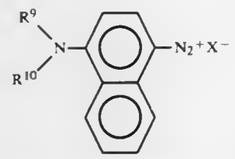
(b) providing a photosensitive film consisting essentially of a resin binder and a photosensitive diazonium salt in an amount of at least 2 mmole per gram of the resin binder on the photoresist film, said diazonium salt being represented by a formula selected from the group consisting of

(III)



wherein R^5, R^6, R^7 and R^8 may be either identical or different and each represent a hydrogen atom, a halogen atom, an amino group, a sulfo group, a carboxyl group, an alkyl group, an alkoxy group, a dialkylamino group, an alkylmercapto group or an acyl group each having 1 to 6 carbon atoms, an aryl group or an aralkyl group each having 6 to 12 carbon atoms; and X represents a halogen ion, a sulfate ion or an anion consisting of a halide of either boron, phosphorus, zinc, arsenic, aluminum, iron or antimony,

(IV)

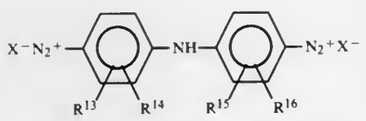


wherein R^9 and R^{10} each represent a hydrogen atom, a halogen atom, an alkyl group, an alkenyl group, an alkoxy group, an aryl group, an aralkyl group, an amino group, a dialkylamino group, an alkylmercapto group, an acyl group, a sulfo group, a carboxy group or



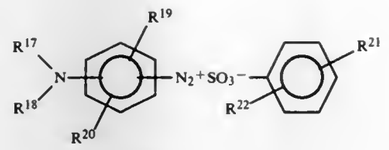
where R^{11} and R^{12} each represent a hydrogen atom, a halogen atom, an alkyl group, an alkenyl group, an alkoxy group, an aryl group, an aralkyl group, an amino group, a dialkylamino group, an alkylmercapto group, an acyl group, a sulfo group or a carboxyl group; and X represents an anion capable of forming a diazonium salt,

(V)

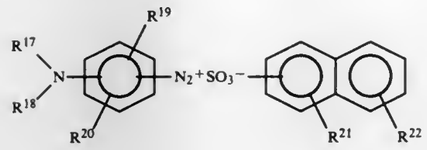


where R^{13}, R^{14}, R^{15} and R^{16} each represent a hydrogen atom, a halogen atom, an alkyl group, an alkenyl group, an alkoxy group, an aryl group, an aralkyl group, an amino group, a dialkylamino group, an alkylmercapto group, an acyl group, a sulfo group or a carboxyl group; and X represents an anion capable of forming a diazonium salt,

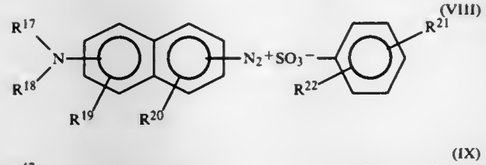
(VI)



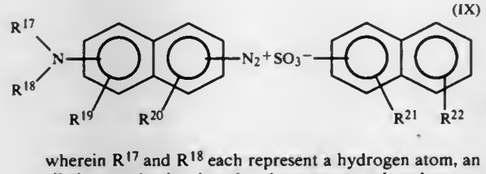
(VII)



(VIII)



(IX)



wherein R^{17} and R^{18} each represent a hydrogen atom, an alkyl group having 1 to 6 carbon atoms, a phenyl group, or R^{17} and R^{18} taken together may be cyclized through a carbon, oxygen or nitrogen atom; R^{19} and R^{20} each represent a hydrogen atom, a halogen atom, an alkyl gruop, an alkoxy group or an alkenyl group each having 1 to 6 carbon atoms; R^{21} and R^{22} each represent a hydrogen atom, a hydroxyl group, a carboxyl group, a sulfo group, an alkyl group or an alkoxy group each having 1 to 6 carbon atoms, an amino group, a nitro group or a benzoyl group,

whereby a composite is formed;

(c) subjecting said composite to a single pattern exposure by use of a light to which both said photoresist film and said photosensitive diazonium salt are sensitive, thereby forming an exposed composite which has an exposure pattern; and then

(d) subjecting said exposed composite to a treatment such that said photosensitive film is removed and said photoresistive film is developed to form a minute pattern, which corresponds to said exposure pattern, of 2 μm or less in said photoresist film.

5,188,925

PROCESSING METHOD FOR SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Moeko Hagiwara, Kokubunji, and Shigeharu Koboshi, Sagamihara, both of Japan, assignors to Konica Corporation, Tokyo, Japan

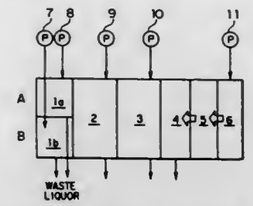
Filed Sep. 4, 1991, Ser. No. 754,803

Claims priority, application Japan, Sep. 5, 1990, 2-234779; Nov. 21, 1990, 2-317034

Int. Cl.[5] **G03C** *7/40*

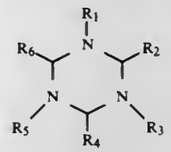
U.S. Cl. 430—372 **10 Claims**

1. A method for processing at least two different kinds of silver halide color photographic light-sensitive materials including first and second light-sensitive materials comprising developing, bleaching, fixing and stabilizing wherein said first and second light-sensitive materials are processed with the same stabilizing solution containing a hexamethylenetetramine compound or at least one of the compounds represented by the following formulas F-1 through F-10, and wherein said first and second light-sensitive materials are a silver halide color photographic material A comprising silver halide grains with a



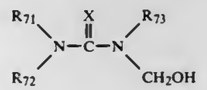
total amount of silver coated of 2 g/m^2 to 10 g/m^2 and another silver halide color photographic light-sensitive material B comprising silver halide grains with a total amount of silver coated of not more than 1 g/m^2, respectively;

formula F-1

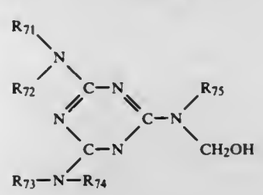


wherein R_1 through R_6 independently represent a hydrogen atom or monovalent organic group,

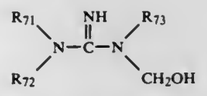
formula F-2



formula F-3

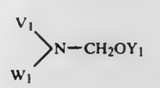


formula F-4

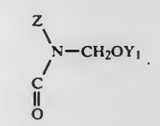


wherein R_{71} through R_{75} independently represent a hydrogen atom or methylol group; X represents an oxygen or sulfur atom,

formula F-5



formula F-6

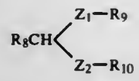


wherein V_1 and W_1 independently represent a hydrogen atom, lower alkyl group or electron-attracting group; V_1 and W_1 may bind to form a 5- or 6- membered nitrogen-containing heterocyclic ring; Y_1 represents a hydrogen atom or a group capable of being split off upon hydrolysis; Z represents a group

VOL 1147 ISS 4 FEB 23 1993

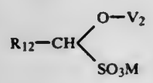
of non-metallic atoms necessary for forming a simple or condensed nitrogen-containing heterocyclic ring together with a nitrogen atom and C=O group;

formula F-7

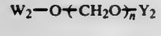


wherein R_8 represents a hydrogen atom or an aliphatic group; R_9 and R_{10} independently represent an aliphatic group or aryl group; R_9 and R_{10} may bind together to form a ring; Z_1 and Z_2 independently represent an oxygen atom, a sulfur atom or $-N(R_{11})-$, wherein Z_1 and Z_2 do not represent an oxygen atom concurrently; R_{11} represents a hydrogen atom, hydroxyl group, aliphatic group or aryl group,

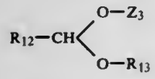
formula F-8



formula F-9



formula F-10



wherein R_{12} represents a hydrogen atom or aliphatic group; V_2 represents a group capable of being split off upon hydrolysis; M represents a cation; W_2 and Y_2 independently represent a hydrogen atom or a group capable of being split off upon hydrolysis; n represents an integer of 1 to 10; Z_3 and R_{13} independently a hydrogen atom, aliphatic group, aryl group or a group capable of being split off upon hydrolysis; Z_3 and R_{13} may bind to form a ring.

5,188,926

PHOTOGRAPHIC ELEMENTS HAVING CARBONAMIDE COUPLER SOLVENTS AND ADDENDA TO REDUCE SENSITIZING DYE STAIN

Edward Schofield, Penfield; Paul B. Merkel, Rochester, and Tienteh Chen, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 9, 1991, Ser. No. 805,880
Int. Cl.[5] G03C *7/30, 7/388*
U.S. Cl. 430—377 **25 Claims**

1. A method of forming color in a silver halide photographic element wherein the silver halide is sensitized with a dye, which comprises reacting an oxidized developing agent with a phenolic or naptholic cyan dye-forming coupler in a carbonamide coupler solvent having the formula:

wherein R_1, R_2 and R_3 are individually selected from the group consisting of straight and branched chain alkyl groups, alkenyl groups and alkylene groups, any of which may be substituted with one or more substitutents selected from the group consisting of alkoxy, aryl, alkoxycarbonyl, aryloxycarbonyl and acyloxy; a phenyl group; and a phenyl group containing at least one substituent selected from the group consisting of alkyl, alkoxy, aryl, alkoxycarbonyl, aryloxcarbonyl and acyloxy, and wherein R_1, R_2 and R_3 combined have from 15 to 30 carbon atoms, and R_1 and R_2 may join to form a ring, when R_3 is an unsubstituted straight or branched chain alkyl, alkenyl or alkylene group, and the carbonamide coupler solvent is used in an amount effective to reduce sensitizer dye staining caused by residual dye retained after processing of the photographic element.

5,188,927

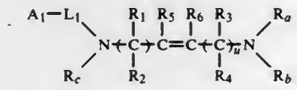
COMPOSITION AND PROCESS FOR THE PROCESSING OF SILVER HALIDE COLOR PHOTOGRAPHIC MATERIAL

Hisashi Okada, and Seki Hiroyuki, both of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 14, 1991, Ser. No. 715,282
Claims priority, application Japan, Jun. 15, 1990, 2-156683; Sep. 27, 1990, 2-258539; Nov. 30, 1990, 2-330776
Int. Cl.[5] G032 *7/42*
U.S. Cl. 430—393 **20 Claims**

1. A process for the processing of an imagewise exposed silver halide color photographic material, which comprises developing in a color developing solution, and then processing with a processing composition comprising at least one metal chelate compound formed of a salt of a metal selected from the group consisting of Fe(III), Mn(III), Co(III), Rh(II), Rh(III), Au(III), Au(II) and Ce(IV) and a compound represented by the general formula (I):

(I)



wherein R_1, R_2, R_3, R_4, R_a, R_b, and R_c each represents a hydrogen atom, an aliphatic group or an aromatic group; R_5 and R_6 each represents a hydrogen atom, an aliphatic group, an aromatic group, a halogen atom, a cyano group, a nitro group, an acyl group, a sulfamoyl group, a carbamoyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, a sulfonyl group or a sulfinyl group, or R_5 and R_6 together may form a 5- or 6-membered ring; L_1 represents a divalent aliphatic or aromatic group or a divalent linking group containing at least one of a divalent aliphatic group and a divalent aromatic group; A_1 represents a carboxyl group, a phosphono group, a sulfo group, a hydroxyl group, or a substituted group thereof (acidic group only) with an alkali metal atom; and t and u each represents an integer 0 or 1; provided that when R_5 and R_6 together form a 5- or 6-membered ring, R_1, R_2, R_3 and R_4 each does not represent an aromatic ring, and when R_5 and R_6 together form a benzene ring, at least one of t and u represents 1.

5,188,928

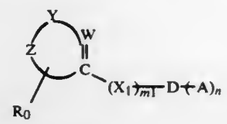
SILVER HALIDE PHOTOGRAPHIC MATERIAL CONTAINING LIGHT ABSORBING COMPOUND

Yukio Karino, and Tetunori Matushita, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 30, 1991, Ser. No. 785,071
Claims priority, application Japan, Oct. 31, 1990, 2-295047
Int. Cl.[5] G03C *1/492*
U.S. Cl. 430—513 **5 Claims**

1. A silver halide photographic material comprising at least one silver halide emulsion layer on a support, wherein said emulsion layer or other hydrophilic colloid layers comprise at least one compound represented by formula:

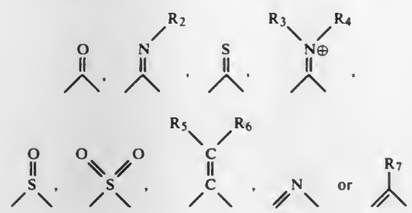
(I)



wherein W represents =N— or



in which R_1 represents a hydrogen atom or a substituent; R_0 represents an alkyl group containing 10 or more carbon atoms or an aromatic group containing 12 or more carbon atoms; Z represents an atomic group which can form a heterocyclic group or a carbon ring; Y represents



wherein R_2, R_3, R_4, R_5, R_6 and R_7 each represents a hydrogen atom or a substituent; X_1 represents a divalent group connected to carbon atom via a hetero atom contained therein; D represents a photographic dye portion connected to X_1 via a hetero atom contained therein; A represents a water-solubilizing group; m_1 represents an integer 0 or 1; and n represents an integer 2 or more.

5,188,929

ELECTROSTATIC IMAGE DEVELOPING TONER COMPRISING COMPLEX COMPOUNDS CONTAINING SILICON

Yukihiro Ishii, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 22, 1991, Ser. No. 673,375
Claims priority, application Japan, Mar. 27, 1990, 2-77718
Int. Cl.[5] G03G *9/097*
U.S. Cl. 430—110 **4 Claims**

1. A toner composition for developing an electrostatic image comprising:

a binder resin;

a colorant dispersed in the binder resin, and

a complex compound containing a silicon atom to which at least two mols of at least one of a non-azo chelating monocyclic or polycyclic aromatic diol, monocyclic or polycyclic aromatic hydroxycarboxylic acid or monocyclic or polycyclic aromatic dicarboxylic acid is coordinated per mol of the silicon atom.

5,188,930

PHOTOGRAPHIC FILM OF SYNDIOTACTIC STYRENE POLYMER

Keisuke Funaki, Ichihara, and Yuichi Ohki, Himeji, both of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 592,800, Oct. 4, 1990, abandoned. This application Dec. 2, 1991, Ser. No. 800,762
Claims priority, application Japan, Oct. 18, 1989, 61-269090
Int. Cl.[5] G03C *1/76*
U.S. Cl. 430—536 **13 Claims**

1. A photographic film which comprises:

(A) a stretched film comprising a styrene polymer having a syndiotactic configuration with thickness of 20 to 500 μm, haze of not more than 3% and moisture expansion coefficient of not more than 1×10^{-6}/% RH, stretched at a stretching ratio of at least 6, and

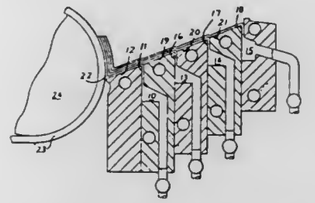
(B) a photosensitive layer comprising a silver salt photosensitive material.

5,188,931

PROCESS OF SIMULTANEOUSLY APPLYING MULTIPLE LAYERS OF HYDROPHILIC COLLOIDAL AQUEOUS COMPOSITIONS TO A HYDROPHOBIC SUPPORT AND MULTILAYER PHOTOGRAPHIC MATERIAL

Domenico Marinelli, and Fulvio Furlan, both of Savona, Italy, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 29, 1990, Ser. No. 471,872
Claims priority, application Italy, Feb. 9, 1989, 19373 A/89
Int. Cl.[5] B05D *1/30;* **G03C** *1/76*
U.S. Cl. 430—539 **11 Claims**



1. A process comprising simultaneously applying multiple layers of hydrophilic colloidal aqueous coating compositions to a moving support with a multilayer bead coating apparatus, wherein the first layer applied next to the support is an hydrophilic colloidal aqueous composition comprising a high molecular weight, highly deionized gelatin having at least 35% by weight of gelatin fractions with molecular weights higher than 250,000 in which there are dispersed fine droplets of a high temperature boiling water immiscible organic solvent.

5,188,932

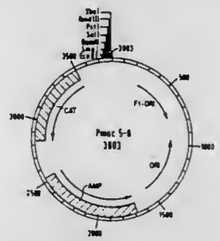
Patent Not Issued For This Number

5,188,933

PROTEIN PP15 PREPARED BY GENETIC MANIPULATION

Ulrich Grundmann, Lahntal-Grossfelden; Karl-Josef Abel, and Eugen Amann, both of Marburg, all of Fed. Rep. of Germany, assignors to Behringwerke Aktiengesellschaft, Marburg-/Lahn, Fed. Rep. of Germany

Continuation of Ser. No. 324,068, Mar. 16, 1989, abandoned. This application Jun. 3, 1991, Ser. No. 709,790
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1988, 3809119
Int. Cl.[5] C07H *15/12;* **C12Q** *1/68;* **C12N** *15/00, 1/00*
U.S. Cl. 435—6 **12 Claims**



1. An isolated DNA sequence coding for protein PP15 having immunosuppressant activity and the amino acid sequence shown in FIG. 2.

VOL 1147 ISS 4 FE 23 1993 UMI

5,188,934

4,7-DICHLOROFLUORESCEIN DYES AS MOLECULAR PROBES

Steven M. Menchen, Fremont; Linda G. Lee, Palo Alto; Charles R. Connell, Redwood City; N. Davis Hershey, San Carlos; Vergine Chakerian, San Mateo; Sam Woo, Redwood City, and Steven Fung, Palo Alto, all of Calif., assignors to Applied Biosystems, Inc., Foster City, Calif.

Filed Nov. 14, 1989, Ser. No. 436,455

Int. Cl.[5] C12Q *1/68*; C07D *311/78, 311/94*

U.S. Cl. 435—6 **18 Claims**

5. A method of distinguishing polynucleotides having different terminal dideoxynucleotides in the chain termination method of DNA sequencing, the method comprising the steps of:

forming a mixture of a first, a second, a third, and a fourth class of polynucleotides,

each polynucleotide in the first class having a 3'-terminal dideoxyadenosine and being labeled with a first dye selected from the group consisting of 5- and 6-carboxyfluorescein, 5- and 6-carboxy-4,7-dichlorofluorescein, 2',7'-dimethoxy-5- and 6-carboxy-4,7-dichlorofluorescein, 2',7'-dimethoxy-4',5'-dichloro-5- and 6-carboxyfluorescein, 2',7'-dimethoxy-4',5'-dichloro-5- and 6-carboxy-4,7-dichlorofluorescein, 1',2',7',8'-dibenzo-5- and 6-carboxy-4,7-dichlorofluorescein, and 1',2',7',8'-dibenzo-4',5'-dichloro-5- and 6-carboxy-4,7-dichlorofluorescein,

each polynucleotide in the second class having a 3'-terminal dideoxythymidine and being labeled with a second dye selected from the group consisting of 5- and 6-carboxyfluorescein, 5- and 6-carboxy-4,7-dichlorofluorescein, 2',7'-dimethoxy-5- and 6-carboxy-4,7-dichlorofluorescein, 2',7'-dimethoxy-4',5'-dichloro-5- and 6-carboxyfluorescein, 2',7'-dimethoxy-4',5'-dichloro-5- and 6-carboxy-4,7-dichlorofluorescein, 1',2',7',8'-dibenzo-5- and 6-carboxy-4,7-dichlorofluorescein, and 1',2',7',8'-dibenzo-4',5'-dichloro-5- and 6-carboxy-4,7-dichlorofluorescein,

each polynucleotide in the third class having a 3'-terminal dideoxyguanosine and being labeled with a third dye selected from the group consisting of 5- and 6-carboxyfluorescein, 5- and 6-carboxy-4,7-dichlorofluorescein, 2',7'-dimethoxy-5- and 6-carboxy-4,7-dichlorofluorescein, 2',7'-dimethoxy-4',5'-dichloro-5- and 6-carboxyfluorescein, 2',7'-dimethoxy-4',5'-dichloro-5- and 6-carboxy-4,7-dichlorofluorescein, 1',2',7',8'-dibenzo-5- and 6-carboxy-4,7-dichlorofluorescein, and 1',2',7',8'-dibenzo-4',5'-dichloro-5- and 6-carboxy-4,7-dichlorofluorescein,

each polynucleotide in the fourth class having a b 3'-terminal dideoxycytosine and being labeled with a fourth dye selected from the group consisting of 5- and 6-carboxyfluorescein, 5- and 6-carboxy-4,7-dichlorofluorescein, 2',7'-dimethoxy-5- and 6-carboxy-4,7-dichlorofluorescein, 2',7'-dimethoxy-4',5'-dichloro-5- and 6-carboxyfluorescein, 2',7'-dimethoxy-4',5'-dichloro-5- and 6-carboxy-4,7-dichlorofluorescein, 1',2',7',8'-dibenzo-5- and 6-carboxy-4,7-dichlorofluorescein, and 1',2',7',8'-dibenzo-4',5'-dichloro-5- and 6-carboxy-4,7-dichlorofluorescein,

wherein the first, second, third, and fourth dyes are spectrally resolvable from one another;

electrophoretically separating on a gel the polynucleotides in the mixture so that bands of similarly sized polynucleotides are formed;

illuminating with an illumination beam the bands on the gel, the illumination beam being capable of causing the dyes to fluoresce; and

identifying the class of the polynucleotides in the bands by the fluorescence or absorption spectrum of the dyes.

5,188,935

REAGENT SYSTEM AND METHOD FOR IDENTIFICATION, ENUMERATION AND EXAMINATION OF CLASSES AND SUBCLASSES OF BLOOD LEUKOCYTES

Robert C. Leif, Coral Gables; Stephen L. Ledis, Hialeah, and Robert I. Feinberg, Sunrise, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Continuation of Ser. No. 866,985, May 15, 1986, abandoned, which is a continuation of Ser. No. 615,961, May 31, 1984, abandoned. This application Nov. 13, 1990, Ser. No. 611,381

The portion of the term of this patent subsequent to Jun. 14, 2005, has been disclaimed.

Int. Cl.[5] G01N *33/569*

U.S. Cl. 435—7.24 **26 Claims**

14. A reagent for use on a whole blood sample for identifying classes, or classes and also subclasses of leukocytes at least one of which has been labeled with specific antibodies, said reagent comprising: a lysing reagent containing an amount of saponin sufficient, within a predetermined time and at a suitable temperature, for lysing erythrocytes in a manner which leaves labeled leukocytes substantially intact; and a fixing reagent containing a cross-linking agent in such amount sufficient, within a predetermined time and at a suitable temperature, for maintaining the physical properties, or the physical properties and also the morphological properties of leukocytes for leukocyte identifying by at least optical detection; said fixing reagent containing a non-fluorescing dialdehyde as an active ingredient.

5,188,936

BRUCELLA ABORTUS ANTIBODY DETECTION METHODS

Louisa B. Tabatabi; John E. Mayfield, both of Ames, Iowa, and Bonnie L. Beck, Waterbury, Conn., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Jan. 16, 1991, Ser. No. 641,346

Int. Cl.[5] G01N *33/569*; C12N *15/53*

U.S. Cl. 435—7.32 **7 Claims**

1. A method of detecting an antibody elicited in response to the presence of *B. abortus* containing *B. abortus* copper-zinc superoxide dismutase protein, CuZnSOD protein, comprising the steps of combining a diagnostic reagent comprising a substantially pure *B. abortus* CuZnSOD protein or a segment of the *B. abortus* CuZnSOD protein effective as an antigenic determinant, with a body fluid sample suspected of containing said antibody and detecting the presence of a complex of said reagent and said antibody.

5,188,937

LAYERED SANDWICH ASSAY METHOD FOR CHLAMYDIA AND MATERIALS THEREFOR

Thomas H. Schulte, Cary; Stewart R. Jurgensen, and James P. Mapes, both of Raleigh, all of N.C., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 334,255, Apr. 6, 1989, abandoned. This application Jul. 17, 1991, Ser. No. 733,070

Int. Cl.[5] G01N *33/571, 33/543*

U.S. Cl. 435—7.36 **20 Claims**

1. A method for detecting Chlamydia antigen comprising:

a) combining a solid support having an antispecies Fc antibody immobilized thereon, a capture antibody, a sample suspected of containing a Chlamydia lipopolysaccharide cell surface antigen and a tracer comprising a signal antibody conjugated to a first enzyme whereby said capture antibody binds to said antispecies antibody, said antigen binds to said capture antibody and said signal antibody binds to said antigen to give a bound fraction containing signal antibody on said support;

b) contacting said support having bound signal antibody thereon with a hydrolase, a blocked fluoroketone and a substrate for said hydrolase, said first enzyme removing the blocking group from said blocked fluoroketone to a fluoroketone, said fluoroketone inhibiting conversion of said substrate to a product by said hydrolase; and

c) detecting the presence of Chlamydia antigen in said sample by inhibition of the appearance of color associated with said product.

5,188,938

ENZYME QUANTITATION WICKING ASSAY

Pyare L. Khanna, Fremont, and Glenda L. Choate, Concord, both of Calif., assignors to Microgenics Corporation, Concord, Calif.

Continuation of Ser. No. 291,457, Dec. 29, 1988, abandoned. This application Oct. 15, 1991, Ser. No. 777,489

The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.

Int. Cl.[5] G01N *33/535, 33/558, 33/537*

U.S. Cl. 435—7.7 **10 Claims**

1. A method for detecting the presence of a ligand or receptor analyte in a sample employing (1) complementary fragments of beta-galactosidase, which fragments are defined as enzyme acceptor (EA) and enzyme donor (ED) and form a complex of active enzyme when bound to each other, (2) a bibulous support to which a first one of said fragments is substantially uniformly bound in a detection region, and (3) a conjugate comprising the second one of said fragments jointed to a moiety cross-reactive with a ligand analyte or complementary to a receptor analyte, said method comprising:

combining in an assay medium (1) said sample, (2) said conjugate, and, when said analyte is a ligand, (3) a receptor reagent capable of binding said ligand, and incubating said assay medium for a sufficient time for ligand to bind to receptor reagent or receptor analyte present in said assay medium, wherein said conjugate is hydrophilic and complexes of said conjugate with said receptor reagent or said receptor analyte are prevented form binding to said first one of said fragments in said detection region (1) by separating complexed enzyme fragment conjugate from uncomplexed enzyme conjugate prior to contacting said bibulous support by using a receptor bound to another support or (2) by locating an anti-receptor on the bibulous support so that complexed enzyme fragment conjugate binds to said anti-receptor to form a high molecular weight aggregate which cannot migrate to said detection region and therefore cannot form active enzyme;

adding said assay medium to a receiving site of said bibulous support whereby said assay medium wicks away from said receiving site into said detection region;

contacting said detection region wit a substrate for beta-galactosidase to produce a product which provides a change in a detectable signal; and

relating said change to the presence of analyte in said sample.

5,188,939

DISPLACEMENT IMMUNOASSAY UTILIZING AN OLIGAVALENT LABELLED ANTIBODY

Dieter Mangold, Maxdorf, and Reiner Schlipfenbacher, Lampertheim, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jul. 9, 1990, Ser. No. 549,893

Claims priority, application Fed. Rep. of Germany, Jul. 12, 1989, 3922960

Int. Cl.[5] G01N *33/543*

U.S. Cl. 435—7.92 **9 Claims**

1. Method for determining an analyte in a liquid sample, comprising contacting said liquid sample to an immobilized complex of (i) immobilized analyte or analyte analogue and (ii) an obligovalent labelled antibody which binds to said analyte to be determined, said oligovlent labelled antibody produced by conjugating antibodies having 2 or fewer binding sites and characterized by at least 4 binding sites for said analyte or analyte analogue per label, under conditions favoring displacement of said obligovalent labelled antibody from said immobilized analyte or analyte analogue and formation of soluble complexes of analyte to be determined and oligovalent labelled antibody, and determining oligovalent labelled antibody bound to said immobilized analyte or analyte analogue or in said liquid sample as a determination of analyte to be determined.

5,188,940

METHOD OF DETERMINING THE TOTAL FIBRINOLYTIC ACTIVITY IN THE PLASMA

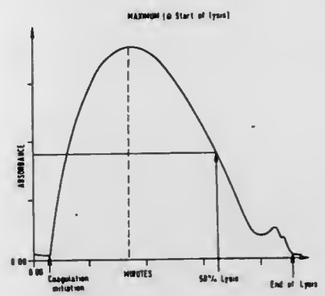
Jürgen Krause, Warthausen, and Walter Haarmann, Biberach, both of Fed. Rep. of Germany, assignors to Dr. Karl Thomae GmbH, Fed. Rep. of Germany

Filed Jan. 10, 1990, Ser. No. 463,177

Claims priority, application Fed. Rep. of Germany, Jan. 10, 1989, 3900493

Int. Cl.[5] C12Q *1/56*

U.S. Cl. 435—13 **3 Claims**



1. In a method for determining the total dibrinolytic activity of he plasma in a patient's blood wherein

a) a sufficient quantity of fibrin to produce turbidity is added to a native sample of the plasma or generated in situ and the turbidity or the fibrin cleavage products formed is or are measured: or

b) a chromogenic plasma substrate and a quantity of fibrin, fibrinogen cleavage products or an enzyme which produces turbidity, are added to a native sample of the plasma and the color formed is measured,

the improvement which comprises substituting a dilute platelet poor sample of the plasma for the native sample of the plasma and adding 1 to 5 percent by weight of polyethylene glycol with a molar weight of 8000 to 35,000.

5,188,941

ENZYMATIC DETERMINATION OF THEOPHYLLINE

Aurora F. deCastro, Union, Mich.; Surendra K. Gupta, and Arun K. Agarwal, both of Elkhart, Ind., assignors to GDS Technology, Inc., Elkhart, Ind.

Continuation of Ser. No. 572,203, Aug. 23, 1990, which is a continuation-in-part of Ser. No. 155,498, Feb. 12, 1988. This application Dec. 31, 1991, Ser. No. 815,590

Int. Cl.[5] C12Q *1/44*

U.S. Cl. 435—19 **30 Claims**

1. A method for determing theophylline in a sample suspected of containing theophylline comprising the steps of:

(a) contacting said sample with theophylline oxidase obtained from a microorganism in the absence of an added electron acceptor whereby a measurable signal is produced;

(b) measuring said signal produced; and

(c) correlating said signal to the concentration of theophylline in the sample.

VOL 1147 ISS 4 FE 23 1993 UMI

5,188,942

METHOD FOR DETERMINING BLUETONGUE VIRUS ANTIBODIES IN SERUM

John J. Reddington, and Ginger M. Reddington, both of Wilton, Conn., assignors to Consultants for Applied Biosciences, Inc., Wilton, Conn.

Filed Oct. 9, 1990, Ser. No. 594,071
Int. Cl.[5] C12Q *1/28;* G01N *33/53*
U.S. Cl. 435—28 25 Claims

1. In an enzyme linked immunosorbent assay method for determining Bluetongue virus-specific antibody in serum from ruminants comprising incubating said serum with Bluetongue virus antigen and determining the amount of serum virus antibody bound by employing an enzyme selected from the group consisting of peroxidase, alkaline phosphatase, beta-galactosidase and urease that conjugates with the antibody, an improvement comprising employing a biotinylated antibody with an avidin-enzyme complex to compete with serum antibody for the antigen binding sites, or to assay by means of an enzyme immunoassay for serum antibody binding sites.

5,188,943

METHOD OF PRODUCING HIGH MOLECULAR WEIGHT HUMAN FIBROBLAST GROWTH FACTORS

Robert Z. Florkiewicz, Poway, Calif., and Andreas Sommer, Boulder, Colo., assignors to Synergen, Inc., Boulder, Colo.

Continuation of Ser. No. 267,966, Nov. 7, 1988, abandoned. This application Apr. 17, 1991, Ser. No. 686,812
Int. Cl.[5] C12N *15/18*
U.S. Cl. 435—69.4 1 Claim

1. A method for the production of a CTG-initiated high molecular weight form of human bFGF-18 selected from the gruop consisting of bFGF-22, bFGF-23, and bFGF-24, wherein said high molecular weight form has at least one active site possessing mitogenic activity, comprising:

(a) culturing host cells transformed with a vector comprising expression regulatory sequences operatively linked to a nucleic acid sequence which encodes the high molecular weight form of human bFGF-18 under conditions for amplification of the vector and expression of the high molecular weight form of bFGF-18;

(b) harvesting the high molecular weight form of bFGF-18 from the culture medium; and

(c) purifying the expressed high molecular weight form of bFGF-18 substantially free from any other form of bFGF-18, when said purified high molecular weight form of bFGF-18 is selected from the group consisting of bFGF-22, bFGF-23, and bFGF-24.

5,188,944

PROCESS FOR THE GLYCOSYLATION OF AVERMECTIN AGYLCONES

Mary N. Omstead, Gladstone; Marvin D. Schulman, Scotch Plains, and Noel M. Young, Rahway, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 542,343, Jun. 22, 1990, abandoned. This application Sep. 19, 1991, Ser. No. 762,183
Int. Cl.[5] C12P *19/62, 19/60;* C12R *1/465*
U.S. Cl. 435—76 14 Claims

1. A process for the conversion of avermectin aglycone molecules into mono α-L-oleandrose or di-α-L-oleandrose glycoslated derivatives thereof which comprises adding an avermectin aglycone substrate to the fermentation medium of a mutant strain of *Streptomyces avermitilis* which is incapable of preparing avermectin molecules in the absence of the added avermectin aglycone substrate.

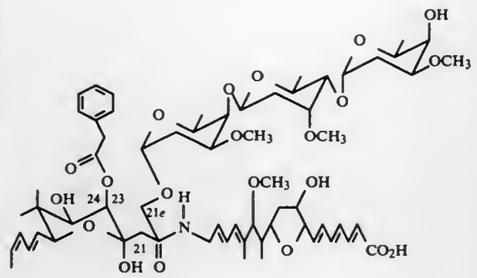
5,188,945

RECOVERY PROCESS FOR ANTIBIOTICS LL-E19020 ALPHA AND BETA

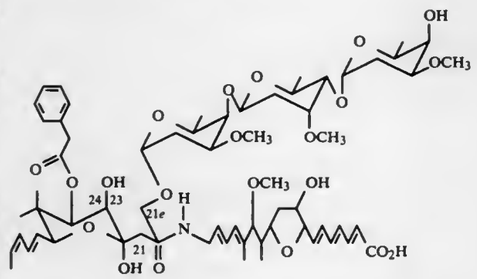
Guy T. Carter, Suffern; David R. Williams, Stony Point, and Fernando Pinho, Valley Cottage, all of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sep. 9, 1991, Ser. No. 756,634
Int. Cl.[5] C12P *19/58, 1/04*
U.S. Cl. 435—77 12 Claims

1. A process for producing antibiotics LL-E19020 alpha having the structure:



and LL-E19020 beta having the structure:



which comprises recovering the products produced by fermentation of a strain of *Streptomyces lydicus* ssp. *tanzanius* NRRL 18036 in an aqueous nutrient medium containing assimilable sources of carbon and nitrogen under submerged aerobic conditions by;

(a) adsorbing the antibiotics on a nonionic adsorption resin;

(b) separating the resin from the aqueous medium;

(c) eluting the antibiotics from the resin with suitable solvent mixture;

(d) purifying the fractions collected in step c by high pressure liquid chromatography on a suitable support with a suitable solvent mixture.

5,188,946

PROCESS AND DEVICE FOR SEQUENTIAL MICROBIAL ENRICHMENT IN A SINGLE APPARATUS

N. Robert Ward, Jr., and Philip J. Lozier, both of Seattle, Wash., assignors to BioControl Systems Incorporated, Bothell, Wash.

Division of Ser. No. 302,009, Jan. 26, 1989, Pat. No. 5,100,801. This application Mar. 30, 1992, Ser. No. 860,684
Int. Cl.[5] B01L *3/00*
U.S. Cl. 435—91 11 Claims

1. A method for sequential microbial enrichment of a particular microorganism within a sample, comprising the steps of:

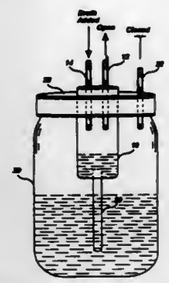
providing an apparatus comprising a container and an enrichment device wherein the container includes a venting means and wherein the enrichment device comprises,

a collection chamber,

a collection port having an inlet and a vent in communication with the collection chamber,

a passageway having a first opening communicating with the collection chamber and having a second opening communicating with the container, and

means for creating an air lock in said passageway to prevent media inside the collection chamber from passing into the container such that the microbial enrichment can take place within the collection chamber without additional media entering into the collection chamber;



inoculating the sample in a first enrichment broth and incubating the first enrichment broth in the container;

transferring an aliquot of incubated first enrichment broth into the collection chamber, establishing a means for preventing communication between the liquid in the container and the liquid in the collection chamber, and performing a second enrichment step by adding a second enrichment broth into the collection chamber; and

incubating the second enrichment broth in the collection chamber.

5,188,947

PROCESS AND MICROORGANISM FOR PRODUCING L-ORNITHINE BY CORYNEBACTERIUM, BREVIBACTERIUM, OR ATHROBACTER

Takayasu Tsuchida; Haruo Uchibori, and Yoshitaka Nishimoto, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Apr. 20, 1990, Ser. No. 512,108
Claims priority, application Japan, Apr. 20, 1989, 1-101011
Int. Cl.[5] C12P *13/10*
U.S. Cl. 435—114 7 Claims

1. A process for producing L-ornithine by fermentation, comprising:

(i) culturing a microorganism selected for the group consisting of *Arthrobacter citreus* FERM BP-2342, *Brevibacterium lactafermentum* FERM BP-2344, and *Corynebacterium glutamicum* FERM BP-2345, in an aqueous nutrient medium containing assimilable source of carbon, nitrogen, and inorganic substances thereby producing L-ornithine; and

(ii) isolating the L-ornithine produced.

5,188,948

PROCESS FOR PRODUCING L-VALINE BY FERMENTATION

Naoki Katsurada, Kanagawa; Haruo Uchibori, and Takayasu Tsuchida, both of Kawasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 180,551, Apr. 12, 1988, abandoned. This application Feb. 9, 1990, Ser. No. 478,032
Claims priority, application Japan, Apr. 16, 1987, 62-093959
Int. Cl.[5] C12P *13/08;* C12N *15/00, 1/20*
U.S. Cl. 435—115 4 Claims

1. A process for producing L-valine by fermentation, which comprises culturing in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen and inorganic substances an L-valine producing microorganism which is selected from the group consisting of *Brevibacterium lactofermentum* AJ 12341 (FERM BP-1763) and *Corynebacterium glutamicum* AJ 12342 (FERM BP-1764), and then recovering L-valine accumulated in said aqueous nutrient medium.

5,188,949

METHOD FOR PRODUCING L-THREONINE BY FERMENTATION

Takayasu Tsuchida; Naoki Katsurada; Noboru Ohtsuka; Haruo Uchibori, and Takeshi Suzuki, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation of Ser. No. 94,897, Sep. 10, 1987, abandoned. This application Aug. 22, 1990, Ser. No. 571,821
Claims priority, application Japan, Sep. 29, 1986, 61-230977; Nov. 14, 1986, 61-271286
Int. Cl.[5] C12P *13/08;* C12N *15/00, 1/20*
U.S. Cl. 435—115 1 Claim

1. A method for producing L-threonine by fermentation which comprises:

culturing a microorganism selected from the group consisting of *Corynebacterium acetoacidophilum* FERM BP-1172 and *Brevibacterium flavum* FERM BP-1173 in an aqueous nutrient medium containing assimilable sources of carbon, nitrogen, and inorganic substances;

accumulating L-threonine in the medium, and then recovering the L-threonine accumulated therein.

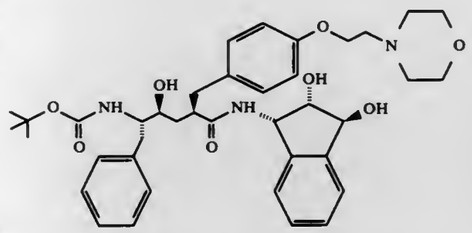
5,188,950

METHOD OF PREPARING HIV PROTEASE INHIBITORS

Suresh K. Balani, Hatfield; Harri G. Ramjit; Steven M. Pitzenberger, both of Lansdale; Michael S. Schwartz, Glenside, all of Pa., and Anthony Y. H. Lu, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 771,026, Oct. 1, 1991, abandoned, which is a continuation of Ser. No. 595,909, Oct. 11, 1990, abandoned. This application Feb. 27, 1992, Ser. No. 845,520
Int. Cl.[5] C12P *17/14*
U.S. Cl. 435—120 2 Claims

1. A method of preparing the product compound of the structure



comprising the steps of

(1) providing a quantity of substrate N-(cis-2(R)-hydroxy-1(S)-indanyl)-5(S)-(1,1-dimethylethoxycarbonylamino)-4(S)-hydroxy-6-phenyl-2(R)-((4-(2-(4-morpholinyl)ethoxy)phenyl)-methyl)-hexanamide,

(2) incubating the substrate compound of step 1 with rat liver slices, and

(3) isolating the product compound.

VOL 1147 ISS 4 FE 23 1993 UMI

5,188,951
ENZYMATIC SYNTHESIS OF SOLUBLE PHOSPHATIDES FROM PHOSPHOLIPIDS

Paul-Alain Tremblay, Hamilton, N.J.; Frank Marziani, Willow Grove, Pa.; John A. F. Tino, and Frank G. Pilkiewicz, both of Cranbury, N.J., assignors to The Liposome Company, Inc., Princeton, N.J.

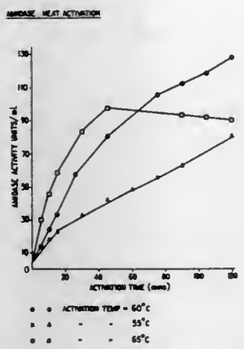
Continuation-in-part of Ser. No. 513,285, Apr. 17, 1990, abandoned. This application May 1, 1991, Ser. No. 694,669
Int. Cl.[5] C12P *9/00, 13/00;* **C12N** *9/16;* **C07F** *9/02*
U.S. Cl. 435—131 **17 Claims**

1. A process for forming a soluble monovalent salt of a phosphatidyl ester which comprises:
a) reacting a phospholipid with a primary alcohol in the presence of
(i) phospholipase D,
(ii) a divalent cationic buffer solution, and
(iii) a water immiscible non-ether solvent so as to form the corresponding phosphatide of the divalent cationic salt; and
b) converting the divalent cationic salt to an organic soluble monovalent salt by suspending with a stoichiometric amount of a monovalent salt having a monovalent cation and whose anion forms an insoluble precipitate with the divalent cation.

5,188,952
PROCESS FOR THE DECOMPOSITION OF ACRYLAMIDE

Mark A. Carver, Stockton-on-Tees, and John Hinton, Middlesbrough, both of United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 133,285, Dec. 14, 1987. This application Jan. 29, 1991, Ser. No. 647,696
Claims priority, application United Kingdom, Dec. 16, 1986, 8630012
. Int. Cl.[5] C12P *7/42;* **C12N** *9/80;* **C12S** *13/00*
U.S. Cl. 435—146 **6 Claims**



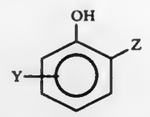
1. A method for the production of an amidase enzyme of increased activity which comprises heating microbial cells of *Methylophilus methylotrophus* containing the enzyme, or extracts of said cells containing the enzyme, in the presence of an amide to a temperature in the range of 40° to 80° C. at a pH of 4 to 9 at a protein concentration in the range of 0.1 to 200 mg/ml and for a period of time in the range of 20 minutes to 10 hours whereby an increase in amidase activity for decomposing acrylamide is induced.

5,188,953
BIOCATALYTIC OXIDATION USING SOYBEAN PEROXIDASE

Mark A. Johnson, Chillicothe; Alexander R. Pokora, Pickerington, and William L. Cyrus, Jr., Ray, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 599,584, Oct. 18, 1990. This application May 22, 1991, Ser. No. 704,074
Int. Cl.[5] C12P *7/22*
U.S. Cl. 435—156 **16 Claims**

1. A process for preparing a phenolic resin which consisting essentially of reacting a phenol represented by the formula (I):



where Y and Z are selected from the group consisting of a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, an aryl group, an allyl group, a phenylalkyl group, and a —COOR group where R represents a hydrogen atom or a lower alkyl group, or Z in conjunction with the adjacent meta position forms a condensed benzene ring, with soybean peroxidase in the presence of a peroxide to form a resin of oxidatively coupled phenol having a number average molecular weight of at least 500.

5,188,954
HIGH-AFFINITY HUMAN SEROTONIN UPTAKE SYSTEM

Dominic M. Lam; Albert S. Chang, both of The Woodlands, Tex., assignor to Baylor College of Medicine, Houston, Tex.

Filed Nov. 21, 1988, Ser. No. 274,328
Int. Cl.[5] C12N *15/00;* **C12Q** *1/68;* **C07H** *21/00*
U.S. Cl. 435—172.3 **15 Claims**

1. An in-vitro composition consisting essentially of non-human mammalian cells capable of being grown in culture and characterized by:
comprising a human genome fragment comprising a DNA sequence encoding a serotonin transporter.

5,188,955
METHOD OF PRESERVING ARYLACYLAMIDASE IN AQUEOUS SOLUTION

Aurora F. DeCastro, Union, Mich.; Surendra K. Gupta, Elkhart, and Steven M. Shantz, Goshen, both of Ind., assignors to GDS Technology, Inc., Elkhart, Ind.

Continuation-in-part of Ser. No. 596,794, Oct. 11, 1990, abandoned, which is a continuation-in-part of Ser. No. 116,169, Oct. 28, 1987, Pat. No. 4,999,288. This application Jan. 21, 1992, Ser. No. 823,452
Int. Cl.[5] C12N *9/96, 9/78*
U.S. Cl. 435—188 **11 Claims**

1. A method for inhibiting conformational changes in arylacylamidase E.C. 3.5.1.13 consisting essentially of adding to an aqueous solution of said arylacylamidase E.C. 3.5.1.13 wherein the solution consists essentially of water and said arylacylamidase an effective amount to inhibit conformational changes of said arylacylamidase of a stabilizing agent having a phenyl group selected from the group consisting of o-cresol, benzoic acid, salts of benzoic acid, and mixtures thereof.

5,188,956
THERMOSTABLE AMYLASE

Takashi Nanmori, Neyagawa, and Ryu Shinke, Hyogo, both of Japan, assignors to Showa Denka K.K., Tokyo, Japan

Continuation of Ser. No. 374,795, Jul. 3, 1989, abandoned. This application Nov. 21, 1990, Ser. No. 619,803
Claims priority, application Japan, Jul. 1, 1988, 63-165762
Int. Cl.[5] C12N *9/24, 9/26, 9/28, 9/34*
U.S. Cl. 435—200 **2 Claims**

1. An isolated thermostable amylase produced by Bacillus having the following properties:
(A) action: acting on raw starch to produce substantially maltose and maltotriose;
(B) optimum pH: about 6.0;
(C) stable pH: after incubation at a pH of 5 to 8 for one hour at 22° C., having a residual activity of at least 95%;
(D) optimum temperature: 70° C.;
(E) thermostability: said amylase is not substantially inactivated by incubation at 60° C. to 70° C. for 15 minutes; and after incubation at 70° C. for one hour, said amylase having a residual activity of at least 90%; and
(F) molecular weight: 52,000±5,000 as determined by gel filtration.

5,188,957
LAMBDA PACKAGING EXTRACT LACKING BETA-GALACTOSIDASE ACTIVITY

Jay M. Short, Encinitas, and Patricia Kretz, San Marcos, both of Calif., assignors to Stratagene, La Jolla, Calif.

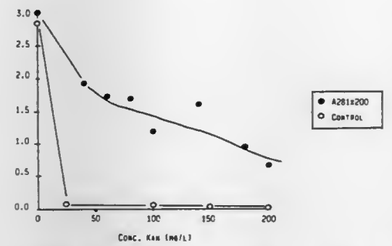
Continuation-in-part of Ser. No. 661,439, Feb. 25, 1991, abandoned. This application Feb. 26, 1991, Ser. No. 661,396
Int. Cl.[5] C12N *7/06, 1/21*
U.S. Cl. 435—235.1 **7 Claims**

1. A bacteriophage lambda DNA packaging extract free of beta-galactosidase.

5,188,958
TRANSFORMATION AND FOREIGN GENE EXPRESSION IN BRASSICA SPECIES

Maurice M. Moloney, Calgary, Canada, and Sharon Radke, Davis, Calif., assignors to Calgene, Inc., Davis, Calif.

Continuation of Ser. No. 54,187, May 26, 1987, abandoned, which is a continuation-in-part of Ser. No. 868,640, May 29, 1986, abandoned. This application Aug. 14, 1989, Ser. No. 395,131
Int. Cl.[5] C12N *5/00, 15/00;* **A01H** *1/04*
U.S. Cl. 435—240.4 **9 Claims**



1. Transgenic Brassica species cells and progeny thereof comprising an expression cassette, wherein said cells are characterized as oncogene-free and capable of regeneration to morphologically normal whole plants, and wherein said expression cassette comprises, in the 5'-3' direction of transcription:
(1) a transcription initiation region functional in Brassica species cells;
(2) a DNA sequence comprising an open reading frame having an initiation codon at its 5' terminus or a nucleic acid sequence complementary to an endogenous transcription product which when expressed will alter the phenotype of said transgenic cells;
(3) a transcription termination region functional in Brassica species cells;
(4) a right border of T-DNA; and
(5) a structural gene capable of expression in said Brassica providing for selection of transgenic Brassica species cells;
wherein said expression cassette is capable of altering the phenotype of said Brassica species cells when said cells are grown under conditions whereby said DNA sequence or said nucleic acid sequence is expressed.

5,188,959
EXTRACELLULAR MATRIX PROTEIN ADHERENT T CELLS

Allan B. Haberman, Somerville, Mass., assignor to Trustees of Tufts College, Medford, Mass.

Continuation-in-part of Ser. No. 414,131, Sep. 28, 1989, abandoned. This application May 18, 1990, Ser. No. 525,512
Int. Cl.[5] C12N *5/00, 5/08;* **C12Q** *1/04*
U.S. Cl. 435—240.243 **22 Claims**

2. A method for increasing the proportion, in a cell population, of normal, mature T cells capable of binding to an extracellular matrix component, comprising steps of
providing a cell mixture comprising activated T lymphocytes in a medium,
contacting the activated T lymphocytes with a collagen on a support in the presence of soluble laminin to permit at least a portion of the activated T lymphocytes to adhere to said collagen on said support, and
separating said medium from said support together with any cells in said medium not adhering to said collagen on said support, and retaining the portion of activated T lymphocytes that adheres to said collagen.

5,188,960
***BACILLUS THURINGIENSIS* ISOLATE ACTIVE AGAINST LEPIDOPTERAN PESTS, AND GENES ENCODING NOVEL LEPIDOPTERAN-ACTIVE TOXINS**

Jewel Payne, San Diego, and August J. Sick, Oceanside, both of Calif., assignors to Mycogen Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 371,955, Jun. 27, 1989. This application Dec. 14, 1989, Ser. No. 451,261
Int. Cl.[5] C12N *1/21, 15/32, 15/70, 15/74*
U.S. Cl. 435—252.3 **13 Claims**

1. An isolated DNA encoding a *Bacillus thuringiensis* toxin having an nucleotide sequence shown in FIG. 11.

5,188,961
DNA ENCODING A STREPTOMYCES ENDOCHITINASE 56 SIGNAL PEPTIDE

Karen M. Overbye, Stoneham; Janice Pero, Lexington, and Phillips W. Robbins, Beverly, all of Mass., assignors to Omnigene, Inc., Cambridge, Mass.

Continuation of Ser. No. 24,002, Mar. 10, 1987, abandoned. This application Feb. 1, 1990, Ser. No. 473,309
Int. Cl.[5] C12N *15/74, 15/52, 1/21*
U.S. Cl. 435—252.31 **15 Claims**

1. An isolated recombinant DNA sequence comprising a transcription unit encoding a preprotein, said transcription unit comprising DNA encoding a *Streptomyces plicatus* endochitinase 56 signal peptide, attached to the 5' end of a structural gene.

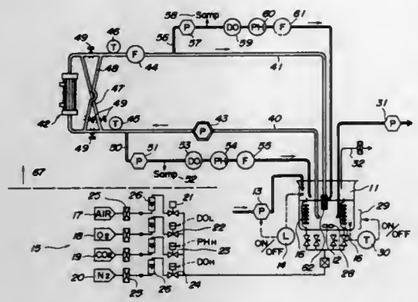
VOL 1147 ISS 4 FE 23 1993 UMI

5,188,962

CELL CULTIVATING APPARATUS

Yoshikazu Hasegawa, Ibaragi, and Akira Hasbimoto, Ryugasaki, both of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Sep. 30, 1991, Ser. No. 767,472
Claims priority, application Japan, Oct. 9, 1990, 2-271924
Int. Cl.[5] C12M *3/04, 3/06*
U.S. Cl. 435—285 13 Claims



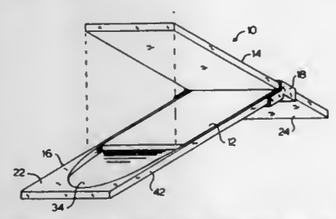
1. In a cell cultivating apparatus having a culture medium tank containing cell culture medium, a cell cultivating vessel having a first chamber connected to a first main duct which is in fluid communication with the culture medium tank, a second chamber connected to a second main duct which is in fluid communication with the culture medium tank, a bundle of porous, hollow threads disposed between said chambers such as to provide fluid communication between the said chambers through the hollows of the threads, and a pump for flowing the culture medium from the culture medium tank through the hollow threads and chambers and back to the culture medium tank, wherein the improvement comprises the pump being a vibrating columnar pump for pulsating the flowing culture medium sufficiently to cause vibrations of the hollow threads such that solids are substantially prevented from adhering to surfaces of the hollow threads and cell cultivation in the cell cultivating vessel is not substantially decreased, said vibrating columnar pump comprising a vibratable tube for receiving and discharging culture medium, permanent magnets disposed around said tube and electromagnets disposed near the permanent magnets such that when an alternating current is passed through the electromagnets the tube vibrates and pulses the culture medium.

5,188,963

DEVICE FOR PROCESSING BIOLOGICAL SPECIMENS FOR ANALYSIS OF NUCLEIC ACIDS

Marilyn J. Stapleton, Durham, N.C., assignor to Gene Tec Corporation, Durham, N.C.

Filed Nov. 17, 1989, Ser. No. 438,592
Int. Cl.[5] G01N *33/559, 33/561*
U.S. Cl. 435—299 12 Claims



1. A carrier device for specimen handling for analysis of a specimen for cellular components, comprising:

a top cover portion and a bottom housing portion, said top cover portion movable between an open and a closed position; said top cover portion having a first area that extends beyond a first side of said bottom housing portion;

said top cover portion and said bottom housing portion connected together by way of a hinge along one side of said bottom housing portion, wherein said top cover portion hingedly moves away from the bottom housing portion and upward from the closed position to an open position; and

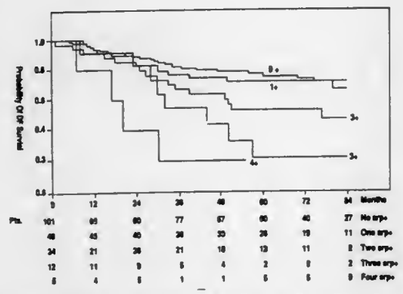
said bottom housing portion having edges on second and third sides and an extended area on a fourth side of said bottom housing portion extending beyond said top cover portion, said side edges defining a space called the matrix and specimen holding area; opposing surfaces of said top and bottom portions defining a top and bottom of said matrix and specimen holding area when said top cover portion is in a closed position; said space being in fluid communication with and extending to the extended area; said extended area containing a fluid receiving area; and wherein when said top cover portion is closed and aligned with respect to the side edges of the bottom housing portion, the top cover portion covers the matrix and specimen holding area, and fluids added to said fluid receiving area fill said matrix and specimen holding area; wherein excess fluids exit the matrix and specimen holding area at an end of the matrix and specimen holding area opposite the fluid receiving area.

5,188,964

METHOD AND KIT FOR THE PROGNOSTICATION OF BREAST CANCER PATIENT VIA HEAT SHOCK/STRESS PROTEIN DETERMINATION

William L. McGuire; Atul K. Tandon; Gary M. Clark, and Gary C. Chamness, all of San Antonio, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Apr. 12, 1990, Ser. No. 509,377
Int. Cl.[5] G01N *33/48*
U.S. Cl. 436—64 24 Claims



1. A method of determining likelihood of breast tumor recurrence in a lymph node-negative breast cancer patient, comprising:

obtaining a tumor tissue sample from the patients;

assaying said tumor tissue sample for the level of stress response proteins therein;

obtaining for each stress response protein an overproduction level, said level being an amount above a measured level of the stress response protein produced by a standard cell line, wherein said measured level is a minimum amount statistically determined to be associated with tumor recurrence; and

determining likelihood of breast tumor recurrence by comparing the measured level of the stress response proteins of the sample to the measured level of the standard cell line, wherein the overproduction level of at least two of said stress response proteins is associated with tumor recurrence in the patient.

5,188,965

REAGENT SOURCE FOR CHEMILUMINESCENT REACTIONS, TEST KIT, AND METHOD FOR USE

Jon C. Wannlund, San Diego, Calif., assignor to Difco Laboratories, Detroit, Mich.

Continuation of Ser. No. 672,042, Mar. 18, 1991, abandoned.
This application Apr. 9, 1992, Ser. No. 867,280
Int. Cl.[5] G01N *21/03, 21/75*
U.S. Cl. 436—165 19 Claims

1. A reagent source for use in a test wherein chemiluminescent light output is measured from a test well having a transparent wall of a preselected peripheral shape and size through which the light output is measured, comprising:

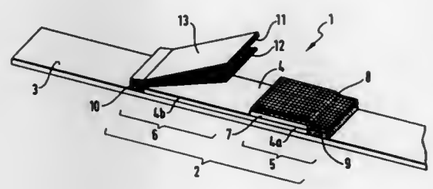
a sheet of solid carrier material having a portion of the reactants required for a chemiluminescent chemical reaction contained therein in a solid form.

5,188,966

TEST CARRIER WITH SEPARATION MEANS FOR ANALYZING A SAMPLE FLUID

Heino Eikmeier, Lorsch, and Anselm Rothe, Birkenau, both of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Feb. 12, 1991, Ser. No. 654,110
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1990, 4005021
Int. Cl.[5] G01N *21/77, 31/22*
U.S. Cl. 436—170 12 Claims



1. A test carrier for analyzing a sample fluid with several test layers which form a sample fluid transport path and which contains a reagent system which reacts with the sample fluid to produce a detectable signal, comprising

a reservoir layer of absorbent material,

a detection layer, arranged in the fluid transport path downstream of the reservoir layer but separated from fluid contact with said reservoir layer, in which detection layer the detectable signal is formed, and

a separating layer arranged between the reservoir layer and the detection layer, said separating layer being adapted to prevent sample fluid contact between the reservoir layer and the detection layer until the reservoir layer and the detection layer are pressed against one another, wherein

the separating layer comprises a lattice-shaped structure, comprising multifilament threads of a hydrophilic material having openings defined by adjacent threads which have a mean width (a) which is greater than 0.05 mm.

5,188,967

AGENTS FOR THE IN VITRO DIAGNOSIS OF MALIGNANT CELLS ORIGINATING IN THE DIGESTIVE TRACT

Daniel Louvard, Sceaux; Brigitte Dudouet, Paris; Sylvie Robine, Vanves; Monique Arpin, Paris; Eric Pringault, Paris, and Alphonse Garcia, Paris, all of France, assignors to Institut Pasteur; Centre National de la Recherche Scientifique and Institut National de la Sante et de la Recherche Medicale, all of Paris, France

Division of Ser. No. 529,676, May 30, 1990, abandoned, which is a continuation of Ser. No. 287,658, Dec. 21, 1988, abandoned, which is a continuation of Ser. No. 6,717, Feb. 19, 1987, abandoned. This application Feb. 28, 1991, Ser. No. 662,992
Claims priority, application France, May 2, 1985, 85 06707; Nov. 13, 1985, 85 16820
Int. Cl.[5] G01N *33/574*
U.S. Cl. 436—501 6 Claims

1. An in vitro method of detecting a tumor associated with cells of renal or intestinal origin, wherein said method comprises

(a) contacting a specimen of tissue or serum from a human subject with a reagent comprising detectable anti-villin antibodies, to form villin- anti-villin immune complexes;

(b) detecting the presence of said immune complexes; and

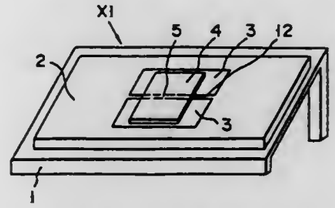
(c) on the basis of the presence of said immune complexes, diagnosing the presence or absence of said tumor.

5,188,968

METHOD AND REACTION KIT FOR AGGLUTINATION DETECTION

Tokio Kano, Nesconset, N.Y.; Toshinobu Niimura, Hachioji, Japan, and Hiroyuki Yonekawa, St. James, N.Y., assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 458,143, Dec. 28, 1989, abandoned.
This application Mar. 2, 1992, Ser. No. 841,769
Int. Cl.[5] G01N *33/53*
U.S. Cl. 436—501 13 Claims



1. A reaction kit for observation and detection of a particle pattern due to an agglutination reaction, comprising:

reaction zone defining means for receiving a sample, said reaction zone defining means comprising:

two plates arranged opposed to each other, at least one of said plates being transparent for visual detection therethrough of a particle pattern formed in said reaction zone; and

spacers inserted between said two plates so as to maintain said two plates in spaced apart relation to each other, said reaction zone being defined in a space between said two plates and between said spacers; and

a supporting base for supporting said reaction zone defining means, and including means for inclining said reaction zone defining means at a specified angle to thereby incline said reaction zone, such that one of said spacers forms a bottom portion of the inclined reaction zone;

a part of the space defined between said two plates and between said spacers serving as an opening through which a sample is introduced into said reaction zone, and wherein said opening is located in a position different from

VOL
1147
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said spacer forming the bottom portion of the inclined reaction zone;

wherein a sample is aspirated into said reaction zone when the sample is applied to said reaction zone defining means.

13. A method of determining a degree of particle agglutination by an agglutination reaction having the reaction kit according to claim 1, the method comprising:

preparing a particle suspension containing particles with specific bonding properties and a substance with specific bonding affinity to the particles;

introducing the particle suspension into a reaction zone of said reaction kit according to claim 1;

setting said reaction zone defining means on said supporting base, and leaving said reaction zone defining means, with the particle suspension therein, on said supporting base for a predetermined time; and

observing the formation and degree of spread of a particle distribution pattern formed in a lower part of said reaction zone defined by said reaction zone defining means.

5,188,969

MONOCLONAL ANTIBODY TO HUMAN LYMPHOTOXIN AND USE THEREOF

Kazuhiko Arai, Sagamihara; Akira Fujiwara; Shosaku Motoda, both of Niigata, and Hiroyasu Suzuki, Tokyo, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1989, Ser. No. 366,568

Claims priority, application Japan, Jun. 20, 1988, 63-150021

Int. Cl.[5] G01N *33/53*; **C12N** *5/20*; **C07K** *13/00*

U.S. Cl. 436—548 **7 Claims**

1. A monoclonal antibody produced by a hybridoma selected from the group consisting of hybridoma 1-6-35 (FERM BP-1890), hybridoma 1-45-10 (FERM BP-1891) and hybridoma 1-74-54 (FERM BP-1892), or a specific binding fragment thereof.

5,188,970

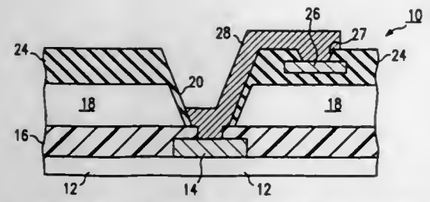
METHOD FOR FORMING AN INFRARED DETECTOR HAVING A REFRACTORY METAL

Rudy L. York, Plano; Joseph D. Luttmer, Richardson; Chang F. Wan, Garland; Thomas W. Orent, Garland; Larry D. Hutchins, Richardson, and Art Simmons, Anna, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 593,363, Oct. 1, 1990, Pat. No. 5,132,761. This application Apr. 9, 1992, Ser. No. 865,595

Int. Cl.[5] H01L *31/18*

U.S. Cl. 437—3 **7 Claims**



1. A process for forming an infrared detector utilizing a refractory metal in a metal-insulator-semiconductor structure of a processor which comprises the steps of:

depositing an insulator layer to a sensing layer;

depositing a refractory metal gate to said insulator layer;

connecting said refractory metal gate to said processor;

forming a via through the sensing layer, insulator layer, and gate to expose said processor;

depositing a second layer of insulator to enclose said sensing layer; and

depositing a conductive layer within the via to electrically connect said gate to said processor.

5,188,971

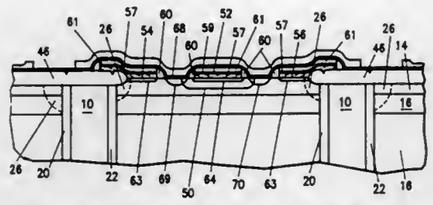
PROCESS FOR MAKING A SELF-ALIGNED BIPOLAR SINKER STRUCTURE

Larry J. Pollock, and Atiye Bayman, both of Palo Alto, Calif., assignors to Synergy Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 291,185, Dec. 28, 1988, Pat. No. 5,001,538. This application Dec. 27, 1990, Ser. No. 635,684

Int. Cl.[5] H01L *21/265*

U.S. Cl. 437—31 **23 Claims**



1. The method of forming a sinker in a substrate supporting a plurality of bipolar devices in tubs in said substrate defined by isolation trenches, said substrate comprising a base layer of P-type material, a relatively thin buried layer of N-type material extending over the surface of said base layer, and an epitaxial layer of N-type material extending over the surface of said buried layer, said tubs for said devices being defined by said isolation trenches extending through said epitaxial layer and said buried layer to said substrate;

the method for forming said sinker comprising the steps of:

partially etching said isolation trench through said epitaxial layer down to said buried layer,

doping the sidewalls of said isolation trench with a dopant of the same polarity as said buried layer, to form a conductive sinker from the surface of said substrate down to said buried layer,

heating said doped sidewalls to diffuse said dopant into said substrate to form the sinker, and

cutting said isolation trench down to said base layer to isolate said tubs including said buried layers one from another.

5,188,972

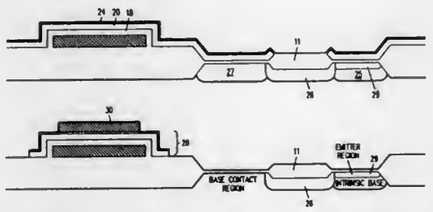
METHOD FOR MAKING BIPOLAR TRANSISTOR BY SELF-ALIGNING THE EMITTER TO THE BASE CONTACT DIFFUSION

Ying K. Shum, Cupertino, and Sik K. Lui, Sunnyvale, both of Calif., assignors to Sierra Semiconductor Corporation, San Jose, Calif.

Division of Ser. No. 648,929, Feb. 1, 1991. This application Apr. 28, 1992, Ser. No. 875,239

Int. Cl.[5] H01L *21/265, 29/70*

U.S. Cl. 437—31 **7 Claims**



1. An improved method for making a semiconductor structure, wherein the structure has a bipolar transistor portion with a self-aligned extrinsic base, and a capacitor portion having a pair of polysilicon electrodes separated by a dielectric region, the improvement comprising forming the self-aligned extrinsic base simultaneously with the dielectric region.

5,188,973

METHOD OF MANUFACTURING SOI SEMICONDUCTOR ELEMENT

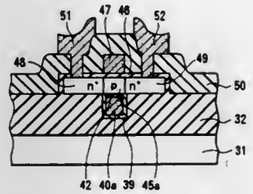
Yasuhisa Omura; Yasuo Kunii, and Katsutoshi Izumi, all of Kanagawa, Japan, assignors to Nippon Telegraph & Telephone Corporation, Japan

Filed Apr. 30, 1992, Ser. No. 877,446

Claims priority, application Japan, May 9, 1991, 3-132227

Int. Cl.[5] H01L *21/70*

U.S. Cl. 437—40 **10 Claims**



1. A method of manufacturing an SOI semiconductor element, comprising the steps of:

preparing a structure obtained by forming a first semiconductor layer on a first insulator;

arranging a process mask on said first semiconductor layer, said process mask having a groove pattern of a predetermined size;

forming a groove extending between said first semiconductor layer and said first insulator layer by etching said first semiconductor layer on the basis of the groove pattern of said process mask to expose said first insulator layer and etching said first insulator layer to a predetermined depth;

forming a second semiconductor layer serving as a buried electrode in said groove such that a level of an upper surface of said second semiconductor layer is equal to a level of a bottom surface of said first semiconductor layer;

forming a second insulator layer on said second semiconductor layer;

performing crystalline growth of a semiconductor layer from side surfaces of said groove to bury the groove with a monocrystalline semiconductor;

forming a source region and a drain region in said monocrystalline semiconductor buried in said groove; and

forming a gate electrode on said monocrystalline semiconductor through a gate oxide film.

5,188,974

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

Chiori Mochizuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 470,406, Jan. 29, 1990, abandoned, which is a continuation of Ser. No. 264,083, Oct. 28, 1988, abandoned. This application Aug. 19, 1991, Ser. No. 747,486

Claims priority, application Japan, Oct. 31, 1987, 62-276348

Int. Cl.[5] H01L *21/265*

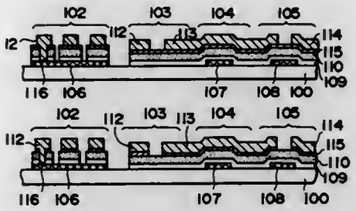
U.S. Cl. 437—40 **9 Claims**

1. A method for manufacturing a semiconductor device on a substrate, said semiconductor device including a plurality of semiconductor elements having a semiconductor region and a pair of electrodes disposed on said semiconductor region through an ohmic contact region disposed on said semiconductor region, comprising the sequential steps of:

forming a semiconductor layer on said substrate, an ohmic contact layer on said semiconductor layer, and a conductive layer on said ohmic contact layer;

removing a portion of said conductive layer, whereby said pair of electrodes are formed on said ohmic contact layer;

removing a portion of said semiconductor layer and said ohmic contact layer to isolate each of said plurality of semiconductor elements;



removing a portion of said ohmic contact layer between said pair of electrodes by utilizing said pair of electrodes as a mask.

5,188,975

METHOD OF PRODUCING A CONNECTION HOLE FOR A DRAM HAVING AT LEAST THREE CONDUCTOR LAYERS IN A SELF ALIGNMENT MANNER.

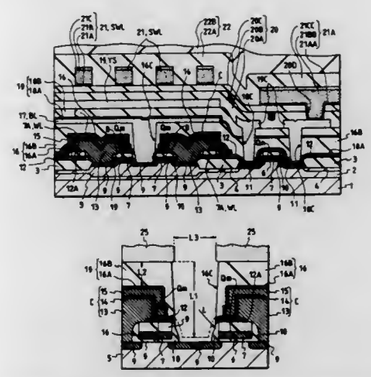
Masayuki Kojima, Kokubunji; Shinji Nishihara, Tachikawa, and Fumiyuki Kanai, Houya, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 20, 1992, Ser. No. 885,852

Claims priority, application Japan, May 20, 1991, 3-114605

Int. Cl.[5] H01L *21/266, 21/76*

U.S. Cl. 437—48 **15 Claims**



1. A method of producing a semiconductor integrated circuit device, comprising:

(a) a step of preparing a semiconductor substrate having a first semiconductor region of a first conduction type and a first insulation film and a second insulation film on a main surface thereof, in which said first insulation film is situated on said first semiconductor region and said second insulation film has a thickness greater than said first insulation film and is situated so as to surround said first insulation film;

(b) a step of forming a first conductor layer and a second conductor layer each having both ends on said first insulation film and a third insulation film and a fourth insulation film on said first conductor layer and said second conductor layer, in which said first conductor layer has an identical pattern with that of said third insulation film and said second conductor layer has an identical pattern with that

of said fourth insulation film respectively, in a planar view;

(c) a step of introducing a first impurity of a second conduction type to the surface of said first semiconductor region for forming a second semiconductor region, in which said first impurity is introduced in self-alignment to said second insulation film and said first and second conductor layers;

(d) a step of forming a fifth insulation film on said semiconductor substrate, subsequently, applying a reactive-ion etching to said fifth insulation film thereby selectively leaving said fifth insulation film at both ends of said first and second conductor layers;

(e) a step of forming a sixth insulation film on said semiconductor substrate and applying a heat treatment to said sixth insulation film thereby flattening the surface thereof;

(f) a step of forming a hole in said sixth insulation film and exposing a portion of a second semiconductor region situated between said first and second conductor layers and a portion of said fifth insulation film; and

(g) a step of forming a third conductor layer on a portion of said second semiconductor region exposed in the step (f) and on said sixth insulation film.

5,188,976

MANUFACTURING METHOD OF NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE

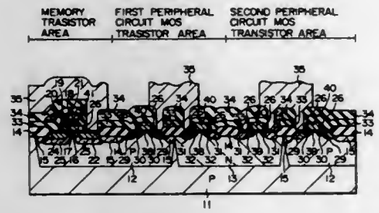
Hitoshi Kume, Musashino; Tetsuo Adachi, Hachioji; Yuzuru Ohji; Tokuo Kure, both of Tokyo; Masahiro Ushiyama, Kokubunji, and Hiroshi Kawakami, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 9, 1991, Ser. No. 727,052

Claims priority, application Japan, Jul. 13, 1990, 2-183944; Nov. 2, 1990, 2-295325

Int. Cl.[5] H01L *21/70*

U.S. Cl. 435—52 **10 Claims**



1. A manufacturing method for forming a non-volatile memory transistor having a floating gate electrode and a control gate electrode, and a MOS transistor for a peripheral circuit, in a first area and a second area of the same semiconductor substrate, respectively, said manufacturing method comprising:

a first step of forming a silicon oxide film over the first and second areas;

a second step of forming a first conductive layer on said silicon oxide film after said first step and removing an unnecessary portion of said first conductive layer to pattern said first conductive layer on said silicon oxide film in said first area;

a third step of forming an interlayer insulating film having a permittivity larger than that of said silicon oxide film over said first conductive layer in said first area and said silicon oxide film in said second area, after said second step; and

another step of removing said interlayer insulating film on said silicon oxide film in said second area, and forming a second conductive layer on said interlayer insulating film in said first area, after said third step,

wherein in said other step, prior to the removal of said interlayer insulating film on said silicon oxide film in said second area, said second conductive layer is formed on said interlayer insulating film in said first area.

5,188,977

METHOD FOR MANUFACTURING AN ELECTRICALLY CONDUCTIVE TIP COMPOSED OF A DOPED SEMICONDUCTOR MATERIAL

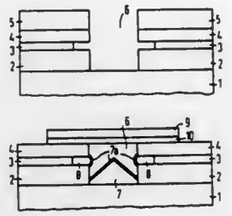
Reinhard Stengl, Stadtbergen; Hans-Willi Meul, Bruckmuehl, and Wolfgang Hoenlein, Unterhaching, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 6, 1991, Ser. No. 802,811

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1990, 4041276

Int. Cl.[5] H01L *21/20, 21/465*

U.S. Cl. 437—89 **11 Claims**



1. A method for manufacturing a cold cathode vacuum tube, comprising the steps of:

providing a substrate as a layer of semiconductor material;

providing a first layer on a surface of the semiconductor material, said first layer being formed of a material on which semiconductor material employed in a subsequent selective epitaxy will not grow;

providing a second layer of doped semiconductor material on the first layer;

applying a third layer onto the second layer, said third layer being formed of a material on which the semiconductor material used in said subsequent selective epitaxy will not grow;

producing in the first, second, and third layers an opening so that a portion of the surface of the substrate is exposed;

producing an electrically conductive tip on the exposed surface portion of the substrate by said selective epitaxy employing said semiconductor material, and wherein a layer growth in a direction parallel to the surface of the substrate is lower than a layer growth in a direction perpendicular to the surface of the substrate, and wherein during said selective epitaxy, a semiconductor material also grows at side walls of said doped semiconductor material second layer; and

providing a further semiconductor material layer over said third layer and covering said opening.

5,188,978

CONTROLLED SILICON DOPING OF III-V COMPOUNDS BY THERMAL OXIDATION OF SILICON CAPPING LAYER

Joel deSouza, Yorktown Heights; James H. Greiner, Millwood, and Devendra K. Sadana, Pleasantville, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 487,501, Mar. 2, 1990, abandoned. This application Aug. 30, 1991, Ser. No. 754,276

Int. Cl.[5] H01L *21/225*

U.S. Cl. 437—160 **43 Claims**

1. A method of fabricating a semiconductor device comprising the steps of:

depositing a layer of silicon without a silicon dioxide cap layer on a surface of a semiconductor substrate of a III-V compound;

thermally oxidizing said silicon layer thereby diffusing silicon into at least a portion of said substrate;

said thermal oxidizing step being performed under oxidizing conditions including type of oxygen ambient, amount of oxygen in the ambient, temperature and time of said step, and no more than a few monolayers of silicon dioxide being formed on a top surface of said silicon layer during said thermal oxidizing step; and

controlling the sheet resistance and depth of the diffused silicon by controlling the thickness of said silicon and one or more of said oxidizing conditions.

5,188,979

METHOD FOR FORMING A NITRIDE LAYER USING PREHEATED AMMONIA

Stanley M. Filipiak, Pflugerville, Tex., assignor to Motorola Inc., Schaumburg, Ill.

Filed Aug. 26, 1991, Ser. No. 749,820

Int. Cl.[5] H01L *21/44*

U.S. Cl. 437—192 **9 Claims**



1. A method for fabricating a semiconductor device having a titanium nitride barrier layer using preheated ammonia, comprising the steps of:

providing a substrate;

depositing a layer of titanium on the substrate;

placing the substrate in a reaction chamber;

heating the substrate in the reaction chamber to a specified temperature;

introducing an ammonia gas which is preheated to a temperature not less than 600° C. into the reaction chamber; and

reacting the preheated ammonia gas with the layer of titanium on the heated substrate to form a titanium nitride barrier layer.

5,188,980

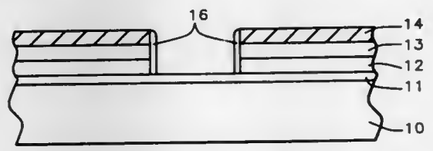
INERT GAS PURGE FOR THE MULTILAYER POLY GATE ETCHING IMPROVEMENT

Ming C. Lai, Hsin-Chu, Taiwan, assignor to United Microelectronics Corporation, Hsinchu, Taiwan

Filed Jul. 6, 1992, Ser. No. 908,381

Int. Cl.[5] H01L *21/308*

U.S. Cl. 437—193 **19 Claims**



1. The process of etching a metal silicide polysilicon multilayer gate on a semiconductor wafer through a patterned resist layer which will not undercut the metal silicide layer which process comprises:

etching the said metal silicide layer with a first flow of chlorine and helium gases into a plasma reactive etching chamber operated in the isotropic mode containing said semiconductor wafer;

detecting the endpoint of the completion of etching of said metal silicide and stopping the flow of said chlorine gas;

flowing helium gas into said etch chamber to purge the chamber of all reaction product gases from said metal silicide etching; and

etching said polysilicon layer with a second flow of chlorine and helium gases into said plasma etching chamber to thereby etch and pattern the polysilicon portion of said multilayer metal silicide polysilicon gate of said semiconductor wafer.

5,188,981

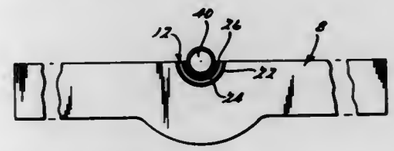
MOLDED ARTICLE WITH INTEGRAL HEAT SHIELD

Ernest D. Stiles, St. Clair Shores; Ronald K. Wlosinski, Sterling Heights, and Daniel Q. Houston, Dearborn, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed May 28, 1991, Ser. No. 706,605

Int. Cl.[5] B32B *9/00*

U.S. Cl. 428—195 **4 Claims**



1. A molded article comprising:

a molded body; and

one or more layers of heat shielding material attached to said molded body, said heat shielding material placed on localized area of said molded article exposed to elevated temperatures, said molded body at least partially impregnating said heat shielding material whereby said heat shielding material is integrally molded within said body.

5,188,982

METHOD OF BONDING A SEMICONDUCTOR DIE TO A PACKAGE USING A GOLD/SILICON PREFORM AND COOLING THE DIE AND PACKAGE THROUGH A MONOTONICALLY DECREASING TEMPERATURE SEQUENCE

Chin-Ching Huang, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 20, 1991, Ser. No. 811,495

Int. Cl.[5] H01L *21/52, 21/58, 21, 603, 21/607*

U.S. Cl. 437—209 **11 Claims**

1. A method for attaching a large die to a package with a layer of Au-Si preform comprising:

preheating the package to a temperature at which the preforms would melt;

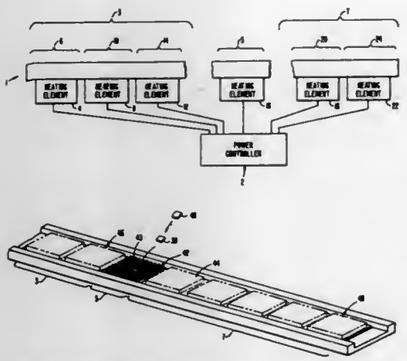
placing the Au-Si preform on to the package so that the Au-Si preform melts;

attaching the die on the package through the preform to securely connect the die to the package by means of the preform after the preform cools;

gradually cooling the package, die and preform sequentially through each temperature in a monotonically decreasing

VOL 1147 ISS 4 FE 23 1993 UMI

sequence of temperatures and maintaining the package, die and preform substantially at each of said temperatures



in the sequence for a predetermined time period so that voids and stress fractures in the preform are avoided.

5,188,983

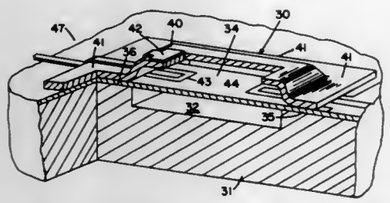
POLYSILICON RESONATING BEAM TRANSDUCERS AND METHOD OF PRODUCING THE SAME

Henry Guckel, Madison, and Jeffry Sniegowski, Oregon, both of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 508,001, Apr. 11, 1990, Pat. No. 5,090,254. This application Jan. 3, 1992, Ser. No. 816,972

Int. Cl.[5] H01L *21/60*

U.S. Cl. 437—209 **6 Claims**



1. A method of making a resonant beam force transducer comprising the steps of:

(a) forming a beam of polysilicon mounted at its ends above a substrate;

(b) annealing the polysilicon beam so it has zero or low built-in tensile strain;

(c) encapsulating the beam in a polysilicon shell which forms with the substrate a cavity which surrounds the beam, and channels formed in the shell leading from the cavity;

(d) sealing the interior of the cavity from the external atmosphere with a gas which reacts to deposit solid material in the channels to close them and to evacuate the cavity.

5,188,984

SEMICONDUCTOR DEVICE AND PRODUCTION METHOD THEREOF

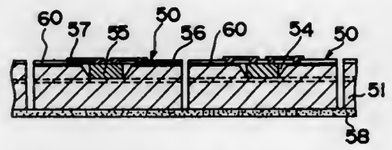
Masanori Nishiguchi, Yokohama, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 430,925, Nov. 2, 1989, abandoned, which is a continuation of Ser. No. 256,455, Oct. 12, 1988, abandoned, which is a division of Ser. No. 184,006, Apr. 20, 1988, abandoned. This application Feb. 4, 1991, Ser. No. 649,183

Claims priority, application Japan, Apr. 21, 1987, 62-98014

Int. Cl.[5] H01L *21/00, 21/02, 21/60, 21/88*

U.S. Cl. 437—211 **4 Claims**



1. A method for producing a semiconductor device comprising the steps of:

forming a first circuit pattern on a substrate having an etching stopper layer in a predetermined depth of said substrate corresponding to a thickness of a compound semiconductor chip and an adhesive of eutectic crystal alloy,

etching a predetermined area of a silicon substrate up to the etching stopper layer by anisotropy etching to form a concave portion substantially aligning said first circuit pattern and said corresponding compound semiconductor chip, said concave portion having a side wall inclination substantially greater than a side wall inclination of said corresponding compound semiconductor ship in order to facilitate insertion of said compound semiconductor chip into said concave portion,

bonding said compound semiconductor chip directly onto a bottom of said substrate in the concave portion with said adhesive of eutectic crystal alloy, said compound semiconductor chip being substantially aligned with said first circuit pattern,

forming a flat insulating film layer surface for covering an electrode of the compound semiconductor chip and a space between a peripheral wall of the concave portion and a side wall of the compound semiconductor chip,

patterning the flat insulative film layer surface to expose the electrode of the compound semiconductor chip, and

forming a second connecting circuit pattern on the insulating film layer surface for connecting between the exposed electrode on the compound semiconductor chip and said first connecting circuit pattern to form a high-density thin-film circuit.

5,188,985

SURFACE MOUNT DEVICE WITH HIGH THERMAL CONDUCTIVITY

Manuel Medeiros, III, Acushnet, and Jay S. Greenspan, South Dartmouth, both of Mass., assignors to Aegis, Inc., New Bedford, Mass.

Division of Ser. No. 677,078, Mar. 29, 1981, Pat. No. 5,111,277. This application Apr. 21, 1992, Ser. No. 871,446

Int. Cl.[5] H01L *21/60*

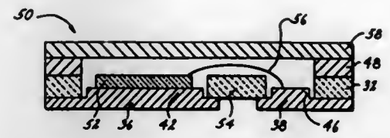
U.S. Cl. 437—218 **12 Claims**

1. A process for the manufacture of a package for encapsulating an electronic device, comprising:

(a). forming a plurality of apertures in a ceramic substrate;

(b). depositing a metallization layer on a first surface of said ceramic substrate about the perimeter of each of said apertures; and

(c). sealing each of said apertures by bonding a separate metallic component having a coefficient of thermal expansion approximately equal to that of said electronic device to said metallization layer about each of said apertures.



5,188,986

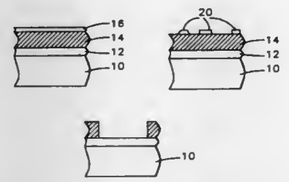
HYDROGEN PEROXIDE IN BASIC SOLUTION TO CLEAN POLYCRYSTALLINE SILICON AFTER PHOSPHOROUS DIFFUSION

Wei-Jyh Liu; Chih-Kung Huang, and Chad-Yang Chen, all of Taipei, Taiwan, assignors to United Microelectronics Corporation, Hsinchu, Taiwan

Filed May 17, 1991, Ser. No. 701,702

Int. Cl.[5] H01L *21/302*

U.S. Cl. 437—225 **15 Claims**



1. Method for forming a high yielding anisotropically patterned thermally doped polycrystalline silicon surface comprising:

providing a polycrystalline silicon body;

doping said body by a thermal diffusion process uniformly with a phosphorous impurity from a phosphorous pentoxide vapor source;

wherein said doping forms a thin phosphorus silicon oxide layer on said surface of said polycrystalline silicon:

removing said silicon oxide surface layer from said doped polycrystalline silicon surface formed during said doping with a hydrofluoric acid solution; cleaning said doped polycrystalline silicon surface with a basic solution of hydrogen peroxide; and

patterning said polycrystalline silicon layer by lithography and anisotropic etching with a reactive ion etching gas.

5,188,987

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE USING A POLISHING STEP PRIOR TO A SELECTIVE VAPOR GROWTH STEP

Masanobu Ogino, Yokosuka, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 506,182, Apr. 9, 1990, abandoned. This application Jun. 12, 1991, Ser. No. 714,348

Claims priority, application Japan, Apr. 10, 1989, 1-87954

Int. Cl.[5] H01L *21/00, 21/02, 21/76, 21/306*

U.S. Cl. 437—228 **11 Claims**

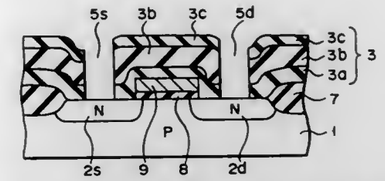
1. A method of manufacturing a semiconductor device, comprising the steps of:

forming an insulative film on a semiconductor substrate of said device;

forming a hole in said insulative film;

performing selective vapor growth to form a conductive layer in said hole on said semiconductor substrate; and

removing silicon particles from said semiconductor substrate by polishing a substantially entire surface of said insulating film formed on said semiconductor substrate subsequent to the selective vapor growth to produce a reduction in thickness of the insulating film of 0.05 micron maximum, the polishing being performed by using cloths containing an alkaline solution having silicon oxides particles dissolved therein.



5,188,988

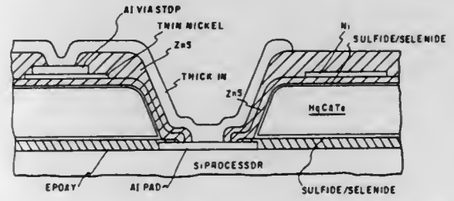
PASSIVATION OXIDE CONVERSION WHEREIN AN ANODICALLY GROWN OXIDE IS CONVERTED TO THE SULFIDE

Towfik H. Teherani, Plano, and D. Dawn Little, Euless, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 225,597, Jul. 27, 1988. This application Nov. 26, 1990, Ser. No. 618,150

Int. Cl.[5] H01L *21/00, 21/02, 21/76, 21/473*

U.S. Cl. 437—235 **11 Claims**



1. A method of passivating a $Hg_{1-x}Cd_xTe$ substrate, comprising the steps of:

(a) growing an oxide layer on said $Hg_{1-x}Cd_xTe$;

(b) chemically converting said layer from $Hg_{1-x}Cd_xTe$ oxide to a member of the group consisting of $Hg_{1-x}Cd_xTe$ sulfide, $Hg_{1-x}Cd_xTe$ selenide, and a combination of $Hg_{1-x}Cd_xTe$ sulfide and $Hg_{1-x}Cd_xTe$ selenide; and

(c) said oxide is anodically grown.

5,188,989

COATING MIX TO PREVENT OXIDATION OF CARBON SUBSTRATES

Howard M. Winkelbauer, McKeesport, and Eugene T. Rushe, Port Vue, both of Pa., assignors to Dresser Industries, Dallas, Tex.

Filed Dec. 1, 1987, Ser. No. 127,268

Int. Cl.[5] C03C *8/04*

U.S. Cl. 501—17 **6 Claims**

1. A fluxed mix for forming an oxidation-resistant glaze coating on a carbon-containing refractory shape consisting essentially of a zinc borosilicate frit, a clay, and a water-soluble acrylic resin.

VOL 1147 ISS 4 FE 23 1993 UMI

5,188,990
LOW TEMPERATURE SEALING GLASS COMPOSITIONS

Maurice E. Dumesnil, Los Altos Hills, and Leo Finkelstein, San Francisco, both of Calif., assignors to VLSI Packaging Materials, Sunnyvale, Calif.

Filed Nov. 21, 1991, Ser. No. 795,873
Int. Cl.[5] C03C *3/12, 8/18, 8/14, 8/24*
U.S. Cl. 501—19 **16 Claims**

1. A low melting glass composition consisting essentially of:
(a) TeO_2: 35 to 80%
(b) V_2O_5: 15 to 50%, and
oxides selected from the group consisting of
(i) Nb_2O_5, ZrO_2, and ZnO 0.1 to 20%,
(ii) Bi_2O_3 and CuO 0.1 to 30%, and
(iii) P_2O_5 and Ta_2O_5 0.1 to 10%, and
up to 10% (weight calculated on an oxide basis) of SnO_2, CdO, BaO, WO_3, MoO_3, TiO_2, or a metal fluoride, said composition being substantially free of Ag_2O.

5,188,991
ZIRCONIUM OXIDE POWDER, PROCESS FOR ITS PREPARATION AND USE

Gangolf Kriechbaum, Freigericht; Peter Kleinschmit, Hanau, and Doris Peuckert, Hofheim, all of Fed. Rep. of Germany, assignors to Degussa Akteingesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 826,227, Jan. 27, 1992, abandoned, which is a continuation of Ser. No. 569,578, Aug. 20, 1990, abandoned, which is a continuation of Ser. No. 369,513, Jun. 21, 1989, abandoned, which is a division of Ser. No. 264,585, Oct. 31, 1988, Pat. No. 5,011,673. This application Jul. 27, 1992, Ser. No. 924,608
Claims priority, application Fed. Rep. of Germany, Oct. 31, 1987, 3737064
Int. Cl.[5] C04B *35/48;* **C01G** *25/02*
U.S. Cl. 501—103 **1 Claim**

1. A method of producing a sintered ceramic which comprises
1) adding an aqueous zirconium salt solution containing yttrium ions, with agitation, to an aqueous base solution, and treating the resulting mixture hydrothermally at a temperature of 200° to 400° C. to produce a crystalline zirconium oxide powder having a BET surface area in the range of 10 to 20 m^2/g, a primary particle size of 0.1 to 0.5 μm and a monoclinic crystal structure, said powder consisting essentially of zirconium oxide and 1 to 10% by weight of Y_2O_3 and having a particle size distribution of 90% between 0.1 and 1 μm, and
2) sintering said crystalline zirconium oxide powder.

5,188,992
PIEZOELECTRIC CERAMIC COMPOSITION FOR ACTUATORS

Tetsuhiko Nishimura, Zama; Takahiro Choda, Yokohama; Yukio Chida, and Yasuo Oguri, both of Tokyo, all of Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

Filed Sep. 19, 1991, Ser. No. 762,361
Claims priority, application Japan, Sep. 20, 1990, 2-250700
Int. Cl.[5] C04B *35/46, 35/49*
U.S. Cl. 501—136 **9 Claims**

1. A piezoelectric ceramic composition for actuators, composed of lead, lanthanum, zirconium, titanium, magnesium, zinc, niobium, manganese, chromium and oxygen atoms, which contains manganese in an amount of at most 1.5% by weight as calculated as MnO and chromium in an amount of at most 0.5% by weight as calculated as Cr_2O_3, relative to a main component composition of the formula (I):

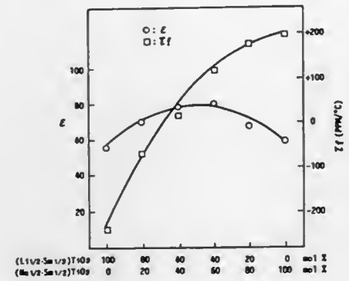
$$Pb_{(1-x)}La_x[(1-z)(Zr_yTi_{(1-y)})+z\{Mg_qZn_{(1-q-))}Nb_{170}\}]_{(1-x/4)}O_3 \quad (I)$$

wherein $0<x\leqq0.07$, $0.40\leqq y\leqq0.65$, $0\leqq q\leqq1$, and $0<z\leqq0.40$.

5,188,993
MICROWAVE DIELECTRIC CERAMIC COMPOSITION

Hisakazu Takahashi; Yoko Baba; Kenichi Ezaki; Yasuhiko Okamoto; Kenichi Shibata, all of Osaka; Kazuhiko Kuroki, Kyoto, and Shigeyuki Yasuyama, Osaka, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Jan. 22, 1992, Ser. No. 823,458
Claims priority, application Japan, Jan. 23, 1991, 3-6457; Feb. 28, 1991, 3-34106; Apr. 26, 1991, 3-97486; May 9, 1991, 3-104458; May 16, 1991, 3-111913; Aug. 29, 1991, 3-218872; Nov. 19, 1991, 3-303293; Dec. 6, 1991, 3-323237
Int. Cl.[5] C04B *35/46, 35/48, 35/49;* **H01B** *1/00*
U.S. Cl. 501—136 **15 Claims**

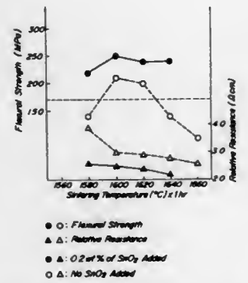


1. A microwave dielectric ceramic composition comprising a composition according to the formula $(A^{1+}_{1}\cdot B^{3+}_{1})TiO_3$, wherein A^{1+} is Li^{1+}, and B^{3+} is a member of the group consisting of Nd^{+}, Sm^{3+}, Co^{3+} and Pr^{3+}.

5,188,994
BETA ALUMINA SINTERED BODY AND METHOD OF MANUFACTURING THE SAME

Shuichi Ichikawa, Handa, and Tomonori Takahashi, Chita, both of Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jan. 10, 1992, Ser. No. 819,171
Claims priority, application Japan, Jan. 18, 1991, 3-041398
Int. Cl.[5] C04B *35/10, 35/20;* **H01M** *6/18*
U.S. Cl. 501—153 **5 Claims**



1. A beta alumina sintered body consisting essentially of 8.0–10.0 wt % of sodium oxide, 3.0–5.5 wt % of magnesium oxide, 0.01–1.0 wt % of tin oxide, and the remainder of aluminum oxide.

5,188,995
REACTIVATION AND PASSIVATION OF SPENT CRACKING CATALYSTS

Michael K. Maholland; Chia-Min Fu, both of Bartlesville, Okla., and Richard E. Lowery, Muscatine, Iowa, assignors to Phillips Petroleum Company, Bartlesville, Okla.

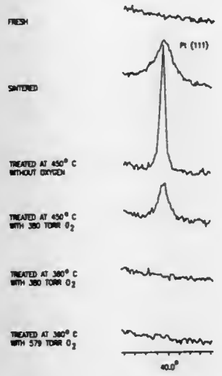
Filed Mar. 24, 1992, Ser. No. 856,432
Int. Cl.[5] B01J *29/38, 38/62;* **C10G** *11/05*
U.S. Cl. 502—28 **19 Claims**

I. A process for reactivating a spent cracking catalyst composition which comprises the steps of:
(a) contacting a spent zeolite-containing catalytic cracking catalyst composition which contains at least one metal contaminant substantially simultaneously with at least one aqueous solution comprising about 0.001-10 mol/l of at least one carboxylic acid and at least one antimony compound, essentially at nonoxidizing conditions;
(b) contacting the treated spent catalytic cracking catalyst composition obtained in step (a) at least once with an aqueous wash liquid consisting essentially of water, at a weight ratio of water to said treated spent catalytic cracking catalyst composition obtained in step (a) in the range of about 0.5:1 to about 10:1 for a time period in the range of about 1 minute to about 2 hours, and substantially separating the thus-washed catalyst composition from the aqueous wash liquid, essentially at nonoxidizing conditions; and
(c) heating the at least partially separated, washed catalytic cracking catalyst composition obtained in step (b) at such conditions as to substantially remove water from said at least partially separated, washed catalytic cracking catalyst composition;
wherein said catalyst reactivation process is carried out at such conditions as to incorporate about 0.001–5 weight-% antimony into said spent catalytic cracking catalyst composition, and to obtain a reactivated catalytic cracking catalyst composition exhibiting higher catalytic cracking activity and lower hydrogen generation, when employed in a process for catalytically cracking a hydrocarbon-containing oil, than said spent zeolite-containing catalytic cracking catalyst composition.

5,188,996
REDISPERSION OF NOBLE METAL ON LOW ACIDITY SUPPORT

Tracy J. Huang, Lawrenceville, N.J., and Ying-Yen P. Tsao, Lahaska, Pa., assignors to Mobil Oil Corp., Fairfax, Va.

Filed May 22, 1991, Ser. No. 704,152
Int. Cl.[5] B01J *23/96, 38/44, 21/08, 21/20*
U.S. Cl. 502—37 **13 Claims**



1. A process for redispersing agglomerated noble metal in a catalyst composition which comprises noble metal on a low-acidity silica support said process comprising contacting the catalyst composition with an inert gas containing molecular chlorine at a partial pressure of from about 3 to about 6 Torr, oxygen at a partial pressure of from about 250 to about 750 torr and water from 0 up to about 50 Torr at a temperature of from about 320° to about 450° C., for a period of time sufficient to attain redispersion of agglomerated metal without metal loss.

5,188,997
SOLID COMPONENT OF CATALYST FOR THE (CO)POLYMERIZATION OF ETHYLENE

Luciano Luciani, Ferrara; Maddalena Pondrelli, Budrio; Renzo Invernizzi, Milan, and Italo Borghi, Ferrara, all of Italy, assignors to ECP Enichem Polimeri s.r.l., Milan, Italy

Filed Sep. 5, 1991, Ser. No. 755,063
Claims priority, application Italy, Sep. 7, 1990, 21405 A/90
Int. Cl.[5] C08F *4/656*
U.S. Cl. 502—107 **23 Claims**

1. A proccess for the preparation of a solid component of a catalyst for the polymerization of ethylene and the copolymerization of ethylene with alfa-olefins, composed of 50–90% by wt. of a carrier of silica particles and 50–10% by wt. of a catalytically active part comprising titanium, magnesium, chlorine and alkoxy groups, comprising the following steps:
(a) a solution of magnesium chloride in ethanol is prepared;
(b) activated silica particles are impregnated with the solution prepared under (a) by suspending the silica particles in the solution;
(c) at least one titanium compound chosen from alkoxides and halogen alkoxides of titanium and a silicon halide are added to the suspension prepared in (b), with an atomic ratio between the magnesium, in the magnesium chloride, and the titanium ranging from 2.0/1 to 12.1/1 and the ratio between the silicon atoms and alkoxy groups in the alkoxide or halogen alkoxide of titanium ranging from 01./1 to 4.0/1;
(d) the ethanol is eliminated from the suspension obtained in (c) by evaporation to recover a solid;
(e) the solid obtained in (d) is reacted with an alkyl aluminum chloride, with an atomic ratio between the chlorine atoms in the alkyl aluminum chloride and the alkoxy groups in the alkoxide or halogen alkoxide of titanium, ranging from 0.5/1 to 7.0/1; and
(f) the solid component of the catalyst is recovered.

5,188,998
TRANSITION-METAL CATALYST COMPONENT FOR A ZIEGLER CATALYST SYSTEM, AND THE USE OF SAID SYSTEM

Ulrich Bueschges, Mannheim, and Roland Salve, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 19, 1991, Ser. No. 671,591
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1990, 4008732
Int. Cl.[5] C08F *4/68*
U.S. Cl. 502—107 **6 Claims**

4. A process for preparing a transition-metal catalyst component for a Ziegler catalyst system, the process consisting essentially of:
1) mixing an inorganic, oxidic carrier with a vanadium trihalide/alcohol complex of the formula $VY_3nZ—OH$, where Y is chlorine or bromine, n is from 1 to 6, and Z is monovalent, saturated, aliphatic or araliphatic hydrocarbon radical having not more than 10 carbon atoms, in an inert organic solvent,
2) removing the solvent by evaporation to form a solid-phase intermediate,
3) mixing the solid-phase intermediate with a mixture of
3.1) an organoaluminum catalyst component of the formula AlR_mX_{3-m} where
R is a C_1–C_{18}-hydrocarbon radical,
m is from 1 to 3, and
X is OR, chlorine, bromine or hydrogen and

VOL 1147 ISS 4 FE 23 1993 UMI

3.2) an organic carboxylate of the formula R^1COOR^2 where each of R^1 and R^2 is independently a C_1–C_{18}-hydrocarbon radical in an organic solvent to form a transition metal catalyst component, and

4) isolating the transition metal catalyst component by filtration, washing and drying.

5,188,999

CATALYST SUPPORT FOR POLYMERIZATION OF OLEFINS, PROCESS FOR MANUFACTURING THE SAME, AND CATALYST OBTAINED FROM THIS SUPPORT

Laurent Duranel, Pau; Jean Malinge, Orthez, and Marie-Laure Bousque, Pau, all of France, assignors to Atochem, France

Filed Nov. 14, 1990, Ser. No. 613,620

Claims priority, application France, Nov. 16, 1989, 89 15028

Int. Cl.[5] C08F *4/02*

U.S. Cl. 502—111 **13 Claims**

1. A catalyst support in the form of solid particles consisting essentially of a complex of $MgCl_2$ and alcohol of the formula $MgCl_2$, x (n-BuOH) in which $0.1 \leqq x \leqq 2$, and which has a specific surface of 1 to 20 m^2/g and a particle porosity of 1 to 2 cm^3/g.

5,189,000

SUPPORTED CATALYST FOR THE POLYMERIZATION AND COPOLYMERIZATION OF OLEFINICALLY UNSATURATED COMPOUNDS, AND A (CO)POLYMERIZATION PROCESS WHICH USES IT

Francesco Masi, San Donato Milanese; Renzo Invernizzi; Antonio Carbonaro, both of Milan; Lorenzo Costa, Sommo, and Angelo Moalli, Castelletto Ticino, all of Italy, assignors to Montedipe S.r.l. and Enichem S.p.A., Milan, Italy

Filed Mar. 21, 1991, Ser. No. 673,272

Claims priority, application Italy, Mar. 26, 1990, 19816 A/90

Int. Cl.[5] C08F *4/64*

U.S. Cl. 502—113 **4 Claims**

1. A supported catalyst active in the polymerization and copolymerization of olefinically unsaturated compounds, comprising an organometallic compound of aluminium and a component obtained by bringing a titanium, vanadium or chromium compound, at least one compound of a second metal chosen from V, Al, Zr, Hf, Mo and Nd and optionally a magnesium compound into contact with a porous support, characterised in that said porous support consists of microbeads of aerogels of one or more inorganic oxides, and having a surface area exceeding 300 m^2/g, a total pore volume exceeding 1 ml/mg and at least 90% of their pores having a diameter lying within a very narrow range of values, the difference between the maximum and minimum values of which is at most 50 Å, said diameter being between 50 and 1000 Å.

5,189,001

CATALYTIC DISTILLATION STRUCTURE

Kenneth H. Johnson, Missouri City, Tex., assignor to Chemical Research & Licensing Company, Pasadena, Tex.

Filed Sep. 23, 1991, Ser. No. 763,525

Int. Cl.[5] B01J *31/08, 35/04*

U.S. Cl. 502—159 **12 Claims**

1. An improvement in a catalyst structure for use in a reaction-distillation column which comprises a catalyst component comprising a closed container containing particulate cation exchange resin catalytic material, wherein the improvement is the intimate commingling of a deformable material with said particulate cation exchange resin catalytic material in an amount sufficient to allow swelling and expansion of said particulate catalytic material.

5,189,002

Patent Not Issued For This Number

5,189,003

CARBONYLATION CATALYST SYSTEM

Peter A. A. Klusener; Hans A. Stil; Fit Drent, and Peter Arnoldy, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 14, 1992, Ser. No. 868,394

Claims priority, application United Kingdom, May 30, 1991, 9111583

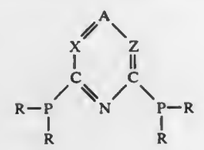
Int. Cl.[5] B01J *31/00*

U.S. Cl. 502—167 **8 Claims**

1. A catalyst system, which comprises:

a) an element of a Group VIII metal or a compound thereof, and

b) a polyphosphinc of general formula:



(I)

wherein

each R is independently selected from an alkyl, cycloalkyl, aryl or heteroaryl group; and

each of A, X and Z is independently selected from a nitrogen atom, a CH group, a group of formula C-PR_2 with R being independently selected from an alkyl, cycloalkyl, aryl or heteroaryl group, and a group of formula CR′, wherein R′ represents a hydroxyl group, an amino group, an amido group, a cyano group, an acyl group, an acyloxy group, a halogen atom, a hydrocarbyl group, a heteroaryl group or a hydrocarbyloxy group, or wherein two adjacent CR′ groups form a ring; or an acid addition salt thereof.

5,189,004

ALKENYL ALKANOATE CATALYST PROCESS

William J. Bartley, Charleston, W. Va., assignor to Union Carbide Chemicals & Plastics Technology Corporation, Danbury, Conn.

Filed Nov. 18, 1991, Ser. No. 793,127

Int. Cl.[5] B01J *37/03, 31/28, 23/58, 23/66*

U.S. Cl. 502—170 **7 Claims**

1. A process for producing a catalyst that is useful in catalyzing the reaction of an alkene, an alkanoic acid and an oxygen-containing gas to produce an alkenyl alkanoate and that comprises support particles which are capable of exchanging cations and which are impregnated with palladium, gold and a potassium promoter selected form the group consisting of potassium alkanoates and any potassium compound that is converted to a potassium alkanoate during said reaction, said process comprising the steps of:

(a) impregnating the support particles with aqueous solutions of water-soluble palladium and gold compounds;

(b) precipitating water-insoluble palladium and gold compounds onto the support particles from such solutions using a precipitating agent;

(c) converting the precipitated water-insoluble palladium and gold compounds to palladium and gold on the support particles using a reducing agent; and

(d) washing the impregnated support with water,

(e) drying the washed impregnated support,

(f) further impregnating the support particles with said potassium promoter,

(g) drying the support so impregnated to produce a dried catalyst containing sodium owing to the presence of sodium in one or more of the materials used in steps (a) to (f),

(h) washing the dried catalyst with water or with an aqueous solution containing said potassium promoter so as to reduce the amount of sodium in the catalyst and thereby to increase the activity of the catalyst, and

(i) drying the catalyst.

5,189,005

ELECTROCATALYST AND PROCESS OF PREPARING SAME

Masahiro Watanabe, Yamanashi, Japan; Paul Stonehart, Madison, Conn.; Kazunori Tsurumi, Kanagawa, Japan; Nobuo Yamamoto, Kanagawa, Japan; Noriaki Hara, Kanagawa, Japan, and Toshihide Nakamura, Kanagawa, Japan, assignors to Tanaka Kikinzoku Kogyo K.K., Tokyo, Japan and Stonehart Associates, Inc., Madison, Conn.

Filed Apr. 3, 1992, Ser. No. 863,118

Int. Cl.[5] B01J *23/89*

U.S. Cl. 502—326 **2 Claims**

1. A platinum alloy catalyst which comprises an electroconductive support and platinum-nickel-cobalt alloy particles having an ordered structure supported on the electroconductive support.

5,189,006

PALLADIUM-TIN CATALYSTS FOR ACYLOXYLATION OF ALKYLAROMATIC COMPOUNDS

Robert L. Augustine, Livingston, and Setrak K. Tanielyan, South Orange, both of N.J., assignors to Philip Morris Incorporated, New York, N.Y. and Philip Morris Products Inc., Richmond, Va.

Division of Ser. No. 788,447, Nov. 6, 1991. This application Feb. 27, 1992, Ser. No. 842,646

Int. Cl.[5] B01J *23/62*

U.S. Cl. 502—339 **3 Claims**

1. A process for preparing a palladium-tin oxidation catalyst which comprises (1) treating a suspension of particulate inorganic support substrate in an aqueous medium with a basic reagent to activate the support substrate surface; (2) treating the aqueous medium suspension of support substrate with a tin salt under basic conditions to form a coating of tin hydroxide on the activated support substrate surface; (3) treating the tin-coated support substrate suspension in an aqueous medium with a water-soluble palladium salt to form a palladium-tin metal complex coating on the support substrate surface; and (4) recovering and drying the metal complex-coated support substrate to provide a catalyst for selective oxidation of organic compounds.

5,189,007

THERMOSENSITIVE RECORDING MATERIAL

Hideo Aihara, Numazu; Norio Kurisu, Susono; Kazuhiro Takei, Numazu, and Yasuhiko Watanabe, Shizuoka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 12, 1991, Ser. No. 805,621

Claims priority, application Japan, Dec. 17, 1990, 2-411120

Int. Cl.[5] B41M *5/40*

U.S. Cl. 503—207 **10 Claims**

1. A thermosensitive recording material comprising:

a support,

a thermosensitive coloring layer capable of inducing color formation upon application of heat thereto comprising a leuco dye and a color developer capable of inducing color formation in said leuco dye upon application of heat thereto, formed on said support, and

a protective layer comprising a resin and a filler formed on said thermosensitive coloring layer, said filler comprising at least one component selected from the group consisting of aluminum hydroxide and aluminum oxide particles, having a volume mean diameter of 1 μm or less, with the amount of the particles with a diameter of 4 μm or less being 90 vol. % or more.

5,189,008

THERMAL TRANSFER RECORDING SHEET AND INK COMPOSITION FOR PRODUCING THE SAME

Yukichi Murata, Kanagawa; Mio Nakamura, Tokyo, both of Japan, and Takashi Morishima, Austin, Tex., assignors to Mitsubishi Kasei Corporation, Tokyo, Japan

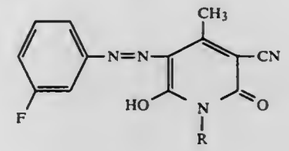
Filed Feb. 13, 1991, Ser. No. 654,469

Claims priority, application Japan, Feb. 14, 1990, 2-33064

Int. Cl.[5] B41M *5/035, 5/38*

U.S. Cl. 503—227 **8 Claims**

1. A thermal transfer recording sheet comprising a substrate having thereon a colorant layer, said colorant layer comprising a binder and a pyridone-type azo dyestuff represented by the following general formula (I):



(I)

wherein R represents a hydrogen atom, an alkyl group having 2 or more carbon atoms, a substituted alkyl group selected from the group consisting of hydroxy-substituted alkyl groups, carboxy-substituted alkyl groups, cyano-substituted alkyl groups, amino-substituted alkyl groups, halogen-substituted alkyl groups, alkyl groups substituted with phenyl group which may have a halogen atom, alkoxyalkoxy-substituted alkyl groups, alkenyloxy-substituted alkyl groups, aryloxy-substituted alkyl groups, aralkyloxy-substituted alkyl groups, alkyl groups substituted with an acyloxy group which may have a halogen atom, alkyl groups substituted with a substituted or unsubstituted alkoxycarbonyl group, alkyl groups substituted with a substituted or unsubstituted alkoxycarbonyloxy group and heterocyclic ring-substituted alkyl groups, a cycloalkyl group, allyl group, or a substituted or unsubstituted phenyl group.

5,189,009

PREPARATION OF SUPERCONDUCTING OXIDES AND OXIDE-METAL COMPOSITES

Gregory J. Yurek, Wellesley, and John B. VanderSande, Newbury, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 547,911, Jul. 3, 1990, abandoned, which is a division of Ser. No. 61,233, Jun. 10, 1987, which is a continuation-in-part of Ser. No. 31,407, Mar. 27, 1987, Pat. No. 4,826,808. This application Apr. 30, 1992, Ser. No. 879,155

Int. Cl.[5] C01F *11/02;* C01G *3/02;* C22C *29/12;* H01L *39/12*

U.S. Cl. 505—1 **12 Claims**

1. A superconducting composite comprising a continuous copper containing superconducting oxide phase in intimate contact with a noble metal phase to provide said superconducting composite with improved mechanical properties.

5,189,010

PROCESS FOR PREPARING SUPERCONDUCTIVE THICK FILMS

Laurie A. Strom, Geneseo; Edward Carnall,Jr.; Steven A. Ferranti, both of Rochester, and Jose M. Mir, Webster, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 556,520, Jul. 20, 1990, Pat. No. 5,087,607. This application Jun. 10, 1991, Ser. No. 712,390

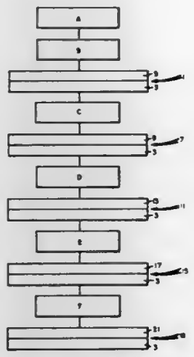
Int. Cl.[5] H01B *12/06;* C01G *3/00;* C04B *41/89;* H01L *39/12*

U.S. Cl. 505—1 **10 Claims**

1. A screen printing composition capable of forming a single application coating having a thickness of at least 5 μm comprised of particles containing inorganic salts forming metal-ligand compounds and a volatilizable liquid in an amount that

VOL 1147 ISS 4 FE 23 1993 UMI

promotes particle cohesion, where the ligand moieties of the compounds are chosen to be thermally decomposable and the metal moieties of the compounds are chosen to form crystalline superconducting copper oxides on heating, the superconducting copper oxides being chosen from the class consisting of (a) rare earth alkaline earth copper oxides and (b) heavy pnictide mixed alkaline earth copper oxides, characterized in that the particles all contain the same metals in the same ratios.



5,189,011

SUPERCONDUCTING MATERIAL AND METHOD FOR PREPARING THE SAME (SR, $\gamma)_x$(LA, $\delta)_{1-x}\epsilon_y CU_{1-y}O_{3-z}$

Hideo Itozaki; Saburo Tanaka; Nobuhiko Fujita; Shuji Yazu, and Tetsuji Jodai, all of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 601,050, Oct. 23, 1990, abandoned, which is a continuation of Ser. No. 224,373, Jul. 26, 1988, abandoned. This application Dec. 27, 1991, Ser. No. 815,576

Claims priority, application Japan, Jul. 26, 1987, 62-185726

Int. Cl.[5] C01F *17/00;* **C01G** *3/02, 29/00;* **H01L** *39/12*

U.S. Cl. 505—1 **5 Claims**

1. A superconducting material comprising a compound oxide represented by the general formula:

$$(Sr, \gamma)_x(La, \delta)_{1-x}Bi_yCu_{1-y}O_{3-z}$$

in which

"γ" represents Ca or Ba, an atomic ratio of γ to Sr being selected in a range between 1% and 90%,

"δ" represents Y or a lanthanide element except La, wherein an atomic ratio of δ to La is selected in a range between 1% and 90%,

x, y and z are numbers each satisfying respective ranges of $0<x<1$, $0<y<1$ and $0\leqq z<1$, and the expression of (Sr, γ) and (La, δ) mean that the respective elements are positioned at predetermined sites in a crystal in a predetermined proportion.

5,189,012

OIL BASED SYNTHETIC HYDROCARBON DRILLING FLUID

Arvind D. Patel; Raymond E. McGlothlin; Roger D. Bleier, and H. N. Brinkley, all of Houston, Tex., assignors to M-I Drilling Fluids Company, Houston, Tex.

Continuation-in-part of Ser. No. 503,304, Mar. 30, 1990, abandoned. This application Jun. 8, 1990, Ser. No. 535,110

Int. Cl.[5] C09K *7/06*

U.S. Cl. 507—103 **23 Claims**

1. An improved continuous phase for an oil-based drilling fluid, said continuous phase comprising a nonhydrogenated synthetic hydrocarbon oil and a weight material, said synthetic hydrocarbon oil having an average molecular weight of from about 120 to about 1000 and being synthesized from one or more olefinic monomers having a chain length of C_2 to C_{14}.

5,189,013

CAMPHOLENIC TERTIARY ALCOHOL AND ITS USE AS A PERFUMING INGREDIENT

Christian Chapuis, Mies, Switzerland, assignor to Firmenich S.A., Geneva, Switzerland

Filed Feb. 21, 1992, Ser. No. 839,603

Claims priority, application Switzerland, Mar. 22, 1991, 890/91 7

Int. Cl.[5] A61K *7/46*

U.S. Cl. 512—23 **9 Claims**

1. 1,2-Dimethyl-4-(2',2',3'-trimethyl-3'-cyclopenten-1'-yl)-2-cyclohexen-1-ol.

4. A method to confer, improve, enhance or modify the odor properties of a perfuming composition or a perfumed article, which method comprises adding to said composition or article a fragrance effective amount of 1,2-dimethyl-4-(2',2',3'-trimethyl-3'-cyclopenten-1'-yl)-2-cyclohexen-1-ol.

5,189,014

METHOD OF TREATING CELLULAR FC RECEPTOR MEDIATED HYPERSENSITIVITY IMMUNE DISORDERS

Fred M. Cowan, Jr., 21 Shady Brook Dr., Colora, Md. 21917

Continuation of Ser. No. 424,088, Oct. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 911,341, Sep. 25, 1986, abandoned, which is a continuation-in-part of Ser. No. 728,142, Apr. 26, 1985, abandoned, which is a continuation of Ser. No. 204,945, Nov. 7, 1980, abandoned, which is a continuation-in-part of Ser. No. 99,741, Dec. 3, 1979, abandoned. This application Jun. 7, 1991, Ser. No. 711,709

Int. Cl.[5] A01N *37/18*

U.S. Cl. 514—2 **13 Claims**

1. A method of immunotherapy for treating the pathological delayed hypersensitivity response to antigen of an immune complex disease condition caused by an antigen-antibody immune complex in a patient suffering from such a disease condition, which method comprises locally or systemically administering to said patient an effective dose of at least one Fc reagent comprising an exogenous polypeptide selected from bacterial polypeptides or leukocyte polypeptides, said polypeptide having at least one site which binds to the Fc-portion of said antigen-antibody immune complex, said antigen-antibody immune complex being susceptible to such binding.

5,189,015

METHOD FOR PROPHYLACTIC TREATMENT OF THE COLONIZATION OF A *STAPHYLOCOCCUS AUREUS* BACTERIAL STRAIN BY BACTERIAL CELL SURFACE PROTEIN WITH FIBRONECTIN AND FIBRINOGEN BINDING ABILITY

Magnus Höök, Birmingham, Ala.; Kjell M. Lindberg, Uppsala, and Torkel M. Wadström, Knivsta, both of Sweden, assignors to Alfa-Laval Agri International AB, Tumba, Sweden

Continuation of Ser. No. 840,580, Jan. 21, 1986, abandoned. This application Dec. 5, 1991, Ser. No. 801,593

Claims priority, application Sweden, May 30, 1984, 8402938

Int. Cl.[5] A01N *37/18, 37/00;* **C12N** *1/00, 1/20*

U.S. Cl. 514—2 **3 Claims**

1. A method for prophylactic treatment of the colonization of a *Staphylococcus aureus* bacterial strain having the ability to bind to fibronectin in a mammal comprising administering to a mammal in need of such treatment, a prophylactic therapeutically active amount of a protein having fibronectin binding properties, to prevent the generation of infections caused by a *Staphylococcus aureus* bacterial strain having the ability to bind to fibronectin, said protein having a molecular weight selected from the group consisting of 87,000 and 165,000.

5,189,016

NUTRIENT COMPOSITIONS CONTAINING PEPTIDES AND METHOD FOR ADMINISTERING THE SAME

David C. Madsen, Libertyville, and W. Bruce Rowe, Evanston, both of Ill., assignors to Clintec Nutrition Co., Deerfield, Ill.

Filed May 18, 1990, Ser. No. 525,861

Int. Cl.[5] A61K *37/00, 31/70*

U.S. Cl. 514—2 **7 Claims**

1. A nutrient composition comprising an aqueous solution including glutaminyl-glycine.

5,189,017

USE OF SUGAR DERIVATIVES FOR THE PROPHYLAXIS AND TREATMENT OF VIRUS INFECTIONS

Bohumir Lukas, Basle, and Karl H. Schmidt-Ruppin, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 319,909, Mar. 3, 1989, abandoned, which is a continuation of Ser. No. 750,667, Jul. 1, 1985, abandoned, which is a continuation of Ser. No. 640,547, Aug. 14, 1984, abandoned, which is a continuation of Ser. No. 515,006, Jul. 18, 1983, abandoned. This application Oct. 17, 1990, Ser. No. 601,600

Claims priority, application Switzerland, Jul. 23, 1982, 4528/82

Int. Cl.[5] A61K *31/70*

U.S. Cl. 514—8 **9 Claims**

1. A method of treating a viral disease due to a virus selected from the group consisting of Herpesviridae, Poxviridae, Picornaviridae, Orthomyxoviridae and Paramyxoviridae in a warm-blooded animal in need thereof comprising administering to said animal after infection an in-vivo anti-virally effective amount of a pharmaceutically acceptable salt of a compound which is N-acetyl-muramyl-L-alanyl-D-isoglutaminyl-L-alanine-2-(1,2-dipalmitoyl-sn-glycero-3-hydroxyphosphoryloxy)-ethylamide in the absence of a vaccine.

5,189,018

METHOD FOR REDUCTION OF CENTRAL NERVOUS SYSTEM (CNS) EDEMA RESULTING FROM HEAD AND SPINAL CORD TRAUMA

Harold Goldman, Southfield; Sharon Murphy, Sterling Heights, and Marilyn Morehead, Detroit, all of Mich., assignors to Wayne State University, Detroit, Mich.

Filed Aug. 19, 1991, Ser. No. 747,794

Int. Cl.[5] A61K *37/00*

U.S. Cl. 514—10 **9 Claims**

1. A method of reducing the rise in intracranial pressure a mammal accompanying head trauma by systemically administering to said mammal an effective amount of an analog of amino acids 4–9 of adrenocorticotropin hormone (ACTH) selected from the group consisting of:

Met-O_2-Glu-His-Phe-D-Lys-Phe-O—$(Ch_2)_9$—CH_3;

Met-O_2-Glu-His-Phe-D-Lys-Phe-NH—$(CH_2)_8$—NH_2;

Met-O-Glu-His-Phe-D-Lys-Phe;

Alpha-MSH; and

Met-(O_2) Glu-His-Phe-D-Lys-Phe.

5,189,019

ANTISTASIN DERIVED ANTICOAGULANT PROTEIN

Linda O. Palladino, Edison; Melvin Silberklang, Engelwood; Jwu-Sheng Tung, Cranbury; Simon W. Law, Westfield, and George E. Mark, Princeton Junction, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 23, 1990, Ser. No. 512,695

Int. Cl.[5] A61K *37/64;* **C07K** *7/10*

U.S. Cl. 514—12 **3 Claims**

1. A protein having a approximate molecular weight of 6000 daltons and having the following sequence:

1	5	10	15
Gln	Gly	Pro	Phe
Gly	Pro	Gly	Cys
Glu	Glu	Ala	Gly
Cys	Pro	Glu	

20	25	30
Gly	Ser	Ala
Cys	Asn	Ile
Ile	Thr	Asp
Arg	Cys	Thr
Cys	Ser	Glu

35	40	45
Val	Arg	Cys
Arg	Val	His
Cys	Pro	His
Gly	Phe	Gln
Arg	Ser	Arg

50	55	58
Tyr	Gly	Cys
Glu	Phe	Cys
Lys	Cys	Arg
Leu	Glu	Pro
Met		

5,189,020

METHOD OF REDUCING NEURONAL DAMAGE USING OMEGA CONOTOXIN PEPTIDES

George P. Miljanich, Redwood City; Robert S. Bitner, Mountain View; Stephen S. Bowersox, Menlo Park; James A. Fox, Palo Alto; Karen L. Valentino, San Carlos; Donald H. Yamashiro, San Francisco, and Makoto Tsubokawa, South San Francisco, all of Calif., assignors to Neurex Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 440,094, Nov. 22, 1989, Pat. No. 5,051,403. This application Aug. 2, 1990, Ser. No. 561,766

The portion of the term of this patent subsequent to Sep. 24, 2008, has been disclaimed.

Int. Cl.[5] A61K *37/02;* **C07K** *7/06, 7/08, 7/10*

U.S. Cl. 514—12 **4 Claims**

1. A method of reducing neuronal damage related to an ischemic condition affecting the central nervous system in a mammalian subject, comprising:

administering to the subject in a pharmaceutically effective amount, an omega conotoxin (OCT) peptide, including a fragment thereof, effective (i) to bind to an omega conotoxin binding protein, with a binding constant which is within the range of binding affinities of MVIIA, MVIIB, GVIA, GVIIA and RVIA omega conotoxins, (ii) to inhibit voltage-gated calcium currents selectively in neuronal tissue with an ED_{50} value which is within the range of ED_{50} values of MVIIA, MVIIB, GVIA, GVIIA and RVIA omega conotoxins, and (iii) to inhibit neurotransmitter release selectively in neuronal tissue, with an IC_{50} which is within the range of MVIIA, MVIIB, GVIA, GVIIA and RVIA omega conotoxins.

5,189,021

METHOD OF TREATING PRECOCIOUS PUBERTY

Fernand Labrie, Quebec, Canada, and Jean-Pierre Raynaud, Paris, France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 334,088, Apr. 5, 1989, Pat. No. 4,981,842, which is a division of Ser. No. 120,408, Nov. 13, 1987, Pat. No. 4,851,386, which is a division of Ser. No. 921,737, Oct. 22, 1986, Pat. No. 4,745,102, which is a division of Ser. No. 895,179, Aug. 11, 1986, Pat. No. 4,728,640, which is a division of Ser. No. 621,421, Jun. 18, 1984, Pat. No. 4,743,589, which is a division of Ser. No. 468,932, Feb. 23, 1983, Pat. No. 4,472,382, which is a division of Ser. No. 189,168, Sep. 22, 1980, abandoned. This application Oct. 10, 1990, Ser. No. 595,297

Claims priority, application France, Sep. 21, 1979, 79 23545

Int. Cl.[5] A61K *37/24*

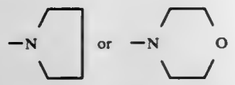
U.S. Cl. 514—15 **6 Claims**

1. A method of treating or preventing precocious puberty in mammals consisting essentially of administering to mammals an amount of a peptide of the formula

p Glu-His-Trp-Ser-Tyr-X-Y-Arg-Pro-Z I

wherein (a) Z is Gly-NH_2, Y is Leu and X is Gly, (b) Z is Gly-NH_2, Y is Leu, X is DL Leu, DL Val, D Abu (α-aminobutyric acid), D Phe, D Ser, D Thr, D Met, D Pgl, D Lys, Leu, Ile, Nle, Val, Met, Phe, D Leu, D Arg, D Ser (tbu), D Thr (tbu), D Cys (tbu), D Asp (O tbu), D Glu (O tbu), D

Orn (boc), D Lys (boc), D Trp, Trp, 2-methyl Ala, D Tyr, lauryl-D Lys, dextran-D Lys, (c) Z is NH-cyclopropyl or NH-Alk- wherein Alk is alkyl of 1 to 3 carbon atoms, Y is Leu and X is D Ser (tbu), D Thr (tbu), D Asp (Otbu), D Glu (Otbu), D Orn (boc), D Lys (boc), (d) Z is —NH—CH_3, —NH—CH_2—CH_3—NH—CH_2—CH_2—CH_3—NH—CH_2—CH_2—OH,



Y is Leu and X is Gly, (e) Z is —NH—CH_2—CH_3, Y is Leu and X is D Trp, D Leu, D Ala, D Ser (tbu), D Tyr, D Lys, Ala, (f) Z is Gly-NH_2 or —NH—CH_2—CH_3, Y is N Me Leu and X is Gly, (g) Z is -NH-cyclopropyl, Y is Leu and X is D Leu or (h) Z is Gly-NH_2, -NH-cyclopropyl or -NHAlk' wherein Alk' is alkyl of 1 to 3 carbon atoms, Y is Ser (but), Cys (but), Asp (Obut), Glu (Obut), Orn (box), Lys (boc) and X is Gly sufficient to treat or prevent precocious puberty.

5,189,022

COMPOSITION FOR THE TREATMENT OF CHRONIC FATIGUE SYNDROME

Thomas P. Bridge, Washington, D.C., and Frederick K. Goodwin, Chevy Chase, Md., assignors to The United States of America as represented by the Secretary of Health and Human Services, Washington, D.C.

Continuation-in-part of Ser. No. 352,313, May 16, 1989, Pat. No. 5,063,206, which is a continuation-in-part of Ser. No. 285,559, Dec. 16, 1988, abandoned, which is a continuation-in-part of Ser. No. 199,873, May 27, 1988, abandoned. This application May 8, 1991, Ser. No. 696,556
The portion of the term of this patent subsequent to Nov. 5, 2008, has been disclaimed.
Int. Cl.[5] A61K *37/02*
U.S. Cl. 514—16 **5 Claims**

1. A method of treating chronic fatigue syndrome not associated with an HIV infection comprising administering to a patient with chronic fatigue syndrome a pharmaceutically acceptable carrier with

(1) a pharmaceutically effective amount of a linear peptide of formula (I):

$$R^a\text{Ser-Thr-Thr-Thr-Asn-Tyr-}R^b \qquad (I)$$

wherein
R^a is Ala, D-Ala or Cys-Ala-, and
R^b is Thr, Thr-amide, Thy-Cys or Thr-Cys-amide, or an ester or amide derivative of said peptide or a physiologically acceptable salt thereof; or

(2) a pharmaceutically effective amount of a linear peptide of formula (II):

$$R^1\text{-}R^2\text{-}R^3R^4\text{-}R^5 \qquad (II)$$

wherein
R^1 is X-Y or Y wherein Y is Thr-, Ser-, Asn-, Leu-, Ile-, Arg- or Glu-, and X is Cys;
R^2 is Thr, Ser or Asp;
R^3 is Thr, Ser, Asn, Arg, Gln, Lys or Trp;
R^4 is Tyr; and
R^5 is Z-X or Z wherein Z is any amino acid and X is Cys, or an ester or amide derivative of said peptide or a physiologically acceptable salt thereof, or

(3) a pharmaceutically effective amount of a linear peptide of formula (III):

$$R^x\text{-}R^2\text{-}R^3R^4\text{-}R^y \qquad (III)$$

wherein
R^x is Ala-R^1, D-Ala-R^1 or X-Ala-R^1 wherein X, R^1, R^2, R^3, R^4 are as defined above, and R^y is Thr-, Thr-amide or Thr-Cys, or an ester or amide derivative of said peptide or a physiologically acceptable salt thereof.

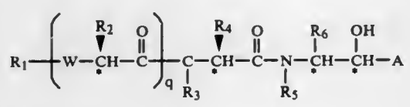
5,189,023

RENIN INHIBITORS

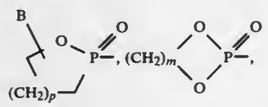
Jay D. Albright, Nanuet, and Fuk-Wah Sum, New City, both of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

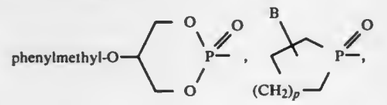
Continuation-in-part of Ser. No. 577,175, Sep. 4, 1990, abandoned. This application Oct. 22, 1991, Ser. No. 780,587
Int. Cl.[5] A61K *37/00*
U.S. Cl. 514—19 **30 Claims**

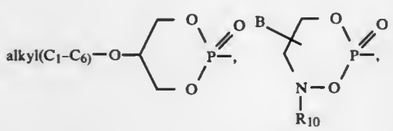
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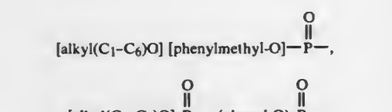


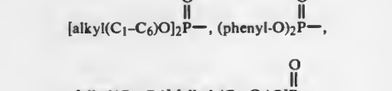
wherein
R is

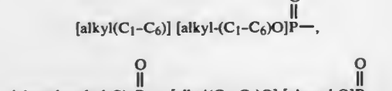


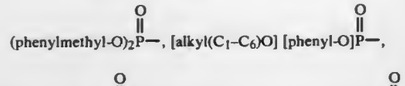


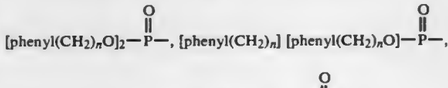


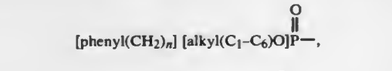


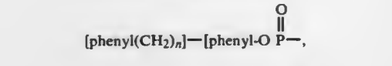


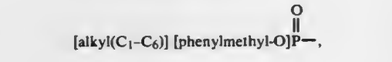




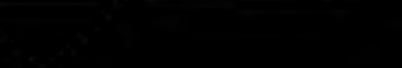


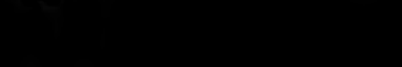




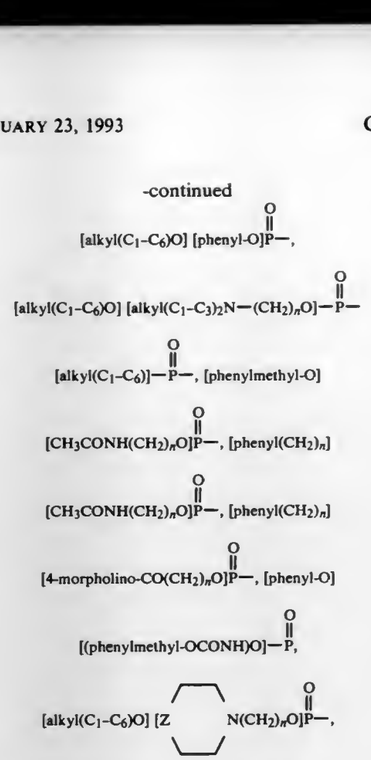




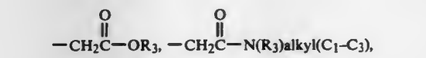


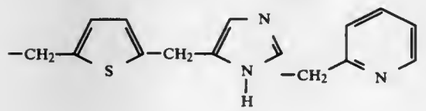


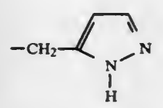
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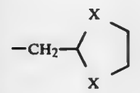
where Z is O, S, SO or SO_2; n is an integer from 1 to 4; m is an integer from 2 to 4, n is an integer from 1 or 2, B is phenylmethyl, cyclohexylmethyl, alkyl (C_1–C_6), R_{10} is H, alkyl(C_1–C_3), alkyl(C_1–C_3)CO—, Z is O, S, SO or SO_2 and q is an integer zero or one;
R_2 phenylmethyl, cyclohexylmethyl, —CH_2(2 -thienyl), —CH_2(3-indolyl), 4-methoxybenzyl, —CH_2-naphthyl or lower alkyl(C_1–C_6);
R_3 is hydrogen or methyl;
R_4 is alkyl(C_1–C_8)(branched or unbranched), —(CH_2-)$_n$—NH_2, phenylmethyl, cyclohexylmethyl, —X-alkyl((-C_1–C_8)(branched or unbranched), X-cyclohexyl, —(CH_2-)$_n$—X-alkyl(C_1–C_3), X—CH_2CH_2N[alkyl(C_1–C_3)]$_2$ (where X is —O— or —S—) and moieties of the formulae:



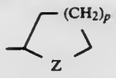




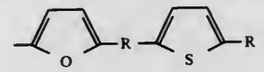
R_5 is hydrogen or methyl; R_6 is alkyl(C_1–C_6), phenylmethyl, cyclohexylmethyl or



W is —O— or —N—R_3 and A is selected from:



where Z is O, S, SO, SO_2 and p is an integer from 1 to 2,and when W is —O— then A may also be



wherein R is selected from the group consisting of Cl, Br, F, —CO-lower alkyl(C_1–C_6), —CO_2 lower alkyl(C_1–C_6),



—CO_2H and lower alkyl(C_1–C_6).

5,189,024

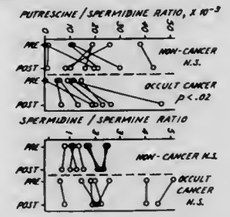
Patent Not Issued For This Number

5,189,025

METHODS FOR THE TREATMENT OF MALIGNANT DISEASE IN PATIENTS USING CITRULLINE CONTAINING AMINO ACID SOLUTIONS

Jaffer Ajani; Bruce Grossie, Jr.; Kenji Nishioka, and David M. Ota, all of Houston, Tex., assignors to Board of Regenets, The University of Texas System, Austin, Tex.

Division of Ser. No. 282,126, Dec. 9, 1988, Pat. No. 4,988,724. This application May 14, 1990, Ser. No. 510,028
The portion of the term of this patent subsequent to Nov. 10, 2009, has been disclaimed.
Int. Cl.[5] A61K *31/70, 31/415, 31/40, 31/195*
U.S. Cl. 514—23 **15 Claims**



1. A formulation comprising a pharmacologically acceptable amount of:

(a) a mixture of the following amino acids in a concentration of between 0.01 to 5.0% by weight of the formulation:
leucine;
methionine;
phenylalanine;
lysine;
valine;
isoleucine;
threonine;
tryptophan;
histidine;
tyrosine;
citrulline; and
ornithine

(b) at least one non-essential amino acid in a concentration of between 0.01–5% by weight of the formulation selected from the group consisting of:
alanine;
glycine;

VOL 1147 ISS 4 FE 23 1993 UMI

proline; and
serine.
the foregoing amino acids being dispersed in a pharmacologically acceptable liquid medium.

5,189,026

TREATMENT OF HUMAN DISEASES INVOLVING DYSREGULATION OR DYSFUNCTION OF THE NERVOUS SYSTEM

Jonathan L. Costa, Wheaton, Ill., and Jesus A. Diazgranados, Cali, Colombia, assignors to Fractal Laboratories, Inc., Newton, N.J.

Filed Jun. 7, 1991, Ser. No. 711,759
Int. Cl.[5] A61K *31/70*
U.S. Cl. 514—30 **9 Claims**

1. A method for preventing, treating or controlling spasticity diseases of human nervous system dysregulation and/or dysfunction, which comprises administering to a patient in need of such preventing, treating or controlling an effective amount of a compound of the avermectin family.

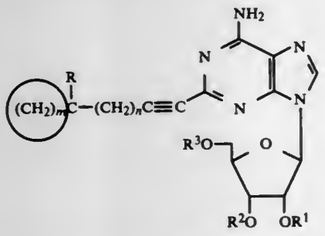
5,189,027

2-SUBSTITUTED ADENOSINE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS FOR CIRCULATORY DISEASES

Takanori Miyashita, Choshi; Toichi Abiru, Sawara; Yohko Watanabe, Choshi; Toyofumi Yamaguchi, Hachioji, and Akira Matsuda, Sapporo, all of Japan, assignors to Yamasa Shoyu Kabushiki Kaisha, Chiba, Japan

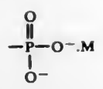
Filed Nov. 27, 1991, Ser. No. 799,071
Claims priority, application Japan, Nov. 30, 1990, 2-337273; Feb. 28, 1991, 3-34249
Int. Cl.[5] C07H *19/167*; A61K *31/70*
U.S. Cl. 514—46 **5 Claims**

1. A 2-substituted adenosine derivative having the following formula [I]

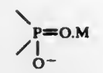


[I]

wherein R represents a hydrogen atom or a hydroxyl group,
m is an integer of 2 to 7,
n is 0 or an integer of 1 to 3, and
R^1, R^2 and R^3, which may be same or different, each independently represent (1) a hydrogen atom, (2) a hydroxy protective group selected from the group consisting of acetyl, chloroacetyl, dichloroacetyl, trifluoroacetyl, methoxyacetyl, propionyl, n-butyryl, (E)-2-methylbutenoyl, isobutyryl, pentanoyl, benzoyl, o-(dibromomethyl)benzoyl, o-(methoxycarbonyl)benzoyl, p-phenylbenzoyl, 2,4,6-trimethylbenzoyl, p-toluoyl, p-anisoyl, p-chlorobenzoyl, p-nitrobenzoyl, α-naphthoyl, benzyl, phenethyl, 3-phenylpropyl, p-methoxybenzyl, p-nitrobenzyl, o-nitrobenzyl, p-halobenzyl, p-cyanobenzyl, diphenylmethyl, triphenylmethyl, α- or β-naphthylmethyl, α-naphthyldiphenylmethyl, trimethylsilyl, triethylsilyl, dimethylisopropylsilyl, isopropyldimethylsilyl, methyl-di-t-butylsilyl, t-butyldimethylsilyl, t-butyldiphenylsilyl, triisopropylsilyl, tetraisopropyldisiloxanyl, methoxymethyl, ethoxymethyl, isopropylidene, ethylidene, propylidene, benzylidene and methoxymethylidene, or (3) a phosphoric acid residue represented by the following formula [A] or [B]:



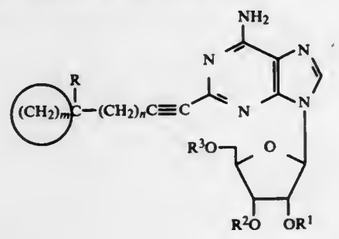
[A]



[B]

wherein
M represents one or more cations having a positive charge which corresponds to a negative charge of the phosphoric acid residue,
or a salt thereof.

5. A method of treating a patient requiring a hypotensor, which comprises administering to said patient a therapeutically effective amount of a hypotensor comprising as an active ingredient an effective amount of a 2-substituted adenosine derivative having the following formula [I]



[I]

wherein
R represents a hydrogen atom or a hydroxyl group,
m is an integer of 2 to 7,
n is 0 or an integer of 1 to 3, and
R^1, R^2 and R^3, which may be the same or different, each independently represents a hydrogen atom or a hydroxy protective group selected from the group consisting of acetyl, chloroacetyl, dichloroacetyl, trifluoroacetyl, methoxyacetyl, propionyl, n-butyryl, (E)-2-methylbutenoyl, isobutyryl, pentanoyl, benzoyl, o-(dibromomethyl)benzoyl, o-(methoxycarbonyl)benzoyl, p-phenylbenzoyl, 2,4,6-trimethylbenzoyl, p-toluoyl, p-anisoyl, p-chlorobenzoyl, p-nitrobenzoyl, α-naphthoyl, benzyl, phenethyl, 3-phenylpropyl, p-methoxybenzyl, p-nitrobenzyl, o-nitrobenzyl, p-halobenzyl, p-cyanobenzyl, diphenylmethyl, triphenylmethyl, α- or β-naphthylmethyl, α-naphthyldiphenylmethyl, trimethylsilyl, triethylsilyl, dimethylisopropylsilyl, isopropyldimethylsilyl, methyl-di-t-butylsilyl, t-butyldimethylsilyl, t-butyldiphenylsilyl, triisopropylsilyl, tetraisopropyldisiloxanyl, methoxymethyl, ethoxymethyl, isopropylidene, ethylidene, propylidene, benzylidene and methoxymethylidene,
or a pharmaceutically acceptable salt thereof.

5,189,028

COMPOSITION AND METHOD TO ENHANCE THE EFFICACY OF A FISH VACCINE AND TO STIMULATE THE IMMUNE SYSTEM OF FISH

Libor H. Nikl, Port Coquitlam, and Lawrence J. Allbright, Burnaby, both of Canada, assignors to Taito Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 313,033, Feb. 21, 1989, Pat. No. 5,147,862. This application Jan. 23, 1992, Ser. No. 824,667
Int. Cl.[5] A61K *31/715, 39/00*
U.S. Cl. 514—54 **8 Claims**

1. A method to stimulate the immune system of fish that comprises administering to the fish a β-1,3-glucan having a β-1,3-linked main chain with β-1,6-linked single glucose side chains.

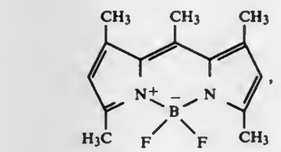
5,189,029

INDACENE COMPOUNDS AND METHODS FOR USING THE SAME

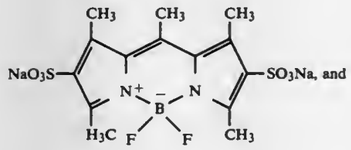
Joseph H. Boyer, and Lee R. Morgan, both of New Orleans, La., assignors to Bo-Dekk Ventures, Ltd., New Orleans, La.

Filed Apr. 23, 1990, Ser. No. 513,059
Int. Cl.[5] H61K *31/64*
U.S. Cl. 514—64 **1 Claim**

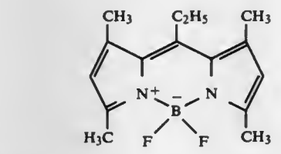
1. A method for treating cancer tumors sensitive to treatment with the compounds below, comprising the steps of:
administering to the animal a compound selected from the group consisting of



,



, and



in an amount sufficient to induce tumor necrosis when the compound is exposed to light from a 250 watt sunlamp;
exposing the tumor to said light for a sufficient duration to induce said tumor necrosis.

5,189,030

1-AMINO-2-PHENYLETHANEPHOSPHONIC ACIDS AS MICROBIOCIDES

Ludwig Maier, Arlesheim, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 394,242, Aug. 14, 1989, abandoned, which is a continuation of Ser. No. 53,588, May 19, 1987, abandoned, which is a continuation of Ser. No. 870,577, Jun. 4, 1986, abandoned. This application Jan. 29, 1992, Ser. No. 827,547
Claims priority, application Switzerland, Jun. 11, 1985, 2462/85
Int. Cl.[5] C07F *9/38, 9/40*; A61K *31/13, 31/185*
U.S. Cl. 514—114 **3 Claims**

1. A method of controlling phytopathogenic microorganisms in cultivated plants or of protecting said plants from attack by such microorganisms, which comprises applying to said plants, to parts thereof or the locus thereof the compound 1-amino-2-(4-fluorophenyl)ethanephosphonic acid or a salt thereof.

2. A method of controlling phytopathogenic microorganisms in cultivated plants or of protecting said plants from attack by such microorganisms, which comprises applying to said plants, to parts thereof or to the locus thereof the compound 1-amino-2-(4-methylphenyl)ethanephosphonic acid or a salt thereof.

3. A method of controlling phytopathogenic microorganisms in cultivated plants or of protecting said plants from attack by such microorganisms, which comprises applying to said plants, to parts thereof or to the locus thereof the compound 1-amino-2-(4-methoxyphenyl)ethanephosphonic acid or a salt thereof.

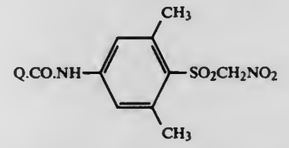
5,189,031

UREA DERIVATIVES, COMPOSITIONS AND USE

David R. Brittain, Rochdale; Steven P. Brown; Anthony L. Cooper, both of Cornwall; Jethro L. Longridge, Macclesfield; Jeffrey J. Morris, Sandbach; John Preston, Knutsford, and Linda Slater, Macclesfield, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jan. 5, 1992, Ser. No. 831,434
Claims priority, application United Kingdom, Aug. 2, 1990, 9016984
Int. Cl.[5] A61K *31/17*; C07C *317/26*
U.S. Cl. 514—155 **7 Claims**

1. A derivative of the compound (4-amino-2,6-dimethylphenylsulphonyl)nitromethane having the formula I:



I

wherein Q is an amino group of the formula R^1R^2N—, in which R^1 and R^2 are independently (1–4 C)alkyl, allyl or phenyl, the latter optionally bearing a (1–4 C)alkyl or (1–4 C)alkoxy substituent; or a pharmaceutically acceptable salt thereof.

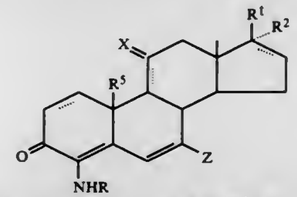
5,189,032

4-AMINO-Δ[4,6]-STEROIDS AND THEIR USE AS 5α-REDUCTASE INHIBITORS

Philip M. Weintraub, Cincinnati, Ohio, assignor to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Division of Ser. No. 720,899, Jul. 2, 1991, Pat. No. 5,130,424, which is a continuation-in-part of Ser. No. 561,410, Aug. 1, 1990, abandoned and Ser. No. 671,555, Mar. 19, 1991, Pat. No. 5,143,909.
Filed Mar. 20, 1992, Ser. No. 855,372
Int. Cl.[5] C07J *21/00, 41/00*; A61K *31/58*
U.S. Cl. 514—173 **5 Claims**

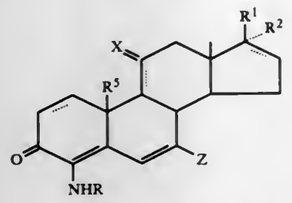
1. A method for treating a patient afflicted with a DHT-mediated disease or condition which comprises administering to said patient an effective 5α-reductase inhibitory amount of a compound of the formula:



wherein R is hydrogen or C_{1-4} alkyl; R^1 is C_{2-6} alkanoyl, —(C_{1-6} alkyl)—OZ^1, —(C_{2-6} alkyl)—$(OZ^1)_2$ or —A—C(O)—Y; Z^1 is hydrogen, C_{1-6} alkyl, phenyl-(C_{1-4} alkyl), Y^1-substituted phenyl)-(C_{1-4} alkyl), C_{1-6} alkanoyl, benzoyl or Y^1-substituted benzoyl wherein Y^1 is methyl, halogen or methoxy; A is absent or is present as an alkylene of 1 to 6 carbon atoms; Y is —OH, —O(C_{1-6} alkyl) or NR^3R^4; R^2 is hydrogen or R^1 and R^2 can be combined to give —O—$CH_2CH_2CH_2$—; R^3 and R^4 are each independently hydrogen, C_{1-6} alkyl, C_{3-6} cycloalkyl or they can be combined to give —$(CH_2)_n$— wherein n is 4 to 6; R^5 is hydrogen or methyl; X is O or (H)(H); Z is hydrogen or C_{1-6} alkyl; and each of the dotted lines in the rings indicates

the optional presence of a double bond with the proviso that a 9,11-double bond can only be present when X is (H)(H) and the proviso that, when a 16,17-double bond is present, then R^2 is absent.

4. A method for treating benign prostatic hypertrophy which comprises administering, to a patient in need of such treatment, an effective 5α-reductase inhibitory amount of a compound of the formula:



wherein R is hydrogen or C_{1-4} alkyl; R^1 is C_{2-6} alkanoyl, —(C_{1-6} alkyl)—OZ^1, —(C_{2-6} alkyl)—$(OZ^1)_2$ or —A—C(O)—Y; Z^1 is hydrogen, C_{1-6} alkyl, phenyl-(C_{1-4} alkyl), (Y^1-substituted phenyl)-(C_{1-4} alkyl), C_{1-6} alkanoyl, benzoyl or Y^1-substituted benzoyl wherein Y^1 is methyl, halogen or methoxy; a is absent or is present as an alkylene of 1 to 6 carbon atoms; Y is —OH, —O(C_{1-6} alkyl) or NR^3R^4; R^2 is hydrogen or R^1 and R^2 can be combined to give —O—$CH_2CH_2CH_2$—; R^3 and R^4 are each independently hydrogen, C_{1-6} alkyl, C_{3-6} cycloalkyl or they can be combined to give —$(CH_2)_n$— wherein n is 4 to 6; R^5 is hydrogen or methyl; X is O or (H)(H); Z is hydrogen or C_{1-6} alkyl; and each of the dotted lines in the rings indicates the optional presence of a double bond with the proviso that a 9,100-double bond can only be present when X is (H)(H) and the proviso that, when a 16,17-double bond is present, then R^2 is absent.

5,189,033

TRICYCLIC HETEROCYCLES

Howard Tucker, Macclesfield, England, assignor to Imperial Chemical Industries PLC, London, England

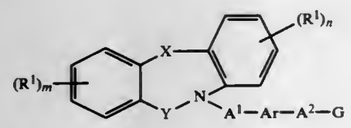
Filed Oct. 8, 1991, Ser. No. 772,972

Claims priority, application United Kingdom, Oct. 8, 1991, 9021813

Int. Cl.[5] **C07D** *281/12, 267/20;* **A61K** *31/51*

U.S. Cl. 514—211 **9 Claims**

1. A tricyclic heterocycle of the formula I



wherein

X is oxy, thio, sulphinyl, sulphonyl;

Y is carbonyl or methylene, the latter group optionally bearing one or two (1–4C)alkyl groups;

each R^1, which may be the same or different, is selected from hydrogen, halogeno, trifluoromethyl, nitro, cyano, hydroxy, amino, (1–4C)alkyl, (1–4C)alkoxy, (1–4C)alkylthio, (1–4C)alkylsulphinyl, (1–4C)alkylsulphonyl, (1–4C)alkylamino and di-(1–4C)alkylamino;

m and n, which may be the same or different, is the integer 1 or 2;

A^1 is a direct link to Ar, or A^1 is (1–6C)alkylene, (3–6C)alkenylene or (3–6C)alkynylene;

A^2 is a direct link to G, or A^2 is (1–4C)alkylene, (2–4C)alkenylene or (2–4C)alkynylene;

Ar is phenylene which may optionally bear one or two substituents selected from halogeno, trifluoromethyl, nitro, cyano, hydroxy, amino, (1–4C)alkyl, (1–4C)alkoxy, (1–4C)alkylthio, (1–4C)alkylsulphinyl, (1–4C)alkylsulphonyl, (1–4C)alkylamino and di-(1–4C)alkylamino; and

G is carboxy, 1H-tetrazol-5-yl or a group of the formula:

—CONH—SO_2R^2

wherein R^2 is (1–4C)alkyl, benzyl or phenyl, the latter two of which may optionally bear one or two substituents selected from halogeno, trifluoromethyl, nitro, cyano, hydroxy, (1–4C)alkyl and (1–4C)alkoxy;

or when G is carboxy an in-vivo hydrolysable ester thereof or an amide thereof;

or a pharmaceutically-acceptable salt thereof.

5,189,034

BENZOXAZINONE AND BENZOTHIAZINONE DERIVATIVES ENDOWED WITH CARDIOVASCULAR ACTIVITY

Sala Alberto, Monza; Francesca Benedini, Milan; Roberta Cereda, Cernusco Lombardone, and Piero Del Soldato, Monza, all of Italy, assignors to Italfarmaco S.P.A., Milan, Italy

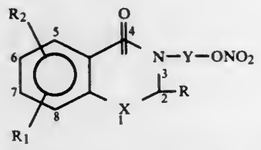
Filed Dec. 10, 1991, Ser. No. 804,396

Claims priority, application Italy, Dec. 14, 1990, 22394

Int. Cl.[5] **A61K** *31/54, 31/535;* **C07D** *279/16, 265/12*

U.S. Cl. 514—224.2 **9 Claims**

1. Compounds of general formula



I

wherein R represents hydrogen, (C_{1-6})alkyl, cyclopentyl, cyclohexyl, or cycloheptyl; R_1 and R_2 independently represent hydrogen, halogen, (C_{1-4})alkyl, (C_{1-4})alkoxy or trifluoromethyl; X is an oxygen or a sulfur atom, Y represents a (C_2-C_6)alkylene chain or a cyclopentylene, cyclohexylene or cyclopentylene group; and the pharmaceutically acceptable acid salts thereof.

5,189,035

FUNGICIDAL FURANONE DERIVATIVES

Jürgen Curtze, Johannisberg, and Guido Albert, Hackenheim, both of Fed. Rep. of Germany, assignors to Shell Research Limited, United Kingdom

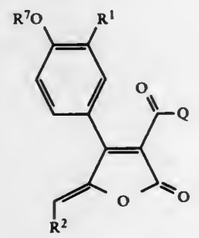
Filed Apr. 2, 1992, Ser. No. 862,080

Claims priority, application European Pat. Off., Apr. 16, 1991, 91106003

Int. Cl.[5] **A01N** *43/08, 43/84;* **C07D** *295/182, 307/68*

U.S. Cl. 514—231.2 **9 Claims**

1. A compound of the formula



(I)

in which

R^1 represents a halogen atom or an optionally substituted alkyl or alkoxy group,

R^2 represents a halogen atom or an optionally substituted alkyl, aryl or heterocyclyl group,

R^7 represents a C_{1-4} alkyl group, and

Q represents an optionally substituted morpholino or amino group.

5,189,036

IMIDAZOLYLBENZOYL SUBSTITUTED HETEROCYCLES

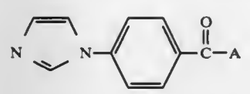
Yuo-Ling Chou, Piscataway; Paul W. Erhardt, Long Valley; Alfred A. Hagedorn, III, Edison; John W. Lampe, Rockaway, all of N.J.; Lumma, Jr., William C., Pennsburg, Pa.; Thomas K. Morgan, Morris Plains, and Jay R. Wiggins, Hamburg, both of N.J., assignors to Schering AG, Berlin, Fed. Rep. of Germany

Filed Jun. 20, 1990, Ser. No. 540,980

Int. Cl.[5] **A61K** *31/495, 31/445;* **C07D** *401/12, 403/12*

U.S. Cl. 514—252 **22 Claims**

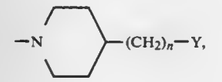
1. A compound of the following Formula I:

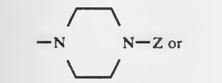


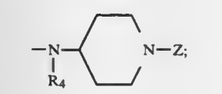
I

wherein

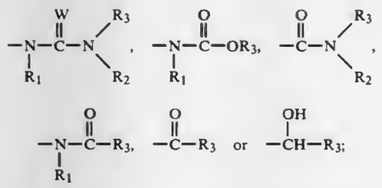
A is



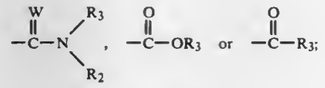




Y is



Z is



W is O, S, NR, NCN or $CHNO_2$;

R is selected from hydrogen, C_1–C_4 straight or branched chain alkyl, optionally substituted aryl or arylalkyl;

R_1, R_2, R_4 are independently hydrogen or C_1–C_4 straight or branched chain alkyl;

R_3 is selected from C_1–C_8 straight or branched alkyl, optionally substituted aryl or arylalkyl or heteroaryl;

n is the integers 0, 1 or 2, or a pharmaceutically acceptable salt thereof;

with the provisos that when R_3 is a C_1–C_8 straight or branched chain alkyl this is not inclusive of a tertiary moiety and when R_3 is heteroaryl, said heteroaryl cannot be attached to a hetero atom e.g. N or O.

5,189,037

SYNERGISTIC COMBINATIONS IN THE TREATMENT OF ANXIETY

Patricia A. Seymour, Mystic, Conn., assignor to Pfizer Inc, New York, N.Y.

Division of Ser. No. 690,412, Apr. 23, 1991, Pat. No. 5,124,346.

This application Apr. 2, 1992, Ser. No. 862,392

Int. Cl.[5] **A61K** *31/135, 31/495, 31/50*

U.S. Cl. 514—252 **5 Claims**

1. A synergistic anxiolytic combination comprising 8-hydroxy-2-(dipropylamino)-1,2,3,4-tetrahydronaphthalene and 1-(2-pyrimidyl)piperazine, wherein the weight ratio of 8-hydroxy-2-(dipropylamino)-1,2,3,4-tetrahydronaphthalene to 1-(2-pyrimidyl)piperazine is in the range from 1:1 to 1:10.

5,189,038

METHOD OF STIMULATING SUPEROXIDE GENERATION

Richard A. Mueller, Glencoe; Akira Nakao, Skokie, and Richard A. Partis, Evanston, all of Ill., assignors to G. D. Searle and Co., Chicago, Ill.

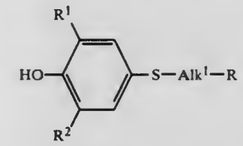
Division of Ser. No. 579,458, Sep. 7, 1990, Pat. No. 5,082,854.

This application Jul. 2, 1991, Ser. No. 724,680

Int. Cl.[5] **A61K** *31/495*

U.S. Cl. 514—255 **6 Claims**

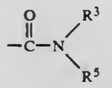
1. A method of stimulating superoxide generation which comprises administering to a mammal in need of such treatment an amount of a compound of the Formula I



(I)

or a pharmaceutically acceptable salt or stereoisomer or geometric isomer thereof; wherein R^1 and R^2 are the same or different and independently represent tert-alkyl or phenyl; Alk^1 represents straight or branched chain alkylene of 1 to 10 carbon atoms; and R represents:

b)

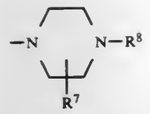


wherein R^3 is hydrogen or alkyl of 1 to 4 carbon atoms and R^5 is phenyl or substituted phenyl;

c)



wherein R^6 is a heterocyclic amine represented by the formula



wherein R^7 is hydrogen or alkyl of 1 to 4 carbon atoms and R^8 is hydrogen, lower alkyl, phenyl, substituted phenyl, benzyl or substituted benzyl; or

d)



wherein R^9 is hydrogen or alkyl of 1 to 4 carbon atoms and R^{10} is alkyl of 1 to 10 carbon atoms; which is effective to stimulate superoxide generation.

5,189,039

7-DISUBSTITUTED-METHYL-4-OXO-3H,5H-PYRROLO[3,2D]PYRIMIDINE AND PHARMACEUTICAL USES AND COMPOSITIONS CONTAINING THE SAME

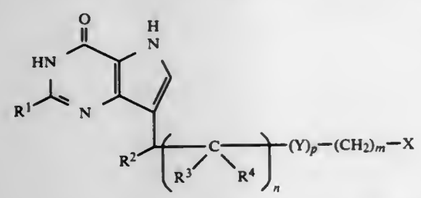
Shri Niwas; John A. Secrist, III; John A. Montgomery, all of Birmingham, Ala.; Mark D. Erion, Livingston; Wayne C. Guida, Fanwood, both of N.J., and Steve E. Ealick, Birmingham, Ala., assignors to BioCryst, Inc., Birmingham, Ala.

Continuation of Ser. No. 42,798, Nov. 29, 1989, abandoned. This application May 14, 1991, Ser. No. 701,575

Int. Cl.[5] **A61K** *31/503;* **C07D** *471/04*

U.S. Cl. 514—258 **26 Claims**

1. A PNP inhibitor comprising a compound of the formula



wherein R^1 is H, NH_2, or OCH_3, R^2 is phenyl optionally substituted with at least one halogen, hydroxy, C_{1-4} alkyl, C_{1-4} alkoxy, or trifluoromethyl, R^3 and R^4 are independently H or C_{1-4} alkyl, m is 0–4, n is 0–6, p is 0–1, X is CN, $CSNH_2$, $PO(OH)_2$, COOH, SO_2NH_2, NH_2, OH, $CNHNH_2$, tetrazole, or triazole, COR^5 where R^5 is C_{1-4} alkyl, CF_3, NH_2, or OC_{1-4} alkyl, and Y is O or NH.

5,189,040

PYRAZOLE DERIVATIVES, METHOD FOR PRODUCING THE SAME AND AGRICULTURAL AND/OR HORTICULTURAL FUNGICIDES CONTAINING THE SAME AS ACTIVE INGREDIENT

Tadashi Ohsumi, Darmstadt, Fed. Rep. of Germany; Makoto Fujimura, Tokyo, and Miki Hayashi, Ikeda, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

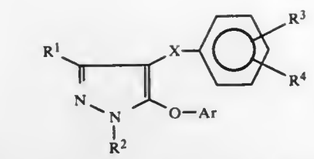
Filed May 16, 1991, Ser. No. 701,240

Claims priority, application Japan, May 28, 1990, 2-138717; Mar. 27, 1991, 3-89952

Int. Cl.[5] **A61K** *31/505;* **C07D** *403/12*

U.S. Cl. 514—269 **12 Claims**

1. A compound having the formula I:



[I]

wherein R^1 is a lower alkyl group, R^2 is a lower alkyl group, R^3 and R^4 are the same or different and each is a hydrogen atom, a halogen atom, a lower alkyl group, a lower haloalkyl group or a lower alkoxy group, X is an oxygen atom, a sulfur atom or a methylene group, and Ar is a pyrimidine-4-yl group which may be substituted by one or two substituents selected from the group consisting of a halogen atom, a lower alkyl group and a lower alkoxy group.

5,189,041

TRICYCLIC 5-HT$_3$ RECEPTOR ANTAGONISTS

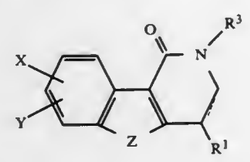
Jacob Berger, Los Altos Hills, and Robin D. Clark, Palo Alto, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Nov. 16, 1990, Ser. No. 614,326

Int. Cl.[5] **A61K** *31/44;* **C07D** *471/02, 233/00*

U.S. Cl. 514—288 **43 Claims**

1. A compound of formula I



(1)

in which:

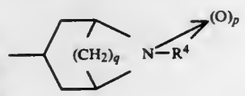
the dashed line denotes an optional bond;

X and Y are independently selected from hydrogen, halogen, hydroxy, lower alkoxy, lower alkyl, nitro, amino, amino-carbonyl, (lower alkyl)amino, di(lower alkyl-)amino, and (lower alkanoyl)amino;

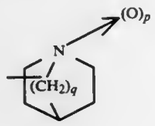
Z is —O—, —S— or $—N(R^2)—$;

R^1 and R^2 are independently selected from hydrogen and lower alkyl or are together $—(CH_2)_n—$ wherein n is an integer from 2 to 4; except that if Z is $—N(R^2)—$ and R^2 is hydrogen or lower alkyl, then the optional bond is present; and

R^3 is selected from

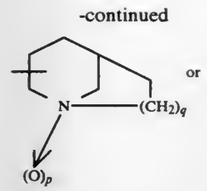


(a)

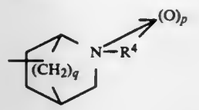


(b)

-continued



(c)



(d)

in which:

p is 0 or 1;

q is 1, 2 or 3; and

R^4 is C_{1-7} alkyl, C_{3-8} cycloalkyl, C_{3-8} cycloalkyl-C_{1-2} alkyl, or a group $(CH_2)_tR^5$ where t is 1 or 2 and R^5 is thienyl, pyrrolyl, or furyl, each optionally further substituted by one or two substituents selected from C_{1-6} alkyl, C_{1-6} alkoxy, trifluoromethyl or halogen, or is phenyl optionally substituted by one or two substituents selected from C_{1-4} alkoxy, trifluoromethyl, halogen, nitro, carboxy, esterified carboxy, and C_{1-4} alkyl optionally substituted by hydroxy, C_{1-4} alkoxy, carboxy, esterified carboxy or in vivo hydrolyzable acyloxy; or a pharmaceutically acceptable salt, or an individual isomer or mixtures of isomers thereof.

5,189,042

FLUOROMACROLIDES HAVING IMMUNOSUPPRESSIVE ACTIVITY

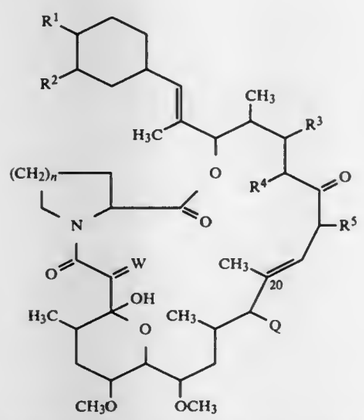
Mark Goulet, Westfield; Thomas R. Beattie, Scotch Plains, and Matthew J. Wyvratt, Mountainside, all of N.J., assignors to Merck & Co. Inc., Rahway, N.J.

Filed Aug. 22, 1991, Ser. No. 748,583

Int. Cl.[5] **A61K** *31/395, 31/695;* **C07D** *498/16*

U.S. Cl. 514—291 **21 Claims**

1. A compound of Formula 1:



I

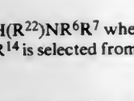
or a pharmaceutically acceptable salt thereof, wherein:

R^1 and R^2 are independently selected from:

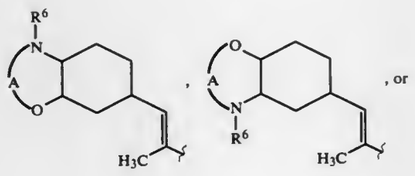
1) $—N_3$;
2) —NHCN;
3) $—NR^6R^7$, wherein R^6 and R^7 independently, are
   a) hydrogen,
   b) C_{1-12} alkyl, unsubstituted or substituted with R^8 and R^9, wherein R^8 and R^9 are independently selected from the group consisting of:
      i) hydrogen,
      ii) —OH,
      iii) C_{1-6} alkoxy,
      iv) $—O—CO—C_{1-6}$alkyl,
      v) $—NR^{10}R^{11}$, wherein R^{10} and R^{11} are independently, hydrogen, or $C_1—_6$alkyl, unsubstituted or substituted with phenyl
      vi) $—CONR^{10}R^{11}$,
      vii) $—CO_2H$,
      viii) $—CO—O—C_{1-6}$alkyl,
      ix) $—S—C_{1-6}$alkyl,
      x) $—SO—C_{1-6}$alkyl,
      xi) $—SO_2—C_{1-6}$alkyl,
      xii) halo,
      xiii) $—C_{3-7}$-cycloalkyl,
      xiv) phenyl, unsubstituted or substituted with X, Y and Z,
      xv) naphthyl, unsubstituted or substituted with X, Y and Z,
      xvi) $—CF_3$,
   c) C_{3-12} alkenyl, unsubstituted or substituted with R^8 and R^9, wherein R^8 and R^9 are as defined above,
   d) C_{3-7} cycloalkyl, unsubstituted or substituted with R^8 and R^9, wherein R^8 and R^9 are as defined above,
   e) phenyl, unsubstituted or substituted with X, Y and Z,
   f) naphthyl, unsubstituted or substituted with X, Y and Z,
   g) $—SO_2$-phenyl, wherein phenyl is unsubstituted or substituted with X, Y and Z,
   h) $—SO_2—C_{1-6}$alkyl,
   i) or where R^6 and R^7 and the N to which they are attached may form a heterocyclic ring selected from the group consisting of: morpholine, thiomorpholine, piperidine, and piperazine, and where the substituent(s), attached to the carbon atom(s) in the heterocyclic ring is/are independently selected from the group consisting of:
      i) hydrogen,
      ii) —OH,
      iii) C_{1-6} alkoxy,
      iv) $—O—CO—C_{1-6}$ alkyl,
      v) $—NR^{10}R^{11}$, wherein R^{10} and R^{11} are as defined above,
      vi) $—CONR^{10}R^{11}$,
      vii) $—CO_2H$,
      viii) $—CO—O—C_{1-6}$ alkyl,
      ix) —SH,
      x) halo,
      xi) phenyl, unsubstituted or substituted with X, Y and Z,
      xii) naphthyl, unsubstituted or substituted with X, Y and Z,
      xiii) $—CF_3$;
4) $—N(R^6)CO—O—R^{12}$, wherein R^6 is as defined above and R^{12} is C_{1-12} alkyl, unsubstituted or substituted with R^8 and R^9, wherein R^8 and R^9 are as defined above;
5) $—N(R^6)CO—R^{13}$, wherein R^6 is as defined above and R^{13} is
   a) hydrogen,
   b) C_{1-12} alkyl, unsubstituted or substituted with R^8 and R^9, wherein R^8 and R^9 are as defined above,
   c) C_{3-12} cycloalkyl, unsubstituted or substituted with R^8 and R^9, wherein R^8 and R^9 are as defined above,
   d) phenyl, unsubstituted or substituted with X, Y and Z,
   e) naphthyl, unsubstituted or substituted with X, Y and Z, or
   f) where R^6 and R^{13} and the —NCO— to which they are attached may form an unsubstituted or substituted 5- to 7-membered heterocyclic ring which may include one or two additional heteroatoms independently selected from the group consisting of O, S, or NR^{10}, wherein R^{10} is as defined above;

VOL 1147 ISS 4 FEB 23 1993 UMI

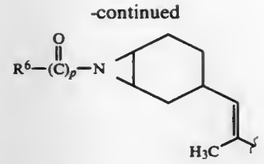
6) —N(R^{14})COCH(R^{22})NR^6R^7 wherein R^6 and R^7 are as defined above, R^{14} is selected from the definitions of R^6, and R^{22} is
a) hydrogen,
b) C_{1-4} alkyl, unsubstituted or substituted with R^{23}, wherein R^{23} is selected from the group consisting of:
i) —OH,
ii) C_{1-6} alkoxy,
iii) —O—CO—C_{1-6} alkyl,
iv) —SH,
v) —S—C_{1-6} alkyl,
vi) —N$R^{10}R^{11}$, wherein R^{10} and R^{11} are as defined above,
vii) —CO_2H,
viii) —$CONH_2$,
ix) imidazolyl,
x) indolyl,
xi) phenyl, and
xii) p-hydroxyphenyl, or
c) phenyl;
7) —N(R^{14})CO(CH_2)$_m$NR^6R^7, wherein m is 0 or 2–6, R^6 and R^7 are as defined above, and R^{14} is selected from the definitions of R^6, or where R^{14} and R^6 and the —N-CO(CH_2)$_m$N— to which they are attached may form an unsubstituted or substituted 5- to 7-membered heterocyclic ring;
8) —N=C(R^{14})—NR^6R^7, wherein R^6 and R^7 are as defined above, and R^{14} is selected from the definitions of R^6, and wherein if either R^6 or R^7 are hydrogen, the tautomeric structure —NHC(R^{14})=N$R^{6\ or\ 7}$ is also possible;
9) —N(R^{15})$_3$+A^-, wherein R^{15} is C_{1-6} alkyl, unsubstituted or substituted with phenyl or naphthyl, and wherein A^- is a counterion selected from the group consisting of: acetate, adipate, benzoate, benzenesulfonate, bisulfate, butyrate, citrate, camphorate, camphorsulfonate, ethanesulfonate, fumarate, hemisulfate, hemitartrate, heptaonate, hexanoate, chloride, bromide, iodide, methanesulfonate, lactate, maleate, methanesulfonate 2-naphthalenesulfonate, nitrate, oxalate, pamoate, perchlorate, persulfate, picrate, pivalate, propionate, succinate, tartrate, tosylate, and undecanoate; and
10)



wherein R^{16} and R^{17} are independently,
a) hydrogen,
b) phenyl, unsubstituted or substituted with X, Y and Z,
c) naphthyl, unsubstituted or substituted with X, Y and Z,
d) —CN,
e) —CF_3,
f) —CO—C_{1-6}alkyl, or
g) —CO—O—C_{1-6}alkyl;
11) C_{1-10} alkoxy;
12) substituted C_{1-10} alkoxy in which one or more substituent(s) is(are) selected from:
a) hydroxy,
b) C_{1-6} alkoxy,
c) phenyl C_{1-3} alkoxy,
d) substituted phenyl C_{1-3} alkoxy, in which the substituents on phenyl are X, Y and Z,
e) —OCOC_{1-6} alkyl,
f) —N$R^{10}R^{11}$, wherein R^{10} and R^{11} are as defined above,
g) —NR^6COC_{1-6} alkyl, wherein R^6 is as defined above,
h) —COOR^6, wherein R^6 is as defined above,
i) —CHO,
j) phenyl,
k) substituted phenyl in which the substituents are X, Y and Z,
l) phenyloxy,
m) substituted phenyloxy in which the substituents are X, Y and Z,
n) 1- or 2-naphthyl,
o) substituted 1- or 2-naphthyl in which the substituents are X, Y and Z,
p) biphenyl, and
q) substituted biphenyl in which the substituents are X, Y and Z;
13) C_{3-10} alkenyloxy;
14) substituted C_{3-10} alkenyloxy in which one or more substituent(s) is(are) selected from:
a) hydroxy,
b) C_{1-6} alkoxy,
c) —OCO—C_{1-6} alkyl,
d) C_{2-8} alkenyl,
e) phenyl,
f) substituted phenyl in which the substituents are X, Y and Z,
g) 1- or 2-naphthyl,
h) substituted 1- or 2-naphthyl in which the substituents are X, Y and Z,
i) biphenyl, and
j) substituted biphenyl in which the substituents are X, Y and Z;
15) C_{3-10} alkynyloxy; and
16) substituted C_{3-10} alkynyloxy in which one or more substituent(s) is(are) selected from:
a) hydroxy,
b) C_{1-6} alkoxy,
c) —OCO—C_{1-6} alkyl,
d) phenyl,
e) substituted phenyl in which the substituents are X, Y and Z,
f) 1- or 2-naphthyl,
g) substituted 1- or 2-naphthyl in which the substituents are X, Y and Z,
h) biphenyl, and
i) substituted biphenyl in which the substituents are X, Y and Z;
17) phenyloxy;
18) substituted phenyloxy in which the substituents are X, Y and Z;
19) 1- or 2- naphthyloxy;
20) substituted 1- or 2-naphthyloxy in which the substituents are X, Y and Z;
21) biphenyloxy;
22) substituted biphenyloxy in which the substituents are X, Y and Z; and
23) hydroxy; or
24) where R^1 and R^2 may be both connected to form a 3- to 7-membered heterocyclic ring of the form;



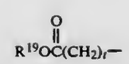
-continued



wherein p is zero or one, R^6 is as defined above, and A is
a) —CO—,
b) —CS—,
c) —CO—C_1-alkyl,
d) —CS—C_1-alkyl, or
e) —C_{1-2}—alkyl, wherein the alkyl may be unsubstituted or substituted with one or more of the following:
i) —OH,
ii) C_{1-6} alkyl,
iii) C_{1-6} alkoxy,
iv) —O—CO—C_{1-6} alkyl,
v) —NR^9R^{10}, wherein R^9 and R^{10} are as defined above,
vi) —CONR^9R^{10},
vii) —CO_2H,
viii) —CO—O—C_{1-6} alkyl,
ix) —S—C_{1-6} alkyl,
x) —SO—C_{1-6} alkyl,
xi) —SO_2—C_{1-6} alkyl,
xii) halo,
xiii) phenyl, unsubstituted or substituted with X, Y or Z, or
xiv) naphthyl unsubstituted or substituted with X, Y or Z;
R^3 is hydrogen, hydroxy, or C_{1-6} alkoxy;
R^4 is hydrogen, or R^3 and R^4 taken together form a double bond;
R^5 is methyl, ethyl, propyl or allyl;
Q is F or OH, with the proviso that if Q is OH, R^2 is other than OH or OCH_3;
W is O or (H, OH);
X, Y and Z independently are selected from:
a) hydrogen,
b) C_{1-7} alkyl,
c) C_{2-6} alkenyl,
d) halo, such as Cl, Br, F or I,
e) —(CH_2)$_t$—N$R^{10}R^{11}$, wherein R^{10} and R^{11} are as defined above, and t is 0 or 2,
f) —CN,
g) —CHO,
h) —CF_3,
i) —SR^{18}, wherein R^{18} is hydrogen, C_{1-6} alkyl, or phenyl,
j) —SOR^{18}, wherein R^{18} is as defined above,
k) —SO_2R^{18}, wherein R^{18} is as defined above,
l) —CON$R^{10}R^{11}$, wherein R^{10} and R^{11} are as defined above,
m) R^{19}O(CH_2)t—wherein R^{19} is hydrogen, C_{1-3} alkyl, hydroxy-C_{2-3}alkyl, phenyl or naphthyl and t is as defined above;
n) —CH(OR^{20})(OR^{21}), wherein R^{20} and R^{21} are C_{1-3} alkyl or taken together form an ethyl or propyl bridge,
o)



wherein R^{19} and t are as defined above; and
p)



wherein R^{19} and t are as defined above;
or any two of X, Y and Z may be joined to form a saturated ring selected from dioxolanyl and dioxanyl; and
n is 1 or 2.

17. A method for the treatment of resistance to transplantation comprising the administration to a mammalian species in need of such treatment an effective amount of the compound of claim 1.

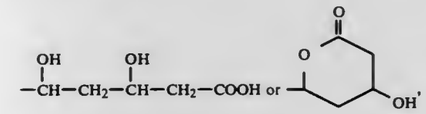
5,189,043

ISOQUINOLONE DERIVATIVES, THEIR PRODUCTION AND USE

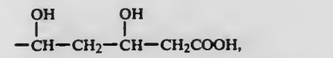
Hideaki Natsugari, Ashiya, and Hitoshi Ikeda, Higashiosaka, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 26, 1990, Ser. No. 603,445
Claims priority, application Japan, Oct. 27, 1989, 1-280602; Mar. 28, 1990, 2-80184
Int. Cl.[5] A61K *31/47*; C07D *217/24*
U.S. Cl. 514—309 **7 Claims**

1. A compound of the formula (I)



in which X is —CH=CH—, Y is



Z is an oxygen atom, R^1 is a C_{1-10} straight or branched chain alkyl group or a phenyl-substituted C_{1-2} alkyl group, R^2 is an optionally halogen-substituted phenyl group and the ring A is a benzene ring, or its C_{1-6} alkyl ester or alkali metal salt.

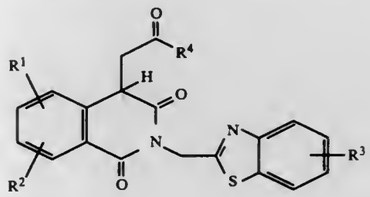
5,189,044

ISOQUINOLINE-1,3-DIONE ACETYL CARBAMATES USEFUL AS ALDOSE REDUCTASE INHIBITORS

Michael S. Malamas, Jamison, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Mar. 20, 1992, Ser. No. 854,196
The portion of the term of this patent subsequent to Jan. 8, 2008, has been disclaimed.
Int. Cl.[5] A61K *31/44*; C07D *417/14*
U.S. Cl. 514—309 **4 Claims**

1. A compound of formula (I)



I

wherein:
R^1, R^2, and R^3 are independently hydrogen, alkyl containing 1 to 6 carbon atoms, halogen, lower alkoxy containing 1 to

VOL 1147 ISS 4 FE 23 1993 UMI

6 carbon atoms, trifluoromethyl and nitro; R^4 is lower alkyl carbamate wherein lower alkyl contains 1 to 6 carbon atoms, aryl carbamate wherein aryl contains 6 to 10 carbon atoms, and aryl (lower akyl) carbamate wherein lower alkyl contains 1 to 6 carbon atoms; or a pharmaceutically acceptable salt thereof.

5,189,045

AMINOPIPERIDINE INDANYL AND BENZOCYCLOBUTENE COMPOUNDS

Jean-Louis Peglion, and Francis Colpaert, both of Le Vesinet, France, assignors to Adir et Compagnie, Courbevoie, France

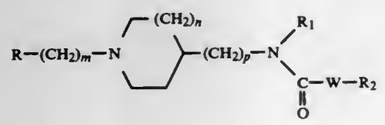
Filed May 17, 1991, Ser. No. 702,591

Claims priority, application France, May 18, 1990, 90 06220

Int. Cl.[5] C07D *413/06;* A61K *31/00*

U.S. Cl. 514—319 **15 Claims**

1. A compound selected from the hose of formula I



(I)

in which:

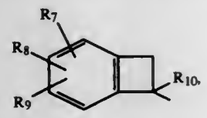
m represents zero, 1, 2, 3 or 4,

n represents 1 and p represent zero, 1 or 2,

W represents oxygen, —NH—, or a single bond,

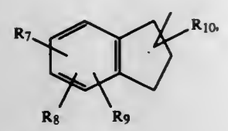
R represents:

benzocyclobuten-1-yl of formula B:



(B)

or indanyl of formula C:



(C)

in which:

R_7, R_8 and R_9, which may be the same or different, each represents hydrogen, halogen, (C_1–C_6) -alkyl or -alkoxy, polyhalogenated (C_1–C_6) alkyl, or hydroxy, or when R represents B, R_7 and R_8 or R_8 and R_9 together also may form methylenedioxy, ethylenedioxy, a furan ring, or a dihydrofuran ring when R represents (B), and have the same meanings less (C_1–C_6)-alkoxy when R represents (C), and

R_{10} represents hydrogen or (C_1–C_6) alkyl;

R_1 represents hydrogen or (C_1–C_6) alkyl, or carbocylic aryl, with the proviso, however, that when, simultaneously, R represents indanyl, p represents zero and W represents a single bond, R1 does not represent aryl;

R_2 represents hydrogen, (C_1–C_6) alkyl, (C_2–C_6) alkenyl, (C_4–C_7) cycloalkyl, benzyl or phenyl (each optionally substituted by one or more halogen, hydroxy, (C_1–C_6)-alkyl or -alkoxy, (C_7–C_{12}) aralkyl, (C_2–C_7) alkoxyalkyl or polyhalogenated (C_1–C_6) alkyl, the optical isomers thereof and the addition salts thereof with a pharmaceutically acceptable organic or mineral acid.

5,189,046

PROTEIN KINASE C MODULATORS

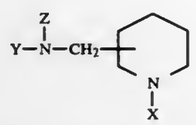
Ronald M. Burch, Silver Spring; Raymond J. Patch, Baltimore; Barry G. Shearer, Baltimore, and John J. Perumattam, Baltimore, all of Md., assignors to Nova Pharmaceutical Corporation, Baltimore, Md.

Continuation-in-part of Ser. No. 657,697, Feb. 19, 1991, abandoned, and a continuation-in-part of Ser. No. 567,219, Aug. 14, 1990, abandoned. This application Jun. 4, 1991, Ser. No. 709,948

Int. Cl.[5] A61K *31/44, 31/445;* C07D *211/06, 211/60*

U.S. Cl. 514—330 **11 Claims**

1. A protein kinase C modulator compound represented by the formula:



(I)

in which:

X and Y independently are, C_{10-20} alkyl, C(O)E, C(O)C-$_{10}$–C_{20} alkyl, C(O)C_{10}–C_{20} alkenyl or S(O_2)C_{10}–C_{20} alkyl with the proviso that they are not the same;

E is CH(NH_2)FG or CH_2FG;

F is C_{1-10} alkylene;

G is NH_2, cyclo C_{3-8} alkyl, CO_2H, phenyl, guanidino, C(O)NH_2, OH, SH, SC_{1-5} alkyl, or CO_2M;

M is C1–8 alkyl, phenyl, phenyl substituted by one or more C_{1-4} alkyl, halogen, hydroxy, C_{1-4} alkoxy, or amino, benzyl or benzyl substituted by one or more C_{1-4} alkyl, halogen, hydroxy, C_{1-4} alkoxy, or amino; and

Z is hydrogen or C_1–C_5 alkyl;

or any pharmaceutically acceptable salt or hydrate thereof.

5,189,047

2-OXO-1,2-(DIHYDROPYRIDYL)-2H-1-BENZOPYRANS

Michael S. Hadley, and Graham E. Jones, both of Harlow, England, assignors to Beecham Group p.l.c., England

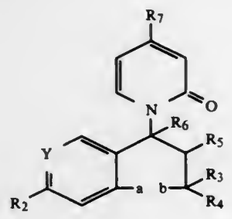
Filed Jul. 20, 1990, Ser. No. 556,553

Claims priority, application United Kingdom, Jul. 21, 1989, 8916683

Int. Cl.[5] A61K *31/44;* C07D *405/04*

U.S. Cl. 514—337 **10 Claims**

1. A compound of formula (I) or a pharmaceutically acceptable salt thereof:



(I)

wherein

a and b together form an —O— linkage;

Y is C-R_1

wherein

either one of R_1 and R_2 is hydrogen and the other is nitro, cyano, halo, CF_3, C_2F_5, formyl, aldoxime, CF_3, NO-$_2$—CH=CH—, NC—CH=CH—; a group R_xX— wherein R_x is C_{1-6} alkyl, which may be optionally substituted by one, two or three of C_{1-4} alkyl, C_{1-4} alkoxy, nitro, halo, CF_3 and cyano; and X is C=O, O.C=O, C=O.O, CHOH, SO, SO_2, O.SO, O.SO_2, CONH, O.CONH C=S, O.C=S, C=S.O, CH.SH, SONH, SO_2NH, O.SONH, O.SO_2NH, CO—CH=CH, C=NHOH, C=NNH_2; or a group R_yR_z-NZ— wherein R_y and R_z are independently hydrogen or C_{1-6} alkyl and Z is C=O, SO or SO_2; or a group $(R_wO)_2$-P(O)W wherein R_w is hydrogen or C_{1-6} alkyl and W is O or a bond; or

R_1 is a C_{3-8} cycloalkyl group or a C_{1-6} alkyl group unsubstituted or substituted by a group which is selected from the group consisting of hydroxy, C_{1-6} alkoxy, amino unsubstituted or substituted by one or two C_{1-6} alkyl groups, C_{1-7} alkanoylamino, C_{3-8} cycloalkyloxy and C_{3-8} cycloalkylamino; and R_2 is hydrogen; or

either one of R_1 and R_2 is nitro, cyano or C_{1-3} alkylcarbonyl and the other is a different group selected from the group consisting of nitro, cyano, halo, C_{1-3} alkylcarbonyl, methoxy or amino unsubstituted or substituted by one or two C_{1-6} alkyl or by C_{2-7} alkanoyl;

either one of R_1 and R_2 is hydrogen or C_{14} alkyl and the other is C_{1-4} alkyl; or

R_3 and R_4 together are C_{2-5} polymethylene; either R_5 is hydrogen, hydroxy, C_{1-6} alkoxy or C_{1-7} acyloxy or ONO_2; and

R_6 is hydrogen; or

R_5 and R_6 together are a bond;

R_7 is unsubstituted or substituted phenyl in which the substituents are selected form the group consisting of C_{1-6}alkyl, C_{1-6}alkoxy, nitro, halo, amino unsubstituted or substituted by one or two C_{1-4} alkyl groups, C_{1-6} alkylcarbonylamino, C_{1-6}alkylcarbonyloxy, hydroyx, and C_{1-6} alkylcarbonyl; and the pyridonyl moiety is trans to the R_5 group when R_5 is hydroxy, C_{1-6} alkoxy, C_{1-7} acyloxy or ONO_2.

5,189,048

SUBSTITUTED 1,2,3 TRIAZOLE ANGIOTENSIN II ANTAGONISTS

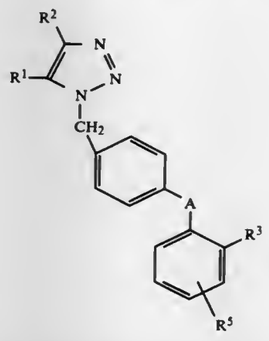
David J. Carini, Wilmington; John Jonas V. Duncia, Newark, and Greogry J. Wells, Wilmington, all of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 498,938, Mar. 26, 1990, Pat. No. 5,081,127, which is a division of Ser. No. 279,193, Dec. 6, 1988, Pat. No. 5,015,651, which is a continuation-in-part of Ser. No. 141,669, Jan. 7, 1988, abandoned. This application Jul. 10, 1991, Ser. No. 711,968

Int. Cl.[5] A61K *31/41, 31/535;* C07D *249/04, 401/14*

U.S. Cl. 514—359 **5 Claims**

1. An antihypertensive compound of the formula:



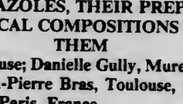
(I)

or a pharmaceutically suitable salt thereof, wherein

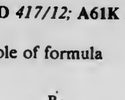
A is a carbon-carbon single bond, CO, O, NHCO, or OCH_2;

R^1 is alkyl of 2 to 6 carbon atoms, alkenyl or alkynyl of 3 to 6 carbon atoms, or $(CH_2)_nOR^4$ provided than when R^1 is $(CH_2)_nOR^4$ then R^2 is H, alkyl of 2 to 6 carbon atoms, or alkenyl or alkynyl of 3 to 6 carbon atoms;

R^2 is H, alkyl of 2 to 6 carbon atoms, alkenyl or alkynyl of 3 or 3 carbon atoms; —$(CH_2)_nOR^4$; —$(CH_2)_mCOR^6$; —$(CH_2)_nOCOR^4$; —$(CH_2)_nS(O)_tR^4$; —$(CH=CH(CH_2)_mCR^4HOR^{12}$; —CH=CH$(CH_2)_m$COR^6; —$(CH_2)_nNHCOOR^{11}$; —$(CH_2)_nNHSO_2R^{11}$; —$CH_2)_nF$; or



R^3 is CO_2H, —$NHSO_2CF_3$; or



R^4 is H or alkyl of 1–4 carbon atoms;

R^5 is H, halogen, NO_2, methoxy, or alkyl of 1 to 4 carbon atoms;

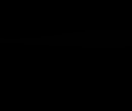
R^4 is H or alkyl of 1–4 carbon atoms;

R^5 is H, halogen, NO_2, methoxy, or alkyl of 1 to 4 carbon atoms;

R^6 is H, alkyl of 1 to 6 carbon atoms; cycloalkyl of 3 to 6 carbon atoms, $(CH_2)_mC_6H_5$, OR^7 or NR^8R^9;

R^7 is H, alkyl of 1 to 5 carbon atoms; cycloalkyl of 3 to 6 carbon atoms; phenyl or benzyl;

R^8 and R^9 are independently H, alkyl of 1 to 4 carbon atoms, phenyl, or benzyl; or NR^8R^9 taken together form a ring of the formula:



Q is NR^{10}, O or CH_2;

R^{10} is H, alkyl of 1 to 10 carbon atoms or perfluoroalkyl of 1 to 6 carbon atoms or $(CH_2)_pC_6H_5$;

R^{12} is H, alkyl of 1 to 4 carbon atoms, or acyl of 1 to 4 carbon atoms;

m is 0 to 6;

n is 1 to 6;

r is 0 to 1;

t is 0 to 2.

5,189,049

HETEROCYCLIC SUBSTITUTED ACYLAMINOTHIAZOLES, THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING THEM

Daniel Frehel, Toulouse; Danielle Gully, Muret; Gerard Valette, Lacroix, and Jean-Pierre Bras, Toulouse, all of France, assignors to Sanofi, Paris, France

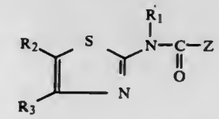
Filed Dec. 5, 1990, Ser. No. 622,620

Claims priority, application France, Dec. 6, 1989, 89 16122; May 4, 1990, 90 05669

Int. Cl.[5] A07D *417/12;* A61K *31/425*

U.S. Cl. 514—371 **15 Claims**

1. A 2-Acylaminothiazole of formula



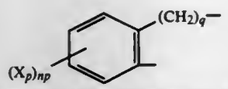
I

in which R_1 represents H, (C_1 to C_4) alkyl or phenyl(C_1–C_3)alkyl; aminoalkyl —Z_1-NR_4R_5, in which Z_1 represents a (C_2 to

C_4) alkylene and R_4 and R_5 independently represent H or (C_1 to C_4) alkyl, or form with N a saturated heterocycle and represent morpholino, pyrrolidinyl piperidino, piperazinyl or 4-(C_1–C_3)alkylpiperazinyl; carboxyalkyl —Z_2—$COOR_6$, in which Z_2 represents (C_1 to C_4) alkylene and R_6 represents H or (C_1 to C_6) alkyl; (C_2 to C_5) cyanoalkyl; carbamoylalkyl —Z_3—$CONR_7R_8$, in which Z_3 represents (C_1 to C_4) alkylene and R_7 and R_8 independently represent H or (C_1 to C_4) alkyl or, with N, represent a heterocycle selected from NR_4R_5; (C_2 to C_6) hydroxyalkyl and (C_2 to C_{10}) alkoxyalkyl;

R_2 represents H or (C_1 to C_4) alkyl;

R_3 represents (C_5 to C_8) cycloalkyl, optionally substituted by one or more (C_1 to C_4) alkyl; an aromatic group, selected from phenyl, optionally carrying one or more substituents chosen from halogen, (C_1–C_6) alkyl, (C_1–C_3) alkoxy and (C_1–C_3) thioalkoxy, nitro, trifluoromethyl and a heterocycle comprising at least one heteroatom chosen from O, S and N, and R_3 then represents furyl, thienyl, pyrroly, pyrazolyl, imidazolyl, pyridyl, pyrazinyl, oxazolyl or thiazolyl, optionally substituted by (C_1 to C_3) alkyl or halogen, or R_2 and R_3 considered together represent the group



fixed by the carbon of the phenyl in position 4 of the thiazolyl and in which q is 1 to 4, and X_p represents the optional substituents chosen from halogen, (C_1–C_3) alkyl, (C_1–C_3) alkoxy, nitro and trifluoromethyl and np represents 0 to 3, and Z represents a heterocycle comprising one or more hetero-atoms chosen from O, S and N, fused with an aromatic ring which may comprise a hetero-atom and which aromatic ring may be substituted by one or more groups chosen from halogen, (C_1–C_3) alkyl, (C_1–C_3) alkoxy, benzyloxy, nitro, amino and trifluoromethyl, and which heterocycle is unsubstituted or substituted on the N atom by C_1–C_4 alkyl; C_1–C_6 hydroxyalkyl; optionally cyclised (C_2–C_{10}) alkoxyalkyl, aminoalkyl —Z_4—$NR_{10}R_{11}$ in which Z_4 represents (C_2–C_4) alkylene and R_{10} and R_{11} independently represent H or (C_1–C_4) alkyl, or $NR_{10}R_{11}$ represents with N a saturated heterocyclic group selected from morpholino, pyrrolidinyl, piperidino, piperazinyl or 4-(C_1–C_3)-alkylpiperazinyl; carboxyalkyl —Z_5—$COOR_{12}$ in which Z_5 represents (C_1–C_4) alkylene and R_{12} is H, benzyl or (C_1–C_6) alkyl; carbamoylalkyl —Z_6-$CONR_{13}R_{14}$, in which Z_6 represents (C_1–C_4) alkylene and R_{13} and R_{14} independently represent H or (C_1–C_6) alkyl or form, with N, a saturated heterocycle selected from $NR_{10}R_{11}$; acyl —COR_{15}, where R_{15} represents (C_1–C_4) alkyl or phenyl; or alkoxycarbonyl —$COOR_{16}$, with R_{16} being tert-butyl or benzyl; as well as the addition salts of the compounds of formula I with inorganic or organic acids and bases.

5,189,050

FERMENTATION ANALOGS OF VIRGINIAMYCIN M_1 TO TREAT PANIC AND ANXIETY DISORDER

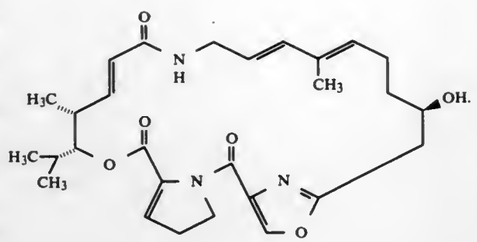
Roger M. Freidinger, Landsale; Mark G. Bock, Hatfield, both of Pa.; Yiu-Kuen T. Lam, Plainsboro, N.J.; Raymond S. Chang, Lansdale, Pa.; Otto D. Hensens, Red Bank, N.J.; Cheryl D. Schwartz, Westfield, N.J., and Deborah L. Zink, Manalapan, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 3, 1991, Ser. No. 709,676

Int. Cl.[5] A61K *31/42*

U.S. Cl. 514—375 **15 Claims**

1. A method of treating panic disorder or anxiety disorder in a mammal which comprises administering to said mammal a therapeutically effective amount of a compound of the formula:



5,189,051

TREATMENT OF GLAUCOMA AND OCULAR HYPERTENSION WITH PYRROLE ANGIOTENSIN-II RECEPTOR ANTAGONISTS

Ronald D. Smith, West Chester, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

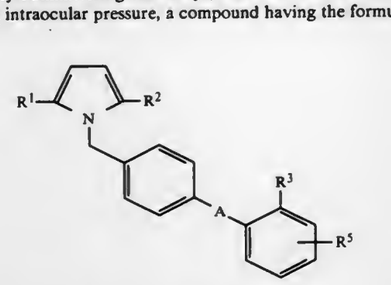
Division of Ser. No. 521,553, May 10, 1990, Pat. No. 5,102,903.

This application Jan. 17, 1992, Ser. No. 822,152

Int. Cl.[5] A61K *413/10, 403/10*

U.S. Cl. 514—381 **9 Claims**

1. A method of treating glaucoma or intraocular hypertension in a patient in need of such treatment which comprises topically administering to the eye, in an amount effective to reduce intraocular pressure, a compound having the formula:

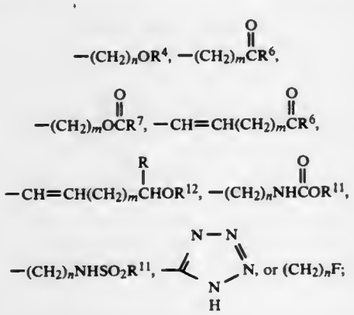


or a pharmaceutically suitable salt thereof, wherein

A is a carbon-carbon single bond, or NHCO;

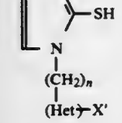
R^1 is alkyl, alkenyl or alkynyl each of 3 to 5 carbon atoms;

R^2 is H, alkyl, alkenyl or alkynyl each of 3 to 5 carbon atoms,



or $(CH_2)_nF$;

R^3 is $—CO_2H$, $—NHSO_2CF_3$; or



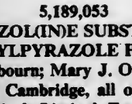
R^4 is H or CH_3;

R^5 is H;

R^6 is H, alkyl of 1 to 6 carbon atoms, OR^7, or NR^8R^9;

R^7 is alkyl of 1 to 6 carbon atoms;

R^8 and R^9 independently are H, alkyl of 1 to 4 carbon atoms, or taken together with the nitrogen form the ring



R^{11} is CF_3, alkyl of 1 to 4 carbon atoms or phenyl;

R^{12} is H, alkyl of 1 to 4 carbon atoms; or acyl of 1 to 4 carbon atoms;

m is 0 to 3; and

n is 1 to 3.

5,189,052

THIONE DOPAMINE BETA HYDROXYLASE INHIBITORS

Donald P. Matthews; James R. McCarthy, both of West Chester; Jeffrey P. Whitten, Cincinnati, all of Ohio, and Robert J. Broersma, Jr., Noblesville, Ind., assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation of Ser. No. 114,168, Oct. 27, 1987, Pat. No. 5,057,613, which is a continuation-in-part of Ser. No. 860,263, May 6, 1986, abandoned. This application Dec. 20, 1989, Ser. No. 453,648

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] C07D *409/06;* A61K *31/415*

U.S. Cl. 514—392 **8 Claims**

1. A compound of the formula

including the 2-thione tautomers thereof, wherein n is 2, 3 or 4; (Het) is a heterocycle of the group consisting of thienyl, furyl, pyrazolyl, pyrimidinyl, pyrrolyl, thiazolyl and imidazol-2-yl; and x' is hydrogen, halogen or $C_{1\text{-}6}$ lower alkyl.

5,189,053

IMIDAZOL(IN)E SUBSTITUTED HALOARYLPYRAZOLE PESTICIDES

Robert J. Willis, Fulbourn; Mary J. O'Mahony, Duxford, and Bryan G. Roberts, Cambridge, all of England, assignors to Schering Agrochemicals Limited, England

Division of Ser. No. 564,729, Aug. 8, 1990, Pat. No. 5,109,012.

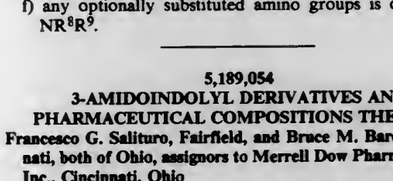
This application Nov. 25, 1991, Ser. No. 797,365

Claims priority, application United Kingdom, Aug. 10, 1989, 8918314; Mar. 24, 1990, 9006653

Int. Cl.[5] A01N *43/54, 43/50;* C07D *403/12, 403/04*

U.S. Cl. 514—397 **17 Claims**

1. A compound of formula I



(I)

an agriculturally or veterinarily salts thereof, in which

Ar is 2,6-dichloro-4-trifluoromethylphenyl or 2-nitro-4-trifluoromethylphenyl

A is $S(O)_m$, —CH=CH—, O or NH;

R^1 is hydrogen, optionally substituted alkyl, halogen or $R^{20}S(O)_q$;

R^2 and R^3 are hydrogen, alkyl, alkenyl or alkynyl, each of which is optionally substituted, aryl, cyano, halogen, nitro, YR^{20}, $S(O)_2NR^8R^9$, CHO, NR^8R^9 or $CYNR^8R^9$;

R^4 is hydrogen, optionally substituted alkyl, optionally substituted alkenyl, acyl or optionally substituted alkoxycarbonyl;

R^5 is hydrogen, alkyl, optionally substituted amino or halogen;

R^8 or R^9 are the same or different and are hydrogen, optionally substituted alkyl, acyl or aryl;

R^{20} is optionally substituted alkyl;

Y is O or S;

m is 0, 1 or 2;

p is 0 or 2;

n is 0, 1 or 2; and

q is 0, 1 or 2,

and in which

a) any alkyl, alkoxy and alkythio groups if of 1 to 4 carbon atoms;

b) any alkenyl or alkynyl groups is of 2 to 5 carbon atoms;

c) any substituted alkyl, alkoxy, alkylthio, alkenyl or alkynyl group is substituted by one or more of the same or different groups selected from halogen, YR^{20}, dihalocyclopropyl, cyano, nitro, optionally substituted amino, acyloxy and aryl;

d) any aryl group is phenyl, optionally substituted by halogen, alkyl, haloalkyl, alkoxy, haloalkoxy, alkylthio, haloalkylthio, haloalkylsulphonyl, cyano or nitro;

e) any acyl group is alkanoyl of 1 to 4 carbon atoms, or alkylsulphonyl or haloalkylsulphonyl; and

f) any optionally substituted amino groups is of formula NR^8R^9.

5,189,054

3-AMIDOINDOLYL DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS THEREOF

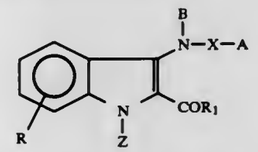
Francesco G. Salituro, Fairfield, and Bruce M. Baron, Cincinnati, both of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 608,457, Nov. 2, 1990, abandoned. This application Nov. 12, 1991, Ser. No. 795,572

Int. Cl.[5] A61K *31/405;* C07D *209/14*

U.S. Cl. 514—419 **74 Claims**

1. A compound of the formula:



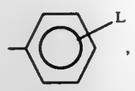
Ia

in which Z is represented by H, C_1–C_4 alkyl, phenyl, substituted phenyl, or a phenylalkyl substituent in which the

VOL 1147 ISS 4 FEB 23 1993 UMI

VOL 1147 ISS 4 FE 23 1993 UMI

phenyl ring may be optionally substituted; R is represented by hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, CF_3, OCF_3, OH, NO_2, or CN; B is represented by hydrogen, C_1–C_4 alkyl, optionally substituted phenylalkyl, or $—CH_2—COR_2$; X is represented by CO or SO_2; A is represented by:



in which L is represented by a substituent selected from the group consisting of hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, CF_3, OCF_3, OH, NO_2, NH_2, phenylalkyl, acetyloxy or CN; R_1, and R_2, are each independently represented by a substituent selected from the group consisting of —OH, $—OR_3$, $—NR_4R_5$, $—OCH_2OR_3$, and $—O—(CH_2)_m—NR_6R_7$, in which m is an integer from 1–4; R_3 is represented by C_1–C_4 alkyl, phenyl, substituted phenyl or a phenylalkyl substituent in which the phenyl ring may be optionally substituted; R_4 and R_5 are each independently represented by hydrogen or a C_1–C_4 alkyl; R_6 and R^7 are each independently represented by hydrogen or a C_1–C_4 alkyl; the pharmaceutically acceptable salt thereof; with the following proviso's 1) that when R, Z, B, are hydrogen, R_1 is OR_3 in which R_3 is ethyl, and X is CO, then L is not hydrogen; 2) that when X is SO_2, R and B are hydrogen, and Z is methyl, then L is not para NO_2, para Methyl, or para chlorine; 3) that when X is SO_2, R and B are hydrogen, and Z is H, then L is not para Cl.

5,189,055

PHENYLPYRROLIC COMPOUNDS USED AS DRUGS, THEIR PREPARATION AND APPLICATION

Claude Thal, Sceaux; Olivier Boye, Etiolles; Daniel Guenard, Montrouge, and Pierre Potier, Paris, all of France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France

PCT No. PCT/FR89/00442, § 371 Date Apr. 1, 1991, § 102(e) Date Apr. 1, 1991, PCT Pub. No. WO90/02733, PCT Pub. Date Mar. 22, 1990

PCT Filed Sep. 4, 1989, Ser. No. 655,430

Claims priority, application France, Sep. 5, 1988, 88 11592

Int. Cl.[5] A61K *31/40;* **C07D** *215/16, 207/30*

U.S. Cl. 514—422 **3 Claims**

1. A compound selected from the class consisting of:
- ethyl 4-methyl-3-phenyl-2-pyrrolecarboxylate,
- methyl 4-methyl-3-(3'-nitrophenyl)2-pyrrolecarboxylate,
- 3-methylpyrrolo[2,3-c]quinolin-4(5H)-one,
- ethyl 3-[2'-(N-benzyloxycarbonylglycylamido)phenyl]-4-methyl-2-pyrrolecarboxylate,
- 1,4-dimethyl-3-(2'-nitrophenyl)pyrrole-2-(N,N'-cyclohexylureidocarboxamide),
- 5-butyl-1,4-dimethyl-2-(1,4-dioxa-2-ethylcarbaldehyde)-3-[2'-(N-benzyloxycarbonyl-N-methylamino)-phenyl]pyrrole,
- 5-butyl-1,4-dimethyl-2-(1,4-dioxa-2-ethylcarbaldehyde)-3-[2'-(N-methylamino)phenyl]pyrrole.

5,189,056

PROTECTION OF MOIST STRATIFIED SQUAMOUS EPITHELIA AGAINST DAMAGE FROM NOXIOUS LUMINAL AGENTS

Roy C. Orlando, Chapel Hill, and Nelia A. Tobey, Raleigh, both of N.C., assignors to University of North Carolina at Chapel Hill, Chapel Hill, N.C.

Filed Dec. 19, 1989, Ser. No. 452,393

Int. Cl.[5] A61K *31/10, 31/385*

U.S. Cl. 514—439 **5 Claims**

1. A method of protection of moist stratified squamous epithelia against damage from a noxious luminal substance primarily causing damage by increasing permeability through the paracellular pathway which comprises stabilizing epithelial intercellular junctions in a patient having exhibited the symptoms of gastroesophageal reflux or reflux esophagitis by administering to said patient so as to come into contact with said epithelia an amount sufficient for protecting said epithelia of a sulfonate so as to block the increase in paracellular permeability that occurs with exposure to said noxious luminal substance.

5,189,057

SACCHAROASCORBIC ACID DERIVATIVES

Koichi Kato, Kawanishi; Hirotomo Masuya, and Moriya Norihiko, both of Kawabe, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

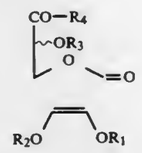
Filed Jul. 19, 1991, Ser. No. 733,209

Claims priority, application Japan, Jul. 20, 1990, 2-193425; May 27, 1991, 3-121033

Int. Cl.[5] A01N *43/20, 43/24;* **C07D** *305/12, 307/93*

U.S. Cl. 514—473 **14 Claims**

1. A compound of the formula (1):



(I)

wherein R_1 and R_2 each is (1) a straight, branched or cyclic C_{1-24} alkyl roup which is unsubstituted or is substituted by halogen, carboxyl or its ester, carbamoyl, nitro, cyano or C_{1-4} alkoxy, provided that the cycloalkyl group may be additionally substituted by a C_{1-4} alkyl group, or (2) a phenyl C_{1-4} alkyl group which is unsubstituted or is substituted by halogen, carboxyl or its ester, carbamoyl, phenyl, nitro, cyano, C_{1-4} alkoxy or C_{1-4} alkyl optionally substituted by halogen; R_3 is a sulfo group or phosphono group; $—CO—R_4$ is an esterified carboxyl group, a thiol-esterified carboxyl group or an amidated carboxyl group; and ~ represents the absolute configuration of R or S, or a pharmaceutically acceptable salt thereof.

5,189,058

IMINODICARBONIC, IMINODICARBONODITHIOIC, AND THIOCARBONYLCARBAMIC ACID ESTERS USEFUL AS ACAT INHIBITORS

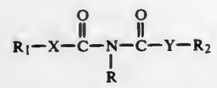
Helen T. Lee, Ann Arbor; Joseph A. Picard, and Drago R. Sliskovic, both of Ypsilanti, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Apr. 9, 1991, Ser. No. 683,208

Int. Cl.[5] A61K *31/27;* **C07C** *333/00, 261/00, 69/76*

U.S. Cl. 514—481 **13 Claims**

1. A compound of the formula

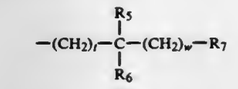


wherein each of X and Y is oxygen or sulfur; wherein R is hydrogen or alkyl having from 1 to 4 carbon atoms; wherein R_1 is phenyl disubstituted on the 2- and 6-positions with groups selected from an alkyl group having from 1 to 6 carbon atoms and which is straight or branched; an alkoxy group having from 1 to 6 carbon atoms and which is straight or branched; phenoxy, hydroxy, fluorine, chlorine, bromine, NO_2, CN, trifluoromethyl, —COOH, —COOalkyl wherein alkyl has from 1 to 4 carbon atoms and is straight or branched, $—(CH_2)_p—NR_3R_4$ wherein p is zero or one, and each of R_3 and R_4 is selected from hydrogen or a straight or branched alkyl group having from 1 to 4 carbon atoms; wherein R_2 is selected from

(a) phenyl which is unsubstituted or is substituted with from 1 to 3 substituents selected from
phenyl,
an alkyl group having from 1 to 6 carbon atoms and which is straight or branched,
an alkoxy group having from 1 to 6 carbon atoms and which is straight or branched;
phenoxy,
hydroxy,
fluorine,
chlorine,
bromine,
NO_2,
CN,
trifluoromethyl,
—COOH,
—COOalkyl wherein alkyl has from 1 to 4 carbon atoms and is straight or branched,
$—(CH_2)_pNR_3R_4$ wherein p, R_3, and R_4 have the meanings defined above,

(b) 1- or 2-naphthyl which is unsubstituted or is substituted with from 1 to 3 substituents selected from
phenyl,
an alkyl group having from 1 to 6 carbon atoms and which is straight or branched,
an alkoxy group having from 1 to 6 carbon atoms and which is straight or branched;
hydroxy,
phenoxy,
fluorine,
chlorine,
bromine,
nitro,
CN,
trifluoromethyl,
—COOH,
—COOalkyl wherein alkyl has from 1 to 4 carbon atoms and is straight or branched,
$—(CH_2)_pNR_3R_4$ wherein p, R_3 and R_4 have the meanings defined above;

(c) the group



wherein t is zero or 1 to 4; w is zero or 1 to 4 with the proviso that the sum of t and w is not greater than 5; R_5 and R_6 are independently selected from hydrogen or alkyl having from 1 to 6 carbon atoms, or when R_5 is hydrogen, R_6 is —COOalkyl wherein alkyl has from 1 to 4 carbon atoms or can be selected from the groups defined for R_7; and R_7 is phenyl or phenyl substituted with from 1 to 3 substituents selected from a straight or branched alkyl group having from 1 to 6 carbon atoms, straight or branched alkoxy group having from 1 to 6 carbon atoms, phenoxy, hydroxy, fluorine, chlorine, bromine, nitro, trifluoromethyl, —COOH, COOalkyl wherein alkyl has from 1 to 4 carbon atoms, or $—(CH_2)_pNR_3R_4$ wherein P, R_3 and R_4 have the meanings defined above; or

(d) a straight or branched hydrocarbon chain having from 1 to 20 carbon atoms and which is saturated or contains from 1 to 3 double bonds; and pharmaceutically acceptable salts thereof.

5,189,059

Patent Not Issued For This Number

5,189,060

IMIDATE INSECTICIDES

David B. Kanne, Corte Madera; Karl J. Fisher, Petaluma, and Michael D. Broadhurst, Novato, all of Calif., assignors to Imperial Chemical Industries PLC, London, United Kingdom

Continuation-in-part of Ser. No. 579,131, Sep. 6, 1990, abandoned, which is a continuation of Ser. No. 352,328, May 16, 1989, abandoned, and a continuation-in-part of Ser. No. 343,552, Apr. 27, 1989, Pat. No. 5,045,566, which is a continuation-in-part of Ser. No. 263,605, Oct. 31, 1988, abandoned, and a continuation-in-part of Ser. No. 264,746, Oct. 31, 1988, abandoned, each each 264,746, is a continuation-in-part of Ser. No. 122,877, Nov. 17, 1987, abandoned. This application Nov. 30, 1990, Ser. No. 621,157

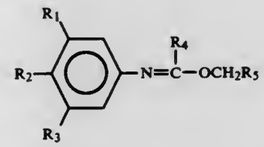
Claims priority, application Iran, Nov. 13, 1988, 27998; European Pat. Off., Nov. 15, 1988, 88310775.7

The portion of the term of this patent subsequent to Feb. 19, 2008, has been disclaimed.

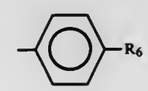
Int. Cl.[5] A61K *37/52, 31/21;* **C07D** *213/643*

U.S. Cl. 514—508 **15 Claims**

1. A compound having the formula

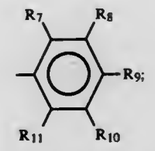


in which
R_1 is hydrogen, halogen, C_1–C_4 alkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy or C_1–C_4 haloalkylthio;
R_2 is hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkyl, C_1–C_4 haloalkoxy or C_1–C_4 haloalkylthio;
R_3 is hydrogen, halogen or C_1–C_4 haloalkyl; or
R_1 and R_2 taken together are C_1–C_4 alkyleneoxy or halo-C_1–C_3 alkyleneoxy;
provided that R_1, R_2 and R_3 are not all hydrogen;
R_4 is methyl, ethyl, n-propyl, C_3–C_7 branched alkyl, C_1–C_6 haloalkyl, C_2–C_6 alkenyl; or cyclopropyl, optionally substituted by up to 4 methyl groups or up to 2 halogens;
R_5 is:



(a)

or



(b)

R_6 is benzyl, C_3–C_4 alkenyl, or C_3 alkynyl;
R_7, R_8, R_{10} and R_{11} are each fluoro; and
R_9 is methoxymethyl, C_3–C_4 alkenyl or C_3 alkynyl.

14. A method for controlling insects comprising applying to an insect, the locus of an insect, or a locus at which insecticidal control is desired, an insecticidally effective amount of a compound according to claim 1.

VOL 1147 ISS 4 FE 23 1993 UMI

5,189,061

(2-CYANO-2-OXIMINOACETYL)-AMINO ACID DERIVATIVES

Winfried Lunkenheimer, Wuppertal; Wilhelm Brandes, Leichlingen, and Gerd Hänssler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

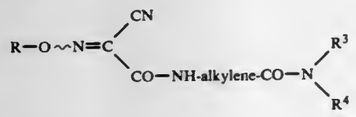
Division of Ser. No. 551,692, Jul. 10, 1990, Pat. No. 5,026,710, which is a division of Ser. No. 200,084, May 27, 1988, Pat. No. 4,963,548. This application Feb. 22, 1991, Ser. No. 673,433

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1987, 3719227

Int. Cl.[5] C07C *255/61;* **A01N** *37/34*

U.S. Cl. 514—519 **6 Claims**

1. A (2-cyano-2-oximinoacetyl)-amino derivative of the formula



(I)

in which

R represents straight-chain or branched alkyl having 1 to 4 carbon atoms;

represents straight-chain or branched cyanoalkyl having 1 to 4 carbon atoms in the alkyl part;

represents in each case straight-chain or branched alkenyl or alkinyl having 2 to 6 carbon atoms;

represents cycloalkyl or cycloalkylalkyl each of which has 3 to 6 carbon atoms per cycloalkyl part and 1 to 4 carbon atoms in the straight-chain or branched alkyl part and each of which is unsubstituted or monosubstituted to pentasubstituted by identical or different alkyl having 1 to 4 carbon atoms; or

represents benzyl or phenethyl, each of which is unsubstituted or monosubstituted to pentasubstituted on phenyl by a substituent independently selected from the group consisting of halogen, alkyl or alkoxy in each case having 1 to 4 carbon atoms, and halogenoalkyl and halogenoalkoxy in each case having 1 or 2 carbon atoms and 2 to 5 identical or different halogen atoms;

"alkylene" represents a straight-chain or branched alkylene chain having 1 to 4 carbon atoms;

R^3 represents hydrogen or alkyl having 1 to 4 carbon atoms;

R^4 represents alkyl having 1 to 4 carbon atoms, which is monosubstituted or disubstituted by a substituent independently selected from the group consisting of:

(a) alkylcarbonyl having 1 to 4 carbon atoms in the straight-chain or branched alkyl part;

(b) hydroxyl;

(c) $-S(O)_nR^{IV}$;

(d) cycloalkyl having 3 to 6 carbon atoms and which is unsubstituted or monosubstituted to pentasubstituted by identical or different C_{1-4}-alkyl; and

(e) cycloalkenyl having 5 to 7 carbon atoms and which is unsubstituted or monosubstituted to pentasubstituted by identical or different C_{1-4}-alkyl;

represents cycloalkenyl having 5 to 7 carbon atoms, which is unsubstituted or monosubstituted to pentasubstituted by identical or different C_{1-4}-alkyl; or

represents $-OR^{IV}$;

R^{IV} represents hydrogen;

represents straight-chain or branched alkyl having 1 to 6 carbon atoms; or

represents phenylalkyl, which has 1 to 4 carbon atoms in the straight-chain or branched alkyl part and which is unsubstituted or monosubstituted to pentasubstituted in the phenyl part by a substituent independently selected from the group consisting of halogen, alkyl or alkoxy each having 1 to 4 carbon atoms, and halogenoalkyl and halogenoalkoxy in each case having 1 or 2 carbon atoms and 2 to 5 identical or different halogen atoms; and

n represents 0, 1 or 2.

5,189,062

PLANT PROTECTING AGENT

András Szegö; László Pap; Lajos Nagy; Eva Somfai; György Szucsány, all of Budapest; István Székely, Dunakeszi; Anikó D. née Molnár, and Ágnes Hegedus, both of Budapest, all of Hungary, assignors to Chinoin Gyogyszer -ES Vegyeszeti Termekek Gyara R.T., Budapest, Hungary

Continuation-in-part of Ser. No. 459,773, Jan. 12, 1990, abandoned. This application Jan. 28, 1992, Ser. No. 827,514

Claims priority, application Hungary, Apr. 7, 1988, 1723/88

Int. Cl.[5] A01N *37/34, 43/08, 53/00, 57/00*

U.S. Cl. 514—521 **8 Claims**

1. An ultra-low volume plant-protecting arthropodicidal formulation, which comprises:

(a) 0.5 to 30 g/l of a pyrethroid selected from the group consisting of allethrin, bifenthrin, bioallethrin, bioresmethrin, a mixture in a ratio of 40:60 of the following isomers of cypermethrin: 1RcisS+1ScisR:1RtransS+1StransR, cyfluthrin, cyhalothrin, cypermethrin, deltamethrin, fenpropethrin, fenvalerate, flycythrinate, fluvalinate, permethrin, phenothrin, resmethrin, tetramethrin, tralomethrin, and transmix;

(b) 2 to 100 g/l of a nonylphenol polyglycol ether having an EO of 6 to 10;

(c) 2 to 300 g/l of a C_{10} to C_{15} aliphatic hydrocarbon mixture containing 45 to 50% naphthene and having a flash point of 50° to 100° C.; and

(d) balance sunflower oil to 1000 ml, wherein the initial contact angle of the formulation on the plant surface is greater than 13°; after 20 minutes, is greater than 6°; and after 120 minutes is still at least 2°.

5,189,063

PESTICIDAL SUBSTITUTED ACRYLIC ESTERS

Alexander Klausener, Krefeld; Herbert Gayer, Monheim; Wolfgang Krämer, Burscheid; Dieter Berg, Wuppertal; Wilhelm Brandes, Leichlingen; Gerd Hänssler, Leverkuseo, and Ulrike Wachendorff-Neumann, Monheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

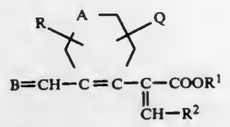
Filed Aug. 17, 1990, Ser. No. 570,099

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1989, 3928999; May 10, 1990, 4014940

Int. Cl.[5] A61K *31/22;* **C07C** *69/76, 321/24*

U.S. Cl. 514—530 **11 Claims**

1. An acrylic ester of the formula



(I)

in which

R^1 represents alkyl, or represents unsubstituted or substituted aralkyl, unsubstituted or substituted aryl are those as defined in R^8

R^2 represents dialkylamino, or represents a radical —Z—R^3,

R^3 represents alkyl, or represents unsubstituted or substituted aralkyl,

Z represents oxygen or sulphur,

A represents

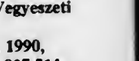


where

n represents a number from 0 to 6,

R^4 and R^5 in each case independently of one another represent alkyl, or together represent an alkylene chain having 2 to 7 carbon atoms, and

R^6 represents alkyl, or represents a radical



where

R^7 represents alkyl, alkoxy or dialkylamino,

B represents the group CH—R^8,

where

R^8 represents unsubstituted or substituted aryl and

R and Q independently of one another represent hydrogen, alkyl, halogenoalkyl or alkoxy.

5,189,064

TREATMENT OF COCAINE ADDICTION

Kenneth Blum, San Antonio, and Michael C. Trachtenberg, Houston, both of Tex., assignors to Matrix Technologies, Inc., Houston, Tex.

Continuation of Ser. No. 105,353, Oct. 7, 1987, abandoned, which is a continuation-in-part of Ser. No. 757,733, Jul. 22, 1985, Pat. No. 4,761,429. This application May 14, 1990, Ser. No. 523,300

Int. Cl.[5] A61K *31/195*

U.S. Cl. 514—561 **10 Claims**

1. A method for treating cocaine addiction which comprises administering to a subject an opiate destruction-inhibiting amount of at least one substance which inhibits the enzymatic destruction of neuropeptidyl opiates, said substance being selected from the group consisting of:

(i) hydrocinnamic acid,

(ii) D-form mono amino acids,

(iii) thiolbenzyl amino acids,

(iv) di- and tripeptides of essential amino acids in D-form

(v) enkephalin fragments,

(vi) oligopeptides or polypeptides comprising the dipeptides D-Phe D-Leu or D-Phe.D-Met

and (b) a neurotransmitter synthesis-promoting amount of at least one neurotransmitter precursor selected from the group consisting of the dopamine precursors L-Phe, L-dopa and L-Tyr, the serotonin precursors 5-hydroxytryptophan and L-Trp, and the GABA precursors, L-Gln, L-glutamic acid and L-glutamate,

the amount of said substance and said neurotransmitter precursor being chosen so that said composition is effective in reducing the subject's craving for cocaine.

5,189,065

USE OF DERIVATIVES OF 9,10-DIHYDROPHENANTHRENE FOR THE PREPARATION OF AN ANTI-TUMOR MEDICAMENT

Jorg Czech; Hans H. Sedlacek, both of Marburg, Fed. Rep. of Germany; Lucien Nedelec, Le Raincy, France; Jacques Guillaume, Paris, France, and Christian Marchandeau, Annet S/Marne, France, assignors to Roussel Uclaf, Paris, France

PCT No. PCT/FR90/00952, § 371 Date Oct. 17, 1991, § 102(e) Date Oct. 17, 1991, PCT Pub. No. WO91/09833, PCT Pub. Date Jul. 11, 1991

PCT Filed Dec. 27, 1990, Ser. No. 752,467

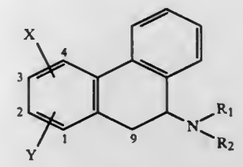
Claims priority, application France, Dec. 28, 1989, 89 17302

Int. Cl.[5] A61K *31/135*

U.S. Cl. 514—656 **4 Claims**

1. A method of treating tumors in warm-blooded animals comprising administering to warm-blooded animals an antitumorally effective amount of at least one member of the group consisting of a compound of the formula

I



wherein X and Y are individually selected from the group consisting of hydrogen, —OH and alkoxy of 1 to 4 carbon atoms, R_1 and R_2 are individually selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, alkenyl and alkynyl of 2 to 4 carbon atoms, aralkyl and acyl or taken together with the nitrogen to which they are attached from a 5- or 6- member heterocycle optionally containing a second heteroatom selected from the group consisting of nitrogen, sulfur and oxygen and their non-toxic, pharmaceutically acceptable acid addition salts.

5,189,066

PHARMACEUTICAL COMPOSITIONS OF TEBUFELONE

Gary R. Kelm, Cincinnati, and Alan E. Bruns, Okeana, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 440,178, Nov. 22, 1989, abandoned. This application Jul. 19, 1991, Ser. No. 732,951

Int. Cl.[5] A61K *31/12*

U.S. Cl. 514—678 **22 Claims**

1. A composition consisting essentially of 1-3,5-bis(1,1-dimethylethyl)-4-hydroxyphenyl-5-hexyn-1-one as a drug active at a concentration of at least about 15% of the composition, and the balance a pharmaceutically-acceptable vehicle, the composition having the following properties:

(1) being a homogeneous liquid at 37° C.,

(2) providing solubilization of the drug active at a level of at least 1 mg/mL in 0.1N HCl at 20° C., and

(3) providing solubilization of 20 mg of the drug active in 500 mL of simulated intestinal fluid in 5 minutes;

the vehicle comprising a surfactant or mixture of surfactants, the vehicle having the following properties:

(a) being a homogeneous liquid at 37° C.,

(b) having an HLB of from about 9 to about 13,

(c) forming a stable dispersion in water at 20° C. at concentrations of 10%;

whereby the absorption of the drug active from the gastrointestinal tract is substantially greater for the composition when perorally administered than for conventional solid dosage forms of the drug active.

5,189,067

SKIN TREATMENT WITH SILICONATES

Helen M. Klimisch, and Thomas H. Lane, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Apr. 11, 1991, Ser. No. 683,899

Int. Cl.[5] A61K *47/00, 31/695*

U.S. Cl. 514—772 **10 Claims**

1. A method of treating dry human skin comprising applying to skin an organosilicon compound exhibiting humectant-like characteristics, the organosilicon compound being an anionic functional siliconate having the formula

VOL 1147 ISS 4 FEB 23 1993 UMI

in which M is an alkali metal cation; R is an organic linking group; Y is an alkali metal salt of an oxyacid and Y is positioned at least two carbon atoms removed from the silicon atom; a and b are integers each having a value of from one to three.

5,189,068

PREPARATION OF INTEGRAL SKIN CELLULAR PLASTICS BY THE POLYADDITION PROCESS IN THE PRESENCE OF TERTIARY ALCOHOLS

Ralf Boehme, Ludwigshafen, and Otto Volkert, Weisenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 717,132, Jun. 18, 1991, abandoned. This application Jul. 20, 1992, Ser. No. 916,578

Claims priority, application Fed. Rep. of Germany, Jun. 23, 1990, 4020079

Int. Cl.[5] C08J *9/34*

U.S. Cl. 521—51 **9 Claims**

1. A process for the preparation of the production of integral skin moldings having a compact peripheral zone and a cellular core comprised of a polyurethane and/or polyisocyanurate polymer, comprising reacting

a) an organic polyisocyanate with

b) at least one high molecular weight compound containing at least two reactive hydrogen atoms, and

c) optionally, a low molecular weight chain extender and/or cross-linking agent, in the presence of

d) an acid free blowing agent selected from the group consisting of

di) one or more tertiary alcohols, and

dii) one or more tertiary alcohols in admixture with water, and

e) an effective amount of a urethane and/or isocyanurate promoting catalyst, in a closed mold with compaction.

5,189,069

PROCESS FOR CONTROLLING THE PARTICLE SIZE IN THE PREPARATION OF EXPANDABLE STYRENE POLYMERS BY SUSPENSION POLYMERIZATION

Hans-Dieter Speikamp, Haltern; Adolf Kühnle, and Jürgen Bretschneider, both of Marl, all of Fed. Rep. of Germany, assignors to Huels Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jul. 5, 1991, Ser. No. 726,288

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1990, 4029298

Int. Cl.[5] C08J *9/20*

U.S. Cl. 521—56 **7 Claims**

1. A process for the preparation of expandable styrene polymer comprising polymerizing styrene and optionally polymerizable comonomers in a stirred aqueous suspension in the presence of a water-soluble free radical initiator and dispersant to the extent that at least 70%, based on the total monomer, of the monomers are polymerized in the aqueous suspension initially to a conversion of at least 70% by weight; and then

adding the remaining monomer, initiator and optional copolymerizable monomer and additives to the polymerization medium over one to three hours;

wherein the metering rate of monomer is chosen so that the remaining monomer content is always less than or equal to 30% by weight.

5,189,070

PROCESS FOR PREPARING LOW DENSITY POROUS CROSSLINKED POLYMERIC MATERIALS

Thomas F. Brownscombe; William P. Gergen; Ronald M. Bass; Maryanne Mores, and Pui K. Wong, all of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 29, 1992, Ser. No. 891,322

Int. Cl.[5] C08J *9/28*

U.S. Cl. 521—64 **29 Claims**

1. A process for the preparation of a porous crosslinked polymeric material comprising the steps of:

(a) providing a water-in-oil high internal phase emulsion comprising i) a mixture of polymerizable monomers comprising at least one vinyl monomer and from about 2 to about 70 weight percent, based on the mixture, of a difunctional unsaturated crosslinking monomer, ii) at least 90 weight percent, based on the emulsion, of water as the internal phase iii) an effective amount of a surfactant to form a water-in-oil high internal phase emulsion, and iv) an effective amount of a polymerization catalyst to cure the polymerizable monomers;

(b) subjecting the water-in-oil high internal phase emulsion to a temperature within the range of about room temperature to less than about 65° C. for a time effective to form a gel having a rheometrics dynamic shear modulus of at least about 500 pascal; and

(c) heating the gel at a temperature of at least about 70° C. for a time effective to cure the monomers.

5,189,071

POLYMERIC COMPOSITION COMPRISING TRANSIENT FOAM CONTROL AGENT

Timothy W. Rhoads, Dalton, Ga.; Kyung W. Suh, Granville, Ohio; Takao Kadota, Utsunomiya, Japan, and William G. Stobby, Johnstown, Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 866,087, Apr. 6, 1992. This application Aug. 3, 1992, Ser. No. 923,758

Int. Cl.[5] C08J *9/08, 9/10, 9/14*

U.S. Cl. 521—79 **8 Claims**

1. A process for preparing a polymeric foam, comprising: (a) blending and melting at least 50 percent by weight of an alkenyl aromatic polymer based upon the weight of the polymeric foam, a blowing agent, and from about 0.05 to about 15 weight percent of a transient foam control agent to form a flowable mixture; and (b) conveying the flowable mixture through a die to a zone of lower pressure to form the foam;

the transient foam control agent being compatible with the alkenyl aromatic polymer in the melt phase, acting to reduce the melt viscosity of the polymer melt, and being nonmiscible with the solid polymer and substantially nondetrimental to the physical properties thereof; the transient foam control agent being selected from the group consisting of $C_{2\text{-}30}$ aliphatic and aromatic carboxylic and polycarboxylic acids and ester and amide derivatives thereof; $C_{2\text{-}30}$ aromatic and aliphatic sulfones and amide derivatives thereof, $C_{5\text{-}30}$ aliphatic and aromatic polyhydroxy compounds; $C_{2\text{-}30}$ aliphatic and aromatic carbamates and carbamate esters, inertly-substituted derivatives of the foregoing; and mixtures of the foregoing transient foam control agents.

5,189,072

POLYMERIC COMPOSITION COMPRISING TRANSIENT FOAM CONTROL AGENT

Timothy W. Rhoads, Granville, Ohio; Takao Kadota, Utsunomiya, Japan; Kyung W. Suh, Grenville, and William G. Stobby, Johnstown, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 505,639, Apr. 6, 1990, abandoned. This application Apr. 6, 1992, Ser. No. 866,087

Int. Cl.[5] C08J *9/08, 9/10, 9/14*

U.S. Cl. 521—88 **13 Claims**

1. An extruded polymeric foam comprising at least 50 percent by weight of an alkenyl aromatic polymer together with a blowing agent and from about 0.05 to about 15 percent of a transient foam control agent which is compatible with the alkenyl aromatic polymer in the melt phase and acts to reduce the melt viscosity of the polymer melt but is nonmiscible with the solid polymer and substantially nondetrimental to the physical properties thereof, the transient foam control agent being selected from the group consisting of $C_{2\text{-}30}$ aliphatic and aromatic carboxylic and polycarboxylic acids; $C_{2\text{-}30}$ aromatic and aliphatic sulfones and amide derivatives thereof, $C_{5\text{-}30}$ aliphatic and aromatic polyhydroxy compounds; $C_{2\text{-}30}$ aliphatic and aromatic carbamates and carbamate esters, inertly-substituted derivatives of the foregoing; and mixtures thereof.

5,189,073

PROCESS FOR THE PRODUCTION OF EXPANDED MATERIALS BASED ON POLYUREA ELASTOMERS

Heiko Humbert, Hamburg; Werner Klockemann, Buchholz, both of Fed. Rep. of Germany, and Dudley J. Primeaux, II, Elgin, Tex., assignors to Texaco Chemical Co., White Plains, N.Y.

Filed Mar. 19, 1992, Ser. No. 855,357

Claims priority, application European Pat. Off., Mar. 19, 1991, 91104262.0

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—110 **21 Claims**

1. A process for the production of expanded polyurea elastomers comprising reacting:

a) an aliphatic polyetheramine having primary amino functions and essentially no free hydroxyl groups;

b) carbon dioxide in the form of carbamate, obtained by reacting carbon dioxide with a portion of the aliphatic polyetheramines;

c) a polyisocyanate;

d) water; and

e) a catalyst having a tertiary amino group;

in the presence of

f) an inert, halogen-free blowing agent.

5,189,074

TERTIARY ETHERS AS BLOWING AGENTS FOR POLYURETHANE FOAMS

H. Dean Moore, Jr., Downingtown, Pa., assignor to ARCO Chemical Technology, L.P., Wilmington, Del.

Filed Dec. 17, 1991, Ser. No. 809,692

Int. Cl.[5] C08J *9/14*

U.S. Cl. 521—114 **14 Claims**

1. A process for producing a polyurethane foam, said process comprising reacting a polyol, a polyisocyanate, and water in the presence of a surfactant, a catalyst, and a blowing agent, wherein said blowing agent is a tertiary aliphatic ether.

5,189,075

POLYUREA ELASTOMERS MADE USING POLYOXYALKYLENE TETRA-OR HIGHER FUNCTIONAL AMINE CHAIN EXTENDERS

Robert L. Zimmerman, Austin, and Dudley J. Primeaux, Elgin, both of Tex., assignors to Texaco Chemical Co., White Plains, N.Y.

Filed Feb. 21, 1992, Ser. No. 838,990

Int. Cl.[5] C08G *18/14*

U.S. Cl. 521—159 **15 Claims**

1. Polyurea elastomer which is the product of:

(A) polyisocyanate, reacted with;

(B) di- and/or tri-functional polyoxyalkylene polyamine and low molecular weight, polyoxyalkylene polyamine chain extender having at least four functional groups including two or more amino groups.

5,189,076

POLYPHENYLENE ETHER RESINS AND COMPOSITIONS HAVING REDUCED ODOR AND METHOD OF REDUCING ODOR IN SAME

Richard C. Bopp, West Coxsackie, N.Y., assignor to General Electric Company, Pittsfield, Mass.

Division of Ser. No. 206,174, Jun. 13, 1988, Pat. No. 5,017,656. This application Dec. 7, 1990, Ser. No. 624,170

Int. Cl.[5] C08G *65/44;* **C08L** *71/12*

U.S. Cl. 521—180 **8 Claims**

1. A foamed thermoplastic composition comprising:

a) a polyphenylene ether resin in combination with a polystrene resin; and b) at least one dicarboxylic acid having the general formula HOOC—X-13 COOH, wherein X is a sigma bond or is a difunctional radical selected from straight or branched alkyl radicals, straight or branched alkenyl radicals, aryl radicals, or substituted radicals of any of the foregoing; wherein the component (b) is presented in an amount effective to reduce the odor of the component (a).

5,189,077

REINFORCING GLASS IONOMER DENTAL FILLING MATERIAL WITH TITANIUM STAINLESS STEEL, OR METALS THEREOF

Ronald E. Kerby, Columbus, Ohio, assignor to The Ohio State University, Columbus, Ohio

Division of Ser. No. 824,085, Mar. 16, 1989, Pat. No. 5,084,491. This application Jul. 29, 1991, Ser. No. 737,183

The portion of the term of this patent subsequent to Jan. 28, 2009, has been disclaimed.

Int. Cl.[5] C08L *7/00*

U.S. Cl. 523—116 **16 Claims**

1. A dental filling material comprising a polymeric binder, glass filler, and a powdered filler comprising a sintered or non-sintered base metal selected from the group consisting of chromium, iron, nickel, tin, titanium, manganese, indium, molybdenum, silicon, and mixtures thereof.

5,189,078

MICROWAVE RADIATION ABSORBING ADHESIVE

Eric J. Johnson, Woodbury; Charles E. Boyer, III, Oakdale; Edmond J. Nielsen, Lake Elmo, and Chris A. Minick, Stillwater, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 18, 1989, Ser. No. 423,220

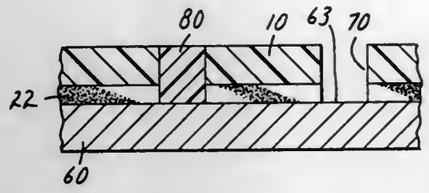
Int. Cl.[5] G21K *1/10*

U.S. Cl. 523—137 **2 Claims**

1. A non-conductive microwave radiation absorbing adhesive comprising dissipative particles dispersed in a polymeric dielectric material chosen from the group consisting of thermosetting adhesives and thermoplastic adhesives, in which the

VOL 1147 ISS 4 FE 23 1993 UMI

dissipative particles are acicular magnetic metallic filaments having an average length of about 10 microns or less, diameters



of about 0.1 micron or more, and aspect ratios between 50:1 and 10:1.

5,189,079

LOW FREE FORMALDEHYDE PHENOLIC POLYOL FORMULATION

Michael M. Geoffrey, Oak Park, and Robert A. Laitar, Woodridge, both of Ill., assignors to Acme Resin Corp., Westchester, Ill.

Filed Jun. 12, 1991, Ser. No. 714,267
Int. Cl.[5] C08G *8/36*
U.S. Cl. 523—142 **9 Claims**

1. A binder composition comprising a mixture of a phenolic resin component, an isocyanate component selected from diisocyanates and polyisocyanates and sufficient catalyst to cause substantially complete reaction between the phenolic resin component and the isocyanate component, wherein the phenolic resin component is a phenolic resole resin wherein the preponderance of the bridges joining the phenolic nuclei are ortho-ortho benzylic ether bridges and which has covalently bound into the resin an aliphatic hydroxy compound which contains two or more hydroxy groups per molecule and has a hydroxyl number of from about 200 to about 1850, the molar ratio of the hydroxy compound to the phenol being from about 0.001:1 to about 0.03:1.

5,189,080

EPOXY RESIN COMPOSITION FOR ENCAPSULATING ELECTRIC CIRCUIT COMPONENTS

Klaus Heyke, Reutlingen-Ohmenhausen; Richard Spitz, Reutlingen; Hans-Joachim Seidel, Waiblingen-Neustadt; Irene Jennrich, Winnenden Birkmannsweiler; Werner Pfander, Fellbach, and Armin Vohr, Reutlingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 514,421, Apr. 25, 1990, abandoned.
This application Jan. 31, 1992, Ser. No. 830,503
Claims priority, application Fed. Rep. of Germany, Apr. 25, 1989, 3913488
Int. Cl.[5] C08K *9/06*
U.S. Cl. 523—212 **9 Claims**

1. An encapsulating material for electrical and electronic components comprising an epoxy-base resin selected from the group consisting of cycloaliphatic epoxide resins, polyfunctional epoxy-novolac resin and mixtures of a cycloaliphatic epoxide resin and a polyfunctional epoxy-novolac resin, and further consisting essentially, for every 100 parts by weight of said epoxy-base resin, of:

90 to 120 parts by weight of methylnadic anhydride, as a hardener;

0.2 to 2 parts by weight of an imidazole-based accelerator;

55 to 70 parts by weight of an amorphous SiO_2-base filler;

0 to 2 parts by weight of pigment; and

0 to 0.5 parts by weight of a hollow glass spherical particles, as a supplementary filler.

5,189,081

PENETRABLE, EPOXY RESIN COMPOSITION COMPRISING GLYCIDYL ETHER OF BISPHENOL MODIFIED WITH GLYCOL OR URETHANE, AND INORGANIC FILLER

Ichiro Akutagawa, Nagareyama; Tsutomu Yamaguchi, Saitama, and Kunimitsu Matsuzaki, Yono, all of Japan, assignors to Somar Corporation, Japan

Division of Ser. No. 375,625, Jul. 5, 1989, Pat. No. 5,077,325.
This application Jul. 2, 1991, Ser. No. 724,776
Claims priority, application Japan, Jul. 4, 1988, 63-166234
Int. Cl.[5] C08K *3/00*; C09J *163/02, 163/04*; H01F *3/14*
U.S. Cl. 523—428 **1 Claim**

1. A method of fixing a ferrite magnet to a desired location of the surface of a motor yoke, comprising the steps of:

providing an epoxy resin composition comprising:

a liquid, epoxy resin mixture containing (1) a glycidyl ether of a bisphenol having an epoxy equivalent of 158–270 and (2) a glycidyl ether of a bisphenol modified with a glycol or an urethane;

a curing agent capable of reacting with said epoxy resin mixture when heated to a curing temperature;

an inert organic solvent which does not react with said epoxy resin mixture, which is capable of dissolving said curing agent and which has a boiling point lower than said curing temperature; and

an inorganic filler having an average particle size of 0.1–5 μm, said composition having a viscosity of 50–10,000 cP at 25° C.;

magnetically bonding the ferrite magnet to the motor yoke at the desired location, at least one of the magnet and the yoke being so shaped that a gap of 0.02–1 mm is defined therebetween;

positioning the resulting assembly to maintain said gap in a vertical or slanted position;

applying a quantity of the epoxy resin composition on an upper portion of said gap; and

heating the assembly at the curing temperature, so that the epoxy resin composition penetrates into said gap and is cured within said gap with the simultaneous evaporation of the organic solvent.

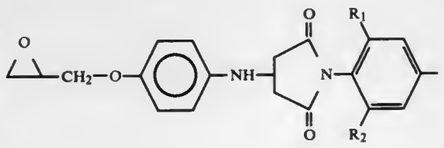
5,189,082

IMIDE EPOXY RESINS FOR SEALING SEMICONDUCTOR ELEMENTS

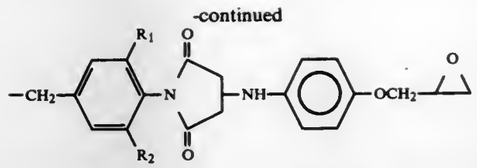
Whan G. Kim, Seoul, and Tai Y. Nam, Kyungki-do, both of Rep. of Korea, assignors to Cheil Industries, Inc., Taegu-si, Rep. of Korea

Filed Dec. 6, 1991, Ser. No. 803,041
Claims priority, application Rep. of Korea, Sep. 26, 1991, 91-16824
Int. Cl.[5] C08G *59/26, 59/32, 73/06, 73/10*
U.S. Cl. 523—443 **14 Claims**

1. An epoxy resin composition for sealing semiconductor elements comprising cresol-novolak epoxy resins, curing agents, curing promoters and inorganic fillers, including imide-epoxy resins represented by the general formula:



-continued



wherein, R_1 and R_2 represent H or a $-(CH_2)_n-CH_3$ group and n=0 or 1.

5,189,083

ASPHALT ACRYLIC MONOMER-CONTAINING BLOCK POLYMER COMPOSITION

Richard Gelles, Sugarland, and Donn A. DuBois, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 18, 1992, Ser. No. 853,564
Int. Cl.[5] C08L *95/00*
U.S. Cl. 524—68 **18 Claims**

1. A bituminous composition comprising a bituminous component and a polymer comprising at least one conjugated diolefin block and at least one alkyl methacrylate block wherein the alkyl group has up to 14 carbon atoms.

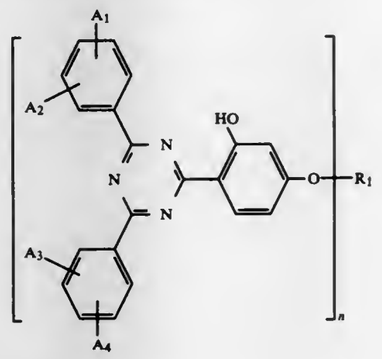
5,189,084

PROCESS FOR INCORPORATING O-HYDROXYPHENYL-S-TRIAZINES IN ORGANIC POLYMERS

Jean-Luc Birbaum, Fribourg; Jean Rody, Riehen; Mario Slongo, Tafers, all of Switzerland, and Andreas Valet, Eimeldingen, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 628,274, Dec. 14, 1990, abandoned.
This application Feb. 26, 1992, Ser. No. 841,907
Claims priority, application Switzerland, Dec. 21, 1989, 4581/89
Int. Cl.[5] C08K *5/34*; C08C *19/22*; C08G *12/30*
U.S. Cl. 524—100 **25 Claims**

1. A process for incorporating an o-hydroxyphenyl-s-triazine in an organic polymer, which process comprises incorporating a compound of formula I



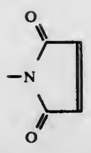
I

wherein

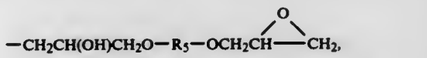
n is 1 or 2,

A_1, A_2, A_3 and A_4 are each independently of one another hydrogen, C_1–C_{12}alkyl, cyclohexyl or halogen,

R_1, when n is 1, is hydrogen, C_1–C_{18}alkyl which is substituted by OH, —COOH, —$COOR_2$, —NHR_3, —$CONHR_4$,



and/or —O—CO—R_4, C_4–C_{20} alkyl which is substituted by OH and interrupted by one or more oxygen atoms, C_2–C_4alkyl which is substituted by OH and C_1–C_{12}alkoxy or phenoxy, cyclohexyl which is substituted by OH or —$OCOR_4$, or is C_2–C_6alkenyl, glycidyl or a group selected from



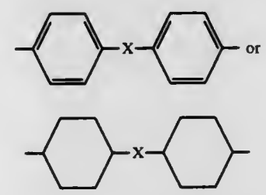
—CO—R_6—COOH or —CO—NH—R_7—NCO, and, when n is 2, is a group selected from —$CH_2CH(OH)CH_2$—, —CO—CH=CH—CO—, —$CH_2CH(OH)CH_2O-R_5-OCH_2CH(OH)CH_2$— or —$CH_2CH(R_8)O$—CO—CH=CH—CO—$OCH(R_8)CH_2$—,

R_2 is C_1–C_4alkyl, glycidyl or C_3–C_5alkenyl,

R_3 is hydrogen, C_1–C_{12}alkyl, C_3–C_5alkenyl or cyclohexyl,

R_4 is C_2–C_6alkenyl or C_2–C_6hydroxyalkyl,

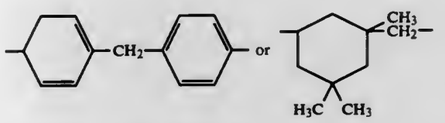
R_5 is C_2–C_{10}alkylene, phenylene or a group



wherein X is —O—, —S—, —SO_2, —CH_2— or —$C(CH_3)_2$—, or R_5 is a group —CO—R_9—CO—,

R_6 is C_2–C_{14}alkylene, —CH=CH— or o-phenylene,

R_7 is C_2–C_{10}alkylene, phenylene, tolylene or a group of formula



R_8 is hydrogen or methyl, and

R_9 is C_2–C_{10}alkylene, —CH=CH— or phenylene,

either during the synthesis of the polymer by copolymerisation, copolycondensation or copolyaddition, or by reaction with a polymer which contains suitable functional groups.

5,189,085

FLAMEPROOF PLASTICS CONTAINING UREA CYANURATE

Heinrich Horacek, Linz, Austria, assignor to Chemie Linz Gesellschaft m.b.H., Linz, Austria

Filed Oct. 4, 1991, Ser. No. 771,200
Claims priority, application Austria, Oct. 15, 1990, 2069/90
Int. Cl.[5] C08J *5/10*; C08K *5/34*; C08L *35/04*
U.S. Cl. 524—101 **8 Claims**

1. A flameproof plastic which contains urea cyanurate as flame retardant.

5,189,086

POLYSUBSTITUTED N-HYDROCARBYLOXY HINDERED AMINE LIGHT STABILIZERS

James P. Galbo, Hartsdale, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 479,879, Feb. 14, 1990, Pat. No. 5,021,597, which is a continuation-in-part of Ser. No. 326,704, Mar. 21, 1989, abandoned. This application Mar. 26, 1991, Ser. No. 675,215

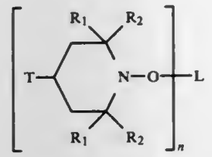
Int. Cl.[5] C08K *5/34*

U.S. Cl. 524—103 **17 Claims**

1. A composition stabilized against the deleterious effects of actinic light which comprises

(a) an organic polymer, and

(b) an effective stabilizing amount of a polysubstituted N-hydrocarbyloxy compound of the formula



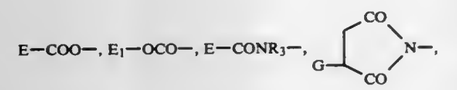
where

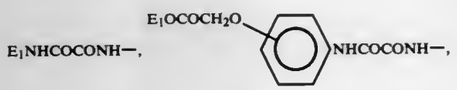
n is 2 to 10,

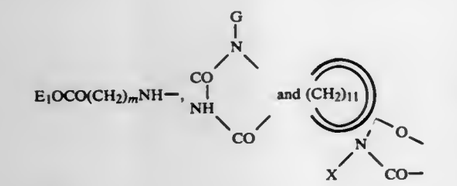
R_1 and R_2 are independently alkyl of 1 to 4 carbon atoms, or R_1 and R_2 together are pentamethylene,

L is an n-valent radical of an alkane or alkene of 1 to 18 carbon atoms, an n-valent radical of a cycloalkane or cycloalkene of 5 to 12 carbon atoms, an n-valent radical of a bicyclic or tricyclic hydrocarbon of 7 to 12 carbon atoms or an n-valent radical of an aryl, alkyl substituted aryl or aralkyl hydrocarbon of 6 to 15 carbon atoms, with the proviso that the N-O groups are not necessarily attached to the same carbon atom in L,

T is an organic moiety selected from the group consisting of





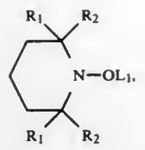


where

E is phenyl, vinyl or alkyl of 1 to 17 carbon atoms,

E_1 is methyl or ethyl,

R_3 is hydrogen, alkyl of 1 to 8 carbon atoms or



where

L_1 is a monovalent radical of the definition of L,

m is 2 to 4, p is 0 to 10,

G is hydrogen or alkyl of 1 to 18 carbon atoms, and

X is hydrogen or $—CH_2CH_2COOC_{12}H_{25}$.

5,189,087

PLASTIC MATERIALS FOR THE PRODUCTION OF DEEP-DRAWN FILMS

Artur Wildenau, Isernhagen, Fed. Rep. of Germany, assignor to J. H. Benecke GmbH, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 41,850, Apr. 23, 1987, Pat. No. 4,778,841, which is a continuation-in-part of Ser. No. 861,154, May 8, 1986, abandoned. This application Jul. 12, 1988, Ser. No. 218,574

Claims priority, application Fed. Rep. of Germany, May 8, 1985, 3516519.7

The portion of the term of this patent subsequent to Feb. 23, 2007, has been disclaimed.

Int. Cl.[5] C08K *5/01;* **C08J** *5/18;* **C08L** *23/02, 53/02*

U.S. Cl. 524—151 **6 Claims**

1. A plastic composition for the production of deep-drawn films characterized by improved resistance to aging consisting essentially of:

a) 55–65 parts by weight of PVC;

b) 50–60 parts by weight of acrylate rubber;

c) 1–10 parts by weight of polystyrene/polyethylene-butylene block copolymer;

d) 5–10 parts by weight of a plasticizer; and

e) 4–5 parts by weight of a processing agent.

5,189,088

BIS(PHENOLIC-AMINE)QUINONE COMPOUNDS AND POLYOLEFIN COMPOSITIONS STABILIZED THEREWITH

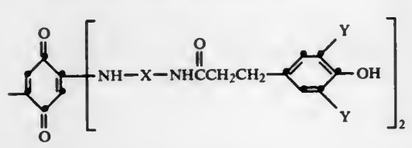
Richard H. S. Wang; Ping P. Shang, and Daniel A. Jervis, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 30, 1992, Ser. No. 860,795

Int. Cl.[5] C08K *5/20;* **C07C** *229/00*

U.S. Cl. 524—222 **8 Claims**

1. A compound having the formula:



(I)

wherein

X is alkylene or cycloalkylene; and

Y is a tertiary hydrocarbyl group having the formula



wherein Z is alkyl or aryl.

5,189,089

RESINOUS BINDERS HAVING IMPROVED DILUTION

Samuel D. Hollis, Savannah, Ga., and Thomas Y. J. Shiah, Yorktown Heights, N.Y., assignors to Union Camp Corporation, Wayne, N.J.

Filed Aug. 31, 1990, Ser. No. 577,235

Int. Cl.[5] C08J *3/02;* **C08L** *23/00;* **C09D** *11/00, 11/08*

U.S. Cl. 524—272 **29 Claims**

1. A resinous binder for use in a gravure printing ink composition containing a colorant, a solvent and a binder system, said resinous binder having known solids content and comprising:

(a) a metal rosin resinate,

(b) a poly (ethylene-vinyl acetate) type polymer having a weight average molecular weight of at least 50,000, and optionally

(c) a solvent; wherein:

said metal rosin resinate constitutes a major proportion of said solids;

said poly(ethylene-vinyl acetate) type polymer constitutes a minor proportion of said solids; and

said poly(ethylene-vinyl acetate) type polymer is present in the resinous binder in an amount which is effective to increase the dilution of the resinous binder as compared to the dilution of the metal rosin resinate alone.

5,189,090

HYDROXYACRYLIC MODIFIED GRINDING RESINS FOR WATER-BASED COATINGS

G. Frederick Hutter, Charleston, and Paul J. Zuraw, Mt. Pleasant, both of S.C., assignors to Westvaco Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 796,651, Nov. 22, 1991. This application Aug. 3, 1992, Ser. No. 923,543

Int. Cl.[5] C08J *3/20;* **C08L** *33/14;* **C09D** *11/08*

U.S. Cl. 524—272 **13 Claims**

1. A process for the production of grinding resins for water-based inks which comprises reacting in a fusion esterification reaction:

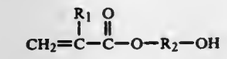
(a) 70 to 96% by weight of a member selected from the group consisting of fumarated rosin, maleated rosin, and combinations thereof;

(b) 2 to 18% by weight of a polyol; and

(c) 2 to 20% by weight of a hydroxyacrylic resin comprising the free radical addition polymerization reaction product of:

(1) 50.0–89.5 parts by weight of a member selected from the group consisting of styrene, alkyl acrylate, cycloalkyl acrylate, methacrylate, and combinations thereof, where the alkyl or cycloalkyl group contains 1–18 carbon atoms,

(2) 10.0–50.0 parts by weight of a hydroxy-containing monomer, or combination of monomers, having the chemical structure:



where R_1 is a hydrogen or methyl group and R_2 is a C_2–C_4 alkylene,

(3) 0.5–12.0 parts by weight of a peroxide or azo catalytic initiator, and

(4) up to 10.0 parts by weight of a mercaptan-containing chain transfer agent.

5,189,091

POLYCARBONATE/AROMATIC POLYESTER BLENDS MODIFIED WITH A GRAFTED OLEFIN COPOLYMER

Michael K. Laughner, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 347,838, May 4, 1989, abandoned. This application Nov. 26, 1990, Ser. No. 617,829

The portion of the term of this patent subsequent to May 29, 2007, has been disclaimed.

Int. Cl.[5] C08L *69/00, 67/02*

U.S. Cl. 524—445 **24 Claims**

1. A composition of matter comprising, in admixture, an aromatic polycarbonate, an aromatic polyester and a grafted olefin/carbon monoxide copolymer.

5,189,092

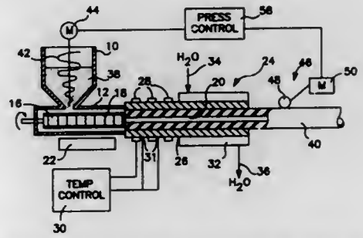
METHOD AND APPARATUS FOR THE CONTINUOUS EXTRUSION OF SOLID ARTICLES

Evan E. Koslow, Weston, Conn., assignor to Koslow Technologies Corporation, Bridgeport, Conn.

Filed Apr. 8, 1991, Ser. No. 682,182

Int. Cl.[5] C08J *5/10;* **C08K** *3/04;* **C08L** *77/10*

U.S. Cl. 524—495 **12 Claims**



1. A method of extruding a solid composite material which comprises:

providing a quantity of first particles of a binder material, said first particles having diameters between about 0.1 and about 250 micrometers;

providing a quantity of second particles of a primary material having a softening temperature substantially greater than the softening temperature of said binder material, said second particles having diameters between about 0.1 and about 3,000 micrometers;

combining the first and second quantities of particles in a substantially uniform mixture wherein said binder material is present in a amount of at least about 3% by weight of the mixture;

extruding said substantially uniform mixture from an extruder barrel into a die of substantially uniform cross-section which cross-section is not substantially smaller than the cross-section of the inside diameter of the extruder barrel;

heating said substantially uniform mixture within said die to a temperature substantially above the softening temperature of said binder material but to a temperature less than the softening temperature of said primary material;

applying sufficient back pressure, from without said die, to the heated mixture within said die to convert said heated mixture into a substantially homogeneous composite material;

rapidly cooling said composite material to below the softening point of the binder material to produce the composite material; and

extruding said composite material from said die as an extruded solid composite material product.

VOL 1147 ISS 4 FEB 23 1993 UMI

5,189,093

BATCHING PROCESS FOR TREATMENT OF CARBON FIBERS

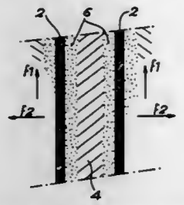
Daniel Beziers, St Medard en Jalles; Bernard Boutevin, Montpellier; Jean-Pierre Parisi, Montpellier; Yannig Thomas, Montpellier, and Evelyne Chataignier, Merignac, all of France, assignors to Aerospatiale Societe Nationale Industrielle, France

Division of Ser. No. 516,106, Apr. 27, 1990, abandoned. This application Jul. 15, 1991, Ser. No. 729,923

Claims priority, application France, Apr. 27, 1989, 89 05598

Int. Cl.[5] C08J *5/06;* **C08K** *3/04;* **C08L** *33/00*

U.S. Cl. 524—847 **6 Claims**



1. A batching process for treatment of carbon fibers having OH reaction sites which are embedded in a resin hardenable by radiation according to a radical mechanism, said process comprising the steps in sequence of:

(a) dissolving in an organic solvent a reacting batching product comprising a monomer having at least one first functional group able to thermally form covalent chemical bonds with the OH reaction sites and at least one second functional group differing from the first group and able to form covalent chemical bonds with said resin during its hardening under said radiation, the first group being selected from the group consisting of an isocyanate, a carboxylic acid anhydride, a methylol and a carboxylic acid chloride group;

(b) depositing on the fibers the solution obtained in step (a); and

(c) heating the fibers obtained in step (b) at a temperature higher than ambient temperature and sufficient (i) to evaporate the solvent and (ii) trigger a chemical reaction between the first functional group of the monomer and each OH reaction site of the carbon fibers.

5,189,094

PROCESS FOR PRODUCING THERMOSET RESIN

Hiroyuki Umetani; Hiroo Inata; Shunichi Matsumura, and Hiroshi Mera, all of Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation of Ser. No. 333,256, Apr. 5, 1989, abandoned. This application Apr. 1, 1991, Ser. No. 680,005

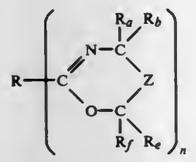
Claims priority, application Japan, Apr. 6, 1988, 63-82878; Apr. 6, 1988, 63-82879

Int. Cl.[5] C08L *67/06, 63/02, 63/04, 61/10*

U.S. Cl. 525—27 **19 Claims**

1. A process for producing a thermoset resin, which comprises reacting

(A) a poly(cyclic iminoether) represented by the following formula (I)



(I)

wherein n is an integer of 2 to 4, R represents a hydrocarbon group having a valence of n which may be interrupted or substituted by an atom other than carbon or a group containing an atom other than carbon, Z represents a direct bond or a group of the formula



and R_a, R_b, R_c, R_d, R_e and R_f are identical or different, and each represents a hydrogen atom, or a methyl, ethyl, propyl, phenyl, tolyl or benzyl group; with the proviso that when n is 2, R may also represent a direct bond,

(B) an ethylenically unsaturated polyester compound having an ethylenically unsaturated bond and a carboxyl or hydroxyl functional group reactive with the cyclic iminoether group of the poly(cyclic iminoether), and

(C) 10 to 400 parts by weight, per 100 parts by weight of the compounds (A) and (B) combined, of an ethylenically unsaturated monomer having an ethylenically unsaturated bond but no functional group reactive with the cyclic iminoether group of the poly(cyclic iminoether),

in the presence of an acid catalyst and a radical catalyst.

5,189,095

HIGH-IMPACT POLYSTYRENE

Richard A. Hall, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Filed Dec. 16, 1991, Ser. No. 808,099

Int. Cl.[5] C08G *63/91, 51/04, 51/08, 55/02*

U.S. Cl. 525—53 **13 Claims**

1. A process for making a high-impact polystyrene, comprising:

(a) introducing into a first reactor a first styrene monomer charge and a rubber polymer and prepolymerizing therein a sufficient amount of the first styrene monomer charge to form a first polystyrene, and contacting therein the resulting first polystyrene and rubber polymer such that a polystyrene-rubber graft copolymer is formed;

(b) introducing into a second reactor a second styrene monomer charge and polymerizing therein from about 20 to about 60 weight percent of the second styrene monomer charge to form a second polystyrene in admixture with the remaining unreacted second styrene monomer charge;

(c) phase inverting the polystyrene-rubber graft copolymer by combining the effluents from the first reactor and the second reactor in a quiescent reaction zone; and

(d) completing the polymerization of the remaining unreacted first and second styrene monomer charges in a polymerization reactor to form high-impact polystyrene.

5,189,096

MOISTURE-CURABLE HOT-MELT ADHESIVE COMPOSITIONS

Jacques Boutillier, Rilly la Montagne, and Yves Lermat, Serquigny, both of France, assignors to Atochem, Puteaux, France

Filed Jan. 19, 1990, Ser. No. 467,260

Claims priority, application France, Jan. 19, 1989, 89 00602

Int. Cl.[5] C08F *16/06*

U.S. Cl. 525—56 **12 Claims**

1. A crosslinkable hot-melt adhesive composition of matter, comprising the prepolymerizate of an hydroxylated ethylene/-vinyl acetate copolymer with a stoichi-ometric excess of a polyisocyanate, said prepolymerizate containing an effective crosslinkable amount of free isocyanate functional groups.

5,189,097

POLYMERIC BLENDS

Edward E. LaFleur, Warminster; Robert M. Amici, Doylestown, and William J. Work, Huntington Valley, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

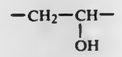
Continuation-in-part of Ser. No. 623,864, Dec. 7, 1990. This application Oct. 22, 1991, Ser. No. 781,715

Int. Cl.[5] C08G *63/48;* **C08F** *8/00*

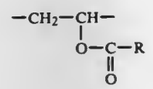
U.S. Cl. 525—57 **20 Claims**

1. A polymeric blend consisting of:

a. from about 50 to about 90 parts of a first polymer containing at least about 95 mol percent of units of the structure



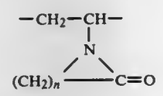
and less than about 5 mol percent of units of the structure



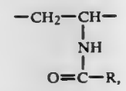
or

wherein R is H or $—(CH_2)_m—CH_3$ and m is 0–7,

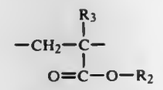
b. from about 10 to about 50 parts of a second polymer containing from about 25 to about 95 weight percent of units of the structure



or



wherein n is 3, 4, or 5, and from about 5 to about 75 weight percent of units of the structure



where R_2 is $CH_1—C_4$ alkyl, and R_3 is H or CH_3, and wherein the blend is melt-processable.

5,189,098

RUBBER MODIFIED REACTION MOLDABLE NYLON-6 COMPOSITIONS

Kishore Udipi, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 225,111, Jul. 27, 1988, Pat. No. 4,994,524, which is a continuation-in-part of Ser. No. 808,781, Dec. 12, 1985, abandoned, which is a continuation-in-part of Ser. No. 808,792, Dec. 12, 1985, abandoned. This application Oct. 1, 1990, Ser. No. 590,725

Int. Cl.[5] C08L *77/00*

U.S. Cl. 525—66 **6 Claims**

1. A colloidal dispersion of a core-shell polymer in caprolactam prepared by adding an aqueous dispersion of a core-shell polymer to liquid caprolactam wherein the core-shell polymer comprises a crosslinked elastomer core having a weight average particle diameter in the range of about 0.1 to about 0.8 microns and a thermoplastic polymer shell having a glass transition temperature of at least 35° C. and comprising at least 10 weight percent of a polar monomer selected from the group consisting of C_1–C_8 alkyl acrylates, C_1–C_8 alkyl methacrylates, vinyl esters, acrylonitrile, methacrylonitrile, acrylamide, methacrylamide, vinyl pyrrolidone, vinyl urea and vinyl N-vinylimides, wherein said dispersion is stable in storage for at least two weeks, and wherein said dispersion can be formulated with sufficient amounts of caprolactam polymerization initiator and/or caprolactam polymerization catalyst to provide substantially complete polymerization of the caprolactam in at least about 15 minutes at a reaction temperature in the range of about 130 ° C. to about 180° C. to provide a rubber-modified nylon-6 having a notched Izod impact strength of at least 53 Joules/meter.

5,189,099

THERMOPLASTIC MOLDING MATERIALS BASED ON POLYESTERS AND POLYPHENYLENE ETHERS

Baerbel Arnold-Mauer, Kallstadt; Klaus Bronstert, Carlsberg, and Ehrenfried Baumgartner, Roedersheim-Gronau, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 14, 1991, Ser. No. 699,527

Claims priority, application Fed. Rep. of Germany, May 15, 1990, 4015533

Int. Cl.[5] C08L *71/12, 67/03*

U.S. Cl. 525—68 **7 Claims**

1. A thermoplastic molding material containing

A) from 5 to 94.9% by weight of a polyester,

B) from 5 to 94.9% by weight of a polyphenylene ether,

C) from 0.1 to 50% by weight of a homopolymer or copolymer carrying primary or secondary amino groups at the chain ends prepared by anionically polymerizing a vinylaromatic compound or a diene or a mixture thereof, and reacting the resulting living anionic polymer chain with an aziridine or diaziridine and subsequently with a nucleophilic compound,

D) from 0 to 40% by weight of an impact-modifying rubber,

E) from 0 to 60% by weight of conventional additives and processing assistants.

5,189,100

POLYMER BLENDS

Jens-Dieter Fischer, Bickenbach; Thomas Rhein, Stadecken-Elsheim, and Manfred Stickler, Seeheim-Jugenheim, all of Fed. Rep. of Germany, assignors to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

Filed Apr. 30, 1991, Ser. No. 693,535

Claims priority, application Fed. Rep. of Germany, May 18, 1990, 4016011

Int. Cl.[5] C08L *33/10, 25/12;* **B32B** *27/30*

U.S. Cl. 525—74 **3 Claims**

1. A polymer blend comprising:

(A) a copolymer comprising:

(a1) C_1–C_{10}-alkyl methacrylates, C_5–C_5-cycloalkyl methacrylates or mixtures thereof,

(a2) maleic acid anhydride or fumaric acid anhydride, and

(a3) vinyl aromatics which may be unsubstituted or substituted on the aromatic ring by 1 or 2 C_1–C_4-alkyl groups,

wherein the component (a1) is present in an amount of 50 to 99 wt. %, based on the total wt. of (A), the component (a2) is present in an amount of 0.5 to 20 wt. %, based on the total wt. of (A), and the component (a3) is present in an amount of 0.5 to 40 wt. %, based on the total wt. of (A); and

(B) a copolymer comprising:

(b1) styrene, α-methyl styrene or mixtures thereof, and

(b2) acrylonitrile, methacrylonitrile or mixtures thereof, wherein the component (b1) is present in an amount of 99.5 to 50 wt. %, based on the total wt. of (B), and the component (b2) is present in an amount of 0.5 to 50 wt. %, based on the total wt. of (B);

wherein said copolymer (A) is present in an amount of 0.5 to 99.5 wt. %, based on the total wt. of (A)+(B), and said copolymer (B) is present in an amount of 99.5 to 0.5 wt. %, based on the total wt. of (A)+(B).

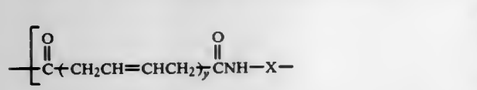
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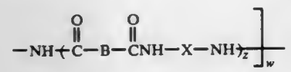
SULFUR VULCANIZED ELASTOMERS REINFORCED WITH ARAMID-POLYDIENE COPOLYMERS

Donald J. Burlett, Wadsworth, and Richard G. Bauer, Kent, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

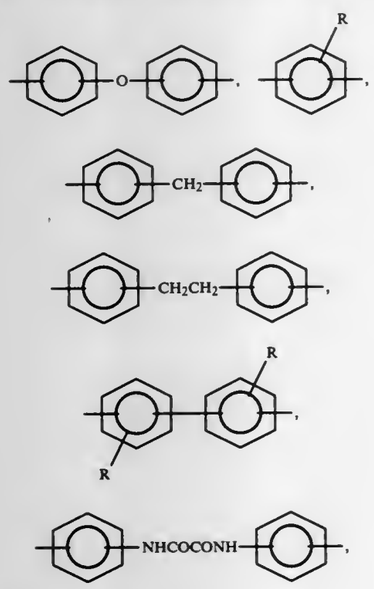
Filed Mar. 5, 1990, Ser. No. 489,298
Int. Cl.[5] C08L *53/00, 47/00*
U.S. Cl. 525—90 **17 Claims**

1. A process for reinforcing a sulfur vulcanizable elastomer comprising admixing a sulfur vulcanizable elastomer with from about 0.5 to about 70 parts per hundred parts of elastomer, of a multiblock copolymer of the structural formula:

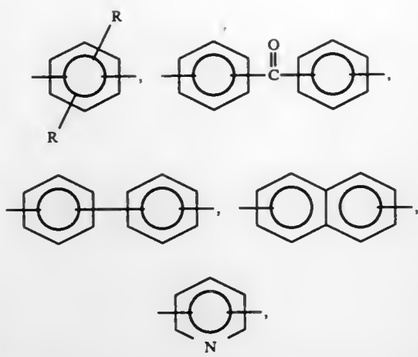




wherein w is n integer of from 1 to 100; y is an integer of from 10 to 500; z is an integer of from 1 to 120; X is:



or mixtures thereof; **B** is:



or mixtures thereof; and wherein R is selected from the group consisting of H, Cl or CH_3; and wherein said sulfur vulcanizable elastomer comprises polybutadiene.

5,189,102

METHOD FOR PRODUCING A VINYL RESIN USING A SILICON OIL SOLVENT

Kazuo Tsubuko; Shinichi Kuramoto, both of Numazu; Kazuhiko Umemura, Susono; Hidemi Uematsu, Fuji, and Okawara, Makoto, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 646,415, Jan. 28, 1991, abandoned. This application Mar. 4, 1992, Ser. No. 844,908
Claims priority, application Japan, Jan. 30, 1990, 2-20224
Int. Cl.[5] C08F *269/00, 2/06, 2/44*
U.S. Cl. 525—112 **15 Claims**

1. A method for producing a vinyl resin comprising the steps of:

forming a polymerization system comprising a polymerizable vinyl monomer dissolved or dispersed in a polymerization solvent comprising a silicone oil, finely-divided particles of silica, and a wax or polyolefin having a softening point of about 60° to 130° C.,

polymerizing said polymerizable vinyl monomer in the presence of a polymerization catalyst, and

separating polymerized resin from polymerization solvent.

5,189,103

POLYPHENYLENE ETHER RESIN COMPOSITION AND PROCESS FOR PRODUCING THE SAME

Hiroomi Abe, Chiba; Kenji Nagaoka, and Takashi Sanada, both of Ichihara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 622,772, Dec. 5, 1990, abandoned. This application Mar. 8, 1991, Ser. No. 665,958
Claims priority, application Japan, Dec. 11, 1989, 1-321148
Int. Cl.[5] C08L *71/12*
U.S. Cl. 525—133 **17 Claims**

2. A resin composition prepared by melting and kneading simultaneously (A) a polyphenylene ether resin, (B) a polyolefin resin, (C) an elastomer and (D) a functional compound simultaneously having (i) non-aromatic carbon-carbon multiple bond(s) and (ii) at least one functional group selected from the group consisting of substituted carboxyl groups, substituted hydroxyl groups, substituted amino groups, substituted silyl groups, substituted mercapto groups, substituted sulfonic acid groups and oxirane groups, in the presence of a radical generator added in an amount of 10 parts by weight or less per 100 parts by weight of the sum of polyphenylene ether resin (A), polyolefin resin (B) and optionally elastomer (C).

5,189,104

ALLOYS HAVING ONE GLASS TRANSITION TEMPERATURE

Michael Haubs, Bad Kreuznach; Otto Hermann-Schönherr, Bensheim, and Harald Cherdron, Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

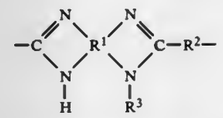
Filed Oct. 10, 1990, Ser. No. 595,294
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1989, 3934026
Int. Cl.[5] C08L *77/00*
U.S. Cl. 525—180 **15 Claims**

1. An alloy having a single glass transition temperature and being composed of

a) at least one homo- or copolybenzimidazole and

b) poly-N-vinylpyrrolidone,

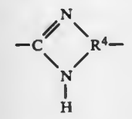
wherein the polybenzimidazole has repeating units of formula I



(I)

in which R^1 is a tetravalent aromatic ring in which the nitrogen atoms are linked to one another in pairs via adjacent C atoms of the aromatic ring, R^2 is an aromatic or heterocyclic ring and R^3 is —H, phenyl or $—CH_2CH_2OH$; or,

the polybenzimidazole has repeating units of formula



(II)

in which R^4 is an aromatic ring in which the nitrogen atoms which form the benzimidazole ring are linked to one another in pairs via adjacent C atoms of the aromatic ring; and,

the polybenzimidazole has Staudinger indices of 0.2 to 2.5 dl/g, measured in N-methyl-2-pyrrolidone at 25° C; and

the poly-N-vinylpyrrolidone has a molecular weight, given as the weight average, in the range of 1000 to 3 million.

5,189,105

ALCOHOL MIXTURE FOR PLASTICIZER

Chihiro Miyazawa; Souichi Orita, and Akio Tsuboi, all of Kurashiki, Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Continuation of Ser. No. 438,569, Nov. 20, 1989, abandoned, which is a continuation of Ser. No. 152,495, Feb. 5, 1988, abandoned. This application Aug. 1, 1991, Ser. No. 738,916
Claims priority, application Japan, Feb. 9, 1987, 27561/1987
Int. Cl.[5] C09K *3/00;* **C07C** *27/20*
U.S. Cl. 252—182.12 **7 Claims**

1. A C_9 alcohol mixture used to make a phthalate plasticizer, said mixture obtained by hydroformylation and hydrogenation of a C_8 olefin mixture as starting material obtained by dimerization of a butene fraction, said alcohol mixture comprising from 10 to 50% by weight of a first group component having a retention time not longer than the retention time of isobutyl n-caprylate, from 10 to 40% by weight of a second group component having a retention time longer than that of isobutyl n-caprylate and not longer than that of methyl n-caprate and from 30 to 70% by weight of a third group component having a retention time longer than that of methyl n-caprate, as divided into three such components by gas chromatography using a capillary column packed with a polyethylene glycol having a number average molecular weight of 15,000 to 20,000 as an isomer separating agent.

5,189,106

POLYETHYLENE COMPOSITION

Toshifumi Morimoto, Yokohama; Takaaki Hattori, Yawata; Noboru Ikegami, Chigasaki; Hirofumi Nishibu, Yokohama; Toshiyuki Miyauchi, Kawasaki, and Kunimichi Kubo, Meguro, all of Japan, assignors to Nippon Petrochemicals Company, Limited, Tokyo, Japan

Filed Dec. 30, 1991, Ser. No. 814,774
Int. Cl.[5] C08L *23/06, 23/08, 23/16*
U.S. Cl. 525—240 **5 Claims**

1. A polyethylene composition which comprises:

(I) 20 to 80 wt. % of a copolymer of ethylene and α-olefins having 3 to 18 carbon atoms, which copolymer meets the following conditions (a) to (d):

(a) intrinsic viscosity (η_1) 1.2 to 9.0 dl/g

(b) density (d_1): 0.890 to 0.935 g/cm^3

(c) in the elution temperature-eluate volume curve in continuously temperature rising elution fractionation, the ratio S (Ib/Ia) of the area Ib under the curve of elution temperature of 25° to 90° C. to the area Ia under the curve of elution temperature of 90° C. and above, is not larger than the value S_1 which is calculated with the following equation,

$$S_1 = 20\,\eta_1^{-1} \exp\left[-50(d_1 - 0.900)\right]$$

(d) the quantity W wt. % of the content which is soluble in 25° C. o-dichlorobenzene is not smaller than the value W_1 which is calculated with the following equation,

$$W_1 = 20 \exp(-\eta_1)$$

and

(II) 80 to 20 wt. % of ethylene homopolymer and/or the copolymer of ethylene and α-olefins having 3 to 18 carbon atoms, which meet the following conditions (e) and (f),

(e) intrinsic viscosity (η_2): 0.2 to 1.6 dl/g

(f) density (d_2): 0.890 to 0.980 g/cm^3 the value (η_1) is larger than (η_2), and the intrinsic viscosity (η) of the composition is 0.77 to 5.2 dl/g, the density (d) thereof is 0.890 to 0.950 g/cm^3 and the N-value calculated with the following equation is 1.7 to 3.5.

$$N\text{-Value} = \frac{\log(\dot{\gamma}_{150}/\dot{\gamma}_{20})}{\log(\tau_{150}/\tau_{20})}$$

wherein "$\dot{\gamma}$" is an apparent shear rate (sec^{-1} at 170° C.) and "τ" is an apparent shear stress (dyne/cm^2 at 170° C.) and the subscripts "20" and "150" indicates loads of 20 kg/cm^2 and 150 kg/cm^2.

5,189,107

PROCESS FOR PREPARING POLYMER PARTICLES

Kiyoshi Kasai; Fujio Sakurai, and Hiroshi Tadenuma, all of Tokyo, Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Mar. 6, 1990, Ser. No. 489,215
Claims priority, application Japan, Mar. 15, 1989, 1-62553
Int. Cl.[5] C08F *265/06, 279/02, 2/24*
U.S. Cl. 525—244 **9 Claims**

1. A process for preparing polymer particles from polymerizable monomers which are ethylenically unsaturated by seed polymerization in the presence of a polymer emulsion comprising water-insoluble low molecular weight polymer particles, in an amount of 0.5–30 parts by weight per 100 parts by weight of said polymerizable monomers, having a weight average molecular weight of 500–10,000 which are prepared by emulsion polymerization or soap-free polymerization of monomers radically polymerizable to an aqueous system in the presence of a

VOL 1147 ISS 4 FEB 23 1993 UMI

molecular weight modifier, wherein said seed polymerization of polymerizable monomers is carried out (i) by initially not charging or charging less than 30% by weight of said polymerizable monomers to the polymerization mixture and (ii) after polymerization conditions are established, by continuously or intermittently adding the remaining portion of said polymerizable monomers to the reaction system.

5,189,108

MODIFIED POLYMER RUBBER AND PROCESS FOR PREPARING THE SAME

Akio Imai; Mitsuji Tsuji; Takashi Sanada, and Keisaku Yamamoto, all of Ichihara, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 14, 1990, Ser. No. 625,924

Claims priority, application Japan, Dec. 27, 1989, 1-341453

Int. Cl.[5] C08F *255/04, 255/06*

U.S. Cl. 525—285 **13 Claims**

1. A process for preparing a modified polymer rubber comprising the steps of:

(1) graft-polymerizing to a shredded rubbery polymer (A) in an aqueous suspension at a temperature of 30°–130° C. at least one grafting monomer (E) selected from the group consisting of

aromatic vinyl monomers (B) and

vinyl monomers consisting of:

at least one aromatic vinyl monomer (B) and at least one non-aromatic vinyl monomer (C) selected from the group consisting of:

acrylonitrile,

methacrylonitirle,

acrylic acid,

acrylic acid alkyl esters,

methacrylic acid,

methacrylic acid alkyl esters, and

vinyl chloride, the weight ratio of the rubbery polymer (A) to the grafting monomer (E) falling with in the range of from 100:5 to 100:100, to obtain a graft polymer, and

(2) kneading the graft copolymer with at least one polymerizable monomer (D) selected for the group consisting of:

unsaturated dicarboxylic acid anhydrides and the derivatives thereof,

unsaturated monocarboxylic acid esters and the derivatives thereof,

unsaturated carboxylic acid amines and the derivatives thereof, and

unsaturated carboxylic acid ethers and the derivatives thereof,

in the presence of a free radical initiator at a temperature of 180°–280° C.

5,189,109

MODIFIED DIENE POLYMER RUBBERS

Akio Imai, and Tomoaki Seki, both of Ichihara, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 302,894, Jan. 30, 1989, abandoned. This application Mar. 23, 1992, Ser. No. 854,781

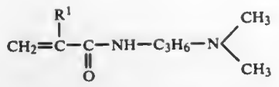
Claims priority, application Japan, Feb. 25, 1988, 63-43777; Feb. 25, 1988, 63-43778; Feb. 26, 1988, 63-44859; Feb. 26, 1988, 63-44860

Int. Cl.[5] C08F *279/02*

U.S. Cl. 525—296 **8 Claims**

1. A process for preparing a modified diene polymer which comprises:

reacting an alkali metal-containing conjugated diene polymer with an acrylamide modifier compound of the formula (1):



(1)

wherein R^1 is a hydrogen atom and

recovering said modified polymer having improved impact resilience and lower hardness at low temperatures;

said alkali metal-containing conjugated diene polymer being a living polymer having an alkali metal end prepared by a polymerization of a conjugated diene monomer, or a mixture of a conjugated diene monomer and an aromatic vinyl monomer, in a hydrocarbon solvent in the presence of an alkali metal-based catalyst, or a polymer to which an alkali metal is introduced by an addition reaction of a diene polymer having conjugated diene units in the polymer chain and an alkali metal-based catalyst in a hydrocarbon solvent wherein said acrylamide modifier is used in an amount of 0.2 to 2 moles per mole of alkali metal based catalyst which is used in the preparation of said alkali metal containing conjugated diene polymer.

5,189,110

SHAPE MEMORY POLYMER RESIN, COMPOSITION AND THE SHAPE MEMORIZING MOLDED PRODUCT THEREOF

Takeshi Ikematu, Musashino; Yasushi Kishimoto, and Koichi Miyamoto, both of Kawasaki, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 454,264, Dec. 21, 1989, abandoned. This application Sep. 16, 1991, Ser. No. 759,618

Claims priority, application Japan, Dec. 23, 1988, 63-323267; Nov. 2, 1989, 1-284700

Int. Cl.[5] C08F *297/04;* **C08L** *53/02;* **B29C** *61/06*

U.S. Cl. 525—314 **13 Claims**

1. A shape memory polymer resin, consisting essentially of a block copolymer having an A-B-A block structure in the polymer chain, and having a weight average molecular weight within the range of 10,000 to 1,000,000, **wherein**

(a) block A is a polymer block comprising a homopolymer of a vinyl aromatic compound, a copolymer of a vinyl aromatic compound and another vinyl aromatic compound, a copolymer of a vinyl aromatic compound and a conjugated diene compound, and/or a hydrogenated product thereof;

(b) block B is a polymer block comprising a homopolymer of butadiene, a copolymer of butadiene with another conjugated diene compound, a copolymer of butadiene with a vinyl aromatic compound, and/or a hydrogenated product thereof, the content of butadiene and/or the hydrogenated product thereof in block B being at least 80% by weight, and 80 to 91% of the linkages of the butadiene and/or the hydrogenated product thereof being 1,4-linkages;

(c) at least 80% by weight of the conjugated diene in the block copolymer being hydrogenated; and

(d) the block copolymer comprises 5 to 50% by weight of said block A; and

wherein said polymer resin having the following properties (1) to (3):

(1) the glass transition temperature Ta of the phase containing block A and the crystalline melting point Tb of the phase containing block B, having the relationship shown by the following formula:

$$25° C. \leqq Tb < Ta \leqq 150° C.,$$

(2) the crystallinity of the phase containing block B at 25° C. being at least 5% by weight; and

(3) said polymer resin being compressible by at least ½-fold of the original thickness at a temperature of (Ta+Tb)/2, and at least 70% of the deformation being fixed by cooling the compressed product to 25° C., and at least 90% of said deformation fixed being restored by reheating to a temperature exceeding (Ta+Tb)/2.

5,189,111

AMINOALKYLATED SIDE-CHAINS-CONTAINING VINYLIC COPOLYMERS

Bernard Danner, Riedisheim, France, assignor to Sandoz Ltd., Basel, Switzerland

Filed Jan. 4, 1989, Ser. No. 293,256

Claims priority, application Fed. Rep. of Germany, Jan. 7, 1988, 38001993

Int. Cl.[5] C08F *120/60, 220/34, 20/34*

U.S. Cl. 525—328.2 **27 Claims**

1. A cationic, water-dilutable, side-chains-containing vinylic copolymer which is characterised by containing a group (γ) of the formula

—X—Alk—Y— (I),

wherein

Alk signifies alkylene with 2–6 carbon atoms, hydroxy-substituted alkylene with 3–6 carbon atoms or alkylene with 4–6 carbon atoms interrupted by oxygen,

X signifies a basic amino group or an ammonium group and

Y signifies a basic —NH— group or an acid adduct thereof, the one of X and Y being further linked to an optionally substituted aliphatic or hetero-aromatic hydrocarbon radical and the other being further linked to hydrogen or to an optionally substituted aliphatic hydrocarbon radical, as a constituent of at least some of the side-chains extending from the main chain, at least 1 mole % of the comonomer-units constituting the copolymer bearing such a (γ)-containing side-chain.

5,189,112

POLYMERS HAVING PENDANT THIURAM DISULPHIDE FUNCTIONS

Gilbert Clouet, La Wantzenau, France, assignor to Elf Atochem S.A., Paris La Defense, France

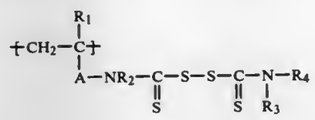
Continuation-in-part of Ser. No. 599,805, Oct. 19, 1990, abandoned. This application Apr. 19, 1991, Ser. No. 687,793

Claims priority, application France, Oct. 19, 1989, 89 13706

Int. Cl.[5] C08F *20/00, 26/00*

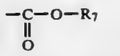
U.S. Cl. 525—328.2 **24 Claims**

1. A polymer comprising a chain linkage comprising repeated units of:



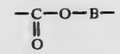
wherein:

R_1 represents a hydrogen atom or a monovalent organic radical which is an alkyl, cycloalkyl or aryl radical or a combination of at least two of the aforesaid radicals; a



radical, where R_7 represents hydrogen, an alkyl, cycloalkyl or aryl radical or a combination of at least two of the aforesaid radicals; or a radical substituted by at least one halogen atom, said radical being an alkyl, cycloalkyl or aryl radical or a combination of at least two of the aforesaid radicals;

represents a single bond; an alkylene, cycloalkylene or arylene radical or a combination of at least two or the aforesaid radicals; or a



radical, where B represents an alkylene, cycloalkylene or arylene radical or a combination of at least two of the aforesaid radicals;

R_2, R_3 and R_4 each represent independently an unsubstituted alkyl, cycloalkyl or aryl radical or a combination of at least two of the aforesaid radicals or at least one of R_3 and R_4 is substituted by at least one hydroxyl or carboxylic acid group, or at least one of R_3 and R_4 represents a polyoxyethylene or polyester sequence derived from a polyoxyethylene or a polyester terminated by a hydroxyl function, respectively;

all of said alkyl, cycloalkyl, aryl radicals and their combinations, alkylene, cycloalkylene, arylene radicals and their combinations optionally containing at least one heteroatom, and/or at least one



radical, where R represents alkyl, cycloalkyl or aryl radicals or a combination of at least two of said radicals.

5,189,113

PREPARATION OF HOMOGENEOUS IONICALLY CROSSLINKED ETHYLENE COPOLYMER IN TWIN SCREW EXTRUDER

Thomas Muehlenbernd, Heidelberg; Norbert Hasenbein, Dirmstein; Gernot Koehler, Worms, and Lothar Schlemmer, Maxdorf, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jun. 14, 1989, Ser. No. 366,494

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1988, 3822068

Int. Cl.[5] C08F *8/44, 222/02*

U.S. Cl. 525—329.5 **2 Claims**

1. A process for the preparation of a homogeneous ionically crosslinked ethylene copolymer, the said process comprising the steps of:

(1) introducing into the feed zone of a twin-screw extruder comprising a feed zone, a mixing zone, a melting zone and a downstream zone, an ethylene copolymer containing, as copolymerized units, from 0.1 to 20 mol-% of at least one α-β-ethylenically unsaturated carboxylic acid or at least one α-β-ethylenically unsaturated comonomer donating carboxyl groups, and a water-soluble metal salt or metal hydroxide, the said water-soluble metal salt or metal hydroxide being added in the solid state either through the polymer feed hopper or through a second solids feed hopper;

(2) mixing and finely dispersing the said water-soluble metal salt or metal hydroxide with the ethylene copolymer in said mixing zone at a temperature in the range of from 140° to 200° C. to obtain a dispersion;

(3) melting and homogenizing the dispersion in said melting zone to obtain a polymer melt;

(4) pumping water into said polymer melt in said melting zone to obtain a mixture and;

(5) reacting the mixture in the downstream zone to obtain the homogeneous ionically crosslinked copolymer.

5,189,114

COMPATIBILIZATION OF POLYPHENYLENE ETHER WITH POLYESTER USING POLYSTYRENE-POLYCARBONATE COPOLYMER

Sterling B. Brown, Schenectady, N.Y., and Edward J. Fewkes, Jr., Belpre, Ohio, assignors to General Electric Company, Pittsfield, Mass.

Filed Dec. 31, 1990, Ser. No. 636,232
Int. Cl.[5] C08F *283/02;* **C08L** *67/03, 69/00, 71/12*
U.S. Cl. 525—394 **18 Claims**

1. A compatibilized polyphenylene ether-polyester composition comprising:
(a) polyphenylene ether resin;
(b) polyester resin; and
(c) a compatibilizer for (a) and (b) comprised of a block copolymer comprised of one or more polycarbonate blocks and one or more polystyrene blocks.

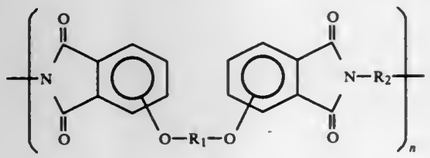
5,189,115

POLYETHERIMIDE COPOLYMERS

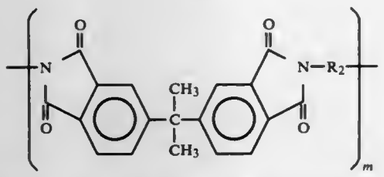
John L. Melquist, Naperville, Ill., assignor to Amoco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 312,741, Feb. 21, 1989, abandoned. This application Nov. 15, 1990, Ser. No. 613,401
Int. Cl.[5] C08F *283/04;* **C08L** *77/00*
U.S. Cl. 525—420 **6 Claims**

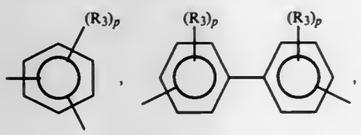
1. A polymer blend comprising a copolymer having the recurring units



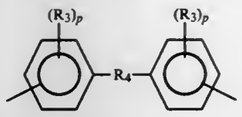
and



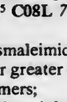
wherein n and m are at least one and the group —O—R$_1$—O— is attached to the 3 or 4 and 3′ or 4′ positions;
wherein R_1 is selected from a substituted or unsubstituted divalent aromatic radical selected from at least one member of the group consisting of



and



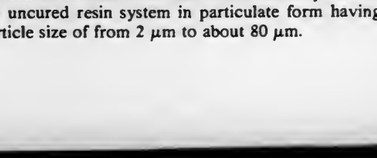
wherein p is from zero to 4, and R_3 is independently a monovalent C_1 to C_6 alkyl, aryl, or halogen with the proviso that R_1 is other than



R_4 is selected from —O—, —S—,



—SO_2—, —SO—, C_1 to C_6 alkylene, C_4 to C_8 cycloalkylene, C_1 to C_6 alkylidene; and
R_2 is selected from a divalent C_6 to C_{20} hydrocarbon radical including halogenated or C_1 to C_6 alkyl-substituted derivatives thereof, C_2 to C_{20} alkylene and cycloalkylene radicals, C_2 to C_8 alkylene-terminated polydiorganosiloxane, or a divalent radical selected from at least one member of the group consisting of





wherein p, R_3, and R_4 are as defined above and an engineering resin comprising at least one member selected from the group consisting of polyarylate, poly(arylate-carbonate), poly(aryl ether sulfone), and poly(arylether ketone).

5,189,116

EXTREMELY TOUGH THERMOSETTING BISMALEIMIDE RESIN SYSTEMS

Jack D. Boyd, Westminster, and Linas N. Repecka, Lakewood, both of Calif., assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 312,526, Feb. 17, 1989, Pat. No. 5,037,689. This application Sep. 27, 1989, Ser. No. 413,429
Int. Cl.[5] C08L *79/08, 81/06*
U.S. Cl. 525—423 **25 Claims**

1. A thermosetting bismaleimide resin system, comprising:
a) 30 weight percent or greater of one or more thermosetting bismaleimide monomers;
b) from 1 to about 30 weight percent of a low viscosity epoxy resin toughener effective to toughen said bismaleimide resin system;
c) from 5 to about 30 weight percent, based on the total resin system, of one or more particulate thermoplastics which are soluble or swellable in said bismaleimide resin system upon cure of said system, and which are effective in toughening said bismaleimide resin system as reflected by an increase in the compression strength after impact when tested according to Boeing Support Specification BSS 7260; and
d) from 5 to about 50 weight percent of a comonomer selected from the group consisting of alkenyl and alkynyl group containing compounds,
wherein a substantial amount of said thermoplastic remains in the uncured resin system in particulate form having a mean particle size of from 2 μm to about 80 μm.

5,189,117

POLYURETHANE FROM EPOXY COMPOUND ADDUCT

Robert E. Hefner, Jr., Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 3, 1990, Ser. No. 562,772
Int. Cl.[5] C08G *59/14, 18/48, 18/50*
U.S. Cl. 525—460 **9 Claims**

1. A polyurethane composition prepared from a formulation comprising:
(1) an adduct prepared by reacting (a) a compound containing at least one epoxy group per molecule with (b) a compound containing at least one epoxide reactive group per molecule, wherein when compound (a) is a polyepoxide, compound (b) contains a single epoxide reactive group per molecule, and when compound (a) is a monoepoxide, compound (b) contains at least two epoxide reactive groups per molecule and said monoepoxide compound is a monoglycidyl ether,
(2) a polyisocyanate; and
(3) optionally, an isocyanate-reactive compound which is different from component (1);
wherein at least one of the adduct or the polyisocyanate contains a rodlike mesogenic moiety.

5,189,118

MIXTURES OF 1-ISOPROPYL-2-ARYL IMIDAZOLE AND 1-ISOPROPYL-2-ARYL IMIDAZOLINE AS EPOXY RESIN CURATIVES

Harold G. Waddill; Wei-Yang Su, and George P. Speranza, all of Austin, Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Feb. 28, 1991, Ser. No. 662,142
Int. Cl.[5] C08G *59/44, 59/50*
U.S. Cl. 525—504 **10 Claims**

1. A method for curing an epoxy resin, comprising combining (1) from about 1 to about 5 parts by weight of a mixture of 1-isopropyl-2-aryl imidazole and 1-isopropyl-2-aryl imidazoline, in which from about 5 to about 50 wt. % of the mixture is 1-isopropyl-2-aryl imidazoline, and (2) about 100 parts by weight of an epoxy resin.

5,189,119

ARTICLE COATED WITH CATIONIC AND HYDROXYL GROUP-CONTAINING RESIN AND EPOXY RESIN

Reiziro Nishida, and Akira Tominaga, both of Hiratsuka, Japan, assignors to Kansai Paint Co., Ltd., Hyogo, Japan

Division of Ser. No. 481,567, Feb. 20, 1990, Pat. No. 5,096,984. This application Oct. 21, 1991, Ser. No. 780,835
Claims priority, application Japan, Feb. 21, 1989, 1-39423; Feb. 21, 1989, 1-322643
Int. Cl.[5] C08L *33/08, 63/02, 75/04;* **B32B** *15/08*
U.S. Cl. 525—526 **10 Claims**

1. An article coated with a cationically electrodepositable paint composition comprising
(A) a resin having hydroxyl groups and cationic groups,
(B) an epoxy resin having at least 2 epoxy groups on average per molecule, each of which is directly bound to an alicyclic ring and/or a bridged alicyclic ring, and
(C) lead hydroxide and/or lead maleate as curing catalyst(s).

5,189,120

PEROXIDE-FREE GRAFTING OF HOMOPOLYMERS AND COPOLYMERS OF ETHYLENE HAVING DENSITIES LESS THAN 0.930 G/CM^3, AND USE OF THE GRAFT COPOLYMERS FOR THE PREPARATION OF IONOMERS OR ADHESION PROMOTERS

Norbert Hasenbein, Dirmstein; Peter Bauer, Ludwigshafen; Lothar Schlemmer, Maxdorf; Alfred F. Hauss; Hans Gropper, both of Ludwigshafen, and Rainer Ohlinger, Heidelberg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Continuation of Ser. No. 384,906, Jul. 25, 1989, abandoned, which is a continuation of Ser. No. 117,295, Nov. 6, 1987, abandoned. This application Oct. 30, 1990, Ser. No. 605,002
Claims priority, application Fed. Rep. of Germany, Nov. 20, 1986, 3639566
Int. Cl.[5] C08F *267/04*
U.S. Cl. 525—285 **4 Claims**

1. A process for grafting monomeric compounds selected from the group consisting of ethylenically unsaturated carboxylic acids having from 3 to 6 carbon atoms and anhydrides thereof onto a saturated homopolymer or copolymer of ethylene having a density less than 0.930 g/cm^3 in a conventional extruder under from 1 to 500 bar in the absence of a free radical catalyst or any other graft-initiating additive, wherein the monomer to be grafted is mixed, in a concentration of from 0.01 to 0.20% by weight, based on the ethylene polymer, with the ethylene polymer which has been melted at 140° C. or higher, and wherein the grafting reaction is carried out at a temperature of from 210° to 300° C. and the monomer is essentially completely converted to grafted polymer product.

5,189,121

ARYLENE SULFIDE COPOLYMER COATING COMPOSITIONS AND PROCESSES

Roy F. Wright, and Michael C. Yu, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 25, 1989, Ser. No. 411,811
Int. Cl.[5] C08F *283/00*
U.S. Cl. 525—537 **7 Claims**

1. A heat curable arylene sulfide copolymer blend composition suitable for use in coating applications comprising:
a first arylene sulfide copolymer consisting essentially of in the range of from about 65 mole % to about 95 mole % unsubstituted para-aromatic sulfide repeating units in the polymer chain, and in the range of from about 5 mole % to about 35 mole % unsubstituted ortho-aromatic sulfide repeating units in the polymer chain based on the total moles of repeating units in the polymer chain; and
a second arylene sulfide copolymer consisting essentially of in the range of from about 65 mole % to about 95 mole % unsubstituted para-aromatic sulfide repeating units in the polymer chain, and in the range of from about 5 mole % to about 35 mole % alkyl-substituted aromatic sulfide repeating units in the polymer chain based on the total moles of repeating units in the polymer chain, said first arylene sulfide copolymer being present in said composition in an amount in the range of from about 10% to about 90% by weight of said composition.

5,189,122

PROCESS FOR THE PREPARATION OF COPOLYMERS OF MALEIC ANHYDRIDE AND ALKYL VINYL ETHER

James R. Kittrell, and Charles W. Quinlan, both of Amherst, Mass., assignors to KSE Inc., Sunderland, Mass.

Filed Jul. 13, 1992, Ser. No. 912,743
Int. Cl.[5] C08F *2/00*
U.S. Cl. 526—77 **20 Claims**

1. A process for the preparation of copolymers of maleic anhydride and alkyl vinyl ethers, which comprises providing alkyl vinyl ether wherein the alkyl group contains from 1 to 5 carbon atoms; contacting the ether with activated charcoal;

VOL 1147 ISS 4 FE 23 1993 UMI

separating the ether from the charcoal to form a charcoal treated alkyl vinyl ether; and reacting the charcoal treated ether with maleic anhydride in the presence of a free radical initiator, said initiator being free from aromatic groups, to form a copolymer of alkyl vinyl ether and maleic anhydride with reduced levels of benzene.

5,189,123

CATALYST FOR THE PREPARATION OF HIGH MOLECULAR WEIGHT HOMOPOLYMERS AND COPOLYMERS OF ETHENE, AND THE MANUFACTURE THEREOF

Hans Gropper, Limburgerhof; Guido Funk, Worms; Erich Kolk, Bad Duerkheim, and Dieter Oeder, Weisenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Oct. 19, 1990, Ser. No. 599,873

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1989, 3938723

Int. Cl.[5] B01J *21/08;* **C08F** *4/24*

U.S. Cl. 526—106 **6 Claims**

1. A process for the manufacture of a supported catalyst for the polymerization of α-olefines, which comprises

(1) loading a support based on silicon dioxide with

(2) either chromium trioxide or a chromium compound capable of being converted to chromium trioxide under the conditions of stage (3) below and

(3) keeping this at a temperature of from 400° to 1,100° C. for from 10 to 1,000 minutes in an anhydrous gas stream containing oxygen in a concentration of more than 10% v/v

wherein the support (1) is prepared by

(1.1) introducing a sodium or potassium waterglass solution into a swirled stream of aqueous mineral acid in both longitudinal and tangential directions thereto, spraying drops of the resulting silicic hydrosol into a gaseous medium and allowing them to solidify to form the hydrogel and washing the resulting hydrogel to free it from salts before ageing commences,

(1.2) extracting not more than 30% of the water contained in the hydrogel by means of a C_1–C_4-alkanol, a C_3–C_5-alkanone or a mixture thereof,

(1.3) drying the hydrogel until no more loss of weight occurs at 180° C. under a vacuum of 10 torr, thus causing xerogel formation, and

(1.4) milling and fractionally screening the resulting xerogel according to particle size.

5,189,124

PROCESS FOR PRODUCING α-OLEFIN POLYMERS

Toshio Sasaki; Takeshi Ebara; Hirofumi Jyohoji; Kooji Mizunuma, all of Ichihara, and Kiyoshi Kawai, Chiba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 433,219, Nov. 8, 1989, abandoned. This application Dec. 5, 1991, Ser. No. 801,584

Claims priority, application Japan, Nov. 11, 1988, 63-286367

Int. Cl.[5] C08F *4/651, 10/00*

U.S. Cl. 526—119 **12 Claims**

1. A process for producing an α-olefin polymer which comprises homopolymerizing or copolymerizing an α-olefin by the use of a catalyst system comprising:

(A) a solid catalyst component (A) containing at least magnesium, titanium, halogen and ester compound as indispensable components, and

(B) a catalyst component (B) produced by reacting an organoaluminum compound represented by general formula $R^1_mAlY_{3-m}$ (R^1 represents an aliphatic hydrocarbon group having 1 to 8 carbon atoms, Y represents halogen, hydrogen or alkoxy group having 1 to 20 carbon atoms, and m represents a number satisfying $2 \leqq m \leqq 3$) with an organic silicon compound represented by general formula $R^2_nSi(OR^3)_{4-n}$ (R^2 represents alicyclic hydrocarbon group or aromatic hydrocarbon group having 5 to 20 carbon atoms, R^3 represents a hydrocarbon group having 1 to 20 carbon atoms, and n represents a number satisfying $0 \leqq n \leqq 3$) in the state of a solution so that the product of this reaction becomes satisfying the following formula:

$$0.98 \leqq K \leqq 2.2$$

wherein

$$K = \frac{m}{Z} \cdot \frac{S'}{S + S'}$$

[S represents the area of a peak in ^{13}C-NMR spectrum of the reaction product assignable to Al-R^1 bond, S' represents the area of a peak in ^{13}C-NMR of the product assignable to the Si-R^1 bond formed by the reaction with organoaluminum compound, and Z represents molar ratio of Si atom to Al atom in component (B)].

5,189,125

PROCESS FOR PRODUCING SYNDIOTACTIC STYRENE COPOLYMER

Nobuhide Ishihara; Masahiko Kuramoto, both of Sodegaura, and Michitake Uoi, Ichihara, all of Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

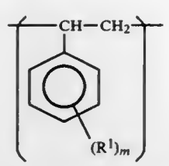
Continuation of Ser. No. 416,914, Oct. 4, 1989, abandoned, which is a continuation-in-part of Ser. No. 175,581, Mar. 28, 1988, abandoned, and Ser. No. 432,324, Nov. 6, 1989, abandoned, which is a continuation of Ser. No. 138,914, Dec. 28, 1987, abandoned, said Ser. No. 175,581, is a continuation of Ser. No. 888,153, Jul. 18, 1986, abandoned. This application Jul. 1, 1991, Ser. No. 728,005

Claims priority, application Japan, Jul. 29, 1985, 60-165881; May 6, 1986, 61-101926; Jan. 28, 1987, 62-17973

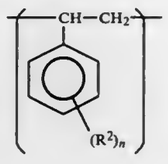
Int. Cl.[5] C08F *4/642, 212/04*

U.S. Cl. 526—160 **14 Claims**

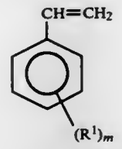
1. A process for producing a styrene copolymer comprising at least one structural unit (I) represented by the general formula (A):



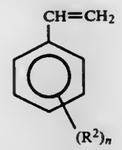
wherein R^1 is a hydrogen atom, a halogen atom, or an oxygen, nitrogen, sulfur, phosphorus or silicon atom-containing group, m is 1, 2 or 3, and when m is 2 or 3, R^1s may be the same or different and a structural unit (II) represented by the general formula (B):



wherein R^2 is a hydrogen atom, a halogen atom, C_1–C_{20} alkyl group or an oxygen, nitrogen, sulfur, phosphorus or silicon atom-containing group, n is 1, 2 or 3, and when n is 2 or 3, R^2s may be the same or different (provided that the structural unit (II) excludes the same as the structural unit (I)), having a degree of polymerization of at least 5, and having a stereostructure that the stereoregularity is mainly syndiotactic, which process comprises copolymerizing at least one styrene-based monomer represented by the general formula (A'):



wherein R^1 and m are the same as defined above and a styrene-based monomer represented by the general formula (B'):



wherein R^2 and n are the same as defined above (provided that the styrene-based monomer of the general formula (B') excludes the same as that of the general formula (A')) in the presence of a catalyst comprising (a) a titanium compound and (b) a reaction product of an organoaluminum compound and water.

5,189,126

EMULSION PRESSURE-SENSITIVE ADHESIVE POLYMERS EXHIBITING EXCELLENT GUILLOTINE PERFORMANCE

Margaret M. Bernard, La Verne, Calif., assignor to Avery Dennison Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 567,141, Aug. 14, 1990, which is a continuation-in-part of Ser. No. 393,970, Aug. 14, 1989, abandoned. This application Mar. 9, 1992, Ser. No. 848,092

Int. Cl.[5] C08F *26/02, 120/04, 222/10;* **C08L** *33/00*

U.S. Cl. 526—261 **21 Claims**

1. An inherently tacky, pressure-sensitive adhesive polymer formed by emulsion polymerization, which polymer comprises, on a polymerized basis and based on the total weight of the monomers:

(a) at least of one alkyl acrylates containing from about 4 to about 8 carbon atoms in the alkyl group, the total amount of alkyl acrylate present being from about 35 to about 60 percent by weight;

(b) at least one vinyl ester containing from 2 to about 16 carbon atoms in the alkyl group of the acid, the total amount of the vinyl ester present being from 15 to about 35 percent by weight;

(c) at least one diester of a dicarboxylic acid in which each alkyl group of the diester independently contains from about 6 to about 12 carbon atoms, the total of the diesters present being in an amount from about 15 to about 30 percent by weight;

(d) at least one reactive multifunctional monomer, the total amount of multifunctional monomer having a cyanurate or phosphate functionality present being from 0.1 to about 1 percent by weight; and

(e) at least one unsaturated carboxylic acid containing from about 3.to about 5 carbon atoms, present in the total of the unsaturated carboxylic acid in a positive amount up to about 10 percent by weight of the monomers, said polymer being formed in the presence of vinyl functional reactive surfactant, and having a gel content in excess of about 60 percent by weight of the polymer.

5,189,127

CROSSLINKED POLYIMIDES PREPARED FROM N-(3-ETHYNYLPHENYL)MALEIMIDE

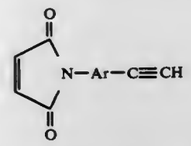
Margaret K. Gerber, Cincinnati, Ohio, and Terry L. St. Clair, Poquoson, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 528,666, May 18, 1990, abandoned. This application Dec. 3, 1991, Ser. No. 801,867

Int. Cl.[5] C08F *222/40*

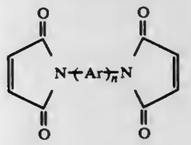
U.S. Cl. 526—262 **10 Claims**

1. A thermally stable, glassy, crosslinked polymer prepared from a monomer composition consisting essentially of at least one ethynyl imide (I) having the following general structural formula:



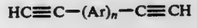
(I)

where Ar is any aromatic moiety; and a member selected from the group consisting of:



(II)

and



(III)

where Ar is any aromatic moiety and n=1–50; and said polymer has a glass transition temperature of at least 500° C.

5,189,128

SOLUTION STABLE POLYIMIDE RESIN SYSTEMS

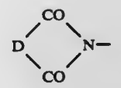
Taishih Maw, Yorktown Heights, N.Y.; Gina Kritchevsky, Danbury, Conn., and Frank Cheng, Spring Valley, N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 690,020, Apr. 23, 1991, abandoned, which is a division of Ser. No. 363,224, Jun. 8, 1989, abandoned, which is a continuation-in-part of Ser. No. 209,381, Jun. 20, 1988, abandoned. This application Dec. 9, 1991, Ser. No. 804,629

Int. Cl.[5] C08F *26/06*

U.S. Cl. 526—262 **3 Claims**

1. A process for preparing a storage stable product containing imide groups dissolved in a non-aqueous solvent medium comprising the steps of (1) reacting at an elevated temperature (a) a polyimide containing at least two radicals of the formula



wherein D is a divalent radical containing a C=C bond, and (b) from about 0.05 to 2.0 moles per mole of component (a) of an alkenyl phenol, an alkenyl phenol ether or mixtures thereof, in the presence of from about 0.01–0.11 moles per one mole of for each two imide moieties in component (a) of a primary, secondary or tertiary amine, mixed secondary/tertiary amine, heterocyclic base or quaternary ammonium compound as a

basic catalyst, said reaction product having a resin melt viscosity of from about 20 to 85 poise as measured on an ICI Cone & Plate Viscometer at 125° C., (2) substantially removing the catalyst, and (3) recovering the storage stable product, wherein subsequent to step (2) the reaction product is dissolved in a non-aqueous solvent medium and said solution is recovered.

5,189,129

HIGH TEMPERATURE POLYMER FROM MALEIMIDE-ACETYLENE TERMINATED MONOMERS

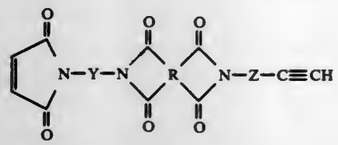
Margaret K. Gerber, Cincinnati, Ohio, and Terry L. St. Clair, Poquoson, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 528,666, May 18, 1990, abandoned. This application Dec. 3, 1991, Ser. No. 801,868

Int. Cl.[5] C08F *222/40*

U.S. Cl. 526—262 **31 Claims**

1. A thermally stable, glassy polymer prepared from a monomer composition comprising at least one (I) ethynyl maleimide having the following general primary structural formula:



(I)

where R, Y, and Z are any aromatic moiety.

5,189,130

SNOW SKI BASE MATERIAL AND SKI BASE MANUFACTURE

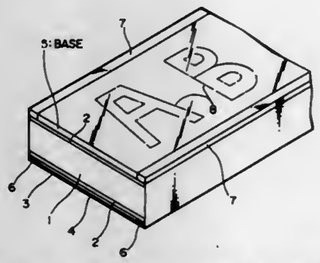
Norihiko Kageyama, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jan. 14, 1991, Ser. No. 640,860

Claims priority, application Japan, Jan. 19, 1990, 2-9550

Int. Cl.[5] C08F *110/02*

U.S. Cl. 526—352 **4 Claims**



1. A snow ski base material consisting essentially of ultra high molecular weight polyethylene having a molecular weight of not less than 500,000, a light transmissivity of not less than 10%, a density of not more than 0.93 g/cm^3 and a degree of crystallinity quality of not more than 55%.

5,189,131

HYDROSILYLATION METHOD

Larry N. Lewis, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 26, 1991, Ser. No. 691,901

Int. Cl.[5] C08G *77/06*

U.S. Cl. 528—15 **5 Claims**

1. A method for enhancing the rate of addition between a silicon hydride and an olefinically unsaturated material in a platinum catalyzed hydrosilylation reaction, which comprises adding to a hydrosilylation mixture, 0.1 to 10 parts by weight of cyclodextrin, per 100 parts by weight of the hydrosilylation mixture.

5,189,132

POLYMERIC HYDRIDOCHLOROSILAZANES, PROCESS FOR THEIR PREPARATION, CERAMIC MATERIALS CONTAINING SILICON NITRIDE WHICH CAN BE MANUFACTURED THEREFROM, AND THEIR MANUFACTURE

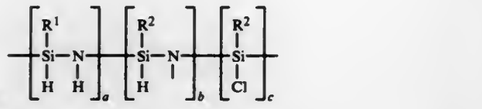
Tilo Vaahs, Kelkheim; Thomas Gerdau, Eppstein; Hans-Jerg Kleiner, Kronberg; Marcellus Peuckert, Hofheim am Taunus, and Martin Brück, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

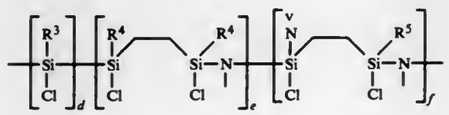
Continuation of Ser. No. 444,053, Nov. 30, 1989, abandoned. This application Sep. 5, 1991, Ser. No. 759,035

Int. Cl.[5] C04B *35/58*

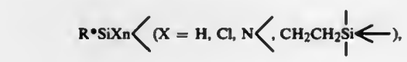
U.S. Cl. 528—33 **5 Claims**

1. A polymeric hydridochlorosilazane of formula (I)





where the free valencies on the nitrogen atoms are saturated with H atoms or silyl radicals



where the radicals independently of one another have the following meanings:

R^1=a C_1–C_6 alkyl or C_2–C_6 alkenyl group,

R^2=a C_2–C_6 alkenyl group is d=e=f≠0, or

R^2=a C_1–C_6 alkyl or C_2–C_6 alkenyl group if at least one of the indices d, e, or f=0, and

R^3, R^4, R^5 and R^*=a, C_1–C_6 alkyl or C_2–C_6 alkenyl group, and

where the indices a, b, c, d, e, and f represent the mol fractions of the respective structural units and add up to a value of one; the index a being 0.1 to 0.9, the index d being from zero to about 0.3, at least one of the indexes b, c, e and f not being zero, and when the index d is not zero, the value of at least one of the indices b, c, e, or f being 0.01 to about 0.3.

5,189,133

HYDROPHYLIC, OLEFINICALLY UNSATURATED POLYURETHANES AND THEIR USE AS REACTIVE EMULSIFIERS

Jürgen Meixner, Krefeld, and Wolfgang Kremer, Kerken, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 20, 1992, Ser. No. 839,454

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1991, 4106121

Int. Cl.[5] C08G *18/30*

U.S. Cl. 528—49 **4 Claims**

1. A hydrophilic polyurethane having a content (i) of olefinic double bonds (expressed as C=C, molecular weight=24) of at least 1.0% by weight and (ii) ethylene oxide units incorporated through polyethylene glycol of 20 to 80% by weight, which comprise the reaction product of

a) 1.0 mole of a polyisocyanate component comprising at least one organic polyisocyanate with

b) 0.3 to 2.5 moles of at least one β,γ-ethylenically unsaturated ether alcohol containing 5 to 29 carbon atoms,

c) 0 to 1.0 mole of a component comprising at least one compound containing isocyanate-reactive groups and

d) 0.25 to 0.85 moles of a polyethylene glycol component comprising at least one polyethylene glycol having a molecular weight of 1,300 to 5,000,

in an NCO/OH equivalent ratio, based on starting components a) to d), of 0.7:1 to 1.2:1.

5,189,134

NONLINEARLY OPTICALLY ACTIVE POLYMERS

Gerard Mignani; Pascal Barthelemy, and Remi Meyrueix, all of Lyons, France, assignors to Rhone-Poulenc Chimie, Courbevole, France

Filed Sep. 18, 1989, Ser. No. 408,382

Claims priority, application France, Sep. 16, 1988, 88 12080

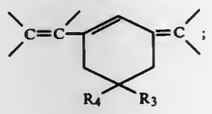
Int. Cl.[5] C08G *63/685*

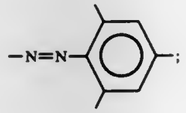
U.S. Cl. 528—68 **10 Claims**

1. A nonlinearly optically active polymer, which comprises the copolymerizate of a first difunctional monomer with a second difunctional comonomer, with at least one of said difunctional monomers comprising a polar charge transfer moiety having the following formula (I):

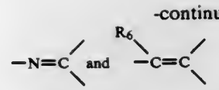
D-(radical with disclosed electrons)-A (I)

in which A is an electron acceptor radical comprising a nitro, cyano, $-CO_2R_5$ or $PO_3(R_5)_2$ radical, wherein R_5 is a lower alkyl radical; D is an electron donor radical, wherein the electron donor radical provides the reactive functions for the polymerizable functional groups, the polymerizable functional groups attached to said electron donor and said other difunctional monomer have alcohol, amine, allyl, vinyl or acid functions; and said radical with dislocated electrons have one of the formulae:





-continued



in which R_3, R_4 and R_6, which may be identical or different, are each a hydrogen atom or a lower alkyl radical.

5,189,135

FLUORINATED POLYURETHANES WITH HYDROXY FUNCTIONALITY, PROCESS FOR PREPARING THEM AND THEIR USE FOR THE TREATMENT OF LITHOIDAL MATERIAL

Ennio Cozzi, Milan; Franco Federici, Varese, and Paolo Parrini, Novara, all of Italy, assignors to Syremont S.p.A., Milan, Italy

Continuation of Ser. No. 543,546, Jun. 26, 1990, abandoned. This application May 5, 1992, Ser. No. 879,124

Claims priority, application Italy, Jun. 28, 1989, 21018 A/89

Int. Cl.[5] C08G *18/50*

U.S. Cl. 528—70 **16 Claims**

1. Low molecular weight non-film forming fluorinated polyurethanes with hydroxy functionality obtained from (1) the reaction of at least one organic diisocyanate with at least one hydroxy-capped perfluoropolyether to produce a product and (2) reacting the product with a polyol, having a functionality of least 2, and in which the ratio of the equivalents of isocyanate groups to total hydroxy groups is lower than or equal to 1, said low molecular weight fluorinated polyurethane having an average molecular weight between greater than 1,000 and 5,000, a hydroxy functionality greater than or equal to 2, a fluorine content larger than 30% by weight, and said fluorinated polyurethane is soluble in organic solvents.

5,189,136

CONDUCTING POLYMER FORMED OF POLY(2-METHOXY,5-(2'-ETHYL-HEXYLOXY)-P-PHENYLENEVINYLENE)

Fred Wudl, Santa Barbara, and Gordana Srdanov, Goleta, both of Calif., assignors to The Regents Of The University of California, Oakland, Calif.

Filed Dec. 12, 1990, Ser. No. 626,463

Int. Cl.[5] C08G *61/02*

U.S. Cl. 528—86 **5 Claims**

1. A poly(phenylenevinylene) polymer comprising: poly(2-methoxy,5-(2'-ethyl-hexyloxy)-p-phenylenevinylene).

5,189,137

METHOD FOR PREPARING A HIGH MOLECULAR WEIGHT POLYETHERMIDE POLYMER IN A DUAL SOLVENT SYSTEM

Paul E. Howson, Latham, and Patricia D. Mackenzie, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 7, 1991, Ser. No. 772,175

Int. Cl.[5] C08G *73/10, 8/02, 14/00*

U.S. Cl. 528—171 **16 Claims**

1. A method for preparing a high molecular weight polyetherimide polymer comprising the steps of:

dissolving a diamine monomer and a dianhydride monomer in a dual solvent system comprised of at least two solvents, chloroform and a second solvent having a relatively high boiling point characteristic such that when said first and second solvents are mixed together, the boiling point of the dual solvent system is at least as high as the temperature at which the polyetherimide is formed; and

heating said dual solvent system containing said dianhydride and diamine monomers to a temperature at which polymerization to said polyetherimide polymer occurs.

VOL 1147 ISS 4 FE 23 1993 UMI

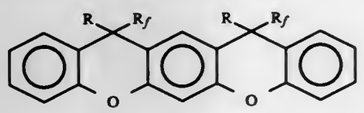
5,189,138

COMPOUNDS, MONOMERS, AND POLYMERS BASED ON PERFLUOROALKYL AND PERFLUOROALKYL-ARYL DIOXAPENTACENE

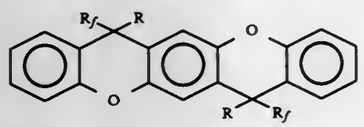
Swiatoslaw Trofimenko, Wilmington, and Brian C. Auman, Newark, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 20, 1991, Ser. No. 661,595
Int. Cl.[5] C08G *63/00, 73/10;* C07D *311/78, 307/77*
U.S. Cl. 528—183 24 Claims

1. A composition of matter comprising at least one of the isomeric structures having the formula



or



wherein R is selected from the group consisting of aryl, substituted aryl, and perfluoroalkyl; and R_f is perfluoroalkyl.

5,189,139

PREPARATION OF POLYCARBONATES COMPRISING SEPARATING BISPHENOL, CONVERTING BISPHENOL TO DIARYL CARBONATE AND RECYCLING

Hendrik E. Tuinstra, and Harold D. Myers, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 8, 1991, Ser. No. 741,925
Int. Cl.[5] C08G *64/24*
U.S. Cl. 528—196 4 Claims

1. A process for producing a polycarbonate comprising the steps of:

A. reacting a diaryl carbonate with a bisphenol to produce a bisphenol polycarbonate and a phenol;

b. separating the polycarbonate and phenol;

C. reacting a carbonyl halide with at least some of the phenol from step B to produce a diaryl carbonate, and recycling the diaryl carbonate to step A.

5,189,140

HEAT-RESISTANT INJECTION-MOLDABLE COPOLYESTER RESINS AND RESIN BLENDS OF THE SAME

Toshio Nakane; Hiroaki Kosuma; Toshio Shiwaku, and Kenji Hijikata, all of Shizuoka, Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

Filed May 8, 1992, Ser. No. 880,443
Claims priority, application Japan, May 10, 1991, 3-105679; Mar. 30, 1992, 4-73915
Int. Cl.[5] C08G *63/13*
U.S. Cl. 528—272 6 Claims

1. A heat-resistant moldable copolyester resin which is the copolymerization reaction product of:

a diol monomer component consisting essentially of 1,4-cyclohexanedimethanol; and

an acid monomer component which includes (i) a first acid comonomer consisting essentially of napthalenedicarboxylic acid or the dimethyl derivative thereof, and (ii) a second acid comonomer consisting essentially of 4,4'-diphenyldicarboxylic acid or an ester-forming derivative thereof, and wherein said first and second comonomers are present in amounts which satisfy a molar fraction ratio:

$$3/7 \leq A/B \leq 8.5/1.5$$

wherein A and B are the molar fractions of the first and second acid comonomers, respectively.

5,189,141

POLYARAMIDE WITH PENDANT CARBOXYL GROUPS

Robert S. Irwin, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 446,338, Dec. 5, 1989, Pat. No. 5,039,785.
This application Apr. 30, 1991, Ser. No. 693,522
Int. Cl.[5] C08G *69/32*
U.S. Cl. 528—331 6 Claims

1. Poly(2,2'-dicarboxy-4,4'-biphenylene terephthalamide), having an inherent viscosity I.V. of at least 3.5 determined as follows:

$$I.V. = \frac{\ln (R.V.)}{C}$$

where R.V. is the relative viscosity measured at 30° C. and C is 0.5 g of polymer per 100 ml of solvent selected from the group consisting of N-methylpyrrolidone, dimethylacetamide and 100% H_2SO_4.

5,189,142

WET STRENGTH RESIN COMPOSITION AND METHOD OF MAKING SAME

David I. Devore, Langhorne, and Stephen A. Fischer, Yardley, both of Pa., assignors to Henkel Corporation, Ambler, Pa.

Filed Aug. 24, 1990, Ser. No. 573,600
Int. Cl.[5] C08G *69/26, 69/34*
U.S. Cl. 528—339.3 20 Claims

1. A wet strength resin composition comprising from about 1% to about 60% by weight of an aminopolyamide-epichlorohydrin acid salt resin, up to about 0.1% by weight total organic chlorine based on the weight of said resin, and the remainder water.

5,189,143

PROCESS FOR PREPARING POLYTETRAFLUOROETHYLENE GRANULAR POWER

Norimasa Honda; Kazuhide Sawada; Kenjiro Idemori, and Hirokazu Yukawa, all of Settsu, Japan, assignors to Daikin Industries, Ltd., Osaka, Japan

Filed Apr. 30, 1991, Ser. No. 693,193
Claims priority, application Japan, May 1, 1990, 2-116265; May 15, 1990, 2-124615
Int. Cl.[5] C08F *6/16*
U.S. Cl. 528—498 8 Claims

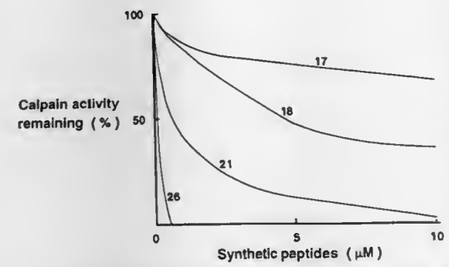
1. A process for preparing a polytetrafluoroethylene granular powder, which comprises agitating a polytetrafluoroethylene powder having an average particle size of not more than 200 μm in a two-phase liquid medium comprising water and at least one halogenated hydrocarbon selected from the group consisting of 1,1-dichloro-2,2,2-trifluoroethane, 1,1-dichloro-1-fluoroethane, 1,1-dichloro-2,2,3,3,3-pentafluoropropane and 1,3-dichloro-1,1,2,2,3-pentafluoropropane.

5,189,144

HUMAN CALPASTATIN-LIKE POLYPEPTIDE

Kiyozo Asada; Takashi Uemori; Masahiro Endo, all of Otsu; Fusao Kimizuka, Ohmihachiman, and Ikunoshin Kato, Uji, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto, Japan

Continuation of Ser. No. 516,981, Apr. 30, 1990, abandoned.
This application Mar. 17, 1992, Ser. No. 852,343
Claims priority, application Japan, Apr. 28, 1989, 1-107388; May 22, 1989, 1-126648
Int. Cl.[5] C07K *7/00*
U.S. Cl. 530—324 1 Claim



1. A polypeptide having a calpain inhibitory activity and having the following amino acid sequence:

Lys—Ser—Leu—Thr—Pro—Ala—Val—Pro—Val—Glu—
Ser—Lys—Pro—Asp—Lys—Pro—Ser—Gly—Lys—Ser—
Gly—Met—Asp—Ala—Ala—Leu—Asp—Asp—Leu—Ile—
Asp—Thr—Leu—Gly—Gly—Pro—Glu—Glu—Thr—Glu—
Glu—Glu—Asn—Thr—Thr—Tyr—Thr—Gly—Pro—Glu—
Val—Ser—Asp—Pro—Met—Ser—Ser—Thr—Tyr—Ile—
Glu—Glu—Leu—Gly—Lys—Arg—Glu—Val—Thr—Ile—
Pro—Pro—Lys—Tyr—Arg—Glu—Leu—Leu—Ala—Y,

wherein Y is selected from the group consisting of —OH and

—Lys—Pro—Ile—Gly—Pro—Asp—Asp—Ala—Ile—Asp—
Ala—Leu—Ser—Ser—Asp—Phe—Thr.

5,189,145

FLOWER-INDUCING SUBSTANCES AND A METHOD FOR PRODUCTION THEREOF

Go Takeba, No. 6-18, Kitaoji 3-chome, Otsu-shi, Shiga-ken, Japan, assignor to Ajinomoto Co., Inc., Tokyo and Go Takeba, Otsu, both of, Japan

Filed Sep. 19, 1990, Ser. No. 584,620
Claims priority, application Japan, Sep. 21, 1989, 1-243387; Mar. 23, 1990, 2-71973; May 10, 1990, 2-118712; Jun. 21, 1990, 2-163716
Int. Cl.[5] C07K *1/00*
U.S. Cl. 530—326 8 Claims

1. A protein or peptide composition having a flower-inducing activity and comprising the following amino acid sequence in its molecule:

Ser-Gln-Leu-Pro-Leu-Val-Gly-Asn-Thr-Ala-Pro-
Asn-Phe-Glu-Ala-Glu-Ala-Val-Phe-Asp-Gln

and being substantially free of plant materials insoluble in water.

5,189,146

PASTEURIZABLE, FREEZE-DRIABLE HEMOGLOBIN-BASED BLOOD SUBSTITUTE

Jen-Chang Hsia, Concord, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Continuation of Ser. No. 359,396, May 31, 1989, abandoned, which is a division of Ser. No. 187,721, Apr. 29, 1988, Pat. No. 4,857,721. This application Oct. 24, 1991, Ser. No. 781,671
Claims priority, application United Kingdom, May 5, 1987, 8710598
Int. Cl.[5] C07K *15/22*
U.S. Cl. 530—385 15 Claims

1. A process for preparing a stabilized hemoglobin product consisting essentially of tetrameric hemoglobin units stabilized against dissociation into dimers, and stabilized against conformational change between the T-conformation and the R-conformation upon formation of aqueous preparations thereof, said tetrameric units having covalent chemical linkages between globin chains of the sub-units to effect the stabilization, which process comprises:

(1) reacting hemoglobin in aqueous solution with a polyaldehyde having more than two aldehydic groups said polylydehyde being free from negatively charged ionic groups capable of reacting with the DPG site of the hemoglobin;

(2) deactivating residual aldehydic groups on said polyaldehyde after the reaction with hemoglobin is substantially complete; and

(3) recovering the conformationally stabilized and intermolecularly crosslinked hemoglobin so formed.

5,189,147

METERODIMERIC T LYMPHOCYTE RECEPTOR ANTIBODY

Haruo Saito, Arlington; David M. Kranz, Somerville; Herman N. Eisen, Waban, and Susumu Tonegawa, Chestnut Hill, all of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Division of Ser. No. 666,988, Oct. 31, 1984, which is a continuation-in-part of Ser. No. 620,122, Jun. 13, 1984, Pat. No. 4,873,190. This application Nov. 14, 1988, Ser. No. 271,216
Int. Cl.[5] A61K *35/14*
U.S. Cl. 530—387.9 6 Claims

1. An antibody specific for regions of the alpha subunit of a mammalian T lymphocyte receptor or an antigenic portion thereof, present on more than one clone of cells bearing T lymphocyte receptors.

5,189,148

STABILIZED FGF COMPOSITION AND PRODUCTION THEREOF

Yohko Akiyama, Ibaraki; Minoru Yoshioka, and Nobuyuki Kitamori, both of Suita, all of Japan, assignors to Takeda Chemical Industries, Inc., Osaka, Japan

Filed Jul. 3, 1990, Ser. No. 547,454
Claims priority, application Japan, Jul. 7, 1989, 1-176228; May 24, 1990, 2-136333
Int. Cl.[5] A61K *37/36*
U.S. Cl. 530—399 12 Claims

1. A stabilized FGF protein composition which comprises an FGF protein and low-substituted hydroxypropyl cellulose which contains not less than 5.0 percent and not more than 16.0 percent of hydroxypropyl group.

VOL 1147 ISS 4 FE 23 1993 UMI

5,189,149

METHOD FOR THE PRODUCTION OF COMPLEXES OF LONG CHAIN POLYUNSATURATED FATTY ACIDS AND THEIR DERIVATIVES, WITH CYCLODEXTRINS, AND THE RESULTING COMPLEXES

Tiberio Bruzzese, and Giovanni Mozzi, both of Milan, Italy, assignors to Staroil Limited, Road Town, British Virgin Isls.

Filed Jul. 26, 1991, Ser. No. 736,565
Claims priority, application Italy, Aug. 9, 1990, 21257 A/90
Int. Cl.[5] C08B *37/16;* A61K *47/40*
U.S. Cl. 514—58 **19 Claims**

1. A complex consisting of an oleaginous substance and a cyclodextrin, and oleaginous substance being selected from the group consisting of long chain polyunsaturated fatty acids, salts, of long chain polyunsaturated fatty acids, C_1–C_3 alkyl or glycerol esters of long chain polyunsaturated fatty acids and mixtures thereof, characterized in that the active oleaginous substance is present in the complex in a concentration higher than 18% by weight.

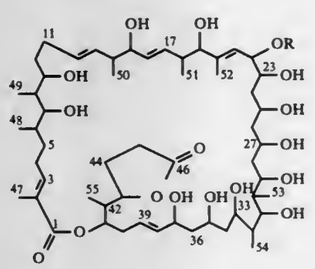
5,189,150

OASOMYCINS

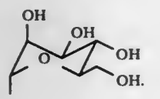
Axel Zeeck, Göttingen; Siegrid Philipps, Celle; Susanne Grabley, Königstein; Ernold Granzer, Kelkheim/Taunus; Klaus Hütter, Bad Soden am Taunus; Ralf Thiericke, Dietzenbach, and Joachim Wink, Rödermark, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 24, 1991, Ser. No. 781,928
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1990, 4034110; Nov. 15, 1990, 4036360
Int. Cl.[5] C07H *17/08*
U.S. Cl. 536—6.5 **1 Claim**

1. The compound of the formula I



in which R is hydrogen or the group



5,189,151

HIGHLY SPECIFIC DNA PROBE FOR ENTEROAGGREGATIVE ESCHERICHIA COLI

Bernadette Baudry, 631 Concerto La., Silver Spring, Md. 20902, and Myron M. Levine, 5209 Windmill La., Columbia, Md. 21044

Filed May 16, 1990, Ser. No. 524,100
Int. Cl.[5] C07H *21/04*
U.S. Cl. 536—24.32 **11 Claims**

1. A DNA segment consisting of a DNA sequence with the enteroaggregative *E. coli* DNA hybridizing specificity of the DNA sequence contained in the bacterium ATCC Accession No. CVP-ATCC 67963.

5,189,152

CELLULOSE SOLUTION IN WATER AND NMMO

Peter Hinterholzer, Timelkam; Stefan Zikeli, Regau; Heinrich Firgo, Vöcklabruck; Bernd Wolschner, Vöcklabruck; Dieter Eichinger, Vöcklabruck; Johann Männer, Weyregg/Attersee; Stephan Astegger, Vöcklabruck, and Karin Weinzierl, Timelkam, all of Austria, assignors to Lenzing Aktiengeseilschaft, Lenzing, Austria

Filed Jul. 16, 1991, Ser. No. 730,169
Claims priority, application Austria, Jul. 16, 1990, 1509/90
Int. Cl.[5] C08B *16/00;* C08L *1/08;* C08J *4/00*
U.S. Cl. 536—56 **12 Claims**

1. A cellulose solution in water and N-methyl-morpholine-N-oxide which comprises 2 to 44% by weight cellulose and which further comprises 0.01 to 1% H_2O_2 and 0.01 to 2% of a stablizer for H_2O_2.

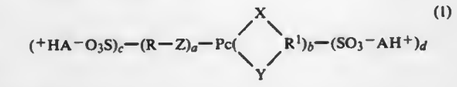
5,189,153

SUBSTITUTED PHTHALOCYANINES

Peter Gregory, Bolton, and Prakash Patel, Edgerton, both of Great Britain, assignors to Imperial Chemical Industries, PLC, London, England

Filed Jun. 19, 1990, Ser. No. 540,172
Claims priority, application United Kingdom, Jul. 12, 1989, 8915961
Int. Cl.[5] C09B *47/04, 62/00, 67/00;* C07D *487/22*
U.S. Cl. 540—122 **8 Claims**

1. A phthalocyanine compound of the Formula (1):



(1)

wherein:
Pc is a phthalocyanine nucleus which is metal free or contains a metal or oxymetal;
X is S; NT or O;
Y is S; NT or O;
Z is S or Se;
in which T in the above is H; alkyl or aryl;
$^+$HA is an aliphatic polyamino ammonium ion or a substituted diguanidinium ion;
each R independently is an aromatic radical linked to a peripheral carbon atom of the Pc nucleus through an atom Z;
each R^1 independently is optionally substituted phenylene or naphthylene in which the atoms X and Y are attached to adjacent nuclear carbon atoms in R^1 and to adjacent peripheral carbon atoms of the Pc nucleus;
a is 0 to 16; provided that
b is 0 to 8; a+b 2b is 8 to 16; and
c+d is 4 to 16.

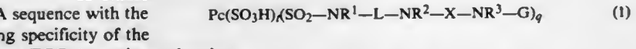
5,189,154

ANIONIC PHTHALOCYANINE COMPOUNDS

Peter Gregory, Bolton; Ronald W. Kenyon, Manchester, and Christine Millard, Cheshire, all of England, assignors to Imperial Chemical Industries PLC, London, England

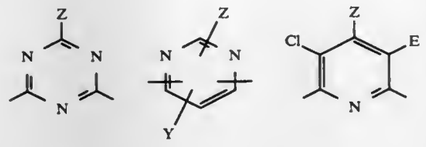
Filed Jun. 28, 1991, Ser. No. 720,296
Claims priority, application United Kingdom, Jul. 26, 1990, 9016451
Int. Cl.[5] C09B *47/04*
U.S. Cl. 540—126 **17 Claims**

1. An anionic phthalocyanine compound which, in the free acid form, has the Formula (1):



(1)

wherein:
Pc is a Li, Na, K, Mg, Ca, Ba, Al, Si, Sn, Pb, Rh, Sc, Ti, V, Cr, Mn, Fe, Co, Zn, Ni or Cu-containing phthalocyanine nucleus;
R^1, R^2 and R^3 are each independently H, C_{1-4}-alkyl or hydroxy-C_{1-4}-alkyl;
L is a divalent aliphatic radical containing from 2 to 6 carbon atoms, benzylene, xylylene or a monocyclic radical of the benzene series;
each X independently is carbonyl or a group of formula (2), (3) or (4):



(2) (3) (4)

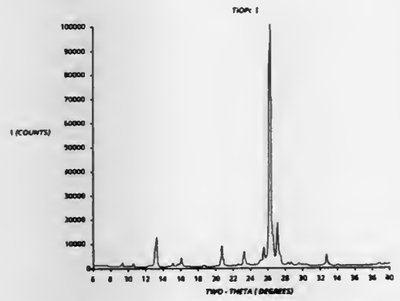
each Z independently is NR^4R^5, SR^6 or OR^6;
each Y independently is H, Cl or Z;
each E independently is Cl or CN;
R^4 and R^5 are each independently H, C_{1-4}-alkyl or substituted C_{1-4}-alkyl in which the substituents are selected from —COOH, —SO_3H and —OH or R^4 and R^5 together with the nitrogen atom to which they are attached form a morpholine or piperidine ring;
R^6 is selected from C_{1-4}-alkyl and hydroxy-C_{1-4}-alkyl
G is a colourless C_{1-4}-substituted alkyl, (C_{1-3}-alkyl)substituted phenyl, substituted phenyl or substituted naphthyl radical wherein the substituent is selected from B, —$(CH_2)_n$—B, —O—$(CH_2)_n$—B, —S—$(CH_2)_n$—B, and —$NR^8(CH_2)_n$—B in which B is CO_2H or COSH, n is an integer from 1 to 6 and R^8 is H or C_{1-4}-alkyl; and
(t+q) is from 3 to 4 inclusive.

5,189,155

TITANYL PHTHALOCYANINE TYPE I PROCESSES

James D. Mayo, Toronto; Terry L. Bluhm, Oakville; Cheng K. Hsiao, Mississauga; Trevor I. Martin, Burlington, and Ah-Mee Hor, Mississauga, all of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 11, 1991, Ser. No. 683,901
Int. Cl.[5] C09B *67/50*
U.S. Cl. 540—141 **24 Claims**



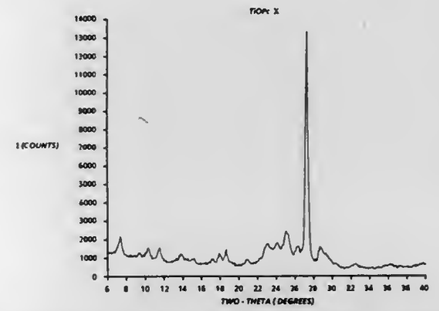
1. A process for the preparation of titanyl phthalocyanine Type I consisting essentially of the addition of titanium tetrabutoxide and diiminoisoindolene to a chloronaphthalene solvent followed by heating; thereafter cooling and separating Type I titanyl phthalocyanine; and subsequently subjecting the said Type I phthalocyanine to washing with boiling N,N-dimethylformamide followed by washing with a second solvent selected from the group consisting of methanol, acetone and water enabling said Type I titanyl phthalocyanine with a purity equal to at least 99 percent.

5,189,156

PROCESSES FOR THE PREPARATION OF TITANIUM-PHTHALOCYANINE TYPE X

James D. Mayo, Toronto, and Sandra J. Gardner, Willowdale, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1991, Ser. No. 673,506
The portion of the term of this patent subsequent to Nov. 24, 2009, has been disclaimed.
Int. Cl.[5] C09B *67/50*
U.S. Cl. 540—141 **25 Claims**



1. A process for the preparation of Type X titanyl phthalocyanine consisting of reacting titanium tetraalkoxide and diiminoisoindolene in the presence of a halonaphthalene solvent; dissolving the resulting Type I titanyl phthalocyanine in a trihaloacetic acid and an alkylene halide wherein alkylene contains from between 1 to about 6 carbon atoms; adding the resulting mixture slowly to a cold aqueous aliphatic alkane alcohol solution wherein alkane contains from 1 to about 12 carbon atoms; and thereafter isolating the resulting Type X titanyl phthalocyanine with an average volume particle size diameter of from about 0.05 to about 0.1 micron.

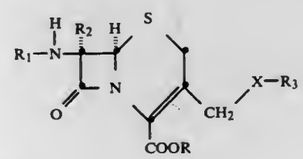
5,189,157

ANTIBACTERIAL CEPHALOSPORIN COMPOUNDS

Chung-Chen, Wei, Cedar Knolls, and Kevin F. West, Fairfield, both of N.J., assignors to Hoffmann La Roche Inc., Nutley, N.J.

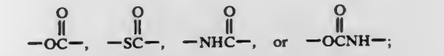
Continuation-in-part of Ser. No. 62,928, Jun. 16, 1987, abandoned. This application May 3, 1988, Ser. No. 189,936
Int. Cl.[5] C07D *501/34;* A61K *31/545*
U.S. Cl. 540—222 **45 Claims**

1. A compound of the formula



I

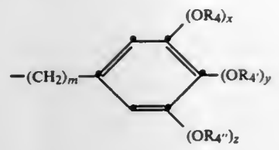
wherein X is



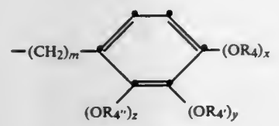
R is hydrogen or a carboxylic acid protecting group;
R_1 is an acyl group;

VOL 1147 ISS 4 FEB 23 1993 UMI

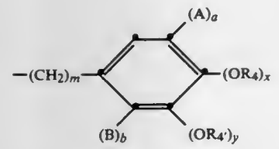
R_2 is hydrogen or lower alkoxy; and
R_3 is of the formula,



or



or



or

wherein R_4, $R_{4'}$ and $R_{4''}$ are independently hydrogen or



wherein R_{200} is straight or branched lower alkyl, A and B are halogen, a, b, x, y and z are independently zero (upon which a hydrogen atom is present at that ring position) or 1 except that at least two of x, y and z are always 1, and m is zero or an integer from 1 to 8.

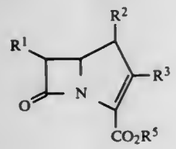
5,189,158

4-SUBSTITUTED AZETIDINONES AS PRECURSORS TO 2-SUBSTITUTED-3-CARBOXY CARBAPENEM ANTIBIOTICS AND A METHOD OF PRODUCING THEM

Gregg B. Feigelson, Spring Valley; William V. Curran, and Carl B. Ziegler, both of Pearl River, all of N.Y., assignors to American Cyanamid Company, Wayne, N.J.

Filed Mar. 20, 1991, Ser. No. 672,496
Int. Cl.[5] C07D *487/00, 487/04*
U.S. Cl. 540—302 **2 Claims**

1. A process for producing a compound of the formula:



wherein:

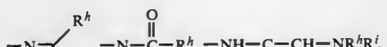
R^1 is hydrogen, hydroxy (lower) alkyl or protected hydroxy (lower) alkyl;

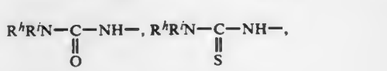
R^2 is selected from the group consisting of hydrogen and $(C_1–C_6)$ alkyl;

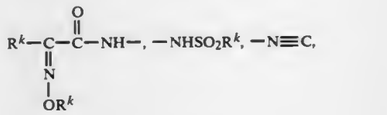
R^3 is hydrogen, halogen, azido, nitro, cyano, a suitable leaving group comprising a moiety selected from $OCOCH_3$, $OCOCF_3$, OSO_2CH_3, OSO_2Ph, $OP(O)(OPh)_2$;

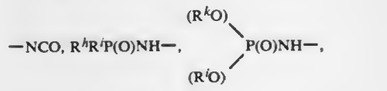
a moiety of the formula $—S(O)_iR^a$, wherein i=0, 1, 2 and R^a may be hydrogen, $(C_1–C_6)$ alkyl, $(C_3–C_7)$ cycloalkyl, $(C_2–C_6)$ alkenyl, $(C_2–C_6)$ alkenyl, aryl heteroaryl, aryl $(C_1–C_6)$ alkanoyl, arylcarbonyl, heteroarylcabonyl, heterocyclyl, heterocyclyl $(C_1–C_6)$ alkyl, fused heterocyclyl, fused heterocyclyl $(C_1–C_6)$ alkyl, fused heteroaryl, fused heteroaryl $(C_1–C_6)$ alkyl, quaternized heteroaryl, quaternized heteroaryl $(C_1–C_6)$ alkyl, quaternized heterocyclyl, quaternized heterocyclyl $(C_1–C_6)$ alkyl, quaternized fused heterocyclyl, quaternized fused heterocyclyl $(C_1–C_6)$ alkyl, quaternized fused heteroaryl, quaternized fused heteroaryl $(C_1–C_6)$ alkyl, quaternized heterocyclyl $(C_1–C_6)$ thioalkyl, any of such groups being optionally substituted by $C_1–C_6$ alkyl, amino, $C_1–C_6$ alkanoylamino, mono-, di- and tri-$(C_1–C_6)$ alkylamino, hydroxy, $C_1–C_6$ alkoxy, mercapto, $C_1–C_6$ alkylthio, heteroarylthio, fused heteroarylthio, arylthio, heterocyclylthio, fused heterocyclylthio, sulphamoyl, carbamoyl, amidino, quanidino, nitro, fluoro, chloro, bromo, carboxy and salts and esters thereof, $C_1–C_6$ alkanoyloxy, arylcarbonyl, heteroarylcarbonyl, heterocyclylcarbonyl, fused heterocyclylcarbonyl, the heteroatom or heteroatoms in the above-named heterocyclyl, fused heterocyclyl, heteroaryl and fused heteroaryl moieties are selected from 1–4 oxygen, nitrogen or sulfur atoms and each ring of the heterocycle, fused heterocycle and heteroaryl, fused heteroaryl moieties is comprised of 5 of 6 atoms, the heteroatom or heteroatoms in the above named quaternized heteroaryl, quaternized heteroaryl $(C_1–C_6)$ alkyl, quaternized heterocyclyl, quaternized heterocyclyl $(C_1–C_6)$ alkyl, quaternized fused heterocyclyl, quaternized fused heterocyclyl $(C_1–C_6)$ alkyl, quaternized fused heteroaryl, quaternized fused heteroaryl $(C_1–C_6)$ alkyl, quaternized heterocyclyl $(C_1–C_6)$ thioalkyl moieties are selected from 1–4 oxygen, nitrogen or sulfur atoms and must contain at least one nitrogen atom and each ring of the respective moiety is comprised of 5 or 6 atoms; a moiety of the formula $—OR^a$, where R^a is described hereinabove;

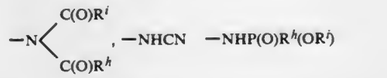
moieties of the formulae $—NR^hR^i$, $—N(R^h)OR^i$, $—N(R^h)NR^hR^i$,



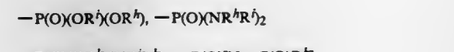


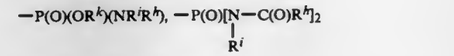




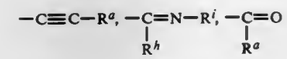


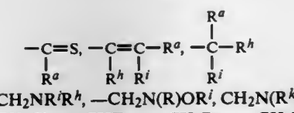
where R^h and R^i are independently selected from hydrogen; substituted or unsubstituted $C_1–C_4$ alkyl and cycloalkyl having from 1 to 6 carbon atoms, aryl, heterocyclyl, heterocyclyl $(C_1–C_4)$ alkyl, heteroaryl and heteroaryl $(C_1–C_4)$ alkyl wherein the heteroatom or heteroatoms are selected from 1–4 oxygen, nitrogen and sulfur atoms or R^h and R^i taken together may form a cyclic group consisting of 5 and 6 ring atoms and wherein R^h and R^i or the cyclic radical formed by their joinder may be substituted wherein the substituents are selected from the group consisting of amino, mono-, di- and tri-$(C_1–C_3)$ alkylamino, hydroxyl, carboxyl, alkoxyl, $—SO_2NH_2$, phenyl, benzyl, and alkoxylcarbonyl; wherein R^k represents hydrogen, substituted or unsubstituted $(C_1–C_3)$ alkyl, $(C_2–C_6)$ alkenyl, heterocyclyl and heteroaryl wherein the heteroatom or heteroatoms are selected from 1–4 oxygen, nitrogen or sulfur and the cyclic portion has 5 or 6 ring atoms wherein the substituents on R^k are selected from amino, mono-, di- and tri-$(C_1–C_3)$ alkylamino, hydroxyl, carboxyl, fluoro, SO_2NH_2 carboxamido and alkoxycarbonyl; moieties of the formulae:





where R^h, R^i and R^k are as hereinbefore defined; moieties of the formulae:

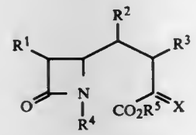




$—CH_2NR^iR^h$, $—CH_2N(R)OR^i$, $CH_2N(R^k(NR^hR^i$, $—CH_2—F$, $—CH_2Cl$, $—CHF_2$, $—CH_2Br$, $—CH_2I$, $—CH_2OCOCH_3$, $—CH_2N(R^i)C(O)R^i$, $—CH_2—N(R)^i$, $CH_2NHP(O)NR^hR^i$, $—CH_2—C(NOR^k)C(O)NR^hR^i$, $—CH_2NHSO_2R^k$, $CH_2NHP(O)(OR^i)(OR^h)$, $—CH_2P(O)(OR^i)(OR^h)$, $—CH_2P(O)(NR^hR^i)$, $—CHR^kNR^iR^h$, $—CHR^kN(R^h)OR^i$, $—CHR^kN(R^k)NR^kR^i$, $—CHF_2$, $—CHCl_2$, $—CHR^kN(R^k)C(O)NR^hR^i$, $—CHR^kC(NOR^k)C(O)NR^hR^i$, $—CHR^kNHSO_2R^k$, $—CHR^kNHP(O)(OR^i)(OR^h)$, $—CHR^kP(O)(OR^i)(OR^h)$ wherein R^a, R^k, R^i and R^h are hereinabove defined and;

R^5 is hydrogen or a suitable removable protecting group for a carboxylic acid;

which comprises reacting a compound of the formula:



wherein R^4 is hydrogen or a suitable removable protecting group for an amide nitrogen and;

X is oxygen, sulfur, a moiety of the formula NR^6 where R^6 is hydrogen, a straight or branched chain $(C_1–C_6)$ lower alkyl, a moiety of the formula NR^7, where R^7 is OH, a straight or branched $(C_1–C_6)$ lower alkoxy or silyloxy, or a moiety of the formula $N—NR^8R^9$ where R^8 and R^9 independently chosen from hydrogen, lower alkyl $(C_1–C_6)$, benzyl, phenyl, CO_2R^5 where R^5 is as hereinbefore defined, or R^8 and R^9 together with the associated nitrogen form a 5 or 6 membered cycloalkyl ring; with a suitable acid.

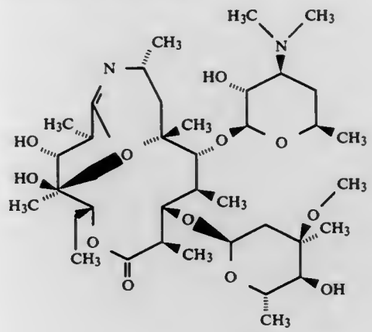
5,189,159

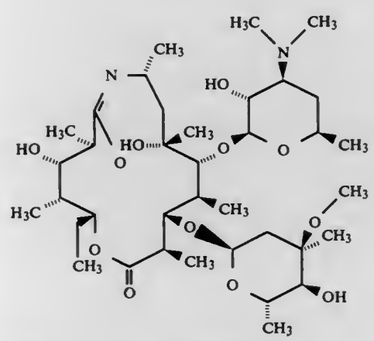
8A-AZA-8A-HOMOERYTHROMYCIN CYCLIC IMINOETHERS

Robert R. Wilkening, Maplewood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 2, 1992, Ser. No. 859,263
Int. Cl.[5] A61K *31/95;* **C07D** *521/00*
U.S. Cl. 540—456 **3 Claims**

1. Compounds of the formulae:





or a pharmaceutically acceptable salt thereof.

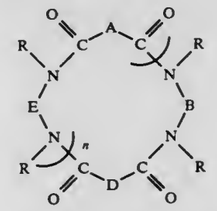
5,189,160

CYCLIC AROMATIC AMIDE OLIGOMERS

Wesley Memeger, Jr., Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 24, 1991, Ser. No. 690,758
Int. Cl.[5] C07D *259/00*
U.S. Cl. 540—460 **20 Claims**

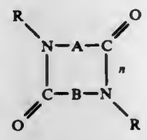
1. A compound of the formula:



wherein A, B, D, and E, are independently selected from the group consisting of benzene or benzene derivatives where the substituents on the benzene are alkyl of 1 to about 8 carbon atoms, halide, or alkoxy of 1 to about 8 carbon atoms 3,3'-

biphenylene, 4,4'-biphenylene, 1,4-naphthalenediyl, 2,6-naphthalenediyl, oxy-3,4'-diphenyldiyl, oxy-4,4'-diphenyldiyl, methylene-3,4'-diphenyldiyl, methylene-4,4'-diphenyldiyl, sulfonyl-3,4'-diphenyldiyl, and sulfonyl-4,4'-diphenyldiyl; R is alkyl of 1 to about 8 carbon atoms or cycloalkyl of 3 to about 8 carbon atoms or aralkyl with ar- being phenyl or naphthyl and the alkyl portion of 1 to about 8 carbon atoms; and n is an integer from 0 to about 12.

19. A compound of the formula:



II

wherein A and B, are independently, selected from the group consisting of benzene or benzene derivatives where the substituents on the benzene are alkyl of 1 to about 8 carbon atoms, halide, or alkoxy of 1 to about 8 carbon atoms, 3,3'-biphenylene, 4,4'-biphenylene, 1,4-naphthalenediyl, 2,6-naphthalenediyl, oxy-3,4'-diphenyldiyl, oxy-4,4'-diphenyldiyl, methylene-3,4'-diphenyldiyl, methylene-4,4'-diphenyldiyl, sulfonyl-3,4'-diphenyldiyl, and sulfonyl-4,4'-diphenyldiyl; R is alkyl of 1 to about 8 carbon atoms or cycloalkyl of 3 to about 8 carbon atoms or aralkyl with ar- being phenyl or naphthyl and the alkyl portion of 1 to about 8 carbon atoms; and n is an integer from 1 to 12.

5,189,161

BENZO(B)PYRROLOBENZODIAZEPINES

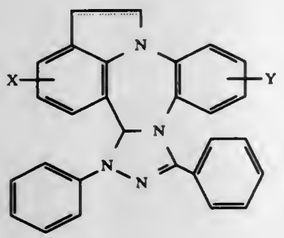
Edward J. Glamkowski, Warren, and Barbara E. Kurys, Elmwood Park, both of N.J., assignors to Hoechst Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 586,357, Sep. 21, 1990, Pat. No. 5,015,738, which is a division of Ser. No. 390,130, Aug. 7, 1989, Pat. No. 4,983,601. This application Mar. 4, 1991, Ser. No. 663,352

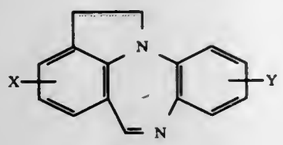
Int. Cl.[5] **C07D** *243/14*

U.S. Cl. 540—555 **22 Claims**

1. A process for the preparation of a compound of the formula



wherein X and Y are independently hydrogen, loweralkyl, or halogen; and the dotted line represents an optional carbon-to-carbon bond which comprises contacting a compound of the formula



wherein X and Y and the dotted line are as above with bis-phenylhydrazidoyl chloride.

5,189,162

UNSYMMETRICAL TRIPHENODIXOAZINE REACTIVE DYES

Peter Smith, Bury, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Nov. 1, 1990, Ser. No. 607,687

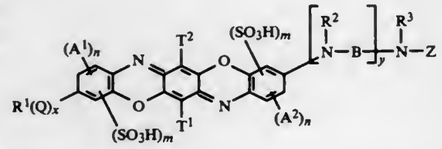
Claims priority, application United Kingdom, Nov. 16, 1989, 8925900

The portion of the term of this patent subsequent to May 28, 2008, has been disclaimed.

Int. Cl.[5] **C07D** *498/04;* **C09B** *19/02, 62/44*

U.S. Cl. 544—75 **10 Claims**

1. Reactive dyes which, in the free acid form, have the Formula (1):



(I)

wherein

T^1 & T^2, each independently, represents H, Cl, Br, F, SO_3H or an optionally substituted alkyl or phenyl radical;

A^1 & A^2 each independently represents Cl, Br, COOH, SO_3H or optionally substituted alkyl, alkoxy or sulphamoyl;

each n independently has a value of 0, 1 or 2;

each m independently has a value of 1 or 2;

R^1 represents H or an optionally substituted alkyl or phenyl radical;

Q represents O or S;

x has a value of 0 or 1;

B represents an optionally substituted divalent alkylene, phenalkylene, naphthalkylene, phenylene or naphthylene radical;

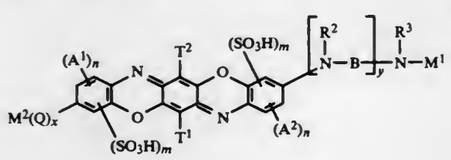
R^2 & R^3 each independently represents H or an optionally substituted alkyl or phenyl radical or R^2 and R^3 together with B and the two N atoms form a piperazine ring;

y has a value of 0 or 1, and

Z represents a fibre-reactive group;

provided that y is 0 when R^1 does not contain a fibre-reactive group.

10. Compounds of the Formula (2) wherein T^1, T^2, A^1, A^2, n, m, Q, x, B, R^2 and R^3 are as defined in claim **1**, M^1 is H or an optionally substituted hydrocarbon radical, M^2 is a hydrocarbon radical having an acylatable substituent, and y is 1



(2)

5,189,163

METHOD OF PREPARING PYRIDAZINONE DERIVATIVES

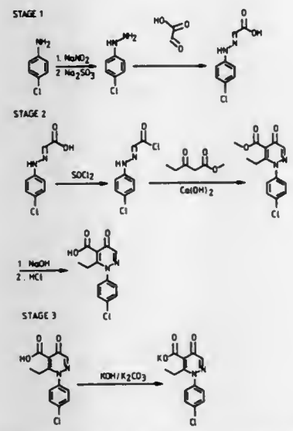
Brian G. Cox, Cheshire, and Michael S. Howarth, Lancashire, both of England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 574,675, Aug. 30, 1990, abandoned. This application Mar. 13, 1992, Ser. No. 858,161

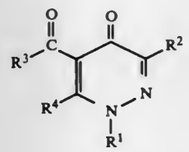
Claims priority, application United Kingdom, Aug. 30, 1989, 8919622

Int. Cl.[5] **C07D** *237/24*

U.S. Cl. 544—239 **8 Claims**

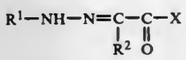


1. The method for preparing a pyridazinone derivative having the formula I



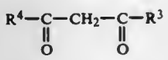
(I)

where: R^1 is an unsubstituted phenyl group or a phenyl group substituted with alkyl or halo groups, R^2 is H, alkyl, or carboxyl groups, R^3 is hydroxy or an alkyl or alkoxy group and R^4 is an alkyl group; said method comprising reacting a hydrazone of glyoxylic acid halide having formula VII:



(VII)

in which X represents a halogen atom and R^1 and R^2 are as defined above, with either (a) an oxo-carboxylic acid ester having the formula VIII;



(VIII)

in which R^3 is an alkyl or alkoxy group and R^4 is as defined above, in the presence of an oxide or hydroxide of a metal selected from the group consisting of calcium, strontium, barium and lithium, or (b) with a preformed complex of an ester (VIII) and an oxide or hydroxide of a metal selected from the group consisting of calcium, strontium, barium and lithium.

5,189,164

PROCESSES FOR THE SYNTHESIS OF SYN-(E)-3,5-DIHYDROXY-7-SUBSTITUTED HEPT-6-ENOIC AND HEPTANOIC ACIDS AND DERIVATIVES AND INTERMEDIATES THEREOF

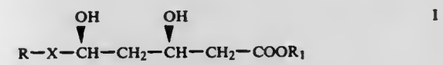
Prasad K. Kapa, Parsippany, and Kan-Ming Chen, Randolph, both of N.J., assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 355,531, May 22, 1989, abandoned. This application Feb. 20, 1990, Ser. No. 482,433

Int. Cl.[5] **C07F** *5/04;* **C07D** *739/02;* **C07C** *69/66, 317/18*

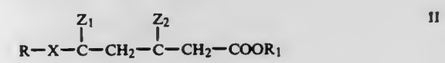
U.S. Cl. 544—297 **29 Claims**

1. A process for synthesizing compounds of the formula:



I

from compounds of the formula:



II

wherein

X is $-CH_2-CH_2-$ or $-CH=CH-$,

Z_1 and Z_2 are either $=O$ or

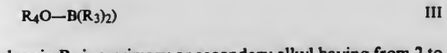


provided that Z_1 and Z_2 are not the same,

R_1 is an ester group inert to the reaction conditions, and

R is an organic radical having groups which are inert under reducing conditions, comprising:

a. providing a reaction medium comprising sodium borohydride in about 3 to 6 parts of tetrahydrofuran to 1 part by volume of an allyl alcohol or lower alcohol having 1 to 4 carbon atoms; and an effective amount of a compound of Formula III:



III

wherein R_3 is a primary or secondary alkyl having from 2 to 4 carbon atoms; and R_4 is allyl or alkyl having from 1 to 4 carbon atoms;

b. treating a compound of Formula II with said reaction medium under conditions suitable for formation of a cyclic boronate ester and/or boron complex of a compound of Formula I, wherein said cyclic boronate ester is formed; and

c. cleaving the product of step (b) to obtain the corresponding compound of Formula I.

5,189,165

PROCESS FOR THE PREPARATION OF 1,1-DISUBSTITUTED CYCLOPROPANE DERIVATIVES

Gerhard Burdinski, Nastätten; Reinhard Kirsch, Frankfurt am Main, and Hariolf Kottmann, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Dec. 21, 1990, Ser. No. 631,399

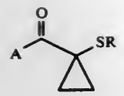
Claims priority, application Fed. Rep. of Germany, Dec. 23, 1989, 3942946

Int. Cl.[5] **C07D** *239/02;* **C07C** *331/00, 319/12*

U.S. Cl. 544—298 **3 Claims**

1. A process for the preparation of cyclopropane derivatives of the formula I

VOL 1147 ISS 4 FE 23 1993 UMI



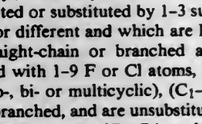
(I)

in which:

A=phenyl, biphenylyl, phenoxyphenyl, benzylphenyl, benzyloxyphenyl, phenylthiophenyl, phenylsulfinylphenyl, phenylsulfonylphenyl, naphthyl, 1,2,3,4-tetrahydronaphthyl, indanyl, fluoroenyl, where the said ring systems are unsubstituted or substituted by 1–3 substituents which are identical or different and which are F, Cl, Br, I, (C_1–C_8)-alkyl, straight-chain or branched and unsubstituted or substituted with 1–9 F or Cl atoms, or (C_3–C_{10})-cycloalkyl (mono-, bi- or multicyclic), (C_1–C_8)-alkoxy, straight-chain or branched, and are unsubstituted or substituted by 1–9 F or Cl atoms, or (C_3–C_8)-cycloalkyl-(C_1–C_4)-alkyl, (C_1–C_8)-alkylthio, (C_1–C_8)-alkylsulfinyl and -sulfonyl, NO_2 or CN;

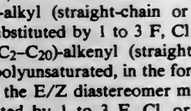
R=(C_1–C_{12})-alkyl (straight-chain or branched, unsubstituted or substituted by 1 to 3 F, Cl or Br atoms or CH_3 groups), (C_2–C_{20})-alkenyl (straight-chain or branched; mono- or polyunsaturated, in the form of the pure E or Z isomers or the E/Z diastereomer mixtures, unsubstituted or substituted by 1 to 3 F, Cl, or Br atoms or CH_3O groups), (C_2–C_{20})-alkynyl (straight-chain or branched; unsubstituted or substituted by 1 to 3 F, Cl or Br atoms or CH_3O groups), (C_4–C_{20})-alkenynyl (straight-chain or branched; mono- or polyunsaturated, in the form of the pure E or Z isomers or the E/Z diastereomer mixtures, unsubstituted or substituted by 1 to 3 F, Cl or Br atom or CH_3O groups), (C_3–C_8)-cycloalkyl, (C_3–C_8)-cycloalkyl-(C_1–C_4)-alkyl, phenyl, phenyl-(C_1–C_4)-alkyl, biphenylyl, phenoxyphenyl, phenylthiophenyl, phenyl-(C_1–C_2)-alkyl, naphthyl, biphenylyl-(C_1–C_4)-alkyl, phenylthiophenyl-(C_1–C_4)-alkyl, phenoxyphenyl-(C_1–C_4)-alkyl, naphthyl-(C_1–C_4)-alkyl, benzothiazol-2-yl, benzimidazol-2-yl, N-(C_1–C_4)-alkylbenzimidazol-2-yl-, pyridyl, pyrid-2-yl-methyl, pyrid-3-yl-methyl, pyrid-4-yl-methyl, pyrimidin-2-yl, pyrimidin-2-yl-methyl, pyrimidin-4-yl-methyl, pyrimidin-5-yl-methyl, furfuryl, thien-2-yl, thien-3-yl, thien-2-yl-methyl, thien-3-yl-methyl, isoxazol-3-yl-methyl, isoxazol-4-yl-methyl, isoxazol-5-yl-methyl, oxazolyl-methyl, thiazol-2-yl-methyl, thiazol-5-yl-methyl, thiazol-5-yl-2-ethyl, (C_2–C_3)-alkyl-Y-aryl (with Y equal to S, O, SO or SO_2) and aryl equal to phenyl, benzyl, thien-2-yl-methyl, thien-3-yl-methyl), benzothiazol-2-yl-methyl, quinolinyl-methyl, pyridyl-phenyl-methyl, where the said ring systems are unsubstituted or substituted by 1, 2 or 3 substituents which are identical or different and each is F, Cl, Br, I, CF_3, (C_1–C_8)-alkyl, (C_1–C_8)-alkoxy, phenyl, and phenyl can be substituted by 1–3 substituents F, Cl, Br, CF_3, (C_1–C_8)-alkyl, (C_1–C_8)-alkoxy,

which comprises reacting a compound of the formula III



(III)

in which A has the abovementioned meaning, with a compound of the formula IV



(IV)

to give compounds of the formula I where R has the above-mentioned meaning, X is fluorine, chlorine, bromine or iodine and sulfate.

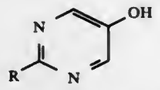
5,189,166

PROCESS FOR THE PREPARATION OF 2-ALKYL-5-HYDROXYPYRIMIDINES FROM 1,3-DIAMINO-2-PROPANOL AND AN ALKANECARBOXYLIC ACID

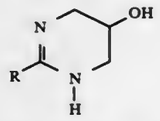
John W. Hull, Jr., Midland, Mich., assignor to DowElanco, Indianapolis, Ind.

Filed Jul. 17, 1992, Ser. No. 916,298
Int. Cl.[5] C07D *239/36*
U.S. Cl. 544—298 **10 Claims**

1. A process for the preparation of 2-alkyl-5-hydroxypyrimidines of the formula



wherein R represents an alkyl group of from 1 to 4 carbon atoms which comprises contacting a 2-alkyl-5-hydroxy-1,4,5,6-tetrahydropyrimidine of the formula



wherein R is as previously defined with at least 2 equivalents of manganese dioxide at a temperature of from about 25° to about 120° C.

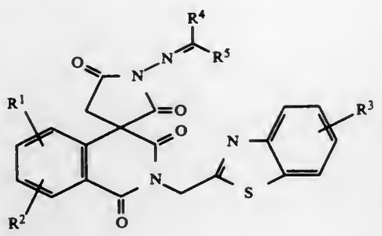
5,189,167

ALKYLIDENE ANALOGS OF 1'-AMINO-2-[(BENZOTHIAZOLYL)-METHYL]SPIRO [ISOQUINOLINE-4(1H),3'-PYRROLIDINE]-1,2',3,5'(2H)-TETRONES USEFUL AS ALDOSE REDUCTASE INHIBITORS

Michael S. Malamas, Jamison, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 25, 1991, Ser. No. 797,567
The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.
Int. Cl.[5] A61K *31/435*; C07D *471/10*
U.S. Cl. 546—18 **5 Claims**

1. A compound of structural formula (I)

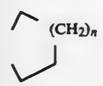


(I)

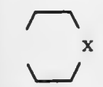
wherein:

R^1, R^2 and R^3 are independently hydrogen, alkyl containing 1 to 6 carbon atoms, halogen, lower alkoxy containing 1 to 6 carbon atoms, trifluoromethyl or nitro;

R^4 and R^5 are independently hydrogen, alkyl containing 1 to 6 carbon atoms, hydrocarbon aromatic moiety, hydrocarbon aromatic moiety, (lower alkyl) wherein hydrocarbon aromatic moiety, contains 6 to 10 carbon atoms and lower alkyl contains 1 to 6 carbon atoms, or R^4 and R^5 are joined to form alicyclic or heterocyclic rings selected from the group consisting of



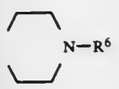
wherein n=1–10;



wherein X=O, S, SO, SO_2;



wherein X=O, S; and



wherein R^6=H, lower alkyl containing 1 to 6 carbon atoms, hydrocarbon aromatic moiety or hydrocarbon aromatic moiety (lower alkyl) wherein hydrocarbon aromatic moiety contains 6 to 10 carbon atoms and lower alkyl contains 1 to 6 carbon atoms.

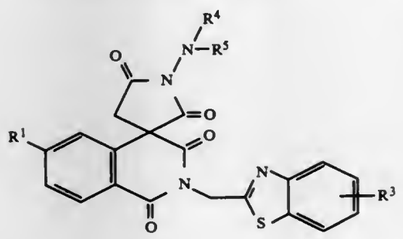
5,189,168

1'-AMINO-2[(BENZOTHIAZOLYL)METHYL]SPIRO-[ISOQUINOLINE-4(1H),3'-PYRROLIDINE]-1,2',3,5'(2H)-TETRONES AND ANALOGS THEREOF USEFUL AS ALDOSE REDUCTASE INHIBITORS

Michael S. Malamas, Jamison, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Nov. 25, 1991, Ser. No. 798,294
The portion of the term of this patent subsequent to Aug. 6, 2008, has been disclaimed.
Int. Cl.[5] A61K *31/435*; C07D *471/10*
U.S. Cl. 546—18 **5 Claims**

1. The compounds of structural formula (I)



(I)

wherein:

R^1, R^2 and R^3 are independently hydrogen, alkyl containing

1 to 6 carbon atoms, halogen, lower alkoxy containing 1 to 6 carbon atoms, trifluoromethyl or nitro;

R^4 and R^5 are independently hydrogen, alkyl containing 1 to 6 carbon atoms, aryl, aryl (lower alkyl) wherein aryl is a hydrocarbon aromatic moiety containing 6 to 10 carbon atoms and lower alkyl contains 1 to 6 carbon atoms, alkanoyl of 2 to 5 carbon atoms, carboalkoxy, alkylsulfoxy, arylsulfoxy, alkylsulfonyl, arylsulfonyl wherein aryl is a hydrocarbon aromatic moiety containing contains 6 to 10 carbon atoms and alkoxy and alkyl contain 1 to 6 carbon atoms, or R^4 and R^5 together with the nitrogen atoms to which they are bonded represent a heterocyclic ring selected from pyrrolidinyl, piperidinyl or azepidinyl rings and the pharmaceutically acceptable salts thereof when R^4 and R^5 are hydrogen, alkyl or aryl.

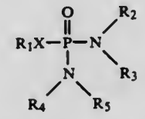
5,189,169

PHOSPHORODIAMIDOTHIOATE HERBICIDES

David B. Kanne, Corte Madera, Calif., assignor to Imperial Chemical Industries PLC, London, Great Britain

Filed Nov. 12, 1991, Ser. No. 790,788
Int. Cl.[5] C07F *9/58, 9/24*
U.S. Cl. 546—22 **22 Claims**

1. A compound having the formula



in which X is sulfur; R_1 is C_1–C_6 alkyl, phenyl, tolyl, chlorophenyl or 3,4-dichlorophenyl; R_2 is C_1–C_4 alkyl; R_3 is pyridyl, phenyl or substituted phenyl in which the substituents are halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 haloalkoxy, nitro and/or cyano; or R_2 and R_3 taken together form an alkylene chain having from 2 to 6 carbon atoms optionally substituted by up to two C_1–C_4 alkyl groups; R_4 and R_5 are each C_2–C_6 alkyl; or R_3 and R_5 taken together form an alkylene chain having from 2 to 5 carbon atoms;

provided that R_3 is not 2,3,6-trifluorophenyl.

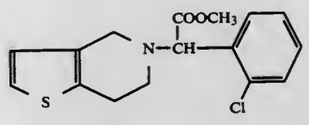
5,189,170

PROCESS FOR THE PREPARATION OF PHENYLACETIC DERIVATIVES OF THIENO-PYRIDINES

Michel Bouisset, Sisteron, and Joël Radisson, Toulouse, both of France, assignors to Sanofi, Paris, France

Division of Ser. No. 540,483, Jun. 19, 1990, Pat. No. 5,036,156.
This application Mar. 29, 1991, Ser. No. 677,482
Claims priority, application France, Sep. 29, 1989, 89 12787
Int. Cl.[5] C07D *495/04*
U.S. Cl. 546—114 **5 Claims**

1. A process for the preparation of a compound of formula III:

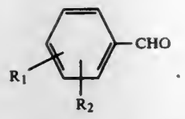


III

wherein an ester of alpha-bromo (2-chloro)phenylacetic acid is reacted with 4,5,6,7-tetrahydro thieno [3,2-c] pyridine in the presence of at least one equivalent of a base in a polar solvent, wherein the alpha-bromo(2-chloro)phenylacetic acid used as the precursor of said ester is prepared by a process wherein an aldehyde of the formula:

VOL 1147 ISS 4 FE 23 1993 UMI

IV



in which R_1 is H and R_2 is 2-Cl, is reacted with $CHBr_3$ and KOH in a mixture of an inert solvent and water.

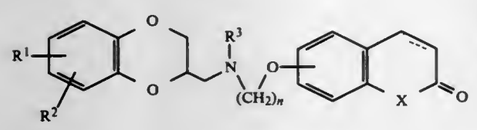
5,189,171

ANTIPSYCHOTIC BENZODIOXAN DERIVATIVES

Gary P. Stack, Ambler; Terrance H. Andree, Doylestown, both of Pa., and Noreen T. Scherer, Plainsboro, N.J., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 719,882, Jun. 21, 1991, Pat. No. 5,166,367.
This application Jan. 17, 1992, Ser. No. 822,475
Int. Cl.[5] C07D *215/227*
U.S. Cl. 546—157 **3 Claims**

1. A compound of the formula:



wherein

the dotted line represents optional unsaturation;

R^1 and R^2 are, independently, hydrogen, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, aralkoxy of 7 to 12 carbon atoms, alkanoyloxy of 2 to 6 carbon atoms, hydroxy, halo, amino, mono- or dialkylamino in which each alkyl group has 1 to 6 carbon atoms, alkanamido of 2 to 6 carbon atoms or sulfonamido or R^1 and R^2 together are methylenedioxy, ethylenedioxy or propylenedioxy;

R^3 is hydrogen or alkyl of 1 to 6 carbon atoms;

n is one of the integers 2, 3 or 4;

X is NR^4, in which R^4 is hydrogen or alkyl of 1 to 6 carbon atoms;

or a pharmaceutically acceptable salt thereof.

5,189,172

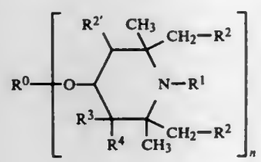
PIPERDINE DERIVATIVES

Mitsumasa Kaitoh; Hideki Kurokawa, and Akiyoshi Ohnishi, all of Yokkaichi, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed Jun. 3, 1992, Ser. No. 893,021
Claims priority, application Japan, Jun. 3, 1991, 3-160134; Sep. 3, 1991, 3-250563; Sep. 3, 1991, 3-250564
Int. Cl.[5] C07D *401/12*
U.S. Cl. 546—208 **5 Claims**

1. A compound represented by the formula:

[I]



wherein:

R^0 indicates a group $R\text{-}(CO)_n$ where R is an alkyl, alkylene or arylene group capable of having n number carbonyl group(s);

R^1 indicates a hydrogen atom, an alkyl group having 1 to 4 carbon atoms, an acyl group having 2 to 7 carbon atoms, or an arylalkyl having 7 to 10 carbon atoms;

R^2 and $R^{2'}$ respectively indicate a hydrogen atom, or an alkyl group having 1 to 4 carbon atoms;

R^3 and R^4 in combination indicate a group =CH—R^5, or R^3 indicates a hydrogen atom and R^4 indicates —CH_2—R^5 where R^5 is a substituted or non-substituted cyclohexyl group, the substituent being an alkyl group having 1 to 4 carbon atoms; and n indicates an integer of 1 to 4.

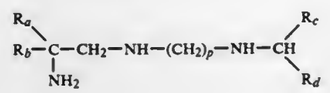
5,189,173

ALKYLATED POLYALKYLENE POLYAMINES AND PROCESS FOR SELECTIVE ALKYLATION

John T. Lai, Broadview Heights, and Pyong-nae Son, Akron, both of Ohio, assignors to The BFGoodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 103,779, Oct. 2, 1987, abandoned, which is a continuation-in-part of Ser. No. 786,765, Oct. 11, 1985, abandoned, which is a continuation-in-part of Ser. No. 664,901, Oct. 26, 1984, Pat. No. 4,547,538, which is a continuation-in-part of Ser. No. 350,536, Feb. 2, 1982, Pat. No. 4,480,092. This application Mar. 2, 1989, Ser. No. 318,047
Int. Cl.[5] C07D *211/56*; C07C *211/13, 211/18*
U.S. Cl. 546—244 **2 Claims**

1. An essentially pure alkylated polyalkylenepolyamine having the structure



wherein,

R_a and R_b independently represent alkyl having from 1 to 24 carbon atoms, and aralkyl having from 7 to about 20 carbon atoms or cycloalkyl; or,

R_a and R_b together when cyclized form a cycloalkyl having from 5 to about 7 carbon atom;

R_c and R_d independently represent branched or unbranched alkyl having from 1 to 24 carbon atoms, aralkyl having from 7 to about 20 carbon atoms or cycloalkyl;

R_c and R_d together when cyclized form a cycloalkyl having from 5 to about 7 carbon atoms, unsubstituted piperidyl or substituted piperidyl wherein said substituents are one or more alkyl or spiro cycloalkyl at one or both of the N-adjacent carbon atoms; and, p represents an integer in the range from 2 to 10.

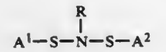
5,189,174

HETEROCYCLIC THIOL-BASED SULFENIMIDE COMPOUNDS

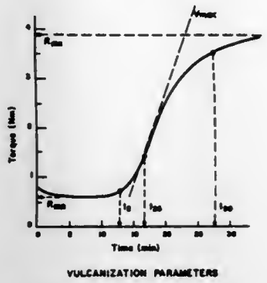
Charles J. Rostek, Jr., Bentleyville, Ohio, assignor to Monsano Company, St. Louis, Mo.

Division of Ser. No. 402,741, Sep. 5, 1989, Pat. No. 5,079,305.
This application Sep. 23, 1991, Ser. No. 763,782
Int. Cl.[5] C07D *213/02, 223/04*
U.S. Cl. 546—255 **3 Claims**

1. A heterocyclic thiol-based sulfenimide compound having the formula



wherein each of A^1 and A^2, independently, is pyridyl, and wherein R is a (a) hydrogen atom, or (b) a hydrocarbyl radical having from 1 to 16 carbon atoms, or (c) the hydrocarbon radical of (b) wherein one or more of the carbon atoms is an oxygen atom, a nitrogen atom, or a substituted nitrogen atom wherein said substituted group is an alkyl and in combination with said nitrogen atom forms a heterocyclic ring having a total of from 1 to 7 carbon atoms, or (d) the hydrocarbyl radical of (b) containing a



halogen, an amino, a cyano, an alkoxy, a hydroxy, or an alkoxycarbonyl.

5,189,175

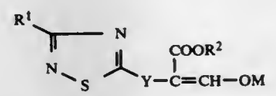
PESTICIDAL THIADIAZOLE-SUBSTITUTED ACRYLIC ACID ESTERS AND INTERMEDIATES THEREFOR

Ulrich Heinemann, Leichlingen; Gerd Kleefeld; Stefan Dutzmann, both of Duesseldorf, and Gerd Hänssler, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 495,528, Mar. 19, 1990, Pat. No. 5,036,085.
This application May 2, 1991, Ser. No. 694,695
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1989, 3910358
Int. Cl.[5] C07D *285/08*
U.S. Cl. 548—128 **12 Claims**

1. A hydroxyacrylic acid ester of the formula

(II)



in which

R^1 represents hydrogen, or straight-chain or branched alkyl having 1 to 8 carbon atoms which is unsubstituted or monosubstituted to polysubstituted by identical or different substituents selected from the group consisting of fluorine, chlorine, bromine, iodine, and arylthio and aryloxy each having 6 to 10 carbon atoms in the aryl moiety, and in each case unsubstituted or monosubstituted to pentasubstituted by identical or different substituents as mentioned below in the definition of R^1;

R^1 furthermore represents straight-chain or branched alkenyl having 2 to 8 carbon atoms, aralkyl having 1 to 6 carbon atoms in the straight-chain or branched alkyl moiety, in each case unsubstituted or monosubstituted to polysubstituted in the aryl moiety by identical or different substituents, aralkenyl having 2 to 6 carbon atoms in the straight-chain or branched alkenyl moiety or aryl having 6 to 10 carbon atoms in the respective aryl moiety, suitable aryl substituents in each case being selected from the group consisting of halogen, cyano, nitro, in each case straight-chain or branched alkyl, alkoxy or alkylthio each having 1 to 6 carbon atoms, in each case straight-chain or branched halogenoalkyl, halogenoalkoxy or halogenoalkylthio each having 1 to 4 carbon atoms and 1 to 9 identical or different halogen atoms, straight-chain or branched alkoxycarbonyl having 1 to 4 carbon atoms or alkoximinoalkyl each having 1 to 6 carbon atoms in the individual alkyl moieties, cycloalkyl having 3 to 8 carbon atoms, doubly linked alkanediyl having 3 to 5 carbon atoms, aryl, aralkyl, aryloxy or aralkyloxy each having 6 to 10 carbon atoms in the aryl moiety and optionally 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and in each case unsubstituted or monosubstituted to polysubstituted in the aryl moiety by identical or different substituents from the group consisting of halogen, alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkoxy or halogenoalkylthio each having 1 to 4 carbon atoms and optionally 1 to 9 identical or different halogen atoms, or heteroarylalkyl or heteroaryl each having 2 to 8 carbon atoms and 1 to 4 identical or different heteroatoms selected from the group consisting of oxygen, sulfur and nitrogen, in the heteroaryl moiety and optionally 1 to 4 carbon atoms in the straight-chain or branched alkyl moiety and in each case optionally monosubstituted to polysubstituted in the heteroaryl moiety by identical or different substituents from the group consisting of halogen, alkyl, alkoxy, alkylthio, halogenoalkyl, halogenoalkoxy or halogenoalkylthio each having 1 to 4 carbon atoms and optionally 1 to 9 identical or different halogen atoms; or

R^1 additionally represents a 5- or 6-membered heteroaryl radical having 1 to 3 identical or different heteroatoms selected from the group consisting of oxygen, sulfur and nitrogen and optionally monosubstituted to polysubstituted by identical or different enes of the abovementioned aryl substituents,

R^2 represents straight-chain or branched alkyl having 1 to 6 carbon atoms,

Y represents oxygen, sulphur or a radical

and

R^5 represents hydrogen or straight-chain or branched alkyl having 1 to 6 carbon atoms and

M represents hydrogen or an alkali metal cation.

5,189,176

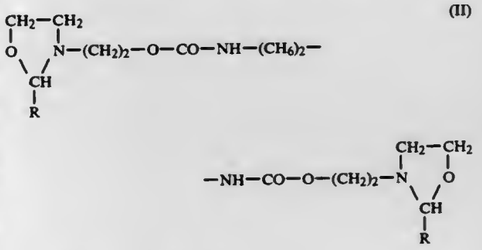
BIS-OXAZOLIDINES, OXAZOLIDINE MIXTURES CONSISTING ESSENTIALLY THEREOF AND THEIR USE AS HARDENERS FOR PLASTICS PRECURSORS CONTAINING ISOCYANATE GROUPS

Harald Blum, Wachtendonk; Josef Pedain, Cologne, and Karl-Heinz Hentschel, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 1, 1991, Ser. No. 723,863
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1990, 4021659
Int. Cl.[5] C07D *263/04*
U.S. Cl. 548—215 **2 Claims**

1. A bis-oxazolidine corresponding to formula (II)

(II)



wherein R represents 1-ethyl pentyl.

5,189,177

CHIRAL BORON CATALYSTS FOR REDUCTION OF KETONES AND PROCESS FOR THEIR PREPARATION

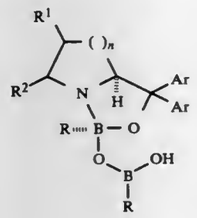
Thomas J. Blacklock, Clark, N.J.; Todd K. Jones, Salan Beach, Calif.; David J. Mathre, Skillman, and Lyndon C. Xavier, Edison, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 510,768, Apr. 18, 1990, Pat. No. 5,039,802. This application Jul. 15, 1991, Ser. No. 730,316

Int. Cl.[5] **C07F** *5/02*

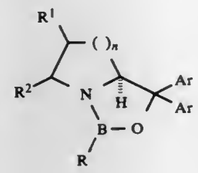
U.S. Cl. 548—405 **11 Claims**

1. A compound of structural formula



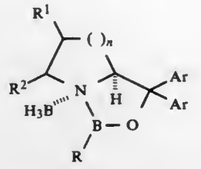
wherein:
n is 1;
R is
1) C_{1-4}alkyl,
2) phenyl,
3) phenyl substituted with one or more of:
i) halo,
ii) C_{1-4}alkyl,
iii) CF_3, or
iv) C_{1-4}alkoxy,
R^1 and R^2 independently are hydrogen, C_{1-3}alkyl, or joined together represent with the carbons to which they are attached a benzo group or a double bond;
Ar is
1) 2-naphthyl,
2) phenyl,
3) phenyl substituted in the 3- or 4-position, with one or more of
i) halo,
ii) C_{1-14}alkyl,
iii) CF_3, or
iv) C_{1-4}alkoxy.

5. The compound of structural formula:



wherein:
n is 1;
R is
1) phenyl,
2) phenyl substituted with one or more of:
i) halo,
ii) C_{1-4}alkyl,
iii) CF_3, or
iv) C_{1-4}alkoxy.
R^1 and R^2 independently are hydrogen, C_{1-3}alkyl, or joined together form, with the carbons to which they are attached, a benzo group or a double bond;
Ar is
1) 2-naphthyl,
2) phenyl,
3) phenyl substituted in 3- and or 4-position with one or more of:
i) halo,
ii) C_{1-4}alkyl,
iii) CF_3, or
iv) C_{1-4}alkoxy.

7. A compound of structural formula



recovered from the reaction mixture wherein
n is 1;
R is
1) C_{1-4}alkyl,
2) phenyl,
3) phenyl substituted with one or more of:
i) halo,
ii) C_{1-4}alkyl,
iii) CF_3, or
iv) C_{1-4}alkoxy,
R^1 and R^2 independently are hydrogen, C_{1-3}alkyl, or joined together form, with the carbons to which they are attached, a benzo group or a double bond;
Ar is
1) 2-naphthyl,
2) phenyl,
3) phenyl substituted in 3- and or 4-positioned with one or more of:
i) halo,
ii) C_{1-4}alkyl,
iii) CF_3, or
iv) C_{t-4}alkoxy.

5,189,178

MATRIX METALLOPROTEASE INHIBITORS

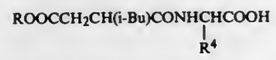
Richard E. Galardy, 73 Faulkner Dr., Guilford, Conn. 06437, and Damian Grobelny, 10 Victoria Ave., Macleod West, 3085, Australia

Continuation-in-part of Ser. No. 615,798, Nov. 21, 1990. This application Aug. 20, 1991, Ser. No. 747,752

Int. Cl.[5] **C07D** *209/20, 209/22, 209/24*

U.S. Cl. 548—495 **7 Claims**

1. A compound of the formula



wherein R is H or lower alkyl (1-6C);
and wherein R^4 is (3-indolyl)methylene,
and the pharmaceutically acceptable amides thereof.

5,189,179

SEROTONIN $5HT_{1A}$ AGONISTS

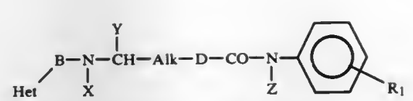
Ian A. McDonald, Loveland; Ronald C. Bernotas, Cincinnati; Mark W. Dudley, Somerville, and Jeffrey S. Sprouse, Cincinnati, all of Ohio, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 574,710, Aug. 29, 1990, abandoned. This application Jul. 30, 1991, Ser. No. 735,700

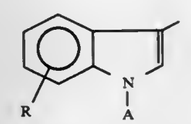
Int. Cl.[5] **C07D** *209/20;* **A61K** *31/405*

U.S. Cl. 548—495 **25 Claims**

1. A compound of the formula:



in which B is represented a C_{1-4} alkylene bridging group; Alk is represented by a linear alkylene bridging group containing from 2–8 carbon atoms which may optionally be monosubstituted at any one carbon atoms with a C_{1-4} alkyl, phenyl, substituted phenyl in which said phenyl ring is substituted with up to 3 substituents in which each substituent is independently selected from the group consisting of halogens, C_{1-4} alkyl, C_{1-4} alkoxy, CF_3, OCF_3, OH, CN, and NO_2, or alkylphenyl substituent in which the phenyl ring may be optionally substituted as above; D is represented by a bond or an ethenylene bridging group; X, Y, and Z are each independently represented by hydrogen, C_{1-4} alkyl, phenyl optionally substituted as described above, or alkylphenyl in which the phenyl ring may be optionally substituted as described above; R_1 is represented by a substituent selected from the group consisting of hydrogen, halogen, C_{1-4} alkyl, C_{1-5} alkoxy, CF_3, OCF_3, OH, NO_2, CN, $—NR_2R_3$, $—CONR_2R_3$, $—COOR_4$, $—CH_2SO_2NR_2R_3$, $—SO_2NR_2R_3$, and $—OCH_2COOR_4$; R_2 and R_3 are each independently represented by H or a C_{1-4} alkyl; R_4 is represented by H, C_{1-4} alkyl, phenyl optionally substituted as above, or an alkylphenyl substituent in which the phenyl ring may be optionally substituted as described above; Het is represented by:



in which R is represented by a substituent selected from the group consisting of hydrogen, halogen, C_{1-4} alkyl, C_{1-5} alkoxy, CF_3, OCF_3, OH, NO_2, CN, $—CH_2SO_2NR_5R_6$, $—SO_2NR_5R_6$, $OCH_2C_6H_5$, $—CONR_5R_6$, $—COOR_7$ and $—OCH_2COOR_7$; R_5 and R_6 are each independently represented by H or C_{1-4} alkyl; R_7 is represented by H, C_{1-4} alkyl, phenyl optionally substituted as above, or an alkylphenyl substituent in which the phenyl ring may be optionally substituted as described above; A is represented by H, or C_{t-4} alkyl; or a pharmaceutically acceptable salt thereof; with the proviso that when Het is an indolyl derivative, then R_1 is not a carbonyl derivative.

5,189,180

SECO-MEVINIC ACID DERIVATIVES USEFUL AS ANTIHYPERCHOLESTEROLEMIC AGENTS AND NEW INTERMEDIATES

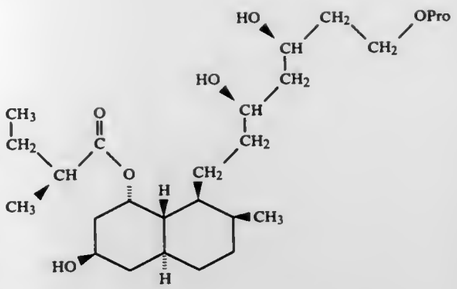
Donald S. Karanewsky, Robbinsville, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 413,656, Sep. 28, 1989, Pat. No. 5,025,017. This application May 1, 1991, Ser. No. 694,515

Int. Cl.[5] **C07D** *311/02, 319/06;* **C07F** *7/02, 7/08*

U.S. Cl. 549—214 **3 Claims**

1. An intermediate of the structure



wherein Pro represents a silyl protecting group.

5,189,181

PROCESS FOR PREPARATION 2,6-DIHYDROBENZO[1:26, 4:5-6]-DIFURAN DYES

Nigel Hall, Greenmount; Nigel Hughes, Shaw, and Prakash Patel, Edgerton, all of England, assignors to Imperial Chemical Industries PLC, London, England

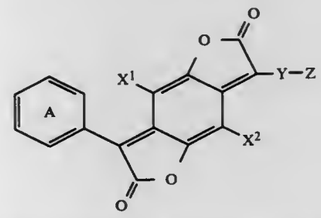
Filed Jan. 7, 1992, Ser. No. 817,615

Claims priority, application United Kingdom, Jan. 8, 1991, 9100303; May 23, 1991, 9111144

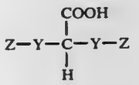
Int. Cl.[5] **C07D** *493/04, 493/14;* **C09B** *57/00;* **D06P** *3/54*

U.S. Cl. 549—299 **3 Claims**

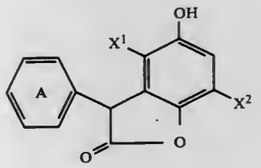
1. A process for the preparation of a polycyclic dye of the formula:



by reacting a substituted acetic acid of the formula:



with a compound of the formula:



and oxidation of the intermediate leuco compound to dehydrogenate the peripheral heterocyclic rings wherein
Y is selected from the group comprising phenyl, pyridyl, naphthyl, thienyl, thiazolyl, isothiazolyl, benzothiazolyl, benzoisothiazolyl, imidazolyl, benzimidazolyl, indolyl, pyrazolyl, pyrimidyl and benzoxazolyl each of which is unsubstituted or is substituted by C_{1-4}-alkyl, C_{2-4}-alkenyl, C_{1-4}-alkoxy, C_{1-4}-alkoxy-C_{1-4}-alkoxy, C_{1-4}-alkylcarbo-

VOL 1147 ISS 4 FE 23 1993 UMI

nyl, C_{1-4}-alkoxycarbonyl, C_{1-4}-alkoxy-C_{1-4}-alkoxycarbonyl, C_{1-4}-alkycarbonyloxy, C_{1-4}-alkoxycarbonyloxy, C_{1-4}-alkoxy-C_{1-4}-alkoxycarbonyloxy, C_{1-4}-alkoxycarbonyl-C_{1-}-alkoxy, C_{1-4}-alkoxy-C_{1-4}-alkoxycarbonyl-C_{1-4}-alkoxy, C_{1-4}-alkylcarbonyloxy-$_{1-4}$-alkoxy, cyano-C_{1-4}-alkoxy, hydroxy-C_{1-4}-alkoxy, C_{1-4}-alkylthio, phenylthio, C_{4-8}-cyclohexyl, nitro, halogen, phenyl, diphenyl, hydroxy, cyano, amino, C_{1-4}-alkylamino, or di(C_{1-4}-alkyl-)amino;

Ring A is unsubstituted or is substituted by from one to five groups selected from the group comprising $-NR^1R^2$, C_{1-4}-alkyl, C_{2-4}-alkenyl, C_{1-4}-alkoxy, C_{1-4}-alkoxy-C_{1-4}-alkoxy, C_{1-4}-alkylcarbonyl, C_{1-4}-alkoxycarbonyl, C_{1-4}-alkoxy-C_{1-4}-alkoxycarbonyl, C_{1-4}-alkylcarbonyloxy, C_{1-4}-alkoxycarbonyloxy, C_{1-4}-alkoxy-C_{1-4}-alkoxycarbonyloxy, C_{1-4}-alkoxycarbonyl-C_{1-4}-alkoxy, C_{1-4}-alkoxy-C_{1-4}-alkoxycarbonyl-C_{1-4}-alkoxy, C_{1-4}-alkylcarbonyloxy-C_{1-4}-alkoxy, cyano-C_{1-4}-alkoxy, hydroxy-C_{1-4}-alkoxy, C_{1-4}-alkylthio, phenylthio, C_{4-8}-cyclohexyl, nitro, halogen, phenyl, diphenyl, hydroxy, cyano, amino, C_{1-4}-alkylamino, or di(C_{1-4}-alkyl)amino;

Z is $-NR^1R^2$;

R^1 and R^2 are each independently H or are independently selected from C_{1-10}-alkyl, C_{2-10}-alkenyl, C_{4-8}-cycloalkyl, phenyl-C_{1-4}-alkyl, phenyl, naphthyl, pyridyl, or thienyl each of which is unsubstituted or is substituted by C_{1-4}-alkyl, C_{2-4}-alkenyl, C_{1-4}-alkoxy, C_{1-4}-alkoxy-C_{1-4}-alkoxy, C_{1-4}-alkylcarbonyl, C_{1-4}-alkoxycarbonyl, C_{1-4}-alkoxy-C_{1-4}-alkoxycarbonyl, C_{1-4}-alkylcarbonyloxy, C_{1-4}-alkoxycarbonyloxy, C_{1-4}-alkoxy-C_{1-4}-alkoxycarbonyloxy, C_{1-4}-alkoxycarbonyl-C_{1-4}-alkoxy, C_{1-4}-alkylcarbonyloxy-C_{1-4}-alkoxy, cyano-C_{1-4}-alkoxy, hydroxy-C_{1-4}-alkoxy, C_{1-4}-alkylthio, phenylthio, C_{4-8}-cyclohexyl, nitro, halogen, phenyl, diphenyl, hydroxy, cyano, amino, C_{1-4}-alkylamino, or di(C_{1-4}-alkyl)amino; or

R^1 and R^2 together with the nitrogen atom to which they are attached form a peperidino or morpholino ring; or

R^1 and R^2 each independently together with the nitrogen to which they are attached and the adjacent carbon atom of Ring B form a tetrahydroquinolino ring; and

X^1 and X^2 are each independently selected from H, halogen, cyano, carboxylic acid, $COOL^3$ in which L^3 is C_{1-4}-alkyl or phenyl, $CONL^1L^2$, $SO_2NL^1L^2$ in which L^1 and L^2 are each independently —H, C_{1-4}-alkyl or phenyl or from C_{1-10}-alkyl, phenyl, naphthyl, pyridyl and thienyl each of which is unsubstituted or is substituted by C_{1-4}-alkyl, C_{2-4}-alkenyl, C_{1-4}-alkoxy, C_{1-4}-alkoxy-C_{1-4}-alkoxy, C_{1-4}-alkylcarbonyl, C_{1-4}-alkoxycarbonyl, C_{1-4}-alkoxy-C_{1-4}-alkoxycarbonyl, C_{1-4}-alkylcarbonyloxy, C_{1-4}-alkoxycarbonyloxy, C_{1-4}-alkoxy-C_{1-4}-alkoxycarbonyloxy, C_{1-4}-alkoxycarbonyl-C_{1-4}-alkoxy, C_{1-4}-alkoxy-C_{1-4}-alkoxycarbonyl-C_{1-4}-alkoxy, C_{1-4}-alkylcarbonyloxy-C_{1-4}-alkoxy, cyano-C_{1-4}-alkoxy, hydroxy-C_{1-4}-alkoxy, C_{1-4}-alkylthio, phenylthio, C_{4-8}-cyclohexyl, nitro, halogen, phenyl, diphenyl, hydroxy, cyano, amino, C_{1-4}-alkylamino, or di(C_{1-4}-alkyl) amino.

5,189,182

PREPARATION OF 5-METHYLBUTYROLACTONE

Rudolf Kummer, Frankenthal; Heinz-Walter Schneider, Ludwigshafen; Werner Bertleff, Viernheim; Rolf Fischer, Heidelberg; Uwe Vagt, Speyer; Fritz Naeumann, Mannheim; Wolfgang Hoelderich, Frankenthal, and Matthias Schwarzmann, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 25, 1988, Ser. No. 236,199

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1987, 3730186; Feb. 2, 1988, 3802980

Int. Cl.[5] C07D *307/20*

U.S. Cl. 549—326 **9 Claims**

1. A process for preparing 5-methylbutyrolactone which comprises: reacting a pentenoic ester of the formula I

$$X—CO_2R \qquad (I)$$

where X is $CH_2=CH—CH_2—CH_2—$, $CH_3—CH=CH—CH_2—$ or $CH_3—CH_2—CH=CH—$ and R is alkyl, cycloalkyl, aralkyl or aryl, or a mixture of these esters with water in the gas phase over a zeolite and/or phosphate catalyst, condensing the gaseous reactant products, separating the aqueous and organic phases and isolating 5-methylbutyrolactone from the reaction mixture.

5,189,183

AROMATIC AMINE DERIVATIVES

Daisuke Fukuoka, Iwakuni; Katsuya Takahashi, Ohtake, and Isao Hashimoto, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

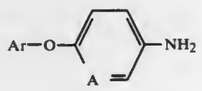
Division of Ser. No. 151,594, Feb. 2, 1988, Pat. No. 5,011,950. This application Oct. 16, 1990, Ser. No. 598,061

Claims priority, application Japan, Feb. 5, 1987, 62-23553

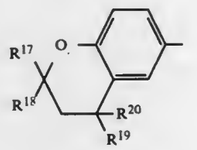
Int. Cl.[5] C07D *307/04, 311/90*

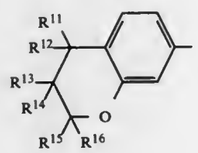
U.S. Cl. 549—345 **26 Claims**

1. The aromatic amine compound of the formula:

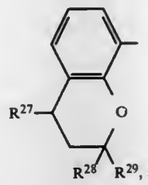


wherein Ar is a radical selected from the group consisting of





-continued



wherein R^{11} to R^{15}, R^{17} to R^{20}, R^{27}–R^{29} and R^{35} to R^{38} may be the same of different and are independently selected from the group consisting of hydrogen, lower alkyl radicals, and lower alkoxy radicals, R^{16} is selected from the group consisting of hydrogen, lower alkyl radicals, lower alkoxy radicals and hydroxyl, with the provisos that at least one of R^{11} to R^{16} is a lower alkoxy radical or hydroxyl radical; R^{11} and R^{15}, or R^{15} and R^{16} may, taken together, represent an alkylene chain, which may be substituted with a lower alkyl radical, to form a 5- or 6-membered ring with the carbon atoms to which they are attached, R^{11} and R^{12} may, taken together, represent an ethylene dioxyl radical, or R^{14} or R^{15} may, taken together, represent a dichloromethylene radical; at least one of R^{17} to R^{20} is a lower alkoxy radical; at least one of R^{27} to R^{29} is a lower alkoxy radical; and at least one of R^{35} to R^{38} is a lower alkoxy radical; and

A is $—\underset{\displaystyle X}{\overset{\displaystyle |}{C}}—$

wherein X is selected from the group consisting of a hydrogen atom, a chlorine atom, and a trifluoromethyl radical.

5,189,184

2-(3'-BUTENYL)-3,4-DIHYDRO-2H-PYRANS, THEIR SYNTHESIS AND USE

Dietmar Schaefer, Hattingen; Andreas Weier; Christian Weitemeyer, both of Essen, and Dietmar Wewers, Bottrop, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

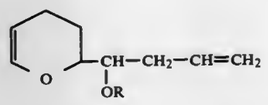
Filed Jul. 29, 1991, Ser. No. 736,766

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1990, 4027436

Int. Cl.[5] C07D *315/00*

U.S. Cl. 549—427 **5 Claims**

1. 2-(3'-butenyl)-3,4-dihydro-2H-pyrans of the general formula



wherein R is hydrogen or an alkyl group with 1 to 6 carbon atoms.

5,189,185

PROCESS FOR PREPARING FURAN COMPOSITIONS

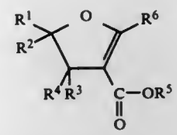
Eugene Harris, West Chester, and Thomas Korte, Cincinnati, both of Ohio, assignors to Henkel Corporation, Ambler, Pa.

Filed Feb. 27, 1990, Ser. No. 485,682

Int. Cl.[5] C07D *307/30*

U.S. Cl. 549—486 **12 Claims**

1. A process for preparing compounds of the formula

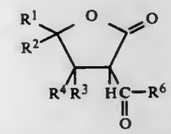


(I)

wherein R^1, R^2, R^3, R^4 and R^6 are each independently hydrogen, alkyl having from 1 to about 20 carbon atoms or alkenyl having from 2 to about 20 carbon atoms the alkyl or alkenyl groups can be substituted with halo, alkoxy and/or aryl, cycloalkyl having from 5 to about 20 carbon atoms which can be substituted with alkyl, alkoxy, alkoxyalky, halo, aryl having from 6 to about 20 carbon atoms which can be substituted with alkyl, alkoxy, alkoxyalky and halo, cycloalkenyl having from about 5 to about 20 carbon atoms which can be substituted with alkyl, alkoxy, alkoxyalkyl and halo, and wherein R^5 is aliphatic hydrocarbyl having from 1 to about 8 carbon atoms which can be substituted with halo, alkoxy and aryl which comprises:

(1) forming a mixture comprising

(a) a composition of the formula



(II)

(b) at least one of an organic orthoester of the formula $R^7C(OR^5)_3$ or an orthosilicate of the formula

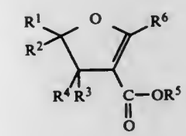
$(R^5O)_{2n+2}Si_nO_{n-1}$

wherein R^7 is hydrogen or a hydrocarbyl group having from 1 to about 8 carbon atoms and n is a number of from 1 to about 4;

(c) a catalytic effective amount of an acid; and

(2) heating the mixture to a temperature effective to react

(a) with (b) to form



VOL 1147 ISS 4 FEB 23 1993 UMI

5,189,186

PROCESS FOR PRODUCING FURYLPROPARGYLCARBINOL AND A DERIVATIVE THEREOF

Kenji Saito, Hirakata; Sanshiro Matsuo, and Yoshiaki Oda, both of Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

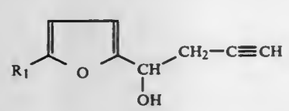
Continuation-in-part of Ser. No. 543,541, Jun. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 362,107, Jun. 6, 1989, abandoned. This application Dec. 17, 1990, Ser. No. 628,101

Claims priority, application Japan, Jun. 16, 1988, 63-149829; Jul. 5, 1988, 63-167922; Oct. 28, 1988, 63-273910; Oct. 31, 1988, 63-276849; Nov. 17, 1988, 63-291906; Mar. 7, 1989, 1-55784

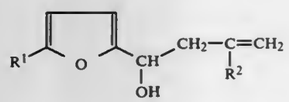
Int. Cl.[5] C07D *307/02*

U.S. Cl. 549—497 **30 Claims**

1. A process for producing furylpropargylcarbinol or a derivative thereof represented by the formula (I):



wherein R^1 represents hydrogen or methyl, which comprises subjecting a haloallylfurylcarbinol or a derivative thereof represented by the formula (II):



wherein R^1 represents hydrogen or methyl and R^2 represents chlorine, bromine or iodine, to a dehydrohalogenation reaction with an alkali metal hydroxide or an alkali metal alkoxide in a polar aprotic solvent.

5,189,187

DITERPENE COMPOUND AND PROCESS FOR PRODUCING THE SAME

Hirofumi Nakano, Tokyo; Shozo Kawada, Yamaguchi; Yoichi Uosaki; Yutaka Saito, both of Tokyo; Katsushige Gomi, Shizuoka, and Toshiaki Iwazaki, Shizuoka, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

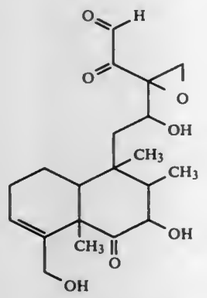
Division of Ser. No. 767,819, Sep. 30, 1991. This application Jun. 24, 1992, Ser. No. 903,476

Claims priority, application Japan, May 10, 1990, 2-267840

Int. Cl.[5] C07D *303/32*

U.S. Cl. 549—548 **1 Claim**

1. A compound represented by formula (II):



(II)

and chemically equivalent tautomers thereof.

5,189,188

BIS(TRIARYLMETHANE) COMPOUNDS

Udo Eckstein, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

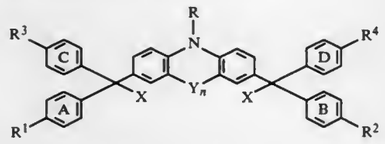
Filed Oct. 31, 1990, Ser. No. 607,192

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1989, 3940478

Int. Cl.[5] C07C *211/55*

U.S. Cl. 552—104 **5 Claims**

1. Compounds of the general formula



in which—independently of one another

X is hydroxyl, alkoxy, alkenyloxy, aralkoxy, cycloalkoxy, aryloxy, acyloxy, alkylamino, dialkylamino, acylamino, aralkylamino or arylamino,

Y is a direct bond, oxygen, sulphur or N-R,

R is alkyl, alkenyl or aralkyl,

R^1 and R^2 are alkoxy, aralkoxy, aryloxy or a radical of the formula



R^3 and R^4 are hydrogen, halogen, alkyl, alkoxy, aralkyl, aralkoxy, aryloxy or a radical of the formula



Z^1 and Z^2 are alkyl, aryl, cycloalkyl or aralkyl and

n is 0,

it being possible for further isocyclic rings to be fused with rings A, B, C and D and for the cyclic and acyclic radicals and rings A, B, C and D to carry further nonionic substituents customary in dyestuff chemistry.

5,189,189

METHOD OF PURIFYING POLYUNSATURATED ALIPHATIC COMPOUNDS

Yoshihisa Misawa; Hisao Kondo; Tetsuya Tsutsumi; Masahiro Hayashi; Daisuke Sugimori, all of Tsukuba; Yorishige Matsuba, Kakogawa; Masashi Isozaki, Kakogawa; Hiroharu Nishigaki, Kakogawa; Kazunaga Yazawa, Sagamihara, and Kiyosi Kondo, Yamato, all of Japan, assignors to Harima Chemicals, Inc., Kakogawa and Sagami Chemical Research Center, Tokyo, Japan

Filed Apr. 23, 1991, Ser. No. 689,622

Claims priority, application Japan, Apr. 24, 1990, 2-106503; Oct. 19, 1990, 2-282579; Oct. 24, 1990, 2-284249; Jan. 28, 1991, 3-025126

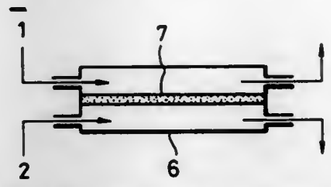
Int. Cl.[5] C11B *7/00*

U.S. Cl. 554—194 **13 Claims**

1. A method of purifying a fatty acid-related polyunsaturated compound, which is characterized in that the following four steps are carried out in numerical order:

1) an aqueous medium containing a silver salt is brought into contact with a mixture containing the fatty acid-related unsaturated compound to form a silver complex of the fatty acid-related polyunsaturated compound;

2) the silver complex is separated from a fraction in which no silver complex was formed and is subjected to procedures for dissociation of the silver



3) the fatty acid-related polyunsaturated compound is dissociated from the silver complex; and

4) the dissociated fatty acid-related polyunsaturated compound is isolated.

5,189,190

VICINAL DISUBSTITUTED CARBOXYLIC ACIDS AND SILYLATED DERIVATIVES

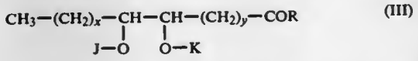
Ta Y. Ching, Novato, and Lon-Tang W. Lin, Vallejo, both of Calif., assignors to Henkel Research Corporation, Santa Rosa, Calif.

Division of Ser. No. 308,786, Feb. 8, 1989, Pat. No. 4,996,342. This application Aug. 20, 1990, Ser. No. 570,097

Int. Cl.[5] C07F *7/08, 7/10*

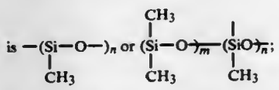
U.S. Cl. 556—418 **15 Claims**

1. A compound of the formula



(III)

wherein R is: (a) OH; (b) OM wherein M is a metal ion selected from the group consisting of Na^+, K^+, Mg^{+2}, Ca^{+2}, or Ba^{+2}; (c) an alkoxyl, or alkenoxyl group having from 1 to 6 carbon atoms; (d) a polyethoxy group having the formula $O(CH_2CH_2O)_a$—H wherein a is an integer having a value of from 1 to 20; (e) —NR^2R wherein R^2 is H, —CH_3, —CH_2CH_3, —CH_2CH_2OH, —$CH_2CH_2N(CH_3)_2$, or —$(CH_2CH_2NH)_bH$ wherein b is an integer having a value of from 1 to 4, and R^3 is H, CH_3, —CH_2CH_3, —CH_2CH_2OH, —$CH_2CH_2N(CH_3)_2$; (f) $ON(R^9)_4$ wherein R^9 is hydrogen, —CH_3, —CH_2CH_3, —CH_2CH_2OH; J is hydrogen, G—R_D wherein G is a bivalent radical derived from an linear or branched alkane or alkene having from 3 to 10 carbon atoms, K hydrogen, G—R_D wherein G is a bivalent radical derived from an linear or branched alkane or alkene having from 3 to 10 carbon atoms with the proviso that only one of J or K is hydrogen; and R_D is



wherein x is an integer having a value of from 0 to 10 and y is an integer having a value of from 0 to 10; m and n are integers having values such that m/n has a value of from 0 to 30 and m+n is equal to or less than 300.

5,189,191

FREE-RADICAL GENERATING AROMATIC DIOLS, POLYCARBONATES CONTAINING THERMAL LABILE GROUPS AND THEIR CONVERSION TO POLYCARBONATE BLOCK COPOLYMERS

Gary W. Yeager, Schenectady, and James V. Crivello, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 756,711, Sep. 9, 1991, Pat. No. 5,140,078. This application May 15, 1992, Ser. No. 883,733

Int. Cl.[5] C07F *7/18*

U.S. Cl. 556—443 **1 Claim**

1. The compound 4,4'-dihydroxy-O,O-bis(trimethylsilyl)-benzopinacol.

5,189,192

PROCESS FOR PREPARING ADDITION POLYMERIZATION CATALYSTS VIA METAL CENTER OXIDATION

Robert E. LaPointe; Robert K. Rosen, and Peter N. Nickias, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 16, 1991, Ser. No. 642,111

Int. Cl.[5] C07C *7/00, 9/00, 11/00, 13/00, 15/00*

U.S. Cl. 556—11 **10 Claims**

1. A process for the preparation of a catalyst useful for addition polymerizations corresponding to the formula:

$L_lMX_n^+A^-$, wherein:

L independently each occurrence is an anionic or nonanionic ligand or ligand system;

M is a metal of group 4–8 of the periodic table also having an oxidation state, M*, one less than the state of the metal in the catalyst;

X independently each occurrence is hydride; halide; or a group selected from alkyl, alkenyl, silyl, germyl, aryl, and combinations thereof having up to 20 carbon, silicon or germanium atoms, and oxygen, nitrogen, phosphorus or sulfur containing derivatives thereof;

l is an integer greater than or equal to 1;

n is an integer greater than or equal to 1, and the sum of l and n together is one less than the valence of M; and

A^- is a monovalent compatible noncoordinating anion,

the steps of the process comprising contacting in a noninterfering, noncoordinating solvent at a temperature from −100° C. to 300° C. a reduced metal derivative corresponding to the formula: $L_lM^*X_n$, wherein L, l, n, X, and M* are as previously defined with an oxidizing agent capable of oxidizing M* to M and which in reduced form is noninterfering with the resulting catalyst, said oxidizing agent comprising a cationic oxidizer and a compatible noncoordinating anion, A^-.

5,189,193

PROCESS FOR PREPARATION OF CYCLIC ORGANOHYDROSILOXANES

Steven K. Freeburne, Edgewood, and David E. Puckett, Taylor Mill, both of Ky., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 31, 1992, Ser. No. 937,089

Int. Cl.[5] C07F *7/08*

U.S. Cl. 556—451 **11 Claims**

1. A process of cyclic organohydrosiloxanes, the process comprising:

(A) contacting an organohydrodihalosilane described by formula

$RHSiX_2$

with a substantially stoichiometric quantity of water at a temperature within a range of about 0° C. to 50° C. to form a first mixture;

VOL 1147 ISS 4 FE 23 1993 UMI

(B) distilling the first mixture to recover a second mixture comprising cyclic organohydrosiloxanes and short-chained polyorganohydrosiloxanes;
(C) contacting the second mixture with water to effect polymerization of the short-chained polyorganohydrosiloxane to long chain polyorganohydrosiloxanes and forming a third mixture;
(D) distilling the third mixture to recover cyclic organohydrosiloxanes described by formula

$$(RHSiO)_n;$$

where each R is a radical independently selected from a group consisting of alkyls comprising one to 20 carbon atoms, alkenyls comprising one to 20 carbon atoms, and aryls; X is a halogen; and n=3 to 12.

5,189,194

PROCESS FOR PREPARATION OF HYDRIDO ORGANOOXYSILANES

Binh T. Nguyen, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jul. 6, 1992, Ser. No. 909,329
Int. Cl.[5] C07F 7/18
U.S. Cl. 556—471 **13 Claims**

1. A process to prepare hydrido organooxysilanes, the process comprising:
(A) contacting a chlorosilane described by formula

$$R_aH_bSiCl_{4-a-b}$$

with a sodium organooxide described by formula

$$NaOR^1$$

at a temperature within a range of about 0° C. to 50° C., and
(B) recovering a hydrido organooxysilane described by formula

$$R_aH_bSi(OR^1)_{4-a-b},$$

where each R is independently selected from a group consisting of alkyls comprising one to 20 carbon atoms, cycloalkyls comprising four to 20 carbon atoms, alkenyls comprising two to 20 carbon atoms, alkyloxys comprising one to 20 carbon atoms, and aryls; R^1 is selected from a group consisting of alkyls comprising one to six carbon atoms and aryls; a=0, 1, or 2; b=1, 2, or 3; and a+b=1, 2, or 3.

5,189,195

PROCESS FOR PRODUCING STABLE, LOW ODOR S,S,S-TRIBUTYLPHOSPHOROTRITHIOATE

Peter E. Newallis; Vidyanatha A. Prasad, both of Lea Wood, and Edward R. Levy, Prairie Village, all of Kans., assignors to Miles Inc., Pittsburgh, Pa.

Filed Jnl. 30, 1991, Ser. No. 738,069
Int. Cl.[5] C07F 9/02, 9/165
U.S. Cl. 558—208 **8 Claims**

1. A process for producing stable S,S,S-tributylphosphorotrithioate having reduced levels of dibutyl disulfide comprising adding a caustic solution to crude S,S,S-tributylphosphorotrithioate which caustic solution has a concentration of less than 10% in an amount sufficient to obtain a constant pH.

5,189,196

NEUTRALIZATION OF POLYAKYLENE CARBONATE POLYOLS FOR POLYURETHANE PREPOLYMER SYNTHESIS

Anthony W. Mancusi, III, and Samuel J. Washington, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 14,954, Feb. 17, 1987, abandoned. This application Aug. 15, 1991, Ser. No. 749,487
Int. Cl.[5] C07C 68/08
U.S. Cl. 558—261 **16 Claims**

1. A method of stabilizing a prepolymer prepared by the reaction of a PAC polyol and a polyisocynate comprising adding to the PAC polyol or the prepolymer prepared therefrom an organosulfonic acid suitable to stabilize the prepolymer in an amount sufficient to neutralize the PAC polyol.

5,189,197

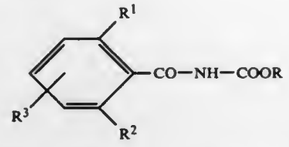
PROCESS FOR PREPARING CARBAMATES, AND INTERMEDIATES THEREIN

Pieter A. Verbrugge, and Jannetje De Waal, both of Amsterdam, Netherlands, assignors to Shell Internationale Research Maatschappij B.V., Netherlands

Filed Feb. 27, 1990, Ser. No. 485,550
Claims priority, application United Kingdom, Mar. 13, 1989, 8905741
Int. Cl.[5] C07C 271/62
U.S. Cl. 560—24 **7 Claims**

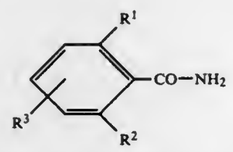
1. A process for the preparation of a N-benzoylcarbamate of the formula:

(I)



wherein R^1 represents a hydrogen atom, a halogen atom, a C_{1-4} alkyl group, a C_{1-4} alkoxy group or a trifluoromethyl group,
R^2 represents a halogen atom, a C_{1-4} alkyl group, a C_{1-4} alkoxy group or a trifluoromethyl group,
R^3 represents a hydrogen atom, a halogen atom, a methyl group or a trifluoromethyl group, and
R represents a C_{1-8} alkyl group optionally substituted by one or more halogen atoms or a phenyl group optionally substituted by one or more substituents selected from halogen atoms and methyl groups,
said process comprising the steps of reacting an alkali metal salt of a benzamide of the formula

(II)



wherein R^1, R^2 and R^3 are as defined above, with a carbonate of the formula

RO—CO—OR (III)

wherein R is as defined above, in the presence of an inert solvent, and
neutralizing the resulting alkali metal salt of the compound of formula I.

5,189,198

PROCESS FOR PREPARING UNSATURATED DICARBOXYLIC ACID DIESTERS

Takashi Kumazawa; Tetsuo Ishibashi, and Mitsugu Kanzawa, all of Sodegaura, Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed May 6, 1991, Ser. No. 696,053
Claims priority, application Japan, May 17, 1990, 2-125568; Jul. 11, 1990, 2-181648; Oct. 11, 1990, 2-270373; Oct. 12, 1990, 2-272401; Feb. 7, 1991, 3-036566
Int. Cl.[5] C07C 67/38
U.S. Cl. 560—81 **19 Claims**

1. A process for preparing an unsaturated dicarboxylic acid diester, which comprises reacting a conjugated diene, carbon monoxide, an alcohol and oxygen at a temperature of 30° to 200° C. and at a partial pressure of carbon monoxide of 20 to 600 kg/cm^{2}G in the presence of a catalyst comprising
(a) 0.01 to 50 g atoms as a metal per 100 moles of said conjugated diene of a platinum metal, a salt thereof or an ammine complex, a nitrile complex, an amine complex, a phosphine complex, a phosphite complex, an arsine complex or a stibine complex compound of said platinum metal,
(b) 0.1 to 100 moles per 1 g atom of said platinum metal or 1 mole of said salt of said complex of said platinum metal of at least one metal salt selected from the group consisting of a copper salt, an iron salt and a manganese salt and
(c) 0.1 to 100 moles per 1 g atom of said platinum metal or 1 mole of said salt or said complex of said platinum metal of at least one compound selected from the group consisting of (i) an alkali metal compound or an alkaline earth metal compound, (ii) a rare earth metal compound, (iii) a metal compound of the groups IIIA, IVA, IVB, VA, VB or VIA, and (iv) a metal carbonxyl compound of the groups VIB, VIIB or VIII.

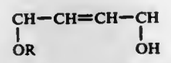
5,189,199

PROCESS FOR THE PREPARATION OF 1,4-DISUBSTITUTED 2-BUTENES

Stephen A. Godleski, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 713,561, Jun. 10, 1991, abandoned, which is a continuation of Ser. No. 239,884, Sep. 2, 1988, abandoned, which is a continuation-in-part of Ser. No. 101,885, Sep. 28, 1987, abandoned. This application Feb. 20, 1992, Ser. No. 839,747
Int. Cl.[5] C07C 67/26, 67/24
U.S. Cl. 560—93 **7 Claims**

1. Process for the preparation of compounds of the structure:



wherein R is C_1–C_{20} alkyl or substituted alkyl or C_4–C_{10} aromatic moieties; which comprises contacting 3,4-epoxy-1-butene with an alcohol in the presence of a catalytic amount of a palladium catalyst comprising Pd(O) complexed with two to four phosphine ligands.

5,189,200

PROCESS FOR THE STEREOSELECTIVE TRANSFORMATION OF A DIOL TO AN ALCOHOL

Yan Gao, Framingham, Mass., assignor to Sepracor, Inc., Marlborough, Mass.

Filed Dec. 21, 1990, Ser. No. 631,808
Int. Cl.[5] C07C 69/675, 69/70
U.S. Cl. 560—180 **5 Claims**

1. A method of transforming a tartaric acid derivative having no free acid or thioacid groups to a malic acid derivative having no free acid or thioacid groups, comprising:
(a) allowing a derivative of tartaric acid having no free acid or thioacid groups to react with a thionyl halide to form a cyclic tartrate sulfite;
(b) allowing said cyclic tartrate sulfite to react with an organic or inorganic halide salt to form a β-halo malic acid sulfite; and
(c) allowing said β-halo malic acid sulfite to react with a reducing agent to provide a derivative of malic acid having no free acid or thioacid groups.

5,189,201

PROCESS FOR PREPARATION OF LOWER FATTY ACID ESTER

Kenichi Sano; Masaaki Nishiyama; Toshiro Suzuki; Shoichiro Wakabayashi, and Kuniaki Miyahara, all of Oita, Japan, assignors to Showa Denko K.K., Tokyo, Japan

Filed Mar. 25, 1992, Ser. No. 857,496
Int. Cl.[5] C07C 69/52
U.S. Cl. 560—205 **19 Claims**

1. A process for the preparation of a lower fatty acid ester wherein a lower fatty acid is reacted with a lower olefin in gaseous phase by using as a solid catalyst at least one heteropoly-acid salt selected from cesium, rubidium, thallium, ammonium, potassium, barium, gold, sodium, lithium, copper and magnesium salts of phosphotungstic acid, silicotungstic acid, phosphomolybdic acid and silicomolybdic acid.

5,189,202

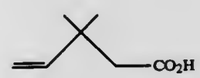
PROCESS FOR THE PREPARATION OF 3,3-DIMETHYL-4-PENTENOIC ACID

Yong Z. Kim, and Won S. Kim, both of Daejeon-si, Rep. of Korea, assignors to Lucky, Ltd., Seoul, Rep. of Korea

Filed Jul. 29, 1988, Ser. No. 225,839
Claims priority, application Rep. of Korea, Jul. 30, 1987, 87-8318; Aug. 24, 1987, 87-9244
Int. Cl.[5] C07C 67/30, 57/02, 57/18
U.S. Cl. 560—213 **15 Claims**

1. A process for the preparation of 3,3-dimethyl-4-pentenoic acid (DPA) represented by the formula (I), which comprises reacting an isoprenol of the formula (II) with triethylorthoacetate (TOA) of the formula (III) in the presence of an acid catalyst to obtain an ether of the formula (IV), converting the obtained ether into another ether of the formula (V) by reacting it in the presence of palladium and hydrogen and simultaneously undergoing a Claisen rearrangement to obtain a compound of the formula (VI), and hydrolyzing the obtained compound (VI) to prepare DPA of the formula (I):

(I)



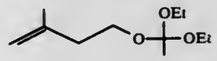
(II)



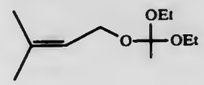
(III)



(IV)



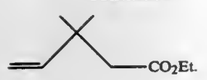
(V)



VOL 1147 ISS 4 FE 23 1993 UMI

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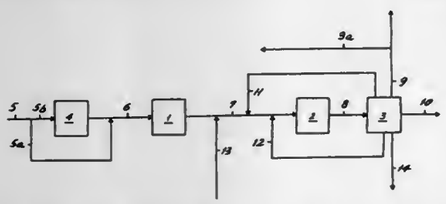
(VI)



5,189,203
PROCESS FOR PREPARING ACETIC ACID, METHYL ACETATE, ACETIC ANHYDRIDE OR MIXTURES THEREOF

John B. Hansen, Helsingor; Finn H. Joensen, Horsholm, and Haldor F. A. Topsoe, Vedbaek, all, Denmark, assignors to Haldor Topsoe A/S, Denmark

Filed Jun. 30, 1988, Ser. No. 213,584
Claims priority, application Denmark, Jun. 30, 1987, 3348/87
Int. Cl.[5] C07C *67/36, 51/10, 51/12, 51/14*
U.S. Cl. 560—232 6 Claims



1. A process for preparing an acetic acid product selected from the group consisting of acetic acid, methyl acetate, acetic anhydride and mixtures thereof by conversion of a synthesis gas mainly consisting of hydrogen and carbon oxides, said process comprising the steps of:

(i) introducing said synthesis gas into a first reactor at a pressure of 5–200 bar and a temperature of 150°–400° C., and converting said synthesis gas therein in the gas phase into methanol and dimethyl ether in the presence of a catalyst selected from the group consisting of a mixture of CuO-ZnO-Al_2O_3 having a composition of about 60 atom % Cu, 25 atom % Zn and 15 atom % Al, and a zeolite so as to obtain a mol proportion 0.1:1 to 3:1 of carbon monoxide to methanol plus dimethyl ether, said mol proportion being defined by the expression $CO/(CH_3OH+2C-H_3OCH_3)$, and then

(ii) carbonylating the mixture formed in step (i) by passing the effluent from the first reactor to a second reactor and converting methanol and dimethyl ether therein in a fluid phase to said acetic acid product at a pressure of 1–800 bar and a temperature of 100°–500° C. in the presence of a catalyst consisting of activated carbon impregnated with rhodium(III)chloride and methyl iodide

and then

(iii) recovering from effluent of said second reactor at least one product stream consisting of the acetic acid products.

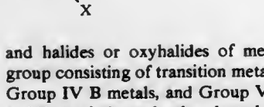
5,189,204
OPTICAL ACTIVE 3-(2-TRIFLUORO-1-HYDROXYETHYL) PROPENYL BENZYL ETHER, DERIVATIVES THEREOF, METHOD FOR PREPARING THE SAME AND USE THEREOF FOR LIQUID CRYSTAL COMPOUND

Tomoya Kitazumo, Tokyo; Takashi Yamazaki, Kanagawa, and Hitoshi Iwatsubo, Tokyo, all of Japan, assignors to Showa Shell Sekiyu Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 396,421, Aug. 21, 1989, Pat. No. 5,047,396, which is a continuation-in-part of Ser. No. 271,744, Nov. 15, 1988, abandoned. This application Jun. 25, 1991, Ser. No. 720,747
Int. Cl.[5] C07C *67/02, 69/76, 41/00*
U.S. Cl. 560—254 3 Claims

1. Optically active alcohol of the formula:

(R)-(VI)



wherein R stands for a phenyl or substituted phenyl group.

5,189,205
PROCESS FOR PREPARING ISOCYANATES

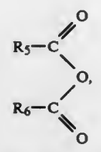
William D. McGhee, St. Louis, and Thomas E. Waldman, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 16, 1992, Ser. No. 852,455
Int. Cl.[5] C07C *263/04*
U.S. Cl. 560—345 28 Claims

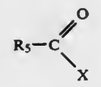
1. A process for preparing an isocyanate comprising:

(a) contacting CO_2 and a primary amine in the presence of an aprotic organic solvent and an organic, nitrogenous base, under reaction conditions of time and temperature sufficient to produce the corresponding ammonium carbamate salt, and

(b) reacting said ammonium carbamate salt with an electrophilic or oxophilic dehydrating agent selected from the group consisting of POX_3, PX_3, SOX_2, SO_2X_2, SO_3, PX_5, P_2O_5, NO_y, NOX, ketene, acid anhydrides having the formula



acid halides having the formula



and halides or oxyhalides of metals selected from the group consisting of transition metals, Group III B metals, Group IV B metals, and Group V B metals, wherein R_5 and R_6 are independently selected from the group consisting of alkyl, fluoroalkyl, aryl, alkaryl and aralkyl radicals having 1 to about 22 carbon atoms and X is chlorine or bromine, halides are chlorides or bromides, and y is 1 or 2 under reaction conditions of time and temperature sufficient to produce the corresponding isocyanate.

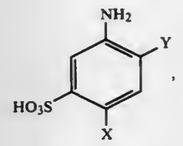
5,189,206
PROCESS FOR THE PREPARATION OF AMINOBENZENESULFONIC ACIDS

Paul Herzig, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 492,705, Mar. 13, 1990, abandoned. This application Aug. 12, 1991, Ser. No. 746,131
Claims priority, application Switzerland, Mar. 16, 1989, 979/89
Int. Cl.[5] C07C *309/30, 309/46*
U.S. Cl. 562—58 10 Claims

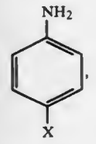
1. A process for the preparation of a compound of the formula

(1)



wherein X is chloro, C_1–C_4alkyl or C_1–C_4alkoxy and Y is hydrogen or sulfo, which process comprises dissolving a compound of the formula

(2)



wherein X has the given meaning, in 1.5 to 10 moles of sulfuric acid per mole of compound of formula (2), adding this solution to enough oleum such that 2 to 4 moles of free SO_3 are present per mole of compound of formula (2), and reacting the mixture in the temperature range from 10° to 80° C. until a sulfo group has been completely introduced, and, if Y is sulfo, subjecting the reaction mixture to further reaction in the temperature range from 100° to 200° C. to introduce a second sulfo group.

5,189,207
PROCESS FOR THE PRODUCTION OF SOLID OR PASTE-FORM PRODUCTS

Gerhard Blasey, Duesseldorf; Christoph Breucker, Wuelfrath; Bernhard Gutsche; Lutz Jeromin, both of Hilden; Guenter Panthel, Haan; Eberhard Peukert, Hilden, and Wolfgang Schmidt, Monheim, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf-Holthausen, Fed. Rep. of Germany

Filed Dec. 7, 1988, Ser. No. 282,073
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1987, 3741401
Int. Cl.[5] C07C *53/00, 143/52;* B01J *2/12;* C05C *3/00*
U.S. Cl. 562—97 11 Claims

1. In a process for the production of solid or paste-form products by the reaction of about stoichiometric quantities of reactants in separate reactant streams in a fast reaction and spraying of the reaction products in a spray unit, the improvement wherein a gaseous medium is added to each of the separate reactant streams, the reactant streams are then combined, and the combined reactant streams are forced through the spray unit at a rate of from about 0.1 to about 15 m/second, as calculated from the gas-free reactant streams and based on the free cross-section of the spray unit, and wherein the weight ratio of the reactants and the gaseous medium is controlled to produce a weight ratio of gaseous medium to product stream of from about 0.04 to about 0.3 (kg/kg).

5,189,208
IBUPROFEN RESOLUTION

G. Patrick Stahly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Jul. 1, 1991, Ser. No. 724,166
Int. Cl.[5] C07B *57/00*
U.S. Cl. 562—402 9 Claims

1. A process for producing a substantially pure enantiomer of ibuprofen, comprising forming a solution of an enantiomerically enriched racemic ibuprofen with an inert solvent;

separating from said solution solid racemic ibuprofen and forming a mother liquor comprising the inert solvent and the substantially pure enantiomer; and

precipitating the substantially pure enantiomer from the mother liquor.

5,189,209
PROCESS FOR PRODUCING HIGHLY PURE ISOPHTHALIC ACID

Tazuo Ohta, Tokyo; Kazuo Tanaka, Okayama; Fumio Ohgoshi, Okayama; Terumasa Yoshida, Okayama, and Ichihei Motoyama, Okayama, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Japan

Filed May 17, 1991, Ser. No. 701,853
Claims priority, application Japan, May 17, 1990, 2-125437
Int. Cl.[5] C07C *51/265, 51/487*
U.S. Cl. 562—414 6 Claims

1. A process for producing highly pure isophthalic acid which comprises (a) carrying out liquid phase oxidation of an m-dialkyl benzene with molecular oxygen in an acetic acid solvent in the presence of a heavy metal catalyst to form crude isophthalic acid, wherein step (a) take place at temperature conditions of 100°–240° C. and at pressure conditions of 5–30 atmospheres, (b) contact-treating the resulting crude isophthalic acid with noble metal catalyst belonging to the Group VIII of the Periodic Table supported by activated carbon in the presence of hydrogen, wherein step (b) take place at temperature conditions of 170° C.–300° C. and at pressure conditions of 15–50 kg/cm^2·G. and then (c) separating the deposited isophthalic acid crystal and (d) filtration-treating the separated mother liquor and (e) recirculating the mother liquor thus treated into the liquid phase oxidation step (a) for reusing as a solvent in step (a).

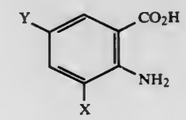
5,189,210
PROCESS FOR THE PREPARATION OF 3- AND/OR 5-SUBSTITUTED ANTHRANILIC ACIDS

Terry L. Wright, Oakland, Calif., and Jon A. Orvik, Midland, Mich., assignors to DowElanco, Indianapolis, Ind.

Filed Apr. 30, 1992, Ser. No. 876,651
Int. Cl.[5] C07C *51/16*
U.S. Cl. 562—418 6 Claims

1. A process for the preparation of an anthranilic acid of formula I:

(I)

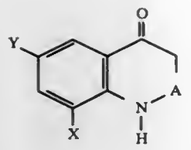


wherein

X and Y independently represent H, halogen, CF_3 or a C_1–C_4 alkyl group,

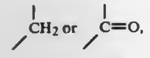
which comprises contacting a quinolin-4-one of formula II

VOL 1147 ISS 4 FE 23 1993 UMI



(II)

wherein
A represents



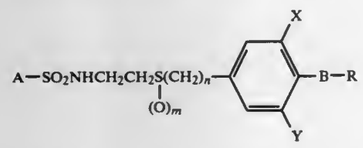
and
X and Y are as previously defined,
with t-butyl hydroperoxide in an inert organic solvent in the presence of a base.

5,189,211
SULFONAMIDE DERIVATIVES

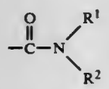
Masakazu Sato, Konosu; Yutaka Kawashima, Tatebayashi; Jun Goto, Omiya; Yoshiyuki Chiba; Mikio Satake, both of Hachioji; Chuzo Iwata, Settsu, and Takeshi Imanishi, Nara, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd. and Nippon Suisan Kaisha, Ltd., both of, Japan

Filed Jul. 26, 1991, Ser. No. 736,616
Claims priority, application Japan, Aug. 1, 1990, 2-204732
Int. Cl.[5] C07C *317/14, 317/26, 317/48*
U.S. Cl. 562—430 **3 Claims**

1. A sulfonamide derivative represented by the formula



wherein A is a naphthyl group, a pyridyl group, a phenyl group, a phenyl group substituted by 1 to 5 members selected from the group consisting of a halogen atom, an alkyl group having 1 to 4 carbon atoms, an alkoxy group having 1 to 4 carbon atoms, a nitro group and an acetamido group, or an alkyl group having 1 to 20 carbon atoms, B is an alkylene group having 1 to 3 carbon atoms, a group of $—OCH_2—$ or a group of —CH=CH—, X and Y are the same or different, and are each a hydrogen atom or a fluorine atom, R is a carboxy group, an alkyoxycarbonyl group having 2 to 5 carbon atoms, a hydroxymethyl group or a group of



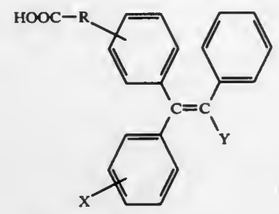
(wherein R^1 is a hydrogen atom or an alkyl group having 1 to 3 carbon atoms, and R^2 is a hydrogen atom, a hydroxyl group, an alkyl group having 1 to 3 carbon atoms, a carboxymethyl group or an alkoxycarbonylmethyl group having 3 to 6 carbon atoms), m is an integer from 0 to 2, n is an integer from 0 to 3, or a salt thereof.

5,189,212
TRIARYLETHYLENE CARBOXYLIC ACIDS WITH ESTROGENIC ACTIVITY

Peter C. Ruenitz, Clarke City, Ga., assignor to University of Georgia Research Foundation, Inc., Athens, Ga.

Filed Sep. 7, 1990, Ser. No. 579,398
Int. Cl.[5] C07C *59/40, 69/76;* **A01N** *37/10*
U.S. Cl. 562—468 **29 Claims**

1. A triarylethylene carboxylic acid of the structure:



wherein R is $(CH_2)_mO$ or $(CH_2)_n$, m is 1, 2, 3, or 4, and n is 0, 1, 2, 3, or 4; X is hydrogen or hydroxyl, Y is methyl, ethyl, chlorine, or bromine, wherein the RCOOH an X moieties are either metal or para to the phenyl ethylene linkage, and wherein when X is hydrogen, R is not $(CH_2)_nO$.

5,189,213
PROCESS FOR THE CARBONYLATION OF ACRYLIC ACID

Jean-Jacques Brunet, Portet Sur Garonne, and Elisabeth Passelaigue, Messeix, both of France, assignors to Rhone-Poulenc Chimie, Cedex, France

Filed Oct. 2, 1990, Ser. No. 592,027
Claims priority, application France, Oct. 2, 1989, 89 13055
Int. Cl.[5] C07C *51/10*
U.S. Cl. 562—517 **19 Claims**

1. A process for the preparation of methylmalonic acid comprising:
reacting acrylic acid in basic solution with carbon monoxide and water in the presence of a catalytically effective amount of an iron carbonyl derivative or a compound capable of forming an iron carbonyl derivative in the reaction mixture.

5,189,214
PRODUCTION OF ACETIC ACID

S. C. Chen, Taipei; C. C. Chu, Kaohsiung; F. S. Lin, Kaohsiung, and F. J. Huang, Kaohsiung, all of Taiwan, assignors to Dairen Chemical Corp. and Chang Chun Petrochemical Co., Ltd., Taipei, Taiwan

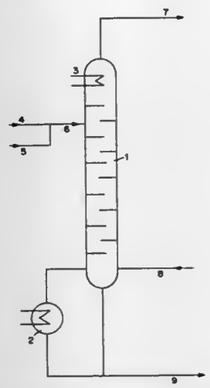
Filed Aug. 15, 1991, Ser. No. 745,349
Int. Cl.[5] C07C *51/12*
U.S. Cl. 562—519 **6 Claims**

1. A process for the production of acetic acid which comprises reacting a feedstock which includes a mixture of methyl acetate and methyl formate, methanol and water, with carbon monoxide, in the presence of a catalyst, at a predetermined temperature and pressure, wherein said water and said methyl esters are present in the feedstock in a molar ratio of at least 1:1, respectively, the partial pressure of the carbon monoxide reactant during the process is between 20 and 80 kg/cm^2, ad , wherein said methyl acetate and methyl formate reactants are substantially consumed during the process.

5,189,215
PROCESS FOR THE PREPARATION OF STORAGE-STABLE LEVULINIC ACID

Lorenz Farnleitner; Hubert Stückler; Herbert Kaiser, all of Linz, and Engelbert Kloimstein, Eferding, all of Austria, assignors to Chemie Linz Gesellschaft m.b.H., Linz, Austria

Continuation of Ser. No. 530,967, May 25, 1990, abandoned.
This application Oct. 28, 1991, Ser. No. 784,746
Claims priority, application Austria, Jun. 5, 1989, 1356/89
Int. Cl.[5] C07C *59/147, 59/185, 59/325, 59/347*
U.S. Cl. 562—577 **11 Claims**



1. Process for the preparation of color-stable levulinic acid by saponification of an acetylsuccinate with aqueous mineral acid, comprising treating a mixture of the acetylsuccinate and mineral acid continuously with steam counter- currently in a reactor cascade, the reaction being carried out above the boiling point of the alcohol being formed in the reaction or above the boiling point of the aqueous azeotrope being formed.

5,189,216
ISOLATION OF A CARBOXYLIC ACID FROM AN AQUEOUS SOLUTION THEREOF

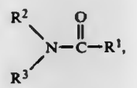
Hans Kiefer, Wachenheim, and Werner Reutemann, Bobenheim-Roxheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jul. 16, 1991, Ser. No. 730,768
Int. Cl.[5] C07C *51/42*
U.S. Cl. 562—600 **1 Claim**

1. A process for the isolation of a carboxylic acid of the general formula (I)

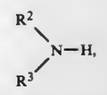
$$R^1—COOH \quad (I),$$

in which R^1 denotes hydrogen, methyl, ethyl, or vinyl, from a dilute aqueous solution thereof by extraction with a secondary amide of the general formula (II)



(II)

in which R^1 has the meanings stated, and R^2 and R^3 are independently of each other C_1–C_8-alkyl, C_3–C_8-cycloalkyl, C_4–C_{20}-cycloalkylalkyl, aryl, C_7–C_{20}-aralkyl, or R^2 and R^3 together form a 1,4- or 1,5-alkylene group which may be mono- to penta-substituted by C_1–C_4-alkyl, wherein the losses of secondary amide (II) are compensated by the addition of the corresponding amine of the general formula (III)



(III)

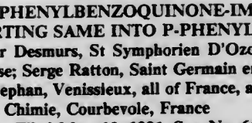
in which R^2 and R^3 have the meanings stated above which is converted to secondary amide (II) by reaction with carboxylic acid (I).

5,189,217
PROCESS FOR THE PRODUCTION OF 1-(N-METHANESULFONYL-N-METHYLAMINOSULFONYL)-3-(2-PYRIMIDYL)UREA DERIVATIVES

Gareth Griffiths, Visp; Aleksander Warm, Visperterminen; Felix Previdoli, Brig, and Gary Ryan, Visp, all of Switzerland, assignors to Lonza, Ltd., Gampel/Valais, Switzerland

Division of Ser. No. 854,536, Mar. 19, 1992. This application Jul. 23, 1992, Ser. No. 917,372
Claims priority, application Switzerland, Mar. 21, 1991, 871/91
Int. Cl.[5] C07C *311/54*
U.S. Cl. 564—040 **1 Claim**

1. 1-Methanesulfonyl-1-methyl-3-(N-methanesulfonyl-N-methylaminosulfonyl) urea of the formula:



III

5,189,218
PREPARATION OF N-PHENYLBENZOQUINONE-IMINE AND CONVERTING SAME INTO P-PHENYLENEDIAMINES

Jean-Roger Desmurs, St Symphorien D'Ozon; Hubert Kempf, Mulhouse; Serge Ratton, Saint Germain en Laye, and Dominique Stephan, Venissieux, all of France, assignors to Rhone-Poulenc Chimie, Courbevole, France

Filed Mar. 13, 1991, Ser. No. 668,637
Claims priority, application France, Mar. 13, 1990, 90 03447
Int. Cl.[5] C07C *249/02*
U.S. Cl. 564—272 **18 Claims**

1. A process for the preparation of N-phenylbenzoquinone-imine, comprising oxidizing N-(4-hydroxyphenyl)aniline in an at least partially organic liquid reaction medium, in the presence of a basic tertiary amine compound.

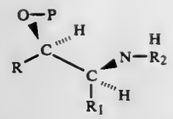
5,189,219
METHOD FOR THE PREPARATION OF ERYTHRO VICINAL AMINO-ALCOHOLS

Johannes Brussee; Arne van der Gen, and Cornelis G. Kruse, all of Weesp, Netherlands, assignors to Duphar International Research B.V., Weesp, Netherlands

Filed Dec. 19, 1991, Ser. No. 810,139
Claims priority, application European Pat. Off., Dec. 24, 1990, 90203498.2
Int. Cl.[5] C07C *209/52*
U.S. Cl. 564—356 **3 Claims**

1. Method for the preparation of an erythro N-substituted vicinal amino-alcohol derivative of formula 1

VOL 1147 ISS 4 FE 23 1993 UMI



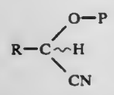
(1)

wherein

P is a group protecting the hydroxyl group;

R is a monocyclic or bicyclic aryl or heteroaryl group substituted with one or more groups X, wherein X is a hydroxy, alkoxy(1–5C), alkyl(1–5C)carbonyloxy, amino, alkyl(1–5C)carbonylamino, alkyl(1–5C)sulphonylamino, nitro, alkyl(1–5C)sulphonyl, alkyl(1–5C)carbonyl, halogen, cyano, alkyl(1–5C), cycloalkyl(5–12C), or a cyclic group annelated with the aryl group or heteroaryl group, or wherein R is a saturated or unsaturated straight or branched alkyl group having 1–30 C-atoms which may be substituted with halogen, alkoxy(1–5C), alkylthio(1–5C), phenyl or phenoxy optionally substituted with one or more groups X, and

R_1 and R_2 independently of each other are alkyl, alkenyl (2–8C), or phenyl or aralkyl(7–10C), optionally substituted with a group X by reacting a hydroxyl-protected cyanohydrin derivative of formula 2



(2)

with a Grignard reagent of formula 3

$$R_1—Mg—Hal \quad (3)$$

yielding a Grignard reacted compound, followed by a novel transimination reaction using a primary amine of formula 4

$$R_2—NH_2 \quad (4)$$

and reduction of the resulting N-substituted imine, wherein P, R, R_1 and R_2 have the abovementioned meanings and Hal is a halogen atom.

5,189,220

PROCESS FOR PREPARING N-ALKYLANILINES AND N-ALLYLANILINES CATALYZED BY IODIDES

Jean Desmurs, Communay, and Jean-Pierre Lecouve, Caluire, both of France, assignors to Rhone-Poulenc Chimie, Cedex, France

Continuation of Ser. No. 386,112, Jul. 28, 1989, abandoned. This application Mar. 25, 1991, Ser. No. 674,316

Claims priority, application France, Jul. 29, 1988, 88 10249

Int. Cl.[5] C07C *209/10*

U.S. Cl. 564—404 **18 Claims**

1. Process for the N-monoalkylation or N-monoallylation of an aniline, comprising the step of bringing the aniline and an alkylating or allylating agent, selected from the group consisting of alkyl chlorides, alkyl bromides, alkyl sulfates, allyl chlorides, allyl bromides and allyl sulfates, into contact in an organic solvent in a homogeneous liquid phase in the presence of an alkali metal iodide or onium iodide and a stoichiometric amount of a non-quarternizable base.

5,189,221

AMINE SEPARATION PROCESS

Roger G. Duranleau, Georgetown, and Robert L. Zimmerman, Austin, both of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.

Filed Nov. 19, 1990, Ser. No. 617,339

Int. Cl.[5] C07C *209/86*

U.S. Cl. 564—499 **16 Claims**

1. A method for separating a mixture of mono-, di- and trialkylamines which comprises adding at least about an equimolar amount, based on the amine mixture, of a formylalkanolamine selected from the group consisting of formyldiethanolamine, formyl aminoethylethanolamine and formyl 2-(2-aminoethylamino)-ethanol to said amine mixture and reacting the formylalkanolamine with the mono- and diamines in the amine mixture at a temperature of about 120° to about 160° C. and a pressure of about 500 to about 3,000 psig to provide a reaction mixture comprising trialkylamines, formyl alkylamines and fromyl monoalkylamines, unreacted formylalkanolamine and the corresponding alkanolamine and separately recovering the trialkyl amine, the formyl alkylamine and the formyl monoalkylamine from the reaction mixture,

said alkyl amines being selected from the group consisting of C_1 to C_4 alkyl amines.

5,189,222

PROCESS FOR THE MANUFACTURE AND RECOVERY OF ALKALI-METAL TETRAORGANYLBORATES

Eugene C. Ashby, Atlanta; Laurence L. Earnhart; Daniel W. Tedder, both of Marietta, and Jagvir Singh, Smyrna, all of Ga., assignors to Optima Chemicals, Inc., Douglas, Ga.

Continuation-in-part of Ser. No. 26,050, Mar. 16, 1987, abandoned. This application Jan. 29, 1990, Ser. No. 472,330

Int. Cl.[5] C07F *5/02*

U.S. Cl. 568—1 **53 Claims**

1. A method of extracting an alkali metal tetraorganylborate from a primary mixture, the primary mixture being the end product of a process for producing the alkali metal tetraorganylborate, and said primary mixture comprising an aqueous phase containing alkali metal tetraorganylborate; an organic phase which is essentially immiscible in the aqueous phase, wherein the organic phase also contains alkali metal tetraorganylborate; and a solid phase, comprising the steps of:

(a) separating the organic phase containing alkali metal tetraorganylborate both from the aqueous phase which also contains alkali metal tetraorganylborate, and from the solid phase;

(b) treating the aqueous phase and the solid phase with an organic solvent to cause a portion of the alkali metal tetraorganylborate in the aqueous phase to migrate to and be contained in the organic solvent;

(c) separating the organic solvent containing the alkali metal tetraorganylborate which has been separated from the aqueous phase and from the solid phase; and

(d) extracting the alkali metal tetraorganylborate both from the organic phase and from the organic solvent, wherein said organic solvent comprises an inert compound and a complexing compound, said inert compound being selected from the group consisting of C_{6-10}arenes and C_{5-8}alkanes and said complexing compound being selected from the gorup consisting of C_{2-12}ethers, C_{1-18}amines, C_{3-18}phosphines and C_{2-12}sulfides.

5,189,223

PROCESS FOR PREPARATION OF 4,4'-DIHYDROXYDIPHENYLSULFONE

Eiji Ogata, Wakayama, and Nobuyuki Nate, Kainan, both of Japan, assignors to Konishi Chemical Ind. Co., Ltd., Wakayama, Japan

PCT No. PCT/JP90/01179, § 371 Date May 1, 1991, § 102(e) Date May 1, 1991, PCT Pub. No. WO91/04245, PCT Pub. Date Apr. 4, 1991

PCT Filed Sep. 14, 1990, Ser. No. 678,332

Claims priority, application Japan, Sep. 14, 1989, 1-239523; Dec. 29, 1989, 1-340699; Dec. 29, 1989, 1-340700

Int. Cl.[5] C07C *317/14, 317/22*

U.S. Cl. 568—33 **11 Claims**

1. A process for preparing 4,4'-dihydroxydiphenylsulfone, comprising reacting a phenol and a sulfonating agent in the presence of mesitylene as a reaction medium at a temperature not lower than about 120° C., thereby producing a suspension containing 4,4'-dihydroxydiphenylsulfone in the mesitylene.

5,189,224

METHOD FOR PREPARING 4-ALKYLSULFONYL-2-CHLORO-M-XYLENE

Masatoshi Baba, and Eiichi Oya, both of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

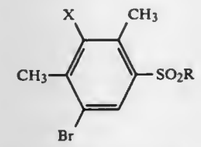
Filed Oct. 9, 1991, Ser. No. 773,431

Claims priority, application Japan, Oct. 19, 1990, 2-282961; Sep. 9, 1991, 3-227954

Int. Cl.[5] C07C *317/14*

U.S. Cl. 568—35 **2 Claims**

1. A 4-alkylsulfonyl-6-bromo-m-xylene derivative of the formula (D):



(D)

wherein X is a hydrogen atom or a chlorine atom, and R is a C_{1-8} alkyl group or a C_{3-8} cycloalkyl group.

5,189,225

PROCESS FOR CATALYTICALLY PRODUCING MONOALKYLETHER OF DIHYDRIC PHENOL COMPOUND

Shinichi Furusaki; Masaoki Matsuda; Muneki Saito; Yasushi Shiomi; Yasuo Nakamura, and Michio Tobita, all of Ube, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Sep. 28, 1990, Ser. No. 589,612

Claims priority, application Japan, Sep. 29, 1989, 1-251977; Jul. 13, 1990, 2-184103

Int. Cl.[5] C07C *41/01*

U.S. Cl. 568—649 **12 Claims**

1. A process for producing a monoalkylether of a dihydric phenol compound, comprising the steps of:

(i) placing an inert solid carrier for a catalyst within a reactor, the inert solid carrier comprising at least one γ-alumina, activated carbon, titania, silica-alumina, member selected from the group consisting of α-alumina, θ-alumina-containing α-alumina, zeolite, kaolin, bentonite and acid clay;

(ii) introducing a feed gas comprising a mixture of a dihydric phenol compound with a lower monohydric alcohol in a molar ratio of 1:1 to 1:50 into the reactor at a temperature of 200° C. to 400° C.;

(iii) simultaneously introducing into the reactor an active component for the catalyst, comprising at least one member selected from the group consisting of:

(a) phosphorus compounds which are orthophosphoric acid, alkyl phosphate, pyrophosphoric acid, metaphosphoric acid, tetraphosphoric acid, polymetaphosphoric acid and unhydrated phosphoric acid; and

(b) mixtures of at least one of the above-mentioned phosphorus compounds (a) with at least one boron compound selected from the group consisting of orthoboric acid, alkyl borates, metaboric acid, tetraboric acid and boron oxide,

in the above-mentioned mixtures (b), the atomic ratios of phosphorus to boron being from 1:0 to 1:10,

whereby the introduced active component is impregnated in the inert solid carrier to provide a catalyst, and the introduced feed gas is brought into contact with the resultant catalyst; and

(iv) collecting the resultant reaction product from said reaction mixture.

5,189,226

ORTHO-SUBSTITUTED BENZALDEHYDES

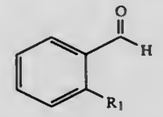
Ralph F. Hall, Villanova; John F. Newton, West Chester, both of Pa.; Kathleen A. Phipps, Cherry Hill, N.J., and Joanne Smallheer, Berwyn, Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation of Ser. No. 248,770, Sep. 23, 1988, Pat. No 4,937,253, which is a continuation-in-part of Ser. No. 195,355, May 16, 1988, Pat. No. 4,874,792, which is a continuation of Ser. No. 926,314, Oct. 31, 1986, abandoned, which is a continuation-in-part of Ser. No. 725,264, Apr. 19, 1985, abandoned. This application Mar. 20, 1990, Ser. No. 496,382

Int. Cl.[5] C07C *47/54*

U.S. Cl. 568—425 **2 Claims**

1. A benzaldehyde of the formula



where R_1 is phenyl-C_4 to C_{10}-alkyl.

5,189,227

1,2,4-TRIHALOBUTYL ETHERS

Hans-Ruedi Känel, Bubendorf, and John G. Dingwall, Nuglar, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

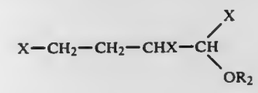
Division of Ser. No. 472,677, Jan. 30, 1990, Pat. No. 4,968,836. This application Aug. 30, 1990, Ser. No. 575,458

Claims priority, application Switzerland, Feb. 2, 1989, 365/89

Int. Cl.[5] C07C *43/12*

U.S. Cl. 568—681 **2 Claims**

1. 1,2,4-trihalobutyl ethers of formula



(III)

in which X is halogen and R_2 is methyl or ethyl.

5,189,228

TETRANITRONORADAMANTANE

Walter W. Zajac, Jr., Newton Square, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 718,323, Jun. 17, 1991, abandoned. This application Jun. 29, 1992, Ser. No. 905,711

Int. Cl.[5] C07C *79/08*

U.S. Cl. 568—941 **1 Claim**

1. 3,7,9,9-Tetranitronoradamantane.

VOL 1147 ISS 4 FEB 23 1993 UMI

5,189,229
DEBROMINATING DIBROMOFLUOROMETHANE WITH TRIBUTYLTIN HYDRIDE
John M. Robinson, Pinner, England, assignor to Glaxo Group Limited, London, England
Continuation of Ser. No. 316,790, Feb. 28, 1989, abandoned. This application Oct. 1, 1990, Ser. No. 591,984
Claims priority, application United Kingdom, Feb. 29, 1988, 8804693
Int. Cl.[5] C07C *17/00, 19/02*
U.S. Cl. 570—176 13 Claims

I. A process for the production of bromofluoromethane in which substantially pure dibromofluoromethane is subjected to reduction with an organotin hydride wherein the ratio of organotin hydride to dibromofluoromethane is 0.9:1 to 1.3:1, and wherein the reaction is carried out with condensing means serving to condense and return any evaporating dibromofluoromethane to the reaction mixture during the continuance of the reaction.

5,189,230
PROCESS FOR THE REMOVAL OF OLEFINIC IMPURITIES FROM HYDROCHLOROFLUOROCARBONS
Peter Hopp, Hofheim am Taunus, and Rolf-Michael Jansen, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany
Filed Dec. 13, 1991, Ser. No. 806,494
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1990, 4041181
Int. Cl.[5] C07C *17/38*
U.S. Cl. 570—177 14 Claims

1. A process for the removal of olefins of the formula $C_nH_xF_yA_z$, in which A is chlorine and/or bromine and n is a number from 2 to 4, x and y are each a number from 1 to 6 and z is a number from 1 to 4, the sum of x+y+z being equal to 2n, from hydrochlorofluorocarbons of the formula $C_2H_mF_pA_q$, in which A is chlorine and/or bromine and m and p are each a number from 1 to 5 and q is a number from 0 to 4, the sum of m+p+q being equal to 6, which comprises reacting the hydrochlorofluorocarbons $C_2H_mF_pA_q$ which are contaminated with the olefins mentioned, in the presence of oxygen-containing phase-transfer catalysts with complex hydrides and/or strong bases wherein said process is carried out in the absence of protic media.

5,189,231
COMPOSITIONS OF LIQUID HYDROCARBONS FROM REFINING ENDOWED WITH IMPROVED BEHAVIOR AT LOW TEMPERATURES
Luciano Canova, Novara; Ettore Santoro, Milan; Luciano Bonoli, Novara, and Paolo Falchi, Chieti, all of Italy, assignors to Societa' Italiana Additivi Per Carburanti s.r.l., Pescara, Italy
Filed Apr. 29, 1991, Ser. No. 692,872
Claims priority, application Itaiy, Apr. 30, 1990, 20179 A/90
Int. Cl.[5] C07C *7/20*
U.S. Cl. 585—4 21 Claims

1. A refined liquid hydrocarbon composition endowed with improved behavior at low temperatures, comprising from 0.005 to 1% by weight of a mixture comprising:
(i) a copolymer of ethylene with at least another copolymerizable monomer, and
(ii) an imidized acrylic polymer, whereby said mixture of (i) and (ii) decreases the pour point and cold filter plugging point of the refined liquid hydrocarbon composition.

5,189,232
METHOD OF MAKING JET FUEL COMPOSITIONS VIA A DEHYDROCONDENSATION REACTION PROCESS
Joseph S. Shabtai; Alex G. Oblad, and Chi H. Tsai, all of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah
Filed Jun. 27, 1991, Ser. No. 722,106
Int. Cl.[5] C10L *1/16;* C07C *2/54*
U.S. Cl. 585—14 11 Claims

1. A method of making jet fuel compositions having high density, high heat of combustion and low freezing point via a dehydrocondensation reaction comprising:
reacting a cyclopentane containing a lower alkyl group with a C_5 to C_8 olefin in the presence of concentrated sulfuric acid or HF at a temperature of about −10° C. to about 50° C. said alkyl group having one to three carbon atoms.

11. A jet fuel composition comprising:
decalins present as at least about 35% of the composition; and alkylated single ring naphthenes present as at least about 4% of the composition.

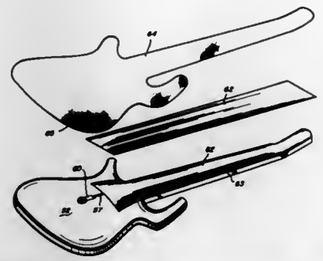
5,189,233
PROCESS FOR THE PRODUCTION OF CYCLOHEXANE BY LIQUID PHASE HYDROGENATION OF BENZENE
John M. Larkin; James H. Templeton, both of Austin, and Donald H. Champion, Pflugerville, all of Tex., assignors to Texaco Chemical Company, White Plains, N.Y.
Filed Aug. 23, 1991, Ser. No. 749,346
Int. Cl.[5] C07C *5/00*
U.S. Cl. 585—265 1 Claim

1. A two-stage, single reactor process for production of cyclohexane by liquid phase hydrogenation of benzene which consisting essentially of using a first catalyst bed consisting essentially of a nickel catalyst having the composition of from 60–85 mol % nickel, 14–37 mol % copper and 1–6 mol % chromium and a second catalyst bed consisting essentially of 10–80 wt % nickel on alumina wherein the temperature range is from about 40° C. to 300° C. and the pressure is from about 500 to 4000 psig.

5,189,234
SELECTIVE DEHYDROGENATION PROCESSES AND CATALYSTS
Jeffrey A. Amelse, Batavia, Ill., assignor to Amoco Corporation, Chicago, Ill.
Filed Oct. 31, 1991, Ser. No. 785,550
Int. Cl.[5] C07C *15/24*
U.S. Cl. 585—320 14 Claims

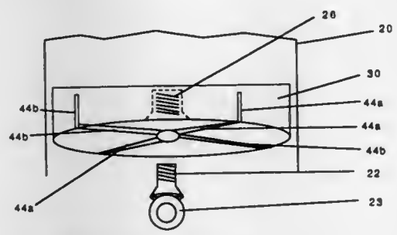
1. A process for dehydrogenating dehydrogenatable organic compounds comprising contacting the organic compound at an elevated temperature with a catalyst formed by the steps comprising:
(a) contacting a composition comprising a platinum group metal component and a halide component on an alumina support material with an alkaline solution of an alkali metal salt, the amount of solution being in excess of the amount absorbed by the composition;
(b) partitioning the composition from the remaining solution to form a treated composition and a filtrate containing solubilized halide removed from the composition; and
(c) drying the treated composition to form the catalyst.

5,189,235
STRINGED MUSICAL INSTRUMENT
Lawrence R. Fishman, West Medford, Mass., and Kenneth Parker, Seymour, Conn., assignors to Korg/Fishpark Associates, Woburn, Mass.
Division of Ser. No. 352,154, May 15, 1989. This application Jul. 19, 1990, Ser. No. 554,560
The portion of the term of this patent subsequent to Jun. 30, 2009, has been disclaimed.
Int. Cl.[5] G10D *3/02*
U.S. Cl. 84—291 14 Claims



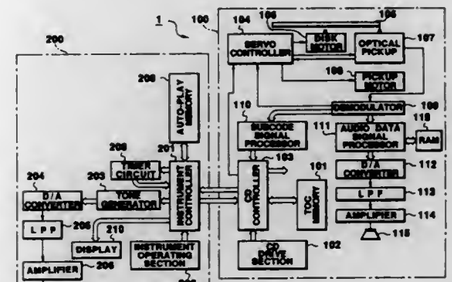
1. A light-weight stringed musical instrument comprising, a wood instrument core that is for forming at least a body of instrument, a neck attached to the body, a laminate comprised of a carbon fiber strengthening layer disposed as a continuous layer to cover at least portions of both said body and neck, a fiberglass finish layer forming an outer surface of the instrument, strings and means for securing the strings to the instrument.

5,189,236
TUNABLE RESONATOR PLUG
Leigh H. Stevens, 515 8th Ave., Asbury Park, N.J. 07712
Filed Oct. 18, 1991, Ser. No. 778,675
Int. Cl.[5] G10D *13/08*
U.S. Cl. 84—410 5 Claims



1. An expansion plug comprised of:
a. a disk formed to the shape of the inside dimension of a tube to be sealed, said disk having an outer circumference with an outer dimension slightly less than the inside dimension of said tube and comprising material capable of elastic expansion;
b. a tapped center hole in said disk;
c. one or more relief cuts across the face of said disk radiating from said hole and penetrating said face of said disk to a depth less than the thickness of said disk such that strain induced in said disk by radial expansion of said hole is dissipated; and
d. means for applying outward radial pressure to the circumference of said hole such that said disk is elastically expanded radially to sealably conform to said inside dimension of said tube.

5,189,237
APPARATUS AND METHOD FOR PERFORMING AUTO-PLAYING IN SYNCHRONISM WITH REPRODUCTION OF AUDIO DATA
Satoru Koguchi, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan
Filed Dec. 10, 1990, Ser. No. 625,309
Claims priority, application Japan, Dec. 18, 1989, 1-327812; Dec. 18, 1989, 1-327813
Int. Cl.[5] G10H *7/00;* G04B *13/00;* A63H *5/00*
U.S. Cl. 84—609 30 Claims



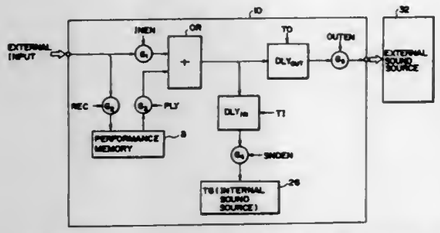
1. An auto-playing apparatus which employs a recording medium that stored audio data and first position data representing a recording position of the audio data such that the audio data and the first position data are associated with each other, and in which the audio data and the auto-play data can be reproduced in synchronism with each other, said auto-playing apparatus comprising:
reproducing means for reproducing the audio data and the first position data from the recording medium by playing the recording medium;
storing means for storing (a) a series of auto-play data items which are to be reproduced in synchronism with the audio data recorded on the recording medium, and (b) second position data corresponding to the first position data and which represents at the same reproduction timing as that of the auto-play data,
auto-playing means, coupled to the storing means, for reading the auto-play data from the storing means and for sequentially generating corresponding tone signals to execute auto-playing;
setting means for setting conditions under which synchronous reproduction of the audio data and auto-play data is performed, said setting means including means for selecting a reproduction start point, and means for determining a second position data corresponding to the selected reproduction start point from among the second position data stored in the storing means;
retrieving means, coupled to the reproducing means, for detecting the second position data stored in the storing means in accordance with the setting of the setting means and for retrieving the first position data corresponding to the detected second position data from among the first position data stored in the recording medium; and
control means, coupled to the setting means, to the auto-playing means, to the retrieving means, and to the reproducing means, for performing control to start auto-playing from the position which the setting means selects as the reproduction start point, and to play the recording medium from the audio data corresponding to the first position data retrieved by the retrieving means, and wherein when the reproduction start point is an intermediate position, intermediate a beginning and an end of the audio data, auto-play starts without delay.

5,189,238

AUTOMATIC PERFORMANCE APPARATUS FOR CAUSING DIFFERENT KINDS OF SOUND SOURCES TO SYNCHRONOUSLY GENERATE TONES

Tokuji Hayakawa, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Oct. 5, 1990, Ser. No. 593,241
Claims priority, application Japan, Oct. 11, 1989, 1-264742
Int. Cl.[5] G10H *1/18, 7/00*
U.S. Cl. 84—609 **19 Claims**



1. An automatic performance apparatus for outputting key data to different kinds of first and second internal or external sound sources and causing said first and second sound sources to synchronously generate tones, comprising:

key data generation means for sequentially generating key data;

first delay means for inputting the key data supplied from said key data generation means and outputting the key data to said first sound source after lapse of a first delay time; and

second delay means for inputting the key data supplied from said key data generation means and outputting the key data to said second sound source after lapse of a second delay time;

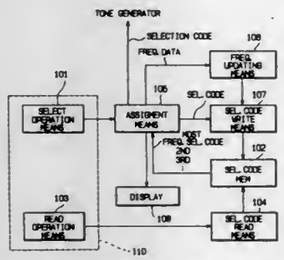
the first and second delay means including setting means for respectively setting the first and second delay times.

5,189,239

DATA SELECTION APPARATUS FOR ELECTRONIC MUSICAL INSTRUMENT WHICH UTILIZES USE FREQUENCY VALUES TO SELECT MUSICAL DATA

Shinya Konishi, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shinzuoka, Japan

Filed Mar. 18, 1991, Ser. No. 671,209
Claims priority, application Japan, Mar. 19, 1990, 2-69486
Int. Cl.[5] C10H *7/00, 1/18, 1/22*
U.S. Cl. 84—615 **24 Claims**



1. A data selection apparatus for an electronic musical instrument stores a plurality of musical data for generating musical tones, comprising:

select operation means for choosing a selection code corresponding to each of the plurality of musical data;

selection code memory means for storing the chosen selection codes;

selection code read means for reading the chosen selection codes corresponding to each of the plurality of musical data stored in said selection code memory means in an order determined by a use frequency of each of the plurality of musical data and selecting one of the plurality of musical data;

assignment means for assigning the selection code corresponding to the selected one of the plurality of musical data to a tone generator for generating the musical tones; and

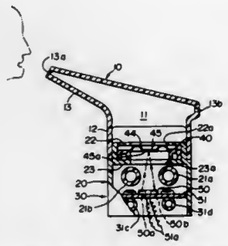
frequency updating means for updating the use frequency of the selected one of the plurality of musical data.

5,189,240

BREATH CONTROLLER FOR MUSICAL INSTRUMENTS

Susumu Kawashima, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Aug. 31, 1989, Ser. No. 401,630
Claims priority, application Japan, Sep. 2, 1988, 63-220731
Int. Cl.[5] G10H *3/06, 1/02*
U.S. Cl. 84—724 **15 Claims**



1. In a breath controller for musical instruments having a mouthpiece, to control musical tones in accordance with a blowing pressure, the breath controller comprising:

an enclosure which defines an air chamber coupled to the mouth piece, wherein the enclosure includes a casing having the air chamber coupled to the mouth piece, and a first lower casing and a second lower casing, the first and second lower casings being coupled together to form a hole communicated to the air chamber;

an elastic member having a reflection surface which is displaced by the blowing pressure;

a light-emitting element for emitting light to the reflection surface;

a light-receiving element for receiving reflected light from the reflection surface, wherein the amount of the reflected light varies in response to the displacement of the elastic member in accordance with the blowing pressure and the reflected light is converted into a signal corresponding to the amount of the reflected light; and

a musical tone generator for generating a musical tone corresponding to the signal.

5,189,241

PICKUP APPARATUS FOR DETECTING STRING VIBRATION FREE FROM EXTERNAL INDUCTIVE NOISE

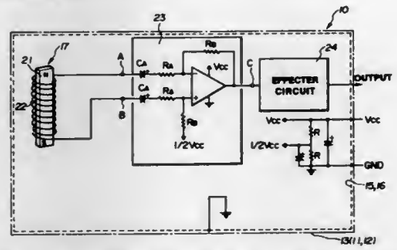
Kazuhisa Nakamura, Tachikawa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1990, Ser. No. 615,474
Claims priority, application Japan, Nov. 25, 1989, 1-136347[U]; Dec. 4, 1989, 1-314551
Int. Cl.[5] G10H *1/02, 3/18*
U.S. Cl. 84—728 **15 Claims**

1. A pickup apparatus comprising:

electromagnetic pickup means including a magnet and a pickup coil wound about said magnet, said electromagnetic pickup means having first and second output ends for converting vibration of a string into an input electrical pickup signal and for providing said input electrical pickup signal across the first and second output ends thereof;

said input electrical pickup signal including an unwanted in-phase inductive noise signal that appears across the first and second output ends of said electromagnetic pickup means; and



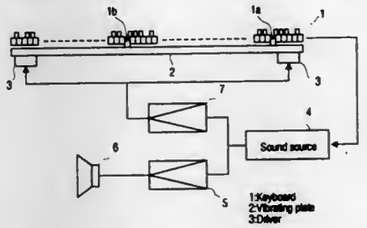
differential amplifier means having inverting and noninverting terminals for receiving said input electrical pickup signal from the first and second output ends of said electromagnetic pickup means across said inverting and noninverting terminals and for amplifying said input electrical pickup signal received at said inverting and non-inverting terminals, said differential amplifier providing an output pickup signal that is substantially free from said in-phase inductive noise.

5,189,242

ELECTRONIC MUSICAL INSTRUMENT

Satoshi Usa, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Division of Ser. No. 423,971, Oct. 19, 1989, Pat. No. 5,054,361.
This application May 21, 1991, Ser. No. 703,370
Claims priority, application Japan, Oct. 27, 1988, 63-271834
Int. Cl.[5] G10H *11/00, 1/34*
U.S. Cl. 84—743 **10 Claims**



1. An electronic musical instrument, comprising:

input means, adapted for contact by the performer, for providing tone data relating to musical tone signals to be generated in response to actions of the performer, said tone data comprising first data representing generation start and second data representing tone pitch; and

vibrator means for vibrating the input means separate from any generation of sounds in response to the tone data thereby to impart vibrations to the input means.

5,189,243

MINEFIELD CLEARING APPARATUS

Harry N. Hambric, 5350 Wade Ln., Woodbridge, Va. 22192

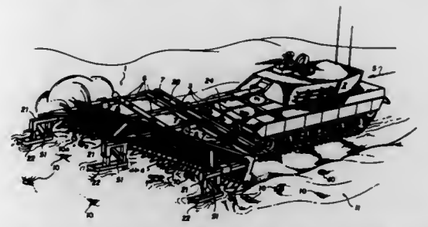
Filed Apr. 16, 1992, Ser. No. 868,845
Int. Cl.[5] F41H *11/12;* **F41F** *3/02*
U.S. Cl. 89—1.13 **17 Claims**

1. A minefield clearing apparatus for attachment to a vehicle comprising:

an interface assembly adapted for mounting onto a vehicle;

plow means joined to said interface assembly for raising and shunting aside objects buried beneath the ground surface; and,

conveyor means located behind said plow means for transporting the contents of the earth raised and shunted by



said plow means, whereby during mine clearing operations the contents of the earth are transported to the rear of the vehicle along a line substantially parallel to the direction of travel of the vehicle.

5,189,244

METHOD AND APPARATUS FOR SPINNING PROJECTILES FIRED FROM A RAIL GUN

William F. Weldon, Austin, Tex., assignor to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 275,605, Nov. 23, 1988, abandoned, which is a continuation of Ser. No. 868,547, May 30, 1986, abandoned. This application Aug. 21, 1989, Ser. No. 396,832
Int. Cl.[5] F41B *6/00*
U.S. Cl. 89—8 **31 Claims**



1. A method of inducing a spin in a projectile fired from the barrel of a railgun having a plurality of conductive rails, comprising the steps of:

cooperatively conforming said barrel of said railgun and said projectile such that said projectile is rotatable relative to said conductive rails within at least a portion of said barrel;

establishing a magnetic field coextensive with a portion of the length of said conductive rails of said railgun, said magnetic field for rotating said projectile; and

propelling said projectile through said barrel and said magnetic field by passing an electrical current through said projectile.

5,189,245

THERMALLY AND MECHANICALLY STABLE MUZZLE REFERENCE SYSTEM COLLIMATOR ASSEMBLY

Mark L. Bundy, Bellcamp, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

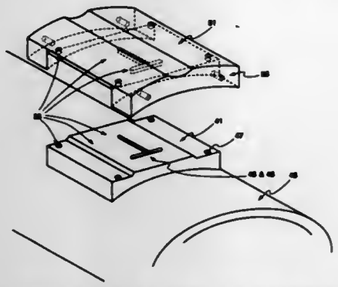
Filed Jan. 2, 1992, Ser. No. 816,005
Int. Cl.[5] F41G *1/46, 1/54*
U.S. Cl. 89—14.1 **5 Claims**

1. A thermally and mechanically stable muzzle reference system collimator assembly comprising

a muzzle reference system collimator; and

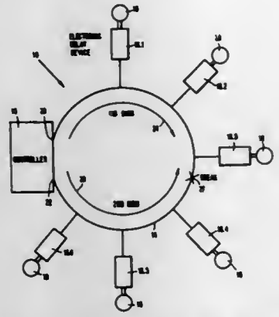
an adaptor plate for affixing said muzzle reference system collimator to a gun barrel;

wherein said muzzle reference system collimator and adaptor plate are composed of materials having a low coefficient of



thermal expansion which ranges in magnitude from one-tenth to one-fifth that of steel; and wherein said adaptor plate is attached to the gun barrel through an elastic interface.

5,189,246
TIMING APPARATUS
Michael J. C. Marsh, Johannesburg; Raymond C. Atkins, Pretoria, and Trevor M. Hodson, Randburg, all of South Africa, assignors to CSIR, Transvaal, South Africa
Filed Sep. 25, 1990, Ser. No. 587,914
Claims priority, application South Africa, Sep. 28, 1989, 89/7389
Int. Cl.[5] F23Q *21/00*
U.S. Cl. 102—217 **21 Claims**

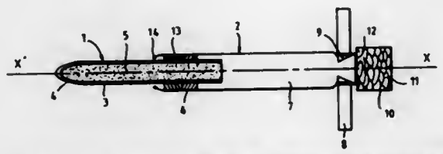


1. Apparatus for activating a plurality of electrical loads after predetermined time delays comprising:
a) a central control unit for generating timing signals;
b) a plurality of remote electrical delay devices, each delay device being associated with a corresponding electrical load and arranged to be serially programmed by a timing signal originating from the central control unit, the timing signal determining the time delay;
c) at least one bidirectional timing signal line for allowing the timing signals to be transmitted in series from the central control unit to each remote electrical delay device in either of two alternative directions;
d) sensing means for sensing a fault in the timing signal line; and
e) direction selection means for selecting the direction of transmission of the timing signals along the bidirectional timing signal line, the direction selection means in use selecting a direction of transmission opposite to the initial direction of transmission of the timing signals from the control unit in the event of said fault being sensed in the timing signal line, for programming those delay devices which cannot be programmed in the initial direction.

5,189,247
LOW-VULNERABILITY EXPLOSIVE MUNITIONS ELEMENT INCLUDING A MULTI-COMPOSITION EXPLOSIVE CHARGE, AND METHOD FOR OBTAINING A BLAST AND/OR BUBBLE EFFECT
Michel Andre, Bretigny; Jean-Pierre Mazer, Vert le Petit, and Bruno Nougnez, Ballancourt, all of France, assignors to SNPE Inc., Princeton, N.J.
Filed Jul. 31, 1991, Ser. No. 738,310
Claims priority, application France, Oct. 17, 1990, 90 12797
Int. Cl.[5] C06B *45/00*
U.S. Cl. 102—291 **20 Claims**

1. An explosive munitions element comprising a casing containing a multicomposition explosive charge including a plurality of adjacent coaxial layers wherein the innermost layer is a composite explosive comprising a filled polyurethane on polyester polymer matrix, the filling of which contains more than 40 percent by weight of an organic nitrate explosive, the percentage being expressed with respect to said composite explosive, and a peripheral layer comprising a pyrotechnic composition comprising a filled polyurethane or polyester polymer matrix, the filling of which contains at least one mineral oxidant and from 0 to less than 10 percent by weight of an organic nitrate explosive, the percentage being expressed with respect to said pyrotechnic composition.

5,189,248
PERFORATING MUNITION FOR TARGETS OF HIGH MECHANICAL STRENGTH
Jean Deffayet, Chaville; Alain Lepicard, Orléans, and André Winaver, Paris, all of France, assignors to Thomson-Brandt Armements, Boulogne Billancourt, France
Filed Sep. 16, 1991, Ser. No. 761,878
Claims priority, application France, Jan. 16, 1990, 90 00430; Jan. 16, 1990, 90 00431; Jan. 16, 1990, 90 00432
Int. Cl.[5] F42B *10/48, 10/56, 12/24, 15/36*
U.S. Cl. 102—386 **8 Claims**

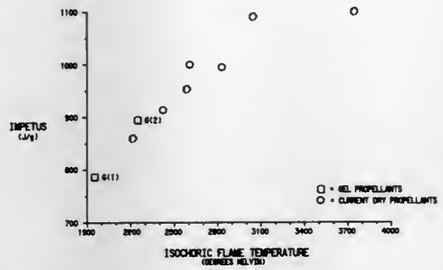


1. A munitoin launched from an air vehicle with a horizontal velocity and attitude for attaching a target with a horizontal layout, said munition comprising:
a front part having an explosive charge enclosed therein;
a rear part attached to said front part, said rear part comprising propulsion means for increasing a velocity of the munition to penetrate the target;
breaking means for providing the munition with a first curvature which is substantially vertical, said braking means being positioned at a rear portion of the rear part; and
back propulsion means for diminishing the first curvature of the munition caused by the braking means, said back propulsion means comprising means for providing a thrust which is parallel to a longitudinal axis of the munition.

5,189,249
GEL PROPELLANT AMMUNITION
William C. Burkhardt; Michael W. Diehl, both of Hagerstown, Md., and Wesley F. Spence, Wallingford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 14, 1991, Ser. No. 790,865
Int. Cl.[5] C06B *45/04; F42B 5/02*
U.S. Cl. 102—430 **3 Claims**

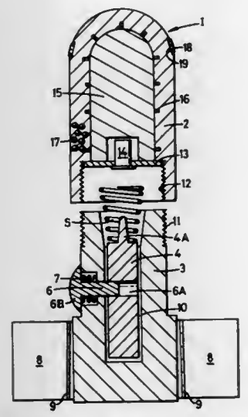
2. An improved ammunition comprising a shell, a projectile,

and a gel propellant in which the gel propellant is not ignitable at pressures below about 900 psi and comprises:
(a) from about 15 to 30 wt. % of a fine particle solid detonating high explosive;
(b) from about 40 to 60 wt. % of an oxidizing agent;



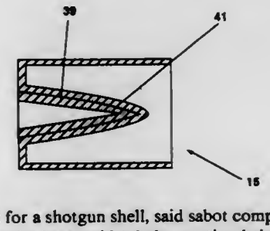
(c) from about 1 to 5 wt. % gum thickening agent;
(d) from about 5 wt. % to about 25 wt. % water;
(e) from about 1 to 5 wt. % nitrocellulose; and optionally
(f) up to about 0.1 wt. % cross-linker.

5,189,250
PROJECTILE FOR SMOOTH BORE WEAPON
Shalom Shaphyr, London, England, assignor to Frag, Ltd., New Quay Douglas, Isle of Man
Continuation-in-part of Ser. No. 416,959, Oct. 4, 1989, abandoned. This application Jul. 24, 1991, Ser. No. 735,378
Claims priority, application United Kingdom, Oct. 5, 1988, 8823264
Int. Cl.[5] F42B *10/16, 12/20, 15/21*
U.S. Cl. 102—439 **14 Claims**



1. An explosive device, including a projectile to be fired from a shotgun, said projectile comprising:
a) a warhead having an explosive charge;
b) a casing having means for joining said casing to said warhead;
c) a plurality of fins affixed to the periphery of said casing and having means for assuming radially retracted and radially extended positions, whereby said fins cause deceleration of said projectile when said fins assume said extended position;
d) a firing pin disposed in an approximately axially extending passage in said casing, whereby the momentum of said firing pin upon deceleration of said casing urges said firing pin in the axial direction;
e) a safety pin having means for engaging said firing pin, thereby locking said firing pin in a safe position, said safety pin disposed in a first approximately radially oriented hole formed in said casing, whereby said firing pin applies a shear force to said safety pin upon said deceleration of said projectile when said fins assume said extended position; and
f) means for exerting a radial force for disengaging said safety pin from said firing pin, whereby said shear force applied by said firing pin restrains said safety pin against said radial force for a predetermined period of time after said projectile leaves a barrel of a shotgun.

5,189,251
SABOT FOR HIGH DISPERSION SHOT SHELL
Lawrence J. Puckett, Churchville, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.
Division of Ser. No. 828,321, Jan. 29, 1992. This application Aug. 21, 1992, Ser. No. 931,477
Int. Cl.[5] F42B *7/08, 14/08*
U.S. Cl. 102—457 **4 Claims**



1. A sabot for a shotgun shell, said sabot comprising a tubular portion and a base, said tubular portion being attached at one end to said base, and said base being provided with a concave portion which defines a centrally disposed recess in said base, wherein said concave portion of said base comprises a plurality of overlapping layers which protrude into a load of shot contained in the tubular portion of said sabot.

5,189,252
ENVIRONMENTALLY IMPROVED SHOT
John Huffman, and John Shannon, both of Memphis, Tenn., assignors to Safety Shot Limited Partnership, Memphis, Tenn.
Division of Ser. No. 606,814, Oct. 13, 1990, Pat. No. 5,088,415. This application Nov. 1, 1991, Ser. No. 786,785
Int. Cl.[5] F42B *7/04*
U.S. Cl. 102—459 **1 Claim**

1. A lead-free shot comprised of a particulate core of a dense metal selected from the group consisting of tungsten, depleted uranium and mixtures thereof, said core provided with a coating of lighter metal selected from the group consisting zinc, bismuth, aluminum, tin, copper, nickel, iron and alloys thereof, said coating being selected such that the overall specific gravity of said coated core is between about 9.0 and 17.5 gm/cc.

5,189,253
FILAMENT DISPENSER
George W. LeCompte, Tucson, Ariz., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Jul. 20, 1990, Ser. No. 556,235
Int. Cl.[5] F42B *12/68*
U.S. Cl. 102—504 **5 Claims**

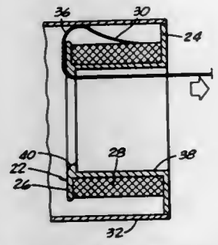
1. Apparatus for dispensing a length of signal carrying filament from storage on board a missile, the filament including one end interconnected with apparatus on board the missile

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and an opposite end interconnected with separate apparatus at a launch site, comprising:

a bobbin having an outer side and central opening extending completely through the bobbin, wherein the filament is wound about the bobbin outer side to form a pack with opposite sides and a predetermined average diameter;

first and second flanges spaced from one another and extending from the bobbin, each said flange engaging an opposite side of the pack for retaining the pack in a stable configuration prior to payout;



a wall affixed to the first flange and encircling the second flange and the pack, the wall disposed close enough to the bobbin to frictionally engage the filament ballooning from the pack and spaced a sufficient distance from the second flange to form a filament access window of fixed size therebetween, whereby filament dispensing from the pack passes through the access window in a first direction and then passes through the bobbin central opening in a second direction generally opposite to the first direction; and

the second flange having a smoothly curved outer end surface for engaging and guiding the filament from the access window.

5,189,254

SEALING BAND FOR AN ARROW-TYPE PROJECTILE

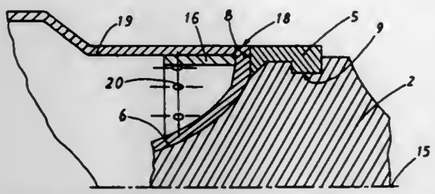
Marc Berville, Luty sur Arnon, and Laurent Queille, Bourges, both of France, assignors to Giat Industries, Versailles, France

Filed Aug. 12, 1991, Ser. No. 744,471

Claims priority, application France, Aug. 13, 1990, 90 10285

Int. Cl.[5] F42B *14/02, 14/06*

U.S. Cl. 102—521 **4 Claims**



1. An arrow-type projectile comprising a penetrator, a sabot formed by several segments disposed around said penetrator, a sealing band positioned in an annular groove of the sabot, an annular rear seal provided on a rear part of the sabot, and joining means provided between said rear seal and an annular rear zone of said sealing band for establishing a mechanical connection between said sealing band and said rear seal, wherein at the level of said annular rear zone of said sealing band, there is provided a substantially cylindrical extension coaxial with said sealing band, said joining means comprising bores made on said extension in a substantially radial direction and uniformly distributed over at least a circumference of said extension, said bores being filled by the material constituting said rear seal.

5,189,255

GAS GENERATOR

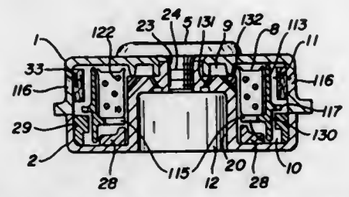
Mitsuhiko Fukabori, 90-38 Shinzaike, Ibokawacho, Ibo-gun, Hyogo; Hiroshi Iwasaki, 500 Kamiyobe, Yobe-ku, Himeji-shi, Hyogo; Hiroaki Shinto, 40-6 Nishiyamacho 4-Chome, Toyotashi, Aichi; Yasunori Iwai, 940 Shinzaike, Aboshi-ku, Himejishi, Hyogo; Ryuji Nishiuchi, 136 Kamae 5-Chome, Shikamaku, Himeji-shi, Hyogo; Yuzo Gotoh, 500 Kamiyobe, Yobe-ku, Himeji-shi, Hyogo; Satoru Hiramatsu, 68 Katajima, Ibokawacho, Ibo-gun, Hyogo; Norimasa Hirata, 16-96 Ohtsucho 1-Chome, Ohtsu-ku, Himeji-shi, Hyogo, and Masakazu Tokuda, 940 Shinzaike, Aboshi-ku, Himeji-shi, Hyogo, all of Japan

Filed Aug. 31, 1990, Ser. No. 576,593

Claims priority, application Japan, Sep. 4, 1989, 1-229073; Sep. 4, 1989, 1-229074; Sep. 4, 1989, 1229071; Sep. 4, 1989, 1229072

Int. Cl.[5] B60R *21/28*; C06D *5/00*

U.S. Cl. 102—531 **14 Claims**



1. A mechanical ignition gas generator including a housing which consists of an upper outer shell container (diffuser) and a lower outer shell container (closure) fitted to each other in such a manner as to define an annular space for storing therein a gas generating agent, a priming charge room having a priming charge therein, a cooling material and a filter, and in which said closure has a cylindrical space capable of fitting to, and storing, a cylindrical mechanical igniter on its lower surface and a plurality of caps ignited by an ignition pin of said igniter are disposed on the top wall of said space, in which generator a hole for communication said priming charge room with the front surface of said caps is disposed inside said closure of said housing besides a cap hole for communicating the back surface of said caps with said priming charge room so as to prevent delayed ignition of said caps.

5,189,256

APPARATUS FOR COILING AND STORING CONDUCTORS IN A CIRCULAR SHAPE

Patrick J. Epple, Bradley Beach, N.J., assignor to Keptel, Inc., Tinton Falls, N.J.

Filed Nov. 18, 1991, Ser. No. 793,205

Int. Cl.[5] H02G *3/08, 3/10*

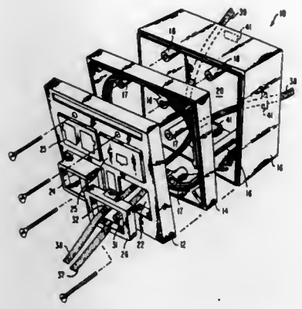
U.S. Cl. 174—50 **4 Claims**

1. Apparatus for coiling and storing at least one electrical distribution or communications conductor in a generally circular shape, comprising:

a frame of predetermined shape, said frame having a generally open interior and an inner peripheral portion;

a plurality of generally arcuate members provided on said peripheral portion and extending inwardly into said open interior, said arcuate members spaced apart and aligned generally circularly, said arcuate members spaced apart and aligned generally circularly, said arcuate members for having said conductor coiled therearound to store said conductor in said generally circular shape, and predetermined ones of said arcuate members including first end portions; and

a plurality of generally straight members provided on said peripheral portion and extending inwardly towards said open interior, said straight members including end portions generally opposite to and spaced from said first end portions of said predetermined ones of said arcuate members, said end portions of said straight members and said first end portions of said predetermined ones of said members cooperatively providing slots for receiving said conductor and for assisting in maintaining said conductor in said circular shape upon being coiled around said arcuate members.



5,189,257

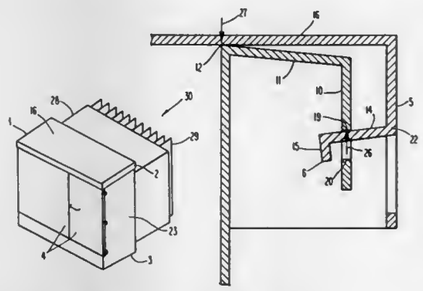
TRANSFORMER HAVING AN INTEGRAL CABINET WITH A CLAMPING COVER HINGE

Virgil L. Borgmeyer, Meta; Chester F. Trice, Jefferson City; Dale A. Tempco, Jefferson City; Thomas F. Clark, Jefferson City; William J. Ritter, Tebbetts, and Leo J. Huest, Jefferson City, all of Mo., assignors to ABB Power T&D Company, Inc., Blue Bell, Pa.

Filed Mar. 5, 1991, Ser. No. 665,556

Int. Cl.[5] H05K *5/00*

U.S. Cl. 174—50 **18 Claims**



1. An electrical transformer comprising:

a) a tank;

b) an enclosure extending from said tank, said enclosure having a base having a first approximately horizontally extending edge and a first approximately vertically extending member;

c) a cover for said enclosure having a top adapted to rest on said first horizontally extending edge; and

d) a hinge adapted to extend between said cover and said first vertically extending member, said hinge being elastically deformed when said top rests on said horizontally extending edge, whereby said hinge applies a first spring force clamping said top onto said first horizontally extending edge.

5,189,258

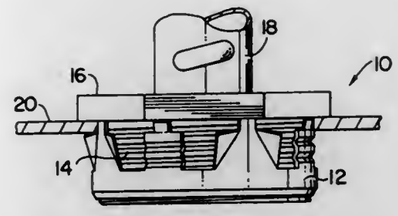
APPARATUS FOR DIRECTLY ATTACHING A STRAIN RELIEF CONNECTOR TO AN ELECTRICAL ENCLOSURE

Edward E. Pratesi, Middletown, Conn., assignor to Bridgeport Fittings, Inc., Stratford, Conn.

Filed Nov. 26, 1990, Ser. No. 618,157

Int. Cl.[5] H02G *3/22*

U.S. Cl. 174—65 R **17 Claims**



1. A retaining apparatus for quickly connecting a body having a flange with a threaded portion to a housing through an opening therein, said retaining apparatus comprising:

a member having a thread engaging means that includes a plurality of thread engaging tabs spaced about said member to extend from a member major edge for fastening the apparatus without threading to the body threaded portion to form an assembly therewith; and

a fastening means extending from said member major edge that is capable of slidably engaging said housing only when moved a selected amount through said opening in a first direction and fastening said assembly to the housing when a force is applied which tends to move said assembly in the opposite direction.

5,189,259

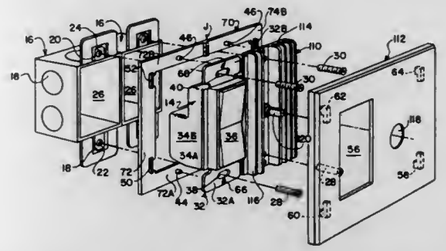
FACE PLATE HAVING PRESS-FIT ATTACHMENT TO ELECTRICAL SWITCHES, OUTLETS AND THE LIKE

Steven R. Carson, Upper Saddle River, N.J., and Jerry D. Gandre, Austin, Tex., assignors to Lightolier, Inc., Secaucus, N.J.

Filed May 17, 1990, Ser. No. 524,657

Int. Cl.[5] H02G *3/14*

U.S. Cl. 174—66 **4 Claims**



1. A segmented coupling plate adapted for multiple wiring device installations comprising, in combination:

a left side frame having a first central portion and first and second sidearms which project at right angles with respect to said first central portion, said first and second sidearms each having first and second index pins projecting transversely with respect thereto, respectively;

a right side frame having a second central portion and third and fourth sidearms projecting at right angles with respect to said second central portion, said third and fourth sidearms each having third and fourth index pins projecting transversely with respect thereto, respectively;

VOL 1147 ISS 4 FE 23 1993 UMI

said left side frame having first and second press-fit connectors mounted on said left side frame at laterally spaced locations relative to said first and second index pins;

said right side frame having third and fourth press-fit connectors mounted on said right side frame at laterally spaced locations relative to said third and fourth index pins;

the first and second sidearms of said left side frame having mutually coacting, interlocking male and female connectors, respectively;

the third and fourth sidearms of said right side frame having complementary male and female connectors, respectively; and,

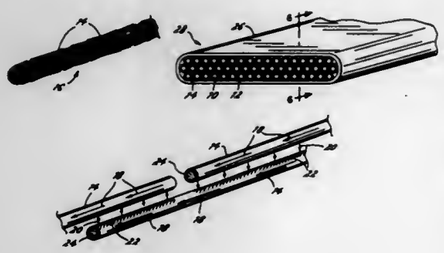
wherein the male and female connectors on the first and second sidearms are adapted for mutually coacting, interlocking engagement with the male and female connectors on the third and fourth sidearms, respectively, for assembly of the right side frame onto the left side frame.

5,189,260

STRAIN TOLERANT MICROFILAMENTARY SUPERCONDUCTING WIRE

Douglas K. Finnemore, Ames, Iowa; Theodore A. Miller, Tuscon, Ariz.; Jerome E. Ostenson, Ames, Iowa; Louis A. Schwartzkopf, Mankato, Minn., and Steven C. Sanders, Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Feb. 6, 1991, Ser. No. 651,551
Int. Cl.[5] H01B *12/00*
U.S. Cl. 174—125.1 **16 Claims**



1. A strain tolerant microfilamentary wire capable of carrying superconducting currents comprising:

a plurality of discontinuous superconducting filaments formed from a high temperature superconducting material, the filaments having a length at least several orders of magnitude greater than the filament diameter;

a normal metal separating and binding the plurality of filaments to form a normal metal matrix, the normal metal being sufficiently thick for relieving strain on the filaments while also being sufficiently thin for allowing superconducting current transfer between the filaments; and

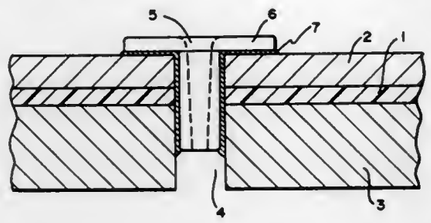
the geometry of dispersal of the filaments in the normal metal matrix providing substantial filament-to-filament overlap to produce superconducting current transfer between the filaments.

5,189,261

ELECTRICAL AND/OR THERMAL INTERCONNECTIONS AND METHODS FOR OBTAINING SUCH

Lawrence C. Alexander, Whitney Point; Bernd K. Appelt, Apalachin, both of N.Y.; David K. Balkin, Mishawaka, Ind.; James J. Hansen, Endicott; Joseph Hromek, Endwell; Ronald A. Kaschak, Vestal; John M. Lauffer, Waverly; Irving Memis, Vestal; Magan S. Patel, Endicott; Andrew M. Seman, Kirkwood, and Robin A. Susko, Owego, all of N.Y., assignors to IBM Corporation, Armonk, N.Y.

Filed Oct. 9, 1990, Ser. No. 598,466
Int. Cl.[5] H05K *1/00*
U.S. Cl. 174—263 **9 Claims**



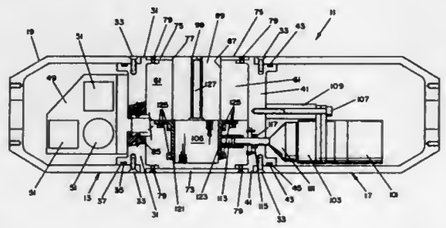
1. A circuit board or card having a dielectric substrate having metallic layers on opposite major surfaces of the substrate thereby providing said board or card with a topside and a bottomside at least one via extending entirely through one of said metallic layers and dielectric substrate and at least partially into the other of said metallic layers, wherein said at least one via contains a solderable member selected from the group consisting of stud having solder on the outer surfaces thereof and eyelet having solder on the outer surfaces thereof wherein said member contacts the walls of the said at least one via to provide electrical or thermal interconnection or both between the metallic layers on said topside and said bottomside and where the said member does not protrude through the combined thickness of the dielectric substrate and metallic layers and wherein said member has flange portions that extend on top of the metallic layer on that surface of the substrate through which said at least one via entirely extends.

5,189,262

ADVANCED MOTOR DRIVEN CLAMPED BOREHOLE SEISMIC RECEIVER

Bruce P. Engler, Sandoval County; Gerard E. Sleefe, and Richard P. Striker, both of Bernalillo County, all of N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 15, 1991, Ser. No. 775,871
Int. Cl.[5] G01V *1/40*
U.S. Cl. 181—102 **14 Claims**



1. A borehole seismic tool comprising:

a housing having a longitudinal axis, an exterior surface, and means adapted to engage the wall of a borehole;

a borehole clamp, said clamp being received in said housing for nonrotating linear movement along a second axis which is perpendicular to said longitudinal axis, said clamp having a surface adapted to engage said borehole wall; electro-mechanical means for moving said clamp, said means including

an electric motor positioned within said housing, said motor having a rotational output shaft;

first means coupled to said motor output shaft for converting said rotational output to rotational movement of a drive shaft about said second axis; and

thread means on said drive shaft threaded into a bore extending into said clamp from a side opposite said wall engaging surface for converting said rotational movement of said drive shaft to linear movement of said clamp;

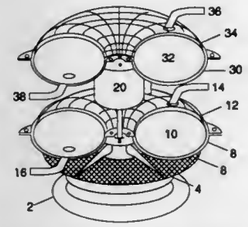
whereby, when said thread means causes said clamp surface to engage said borehole wall, said means adapted to engage is driven into engagement with said borehole wall.

5,189,263

HUMAN-PORTABLE GEOPHYSICAL ENERGY SOURCE

Joe M. Bearden, Shaw Centre, Singapore, assignor to Chevron Research and Technology Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 725,236, Jun. 26, 1991, abandoned, which is a continuation of Ser. No. 551,968, Jul. 12, 1990, abandoned. This application Feb. 10, 1992, Ser. No. 833,231
Claims priority, application Denmark, Mar. 6, 1992, 309/92; Brazil, Mar. 11, 1992, 9105810
Int. Cl.[5] G01V *1/04*
U.S. Cl. 181—113 **2 Claims**



1. A geophysical energy source comprising:

(a) an earth-coupling means, wherein the earth-coupling means does not weigh substantially more than 50 kg, enabling the earth-coupling means to be capable of being carried by a human on foot;

(b) a hydraulic means for providing seismic energy operably connected to the earth-coupling means, wherein the hydraulic means does not weigh substantially more than 50 kg, enabling the hydraulic means to be capable of being carried by a human on foot;

(c) a containing means comprising at least one flexible container that provides hold-down mass to the earth-coupling means to maintain coupling with the earth, wherein the containing means comprises an upper container and a lower container, wherein the lower container is spatially above the earth-coupling means, and the upper container is spatially above both the lower container and the means for providing seismic energy, wherein neither the upper container nor the lower container weights substantially more than 50 kg, enabling the containing means to be capable of being carried by a human on foot; and

(d) a means for filling and removing liquid from the containing means, wherein the means for filling and removing liquid comprises;

(1) a pump component:

(2) at least one hose component; and

(3) an electrical power source;

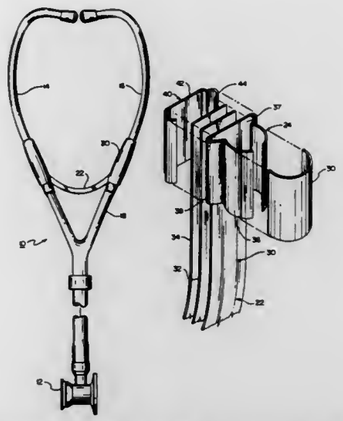
wherein each component does not weigh substantially more than 50 kg, enabling each component of the means for filling and removing liquid to be capable of being carried by a human on foot.

5,189,264

BINAURAL STETHOSCOPE SPRING

Edward L. Peart, Arden, N.C., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Sep. 14, 1990, Ser. No. 582,243
Int. Cl.[5] A61B *7/02*
U.S. Cl. 181—131 **7 Claims**



1. In a stethoscope having a pair of elongated ear tubes each having an upper end suitably curved for insertion into an ear of a wearer, and lower end suitable for connection to a flexible "Y" tube connected to a chestpiece, a U-shaped spring assembly having two ends for joining the lower ends of said ear tubes and biasing the curved upper ends thereof toward each other which comprises:

a first leaf spring formed into a generally U-shaped configuration having at each end thereof a partial cylindrical ferrule extending outwardly of the U-shape thereof and adapted to engage in a cooperating groove in the ear tube lower end;

second and third leaf springs formed into a generally U-shaped configuration corresponding to that of said first leaf spring so as to nest therein;

said second and third leaf springs being positioned on an inner surface of the U-shaped first leaf spring and extending from end to end thereof; and

at each end of said spring assembly:

a first spring clip member open on one side, adapted to be snapped about said partial cylindrical ferrule from the inner surface of the U-shaped spring assembly to secure the end of said second and third leaf springs to the end of said first leaf spring;

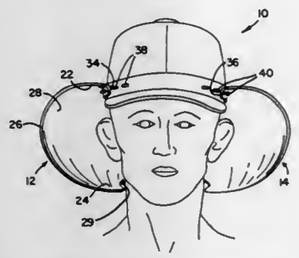
a second spring clip member open on one side adapted to be engaged about a cylindrical portion of said partial cylindrical ferrule to lock said ferrule in the cooperating groove in the ear tube lower end; said ferrule and second spring clip member together forming a receptacle for receiving a grooved lower end of the ear tube to allow swiveling of the ear tube relative to the "Y" tube and spring assembly, but prevent withdrawal therefrom when fully assembled; and

an elastomer coating encapsulating said first, second, and third leaf springs, said ferrule, and said first and second spring clip members to maintain them in assembled form about the lower end of the ear tube to be joined to a

VOL
1147
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flexible "Y" tube and chespiece to constitute a stethoscope.

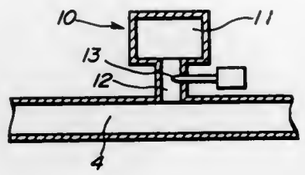
5,189,265
CAP WITH HEARING ENHANCING STRUCTURE
Mark P. Tilkens, 1068 Westport Dr., Apartment 216, Port Washington, Wis. 53074
Filed Mar. 15, 1991, Ser. No. 669,844
Int. Cl.[5] H04R *25/00*
U.S. Cl. 181—133 **6 Claims**



1. A hearing enhancing device adapted to be worn on a person's head, comprising:
a cap including a band for encircling the person's head, the band being adjustable to varying sizes to accommodate varying head sizes;
a pair of hearing-enhancing members located on opposite sides of the cap and connected to the band, each member having a curved interior surface which cooperates with a side of the person's head to define an internal cavity within which one of the person's ears is located when the cap is placed on the person's head, wherein each hearing enhancing member includes a leading edge adapted to be located forwardly of one of the person's ears; and
a variable position connection arrangement interposed between each hearing-enhancing member and the band, for providing adjustment of each member on the band to enable the leading edge of each hearing-enhancing member to be positioned forwardly of one of the person's ears when the band is adjusted from one size to another, wherein the variable position connection arrangement comprises a series of openings provided in each hearing-enhancing member and a series of pegs provided on the band, the pegs being engageable within the openings for accommodating movement of each member to varying discrete locations on the band.

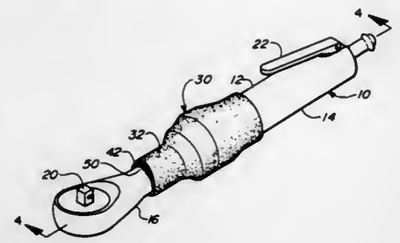
5,189,266
VEHICULAR EXHAUST RESONANCE SUPPRESSION SYSTEM AND SENSING MEANS THEREFORE
Akira Sasaki; Yoshikazu Hayakawa; Yuichi Sakuma; Tatsuo Sakai, all of Yokosuka, and Yoshinori Kihara, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed May 31, 1990, Ser. No. 531,225
Claims priority, application Japan, Jun. 9, 1989, 1-147528; Jun. 9, 1989, 1-147529; Jun. 9, 1989, 1-147530; Jun. 9, 1989, 1-147531; Jun. 9, 1989, 1-147532
Int. Cl.[5] F01N *7/08, 1/00*
U.S. Cl. 181—227 **14 Claims**

1. A resonance suppression device for an internal combustion engine comprising:
an exhaust system, said exhaust system including a passage coupled to an exhaust outlet of an internal combustion engine for directing a flow of exhaust gasses expelled by said internal combustion engine;
tuning means for selectively altering a frequency at which gas in said exhaust system resonates;
a resonance detecting means, said resonance detecting means including a resonating chamber which is connected by a connector passage to said passage at a portion whereat an anti-node of a sound wave of said resonant frequency occurs, and a temperature sensor, said temperature sensor being disposed in said connector passage; and



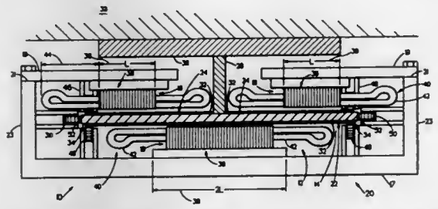
control means, said control means being responsive to a signal output of said resonance detecting means for switching said tuning means in a manner which alters a resonance frequency of said exhaust system upon the detection of resonance by said resonance detecting means.

5,189,267
PNEUMATIC TOOL MUFFLER SYSTEM
Gary A. Ligman, 310 Mill Rd., Martinez, Calif. 94553
Filed May 31, 1991, Ser. No. 708,247
Int. Cl.[5] F01N *3/00*
U.S. Cl. 181—230 **5 Claims**



1. In combination:
a pneumatic tool including a first body portion and a second body portion connected to said first body portion at a juncture, said pneumatic tool defining an air flow outlet at the juncture of said first and second body portions through which air having noise characteristics is emitted during operation of said tool, the first body portion of said pneumatic tool having an outer peripheral surface at said juncture of greater magnitude than the outer peripheral surface of the second body portion thereof, and said air flow outlet directing pressurized air from said first body portion and toward said second body portion; and
muffler apparatus for modifying the noise characteristics of air exhausted from said air flow outlet during operation of said pneumatic tool, said muffler apparatus comprising heat shrunk tubing having first and second ends and disposed about said first and second body portions, said heat shrunk tubing generally conforming in shape to and secured to and in engagement with the first body portion completely about the outer periphery of said first body portion to form a seal with said first body portion substantially preventing flow of pressurized air from said air flow outlet out the first end of said heat shrunk tubing and said heat shrunk tubing secured to and in engagement with said second body portion and defining therewith a restricted fluid-flow passageway with said second body portion, said passageway leading from said air flow outlet to the second end of said heat shrunk tubing, said second body portion and said heat shrunk tubing cooperating to form a bend in said fluid-flow passageway so configured as to cause pressurized air in said fluid-flow passageway to obliquely impact against a segment of the outer peripheral surface of said second body portion, and said muffler apparatus additionally comprising foraminous material disposed in said restricted fluid-flow passageway through which pressurized air from said air flow outlet passes prior to said pressurized air exiting said heat shrunk tubing second end and compressed between said second body portion and said heat shrunk tubing.

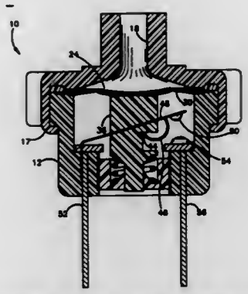
5,189,268
ELEVATOR WITH LINEAR MOTOR DRIVE ASSEMBLY
Marcel Pavoz, Nanterre, France, and Ernest P. Gagnon, Manchester, Conn., assignors to Otis Elevator Company, Farmington, Conn.
Filed Oct. 30, 1991, Ser. No. 785,604
Int. Cl.[5] H02K *42/00*
U.S. Cl. 187—112 **18 Claims**



1. A linear motor for providing motive force to an elevator in a hoistway comprising:
a secondary, having a thickness, a first side and a second side;
a first primary, having a body with a surface area and a width;
a plurality of second primaries, each having a body with a surface area and a width; and
a frame, for mounting said first primary in close proximity to said first side of said secondary, and for mounting said second primaries in close proximity to said second side of said secondary, wherein said body of said first primary is offset from said bodies of said second primaries.

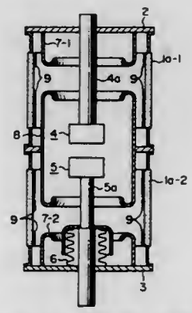
5,189,269
FLUID PRESSURE SWITCH HAVING A BELLEVILLE WASHER
Daniel C. Stahly, Elmhurst, Ill., assignor to Eaton Corporation, Cleveland, Ohio
Filed Apr. 10, 1992, Ser. No. 866,600
Int. Cl.[5] H01H *35/34*
U.S. Cl. 200—83 P **9 Claims**

1. A pressure switch assembly comprising:
(a) body means defining fluid pressure signal port and a fluid pressure sensing cavity;
(b) pressure-responsive means forming a portion of the boundary of said cavity and movable in response to pressure changes in said cavity;
(c) bias means disposed on one side of said pressure-responsive means and resisting movement thereof, said bias means including
(i) a Belleville washer supported at its outer periphery on said body means,
(ii) a convexo-concave disc having the outer periphery thereof supported on the inner periphery of said Belleville washer, wherein upon increasing pressure on said pressure-responsive means, said disc undergoes snap-acting reverse curvature movement at a first pressure level and said Belleville washer goes over-center with a snap-action at a second pressure level higher than said first level; and,



(d) switch means including actuator means operably moved by said disc for actuation and de-actuation.

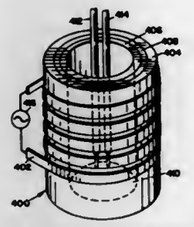
5,189,270
CONTACT STRUCTURE FOR VACUUM CIRCUIT BREAKER
Morihisa Matumoto, Kitaibaraki; Kouji Suzuki, Takahagi; Shunkichi Endo, and Yukio Kurosawa, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 25, 1991, Ser. No. 735,889
Claims priority, application Japan, Aug. 3, 1990, 2-205014
Int. Cl.[5] H01H *33/66*
U.S. Cl. 200—144 B **6 Claims**



1. A contact structure for a vacuum circuit breaker, comprising:
a vacuum vessel of an electrically insulating material having an inner surface;
fixed and movable contact units sealed in said vacuum vessel;
shield means surrounding said fixed and movable contact units in said vacuum vessel; and
particles of a metal applied to at least a part of the inner surface of said vacuum vessel, wherein said particles have a diameter substantially in a range of 0.5 μm to 10 μm, and are distributed as one of individual particles or groups of particles so distributed so as to be spaced from an adjacent particle or adjacent particle groups by a distance substantially in a range of from 10 μm to 100 μm.

VOL
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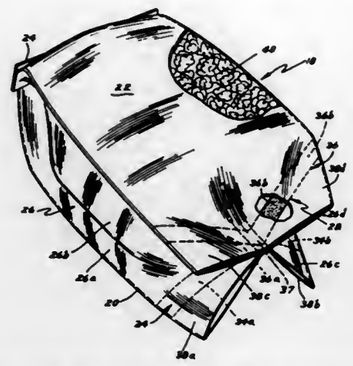
5,189,271
TEMPERATURE SELF-REGULATING INDUCTION APPARATUS
Rodney L. Derbyshire, Menlo Park, Calif., assignor to Metcal, Inc., Menlo Park, Calif.
Division of Ser. No. 170,108, Mar. 11, 1988, Pat. No. 4,914,267, which is a continuation of Ser. No. 837,559, Mar. 3, 1986, abandoned, which is a continuation of Ser. No. 568,220, Nov. 25, 1985, abandoned, which is a continuation-in-part of Ser. No. 445,819, Dec. 1, 1982, abandoned. This application Apr. 2, 1990, Ser. No. 502,864
Int. Cl.[5] H05B *6/40*
U.S. Cl. 219—10.53 **12 Claims**



1. A device for connecting two members, the device comprising:
a heat recoverable sleeve, having two open ends, each of said two members being insertable into a different one of the two ends;
a ferromagnetic material, and
winding means for inducing current in said ferromagnetic material, said winding means being flux coupled to said ferromagnetic material;
said ferromagnetic material disposed to generate heat in said heat recoverable sleeve responsive to development of current therein;
said sleeve having a size recover temperature below the Curie temperature of the ferromagnetic material;
said sleeve recovering to a memory configuration thereof to engage the members when inserted therein and upon said sleeve being heated to its recover temperature.

5,189,272
BAG UTILIZING A MICROWAVE SUSCEPTOR AND NON-HEATED FLAPS
Duane L. McDonald, Maple Grove, and Barbara E. Morrissette, Plymouth, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Feb. 6, 1992, Ser. No. 834,187
Int. Cl.[5] H05B *6/80;* **B65D** *30/18*
U.S. Cl. 219—10.55 E **20 Claims**

1. Package for use in a microwave oven comprising, in combination: a flexible bag including a bottom wall, a top wall, and at least a first side wall extending between the top and bottom walls, with the top, bottom and side walls including first and second ends, with the first side wall including at least first and second pleats with the pleats being connected together and having opposite edges connected to the bottom wall and the top wall, with the bag further including an end wall at the first ends of the top, bottom and side walls; susceptor means for converting microwave energy into heat overlying a portion of the bottom wall spaced from the first and second ends of the bottom wall; and a peelable seal between the first pleat and the bottom wall and between the second pleat and the top wall adjacent the second ends of the top, bottom, and side walls which fails during microwave cooking allowing trapped steam to vent from the package and allowing the consumer to open the package after microwave cooking, with the peelable seal being spaced from the second ends of the top, bottom and side walls to define at least first and second unsealed areas located on the side of the peelable seal opposite the end wall and allowing air to flow between the side, top and bottom walls from the second ends of the side, top and bottom walls to the peelable seal to maintain the unsealed



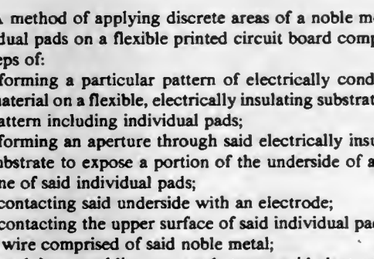
areas at a cooler surface temperature than the remainder of the package for grasping by the consumer.

5,189,273
MICROWAVE ABSORBING HEATER
Takao Inukai; Kanichi Tachibana; Kazuo Tsukada; Toshitaka Fujikawa; Keiichi Iida, and Noboru Kogure, all of Tokyo, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan
Filed Sep. 30, 1991, Ser. No. 767,882
Claims priority, application Japan, Nov. 21, 1990, 2-314385; May 7, 1991, 3-101354
Int. Cl.[5] H05B *6/02*
U.S. Cl. 219—10.55 E **9 Claims**

2. A microwave absorbing heater comprising a porous body having a porosity of 40 to 95% so that the porous body does not substantially retain therein vapor produced from a material heated by the microwave and provides high thermal shock resistance not less than 400° C. to easily scorch a surface of the heated material, said porous body being composed of 60 to 98 wt. % of the silicon carbide without substantially having free carbon and free silicon and 40 to 2 wt. % of an inorganic electrical insulating material to consolidate the silicon carbide particles without lowering microwave absorption ability.

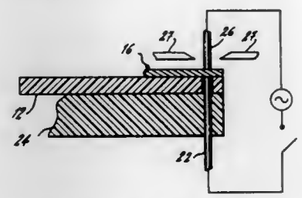
5,189,274
HEATING METHOD FOR MICROWAVE OVEN HAVING HEAT ELEMENT
Hideki Yamaguchi, Yamatokoriyama; Masahiro Nitta, Nara, and Katsunori Furukawa, Kashihara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Division of Ser. No. 535,030, Jun. 8, 1990, Pat. No. 5,082,999. This application Sep. 30, 1991, Ser. No. 767,694
Claims priority, application Japan, Jun. 13, 1989, 1-151451; Jun. 14, 1989, 1-151772
Int. Cl.[5] H05B *6/12*
U.S. Cl. 219—10.55 M **4 Claims**

3. A heating method for an oven having an input panel for allowing a user to input heating instructions, a microwave source for generating microwave energy within a chamber and a thermal heating element sheathed by dielectric material for generating thermal energy within the chamber, the dielectric material being exposed to the microwave energy generated by the microwave source, said method comprising:
in response to a thermal heating instruction input via the input panel, a step of thermal heating by causing the thermal heating element to generate thermal energy within the chamber, wherein a dielectric loss of the dielectric material increases as the temperature of the dielectric material increases in response to the thermal energy;
upon completion of the thermal heating, a step of activating a timer to measure a predetermined period of time;
in response to a microwave heating instruction input via the input panel, a step of determining whether the predetermined period of time measured by the timer has expired, a step of causing the microwave source to generate microwave energy within the chamber if the predetermined



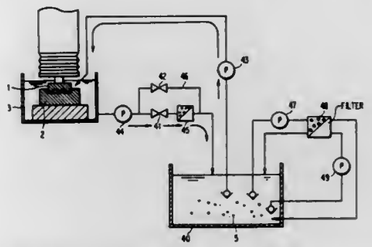
period of time has expired, and a step of prohibiting the microwave source from generating microwave energy within the chamber if the predetermined period of time measured by the timer has not expired so that the dielectric loss of the dielectric material decreases as the temperature of the dielectric material decreases in response to an absence of thermal energy, and then causing the microwave source to generate microwave energy within the chamber upon the lapse of the predetermined period of time measured by the timer.

5,189,275
PRINTED CIRCUIT ASSEMBLY WITH CONTACT DOT
Frank J. Avellino, Russell; Richard A. Case, Pittsfield, and David T. Swanson, Warren, all of Pa., assignors to GTE Products Corporation, Danvers, Mass.
Filed Aug. 21, 1989, Ser. No. 409,850
Int. Cl.[5] B23K *11/16;* **H01R** *43/02*
U.S. Cl. 219—56.22 **10 Claims**



1. A method of applying discrete areas of a noble metal to individual pads on a flexible printed circuit board comprising the steps of:
(a) forming a particular pattern of electrically conductive material on a flexible, electrically insulating substrate, said pattern including individual pads;
(b) forming an aperture through said electrically insulating substrate to expose a portion of the underside of at least one of said individual pads;
(c) contacting said underside with an electrode;
(d) contacting the upper surface of said individual pad with a wire comprised of said noble metal;
(e) applying a welding current between said electrode and said wire to weld said wire to said pad; and
(f) severing said wire to leave a particular amount on said upper surface of said pad.

5,189,276
METHOD AND APPARATUS FOR TREATING THE DIELECTRIC USED IN ELECTRICAL DISCHARGE MACHINING
Takuji Magara, Aichi, Japan, assignor to Mitsubishi Denki K.K., Tokyo, Japan
Continuation of Ser. No. 618,444, Nov. 27, 1990, abandoned. This application Mar. 27, 1992, Ser. No. 883,615
Claims priority, application Japan, Feb. 13, 1990, 2-32152
Int. Cl.[5] B23H *1/10*
U.S. Cl. 219—69.14 **18 Claims**



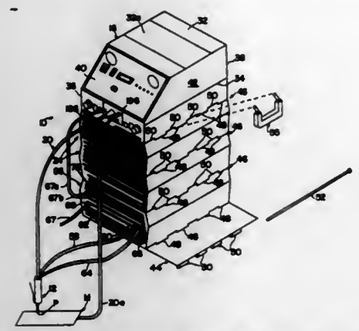
1. An apparatus for treating dielectric for an electrical discharge machine, comprising:
dielectric containing means for alternately containing a first dielectric and a second dielectric;
path means establishing liquid communication between said dielectric containing means and an electrical discharge machine tank;
control valves, operative within said path means for controlling the flow of said dielectrics;
first dielectric filtering means disposed in said path means for filtering said first dielectric; and
second dielectric filtering means for removing powder materials from said second dielectric;
said dielectric containing means comprising a single non-compartmentalized tank having means for converting said first dielectric to said second dielectric by adding said powder materials to said first dielectric.

5,189,277
MODULAR, STACKABLE PLASMA CUTTING APPARATUS
John A. Boisvert; Fred A. Rogers, both of Grafton; Dennis J. Solley, Merrimack; David A. Tatham, and Raymond G. Wilkins, both of Grafton, all of N.H., assignors to Thermal Dynamics Corporation, St. Louis, Mo.
Filed Apr. 8, 1991, Ser. No. 682,727
Int. Cl.[5] B23K *9/00, 9/10*
U.S. Cl. 219—121.54 **25 Claims**

1. Plasma cutting apparatus for use in cutting a material comprising:
a cutting torch for cutting the material, control means for controlling a cutting operation performed using the torch, said control means including a control module in which the control means is housed, at least one power means for supplying power to the cutting torch, the application of said power being controlled by said control means, and said power means including at least one power module in which said power means is housed, the control module and power module being removably stackable one on top of the other, an electrical connection means carried on each control and power module for automatically electri-

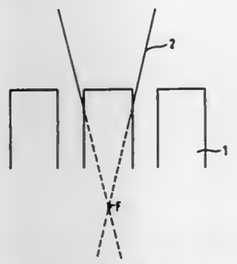
VOL 1147 ISS 4 FE 23 1993 UMI

cally connecting at least said one power module to the control module at the interface between the stacking of



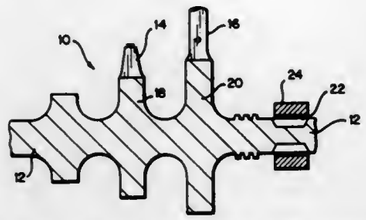
the control module onto the said at least one power module.

5,189,278
METHOD FOR EDGE ROUNDING OF SPRINGS
Klaus Frietsch, Schramberg, Fed. Rep. of Germany, assignor to Hugo Kern & Liebers GmbH & Co. Platinen- und Federnfabrik, Schramberg, Fed. Rep. of Germany
Filed Jun. 27, 1991, Ser. No. 722,000
Claims priority, application Fed. Rep. of Germany, Jun. 29, 1990, 4020700
Int. Cl.[5] B23K *26/00*
U.S. Cl. 219—121.66 **6 Claims**



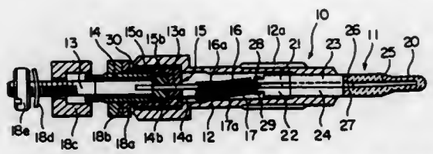
1. A method for the edge rounding of springs in a spring bundle or a plurality of juxtaposed springs, each having stamping burrs or the like, comprising the steps of heating each spring of a bundle or strip of springs with a laser beam until a desired edge rounding is obtained by softening or fusing each spring surface, and thereafter terminating the heating step, and controlling said heating step of focusing said laser beam at a point in front of or behind the surface of each spring being processed, whereby said springs form contact tongues of micrositding contacts, and are processed continuously or cyclically through said laser beam, and wherein said laser beam is generated by a pulse laser or a continuous wave laser.

5,189,279
STEAM TURBINE ROTOR WELDING
Walter H. Foster, III, Jaffrey, N.H.; Lawrence D. Sparks, Bangor, Me.; Louis P. Earvolino, Holliston, Mass., and Fred DeSaw, Columbus, Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Dec. 30, 1991, Ser. No. 813,746
Int. Cl.[5] B23K *9/04*
U.S. Cl. 219—137 R **20 Claims**



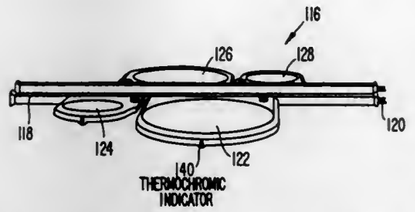
1. A process of welding a rotatable machine component comprising the steps of:
a) rotating the component about a longitudinal axis of rotation thereof;
b) preheating an area of the component to be welded;
c) depositing a plurality of weld beads in said area;
d) post weld heat treating said area; and
e) cooling said area to room temperature;
wherein steps b) through e) are carried out during continuous rotation of said component.

5,189,280
GLOW PLUG FOR DIESEL ENGINES
Seiji Okazaki, Moka; Shigeki Yokoyama, Kumagaya; Makoto Imaizumi, Moka; Koji Hatanaka, and Takashi Aota, both of Higashimatsuyama, all of Japan, assignors to Hitachi Metals, Ltd. and Jidoshakiki Co. Ltd., both of Tokyo, Japan
Continuation of Ser. No. 266,565, Nov. 3, 1988, abandoned. This application Jan. 16, 1991, Ser. No. 642,703
Claims priority, application Japan, Nov. 5, 1987, 62-280152; Dec. 10, 1987, 62-188171; Sep. 29, 1988, 63-245570
Int. Cl.[5] F23Q *7/22*; F02P *19/02*; H05B *3/00*
U.S. Cl. 219—270 **18 Claims**



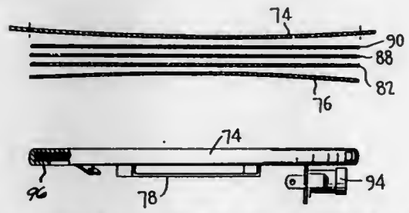
2. A glow plug for diesel engines comprising a ceramic heater supported with one end thereof cantilevered toward the outside of a hollow holder; said ceramic heater is composed of a U-shaped heating portion and a pair of leads extending backward from both ends of said U-shaped heating portion, both being formed integrally by an electrically conductive sialon; the outer periphery of at least one of said leads is bonded and held in said holder via an insulating layer; the rear end of at least one of said leads is connected by means of a metallic lead wire via a bonding material to an external connection terminal; and said ceramic heater and other components are integrally bonded by forming metallized layers via said bonding material to form reaction layers, said bonding material including 6–10 wt. % titanium, with the balance being one or both of silver solder copper forming an improved air-tight seal between said leads and said insulating sheet.

5,189,281
RETHERMALIZATION CART INDICATOR SYSTEM
W. Burk Wyatt; Kevin B. Cundiff, both of Brentwood, and Kenneth R. Little, Jr., Nashville, all of Tenn., assignors to Aladdin Synergetics, Inc., Nashville, Tenn.
Continuation-in-part of Ser. No. 394,204, Aug. 15, 1989, and Ser. No. 471,483, Jan. 29, 1990, abandoned, and Ser. No. 541,129, Jun. 20, 1990. This application Aug. 15, 1990, Ser. No. 567,361
Int. Cl.[5] H05B *3/68*
U.S. Cl. 219—386 **11 Claims**



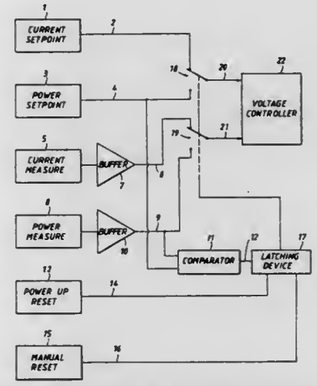
1. A rethermalization heat indicator system, comprising:
a rethermalization cart having a generally open cart side;
an electrical heater pad supported in said cart and positioned for thermal contact with a food carrying member in said cart;
switch means for electrically switching said pad between different heat actuation states; and
non-electric, temperature indicator means for indicating the temperature of said pad, said indicator means including a thermochromic member and outer heat conductive sleeve means surrounding said thermochromic member for conducting heat from said heating pad to said member, said member and said sleeve being disposed in said pad so that the thermally changeable color of said member is visible from outside of said open cart side.

5,189,282
THERMAL PADS FOR HEATABLE TURNTABLE
Octavio Rocha, Monte Capitolio No. 232, Piso No. 23 Condominio La Diana, Col. Fuentes Del Valle, and Serafin C. Espinoza, Via Arsinaria No. 315, Col Fuentes Del Valle, both of Garza Garcia, N.L. C.P. 66220, Mexico
Division of Ser. No. 538,018, Jun. 12, 1990, which is a continuation-in-part of Ser. No. 319,045, Mar. 6, 1989, abandoned. This application Aug. 14, 1991, Ser. No. 744,899
Int. Cl.[5] H05B *3/72*
U.S. Cl. 219—467 **2 Claims**



1. A thermal pad comprising, an outer heating surface plate, and outer support disc, and an intermediate heating element comprising a resistance plate sandwiched between a pair of insulation plates, spaced resistor wires supported on said resistor plate, said heating surface plate having a peripheral lip underlying said disc for tightly compressing together the heating surface plate, the heating element and the disc, said heating surface plate being concavely shaped toward said heating element and said support disc being convexly shaped toward said heating element for thereby ensuring firm contact between said heating surface plate and said heating element for improving heat transfer and to prevent any misalignment of the resistor wires.

5,189,283
CURRENT TO POWER CROSSOVER HEATER CONTROL
Frederick G. Carl, Jr., and Eric P. de Rouffignac, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.
Filed Aug. 28, 1991, Ser. No. 751,398
Int. Cl.[5] H05B *1/02*
U.S. Cl. 219—497 **14 Claims**



1. An apparatus to control electrical current to a heater which consumes power to generate heat comprising:
a) a means to measure current, said means which generates a measured current signal which varies with the electrical current going to the heater;
b) a means to measure power consumed by the heater, said means which generates a measured power signal which varies with the power consumed by the heater;
c) a current set point signal means which generates a current set point signal which corresponds to a maximum current;
d) a power set point signal means which generates a power set point signal which corresponds to a maximum power;
e) a comparator which receives the power set point signal and the measured power signal and generates a transfer signal when the measured power signal is equal to or greater than the power set point signal;
f) a power-up signal means which detects power service increasing from essentially zero RMS volts to a higher RMS voltage and generates a power-up signal when the power service RMS voltage increase is detected;
g) a means to generate a reset signal;
h) an electronic latching device which receives the transfer signal, the power-up signal, and the reset signal, and generates a power control signal from when the transfer signal is detected until a power-up signal or a reset signal is detected and does not generate a power control signal from when a reset signal or a power-up signal is received until a transfer signal is received;
i) a switching means which passes an input of the current set point signal to a set point output and which passes the measured current signal to a process output when the latching device is not generating a power control signal and when the latching device is generating a power control signal, passes an input of the power set point to the set point output and the measured power signal to the process output; and
j) a voltage controller means which controls voltage to the heater to maintain the process input at about the set point output.

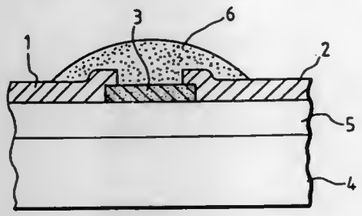
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RESISTOR, PROCESS FOR PRODUCING THE SAME, AND THERMAL HEAD USING THE SAME

Kumiko Takahashi; Kazuo Baba, and Yoshiyuki Shiratsuki, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 27, 1989, Ser. No. 315,665
Claims priority, application Japan, Feb. 29, 1988, 46406/88
The portion of the term of this patent subsequent to Oct. 1, 2008, has been disclaimed.
Int. Cl.[5] H05B *3/16;* **G01D** *15/10;* **H01C** *1/012;* **B05D** *3/02*
U.S. Cl. 219—543 **8 Claims**



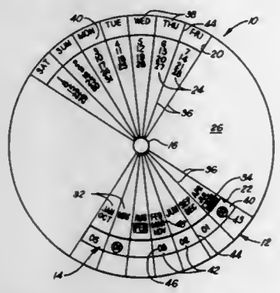
1. A process for producing a resistor, comprising:
(a) coating a substrate with a solution of an iridium-containing organometallic compound in a solvent; and
(b) firing the resulting coated substrate to form said resistor.

5,189,285

CALENDAR DATE FINDER

Fletcher D. Young, Jr., 20882 Greenview, Southfield, Mich. 48075

Continuation-in-part of Ser. No. 596,528, Oct. 12, 1990, abandoned. This application Dec. 18, 1991, Ser. No. 809,911
Int. Cl.[5] G06C *3/00*
U.S. Cl. 235—88 R **6 Claims**



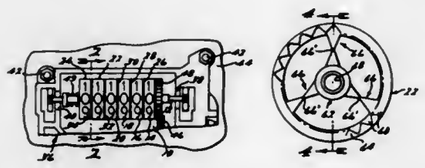
1. A slide rule for finding calendar date information for any year between a first preselected year and a second preselected year, inclusive, said slide rule comprising:
a first disk having a first side and a first periphery, said first disk having a notch along a predetermined portion of said first periphery, said first disk further having a cut-out spaced a predetermined distance from said first periphery along a predetermined portion of said first periphery opposite said notch;
numeric indicia placed on said first side of said first disk at a location adjacent said notch, said numeric indicia being arranged as a sequence of numbers from 1 to 31 and being further arranged in a series of seven columns;
month indicia placed on said first side of said first disk at a location adjacent said cut-out, said month indicia being arranged in a predetermined pattern of seven columns;
a second disk having a second side and a second periphery;
week day indicia placed on said second side of said second disk at a location adjacent said second periphery, said week day indicia being arranged in a predetermined pattern along said second periphery in order of the seven days of the week, specifically Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday, repeating in four sets thereof;
year indicia placed on said second side of said second disk at a location adjacent said week day indicia, said year indicia being arranged in a predetermined pattern, said year indicia indicating every year from 1987 through 2015, inclusive; and
connection means for connecting said first disk to said second disk so that said first disk may rotate with respect to said second disk, said second side of said second disk facing said first disk, said first side of said first disk facing away from said second disk one set of seven week day indicia of said week day indicia being visible through said notch in said first disk so that one week day indicia is alignable with a respective one of said columns of said numeric indicia, said year indicia being visible through said cut-out in said first disk so that any of said year indicia is alignable with a respective one of said columns of said month indicia;
wherein selective alignment of a year indicia with a month indicia automatically causes an alignment of said numeric indicia with said week day indicia so as to indicate all calendar dates in the selected month in the selected year.

5,189,286

ODOMETER WHEEL WITH FRANGIBLE SPOKES

Robert L. Tromeur, 18632 Doty, Mt. Clemens, Mich. 48043

Filed Nov. 18, 1991, Ser. No. 793,963
Int. Cl.[5] G01C *22/00*
U.S. Cl. 235—95 R **4 Claims**



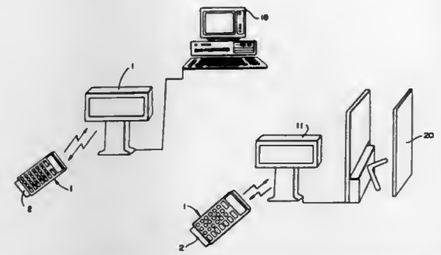
1. In a mileage recording odometer including a shaft having a plurality of cylindrical digit wheels closely space thereon in side by side relationship to one another, an improved digit wheel, comprising: the digit wheel having a central hub portion, an outer rim portion and frangible connecting spokes therebetween responsive by breaking to prying of the rim portion relative to the hub portion; the hub portion having a central aperture through which the shaft extends; the hub, rim and spoke portions being integrally mold formed; the cross sectional area of the spoke being greater adjacent the hub and rim portions and progressively decreasing toward a narrow midportion so that any significant axially directed prying force on the rim portion generates a sufficient bending stress on the narrow midportion resulting in breakage of the spoke portion resulting in visual misalignment of the rim portion relative to the hub.

5,189,287

SYSTEM FOR INPUTTING, PROCESSING AND TRANSMITTING INFORMATION AND DATA

Raoul Parienti, 107, avenue Leon-Beranger, Saint-Laurent-du-Var, France F06700

PCT No. PCT/FR90/00460, § 371 Date Mar. 6, 1991, § 102(e) Date Mar. 6, 1991, PCT Pub. No. WO91/00574, PCT Pub. Date Jan. 10, 1991
PCT Filed Jun. 22, 1990, Ser. No. 656,057
Claims priority, application France, Jun. 23, 1989, 89 08653
Int. Cl.[5] G06F *15/26, 15/30*
U.S. Cl. 235—375 **12 Claims**



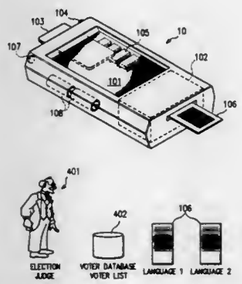
1. A system for inputting, processing and transmitting information nd data, said system comprising:
a plurality of memory cards, each of said memory cards comprising permanent memory means for storing permanent data and information, and removable memory means, detachably attached to said memory card, for storing temporary data and information;
a plurality of portable casings, each of said casings comprising a card slot for selectively receiving one of said memory boards, communication means for selectively transmitting and receiving data and information optically or acoustically, and a keyboard for manually inputting information; and
a plurality of specialized terminals capable of optically transmitting and receiving data and information with said communication means for said casings whereby said communication means communicates the data and information stored in said memory cards.

5,189,288

METHOD AND SYSTEM FOR AUTOMATED VOTING

Julien Anno, Dilbeek, Belgium; Russell F. Lewis, Dallas, and Dale A. Cone, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 14, 1991, Ser. No. 641,029
Int. Cl.[5] G06F *15/21*
U.S. Cl. 235—386 **38 Claims**



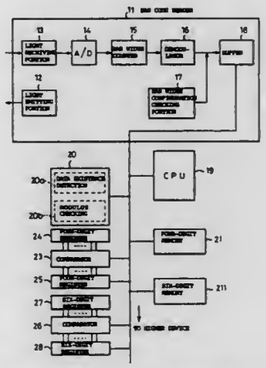
1. A polling system for recording selected choices of a plurality of individuals, said system comprising:
a terminal for providing to a user a plurality of selective choices;
a removable key containing information for enabling said terminal for a particular user; and
a system operative when said key is used with said terminal to modify said information contained on said user's key to preclude the subsequent use of said key to enable any terminal.

5,189,289

DISTINGUISHING BAR CODE TYPES BY COMPARING BAR BLOCK SIZES

Mitsuo Watanabe, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP90/00625, § 371 Date Jan. 17, 1991, § 102(e) Date Jan. 17, 1991, PCT Pub. No. WO90/14638, PCT Pub. Date Nov. 29, 1990
PCT Filed May 17, 1990, Ser. No. 640,358
Claims priority, application Japan, May 17, 1989, 1-123402
Int. Cl.[5] G06K *5/00, 7/14, 7/016*
U.S. Cl. 235—437 **38 Claims**



1. A bar code reading method comprising the steps of:
(a) generating, in a single reading operation, plural pieces of bar block data corresponding to a bar code having a number of digits which is one of a plurality of predetermined standard values;
(b) detecting the respective numbers of digits of said plural pieces of the bar block data;
(c) storing said bar block data in storage regions corresponding to the plurality of predetermined standard values, based on the detected numbers of digits of the bar block data;
(d) detecting whether or not the bar block data have been stored in two different storage regions; and
(e) judging that the reading operation is erroneous if the bar block data are stored in the two different storage regions.

5,189,290

OPTICAL CARD PROCESSING APPARATUS USING TRACKING ERROR SIGNALS TO DETERMINE PROPER CARD ORIENTATION

Keiichi Tsutsui, Yokohama, Japan, assignor to Omron Corporation, Kyoto, Japan

Continuation of Ser. No. 595,578, Oct. 11, 1990, abandoned. This application Apr. 6, 1992, Ser. No. 863,547
Claims priority, application Japan, Oct. 14, 1989, 1-267042
Int. Cl.[5] G11B *7/00;* **G06K** *7/10*
U.S. Cl. 235—454 **12 Claims**

1. An optical card processing apparatus for determining whether an optical card is disposed in a proper reading/writing orientation in said apparatus, said apparatus comprising:

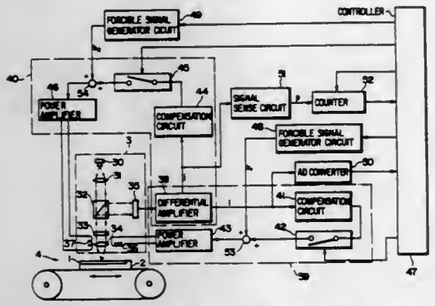
means for holding an optical card provided with an information recording section on a surface thereof, said information recording section being provided with information recording tracks;

an optical system including a light emitting element, an objective for focusing light emitted from said light emitting element to project light onto said card held by said holding means and for collecting light reflected from said card, a light receiving element for receiving light collected by said objective and outputting a signal representing the received light, a tracking actuator for moving said objective in a tracking direction orthogonal to the information recording tracks of the information recording section, and a focusing actuator for moving said objective in a focusing direction orthogonal to said card surface;

means for generating a tracking error signal and a focusing error signal based on said output signal of said light receiving element;

first driving means for driving said tracking actuator;

tracking servo control loop means, including first switching means for connecting and disconnecting said tracking servo control loop means to said first driving means, for controlling said tracking actuator through said first driving means such that projected light through said objective traces the information recording track of the information recording section based on said tracking error signal when said first switching means connects said tracking servo control loop means;



second driving means for driving said focusing actuator;

focusing servo control loop means, including second switching means for connecting and disconnecting said focusing servo control loop means to said second driving means, for controlling said focusing actuator through said second driving means such that projected light through said objective is properly focused on the card surface based on said focusing error signal when said second switching means connects said focusing servo control loop means to said second driving means;

first forcible signal generator means for generating a first forced movement signal, and for applying said first forced movement signal to said first driving means, such that said objective is forcibly moved by said tracking actuator in a direction orthogonal to the information recording tracks of the information recording section;

first control means for causing said first switching means to disconnect said tracking servo control loop means, for causing said second switching means to connect said focusing servo control loop means, and for actuating said first forcible signal generator means to generate said first forced movement signal; and

first card orientation judging means for determining whether the optical card is inserted into and disposed in said apparatus in a proper orientation based on analysis of said tracking error signal when said tracking servo control loop means is disconnected and said first forced movement signal is applied to said first driving means.

5,189,291

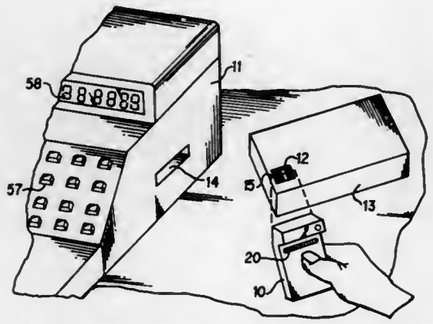
BAR CODE READER OPERABLE AS REMOTE SCANNER OR WITH FIXED TERMINAL

Bish Siemiatkowski, Los Gatos, Calif., assignor to Symbol Technologies, Inc., Bohemia, N.Y.

Continuation of Ser. No. 345,881, May 1, 1989, abandoned. This application Sep. 30, 1991, Ser. No. 769,330

Int. Cl.[5] G06K *7/10*

U.S. Cl. 235—472 **20 Claims**



1. A system for reading bar code symbols, comprising:

(a) a hand-held scanning unit in a lightweight, portable housing operating in a remote mode uncoupled from a terminal unit and operating in a coupled mode engaging a terminal unit, said scanning unit including: symbol-detection means for generating a light beam directed toward a symbol to be read, and for receiving reflected light from such symbol to produce electrical signals corresponding to data represented by the symbol; data transfer means for transferring the data represented by the symbol externally of said scanning unit and for receiving information from a source external to said scanning unit, by first coupling means requiring no direct electrical connection when in said coupled mode; read-control means to actuate said symbol-detection means to initiate reading of a symbol; and a rechargeable power supply in said scanning unit for supplying electrical power to said scanning unit, said power supply including second coupling means for receiving power for recharging; and

(b) a terminal unit operating remotely from said scanning unit when in said remote mode and operating coupled to said scanning unit when in said coupled mode, said terminal unit including: data input means for receiving the data transferred from the data transfer means of said scanning unit by transmission without direct electrical connection when the scanning unit engages the terminal unit via said first coupling means in said coupled mode, and data output means for transmitting information to said scanning unit via said first coupling means, to thereby receive data from and transfer information to said scanning unit without direct electrical connection; means for displaying and storing the data transferred from said scanning unit; and means for transferring power to said second coupling means by power transmission without direct electrical connection for recharging said rechargeable power supply of said scanning unit when said scanning unit engages said terminal unit in said coupled mode; said scanning unit by said symbol-detection means generating said laser beam and receiving said reflected light when in said coupled mode in response to said information transferred from said terminal unit.

5,189,292

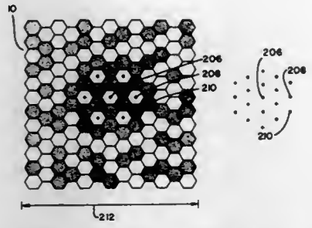
FINDER PATTERN FOR OPTICALLY ENCODED MACHINE READABLE SYMBOLS

Eric P. Batterman, Flemington, and Donald G. Chandler, Princeton, both of N.J., assignors to Omniplanar, Inc., Princeton, N.J.

Filed Oct. 30, 1990, Ser. No. 606,016

Int. Cl.[5] G06K *19/06, 7/10, 19/00, 9/36*

U.S. Cl. 235—494 **52 Claims**



1. An optically encoded label, including an improved finder pattern, comprising:

a two dimensional data array of optically encoded data cells arranged in a predetermined geometric data array pattern; and

a plurality of spots, wherein

said plurality of spots is arranged in a two dimensional array having a predetermined geometric pattern with a known predetermined relationship to said predetermined geometric data array pattern.

5,189,293

OPTICAL SCANNING APPARATUS INCLUDING BEAM FOCAL POINT POSITION CONTROL WHEN OUT OF FOCUS RANGE

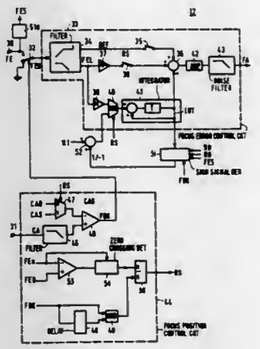
George A. L. Leenknegt, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 2, 1992, Ser. No. 844,259

Claims priority, application European Pat. Off., Jun. 27, 1991, 91201634.2

Int. Cl.[5] G01J *1/20;* **G11B** *7/00*

U.S. Cl. 250—201.5 **2 Claims**



1. Optical scanning apparatus comprising:

a radiation source for generating a radiation beam;

an optical system including means for focusing the radiation beam to a focal point on a plane;

focus actuator means for controlling said focusing means to shift the focal point relative to said plane;

focus detection means for deriving a focus error signal (FE) which, in a predetermined focus range, is of a magnitude and sign indicative of the distance and direction of departure of the focal point from said plane, and for further deriving a focus position signal (CA) when the focal point is positioned outside said focus range;

a focus control unit comprising a control circuit for deriving a focus actuator control signal (FA) in response to the focus error signal (FE) and supplying said control signal (FA) to said actuator means to cause said actuator means to maintain the focal point essentially on said plane;

a signal generator responsive to the focus position signal (CA) to cause said control circuit to generate a substitute focus actuator control signal when the focus position signal (CA) signifies that the focal point has transgressed said focus range, and for terminating the substitute control signal when the focal point has returned to said focus range, the substitute control signal varying with time; and

means comprised in said signal generator for causing the substitute control signal to be initiated in a direction determined by the sign of the focus error signal (FE) at the time of departure of the focal point from said focus range.

5,189,294

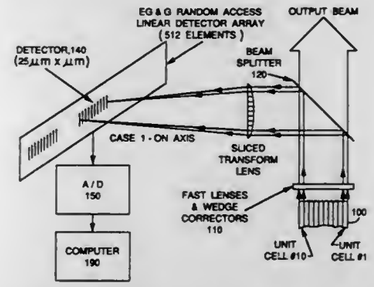
TRANSFORM LENS WITH A PLURALITY OF SLICED LENS SEGMENTS

John E. Jackson, Hazelwood; Joseph L. Levy, University City; Christopher C. Leung, Ballwin, and Gordon H. Burkhart, St. Louis, all of Mo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 8, 1992, Ser. No. 910,466

Int. Cl.[5] G01J *1/20*

U.S. Cl. 250—201.9 **16 Claims**



1. A transform lens for use with a planar array of light emitting elements, wherein said planar array includes N rows and M columns of light emitting elements, which each output of an optical output signal, wherein N and M are integers, wherein said transform lens comprises:

a plurality of sliced lens segments, each of which is aligned to capture and focus the optical output signals of a single column of light emitting elements, and outputting thereby M rows of focused optical signal spots, wherein each focused optical signal spot contains the optical output signals of a N light emitting elements in a particular column; and

a means for holding said plurality of sliced lens segments in place to collectively form said transform lens thereby.

5,189,295

THREE AXIS EARTH/STAR SENSOR

Gerald Falbel, Stamford, Conn., assignor to EDO Corporation, Barnes Engineering Division, Shelton, Conn.

Filed Aug. 30, 1991, Ser. No. 753,105

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—206.2 **7 Claims**

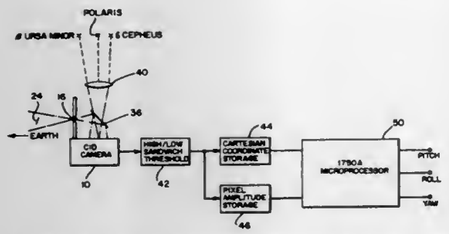
1. A three axis earth/star sensor mounted in a spacecraft is placed in an equatorial orbit around the earth for measuring

VOL 1147 ISS 4 FEB 23 1993 UMI

Pitch, Roll and Yaw, while viewing Polaris, beta Ursa Minor and gamma Cepheus when in the field of view of the orbiting sensor comprising:

a pinhole aperture in said sensor for viewing the earth from said sensor's equatorial orbit of the earth;

a beam splitter in alignment with said aperture for reflecting radiation from the earth coming through said pinhole and transmitting light from Polaris, beta Ursa Minor and gamma Cepheus when in the field of view of said beam splitter;



a visible light detector means in alignment with said beam splitter for receiving visible radiation from the earth through said pinhole and visible radiation from Polaris, beta Ursa Minor and gamma Cepheus when in the field of view of said detector means being applied thereto by said beam splitter; and

means for deriving Pitch, Roll and Yaw signals generated by said visible light detector means while orbiting the earth.

5,189,296

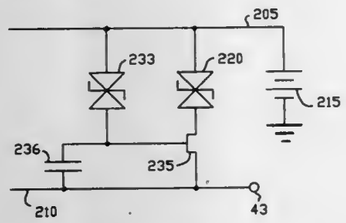
OPTICAL RECEIVER HAVING A LOW CAPACITANCE INTEGRATED PHOTODETECTOR

Young H. Kwark, Shrub Oak, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 3, 1992, Ser. No. 863,575

Int. Cl.[5] H01J *40/14*

U.S. Cl. 250—208.2 **15 Claims**



1. An optical receiver, comprising:

a plurality of photodetector cells, each of said photodetector cells having first and second photodiodes for converting light energy into electrical signals;

said first photodiode connected to a switch means for connecting said second photodiode to an output of said photodetector cell when said first photodiode detects light energy; and

said output from each of said plurality of photodetector cells connected in parallel.

5,189,297

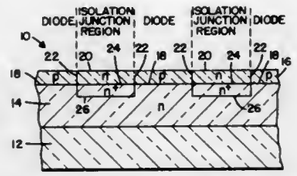
PLANAR DOUBLE-LAYER HETEROJUNCTION HGCDTE PHOTODIODES AND METHODS FOR FABRICATING SAME

William L. Ahlgren, Goleta, Calif., assignor to Santa Barbara Research Center, Goleta, Calif.

Filed Aug. 29, 1988, Ser. No. 237,806

Int. Cl.[5] H01J *40/14; H01L 27/14, 31/18*

U.S. Cl. 250—214.1 **27 Claims**



1. An array of radiation responsive photodiodes comprising:

a base layer having a first type of electricai conductivity, said base layer being responsive to radiation for absorbing the radiation and generating charge carriers therefrom;

a collector layer overlying said base layer, said collector layer having a second type of electrical conductivity for collecting charge carriers from said base layer, the interface of a top surface of said base layer and a bottom surface of said collector layer defining a photodiode heterojunction; and

an isolation junction region thermally formed within at least said collector layer and having a shape selected for differentiating said photodiode heterojunction into a plurality of photodiode heterojunctions, said isolation junction region having an opposite type of conductivity from that of said collector layer.

5,189,298

MEASURING INSTRUMENT USING TWO TRANSMITTERS AND TWO RECEIVERS FOR MEASURING LIGHT TRAVELLING IN AN OPTICAL MEDIUM

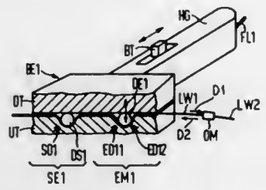
Winfried Lieber, Krailling, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 28, 1991, Ser. No. 783,413

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1990, 4036106

Int. Cl.[5] H01J *5/16*

U.S. Cl. 250—227.16 **15 Claims**



1. In a measuring instrument for an optical medium, said instrument using two optical transmitters and two optical receiver means, which can be optically coupled to the optical medium on either side thereof, and includes means for measuring, evaluating and displaying signals from the receiver means, the improvements comprising one optical transmitter and one receiver means being combined into one component, the other optical transmitter and optical receiver means being combined into another component, said components being connected via flexible leads with said means for measuring, evaluating and displaying.

5,189,299

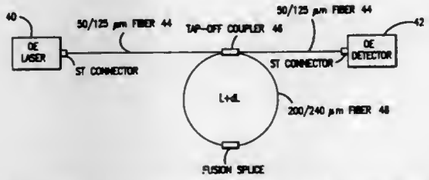
METHOD AND APPARATUS FOR SENSING STRAIN IN A WAVEGUIDE

Bernd D. Zimmermann, Blacksburg; Richard O. Claus, Christiansburg; Kent A. Murphy, Roanoke, and David A. Kapp, Blacksburg, all of Va., assignors to Virginia Polytechnic Institute & State University; Virginia Tech Intellectual Properties, Inc., both of Blacksburg and Center for Innovative Technology, Herndon, all of, Va.

Continuation-in-part of Ser. No. 210,890, Jun. 20, 1988, Pat. No. 4,928,004. This application May 22, 1990, Ser. No. 526,593

Int. Cl.[5] H01J *5/16; G01N 21/00*

U.S. Cl. 250—227.16 **30 Claims**



1. An apparatus for sensing parameters in a waveguide comprising:

(a) a light source;

(b) a light detector;

(c) a waveguide connecting said source with said detector;

(d) means for generating light pulses from said source through said waveguide; and

(e) means for propagating at least one of said light pulses in a closed loop a plurality of times, wherein said light detector detects arrival times of said light pulses after propagating in said closed loop a plurality of times.

5,189,300

METHOD AND APPARATUS FOR MEASURING THE ATTENUATION OF AN OPTICAL MEDIUM

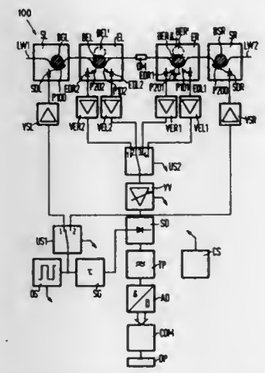
Winfried Lieber, Krailling, and Gervin Ruegenberg, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Oct. 28, 1991, Ser. No. 783,401

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1990, 4036074

Int. Cl.[5] H01J *5/16*

U.S. Cl. 250—227.24 **14 Claims**



1. In a method for measuring the optical attenuation of an optical medium having a light waveguide connected to each side by placing a first measurement transmitter and a first receiver on one side of the optical medium and a second measurement transmitter and second receiver on the other side of the optical medium, wherein each of the transmitter and receivers being optically coupled to a respective one of the light waveguides connected to the optical medium and the measurements being implemented proceeding from both sides of the optical medium, the improvements comprising coupling only the first receiver to the respective waveguide for a first measuring time, wherein the second receiver is not coupled during this first measuring time, alternately activating the two transmitters during said first measuring time to create a first measurement series in the first receiver, then, subsequently uncoupling the first receiver and coupling the second receiver, creating a second measurement series by alternately activating the first and second transmitters, and calculating the attenuation from the two measurement series.

5,189,301

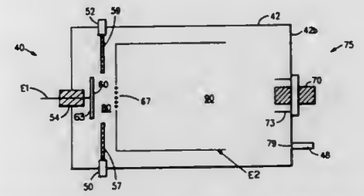
SIMPLE COMPACT ION MOBILITY SPECTROMETER HAVING A FOCUSING ELECTRODE WHICH DEFINES A NON-UNIFORM FIELD FOR THE DRIFT REGION

Govindanunny Thekkadath, Nepean, Canada, assignor to CPAD Holdings, Ltd., Canada

Filed Aug. 20, 1991, Ser. No. 747,857

Int. Cl.[5] H01J *49/40*

U.S. Cl. 250—287 **22 Claims**



1. A simplified ion mobility spectrometer having high sensitivity, said spectrometer comprising:

(a) a cylindrical housing having an ionizing region at a first end thereof, a detection region at a second end thereof, and a drift region therebetween, said housing having means for introducing a drift gas at the second end thereof;

(b) first means for introducing a sample gas, having molecules of interest therein, into the ionizing region at the first end of said housing, and second means for withdrawing sample gas and drift gas from said first end of said housing;

(c) means for ionizing molecules of interest in said carrier gas within said ionizing region;

(d) a first electrode means having an axial dimension for separating the ionizing region from the drift region, the configuration of which defines a non-uniform electric field gradient for said drift region, said field increasing in intensity along the axial dimension of the first electrode means towards the detection region, said first electrode means defining an aperture between said ionizing region and said drift region;

(e) means for detecting ionized molecules of interest mounted in said detection region adjacent said second end of said housing;

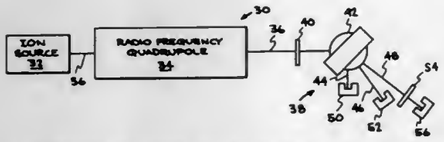
(f) means for intermittently pulsing ionized molecules in said ionizing region through said aperture into said drift region.

5,189,302

SMALL SYSTEM FOR TRITIUM ACCELERATOR MASS SPECTROMETRY

Mark L. Roberts, and Jay C. Davis, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 28, 1991, Ser. No. 783,803
Int. Cl.[5] B01D *59/44*; H01J *49/40*
U.S. Cl. 250—288 10 Claims



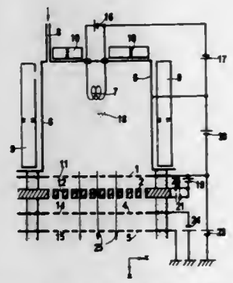
1. Apparatus for ionizing and accelerating a sample containing molecular species of hydrogen, including tritium, and detecting the concentration of said tritium, comprising:
a source which generates a substantially linear ion beam including ions of tritium from the sample;
a radio-frequency quadropole accelerator directly coupled to and axially aligned with the source, which accelerates species of mass 1, 2, and 3 of the sample to different energy levels along the same axis as the ion beam; and
a combination momentum/energy loss spectrometer to measure the concentration of tritium relative to deuterium and hydrogen in the sample, comprising:
a dissociation foil which dissociates the molecular species after the ion beam exits the accelerator,
a magnet which divides the molecular species into separate ion beams of mass 1,2, and 3, respectively,
detectors for the ion beams of mass 1 and 2, and
a third detector which detects tritium ions.

5,189,303

ION SOURCE HAVING A MASS SEPARATION DEVICE

Masayasu Tanjyo, and Hiroshi Nakazato, both of Kyoto, Japan, assignors to Nissin Electric Co., Ltd., Kyoto, Japan

Filed Feb. 21, 1992, Ser. No. 838,926
Claims priority, application Japan, Jul. 23, 1991, 3-207590
Int. Cl.[5] H01J *49/32*, *37/08*
U.S. Cl. 250—296 18 Claims



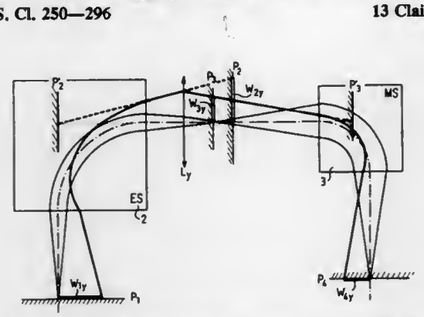
1. An ion source having a mass-separation device which converts material gas into plasma and exhausts ion beams from the plasma comprising a vacuum chamber having a gas inlet and an ion outlet, a vacuum pump for making the chamber vacuum, a discharge device for generating a discharge in the chamber to excite material gas into plasma, a plasma electrode plate having ion holes and being installed at the outlet of the chamber, the plasma electrode plate being biased at a high positive voltage lower than the voltage of the chamber, an extraction electrode plate having ion holes at the same positions and being installed next to the plasma electrode plate, the extraction electrode being biased at a high positive voltage lower than the voltage of the plasma electrode plate, an acceleration electrode plate having ion holes at the same positions and being installed next to the extraction electrode at the outlet of the chamber, the acceleration electrode plate being biased at a negative small voltage, a grounded electrode plate having ion holes at the same positions as the acceleration electrode plate and being installed next to the acceleration electrode plate at the outlet of the chamber, characterized in that each ion hole of the extraction electrode is provided with a Wien filter including permanent magnets facing each other with different magnetic poles for producing a magnetic field perpendicular to an axial direction of the ion holes and electrodes facing each other and being biased at different voltages for producing an electric field perpendicular both to the magnetic field and to the axial direction, ion beams whose mass is equal to a reference mass M□ make a straight way through the Wien filters of the extraction electrode plate by receiving the same but reverse forces from the electric field and the magnetic field, but other ion beams whose mass is not equal to the reference mass M□ make an arc way through the Wien filters by receiving different, reverse forces from the electric field and the magnetic field, and collide with the next acceleration electrode plate.

5,189,304

HIGH TRANSMISSION MASS SPECTROMETER WITH IMPROVED OPTICAL COUPLING

Emmanuel De Chambost, Limours, and Bernard Rasser, Paris, both of France, assignors to Cameca, Courbevoie, France

Filed Aug. 19, 1991, Ser. No. 747,027
Claims priority, application France, Aug. 24, 1990, 90 10632
Int. Cl.[5] H01J *49/32*
U.S. Cl. 250—296 13 Claims



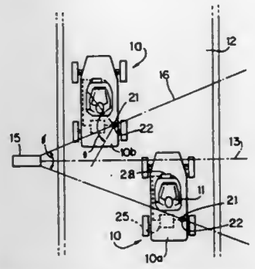
2. A high transmission stigmatic double focusing mass spectrometer for determining composition of a sample, comprising:
an input slit means for passing an ion beam therethrough;
an electrostatic sector means for electrostaticly deflecting said ion beam passed through said input slit means;
a magnetic sector means opposed to said electrostatic sector means for magnetically deflecting said ion beam, wherein one of said electrostatic sector means and said magnetic sector means receives said ion beam form said input slit means and directs said ion beam toward the other one of said electrostatic sector means and said magnetic sector means;
an output slit for passing selected ions of said ion beam therethrough, wherein said other one of said electrostatic sector means and said magnetic sector means directs said ion beam toward said output slit;
an optical coupling system between the magnetic sector means and the electrostatic sector means which comprises a first lens with a first slit oriented along a first plane in which a path of said ion beam is incurvated and a second lens with a second slit oriented along a second plane that is perpendicular to said first plane;
wherein positions of the two lenses along the optical axis of the spectrometer provide compensation for chromatic dispersions along the optical axis downline from the spectrometer, a stigmaticimage of the input slit in an output plane of the spectrometer, and a stigmatic image downline from the spectrometer;
wherein the first lens and the second lens are located on opposite sides of a conjugate plane of the input slit,
a position of the first lens and a focal length of the first lens are determined so that the first lens conjugates an input slit image in a conjugate plane of the input slit to produce a magnified image having a magnification equal to a ratio of a coefficient of dispersion in mass of the magnetic sector to a coefficient of dispersion in mass of the electrostatic sector, and
a position of the first lens and a focal length of the first lens are determined so that the first lens also conjugates a virtual image of the sample provided by the electrostatic sector at a virtual image plane into an image at an achromatic plane of the magnetic sector.

5,189,305

TIMING APPARATUS PARTICULARLY FOR RACING VEHICLES

Kim E. Penglase, and Jacek Dutkiewicz, both of Bairnsdale, Australia, assignors to Redback Electronics Pty, Ltd., Bairnsdale, Australia

PCT No. PCT/AU90/00195, § 371 Date Nov. 13, 1991, § 102(e) Date Nov. 13, 1991, PCT Pub. No. WO90/14643, PCT Pub. Date Nov. 29, 1990
PCT Filed May 14, 1990, Ser. No. 776,225
Claims priority, application Australia, May 15, 1989, PI4166
Int. Cl.[5] G01C *22/00*
U.S. Cl. 250—338.1 6 Claims



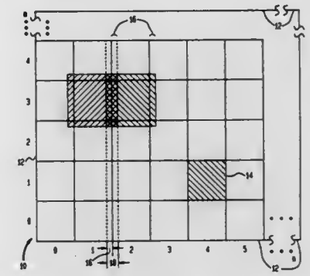
1. A timing apparatus for providing timing information to a moving person moving past a datum line, the timing apparatus including:
a radiation source for location at the datum line and for emitting radiation in a diverging radiation zone across a path along which the person moves so that the person crosses the radiation zone, the diverging radiation zone straddling the datum line which extends across the path; and
timing means for moving with the person and for providing timing information, the timing means including:
a radiation sensor for receiving radiation emitted by the radiation source as the radiation zone is crossed and for generating a sensor signal in response to sensing of incident radiation,
a radiation detector circuit connected to receive the sensor signal and operative to discriminate radiation from the radiation source and to generate a detector signal for as long as radiation from the radiation source is being received and detected,
a calculator circuit coupled to the detector circuit to receive the detector signal and operative to calculate
a predetermined proportion of the duration of the radiation zone crossing as represented by the duration of the detector signal so as to thereby determine the instant of crossing of the datum line located within the diverging radiation zone, and
display means connected to the calculator circuit and operative to display timing information including the time of crossing of the datum line.

5,189,306

GREY-SPLICE ALGORITHM FOR ELECTRON BEAM LITHOGRAPHY POST-PROCESSOR

Joseph B. Frei, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 24, 1992, Ser. No. 856,605
Int. Cl.[5] H01V *37/302*
U.S. Cl. 250—492.2 15 Claims



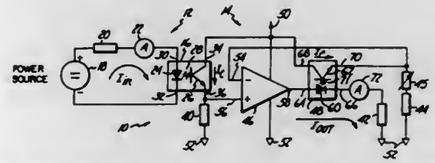
1. A method of producing grey-splices in a pattern exposure system in which the writing area is divided into sub-fields and a desired pattern is represented by a plurality of non-overlapping rectangles, said method including the steps of
determining ones of said rectangles which are wholly or partly included in a sub-field overlap zone,
dividing said sub-field overlap zone into sections,
examining each said section to determine at least the number of exposure spots required to form portions of said rectangles which are in said sub-field overlap zone,
selecting a section in accordance with said examining step, and
greying at least one said exposure spot in said section.

5,189,307

ISOLATED CURRENT MIRROR WITH OPTICAL INSULATOR GENERATING FEEDBACK SIGNAL

Liboslav Fabian, New Brighton, Minn., assignor to Empi, Inc., St. Paul, Minn.

Filed Mar. 13, 1992, Ser. No. 851,052
Int. Cl.[5] G02B *27/00*; H03K *3/42*
U.S. Cl. 250—551 22 Claims



14. An isolated source for providing an output signal as a function of an input signal, the source comprising:
a source of the input signal;
a first optical isolator for converting the input signal to a control signal;
an amplifier for supplying the output signal as a function of the control signal and a feedback signal; and
a second optical isolator for deriving the feedback signal as a function of the output signal.

VOL 1147 ISS 4 FEB 23 1993 UMI

5,189,308

BALE OPENER HAVING DUAL SENSORS CONNECTED TO A SURFACE INCLINATION CONTROL DEVICE

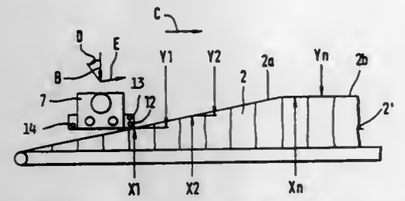
Wolfgang Kortlang, Mönchengladbach; Josef Temburg, Jüchen, and Johann Zander, Mönchengladbach, all of Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Mönchengladbach, Fed. Rep. of Germany

Filed Mar. 27, 1992, Ser. No. 857,576

Claims priority, application Fed. Rep. of Germany, Mar. 27, 1991, 4110074

Int. Cl.[5] G01V *9/04*

U.S. Cl. 250—561 **15 Claims**



1. A method of determining the inclination of an upper surface of a series of fiber bales by a bale opener travelling horizontally in a direction of travel along the bale series and having a tower and a detaching assembly mounted on the tower and being vertically displaceable relative to the tower and being rotatable about a horizontal axis oriented perpendicularly to the direction of travel; comprising the following steps:

(a) at a first location along the travelling path simultaneously lowering two bale surface level sensors spaced from one another in said travelling direction until a first of the two sensors is situated below the bale surface level;

(b) pivoting a second of the two sensors about a horizontal axis through a first pivot angle until said second sensor is situated below the bale surface level;

(c) moving the bale opener to a second location along said travelling path;

(d) repeating steps (a) and (b) at said second location; and

(e) determining the angle of inclination of the bale surface from the coordinates of locations and the pivot angles of said second sensor.

5,189,309

AVALANCHE PHOTODIODE WITH ALINASP CAP LAYER

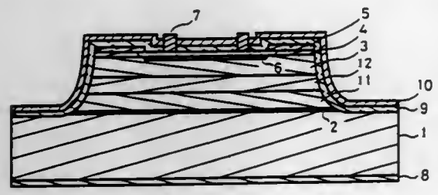
Morio Wada, Tokyo; Masahito Seko, Yamato; Youichi Sekiguchi, Tokyo, and Hideto Iwaoka, Hachioji, all of Japan, assignors to Optical Measurement Technology Development Co., Ltd., Tokyo, Japan

Filed Jul. 8, 1991, Ser. No. 726,802

Claims priority, application Japan, Aug. 7, 1990, 2-209584

Int. Cl.[5] H01L *27/14*

U.S. Cl. 257—21 **2 Claims**



1. A photodiode comprising:

an InP substrate;

a light-absorbing layer which is provided on said InP substrate and absorbs incident light to generate carriers, said light-absorbing layer being formed mainly of $Ga_xIn_{1-x}As$ wherein the composition x is less than 0.47;

a buffer layer provided between said light-absorbing layer and said substrate, formed of a material to decrease a lattice mismatch effect between said light absorbing layer and said substrate; and

a cap layer provided on an incident side of the light-absorbing layer, which has a lattice constant substantially the same as that of the light-absorbing layer and which is mainly composed of $Al_pIn_{1-p}As_qP_{1-q}$ of compositions p and q.

5,189,310

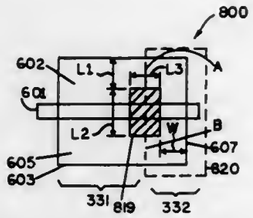
BICMOS LOGIC GATE CIRCUIT AND STRUCTURES

Kit M. Cham, Cupertino, and Robert E. Gleason, Jr., San Carlos, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 446,370, Dec. 5, 1989, Pat. No. 4,999,523. This application Jan. 15, 1991, Ser. No. 641,225

Int. Cl.[5] H01L *29/78, 29/86, 27/01*

U.S. Cl. 257—392 **5 Claims**



1. A semiconductor structure comprising:

an MOS transistor comprising a first region serving as a source, a second region laterally spaced apart from said first region, serving as a drain, a channel located between said source and said drain, and a control gate located above at least a portion of said channel;

a depletion mode transistor fabricated with the MOS transistor within a single active region, the depletion mode transistor having a width, the transistor comprising a third region serving as a source and connected to said source of said MOS transistor, a fourth region laterally spaced apart from said third region serving as a drain, a channel located between said source and said drain of said depletion mode transistor, and a control gate located above at least a portion of said channel of said depletion mode transistor and connected to said gate of said MOS transistor; and

an oxide region between the MOS transistor and the depletion mode transistor such that the width of the depletion mode transistor is defined on one side by the oxide region and on the other side by one edge of the active region.

5,189,311

CRASH SENSOR

Hiroshi Moriyama; Hiroyuki Sada, and Takeo Shiozawa, all of Kobe, Japan, assignors to Sensor Technology Co., Ltd., Kobe, Japan

Filed Jan. 24, 1991, Ser. No. 645,258

Claims priority, application Japan, Jan. 29, 1990, 2-19979; Mar. 23, 1990, 2-74457

Int. Cl.[5] G06G *7/18*

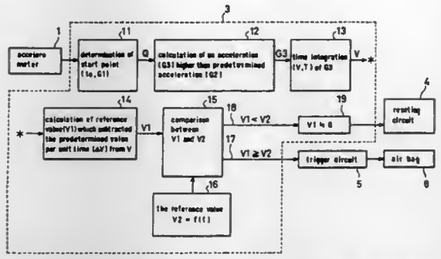
U.S. Cl. 307—10.1 **10 Claims**

1. A crash sensor which detects crash of a vehicle from an acceleration waveform of an accelerometer to trigger operation of a passenger protecting apparatus, comprising:

means for peak cutting any portion of the inputted acceleration waveform lower than a predetermined value;

means for time integrating a value obtained by such peak cutting;

means for subtracting a time integrated value of a predetermined function ΔV per unit time from a value obtained by such time integration; and



means for comparing a value obtained by such subtraction with a predetermined time function value to develop a triggering signal.

5,189,312

MULTIPLEXER CIRCUIT HAVING A SIMPLIFIED CONSTRUCTION AND REDUCED NUMBER OF PARTS

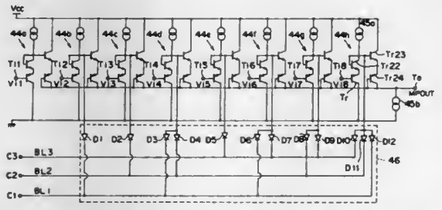
Katsuya Shimizu, Kasugai, and Tomoaki Ito, Nagoya, both of Japan, assignors to Fujitsu Limited, Kawasaki and Fujitsu VLSI Limited, Kasugai, both of, Japan

Filed May 24, 1991, Ser. No. 705,557

Claims priority, application Japan, May 25, 1990, 2-135659

Int. Cl.[5] H03K *17/56, 5/22*

U.S. Cl. 307—243 **11 Claims**



1. A multiplexer circuit for producing, at an output terminal thereof, an output voltage having a selected one of a plurality of different voltage levels, selected in response to and as designated by a control data signal supplied as an input to the circuit, comprising:

voltage generation means, normally enabled, for producing a plurality of output voltages respectively of the plurality of different voltage levels, the plurality of output voltages being related in ascending order, from the lowest to the highest, of the corresponding, different voltage levels thereof;

means, responsive to a received control data signal and the thereby designated voltage level of the output voltage to be produced, for individually and selectively disabling the production of each voltage output of the voltage generation means having a corresponding voltage level which is of a higher order than the voltage level of the output voltage designated by the control data signal; and

means for receiving and supplying to the output terminal, in common, the plurality of output voltages produced by the voltage generation means, the voltage level of the output voltage produced at the output terminal of the multiplexer circuit accordingly being determined by the corresponding voltage level of the highest ordered voltage output, of the plurality of voltage outputs of the voltage generating means, which is not disabled by the disabling means in response to and in accordance with the received control data signal.

5,189,313

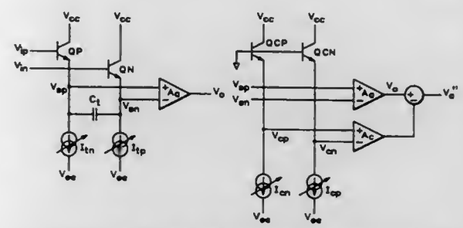
VARIABLE TRANSITION TIME GENERATOR

Valdis E. Garuts, Beaverton, Oreg., assignor to Tektronix, Inc., Wilsonvile, Oreg.

Continuation of Ser. No. 615,120, Nov. 19, 1990, abandoned. This application Feb. 28, 1992, Ser. No. 841,761

Int. Cl.[5] H03K *6/04, 4/06*

U.S. Cl. 307—263 **5 Claims**



1. An electrical pulse generator having independently variable transition times between first and second pulse amplitude levels, comprising

input circuit means for receiving a differential input signal and providing a differential output signal,

a timing capacitor coupled across the differential output signal,

circuit means for buffering the differential output signal and providing a pulse output signal having first and second amplitude levels,

means comprising a first variable timing current source coupled to said input circuit means for controlling the transition time of the pulse output signal from said first to said second amplitude level,

means comprising a second variable timing current source coupled to said input circuit means for controlling the transition time of the pulse output signal from said second to said first amplitude level,

means for providing a compensating d.c. offset signal in response to current variations in the first and second variable timing current sources, and

means for combining the d.c. offset signal with the pulse output signal to provide a compensated pulse output signal.

5,189,314

VARIABLE CHIP-CLOCKING MECHANISM

Christos J. Georgiou, White Plains; Thor A. Larsen, Hopewell Junction, and Eugen Schenfeld, Mount Kisco, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 4, 1991, Ser. No. 754,795

Int. Cl.[5] H03K *3/72*

U.S. Cl. 307—271 **7 Claims**

1. A variable clocking mechanism for an electronic circuit chip in which heat generated by circuits in the chip and speed performance of those circuits both increase with a clock frequency used to clock those circuits, comprising:

means for generating a high clock frequency for clocking circuits in said chip at a higher than normal rate, said circuits generating heat when clocked at said high clock frequency at a rate which cannot be sustained indefinitely without damage to said chip;

means for generating a low clock frequency for clocking circuits in said chip at a lower than normal rate, said circuits generating less heat when clocked at said low clock frequency than if said circuits were clocked at a normal rate;

VOL 1147 ISS 4 FE 23 1993 UMI

activity monitoring means for sensing an idle status for circuits in said chip;

means responsive to said activity monitoring means for clocking circuits in said chip at said low clock frequency when said circuits are idle;

a heat savings accumulator responsive to said clock frequency used to clock said circuits in said chip for estimating an amount of heat generation which is avoided as a result of clocking circuits in said chip at said low clock frequency minus an amount of heat generation which is added as a result of clocking circuits in said chip at said high clock frequency, said heat accumulator having a maximum heat savings which can be accumulated; and

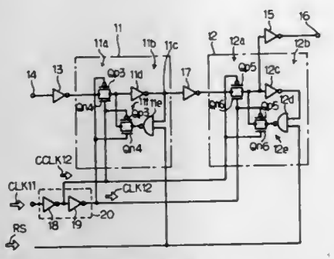
means responsive to said heat savings accumulator and said activity monitor for clocking at least some of the circuits in said chip which are not idle at said high clock frequency if heat savings have been accumulated.

5,189,315

HIGH-SPEED FLIP FLOP CIRCUIT WITH MASTER LATCHING CIRCUIT FREE FROM INFLUENCE OF SLAVE LATCHING CIRCUIT

Masao Akata, Tokyo, Japan, assignor to NEC Corp., Tokyo, Japan

Filed Feb. 4, 1992, Ser. No. 830,706
Claims priority, application Japan, Feb. 18, 1991, 3-045934
Int. Cl.[5] H03K *3/289, 3/356*
U.S. Cl. 307—272.2 **8 Claims**



1. A flip flop circuit comprising:

a) a master latching circuit having a first transmission gate responsive to a clock signal and the complementary clock signal therefor for passing a data bit, and a first positive feedback loop coupled between said first transmission gate and an output node of said master latching circuit for temporally storing the data bit,

b) a slave latching circuit having a second transmission gate responsive to said clock signal and said complementary clock signal and complementarily shifted between on and off states with respect to said first transmission gate, and a second positive feedback loop coupled with said second transmission gate for temporally storing a data bit, and

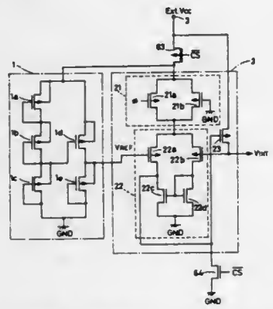
c) an asynchronous type buffer circuit coupled between the output node of said master latching circuit and said second transmission gate, said first positive feedback loop comprising a first inverting circuit with an input node coupled with said first transmission gate, a first logic gate with a reset node and a data input node coupled with the output node of said first inverting circuit, and a third transmission gate coupled between the output node of said first logic gate and the input node of said first inverting circuit.

5,189,316

STEPDOWN VOLTAGE GENERATOR HAVING ACTIVE MODE AND STANDBY MODE

Shuji Murakami, and Kazuyasu Fujishima, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1991, Ser. No. 706,925
Claims priority, application Japan, Jun. 14, 1990, 2-157902
Int. Cl.[5] H03K *3/01*
U.S. Cl. 307—296.1 **2 Claims**



1. A semiconductor integrated circuit device for stepping down a supply voltage supplied from an external power supply to apply said supply voltage to a main circuit, having an active mode and a standby mode, comprising:

internal stepdown means for stepping down the supply voltage supplied by said external power supply and supplying an intermediate voltage to said main circuit;

inactivating means for inactivating said internal stepdown means in said standby mode; and

supply voltage applying means for directly applying said supply voltage, which is supplied from said external power source, to said main circuit in said standby mode; and

wherein said supply voltage applying means includes:

a first transistor element having a control electrode and being coupled between said external power supply and a supply input terminal of said main circuit, and

a second transistor element coupled between said control electrode of said first transistor element and a reference potential source, performing a switching operation in response to a timing signal corresponding to a chip select signal.

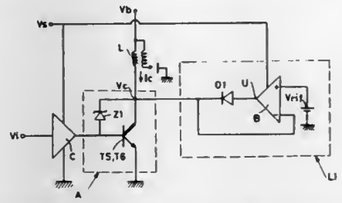
5,189,317

CIRCUIT FOR LIMITING THE OUTPUT VOLTAGE OF A MONOLITHIC SEMICONDUCTOR POWER DEVICE WHICH DRIVES A RESONANT LOAD CONNECTED TO A POWER SUPPLY

Sergio Palara, Acicastello; Mario Paparo, S. Giovanni la Punta, and Roberto Pellicanó, Reggio Calabria, all of Italy, assignors to SGS-Thomson Microelectronics, Milan, Italy

Filed Oct. 22, 1990, Ser. No. 600,870
Claims priority, application Italy, Oct. 24, 1989, 22104 A/89
Int. Cl.[5] H03K *5/153*
U.S. Cl. 307—350 **15 Claims**

1. An output voltage limiting circuit for a monolithic semiconductor power device having an input terminal controlled by an input signal and an output terminal for controlling a resonant load, comprising a comparator for comparing an output voltage at said output terminal of the power device with a predetermined reference voltage and for supplying current to the load when said output voltage becomes lower than said reference voltage so as to maintain said output voltage substantially equal to said reference voltage, and diode means interposed between said output terminal and the comparator to protect the comparator against output overvoltage of the power device, wherein said comparator comprises a first bipolar transistor having a first terminal connected to a voltage



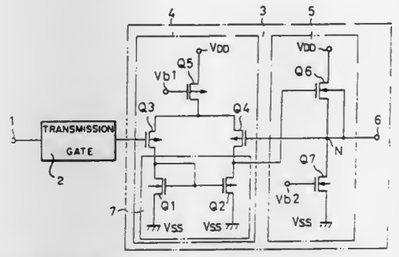
supply, a second terminal connected to said output terminal of the power device through first diode means and a control terminal connected to a source of said reference voltage, a second bipolar transistor having a first terminal connected to a voltage supply and a second terminal connected to said output terminal of the power device through second diode means, and a third bipolar transistor operatively interposed between the first terminal of the first transistor and a control terminal of the second transistor to cause switching on of the second transistor simultaneously with switching on of the first transistor as caused by lowering of the output voltage of the power device under said reference voltage.

5,189,318

ANALOG SIGNAL EXTRACTING CIRCUIT

Junji Tanaka, Sakurai, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 11, 1991, Ser. No. 774,830
Claims priority, application Japan, Oct. 19, 1990, 2-282872
Int. Cl.[5] H03K *5/153, 17/687*
U.S. Cl. 307—352 **2 Claims**



1. An analog signal extracting circuit comprising:

a sampling gate for sampling an analog input voltage;

a differential amplifier which receives an analog voltage outputted from said sampling gate, said differential amplifier including,

a first p-channel MOS transistor having a source connected to a power supply and a gate connected to a first bias power supply,

a second p-channel MOS transistor having a source connected to a drain of said first p-channel MOS transistor and a gate connected to said sampling gate,

a third p-channel MOS transistor having a source connected to said drain of said first p-channel MOS transistor,

a first n-channel MOS transistor having a gate and a drain each connected to a drain of said second p-channel MOS transistor and a source connected to ground, and

a second n-channel MOS transistor having a drain connected to a drain of said third p-channel MOS transistor, a gate connected to said gate of said first n-channel MOS transistor and a source connected to the ground; and

a buffer to which an output of said differential amplifier is applied, said buffer including,

a third n-channel MOS transistor having a drain connected to said power supply, a gate connected to said drain of said third p-channel MOS transistor and a source connected to a gate of said third p-channel MOS transistor,

a fourth n-channel MOS transistor having a drain connected to said source of said third n-channel MOS transistor, a gate connected to a second bias power supply and a source connected to the ground, and

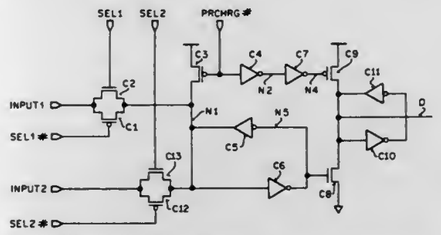
an output terminal connected to said source of said third n-channel MOS transistor.

5,189,319

POWER REDUCING BUFFER/LATCH CIRCUIT

Wingcho Fung, Fremont, and Krishna M. Yellamilli, San Jose, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Oct. 10, 1991, Ser. No. 774,219
Int. Cl.[5] H03K *19/096, 19/20*
U.S. Cl. 307—452 **5 Claims**



1. A buffer circuit comprising:

output driver means for generating a data output signal, the output driver means including a first transistor for driving the data output signal to a first voltage level and a second transistor for driving the data output signal to a second voltage level;

keeper circuit means coupled to the output driver means for maintaining the data output signal at one of the first and second voltage levels when both the first and second transistors are turned off;

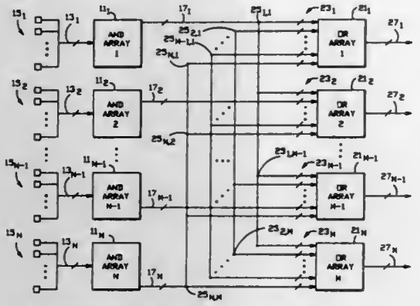
latch means coupled to a gate terminal of the first transistor for maintaining a gate voltage;

precharge circuit means coupled to the latch means and the output driver means for turning off the first transistor and turning on the second transistor, thereby forcing the data output signal to the second voltage level;

gate means coupled to the latch means for selectively coupling a data input signal to the gate terminal of the first transistor.

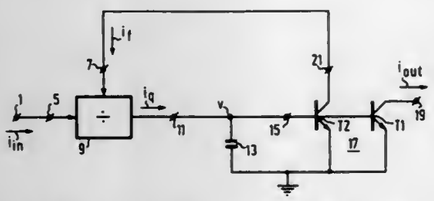
VOL 1147 ISS 4 FEB 23 1993 UMI

5,189,320
PROGRAMMABLE LOGIC DEVICE WITH MULTIPLE SHARED LOGIC ARRAYS
Geoffrey S. Gongwer, San Jose, Calif., assignor to Atmel Corporation, San Jose, Calif.
Filed Sep. 23, 1991, Ser. No. 763,921
Int. Cl.[5] H03K *19/177*
U.S. Cl. 307—465 **23 Claims**



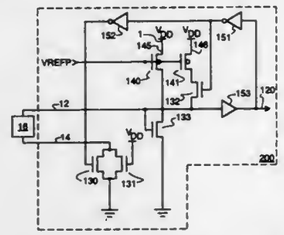
1. A programmable logic device comprising
a plurality of logic arrays of the type having rows and columns of identical switches for the programmable combination of array input signals, each logic array connected to a different set of inputs for receiving input signals therefrom, each logic array having a set of outputs and being operative to provide intermediate terms on said set of outputs as a function of selected input signals on said inputs to that logic array, all of said logic arrays being simultaneously enabled and operating at least when any input signal changes logic states, no logic array input being connected to receive a logic array intermediate term, and
at least one logic gate having a set of inputs connected to outputs from a plurality of said logic arrays for receiving intermediate terms therefrom, said at least one logic gate having an output and being operative to provide a final logic term on said output as a function of said intermediate terms received on its inputs
wherein all inputs to at least a pair of said logic arrays are separate and distinct.

5,189,321
COMPANDING CURRENT-MODE TRANSCONDUCTOR-C INTEGRATOR
Evert Seevinck, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 27, 1991, Ser. No. 766,890
Claims priority, application Netherlands, Oct. 4, 1990, 9002154
Int. Cl.[5] G06G *7/10, 7/18*
U.S. Cl. 307—490 **16 Claims**



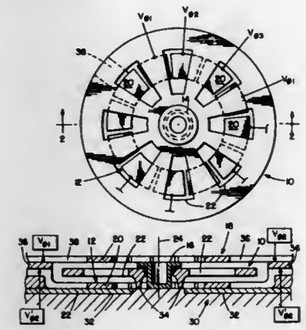
1. A transconductor-capacitor integrator for generating at least one output signal which is proportional to the integral of an input signal, which integrator comprises: an input terminal for receiving the input signal, an output terminal for supplying the output signal, a capacitor, a transconductor having an input and an output,
wherein the input signal and the output signal are an input current and an output current, respectively, and
the transconductor has its input and its output coupled to the capacitor and to the output terminal, respectively, to convert a voltage across the capacitor into the output current,
a differentiator having a voltage input, a current input, and an output at which is generated a differentiated current which is proportional to the derivative with respect to a voltage supplied to the voltage input of a current supplied to the current input,
means for supplying to the current input a feedback current proportional to the output current,
means for supplying to the voltage input said capacitor voltage, and
a current divider responsive to the input current and the differentiated current for supplying to the capacitor a quotient current proportional to the quotient of the input current at the input terminal and the differentiated current.

5,189,322
LOW-POWER SENSE AMPLIFIER WITH FEEDBACK
Melvin D. Chan, Campbell, and Brad Sharpe-Geisler, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Mar. 28, 1990, Ser. No. 500,637
Int. Cl.[5] H03F *3/45*; G01R *19/00*; G11C *7/00*
U.S. Cl. 307—530 **27 Claims**



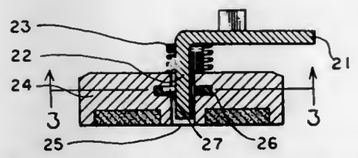
1. An apparatus for sensing whether or not a first line and a second line are electrically connected to each other, comprising:
a first electrical path between said first line and a voltage V1;
a second electrical path between said second line and a voltage V2 different from V1;
first means for opening and closing said first electrical path in response to a voltage on said first line;
second means for opening and closing said second electrical path in response to the voltage on said first line;
wherein said fist and second electrical paths and said first and second means cooperate so that the voltage on sad first line has a value:
V3 when said first and second lines are disconnected from each other; and
V4 different from V3 when said first and second lines are connected to each other;
wherein said first means:
opens said first path when tne voltage on said first line is V3; and
closes said first path when the voltage on said firs line is V4;
wherein said second means:
opens said second path when the voltage on said first line is V4; and
closes said second path when the voltage on said first line is V3; and
wherein each of said first and second means has a delay at least as long as a transition of the voltage on said first line from V3 to V4 and at least as long as a transition of the voltage on said first lien from V4 to V3.

5,189,323
ROTARY, VERTICAL-DRIVE, TETHERED MICROMOTOR
Willian N. Carr, Wayne, N.J.; Hong Yn, San Jose, Calif., and Dong-Il D. Cho, Princeton Junction, N.J., assignors to The Trustees of Princeton University, Princeton Junction, N.J.
Filed Dec. 19, 1991, Ser. No. 810,395
Int. Cl.[5] H02K *1/22*
U.S. Cl. 310—40 MM **9 Claims**



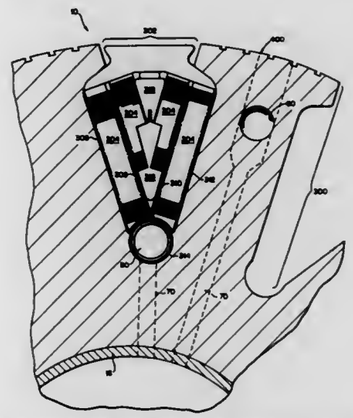
1. An electrostatically operable micromotor, comprising:
a circular, conductive material rotor having first and second major surfaces, an axis of symmetry, and an annulus of apertures disposed about said axis of symmetry so as to provide non-conductive interruptions of said rotor's conductive material;
first and second annular, segmented, torque stators respectively disposed adjacent said first and second major surfaces of said rotor and aligned with said annulus of apertures;
bearing means for tethering said rotor to a support surface; and
circuit means connected to each segment of each said torque stator for applying phased signals thereto to induce a rotation force in said rotor, phased signals applied to segments of said first annular torque stator adjusted to balance phased signals applied to segments of said second torque stator.

5,189,324
ELECTROMAGNET MOUNT FOR AN ELECTRIC BRAKE
Earl A. Beck, Tulsa, and Ken E. Kalies, Seminole, both of Okla., assignors to Hayes Axle, Inc., Seminole, Okla.
Filed Aug. 15, 1991, Ser. No. 745,543
Int. Cl.[5] H02K *5/24, 7/10*; G05G *1/00*
U.S. Cl. 310—51 **7 Claims**



1. In an electric drum brake, a brake drum, a backing plate, a pair of brake shoes supported by said backing plate, an actuating lever carried by said backing plate, said actuating lever having a tang thereon, an electromagnet having an aperture positioned around said tang, the improvement comprising:
a circumferential recess in said aperture, and
means positioned at least partially within said circumferential recess to absorb vibrations and prevent contact between said tang and said electromagnet.

5,189,325
LIQUID COOLING THE ROTOR OF AN ELECTRICAL MACHINE
Emil D. Jarczynski, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed Jun. 15, 1990, Ser. No. 539,825
Int. Cl.[5] H02K *9/00, 9/20*
U.S. Cl. 310—54 **27 Claims**



8. An electrical machine having a rotatable rotor member comprising:
electrical current conductors which produce heat during machine operation due to electrical current flow therein;
magnetic flux conducting structure which also produces heat during machine operation due to induced eddy currents and/or windage losses therein;
a first liquid coolant passage thermally coupled primarily to said electrical current conductor without being electrically connected therewith;
a second liquid coolant passage disposed within and thermally coupled primarily to said magnetic flux conducting structure; and
means for coupling in series the first liquid coolant passage and the second liquid coolant passage whereby, during machine operation, liquid coolant first passes through one of the first and second passages and before passing through the other of the passages.

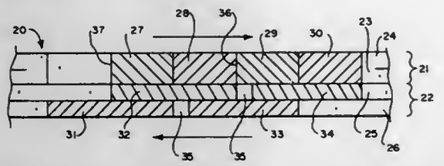
9. An electrical machine as in claim 8, wherein liquid coolant first passes through the first liquid coolant passage before passing through the second liquid coolant passage.

5,189,326
INFORMATION STORAGE MEDIA HAVING INFORMATION STORED THEREON FOR PLAYBACK AT DIFFERENT SPEEDS AND METHOD OF INDEXING SUCH STORED INFORMATION
Gregory M. Barrow, 6370 Ashwood Dr., Salt Lake City, Utah 84124
Filed Dec. 13, 1991, Ser. No. 807,254
Int. Cl.[5] G11B *15/12*
U.S. Cl. 360—63 **20 Claims**

1. Information storage media adapted to be read by a ma-

VOL 1147 ISS 4 FE 23 1993 UMI

chine at predetermined speeds and having information representative of audio sound stored thereon, and wherein the characteristics of the information as read back from the media by the machine depend upon the speed at which the media is read, comprising multi-track information storage media adapted to be read by a machine; information representative of audio sound stored thereon adapted to be read by a machine and intelligible to a listener as audio sound when read by the machine at a first speed; information representative of audio sound stored thereon adapted to be read by a machine and intelligible to a listener as audio sound when read by the ma-



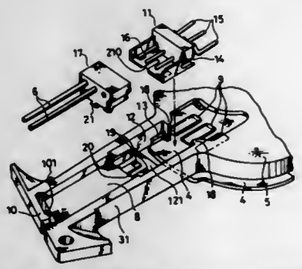
chine at a second speed; wherein at least one characteristic of the information as read back from the media by the machine depends upon the speed at which the media is read and the information stored on the media is divided between that adapted to be read at the first speed and that adapted to be read at the second speed based upon the characteristics of the information; wherein at least some of the information adapted to be read at the first speed is related to at least some of the information adapted to be read at the second speed; and wherein related portions of the information are stored on different tracks of the media and are keyed to one another.

5,189,327

AXIAL-FLOW FAN MOTOR WITH MODULAR CONNECTOR

Shigeru Ootsuka, Yonago; Naoki Nakada, Saihaku, and Takehito Tsukada, Yonago, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Aug. 28, 1991, Ser. No. 750,866
Claims priority, application Japan, Aug. 29, 1990, 2-229367
Int. Cl.[5] H02K *5/04*; F04B *35/04*
U.S. Cl. 310—71 **9 Claims**



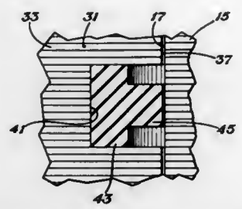
1. A brushless dc axial-flow fan motor comprising:
a housing serving as an outer frame, comprising a center hub, a plurality of spokes radially extending from said center hub to a periphery of said housing, and a cavity having two side walls provided in one of said plurality of spokes;
a printed circuit board contained in said center hub and having a plurality of soldering lands facing said cavity;
a plug accommodated in said cavity, having two sides, engaging protrusions, a plurality of connection pins and a plurality of soldering pin ends soldered on said plurality of soldering lands of said printed circuit board; and
a detachable receptacle mechanically connected to said plug and having a plurality of lead wires electrically connected to said plurality of connection pins of said plug.

5,189,328

LAMINATED MOTOR BEARING FOR ELECTRICAL SUBMERSIBLE PUMP

Dick L. Knox, Claremore, Okla., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed May 15, 1992, Ser. No. 884,739
Int. Cl.[5] H02K *5/16, 7/08*
U.S. Cl. 310—90 **7 Claims**



7. In a motor for a submersible well pump, the motor being of the type having a cylindrical housing, a stator stationarily mounted in the housing for producing a rotating magnetic field, the stator having an inner wall providing an axial passage therethrough, a rotor mounted to a shaft and located in the passage for rotating in response to the rotating magnetic field when the stator is supplied with electrical power, the rotor having plurality of sections, each section having ends spaced axially apart from each other, providing annular spaces for bearing assemblies to radially support the shaft, each bearing assembly comprising in combination:
a bushing mounted to the shaft in each annular space for rotation with the shaft;
a hub mounted slidably to the bushing to allow rotation of the bushing relative to the hub;
a plurality of thin circular metal nonmagnetic disks stacked axially together in contact with each other to define a bearing body with a lower portion, a central portion, and an upper portion, each of the disks having an inner diameter and an outer diameter, the inner diameters of the disks being secured to the hub to prevent rotation of the bearing body relative to the hub, the outer diameters of the disks of the central portion being smaller than the outer diameters of the disks of the lower portion and upper portion, defining an annular recess, the outer diameters of the lower portion and upper portion being closely spaced to the inner wall of the stator, the disks increasing electrical resistance of the bearing body to diminish any induced currents from the rotating magnetic field;
the bushing engaging ends of adjacent sections of the rotor and having an axial length greater than the axial lengths of the bearing body and the hub to avoid any axial load on the bearing body due to the weight of the sections of the rotor above the bearing assembly; and
a resilient member in the recess of the bearing body for engaging the inner wall of the stator to prevent rotation of the bearing body and stabilize the shaft.

5,189,329

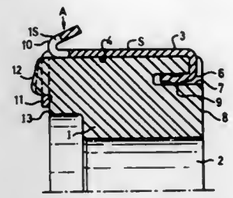
ASSEMBLED COMMUTATOR

Georg Strobl, Repulse Bay, Hong Kong, assignor to Johnson Electric S.A., La Chaus De Fonds, Switzerland

Continuation of Ser. No. 412,306, Sep. 25, 1989, abandoned. This application Apr. 24, 1991, Ser. No. 689,951
Claims priority, application United Kingdom, Sep. 26, 1988, 8822555
Int. Cl.[5] H02K *13/04*
U.S. Cl. 310—233 **1 Claim**

1. An assembled commutator comprising a cylindrical base having a plurality of bosses at one end and a plurality of commutator segments mounted on the base, wherein each segment comprises a longitudinal body radially separated from a longitudinal axis of the base, the body having a first and second end,

the body being integrally formed on the first end with a tang arranged for coupling the segment to an armature winding and with a closed loop which is looped around a respective boss,



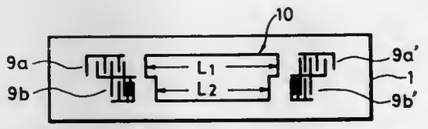
wherein the loop extends radially inwardly of the body of the segment and the tang extends radially outwardly of the body of the segment.

5,189,330

SURFACE ACOUSTIC WAVE DEVICE

Teruo Niitsuma, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 567,952, Aug. 15, 1990, abandoned. This application Sep. 23, 1991, Ser. No. 764,053
Claims priority, application Japan, Aug. 16, 1989, 1-211999; Aug. 16, 1989, 1-212000
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—313 B **17 Claims**



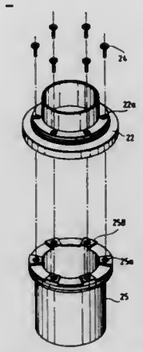
1. A surface acoustic wave device comprising:
a piezoelectric substrate, in which the sound velocity of the surface acoustic wave has a velocity dispersion;
a pair of input transducer means at left and right end portions on said substrate; and
an output gate electrode formed on said substrate between said input transducer means;
wherein said input transducer means includes a plurality of pairs of input transducers juxtaposed in a direction perpendicular to a propagation direction of the surface acoustic wave; each of the pairs of input transducers having uniform pitch interdigital electrodes; the pitches of the electrodes of different pairs being different; and the distance between the transducers of different pairs being different from each other;
wherein said output gate electrode is divided, corresponding to propagation paths of the surface acoustic wave between different pairs of input transducers disposed at the left and right end portions on the substrate; and
wherein grooves are formed under said divided output gate electrode, corresponding to parts of the electrode this obtained.

5,189,331

VIBRATION WAVE DRIVEN MOTOR

Hitoshi Mukohjima, Yokohama; Takayuki Hirano, Utsunomiya; Yoshihiro Seki, Utsunomiya, and Mituru Miura, Utsunomiya, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 475,988, Jan. 30, 1990, abandoned. This application Dec. 12, 1991, Ser. No. 806,787
Claims priority, application Japan, Jan. 31, 1989, 1-23087; Jan. 31, 1989, 1-23088
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—323 **7 Claims**



1. A vibration wave motor, comprising:
a vibration member having a driving portion with a driving surface, said vibration member for generating a travelling vibration wave therein in response to an applied electrical signal;
a contact member having a contact portion arranged in contact with the entire driving surface of said driving portion, whereby the contact member and the vibration member are relatively driven by the travelling vibration wave;
a member for transmitting a driving force from the contact member to a load; and
a coupling member comprising plural coupling portions, said coupling member being disposed between said contact member and said member for transmitting driving force, wherein said coupling member couples said contact member and said driving force transmitting member at plural coupling portions, and prevents propagation of a vibration wave in a direction perpendicular to said travelling vibration wave.

5,189,332

FLEXIBLE ENERGY COUPLING AND ASSOCIATED MOUNTING FOR PIEZO ELECTRIC CRYSTALS

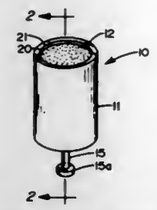
John J. Wild, 4262 Alabama Ave. So., Minneapolis, Minn. 55416

Filed Nov. 18, 1991, Ser. No. 793,622
Int. Cl.[5] H01L *41/08*
U.S. Cl. 310—345 **12 Claims**

1. Flexible conductive mounting structure for piezo-electric crystal, including:
a. a rigid, hollow, generally longitudinally extending housing having an open end or a shouldered end;
b. flexible adhesive means attaching the outer periphery of the crystal to the innermost portion of said housing shoulder end;
c. a flexible, compressive conductor member interiorally of said housing and arranged in transmitting position to the rear surface of the crystal;
d. means for providing energy to and receiving energy from

VOL 1147 ISS 4 FEB 23 1993 UMI

said conductor member whereby such energy is conducted to the crystal;



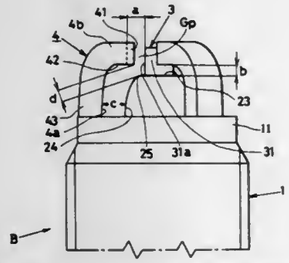
e. means for applying a compressive force longitudinally of said housing to said conductor member.

5,189,333

MULTI-GAP SPARK PLUG FOR AN INTERNAL COMBUSTION ENGINE

Junichi Kagawa; Masaaki Murase, and Shinichi Nakamura, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Feb. 27, 1991, Ser. No. 661,149
Claims priority, application Japan, Aug. 8, 1990, 2-211085
Int. Cl.[5] H01T *13/46, 13/32*
U.S. Cl. 313—140 **2 Claims**



1. A multi-gap type spark plug for an internal combustion engine comprising:

a cylindrical metallic shell having a tubular ceramic insulator concentrically enclosed therein, said insulator having a tapered front leg portion whose front end extends beyond said metallic shell by 2.5 mm;

a center electrode concentrically enclosed in said insulator and having at a front end thereof a firing tip that extends beyond said insulator; and

a plurality of L-shaped outer electrodes each having a vertical piece and a lateral piece, said vertical piece depending from said front end of said metallic shell to circumferentially surround said front end of said insulator, said lateral piece having an inner surface arranged in parallel with a front end surface of said insulator and an end tip terminated to oppose an outer surface of said firing tip establishing a spark gap therebetween;

wherein a vertical distance between said front end surface of said insulator and said inner surface of said lateral piece of each said outer electrode being within a range from 0.3 mm to 1.2 mm inclusive, and wherein said end tip of said lateral piece of each said outer electrode terminates short of a cornered portion of said front end surface of said insulator to partially overlap therewith, and a relationship among dimensions (a), (d) and (c) is determined as follows:

$$(a/2) \leqq d \leqq (3a/2),\ c > a$$

where (a): said spark gap between said outer surface of said firing tip and said end tip of said lateral piece of each said outer electrode,

(d): a minimum distance between said front end surface of said insulator and said inner surface of said lateral piece of each said outer electrode,

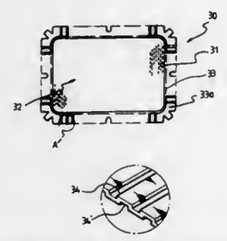
(c): a lateral distance between an outer surface of said front end of said insulator and an inner surface of said vertical piece of each said outer electrode.

5,189,334

CATHODE RAY TUBE HAVING SHADOW MASK

Hae-kyun Park, Pusan, Rep. of Korea, assignor to Samsung Electronic Devices Co., Ltd., Kyunggi-do, Rep. of Korea

Continuation-in-part of Ser. No. 607,659, Nov. 1, 1990, abandoned. This application Apr. 28, 1992, Ser. No. 876,071
Claims priority, application Rep. of Korea, Nov. 2, 1989, 89-16178
Int. Cl.[5] H01J *29/07*
U.S. Cl. 313—402 **2 Claims**



1. A shadow mask for use in a color cathode ray tube and having an electron beam transmissive domed plane disposed substantially perpendicular to an electron beam path, said domed plane comprising:

a central apertured area having a predetermined pattern of electron beam transmissive apertures chemically etched therein;

an unapertured border formed along the periphery of said central apertured border; and

a skirt portion formed along the periphery of said unapertured border, said skirt portion and said unapertured border comprising a plurality of chemically etched stripe type grooves formed on top and bottom surfaces of both said unapertured border and said skirt portion, said plurality of chemically etched stripe type grooves being alternately configured and provided to eliminate the problem of spring-back when the domed plane is press-formed into domed shape.

5,189,335

METHOD OF CONTROLLING ELECTRON BEAMS IN AN IMAGE DISPLAY APPARATUS

Toshinobu Sekihara, Osaka, and Mitsunori Yokomakura, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

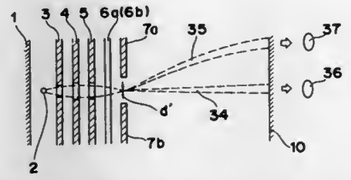
Division of Ser. No. 600,806, Oct. 22, 1990, abandoned. This application Dec. 23, 1991, Ser. No. 813,489
Claims priority, application Japan, Oct. 20, 1989, 1-274098
Int. Cl.[5] H01J *29/70, 29/74*
U.S. Cl. 313—422 **1 Claim**

1. A method for controlling electron beams in an image display apparatus, the image display apparatus including, in sequential order, a plurality of line cathodes arranged horizontally in parallel with each other, an electron beam lead electrode, a signal electrode, a focusing electrode, a horizontal deflecting electrode, a vertical deflecting electrode and a light emitting device, the vertical deflecting electrode including plural spaced apart conductive plate members extending horizontally in a same vertical plane, said method comprising the steps of:

radiating electron energy from at least one of the line cathodes towards the electron beam lead electrode and emitting plural electron beams from the electron beam electrodes towards the signal electrode;

selectively passing the electron beams through the signal electrode towards the focusing electrode in accordance with a video signal applied to the signal electrode;

electrostatically focusing the electron beams which have passed through the signal electrode by causing the focusing electrode to converge each electron beam to a focal point which is formed between two of said plural spaced apart conductive plate members, the thus focused electron beams being directed towards the horizontal deflecting electrode;



electrostatically deflecting the focused electron beams horizontally using the horizontal deflecting electrode, the thus horizontally deflected electron beams being directed towards the vertical deflecting electrode; and,

electrostatically deflecting the horizontally deflected electron beams vertically using the vertical deflecting electrode, each thus vertically deflected electron beam being directed towards the light emitting device and forming an electron spot on the light emitting device, the light emitting device emitting light in response to each incident electron spot;

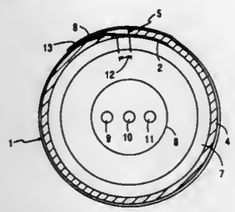
wherein a size of each electron spot is minimized by the convergence of each electron beam at the focal point which is formed between two of said plural spaced apart conductive plate members of the vertical deflecting electrode.

5,189,336

DEVICE FOR ELECTRON BEAM CONTROL IN A CATHODE RAY TUBE

Luigi Sarracco, Rome, Italy, assignor to Videocolor S.p.A., Anagni, Italy

Filed Nov. 26, 1991, Ser. No. 798,446
Claims priority, application Italy, Jan. 29, 1991, M191A00208
Int. Cl.[5] H01J *29/76*
U.S. Cl. 313—440 **8 Claims**



1. A device to control electron beam position in a picture tube, comprising:

a picture tube with neck and electron gun;

a flexible magnetizable strip having two ends;

an adhesive tape having two ends, said strip being adhered to the tape such that said tape ends extend beyond said strip ends, said tape and strip encircling said neck, with said strip contacting said neck and a first of the two tape ends attached to said neck and the second tape end completing said encirclement; and

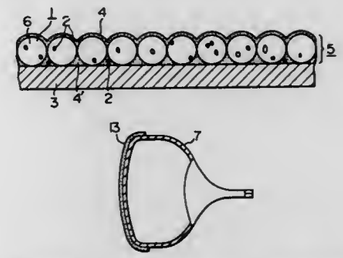
said strip further comprising at least one of the two ends tapered in thickness to support at least one of said two tape ends and provide a smooth completion of said encirclement.

5,189,337

ULTRAFINE PARTICLES FOR USE IN A CATHODE RAY TUBE OR AN IMAGE DISPLAY FACE PLATE

Yoshishige Endo, Tsuchiura; Takeshi Araya, Higashikurume; Masahiko Ono, Ibaraki; Takao Kawamura, Chiba, and Hiromitsu Kawamura, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 8, 1989, Ser. No. 404,553
Claims priority, application Japan, Sep. 9, 1988, 63-224658
Int. Cl.[5] H01J *29/88;* **H01B** *1/08;* **B32B** *18/00;* **C09K** *3/16*
U.S. Cl. 313—479 **14 Claims**



13. A cathode ray tube having a surface on which a thin film is formed, said thin film being composed of ultrafine particles of a composite particulate substance composed of two or more types of inorganic oxides, forming a particulate structure comprising at least an electrically conductive inorganic oxide selected from the group consisting of SnO_2, In_2O_3 and Sb_2O_3 and an anti-reflective inorganic oxide comprising SiO_2 and wherein the electrically conductive and the anti-reflective inorganic oxides are mutually mixed with one another or the electrically conductive inorganic oxide is contained in the anti-reflective inorganic oxide, the particulate structure having an average particle diameter of not more than 0.1 μm and a particle size distribution having the following characteristics that:

a maximum peak is existent in the vicinity of the average particle diameter of the ultrafine particles, n amount of ultrafine particles having a particle diameter in the maximum peak region accounts for not less than 50% based on the total amount, a maximum particle diameter is about two times as large as the average particle diameter and a minimum particle diameter is about ½ thereof.

5,189,338

PHOTOMULTIPLIER TUBE HAVING REDUCED TUBE LENGTH

Keiichi Ohishi, and Suenori Kimura, both of Hamamatsu, Japan, assignors to Hamamatsu Photonics K.K., Shizuoka, Japan

Filed Jan. 9, 1992, Ser. No. 818,282
Claims priority, application Japan, Jan. 14, 1991, 3-16066
Int. Cl.[5] H01J *31/48*
U.S. Cl. 315—11 **8 Claims**

1. A photomultiplier tube comprising:

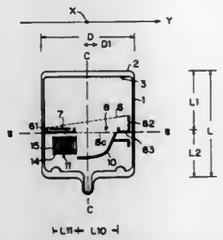
an outer tube having a top end wall and defining a central axis;

a photocathode disposed in the outer tube and provided at the top end wall for converting light into photoelectrons;

a focussing electrode means formed with a photoelectron transmission hole whose center is positioned at a position deviating from the central axis for deviating a locus of the photoelectrons emitted from the photocathode to permit the photoelectrons to pass through the photoelectron transmission hole;

a first stage dynode whose center is positioned at a position

deviating from the central axis for alignment with the photoelectron transmission hole in order to receive the photoelectrons entered through the photoelectron transmission hole and converged by the focussing electrode, and in order to emit secondary electrons; and



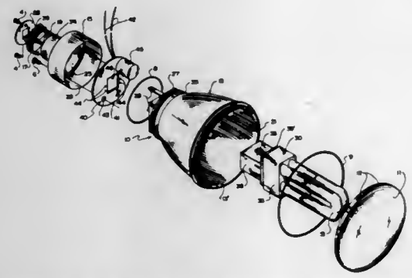
an array of electrodes positioned beside the first stage dynode at a position diametrically opposite the first stage dynode for receiving the secondary electrons.

5,189,339

FLUORESCENT LAMP ASSEMBLIES

Gayle R. Peshak, Lake Forest, Ill., assignor to Applied Lumens, Ltd., Lake Forest, Ill.

Filed Sep. 5, 1990, Ser. No. 577,492
Int. Cl.[5] H01J *7/44*
U.S. Cl. 315—58 **24 Claims**



1. Fluorescent lamp assembly with axial symmetry, comprising a fluorescent lamp bulb and a solid-state ballast therefor, and two-member laterally bulb-surrounding and ballast-surrounding non-conductive housing means including a first one-piece housing member with a large flared open end to be sealed by a covering lens and with a small open end adapted to surround part of the lamp bulb, and a second one-piece housing member with a small open end to be covered by electrical screw-in means and with a large open end adapted to surround the ballast and overlap the small end of and be sealed to the first member.

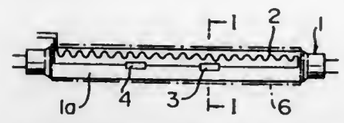
5,189,340

FLUORESCENT LAMP ASSEBMLY FOR IMAGE SCANNER

Shinyu Ikeda, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 213,767, Jun. 30, 1988, abandoned. This application May 19, 1992, Ser. No. 888,460
Claims priority, application Japan, Jul. 3, 1987, 62-166572
Int. Cl.[5] H05B *37/00*; G03B *15/00*
U.S. Cl. 315—116 **18 Claims**

1. A fluorescent lamp for use in an image scanner comprising:
a fluorescent lamp having a glass tube;
means for energizing said fluorescent lamp;
heating means for heating said glass tube of said fluorescent lamp independently of whether said fluorescent lamp is energized or not; and
control means for controlling the temperature of said glass tube, said control means comprising means for controlling



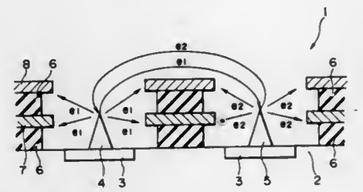
said heating means independently of said energization means in such a manner as to maintain the temperature of said glass tube at a predetermined optimum level even though said fluorescent lamp is not energized, whereby the luminescent characteristic of said fluorescent lamp is stabilized when said fluorescent lamp is energized.

5,189,341

ELECTRON EMITTING ELEMENT

Shigeo Itoh; Teruo Watanabe; Hisashi Nakata, and Toshinori Takagi, all of Mobara, Japan, assignors to Futaba Denshi Kogyo Kabushiki Kaisha, Mobara, Japan

Filed May 16, 1991, Ser. No. 701,027
Claims priority, application Japan, May 17, 1990, 2-125435
Int. Cl.[5] H01J *1/02*
U.S. Cl. 315—169.1 **9 Claims**



1. An electron emitting element comprising:
an evacuated envelope;
a plurality of electrodes contained in said envelope, said electrodes including a pair of electrodes, each of said pair of electrodes provided with a triangular projection, said pair of electrodes arranged on the same plane in the side by side relationship; and
means for alternately applying a field emission voltage to one of said pair of electrodes so as to have said one of said pair of electrodes function as an emitter and applying a voltage higher than the field emission voltage to the other of said pair of electrodes so as to have said other of said pair of electrodes function as a gate, to thereby establish an electric field capable of permitting alternate emission of field electrons between said pair of electrodes.

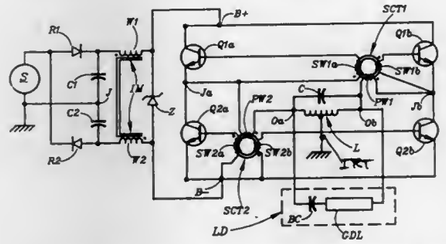
5,189,342

PARALLEL-TUNED ELECTRONIC BALLAST

Ole K. Nilssen, Caesar Dr., Barrington, Ill. 60010

Continuation of Ser. No. 646,497, Jan. 28, 1991, abandoned, which is a continuation of Ser. No. 107,795, Oct. 13, 1987, abandoned, which is a continuation-in-part of Ser. No. 658,423, Oct. 5, 1984, abandoned. This application Feb. 25, 1992, Ser. No. 840,528
Int. Cl.[5] 315 *226, 244, DIG. 7*; H05B *41/29*
U.S. Cl. 315—209 R **19 Claims**

1. A ballast for a gas discharge lamp, comprising:
a source operative, between a first and a second DC output terminal, to provide a DC voltage of substantially constant magnitude; and
inverter-type power supply connected with the DC output terminals and operative to provide a high-frequency AC voltage between a first inverter output terminal and an inverter reference terminal; the high-frequency AC voltage being of a certain magnitude and a certain frequency; the certain frequency being substantially higher than the frequency of the power line voltage on an ordinary electric utility power line; the power supply including a tuned L-C circuit connected with the first inverter output terminal and the inverter reference terminal; the L-C circuit having a tank capacitor parallel-connected with a tank inductor and being resonant at or near said certain frequency; any high-frequency voltage existing between the inverter reference terminal and the first DC output terminal being of magnitude negligible in comparison with said certain magnitude.

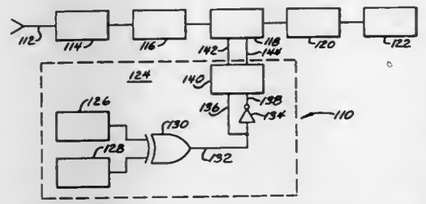


5,189,343

HIGH FREQUENCY LUMINOUS TUBE POWER SUPPLY HAVING NEON-BUBBLE AND MERCURY-MIGRATION SUPPRESSION

David Pacholok, Sleepy Hollow, Ill., assignor to Everbrite, Inc., Greenfield, Wis.

Filed Aug. 27, 1991, Ser. No. 750,530
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—219 **6 Claims**



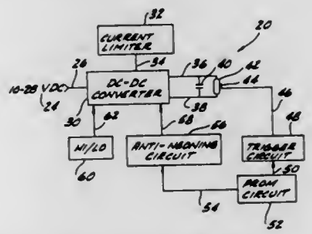
1. A high frequency power supply for neon and mercury gas tube loads including a high frequency transformer having primary and high-voltage secondary windings, means for connecting the secondary winding to a gas tube load for passing a current therethrough; DC input means for connection to a source of DC power; switch means connected to the DC input means and to the primary of the transformer for connecting the DC input means to the transformer primary and for selectively reversing the polarity of the input from the DC input means to the transformer primary; controller means operatively connected to the switch means for effecting the polarity switching of the switch means; the controller means including means for generating a first higher frequency asymmetric signal and means for generating a second lower frequency symmetric signal; means for combining the first asymmetric and second symmetric signals to produce a composite signal having an asymmetrical higher frequency waveform, the phase of the asymmetry being reversed symmetrically at the lower frequency rate whereby the current through a gas tube load is at all times asymmetrical but where the long-term current waveform through the load is symmetrical thereby eliminating visible neon bubble formation and minimizing migration of mercury gas atoms.

5,189,344

SOLID STATE STROBE TUBE CONTROL CIRCUIT WITH PROGRAMMABLE FLASH PATTERN

Steven A. Rose, Kirkwood, Mo., assignor to Public Safety Equipment, Inc., St. Louis, Mo.

Filed May 3, 1991, Ser. No. 695,257
Int. Cl.[5] H05B *37/02*
U.S. Cl. 315—293 **38 Claims**



18. An anti-neoning control circuit comprising:
strobe means which is repeatedly charged and discharged;
a power supply for charging the strobe means;
means for producing a sequential output;
a semiconductor read only memory responsive to the sequential output for producing a anti-neoning pulse of a predetermined duration;
means responsive to the anti-neoning pulse for disconnecting the strobe means from the power supply after the discharge for the predetermined duration, wherein the predetermined duration is greater than a period of time after the discharge during which the connection of the power supply to the strobe tube would result in current flowing through the strobe tube whereby neoning of the strobe tube is prevented and wherein the predetermined duration controls the charging time of the strobe means whereby the flash intensity of the strobe means is a function of the anti-neoning pulse.

5,189,345

GAS-DISCHARGE SWITCH

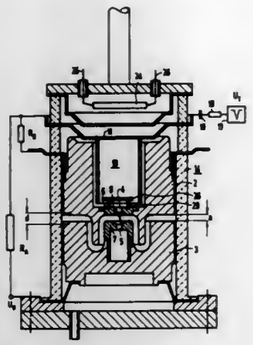
David-Walter Branston, Igelsdorf, and Jan Stroh, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 22, 1992, Ser. No. 871,992
Claims priority, application European Pat. Off., Apr. 25, 1991, 91106732.0
Int. Cl.[5] H01J *17/00*; H01T *2/00*
U.S. Cl. 315—326 **5 Claims**

1. A gas-discharge switching comprising:
a) a trigger voltage source;
b) an arcing chamber containing an ionizable gas filing;
c) a cathode, said cathode having a rear space and being disposed in said arcing chamber;
d) an anode, said anode being disposed in said arcing chamber with a discharge gap clearance (d) between said cathode and said anode;
e) an anode resistor R_A; and
f) a hat-shaped control electrode, said control electrode surrounding said rear cathode space, having an opening facing the discharge gap, being separated from the cathode, being connected to a trigger voltage source, and being connected via an anode resistor R_A to the anode,
wherein a low-pressure gas discharge is ignited by increasing the electron density in the rear cathode space and wherein the

VOL 1147 ISS 4 FEB 23 1993 UMI

arcing chamber contains an ionizable gas filling having a pressure p selected so as to allow the igniting voltage of the low-



pressure gas discharge to diminish as the product p×d increases.

5,189,346

GAS-DISCHARGE SWITCH

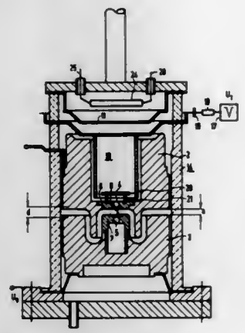
David-Walter Branston, Igelsdorf, and Jan Stroh, Erlangen, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 22, 1992, Ser. No. 871,989

Claims priority, application European Pat. Off., Apr. 25, 1991, 91106733.8

Int. Cl.[5] H01J *17/00;* **H01T** *2/00*

U.S. Cl. 315—326 **10 Claims**



1. A gas-discharge switch comprising:

a) a trigger voltage source;

b) an arcing chamber containing an ionizable gas filing;

c) a first main electrode, said first main electrode having a rear space, having an opening leading from a discharge gap to said rear space, and being disposed in said arcing chamber;

d) a second main electrode, said second main electrode being disposed in said arcing chamber with a discharge gap clearance (d) between said first main electrode and said second main electrode;

e) a hat-shaped control electrode, said control electrode surrounding said rear space of said first main electrode, having an opening facing the discharge gap, being separate from the first main electrode, and being connected to a trigger voltage source; and

f) a baffle plate, said baffle plate being provided in said rear space of said first main electrode between said opening of said first main electrode and said hat-shaped control electrode at a predetermined distance from the surface of said first main electrode,

wherein a low-pressure gas discharge is ignited by increasing the electron density in the said rear space of said first main electrode and

wherein said ionizable gas filling of said arcing chamber has a pressure p selected so as to allow the igniting voltage of the low-pressure gas discharge to diminish as the product p×d increases.

5,189,347

VIDEO CIRCUIT FOR DRIVING A CATHODE RAY TUBE

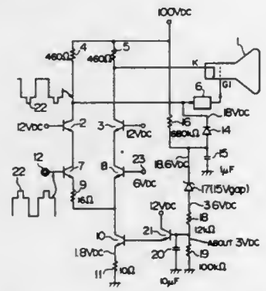
Masanori Ogino; Takeo Yamada; Miyuki Ikeda; Tsueno Fujikura, and Takahiko Fujiwara, all of Yokohama, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 19, 1991, Ser. No. 810,298

Claims priority, application Japan, Dec. 26, 1990, 2-417589

Int. Cl.[5] G09G *1/04;* **H01J** *29/70*

U.S. Cl. 315—383 **6 Claims**



1. A video circuit for driving a cathode ray tube of a type by which an inputted video signal is amplified by a differential amplifying circuit, an output of which is applied to a grid electrode and a cathode electrode of the cathode ray tube in a differential manner, comprising:

current source means for supplying current to said differential amplifying circuit;

detecting diode means for detecting a minimum peak output voltage of a grid side output transistor of said differential amplifying circuit in a horizontal blanking interval;

filtering means for smoothing an output voltage of said detecting diode means; and

control means for effecting negative feedback control so that an output potential of said grid side output transistor is made constant by controlling the current of said current source means in accordance with the output voltage of said detecting diode means.

5,189,348

CATHODE RAY TUBE APPARATUS INTENDED TO REDUCE MAGNETIC FLUXES LEAKED OUTSIDE THE APPARATUS

Masahiro Yokota; Hideo Mori, both of Fukaya, and Kiyoshi Oyama, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 535,197, Jun. 8, 1990, abandoned. This application May 26, 1992, Ser. No. 888,281

Claims priority, application Japan, Jun. 9, 1989, 1-146979

Int. Cl.[5] G09G *1/04;* **H01J** *29/06*

U.S. Cl. 315—399 **13 Claims**

1. A cathode ray tube apparatus comprising:

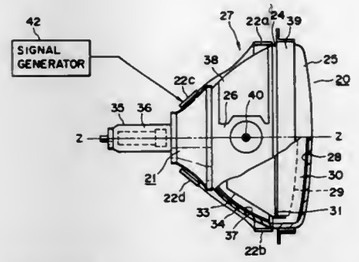
means for generating electron beams;

means for emitting light rays when the electron beams land thereon;

an envelope, having an axis, for receiving the electron beam generating means and light ray generating means;

means, provided on the envelope, for generating effective magnetic fluxes in the envelope to deflect the electron beams in the horizontal direction and also generating leakage magnetic fluxes outside the envelope, said leakage magnetic fluxes emanating about a center between said magnetic flux generating means and said emitting means;

first means, provided on one side from a first reference plane extending through the center of the leakage magnetic field, perpendicular to the axis and crossing the envelope,



for generating first compensating magnetic fluxes in a direction reverse to that of the leakage magnetic fluxes;

second means, provided on the other side from the first reference plane, for generating second compensating magnetic fluxes in the direction reverse to that of the leakage magnetic fluxes; and

signal generating means for generating a signal to energize the deflection magnetic flux generating means and the first and second compensating magnetic flux generating means.

5,189,349

DRIVE CIRCUIT FOR MULTI-PHASE BRUSHLESS DC MOTOR INCLUDING DRIVE CURRENT DETECTOR

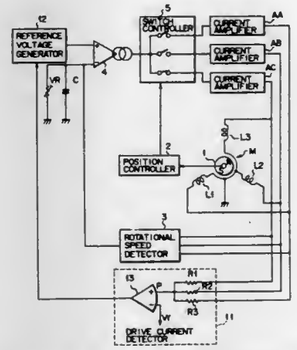
Hiroyuki Haga, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 31, 1991, Ser. No. 738,521

Claims priority, application Japan, Aug. 2, 1990, 2-203839

Int. Cl.[5] H02P *5/00*

U.S. Cl. 318—254 **1 Claim**



1. A drive circuit for a multi-phase brushless DC motor comprising:

a DC motor having three-phase drive coils and a rotor;

rotational position detecting means for performing a predetermined calculation of an induction voltage waveform of each of said three-phase drive coils to detect a rotational position of said rotor of said DC motor;

commutation control means for selecting a drive coil from said three-phase drive coils in accordance with a position detection output from said rotational position detecting means;

drive output means for supplying a drive current corresponding to an input level from a first comparator by way of said commutation control means to one of said drive coils selected by said commutation control means;

rotational speed detecting means for detecting a motor speed on the basis of counter electromotive voltage generated by each of said drive coils by rotating said motor, and for generating a current which is proportional to said motor speed;

a first resistor for determining a motor speed detection output level on the basis of the current output from said rotational speed detecting means;

said first comparator comparing said motor speed detection output level with a first reference voltage, for generating a comparison output in accordance with a difference between said motor speed detection output level and said first reference voltage, and for supplying said comparison output to said drive output means through said commutation control means;

drive current detecting means comprising a second comparator, and second, third, and fourth resistors, each of said resistors being connected to one of said three-phase drive coils, respectively, and also being commonly connected to a non-inverting input terminal of said second comparator, said input terminal of said second comparator being supplied with a DC component obtained by totaling counter electromotive voltages which are generated by said three-phase drive coils and supplied through said second, third, and fourth resistors, and an inverting input terminal of said second comparator being supplied with a voltage having an intermediate value between an output voltage component obtained during a normal rotation of the motor and an output voltage component obtained during a reverse rotation of the motor; and

reference voltage generating means for generating said first reference voltage which is varied in proportion to an output level of said second comparator.

5,189,350

MONITORING SYSTEM

Dudley C. Mallett, Blackheath, England, assignor to J. H. Fenner & Co., Ltd., North Humberside, England

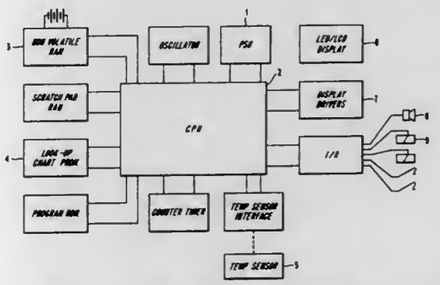
PCT No. PCT/GB89/00177, § 371 Date Oct. 18, 1990, § 102(e) Date Oct. 18, 1990, PCT Pub. No. WO89/07852, PCT Pub. Date Aug. 24, 1989

PCT Filed Feb. 17, 1989, Ser. No. 555,466

Claims priority, application United Kingdom, Feb. 18, 1988, 8803827

Int. Cl.[5] H02H *7/085, 1/00;* **G01D** *9/00*

U.S. Cl. 318—434 **14 Claims**



1. A method of monitoring the instantaneous operating capacity of a non-continuously rated electric motor, comprising the steps of:

storing an absolute maximum operating temperature and a predetermined maximum permitted operating temperature of a motor;

sensing an operating temperature of the motor;

VOL 1147 ISS 4 FEB 23 1993 UMI

indicating, in response to said steps of storing and sensing, the sensed operating temperature as lying:

a) within a safe operating range, below the predetermined maximum permitted operating temperature;

b) within a hazardous operating range, lying between the predetermined maximum permitted operating temperature and the absolute maximum operating temperature; and

c) at or above a dangerous operating point lying at or above the absolute maximum operating temperature; and

operating a motor cut-out if the operating temperature of the motor exceeds the predetermined maximum permitted operating temperature, which cut-out can be manually overridden to enable continued operation of the motor in the hazardous operating range, but which cannot be manually overridden which the operating temperature of the motor reaches the absolute maximum operating temperature.

5,189,351

CORRECTIVE POSITIONING METHOD IN A ROBOT

Nobutoshi Torii, Hachioji; Ryo Nihei, and Mitsuhiro Yasumura, both of Yamanashi, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

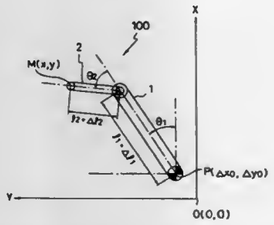
PCT No. PCT/JP90/00075, § 371 Date Aug. 16, 1990, § 102(e) Date Aug. 16, 1990, PCT Pub. No. WO90/08016, PCT Pub. Date Jul. 26, 1990

PCT Filed Jan. 23, 1990, Ser. No. 566,464

Claims priority, application Japan, Jan. 23, 1989, 1-11951

Int. Cl.[5] B25J *9/10;* **G05D** *3/12*

U.S. Cl. 318—568.19 **2 Claims**



1. A corrective positioning method for a robot including a body having an arm comprised of links, and the error inherent to the robot includes an error of a pivotal center position of the arm and link length error of lengths of the links, which are inherent to the robot body, comprising steps of:

(a) setting a correction parameter indicative of an error inherent to the robot, including substeps of:

(a1) sequentially performing calibration based on a plurality of known points, to obtain displayed rotary angles respectively associated with the links;

(a2) deriving a required number of equations which only include, as unknowns, the link length errors and link rotary angles at the time of the calibration;

(a3) determining the error of the pivotal center position of the arm on the basis of the link length errors, and the link rotary angles, which are respectively determined by solving the equations; and

(a4) determining link rotary angle errors respectively associated with the links on the basis of the displayed rotary angles and the link rotary angles, said correction parameter including the link rotary angle errors together with the link length errors and the error of the pivotal center position of the arm;

(b) correcting a robot positioning command, which does not take into account the error inherent to the robot, on the basis of the correction parameter when the robot positioning command is input; and

(c) positioning the robot in accordance with the corrected robot positioning command.

5,189,352

DRILLING RESTART CONTROL SYSTEM

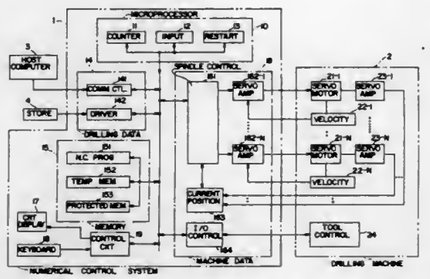
Yasuhiko Hamaya, Toyama, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 8, 1991, Ser. No. 790,267

Claims priority, application Japan, Nov. 8, 1990, 2-304476

Int. Cl.[5] H05K *3/00;* **G05B** *19/18*

U.S. Cl. 318—569 **3 Claims**



1. A drilling restart control system for an NC drilling machine comprising:

a supplying source of drilling data representing a plurality of holes of a plurality of diameters to be drilled in a platelike workpiece, said drilling data being defined in the form of data blocks showing the diameters of the holes and a plurality of positions on said workpiace;

machining data imparting means for supplying driving signals to the drilling machine so as to execute drillings of said workpiece as indicated in said data blocks by processing said drilling data for each of said data blocks;

position data supplying means for supplying the current position of a tool installed in said drilling machine;

a memory with protection against electric power failure which stores the diameters of said holes and the number of holes formed by machining for each of these diameters;

machining start indicating means for indicating a start or a restart after temporary interruption of said drilling machining to said machining data imparting means;

means for generating a coincidence signal between the drilling data from said supplying source and the contents of said memory when they are compared in response to the indication from said machining start indicating means, and are found to coincide with each other; and

means for reserving said drilling machining from the receipt of the indication by said machining start indicating means until the generation of said coincidence signal.

5,189,353

RESOLVER SYSTEM

Yasuhiro Ezuka, Maebashi, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 1, 1991, Ser. No. 786,506

Claims priority, application Japan, Nov. 2, 1990, 2-298473

Int. Cl.[5] H02K *24/00*

U.S. Cl. 318—605 **11 Claims**

1. A resolver system comprising:

a resolver having an annular rotor, and an annular stator arranged around said annular rotor in spaced relationship thereto, said rotor and said stator being arranged such that the reluctance of a space defined between said rotor and said stator varies with a change in an angular position of said rotor such that one revolution of said rotor causes one cycle of a fundamental frequency component of variation of the reluctance,

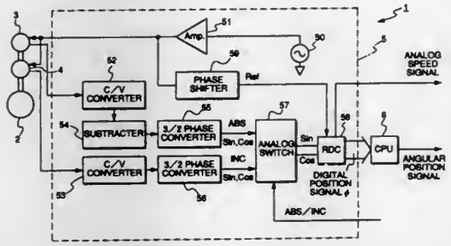
said stator having formed thereon a plurality of pole shoes circumferentially arranged at intervals of 120" or 60" to form three or six phases, respectively, each of said pole shoes having a single kind of winding wound thereon,

said pole shoes of said stator comprise a first group of pole shoes for forming three or six phases (A, B, C), and a second group of pole shoes arranged at locations diametrically opposite to respective ones of said first group of pole shoes for forming three or six phases ($\overline{A}$, $\overline{B}$, $\overline{C}$, . . .), each of said pole shoes having a single kind of winding wound thereon, and each of said phases of said first and second groups of pole shoes being formed by a plurality of ones of said pole shoes,

said resolver system further comprising:

excitation means for applying an excitation signal to each of said windings on said pole shoes of said stator to excite same, and

signal processing means responsive to a value of current flowing in each of said windings which is variable with variation of the reluctance, for generating a speed signal indicative of the rotational speed of said rotor and a position signal indicative of the angular position of said rotor,



said signal processing means comprising a servo driver responsive to the value of current flowing in said windings of each of said phases for generating said speed signal and said position signal, and control means for processing said position signal to generate an angular position signal indicative of the angular position of said rotor, and

said servo driver comprising a current-to-voltage converter for converting the value of current flowing in the windings of said each phase to generate a voltage signal indicative of a voltage applied to said windings of said each phase, a subtracter for subtracting said voltage signal from said converter indicative of a voltage applied to said windings of each of said phases of said second group of pole shoes from said voltage signal from said converter indicative of a voltage applied to said windings of a corresponding one of said phases of said first group of pole shoes to generate a three- or six-phase voltage signal, a 3 or 6 phase-to-2 phase converter for converting said three- or six phase voltage signal to a two-phase voltage signal, and a resolver-to-digital converter responsive to said two-phase voltage signal from said 3 or 6 phase-to-2 phase converter for generating an analog speed signal and a digital position signal.

5,189,354

ANGULAR POSITION SELECTING APPARATUS

Tsutomu Tominaga, and Akira Watanabe, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1991, Ser. No. 643,245

Claims priority, application Japan, Jan. 20, 1990, 2-10809

Int. Cl.[5] G05B *11/01*

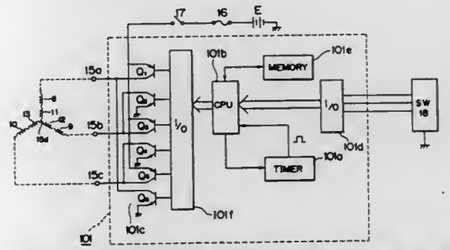
U.S. Cl. 318—671 **3 Claims**

1. An angular position selecting apparatus comprising:

a permanent magnet rotor to which an output shaft is connected, said permanent magnet rotor having more than one pair of poles;

a stator having coils which are grouped into three phases including a first phase, a second phase, and a third phase, said first to third phases being connected in Y-connection, each phase having as many series-connected coils as there are pairs of said poles of the permanent magnet rotor;

timer means for outputting a first signal for a predetermined length of time when a target angular position of said rotor is selected;



rotation direction commanding means for outputting, on the basis of a present angular position of said rotor and said target angular position of said rotor, a second signal indicative of a direction in which said rotor is supposed to rotate; and

current polarity control means for supplying a first current to said first phase in accordance with said first signal and a second current in accordance with said second signal to said third phase so as to drive said rotor into rotation to said target angular position.

5,189,355

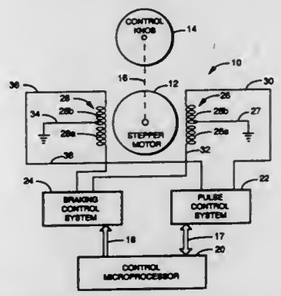
INTERACTIVE ROTARY CONTROLLER SYSTEM WITH TACTILE FEEDBACK

David N. Larkins, Fremont; Glenn T. Yoshida, Cupertino, and Thomas L. Helmers, San Jose, all of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Apr. 10, 1992, Ser. No. 866,695

Int. Cl.[5] H02K *29/12*

U.S. Cl. 318—685 **8 Claims**



1. An apparatus comprising:

motor means having a shaft and first and second windings, each of said windings having first and second portions;

a manually rotatable member coupled for rotation with said shaft;

processor means;

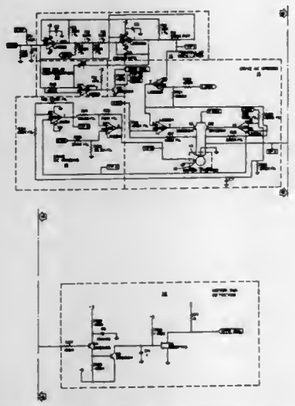
means coupled to given ones of said first and second winding portions and responsive to rotation of said member for providing signals from said motor means to said processor means indicative of parameters of motion of said member; and

output means coupled to said processor means and to the other ones of said first and second winding portions for receiving commands from said processor means and energizing said other ones of said first and second winding portions for providing a force on said shaft in opposition to the direction of the force of rotation of said member.

5,189,356
VOLTAGE DRIVE AMPLIFIER WITH VOLTAGE FEEDBACK

Michael S. Rovner, San Jose, Calif., assignor to Symbol Technologies, Inc., Bohemia, N.Y.

Filed Jan. 10, 1991, Ser. No. 639,822
Int. Cl.[5] G05B *19/40*
U.S. Cl. 318—685 **13 Claims**



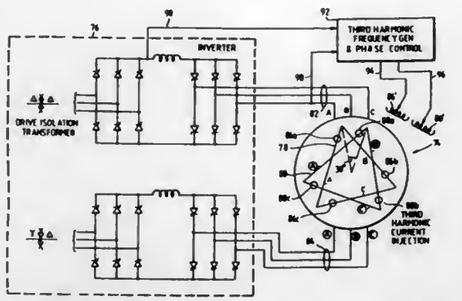
1. A voltage drive circuit for a stepper motor in a laser scanning device, comprising:
   a. said stepper motor having a rotor, a stator, a center-tapped AC winding to which an AC drive signal is applied and a DC winding to which a DC drive signal is applied;
   b. a triangular waveform generating means for generating a periodic triangular voltage signal;
   c. means for driving said AC winding with said periodic triangular voltage signal, including a voltage feedback circuit in which a voltage across the AC winding is compared with the input periodic triangular voltage signal driving the AC winding and the voltage across the AC winding is caused to follow the input periodic triangular voltage signal driving the AC winding; and
   d. means for driving said DC winding with a DC winding voltage signal.

5,189,357
METHOD AND APPARATUS FOR IMPROVING PERFORMANCE OF AC MACHINES

Herbert H. Woodson, and John S. Hsu, both of Austin, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Continuation of Ser. No. 888,818, Jul. 22, 1986, abandoned. This application Jul. 17, 1989, Ser. No. 382,078
Int. Cl.[5] H02P *5/40*
U.S. Cl. 318—737 **19 Claims**

1. A method of exciting a polyphase alternating current machine having a set of windings formed therein wherein at least a first portion of said winding have a preselected number of poles associated therewith, and at least a second portion of said windings have an odd multiple preselected number of poles associated therewith, comprising the steps of:
   exciting at least said first portion of the windings of said machine with a polyphase fundamental frequency current so that a fundamental flux wave rotates in an air gap of said machine at a speed corresponding to the frequency of said fundamental frequency current; and

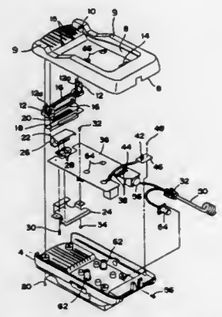


   exciting at least said second portion of the windings of said machine with an odd harmonic frequency of said fundamental frequency current so that a harmonic flux wave rotates in the air gap of said machine at a speed substantially synchronous with said fundamental flux wave.

5,189,358
ADAPTOR FOR MOUNTING PORTABLE RADIO APPARATUS TO MOVING BODY AND CHARGER FOR PORTABLE RADIO APPARATUS

Masashi Tomura; Hisamitsu Takagi, and Yoshihiro Matsumoto, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 24, 1991, Ser. No. 764,705
Claims priority, application Japan, May 7, 1991, 3-130244; May 31, 1991, 3-129110
Int. Cl.[5] H01M *10/44;* **H04B** *1/38*
U.S. Cl. 320—2 **8 Claims**

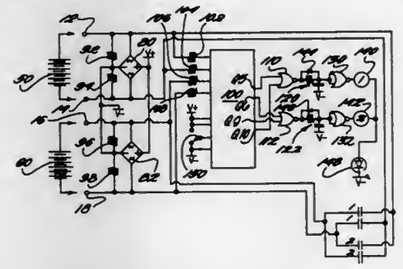


1. An adaptor for a portable radio apparatus adapted to mount the portable radio apparatus to a moving body, the portable radio apparatus having a battery pack attached thereto, said battery pack being either a large-capacity battery pack or a small-capacity battery pack adapted to be mounted selectively, said large-capacity battery pack having a swelled bottom, a retaining slot formed in the bottom of both the large-capacity battery pack and that of the small-capacity battery pack, and a retaining slot formed in one end of the portable radio apparatus, said adaptor for the portable radio apparatus comprising:
   a case for mounting the portable radio apparatus thereto, said case having a recess formed in a top thereof for receiving the swelled bottom of said large-capacity battery pack, said case further having a pair of guides for guiding both sides of the portable radio apparatus, a first projection adapted for engagement with the retaining slot of the portable radio apparatus, and a second projection adapted for engagement with the retaining slot of the battery pack, with openings being formed opposedly to each other in inner surfaces of said paired guides;
   a printed circuit board accommodated within said case, said printed circuit board having a charging circuit formed thereon;
   a pair of ratchets adapted to enter and have the openings formed in said guides, said ratchets each having a tapered portion whose thickness in the vertical direction is smaller at a first end thereof;
   urging means for urging said paired ratchets toward each other; and
   a pair of charging terminals connected electrically to the charging circuit on said printed circuit board and projecting from the top of said case.

5,189,359
SOLID STATE SAFETY JUMPER CABLES

James W. Kronberg, 353 Church Rd., Beech Island, S.C. 29841

Filed Jan. 22, 1991, Ser. No. 643,317
Int. Cl.[5] H02J *7/00*
U.S. Cl. 320—26 **4 Claims**

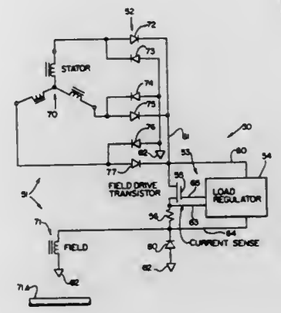


1. A device for use in connecting in parallel a first battery having two terminals to a second battery having two terminals, said device comprising:
   conductor means for enabling current to flow to and from each of said four terminals;
   means for comparing each of the voltages of said four terminals to a reference voltage, said voltages sampled from said conductor means, to determine which of said four terminals have voltages higher and which of said terminals have voltages lower than said reference voltage, said comparing means generating a high signal for each of said four terminals having a higher voltage and generating a low signal for each terminals having a lower voltage, said high and low signals generated by said comparing means forming a set of signals;
   means for connecting either terminal of said first battery to either terminal of said second battery, said connecting means responsive to said high and low signals from said comparing means, said connecting means connecting one terminal of said first battery for which said comparing means has generated said high signal to one terminal of said second battery for which said comparing means has generated said high signal and the remaining terminal of said first battery for which said comparing means has generated said low signal to the remaining terminal of said second battery for which said comparing means has generated said low signal from so that said first battery and said second battery are connected in parallel; and
   two bridge rectifiers for selecting said reference voltage from said voltages of said four terminals so that said reference voltage is higher than the lowest voltage of said four terminals and lower than the highest voltage of said four terminals.

5,189,360
METHOD AND APPARATUS FOR PROVIDING CONTROLLED MECHANICAL BRAKING TORQUE

Rodney E. Schwartz, Tempe, and Steven T. Clauter, Scottsdale, both of Ariz., assignors to Integrated Technology Corporation, Tempe, Ariz.

Filed Mar. 27, 1989, Ser. No. 335,791
Int. Cl.[5] H02P *9/00, 3/00*
U.S. Cl. 322—25 **15 Claims**



1. Electrical apparatus for generating a mechanical braking torque, comprising
   AC alternator means having a stator and a field winding for generating an electrical output as a function of a mechanical input, said stator having highly resistive windings,
   rectifier means for rectifying the output from said AC alternator means to provide a rectified DC output,
   means for coupling said rectified DC output to said field winding whereby substantially all of the current induced in said stator flows back into said field winding so as to generate said mechanical braking torque over the intended range of operation of said alternator means, and
   current regulator means for regulating the amount of current which flows between said stator and said field winding in order to control the amount of said mechanical braking torque.

5,189,361
HIGH VOLTAGE DC POWER GENERATION CIRCUIT POWERED FROM THE ALTERNATOR OF A MOTOR VEHICLE

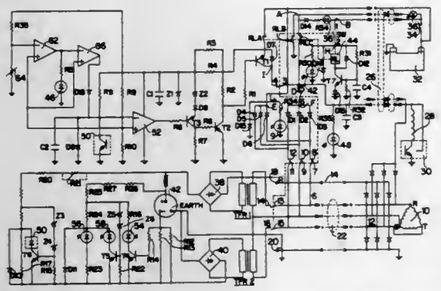
Werner A. Meier, 14 Main Road, Gonuble, East London, Cape Province, South Africa

Filed Jul. 25, 1991, Ser. No. 735,813
Claims priority, application South Africa, Nov. 14, 1990, 90/9130
Int. Cl.[5] H02M *7/00;* **H02P** *9/00*
U.S. Cl. 322—90 **9 Claims**

1. A power generator circuit driven by the output of an alternator, comprising:
   input means for receiving a rectified DC output from the alternator; at least one step-up transformer for receiving an AC output from the alternator and raising its voltage; rectifier means for rectifying the output of the at least one

VOL 1147 ISS 4 FE 23 1993 UMI

step-up transformer; and means for connecting the output of the rectifier means and the rectified DC output from the



alternator in series to provide a relatively high voltage DC output.

5,189,362

HIGH FREQUENCY SIGNAL MEASUREMENT CIRCUITS UTILIZING TEMPERATURE-SENSITIVE DEVICES

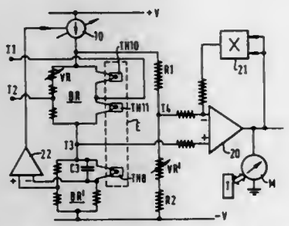
Richard G. V. Doble, 42, Denmark Rd., Ealing W138RG, United Kingdom

Filed Jan. 3, 1991, Ser. No. 637,214

Claims priority, application United Kingdom, Jan. 9, 1990, 9000479; Jan. 19, 1990, 9001223; Feb. 22, 1990, 9004025; Aug. 20, 1990, 9018272

Int. Cl.[5] G01R *21/02*

U.S. Cl. 324—106 **20 Claims**



1. A bridge circuit arrangement for measuring the amplitude of an A.C. signal, comprising first and second temperature-sensitive devices, said first temperature-sensitive device being incorporated in a balanced bridge circuit, power supply means coupled to said first and second temperature-sensitive devices and arranged to energise said balanced bridge circuit at a first balanced pair of terminals thereof, means for applying an A.C. signal to one of said temperature-sensitive devices and means for applying a compensating signal to the other of said temperature-sensitive devices, one of said signals being applied to said first temperature-sensitive device via a second balanced pair of terminals of said balanced bridge circuit and thereby isolated from the other of said signals, and feedback means coupled to said first and second temperature-sensitive devices, said feedback means being arranged to vary the amplitude of said compensating signal in relation to the amplitude of said A.C. signal so as to maintain a predetermined relationship between the amplitudes of said signals.

5,189,363

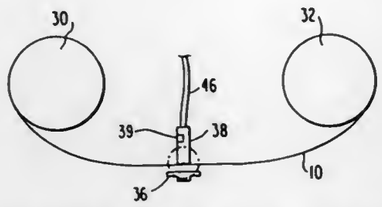
INTEGRATED CIRCUIT TESTING SYSTEM HAVING A CANTILEVERED CONTACT LEAD PROBE PATTERN MOUNTED ON A FLEXIBLE TAPE FOR INTERCONNECTING AN INTEGRATED CIRCUIT TO A TESTER

Mark F. Bregman, Ridgefield, Conn.; Paul R. Hoffman, Santa Clara, Calif.; Peter G. Ledermann, Ossining, N.Y.; Paul A. Moskowitz, Yorktown Heights, N.Y.; Roger A. Pollak, Pleasantville, N.Y.; Timothy C. Reiley, Los Gatos, Calif., and Mark B. Ritter, Brookfield, Conn., assignors to IBM Corporation, Armonk, N.Y.

Filed Sep. 14, 1990, Ser. No. 583,261

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—158 P **38 Claims**



1. An apparatus for testing an electronic device having a plurality of contact locations on a surface thereof, comprising:

a film tape having a dielectric layer, a plurality of conductive beam leads thereon; an aperture in said layer, said beam leads positioned such that they project into said aperture;

means for moving said entire tape essentially in a plane of said tape to position said beam leads for testing said electronic device; and

means for pressing said beam leads into engagement with said contact locations on said electronic device.

5,189,364

CONTACT PROBE

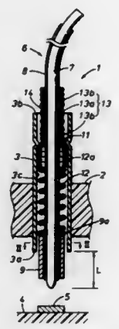
Toshio Kazama, Kanagawa, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

Filed Jul. 30, 1991, Ser. No. 737,763

Claims priority, application Japan, Jul. 30, 1990, 2-201998

Int. Cl.[5] G01R *1/073*

U.S. Cl. 324—158 P **11 Claims**



1. A contact probe comprising:

a tubular receptacle having a front end and a rear end, said tubular receptacle including a first shoulder surface at one end thereof;

a needle member slideably received in said tubular receptacle, said needle member including a second shoulder surface at one end thereof;

a compression coil spring coiled around said needle member, the ends of said coil spring respectively abutting said first and second shoulder surfaces at each end thereof, whereby said needle member is urged out of said front end of said tubular receptacle;

means for limiting an extent of the movement of said needle member out of said front end of said tubular receptacle; and

sleeve means secured to a part of said needle member which is adjacent said rear end of said receptacle, said sleeve means having at least a portion thereof disposed within said receptacle during an entire stroke of said needle member.

5,189,365

METHOD OF LOCATING A FAULT IN A LOGIC IC DEVICE

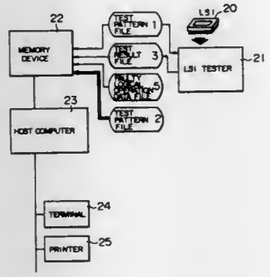
Masaharu Ikeda, Imabari; Takahiro Funabiki, Ome, and Kazuo Kasuga, Fussa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 7, 1991, Ser. No. 772,412

Claims priority, application Japan, Oct. 12, 1990, 2-274179

Int. Cl.[5] G01R *31/28;* **G06F** *11/00*

U.S. Cl. 324—158 R **7 Claims**



1. A method of locating a fault in a logic IC device based on a tri-value logic using a computer, comprising the steps of:

intensionally creating at least one logical fault in logical operation data for said logic IC device for performing a fault simulation to obtain a first logical output;

performing a simulation with fault-free logical operation data to obtain a second logical output;

matching said first and second logical outputs with each other to detect inverted locations at which the logical states of said first and second logical outputs are not coincident; and

comparing faulty pin locations at which faulty logical outputs have been detected in an actually faulty logic IC device with said inverted locations,

wherein it is determined that a true fault has occurred at a location at which said logical fault in said logical data has been created when said inverted locations are coincident with said faulty pin locations.

5,189,366

METHOD AND APPARATUS USING A VARYING ELECTROMAGNETIC FIELD FOR DETERMINING THE NATURE, OR A PROPERTY OF A NON-METALLIC MATERIAL

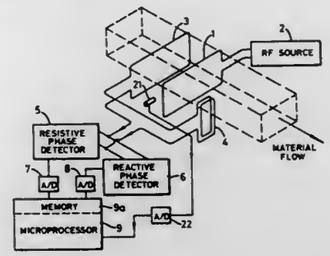
Geoffrey Mayo, Warsash, United Kingdom, assignor to Loma Group Limited, United Kingdom

Filed Dec. 18, 1989, Ser. No. 454,731

Claims priority, application United Kingdom, Dec. 20, 1988, 8829617

Int. Cl.[5] G01N *27/72;* **G01R** *33/12*

U.S. Cl. 324—233 **21 Claims**



1. A method of determining the nature or property of a non-metallic material comprising the steps of:

a) generating a time-varying electromagnetic field in a primary coil,

b) providing a sensing coil in the vicinity of the electromagnetic field,

c) introducing the non-magnetic material into field whereby a signal is developed in the sensing coil, and

d) detecting the signal developed in the sensing coil and using it to determine the nature or property of said material,

the method being characterised by:

e) using a frequency for generating said field which will provide a distinguishable change in the reactive component in the signal induced in the sensing coil due to the presence of said material in said electromagnetic field,

f) obviating any substantial voltage induced in the sensing coil due to said electromagnetic field alone, thereby to improve the sensitivity of the system for detecting said change in the reactive component,

g) determining resistive and reactive components of the signal induced in the sensing coil due to the complex impedance of the material as the material is passed through said field,

h) using said components of the complex impedance to determine the nature or a property of the non-metallic material.

5,189,367

MAGNETORESISTOR USING A SUPERLATTICE OF GAAS AND ALGAAS

Mark Lee, Bridgewater; Stuart A. Solin, Princeton Junction, and Peter A. Wolff, Princeton, all of N.J., assignors to NEC Research Institute, Inc., Princeton, N.J.

Filed Nov. 21, 1991, Ser. No. 796,709

Int. Cl.[5] G01R *33/06*

U.S. Cl. 324—252 **7 Claims**

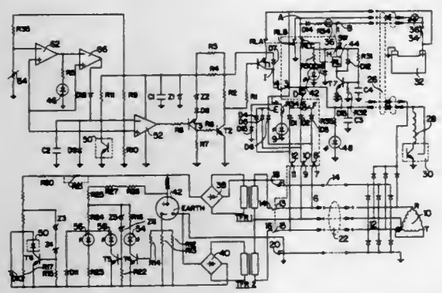
1. Apparatus for determining the strength of a strong magnetic field comprising,

a superlattice consisting of a plurality of lattice matched layers alternately of gallium arsenide essentially undoped and of aluminum gallium arsenide including a dopant, the superlattice including at least twenty pairs of layers,

means including a pair of contact end layers on opposite end surfaces of the superlattice for flowing current vertically through the superlattice, and

VOL 1147 ISS 4 FE 23 1993 UMI

step-up transformer; and means for connecting the output of the rectifier means and the rectified DC output from the



alternator in series to provide a relatively high voltage DC output.

5,189,362

HIGH FREQUENCY SIGNAL MEASUREMENT CIRCUITS UTILIZING TEMPERATURE-SENSITIVE DEVICES

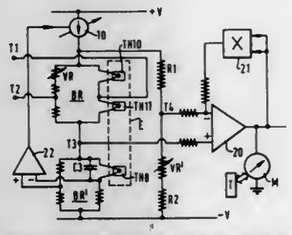
Richard G. V. Doble, 42, Denmark Rd., Ealing W138RG, United Kingdom

Filed Jan. 3, 1991, Ser. No. 637,214

Claims priority, application United Kingdom, Jan. 9, 1990, 9000479; Jan. 19, 1990, 9001223; Feb. 22, 1990, 9004025; Aug. 20, 1990, 9018272

Int. Cl.[5] G01R *21/02*

U.S. Cl. 324—106 **20 Claims**



1. A bridge circuit arrangement for measuring the amplitude of an A.C. signal, comprising first and second temperature-sensitive devices, said first temperature-sensitive device being incorporated in a balanced bridge circuit, power supply means coupled to said first and second temperature-sensitive devices and arranged to energise said balanced bridge circuit at a first balanced pair of terminals thereof, means for applying an A.C. signal to one of said temperature-sensitive devices and means for applying a compensating signal to the other of said temperature-sensitive devices, one of said signals being applied to said first temperature-sensitive device via a second balanced pair of terminals of said balanced bridge circuit and thereby isolated from the other of said signals, and feedback means coupled to said first and second temperature-sensitive devices, said feedback means being arranged to vary the amplitude of said compensating signal in relation to the amplitude of said A.C. signal so as to maintain a predetermined relationship between the amplitudes of said signals.

5,189,363

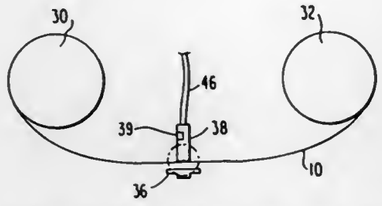
INTEGRATED CIRCUIT TESTING SYSTEM HAVING A CANTILEVERED CONTACT LEAD PROBE PATTERN MOUNTED ON A FLEXIBLE TAPE FOR INTERCONNECTING AN INTEGRATED CIRCUIT TO A TESTER

Mark F. Bregman, Ridgefield, Conn.; Paul R. Hoffman, Santa Clara, Calif.; Peter G. Ledermann, Ossining, N.Y.; Paul A. Moskowitz, Yorktown Heights, N.Y.; Roger A. Poliak, Pleasantville, N.Y.; Timothy C. Reiley, Los Gatos, Calif., and Mark B. Ritter, Brookfield, Conn., assignors to IBM Corporation, Armonk, N.Y.

Filed Sep. 14, 1990, Ser. No. 583,261

Int. Cl.[5] G01R *31/02*

U.S. Cl. 324—158 P **38 Claims**



1. An apparatus for testing an electronic device having a plurality of contact locations on a surface thereof, comprising:

a film tape having a dielectric layer, a plurality of conductive beam leads thereon; an aperture in said layer, said beam leads positioned such that they project into said aperture;

means for moving said entire tape essentially in a plane of said tape to position said beam leads for testing said electronic device; and

means for pressing said beam leads into engagement with said contact locations on said electronic device.

5,189,364

CONTACT PROBE

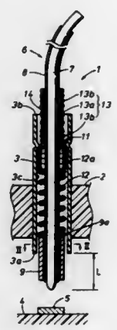
Toshio Kazama, Kanagawa, Japan, assignor to NHK Spring Co., Ltd., Yokohama, Japan

Filed Jul. 30, 1991, Ser. No. 737,763

Claims priority, application Japan, Jul. 30, 1990, 2-201998

Int. Cl.[5] G01R *1/073*

U.S. Cl. 324—158 P **11 Claims**



1. A contact probe comprising:

a tubular receptacle having a front end and a rear end, said tubular receptacle including a first shoulder surface at one end thereof;

a needle member slideably received in said tubular receptacle, said needle member including a second shoulder surface at one end thereof;

a compression coil spring coiled around said needle member, the ends of said coil spring respectively abutting said first and second shoulder surfaces at each end thereof, whereby said needle member is urged out of said front end of said tubular receptacle;

means for limiting an extent of the movement of said needle member out of said front end of said tubular receptacle; and

sleeve means secured to a part of said needle member which is adjacent said rear end of said receptacle, said sleeve means having at least a portion thereof disposed within said receptacle during an entire stroke of said needle member.

5,189,365

METHOD OF LOCATING A FAULT IN A LOGIC IC DEVICE

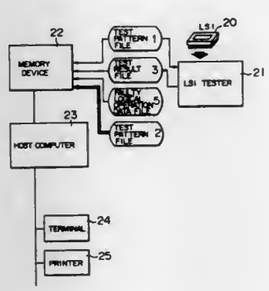
Masaharu Ikeda, Imabari; Takahiro Funabiki, Ome, and Kazuo Kasuga, Fussa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 7, 1991, Ser. No. 772,412

Claims priority, application Japan, Oct. 12, 1990, 2-274179

Int. Cl.[5] G01R *31/28;* **G06F** *11/00*

U.S. Cl. 324—158 R **7 Claims**



1. A method of locating a fault in a logic IC device based on a tri-value logic using a computer, comprising the steps of:

intensionally creating at least one logical fault in logical operation data for said logic IC device for performing a fault simulation to obtain a first logical output;

performing a simulation with fault-free logical operation data to obtain a second logical output;

matching said first and second logical outputs with each other to detect inverted locations at which the logical states of said first and second logical outputs are not coincident; and

comparing faulty pin locations at which faulty logical outputs have been detected in an actually faulty logic IC device with said inverted locations,

wherein it is determined that a true fault has occurred at a location at which said logical fault in said logical data has been created when said inverted locations are coincident with said faulty pin locations.

5,189,366

METHOD AND APPARATUS USING A VARYING ELECTROMAGNETIC FIELD FOR DETERMINING THE NATURE, OR A PROPERTY OF A NON-METALLIC MATERIAL

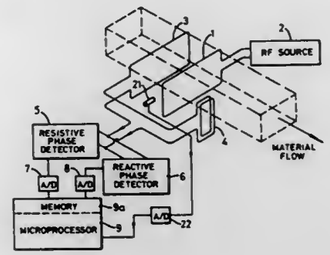
Geoffrey Mayo, Warsash, United Kingdom, assignor to Loma Group Limited, United Kingdom

Filed Dec. 18, 1989, Ser. No. 454,731

Claims priority, application United Kingdom, Dec. 20, 1988, 8829617

Int. Cl.[5] G01N *27/72;* **G01R** *33/12*

U.S. Cl. 324—233 **21 Claims**



1. A method of determining the nature or property of a non-metallic material comprising the steps of:

a) generating a time-varying electromagnetic field in a primary coil,

b) providing a sensing coil in the vicinity of the electromagnetic field,

c) introducing the non-magnetic material into field whereby a signal is developed in the sensing coil, and

d) detecting the signal developed in the sensing coil and using it to determine the nature or property of said material,

the method being characterised by:

e) using a frequency for generating said field which will provide a distinguishable change in the reactive component in the signal induced in the sensing coil due to the presence of said material in said electromagnetic field,

f) obviating any substantial voltage induced in the sensing coil due to said electromagnetic field alone, thereby to improve the sensitivity of the system for detecting said change in the reactive component,

g) determining resistive and reactive components of the signal induced in the sensing coil due to the complex impedance of the material as the material is passed through said field,

h) using said components of the complex impedance to determine the nature or a property of the non-metallic material.

5,189,367

MAGNETORESISTOR USING A SUPERLATTICE OF GAAS AND ALGAAS

Mark Lee, Bridgewater; Stuart A. Solin, Princeton Junction, and Peter A. Wolff, Princeton, all of N.J., assignors to NEC Research Institute, Inc., Princeton, N.J.

Filed Nov. 21, 1991, Ser. No. 796,709

Int. Cl.[5] G01R *33/06*

U.S. Cl. 324—252 **7 Claims**

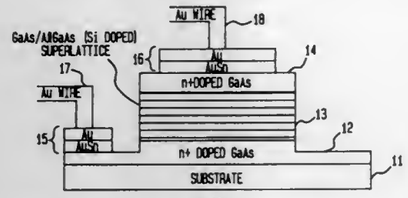
1. Apparatus for determining the strength of a strong magnetic field comprising,

a superlattice consisting of a plurality of lattice matched layers alternately of gallium arsenide essentially undoped and of aluminum gallium arsenide including a dopant, the superlattice including at least twenty pairs of layers,

means including a pair of contact end layers on opposite end surfaces of the superlattice for flowing current vertically through the superlattice, and

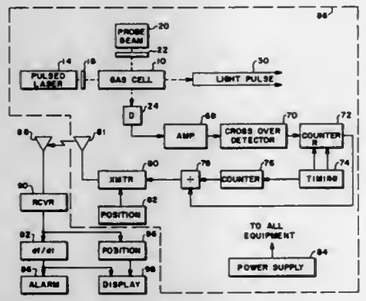
VOL 1147 ISS 4 FE 23 1993 UMI

means connected between the pair of contact layers for measuring the resistance of the superlattice between the pair of contact layers as the magnetic field to be measured



is passed through the superlattice parallel to the current flow, the value of the resistance serving as a measure of the magnetic field.

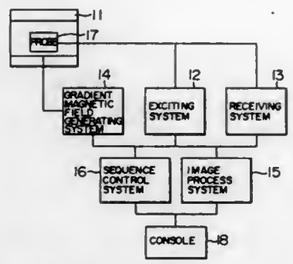
5,189,368
MAGNETOMETER
Walter E. Chase, Dover, N.H., assignor to Lockheed Sanders, Inc., Nashua, N.H.
Filed Sep. 24, 1976, Ser. No. 726,367
Int. Cl.[5] G01V *3/00*
U.S. Cl. 324—304 **32 Claims**



1. A magnetometer comprising,
a cell of gas having unpaired electrons,
means for transmitting a non-continuous pulse of energy through the cell at a frequency corresponding to a transition of the gas, and,
means for obtaining the frequency of the resulting unreinforced free precession of the aligned angular moments of the atoms of the gas about the local magnetic field at said gas cell after the passage of said pulse through said cell, said frequency being proportional to the local magnetic field at said gas cell.

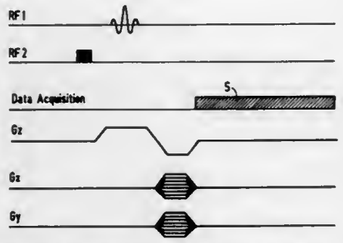
5,189,369
NMR IMAGING METHOD OF LOW FLOW RATE FLUID
Atsushi Takane; Hideaki Koizumi, both of Katsuta, and Koichi Sano, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 18, 1991, Ser. No. 671,091
Claims priority, application Japan, Mar. 19, 1990, 2-67135
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—306 **9 Claims**

1. An NMR imaging method for a low flow rate fluid comprising the steps of:
(a) exciting spins in a fluid of a fluid portion of an object having fluid flow therein by applying a plurality of RF pulses to the object, each of the plurality of RF pulses being applied at intervals shorter than a relaxation time of an excited spin in order to cause a steady-state free precession in which a free induction decay (FID) signal occurring immediately after an application of one of said plurality of RF pulses and a time-reversed FID signal occurring immediately preceding application of the next one of said plurality of RF pulses are generated;



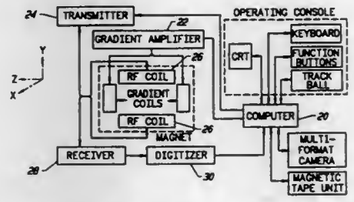
(b) applying a gradient magnetic field to the fluid portion along a direction of fluid flow for controlling a phase rotation of spins in said excited fluid;
(c) measuring said time-reversed FID signal; and
(d) constructing an image of said fluid by projecting three-dimensional data obtained from said measured time-reversed FID signal.

5,189,370
CHEMICAL SHIFT IMAGING
Heinrich Kolem, Effeltrich, and Rolf Sauter, Fuerth, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany
Filed Aug. 16, 1991, Ser. No. 746,451
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **5 Claims**



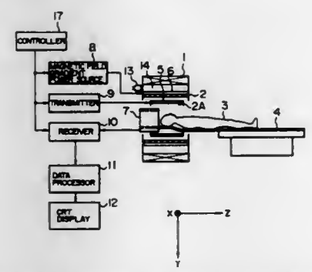
1. A method for chemical shift imaging of atoms other than hydrogen of an examination subject positioned in a static magnetic field comprising the following steps performed in order:
applying a first radio frequency pulse at the resonance frequency of hydrogen;
applying a second radio frequency pulse at the resonance frequency of the atoms to be subjected to nuclear magnetic resonance;
applying at least one phase encoding gradient;
reading out the FID-signal caused by the second radio frequency pulse;
repeating said applying and reading steps for a repetition time and for a flip angle of the first radio frequency pulse that will cause an Overhauser Effect enhancement of the resonance line of the atoms subjected to nuclear magnetic resonance to be achieved while changing the phase encoding gradient from each step to the next step.

5,189,371
METHOD AND MEANS FOR MAGNETIC RESONANCE IMAGING AND SPECTROSCOPY USING TWO-DIMENSIONAL SELECTIVE ADIABATIC PI PULSES
Steven M. Conolly, and John M. Pauly, both of Menlo Park, Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.
Filed Aug. 8, 1991, Ser. No. 742,785
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—309 **13 Claims**



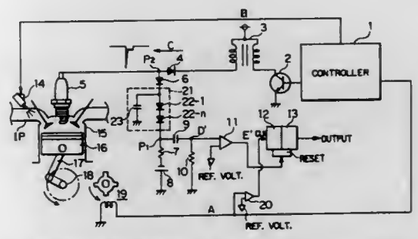
1. A method of inverting a region in the plane of an object using selective adiabatic nuclear magnetic resonance RF pulses comprising the steps of
a) placing said object in a static magnetic field,
b) applying a sequence of one dimensional selective sub-pulses, said sub-pulses rotating spins with nearly identical rotation profiles, each sub-pulse having a rotation angle determined by sampling of one of said adiabatic nuclear magnetic resonance RF pulses, and
c) concurrently with step (b) applying a time varying magnetic gradient along said one axis (x) and consistent with each of said RF sub-pulses.

5,189,372
SILENCER FOR MAGNETIC FIELD GRADIENT COILS IN A MAGNETIC RESONANCE IMAGING APPARATUS
Yoshiki Igarashi, and Goh Miyajima, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Jul. 15, 1991, Ser. No. 730,095
Claims priority, application Japan, Jul. 16, 1990, 2-187699
Int. Cl.[5] G01R *33/20*
U.S. Cl. 324—318 **5 Claims**



1. A silencer for a plurality of magnetic field gradient coils in a magnetic resonance imaging apparatus, comprising:
a magnet for generating a stationary magnetic field;
said plurality of inclined magnetic field gradient coils disposed within said magnet for generating in the stationary magnetic field gradients to impart positional information to a magnetic resonance signal;
a bobbin for holding said plurality of magnetic field gradient coils;
a high frequency coil for transmitting a high frequency magnetic field to an object undergoing examination disposed within said bobbin;
a receiving coil for receiving a nuclear magnetic resonance signal occurring in the object;
a data processor for processing the nuclear magnetic resonance signal received by said receiving coil to reconstruct an image; and
a silencer provided between an internal space between said magnet and said bobbin and a space outside said magnet for reducing the diffusion of noise occurring due to an electric current flowing through said plurality of magnetic field gradient coils to the external space through the internal space.

5,189,373
IGNITION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE WITH ENGINE CYLINDER MISFIRING DETECTOR HAVING AN IONIZATION CURRENT NOISE FILTER
Shigemi Murata, and Masayuki Ikeuchi, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 1, 1991, Ser. No. 769,313
Claims priority, application Japan, Oct. 4, 1990, 2-265118
Int. Cl.[5] F02P *17/00*
U.S. Cl. 324—399 **4 Claims**



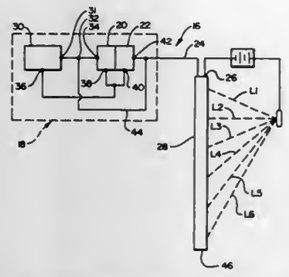
1. An ignition apparatus for an internal combustion engine having an ignition coil and a spark plug with electrodes, said apparatus comprising:
a) a controller for controlling the ignition coil to generate a high voltage firing signal for the spark plug, mounted in a cylinder of the engine, in synchronism with the rotation thereof; and
b) means for detecting a misfiring of said engine cylinder; said misfiring detecting means comprising:
c) an ionization current detector (7-13) for detecting an ionization current generated between the electrodes of said spark plug upon combustion of an air/fuel mixture in the cylinder; and
d) means for preventing a false detection due to a noise signal resulting from the high voltage firing signal, said preventing means comprising:
e) a filter (21) connected to an input side of said ionization current detector for filtering noise contained in the ionization current, the noise being induced by said ignition coil upon the firing of said spark plug.

5,189,374
METHOD FOR PULSE PROPAGATION ANALYSIS OF A WELL CASING OR THE LIKE BY TRANSMITTED PULSE INTERACTION
Gale D. Burnett, 9191 Northwood Rd., Lynden, Wash. 98264
Filed Oct. 25, 1991, Ser. No. 782,559
Int. Cl.[5] G01R *31/11, 31/12*
U.S. Cl. 324—534 **12 Claims**

1. A method of detecting an anomaly along a member having a lengthwise axis, said method comprising:
a. sending a first electrical pulse from a first location on said axis toward a second location on said axis, with said pulse

being reflected as a reflected pulse from said second location toward said first location;

b. sending a second pulse, synchronized with said first pulse, along said axis in a direction toward said second location and toward said reflected pulse so as to cause said second pulse and said reflected pulse to intersect at an intersecting location;



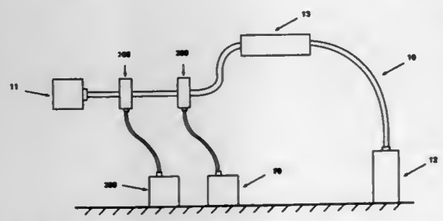
c. detecting and analyzing at least one of said reflected pulse and said second pulse after passing through said intersecting location to ascertain modifications of one of said reflected pulse and said second pulse wherein said anomaly is detected in response to said ascertained modifications.

5,189,375

INDUCTIVE CABLE RESISTANCE TESTER

John E. B. Tuttle, Falls Church, Va., assignor to United States of America as represented by the Secretary of The Army, Washington, D.C.

Filed Jun. 4, 1991, Ser. No. 710,200
Int. Cl.[5] G01R *27/14*
U.S. Cl. 324—537 **2 Claims**



2. An apparatus for measuring resistance in a circuit without disconnecting said circuit comprising:

means for inductively inducing a repetitive current pulse in a circuit under test;

means for inductively sampling said repetitive current pulse induced in said circuit under test, wherein said means for inductively inducing and said means for inductively sampling are axially spaced on said circuit under test,

means for displaying a voltage waveform proportional to said repetitive current pulse induced in said circuit under test,

means for calibration of said means for displaying a voltage waveform,

means for inserting a reference resistance into said circuit under test,

means for producing a reference voltage waveform, wherein said means for displaying a voltage waveform proportional to said repetitive current pulse induced in said circuit under test includes means for displaying a trapezoidal voltage waveform and also includes means for displaying droop of said trapezoidal voltage waveform and wherein said means for displaying a voltage waveform comprises a means for measuring said resistance in said circuit under test in which the following equations apply:

$$R_x = R_c D_1/(D_2 - D_1)$$

$$D_1 = (V_1 - V_2)/V_1 = R_x T/L$$

$$D_2 = (V_1 - V_3)/V_1 = (R_x + R_c)T/L$$

where:

R_x = unknown resistance in said circuit under test

R_c = known value of said reference resistance inserted into said circuit under test

D_1 = droop of said trapezoidal voltage waveform of said circuit under test

D_2 = droop of said reference voltage waveform of said circuit under test with said reference resistance inserted

T = duration of said trapezoidal voltage waveform from V_1 to V_2

L = equivalent inductance in Henries of said circuit under test, and

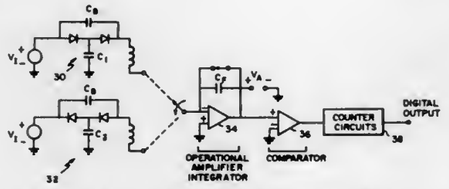
V_3 = voltage at the end of said reference voltage waveform where droop is measured when said reference resistance is inserted into said circuit under test.

5,189,376

METHOD FOR THE MEASURMENT OF CAPACITANCE, WITH APPLICATION TO LINEAR MEASUREMENT OF DISTANCE

James K. Roberge, Lexington, and Martha L. Gray, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 17, 1990, Ser. No. 629,725
Int. Cl.[5] G01R *27/26*
U.S. Cl. 324—662 **16 Claims**



1. Apparatus for measuring capacitance, comprising:

a first circuit that produces a current, the average amplitude of which is proportional to the capacitance to be measured, said first circuit comprising a capacitive pump circuit,

a second circuit that integrates the output current of the first circuit between first and second reference levels, and that supplies a representation of the time required for the integration,

said second circuit including a correction circuit for correcting nonlinearities, said correction circuit providing a power series correction.

5,189,377

METHOD AND APPARATUS FOR CO-ORDINATE MEASURING USING A CAPACITANCE PROBE

Lawrence J. Rhoades, Pittsburgh; Ralph L. Resnick, Slickville, and John R. Rose, Pittsburgh, all of Pa., assignors to Extrude Hone Corporation, Irwin, Pa.

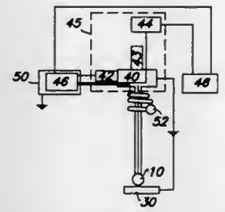
Filed Sep. 4, 1990, Ser. No. 577,021
Int. Cl.[5] G01R *29/12, 27/26*
U.S. Cl. 324—662 **19 Claims**

1. A method for measuring surface characteristics which comprise dimensions and contour of a conductive workpiece

utilizing a non-contacting, conductive probe sensor, the steps comprising;

a) applying a voltage across said workpiece and said sensor,

b) causing a relative motion between said sensor and said workpiece so that said sensor defines a path of travel with reference to said workpiece by which said sensor is moved generally parallel to a first workpiece surface at a velocity dependent upon the measured capacitance so that said velocity is increased when the capacitance indicates that the sensor is in no danger of impacting with or moving



past the workpiece, and said velocity is reduced in proportion to capacitance changes indicating that the sensor is approaching a second workpiece surface intersecting with said first workpiece surface,

c) measuring and recording said path of travel,

d) measuring and recording the capacitance between said sensor and said workpiece relative to said path of travel,

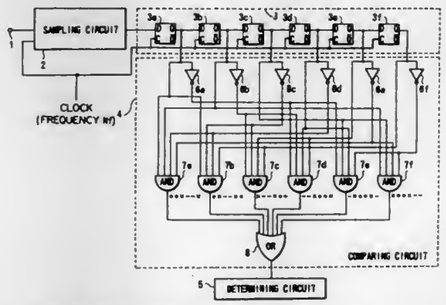
e) determining the surface parameters of the workpiece as a function of the said recorded path of travel and the corresponding recorded capacitance.

5,189,378

TONE SIGNAL DETECTING CIRCUIT

Masanobu Arai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 6, 1991, Ser. No. 756,067
Claims priority, application Japan, Sep. 12, 1990, 2-239951; Sep. 13, 1990, 2-241274
Int. Cl.[5] H03K *9/06, 5/22*
U.S. Cl. 328—138 **9 Claims**



1. A tone signal detecting circuit comprising:

a sampling circuit for sampling a polarity of a tone signal at a sampling rate N times (N is a natural number) higher than a frequency f of the tone signal and outputting sampling polarities as time series data;

a storage circuit for storing M (M is a natural number) latest values of polarity patterns of said time series data which are output from said sampling circuit;

a comparing circuit for comparing a plurality of polarity patterns expected to appear upon input of the tone signal with polarity patterns stored in said storage circuit and outputting coincidence outputs; and

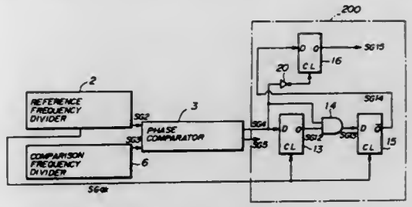
a determining circuit for detecting a tone signal by determining whether an output from said comparing circuit continues for not less than a predetermined period of time.

5,189,379

PULSE WIDTH DETECTING CIRCUIT AND PLL SYNTHESIZER CIRCUIT USING THE SAME

Shinji Saito, Tajimi, and Akira Kobayashi, Kasugai, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 614,639, Nov. 16, 1990, abandoned. This application Jul. 23, 1992, Ser. No. 918,124
Claims priority, application Japan, Nov. 16, 1989, 1-300283
Int. Cl.[5] H03K *5/26;* H03L *7/06, 7/18*
U.S. Cl. 331—1 A **17 Claims**



11. A PLL synthesizer circuit comprising:

reference frequency generating means for generating a reference frequency signal and a reference clock signal;

phase comparing means for comparing a phase of said reference frequency signal with an output signal and for outputting a phase difference signal having a pulse form;

voltage-controlled oscillation means, coupled to said phase comparing means, for generating said output signal having a frequency dependent on said phase difference signal; and

phase lock detecting means, coupled to said phase comparing means, for determining whether or not said phase difference signal has a pulse width in which said reference clock signal successively changes n times (n is a numeral equal to or greater than 2) and for outputting a phase lock detection signal representing that said PLL synthesizer circuit is in a phase-locked state when it is determined that said reference clock signal does not successively change n times in said pulse width of said phase difference signal, said phase lock detection signal has a first level obtained when it is determined that said reference clock signal does not successively change n times in said pulse width of said phase difference signal, and a second level obtained when it is determined that said reference clock signal successively changes n times in said pulse width, said first level indicating that said PLL synthesizer circuit is in the phase-locked state, and said second level indicating that said PLL synthesizer circuit is in a phase-unlocked state.

12. A pulse width detecting circuit comprising:

an input terminal; and

pulse width detecting means for repeatedly determining whether or not a pulse signal applied to said input terminal changes during a time when a reference clock signal successively changes n times (n is a numeral equal to or greater than 2) and for generating a pulse width detection signal indicating a change in a period of said pulse signal applied to said input terminal on the basis of whether or not the reference clock signal successively changes n times, said pulse width detecting means including:

decision means for determining whether or not said pulse width detection signal is successively generated a predetermined number of times in synchronism with a change of said pulse signal and for outputting a finalized pulse width detection signal indicating that said pulse signal definitely has a predetermined pulse width when it is determined said pulse width detection signal is successively generated said predetermined number of times.

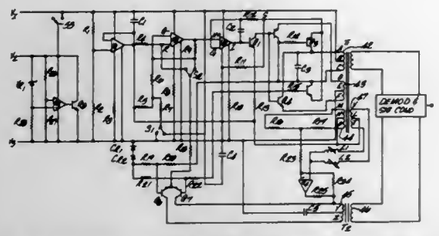
VOL 1147 ISS 4 FEB 23 1993 UMI

5,189,380

INTEGRATED CIRCUIT FOR TRANSDUCERS

John R. Tavis, Mariposa, Calif., assignor to Tavis Corporation, Mariposa, Calif.

Filed Apr. 13, 1992, Ser. No. 867,598
Int. Cl.[5] H03L *5/00*
U.S. Cl. 331—109 **17 Claims**



1. An integrated circuit for VR transducers comprising:
a low power consumption amplitude stabilized oscillator circuit having
a sine wave oscillator having a first transistor pair with emitter and collector electrodes connected in push-pull arrangement, with the emitter electrodes connected across a secondary winding of a transformer and with the collector electrodes connected across a primary winding of the transformer, and further having a capacitive element connected across the primary winding, the oscillator producing a sinusoidal output signal,
a first synchronous full wave phase sensitive demodulator means connected to the oscillator for receiving sinusoidal signals representative of the amplitude of the output and producing a full wave DC rectified signal,
a high frequency filter means connected to the first demodulator means for smoothing the rectified signal to provide a control voltage,
an amplifier means connected to the filter means for comparing the control voltage to a reference voltage and producing a control signal output to the oscillator;
a linearity circuit having
a reference signal source connected across a secondary winding of the first transformer and producing a reference voltage,
a sensor means having a variable transducer pair connected across a secondary winding of the first transformer and producing an output signal,
an amplifier means connected to the sensor means for comparing the output signal and a reference voltage and producing an amplified signal;
a second synchronous full wave phase sensitive demodulator means for producing a full wave DC rectified signal proportional to the amplified signal;
a reference voltage means; and
a level shifter means having
an amplifier means connected to the second demodulator means for comparing the rectified signal to the DC reference voltage and producing a modifying control signal output to the oscillator circuit.

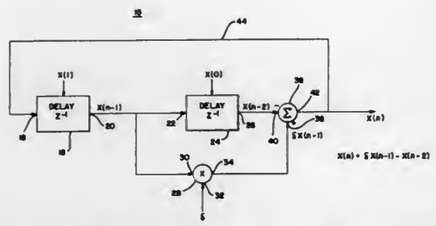
5,189,381

APPARATUS FOR GENERATING A SINUSOIDAL OUTPUT SIGNAL

Safdar M. Asghar, and Alfredo R. Linz, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 31, 1991, Ser. No. 785,497
Int. Cl.[5] H03B *1/00*
U.S. Cl. 331—179 **9 Claims**

1. An apparatus for generating an output signal in response to an input signal having a variable input level, said output signal having an output frequency, variations in said output frequency being representative of variations in said input level; the apparatus comprising:
a processing means for implementing a digital signal processing algorithm for generating a plurality of control signals in response to said input signal, said plurality of control signals being representative of said variable input level; and
an oscillator means for recursively generating said output signal in response to said plurality of control signals; said output signal being successively sampled during a plurality of sampling intervals, said output signal during a respective sampling interval of said plurality of sampling intervals being algorithmically related to at least one earlier said sample of said output signal and to at least one said control signal of said plurality of control signals;



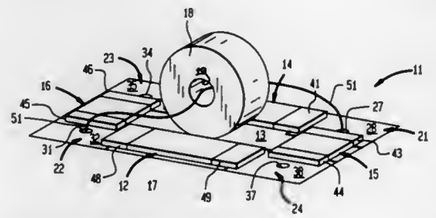
said plurality of control signals including a first control signal, a second control signal, and at least one intermediate control signal, said oscillator means responding to said first control signal to generate said output signal at a first frequency, said oscillator means responding to said second control signal to generate said output signal at a second frequency, said oscillator means responding to said at least one intermediate control signal to generate said output signal at at least one intermediate frequency intermediate said first frequency and said second frequency, each respective intermediate control signal of said at least one intermediate control signal being associated with a respective intermediate frequency.

5,189,382

ELECTRICAL FILTER WITH ORTHOGONALLY CONDUCTING CAPACITORS

George M. Kauffman, 14 Abigale Dr., Hudson, Mass. 01749

Filed Dec. 23, 1991, Ser. No. 812,335
Int. Cl.[5] H03H *7/01*
U.S. Cl. 333—169 **18 Claims**



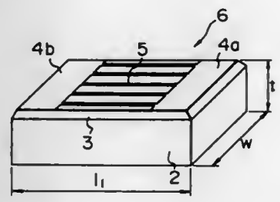
1. An electrical filter comprising:
input electrode means;
output electrode means;
ground electrode means;
a first input capacitor connected between said input electrode means and said ground electrode means, said first input capacitor having conductive ends separated in a first substantially rectilinear direction and joined by a dielectric portion such that current through said dielectric portion flows in said first rectilinear direction;
a second input capacitor connected in shunt with said first input capacitor between said input electrode means and said ground electrode means, said second input capacitor having conductive ends separated in a second substantially rectilinear direction substantially orthogonal to said first rectilinear direction and joined by a second dielectric portion such that current through said second dielectric portion flows in said second rectilinear direction;
a first output capacitor connected between said output electrode means and said ground electrode means;
a second output capacitor connected in shunt with said first output capacitor between said output electrode means and said ground electrode means; and
an inductive means coupled between said input electrode means and said output electrode means.

5,189,383

CIRCUIT ELEMENT UTILIZING MAGNETOSTATIC WAVE

Yasuhide Murakami, Kumagaya, and Kohei Ito, Fukaya, both of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed Sep. 4, 1991, Ser. No. 754,521
Claims priority, application Japan, Sep. 5, 1990, 2-234976
Int. Cl.[5] H03H *7/34;* H01P *7/00*
U.S. Cl. 333—201 **5 Claims**



1. A circuit utilizing a magnetostatic wave, comprising:
means for exciting a magnetostatic wave; and
a member having end faces and being operatively connected to said exciting means for propagating the magnetostatic wave, at least one of said end faces of the member being a rough surface, wherein said at least one rough end face has a roughness corresponding to that produced by lapping with an abrasive having grain size greater than or equal to about 15 μm.

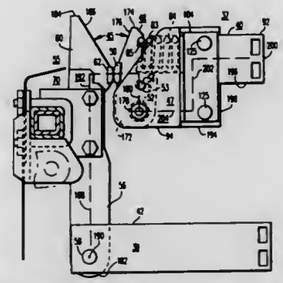
5,189,384

CIRCUIT BREAKER HAVING IMPROVED CONTACT STRUCTURE

Stanislaw A. Milianowicz, Monroeville; Russell W. Long, Pleasant Hills, and Alexander V. Donatelli, Wilkinsburg, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 6, 1991, Ser. No. 788,692
Int. Cl.[5] H01H *75/00*
U.S. Cl. 335—16 **11 Claims**

1. A power circuit breaker having movable and relatively stationary contact assemblies, said movable contact assembly being operable between closed and open positions relative to the stationary contact assembly, said movable and relatively stationary contact assemblies respectively having first and second conductive members having predetermined length dimensions, a main contact tip on each of the first and second conductive members, and means pivotally mounting the first and second conductive members, characterized by:
said means which pivotally mounts the second conductive member including a pivot axis which is spaced from the associated main contact tip,
said first and second conductive members being disposed in spaced, substantially parallel relation when the movable contact assembly is in the closed position, to provide a first current loop having first and second legs defined by said first and second conductive members which direct current through the first and second legs in opposite directions,
said means which pivotally mounts the second conductive member directing current flow in a path which provides a component of current which is spaced from and substantially parallel to the second leg of the first current loop, to provide a second current loop defined by the second leg of the first loop and a third leg formed by said current component, with current flow through the second and third legs being in opposite directions,
whereby magnetic forces in the first current loop which tend to force the second leg towards the third leg, are opposed by magnetic forces in the second current loop which tend to force the second leg towards the first leg,



said means which pivotally mounts the second conductive member including a fixed bearing member having first and second ends, with the second conductive member being mounted on said fixed bearing member with a snug but rotatable fit to define a first joint,
first and second pole stud members,
and means clamping the first and second ends of the fixed bearing member between said first and second pole stud members, to provide second and third joints, whereby a first current path includes the second conductive member, the first joint, the fixed bearing member, the second joint, and the first pole stud member, and a second current path includes the second conductive member, the first joint, the fixed bearing member, the third joint, and the second pole stud member.

5,189,385

INTERLOCK FOR ELECTROMAGNETIC SWITCHING DEVICES

Günter Gnahn, Sulzbach-Rosenberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

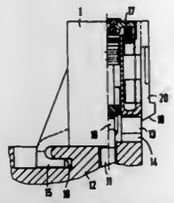
Filed Apr. 16, 1991, Ser. No. 686,046
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1990, 9004431[U]
Int. Cl.[5] H01H *67/02*
U.S. Cl. 335—132 **8 Claims**

1. A device comprising:
a) a first switching device, said first switching device
i) having a first moving part;
b) a second switching device, said second switching device
i) having a second moving part, and
ii) being arranged side by side with said first switching device; and
c) means for mechanically locking out said first switching device when said second switching device is in a closed position, said means for mechanically locking out including
i) a first locking element, said first locking element having

VOL 1147 ISS 4 FE 23 1993 UMI

a first coupling part, said coupling part of said first locking element being adapted to couple with said moving part of said first switching device, and

ii) a second locking element, said second locking element having a second coupling part, said coupling part of said



second locking element being adapted to couple with said moving part of said second switching device,

wherein said first and second moving parts of said first and second switching devices are capable of further serving as coupling members for auxiliary switches that may be set onto the first and second switching devices, respectively.

5,189,386

ALUMINUM-STABILIZED SUPERCONDUCTOR AND SUPERCONDUCTING COIL, AND METHOD OF MANUFACTURING THE SUPERCONDUCTOR

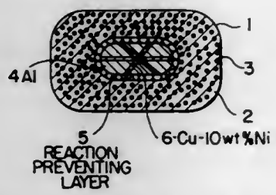
Naofumi Tada; Fumio Iida; Ryukichi Takahashi, all of Hitachi; Naoki Maki, Ibaraki; Shuji Sakai, Tsuchiura, and Yoshiji Hotta, Hitachi, all of Japan, assignors to Hitachi, Ltd. and Hitachi Cable Ltd., both of Tokyo, Japan

Continuation of Ser. No. 555,027, Jul. 20, 1990, abandoned. This application Aug. 28, 1991, Ser. No. 754,230

Claims priority, application Japan, Jul. 21, 1989, 1-187362; Sep. 30, 1989, 1-255436

Int. Cl.[5] H01F *7/22*

U.S. Cl. 335—216 **32 Claims**



1. A superconductor wire, having a cross section, which has an aluminum area at the center of the cross section, and a copper composite conductor area, having a copper matrix and multifilamentary NbTi embedded in the copper matrix, at the peripheral part of the cross section, around the aluminum area, wherein the cross-sectional area ratio of (Cu+Al)/NbTi is in the range of 0.5 to 3.0 and the cross-sectional area ratio of Al/Cu is in the range of 0.05 to 0.5.

5,189,387

SURFACE MOUNT DEVICE WITH FOLDBACK SWITCHING OVERVOLTAGE PROTECTION FEATURE

Richard K. Childers, Foster City, and John H. Bunch, Menlo Park, both of Calif., assignors to Electromer Corporation, Palo Alto, Calif.

Filed Jul. 11, 1991, Ser. No. 728,605

Int. Cl.[5] H01C *7/10*

U.S. Cl. 338—20 **7 Claims**

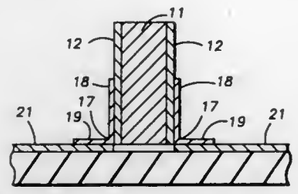
1. A transient overvoltage protection surface mount device for mounting between spaced flat conductors carried by an insulating substrate for protecting against electrical overvoltage transients between said conductors comprising:

spaced apart conductive sheets;

associated spaced conductors associated with said spaced apart conductive sheets;

a foldback switching material disposed between said pair of spaced conductive sheets serving to link said pair of conductive sheets by a foldback switching mechanism when the voltage between said conductive plates exceeds a predetermined voltage;

means for connecting each of said sheets to an associated space conductor; and



wherein said foldback switching material is a matrix formed of only homogeneously distributed, conductive particles, said particles having a particle size in the range of between greater than 10 microns to two hundred microns and having a spacing between said particles in the range of at least of 1000 angstroms to provide said foldback switching mechanism therebetween; and a binder selected to provide a foldback media and predetermined resistance between said conductive particles.

5,189,388

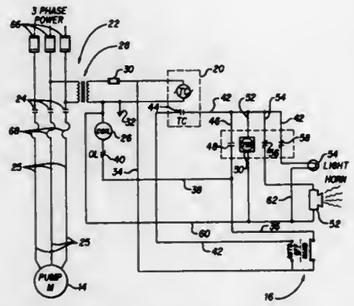
OIL WELL PUMP START-UP ALARM

Judy A. Mosley, Rte. 1, Box 109, Ratliff City, Okla. 73081, and Othal Ballard, 30 S Frances St., Healdton, Okla. 73438

Filed Mar. 4, 1991, Ser. No. 663,617

Int. Cl.[5] G08B *1/00*

U.S. Cl. 340—309.15 **8 Claims**



1. An oil well pump start-up alarm comprising:

an oil well pumping unit;

control means for controlling the operation of said oil well pumping unit, said control means including an ON-OFF-Auto switch means in a motor control circuit means, a step-down transformer means for transferring power from main power lines to said motor control circuit means when said switch means is in one of ON and AUTO positions, and a time clock means for controlling an ON-OFF time sequence of said motor control circuit means when said switch means is in the AUTO position; and

start-up alarm means connected to said motor control circuit means operable to provide an alarm prior to start-up of said oil well pumping unit; whereby

people in the vicinity of the oil well pumping unit will be warned of imminent start-up of the oil well pumping unit.

5,189,389

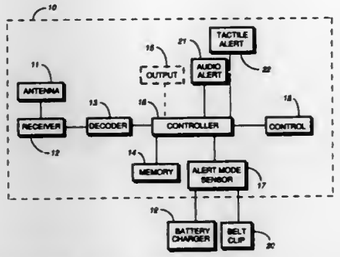
ELECTRONIC DEVICE HAVING POSITION SELECTABLE ALERT MODES

Joan S. DeLuca, and Michael J. DeLuca, both of Boca Raton, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 23, 1990, Ser. No. 513,533

Int. Cl.[5] H04Q *1/30*

U.S. Cl. 340—311.1 **16 Claims**



1. An electronic device comprising:

sensor means for determining when the electronic device is being worn by a user and when the electronic device is not being worn by said user;

first alerting means for providing a first alert;

second alerting means for providing a second alert; and

alert selection means, coupled to the sensor means, for alternatively activating the first alerting means when the electronic device is being worn by said user and the second alerting means when the electronic device is not being worn by said user.

5,189,390

METHOD FOR STIMULATING THE FINGER OF AN OPERATOR ACTING ON A STATIC KEYBOARD AND A DEVICE FOR IMPLEMENTING THIS METHOD

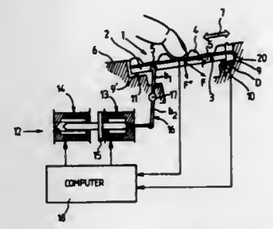
Pierre Fagard, Montigny le Bretonneux, France, assignor to Sextant Avionique, France

Filed Sep. 21, 1990, Ser. No. 586,645

Claims priority, application France, Sep. 22, 1989, 89 12455

Int. Cl.[5] H03K *17/94*

U.S. Cl. 340—407 **10 Claims**



1. A stimulation method for generating a given tactile effect on a finger of a user which exerts a force in an actuation direction on a static keyboard including a plurality of static keys, said method consisting in making said keyboard mobile in a determined direction and in causing an assisted movement of the keyboard in said determined direction while said force is exerted, which method further comprises the following steps:

detecting a magnitude representative of a component of said force in said actuation direction,

comparing said magnitude with a threshold value,

holding immobile said keyboard when said magnitude is lower than said threshold value,

controlling said assisted movement over a preestablished distance, when said magnitude exceeds said threshold value.

5,189,391

METHOD FOR THE SURVEILLANCE OF A BRAKE DEVICE IN REGARD TO OVERLOAD

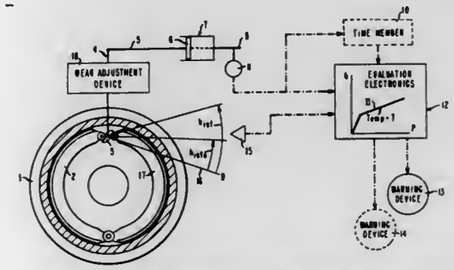
Joachim Feldmann, Neustadt; Erwin Petersen, Wunstorf, and Manfred Schult, Garbsen, all of Fed. Rep. of Germany, assignors to WABCO Westinghouse Fahrzugbremsen GmbH, Hanover, Fed. Rep. of Germany

Filed Sep. 12, 1990, Ser. No. 581,527

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1989, 3930571

Int. Cl.[5] G01M *19/00*

U.S. Cl. 340—453 **15 Claims**



1. A method for the surveillance of a brake device relating to overload, where the brake device includes a wear readjustment device, is actuatable by a pressure p, and where the brake device reaches a load limit in a brake actuation, when a selected device component, which is deformed in a brake application, is warmed to a permissible temperature T, wherein

(a) in a preliminary step the selected device component is warmed to said permissible temperature T,

(b) in said preliminary step a characterizing curve of a value h measured versus pressure, is determined for the selected device component warmed to said temperature T, wherein the value h represents the deformation of the device component, said characterizing curve being designated as deformation characterizing curve $h=f_{(p,T)}$,

(c) in a brake actuation, the value h_{ist}, representing a deformation occurring of the selected device component of the value h, and the existing pressure p_{ist} are measured.

(d) a warning signal is furnished if a point defined by the value h_{ist} and the pressure p_{ist} reaches the deformation characterizing curve $h=f_{(p,T)}$ or exceeds the deformation characterizing curve $h=f_{(p,T)}$ in a direction of higher values of the value h.

5,189,392

HEATING SYSTEM SHUT-OFF SYSTEM USING DETECTOR AND EXISTING SAFETY SWITCH OR FUEL VALVE

Carl E. Kass, P.O. Box 346, Cragsmoor, N.Y. 12420, and Arthur W. Little, R.R. Box 91, Napanoch, N.Y. 12458

Filed Jun. 24, 1991, Ser. No. 719,636

Int. Cl.[5] G08B *19/00*

U.S. Cl. 340—521 **9 Claims**

1. A safety apparatus for shutting off a unit having a manually operated interruption switch, comprising:

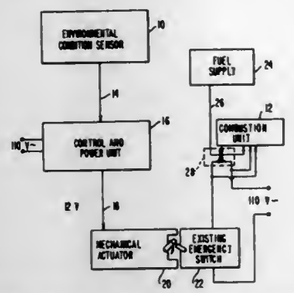
environmental condition sensing means arranged proximate the unit for sensing a selected condition and producing a low-voltage, low amperage, output signal indicative thereof;

control means receiving said output signal from said environmental condition sensing means and producing a low-voltage, low-amperage, energization signal;

electrically operated actuating means connected to receive

said energization signal from said control means for operating said interruption switch; and

mounting means for mounting said electrically operated actuating means adjacent said manually operated interruption switch, whereby said interruption switch is mechanically operated by said actuating means to an open condition and the unit is shut off upon said actuating means receiving said energization signal from said control means.



5,189,393

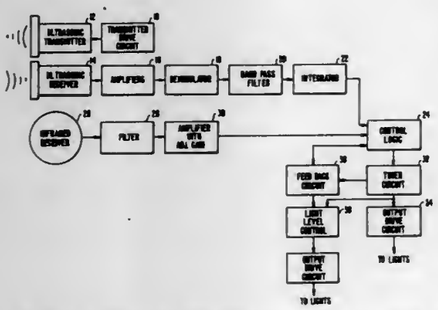
DUAL TECHNOLOGY MOTION SENSOR

Charles C. Hu, San Jose, Calif., assignor to The Watt Stopper Inc., Santa Clara, Calif.

Filed Jun. 7, 1991, Ser. No. 712,230

Int. Cl.[5] G08B *19/00*

U.S. Cl. 340—522 **12 Claims**



1. A motion sensor for detecting motion and providing an activating signal to a load, comprising:

an ultrasonic transmitter;

an ultrasonic receiver for generating a first detection signal;

an infrared receiver for generating a second detection signal;

means for generating said activating signal when both said first and second detection signals are present;

means for maintaining said activating signal when only one of said first and second detection signals are present;

a photo sensor for producing a third detection signal; and

means for deactivating said activation signal when said third detection signal is beyond a predetermined threshold.

5,189,394

FIRE ALARM DISPLAY

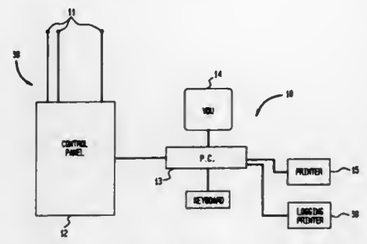
Ronald Walter, Bracken Ridge, and Brian A. Chadwick, Beachmere, both of Australia, assignors to Grinell Asia Pacific Pty. Limited, Queensland, Australia

Filed Dec. 19, 1990, Ser. No. 630,079

Claims priority, application Australia, Dec. 22, 1989, PJ7984; Apr. 11, 1990, PJ9599

Int. Cl.[5] G08B *25/00*

U.S. Cl. 340—525 **9 Claims**



1. Display apparatus suitable for use with a fire alarm system having a plurality of sensors positioned at various locations within an area layout, the display apparatus comprising:

(i) computer means for storing information relating to said area layout, said computer means having a memory;

(ii) input means for deriving said information relating to said area layout from at least one pre-existing documentary graphic representation of said area layout, said input means storing in said memory said information as at least one screen image, said input means including a scanning device for scanning said documentary graphic representation and providing an output thereof in digital form to said memory;

(iii) superposition means for adding data relating to said locations of said sensors to said at least one screen image stored in said memory; and

(iv) visual display means connected to said computer means for selectively displaying said superpositioned stored screen image so as to display said layout including said locations of said sensors.

5,189,395

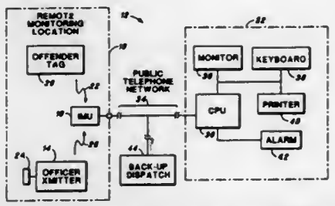
ELECTRONIC HOUSE ARREST SYSTEM HAVING OFFICER SAFETY REPORTING FEATURE

Michael S. Mitchell, Phoenix, Ariz., assignor to BI, Inc., Boulder, Colo.

Filed May 10, 1991, Ser. No. 698,691

Int. Cl.[5] G08B *1/08*

U.S. Cl. 340—539 **19 Claims**



1. An electronic house arrest monitoring (EHAM) system for monitoring the presence or absence of an offender at a prescribed location remote from a central monitoring location, comprising:

a tag carried by the offender, said tag having transmitter means therein for generating and transmitting a first multi-bit identification (ID) signal at low power, and hence over a short range, said first ID signal including a particular combination of bits that uniquely identifies the offender to whom the tag has been assigned;

a triggerable portable transmitter carried by an officer who visits the offender at the prescribed location, said triggerable portable transmitter including means for manually triggering the generation and transmission of a second multi-bit ID signal upon manual activation of a transmit switch, said second ID signal including a prescribed combination of bits that identifies a situation wherein the officer believes back-up assistance may be needed at the prescribed location;

an in-house monitoring unit at the prescribed location, said IMU including a receiver for receiving said first and second ID signals, and processing means for examining said received first and second ID signals and responding to said first ID signal with a first response and to said second ID signal with a second response different than said first response;

a central processing unit at the central monitoring location;

means for selectively establishing telecommunicative contact between said IMU and CPU;

said second response of said IMU including means for notifying said CPU of the receipt of said second ID signal through said established telecommunicative contact, and providing said CPU with information that identifies the prescribed location at which the second ID signal was received, whereupon appropriate action may be taken to dispatch back-up assistance to said prescribed location.

5,189,396

ELECTRONIC SEAL

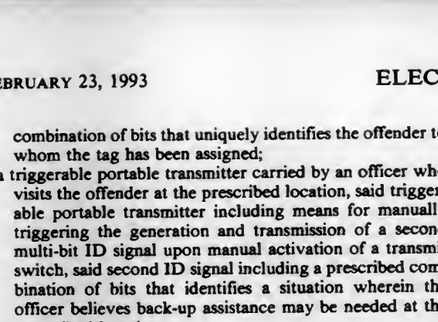
Anatoli Stobbe, Steinradweg 3, D-3013 Barsinghausen 2, Fed. Rep. of Germany

Filed Jun. 6, 1991, Ser. No. 711,653

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1990, 4019265

Int. Cl.[5] G08B *13/06*

U.S. Cl. 340—541 **25 Claims**



1. An electronic seal for recording the time of changes in the seal state and storing logistics data comprising:

a sealing strip fixed in a casing and formed as a safety loop; and

a monitoring device located in the casing and attached to said sealing strip for monitoring the seal state, said monitoring device including

i. a power source operatively connected to said monitoring device;

ii. an opening sensor;

iii. a clock generator;

iv. a counter clocked by said clock generator for generating a time value; and

v. a memory containing starting time, time zone, loading point, destination, country, owners, forwarding agents and transportation information, said opening sensor detecting changes in the seal state and storing an associated time value in said memory, said monitoring device generating time values at periodic intervals, detecting changes in the seal state and recording time values associated with changes in the seal state so that the time and duration of seal openings as well as the logistics of the casing, determines the location of the casing at the time of a seal opening.

5,189,397

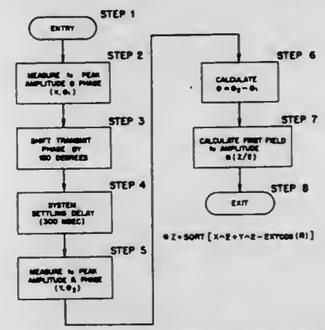
METHOD AND APPARATUS FOR DETERMINING THE MAGNITUDE OF A FIELD IN THE PRESENCE OF AN INTERFERING FIELD IN AN EAS SYSTEM

Harry E. Watkins, Boca Raton, Fla., and David L. Roberson, Forest, Va., assignors to Sensormatic Electronics Corporation, Deerfield Beach, Fla.

Filed Jan. 9, 1992, Ser. No. 820,313

Int. Cl.[5] G08B *13/24*

U.S. Cl. 340—572 **33 Claims**



14. An electronic article surveillance system for use in detecting articles in a surveillance zone in which a first magnetic field at a first fundamental frequency is established by said article surveillance system and in which a second magnetic field is able to be present, said surveillance system comprising:

a transmitter;

a receiver;

and control and processing means including: means for enabling first transmission into said zone by said transmitter of a magnetic field at said first fundamental frequency, a first amplitude and a first phase to establish said first magnetic field at a first time; means for enabling first detection of the magnetic field in said zone received by said receiver as a result of said first transmission; means for enabling second transmission by said transmitter of a magnetic field at said first fundamental frequency, said first amplitude and a second phase different from said first phase into said zone to establish said first magnetic field at a second time; and means for enabling first processing of the magnetic fields detected as a result of said first and second detections to determine the fundamental amplitude of said first magnetic field.

5,189,398

FLAME DETECTING AND ALARMING SYSTEM WITH ULTRAVIOLET SENSOR

Noboru Mizutani, Isesaki, Japan, assignor to Tokyo Parts Industrial Co., Ltd., Isesaki, Japan

Filed Jun. 5, 1991, Ser. No. 710,706

Claims priority, application Japan, Jun. 11, 1990, 2-152352

Int. Cl.[5] G08B *17/12*

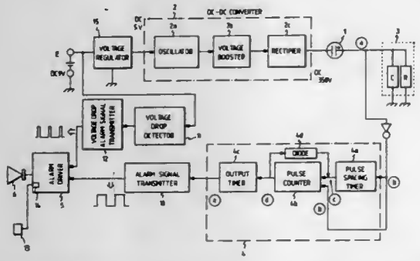
U.S. Cl. 340—578 **3 Claims**

1. A flame detecting and alarm system, comprising:

(a) a ultraviolet radiation sensor (UV sensor) which detects ultraviolet radiation, said UV sensor outputting sensor output pulses having pulse spacings, said pulse spacings

VOL 1147 ISS 4 FE 23 1993 UMI

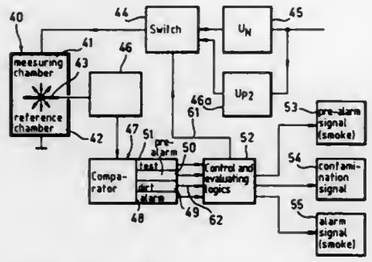
representing amounts of energy of the ultraviolet radiation detected by said UV sensor;
(b) means for transforming said sensor output pulses having pulse spacings to second pulses having the same pulse spacings as of said sensor output pulses;
(c) a pulse spacing timer which measures each of the pulse spacings of said second pulses in reference to a predetermined time period and outputs a pulse spacing timer output signal, said pulse-spacing timer output signal maintaining a first signal level after any of said second pulses has entered said pulse-spacing timer and as long as the measured pulse spacings of successive second pulses are within said predetermined time period but shifting to a second signal level when said predetermined time period has elapsed after any of said second pulses has entered said



pulse-spacing timer without an input of a succeeding pulse;
(d) a pulse counter for counting a number of said second pulses which are "continuous", the term "continuous" signifying that the pulse spacings of said second pulses are less than said predetermined time period, said pulse counter outputting a flame recognition signal when the number of "continuous" second pulses counted has reached a predetermined number;
(e) an output timer for outputting a time-regulated alarm signal in response to said flame recognition signal;
(f) an alarming device;
(g) an alarm driver to activate said alarming device in response to said alarm signal; and
(h) a power supply means for providing said UV sensor with operational DC power therefor.

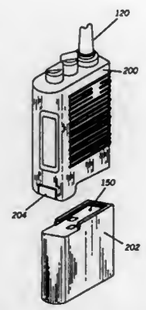
5,189,399
METHOD OF OPERATING AN IONIZATION SMOKE ALARM AND IONIZATION SMOKE ALARM
Hartwig Beyersdorf, Travemünder Allee 6 a, 2400 Lübeck, Fed. Rep. of Germany
Continuation of Ser. No. 480,849, Feb. 16, 1990, abandoned. This application Nov. 22, 1991, Ser. No. 796,904
Claims priority, application Fed. Rep. of Germany, Feb. 18, 1989, 3904979
Int. Cl.[5] G08B *17/10*
U.S. Cl. 340—629 **30 Claims**

1. A system for detecting smoke, said system comprising:
a first device, said first device comprising:
a chamber open to ambient atmosphere, said chamber including:
a radioactive source within said chamber for ionization of a selected portion of said atmosphere within said chamber; and
a first pair of electrodes spaced apart;
a supply circuit connected to said first pair of electrodes suited for connection to an electrical energization source for providing at least temporarily a first voltage across said first pair of electrodes to establish a first field strength therebetween, said supply circuit having a supply circuit parameter value for a supply circuit parameter having a characteristic variation based on environmental factor variation within said chamber;
an initiation circuit for measuring said supply circuit parameter value with said first field strength present and generating an initiation signal if said supply circuit parameter value reaches a selected first reference value; and
means for determining a characteristic of environmental factor variation within said chamber, including:



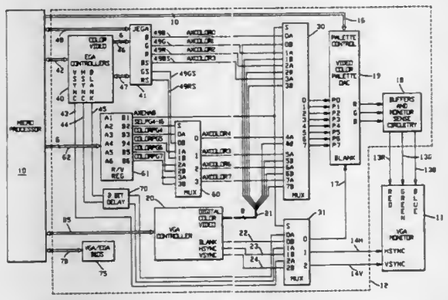
means for providing a second field strength occurring at least temporarily within said chamber and
determination circuit means, for producing a determination signal indicative of environmental factor variation within said chamber based on a comparison of (a) a determination circuit parameter value of a determination circuit parameter responding to said second field strength to exhibit a characteristic variation based on environmental factor variation within said chamber with (b) a selected second reference value.

5,189,400
COMMUNICATION DEVICE CAPABLE OF PREVENTING ENERGY SOURCE REMOVAL
Charles P. Schultz, Hialeah, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Continuation of Ser. No. 550,933, Jul. 11, 1990, abandoned. This application Jan. 21, 1992, Ser. No. 826,185
Int. Cl.[5] G08B *21/00*
U.S. Cl. 340—636 **28 Claims**



1. A method for preventing the physical removal of an energy source from a device comprising the steps of:
a) attaching the energy source to the device using an attachment means which engages the energy source directly to the device;
(b) activating a latching means so as to prevent removal of the energy source by prohibiting an energy source release mechanism which is part of the attachment means from operating;
(c) determining whether an activity is in progress or an event has occurred which is not related to changing the state of the latching means; and
(d) deactivating the latching means when it is determined that the activity is not in progress or the event has not occurred.

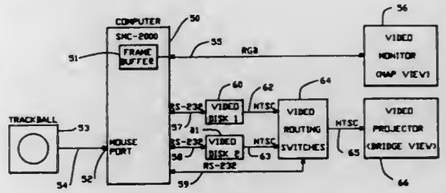
5,189,401
AX AND EGA VIDEO DISPLAY APPARATUS UTILIZING A VGA MONITOR
Donald W. Kugler, Jr., Frenchtown; Christopher D. Coley, Flemington, and Jeffrey A. Walck, Lebanon, all of N.J., assignors to Unisys Corporation, Blue Bell, Pa.
Filed Jun. 14, 1991, Ser. No. 715,207
Int. Cl.[5] G09G *1/28*
U.S. Cl. 340—703 **10 Claims**



1. Apparatus for interfacing EGA video controller means to an analog VGA monitor normally driven from a VGA video controller, said EGA video controller means providing EGA digital video color bits, said VGA video controller normally generating VGA digital video color bits, said EGA digital video color bits being fewer in number than said VGA digital video color bits, comprising:
supplementing means for providing supplementary EGA digital video color bits,
said supplementary EGA digital video color bits being combined with said EGA digital video color bits from said EGA video controller means to provide combined EGA digital video color bits equal in number to said VGA digital video color bits,
a VGA video controller for providing said VGA digital video color bits,
a digital processor interactively coupled with said VGA video controller and said EGA video controller means, and
a VGA video color palette DAC responsive to said combined EGA digital video color bits and coupled to said VGA monitor for driving said VGA monitor with analog video color signals in accordance with said combined EGA digital video color bits,
said VGA video color palette DAC being responsive to said VGA digital video color bits.

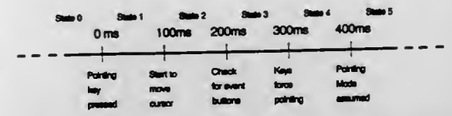
5,189,402
CONTENT ADDRESSABLE VIDEO SYSTEM FOR IMAGE DISPLAY
Michael Naimark, and Kenneth M. Carson, both of San Francisco, Calif., assignors to Advanced Interaction, Inc., San Francisco, Calif.
Continuation of Ser. No. 50,196, May 14, 1987, Pat. No. 4,857,902. This application May 24, 1989, Ser. No. 356,543
The portion of the term of this patent subsequent to Aug. 15, 2006, has been disclaimed.
Int. Cl.[5] G06F *3/033*
U.S. Cl. 340—709 **6 Claims**

1. A method for displaying image data representing a plurality of visual image of a subject, wherein each of the plurality of visual images comprises a different perspective of the subject, comprising the steps of:
organizing the plurality of visual image into a matrix in which each visual image has a position in the matrix and the perspective of each visual image is indicated by its position in the matrix;
storing a frame of image data for each visual image in a location accessible in response to the position of the visual image in the matrix;
displaying a current frame;



displaying to an operator a representation of at least a portion of the matrix;
highlighting on the displayed representation, a position in the matrix of the current frame;
providing input data indicating a change in position in the matrix and thereby a desired change in perspective of the subject;
translating the input data to an updated position in the matrix;
accessing the frame having the updated position and displaying the accessed frame as a new current frame.

5,189,403
INTEGRATED KEYBOARD AND POINTING DEVICE SYSTEM WITH AUTOMATIC MODE CHANGE
Patrick J. Franz, Portland, and David H. Straayer, Colton, both of Oreg., assignors to Home Row, Inc., Clackamas, Oreg.
Continuation-in-part of Ser. No. 412,680, Sep. 26, 1989, Pat. No. 5,124,689. This application Feb. 1, 1991, Ser. No. 649,711
Int. Cl.[5] G09G *3/02*
U.S. Cl. 340—711 **9 Claims**



1. In a computer system having a typing mode of operation and a pointing mode of operation, and including a keyboard having a plurality of keys that includes typing keys, one of the typing keys being also a pointing key, and a display screen having a cursor, an implicit method of switching between typing mode and pointing mode, comprising:
defining a first predetermined time interval and a second predetermined time interval longer than the first time interval;
during the typing mode of operation, monitoring keyboard to detect a first keyboard event;
responsive to detecting a first keyboard event, testing for a pointing key press;
if the first keyboard event is a pointing key press;
monitoring a time elapsed since the pointing key press;
monitoring the keyboard to detect a second keyboard event;
if the elapsed time is greater than the first time interval and no second keyboard event has been detected, storing an initial cursor position, acquiring pointing sensor data

VOL 1147 ISS 4 FEB 23 1993 UMI

and moving the cursor from the initial position responsive to the pointing sensor data, thereby switching the system to the pointing mode of operation;

continuing after the first time interval has elapsed to monitor the time elapsed since the pointing key press;

continuing after the first time interval has elapsed to monitor the keyboard to detect a second keyboard event; and

responsive to detecting a second keyboard event, if the elapsed time is less than the second predetermined time interval, switching the system back to the typing mode of operation;

defining a third predetermined time interval longer than the second time interval;

designating at least one key other than the pointing key as a pointing event key for emulating a mouse button;

if the elapsed time is greater than the second time interval and a second keyboard event has not been detected, continuing after the second time interval has elapsed to monitor the keyboard to detect a second keyboard event; and

responsive to detecting a second keyboard event, if the elapsed time is less than the third predetermined time interval, determining whether the second keyboard event is a pointing key release;

if the second keyboard event is not a pointing key release, determining whether the second keyboard event is a pointing event key press; and

if the second keyboard event is pointing event key press, processing the pointing event key press normally to emulate a mouse key press and continuing in the pointing mode of operation.

5,189,404

DISPLAY APPARATUS WITH ROTATABLE DISPLAY SCREEN

Tamon Masimo, Hiratsuka; Hiroshi Kanazawa, Yokohama; Hidefumi Masuzaki, and Satoshi Ito, both of Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo and Hitachi Software Engineering Co., Ltd., Yokohama, both of, Japan

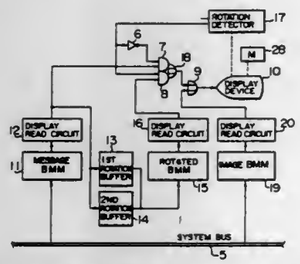
Division of Ser. No. 318,249, Mar. 3, 1989, Pat. No. 5,030,944, which is a continuation of Ser. No. 63,104, Jun. 17, 1987, Pat. No. 4,831,368. This application Jun. 7, 1991, Ser. No. 711,903

Claims priority, application Japan, Jun. 18, 1986, 61-142614

The portion of the term of this patent subsequent to May 16, 2006, has been disclaimed.

Int. Cl.[5] G096 *5/00*

U.S. Cl. 340—720 **5 Claims**



1. A display apparatus for displaying images on a unidirectionally elongated, rotatable display device which displays synthesized data composed of a functional message and image information, said display apparatus comprising:

a rotational mechanism for rotating said display device to a position of vertical or a position of horizontal elongation;

means for displaying the functional message with a first orientation and the image information with a second orientation, which may be the same or different from said first orientation, on the display device when the display device is held in the position of vertical elongation, and for displaying the functional message rotated by 90° with respect to said first orientation and synthesized with the image information having said second orientation on the display device when the display device is held in the position of horizontal elongation.

5,189,405

THIN FILM ELECTROLUMINESCENT PANEL

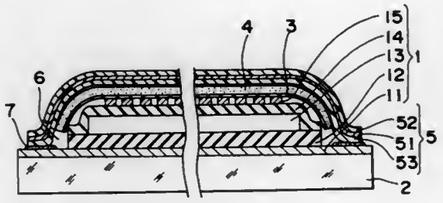
Takuo Yamashita; Takashi Ogura; Hiroaki Nakaya, and Masaru Yoshida, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 470,154, Jan. 25, 1990, abandoned. This application Dec. 23, 1991, Ser. No. 811,905

Claims priority, application Japan, Jan. 26, 1989, 1-17085

Int. Cl.[5] G09G *3/30*

U.S. Cl. 340—781 **17 Claims**



1. A thin film electroluminescent panel comprising:

a transparent substrate,

a thin film electroluminescent element formed on the transparent substrate,

a moisture-proof sheet formed of a metal film located between two resin films, covering the thin film electrolumnescent element, the periphery of the moisture-proof sheet being adhered to the transparent substrate, and

a moisture absorption sheet of an organic polymer with dispersed powder of moisture absorbent properties, located on a plastic film, said moisture absorption sheet being located between the thin film electroluminescent element and the moisture-proof sheet, the plastic film being adhered planarly and in direct physical contact with the thin film electroluminescent element.

5,189,406

DISPLAY DEVICE

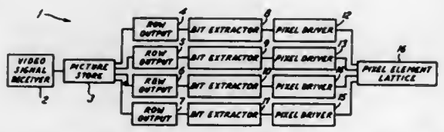
Brian J. Humphries, Windsor; Colin M. Waters, Frodsham; Steven D. Bull, Ripley, and Christopher J. Morris, Feltham, all of England, assignors to Thorn EMI plc, London, England

Continuation of Ser. No. 642,145, Jan. 15, 1991, which is a continuation of Ser. No. 175,405, Mar. 30, 1988, which is a continuation-in-part of Ser. No. 99,458, Sep. 21, 1987, abandoned. This application Aug. 28, 1991, Ser. No. 754,186

Claims priority, application United Kingdom, Sep. 20, 1986, 8622717; European Pat. Off., Sep. 18, 1987, 87308314.1; United Kingdom, Dec. 4, 1987, 8728434

Int. Cl.[5] G09G *3/00*

U.S. Cl. 340—793 **26 Claims**



1. A display device for displaying a picture with grey-scale, the display device comprising:

a lattice of pixel elements, each selectably settable in dependence on the respective pixel-data in a received signal representing one picture for display;

means to effect time-multiplex addressing of collections of rows of pixel elements within a group address period according to a predetermined sequence, each collection being addressed a plurality of address times for each picture;

the addressing means including means to set in each group address period a group of collections of rows said group consisting of a plurality of collections of rows spaced apart in the address sequence such that the collections of rows in a group form a series with adjacent collections of rows having a temporal separation exhibiting a geometric progression in the addressing sequence, the geometric progression having a common ratio N which is an integer of at least 2;

each pixel within a group being set for a time duration dependent upon the temporal separation of adjacent collections of rows within the sequence thereby to effect a grey-scale display.

5,189,407

MULTI-COLOR DISPLAY SYSTEM

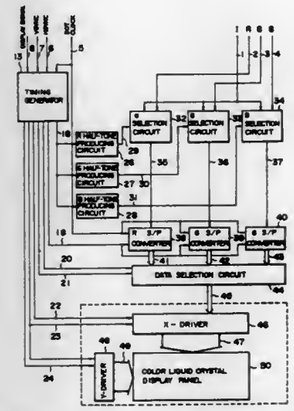
Hiroyuki Mano; Terumi Takashi, both of Yokohama; Toshio Futami, and Tatsuhisa Fujii, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 9, 1990, Ser. No. 506,190

Claims priority, application Japan, Apr. 10, 1989, 1-90222

Int. Cl.[5] G09G *3/00*

U.S. Cl. 340—793 **13 Claims**



10. A multi-color display control apparatus used for a display device which includes a liquid crystal panel composed of a multitude of liquid crystal cells arranged in the form of matrix each of the cells having a different primary color filter thereon; and drive means adapted to receive several times a plurality of parallel display data to acquire a full line of display data such that a visual information dot is composed of a set of three liquid crystal cells aligned in a horizontal line, each of the cells being ON-OFF controlled according to the display data, the apparatus comprising:

means for producing a half-tone display signal which causes a selected liquid crystal cell to be in the "ON" state during M frames out of N frames (N>M);

means responsive to said half-tone display signal and at least four-bit display data, three bits of which are used to control the respective three primary color liquid crystal cells, for substituting said half-tone display signal for any bit signal of said three bits depending upon the fourth bit of the display data, said any bit signal indicating the "OFF" state of a selected liquid crystal cell;

serial-to-parallel conversion means for converting serial display data for each primary color outputted from said means for substituting into parallel display data; and

means for selecting parallel data of a predetermined number of bits out of said parallel display data for each primary color such that said parallel data meet the three primary color arrangement of the liquid crystal cells aligned in a horizontal direction.

5,189,408

ORIENTATION-SENSITIVE DISPLAY SYSTEM

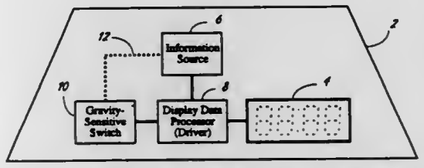
Mordechai Teicher, 9 Gordon Street, 44 260 Kfar Saba, Israel

Filed Dec. 30, 1991, Ser. No. 814,159

Claims priority, application Israel, Jan. 21, 1991, 96983

Int. Cl.[5] G08B *5/00*

U.S. Cl. 340—815.01 **20 Claims**



1. An orientation-sensitive display system, comprising:

a housing including a visual display and orientable with the visual display to either an upright position or to an inverted position;

at least one source of data to be displayed;

a gravity-sensitive device for sensing the relative position of the housing;

and data processor means receiving data from said source, and controlled by said gravity-sensitive device, for controlling the visual display of the data in accordance with the orientation of the housing as sensed by said gravity-sensitive device such that when the housing is in the upright position, the visual display of the data is in an upright orientation with respect to the housing, and when the housing is in the inverted position, the visual display of the data is in an inverted orientation with respect to the housing, whereby the visual display of the data appears in the same orientation to a viewer in both positions of the housing.

5,189,409

SYSTEM FOR CONTROLLING TERMINAL EQUIPMENT

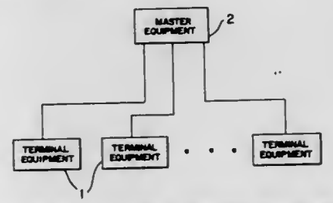
Yasuo Okuno, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 565,205, Aug. 9, 1990, abandoned, which is a continuation of Ser. No. 186,084, Apr. 25, 1988, abandoned. This application Sep. 20, 1991, Ser. No. 762,179

Claims priority, application Japan, Apr. 25, 1987, 62-102763

Int. Cl.[5] G05B *23/00*

U.S. Cl. 340—825.06 **20 Claims**



1. A system for individually controlling the operation state

VOL 1147 ISS 4 FE 23 1993 UMI

of multiple terminals in a data communication system by means of a master control; comprising:

means for outputting various individual control preset signals of various preset durations from said master control to each of said multiple terminals, the output control signals comprising data time and pose time the data time, being time when a plurality of adjacent pulses exists, the pose time being distinct and separate from said pules and time when there are no pulses;

means provided in each of said multiple terminals, for measuring the duration of control signal which includes said data and pose time output from said master control; and

means for supplying power supply voltage to each of said multiple terminals, independent of all other terminals when the measuring by said means for measuring of the control signals which includes the data and pose time, becomes equal to or larger than said preset duration, wherein the power supply voltage and the output control signals are carried by a common line.

5,189,410

DIGITAL CROSS CONNECT SYSTEM

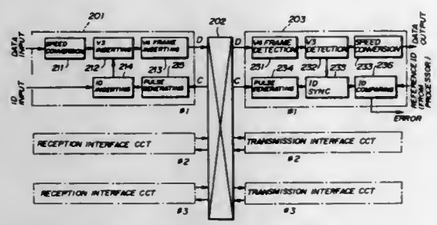
Toru Kosugi, Ohmiya; Yuichi Hashimoto, Utsunomiya; Masayuki Tanaka, Ashikaga; Katsuichi Ohara, Tokyo; Takahiro Furukawa, and Makoto Aoki, both of Oyama, all of Japan, assignors to Fujitsu Limited, Japan

Filed Dec. 28, 1990, Ser. No. 635,439

Claims priority, application Japan, Dec. 28, 1989, 1-343465; Jan. 19, 1990, 2-10299; Jan. 19, 1990, 2-10300

Int. Cl.[5] H04Q *11/00;* **H04J** *3/00*

U.S. Cl. 340—825.14 **7 Claims**



1. A digital cross connect system, comprising:

first interface means including a plurality of first interface circuits for converting an input line signal into a VT signal having a reserved path overhead part having at least one predetermined bit, and the VT signal having a VT frame format in conformance with synchronous optical network standards;

switching means for cross connecting the VT signal received from said first interface means forming a cross connected VT signal; and

second interface means including a plurality of second interface circuits for converting the cross connected VT signal received from said switching means into a line signal,

each of the plurality of first interface circuits of said first interface means including signal inserting means for inserting a frame synchronizing signal within the reserved path overhead part of the VT signal, said signal inserting means including producing means for producing the frame synchronizing signal by inverting the at least one predetermined bit of the reserved path overhead part of the VT signal, and

each of the plurality of second interface circuits of said second interface means including synchronization means for achieving frame synchronization of the VT signal in response to the frame synchronizing signal.

5,189,411

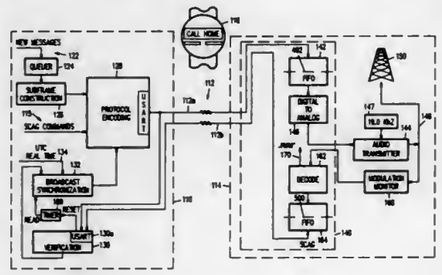
RADIO SIGNAL DATA TRANSMISSION SYNCHRONIZATION

James K. Collar, Portland; Garold B. Gaskill, Tualatin; Daniel J. Park, Portland; Carl D. Shanks, and Rick T. Wells, both of Aloha, all of Oreg., assignors to Seiko Corp. and Seiko Epson Corp., both of, Japan

Continuation-in-part of Ser. No. 553,700, Jul. 17, 1990, abandoned, which is a continuation of Ser. No. 326,491, Mar. 17, 1989, abandoned, which is a continuation of Ser. No. 101,252, Sep. 25, 1987, abandoned, which is a division of Ser. No. 802,844, Nov. 27, 1985, Pat. No. 4,713,808. This application Oct. 10, 1990, Ser. No. 595,145

Int. Cl.[5] H04J *3/00*

U.S. Cl. 340—825.14 **16 Claims**



1. A method of transmitting time of day information by radio signal, the method comprising:

providing a transmission sequence of data packets to be transmitted at a predetermined transmission rate, said data packets including time packets carrying time of day information corresponding to an expected time of transmission, said transmission sequence including padding data selectably inserted between the data packets;

transmitting said transmission sequence of data packets substantially at said predetermined transmission rate:

detecting a time of transmission for ones of said data packets;

comparing detected times of transmission with expected times of transmission for said data packets to calculate a timing error representing a difference between time of day information carried in a given time packet and a calculated time of transmission for the given time packet; and

modifying the amount of padding data within said transmission sequence based on said timing error to cause transmission of subsequent time packets substantially at a time corresponding to the time of day information carried therein.

5,189,412

REMOTE CONTROL FOR A CEILING FAN

Vinay Mehta, Germantown, Tenn., and P. C. Leung, Kowloon, Hong Kong, assignors to Hunter Fan Company, Memphis, Tenn.

Continuation of Ser. No. 522,213, May 11, 1990, abandoned.

Filed Sep. 11, 1990, Ser. No. 629,091

Int. Cl.[5] H04Q *7/02*

U.S. Cl. 340—825.22 **25 Claims**

1. A remote control for a ceiling fan comprising:

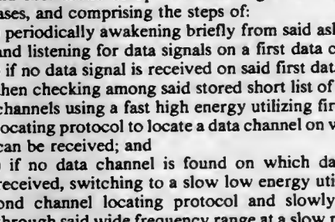
power supply means for supplying power to said remote control;

keyboard means for inputting ceiling fan control commands;

control means coupled to said keyboard means and said power supply means for accepting the ceiling fan control commands and outputting a series of ceiling fan control signals;

transmitter means coupled to said control means and said power supply means for transmitting the control signals to the ceiling fan; and

animated fan display means coupled to said control means for displaying an animated pictorial representation of the ceiling fan;



wherein said animated fan display means is animated to provide an appearance of rotation in a direction consistent with a direction of rotation of the ceiling fan as determined from the ceiling fan control commands from said control means.

5,189,413

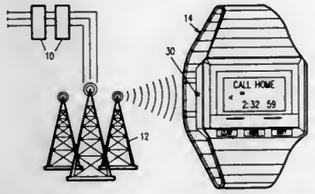
SCANNING RECEIVER WITH MANUAL OVERRIDE OF FREQUENCY SCANNING ROUTINE

Garold B. Gaskill, Tualatin, and Daniel J. Park, Portland, both of Oreg., assignors to Seiko Corp. and Seiko Epson Corp., both of, Japan

Continuation of Ser. No. 430,457, Oct. 31, 1989, abandoned, which is a continuation-in-part of Ser. No. 367,014, Jun. 16, 1989, abandoned, and Ser. No. 367,207, Jun. 16, 1989, abandoned, and a continuation-in-part of Ser. No. 352,635, May 12, 1989, Pat. No. 4,897,835, which is a continuation of Ser. No. 121,139, Nov. 16, 1987, abandoned, which is a continuation-in-part of Ser. No. 802,844, Nov. 27, 1985, Pat. No. 4,713,808. This application Mar. 12, 1991, Ser. No. 668,380

Int. Cl.[5] H04B *7/00*

U.S. Cl. 340—825.44 **9 Claims**



1. A method of operating a frequency agile data receiver capable of operating over a wide frequency range, said receiver having stored therein a short list of local data channels, said method including a first mode of operation and a fast scan mode of operation,

(a) said first mode of operation having awake and asleep phases, and comprising the steps of:

a1) periodically awakening briefly from said asleep phase and listening for data signals on a first data channel;

a2) if no data signal is received on said first data channel, then checking among said stored short list of local data channels using a fast high energy utilizing first channel locating protocol to locate a data channel on which data can be received; and

a3) if no data channel is found on which data can be received, switching to a slow low energy utilizing second channel locating protocol and slowly scanning through said wide frequency range at a slow rate to find a data channel on which data can be received, and

b) said fast scan mode of operation comprising the steps:

b1) providing a manually induced stimulus to said receiver which interrupts said first mode of operation; and

b2) initiates checking among said wide frequency range using a fast relatively high energy utilizing third channel locating protocol to locate a data channel on which data can be received,

whereby in response to said manual stimulus said receiver is switched to said high energy utilizing third data channel locating protocol.

5,189,414

NETWORK SYSTEM FOR SIMULTANEOUSLY COUPLING PAIRS OF NODES

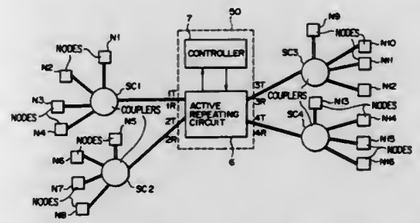
Kiyoshi Tawara, Ootawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 609,015, Nov. 1, 1990, abandoned, which is a continuation of Ser. No. 101,121, Sep. 25, 1987, abandoned. This application Apr. 4, 1991, Ser. No. 681,455

Claims priority, application Japan, Sep. 30, 1986, 61-229682

Int. Cl.[5] H04Q *9/00*

U.S. Cl. 340—825.5 **16 Claims**



1. A network system in which at least four star networks each having a plurality of nodes are coupled through data transfer paths for transmission of a data signal, said star networks being mutually coupled by a repeater for performing data communication between said nodes, said repeater comprising:

switching circuit means including a plurality of switching circuits enabling pair of said star networks to be selectively and simultaneously coupled; and

switch controller means for monitoring a communication request generated from a given node in a given network which request communication with another node in another network and activating one of switching circuits corresponding to the given star network and the other star network in accordance with the communication request,

whereby data communication between a given node in a first star network and a given node in a second star network and data communication between a given node in a third star network and a given node in a fourth star network are simultaneously performed.

5,189,415

RECEIVING APPARATUS

Takashi Shimada; Satoru Inoue; Takaaki Maekawa, and Akio Jitsumori, all of Hyogo, Japan, assignors to Japan National Oil Corporation, Tokyo, Japan

Filed Oct. 15, 1991, Ser. No. 775,760

Claims priority, application Japan, Nov. 9, 1990, 2-305219; Nov. 9, 1990, 2-305221

Int. Cl.[5] G01V *1/00*

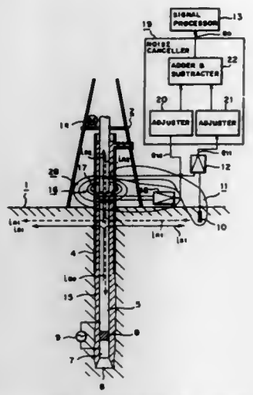
U.S. Cl. 340—854.6 **13 Claims**

1. A receiving apparatus for receiving information transmitted from a bottomhole to a surface by means of electromagnetic waves, which comprises:

a receiving antenna for receiving a transmitted signal from said bottomhole;

a noise detector for detecting noise current received by said receiving antenna; and

a noise canceller for removing noise components received by said receiving antenna by comparing an output signal



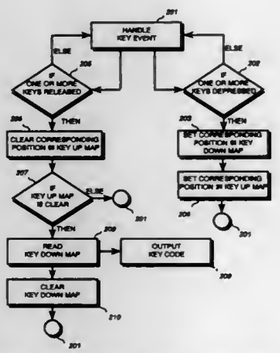
from said receiving antenna and an output signal of said noise detector.

5,189,416

CHORDAL KEYBOARD METHOD AND APPARATUS

Mark D. Estes, Austin, Tex., assignor to Walker-Estes Corporation, Oklahoma City, Okla.

Filed Apr. 29, 1991, Ser. No. 692,386
Int. Cl.[5] H03M *11/20*
U.S. Cl. 341—26 **14 Claims**



1. A method for generating a key code using a plurality of keys coupled to a controller with a first set of registers and a second set of registers, comprising the steps, using said plurality of keys, said first set of registers and said second set of registers, of:

depressing at least one of said plurality of keys;

detecting, using said controller, which of said plurality of keys are in a depressed position;

setting, using said controller, in said first set of registers, bit locations of respective depressed keys;

setting, using said controller, in the second set of registers, bit locations of respective depressed keys;

detecting, using said controller, which of said plurality of keys are released from the depressed position;

clearing, using said controller, in said second set of registers, bit locations of respective released keys;

detecting all of said plurality of keys in a released position;

generating, responsive to detecting all of said plurality of keys in the released position, a key code responsive to bit locations set in said first set of registers; and

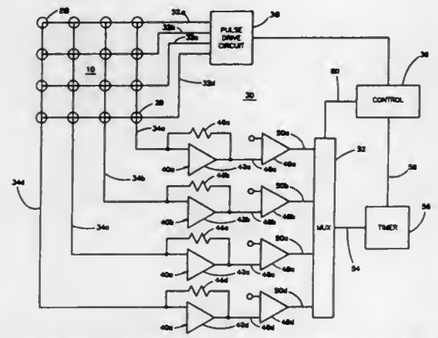
clearing, after generating the key code, said first set of registers and said second set of registers.

5,189,417

DETECTION CIRCUIT FOR MATRIX TOUCH PAD

David W. Caldwell, and Nicholas W. Medendorp, both of Holland, Mich., assignors to Donnelly Corporation, Holland, Mich.

Filed Oct. 16, 1990, Ser. No. 598,129
Int. Cl.[5] H03M *11/20*
U.S. Cl. 341—26 **24 Claims**



1. A circuit for detecting user contact of one of a plurality of touch pads comprising:

a plurality of drive lines and a plurality of sense lines, each of said touch pads being coupled to a difference combination of said drive and sense lines from any other of said touch pads;

driver circuit means for providing pulsed drive signals to said drive lines;

at least one amplifier having an input connected at a given time to one of said sense lines, an output and gain means for establishing the gain of said at least one amplifier; and

demodulating means responsive to said at least one amplifier output for determining which of said touch pads is being contacted by a user, wherein said demodulating means includes at least one comparator means responsive at said given time to the amplified sensed signal of said one of said sense lines for producing a pulse having a width that is a function of the time that the associated amplified sensed signal is above a given reference level.

5,189,418

DITHER ERROR CORRECTION

Manfred U. Bartz, Snohomish, and Donald R. Hiller, Lake Stevens, both of Wash., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 16, 1992, Ser. No. 872,744
Int. Cl.[5] H03M *1/20*
U.S. Cl. 341—131 **15 Claims**

1. A dithered analog-to-digital conversion circuit with component limitation error correction, comprising:

a PRN generator for digitally generating a sequence of dither values;

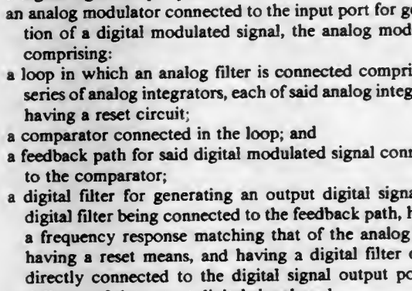
a dither DAC connected to the PRN generator for sequentially converting the dither values to analog form to produce an analog dither signal;

an input for receiving an analog input signal;

at least one generating means coupled to the PRN generator, each generating means generating a correction signal;

summing means for combining the analog input signal and the analog dither signal to produce a combined signal, and for subtracting each correction signal from a dither signal path;

an analog-to-digital converter for converting the combined signal to digital form; and



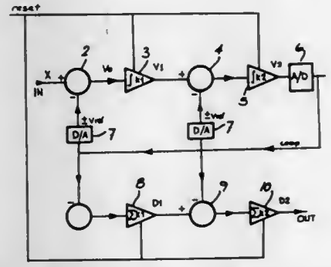
a digital dither subtractor coupled to an output of the analog-to-digital converter for subtracting the sequence of dither values from the combined signal to produce a digital output signal.

5,189,419

SINGLE SHOT SIGMA-DELTA ANALOG TO DIGITAL CONVERTER

Colin Lyden, Baltimore, Ireland, assignor to University College Cork, Cork, Ireland

Filed May 20, 1991, Ser. No. 702,337
Claims priority, application Ireland, May 21, 1990, 1815/90
Int. Cl.[5] H03M *3/02*
U.S. Cl. 341—143 **7 Claims**



1. A sigma-delta analog to digital converter comprising:

an analog signal input port;

a digital signal output port;

an analog modulator connected to the input port for generation of a digital modulated signal, the analog modulator comprising:

a loop in which an analog filter is connected comprising a series of analog integrators, each of said analog integrators having a reset circuit;

a comparator connected in the loop; and

a feedback path for said digital modulated signal connected to the comparator;

a digital filter for generating an output digital signal, the digital filter being connected to the feedback path, having a frequency response matching that of the analog filter, having a reset means, and having a digital filter output directly connected to the digital signal output port for delivery of the output digital signal; and

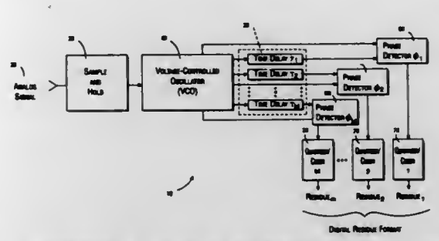
a link interconnecting the reset circuits of the analog modulator and the reset means of the digital filter.

5,189,420

METHOD AND APPARATUS FOR DIRECT ANALOG TO FORMATTED DIGITAL NUMBER CONVERSION

F. Neal Eddy, Weston, and Joel M. Schoen, Sudbury, both of Mass., assignors to The Mitre Corporation, Bedford, Mass.

Filed Jun. 8, 1990, Ser. No. 534,941
Int. Cl.[5] H03M *1/60*
U.S. Cl. 341—157 **25 Claims**



1. Apparatus of converting an analog signal into digital format for a preselected number system, comprising:

a variable frequency oscillator connected to receive a time-sample of said analog signal, said oscillator generating a frequency signal having a frequency that is a function of the amplitude of said analog signal,

a delay line connected to receive said frequency signal, said delay line producing at least one time-delayed signal with a phase shift, relative to said frequency signal, that indicates the value of one component representation for the analog signal amplitude in said number system, the number system being comprised of a range of component representations for equivalently representing the range of amplitudes of said analog signal, and

a phase detector connected to receive said time-delayed signal, said phase detector generating a digital format for said number system representation, said digital format based on a number system distinct from said preselected number system, whereby said analog signal amplitude is converted directly to a digitized version of the corresponding number in the preselected number system.

5,189,421

MICROCONTROLLER BASED ANALOG-TO-DIGITAL CONVERTER USING VARIABLE PULSE WIDTH MODULATION

Kevin M. Daugherty, Brighton, Mich., assignor to National Semiconductor Corporation, Santa Clara, Calif.

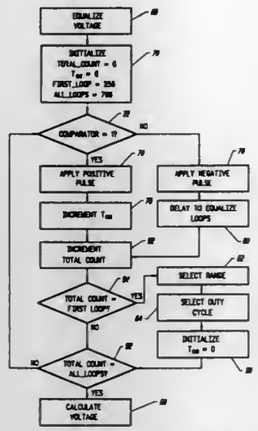
Filed Dec. 23, 1991, Ser. No. 813,205
Int. Cl.[5] H03M *1/60*
U.S. Cl. 341—157 **12 Claims**

1. An apparatus for converting an analog voltage value to a digital voltage value, said apparatus comprising:

a comaprator to comapre an unknown analog voltage value with a voltage value on a capacitor and generating a corresponding comparator output signal;

means for monitoring said comparator output signal to provide pulsed signals to said capacitor, each of said pulsed signals having a dynamically defined duty cycle to maintain said voltage value on said capacitor approximately equal to said unknown analog voltage;

means for counting said pulsed signals to form a pulse count; and



means for calculating said digital voltage value from said pulse count.

5,189,422

ANALOG-TO-DIGITAL CONVERTER WITH DELAY CORRECTION

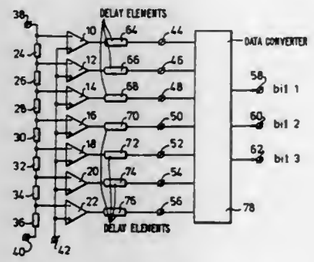
Rudy J. van de Plassche, and Petrus G. M. Baltus, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 6, 1991, Ser. No. 788,410

Claims priority, application Netherlands, Nov. 9, 1990, 9002445

Int. Cl.[5] H03M *1/36, 1/06*

U.S. Cl. 341—159 **8 Claims**



1. Analog-to-digital converter operating in parallel having an analog signal input and a number of digital signal outputs, and one output, one input being connected to an impedance network for supplying this one input with its own predetermined reference voltage, and the second input being connected to the analog signal input of the converter for receiving an analog input signal to be converted, so that each of the comparators processes a predetermined input signal portion, the comparator outputs being coupled to corresponding digital signal outputs, characterized in that delay elements are inserted between the comparator outputs and the corresponding digital signal outputs for causing a delay to occur related to the steepness of the slope of the input signal portion of the relevant comparator.

5,189,423

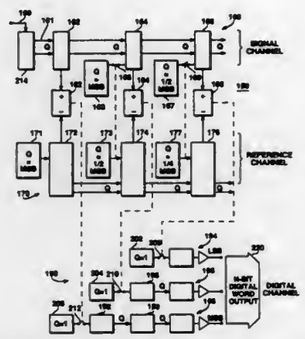
CHARGE-MOLD ANALOG TO DIGITAL CONVERTER

Thomas E. Linnenbrink, 475 Silver Saddle Rd., Monument, Colo. 80132; Mark Wadsworth, 536 Wentworth Dr., Richardson, Tex. 75081, and Stephen D. Gaalema, 12930 Morris Trail, Colorado Springs, Colo. 80908

Continuation-in-part of Ser. No. 560,949, Jul. 31, 1990, Pat. No. 5,061,927. This application Oct. 29, 1991, Ser. No. 784,277

Int. Cl.[5] H03M *1/38*

U.S. Cl. 341—172 **3 Claims**



1. A charge-mode analog to digital converter comprising:

a signal charge input adapted for input of a signal charge;

a charge channel coupled to the signal charge input having a plurality of serially coupled charge wells;

charge injection means for selectively injecting predetermined charges including a reference charge into the charge channel;

two-step comparator means coupled to the charge channel for sensing the signal charge and reference charge, and for comparing the signal charge to the reference charge to generate control signals responsive thereto;

means for selectively adding a selected charge to the reference charge;

switch means for conditionally adding a selected charge to the signal charge responsive to the control signals; and

digital channel for generating a digital word responsive to the control signals.

5,189,424

THREE DIMENSIONAL INTERFEROMETRIC SYNTHETIC APERTURE RADAR TERRAIN MAPPING EMPLOYING ALTITUDE MEASUREMENT AND SECOND ORDER CORRECTION

William M. Brown, Ann Arbor, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Sep. 19, 1991, Ser. No. 762,923

Int. Cl.[5] G01S *13/90, 15/89*

U.S. Cl. 342—25 **33 Claims**

1. A method of terrain mapping employing a platform including first and second antennas, the first and second antennas each having a predetermined field of view and together forming an interferometer baseline, said method comprising the steps of:

moving the platform substantially perpendicular to the interferometer baseline along a set of substantially parallel platform paths;

for each such platform path;

repeatedly detecting the position of the moving platform,

repeatedly detecting the distance above the terrain of the moving platform via a radiant ranging sensor,

repeatedly transmitting a radar signal via at least one of the first and second antennas,

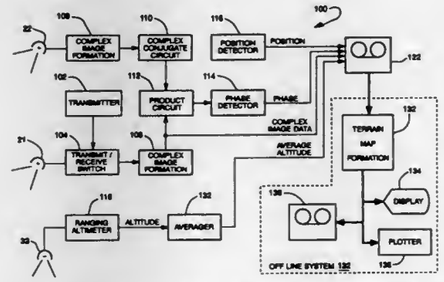
receiving reflections of each of said transmitted radar signals via the predetermined field of view of at least one of the first and second antennas,

forming first synthetic aperture complex image data for a plurality of resolution cells in slant range and Doppler frequency from radar reflections received by the first antenna employing plural transmitted radiant signals;

forming second synthetic aperture complex image data for a plurality of resolution cells in slant range and Doppler frequency from radar reflections received by the second antenna employing plural transmitted radiant signals;

determining the phase difference between said first and second synthetic aperture complex image data for each resolution cell;

computing the elevation and ground range for each resolution cell within a selected one of said first and second synthetic aperture complex image data for each of said set of platform paths employing the detected position of the moving platform and the phase difference between said first and second synthetic aperture complex image data for that platform path;



computing a first order corrected elevation and ground range for each resolution cell for each of said set of platform paths corrected for interferometer baseline roll angle employing said detected distance above the terrain of the moving platform of a corresponding adjacent platform path where the moving platform passed above the terrain imaged in said selected one of said first and second synthetic aperture complex image data; and

computing a second order corrected elevation and ground range for each resolution cell corrected for the first return point of said radiant ranging sensor, employing said first order corrected elevation and ground range for resolution cells near each of said corresponding adjacent platform paths.

5,189,425

METHOD AND APPARATUS FOR MONITORING VEHICULAR TRAFFIC

John W. T. Dabbs, 115 Claymore La., Oak Ridge, Tenn. 37830-7675

Continuation-in-part of Ser. No. 583,560, Sep. 14, 1990, Pat. No. 5,075,680. This application Sep. 23, 1991, Ser. No. 763,850

The portion of the term of this patent subsequent to Dec. 24, 2008, has been disclaimed.

Int. Cl.[5] G01S *13/86, 13/91;* **G08G** *5/00;* **H01Q** *1/00*

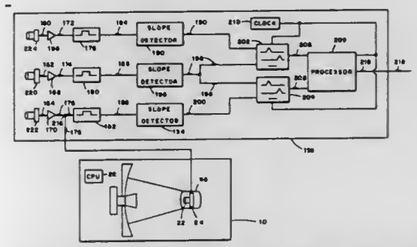
U.S. Cl. 342—52 **23 Claims**

1. An apparatus for counting and analyzing air traffic comprising at least one individual type of aircraft generating sound and conducting one of a plurality of possible flight operations at an airport consisting of a target runway and at least one cross-runway intersecting the target runway comprising:

radar means for generating and propagating radar radiation of a predetermined wavelength to be directed towards a target and for converting any doppler-shifted radar radiation reflected by said target into first electronic signals corresponding to said reflected doppler radiation;

reflector means having a focus for directing said radar radiation generated by said radar means toward target air traffic conducting flight operations and for receiving reflected doppler radar radiation reflected by said target air traffic and simultaneously for receiving sound generated by said air traffic conducting flight operations said reflector means further comprised of,

a parabolic primary reflector having an aperture located at its center through which radar radiation may pass, operated at its focus as to sound, operated in a Cassegrainian mode as to radar radiation, for directing radar radiation towards a target aircraft and for simultaneously receiving reflected doppler radiation and sound; and



a hyperbolic sub-reflector having a front surface and a rear surface located between said primary reflector and the focus of said primary reflector, for directing radar radiation emanating from said aperture in said primary reflector toward said primary reflector and for directing received reflected doppler radiation from said primary reflector toward said aperture in said primary reflector, said hyperbolic sub-reflector being constructed so as to be transmissive of sound; and

microphone means for converting said received sound into a second electronic signal corresponding to said received sound said microphone means further comprising a cross-runway use detector; and

analyzer means for analyzing said first and second electronic signals to determine a plurality of parameters of said air traffic conducting flight operations at said airport.

5,189,426

DOPPLER FREQUENCY SPECTRUM DE-EMPHASIS FOR AUTOMOTIVE COLLISION AVOIDANCE RADAR SYSTEM

Jimmie Asbury, San Diego, and John W. Davis, Encinitas, both of Calif., assignors to IVHS Technologies, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 695,951, May 6, 1991, abandoned. This application Sep. 6, 1991, Ser. No. 756,176

Int. Cl.[5] G01S *13/60*

U.S. Cl. 342—70 **17 Claims**

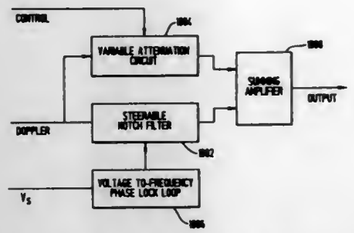
13. In a vehicle radar system of the type having means for transmitting a radar signal and for receiving echo signals of the radar signal, for generating a spectrum of Doppler frequencies from such received echo signals, including a Doppler frequency indicative of the speed of the vehicle, a method of de-emphasizing the generated Doppler spectrum comprising the steps of:

a. receiving the generated spectrum of Doppler frequencies and the vehicle speed signal;

b. de-emphasizing selected frequencies of the received generated spectrum of Doppler frequencies, such selected frequencies including the received generated Doppler frequency indicative of the vehicle speed, and passing frequencies of the received generated spectrum of Dop-

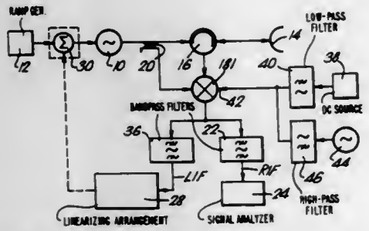
VOL 1147 ISS 4 FEB 23 1993 UMI

pler frequencies greater than or less than the frequency of the frequency notch;



c. outputting the de-emphasized and passed Doppler frequencies to the vehicle radar system.

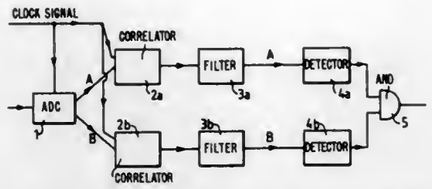
5,189,427
FMCW RADAR LINEARIZER
Andrew G. Stove, Reigate, England, and Michael B. Williams, Waterloo, Canada, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jul. 9, 1991, Ser. No. 727,190
Claims priority, application United Kingdom, Jul. 11, 1990, 9015261
Int. Cl.[5] G01S *13/34*
U.S. Cl. 342—128 **11 Claims**



1. An FMCW radar comprising an rf voltage controlled oscillator (VCO), means for successively sweeping the VCO frequency over a defined range, signal operating means for radiating the transmitter signal and for receiving at least the return signal, a stable local oscillator (STALO), a mixer having a plurality of ports to which are applied the return signal, a local oscillator signal derived from the VCO and a signal from the STALO and from which are derived a radar IF signal and a linearizer IF signal, and a linearizing arrangement having an input for receiving the linearizer IF signal.

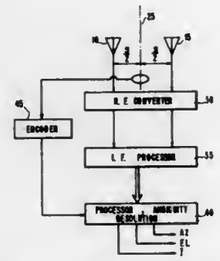
5,189,428
METHOD FOR THE PROCESSING OF A DIGITALLY ENCODED PULSE SIGNAL
Jacky Bonvet, Boulogne, and Anne Chapelet, La Celle St. Cloud, both of France, assignors to Thomson-CSF, Puteaux, France
Filed Dec. 19, 1991, Ser. No. 810,687
Claims priority, application France, Dec. 27, 1990, 90 16325
Int. Cl.[5] G01S *7/285, 13/28*
U.S. Cl. 342—132 **7 Claims**

4. A signal receiver comprising:
A and B channels, said A channel comprising, in series, at least one autocorrelator and at least one threshold detector, said B channel comprising, in series, at least one intercorrelator and at least one threshold detector, and



an AND circuit, for logically ANDing the output of said A and B channels.

5,189,429
METHOD AND APPARATUS FOR AMBIGUITY RESOLUTION IN ROTATING INTERFEROMETER
Glenn B. Guard, Laurel, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Continuation of Ser. No. 597,476, Oct. 12, 1990, abandoned.
This application Jan. 9, 1992, Ser. No. 819,610
Int. Cl.[5] G01S *5/02, 5/04*
U.S. Cl. 342—424 **2 Claims**



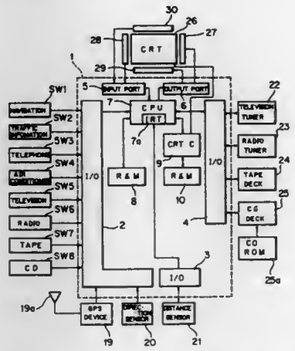
1. A method of ambiguity resolution in a rotating interferometer having a boresight, said method comprising the steps of:
(a) receiving signals at multiple headings of the interferomter boresight;
(b) measuring frequency and phase differences of a signal received at the multiple headings of the interferometer boresight;
(c) calculating a set of phase differences for each of the multiple headings;
(d) determining a set of cone angles based on the set of measured phase differences for each of the multiple headings;
(e) calculating a set of azimuth angles based on the set of cone angles and a range of elevation angles;
(f) determining an azimuth angle that has a minimum angular distance to the group of the azimuth angles in the set of azimuth angles; and
(g) determining an elevation angle corresponding to the determined azimuth angle,
where the rotating interferometer includes two elements spaced apart by a distance S, and where the set of phase differences is calculated based on

$$\psi_{j,k}\psi_j+2\pi k \text{ such that } |\psi_{j,k}| \leqq 2\pi S/\lambda \text{and}$$

where ψ_j represents a measured modulo 2π phase difference for k=. . . , −3, −2, −1, 0, 1, 2, 3, . . . , and j=1, 2, 3, . . . and said set of cone angles is calculated based on

$$\phi_{j,k}=\cos^{-1}(\lambda\psi_{j,k}/2\pi S).$$

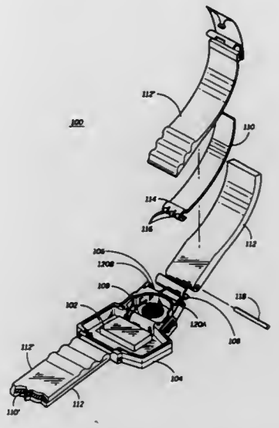
5,189,430
NAVIGATION SYSTEM FOR MOVABLE BODY
Haruto Yano; Yoshiaki Hirasa; Toshimichi Tokunaga, all of Hiroshima; Katsuro Hayami, Hyogo; Norihiro Naito, Hyogo; Teruki Akamatsu, Hyogo; Hirofumi Goto, Hyogo, and Kazuhiro Yokouchi, Hyogo, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo and Mazda Motor Corporation, Hiroshima, both of, Japan
Continuation of Ser. No. 601,123, Oct. 22, 1990, abandoned.
This application Jan. 28, 1992, Ser. No. 825,828
Claims priority, application Japan, Oct. 24, 1989, 1-277543; Oct. 24, 1989, 1-277544
Int. Cl.[5] G01S *3/02*
U.S. Cl. 342—457 **4 Claims**



1. A navigation system for a movable body, comprising:
map storage means in which a map is stored;
current position detecting means for detecting a current position of said movable body with respect to the map;
locus storage means for storing therein a locus of said movable body, said locus provided by successive ones of the current position detected successively by said current position detecting means;
display means having a screen for normally displaying thereon the map from said map storage means, a current position of said movable body from said position detecting means, and a locus of said movable body from said locus storage means; and
selectively operable switching means for manually causing said display means to erase the display of only the locus of said movable body;
said selectively operable switching means being a manually operated switch.

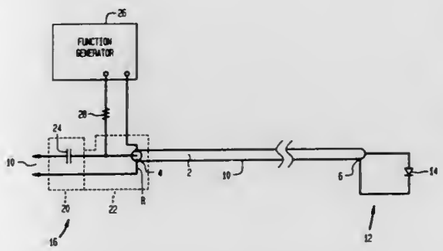
5,189,431
REMOVABLE ANTENNA COUPLING ON A WRIST WATCH PAGER
Robert A. Marinelli, Boynton Beach, Fla., assignor to Motorola, Imc., Schaumburg, Ill.
Continuation of Ser. No. 600,874, Oct. 22, 1990, abandoned.
This application Apr. 6, 1992, Ser. No. 863,528
Int. Cl.[5] H01Q *1/44, 1/27;* H01R *31/00*
U.S. Cl. 343—718 **5 Claims**

1. A selective call receiver, comprising:
means for receiving a message;
a housing for enclosing the receiving means, a substantially semicircular arcuate recess shaped in a portion of said housing for receiving a first substantially semicircular arcuate contact having a substantially arcuate outer surface for providing a non-movable mechanical coupling with the substantially semicircular arcuate recess, said first substantially semicircular arcuate contact having a substantially arcuate inner surface; and
a second substantially arcuate contact terminating an end of



a wrist band antenna, said second substantially arcuate contact having an outer contact surface for coupling with said substantially arcuate inner surface of the first substantially semicircular arcuate contact thereby forming a movable electrical coupling therebetween.

5,189,432
RADIATING ANTENNA CABLE APPARATUS
Robert Lombardi, Melbourne; George Rassweiler, Indialantic, and Jon M. Stern, Melbourne, all of Fla., assignors to Harris Corporation, Melbourne, Fla.
Filed Aug. 15, 1991, Ser. No. 745,503
Int. Cl.[5] H01Q *11/02*
U.S. Cl. 343—739 **34 Claims**



16. A distributed antenna system comprising:
an antenna cable; and
means for providing the cable with first and second time multiplexed cable termination impedance values.

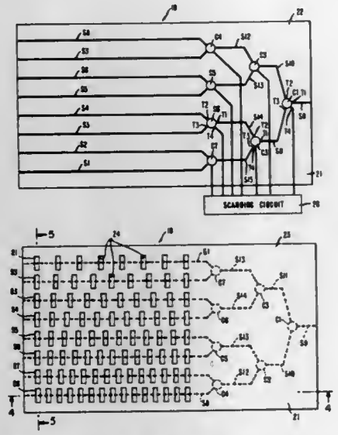
VOL 1147 ISS 4 FE 23 1993 UMI

5,189,433

SLOTTED MICROSTRIP ELECTRONIC SCAN ANTENNA

Richard A. Stern, Allenwood, and Richard W. Babbitt, Fair Haven, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 9, 1991, Ser. No. 773,813
Int. Cl.[5] H01Q *13/10*
U.S. Cl. 343—770 **13 Claims**



1. A phase-array, rf antenna comprising:

a conductive sheet having a plurality of radiating slots, said slots arranged in a plurality of rows, wherein each of said rows are arranged in a linear array and said slots are spaced in each row so as to generate a predetermined radiation pattern when rf energy is coupled to a single row and wherein said slots are spaced differently in each of said rows whereby the direction of said radiation pattern is different for each of said rows;

waveguide means for coupling rf energy to and from said rows; and

switching means for selectively permitting rf energy to be transmitted by said waveguide means to and from one of said rows while blocking the transmission of rf energy to and from all other of said rows.

5,189,434

MULTI-MODE ANTENNA SYSTEM HAVING PLURAL RADIATORS COUPLED VIA HYBRID CIRCUIT MODULES

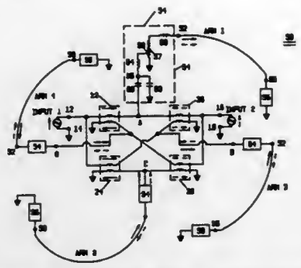
Ross L. Bell, Mineral Wells, Tex., assignor to Antenna Products Corp., Mineral Wells, Tex.

Filed Mar. 21, 1989, Ser. No. 326,746
Int. Cl.[5] H01Q *25/04;* **H01P** *5/16*
U.S. Cl. 343—853 **42 Claims**

33. An antenna system for simultaneously providing at least two independent radiation patterns, comprising:

a plurality of radiators and a hybrid circuit structure, said radiators arranged to form a multi-arm antenna, each arm including a first terminal connected to the hybrid circuit structure and a second terminal connected to a reference potential, the hybrid circuit structure having a plurality of input terminals arranged in pairs for receiving multiple rf input signals in substantial electrical isolation from one another, said structure including four output terminals, wherein each of said output terminals provides connection with the first terminal of a different radiator for simultaneously feeding the radiators with each of the multiple input signals, said structure further including

constant-impedence transmission-line balun means operatively connected with said input and output terminals for rendering the pairs of input terminals rf isolated from one



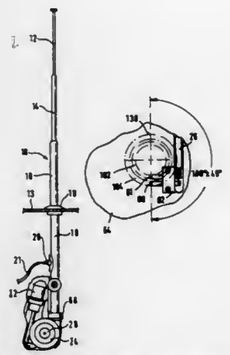
another and for rendering the output terminals rf isolated from one another.

5,189,435

RETRACTABLE MOTORIZED MULTIBAND ANTENNA

George D. Yarsunas, Vincentown; Michael L. Brennan, Howell, and Frank Duggan, Trenton, all of N.J., assignors to Radio Frequency Systems, Inc., Marlboro, N.J.

Filed Jan. 16, 1991, Ser. No. 642,195
Int. Cl.[5] H01Q *1/10*
U.S. Cl. 343—903 **28 Claims**



18. A rotary connector for use in a retractable motorized antenna for connecting a high frequency portion of the antenna to a high frequency transceiver such as a cellular telephone, comprising:

A. a housing;

B. a spool rotatably mounted within said housing;

C. a coaxial cable operationally connected at its one end to said spool so as to be wound and unwound thereon;

D. drive means operationally connected to said spool for rotating the same;

E. first and second contacts mounted on said spool for rotation therewith and electrically connected to said coaxial cable;

F. third and fourth contacts mounted on said housing in electrical contact with said first and second contacts respectively on said spool during rotation of said spool; and

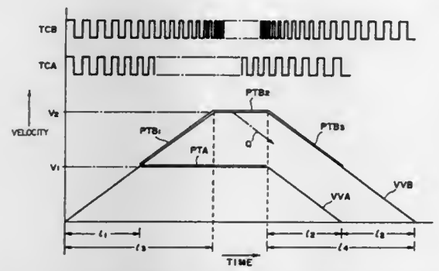
G. electrical conductor mounted on said housing in electrical contact with said third and fourth contacts for transferring a high frequency signal to a high frequency transceiver.

5,189,436

RECORDING METHOD THAT SELECTS A MOVEMENT VELOCITY IN CONFORMITY WITH A RECOGNIZED RECORDING WIDTH TO ACCOMPLISH RECORDING AND RECORDING APPARATUS USING THE SAME METHOD

Junichi Yoshikawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1990, Ser. No. 501,246
Claims priority, application Japan, Mar. 29, 1989, 1-74893
Int. Cl.[5] B41J *2/05, 19/00*
U.S. Cl. 346—1.1 **26 Claims**



1. A recording method of effecting recording on a recording medium, comprising the steps of:

recognizing a recording width over which recording is to be effected; and

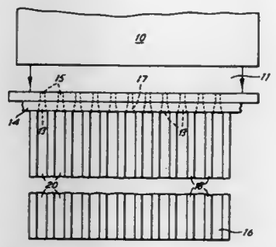
effecting recording on a recording medium at a movement velocity selected in conformity with the recognized recording width by first accelerating recording means along the conveyance path of a recording medium, then moving the recording means along the conveyance path with constant velocity and then decelerating the recording means, and by effecting recording when the recording means moves at a constant velocity and when the recording means is accelerating or decelerating and in accordance with the timing of signals responsive to the movement velocity when the recording means is accelerated, decelerated and moved at a constant velocity.

5,189,437

MANUFACTURE OF NOZZLES FOR INK JET PRINTERS

A. John Michaelis, Glen Ellyn, Ill.; Anthony D. Paton, and Stephen Temple, both of Cambridge, England, assignors to XAAR Limited, Cambridge, England

Continuation of Ser. No. 470,446, Jan. 19, 1990, abandoned, which is a continuation of Ser. No. 246,462, Sep. 19, 1988, abandoned. This application Oct. 2, 1991, Ser. No. 769,583
Claims priority, application United Kingdom, Sep. 19, 1987, 8722087
Int. Cl.[5] B41J *2/16, 2/045*
U.S. Cl. 346—1.1 **38 Claims**



1. A method of making a nozzle plate for an ink jet printhead comprising the steps of:

directing a pulse high energy beam at a surface of said plate to impinge on said surface and remove material from the plate; and

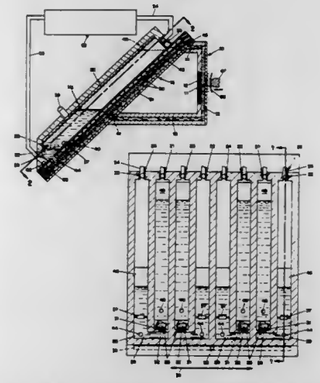
relatively rocking the plate and the beam about an axis normal to the axis of the nozzle so that said nozzle is formed progressively with a bore which extends through said plate and tapers towards an outlet end thereof in a direction opposed to that of the beam.

5,189,438

DUAL RESERVOIR AND VALVE SYSTEM FOR AN INK JET HEAD

Nathan P. Hine; Paul A. Hoisington, both of Norwich; Charles W. Spehrley, Jr, Hartford; Melvin L. Biggs, Norwich, all of Vt., and Richard Carden, Canaan, N.H., assignors to Spectra, Inc., Hanover, N.H.

Continuation of Ser. No. 509,982, Apr. 19, 1990, abandoned, which is a division of Ser. No. 319,630, Mar. 6, 1989, Pat. No. 4,937,598. This application Nov. 22, 1991, Ser. No. 799,745
Int. Cl.[5] G01D *15/16*
U.S. Cl. 346—1.1 **25 Claims**



9. A method for supplying ink to an orifice in an ink jet head which includes first and second reservoirs and a passage extending from the first reservoir past the orifice to the second reservoir comprising establishing a pressure difference between the ink in the first and second reservoirs, blocking the orifice to prevent ink from flowing out of the orifice and causing the ink to flow through the passage from the first reservoir past the orifice to the second reservoir to replace ink in the passage region adjacent to the orifice.

5,189,439

IMAGE RECORDING DEVICE FOR RECORDING A PREDETERMINED NUMBER OF IMAGES ON A SINGLE RECORDING MEDIUM

Toshiharu Yumoto, Nagano, and Tsuyoshi Shoji, Tokyo, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 617,313, Nov. 23, 1990, abandoned. This application Mar. 13, 1992, Ser. No. 851,259
Claims priority, application Japan, Nov. 25, 1989, 1-305712
Int. Cl.[5] B41J *2/32*
U.S. Cl. 346—76 PH **13 Claims**

1. An image recording device for recording one or more images arranged along a main scanning direction on a single recording medium, comprising:

recording means for recording the images on the recording medium;

a frame memory, operatively connected to said recording means, including a number of frame memory areas, the number of said frame memory areas is at least one greater

VOL 1147 ISS 4 FE 23 1993 UMI

than a number of the images arranged along the main scanning direction on the recording medium; and

determining means for determining completion of storage of

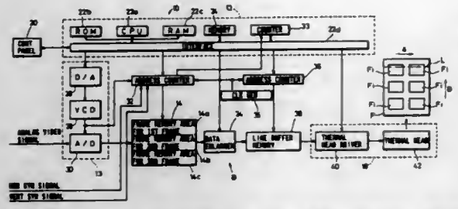


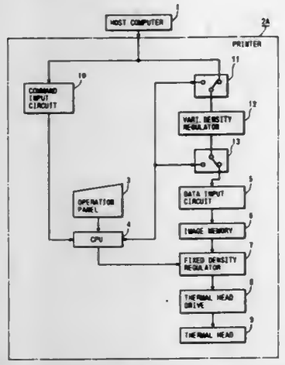
image data in the number of said frame memory areas equal to the number of the images arranged along the main scanning direction, and for producing a completion signal when said completion of storage is determined.

5,189,440

PRINTER WITH DUAL COLOR DENSITY REGULATION

Kiyoshi Takakuwa, and Keisuke Oda, both of Hiroshima, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 29, 1991, Ser. No. 784,258
Claims priority, application Japan, Nov. 9, 1990, 2-302781
Int. Cl.[5] G01D *15/10*
U.S. Cl. 346—76 PH **2 Claims**



1. A printer for printing variable density, multiple color prints in response to commands for controlling parameters, such as color density of a printed image, and image data sent from a host computer, the printer comprising:

a CPU responsive to commands from the host computer;

a first variable density regulating circuit storing color density correction data, receiving image data from the host computer, and connected to and controlled by the CPU for totally regulating the color density of a color image to be printed and outputting totally regulated image data;

a second variable density regulating circuit connected to the first variable density regulating circuit and to the CPU storing a plurality of predetermined density regulating data for finely regulating the color density of the color image to be printed in response to the totally regulated image data received from the first variable density regulating circuit and one of the predetermined density regulating data selected through the CPU and outputting finely regulated image data; and

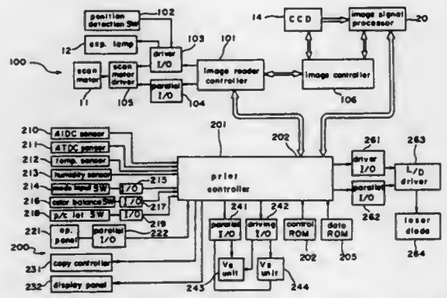
printing means connected to the second variable density regulating circuit for receiving the finely regulated image data from the second variable density regulating circuit and printing the color image in response.

5,189,441

IMAGE FORMING APPARATUS HAVING DENSITY CONTROL

Kazuyuki Fukui, Toyohashi, and Takanobu Yamada, Toyokawa, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 1, 1991, Ser. No. 694,081
Claims priority, application Japan, May 2, 1990, 2-115976
Int. Cl.[5] G01D *15/14*
U.S. Cl. 346—160 **28 Claims**



1. An electrophotographic image forming apparatus, comprising:

a photoconductor having a sensitized surface;

exposure means for forming an electrostatic latent image on the sensitized surface of said photoconductor by performing a raster scan with a light beam;

exposure control means for controlling an intensity of the light beam irradiating the sensitized surface of said photoconductor with said exposure means in correspondence with an image density signal designating a density of respective picture elements of an image to be formed, and for controlling said exposure means so that a predetermined interval can be inserted between lighter emitting periods; and

interval control means for changing a duration of the interval;

wherein said exposure control means varies the intensity of the light beam in correspondence with the duration of the interval.

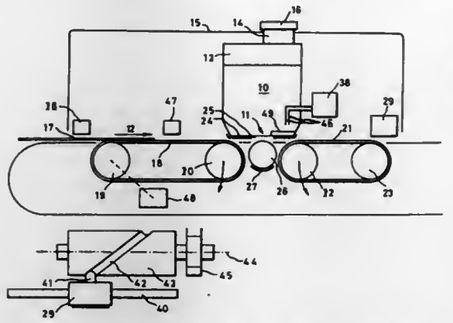
5,189,442

FRANKING MACHINE WITH INK JET PRINTER UTILIZING MELTED SOLID INK

Raymond J. Herbert, Leigh-on-Sea, United Kingdom, assignor to Alcatel Business Systems Limited, Essex, United Kingdom

Filed Aug. 31, 1990, Ser. No. 575,673
Claims priority, application United Kingdom, Sep. 4, 1989, 8919917
Int. Cl.[5] G01D *15/16*
U.S. Cl. 346—140 R **9 Claims**

1. A franking machine including a stationary print head comprising a plurality of ink jet nozzles; a receptacle for solid ink pellets, said receptacle communicating with said nozzles; heating means to melt the solid ink pellets contained in the receptacle so that the melted ink is enabled to flow to said nozzles; each nozzle being provided with a piezo-electric device; a guide surface in spaced relation to said nozzles; means operable to feed a mail item in engagement with said guide surface past said nozzles; means to operate the piezo-electric device of selected ones of said nozzles to eject droplets of ink from said selected nozzles onto the mail item during feeding of the mail item past said nozzles and cleaning means extending in opposition to all said plurality of nozzles of the print head and during printing on the mail item, said cleaning means remaining located in opposition to said nozzles and spaced from said nozzles to provide a passage for mail items between said noz-



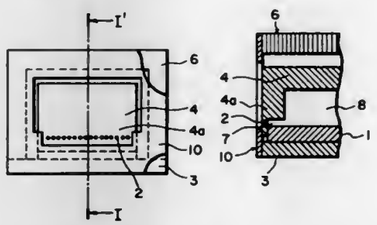
zles and said cleaning means and said cleaning means being engageable with said plurality of ink jet nozzles by rotation thereof and being rotatable relative to said nozzles while in engagement with all said nozzles to clean debris from said nozzles.

5,189,443

RECORDING HEAD HAVING STRESS-MINIMIZING CONSTRUCTION

Teruo Arashima, Yokohama; Makiko Kimura, Sagamihara; Toshio Kashino, Chigasaki; Hiroshi Sugitani, Machida; Yoshifumi Hattori, Yamato; Masami Ikeda, Tokyo; Asao Saito, Yokohama; Kazuaki Masuda, Sagamihara; Akio Saito, Hadano, and Tsuyoshi Orikasa, Kasukabe, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 583,565, Sep. 17, 1990, abandoned. This application Jun. 29, 1992, Ser. No. 905,234
Claims priority, application Japan, Sep. 18, 1989, 1-241026
Int. Cl.[5] G01D *15/16, 9/00*
U.S. Cl. 346—140 R **5 Claims**



1. A recording head comprising:

a first member having an integral orifice plate portion having a line of ink discharge outlets through which ink is discharged, and a base plate portion having grooves communicating with said discharge outlets;

a second member joined with said first member to form passages for the ink and having electrothermal transducers for generating thermal energy contributable to discharge of the ink; and

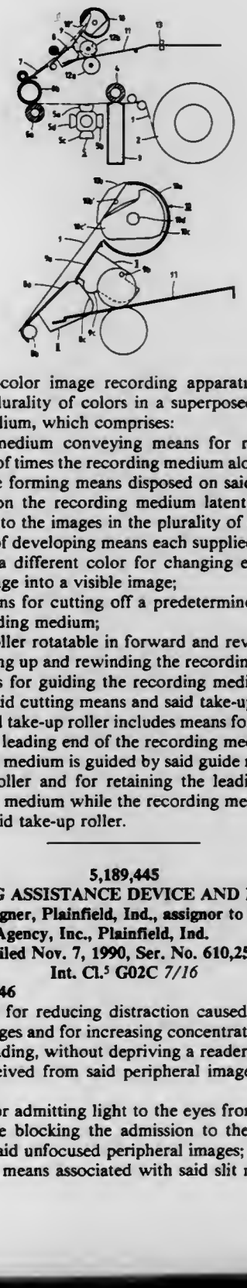
a thin plate member defining a through-opening having a periphery for exposing the discharge outlets and externally urging said orifice plate portion against said second member at an end remote from said base plate portion, said thin plate member extending along said line of ink discharge outlets.

5,189,444

AUTOMATIC ROLL-IN TAKE-UP REEL AND MULTI-COLOR IMAGE RECORDING APPARATUS USING THE SAME

Masao Yamada, Yokohama; Yoshihiro Ikeda, and Hiraku Yamamoto, both of Chigasaki, all of Japan, assignors to Matsushita Graphic Communication Systems, Inc., Tokyo, Japan

Filed Sep. 10, 1991, Ser. No. 757,410
Claims priority, application Japan, Sep. 10, 1990, 2-240914; Mar. 20, 1991, 3-056609
Int. Cl.[5] G01D *15/06;* G03G *15/01*
U.S. Cl. 346—157 **15 Claims**



1. A multi-color image recording apparatus for forming images in a plurality of colors in a superposed manner on a recording medium, which comprises:

recording medium conveying means for reciprocating a plurality of times the recording medium along a feed path;

latent image forming means disposed on said feed path for forming on the recording medium latent images corresponding to the images in the plurality of colors;

a plurality of developing means each supplied with a developer for a different color for changing each respective latent image into a visible image;

cutting means for cutting off a predetermined length from the recording medium;

a take-up roller rotatable in forward and reverse directions for winding up and rewinding the recording medium; and

guide means for guiding the recording medium selectively toward said cutting means and said take-up roller,

wherein said take-up roller includes means for automatically holding a leading end of the recording medium when the recording medium is guided by said guide means into said take-up roller and for retaining the leading end of the recording medium while the recording medium is wound around said take-up roller.

5,189,445

READING ASSISTANCE DEVICE AND METHOD

Harold W. Stagner, Plainfield, Ind., assignor to Special Education Rehab Agency, Inc., Plainfield, Ind.

Filed Nov. 7, 1990, Ser. No. 610,257
Int. Cl.[5] G02C *7/16*
U.S. Cl. 351—46 **19 Claims**

1. A device for reducing distraction caused by unfocused peripheral images and for increasing concentration on focused text during reading, without depriving a reader's eyes of light otherwise received from said peripheral images, said device comprising:

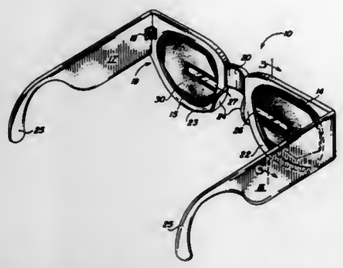
slit means for admitting light to the eyes from said focused text, while blocking the admission to the eyes of light forming said unfocused peripheral images;

illumination means associated with said slit means for sup-

VOL 1147 ISS 4 FE 23 1993 UMI

plying white light peripherally to the eyes in place of said blocked light; and

means mounting said slit means and illumination means before the eyes of the reader, said mounting means com-



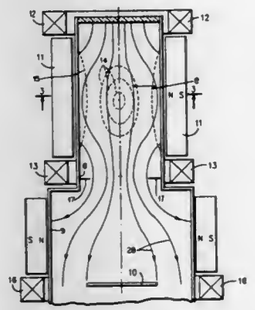
prising a front portion supporting said slit means and illumination means, and left and right portions connected to said front portion and supportable about the reader's head.

5,189,446

PLASMA WAFER PROCESSING TOOL HAVING CLOSED ELECTRON CYCLOTRON RESONANCE

Michael S. Barnes, Mahopac; John C. Forster, and John H. Keller, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 17, 1991, Ser. No. 702,654
Int. Cl.[5] H05H *1/18*
U.S. Cl. 315—111.41 **11 Claims**



1. A plasma processing tool comprising:

a) a plasma beam chamber having a plasma beam generating first region and a plasma-workpiece interaction second region extending along an axis of said chamber;

b) first and second axially separated coil means along said first region for providing a magnetic field directed along the axis of said chamber;

c) multipole magnet means extending between said oil means for providing a transverse cusp magnetic field;

d) a gas within said chamber;

e) means for applying microwave energy to said first region;

f) said fields having strengths selected to provide with said microwave energy a plasma beam having a substantially closed plasma electron cyclotron resonance zone within said first region;

g) said zone being removed from contact with the walls of said chamber;

h) a workpiece in said second region along said axis;

i) said beam being guided by said magnetic field directed along said axis; and

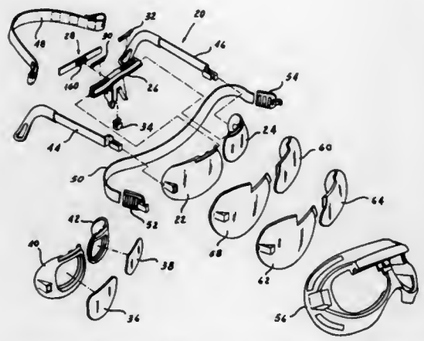
j) said zone having a size consistent with a size of said workpiece so that substantially the entirety of said beam is intercepted by said workpiece.

5,189,447

INTEGRATED FIELD EYEWEAR SYSTEM

Richard A. Oleson, Lexington, Ky., assignor to Gentex Corporation, Carboondale, Pa.

Continuation of Ser. No. 301,349, Jan. 25, 1989, abandoned. This application Oct. 9, 1990, Ser. No. 593,578
Int. Cl.[5] G02C *1/08*
U.S. Cl. 351—121 **21 Claims**



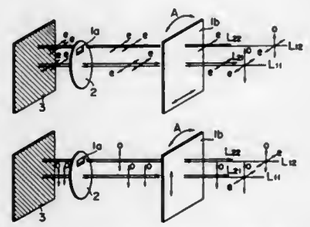
2. Eyewear including in combination a front comprising a bridge and respective left and right primary elements each having a transparent portion, each primary element having a temporal portion forming a fore-and-aft extending passage having a sidewall provided with an opening therein of limited extent, a pair of members elongated in a fore-and-aft direction and adapted to be inserted through the respective sidewall openings into the respective passages and locked therein by being drawn aft, and means attached to said members for securing the front to the head of a wearer.

5,189,448

UNIT FOR SEARCHING FOR A LOST CONTACT LENS

Katsumi Yaguchi, 6-3, Iidabashi 1-Chome, Chiyoda-ku, Tokyo, Japan

Filed Aug. 8, 1991, Ser. No. 742,118
Int. Cl.[5] G02C *7/04, 7/12*
U.S. Cl. 351—162 **13 Claims**



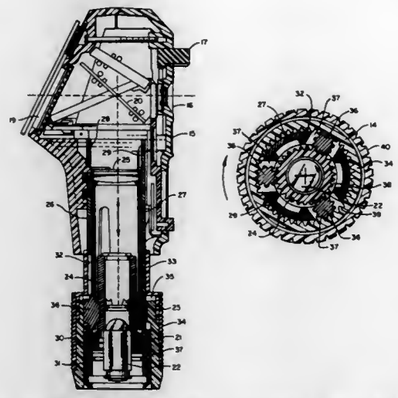
1. A device for searching for a lost contact lens, the combination comprising a contact lens, a polarizing filter on at least a part of said contact lens, and lens search means operable to facilitate viewing of said contact lens when said contact lens has been temporarily misplaced or lost, said lens search means comprising a polarizing plate operable to cause said polarizing filter on said contact lens to appear opaque when viewed through said polarizing plate.

5,189,449

RETINOSCOPE WITH EXTERNAL CONTROL SLEEVE

David G. Perkins, Syracuse, N.Y., assignor to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Filed Sep. 11, 1991, Ser. No. 757,897
Int. Cl.[5] A61B *3/10*
U.S. Cl. 351—211 **11 Claims**



11. Streak retinoscope which comprises a lamp assembly producing a transverse streak of light, and a control handle assembly effective to permit adjustment of focus of said streak of light and adjustment of its angular position as reflected by a beam splitter onto the retina of a patient's eye; said control handle assembly including a main sleeve having a head assembly mounted at its distal end; a lamp carrier sleeve generally within said main sleeve said lamp carrier sleeve having said lamp assembly mounted therein, and having gear teeth extending axially along an outer surface, and said main sleeve including means holding said lamp carrier sleeve therewithin to permit angular rotation but prevent axial displacement of said lamp carrier sleeve; a lens holder having a focusing lens assembly disposed at its distal end, including means holding the lens holder with respect to the main sleeve and permitting axial movement relative to the main sleeve, and a control sleeve disposed radially outward of the main sleeve and displaceable axially and freely rotatable angularly over 360 degrees, including means engaging a portion of said lens holder so that axial displacement of said control sleeve results in corresponding axial movement of the lens assembly for focussing said streak without axial movement of said lamp carrier sleeve, and interior gear teeth formed on an inner surface of said control sleeve, said interior gear teeth operatively engaging the gear teeth of the lamp carrier, so that rotation of said control sleeve results in a corresponding angular rotation of the streak.

5,189,450

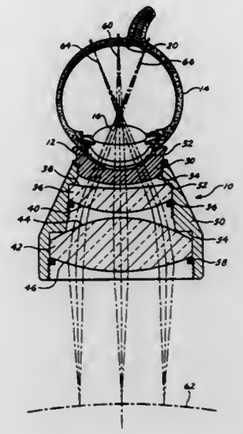
HIGH MAGNIFICATION OPHTHALMIC LENS

Janet L. Crossman; Phillip J. Erickson, both of Bellevue; Gregory L. Heacock, Seattle, all of Wash., and Martin A. Mainster, Overland Park, Kans., assignors to Ocular Instruments, Inc., Bellevue, Wash.

Filed May 21, 1991, Ser. No. 703,680
The portion of the term of this patent subsequent to Apr. 16, 2008, has been disclaimed.
Int. Cl.[5] A61B *3/00*
U.S. Cl. 351—219 **10 Claims**

1. A magnifying ophthalmic lens for observing the fundus of the eye and for delivering laser energy thereto comprising:

a contact lens having a posterior surface and an anterior surface, said posterior surface having a curvature compatible with the anterior surface of a cornea, the anterior surface of the contact lens having a predetermined radius of curvature R_{2C}, wherein the indices of refraction of said contact lens can range from 1.40 to 1.95, R_{2C} can range from 7.0 mm to 22.4 mm and the axial thickness of the contact lens (T_C) can range from 0.5 mm to 4.5 mm,



an entry lens positioned anterior to the contact lens, the entry lens being aspheric, the surfaces of the entry lens being defined by the formula:

$$Z = \frac{CK^2}{1 + \sqrt{1 - C^2EK^2}},$$

wherein

$C=(1/R)$,

$E=b+1$, and

$K^2=x^2+y^2$,

wherein for the anterior surface of the lens,

R_{2EL} ranges from 18.4 mm to 35.3 mm and

b_{2EL} ranges from 0 to -40, and

wherein for the posterior surface of said lens,

R_{1EL} ranges from 13.3 mm to 20.7 mm, and

b_{1EL} ranges from 0 to -10,

said entry lens having a thickness (T_{EL}) ranging from 1.0 mm to 32.1 mm, wherein

said entry lens has an index of refraction ranging from 1.4 to 1.95, and

a center lens positioned between the contact lens and the entry lens, the optical axes of the contact lens, the center lens, and the aspheric lens being substantially coincident, the center lens having a posterior surface having a radius of curvature R_{1CL}, the anterior surface of the center lens having a radius of curvature R_{2CL}, the center lens element receiving light rays emerging from the eye and the contact lens and refracting the light rays toward the optical axis of the ophthalmic lens, the entry lens collecting the light rays emerging from the center lens and producing an aerial image anterior to the entry lens, the contact lens and the center lens element being positioned relative to each other and to the entry lens and having their radii of curvatures chosen such that light rays originating on the fundus of the eye are magnified in the aerial image produced by the entry lens, at a magnification greater than 1.0×, and wherein the indices of refraction for the center lens can range from 1.40 to 1.95, R_{1CL} can range from -32.8 mm through infinity to 195.9 mm, R_{2CL} can range from 23.9 mm to 66.1 mm and the axial thickness of the center lens (T_{CL}) can range from 0.5 mm to 8.7 mm.

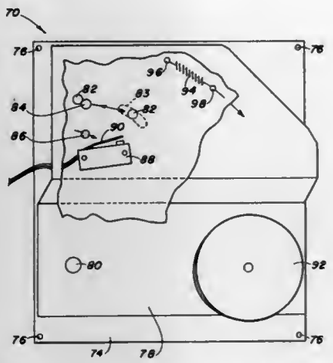
VOL 1147 ISS 4 FEB 23 1993 UMI

5,189,451

PLATTER FEED SAFETY

Robert C. Bredin, 1267 Anderson Ave., Apt. 13, Fort Lee, N.J. 07024

Filed Jan. 8, 1992, Ser. No. 817,783
Int. Cl.[5] G03B *21/00*
U.S. Cl. 352—128 5 Claims



1. In a film platter system having a feed out platter with means defining a feed out path for film to a projector, a platter support for rotatably carrying the feed out platter, and power supply means for operating the platter system, the platter system being susceptible to a head wrap condition whereupon tension of film on the feed out path increases above a normal tension of the film on the path, the improvement comprising:

a roller plate mounted for movement along the feed out path;

a safety roller mounted for rotation to said roller plate and engaged with film on said feed out path;

biasing means engaged with said roller plate for urging said roller plate in a tension resisting direction and, under normal feeding conditions for film on the feed out path, said biasing means maintaining said roller plate in an inactive position;

switch means engageable by said roller plate and activatable upon movement of said roller plate into an active position spaced from said inactive position and against biasing of said biasing means under elevated tension of film on the feed out path due to a head wrap condition in the platter system;

a mounting plate adapted to be fixed at a selected location along the feed out path, said roller plate being movably mounted to said mounting plate;

said roller plate being pivotally mounted at a pivot point to said mounting plate, said safety roller being rotatably mounted to said mounting plate at a location spaced from said pivot point, said biasing means comprising a spring connected between said mounting plate and said roller plate;

said switch means comprising a microswitch mounted to one of said mounting and roller plates, and an activating pin fixed to the other of said mounting and roller plates for movement to activate said switch in said active position of said roller plate;

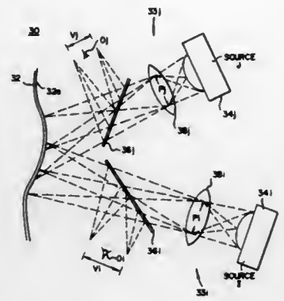
said roller plate includes a bend which divides said roller plate between a first part on which said pivot point and safety roller are mounted and which is close to and parallel to said mounting plate, and a second part which is spaced away from said mounting plate, said spring, activating pin and switch being mounted in a spaced between said mounting plate and the second part of said roller plate.

5,189,452

REAL IMAGE PROJECTION SYSTEM

James M. Hodson, Munich, Fed. Rep. of Germany, and Dennis M. Joseph, New Smyrna Beach, Fla., assignors to General Electric Company, Philadelphia, Pa.

Filed Dec. 9, 1991, Ser. No. 803,540
Int. Cl.[5] G02B *27/14*
U.S. Cl. 353—94 16 Claims



7. An image projection system for providing a different display of visual information to each of a plurality of observers, comprising:

a projection screen formed of a selected material;

a plurality of source means, each projecting different display information;

a like plurality of spatially-separated beamsplitter means, each situated along an optical axis of the screen and between the screen and a position of a different one of said observers, for redirecting at least a portion of the illumination for an associated one of the source means substantially onto the optical axis and for passing at least a portion of the redirected illumination reflected from said screen to the position of the associated observer; and

a plurality of lens mean, each interposed between an associated pair of said source means and said beamsplitter means, to project from a common portion of the screen each of a like plurality of different images into each different viewing volume occupiable by a different and spatially-separated one of a plurality of observers, without significant interference with the visible information directed to any of the remaining observers.

5,189,453

METHOD AND SYSTEM FOR PRE-EXPOSING INFORMATION ON A FILMSTRIP

James D. Boyd, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 19, 1991, Ser. No. 688,660
Int. Cl.[5] G03B *1/00, 17/24*
U.S. Cl. 354—122 16 Claims

5. A system for superimposing information on each available imaging area of a filmstrip, said system comprising:

an enclosure, having a first and second opening;

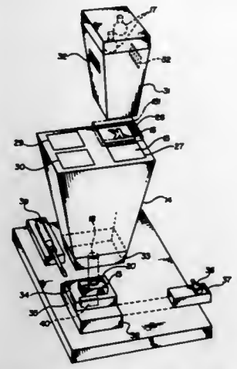
a camera that is mounted at the first opening of said enclosure, said camera having a filmstrip that is prewound to a storage area contained within said camera and a metering system that preserves film registration throughout winding and picture taking cycles;

a transparent or translucent material containing information that is mounted at the second opening of said enclosure;

illuminating means mounted outside said enclosure second opening behind said transparent material for supplying near maximum light density on said filmstrip;

means for winding said filmstrip to the first and subsequent imaging areas, said winding means is coupled to said camera;

means for tripping the shutter of said camera thereby exposing a portion of the first and subsequent imaging areas of said filmstrip with an image of the information; and



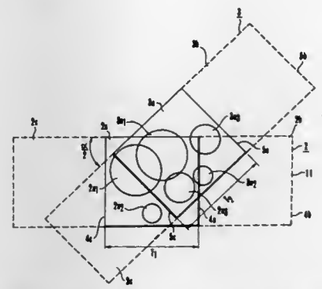
means for prewinding said filmstrip back into the storage area of said camera, so that when a picture is taken with said camera, a detailed latent image of the information will appear at the same location on each imaging area of the filmstrip.

5,189,454

PHASE-TYPE FOCUSING SCREEN AND PROCESS FOR MANUFACTURING THE SAME

Schoichi Yamazaki, and Hiroshi Matsui, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1990, Ser. No. 482,840
Claims priority, application Japan, Feb. 28, 1989, 1-047965; Jun. 28, 1989, 1-167907
Int. Cl.[5] G03B *3/00, 21/60*
U.S. Cl. 354—200 5 Claims



1. A focusing screen positioned at or near the image which a photographic lens forms, comprising:

a first pattern portion having a plurality of first unit pattern regions periodically arrayed, each unit pattern region having a plurality of irregularly arrayed minute patterns of protrudent and/or recessed profile; and

a second pattern portion having a plurality of second unit pattern regions periodically arrayed, each unit pattern region having a plurality of irregularly arrayed minute patterns of protrudent and/or recessed profile,

wherein said first and second pattern portions are superimposed one upon the other to form at least three plane portions, and said plane portions each having a level difference and wherein said level difference is plural in number, and one d_1 of the level differences and another one d_2 satisfy the following conditions:

$$0.38\lambda/(n-1) \leqq d_1 \leqq 0.62\lambda/(n-1)$$

$$0.72\lambda/(n-1) \leqq d_2 \leqq 1.1\lambda/(n-1)$$

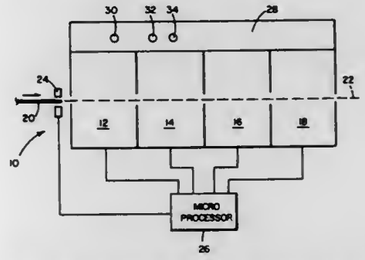
wherein n is a refractive index of the material of said focusing screen and λ is a predetermined working wavelength in the visible light region.

5,189,455

PROCESSOR HAVING MEANS FOR INDICATING AN ERROR IN AN OPERATING CONDITION

April M. Seim, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 7, 1991, Ser. No. 772,516
Int. Cl.[5] G03D *13/00*
U.S. Cl. 354—297 4 Claims



1. In a processor for developing latent images on a photosensitive material, the processor having at least one processing station wherein a processing solution engages the material and a drying station wherein the material is dried, means for sensing a plurality of operating conditions in the stations and detecting a failure in the operating conditions, and a lamp for signaling error conditions, the improvement comprising:

control means coupled to the lamp and to the sensing means, the control means being effective to turn the lamp on and off one or more times in response to the sensing means detecting failure in the operating conditions, the number of times the lamp is turned on and off being related to the particular failure condition detected by the sensing means, and the control means turning the lamp on and off a different number of times for each of the operating conditions sensed in accordance with a predetermined arrangement.

5,189,456

METHOD AND APPARATUS FOR ADJUSTING THE VOLUME OF REPLENISHMENT FLUID PROVIDED TO A CHAMBER OF A FILM PROCESSOR

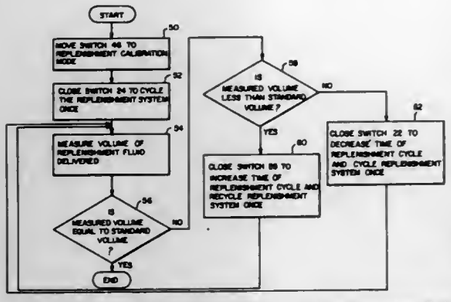
David G. Sherburne, Ontario; April M. Seim, Spencerport, and Michael G. Howe, Bloomfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 30, 1991, Ser. No. 767,757
Int. Cl.[5] G03D *13/00*
U.S. Cl. 354—298 4 Claims

1. In a processor for developing latent images on a photosensitive material, the processor having at least one chamber for holding a processing fluid that periodically needs to be replenished, a plurality of switches for detecting events occurring during operation of the processor to develop latent images, a processor control coupled to the switches for receiving signals in response to the switches detecting events, a replenishment system operable when cycled once to deliver a quantity of replenishment fluid to the chamber, the processor control being connected to the replenishment system, the improvement comprising:

means for changing the processor control from a normal mode of operation to a replenishment adjustment mode of

operation wherein the volume of replenishment fluid furnished to the chamber during one cycle of the replenishment system can be measured and adjusted, the changing means being effective to change the function of three of the switches so that 1) a first one of the switches is effective to initiate one cycle of operation of the replenish-



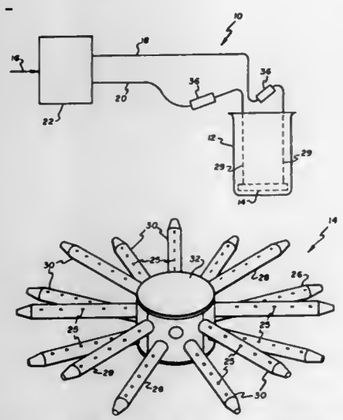
ment system so that the volume of replenishment fluid delivered during a cycle can be measured and compared to a standard volume, 2) a second one of the switches is effective to increase the volume of fluid delivered during one cycle of the replenishment system, and 3) a third one of the switches is effective to decrease the volume of fluid delivered during one cycle of the replenishment system.

5,189,457

SHEET PROCESSING APPARATUS AND METHOD

Ronald P. Schlee, and Jeffrey L. Hall, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 28, 1992, Ser. No. 826,718
Int. Cl.[5] G03D *3/04*
U.S. Cl. 354—328 **17 Claims**



1. Apparatus for processing sheets of photosensitive material disposed in a tank containing a processing solution, said apparatus comprising:

a) a gas distributor disposed in said solution, said gas distributor having at least two independent gas inlet lines for alternately receiving a gas, said distributor further having a plurality of spaced openings for dispensing the gas into the tank;

b) means for holding the photosensitive sheets in the solution; and,

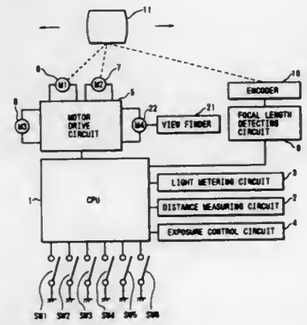
c) means connected to said gas inlet lines for alternately bursting the gas through said gas distributor such that said gas burst during its upward movement passes along the surface of said sheets to provide uniform solution agitation.

5,189,458

ELECTRIC ZOOMING CAMERA

Hidenori Miyamoto, Kawasaki; Kolchi Daitoku, Sagamihara; Kazuyuki Kazami; Toshiyuki Nakamura, both of Tokyo, and Yuji Katano, Kawasaki, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 762,083, Sep. 19, 1991, abandoned, which is a continuation of Ser. No. 603,259, Oct. 26, 1990, abandoned, which is a continuation of Ser. No. 428,519, Oct. 30, 1989, abandoned. This application Jul. 7, 1992, Ser. No. 908,877
Claims priority, application Japan, Jul. 5, 1988, 63-221775; Nov. 2, 1988, 63-279025
Int. Cl.[5] G03B *13/00*
U.S. Cl. 354—400 **25 Claims**



1. A camera comprising:

(a) a photographing lens with variable focal length;

(b) first focal length varying signal generator means, for generating a first focal length varying signal continuously during a manual operation;

(c) drive means for electrically driving said photographing lens to vary the focal length thereof during the generation of said first focal length varying signal;

(d) current focal length signal generator means for generating a current focal length signal corresponding to the current focal length of said photographing lens;

(e) memory instruction signal generator means for generating a memory instruction signal in response to a manual operation;

(f) information memory means for storing information corresponding to said current focal length signal at the generation of said memory instruction signal;

(g) second focal length varying signal generator means for generating a second focal length varying signal in response to a manual operation, wherein said drive means is adapted, in response to said second focal length varying signal, to electrically drive said photographing lens to a focal length corresponding to said information; and

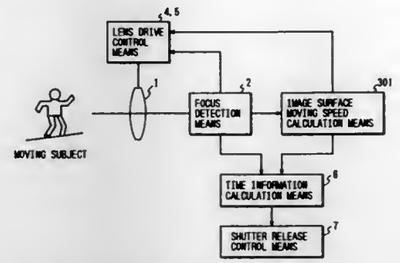
(h) manually operable means for determining whether or not said drive means is responsive to said second focal length varying signal, said information memory means retaining information stored therein even when said drive means is not responsive to said second focal length varying signal.

5,189,459

AUTOMATIC FOCUSING APPARATUS

Toshimi Watanabe, Machida, and Akira Ogasawara, Kawasaki, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed May 17, 1991, Ser. No. 701,842
Claims priority, application Japan, May 22, 1990, 2-131626
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—402 **12 Claims**



1. An automatic focusing apparatus comprising:

focus detection means for repeatedly calculating an amount of defocus corresponding to the difference between a surface of a subject image imaged by a taking optical system and a prospective image surface in a conjugate relationship with a film surface;

image surface speed calculation means for calculating speed at which the surface of the subject image imaged by the taking optical system moves with the movement of the subject on the basis of present and past amounts of defocus calculated by said focus detection means;

lens drive control means for driving and controlling the taking optical system on the basis of said amount of defocus calculated by said focus detection means and speed of the subject image surface calculated by said image surface speed calculation means, wherein the driving and the controlling of the taking optical system continue after a shutter release operation is started;

time information calculation means for calculating time information indicating the time when the surface of the subject image imaged by the taking optical system will coincide with the prospective image surface on the basis of said amount of defocus, said speed of the image surface and drive speed of the taking optical system driven and controlled by said lens drive control means; and

shutter release control means for starting, based on the time information, the action of shutter release mechanism by such a timing that exposure is effected when the surface of the subject image imaged by the taking optical system coincides with the prospective image surface.

5,189,460

CAMERA DETECTING LUMINANCE FROM A PLURALITY OF AREAS

Shingo Hayakawa, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1991, Ser. No. 646,250
Claims priority, application Japan, Jan. 30, 1990, 2-19742; Jan. 30, 1990, 2-19752
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—402 **30 Claims**

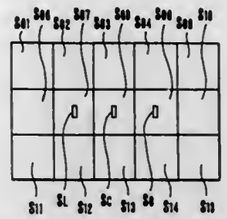
1. A camera comprising:

(a) detecting means for dividing a field of view into a plurality of small areas and detecting the luminance of each of said small areas;

(b) focus detecting means capable of detecting focuses of a plurality of focus detecting areas in said field of view;

(c) setting means for classifying said plurality of small areas into different preset combinations in accordance with a selection of said focus detecting areas; and

(d) calculation means for calculating a light measurement value by using the luminance of two or more of said small areas obtained by said detecting means and changing



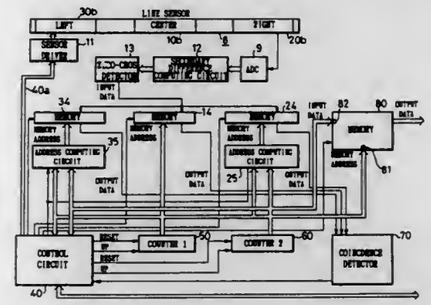
degrees of weight on said small areas classified by said setting means.

5,189,461

RANGE FINDER FOR PASSIVE TYPE AUTOFOCUSSING DEVICE

Minoru Ishiguro, Ohmiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Ohmiya, Japan

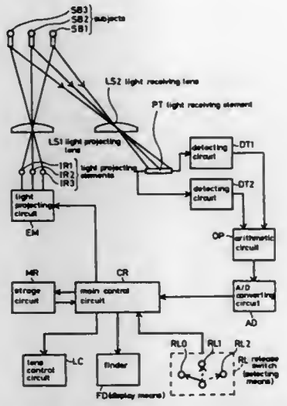
Filed Mar. 5, 1992, Ser. No. 846,166
Claims priority, application Japan, Mar. 6, 1991, 3-064617; Mar. 6, 1991, 3-065616; Mar. 6, 1991, 3-065618
Int. Cl.[5] G03B *13/36*; G01C *3/08*; H01J *40/14*
U.S. Cl. 354—402 **6 Claims**



1. Range finder for passive type autofocussing device, said range finder comprising a photosensor to pick up a luminance distribution of a scene to be photographed, said photosensor consisting of a single line sensor divided into three sections and three imaging lenses adapted to image the scene on the respective sections of the line sensor, a single secondary difference computing circuit to A/D convert an output signal from said line sensor and to compute a secondary difference of the digitalized value, a single zero-cross detecting circuit to detect a zero-cross point of an output signal from said secondary difference computing circuit, zero-cross memory circuits associated with said three sections of said line sensor, respectively, for storage of zero-cross behavior signals provided from said zero-cross detecting circuit, and a coincidence detecting circuit adapted to compare the zero-cross behavior signals stored in said respective zero-cross memory circuit with one another and thereby to detect a coincidence of these zero-cross behavior signals, wherein one of said three line sensor sections is selected as a reference sensor section and the zero-cross behavior signals provided from the other two sensor sections are successively shifted relative to the zero-cross behavior signal provided from said reference sensor section until a coincidence of these zero-cross behavior signals is detected by said coincidence detecting circuit and a range to the scene is computed from an amount of said shift.

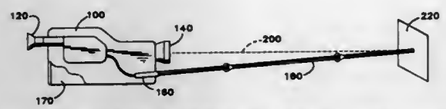
VOL 1147 ISS 4 FEB 23 1993 UMI

5,189,462
RANGE METER FOR CAMERA
Yuji Nakajima, Chiba, Japan, assignor to Seikosha Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 634,260, Dec. 26, 1990. This application May 28, 1992, Ser. No. 891,676
Claims priority, application Japan, Dec. 27, 1989, 1-339421
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—403 **9 Claims**



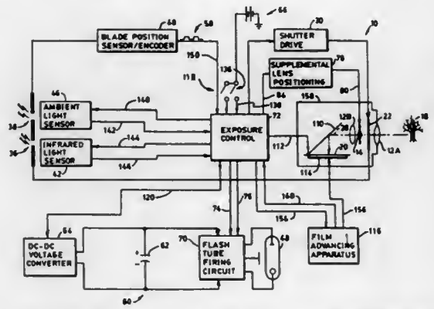
1. A range meter for cameras comprising light projecting means for projecting a plurality of irradiation beams in different directions, selecting means for manually selecting a desired one out of the plurality of the irradiation beams, light receiving means for receiving the reflected light from a subject to be photographed that is irradiated with the irradiation beam selected by the selecting means to provide an output signal corresponding to the position at which light is received on the light receiving means, and logic means for determining the distance to the subject on the basis of the output signal of the light receiving means.

5,189,463
CAMERA AIMING MECHANISM AND METHOD
David G. Capper, 49 Edwards Ave., Sausalito, Calif. 94965, and Stanley H. Axelrod, Port Orchard, Wash., assignors to David G. Capper, Sausalito, Calif.
Filed Feb. 12, 1992, Ser. No. 835,192
Int. Cl.[5] G03B *13/00*
U.S. Cl. 354—403 **26 Claims**



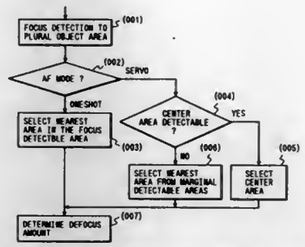
1. A photographic apparatus with non-viewfinder-dependent aiming capability, the apparatus comprising:
a camera that receives light from a field of view, produces signals representative of the received light, and intermittently reads the signals to create a photographic image, where the intermittent reading results in intermissions between readings; and
a radiant energy source operatively associated with the camera for producing a beam of radiant energy and for projecting the beam of radiant energy during intermissions between readings to identify at least a part of the field of view by producing a discernable energy pattern on an object having a known position relative to the field of view.

5,189,464
SUPPLEMENTAL LENS POSITIONING SYSTEM FOR A FIXED FOCUS LENS CAMERA
David L. Farrington, Boxborough; Norman D. Staller, Beverly, and Jon E. Van Tassell, Concord, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Dec. 18, 1991, Ser. No. 809,330
Int. Cl.[5] G03B *13/36*
U.S. Cl. 354—403 **9 Claims**



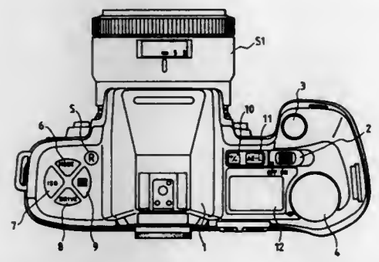
1. A focus control system for photographic apparatus having means for defining a film plane, said focus control system comprising:
a first lens mounted in a fixed position on the apparatus for directing image-carrying light rays along an optical path from a subject to be photographed, located within a first distance-zone, to the film plane;
a second lens mounted for movement between a first position where, in combination with said first lens, it directs image-carrying light rays along said optical path from a subject to be photographed to the film plane, the subject being located within a second distance-zone which is more remote from the apparatus than said first distance-zone, and a second position displaced from said optical path;
drive means coupled to said second lens for moving said second lens between its said first and second positions;
an energizable light source for illuminating the scene for a predetermined period of time with artificial light prior to an exposure interval;
means for determining if a predetermined amount of time has elapsed since the artificial light has been emitted and for generating a first signal representative thereof;
light sensitive means for detecting artificial light emitted by said light source and reflected from a subject to be photographed and for generating a second signal representative of subject reflectivity; and
signal detecting means, responsive to said first and second signals, for determining if said second-signal has or has not been generated within said predetermined period of time; and
control means 1) for energizing and de-energizing said light source to illuminate a subject to be photographed for said predetermined period of time, and 2) responsive to said signal detecting means for subjects located within said second distance-zone, for actuating said drive means to move said movably mounted second lens from its said second position to its said first position if said signal detecting means determines that said second-signal has not been generated within said predetermined period of time.

5,189,465
FOCUS DETECTION APPARATUS DETECTING FEARS TO A PLURALITY OF AREAS
Akira Akashi, and Masaki Higashihara, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 15, 1991, Ser. No. 641,509
Claims priority, application Japan, Jan. 16, 1990, 2-7770
Int. Cl.[5] G03B *3/10*
U.S. Cl. 354—408 **17 Claims**



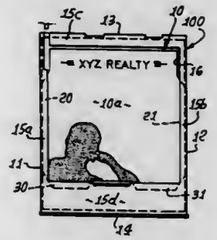
1. An automatic focusing apparatus having a first auto-focusing mode in which, regardless of an in-focus or out-of-focus state, an auto-focusing operation including focus detection and driving of an optical system are repeatedly performed, and a second auto-focusing mode in which said auto-focusing operation is performed until an in-focus state is obtained and the auto-focusing operation is terminated after the in-focus state is detected, said apparatus comprising:
(a) a sensor unit for receiving light beams from a plurality of different areas in a photographic scene; and
(b) a focusing processing circuit which, in said first auto-focusing mode, causes said auto-focusing operation to be performed on the basis of an output of the sensor unit representing a particular area of said plurality of areas as long as an output of said sensor unit which represents said particular area is appropriate and which, in said second auto-focusing mode, selects as a result of the auto-focusing operation a signal representing a particular focusing state among focus state signals of each of said areas obtained by the auto-focusing operation performed on outputs of said sensor unit corresponding to each of said areas in the photographic scene.

5,189,466
INFORMATION SETTING APPARATUS IN A CAMERA
Seiichi Yasukawa, and Takashi Saegusa, both of Kawasaki, Japan, assignors to Nikon Corporation, Tokyo, Japan
Filed Dec. 3, 1991, Ser. No. 801,893
Claims priority, application Japan, Dec. 20, 1990, 2-412471
Int. Cl.[5] G03B *17/00*
U.S. Cl. 354—412 **5 Claims**



1. An information setting apparatus in a camera including:
selecting operation means having a plurality of operating portions operated to select one of a plurality of functions when the set values of said plurality of functions are to be changed;
changing operation means operated to change the set value of said selected function;
resetting operation means having an operating portion for resetting all of the set values of said plurality of functions to a predetermined standard value; and
individual resetting means for resetting only the selected function to said predetermined standard value when one of the operating portions of said selecting operation means and said resetting operation means are operated together.

5,189,467
METHOD OF COMBINING GRAPHICS AND PHOTOGRAPHY TO PROVIDE A PROGRAM TO CREATE SELF-ESTEEM IN CHILDREN
Alton D. Wheeler, 3940 Fox Meadow La., Pasadena, Tex. 77504
Filed Jun. 27, 1991, Ser. No. 722,187
Int. Cl.[5] G03B *35/00*
U.S. Cl. 354—110 **32 Claims**



1. In the method of producing multiple images on a light sensitive photographic film, the steps including
a) providing a photographic film having thereon a pre-exposed image A which is undeveloped,
b) providing a single template having
i) a mask section A' positioned to mask said image A when the template is aligned in superposed relation over the film, and
ii) a transparent section with a graphics image B thereon to be reproduced on the film,
iii) said template provided to offset said section A' from said image B at different locations on the same template,
c) aligning the template in superposed relation over the film, and
d) passing light through said transparent section of the template to reproduce a version of said image B on the undeveloped film, light also being simultaneously blocked by the mask section of the template,
e) and developing said film to convert said images A and B thereon into developed visible images.

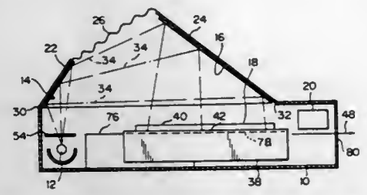
5,189,468
HARD COPY GENERATING METHOD AND DEVICE USING A LIQUID CRYSTAL PANEL
Masamichi Sato, and Jun Yamaguchi, both of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Apr. 15, 1991, Ser. No. 685,103
Claims priority, application Japan, Apr. 20, 1990, 2-102857
Int. Cl.[5] G03B *27/04, 27/02*
U.S. Cl. 355—88 **8 Claims**

1. A method of generating a hard copy from a video signal, comprising the steps of:
receiving a video signal corresponding to an image;
displaying said image on a liquid crystal display panel in the form of a black and white image corresponding to said video signal;
exposing a thermal development, photosensitive recording medium to radiation from a light source so as to form a

VOL 1147 ISS 4 FE 23 1993 UMI

photocured latent image on said recording medium, said radiation passing through said liquid crystal display panel before reaching said recording medium;

heating said recording medium so as to diffuse components



related to one of color development and bleaching in unexposed areas of said recording medium thereby forming a visible image thereon;

said recording medium being sensitive to radiation having wavelengths in the range of 300 nm to 700 nm.

5,189,469

RECORDING DEVICE

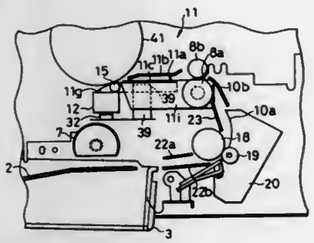
Yuji Endo, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 18, 1992, Ser. No. 836,415

Claims priority, application Japan, Feb. 18, 1991, 3-23088

Int. Cl.[5] G03G *15/14*

U.S. Cl. 355—200 **8 Claims**



1. A recording device comprising:

a housing comprised of a lower cover and an upper cover pivotable with respect to the lower cover for opening to permit access to an interior of the housing, and closing to prevent access to the interior of the housing;

a photosensitive drum, having a cylindrical surface, being mounted to the upper cover;

a transfer charger being mounted to the lower cover;

a transfer section disposed between said photosensitive drum and said transfer charger when said upper cover is closed relative to said lower cover;

a paper guide assembly having one part adjacent the transfer section for guiding recording paper to the transfer section;

a plurality of support rollers rotatably mounted on said one part of the paper guide assembly so as to be engageable with axial ends of the photosensitive drum;

the paper guide assembly including means for engaging the transfer charger so that as the paper guide assembly is pressed by the photosensitive drum through contact of the plurality of rollers, the transfer charger is pressed by the paper guide assembly;

means for resiliently pressing the transfer charger toward the photosensitive drum;

whereby when the upper cover is closed the photosensitive drum is caused to abut on the plurality of support rollers, and a gap formed between the cylindrical surface of the photosensitive drum and the transfer charger is determined by abutment of the support rollers on the cylindrical surface of the photosensitive drum.

5,189,470

XEROGRAPHIC APPARATUS FOR LABEL PRINTER

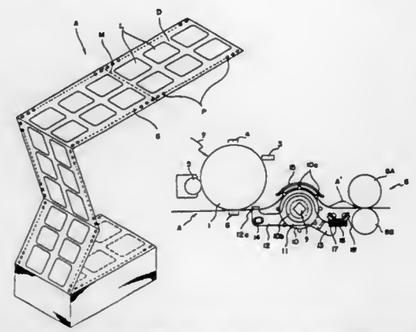
Yasuhiko Matsuda, and Kazuhiro Karuishi, both of Iwate, Japan, assignors to Kabushiki Kaisha Sato, Japan

Filed Oct. 1, 1991, Ser. No. 771,126

Claims priority, application Japan, Oct. 3, 1990, 2-103664[U]; Oct. 3, 1990, 2-263908; Oct. 3, 1990, 2-263909; Oct. 3, 1990, 2-263910; Oct. 3, 1990, 2-263911; Oct. 12, 1990, 2-274426; Oct. 12, 1990, 2-274427; Oct. 12, 1990, 2-274428; Oct. 31, 1990, 2-294514; Nov. 30, 1990, 2-128789[U]

Int. Cl.[5] G03G *15/00*

U.S. Cl. 355—208 **8 Claims**



1. A xerographic apparatus for a label printer receiving a continuous label strip, the label strip having labels trimmed to appropriate shape and provisionally attached to a backing strip, the apparatus comprising:

a photosensitive drum rotatable at a prescribed peripheral speed;

toner fixing means;

label strip conveyance means positioned between the photosensitive drum and the toner fixing means for conveying the label strip at a speed equal to the peripheral speed of the photosensitive drum;

a motor for independently driving the toner fixing means;

slack detection means positioned between the label strip conveyance means and the toner fixing means for detecting slack in the label strip, said slack detection means comprising a light transmitter and a light receiver, the light transmitter transmitting light onto the label strip and the light receiver receiving light from the transmitter reflected off the label strip, the amount of light received by the receiver being related to the amount of slack in the label strip; and

speed control means responsive to an output of the slack detection means for increasing the speed of the motor when the slack detection means detects slack in the label strip.

5,189,471

IMAGE FORMING APPARATUS WITH SLIDABLY MOUNTED DEVELOPING UNIT AND PHOTOCONDUCTIVE UNIT

Kouichi Irihara; Yukinori Andou, and Yuhi Yui, all of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 6, 1990, Ser. No. 534,148

Claims priority, application Japan, Jun. 7, 1989, 1-67072[U]

Int. Cl.[5] G03G *21/00, 15/00*

U.S. Cl. 355—210 **3 Claims**

1. An image forming apparatus, comprising:

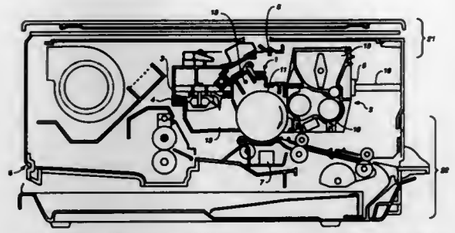
a developing unit disposed in a body;

a photoconductor unit disposed in the body;

a rail on which the developing unit and the photoconductor unit are slidably mounted adjacent to each outer, the developing unit and photoconductor unit being mounted

in such a manner so as to allow the developing unit and the photoconductor unit to be successively pulled out of the body;

an urging member for urging the photoconductor unit and the developing unit toward the direction in which the photoconductor unit and the developing unit are pulled out of the body; and



a positioning member slidably engaged with the rail and lockable at a position on the rail so as to maintain the developing unit in a fixed position, the developing unit being urged at one end by the photoconductor unit toward the positioning member.

5,189,472

COLOR IMAGE FORMING APPARATUS HAVING A PLURALITY OF GUIDE MEMBERS FACING A PLURALITY OF DEVELOPING DEVICES

Satoshi Haneda; Masakazu Fukuchi; Shunji Matsuo, and Shizuo Morita, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

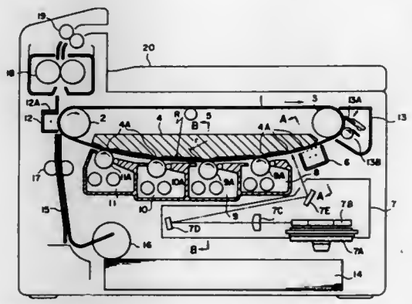
Continuation of Ser. No. 535,121, Jun. 8, 1990, Pat. No. 5,063,411. This application Jul. 31, 1991, Ser. No. 738,512

Claims priority, application Japan, Jun. 16, 1989, 1-153743; Jul. 7, 1989, 1-177729; Jul. 25, 1989, 1-192874

The portion of the term of this patent subsequent to Nov. 5, 2008, has been disclaimed.

Int. Cl.[5] G03G *5/00, 15/01*

U.S. Cl. 355—212 **15 Claims**



1. A color image forming apparatus, comprising:

a photoreceptor endless belt;

a plurality of spaced apart guide members, each of said guide members having a guide surface portion for guiding said endless belt, each of said guide surface portions including a contact portion which contacts said endless belt, said guide surface portions together defining a substantially convex guide surface;

a plurality of developing means each positioned to face a respective one of said guide surface portions of said spaced apart guide members; and

said endless belt being mounted on said plurality of guide members to pass between said substantially convex guide surface and each of said plurality of developing means.

5,189,473

INSIDE CONTAMINATION PREVENTION STRUCTURE FOR A DEVICE UTILIZING TONER PARTICLES

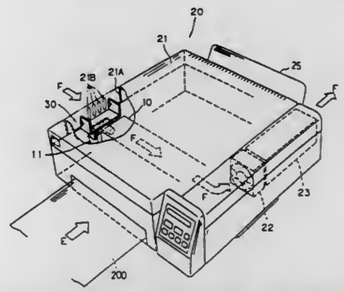
Ikuo Negoro, Sakado; Hiroyuki Yamaguchi, and Masahiro Kita, both of Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 10, 1991, Ser. No. 682,937

Claims priority, application Japan, Apr. 10, 1990, 2-38268[U]

Int. Cl.[5] G03G *21/00*

U.S. Cl. 355—215 **10 Claims**



2. An inside contamination preventing mechanism that is adapted to be positioned in an imaging apparatus utilizing an electrophotographic system for forming an image on a predetermined recording medium and having an air directing mechanism an air intake portion through which air flows from an outside of said imaging apparatus and a driving member for driving said flowing air to a predetermined portion through a predetermined area within said imaging apparatus, and a toner containing member that is located adjacent said air intake portion for containing toner particles that remain in said imaging apparatus after an imaging operation is performed on said predetermined recording medium;

said inside contamination preventing mechanism comprising a cover member that is provided on an inner surface of said imaging apparatus to cover an opening of said toner containing member so as to inhibit a communication between said air intake portion and said opening of said toner containing member, while allowing an inflow of said remaining toner particles through said opening, a drum unit including a photoconductive drum on which a latent image is formed and a transfer unit on which said toner particles are distributed in accordance with a latent image being located at said predetermined area, and a filter for absorbing ozone generated at said transfer unit being provided at said predetermined portion.

5,189,474

AGITATING MEMBER FOR A DEVELOPING APPARATUS

Shigeyuki Miya; Takenori Shibata, both of Utsunomiya; Yoshihiro Komatsu, Imaichi; Hiromichi Miyoshi, Utsunomiya; Tadashi Hirata, Kawagoe; Yoshio Taniguchi, Tokyo, and Takuo Kobayashi, Utsunomiya, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 18, 1991, Ser. No. 686,973

Claims priority, application Japan, Apr. 18, 1990, 2-101946; Apr. 18, 1990, 2-101947; Apr. 18, 1990, 2-101954

Int. Cl.[5] G03G *15/06;* B01F *15/02*

U.S. Cl. 355—245 **9 Claims**

1. A developing apparatus which comprises:

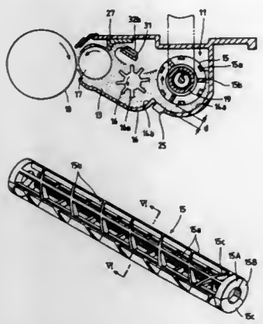
(*a*) a development box;

(*b*) a developing roller disposed in said development box;

(*c*) a stirring roller parallel spaced apart from

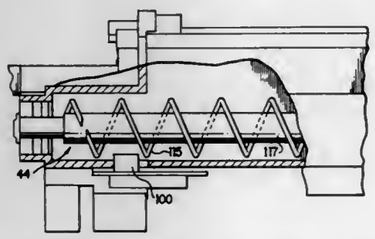
VOL 1147 ISS 4 FEB 23 1993 UMI

(c said developing roller;
(d) a toner replenisher pipe disposed in said stirring roller; and
(e) said stirring roller having a substantially hollow cylindrical shape including a plurality of axial ribs extending parallel to a longitudinal axis of said hollow cylindrical



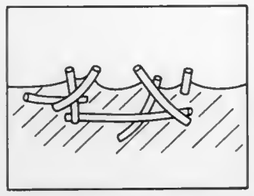
stirring roller and disposed equidistantly from said longitudinal axis of said stirring roller, and a plurality of helical blades integral with said axial ribs and skewed relative to said longitudinal axis of said stirring roller, said hollow cylindrical stirring roller being composed of at least two identical segments which are divided by a plane extending through said longitudinal axis of said stirring roller.

5,189,475
DEVELOPER MECHANISM WITH SENSOR AND NOTCHED AUGER
Peter G. Fournia, and Stephen D. Cipolla, both of Penfield, N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Aug. 26, 1991, Ser. No. 749,784
Int. Cl.[5] G03G *21/00*
U.S. Cl. 355—246 **16 Claims**



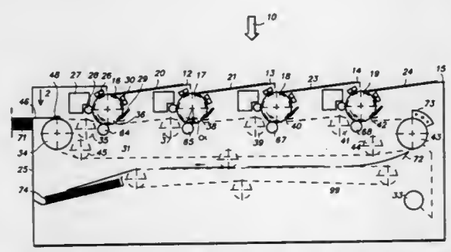
9. A developer mechanism for determining a concentration of toner particles within a two-component development printing machine in which two-component developer material comprises said toner particles and carrier granules in a reservoir, the toner particles being selectively attracted to a charged receptor surface, the developer mechanism comprising:
at least one auger rotatably mounted in the reservoir for moving the developer material, the auger comprising a core and a radially extending blade;
a sensor mounted in the reservoir adjacent the auger for sensing an amount of toner particles in the reservoir;
wherein said sensor is positioned to overlap with the radially extending blade of said auger, the blade having a notched portion above said sensor to avoid contact with said sensor during rotation of said auger.

5,189,476
DEVELOPING DEVICE FOR PRODUCING A DEVELOPED IMAGE
Masahiro Anno; Hiroshi Mizuno; Kouichi Etou, and Eiichi Sano, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed May 7, 1990, Ser. No. 519,645
Claims priority, application Japan, May 9, 1989, 1-116490
Int. Cl.[5] G03G *15/08*
U.S. Cl. 355—259 **13 Claims**



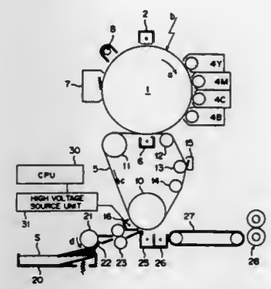
1. A monocomponent developing device comprising:
a developer transporting member confronting a photoreceptor and rotatably mounted for developing an electrostatic latent image formed on a surface of said photoreceptor, said developer transporting member containing means for controlling medium resistivity of the surface of the developer transporting member at not more than 10^{14} Ωcm, said means comprising a whisker having an 0.1 μm to 1 μm outside diameter in a surface layer thereof, and
supplying means for supplying a toner to the surface of the developing transporting member.

5,189,477
APPARATUS FOR THE PRODUCTION OF A COLOUR IMAGE
Paul H. Leys, Kontich; Jan A. Zwijsen, Wilrijk, and Luc K. Van Aken, Kuringen, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium
Filed Nov. 26, 1991, Ser. No. 798,005
Claims priority, application European Pat. Off., Dec. 17, 1990, 90203347.1
Int. Cl.[5] G03G *15/01, 15/00*
U.S. Cl. 355—271 **12 Claims**



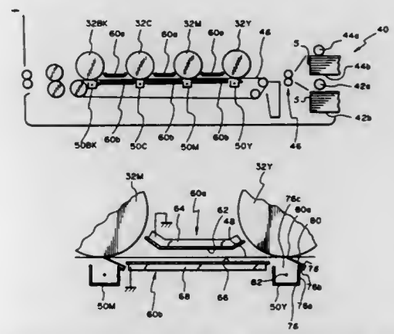
1. An image-forming apparatus of the type having a transfer device for transferring at least one distinctive image from a corresponding support carrying the same to a single carrier support, which apparatus comprises co-operating registering elements for bringing into alignment the leading end of each such image-carrying support with the leading end of said carrier support, said registering elements comprising a register strip provided with register holes and adapted for attachment to the leading end of said carrier support and co-operating registering pins for registering engagement with said holes, a rotatable transfer cylinder for each such image support in which said registering pins are mounted for movement along an axis extending generally radially of said cylinder between a retracted position fully contained within the cylinder periphery and a projected registering position with the outer ends thereof protruding outside the cylinder periphery, each such transfer cylinder being adapted to carry the corresponding image-carrying support on its periphery with the leading end of support engaged thereon in a predetermined peripheral position, feeding means for advancing said register strip and the carrier support attached thereto into proximity with the periphery of each such transfer cylinder to bring the register holes on said strip into registration with the register pins in their projected position and thus bring the respective leading ends of the image-carrying support and carrier support into registration, pressure means for urging the thus-registered image-carrying support and carrier support into intimate frictional contact progressively along their length to transfer the image from its support to the carrier support, and control means for controlling the retraction and projection of said register pins in substantially timed relation to the advance of said register strip and carrier support to move said pins into their projected position at least coincidental with the arrival of the register strip at each transfer cylinder.

5,189,478
IMAGE FORMING METHOD AND IMAGE FORMING APPARATUS, INCLUDING MEANS FOR CONTROLLING THE CHARGE ON A TRANSFER MEDIUM
Yoshinobu Hara, Shinshiro; Shizuo Yuge, Toyokawa, and Kazuyoshi Hara, Atsugi, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Sep. 25, 1991, Ser. No. 765,390
Claims priority, application Japan, Sep. 29, 1990, 2-261140; Sep. 29, 1990, 2-261141
Int. Cl.[5] G03G *15/01, 15/04*
U.S. Cl. 355—271 **13 Claims**



1. An image forming apparatus comprising:
an electrostatic latent image carrying member which is rotated in one direction;
means for forming a toner image on the electrostatic latent image carrying member;
a transfer medium facing the electrostatic latent image carrying member, the transfer medium being rotated such that the facing part moves in the same direction as the electrostatic latent image carrying member;
first transfer means for transferring the toner image from the electrostatic latent image carrying member to the transfer medium;
means for reducing charge on the toner image transferred to the transfer medium, the charge reducing means being disposed in a downstream side of the first transfer means in respect to the direction of rotation of the transfer medium;
second transfer means for transferring the toner image on the transfer medium to a sheet, the second transfer means being disposed in a downstream side of the charge reducing means in respect to the direction of rotation of the transfer medium;
count means for detecting the number of toner images transferred from the electrostatic latent image carrying member to the transfer medium; and
means for setting output of the charge reducing means in accordance with the number detected by the count means.

5,189,479
IMAGE TRANSFERRING DEVICE FOR A COLOR IMAGE RECORDER
Itaru Matsuda, and Hiroyuki Ohkaji, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan
Filed Jun. 28, 1991, Ser. No. 723,437
Claims priority, application Japan, Jun. 29, 1990, 2-174159; Jun. 29, 1990, 2-174160; Jan. 25, 1991, 3-007873
Int. Cl.[5] G03G *15/16*
U.S. Cl. 355—274 **7 Claims**



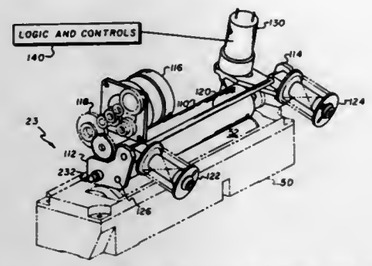
1. A device incorporated in an image recorder for sequentially transferring images from a plurality of photoconductive elements to a recording medium in such a way that the images are superposed on each other one by one by transfer chargers at successive image transfer positions, said device comprising:
a belt made of a dielectric material and movable while sequentially contacting said photoconductive elements at said successive image transfer positions; and
a plurality of plate means located between nearby ones of said transfer positions in a range extending from the transfer position on the most upstream side with respect to a direction of movement of said belt to the transfer position on the most downstream side, said plurality of plate means facing each other with the intermediary of said belt and being fully spaced apart from opposite surfaces of said belt by a predetermined distance;
wherein said plurality of plate means comprises a first and a second conductive member each having an insulating member on a surface thereof which faces said belt, and said belt pressing means and said transfer charge restricting means comprise a single bifunctioning member implemented as a thin insulating member which covers part of an opening of a shield case of associated one of said transfer chargers and contacts said belt at the free end thereof.

5,189,480
APPARATUS FOR FIXING A TONER IMAGE INCLUDING ECCENTRICALLY MOUNTED PRESSURE RELIEVING MEANS
Linn C. Hoover, Rochester, and Dennis J. O'Dea, Macedon, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jan. 31, 1992, Ser. No. 830,040
Int. Cl.[5] G03G *15/20*
U.S. Cl. 355—282 **4 Claims**

1. Apparatus for fixing a toner image to a receiving sheet, said apparatus comprising:
first and second fixing members,
at least said first member including a roller rotatable to move

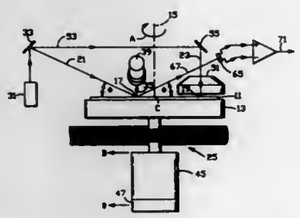
VOL 1147 ISS 4 FE 23 1993 UMI

the sheet through a nip formed by said first and second members,
means for applying a force urging said first and second members together to provide a fixing pressure in said nip,
means for moving said first member away from said second member to relieve the pressure in said nip,
characterized in that said means for moving said first member away from said second member includes,
bearing support means defining outside cylindrical bearing surface means upon which said roller is rotatable about a primary axis of rotation,



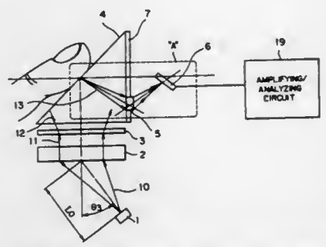
a shaft eccentrically positioned in and fixed with respect to said bearing support means,
a pair of support arms for supporting said shaft for rotation about a secondary axis of rotation displaced from said primary axis of rotation,
spring means for urging said support arms in a direction urging said first member toward said second member, and
means for rotating said shaft with respect to said shaft support means to vary the position of said primary axis of rotation with respect to said shaft support means.

5,189,481
PARTICLE DETECTOR FOR ROUGH SURFACES
Peter C. Jann, Santa Clara; Kenneth P. Gross, San Carlos, and Armand P. Neukermans, Palo Alto, all of Calif., assignors to Tencor Instruments, Mountain View, Calif.
Filed Jul. 26, 1991, Ser. No. 736,517
Int. Cl.[5] G01N *21/88*
U.S. Cl. 356—73 **14 Claims**



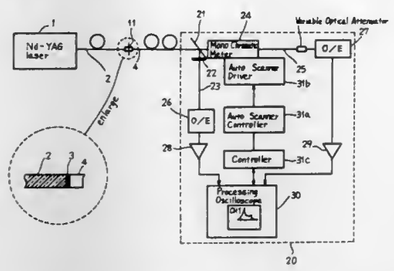
1. A wafer inspection apparatus comprising
a wafer chuck for supporting a wafer thereon, said wafer having a substantially planar surface to be inspected,
means connected to said wafer chuck for simultaneously rotating said chuck about a central axis of said chuck and translating said chuck along a path relative to a fixed reference position, said wafer chuck and said motion means disposed in a vacuum environment,
a light source providing a light beam,
a first surface inspection station having first means for directing said light beam to a first fixed position, such that said beam is incident upon said surface of said wafer and describes a spiral on said surface as said wafer on said chuck moves, said first surface inspection station also having first means for collecting and detecting a portion of light from said first fixed position, said first means providing a signal indicative of a first characteristic of said surface of said wafer at said first position, and
a second surface inspection station having second means for direction said light beam to a second fixed position, such that said beam is incident upon said surface of said wafer and describes a spiral on said surface as said wafer on said chuck moves, said second position being spaced apart from said first position, said second surface inspection station also having second means for collecting and detecting a portion of light from said second fixed position, said second means providing a signal indicative of a second characteristic of said surface of said wafer at said second position.

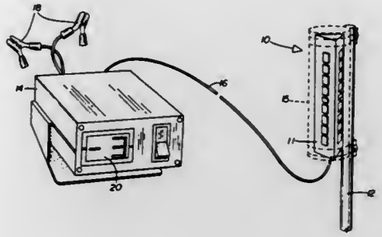
5,189,482
OPTICAL APPARATUS FOR FINGERPRINT RECOGNITION SYSTEM
Keun Y. Yang, Seoul, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea
Filed May 22, 1991, Ser. No. 704,228
Claims priority, application Rep. of Korea, May 30, 1990, 7896/1990
Int. Cl.[5] G06K *9/20*
U.S. Cl. 356—73 **5 Claims**



1. An optical apparatus for fingerprint recognition system comprising:
a light source for emitting a spherical beam;
collimating hologram means for producing a plane beam upon receiving the emitted spherical beam from said light source;
diffuser means for scattering the plane beam from said collimating hologram onto a subject fingerprint;
prism means for absorbing the scattered beam encountering ridges in the subject fingerprint ridges and reflecting the scattered beam encountering valleys in the subject fingerprint;
fingerprint image producing hologram means for converting the scattered beam encountering the valleys reflected by said prism into a reflected spherical beam and for condensing the reflected spherical beam representing the subject fingerprint; and
a light sensitive area for converting the condensed reflected spherical beam of the fingerprint image into an electric signal;
said prism means including a cutoff/absorption plate for cutting off and absorbing the scattered beam;
said fingerprint producing hologram means being mounted on a surface of said prism means vertical to a surface receiving the plane beam.

5,189,483
APPARATUS FOR MEASUREMENT OF CHROMATIC DISPERSION IN A SINGLE MODE OPTICAL FIBER
Shinya Inagaki, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan
Continuation of Ser. No. 484,522, Feb. 26, 1990, abandoned. This application Sep. 25, 1991, Ser. No. 764,967
Claims priority, application Japan, Feb. 28, 1989, 1-46903
Int. Cl.[5] G01N *21/84*
U.S. Cl. 356—73.1 **3 Claims**



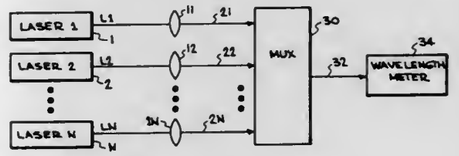


1. An apparatus for measurement of chromatic dispersion in a single mode optical fiber, comprising:
laser pulse generating means for generating a laser pulse of a predetermined wavelength;
optical fiber means, operatively connected to said laser pulse generating means, for generating Raman oscillation of the laser pulse;
wavelength selection and reflection film means, provided at an input end face of the optical fiber means, for reflecting light of the predetermined wavelength and for transmitting light generated by Raman oscillation;
a sample optical fiber operatively connected to said selection and reflection film means so as to transmit the light generated by Raman oscillation; and
delay time measuring means for receiving the light transmitted through said sample fiber and for measuring a delay time of the receiving light as a function of optical wavelength, said delay time measuring means includes
first means for receiving light of a reference wavelength from said sample optical fiber, wherein said reference wavelength is selected so as to include a wavelength having no chromatic dispersion in said sample optical fiber,
second means for selectively receiving object wavelength light among a plurality of light wavelengths from said sample optical fiber, and
third means for measuring a delay time of the object wavelength relative to the reference wavelength.

5,189,484
LASER BEAM DETECTOR FOR GRADE ELEVATION MEASUREMENT
Eric C. Koschmann, 8483 Mattituck Cir., Orlando, Fla. 32829-8535; Mark E. Taylor, 821 Orangewood Dr., Oviedo, Fla. 32765, and Carroll D. Lifer, 5941 Ankneytown Rd., P.O. Box 309, Bellville, Ohio 44813
Filed Aug. 13, 1991, Ser. No. 744,442
Int. Cl.[5] G01B *11/00*
U.S. Cl. 356—138 **20 Claims**

1. A laser beam detector system for grade elevation measurement, comprising an array of photodetectors usable in conjunction with a laser employed to define an elevation or grade as a base plane, said detector array being utilized on a substantially vertically disposed, elongate device having a plurality of faces, a plurality of detectors disposed in a consistently spaced arrangement on each of said faces, with the detectors of each face having a field of view different from the field of view of the detectors of the other faces, each detector on each face of said array being disposed at the same height as a corresponding detector on each of the other faces, with a designated detector on each face being representative of the base plane of the detector array, the distance each other detector on a given face of the array is spaced from the respective designated detector representing a particular position above or below the base plane, each group of detectors at the same height being electrically interconnected in a co-functioning group, means for detecting a laser beam incident on any detector of a co-functioning group, means for identifying the position of the detector in the array, upon which the laser beam has impinged, and means for displaying a readout indicative of the detector upon which the laser has impinged, said readout being in the form of a plainly visible representative character providing an indication of the position of the detector array above or below the base plane.

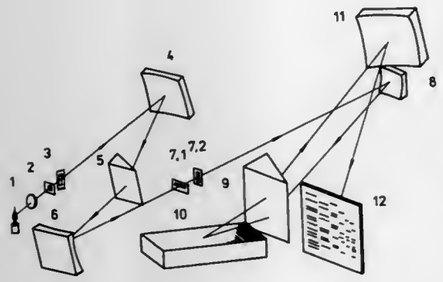
5,189,485
WAVELENGTH METER HAVING SINGLE MODE FIBER OPTICS MULTIPLEXED INPUTS
Richard P. Hackel, Livermore; Robert D. Paris, San Ramon, and Mark Feldman, Pleasanton, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Continuation of Ser. No. 284,859, Dec. 13, 1988, abandoned, which is a continuation of Ser. No. 915,207, Sep. 25, 1986, abandoned. This application Feb. 21, 1991, Ser. No. 667,471
Int. Cl.[5] G02B *5/14*; G01J *3/18*
U.S. Cl. 356—320 **5 Claims**



1. The apparatus comprising
means for transporting a plurality of laser beams,
optical fiber means wherein said optical fiber means is a single mode optical fiber,
time division multiplexing means including means for mechanically multiplexing said plurality of laser beams onto said optical fiber means to form a multiplexed laser signal,
wavelength meter means connected to receive said multiplexed laser beams for determining the wavelength of any one of said plurality of said laser beams.

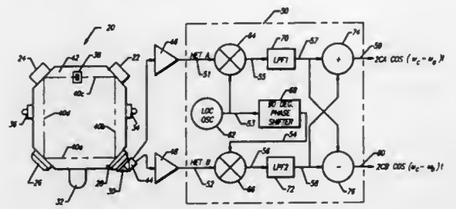
VOL 1147 ISS 4 FEB 23 1993 UMI

5,189,486
ECHELLE POLYCHROMATOR
Stefan Florek, and Helmut Becker-Ross, both of Berlin, Fed. Rep. of Germany, assignors to Zentralinstitut für Optik und Spektroskopie, Berlin-Adlershof, Fed. Rep. of Germany
Filed Feb. 15, 1991, Ser. No. 657,096
Claims priority, application German Democratic Rep., Feb. 15, 1991, 337865
Int. Cl.[5] G01J *3/28*
U.S. Cl. 356—328 **5 Claims**



1. In an Echelle polychromator, having a basic Echelle polychromator unit that has a basic entrance slit arrangement of a basic main slit and a basic transverse slit that is disposed transversely to the basic main slit, basic collimator optics, a basic prism, an Echelle grating, basic camera optics, and a detector arrangement, the improvement comprising:
(a) a dispersive and polychromatic illuminating supplemental device for producing a radiation spectrum having a dispersion-induced geometric width, said supplemental device being connected in series before the basic Echelle polychromator, the supplemental device comprising a supplemental entrance slit arrangement comprised of a supplemental main slit and a supplemental transverse slit that is disposed transversely to the basic main slit, supplemental collimator optics, a supplemental prism having a transverse dispersion, and supplemental camera optics;
(b) said basic and said supplemental entrance slit arrangements each comprise a main slit for limiting in the direction of the grating dispersion the bundle of radiation emitted by a source, and a transverse slit for limiting the bundle of emitted radiation in the direction of the dispersion of the basic prism,
(c) the entirety of the wavelength range to be processed by the basic polychromator is imaged substantially completely with minimal aberration on the basic transverse slit as a radiation spectrum of the supplemental device;
(d) the radiation dispersion of the supplemental device runs in the direction of the transverse dispersion of the basic prism;
(e) the dispersion-induced geometric width of the spectrum of the radiation from the supplemental device for the entirety of the wavelength region to be processed by the basic polychromator, is less than the width of the basic transverse slit; and
(f) parts of the bundle of radiation of the spectrum of the supplemental device are blocked out by the basic transverse slit.

5,189,487
MULTIOSCILLATOR RING LASER GYROSCOPE LOCAL OSCILLATOR-BASED OUTPUT OPTICS DETECTION SYSTEM
John G. Mark, Pasadena; Daniel A. Tazartes, West Hills, and Tae W. Hahn, Chatsworth, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Filed Nov. 21, 1991, Ser. No. 796,567
Int. Cl.[5] G01C *19/64*
U.S. Cl. 356—350 **9 Claims**

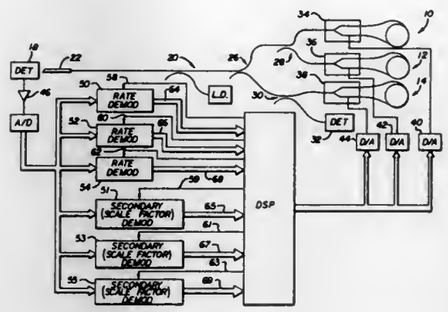


1. In a multioscillator ring laser gyroscope, a rotational sensing system including output optics detection system for sensing the rotational rate of said gyroscope, comprising:
an output prism, affixed to an output mirror of a ring resonator cavity of a multioscillator ring laser gyroscope, suitable for heterodyning high frequency optical signals, said signals being grouped into pairs of right and left circularly polarized light, each polarized pair of signals having a clockwise component and an anti-clockwise component;
said prism producing output signals which are Sagnac effect modulated Faraday biased beat frequency signals, in the form of optical suppressed carrier modulation signals;
photo-electronic transducer means for electronically detecting said high frequency optical signals and converting said signals into heterodyned electronic signals;
electronic signal separation means for processing said heterodyned electronic signals, including a local oscillator, corresponding to said suppressed carrier modulation signals from said photo-electronic transducer means;
whereby, the suppressed carrier modulation signal from said photo-electronic transducer means is electronically separated into clockwise and anti-clockwise component output signals of at least one of said polarized pairs, said components corresponding to each of the multioscillator ring laser gyroscope signals, so that rotational rate and direction may be measured.

5,189,488
FIBER OPTICAL GYROSCOPE UTILIZING ORTHOGONAL SEQUENCES
John G. Mark, Pasadena; George A. Pavlath, Thousand Oaks, and Daniel A. Tazartes, West Hills, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Filed Nov. 25, 1991, Ser. No. 796,868
Int. Cl.[5] G01C *19/72*
U.S. Cl. 356—350 **24 Claims**

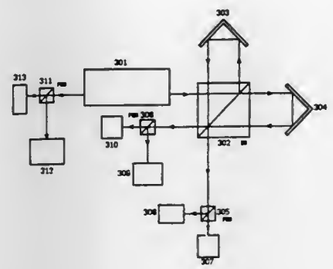
1. In a method for measuring rotation rate with an interferometer in which a modulation sequence of optical phase shifts, each being an odd multiple of $\pi/2$ and having a duration equal to the interferometer sensor coil transit time, is applied to a pair of counterpropagating light beams that are then combined and demodulated to determine rotation rate, the improvement comprising the steps of:
a) generating a sequence of phase shifts, each of said phase shifts being an odd multiple of $\pi/2$;
b) generating a primary and secondary demodulation sequence that correspond to said phase shift sequence; then
c) comparing said primary and secondary demodulation sequences in accordance with a predetermined criterion; then

d) repeating steps (a) through (c) until demodulation sequences are generated such that said criterion is satisfied; then
e) selecting said sequence of phase shifts that corresponds to the demodulation sequences that satisfy said criterion; and then



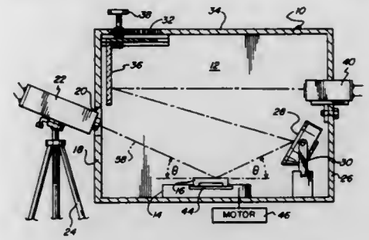
f) applying said sequence of phase shifts to said pair of light beams whereby said pair is modulated in accordance with said selected sequence.

5,189,489
INTERFEROMETRIC MEASUREMENT DEVICE WITH NON STABILIZED LIGHT SOURCE
Andrei Brunfeld, Bat-Yam, Israel, assignor to Amsys Ltd., Jerusalem, Israel
Filed May 14, 1991, Ser. No. 699,675
Claims priority, application Israel, May 17, 1990, 94429
Int. Cl.[5] G01B *11/02*
U.S. Cl. 356—358 **12 Claims**



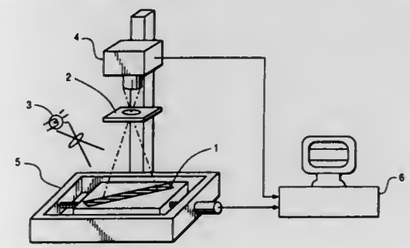
1. A method of greatly increasing the effective coherence length of multimode non-stablized lasers in two-beam interferometric devices, comprising the steps of: decoding the total interferometric signal so as to separate the individual fringe signals of the laser modes after interference and before detection; choosing the optimal signal for counting; switching whenever necessary fringe counting to the optimal individual signal in accordance with appropriate optimization criteria; and adjusting the count after switching according to the wave length of the specific mode used for counting.

5,189,490
METHOD AND APPARATUS FOR SURFACE ROUGHNESS MEASUREMENT USING LASER DIFFRACTION PATTERN
Devdas Shetty, West Hartford, and Henry Neault, Tolland, both of Conn., assignors to University of Hartford, West Hartford, Conn.
Filed Sep. 27, 1991, Ser. No. 767,222
Int. Cl.[5] G01B *11/24*
U.S. Cl. 356—371 **20 Claims**



1. In a non-contact method for analyzing surface roughness utilizing a vision system, the steps comprising:
(a) directing onto the surface of a workpiece at a specific angle of incidence a beam of collimated monochromatic light and thereby producing a diffraction pattern in the light reflected from said surface;
(b) capturing the image of the reflected diffraction pattern in the reflected light on a mirror and reflecting it onto a display screen;
(c) converting the diffraction pattern image displayed on said screen into analog signals;
(d) converting said analog signals into digital data;
(e) determining the intensity of the captured image from said digital data;
(f) comparing the data on the determined intensity of the captured image with data on intensity from calibrated standards of surface roughness; and
(g) determining the surface roughness of said workpiece from said comparison.

5,189,491
METHOD OF MEASURING TRACK DISPLACEMENT ON A MAGNETIC TAPE
Yasushi Sogabe, Osaka; Kenji Matsuura, and Shigeki Murata, both of Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Jun. 7, 1991, Ser. No. 712,040
Claims priority, application Japan, Jun. 11, 1990, 2-151941
Int. Cl.[5] G01B *11/14*; G01N *27/84*
U.S. Cl. 356—372 **3 Claims**



1. A method of measuring a displacement of a track on a magnetic tape comprising the steps of:
recording a periodically changing signal on a magnetic tape with a magnetic head to form a plurality of tracks each

having recorded thereon the periodically changing signal under control for keeping a predetermined relative speed between said magnetic tape and said magnetic head in a longitudinal direction of each track;

attaching magnetic powder to said magnetic tape on which the plurality of tracks have ben formed so as to form on said magnetic tape a visual periodic pattern of recorded signal;

imaging said visual periodic pattern with an imaging device while applying light to said magnetic tape from a predetermined direction and moving at least one of said magnetic tape and said imaging device in a longitudinal direction of a track at a predetermined relative speed between said magnetic tape and said imaging device in the longitudinal direction of the track so as to obtain an image which changes periodically corresponding to said visual periodic pattern; and

detecting a displacement of the track in the longitudinal direction thereof by comparing a relationship between a period of a periodic change of said image and said relative speed between said magnetic tape and said imaging device in said magnetic tape and said imaging device in said imaging step with a relationship between a period of a periodic change of said periodically changing signal and said relative speed between said magnetic tape and said magnetic head in said recording step.

5,189,492

DEVICE FOR MEASURING THE DEFLECTION OF ELONGATE COMPONENTS

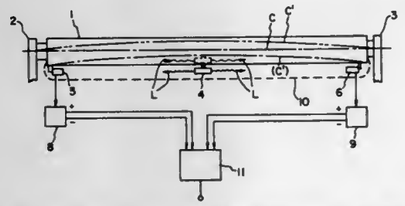
Hans-Peter Sollinger, Heidenheim, and Johannes Hennig, Herbrechtingen-Bolheim, both of Fed. Rep. of Germany, assignors to J.M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Continuation of Ser. No. 385,202, Jul. 25, 1989, abandoned. This application Jan. 27, 1992, Ser. No. 825,837

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1988, 3825415

Int. Cl.[5] G01B *11/14*

U.S. Cl. 356—373 **13 Claims**



1. A device for measuring the deflection of an elongate structural component supported on both ends and having a longitudinal axis, said device comprising:

at least one transmitting unit having means for transmitting a pair of signals each in the form of a sharply focused energy signal of electromagnetic radiation, said transmitting unit being connected firmly with the elongate structural component at approximately the center thereof such that the signals extend in opposite directions essentially parallel to the longitudinal axis of the elongate structural component and toward the respective ends of the elongate structural component;

two receiving units each arranged on a respective end of said elongate structural component and axially aligned with one another and with said transmitting unit, each receiving unit receiving a transmitted signal only from one direction relative to the ends of the elongate structural component, each said receiving unit comprising sensor means having a plurality of sensors arranged in at least one row including a zero sensor, with the row extending in the direction of deflection of the elongate structural component, said sensor means producing an output signal in response to impinging radiation thereon;

said transmitting and receiving units being arranged such that at a condition of zero deflection of the elongate structural component, each of the transmitted signals will be received by the zero sensor of the respective receiving unit, and that at a condition of non-zero deflection of the elongate structural component, at least one of the transmitted signals will be received by a sensor at a distance from the respective zero sensor, whereby the strength of the output signal from the respective said receiving unit corresponds to the distance said receiving sensor of said receiving unit is from the respective zero sensor indicating the degree of deflection of the structural component.

5,189,493

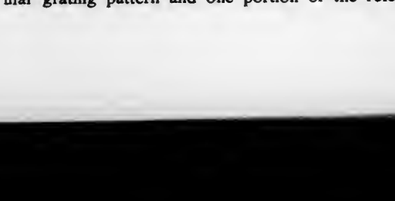
MOIRE CONTOURING CAMERA

Kevin G. Harding, Ann Arbor, Mich., assignor to Industrial Technology Institute, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 608,571, Nov. 2, 1990, Pat. No. 5,069,549. This application Oct. 21, 1991, Ser. No. 775,883

Int. Cl.[5] G01B *11/24*

U.S. Cl. 356—376 **20 Claims**



1. A moire contouring imaging device comprising:

an optical grating,

a primary lens,

light source means for projecting a beam of light along an illumination beam path, through said grating and said primary lens such that an image of said grating is projected onto an object focal plane,

viewing optical means for defining a viewing beam path in which light reflected from said object focal plane passes through said grating and said primary lens, wherein said illumination beam path and said viewing beam path are inclined with respect to one another at an occlusion angle at said object plane so that contours of an object at said object focal plane create moire fringe patterns, and

translation means for displacing said grating thereby enabling presentation of a moire image at multiple phases of position across a viewing field of said imaging device.

5,189,494

POSITION DETECTING METHOD AND APPARATUS

Masato Muraki, c/o Kosugi Jigyosho, Canon Kabushiki Kaisha, 53 Imaikamicho, Nakahara-ku, Kawasaki-shi, Kanagawa-ken, Japan

Continuation of Ser. No. 742,726, Aug. 6, 1991, abandoned, which is a continuation of Ser. No. 432,843, Nov. 7, 1989, abandoned. This application Jan. 8, 1992, Ser. No. 817,969

Claims priority, application Japan, Nov. 7, 1988, 63-280690

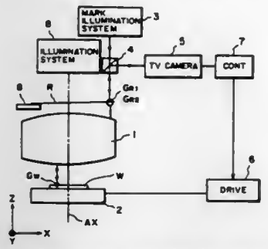
Int. Cl.[5] G01B *11/00*

U.S. Cl. 356—401 **51 Claims**

1. A position detecting method for detecting the relative position of a particular grating pattern with respect to a predetermined reference grating pattern, said method comprising:

a signal forming step for forming first and second signals corresponding to moire fringes provided or to be provided by the patterns; said signal forming step comprising a first-signal forming step for forming, by using the particular grating pattern and one portion of the reference grating pattern, the first signal corresponding to a first moire fringe provided by or to be provided by these patterns, and a second-signal forming step for forming, by using the particular grating pattern and another portion of the reference grating pattern, the second signal corresponding to a second moire fringe provided by or to be provided by these patterns; the first and second signals having phases shiftable in opposite directions in accordance with the position of the particular grating pattern with respect to the reference grating pattern; and

a position detecting step for detecting the position of the particular grating pattern with respect to the reference grating pattern on the basis of any difference in phase between the first and second signals.



5,189,495

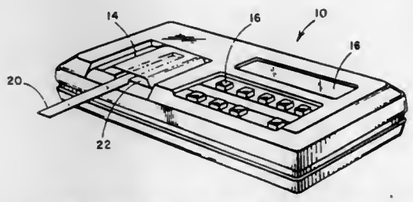
AMBIENT LIGHT SUPPRESSION FOR REFLECTANCE PHOTOMETERS

Albert Brunsting, Elkhart, and Roger D. Sonnenburg, Osceola, both of Ind., assignors to Miles Inc., Elkhart, Ind.

Filed Sep. 3, 1991, Ser. No. 754,065

Int. Cl.[5] G01J *3/51;* **G01N** *21/47*

U.S. Cl. 356—402 **4 Claims**



1. A reflectance photometer for making reflectance measurements from a reagent test device wherein said reflectance photometer has a readhead area covered with a spectral cover which blocks the transmission of light in the range of at least 60 nanometers but no more than 200 nanometers centered about the operating detection wavelength from entering said readhead area and in which the spectral cover does not have to be moved during use for the insertion and removal of a reagent test device into and from said readhead area.

5,189,496

LIGHT-EMITTING DIODE WITH CURRENT-BLOCKING

Masayuki Kuwabara, Kanagawa, Japan, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1991, Ser. No. 809,892

Claims priority, application Japan, Dec. 27, 1990, 2-408357

Int. Cl.[5] H01L *33/00*

U.S. Cl. 257—79 **10 Claims**

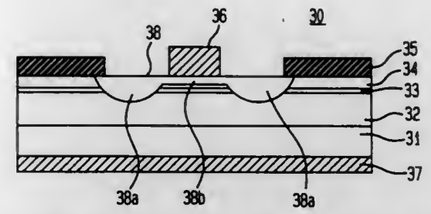
1. A light-emitting diode comprising:

a body of a semiconductor material having a p-n junction therein which is adapted to emit light when a potential is applied thereacross;

said body comprising at least two layers of opposite conductivity type;

an electrode on said body extending across a portion of the p-n junction;

a current-blocking region in said body beneath the electrode to prevent light from being generated in the substrate under the electrode; and



wherein a diffusion region is of a conductivity type opposite that of one of said layers, a first portion of the diffusion region is under the electrode and extends only into the one layer and a second portion of the diffusion region is outside the electrode and extends into the other layer.

5,189,497

SEMICONDUCTOR MEMORY DEVICE

Kazuhiro Komori, Kodaira; Satoshi Meguro; Takaaki Hagiwara, both of Hinode; Hitoshi Kume; Toshihisa Tsukada, both of Mussashino, and Hideaki Yamamoto, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

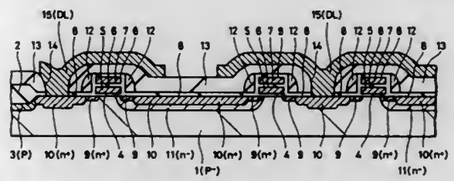
Continuation of Ser. No. 517,386, Apr. 30, 1990, abandoned, which is a continuation of Ser. No. 440,475, Nov. 21, 1989, abandoned, which is a continuation of Ser. No. 310,014, Feb. 13, 1989, abandoned, which is a continuation of Ser. No. 53,730, May 26, 1987, abandoned. This application Sep. 24, 1991, Ser. No. 765,065

Claims priority, application Japan, May 26, 1986, 61-119215

The portion of the term of this patent subsequent to Jan. 7, 2009, has been disclaimed.

Int. Cl.[5] H01L *29/78, 71/52, 49/02*

U.S. Cl. 357—23.5 **23 Claims**



6. A memory cell structure of an electrically erasable memory formed on a semiconductor substrate, said memory cell comprising a single transistor, said single transistor including:

a control gate electrode;

a floating gate electrode positioned under said control gate electrode;

a first gate insulation film formed between an upper main surface of said semiconductor substrate and said floating gate electrode, said semiconductor substrate being of a first conductivity type;

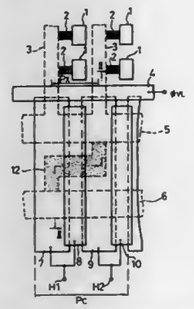
a second gate insulation film formed between said control gate electrode and said floating gate electrode; and

a source region and a drain region each being formed in said semiconductor substrate, wherein said source and drain regions are formed on opposite sides of a channel region located beneath the two gate electrodes, wherein said drain region includes a first region of a second conductivity type, wherein there is formed in said semiconductor substrate a second region of said first conductivity type

VOL 1147 ISS 4 FE 23 1993 UMI

which is adjacent to said drain region, said second region has a higher doping concentration than that of said semiconductor substrate, and wherein said source region comprises third and fourth regions of said second conductivity type, said fourth region is formed in such a manner so as to surround said third region and has a lower doping concentration than said third region.

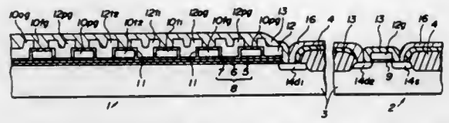
5,189,498
CHARGE COUPLED DEVICE
Kiyohiko Sakakibara, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 2, 1990, Ser. No. 608,387
Claims priority, application Japan, Nov. 6, 1989, 1-289028; Mar. 22, 1990, 2-74024; Jun. 11, 1990, 2-153399; Jul. 31, 1990, 2-204505
Int. Cl.[5] H01L *29/78*
U.S. Cl. 257—216 **5 Claims**



1. A charge coupled device comprising:
a first conductivity type substrate having a surface;
an insulating film disposed on said surface;
a second conductivity type first horizontal channel having a first dopant concentration extending from said surface to a first depth in said first conductivity type semiconductor substrate;
a second conductivity type second horizontal channel having the first dopant concentration extending from said surface to the first depth in said substrate and spaced from said first horizontal channel; and
a second conductivity type transfer channel having a second dopant concentration, disposed in, and extending from said surface to a second depth in said substrate contacting said first and second horizontal channels and connecting said first horizontal channel with said second horizontal channel for transferring charges from said first horizontal channel to said second horizontal channel, wherein the second depth exceeds the first depth and the second dopant concentration is less than the first dopant concentration.

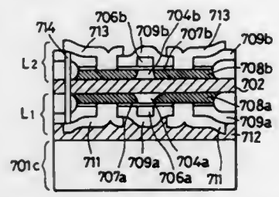
5,189,499
CHARGE-COUPLED DEVICE AND PROCESS OF FABRICATION THEREOF
Akio Izumi; Yasuhito Maki; Tadakuni Narabu; Maki Sato; Takaji Otsu, and Katsuyuki Saito, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation of Ser. No. 481,231, Feb. 20, 1990. This application Oct. 8, 1991, Ser. No. 771,867
Claims priority, application Japan, Feb. 21, 1990, 1-40995
Int. Cl.[5] H01L *29/76, 27/14*
U.S. Cl. 257—215 **3 Claims**

1. A charge-coupled device formed on a semiconductor body comprising:
(a) a charge transfer section including a charge transferring portion and a charge detecting portion, said charge transferring portion having a plurality of transfer electrodes insulated from said semiconductor body by a first insulating layer, said charge detecting portion having a floating gate electrode and a pre-charge electrode, both of which are insulated from said semiconductor body by said first insulating layer, said charge detecting portion formed adjacent to said charge transferring portion;
(b) said first insulating layer consisting of a first semiconductor oxide layer formed on said semiconductor body, a



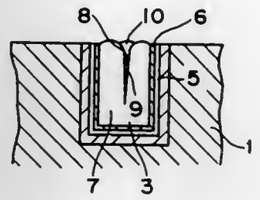
semiconductor nitride layer formed on said first semiconductor layer, and a second semiconductor oxide layer formed on said nitride layer; and
a peripheral element at least including a MOS transistor and having a gate electrode insulated from said semiconductor body by a second insulating layer consisting of a single layer and extending beneath said gate electrode of said peripheral element.

5,189,500
MULTI-LAYER TYPE SEMICONDUCTOR DEVICE WITH SEMICONDUCTOR ELEMENT LAYERS STACKED IN OPPOSITE DIRECTIONS AND MANUFACTURING METHOD THEREOF
Shigeru Kusunoki, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 20, 1990, Ser. No. 585,462
Claims priority, application Japan, Sep. 22, 1989, 1-247156
Int. Cl.[5] H01L *27/14, 31/00*
U.S. Cl. 359—72 **15 Claims**



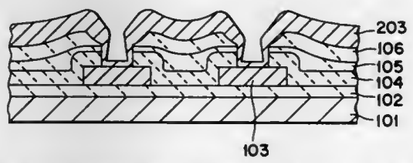
1. A multi-layer type semiconductor device comprising;
a transparent substrate,
a photosensor layer formed on said transparent substrate and including photosensor elements for detecting light passing through said transparent substrate and converting the light into an electric signal,
a circuit layer formed on and connected to said photosensor layer and including a processing circuit for processing said electric signal received from said photosensor layer,
an insulating layer formed on said circuit layer and including through holes, and
a display element layer formed on said insulating layer and including display elements arranged in vertically back-to-back relations with said photosensor elements of said photosensor layer and electrically connected to said circuit layer via said through holes for displaying results of processing output from said circuit layer.

5,189,501
ISOLATOR FOR ELECTRICALLY ISOLATING SEMICONDUCTOR DEVICES IN AN INTEGRATED CIRCUIT
Akio Kawamura, Nara; Katsuji Iguchi, Yamatokooriyama, and Masahiko Urai, Nara, aii of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Continuation of Ser. No. 413,720, Sep. 28, 1989. This application Mar. 2, 1992, Ser. No. 841,773
Claims priority, application Japan, Oct. 5, 1988, 63-251070
Int. Cl.[5] H01L *27/12*
U.S. Cl. 257—647 **2 Claims**



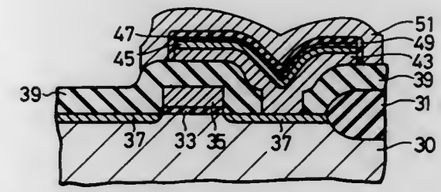
1. An isolator for isolating semiconductor devices in an integrated circuit on a semiconductor substrate comprising a trench of a predetermined depth and width formed on a top surface of the semiconductor substrate and having sidewalls, the trench is substantially filled wit ha silicon oxide layer grown by a chemical vapor deposition method,
a silicon nitride layer in said trench is located between said sidewalls of said trench and said silicon oxide layer, and
a small ditch created, by the use of a hydrofluoric acid to treat said silicon oxide layer, in the middle of a top surface of the silicon oxide layer in the trench is filled with a silicon layer, at least a top surface of which is thermally oxidized to form another silicon oxide layer, said small ditch extends from a top of said trench toward a bottom of said trench and has a wedge shape which has a wider width at the top of said trench, said width of said small ditch being the same width irrespective of said width of said trench.

5,189,502
SEMICONDUCTOR DEVICE HAVING VENTILATIVE INSULATING FILMS
Hideki Gomi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed May 7, 1991, Ser. No. 696,845
Claims priority, application Japan, May 8, 1990, 2-118164
Int. Cl.[5] H01L *29/34*
U.S. Cl. 257—759 **6 Claims**



1. A semiconductor device comprising; a first wiring layer, an insulator layer formed on said first wiring layer and including a first silicon oxide film, a spin-coated insulating film formed on said first silicon oxide film and a second silicon oxide film formed on said spin-coated insulating film, a through-hole selectively formed in said insulator layer to expose a part of said first wiring layer, and a second wiring layer formed on said insulator layer and in contact with said part of said first wiring layer exposed through said through-hole, wherein said second silicon oxide film has a density that is lower than the density of said first silicon oxide film and allows gas from said spin-coated insulating film to go through said second silicon oxide film.

5,189,503
HIGH DIELECTRIC CAPACITOR HAVING LOW CURRENT LEAKAGE
Kyoichi Suguro; Keltaro Imai, both of Yokohama; Mitsutoshi Koyama, Koganei, and Kikuo Yamabe, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Continuation of Ser. No. 319,344, Mar. 6, 1989. This application Apr. 10, 1991, Ser. No. 683,132
Claims priority, application Japan, Mar. 4, 1988, 63-049733; Dec. 22, 1988, 63-322064
Int. Cl.[5] H01L *29/68, 27/02, 29/34*
U.S. Cl. 257—310 **12 Claims**



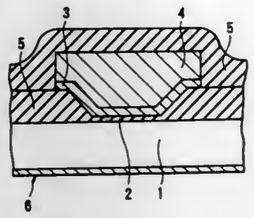
1. A semiconductor device comprising:
a lower electrode made of a simple substance of a metallic element and formed on a semiconductor substrate;
a first insulation film formed on said lower electrode, said first insulation film composed of an oxide of a transition metal and pieces of a dissimilar metal element added to the oxide, the positive charge number under an ionized state of the dissimilar metal element being smaller by one than that of the transition metal, the dissimilar metal element having only a single valence to fix said positive charge number;
an upper electrode formed on said first insulation film; and
a second insulation film disposed between said first insulation film and said lower electrode or between said first insulation film and said upper electrode, said second insulation film being composed of a metal oxide having a dielectric constant higher than that of said first insulation film.

5,189,504
SEMICONDUCTOR DEVICE OF MOS STRUCTURE HAVING P-TYPE GATE ELECTRODE
Satoshi Nakayama, and Tetsushi Sakai, both of Kanagawa, Japan, assignors to Nippon Telegraph and Telephone Corporation, Japan
Continuation of Ser. No. 624,402, Dec. 7, 1990, abandoned. This application Jan. 30, 1992, Ser. No. 827,904
Claims priority, application Japan, Dec. 11, 1989, 1-318791; Oct. 2, 1990, 2-263089
Int. Cl.[5] H01L *29/04, 29/167, 29/207, 29/227*
U.S. Cl. 257—422 **4 Claims**

3. A semiconductor device of a MOS structure having a p-type gate electrode, wherein said gate electrode comprises a first layer of polysilicon doped with a constant concentration of nitrogen inert material and boron, wherein said first layer of

VOL 1147 ISS 4 FE 23 1993 UMI

polysilicon if formed on a MOS gate oxide film and a second layer of boron-doped polysilicon is formed over the entirely of



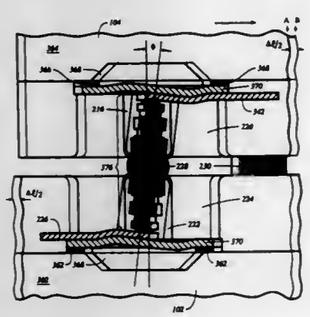
said first layer of polysilicon doped with nitrogen inert material and boron.

5,189,505

FLEXIBLE ATTACHMENT FLIP-CHIP ASSEMBLY

Dirk J. Bartelink, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 433,485, Nov. 8, 1989, Pat. No. 5,077,598. This application Aug. 22, 1991, Ser. No. 748,991
The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.
Int. Cl.[5] H01C *23/48, 29/44, 29/52, 29/60*
U.S. Cl. 257—419 **18 Claims**



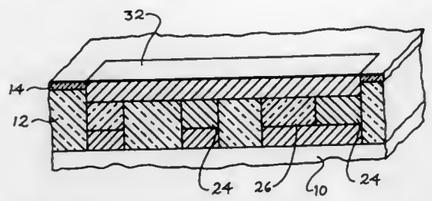
1. An integrated circuit assembly comprising:
an integrated circuit carrier;
at least one integrated circuit chip in a flip-chip arrangement with the carrier;
a connection post comprising a first post attached to the carrier, a second post attached to the chip, and a solder bump attaching the first and second posts, the connection post electrically and mechanically connecting the carrier and the chip, the connection post having an axis defining an axial direction, the connection post spacing the chip and the carrier in the axial direction; and
flexible attachment means for attaching the connection post to at least one element of the set consisting of the carrier and the chip so that the connection post can move in the axial direction and tilt with respect to the axial direction;
whereby, when the carrier and the chip undergo differential thermal expansion, the connection post moves to reduce shear strain in planes orthogonal to the normal axial direction along the connection post.

5,189,506

TRIPLE SELF-ALIGNED METALLURGY FOR SEMICONDUCTOR DEVICES

John E. Cronin, Milton, and Carter W. Kaanta, Colchester, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 546,175, Jun. 29, 1990, abandoned. This application Jun. 3, 1992, Ser. No. 894,178
Int. Cl.[5] H01L *23/48*
U.S. Cl. 257—752 **3 Claims**



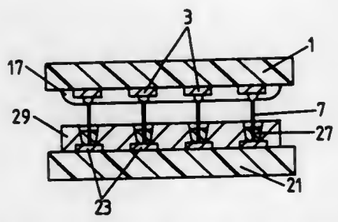
1. A metallurgical structure for an integrated circuit having a conductive member formed in a recess in a layer of insulating material by sequential first, second and third mask-definable layers of conductive material characterized in that each of said layers of conductive material has a substantially vertical surface portion adjacent to said insulating material and terminating in at least one common plane defined in said insulating material by said first mask.

5,189,507

INTERCONNECTION OF ELECTRONIC COMPONENTS

William D. Carlomagno, Redwood City; Dennis E. Cummings, Placerville, and Alexandru S. Gliga, San Jose, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 503,508, Apr. 2, 1990, abandoned, which is a division of Ser. No. 151,131, Feb. 1, 1988, Pat. No. 4,955,523, which is a continuation-in-part of Ser. No. 942,665, Dec. 17, 1986, abandoned, which is a continuation-in-part of Ser. No. 942,667, Dec. 17, 1986, abandoned, which is a continuation-in-part of Ser. No. 15,550, Feb. 13, 1987, abandoned. This application Jun. 7, 1991, Ser. No. 713,024
Int. Cl.[5] H01L *23/12, 23/54*
U.S. Cl. 257—777 **16 Claims**



1. An assembly comprising first and second electronic components in opposing face-to-face relationship, each component having a plurality of contacts, pairs of contacts on the first and second components respectively being interconnected by individual interconnection wires extending between contacts on the opposing faces of the two components, each of said wires
(a) being bonded to the contact on the first component without the use of a material other than the materials of the wire and of that contacts, and
(b) being bonded to the contact on the second component by means of a conductive material that is different from the materials of the wire and of that contact.

5,189,508

SILICON WAFER EXCELLING IN GETTERING ABILITY AND METHOD FOR PRODUCTION THEREOF

Masaharu Tachimori; Kazunori Ishizaka, and Hideo Araki, all of Hikari, Japan, assignors to Nippon Steel Corporation and NSC Electron Corp., both of Tokyo, Japan

Continuation of Ser. No. 334,883, Mar. 30, 1989, abandoned. This application Oct. 31, 1991, Ser. No. 784,628
Claims priority, application Japan, Mar. 30, 1988, 63-78370
Int. Cl.[5] H01L *23/36, 29/04, 21/306*
U.S. Cl. 257—49 **6 Claims**

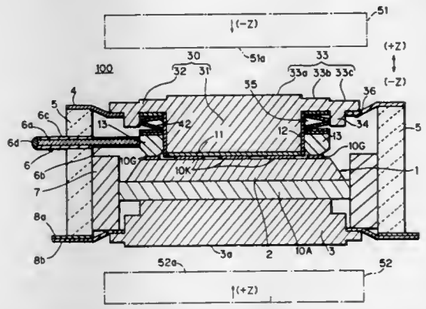
1. A silicon wafer possessing an excellent ability of gettering impurities from a single crystal silicon semiconductor, comprising:
a substrate of single crystal silicon for forming devices therein;
a silicon oxide film 1 to 8 Å in thickness, formed on one surface of said substrate, providing countless nuclei necessary for uniform growth of a polycrystalline film; and
a polysilicon film formed on said silicon oxide film as a getter of impurities in said substrate.

5,189,509

SEMICONDUCTOR DEVICE AND ELECTRODE BLOCK FOR THE SAME

Katsumi Satoh, and Futoshi Tokunoh, both of Fukuoka, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1990, Ser. No. 621,967
Claims priority, application Japan, Dec. 15, 1989, 1-326662
Int. Cl.[5] H01L *23/02, 23/04*
U.S. Cl. 257—718 **12 Claims**



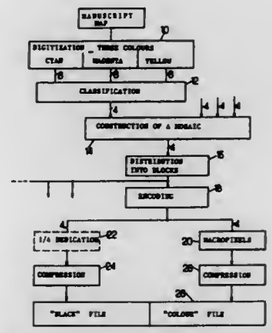
1. A pressure contact type semiconductor device, comprising:
a semiconductor element which includes a semiconductor substrate having top and bottom major surfaces, a first main electrode provided on a first region of said top major surface, a control electrode provided on a second region of said top major surface, wherein said second region is spatially separate from said first region, and a second main electrode provided on said bottom major surface;
a first external main electrode member provided above said semiconductor element which includes a bottom surface including an extended lower portion and a recessed upper portion, wherein said extended lower portion is electrically in contact with said first main electrode and said recessed upper portion is opposed to said control electrode across a gap, and
a top surface including a first area opposite to said extended lower portion and a second area at least a part of which is opposite to said recessed upper portion, wherein a level of said first area is higher than a level of said second area;
a control conductor inserted into said gap and pushed onto said control electrode by an elastic member provided between said control conductor and a cavity defined by said upper recessed portion; and
a second external main electrode member provided on and electrically in contact with said second main electrode.

5,189,510

METHOD AND DEVICE FOR THE ACQUISTION AND DIGITAL STORAGE OF COLORED GEOGRAPHICAL MAPS AND DISPLAY OF THE MAPS

Yves Henaff, Viroflay, and Hervé Le Roux, Louviers, both of France, assignors to Matra Sep Imagerie et Informatique, France

Filed Mar. 13, 1990, Ser. No. 491,691
Claims priority, application France, Mar. 13, 1989, 89 03240
Int. Cl.[5] H04N *1/46, 1/00*
U.S. Cl. 358—75 **12 Claims**



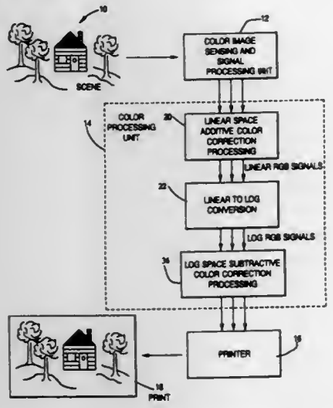
1. A process for acquiring and digitally storing coloured geographical maps having black portions, comprising the steps of:
a) digitizing each of a plurality of mutually adjacent maps by raster scanning for representing each of said mutually adjacent maps as a separate matrix of first pixels each encoded as a word having a predetermined number of bits and representing at least three fundamental colours of a respective one of said first pixels;
b) classifying the first pixels of each of said maps by assigning each of them to one of a predetermined number of classes depending on their colour, whereby each of said pixels is defined by a class defining code having a number of bits less than the respective word obtained in step (a);
c) forming a mosaic of mutually connected maps by re-sampling said mutually adjacent maps as second pixels, in a common reference grid and assigning, to each said second pixel, the code of that first pixel which is closest thereto;
d) splitting up the mosaic into mutually identical blocks, each having a same predetermined number of second pixels;
e) forming a colour file for each block by (e1) compressing groups of the second pixels into respective macropixels each consisting of n mutually adjacent second pixels, n being a predetermined integer, and assigning, to each said macropixel, a single of said class defining codes, then (e2) storing, for each line of macropixels, each line segment consisting of macropixels having a same constant colour, as a combination of the code of the class of the first macropixel of the segment and of the number of macropixels in the segment; and
f) forming a black-and-white file for each block by storing, for each line in the block, black segments consisting of second pixels having a radiometric value lower than a predetermined threshold each in the form of the indication of the first pixel of the black segment and the number of following pixels also having a radiometric value lower than said threshold.

VOL 1147 ISS 4 FE 23 1993 UMI

5,189,511
METHOD AND APPARATUS FOR IMPROVING THE COLOR RENDITION OF HARDCOPY IMAGES FROM ELECTRONIC CAMERAS

Kenneth A. Parulski; Donald C. Bellis, Jr., both of Rochester; Robert H. Hibbard, Fairport; Edward J. Giorgianni, and Elizabeth Mclnerney, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 19, 1990, Ser. No. 495,067
Int. Cl.[5] G03F *3/08*
U.S. Cl. 358—80 7 Claims

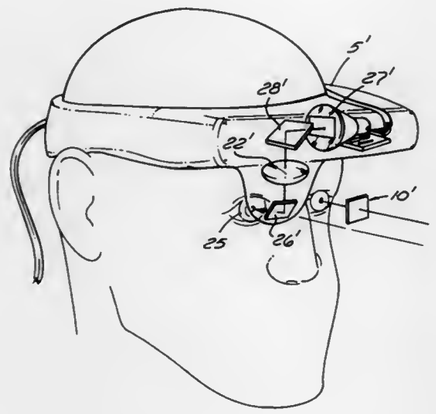


1. An apparatus for converting an image into a color print, comprising:
a color camera producing RGB data;
a two dimensional lowpass filter connected to said camera;
a linear correction unit connected to said two dimensional low pass filter;
a log conversion unit connected to said linear correction unit;
a log correction unit connected to said log conversion unit;
a linear conversion unit connected to said log correction unit;
a first adder connected to said sensor and said two dimensional lowpass filter;
a second adder connected to said linear conversion unit and said second adder;
a first enhancement conversion unit connected to said camera;
a vertical bandpass filter connected to said first enhancement conversion unit;
a second low pass filter connected to said vertical band pass filter;
a vertical noise removal unit connected to said second low pass filter;
a horizontal bandpass filter connected to said first enhancement conversion unit;
a horizontal noise removal unit connected to said horizontal bandpass filter;
a third adder connected to said vertical and horizontal noise removal units;
a second enhancement conversion unit connected to said second adder;
a fourth adder connected to said third adder and said second enhancement conversion unit;
a log exposure conversion unit connected to said fourth adder;
a density conversion unit connected to said log exposure conversion unit; and
a thermal printer connected to said density conversion unit.

5,189,512
HELMET INTEGRATED DISPLAY SYSTEM

Michael H. Cameron, Woodland Hills, and James F. Cameron, Beverly Hills, both of Calif., assignors to Camair Research, Inc., Burbank, Calif.

Filed Jul. 1, 1991, Ser. No. 724,196
Int. Cl.[5] H04N *7/18*
U.S. Cl. 358—93 18 Claims

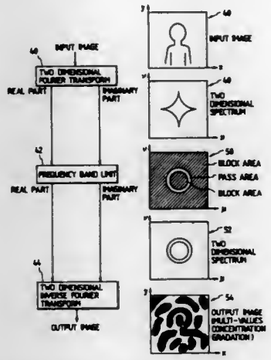


1. A helmet integrated display system adapted to mount on a wearer's head for combining visual images perceived by the wearer's sighting eye through a viewfinder and by the wearer's non-sighting eye, the system comprising:
a headbrace means adapted for mounting to the wearer's head, wherein the headbrace means supports the viewfinder to provide viewing by the sighting eye;
a video image means for generating the visual image from a video signal input, mounted to the viewfinder;
an optical means for converting the visual image from the video image means into a virtual image and projecting the virtual image, wherein the optical means is mounted to the viewfinder at a first predetermined distance away from the video image means;
a non-transparent reflecting means for directing the projected virtual image into a first predetermined portion of the sighting eye not more than about 30% of a field of view of the sighting eye, wherein the optical means is disposed between the reflecting means and the video image means, and wherein the reflecting means is mounted to the viewfinder; and
an adjustable occlusion means set to a predetermined position with respect to the non-sighting eye for occluding a second predetermined portion of the non-sighting eye corresponding to not more than about 30% of a field of view of the non-sighting eye for matting out objects that would otherwise be perceived by the non-sighting eye in the second predetermined portion, wherein the occlusion means is mounted to the headbrace means.

5,189,513
IMAGE PROCESSING DEVICE

Masayoshi Sekine, Tokyo, and Toshiaki Kondo, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 811,910, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 687,633, Apr. 19, 1991, abandoned. This application Jun. 9, 1992, Ser. No. 896,783
Claims priority, application Japan, Apr. 27, 1990, 2-113951
Int. Cl.[5] G06F *15/68, 15/70;* H04N *5/225*
U.S. Cl. 358—105 31 Claims

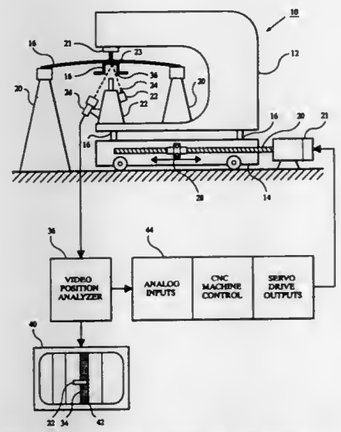


1. An image processing device, comprising:
(a) filter means for extracting predetermined spatial frequency components from an input image signal, and
(b) concentration normalizing means for normalizing an output of said filter means to a concentration of the image.

5,189,514
GUIDANCE SYSTEM FOR AUTOMATIC RIVETERS

William A. Roden, San Diego, Calif., assignor to General Dynamics Corporation Convair Division, San Diego, Calif.

Filed Aug. 29, 1991, Ser. No. 751,462
Int. Cl.[5] H04N *5/225*
U.S. Cl. 358—125 9 Claims

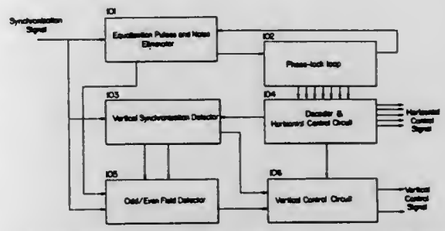


1. An automatic tracking system for tracking a selected area of an object translating along a selected axis comprising:
a first translating means for translating said object along said selected axis;
an indicator means having an edge positioned along said selected axis;
detecting means for detecting the location of said edge of said indicator means and producing a voltage relative to the position of said edge relative to said detecting means, said voltage being of a known value when said edge is correctly positioned relative to said detecting means and being less or greater than said known value when said edge is not correctly positioned relative to said detecting means; and
a second translating means for translating said object normal to said selected axis until said edge is correctly positioned and continually maintaining that correct position thereof as said object is translated along said selected axis, said second translating means having an upper supporting surface and said first translating means being carried on said upper supporting surface of said second translating means for relative movement therebetween.

5,189,515
TELEVISION SYNCHRONIZATION SIGNAL SEPARATOR

Yen-Chen Chen, Hsichu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Feb. 4, 1991, Ser. No. 650,197
Int. Cl.[5] H04N *5/08*
U.S. Cl. 358—157 6 Claims



1. A television synchronizing signal generator for separating from a composite synchronization signal, horizontal synchronizing pulses, vertical synchronizing pulses, equilization pulses for determining even or odd field, comprising:
an equalization pulse and noise eliminator for elimating said equalization pulses from said composite synchronization signal and generating said horizontal synchronization pulses with a period equal to one horizontal scanning time;
a phase-locked loop including:
a voltage controlled oscillator generating a high frequency signal multiple times the pulse repetition rate of said horizontal synchronization pulses,
a first counter for generating pulses of submultiple frequency of said high frequency signal,
a phase comparator for comparing the frequencies of said horizontal synchronization pulses derived from said equalization pulse and noise eliminator and said submultiple frequency pulses,
a low pass filter for feeding back a dc voltage for controlling said oscillator to generate and to lock in said high frequency signal;
a horizontal control circuit for generating a horizontal scanning signal by dividing said high frequency signal;
a vertical synchronization detector which derives a vertical synchronizing signal from said composite synchronizing signal;
an even or odd field detector which detects the state of said even or odd field by deriving a signal from said composite synchronizing signal, from said equalization pulse and noise eliminator, and from said vertical synchronization detector;
a vertical control circuit for generating a scanning signal

VOL 1147 ISS 4 FE 23 1993 UMI

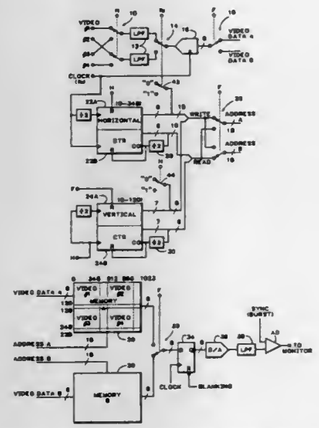
derived from said vertical synchronizing signal and the state of said even or odd field.

5,189,516

VIDEO PREVIEW SYSTEM FOR ALLOWING MULTIPLE OUTPUTS TO BE VIEWED SIMULTANEOUSLY ON THE SAME MONITOR

Richard B. Angell, Nevada City, and Kirk M. Gramcko, Grass Valley, both of Calif., assignors to The Grass Valley Group, Inc., Nevada City, Calif.

Filed Apr. 23, 1990, Ser. No. 513,527
Int. Cl.[5] H04N *5/268, 5/262*
U.S. Cl. 358—181 **19 Claims**



1. A multiple video preview system comprising:
means for receiving a plurality of input video signals;
means for selecting k of the input video signals at a time at a first rate;
means for sequentially and repeatedly sampling each of the k input video signals at a second rate to produce a serial data stream in which each sequence of k consecutive data points contains one data point from each of the k input video signals;
a memory;
means for storing the serial data stream as compressed video for each input video signal in respective designated regions of the memory; and
means for extracting the compressed video from the memory as a single video output signal for input to a monitor for simultaneously displaying the input video signals.

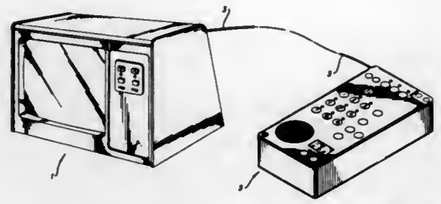
5,189,517

REMOTE UNIT FOR CONTROLLING THE OPERATION OF A TELEVISION RECEIVER

John Ohara, 2716 Butler Ave., Los Angeles, Calif. 90064

Filed Aug. 29, 1988, Ser. No. 237,084
Int. Cl.[5] H04N *5/44*
U.S. Cl. 358—194.1 **3 Claims**

1. A remote unit for a television receiver, said television receiver including sound reproducing means, said remote unit comprising: a control panel, a plurality of television channel selection push-button switches mounted on said control panel; a screen mounted on the control panel for displaying numbers identifying the television channels selected by said channel selection push-button switches; second sound reproducing means mounted in said remote unit for reproducing the sound accompanying the television channels selected by said channel selection push-button switches; and further means mounted on said control panel for controlling the volume of the sound reproduced by said second sound reproducing means, and



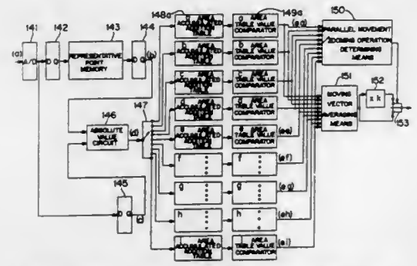
which includes volume indicator lights mounted on the control panel.

5,189,518

IMAGE BLUR CORRECTING APPARATUS

Yoshihiro Nishida, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 597,683, Oct. 16, 1990, abandoned. This application Sep. 9, 1991, Ser. No. 758,546
Claims priority, application Japan, Oct. 17, 1989, 1-271032; Oct. 24, 1989, 1-277539; Mar. 9, 1990, 2-58851; Jun. 8, 1990, 2-150595
Int. Cl.[5] H04N *5/232*
U.S. Cl. 358—222 **10 Claims**



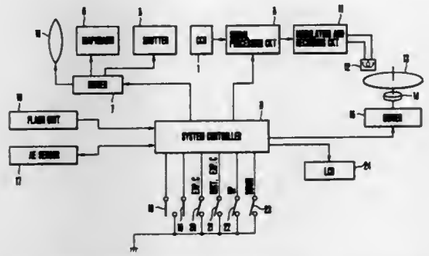
1. An image blur correcting apparatus comprising:
a lens-barrel part including a lens and an imaging device;
image signal processing means for forming a video signal from an electrical signal obtained at said imaging device;
a supporting body for supporting said lens-barrel part in a freely pivoting manner around a rotating axis crossing a beam axis incident to said lens-barrel part at approximately right angles;
actuator mans, attached between said lens-barrel part and said supporting body, for rotating said lens-barrel part;
relative angle detecting mans for detecting a relative angle between said lens-barrel part and said supporting body;
means for detecting a moving vector indicating an amount of blur of the image from correlation between two frames of image information from said image signal processing means, which are continuous in view of time;
angular velocity operating means for calculating rotation angular velocity using a zoom multiplying factor from the detected moving vector; and
calculating controlling means for outputting a control signal of an actuator in accordance with outputs of said relative angle detecting means and said angular velocity detecting means.

5,189,519

ELECTRONIC CAMERA WITH EXPOSURE CONTROL

Ryosuke Miyamoto; Makoto Sekita, and Shobei Takeda, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1989, Ser. No. 325,547
Claims priority, application Japan, Mar. 22, 1988, 63-065859; Jun. 7, 1988, 63-139620; Jun. 7, 1988, 63-139621; Jun. 16, 1988, 63-146908
Int. Cl.[5] H04N *5/30*
U.S. Cl. 358—228 **20 Claims**



1. An image sensing device comprising:
(a) image sensing means for converting an optical image of an object to be photographed into an electrical signal;
(b) detecting means, arranged separately from said image sensing means, for detecting a brightness of said object to be photographed; and
(c) control means, responsive to a first photoelectric converting operation in a first predetermined condition in response to a detection output of said detecting means furnished to said control means and providing information on a first optical image of said object to be photographed, for executing a first mode in which said information is recorded, and for selectively thereafter executing a second mode in which said information on the first optical image is compared with a predetermined reference information which provides an optimum photographing condition for a main portion of the object for obtaining a comparison result, the first condition is compensated based on said comparison result to obtain a second condition, a second photoelectric converting operation is performed in the second condition, and information on a second optical image of said object to be photographed obtained by said second photoelectric converting operation is recorded.

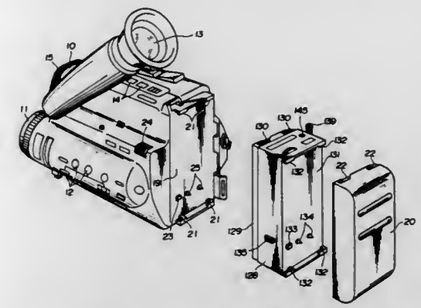
5,189,520

VIDEO CAMERA MODULAR ACCESSORY APPARATUS

Yoshisada Okayasu; Toshiyuki Yamauchi, both of Kanagawa; Akinari Mori; Naoki Kamaya, both of Tokyo; Naoki Okayama, Kanagawa; Takanori Maruichi, Chiba; Junichi Iwasawa; Yukio Yamada, both of Kanagawa, and Renjiro Okano, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 25, 1991, Ser. No. 660,786
Claims priority, application Japan, Feb. 26, 1990, 2-44941; Feb. 26, 1990, 2-44942; Feb. 26, 1990, 2-44943
Int. Cl.[5] H04N *5/30, 5/225*
U.S. Cl. 358—229 **4 Claims**

1. In a video camera including a cabinet in which a VTR system is housed and wherein said cabinet has a first battery mounting site on which a battery pack can be connected in a manner which enables electrical power to be supplied from the battery pack to the video camera and said video camera is adapted to receive a cassette in which a magnetic tape is housed, said video camera being arranged to record signals on the magnetic tape, the arrangement comprising:
a removable adapter pack having a tuner unit, said adapter pack being adapted for connection to the first battery mounting site, wherein said adapter pack has a second mounting site on which the battery pack can be mounted and permits electrical power from the battery pack mounted on the second mounting site to be supplied therethrough to the camera via the first mounting site in a



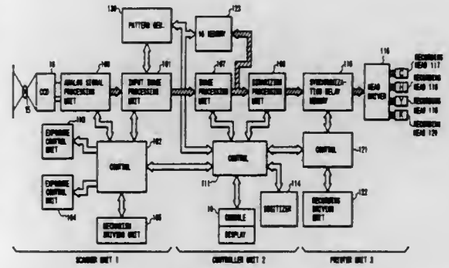
manner wherein both the camera and the adapter pack can be operated on the single battery pack, and wherein said adapter pack permits electrical signals from said tuner unit to be supplied to the camera via the first mounting site for recording on said tape.

5,189,521

IMAGE FORMING APPARATUS AND METHOD FOR CORRECTION IMAGE DENSITY NON-UNIFORMITY BY READING A TEST PATTERN RECORDED BY THE APPARATUS

Toshihiko Ohtsubo, Yokohama; Seita Shouno, Warabi; Akio Suzuki, Yokohama; Kiyohisa Sugishima, Yokohama; Eiichi Takagi, Yokohama, and Yoshihiro Takada, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 6, 1991, Ser. No. 711,648
Claims priority, application Japan, Jun. 11, 1990, 2-152150
Int. Cl.[5] H04N *1/21, 1/40;* **G03G** *21/00*
U.S. Cl. 358—296 **31 Claims**



1. An image forming apparatus for recording data representing an original image read by a reading unit on a recording medium using a recording head having an array of a plurality of recording elements, the apparatus comprising:
mode select means for selecting a test mode for generating predetermined data in accordance with a first operation;
pattern forming means for forming a test pattern on said recording medium with said recording head using the predetermined data in accordance with a second operation, the test pattern having an area larger than an array range of said plurality of recording elements;
detection means for causing said reading unit to read the test pattern in accordance with a third operation to detect a density distribution within the array range of said plurality of recording elements;

VOL 1147 ISS 4 FE 23 1993 UMI

generation means for generating correction data for correcting the data representing an original image based on the density distribution in correspondence with said plurality of recording elements; and

guide means for instructing an operator of operational procedures of the apparatus by displaying on a display unit that each of the first, second and third operation is to be performed.

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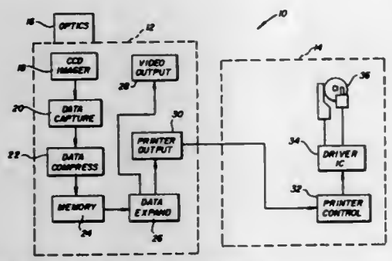
SYNCHRONIZED THERMAL PRINTING

Stanley W. Stephenson, III, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 6, 1991, Ser. No. 756,102

Int. Cl.[5] H04N *1/23, 1/36*

U.S. Cl. 358—296 **3 Claims**



1. An imaging apparatus, comprising:

an image capture device having image capturing means and video encoding means;

means, in said image capture device, for producing digital image and timing signals, said image and timing signals bypassing said video encoding means;

an image printer free of image capturing means and video decoding means; and

means for providing a slow speed readout of the digital image and timing signals to said image printer.

5,189,523

IMAGE PROCESSING APPARATUS

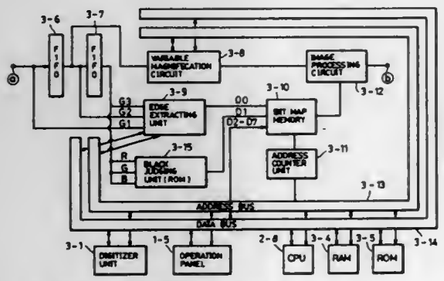
Takashi Sngiura, Tokyo; Nao Nagashima, and Shunichi Abe, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 27, 1990, Ser. No. 618,398

Claims priority, application Japan, Nov. 27, 1989, 1-304848; Dec. 29, 1989, 1-341987; Jan. 31, 1990, 2-019286

Int. Cl.[5] H04N *1/29, 1/38, 1/387, 1/46*

U.S. Cl. 358—300 **17 Claims**



1. An image processing apparatus comprising:

input means for inputting an image signal representing an original;

image discrimination means for discriminating a characteristic of the image signal input by said input means for each block of a predetermined size and providing a discrimination signal representing the characteristic of the image signal;

a memory for storing the discrimination signal of each said block for at least one picture of the original provided by said image discrimination means; and

processing means for processing the image signal input by said input means in accordance with the discrimination signal of each said block stored in said memory to reproduce an image.

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VIDEO CAMERA HAVING AN INDICATOR FOR WARNING OF THE OCCURRENCE OF MATTERS WHICH INTERRUPT RECORDING

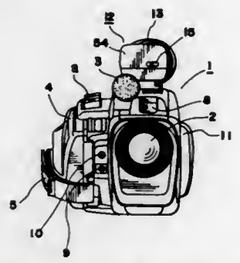
Tadahiro Yoshida; Hiroyuki Tsumazawa, and Tetsuo Kono, all of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 6, 1989, Ser. No. 403,761

Claims priority, application Japan, Sep. 7, 1988, 63-117512[U]; Sep. 7, 1988, 63-117513[U]; Sep. 7, 1988, 63-117514[U]; Sep. 9, 1988, 63-119036[U]

Int. Cl.[5] H04N *5/782*

U.S. Cl. 358—335 **10 Claims**



1. A video camera for recording pictures comprising:

means for recording pictures to a medium;

first detecting means for detection that the end of the medium for recording is near;

second detecting means for detecting that a voltage of a power source is below as predetermined level;

a single element, provided as a first indicator on the front surface of the video camera, for indicating that the recording is carried out by the recording means in a first sate and that the end of the medium for recording is near of the voltage of the power source is below the predetermined level in a second state; and

means or changing the indicating same of the single element from the fist state to the second state when the first detecting means detects that the end of the medium for recording is near or the second detecting means detects that the voltage of the power source is below the predetermined level during the recording by the recording means.

5,189,525

FACSIMILE APPARATUS

Takashi Kotani, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1990, Ser. No. 524,027

Claims priority, application Japan, May 17, 1989, 1-121453

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—407 **14 Claims**

1. A facsimile apparatus connected to a digital network of an ISDN and an analog network other than ISDN, comprising

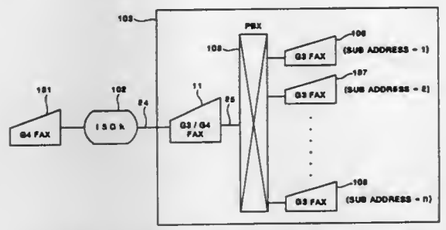
detecting means for detecting arrival information from said digital network;

receiving means for receiving a digital facsimile signal from said digital network;

transmission means for converting the digital facsimile signal into an analog facsimile signal and transmitting the analog facsimile signal to said analog network;

output means for outputting the digital facsimile signal; and

control means for discriminating whether or not said arrival information includes address information to designate a destination thermal and for discriminating whether or not said address information designates an analog terminal



connected to said analog network, where said arrival information includes the address information to designate an analog terminal, for causing said transmission means to transmit an analog facsimile signal corresponding to said digital facsimile signal received form said digital network to the analog terminal designated by said address information,

wherein when said arrival information does not include the address information, said control means causes said output means to output said digital facsimile signal from the digital network.

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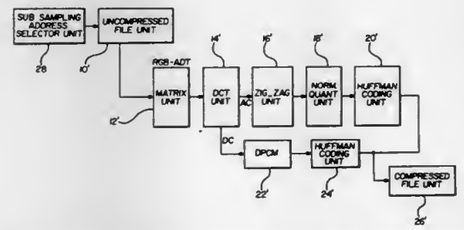
METHOD AND APPARATUS FOR PERFORMING IMAGE COMPRESSION USING DISCRETE COSINE TRANSFORM

Steven J. Sasson, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 21, 1990, Ser. No. 591,319

Int. Cl.[5] H04N *1/415, 7/12*

U.S. Cl. 358—432 **5 Claims**



1. A method of performing image compression of image data comprising the steps of:

generating uncompressed image data including high image frequency components and low frequency image components; sampling said uncompressed image data and forming a plurality of image blocks including only said high frequency image components of said uncompressed image data; and performing image compression on said image blocks to generate a compressed image data;

wherein said step of sampling said uncompressed image data and forming a plurality of image blocks comprises sampling said high frequency image components at a horizontal and vertical spatial sampling frequency equal to a spatial frequency of said low frequency components.

5,189,527

FACSIMILE COMMUNICATION DEVICE

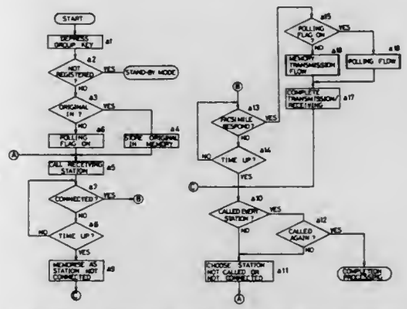
Toshihiro Matsuda, and Daisuke Moriya, both of Yamatokoriyama, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 555,649, Jul. 23, 1990, abandoned. This application Jul. 31, 1991, Ser. No. 740,880

Claims priority, application Japan, Jul. 28, 1989, 1-197277

Int. Cl.[5] H04N *1/00*

U.S. Cl. 358—440 **7 Claims**



1. A facsimile communication device capable of sending first image data corresponding to a first original document set therein and also capable of receiving other image data corresponding to other original documents emanating from other facsimile communication devices, said facsimile communication device, comprising:

group key means for selecting a plurality of said other facsimile communication devices in response to the operation of a group key;

designating means responsive to the operation of said group key means for sequentially designating identifying data of said selected plurality of other facsimile communication devices to which said first image data of said first original document should be transmitted or from which said other image data should be transmitted;

original document detecting means for detecting whether or not said first original document to be transmitted has been set; and

control means directly responsive to said designating means and said detecting means for reading outputs from said designating means and original document detecting means and accordingly controlling data-transmission;

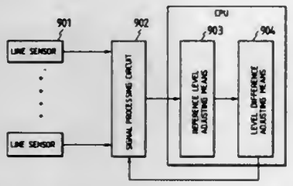
said control means operating so that if said first original document has been set when said designating means designates identifying data, said plurality of other facsimile communication devices corresponding to the identifying data and to which image data should be transmitted are sequentially called in response to the operation of said group key means to receive the first image data of the first original document, and if the first original document has not been set when said designating means designates the identifying data, said plurality of other facsimile communication devices corresponding to the identifying data and from which the other image data should be transmitted are sequentially called and said other image data is caused to be sequentially transmitted from said other devices; and

said facsimile communicating device further including group storage means for storing said identifying data of a plurality of said other facsimile communication devices and for storing a data group including a plurality of shortened number data each of which is associated with one of said other facsimile communication devices, wherein each

VOL 1147 ISS 4 FE 23 1993 UMI

of the shortened number data are read out from the group storage means and cause said designating means to sequentially designate said selected plurality when said group key means is operated.

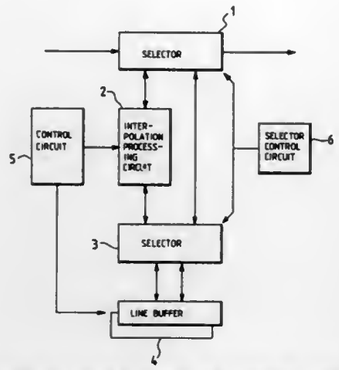
5,189,528
IMAGE READING APPARATUS
Izumi Takashima; Yoshiya Imoto; Shinichiro Taga, and Mitsuo Shimizu, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Sep. 18, 1989, Ser. No. 408,390
Claims priority, application Japan, Sep. 21, 1988, 63-238167
Int. Cl.[5] H04N *1/40*
U.S. Cl. 358—448 **9 Claims**



1. An image reading apparatus for supplying image reading signals from a plurality of colinear line sensors into a signal processing circuit comprising: reference level adjusting means for adjusting a level of dark output from any of said line sensors to a set reference level obtained by averaging dark output levels at at least two points on the respective line sensors, and level difference adjusting means for adjusting to a minimum, by a linear approximation with respect to the set reference level, a difference of dark output levels between said line sensor being adjusted to the set reference level and a second line sensor adjacent to said line sensor being adjusted to the set reference level and for similarly adjusting to a minimum a difference of dark output levels between said second line sensor and a third line sensor adjacent to said second line sensor.

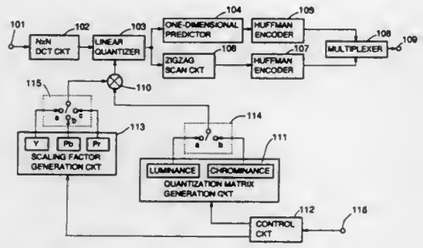
5,189,529
REDUCTION/ENLARGEMENT PROCESSING SYSTEM FOR AN IMAGE PROCESSING APPARATUS
Masahiro Ishiwata; Noriaki Tsuchiya; Teruyuki Aoyama, and Akihiko Fusatani, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Nov. 30, 1989, Ser. No. 443,656
Claims priority, application Japan, Dec. 14, 1988, 63-316045
Int. Cl.[5] H04N *1/393*
U.S. Cl. 358—451 **11 Claims**

1. A reduction/enlargement processing system for an image processing apparatus, comprising:
- reading means for reading a plurality of image data by moving a line sensor in a secondary scan direction while an image on an original is read by said line sensor in a main scan direction;
- buffer means for storing said plurality of image data;
- interpolation processing means for applying a 2-point interpolation to the image data when the image data is written into said buffer means for a reduction processing or is read out of said buffer means for an enlargement processing;
- control means for controlling the writing of data and the reading of data from said buffer means and for controlling said interpolation processing, wherein the image data is processed at one of a time when the image data is written into said buffer means for said reduction processing and a time when the image data is read out of said buffer means for said enlargement processing;
- a first selector for selecting one of the read image data and the data from said buffer means as data to be supplied to said interpolation processing means;
- a second selector for selecting one of the read image data and the read image data interpolated by said interpolation processing means as data to be written in said buffer means; and



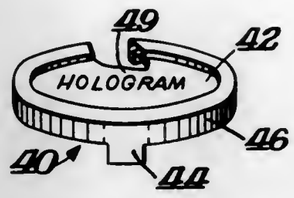
- a third selector for selecting the data from said buffer means and outputting one of said data from said buffer means and said data from said buffer means after processing thereof by said interpolation processing means.

5,189,530
IMAGE PROCESSING APPARATUS
Akio Fujii, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 22, 1992, Ser. No. 872,050
Claims priority, application Japan, Apr. 23, 1991, 3-092288
Int. Cl.[5] G06K *9/00*
U.S. Cl. 358—458 **10 Claims**



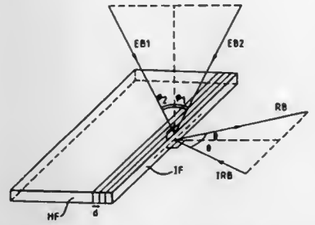
1. An image processing apparatus comprising:
- generating means for generating first spatial frequency component data relating to luminance data and second spatial frequency component data relating to chrominance data;
- dividing means for dividing the first and second spatial frequency component data into a plurality of blocks, respectively, each of said blocks having a plurality of spatial frequency component data;
- first quantizing means for quantizing the first spatial frequency component data for each of said blocks;
- second quantizing means for quantizing the second spatial frequency component data for each of said blocks;
- first memory means for storing first set of quantization parameters for said first quantizing means;
- second memory means for storing second set of quantization parameters for said second quantizing means; and
- control means for generating first coefficient for varying the first set of parameters and second coefficient for varying the second set of parameters.

5,189,531
HOLOGRAM PRODUCTION
Charles E. Palmer, Mamaroneck, N.Y.; Barry J. Taylor, Gnetersloh, Fed. Rep. of Germany, and August DeFazio, 33 Forman La., Englishtown, N.J. 07726, assignors to August DeFazio, Darlington, Pa.
Filed Oct. 17, 1988, Ser. No. 257,999
Int. Cl.[5] G03H *1/02*; A45D *42/04, 33/18*; B29D *11/00*
U.S. Cl. 359—3 **11 Claims**



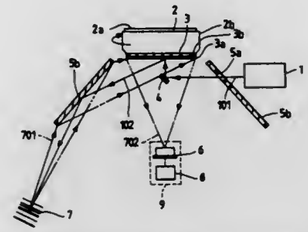
4. A molded one-piece non-planar cover of a cosmetic compact having an integral transparent outer surface in which a hologram image is contained and is viewable, said cover having an inner surface that is specularly reflective.

5,189,532
EDGE-ILLUMINATED NARROW BANDWIDTH HOLOGRAPHIC FILTER
Andrew P. Ramsbottom, Bolton, and Alan W. Christie, Southport, both of United Kingdom, assignors to Pilkington P.E. Limited, United Kingdom
Continuation of Ser. No. 423,961, Oct. 19, 1989, abandoned.
This application Oct. 15, 1991, Ser. No. 776,730
Claims priority, application United Kingdom, Oct. 21, 1988, 88/24784
Int. Cl.[5] G02B *5/32*; G03H *1/02*
U.S. Cl. 359—15 **38 Claims**



10. Apparatus in the form of a narrow bandwidth optical filter comprising in combination:
- a transmission holographic optical element comprising a thin film of holographic material having two large area surfaces and an edge in which a transmission hologram is constructed, wherein interference fringe planes are formed through the depth of the holographic material from one of said surfaces to the other;
- and interrogation means for interrogating the interference fringes by illuminating an edge of the holographic material with a narrow and tightly focused interrogating beam having a focused spot size which has a dimension less than the thickness of the holographic material to cause diffracted illumination to emerge from said edge,
- wherein the transmission holographic optical element responds, in use, in the manner of a relatively thick reflection holographic optical element to realize holographic properties and characteristics of a reflection hologram of greater effective thickness than said film.

5,189,533
APPARATUS FOR OPTICALLY READING INFORMATION
Masahiro Taguchi, Aichi; Atsushi Hashikawa, Okazaki, and Katsunori Goto, Handa, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan
Filed Apr. 1, 1991, Ser. No. 678,595
Claims priority, application Japan, Mar. 30, 1990, 2-85262
Int. Cl.[5] G02B *5/32*
U.S. Cl. 359—18 **34 Claims**



1. An optical information reading apparatus for optically reading information recorded on a recording medium, comprising:
- light source means for emitting light;
- hologram means comprising a reflection type hologram element for receiving at substantially its center portion the light emitted from said light source to diffract the received light so as to produce first diffracted light and further for receiving at substantially its entire surface light from said recording medium to diffract the received light so as to produce second diffracted light;
- drive means for driving said hologram means so as to move said first diffracted light for a scanning operation;
- reflection means for reflecting said first diffracted light from said hologram means toward said recording medium and further for reflecting light reflected from said recording medium toward substantially the entire surface of said hologram means whereby said hologram means produces said second diffracted light; and
- light-receiving means for receiving said second diffracted light from said hologram means to read the information recorded on said recording medium.

5,189,534
LIQUID CRYSTAL COLOR DISPLAYS WHICH COOL FROM ISOTROPIC TO TWISTED NEMATIC TO SMECTIC
Damien G. McDonnell; Edward P. Raynes, and Robert Daley, all of Worcestershire, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
PCT No. PCT/GB89/00262, § 371 Date Oct. 31, 1990, § 102(e) Date Oct. 31, 1990, PCT Pub. No. WO89/09426, PCT Pub. Date Oct. 5, 1989
PCT Filed Mar. 14, 1989, Ser. No. 603,668
Claims priority, application United Kingdom, Mar. 24, 1988, 8807090
Int. Cl.[5] G02F *1/13*
U.S. Cl. 359—45 **10 Claims**

1. A liquid crystal colour display comprising:
- a smectic liquid crystal cell, said cell comprising:
  - two cell walls, each of said walls coated with a sheet electrode for applying an electric field across the cell;
  - a smectic liquid crystal material layer located between said walls, said liquid crystal material having a nematic phase between smectic and isotropic phases; and
  - a homogeneous surface alignment treatment on said cell

VOL 1147 ISS 4 FE 23 1993 UMI

walls, the alignment direction on one wall being at least 45° to the alignment direction on the other wall,

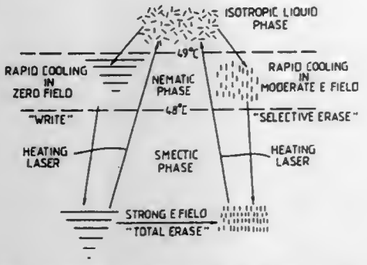
a light source for illuminating the cell,

a lens system for directing light from the light source via the cell to a display screen,

a laser light source for locally heating at least a portion of said liquid crystal material to an isotropic phase

a scanning system for scanning laser light across the cell,

a neutral plane polariser between said light source and said cell, and



at least one polariser positioned to receive light from the cell, said laser light source, said surface alignment treatment, and said cell walls comprising a means for cooling said liquid crystal material rapidly from an isotropic state and for causing the liquid crystal material to adopt a twisted light rotating configuration in the absence of an applied electric field, and for causing the liquid crystal material to adopt a non-rotating configuration in the presence of an electric field.

5,189,535

LIQUID CRYSTAL DISPLAY ELEMENT AND METHOD FOR DRIVING SAME

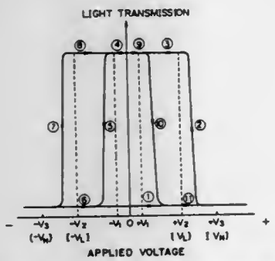
Akihiro Mochizuki, Atsugi; Fumiyo Onda, Kawasaki; Toshiaki Yoshihara, Atsugi; Masayuki Iwasaki, Saitama, and Yasuo Yamagishi, Zama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 441,047, Nov. 22, 1989, which is a continuation of Ser. No. 291,335, Dec. 28, 1988, abandoned, which is a continuation of Ser. No. 130,324, Dec. 8, 1987, abandoned. This application Feb. 28, 1991, Ser. No. 662,103

Claims priority, application Japan, Dec. 11, 1986, 61-293514; Dec. 18, 1986, 61-300134; Dec. 18, 1986, 61-300140; Mar. 14, 1987, 62-057917

Int. Cl.[5] G02F *1/133;* G09G *3/36*

U.S. Cl. 359—55 **12 Claims**



1. A method for driving a liquid crystal display element which includes a liquid crystal composition having an optically active compound as at least one constituent and showing a cholesteric phase in a bulk state, wherein the liquid crystal composition is arranged between substrates, at least one of which is provided with a transparent electrode, so that long axes of individual liquid crystal molecules are in parallel to one another and are oriented in the same direction to the surfaces of the substrates, and the long axes of the molecules are uniformly aligned in parallel, vertically or inclined to the surfaces of the substrates, and in an X, Y simple matrix electrode panel having X and Y electrodes, the method comprising the steps of:

(1) applying to all cross-points of the X and Y electrodes a voltage V_H having a positive polarity necessary for reducing the light transmission to a saturation value, (2) applying to selected points a voltage V_L having a positive polarity lower than said voltage V_H but higher than a voltage just before the light transmission is changed to a low value from a high value, (3) applying a voltage having a negative polarity lower than $-V_H$ to non-selected points, and (4) subsequent to the step (3), applying a voltage lower than V_H but higher than V_L to the non-selected points and retaining said voltage at the non-selected points.

5,189,536

FERROELECTRIC LIQUID CRYSTAL ELEMENT HAVING UNIFORM HIGH TEMPERATURE ALIGNMENT

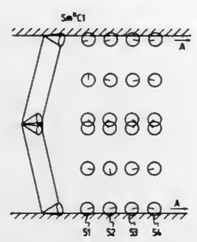
Yukio Hanyu, Atsugi; Yutaka Inaba, Kawaguchi; Masanobu Asaoka, Yokohama; Osamu Taniguchi, Chigasaki; Kenji Shinjo, and Toshiharu Uchimi, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 1, 1991, Ser. No. 663,436

Claims priority, application Japan, Mar. 2, 1990, 2-049582; Apr. 6, 1990, 2-090414; May 28, 1990, 2-139033; Jul. 3, 1990, 2-174492

Int. Cl.[5] G02F *1/13, 1/1343*

U.S. Cl. 359—56 **10 Claims**



1. A ferroelectric liquid crystal element comprising a ferroelectric liquid crystal and a pair of substantially parallel substrates having opposite surfaces between which the ferroelectric liquid crystal is sealed, the substrates being provided with electrodes to which voltages are applied and being subjected to a uniaxial orientation treatment wherein

the ferroelectric liquid crystal has an orientation state represented by the following condition:

$$\theta < \alpha + \delta$$

wherein α is a pretilt angle to the ferroelectric liquid crystal, θ is a tilt angle, and δ is an inclination angle of ferroelectric layer, the ferroelectric liquid crystal exhibits at least two stable orientation states and an angle θ_a midway between the optical axes of the at least two stable orientation states and the tilt angle θ of the ferroelectric liquid crystal satisfy the following condition:

$$\theta > \theta_a > \theta/2.$$

5,189,537

INDICIA DISPLAY FOR ELECTRO-OPTIC DEVICES WHEREIN THE INDICIA COMPRISES A DIELECTRIC MATERIAL EXTENDING AT LEAST PARTIALLY INTO THE ELECTRO-OPTIC MEDIUM

Desmond J. O'Farrell, Holland, Mich., assignor to Donnelly Corporation, Holland, Mich.

Filed Jan. 28, 1991, Ser. No. 647,296

Int. Cl.[5] G02F *1/13;* B60Q *1/26*

U.S. Cl. 359—71 **41 Claims**



1. An electro-optic device comprising:

a pair of optically transparent substrates positioned in spaced relation to one another, each substrate having an inner surface facing the inner surface of the other substrate, an opposing outer surface and a perimeter edge, said inner surfaces defining a space between said substrates;

an electro-optic medium confined in said space and having a light transmittance which is variable by the application of an electric field;

a seal extending between said substrates near their respective perimeter edges, circumscribing said space between said substrates, and confining said electro-optic medium in said space;

electrical means for applying an electric field to said electro-optic medium; and

a dielectric material forming indicia on at least one of said inner surfaces, said indicia extending from said one surface toward the other of said surfaces and extending at least partially into said electro-optic medium.

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LIQUID CRYSTAL DISPLAY HAVING POSITIVE AND NEGATIVE BIREFRINGENT COMPENSATOR FILMS

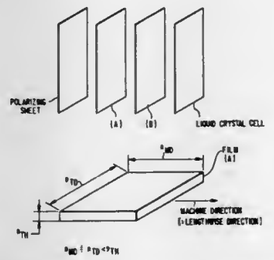
Kohei Arakawa, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 3, 1989, Ser. No. 431,500

Claims priority, application Japan, Nov. 4, 1988, 63-278592; Dec. 14, 1988, 63-315743; Sep. 12, 1989, 1-236493

Int. Cl.[5] G02F *1/133, 1/137*

U.S. Cl. 359—73 **5 Claims**



1. A liquid crystal display comprising a liquid crystal cell and a polarizing sheet having inserted therebetween at least one film having light transmission properties, said film (A) satisfying the relationship:

$$\eta_{TH} - (\eta_{MD} + \eta_{TD})/2 > 0$$

wherein η_{TH} is the refractive index in the normal direction; η_{MD} is the refractive index in the machine direction; and η_{TD} is the refractive index in the transverse direction, and at least one uniaxially stretched film (B) of a polymer having a positive intrinsic birefringence and light transmission properties.

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DRIVE LINE WIRING FOR LIQUID CRYSTAL DISPLAY

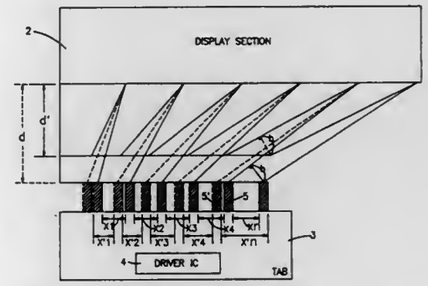
Hiroshi Suzuki, Fujisawa, Japan, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 12, 1991, Ser. No. 729,085

Claims priority, application Japan, Jul. 12, 1990, 2-182895

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—87 **14 Claims**



1. A wiring arrangement comprising;

a first series of n elements which are spaced at equal distances along a first line along a length L;

a second series of n elements which are spaced along a second line parallel to said first line along a length l, where l is shorter than L; and

n leads, each lead being for connecting one of said first series of elements to one of said second series of elements;

wherein a first spacing between successive pairs of said leads measured in a direction substantially perpendicular to a lead of said pair of leads, is constant from lead pair to lead pair; and

wherein a second spacing between successive pairs of said second series of elements becomes progressively larger towards at least one end of said second series of elements.

5,189,540

LIQUID CRYSTAL DISPLAY DEVICE HAVING A MATERIAL FOR DISTURBING THE ORIENTATION OF THE LIQUID CRYSTAL MOLECULES

Kimiaki Nakamura; Hidefumi Yoshida, and Kazutaka Hanaoka, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 3, 1992, Ser. No. 829,883

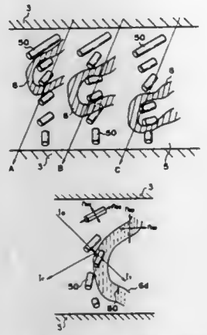
Claims priority, application Japan, Feb. 1, 1991, 3-11787; Mar. 25, 1991, 3-60475; Mar. 27, 1991, 3-62309

Int. Cl.[5] G02F *1/13*

U.S. Cl. 359—102 **16 Claims**

1. A liquid crystal display device equipped with a liquid crystal cell formed by disposing a pair of transparent substrates, each having a drive electrode and an alignment layer formed and laminated thereon, in such a manner as to oppose each other with a small space therebetween and by charging and sealing a liquid crystal into said space, characterized in that the molecules of the liquid crystal are orientated along a vertical axis of a substrate surface under a twist state or a homeotropic and homogeneous state to the substrate surface, and the orientation of the liquid crystal molecules inside a plane paral-

lel to the substrate surface and spaced apart by an arbitrary distance from said substrates is irregular inside said plane



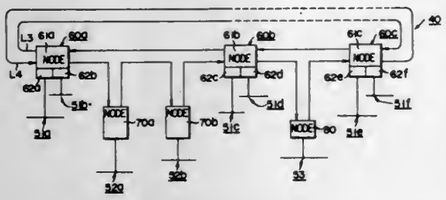
wherein a material for disturbing the orientation of the liquid crystal molecules is added.

5,189,541

METHOD AND APPARATUS FOR CONNECTING BRANCH NETWORKS WITH A TRUNK NETWORK IN OPTICAL TRANSMISSION SYSTEM

Kuniyoshi Konishi, Hachioji, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 470,416, Jan. 29, 1990, Pat. No. 5,060,224. This application Aug. 12, 1991, Ser. No. 743,913
Claims priority, application Japan, Nov. 30, 1987, 62-302686
The portion of the term of this patent subsequent to Oct. 22, 2008, has been disclaimed.
Int. Cl.[5] H04B *10/20*; H04J *14/00*
U.S. Cl. 359—118 **8 Claims**



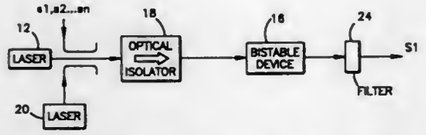
1. An optical network system comprising:
a trunk network having a first and second ring type optical transmission lines;
a plurality of trunk nodes including a first trunk node connected to the first and second ring type optical transmission lines, the first trunk node having a first loop back circuit, and a second trunk node connected to the first and second ring type optical transmission lines, the second trunk node having a second loop back circuit;
a first branch node connected to the first ring type optical transmission line, the first branch node located between the first and second trunk nodes;
a second branch node connected to the first ring type optical transmission line, the second branch node located between the first and second trunk nodes;
a plurality of branch networks having a first branch network connected to the first trunk node and a second branch network connected to the second trunk node;
the first branch node including first switch means for switching a data flow between the first ring type optical transmission line and the first branch network, first conversion means for converting an optical signal from the first switch means into an electric signal and first interface means for transferring the electric signal from the first conversion means to the first branch network, the first switch means having a first mode for directly returning the optical signal received from the first ring type optical transmission line to the first ring type optical transmission line so as to disconnect the data flow between the first ring type optical transmission line and the first branch network and a second mode for transferring the optical signal received from the first ring type optical transmission line to the first conversion means so as to connect the data flow between the first ring type optical transmission line and the first branch network, the first interface means controlling the first switch means between the first mode and the second mode; and
the second branch node including second switch means for switching a data flow between the first ring type optical transmission line and the second branch network, second conversion means for converting an optical signal from the first switch means into an electric signal and second interface means for transferring the electric signal from the second conversion means to the second branch network, the second switch means having a first mode for directly returning the optical signal received from the first ring type optical transmission line to the first ring type optical transmission line so as to disconnect the data flow between the first ring type optical transmission line and the second branch network and a second mode for transferring the optical signal received from the first ring type optical transmission line to the second conversion means so as to connect the data flow between the first ring type optical transmission line and the second branch network, the second interface means controlling the second switch means between the first mode and the second mode.

5,189,542

SYSTEM FOR THE OPTICAL SWITCHING OF FREQUENCY MULTIPLEXED SIGNALS

Jean-Louis Oudar, Chatenay-Malabry, France, assignor to France Telecom Etablissement Autonome de Droit Public (Centre National d'Etudes des Telecommunications), Issy-Les-Moulineaux, France

Filed Jul. 15, 1991, Ser. No. 731,194
Claims priority, application France, Jul. 17, 1990, 90 09108
Int. Cl.[5] H04J *14/02*
U.S. Cl. 359—128 **11 Claims**



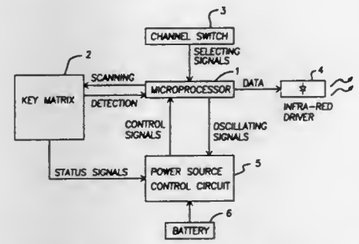
1. A system for the optical switching of frequency multiplexed optical siganls (s1, s2, . . . sN), each of said siganls transporting information and being associated with a center optical frequency, characterized in that it has at least one switching means comprising at least one light source (**12**) able to emit a coherent monochromatic beam, called a control beam, whose frequency is equal to the center optical frequency of a selected one of the optical siganls and whose amplitude is equal to K times the maximum amplitude of the optical siganls, K being an integer at least equal to the number of siganls, said control beam being able to interfere with the signal which has been selected; an optical coupling means (**14,22,40**) which optically couples the optical signals and the control beam; and an optical switching device (**16,28**) having an active material with a non-linear optical response, whose passband is narrower than the intervals separating frequency bands occupied by the optical siganls and wider than a frequency band occupied by the selected optical signal, said switching device (**16,28**) receiving at an input the optically coupled light from the optical coupling means (**14,22,40**) and supplying at an output an optical beam, which reproduces the information transported by the selected optical signal, so that said switching device has both filtering and optical switching functions.

5,189,543

INFRA-RED WIRELESS KEYBOARD SYSTEM

Steve Lin, Taipei; Kent Kao, Keelung City, and Robert Hsue, Hsing-Chuang City, all of Taiwan, assignors to Acer Incorporated, Taiwan

Filed Nov. 19, 1990, Ser. No. 615,567
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—142 **3 Claims**



1. A communication system comprising:
a wireless keyboard means for emitting infra-red signals, the infra-red signals comprising an ID code and data, the code and data being transmitted according to a predefined communication format at a user-selected carrier frequency, the wireless keyboard means including a channel switch circuit for user selection of the carrier frequency;
a receiving means for receiving the infra-red signals and for converting the received signals to an electrical signal;
a tuning and amplifying circuit means coupled to the receiving means, the tuning circuit capable of being tuned to a preset carrier frequency by the user, the tuning circuit receiving the electrical signal and transmitting it to the amplifying circuit if the carrier frequency of the electrical signal and the preset carrier frequency tuned on the tuning circuit means are the same, the amplifying circuit amplifying the electrical signal;
a carrier filtering circuit means, coupled to the tuning and amplifying circuit means for filtering the carrier component of the electrical signal;
single-shot circuit means coupled to the carrier filtering circuit means, the single-shot circuit means converting the demodulated electrical signal to a code wave signal compatible with a predefined communication signal protocol; and
a microprocessor coupled to the single-shot circuit means for receiving said code wave signal and for determining if the ID code is correct.

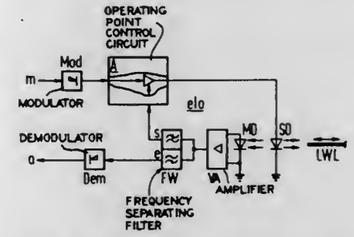
5,189,544

BIDIRECTIONAL LIGHT WAVEGUIDE TELECOMMUNICATION SYSTEM

Heinrich Sailer, Hausham, Austria, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 13, 1991, Ser. No. 759,166
Claims priority, application European Pat. Off., Sep. 14, 1990, 90117771.7
Int. Cl.[5] H04B *10/00*
U.S. Cl. 359—153 **2 Claims**

1. A bidirectional light waveguide transmission system comprising:
a plurality of telecommunication stations each optically coupled to a respective light waveguide line, each of said telecommunication stations comprising
a modulator for receiving an input information signal and an output, said modulator operable to convert the input information signal into transmission signals in a respective transmission frequency band;
a laser diode coupled to a respective light waveguide line for transmitting the converted information signal;
a control circuit connected between said modulator and said laser diode for setting the operating point of said laser diode in response to a control signal,
a monitor diode optically coupled to the respective light waveguide line and operable to convert light signals received from the respective light waveguide line into corresponding electrical signals in the transmission frequency band and in a respective receiving frequency band,



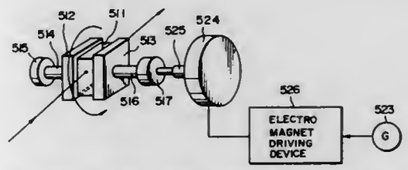
filter means including first and second outputs and connected to said monitor diode for separating the frequency bands of received optical signals into an electrical information signal at said first output and a control signal at said second output, said second output connected to said control circuit for setting the operating point of said laser diode, and
a demodulator connected to said first output of said filter means for converting the electrical information signal into an output signal.

5,189,545

OPTICAL DEFLECTOR AND DISPLAY UNIT USING THE SAME

Yntaka Takata, and Hiroo Kobayashi, both of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 519,453, May 4, 1990, abandoned. This application Dec. 13, 1991, Ser. No. 807,614
Claims priority, application Japan, May 18, 1989, 1-127236; Oct. 31, 1989, 1-284471
Int. Cl.[5] G02B *26/08, 27/64*
U.S. Cl. 359—197 **14 Claims**



7. An optical deflector, housed within a portable hand-held housing, comprising:
a polygonal prism of even-numbered sides for refracting a light beam incident upon a first side surface thereof to emerge from a second side surface, opposite said first side surface, in a direction substantially parallel to a direction of incidence of said light beam;
rotational driving means for rotating said polygonal prism about a central axis to displace said emergent light beam, a point of emergence of said emergent light beam on said second side surface being displaced a displacement dis-

VOL 1147 ISS 4 FEB 23 1993 UMI

tance along a direction of rotation of said polygonal prism; and

movement compensation means, coupled to said rotational driving means, for detecting acceleration due to movement of the portable hand-held housing, to generate an acceleration signal,

said rotational driving means rotating said polygonal prism to a proper rotational angle in accordance with said acceleration signal to compensate for unintentional movement of the portable hand-held housing.

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SCANNING OPTICAL SYSTEM WITH OFFSET LENS COMPONENT

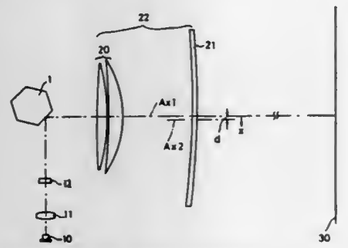
Takashi Iizuka, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1991, Ser. No. 765,937

Claims priority, application Japan, Sep. 27, 1990, 2-258647; Aug. 19, 1991, 3-206703

Int. Cl.[5] G02B *26/08*

U.S. Cl. 359—217 **9 Claims**



1. A scanning optical system comprising:

a scanning deflector for deflecting a light beam from a light source in a principal scanning direction; and

a scanning lens which forms an image of the light beam reflected by said scanning deflector on a scanning surface;

said scanning lens comprising at least one lens, the center axis of at least one surface of said at least one lens being decentered from the center axis of another surface of said scanning lens towards one side of said principal scanning direction.

5,189,547

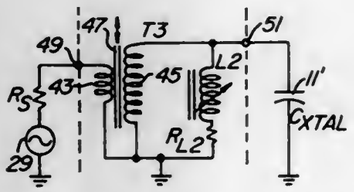
ELECTRO-OPTICAL LIGHT MODULATOR DRIVEN BY A RESONANT ELECTRICAL CIRCUIT

Timothy Day, Mountain View, and Robert A. Marsland, Jr., Cupertino, both of Calif., assignors to New Focus, Inc., Mountain View, Calif.

Filed May 28, 1991, Ser. No. 706,292

Int. Cl.[5] G02F *1/03*; H01L *41/04*

U.S. Cl. 359—245 **9 Claims**



1. A driving circuit connected to an optical phase modulating crystal that presents a capacitive load to the circuit, comprising:

a transformer having a primary winding and a secondary winding,

means connected to one terminal of the primary winding for providing a first manually selectable capacitance in series with the primary winding and a source of a radio frequency signal,

means connected as part of a series circuit with said transformer secondary winding and said crystal for providing a manually selectable inductance therein, and

means connected in parallel with said crystal for providing a second manually selectable capacitance thereacross,

whereby an overall impedance and resonant frequency of the circuit is controllable over a limited range by selection of the inductance, first capacitance and second capacitance values.

5,189,548

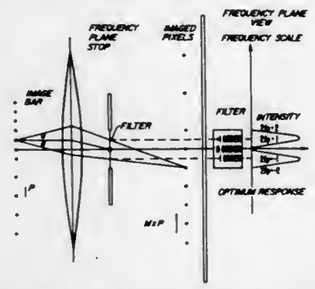
ELECTROOPTIC TIR LIGHT MODULATOR IMAGE BAR HAVING MULTIPLE ELECTRODES PER PIXEL

David L. Hecht, Palo Alto, Calif., assignor to Xerox Corporation, Rochester, N.Y.

Filed Dec. 31, 1991, Ser. No. 816,452

Int. Cl.[5] G02F *1/03, 1/29*

U.S. Cl. 359—263 **4 Claims**



1. In a system that includes an electrooptic total internal reflection light modulator having a set of electrodes, an electronic control subsystem for differentially encoding pixel data on the electrodes by applying corresponding voltages thereto in a manner that defines a minimum pixel pitch P, an illumination subsystem for providing an input beam to the modulator, which input beam is converted to a phase front modulated beam by the modulator and the voltages applied thereto, and an imaging subsystem for converting the phase front modulated beam to an imaged beam having an intensity modulated profile corresponding to the pixel data, the improvement wherein:

the set of electrodes includes a plurality of N individually addressable electrodes for each pixel, with all electrodes in the set being at a center-to-center spacing of P/N; and

the optical train and the modulator are configured such that the drive voltage provided by the electronic control subsystem and the resultant pixel size are substantially the same as if the set of electrodes consisted of a single electrode per pixel with an electrode center-to-center spacing of P.

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ELECTROCHROMIC, ELECTROLUMINESCENT AND ELECTROCHEMILUMINESCENT DISPLAYS

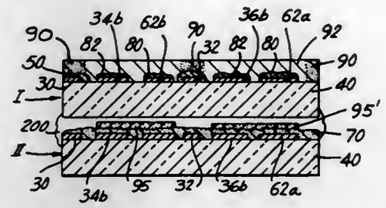
Nicholas Leventis, Somerville, and Mark S. Wrighton, Winchester, both of Mass., assignors to Molecular Displays, Inc., Andover, Mass.

Filed Feb. 26, 1990, Ser. No. 485,379

Int. Cl.[5] G02F *1/153*

U.S. Cl. 359—271 **63 Claims**

1. An electrochromic display pixel comprising a substrate, a pair of electrodes mounted face up and side by side on one side of said substrate and in close proximity to each other, at least one of said electrodes being coated on its face with a first chemical substance which is electrochromic, a layer of ionically conductive electrolyte over said electrode pair to complete an electrochemical cell so that when a bias is imposed between the electrodes of said pair, said first chemical substance changes its spectral absorption characteristics, a relatively non-conductive border region surrounding said pixel, and a transparent cover having a substantially non-conductive face in contact with said electrolyte layer.



5,189,550

ION-BEAM BASED DEPOSITION OF COATINGS FOR ELECTROCHROMIC DEVICES

Ronald B. Goldner, Lexington; Floyd O. Arntz, Newtonville; Bertrand Morel, Arlington; Terry E. Haas, Sudbury, and Kwok-Keung Wong, Watertown, all of Mass., assignors to Tufts University, Medford, Mass.

Division of Ser. No. 405,271, Sep. 11, 1989, Pat. No. 5,051,274.

This application Dec. 13, 1991, Ser. No. 787,302

The portion of the term of this patent subsequent to May 23, 2006, has been disclaimed.

Int. Cl.[5] G02F *1/01*; B05D *3/06*

U.S. Cl. 359—273 **5 Claims**

1. An electrochromic device comprising:

a light transmissive substrate having a first layer of electrically-conductive material deposited thereon by thermal evaporation;

a layer of tungsten oxide deposited on said first layer by thermal evaporation of tungsten oxide within a stream of oxygen or argon ions;

a layer of ion conductive-electron resistive material deposited on said tungsten oxide by thermal evaporation;

a counter-electrode layer deposited on said electron resistive-ion conductive layer by thermal evaporation; and

a second layer of electrically-conductive material on said counter-electrode layer by thermal evaporation.

5,189,551

SOLAR SCREENING FILM FOR A VEHICLE WINDSHIELD

Floyd E. Woodard, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 27, 1989, Ser. No. 385,527

The portion of the term of this patent subsequent to Jul. 24, 2007, has been disclaimed.

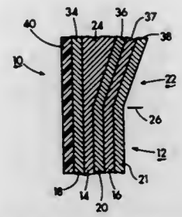
Int. Cl.[5] G02B *5/26, 5/28*

U.S. Cl. 359—360 **6 Claims**

1. A solar screening film for a motor vehicle windshield comprising:

(a) an interference filter segment comprising two or more light-reflecting metal layers, each surface of which is contiguous with a dielectric layer; and

(b) an integral gradient band continuation of said interference filter above the direct line of vision through a windshield when said solar screening film is disposed in a motor vehicle, for reflective rejection of infra-red solar energy, said band including an extension of one of the light-reflecting metal layers gradually increasing in thickness toward a marginal edge of the film.



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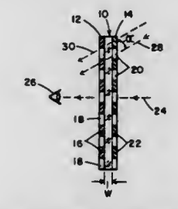
INCIDENCE ANGLE LIGHT ATTENUATOR FOR LIGHT TRANSMISSIVE PANELS

Sayed M. Metwalli, 1029 Howell Harbor Dr., Casselberry, Fla. 32707

Filed Sep. 3, 1991, Ser. No. 753,910

Int. Cl.[5] G02F *1/01*

U.S. Cl. 359—489 **2 Claims**



1. Apparatus for controlling light passage through a panel as a function of incident light angle comprising:

a light transmissive panel having first and second surfaces spaced apart by the thickness of said panel;

a first plurality of light polarizing elements formed as elongated strips each having an absorption axis at least in the middle thereof aligned in a first predetermined direction, said absorption axis generally continuously varying toward a second absorption axis from the middle of the strips to opposite edges thereof;

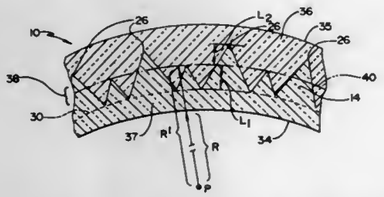
a second plurality of light polarizing elements forming as elongated strips each having an absorption axis at least in the middle thereof aligned in the second predetermined direction, said second plurality of elements being alternately arranged with said first elements to form a first polarized sheet, said first sheet being overlayed on said first surface of said panel, said absorption axis of said second plurality of strips varying toward the first absorption axis from the middle of the strips to opposite edge thereof, said absorption axis of said second strips at their respective edges being substantially identical to the absorption axis of said first strips at adjacent edges thereof such that the absorption axis varies substantially continuously over said sheet;

a second polarized sheet substantially identical to said first sheet, said second sheet being overlayed on said second surface of said panel, said first and second sheets being positioned such that light impinging on said panel within a preselected range of incidence angles passes through only areas of similar polarization of said first and second plurality of element sand at least some light impinging at angles outside said preselected range passes through areas of different polarization of said first and second plurality of elements; and

said first and second plurality of elements being selected

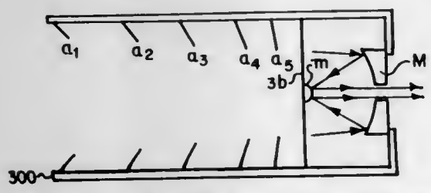
such that light passing through at least the middle of both of said elements is substantially attenuated.

5,189,553
OPTIMIZED CONSTRUCTION OF RETROREFLECTIVE ARTICLES FOR CURVED APPLICATIONS
Kenneth L. Smith, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jun. 8, 1992, Ser. No. 895,275
Int. Cl.[5] G02B *5/124*
U.S. Cl. 359—530 **20 Claims**



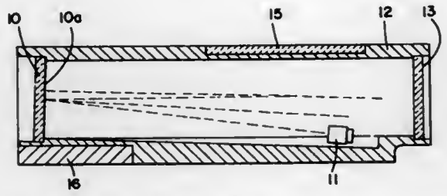
1. A retroreflective cube corner element laminated sheet for bending applications, comprising:
a) a sheet outer surface designed for tension during laminated sheet bending and a sheet inner surface designed for compression during laminated sheet bending;
b) a neutral bending axis region located relative to the outer surface and the inner surface so that the neutral bending axis region comprises a neutral bending axis which is substantially free of stress and deformation during laminated sheet bending; and
c) a plurality of reflective cube corner elements having surfaces purposefully located proximate the neutral bending axis to provide enhanced retroreflective performance for a given radius of curvature.

5,189,554
TELESCOPE BAFFLE SYSTEM
George A. Vanasse, Chelmsford, and Ernest R. Huppi, Concord, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed Sep. 30, 1991, Ser. No. 771,378
Int. Cl.[5] G02B *27/00*
U.S. Cl. 359—601 **20 Claims**



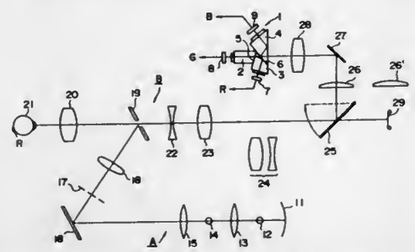
1. A telescope baffle system for use with any optical instrument which processes light with both on-axis radiation and off-axis radiation, wherein said optical instrument has a chamber which conducts said light along an optical axis from an input side to optical elements on an output side, and wherein said telescope baffle system comprises a plurality of retro-reflector array elements which are mounted inside said chamber, said plurality of retro-reflector array elements having retro-reflective surfaces which face said input side of said chamber to eliminate off-axis radiation, said retro-reflector array elements each having an absorptive coating on their output side to absorb off-axis radiation so that it is not reflected back towards said optical instrument.

5,189,555
PARALLAX FREE OPTICAL SIGHTING DEVICE
Rickard Jörlöv, Lomma, Sweden, assignor to Aimpoint AB, Malmo, Sweden
Filed May 8, 1990, Ser. No. 521,151
Claims priority, application Sweden, May 10, 1989, 8901657
Int. Cl.[5] G02B *17/00, 23/10;* F41G *3/00*
U.S. Cl. 359—618 **9 Claims**



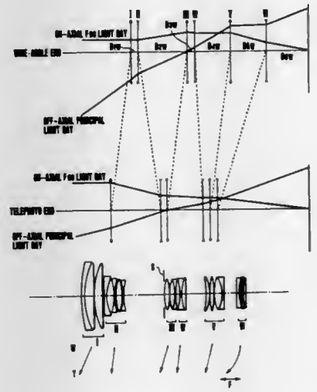
1. Parallax free sight, comprising:
a casing having a rectangular cross section forming an elongated light channel;
a concave-convex lens with a parabolic shaped optical surface attached to one end of said light channel, said concave side of said lens facing into said light channel, the perimeter dimensions of said lens being adapted to the rectangular shape and dimensions of said light channel, the longer sides of said rectangular lens perimeter positioned in a horizontal plane when the sight is in use;
a semi-reflective mirror surface provided on said concave side of said lens, said semi-reflective mirror surface having a focal point;
a transparent body attached to the other end of said light channel;
an electrical light emitting means arranged at said focal point of said semi-reflective mirror surface, said semi-reflective mirror surface reflecting light of a wave length corresponding to the light emitted by said light emitting means;
a battery contained within a protected space connected to said light emitting means; and
at least one solar cell on an outside surface of said casing, said solar cell being electrically connected to said electrical light emitting means.

5,189,556
COLOR PHOTOGRAPHY OPTICAL SYSTEM
Hiroyuki Ohtsuka, Tokyo, Japan, assignor to Kabushiki Kaisha Topcon, Tokyo, Japan
Filed Jan. 16, 1992, Ser. No. 821,371
Claims priority, application Japan, Jan. 17, 1991, 3-003627
Int. Cl.[5] G02B *27/14;* G03B *29/00;* A61B *3/14;* H04N *7/18*
U.S. Cl. 359—634 **11 Claims**



1. A color photography optical system for bringing a light beam that has passed through an aperture diaphragm to an image in the vicinity of a field lens, guiding the light beam that has passed through the field lens via a relay lens to a three prism type color separation optical system having a photographic device, and forming an image on said photographic device, characterized in that:
the focal length of said field lens can be varied such that said light beam which has passed through the relay lens is effectively telecentric on the side of said color separation optical system.

5,189,557
HIGH VARIABLE MAGNIFICATION RANGE ZOOM LENS
Hiroshi Endo, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 15, 1991, Ser. No. 793,094
Claims priority, application Japan, Nov. 20, 1990, 2-316248; Nov. 20, 1990, 2-316249; Nov. 20, 1990, 2-316261
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—683 **24 Claims**



1. A high variable magnification range zoom lens comprising, in the order from the object side, a first lens unit having a positive refractive power, a second lens unit having a negative refractive power, a third lens unit having a positive refractive power, a fourth lens unit having a negative refractive power, a fifth lens unit having a positive refractive power, and a sixth lens unit having a negative refractive power, wherein letting air separations between the i-th lens unit and the (i+1)st lens unit in a wide-angle end and a telephoto end be denoted by D_{iW} and D_{iT}, respectively, zooming from the wide-angle end to the telephoto end is performed by satisfying the following conditions:

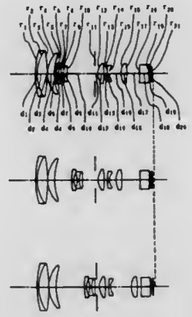
$$D_{1W} < D_{1T}$$

$$D_{2W} > D_{2T}$$

$$D_{3W} < D_{3T}$$

$$D_{4W} > D_{4T}$$

5,189,558
VARI-FOCAL SYSTEM HAVING SHORT TOTAL LENGTH
Atsujiro Ishii; Tsutomn Uzawa, and Shinichi Mihara, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Jun. 10, 1991, Ser. No. 712,980
Claims priority, application Japan, Jun. 11, 1990, 2-149848; Aug. 24, 1990, 2-220966; Oct. 18, 1990, 2-279577
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—687 **20 Claims**

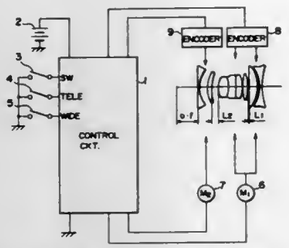


1. A vari-focal lens system comprising, in order from the object side,
a vari-focal subsystem comprising a first lens unit having a positive refractive power and a second lens unit having a negative refractive power; and
an imaging subsystem comprising a third lens unit having a positive refractive power, and a fourth lens unit having a positive refractive power and being movable during the variation of local length mainly for correcting deviation of the image position;
said third lens unit consisting of two to four lens components including a positive lens component on the object side and having a convex surface on the object side, and a negative lens component having a concave surface on the image side,
said fourth lens unit consisting of two or a smaller number of positive lens components, and
at least one of the lens surfaces in said imaging subsystem being an aspherical surface having refractive power weakened as the portions of said aspherical surface are farther from the optical axis.

5,189,559
OPTICAL APPARATUS HAVING A ZOOM MECHANISM
Yoshiyuki Kaneko, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 31, 1991, Ser. No. 786,180
Claims priority, application Japan, Nov. 2, 1990, 2-297616
Int. Cl.[5] G02B *15/14*
U.S. Cl. 359—697 **15 Claims**

1. An optical apparatus having a zoom mechanism for zooming comprised of a plurality of groups of lens units driven independently of one another by a plurality of motors, said optical apparatus comprising:
(a) driving means for respectively driving said plurality of

motors at substantially constant speed during zooming; and



(b) control means for compensatively moving one of said lens units on a basis of a positional information of a stopped other lens unit during a stoppage of said zooming.

5,189,560

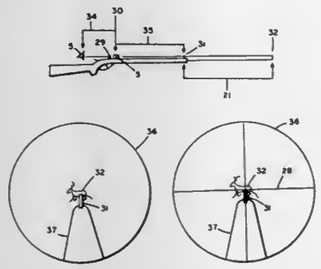
SIGHTING TELESCOPE FOR SIMULTANEOUS VIEWING OF TARGET AND SIGHT

Bruce W. Edwards, and D. Brandon Edwards, both of Virginia Beach, Va., assignors to Edwards Optical Corporation, Virginia Beach, Va.

Filed Feb. 15, 1991, Ser. No. 657,093

Int. Cl.[5] G02B *23/00*; F41G *1/00*

U.S. Cl. 359—744 **26 Claims**



1. An aiming mechanism for sighting a distant target comprising:

a sight for locating the target within a field of view; and

a Galilean telescope positioned between the sight and a user's eye, the telescope being of power less than 3× and being positioned for eye relief greater than 10 cm such that both the distant target and the sight are simultaneously within the user's depth of field through the telescope.

5,189,561

AUTOMATIC OSCILLATING VEHICLE MIRROR

Sun T. Hong, 412 Mountain View Court, Orange, Calif. 92669

Filed Mar. 27, 1992, Ser. No. 858,488

Claims priority, application Rep. of Korea, Mar. 28, 1991, 91-4139

Int. Cl.[5] G02B *7/18*; B60R *1/08*

U.S. Cl. 359—843 **3 Claims**

1. An automatic oscillating vehicle side mirror for vehicles having a turning signal and side view mirrors, comprising:

a basic plate body, said basic plate body including:

a pair of a rectangular openings disposed on one side thereof,

a pair of outer hollow brackets adjacent said pair of rectangular openings and are disposed on the front surface thereof, each of said outer hollow brackets having an aperture,

an L-shaped coil spring disposed between said pair of outer hollow brackets, and

a plurality of bolt apertures disposed on the other side thereof,

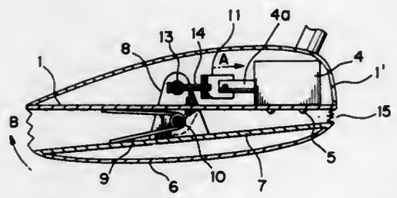
a mirror fixing plate including a pair of inner brackets, each of said inner brackets having an upper aperture and a lower aperture,

a side mirror secured to said mirror fixing plate,

a solenoid member fixed to the rear surface thereof and aligned with said plurality of bolt apertures by a plurality of bolts, said solenoid member including:

a solenoid body,

an operating lever movably connected to said solenoid body so as to be backwardly moved into and frontwardly moved from the solenoid body when the solenoid body is charged with electricity from an electric source of the vehicle by a relay, and



a C-shaped connector connected to said operating lever by a cotter pin,

a first shaft rod rotatably inserted into said apertures of said pair of outer hollow brackets, said lower apertures of said pair of inner brackets and said L-shaped coil spring, and

a second shaft rod rotatably inserted into said upper apertures of said pair of inner brackets and said second shaft rod adjustably connected to said C-connector by a screw for providing a certain angle of the mirror fixing plate, whereby upon operating the turning signal of the vehicle, the operating lever pulls and pushes the second shaft rod so that the side view mirrors are rearwardly moved by said relay for providing a wide angle view toward the left and right directions and which substantially reduces or eliminates a particular blind spot.

5,189,562

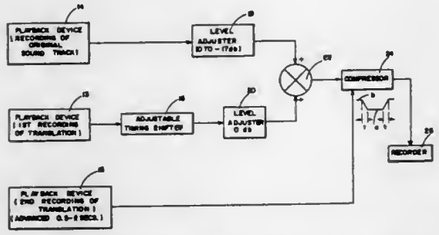
SYSTEM AND METHOD FOR COMBINING LANGUAGE TRANSLATION WITH ORIGINAL AUDIO ON VIDEO OR FILM SOUND TRACK

Leonard M. Greene, 6 Hickory La., Scarsdale, N.Y. 10503

Filed Jun. 25, 1990, Ser. No. 542,941

Int. Cl.[5] G11B *27/02*

U.S. Cl. 360—13 **8 Claims**



1. A system for recording the original sound track for a video or film production along with a translation of the original sound track into a different language therefrom while leaving the audio of both the original sound track and the translation at a predetermined audio level which is within the normal hearing range at all times comprising:

first playback means for providing an audio output in accordance with the original sound track,

second playback means for providing an audio output in accordance with the translation of said original sound track,

means for time shifting the output of said second playback means relative to that of said first playback means for optimum clarity and comprehension,

means for adjusting the audio level of the output of said first playback means to a predesired level which is within the normal hearing range,

means for adjusting the audio level of the output of said second playback means to a predesired level which is within the normal hearing range and above the audio level of the output of said first playback means,

third playback means for providing an output in accordance with said translation which is advanced in time relative to the output of said second playback means by a predetermined time period,

means for combining the outputs of said first and second playback means,

means responsive to the output of said third playback means for lowering the level of the output of said combining means during a period of time encompassing said predetermined time period before the appearance of a signal in the output of said second playback means, during the presence of said signal in the output of said second playback means, and a predetermined time period after said signal in the output of said second playback means has terminated, said lowered level being within the normal hearing range, and

means for recording the output of said means for lowering the output of the combining means.

5,189,563

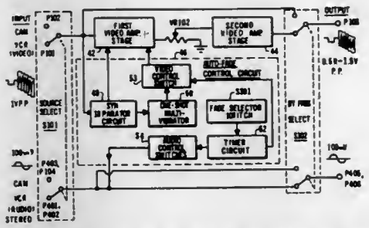
VIDEO TAPE EDITOR WITH FADE CONTROL FUNCTIONS

Steven M. Breslau, Chicago, Ill.; Han-Min Peng, and Chieh-Chi Kang, both of Taipei, Taiwan, assignors to Sima Products Corporation, Skokie, Ill.

Filed Dec. 14, 1990, Ser. No. 627,746

Int. Cl.[5] G11B *27/02*

U.S. Cl. 360—14.1 **20 Claims**



1. A video tape editing apparatus for use with first and second video playback devices and a video recording device to produce clean transitions at edit-points, said apparatus comprising:

first input means connectible to the first video playback device for receiving a first source of composite video signal components and audio signal components;

second input means connectible to the second video playback device for receiving a second source of composite video signal components and audio components;

output means including video and audio outputs, said output means connectible to the video recording device for sending said first source of composite video signal components and audio signal components, and for sending said second source of composite video signal components and audio signal components;

selection switch means for selectively switching between said first input means and said second input means;

first video amplifier means coupled to said selection switch means and being responsive to the selected composite video signal components for generating a first amplified video signal;

sync separator means coupled to said selection switch means and being responsive to the selected composite video signal components for generating a horizontal sync pulse;

second video amplifier means responsive to said first amplified video signal for generating a second amplified video signal at said video output of said output means;

trigger circuit means responsive to said horizontal sync pulse for generating a sync control signal having a predetermined duration;

fade control circuit means including a fade selector switch for generating a fade-out control signal when said fade switch is in a first position and for generating a fade-in control signal when said fade switch is in a second position;

video switch means responsive to said fade-out signal and coupled to said first video amplifier means for shunting of the selected composite video signal components therein to ground, said video switch means being further responsive to said sync control signal for preventing the shunting of the selected composite video signal components in said first video amplifier means for the duration of said sync control signal;

said video switch means being responsive to said fade-in signal for removing the shunting of the selected composite video signal components in said first video amplifier means; and

audio switch means responsive to fade-out signal for shunting of the audio signal components to ground at said audio output of said output means, said audio switch means being responsive to said fade-in signal for removing the shunting of the audio signal components to ground.

5,189,564

MAGNETIC RECORDING/REPRODUCING METHOD AND APPARATUS

Nobutaka Amada, Hitachi-Hachimanyama Apt.-552, 1545 Yoshida-cho; Takaharu Noguchi, Totsuka-Highrise 135, 884-1 Kamikurata-cho, both of Totsuka-ku, Yokohama-shi; Hiroyuki Kimura, 1-12-1725, Yurigaoka, Ninomiya-cho, Naka-gun, Kanagawa-ken; Masaharu Kobayashi, Hitachi-Hachimanyama Apt.-331, 1545 Yoshida-cho, Totsuka-ku, Yokohama-shi; Takao Arai, 65-24 Ibukino, Midori-ku, Yokohama-shi, Kanagawa-ken; Yasufumi Yumde, 1257-1, Yoshida-cho, Totsuka-ku, Yokohama-shi, Kanagawa-ken, and Kuniaki Miura, 3173-1 Godai, Naka-cho, Naka-gun, Ibaraki-ken, all of Japan

Continuation of Ser. No. 872,902, Jun. 11, 1986, abandoned.

This application Mar. 10, 1989, Ser. No. 321,778

Claims priority, application Japan, Jun. 21, 1985, 60-134054; Jun. 21, 1985, 60-134057

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—32 **31 Claims**

1. An information recording/reproducing apparatus for recording/reproducing a digital audio signal on/from a magnetic medium, said digital audio signal being modulated/demodulated by a phase shift keying modulator/demodulator, comprising:

a serial-parallel converter for converting said digital audio signal into two parallel audio data signals Xk and Yk corresponding to even and odd bits of said digital audio signal, respectively, wherein said parallel audio data signals Xk and Yk have a relative time difference corresponding to an one half data period, where k is an integer;

first and second differential coders for coding said parallel

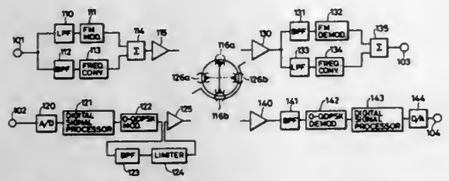
VOL 1147 ISS 4 FEB 23 1993 UMI

audio data signals Xk and Yk into code data signals Pk and Qk;

a quadrature modulator for balanced-modulating two quadrature carriers using said parallel audio data signals Pk and Qk, respectively, said two quadrature carriers having a $\pi/2$ phase difference from each other and for combining said balanced-modulated quadrature carriers to produce an output;

a first magnetic recording/reproducing means for recording/reproducing said output of said quadrature modulator on/from a deep part of said magnetic medium;

a coherent detector for phase-detecting said output reproduced from said deep part of said magnetic medium by use of two quadrature carriers having a $\pi/2$ phase difference from each other;



first and second code discriminators for discriminating two outputs of said coherent detector to reproduce said code data signals Pk and Qk, respectively;

first and second differential decoders for differential decoding said reproduced code data signals Pk and Qk respectively to reproduce said parallel audio data signals Xk and Yk; and

a parallel-serial converter for converting said reproduced parallel audio data signals Xk and Yk to reproduce said digital audio signal, said odd bits corresponding to said reproduced parallel audio data signal Xk and said even bits corresponding to said reproduced parallel audio data signal Yk.

5,189,565

SLEW RATE CONVERTER FOR A VIDEO SIGNAL RECORDING APPARATUS

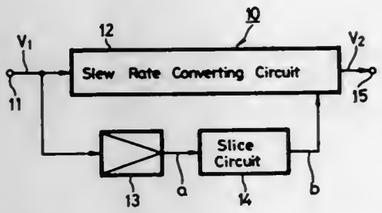
Ichitaro Sato, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jul. 17, 1990, Ser. No. 553,390

Claims priority, application Japan, Jul. 21, 1989, 1-189163

Int. Cl.[5] H04N *5/78*; G11B *5/02*

U.S. Cl. 360—33.1 **3 Claims**



1. An apparatus for recording a video signal on a videotape, said apparatus comprising:

a recording circuit;

a slew rate converter having an input terminal for receiving and converting the slew rate of a video signal fed thereto and an output terminal supplying the slew rate converted video signal to said recording circuit, said video signal as received at said input terminal including a signal component having a high frequency and an amplitude exceeding a predetermined level;

a detecting circuit receiving said video signal for detecting when said high-frequency signal component of said video signal exceeds a predetermined threshold level and producing a detection output signal; and

said slew rate converter including control means comprising a current controlled amplifier responsive to said detection output signal for controlling a slew rate of said slew rate converter so as to suppress said signal component in the video signal as supplied to said output terminal and comprising a transistor that controls an amount of the current of said current controlled amplifier and said slew rate converter includes a capacitor that converts the slew rate in response to the current in said current controlled amplifier.

5,189,566

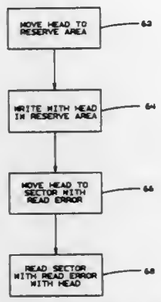
METHOD AND APPARATUS FOR RECOVERING DATA

Thomas C. Christensen; Weldon M. Hanson; James J. Mosser, and Donald E. Vosberg, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 15, 1990, Ser. No. 494,047

Int. Cl.[5] G11B *5/09*

U.S. Cl. 360—53 **1 Claim**



1. A method of recovering data from a magnetic storage device which has a disk for storing data, said disk having at least one track in which includes a plurality of sectors which include data, said storage device also having a transducer for reading and writing data to the surface of the disk, said method for recovering data comprising the steps of:

detecting a read error in the data in a first sector of said plurality of sectors within said track;

reading data from a second sector of said plurality of sectors within said track;

rewriting the data from said second sector to said second sector; and

reading the data in the first sector.

5,189,567

HIGH SPEED SWITCHING CIRCUIT FOR CONTROLLING CURRENT FLOW IN A BRIDGE CIRCUIT COIL FOR USE IN A MAGNETO-OPTIC DIRECT OVERWRITE SYSTEM

Hemant K. Mody, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 26, 1991, Ser. No. 749,757

Int. Cl.[5] G11B *13/04, 11/12, 11/10*

U.S. Cl. 360—59 **15 Claims**

1. A direct over-write magneto-optic recording apparatus for recording digital information in a magnetic recording layer of the type having vertically oriented magnetic domains, said digital information identified by a digital information source, said apparatus comprising:

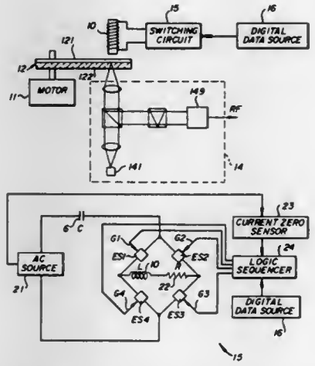
(a) means for scan-irradiating the recording layer with a beam of radiant energy to elevate the temperature of a selected portion of the magnetic recording layer to a level above the Curie temperature of said layer;

(b) an energizing source for providing an alternating current having a predetermined frequency;

(c) magnetic field-producing means for producing a magnetic field in the irradiated portion of the recording layer, said field being parallel to the vertical orientation of said magnetic domains, said field-producing means including a coil; and

(d) circuit means operatively coupled between said coil and said energizing source, said circuit means including a capacitive element coupled in series with said energizing source, said capacitive element and an inductance of said coil included in a resonant circuit having a resonant frequency generally equal to said predetermined frequency, said circuit means adapted to control a direction of said alternating current through said coil for each positive current and negative current half cycle of said alternating current predetermined frequency, said circuit means controlling said direction in response to signals from said digital information source.

4. A direct over-write magneto-optic recording apparatus for recording digital information in a magnetic recording layer of the type having vertically oriented magnetic domains, wherein an information data source provides control signals



identifying data to be stored by said recording apparatus, said apparatus comprising:

(a) means for scan-irradiating the recording layer with a beam of radiant energy to elevate the temperature of a selected portion of the magnetic recording layer to a level above the Curie temperature of said layer;

(b) magnetic field-producing means for producing a magnetic field in the irradiated portion of the recording element, said field being parallel to the vertical orientation of said magnetic domains, said field-producing means including a coil and a current source, said current source providing a high frequency alternating current, wherein a field current through said coil produces said magnetic field; and

(c) switching means coupled to said coil for controlling a direction of said field current through said coil; and

(d) a capacitive element coupled between said current source and said switching means, said coil and said capacitive element being coupled in series to provide a resonant circuit having a resonant frequency substantially equal to a frequency of said current source, said switching means switching conducting states to control a direction of field current for each positive and each negative half cycle of said alternating current, a state of said switching means being determined by said control signals.

5,189,568

METHOD AND APPARATUS FOR GENERATING FRAME CONTROL SIGNALS IN A MULTIHEAD VIDEOTAPE RECORDER USING MULTIPLE VIDEO SIGNAL TRACKS FOR EACH VIDEO FRAME

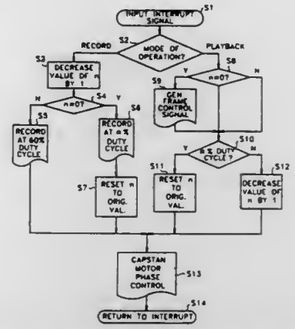
Myeong-bo Sim; Jeong-il Park, both of Kyunggi-do, and Cheol-weon Lee, Seoul, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Mar. 27, 1991, Ser. No. 676,003

Claims priority, application Rep. of Korea, Jun. 29, 1990, 90-9770; Mar. 11, 1991, 91-3874

Int. Cl.[5] G11B *15/52, 5/02*

U.S. Cl. 360—73.13 **7 Claims**



1. A method for recording control signals in a control track portion of a video tape in which a multiplicity of video signal tracks are recorded in a video track portion for each frame of a video image, said control signals being used in the control of video signal processing and motor phase control of a video tape recorder, said control signals being in the form of pulses each having a specified duty cycle over a specified pulse period, wherein the number of rising edges of said control signal pulses for each frame is equal to an integer n, comprising the steps of:

setting n to its initial value;

decreasing the value of n by one in response to an interrupt signal;

determining whether n is equal to zero;

recording a control signal pulse at a 60% duty cycle when n is not equal to zero; and

recording a control signal pulse at a α % duty cycle when n is equal to zero, α being a value other than 60%, and resetting n to its initial value;

wherein a control signal pulse having a α % duty cycle represents a frame reference signal representing the beginning of a video image frame.

5,189,569

HEAD DRIVE MECHANISM WITH PIVOTING MECHANISM

Yuichi Kurosawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1990, Ser. No. 587,663

Claims priority, application Japan, Sep. 26, 1989, 1-251329

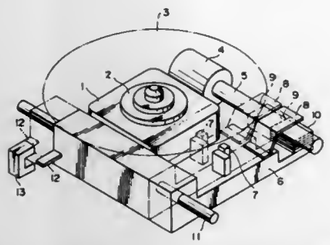
Int. Cl.[5] G11B *5/54*

U.S. Cl. 360—75 **10 Claims**

1. A head drive mechanism associated with a disk driving device, a disk member being mounted and driven to be rotated on said disk driving device, said head drive mechanism comprising a support member carrying a head member which is capable of recording signals on said disk member and reproducing the signals from said disk member, said support member being driven to slide such that said head member is moved in a radial direction of said disk member, said head drive mechanism further comprising:

VOL
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pivot means for pivoting said support member in a direction orthogonal to the sliding direction of said support member such that a first end of said support member is swingable; and

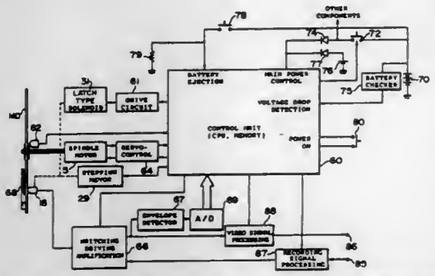


actuating means provided on said first end of said support member for driving said support member to swing.

5,189,570
BISTABLE MAGNETIC HEAD ADVANCING/RETRACTING DEVICE FOR ROTATING MAGNETIC RECORDING MEDIUM

Yutaka Maeda; Kiyotaka Kaneko; Izumi Miyake; Yoshio Nakane, and Hiroshi Shimaya, all of Tokyo, Japan, assignors to Fuji Photo Film Co, Ltd., Kanagawa, Japan

Continuation of Ser. No. 314,112, Feb. 23, 1989, abandoned.
This application Aug. 15, 1991, Ser. No. 746,186
Claims priority, application Japan, Feb. 23, 1988, 63-38700
Int. Cl.[5] G11B *5/54*
U.S. Cl. 360—75 **14 Claims**



13. A method of operating a recording/playback apparatus for rotating a magnetic disk comprising the steps of:

mounting the magnetic disk upon a disk plate within the apparatus;

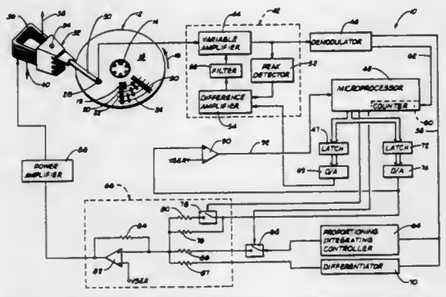
transporting a magnetic head during recording/playback along a radial direction across an underside of the mounted magnetic disk by rotating a threaded lead screw, housed within a recessed portion of a head carriage disposed parallel along the radial direction in which the magnetic head is transported, the lead screw mounted on a base plate of the head carriage exteriorly of the recess to be rotatably driven by a drive motor, a sliding needle, including opposing first and second ends which are embedded within the head carriage, engaging the threaded lead screw for transporting the head carriage in response to rotation of the threaded lead screw; and

advancing and retracting the magnetic head with respect to the magnetic disk to be respectively in an advanced position and a retracted position, the magnetic head being advanced toward the magnetic disk by releasing an engagement member of advancing/retracting means from a horizontal surface of the head carriage via an output shaft of a latch-type solenoid held in a first position responsive to of a negative pulse of a driving power supply and being retracted from said magnetic disk by engagement of the engagement member of the advancing/retracting means with the horizontal surface of the head carriage when the output shaft of the latch-type solenoid is held in a second position responsive to a positive pulse of the driving power.

5,189,571
ADAPTIVE SETTLE TIME MINIMIZATION FOR A HARD DISK DRIVE

Robert D. Murphy, Yukon, and Stephen R. Genheimer, Mustang, both of Okla., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Apr. 30, 1990, Ser. No. 524,190
Int. Cl.[5] G11B *21/02, 5/55*
U.S. Cl. 360—75 **14 Claims**



13. In a disc drive having an actuator operable in response to a signal to accelerate and decelerate a transducer, the method of compensating said signal for offset comprising:

operating said actuator in a manner designed to move said transducer at a preselected speed in a first direction;

operating said actuator in a manner designed to move said transducer at the same speed in a second direction opposite the first direction;

determining first and second actual speeds at which said transducer moves in said respective first and second directions; and

altering said signal to compensate for said offset if said first and second actual speeds differ by more than a predetermined amount.

5,189,572
MAGNETIC CONTROL OF A TRANSDUCER SIGNAL TRANSFER ZONE TO EFFECT TRACKING OF A PATH ALONG A RECORD MEDIUM

Beverley R. Gooch, Sunnyvale, Calif., assignor to Ampex Corporation, Redwood City, Calif.

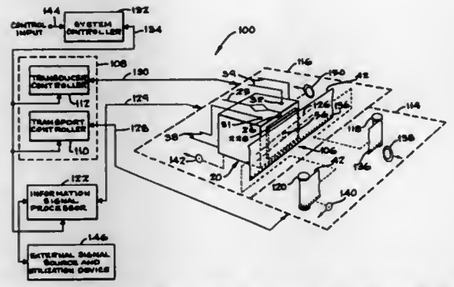
Continuation-in-part of Ser. No. 829,592, Feb. 13, 1986, Pat. No. 5,119,255, and a continuation-in-part of Ser. No. 715,211, Mar. 22, 1985, abandoned, and a continuation-in-part of Ser. No. 808,588, Dec. 13, 1985, abandoned, and a continuation-in-part of Ser. No. 808,924, Dec. 13, 1985, abandoned, said Ser. No. 829,592, and Ser. No. 715,211, each is a continuation-in-part of Ser. No. 641,817, Aug. 16, 1984, abandoned, said Ser. No. 808,588, is a continuation-in-part of Ser. No. 715,211,. This application Mar. 24, 1986, Ser. No. 843,453
Int. Cl.[5] G11B *5/584, 5/187, 5/23, 5/52*
U.S. Cl. 360—77.12 **68 Claims**

1. A system for transferring information signals with respect to a magnetic record medium wherein the information signals are transferred by a transducer controlled to trace a selected path along the record medium during the transfers, the magnetic record medium has signals recorded thereon from which

the location of the selected path can be determined, comprising:

a magnetic transducer disposed for transferring information signals with respect to the magnetic record medium, said magnetic transducer including a body of magnetically permeable material defining a magnetic flux path therein and a winding disposed in electromagnetic coupling relation to the magnetic flux path, said body defining a transducing gap therein for magnetically coupling the magnetic flux path to the magnetic record medium;

a saturation control means coupled to the magnetic transducer and responsive to a control signal for magnetically saturating a selected region of the body to enable a selected segment of the gap to effect the transfer of information signals between the magnetic record medium and the winding;



means for producing relative movement between the selected segment of the gap and the magnetic record medium that cause the selected segment to trace a path along the record medium;

means responsive to signals recorded on the magnetic record medium for sensing deviations of the enabled selected segment of the gap from the selected path; and

a generator for generating a said control signal and coupling the same to the saturation control means, said generator is responsive to the sensed deviations to vary said control signal according to deviations of the selected segment of the gap from the selected path to effect, upon coupling to the saturation control means, a corresponding movement of the enabled selected segment along the defined transducing gap in a direction so that the enabled selected segment follows the selected path.

5,189,573
MAGNETIC TAPE CASSETTE APPARATUS WITH A DRIVE MECHANISM WHICH SERVES FOR PLAYING MAGNETIC TAPE CASSETTES

Karl Klös-Hein, Wettenberg, and Hans-Georg Hermanni, Sinn, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 480,427, Feb. 15, 1990, abandoned.
This application Oct. 28, 1991, Ser. No. 784,724
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1989, 3904483; May 5, 1989, 3914789
Int. Cl.[5] G11B *5/027*
U.S. Cl. 360—85 **15 Claims**

1. A magnetic tape cassette apparatus having a loading mechanism, said loading mechanism comprising:

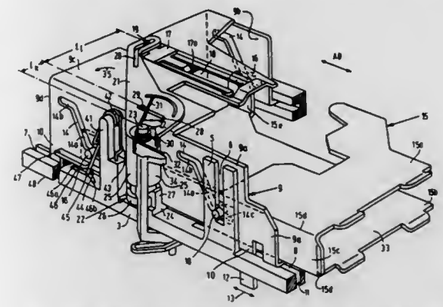
(a) a chassis having a fixed vertical guideway;

(b) a slide slidably connected to said chassis for reciprocating movement between a first slide position and a second slide position, said slide including an inclined lift slot;

(c) a cassette tray sized to slidably receive a magnetic tape cassette, said cassette tray including a pin extending laterally into said vertical guideway of said chassis and said inclined lift slot of said slide, during translation of said slide between said first slide position and a second slide position said inclined lift slot acting on said pin of said tray and moving said tray vertically with respect to said chassis between a raised and lowered tray position with said tray pin constrained in said vertical guide;

(d) an actuating lever pivotally mounted on a pivot on said chassis and coupled to said slide; and

(e) a cassette catch connected to said actuating lever for engaging and moving the magnetic tape cassette within

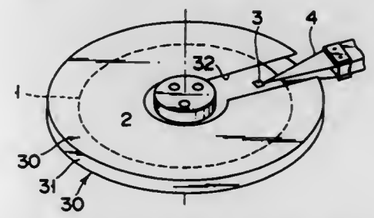


said tray during movement of said slide between a play position, in which said cassette is fully inserted within said tray, and an eject/load position, in which said cassette partially protrudes from said tray, said cassette catch being connected to said actuating lever at a location more distant from said pivot than said coupling of said slide to said actuating lever such that said cassette catch translates a greater distance than said slide during translation of said slide.

5,189,574
FLEXIBLE INFORMATION STORING DISK APPARATUS HAVING LAMINAR AIR FLOW

Makoto Imamura, Hayama; Kazushi Tanimoto, Tokyo, both of Japan; Yoichiro Tanaka, Lauderdale, Minn.; Yoshiaki Sonobe, Ichikawa, and Katsuyoshi Kitagawa, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Nov. 3, 1989, Ser. No. 431,387
Claims priority, application Japan, Nov. 4, 1988, 63-278794
Int. Cl.[5] G11B *5/60, 15/64, 17/32, 21/20*
U.S. Cl. 360—103 **1 Claim**



1. An information storing disk apparatus comprising:

a flexible disk for storing reproducing information;

a means for rotating said disk to cause centrifugal force to act on said disk in a radial direction thereof, for keeping said disk flat, and for creating air flow on both sides of said disk in a circumferential direction thereof wherein air flow is created in the radial direction of said disk when said disk is rotated;

a pair of head sliders located to face both sides of said disk, respectively, at least one of the head sliders having means for reading and writing information on and from said disk

VOL 1147 ISS 4 FE 23 1993 UMI

and each of said head sliders having air surface on which air force caused by a circumferential air flow acts to float said head slider from said disk;

supporting means for supporting said pair of head sliders, said supporting means serving to apply elastic force of said supporting means to each of said head sliders against the air force, and keeping said head sliders floating from said disk by a predetermined distance when the elastic force is balanced with the air force applied;

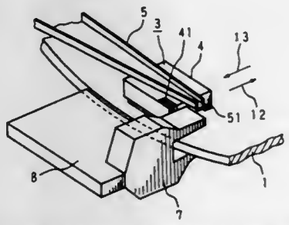
a straightening means for straightening the air flow in the radial direction of said disk, and for reducing the occurrence of turbulent flow in the air flow, said straightening means being located to face both sides of said disk with a predetermined distance interposed between each of said straightening means and a corresponding side of said disk, and having a pair of stationary straightening surfaces each serving to straighten the air flow in the radial direction of said disk to prevent an occurrence of turbulent flow between each of stationary straightening surface and said disk, said straightening means having a pair of first stationary plates arranged to face both sides of said disk and said straightening surface being formed on that face of each of said first stationary plate which faces said disk, each of said first stationary plates being shaped like a circle having such a side that covers said disk, and having a cut-away portion for defining a space in which each of said head sliders can move on said disk in a radial direction thereof.

5,189,575

READ/WRITE HEAD RETRACT MECHANISM

Yasushi Onooka; Junji Kawada, both of Kamakura, and Tetsu Yamamoto, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Oct. 4, 1990, Ser. No. 592,585
Claims priority, application Japan, Oct. 6, 1989, 1-262353
Int. Cl.[5] G11B *5/54, 5/41*
U.S. Cl. 360—105 **14 Claims**



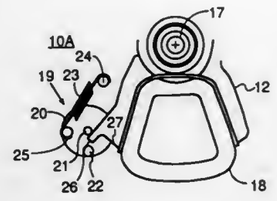
1. A read/write head retract apparatus for use with a recording disk, the apparatus comprising:
a read and/or write head;
a spring for supporting said read and/or write head and for urging said read and/or write head toward said recording disk;
an actuator to move said spring and in turn said read and/or write head in a substantially radial direction of said recording disk during unloading or loading of said head;
a cam guiding said spring and said read and/or write head away from said recording disk during unloading of said read and/or write head by said actuator; and
a platform having a surface upon which said read and/or write head directly rests after having moved away from said recording disk during unloading.

5,189,576

ROTARY INERTIAL LATCH FOR DISK DRIVE ACTUATOR

James H. Morehouse, Jamestown; James A. Dunckley, and David M. Furay, both of Boulder, all of Colo., assignors to Integral Peripherals, Inc., Boulder, Colo.

Filed Dec. 19, 1990, Ser. No. 629,929
Int. Cl.[5] G11B *5/54, 21/22*
U.S. Cl. 360—105 **11 Claims**



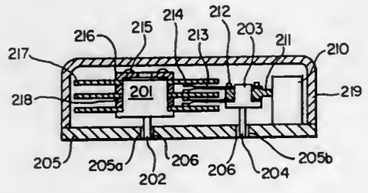
1. A disk drive for storing and/or retrieving information comprising:
a disk comprising a storage medium and rotatable about an axis;
means for rotating said disk;
an actuator rotatable about a pivot and comprising a head for storing information in and/or retrieving information from said storage medium; and
an inertial latch for preventing rotation of said actuator with respect to said disk drive when said disk drive is subjected to a rotational force, said inertial latch comprising:
an inertial body rotatable about an axis;
engagement means joined to said inertial body, said engagement means being capable of engaging said actuator so as to prevent said actuator from rotating about said pivot when said disk drive is subjected to a rotational force; and
bias means for biasing said engagement means such that said engagement means engages said actuator only when said disk drive is being subjected to an external rotational force.

5,189,577

A MAGNETIC DISK APPARATUS AND A MOTOR SECUREMENT THEREFOR

Hiroshi Nishida, Kanagawa; Tatsuya Ishigaki, Yokohama; Atsushi Ito, Odawara; Yoshinobu Kudou, Miramiashigara; Hiroshi Katou, Hadano, and Kousuke Fujii, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 446,788, Dec. 6, 1989, Pat. No. 5,027,242. This application Mar. 13, 1991, Ser. No. 669,003
Claims priority, application Japan, Dec. 9, 1988, 63-311712
The portion of the term of this patent subsequent to Jun. 25, 2008, has been disclaimed.
Int. Cl.[5] G11B *5/55, 5/012*
U.S. Cl. 360—106 **23 Claims**



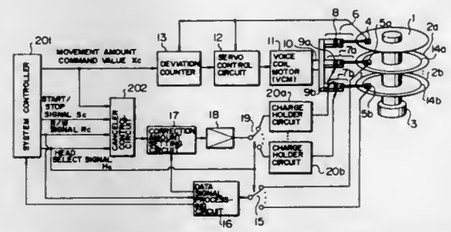
1. A magnetic disk apparatus, comprising:
a base member and a cover mounted on said base member to form an enclosure;
support means for rotatably supporting a plurality of magnetic disks within said enclosure, wherein a plurality of said disks are supported by said support means and wherein a space between said magnetic disks is less than substantially 2.3 mm;
motor means for rotating said magnetic disks, said motor means being secured to said base member by an adhesive;
first and second transducer means for writing information on and reading information from upper and lower surfaces of adjacent ones of said magnetic disks;
first and second spring means having opposite ends for securing said first and second transducer means on one of said ends in order to position said first and second transducer means in close proximity to both surfaces of adjacent ones of said magnetic disks;
arm means for supporting both said spring means, each of said spring means being connected at the other of said ends to said arm means and being arranged substantially within the same plane parallel to said magnetic disks; and
positioning means for moving said arm means in order to position said first and second transducer means in predetermined positions.

5,189,578

DISK SYSTEM WITH SUB-ACTUATORS FOR FINE HEAD DISPLACEMENT

Kenji Mori, Tsuchiura; Hiromu Hirai, Tsukuba; Haruaki Otsuki, Toride; Tsuyoshi Takahashi, Odawara; Jun Naruse, Odawara; Yuji Nishimura, Odawara, and Muneo Kawamoto, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 26, 1990, Ser. No. 543,425
Claims priority, application Japan, Jun. 28, 1989, 1-164041
Int. Cl.[5] G11B *21/08, 21/24, 21/10*
U.S. Cl. 360—106 **5 Claims**



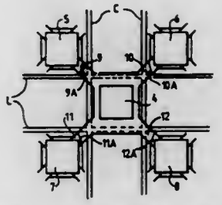
1. A disk system comprising a plurality of disks for recording information, a plurality of guide arms, a plurality of heads mounted on said plurality of guide arms for recording or reproducing information on or from respective disk surfaces of said plurality of disks, a main actuator for simultaneously driving said plurality of guide arms to simultaneously drive said plurality of heads in a long stroke, a plurality of sub-actuators for driving at least two of said plurality of heads in fine strokes independently of one another, and means for correcting respective offsets of said plurality of heads with said plurality of sub-actuators based on position information recorded on said respective disk surfaces and reproduced by said plurality of heads and actual position information indicative of actual positions of said plurality of heads, wherein each of said plurality of sub-actuators includes a piezoelectric element mounted on an associated one of said plurality of guide arms and resilient means for restricting movement of said piezoelectric element having low rigidity in a driving direction of said piezoelectric element and high rigidity in other directions, and wherein a distal end portion of each of said plurality of guide arms is divided in a direction of a thickness thereof to form upper and lower head mounting portions on which respective ones of said plurality of heads are mounted to form upper and lower head's, and wherein respective piezoelectric elements and respective resilient means are mounted on said upper and lower head mounting portions for driving said upper and lower heads in fine strokes independently on each other.

5,189,579

MULTIPLE-TRACK RECORDING MAGNETIC HEAD WITH COMPACT MATRIX STRUCTURE

Joseph Colineau, Bures Sur Yvette, France, assignor to Thomson-CSF, Puteaux, France

PCT No. PCT/FR90/00385, § 371 Date Feb. 19, 1991, § 102(e) Date Feb. 19, 1991, PCT Pub. No. WO90/16063, PCT Pub. Date Dec. 27, 1990
PCT Filed Jun. 1, 1990, Ser. No. 651,349
Claims priority, application France, Jun. 16, 1989, 89 08018
Int. Cl.[5] G11B *5/29*
U.S. Cl. 360—121 **5 Claims**



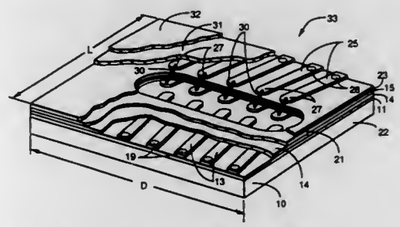
1. A multiple-track recording magnetic head structure, comprising:
a substrate comprising magnetic material;
a matrix of pads on and connected to the substrate, each pad comprising magnetic-material,
a matrix of electrical column and row conductors disposed above regions of the substrate that are between the pads;
a matrix of magnetic poles comprising magnetic material, each pole contacting a pad and opposing across a gap another one of the poles which contacts another one of the pads, said gap substantially midway between adjacent pads,
wherein each set of opposing poles and pads contacted thereto forms, in combination with the substrate, a broken magnetic loop which is broken only by the corresponding gap, wherein two electrical conductors of the matrix of electrical conductors are enclosed by the broken loop;
wherein each magnetic pad contacts four of the poles.

5,189,580

ULTRA SMALL TRACK WIDTH THIN FILM MAGNETIC TRANSDUCER

Raghavan Pisharody, Palo Alto, and Beverley R. Gooch, Sunnyvale, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

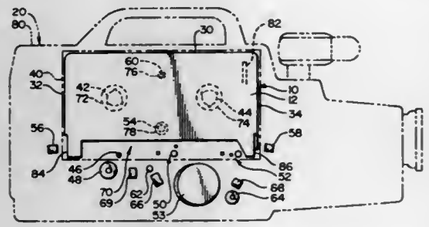
Division of Ser. No. 373,762, Jun. 30, 1989, Pat. No. 5,016,342. This application Jan. 18, 1991, Ser. No. 643,408
Int. Cl.[5] G11B *5/147*
U.S. Cl. 360—126 **11 Claims**



1. A thin film magnetic transducer, comprising:
a support member of a non-magnetic material having a planar surface;

a thin film magnetic core layer of generally uniform thickness superposed with an in a plane parallel to said planar surface, and having the thickness defining the track width of said transducer;
window means in said core layer;
said thin film magnetic core layer being separated by a transducing gap having a predetermined length and depth, said transducing gap defining in said magnetic core layer two coplanar confronting magnetic poles having the same thickness as the thickness of said thin film magnetic core layer;
a thin film non-magnetic material superposed with said magnetic core layer and filling said transducing gap; and
first and second pluralities of thin film conductor leads formed on opposite sides of and insulated from said magnetic core layer and having ends thereof accessible through said window means for interconnection to form a transducer winding.

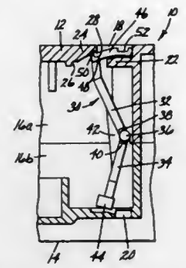
5,189,581
DRYING MECHANISMS AND METHODS FOR REMOVING EXCESS MOISTURE FROM ELECTRONIC EQUIPMENT
Robert L. Schroder, P.O. Box 593, and Willard B. Moffitt, 1286 Wildwood La., both of Anacortes, Wash. 98221
Filed Mar. 22, 1991, Ser. No. 673,940
Int. Cl.[5] G11B *23/04*
U.S. Cl. 360—128 **28 Claims**



1. A combination of:
an electronic device having a housing defining at least one orifice through which a container may be inserted and withdrawn, where the container is adapted to hold recording media that may be accessed by the electronic device;
a hollow casing in the general shape of the container, the casing having at least one passageway formed therein that allows communication between the interior of the hollow casing and the interior of the housing;
desiccant material inside the casing; and
means for covering the at least one passageway to prevent the desiccant material from passing through the at least one passageway while allowing moisture to pass therethrough.

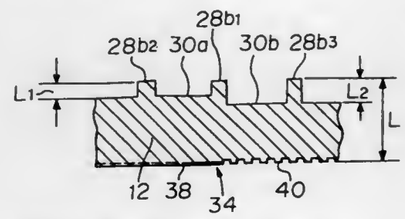
5,189,582
RECORDING LATCH
Robert L. Hanson, and John A. Bailey, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 11, 1991, Ser. No. 639,885
Int. Cl.[5] G11B *23/02, 15/04*
U.S. Cl. 360—132 **9 Claims**

1. A recording latch which is pivotably mountable in a recording cassette between a record position and a no-record position, wherein the cassette includes a top wall and a bottom wall and the bottom wall includes a record opening which is blocked during one of the record and no-record positions, and the top wall includes a latch-engaging opening through which the latch is visible in one of the record and no-record positions, wherein the recording latch comprises:
an upper body portion;
a lower body portion;
a pair of central arms located between the upper and lower body portions and extending in opposite directions;
a plug disposed at the bottom of the lower body portion to selectively block the record opening;



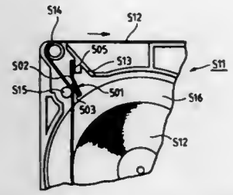
a flange disposed at the top of the upper body portion to be selectively visible through the latch-engaging opening in the top wall; and
means for securing the position of the latch and controlling the forces required to pivot the latch between the record and no-record positions, wherein the securing means is located entirely on one of the upper body portion and lower body portion of the recording latch.

5,189,583
MAGNETIC TAPE CASSETTE HAVING RIBS IN REEL AREAS
Masatoshi Okamura, and Hiroshi Kaneda, both of Tokyo, Japan, assignors to TDK Corporation, Tokyo, Japan
Filed Mar. 21, 1991, Ser. No. 673,079
Claims priority, application Japan, Mar. 30, 1990, 2-35384[U]
Int. Cl.[5] G11B *23/02*
U.S. Cl. 360—132 **3 Claims**



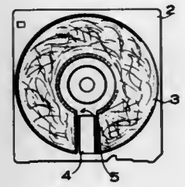
1. A magnetic tape cassette comprising a casing formed with upper and lower half casings each having a base plate with reel areas and reel hubs rotatably supported in the casing to wind and rewind a magnetic tape, at least one of said upper and lower half casings having ribs in the reel areas in the inner surface of the base plate of said at least one of said upper and lower casings so that a number of recesses are formed by the ribs, wherien the improvement comprises the depth of the recesses produced by forming the ribs in varied in correspondence to the degree of roughness of the outer surface of the base plate which is determined by requirements in designing the half casing having the ribs.

5,189,584
MAGNETIC TAPE CASSETTE
Masato Mizuno, and Kengo Oishi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Division of Ser. No. 889,244, May 28, 1992, which is a division of Ser. No. 799,204, Nov. 27, 1991, which is a division of Ser. No. 697,560, May 9, 1991, Pat. No. 5,101,307, which is a division of Ser. No. 323,926, Mar. 15, 1989, Pat. No. 5,041,938. This application Aug. 28, 1992, Ser. No. 936,658
Claims priority, application Japan, Mar. 15, 1988, 63-33175; Mar. 15, 1988, 63-33176; Mar. 15, 1988, 63-36416; Apr. 1, 1988, 63-42993; Apr. 7, 1988, 63-46184; Apr. 7, 1988, 63-46185; Apr. 18, 1988, 63-50834
Int. Cl.[5] G11B *23/087*
U.S. Cl. 360—132 **3 Claims**



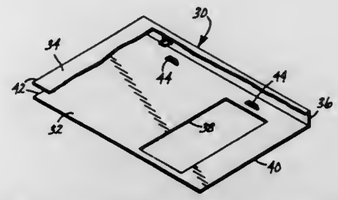
1. In a magnetic tape cassette rotatably housing pair of hubs on which a magnetic tape is wound having a resilient pad which is held in sliding contact with the magnetic tape and presses against the magnetic tape so as to stabilize the running of the magnetic tape, the improvement wherein said resilient pad has a hard coating of an ultraviolet-curing resin formed on a portion thereof which is contact with the magnetic tape.

5,189,585
FLOPPY DISK WITH HEAD SLOT IN LINER CUT FROM LINER MATERIAL WITH PREFERRED ORIENTATION
Toyohide Kubo, Tokushima, Japan, assignor to AWA Engineering Co., Ltd., Tokushima, Japan
Continuation-in-part of Ser. No. 318,713, Mar. 3, 1989, abandoned. This application Jon. 18, 1990, Ser. No. 544,217
Claims priority, application Japan, Mar. 8, 1988, 63-55348
Int. Cl.[5] G11B *23/033;* B65D *85/30*
U.S. Cl. 360—133 **1 Claim**



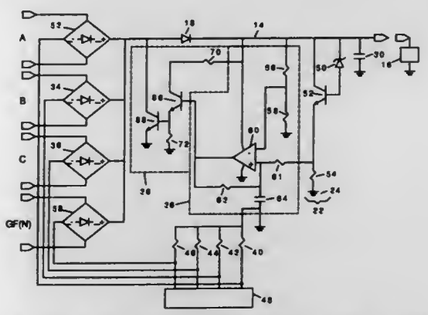
1. A method of making a floppy disk comprising:
determining a direction in which a sheet of liner material for producing an annular floppy disk liner having an elongated radial disk head slot therein has a tensile strength which is greater than a tensile strength in a direction perpendicular to said firstmentioned direction;
cutting from the sheet of liner material such a floppy disk liner with a direction of elongation of the disk head slot being in said direction perpendicular to said firstmentioned direction;and
assembling the thus cut out floppy disk liner in a floppy disk between a magnetic disk and a rigid casing for containing the magnetic disk with the disk head slot in the liner aligned with a corresponding disk head slot in the casing.

5,189,586
LANCED SHUTTER TAB FOR DISK CARTRIDGES
Paul D. Rumpza, Roseville, and James J. Wulfing, Stillwater, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 21, 1991, Ser. No. 658,547
Int. Cl.[5] G11B *23/03*
U.S. Cl. 360—133 **16 Claims**



1. A tab for slidably securing a U-shaped shutter having a planar surface to the front wall of a substantially flat rigid disk cartridge case to open and close the head access opening, wherein the tab has two longitudinal ends and two lateral sides and is receivable in a slot formed in the cartridge case and comprises a portion of material out of the plane of the shutter, which is connected at both longitudinal ends to the shutter and is not connected at either lateral side to the shutter, and wherein the shutter has an edge adjacent the lateral side of the tab.

5,189,587
DUAL SHUNT CURRENT REGULATOR
Andy A. Haun, and Earl J. Tessmer, both of Cedar Rapids, Iowa, assignors to Square D Company, Palatine, Ill.
Filed Jul. 24, 1990, Ser. No. 558,130
Int. Cl.[5] H02H *9/04*
U.S. Cl. 361—56 **8 Claims**

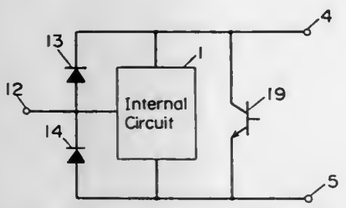


1. A current regulator circuit for regulating a supply current flowing in a current path between a current source and a load, comprising:
a current blocking means in the current path for preventing current from flowing through the current blocking means in a direction from the load to the source;
a capacitor coupled to the current path on the load side of the current blocking means;
a first shunting circuit, coupled to the current path on the load side of the current blocking means, for shunting prescribed current levels from the current path, and including:
a zener diode coupled to the current path on the load side of the current blocking means, for passing current when the supply current exceeds a first threshold level, and
switch means, responsive to the zener diode passing said

VOL
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current, for generating a voltage signal indicative of a charge on the capacitor;
a reference circuit for providing a reference voltage which is proportional to the charge on the capacitor;
a comparator circuit, responsive to the reference voltage, for generating an enable signal when the voltage signal exceeds the reference voltage, wherein the comparator circuit includes feedback circuitry to provide hysterisis control to the enable signal; and
a second shunting circuit including shunting means, responsive to the enable signal and coupled to the current path on the source side of the current blocking means, for shunting substantially higher levels of current from the current path than the prescribed current levels of the first shunting circuit.

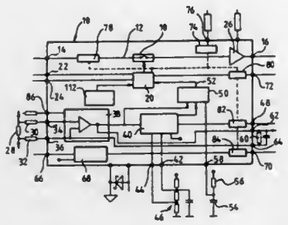
5,189,588
SURGE PROTECTION APPARATUS
Shigeru Yano, and Masao Takiguchi, both of Takatsuki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 15, 1990, Ser. No. 493,684
Claims priority, application Japan, Mar. 15, 1989, 1-60864
Int. Cl.[5] H02H *9/04*
U.S. Cl. 361—56 **3 Claims**



1. A surge protection apparatus for protecting an internal circuit composed of MOS semiconductor elements comprising:
a signal terminal, a first power supply terminal and second power supply terminal connected to the internal circuit;
a first diode having an anode which is connected to said signal terminal and having a cathode which is connected to said first power supply terminal;
a second diode having a cathode which is connected to said signal terminal and having an anode which is connected to said second power supply terminal; and
a protective MOS transistor having a drain electrode which is connected to said first power supply terminal, and having a source electrode which is connected to said second power supply terminal and having a gate electrode which is connected to said source electrode.

5,189,589
POWER CONTROLLER
Klaus W. Marschall, Meersburg, Fed. Rep. of Germany, assignor to Bodenseewerk Gerätetechnik GmbH, Fed. Rep. of Germany
Filed Feb. 7, 1990, Ser. No. 477,253
Claims priority, application Fed. Rep. of Germany, Sep. 25, 1989, 3931921
Int. Cl.[5] H02H *3/08*
U.S. Cl. 361—93 **1 Claim**

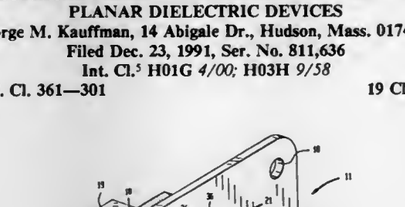
1. Power controller for the monitored activation, monitoring and protection of current-consuming loads in a load circuit by a microprocessor having low-power control outputs, characterized in that the following circuit elements are integrated in an integrated device:
(a) an activation path (12) disconnectable by an electronic switch (18) and to which either a CMOS or TTL signal is adapted to be applied by a microprocessor output port and which generates a MOS-FET control signal,
(b) a latch (20) which is arranged to control said electronic switch (18) and which, for its part, is adapted to be controlled by external either CMOS or TTL level signals such that the switch (18) opens with a first signal and closes with a second signal,
(c) a current comparator (40) offering a first and a second switching threshold adapted to be determined by external components and a third fixed internal switching threshold, and to which the load current is adapted to be applied common mode rejected and which are arranged to control the latch (20) to open the electronic switch (18)
with a delay determined by external components (54,56) when the second lower switching threshold of the current comparator (40) is exceeded, and
undelayed when the third higher switching threshold of the current comparator (40) is exceeded,
(d) a status indicator (72) for the latch (20) which indicates when the power controller detects a state of overcurrent,



(e) a load voltage measuring path (68) having a signal output (70) which is indicative of whether a load voltage is within a predetermined tolerance,
(f) a first load current measuring path, the load current input (34,36) of which is connected to the current comparator (40), having a signal output (48) which is indicative at whether the load current is within a predetermined tolerance,
(g) a second load current measuring path (60) having an analog voltage output (62,64) adapted to be calibrated according to the current and to be applied to an A/D-converter (100) of a microprocessor (90),
(h) a reset circuit (112) which sets the latch (20) to a well-defined state when the device (10) is powered, and
(i) a test circuit (86,96) which is arranged to be supplied by analog input voltages form the D/A-converter of the microprocessor (90) connected to the current measuring paths (40) for simulation of load currents.

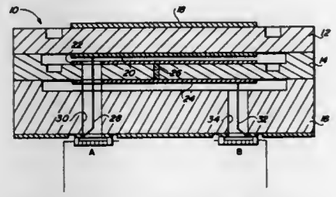
5,189,590
CLOSED-LOOP MULTI-SENSOR CONTROL SYSTEM AND METHOD
Carl S. Schneider, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Continuation of Ser. No. 558,111, Jul. 25, 1990, abandoned. This application Nov. 14, 1991, Ser. No. 823,031
Int. Cl.[5] B63G *9/06;* **H01F** *13/00*
U.S. Cl. 361—149 **3 Claims**

1. A closed-loop matrix method for controlling magnetic signatures surrounding a three dimensional space at distances away from a centerline of the space exceeding the distances between degaussing coils within the space comprising:
providing a plurality of degaussing coils within the space for degaussing;
providing a plurality of sensors within the space for measuring magnetic state signatures;
measuring simultaneously internal space signatures and signatures external to the space for preparing coil and magnetic state signature matrices;
determining a control matrix, for the coil currents from internal space magnetic signatures; and



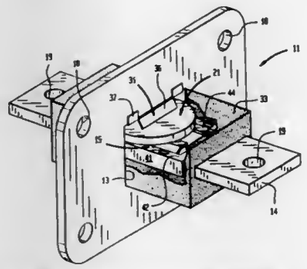
controlling the coil and magnetic state signature by repeatedly determining the coil currents from internal space signatures using the control matrix for control purposes.

5,189,591
ALUMINOSILICATE GLASS PRESSURE TRANSDUCER
Anthony J. Bernot, Gilbert, Ariz., assignor to Allied-Signal Inc., Morris Township, Morris County, N.J.
Filed Jun. 12, 1992, Ser. No. 898,057
Int. Cl.[5] H01G *7/00*
U.S. Cl. 361—283 **16 Claims**



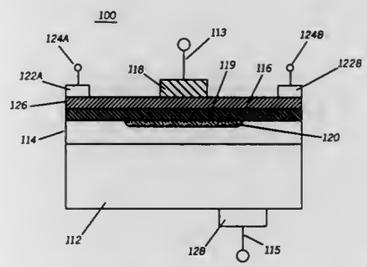
1. A capacitive pressure transducer comprising:
a pressure diaphragm made of glass having a thermal elastic coefficient between ±30 ppm/° C;
a first electrode on a first surface of said pressure diaphragm;
support means for supporting said pressure diaphragm, said support means being made of said glass; and
electrode means, carried by said support means, for providing a second electrode which cooperates with said first electrode to form a capacitor.

5,189,592
ELECTRICAL FILTER WITH RESILIENTLY MOUNTED PLANAR DIELECTRIC DEVICES
George M. Kauffman, 14 Abigale Dr., Hudson, Mass. 01749
Filed Dec. 23, 1991, Ser. No. 811,636
Int. Cl.[5] H01G *4/00;* **H03H** *9/58*
U.S. Cl. 361—301 **19 Claims**



3. An electrical capacitor device comprising:
first electrode means;
second electrode means;
dielectric means with first and second ends;
a first electrical terminal fixed to said first end and connected to said first electrode means;
a second electrical terminal spaced a given distance from said first electrical terminal, fixed to said second end and connected to said second electrode means; and
resilient means providing an electrical connection between at least one of said connected first electrical terminal and said first electrode means and said connected second electrical terminal and said second electrode means and permitting relative motion therebetween, and wherein said resilient means is connected to said at least one electrical terminal over a contact surface area having dimensions substantially greater than said given distance.

5,189,593
INTEGRATED DISTRIBUTED RESISTIVE-CAPACITIVE NETWORK
Leng H. Ooi, Sunrise, Fla., assignor to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 4, 1991, Ser. No. 787,278
Int. Cl.[5] H01G *3/075;* **H01L** *29/92;* **H03H** *7/06*
U.S. Cl. 455—195.1 **4 Claims**



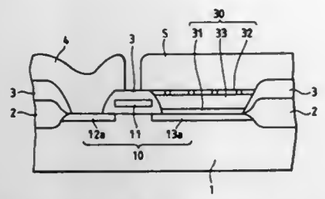
1. An integrated-distributed-resistive-capacitive network, comprising:
a high dielectric electronically-tunable Zirconium Titanate integrated capacitor, comprising:
a semiconductor having a layer of semi-conductive material of a higher resistivity than the semiconductor;
a depletion layer formed in the high resistivity layer;
an insulating layer of Zirconium Titanate formed on the high resistivity layer;
a conductive electrode formed on the dielectric layer;
a resistive layer formed on the high dielectric semiconductor integrated capacitor; and
a plurality of electrical contact terminals coupled to the resistive layer.

5,189,594
CAPACITOR IN A SEMICONDUCTOR INTEGRATED CIRCUIT AND NON-VOLATILE MEMORY USING SAME
Kazuhiro Hoshiba, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan
Filed Apr. 30, 1992, Ser. No. 876,196
Claims priority, application Japan, Sep. 20, 1991, 3-270020; Sep. 20, 1991, 3-270021
Int. Cl.[5] H01G *4/06;* **H01L** *27/02;* **G11C** *11/22*
U.S. Cl. 257—295 **8 Claims**

1. A capacitor in a semiconductor integrated circuit, comprising:

VOL 1147 ISS 4 FE 23 1993 UMI

a lower electrode formed on a semiconductor substrate;
a ferroelectric film formed on said lower electrode; and
an upper electrode formed on said ferroelectric film;



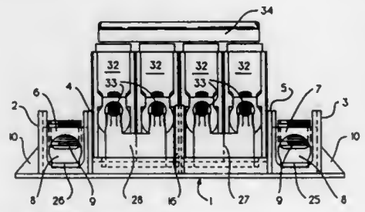
wherein at least one of said upper and lower electrodes is in the form of a comb.

5,189,595
EDGE SHRINKAGE COMPENSATED DEVICES
James Dunkley, Mission Viejo, Calif., assignor to Silicon Systems, Inc., Tustin, Calif.
Filed Feb. 19, 1992, Ser. No. 837,727
Int. Cl.[5] H01G *4/06;* H01L *27/02*
U.S. Cl. 361—313 **37 Claims**



17. First and second capacitors having first and second capacitances, the ratio of said second capacitance to said first capacitance having a nominal value of R, comprising:
a first conductive region for said first capacitor formed on a surface; said first conductive region having a first area and comprising a first perimeter; first portions of said first perimeter comprising a first total length disposed adjacent to a portions of said first conductive region such that edge shrinkage along said first portions of said first perimeter is inhibited; second portions of said first perimeter comprising a second total length disposed adjacent to portions of at least one passive region not electrically connected to said first conductive region such that edge shrinkage along said second portions of said second perimeter is inhibited; and third portions of said first perimeter comprising a third total length disposed at a distance from any other regions such that edge shrinkage along said third portions of said perimeter is not inhibited by any such other regions; each of said first, second and third lengths being at least equal to zero;
a second conductive region for said second capacitor formed on a surface; said second conductive region having a second area and comprising a second perimeter; first portions of said second perimeter comprising a first total length disposed adjacent to a portions of said second conductive region such that edge shrinkage along said first portions of said second perimeter is inhibited; second portions of said second perimeter comprising a second total length disposed adjacent to portions of at least one passive region not electrically connected to said second conductive region such that edge shrinkage along said second portions of said second perimeter is inhibited; and third portions of said second perimeter comprising a third total length disposed at a distance from any other regions such that edge shrinkage along said third portions of said perimeter is not inhibited by any such other regions; each of said first, second and third lengths being at least equal to zero;
a ratio of said third total length of said second perimeter to said third total length of said first perimeter being approximately equal to said ratio R.

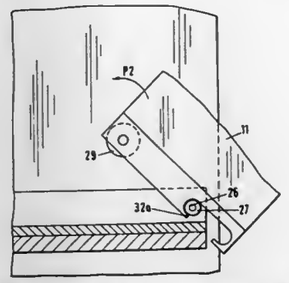
5,189,596
TRANSITION FOR ELECTRICAL APPARATUS
Louis L. Runge, Clinton, Miss., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Dec. 20, 1991, Ser. No. 811,361
Int. Cl.[5] H02B *1/04*
U.S. Cl. 361—355 **5 Claims**



1. An electrical transition comprising:
a) a nonconductive base having extending upwardly therefrom
i) at least one side rail; and
ii) at least one interior rail spaced apart from a side rail so that a wire connector may fit therebetween, the side rail and interior rail being sized and configured to prevent a connector placed therebetween from moving across the base;
b) at least one connector, each connector positioned between a side rail and an interior rail, and having an opening therein; and
c) a bus bar placed on the base, the bus bar having a bus base, at least one tab extending into the opening of one connector, and at least one contact having an upright portion extending upwardly from the base, and an angled portion attached to the upright portion and extending over the bus base, the contact being sized and configured to receive a circuit breaker.

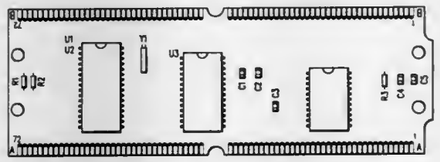
5,189,597
ELECTRIC CONTROL BOX, IN PARTICULAR FOR LOW-VOLTAGE SYSTEMS
Hartwig Mayer, Neckargerach; Manfred Hofmann, Eberbach, and Hans-Peter Riedinger, Waldbrunn, all of Fed. Rep. of Germany, assignors to Abb Ceag Licht- und Stromversorgungstechnik GmbH, Soest, Fed. Rep. of Germany
Filed Nov. 5, 1991, Ser. No. 788,188
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1990, 4035081
Int. Cl.[5] H05K *5/02*
U.S. Cl. 361—391 **12 Claims**

1. An electrical control box, comprising an interior defining a compartment with a front region, at least one stationary counterpart contact disposed in said compartment and a counterpart element disposed in said front region of said compartment; at least one drawer removably inserted into said compartment and having electrical and electronic component means for switching and controlling, said at least one drawer having a rectangularly elongated contour, with a height being a multiple of a width of each of said at least one drawer, said at least one drawer having a back located in said interior in an inserted position and a bottom, rollers disposed on said bottom, at least one contact disposed on said back for respectively contacting said at least one stationary counterpart contact, said at least one drawer having a front, and including two handle means being mutually spaced apart on said back of each of said at least one drawer, for manually transporting said at least one drawer in a horizontal position with said front pointing downward, and a swivel suspension joint disposed on said bottom to be suspended at said counterpart element when installed, for



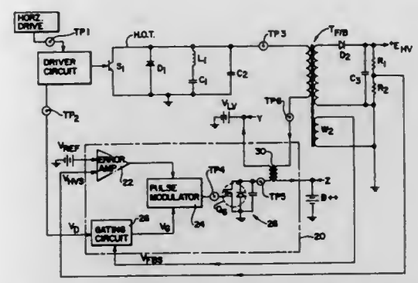
permitting said at least one drawer to be swiveled between a first suspension position in which said at least one drawer is hinged obliquely forward with said front pointing downward and a second insertion position after the suspension position and to be moved between the second insertion position and an inserted position.

5,189,598
DUAL FUNCTION MICROBOARD WITH A ROW OF CONNECTORS ON TWO EDGES
Michael L. Bolan, Dallas; Wendell L. Little, Denton; Elaine Jansen, Flower Mound, and Don Folkes, Coppell, all of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.
Filed Aug. 14, 1990, Ser. No. 567,467
Int. Cl.[5] H05K *1/00*
U.S. Cl. 361—397 **1 Claim**



1. A microboard package for an electronic subsystem, comprising:
a microboard having first and second long edges, and one or more shorter edges, around the perimeter thereof;
said first long edge having a first row of edge connector contacts along substantially all of said first long edge, and said second long edge having a second row of edge connector contacts along substantially all of said second edge;
said shorter edges without connector contacts;
said first and second rows of edge connector contacts being configured so that either can be inserted into a female connector in a motherboard;
said first and second rows of edge connector contacts having substantially the same physical layout, but not having substantially the same electrical contact placements;
whereby a user can choose a first functional connection to a motherboard female connector of a given form factor by inserting said first row of contacts into said motherboard female connector, or alternatively can choose a second functional connection, different from said first functional connection, by inserting said second row of contacts into said motherboard female connector.

5,189,599
HIGH VOLTAGE REGULATOR FOR AN INTEGRATED HORIZONTAL SWEEP SYSTEM
Bruce E. Messman, Lake In the Hills, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.
Filed Aug. 14, 1991, Ser. No. 744,773
Int. Cl.[5] H02M *3/335*
U.S. Cl. 363—21 **20 Claims**



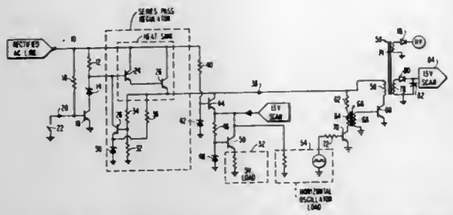
1. A voltage regulator for a pulsed voltage power supply, said supply being capable of generating a series of voltage pulses to produce an unregulated voltage at the output of said supply, said voltage regulator, comprising:
first producing means, connected to the output of said supply, for producing a voltage feedback signal which is proportional to the magnitude of said output voltage;
second producing means, receptive to said voltage pulses, for producing a timing signal corresponding to the time for generating of each said voltage pulses;
third producing means for producing a reference voltage, and
constant energy applying means, receptive of said voltage feedback signal from said first producing means and of said timing signal from said second producing means and of said reference voltage from said third producing means, for applying sufficient additional voltage during said time for generating of each of said voltage pulses in order to maintain said voltage feedback signal substantially equal to said reference voltage and to maintain the combination of said additional voltage and said voltage pulse near a regulated level, said applying means producing a series of additional voltage pulses which are synchronized with said voltage pulses, each one of said additional voltage pulses beginning at a predetermined point in time relative to the beginning of one of said voltage pulses and ending at a variable point in time which is during the generation of said one voltage pulse and which is a function of the magnitude of the difference between each one of said voltage pulses and said reference voltage.

5,189,600
COMBINED POWER SUPPLY FOR MAIN AND STAND-BY POWER
Gregory W. Keck, and Robert L. Lyle, Jr., both of Knoxville, Tenn., assignors to North American Philips Corporation, New York, N.Y.
Filed Dec. 19, 1991, Ser. No. 810,247
Int. Cl.[5] H02M *3/335;* H04N *5/63*
U.S. Cl. 363—212 **6 Claims**

1. A power supply having an input section for supplying an input voltage and a control voltage, and a main power supply section coupled to receive said input voltage and said control voltage from said input section, said main power supply section including a series pass regulator having heat dissipating components, and an output for supplying a first output voltage, said power supply further comprising:
a stand-by power supply section coupled to the output of

said main power supply section for providing at least one stand-by voltage; and

means coupled to said input section for selectively reducing said control voltage therefrom thereby causing said main power supply section to provide a second output voltage substantially lower than said first output voltage, excessive power being dissipated in said heat dissipating components of said main power supply section, and said second output voltage being sufficient for said stand-by



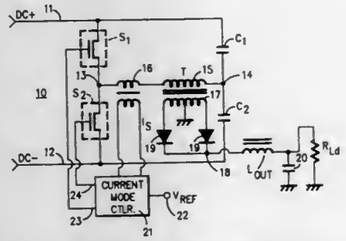
power supply section to operate properly, characterized in that said power supply further comprises a secondary power supply coupled to the output of said main power supply section for proving a secondary output voltage only when said main power supply section is providing said first output voltage, said secondary output voltage being applied to said stand-by power supply section to limit power dissipation in said stand-by power supply section when said main power supply section is providing said first output voltage.

5,189,601

HALF BRIDGE CONVERTER WITH CURRENT MODE CONTROLLER

Jeff C. Sellers, Palmyra, N.Y., assignor to ENI Div. of Astec America, Inc., Rochester, N.Y.

Filed Nov. 18, 1991, Ser. No. 793,477
Int. Cl.[5] H02M *3/335, 7/5387*
U.S. Cl. 363—21 **6 Claims**



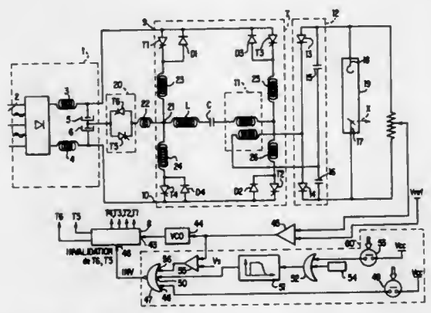
1. Current-mode controlled half-bridge power converter which comprises a source of dc electrical current including a positive conductor and a negative conductor; first and second capacitors of substantially the same value and connected in series between the positive and negative conductors, the capacitors defining a node therebetween; first and second controlled switches each having a gate terminal and current carrying electrodes, said switches being coupled in series between the positive and negative conductors and defining a node between said switches; a transformer having a primary winding coupled between said nodes to conduct current when either of said switches is closed, and a secondary winding; a half-bridge rectifier circuit coupled to said secondary winding, and including an output inductor through which output current flows; a current sensor coupled to said transformer and supplying a current sample signal that varies with the current flowing through said transformer; and a current-mode controller having an input to receive said current sample signal, a reference input to which a command level is applied, and first and second gate outputs respectively coupled to the gate terminals of said first and second switches; wherein said current-mode controller includes a sample gating circuit having a comparator with inputs to receive said current sample signal and said command level and an output coupled to a wave shaping circuit that develops a first gating signal applied to said first gate output to close said first switch and open same when the current through said transformer rises to said command level, each occurrence of said first gating signal having a pulse width that depends on said rise of current to said command level; and a track gating circuit for generating a second gating signal having a pulse width equal to the width of a most recent occurrence of said first gating signal, and applying said second gating signal to said second gate output between occurrences of said first gating signal, so that current flows to said capacitors through said transformer in both directions in a balanced fashion.

5,189,602

HIGH-VOLTAGE GENERATOR WITH SELECTIVE HALF-BRIDGE AND FULL-BRIDGE OPERATION

Bernard Callier, and Jean-Pierre Maynard, both of Voisins le Bretonneux, France, assignors to General Electric CGR S.A., Issy les Moulineaux, France

Continuation of Ser. No. 522,149, May 11, 1990, abandoned.
This application Sep. 26, 1991, Ser. No. 765,488
Claims priority, application France, May 12, 1989, 89 06254
Int. Cl.[5] H02M *3/315*
U.S. Cl. 363—28 **8 Claims**



1. A high-voltage generator with wide range of power comprising:

a first AC-DC rectifier to rectify a low-voltage, low-frequency AC electrical signal into a low-voltage DC signal;

a full-bridge inverter controlled at high frequency to convert this low-voltage DC signal into a low-voltage, high-frequency AC signal;

a transformer to raise the voltage of this low-voltage, high-frequency AC signal;

and a second rectifier to convert a high-voltage, high frequency AC signal thus obtained into a high-voltage DC signal, comprising:

a connection circuit controlled at said high frequency AC electrical signal to connect a mid-point of the first rectifier to a mid-point of the full-bridge inverter, only when the generator is to be used at low power so as to serially connect a primary winding of said transformer between said mid-points,

means for opening said connection circuit when said generator is to be used at full-power so as to connect said primary winding of said transformer to said first AC-DC rectifier in parallel,

and means for the automatic disconnection of the connection

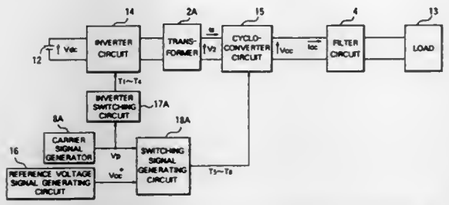
circuit at the start of each operation pulse of the high-voltage generator.

5,189,603

DC TO AC ELECTRIC POWER CONVERTING APPARATUS

Nobuo Sashida; Kazunori Sanada, both of Kobe, and Masato Koyama, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1991, Ser. No. 756,426
Claims priority, application Japan, Sep. 10, 1990, 2-240951
Int. Cl.[5] H02M *5/22*
U.S. Cl. 363—160 **9 Claims**



1. A DC-to-AC electric power converting apparatus comprising:

an invertor circuit having a plurality of switching elements and converting DC electric power into AC electric power;

a transformer connected to said invertor circuit;

a cyclo-converter circuit connected to said transformer;

a carrier signal generator for generating a carrier signal of a predetermined frequency;

an invertor switching circuit having a peak detection circuit connected to an input which detects a peak of a signal supplied to the input so that the switching operation of a plurality of the switching elements of said invertor circuit is synchronized with the carrier signal, the switching operation occurring in a period in which no electric current is passed through said invertor circuit;

a reference voltage signal generating circuit for generating a reference voltage signal for AC voltage to be transmitted from said cyclo-converter circuit; and

a switching signal generating circuit for generating a control signal for controlling said cyclo-converter circuit in response to said reference voltage signal generated by said reference voltage signal generating circuit and said carrier signal generated by said carrier signal generator.

5,189,604

DISTRIBUTED LOGIC CONTROL SYSTEM AND METHOD

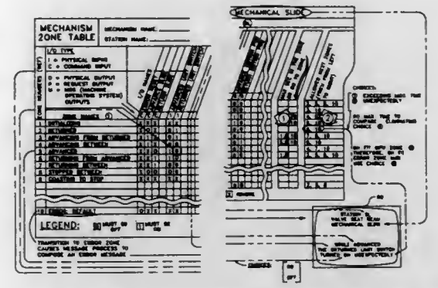
Rodger T. Lovrenich, Santa Teresa, N. Mex., assignor to El Paso Technologies Company, El Paso, Tex.

Division of Ser. No. 463,868, Jan. 5, 1990, abandoned, which is a continuation of Ser. No. 340,435, Apr. 19, 1989, abandoned, which is a continuation of Ser. No. 38,018, Apr. 14, 1987, Pat. No. 4,858,102, which is a continuation-in-part of Ser. No. 757,279, Jul. 19, 1985, abandoned. This application Dec. 19, 1990, Ser. No. 630,232
The portion of the term of this patent subsequent to Aug. 15, 2006, has been disclaimed.
Int. Cl.[5] G06F *15/46*
U.S. Cl. 364—136 **21 Claims**

1. An apparatus for indicating errors in a machine comprising:

means having a table containing a list of zone names, input-/output names, input/output images for each zone and allowed zones for each said zone; and

means having a stored input/output image and last valid zone name, and a memory containing a plurality of error designations and means for implementing an algorithm for



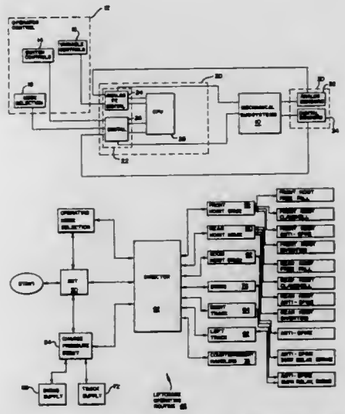
generating an error message from said table and said stored data.

5,189,605

CONTROL AND HYDRAULIC SYSTEM FOR A LIFTCRANE

Arthur Zuehlke, and David Pech, both of Manitowoc, Wis., assignors to The Manitowoc Company, Inc., Manitowoc, Wis.

Filed Oct. 10, 1989, Ser. No. 418,879
Int. Cl.[5] G05B *11/01, 11/32*
U.S. Cl. 364—140 **20 Claims**



1. A control system for operation of a liftcrane comprising:

controls for outputting signals for operation of the liftcrane mechanical functions of the liftcrane,

liftcrane mechanical subsystems powered by a closed loop hydraulic system, and

a programmable controller responsive to said controls and connected to said liftcrane mechanical subsystems, said controller adapted to run a routine for controlling said liftcrane mechanical subsystems to define operation of the liftcrane,

sensors responsive to said mechanical subsystems, said sensors connected to said controller for providing information about the status of said mechanical subsystems to said controller;

and further in which said controller comprises:

an interface connected to said controls and said sensors, and

a computer connected to said interface; and further in which said controls comprises a mode selector adapted to provide an output indicative of a specialized liftcrane task.

VOL 1147 ISS 4 FE 23 1993 UMI

5,189,606

TOTALLY INTEGRATED CONSTRUCTION COST ESTIMATING, ANALYSIS, AND REPORTING SYSTEM

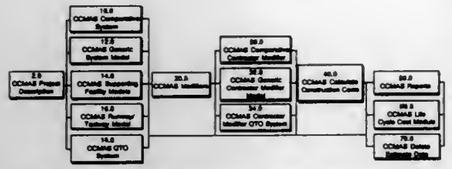
Thomas J. Burns, Callaway; Edward C. Page, Lynn Haven; Rita A. Gregory, and George M. Pryor, both of Panama City, all of Fla., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 400,764, Aug. 30, 1989, abandoned. This application May 14, 1991, Ser. No. 702,345

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—401 **17 Claims**

MICROFICHE APPENDIX INCLUDED
(38 Microfiche, 9 Pages)



1. In a totally integrated construction estimating, analysis, and reporting computer system having procedures which automatically determine, based on input parameters, individual algorithms and knowledge-based factors representative of various functional, physical, and geographic requirements of a facility, including a breakdown of materials at a facility system level which includes functional areas of primary and supporting facilities, and decreasing levels of a hierarchy down to an elemental level which includes material, labor, and equipment;

wherein said system comprises:

manual-entry means for entering initial input parameters which include parameters indicative of the type, size and location of the facility;

knowledge base file means comprising data on functional, physical, and geographical construction requirements of the facility, and a plurality of algorithms representative of knowledge construction principles and human judgments applicable to the facility at said facility systems level, and other levels on down to the elemental level;

means for generating a model of the facility at said facility systems level and other levels on down to the elemental level including:

inference and control means using said knowledge base file means and said initial input parameters for determining a set of system parameters and default values thereof relating to the facility at a system level, with typical values being defined, means for modifying the system parameters by manual entries;

inference and control means using said knowledge base file means for determining subsystem parameters for a plurality of subsystems within the facility, as a function of said initial input parameters and said system parameters, means for modifying the subsystem parameters by manual entries;

inference and control means using said knowledge base file means for determining assembly category parameters for a plurality of assembly categories within the facility, as a function of said initial input parameters and said system and subsystem parameters, means for modifying the assembly category parameters by manual entries;

inference and control means using said knowledge base file means for determining assembly parameters for a plurality of assemblies within the facility, as a function of said initial input parameters and said system, subsystem and assembly category parameters, means for modifying the assembly parameters by manual entries;

inference and control means using said knowledge base file means for determining parameters for a plurality of line item elements within the facility, as a function of said initial input parameters and said system, subsystem, assembly category and assembly parameters, to determine material, equipment and labor inclusive in individual line items, means for modifying the parameters for the line items elements by manual entries.

5,189,607

METHOD FOR SENDING SELECTED DATA FROM ELECTRONIC CASH REGISTERS TO A HOST UNIT

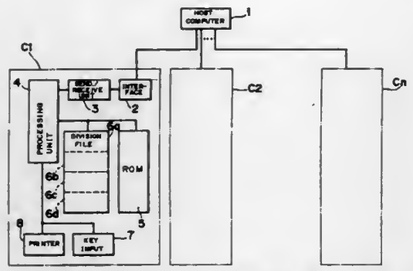
Takashi Shirasaki, Nara; Toshifumi Nishii; Yukihiko Oka, both of Yamatokooriyama, and Kunihiro Miyamoto, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 264,879, Oct. 31, 1988, abandoned. This application Jul. 22, 1991, Ser. No. 733,978

Claims priority, application Japan, Oct. 31, 1987, 62-276285; Oct. 31, 1987, 62-276286

Int. Cl.[5] G06F *15/21*

U.S. Cl. 364—405 **5 Claims**



1. A method for selectively sending data from a host computer to a plurality of slave electronic cash registers operatively connected to a master electronic cash register comprising the steps of:

(a) transmitting command signals from the host computer to a master electronic cash register for a slave electronic cash register operatively connected to said master electronic cash register, said command signals being signals for selectively retrieving specific sales data and/or all data in a divisional file of a memory in the slave electronic cash register, the division file including a plurality of sorting areas with some of said plurality of sorting areas, containing sales data while the remaining sorting areas contain other data; and

(b) sending instructions from the master electronic cash register to the save electronic cash register based on the specific command signal.

5,189,608

METHOD AND APPARATUS FOR STORING AND GENERATING FINANCIAL INFORMATION EMPLOYING USER SPECIFIED INPUT AND OUTPUT FORMATS

Richard J. Lyons, West Hempstead; Kevin F. Nolan, Middle Village, both of N.Y., and Wah C. Chu, Fairfield, Conn., assignors to IMRS Operations, Inc., Stamford, Conn.

Continuation of Ser. No. 55,823, Jun. 1, 1987, Pat. No. 4,989,141. This application Feb. 15, 1990, Ser. No. 480,701

The portion of the term of this patent subsequent to Jan. 29, 2008, has been disclaimed.

Int. Cl.[5] G06F *15/21*

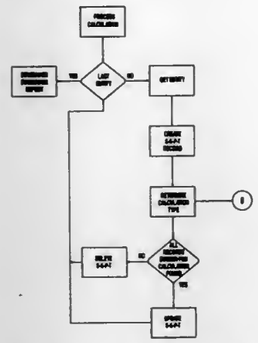
U.S. Cl. 364—408 **9 Claims**

1. In a computer, a method of storing and generating financial information of the type used in financial schedules comprising the steps of:

storing financial information in a first format in a storage means in which format each of a plurality of financial data values is associated with a set of at least three identifying attributes and some data values are associated with a set of attributes different from that associated with other data values;

specifying by user input to said computer a plurality of second formats in which are received data values to be stored in said storage means, each of said second formats associating each of a plurality of financial data value with one of said sets of at least three identifying attributes, whereby a plurality of user-defined data input templates are defined;

using said data input templates to convert data values received in each of the plurality of second formats into said first format and storing such data values in said storage means in said first format;



specifying by user input to said computer a plurality of third formats in which data values stored in said storage means are to be provided for output, each of said third formats associating a plurality of financial data values stored in said first format and associated with a first set of at least three attributes with a plurality of financial data values stored in said first format and associated with second set of at least three attributes, whereby a plurality of user-defined of data output templates are defined; and

using one of said data output templates to convert data values stored in said storage means to said third format.

5,189,609

MEDICAL MONITORING SYSTEM WITH SOFTKEY CONTROL

Gerhard Tivig, Boeblingen; Wilhelm Meier, Herrenberg, and Egon Pfeil, Aidlingen, all of Fed. Rep. of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 617,372, Nov. 19, 1990, Pat. No. 5,056,059, which is a continuation of Ser. No. 253,813, Oct. 5, 1988, abandoned. This application Jun. 27, 1991, Ser. No. 721,961

The portion of the term of this patent subsequent to Oct. 15, 2008, has been disclaimed.

Int. Cl.[5] G06F *15/00*

U.S. Cl. 364—413.01 **4 Claims**

1. A medical monitoring system comprising:

a display means which displays medical parameters from a plurality of medical monitors;

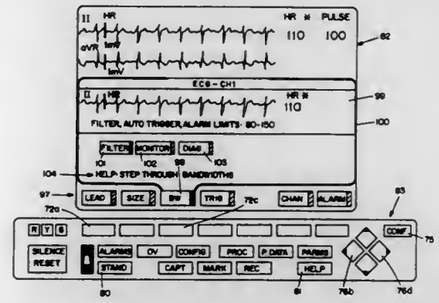
a keyboard, and

a processor programmed to respond to the keyboard to control display actions of the display means, the display actions comprising:

a first display of physiological waves of plural medical parameters,

a second display, caused by the processor in response to actuation of a hardkey, of a menu of medical parameters as objects to be manipulated, the menu serving as softkey labels; and

a third display, caused by the processor in response to softkey selection of a medical parameter from the menu of medical parameters, of a task menu of tasks available to be performed relative to a selected medical parameter, the task menu replacing the menu of medical parameters and thereafter serving as softkey labels, there being displayed



with the task menu a selection of actions, the actions being only those available to be selected and performed relative to the selected task, the processor responding to selection of any other selected task from the task menu to display only actions available relative to the other selected task.

5,189,610

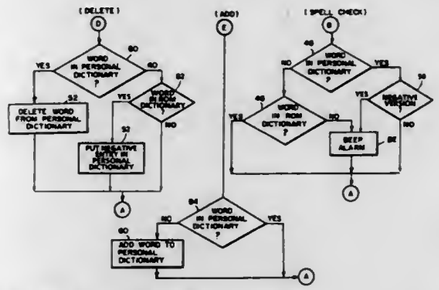
ELECTRONIC DICTIONARY WITH CORRECT AND INCORRECT WORDS

Ronald M. Kaplan, Palo Alto, Calif.; Michael A. McCourt, Fairport, and Kenneth J. Henderson, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn. and Microlytics, Inc., Pittsford, N.Y.

Continuation of Ser. No. 921,655, Oct. 20, 1986, abandoned. This application May 17, 1989, Ser. No. 355,062

Int. Cl.[5] G06Z *15/40*

U.S. Cl. 364—419 **20 Claims**



5. An electronic dictionary comprising:

digital memory, the digital memory storing:

permanent word data including a first part of positive word data; and

personal word data including a second part of positive word data, the personal word data further including negative word data;

the first part of positive word data and the second part of positive word data together indicating a set of words, the first part of positive word data indicating a first subset of the set of words, the second part of positive word data indicating a second subset of the set of words;

the negative word data indicating that a first one of the set of words is incorrect, the first word being one of the first subset of the set of words; and

a processor connected for accessing the permanent word

VOL 1147 ISS 4 FE 23 1993 UMI

data and the personal word data stored in the digital memory to determine whether words are incorrect.

5,189,611

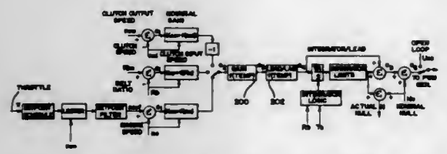
TEMPERATURE COMPENSATION TECHNIQUE FOR A CONTINUOUSLY VARIABLE TRANSMISSION CONTROL SYSTEM

Werner P. Petzold, Harwood Heights, Ill., and William P. Umlauf, Schererville, Ind., assignors to Borg-Warner Automotive, Inc., Sterling Heights

Continuation of Ser. No. 370,129, Jun. 20, 1989, abandoned, which is a continuation of Ser. No. 25,392, Mar. 13, 1987, abandoned. This application Feb. 27, 1990, Ser. No. 488,436

Int. Cl.[5] B60K *41/18*

U.S. Cl. 364—424.1 **15 Claims**



1. A method for adjusting a continuously variable transmission system having regulating means for regulating fluid transfer, where the fluid transfer is used to provide belt ratio control, line pressure control and clutch control, so that the operation of said continuously variable transmission system is substantially consistent at any system operating temperature, including;

sensing the system operating temperature;

independently determining variations caused by system operating temperature in said regulating means for regulating fluid transfer used to provide belt ratio control, line pressure control and clutch control;

storing said independently determined variations; and

adjusting said regulating means for regulating said fluid transfer and thereby to adjust said fluid transfer for said stored independent variations at said sensed operating temperature to provide substantially consistent operation of said continuously variable transmission system at any system operating temperature.

5,189,612

SYSTEM AND METHOD OF NAVIGATING THE TRAVEL OF AN AUTONOMOUS VEHICLE

Pierre Lemercier, Saint Martin le Vinoux, and Philippe Trystram, Saint Egreve, both of France, assignors to Protee Groupement D'Interet Economique, Paris, France

Continuation of Ser. No. 506,552, Apr. 5, 1990, abandoned, which is a continuation of Ser. No. 149,388, Jan. 28, 1988, abandoned. This application Sep. 12, 1991, Ser. No. 759,753

Claims priority, application France, Feb. 4, 1987, 87 01343

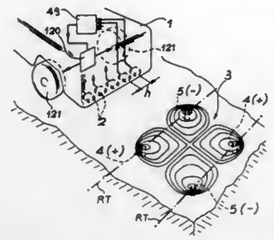
Int. Cl.[5] G06F *15/50*

U.S. Cl. 364—424.02 **20 Claims**

1. A navigation system for an autonomous vehicle travelling over a ground surface comprising:

discrete markers formed by permanent magnets in said surface so that adjacent markers have different magnetic fields, the markers having lengths smaller than distances separating successive markers along a travel course of the vehicle;

a transverse row of magnetic field detectors secured to a vehicle so as to supply a piloting station with information for controlling said vehicle, each detector comprising a pair of pickups and a means for computing a difference between output signals produced by said pickups under a



influence of said magnetic fields, said pickups for each detector overlying one another.

5,189,613

DEVICE FOR ADJUSTING THE STEERING ANGLE OF VEHICLE WHEELS

Dean Karnopp, Davis, Calif., assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

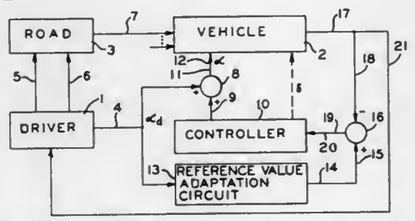
PCT No. PCT/DE90/00362, § 371 Date Jan. 11, 1991, § 102(e) Date Jan. 11, 1991, PCT Pub. No. WO91/00207, PCT Pub. Date Jan. 10, 1991

PCT Filed May 16, 1990, Ser. No. 646,780

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1989, 3920853

Int. Cl.[5] B62D *5/04*

U.S. Cl. 364—424.05 **28 Claims**



1. In a vehicle having a plurality of steerable wheels and a steering wheel, an apparatus for adjusting the steering angle of at least one steerable wheel of the vehicle, said apparatus comprising:

sensor means for sensing the steering angle of the vehicle steering wheel, the speed of the vehicle, and a vehicle state variable of the vehicle, said steering angle selected by a driver of the vehicle, said sensor means generating an output signal; and

a controller connected to said sensor means and receiving said sensor means output signal, said controller determining a reference value for said vehicle state variable which is dependent on the vehicle speed and the steering angle;

said controller correcting the steering angle of said steerable wheel such that the vehicle has an understeering steering performance.

5,189,614

VEHICLE SHOCK ABSORBING SYSTEM

Hiroshi Mitsuoka, and Kouji Hirao, both of Aichi, Japan, assignors to Aisin Seiki K.K. Kariya, Japan

Filed Jul. 6, 1990, Ser. No. 549,037

Claims priority, application Japan, Jul. 6, 1989, 1-175291

Int. Cl.[5] B60G *17/00*

U.S. Cl. 364—424.05 **10 Claims**

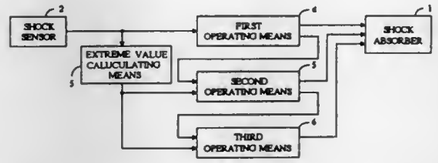
1. A vehicle shock absorbing system for controlling vibrations of a vehicle, comprising:

absorbing control means disposed between a vehicle body and a wheel, said absorbing control means being operable in at least a first shock condition representing a soft suspension, a second shock condition representing a hard suspension, and a third shock condition representing a normal suspension;

shock sensing means for detecting a chock value applied to said vehicle body;

calculating means for calculating an extreme value of said shock value detected by said shock sensing means, said calculating means generating a maximum value and minimum value of said extreme value;

first shock operating means for selecting the first shock



condition of said absorbing control means when a presently detected shock value exceeds a first predetermined value;

second shock operating means for selecting the second shock condition of said absorbing control means when said maximum value of the calculated extreme value is less than the first predetermined value while said first shock condition is selected; and

third shock operating means for selecting the third operating condition of said absorbing control means when said maximum value of the calculated extreme value is less than a second predetermined value which is less than the first predetermined value while said second shock condition is selected.

5,189,615

SEMI-ACTIVE SUSPENSION CONTROL

Erich Rubel, Ludwigsburg; Karl-Heinz Haegele, Vaihingen/-Enz; Michael Pantber, Leonberg-Gebersbeim, and Klaus Gatter, Winnenden, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

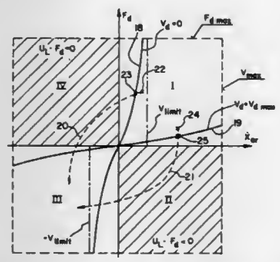
PCT No. PCT/DE90/00340, § 371 Date Feb. 14, 1991, § 102(e) Date Feb. 14, 1991, PCT Pub. No. WO91/00187, PCT Pub. Date Jan. 10, 1991

PCT Filed May 12, 1990, Ser. No. 654,641

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1989, 3921324; Sep. 13, 1989, 3930555

Int. Cl.[5] B60G *17/015*

U.S. Cl. 364—424.05 **7 Claims**



1. A process for the undercarriage control of vehicles, particularly of passenger cars and trucks, the vehicles having a plurality of semiactive shock absorbers arranged between the vehicle superstructure and the wheels, each semiactive shock absorber including a cylinder subdivided into two working spaces by a piston wherein a fluid may flow through a variable valve from one working space to the other, each valve being adjustable dependant on factors of absorber force and piston velocity when a factor pair falls within specific limits and each valve being adjustable according to maximally soft or maximally hard shock absorber settings when the factors fall outside said specific limits, said process comprising the steps of:

determining the piston velocity of the shock absorbers;

determining the dynamic state of vehicular travel and processing the determined state of travel for calculation of factors of shock absorber force and piston velocity for each shock absorber to provide a momentarily optimal shock absorber force; and

adjusting each valve according to the momentarily optimal shock absorber force and the corresponding factor pair of calculated shock absorber force and piston velocity, wherein:

(1) if the corresponding factor pair of calculated shock absorber force and piston velocity falls within said specific limits, the corresponding valve is adjusted dependent on the piston velocity, and

(2) if the corresponding factor pair of calculated shock absorber force and piston velocity falls outside said specific limits, the corresponding valve is adjusted to said maximally soft or maximally hard shock absorber setting depending on which of the two shock absorber settings most closely approximates the effect of the momentarily optimal shock absorber force applied to the determined dynamic state of vehicular travel.

5,189,616

FOUR-WHEEL STEERING SYSTEM FOR MOTOR VEHICLE

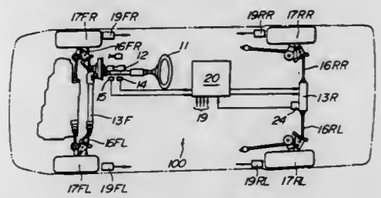
Osamu Tsurumiya; Masataka Izawa; Masaru Abe, and Ikuo Nonaga, all of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 21, 1990, Ser. No. 616,408

Claims priority, application Japan, Nov. 22, 1989, 1-304234

Int. Cl.[5] B62D *6/02*

U.S. Cl. 364—424.05 **4 Claims**



2. A four-wheel steering system for a motor-vehicle having a steering wheel, front wheels steerable by the steering wheel, and rear wheels steerable through a target rear wheel angle which depends on a front wheel steering angle of the front wheel and an actual vehicle speed of the motor vehicle, said four-wheel steering system comprising:

means for detecting the actual vehicle speed of the motor vehicle;

means for detecting the front wheel steering angle;

means for determining a basic steering angle ratio based on the actual vehicle speed and the front wheel steering angle;

said basic steering angle ratio being of such characteristics that the basic steering angle ratio is of a negative value when the vehicle speed is lower than a first predetermined vehicle speed of a relatively small value, and of a positive value when the vehicle speed is higher than said first predetermined vehicle speed;

means for determining a corrective coefficient when said basic steering angle ratio is of a positive value;

VOL 1147 ISS 4 FEB 23 1993 UMI

said corrective coefficient being of a value smaller than 1, including zero and a negative value, when the front wheel steering angle is in a relatively small range;

means for determining a final steering angle ratio based on said basic steering angle ratio when the actual vehicle speed is lower than said first predetermined vehicle speed, and for determining a final steering angle ratio based on said basic steering angle ratio and said corrective coefficient when the actual vehicle speed is higher than said first predetermined vehicle speed;

means for determining the target rear wheel steering angle from the final steering angle ratio thus determined and the front wheel steering angle; and

means for steering the rear wheels through said target rear wheel steering angle.

5,189,617

MOTOR VEHICLE CONTROL SYSTEM AND CONTROL UNIT THEREFOR

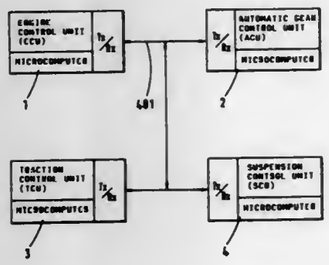
Takashi Shiraishi, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 23, 1990, Ser. No. 602,466

Claims priority, application Japan, Oct. 27, 1989, 1-278394

Int. Cl.[5] G06F *15/20*

U.S. Cl. 364—424.05 **19 Claims**



1. A control unit for a motor vehicle control system, said control unit comprising:

means for connection to a sensor and for calculating a control parameter based upon data derived from an output of said sensor;

means for driving at least one actuator means in accordance with said calculated parameter;

means for communicating with other control units;

transmitting means for transmitting an interrogation signal to said other control units;

receiving means for receiving response signals from said other control units in response to said interrogation signals; and

modifying means connected with said receiving means for adaptively varying said control parameter in dependence upon the existence of the responses received by said receiving means.

5,189,618

AUTOMOTIVE CRUISE CONTROL SYSTEM FOR CONTROLLING VEHICLE TO RUN AT CONSTANT SPEED

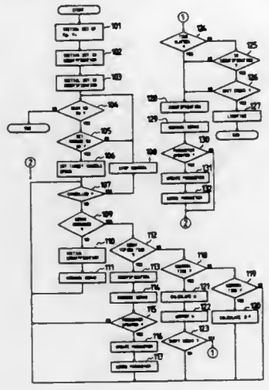
Masao Tsujii, Nagoya; Hitoshi Takeuchi, Kariya; Kyojl Oda, Gamagori; Masahiro Ohba, Okazaki; Yutaka Ninoyu, Oobu, and Tsutomu Natsume, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 545,195, Jun. 28, 1990, abandoned. This application Jul. 7, 1992, Ser. No. 908,879

Claims priority, application Japan, Jun. 28, 1989, 1-166245

Int. Cl.[5] B60K *31/04, 31/00*

U.S. Cl. 364—426.04 **13 Claims**



1. A constant-speed travelling control system for use in a motor vehicle, comprising:

vehicle-speed detecting means for detecting a speed of said motor vehicle;

target vehicle speed setting means for setting a target speed of said motor vehicle;

actuator means for regulating the vehicle speed;

actuator operation detecting means for detecting an operation state of said actuator means;

actuator-system identification means for on-line-identifying an actuator-system model whose input is an actuator control signal and whose output is an actual operation state of said actuator means;

vehicle-system identification means for on-line-identifying a vehicle-system model whose input is said actual operation state of said actuator means and whose output is an actual vehicle speed of said motor vehicle;

identification executing means for causing said vehicle-system and actuator-system identification means to identify said models at different timings; and

control means for outputting an actuator control signal to said actuator means on the basis of said vehicle-system model and said actuator-system model, so that the vehicle speed detected becomes coincident with the set target vehicle speed.

5,189,619

AI-BASED ADAPTIVE VEHICLE CONTROL SYSTEM

Kunihiko Adachi; Norikazu Endo, and Hirooori Miyakoshi, all of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Aug. 2, 1990, Ser. No. 561,827

Claims priority, application Japan, Sep. 5, 1989, 1-230707; Sep. 5, 1989, 1-230708

Int. Cl.[5] G08G *1/16;* **B60K** *31/00*

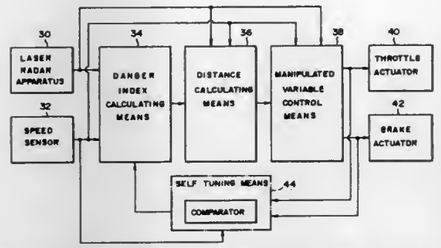
U.S. Cl. 364—426.04 **6 Claims**

1. An AI-based adaptive vehicle control system which is capable of controlling a driving condition of a vehicle by adapting said control system of the vehicle itself to driving characteristics of a driver, said control system comprising:

an environment judging means for judging a vehicle external environment;

a state judging means for judging a running state of said vehicle;

a danger index calculating means for calculating a danger index from said vehicle external environment and said running state of said vehicle in accordance with said driver's sense of driving;



a control means for optimizing said running state by controlling the running state in accordance with the calculated danger index such that the running state corresponds to an optimized running state; and

an adjusting means for detecting a change in the running state controlled by the control means, due to an override driving operation by said driver for overriding the optimized running state controlled by the control means, such that the running state becomes different from the optimized running state, and for adjusting the danger index in accordance with said change.

5,189,620

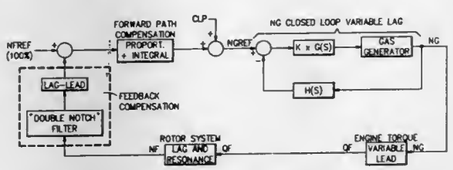
CONTROL SYSTEM FOR GAS TURBINE HELICOPTER ENGINES AND THE LIKE

Douglas A. Parsons, Enfield; Mark A. Johnston, Windsor; John E. Games, Granby, and Gerald L. DePardo, Glastonbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 6, 1989, Ser. No. 418,359

Int. Cl.[5] G05B *13/02, 7/02;* **F02C** *9/00*

U.S. Cl. 364—431.02 **12 Claims**



1. A control system for isochronously controlling free turbine speed (NF) of a gas turbine engine having a free turbine connected to a rotor system, having a gas generator speed (NG) to engine output torque (QF) (QF/NG) frequency characteristic with a variable lead and a variable dc gain, both that vary as a function of NG, and having an engine output torque (QF) to free turbine speed (NF) (NF/QF) rotor system frequency characteristic with a variable dominant rotor lag, a variable dc rotor gain, a variable resonance frequency, and a variable resonance peak magnitude, comprising:

an inner closed loop control on NG, responsive to an NG reference signal, having a variable NG loop gain and a corresponding variable NG closed loop bandwidth being substantially a variable high order lag;

said variable forward path NG gain being varied as a function of NG speed to cause said variable NG closed loop bandwidth to substantially match the variable lead of the QF/NG frequency characteristic;

a double notch filter feedback compensator, disposed in a feedback path of said control system, responsive to the free turbine speed having a frequency response magnitude that attenuates substantially all of said resonance peak of said rotor system over the range of said variable resonance frequency; and

a proportional-plus-integral (P+I) type NF forward path compensator, disposed in a forward path of said control system, having an integrator for providing said isochronous control of NF, having integral gain, and having a lead frequency, and providing a bias signal to said NG reference signal.

5,189,621

ELECTRONIC ENGINE CONTROL APPARATUS

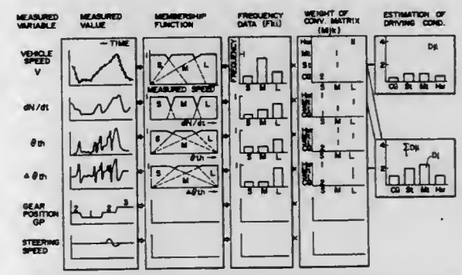
Mikihiko Onari, Kokubunji; Motohisa Funabashi, Sagamihara; Teruji Sekozawa, Kawasaki, and Makoto Shioya, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 233,209, Aug. 17, 1988, abandoned, which is a continuation-in-part of Ser. No. 46,388, May 6, 1987, Pat. No. 4,853,720. This application Dec. 3, 1990, Ser. No. 622,217

Claims priority, application Japan, Aug. 19, 1987, 62-204006; Oct. 28, 1987, 62-270202

Int. Cl.[5] G06F *15/20;* **F02D** *41/00;* **B60K** *41/00*

U.S. Cl. 364—431.04 **59 Claims**



1. A method of controlling an internal combustion engine for a vehicle comprising the steps as follows:

detecting a plurality of driving actions made by an operator of the vehicle;

detecting a plurality of operating conditions of the vehicle;

estimating a driver's preference for driveability of the vehicle comprising determining occurrence frequencies of the driving actions and operating conditions over a predetermined period; and,

selectively adjusting engine operation in accordance with the estimated driver's preference.

5,189,622

EMBROIDERY DATA PREPARING APPARATUS

Atsuya Hayakawa; Kyoji Komuro, and Hideaki Shimizu, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 15, 1990, Ser. No. 598,191

Claims priority, application Japan, Oct. 21, 1989, 1-274745

Int. Cl.[5] G06F *15/46;* **D05B** *21/00*

U.S. Cl. 364—470 **20 Claims**

1. An apparatus for preparing stitch position-related data and utilizing the data for controlling an embroidery sewing machine to embroider a predetermined area by forming stitches at respective stitch positions and thereby filling the area with the formed stitches, comprising:

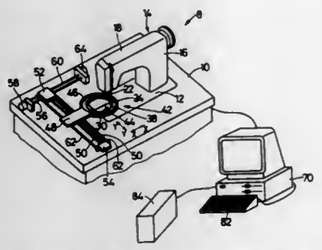
dividing means for specifying a plurality of base positions on an outline of said area based on outline data representative of said outline, said outline data including a plurality of

VOL 1147 ISS 4 FEB 23 1993 UMI

sets of position data each of which is representative of a corresponding one of a plurality of specific positions predetermined on said outline, said base positions defining a polygon approximating said area, said dividing means defining a plurality of straight division lines each of which passes a corresponding pair of base positions of said plurality of base positions and which do not intersect each other inside said outline, said division lines dividing said area and said polygon into a plurality of sub-areas and a plurality of sub-polygons, respectively, each of said sub-areas being approximated by a corresponding one of said sub-polygons;

data producing means for producing said stitch position-related data based on said sub-areas;

checking means for, if said dividing means produces as one of said sub-areas a triangle-like sub-area which is approxi-



mated by a triangle as said corresponding one sub-polygon therefor, judging whether or not said triangle-like sub-area is an appropriate sub-area to be utilized by said data producing means for producing said stitch position-related data;

modifying means for, if a negative judgment is made by said checking means, modifying said triangle-like sub-area to a quadrangle-like sub-area which is approximated by a quadrangle, by determining a special position on said outline of said area, said quadrangle being defined by said special position and three said base positions defining said triangle approximating said triangle-like sub-area, said data producing means utilizing said quadrangle-like sub-area in place of said triangle-like sub-area for producing said stitch position-related data; and

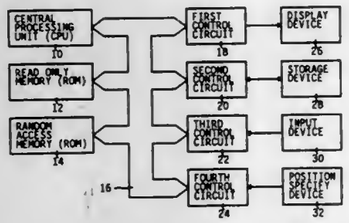
data utilization means for using said stitch position-related data to form said stitches.

5,189,623

EMBROIDERY DATA PROCESSING APPARATUS

Kyoji Komuro; Atsuya Hayakawa, and Hideaki Shimizu, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 26, 1990, Ser. No. 604,881
Claims priority, application Japan, Oct. 31, 1989, 1-285515
Int. Cl.[5] G06F *15/46;* **D05B** *21/00*
U.S. Cl. 364—470 **11 Claims**



1. An apparatus for processing embroidery data and utilizing the data for controlling a sewing machine for embroidering a plurality of areas by filling the areas with stitches, comprising:

storing means for storing, for each of said areas, sets of position data each of which is representative of a corresponding one of a plurality of defining points which cooperate with each other to define said each area;

selecting means for selecting, based on the sets of position data stored in said storing means, one of pairs of the defining points belonging to successive two of said areas one of which precedes the other area in an order of embroidering of said areas which pairs result from combining a particular defining point belonging to a first group consisting of the defining points defining one of said successive two areas, with each of defining points which belong to a second group consisting of the defining points defining the other of said successive two areas and which satisfy a predetermined requirement, such that a distance between the two defining points of the selected pair is the smallest of said pairs;

producing means for determining one of the two defining points of said selected pair which one point belongs to said preceding one of said successive two areas, as an end position of the embroidering of said preceding one area, and the other defining point of said selected pair as a start position of the embroidering of said other area of said successive two areas, and producing said embroidery data based on the determined end and start positions of said successive two areas; and

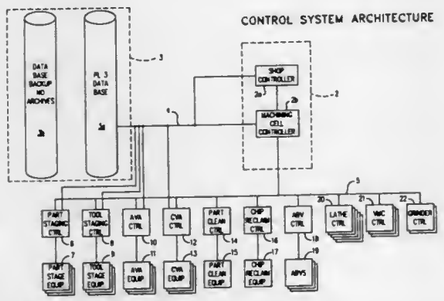
data utilization means for using said embroidery data to form said stitches.

5,189,624

INTELLIGENT MACHINING WORKSTATION OPERATING LOGIC

Allan R. Barlow, Georgetown; Paul D. Colananni, Medway, both of Mass.; Daniel C. Garafola, Coventry, Conn.; Bryan E. Irving, Rochester, N.H.; Larisa A. Elman, Swampscott, and William A. Hunter, Danvers, both of Mass., assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 415,496, Sep. 29, 1989,. This application Jan. 27, 1992, Ser. No. 825,741
Int. Cl.[5] G06F *15/46;* **G05B** *19/417*
U.S. Cl. 364—474.11 **7 Claims**



1. A manufacturing apparatus, comprising:

one or more machining apparatus;

a host controller connected to the one or more machining apparatus;

each of the machining apparatus including a workstation controller having operating control logic for controlling the operation of the machining apparatus; and

the workstation controller also having automation control logic for automating the operation of the machining apparatus comprising:

a means for managing initialization of the workstation controller;

a means for managing communications between the host controller and the workstation controller in the machining apparatus;

a means for managing quality control requirements of the machining apparatus;

a means for managing interchanges of workpieces, tool magazines, and chip containers between automated guided vehicles and the machining apparatus;

a means for managing supply of coolant to the machining apparatus;

a means for managing removal of swarf from the machining apparatus;

a means for managing status and location of workpieces in the machining apparatus;

a means for managing tool supply and exchange in the machining apparatus;

a means for logging and reporting of data from the machining apparatus;

a means for managing end of program tasks in the machining apparatus;

a means for managing aborting of a program running in the machining apparatus; and

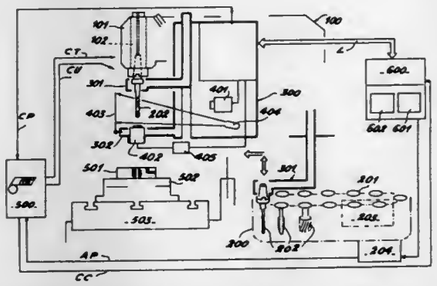
a means for managing detection of tool breaks and tool wear and for managing recovery of the machining apparatus from such tool breaks and wear.

5,189,625

SYSTEM FOR CHECKING TOOL BREAKAGES ON A MACHINING CENTER

Daniel J. Le Floch, Saint Nazaire, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris Cedex, France

Filed Apr. 13, 1990, Ser. No. 509,340
Claims priority, application France, Apr. 14, 1989, 89 04976
Int. Cl.[5] G06F *15/70;* **B23Q** *17/09*
U.S. Cl. 364—474.17 **11 Claims**



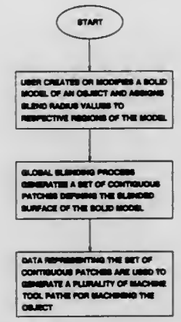
1. System for checking tool breakages on a machining center equipped with a tool magazine and a numerically controlled machine tool, said system having photographing means, processing means, control means and display means, said system comprises a first camera for taking pictures of each tool in the magazine in accordance with at least one first plane; positioning control means for putting into place the tool which will carry out the machining of a part and arrange said first camera for obtaining at least one picture of said tool according to said first plane both before and after said tool has machined said part; processing and control means for processing pictures obtained by said first camera to carry out a comparison of these two pictures, supplying a positive or negative checking signal as a function of the comparison result, allocating said tool to be checked to a first or a second class as a function of its physical characteristics obtained by the processing of the picture of said tool prior to machining, and producing a regulating signal on the basis of a first physical characteristic of the tool and if necessary, controlling and regulating the focussing of a second camera on the basis of said regulating signal in order to take a picture both before and after machining to at least one second plane perpendicular to said first plane and as a function of the class to which the tool belongs.

5,189,626

AUTOMATIC GENERATION OF A SET OF CONTIGUOUS SURFACE PATCHES ON A COMPUTER MODELED SOLID

Stephen Colburn, Eureka, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Mar. 27, 1991, Ser. No. 675,761
Int. Cl.[5] G06F *15/60, 15/62*
U.S. Cl. 364—474.24 **18 Claims**



1. A method of operating a computer for generating a plurality of machine tool paths for machining an object from a set of contiguous surface patches arranged on and approximating a computer representation of a solid model, said solid model having a blended surface wherein the solid model is characterized by at least one region having a local blend radius value, said computer having a recording medium, comprising the steps of:

(a) constructing an equilateral triangle defined by a plurality of surface points, each surface point having a gradient vector substantially normal to the surface of the blended solid model and wherein the size of said equilateral triangle is proportional to the local blend radius;

(b) determining a current edge having end points from one of said constructed triangle edges;

(c) generating a candidate point positioned equidistant from the end points of said current edge on the blended surface exterior to said constructed triangle;

(d) constructing a subsequent triangle from the candidate point using the current edge as the subsequent triangle base, said subsequent triangle having an altitude substantially equal to the altitude of the equilateral triangle and wherein said subsequent triangle is defined by a plurality of surface points, each surface point having a gradient vector substantially normal to the surface of the blended solid model;

(e) continuing the steps of (b), (c), and (d) in sequential order upon a previously constructed triangle until the resulting triangular mesh covers a predetermined portion of the solid model;

(f) storing the set of surface points and corresponding gradient vectors which define the surfaces on said recording medium; and

(g) utilizing said stored information to define said set of surface patches and generate the plurality of machine tool paths corresponding to the blended surface for machining said object.

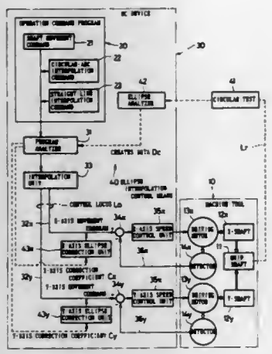
VOL 1147 ISS 4 FEB 23 1993 UMI

5,189,627

ELLIPSE INTERPOLATION CONTROL METHOD BY AN NC-DEVICE

Takeshi Momochi; Tadashi Sasaki; Michio Matsumoto; Tomoo Hayashi, and Masahito Shiozaki, all of Numazu, Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 6, 1990, Ser. No. 548,704
Int. Cl.[5] G06F *15/46;* **B23Q** *17/22*
U.S. Cl. 364—474.31 **9 Claims**



1. An ellipse interpolation control method using an NC-device comprising:

a program analyzer for determining a predetermined control locus from a given operation command program;

an interpolation unit for determining movement command values for a plurality of shafts of a machine tool on the basis of the predetermined control locus;

a feedback loop for controlling respective driving mechanisms for the shafts of the machine tool in accordance with the corresponding movement command values for the shafts thereby causing the machine tool to perform a multi dimensional operation utilizing the respective shafts, the method comprising the steps of:

causing the NC-device to control the machine tool using the predetermined control locus of a complete circle while measuring an operation locus of the machine tool using a measuring device connected externally to the NC-device;

delivering the measured data on the operation locus to the NC-device;

analyzing ellipse configuration data from the operation locus, wherein the ellipse configuration data includes data indicative of a major and a minor axis of the operation locus;

determining respective correction coefficients for the shafts to convert an ellipse configuration defined by the ellipse configuration data in the program analyzer to a complete circle; and

correcting the movement command values for the shafts corresponding to the correction coefficients.

5,189,628

SYSTEM AND METHOD FOR PARTITIONING PLA PRODUCT TERMS INTO DISTINCT LOGICAL GROUPS

Glenn A. Olsen, Colorado Springs, Colo.; Chong-Ming Lee, Singapore, Singapore; Michael T. Yeager, Sunnyvale, and Scott K. Pickett, Los Gatos, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

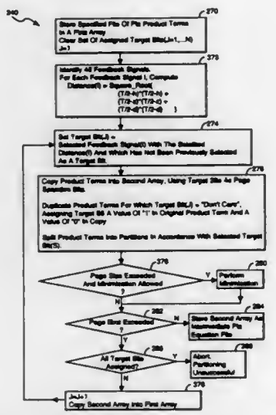
Filed Mar. 11, 1991, Ser. No. 667,571
Int. Cl.[5] G06F *15/60;* **H03K** *19/177*
U.S. Cl. 364—489 **16 Claims**

1. A method of operating a computer system to program at least one programmable logic device in accordance with a specified set of PLA product terms, the steps of the method performed by said computer system comprising:

receiving and storing in a computer storage means a specified set of PLA product terms, each PLA product term specifying values for a specified set of binary input signals, and specifying values for a specified set of binary output signals, wherein a subset of said binary output signals are feedback signals used as corresponding ones of said binary input signals;

evaluating at least a subset of said feedback signals with respect to predefined criteria and generating a corresponding merit value for each of said feedback signals;

selecting at least one of said feedback signals in accordance with said generated merit values; and



partitioning into partitioned subsets said set of PLA product terms in accordance with said specified values of the binary input signals which correspond to said selected feedback signals; wherein all of said PLA product terms in each said partitioned subset of PLA product terms have identical input signal values corresponding to said selected feedback signals, and said PLA product terms in different ones of said partitioned subsets have different input signal values corresponding to said selected feedback signals; and

storing control signals, corresponding to said partitioned subsets of PLA product terms, in at least one programmable logic device.

5,189,629

METHOD OF LOGIC GATE REDUCTION IN A LOGIC GATE ARRAY

Kirk K. Kohnen, Fullerton, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.

Filed Jun. 6, 1990, Ser. No. 533,985
Int. Cl.[5] G06F *15/60*
U.S. Cl. 364—490 **10 Claims**

1. A computer implemented processing method for reducing, the gate count in a gate array formed of gates having the same basic logic function, the gate array including at least one wide gate, and for connecting gate array inputs and outputs to perform predetermined output logic functions, said method comprising the steps of:

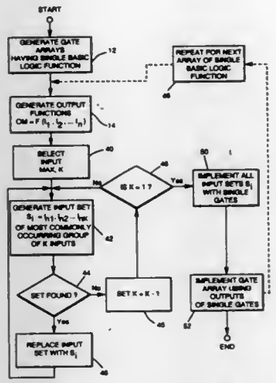
(a) grouping the gate array inputs into output function groups, there being one output function group for each output of the gate array and each output function group including all of the gate array inputs associated with that gate array output;

(b) setting a gate width limit;

(c) starting with a number of inputs equal to the gate width limit, generating an input set that includes the most commonly occurring combination of gate array inputs in the output function groups;

(d) replacing the combination of gate array inputs in the output functions with the input set;

(e) repeating steps (c) and (d) until all combinations of gate array inputs in the output functions are replaced with an input set;



(f) implementing each input set with a single gate of the same basic logic function as the gates of the gate array and having the input set as its inputs; and

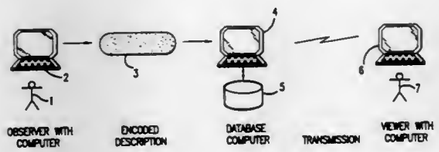
(g) replacing each input set connected to a gate of the gate array with a single input connected to the output of that single gate having the input set as its inputs.

5,189,630

METHOD FOR ENCODING AND BROADCASTING INFORMATION ABOUT LIVE EVENTS USING COMPUTER PATTERN MATCHING TECHNIQUES

David R. Barstow, 107 Laura La., Austin, Tex. 78746, and Daniel W. Barstow, 98 Hillcrest Ave., New Britain, Conn. 06053

Filed Jan. 15, 1991, Ser. No. 641,716
Int. Cl.[5] H04H *1/00;* **H04N** *7/00*
U.S. Cl. 364—514 **19 Claims**



1. A method for broadcasting information about a live event that is constituted by a plurality of subevents, each subevent including at least one action, comprising the steps of:

producing a first information signal comprising an audio description of the event;

producing a second information signal, said second information signal including a sequence of symbolic representations for each subevent of the event, each sequence including a value for at least one status variable that defines the status of the event at a particular time in relation to the subevent represented by that sequence, said second information signal comprising a signal from which a computer simulation of the event described by the first information signal can be produced;

producing a broadcast signal by combining said first and second second information signals;

transmitting said broadcast signal from a first location;

receiving said broadcast signal at a second location;

separating said broadcast signal into said first and second information signals;

analyzing said second information signal using pattern-matching techniques to detect subevents and status information of interest;

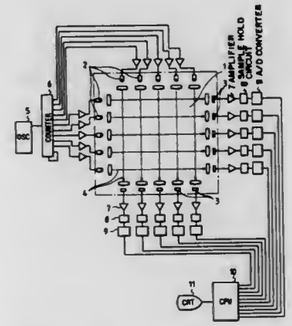
selectively producing an audio representation of the event using said first information based on the detection of subevents and status information of interest by said step of analyzing.

5,189,631

SMOKE DENSITY MONITOR SYSTEM

Takashi Suzuki, Tokyo, Japan, assignor to Nittan Company, Limited, Tokyo, Japan

Filed Dec. 6, 1990, Ser. No. 623,089
Claims priority, application Japan, Dec. 19, 1989, 1-327163
Int. Cl.[5] G08B *17/107*
U.S. Cl. 364—550 **11 Claims**



1. A smoke density monitoring system for detecting the presence of smoke within a defined space, said space having first and second sides which are opposite each other, and third and forth sides which are opposite each other, said system comprising:

a first group of light sources positioned along the first side of said space;

a first group of light detectors positioned along said second side of said space for receiving light from said first group of light sources;

a second group of light sources positioned along the third side of said space;

a second group of light detectors positioned along the fourth side of said space for receiving light from said second group of light sources;

the arrangement of said light sources and said light detectors being such to define a plurality of subspaces within said space;

activating means connected to each of said first and second light sources for momentarily activating sequentially each light source so as consequently to actuate a corresponding light detector;

conversion means connected to each of said first and second light detectors for converting a detected light into an electrical signal; and

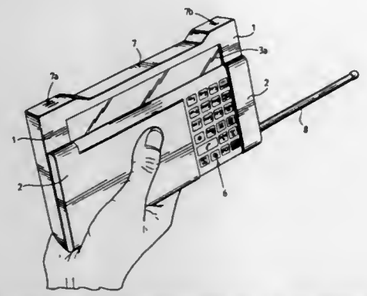
computer means connected to receive the electrical signals from said light detectors and to compare a signal from a particular subspace with a signal received from that subspace when the respective transmittance path was clear and to monitor the smoke density in the subspace being monitored.

VOL 1147 ISS 4 FE 23 1993 UMI

5,189,632
PORTABLE PERSONAL COMPUTER AND MOBILE TELEPHONE DEVICE

Reijo Paajanen; Mikko Terho, and Tom Höglund, all of Tampere, Finland, assignors to Oy Nokia Ab, Helsinki, Finland

Filed Jul. 23, 1991, Ser. No. 734,731
Claims priority, application Finland, Aug. 20, 1990, 904111
Int. Cl.[5] G06F *1/00*; H04M *11/00*
U.S. Cl. 364—705.05 **3 Claims**



1. A portable computer/telephone device comprising a body structure, a personal computer unit and a mobile telephone unit housed in said body structure, said body structure comprising a first part having a display screen on one side thereof or visually displaying the results of operations of said computer and telephone units, a second part pivotally connected to said first part for movement between an open position and closed position, said second part having a computer keyboard containing at least some of the keys for operating said computer unit on one side thereof that lies adjacent said display screen and is accessible to a user of said computer unit when said second part is in the open position and having a telephone keypad on an opposite side thereof containing at least some of the keys for operating said telephone unit, said one side of said second part lying against said one side of said first part and covering over a portion of the display screen when said second part is in the closed position.

5,189,633
APPARATUS AND METHOD FOR INTERACTIVELY MANIPULATING MATHEMATICAL EQUATIONS

Allan R. Bonadio, 562 Shoreline Hwy., Mill Valley, Calif. 94941

Continuation of Ser. No. 604,550, Oct. 26, 1990, abandoned, which is a continuation-in-part of Ser. No. 463,740, Jan. 12, 1990, abandoned. This application Feb. 26, 1992, Ser. No. 841,851
Int. Cl.[5] G06F *3/00, 15/32*
U.S. Cl. 364—709.12 **64 Claims**
MICROFICHE APPENDIX INCLUDED
(16 Microfiche, 1558 Pages)

23. In a computer programmed to provide interactive mathematical manipulation for displaying mathematical expression elements and equations on a display which are manipulated by a user in accordance with conventional rules of mathematics, a computer implemented method comprising the steps of:

inputting expression elements and equations on an input means;

displaying the expression elements and equations on a display means;

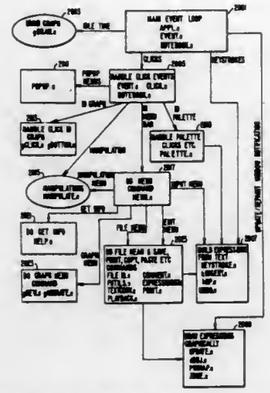
identifying particular expression elements and equations displayed on said display means to be manipulated and transmitting location data representing data element and equation locations;

tracking manipulation of the expression elements and equations upon receiving the expression elements and equations input by the user via said input means,

generating display data representing the display position of expression elements and equations in response to the expression elements and equations received;

transmitting said display data to said display means;

receiving editing instructions on said input means from the user and editing the expression elements and equations displayed on said display means in accordance with said editing instructions; and



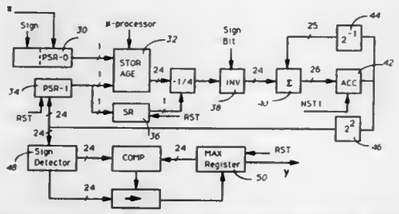
receiving said location data and manipulating the expression elements and equations in accordance with a change in position as defined by said location data;

manipulating the expression data and equations on said display means in accordance with said location data wherein the conventional rules of mathematics are applied to manipulations to maintain consistency in truth between the equations as input by the user.

5,189,634
DIGITAL SIGNAL PROCESSING APPARATUS FOR DETECTING A FREQUENCY COMPONENT OF DIGITAL SIGNALS

Gernot Eberle, Lanark, and Guy J. Chaput, Carleton Place, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Mar. 28, 1991, Ser. No. 676,593
Int. Cl.[5] G06F *15/31*
U.S. Cl. 364—724.09 **7 Claims**



1. A distributed arithmetic digital signal processing apparatus for detecting a frequency component F_r in a pulse coded digital input signal expressed in the fractional two's complement numeric representation, comprising:

storage means holding only three stored values which are respectively $A_0/4$, $B_1/4=2\{\cos(2\pi F_r/F_s)\}/4$, and $(A_0+B_1)/4$; where A_0 is a real number and F_s is a sampling frequency; and having only two address terminals providing only two address bits and a data output terminal for producing a content signal in repsonse to the state of said two address bits;

first shift register means for receiving said input signal and sending each sample of said input signal to one of said address terminals;

second shift register means connected to the other of said address terminals for shifting its input by one sample and sending its output to said other of the address terminals;

subtracting means connected to said data output terminal for subtracting ¼ from said content signal;

an accumulator stage connected to said subtracting means for applying back its output to said second shift register means as the input of said second shift register means;

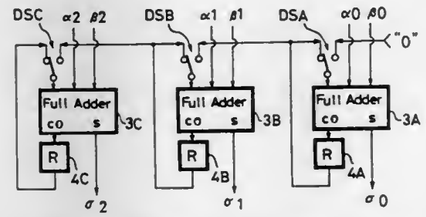
third shift register means connected to said second shift register means for shifting the output of said second shift register means by one sample and sending its output to said subtracting means; and

maximum register means connected to said accumulator stage to register a maximum value of the output of said accumulator stage in every sampling session containing a predetermined number of samples and to generate a detector output signal indicative of said maximum value which in turn is indicative of said frequency component F_r.

5,189,635
DIGITAL DATA PROCESSING CIRCUIT

Mitsuharu Ohki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 30, 1992, Ser. No. 828,386
Claims priority, application Japan, Jan. 31, 1991, 3-011309
Int. Cl.[5] G06F *7/50*
U.S. Cl. 364—784 **1 Claim**



1. A digital data processing circuit comprising:

a 2-input data selector having two input terminals and an output terminal;

a first register connected to one of said two input terminals of the 2-input data selector;

a first full adder having a carry output terminal connected to said first register, for supplying a carry output through said first register to said one input terminal of said 2-input data selector, said output terminal of said 2-input data selector being connected to an input terminal of said first full adder;

a second register connected to the other of said two input terminals of said 2-input data selector; and

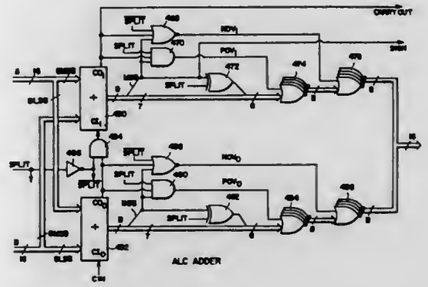
a second full adder having a carry output terminal connected to said second register, for supplying a carry output through said second register to the other input terminal of said 2-input data selector, said first and second full adders having input terminals for receiving first and second data supplied in a time-division multiplexed manner;

wherein said 2-input data selector is controlled to select the supplied carry outputs for producing the sum of the first and second data as sum outputs from said first and second full adders.

5,189,636
DUAL MODE COMBINING CIRCUITRY

Michael F. Patti, Plainsboro; Nicola J. Fedele, Kingston, both of N.J.; Kevin Harney, Brooklyn, N.Y., and Allen H. Simon, Belle Mead, N.J., assignors to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 121,022, Nov. 16, 1987, Pat. No. 5,047,975. This application Dec. 10, 1990, Ser. No. 625,295
The portion of the term of this patent subsequent to Sep. 10, 2008, has been disclaimed.
Int. Cl.[5] G06F *7/50*
U.S. Cl. 364—786 **12 Claims**



5. Circuitry comprising:

a combining device having n differing combining means, said combining means being arranged as a plurality of pairs of adjacent combining means, said combining means having respective means for receiving input values and providing a respective combined output value;

a plurality of coupling means having first and second coupling modes;

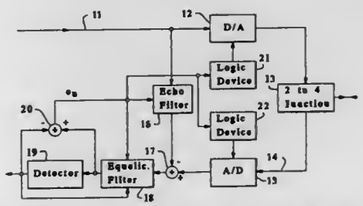
individuals ones of said coupling means being coupled to both combining means of said pairs of adjacent combining means for coupling said combining means of said pairs of adjacent combining means to each other in accordance with said coupling modes; and,

mode conditional saturation means for providing saturation when said combined output value is outside a predetermined range if said coupling means is in said first mode and not providing said such saturation signal if said coupling means is in said second mode.

5,189,637
METHOD AND APPARATUS FOR PREVENTING ERRONEOUS ECHOELIMINATION AND EQUALIZATION

Erik A. Eriksson, Bandhagen, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Mar. 26, 1990, Ser. No. 498,755
Claims priority, application Sweden, Apr. 27, 1989, 89015424
Int. Cl.[5] G06G *7/02*; H04J *1/00*
U.S. Cl. 364—825 **14 Claims**



1. A method for preventing erroneous echo-elimination and equalization outputs from adaptive echo-elimination and adaptive equalization filters, respectively, caused by digital-to-

VOL 1147 ISS 4 FE 23 1993 UMI

analog conversion devices and analog-to-digital conversion devices in a telecommunications system, comprising:

(a) generating an error signal based on a difference between a received signal and a detected output signal;

(b) updating said adaptive equalization filter with said error signal; and

(c) in at least one of said digital-to-analog conversion devices and said analog-to-digital conversion devices, compensating for non-linearities using said error signal.

5,189,638

PORTABLE SEMICONDUCTOR MEMORY DEVICE

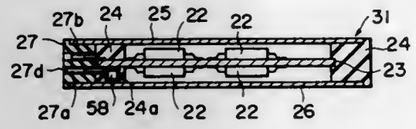
Masatoshi Kimura, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 559,074, Jul. 30, 1990, abandoned. This application Jul. 9, 1992, Ser. No. 912,117

Claims priority, application Japan, Apr. 26, 1990, 2-108634; Apr. 26, 1990, 2-108635; May 24, 1990, 2-132466

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—52 **12 Claims**



1. An IC card comprising:

memory means for storing data;

an enclosure housing said memory means, said housing including an electrically conductive casing comprising a pair of electrically conductive panels sandwiching said memory means and a frame supporting said panels and including a through hole;

a connector for connecting said device to an external circuit, said connector having a plurality of terminals including an earth terminal and input/output terminals through which data is input to and output from said memory means, the through hole in said frame being disposed adjacent said earth terminal;

a first earth line connecting said earth terminal to said memory means; and

connection means including at least one of a capacitor, a resistor, and an overvoltage protecting element disposed within the through hole in said frame electrically connecting said earth terminal to one of said panels.

5,189,639

SEMICONDUCTOR MEMORY DEVICE HAVING BIT LINES CAPABLE OF PARTIAL OPERATION

Hideshi Miyatake, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 584,418, Sep. 17, 1990, abandoned, which is a continuation of Ser. No. 269,765, Nov. 10, 1988, abandoned. This application Oct. 29, 1991, Ser. No. 784,105

Claims priority, application Japan, Nov. 26, 1987, 62-297979

Int. Cl.[5] G11C *11/24*

U.S. Cl. 365—149 **11 Claims**

1. A semiconductor memory device comprising:

first and second memory cells;

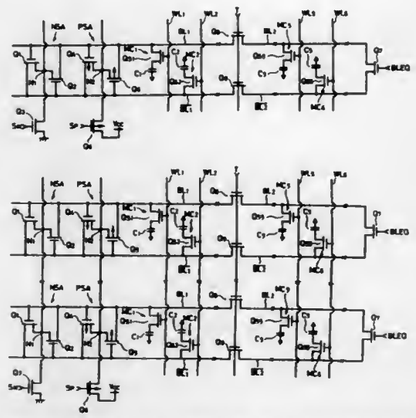
a first bit line pair connected to said first memory cell for inputting and outputting information to and from said first memory cell;

a second bit line pair connected to said second memory cell for inputting and outputting information to and from said second memory cell;

connecting means for electrically connecting to each other respective bit lines of said first and second bit line pairs;

amplifying means connected to said first bit line pair remote from the connection of said first bit line pair with said for amplifying respective potentials on said first and said second bit line pairs to a first potential and to a second potential based on a potential difference generated between respective bit lines of said first or second bit line pairs, said first memory cell being located between said amplifying means and said connecting means;

accessing means for accessing selected memory cells for an accessing period;



activation means for activating said amplifying means subsequent to the start of said accessing period; and

control means releasing connection of said first and second bit line pairs by said connecting means before said amplifying means is activated and maintaining disconnection between said first and second bit line pairs thereafter throughout said accessing period in response to selection of said first memory cell.

5,189,640

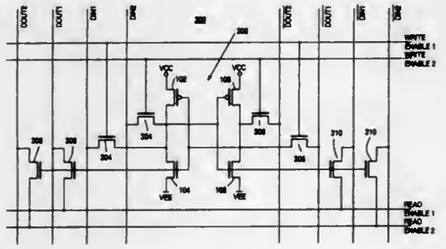
HIGH SPEED, MULTI-PORT MEMORY CELL UTILIZABLE IN A BICMOS MEMORY ARRAY

Jeff M. Huard, Puyallup, Wash., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 499,715, Mar. 27, 1990, abandoned. This application Sep. 9, 1991, Ser. No. 758,226

Int. Cl.[5] G11C *11/00, 11/34, 8/00*

U.S. Cl. 365—154 **8 Claims**



1. A memory cell for use in a memory circuit, the memory cell comprising:

(a) first and second complementary data-out lines;

(b) a read enable control line;

(c) a data storage cell connected between a positive supply voltage and a negative supply voltage and that defines first and second complementary data storage nodes;

(d) write port means connected to the first and second data storage nodes for enabling data to be written to the data storage nodes; and

(e) a read port that includes a first field-effect read port transistor having its source-drain path coupled between the first data-out line and the read enable control line, the gate of the first read port transistor connected to the second data storage node, and a second field-effect read port transistor having its source-drain path coupled between the second data-out line and the read enable control line, the gate of the second read port transistor connected to the first data storage node,

whereby the storage cell is read by pulling current from the read enable line and monitoring the difference in current between the first and second complementary data-out lines.

5,189,641

NON-VOLATILE RANDOM ACCESS MEMORY DEVICE

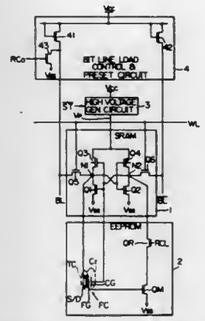
Hideki Arakawa, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 203,921, Jun. 8, 1988, abandoned. This application Nov. 5, 1990, Ser. No. 609,096

Claims priority, application Japan, Jun. 8, 1987, 62-141443

Int. Cl.[5] G11C *7/00*

U.S. Cl. 365—228 **4 Claims**



1. A semiconductor memory device including a plurality of memory cells formed in a semiconductor substrate and plural pairs of complementary bit lines formed thereon, each of said memory cells comprising:

a volatile memory cell portion formed in said substrate and including a flip-flop having a pair of nodes and respective transfer gate transistors connecting said pair of nodes to a corresponding pair of said plural pairs of complementary bit lines;

a non-volatile memory cell portion formed in said substrate and including:

a capacitor circuit coupled across said pair of nodes and comprising a diffused region formed in said semiconductor substrate, a floating gate formed on a tunnel insulation layer in turn formed on said diffused region, and a control gate formed on an insulation layer in turn formed on said floating gate,

a memory transistor formed in said substrate and having a gate connected to the floating gate,

a recall transistor formed in said substrate and connected between said memory transistor and one of said pair of nodes and selectively operable, when turned ON, for recalling data from said non-volatile memory cell portion and supplying the recalled data to said volatile memory cell portion, and

said non-volatile memory cell portion further including a first transistor coupled across one of said pair of nodes and said diffused region and a second transistor coupled across the other of said pair of nodes and said control gate, said first and second transistors being selectively turned ON for transferring data from said volatile memory cell portion to said non-volatile memory cell portion in a data store operation; and

voltage supply means, connected to said flip-flop, for selectively supplying a first power supply voltage during a read/write operation of said volatile memory cell portion and a second power supply voltage, higher than said first power supply voltage, across said pair of nodes of said flip-flop and correspondingly across aid control gate and said diffused region, said second power supply voltage producing a tunnel effect in said capacitor circuit and thereby performing said data store operation of storing said data, transferred from said volatile memory cell portion to said non-volatile memory cell portion, in said non-volatile memory cell portion.

5,189,642

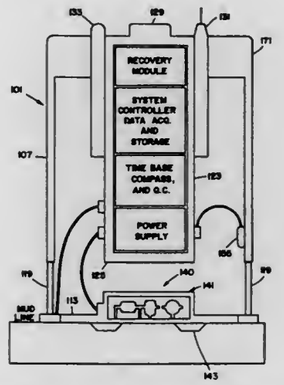
SEAFLOOR SEISMIC RECORDER

Paul L. Donoho, Houston, Tex.; Mitchell F. Peterson, Diamond Bar, Calif.; Hughie Ryder, Anaheim, Calif., and William H. Keeling, Chino, Calif., assignors to Chevron Research and Technology Company, San Francisco, Calif.

Filed Sep. 10, 1991, Ser. No. 757,155

Int. Cl.[5] G01V *1/38*

U.S. Cl. 367—15 **20 Claims**



1. An improved seafloor seismic recorder comprising:

(a) a chassis having an upper end plate and at least two rigid leg members having top and bottom ends extending downward from said end plate;

(b) a ballast ring disconnectably connected to said bottom ends of said leg members;

(c) a control package comprising a housing and electronics means to record seismic signals, power source means, control circuit means, timer means, and compass means therein, said housing having an upper portion and a lower portion and fixedly connected to said chassis between said leg members and below said upper end plate;

(d) a geophone package disconnectably connected to said lower portion of said housing by a geophone clamp means, and electrically connected to said control package, and tethered to said housing by a tether means that will absorb tension caused by detaching said leg members from said ballast ring, said geophone package comprising at least one geophone that is bias-mounted such that it comes to rest in a nearly horizontal position;

(e) buoy means attached to said upper end plate to maintain said upper end plate nearly vertically above said base plate when said seafloor recorder is released into a body of

VOL 1147 ISS 4 FE 23 1993 UMI

water, and to permit said ballast ring and said geophone package to become embedded in sediment on the water bottom upon impact such that sufficient coupling between said geophone package and said sediment is achieved, and to permit said chassis, geophone package, and control package to rise to the surface upon said release of said ballast ring from said leg members; and

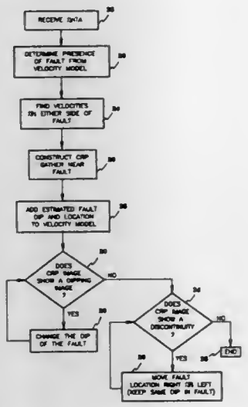
(f) leg extension means, leg clamp means, and leg stop means permitting said leg members to be partially extended to cause said chassis and said control package to rise toward the surface for a short distance, to isolate said geophone package from said housing when detached from said lower portion of said housing yet remain sufficiently coupled to said sediment.

5,189,643

METHOD OF ACCURATE FAULT LOCATION USING COMMON REFLECTION POINT GATHERS

Shein S. Wang, and David W. Bell, both of Ponca City, Okla., assignors to Conoc Inc., Ponca City, Okla.

Filed Mar. 5, 1992, Ser. No. 847,446
Int. Cl.[5] G01V *1/28*
U.S. Cl. 367—38 **4 Claims**



1. A method for determining near vertical boundary locations from seismic data comprising the steps of:

receiving seismic data including a velocity model;

ascertaining presence of a near vertical boundary in the velocity model;

finding velocities on either side of the near vertical boundary using common reflection point (CRP) velocity analysis on said model;

constructing a CRP gather at a selected velocity near the near vertical boundary on said model;

varying the dip of the near vertical boundary in the velocity model until the CRP gather image is flat, wherein the correct near vertical boundary dip is determined; and

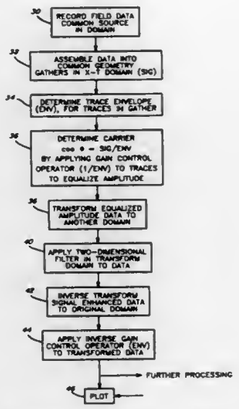
varying the location of the near vertical boundary to the right or the left in the velocity model until discontinuities on the CRP gather image are eliminated, wherein the correct near vertical boundary location is determined.

5,189,644

REMOVAL OF AMPLITUDE ALIASING EFFECT FROM SEISMIC DATA

Lawrence C. Wood, 15606 Grovespring Dr., Houston, Tex. 77068

Filed Feb. 4, 1992, Ser. No. 830,631
Int. Cl.[5] G01V *1/28*
U.S. Cl. 367—38 **15 Claims**



1. A method of processing seismic data to remove the effect of amplitude aliasing from displays of the data, comprising the steps of:

(a) obtaining field records of seismic data;

(b) assembling the seismic data into common geometry gathers;

(c) determining an amplitude aliasing corrective factor for unwanted repetitive dispersions in the data;

(d) applying the corrective factor to the assembled data to equalize signal amplitudes in the assembled data;

(e) transforming the equalized signal amplitudes in the assembled data to a different domain after said step of applying the corrective factor;

(f) enhancing the reflection signal content of the transformed data;

(g) inverse transforming the enhanced signal content data from the different domain;

(h) applying an inverse of the corrective factor to the inverse transformed data; and

(i) forming a display of the data after said step of applying an inverse of the corrective factor so that the effect of amplitude aliasing is removed from the data.

5,189,645

DOWNHOLE TOOL

Frank A. S. Innes, Bieldside, Great Britain, assignor to Halliburton Logging Services, Inc., Houston, Tex.

Filed Nov. 1, 1991, Ser. No. 786,640
Int. Cl.[5] G01V *1/40*
U.S. Cl. 367—84 **5 Claims**

1. A downhole tool for generating pressure pulses in a flowing column of drilling fluid in a drill string wherein the tool comprises:

(a) an elongate body adapted to be positioned in a drill collar at the lower end of a drill string exposed to drilling fluid flow in the drill string;

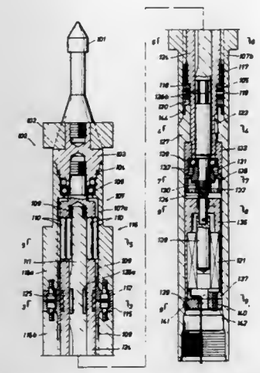
(b) a first set of blades supported on a cylindrical housing about said body wherein said blades have an angle of attack which enables flowing drilling fluid to interact therewith and create rotation for said blades in a first direction relative to said body;

(c) a second set of blades supported on a second cylindrical

housing about said body and spaced rearwardly on said body from said first set of blades, and wherein said second set of blades has an angle of attack to impart rotation to said second blades and said cylindrical housing in the same direction as the first set of blades;

(d) an electrically operated solenoid in said body responsive to a signal for forming a pressure pulse in the column of drilling fluid;

(e) locking means connected to said solenoid and extending from said solenoid to releasably lock said first and second



blades in relatively altered positions, said positions defining first and second positions and further wherein said first position provides a streamlined flow path through the first and second sets of blades, and the second position defines a restricted drilling fluid flow path wherein fluid flow restriction is changed as a result of relative positioning of said first and second blades considered jointly; and

(f) wherein said first and second positions form pressure pulses in the drilling fluid as a result of operation of said solenoid.

5,189,646

SMALL-SIZED ELECTRONIC DEVICE WITH DEPTH GAUGE

Yukitoshi Sako; Fumitoshi Kamikawa, and Sayuri Ohta, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

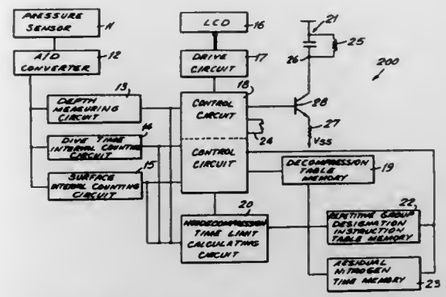
Continuation-in-part of Ser. No. 383,462, Jul. 20, 1989. This application Jan. 10, 1991, Ser. No. 639,633
Claims priority, application Japan, Jul. 20, 1988, 63-181091; Aug. 18, 1988, 63-205534; Aug. 18, 1988, 63-205538; Aug. 19, 1988, 63-206977; Aug. 19, 1988, 63-206978; Jan. 10, 1990, 2-3209; Sep. 13, 1990, 2-243375
Int. Cl.[5] G04B *47/06*; G01L *7/00*; G08B *21/00*
U.S. Cl. 368—10 **18 Claims**

1. A small-sized electronic device with depth gauge comprising:

pressure sensor means for measuring a current pressure and outputting pressure data in response thereto;

memory means for storing the pressure data;

dive time measuring means for measuring a dive time interval;



mean depth calculating means for receiving said stored pressure data and said dive time interval and calculating a mean depth in response thereto; and

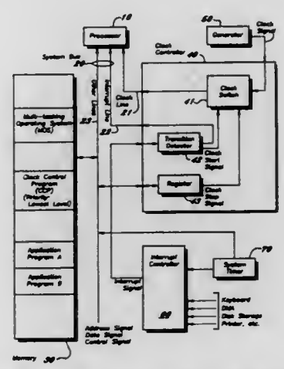
display means for displaying the mean depth.

5,189,647

INFORMATION PROCESSING SYSTEM HAVING POWER SAVING CONTROL OF THE PROCESSOR CLOCK

Naoshi Suzuki, Kanagawa, and Shunya Uno, Machida, both of Japan, assignors to International Business Machines Corp., Armonk, N.Y.

Filed Feb. 24, 1992, Ser. No. 840,417
Claims priority, application Japan, Feb. 25, 1991, 3-050307
Int. Cl.[5] G06F *1/04*; G04B *47/00*
U.S. Cl. 368—10 **2 Claims**



1. An information processing system, comprising in combination:

a processor;

a bus coupled to said processor;

a clock generator for generating a clock signal;

a clock switch coupled between said clock generator and said processor, said clock switch having ON and OFF states;

register means, coupled between said bus and said clock switch, for receiving a stop code from said bus and for sending a stop signal to said clock switch to turn said clock switch OFF; and

system timer means, coupled to said clock switch, for periodically sending start signals to said clock switch to turn

VOL 1147 ISS 4 FE 23 1993 UMI

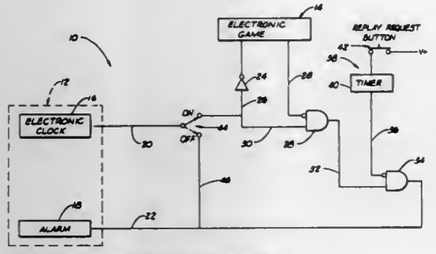
said clock switch ON, such that said clock signal is coupled to said processor.

5,189,648

ALARM CLOCK GAME COMBINATION

Stephen B. Cooper, Norman, Okla., and Scott R. Downie, Kansas City, Kans., assignors to Stephen B. Cooper, Norman, Okla.

Filed Jul. 11, 1991, Ser. No. 728,402
Int. Cl.[5] G04B *23/02*; G04C *21/00*
U.S. Cl. 368—73 **6 Claims**



1. A game-alarm clock comprising:

electronic clock means for measuring time (measured time) and being settable at an alarm time for outputting an electronic alarm signal in response to the measured time being equal to the alarm time, the electronic alarm clock means outputting an electronic no alarm signal in response to the measured time not being equal to the alarm time;

alarm means for outputting an audibly perceivable alarm sound in one mode and for terminating the alarm sound in one other mode;

electronic game means for providing a game for playing by an individual and receiving the electronic alarm signal and for outputting an electronic game lost signal and for outputting an electronic game won signal in response to the individual winning the game; and

means for receiving the electronic game lost signal and the electronic game won signal from the electronic game means and for causing the alarm means to output the audibly preceivable alarm sound in response to receiving the electronic game lost signal and the electronic alarm signal in one mode of operation, and for causing the terminating of the audibly perceivable alarm sound in response to receiving the electronic game won signal and the electronic alarm signal or in response to receiving the electronic no alarm signal and either the electronic game won signal or the electronic game lost signals, said means including means for delaying the alarm means outputting the alarm sound for a predetermined period of time when said means is receiving the electronic game lost signal and the electronic alarm signal in one other mode of operation.

5,189,649

METHOD AND APPARATUS FOR DIRECTLY OVERWRITING MAGNETOOPTIC DATA STORAGE MEDIA

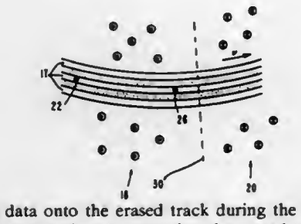
Henryk Birecki, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 732,341, Jul. 17, 1991, abandoned, which is a continuation of Ser. No. 356,312, May 24, 1989, abandoned. This application Apr. 28, 1992, Ser. No. 876,693
Int. Cl.[5] G11B *13/04, 11/10*
U.S. Cl. 369—13 **2 Claims**

1. A method of directly overwriting data in a magnetooptic data recording system incorporating a moving magnetooptic recording medium, said method comprising the steps of:

applying static first and second directionally opposed magnetic fields to predetermined areas of the recording medium that correspond to multiple tracks of the recording medium, which magnetic fields each has a flux density that is insufficient by itself to alter data recorded in the recording medium;

erasing data from the recording medium during direct overwriting operations by exposing the recording medium to heat and the first magnetic field, including constantly focussing a continuous laser beam onto a single track of the recording medium at a location of the recording medium offset from the first magnetic field such that the track enters the first magnetic field during cooling down from exposure to said continuous laser beam, thereby providing an erased track; and



writing data onto the erased track during the direct overwriting operations by exposing the erased track to heat and the second magnetic field, including intermittently focussing a pulsed laser beam onto the erased track of the recording medium at a location of the recording medium offset from the second magnetic field such that the erased track enters the second magnetic field during cooling down from exposure to the pulsed laser beam;

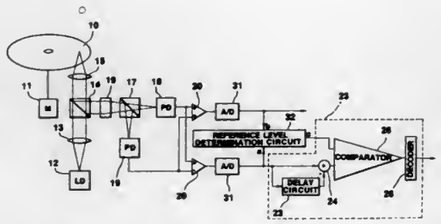
whereby a particular location on the recording medium is moved through a sequence of exposure to the continuous laser beam, partial cooling, erasure by said first magnetic field, selective exposure to said pulsed laser beam, partial cooling, and writing by said second magnetic field.

5,189,650

MAGNETO-OPTICAL SIGNAL REPRODUCING APPARATUS IN WHICH REPRODUCED MAGNETO-OPTICAL SIGNAL LEVEL IS COMPARED WITH REFERENCE SIGNAL LEVEL VARIED IN ACCORDANCE WITH IN-PHASE SIGNAL

Tetsu Watanabe, Tokyo; Tamotsu Yamagami, and Tetsuji Kawashima, both of Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 26, 1990, Ser. No. 617,803
Claims priority, application Japan, Nov. 29, 1989, 1-310353
Int. Cl.[5] G11B *13/04, 11/12, 11/10*
U.S. Cl. 369—13 **7 Claims**



1. A magneto-optical signal reproducing apparatus for reproducing a binary data sequence included in a signal recorded in a data area on a magneto-optical recording medium, said apparatus comprising:

optical pickup means including means for optically reading said signal recorded on said recording medium and means for generating a magneto-optical signal and an in-phase signal from the signal read by said means for optically reading;

reference level determination means for generating a reference level signal in accordance with at least said in-phase signal from said means for generating; and

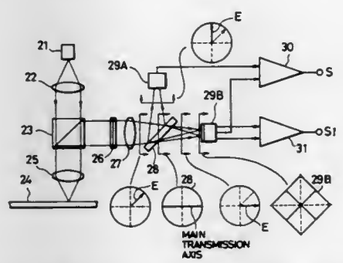
reproducing circuit means including means for comparing levels of said magneto-optical signal and of said reference level signal and, in response to such comparison, providing a binary output which corresponds to said binary data sequence.

5,189,651

OPTICAL SYSTEM IN MAGNETO-OPTICAL RECORDING AND REPRODUCING DEVICE

Yoshihiro Utsumi, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 48,843, May 12, 1987, abandoned. This application Oct. 30, 1989, Ser. No. 438,932
Claims priority, application Japan, May 12, 1986, 61-70807[U]
Int. Cl.[5] G11B *7/00*; G01J *1/36*
U.S. Cl. 369—13 **10 Claims**



1. A reproducing device for reading signals, comprising:

means for obtaining a reflected light signal from a magneto-optical recording medium;

a single astigmatic plate forming an integral astigmatism causing analyzer element, said astigmatic plate having an incident surface provided with a polarizing film thereon and a conveyance surface opposed to said incident surface, said reflected light being incident on said incident surface of said astigmatic plate, such that a plane of said incident surface forms a predetermined angle to a polarization plane of said reflected light, said polarizing film receiving and dividing said reflected light signal into a first light signal, which reflects from said polarizing film and a second light signal, which passes through said polarizing film, said first and second light signals being of different polarization, and said astigmatic plate causing said second light signal to be more astigmatic than said first light signal;

a first light detector for receiving said first light signal directly from said polarizing film as a first data signal; and

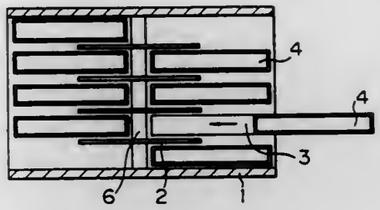
a second light detector for receiving said second light signal directly from said conveyance surface of the astigmatic plate as a focusing signal.

5,189,652

MULTI-DISC RECORDING AND REPRODUCING APPARATUS HAVING DETACHABLE OPTICAL HEAD UNITS

Kazuhiko Inoue, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 7, 1991, Ser. No. 665,835
Claims priority, application Japan, Mar. 8, 1990, 2-54895
Int. Cl.[5] G11B *7/08, 7/12*
U.S. Cl. 369—36 **17 Claims**



1. An optical disc apparatus comprising:

a housing structure;

disc media contained in said housing structure;

a plurality of head units slidably inserted into said housing structure along groove means formed in parallel to disc surfaces of said disc media, each of said plurality of head units including a semiconductor laser diode, wherein said head units can be completely slidably removed from said housing structure; and

a head mounted on each of said plurality of head units so that each of said heads is movable within a head unit in parallel to the disc surface of said disc media, whereby each of said heads can access a predetermined position on the disc media,

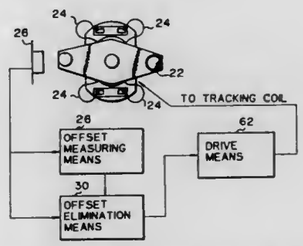
wherein said head units are located at opposing sides of a spindle shaft of the disc media, such that both sides of the disc can be read when said head units are inserted into said housing structure.

5,189,653

OPTICAL DISK DEVICE ELIMINATING OFFSET OF ACTUATOR AND OFFSET ELIMINATING METHOD USED THEREBY

Shigenori Yanagi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 17, 1990, Ser. No. 568,874
Claims priority, application Japan, Aug. 19, 1989, 1-213421
Int. Cl.[5] G11B *7/00*
U.S. Cl. 369—44.32 **7 Claims**



7. A method of eliminating offset in an optical disk device having an actuator including a moving member for a fine adjustment of tracking control when accessing an optical disk, a spring member for holding the moving member at a predetermined balanced position, and position detection means for

VOL 1147 ISS 4 FE 23 1993 UMI

detecting a neutral position of the moving member, the method comprising the steps of:

a) increasing or decreasing an electric drive current supplied to the moving member, by a predetermined step when released from tracking control;

b) storing the electric drive current value as an offset current when a position detection error signal, due to the position detection means, becomes zero; and

c) supplying the offset current as an electric drive current for the moving member during a tracking control state.

5,189,654

AUTOMATIC GAIN CONTROL APPARATUS FOR USE IN OPTICAL DISC RECORDING AND PLAYBACK SYSTEM

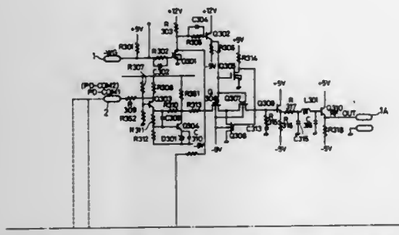
Tadashi Minakuchi, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 450,559, Dec. 14, 1989, abandoned. This application Dec. 3, 1991, Ser. No. 801,619

Claims priority, application Japan, Dec. 14, 1988, 63-162209[U]

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—44.36 **32 Claims**



1. An automatic gain control apparatus, comprising:

means for receiving at least one light beam which is incident on an optical disk and is reflected by said optical disk for producing a signal in accordance with a state of said optical disk;

means for holding a playback signal, which is produced from said light beam receiving means and which includes data recorded on said optical disk, when data is recorded on said optical disk;

means responsive to a control signal for controlling a gain of a tracking error signal; and

means for generating said control signal from said signal outputted from said holding means.

5,189,655

OPTICAL HEAD FOR OPTICAL DISK RECORDING/REPRODUCING APPARATUS INCLUDING MODIFIED WOLLASTON PRISM

Nobuo Ogata, Tenri; Tetsuo Ueyama; Yoshihiro Sekimoto, both of Nara; Toshiyuki Tanaka, Moriguchi, and Hideaki Sato, Yamato-Koriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 11, 1990, Ser. No. 580,830

Claims priority, application Japan, Sep. 14, 1989, 1-239009

Int. Cl.[5] G11B *7/095*

U.S. Cl. 369—44.23 **8 Claims**

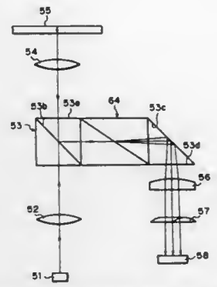
1. An optical head for an optical disk recording/reproducing apparatus for irradiating a recording medium by a light beam emitted from a light source and introducing an information light which is formed by a light beam reflected from the recording medium to a photo detecting system, a shift of an optical axis of the information light being minimized, the optical bead comprising:

means for receiving said information light which is reflected from said recording medium;

a first reflecting means for reflecting said information light received by said receiving means;

a second reflecting means for further reflecting said information light reflected by said first reflecting means and for directing said further reflected information light toward said photo detecting system;

means for emerging said information light reflected by said second reflecting means to said photo detecting system;



a beam incident means disposed adjacent to said first reflection means for shaping a beam of said light incident on a surface thereof, said receiving means, said first reflecting means, said second reflecting means, said emerging means, and said beam incident means constituting a light splitting means; and

a modified Wollaston prism disposed between said first reflecting means and said second reflecting means for splitting said information light reflected from said first reflecting means.

5,189,656

CONTROL SYSTEM FOR A COMPACT DISK PLAYER

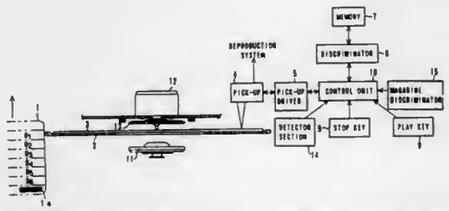
Naoki Masaki; Osamu Hira, and Naoki Shimada, all of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 518,925, Sep. 7, 1990, abandoned. This applicatioo Mar. 10, 1992, Ser. No. 847,882

Claims priority, application Japan, Feb. 28, 1990, 2-48406; Mar. 22, 1990, 2-72909

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—47 **8 Claims**



1. A control system for a compact disk player having a magazine containing a plurality of disks and operating keys including a play key for playing a disk and a stop key for stopping the playing of said disk, the control system comprising:

detector means, responsive to operation of the stop key, for detecting an identification of a last disk which has been played immediately before operation of the stop key;

memory means for storing the detected identification of the last disk;

determining means for determining if the play key has been operated after the operation of the stop key;

reading means, responsive to the determining means, for reading the identification stored in the memory means when only the play key is operated after operation of the stop key; and

playing means, responsive to the read out identification from the reading means, for replaying the last disk in accordance with the identification from the reading means therein enabling repeated playing of the last disk when only said play key is operated after operation of the stop key.

5,189,657

CIRCUIT FOR WRITING AND REPRODUCING A MODULATION SIGNAL ONTO WRITABLE OPTICAL DISK

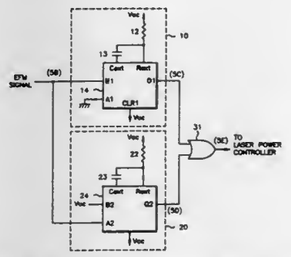
Jae-Hong Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 1, 1990, Ser. No. 531,525

Claims priority, application Rep. of Korea, Jun. 3, 1989, 1989-7647

Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—59 **20 Claims**



1. A circuit for writing data representative of digital signals, said digital signals representative of a first format of modulated signals, onto a disk medium, and thereafter, providing for output, reproductions of said first format of modulated signals or said digital signals, according to system control signals, said circuit comprising:

first pulse generator means for generating first write pulses in response to each rising edge of said first format of modulated signals;

second pulse generator means for generating second write pulses in response to each falling edge of said first format of modulated signals;

gating means for sequentially providing said first and second write pulses to a laser power controller, so as to enable writing of data representative of said digital signals onto the disk medium;

means for reading said data on said disk medium and for reproducing said digital signals represented by said data;

signal reproducing means for receiving the reproduced digital signals and for generating reproductions of said first format of modulated signals by converting the reproduced digital signals into said reproductions of said first format of modulated signals; and

switching means for selecting either said reproductions of said first format of modulated signals or said reproduced digital signals, for output to a demodulator in response to said system control signals.

5,189,658

DEVICE FOR RECORDING INFORMATION ON AN OPTICAL DATA CARRIER

Klaus M. Moses, Am Honigbirnbaum 38, D-6232 Bad Soden 2, Fed. Rep. of Germany

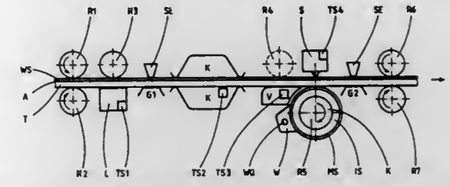
PCT No. PCT/DE90/00482, § 371 Date Mar. 27, 1991, § 102(e) Date Mar. 27, 1991, PCT Pub. No. WO91/00595, PCT Pub. Date Jan. 10, 1991

PCT Filed Jun. 26, 1990, Ser. No. 656,080

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1989, 3921470

Int. Cl.[5] G11B *11/00*

U.S. Cl. 369—100 **16 Claims**



1. Device for recording information in columns and rows on a data carrier that has a layer the optical properties of which can be influenced by different temperatures, such that, starting from a first temperature (for example, room temperature) and a first optical state (e.g., opaque), the layer can be changed to a second optical state (e.g., transparent) by heating to a second temperature, and this change can be rendered permanent by cooling to the first temperature and can later be reversed by heating the layer, which is now in the second optical state, from the first temperature to a third temperature and then cooling it again, such that the second temperature is greater than the first temperature, and the third temperature is greater than the second temperature, characterized by an erasing device (L), a cooling device (K), a preheating device (V), and a recording device (S), such that the erasing device (L) heats the layer (WS) to the third temperature (T2) or to the second temperature (T1), the cooling device (K) cools the layer (WS) to the first temperature (T0), the preheating device (V) heats the layer (WS) to the fourth temperature, which lies between the first temperature (T0) and the second temperature (T1) or third temperature (T2), and the recording device (S) heats the appropriate sites on the layer (WS) to the third temperature (T2) or the second temperature (T1), as a function of the information to be recorded; during this process the sheetlike data carrier (A) passes in succession through the indicated devices, each of which extends over the full width of the data carrier (A), in the indicated order (L, K, V, S); the preheating device (V) is situated very close to the recording device (S) or is actually part of the recording device; the recording energy is controlled as a function of the signals of thermal and/or optical sensing devices (SE, TS), and the information recorded on the data carrier (A) by the recording device (S) is checked by the optical sensing device (SE).

5,189,659

METHOD AND APPARATUS FOR RECORDING AND REPRODUCING INFORMATION BY INTERMITTENT LIGHT EMISSION FROM LASER LIGHT SOURCE

Shinichi Ohta, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 26, 1991, Ser. No. 674,943

Claims priority, application Japan, Mar. 27, 1990, 2-75383

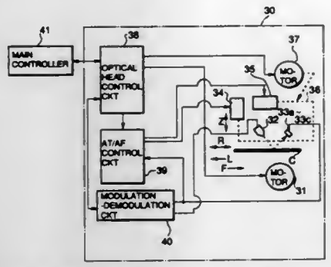
Int. Cl.[5] G11B *7/00*

U.S. Cl. 369—109 **41 Claims**

1. An apparatus for recording information signals onto an optical recording medium and reproducing the information signals from the optical recording medium, comprising:

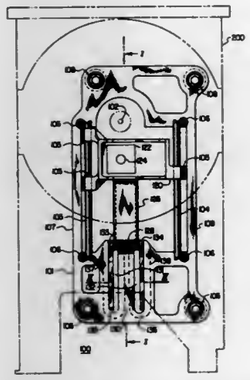
VOL
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a laser light source for radiating a laser beam onto said optical recording medium;
laser driving means for driving said laser light source, said laser driving means controlling said laser light source to



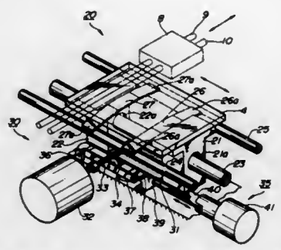
selectively perform the continuous light emission during recording and the intermittent light emission with a sufficiently higher frequency than that of said information signals during reproducing; and
means for moving said medium relative to the laser beam.

5,189,660
OPTICAL DATA STORAGE SYSTEM WITH UNITARY FERROUS FRAME
Marcus L. Caldwell, Colorado Springs, Colo., assignor to Tandy Corporation, Ft. Worth, Tex.
Filed May 9, 1991, Ser. No. 697,375
Int. Cl.[5] G11B *21/02, 17/30, 17/00*
U.S. Cl. 369—215 **18 Claims**



1. Apparatus for optically recording and playback of data on an article of optical media comprising:
transport means for supporting and imparting predetermined motion to said optical media;
optical transducer linearly translatable relative to said optical media for writing and reading data;
electric solenoid means attached to said optical transducer for providing said linear translation of said optical transducer;
magnetic means for establishing a magnetic field on at least two opposite sides of said electric solenoid means; and,
unitary frame, attached to said transport means, for supporting said optical transducer and said magnetic means, and providing a magnetic core for said magnetic field, said unitary frame being of ferrous material and including defined near one end therein a magnetic E-core comprising parallel outer legs and a center leg conjoined at one end by a common member substantially at right angles to said legs.

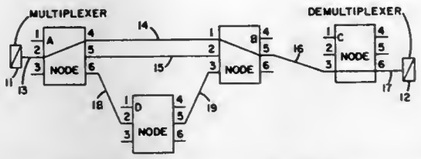
5,189,661
CARD CARRIER
Tetsuya Honda, Shiki, and Hidenori Suzuki, Fujimi, both of Japan, assignors to Kabushiki Kaisha, Japan
Filed Dec. 21, 1989, Ser. No. 454,766
Claims priority, application Japan, Dec. 27, 1988, 63-168721[U]; Dec. 27, 1988, 63-330701
Int. Cl.[5] G06K *13/00;* **G11B** *19/20*
U.S. Cl. 369—258 **4 Claims**



1. A card carrier having a table for carrying a card, a hole formed in said table, a guide rod inserted through said hole, said guide rod having an extension extending in one direction, and table drive means for reciprocatedly moving said table along said guide rod, wherein a pair of rods are arranged oppositely with respect to said guide rod and extended in the same direction as that of said extension of said guide rod, and press contact slide means disposed on said table, one end of said press contact slide means being pressed against one of said pair of rods, while the other end being pressed against the other one of said pair of rods, and wherein said table drive means comprises:
a belt made of resilient material stretched across said table in the longitudinal direction of said guide rod, a drive shaft disposed adjacent to one side of said belt, a pinch roller disposed adjacent to the other side of said belt and in opposition to said drive shaft with respect to said belt, said pinch roller being allowed to touch and detach from the other side of said belt, and a roller touch/detach means for touching said pinch roller to the other side of said belt and detaching said pinch roller from the other side of said belt.

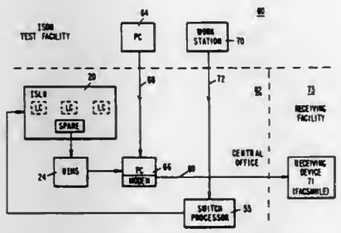
5,189,662
TRANSMISSION NETWORK HAVING ELECTRONICALLY SWITCHABLE NODES FOR SWITCHING SIGNAL PATHS AND A METHOD OF CONTROLLING SAID NETWORK
Harold Kleine-Altekamp, Bietigheim, Fed. Rep. of Germany, assignor to Alcatel N.V., Amsterdam, Netherlands
Filed Jan. 25, 1990, Ser. No. 470,178
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1989, 3902243
Int. Cl.[5] H04J *3/14*
U.S. Cl. 370—16 **22 Claims**

12. A transmission network, comprising:
a plurality of switchable nodes; and
a plurality of circuit-switched transmission lines connected between said nodes, selected ones of said nodes and lines forming a circuit-switched signal path between two end nodes and having intermediate nodes, said end nodes each being capable of generating an identification signal which identifies a source node of the path and an input port of the source node, as well as a destination node of the path and an output port of the destination node, and inserting said identification signal into a digital signal to be transmitted, the intermediate nodes being capable of receiving and checking the identification signal and passing the identification signal to the next intermediate node toward the



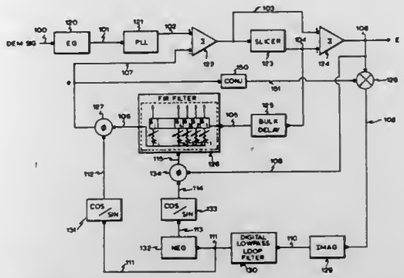
destination node, all nodes being capable of performing a monitoring function to detect path disturbances.

5,189,663
METHOD OF AND SYSTEM FOR REMOTE TESTING AND REPORTING OF ISDN LINE CONDITIONS
Clifton B. Williams, Richmond, Va., assignor to C & P of Virginia, Richmond, Va.
Continuation-in-part of Ser. No. 394,090, Aug. 15, 1989, Pat. No. 4,998,240. This application Apr. 26, 1990, Ser. No. 515,007
The portion of the term of this patent subsequent to Mar. 5, 2008, has been disclaimed.
Int. Cl.[5] H04J *3/14*
U.S. Cl. 370—17 **26 Claims**



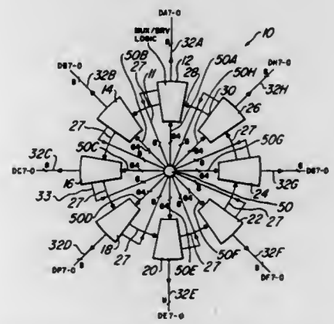
1. A system for remote and unattended testing and reporting of ISDN protocol at a central office, comprising:
means for accessing at least D-channel data of a selected customer ISDN line at said central office;
a first computer at said central office programmed to perform protocol analysis of data applied thereto, wherein said first computer includes a communication device coupled to a report communication line;
means for supplying said at least D-channel data to said first computer for performing protocol analysis thereof;
a second computer at a test facility remote from said central office;
a communication path interconnecting said first and second computers; and
means responsive to said second computer at said remote test facility and incorporating said communication path for controlling said first computer at said central office to provide said protocol analysis of said at least D-channel data and to selectively supply at least one of said D-channel data and data indicative of said protocol analysis to said report communication line.

5,189,664
LISTENER ECHO CANCELLATION
King Y. Cheng, Penn Valley, Calif., assignor to Silicon Systems, Inc., Tustin, Calif.
Filed Feb. 19, 1991, Ser. No. 657,535
Int. Cl.[5] H04J *3/10*
U.S. Cl. 370—32.1 **15 Claims**



14. A method for cancelling listener echo in a transmission line comprising:
quantizing an input signal to provide an ideal signal;
subtracting said ideal signal from said input signal to provide an error signal;
delaying said ideal signal by an equivalent of one round trip through the transmission line to provide a delay signal;
applying said delayed signal to an adaptive FIR filter to provide a filter output;
phase shifting said filter output by the application of a phase correction signal to provide an echo approximation;
subtracting said echo approximation from said input signal;
phase shifting said error signal to provide a phase shifted error signal;
utilizing said phase shifted error signal to update said adaptive FIR filter.

5,189,665
PROGRAMMABLE CONFIGURABLE DIGITAL CROSSBAR SWITCH
Jeff A. Niehaus, Dallas; Stephen Li, Garland, and Frank Laczko, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of Ser. No. 764,044, Sep. 23, 1991, abandoned, which is a continuation of Ser. No. 330,657, Mar. 30, 1989, abandoned. This application Mar. 10, 1992, Ser. No. 850,020
Int. Cl.[5] H04Q *11/04;* **H04L** *12/40*
U.S. Cl. 370—458.1 **13 Claims**



1. A programmable reconfigurable digital crossbar switch, comprising:
a plurality of multiplexer logic control ports;

VOL 1147 ISS 4 FEB 23 1993 UMI

an m-bit internal data bus coupled to each of said multiplexer logic control ports for the interchange of data between any one of said multiplexer logic control ports and any other of said multiplexer control ports, whereby m is an integer greater than zero;

a plurality of n-bit input/output data buses, each coupled to a respective one of said multiplexer logic control ports for the interchange of data between said multiplexer logic control ports and external devices, whereby n is an integer greater than zero;

an n-bit port-to-port data transfer data bus sequentially interconnecting said plurality of multiplexer logic control ports in a looping configuration for the interchange of data between adjacent said multiplexer logic control ports; and

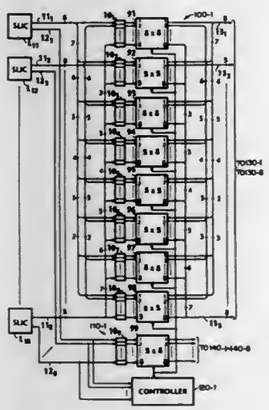
control means operatively coupled to each of said multiplexer logic control ports for controlling a flow of data into and out of each of said multiplexer logic control ports and between each of said multiplexer logic control ports.

5,189,666

BIT-SLICE ASYNCHRONOUS TRANSFER MODE SWITCHING SYSTEM

Manabu Kagawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 24, 1991, Ser. No. 645,990
Claims priority, application Japan, Jan. 25, 1990, 2-16817
Int. Cl.[5] H04Q *11/04*
U.S. Cl. 370—60 **5 Claims**



4. An asynchronous transfer mode (ATM) switching system comprising:

a routing memory for storing routing information;

a plurality of line circuit means for serially receiving an ATM cell through transmission lines, accessing said routing memory to produce a routing signal in response to receipt of said ATM cell, dividing the ATM cell into a control segment and payload segments, and arranging the control segment and the payload segments in parallel form, said control segment containing said routing signal;

an input-stage switching network comprising a plurality of first parallel switches having a plurality of sets of input terminals and a plurality of sets of output terminals, the input terminals of each set being connected in parallel to each of said line circuit means to simultaneously receive said control segment and said payload segments;

an input controller responsive to a control segment from one of said line circuit means for controlling the first parallel switches so that said control segment and associated payload segments are simultaneously transmitted through said first parallel switches to one of the sets of said output terminals;

an output-stage switching network comprising a plurality of second parallel switches having a plurality of sets of input terminals and a plurality of sets of output terminals, the input terminals of each set of the second parallel switches being connected to one of the sets of the output terminals of the input-stage switching network, the output terminals of each set of the second parallel switches being connected in parallel to each of a plurality of trunk circuits; and

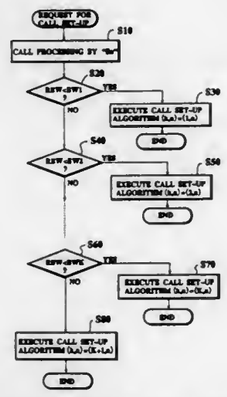
an output controller responsive to the control segment received in said input-stage switching network for controlling the output-stage switching network so that said payload segments are simultaneously transmitted through said second parallel switches to one of said trunk circuits.

5,189,667

METHOD AND APPARATUS FOR CONTROLLING CALL PROCESSING BASED UPON LOAD CONDITIONS

Hiroshi Esaki, Kanagawa, and Takashi Kamitake, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 10, 1991, Ser. No. 638,984
Claims priority, application Japan, Mar. 1, 1990, 2-47141
Int. Cl.[5] H04Q *11/04*
U.S. Cl. 370—60 **13 Claims**



1. A method for controlling call set-up operation in a packet data communication network comprising the steps of:

preparing a plurality of call set-up algorithms different from each other; and

selecting one call set-up algorithm of said call set-up algorithms suitable for a call set-up demand, depending upon at least a load condition of said packet data communication network, whereby said call set-up operation is carried out in accordance with said one call set-up algorithm selected.

5,189,668

ATM SWITCH AND ATM MULTIPLEXER

Masahiro Takatori, Kokubunji; Yukio Nakano, Hachioji; Yoshihiro Ashi, and Tadayuki Kanno, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 7, 1991, Ser. No. 741,588
Claims priority, application Japan, Aug. 10, 1990, 2-210346; Nov. 9, 1990, 2-302403
Int. Cl.[5] H04J *3/02*
U.S. Cl. 370—60 **30 Claims**

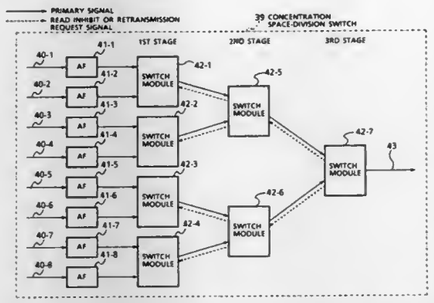
1. An ATM switch of an individual buffer type accommodating K (K is an integer not less than one) input highways and L (L is an integer not less than one) output highways, comprising L concentration space-division switches, each of said concentration space-division switches coupled to said K input highways and an output highway of said L output highways including a plurality of switch modules coupled to each other in an S-stage structure (S is an integer not less than one),

wherein each of said switch modules comprises:

M buffers respectively coupled to M inputs (M is an integer not less than one);

M buffer control circuits which conduct write and read control operations respectively on said M buffers;

a selector which selects an arbitrary one of outputs from said M buffers; and



a selector control circuit which issues an output instruction to an arbitrary one of said buffer control circuits and achieves a selector control operation associated therewith,

wherein said S-stage structure comprises:

S stages;

each of said stages except an S-th stage including switch modules, of said plurality of switch modules, a number of which is obtained by multiplying by at most M a number of switch modules in a stage subsequent thereto;

said S-th stage, which is a final stage, constituted with one switch module;

each of said stages except said S-th stage having outputs coupled to inputs of a stage subsequent thereto and said S-th stage having an output.

5,189,669

CELL TRANSFER APPARATUS AND METHOD USING A VARIABLE RATE CODEC

Masakatsu Nunokawa, Fujimi, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 12, 1990, Ser. No. 581,389
Claims priority, application Japan, Sep. 14, 1989, 1-239671
Int. Cl.[5] H04J *3/22*
U.S. Cl. 370—84 **16 Claims**

12. A cell transfer method using a variable rate codec in which information is encoded at a variable rate by the variable rate codec, and the encoded information is cellulated to packets having a fixed length and transferred in an asynchronous manner, comprising the steps of:

determining a sequence number of a cell corresponding to a present unit of encoding information by adding to a sequence number of a cell corresponding to a last unit of encoding information a weight corresponding to an encoding time of the last unit of encoding information when the cellulated information is to be sent; and

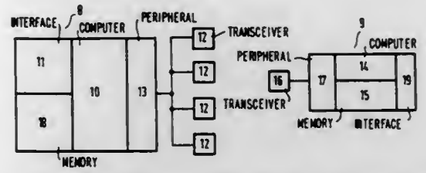
determining a reproduction timing in accordance with the sequence number of the cellulated information being received when same is to be reproduced.

5,189,670

DATA PACKET TRANSMISSION SYSTEM ACCOMMODATING DIFFERENT SUBSTATION RESPONSE TIMES

Andrew Inglis, Upwey, Australia, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 28, 1991, Ser. No. 647,327
Claims priority, application Australia, Jan. 30, 1990, PJ-8392
Int. Cl.[5] H04L *12/56*
U.S. Cl. 370—94.1 **12 Claims**



1. A system for transmitting data packets of mutually equal given duration over one or more transmission channels, comprising a main station and a plurality of substations, wherein said main station comprises means for transmitting on each transmission channel a synchronizing signal which indicates the beginning of a frame,

characterized in that said main station comprises programmable memory means for storing, with respect to each said channel, a maximum link establishment time and a maximum link termination time, and

each substation comprises programmable memory means for storing, with respect to each channel, said maximum link establishment time and said maximum link termination time,

dividing means, responsive to reception of said synchronizing signal on one of said channels, for subdividing said frame into a sequence of consecutive time slots of mutually equal durations at least equal to the sum of said given duration and the respective stored maximum link establishment and termination times for said one channel,

means for transmitting a selected data packet by selecting one time slot from said sequence of consecutive time slots; transmitting said selected data packet during a time period delayed after the beginning of said one time slot by a time duration equivalent to said stored maximum link establishment time, and terminating transmission of said packet at a time before the end of said selected time slot by a time duration equivalent to said stored maximum link termination time.

5,189,671

APPARATUS AND METHOD FOR FORMATTING VARIABLE LENGTH DATA PACKETS FOR A TRANSMISSION NETWORK

Eric M. Cheng, San Jose, Calif., assignor to Raynet Corporation, Menlo Park, Calif.

Filed Dec. 20, 1991, Ser. No. 812,171
Int. Cl.[5] H04J *3/26*
U.S. Cl. 370—94.1 **18 Claims**

8. A host terminal for assembling recurrent packets within recurrent data frames of information for transmission over a network from the host terminal to a variable number of network units, wherein each frame contains a programmed number of network unit packets which can vary from frame to frame, wherein each packet has a variable byte length which can change from frame to frame related to an amount of bandwidth required by each network unit, comprising:

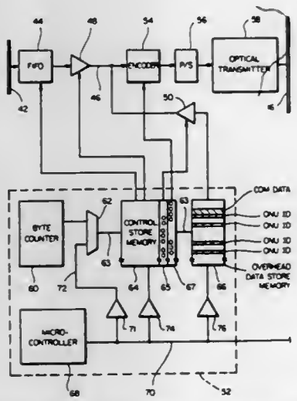
user data buffer storage means for storing user data bytes,

control memory means for storing a control pattern for controlling a format of the frames, the control memory

VOL 1147 ISS 4 FEB 23 1993 UMI

means having a number of addresses at least as large as a number of bytes in the information frame,

overhead memory means for storing frame overhead information at predetermined storage locations therein, the overhead memory means having a number of addresses at least as large as a number of bytes in the information frame, at least some of the frame overhead information comprising packet ID identifiers which are stored at numeric address locations within the overhead memory means so as to be sequentially spaced apart and so as to numerically coincide with frame address locations where each such packet ID identifier is to be located in the frame,



control byte counter means for generating and simultaneously applying sequential numeric address values to the control memory means and the overhead memory means, and

decoding logic means for decoding control bytes put out by the control memory means to control selective data output of the user data buffer storage means and the overhead memory means whereby each byte obtained from the overhead memory means is from a sequential address location corresponding to the sequential address value which generated its associated control byte so as to construct frames in accordance with the control pattern stored in the control memory means.

5,189,672

DEVICE FOR REGULATING THE THROUGHPUT OF VIRTUAL CIRCUITS ON AN ASYNCHRONOUS TIME-DIVISION MULTIPLEX TRANSMISSION CHANNEL

Denis Le Bihan, Lanmerin, France, assignor to Alcatel Cit, Paris, France

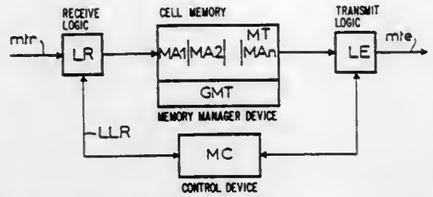
Continuation of Ser. No. 597,939, Oct. 12, 1990, abandoned. This application Jul. 24, 1992, Ser. No. 917,748

Claims priority, application France, Oct. 12, 1989, 89 13341

Int. Cl.[5] H04J *3/24*

U.S. Cl. 370—94.1 **10 Claims**

1. A device for regulating the throughput of virtual circuits carried by an asynchronous time-division multiplex channel in which incoming cells of an input asynchronous time-division multiplex channel, each belonging to one of said virtual circuits and including a header containing a destination indicator which can be used as a virtual circuit identifier, are routed to a cell memory comprising a plurality of virtual circuit buffer memories with each buffer memory associated with a respective one of said virtual circuits, each of said incoming cells being stored in the virtual circuit buffer memory associated with the virtual circuit to which the cell belongs, and all of said stored incoming cells being read from said virtual circuit buffer memories as outgoing cells of an output asynchronous time-division multiplex channel, characterized in that said device comprises control means for reading all of the stored cells from the buffer memories in an order such that cells belonging to a



given virtual circuit and read from a given virtual circuit buffer memory are spaced on average by at least a given interval associated with said given virtual circuit.

5,189,673

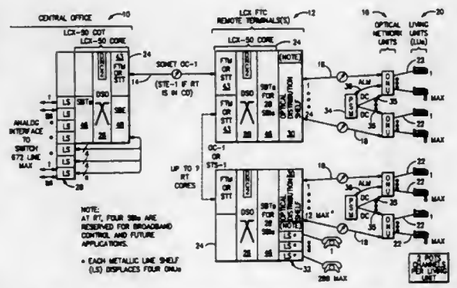
METHOD AND APPARATUS FOR CONTROLLING SWITCHED VIDEO IN AN OPTICAL FIBER TELECOMMUNICATIONS SYSTEM

Larry W. Burton; Joseph E. Sutherland, both of Raleigh; Paul M. Matsumura, Carrboro; Karen V. Ball, and Richard M. Czerwiec, both of Raleigh, all of N.C., assignors to Alcatel Network Systems, Inc., Richardson, Tex.

Filed Jul. 30, 1991, Ser. No. 738,181

Int. Cl.[5] H04J *3/02, 14/08*

U.S. Cl. 370—110.1 **7 Claims**



1. In an integrated communications network that provides narrowband signals and broadband switched signals to subscribers, a method comprising the steps of:

generating a control signal in response to a broadband signal selection made by a subscriber;

transmitting the control signal from the subscriber to a network unit over the lines providing the broadband signals;

combining said signal with other signals from other subscribers;

transmitting said combined signals as a broadband control signal in the narrowband;

combining broadband control signals from a plurality of network units to form a frame of broadband control signals;

transmitting said frame of broadband control signals to a broadband control unit; and

controlling the broadband switched signals in accordance with the generated control signal.

5,189,674

FAULT LOCATING SYSTEM CAPABLE OF QUICKLY LOCATING A FAULT IN A HIERARCHICAL COMMUNICATION NETWORK

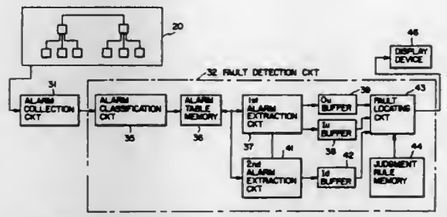
Hiroshi Shimizu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 11, 1990, Ser. No. 550,830

Claims priority, application Japan, Jul. 11, 1989, 1-179256; Aug. 8, 1989, 1-206518

Int. Cl.[5] G01R *31/28*

U.S. Cl. 371—20.1 **7 Claims**



1. A fault locating system for use in combination with a communication network which comprises a plurality of communication units structured in a hierarchy and divisible into a plurality of layers graded from an uppermost layer to a lowermost one, said fault locating system used to locate a fault when said fault occurs in said communication network, wherein each of said communication units, when there is no fault, is supplied with first and second input signals from upper and lower ones of said layers in the hierarchy, respectively, and supplies an output signal upwards of the hierarchy, said communication units producing fault information signals representative of whether or not the faults occur in said communication units and being rendered into faulty communication units on occurrence of the faults, each of said fault information signals being classifiable into first, second, and third alarm signals, said first and second alarm signals representing interruptions of said first and second input signals while said third alarm signal represents an interruption of said output signal, said fault locating system comprising:

classification means supplied with said fault information signals from said communication units for classifying each of said fault information signals into said first through said third alarm signals;

alarm signal memorizing means connected to said classification means for storing said first through said third alarm signals for every one of said communication units;

judgment rule memorizing means for memorizing a predetermined judgment rule for locating the fault;

alarm monitoring means connected to said alarm signal memorizing means for monitoring said alarm signal memorizing means to detect whether or not the first through the third alarm signals are stored in said alarm signal memorizing means and to output the first through the third alarm signals as first through third extracted signals when the first through third alarm signals are stored wherein, the first extracted signal is a selected one of the first and the third alarm signals sent from a first unit that is a highest one of the faulty communication units located at a highest layer among the faulty communication units, while the second extracted signal is a remaining one of the first and the third alarm signals sent from a second unit that logically forms a counterpart communication unit of said first unit in the hierarchy, and said third extracted signal is the second alarm signal of a third unit that belongs to a physically higher layer relative to said first and said second units; and

judging means connected to said alarm monitoring means and said judgment rule memorizing means for judging the fault from said first through said third extracted signals in accordance with said predetermined judgment rule to locate the fault.

5,189,675

SELF-DIAGNOSTIC CIRCUIT FOR LOGIC CIRCUIT BLOCK

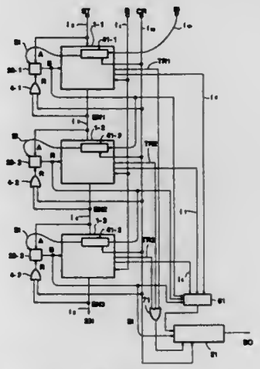
Yasuyuki Nozuyama, Tokyo, and Akira Nishimura, Kanagawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 370,036, Jun. 22, 1989, abandoned. This application Feb. 14, 1992, Ser. No. 834,988

Claims priority, application Japan, Jun. 22, 1988, 63-154017

Int. Cl.[5] H04B *17/00*

U.S. Cl. 371—22.3 **5 Claims**



4. A self diagnostic circuit comprising:

(a) a plurality of logic circuits, connected in a given order to be diagnosed, each logic circuit of said logic circuits including a circuit for generating a diagnostic input pattern for said each logic circuit and an end signal generating circuit for generating an end signal from said logic circuit and said each logic circuit being diagnosed according to an end signal sent from a logic circuit of said logic circuits which is in a preceding location in said given order;

(b) a first storage circuit, coupled to said logic circuits, for storing information indicating that diagnosis of at least one logic circuit of said logic circuits is being executed;

(c) a second storage circuit, coupled to said logic circuits, for storing information of diagnostic results from said logic circuits, said first and second storage circuits receiving input signals for storage according to a scan operation mode signal; and

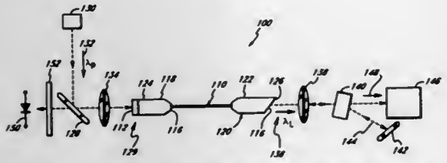
(d) a scan chain circuit for connecting said first and second storage circuits and diagnostic input pattern generating and end signal generating circuits in a predetermined order, said scan chain circuit supplying scan-in data to said first and second storage circuits and to said diagnostic input pattern generating and end signal generating circuits for setting said scan-in data in said storage circuits and in said diagnostic input pattern generating and end signal generating circuits,

said scan-in data being supplied through said scan chain circuit to said storage circuits and diagnostic input pattern generating and end signal generating circuits while a scan operation mode signal is supplied to said scan chain circuit, then, after said scan-in data is set in said storage circuits and diagnostic input pattern generating and end signal generating circuits, said scan operation mode signal is released, thus selectively causing diagnosis of a specific logic circuit of said logic circuits in response to said diagnostic input pattern generating circuit of said specific logic circuit and subsequent generation of said end signal

VOL 1147 ISS 4 FE 23 1993 UMI

from said end signal generating circuit of said specific logic circuit.

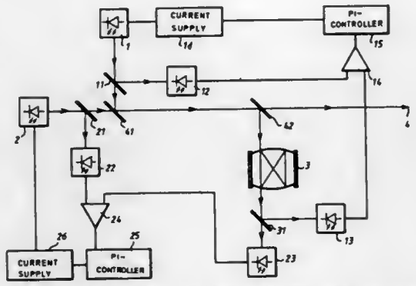
5,189,676
BROADBAND LASER SOURCE
Paul F. Wysocki, Stanford; Michel J. F. Digonnet, Palo Alto, and Byoung Y. Kim, Menlo Park, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.
Filed Sep. 6, 1989, Ser. No. 403,703
Int. Cl.[5] H01S *3/30*
U.S. Cl. 372—6 **39 Claims**



1. A broadband laser source having a source optical spectrum with a source linewidth, comprising:
a resonant cavity having a waveguide comprising a medium which emits radiation in an emission spectrum comprising optical energy in a continuum of frequencies, in response to application of pump energy to said lasing medium said radiation having an emission linewidth that is significantly narrower than said source linewidth;
a source of pump energy for producing said optical energy; and
a frequency modulator having an optical passband which frequency shifts radiation passing through said resonant cavity, within said optical passband, said optical passband being narrower than said source linewidth and being sufficiently wide to encompass at least a substantial portion of the continuum of frequencies, said modulator repetitively shifting the continuum of frequencies within the passband as radiation passes repetitively through said cavity, said modulator varying said passband to shift said continuum of frequencies within the passband from one side of said source optical spectrum to the other to provide said source linewidth, the passband being varied at a rate which is sufficiently slow to permit the repetitively shifted continuum of frequencies to substantially continuously remain within the varying passband as said continuum of frequencies is shifted from one side of the source optical spectrum to the other.

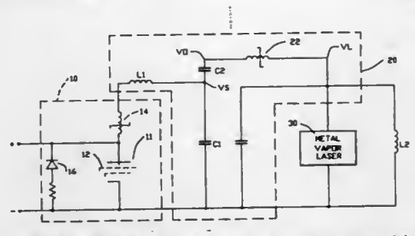
5,189,677
ARRANGEMENT HAVING TWO LASER DIODES FOR GENERATING LIGHT HAVING TWO WAVELENGTHS
Uwe Yry, Aalen, Fed. Rep. of Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Fed. Rep. of Germany
Filed Dec. 16, 1991, Ser. No. 808,221
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1990, 4039955
Int. Cl.[5] H01S *3/10*
U.S. Cl. 372—23 **6 Claims**

1. An arrangement for generating light having two wavelengths, the arrangement comprising:
first and second laser diodes for generating first and second beams of light having respective wavelengths;
polarizing means for polarizing said first and second beams relative to each other and superposing said first and second beams into one beam;
splitter means for splitting off respective primary components and respective secondary components from said one beam;
a Fabry-Perot interferometer having first and second transmission maxima;
optical means for coupling respective first portions of said primary components defining said one beam into said interferometer;
first and second photodiodes arranged downstream of said interferometer for receiving said first portions, respectively;



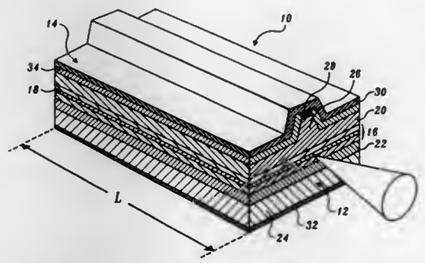
first control means for coacting with said first photodiode and said first secondary component for stabilizing said first laser diode on said first transmission maximum;
second control means for coacting with said second photodiode and said second secondary component for stabilizing said second laser diode on said second transmission maximum; and,
said optical means being adapted to supply respective second portions of said primary components not coupled into said interferometer as the output of said arrangement.

5,189,678
COUPLING APPARATUS FOR A METAL VAPOR LASER
Don G. Ball, Livermore, and John L. Miller, Dublin, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.
Filed Sep. 29, 1986, Ser. No. 915,197
Int. Cl.[5] H01J *3/10*
U.S. Cl. 372—28 **7 Claims**



1. Coupling apparatus for a metal vapor laser comprising
thyratron means for generating a first series of voltage pulses having a first amplitude and a first high repetition rate,
coupling means responsive to said first series of pulses for increasing said amplitude to a second amplitude higher than said first amplitude, thereby forming a second series of pulses at said first repetition rate, said coupling means for coupling said second series of pulses having said second amplitude to said metal vapor laser wherein said coupling means include peaking switch means for coupling said second series of pulses to said laser,
first capacitor means for charging to a first voltage corresponding approximately to said first amplitude, second capacitor means for charging to a second voltage corresponding to said first amplitude, and
means for connecting in series said charges on said first and second capacitor means to said metal vapor laser, thereby increasing said first amplitude to said second amplitude.

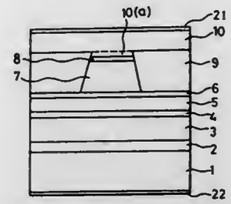
5,189,679
STRAINED QUANTUM WELL LASER FOR HIGH TEMPERATURE OPERATION
Pamela L. Derry, Renton; Chi-Shain Hong, Bellevue; Eric Y. Chan, Mercer Island; Luis Figueroa, Bellevue, all of Wash., and R. Jennhwa Fu, Mendham, N.J., assignors to The Boeing Company, Seattle, Wash.
Filed Sep. 6, 1991, Ser. No. 756,193
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—45 **11 Claims**



1. A semiconductor laser, comprising:
a substrate on which is defined a layered semiconductor structure including an active region of length L, the active region comprising a quantum well surrounded by optical confining layers, and cladding layers;
first and second electrodes through which an electrical current flows to excite the active region;
the active region further comprising front and rear faces, the rear face having a high reflectivity coating thereon, the length L and the reflectivity R of the front end face being selected as a function of a threshold carrier density and a desired operating temperature of up to 100° C., as determined by computer modeling the operation of the laser so as to minimize a plurality of parameters, including:
(a) a threshold current density;
(b) the length;
(c) a threshold current; and
(d) power consumption;
said plurality of parameters (a) through (d) being minimized and selected consistent with achieving a design output power at the desired operating temperature, such that the laser is capable of operating reliably and producing the design output power at the desired operating temperature for at least 2000 hours.

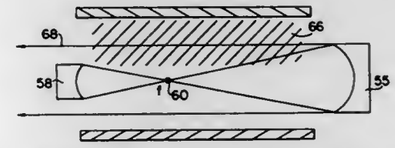
5,189,680
VISIBLE LIGHT LASER DIODE
Tatsuya Kimura, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 4, 1991, Ser. No. 754,658
Claims priority, application Japan, Apr. 16, 1991, 3-112543
Int. Cl.[5] H01S *3/19*
U.S. Cl. 372—46 **7 Claims**

1. A semiconductor laser comprising:
an n-type GaAs substrate having a lattice constant a;
an n-type AlGaInP first cladding layer having a first lattice constant a;
an undoped GaInP active layer having a second lattice constant;
a p-type AlGaInP second cladding layer containing Zn as a dopant impurity and having a third lattice constant;
a p-type GaAs contacting layer, said layers being serially arranged physically and electrically; and
a first electrode disposed on the substrate and a second electrode disposed on the contacting layer wherein the first and second lattice constants are substantially equal to a and the ratio of the third lattice to a falls within a range of 2×10^{-3} to 1×10^{-2} when the third lattice constant is



larger than a and a range of 5×10^{-3} to 2×10^{-2} when the third lattice constant is smaller than a, whereby Zn diffusion into the active layer is inhibited.

5,189,681
HIGH POWERED LASER WITH REDUCED OPTICAL ABERRATION
Paul R. Blaszuk, Lebanon, Conn., assignor to United Technologies Corporation, Hartford, Conn.
Filed Oct. 23, 1991, Ser. No. 781,771
Int. Cl.[5] H01S *3/08*
U.S. Cl. 372—95 **12 Claims**



1. An unstable optical resonator assembly for use with a laser having an optical cavity with a gaseous gain medium located therein, said gaseous gain medium having opposed electrical excitation electrodes adjacent to said optical cavity extending along a portion of an optic axis, said gaseous gain medium having a first region at a first temperature and a second region adjacent to one of said electrodes at a second temperature, said unstable optical resonator assembly comprising:
a first mirror positioned at a first end of the optical cavity having a focus therein located along said optic axis;
a second mirror positioned opposed to said first mirror at a second end of the optical cavity, said second mirror having a focus therein substantially at said first mirror focus;
said first and second mirrors configured to invert an optical beam transiting therebetween thereby having said optical beam substantially avoid said second gaseous gain medium region.

5,189,682
METHOD FOR INCREASING THE EFFICIENCY OF A DIRECT CURRENT ELECTRIC ARC FURNACE
Toshimichi Maki, and Takato Matsuo, both of Kawasaki, Japan, assignors to NKK Corporation, Tokyo, Japan
Division of Ser. No. 601,997, Oct. 23, 1990, Pat. No. 5,138,629.
This application Mar. 26, 1992, Ser. No. 857,737
Claims priority, application Japan, Oct. 23, 1989, 1-273666
Int. Cl.[5] H05B *7/22*
U.S. Cl. 373—64 **4 Claims**

1. A method for increasing the efficiency of a direct current electric arc furnaces by substantially maintaining the arc at the center of the furnace comprising:
providing a main body having;
a vertical axis;
a top section having a center portion positioned on said vertical axis; and

VOL 1147 ISS 4 FEB 23 1993 UMI

a bottom section adapted to hold a molten steel bath, said molten steel bath having a top surface, and said bottom section having a center portion positioned on said vertical axis below said top portion;

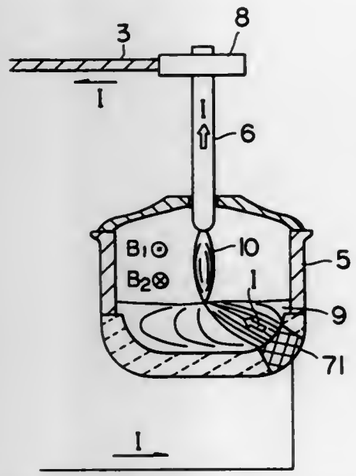
connecting an electrical feed system to feed a direct current to said main body, said electrical feed system including:

a movable electrode having a diameter and a central portion, said movable electrode being positioned in said main body above said top surface of said molten steel bath; and

a bottom electrode having a diameter and a central portion, said bottom electrode being attached to the bottom section of the main body;

flowing the direct current through said electrical feed system to said movable and bottom electrodes to create an arc substantially on the vertical axis of said main body between said top surface of said molten steel bath and the movable electrode;

positioning said central portion of the bottom electrode to be spaced apart by a distance "d" from the vertical axis of the main body in a direction perpendicular to said vertical



axis, thereby creating a flow of direct current in said electrical feed system that induces a first force in said molten steel bath which acts in a first direction to move the arc away from said vertical axis of the main body;

cancelling at least a portion of the first force by producing a second force in said molten steel bath which acts in a second direction at least partially opposing said first force, said second force being created by positioning said central portion of the bottom electrode with said distance "d" from the vertical axis of said main body which causes an induced current to flow in said molten steel bath when said direct current flows through said electrical feed circuit, said induced current flowing between a portion of the top surface of the molten steel bath that is substantially directly below said arc and said bottom electrode, the flow of said induced current in said molten steel bath including said second force in said molten steel bath; and

selecting the distance "d" to control the induced current flowing in said molten steel bath, thereby controlling said second force whereby a position of said arc substantially on said vertical axis is maintained by controlling said second force to at least partially oppose said first force.

5,189,683

TRANSCEIVER PROVIDING SELECTABLE FREQUENCIES AND SPREADING SEQUENCES

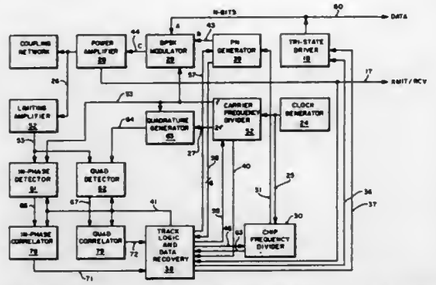
Brooks E. Cowart, Mountain View, Calif., assignor to Echelon Corporation, Palo Alto, Calif.

Continuation of Ser. No. 684,038, Apr. 11, 1991, Pat. No. 5,146,471, which is a continuation of Ser. No. 567,232, Aug. 13, 1990, Pat. No. 5,029,180, which is a continuation-in-part of Ser. No. 328,058, Mar. 23, 1989, Pat. No. 4,979,183. This application Jan. 30, 1992, Ser. No. 830,121

The portion of the term of this patent subsequent to Dec. 18, 2007, has been disclaimed.

Int. Cl.[5] H04K *1/00*

U.S. Cl. 375—1 **8 Claims**



1. An integrated circuit for transmitting and receiving digital information across various communications media comprising:

a frequency means for generating a reference frequency;

transmitter means for locking a digital bit stream, a carrier signal and a predetermined chip sequence to produce a spread spectrum signal for transmission to another integrated circuit;

receiver means for acquiring and decoding a previously transmitted spread spectrum signal using a local carrier signal and a local predetermined chip sequence to recover said digital bit stream; and

wherein said carrier signal and said predetermined chip sequence are substantially identical to said local carrier signal and said local predetermined chip sequence, respectively, and each are derived from an integral multiple of said reference frequency.

5,189,684

LINE SIGNAL DETERIORATION REMOVING SYSTEMS

Takashi Kaku, Tama; Hiroki Kishimoto, and Kyoko Hirao, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

PCT No. PCT/JP90/00735, § 371 Date Oct. 2, 1990, § 102(e) Date Oct. 2, 1990, PCT Pub. No. WO90/16117, PCT Pub. Date Dec. 27, 1990

PCT Filed Jun. 6, 1990, Ser. No. 582,207

Claims priority, application Japan, Jun. 13, 1989, 1-151273; Jun. 13, 1989, 1-151274

Int. Cl.[5] H03H *7/30*

U.S. Cl. 375—14 **11 Claims**



1. A line signal deterioration removing system supplied with a receiving signal on a transmission line, comprising:

an automatic equalizer for removing intersymbol interference from the receiving signal on the transmission line to provide an equalized signal;

phase jitter interference removing means, operatively coupled to said automatic equalizer, for receiving the equalized signal, for compensating for phase jitter interference in the equalized signal between at least two phase jitters generated when said phase jitter is supplied to said automatic equalizer, and for providing a phase-jitter-interference-conditioned signal;

phase jitter removing means, operatively coupled to said phase jitter interference removing means, for receiving the phase-jitter-interference-conditioned signal and for removing phase jitter included in the phase-jitter-interference-conditioned signal to provide a phase-jitter-conditioned signal; and

deciding means, operatively coupled to said phase jitter removing means, for receiving the phase jitter-conditioned signal, for compensating for the intersymbol interference and the phase jitter from the phase-jitter-conditioned signal and for deciding a maximum likelihood signal point based on the phase-jitter-conditioned signal.

5,189,685

FAST COUNTER/DIVIDER AND ITS USE IN A SWALLOWER COUNTER

Jean-Luc Jaffard, Saint Egreve; Loïc Lietar, Paris, and Michel Mouret, Jarry, all of France, assignors to SGS-Thomson Microelectronics, S.A., Gentilly, France

Filed Sep. 11, 1991, Ser. No. 758,830

Claims priority, application France, Sep. 12, 1990, 90 11511

Int. Cl.[5] H03K *23/66*

U.S. Cl. 377—48 **4 Claims**

1. A counter/divider dividing an input frequency (F1) by $2^{q+n}+\frac{1}{2}$, comprising:

a first divider by 2^q receiving the signal to divide of frequency F1 and providing 2^{q+1} outputs at the frequency $F1/2^q$ out of phase the ones to the others of $360°/2^{q+1}$;

a multiplexer having a control terminal and sequentially providing at its output each of said 2^{q+1} outputs each time a control signal is applied to said terminal; and

a second divider by 2^n receiving the output of the multiplexer and providing the desired output of the counter/divider, this output being applied to said terminal;

means to inhibit the operation of the multiplexer whereby a same output of the first divider is permanently provided to the input of the second divider and whereby the division rate of the counter/divider is 2^{q+n}.

5,189,686

ADJUSTABLE MOUNTING BASE FOR MAMMOGRAPHIC SPOT COMPRESSION AND MAGNIFICATION PLATFORM

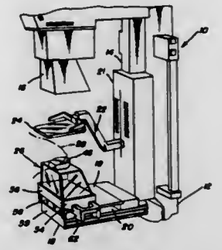
Gordon L. Hixson, Sr., Chattanooga, Tenn., assignor to American Mammographics, Inc., Chattanooga, Tenn.

Continuation-in-part of Ser. No. 736,068, Jul. 25, 1991, Pat. No. 5,136,623. This application Nov. 25, 1991, Ser. No. 797,386

Int. Cl.[5] G21K *1/02*

U.S. Cl. 378—37 **5 Claims**

1. A spot compression and magnification device positionable on the cover of at least two different size cassette holders selectively disposed on the breast supporting platform of mammographic apparatus for aiding in the spot compression of the breast of a female patient to provide x-ray images of localized portions of the breast, each of said covers being spaced above said platform and defining a tunnel therebetween, said device comprising a base having a polygonical cross section configuration including an upper platform and an open bottom defined between upstanding peripheral planar skirts, an aperture formed in said upper platform, an upstanding pedestal extending from said platform superposed about said aperture, said pedestal having an upstanding peripheral wall and a flat top surface adapted for receiving the lower portion of said breast, adjustable clamping means for adjustably attaching said device to the cover of either of said at least two cassette holders, means including biasing means for connecting said clamping means to said base and for permitting said clamping means to be extended manually from said base and resiliently urged



toward said base, said clamping means including first and second sets of tongues disposed below the plane of said open bottom and projecting in a direction toward the interior of said base, each tongue of said sets of tongues having an upper surface and at least said first set of tongues having a lower surface spaced from the upper surface of a corresponding tongue of said second set, said first set of tongues being disposed closer to said base than said second set for entering into said tunnel and for engaging the upper surface of the respective tongue of said first set with a lower surface of the cover of a smaller of said holders when said base is positioned on the cover of said smaller holder, and said second set of tongues being disposed for entering into said tunnel and engaging the upper surface of the respective tongue of said second set with the lower surface of the cover of a larger of said holders when the lower surface of said first tongues is disposed on the cover of said larger holder.

5,189,687

APPARATUS FOR STEREOTACTIC RADIOSURGERY

Frank J. Bova, and William A. Friedman, both of Gainesville, Fla., assignors to University of Florida Research Foundation, Inc., Alachua, Fla.

Continuation of Ser. No. 353,816, May 18, 1989, Pat. No. 5,027,818. This application Jun. 4, 1991, Ser. No. 709,812

Claims priority, application PCT Int'l Appl., Dec. 2, 1988, PCT/US88/04303

The portion of the term of this patent subsequent to Jul. 2, 2008, has been disclaimed.

Int. Cl.[5] A61N *5/10*

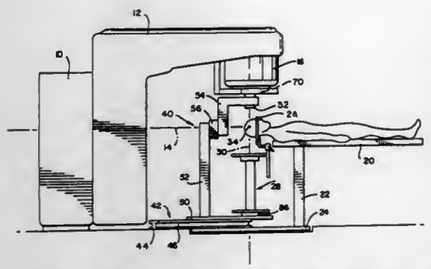
U.S. Cl. 378—65 **19 Claims**

1. Stereotactic radiosurgery apparatus comprising:

a gantry supported for rotation about a gantry axis, the gantry having a radiation-emitting head for movement in an arc in a radiation plane about a center point corresponding to an intersection of the gantry axis and the radiation plane, said gantry axis being normal to said radiation plane;

a collimator disposed to focus radiation from said radiation-emitting head on said center point; and

collimator linking means for linking movement of said collimator to said radiation-emitting head for automatic rotation of said collimator in said radiation plane and about said gantry axis upon rotation of said gantry, and wherein said collimator linking means allows movement of said



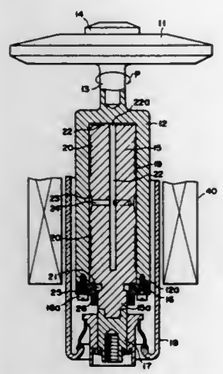
collimator relative to said radiation emitting head, said collimator linking means includes a linking member connected to said collimator, said linking member allowing said collimator to track rotation of said gantry with no or minimal transfer of positioning inaccuracies from said gantry to said collimator.

5,189,688

ROTARY-ANODE TYPE X-RAY TUBE

Katsuhiro Ono, Utsunomiya; Hidero Anno; Hiroyuki Sugiura, both of Ootawara; Takayuki Kitami, Tochigi, and Hiroaki Tazawa, Ootawara, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 27, 1991, Ser. No. 766,069
Claims priority, application Japan, Oct. 5, 1990, 2-266268
Int. Cl.[5] H01J *35/26*
U.S. Cl. 378—133 **13 Claims**



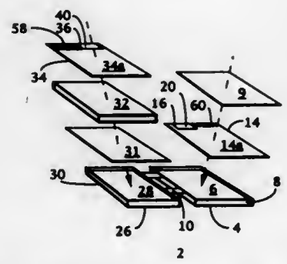
1. A rotary-anode type X-ray tube comprising:
an anode target;
a rotary structure to which said anode target is fixed;
a stationary structure, coaxially arranged with said rotary structure, for rotatably supporting said rotary structure;
a hydrodynamic bearing formed between said rotary structure and said stationary structure, said hydrodynamic bearing having a first gap in which a metal lubricant is applied, the metal lubricant being in liquid state during rotation of said rotary structure;
a vacuum envelope in which said rotary and stationary structures and said hydrodynamic bearing are installed; and
separating means for separating metal lubricant and gas bubbles formed therein, said separating means including a first annular space formed between said rotary structure and stationary structure and communicating with the first gap, a second gap formed between said rotary structure and stationary structure, the second gap communicating the annular space with an inner space of the vacuum envelope, and the second gap being narrower than the annular space.

5,189,689

FILM CASSETTE HAVING MARKER FOR IDENTIFYING THE EXPOSURE SIDE OF A MEDICAL RADIOGRAPH

Carl E. Fabian, 577 NE. 96th St., Miami Shores, Fla. 33138

Continuation of Ser. No. 572,392, Aug. 27, 1990, Pat. No. 5,077,778. This application Nov. 4, 1991, Ser. No. 791,778
The portion of the term of this patent subsequent to Dec. 31, 2008, has been disclaimed.
Int. Cl.[5] H05G *1/28*
U.S. Cl. 378—162 **22 Claims**



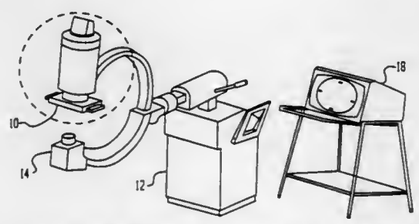
11. A light-opaque marker appointed for installation on the active side of an intensifying screen disposed in an X ray film cassette, said marker having an adhesive coating adapted for permanent contact with said active side of said intensifying screen.

5,189,690

FLUOROSCOPY ORIENTATION DEVICE

Ronald Samuel, 46 Township Line Rd. Apt. 301, Elkins Park, Pa. 19117

Filed Sep. 9, 1991, Ser. No. 757,036
Int. Cl.[5] H05G *1/28*
U.S. Cl. 378—162 **20 Claims**



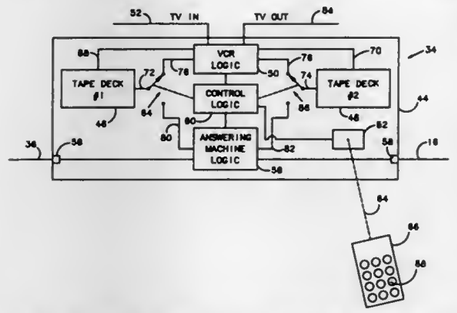
1. A device for assisting an operator of a fluoroscope in orienting said fluoroscope on an object during a fluoroscopic examination, said fluoroscope comprising a fluoroscopic x-ray emission tube, a receiver tube, and a monitor operatively coupled to said receiver tube for displaying a radiographic image of an internal structure of said object, which device comprises:
a sheet transparent to x-ray radiation, said sheet possessing orientation indication means; and
means for positioning said sheet between said object and said receiver tube, said positioning means being attached to said fluoroscope;
wherein a surface of said x-ray transparent sheet contains a cavity for receiving an x-ray transparent disc and means for securing said disc in said cavity, said disc possessing said orientation indication means.

5,189,691

VCR WITH VIDEO PHONE ANSWERING CAPABILITY

R. Terren Dunlap, Scottsdale, Ariz., assignor to Go-Video, Inc., Scottsdale, Ariz.

Filed Aug. 30, 1991, Ser. No. 753,228
Int. Cl.[5] H04M *1/64;* **G11B** *31/00;* **H04N** *7/14*
U.S. Cl. 379—70 **9 Claims**



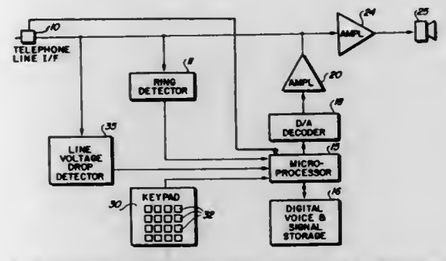
1. An answering machine for unattended answering of a video telephone system comprising:
a) first video read and write deck means for containing a video cassette tape and for writing video signals onto said video cassette tape and for reading video signals therefrom;
b) second video read and write deck means for containing a video cassette tape and for writing video signals onto said video cassette tape and for reading video signals therefrom;
c) input means connected to a telephone line for receiving incoming video telephone calls;
d) output means connected to a telephone line input of the video telephone system for bi-directionally communicating with the video telephone system; and,
e) answering logic means connected to said first video read and write deck means, said second video read and write deck means, said input means, and said output means for recording outgoing video answering messages onto said video cassette tape of said first video read and write deck means, for answering incoming calls on said telephone line, for playing contents of said video cassette tape of said first video read and write deck means to incoming callers on said telephone line, for recording incoming video messages onto said video cassette tape of said second video read and write deck means, and for playing back recorded incoming video messages on said video cassette tape of said second video read and write deck means to a user; wherein additionally,
f) said first video read and write deck means and said second video read and write deck means comprise tape decks of a dual-deck video cassette recorder (VCR); and,
g) said dual-deck VCR includes television connection logic means for operably connecting said first video read and write deck means and said second video read and write deck means to a television signal input of a broadcast television set; and additionally comprising,
h) switching means for selectively switching connections from said first video read and write deck means and said second video read and write deck means between said television connection logic means and said answering logic means whereby said dual-deck VCR can be used in conjunction with broadcast television viewing and recording and in conjunction with video telephone answering; and,
i) control means for selectively switching said switching means between an answering mode with said answering logic means connected to said first video read and write deck means and said second video read and write deck means and a VCR mode with said television connection logic means connected to said first video read and write deck means and said second video read and write deck means.

5,189,692

TELEPHONE OPERATOR SIMULATOR

George Ferrara, 8213 E. LaJunta Rd., Scottsdale, Ariz. 85255

Filed Apr. 26, 1991, Ser. No. 691,819
Int. Cl.[5] H04M *1/64*
U.S. Cl. 379—8.8 **8 Claims**



1. A telephone operator simulator system at a called party location for interfacing with incoming calls on a telephone line, including in combination:
storage means for storing at lest first and second predetermined response messages;
control means coupled with said storage means, and with said telephone line for delivering said predetermined response messages from said storage means to said telephone line;
ring detector means coupled with said telephone line for enabling said control means for operation;
manually operated selection means coupled with said control means for supplying selection signals to said control means enabled by said ring detector means to cause said control means to produce a first "off-hook" condition on said telephone line and to deliver selected response messages from said storage means to said telephone line after said first "off-hook" condition has been produced;
means coupled to said telephone line for monitoring incoming messages and response messages appearing on said telephone line; and
second detector means coupled with said telephone line for disabling said control means in response to a second "off-hook" condition occurring on said telephone line to prevent further supply of response messages from said storage means to said telephone line in response to detection of predetermined line electrical variations, whereby normal voice conversation between a called party and a calling party thereafter may take place on said telephone line.

5,189,693

REMOTE CONTROL FACSIMILE APPARATUS WITH REMOTELY SET OPERATION MODE

Masato Nakajima, Kanagawa, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Mar. 20, 1991, Ser. No. 672,321
Claims priority, application Japan, Mar. 22, 1990, 2-69737
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—100 **5 Claims**

1. A remote-controlled facsimile apparatus in which a predetermined operation mode corresponding to number information received from an external calling unit via a telephone line

VOL 1147 ISS 4 FE 23 1993 UMI

is executed only when said facsimile apparatus is set in a predetermined condition, said facsimile apparatus comprising:

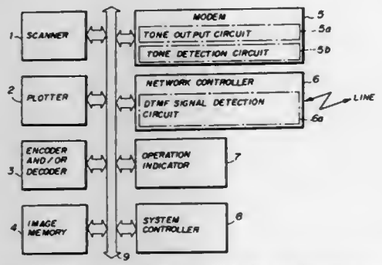
memory means for storing various service codes corresponding to the number information being received from the calling unit via the telephone line;

first control means for controlling connection of said facsimile apparatus to the telephone line, said first control means including a DTMF signal detection circuit for detecting the reception of a DTMF signal transmitted from the calling unit via the telephone line;

second control means, coupled to said first control means and said memory means, for controlling the overall operations of said facsimile apparatus, said second control means executing a predetermined operation mode corresponding to the number information being received from the calling unit via the telephone line only when aid facsimile apparatus is set in the predetermined condition; and

a modem unit, coupled to said first and second control means, for modulating a carrier signal and for demodulating a modulated carrier signal, said modem unit including a tone output circuit for outputting various procedure signals used by said first control means, and for outputting various signal sounds to the calling unit via the telephone line in response to the number information received from the calling unit,

wherein said tone output circuit outputs an acknowledgment signal sound to the calling unit via the telephone line when an image transference request is specified by a DTMF signal received by said first control means and an image



data to be transferred is stored in an image memory provided in said facsimilie apparatus,

wherein said tone output circuit outputs a non-acknowledgment signal sound to the calling unit via the telephone line when said acknowledgment signal sound has been output by said tone output circuit and a telephone number of a facsimile unit to which the image data stored in the image memory is to be transferred is not correctly specified by a DTMF signal received by said first control means,

wherein said tone output circuit outputs an inexecutability signal sound to the calling unit via the telephone line when the image transference request is specified by the DTMF signal received by said first control means and no image data to be transferred is stored in the image memory, said inexecutability signal sound being different from said non-acknowledgement signal sound and being recognizable to an operator at the calling unit for indicating that the facsimile apparatus has not been set in the predetermined condition, and

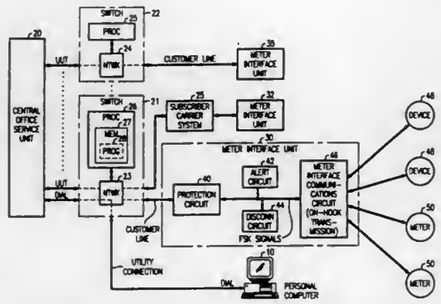
wherein said tone output circuit outputs an executability signal sound to the calling unit via the telephone line when said telephone number of said facsimile unit to which the image data stored in the image memory is to be transferred is correctly specified by the DTMF signal received by said first control means, said executability signal sound being different from said acknowledgement signal sound and being recognizable to an operator at the calling unit for indicating that said facsimile apparatus has been set in the predetermined condition.

5,189,694

TELEMETRY ACCESS ARRANGEMENT

Stuart M. Garland, Morton Grove, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 31, 1990, Ser. No. 576,542
Int. Cl.[5] H04M *11/00*
U.S. Cl. 379—106 **19 Claims**



6. A method of accessing a customer premises device from a data accessing device via a telecommunications switching system said telecommunications switching system comprising a voice band signal switching network for switchably interconnecting multiplicities of inlets and multiplicities of outlets, said inlets for connection to interoffice telecommunications trunks, said outlets for connection to analog customer lines, the method comprising:

determing that a class of service for an inlet connected to said data accessing device is a class of service requiring establishment of a suppressed ringing connection;

establishing a suppressed ringing connection from said inlet to an outlet of said voice band signal switching network for connecting said data accessing device to an analog customer line connected to station equipment of a customer; and

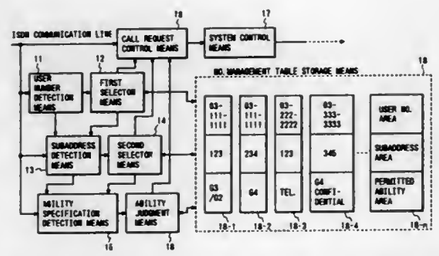
transmitting signals over said suppressed ringing connection for accessing said customer premises device over said analog line from said data accessing device.

5,189,695

COMMUNICATION TERMINAL UNIT FOR CONNECTION TO AN ISDN

Yoshihiro Maei, Saitama, Japan, assignor to Fujl Xerox Co., Ltd., Tokyo, Japan

Filed Sep. 9, 1991, Ser. No. 757,027
Claims priority, application Japan, Sep. 10, 1990, 2-237142
Int. Cl.[5] H04M *1/66, 11/00*; H04J *3/12, 3/24*
U.S. Cl. 379—199 **5 Claims**



1. A communication terminal unit whose response is limited by a call set-up signal sent from an ISDN (Integrated Services Digital Network), said communication terminal unit comprising:

number management table storage means for storing at least one number management table, said number management table including a user number area, a subaddress area, and an accepted ability area for designating at least one ability;

user number detection means for detecting a user number included in said call set-up signal;

subaddress detection means for detecting a subaddress included in said call set-up signal;

selector means for selecting at least one number management table storing both the user number detected by said user number detection means in a user number area of said at least one number management table and the subaddress detected by said subaddress detection means in a subaddress area of said at least one number management table;

ability specification detection means for detecting ability specification information included in said call set-up signal;

ability judgment means for judging whether an ability specified by said ability specification information is designated in an accepted ability area of said at least one number management table selected by said selector means; and

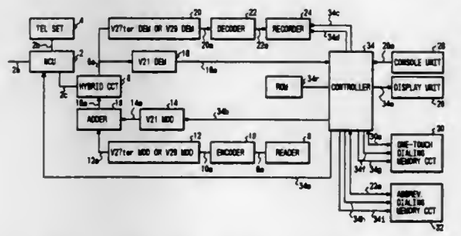
call request control means for either accepting or declining a call request in accordance with the results of the selection made by said selector means and the judgement made by said ability judgment means.

5,189,696

DATA COMMUNICATION APPARATUS

Takehiro Yoshida, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1991, Ser. No. 689,522
Int. Cl.[5] H04M *11/00, 1/66*
U.S. Cl. 379—355 **10 Claims**



1. A data communication apparatus comprising:

memory means capable of storing telephone number data and also information representing data communication permissible telephone number data;

dialing means for executing a dialing operation in accordance with the telephone number data stored in said memory means;

receiving means for receiving telephone number data of a partner station sent from the partner station;

instructing means for instructing a dialing operation based on the telephone number data stored in the memory means; and

control means for controlling the dialing operation in response to an instruction of said instruction means, and for, upon reception of a call, comparing telephone number data of a partner station received by said receiving means with the telephone number data stored in the memory means to control data communication in accordance with a comparison result;

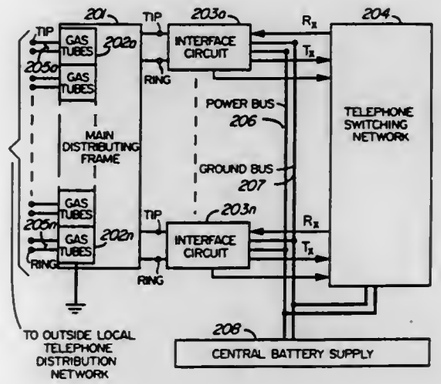
wherein when a dialing operation is executed by an instruction of said instruction means, said control means judges whether or not the information is stored in said memory means, and if it is judged that the information is stored, said control means prohibits the dialing operation.

5,189,697

LINE INTERFACE CIRCUIT

Tapan K. Das; Oguz Ozkan, both of Brampton, and George S. Fung, Concord, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 30, 1990, Ser. No. 516,596
Int. Cl.[5] H02H *3/20*; H04M *19/00*
U.S. Cl. 379—413 **7 Claims**



1. A line interface circuit, for supplying energizing direct current from a power source via tip and ring leads of a two wire communications line connected with a telephone apparatus, and for coupling alternating current signals between the telephone line and an associated telephone facility, the line interface circuit comprising:

tip and ring terminals for connection to the tip and ring leads;

power terminals for connection to the power source;

coupling means being connected in series with the tip and ring terminals for providing paths for the energizing direct current and for the alternating current signals;

an active tip feed means being connected in series between the tip terminal and the coupling means, and

an active ring feed means being connected in series between the ring terminal and the coupling means;

the active tip feed means and the active ring feed means each comprising:

a line terminal connected at a respective one of the tip and ring terminals, and an interface terminal connected to the coupling means;

passive and active resistance elements being connected in series between the line and interface terminals, the passive resistance element being of a resistance value corresponding to a predetermined fraction of the predetermined resistance;

a reference voltage divider connected between the line and interface terminals and defining a reference voltage tap; and

valving control means being responsive to a reference voltage at the reference voltage tap, for adjusting the resistance of the active resistance element to a value which in summation with the resistance of the passive resistance element provides the predetermined resistance, and being responsive to an occurrence of an excess of voltage at the reference voltage tap, for adjusting the resistance of the active resistance element toward infinity, whereby current flow via the active feed means is substantially shut OFF.

VOL 1147 ISS 4 FE 23 1993 UMI

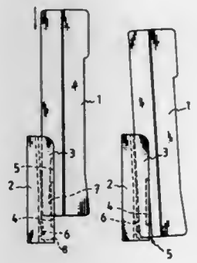
5,189,698

HOLDER SUITABLE FOR PREVENTING INADVERTENT DETACHMENT OF A TELEPHONE OR ITS OPERATING HANDPIECE HELD BY THE HOLDER

Pekka Hakanen, Turku, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Mar. 22, 1991, Ser. No. 674,521
Claims priority, application Finland, Apr. 12, 1990, 901892
Int. Cl.[5] H04R *25/00*
U.S. Cl. 379—455 **8 Claims**

1. A holder for a telephone or its operating handpiece, the holder being formed of a single integral piece and comprising:
a base having a face;



two elongated side plates each extending from the face and being spaced apart from each other and facing each other;
a bottom plate extending from the face and arranged so that the telephone or its operating handpiece is movable between the side plates to reach the bottom plate;
latching means spaced from the base and formed on each of said side plates for latching the telephone or its operating handpiece; and
spring means protruding outwardly from the face of the base, the face being bounded by the side plates and the bottom plate, whereby the telephone or its operating handpiece is movable between the side plates under manual pressure into a positing where a contact area of the telephone or operating handpiece compresses the spring means and where manual release of the handpiece or its operating handpiece allows the spring means to bias back and push the contact area ot the telephone or its operating handpiece further away from the base.

5,189,699

Patent Not Issued For This Number

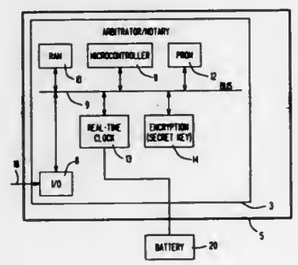
5,189,700

DEVICES TO (1) SUPPLY AUTHENTICATED TIME AND (2) TIME STAMP AND AUTHENTICATE DIGITAL DOCUMENTS

Robert R. Blandford, 1809 Paul Spring Rd., Alexandria, Va. 22307

Continuation-in-part of Ser. No. 375,502, Jul. 5, 1989. This application Jan. 7, 1991, Ser. No. 637,675
Int. Cl.[5] H04K *1/00, 9/00;* **G07D** *7/00*
U.S. Cl. 380—23 **20 Claims**

1. A device for producing authenticated time for a user device, comprising:
a clock;
encryption means including a secret key;



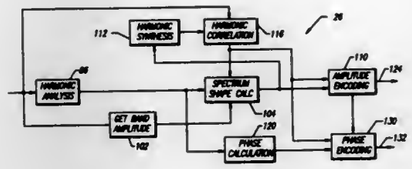
input/output means including a port for receiving and transmitting digital signals from and to the user device;
a digital bus connected to the input/output means, the encryption means, and the clock;
controller means connected to the bus for controlling operation of said input/output means, said clock and said encryption means to receive requests for authenticated time applied to the port of the input/output means, to read time data from the clock, to operate the encryption means to generate an encrypted authentication code from the time data, and to transmit from the port of said input/output means the time data and the encrypted authentication code;
mean for preventing operation of the user device until the authentication code and the time data are transmitted from the port of the input/output means to the user device; and
seal means enclosing said clock, said encryption means, said input/output means, said digital bus, and said controller means to prevent access to said clock, said encryption means, said digital bus, said controller means and said input/output means except via the port of said input/output means.

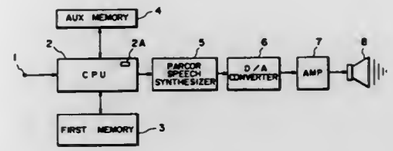
5,189,701

VOICE CODER/DECODER AND METHODS OF CODING/DECODING

Jaswant R. Jain, Chatsworth, Calif., assignor to MICOM Communications Corp., Simi Valley, Calif.

Filed Oct. 25, 1991, Ser. No. 782,669
Int. Cl.[5] G10L *5/00, 3/02, 5/02*
U.S. Cl. 381—41 **93 Claims**





1. In combination for use in a voice coder to determine the pitch frequency of voice signals introduced to the voice coder,
first means for dividing the voice signals into successive time frames,
second means for providing a frequency transform of the voice signals in each time frame to obtain a plurality of signals at different frequencies in such time frame, the signals at the different frequencies in each time frame having a pitch frequency,
third means for providing a Cepstrum determination of the signals from the Fourier frequency transform in each of the successive time frames to obtain a determination of the pitch frequency of the frequency signals in such time frame, and
fourth means for providing a harmonic gap determination of the frequency signals in each of the successive time frames from the Cepstrum determination to refine the determination of the pitch frequency by the third means of the frequency signals in each time frame.

memory means for storing a plurality of sets of feature parameters, and for storing information for enabling speech speed control in such a manner as not to skip at least each set of the feature parameters in accordance with whether each set of feature parameters represents the timing of a non-stable portion of generated speech, the information being established based on the duration of speech generated using at least one feature parameter; and
speed control means for, during voice synthesis in which a voice signal is synthesized by the voice synthesizer, skipping the sets of the feature parameters, for which the speed control is enabled by the information.

5,189,702

VOICE PROCESSING APPARATUS FOR VARYING THE SPEED WITH WHICH A VOICE SIGNAL IS REPRODUCED

Atsushi Sakurai, Yokohama, and Junichi Tamura, Atsugi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 600,241, Oct. 22, 1990, abandoned, which is a continuation of Ser. No. 151,549, Feb. 2, 1988, abandoned. This application Oct. 2, 1991, Ser. No. 770,136
Claims priority, application Japan, Feb. 16, 1987, 62-031581
Int. Cl.[5] G10L *3/00*
U.S. Cl. 381—51 **17 Claims**

1. A voice processing apparatus for increasing the speed of synthesized speech synthesized by a voice synthesizer, comprising:

5,189,703

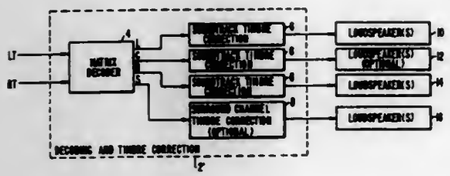
TIMBRE CORRECTION UNITS FOR USE IN SOUND SYSTEMS

Tomlinson Holman, Fairfax, Calif., assignor to LucasArts Entertainment Company, San Rafael, Calif.

Division of Ser. No. 366,991, Jun. 20, 1989, which is a continuation-in-part of Ser. No. 141,570, Jan. 6, 1988. This application May 28, 1991, Ser. No. 707,118
Int. Cl.[5] H03G *3/00, 5/00;* **H04M** *1/24*
U.S. Cl. 381—61 **17 Claims**

1. A frequency response correction unit for use in a sound system for reproducing a motion picture soundtrack by means of at least one loudspeaker means in a relatively small room, compared to a motion picture theater, wherein said motion picture soundtrack is equalized for playback in a room whose room-loudspeaker system is aligned to the standard motion picture theater X-curve, comprising
signal input means for receiving a signal derived from the motion picture soundtrack,
soundtrack frequency response correcting means for receiving an input signal from the signal input means and chang-

ing the frequency response of the input signal to compensate for said X-curve equalization, and



signal output means for receiving an output signal from the soundtrack frequency response correcting means and coupling the output signal to the loudspeaker means.

5,189,704

HEARING AID CIRCUIT HAVING AN OUTPUT STAGE WITH A LIMITING MEANS

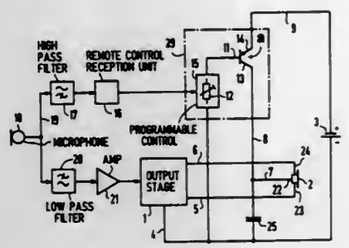
Gerhard Krauss, Nuermberg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 15, 1991, Ser. No. 729,569

Claims priority, application European Pat. Off., Jul. 25, 1990, 90114273.7

Int. Cl.[5] H04R *25/00*

U.S. Cl. 381—68.4 **15 Claims**



1. A hearing aid circuit, comprising:

an output stage connected via an earphone and a battery to an adjustable limiting circuit means for limiting a maximum acoustic output level of the earphone;

said limiting means being electronic and comprising at least one first controllable semiconductor;

controllable component means comprising a programmable electronic resistor for operating the semiconductor as a current-traversed switch given deactivated electronic limiting, and for operating the semiconductor as a current-traversed, variable resistor given activated electronic limiting;

the first controllable semiconductor comprising a control terminal which is connected to the controllable component means; and

for electronic limiting approaching zero, the first controllable semiconductor being supplied via the controllable component means with a current which allows the first controllable semiconductor to become transmissive due to overdrive.

5,189,705

AUDIO EQUIPMENT

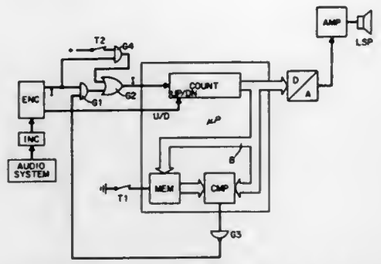
Simon-André Lavaud, Villingen-Schwenningen, Fed. Rep. of Germany, assignor to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Fed. Rep. of Germany

Continuation of Ser. No. 571,766, Aug. 23, 1990, abandoned. This application Dec. 5, 1991, Ser. No. 804,469

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1989, 3927902

Int. Cl.[5] H03G *3/00*

U.S. Cl. 381—104 **4 Claims**



1. An arrangement for adjusting volume of a played-beck signal from an audio system, comprising: a pulse generator; encoder means connected to said pulse generator for processing pulses from said generator; counting means triggered by pulses from said encoder means for setting said counting means to count up or down; said counting means having a counting input; gate means connected to said counting input and an output of said encoder means; memory means connected to an output of said counting means for storing a predetermined counter state corresponding to a predetermined threshold; first switch means for actuating said memory means to store said counter state when the volume of said played-back signal corresponding to said threshold has been attained; audio receiver means for receiving said output from said counting means; comparator means connected to said output of said counting means and output of said memory means for comparing constantly the output of said counting means with the threshold stored in said memory means; said gate means responding to a control signal from said comparator means for blocking an output signal from said output of said encoder means to said counting means when said output signal of said counting means is substantially equal to the threshold stored in said memory means, so that the counter state remains constant upon further actuation of said pulse generator; and second switch means connected to said gate means for opening said gate means to remove said blocking and transmit the output signal from said encoder to said counting means for exceeding the volume represented by said threshold.

5,189,706

ACOUSTIC APPARATUS

Tatsuo Saeki, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jan. 22, 1990, Ser. No. 467,980

Claims priority, application Japan, Jan. 23, 1989, 1-5447[U]

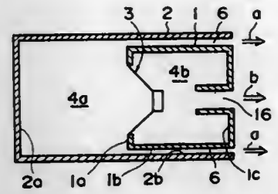
Int. Cl.[5] H04R *25/00, 7/00;* **H05K** *5/00*

U.S. Cl. 381—159 **2 Claims**

1. An acoustic apparatus comprising an acoustic cabinet in which a first resonance cavity is formed, a first resonance port for causing the first resonance cavity to communicate with the external region of the cabinet, the first resonance port comprising a first resonator together with the first resonance cavity and radiating a first resonance sound, and a vibrator for driving the first resonator, wherein the acoustic cabinet comprises:

an inner cabinet on which the vibrator is mounted, the inner cabinet having an outer peripheral surface extending between one end surface and an opposite other end surface thereof, the inner cabinet including a second cavity, a second resonance port for constituting a second resonator together with the second cavity and radiating a second resonance sound being provided on the one end surface of the inner cabinet; and

an outer cabinet having an inner peripheral surface and an opening formed at one end surface of the outer cabinet covering the inner cabinet with a predetermined first gap being formed between the inner peripheral surface of the outer cabinet and the outer peripheral surface of the inner cabinet, the first gap extending along substantially the



entire outer peripheral surface of the inner cabinet between the one end surface and the opposite other end surface, the opening causing the first gap to communicate with the external region and to function as the first resonance port, wherein the one end surface of the inner cabinet is exposed out of the opening of the outer cabinet, and a second gap wider than the first gap and serving as the first resonance cavity being formed between the other end surface of the outer cabinet opposite the opening and the other end surface of the inner cabinet and the vibrator being mounted on the other end surface of the inner cabinet.

5,189,707

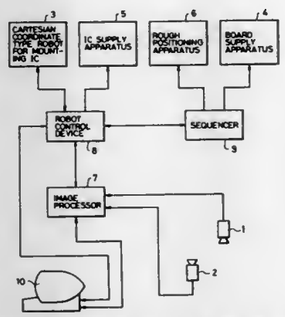
METHOD OF LOADING SURFACE MOUNTED DEVICE AND AN APPARATUS THEREFOR

Kenji Suzuki, Ebina; Seiji Hata, Fujisawa; Yoshien Nishida, Yokohama; Kyoichi Kawasaki; Kenjiro Fujii, both of Funabashi; Yasunori Shimura, Chiba, and Shigenori Takeyoshi, Abiko, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 896,864, Aug. 15, 1986, Pat. No. 4,737,845. This application Apr. 11, 1988, Ser. No. 179,983

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—8 **14 Claims**



1. A method of aligning an electronic part having a plurality of contacts arrayed in parallel on at least two opposed sides of an electronic part, comprising the steps of:

providing a measurement line of an image-based pattern of each array of said contacts on said electronic part, so that the measurement lime intersects a direction of the contact array substantially at a right angle thereto,

detecting the edge of each contact on said measurement line as a weighted mean in a range between a maximum and a minimum of a brightness distribution on said measurement line,

obtaining a central point of each contact array on each of said at least two opposed sides from an average position of the edges of said at least two opposed sides to form first and second central points, and

correcting a position and rotation of said electronic part on the basis of said first and second central points.

5,189,708

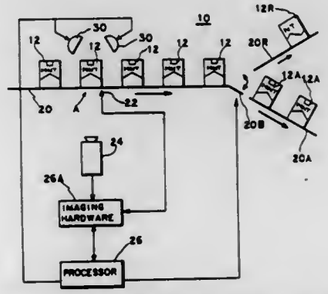
METHODS AND APPARATUS FOR OPTICALLY DETERMINING THE ACCEPTABILITY OF PRODUCTS

Kenneth A. Cox, and Robert J. Maher, both of Midlothian, Va., assignors to Philip Morris Inc., New York, N.Y.

Continuation of Ser. No. 308,739, Feb. 9, 1989, Pat. No. 5,046,111. This application Dec. 17, 1990, Ser. No. 634,110

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—8 **48 Claims**



1. A method of determining whether or not a product has an acceptable appearance comprising the steps of:

generating a plurality of reference images from reference products, the image generation for each reference product including the steps of acquiring a two-dimensional image of the product surface, subdividing the acquired image into a plurality of sub-areas, and assigning a value to each sub-area dependent on the optical characteristic of the sub-area;

deriving from the images acquired from the reference products a discriminant image;

setting a threshold level on the amount by which a dot product of the discriminant image and an actual product whose appearance is to be determined may deviate from a reference dot product of the discriminant image and an acceptable product image;

generating an image foe an actual product by repeating the steps for generating each reference image; and

comparing the dot product of the discriminant image and the acquired product image to the reference dot product; whereby images of actual products whose dot product deviations from the reference dot product are greater than the threshold level are determined to have an unacceptable appearance.

5,189,709

DYNAMIC PATTERN MATCHER USING INCOMPLETE DATA

Lui Wang, Houston, Tex., and Gordon G. Johnson, Princeton, N.J., assignors to The United States of America as represented by the United States National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 26, 1991, Ser. No. 749,819

Int. Cl.[5] G06K *9/00*

U.S. Cl. 382—10 **20 Claims**

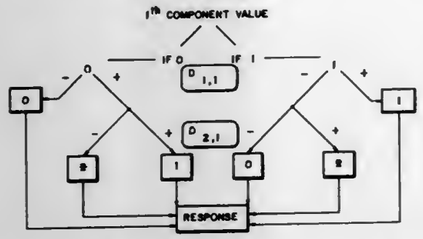
1. A method of comparing, with the aid of a computing

VOL 1147 ISS 4 FE 23 1993 UMI

system, a query pattern with a set of stored patterns, said method comprising the steps of:

a) creating a library of stored patterns in a desired format wherein each pattern comprises a set of elements, each pattern having a relative time-dependent importance/avoidance property;

b) presenting a query pattern comprising a set of elements representative of the entity to be matched in the same size and format as the stored patterns;



c) comparing the query pattern with each of the stored patterns, on an element-by-element basis and determining a first degree of match for each stored pattern;

d) indicating a complete match if one exists;

e) creating, if no complete match exists, a derived query pattern having the same number of elements as the original query pattern and the stored patterns, said derived query pattern being created as follows:

1) determining a set of first change numbers D according to the following formula:

$$D_1\Lambda[t]\colon X : B^1, \ldots, B^k) = C(1,t)P^{H(1,t)}\,[P^{L\Lambda(X,1)}]\,S_1(X,i) +$$

$$C(2,t)P^{H(2,t)}\,[P^{L\Lambda(X,2)}]\,S_2(X,i) + \ldots + C(k,t)P^{H(k,t)}\,[P^{L\Lambda(X,k)}]\,S_k(X,t)$$

where:

$D_{1\,i}$ is the first change number for the ith element of the query pattern,

t indicates a function of time,

C(i,t) is the algebraic sign of the relative importance property at time t of stored pattern B^i, $p^{H(i,t)}$ is the magnitude of the relative importance property of stored pattern B^i at time t,

J(X,i) is the degree of match with stored pattern B^i,

(S_z(X,i) is:

-1 if thei th element of B^z and the ith element of X are both 0;

1 if the ith element of B^z and the ith element of X are both 1;

$-p^3$ if the ith element of B^z is 0 and the ith element of X is 1;

p^3 if the ith element of B^z is 1 and the ith element of X is 0,

2) setting the value of the ith element of the derived query pattern at 1 if the value of the ith element of the query pattern is 1 and the first change number for the ith element is positive;

3) setting the value of the ith element of the derived query pattern at 1 if the value of the ith element of the query pattern is 1 and the first change number for the ith element is zero;

4) setting the value of the ith element of the derived query pattern at 0 if the value of the ith element of the query pattern is 1 and the first change number for the ith element is negative;

5) setting the value of the ith element of the derived query pattern at 1 if the value of the ith element of the query pattern is 0 and the first change number for the ith element is positive;

6) setting the value of the ith element of the derived query pattern at 0 if the value of the ith element of the query pattern is 0 and the first change number for the ith element is zero;

7) setting the value of the ith element of the derived query pattern at 0 if the value of the ith element of the query pattern is 0 and the first change number for the ith element is negative;

f) comparing the derived query pattern with each of the stored patterns, on an element by element basis and determining a second degree of match;

g) indicating an answer pattern, said answer pattern being the derived query pattern if a complete match exists between the derived query pattern and a stored pattern,

h) creating, if no complete match exists, an answer pattern having the same number of elements as the derived query pattern and the stored patterns, said answer pattern being created as follows:

1) determining a set of second change numbers D_2 according to the following formula:

$$D_2\Lambda[t]\colon X' : B^1, \ldots, B^k) = C(1,t)P^{H(1,t)}\,[P^{L'\Lambda(X',1)}]\,S_1(X',i) +$$

$$C(2,t)P^{H(2,t)}\,[P^{L'\Lambda(X',2)}]\,S_2(X',i) + \ldots +$$

$$C(k,t)P^{H(k,t)}\,[P^{L'\Lambda(X',k)}]\,S_k(X',i)$$

where:

$D_{2\,i}$ is the second change number for the ith element of the query pattern,

t indicates a function of time,

C(i,t) is the algebraic sign of the relative importance property (or zero) of the stored pattern B^i at time t,

$p^{H(i,t)}$ is the magnitude of the relative importance property of stored pattern B^i,

J(X',i) is the second degree of match B^i and X,

S_z(X',1) is:

-1 if the element of B^z, and the ith element of X' are both 0;

1 if the ith element of B^z and the ith element of X' are both 1;

$-P^3$ if the ith element of B^z is 0 and the ith element of X' is 1; P^3 if the ith element of B^2 is 1 and the ith element of X' is 0,

2) setting the value of the ith element of the answer pattern at 1 if the value of the ith element of the query pattern is 0 and both the first change number and the second change number for the ith element are positive;

3) setting the value of the ith element of the answer pattern at 0 if the value of the ith element of the query pattern is 1 and both the first change number and the second change number for the ith element are negative;

4) setting the value of the ith element of the answer pattern at 0 if the value of the ith element of the query pattern is 0 and the first change number for the ith element is negative;

5) setting the value of the ith element of the answer pattern at 1 if the value of the ith element of the query is 1 and the first change number is positive;

6) setting the value of the ith element of the answer pattern at *, where * indicates ambiguity, if the value of the ith element of the query pattern is 0, the first change number for the ith element is positive and the second change number is negative; and

setting the value of the ith element of the answer pattern at * if the value of the ith element of the query pattern is 1, the first change number is negative and the second change number for the ith element is positive; and

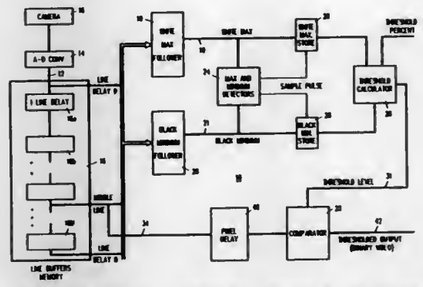
i) converting answer pattern from representational format to desired format with ambiguous elements distinguished from determined elements in some manner.

5,189,710

METHOD AND AN APPARATUS FOR GENERATING A VIDEO BINARY SIGNAL FOR A VIDEO IMAGE HAVING A MATRIX OF PIXELS

Kenneth C. Holt, Berkeley, Calif., assignor to Teknekron Communications Systems, Inc., Berkeley, Calif.

Filed Sep. 17, 1990, Ser. No. 583,444
Int. Cl.^{5} G06K *9/48*
U.S. Cl. 382—22 **19 Claims**



1. An apparatus for dynamically setting a discrimination threshold for the processing of an image having one or more edges said image is composed of a plurality of lines, each having a plurality of pixels, each pixel having a grey value, said apparatus comprising:

means for receiving a plurality of said lines of pixels;

means for determining the pixel ("instantaneous maximum pixel") having the maximum grey value among the plurality of pixels received;

means for receiving said instantaneous maximum pixel and for storing its grey value in the event said instantaneous maximum pixel is associated with one of said edges of said image;

means for determining the pixel ("instantaneous minimum pixel") having the minimum grey value among the plurality of pixels received;

means for receiving said instantaneous minimum pixel and for storing its grey value in the event said instantaneous minimum pixel is associated with one of said edges of said image;

means for setting a grey scale threshold based upon the stored minimum grey value and the stored maximum grey value; and

means for comparing the grey value of each pixel of said image to said grey scale threshold to produce a first binary output for each pixel.

5,189,711

AUTOMATIC DETECTION OF ELLIPTICAL SHAPES

Isaac Weiss, 3450 Toledo Terr., #410, Hyattsville, Md. 20782, and Azriel Rosenfeld, 847 Loxford Terr., Silver Spring, Md. 20901

Continuation-in-part of Ser. No. 440,714, Nov. 24, 1989. This application Sep. 9, 1991, Ser. No. 800,472
Int. Cl.^{5} G06K *9/46*
U.S. Cl. 382—25 **1 Claim**

1. A method of detection of a plurality of objects, or parts of objects, having circular, elliptical, parabolic or hyperbolic shapes, within an image containing many different objects, comprising of the following steps:

a) transducing an optical image into an electrical signal representing the grey level (brightness) of the image at each point (x, y) using a camera;

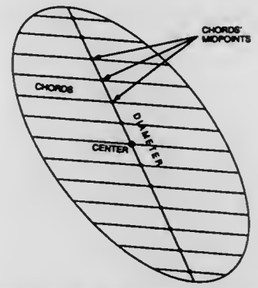
b) finding local changes in brightness along x which are large enough to be regarded as edges of an object;

c) finding the midpoint between any two edges lying on the same scan line, i.e. a line that is parallel to the image's x axis;

d) feeding all the midpoints from above into a straight line detector; keeping a record of the parameters of each skew-symmetry line thus detected, as well as the skew symmetric set of edges that gave rise to it;

e) rotating the camera around its optical axis using a motor and repeating previous steps (a) through (d), to find from the edges in memory sets of edges that have a second line of skew symmetry; keeping in memory each such set of edges and its two skew symmetry lines;

f) rotating the camera again, repeating previous steps (a) through (d) and finding all sets of edges having three skew symmetry lines; thus finding sets consisting possibly of ellipses with the same center, orientation and eccentricity;



g) calculating from the parameters of the skew symmetry lines of the sets found in (f), and from the scan line rotation angles, the intersection point of the lines (the center), the orientation and the eccentricity of the possible ellipses;

h) eliminating the orientation and eccentricity found in (g) by means of of a geometrical transformation for each elliptical set found in (f), transforming the ellipses into circles;

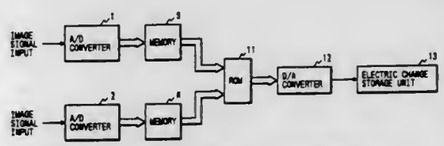
i) histograming the distances of the edges from the center for each circular set found in (h), and separating the set of edges into subsets of edges having the same distance from the center.

5,189,712

CORRELATION DETECTOR FOR IMAGES

Yasuya Kajiwara, and Kazumichi Tsutsumi, both of Hyogo, Japan, assignors to Mitsubishi Denki K.K., Tokyo, Japan

Filed Jul. 17, 1991, Ser. No. 731,605
Claims priority, application Japan, Jul. 17, 1990, 2-191658
Int. Cl.^{5} G06K *9/64*
U.S. Cl. 382—42 **3 Claims**



1. A correlation detector for images, comprising:

means for converting a first plurality of pixel signals representing a first image and a second plurality of pixel signals representing a second image into digital data;

means for deriving one of (a) an absolute value of a difference between each pixel signal of said first plurality and a corresponding pixel signal of said second plurality, and (b) a product of each pixel signal of said first plurality and said corresponding pixel signal of said second plurality, from a table in accordance with pixel signal values of the pixel signals of said first plurality and said corresponding pixel signals of said second plurality;

VOL 1147 ISS 4 FE 23 1993 UMI

means for converting said derived values into analog values; and

means for storing said analog values as electric charges by converting said analog values into current values proportional to said converted analog values, said storing means performing a mathematical summation operation on said analog values.

5,189,713

ELECTRO-OPTIC DEVICE

Robert N. Shaw, Ipswich, England, assignor to BT&D Technologies Limited, Ipswich, England

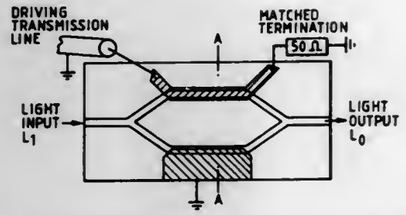
PCT No. PCT/GB89/00565, § 371 Date Nov. 14, 1990, § 102(e) Date Nov. 14, 1990, PCT Pub. No. WO89/11676, PCT Pub. Date Nov. 30, 1989

PCT Filed May 23, 1989, Ser. No. 602,276

Claims priority, application United Kingdom, May 23, 1988, 8812180

Int. Cl.[5] G02B *6/10*

U.S. Cl. 385—2 **17 Claims**



1. An electro-optic waveguide device of the type in which first and second electrodes are formed on a surface of a substrate of a pyroelectric material, the substrate including first and second optical waveguides which are each at least partially overlain by a respective one of said electrodes, the optical waveguides having a refractive index which can be adjusted by application of an electric field via said electrodes, the refractive index changing with changes in a component of said field, which component is substantially perpendicular to said surface on which said electrodes are formed, wherein said first and second electrodes comprise respectively a ground plane electrode and a travelling-wave electrode, the improvement comprising fixing the ground plane electrode relative to said first waveguide such that throughout the entire overlain length of said first waveguide the ground plane electrode overlies less than the whole width thereof, thereby reducing the temperature sensitivity of the device.

5,189,714

OPTICAL WAVELENGTH FILTER DEVICE

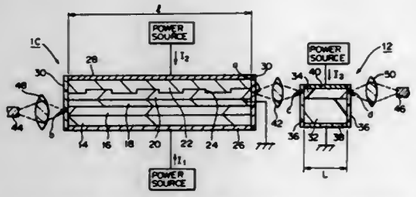
Hideaki Okayama, and Takashi Ushikubo, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1991, Ser. No. 767,110

Claims priority, application Japan, Sep. 28, 1990, 2-262161

Int. Cl.[5] G02B *6/10, 6/38;* H01S *3/082*

U.S. Cl. 385—27 **9 Claims**



1. An optical wavelength filter device for separating an optical signal having a specific wavelength among those having multiplexed wavelengths comprising:

a first optical wavelength filter of a mode conversion type, said first optical wavelength filter having a wide turning width; and

a second optical wavelength filter of an interferometer type optically coupled with the first optical wavelength filter, said second optical wavelength filter having a generally narrower bandpass width that of said first optical wavelength filter.

5,189,715

OPTICAL WAVEGUIDE CONNECTION ELEMENTS

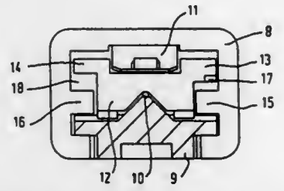
Wolfgang Eutin, Köln, and Bernhard Groll, Weilerswist, both of Fed. Rep. of Germany, assignors to U.S. Philips Corp., New York, N.Y.

Filed Aug. 19, 1991, Ser. No. 747,214

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1990, 4026709

Int. Cl.[5] G02B *6/38*

U.S. Cl. 385—72 **3 Claims**



1. An optical plug connector having two plugs each of which holds an end portion of an optical waveguide and which can be inserted from opposite sides into a coupling sleeve until the end faces of the optical waveguides are located against each other, and comprising a guide element for guiding and aligning the optical waveguides, which guide element can be axially inserted in both plugs and which extends beyond their joint area, characterized in that stop elements are provided at the plugs, which stop elements cooperate with the stop elements of the mating plug in such a manner that when the guide element is not inserted, at least the optical waveguide holding elements of the plugs are prevented from moving completely towards each other in an axial direction.

5,189,716

PHOTOSEMICONDUCTOR AND OPTICAL FIBER WELDED MODULE

Takahiro Matsubara; Yoshio Makita, and Koichiro Iwao, all of Osaka, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 647,035, Jan. 29, 1991, Pat. No. 5,119,462. This application Mar. 6, 1992, Ser. No. 846,338

Claims priority, application Japan, Jan. 29, 1990, 2-18718; Mar. 22, 1990, 2-72591

Int. Cl.[5] G02B *6/26;* H01J *5/16*

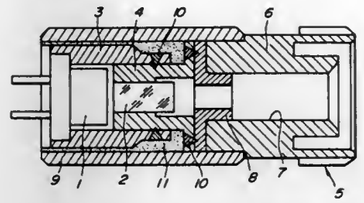
U.S. Cl. 385—93 **8 Claims**

1. A photosemiconductor module for being optically coupled to an optical fiber, comprising:

a holder assembly;

a photosemiconductor and a lens which are fixedly mounted in said holder assembly coaxially along an optical axis;

an optical connector joined coaxially to said holder assembly by lap laser beam welding and adapted to be connected to the optical fiber; and



a sleeve partially fitted over a portion of said optical connector so as to protectively cover at least a portion of said holder assembly and a portion of said optical connector.

5,189,717

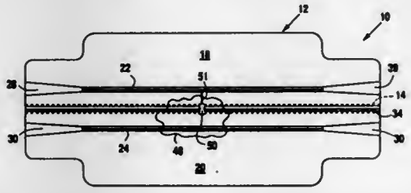
OPTICAL FIBER SPLICE

Donald K. Larson, Cedar Park, and Richard A. Patterson, Georgetown, both of Tex., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 692,271, Apr. 26, 1991, Pat. No. 5,102,212, which is a continuation of Ser. No. 437,027, Nov. 15, 1989, Pat. No. 5,013,123, which is a continuation-in-part of Ser. No. 305,471, Feb. 1, 1989, abandoned, which is a continuation of Ser. No. 182,872, Apr. 18, 1988, Pat. No. 4,824,197. This application Aug. 29, 1991, Ser. No. 750,401

Int. Cl.[5] G02B *6/00, 6/36*

U.S. Cl. 385—95 **18 Claims**



1. An article for splicing two optical fibers together, comprising:

a splice element having a hinge defining first and second generally planar leg members, said splice element and leg members having inside and outside surfaces;

said first and second leg members having means for holding a fiber therebetween;

refractive index matching means disposed on said inside surfaces of said first and second leg members; and

means for minimizing migration of said refractive index matching means near an interface between the fibers.

5,189,718

COMPOSITE CABLE CONTAINING LIGHT WAVEGUIDES AND ELECTRICAL CONDUCTORS

Michael J. Barrett, and Andrew S. Dodd, both of Hickory, N.C., assignors to Siecor Corporation, Hickory, N.C.

Filed Apr. 2, 1991, Ser. No. 862,475

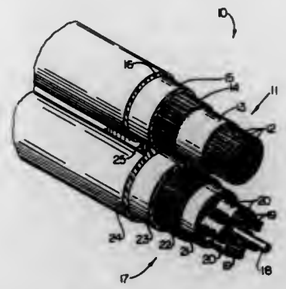
Int. Cl.[5] G02B *6/44*

U.S. Cl. 385—101 **6 Claims**

1. A cable containing light waveguides and electrical conductors, comprising:

(a) a first tube containing a plurality of current carrying electrical conductors;

(b) a second tube containing at least one strength member and a plurality of light waveguides; and,



(c) a web extending between the first and second tubes, said web having a thickness narrower than half the outer diameter of the first tube or the second tube.

5,189,719

METALLIC SHEATH CABLE

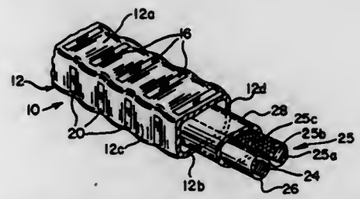
Allan Coleman, Highland Park, and Wayne J. Kowalski, Buffalo Grove, both of Ill., assignors to Coleman Cable Systems, Inc., North Chicago, Ill.

Continuation-in-part of Ser. No. 358,575, May 26, 1989, Pat. No. 5,001,303. This application Feb. 5, 1991, Ser. No. 650,691

The portion of the term of this patent subsequent to Mar. 19, 2008, has been disclaimed.

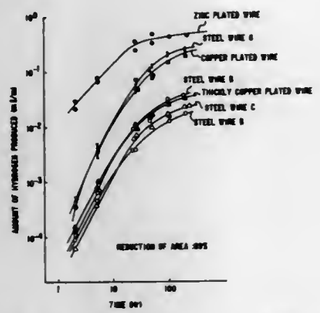
Int. Cl.[5] H01B *7/20*

U.S. Cl. 385—101 **9 Claims**



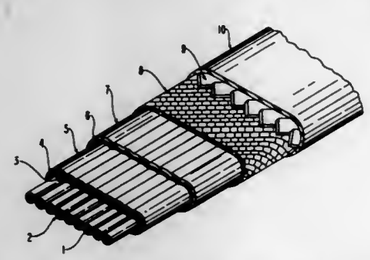
1. An electrical conductor cable comprising an elongated tubular metallic sheath of generally rectangular transverse cross-sectional configuration having a greater major axis dimension than minor axis dimension, and at least one insulated electrical conductor extending longitudinally within said sheath and having a substantially circular transverse cross-sectional configuration, said sheath being defined by first and second pairs of substantially parallel mutually perpendicular sidewalls having respective widths substantially equal to said major and minor axis dimensions and connected along longitudinal marginal edges so as to form an uninterrupted closed internal passage to receive said electrical conductor, said sheath having a substantially seamless wall of uniform thickness about its full periphery, said first pair of sidewalls being generally flat sidewalls, and said second pair of sidewalls being convexly curved sidewalls connected along longitudinal marginal edges to corresponding longitudinal marginal edges of said first pair of sidewalls, said sheath and electrical conductor enabling bending of said cable about said major and minor axes of said sheath.

5,189,720
METHOD FOR MANUFACTURING STEEL WIRE MATERIAL FOR REINFORCING OPTICAL FIBER
Teruyuki Murai, and Susumu Yamamoto, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Apr. 2, 1990, Ser. No. 503,027
Claims priority, application Japan, Apr. 3, 1989, 1-85177
Int. Cl.[5] C23F *15/00*
U.S. Cl. 385—103 6 Claims



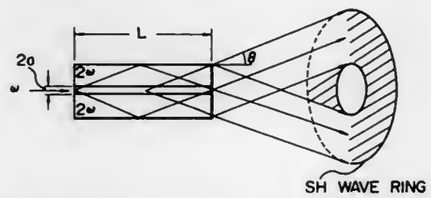
1. The method of manufacturing an optical fiber reinforced with a steel wire which comprises;
immersing a steel wire in a solution of phosphate chemical conversion coating compound;
depositing at least 13 grams per square meter of said chemical conversion coating on said steel wire;
drawing said coated steel wire to reduce its area at least 30% to compact said coating thereon, whereby forming a coated steel wire which is substantially unreactive with water to evolve hydrogen; and
compositing said coated steel wire with an optical fiber in a reinforcing relationship.

5,189,721
OPTICAL FIBER RIBBON CABLE
Emile G. Sayegh, and Alfredo L. Cedrone, both of Austin, Tex., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Filed Feb. 14, 1992, Ser. No. 837,465
Int. Cl.[5] G02B *6/44*
U.S. Cl. 385—114 8 Claims



1. An optical fiber ribbon cable comprising in order from inside to outside:
(a) a multiplicity of parallel polymer-coated optical fibers arranged at controlled fixed distances apart and from a datum edge of the cable;
(b) said fibers surrounded as a unit on at least the top and bottom sides of the unit by a first layer of tape comprising porous expanded polytetrafluoroethylene having each side coated by an adhesive;
(c) said first layer surrounded by a second layer of polyester tape optionally coated on its inner side with an adhesive layer;
(d) said second tape layer surrounded by a braided sheath of strong polymer fibers;
(e) said braided sheath surrounded by a layer of tape-wrapped binder tape; and
(f) said binder tape layer surrounded by an extruded flame-resistant thermoplastic polymer layer.

5,189,722
FIBER TYPE WAVELENGTH CONVERSION ELEMENT
Kiyofumi Chikuma, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Continuation of Ser. No. 575,477, Aug. 31, 1990, abandoned.
This application Apr. 21, 1992, Ser. No. 873,693
Claims priority, application Japan, Sep. 4, 1989, 1-228632; May 28, 1990, 2-137632
Int. Cl.[5] G02B *1/04, 6/10*
U.S. Cl. 385—122 10 Claims



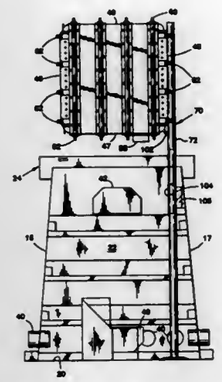
1. A fiber type wavelength conversion element, comprising:
a fiber core made of a non-linear optical crystal and having a circular cross section, and
a clad material made of an optical glass and surrounding said core such that a wavelength of incident light is converted to a half wavelength of secondary higher harmonic light by non-linear optical effects of the second order in said core; and wherein
said clad material has a refractive index which satisfies the following in equality

$$0.968 \leqq n_{clad}{}^{2\omega}/n_{core}{}^{\omega} < 1.005$$

where $n_{core}{}^{\omega}$ represents the refractive index of said fiber core with respect to incident light, and $n_{clad}{}^{2\omega}$ represents the refractive index of said clad material with respect to secondary higher harmonic light, the radius of said core being equal to or more than 0.50 μm and sufficient to guide said incident light for wavelength conversion such that conversion efficiency is maintained.

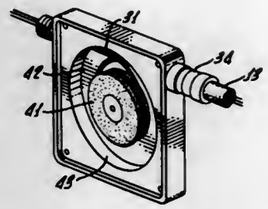
5,189,723
BELOW GROUND CROSS-CONNECT/SPLICE SYTEM (BGX)
Stephen M. Johnson, St. Paul; Calvin Huggar, Sr., Minneapolis, and Roy L. Henneberger, Eagan, all of Minn., assignors to ADC Telecommunications, Inc., Minneapolis, Minn.
Filed Jan. 6, 1992, Ser. No. 816,558
Int. Cl.[5] G02B *6/00, 6/36*
U.S. Cl. 385—134 6 Claims

1. A below ground fiber cable management system comprising;
a base member having a plurality of corrosion-resistant walls cooperating to define a base member interior, said walls defining an opening on an upper end of said member and exposing said interior;
a base member cover sized to cover said opening and having means for securing said cover to said member and releasably closing said opening in watertight closure;
a termination box sized to be received within said interior and pass through said opening, said box having walls defining a box interior and sized to receive fiber optic termination equipment, sealing means for sealing said box openings in watertight sealant;



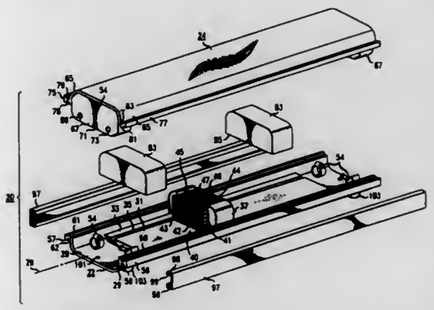
a box actuator for securing said box to said member and having means for selectively moving said box from said interior and out of said member through said base member opening.

5,189,724
ARRANGEMENT FOR ACCOMMODATING EXCESS LENGTH OF OPTICAL FIBERS
James T. Hartley, Tustin, Calif., assignor to Hughes Aircraft Company, Los Angeles, Calif.
Filed Feb. 24, 1992, Ser. No. 840,226
Int. Cl.[5] G02B *6/36*
U.S. Cl. 385—135 9 Claims



1. The method of accommodating excess length of optical fibers of a type which are to be bent to no less than a predetermined radius, and which are in an optical fiber harness system in which a plurality of optical fibers are received within a conduit which has a first length when not under tensile load and can stretch to a second and greater length when under tensile load, comprising the steps of
causing said fibers to have a length which is greater than said second length of said conduit so that there is a first excess length of said fibers outside said conduit when said conduit is of said first length, and a second excess length of said fibers outside said conduit when said conduit is of said second length, said first excess length being greater than said second excess length, said second excess length being made sufficient to allow said second excess length of fibers to be coiled at a radius no less than said predetermined radius when said conduit is of said second length,
coiling said fibers outside of said conduit within a chamber which will accommodate said first excess length of fibers in a coil when said conduit is of said first length,
causing said conduit to be of said first length,
and applying a tensile load to said conduit so that said conduit achieves said second length, and said second excess length of fibers is coiled in said chamber to a radius no less than said predetermined radius.

5,189,725
OPTICAL FIBER CLOSURE
William H. Bensel, III, Lawrenceville, and Gary S. Cobb, Norcross, both of Ga., assignors to AT&T Bell Laboratories, Murray Hill, N.J.
Filed Jan. 28, 1992, Ser. No. 826,711
Int. Cl.[5] G02B *6/38*
U.S. Cl. 385—135 17 Claims



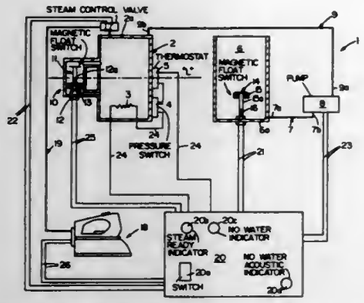
1. A closure, which comprises
a longitudinally extending base which includes longitudinally extending free edge portions;
a longitudinally extending cover which includes longitudinally extending free edge portions each associated with a longitudinally extending free edge portion of said base and which is adapted to be assembled to said base;
at least one splicing module which is supported by said base, each module including a plurality of nests each of which is adapted to hold a connective arrangement for optical fibers such that the radius of curvature of fiber end portions which are spliced is less than a value which introduces unacceptable losses into the optical fiber;
compliant means disposed at each end of said closure and engaging inner surfaces of said base and said cover and including passageways therethrough to allow a cable to extend through each passageway into said closure; and
means adapted to become slidably engaged with associated longitudinally extending side edge portions of said cover and of said base for securing said cover to said base.

5,189,726
STEAM PRODUCING APPARATUS FOR HOME USE WITH LOW COLD WATER RESERVOIR LEVEL STEAM OUTPUT STOPPAGE
Costanzo Pan, Borgosatollo, Italy, assignor to CTS Costruzioni Techniche Sanmarinesi, Italy
Filed Mar. 1, 1991, Ser. No. 662,746
Claims priority, application Italy, Sep. 28, 1990, 21884/90[U]
Int. Cl.[5] H05B *1/02*; D06F *75/10*; F24H *1/28*; H01H *36/02*
U.S. Cl. 392—401 7 Claims

1. A steam producing apparatus for home use, fed by a cold water reservoir, comprising a boiler provided with an electric resistance heating element designed to heat and vaporize water, a thermostat intervening on the heating element to keep a temperature control in the boiler, a water reservoir independent of the boiler, a pump arranged to transfer water from the reservoir to the boiler and a first magnetic float switch associated with the boiler and intervening on the pump to keep a predetermined amount of water constant in the boiler, said apparatus further comprising a second magnetic float switch located in the reservoir, signalling the lack of water in the reservoir itself and connected to a solenoid shutoff valve asso-

VOL 1147 ISS 4 FEB 23 1993 UMI

ciated with the steam outlet of the boiler for carrying out the interruption of steam delivery from the boiler in response to

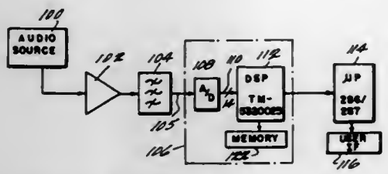


the sensing of a predetermined minimum water level in the reservoir by said second magnetic float switch.

5,189,727
METHOD AND APPARATUS FOR LANGUAGE AND SPEAKER RECOGNITION

Stephen J. Guerreri, Cary, N.C., assignor to Electronic Warfare Associates, Inc. and Systems Technology Associates, Vienna, Va.

Continuation of Ser. No. 386,425, Jul. 28, 1989, abandoned. This application Aug. 26, 1991, Ser. No. 752,898
Int. Cl.[5] G10L *9/06*
U.S. Cl. 395—2 **52 Claims**

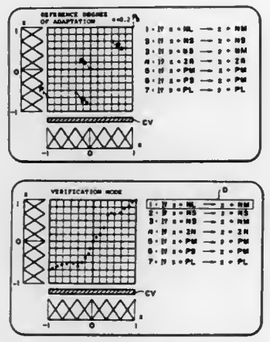


1. A method for recognizing an aspect of speech, comprising the steps of:
creating a plurality of histograms each having a plurality of elements, each element indicating a number of occurrences of a particular spectral distribution over a predetermined frequency range occurring within said speech, said plurality of histograms produced for each known aspects of speech respectively;
receiving a segment of unknown speech to be recognized;
creating a histogram having a plurality of elements, each element indicating a number of occurrences particular spectral distributions occurring within said unknown speech;
determining differences between said histogram for said unknown speech and each of said histograms for said known aspects; and
recognizing an aspect by determining which histogram of a known aspect is closest to said histogram for said unknown speech, the closest one indicating a recognition if the difference is less than a predetermined amount.

5,189,728
RULE GENERATING AND VERIFYING APPARATUS FOR FUZZY CONTROL

Takeshi Yamakawa, Iizuka, and Tsutomu Ishida, Suita, both of Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Continuation of Ser. No. 392,303, Aug. 11, 1989, abandoned. This application Oct. 8, 1991, Ser. No. 771,837
Claims priority, application Japan, Aug. 18, 1988, 63-203912
Int. Cl.[5] G06F *15/00*
U.S. Cl. 395—51 **10 Claims**



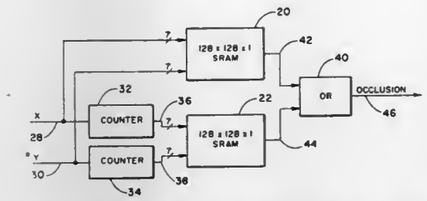
1. A rule generating apparatus for fuzzy control, comprising:
a memory for storing a plurality of predetermined membership functions for fuzzy control concerning an input variable and a plurality of predetermined membership functions for fuzzy control concerning an output variable;
an input device for entering paired data comprising a predetermined input value and an output value to be obtained by a fuzzy inference when the predetermined input value is given;
a processing unit for receiving said paired data from said input device and for retrieving at least one of said plurality of predetermined membership functions from said memory, said processing unit comprising:
a first processor for finding degrees of adaptation of the given input value to the membership functions retrieved from said memory concerning the input variable, said first processor operating to extract a membership function concerning which the found degree of adaptation exceeds a required first reference degree of adaptation;
a second processor for finding degrees of adaptation of the given output value to the membership functions retrieved from said memory concerning the output variable, said second processor operating to extract a membership function concerning which the found degree of adaptation exceeds a required second reference degree of adaptation; and
an output device for displaying an output of the extracted membership functions concerning the input and output variables.

5,189,729
VIDEO OCCLUSION FOR OVERLAPPING STROKE VECTORS

William R. Hancock, Phoenix, Ariz., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 21, 1990, Ser. No. 541,544
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—135 **12 Claims**

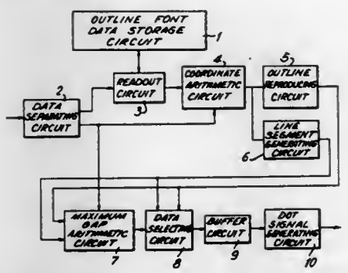
1. A video occlusion mechanism for two stroke written vectors having vector coordinates provided on an x address line and a y address line comprising:
(a) a first full field memory for storing occlusion signals wherein the occlusion signals are addressed by the vector coordinates and wherein the first field memory means includes a first input connected to the x address line and a second input connected to the y address line, and an output;
(b) a second full field memory for storing the same occlusion signals stored in the first full field memory and including a first input, a second input and an output;
(c) a first counted having an input connected to the x address line and having an output providing a first address and connected to the first input of the second full field memory wherein the first address at its output is unequal to the vector coordinate at its input;
(d) a second counter having an input connected to the y address line and having an output providing a second address and connected to the second input of the second full field memory wherein the second address at its output is unequal to the vector coordinate at its input; and
(e) a logical OR gate having a first input connected to the output of the first full field memory and a second input connected to the output of the second full field memory and having an output which provides an ORed occlusion signal.



5,189,730
APPARATUS FOR GENERATING CHARACTER PATTERN SIGNALS AND METHOD FOR GENERATING SAME

Kazuhiro Kajimoto, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 1, 1990, Ser. No. 488,575
Claims priority, application Japan, Mar. 2, 1989, 1-51298
Int. Cl.[5] G06F *15/62*
U.S. Cl. 395—142 **4 Claims**

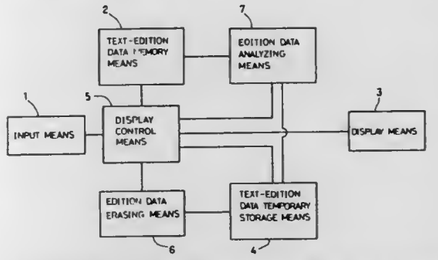


1. An apparatus for generating a character pattern signal corresponding to a character in response to a character code signal and an attribute signal, the character having an outline which may be divided into at least two regions, each region being defined by conic data defining a curve including an initial point and terminal point defining a beginning and end of the region and a control point positioned outside the curve comprising:
a converting means for converting the control point into an auxiliary point having coordinates at one point on the curve; an outline storage means for storing the initial point, terminal point and auxiliary point as data;
outline reproducing means for converting the data into scaled down data, standard sized data or enlarged data in response to the attribute signal; and reproducing a conic spline from the stored data;
selecting means for computing, in response to an attribute signal indicating scaled down data, a linear function for producing a first line segment for connecting the initial point to the auxiliary point, a second line segment for connecting the terminal point to the auxiliary point and a third line segment for connecting the terminal point to the initial point, and computing a maximum gap between a curve passing through the initial point, terminal point and auxiliary point and the first line segment and second line segment and outputting the conic spline when the maximum gap is greater than a reference value and either both the first line segment and second line segment, or the third line segment, as outline data when the maximum gap is smaller than the reference value; and
a dot pattern data converting means for outputting dot signals on the basis of the outline data.

5,189,731
CHARACTER PROCESSING SYSTEM HAVING EDITING FUNCTION

Koichiro Sakamoto, Sakai, and Hiroichi Yoshida, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 184,434, Apr. 21, 1988, abandoned. This application Jun. 1, 1990, Ser. No. 532,119
Claims priority, application Japan, Apr. 22, 1987, 62-99376
Int. Cl.[5] G06F *15/20*
U.S. Cl. 395—146 **23 Claims**



1. A character processing system having an edition function, the system comprising:
input means for entering text data and edition data,
text-edition data memory means for storing the text data and the edition data for the text data, the edition data corresponding to items including formats, justification and character expansion;
display means for displaying said text data in a format and said edition data;
text-edition data temporary storage means for temporarily storing the text data and the edition data for the text data to be fed to the display means;
said input means inputting an instruction to display text and edition data;
display control means for controlling of reading text and edition data;
display control means for controlling of reading text edition data out from the text-edition data temporary storage means in response to said instruction from the input means to display text and edition data collectively on the display means, said edition data being displayed only at a head of text data lines, while maintaining the display of said text data format unaltered, and checking the data shown on said display means from line to line for recognition of edition data;

VOL 1147 ISS 4 FE 23 1993 UMI

said input means inputting a display change over instructions;

edition data erasing means for erasing edition data on display, when the edition data is recognized by the display control means, in response to said display change-over instruction from the input means while maintaining the display of said text data format unaltered, and

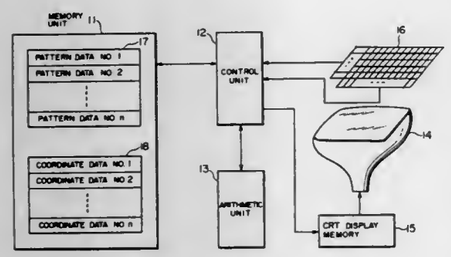
edition data analyzing means for searching the text data stored in the text-edition data memory means from line to line for edition data and outputting the recognized edition data corresponding to the text data on display at each line concerned, when the display control means recognized no edition data on display in response to the display change-over instruction from the input means.

5,189,732

TOUCH PANEL INPUT APPARATUS

Hirotaka Kondo, Owariasahi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 269,304, Nov. 10, 1988, abandoned.
This application Mar. 28, 1991, Ser. No. 679,132
Claims priority, application Japan, Nov. 18, 1987, 62-289306
Int. Cl.[5] G06F *15/606*
U.S. Cl. 395—155 **16 Claims**



1. A pointing input panel apparatus, comprising:

display means;

transparent panel means for receiving a pointing input superposed on a display screen of said display means;

pattern memory means storing a plurality of pattern data including data of display areas displayed on said display means indicating pointing input positions;

key position memory means storing a plurality of position information each defining one of a plurality of effective areas for accepting pointing inputs made in correspondence to each of said display areas;

said key position memory means further storing key code information read out in response to a pointing input to said panel means for identifying said effective areas; and

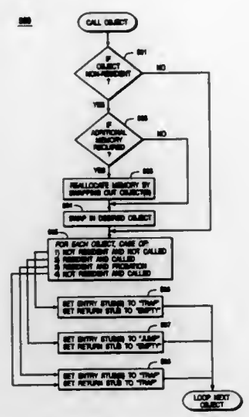
said panel means being separated from said display screen such that an apparent alignment of said display areas and said effective areas changes when viewed from different positions thus causing parallax induced pointing input errors to occur for pointing inputs made about the periphery of said display areas; and each of said effective areas having a periphery with a portion thereof that extends in a direction outwardly with respect to a like portion of the periphery of a corresponding one of the display areas to form an overlap area for accepting said parallax induced pointing input errors wherein the extending direction and size of the overlap area for each of the effective areas change in accordance with a position of said corresponding display areas on said display screen.

5,189,733

APPLICATION PROGRAM MEMORY MANAGEMENT SYSTEM

John G. Bennett, San Mateo; Anders Hejlsberg, and Peter Kukol, both of Aptos, all of Calif., assignors to Borland International, Inc., Scotts Valley, Calif.

Filed Aug. 22, 1989, Ser. No. 397,075
Int. Cl.[5] G06F *9/40, 9/46*
U.S. Cl. 395—650 **27 Claims**



1. In a computer system having a main memory and a secondary memory for storing objects not present in the main memory, a method for execution of an application program in a limited memory space, said program including at least one code object capable of removal from the main memory during program execution, the method comprising:

(a) allocating space in main memory for an entry stub for accessing a code object which is required to be resident in the main memory;

(b) if a code object is resident at a location in the main memory, storing as the entry stub a vector to the code object at the location;

(c) if a code object is not resident at a location in the main memory, storing as the entry stub an instruction executable by the computer upon any calls to the code object; and

(d) processing each call to a code object by at least referencing the entry stub, whereby a call to the code object results in execution of the instruction by the computer when the code object is not resident.

5,189,734

CELLULAR RADIO SYSTEM

Alister J. Bailey, Horley, and Sunil K. Vadgama, Thornton Heath, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

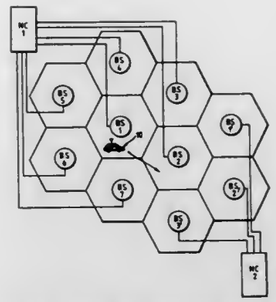
Continuation of Ser. No. 438,287, Nov. 16, 1989, abandoned.
This application Mar. 20, 1992, Ser. No. 855,160
Claims priority, application United Kingdom, Nov. 16, 1988, 8826751
Int. Cl.[5] H04Q *7/02*
U.S. Cl. 455—33.2 **12 Claims**

1. A method of operating a cellular radio system comprising a plurality of geographically separate base stations distributed so as to define a plurality of contiguous radio cells, means for enabling the base stations to communicate with each other, and at least one network controller for controlling a group of the base stations, the method comprising the steps of:

establishing two way communication between a mobile in one of said cells and the base station of said one cell;

forming a subset of said cells adjacent to the one cell; and

requesting the base stations of said subset to reserve a channel for the communication in anticipation of handing over the communication with the mobile to one of the base stations of said subset, the handover being in response to signal quality parameters becoming unacceptable, said requesting occurring prior to the signal quality parameters becoming unacceptable.

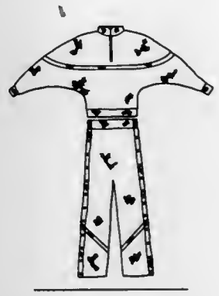


VOL
1147
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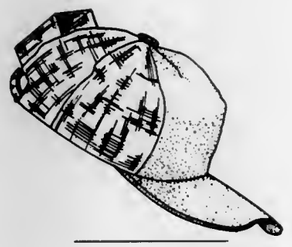
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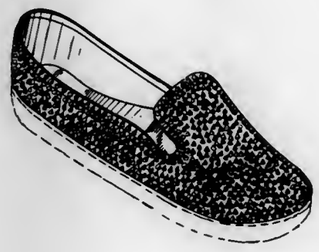
333,374
WARM-UP SUIT
David B. Aubuchon, Festus; Karen J. Riebel, St. Louis, and William L. Schaefer, Arnold, all of Mo., assignors to Figgie International Inc., Willoughby, Ohio
Filed Sep. 10, 1990, Ser. No. 580,005
Term of patent 14 years
U.S. Cl. D2—29



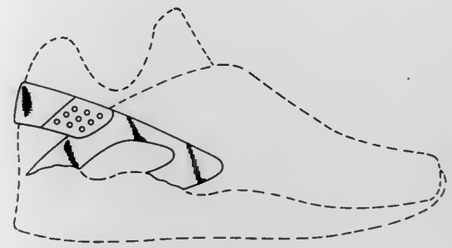
333,375
COMBINED CAP AND BACK POCKET
David Ouellette, 106 Chestnut St., Lowell, Mass. 01852
Filed Mar. 8, 1990, Ser. No. 490,280
Term of patent 14 years
U.S. Cl. D2—244



333,376
SHOE UPPER
Bonnie Raffe, 8589 Chevy Chase St., Jamaica Estates, N.Y. 11432
Filed Oct. 2, 1989, Ser. No. 415,533
Term of patent 14 years
U.S. Cl. D2—314



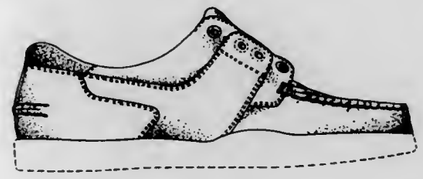
333,377
HEEL ELEMENT OF A SHOE UPPER
Tinker L. Hatfield, Portland, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Jul. 27, 1990, Ser. No. 558,411
Term of patent 14 years
U.S. Cl. D2—314



333,378
ELEMENT OF A SHOE UPPER
Judith R. Close, Dedham, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Division of Ser. No. 684,201, Apr. 12, 1991, Pat. No. D. 325,809.
This application May 4, 1992, Ser. No. 878,286
Term of patent 14 years
U.S. Cl. D2—314



333,379
SHOE UPPER
Raymond F. Tonkel, Sudbury, and David W. Foster, Marlboro, both of Mass., assignors to The Rockport Company, Inc., Marlboro, Mass.
Filed Jun. 12, 1992, Ser. No. 898,069
Term of patent 14 years
U.S. Cl. D2—314

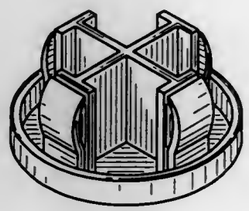


VOL
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ISS
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1993
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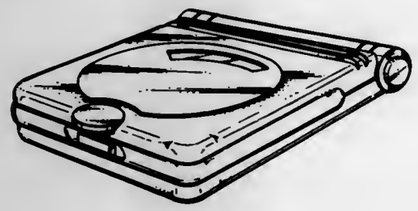
333,380
CHILD SAFETY SEAT BELT
Barbara Swift, 69 Fair Oaks St., San Francisco, Calif. 94110
Filed Jul. 18, 1990, Ser. No. 553,687
Term of patent 14 years
U.S. Cl. D2—639



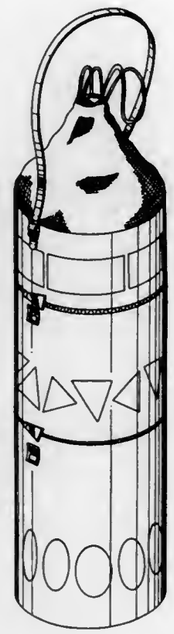
333,381
HUB FOR CASSETTE STORAGE CONTAINER
James K. Sankey, Hudson; James T. Weisburn, Massillon, and Andrew W. Moock, Brecksville, all of Ohio, assignors to Alpha Enterprises, Inc., East Canton, Ohio
Filed Apr. 10, 1991, Ser. No. 683,746
Term of patent 14 years
U.S. Cl. D3—35



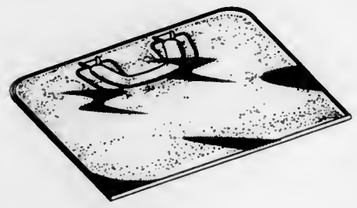
333,382
DISC STORAGE CONTAINER
Billy Cheng, 6F, No. 31-9, San Min Rd., Hsin Tien, Taipei, Hsien, Taiwan
Filed Nov. 21, 1991, Ser. No. 795,612
Term of patent 14 years
U.S. Cl. D3—35



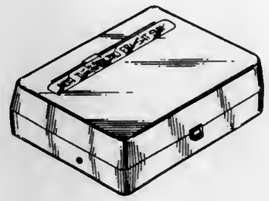
333,383
COMPARTMENTED COSMETIC CASE
Christine Brooks, 22 Larchmont Rd., Buffalo, N.Y. 14214
Filed Jul. 25, 1990, Ser. No. 557,667
Term of patent 14 years
U.S. Cl. D3—39



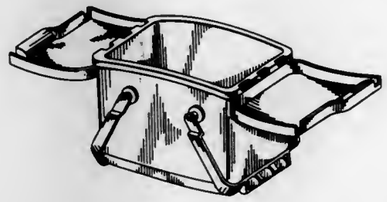
333,384
PORTFOLIO FOLDER
Gary L. Brogdon, 1658 Grandens La., Stone Mtn., Ga. 30087, assignor to Gary L. Brogdon, Stone Mtn., Ga.
Filed Nov. 15, 1990, Ser. No. 613,371
The portion of the term of this patent subsequent to Jul. 23, 2009, has been disclaimed.
Term of patent 14 years
U.S. Cl. D3—76



333,385
STORAGE CASE FOR SOLAR POWERED HEARING AIDS
Guenther W. Schmid, Syracuse, N.Y., assignor to Solar Aid Corporation, Syracuse, N.Y.
Filed Dec. 3, 1990, Ser. No. 621,726
Term of patent 14 years
U.S. Cl. D3—78



333,386
PICNIC BASKET
W. Henry Kahl, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jul. 9, 1990, Ser. No. 549,722
Term of patent 14 years
U.S. Cl. D3—79



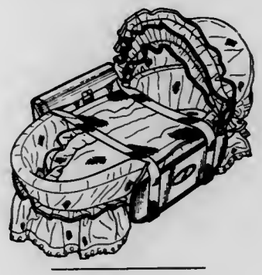
333,387
FABRIC
Nancy A. Guay, Cambridge, Mass., assignor to Herman Miller, Inc., Zeeland, Mich.
Filed Dec. 10, 1990, Ser. No. 624,928
Term of patent 14 years
U.S. Cl. D5—56



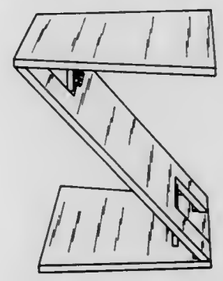
333,388
PICTURE FRAME
Karen A. Holson, Rt. 2, Box 163, Middlebrook, Va. 24459
Filed Nov. 29, 1990, Ser. No. 619,683
Term of patent 14 years
U.S. Cl. D6—309



333,389
CAR BABY BED
Hideo Saito; Yoshiyasu Ishii, and Susumu Matsumoto, all of Tokyo, Japan, assignors to Combi Corporation, Tokyo, Japan
Filed Sep. 5, 1990, Ser. No. 578,105
Claims priority, application Japan, Mar. 8, 1990, 2-7312
Term of patent 14 years
U.S. Cl. D6—356

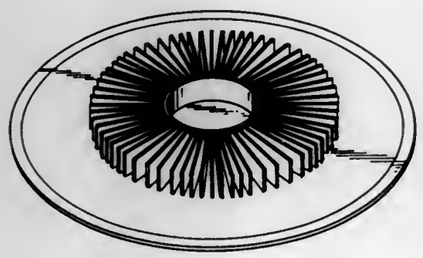


333,390
FOLDING TABLE
Stephanie S. McCauley, 6285 N. Ocean Blvd., Ocean Ridge, Fla. 33435
Filed Jan. 29, 1990, Ser. No. 471,717
Term of patent 14 years
U.S. Cl. D6—429

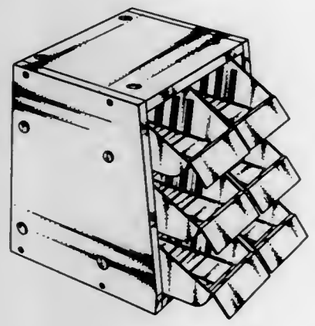


VOL 1147 ISS 4 FEB 23 1993 UMI

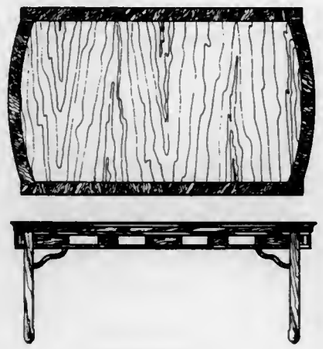
333,391
DISPLAY HOLDER FOR FLAT MATERIALS
Linda C. Stein, 1139 Ivy Wall Dr., Houston, Tex. 77079
Filed Mar. 7, 1991, Ser. No. 665,712
Term of patent 14 years
U.S. Cl. D6—457



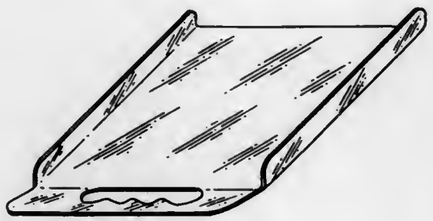
333,392
DISPLAY CABINET
Derwyn Cugley, Brea, Calif., assignor to VSI Fasteners, Inc., Staton, Calif.
Filed May 3, 1990, Ser. No. 518,647
Term of patent 14 years
U.S. Cl. D6—476



333,393
TABLE
John B. Wisner, New York, N.Y., assignor to Ficks Reed Company, Cincinnati, Ohio
Filed Nov. 21, 1990, Ser. No. 617,062
Term of patent 14 years
U.S. Cl. D6—480



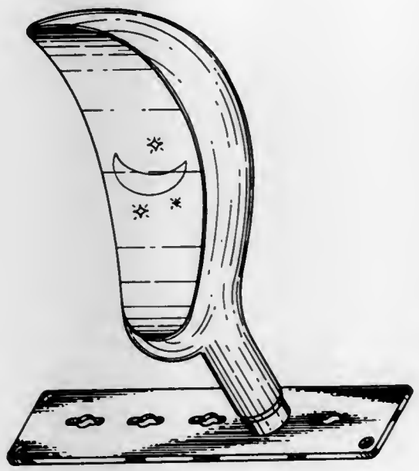
333,394
CARRIER CADDY FOR T.V. AND VCR REMOTE CONTROL UNITS
Blake Warrington, Dublin, Calif., assignor to Warrington and Watters, Dublin, Calif.
Filed Dec. 14, 1990, Ser. No. 627,381
Term of patent 14 years
U.S. Cl. D6—485



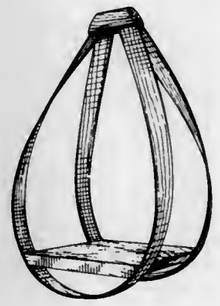
333,395
TABLE BASE
Mikhail Loznikov, 2007 Balboa St., San Francisco, Calif. 94121
Filed Dec. 28, 1990, Ser. No. 635,328
Term of patent 14 years
U.S. Cl. D6—495



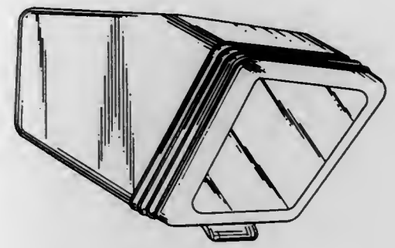
333,396
HEAD REST
Pennie J. Hendrickson, 345 N. 16th #105, Saint Helens, Oreg. 97051-1360
Filed Mar. 6, 1990, Ser. No. 488,856
Term of patent 14 years
U.S. Cl. D6—501



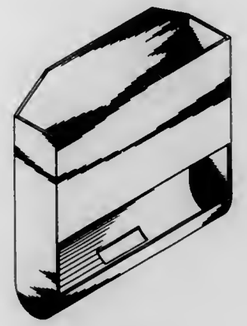
333,397
PLANT HOLDER
Bruce G. Barrett, In Woods of Vermont, R.F.D. #1 Box 629, Hyde Park, Vt. 05655
Filed Feb. 14, 1991, Ser. No. 655,906
Term of patent 14 years
U.S. Cl. D6—513



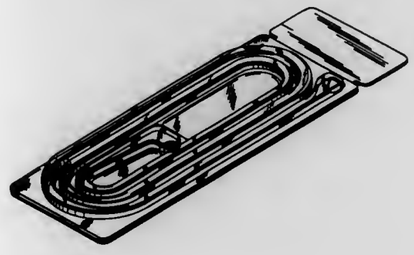
333,398
CEILING OR WALL-MOUNTED TV MONITOR SUPPORT
Marty Sedighzadeh, 11504 W. Berry Pl., Littleton, Colo. 80127, and Robert Bromley, Boulder, Colo., assignors to Marty Sedighzadeh, Littleton, Colo.
Filed Sep. 19, 1991, Ser. No. 762,956
Term of patent 14 years
U.S. Cl. D6—513



333,399
GREASE GUN CARTRIDGE DISPENSER
Grady Thomas, Jr., 4775 Royal Dr., Post Falls, Id. 83854
Filed Jun. 20, 1990, Ser. No. 540,920
Term of patent 14 years
U.S. Cl. D6—515

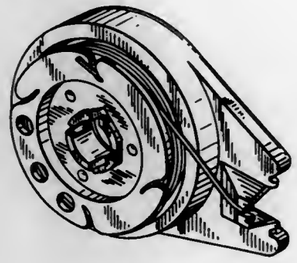


333,400
SUTURE PACKAGE
David L. Brown, Wallingford, Conn., assignor to United States Surgical Corporation, Norwalk, Coun.
Filed Dec. 28, 1990, Ser. No. 635,785
Term of patent 14 years
U.S. Cl. D6—515

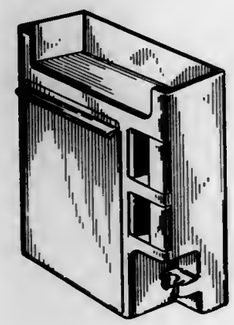


VOL 1147 ISS 4 FEB 23 1993 UMI

333,401
SUTURE DISPENSER
David L. Brown, Wallingford, and Stanley J. Malinowski, Guilford, both of Conn., assignors to United States Surgical Corporation, Norwalk, Conn.
Filed Jan. 7, 1991, Ser. No. 638,413
Term of patent 14 years
U.S. Cl. D6—515



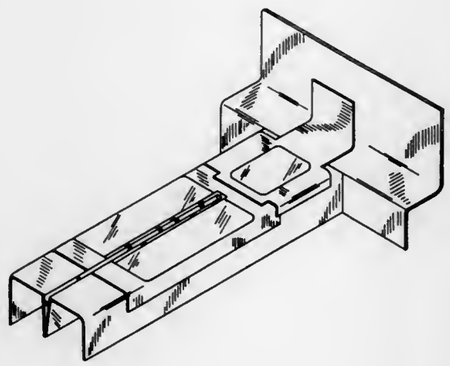
333,402
STORAGE UNIT FOR ELECTRICAL HARDWARE ITEMS
Bruce Ancona, and Jane Ancona, both of New York, N.Y., assignors to M. Kamenstein, Inc., White Plains, N.Y.
Filed Feb. 28, 1990, Ser. No. 484,116
Term of patent 14 years
U.S. Cl. D6—559



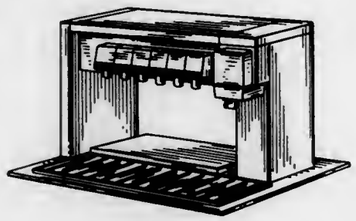
333,403
ORTHOPEDIC PILLOW TO BE PLACED BETWEEN KNEES
Donald J. Perrone, Elmwood, Conn., assignor to Alway, Inc., Flemington, N.J.
Filed Feb. 11, 1991, Ser. No. 653,811
Term of patent 14 years
U.S. Cl. D6—601



333,404
SURGICAL DRAPE
Joseph F. Thompson, Lindenhurst, Ill., assignor to Baxter International Inc., Deerfield, Ill.
Filed Dec. 4, 1990, Ser. No. 624,905
Term of patent 14 years
U.S. Cl. D6—602



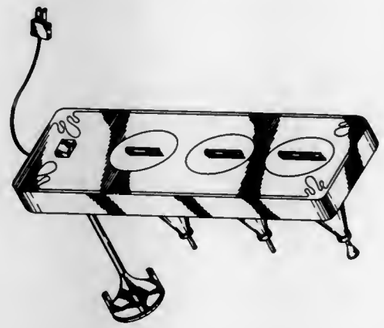
333,405
COMBINED BEVERAGE AND ICE DISPENSER
Edmund A. Moyer, Jr., Coopersburg, Pa., and Keith D. Kitts, Glenview, Ill., assignors to Follett Corporation, Easton, Pa.
Filed Feb. 3, 1989, Ser. No. 306,660
Term of patent 14 years
U.S. Cl. D7—308



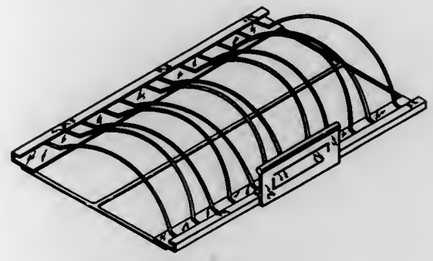
333,406
DECALCOMANIA FOR CHINA DINNERWARE OR SIMILAR ARTICLE
Michele M. Jaworski, New Castle, Pa., assignor to Syracuse China Corporation, Syracuse, N.Y.
Filed May 20, 1991, Ser. No. 702,033
Term of patent 14 years
U.S. Cl. D7—396.5



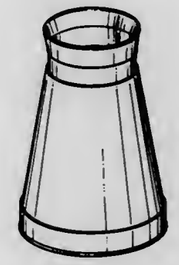
333,407
COMBINED DISPENSER AND MIXER ATTACHMENT
John L. Whitten, 116 N. 450 West, Layton, Utah 84041
Filed Jul. 12, 1990, Ser. No. 551,727
Term of patent 14 years
U.S. Cl. D7—397



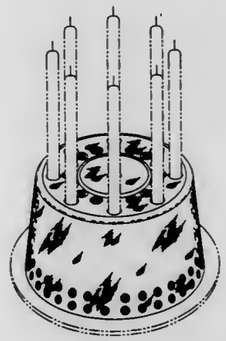
333,408
TACO HOLDER
Nathaniel Fleisher, 258 Tuscany E., Delray Beach, Fla. 33446-1227
Filed Nov. 20, 1991, Ser. No. 795,100
Term of patent 14 years
U.S. Cl. D7—504



333,409
COMBINED MUG AND MEGAPHONE
Cary V. Dietzmann, 12615 Drumwood, Cypress, Tex. 77429
Filed Aug. 29, 1990, Ser. No. 574,248
Term of patent 14 years
U.S. Cl. D7—507

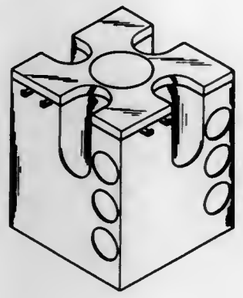


333,410
BIRTHDAY SANI-CAKE COVER
Patsy F. Panzarello, 8918 Hermosa, Temple City, Calif. 91780
Filed Jan. 4, 1991, Ser. No. 637,497
Term of patent 14 years
U.S. Cl. D7—610

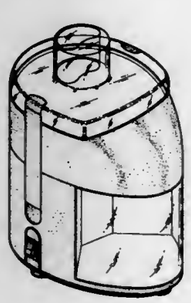


VOL 1147 ISS 4 FEB 23 1993 UMI

333,411
HOLDER FOR PREPARATION UTENSILS
Yun-Yu Ku, P.O. Box 82-144, Taipei, Taiwan
Filed Mar. 25, 1991, Ser. No. 676,217
Term of patent 14 years
U.S. Cl. D7—641



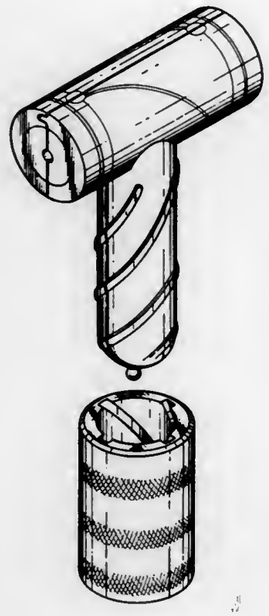
333,412
JUICE EXTRACTOR
Monte Levin, 300 E. 56th St., Apt. 18M, New York, N.Y.
Filed Apr. 12, 1991, Ser. No. 684,365
Term of patent 14 years
U.S. Cl. D7—665



333,413
MEAT HOLDER
David Kistner, 4028 Mohegan Ave., Huber Heights, Ohio 45424
Filed Sep. 20, 1990, Ser. No. 586,013
Term of patent 14 years
U.S. Cl. D7—683



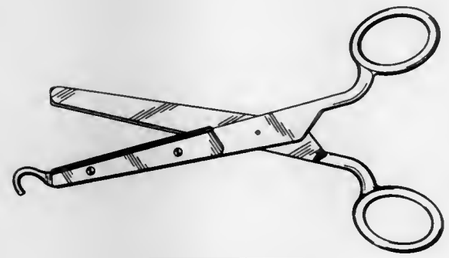
333,414
CABLE LUBRICATING TOOL
James M. Aylward, 1432 Presque Isle, Marquette, Mich. 49855
Filed Jan. 16, 1991, Ser. No. 641,573
Term of patent 14 years
U.S. Cl. D8—14.1



333,415
TAG ATTACHER
Akira Furutsu, Tokyo, Japan, assignor to Japan Bano'k Co., Ltd., Tokyo, Japan and Ben Clements & Sons, Inc., South Hackensack, N.J.
Filed Jul. 18, 1991, Ser. No. 731,912
Term of patent 14 years
U.S. Cl. D8—51



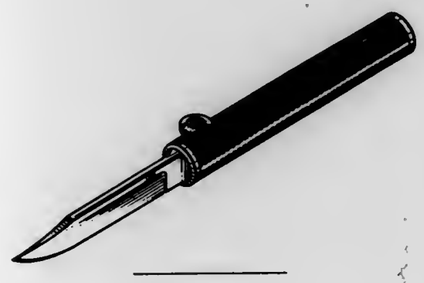
333,416
SAFETY SCISSORS
Charles R. Brown, Jr., Bassett, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 10, 1990, Ser. No. 565,122
Term of patent 14 years
U.S. Cl. D8—57



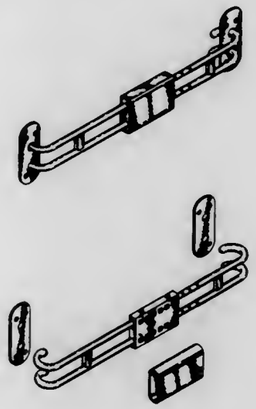
333,417
COMBINED SCREWDRIVER AND WIRE BENDER
Gregory J. Ragsdale, 6414 Virginia Ave., St. Louis, Mo. 63110
Filed Mar. 7, 1991, Ser. No. 665,730
Term of patent 14 years
U.S. Cl. D8—87



333,418
RETRACTABLE BLADE KNIFE
Lynn C. Thompson, 2747 Seahorse, Ventura, Calif. 93001, and Denis Lemaire, 534 Verendrye Street, Boucherville, Quebec, Canada J4B 2Y1
Filed Feb. 19, 1991, Ser. No. 656,635
Term of patent 14 years
U.S. Cl. D8—99

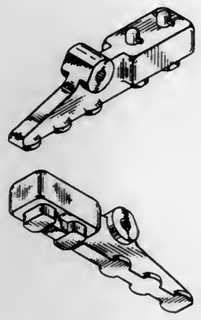


333,419
BAR LOCK FOR PROTECTION OF A TRUCK CAB WINDOW
Andrew McLeod, 6463 Lensen St., Philadelphia, Pa. 19119
Filed Aug. 9, 1990, Ser. No. 564,553
Term of patent 14 years
U.S. Cl. D8—341

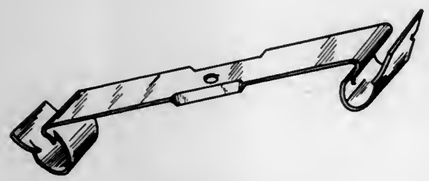


VOL 1147 ISS 4 FE 23 1993 UMI

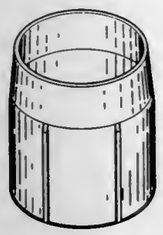
333,420
TRACK FITTING FOR VEHICLE SEATS
Randy J. Bales, Nocona; Klay E. Gilbert, and Steven R. Bell, both of Lindsay, all of Tex., assignors to Weber Aircraft, Inc., Gainesville, Tex.
Filed Dec. 18, 1991, Ser. No. 809,405
Term of patent 14 years
U.S. Cl. D8—349



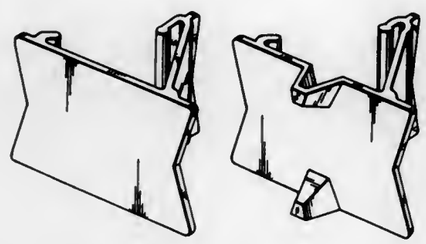
333,421
AIR HOSE BRACKET FOR DUAL WHEELED TRUCKS
Anthony J. Patti, 27610 Fairview Ave., Hayward, Calif. 94542
Filed Aug. 22, 1990, Ser. No. 570,721
Term of patent 14 years
U.S. Cl. D8—356



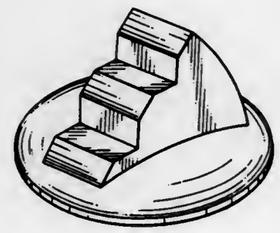
333,422
PLUG FOR A CARPET CORE ROLL
Robert C. Nowotny, Calhoun, Ga., and Gene Hannah, Old Fort, Tenn., assignors to Don Evans, Inc., Deforest, Wis.
Filed Aug. 22, 1990, Ser. No. 571,463
Term of patent 14 years
U.S. Cl. D8—358



333,423
CLIP FOR ATTACHING A WIRE STRAND TO A FENCE POST
Arris A. Sigle, H.C. 1, Box 2, Luray, Kans. 67649
Filed Feb. 2, 1990, Ser. No. 473,693
Term of patent 14 years
U.S. Cl. D8—394



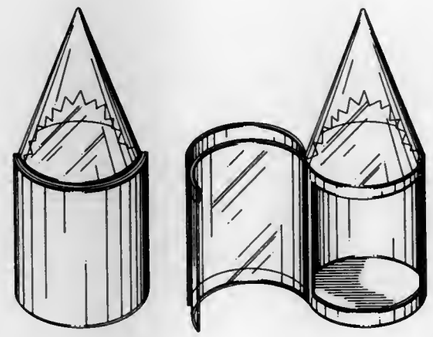
333,424
STOP FOR SLIDING DOORS OR WINDOWS
Scott R. Kramer, 19705 Eagle Ridge La., Northridge, Calif. 91326
Filed Jun. 20, 1991, Ser. No. 718,851
Term of patent 14 years
U.S. Cl. D8—402



333,425
COMBINED COLOGNE ATOMIZER AND CAP
Charles Boussiquet, Paris, France, assignor to Lancome Parfums et Beaute & Cie, Paris, France
Filed Jun. 10, 1991, Ser. No. 713,345
Term of patent 14 years
U.S. Cl. D9—300



333,426
CONTAINER SIMULATING A SPACE SHIP
Michael J. B. Lande, 805 San Vicente Blvd., Santa Monica, Calif. 90402
Filed Oct. 29, 1990, Ser. No. 604,411
Term of patent 14 years
U.S. Cl. D9—307



333,427
SIMULATIVE BOTTLE
Arne H. Brauner, Minnetonka; Shawn P. O'Grady, St. Louis Park; Rod B. Jané, Wayzata; Alden H. Pflager, Minneapolis, and Scott W. Baker, Medina, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Oct. 25, 1991, Ser. No. 782,445
Term of patent 14 years
U.S. Cl. D9—311



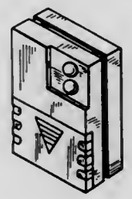
333,428
BOTTLE
Marc Gobe, New York, N.Y., assignor to Victoria's Secret Stores, Inc., Reynoldsburg, Ohio
Filed Aug. 3, 1992, Ser. No. 924,826
Term of patent 14 years
U.S. Cl. D9—315



333,429
BOTTLE
Bernard Koytuk, New York, N.Y., assignor to The Ralph Lauren Trust, New York, N.Y.
Filed Jul. 3, 1990, Ser. No. 547,441
The portion of the term of this patent subsequent to Jan. 14, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—333



333,430
PILL BOX WITH VIBRATOR TIMER
Ingeborg Reiseneder, Chicago, Ill., assignor to The Cloverline, Inc., Chicago, Ill.
Filed Apr. 22, 1991, Ser. No. 688,885
Term of patent 14 years
U.S. Cl. D9—418



VOL
1147
ISS
4
FE
23
1993
UMI

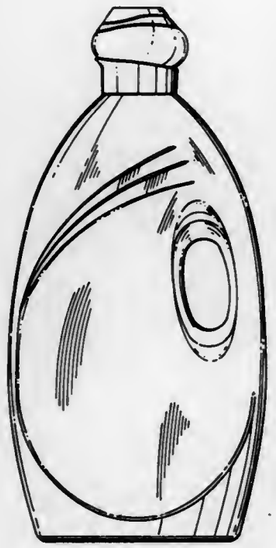
333,431
CLOSURE FOR BAGS
Donovan J. Allen, Taylors, S.C., assignor to Lasso L.P., Greenville, S.C.
Filed Apr. 16, 1991, Ser. No. 686,197
Term of patent 14 years
U.S. Cl. D9—435



333,432
BOTTLE WITH HANDLE
Frank E. Gonda, Fairfield, Conn., and Earl Hoyt, Franklin Lakes, N.J., assignors to Lever Brothers Company, Division of Conopco, Inc., New York, N.N.Y.
Filed Sep. 5, 1991, Ser. No. 755,212
Term of patent 14 years
U.S. Cl. D9—528



333,433
COMBINED BOTTLE AND CAP
Umberto D. I. Segati, Vincennes, France, assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Apr. 22, 1991, Ser. No. 688,206
Term of patent 14 years
U.S. Cl. D9—531



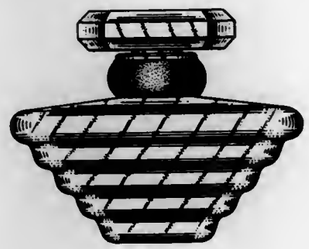
333,434
BOTTLE
Roo Sosenko, 90 Gold St., Ste. 11K, New York, N.Y. 10038
Filed Jan. 30, 1991, Ser. No. 648,398
Term of patent 14 years
U.S. Cl. D9—539



333,435
COMBINED BOTTLE AND CAP
Graham J. Blair, Wirral, England, assignor to Lever Brothers Company, Division of Conopco, Inc., New York, N.Y.
Filed Mar. 16, 1990, Ser. No. 495,532
Term of patent 14 years
U.S. Cl. D9—542



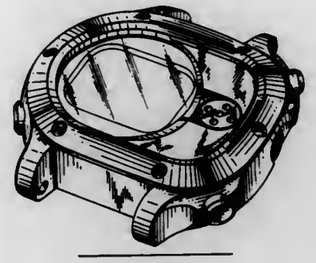
333,436
COLOGNE BOTTLE
Charles Boussiquet, Paris, France, assignor to Lancome Parfums Et Beaute & Cie, Paris, France
Filed Jun. 10, 1991, Ser. No. 713,344
Term of patent 14 years
U.S. Cl. D9—546



333,437
WATCH FACE
Martin Hirschhorn, Boca Raton, Fla., assignor to Time In Motion, Inc., Boca Raton, Fla.
Filed Aug. 22, 1990, Ser. No. 571,524
Term of patent 14 years
U.S. Cl. D10—12



333,438
COMBINED WATCH AND DEPTH GAUGE FOR DIVERS
Keisuke Tsuji, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan
Filed Jul. 18, 1990, Ser. No. 555,542
Claims priority, application Japan, Jan. 18, 1990, 2-1000
Term of patent 14 years
U.S. Cl. D10—31



333,439
WATCH
Larry V. Quinn, Sr., 290 K Street, P.O. Box 593, Lincoln, Calif. 95648
Filed Jun. 15, 1990, Ser. No. 538,480
Term of patent 14 years
U.S. Cl. D10—34

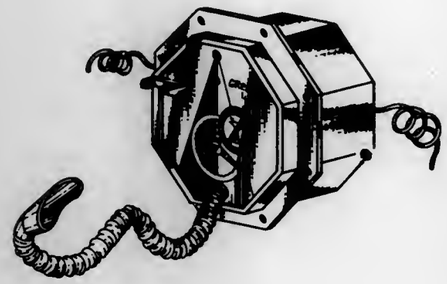


333,440
CRIBBAGE BOARD
David Matheson-Thomas, 265 Cortsen Rd., Pleasant Hill, Calif. 94523
Filed Feb. 28, 1991, Ser. No. 662,798
Term of patent 14 years
U.S. Cl. D10—46.1

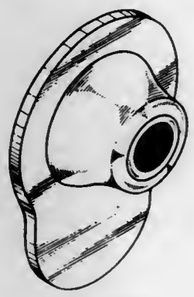


VOL 1147 ISS 4 FE 23 1993 UMI

333,441
SOBRIETY TESTER
Frank Greene, 1320 Custer Ave., Billings, Mont. 59102
Filed Jan. 9, 1990, Ser. No. 462,437
Term of patent 14 years
U.S. Cl. D10—81



333,442
ALARM FOR DROWSY DRIVERS
John J. Del Buono, 120 Brook La., Smithtown, N.Y. 11787
Filed May 31, 1991, Ser. No. 708,619
Term of patent 14 years
U.S. Cl. D10—106



333,443
BELL
Huang C. Shyan, No. 1-1, Changma St., Hsiushui Hsiang, Changhua Hsien, Taiwan
Filed Sep. 25, 1991, Ser. No. 765,165
Term of patent 14 years
U.S. Cl. D10—116



333,444
BELL
Huang C. Shyan, No. 1-1, Changma St., Hsiushui Hsiang, Changhua Hsien, Taiwan
Filed Sep. 25, 1991, Ser. No. 765,166
Term of patent 14 years
U.S. Cl. D10—116



333,445
BELL
Huang C. Shyan, No. 1-1, Changma St., Hsiushui Hsiang, Changhua Hsien, Taiwan
Filed Sep. 26, 1991, Ser. No. 766,680
Term of patent 14 years
U.S. Cl. D10—116



333,446
EXPANSION BRACELET
George T. Butler, Warwick, R.I., assignor to Textron Inc., Providence, R.I.
Filed Jun. 5, 1992, Ser. No. 895,819
Term of patent 14 years
U.S. Cl. D11—19



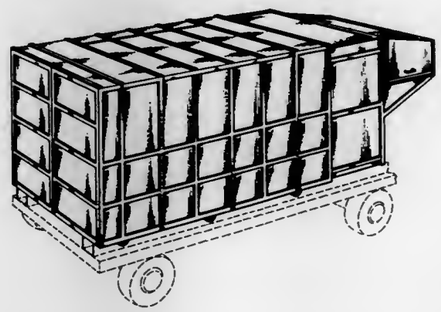
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PHOTO IDENTIFICATION LOCKET
George T. Butler, Jr., Warwick, R.I., assignor to Textron Inc., Providence, R.I.
Filed Mar. 5, 1991, Ser. No. 665,000
Term of patent 14 years
U.S. Cl. D11—80



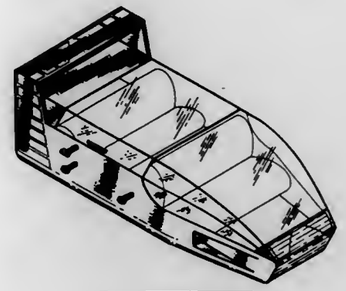
333,448
ANGEL FIGURINE
Judy L. Bohn, 247 Jennifer Cir., Roseville, Calif. 95678
Filed Apr. 8, 1991, Ser. No. 681,400
Term of patent 14 years
U.S. Cl. D11—128



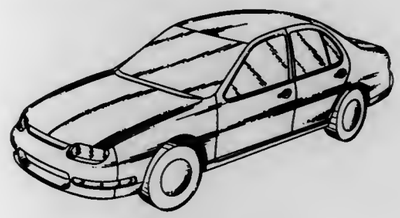
333,449
DUMP TRUCK BODY
Edward J. Camillieri, 8661 Blythe Ave., Orangevale, Calif. 95662, assignor to Edward J. Camillieri, Orangevale, Calif.
Filed Mar. 14, 1991, Ser. No. 670,145
Term of patent 14 years
U.S. Cl. D12—15



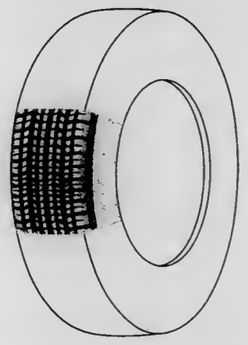
333,450
PASSENGER VEHICLE ATTACHMENT FOR A MOTORCYCLE
Nick A. Hyde, Sr., 1224 W. 5th St., Crowley, La. 70526
Filed Jun. 21, 1991, Ser. No. 718,867
Term of patent 14 years
U.S. Cl. D12—107



333,451
AUTOMOBILE
Allan L. Flowers, Del Mar, Calif., assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Jan. 25, 1991, Ser. No. 645,679
Term of patent 14 years
U.S. Cl. D12—92

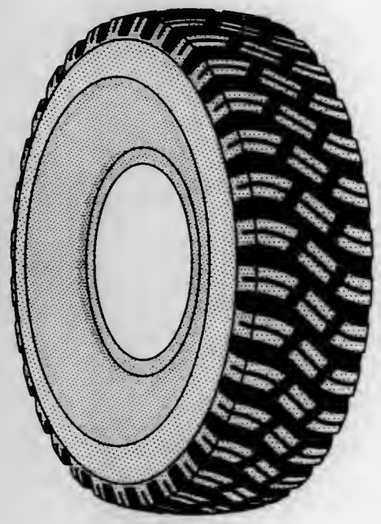


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VEHICLE TIRE
Richard N. Crano, Akron; Douglas A. Neidhart, Tallmadge; Mark D. Slingluff, North Canton, and Gary P. Zoiton, Richfield, all of Ohio, assignors to General Tire, Inc., Akron, Ohio
Filed Aug. 2, 1991, Ser. No. 740,204
Term of patent 14 years
U.S. Cl. D12—146

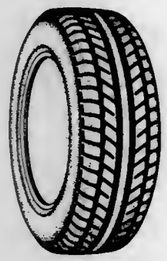


VOL 1147 ISS 4 FEB 23 1993 UMI

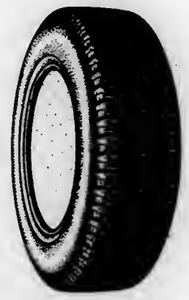
333,453
TIRE
Michael W. Cook, Uniontown; Eathel L. Duncan; James S. Guzi, both of Akron, and Jolan F. Lobb, North Canton, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 3, 1990, Ser. No. 624,902
Term of patent 14 years
U.S. Cl. D12—147



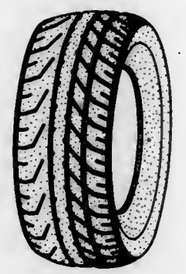
333,454
AUTOMOBILE TIRE
Misao Kawabata, and Hisao Ushikubo, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Dec. 4, 1990, Ser. No. 624,903
Claims priority, application Japan, Jun. 5, 1990, 2-18669
Term of patent 14 years
U.S. Cl. D12—147



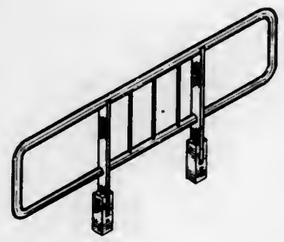
333,455
AUTOMOBILE TIRE
Yasuo Himuro, and Yuji Kato, both of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Jan. 14, 1991, Ser. No. 648,421
Claims priority, application Japan, Jul. 16, 1990, 2-23638
Term of patent 14 years
U.S. Cl. D12—147



333,456
TIRE
Byung L. Woo, Taejon, Rep. of Korea, assignor to Hankook Tire Mfg. Co., Ltd., Rep. of Korea
Filed Feb. 4, 1991, Ser. No. 650,708
Term of patent 14 years
U.S. Cl. D12—147



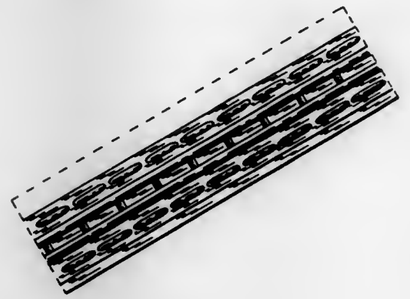
333,457
VEHICLE BUMPER GUARD
Paul W. La Foe, and Donna La Foe, both of R.R. 3 Box 225, Veedersburg, Ind. 47987
Filed Aug. 7, 1991, Ser. No. 741,162
Term of patent 14 years
U.S. Cl. D12—171



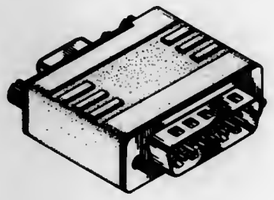
333,458
BRAKE LEVER
Jerry D. Adam, 2302 - 138 Silvergrove Drive N.W., Calgary, Alberta, Canada T3B 5H4
Filed Apr. 9, 1991, Ser. No. 682,218
Term of patent 14 years
U.S. Cl. D12—179



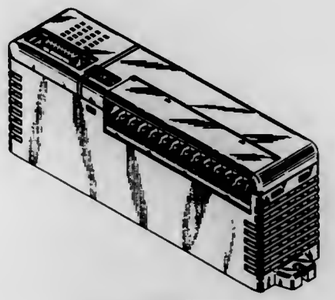
333,459
SEGMENT OF EDGING FOR A CAR MAT
Marc A. Cole, Brooklyn, Mich., assignor to Brooklyn Products, Inc., Brooklyn, Mich.
Filed Feb. 22, 1991, Ser. No. 659,048
Term of patent 14 years
U.S. Cl. D12—203



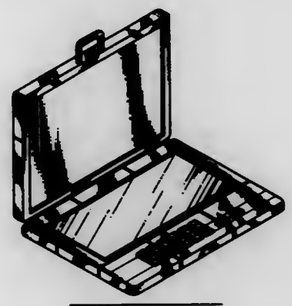
333,460
ELECTRICAL CONNECTOR
George Y. Huang, 4-2F, No. 5, Sec. 1, Pa-Te Rd., Taipei City, Taiwan
Filed Jan. 11, 1991, Ser. No. 639,943
Term of patent 14 years
U.S. Cl. D13—147



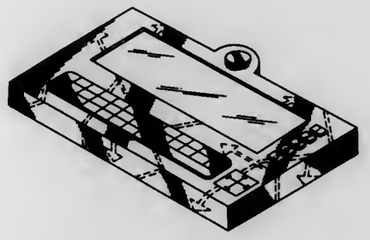
333,461
REMOTE CONTROL UNIT FOR PROGRAMMABLE CONTROLLER
Norio Shimizu, and Yuichi Watanabe, both of Tokyo, Japan, assignors to Koyo Electronics Industries Co., Ltd., Tokyo, Japan
Filed Sep. 7, 1990, Ser. No. 579,450
Claims priority, application Japan, Mar. 15, 1990, 2-8727
Term of patent 14 years
U.S. Cl. D13—162



333,462
PORTABLE ELECTRONIC MAP DISPLAY
Kenneth A. Tyson, 1808 N. 7th St., Zepyhills, Fla. 34248
Filed Feb. 14, 1990, Ser. No. 479,751
Term of patent 14 years
U.S. Cl. D14—113

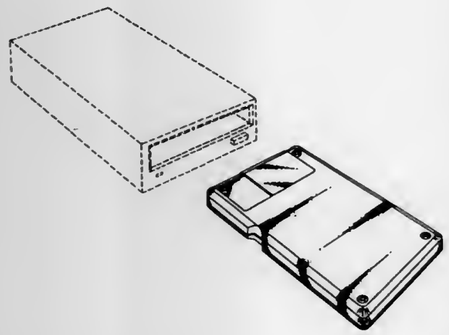


333,463
PORTABLE ELECTRONIC MAP DISPLAY
Salvatore Battaglia, 3214 Parsifal Pl., Country Club, N.Y. 10465
Filed Jun. 5, 1990, Ser. No. 533,697
Term of patent 14 years
U.S. Cl. D14—113

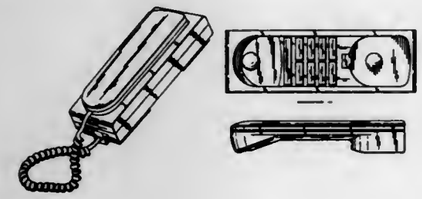


VOL 1147 ISS 4 FEB 23 1993 UMI

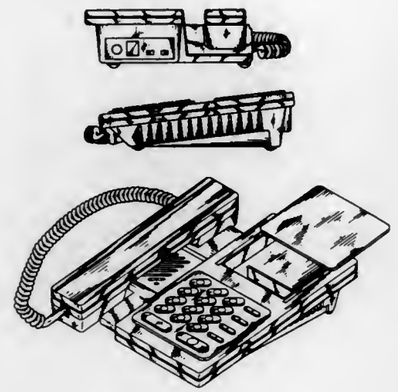
333,464
DISK MAGAZINE FOR DISK UNIT
Kosubun Yoshida, Sayama, Japan, assignor to TEAC Corporation, Tokyo, Japan
Filed Jun. 25, 1990, Ser. No. 543,180
Claims priority, application Japan, Mar. 22, 1990, 2-9664
Term of patent 14 years
U.S. Cl. D14—114



333,465
TELEPHONE SET
Robert J. Hayes, Gahanna, Ohio; Vincent L. Haley, Raleigh, N.C., and Robert W. Mervar, Dublin, Ohio, assignors to Forerunner Corporation, Columbus, Ohio
Filed Jan. 16, 1991, Ser. No. 641,563
Term of patent 14 years
U.S. Cl. D14—142



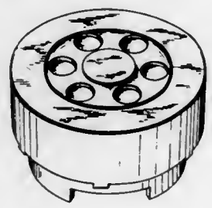
333,466
TELEPHONE SET
Wu S. Chung, 12Fl., No. 126, Sec. 4, Nanking E. Rd., Taipei, Taiwan
Filed Nov. 26, 1990, Ser. No. 617,866
Term of patent 14 years
U.S. Cl. D14—151



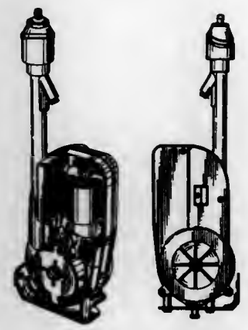
333,467
SPEAKER BOX
Kentaro Yamamoto, Tokyo, Japan, assignor to Yamaha Corporation, Japan
Filed Apr. 30, 1990, Ser. No. 517,053
Claims priority, application Japan, Nov. 1, 1989, 1-39966
Term of patent 14 years
U.S. Cl. D14—214



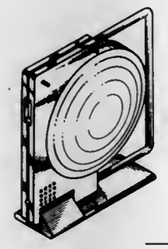
333,468
TRANSDUCER
Kaj B. Hansen, Horsens, Denmark, assignor to Kirk Acoustics A/S, Horsens, Denmark
Filed Apr. 9, 1990, Ser. No. 505,684
Claims priority, application Denmark, Oct. 9, 1989, 1223
Term of patent 14 years
U.S. Cl. D14—222



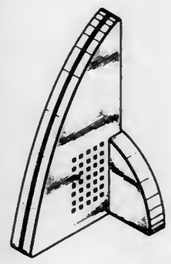
333,469
ANTENNA FOR AUTOMOBILES
Kiyoshi Tezuka, Tokyo, Japan, assignor to Harada Industry Co., Ltd., Tokyo, Japan
Filed Aug. 8, 1990, Ser. No. 564,305
Claims priority, application Japan, Feb. 9, 1990, 2-3648
Term of patent 14 years
U.S. Cl. D14—230



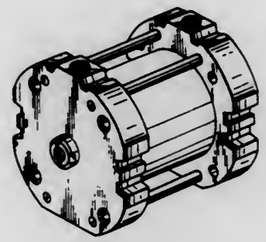
333,470
FOLDABLE ANTENNA
Andy S. Vong, Venice, Calif., assignor to Parsec Delaware, Ltd., Wilmington, Del.
Filed Dec. 3, 1990, Ser. No. 620,930
Term of patent 14 years
U.S. Cl. D14—230



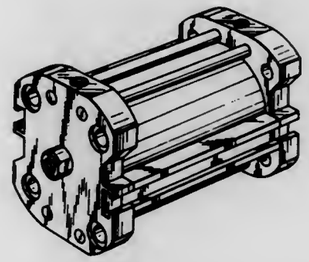
333,471
ANTENNA
Andy S. Vong, Venice, Calif., assignor to Parsec Delaware, Ltd., Wilmington, Del.
Filed Dec. 3, 1990, Ser. No. 621,544
Term of patent 14 years
U.S. Cl. D14—230



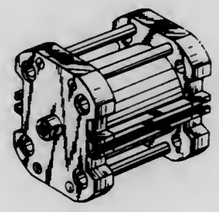
333,472
AIR CYLINDER
Akira Aizawa, Soka, Japan, assignor to SMC Corporation, Tokyo, Japan
Filed Feb. 28, 1990, Ser. No. 486,171
Claims priority, application Japan, Aug. 30, 1989, 1-31570; Aug. 30, 1989, 1-31575
Term of patent 14 years
U.S. Cl. D15—7



333,473
AIR CYLINDER
Akira Aizawa, Soka, Japan, assignor to SMC Corporation, Tokyo, Japan
Filed Feb. 28, 1990, Ser. No. 486,176
Claims priority, application Japan, Aug. 30, 1989, 1-31573
Term of patent 14 years
U.S. Cl. D15—7

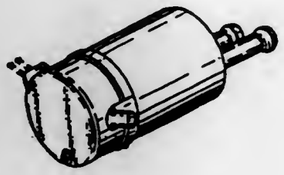


333,474
AIR CYLINDER
Akira Aizawa, Soka, Japan, assignor to SMC Corporation, Tokyo, Japan
Filed Feb. 28, 1990, Ser. No. 486,177
Claims priority, application Japan, Aug. 30, 1989, 1-31574
Term of patent 14 years
U.S. Cl. D15—7

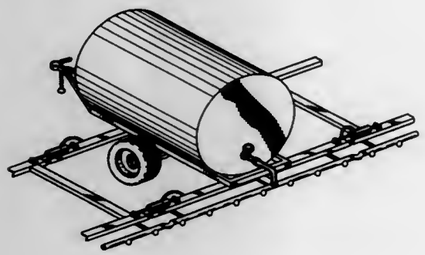


VOL 1147 ISS 4 FE 23 1993 UMI

333,475
FUEL PUMP FOR AUTOMOBILE
Hisashi Kuwada, and Hajime Takaie, both of Fukuyama, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 26, 1990, Ser. No. 488,970
Claims priority, application Japan, Sep. 25, 1989, 1-34843
Term of patent 14 years
U.S. Cl. D15—9.1



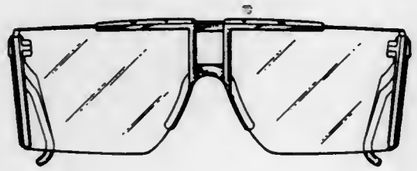
333,476
AGRICULTURAL SPRAYER
Ross Gingrich, R.R. 1, Roanoke, Ill. 61561
Filed Nov. 29, 1990, Ser. No. 619,692
Term of patent 14 years
U.S. Cl. D15—13



333,477
CAN CRUSHER
Cecil J. Stralow, 14672 Brookstone Dr., Poway, Calif. 92064
Filed Jan. 18, 1991, Ser. No. 642,770
Term of patent 14 years
U.S. Cl. D15—123



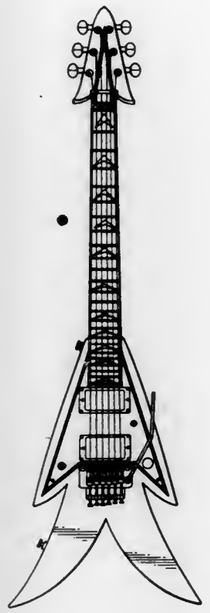
333,478
EYEGLASS SAFETY FRAME
Richard T. Metcalfe, Sturbridge, Mass., and Richard H. Seager, Mystic, Conn., assignors to Cabot Safety Corporation, Southbridge, Mass.
Filed Nov. 8, 1991, Ser. No. 789,478
Term of patent 14 years
U.S. Cl. D16—102



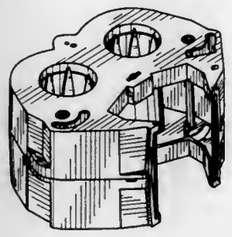
333,479
TRIPOD FOR A CAMERA
Lee Chun-Mao, No. 22, Alley 7, Lane 428, Chung Cheng N. Rd., San Chorng City, Taipei Hsien, Taiwan
Filed Dec. 17, 1990, Ser. No. 629,125
Term of patent 14 years
U.S. Cl. D16—244



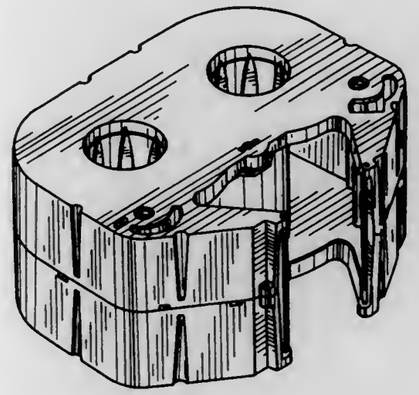
333,480
ELECTRIC GUITAR
Steven E. Arsenault, 86 Bailey Ave., Lewiston, Me. 04240
Filed May 2, 1991, Ser. No. 695,031
Term of patent 14 years
U.S. Cl. D17—19



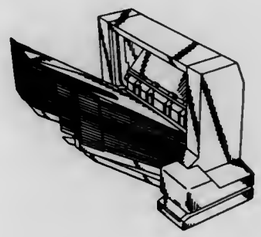
333,481
INK RIBBON CARTRIDGE
Jean-Marie G. Laurent, Gonesse, France, assignor to I.E.R., Courbevoie, France
Filed Apr. 18, 1990, Ser. No. 510,820
Claims priority, application France, Oct. 18, 1989, 896509
Term of patent 14 years
U.S. Cl. D18—12



333,482
INK RIBBON CARTRIDGE
Jean-Marie G. Laurent, Gonesse, France, assignor to I.E.R., Courbevoie, France
Filed Apr. 18, 1990, Ser. No. 510,870
Claims priority, application France, Oct. 18, 1989, 896509
Term of patent 14 years
U.S. Cl. D18—12

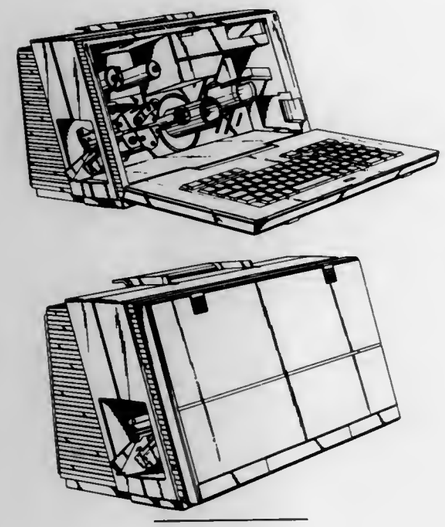


333,483
SORTER FOR AN IMAGE FORMING APPARATUS
Yutaka Nishimura, Hirakata, and Yoichiro Irie, Suita, both of Japan, assignors to Mita Industrial Co., Ltd., Japan
Filed May 24, 1991, Ser. No. 705,141
Claims priority, application Japan, Nov. 30, 1990, 40477/1990
Term of patent 14 years
U.S. Cl. D18—48

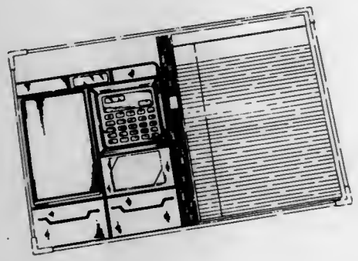


VOL 1147 ISS 4 FE 23 1993 UMI

333,484
PORTABLE PRINTER
Alexander Neumeister, Von Goebel Platz 8, W-8000 Munchen 19, Fed. Rep. of Germany
Filed Oct. 22, 1990, Ser. No. 602,082
Claims priority, application United Kingdom, Apr. 23, 1990, D2006306
Term of patent 14 years
U.S. Cl. D18—52



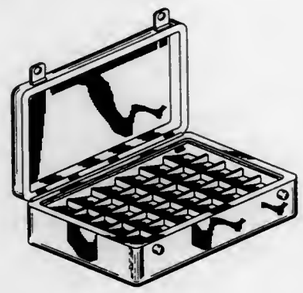
333,485
ACCESSORY POCKET FOR PORTFOLIO
Randy A. Kogutt, Dallas, Tex., assignor to Dart Mannfacturing Company, Dallas, Tex.
Filed Jni. 22, 1991, Ser. No. 733,235
Term of patent 14 years
U.S. Cl. D19—32



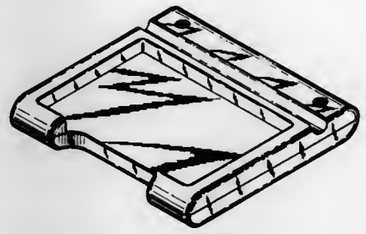
333,486
BALL POINT PEN
Xavier Rousseau, Paris, France, assignor to S.T. DuPont Societe Anonyme, Paris, France
Filed Feb. 28, 1990, Ser. No. 486,713
Claims priority, application France, Oct. 9, 1989, 89 6283
The portion of the term of this patent subsequent to Nov. 24, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D19—49



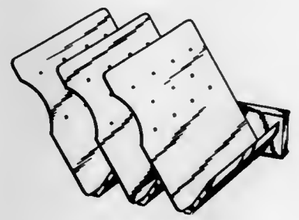
333,487
COMPARTMENTED STORAGE BOX FOR PASTELS
Paul A. Papp, 36 Longfellow Cir., Ormond Beach, Fla. 32074
Filed Jul. 10, 1989, Ser. No. 377,306
Term of patent 14 years
U.S. Cl. D19—75



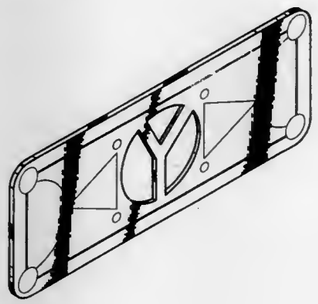
333,488
COMBINED NOTE PAPER AND WRITING INSTRUMENT HOLDER
Balthasar Kirchner, Eferding, Austria, assignor to Ernst Stadelmann Gesellschaft M.B.H., Eferding, Austria
Filed Aug. 17, 1990, Ser. No. 569,453
Claims priority, application Austria, Feb. 22, 1990, 27886; Feb. 22, 1990, 27887; Feb. 22, 1990, 27888; Feb. 22, 1990, 27889; Feb. 22, 1990, 27890; Feb. 22, 1990, 27891; Feb. 22, 1990, 27892
Term of patent 14 years
U.S. Cl. D19—78



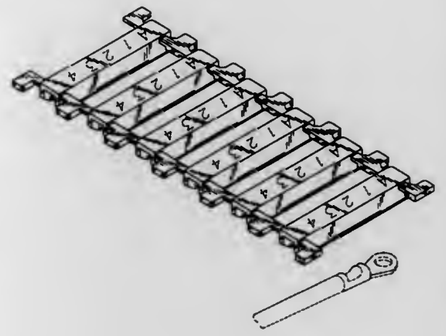
333,489
DIAGONAL PAPER SORTER
Timothy R. Stern, Grand Rapids, Mich., and Paul B. Siebert, Chicago, Ill., assignors to Steelcase Inc., Grand Rapids, Mich.
Continuation-in-part of Ser. No. 307,588, Feb. 7, 1989, abandoned. This application Jun. 28, 1991, Ser. No. 723,508
Term of patent 14 years
U.S. Cl. D19—90



333,490
VEHICLE IDENTIFICATION TAG
John E. Engelberts, 700 Christine Dr., Midwest City, Okla. 73130
Filed Nov. 1, 1990, Ser. No. 607,491
Term of patent 14 years
U.S. Cl. D20—13



333,491
SET OF IDENTIFICATION TAGS FOR ELECTRICAL WIRE ENDS
Katsuhisa Mori, Osaka; Keiji Sonoda, Nara, and Hideo Miyata, Neyagawashi, all of Japan, assignors to Nichifu Terminal Manufacture Co., Ltd., Osaka, Japan
Filed Oct. 24, 1990, Ser. No. 603,820
Claims priority, application Japan, Apr. 25, 1990, 2-14449
Term of patent 14 years
U.S. Cl. D20—22

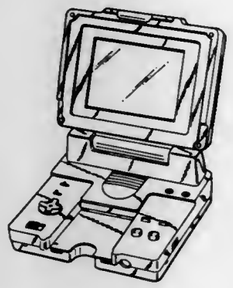


333,492
GAME TABLE
Robert Paredes, 5 E. Halley La., Central Islip, N.Y. 11722-2205
Filed Aug. 9, 1990, Ser. No. 564,548
Term of patent 14 years
U.S. Cl. D21—5

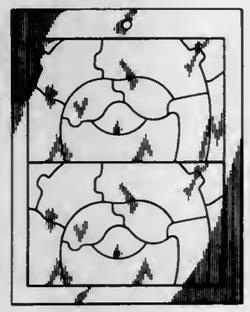


VOL 1147 ISS 4 FEB 23 1993 UMI

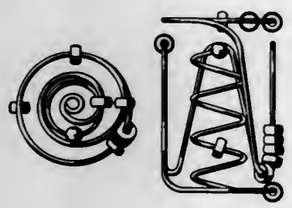
333,493
ELECTRONIC GAME HOUSING
Masanori Sato, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo and Hudson Soft Co., Ltd., Hokkaido, both of, Japan
Filed Nov. 20, 1991, Ser. No. 796,126
Claims priority, application Japan, May 20, 1991, 3-14573
Term of patent 14 years
U.S. Cl. D21—13



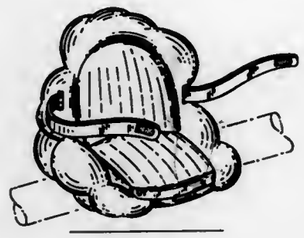
333,494
JIGSAW PUZZLE
Benjamin Fagan, 5032 N. Santa Monica, Whitefish Bay, Wis. 53217
Filed Jan. 16, 1991, Ser. No. 641,566
Term of patent 14 years
U.S. Cl. D21—104



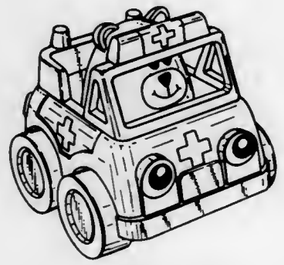
333,495
TOY
Kathy Klaus, 169 Aspen Heights, 23330 Rd. 522, Sherwood Park, Alberta, Canada T8B 1H8
Filed Apr. 15, 1991, Ser. No. 685,201
Term of patent 14 years
U.S. Cl. D21—106



333,496
DOLL SEAT
J. Dolores Cardillo, 77 Salisbury St., Hull, Mass. 02045
Continuation-in-part of Ser. No. 237,558, Aug. 29, 1988, abandoned. This application Aug. 7, 1990, Ser. No. 564,292
Term of patent 14 years
U.S. Cl. D21—123



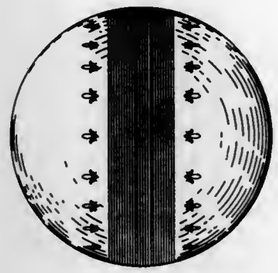
333,497
TOY EMERGENCY VEHICLE
Ian T. Revell, Knutsford, Great Britain, assignor to Kiddicraft Limited, Berkshire, Great Britain
Filed Jul. 10, 1991, Ser. No. 728,086
Claims priority, application United Kingdom, Jan. 11, 1991, 2012277
Term of patent 14 years
U.S. Cl. D21—128



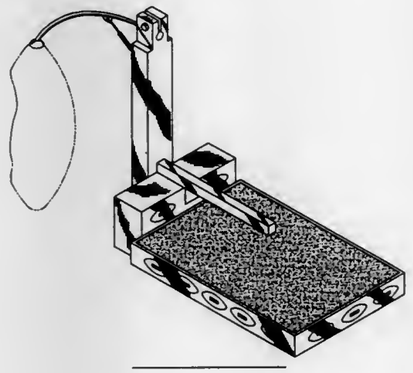
333,498
DOLL
Cheri M. Anthony, Rte. 1 Box 58-A, Brooksville, Miss. 39739
Filed Jan. 18, 1991, Ser. No. 643,062
Term of patent 14 years
U.S. Cl. D21—171



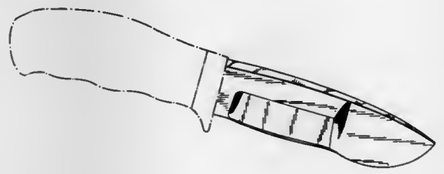
333,499
WARM-UP BALL
Jack F. Perrone, 113 Merriweather Dr., Syracuse, N.Y. 13219
Filed Oct. 18, 1990, Ser. No. 599,388
Term of patent 14 years
U.S. Cl. D21—205



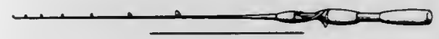
333,500
FOOTBALL KICKING TEE
David J. Berger, and Richard E. Berger, both of 5995 Whitman Rd., Columbus, Ohio 43213
Filed Aug. 15, 1990, Ser. No. 567,653
Term of patent 14 years
U.S. Cl. D21—209



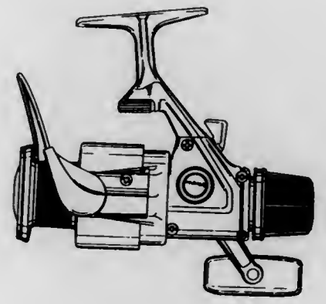
333,501
KNIFE BLADE
Robert W. Loveless, Riverside, Calif., assignor to Beretta U.S.A. Corp., Accokeek, Md.
Filed May 16, 1989, Ser. No. 352,453
Term of patent 14 years
U.S. Cl. D22—118



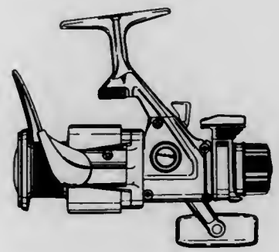
333,502
FISHING ROD
Kenji Onishi, Osaka, Japan, assignor to Shimano Industrial Co., Ltd., Osaka, Japan
Filed Feb. 21, 1990, Ser. No. 483,429
The portion of the term of this patent subsequent to Dec. 15, 2006, has been disclaimed.
Term of patent 14 years
U.S. Cl. D22—142



333,503
FISHING REEL
Seiji Myojo, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan
Continuation-in-part of Ser. No. 216,997, Jul. 11, 1988, abandoned. This application Feb. 23, 1990, Ser. No. 483,781
Claims priority, application Japan, Jan. 12, 1988, 63-970
Term of patent 14 years
U.S. Cl. D22—141

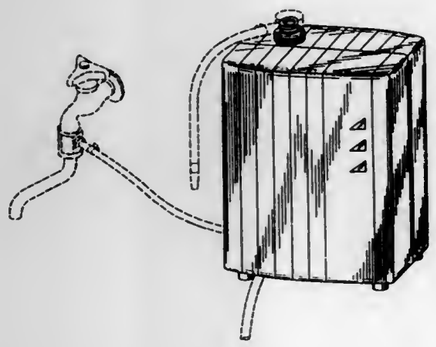


333,504
FISHING REEL
Seiji Myojo, Sakai, Japan, assignor to Shimano Inc., Osaka, Japan
Continuation-in-part of Ser. No. 216,998, Jul. 11, 1988, abandoned. This application Feb. 23, 1990, Ser. No. 483,783
Claims priority, application Japan, Jan. 12, 1988, 63-969
Term of patent 14 years
U.S. Cl. D22—141



VOL 1147 ISS 4 FEB 23 1993 UMI

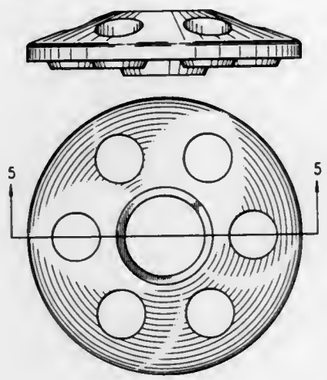
333,505
APPARATUS FOR PRODUCING ELECTROLYZED WATER
Yoshio Matsumura, 45-17, Koiue 5-chome, Nishi-ku, Hiroshima-shi, Hiroshima-ken, Japan
Filed Aug. 17, 1990, Ser. No. 569,166
Claims priority, application Japan, Feb. 27, 1990, 2-6280
Term of patent 14 years
U.S. Cl. D23—200



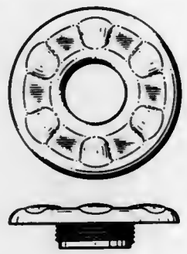
333,506
FUNNEL
Donald P. Krajewski, 548 Maple Dr., Stewartsville, N.J. 08886
Filed May 1, 1991, Ser. No. 694,040
Term of patent 14 years
U.S. Cl. D23—200



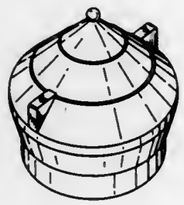
333,507
LAWN SPRINKLER HEAD PROTECTOR
Arthur D. Colo'n, 9821 Summerwood Cr., #1404, Dallas, Tex. 75243
Filed Jul. 18, 1991, Ser. No. 738,723
Term of patent 14 years
U.S. Cl. D23—213



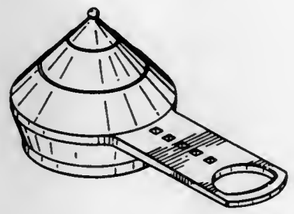
333,508
ESCUTCHEON FOR A WHIRLPOOL JET NOZZLE
Dewey K. Wallace, 1615 Wendy Way, Richardson, Tex. 75081
Filed Apr. 2, 1990, Ser. No. 504,264
Term of patent 14 years
U.S. Cl. D23—249



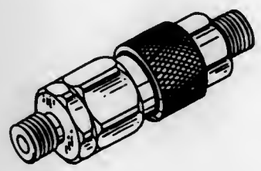
333,509
FAUCET HANDLE
Andreas Haug, and Thomas Schoenherr, both of Stuttgart, Fed. Rep. of Germany, assignors to Hans Grohe GmbH & Co. KG, Fed. Rep. of Germany
Filed Apr. 3, 1991, Ser. No. 679,583
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1990, 9006679[U]
Term of patent 14 years
U.S. Cl. D23—250



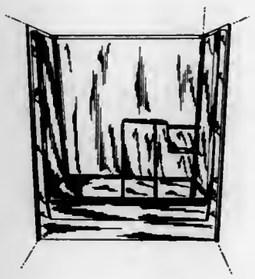
333,510
FAUCET HANDLE
Andreas Haug, and Thomas Schoenherr, both of Stuttgart, Fed. Rep. of Germany, assignors to Hans Grohe GmbH & Co. KG, Fed. Rep. of Germany
Filed Apr. 3, 1991, Ser. No. 679,589
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1990, 9006679[U]
Term of patent 14 years
U.S. Cl. D23—252



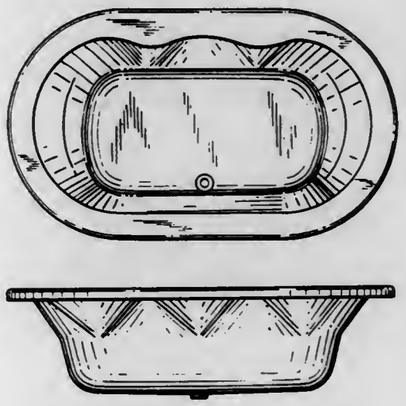
333,511
PIPE COUPLER
Toshio Mikiya, and Reichi Makishima, both of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan
Filed Sep. 18, 1990, Ser. No. 584,575
Claims priority, application Japan, Mar. 20, 1990, 2-9088
The portion of the term of this patent subsequent to Feb. 9, 2007, has been disclaimed.
Term of patent 14 years
U.S. Cl. D23—262



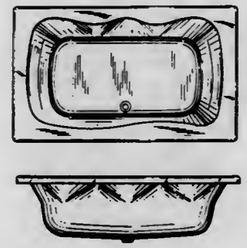
333,512
COMBINED BATHTUB AND SHOWER ENCLOSURE
Herbert V. Kohler, Jr., Kohler; Anthony J. Kashinn, Grafton, and Glen D. Rauwerdink, Hingham, all of Wis., assignors to Kohler Co., Kohler, Wis.
Filed Jun. 7, 1991, Ser. No. 712,809
Term of patent 14 years
U.S. Cl. D23—275



333,513
BATHTUB
Robin H. Levien, London, England, assignor to American Standard Inc., New York, N.Y.
Division of Ser. No. 554,031, Jul. 17, 1990, Pat. No. D. 330,934.
This application Jul. 30, 1992, Ser. No. 921,498
Claims priority, application World Int. Prop. O., Jan. 23, 1990, DM/015663
Term of patent 14 years
U.S. Cl. D23—277

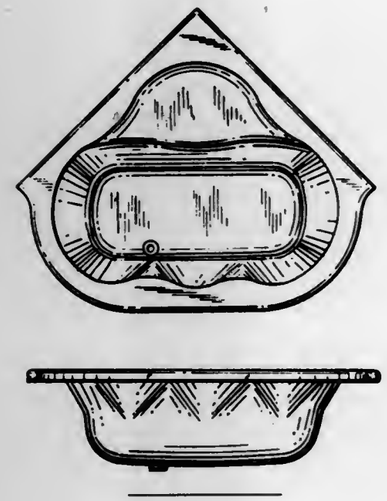


333,514
BATHTUB
Robin H. Levien, London, England, assignor to American Standard Inc., New York, N.Y.
Division of Ser. No. 554,031, Jul. 17, 1990, Pat. No. D. 330,934.
This application Jul. 30, 1992, Ser. No. 921,499
Claims priority, application World Int. Prop. O., Jan. 23, 1990, DM/015663
Term of patent 14 years
U.S. Cl. D23—277



VOL 1147 ISS 4 FEB 23 1993 UMI

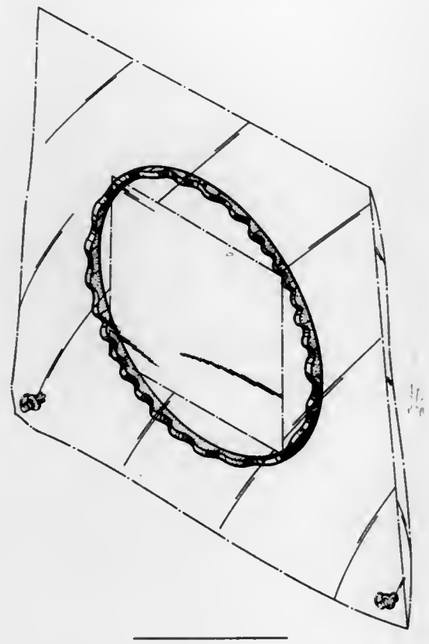
333,515
BATHTUB
Robin H. Levien, London, England, assignor to American Standard Inc., New York, N.Y.
Division of Ser. No. 554,031, Jul. 17, 1990, Pat. No. Des. 330,934. This application Jul. 30, 1992, Ser. No. 921,500
Claims priority, application World Int. Prop. O., Jan. 23, 1990, DM/015663
Term of patent 14 years
U.S. Cl. D23—277



333,516
COMBINED HEAT SHIELD AND BLOWER FOR DISPERSING HEAT FROM A WOOD BURNING STOVE
Lorin L. Lippert, 1605 Meadow La., Rapid City, S. Dak. 57701
Filed Aug. 15, 1990, Ser. No. 567,550
Term of patent 14 years
U.S. Cl. D23—403



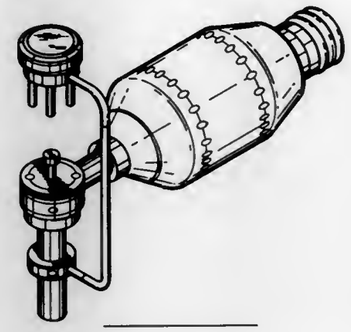
333,517
SUPPORT FOR A FLUID COLLECTION POUCH
Dennis R. Alcorn, and Robert E. Delk, both of Dallas, Tex., assignors to Struckmeyer Corporation, Dallas, Tex.
Filed Aug. 6, 1990, Ser. No. 562,962
Term of patent 14 years
U.S. Cl. D24—117



333,518
INTRAVENOUS ROLLER CLAMP GUARD
Garry F. Gillette, 91 Bromback St., Pittsfield, Mass. 01201
Filed Mar. 29, 1991, Ser. No. 677,284
Term of patent 14 years
U.S. Cl. D24—127



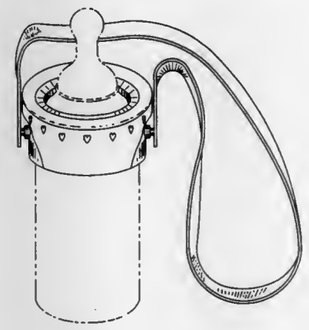
333,519
MANOMETER FOR MEASURING INTRATHORACIC PRESSURE OF AN INFANT
Todd Scheer, 6732 Woodlake, Apt. #324, Orlando, Fla. 32810
Filed Dec. 10, 1990, Ser. No. 624,675
Term of patent 14 years
U.S. Cl. D24—186



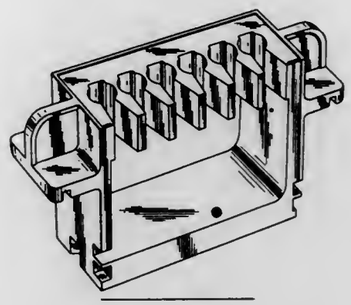
333,520
HAND SPLINT
Donaerl B. Mann, St. Petersburg, Fla., assignor to D'Mannco, Inc., High Springs, Fla.
Filed Dec. 24, 1990, Ser. No. 632,741
Term of patent 14 years
U.S. Cl. D24—190



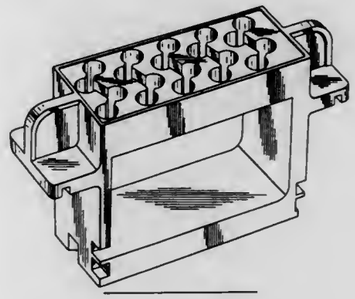
333,521
BABY BOTTLE KEEPER
James E. Jamerson, 102 Wimbish La., Bonaire, Ga. 31005, and Isaac D. Jamerson, 301 Republican St., Winona, Mich. 38967
Filed Jun. 15, 1990, Ser. No. 538,489
Term of patent 14 years
U.S. Cl. D24—199



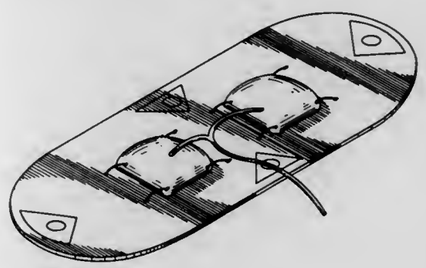
333,522
SAMPLE TUBE HOLDER
F. Thomas Gianino, Bradford, Mass., assignor to P B Diagnostic Systems, Inc., Westwood, Mass.
Filed Jul. 23, 1991, Ser. No. 734,806
Term of patent 14 years
U.S. Cl. D24—229



333,523
SAMPLE CUP HOLDER
F. Thomas Gianino, Bradford, Mass., assignor to P B Diagnostic Systems, Inc., Westwood, Mass.
Filed Jul. 23, 1991, Ser. No. 734,811
Term of patent 14 years
U.S. Cl. D24—229

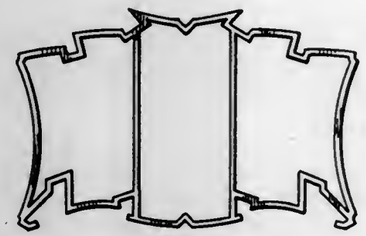


333,524
POOL COVER
Matthew Niedfeld, 213 Doris Ave., North Bellmore, N.Y. 11710
Filed Oct. 30, 1990, Ser. No. 605,470
Term of patent 14 years
U.S. Cl. D25—2

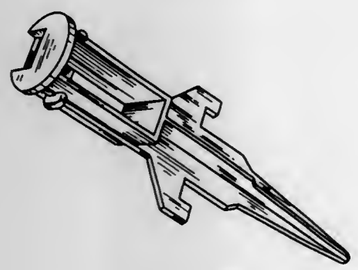


VOL 1147 ISS 4 FE 23 1993 UMI

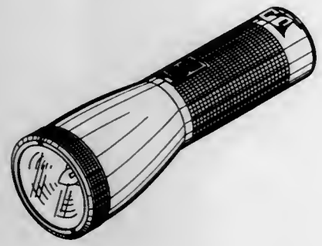
333,525
DECORATIVE EXTRUSION
Peter M. Stagl, Morris Plains, N.J., assignor to Avnet, Inc., Great Neck, N.Y.
Filed Aug. 17, 1990, Ser. No. 569,418
Term of patent 14 years
U.S. Cl. D25—124



333,526
STAKE FOR SUPPORTING AN OUTDOOR CHRISTMAS LIGHT
Beverly W. Taylor, Hermann, Mo., assignor to Handi-Pac, Inc., Hermann, Mo.
Filed Jul. 3, 1990, Ser. No. 548,731
Term of patent 14 years
U.S. Cl. D25—131



333,527
RECHARGEABLE FLASHLIGHT
Chung S. Leung, Tsuen Wan, Hong Kong, assignor to Foster Industries Co., Ltd., Hong Kong, Hong Kong
Filed Jan. 16, 1991, Ser. No. 645,002
Claims priority, application United Kingdom, Jul. 30, 1990, 2008623
Term of patent 14 years
U.S. Cl. D26—49



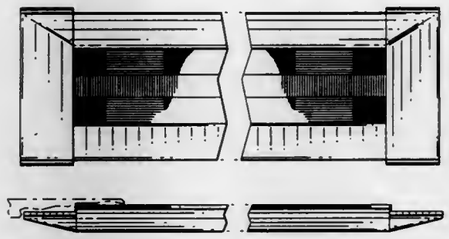
333,528
ADJUSTABLE LAMP
Thierry Blet, Paris, France, assignor to Societe Elixir, Paris, France
Filed Jul. 18, 1991, Ser. No. 731,940
Claims priority, application France, Jan. 18, 1991, 91 0299
Term of patent 14 years
U.S. Cl. D26—62



333,529
OUTDOOR FLOODLIGHT
John F. Denison, Lake Villa; John A. Czerlanis, Solon Mills, both of Ill., and Robert D. Giese, Racine, Wis., assignors to Intermatic Incorporated, Spring Grove, Ill.
Filed Nov. 1, 1990, Ser. No. 609,451
Term of patent 14 years
U.S. Cl. D26—68



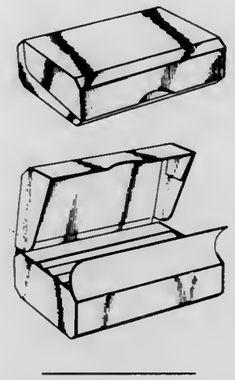
333,530
UNDER-SHELF TASK LIGHT
Bruce K. Boundy, Caledonia Township, Kent County, Mich., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.
Filed Jan. 28, 1991, Ser. No. 648,436
Term of patent 14 years
U.S. Cl. D26—74



333,531
WALL-MOUNTED LANTERN
Mark W. Rottner, Atlanta, Ga., assignor to Georgian Art Lighting Designs, Inc., Lawrenceville, Ga.
Filed Mar. 13, 1991, Ser. No. 669,215
Term of patent 14 years
U.S. Cl. D26—87



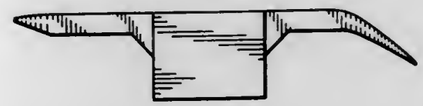
333,532
CIGARETTE PACK
Christopher J. Campbell, Pully, Switzerland, assignor to Fabriques de Tabac Reunies, S.A., Neuchatel, Switzerland
Filed May 14, 1991, Ser. No. 699,795
Claims priority, application United Kingdom, Nov. 14, 1990, 2011064
Term of patent 14 years
U.S. Cl. D27—189



333,533
MIRROR WITH CONVERTIBLE HANDLE AND STAND
Kwok W. Lee, Lomak Industrial Building, 11 Yip Cheong Street On Lok Tsuen Industrial Park, Fanling, New Territories, Hong Kong
Filed Oct. 30, 1990, Ser. No. 605,477
Claims priority, application United Kingdom, May 14, 1990, 2006806
Term of patent 14 years
U.S. Cl. D28—64.1

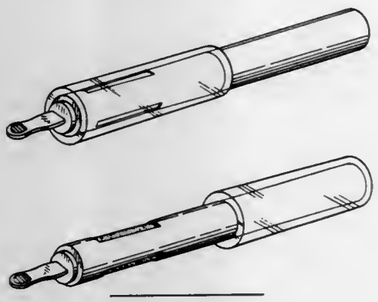


333,534
TOOTHPICK
Nicomedes Dizon, 8822 Willis Ave., Box 2, Panorama City, Calif. 91402
Filed Mar. 11, 1991, Ser. No. 667,075
Term of patent 14 years
U.S. Cl. D28—64

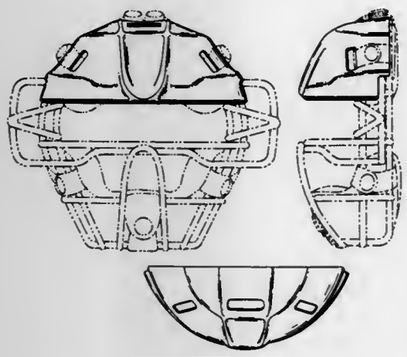


VOL
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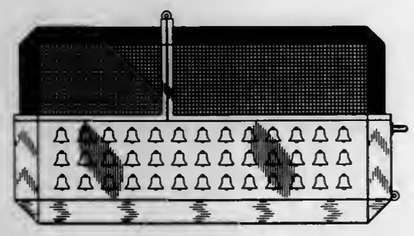
333,535
COSMETIC COMPACT
Melvin E. Kamen, Highlands, and Philip Bernstein, Glen Ridge, both of N.J., assignors to Revlon Consumer Products Corporation, New York, N.Y.
Filed Jul. 5, 1990, Ser. No. 548,634
Term of patent 14 years
U.S. Cl. D28—78



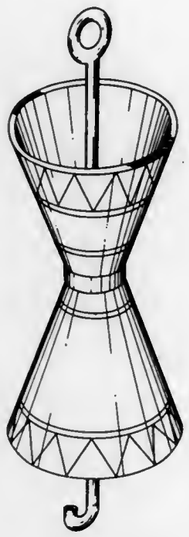
333,536
CATCHER'S MASK VISOR
Timothy J. Dooley, 964 Murdoch La., Ventura, Calif. 93003
Filed May 18, 1990, Ser. No. 525,481
Term of patent 14 years
U.S. Cl. D29—16



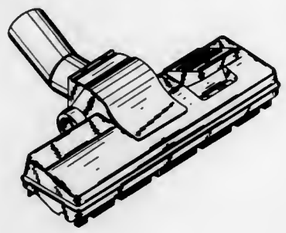
333,537
TRANSPORTABLE PET SHELTER FOR THE BED OF A PICKUP TRUCK
Walter C. Muse, Jr., 907 E. Village La., Austin, Tex. 78758
Filed Dec. 14, 1990, Ser. No. 627,373
Term of patent 14 years
U.S. Cl. D30—114



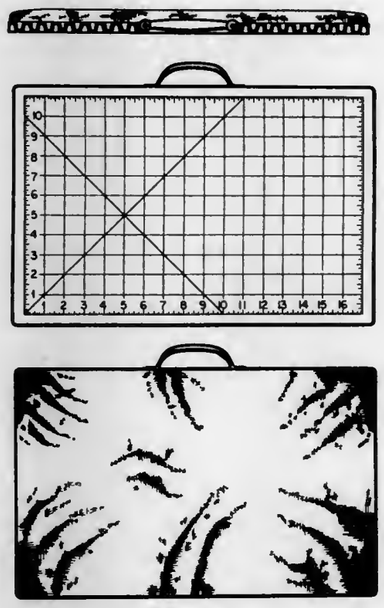
333,538
ANT STOPPER FOR USE WITH A HUMMINGBIRD FEEDER
Gerald E. Kingsley, P.O. Box 158, Lebanon, Oreg. 97355
Filed Jun. 14, 1990, Ser. No. 537,750
Term of patent 14 years
U.S. Cl. D30—199



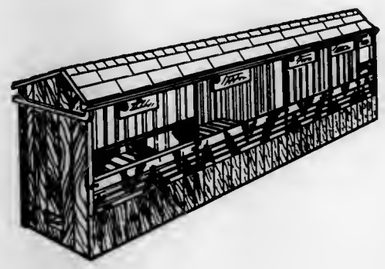
333,539
SUCTION CLEANER NOZZLE
Wilfried Krämer, Reichshof-Odenspiel; Kalus-Dieter Riehl, Drolshagen-Brachtpe, and Otto Illesy, Reichshof-Erdingen, all of Fed. Rep. of Germany, assignors to Wessel-Werk GmbH, Reichshof, Fed. Rep. of Germany
Filed Sep. 1, 1989, Ser. No. 402,141
The portion of the term of this patent subsequent to Feb. 2, 2010, has been disclaimed.
Term of patent 14 years
U.S. Cl. D32—32



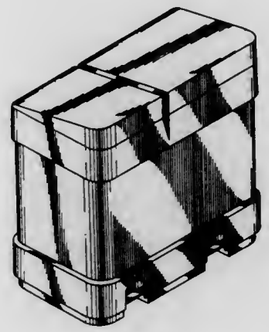
333,540
COMBINATION CUTTING AND IRONING BOARD
Marion V. Ziegler, 133 Harding Ave., San Fernando, Calif. 91340
Filed Jul. 16, 1990, Ser. No. 553,008
Term of patent 14 years
U.S. Cl. D32—66



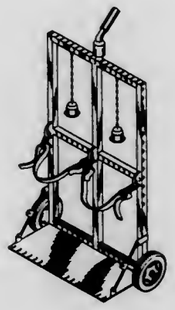
333,541
RECYCLING STATION
Omer G. Kropf, Syracuse, Ind., assignor to Supreme Corporation, Goshen, Ind.
Filed Jan. 24, 1991, Ser. No. 645,281
Term of patent 14 years
U.S. Cl. D34—1



333,542
WASTE CONTAINER FOR RECYCLE MATERIALS
Rosemarie McKenzie, 1572 Willmantic Dr., Virginia Beach, Va. 23456
Filed Mar. 4, 1991, Ser. No. 663,640
Term of patent 14 years
U.S. Cl. D34—9

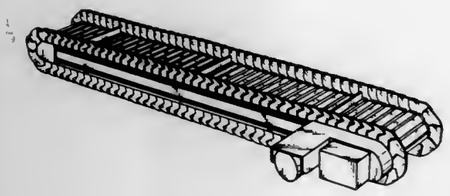


333,543
HAND TRUCK
Daniel W. Rodriguez, 967 W. 22nd St., San Pedro, Calif. 90731
Filed Jul. 20, 1990, Ser. No. 554,815
Term of patent 14 years
U.S. Cl. D34—26

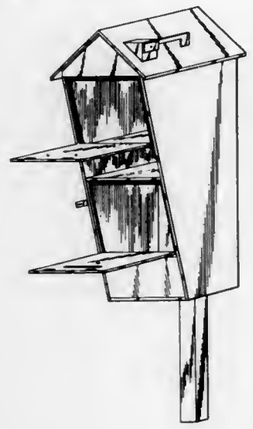


VOL
1147
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333,544
CONVEYOR BELT
Akira Uehara, 1-19-18 Nishi-Tsutsujigaoka, Chofu-Shi, Tokyo, 182, Japan
Filed May 7, 1991, Ser. No. 696,539
Claims priority, application Japan, Nov. 10, 1990, 2-37914
Term of patent 14 years
U.S. Cl. D34—29



333,545
COMBINED MAIL AND NEWSPAPER BOX WITH SUPPORT
Ceilon H. Rentz, 3704 Ponce de Leon Ave., Jacksonville, Fla. 32217
Filed Feb. 8, 1991, Ser. No. 654,364
Term of patent 14 years
U.S. Cl. D99—29



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF FEBRUARY, 1993

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Corporation: *See—*
Nieminen, Matti O.; and Olkkonen, Kari, 5,187,821, Cl. 5-83.100.

A G Processing Technologies, Inc.: *See—*
Thompson, Thomas E.; and Westerberg, Eugene R., 5,188,458, Cl. 374-121.000.

A & S Corporation: *See—*
Amao, Tsutomu, 5,188,278, Cl. 228-112.000.

Aaron, Nancy A. Hand-held bar code printer for envelopes and labels. 5,188,464, Cl. 400-103.000.

Abb Ceag Licht- und Stromversorgungstechnik GmbH: *See—*
Mayer, Hartwig; Hofmann, Manfred; and Riedinger, Hans-Peter, 5,189,597, Cl. 361-391.000.

ABB Power T&D Company, Inc.: *See—*
Borgmeyer, Virgil L.; Trice, Chester F.; Tempco, Dale A.; Clark, Thomas F.; Ritter, William J.; and Huests, Leo H., 5,189,257, Cl. 174-50.000.

ABB Vetco Gray Inc.: *See—*
Brammer, Norman; and Nobileau, Philippe C., 5,188,181, Cl. 166-344.000.
Jennings, Charles E., 5,188,180, Cl. 166-338.000.

Abbott Laboratories: *See—*
Hochberg, Howard M., 5,188,803, Cl. 422-99.000.

Abe, Atsushi; and Sakai, Yoshio, to Furuno Electric Company, Limited. Gyro compass. 5,187,870, Cl. 33-324.000.

Abe, Hiroomi; Nagaoka, Kenji; and Sanada, Takashi, to Sumitomo Chemical Company, Limited. Polyphenylene ether resin composition and process for producing the same. 5,189,103, Cl. 525-133.000.

Abe, Keiji: *See—*
Toyoda, Harumitsu; Senoo, Masamichi; and Abe, Keiji, 5,188,626, Cl. 604-385.100.

Abe, Masaru: *See—*
Tsurumiya, Osamu; Izawa, Masataka; Abe, Masaru; and Nonaga, Ikuo, 5,189,616, Cl. 364-424.050.

Abe, Shunichi: *See—*
Sugiura, Takashi; Nagashima, Nao; and Abe, Shunichi, 5,189,523, Cl. 358-300.000.

Abel, Karl-Josef: *See—*
Grundmann, Ulrich; Abel, Karl-Josef; and Amann, Eugen, 5,188,933, Cl. 435-6.000.

Abiru, Toichi: *See—*
Miyashita, Takanori; Abiru, Toichi; Watanabe, Yohko; Yamaguchi, Toyofumi; and Matsuda, Akira, 5,189,027, Cl. 514-46.000.

Acer Incorporated: *See—*
Lin, Steve; Kao, Kent; and Hsue, Robert, 5,189,543, Cl. 359-142.000.

Acme Resin Corp.: *See—*
Geoffrey, Michael M.; and Laitar, Robert A., 5,189,079, Cl. 523-142.000.

Acoustic Imaging Technologies Corporation: *See—*
Sturgill, Michael R.; and Herres, Bradley K., 5,188,112, Cl. 128-661.090.

Adachi, Kunihiko; Endo, Norikazu; and Miyakoshi, Hironori, to Toyota Jidosha Kabushiki Kaisha. AI-based adaptive vehicle control system. 5,189,619, Cl. 364-426.040.

Adachi, Tetsuo: *See—*
Kume, Hitoshi; Adachi, Tetsuo; Ohji, Yuzuru; Kure, Tokuo; Ushiyama, Masahiro; and Kawakami, Hiroshi, 5,188,976, Cl. 435-52.000.

Adair, Edwin L. Heat sterilizable electronic video endoscope. 5,188,094, Cl. 128-6.000.

Adamic, Raymond J.; and Gibney, Theresa A., to Hewlett-Packard Company. Anti-coalescent ink composition and method for making the same. 5,188,664, Cl. 106-22.00R.

ADC Telecommunications, Inc.: *See—*
Johnson, Stephen M.; Huggar, Calvin, Sr.; and Henneberger, Roy L., 5,189,723, Cl. 385-134.000.

ADDCO Manufacturing, Inc.: *See—*
Nicholson, John P.; and Nicholson, Timothy J., 5,187,993, Cl. 74-89.150.

Adir et Compagnie: *See—*
Peglion, Jean-Louis; and Colpaert, Francis, 5,189,045, Cl. 514-319.000.

Adkins, Delbert L.; Brauckmiller, Raymond R.; and Soles, Dennis C., to Bundy Corporation. Exhaust gas recirculation coupler and differential venturi. 5,188,086, Cl. 123-568.000.

Advance Process Supply Company: *See—*
Fuqua, Rick L.; and Motev, Phil, 5,188,026, Cl. 101-129.000.
Iaccino, Alex; Motev, Phil; and Fuqua, Rick L., 5,188,034, Cl. 101-474.000.

Advanced Fiber Technology, Inc.: *See—*
Gerber, Milton, 5,188,298, Cl. 241-5.000.

Advanced Interaction, Inc.: *See—*
Naimark, Michael; and Carson, Kenneth M., 5,189,402, Cl. 340-709.000.

Advanced Interventional Systems, Inc.: *See—*
Goldenberg, Tsvi, 5,188,632, Cl. 606-7.000.

Advanced Micro Devices, Inc.: *See—*
Asghar, Safdar M.; and Linz, Alfredo R., 5,189,381, Cl. 331-179.000.
Chan, Melvin D.; and Sharpe-Geisler, Brad, 5,189,322, Cl. 307-530.000.

Advanced Polymer Systems, Inc.: *See—*
Ahene, Ago B.; and Chedekel, Miles, 5,188,844, Cl. 424-574.000.

Aegis, Inc.: *See—*
Medeiros, Manuel, III; and Greenspan, Jay S., 5,188,985, Cl. 437-218.000.

Aerospatiale Societe Nationale Industrielle: *See—*
Beziers, Daniel; Boutevin, Bernard; Parisi, Jean-Pierre; Thomas, Yannig; and Chataignier, Evelyne, 5,189,093, Cl. 524-847.000.
Le Floch, Daniel J., 5,189,625, Cl. 364-474.170.

Afflitto, John: *See—*
Gaffar, Abdul; Nabi, Nuran; Afflitto, John; and Stringer, Orum, 5,188,821, Cl. 424-52.000.

Agarwal, Arun K.: *See—*
deCastro, Aurora F.; Gupta, Surendra K.; and Agarwal, Arun K., 5,188,941, Cl. 435-19.000.

Agency of Industrial Science and Technology: *See—*
Sato, Yoshio; Murayama, Katsuo; and Nakai, Toshihiro, 5,188,737, Cl. 210-638.000.
Yamada, Yasuhiro; Honda, Hidemasa; Yamasaki, Haruki; and Shimizu, Susumu, 5,188,894, Cl. 428-370.000.

Agfa-Gevaert, N.V.: *See—*
De Niel, Marc A.; de Ruijter, Dirk F.; Vackier, Leo N.; and Verlinden, Bart J., 5,188,732, Cl. 210-285.000.
Dewanckele, Jean-Marie O.; Tavernier, Serge M.; and Ghekiere, Jean-Pierre A., 5,188,919, Cl. 430-106.000.
Leys, Paul H.; Zwijsen, Jan A.; and Van Aken, Luc K., 5,189,477, Cl. 355-271.000.

agru Alois Gruber GmbH: *See—*
Lueghamer, Albert, 5,188,697, Cl. 156-499.000.

Ahene, Ago B.; and Chedekel, Miles, to Advanced Polymer Systems, Inc. Color modified melanins and methods for their preparation and use. 5,188,844, Cl. 424-574.000.

Ahlgren, William L., to Santa Barbara Research Center. Planar double-layer heterojunction HgCdTe photodiodes and methods for fabricating same. 5,189,297, Cl. 250-214.100.

Ahmad, Jamil; and Riccitelli, Samuel D., to Puritan-Bennett Corporation. Calibration cuvette. 5,187,970, Cl. 73-1.00G.

Ahmad, Jamil; and Riccitelli, Samuel D., to Puritan-Bennett Corporation. Calibration cuvette. 5,187,971, Cl. 73-1.00G.

Ahn, Kie Y.; Lynt, Harold N., Jr.; and Jipson, Victor B., to International Business Machines Corporation. Optical storage media with discontinuous thin metallic films. 5,188,923, Cl. 430-273.000.

Aiba, Osamu: *See—*
Kawahara, Sadao; Yamamura, Michio; Yuda, Jiro; Kojima, Yoshinori; Yamamoto, Shuichi; Sakai, Manabu; Muramatsu, Shigeru; and Aiba, Osamu, 5,188,521, Cl. 418-55.300.

Aihara, Hideo; Kurisu, Norio; Takei, Kazuhiro; and Watanabe, Yasuhiko, to Ricoh Company, Ltd. Thermosensitive recording material. 5,189,007, Cl. 503-207.000.

Aikawa, Yasutaka: *See—*
Nishiyama, Akio; Koyama, Takashi; Aikawa, Yasutaka; Ohshima, Hideo; Terao, Yuichiro; Kato, Munenori; and Sakai, Akio, 5,188,908, Cl. 428-698.000.

Aimpoint AB: *See—*
Jorlov, Rickard, 5,189,555, Cl. 359-618.000.

Air Kontrol, Inc.: *See—*
Nolen, Edward F., Jr., 5,188,646, Cl. 55-155.000.

Air Preheater Company, Inc., The: *See—*
Pace, Darr C.; Bayer, Craig E.; Casagrande, Mark T.; Johnson, Craig R.; Hall, Danny K.; and Nolan, Andrew W., 5,188,804, Cl. 422-111.000.

Aisan Kogyo Kabushiki Kaisha: *See—*
Asano, Hitoshi, 5,188,297, Cl. 239-585.300.

Aishin Kakou K.K.: *See—*
Nagata, Nobuyuki; Tsutsui, Itsuro; Ota, Koji; Hashimoto, Hirofumi; and Shibata, Haruji, 5,188,693, Cl. 156-244.110.

Aisin Seiki K.K.: *See—*
Mitsuoka, Hiroshi; and Hirao, Kouji, 5,189,614, Cl. 364-424.050.

Aisin Seiki Kabushiki Kaisha: *See—*
Goto, Shigeki; and Shimei, Masato, 5,188,006, Cl. 74-867.000.

338-962 O.G.-93-23

VOL 1147 ISS 4 FE 23 1993 UMI

Maeda, Kenji; Hayashi, Kenichiro; Masuda, Mitsuyoshi; Nishikawa, Hirofumi; and Suzuki, Katsuhiro, 5,188,420, Cl. 296-223.000.
Shimanuki, Shizuo; Nakai, Yoshitomo; and Itakura, Masamichi, 5,188,509, Cl. 415-208.100.
Sugiki, Akio; Ishikawa, Masanobu; Yoshida, Nobuhiro; Tanahashi, Haruhiko; and Miura, Kiyokatsu, 5,188,392, Cl. 280-775.000.

Ajani, Jaffer; Grossie, Bruce, Jr.; Nishioka, Kenji; and Ota, David M., to Board of Regenets, The University of Texas System. Methods for the treatment of malignant disease in patients using citrulline containing amino acid solutions. 5,189,025, Cl. 514-23.000.

Ajinomoto Co., Inc.: *See—*
Katsurada, Naoki; Uchibori, Haruo; and Tsuchida, Takayasu, 5,188,948, Cl. 435-115.000.
Takeba, Go, 5,189,145, Cl. 530-326.000.
Tsuchida, Takayasu; Uchibori, Haruo; and Nishimoto, Yoshitaka, 5,188,947, Cl. 435-114.000.
Tsuchida, Takayasu; Katsurada, Naoki; Ohtsuka, Noboru; Uchibori, Haruo; and Suzuki, Takeshi, 5,188,949, Cl. 435-115.000.

Akahoshi, Hideaki: *See—*
Echigo, Mitsuji; Moriyama, Naomune; Akahoshi, Hideaki; Kameda, Osamu; and Akutagawa, Hitoshi, 5,188,574, Cl. 475-206.000.

Akamatsu, Teruki: *See—*
Yano, Haruto; Hirasa, Yoshiaki; Tokunaga, Toshimichi; Hayami, Katsuro; Naito, Norihiro; Akamatsu, Teruki; Goto, Hirofumi; and Yokouchi, Kazuhiro, 5,189,430, Cl. 342-457.000.

Akanuma, Masaaki; and Hasegawa, Akira, to Yoshida Kogyo K. K. Electrolytic processing system. 5,188,719, Cl. 204-206.000.

Akasaki, Hiroshi: *See—*
Nakao, Takashi; Emoto, Yoshiaki; Sekiguchi, Koichiro; Iketani, Masayuki; Sahara, Kunizo; Yoshida, Ikuo; Kohno, Akiomi; Horino, Masaya; Kamohara, Hideaki; Irie, Shouichi; Akasaki, Hiroshi; and Otsuka, Kanji, 5,188,280, Cl. 228-123.000.

Akashi, Akira; and Higashihara, Masaki, to Canon Kabushiki Kaisha. Focus detection apparatus detecting fears to a plurality of areas. 5,189,465, Cl. 354-408.000.

Akashi, Shunji; and Watanabe, Yasushi, to Yoshida Kogyo K. K. Slider pull tab for slide fastener. 5,187,842, Cl. 24-431.000.

Akata, Masao, to NEC Corp. High-speed flip flop circuit with master latching circuit free from influence of slave latching circuit. 5,189,315, Cl. 307-272.200.

Akiyama, Eitetsu; and Kishi, Noriyuki, to Honda Giken Kogyo Kabushiki Kaisha. Engine control device. 5,187,935, Cl. 60-602.000.

Akiyama, Yohko; Yoshioka, Minoru; and Kitamori, Nobuyuki, to Takeda Chemical Industries, Inc. Stabilized FGF composition and production thereof. 5,189,148, Cl. 530-399.000.

Akutagawa, Hitoshi: *See—*
Echigo, Mitsuji; Moriyama, Naomune; Akahoshi, Hideaki; Kameda, Osamu; and Akutagawa, Hitoshi, 5,188,574, Cl. 475-206.000.

Akutagawa, Ichiro; Yamaguchi, Tsutomu; and Matsuzaki, Kinimitsu, to Somar Corporation. Penetrable, epoxy resin composition comprising glycidyl ether of bisphenol modified with glycol or urethane, and inorganic filler. 5,189,081, Cl. 523-428.000.

Aladdin Synergetics, Inc.: *See—*
Wyatt, W. Burk; Cundiff, Kevin B.; and Little, Kenneth R., Jr., 5,189,281, Cl. 219-386.000.

Albert, Christine C.: *See—*
Khan, Motasimur R.; Zang, Richard B.; and Albert, Christine C., 5,188,739, Cl. 210-770.000.

Albert-Frankenthal Aktiengesellschaft: *See—*
Puschnerat, Helmut; Reutter, Walter; and Unverzagt, Walter, 5,188,030, Cl. 101-348.000.

Albert, Guido: *See—*
Curtze, Jurgen; and Albert, Guido, 5,189,035, Cl. 514-231.200.

Albert Hoffmann KG: *See—*
Hoof, Erhard, 5,188,303, Cl. 241-194.000.

Alberto, Sala; Benedini, Francesca; Cereda, Roberta; and Del Soldato, Piero, to Italfarmaco S.P.A. Benzoxazinone and benzothiazinone derivatives endowed with cardiovascular activity. 5,189,034, Cl. 514-224.200.

Albright, Jay D.; and Sum, Fuk-Wah, to American Cyanamid Company. Renin inhibitors. 5,189,023, Cl. 514-19.000.

Alcatel Alsthom Compagnie Generale D'Electricite: *See—*
Crepy, Gilles; and Buchel, Jean-Pierre, 5,188,913, Cl. 429-101.000.

Alcatel Business Systems Limited: *See—*
Herbert, Raymond J., 5,189,442, Cl. 346-140.00R.

Alcatel Cit: *See—*
Le Bihan, Denis, 5,189,672, Cl. 370-94.100.
Mathieu, Luc, 5,188,145, Cl. 137-340.000.

Alcatel Fibres Optiques: *See—*
Hakoun, Roland; Reslinger, Michel; and Galopin, Joan, 5,188,268, Cl. 225-96.500.

Alcatel Network Systems, Inc.: *See—*
Burton, Larry W.; Sutherland, Joseph E.; Matsumura, Paul M.; Ball, Karen V.; and Czerwiec, Richard M., 5,189,673, Cl. 370-110.100.

Alcatel N.V.: *See—*
Kleine-Altekamp, 5,189,662, Cl. 370-16.000.

Alcon Surgical, Inc.: *See—*
Wypych, Peter; and Haines, Stephen W., 5,188,589, Cl. 604-22.000.

Aldridge, Donald: *See—*
Sargent, Dennis; Aldridge, Donald; and McKenney, Bill, 5,188,267, Cl. 224-215.000.

Alexander, L. Bruce: *See—*
Bushman, Ronald C.; Alexander, L. Bruce; and Harris, William E., Jr., 5,188,021, Cl. 99-502.000.

Alexander, Lawrence C.; Appelt, Bernd K.; Balkin, David K.; Hansen, James J.; Hromek, Joseph; Kaschak, Ronald A.; Lauffer, John M.; Memis, Irving; Patel, Magan S.; Seman, Andrew M.; and Susko, Robin A., to International Business Machines Corporation. Electrical and/or thermal interconnections and methods for obtaining such. 5,189,261, Cl. 174-263.000.

Alexander, William. Moisture-impervious panel capable of delayed, rapid hydration. 5,187,915, Cl. 52-742.000.

Alfa-Laval Agri International AB: *See—*
Hook, Magnus; Lindberg, Kjell M.; and Wadstrom, Torkel M., 5,189,015, Cl. 514-2.000.

Alfred Teves GmbH: *See—*
Burgdorf, Jochen; Steffes, Helmut; Volz, Peter; Beck, Erhard; and Zaviska, Dalibor, 5,188,439, Cl. 303-116.100.
Reinartz, Hans; Steffes, Helmut; Volz, Peter; and Beck, Erhard, 5,188,433, Cl. 303-100.000.

Alger, Andrew: *See—*
Kurth, Mark; Alger, Andrew; and Blahuta, Lew, 5,188,727, Cl. 210-85.000.

Allbright, Lawrence J.: *See—*
Nikl, Libor H.; and Allbright, Lawrence J., 5,189,028, Cl. 514-54.000.

Allen, Charles H.: *See—*
Lodge, Richard W.; and Allen, Charles H., 5,188,859, Cl. 426-560.000.

Allen, William E.: *See—*
Tonsor, Andrew J.; Quant, Wilton E.; Hosseini, Javad; Hopkins, Michael F.; and Allen, William E., 5,188,502, Cl. 414-700.000.

Allied-Signal Inc.: *See—*
Bernot, Anthony J., 5,189,591, Cl. 361-283.000.
Devall, Jeffrey E., 5,188,436, Cl. 303-113.200.

Allwaste, Inc.: *See—*
Holm, William D., 5,187,903, Cl. 51-320.000.

Altdorf, Joachim: *See—*
Nolte, Albert; Altdorf, Joachim; and Scheffler, Paul, 5,188,072, Cl. 123-198.00C.

Altman Stage Lighting Co., Inc.: *See—*
Ryan, John T., 5,188,452, Cl. 362-293.000.

Alvarez-Avila, Carlos; Ruesseler, Karl-Friedrich; Tschoeke, Helmut; and Konrath, Karl, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 5,188,076, Cl. 123-357.000.

Alvarez, Oscar E. Hammer mill apparatus. 5,188,302, Cl. 241-189.100.

Amada Company, Limited: *See—*
Prunotto, Gianpaolo; and Sartorio, Franco, 5,187,958, Cl. 72-9.000.

Amada, Nobutaka; Noguchi, Takaharu; Kimura, Hiroyuki; Kobayashi, Masaharu; Arai, Takao; Yumde, Yasufumi; and Miura, Kuniaki. Magnetic recording/reproducing method and apparatus. 5,189,564, Cl. 360-32.000.

Amann, Eugen: *See—*
Grundmann, Ulrich; Abel, Karl-Josef; and Amann, Eugen, 5,188,933, Cl. 435-6.000.

Amao, Tsutomu, to A & S Corporation. Friction welding method for joining a rim and a disc of a disc wheel and the apparatus therefor. 5,188,278, Cl. 228-112.000.

Amelse, Jeffrey A., to Amoco Corporation. Selective dehydrogenation processes and catalysts. 5,189,234, Cl. 585-320.000.

American Cyanamid Company: *See—*
Albright, Jay D.; and Sum, Fuk-Wah, 5,189,023, Cl. 514-19.000.
Carter, Guy T.; Williams, David R.; and Pinho, Fernando, 5,188,945, Cl. 435-77.000.
Feigelson, Gregg B.; Curran, William V.; and Ziegler, Carl B., 5,189,158, Cl. 540-302.000.

American Home Products Corporation: *See—*
Malamas, Michael S., 5,189,044, Cl. 514-309.000.
Malamas, Michael S., 5,189,167, Cl. 546-18.000.
Malamas, Michael S., 5,189,168, Cl. 546-18.000.
Stack, Gary P.; Andree, Terrance H.; and Scherer, Noreen T., 5,189,171, Cl. 546-157.000.

American Mammographics, Inc.: *See—*
Hixson, Gordon L., Sr., 5,189,686, Cl. 378-37.000.

Amici, Robert M.: *See—*
LaFleur, Edward E.; Amici, Robert M.; and Work, William J., 5,189,097, Cl. 525-57.000.

Amo, Don J.: *See—*
DeMerritt, Paul A.; and Amo, Don J., 5,188,288, Cl. 237-70.000.

Amoco Corporation: *See—*
Amelse, Jeffrey A., 5,189,234, Cl. 585-320.000.
Hall, Richard A., 5,189,095, Cl. 525-53.000.
Melquist, John L., 5,189,115, Cl. 525-420.000.

AMP Incorporated: *See—*
Hass, Jurgen; Hotea, Gheorghe; and Siegel, Guenter, 5,188,545, Cl. 439-851.000.

Ampex Corporation: *See—*
Gooch, Beverley R., 5,189,572, Cl. 360-77.120.
Larkins, David N.; Yoshida, Glenn T.; and Helmers, Thomas L., 5,189,355, Cl. 318-685.000.
Pisharody, Raghavan; and Gooch, Beverley R., 5,189,580, Cl. 360-126.000.

Amphenol Corporation: *See—*
Swift, Peter R., 5,188,543, Cl. 439-620.000.

Amsys Ltd.: *See—*
Brunfeld, Andrei, 5,189,489, Cl. 356-358.000.

Anders, Gary H.: *See—*
Breunig, Timothy A.; and Anders, Gary H., 5,187,947, Cl. 62-346.000.

Anderson, David A.; Witzel, John G.; Christensen, Don; and Bahia, Hussain, to Pennsylvania Research Corporation, The. Bending beam creep test device with piston having a gas bearing. 5,187,987, Cl. 73-852.000.

Anderson, George. Cushion grip and spare battery holder for flashlight. 5,188,450, Cl. 362-194.000.

Anderson, John P., to Hartwell Corporation, The. Catch for door latch. 5,188,403, Cl. 292-17.000.

Anderson, Philip M.: *See—*
Fabian, Carl E.; and Anderson, Philip M., 5,188,126, Cl. 128-899.000.

Anderson, Russell W.: *See—*
Hendrickson, Arthur N.; Hanlon, Lawrence C.; and Anderson, Russell W., 5,188,299, Cl. 241-23.000.

Anderson, William L., Jr., to Stewart & Stevenson Services, Inc. Apparatus for inserting and withdrawing coil tubing into a well. 5,188,174, Cl. 166-77.000.

Andersson, Sven-Borje: *See—*
Lindskog, Inga M.; Sjogren, Bengt C. H.; and Andersson, Sven-Borje, 5,188,835, Cl. 424-432.000.

Ando, Kiyoshi: *See—*
Hirai, Masanori; Takenaka, Hiroyuki; Yokoi, Hidekazu; Nachi, Tsuyoshi; and Ando, Kiyoshi, 5,187,994, Cl. 74-120.000.

Andou, Yukinori: *See—*
Irihara, Kouichi; Andou, Yukinori; and Yui, Yuhi, 5,189,471, Cl. 355-210.000.

Andre, Michel; Mazer, Jean-Pierre; and Nouguez, Bruno, to SNPE Inc. Low-vulnerability explosive munitions element including a multi-composition explosive charge, and method for obtaining a blast and/or bubble effect. 5,189,247, Cl. 102-291.000.

Andree, Terrance H.: *See—*
Stack, Gary P.; Andree, Terrance H.; and Scherer, Noreen T., 5,189,171, Cl. 546-157.000.

Andrews, Albert E.: *See—*
Bartman, David A.; Morris, Daniel L.; and Andrews, Albert E., 5,188,352, Cl. 271-175.000.

Angell, Richard B.; and Gramcko, Kirk M., to Grass Valley Group, Inc., The. Video preview system for allowing multiple outputs to be viewed simultaneously on the same monitor. 5,189,516, Cl. 358-181.000.

Anno, Hidero: *See—*
Ono, Katsuhiro; Anno, Hidero; Sugiura, Hiroyuki; Kitami, Takayuki; and Tazawa, Hiroaki, 5,189,688, Cl. 378-133.000.

Anno, Julien; Lewis, Russell F.; and Cone, Dale A., to Texas Instruments Incorporated. Method and system for automated voting. 5,189,288, Cl. 235-386.000.

Anno, Masahiro; Mizuno, Hiroshi; Etou, Kouichi; and Sano, Eiichi, to Minolta Camera Kabushiki Kaisha. Developing device for producing a developed image. 5,189,476, Cl. 355-259.000.

Anodyne Corporation: *See—*
Merry, Donald D., 5,187,822, Cl. 5-86.100.

Antenna Products Corp.: *See—*
Bell, Ross L., 5,189,434, Cl. 343-853.000.

Aoki, Makoto: *See—*
Kosugi, Toru; Hashimoto, Yuichi; Tanaka, Masayuki; Ohara, Katsuichi; Furukawa, Takahiro; and Aoki, Makoto, 5,189,410, Cl. 340-825.140.

Aota, Takashi: *See—*
Okazaki, Seiji; Yokoyama, Shigeki; Imaizumi, Makoto; Hatanaka, Koji; and Aota, Takashi, 5,189,280, Cl. 219-270.000.

Aoyama, Teruyuki: *See—*
Ishiwata, Masahiro; Tsuchiya, Noriaki; Aoyama, Teruyuki; and Fusatani, Akihiko, 5,189,529, Cl. 358-451.000.

Appelberg, Bengt, to Bas Teknik AB. Magazine for storing and transferring metal rods. 5,188,503, Cl. 414-745.100.

Appelt, Bernd K.: *See—*
Alexander, Lawrence C.; Appelt, Bernd K.; Balkin, David K.; Hansen, James J.; Hromek, Joseph; Kaschak, Ronald A.; Lauffer, John M.; Memis, Irving; Patel, Magan S.; Seman, Andrew M.; and Susko, Robin A., 5,189,261, Cl. 174-263.000.

Applied Biosystems, Inc.: *See—*
Menchen, Steven M.; Lee, Linda G.; Connell, Charles R.; Hershey, N. Davis; Chakerian, Vergine; Woo, Sam; and Fung, Steven, 5,188,934, Cl. 435-6.000.

Applied Lumens, Ltd.: *See—*
Peshak, Gayle R., 5,189,339, Cl. 315-58.000.

Applied Materials, Inc.: *See—*
Rinnovatore, James V., 5,188,672, Cl. 118-715.000.

Applied Mechanis, Inc.: *See—*
Krause, Hans H.; and Krause, Ralph O., 5,188,379, Cl. 280-6.120.

APV Gaulin, Inc.: *See—*
Grant, Philip M., 5,188,857, Cl. 426-519.000.

Aquafan (Proprietary) Limited: *See—*
De Witt, James J., 5,188,771, Cl. 261-25.000.

Arai, Fumiaki: *See—*
Sugiyama, Shoichi; Arai, Fumiaki; Nonogaki, Masayasu; Natori, Yuji; Yamaguchi, Hideyuki; Ueda, Hitoshi; Tomita, Hiroshi; and Kato, Kotaro, 5,188,881, Cl. 428-143.000.

Arai, Kazuhiko; Fujiwara, Akira; Motoda, Shosaku; and Suzuki, Hiroyasu, to Denki Kagaku Kogyo Kabushiki Kaisha. Monoclonal antibody to human lymphotoxin and use thereof. 5,188,969, Cl. 436-548.000.

Arai, Masanobu, to NEC Corporation. Tone signal detecting circuit. 5,189,378, Cl. 328-138.000.

Arai, Seiji: *See—*
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Fujii, Yasuo; Nakamura, Tetsuya; Fukuyama, Hirotaka; Arai, Seiji; Sato, Koichiro; Takagi, Toshio; Nishina, Shuji; Hukasawa, Jiro; Maruta, Masatoshi; and Koizumi, Seiichi, 5,188,057, Cl. 118-657.000.

Arai, Takao: *See—*
Amada, Nobutaka; Noguchi, Takaharu; Kimura, Hiroyuki; Kobayashi, Masaharu; Arai, Takao; Yumde, Yasufumi; and Miura, Kuniaki, 5,189,564, Cl. 360-32.000.

Arakawa, Hideki, to Fujitsu Limited. Non-volatile random access memory device. 5,189,641, Cl. 365-228.000.

Arakawa, Kohei, to Fuji Photo Film Co., Ltd. Liquid crystal display having positive and negative birefringent compensator films. 5,189,538, Cl. 359-73.000.

Araki, Hideo: *See—*
Tachimori, Masaharu; Ishizaka, Kazunori; and Araki, Hideo, 5,189,508, Cl. 257-49.000.

Arashima, Teruo; Kimura, Makiko; Kashino, Toshio; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; and Orikasa, Tsuyoshi, to Canon Kabushiki Kaisha. Recording head having stress-minimizing construction. 5,189,443, Cl. 346-140.00R.

Araya, Takeshi: *See—*
Endo, Yoshishige; Araya, Takeshi; Ono, Masahiko; Kawamura, Takao; and Kawamura, Hiromitsu, 5,189,337, Cl. 313-479.000.

Archibald, Roy D.: *See—*
Chandrasekaran, Santosh K.; Reents, Margaret J.; Babcock, John C.; Bowman, Lyle M.; Archibald, Roy D.; and Robinson, Joseph R., 5,188,826, Cl. 424-78.040.

Architectural Lighting Systems Inc.: *See—*
Davis, Scott A.; and Uryase, Jan W., 5,188,449, Cl. 362-148.000.

ARCO Chemical Technology, L.P.: *See—*
Moore, H. Dean, Jr., 5,189,074, Cl. 521-114.000.

Arghyris, Laurent: *See—*
Kamal, Musa R.; Lohfink, Gunter; Arghyris, Laurent; and Hozhabr-Ghelichi, Sassan, 5,188,784, Cl. 264-108.000.

Ariprala, Sarojini D.: *See—*
Hajaligol, Mohammad R.; Deevi, Seetharama C.; Ariprala, Sarojini D.; Losee, Donald B.; Waymack, Bruce E.; and Watkins, Michael L., 5,188,130, Cl. 131-359.000.

Armstrong, Timothy O.: *See—*
Baechler, Philip A.; and Armstrong, Timothy O., 5,188,389, Cl. 280-650.000.

Armstrong World Industries, Inc.: *See—*
Hensel, Robert D.; Ray, Leonard N., Jr.; Reuwer, Joseph F., Jr.; Ross, Jeffrey S.; and Wisnosky, Jerome D., 5,188,876, Cl. 428-76.000.
Kauffman, William J.; Lilley, George L.; and Ruch, David E., 5,188,874, Cl. 428-47.000.

Arnaud, Didier; and Tanguy, Jean-Claude, to Societe Atochem. Azeotropic mixtures of dimethyl ether and of 1,1,1,2-tetrafluoroethane and their use. 5,188,748, Cl. 252-67.000.

Arnell, Stephen R.: *See—*
Bilko, John P.; Arnell, Stephen R.; Boyd, Andrew J.; and Goodwin, Perry A., 5,187,962, Cl. 72-62.000.

Arnold-Mauer, Baerbel; Bronstert, Klaus; and Baumgartner, Ehrenfried, to BASF Aktiengesellschaft. Thermoplastic molding materials based on polyesters and polyphenylene ethers. 5,189,099, Cl. 525-68.000.

Arnoldy, Peter: *See—*
Klusener, Peter A. A.; Stil, Hans A.; Drent, Fit; and Arnoldy, Peter, 5,189,003, Cl. 502-167.000.

Arntz, Floyd O.: *See—*
Goldner, Ronald B.; Arntz, Floyd O.; Morel, Bertrand; Haas, Terry E.; and Wong, Kwok-Keung, 5,189,550, Cl. 359-273.000.

Arpin, Monique: *See—*
Louvard, Daniel; Dudouet, Brigitte; Robine, Sylvie; Arpin, Monique; Pringault, Eric; and Garcia, Alphonse, 5,188,967, Cl. 436-501.000.

Arrowsmith, David R.; Parsons, David; and Young, Alastair J., to Automotive Products plc. Pre-filled power hydraulic system. 5,188,204, Cl. 192-3.580.

Arseneault, Barbara. Entertainment and feeding device for use by children in automobiles. 5,188,421, Cl. 297-182.000.

Asada, Kiyozo; Uemori, Takashi; Endo, Masahiro; Kimizuka, Fusao; and Kato, Ikunoshin, to Takara Shuzo Co., Ltd. Human calpastatin-like polypeptide. 5,189,144, Cl. 530-324.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Ikematu, Takeshi; Kishimoto, Yasushi; and Miyamoto, Koichi, 5,189,110, Cl. 525-314.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Iizuka, Takashi, 5,189,546, Cl. 359-217.000.
Ikeda, Shinyu, 5,189,340, Cl. 315-116.000.
Kurosawa, Yuichi, 5,189,569, Cl. 360-75.000.
Minakuchi, Tadashi, 5,189,654, Cl. 369-44.360.
Negoro, Ikuo; Yamaguchi, Hiroyuki; and Kita, Masahiro, 5,189,473, Cl. 355-215.000.

Asano, Hitoshi, to Aisan Kogyo Kabushiki Kaisha. Pressure tight injector. 5,188,297, Cl. 239-585.300.

Asano, Yasushi; and Togano, Norio, to Fuji Kiko Co., Ltd. Shift lever for automatic transmission. 5,187,998, Cl. 74-523.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Asano, Yasushi: *See*—
Kobayashi, Satoshi; Asano, Yasushi; Yamazaki, Hiroshi; and Watanabe, Takumi, 5,187,999, Cl. 74-528.000.

Asaoka, Masanobu: *See*—
Hanyu, Yukio; Inaba, Yutaka; Asaoka, Masanobu; Taniguchi, Osamu; Shinjo, Kenji; and Uchimi, Toshiharu, 5,189,536, Cl. 359-56.000.

Asbury, Jimmie; and Davis, John W., to IVHS Technologies, Inc. Doppler frequency spectrum de-emphasis for automotive collision avoidance radar system. 5,189,426, Cl. 342-70.000.

Asghar, Safdar M.; and Linz, Alfredo R., to Advanced Micro Devices, Inc. Apparatus for generating a sinusoidal output signal. 5,189,381, Cl. 331-179.000.

Ashby, Eugene C.; Earnhart, Laurence L.; Tedder, Daniel W.; and Singh, Jagvir, to Optima Chemicals, Inc. Process for the manufacture and recovery of alkali-metal tetraorganylborates. 5,189,222, Cl. 568-1.000.

Ashi, Yoshihiro: *See*—
Takatori, Masahiro; Nakano, Yukio; Ashi, Yoshihiro; and Kanno, Tadayuki, 5,189,668, Cl. 370-60.000.

Ashihara, Hideyuki. Police baton with crosshandle and handguard. 5,188,362, Cl. 273-84.00R.

Ashiya, Seiji: *See*—
Hodumi, Masahiko; Bando, Koji; Suzuki, Takahiro; Hashiba, Shigeto; Ono, Yoshiyuki; Okano, Sadao; Ashiya, Seiji; and Murase, Masanori, 5,188,916, Cl. 430-65.000.

Astegger, Stephan: *See*—
Hinterholzer, Peter; Zikell, Stefan; Firgo, Heinrich; Wolschner, Bernd; Eichinger, Dieter; Manner, Johann; Astegger, Stephan; and Weinzierl, Karin, 5,189,152, Cl. 536-56.000.

AT&T Bell Laboratories: *See*—
Bensel, William H., III; and Cobb, Gary S., 5,189,725, Cl. 385-135.000.
Garland, Stuart M., 5,189,694, Cl. 379-106.000.

Athana Incorporated: *See*—
Rotter, Gerhard, 5,188,310, Cl. 242-199.000.

Atherton, Angela D.: *See*—
Iles, Martin C.; Atherton, Angela D.; and Copping, Neil M., 5,188,825, Cl. 424-78.100.

Atkins, Marie B. Toothbrush construction. 5,187,829, Cl. 15-167.100.

Atkins, Raymond C.: *See*—
Marsh, Michael J. C.; Atkins, Raymond C.; and Hodson, Trevor M., 5,189,246, Cl. 102-217.000.

Atkinson, Joseph G.; Claremon, David A.; Baldwin, John J.; Friedman, Paul A.; Remy, David C.; and Stern, Andrew M., to Merck & Co., Inc. Methods for thrombolytic therapy. 5,188,830, Cl. 424-94.630.

Atlantic Richfield Company: *See*—
Blount, Curtis G.; and Braden, John C., 5,188,172, Cl. 166-64.000.
Carpenter, Robert B., 5,188,176, Cl. 166-285.000.
Skaalure, Eric W., 5,188,190, Cl. 175-58.000.

Atmel Corporation: *See*—
Gongwer, Geoffrey S., 5,189,320, Cl. 307-465.000.

Atochem: *See*—
Boutillier, Jacques; and Lermat, Yves, 5,189,096, Cl. 525-56.000.
Duranel, Laurent; Malinge, Jean; and Bousque, Marie-Laure, 5,188,999, Cl. 502-111.000.

Atsugi Unisia Corporation: *See*—
Hara, Masahiko, 5,188,522, Cl. 418-77.000.

Atsumi, Akihiro: *See*—
Takezawa, Makoto; Miyao, Makiji; Murakami, Shinkichi; and Atsumi, Akihiro, 5,188,878, Cl. 428-114.000.

Audi A.G.: *See*—
Bauder, Richard, 5,188,077, Cl. 123-359.000.

Augustin, Martin: *See*—
Brose, Werner; and Augustin, Martin, 5,188,223, Cl. 206-45.150.

Augustine, Robert L.; and Tanielyan, Setrak K., to Philip Morris Incorporated; and Philip Morris Products Inc. Palladium-tin catalysts for acyloxylation of alkylaromatic compounds. 5,189,006, Cl. 502-339.000.

Auman, Brian C.: *See*—
Trofimenko, Swiatoslaw; and Auman, Brian C., 5,189,138, Cl. 528-183.000.

Aune, Jan A.; Eikeland, Inger J.; and Pedersen, Thor, to Elkem Technology A/S. Method for recovering zinc from zinc-containing waste materials. 5,188,658, Cl. 75-10.310.

Automotive Products plc: *See*—
Arrowsmith, David R.; Parsons, David; and Young, Alastair J., 5,188,204, Cl. 192-3.580.

Avellino, Frank J.; Case, Richard A.; and Swanson, David T., to GTE Products Corporation. Printed circuit assembly with contact dot. 5,189,275, Cl. 219-56.220.

Avery Dennison Corporation: *See*—
Bernard, Margaret M., 5,189,126, Cl. 526-261.000.

AWA Engineering Co., Ltd.: *See*—
Kubo, Toyohide, 5,189,585, Cl. 360-133.000.

Axelrod, Stanley H.: *See*—
Capper, David G.; and Axelrod, Stanley H., 5,189,463, Cl. 354-403.000.

Ayala, Raul E., to General Electric Company. Molybdenum-based additives to mixed-metal oxides for use in hot gas cleanup sorbents for the catalytic decomposition of ammonia in coal gases. 5,188,811, Cl. 423-230.000.

Azon Systems, Inc.: *See*—
Rawlings, David E., 5,187,867, Cl. 29-897.312.

B.S.R.D. Limited: *See*—
Foster, Howard J.; Gordon, Ian A.; and Palliser, Martin, 5,188,425, Cl. 297-473.000.

Baba, Kazuo: *See*—
Takahashi, Kumiko; Baba, Kazuo; and Shiratsuki, Yoshiyuki, 5,189,284, Cl. 219-543.000.

Baba, Masatoshi; and Oya, Eiichi, to Nissan Chemical Industries Ltd. Method for preparing 4-alkylsulfonyl-2-chloro-m-xylene. 5,189,224, Cl. 568-35.000.

Baba, Yoko: *See*—
Takahashi, Hisakazu; Baba, Yoko; Ezaki, Kenichi; Okamoto, Yasuhiko; Shibata, Kenichi; Kuroki, Kazuhiko; and Yasuyama, Shigeyuki, 5,188,993, Cl. 501-136.000.

Babbitt, Richard W.: *See*—
Stern, Richard A.; and Babbitt, Richard W., 5,189,433, Cl. 343-770.000.

Babcock, John C.: *See*—
Chandrasekaran, Santosh K.; Reents, Margaret J.; Babcock, John C.; Bowman, Lyle M.; Archibald, Roy D.; and Robinson, Joseph R., 5,188,826, Cl. 424-78.040.

Babcock & Wilcox Company, The: *See*—
Gossler, E. Thomas; and Paul, Michael A., 5,187,976, Cl. 73-65.010.

Babie, Wayne T.; Devries, Kenneth L.; Nguyen, Bang C.; and Yang, Chau-Hwa J., to International Business Machines Corporation. Selective silicon nitride plasma etching. 5,188,704, Cl. 156-643.000.

Badger, John S.: *See*—
McGuckin, Hugh G.; and Badger, John S., 5,188,662, Cl. 75-713.000.

Badiali, Roberto: *See*—
Colli, Luigi; and Badiali, Roberto, 5,188,304, Cl. 242-35.60R.

Badillo, Paul, to Bakron Corp. Plastic bobbin basket with damage resistant members. 5,188,046, Cl. 112-231.000.

Baechler, Philip A.; and Armstrong, Timothy O., to Racing Strollers Inc. Foldable baby stroller and axle assembly therefor. 5,188,389, Cl. 280-650.000.

Baerts, Christiaan E. E., to Electro-Nite International N.V. Device for withdrawing samples from molten metals. 5,187,991, Cl. 73-864.560.

Baggio, Giorgio; and Zorzi, Clandio, to Nordica S.p.A. Closure lever device. 5,187,884, Cl. 36-50.000.

Bahia, Hussain: *See*—
Anderson, David A.; Witzel, John G.; Christensen, Don; and Bahia, Hussain, 5,187,987, Cl. 73-852.000.

Bailey, Alister J.; and Vadgama, Sunil K., to U.S. Philips Corporation. Cellular radio system. 5,189,734, Cl. 455-33.200.

Bailey, John A.: *See*—
Hanson, Robert L.; and Bailey, John A., 5,189,582, Cl. 360-132.000.

Bain, Ronald G.: *See*—
Phillips, Joseph R.; Warloff, Peter E. T.; Hefele, John; Bilodeau, Victor L.; Bain, Ronald G.; and Barrett, Mark, 5,187,956, Cl. 68-181.00R.

Baines, Gurney D. Umbrella support bracket. 5,188,331, Cl. 248-538.000.

Bajor, John S.: *See*—
Viccaro, John P.; Bajor, John S.; and Tartakovsky, Alla, 5,188,822, Cl. 424-52.000.

Bakanowsky, Louis J., III, to Curtis Manufacturing Company, Inc. Cleaning cartridge for computer and video games. 5,187,902, Cl. 51-205.00R.

Baker, Christopher G.; and Zucker, Elliott S., to Kolmar Laboratories, Inc. Topical cleansing and conditioning composition. 5,188,756, Cl. 252-174.150.

Baker Hughes Incorporated: *See*—
Hopmann, Mark; Jennings, Steve L.; and Dinhoble, Daniel E., 5,188,183, Cl. 166-387.000.
Knox, Dick L., 5,189,328, Cl. 310-90.000.

Baker, Ross G., Jr.: *See*—
Wernicke, Joachim F.; Terry, Reese S., Jr.; and Baker, Ross G., Jr., 5,188,104, Cl. 128-419.00R.

Bakker, Marinus: *See*—
Visser, Johannes; and Bakker, Marinus, 5,188,842, Cl. 424-535.000.

Bakron Corp.: *See*—
Badillo, Paul, 5,188,046, Cl. 112-231.000.

Balani, Suresh K.; Ramjit, Harri G.; Pitzenberger, Steven M.; Schwartz, Michael S.; and Lu, Anthony Y. H., to Merck & Co., Inc. Method of preparing HIV protease inhibitors. 5,188,950, Cl. 435-120.000.

Bald, Brigitte, to Gedib Ingenieurburo Und Innovations-Beratung GmbH. Rotary to linear motion converter. 5,187,992, Cl. 74-89.150.

Baldacci, Bruno H., to Ranpak Corp. Method for producing a narrow width cushioning paper product. 5,188,581, Cl. 493-381.000.

Baldridge, David L.: *See*—
Stolarczyk, Larry G.; Stolarczyk, Gerald L.; and Baldridge, David L., 5,188,426, Cl. 299-1.200.

Baldwin, John J.: *See*—
Atkinson, Joseph G.; Claremon, David A.; Baldwin, John J.; Friedman, Paul A.; Remy, David C.; and Stern, Andrew M., 5,188,830, Cl. 424-94.630.

Balkin, David K.: *See*—
Alexander, Lawrence C.; Appelt, Bernd K.; Balkin, David K.; Hansen, James J.; Hromek, Joseph; Kaschak, Ronald A.; Lauffer, John M.; Memis, Irving; Patel, Magan S.; Seman, Andrew M.; and Susko, Robin A., 5,189,261, Cl. 174-263.000.

Ball, Don G.; and Miller, John L., to United States of America, Energy. Coupling apparatus for a metal vapor laser. 5,189,678, Cl. 372-28.000.

Ball, Karen V.: *See*—
Burton, Larry W.; Sutherland, Joseph E.; Matsumura, Paul M.; Ball, Karen V.; and Czerwiec, Richard M., 5,189,673, Cl. 370-110.100.

Ballard, Kenneth D.; Bottino, Ronald E.; Labbe, Mark K.; Lopata, John E.; Malinski, Tom; Meier, Wilhelm; Morelli, Lou; Pacyga, Michael G.; Primorac, Mitch; Roodnat, Bernardus; and Simpson, Shawn, to Molex Incorporated. Continuous carrier web member and method of fabricating sheet metal components for electrical connectors. 5,188,546, Cl. 439-885.000.

Ballard, Othal: *See*—
Mosley, Judy A.; and Ballard, Othal, 5,189,388, Cl. 340-309.150.

Ballman, Gray. Electrical connector with integral strain relief and mount, and overtemperature indicator. 5,188,542, Cl. 439-620.000.

Baltus, Petrus G. M.: *See*—
van de Plassche, Rudy J.; and Baltus, Petrus G. M., 5,189,422, Cl. 341-159.000.

Bando, Koji: *See*—
Hodumi, Masahiko; Bando, Koji; Suzuki, Takahiro; Hashiba, Shigeto; Ono, Yoshiyuki; Okano, Sadao; Ashiya, Seiji; and Murase, Masanori, 5,188,916, Cl. 430-65.000.

Bardaville, George A. Electrical junction and switch boxes. 5,187,853, Cl. 29-407.000.

Barkowsky, Peter: *See*—
Borchardt, Horst; Barkowsky, Peter; and Friedrich, Jorg-Richard, 5,188,010, Cl. 83-175.000.

Barkus, Philip. Comb for applying hair coloring dye. 5,188,132, Cl. 132-219.000.

Barlow, Allan R.; Colananni, Paul D.; Garafola, Daniel C.; Irving, Bryan E.; Elman, Larisa A.; and Hunter, William A., to General Electric Company. Intelligent machining workstation operating logic. 5,189,624, Cl. 364-474.110.

Barnes, Michael S.; Forster, John C.; and Keller, John H., to International Business Machines Corporation. Plasma wafer processing tool having closed electron cyclotron resonance. 5,189,446, Cl. 315-111.410.

Barnum, Stephen J. Pitching rubber. 5,188,357, Cl. 273-25.000.

Baron, Bruce M.: *See*—
Salituro, Francesco G.; and Baron, Bruce M., 5,189,054, Cl. 514-419.000.

Barrett, John P., Sr.; Thorsen, Daniel M.; and Johnson, John H. Flushing system for a water closet. 5,187,818, Cl. 4-313.000.

Barrett, Mark: *See*—
Phillips, Joseph R.; Warloff, Peter E. T.; Hefele, John; Bilodeau, Victor L.; Bain, Ronald G.; and Barrett, Mark, 5,187,956, Cl. 68-181.00R.

Barrett, Michael J.; and Dodd, Andrew S., to Siecor Corporation. Composite cable containing light waveguides and electrical conductors. 5,189,718, Cl. 385-101.000.

Barrett, Michael P. Compact disk holder. 5,188,228, Cl. 206-310.000.

Barrow, Gregory M. Information storage media having information stored thereon for playback at different speeds and method of indexing such stored information. 5,189,326, Cl. 360-63.000.

Barstow, Daniel W.: *See*—
Barstow, David R.; and Barstow, Daniel W., 5,189,630, Cl. 364-514.000.

Barstow, David R.; and Barstow, Daniel W. Method for encoding and broadcasting information about live events using computer pattern matching techniques. 5,189,630, Cl. 364-514.000.

Bartelink, Dirk J., to Hewlett-Packard Company. Flexible attachment flip-chip assembly. 5,189,505, Cl. 257-419.000.

Barthelemy, Pascal: *See*—
Mignani, Gerard; Barthelemy, Pascal; and Meyrueix, Remi, 5,189,134, Cl. 528-68.000.

Bartholmey, Brett A.: *See*—
Stern, Donald J.; Heaton, Jeff S.; Tryon, James A.; and Bartholmey, Brett A., 5,188,295, Cl. 239-320.000.

Bartley, William J., to Union Carbide Chemicals & Plastics Technology Corporation. Alkenyl alkanoate catalyst process. 5,189,004, Cl. 502-170.000.

Bartman, David A.; Morris, Daniel L.; and Andrews, Albert E., to Xerox Corporation. Copy output stacker for engineering size copies. 5,188,352, Cl. 271-175.000.

Bartmann, Ekkehard; Hittich, Reinhard; Plach, Herbert; and Finkenzeller, Ulrich, to Merck Patent Gesellschaft mit Beschrankter Haftung. Haloacetylene derivatives. 5,188,759, Cl. 252-299.010.

Barton, Andrew J.: *See*—
Barton, Leslie W.; and Barton, Andrew J., 5,188,558, Cl. 446-224.000.

Barton, Leslie W.; and Barton, Andrew J. Self-sealing refillable plastic balloon valve. 5,188,558, Cl. 446-224.000.

Bartoschek, Manfred; and Lovisetto, Primo, to KSB Aktiengesellschaft. Sheet metal housing for valves. 5,188,339, Cl. 251-367.000.

Bartz, Manfred U.; and Hiller, Donald R., to Hewlett-Packard Company. Dither error correction. 5,189,418, Cl. 341-131.000.

Bas Teknik AB: *See*—
Appelberg, Bengt, 5,188,503, Cl. 414-745.100.

BASF Aktiengesellschaft: *See*—
Arnold-Mauer, Baerbel; Bronstert, Klaus; and Baumgartner, Ehrenfried, 5,189,099, Cl. 525-68.000.
Bittler, Knut; Ter Maat, Johan H. H.; and Sterzel, Hans-Josef, 5,188,782, Cl. 264-82.000.
Boehme, Ralf; and Volkert, Otto, 5,189,068, Cl. 521-51.000.
Boyd, Jack D.; and Repecka, Linas N., 5,189,116, Cl. 525-423.000.
Bueschges, Ulrich; and Saive, Roland, 5,188,998, Cl. 502-107.000.
Gropper, Hans; Funk, Guido; Kolk, Erich; and Oeder, Dieter, 5,189,123, Cl. 526-106.000.
Hamprecht, Gerhard; Mayer, Horst; Westphalen, Karl-Otto; Walter, Helmut; Gerber, Matthias; Grossmann, Klaus; and Rademacher, Wilhelm, 5,188,657, Cl. 504-212.000.
Hasenbein, Norbert; Bauer, Peter; Schlemmer, Lothar; Hauss, Alfred F.; Gropper, Hans; and Ohlinger, Rainer, 5,189,120, Cl. 525-285.000.
Kiefer, Hans; and Reutemann, Werner, 5,189,216, Cl. 562-600.000.
Kummer, Rudolf; Schneider, Heinz-Walter; Bertleff, Werner; Fischer, Rolf; Vagt, Uwe; Naeumann, Fritz; Hoelderich, Wolfgang; and Schwarzmann, Matthias, 5,189,182, Cl. 549-326.000.
Muehlenbernd, Thomas; Hasenbein, Norbert; Koehler, Gernot; and Schlemmer, Lothar, 5,189,113, Cl. 525-329.500.

BASF Lack + Farben Aktiengesellschaft: *See*—
Schwerzel, Thomas; Schupp, Hans; Huemke, Klaus; Faul, Dieter; and Heimann, Ulrich, 5,188,716, Cl. 204-181.700.

BASF Magnetics GmbH: *See*—
Richter, Hans J.; Hibst, Hartmut; and Fischer, Gerd, 5,188,865, Cl. 427-128.000.

Bass, Ronald M.: *See*—
Brownscombe, Thomas F.; Gergen, William P.; Bass, Ronald M.; Mores, Maryanne; and Wong, Pui K., 5,189,070, Cl. 521-64.000.

Bassine, Stuart. Pivoting vane rotary compressor. 5,188,524, Cl. 418-152.000.

Bates, Leroy A.: *See*—
Singh, Jogender; Jain, Sulekh C.; Lloyd, Thomas W.; Bates, Leroy A.; Lacroix, Denis; Cooper, Ernest B., Jr.; Mannava, Seetharamaiah; and Couture, Serge B., 5,187,967, Cl. 72-340.000.

Battenfeld, Kurt: *See*—
Beetz, Horst; and Battenfeld, Kurt, 5,187,968, Cl. 72-410.000.

Batterman, Eric P.; and Chandler, Donald G., to Omniplanar, Inc. Finder pattern for optically encoded machine readable symbols. 5,189,292, Cl. 235-494.000.

Bauder, Richard, to Audi A.G. Apparatus for a diesel engine. 5,188,077, Cl. 123-359.000.

Baudry, Bernadette; and Levine, Myron M. Highly specific DNA probe for enteroaggregative escherichia coli. 5,189,151, Cl. 536-24.320.

Bauer, Peter: *See*—
Hasenbein, Norbert; Bauer, Peter; Schlemmer, Lothar; Hauss, Alfred F.; Gropper, Hans; and Ohlinger, Rainer, 5,189,120, Cl. 525-285.000.

Bauer, Richard G.: *See*—
Burlett, Donald J.; and Bauer, Richard G., 5,189,101, Cl. 525-90.000.

Bauer, Ted J.; Harmon, David M.; Treliving, Gordon, deceased (by Treliving, Roberta, legal representative); and Kirwan, Rory G., to Medite Corporation. Apparatus and method of manufacturing synthetic boards including fire-retardant boards. 5,188,785, Cl. 264-115.000.

Baukus, James P.: *See*—
Zinck, Jennifer J.; and Baukus, James P., 5,188,671, Cl. 118-715.000.

Baum, Morton S., to Labelmatic, Inc. Label pickup and applicator assembly and method. 5,188,687, Cl. 156-64.000.

Baumgartner, Ehrenfried: *See*—
Arnold-Mauer, Baerbel; Bronstert, Klaus; and Baumgartner, Ehrenfried, 5,189,099, Cl. 525-68.000.

Baur, Gunter; Scheuble, Bernhard; and Fehrenbach, Waltraud, to Merck Patent Gesellschaft mit beschraenkter Haftung. Electrooptical display element using a supertwist liquid crystal having specified elastic constants. 5,188,758, Cl. 252-299.010.

Baxter International Inc.: *See*—
Jepson, Steve C.; and Dudar, Thomas E., 5,188,620, Cl. 604-283.000.

Baxter Internatonal Inc.: *See*—
Schoendorfer, Donald W.; and Prince, Paul R., 5,188,588, Cl. 604-6.000.

Bayer Aktiengesellschaft: *See*—
Blum, Harald; Pedain, Josef; and Hentschel, Karl-Heinz, 5,189,176, Cl. 548-215.000.
Eckstein, Udo, 5,189,188, Cl. 552-104.000.
Heinemann, Ulrich; Kleefeld, Gerd; Dutzmann, Stefan; and Hanssler, Gerd, 5,189,175, Cl. 548-128.000.
Klausener, Alexander; Gayer, Herbert; Kramer, Wolfgang; Berg, Dieter; Brandes, Wilhelm; Hanssler, Gerd; and Wachendorff-Neumann, Ulrike, 5,189,063, Cl. 514-530.000.
Lunkenheimer, Winfried; Brandes, Wilhelm; and Hanssler, Gerd, 5,189,061, Cl. 514-519.000.
Meixner, Jurgen; and Kremer, Wolfgang, 5,189,133, Cl. 528-49.000.

Bayer, Craig E.: *See*—
Pace, Darr C.; Bayer, Craig E.; Casagrande, Mark T.; Johnson, Craig R.; Hall, Danny K.; and Nolan, Andrew W., 5,188,804, Cl. 422-111.000.

Bayless, Brian; and Lyon, Russell R., to Bryman Medical Inc. Swivel clip medical tube holder. 5,188,609, Cl. 604-180.000.

Baylor College of Medicine: *See*—
Lam, Dominic M., 5,188,954, Cl. 435-172.300.

Bayman, Atiye: *See*—
Pollock, Larry J.; and Bayman, Atiye, 5,188,971, Cl. 437-31.000.

Bazbaz, Jacobo: *See*—
Pierce, Larry W.; Zeigler, Steve F.; and Bazbaz, Jacobo, 5,188,235, Cl. 206-554.000.

Bearden, Joe M., to Chevron Research and Technology Company. Human-portable geophysical energy source. 5,189,263, Cl. 181-113.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Beattie, Thomas R.: *See*—
Goulet, Mark; Beattie, Thomas R.; and Wyvratt, Matthew J., 5,189,042, Cl. 514-291.000.
Beck, Bonnie L.: *See*—
Tabatabi, Louisa B.; Mayfield, John E.; and Beck, Bonnie L., 5,188,936, Cl. 435-7.320.
Beck, Earl A.; and Kalies, Ken E., to Hayes Axle, Inc. Electromagnet mount for an electric brake. 5,189,324, Cl. 310-51.000.
Beck, Erhard: *See*—
Burgdorf, Jochen; Steffes, Helmut; Volz, Peter; Beck, Erhard; and Zaviska, Dalibor, 5,188,439, Cl. 303-116.100.
Reinartz, Hans; Steffes, Helmut; Volz, Peter; and Beck, Erhard, 5,188,433, Cl. 303-100.000.
Becker-Ross, Helmut: *See*—
Florek, Stefan; and Becker-Ross, Helmut, 5,189,486, Cl. 356-328.000.
Becton, Dickinson and Company: *See*—
Schulte, Thomas H.; Jurgensen, Stewart R.; and Mapes, James P., 5,188,937, Cl. 435-7.360.
Sweeney, Niall; Nagy, Michael; and Eisenring, Richard, 5,188,597, Cl. 604-110.000.
Beecham Group p.l.c.: *See*—
Hadley, Michael S.; and Jones, Graham E., 5,189,047, Cl. 514-337.000.
Beetz, Horst; and Battenfeld, Kurt, to WEZAG GmbH Werkzeugfabrik. Crimp tool for pressing end sleeves for strands. 5,187,968, Cl. 72-410.000.
Behringwerke Aktiengesellschaft: *See*—
Grundmann, Ulrich; Abel, Karl-Josef; and Amann, Eugen, 5,188,933, Cl. 435-6.000.
Bell, David W.: *See*—
Wang, Shein S.; and Bell, David W., 5,189,643, Cl. 367-38.000.
Bell, Ross L., to Antenna Products Corp. Multi-mode antenna system having plural radiators coupled via hybrid circuit modules. 5,189,434, Cl. 343-853.000.
Bellis, Donald C., Jr.: *See*—
Parulski, Kenneth A.; Bellis, Donald C., Jr.; Hibbard, Robert H.; Giorgianni, Edward J.; and McInerney, Elizabeth, 5,189,511, Cl. 358-80.000.
Bendix Europe Services Techniques: *See*—
Gautier, Jean-Pierre, 5,188,431, Cl. 303-4.000.
Lebret, Pierre, 5,188,438, Cl. 303-116.200.
Monteillet, Jean-Claude, 5,188,201, Cl. 188-71.900.
Benedini, Francesca: *See*—
Alberto, Sala; Benedini, Francesca; Cereda, Roberta; and Del Soldato, Piero, 5,189,034, Cl. 514-224.200.
Benford, Howard L.: *See*—
Leising, Maurice B.; Nogle, Thomas D.; Benford, Howard L.; Helbrook, Gerald L.; Klotz, James R.; Martin, Berthold; Mikel, Steven A.; and Nortman, William, 5,188,575, Cl. 475-280.000.
Bennett, John G.; Hejlsberg, Anders; and Kukol, Peter, to Borland International, Inc. Application program memory management system. 5,189,733, Cl. 395-650.000.
Bensel, William H., III; and Cobb, Gary S., to AT&T Bell Laboratories. Optical fiber closure. 5,189,725, Cl. 385-135.000.
Benson, John D.; and Erickson, Ivan B., to Benson, John D. Countertop can crusher. 5,188,022, Cl. 100-52.000.
Bentley Group Limited: *See*—
Stroud, Edward C.; and Griffith, John D., 5,187,951, Cl. 66-14.000.
Berdan, Karl; and Mendes, Louis. Mechanical lock for vehicle trim panels and the like. 5,188,408, Cl. 293-155.000.
Berg, Dieter: *See*—
Klausener, Alexander; Gayer, Herbert; Kramer, Wolfgang; Berg, Dieter; Brandes, Wilhelm; Hanssler, Gerd; and Wachendorff-Neumann, Ulrike, 5,189,063, Cl. 514-530.000.
Berger, Jacob; and Clark, Robin D., to Syntex (U.S.A.) Inc. Tricyclic 5-HT$_3$ receptor antagonists. 5,189,041, Cl. 514-288.000.
Berkel Incorporated: *See*—
Somal, Hardev S.; and Keehn, Daniel, 5,188,011, Cl. 83-478.000.
Bernacchi, Donald B.; Immel, Donna L.; and Yuknis, Carol A., to Griffith Laboratories Worldwide, Inc. Process for making coated expanded snack product. 5,188,855, Cl. 426-273.000.
Bernard, Margaret M., to Avery Dennison Corporation. Emulsion pressure-sensitive adhesive polymers exhibiting excellent guillotine performance. 5,189,126, Cl. 526-261.000.
Bernot, Anthony J., to Allied-Signal Inc. Aluminosilicate glass pressure transducer. 5,189,591, Cl. 361-283.000.
Bernotas, Ronald C.: *See*—
McDonald, Ian A.; Bernotas, Ronald C.; Dudley, Mark W.; and Sprouse, Jeffrey S., 5,189,179, Cl. 548-495.000.
Bernstein, Linda A., to International Paper Company. Compact disc package. 5,188,229, Cl. 206-312.000.
Bertho, Dominique; Roche, Peter; and McNamara, Paddy, to Molex Incorporated. Surface mount connector with clip engaging contacts. 5,188,534, Cl. 439-79.000.
Bertho, Dominique; Kachlic, Jerry D.; and Teck, Yap Y., to Molex Incorporated. Low profile electrical connector. 5,188,535, Cl. 439-83.000.
Bertleff, Werner: *See*—
Kummer, Rudolf; Schneider, Heinz-Walter; Bertleff, Werner; Fischer, Rolf; Vagt, Uwe; Naeumann, Fritz; Hoelderich, Wolfgang; and Schwarzmann, Matthias, 5,189,182, Cl. 549-326.000.
Bertram, James L.: *See*—
Liao, Zeng K.; and Bertram, James L., 5,188,903, Cl. 428-447.000.
Bertrand, Victor J., to Ritvik Group Inc., The. Display packaging with retractable hook. 5,188,221, Cl. 206-44.00R.
Berville, Marc; and Queille, Laurent, to Giat Industries. Sealing band for an arrow-type projectile. 5,189,254, Cl. 102-521.000.
Bettinger, David S. Dispensing device having a wall made from a shrink plastic material. 5,188,260, Cl. 222-95.000.
Beyersdorf, Hartwig. Method of operating an ionization smoke alarm and ionization smoke alarm. 5,189,399, Cl. 340-629.000.
Beziers, Daniel; Boutevin, Bernard; Parisi, Jean-Pierre; Thomas, Yannig; and Chataignier, Evelyne, to Aerospatiale Societe Nationale Industrielle. Batching process for treatment of carbon fibers. 5,189,093, Cl. 524-847.000.
BFGoodrich Company, The: *See*—
Lai, John T.; and Son, Pyong-nae, 5,189,173, Cl. 546-244.000.
Bhaduri, Sarit B.: *See*—
Sekhar, Jainagesh A.; Bhaduri, Sarit B.; Li, Hung P.; and Canarslan, Necip S., 5,188,678, Cl. 148-514.000.
BI, Inc.: *See*—
Mitchell, Michael S., 5,189,395, Cl. 340-539.000.
Bieganski, Zdzislaw, to ZB New Products Limited. Solder removal tools. 5,187,833, Cl. 15-341.000.
Big E-Z Bookkeeping Company: *See*—
Carley, Michelle, 5,188,562, Cl. 462-54.000.
Biggers, Rand R.: *See*—
Stefanov, Michael E.; Biggers, Rand R.; Rish, Jeff W., III; Henderson, Girardeau L.; and Pham, Chuong N., 5,188,171, Cl. 165-96.000.
Biggs, Melvin L.: *See*—
Hine, Nathan P.; Hoisington, Paul A.; Spehrley, Charles W., Jr; Biggs, Melvin L.; and Carden, Richard, 5,189,438, Cl. 346-1.100.
Bilko, John P.; Arnell, Stephen R.; Boyd, Andrew J.; and Goodwin, Perry A., to CMB Foodcan PLC. Apparatus and method for reshaping containers. 5,187,962, Cl. 72-62.000.
Bilodeau, Victor L.: *See*—
Phillips, Joseph R.; Warloff, Peter E. T.; Hefele, John; Bilodeau, Victor L.; Bain, Ronald G.; and Barrett, Mark, 5,187,956, Cl. 68-181.00R.
BioControl Systems Incorporated: *See*—
Ward, N. Robert, Jr.; and Lozier, Philip J., 5,188,946, Cl. 435-91.000.
BioCryst, Inc.: *See*—
Niwas, Shri; Secrist, John A., III; Montgomery, John A.; Erion, Mark D.; Guida, Wayne C.; and Ealick, Steve E., 5,189,039, Cl. 514-258.000.
Birbaum, Jean-Luc; Rody, Jean; Slongo, Mario; and Valet, Andreas, to Ciba-Geigy Corporation. Process for incorporating o-hydroxyphenyl-s-triazines in organic polymers. 5,189,084, Cl. 524-100.000.
Birecki, Henryk, to Hewlett-Packard Company. Method and apparatus for directly overwriting magnetooptic data storage media. 5,189,649, Cl. 369-13.000.
Birk, Manfred; Engel, Gerhard; Eyberg, Wilhelm; Henze, Thomas; and Schmitt, Alfred, to Robert Bosch GmbH. Control system for a fuel pump. 5,188,081, Cl. 123-479.000.
Birkle, Siegfried; Gehring, Johann; and Nippe, Waldemar, to Siemens Aktiengesellschaft. Apparatus for electrolytic surface coating of pourable material. 5,188,718, Cl. 204-201.000.
Bitner, Robert S.: *See*—
Miljanich, George P.; Bitner, Robert S.; Bowersox, Stephen S.; Fox, James A.; Valentino, Karen L.; Yamashiro, Donald H.; and Tsubokawa, Makoto, 5,189,020, Cl. 514-12.000.
Bitsch, Harald; and Schmidt, Heinz, to Mannesmann Aktiengesellschaft. Force-transmitting, cone-shaped press-fit connection. 5,188,478, Cl. 403-267.000.
Bittler, Knut; Ter Maat, Johan H. H.; and Sterzel, Hans-Josef, to BASF Aktiengesellschaft. Production of preforms from ceramic or metallic fibers. 5,188,782, Cl. 264-82.000.
Black, Hugh E., to Schering Corporation. Use of interleukin-4- for lowering blood-cholesterol levels. 5,188,827, Cl. 424-85.200.
Blacklock, Thomas J.; Jones, Todd K.; Mathre, David J.; and Xavier, Lyndon C., to Merck & Co., Inc. Chiral boron catalysts for reduction of ketones and process for their preparation. 5,189,177, Cl. 548-405.000.
Blahuta, Lew: *See*—
Kurth, Mark; Alger, Andrew; and Blahuta, Lew, 5,188,727, Cl. 210-85.000.
Blair, Dianna S.; Freye, Gregory C.; Hughes, Robert C.; Martin, Stephen J.; and Ricco, Antonio J., to United States of America, Energy. Method and apparatus for acoustic plate mode liquid-solid phase transition detection. 5,187,980, Cl. 73-599.000.
Blakeney, Andrew J.: *See*—
Jeffries, Alfred T., III; Honda, Kenji; Blakeney, Andrew J.; and Tadros, Sobhy, 5,188,921, Cl. 430-192.000.
Blandford, Robert R. Devices to (1) supply authenticated time and (2) time stamp and authenticate digital documents. 5,189,700, Cl. 380-23.000.
Blasey, Gerhard; Breucker, Christoph; Gutsche, Bernhard; Jeromin, Lutz; Panthel, Guenter; Peukert, Eberhard; and Schmidt, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Process for the production of solid or paste-form products. 5,189,207, Cl. 562-97.000.
Blaszuk, Paul R., to United Technologies Corporation. High powered laser with reduced optical aberration. 5,189,681, Cl. 372-95.000.
Blatt, John A.: *See*—
Golden, Michael J., 5,188,411, Cl. 294-64.200.
Bleier, Roger D.: *See*—
Patel, Arvind D.; McGlothlin, Raymond E.; Bleier, Roger D.; and Brinkley, H. N., 5,189,012, Cl. 507-103.000.

Bley, Robert S.: *See*—
Condon, Dennis E.; Bley, Robert S.; and Purkait, Bobby K., 5,188,596, Cl. 604-101.000.
Block Drug Company: *See*—
Chang, Tiang-Shing, 5,188,755, Cl. 252-174.000.
Blomgren, George E.; and Jones, Steven D., to Eveready Battery Company, Inc. Low temperature molten compositions comprised of quaternary alkyl phosphonium salts. 5,188,914, Cl. 429-112.000.
Blount, Curtis G.; and Braden, John C., to Atlantic Richfield Company. Automatic downhole well shut-in control valve. 5,188,172, Cl. 166-64.000.
Bluhm, Terry L.: *See*—
Mayo, James D.; Bluhm, Terry L.; Hsiao, Cheng K.; Martin, Trevor I.; and Hor, Ah-Mee, 5,189,155, Cl. 540-141.000.
Blum, Harald; Pedain, Josef; and Hentschel, Karl-Heinz, to Bayer Aktiengesellschaft. Bis-oxazolidines, oxazolidine mixtures consisting essentially thereof and their use as hardeners for plastics precursors containing isocyanate groups. 5,189,176, Cl. 548-215.000.
Blum, Kenneth; and Trachtenberg, Michael C., to Matrix Technologies, Inc. Treatment of cocaine addiction. 5,189,064, Cl. 514-561.000.
Bo-Dekk Ventures, Ltd.: *See*—
Boyer, Joseph H.; and Morgan, Lee R., 5,189,029, Cl. 514-64.000.
Board of Regenets, The University of Texas System: *See*—
Ajani, Jaffer; Grossie, Bruce, Jr.; Nishioka, Kenji; and Ota, David M., 5,189,025, Cl. 514-23.000.
Board of Regents, The University of Texas System: *See*—
McGuire, William L.; Tandon, Atul K.; Clark, Gary M.; and Chamness, Gary C., 5,188,964, Cl. 436-64.000.
Sherry, A. Dean; Lazar, Istvan; Brucher, Erno; and Ramasamy, Ravichandran, 5,188,816, Cl. 424-9.000.
Weldon, William F., 5,189,244, Cl. 89-8.000.
Woodson, Herbert H.; and Hsu, John S., 5,189,357, Cl. 318-737.000.
Boardman, James R.; and Ofstead, Ronald F., to Minnesota Mining and Manufacturing Company. Method of sealing a gelatin capsule. 5,188,688, Cl. 156-69.000.
Boardman Molded Products, Inc.: *See*—
Ullman, Myron, 5,188,582, Cl. 493-440.000.
Boatner, Lynn A.: *See*—
Feenstra, Roeland; and Boatner, Lynn A., 5,188,906, Cl. 428-688.000.
Bobo, Melvin: *See*—
Pope, Adam N.; and Bobo, Melvin, 5,188,375, Cl. 277-58.000.
BOC Group, Inc., The: *See*—
Davidson, Jeffrey; Sherman, Robert; and Paciei, Richard, 5,188,714, Cl. 204-129.350.
Boccardo, Victor N. Paint removing compositions and methods for the manufacture and use thereof. 5,188,666, Cl. 106-190.000.
Bock, Mark G.: *See*—
Freidinger, Roger M.; Bock, Mark G.; Lam, Yiu-Kuen T.; Chang, Raymond S.; Hensens, Otto D.; Schwartz, Cheryl D.; and Zink, Deborah L., 5,189,050, Cl. 514-375.000.
Bock, Wojtek J.; Wolinski, Tomasz R.; and Wisniewski, Roland, to Universite du Quebec a Hull. Fiber-optic strain gauge manometer. 5,187,983, Cl. 73-705.000.
Bodenseewerk Geratetechnik GmbH: *See*—
Marschall, Klaus W., 5,189,589, Cl. 361-93.000.
Boehme, Ralf; and Volkert, Otto, to BASF Aktiengesellschaft. Preparation of integral skin cellular plastics by the polyaddition process in the presence of tertiary alcohols. 5,189,068, Cl. 521-51.000.
Boehringer Mannheim GmbH: *See*—
Eikmeier, Heino; and Rothe, Anselm, 5,188,966, Cl. 436-170.000.
Mangold, Dieter; and Schlipfenbacher, Reiner, 5,188,939, Cl. 435-7.920.
Boeing Company, The: *See*—
Derry, Pamela L.; Hong, Chi-Shain; Chan, Eric Y.; Figueroa, Luis; and Fu, R. Jennhwa, 5,189,679, Cl. 372-45.000.
Bogert, Hermann; and Seidel, Hans-Georg, to Heye, Hermann. Apparatus for severing gobs from glass streams. 5,188,653, Cl. 65-334.000.
Bohler Ybbstalwerke GmbH: *See*—
Gstettner, Manfred; and Wimmer, Alois, 5,188,158, Cl. 144-162.00R.
Bohme, Karl, to Huss Maschinenfabrik GmbH & Co., KG. Looping swing with parallel rows of seats. 5,188,566, Cl. 472-45.000.
Boisvert, John A.; Rogers, Fred A.; Solley, Dennis J.; Tatham, David A.; and Wilkins, Raymond G., to Thermal Dynamics Corporation. Modular, stackable plasma cutting apparatus. 5,189,277, Cl. 219-121.540.
Boisvert, Wayne: *See*—
Muhammad, Nouman; Boisvert, Wayne; Harris, Michael; and Weiss, Jay, 5,188,836, Cl. 424-431.000.
Bolan, Michael L.; Little, Wendell L.; Jansen, Elaine; and Folkes, Don, to Dallas Semiconductor Corporation. Dual function microboard with a row of connectors on two edges. 5,189,598, Cl. 361-397.000.
Boley, Warren M.: *See*—
Joyce, Michael J.; Boley, Warren M.; and Deal, James L., 5,188,279, Cl. 228-113.000.
Boltze, Wolfgang; and Wittig, Werner, to Keiper Recaro GmbH & Co. Jointed fitting for vehicle seats, in particular motor vehicle seats. 5,188,571, Cl. 475-162.000.
Bonadio, Allan R. Apparatus and method for interactively manipulating mathematical equations. 5,189,633, Cl. 364-709.120.
Bonilla, Jorge A.: *See*—
Chen, Gilbert K.; McKelvy, Robert; Bonilla, Jorge A.; Glaspie, Don; and De Bruyn, George, 5,188,773, Cl. 261-112.200.
Bonko, Mark L., to Goodyear Tire & Rubber Company, The. Pneumatic tire for agricultural or logging use. 5,188,683, Cl. 152-209.00B.
Bonnet, Claude. Pleasure boat with sails or motor. 5,188,056, Cl. 114-355.000.
Bonnett, Roy E.: *See*—
Burnham, Robert E.; and Bonnett, Roy E., 5,188,414, Cl. 296-37.600.
Bonney, Stanley G.: *See*—
Wilson, Alan A.; Brand, Peter J.; Judd, David R.; and Bonney, Stanley G., 5,187,921, Cl. 53-453.000.
Bonoli, Luciano: *See*—
Canova, Luciano; Santoro, Ettore; Bonoli, Luciano; and Falchi, Paolo, 5,189,231, Cl. 585-4.000.
Boon Edam B.V.: *See*—
Huber, Jacob R. A., 5,187,895, Cl. 49-42.000.
Bopp, Richard C., to General Electric Company. Polyphenylene ether resins and compositions having reduced odor and method of reducing odor in same. 5,189,076, Cl. 521-180.000.
Borchardt, Horst; Barkowsky, Peter; and Friedrich, Jorg-Richard, to Hermann Berstorff Maschinenbau GmbH. Arrangement for cutting thin-walled belts from a closed band of rubber. 5,188,010, Cl. 83-175.000.
Borg-Warner Automotive, Inc.: *See*—
Petzold, Werner P.; and Umlauf, William P., 5,189,611, Cl. 364-424.100.
Borghi, Italo: *See*—
Luciani, Luciano; Pondrelli, Maddalena; Invernizzi, Renzo; and Borghi, Italo, 5,188,997, Cl. 502-107.000.
Borgmeyer, Virgil L.; Trice, Chester F.; Tempco, Dale A.; Clark, Thomas F.; Ritter, William J.; and Huests, Leo H., to ABB Power T&D Company, Inc. Transformer having an integral cabinet with a clamping cover hinge. 5,189,257, Cl. 174-50.000.
Borland International, Inc.: *See*—
Bennett, John G.; Hejlsberg, Anders; and Kukol, Peter, 5,189,733, Cl. 395-650.000.
Born, Alessandro: *See*—
Muller, Walter; Nutzi, Silvan; and Born, Alessandro, 5,188,622, Cl. 604-319.000.
Bossi, Daniele, to CO.E.P.T.E. Costruzioni Elettromeccaniche per Trazione Elettrica S.r.l. Coding method for electric cable. 5,187,854, Cl. 29-451.000.
Boston University, Trustees of: *See*—
Wang, Zhengxin; and Laursen, Richard A., 5,188,733, Cl. 210-321.840.
Bostwick, Martin M.: *See*—
Kovacic, Theodore J.; Kaufman, Richard H.; Bostwick, Martin M.; Crescenzi, Donald C.; Valls, William H.; and Bucaccio, Thomas, 5,188,250, Cl. 215-32.000.
Botich, Michael J.; and Halseth, Thor, to Med-Design, Inc. Retractable needle system. 5,188,599, Cl. 604-110.000.
Bottino, Ronald E.: *See*—
Ballard, Kenneth D.; Bottino, Ronald E.; Labbe, Mark K.; Lopata, John E.; Malinski, Tom; Meier, Wilhelm; Morelli, Lou; Pacyga, Michael G.; Primorac, Mitch; Roodnat, Bernardus; and Simpson, Shawn, 5,188,546, Cl. 439-885.000.
Bouisset, Michel; and Radisson, Joel, to Sanofi. Process for the preparation of phenylacetic derivatives of thieno-pyridines. 5,189,170, Cl. 546-114.000.
Boulay, Steven G.: *See*—
Joseph, Michael L.; Boulay, Steven G.; and Nasman, Ronald W., 5,188,324, Cl. 248-222.300.
Bousque, Marie-Laure: *See*—
Duranel, Laurent; Malinge, Jean; and Bousque, Marie-Laure, 5,188,999, Cl. 502-111.000.
Boutevin, Bernard: *See*—
Beziers, Daniel; Boutevin, Bernard; Parisi, Jean-Pierre; Thomas, Yannig; and Chataignier, Evelyne, 5,189,093, Cl. 524-847.000.
Boutillier, Jacques; and Lermat, Yves, to Atochem. Moisture-curable hot-melt adhesive compositions. 5,189,096, Cl. 525-56.000.
Bouvet, Jacky; and Chapelet, Anne, to Thomson-CSF. Method for the processing of a digitally encoded pulse signal. 5,189,428, Cl. 342-132.000.
Bova, Frank J.; and Friedman, William A., to University of Florida Research Foundation, Inc. Apparatus for stereotactic radiosurgery. 5,189,687, Cl. 378-65.000.
Bowersox, Stephen S.: *See*—
Miljanich, George P.; Bitner, Robert S.; Bowersox, Stephen S.; Fox, James A.; Valentino, Karen L.; Yamashiro, Donald H.; and Tsubokawa, Makoto, 5,189,020, Cl. 514-12.000.
Bowman, Lyle M.: *See*—
Chandrasekaran, Santosh K.; Reents, Margaret J.; Babcock, John C.; Bowman, Lyle M.; Archibald, Roy D.; and Robinson, Joseph R., 5,188,826, Cl. 424-78.040.
Boyd, Andrew J.: *See*—
Bilko, John P.; Arnell, Stephen R.; Boyd, Andrew J.; and Goodwin, Perry A., 5,187,962, Cl. 72-62.000.
Boyd, Jack D.; and Repecka, Linas N., to BASF Aktiengesellschaft. Extremely tough thermosetting bismaleimide resin systems. 5,189,116, Cl. 525-423.000.
Boyd, James D., to Eastman Kodak Company. Method and system for pre-exposing information on a filmstrip. 5,189,453, Cl. 354-122.000.
Boye, Olivier: *See*—
Thal, Claude; Boye, Olivier; Guenard, Daniel; and Potier, Pierre, 5,189,055, Cl. 514-422.000.
Boyer, Charles E., III: *See*—
Johnson, Eric J.; Boyer, Charles E., III; Nielsen, Edmond J.; and Minick, Chris A., 5,189,078, Cl. 523-137.000.

Boyer, Joseph H.; and Morgan, Lee R., to Bo-Dekk Ventures, Ltd. Indacene compounds and methods for using the same. 5,189,029, Cl. 514-64.000.
Braden, John C.: *See—*
Blount, Curtis G.; and Braden, John C., 5,188,172, Cl. 166-64.000.
Brammer, Norman; and Nobileau, Philippe C., to ABB Vetco Gray Inc. Annulus shutoff device for a subsea well. 5,188,181, Cl. 166-344.000.
Brand, Peter J.: *See—*
Wilson, Alan A.; Brand, Peter J.; Judd, David R.; and Bonney, Stanley G., 5,187,921, Cl. 53-453.000.
Brandes, Wilhelm: *See—*
Klausener, Alexander; Gayer, Herbert; Kramer, Wolfgang; Berg, Dieter; Brandes, Wilhelm; Hanssler, Gerd; and Wachendorff-Neumann, Ulrike, 5,189,063, Cl. 514-530.000.
Lunkenheimer, Winfried; Brandes, Wilhelm; and Hanssler, Gerd, 5,189,061, Cl. 514-519.000.
Branston, David-Walter; and Stroh, Jan, to Siemens Aktiengesellschaft. Gas-discharge switch. 5,189,345, Cl. 315-326.000.
Branston, David-Walter; and Stroh, Jan, to Siemens Aktiengesellschaft. Gas-discharge switch. 5,189,346, Cl. 315-326.000.
Bras, Jean-Pierre: *See—*
Frehel, Daniel; Gully, Danielle; Valette, Gerard; and Bras, Jean-Pierre, 5,189,049, Cl. 514-371.000.
Brasen, Daniel R.; and Wong, Dale M., to VLSI Technology, Inc. Adaptable topologies used in routing of ground and power networks on integrated circuits. 5,187,864, Cl. 29-846.000.
Brauckmiller, Raymond R.: *See—*
Adkins, Delbert L.; Brauckmiller, Raymond R.; and Soles, Dennis C., 5,188,086, Cl. 123-568.000.
Braun, Henry D. Oil confinement device. 5,188,482, Cl. 405-70.000.
Braun, Robert D.: *See—*
Mellits, Kirk E.; Braun, Robert D.; and Wollert, Gary S., 5,187,974, Cl. 73-49.700.
Bredin, Robert C. Platter feed safety. 5,189,451, Cl. 352-128.000.
Bregman, Mark F.; Hoffman, Paul R.; Ledermann, Peter G.; Moskowitz, Paul A.; Pollak, Roger A.; Reiley, Timothy C.; and Ritter, Mark B., to International Business Machines Corporation. Integrated circuit testing system having a cantilevered contact lead probe pattern mounted on a flexible tape for interconnecting an integrated circuit to a tester. 5,189,363, Cl. 324-158.00P.
Brelan S.A.: *See—*
Leurent, Henri G., 5,187,914, Cl. 52-738.000.
Brennan, Michael L.: *See—*
Yarsunas, George D.; Brennan, Michael L.; and Duggan, Frank, 5,189,435, Cl. 343-903.000.
Breslau, Steven M.; Peng, Han-Min; and Kang, Chieh-Chi, to Sima Products Corporation. Video tape editor with fade control functions. 5,189,563, Cl. 360-14.100.
Bretschneider, Jurgen: *See—*
Speikamp, Hans-Dieter; Kuhnle, Adolf; and Bretschneider, Jurgen, 5,189,069, Cl. 521-56.000.
Breucker, Christoph: *See—*
Blasey, Gerhard; Breucker, Christoph; Gutsche, Bernhard; Jeromin, Lutz; Panthel, Guenter; Peukert, Eberhard; and Schmidt, Wolfgang, 5,189,207, Cl. 562-97.000.
Breuer, Rudi A. Transporter unit for adjusting a genoa lead block and car. 5,188,052, Cl. 114-204.000.
Breunig, Timothy A.; and Anders, Gary H., to Doskocil Companies Incorporated. Wheel type freezer and method for rapid, low temperature freezing. 5,187,947, Cl. 62-346.000.
Brewer, James E.: *See—*
Pommrehn, Mark R.; Brewer, James E.; and Kroll, Mark W., 5,188,116, Cl. 128-696.000.
Brico Engineering Limited: *See—*
Purnell, Charles G., 5,188,659, Cl. 75-246.000.
Bridge, Thomas P.; and Goodwin, Frederick K., to United States of America, Health and Human Services. Composition for the treatment of chronic fatigue syndrome. 5,189,022, Cl. 514-16.000.
Bridgeport Fittings, Inc.: *See—*
Pratesi, Edward E., 5,189,258, Cl. 174-65.00R.
Bridgestone Corporation: *See—*
Graves, Daniel F., 5,188,904, Cl. 428-447.000.
Himuro, Yasuo, 5,188,684, Cl. 152-209.00R.
Bridgestone/Firestone, Inc.: *See—*
Siegenthaler, Karl J., 5,188,846, Cl. 425-11.000.
Briggs & Stratton: *See—*
Fiorenza, John A., II, 5,188,069, Cl. 123-146.50B.
Brigham and Women's Hospital: *See—*
Goldberg, Mark A.; and Faquin, William C., 5,188,828, Cl. 424-85.200.
Brinkley, H. N.: *See—*
Patel, Arvind D.; McGlothlin, Raymond E.; Bleier, Roger D.; and Brinkley, H. N., 5,189,012, Cl. 507-103.000.
Brittain, David R.; Brown, Steven P.; Cooper, Anthony L.; Longridge, Jethro L.; Morris, Jeffrey J.; Preston, John; and Slater, Linda, to Imperial Chemical Industries PLC. Urea derivatives, compositions and use. 5,189,031, Cl. 514-155.000.
Broadbent, Eliot K.; and Miller, Kenneth C., to Novellus Systems, Inc. Sweeping method and magnet track apparatus for magnetron sputtering. 5,188,717, Cl. 204-192.120.
Broadhurst, Michael D.: *See—*
Kanne, David B.; Fisher, Karl J.; and Broadhurst, Michael D., 5,189,060, Cl. 514-508.000.
Brockmann, Joachim, to Durkopp Adler Aktiengesellschaft. Folding device for sewing a second workpiece onto a first workpiece in an automatic sewing machine. 5,188,044, Cl. 112-121.150.
Broer, Dirk J.: *See—*
Hikmet, Rifat A. M.; and Broer, Dirk J., 5,188,760, Cl. 252-299.010.
Broersma, Robert J., Jr.: *See—*
Matthews, Donald P.; McCarthy, James R.; Whitten, Jeffrey P.; and Broersma, Robert J., Jr., 5,189,052, Cl. 514-392.000.
Brokaw, Paul E.: *See—*
Nottingham, John R.; Spirk, John; Saunders, Craig M.; and Brokaw, Paul E., 5,188,256, Cl. 222-1.000.
Bronstert, Klaus: *See—*
Arnold-Mauer, Baerbel; Bronstert, Klaus; and Baumgartner, Ehrenfried, 5,189,099, Cl. 525-68.000.
Brookfield, Richard A.; and Walle, Leonard I., to Compressed Air Filter Technologies, Inc. Drop legs for compressed air lines. 5,188,647, Cl. 55-462.000.
Brose, Werner; and Augustin, Martin, to Storck Einkauf + Service GmbH. Folding box. 5,188,223, Cl. 206-45.150.
Brosig, Stefan, to Nokia (Deutschland) GmbH. High-resolution, passively controlled liquid crystal display. 5,188,870, Cl. 428-1.000.
Brother Kogyo Kabushiki Kaisha: *See—*
Hayakawa, Atsuya; Komuro, Kyoji; and Shimizu, Hideaki, 5,189,622, Cl. 364-470.000.
Hayashi, Takayuki, 5,188,350, Cl. 271-114.000.
Komuro, Kyoji; Hayakawa, Atsuya; and Shimizu, Hideaki, 5,189,623, Cl. 364-470.000.
Miwa, Yuji, 5,187,900, Cl. 51-95.0WH.
Nagao, Yoshiaki; Kobayashi, Atsuhiro; and Sakuma, Mikio, 5,188,469, Cl. 400-615.200.
Brown International Corporation: *See—*
Bushman, Ronald C.; Alexander, L. Bruce; and Harris, William E., Jr., 5,188,021, Cl. 99-502.000.
Brown, Randall L. Toy rocket apparatus. 5,188,557, Cl. 446-212.000.
Brown, Ronald E.: *See—*
Kuerston, Richard D.; and Brown, Ronald E., 5,188,709, Cl. 196-14.520.
Brown, Sterling B.; and Fewkes, Edward J., Jr., to General Electric Company. Compatibilization of polyphenylene ether with polyester using polystyrene-polycarbonate copolymer. 5,189,114, Cl. 525-394.000.
Brown, Steven P.: *See—*
Brittain, David R.; Brown, Steven P.; Cooper, Anthony L.; Longridge, Jethro L.; Morris, Jeffrey J.; Preston, John; and Slater, Linda, 5,189,031, Cl. 514-155.000.
Brown, William M., to Environmental Research Institute of Michigan. Three dimensional interferometric synthetic aperture radar terrain mapping employing altitude measurement and second order correction. 5,189,424, Cl. 342-25.000.
Brownscombe, Thomas F.; Gergen, William P.; Bass, Ronald M.; Mores, Maryanne; and Wong, Pui K., to Shell Oil Company. Process for preparing low density porous crosslinked polymeric materials. 5,189,070, Cl. 521-64.000.
Brubaker, Burton D.: *See—*
Suh, Kyung W.; Brubaker, Burton D.; Stobby, William G.; McCullough, Francis P.; and Snelgrove, R. Vernon, 5,188,896, Cl. 428-397.000.
Brucher, Erno: *See—*
Sherry, A. Dean; Lazar, Istvan; Brucher, Erno; and Ramasamy, Ravichandran, 5,188,816, Cl. 424-9.000.
Bruck, Martin: *See—*
Vaahs, Tilo; Gerdau, Thomas; Kleiner, Hans-Jerg; Peuckert, Marcellus; and Bruck, Martin, 5,189,132, Cl. 528-33.000.
Brunet, Jean-Jacques; and Passelaigue, Elisabeth, to Rhone-Poulenc Chimie. Process for the carbonylation of acrylic acid. 5,189,213, Cl. 562-517.000.
Brunfeld, Andrei, to Amsys Ltd. Interferometric measurement device with non stabilized light source. 5,189,489, Cl. 356-358.000.
Brunnenkant, Christel: *See—*
Young, Richard H., Sr.; Hansen, Michael R.; Lancaster, E. Peter; Mehta, aresh R.; and Brunnenkant, Christel, 5,188,624, Cl. 604-378.000.
Bruno, Righi, to O.A.M S.p.A. Device for the receiving and synchronized transferring of various articles. 5,188,217, Cl. 198-803.900.
Bruns, Alan E.: *See—*
Kelm, Gary R.; and Bruns, Alan E., 5,189,066, Cl. 514-678.000.
Brunsting, Albert; and Sonnenburg, Roger D., to Miles Inc. Ambient light suppression for reflectance photometers. 5,189,495, Cl. 356-402.000.
Brussee, Johannes; van der Gen, Arne; and Kruse, Cornelis G., to Duphar International Research B.V. Method for the preparation of erythro vicinal amino-alcohols. 5,189,219, Cl. 564-356.000.
Bruzzese, Tiberio; and Mozzi, Giovanni, to Staroil Limited. Method for the production of complexes of long chain polyunsaturated fatty acids and their derivatives, with cyclodextrins, and the resulting complexes. 5,189,149, Cl. 514-58.000.
Bryan, William J., to Combustion Engineering, Inc. Extended weld tab for fuel assembly grid. 5,188,797, Cl. 376-438.000.
Bryman Medical Inc.: *See—*
Bayless, Brian; and Lyon, Russell R., 5,188,609, Cl. 604-180.000.
BT&D Technologies Limited: *See—*
Shaw, Robert N., 5,189,713, Cl. 385-2.000.
BTR Dunlop Limited: *See—*
Dorse, John R., 5,188,460, Cl. 383-18.000.
Bucaccio, Thomas: *See—*
Kovacic, Theodore J.; Kaufman, Richard H.; Bostwick, Martin M.; Crescenzi, Donald C.; Valls, William H.; and Bucaccio, Thomas, 5,188,250, Cl. 215-32.000.

Buchberg, Akiva: *See—*
Capy, Gilbert, 5,188,265, Cl. 223-32.000.
Buchel, Jean-Pierre: *See—*
Crepy, Gilles; and Buchel, Jean-Pierre, 5,188,913, Cl. 429-101.000.
Bucher GmbH, Maschinenfabrik: *See—*
Zatrieb, Jacek; and Dorflinger, Clemens, 5,188,523, Cl. 418-126.000.
Buchnag, Kamal M. Food shelving and cycling system. 5,188,020, Cl. 99-468.000.
Bueschges, Ulrich; and Saive, Roland, to BASF Aktiengesellschaft. Transition-metal catalyst component for a Ziegler catalyst system, and the use of said system. 5,188,998, Cl. 502-107.000.
Bulanda, John J.: *See—*
Hillegonds, Larry A.; Jue, George H.; and Bulanda, John J., 5,187,861, Cl. 29-751.000.
Bull, Steven D.: *See—*
Humphries, Brian J.; Waters, Colin M.; Bull, Steven D.; and Morris, Christopher J., 5,189,406, Cl. 340-793.000.
Bulteau, Serge, to Schlumberger Industries. Apparatus for detecting rotation of a rotary element such as the spinner of a water meter. 5,187,989, Cl. 73-861.780.
Bunch, John H.: *See—*
Childers, Richard K.; and Bunch, John H., 5,189,387, Cl. 338-20.000.
Bundy Corporation: *See—*
Adkins, Delbert L.; Brauckmiller, Raymond R.; and Soles, Dennis C., 5,188,086, Cl. 123-568.000.
Bundy, Mark L., to United States of America, Army. Thermally and mechanically stable muzzle reference system collimator assembly. 5,189,245, Cl. 89-14.100.
Burch, Ronald M.; Patch, Raymond J.; Shearer, Barry G.; and Perumattam, John J., to Nova Pharmaceutical Corporation. Protein kinase C modulators. 5,189,046, Cl. 514-330.000.
Burdinski, Gerhard; Kirsch, Reinhard; and Kottmann, Hariolf, to Hoechst Aktiengesellschaft. Process for the preparation of 1,1-disubstituted cyclopropane derivatives. 5,189,165, Cl. 544-298.000.
Burgdorf, Jochen; Steffes, Helmut; Volz, Peter; Beck, Erhard; and Zaviska, Dalibor, to Alfred Teves GmbH. Brake pressure control. 5,188,439, Cl. 303-116.100.
Burgess, Stuart C.: *See—*
Karp, Stefan; and Burgess, Stuart C., 5,188,205, Cl. 192-46.000.
Burke, Richard A.; Goodall, James R.; Melton, Michael D.; Osborne, Roy S.; and Patterson, Carl D., to Hoechst Celanese Corporation. Apparatus for thermomechanical testing of fibers. 5,188,456, Cl. 374-50.000.
Burkhardt, William C.; Diehl, Michael W.; and Spence, Wesley F., to Du Pont de Nemours, E. I., and Company. Gel propellant ammunition. 5,189,249, Cl. 102-430.000.
Burkhart, Gordon H.: *See—*
Jackson, John E.; Levy, Joseph L.; Leung, Christopher C.; and Burkhart, Gordon H., 5,189,294, Cl. 250-201.900.
Burlett, Donald J.; and Bauer, Richard G., to Goodyear Tire & Rubber Company, The. Sulfur vulcanized elastomers reinforced with aramid-polydiene copolymers. 5,189,101, Cl. 525-90.000.
Burnett, Gale D. Method for pulse propagation analysis of a well casing or the like by transmitted pulse interaction. 5,189,374, Cl. 324-534.000.
Burnham, Robert E.; and Bonnett, Roy E., to Ford Motor Company. Pick-up truck with auxiliary load compartment. 5,188,414, Cl. 296-37.600.
Burns, Thomas J.; Page, Edward C.; Gregory, Rita A.; and Pryor, George M., to United States of America, Air Force. Totally integrated construction cost estimating, analysis, and reporting system. 5,189,606, Cl. 364-401.000.
Burtch, John E.: *See—*
Hornback, Roger W.; and Burtch, John E., 5,188,775, Cl. 264-25.000.
Burton, Forrest R., to P.D.Q. Manufacturing Inc. Fluid applicating and vehicle washing apparatus. 5,188,293, Cl. 239-227.000.
Burton, Larry W.; Sutherland, Joseph E.; Matsumura, Paul M.; Ball, Karen V.; and Czerwiec, Richard M., to Alcatel Network Systems, Inc. Method and apparatus for controlling switched video in an optical fiber telecommunications system. 5,189,673, Cl. 370-110.100.
Busato, Murray F.: *See—*
Cook, John E.; Busato, Murray F.; and Gillier, William C., 5,188,141, Cl. 137-112.000.
Bushman, Ronald C.; Alexander, L. Bruce; and Harris, William E., Jr., to Brown International Corporation. Fruit juice and pulp extractor. 5,188,021, Cl. 99-502.000.
Bushnell, Peter: *See—*
Scott, Peter D.; and Bushnell, Peter, 5,188,508, Cl. 415-206.000.
Butters, Scott W., to InoTec Corporation. Collapsible drink dispenser. 5,188,261, Cl. 222-107.000.
Buttery, Howard J.: *See—*
Schmidt, Diane G.; Buttery, Howard J.; and Norbury, Robert J., 5,188,753, Cl. 252-132.000.
Byrnes, Francis E., to United Technologies Corporation. Snubber-bearing with combined elastomer laminates. 5,188,513, Cl. 416-134.00A.
C & P of Virginia: *See—*
Williams, Clifton B., 5,189,663, Cl. 370-17.000.
C.S. Technology: *See—*
Healy, Charles D., 5,188,095, Cl. 128-32.000.
Cabot Safety Corporation: *See—*
Gardner, Ross, Jr., 5,188,123, Cl. 128-864.000.
Caldwell, David W.; and Medendorp, Nicholas W., to Donnelly Corporation. Detection circuit for matrix touch pad. 5,189,417, Cl. 341-26.000.
Caldwell, Marcus L., to Tandy Corporation. Optical data storage system with unitary ferrous frame. 5,189,660, Cl. 369-215.000.
Calgene, Inc.: *See—*
Moloney, Maurice M.; and Radke, Sharon, 5,188,958, Cl. 435-240.400.
Callas, Mike T. Sign holder. 5,188,332, Cl. 248-544.000.
Callier, Bernard; and Maynard, Jean-Pierre, to General Electric CGR S.A. High-voltage generator with selective half-bridge and full-bridge operation. 5,189,602, Cl. 363-28.000.
Calvin, Vaughn. Rebuildable slurry conduit elbow. 5,188,396, Cl. 285-16.000.
Calvin's Cap Racks: *See—*
Hilty, Calvin A.; Raid, Larry J.; and Grigel, George G., 5,188,325, Cl. 248-224.400.
Cam Sales, Inc.: *See—*
Leach, Christopher B., 5,187,882, Cl. 34-46.000.
Camair Research, Inc.: *See—*
Cameron, Michael H.; and Cameron, James F., 5,189,512, Cl. 358-93.000.
Cameca: *See—*
De Chambost, Emmanuel; and Rasser, Bernard, 5,189,304, Cl. 250-296.000.
Cameron, James F.: *See—*
Cameron, Michael H.; and Cameron, James F., 5,189,512, Cl. 358-93.000.
Cameron, Michael H.; and Cameron, James F., to Camair Research, Inc. Helmet integrated display system. 5,189,512, Cl. 358-93.000.
Camp International, Inc.: *See—*
Peters, Helena, 5,188,585, Cl. 602-19.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of Communications: *See—*
Dufour, Martial J., 5,187,872, Cl. 33-356.000.
Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See—*
Hsia, Jen-Chang, 5,189,146, Cl. 530-385.000.
Canarslan, Necip S.: *See—*
Sekhar, Jainagesh A.; Bhaduri, Sarit B.; Li, Hung P.; and Canarslan, Necip S., 5,188,678, Cl. 148-514.000.
Canon Kabushiki Kaisha: *See—*
Akashi, Akira; and Higashihara, Masaki, 5,189,465, Cl. 354-408.000.
Arashima, Teruo; Kimura, Makiko; Kashino, Toshio; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; and Orikasa, Tsuyoshi, 5,189,443, Cl. 346-140.00R.
Endo, Hiroshi, 5,189,557, Cl. 359-683.000.
Fujii, Akio, 5,189,530, Cl. 358-458.000.
Hanyu, Yukio; Inaba, Yutaka; Asaoka, Masanobu; Taniguchi, Osamu; Shinjo, Kenji; and Uchimi, Toshiharu, 5,189,536, Cl. 359-56.000.
Hayakawa, Shingo, 5,189,460, Cl. 354-402.000.
Hiramatsu, Soichi; and Hashimoto, Kenichiro, 5,188,270, Cl. 226-76.000.
Iwaki, Takashi; Takiguchi, Takao; Togano, Takeshi; Yamada, Yoko; and Nakamura, Shinichi, 5,188,762, Cl. 252-299.620.
Kaneko, Yoshiyuki, 5,189,559, Cl. 359-697.000.
Kotani, Takashi, 5,189,525, Cl. 358-407.000.
Miyamoto, Ryosuke; Sekita, Makoto; and Takeda, Shohei, 5,189,519, Cl. 358-228.000.
Mochizuki, Chiori, 5,188,974, Cl. 437-40.000.
Mukohjima, Hitoshi; Hirano, Takayuki; Seki, Yoshihiro; and Miura, Mituru, 5,189,331, Cl. 310-323.000.
Nomura, Takeshi, 5,188,650, Cl. 65-64.000.
Ohta, Shinichi, 5,189,659, Cl. 369-109.000.
Ohtsubo, Toshihiko; Shouno, Seita; Suzuki, Akio; Sugishima, Kiyohisa; Takagi, Eiichi; and Takada, Yoshihiro, 5,189,521, Cl. 358-296.000.
Sakurai, Atsushi; and Tamura, Junichi, 5,189,702, Cl. 381-51.000.
Sekine, Masayoshi; and Kondo, Toshiaki, 5,189,513, Cl. 358-105.000.
Sugiura, Takashi; Nagashima, Nao; and Abe, Shunichi, 5,189,523, Cl. 358-300.000.
Yamazaki, Schoichi; and Matsui, Hiroshi, 5,189,454, Cl. 354-200.000.
Yoshida, Takehiro, 5,189,696, Cl. 379-355.000.
Yoshikawa, Junichi, 5,189,436, Cl. 346-1.100.
Canova, Luciano; Santoro, Ettore; Bonoli, Luciano; and Falchi, Paolo, to Societa' Italiana Additivi Per Carburanti s.r.l. Compositions of liquid hydrocarbons from refining endowed with improved behavior at low temperatures. 5,189,231, Cl. 585-4.000.
Capper, David G.; and Axelrod, Stanley H., to Capper, David G. Camera aiming mechanism and method. 5,189,463, Cl. 354-403.000.
Capson, Ronnie R.: *See—*
Ferguson, Michael D.; and Capson, Ronnie R., 5,188,373, Cl. 273-421.000.
Caputo, Gary L. Apparatus and method for producing air cushion product. 5,188,691, Cl. 156-145.000.
Capy, Gilbert, to Capy, Gilbert; and Buchberg, Akiva. Continuous sheet pleating device for making overlapping pleats and arrangements for making areas with no pleats and method of making pleats. 5,188,265, Cl. 223-32.000.
Carbo Ceramics Inc.: *See—*
Sweet, Larrie, 5,188,175, Cl. 166-280.000.

VOL 1147 ISS 4 FE 23 1993 UMI

VOL 1147 ISS 4 FE 23 1993 UMI

Carbonaro, Antonio: *See—*
Masi, Francesco; Invernizzi, Renzo; Carbonaro, Antonio; Costa, Lorenzo; and Moalli, Angelo, 5,189,000, Cl. 502-113.000.
Carden, Richard: *See—*
Hine, Nathan P.; Hoisington, Paul A.; Spehrley, Charles W., Jr; Biggs, Melvin L.; and Carden, Richard, 5,189,438, Cl. 346-1.100.
Cardinale, Douglas. Vinyl tile measuring and cutting device. 5,188,013, Cl. 83-879.000.
Cargile, David W., to Graham Packaging Corporation. Plastic bottle having a linerless closure with collapsible flange and method. 5,188,249, Cl. 215-31.000.
Carini, David J.; Duncia, John Jonas V.; and Wells, Greogry J., to Du Pont de Nemours, E. I., and Company. Substituted 1,2,3 triazole angiotensin II antagonists. 5,189,048, Cl. 514-359.000.
Carl, Frederick G., Jr.; and de Rouffignac, Eric P., to Shell Oil Company. Current to power crossover heater control. 5,189,283, Cl. 219-497.000.
Carl-Zeiss-Stiftung: *See—*
Yry, Uwe, 5,189,677, Cl. 372-23.000.
Carley, Michelle, to Big E-Z Bookkeeping Company. Accounting device for simplified bookkeeping. 5,188,562, Cl. 462-54.000.
Carlomagno, William D.; Cummings, Dennis E.; and Gliga, Alexandru S., to Raychem Corporation. Interconnection of electronic components. 5,189,507, Cl. 257-777.000.
Carlson, Lee A.: *See—*
O'Brien, Karen M.; and Carlson, Lee A., 5,187,888, Cl. 40-359.000.
Carmain, Jeffrey L.: *See—*
Kuehling, Guenter F.; and Carmain, Jeffrey L., 5,187,875, Cl. 33-541.000.
Carnago, John F.: *See—*
Sankpal, Bak G.; and Carnago, John F., 5,188,005, Cl. 74-866.000.
Carnall, Edward, r.: *See—*
Strom, Laurie A.; Carnall, Edward, r.; Ferranti, Steven A.; and Mir, Jose M., 5,189,010, Cl. 505-1.000.
Carney, Edward J.: *See—*
Uttke, Russell H. C.; and Carney, Edward J., 5,188,214, Cl. 198-501.000.
Carpenter, Robert B., to Atlantic Richfield Company. Cement slurries for diviated wells. 5,188,176, Cl. 166-285.000.
Carr, Willian N.; Yu, Hong; and Dong-Il, Dan C., to Princeton University, The Trustees of. Rotary, vertical-drive, tethered micromotor. 5,189,323, Cl. 310-40.0MM.
Carrotte, Jonathan F.: *See—*
Stevens, Stanley J.; and Carrotte, Jonathan F., 5,187,937, Cl. 60-752.000.
Carson, Kenneth M.: *See—*
Naimark, Michael; and Carson, Kenneth M., 5,189,402, Cl. 340-709.000.
Carson, Steven R.; and Gandre, Jerry D., to Lightolier, Inc. Face plate having press-fit attachment to electrical switches, outlets and the like. 5,189,259, Cl. 174-66.000.
Carter, George A., III. Decorative simulated wheel cover retention system. 5,188,428, Cl. 301-37.100.
Carter, Guy T.; Williams, David R.; and Pinho, Fernando, to American Cyanamid Company. Recovery process for antibiotics LL-E19020 alpha and beta. 5,188,945, Cl. 435-77.000.
Cartonneries de la Lys-Ondulys: *See—*
Ringot, Jean-Marc; and Sauvaige, Henri, 5,188,211, Cl. 198-411.000.
Carver, Mark A.; and Hinton, John, to Imperial Chemical Industries PLC. Process for the decomposition of acrylamide. 5,188,952, Cl. 435-146.000.
Carver, Robert G., to Coburn, Inc. Display carrier with dividing member. 5,188,232, Cl. 206-426.000.
Casagrande, Mark T.: *See—*
Pace, Darr C.; Bayer, Craig E.; Casagrande, Mark T.; Johnson, Craig R.; Hall, Danny K.; and Nolan, Andrew W., 5,188,804, Cl. 422-111.000.
Case, Richard A.: *See—*
Avellino, Frank J.; Case, Richard A.; and Swanson, David T., 5,189,275, Cl. 219-56.220.
Casio Computer Co., Ltd.: *See—*
Koguchi, Satoru, 5,189,237, Cl. 84-609.000.
Nakamura, Kazuhisa, 5,189,241, Cl. 84-728.000.
Castel, Dawn S.: *See—*
Castel, John C.; Castel, Dawn S.; and Hall, Michael R., 5,188,586, Cl. 602-19.000.
Castel, John C.; Castel, Dawn S.; and Hall, Michael R., to Smith Truss Company, The. Back support belt. 5,188,586, Cl. 602-19.000.
Caterpillar Inc.: *See—*
Colburn, Stephen, 5,189,626, Cl. 364-474.240.
Tonsor, Andrew J.; Quant, Wilton E.; Hosseini, Javad; Hopkins, Michael F.; and Allen, William E., 5,188,502, Cl. 414-700.000.
Catheter Research, Inc.: *See—*
Yates, David C.; and McCoy, William C., 5,188,111, Cl. 128-657.000.
Cavenaugh, Glen C.: *See—*
Drye, Jerry L.; and Cavenaugh, Glen C., 5,188,792, Cl. 264-232.000.
Cedrone, Alfredo L.: *See—*
Sayegh, Emile G.; and Cedrone, Alfredo L., 5,189,721, Cl. 385-114.000.
Celsa L.G. (Societe Anomyne): *See—*
Nadal, Guy, 5,188,616, Cl. 604-218.000.
Center for Innovative Technology: *See—*
Zimmermann, Bernd D.; Claus, Richard O.; Murphy, Kent A.; and Kapp, David A., 5,189,299, Cl. 250-227.160.
Central Glass Company, Limited: *See—*
Kobayashi, Yo-ichi; Omori, Muneki; and Yamada, Chikako, 5,188,829, Cl. 424-94.630.
Centre National de la Recherche Scientifique: *See—*
Louvard, Daniel; Dudouet, Brigitte; Robine, Sylvie; Arpin, Monique; Pringault, Eric; and Garcia, Alphonse, 5,188,967, Cl. 436-501.000.
Centre National de la Recherche Scientifique (CNRS): *See—*
Thal, Claude; Boye, Olivier; Guenard, Daniel; and Potier, Pierre, 5,189,055, Cl. 514-422.000.
Ceodeau S.A.: *See—*
Kremer, Paul, 5,188,155, Cl. 147-65.000.
Cereda, Roberta: *See—*
Alberto, Sala; Benedini, Francesca; Cereda, Roberta; and Del Soldato, Piero, 5,189,034, Cl. 514-224.200.
Chadwick, Brian A.: *See—*
Walter, Ronald; and Chadwick, Brian A., 5,189,394, Cl. 340-525.000.
Chakerian, Vergine: *See—*
Menchen, Steven M.; Lee, Linda G.; Connell, Charles R.; Hershey, N. Davis; Chakerian, Vergine; Woo, Sam; and Fung, Steven, 5,188,934, Cl. 435-6.000.
Cham, Kit M.; and Gleason, Robert E., Jr., to Hewlett-Packard Company. BICMOS logic gate circuit and structures. 5,189,310, Cl. 257-392.000.
Chamness, Gary C.: *See—*
McGuire, William L.; Tandon, Atul K.; Clark, Gary M.; and Chamness, Gary C., 5,188,964, Cl. 436-64.000.
Chamot, Jean-Pierre, to Procedes Vernet. Thermostat actuated by an expanding wax capsule and incorporating a safety device. 5,188,287, Cl. 236-34.500.
Champeau, Eugene J.: *See—*
Maloney, Thomas J.; and Champeau, Eugene J., 5,188,606, Cl. 604-161.000.
Champion, Donald H.: *See—*
Larkin, John M.; Templeton, James H.; and Champion, Donald H., 5,189,233, Cl. 585-265.000.
Chan, Eric Y.: *See—*
Derry, Pamela L.; Hong, Chi-Shain; Chan, Eric Y.; Figueroa, Luis; and Fu, R. Jennhwa, 5,189,679, Cl. 372-45.000.
Chan, Melvin D.; and Sharpe-Geisler, Brad, to Advanced Micro Devices, Inc. Low-power sense amplifier with feedback. 5,189,322, Cl. 307-530.000.
Chandler, Donald G.: *See—*
Batterman, Eric P.; and Chandler, Donald G., 5,189,292, Cl. 235-494.000.
Chandrasekaran, Santosh K.; Reents, Margaret J.; Babcock, John C.; Bowman, Lyle M.; Archibald, Roy D.; and Robinson, Joseph R., to InSite Vision Incorporated. Topical ophthalmic suspensions. 5,188,826, Cl. 424-78.040.
Chang Chun Petrochemical Co., Ltd.: *See—*
Chen, S. C.; Chu, C. C.; Lin, F. S.; and Huang, F. J., 5,189,214, Cl. 562-519.000.
Chang, Raymond S.: *See—*
Freidinger, Roger M.; Bock, Mark G.; Lam, Yiu-Kuen T.; Chang, Raymond S.; Hensens, Otto D.; Schwartz, Cheryl D.; and Zink, Deborah L., 5,189,050, Cl. 514-375.000.
Chang, Tiang-Shing, to Block Drug Company. Surface erodible controlled releasing, free standing cleansing block and cleaning method for the domestic water closet. 5,188,755, Cl. 252-174.000.
Chapelet, Anne: *See—*
Bouvet, Jacky; and Chapelet, Anne, 5,189,428, Cl. 342-132.000.
Chapuis, Christian, to Firmenich S.A. Campholenic tertiary alcohol and its use as a perfuming ingredient. 5,189,013, Cl. 512-23.000.
Chaput, Guy J.: *See—*
Eberle, Gernot; and Chaput, Guy J., 5,189,634, Cl. 364-724.090.
Charles Stark Draper Laboratory, Inc., The: *See—*
Fyler, Donald C.; and Hale, Layton G., 5,188,045, Cl. 112-121.260.
Chase, Valerie: *See—*
Gay, Richard J.; Gay, Charles C.; Matthews, Veronique M.; Gay, Francoise E. M.; and Chase, Valerie, 5,188,179, Cl. 166-310.000.
Chase, Walter E., to Lockheed Sanders, Inc. Magnetometer. 5,189,368, Cl. 324-304.000.
Chataignier, Evelyne: *See—*
Beziers, Daniel; Boutevin, Bernard; Parisi, Jean-Pierre; Thomas, Yannig; and Chataignier, Evelyne, 5,189,093, Cl. 524-847.000.
Chedekel, Miles: *See—*
Ahene, Ago B.; and Chedekel, Miles, 5,188,844, Cl. 424-574.000.
Cheil Industries, Inc.: *See—*
Kim, Whan G.; and Nam, Tai Y., 5,189,082, Cl. 523-443.000.
Chemical Research & Licensing Company: *See—*
Johnson, Kenneth H., 5,189,001, Cl. 502-159.000.
Chemie Linz Gesellschaft m.b.H.: *See—*
Farnleitner, Lorenz; Stuckler, Hubert; Kaiser, Herbert; and Kloimstein, Engelbert, 5,189,215, Cl. 562-577.000.
Horacek, Heinrich, 5,189,085, Cl. 524-101.000.
Chen, Chad-Yang: *See—*
Liu, Wei-Jyh; Huang, Chih-Kung; and Chen, Chad-Yang, 5,188,986, Cl. 437-225.000.
Chen Chi Electro Chemical Co., Ltd.: *See—*
Chiou, Tzeng-Shyang, 5,187,816, Cl. 4-313.000.
Chen, Chiang-Ming: *See—*
Jeng, Bill C. B.; and Chen, Chiang-Ming, 5,187,873, Cl. 33-435.000.

Chen, Dennis. Structure of racket with improved weight distribution adjusting mechanism. 5,188,360, Cl. 273-73.00R.
Chen, Gilbert K.; McKelvy, Robert; Bonilla, Jorge A.; Glaspie, Don; and De Bruyn, George, to Glitsch, Inc. Tower packing with small and large louvers and mixing method. 5,188,773, Cl. 261-112.200.
Chen, James N. C.; and Ostrowski, Susan, to Hewlett-Packard Company. Ultrasound transducer. 5,187,981, Cl. 73-642.000.
Chen, Kau-Ming: *See—*
Kapa, Prasad K.; and Chen, Kau-Ming, 5,189,164, Cl. 544-297.000.
Chen, S. C.; Chu, C. C.; Lin, F. S.; and Huang, F. J., to Dairen Chemical Corp.; and Chang Chun Petrochemical Co., Ltd. Production of acetic acid. 5,189,214, Cl. 562-519.000.
Chen, Tienteh: *See—*
Schofield, Edward; Merkel, Paul B.; and Chen, Tienteh, 5,188,926, Cl. 430-377.000.
Chen, Tzu-Yu; and Godfrey, Martin R., to Nalco Chemical Company. Condensate corrosion sensor. 5,188,715, Cl. 204-153.110.
Chen, Yen-Chen, to Industrial Technology Research Institute. Television synchronization signal separator. 5,189,515, Cl. 358-157.000.
Cheng, Eric M., to Raynet Corporation. Apparatus and method for formatting variable length data packets for a transmission network. 5,189,671, Cl. 370-94.100.
Cheng, Frank: *See—*
Maw, Taishih; Kritchevsky, Gina; and Cheng, Frank, 5,189,128, Cl. 526-262.000.
Cheng, King Y., to Silicon Systems, Inc. Listener echo cancellation. 5,189,664, Cl. 370-32.100.
Chenot, Charles F.; and Minnier, Henry B., to GTE Products Corporation. Method for preparing zinc orthosilicate phosphor. 5,188,763, Cl. 252-301.500.
Cherdron, Harald: *See—*
Haubs, Michael; Hermann-Schonherr, Otto; and Cherdron, Harald, 5,189,104, Cl. 525-180.000.
Cherveny, Mark V.; Trares, Keith C.; Waibel, Terry J.; Hopkins, William M.; Sinopoli, Italo M.; and Young, Ray A., to Goodyear Tire & Rubber Company, The. Pneumatic radial tire including steel belt cords of 2+2x.30HT construction. 5,188,685, Cl. 152-451.000.
Chesebrough-Pond's USA Co., Dividion of Conopco, Inc.: *See—*
Cummins, Diane; and van der Ouderaa. Franciscus J., 5,188,820, Cl. 424-49.000.
Chesebrough-Pond's USA Co., Division of Conopco, Inc.: *See—*
Nicoll, Gregg A.; Ojo-Osagie, Ann C.; and Scott, Ian R., 5,188,831, Cl. 424-401.000.
Viccaro, John P.; Bajor, John S.; and Tartakovsky, Alla, 5,188,822, Cl. 424-52.000.
Chevron Research and Technology Company: *See—*
Bearden, Joe M., 5,189,263, Cl. 181-113.000.
Donoho, Paul L.; Peterson, Mitchell F.; Ryder, Hughie; and Keeling, William H., 5,189,642, Cl. 367-15.000.
Chiang, Lee; and Ratcliffe, William R., to Marpole International Inc. Illuminating system. 5,188,447, Cl. 362-103.000.
Chiba, Yoshiyuki: *See—*
Sato, Masakazu; Kawashima, Yutaka; Goto, Jun; Chiba, Yoshiyuki; Satake, Mikio; Iwata, Chuzo; and Imanishi, Takeshi, 5,189,211, Cl. 562-430.000.
Chiba, Yuho; and Tomita, Takao, to Meiji Milk Products Co., Ltd. Apparatus for examining and determining the viscosity of a liquid in a container. 5,187,975, Cl. 73-54.010.
Chida, Yukio: *See—*
Nishimura, Tetsuhiko; Choda, Takahiro; Chida, Yukio; and Oguri, Yasuo, 5,188,992, Cl. 501-136.000.
Chikuma, Kiyofumi, to Pioneer Electronic Corporation. Fiber type wavelength conversion element. 5,189,722, Cl. 385-122.000.
Child Sexual Abuse Team, Wake AHEC: *See—*
White, Susanne T.; Lyna, Pauline R.; and Fay, W. Joy, 5,188,120, Cl. 128-778.000.
Childers, Richard K.; and Bunch, John H., to Electromer Corporation. Surface mount device with foldback switching overvoltage protection feature. 5,189,387, Cl. 338-20.000.
Ching, Ta Y.; and Lin, Lon-Tang W., to Henkel Research Corporation. Vicinal disubstituted carboxylic acids and silylated derivatives. 5,189,190, Cl. 556-418.000.
Chinoin Gyogyszer -ES Vegyeszeti Termekek Gyara R.T.: *See—*
Szego, Andras; Pap, Laszlo ; Nagy, Lajos; Somfai, Eva; Szucsany, Gyorgy; Szekely, Istvan; Molnar, Aniko D. nee; and Hegedus, Agnes, 5,189,062, Cl. 514-521.000.
Chiou, Tzeng-Shyang, to Chen Chi Electro Chemical Co., Ltd. Automatic flushing device. 5,187,816, Cl. 4-313.000.
Chiron-Werke GmbH & Co. KG: *See—*
Ruschle, Eugen; and Haninger, Rudolf, 5,188,579, Cl. 483-1.000.
Chisso Corporation: *See—*
Terashima, Kanetsugu; Kikuchi, Makoto; and Murashiro, Katsuyuki, 5,188,761, Cl. 252-299.610.
Chiu, Hsiu-Hui, to Sunshon Molding Co., Ltd. Structure for a golf cart wheel shaft. 5,188,430, Cl. 301-111.000.
Choate, Glenda L.: *See—*
Khanna, Pyare L.; and Choate, Glenda L., 5,188,938, Cl. 435-7.700.
Choda, Takahiro: *See—*
Nishimura, Tetsuhiko; Choda, Takahiro; Chida, Yukio; and Oguri, Yasuo, 5,188,992, Cl. 501-136.000.
Choi, Hwan Y., to Samsung Electronics Co., Ltd. Apparatus for controlling reel brake operation of tape recorder. 5,188,311, Cl. 242-204.000.
Chou, Yuo-Ling; Erhardt, Paul W.; Hagedorn, Alfred A., III; Lampe, John W.; Lumma, Jr., William C.; Morgan, Thomas K.; and Wiggins, Jay R., to Schering AG. Imidazolylbenzoyl substituted heterocycles. 5,189,036, Cl. 514-252.000.
Christe, Marcel; Koch, Walter; and Grimm, Peter, to Sulzer Brothers Limited. Weaving rotor comb fin design for series-shed loom. 5,188,154, Cl. 139-28.000.
Christensen, Don: *See—*
Anderson, David A.; Witzel, John G.; Christensen, Don; and Bahia, Hussain, 5,187,987, Cl. 73-852.000.
Christensen, Thomas C.; Hanson, Weldon M.; Mosser, James J.; and Vosberg, Donald E., to International Business Machines Corporation. Method and apparatus for recovering data. 5,189,566, Cl. 360-53.000.
Christie, Alan W.: *See—*
Ramsbottom, Andrew P.; and Christie, Alan W., 5,189,532, Cl. 359-15.000.
Christoudias, George C. Christoudias endospongestick probe. 5,188,630, Cl. 606-1.000.
Christy Machine Company: *See—*
Fielding, Randy L., 5,188,262, Cl. 222-185.000.
Chu, C. C.: *See—*
Chen, S. C.; Chu, C. C.; Lin, F. S.; and Huang, F. J., 5,189,214, Cl. 562-519.000.
Chu, Cheng. Vibration controlled experimenting device provided with a motor with an imbalanced rotor. 5,187,982, Cl. 73-666.000.
Chu, Shaw-Chang; and Kirk, Kevin A., to Mobil Oil Corporation. Low coefficient of friction material and plastic films coated therewith. 5,188,867, Cl. 427-173.000.
Chu, Wah C.: *See—*
Lyons, Richard J.; Nolan, Kevin F.; and Chu, Wah C., 5,189,608, Cl. 364-408.000.
Chugai Seiyaku Kabushiki Kaisha: *See—*
Iida, Yoshimitsu; and Sumida, Shuji, 5,188,840, Cl. 424-468.000.
Chung-Chen, Wei; and West, Kevin F., to Hoffmann La Roche Inc. Antibacterial cephalosporin compounds. 5,189,157, Cl. 540-222.000.
Ciba-Geigy Corporation: *See—*
Birbaum, Jean-Luc; Rody, Jean; Slongo, Mario; and Valet, Andreas, 5,189,084, Cl. 524-100.000.
Galbo, James P., 5,189,086, Cl. 524-103.000.
Herzig, Paul, 5,189,206, Cl. 562-58.000.
Kanel, Hans-Ruedi; and Dingwall, John G., 5,189,227, Cl. 568-681.000.
Lukas, Bohumir; and Schmidt-Ruppin, Karl H., 5,189,017, Cl. 514-8.000.
Maier, Ludwig, 5,189,030, Cl. 514-114.000.
Maw, Taishih; Kritchevsky, Gina; and Cheng, Frank, 5,189,128, Cl. 526-262.000.
Cipolla, Stephen D.: *See—*
Fournia, Peter G.; and Cipolla, Stephen D., 5,189,475, Cl. 355-246.000.
Citation Medical Corporation: *See—*
Lafferty, Michael; Kline, Daniel; and Slemon, Charles S., 5,188,093, Cl. 128-6.000.
Citizen Watch Co., Ltd.: *See—*
Yamamoto, Tetsuya; Endoh, Yukio; Segawa, Akio; Matsumoto, Kenji; and Komiyama, Takeo, 5,188,467, Cl. 400-157.200.
Claremon, David A.: *See—*
Atkinson, Joseph G.; Claremon, David A.; Baldwin, John J.; Friedman, Paul A.; Remy, David C.; and Stern, Andrew M., 5,188,830, Cl. 424-94.630.
Clarion Co., Ltd.: *See—*
Niitsuma, Teruo, 5,189,330, Cl. 310-313.00B.
Clark, Carl L.: *See—*
Corey, Nathan A.; Clark, Carl L.; and Dolgas, Patrick A., 5,187,856, Cl. 29-564.600.
Clark, Gary M.: *See—*
McGuire, William L.; Tandon, Atul K.; Clark, Gary M.; and Chamness, Gary C., 5,188,964, Cl. 436-64.000.
Clark, Robin D.: *See—*
Berger, Jacob; and Clark, Robin D., 5,189,041, Cl. 514-288.000.
Clark, Thomas F.: *See—*
Borgmeyer, Virgil L.; Trice, Chester F.; Tempco, Dale A.; Clark, Thomas F.; Ritter, William J.; and Huests, Leo H., 5,189,257, Cl. 174-50.000.
Clark, William M., to Ford Motor Company. Suspension system having active and passive modes. 5,188,390, Cl. 280-707.000.
Claus, Richard O.: *See—*
Zimmermann, Bernd D.; Claus, Richard O.; Murphy, Kent A.; and Kapp, David A., 5,189,299, Cl. 250-227.160.
Clausen, Edgar C.; and Gaddy, James L. Concentrated sulfuric acid process for converting lignocellulosic materials to sugars. 5,188,673, Cl. 127-37.000.
Clauter, Steven T.: *See—*
Schwartz, Rodney E.; and Clauter, Steven T., 5,189,360, Cl. 322-25.000.
Clean Air Engineering, Inc.: *See—*
DeFriez, Herbert H., 5,187,972, Cl. 73-23.200.
Clement, Charles D.: *See—*
Kuehner, Gerhard; Vogel, Karl; Rodriguez, Juan D.; and Clement, Charles D., 5,188,806, Cl. 422-151.000.
Clintec Nutrition Co.: *See—*
Madsen, David C.; and Rowe, W. Bruce, 5,189,016, Cl. 514-2.000.
Clouet, Gilbert, to Elf Atochem S.A. Polymers having pendant thiuram disulphide functions. 5,189,112, Cl. 525-328.200.
Cluthe, Frederic S.: *See—*
Ehrhardt, Gerry H., 5,188,765, Cl. 252-363.500.

VOL 1147 ISS 4 FE 23 1993 UMI

CMB Foodcan PLC: *See—*
Bilko, John P.; Arnell, Stephen R.; Boyd, Andrew J.; and Goodwin, Perry A., 5,187,962, Cl. 72-62.000.

CO.E.P.T.E. Costruzioni Elettromeccaniche per Trazione Elettrica S.r.l.: *See—*
Bossi, Daniele, 5,187,854, Cl. 29-451.000.

Coates, David; Sage, Ian C.; and Jenner, John A., to Merck Patent Gesellschaft mit Beschrankter Haftung. Thermochromic mixtures. 5,188,815, Cl. 424-7.100.

Cobb, Gary S.: *See—*
Bensel, William H., III; and Cobb, Gary S., 5,189,725, Cl. 385-135.000.

Cobra Fire Corporation: *See—*
Miller, Brian D., 5,188,307, Cl. 242-86.000.

Coburn, Inc.: *See—*
Carver, Robert G., 5,188,232, Cl. 206-426.000.

Coca-Cola Company, The: *See—*
Plester, George, 5,188,257, Cl. 222-1.000.

Cohen, Sidney M.: *See—*
Litka, Anthony F.; and Cohen, Sidney M., 5,188,668, Cl. 106-739.000.

Colananni, Paul D.: *See—*
Barlow, Allan R.; Colananni, Paul D.; Garafola, Daniel C.; Irving, Bryan E.; Elman, Larisa A.; and Hunter, William A., 5,189,624, Cl. 364-474.110.

Colburn, Stephen, to Caterpillar Inc. Automatic generation of a set of contiguous surface patches on a computer modeled solid. 5,189,626, Cl. 364-474.240.

Cold Jet, Inc.: *See—*
Young, Frederick C.; and Garbutt, D. Lee, Jr., 5,188,151, Cl. 137-874.000.

Coleman, Allan; and Kowalski, Wayne J., to Coleman Cable Systems, Inc. Metallic sheath cable. 5,189,719, Cl. 385-101.000.

Coleman Cable Systems, Inc.: *See—*
Coleman, Allan; and Kowalski, Wayne J., 5,189,719, Cl. 385-101.000.

Coley, Christopher D.: *See—*
Kugler, Donald W., Jr.; Coley, Christopher D.; and Walck, Jeffrey A., 5,189,401, Cl. 340-703.000.

Colgate-Palmolive Company: *See—*
Gaffar, Abdul; Nabi, Nuran; Afflitto, John; and Stringer, Orum, 5,188,821, Cl. 424-52.000.
Prencipe, Michael; McCandlish, Elizabeth F.; and Loprest, Frank J., 5,188,752, Cl. 252-96.000.

Colgate, Samuel O.; and Schrag, Grant M., to University of Florida. Gasket apparatus and hermetically sealed joints employing said gasket apparatus. 5,188,402, Cl. 285-332.000.

Colin, Gerard; and Keller, Jacques, to Sollac. Installation and process for electrolytic coating of a metal strip. 5,188,720, Cl. 204-206.000.

Colineau, Joseph, to Thomson-CSF. Multiple-track recording magnetic head with compact matrix structure. 5,189,579, Cl. 360-121.000.

Collar, James K.; Gaskill, Garold B.; Park, Daniel J.; Shanks, Carl D.; and Wells, Rick T., to Seiko Corp.; and Seiko Epson Corp. Radio signal data transmission synchronization. 5,189,411, Cl. 340-825.140.

Colli, Luigi; and Badiali, Roberto, to Savio S.p.A. Device and process for the handling and the control of the thread on a coner machine during the operation of spool change and of thread joining. 5,188,304, Cl. 242-35.60R.

Collings, Peter, to Wiggins Teape Group Limited, The. Authenticatable security paper. 5,188,871, Cl. 428-29.000.

Collins, Walter, to Suspended Animation, Inc. Suspender loop buckle. 5,187,839, Cl. 24-170.000.

Colony, Incorporated: *See—*
Zich, Jerrold R., 5,188,326, Cl. 248-225.200.

Colpaert, Francis: *See—*
Peglion, Jean-Louis; and Colpaert, Francis, 5,189,045, Cl. 514-319.000.

Colton, Douglas E., to Slautterback Corporation. Articulating applicator head for flap sealing upon cycle stop. 5,188,695, Cl. 156-356.000.

Colussi, Vittorio: *See—*
Meroni, Roberto; Gerin, Umberto; Lancerotto, Fabio; and Colussi, Vittorio, 5,187,929, Cl. 57-80.000.

Comair Rotron, Inc.: *See—*
Scott, Peter D.; and Bushnell, Peter, 5,188,508, Cl. 415-206.000.

Combustion Engineering, Inc.: *See—*
Bryan, William J., 5,188,797, Cl. 376-438.000.

Combustion Research Corporation: *See—*
DeMerritt, Paul A.; and Amo, Don J., 5,188,288, Cl. 237-70.000.

Comerci, Joseph D.; DeRoss, Robert; O'Connell, Michael J.; and Templeton, John E., Jr., to Molex Incorporated. Electrical cable tap system. 5,188,541, Cl. 439-596.000.

Compaq Computer Corporation: *See—*
Ganthier, James J.; and Ulery, Kirk D., 5,188,536, Cl. 439-83.000.

Compressed Air Filter Technologies, Inc.: *See—*
Brookfield, Richard A.; and Walle, Leonard I., 5,188,647, Cl. 55-462.000.

Compucube, Inc.: *See—*
Hirschenson, Bernard; and Hardin, Joanna, 5,188,321, Cl. 248-118.000.

Condon, Dennis E.; Bley, Robert S.; and Purkait, Bobby K., to Mentor Corporation. Transparent prostate dilation balloon and scope. 5,188,596, Cl. 604-101.000.

Cone, Dale A.: *See—*
Anno, Julien; Lewis, Russell F.; and Cone, Dale A., 5,189,288, Cl. 235-386.000.

Conn, William: *See—*
Timmons, Terry K.; Stopper, Steve R.; Fox, Norman K.; Everhart, Dennis S.; Conn, William; and Morell, Lori A., 5,188,885, Cl. 428-198.000.

Connell, Charles R.: *See—*
Menchen, Steven M.; Lee, Linda G.; Connell, Charles R.; Hershey, N. Davis; Chakerian, Vergine; Woo, Sam; and Fung, Steven, 5,188,934, Cl. 435-6.000.

Connor, Daniel S.; Scheibel, Jeffrey J.; Murch, Bruce P.; Mao, Mark H.; Gosselink, Eugene P.; and Severson, Roland G., Jr., to Procter & Gamble Company, The. Process for reducing the levels of fatty acid contaminants in polyhydroxy fatty acid amide surfactants. 5,188,769, Cl. 252-548.000.

Conoco Inc.: *See—*
Wang, Shein S.; and Bell, David W., 5,189,643, Cl. 367-38.000.

Conolly, Steven M.; and Pauly, John M., to Leland Stanford Junior University, The Board of Trustees of the. Method and means for magnetic resonance imaging and spectroscopy using two-dimensional selective adiabatic PI pulses. 5,189,371, Cl. 324-309.000.

Constantz, Brent, to Norian Corporation. Apparatus for hydroxyapatite coatings of substrates. 5,188,670, Cl. 118-667.000.

Consultants for Applied Biosciences, Inc.: *See—*
Reddington, John J.; and Reddington, Ginger M., 5,188,942, Cl. 435-28.000.

Consumers' Gas Company, Ltd., The: *See—*
Grant, Michael D.; and Treymayne, Michael A., 5,188,017, Cl. 91-459.000.

Conte, Donald V.: *See—*
Downing, Robert W.; and Conte, Donald V., 5,188,911, Cl. 429-70.000.

Contreras, Sylvie: *See—*
Mosser, Vincent; Robert, Jean-Louis; and Contreras, Sylvie, 5,187,984, Cl. 73-708.000.

Cook, Donald R.; and Macri, Joseph A. Dual port lance and method. 5,188,661, Cl. 75-387.000.

Cook, Harold T., Jr.; Furlong, Donn B.; Svendsen, Robert A.; and Rustad, Allan P., to Marco Seattle, Inc. Hydraulic swivel. 5,188,146, Cl. 137-580.000.

Cook, John E.; Busato, Murray F.; and Gillier, William C., to Siemens Automotive Limited. Vacuum boost valve. 5,188,141, Cl. 137-112.000.

Coombe, Douglas C. Pivoting golf putter apparatus. 5,188,361, Cl. 273-81.300.

Cooper, Anthony L.: *See—*
Brittain, David R.; Brown, Steven P.; Cooper, Anthony L.; Longridge, Jethro L.; Morris, Jeffrey J.; Preston, John; and Slater, Linda, 5,189,031, Cl. 514-155.000.

Cooper, Ernest B., Jr.: *See—*
Singh, Jogender; Jain, Sulekh C.; Lloyd, Thomas W.; Bates, Leroy A.; Lacroix, Denis; Cooper, Ernest B., Jr.; Mannava, Seetharamaiah; and Couture, Serge B., 5,187,967, Cl. 72-340.000.

Cooper Industries, Inc.: *See—*
Hynes, Joseph H., 5,188,397, Cl. 285-24.000.

Cooper, Stephen B.: *See—*
Cooper, Stephen B. C.; and Downie, Scott R., 5,189,648, Cl. 368-73.000.

Cooper, Stephen B. C.; and Downie, Scott R., to Cooper, Stephen B. Alarm clock game combination. 5,189,648, Cl. 368-73.000.

Copperweld Corporation: *See—*
Rhoades, John P., 5,187,866, Cl. 29-888.100.

Copping, Neil M.: *See—*
Iles, Martin C.; Atherton, Angela D.; and Copping, Neil M., 5,188,825, Cl. 424-78.100.

Cordis Corporation: *See—*
Sleep, Richard F., 5,188,605, Cl. 604-158.000.

Corey, Nathan A.; Clark, Carl L.; and Dolgas, Patrick A., to Globe Products Inc. Armature winding apparatus. 5,187,856, Cl. 29-564.600.

Cortek S.p.A.: *See—*
Fini, Massimo, 5,188,801, Cl. 422-48.000.

Cosmos, Michael: *See—*
Noland, John; and Cosmos, Michael, 5,188,041, Cl. 110-246.000.

Costa, Jonathan L.; and Diazgranados, Jesus A., to Fractal Laboratories, Inc. Treatment of human diseases involving dysregulation or dysfunction of the nervous system. 5,189,026, Cl. 514-30.000.

Costa, Lorenzo: *See—*
Masi, Francesco; Invernizzi, Renzo; Carbonaro, Antonio; Costa, Lorenzo; and Moalli, Angelo, 5,189,000, Cl. 502-113.000.

Cotter, Donald P., to Cotterco, Inc. Standing seam roofing/cladding system. 5,187,911, Cl. 52-469.000.

Cotterco, Inc.: *See—*
Cotter, Donald P., 5,187,911, Cl. 52-469.000.

Cottington, Levi J.: *See—*
Revis, Anthony; and Cottington, Levi J., 5,188,900, Cl. 428-412.000.

Coulter Electronics, Inc.: *See—*
Leif, Robert C.; Ledis, Stephen L.; and Feinberg, Robert I., 5,188,935, Cl. 435-7.240.

Courier Products Limited: *See—*
Maidment, Robert A. M., 5,187,897, Cl. 49-236.000.

Couture, Serge B.: *See—*
Singh, Jogender; Jain, Sulekh C.; Lloyd, Thomas W.; Bates, Leroy A.; Lacroix, Denis; Cooper, Ernest B., Jr.; Mannava, Seetharamaiah; and Couture, Serge B., 5,187,967, Cl. 72-340.000.

Cowan, Fred M., Jr. Method of treating cellular Fc receptor mediated hypersensitivity immune disorders. 5,189,014, Cl. 514-2.000.

Cowart, Brooks E., to Echelon Corporation. Transceiver providing selectable frequencies and spreading sequences.. 5,189,683, Cl. 375-1.000.

Cox, Brian G.; and Howarth, Michael S., to Imperial Chemical Industries PLC. Method of preparing pyridazinone derivatives. 5,189,163, Cl. 544-239.000.

Cox, Kenneth A.; and Maher, Robert J., to Philip Morris Inc. Methods and apparatus for optically determining the acceptability of products. 5,189,708, Cl. 382-8.000.

Cozzi, Ennio; Federici, Franco; and Parrini, Paolo, to Syremont S.p.A. Fluorinated polyurethanes with hydroxy functionality, process for preparing them and their use for the treatment of lithoidal material. 5,189,135, Cl. 528-70.000.

CPAD Holdings, Ltd.: *See—*
Thekkadath, Govindanunny, 5,189,301, Cl. 250-287.000.

Crane Cams: *See—*
Gaterman, William C., III; and Pohle, William A., 5,188,068, Cl. 123-90.350.

Creevy, Clifford S.; and Eckert, Terry T., to General Electric Company. Apparatus and method for preventing leakage of cooling air in a shroud assembly of a gas turbine engine. 5,188,506, Cl. 415-115.000.

Crepy, Gilles; and Buchel, Jean-Pierre, to Alcatel Alsthom Compagnie Generale D'Electricite. Lithium/bromine trifluoride electrochemical cell designed to be discharged after being activated and stored. 5,188,913, Cl. 429-101.000.

Crescenzi, Donald C.: *See—*
Kovacic, Theodore J.; Kaufman, Richard H.; Bostwick, Martin M.; Crescenzi, Donald C.; Valls, William H.; and Bucaccio, Thomas, 5,188,250, Cl. 215-32.000.

Crivello, James V.: *See—*
Yeager, Gary W.; and Crivello, James V., 5,189,191, Cl. 556-443.000.

Crocker, William A.; Haygarth, John C.; Riesen, Jon A.; and Peterson, John R., to Teledyne Industries, Inc. Method for separating coke from a feed mixture containing zirconium and radioactive materials by flotation process. 5,188,809, Cl. 423-2.000.

Cronin, John E.; and Kaanta, Carter W., to International Business Machines Corporation. Triple self-aligned metallurgy for semiconductor devices. 5,189,506, Cl. 257-752.000.

Crooker, Richard M., to Elf Atochem North America, Inc. R22/R124/R142b refrigerant blends. 5,188,749, Cl. 252-67.000.

Cross, David J., to Her Majesty the Queen in right of New Zealand. Fluid distribution device. 5,188,291, Cl. 239-3.000.

Crossman, Janet L.; Erickson, Phillip J.; Heacock, Gregory L.; and Mainster, Martin A., to Ocular Instruments, Inc. High magnification ophthalmic lens. 5,189,450, Cl. 351-219.000.

Csehi, Dennis M., to Libbey-Owens-Ford Co. Method and apparatus for heat treating glass sheets. 5,188,651, Cl. 65-114.000.

CSIR: *See—*
Marsh, Michael J. C.; Atkins, Raymond C.; and Hodson, Trevor M., 5,189,246, Cl. 102-217.000.

CTS Costruzioni Techniche Sanmarinesi: *See—*
Pan, Costanzo, 5,189,726, Cl. 392-401.000.

Cummings, Dennis E.: *See—*
Carlomagno, William D.; Cummings, Dennis E.; and Gliga, Alexandru S., 5,189,507, Cl. 257-777.000.

Cummins, Diane; and van der Ouderaa, Franciscus J., to Chesebrough-Pond's USA Co., Dividion of Conopco, Inc. Method of inhibiting plaque on teeth by applying an oral composition. 5,188,820, Cl. 424-49.000.

Cundiff, Kevin B.: *See—*
Wyatt, W. Burk; Cundiff, Kevin B.; and Little, Kenneth R., Jr., 5,189,281, Cl. 219-386.000.

Curchod, Donald B., to Curchod, Donald B. Car cover and anchoring assembly. 5,188,417, Cl. 296-136.000.

Curran, William V.: *See—*
Feigelson, Gregg B.; Curran, William V.; and Ziegler, Carl B., 5,189,158, Cl. 540-302.000.

Curry, Randy D., to Titan Corporation, The. Magnetic-pulse sealing of oil-well-head pipe. 5,188,177, Cl. 166-297.000.

Curtis, Grant B., Jr. Plant support structure. 5,188,330, Cl. 248-519.000.

Curtis Manufacturing Company, Inc.: *See—*
Bakanowsky, Louis J., III, 5,187,902, Cl. 51-205.00R.

Curtze, Jurgen; and Albert, Guido, to Shell Research Limited. Fungicidal furanone derivatives. 5,189,035, Cl. 514-231.200.

CVI Incorporated: *See—*
Spulgis, Ivars S., 5,188,519, Cl. 417-511.000.

CVP Systems, Inc.: *See—*
Mykleby, Laurie G., 5,187,917, Cl. 53-434.000.

Cyberonics, Inc.: *See—*
Wernicke, Joachim F.; Terry, Reese S., Jr.; and Baker, Ross G., Jr., 5,188,104, Cl. 128-419.00R.

Cyrus, William L., Jr.: *See—*
Johnson, Mark A.; Pokora, Alexander R.; and Cyrus, William L., Jr., 5,188,953, Cl. 435-156.000.

Czech, Jorg; Sedlacek, Hans H.; Nedelec, Lucien; Guillaume, Jacques; and Marchandeau, Christian, to Roussel Uclaf. Use of derivatives of 9,10-dihydrophenanthrene for the preparation of an anti-tumor medicament. 5,189,065, Cl. 514-656.000.

Czerwiec, Richard M.: *See—*
Burton, Larry W.; Sutherland, Joseph E.; Matsumura, Paul M.; Ball, Karen V.; and Czerwiec, Richard M., 5,189,673, Cl. 370-110.100.

Dabbs, John W. T. Method and apparatus for monitoring vehicular traffic. 5,189,425, Cl. 342-52.000.

Dabney, Upton R., to Hoover Group, Inc. Formed wire box spring with grid lock system. 5,188,344, Cl. 267-103.000.

Daifuku Co., Ltd.: *See—*
Shirai, Yoji, 5,188,199, Cl. 187-95.000.

Daikin Industries, Ltd.: *See—*
Honda, Norimasa; Sawada, Kazuhide; Idemori, Kenjiro; and Yukawa, Hirokazu, 5,189,143, Cl. 528-498.000.
Shimizu, Tetsuo; and Yamaguchi, Seitaro, 5,188,764, Cl. 252-308.000.

Daines, John W., to Rolls-Royce plc. Friction bonding clamp for a rotor blade. 5,188,275, Cl. 228-2.000.

Dairen Chemical Corp.: *See—*
Chen, S. C.; Chu, C. C.; Lin, F. S.; and Huang, F. J., 5,189,214, Cl. 562-519.000.

Daitoku, Koichi: *See—*
Miyamoto, Hidenori; Daitoku, Koichi; Kazami, Kazuyuki; Nakamura, Toshiyuki; and Katano, Yuji, 5,189,458, Cl. 354-400.000.

Daiwa Paint Trading Co. Ltd.: *See—*
Hideyuki, Sakai, 5,188,035, Cl. 104-89.000.

Daley, Robert: *See—*
McDonnell, Damien G.; Raynes, Edward P.; and Daley, Robert, 5,189,534, Cl. 359-45.000.

Dalin, Ivan: *See—*
Hellstrom, Pia; Dalin, Ivan; and Linderstrom-Lang, Steen, 5,188,814, Cl. 423-430.000.

Dallas Semiconductor Corporation: *See—*
Bolan, Michael L.; Little, Wendell L.; Jansen, Elaine; and Folkes, Don, 5,189,598, Cl. 361-397.000.

Dana Corporation: *See—*
Keller, Thomas J., 5,188,564, Cl. 464-14.000.

Daniels Manufacturing Corporation: *See—*
Kuehling, Guenter F.; and Carmain, Jeffrey L., 5,187,875, Cl. 33-541.000.

Dannatt, Hugh St. L., to Pitney Bowes Inc. Segmented tape transport and moistening system. 5,188,271, Cl. 226-102.000.

Danner, Bernard, to Sandoz Ltd. Aminoalkylated side-chains-containing vinylic copolymers. 5,189,111, Cl. 525-328.200.

Danz, Robert. Bar anchor arrangement. 5,188,473, Cl. 403-27.000.

Dart Industries Inc.: *See—*
Fukuda, Takeshi; and Picozza, Augusto A., 5,188,234, Cl. 206-541.000.

Das, Tapan K.; Ozkan, Oguz; and Fung, George S., to Northern Telecom Limited. Line interface circuit. 5,189,697, Cl. 379-413.000.

Daugherty, Kevin M., to National Semiconductor Corporation. Microcontroller based analog-to-digital converter using variable pulse width modulation. 5,189,421, Cl. 341-157.000.

Daussan, Andre ; Daussan, Gerard; and Daussan, Jean-Charles, to Daussan et Compagnie. Method for applying a covering on a substrate, a device for carrying out the method and a covering obtained by means of said method. 5,188,690, Cl. 156-91.000.

Daussan, Andre : *See—*
Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre , 5,188,794, Cl. 266-44.000.

Daussan et Compagnie: *See—*
Daussan, Andre ; Daussan, Gerard; and Daussan, Jean-Charles, 5,188,690, Cl. 156-91.000.
Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre , 5,188,794, Cl. 266-44.000.

Daussan, Gerard: *See—*
Daussan, Andre ; Daussan, Gerard; and Daussan, Jean-Charles, 5,188,690, Cl. 156-91.000.
Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre , 5,188,794, Cl. 266-44.000.

Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre , to Daussan et Compagnie. Method for covering a metallurgical vessel with a purifying lining and composition relating to said method, and protective lining thus obtained. 5,188,794, Cl. 266-44.000.

Daussan, Jean-Charles: *See—*
Daussan, Andre ; Daussan, Gerard; and Daussan, Jean-Charles, 5,188,690, Cl. 156-91.000.

Davi, Orazio M., to Promau S.r.l. Programmable plate bending machine. 5,187,959, Cl. 72-9.000.

David, Henry B., to Melco Wire Products Co. Ambulatory support apparatus. 5,188,323, Cl. 248-158.000.

Davidson, Jeffrey; Sherman, Robert; and Paciei, Richard, to BOC Group, Inc., The. Stainless steel surface passivation treatment. 5,188,714, Cl. 204-129.350.

Davis, Herschel W.: *See—*
Haun, Harold; Davis, Herschel W.; and Koger, Robert D., 5,188,445, Cl. 362-80.000.

Davis, Jay C.: *See—*
Roberts, Mark L.; and Davis, Jay C., 5,189,302, Cl. 250-288.000.

Davis, John W.: *See—*
Asbury, Jimmie; and Davis, John W., 5,189,426, Cl. 342-70.000.

Davis, Robert H., to Mobil Oil Corporation. Antiwear/antioxidant additives based on dimercapto derivatives of acrylates and methacrylates polymers and amine reaction products thereof. 5,188,746, Cl. 252-47.500.

Davis, Scott A.; and Uryasz, Jan W., to Architectural Lighting Systems Inc. Lighting fixture assembly. 5,188,449, Cl. 362-148.000.

Davy (Distington) Limited: *See—*
Perry, Robert M., 5,188,166, Cl. 164-416.000.
Perry, Robert M.; and Reynolds, Timothy, 5,188,167, Cl. 164-418.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Day, Timothy; and Marsland, Robert A., Jr., to New Focus, Inc. Electro-optical light modulator driven by a resonant electrical circuit. 5,189,547, Cl. 359-245.000.

Deal, James L.: *See—*
Joyce, Michael J.; Boley, Warren M.; and Deal, James L., 5,188,279, Cl. 228-113.000.

De Bruyn, George: *See—*
Chen, Gilbert K.; McKelvy, Robert; Bonilla, Jorge A.; Glaspie, Don; and De Bruyn, George, 5,188,773, Cl. 261-112.200.

deCastro, Aurora F.; Gupta, Surendra K.; and Agarwal, Arun K., to GDS Technology, Inc. Enzymatic determination of theophylline. 5,188,941, Cl. 435-19.000.

DeCastro, Aurora F.; Gupta, Surendra K.; and Shantz, Steven M., to GDS Technology, Inc. Method of preserving arylacylamidase in aqueous solution. 5,188,955, Cl. 435-188.000.

De Chambost, Emmanuel; and Rasser, Bernard, to Cameca. High transmission mass spectrometer with improved optical coupling. 5,189,304, Cl. 250-296.000.

Deere & Company: *See—*
Patterson, Jon M.; Teal, Richard D.; Weitz, James H.; and Wasson, Steven C., 5,187,925, Cl. 56-17.100.

Deevi, Seetharama C.: *See—*
Hajaligol, Mohammad R.; Deevi, Seetharama C.; Ariprala, Sarojini D.; Losee, Donald B.; Waymack, Bruce E.; and Watkins, Michael L., 5,188,130, Cl. 131-359.000.

DeFazio, August: *See—*
Palmer, Charles E.; Taylor, Barry J.; and DeFazio, August, 5,189,531, Cl. 359-3.000.

Deffayet, Jean; Lepicard, Alain; and Winaver, Andre , to Thomson-Brandt Armements. Perforating munition for targets of high mechanical strength. 5,189,248, Cl. 102-386.000.

DeFriez, Herbert H., to Clean Air Engineering, Inc. Gas monitor. 5,187,972, Cl. 73-23.200.

de Graaf, Martinus J. M.; Fickes, Michael G.; Johnson, George H.; and Simmons, Howard E., III, to Du Pont de Nemours, E. I., and Company. Direct effect master/stamper for optical recording. 5,188,863, Cl. 427-512.000.

Degussa AG: *See—*
Kuehner, Gerhard; Vogel, Karl; Rodriguez, Juan D.; and Clement, Charles D., 5,188,806, Cl. 422-151.000.

Degussa Akteingesellschaft: *See—*
Kriechbaum, Gangolf; Kleinschmit, Peter; and Peuckert, Doris, 5,188,991, Cl. 501-103.000.

Delahunt, Robert F.: *See—*
Hartman, William J.; and Delahunt, Robert F., 5,188,854, Cl. 426-272.000.

Delannoy, Vincent, to Solvay. Polyolefin-based mouldable compositions and articles made from these compositions. 5,188,873, Cl. 428-36.920.

Delaware Capital Formation, Inc.: *See—*
Stanley, Johnny T.; and Roberts, Brian W., 5,187,852, Cl. 29-243.570.

Deleuil, Michel; Labourt-Ibarre, Pierre; Rona, Robert; and Statiotis, Eraclis, to Rhone-Poulenc Sante. Process for the preparation of medications in the form of pearls. 5,188,838, Cl. 424-451.000.

Delloye, Thierry; and Sabot, Jean-Louis, to Rhone-Poulenc Chimie. Separation of rare earth values by liquid/liquid extraction. 5,188,735, Cl. 210-634.000.

Del Soldato, Piero: *See—*
Alberto, Sala; Benedini, Francesca; Cereda, Roberta; and Del Soldato, Piero, 5,189,034, Cl. 514-224.200.

DeLuca, Joan S.; and DeLuca, Michael J., to Motorola, Inc. Electronic device having position selectable alert modes. 5,189,389, Cl. 340-311.100.

DeLuca, Michael J.: *See—*
DeLuca, Joan S.; and DeLuca, Michael J., 5,189,389, Cl. 340-311.100.

DeMerritt, Paul A.; and Amo, Don J., to Combustion Research Corporation. Greenhouse heating system. 5,188,288, Cl. 237-70.000.

De Niel, Marc A.; de Ruijter, Dirk F.; Vackier, Leo N.; and Verlinden, Bart J., to Agfa-Gevaert, N.V. Ion exchange resin holder. 5,188,732, Cl. 210-285.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Arai, Kazuhiko; Fujiwara, Akira; Motoda, Shosaku; and Suzuki, Hiroyasu, 5,188,969, Cl. 436-548.000.

Dennison Manufacturing Company: *See—*
O'Brien, Karen M.; and Carlson, Lee A., 5,187,888, Cl. 40-359.000.

Depa, Louis S.; and Fisher, Robert L., to Rockwell International Corporation. Printing press blanket cylinder assembly, subassemblies and method of using same. 5,188,031, Cl. 101-415.100.

DePardo, Gerald L.: *See—*
Parsons, Douglas A.; Johnston, Mark A.; Games, John E.; and DePardo, Gerald L., 5,189,620, Cl. 364-431.020.

Derbyshire, Rodney L., to Metcal, Inc. Temperature self-regulating induction apparatus. 5,189,271, Cl. 219-10.530.

Derifan S.p.A.: *See—*
Errani, Franca; and Missirini, Marino, 5,187,916, Cl. 53-389.200.

DeRoss, Robert: *See—*
Comerci, Joseph D.; DeRoss, Robert; O'Connell, Michael J.; and Templeton, John E., Jr., 5,188,541, Cl. 439-596.000.

de Rouffignac, Eric P.: *See—*
Carl, Frederick G., Jr.; and de Rouffignac, Eric P., 5,189,283, Cl. 219-497.000.

Derry, Pamela L.; Hong, Chi-Shain; Chan, Eric Y.; Figueroa, Luis; and Fu, R. Jennhwa, to Boeing Company, The. Strained quantum well laser for high temperature operation. 5,189,679, Cl. 372-45.000.

de Ruijter, Dirk F.: *See—*
De Niel, Marc A.; de Ruijter, Dirk F.; Vackier, Leo N.; and Verlinden, Bart J., 5,188,732, Cl. 210-285.000.

DeSaw, Fred: *See—*
Foster, Walter H., III; Sparks, Lawrence D.; Earvolino, Louis P.; and DeSaw, Fred, 5,189,279, Cl. 219-137.00R.

Desmurs, Jean; and Lecouve, Jean-Pierre, to Rhone-Poulenc Chimie. Process for preparing N-alkylanilines and N-allylanilines catalyzed by iodides. 5,189,220, Cl. 564-404.000.

Desmurs, Jean-Roger; Kempf, Hubert; Ratton, Serge; and Stephan, Dominique, to Rhone-Poulenc Chimie. Preparation of n-phenylbenzoquinone-imine and converting same into p-phenylenediamines. 5,189,218, Cl. 564-272.000.

deSouza, Joel; P.; Greiner, James H.; and Sadana, Devendra K., to International Business Machines Corporation. Controlled silicon doping of III-V compounds by thermal oxidation of silicon capping layer. 5,188,978, Cl. 437-160.000.

DeTolla, Francis L.: *See—*
Frey, Luther R.; and DeTolla, Francis L., 5,188,292, Cl. 239-127.300.

Dettmer, Hans J.; Herwig, Jorg; Hagemann, Joachim; Marchewka, Werner; and Utzfeld, Michael, to Fischer & Porter Company. Apparatus for measuring the flow of a fluid medium. 5,187,988, Cl. 73-861.530.

Deutsche Thomson-Brandt GmbH: *See—*
Lavaud, Simon-Andre , 5,189,705, Cl. 381-104.000.

Devall, Jeffrey E., to Allied-Signal Inc. Linear variable pressure adaptive braking and traction control system. 5,188,436, Cl. 303-113.200.

Devore, David I.; and Fischer, Stephen A., to Henkel Corporation. Wet strength resin composition and method of making same. 5,189,142, Cl. 528-339.300.

Devries, Kenneth L.: *See—*
Babie, Wayne T.; Devries, Kenneth L.; Nguyen, Bang C.; and Yang, Chau-Hwa J., 5,188,704, Cl. 156-643.000.

De Waal, Jannetje: *See—*
Verbrugge, Pieter A.; and De Waal, Jannetje, 5,189,197, Cl. 560-24.000.

Dewanckele, Jean-Marie O.; Tavernier, Serge M.; and Ghekiere, Jean-Pierre A., to Agfa-Gevaert, N.V. Particulate toner material containing charge controlling compound. 5,188,919, Cl. 430-106.000.

De Witt, James J., to Aquafan (Proprietary) Limited. Method and apparatus for treating a gas or liquid. 5,188,771, Cl. 261-25.000.

Diafoil Company, Limited: *See—*
Takeda, Naohiro; Otani, Yuzo; Okajima, Nariaki; Ito, Yoshihiko; Kinoshita, Shin-ichi; Inagaki, Masashi; and Harada, Takashi, 5,188,891, Cl. 428-323.000.

Diazgranados, Jesus A.: *See—*
Costa, Jonathan L.; and Diazgranados, Jesus A., 5,189,026, Cl. 514-30.000.

Diehl GmbH & Co.: *See—*
Lochner, Gunther; and Schwarz, Wolfgang, 5,188,682, Cl. 149-1.000.

Diehl, Michael W.: *See—*
Burkhardt, William C.; Diehl, Michael W.; and Spence, Wesley F., 5,189,249, Cl. 102-430.000.

Difco Laboratories: *See—*
Wannlund, Jon C., 5,188,965, Cl. 436-165.000.

Digital Equipment Corporation: *See—*
Joseph, Michael L.; Boulay, Steven G.; and Nasman, Ronald W., 5,188,324, Cl. 248-222.300.

Digonnet, Michel J. F.: *See—*
Wysocki, Paul F.; Digonnet, Michel J. F.; and Kim, Byoung Y., 5,189,676, Cl. 372-6.000.

Dilmore, Colonel R.; and Maloney, Bernard A., to PPG Industries, Inc. Diaphragm for use in chlor-alkali cells. 5,188,712, Cl. 204-98.000.

Dingwall, John G.: *See—*
Kanel, Hans-Ruedi; and Dingwall, John G., 5,189,227, Cl. 568-681.000.

Dinhoble, Daniel E.: *See—*
Hopmann, Mark; Jennings, Steve L.; and Dinhoble, Daniel E., 5,188,183, Cl. 166-387.000.

Di Rosa, Gaetano, to Fata Automation S.p.A. Suspension device for overhead tracks with L-shaped elastic clamps for engaging grooves on the rails and clamping the rails to the suspension device. 5,188,036, Cl. 104-111.000.

Diversified Recycling Technology: *See—*
Greenberg, Bernard, 5,188,703, Cl. 156-642.000.

Dixon, Daniel A.; Gierut, Frederick J.; Lawniczak, Joe; Patel, Arvind; and Primorac, Michael, to Molex Incorporated. Electrical terminal pin. 5,188,547, Cl. 439-886.000.

Dixon, David A., to Reefco Manufacturing Corporation. Refrigerated container. 5,187,945, Cl. 62-234.000.

DJS & T Limited Partnership: *See—*
Stern, Donald J.; Heaton, Jeff S.; Tryon, James A.; and Bartholmey, Brett A., 5,188,295, Cl. 239-320.000.

Doble, Richard G. V. High frequency signal measurement circuits utilizing temperature-sensitive devices. 5,189,362, Cl. 324-106.000.

Dr. Karl Thomae GmbH: *See—*
Krause, Jurgen; and Haarmann, Walter, 5,188,940, Cl. 435-13.000.

Dodd, Andrew S.: *See—*
Barrett, Michael J.; and Dodd, Andrew S., 5,189,718, Cl. 385-101.000.

Doherr, Karl-Friedrich: *See—*
Foitzik, Roland; Doherr, Karl-Friedrich; Munscher, Dieter; and Saliaris, Christos, 5,188,315, Cl. 244-152.000.

Dohnalik, Martin F., to Gehl Company. Stabilizing cylinder for a rough terrain forklift. 5,188,248, Cl. 212-189.000.

Dolgas, Patrick A.: *See—*
Corey, Nathan A.; Clark, Carl L.; and Dolgas, Patrick A., 5,187,856, Cl. 29-564.600.

Dolin, Robert A., Jr., to Intel Corporation. Method of coupling lf signals by means of power line communications coupler. 5,187,865, Cl. 29-868.000.

Domb, Abraham J., to Nova Pharmaceutical Corporation. Lipsopheres for controlled delivery of substances. 5,188,837, Cl. 424-450.000.

Dominion Plastics Inc.: *See—*
Ross, Alan, 5,187,896, Cl. 49-74.00L.

Donaghy, David J.: *See—*
Gunderson, Rick L.; and Donaghy, David J., 5,187,837, Cl. 16-375.000.

Donatelli, Alexander V.: *See—*
Milianowicz, Stanislaw A.; Long, Russell W.; and Donatelli, Alexander V., 5,189,384, Cl. 335-16.000.

Dong-Il, Dan C.: *See—*
Carr, Willian N.; Yu, Hong; and Dong-Il, Dan C., 5,189,323, Cl. 310-40.0MM.

Dong Kwang Corporation: *See—*
Lee, Sang U., 5,187,835, Cl. 16-52.000.

Donges, William E.; and Mycke, Jacques, to Nordson Corporation. Circuit board coating apparatus with inverting pallet shuttle. 5,188,669, Cl. 118-503.000.

Donnelly Corporation: *See—*
Caldwell, David W.; and Medendorp, Nicholas W., 5,189,417, Cl. 341-26.000.
O'Farrell, Desmond J., 5,189,537, Cl. 359-71.000.

Donoho, Paul L.; Peterson, Mitchell F.; Ryder, Hughie; and Keeling, William H., to Chevron Research and Technology Company. Seafloor seismic recorder. 5,189,642, Cl. 367-15.000.

Dopaco, Inc.: *See—*
Eisman, Larry, 5,188,284, Cl. 229-110.000.

Dorflinger, Clemens: *See—*
Zatrieb, Jacek; and Dorflinger, Clemens, 5,188,523, Cl. 418-126.000.

Doring, Erich. Door or wall reinforcing filler assembly and method. 5,188,040, Cl. 109-49.500.

Dormon-Brailsford, Michael I. Paint system for removing paint. 5,188,675, Cl. 134-4.000.

Dorotinsky, Dennis R.; and Lesson, Kenneth G. Adjustable golf swing training device. 5,188,366, Cl. 273-188.00R.

Dorse, John R., to BTR Dunlop Limited. Liquid storage bag. 5,188,460, Cl. 383-18.000.

Dorsey, James H., III. Irrigation control valve for endoscopic instrument. 5,188,591, Cl. 604-33.000.

Doskocil Companies Incorporated: *See—*
Breunig, Timothy A.; and Anders, Gary H., 5,187,947, Cl. 62-346.000.

Dougherty, Lawrence W., to Zenith Electronics Corporation. Flat front panel CRT bulb pre-stressed prior to final evacuation and method of making same. 5,188,553, Cl. 445-8.000.

Dover Corporation: *See—*
Dressler, Jim; Johnston, Bill; Loftis, Gerald; Salierno, Mark; Solt, Gordon; Spira, Jeff; and Tarsha, Manual, 5,188,316, Cl. 244-234.000.

Dow Chemical Company, The: *See—*
Eiffler, Jurgen, 5,188,766, Cl. 252-500.000.
Hefner, Robert E., Jr., 5,189,117, Cl. 525-460.000.
LaPointe, Robert E.; Rosen, Robert K.; and Nickias, Peter N., 5,189,192, Cl. 556-11.000.
Laughner, Michael K., 5,189,091, Cl. 524-445.000.
Liao, Zeng K.; and Bertram, James L., 5,188,903, Cl. 428-447.000.
Mancusi, Anthony W., III; and Washington, Samuel J., 5,189,196, Cl. 558-261.000.
McReynolds, Kent B., 5,188,888, Cl. 428-220.000.
Rhoads, Timothy W.; Suh, Kyung W.; Kadota, Takao; and Stobby, William G., 5,189,071, Cl. 521-79.000.
Rhoads, Timothy W.; Kadota, Takao; Suh, Kyung W.; and Stobby, William G., 5,189,072, Cl. 521-88.000.
Suh, Kyung W.; Stobby, William G.; and McCullough, Francis P., 5,188,893, Cl. 428-362.000.
Suh, Kyung W.; Brubaker, Burton D.; Stobby, William G.; McCullough, Francis P.; and Snelgrove, R. Vernon, 5,188,896, Cl. 428-397.000.
Tuinstra, Hendrik E.; and Myers, Harold D., 5,189,139, Cl. 528-196.000.

Dow Corning Corporation: *See—*
Freeburne, Steven K.; and Puckett, David E., 5,189,193, Cl. 556-451.000.
Klimisch, Helen M.; and Lane, Thomas H., 5,189,067, Cl. 514-772.000.
Lee, Chi-long; and Lutz, Michael A., 5,188,864, Cl. 427-515.000.
Nguyen, Binh T., 5,189,194, Cl. 556-471.000.
Revis, Anthony; and Cottington, Levi J., 5,188,900, Cl. 428-412.000.

DowElanco: *See—*
Hull, John W., Jr., 5,189,166, Cl. 544-298.000.
Wessling, Ritchie A.; Pickelman, Dale M.; and Wujek, Dennis G., 5,188,824, Cl. 424-78.100.
Wright, Terry L.; and Orvik, Jon A., 5,189,210, Cl. 562-418.000.

Downey, Arthur E.: *See—*
Farbood, Mohamad I.; Morris, James A.; Downey, Arthur E.; and Kiwala, Jacob, 5,188,129, Cl. 131-276.000.

Downie, Scott R.: *See—*
Cooper, Stephen B. C.; and Downie, Scott R., 5,189,648, Cl. 368-73.000.

Downing, Robert W.; and Conte, Donald V., to Magnavox Electronic Systems Company. Tapered manifold for batteries requiring forced electrolyte flow. 5,188,911, Cl. 429-70.000.

Drake, Evelyn N.: *See—*
Manalastas, Pacifico V.; Drake, Evelyn N.; Thaler, Warren A.; Kresge, Edward N.; Elspass, Chester W.; Geiger, Albert J.; and Swarup, Vijay, 5,188,654, Cl. 71-28.000.

Drake, John D.: *See—*
Lyndhurst, Richard; and Drake, John D., 5,188,065, Cl. 123-41.440.

Drent, Fit: *See—*
Klusener, Peter A. A.; Stil, Hans A.; Drent, Fit; and Arnoldy, Peter, 5,189,003, Cl. 502-167.000.

Dresser Industries: *See—*
Winkelbauer, Howard M.; and Rushe, Eugene T., 5,188,989, Cl. 501-17.000.

Dressler, Jim; Johnston, Bill; Loftis, Gerald; Salierno, Mark; Solt, Gordon; Spira, Jeff; and Tarsha, Manual, to Dover Corporation. Aircraft autothrottle system. 5,188,316, Cl. 244-234.000.

Drumm, Kevin R., to Nuraseal Company, Limited. Externally-mounted, stationary-design, self-aligning rotary face seal. 5,188,377, Cl. 277-81.00S.

Drye, Jerry L.; and Cavenaugh, Glen C., to Trinity American Corp. Post treatment of polyurethane foam. 5,188,792, Cl. 264-232.000.

Du, Benjamin R. Method and apparatus for facilitating the cleaning of a spray aperture in a mixing chamber of a nozzle. 5,188,255, Cl. 222-1.000.

Du Pont Canada Inc.: *See—*
King, David C.; Lillis, Rupert M.; and White, George, 5,188,787, Cl. 264-153.000.

DuBois, Donn A.: *See—*
Gelles, Richard; and DuBois, Donn A., 5,189,083, Cl. 524-68.000.

Dubroff, Seymour. Buffer-containing devices for preventing clouding of posterior capsule after extracapsular cataract eye surgery and method of performing cataract surgery. 5,188,590, Cl. 604-22.000.

Dudar, Thomas E.: *See—*
Jepson, Steve C.; and Dudar, Thomas E., 5,188,620, Cl. 604-283.000.

Dudley, Mark W.: *See—*
McDonald, Ian A.; Bernotas, Ronald C.; Dudley, Mark W.; and Sprouse, Jeffrey S., 5,189,179, Cl. 548-495.000.

Dudouet, Brigitte: *See—*
Louvard, Daniel; Dudouet, Brigitte; Robine, Sylvie; Arpin, Monique; Pringault, Eric; and Garcia, Alphonse, 5,188,967, Cl. 436-501.000.

Duez, Christian; Semedard, Jean-Claude; and Morin, Jean-Xavier, to Stein Industrie. Pulp dispersion lance. 5,188,296, Cl. 239-403.000.

Duffy, Joseph J.; Potter, Jerry F.; Roth, Elwood A.; Samant, Kalika R.; and Todd, Maurice C., to Du Pont de Nemours, E. I., and Company. Method for heating crimped fibers and product thereof. 5,187,845, Cl. 28-267.000.

Dufour, Martial J., to Canada, Her Majesty the Queen in right of, as represented by the Minister of Communications. Automatic calibration of magnetic compasses. 5,187,872, Cl. 33-356.000.

Duggan, Frank: *See—*
Yarsunas, George D.; Brennan, Michael L.; and Duggan, Frank, 5,189,435, Cl. 343-903.000.

Duma AB: *See—*
Poore, Cyril; and Sams, Bernard, 5,188,253, Cl. 220-212.000.

Dumesnil, Maurice E.; and Finkelstein, Leo, to VLSI Packaging Materials. Low temperature sealing glass compositions. 5,188,990, Cl. 501-19.000.

Duncia, John Jonas V.: *See—*
Carini, David J.; Duncia, John Jonas V.; and Wells, Greogry J., 5,189,048, Cl. 514-359.000.

Dunckley, James A.: *See—*
Morehouse, James H.; Dunckley, James A.; and Furay, David M., 5,189,576, Cl. 360-105.000.

Dunkley, James, to Silicon Systems, Inc. Edge shrinkage compensated devices. 5,189,595, Cl. 361-313.000.

Dunlap, R. Terren, to Go-Video, Inc. VCR with video phone answering capability. 5,189,691, Cl. 379-70.000.

Dunworth, Bruce; and McCorkle, Gary, to Ferro Corporation. Method of forming a porous refractory immersion nozzle. 5,188,689, Cl. 156-89.000.

Duphar International Research B.V.: *See—*
Brussee, Johannes; van der Gen, Arne; and Kruse, Cornelis G., 5,189,219, Cl. 564-356.000.

Dupon, Ryan W.; Thompson, Mark S.; Wiseman, Gary H.; Musolf, Douglas J.; and Tanous, Adam S., to Raychem Corporation. Metal oxide dielectric dense bodies, precursor powders therefor, and methods for preparing same. 5,188,886, Cl. 428-209.000.

Du Pont de Nemours, E. I., and Company: *See—*
Burkhardt, William C.; Diehl, Michael W.; and Spence, Wesley F., 5,189,249, Cl. 102-430.000.
Carini, David J.; Duncia, John Jonas V.; and Wells, Greogry J., 5,189,048, Cl. 514-359.000.
de Graaf, Martinus J. M.; Fickes, Michael G.; Johnson, George H.; and Simmons, Howard E., III, 5,188,863, Cl. 427-512.000.
Duffy, Joseph J.; Potter, Jerry F.; Roth, Elwood A.; Samant, Kalika R.; and Todd, Maurice C., 5,187,845, Cl. 28-267.000.
Grindstaff, Teddy H., 5,188,892, Cl. 428-59.000.
Irwin, Robert S., 5,189,141, Cl. 528-331.000.
Memeger, Wesley, Jr., 5,189,160, Cl. 540-460.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Smith, Ronald D., 5,189,051, Cl. 514-381.000.
Tosun, Guray; and Glicksman, Howard D., 5,188,660, Cl. 75-370.000.
Trofimenko, Swiatoslaw; and Auman, Brian C., 5,189,138, Cl. 528-183.000.
Wittens, Henricus L., 5,187,863, Cl. 29-845.000.
Zafiroglu, Dimitri P., 5,187,952, Cl. 66-192.000.

Dupps Company, The: *See—*
Mansfield, Peter W.; and Dupps, Frank N., 5,188,023, Cl. 100-145.000.

Dupps, Frank N.: *See—*
Mansfield, Peter W.; and Dupps, Frank N., 5,188,023, Cl. 100-145.000.

Duracell Inc.: *See—*
Kivell, Larry; Milanese, Robert L.; Kiernan, Charles E.; and Tittel, Lorne, 5,188,231, Cl. 206-333.000.

Duranel, Laurent; Malinge, Jean; and Bousque, Marie-Laure, to Atochem. Catalyst support for polymerization of olefins, process for manufacturing the same, and catalyst obtained from this support. 5,188,999, Cl. 502-111.000.

Duranleau, Roger G.; and Zimmerman, Robert L., to Texaco Chemical Company. Amine separation process. 5,189,221, Cl. 564-499.000.

Durina, Michael F., to Spirex Corporation. Pipe coupling device and method. 5,188,399, Cl. 285-91.000.

Durkopp Adler Aktiengesellschaft: *See—*
Brockmann, Joachim, 5,188,044, Cl. 112-121.150.

Dutkiewicz, Jacek: *See—*
Penglase, Kim E.; and Dutkiewicz, Jacek, 5,189,305, Cl. 250-338.100.

Dutzmann, Stefan: *See—*
Heinemann, Ulrich; Kleefeld, Gerd; Dutzmann, Stefan; and Hanssler, Gerd, 5,189,175, Cl. 548-128.000.

Dwivedi, Ratnesh K.: *See—*
Kantner, Robert C.; and Dwivedi, Ratnesh K., 5,188,164, Cl. 164-97.000.

Dykes, Norman A., to Thorn EMI Electronics Limited. Transport device. 5,188,468, Cl. 400-579.000.

E & J Demark, Inc.: *See—*
Mumper, James O., 5,188,187, Cl. 173-128.000.

E. R. Squibb & Sons, Inc.: *See—*
Karanewsky, Donald S., 5,189,180, Cl. 549-214.000.

Ealick, Steve E.: *See—*
Niwas, Shri; Secrist, John A., III; Montgomery, John A.; Erion, Mark D.; Guida, Wayne C.; and Ealick, Steve E., 5,189,039, Cl. 514-258.000.

Earnhart, Laurence L.: *See—*
Ashby, Eugene C.; Earnhart, Laurence L.; Tedder, Daniel W.; and Singh, Jagvir, 5,189,222, Cl. 568-1.000.

Earvolino, Louis P.: *See—*
Foster, Walter H., III; Sparks, Lawrence D.; Earvolino, Louis P.; and DeSaw, Fred, 5,189,279, Cl. 219-137.00R.

Eastman Kodak Company: *See—*
Boyd, James D., 5,189,453, Cl. 354-122.000.
Godleski, Stephen A., 5,189,199, Cl. 560-93.000.
Hoover, Linn C.; and O'Dea, Dennis J., 5,189,480, Cl. 355-282.000.
Kuwabara, Masayuki, 5,189,496, Cl. 257-79.000.
McGuckin, Hugh G.; and Badger, John S., 5,188,662, Cl. 75-713.000.
Mody, Hemant K., 5,189,567, Cl. 360-59.000.
Parulski, Kenneth A.; Bellis, Donald C., Jr.; Hibbard, Robert H.; Giorgianni, Edward J.; and McInerney, Elizabeth, 5,189,511, Cl. 358-80.000.
Sasson, Steven J., 5,189,526, Cl. 358-432.000.
Schaeffer, James R.; Engebrecht, Ronald H.; Winterkorn, Robert F.; Warren, Harold C., III; and Welter, Thomas R., 5,188,802, Cl. 422-56.000.
Schlee, Ronald P.; and Hall, Jeffrey L., 5,189,457, Cl. 354-328.000.
Schofield, Edward; Merkel, Paul B.; and Chen, Tienteh, 5,188,926, Cl. 430-377.000.
Seim, April M., 5,189,455, Cl. 354-297.000.
Sherburne, David G.; Seim, April M.; and Howe, Michael G., 5,189,456, Cl. 354-298.000.
Stephenson, Stanley W., III, 5,189,522, Cl. 358-296.000.
Strom, Laurie A.; Carnall, Edward, r.; Ferranti, Steven A.; and Mir, Jose M., 5,189,010, Cl. 505-1.000.
Wang, Richard H. S.; Shang, Ping P.; and Jervis, Daniel A., 5,189,088, Cl. 524-222.000.

Eaton Corporation: *See—*
Jarosch, George W., 5,187,944, Cl. 62-225.000.
Stahly, Daniel C., 5,189,269, Cl. 200-83.00P.

Ebara, Takeshi: *See—*
Sasaki, Toshio; Ebara, Takeshi; Jyohoji, Hirofumi; Mizunuma, Kooji; and Kawai, Kiyoshi, 5,189,124, Cl. 526-119.000.

Eberle, Gernot; and Chaput, Guy J., to Northern Telecom Limited. Digital signal processing apparatus for detecting a frequency component of digital signals. 5,189,634, Cl. 364-724.090.

Ebert, Frederick J., to United Technologies Corporation. Helicopter anti-torque device direct pitch control. 5,188,511, Cl. 416-25.000.

Ebine, Nobuhito: *See—*
Katoh, Tokoyuki; and Ebine, Nobuhito, 5,188,912, Cl. 429-96.000.

Echelon Corporation: *See—*
Cowart, Brooks E., 5,189,683, Cl. 375-1.000.

Echigo, Mitsuji; Moriyama, Naomune; Akahoshi, Hideaki; Kameda, Osamu; and Akutagawa, Hitoshi, to Mazda Motor Corporation. Power train for automotive vehicle. 5,188,574, Cl. 475-206.000.

Echols, Ralph H., III; Pearce, Joseph L.; and Patterson, Daniel L., to Otis Engineering Corporation. System containing expendible isolation valve with frangible sealing member, seat arrangement and method for use. 5,188,182, Cl. 166-376.000.

Eckert, Terry T.: *See—*
Creevy, Clifford S.; and Eckert, Terry T., 5,188,506, Cl. 415-115.000.

Eckstein, Udo, to Bayer Aktiengesellschaft. Bis(triarylmethane) compounds. 5,189,188, Cl. 552-104.000.

Eclipse Manufacturing Co.: *See—*
Leicht, Jeffrey K., 5,188,573, Cl. 474-175.000.

ECP Enichem Polimeri s.r.l.: *See—*
Luciani, Luciano; Pondrelli, Maddalena; Invernizzi, Renzo; and Borghi, Italo, 5,188,997, Cl. 502-107.000.

Eddy, F. Neal; and Schoen, Joel M., to Mitre Corporation, The. Method and apparatus for direct analog to formatted digital number conversion. 5,189,420, Cl. 341-157.000.

Eden, James L.: *See—*
Kasica, James J.; and Eden, James L., 5,188,674, Cl. 127-65.000.

Edmark, Karl W., III. Multi-sensor probe assembly and method for fuel storage system including overflow protection means. 5,187,979, Cl. 73-304.00C.

EDO Corporation, Barnes Engineering Division: *See—*
Falbel, Gerald, 5,189,295, Cl. 250-206.200.

Edwards, A. W. Reusable projectile impact reflecting target for day or night use. 5,188,371, Cl. 273-378.000.

Edwards, Bruce W.; and Edwards, D. Brandon, to Edwards Optical Corporation. Sighting telescope for simultaneous viewing of target and sight. 5,189,560, Cl. 359-744.000.

Edwards, D. Brandon: *See—*
Edwards, Bruce W.; and Edwards, D. Brandon, 5,189,560, Cl. 359-744.000.

Edwards Optical Corporation: *See—*
Edwards, Bruce W.; and Edwards, D. Brandon, 5,189,560, Cl. 359-744.000.

Ehrhardt, Gerry H., to Cluthe, Frederic S. Flow agent-dispersant composition. 5,188,765, Cl. 252-363.500.

Eichinger, Dieter: *See—*
Hinterholzer, Peter; Zikell, Stefan; Firgo, Heinrich; Wolschner, Bernd; Eichinger, Dieter; Manner, Johann; Astegger, Stephan; and Weinzierl, Karin, 5,189,152, Cl. 536-56.000.

Eide, Eric P.: *See—*
Eide, Russel L.; Eide, Eric P.; and Eide, Russel L., II, 5,188,500, Cl. 414-412.000.

Eide, Russel L.; Eide, Eric P.; and Eide, Russel L., II, to Light Work Inc. Device for tearing refuse bags. 5,188,500, Cl. 414-412.000.

Eide, Russel L., II: *See—*
Eide, Russel L.; Eide, Eric P.; and Eide, Russel L., II, 5,188,500, Cl. 414-412.000.

Eiffler, Jurgen, to Dow Chemical Company, The. Electrically conductive polymer compositions, processes and polymers useful for preparing the polymer compositions. 5,188,766, Cl. 252-500.000.

Eikeland, Inger J.: *See—*
Aune, Jan A.; Eikeland, Inger J.; and Pedersen, Thor, 5,188,658, Cl. 75-10.310.

Eikmeier, Heino; and Rothe, Anselm, to Boehringer Mannheim GmbH. Test carrier with separation means for analyzing a sample fluid. 5,188,966, Cl. 436-170.000.

Eisai Co., Ltd.: *See—*
Hasegawa, Yoshikazu; and Hashimoto, Akira, 5,188,962, Cl. 435-285.000.

Eisen, Herman N.: *See—*
Saito, Haruo; Kranz, David M.; Eisen, Herman N.; and Tonegawa, Susumu, 5,189,147, Cl. 530-387.900.

Eisenring, Richard: *See—*
Sweeney, Niall; Nagy, Michael; and Eisenring, Richard, 5,188,597, Cl. 604-110.000.

Eisenwerk Gerhard GmbH: *See—*
Gerhard, Helmut, 5,188,252, Cl. 220-1.500.

Eisman, Larry, to Dopaco, Inc. Carton with lug locked tray and cover. 5,188,284, Cl. 229-110.000.

Ejiri, Yuki; Okazaki, Tsutomu; Yamada, Koichiro; Niida, Chiaki; Saeki, Hiroaki; and Honma, Hideki, to Hitachi Ltd.; and Hitachi Automotive Engineering Co., Ltd. Fluid control valve, valve support member therefor and idling air amount control apparatus for automobile using the fluid control valve. 5,188,073, Cl. 123-339.000.

Eka Nobel AB: *See—*
Hellstrom, Pia; Dalin, Ivan; and Linderstrom-Lang, Steen, 5,188,814, Cl. 423-430.000.

El Paso Technologies Company: *See—*
Lovrenich, Rodger T., 5,189,604, Cl. 364-136.000.

Electric Power Research Institute, Inc.: *See—*
Girgis, Ramsis S.; and Martincic, Paul W., 5,188,277, Cl. 228-111.000.

Electro-Nite International N.V.: *See—*
Baerts, Christiaan E. E., 5,187,991, Cl. 73-864.560.

Electromer Corporation: *See—*
Childers, Richard K.; and Bunch, John H., 5,189,387, Cl. 338-20.000.

Electronic Warfare Associates, Inc.: *See—*
Guerreri, Stephen J., 5,189,727, Cl. 395-2.000.

Elf Atochem North America, Inc.: *See—*
Crooker, Richard M., 5,188,749, Cl. 252-67.000.

Elf Atochem S.A.: *See—*
Clouet, Gilbert, 5,189,112, Cl. 525-328.200.

Elkem Technology A/S: *See—*
Aune, Jan A.; Eikeland, Inger J.; and Pedersen, Thor, 5,188,658, Cl. 75-10.310.

Elman, Larisa A.: *See—*
Barlow, Allan R.; Colananni, Paul D.; Garafola, Daniel C.; Irving, Bryan E.; Elman, Larisa A.; and Hunter, William A., 5,189,624, Cl. 364-474.110.

Elspass, Chester W.: *See—*
Manalastas, Pacifico V.; Drake, Evelyn N.; Thaler, Warren A.; Kresge, Edward N.; Elspass, Chester W.; Geiger, Albert J.; and Swarup, Vijay, 5,188,654, Cl. 71-28.000.

Eltech Systems Corporation: *See—*
Pohto, Gerald R.; and Gestaut, Llawrence J., 5,188,721, Cl. 204-280.000.

Emerson Electric Co.: *See—*
Weber, Thomas J.; Garrison, Dale L.; Forrest, Richard E.; and Strutz, William F., 5,188,710, Cl. 202-185.300.

Emich, Georg, to Maschinenfabrik Goebel GmbH. Substrate machining device having improved blade contact. 5,188,012, Cl. 83-496.000.

Emori, Kiyoshi, to Minolta Camera Kabushiki Kaisha. Paper storage device. 5,188,354, Cl. 271-217.000.

Emoto, Yoshiaki: *See—*
Nakao, Takashi; Emoto, Yoshiaki; Sekiguchi, Koichiro; Iketani, Masayuki; Sahara, Kunizo; Yoshida, Ikuo; Kohno, Akiomi; Horino, Masaya; Kamohara, Hideaki; Irie, Shouichi; Akasaki, Hiroshi; and Otsuka, Kanji, 5,188,280, Cl. 228-123.000.

Empi, Inc.: *See—*
Fabian, Liboslav, 5,189,307, Cl. 250-551.000.

Endo, Hiroshi, to Canon Kabushiki Kaisha. High variable magnification range zoom lens. 5,189,557, Cl. 359-683.000.

Endo, Masahiro: *See—*
Asada, Kiyozo; Uemori, Takashi; Endo, Masahiro; Kimizuka, Fusao; and Kato, Ikunoshin, 5,189,144, Cl. 530-324.000.

Endo, Norikazu: *See—*
Adachi, Kunihiko; Endo, Norikazu; and Miyakoshi, Hironori, 5,189,619, Cl. 364-426.040.

Endo, Shunkichi: *See—*
Matumoto, Morihisa; Suzuki, Kouji; Endo, Shunkichi; and Kurosawa, Yukio, 5,189,270, Cl. 200-144.00B.

Endo Technic Corporation: *See—*
Levy, Guy, 5,188,532, Cl. 433-216.000.

Endo, Toyofusa: *See—*
Nakao, Akira; Endo, Toyofusa; and Ikeda, Takeshi, 5,187,857, Cl. 29-564.700.

Endo, Yoshishige; Araya, Takeshi; Ono, Masahiko; Kawamura, Takao; and Kawamura, Hiromitsu, to Hitachi, Ltd. Ultrafine particles for use in a cathode ray tube or an image display face plate. 5,189,337, Cl. 313-479.000.

Endo, Yuji, to Mitsubishi Denki Kabushiki Kaisha. Recording device. 5,189,469, Cl. 355-200.000.

Endoh, Yukio: *See—*
Yamamoto, Tetsuya; Endoh, Yukio; Segawa, Akio; Matsumoto, Kenji; and Komiyama, Takeo, 5,188,467, Cl. 400-157.200.

Eneim, Arthur A.: *See—*
Skertic, Matthew M.; Hlava, Joseph L.; Eneim, Arthur A.; and Maassen, Nevil Q., 5,187,939, Cl. 62-51.200.

Engebrecht, Ronald H.: *See—*
Schaeffer, James R.; Engebrecht, Ronald H.; Winterkorn, Robert F.; Warren, Harold C., III; and Welter, Thomas R., 5,188,802, Cl. 422-56.000.

Engel, Gerhard: *See—*
Birk, Manfred; Engel, Gerhard; Eyberg, Wilhelm; Henze, Thomas; and Schmitt, Alfred, 5,188,081, Cl. 123-479.000.

Engler, Bruce P.; Sleefe, Gerard E.; and Striker, Richard P., to United States of America, Energy. Advanced motor driven clamped borehole seismic receiver. 5,189,262, Cl. 181-102.000.

ENI Div. of Astec America, Inc.: *See—*
Sellers, Jeff C., 5,189,601, Cl. 363-21.000.

Enichem S.p.A.: *See—*
Masi, Francesco; Invernizzi, Renzo; Carbonaro, Antonio; Costa, Lorenzo; and Moalli, Angelo, 5,189,000, Cl. 502-113.000.

Envirochip Technologies Ltd.: *See—*
O'Brien, Robert N.; and McEwan, Thomas D., 5,188,713, Cl. 204-106.000.

Environmental Research Institute of Michigan: *See—*
Brown, William M., 5,189,424, Cl. 342-25.000.

Epple, Patrick J., to Keptel, Inc. Apparatus for coiling and storing conductors in a circular shape. 5,189,256, Cl. 174-50.000.

Equi-Cycle Corporation: *See—*
Trammell, Earl M., Jr., 5,188,003, Cl. 74-594.300.

Erber, Gunther. Louverable rolling shutter. 5,188,161, Cl. 160-133.000.

Erhardt, Paul W.: *See—*
Chou, Yuo-Ling; Erhardt, Paul W.; Hagedorn, Alfred A., III; Lampe, John W.; Lumma, Jr., William C.; Morgan, Thomas K.; and Wiggins, Jay R., 5,189,036, Cl. 514-252.000.

Erickson, Gordon R.: *See—*
Simon, Terry L.; and Erickson, Gordon R., 5,188,162, Cl. 160-166.100.

Erickson, Ivan B.: *See—*
Benson, John D.; and Erickson, Ivan B., 5,188,022, Cl. 100-52.000.

Erickson, Phillip J.: *See—*
Crossman, Janet L.; Erickson, Phillip J.; Heacock, Gregory L.; and Mainster, Martin A., 5,189,450, Cl. 351-219.000.

Eriksson, Erik A., to Telefonaktiebolaget L M Ericsson. Method and apparatus for preventing erroneous echoelimination and equalization. 5,189,637, Cl. 364-825.000.

Erion, Mark D.: *See—*
Niwas, Shri; Secrist, John A., III; Montgomery, John A.; Erion, Mark D.; Guida, Wayne C.; and Ealick, Steve E., 5,189,039, Cl. 514-258.000.

Erlenkeuser, Gerd, to Wera Werk Hermann Werner GmbH & Co. Chuck for polygonal shank ends of tools. 5,188,378, Cl. 279-22.000.

Errani, Franca; and Missirini, Marino, to Derifan S.p.A. Gripper for plastic film automatic machine. 5,187,916, Cl. 53-389.200.

Esaki, Hiroshi; and Kamitake, Takashi, to Kabushiki Kaisha Toshiba. Method and apparatus for controlling call processing based upon load conditions. 5,189,667, Cl. 370-60.000.

ESCO Corporation: *See—*
Hahn, Frederick C.; Ulven, Andrew H.; and Huiras, James W., 5,188,680, Cl. 148-593.000.

Esparza, Joe O.: *See—*
Kopp, Frans; Esparza, Joe O.; and Long, Thomas E., 5,188,483, Cl. 405-191.000.

Espinoza, Serafin C.: *See—*
Rocha, Octavio; and Espinoza, Serafin C., 5,189,282, Cl. 219-467.000.

Esplin, Trevor T. Valve assembly. 5,188,150, Cl. 137-630.140.

Estes, Mark D., to Walker-Estes Corporation. Chordal keyboard method and apparatus. 5,189,416, Cl. 341-26.000.

Etablissements Ludger Simond, Societe Anonyme: *See—*
Simond, Ludger, 5,187,844, Cl. 24-599.500.

Ethicon, Inc.: *See—*
Fedotov, Vladimir, 5,188,636, Cl. 606-144.000.

Ethyl Corporation: *See—*
Stahly, G. Patrick, 5,189,208, Cl. 562-402.000.

Etou, Kouichi: *See—*
Anno, Masahiro; Mizuno, Hiroshi; Etou, Kouichi; and Sano, Eiichi, 5,189,476, Cl. 355-259.000.

Euclid Spiral Paper Tube Co.: *See—*
Pesho, Stephen W., 5,188,289, Cl. 239-1.000.

Eutin, Wolfgang; and Groll, Bernhard, to U.S. Philips Corp. Optical waveguide connection elements. 5,189,715, Cl. 385-72.000.

Evans, Harold A. Bag holding system for recyclables. 5,188,254, Cl. 220-404.000.

Evans, John C.: *See—*
Thead, William H.; and Evans, John C., 5,188,598, Cl. 604-110.000.

Evans, Ronald G. Combination simulated planter and cat litter enclosure. 5,188,063, Cl. 119-165.000.

Everbrite, Inc.: *See—*
Pacholok, David, 5,189,343, Cl. 315-219.000.

Eveready Battery Company, Inc.: *See—*
Blomgren, George E.; and Jones, Steven D., 5,188,914, Cl. 429-112.000.
Feddrix, Frank H., 5,188,711, Cl. 204-71.000.
Getz, Dale R.; and Nardi, John C., 5,188,869, Cl. 427-242.000.
Pedicini, Christopher S., 5,188,909, Cl. 429-7.000.

Everhart, Dennis S.: *See—*
Timmons, Terry K.; Stopper, Steve R.; Fox, Norman K.; Everhart, Dennis S.; Conn, William; and Morell, Lori A., 5,188,885, Cl. 428-198.000.

Extrude Hone Corporation: *See—*
Rhoades, Lawrence J., 5,187,899, Cl. 51-59.0SS.
Rhoades, Lawrence J.; Resnick, Ralph L.; and Rose, John R., 5,189,377, Cl. 324-662.000.

Exxon Research and Engineering Company: *See—*
Manalastas, Pacifico V.; Drake, Evelyn N.; Thaler, Warren A.; Kresge, Edward N.; Elspass, Chester W.; Geiger, Albert J.; and Swarup, Vijay, 5,188,654, Cl. 71-28.000.
Sabottke, Craig Y., 5,188,805, Cl. 422-111.000.
Witzke, Horst; and Kear, Bernard H., 5,188,776, Cl. 264-29.200.

Eyberg, Wilhelm: *See—*
Birk, Manfred; Engel, Gerhard; Eyberg, Wilhelm; Henze, Thomas; and Schmitt, Alfred, 5,188,081, Cl. 123-479.000.

Eybl, Elisabeth: *See—*
Grimm, Michael; Eybl, Elisabeth; Griesmacher, Andrea; Grabenwoger, Martin; Muller, Mathias M.; and Wolner, Ernst, 5,188,834, Cl. 424-422.000.

Ezaki, Kenichi: *See—*
Takahashi, Hisakazu; Baba, Yoko; Ezaki, Kenichi; Okamoto, Yasuhiko; Shibata, Kenichi; Kuroki, Kazuhiko; and Yasuyama, Shigeyuki, 5,188,993, Cl. 501-136.000.

Ezuka, Yasuhiro, to Nippon Seiko Kabushiki Kaisha. Resolver system. 5,189,353, Cl. 318-605.000.

Fabian, Carl E.; and Anderson, Philip M. Surgical implement detector utilizing capacitive coupling. 5,188,126, Cl. 128-899.000.

Fabian, Carl E. Film cassette having marker for identifying the exposure side of a medical radiograph. 5,189,689, Cl. 378-162.000.

Fabian, Liboslav, to Empi, Inc. Isolated current mirror with optical insulator generating feedback signal. 5,189,307, Cl. 250-551.000.

Fabricated Steel Products, Division of Indal Limited: *See—*
Greaves, Jeffrey, 5,188,341, Cl. 254-323.000.

Fadner, Thomas A., to Rockwell International Corporation. Direct-to-press imaging system for use in lithographic printing. 5,188,033, Cl. 101-467.000.

Fagard, Pierre, to Sextant Avionique. Method for stimulating the finger of an operator acting on a static keyboard and a device for implementing this method. 5,189,390, Cl. 340-407.000.

Fairey, Norman R.; and Hatton, Robert D., to Johnson Matthey Public Limited Company. Metal fabrics. 5,188,813, Cl. 423-403.000.

Falbel, Gerald, to EDO Corporation, Barnes Engineering Division. Three axis earth/star sensor. 5,189,295, Cl. 250-206.200.

VOL 1147 ISS 4 FE 23 1993 UMI

Falchi, Paolo: *See—*
Canova, Luciano; Santoro, Ettore; Bonoli, Luciano; and Falchi, Paolo, 5,189,231, Cl. 585-4.000.
Falzarano, Carmine L. Amusement game. 5,188,364, Cl. 273-126.00R.
Fantoni, Giuseppe, to Office Meccaniche G. Cerutti S.p.A. Printing apparatus with quickly changeable printing plate. 5,188,027, Cl. 101-216.000.
Fanuc, Ltd.: *See—*
Torii, Nobutoshi; Naito, Yasuo; and Kinoshita, Satoshi, 5,187,996, Cl. 74-479.000.
Torii, Nobutoshi; Nihei, Ryo; and Yasumura, Mitsuhiro, 5,189,351, Cl. 318-568.190.
Faquin, William C.: *See—*
Goldberg, Mark A.; and Faquin, William C., 5,188,828, Cl. 424-85.200.
Farbood, Mohamad I.; Morris, James A.; Downey, Arthur E.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. Tricyclic ether-substituted acetic acid, tobacco flavoring use thereof and process for preparing same. 5,188,129, Cl. 131-276.000.
Farley, Gary L., to United States of America, National Aeronautics and Space Administration. Fill yarn insertion and beatup using inflatable membrane. 5,188,153, Cl. 139-11.000.
Farnleitner, Lorenz; Stuckler, Hubert; Kaiser, Herbert; and Kloimstein, Engelbert, to Chemie Linz Gesellschaft m.b.H. Process for the preparation of storage-stable levulinic acid. 5,189,215, Cl. 562-577.000.
Farrington, David L.; Staller, Norman D.; and Van Tassell, Jon E., to Polaroid Corporation. Supplemental lens positioning system for a fixed focus lens camera. 5,189,464, Cl. 354-403.000.
Fata Automation S.p.A.: *See—*
Di Rosa, Gaetano, 5,188,036, Cl. 104-111.000.
Faul, Dieter: *See—*
Schwerzel, Thomas; Schupp, Hans; Huemke, Klaus; Faul, Dieter; and Heimann, Ulrich, 5,188,716, Cl. 204-181.700.
Faulhaber, Andreas: *See—*
Muller, Armin; Zimmer, Richard; and Faulhaber, Andreas, 5,188,440, Cl. 303-116.200.
Faxe Kalk: *See—*
Hellstrom, Pia; Dalin, Ivan; and Linderstrom-Lang, Steen, 5,188,814, Cl. 423-430.000.
Fay, Lawrence W.: *See—*
Jory, John; and Fay, Lawrence W., 5,187,877, Cl. 33-640.000.
Fay, W. Joy: *See—*
White, Susanne T.; Lyna, Pauline R.; and Fay, W. Joy, 5,188,120, Cl. 128-778.000.
Feddrix, Frank H., to Eveready Battery Company, Inc. Electrolytic process for making alloys of rare earth and other metals. 5,188,711, Cl. 204-71.000.
Fedele, Nicola J.: *See—*
Patti, Michael F.; Fedele, Nicola J.; Harney, Kevin; and Simon, Allen H., 5,189,636, Cl. 364-786.000.
Federici, Franco: *See—*
Cozzi, Ennio; Federici, Franco; and Parrini, Paolo, 5,189,135, Cl. 528-70.000.
Fedotov, Vladimir, to Ethicon, Inc. Purse string suture instrument. 5,188,636, Cl. 606-144.000.
Feenstra, Roeland; and Boatner, Lynn A., to Martin Marietta Energy Systems, Inc. Substrates suitable for deposition of superconducting thin films. 5,188,906, Cl. 428-688.000.
Fehrenbach, Waltraud: *See—*
Baur, Gunter; Scheuble, Bernhard; and Fehrenbach, Waltraud, 5,188,758, Cl. 252-299.010.
FEI Company: *See—*
Swandon, Lynwood W.; and Lindquist, John M., 5,188,705, Cl. 156-643.000.
Feigelson, Gregg B.; Curran, William V.; and Ziegler, Carl B., to American Cyanamid Company. 4-substituted azetidinones as precursors to 2-substituted-3-carboxy carbapenem antibiotics and a method of producing them. 5,189,158, Cl. 540-302.000.
Feinberg, Robert I.: *See—*
Leif, Robert C.; Ledis, Stephen L.; and Feinberg, Robert I., 5,188,935, Cl. 435-7.240.
Feldman, Mark: *See—*
Hackel, Richard P.; Paris, Robert D.; and Feldman, Mark, 5,189,485, Cl. 356-320.000.
Feldmann, Joachim; Petersen, Erwin; and Schult, Manfred, to WABCO Westinghouse Fahrzugbremsen GmbH. Method for the surveillance of a brake device in regard to overload. 5,189,391, Cl. 340-453.000.
Fellwock, Charles G.: *See—*
Tershak, Andrew T.; Fellwock, Charles G.; and Thieneman, Michael D., 5,187,941, Cl. 62-89.000.
Ferag AG: *See—*
Honegger, Werner, 5,188,349, Cl. 270-55.000.
Feret, Ronald M., to Johnson & Johnson Consumer Products, Inc. Low friction film dressing. 5,188,124, Cl. 128-889.000.
Ferguson, Arthur R.; and Rose, Edgar, to Outboard Marine Corporation. Marine propulsion device mounting arrangement. 5,188,548, Cl. 440-61.000.
Ferguson, Michael D.; and Capson, Ronnie R., to Sure Trak. Hunting arrow with signal generating means. 5,188,373, Cl. 273-421.000.
Ferguson, Michael J.; and Paterson, Stephen E. Combination blanket and tote bag. 5,187,823, Cl. 5-417.000.
Ferranti, Steven A.: *See—*
Strom, Laurie A.; Carnall, Edward, r.; Ferranti, Steven A.; and Mir, Jose M., 5,189,010, Cl. 505-1.000.
Ferrara, George. Telephone operator simulator. 5,189,692, Cl. 379-8.800.
Ferro Corporation: *See—*
Dunworth, Bruce; and McCorkle, Gary, 5,188,689, Cl. 156-89.000.
Fewkes, Edward J., Jr.: *See—*
Brown, Sterling B.; and Fewkes, Edward J., Jr., 5,189,114, Cl. 525-394.000.
Fiberspar, Inc.: *See—*
Quigley, Peter A., 5,188,872, Cl. 428-36.200.
Fickes, Michael G.: *See—*
de Graaf, Martinus J. M.; Fickes, Michael G.; Johnson, George H.; and Simmons, Howard E., III, 5,188,863, Cl. 427-512.000.
Field, Stanley B.: *See—*
Phipps, Jeffrey H.; and Field, Stanley B., 5,188,122, Cl. 128-788.000.
Fielding, Randy L., to Christy Machine Company. Apparatus for dispensing moist powder materials. 5,188,262, Cl. 222-185.000.
Figge, Dieter; and Fink, Peter, to Mannesmann Aktiengesellschaft. Roll stand for a planetary rolling mill. 5,187,965, Cl. 72-190.000.
Figueroa, Luis: *See—*
Derry, Pamela L.; Hong, Chi-Shain; Chan, Eric Y.; Figueroa, Luis; and Fu, R. Jennhwa, 5,189,679, Cl. 372-45.000.
Filipiak, Stanley M., to Motorola Inc. Method for forming a nitride layer using preheated ammonia. 5,188,979, Cl. 437-192.000.
Finduck S.r.L.: *See—*
Mannato, Pietro, 5,188,475, Cl. 403-58.000.
Fini, Massimo, to Cortek S.p.A. Device for the treatment of blood. 5,188,801, Cl. 422-48.000.
Fink, Peter: *See—*
Figge, Dieter; and Fink, Peter, 5,187,965, Cl. 72-190.000.
Finkelstein, Leo: *See—*
Dumesnil, Maurice E.; and Finkelstein, Leo, 5,188,990, Cl. 501-19.000.
Finkenzeller, Ulrich: *See—*
Bartmann, Ekkehard; Hittich, Reinhard; Plach, Herbert; and Finkenzeller, Ulrich, 5,188,759, Cl. 252-299.010.
Finnemore, Douglas K.; Miller, Theodore A.; Ostenson, Jerome E.; Schwartzkopf, Louis A.; and Sanders, Steven C., to Iowa State University Research Foundation, Inc. Strain tolerant microfilamentary superconducting wire. 5,189,260, Cl. 174-125.100.
Fiorenza, John A., II, to Briggs & Stratton. Safety interlock for a device. 5,188,069, Cl. 123-146.50B.
Firgo, Heinrich: *See—*
Hinterholzer, Peter; Zikell, Stefan; Firgo, Heinrich; Wolschner, Bernd; Eichinger, Dieter; Manner, Johann; Astegger, Stephan; and Weinzierl, Karin, 5,189,152, Cl. 536-56.000.
Firmenich S.A.: *See—*
Chapuis, Christian, 5,189,013, Cl. 512-23.000.
Fischer, Gerd: *See—*
Richter, Hans J.; Hibst, Hartmut; and Fischer, Gerd, 5,188,865, Cl. 427-128.000.
Fischer, Jens-Dieter; Rhein, Thomas; and Stickler, Manfred, to Rohm GmbH Chemische Fabrik. Polymer blends. 5,189,100, Cl. 525-74.000.
Fischer & Porter Company: *See—*
Dettmer, Hans J.; Herwig, Jorg; Hagemann, Joachim; Marchewka, Werner; and Utzfeld, Michael, 5,187,988, Cl. 73-861.530.
Fischer, Rolf: *See—*
Kummer, Rudolf; Schneider, Heinz-Walter; Bertleff, Werner; Fischer, Rolf; Vagt, Uwe; Naeumann, Fritz; Hoelderich, Wolfgang; and Schwarzmann, Matthias, 5,189,182, Cl. 549-326.000.
Fischer, Stephen A.: *See—*
Devore, David I.; and Fischer, Stephen A., 5,189,142, Cl. 528-339.300.
Fisher, Karl J.: *See—*
Kanne, David B.; Fisher, Karl J.; and Broadhurst, Michael D., 5,189,060, Cl. 514-508.000.
Fisher, Robert L.: *See—*
Depa, Louis S.; and Fisher, Robert L., 5,188,031, Cl. 101-415.100.
Fishman, Lawrence R.; and Parker, Kenneth, to Korg/Fishpark Associates. Stringed musical instrument. 5,189,235, Cl. 84-291.000.
Flo-Con Systems, Inc.: *See—*
King, Patrick D., 5,188,743, Cl. 222-590.000.
Florek, Stefan; and Becker-Ross, Helmut, to Zentralinstitut fur Optik und Spektroskopie. Echelle polychromator. 5,189,486, Cl. 356-328.000.
Florkiewicz, Robert Z.; and Sommer, Andreas, to Synergen, Inc. Method of producing high molecular weight human fibroblast growth factors. 5,188,943, Cl. 435-69.400.
Focke & Co., (GmbH & Co.): *See—*
Focke, Heinz, 5,187,920, Cl. 53-447.000.
Focke, Heinz, to Focke & Co., (GmbH & Co.). Pack for cigarettes or the like and process and apparatus for the production thereof. 5,187,920, Cl. 53-447.000.
Fohl, Artur, to TRW Repa GmbH. Control mechanism for pretensioners in a safety belt system or for a gas bag restraining system. 5,188,393, Cl. 280-806.000.
Foitzik, Roland; Doherr, Karl-Friedrich; Munscher, Dieter; and Saliaris, Christos, to Rheinmetall GmbH. Submunition unit including a rotary parachute. 5,188,315, Cl. 244-152.000.
Folkes, Don: *See—*
Bolan, Michael L.; Little, Wendell L.; Jansen, Elaine; and Folkes, Don, 5,189,598, Cl. 361-397.000.
Fontana, Fernando, to G.T.F. S.r.l. Jointed pocket-book type closing device for watch bands, bracelets, jewels and the like. 5,187,838, Cl. 24-71.00J.
Fontichiaro, Dominic; and Kabat, Daniel M., to Ford Motor Company. Adjustable valve system for an internal combustion engine. 5,188,067, Cl. 123-90.180.

Ford Motor Company: *See—*
Burnham, Robert E.; and Bonnett, Roy E., 5,188,414, Cl. 296-37.600.
Clark, William M., 5,188,390, Cl. 280-707.000.
Fontichiaro, Dominic; and Kabat, Daniel M., 5,188,067, Cl. 123-90.180.
Sankpal, Bak G.; and Carnago, John F., 5,188,005, Cl. 74-866.000.
Stiles, Ernest D.; Wlosinski, Ronald K.; and Houston, Daniel Q., 5,188,981, Cl. 428-195.000.
Forey, Daniel J. Golf ball retriever. 5,188,409, Cl. 294-19.200.
Forrest, Richard E.: *See—*
Weber, Thomas J.; Garrison, Dale L.; Forrest, Richard E.; and Strutz, William F., 5,188,710, Cl. 202-185.300.
Forster, John C.: *See—*
Barnes, Michael S.; Forster, John C.; and Keller, John H., 5,189,446, Cl. 315-111.410.
Forster, Richard F.; and Rudersdorf, Friedemann A., to Pfleiderer Verkehrstechnik GmbH. Foundation pile of reinforced concrete. 5,188,485, Cl. 405-232.000.
Fortenbacher, Thomas: *See—*
Reisser, Berni; Pflug, Hannes; Khosrawi, Mohammad-Ali; Scharf, Michael; Simon, Helmut; Taudt, Christian; Goll, Wolfgang; Wuetherich, Paul; Fortenbacher, Thomas; and Konrath, Karl, 5,188,083, Cl. 123-502.000.
Foster, Clark B.: *See—*
Haber, Terry M.; Foster, Clark B.; and Smedley, William H., 5,188,615, Cl. 604-203.000.
Foster, Howard J.; Gordon, Ian A.; and Palliser, Martin, to B.S.R.D. Limited. Pretensioning latching mechanism. 5,188,425, Cl. 297-473.000.
Foster, Walter H., III; Sparks, Lawrence D.; Earvolino, Louis P.; and DeSaw, Fred, to General Electric Company. Steam turbine rotor welding. 5,189,279, Cl. 219-137.00R.
Fournia, Peter G.; and Cipolla, Stephen D., to Xerox Corporation. Developer mechanism with sensor and notched auger. 5,189,475, Cl. 355-246.000.
Fox, James A.: *See—*
Miljanich, George P.; Bitner, Robert S.; Bowersox, Stephen S.; Fox, James A.; Valentino, Karen L.; Yamashiro, Donald H.; and Tsubokawa, Makoto, 5,189,020, Cl. 514-12.000.
Fox, Norman K.: *See—*
Timmons, Terry K.; Stopper, Steve R.; Fox, Norman K.; Everhart, Dennis S.; Conn, William; and Morell, Lori A., 5,188,885, Cl. 428-198.000.
Fractal Laboratories, Inc.: *See—*
Costa, Jonathan L.; and Diazgranados, Jesus A., 5,189,026, Cl. 514-30.000.
Frag, Ltd.: *See—*
Shaphyr, Shalom, 5,189,250, Cl. 102-439.000.
Fraley, Robert T.: *See—*
Shah, Dilip M.; Rogers, Stephen G.; Horsch, Robert B.; and Fraley, Robert T., 5,188,642, Cl. 47-58.000.
France Telecom Etablissement Autonome de Droit Public (Centre National d'Etudes des Telecommunications): *See—*
Oudar, Jean-Louis, 5,189,542, Cl. 359-128.000.
Francuz, Josip: *See—*
Kunze, Hans-Jurgen; and Francuz, Josip, 5,187,973, Cl. 73-40.50R.
Frank, Werner P.: *See—*
Hill, Francis U.; Schoenzart, Paul F.; and Frank, Werner P., 5,188,879, Cl. 428-117.000.
Franz, Patrick J.; and Straayer, David H., to Home Row, Inc. Integrated keyboard and pointing device system with automatic mode change. 5,189,403, Cl. 340-711.000.
Fratelli Pettinaroli S.p.A.: *See—*
Pettinaroli, Giuseppe, 5,188,335, Cl. 251-95.000.
Freeburne, Steven K.; and Puckett, David E., to Dow Corning Corporation. Process for preparation of cyclic organohydrosiloxanes. 5,189,193, Cl. 556-451.000.
Frehel, Daniel; Gully, Danielle; Valette, Gerard; and Bras, Jean-Pierre, to Sanofi. Heterocyclic substituted acylaminothiazoles, their preparation and pharmaceutical compositions containing them. 5,189,049, Cl. 514-371.000.
Frei, Joseph B., to International Business Machines Corporation. Greysplice algorithm for electron beam lithography post-processor. 5,189,306, Cl. 250-492.200.
Freidinger, Roger M.; Bock, Mark G.; Lam, Yiu-Kuen T.; Chang, Raymond S.; Hensens, Otto D.; Schwartz, Cheryl D.; and Zink, Deborah L., to Merck & Co., Inc. Fermentation analogs of Virginiamycin M_1 to treat panic and anxiety disorder. 5,189,050, Cl. 514-375.000.
French, Scott H., to General Motors Corporation. Parts washer. 5,187,831, Cl. 15-302.000.
Freudenberg, Carl: *See—*
Mertens, Klaus; and Sausner, Andreas, 5,188,337, Cl. 251-129.170.
Frey, Luther R.; and DeTolla, Francis L., to United States of America, Air Force. Thermal shields for rotating members in a gas flow path. 5,188,292, Cl. 239-127.300.
Freye, Gregory C.: *See—*
Blair, Dianna S.; Freye, Gregory C.; Hughes, Robert C.; Martin, Stephen J.; and Ricco, Antonio J., 5,187,980, Cl. 73-599.000.
Friedman, Herbert: *See—*
O'Brien, Patrick J.; and Friedman, Herbert, 5,188,230, Cl. 206-312.000.
Friedman, Paul A.: *See—*
Atkinson, Joseph G.; Claremon, David A.; Baldwin, John J.; Friedman, Paul A.; Remy, David C.; and Stern, Andrew M., 5,188,830, Cl. 424-94.630.
Friedman, William A.: *See—*
Bova, Frank J.; and Friedman, William A., 5,189,687, Cl. 378-65.000.
Friedrich, Jorg-Richard: *See—*
Borchardt, Horst; Barkowsky, Peter; and Friedrich, Jorg-Richard, 5,188,010, Cl. 83-175.000.
Frietsch, Klaus, to Hugo Kern & Liebers GmbH & Co. Platinen- und Federnfabrik. Method for edge rounding of springs. 5,189,278, Cl. 219-121.660.
Fritts, Mark A. Protective stabilizing sleeve for IV needle. 5,188,608, Cl. 604-179.000.
Frohbieter, Edwin H., to Whirlpool Corporation. Clear cube ice maker. 5,187,948, Cl. 62-351.000.
Froutzis, Andrew. Convertible seat-bed. 5,187,820, Cl. 5-37.100.
Fu, Chia-Min: *See—*
Maholland, Michael K.; Fu, Chia-Min; and Lowery, Richard E., 5,188,995, Cl. 502-28.000.
Fu, R. Jennhwa: *See—*
Derry, Pamela L.; Hong, Chi-Shain; Chan, Eric Y.; Figueroa, Luis; and Fu, R. Jennhwa, 5,189,679, Cl. 372-45.000.
Fuji Jukogyo Kabushiki Kaisha: *See—*
Saito, Yoichi, 5,188,087, Cl. 123-571.000.
Fuji Kiko Co., Ltd.: *See—*
Asano, Yasushi; and Togano, Norio, 5,187,998, Cl. 74-523.000.
Kobayashi, Satoshi; Asano, Yasushi; Yamazaki, Hiroshi; and Watanabe, Takumi, 5,187,999, Cl. 74-528.000.
Sukeshita, Kazumi; Tomikawa, Takayuki; and Ikegami, Yasuyuki, 5,188,001, Cl. 74-560.000.
Fuji Photo Film Co., Ltd.: *See—*
Arakawa, Kohei, 5,189,538, Cl. 359-73.000.
Fukuhori, Shinji; and Iwasaki, Naoyuki, 5,188,645, Cl. 55-20.000.
Karino, Yukio; and Matushita, Tetunori, 5,188,928, Cl. 430-513.000.
Kataoka, Hideaki; Okutsu, Kazuo; Takahashi, Koichi; and Mizuno, Kazunori, 5,188,306, Cl. 242-71.100.
Kato, Eiichi, 5,188,917, Cl. 430-96.000.
Maeda, Yutaka; Kaneko, Kiyotaka; Miyake, Izumi; Nakane, Yoshio; and Shimaya, Hiroshi, 5,189,570, Cl. 360-75.000.
Mizuno, Masato; and Oishi, Kengo, 5,189,584, Cl. 360-132.000.
Nishiura, Yosuke, 5,188,789, Cl. 264-171.000.
Okada, Hisashi; and Hiroyuki, Seki, 5,188,927, Cl. 430-393.000.
Sato, Masamichi; and Yamaguchi, Jun, 5,189,468, Cl. 355-88.000.
Suzuki, Yuji; and Yamazaki, Takeshi, 5,188,788, Cl. 264-169.000.
Yumoto, Toshiharu; and Shoji, Tsuyoshi, 5,189,439, Cl. 346-76.0PH.
Fuji Photo Optical Co., Ltd.: *See—*
Ishiguro, Minoru, 5,189,461, Cl. 354-402.000.
Fuji Xerox Co., Ltd.: *See—*
Hodumi, Masahiko; Bando, Koji; Suzuki, Takahiro; Hashiba, Shigeto; Ono, Yoshiyuki; Okano, Sadao; Ashiya, Seiji; and Murase, Masanori, 5,188,916, Cl. 430-65.000.
Ishii, Yukihiro, 5,188,929, Cl. 430-110.000.
Ishiwata, Masahiro; Tsuchiya, Noriaki; Aoyama, Teruyuki; and Fusatani, Akihiko, 5,189,529, Cl. 358-451.000.
Maei, Yoshihiro, 5,189,695, Cl. 379-199.000.
Takahashi, Kumiko; Baba, Kazuo; and Shiratsuki, Yoshiyuki, 5,189,284, Cl. 219-543.000.
Takashima, Izumi; Imoto, Yoshiya; Taga, Shinichiro; and Shimizu, Mitsuo, 5,189,528, Cl. 358-448.000.
Fujii, Akio, to Canon Kabushiki Kaisha. Image processing apparatus. 5,189,530, Cl. 358-458.000.
Fujii, Kenichi: *See—*
Matsubara, Motoki; Sasabe, Setsuo; Hongo, Takayasu; and Fujii, Kenichi, 5,188,470, Cl. 400-621.000.
Fujii, Kenjiro: *See—*
Suzuki, Kenji; Hata, Seiji; Nishida, Yoshien; Kawasaki, Kyoichi; Fujii, Kenjiro; Shimura, Yasunori; and Takeyoshi, Shigenori, 5,189,707, Cl. 382-8.000.
Fujii, Kousuke: *See—*
Nishida, Hiroshi; Ishigaki, Tatsuya; Ito, Atsushi; Kudou, Yoshinobu; Katou, Hiroshi; and Fujii, Kousuke, 5,189,577, Cl. 360-106.000.
Fujii, Tatsuhisa: *See—*
Mano, Hiroyuki; Takashi, Terumi; Futami, Toshio; and Fujii, Tatsuhisa, 5,189,407, Cl. 340-793.000.
Fujii, Yasuo: *See—*
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Fujii, Yasuo; Nakamura, Tetsuya; Fukuyama, Hirotaka; Arai, Seiji; Sato, Koichiro; Takagi, Toshio; Nishina, Shuji; Hukasawa, Jiro; Maruta, Masatoshi; and Koizumi, Seiichi, 5,188,057, Cl. 118-657.000.
Fujikawa, Toshitaka: *See—*
Inukai, Takao; Tachibana, Kanichi; Tsukada, Kazuo; Fujikawa, Toshitaka; Iida, Keiichi; and Kogure, Noboru, 5,189,273, Cl. 219-10.55E.
Fujikura, Tsueno: *See—*
Ogino, Masanori; Yamada, Takeo; Ikeda, Miyuki; Fujikura, Tsueno; and Fujiwara, Takahiko, 5,189,347, Cl. 315-383.000.
Fujimoto, Sachito: *See—*
Habaguchi, Masayuki; Nakajima, Toyohei; Hosoda, Fumio; Fujimoto, Sachito; Kitamoto, Masakazu; Moriwaki, Hideo; and Nakamura, Takefumi, 5,188,085, Cl. 123-520.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Fujimoto, Shinichiro: *See*—
Yamasaki, Yoshikiyo; and Fujimoto, Shinichiro, 5,188,138, Cl. 135-65.000.

Fujimura, Makoto: *See*—
Ohsumi, Tadashi; Fujimura, Makoto; and Hayashi, Miki, 5,189,040, Cl. 514-269.000.

Fujishima, Kazuyasu: *See*—
Murakami, Shuji; and Fujishima, Kazuyasu, 5,189,316, Cl. 307-296.100.

Fujita, Koei: *See*—
Yamazaki, Mitsuo; Ichimura, Nobuo; Miyamoto, Yasuo; Fujita, Koei; and Kawasumi, Masao, 5,188,767, Cl. 252-512.000.

Fujita, Nobuhiko: *See*—
Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, 5,189,011, Cl. 505-1.000.

Fujitsu Limited: *See*—
Arakawa, Hideki, 5,189,641, Cl. 365-228.000.
Hirano, Yoshio, 5,188,701, Cl. 156-626.000.
Inagaki, Shinya, 5,189,483, Cl. 356-73.100.
Inoue, Kazuhiko, 5,189,652, Cl. 369-36.000.
Kaku, Takashi; Kishimoto, Hiroki; and Hirao, Kyoko, 5,189,684, Cl. 375-14.000.
Kosugi, Toru; Hashimoto, Yuichi; Tanaka, Masayuki; Ohara, Katsuichi; Furukawa, Takahiro; and Aoki, Makoto, 5,189,410, Cl. 340-825.140.
Mochizuki, Akihiro; Onda, Fumiyo; Yoshihara, Toshiaki; Iwasaki, Masayuki; and Yamagishi, Yasuo, 5,189,535, Cl. 359-55.000.
Nakai, Satoshi, 5,188,058, Cl. 118-719.000.
Nakamura, Kimiaki; Yoshida, Hidefumi; and Hanaoka, Kazutaka, 5,189,540, Cl. 359-102.000.
Saito, Shinji; and Kobayashi, Akira, 5,189,379, Cl. 331-1.00A.
Shimizu, Katsuya; and Ito, Tomoaki, 5,189,312, Cl. 307-243.000.
Tomura, Masashi; Takagi, Hisamitsu; and Matsumoto, Yoshihiro, 5,189,358, Cl. 320-2.000.
Watanabe, Mitsuo, 5,189,289, Cl. 235-437.000.
Yanagi, Shigenori, 5,189,653, Cl. 369-44.320.

Fujitsu VLSI Limited: *See*—
Shimizu, Katsuya; and Ito, Tomoaki, 5,189,312, Cl. 307-243.000.

Fujiwara, Akira: *See*—
Arai, Kazuhiko; Fujiwara, Akira; Motoda, Shosaku; and Suzuki, Hiroyasu, 5,188,969, Cl. 436-548.000.

Fujiwara, Chikara; Onda, Takashi; and Fukushima, Akira, to Mitsubishi Jukogyo Kabushiki Kaisha. Brazing procedure in inert atmosphere. 5,188,281, Cl. 228-189.000.

Fujiwara, Takahiko: *See*—
Ogino, Masanori; Yamada, Takeo; Ikeda, Miyuki; Fujikura, Tsueno; and Fujiwara, Takahiko, 5,189,347, Cl. 315-383.000.

Fukabori, Mitsuhiko; Iwasaki, Hiroshi; Shinto, Hiroaki; Iwai, Yasunori; Nishiuchi, Ryuji; Gotoh, Yuzo; Hiramatsu, Satoru; Hirata, Norimasa; and Tokuda, Masakazu. Gas generator. 5,189,255, Cl. 102-531.000.

Fukai, Hideaki; Suenaga, Hiroyoshi; and Minakawa, Kuninori, to NKK Corporation. Method of manufacturing a magnetic disk substrate. 5,188,677, Cl. 148-501.000.

Fukuchi, Masakazu: *See*—
Haneda, Satoshi; Fukuchi, Masakazu; Matsuo, Shunji; and Morita, Shizuo, 5,189,472, Cl. 355-212.000.

Fukuda, Katsuhiko: *See*—
Kobayashi, Koichi; Mishima, Seiji; Kamio, Kenji; Miyata, Etsuhisa; Fukuda, Katsuhiko; and Oi, Junichi, 5,188,847, Cl. 425-135.000.

Fukuda, Takeshi; and Picozza, Augusto A., to Dart Industries Inc. Lunchbox with carrying pouch. 5,188,234, Cl. 206-541.000.

Fukuhori, Shinji; and Iwasaki, Naoyuki, to Fuji Photo Film Co., Ltd. Method and apparatus for dew point adjustment using dry dehumidifier. 5,188,645, Cl. 55-20.000.

Fukui, Kazuyuki; and Yamada, Takanobu, to Minolta Camera Kabushiki Kaisha. Image forming apparatus having density control. 5,189,441, Cl. 346-160.000.

Fukumoto, Kazuyuki: *See*—
Itatani, Ryohei; and Fukumoto, Kazuyuki, 5,188,862, Cl. 427-570.000.

Fukuoka, Daisuke; Takahashi, Katsuya; and Hashimoto, Isao, to Mitsui Petrochemical Industries, Ltd. Aromatic amine derivatives. 5,189,183, Cl. 549-345.000.

Fukushima, Akira: *See*—
Fujiwara, Chikara; Onda, Takashi; and Fukushima, Akira, 5,188,281, Cl. 228-189.000.

Fukuvi Chemical Industry Co., Ltd.: *See*—
Horii, Kiyoshi; and Sawazaki, Hiroaki, 5,188,868, Cl. 427-212.000.

Fukuyama, Hirotaka: *See*—
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Fujii, Yasuo; Nakamura, Tetsuya; Fukuyama, Hirotaka; Arai, Seiji; Sato, Koichiro; Takagi, Toshio; Nishina, Shuji; Hukasawa, Jiro; Maruta, Masatoshi; and Koizumi, Seiichi, 5,188,057, Cl. 118-657.000.

Funabashi, Motohisa: *See*—
Onari, Mikihiko; Funabashi, Motohisa; Sekozawa, Teruji; and Shioya, Makoto, 5,189,621, Cl. 364-431.040.

Funabiki, Takahiro: *See*—
Ikeda, Masaharu; Funabiki, Takahiro; and Kasuga, Kazuo, 5,189,365, Cl. 324-158.00R.

Funaki, Keisuke; and Ohki, Yuichi, to Idemitsu Kosan Co., Ltd. Photographic film of syndiotactic styrene polymer. 5,188,930, Cl. 430-536.000.

Fung, George S.: *See*—
Das, Tapan K.; Ozkan, Oguz; and Fung, George S., 5,189,697, Cl. 379-413.000.

Fung, Steven: *See*—
Menchen, Steven M.; Lee, Linda G.; Connell, Charles R.; Hershey, N. Davis; Chakerian, Vergine; Woo, Sam; and Fung, Steven, 5,188,934, Cl. 435-6.000.

Fung, Wingcho; and Yellamilli, Krishna M., to Intel Corporation Power reducing buffer/latch circuit. 5,189,319, Cl. 307-452.000.

Funk, Guido: *See*—
Gropper, Hans; Funk, Guido; Kolk, Erich; and Oeder, Dieter, 5,189,123, Cl. 526-106.000.

Fuqua, Rick L.; and Motev, Phil, to Advance Process Supply Company. Pin register system for screen printers. 5,188,026, Cl. 101-129.000.

Fuqua, Rick L.: *See*—
Iaccino, Alex; Motev, Phil; and Fuqua, Rick L., 5,188,034, Cl. 101-474.000.

Furay, David M.: *See*—
Morehouse, James H.; Dunckley, James A.; and Furay, David M., 5,189,576, Cl. 360-105.000.

Furlan, Fulvio: *See*—
Marinelli, Domenico; and Furlan, Fulvio, 5,188,931, Cl. 430-539.000.

Furlong, Donn B.: *See*—
Cook, Harold T., Jr.; Furlong, Donn B.; Svendsen, Robert A.; and Rustad, Allan P., 5,188,146, Cl. 137-580.000.

Furr, Guy H.; and Furr, Lonnie C. Basketball shooting aid device. 5,188,356, Cl. 273-1.50A.

Furr, Lonnie C.: *See*—
Furr, Guy H.; and Furr, Lonnie C., 5,188,356, Cl. 273-1.50A.

Furukawa, Katsunori: *See*—
Yamaguchi, Hideki; Nitta, Masahiro; and Furukawa, Katsunori, 5,189,274, Cl. 219-10.55M.

Furukawa, Takahiro: *See*—
Kosugi, Toru; Hashimoto, Yuichi; Tanaka, Masayuki; Ohara, Katsuichi; Furukawa, Takahiro; and Aoki, Makoto, 5,189,410, Cl. 340-825.140.

Furuno Electric Company, Limited: *See*—
Abe, Atsushi; and Sakai, Yoshio, 5,187,870, Cl. 33-324.000.

Furusaki, Shinichi; Matsuda, Masaoki; Saito, Muneki; Shiomi, Yasushi; Nakamura, Yasuo; and Tobita, Michio, to Ube Industries, Ltd. Process for catalytically producing monoalkylether of dihydric phenol compound. 5,189,225, Cl. 568-649.000.

Furuya, Hiroyuki; and Ohtaki, Keizaburo, to Honda Giken Kogyo Kabushiki Kaisha. Method and apparatus for manufacturing motorcar door. 5,188,276, Cl. 228-6.100.

Fusatani, Akihiko: *See*—
Ishiwata, Masahiro; Tsuchiya, Noriaki; Aoyama, Teruyuki; and Fusatani, Akihiko, 5,189,529, Cl. 358-451.000.

Fuseki, Takashi. Signature inspection device for folder of web printing press. 5,188,348, Cl. 270-45.000.

Futaba Denshi Kogyo Kabushiki Kaisha: *See*—
Itoh, Shigeo; Watanabe, Teruo; Nakata, Hisashi; and Takagi, Toshinori, 5,189,341, Cl. 315-169.100.

Futami, Syoji: *See*—
Horibata, Shinji; Odoi, Yuzo; and Futami, Syoji, 5,187,860, Cl. 29-603.000.

Futami, Toshio: *See*—
Mano, Hiroyuki; Takashi, Terumi; Futami, Toshio; and Fujii, Tatsuhisa, 5,189,407, Cl. 340-793.000.

Fyler, Donald C.; and Hale, Layton G., to Charles Stark Draper Laboratory, Inc., The. System for joining limp material segments with easing. 5,188,045, Cl. 112-121.260.

G. A. Braun, Inc.: *See*—
Hertig, Daniel M.; and Osinski, Grzegorz, 5,187,955, Cl. 68-58.000.

G. D. Searle and Co.: *See*—
Mueller, Richard A.; Nakao, Akira; and Partis, Richard A., 5,189,038, Cl. 514-255.000.

G.T.F. S.r.l.: *See*—
Fontana, Fernando, 5,187,838, Cl. 24-71.00J.

Gaalema, Stephen D.: *See*—
Linnenbrink, Thomas E.; Wadsworth, Mark; and Gaalema, Stephen D., 5,189,423, Cl. 341-172.000.

Gaddy, James L.: *See*—
Clausen, Edgar C.; and Gaddy, James L., 5,188,673, Cl. 127-37.000.

Gaffar, Abdul; Nabi, Nuran; Afflitto, John; and Stringer, Orum, to Colgate-Palmolive Company. Antibacterial antiplaque oral composition mouthwash or liquid dentifrice. 5,188,821, Cl. 424-52.000.

Gagnon, Ernest P.: *See*—
Pavoz, Marcel; and Gagnon, Ernest P., 5,189,268, Cl. 187-112.000.

Galardy, Richard E.; and Grobelny, Damian. Matrix metalloprotease inhibitors. 5,189,178, Cl. 548-495.000.

Galbo, James P., to Ciba-Geigy Corporation. Polysubstituted N-hydrocarbyloxy hindered amine light stabilizers. 5,189,086, Cl. 524-103.000.

Galea, Joseph M., to Sklar-Peppler Furniture Corporation. Spring system for upholstered furniture. 5,188,343, Cl. 267-103.000.

Galedrige, Alan K.: *See*—
Newcomer, Charles H.; Galedrige, Alan K.; and Saylor, Richard N., 5,188,318, Cl. 248-68.100.

Galopin, Joan: *See*—
Hakoun, Roland; Reslinger, Michel; and Galopin, Joan, 5,188,268, Cl. 225-96.500.

Galt, Kenneth M.: *See*—
Hussein, Hany M. G.; Loeb, Marvin; and Galt, Kenneth M., 5,188,634, Cl. 606-14.000.

Games, John E.: *See*—
Parsons, Douglas A.; Johnston, Mark A.; Games, John E.; and DePardo, Gerald L., 5,189,620, Cl. 364-431.020.

Gandek, Thomas P.: *See*—
Griggs, Bruce F.; Gandek, Thomas P.; Pikulin, Michael A.; and Rosen, Allen, 5,188,708, Cl. 162-40.000.

Gandre, Jerry D.: *See*—
Carson, Steven R.; and Gandre, Jerry D., 5,189,259, Cl. 174-66.000.

Ganthier, James J.; and Ulery, Kirk D., to Compaq Computer Corporation. Space-saving insulation displacement type interconnect device for electrically coupling a ribbon connector to a printed circuit board. 5,188,536, Cl. 439-83.000.

Gao, Yun, to Sepracor, Inc. Process for the stereoselective transformation of a diol to an alcohol. 5,189,200, Cl. 560-180.000.

Garafola, Daniel C.: *See*—
Barlow, Allan R.; Colananni, Paul D.; Garafola, Daniel C.; Irving, Bryan E.; Elman, Larisa A.; and Hunter, William A., 5,189,624, Cl. 364-474.110.

Garbutt, D. Lee, Jr.: *See*—
Young, Frederick C.; and Garbutt, D. Lee, Jr., 5,188,151, Cl. 137-874.000.

Garcia, Alphonse: *See*—
Louvard, Daniel; Dudouet, Brigitte; Robine, Sylvie; Arpin, Monique; Pringault, Eric; and Garcia, Alphonse, 5,188,967, Cl. 436-501.000.

Gardner, Maxwell. Fireplace enclosure. 5,188,091, Cl. 126-548.000.

Gardner, Ross, Jr., to Cabot Safety Corporation. Hearing protective earplug having alternative modes of insertion. 5,188,123, Cl. 128-864.000.

Gardner, Sandra J.: *See*—
Mayo, James D.; and Gardner, Sandra J., 5,189,156, Cl. 540-141.000.

Garelick Mfg. Co.: *See*—
Garelick, Richard J., 5,188,139, Cl. 135-67.000.

Garelick, Paul: *See*—
Merianos, John J.; Garelick, Paul; and Lieberman, Herbert A., 5,188,818, Cl. 424-49.000.

Garclick, Richard J., to Garelick Mfg. Co. Foldable support device. 5,188,139, Cl. 135-67.000.

Garland, Stuart M., to AT&T Bell Laboratories. Telemetry access arrangement. 5,189,694, Cl. 379-106.000.

Garrison, Brevard S., to Millipore Corporation. Conduit plate for fluid delivery system. 5,188,148, Cl. 137-606.000.

Garrison, Dale L.: *See*—
Weber, Thomas J.; Garrison, Dale L.; Forrest, Richard E.; and Strutz, William F., 5,188,710, Cl. 202-185.300.

Garuts, Valdis E., to Tektronix, Inc. Variable transition time generator. 5,189,313, Cl. 307-263.000.

Gas Research Institute: *See*—
Litka, Anthony F.; and Cohen, Sidney M., 5,188,668, Cl. 106-739.000.

Gasch, Christian, to Viscodrive GmbH. Drive assembly for a four wheel drive vehicle. 5,188,194, Cl. 180-248.000.

Gaskill, Garold B.; and Park, Daniel J., to Seiko Corp.; and Seiko Epson Corp. Scanning receiver with manual override of frequency scanning routine. 5,189,413, Cl. 340-825.440.

Gaskill, Garold B.: *See*—
Collar, James K.; Gaskill, Garold B.; Park, Daniel J.; Shanks, Carl D.; and Wells, Rick T., 5,189,411, Cl. 340-825.140.

Gass, Ernst: *See*—
Hinz, Wolfgang; and Gass, Ernst, 5,188,856, Cl. 426-465.000.

Gaterman, William C., III; and Pohle, William A., to Crane Cams. Roller tappet. 5,188,068, Cl. 123-90.350.

Gates, E. Robert: *See*—
Jones, Travis R.; and Gates, E. Robert, 5,188,655, Cl. 504-136.000.

Gatter, Klaus: *See*—
Rubel, Erich; Haegele, Karl-Heinz; Panther, Michael; and Gatter, Klaus, 5,189,615, Cl. 364-424.050.

Gautier, Jean-Pierre, to Bendix Europe Services Techniques. Brake system with dual vacuum boosters having interconnected chambers and dual master cylinders having interconnected hydraulic circuits. 5,188,431, Cl. 303-4.000.

Gay, Charles C.: *See*—
Gay, Richard J.; Gay, Charles C.; Matthews, Veronique M.; Gay, Francoise E. M.; and Chase, Valerie, 5,188,179, Cl. 166-310.000.

Gay, Francoise E. M.: *See*—
Gay, Richard J.; Gay, Charles C.; Matthews, Veronique M.; Gay, Francoise E. M.; and Chase, Valerie, 5,188,179, Cl. 166-310.000.

Gay, Richard J.; Gay, Charles C.; Matthews, Veronique M.; Gay, Francoise E. M.; and Chase, Valerie. Dynamic polysulfide corrosion inhibitor method and system for oil field piping. 5,188,179, Cl. 166-310.000.

Gayer, Herbert: *See*—
Klausener, Alexander; Gayer, Herbert; Kramer, Wolfgang; Berg, Dieter; Brandes, Wilhelm; Hanssler, Gerd; and Wachendorff-Neumann, Ulrike, 5,189,063, Cl. 514-530.000.

GDS Technology, Inc.: *See*—
deCastro, Aurora F.; Gupta, Surendra K.; and Agarwal, Arun K., 5,188,941, Cl. 435-19.000.
DeCastro, Aurora F.; Gupta, Surendra K.; and Shantz, Steven M., 5,188,955, Cl. 435-188.000.

Gebauer, Gerhard; and Gruber, Johann, to J. Wagner GmbH. Electrostatic compressed air paint spray gun. 5,188,290, Cl. 239-3.000.

GEC Alsthom SA: *See*—
Joveux-Bouillon, Bernard; and Maineult, Jean, 5,188,538, Cl. 439-271.000.

Geco A.S.: *See*—
Gjestrum, Einar; Hjelle, Oddbjorn; Hogsnes, Oyvind; Valle, Gunnar F.; and Sorbotten, Oyvind, 5,188,053, Cl. 114-242.000.

Gedib Ingenieurburo Und Innovations-Beratung GmbH: *See*—
Bald, Brigitte, 5,187,992, Cl. 74-89.150.

Gehl Company: *See*—
Dohnalik, Martin F., 5,188,248, Cl. 212-189.000.

Gehring, Johann: *See*—
Birkle, Siegfried; Gehring, Johann; and Nippe, Waldemar, 5,188,718, Cl. 204-201.000.

Geiger, Albert J.: *See*—
Manalastas, Pacifico V.; Drake, Evelyn N.; Thaler, Warren A.; Kresge, Edward N.; Elspass, Chester W.; Geiger, Albert J.; and Swarup, Vijay, 5,188,654, Cl. 71-28.000.

Geittner, Peter E. E.; Hagemann, Hans-Jurgen; and Warnier, Jacques P. M., to U.S. Philips Corp. Method of manufacturing optical fibres. 5,188,648, Cl. 65-3.120.

Gelles, Richard; and DuBois, Doun A., to Shell Oil Company. Asphalt acrylic monomer-containing block polymer composition. 5,189,083, Cl. 524-68.000.

Gen-Tech, Inc.: *See*—
Parkow, James C.; and Seitz, Robert F., 5,188,264, Cl. 222-554.000.

Gene E. Myers Enterprises, Inc.: *See*—
Myers, Gene E., 5,188,619, Cl. 604-280.000.

Gene Tec Corporation: *See*—
Stapleton, Marilyn J., 5,188,963, Cl. 435-299.000.

General Dynamics Corporation: *See*—
Weltman, Henry J.; and Phillips, Tony L., 5,188,754, Cl. 252-162.000.

General Dynamics Corporation Convair Division: *See*—
Roden, William A., 5,189,514, Cl. 358-125.000.

General Electric CGR S.A.: *See*—
Callier, Bernard; and Maynard, Jean-Pierre, 5,189,602, Cl. 363-28.000.

General Electric Company: *See*—
Ayala, Raul E., 5,188,811, Cl. 423-230.000.
Barlow, Allan R.; Colananni, Paul D.; Garafola, Daniel C.; Irving, Bryan E.; Elman, Larisa A.; and Hunter, William A., 5,189,624, Cl. 364-474.110.
Bopp, Richard C., 5,189,076, Cl. 521-180.000.
Brown, Sterling B.; and Fewkes, Edward J., Jr., 5,189,114, Cl. 525-394.000.
Creevy, Clifford S.; and Eckert, Terry T., 5,188,506, Cl. 415-115.000.
Foster, Walter H., III; Sparks, Lawrence D.; Earvolino, Louis P.; and DeSaw, Fred, 5,189,279, Cl. 219-137.00R.
Hodson, James M.; and Joseph, Dennis M., 5,189,452, Cl. 353-94.000.
Howson, Paul E.; and Mackenzie, Patricia D., 5,189,137, Cl. 528-171.000.
Iacovangelo, Dominic C., 5,188,643, Cl. 51-293.000.
Jarczynski, Emil D., 5,189,325, Cl. 310-54.000.
Kast, Kevin H.; and Myers, William J., Jr., 5,187,936, Cl. 60-734.000.
Lewis, Larry N., 5,189,131, Cl. 528-15.000.
O'Hara, Kevin S., 5,188,457, Cl. 374-104.000.
Parimore, Thomas N., Jr.; and Koss, Christopher R., 5,188,398, Cl. 285-39.000.
Pope, Adam N.; and Bobo, Melvin, 5,188,375, Cl. 277-58.000.
Schilling, Jan C.; Tucker, James W.; and Koch, Carl C., 5,188,505, Cl. 415-9.000.
Shanks, Bruce E., 5,188,451, Cl. 362-223.000.
Singh, Jogender; Jain, Sulekh C.; Lloyd, Thomas W.; Bates, Leroy A.; Lacroix, Denis; Cooper, Ernest B., Jr.; Mannava, Seetharamaiah; and Couture, Serge B., 5,187,967, Cl. 72-340.000.
Sweeney, Derek J., 5,188,507, Cl. 415-173.100.
Taylor, Dale F., 5,188,676, Cl. 148-217.000.
Taylor, Jack R., 5,187,931, Cl. 60-39.070.
Yeager, Gary W.; and Crivello, James V., 5,189,191, Cl. 556-443.000.

General Mills, Inc.: *See*—
McDonald, Duane L.; and Morrissette, Barbara E., 5,189,272, Cl. 219-10.55E.

General Motors Corporation: *See*—
French, Scott H., 5,187,831, Cl. 15-302.000.
Gorman, Michael J., 5,188,374, Cl. 277-35.000.
Maguire, Joel M.; and Hall, Arlis, 5,188,576, Cl. 475-348.000.

General Products Company, Inc.: *See*—
McKann, H. Smith, 5,187,898, Cl. 49-505.000.

Genheimer, Stephen R.: *See*—
Murphy, Robert D.; and Genheimer, Stephen R., 5,189,571, Cl. 360-75.000.

Genossenschaft Vebo, Solothurnische Eingliederungsstatte fur Behinderte: *See*—
Muller, Walter; Nutzi, Silvan; and Born, Alessandro, 5,188,622, Cl. 604-319.000.

Gentex Corporation: *See*—
Oleson, Richard A., 5,189,447, Cl. 351-121.000.

Geoffrey, Michael M.; and Laitar, Robert A., to Acme Resin Corp. Low free formaldehyde phenolic polyol formulation. 5,189,079, Cl. 523-142.000.

Georgiou, Christos J.; Larsen, Thor A.; and Schenfeld, Eugen, to International Business Machines Corporation. Variable chip-clocking mechanism. 5,189,314, Cl. 307-271.000.

Gerber, Margaret K.; and St. Clair, Terry L., to United States of America, National Aeronautics and Space Administration. Crosslinked

VOL 1147 ISS 4 FE 23 1993 UMI

polyimides prepared from N-(3-ethynylphenyl)maleimide. 5,189,127, Cl. 526-262.000.

Gerber, Margaret K.; and St. Clair, Terry L., to United States of America, National Aeronautics and Space Administration. High temperature polymer from maleimide-acetylene terminated monomers. 5,189,129, Cl. 526-262.000.

Gerber, Matthias: *See*—
Hamprecht, Gerhard; Mayer, Horst; Westphalen, Karl-Otto; Walter, Helmut; Gerber, Matthias; Grossmann, Klaus; and Rademacher, Wilhelm, 5,188,657, Cl. 504-212.000.

Gerber, Milton, to Advanced Fiber Technology, Inc. Method and apparatus for fiberizing. 5,188,298, Cl. 241-5.000.

Gerdau, Thomas: *See*—
Vaahs, Tilo; Gerdau, Thomas; Kleiner, Hans-Jerg; Peuckert, Marcellus; and Bruck, Martin, 5,189,132, Cl. 528-33.000.

Gergen, William P.: *See*—
Brownscombe, Thomas F.; Gergen, William P.; Bass, Ronald M.; Mores, Maryanne; and Wong, Pui K., 5,189,070, Cl. 521-64.000.

Gerhard, Helmut, to Eisenwerk Gerhard GmbH. Freight container. 5,188,252, Cl. 220-1.500.

Gerin, Umberto: *See*—
Meroni, Roberto; Gerin, Umberto; Lancerotto, Fabio; and Colussi, Vittorio, 5,187,929, Cl. 57-80.000.

Gerrans, Wilbur, to Pakon, Inc. Slide mounter with bridging film advance. 5,187,918, Cl. 53-435.000.

Gerrans, Wilbur, to Pakon, Inc. Slide mounter with positive stop film placement. 5,187,923, Cl. 53-520.000.

Gestaut, Llawrence J.: *See*—
Pohto, Gerald R.; and Gestaut, Llawrence J., 5,188,721, Cl. 204-280.000.

Getz, Dale R.; and Nardi, John C., to Eveready Battery Company, Inc. Process for burnishing anode current collectors. 5,188,869, Cl. 427-242.000.

Ghekiere, Jean-Pierre A.: *See*—
Dewanckele, Jean-Marie O.; Tavernier, Serge M.; and Ghekiere, Jean-Pierre A., 5,188,919, Cl. 430-106.000.

Giallourakis, Michael A., to Sponge Fishing Co., Inc. Washing, drying and scrubbing pad. 5,187,830, Cl. 15-244.300.

Giannuzzi, Louis N. Self-tapping screw-type masonry anchor. 5,188,496, Cl. 411-386.000.

Giat Industries: *See*—
Berville, Marc; and Queille, Laurent, 5,189,254, Cl. 102-521.000.

Giberson, Melbourne F. Rocker connection. 5,188,170, Cl. 165-67.000.

Gibney, Theresa A.: *See*—
Adamic, Raymond J.; and Gibney, Theresa A., 5,188,664, Cl. 106-22.00R.

Gierut, Frederick J.: *See*—
Dixon, Daniel A.; Gierut, Frederick J.; Lawniczak, Joe; Patel, Arvind; and Primorac, Michael, 5,188,547, Cl. 439-886.000.

Gilkes, Robert R. Apparatus for laying lines in an ice rink. 5,188,700, Cl. 156-575.000.

Gillier, William C.: *See*—
Cook, John E.; Busato, Murray F.; and Gillier, William C., 5,188,141, Cl. 137-112.000.

Gilton, Terry: *See*—
Yu, Chris C.; Sandhu, Gurtej S.; and Gilton, Terry, 5,188,723, Cl. 205-125.000.

Giorgianni, Edward J.: *See*—
Parulski, Kenneth A.; Bellis, Donald C., Jr.; Hibbard, Robert H.; Giorgianni, Edward J.; and McInerney, Elizabeth, 5,189,511, Cl. 358-80.000.

Gipe, Thomas A.; and Yoder, Steve R., to Pear Tree Mfg., A Corporation of Pennsylvania. Golf training-exercise apparatus. 5,188,367, Cl. 273-191.00R.

Girgis, Ramsis S.; and Martincic, Paul W., to Electric Power Research Institute, Inc. Method of joining transformer coil conductors. 5,188,277, Cl. 228-111.000.

Girrbach Dental GmbH: *See*—
Luth, Stefan, 5,188,529, Cl. 433-68.000.

Gjestrum, Einar; Hjelle, Oddbjorn; Hogsnes, Oyvind; Valle, Gunnar F.; and Sorbotten, Oyvind, to Geco A.S. Arrangement in a buoyancy towed body means. 5,188,053, Cl. 114-242.000.

Glamkowski, Edward J.; and Kurys, Barbara E., to Hoechst Roussel Pharmaceuticals Inc. Benzo(b)pyrrolobenzodiazepines. 5,189,161, Cl. 540-555.000.

Glashaus Incorporated: *See*—
Olson, Ronald H., 5,187,909, Cl. 52-308.000.

Glaspie, Don: *See*—
Chen, Gilbert K.; McKelvy, Robert; Bonilla, Jorge A.; Glaspie, Don; and De Bruyn, George, 5,188,773, Cl. 261-112.200.

Glass, Philip E. Lawn game mallet. 5,188,358, Cl. 273-67.00R.

Glaxo Group Limited: *See*—
Robinson, John M., 5,189,229, Cl. 570-176.000.
Wilson, Alan A.; Brand, Peter J.; Judd, David R.; and Bonney, Stanley G., 5,187,921, Cl. 53-453.000.

Gleason, Robert E., Jr.: *See*—
Cham, Kit M.; and Gleason, Robert E., Jr., 5,189,310, Cl. 257-392.000.

Glicksman, Howard D.: *See*—
Tosun, Guray; and Glicksman, Howard D., 5,188,660, Cl. 75-370.000.

Gliga, Alexandru S.: *See*—
Carlomagno, William D.; Cummings, Dennis E.; and Gliga, Alexandru S., 5,189,507, Cl. 257-777.000.

Glitsch, Inc.: *See*—
Chen, Gilbert K.; McKelvy, Robert; Bonilla, Jorge A.; Glaspie, Don; and De Bruyn, George, 5,188,773, Cl. 261-112.200.

Globe Products Inc.: *See*—
Corey, Nathan A.; Clark, Carl L.; and Dolgas, Patrick A., 5,187,856, Cl. 29-564.600.

Gnahn, Gunter, to Siemens Aktiengesellschaft. Interlock for electromagnetic switching devices. 5,189,385, Cl. 335-132.000.

Go-Video, Inc.: *See*—
Dunlap, R. Terren, 5,189,691, Cl. 379-70.000.

Godfrey, Martin R.: *See*—
Chen, Tzu-Yu; and Godfrey, Martin R., 5,188,715, Cl. 204-153.110.

Godleski, Stephen A., to Eastman Kodak Company. Process for the preparation of 1,4-disubstituted 2-butenes. 5,189,199, Cl. 560-93.000.

Godse, Rajendra V.: *See*—
Santhanam, Anakkavur T.; and Godse, Rajendra V., 5,188,489, Cl. 407-119.000.

Gold, Danny. Glove with attached heater pack. 5,187,814, Cl. 2-160.000.

Goldberg, Mark A.; and Faquin, William C., to Brigham and Women's Hospital. Interleukin-6 to stimulate erythropoietin production. 5,188,828, Cl. 424-85.200.

Golden, Michael J., to Blatt, John A. Vacuum cup control apparatus. 5,188,411, Cl. 294-64.200.

Goldenberg, Tsvi, to Advanced Interventional Systems, Inc. Guidance and delivery system for high-energy pulsed laser light. 5,188,632, Cl. 606-7.000.

Goldman, Harold; Murphy, Sharon; and Morehead, Marilyn, to Wayne State University. Method for reduction of central nervous system (CNS) edema resulting from head and spinal cord trauma. 5,189,018, Cl. 514-10.000.

Goldner, Ronald B.; Arntz, Floyd O.; Morel, Bertrand; Haas, Terry E.; and Wong, Kwok-Keung, to Tufts University. Ion-beam based deposition of coatings for electrochromic devices. 5,189,550, Cl. 359-273.000.

Goldstar Co., Ltd.: *See*—
Yang, Keun Y., 5,189,482, Cl. 356-73.000.

Goll, Wolfgang: *See*—
Reisser, Berni; Pflug, Hannes; Khosrawi, Mohammad-Ali; Scharf, Michael; Simon, Helmut; Taudt, Christian; Goll, Wolfgang; Wuetherich, Paul; Fortenbacher, Thomas; and Konrath, Karl, 5,188,083, Cl. 123-502.000.

Gomi, Hideki, to NEC Corporation. Semiconductor device having ventilative insulating films. 5,189,502, Cl. 257-759.000.

Gomi, Katsushige: *See*—
Nakano, Hirofumi; Kawada, Shozo; Uosaki, Yoichi; Saito, Yutaka; Gomi, Katsushige; and Iwazaki, Toshiaki, 5,189,187, Cl. 549-548.000.

Gongwer, Geoffrey S., to Atmel Corporation. Programmable logic device with multiple shared logic arrays. 5,189,320, Cl. 307-465.000.

Gooch, Beverley R., to Ampex Corporation. Magnetic control of a transducer signal transfer zone to effect tracking of a path along a record medium. 5,189,572, Cl. 360-77.120.

Gooch, Beverley R.: *See*—
Pisharody, Raghavan; and Gooch, Beverley R., 5,189,580, Cl. 360-126.000.

Good, Kenneth W., Jr. Wrap around labeling machine. 5,188,696, Cl. 156-361.000.

Goodall, James R.: *See*—
Burke, Richard A.; Goodall, James R.; Melton, Michael D.; Osborne, Roy S.; and Patterson, Carl D., 5,188,456, Cl. 374-50.000.

Goodwin, Frederick K.: *See*—
Bridge, Thomas P.; and Goodwin, Frederick K., 5,189,022, Cl. 514-16.000.

Goodwin, Perry A.: *See*—
Bilko, John P.; Arnell, Stephen R.; Boyd, Andrew J.; and Goodwin, Perry A., 5,187,962, Cl. 72-62.000.

Goodyear Tire & Rubber Company, The: *See*—
Bonko, Mark L., 5,188,683, Cl. 152-209.00B.
Burlett, Donald J.; and Bauer, Richard G., 5,189,101, Cl. 525-90.000.
Cherveny, Mark V.; Trares, Keith C.; Waibel, Terry J.; Hopkins, William M.; Sinopoli, Italo M.; and Young, Ray A., 5,188,685, Cl. 152-451.000.

Gordon, Ian A.: *See*—
Foster, Howard J.; Gordon, Ian A.; and Palliser, Martin, 5,188,425, Cl. 297-473.000.

Gordy, John. Process for chemically hardening wood. 5,188,707, Cl. 162-11.000.

Gorman, Michael J., to General Motors Corporation. One-piece seal for rotating annular interface. 5,188,374, Cl. 277-35.000.

Gosselink, Eugene P.: *See*—
Connor, Daniel S.; Scheibel, Jeffrey J.; Murch, Bruce P.; Mao, Mark H.; Gosselink, Eugene P.; and Severson, Roland G., Jr., 5,188,769, Cl. 252-548.000.

Gossler, E. Thomas; and Paul, Michael A., to Babcock & Wilcox Company, The. Mass-moment weighing beam. 5,187,976, Cl. 73-65.010.

Goto, Hirofumi: *See*—
Yano, Haruto; Hirasa, Yoshiaki; Tokunaga, Toshimichi; Hayami, Katsuro; Naito, Norihiro; Akamatsu, Teruki; Goto, Hirofumi; and Yokouchi, Kazuhiro, 5,189,430, Cl. 342-457.000.

Goto, Jun: *See*—
Sato, Masakazu; Kawashima, Yutaka; Goto, Jun; Chiba, Yoshiyuki; Satake, Mikio; Iwata, Chuzo; and Imanishi, Takeshi, 5,189,211, Cl. 562-430.000.

Goto, Katsunori: *See*—
Taguchi, Masahiro; Hashikawa, Atsushi; and Goto, Katsunori, 5,189,533, Cl. 359-18.000.

Goto, Shigeki; and Shimei, Masato, to Aisin Seiki Kabushiki Kaisha. Shift control apparatus for automatic transmissions. 5,188,006, Cl. 74-867.000.

Gotoh, Yuzo: *See*—
Fukabori, Mitsuhiko; Iwasaki, Hiroshi; Shinto, Hiroaki; Iwai, Yasunori; Nishiuchi, Ryuji; Gotoh, Yuzo; Hiramatsu, Satoru; Hirata, Norimasa; and Tokuda, Masakazu, 5,189,255, Cl. 102-531.000.

Goulet, Mark; Beattie, Thomas R.; and Wyvratt, Matthew J., to Merck & Co. Inc. Fluoromacrolides having immunosuppressive activity. 5,189,042, Cl. 514-291.000.

Gourdon, Eric, to Powerbloc IBC Canada Inc. Speed variator pulley provided with a reduced friction, removable rings. 5,188,568, Cl. 474-13.000.

Goyo Paper Working Co., Ltd.: *See*—
Kawahara, Hiroshi; Okunaka, Noriaki; Kobayashi, Mitsuru; Tokuno, Isao; and Ohara, Shuzo, 5,188,395, Cl. 283-113.000.

Grabenwoger, Martin: *See*—
Grimm, Michael; Eybl, Elisabeth; Griesmacher, Andrea; Grabenwoger, Martin; Muller, Mathias M.; and Wolner, Ernst, 5,188,834, Cl. 424-422.000.

Grabley, Susanne: *See*—
Zeeck, Axel; Philipps, Siegrid; Grabley, Susanne; Granzer, Ernold; Hutter, Klaus; Thiericke, Ralf; and Wink, Joachim, 5,189,150, Cl. 536-6.500.

Graf, Lawrence J. Catamaran boat. 5,188,049, Cl. 114-61.000.

Graf vom Hagen, Siegbert: *See*—
Stamm, Klaus; and Graf vom Hagen, Siegbert, 5,188,088, Cl. 123-620.000.

Graham Packaging Corporation: *See*—
Cargile, David W., 5,188,249, Cl. 215-31.000.

Gramcko, Kirk M.: *See*—
Angell, Richard B.; and Gramcko, Kirk M., 5,189,516, Cl. 358-181.000.

Grammer AG: *See*—
Meiller, Hermann; and Mertel, Walter, 5,188,423, Cl. 297-412.000.

Graner, Juergen; and Kubach, Hans, to Robert Bosch GmbH. Magnet system for a valve. 5,188,336, Cl. 251-129.160.

Grant, Michael D.; and Treymayne, Michael A., to Consumers' Gas Company, Ltd., The. Natural gas cylinder fitting and solenoid valve. 5,188,017, Cl. 91-459.000.

Grant, Philip M., to APV Gaulin, Inc. Citrus juice concentrate method. 5,188,857, Cl. 426-519.000.

Granzer, Ernold: *See*—
Zeeck, Axel; Philipps, Siegrid; Grabley, Susanne; Granzer, Ernold; Hutter, Klaus; Thiericke, Ralf; and Wink, Joachim, 5,189,150, Cl. 536-6.500.

Grass Valley Group, Inc., The: *See*—
Angell, Richard B.; and Gramcko, Kirk M., 5,189,516, Cl. 358-181.000.

Graves, Daniel F., to Bridgestone Corporation. Solution-applied laminate release for TAM bladders. 5,188,904, Cl. 428-447.000.

Gray, Martha L.: *See*—
Roberge, James K.; and Gray, Martha L., 5,189,376, Cl. 324-662.000.

Greaves, Jeffrey, to Fabricated Steel Products, Division of Indal Limited. Safety latch for a tire carrier. 5,188,341, Cl. 254-323.000.

Green, Colleen A.: *See*—
Green, William J., 5,188,340, Cl. 254-132.000.

Green, Ralph E., Jr.; Jones, Ronald H.; Peters, Leland J.; and Withol, Peter J., to Implant Innovations, Inc. Dental implant system. 5,188,800, Cl. 422-23.000.

Green, Stephen L.: *See*—
Stern, Joseph A.; Green, Stephen L.; King, Charles B.; and May, Sharon B., 5,187,815, Cl. 2-161.00R.

Green, William J., to Green, Colleen A. Weed extraction device. 5,188,340, Cl. 254-132.000.

Greenberg, Bernard, to Diversified Recycling Technology. Method and apparatus for recovering copper and regenerating ammoniacal etchant from spent ammoniacal etchant. 5,188,703, Cl. 156-642.000.

Greene, Leonard M. System and method for combining language translation with original audio on video or film sound track. 5,189,562, Cl. 360-13.000.

Greenspan, Jay S.: *See*—
Medeiros, Manuel, III; and Greenspan, Jay S., 5,188,985, Cl. 437-218.000.

Greenway Services, Inc., The: *See*—
Ripley, Thomas L., Sr.; and Indyk, Henry, 5,187,894, Cl. 47-86.000.

Gregory, Peter; and Patel, Prakash, to Imperial Chemical Industries, PLC. Substituted phthalocyanines. 5,189,153, Cl. 540-122.000.

Gregory, Peter; Kenyon, Ronald W.; and Millard, Christine, to Imperial Chemical Industries PLC. Anionic phthalocyanine compounds. 5,189,154, Cl. 540-126.000.

Gregory, Rita A.: *See*—
Burns, Thomas J.; Page, Edward C.; Gregory, Rita A.; and Pryor, George M., 5,189,606, Cl. 364-401.000.

Greiner, James H.: *See*—
deSouza, Joel; P.; Greiner, James H.; and Sadana, Devendra K., 5,188,978, Cl. 437-160.000.

Griesmacher, Andrea: *See*—
Grimm, Michael; Eybl, Elisabeth; Griesmacher, Andrea; Grabenwoger, Martin; Muller, Mathias M.; and Wolner, Ernst, 5,188,834, Cl. 424-422.000.

Griffith, John D.: *See*—
Stroud, Edward C.; and Griffith, John D., 5,187,951, Cl. 66-14.000.

Griffith Laboratories Worldwide, Inc.: *See*—
Bernacchi, Donald B.; Immel, Donna L.; and Yuknis, Carol A., 5,188,855, Cl. 426-273.000.

Griffiths, Gareth; Warm, Aleksander; Previdoli, Felix; and Ryan, Gary, to Lonza, Ltd. Process for the production of 1-(N-Methanesulfonyl-N-methylaminosulfonyl)-3-(2-pyrimidyl)urea derivatives. 5,189,217, Cl. 564-040.000.

Grigel, George G.: *See*—
Hilty, Calvin A.; Raid, Larry J.; and Grigel, George G., 5,188,325, Cl. 248-224.400.

Griggs, Bruce F.; Gandek, Thomas P.; Pikulin, Michael A.; and Rosen, Allen, to Union Camp Patent Holding, Inc. Process for high consistency oxygen delignification followed by ozone relignification. 5,188,708, Cl. 162-40.000.

Griggs, James L., to Hydro Dynamics, Inc. Apparatus for heating fluids. 5,188,090, Cl. 126-247.000.

Grimes, Jane. Toilet pots. 5,187,819, Cl. 4-483.000.

Grimm, Michael; Eybl, Elisabeth; Griesmacher, Andrea; Grabenwoger, Martin; Muller, Mathias M.; and Wolner, Ernst, to Sorin Biomedica S.p.A. Method of preparing a biological implantation material. 5,188,834, Cl. 424-422.000.

Grimm, Peter: *See*—
Christe, Marcel; Koch, Walter; and Grimm, Peter, 5,188,154, Cl. 139-28.000.

Grindstaff, Teddy H., to Du Pont de Nemours, E. I., and Company. Spun textile yarns. 5,188,892, Cl. 428-59.000.

Grinell Asia Pacific Pty. Limited: *See*—
Walter, Ronald; and Chadwick, Brian A., 5,189,394, Cl. 340-525.000.

Grinnell Corporation: *See*—
Mears, James W., 5,188,185, Cl. 169-37.000.

Grob Werke GmbH & Co. KG: *See*—
Riezler, Wendelin, 5,188,215, Cl. 198-781.000.

Grobelny, Damian: *See*—
Galardy, Richard E.; and Grobelny, Damian, 5,189,178, Cl. 548-495.000.

Groll, Bernhard: *See*—
Eutin, Wolfgang; and Groll, Bernhard, 5,189,715, Cl. 385-72.000.

Gropper, Hans; Funk, Guido; Kolk, Erich; and Oeder, Dieter, to BASF Aktiengesellschaft. Catalyst for the preparation of high molecular weight homopolymers and copolymers of ethene, and the manufacture thereof. 5,189,123, Cl. 526-106.000.

Gropper, Hans: *See*—
Hasenbein, Norbert; Bauer, Peter; Schlemmer, Lothar; Hauss, Alfred F.; Gropper, Hans; and Ohlinger, Rainer, 5,189,120, Cl. 525-285.000.

Gross, Kenneth P.: *See*—
Jann, Peter C.; Gross, Kenneth P.; and Neukermans, Armand P., 5,189,481, Cl. 356-73.000.

Grossie, Bruce, Jr.: *See*—
Ajani, Jaffer; Grossie, Bruce, Jr.; Nishioka, Kenji; and Ota, David M., 5,189,025, Cl. 514-23.000.

Grossmann, Klaus: *See*—
Hamprecht, Gerhard; Mayer, Horst; Westphalen, Karl-Otto; Walter, Helmut; Gerber, Matthias; Grossmann, Klaus; and Rademacher, Wilhelm, 5,188,657, Cl. 504-212.000.

Grubba, Robert A.: *See*—
Richardson, David L.; Grubba, Robert A.; McLaughlin, Timothy P.; and Parran, David B., 5,188,173, Cl. 166-77.000.

Gruber, Johann: *See*—
Gebauer, Gerhard; and Gruber, Johann, 5,188,290, Cl. 239-3.000.

Grundmann, Ulrich; Abel, Karl-Josef; and Amann, Eugen, to Behringwerke Aktiengesellschaft. Protein PP15 prepared by genetic manipulation. 5,188,933, Cl. 435-6.000.

Gstettner, Manfred; and Wimmer, Alois, to Bohler Ybbstalwerke GmbH. Exchangeable element subject to wear. 5,188,158, Cl. 144-162.00R.

GTE Products Corporation: *See*—
Avellino, Frank J.; Case, Richard A.; and Swanson, David T., 5,189,275, Cl. 219-56.220.
Chenot, Charles F.; and Minnier, Henry B., 5,188,763, Cl. 252-301.500.
Snellgrove, Richard A.; and Wyner, Elliot F., 5,188,554, Cl. 445-26.000.

Gu, Huan-Lung, to Industrial Technology Research Institute. Beverage container with concealed straw. 5,188,283, Cl. 229-103.100.

Guard, Glenn B., to Westinghouse Electric Corp. Method and apparatus for ambiguity resolution in rotating interferometer. 5,189,429, Cl. 342-424.000.

Guardian Industries Corp.: *See*—
Linge, Philip J.; and Nalepka, Raymond, 5,188,887, Cl. 428-216.000.

Guardiola, Agustin D., to Talleres Daumar S.A. Process for filling containers with products in a predetermined distribution. 5,187,919, Cl. 53-443.000.

Guckel, Henry; and Sniegowski, Jeffry, to Wisconsin Alumni Research Foundation. Polysilicon resonating beam transducers and method of producing the same. 5,188,983, Cl. 437-209.000.

Guenard, Daniel: *See*—
Thal, Claude; Boye, Olivier; Guenard, Daniel; and Potier, Pierre, 5,189,055, Cl. 514-422.000.

Guerreri, Stephen J., to Electronic Warfare Associates, Inc.; and Systems Technology Associates. Method and apparatus for language and speaker recognition. 5,189,727, Cl. 395-2.000.

VOL
1147
ISS
4
FE
23
1993
UMI

Guida, Wayne C.: *See—*
Niwas, Shri; Secrist, John A., III; Montgomery, John A.; Erion, Mark D.; Guida, Wayne C.; and Ealick, Steve E., 5,189,039, Cl. 514-258.000.
Guigan, Jean. Apparatus for separating two phases of a sample of heterogeneous liquid by centrifuging, the apparatus being particularly suitable for separating plasma from whole blood. 5,188,583, Cl. 494-43.000.
Guillaume, Jacques: *See—*
Czech, Jorg; Sedlacek, Hans H.; Nedelec, Lucien; Guillaume, Jacques; and Marchandeau, Christian, 5,189,065, Cl. 514-656.000.
Gully, Danielle: *See—*
Frehel, Daniel; Gully, Danielle; Valette, Gerard; and Bras, Jean-Pierre, 5,189,049, Cl. 514-371.000.
Gunderson, Rick L.; and Donaghy, David J., to White Consolidated Industries, Inc. Door hinge assembly. 5,187,837, Cl. 16-375.000.
Gupta, Surendra K.: *See—*
deCastro, Aurora F.; Gupta, Surendra K.; and Agarwal, Arun K., 5,188,941, Cl. 435-19.000.
DeCastro, Aurora F.; Gupta, Surendra K.; and Shantz, Steven M., 5,188,955, Cl. 435-188.000.
Gurosh, Jeffrey A.: *See—*
Moeinzadeh, Manssour H.; Kaplan, Lawrence M.; and Gurosh, Jeffrey A., 5,188,274, Cl. 227-180.000.
Gustavsson, Alvar, to Skarblacka Bil & Motor AB. Internal combustion engine. 5,188,066, Cl. 123-48.00A.
Gutierrez, Manuel. Fishing rod holder and stand. 5,187,892, Cl. 43-21.200.
Gutsche, Bernhard: *See—*
Blasey, Gerhard; Breucker, Christoph; Gutsche, Bernhard; Jeromin, Lutz; Panthel, Guenter; Peukert, Eberhard; and Schmidt, Wolfgang, 5,189,207, Cl. 562-97.000.
Gysling, Peter, to Hewlett-Packard Company. Multi-size paper cassette having a sheet size indicator. 5,188,351, Cl. 271-171.000.
Haarmann, Walter: *See—*
Krause, Jurgen; and Haarmann, Walter, 5,188,940, Cl. 435-13.000.
Haas, Terry E.: *See—*
Goldner, Ronald B.; Arntz, Floyd O.; Morel, Bertrand; Haas, Terry E.; and Wong, Kwok-Keung, 5,189,550, Cl. 359-273.000.
Habaguchi, Masayuki; Nakajima, Toyohei; Hosoda, Fumio; Fujimoto, Sachito; Kitamoto, Masakazu; Moriwaki, Hideo; and Nakamura, Takefumi, to Honda Giken Kogyo Kabushiki Kaisha. Device for measuring concentration/flow rate of a mixture drawn into an internal combustion engine and air-fuel ratio control system of the engine incorporating the device. 5,188,085, Cl. 123-520.000.
Haber, Terry M.; Foster, Clark B.; and Smedley, William H., to Habley Medical Technology Corp. Mixing vial. 5,188,615, Cl. 604-203.000.
Haberman, Allan B., to Tufts College, Trustees of. Extracellular matrix protein adherent T cells. 5,188,959, Cl. 435-240.243.
Habley Medical Technology Corp.: *See—*
Haber, Terry M.; Foster, Clark B.; and Smedley, William H., 5,188,615, Cl. 604-203.000.
Hackel, Richard P.; Paris, Robert D.; and Feldman, Mark, to United States of America, Energy. Wavelength meter having single mode fiber optics multiplexed inputs. 5,189,485, Cl. 356-320.000.
Hadley, Michael S.; and Jones, Graham E., to Beecham Group p.l.c. 2-Oxo-1,2-(dihydropyridyl)-2H-1-benzopyrans. 5,189,047, Cl. 514-337.000.
Haegele, Karl-Heinz: *See—*
Rubel, Erich; Haegele, Karl-Heinz; Panther, Michael; and Gatter, Klaus, 5,189,615, Cl. 364-424.050.
Haertl, Christof; and Mueller, Jochen, to Siemens Aktiengesellschaft. Hearing aid having electrical contact means arranged in a battery compartment. 5,188,540, Cl. 439-500.000.
Haga, Hiroyuki, to Kabushiki Kaisha Toshiba. Drive circuit for multiphase brushless DC motor including drive current detector. 5,189,349, Cl. 318-254.000.
Hagedorn, Alfred A., III: *See—*
Chou, Yuo-Ling; Erhardt, Paul W.; Hagedorn, Alfred A., III; Lampe, John W.; Lumma, Jr., William C.; Morgan, Thomas K.; and Wiggins, Jay R., 5,189,036, Cl. 514-252.000.
Hageman, Martin P., to Kelley Company, Inc. Automatically sequenced hydraulic cylinder mechanism. 5,188,015, Cl. 91-321.000.
Hagemann, Hans-Jurgen: *See—*
Geittner, Peter E. E.; Hagemann, Hans-Jurgen; and Warnier, Jacques P. M., 5,188,648, Cl. 65-3.120.
Hagemann, Joachim: *See—*
Dettmer, Hans J.; Herwig, Jorg; Hagemann, Joachim; Marchewka, Werner; and Utzfeld, Michael, 5,187,988, Cl. 73-861.530.
Hagiwara, Moeko; and Koboshi, Shigeharu, to Konica Corporation. Processing method for silver halide color photographic light-sensitive material. 5,188,925, Cl. 430-372.000.
Hagiwara, Takaaki: *See—*
Komori, Kazuhiro; Meguro, Satoshi; Hagiwara, Takaaki; Kume, Hitoshi; Tsukada, Toshihisa; and Yamamoto, Hideaki, 5,189,497, Cl. 357-23.500.
Hahn, Douglas E.: *See—*
Rani, Robert G.; and Hahn, Douglas E., 5,188,628, Cl. 604-405.000.
Hahn, Frederick C.; Ulven, Andrew H.; and Huiras, James W., to ESCO Corporation. Method of making tooth point. 5,188,680, Cl. 148-593.000.
Hahn, Tae W.: *See—*
Mark, John G.; Tazartes, Daniel A.; and Hahn, Tae W., 5,189,487, Cl. 356-350.000.
Haines, Stephen W.: *See—*
Wypych, Peter; and Haines, Stephen W., 5,188,589, Cl. 604-22.000.
Hajaligol, Mohammad R.; Deevi, Seetharama C.; Ariprala, Sarojini D.; Losee, Donald B.; Waymack, Bruce E.; and Watkins, Michael L., to Philip Morris, Incorporated. Chemical heat source comprising metal nitride, metal oxide and carbon. 5,188,130, Cl. 131-359.000.
Hakanen, Pekka, to Nokia Mobile Phones Ltd. Holder suitable for preventing inadvertent detachment of a telephone or its operating handpiece held by the holder. 5,189,698, Cl. 379-455.000.
Hakki, Sam I. Dynamic pressurized catheter with simultaneous oxygen delivery and suction. 5,188,592, Cl. 604-35.000.
Hakoun, Roland; Reslinger, Michel; and Galopin, Joan, to Alcatel Fibres Optiques. Device for cutting an optical fiber obliquely. 5,188,268, Cl. 225-96.500.
Haldor Topsoe A/S: *See—*
Hansen, John B.; Joensen, Finn H.; and Topsoe, Haldor F. A., 5,189,203, Cl. 560-232.000.
Hale, Layton G.: *See—*
Fyler, Donald C.; and Hale, Layton G., 5,188,045, Cl. 112-121.260.
Hall, Arlis: *See—*
Maguire, Joel M.; and Hall, Arlis, 5,188,576, Cl. 475-348.000.
Hall, Charlie R. Metal demolition shear. 5,187,868, Cl. 30-134.000.
Hall, Danny K.: *See—*
Pace, Darr C.; Bayer, Craig E.; Casagrande, Mark T.; Johnson, Craig R.; Hall, Danny K.; and Nolan, Andrew W., 5,188,804, Cl. 422-111.000.
Hall, Jeffrey L.: *See—*
Schlee, Ronald P.; and Hall, Jeffrey L., 5,189,457, Cl. 354-328.000.
Hall, Kevin, to Meco Australia Pty Limited. Belt conveyor advancing and/or retreating return end. 5,188,208, Cl. 198-312.000.
Hall, Michael R.: *See—*
Castel, John C.; Castel, Dawn S.; and Hall, Michael R., 5,188,586, Cl. 602-19.000.
Hall, Nigel; Hughes, Nigel; and Patel, Prakash, to Imperial Chemical Industries PLC. Process for preparation 2,6-dihydrobenzo[1:26, 4:5-6]-difuran dyes. 5,189,181, Cl. 549-299.000.
Hall, Ralph F.; Newton, John F.; Phipps, Kathleen A.; and Smallheer, Joanne, to SmithKline Beecham Corporation. Ortho-substituted benzaldehydes. 5,189,226, Cl. 568-425.000.
Hall, Richard A., to Amoco Corporation. High-impact polystyrene. 5,189,095, Cl. 525-53.000.
Halliburton Logging Services, Inc.: *See—*
Innes, Frank A. S., 5,189,645, Cl. 367-84.000.
Tomek, Martin L., 5,188,191, Cl. 175-321.000.
Halseth, Thor: *See—*
Botich, Michael J.; and Halseth, Thor, 5,188,599, Cl. 604-110.000.
Hamada, Masaaki; and Yoshida, Takashi, to Tokai Rubber Industries, Ltd. Fluid-filled elastic mount having two pressure-receiving chambers communicating with equilibrium chamber through respective orifice passages. 5,188,346, Cl. 267-140.120.
Hamamatsu Photonics K.K.: *See—*
Ohishi, Keiichi; and Kimura, Suenori, 5,189,338, Cl. 315-11.000.
Hamaya, Yasuhiko, to NEC Corporation. Drilling restart control system. 5,189,352, Cl. 318-569.000.
Hambric, Harry N. Minefield clearing apparatus. 5,189,243, Cl. 89-1.130.
Hamilton, Arthur C., Sr.: *See—*
Hemann, Donald R.; and Hamilton, Arthur C., Sr., 5,188,860, Cl. 426-560.000.
Hamilton, James J., to J. J. Hamilton Enterprises, Inc. Barbecue grill support. 5,188,089, Cl. 126-30.000.
Hammerstedt, Roy H., to Pennsylvania Research Corporation, The. Apparatus for remote mixing of fluids. 5,188,455, Cl. 366-150.000.
Hammett, Roy, to International Container Systems, Inc. Beverage container carrier. 5,188,233, Cl. 206-427.000.
Hammond, Douglas S.: *See—*
Subisak, Gregory J.; and Hammond, Douglas S., 5,188,453, Cl. 362-329.000.
Hamprecht, Gerhard; Mayer, Horst; Westphalen, Karl-Otto; Walter, Helmut; Gerber, Matthias; Grossmann, Klaus; and Rademacher, Wilhelm, to BASF Aktiengesellschaft. Herbicidal sulfonylureas and their use. 5,188,657, Cl. 504-212.000.
Han, Ki B., to Hyundai Motor Company. Cylinder block structure. 5,188,071, Cl. 123-195.00R.
Han-Oh, Kewon: *See—*
Jung-Il; Seo; and Han-Oh, Kewon, 5,187,949, Cl. 62-411.000.
Hanaoka, Kazutaka: *See—*
Nakamura, Kimiaki; Yoshida, Hidefumi; and Hanaoka, Kazutaka, 5,189,540, Cl. 359-102.000.
Hanauer, Lisa E., to Med-Pass, Incorporated. Medical form. 5,188,563, Cl. 462-56.000.
Hancock, William R., to Honeywell Inc. Video occlusion for overlapping stroke vectors. 5,189,729, Cl. 395-135.000.
Handel, Friedrich: *See—*
Thumm, Helmut; and Handel, Friedrich, 5,187,847, Cl. 29-48.50A.
Haneda, Satoshi; Fukuchi, Masakazu; Matsuo, Shunji; and Morita, Shizuo, to Konica Corporation. Color image forming apparatus having a plurality of guide members facing a plurality of developing devices. 5,189,472, Cl. 355-212.000.
Haninger, Rudolf: *See—*
Ruschle, Eugen; and Haninger, Rudolf, 5,188,579, Cl. 483-1.000.
Hanlon, Lawrence C.: *See—*
Hendrickson, Arthur N.; Hanlon, Lawrence C.; and Anderson, Russell W., 5,188,299, Cl. 241-23.000.
Hansen, Carlos F. G. Capillary massage apparatus. 5,188,097, Cl. 128-36.000.

Hansen, James J.: *See—*
Alexander, Lawrence C.; Appelt, Bernd K.; Balkin, David K.; Hansen, James J.; Hromek, Joseph; Kaschak, Ronald A.; Lauffer, John M.; Memis, Irving; Patel, Magan S.; Seman, Andrew M.; and Susko, Robin A., 5,189,261, Cl. 174-263.000.
Hansen, John B.; Joensen, Finn H.; and Topsoe, Haldor F. A., to Haldor Topsoe A/S. Process for preparing acetic acid, methyl acetate, acetic anhydride or mixtures thereof. 5,189,203, Cl. 560-232.000.
Hansen, Michael R.: *See—*
Young, Richard H., Sr.; Hansen, Michael R.; Lancaster, E. Peter; Mehta, aresh R.; and Brunnenkant, Christel, 5,188,624, Cl. 604-378.000.
Hanson, C. William, III: *See—*
Hoffman, Eric A.; and Hanson, C. William, III, 5,188,098, Cl. 128-204.230.
Hanson, Gordon N. Range of motion instruments for the spine. 5,188,121, Cl. 128-781.000.
Hanson, Robert K.: *See—*
Marino, Peter C.; Hanson, Robert K.; and Marino, Joseph C., 5,188,240, Cl. 211-41.000.
Hanson, Robert L.; and Bailey, John A., to Minnesota Mining and Manufacturing Company. Recording latch. 5,189,582, Cl. 360-132.000.
Hanson, Weldon M.: *See—*
Christensen, Thomas C.; Hanson, Weldon M.; Mosser, James J.; and Vosberg, Donald E., 5,189,566, Cl. 360-53.000.
Hanssler, Gerd: *See—*
Heinemann, Ulrich; Kleefeld, Gerd; Dutzmann, Stefan; and Hanssler, Gerd, 5,189,175, Cl. 548-128.000.
Klausener, Alexander; Gayer, Herbert; Kramer, Wolfgang; Berg, Dieter; Brandes, Wilhelm; Hanssler, Gerd; and Wachendorff-Neumann, Ulrike, 5,189,063, Cl. 514-530.000.
Lunkenheimer, Winfried; Brandes, Wilhelm; and Hanssler, Gerd, 5,189,061, Cl. 514-519.000.
Hantelmann, Rolf; and Schwark, Hartmut, to Schmalbach-Lubeca AG. Guide for stack of disk-shaped elements. 5,188,497, Cl. 413-45.000.
Hanyu, Yukio; Inaba, Yutaka; Asaoka, Masanobu; Taniguchi, Osamu; Shinjo, Kenji; and Uchimi, Toshiharu, to Canon Kabushiki Kaisha. Ferroelectric liquid crystal element having uniform high temperature alignment. 5,189,536, Cl. 359-56.000.
Hara, Kazuyoshi: *See—*
Hara, Yoshinobu; Yuge, Shizuo; and Hara, Kazuyoshi, 5,189,478, Cl. 355-271.000.
Hara, Masahiko, to Atsugi Unisia Corporation. Vane pump with a throttling groove in the rotor. 5,188,522, Cl. 418-77.000.
Hara, Noriaki: *See—*
Watanabe, Masahiro; Stonehart, Paul; Tsurumi, Kazunori; Yamamoto, Nobuo; Hara, Noriaki; and Nakamura, Toshihide, 5,189,005, Cl. 502-326.000.
Hara, Yoshinobu; Yuge, Shizuo; and Hara, Kazuyoshi, to Minolta Camera Kabushiki Kaisha. Image forming method and image forming apparatus, including means for controlling the charge on a transfer medium. 5,189,478, Cl. 355-271.000.
Harada, Takashi: *See—*
Takeda, Naohiro; Otani, Yuzo; Okajima, Nariaki; Ito, Yoshihiko; Kinoshita, Shin-ichi; Inagaki, Masashi; and Harada, Takashi, 5,188,891, Cl. 428-323.000.
Harandi, Mohsen N., to Mobil Oil Corporation. Fluidized catalyst process for production and etherification of olefins. 5,188,725, Cl. 208-67.000.
Hardin, Joanna: *See—*
Hirschenson, Bernard; and Hardin, Joanna, 5,188,321, Cl. 248-118.000.
Harding, Kevin G., to Industrial Technology Institute. Moire contouring camera. 5,189,493, Cl. 356-376.000.
Harima Chemicals, Inc.: *See—*
Misawa, Yoshihisa; Kondo, Hisao; Tsutsumi, Tetsuya; Hayashi, Masahiro; Sugimori, Daisuke; Matsuba, Yorishige; Isozaki, Masashi; Nishigaki, Hiroharu; Yazawa, Kazunaga; and Kondo, Kiyosi, 5,189,189, Cl. 554-194.000.
Harmon, David M.: *See—*
Bauer, Ted J.; Harmon, David M.; Treliving, Gordon, deceased; and Kirwan, Rory G., 5,188,785, Cl. 264-115.000.
Harney, Kevin: *See—*
Patti, Michael F.; Fedele, Nicola J.; Harney, Kevin; and Simon, Allen H., 5,189,636, Cl. 364-786.000.
Harris Corporation: *See—*
Lombardi, Robert; Rassweiler, George; and Stern, Jon M., 5,189,432, Cl. 343-739.000.
Harris, Eugene; and Korte, Thomas, to Henkel Corporation. Process for preparing furan compositions. 5,189,185, Cl. 549-486.000.
Harris, Michael: *See—*
Muhammad, Nouman; Boisvert, Wayne; Harris, Michael; and Weiss, Jay, 5,188,836, Cl. 424-431.000.
Harris, William E., Jr.: *See—*
Bushman, Ronald C.; Alexander, L. Bruce; and Harris, William E., Jr., 5,188,021, Cl. 99-502.000.
Hart, Charles, to Prac-Tech-Cal. Hypodermic syringe needle containment assembly. 5,188,614, Cl. 604-197.000.
Hartelius, Mark; and Randleman, Randy, to Hartelius, Mark. Ball rolling toy. 5,188,556, Cl. 446-172.000.
Hartley, James T., to Hughes Aircraft Company. Arrangement for accommodating excess length of optical fibers. 5,189,724, Cl. 385-135.000.
Hartman, William J.; and Delahunt, Robert F., to Tyson Holding Company. Process for preparing a fish analog. 5,188,854, Cl. 426-272.000.
Hartmann, Uwe: *See—*
Ruf, Wolf-Dieter; Hartmann, Uwe; Kost, Friedrich; and Van Zanten, Anton, 5,188,434, Cl. 303-111.000.
Hartwell Corporation, The: *See—*
Anderson, John P., 5,188,403, Cl. 292-17.000.
Harty, Douglas E.; and Parsons, Bill J., to Plastic Innovation, Inc. Drawer assembly for fisherman's chair seat. 5,188,442, Cl. 312-235.800.
Haruta, Yoshiyuki: *See—*
Murakoshi, Toshiichi; Kawazoe, Hiroshi; Takahata, Toshihiro; Nishimura, Shigeki; and Haruta, Yoshiyuki, 5,187,858, Cl. 29-596.000.
Hasegawa, Akira: *See—*
Akanuma, Masaaki; and Hasegawa, Akira, 5,188,719, Cl. 204-206.000.
Hasegawa, Takanori, to Riso Kagaku Corporation. Disposal device for paper documents. 5,188,301, Cl. 241-33.000.
Hasegawa, Tomohiro: *See—*
Thiele, Karl E.; Hasegawa, Tomohiro; and Smith, Richard B., 5,188,114, Cl. 128-661.090.
Hasegawa, Yoshikazu; and Hashimoto, Akira, to Eisai Co., Ltd. Cell cultivating apparatus. 5,188,962, Cl. 435-285.000.
Hasenbein, Norbert; Bauer, Peter; Schlemmer, Lothar; Hauss, Alfred F.; Gropper, Hans; and Ohlinger, Rainer, to BASF Aktiengesellschaft. Peroxide-free grafting of homopolymers and copolymers of ethylene having densities less than 0.930 g/cm^3, and use of the graft copolymers for the preparation of ionomers or adhesion promoters. 5,189,120, Cl. 525-285.000.
Hasenbein, Norbert: *See—*
Muehlenbernd, Thomas; Hasenbein, Norbert; Koehler, Gernot; and Schlemmer, Lothar, 5,189,113, Cl. 525-329.500.
Hashiba, Shigeto: *See—*
Hodumi, Masahiko; Bando, Koji; Suzuki, Takahiro; Hashiba, Shigeto; Ono, Yoshiyuki; Okano, Sadao; Ashiya, Seiji; and Murase, Masanori, 5,188,916, Cl. 430-65.000.
Hashida, Yoshisuke; Takaoka, Hideo; and Kamei, Yoshiharu, to Sun Seiki Co., Ltd. Sheet perforating apparatus. 5,188,694, Cl. 156-353.000.
Hashikawa, Atsushi: *See—*
Taguchi, Masahiro; Hashikawa, Atsushi; and Goto, Katsunori, 5,189,533, Cl. 359-18.000.
Hashimoto, Akira: *See—*
Hasegawa, Yoshikazu; and Hashimoto, Akira, 5,188,962, Cl. 435-285.000.
Hashimoto, Hirofumi: *See—*
Nagata, Nobuyuki; Tsutsui, Itsuro; Ota, Koji; Hashimoto, Hirofumi; and Shibata, Haruji, 5,188,693, Cl. 156-244.110.
Hashimoto, Isao: *See—*
Fukuoka, Daisuke; Takahashi, Katsuya; and Hashimoto, Isao, 5,189,183, Cl. 549-345.000.
Hashimoto, Kenichiro: *See—*
Hiramatsu, Soichi; and Hashimoto, Kenichiro, 5,188,270, Cl. 226-76.000.
Hashimoto, Takafumi, to Kabushiki Kaisha Meidensha. Electrolyte for zinc bromide battery. 5,188,915, Cl. 429-199.000.
Hashimoto, Yuichi: *See—*
Kosugi, Toru; Hashimoto, Yuichi; Tanaka, Masayuki; Ohara, Katsuichi; Furukawa, Takahiro; and Aoki, Makoto, 5,189,410, Cl. 340-825.140.
Hashizume, Hiroshi: *See—*
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Fujii, Yasuo; Nakamura, Tetsuya; Fukuyama, Hirotaka; Arai, Seiji; Sato, Koichiro; Takagi, Toshio; Nishina, Shuji; Hukasawa, Jiro; Maruta, Masatoshi; and Koizumi, Seiichi, 5,188,057, Cl. 118-657.000.
Hass, Jurgen; Hotea, Gheorghe; and Siegel, Guenter, to AMP Incorporated. Electrical socket terminal. 5,188,545, Cl. 439-851.000.
Hata, Seiji: *See—*
Suzuki, Kenji; Hata, Seiji; Nishida, Yoshien; Kawasaki, Kyoichi; Fujii, Kenjiro; Shimura, Yasunori; and Takeyoshi, Shigenori, 5,189,707, Cl. 382-8.000.
Hatanaka, Koji: *See—*
Okazaki, Seiji; Yokoyama, Shigeki; Imaizumi, Makoto; Hatanaka, Koji; and Aota, Takashi, 5,189,280, Cl. 219-270.000.
Hatheway, Alson E. Precision motion transducer. 5,187,876, Cl. 33-568.000.
Hatin, Donald T., to ITT Corporation. Torque indicator device and method for use with a threaded fastener. 5,188,494, Cl. 411-10.000.
Hatton, Robert D.: *See—*
Fairey, Norman R.; and Hatton, Robert D., 5,188,813, Cl. 423-403.000.
Hattori, Takaaki: *See—*
Morimoto, Toshifumi; Hattori, Takaaki; Ikegami, Noboru; Nishibu, Hirofumi; Miyauchi, Toshiyuki; and Kubo, Kunimichi, 5,189,106, Cl. 525-240.000.
Hattori, Yoshifumi: *See—*
Arashima, Teruo; Kimura, Makiko; Kashino, Toshio; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; and Orikasa, Tsuyoshi, 5,189,443, Cl. 346-140.00R.
Hattori, Yuji; Soga, Yoshinobu; Sugaya, Masami; and Kato, Nobuyuki, to Toyota Jidosha Kabushiki Kaisha. Hydraulic control apparatus for belt-and-pulley type continuously variable transmission, incorporat-

VOL 1147 ISS 4 FEB 23 1993 UMI

ing means for increasing belt tensioning pressure upon reversal of rotating direction of pulleys. 5,188,007, Cl. 74-867.000.

Haubs, Michael; Hermann-Schonherr, Otto; and Cherdron, Harald, to Hoechst Aktiengesellschaft. Alloys having one glass transition temperature. 5,189,104, Cl. 525-180.000.

Hauck, Lane T. Novelty device and method of using same. 5,188,565, Cl. 472-51.000.

Haun, Andy A.; and Tessmer, Earl J., to Square D Company. Dual shunt current regulator. 5,189,587, Cl. 361-56.000.

Haun, Harold; Davis, Herschel W.; and Koger, Robert D., to Wheeled Coach Corporation. Vehicle having warning units mounted within hood cutouts. 5,188,445, Cl. 362-80.000.

Hauss, Alfred F.: *See—*
Hasenbein, Norbert; Bauer, Peter; Schlemmer, Lothar; Hauss, Alfred F.; Gropper, Hans; and Ohlinger, Rainer, 5,189,120, Cl. 525-285.000.

Haustein, Norman E. Vehicle driving wheel suspension system. 5,188,195, Cl. 180-353.000.

Hawash, Suheal N.; and Hively, Terry E., to Navistar International Transportation Corp. Clamp for hoses, tubing and/or electrical harnesses. 5,188,319, Cl. 248-68.100.

Hayakawa, Atsuya; Komuro, Kyoji; and Shimizu, Hideaki, to Brother Kogyo Kabushiki Kaisha. Embroidery data preparing apparatus. 5,189,622, Cl. 364-470.000.

Hayakawa, Atsuya: *See—*
Komuro, Kyoji; Hayakawa, Atsuya; and Shimizu, Hideaki, 5,189,623, Cl. 364-470.000.

Hayakawa, Shingo, to Canon Kabushiki Kaisha. Camera detecting luminance from a plurality of areas. 5,189,460, Cl. 354-402.000.

Hayakawa, Tokuji, to Yamaha Corporation. Automatic performance apparatus for causing different kinds of sound sources to synchronously generate tones. 5,189,238, Cl. 84-609.000.

Hayakawa, Yoshikazu: *See—*
Sasaki, Akira; Hayakawa, Yoshikazu; Sakuma, Yuichi; Sakai, Tatsuo; and Kihara, Yoshinori, 5,189,266, Cl. 181-227.000.

Hayami, Katsuro: *See—*
Yano, Haruto; Hirasa, Yoshiaki; Tokunaga, Toshimichi; Hayami, Katsuro; Naito, Norihiro; Akamatsu, Teruki; Goto, Hirofumi; and Yokouchi, Kazuhiro, 5,189,430, Cl. 342-457.000.

Hayashi, Fujio: *See—*
Tagawa, Kimiteru; Takahashi, Seiichi; Utsuno, Noritoshi; Umehara, Hideki; Hayashi, Fujio; Kiba, Shigeo; and Suda, Satoru, 5,188,898, Cl. 428-403.000.

Hayashi, Kenichiro: *See—*
Maeda, Kenji; Hayashi, Kenichiro; Masuda, Mitsuyoshi; Nishikawa, Hirofumi; and Suzuki, Katsuhiro, 5,188,420, Cl. 296-223.000.

Hayashi, Masahiro: *See—*
Misawa, Yoshihisa; Kondo, Hisao; Tsutsumi, Tetsuya; Hayashi, Masahiro; Sugimori, Daisuke; Matsuba, Yorishige; Isozaki, Masashi; Nishigaki, Hiroharu; Yazawa, Kazunaga; and Kondo, Kiyosi, 5,189,189, Cl. 554-194.000.

Hayashi, Miki: *See—*
Ohsumi, Tadashi; Fujimura, Makoto; and Hayashi, Miki, 5,189,040, Cl. 514-269.000.

Hayashi, Shigeo: *See—*
Yamaguchi, Katsuyoshi; Kondoh, Masatoshi; Hayashi, Shigeo; Sonokawa, Masayoshi; Matsuzawa, Shoichi; and Takahashi, Atsushi, 5,188,572, Cl. 475-168.000.

Hayashi, Takayuki, to Brother Kogyo Kabushiki Kaisha. Paper feeder with stationary and free paper feed rollers. 5,188,350, Cl. 271-114.000.

Hayashi, Tomoo: *See—*
Momochi, Takeshi; Sasaki, Tadashi; Matsumoto, Michio; Hayashi, Tomoo; and Shiozaki, Masahito, 5,189,627, Cl. 364-474.310.

Hayashida, Shigeru; and Tai, Seiji, to Hitachi Chemical Company, Ltd.; and Hitachi, Ltd. Optical recording medium. 5,188,922, Cl. 430-270.000.

Hayes Axle, Inc.: *See—*
Beck, Earl A.; and Kalies, Ken E., 5,189,324, Cl. 310-51.000.

Haygarth, John C.: *See—*
Crocker, William A.; Haygarth, John C.; Riesen, Jon A.; and Peterson, John R., 5,188,809, Cl. 423-2.000.

Hazenbroek, Jacobus E. Method and apparatus for separating the legs from the back of a poultry carcass. 5,188,559, Cl. 452-167.000.

Hazenbroek, Jacobus E. Wing tip cutter. 5,188,560, Cl. 452-169.000.

Heacock, Gregory L.: *See—*
Crossman, Janet L.; Erickson, Phillip J.; Heacock, Gregory L.; and Mainster, Martin A., 5,189,450, Cl. 351-219.000.

Healy, Charles D., to C.S. Technology. Portable vibrating platform. 5,188,095, Cl. 128-32.000.

Heaton, Jeff S.: *See—*
Stern, Donald J.; Heaton, Jeff S.; Tryon, James A.; and Bartholmey, Brett A., 5,188,295, Cl. 239-320.000.

Hecht, David L., to Xerox Corporation. Electrooptic TIR light modulator image bar having multiple electrodes per pixel. 5,189,548, Cl. 359-263.000.

Heck, Thomas E.; and Plaza, Joseph J., to Kelsey-Hayes Company. Fabricated wheel having a radially inwardly extending disc face. 5,188,429, Cl. 301-63.100.

Heel, Helmut; and Kettel, Hans, to Ott Maschinentechnik GmbH. Tool holder of modular construction for driven tools. 5,188,493, Cl. 409-230.000.

Hefele, John: *See—*
Phillips, Joseph R.; Warloff, Peter E. T.; Hefele, John; Bilodeau, Victor L.; Bain, Ronald G.; and Barrett, Mark, 5,187,956, Cl. 68-181.00R.

Hefner, Robert E., Jr., to Dow Chemical Company, The. Polyurethane from epoxy compound adduct. 5,189,117, Cl. 525-460.000.

Hegedus, Agnes: *See—*
Szego, Andras; Pap, Laszlo ; Nagy, Lajos; Somfai, Eva; Szucsany, Gyorgy; Szekely, Istvan; Molnar, Aniko D. nee; and Hegedus, Agnes, 5,189,062, Cl. 514-521.000.

Heilman, William J.; and Wilburn, Bruce E., to Pennzoil Products Company. Olefin polymer pour point depressants. 5,188,724, Cl. 208-18.000.

Heim, Joseph R., to United States of America, Energy. Method of preloading superconducting coils by using materials with different thermal expansion coefficients. 5,187,859, Cl. 29-599.000.

Heimann, Ulrich: *See—*
Schwerzel, Thomas; Schupp, Hans; Huemke, Klaus; Faul, Dieter; and Heimann, Ulrich, 5,188,716, Cl. 204-181.700.

Heinemann, Ulrich; Kleefeld, Gerd; Dutzmann, Stefan; and Hanssler, Gerd, to Bayer Aktiengesellschaft. Pesticidal thiadiazole-substituted acrylic acid esters and intermediates therefor. 5,189,175, Cl. 548-128.000.

Heinrich, Hansjorg; and Rupprecht, Peter, to KSB Aktiengesellschaft. Bearing for the shaft of a canned motor pump. 5,188,463, Cl. 384-441.000.

Heiss, Jurgen K. Nipper instrument for cutting surgical nails, wires or the like. 5,187,869, Cl. 30-189.000.

Heitmann, Uwe, to Korber AG. Apparatus for feeding tobacco to distributors of rod making machines. 5,188,127, Cl. 131-108.000.

Hejlsberg, Anders: *See—*
Bennett, John G.; Hejlsberg, Anders; and Kukol, Peter, 5,189,733, Cl. 395-650.000.

Helbrook, Gerald L.: *See—*
Leising, Maurice B.; Nogle, Thomas D.; Benford, Howard L.; Helbrook, Gerald L.; Klotz, James R.; Martin, Berthold; Mikel, Steven A.; and Nortman, William, 5,188,575, Cl. 475-280.000.

Hellstrom, Pia; Dalin, Ivan; and Linderstrom-Lang, Steen, to Eka Nobel AB; and Faxe Kalk. Method of bleaching. 5,188,814, Cl. 423-430.000.

Helmers, Thomas L.: *See—*
Larkins, David N.; Yoshida, Glenn T.; and Helmers, Thomas L., 5,189,355, Cl. 318-685.000.

Hemann, Donald R.; and Hamilton, Arthur C., Sr., to Ralston Purina Company. Process for the production of a fiber containing cereal product. 5,188,860, Cl. 426-560.000.

Henaff, Yves; and Le Roux, Herve , to Matra Sep Imagerie et Informatique. Method and device for the acquistion and digital storage of colored geographical maps and display of the maps. 5,189,510, Cl. 358-75.000.

Henderson, Girardeau L.: *See—*
Stefanov, Michael E.; Biggers, Rand R.; Rish, Jeff W., III; Henderson, Girardeau L.; and Pham, Chuong N., 5,188,171, Cl. 165-96.000.

Henderson, Kenneth J.: *See—*
Kaplan, Ronald M.; McCourt, Michael A.; and Henderson, Kenneth J., 5,189,610, Cl. 364-419.000.

Hendrickson, Arthur N.; Hanlon, Lawrence C.; and Anderson, Russell W., to Rap Process Machinery Corp. Apparatus and method for recycling asphalt materials. 5,188,299, Cl. 241-23.000.

Henkel Corporation: *See—*
Devore, David I.; and Fischer, Stephen A., 5,189,142, Cl. 528-339.300.
Harris, Eugene; and Korte, Thomas, 5,189,185, Cl. 549-486.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Blasey, Gerhard; Breucker, Christoph; Gutsche, Bernhard; Jeromin, Lutz; Panthel, Guenter; Peukert, Eberhard; and Schmidt, Wolfgang, 5,189,207, Cl. 562-97.000.
Wilms, Elmar; and Wiemer, Frank, 5,188,786, Cl. 264-117.000.

Henkel Research Corporation: *See—*
Ching, Ta Y.; and Lin, Lon-Tang W., 5,189,190, Cl. 556-418.000.

Henneberger, Roy L.: *See—*
Johnson, Stephen M.; Huggar, Calvin, Sr.; and Henneberger, Roy L., 5,189,723, Cl. 385-134.000.

Hennig, Johannes: *See—*
Sollinger, Hans-Peter; and Hennig, Johannes, 5,189,492, Cl. 356-373.000.

Henry-Moore, Nicholas, to Torrington Company, The. Vehicle steering column coupling. 5,187,997, Cl. 74-493.000.

Hensel, Robert D.; Ray, Leonard N., Jr.; Reuwer, Joseph F., Jr.; Ross, Jeffrey S.; and Wisnosky, Jerome D., to Armstrong World Industries, Inc. Surface covering with inorganic wear layer. 5,188,876, Cl. 428-76.000.

Hensens, Otto D.: *See—*
Freidinger, Roger M.; Bock, Mark G.; Lam, Yiu-Kuen T.; Chang, Raymond S.; Hensens, Otto D.; Schwartz, Cheryl D.; and Zink, Deborah L., 5,189,050, Cl. 514-375.000.

Hensley, Randy L.: *See—*
Nicholas, John D.; and Hensley, Randy L., 5,187,910, Cl. 52-317.000.

Hentschel, Karl-Heinz: *See—*
Blum, Harald; Pedain, Josef; and Hentschel, Karl-Heinz, 5,189,176, Cl. 548-215.000.

Henze, Thomas: *See—*
Birk, Manfred; Engel, Gerhard; Eyberg, Wilhelm; Henze, Thomas; and Schmitt, Alfred, 5,188,081, Cl. 123-479.000.

Her Majesty the Queen in right of New Zealand: *See—*
Cross, David J., 5,188,291, Cl. 239-3.000.

Herbert, Raymond J., to Alcatel Business Systems Limited. Franking machine with ink jet printer utilizing melted solid ink. 5,189,442, Cl. 346-140.00R.

Hermann Berstorff Maschinenbau GmbH: *See—*
Borchardt, Horst; Barkowsky, Peter; and Friedrich, Jorg-Richard, 5,188,010, Cl. 83-175.000.

Hermann-Schonherr, Otto: *See—*
Haubs, Michael; Hermann-Schonherr, Otto; and Cherdron, Harald, 5,189,104, Cl. 525-180.000.

Hermanni, Hans-Georg: *See—*
Klos-Hein, Karl; and Hermanni, Hans-Georg, 5,189,573, Cl. 360-85.000.

Herres, Bradley K.: *See—*
Sturgill, Michael R.; and Herres, Bradley K., 5,188,112, Cl. 128-661.090.

Herrington, Eldridge P., Jr.; and Spielberg, Richard, to Miles Inc. Phlebotomist protector apparatus. 5,188,612, Cl. 604-192.000.

Herron, Donald F. Portable seat. 5,188,424, Cl. 297-440.000.

Hershey, N. Davis: *See—*
Menchen, Steven M.; Lee, Linda G.; Connell, Charles R.; Hershey, N. Davis; Chakerian, Vergine; Woo, Sam; and Fung, Steven, 5,188,934, Cl. 435-6.000.

Hertig, Daniel M.; and Osinski, Grzegorz, to G. A. Braun, Inc. Center shaft dye injection apparatus. 5,187,955, Cl. 68-58.000.

Herwig, Jorg: *See—*
Dettmer, Hans J.; Herwig, Jorg; Hagemann, Joachim; Marchewka, Werner; and Utzfeld, Michael, 5,187,988, Cl. 73-861.530.

Herzig, Paul, to Ciba-Geigy Corporation. Process for the preparation of aminobenzenesulfonic acids. 5,189,206, Cl. 562-58.000.

Heurteboust, Gerard: *See—*
Seconde, Jean-Francois; and Heurteboust, Gerard, 5,187,966, Cl. 72-329.000.

Hewlett-Packard Company: *See—*
Adamic, Raymond J.; and Gibney, Theresa A., 5,188,664, Cl. 106-22.00R.
Bartelink, Dirk J., 5,189,505, Cl. 257-419.000.
Bartz, Manfred U.; and Hiller, Donald R., 5,189,418, Cl. 341-131.000.
Birecki, Henryk, 5,189,649, Cl. 369-13.000.
Cham, Kit M.; and Gleason, Robert E., Jr., 5,189,310, Cl. 257-392.000.
Chen, James N. C.; and Ostrowski, Susan, 5,187,981, Cl. 73-642.000.
Gysling, Peter, 5,188,351, Cl. 271-171.000.
Secker, Herbert, 5,188,108, Cl. 128-633.000.
Thiele, Karl E.; Hasegawa, Tomohiro; and Smith, Richard B., 5,188,114, Cl. 128-661.090.
Tivig, Gerhard; Meier, Wilhelm; and Pfeil, Egon, 5,189,609, Cl. 364-413.010.

Heye, Hermann: *See—*
Bogert, Hermann; and Seidel, Hans-Georg, 5,188,653, Cl. 65-334.000.

Heyke, Klaus; Spitz, Richard; Seidel, Hans-Joachim; Jennrich, Irene; Pfander, Werner; and Vohr, Armin, to Robert Bosch GmbH. Epoxy resin composition for encapsulating electric circuit. 5,189,080, Cl. 523-212.000.

Hibbard, Robert H.: *See—*
Parulski, Kenneth A.; Bellis, Donald C., Jr.; Hibbard, Robert H.; Giorgianni, Edward J.; and McInerney, Elizabeth, 5,189,511, Cl. 358-80.000.

Hibst, Hartmut: *See—*
Richter, Hans J.; Hibst, Hartmut; and Fischer, Gerd, 5,188,865, Cl. 427-128.000.

Hida, Senzoo: *See—*
Ohmura, Keiji; Okuno, Sumio; Masai, Kentaro; Ooba, Hideshi; Hida, Senzoo; and Okamoto, Seiichi, 5,188,039, Cl. 105-423.000.

Hideyuki, Sakai, to Nichidai Industrial Co. Ltd.; and Daiwa Paint Trading Co. Ltd. Horizontally flexible conveyor. 5,188,035, Cl. 104-89.000.

Higashihara, Masaki: *See—*
Akashi, Akira; and Higashihara, Masaki, 5,189,465, Cl. 354-408.000.

Hijikata, Kenji: *See—*
Nakane, Toshio; Konuma, Hiroaki; Shiwaku, Toshio; and Hijikata, Kenji, 5,189,140, Cl. 528-272.000.

Hijikata, Toshihiko: *See—*
Horikawa, Osamu; and Hijikata, Toshihiko, 5,188,779, Cl. 264-62.000.

Hikmet, Rifat A. M.; and Broer, Dirk J., to U. S. Philips Corporation. Liquid crystalline material and display cell containing said material. 5,188,760, Cl. 252-299.010.

Hilakos, Stephen W., to IMC Fertilizer, Inc. Automatic control system for a phosacid attack tank and filter. 5,188,812, Cl. 423-320.000.

Hill, Francis U.; Schoenzart, Paul F.; and Frank, Werner P., to Sorrento Engineering Corporation. Polyimide foam filled structures. 5,188,879, Cl. 428-117.000.

Hillegonds, Larry A.; Jue, George H.; and Bulanda, John J., to Panduit Corp. Wire insertion hand tool with removable bench mounting accessories. 5,187,861, Cl. 29-751.000.

Hiller, Donald R.: *See—*
Bartz, Manfred U.; and Hiller, Donald R., 5,189,418, Cl. 341-131.000.

Hilty, Calvin A.; Raid, Larry J.; and Grigel, George G., to Calvin's Cap Racks. Clothing suspension apparatus. 5,188,325, Cl. 248-224.400.

Himuro, Yasuo, to Bridgestone Corporation. Pneumatic radial tires. 5,188,684, Cl. 152-209.00R.

Hine, Nathan P.; Hoisington, Paul A.; Spehrley, Charles W., Jr; Biggs, Melvin L.; and Carden, Richard, to Spectra, Inc. Dual reservoir and valve system for an ink jet head. 5,189,438, Cl. 346-1.100.

Hino, Atsushi: *See—*
Takayama, Yoshinari; Mochizuki, Amane; Hino, Atsushi; Ouchi, Kazuo; and Sugimoto, Masakazu, 5,188,702, Cl. 156-630.000.

Hinterholzer, Peter; Zikell, Stefan; Firgo, Heinrich; Wolschner, Bernd; Eichinger, Dieter; Manner, Johann; Astegger, Stephan; and Weinzierl, Karin, to Lenzing Aktiengesellschaft. Cellulose solution in water and NMMO. 5,189,152, Cl. 536-56.000.

Hinton, John: *See—*
Carver, Mark A.; and Hinton, John, 5,188,952, Cl. 435-146.000.

Hinz, Wolfgang; and Gass, Ernst, to Swag Zschokke Wartmann AG. Method of drying lumpy agricultural products. 5,188,856, Cl. 426-465.000.

Hioki, Takeshi: *See—*
Moriuma, Hiroshi; Osaki, Haruyoshi; Hioki, Takeshi; and Uetani, Yasunori, 5,188,920, Cl. 430-191.000.

Hira, Osamu: *See—*
Masaki, Naoki; Hira, Osamu; and Shimada, Naoki, 5,189,656, Cl. 369-47.000.

Hirai, Hiromu: *See—*
Mori, Kenji; Hirai, Hiromu; Otsuki, Haruaki; Takahashi, Tsuyoshi; Naruse, Jun; Nishimura, Yuji; and Kawamoto, Muneo, 5,189,578, Cl. 360-106.000.

Hirai, Masanori; Takenaka, Hiroyuki; Yokoi, Hidekazu; Nachi, Tsuyoshi; and Ando, Kiyoshi, to Teijin Seiki Co., Ltd. Rotary motion to longitudinal motion converting mechanism. 5,187,994, Cl. 74-120.000.

Hiramatsu, Satoru: *See—*
Fukabori, Mitsuhiko; Iwasaki, Hiroshi; Shinto, Hiroaki; Iwai, Yasunori; Nishiuchi, Ryuji; Gotoh, Yuzo; Hiramatsu, Satoru; Hirata, Norimasa; and Tokuda, Masakazu, 5,189,255, Cl. 102-531.000.

Hiramatsu, Soichi; and Hashimoto, Kenichiro, to Canon Kabushiki Kaisha. Sheet conveyor having retractable pins held in a wheel for openings in a sheet. 5,188,270, Cl. 226-76.000.

Hirano, Takayuki: *See—*
Mukohjima, Hitoshi; Hirano, Takayuki; Seki, Yoshihiro; and Miura, Mituru, 5,189,331, Cl. 310-323.000.

Hirano, Yoshio, to Fujitsu Limited. Method of fabricating semiconductor device. 5,188,701, Cl. 156-626.000.

Hirao, Kouji: *See—*
Mitsuoka, Hiroshi; and Hirao, Kouji, 5,189,614, Cl. 364-424.050.

Hirao, Kyoko: *See—*
Kaku, Takashi; Kishimoto, Hiroki; and Hirao, Kyoko, 5,189,684, Cl. 375-14.000.

Hirasa, Yoshiaki: *See—*
Yano, Haruto; Hirasa, Yoshiaki; Tokunaga, Toshimichi; Hayami, Katsuro; Naito, Norihiro; Akamatsu, Teruki; Goto, Hirofumi; and Yokouchi, Kazuhiro, 5,189,430, Cl. 342-457.000.

Hirata, Hisakazu; Okubo, Kazuyuki; and Kitamura, Motomi, to Nissie Jushi Kogyo K.K. Clamping apparatus for molding machine. 5,188,850, Cl. 425-589.000.

Hirata, Norimasa: *See—*
Fukabori, Mitsuhiko; Iwasaki, Hiroshi; Shinto, Hiroaki; Iwai, Yasunori; Nishiuchi, Ryuji; Gotoh, Yuzo; Hiramatsu, Satoru; Hirata, Norimasa; and Tokuda, Masakazu, 5,189,255, Cl. 102-531.000.

Hirata, Tadashi: *See—*
Miya, Shigeyuki; Shibata, Takenori; Komatsu, Yoshihiro; Miyoshi, Hiromichi; Hirata, Tadashi; Taniguchi, Yoshio; and Kobayashi, Takuo, 5,189,474, Cl. 355-245.000.

Hiroyuki, Seki: *See—*
Okada, Hisashi; and Hiroyuki, Seki, 5,188,927, Cl. 430-393.000.

Hirschenson, Bernard; and Hardin, Joanna, to Compucube, Inc. Keyboard stand. 5,188,321, Cl. 248-118.000.

Hitachi Automotive Engineering Co., Ltd.: *See—*
Ejiri, Yuki; Okazaki, Tsutomu; Yamada, Koichiro; Niida, Chiaki; Saeki, Hiroaki; and Honma, Hideki, 5,188,073, Cl. 123-339.000.

Hitachi Cable Ltd.: *See—*
Tada, Naofumi; Iida, Fumio; Takahashi, Ryukichi; Maki, Naoki; Sakai, Shuji; and Hotta, Yoshiji, 5,189,386, Cl. 335-216.000.

Hitachi Chemical Company, Ltd.: *See—*
Hayashida, Shigeru; and Tai, Seiji, 5,188,922, Cl. 430-270.000.
Yamazaki, Mitsuo; Ichimura, Nobuo; Miyamoto, Yasuo; Fujita, Koei; and Kawasumi, Masao, 5,188,767, Cl. 252-512.000.

Hitachi Engineering Co., Ltd.: *See—*
Tamaki, Shigeo, 5,188,078, Cl. 123-403.000.

Hitachi Ltd.: *See—*
Ejiri, Yuki; Okazaki, Tsutomu; Yamada, Koichiro; Niida, Chiaki; Saeki, Hiroaki; and Honma, Hideki, 5,188,073, Cl. 123-339.000.
Endo, Yoshishige; Araya, Takeshi; Ono, Masahiko; Kawamura, Takao; and Kawamura, Hiromitsu, 5,189,337, Cl. 313-479.000.
Hayashida, Shigeru; and Tai, Seiji, 5,188,922, Cl. 430-270.000.
Igarashi, Yoshiki; and Miyajima, Goh, 5,189,372, Cl. 324-318.000.
Ikeda, Masaharu; Funabiki, Takahiro; and Kasuga, Kazuo, 5,189,365, Cl. 324-158.00R.
Kojima, Masayuki; Nishihara, Shinji; and Kanai, Fumiyuki, 5,188,975, Cl. 437-48.000.
Komori, Kazuhiro; Meguro, Satoshi; Hagiwara, Takaaki; Kume, Hitoshi; Tsukada, Toshihisa; and Yamamoto, Hideaki, 5,189,497, Cl. 357-23.500.
Kondo, Hirotaka, 5,189,732, Cl. 395-155.000.
Kume, Hitoshi; Adachi, Tetsuo; Ohji, Yuzuru; Kure, Tokuo; Ushiyama, Masahiro; and Kawakami, Hiroshi, 5,188,976, Cl. 435-52.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Mano, Hiroyuki; Takashi, Terumi; Futami, Toshio; and Fujii, Tatsuhisa, 5,189,407, Cl. 340-793.000.
Masimo, Tamon; Kanazawa, Hiroshi; Masuzaki, Hidefumi; and Ito, Satoshi, 5,189,404, Cl. 340-720.000.
Matumoto, Morihisa; Suzuki, Kouji; Endo, Shunkichi; and Kurosawa, Yukio, 5,189,270, Cl. 200-144.00B.
Mori, Kenji; Hirai, Hiromu; Otsuki, Haruaki; Takahashi, Tsuyoshi; Naruse, Jun; Nishimura, Yuji; and Kawamoto, Muneo, 5,189,578, Cl. 360-106.000.
Nakao, Takashi; Emoto, Yoshiaki; Sekiguchi, Koichiro; Iketani, Masayuki; Sahara, Kunizo; Yoshida, Ikuo; Kohno, Akiomi; Horino, Masaya; Kamohara, Hideaki; Irie, Shouichi; Akasaki, Hiroshi; and Otsuka, Kanji, 5,188,280, Cl. 228-123.000.
Nishida, Hiroshi; Ishigaki, Tatsuya; Ito, Atsushi; Kudou, Yoshinobu; Katou, Hiroshi; and Fujii, Kousuke, 5,189,577, Cl. 360-106.000.
Ogino, Masanori; Yamada, Takeo; Ikeda, Miyuki; Fujikura, Tsueno; and Fujiwara, Takahiko, 5,189,347, Cl. 315-383.000.
Ohmura, Keiji; Okuno, Sumio; Masai, Kentaro; Ooba, Hideshi; Hida, Senzoo; and Okamoto, Seiichi, 5,188,039, Cl. 105-423.000.
Onari, Mikihiko; Funabashi, Motohisa; Sekozawa, Teruji; and Shioya, Makoto, 5,189,621, Cl. 364-431.040.
Shiraishi, Takashi, 5,189,617, Cl. 364-424.050.
Suzuki, Kenji; Hata, Seiji; Nishida, Yoshien; Kawasaki, Kyoichi; Fujii, Kenjiro; Shimura, Yasunori; and Takeyoshi, Shigenori, 5,189,707, Cl. 382-8.000.
Tada, Naofumi; Iida, Fumio; Takahashi, Ryukichi; Maki, Naoki; Sakai, Shuji; and Hotta, Yoshiji, 5,189,386, Cl. 335-216.000.
Takane, Atsushi; Koizumi, Hideaki; and Sano, Koichi, 5,189,369, Cl. 324-306.000.
Takatori, Masahiro; Nakano, Yukio; Ashi, Yoshihiro; and Kanno, Tadayuki, 5,189,668, Cl. 370-60.000.
Tamaki, Shigeo, 5,188,078, Cl. 123-403.000.

Hitachi Metals, Ltd.: *See—*
Murakami, Yasuhide; and Ito, Kohei, 5,189,383, Cl. 333-201.000.
Okazaki, Seiji; Yokoyama, Shigeki; Imaizumi, Makoto; Hatanaka, Koji; and Aota, Takashi, 5,189,280, Cl. 219-270.000.

Hitachi Software Engineering Co., Ltd.: *See—*
Masimo, Tamon; Kanazawa, Hiroshi; Masuzaki, Hidefumi; and Ito, Satoshi, 5,189,404, Cl. 340-720.000.

Hitachi VLSI Engineering Corp.: *See—*
Nakao, Takashi; Emoto, Yoshiaki; Sekiguchi, Koichiro; Iketani, Masayuki; Sahara, Kunizo; Yoshida, Ikuo; Kohno, Akiomi; Horino, Masaya; Kamohara, Hideaki; Irie, Shouichi; Akasaki, Hiroshi; and Otsuka, Kanji, 5,188,280, Cl. 228-123.000.

Hitachi Zosen Corporation: *See—*
Nakao, Akira; Endo, Toyofusa; and Ikeda, Takeshi, 5,187,857, Cl. 29-564.700.
Taguchi, Ichizo, 5,187,960, Cl. 72-19.000.

Hittich, Reinhard: *See—*
Bartmann, Ekkehard; Hittich, Reinhard; Plach, Herbert; and Finkenzeller, Ulrich, 5,188,759, Cl. 252-299.010.

Hively, Terry E.: *See—*
Hawash, Suheal N.; and Hively, Terry E., 5,188,319, Cl. 248-68.100.

Hixson, Gordon L., Sr., to American Mammographics, Inc. Adjustable mounting base for mammographic spot compression and magnification platform. 5,189,686, Cl. 378-37.000.

Hiyama, Satoshi: *See—*
Takebe, Katsuhiko; and Hiyama, Satoshi, 5,187,986, Cl. 73-766.000.

Hjelle, Oddbjorn: *See—*
Gjestrum, Einar; Hjelle, Oddbjorn; Hogsnes, Oyvind; Valle, Gunnar F.; and Sorbotten, Oyvind, 5,188,053, Cl. 114-242.000.

Hlava, Joseph L.: *See—*
Skertic, Matthew M.; Hlava, Joseph L.; Eneim, Arthur A.; and Maassen, Nevil Q., 5,187,939, Cl. 62-51.200.

Ho, Teng L. Stationery box in the shape of a video camera. 5,188,227, Cl. 206-214.000.

Hochberg, Howard M., to Abbott Laboratories. Device for preparing a medical sensor for use. 5,188,803, Cl. 422-99.000.

Hodogaya Chemical Co., Ltd.: *See—*
Kobayashi, Yo-ichi; Omori, Muneki; and Yamada, Chikako, 5,188,829, Cl. 424-94.630.

Hodson, James M.; and Joseph, Dennis M., to General Electric Company. Real image projection system. 5,189,452, Cl. 353-94.000.

Hodson, Trevor M.: *See—*
Marsh, Michael J. C.; Atkins, Raymond C.; and Hodson, Trevor M., 5,189,246, Cl. 102-217.000.

Hodumi, Masahiko; Bando, Koji; Suzuki, Takahiro; Hashiba, Shigeto; Ono, Yoshiyuki; Okano, Sadao; Ashiya, Seiji; and Murase, Masanori, to Fuji Xerox Co., Ltd. Electrophotographic photoreceptor having a zirconium and silicon-containing underlayer. 5,188,916, Cl. 430-65.000.

Hoechst Aktiengesellschaft: *See—*
Burdinski, Gerhard; Kirsch, Reinhard; and Kottmann, Hariolf, 5,189,165, Cl. 544-298.000.
Haubs, Michael; Hermann-Schonherr, Otto; and Cherdron, Harald, 5,189,104, Cl. 525-180.000.
Hopp, Peter; and Jansen, Rolf-Michael, 5,189,230, Cl. 570-177.000.
Mehlhorn, Heinz; Taraschewski, Horst; Schmahl, Gunter; Raether, Wolfgang; and Rosner, Manfred, 5,188,832, Cl. 424-405.000.
Peuckert, Marcellus, 5,188,781, Cl. 264-65.000.
Vaahs, Tilo; Gerdau, Thomas; Kleiner, Hans-Jerg; Peuckert, Marcellus; and Bruck, Martin, 5,189,132, Cl. 528-33.000.
Zeeck, Axel; Philipps, Siegrid; Grabley, Susanne; Granzer, Ernold; Hutter, Klaus; Thiericke, Ralf; and Wink, Joachim, 5,189,150, Cl. 536-6.500.

Hoechst Celanese Corporation: *See—*
Burke, Richard A.; Goodall, James R.; Melton, Michael D.; Osborne, Roy S.; and Patterson, Carl D., 5,188,456, Cl. 374-50.000.

Hoechst Roussel Pharmaceuticals Inc.: *See—*
Glamkowski, Edward J.; and Kurys, Barbara E., 5,189,161, Cl. 540-555.000.

Hoelderich, Wolfgang: *See—*
Kummer, Rudolf; Schneider, Heinz-Walter; Bertleff, Werner; Fischer, Rolf; Vagt, Uwe; Naeumann, Fritz; Hoelderich, Wolfgang; and Schwarzmann, Matthias, 5,189,182, Cl. 549-326.000.

Hoenlein, Wolfgang: *See—*
Stengl, Reinhard; Meul, Hans-Willi; and Hoenlein, Wolfgang, 5,188,977, Cl. 437-89.000.

Hoerbiger Hydraulik GmbH: *See—*
Huber, Gerhard, 5,188,051, Cl. 114-150.000.

Hoffman, Arlan J. Vending machine coin mechanism. 5,188,207, Cl. 194-236.000.

Hoffman, Eric A.; and Hanson, C. William, III, to University of Pennsylvania, The Trustees of the. Method and apparatus for ECG gated ventilation. 5,188,098, Cl. 128-204.230.

Hoffman, Paul R.: *See—*
Bregman, Mark F.; Hoffman, Paul R.; Ledermann, Peter G.; Moskowitz, Paul A.; Pollak, Roger A.; Reiley, Timothy C.; and Ritter, Mark B., 5,189,363, Cl. 324-158.00P.

Hoffmann, Gerald W.; and Van der Male, John. Tractor power broom apparatus. 5,187,828, Cl. 15-82.000.

Hoffmann La Roche Inc.: *See—*
Chung-Chen, Wei; and West, Kevin F., 5,189,157, Cl. 540-222.000.

Hofmann, Manfred: *See—*
Mayer, Hartwig; Hofmann, Manfred; and Riedinger, Hans-Peter, 5,189,597, Cl. 361-391.000.

Hoglund, Tom: *See—*
Paajanen, Reijo; Terho, Mikko; and Hoglund, Tom, 5,189,632, Cl. 364-705.050.

Hogsnes, Oyvind: *See—*
Gjestrum, Einar; Hjelle, Oddbjorn; Hogsnes, Oyvind; Valle, Gunnar F.; and Sorbotten, Oyvind, 5,188,053, Cl. 114-242.000.

Hoh, Ying-Chu: *See—*
Pen, Ben-Li; Wang, Dah-Ping; Hoh, Ying-Chu; and Tsao, Kuo-Hao, 5,188,736, Cl. 210-634.000.

Hoisington, Paul A.: *See—*
Hine, Nathan P.; Hoisington, Paul A.; Spehrley, Charles W., Jr; Biggs, Melvin L.; and Carden, Richard, 5,189,438, Cl. 346-1.100.

Hoke Incorporated: *See—*
Radossi, Sergio, 5,188,144, Cl. 137-315.000.

Hollis, Samuel D.; and Shiah, Thomas Y. J., to Union Camp Corporation. Resinous binders having improved dilution. 5,189,089, Cl. 524-272.000.

Hollstegge, Jerome E. Drying rack for freezer bags and like articles. 5,188,244, Cl. 211-71.000.

Holm, William D., to Allwaste, Inc. Method for removing accumulated ash from precipitators. 5,187,903, Cl. 51-320.000.

Holman, Tomlinson, to LucasArts Entertainment Company. Timbre correction units for use in sound systems. 5,189,703, Cl. 381-61.000.

Holophane Company, Inc.: *See—*
Subisak, Gregory J.; and Hammond, Douglas S., 5,188,453, Cl. 362-329.000.

Holst, Melvin. Fabric dryer with rotary microwave choke seal. 5,187,879, Cl. 34-1.0DD.

Holt, Kenneth C., to Teknekron Communications Systems, Inc. Method and an apparatus for generating a video binary signal for a video image having a matrix of pixels. 5,189,710, Cl. 382-22.000.

Home Row, Inc.: *See—*
Franz, Patrick J.; and Straayer, David H., 5,189,403, Cl. 340-711.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Akiyama, Eitetsu; and Kishi, Noriyuki, 5,187,935, Cl. 60-602.000.
Furuya, Hiroyuki; and Ohtaki, Keizaburo, 5,188,276, Cl. 228-6.100.
Habaguchi, Masayuki; Nakajima, Toyohei; Hosoda, Fumio; Fujimoto, Sachito; Kitamoto, Masakazu; Moriwaki, Hideo; and Nakamura, Takefumi, 5,188,085, Cl. 123-520.000.
Takebe, Katsuhiko; and Hiyama, Satoshi, 5,187,986, Cl. 73-766.000.
Tsurumiya, Osamu; Izawa, Masataka; Abe, Masaru; and Nonaga, Ikuo, 5,189,616, Cl. 364-424.050.

Honda, Hidemasa: *See—*
Yamada, Yasuhiro; Honda, Hidemasa; Yamasaki, Haruki; and Shimizu, Susumu, 5,188,894, Cl. 428-370.000.

Honda, Kenji: *See—*
Jeffries, Alfred T., III; Honda, Kenji; Blakeney, Andrew J.; and Tadros, Sobhy, 5,188,921, Cl. 430-192.000.

Honda, Norimasa; Sawada, Kazuhide; Idemori, Kenjiro; and Yukawa, Hirokazu, to Daikin Industries, Ltd. Process for preparing polytetrafluoroethylene granular power. 5,189,143, Cl. 528-498.000.

Honda, Tetsuya; and Suzuki, Hidenori, to Kabushiki Kaisha. Card carrier. 5,189,661, Cl. 369-258.000.

Honegger, Werner, to Ferag AG. Method and apparatus for inserting printed products in a folded main product. 5,188,349, Cl. 270-55.000.

Honeywell Inc.: *See—*
Hancock, William R., 5,189,729, Cl. 395-135.000.
Nelson, Richard W., 5,187,985, Cl. 73-708.000.

Hong, Chi-Shain: *See—*
Derry, Pamela L.; Hong, Chi-Shain; Chan, Eric Y.; Figueroa, Luis; and Fu, R. Jennhwa, 5,189,679, Cl. 372-45.000.

Hong, Sun T. Automatic oscillating vehicle mirror. 5,189,561, Cl. 359-843.000.

Hongo, Takayasu: *See—*
Matsubara, Motoki; Sasabe, Setsuo; Hongo, Takayasu; and Fujii, Kenichi, 5,188,470, Cl. 400-621.000.

Honma, Hideki: *See—*
Ejiri, Yuki; Okazaki, Tsutomu; Yamada, Koichiro; Niida, Chiaki; Saeki, Hiroaki; and Honma, Hideki, 5,188,073, Cl. 123-339.000.

Hoof, Erhard, to Albert Hoffmann KG. Apparatus for protecting disks of a hammer-crusher rotor with a protective shield. 5,188,303, Cl. 241-194.000.

Hook, Magnus; Lindberg, Kjell M.; and Wadstrom, Torkel M., to Alfa-Laval Agri International AB. Method for prophylactic treatment of the colonization of a *Staphylococcus aureus* bacterial strain by bacterial cell surface protein with fibronectin and fibrinogen binding ability. 5,189,015, Cl. 514-2.000.

Hooper, Michael E.; and Wilcock, Donald F., to Smith International Inc. Lubricant system for a rotary cone rock bit. 5,188,462, Cl. 384-93.000.

Hoover Group, Inc.: *See—*
Dabney, Upton R., 5,188,344, Cl. 267-103.000.

Hoover, Linn C.; and O'Dea, Dennis J., to Eastman Kodak Company. Apparatus for fixing a toner image including eccentrically mounted pressure relieving means. 5,189,480, Cl. 355-282.000.

Hopkins, Michael F.: *See—*
Tonsor, Andrew J.; Quant, Wilton E.; Hosseini, Javad; Hopkins, Michael F.; and Allen, William E., 5,188,502, Cl. 414-700.000.

Hopkins, William M.: *See—*
Cherveny, Mark V.; Trares, Keith C.; Waibel, Terry J.; Hopkins, William M.; Sinopoli, Italo M.; and Young, Ray A., 5,188,685, Cl. 152-451.000.

Hopmann, Mark; Jennings, Steve L.; and Dinhoble, Daniel E., to Baker Hughes Incorporated. Method and apparatus for controlling the flow of well bore fluids. 5,188,183, Cl. 166-387.000.

Hopp, Peter; and Jansen, Rolf-Michael, to Hoechst Aktiengesellschaft. Process for the removal of olefinic impurities from hydrochlorofluorocarbons. 5,189,230, Cl. 570-177.000.

Hor, Ah-Mee: *See—*
Mayo, James D.; Bluhm, Terry L.; Hsiao, Cheng K.; Martin, Trevor I.; and Hor, Ah-Mee, 5,189,155, Cl. 540-141.000.

Horacek, Heinrich, to Chemie Linz Gesellschaft m.b.H. Flameproof plastics containing urea cyanurate. 5,189,085, Cl. 524-101.000.

Hori, Masaru; and Itoh, Masamitsu, to Kabushiki Kaisha Toshiba. Method of manufacturing an X-ray exposure mask and device for controlling the internal stress of thin films. 5,188,706, Cl. 156-643.000.

Horiba, Ltd.: *See—*
Mino, Kazuo; Nomura, Toshiyuki; and Tsujioka, Yuiji, 5,188,459, Cl. 374-158.000.
Yoshii, Takao; Oku, Narihiro; Horii, Yoshio; and Terada, Kunio, 5,188,334, Cl. 251-7.000.

Horibata, Shinji; Odoi, Yuzo; and Futami, Syoji, to Mitsubishi Denki Kabushiki Kaisha. Method of manufacturing thin film magnetic head. 5,187,860, Cl. 29-603.000.

Horii, Kiyoshi; and Sawazaki, Hiroaki, to Fukuvi Chemical Industry Co., Ltd. Method for coating surfaces of a powdered material by directing coating material into Coanda spiral flow of powdered material. 5,188,868, Cl. 427-212.000.

Horii, Yoshio: *See—*
Yoshii, Takao; Oku, Narihiro; Horii, Yoshio; and Terada, Kunio, 5,188,334, Cl. 251-7.000.

Horikawa, Osamu; and Hijikata, Toshihiko, to NGK Insulators, Ltd. Production of ceramic honeycomb structural bodies. 5,188,779, Cl. 264-62.000.

Horino, Masaya: *See—*
Nakao, Takashi; Emoto, Yoshiaki; Sekiguchi, Koichiro; Iketani, Masayuki; Sahara, Kunizo; Yoshida, Ikuo; Kohno, Akiomi; Horino, Masaya; Kamohara, Hideaki; Irie, Shouichi; Akasaki, Hiroshi; and Otsuka, Kanji, 5,188,280, Cl. 228-123.000.

Horita, Yoshiyuki: *See—*
Takemura, Chiharu; and Horita, Yoshiyuki, 5,187,841, Cl. 24-429.000.

Horn, Waldemar, to Lewa Herbert Ott GmbH & Co. Diaphragm for an hydraulically driven diaphragm pump. 5,188,515, Cl. 417-63.000.

Hornback, Roger W.; and Burtch, John E., to Owens-Illinois Plastic Products Inc. Method and apparatus for shrinking a foam sleeve on a taper wall container. 5,188,775, Cl. 264-25.000.

Hornyak, Julius N.: *See—*
LeBegue, Maurice K.; and Hornyak, Julius N., 5,188,427, Cl. 299-12.000.

Horsch, Robert B.: *See—*
Shah, Dilip M.; Rogers, Stephen G.; Horsch, Robert B.; and Fraley, Robert T., 5,188,642, Cl. 47-58.000.

Horst, James F.: *See—*
McKenna, Frank J.; Horst, Richard K.; Horst, James F.; Wright, Charles S.; and Matthews, John D., 5,187,928, Cl. 56-328.100.

Horst, Richard K.: *See—*
McKenna, Frank J.; Horst, Richard K.; Horst, James F.; Wright, Charles S.; and Matthews, John D., 5,187,928, Cl. 56-328.100.

Horvath, Steven J. Method for applying anti-lacerative film to glass. 5,188,692, Cl. 156-212.000.

Hoshiba, Kazuhiro, to Rohm Co., Ltd. Capacitor in a semiconductor integrated circuit and non-volatile memory using same. 5,189,594, Cl. 257-295.000.

Hosoda, Fumio: *See—*
Habaguchi, Masayuki; Nakajima, Toyohei; Hosoda, Fumio; Fujimoto, Sachito; Kitamoto, Masakazu; Moriwaki, Hideo; and Nakamura, Takefumi, 5,188,085, Cl. 123-520.000.

Hosoi, Hideki: *See—*
Takaki, Akira; Iguchi, Hirokazu; Suzuki, Satoshi; Mori, Hiroto; and Hosoi, Hideki, 5,188,751, Cl. 525-70.000.

Hosokawa Mikropul Gesellschaft fur Mahlund Staubtechnik mbH: *See—*
Schwamborn, K. H., 5,188,237, Cl. 209-23.000.

Hosseini, Javad: *See—*
Tonsor, Andrew J.; Quant, Wilton E.; Hosseini, Javad; Hopkins, Michael F.; and Allen, William E., 5,188,502, Cl. 414-700.000.

Hotea, Gheorghe: *See—*
Hass, Jurgen; Hotea, Gheorghe; and Siegel, Guenter, 5,188,545, Cl. 439-851.000.

Hotta, Yoshiji: *See—*
Tada, Naofumi; Iida, Fumio; Takahashi, Ryukichi; Maki, Naoki; Sakai, Shuji; and Hotta, Yoshiji, 5,189,386, Cl. 335-216.000.

House, Roy F., to Venture Innovations, Inc. Clumping cat litter. 5,188,064, Cl. 119-172.000.

Houston, Daniel Q.: *See—*
Stiles, Ernest D.; Wlosinski, Ronald K.; and Houston, Daniel Q., 5,188,981, Cl. 428-195.000.

Howarth, Michael S.: *See—*
Cox, Brian G.; and Howarth, Michael S., 5,189,163, Cl. 544-239.000.

Howe, Michael G.: *See—*
Sherburne, David G.; Seim, April M.; and Howe, Michael G., 5,189,456, Cl. 354-298.000.

Howson, Paul E.; and Mackenzie, Patricia D., to General Electric Company. Method for preparing a high molecular weight polyethermide polymer in a dual solvent system. 5,189,137, Cl. 528-171.000.

Hoya Corporation: *See—*
Shimizu, Yasumoto, 5,188,901, Cl. 428-421.000.

Hozhabr-Ghelichi, Sassan: *See—*
Kamal, Musa R.; Lohfink, Gunter; Arghyris, Laurent; and Hozhabr-Ghelichi, Sassan, 5,188,784, Cl. 264-108.000.

Hromek, Joseph: *See—*
Alexander, Lawrence C.; Appelt, Bernd K.; Balkin, David K.; Hansen, James J.; Hromek, Joseph; Kaschak, Ronald A.; Lauffer, John M.; Memis, Irving; Patel, Magan S.; Seman, Andrew M.; and Susko, Robin A., 5,189,261, Cl. 174-263.000.

Hsia, Jen-Chang, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Pasteurizable, freeze-driable hemoglobin-based blood substitute. 5,189,146, Cl. 530-385.000.

Hsiao, Cheng K.: *See—*
Mayo, James D.; Bluhm, Terry L.; Hsiao, Cheng K.; Martin, Trevor I.; and Hor, Ah-Mee, 5,189,155, Cl. 540-141.000.

Hsu, John S.: *See—*
Woodson, Herbert H.; and Hsu, John S., 5,189,357, Cl. 318-737.000.

Hsue, Robert: *See—*
Lin, Steve; Kao, Kent; and Hsue, Robert, 5,189,543, Cl. 359-142.000.

Hsueh, Jen S. Partition frame elements. 5,187,912, Cl. 52-584.000.

Hu, Charles C., to Watt Stopper Inc., The. Dual technology motion sensor. 5,189,393, Cl. 340-522.000.

Huang, Chih-Kung: *See—*
Liu, Wei-Jyh; Huang, Chih-Kung; and Chen, Chad-Yang, 5,188,986, Cl. 437-225.000.

Huang, Chin-Ching, to VLSI Technology, Inc. Method of bonding a semiconductor die to a package using a gold/silicon preform and cooling the die and package through a monotonically decreasing temperature sequence. 5,188,982, Cl. 437-209.000.

Huang, F. J.: *See—*
Chen, S. C.; Chu, C. C.; Lin, F. S.; and Huang, F. J., 5,189,214, Cl. 562-519.000.

Huang, Tracy J.; and Tsao, Ying-Yen P., to Mobil Oil Corp. Redispersion of noble metal on low acidity support. 5,188,996, Cl. 502-37.000.

Huang, Yuh T. Hydraulic/pneumatic pump. 5,188,516, Cl. 417-199.100.

Huard, Jeff M., to National Semiconductor Corporation. High speed, multi-port memory cell utilizable in a BICMOS memory array. 5,189,640, Cl. 365-154.000.

Huber, Gerhard, to Hoerbiger Hydraulik GmbH. Power steering mechanism for vehicles, particularly motor boats. 5,188,051, Cl. 114-150.000.

Huber, Jacob R. A., to Boon Edam B.V. Revolving door, particularly for the protection of the access to a room. 5,187,895, Cl. 49-42.000.

Huels Aktiengesellschaft: *See—*
Speikamp, Hans-Dieter; Kuhnle, Adolf; and Bretschneider, Jurgen, 5,189,069, Cl. 521-56.000.

Huemke, Klaus: *See—*
Schwerzel, Thomas; Schupp, Hans; Huemke, Klaus; Faul, Dieter; and Heimann, Ulrich, 5,188,716, Cl. 204-181.700.

Huests, Leo H.: *See—*
Borgmeyer, Virgil L.; Trice, Chester F.; Tempco, Dale A.; Clark, Thomas F.; Ritter, William J.; and Huests, Leo H., 5,189,257, Cl. 174-50.000.

Huffman, John; and Shannon, John, to Safety Shot Limited Partnership. Environmentally improved shot. 5,189,252, Cl. 102-459.000.

Huggar, Calvin, Sr.: *See—*
Johnson, Stephen M.; Huggar, Calvin, Sr.; and Henneberger, Roy L., 5,189,723, Cl. 385-134.000.

Hughes Aircraft Company: *See—*
Hartley, James T., 5,189,724, Cl. 385-135.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Johnson, Kirk E.; and Modzelewski, Edward, 5,188,282, Cl. 228-242.000.
Kohnen, Kirk K., 5,189,629, Cl. 364-490.000.
LeCompte, George W., 5,189,253, Cl. 102-504.000.
Pierce, Brian M., 5,188,783, Cl. 264-104.000.
Skertic, Matthew M.; Hlava, Joseph L.; Eneim, Arthur A.; and Maassen, Nevil Q., 5,187,939, Cl. 62-51.200.
Zinck, Jennifer J.; and Baukus, James P., 5,188,671, Cl. 118-715.000.

Hughes, Nigel: *See—*
Hall, Nigel; Hughes, Nigel; and Patel, Prakash, 5,189,181, Cl. 549-299.000.

Hughes, Robert C.: *See—*
Blair, Dianna S.; Freye, Gregory C.; Hughes, Robert C.; Martin, Stephen J.; and Ricco, Antonio J., 5,187,980, Cl. 73-599.000.

Hugo Kern & Liebers GmbH & Co. Platinen- und Federnfabrik: *See—*
Frietsch, Klaus, 5,189,278, Cl. 219-121.660.

Huiras, James W.: *See—*
Hahn, Frederick C.; Ulven, Andrew H.; and Huiras, James W., 5,188,680, Cl. 148-593.000.

Hukasawa, Jiro: *See—*
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Fujii, Yasuo; Nakamura, Tetsuya; Fukuyama, Hirotaka; Arai, Seiji; Sato, Koichiro; Takagi, Toshio; Nishina, Shuji; Hukasawa, Jiro; Maruta, Masatoshi; and Koizumi, Seiichi, 5,188,057, Cl. 118-657.000.

Hull, John W., Jr., to DowElanco. Process for the preparation of 2-alkyl-5-hydroxypyrimidines from 1,3-diamino-2-propanol and an alkanecarboxylic acid. 5,189,166, Cl. 544-298.000.

Hultholm, Stig-Erik: *See—*
Lilja, Launo L.; Makitalo, Valto J.; Hultholm, Stig-Erik; and Nyman, Bror G., 5,188,808, Cl. 422-229.000.

Humbert, Heiko; Klockemann, Werner; and Primeaux, Dudley J., II, to Texaco Chemical Co. Process for the production of expanded materials based on polyurea elastomers. 5,189,073, Cl. 521-110.000.

Hummel Machine and Tool Company: *See—*
Hummel, Scott, 5,188,189, Cl. 173-213.000.

Hummel, Scott, to Hummel Machine and Tool Company. Adjustable universal driver. 5,188,189, Cl. 173-213.000.

Humphries, Brian J.; Waters, Colin M.; Bull, Steven D.; and Morris, Christopher J., to Thorn EMI plc. Display device. 5,189,406, Cl. 340-793.000.

Hunnell, Jack E.; and Hunnell, John E., to Triangle Biomedical Sciences, Inc. Compressible microtome object holder. 5,188,347, Cl. 269-258.000.

Hunnell, John E.: *See—*
Hunnell, Jack E.; and Hunnell, John E., 5,188,347, Cl. 269-258.000.

Hunter Fan Company: *See—*
Mehta, Vinay; and Leung, P. C., 5,189,412, Cl. 340-825.220.

Hunter, William A.: *See—*
Barlow, Allan R.; Colananni, Paul D.; Garafola, Daniel C.; Irving, Bryan E.; Elman, Larisa A.; and Hunter, William A., 5,189,624, Cl. 364-474.110.

Huppi, Ernest R.: *See—*
Vanasse, George A.; and Huppi, Ernest R., 5,189,554, Cl. 359-601.000.

Huss Maschinenfabrik GmbH & Co., KG: *See—*
Bohme, Karl, 5,188,566, Cl. 472-45.000.

Hussein, Hany M. G.; Loeb, Marvin; and Galt, Kenneth M., to Trimedyne, Inc. Rotatable laser probe with beveled tip. 5,188,634, Cl. 606-14.000.

Husson, Isabelle: *See—*
Simpkin, Gordon T.; and Husson, Isabelle, 5,188,841, Cl. 424-495.000.

Hutchins, Larry D.: *See—*
York, Rudy L.; Luttmer, Joseph D.; Wan, Chang F.; Orent, Thomas W.; Hutchins, Larry D.; and Simmons, Art, 5,188,970, Cl. 437-3.000.

Hutter, G. Frederick; and Zuraw, Paul J., to Westvaco Corporation. Hydroxyacrylic modified grinding resins for water-based coatings. 5,189,090, Cl. 524-272.000.

Hutter, Klaus: *See—*
Zeeck, Axel; Philipps, Siegrid; Grabley, Susanne; Granzer, Ernold; Hutter, Klaus; Thiericke, Ralf; and Wink, Joachim, 5,189,150, Cl. 536-6.500.

Hydro Dynamics, Inc.: *See—*
Griggs, James L., 5,188,090, Cl. 126-247.000.

Hydro International Limited: *See—*
Smisson, Robert P. M.; and Lamb, Timothy J., 5,188,238, Cl. 209-211.000.

Hynes, Joseph H., to Cooper Industries, Inc. Clamp and clamp supporting apparatus. 5,188,397, Cl. 285-24.000.

Hyundai Motor Company: *See—*
Han, Ki B., 5,188,071, Cl. 123-195.00R.

Iaccino, Alex; Motev, Phil; and Fuqua, Rick L., to Advance Process Supply Company. Shirt pallet with retractable arms biased toward extended position. 5,188,034, Cl. 101-474.000.

Iacovangelo, Dominic C., to General Electric Company. Method of applying metal coatings on cubic boron nitride and articles made therefrom. 5,188,643, Cl. 51-293.000.

Ichihashi, Tetsuo: *See—*
Nitta, Shozo; Kurihara, Hideshi; Sanenobu, Kazuyuki; Ichihashi, Tetsuo; and Takagi, Norio, 5,188,774, Cl. 264-22.000.

Ichikawa, Shuichi; and Takahashi, Tomonori, to NGK Insulators, Ltd. Beta alumina sintered body and method of manufacturing the same. 5,188,994, Cl. 501-153.000.

Ichimura, Nobuo: *See—*
Yamazaki, Mitsuo; Ichimura, Nobuo; Miyamoto, Yasuo; Fujita, Koei; and Kawasumi, Masao, 5,188,767, Cl. 252-512.000.

ICL Personal Systems Oy: *See—*
Mattila, Reijo, 5,188,471, Cl. 400-630.000.

Idemitsu Kosan Co., Ltd.: *See—*
Funaki, Keisuke; and Ohki, Yuichi, 5,188,930, Cl. 430-536.000.
Ishihara, Nobuhide; Kuramoto, Masahiko; and Uoi, Michitake, 5,189,125, Cl. 526-160.000.

Idemitsu Petrochemical Company Limited: *See—*
Itatani, Ryohei; and Fukumoto, Kazuyuki, 5,188,862, Cl. 427-570.000.
Kumazawa, Takashi; Ishibashi, Tetsuo; and Kanzawa, Mitsugu, 5,189,198, Cl. 560-81.000.

Idemori, Kenjiro: *See—*
Honda, Norimasa; Sawada, Kazuhide; Idemori, Kenjiro; and Yukawa, Hirokazu, 5,189,143, Cl. 528-498.000.

Idemoto, Morito; and Noguchi, Yasuo, to Sumitomo Bakelite Company Limited. Surgical ultrasonic horn. 5,188,102, Cl. 128-24.0AA.

Ido, Kou: *See—*
Udo, Hiroshi; Nagaishi, Hatsuo; Takasaki, Tadaoki; and Ido, Kou, 5,188,082, Cl. 123-491.000.

Idosako, Hidetaka; and Takayama, Masao, to Kabushiki Kaisha Somic Ishikawa. Ball joint. 5,188,477, Cl. 403-133.000.

Igarashi, Yoshiki; and Miyajima, Goh, to Hitachi, Ltd. Silencer for magnetic field gradient coils in a magnetic resonance imaging apparatus. 5,189,372, Cl. 324-318.000.

Igaue, Takamitsu; Nomura, Hironori; Shimakawa, Taiji; and Sasaki, Tohru, to Uni-Charm Corporation. Disposable garments of pants type. 5,188,627, Cl. 604-385.200.

Igaue, Takamitsu: *See—*
Nishino, Kazunari; Sasagawa, Shuzo; Katsurayama, Hirofumi; Igaue, Takamitsu; and Kido, Tsutomu, 5,188,895, Cl. 428-373.000.

Iguchi, Hirokazu: *See—*
Takaki, Akira; Iguchi, Hirokazu; Suzuki, Satoshi; Mori, Hiroto; and Hosoi, Hideki, 5,188,751, Cl. 525-70.000.

Iguchi, Katsuji: *See—*
Kawamura, Akio; Iguchi, Katsuji; and Urai, Masahiko, 5,189,501, Cl. 257-647.000.

Iguchi, Michihisa: *See—*
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Fujii, Yasuo; Nakamura, Tetsuya; Fukuyama, Hirotaka; Arai, Seiji; Sato, Koichiro; Takagi, Toshio; Nishina, Shuji; Hukasawa, Jiro; Maruta, Masatoshi; and Koizumi, Seiichi, 5,188,057, Cl. 118-657.000.

Iida, Fumio: *See—*
Tada, Naofumi; Iida, Fumio; Takahashi, Ryukichi; Maki, Naoki; Sakai, Shuji; and Hotta, Yoshiji, 5,189,386, Cl. 335-216.000.

Iida, Keiichi: *See—*
Inukai, Takao; Tachibana, Kanichi; Tsukada, Kazuo; Fujikawa, Toshitaka; Iida, Keiichi; and Kogure, Noboru, 5,189,273, Cl. 219-10.55E.

Iida, Yoshimitsu; and Sumida, Shuji, to Chugai Seiyaku Kabushiki Kaisha. Slow-release pharmaceutical agent. 5,188,840, Cl. 424-468.000.

Iizuka, Takashi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Scanning optical system with offset lens component. 5,189,546, Cl. 359-217.000.

Ikari, Hirotake; and Takahashi, Teruyoshi, to Rohm and Haas Company. Aquatic antifouling composition. 5,188,663, Cl. 106-18.330.

Ikeda, Hitoshi: *See—*
Natsugari, Hideaki; and Ikeda, Hitoshi, 5,189,043, Cl. 514-309.000.

Ikeda, Masaharu; Funabiki, Takahiro; and Kasuga, Kazuo, to Hitachi, Ltd. Method of locating a fault in a logic IC device. 5,189,365, Cl. 324-158.00R.

Ikeda, Masami: *See—*
Arashima, Teruo; Kimura, Makiko; Kashino, Toshio; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; and Orikasa, Tsuyoshi, 5,189,443, Cl. 346-140.00R.

Ikeda, Miyuki: *See—*
Ogino, Masanori; Yamada, Takeo; Ikeda, Miyuki; Fujikura, Tsueno; and Fujiwara, Takahiko, 5,189,347, Cl. 315-383.000.

Ikeda, Shinyu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Fluorescent lamp assebmly for image scanner. 5,189,340, Cl. 315-116.000.

Ikeda, Takeshi: *See—*
Nakao, Akira; Endo, Toyofusa; and Ikeda, Takeshi, 5,187,857, Cl. 29-564.700.

Ikeda, Tatsuji: *See—*
Sunohara, Ichiro; and Ikeda, Tatsuji, 5,188,009, Cl. 83-13.000.

Ikeda, Yoshihiro: *See—*
Yamada, Masao; Ikeda, Yoshihiro; and Yamamoto, Hiraku, 5,189,444, Cl. 346-157.000.

Ikegami, Noboru: *See—*
Morimoto, Toshifumi; Hattori, Takaaki; Ikegami, Noboru; Nishibu, Hirofumi; Miyauchi, Toshiyuki; and Kubo, Kunimichi, 5,189,106, Cl. 525-240.000.

Ikegami, Yasuyuki: *See—*
Sukeshita, Kazumi; Tomikawa, Takayuki; and Ikegami, Yasuyuki, 5,188,001, Cl. 74-560.000.

Ikematu, Takeshi; Kishimoto, Yasushi; and Miyamoto, Koichi, to Asahi Kasei Kogyo Kabushiki Kaisha. Shape memory polymer resin, composition and the shape memorizing molded product thereof. 5,189,110, Cl. 525-314.000.

→

Iketani, Masayuki: *See—*
Nakao, Takashi; Emoto, Yoshiaki; Sekiguchi, Koichiro; Iketani, Masayuki; Sahara, Kunizo; Yoshida, Ikuo; Kohno, Akiomi; Horino, Masaya; Kamohara, Hideaki; Irie, Shouichi; Akasaki, Hiroshi; and Otsuka, Kanji, 5,188,280, Cl. 228-123.000.

Ikeuchi, Masayuki: *See—*
Murata, Shigemi; and Ikeuchi, Masayuki, 5,189,373, Cl. 324-399.000.

Iles, Martin C.; Atherton, Angela D.; and Copping, Neil M. Freeze-dried dosage forms and methods for preparing the same. 5,188,825, Cl. 424-78.100.

Illinois Tool Works Inc.: *See—*
Jones, James D., Jr., 5,188,495, Cl. 411-369.000.

Imai, Akio; Tsuji, Mitsuji; Sanada, Takashi; and Yamamoto, Keisaku, to Sumitomo Chemical Company, Limited. Modified polymer rubber and process for preparing the same. 5,189,108, Cl. 525-285.000.

Imai, Akio; and Seki, Tomoaki, to Sumitomo Chemical Company, Limited. Modified diene polymer rubbers. 5,189,109, Cl. 525-296.000.

Imai, Jun: *See—*
Kamijo, Shinji; Imai, Jun; and Kodaira, Hiromichi, 5,188,833, Cl. 424-405.000.

Imai, Keitaro: *See—*
Suguro, Kyoichi; Imai, Keitaro; Koyama, Mitsutoshi; and Yamabe, Kikuo, 5,189,503, Cl. 257-310.000.

Imai, Ryuusuke; Nashiwa, Michio; Oomura, Yasuhiro; Matsuda, Ryouichi; Satou, Michio; and Takeuchi, Tamayuki, to Nippon Steel Corporation. Resin-sandwiched metal laminate, process and apparatus for producing the same and process for the producing resin film for the resin-sandwiched metal laminate. 5,188,698, Cl. 156-500.000.

Imaizumi, Makoto: *See—*
Okazaki, Seiji; Yokoyama, Shigeki; Imaizumi, Makoto; Hatanaka, Koji; and Aota, Takashi, 5,189,280, Cl. 219-270.000.

Imamura, Makoto; Tanimoto, Kazushi; Tanaka, Yoichiro; Sonobe, Yoshiaki; and Kitagawa, Katsuyoshi, to Kabushiki Kaisha Toshiba. Flexible information storing disk apparatus having laminar air flow. 5,189,574, Cl. 360-103.000.

Imanishi, Takeshi: *See—*
Sato, Masakazu; Kawashima, Yutaka; Goto, Jun; Chiba, Yoshiyuki; Satake, Mikio; Iwata, Chuzo; and Imanishi, Takeshi, 5,189,211, Cl. 562-430.000.

IMC Fertilizer, Inc.: *See—*
Hilakos, Stephen W., 5,188,812, Cl. 423-320.000.

Immel, Donna L.: *See—*
Bernacchi, Donald B.; Immel, Donna L.; and Yuknis, Carol A., 5,188,855, Cl. 426-273.000.

Imoto, Yoshiya: *See—*
Takashima, Izumi; Imoto, Yoshiya; Taga, Shinichiro; and Shimizu, Mitsuo, 5,189,528, Cl. 358-448.000.

Imperial Chemical Industries PLC: *See—*
Brittain, David R.; Brown, Steven P.; Cooper, Anthony L.; Longridge, Jethro L.; Morris, Jeffrey J.; Preston, John; and Slater, Linda, 5,189,031, Cl. 514-155.000.
Carver, Mark A.; and Hinton, John, 5,188,952, Cl. 435-146.000.
Cox, Brian G.; and Howarth, Michael S., 5,189,163, Cl. 544-239.000.
Gregory, Peter; and Patel, Prakash, 5,189,153, Cl. 540-122.000.
Gregory, Peter; Kenyon, Ronald W.; and Millard, Christine, 5,189,154, Cl. 540-126.000.
Hall, Nigel; Hughes, Nigel; and Patel, Prakash, 5,189,181, Cl. 549-299.000.
Kanne, David B.; Fisher, Karl J.; and Broadhurst, Michael D., 5,189,060, Cl. 514-508.000.
Kanne, David B., 5,189,169, Cl. 546-22.000.
Parton, Brian, 5,188,641, Cl. 8-647.000.
Smith, Peter, 5,189,162, Cl. 544-75.000.
Tucker, Howard, 5,189,033, Cl. 514-211.000.

Implant Innovations, Inc.: *See—*
Green, Ralph E., Jr.; Jones, Ronald H.; Peters, Leland J.; and Withol, Peter J., 5,188,800, Cl. 422-23.000.

IMRS Operations, Inc.: *See—*
Lyons, Richard J.; Nolan, Kevin F.; and Chu, Wah C., 5,189,608, Cl. 364-408.000.

Inaba, Yutaka: *See—*
Hanyu, Yukio; Inaba, Yutaka; Asaoka, Masanobu; Taniguchi, Osamu; Shinjo, Kenji; and Uchimi, Toshiharu, 5,189,536, Cl. 359-56.000.

Inagaki, Masashi: *See—*
Takeda, Naohiro; Otani, Yuzo; Okajima, Nariaki; Ito, Yoshihiko; Kinoshita, Shin-ichi; Inagaki, Masashi; and Harada, Takashi, 5,188,891, Cl. 428-323.000.

Inagaki, Shinya, to Fujitsu Limited. Apparatus for measurement of chromatic dispersion in a single mode optical fiber. 5,189,483, Cl. 356-73.100.

Inata, Hiroo: *See—*
Umetani, Hiroyuki; Inata, Hiroo; Matsumura, Shunichi; and Mera, Hiroshi, 5,189,094, Cl. 525-27.000.

Industrial Magnetics, Inc.: *See—*
Stowe, Michael W., 5,188,239, Cl. 209-223.100.

Industrial Technology Institute: *See—*
Harding, Kevin G., 5,189,493, Cl. 356-376.000.

Industrial Technology Research Institute: *See—*
Chen, Yen-Chen, 5,189,515, Cl. 358-157.000.
Gu, Huan-Lung, 5,188,283, Cl. 229-103.100.

Indyk, Henry: *See—*
Ripley, Thomas L., Sr.; and Indyk, Henry, 5,187,894, Cl. 47-86.000.

Inglis, Andrew, to U.S. Philips Corporation. Data packet transmission system accommodating different substation response times. 5,189,670, Cl. 370-94.100.

Innes, Frank A. S., to Halliburton Logging Services, Inc. Downhole tool. 5,189,645, Cl. 367-84.000.

InoTec Corporation: *See—*
Butters, Scott W., 5,188,261, Cl. 222-107.000.

Inoue, Kazuhiko, to Fujitsu Limited. Multi-disc recording and reproducing apparatus having detachable optical head units. 5,189,652, Cl. 369-36.000.

Inoue, Satoru: *See—*
Shimada, Takashi; Inoue, Satoru; Maekawa, Takaaki; and Jitsumori, Akio, 5,189,415, Cl. 340-854.600.

Inoue, Takasi: *See—*
Nakamura, Shoji; Inoue, Takasi; Sunohara, Masaaki; and Shioyama, Tadao, 5,188,652, Cl. 65-319.000.

Inserra, Dario; Marzio, Marco; and Pellizzari, Paolo, to Varian Associates, Inc. Process for manufacturing an impeller by electrical discharge machining and articles so obtained. 5,188,514, Cl. 416-223.00A.

InSite Vision Incorporated: *See—*
Chandrasekaran, Santosh K.; Reents, Margaret J.; Babcock, John C.; Bowman, Lyle M.; Archibald, Roy D.; and Robinson, Joseph R., 5,188,826, Cl. 424-78.040.

Institut National de la Sante et de la Recherche Medicale: *See—*
Louvard, Daniel; Dudouet, Brigitte; Robine, Sylvie; Arpin, Monique; Pringault, Eric; and Garcia, Alphonse, 5,188,967, Cl. 436-501.000.

Institut Pasteur: *See—*
Louvard, Daniel; Dudouet, Brigitte; Robine, Sylvie; Arpin, Monique; Pringault, Eric; and Garcia, Alphonse, 5,188,967, Cl. 436-501.000.

Institute of Nuclear Energy Research: *See—*
Pen, Ben-Li; Wang, Dah-Ping; Hoh, Ying-Chu; and Tsao, Kuo-Hao, 5,188,736, Cl. 210-634.000.

Integral Peripherals, Inc.: *See—*
Morehouse, James H.; Dunckley, James A.; and Furay, David M., 5,189,576, Cl. 360-105.000.

Integrated Technology Corporation: *See—*
Schwartz, Rodney E.; and Clauter, Steven T., 5,189,360, Cl. 322-25.000.

Intel Corporation: *See—*
Dolin, Robert A., Jr., 5,187,865, Cl. 29-868.000.
Fung, Wingcho; and Yellamilli, Krishna M., 5,189,319, Cl. 307-452.000.
Patti, Michael F.; Fedele, Nicola J.; Harney, Kevin; and Simon, Allen H., 5,189,636, Cl. 364-786.000.

International Business Machines Corporation: *See—*
Ahn, Kie Y.; Lynt, Harold N., Jr.; and Jipson, Victor B., 5,188,923, Cl. 430-273.000.
Alexander, Lawrence C.; Appelt, Bernd K.; Balkin, David K.; Hansen, James J.; Hromek, Joseph; Kaschak, Ronald A.; Lauffer, John M.; Memis, Irving; Patel, Magan S.; Seman, Andrew M.; and Susko, Robin A., 5,189,261, Cl. 174-263.000.
Babie, Wayne T.; Devries, Kenneth L.; Nguyen, Bang C.; and Yang, Chau-Hwa J., 5,188,704, Cl. 156-643.000.
Barnes, Michael S.; Forster, John C.; and Keller, John H., 5,189,446, Cl. 315-111.410.
Bregman, Mark F.; Hoffman, Paul R.; Ledermann, Peter G.; Moskowitz, Paul A.; Pollak, Roger A.; Reiley, Timothy C.; and Ritter, Mark B., 5,189,363, Cl. 324-158.00P.
Christensen, Thomas C.; Hanson, Weldon M.; Mosser, James J.; and Vosberg, Donald E., 5,189,566, Cl. 360-53.000.
Cronin, John E.; and Kaanta, Carter W., 5,189,506, Cl. 257-752.000.
deSouza, Joel; P.; Greiner, James H.; and Sadana, Devendra K., 5,188,978, Cl. 437-160.000.
Frei, Joseph B., 5,189,306, Cl. 250-492.200.
Georgiou, Christos J.; Larsen, Thor A.; and Schenfeld, Eugen, 5,189,314, Cl. 307-271.000.
Johnson, William M.; and Parish, George K., 5,188,465, Cl. 400-121.000.
Kwark, Young H., 5,189,296, Cl. 250-208.200.
Pence, William E., IV, 5,188,286, Cl. 236-1.00F.
Suzuki, Hiroshi, 5,189,539, Cl. 359-87.000.
Suzuki, Naoshi; and Uno, Shunya, 5,189,647, Cl. 368-10.000.

International Container Systems, Inc.: *See—*
Hammett, Roy, 5,188,233, Cl. 206-427.000.

International Flavors & Fragrances Inc.: *See—*
Farbood, Mohamad I.; Morris, James A.; Downey, Arthur E.; and Kiwala, Jacob, 5,188,129, Cl. 131-276.000.

International Paper Company: *See—*
Bernstein, Linda A., 5,188,229, Cl. 206-312.000.

International Visual Corporation: *See—*
Maxworthy, John, 5,188,246, Cl. 211-153.000.

Interventional Thermodynamics, Inc.: *See—*
Nichols, Colin J., 5,188,602, Cl. 604-113.000.

Inukai, Takao; Tachibana, Kanichi; Tsukada, Kazuo; Fujikawa, Toshitaka; Iida, Keiichi; and Kogure, Noboru, to Mitsubishi Materials Corporation. Microwave absorbing heater. 5,189,273, Cl. 219-10.55E.

Invermizzi, Renzo: *See—*
Luciani, Luciano; Pondrelli, Maddalena; Invernizzi, Renzo; and Borghi, Italo, 5,188,997, Cl. 502-107.000.
Masi, Francesco; Invernizzi, Renzo; Carbonaro, Antonio; Costa, Lorenzo; and Moalli, Angelo, 5,189,000, Cl. 502-113.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Iowa State University Research Foundation, Inc.: *See—*
Finnemore, Douglas K.; Miller, Theodore A.; Ostenson, Jerome E.; Schwartzkopf, Louis A.; and Sanders, Steven C., 5,189,260, Cl. 174-125.100.

Irie, Shouichi: *See—*
Nakao, Takashi; Emoto, Yoshiaki; Sekiguchi, Koichiro; Iketani, Masayuki; Sahara, Kunizo; Yoshida, Ikuo; Kohno, Akiomi; Horino, Masaya; Kamohara, Hideaki; Irie, Shouichi; Akasaki, Hiroshi; and Otsuka, Kanji, 5,188,280, Cl. 228-123.000.

Irihara, Kouichi; Andou, Yukinori; and Yui, Yuhi, to Sharp Kabushiki Kaisha. Image forming apparatus with slidably mounted developing unit and photoconductive unit. 5,189,471, Cl. 355-210.000.

Irving, Bryan E.: *See—*
Barlow, Allan R.; Colananni, Paul D.; Garafola, Daniel C.; Irving, Bryan E.; Elman, Larisa A.; and Hunter, William A., 5,189,624, Cl. 364-474.110.

Irwin, Robert S., to Du Pont de Nemours, E. I., and Company. Polyaramide with pendant carboxyl groups. 5,189,141, Cl. 528-331.000.

Ishibashi, Tetsuo: *See—*
Kumazawa, Takashi; Ishibashi, Tetsuo; and Kanzawa, Mitsugu, 5,189,198, Cl. 560-81.000.

Ishibashi, Yutaka: *See—*
Takeda, Fumio; Kojima, Yoshio; Kaneko, Tsuneo; Ishibashi, Yutaka; Sasaki, Naoto; and Tsushima, Isako, 5,187,907, Cl. 52-221.000.

Ishida, Tsutomu: *See—*
Yamakawa, Takeshi; and Ishida, Tsutomu, 5,189,728, Cl. 395-51.000.

Ishigaki, Tatsuya: *See—*
Nishida, Hiroshi; Ishigaki, Tatsuya; Ito, Atsushi; Kudou, Yoshinobu; Katou, Hiroshi; and Fujii, Kousuke, 5,189,577, Cl. 360-106.000.

Ishiguro, Minoru, to Fuji Photo Optical Co., Ltd. Range finder for passive type autofocussing device. 5,189,461, Cl. 354-402.000.

Ishihara, Nobuhide; Kuramoto, Masahiko; and Uoi, Michitake, to Idemitsu Kosan Co., Ltd. Process for producing syndiotactic styrene copolymer. 5,189,125, Cl. 526-160.000.

Ishihara, Takeshi; and Misawa, Hidenobu, to NGK Insulators, Ltd. Solid oxide fuel cells. 5,188,910, Cl. 429-31.000.

Ishii, Atsujiro; Uzawa, Tsutomu; and Mihara, Shinichi, to Olympus Optical Co., Ltd. Vari-focal system having short total length. 5,189,558, Cl. 359-687.000.

Ishii, Minoru: *See—*
Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, 5,188,520, Cl. 418-55.100.

Ishii, Yukihiro, to Fuji Xerox Co., Ltd. Electrostatic image developing toner comprising complex compounds containing silicon. 5,188,929, Cl. 430-110.000.

Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Fujii, Yasuo; Nakamura, Tetsuya; Fukuyama, Hirotaka; Arai, Seiji; Sato, Koichiro; Takagi, Toshio; Nishina, Shuji; Hukasawa, Jiro; Maruta, Masatoshi; and Koizumi, Seiichi, to Kabushiki Kaisha Toshiba; Shindengen Electric Manufacturing Co., Ltd.; and Yamanashi Electronics Co., Ltd. Developing apparatus. 5,188,057, Cl. 118-657.000.

Ishikawa, Masanobu: *See—*
Sugiki, Akio; Ishikawa, Masanobu; Yoshida, Nobuhiro; Tanahashi, Haruhiko; and Miura, Kiyokatsu, 5,188,392, Cl. 280-775.000.

Ishiwata, Masahiro; Tsuchiya, Noriaki; Aoyama, Teruyuki; and Fusatani, Akihiko, to Fuji Xerox Co., Ltd. Reduction/enlargement processing system for an image processing apparatus. 5,189,529, Cl. 358-451.000.

Ishizaka, Kazunori: *See—*
Tachimori, Masaharu; Ishizaka, Kazunori; and Araki, Hideo, 5,189,508, Cl. 257-49.000.

Ishizaki, Naoki: *See—*
Shirai, Kiyoshi; Uehara, Kazuo; Morita, Koichi; Takiguchi, Takahide; and Ishizaki, Naoki, 5,188,147, Cl. 137-596.000.

Isobe, Tsutomu: *See—*
Yamamoto, Yuzo; Nomoto, Katsunori; and Isobe, Tsutomu, 5,188,866, Cl. 427-132.000.

Isozaki, Masashi: *See—*
Misawa, Yoshihisa; Kondo, Hisao; Tsutsumi, Tetsuya; Hayashi, Masahiro; Sugimori, Daisuke; Matsuba, Yorishige; Isozaki, Masashi; Nishigaki, Hiroharu; Yazawa, Kazunaga; and Kondo, Kiyosi, 5,189,189, Cl. 554-194.000.

ISP Investments Inc.: *See—*
Merianos, John J.; Garelick, Paul; and Lieberman, Herbert A., 5,188,818, Cl. 424-49.000.

Itakura, Masamichi: *See—*
Shimanuki, Shizuo; Nakai, Yoshitomo; and Itakura, Masamichi, 5,188,509, Cl. 415-208.100.

Italfarmaco S.P.A.: *See—*
Alberto, Sala; Benedini, Francesca; Cereda, Roberta; and Del Soldato, Piero, 5,189,034, Cl. 514-224.200.

Itatani, Ryohei; and Fukumoto, Kazuyuki, to Idemitsu Petrochemical Company Limited. Microwave plasma generating apparatus and process for the preparation of diamond thin film utilizing same. 5,188,862, Cl. 427-570.000.

Ito, Atsushi: *See—*
Nishida, Hiroshi; Ishigaki, Tatsuya; Ito, Atsushi; Kudou, Yoshinobu; Katou, Hiroshi; and Fujii, Kousuke, 5,189,577, Cl. 360-106.000.

Ito, Kohei: *See—*
Murakami, Yasuhide; and Ito, Kohei, 5,189,383, Cl. 333-201.000.

Ito, Satoshi: *See—*
Masimo, Tamon; Kanazawa, Hiroshi; Masuzaki, Hidefumi; and Ito, Satoshi, 5,189,404, Cl. 340-720.000.

Ito, Tomoaki: *See—*
Shimizu, Katsuya; and Ito, Tomoaki, 5,189,312, Cl. 307-243.000.

Ito, Yoshihiko: *See—*
Takeda, Naohiro; Otani, Yuzo; Okajima, Nariaki; Ito, Yoshihiko; Kinoshita, Shin-ichi; Inagaki, Masashi; and Harada, Takashi, 5,188,891, Cl. 428-323.000.

Itoh, Hiroyuki, deceased (by Kawai, Fumio, legal representative*); and Kawai, Yuji, to Sumitomo Wiring Systems, Ltd. Slippage preventer for an ignition terminal cable. 5,188,537, Cl. 439-127.000.

Itoh, Masamitsu: *See—*
Hori, Masaru; and Itoh, Masamitsu, 5,188,706, Cl. 156-643.000.

Itoh, Shigeo; Watanabe, Teruo; Nakata, Hisashi; and Takagi, Toshinori, to Futaba Denshi Kogyo Kabushiki Kaisha. Electron emitting element. 5,189,341, Cl. 315-169.100.

Itoi, Shigeru, to Kiyohara, Masako. Fluid flow controller. 5,188,338, Cl. 251-265.000.

Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, to Sumitomo Electric Industries, Ltd. Superconducting material and method for preparing the same $(Sr, \gamma)_x(La, \delta)_{1-x}\epsilon_y$-$Cu_{1-y}O_{3-z}$. 5,189,011, Cl. 505-1.000.

ITT Corporation: *See—*
Hatin, Donald T., 5,188,494, Cl. 411-10.000.
Klinger, Gary, 5,187,851, Cl. 29-237.000.
Winter, Klaus, 5,188,203, Cl. 188-218.0XL.

Ivansson, Hans, to Tour & Andersson AB. Method and device for pressure die casting. 5,188,165, Cl. 164-113.000.

IVHS Technologies, Inc.: *See—*
Asbury, Jimmie; and Davis, John W., 5,189,426, Cl. 342-70.000.

Ivy Hill Corporation: *See—*
O'Brien, Patrick J.; and Friedman, Herbert, 5,188,230, Cl. 206-312.000.

Iwai, Yasunori: *See—*
Fukabori, Mitsuhiko; Iwasaki, Hiroshi; Shinto, Hiroaki; Iwai, Yasunori; Nishiuchi, Ryuji; Gotoh, Yuzo; Hiramatsu, Satoru; Hirata, Norimasa; and Tokuda, Masakazu, 5,189,255, Cl. 102-531.000.

Iwaki, Takashi; Takiguchi, Takao; Togano, Takeshi; Yamada, Yoko; and Nakamura, Shinichi, to Canon Kabushiki Kaisha. Mesomorphic compound, liquid crystal composition, liquid crystal device, display apparatus and display method. 5,188,762, Cl. 252-299.620.

Iwao, Koichiro: *See—*
Matsubara, Takahiro; Makita, Toshio; and Iwao, Koichiro, 5,189,716, Cl. 385-93.000.

Iwaoka, Hideto: *See—*
Wada, Morio; Seko, Masahito; Sekiguchi, Youichi; and Iwaoka, Hideto, 5,189,309, Cl. 257-21.000.

Iwasaki, Hiroshi: *See—*
Fukabori, Mitsuhiko; Iwasaki, Hiroshi; Shinto, Hiroaki; Iwai, Yasunori; Nishiuchi, Ryuji; Gotoh, Yuzo; Hiramatsu, Satoru; Hirata, Norimasa; and Tokuda, Masakazu, 5,189,255, Cl. 102-531.000.

Iwasaki, Masayuki: *See—*
Mochizuki, Akihiro; Onda, Fumiyo; Yoshihara, Toshiaki; Iwasaki, Masayuki; and Yamagishi, Yasuo, 5,189,535, Cl. 359-55.000.

Iwasaki, Naoyuki: *See—*
Fukuhori, Shinji; and Iwasaki, Naoyuki, 5,188,645, Cl. 55-20.000.

Iwasawa, Junichi: *See—*
Okayasu, Yoshisada; Yamauchi, Toshiyuki; Mori, Akinari; Kamaya, Naoki; Okayama, Naoki; Maruichi, Takanori; Iwasawa, Junichi; Yamada, Yukio; and Okano, Renjiro, 5,189,520, Cl. 358-229.000.

Iwashita Engineering, Ltd.: *See—*
Iwashita, Isao, 5,188,258, Cl. 222-61.000.

Iwashita, Hiroyuki: *See—*
Muramatsu, Kenji; and Iwashita, Hiroyuki, 5,188,198, Cl. 185-39.000.

Iwashita, Isao, to Iwashita Engineering, Ltd. Apparatus reponsive to pressure of a medium which effects fluid discharge for controlling the pressure of the medium and the time the medium acts on the fluid. 5,188,258, Cl. 222-61.000.

Iwata, Chuzo: *See—*
Sato, Masakazu; Kawashima, Yutaka; Goto, Jun; Chiba, Yoshiyuki; Satake, Mikio; Iwata, Chuzo; and Imanishi, Takeshi, 5,189,211, Cl. 562-430.000.

Iwatsubo, Hitoshi: *See—*
Kitazumo, Tomoya; Yamazaki, Takashi; and Iwatsubo, Hitoshi, 5,189,204, Cl. 560-254.000.

Iwazaki, Toshiaki: *See—*
Nakano, Hirofumi; Kawada, Shozo; Uosaki, Yoichi; Saito, Yutaka; Gomi, Katsushige; and Iwazaki, Toshiaki, 5,189,187, Cl. 549-548.000.

Izawa, Masataka: *See—*
Tsurumiya, Osamu; Izawa, Masataka; Abe, Masaru; and Nonaga, Ikuo, 5,189,616, Cl. 364-424.050.

Izumi, Akio; Maki, Yasuhito; Narabu, Tadakuni; Sato, Maki; Otsu, Takaji; and Saito, Katsuyuki, to Sony Corporation. Charge-coupled device and process of fabrication thereof. 5,189,499, Cl. 257-215.000.

Izumi, Katsutoshi: *See—*
Omura, Yasuhisa; Kunii, Yasuo; and Izumi, Katsutoshi, 5,188,973, Cl. 437-40.000.

J. H. Benecke GmbH: *See—*
Wildenau, Artur, 5,189,087, Cl. 524-151.000.

J. H. Fenner & Co., Ltd.: *See—*
Mallett, Dudley C., 5,189,350, Cl. 318-434.000.

J. J. Hamilton Enterprises, Inc.: *See—*
Hamilton, James J., 5,188,089, Cl. 126-30.000.

J.M. Voith GmbH: *See—*
Sollinger, Hans-Peter; and Hennig, Johannes, 5,189,492, Cl. 356-373.000.

J. Wagner GmbH: *See—*
Gebauer, Gerhard; and Gruber, Johann, 5,188,290, Cl. 239-3.000.

Jackson, John E.; Levy, Joseph L.; Leung, Christopher C.; and Burkhart, Gordon H., to United States of America, Air Force. Transform lens with a plurality of sliced lens segments. 5,189,294, Cl. 250-201.900.

Jacobi, Roger P., to Laserscope. Method for enhanced retention of balloon catheter in body cavity. 5,188,595, Cl. 604-53.000.

Jacobs, John F., Jr. Watercraft towing apparatus. 5,188,054, Cl. 114-250.000.

Jaffard, Jean-Luc; Lietar, Loic; and Mouret, Michel, to SGS-Thomson Microelectronics, S.A. Fast counter/divider and its use in a swallower counter. 5,189,685, Cl. 377-48.000.

Jain, Jaswant R., to MICOM Communications Corp. Voice coder/decoder and methods of coding/decoding. 5,189,701, Cl. 381-41.000.

Jain, Sulekh C.: *See—*
Singh, Jogender; Jain, Sulekh C.; Lloyd, Thomas W.; Bates, Leroy A.; Lacroix, Denis; Cooper, Ernest B., Jr.; Mannava, Seetharamaiah; and Couture, Serge B., 5,187,967, Cl. 72-340.000.

Jameson, Graeme J., to University of Newcastle Research Associates Ltd. Method of operating a plurality of minerals separation flotation cells. 5,188,726, Cl. 209-164.000.

Janatka, Karel J.: *See—*
Lowell, Kenneth W.; Synnett, Karen P.; and Janatka, Karel J., 5,188,355, Cl. 271-225.000.

Jann, Peter C.; Gross, Kenneth P.; and Neukermans, Armand P., to Tencor Instruments. Particle detector for rough surfaces. 5,189,481, Cl. 356-73.000.

Jansen, Elaine: *See—*
Bolan, Michael L.; Little, Wendell L.; Jansen, Elaine; and Folkes, Don, 5,189,598, Cl. 361-397.000.

Jansen, Rolf-Michael: *See—*
Hopp, Peter; and Jansen, Rolf-Michael, 5,189,230, Cl. 570-177.000.

Japan Electronic Control Systems Company, Ltd.: *See—*
Komatsu, Syunji; Kuribara, Masaru; and Kobayashi, Kazumitsu, 5,187,942, Cl. 62-149.000.

Japan Gore-Tex, Inc.: *See—*
Ohashi, Kazuhiko; Kato, Hiroshi; and Wani, Takayuki, 5,188,890, Cl. 428-306.600.

Japan National Oil Corporation: *See—*
Shimada, Takashi; Inoue, Satoru; Maekawa, Takaaki; and Jitsumori, Akio, 5,189,415, Cl. 340-854.600.

Japan Synthetic Rubber Co., Ltd.: *See—*
Kasai, Kiyoshi; Sakurai, Fujio; and Tadenuma, Hiroshi, 5,189,107, Cl. 525-244.000.

Jarczynski, Emil D., to General Electric Company. Liquid cooling the rotor of an electrical machine. 5,189,325, Cl. 310-54.000.

Jarosch, George W., to Eaton Corporation. Variable superheat target strategy for controlling an electrically operated refrigerant expansion valve. 5,187,944, Cl. 62-225.000.

Jason, Inc.: *See—*
Tyler, James B.; Scheider, Alfred F.; and Warner, R. Brown, 5,187,904, Cl. 51-330.000.

Jastrow, Keith. Lifting apparatus. 5,188,247, Cl. 212-140.000.

Jeffries, Alfred T., III; Honda, Kenji; Blakeney, Andrew J.; and Tadros, Sobhy, to OCG Microelectronic Materials, Inc. Selected block copolymer novolak binder resins in radiation-sensitive resist compositions. 5,188,921, Cl. 430-192.000.

Jeffs, David G.: *See—*
Wallace, Peter L.; and Jeffs, David G., 5,188,778, Cl. 264-45.100.

Jelic, Ralph, to Verosol USA Inc. Honeycombed shade. 5,188,160, Cl. 160-84.100.

Jeng, Bill C. B.; and Chen, Chiang-Ming. Students multi-function protractor. 5,187,873, Cl. 33-435.000.

Jenner, John A.: *See—*
Coates, David; Sage, Ian C.; and Jenner, John A., 5,188,815, Cl. 424-7.100.

Jennings, Charles E., to ABB Vetco Gray Inc. Hydraulic circuit for a well tool. 5,188,180, Cl. 166-338.000.

Jennings, Steve L.: *See—*
Hopmann, Mark; Jennings, Steve L.; and Dinhoble, Daniel E., 5,188,183, Cl. 166-387.000.

Jennrich, Irene: *See—*
Heyke, Klaus; Spitz, Richard; Seidel, Hans-Joachim; Jennrich, Irene; Pfander, Werner; and Vohr, Armin, 5,189,080, Cl. 523-212.000.

Jepson, Steve C.; and Dudar, Thomas E., to Baxter International Inc. Pre-slit injection site and associated cannula. 5,188,620, Cl. 604-283.000.

Jeromin, Lutz: *See—*
Blasey, Gerhard; Breucker, Christoph; Gutsche, Bernhard; Jeromin, Lutz; Panthel, Guenter; Peukert, Eberhard; and Schmidt, Wolfgang, 5,189,207, Cl. 562-97.000.

Jervis, Daniel A.: *See—*
Wang, Richard H. S.; Shang, Ping P.; and Jervis, Daniel A., 5,189,088, Cl. 524-222.000.

Jidosha Kiki Co., Ltd.: *See—*
Mori, Kohei, 5,187,934, Cl. 60-562.000.

Jidoshakiki Co. Ltd.: *See—*
Okazaki, Seiji; Yokoyama, Shigeki; Imaizumi, Makoto; Hatanaka, Koji; and Aota, Takashi, 5,189,280, Cl. 219-270.000.

Jimbo, Naoaki: *See—*
Uchiyama, Akira; Jimbo, Naoaki; and Shimizu, Shizuo, 5,188,882, Cl. 428-159.000.

Jipson, Victor B.: *See—*
Ahn, Kie Y.; Lynt, Harold N., Jr.; and Jipson, Victor B., 5,188,923, Cl. 430-273.000.

Jitsumori, Akio: *See—*
Shimada, Takashi; Inoue, Satoru; Maekawa, Takaaki; and Jitsumori, Akio, 5,189,415, Cl. 340-854.600.

Jodai, Tetsuji: *See—*
Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, 5,189,011, Cl. 505-1.000.

Joensen, Finn H.: *See—*
Hansen, John B.; Joensen, Finn H.; and Topsoe, Haldor F. A., 5,189,203, Cl. 560-232.000.

Joesten, Burdette L.; and Su, Tien-Kuei, to Mobil Oil Corporation. Opaque film and method for its preparation. 5,188,777, Cl. 264-41.000.

Johnson, Craig R.: *See—*
Pace, Darr C.; Bayer, Craig E.; Casagrande, Mark T.; Johnson, Craig R.; Hall, Danny K.; and Nolan, Andrew W., 5,188,804, Cl. 422-111.000.

Johnson Electric S.A.: *See—*
Strobl, Georg, 5,189,329, Cl. 310-233.000.

Johnson, Eric J.; Boyer, Charles E., III; Nielsen, Edmond J.; and Minick, Chris A., to Minnesota Mining and Manufacturing Company. Microwave radiation absorbing adhesive. 5,189,078, Cl. 523-137.000.

Johnson, George H.: *See—*
de Graaf, Martinus J. M.; Fickes, Michael G.; Johnson, George H.; and Simmons, Howard E., III, 5,188,863, Cl. 427-512.000.

Johnson, Gerald E.; Rivera, James A.; and McClement, Arthur, to Otis Elevator Company. Handrail roller bow adjustment. 5,188,209, Cl. 198-336.000.

Johnson, Gordon G.: *See—*
Wang, Lui; and Johnson, Gordon G., 5,189,709, Cl. 382-10.000.

Johnson, James W.: *See—*
Rhodes, Wayne A.; and Johnson, James W., 5,188,486, Cl. 406-145.000.

Johnson, John H.: *See—*
Barrett, John P., Sr.; Thorsen, Daniel M.; and Johnson, John H., 5,187,818, Cl. 4-313.000.

Johnson & Johnson Consumer Products, Inc.: *See—*
Feret, Ronald M., 5,188,124, Cl. 128-889.000.

Johnson, Kenneth H., to Chemical Research & Licensing Company. Catalytic distillation structure. 5,189,001, Cl. 502-159.000.

Johnson, Kirk E.; and Modzelewski, Edward, to Hughes Aircraft Company. Vapor phase flash fusing of printed wiring boards. 5,188,282, Cl. 228-242.000.

Johnson, Mark A.; Pokora, Alexander R.; and Cyrus, William L., Jr., to Mead Corporation, The. Biocatalytic oxidation using soybean peroxidase. 5,188,953, Cl. 435-156.000.

Johnson Matthey Public Limited Company: *See—*
Fairey, Norman R.; and Hatton, Robert D., 5,188,813, Cl. 423-403.000.

Johnson, Stephen M.; Huggar, Calvin, Sr.; and Henneberger, Roy L., to ADC Telecommunications, Inc. Below ground cross-connect/splice sytem (BGX). 5,189,723, Cl. 385-134.000.

Johnson, Stephen W. Portable and collapsible livestock feeder. 5,188,060, Cl. 119-58.000.

Johnson, William M.; and Parish, George K., to International Business Machines Corporation. RMS power controller for dot-matrix printers. 5,188,465, Cl. 400-121.000.

Johnston, Bill: *See—*
Dressler, Jim; Johnston, Bill; Loftis, Gerald; Salierno, Mark; Solt, Gordon; Spira, Jeff; and Tarsha, Manual, 5,188,316, Cl. 244-234.000.

Johnston, Clarence P. Device for applying scent to fishing lures. 5,187,890, Cl. 43-4.000.

Johnston, Mark A.: *See—*
Parsons, Douglas A.; Johnston, Mark A.; Games, John E.; and DePardo, Gerald L., 5,189,620, Cl. 364-431.020.

Jones, Graham E.: *See—*
Hadley, Michael S.; and Jones, Graham E., 5,189,047, Cl. 514-337.000.

Jones, James D., Jr., to Illinois Tool Works Inc. Fastener assembly useful as drain plug. 5,188,495, Cl. 411-369.000.

Jones, Ronald H.: *See—*
Green, Ralph E., Jr.; Jones, Ronald H.; Peters, Leland J.; and Withol, Peter J., 5,188,800, Cl. 422-23.000.

Jones, Steven D.: *See—*
Blomgren, George E.; and Jones, Steven D., 5,188,914, Cl. 429-112.000.

Jones, Todd K.: *See—*
Blacklock, Thomas J.; Jones, Todd K.; Mathre, David J.; and Xavier, Lyndon C., 5,189,177, Cl. 548-405.000.

Jones, Travis R.; and Gates, E. Robert. Plant growth enhancing compositions using gibberellins, indoleacetic acid and kinetin. 5,188,655, Cl. 504-136.000.

Jorba, Jose . Carrier for a group of containers and cardboard blank therefor. 5,188,225, Cl. 206-145.000.

Jorlov, Rickard, to Aimpoint AB. Parallax free optical sighting device. 5,189,555, Cl. 359-618.000.

Jory, John; and Fay, Lawrence W. Craftsman's adjustable angle instrument. 5,187,877, Cl. 33-640.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Joseph, Dennis M.: *See*—
Hodson, James M.; and Joseph, Dennis M., 5,189,452, Cl. 353-94.000.

Joseph, Michael L.; Boulay, Steven G.; and Nasman, Ronald W., to Digital Equipment Corporation. Self-retaining mounting block. 5,188,324, Cl. 248-222.300.

Joveux-Bouillon, Bernard; and Maineult, Jean, to GEC Alsthom SA. Electrical connection, in particular for a modular, medium-tension electricity substation. 5,188,538, Cl. 439-271.000.

Joy, Gerald T.; and Wilson, Edla C., III. Automatic litter box for small animals. 5,188,062, Cl. 119-164.000.

Joyce, Michael J.; Boley, Warren M.; and Deal, James L., to United Technologies Corporation. Inertia bonding utilizing alternative axial load paths. 5,188,279, Cl. 228-113.000.

Judd, David R.: *See*—
Wilson, Alan A.; Brand, Peter J.; Judd, David R.; and Bonney, Stanley G., 5,187,921, Cl. 53-453.000.

Jue, George H.: *See*—
Hillegonds, Larry A.; Jue, George H.; and Bulanda, John J., 5,187,861, Cl. 29-751.000.

Jullien, Robert G. Syringe guard apparatus. 5,188,600, Cl. 604-110.000.

Jung-Il, Seo; and Han-Oh, Kewon, to Samsung Electronics Co., Ltd. Air conditioner having a selectable air discharge. 5,187,949, Cl. 62-411.000.

Jurgensen, Stewart R.: *See*—
Schulte, Thomas H.; Jurgensen, Stewart R.; and Mapes, James P., 5,188,937, Cl. 435-7.360.

Jurica, Joseph J.: *See*—
Walworth, Tom M., Jr.; Jurica, Joseph J.; Weilemann, Donald E.; and Turner, Joseph, 5,188,418, Cl. 296-183.000.

Jyohoji, Hirofumi: *See*—
Sasaki, Toshio; Ebara, Takeshi; Jyohoji, Hirofumi; Mizunuma, Kooji; and Kawai, Kiyoshi, 5,189,124, Cl. 526-119.000.

Kaali, Steven; and Schwolsky, Peter M. Alternating current supplied electrically conductive method and system for treatment of blood and/or other body fluids and/or synthetic flnids with electric forces. 5,188,738, Cl. 210-748.000.

Kaanta, Carter W.: *See*—
Cronin, John E.; and Kaanta, Carter W., 5,189,506, Cl. 257-752.000.

Kabat, Daniel M.: *See*—
Fontichiaro, Dominic; and Kabat, Daniel M., 5,188,067, Cl. 123-90.180.

Kabi Pharmacia AB: *See*—
Lindskog, Inga M.; Sjogren, Bengt C. H.; and Andersson, Sven-Borje, 5,188,835, Cl. 424-432.000.

Kabushiki Kaisha: *See*—
Honda, Tetsuya; and Suzuki, Hidenori, 5,189,661, Cl. 369-258.000.

Kabushiki Kaisha Arikawa Seisakusho: *See*—
Satoh, Katsuhiko; Muto, Itsuo; Takeda, Shigeki; and Miyamoto, Mamoru, 5,188,134, Cl. 134-57.00R.

Kabushiki Kaisha Fuji Iryoki: *See*—
Yamasaki, Yoshikiyo; and Fujimoto, Shinichiro, 5,188,138, Cl. 135-65.000.

Kabushiki Kaisha Japan Health: *See*—
Yamasaki, Yoshikiyo; and Fujimoto, Shinichiro, 5,188,138, Cl. 135-65.000.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See*—
Konishi, Shinya, 5,189,239, Cl. 84-615.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Kitagawa, Hiroshi, 5,188,004, Cl. 74-813.00R.
Shirai, Kiyoshi; Uehara, Kazuo; Morita, Koichi; Takiguchi, Takahide; and Ishizaki, Naoki, 5,188,147, Cl. 137-596.000.

Kabushiki Kaisha Meidensha: *See*—
Hashimoto, Takafumi, 5,188,915, Cl. 429-199.000.

Kabushiki Kaisha POWREX: *See*—
Satoh, Katsuhiko; Muto, Itsuo; Takeda, Shigeki; and Miyamoto, Mamoru, 5,188,134, Cl. 134-57.00R.

Kabushiki Kaisha Sato: *See*—
Matsuda, Yasuhiko; and Karuishi, Kazuhiro, 5,189,470, Cl. 355-208.000.

Kabushiki Kaisha Somic Ishikawa: *See*—
Idosako, Hidetaka; and Takayama, Masao, 5,188,477, Cl. 403-133.000.

Kabushiki Kaisha Topcon: *See*—
Ohtsuka, Hiroyuki, 5,189,556, Cl. 359-634.000.

Kabushiki Kaisha Toshiba: *See*—
Esaki, Hiroshi; and Kamitake, Takashi, 5,189,667, Cl. 370-60.000.
Haga, Hiroyuki, 5,189,349, Cl. 318-254.000.
Hori, Masaru; and Itoh, Masamitsu, 5,188,706, Cl. 156-643.000.
Imamura, Makoto; Tanimoto, Kazushi; Tanaka, Yoichiro; Sonobe, Yoshiaki; and Kitagawa, Katsuyoshi, 5,189,574, Cl. 360-103.000.
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Fujii, Yasuo; Nakamura, Tetsuya; Fukuyama, Hirotaka; Arai, Seiji; Sato, Koichiro; Takagi, Toshio; Nishina, Shuji; Hukasawa, Jiro; Maruta, Masatoshi; and Koizumi, Seiichi, 5,188,057, Cl. 118-657.000.
Konishi, Kuniyoshi, 5,189,541, Cl. 359-118.000.
Kunihiro, Ikari, deceased; Niki, Hirokazu; Nakase, Makoto; and Shinozaki, Toshiaki, 5,188,924, Cl. 430-312.000.
Nozuyama, Yasuyuki; and Nishimura, Akira, 5,189,675, Cl. 371-22.300.
Nunokawa, Masakatsu, 5,189,669, Cl. 370-84.000.
Ogino, Masanobu, 5,188,987, Cl. 437-228.000.
Ono, Katsuhiro; Anno, Hidero; Sugiura, Hiroyuki; Kitami, Takayuki; and Tazawa, Hiroaki, 5,189,688, Cl. 378-133.000.
Sato, Takeshi; and Saito, Sumiko, 5,188,113, Cl. 128-661.090.
Sugimoto, Hiroshi, 5,188,110, Cl. 128-653.100.
Suguro, Kyoichi; Imai, Keitaro; Koyama, Mitsutoshi; and Yamabe, Kikuo, 5,189,503, Cl. 257-310.000.
Takeda, Fumio; Kojima, Yoshio; Kaneko, Tsuneo; Ishibashi, Yutaka; Sasaki, Naoto; and Tsushima, Isako, 5,187,907, Cl. 52-221.000.
Tawara, Kiyoshi, 5,189,414, Cl. 340-825.500.
Yokota, Masahiro; Mori, ideo; and Oyama, Kiyoshi, 5,189,348, Cl. 315-399.000.

Kabushiki Kaisha Toyota Chuo Kenkyosho: *See*—
Taniguchi, Yousuke; Miyawaki, Tadayuki; Tanaka, Hisashi; and Kitada, Motohiro, 5,187,943, Cl. 62-180.000.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
Mori, Kazuhiko; Kawasaki, Minoru; Yoshida, Shin; Murase, Hiroyuki; Saito, Takashi; Tanaka, Kouji; and Shimura, Yoshio, 5,188,799, Cl. 420-469.000.

Kabushiki Kaisha Yamada Corp.: *See*—
Saita, Seiji, 5,188,518, Cl. 417-403.000.

K.K. Sankyo Seiki Seisakusho: *See*—
Muramatsu, Kenji; and Iwashita, Hiroyuki, 5,188,198, Cl. 185-39.000.

Kachlic, Jerry D.: *See*—
Bertho, Dominique; Kachlic, Jerry D.; and Teck, Yap Y., 5,188,535, Cl. 439-83.000.

Kaczorowski, Wladyslaw. Clasp with a tape for binding, fixing, and tightening. 5,187,840, Cl. 24-273.000.

Kadota, Takao: *See*—
Rhoads, Timothy W.; Suh, Kyung W.; Kadota, Takao; and Stobby, William G., 5,189,071, Cl. 521-79.000.
Rhoads, Timothy W.; Kadota, Takao; Suh, Kyung W.; and Stobby, William G., 5,189,072, Cl. 521-88.000.

Kaga, Kouichi, to Toyoda Gosei Co., Ltd. Steering wheel having an air bag unit. 5,188,000, Cl. 74-552.000.

Kagawa, Junichi; Murase, Masaaki; and Nakamura, Shinichi, to NGK Spark Plug Co., Ltd. Multi-gap spark plug for an internal combustion engine. 5,189,333, Cl. 313-140.000.

Kagawa, Manabu, to NEC Corporation. Bit-slice asynchronous transfer mode switching system. 5,189,666, Cl. 370-60.000.

Kageyama, Norihiko, to Yamaha Corporation. Snow ski base material and ski base manufacture. 5,189,130, Cl. 526-352.000.

Kai, Yoshiaki; and Suzuki, Takashi, to Matsushita Electric Industrial Co., Ltd. Fluorine-containing lubricant compounds. 5,188,747, Cl. 252-54.000.

Kaiser, Herbert: *See*—
Farnleitner, Lorenz; Stuckler, Hubert; Kaiser, Herbert; and Kloimstein, Engelbert, 5,189,215, Cl. 562-577.000.

Kaitoh, Mitsumasa; Kurokawa, Hideki; and Ohnishi, Akiyoshi, to Mitsubishi Petrochemical Company Limited. Piperdine derivatives. 5,189,172, Cl. 546-208.000.

Kajimoto, Kazuhiro, to Seiko Epson Corporation. Apparatus for generating character pattern signals and method for generating same. 5,189,730, Cl. 395-142.000.

Kajiwara, Yasuya; and Tsutsumi, Kazumichi, to Mitsubishi Denki K.K. Correlation detector for images. 5,189,712, Cl. 382-42.000.

Kaku, Takashi; Kishimoto, Hiroki; and Hirao, Kyoko, to Fujitsu Limited. Line signal deterioration removing systems. 5,189,684, Cl. 375-14.000.

Kalies, Ken E.: *See*—
Beck, Earl A.; and Kalies, Ken E., 5,189,324, Cl. 310-51.000.

Kamabora, Koichi: *See*—
Sakakibara, Koji; and Kamabora, Koichi, 5,188,080, Cl. 123-425.000.

Kamal, Musa R.; Lohfink, Gunter; Arghyris, Laurent; and Hozhabr-Ghelichi, Sassan, to Royal Institution for the Advancement of Learning (McGill University), The. Process for laminar pollymer extrusion. 5,188,784, Cl. 264-108.000.

Kamaya, Naoki: *See*—
Okayasu, Yoshisada; Yamauchi, Toshiyuki; Mori, Akinari; Kamaya, Naoki; Okayama, Naoki; Maruichi, Takanori; Iwasawa, Junichi; Yamada, Yukio; and Okano, Renjiro, 5,189,520, Cl. 358-229.000.

Kameda, Osamu: *See*—
Echigo, Mitsuji; Moriyama, Naomune; Akahoshi, Hideaki; Kameda, Osamu; and Akutagawa, Hitoshi, 5,188,574, Cl. 475-206.000.

Kamei, Yoshiharu: *See*—
Hashida, Yoshisuke; Takaoka, Hideo; and Kamei, Yoshiharu, 5,188,694, Cl. 156-353.000.

Kamijo, Shinji; Imai, Jun; and Kodaira, Hiromichi, to Kyorin Seiyaku Kabushiki Kaisha. Freeze-dried pharmaceutical preparations for parenteral use. 5,188,833, Cl. 424-405.000.

Kamikawa, Fumitoshi: *See*—
Sako, Yukitoshi; Kamikawa, Fumitoshi; and Ohta, Sayuri, 5,189,646, Cl. 368-10.000.

Kamio, Kenji: *See*—
Kobayashi, Koichi; Mishima, Seiji; Kamio, Kenji; Miyata, Etsuhisa; Fukuda, Katsuhiko; and Oi, Junichi, 5,188,847, Cl. 425-135.000.

Kamitake, Takashi: *See*—
Esaki, Hiroshi; and Kamitake, Takashi, 5,189,667, Cl. 370-60.000.

Kamohara, Hideaki: *See*—
Nakao, Takashi; Emoto, Yoshiaki; Sekiguchi, Koichiro; Iketani, Masayuki; Sahara, Kunizo; Yoshida, Ikuo; Kohno, Akiomi; Horino, Masaya; Kamohara, Hideaki; Irie, Shouichi; Akasaki, Hiroshi; and Otsuka, Kanji, 5,188,280, Cl. 228-123.000.

Kampemann, Wolfgang: *See*—
Schmitt, Hubert; and Kampemann, Wolfgang, 5,188,432, Cl. 303-96.000.

Kamyr, Inc.: *See*—
Phillips, Joseph R.; Warloff, Peter E. T.; Hefele, John; Bilodeau, Victor L.; Bain, Ronald G.; and Barrett, Mark, 5,187,956, Cl. 68-181.00R.

Kanai, Fumiyuki: *See*—
Kojima, Masayuki; Nishihara, Shinji; and Kanai, Fumiyuki, 5,188,975, Cl. 437-48.000.

Kanazawa, Hiroshi: *See*—
Masimo, Tamon; Kanazawa, Hiroshi; Masuzaki, Hidefumi; and Ito, Satoshi, 5,189,404, Cl. 340-720.000.

Kanbe, Hiroyuki; and Okamura, Kazunori, to Nippon Chemi-Con Corporation. Guide roller with metal cylinder and resin portion. 5,188,272, Cl. 226-190.000.

Kaneda, Hiroshi: *See*—
Okamura, Masatoshi; and Kaneda, Hiroshi, 5,189,583, Cl. 360-132.000.

Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Takaki, Akira; Iguchi, Hirokazu; Suzuki, Satoshi; Mori, Hiroto; and Hosoi, Hideki, 5,188,751, Cl. 525-70.000.

Kaneko, Kiyotaka: *See*—
Maeda, Yutaka; Kaneko, Kiyotaka; Miyake, Izumi; Nakane, Yoshio; and Shimaya, Hiroshi, 5,189,570, Cl. 360-75.000.

Kaneko, Tsuneo: *See*—
Takeda, Fumio; Kojima, Yoshio; Kaneko, Tsuneo; Ishibashi, Yutaka; Sasaki, Naoto; and Tsushima, Isako, 5,187,907, Cl. 52-221.000.

Kaneko, Yoshiyuki, to Canon Kabushiki Kaisha. Optical apparatus having a zoom mechanism. 5,189,559, Cl. 359-697.000.

Kanel, Hans-Ruedi; and Dingwall, John G., to Ciba-Geigy Corporation. 1,2,4-trihalobutyl ethers. 5,189,227, Cl. 568-681.000.

Kang, Chieh-Chi: *See*—
Breslau, Steven M.; Peng, Han-Min; and Kang, Chieh-Chi, 5,189,563, Cl. 360-14.100.

Kanne, David B.; Fisher, Karl J.; and Broadhurst, Michael D., to Imperial Chemical Industries PLC. Imidate insecticides. 5,189,060, Cl. 514-508.000.

Kanne, David B., to Imperial Chemical Industries PLC. Phosphorodiamidothioate herbicides. 5,189,169, Cl. 546-22.000.

Kanno, Tadayuki: *See*—
Takatori, Masahiro; Nakano, Yukio; Ashi, Yoshihiro; and Kanno, Tadayuki, 5,189,668, Cl. 370-60.000.

Kano, Tokio; Niimura, Toshinobu; and Yonekawa, Hiroyuki, to Olympus Optical Co., Ltd. Method and reaction kit for agglutination detection. 5,188,968, Cl. 436-501.000.

Kansai Paint Company, Limited: *See*—
Kogure, Hideo; Murase, Heihachi; and Tamura, Koichi, 5,188,750, Cl. 252-70.000.
Nishida, Reiziro; and Tominaga, Akira, 5,189,119, Cl. 525-526.000.

Kantner, Robert C.; and Dwivedi, Ratnesh K., to Lanxide Technology Company, LP. Method of forming macrocomposite bodies by self-generated vacuum techniques using a glassy seal. 5,188,164, Cl. 164-97.000.

Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Matsubara, Motoki; Sasabe, Setsuo; Hongo, Takayasu; and Fujii, Kenichi, 5,188,470, Cl. 400-621.000.

Kanzawa, Mitsugu: *See*—
Kumazawa, Takashi; Ishibashi, Tetsuo; and Kanzawa, Mitsugu, 5,189,198, Cl. 560-81.000.

Kao Corporation: *See*—
Toyoda, Harumitsu; Senoo, Masamichi; and Abe, Keiji, 5,188,626, Cl. 604-385.100.
Yamamoto, Yuzo; Nomoto, Katsunori; and Isobe, Tsutomu, 5,188,866, Cl. 427-132.000.

Kao, Kent: *See*—
Lin, Steve; Kao, Kent; and Hsue, Robert, 5,189,543, Cl. 359-142.000.

Kapa, Prasad K.; and Chen, Kau-Ming, to Sandoz Ltd. Processes for the synthesis of syn-(E)-3,5-dihydroxy-7-substituted hept-6-enoic and heptanoic acids and derivatives and intermediates thereof. 5,189,164, Cl. 544-297.000.

Kaplan, Lawrence M.: *See*—
Moeinzadeh, Manssour H.; Kaplan, Lawrence M.; and Gurosh, Jeffrey A., 5,188,274, Cl. 227-180.000.

Kaplan, Ronald M.; McCourt, Michael A.; and Henderson, Kenneth J., to Xerox Corporation; and Microlytics, Inc. Electronic dictionary with correct and incorrect words. 5,189,610, Cl. 364-419.000.

Kapp, David A.: *See*—
Zimmermann, Bernd D.; Claus, Richard O.; Murphy, Kent A.; and Kapp, David A., 5,189,299, Cl. 250-227.160.

Karanewsky, Donald S., to E. R. Squibb & Sons, Inc. Seco-mevinic acid derivatives useful as antihypercholesterolemic agents and new intermediates. 5,189,180, Cl. 549-214.000.

Karino, Yukio; and Matushita, Tetunori, to Fuji Photo Film Co., Ltd. Silver halide photographic material containing light absorbing compound. 5,188,928, Cl. 430-513.000.

Karlsrud, Chris E., to Speedfam Corporation. Circumferential pattern finishing machine. 5,187,901, Cl. 51-132.000.

Karnopp, Dean, to Robert Bosch GmbH. Device for adjusting the steering angle of vehicle wheels. 5,189,613, Cl. 364-424.050.

Karp, Stefan; and Burgess, Stuart C. One way clutch. 5,188,205, Cl. 192-46.000.

Karuishi, Kazuhiro: *See*—
Matsuda, Yasuhiko; and Karuishi, Kazuhiro, 5,189,470, Cl. 355-208.000.

Kasai, Kiyoshi; Sakurai, Fujio; and Tadenuma, Hiroshi, to Japan Synthetic Rubber Co., Ltd. Process for preparing polymer particles. 5,189,107, Cl. 525-244.000.

Kaschak, Ronald A.: *See*—
Alexander, Lawrence C.; Appelt, Bernd K.; Balkin, David K.; Hansen, James J.; Hromek, Joseph; Kaschak, Ronald A.; Lauffer, John M.; Memis, Irving; Patel, Magan S.; Seman, Andrew M.; and Susko, Robin A., 5,189,261, Cl. 174-263.000.

Kashino, Toshio: *See*—
Arashima, Teruo; Kimura, Makiko; Kashino, Toshio; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; and Orikasa, Tsuyoshi, 5,189,443, Cl. 346-140.00R.

Kasita, James J.; and Eden, James L., to National Starch and Chemical Investment Holding Corporation. Continuous coupled jet-cooking/-spray-drying process and novel pregelatinized high amylose starches prepared thereby. 5,188,674, Cl. 127-65.000.

Kasper, Horst M., to Mannesmann Aktiengesellschaft. Matrix pin print head with rebound control. 5,188,466, Cl. 400-124.000.

Kass, Carl E.; and Little, Arthur W. Heating system shut-off system using detector and existing safety switch or fuel valve. 5,189,392, Cl. 340-521.000.

Kast, Kevin H.; and Myers, William J., Jr., to General Electric Company. Continuous flow fuel circulation system. 5,187,936, Cl. 60-734.000.

Kasuga, Kazuo: *See*—
Ikeda, Masaharu; Funabiki, Takahiro; and Kasuga, Kazuo, 5,189,365, Cl. 324-158.00R.

Katano, Yuji: *See*—
Miyamoto, Hidenori; Daitoku, Koichi; Kazami, Kazuyuki; Nakamura, Toshiyuki; and Katano, Yuji, 5,189,458, Cl. 354-400.000.

Kataoka, Hideaki; Okutsu, Kazuo; Takahashi, Koichi; and Mizuno, Kazunori, to Fuji Photo Film Co., Ltd. Self-advancing film cassette including an auxiliary rotation transmittance structure. 5,188,306, Cl. 242-71.100.

Kato, Eiichi, to Fuji Photo Film Co., Ltd. Electrophotographic light-sensitive material. 5,188,917, Cl. 430-96.000.

Kato, Hiroshi: *See*—
Ohashi, Kazuhiko; Kato, Hiroshi; and Wani, Takayuki, 5,188,890, Cl. 428-306.600.

Kato, Ikunoshin: *See*—
Asada, Kiyozo; Uemori, Takashi; Endo, Masahiro; Kimizuka, Fusao; and Kato, Ikunoshin, 5,189,144, Cl. 530-324.000.

Kato, Koichi; Masuya, Hirotomo; and Norihiko, Moriya, to Takeda Chemical Industries, Ltd. Saccharoascorbic acid derivatives. 5,189,057, Cl. 514-473.000.

Kato, Kotaro: *See*—
Sugiyama, Shoichi; Arai, Fumiaki; Nonogaki, Masayasu; Natori, Yuji; Yamaguchi, Hideyuki; Ueda, Hitoshi; Tomita, Hiroshi; and Kato, Kotaro, 5,188,881, Cl. 428-143.000.

Kato, Munenori: *See*—
Nishiyama, Akio; Koyama, Takashi; Aikawa, Yasutaka; Ohshima, Hideo; Terao, Yuichiro; Kato, Munenori; and Sakai, Akio, 5,188,908, Cl. 428-698.000.

Kato, Nobuyuki: *See*—
Hattori, Yuji; Soga, Yoshinobu; Sugaya, Masami; and Kato, Nobuyuki, 5,188,007, Cl. 74-867.000.

Kato, Takashi, to Tachi S. Co. Ltd. Structure for attaching a carpet to a forwardly foldable seat back. 5,188,416, Cl. 296-65.100.

Katoh, Tokoyuki; and Ebine, Nobuhito, to Sony Corporation. Button battery holder. 5,188,912, Cl. 429-96.000.

Katou, Hiroshi: *See*—
Nishida, Hiroshi; Ishigaki, Tatsuya; Ito, Atsushi; Kudou, Yoshinobu; Katou, Hiroshi; and Fujii, Kousuke, 5,189,577, Cl. 360-106.000.

Katsurada, Naoki; Uchibori, Haruo; and Tsuchida, Takayasu, to Ajinomoto Co., Inc. Process for producing L-valine by fermentation. 5,188,948, Cl. 435-115.000.

Katsurada, Naoki: *See*—
Tsuchida, Takayasu; Katsurada, Naoki; Ohtsuka, Noboru; Uchibori, Haruo; and Suzuki, Takeshi, 5,188,949, Cl. 435-115.000.

Katsurayama, Hirofumi: *See*—
Nishino, Kazunari; Sasagawa, Shuzo; Katsurayama, Hirofumi; Igaue, Takamitsu; and Kido, Tsutomu, 5,188,895, Cl. 428-373.000.

Katz, Victoria: *See*—
Kobza, David L.; and Katz, Victoria, 5,188,241, Cl. 211-59.100.

Kauffman, George M. Electrical filter with orthogonally conducting capacitors. 5,189,382, Cl. 333-169.000.

Kauffman, George M. Electrical filter with resiliently mounted planar dielectric devices. 5,189,592, Cl. 361-301.000.

Kauffman, William J.; Lilley, George L.; and Ruch, David E., to Armstrong World Industries, Inc. Hybrid floor covering. 5,188,874, Cl. 428-47.000.

Kaufman, Richard H.: *See*—
Kovacic, Theodore J.; Kaufman, Richard H.; Bostwick, Martin M.; Crescenzi, Donald C.; Valls, William H.; and Bucaccio, Thomas, 5,188,250, Cl. 215-32.000.

Kawada, Junji: *See*—
Onooka, Yasushi; Kawada, Junji; and Yamamoto, Tetsu, 5,189,575, Cl. 360-105.000.

VOL 1147 ISS 4 FEB 23 1993 UMI

Kawada, Shozo: *See—*
Nakano, Hirofumi; Kawada, Shozo; Uosaki, Yoichi; Saito, Yutaka; Gomi, Katsushige; and Iwazaki, Toshiaki, 5,189,187, Cl. 549-548.000.

Kawahara, Hiroshi; Okunaka, Noriaki; Kobayashi, Mitsuru; Tokuno, Isao; and Ohara, Shuzo, to Goyo Paper Working Co., Ltd. Waterproof recording material having ground patterns and its manufacturing method. 5,188,395, Cl. 283-113.000.

Kawahara, Sadao; Yamamura, Michio; Yuda, Jiro; Kojima, Yoshinori; Yamamoto, Shuichi; Sakai, Manabu; Muramatsu, Shigeru; and Aiba, Osamu, to Matsushita Electric Industrial Co., Ltd. Scroll compressor with reduced vibration resulting from the Oldham's ring. 5,188,521, Cl. 418-55.300.

Kawahara, Setsuko; Nakano, Yasushi; Shimizu, Yuji; and Yamauchi, Yasuhisa, to Konica Corporation. Magnetic recording medium. 5,188,907, Cl. 428-694.000.

Kawai, Fumio, legal representative*: *See—*
Itoh, Hiroyuki, deceased; and Kawai, Yuji, 5,188,537, Cl. 439-127.000.

Kawai, Kiyoshi: *See—*
Sasaki, Toshio; Ebara, Takeshi; Jyohoji, Hirofumi; Mizunuma, Kooji; and Kawai, Kiyoshi, 5,189,124, Cl. 526-119.000.

Kawai, Yuji: *See—*
Itoh, Hiroyuki, deceased; and Kawai, Yuji, 5,188,537, Cl. 439-127.000.

Kawakami, Hiroshi: *See—*
Kume, Hitoshi; Adachi, Tetsuo; Ohji, Yuzuru; Kure, Tokuo; Ushiyama, Masahiro; and Kawakami, Hiroshi, 5,188,976, Cl. 435-52.000.

Kawamoto, Muneo: *See—*
Mori, Kenji; Hirai, Hiromu; Otsuki, Haruaki; Takahashi, Tsuyoshi; Naruse, Jun; Nishimura, Yuji; and Kawamoto, Muneo, 5,189,578, Cl. 360-106.000.

Kawamura, Akio; Iguchi, Katsuji; and Urai, Masahiko, to Sharp Kabushiki Kaisha. Isolator for electrically isolating semiconductor devices in an integrated circuit. 5,189,501, Cl. 257-647.000.

Kawamura, Hiromitsu: *See—*
Endo, Yoshishige; Araya, Takeshi; Ono, Masahiko; Kawamura, Takao; and Kawamura, Hiromitsu, 5,189,337, Cl. 313-479.000.

Kawamura, Takao: *See—*
Endo, Yoshishige; Araya, Takeshi; Ono, Masahiko; Kawamura, Takao; and Kawamura, Hiromitsu, 5,189,337, Cl. 313-479.000.

Kawaoka, Akiyoshi: *See—*
Mamoto, Katsuhiro; Nakamura, Yasuyuki; Kawaoka, Akiyoshi; and Tabata, Masahiko, 5,188,851, Cl. 426-2.000.

Kawasaki, Kyoichi: *See—*
Suzuki, Kenji; Hata, Seiji; Nishida, Yoshien; Kawasaki, Kyoichi; Fujii, Kenjiro; Shimura, Yasunori; and Takeyoshi, Shigenori, 5,189,707, Cl. 382-8.000.

Kawasaki, Minoru: *See—*
Mori, Kazuhiko; Kawasaki, Minoru; Yoshida, Shin; Murase, Hiroyuki; Saito, Takashi; Tanaka, Kouji; and Shimura, Yoshio, 5,188,799, Cl. 420-469.000.

Kawashima, Susumu, to Yamaha Corporation. Breath controller for musical instruments. 5,189,240, Cl. 84-724.000.

Kawashima, Tetsuji: *See—*
Watanabe, Tetsu; Yamagami, Tamotsu; and Kawashima, Tetsuji, 5,189,650, Cl. 369-13.000.

Kawashima, Yutaka: *See—*
Sato, Masakazu; Kawashima, Yutaka; Goto, Jun; Chiba, Yoshiyuki; Satake, Mikio; Iwata, Chuzo; and Imanishi, Takeshi, 5,189,211, Cl. 562-430.000.

Kawasumi, Masao: *See—*
Yamazaki, Mitsuo; Ichimura, Nobuo; Miyamoto, Yasuo; Fujita, Koei; and Kawasumi, Masao, 5,188,767, Cl. 252-512.000.

Kawazoe, Hiroshi: *See—*
Murakoshi, Toshiichi; Kawazoe, Hiroshi; Takahata, Toshihiro; Nishimura, Shigeki; and Haruta, Yoshiyuki, 5,187,858, Cl. 29-596.000.

Kazama, Toshio, to NHK Spring Co., Ltd. Contact probe. 5,189,364, Cl. 324-158.00P.

Kazami, Kazuyuki: *See—*
Miyamoto, Hidenori; Daitoku, Koichi; Kazami, Kazuyuki; Nakamura, Toshiyuki; and Katano, Yuji, 5,189,458, Cl. 354-400.000.

Kear, Bernard H.: *See—*
Witzke, Horst; and Kear, Bernard H., 5,188,776, Cl. 264-29.200.

Keck, Gregory W.; and Lyle, Robert L., Jr., to North American Philips Corporation. Combined power supply for main and stand-by power. 5,189,600, Cl. 363-212.000.

Keehn, Daniel: *See—*
Somal, Hardev S.; and Keehn, Daniel, 5,188,011, Cl. 83-478.000.

Keeling, William H.: *See—*
Donoho, Paul L.; Peterson, Mitchell F.; Ryder, Hughie; and Keeling, William H., 5,189,642, Cl. 367-15.000.

Keimel, John G., to Medtronic, Inc. Apparatus and method for treating a tachyarrhythmia. 5,188,105, Cl. 128-419.00D.

Keiper Recaro GmbH & Co.: *See—*
Boltze, Wolfgang; and Wittig, Werner, 5,188,571, Cl. 475-162.000.

Keller, Cyril N. Marker body. 5,188,551, Cl. 441-6.000.

Keller, Jacques: *See—*
Colin, Gerard; and Keller, Jacques, 5,188,720, Cl. 204-206.000.

Keller, John H.: *See—*
Barnes, Michael S.; Forster, John C.; and Keller, John H., 5,189,446, Cl. 315-111.410.

Keller, Thomas J., to Dana Corporation. Lubrication device for universal joint assembly. 5,188,564, Cl. 464-14.000.

Kellermann, Karl: *See—*
Straubel, Max; and Kellermann, Karl, 5,188,075, Cl. 123-357.000.

Kelley Company, Inc.: *See—*
Hageman, Martin P., 5,188,015, Cl. 91-321.000.

Kelm, Gary R.; and Bruns, Alan E., to Procter & Gamble Company, The. Pharmaceutical compositions of tebufelone. 5,189,066, Cl. 514-678.000.

Kelsey-Hayes Company: *See—*
Heck, Thomas E.; and Plaza, Joseph J., 5,188,429, Cl. 301-63.100.

Kempf, Hubert: *See—*
Desmurs, Jean-Roger; Kempf, Hubert; Ratton, Serge; and Stephan, Dominique, 5,189,218, Cl. 564-272.000.

Kennametal Inc.: *See—*
Santhanam, Anakkavur T.; and Godse, Rajendra V., 5,188,489, Cl. 407-119.000.

Kenyon, Ronald W.: *See—*
Gregory, Peter; Kenyon, Ronald W.; and Millard, Christine, 5,189,154, Cl. 540-126.000.

Keptel, Inc.: *See—*
Epple, Patrick J., 5,189,256, Cl. 174-50.000.

Keravision, Inc.: *See—*
Kilmer, Lauren G.; and Reynolds, Alvin E., 5,188,125, Cl. 128-898.000.

Kerby, Ronald E., to Ohio State University, The. Reinforcing glass ionomer dental filling material with titanium stainless steel, or metals thereof. 5,189,077, Cl. 523-116.000.

Kershner, Gary P. Adjustable boat anchor. 5,188,055, Cl. 114-299.000.

Kettel, Hans: *See—*
Heel, Helmut; and Kettel, Hans, 5,188,493, Cl. 409-230.000.

Keyvani, Daryoush. Swimming aid. 5,188,552, Cl. 441-116.000.

Khan, Motasimur R.; Zang, Richard B.; and Albert, Christine C., to Texaco Inc. Disposal of sewage sludge. 5,188,739, Cl. 210-770.000.

Khan, Motasimur R., to Texaco Inc. Process for producing pumpable fuel slurry of sewage sludge and low grade solid carbonaceous fuel. 5,188,740, Cl. 210-770.000.

Khan, Motasimur R.: *See—*
Zang, Richard B.; and Khan, Motasimur R., 5,188,741, Cl. 210-774.000.

Khanna, Pyare L.; and Choate, Glenda L., to Microgenics Corporation. Enzyme quantitation wicking assay. 5,188,938, Cl. 435-7.700.

Kho, Dick T. Wheel holding bracket assembly for suitcases. 5,188,381, Cl. 280-37.000.

Khosrawi, Mohammad-Ali: *See—*
Reisser, Berni; Pflug, Hannes; Khosrawi, Mohammad-Ali; Scharf, Michael; Simon, Helmut; Taudt, Christian; Goll, Wolfgang; Wuetherich, Paul; Fortenbacher, Thomas; and Konrath, Karl, 5,188,083, Cl. 123-502.000.

Kiba, Shigeo: *See—*
Tagawa, Kimiteru; Takahashi, Seiichi; Utsuno, Noritoshi; Umehara, Hideki; Hayashi, Fujio; Kiba, Shigeo; and Suda, Satoru, 5,188,898, Cl. 428-403.000.

Kido, Tsutomu: *See—*
Nishino, Kazunari; Sasagawa, Shuzo; Katsurayama, Hirofumi; Igaue, Takamitsu; and Kido, Tsutomu, 5,188,895, Cl. 428-373.000.

Kiefer, Hans; and Reutemann, Werner, to BASF Aktiengesellschaft. Isolation of a carboxylic acid from an aqueous solution thereof. 5,189,216, Cl. 562-600.000.

Kiekert GmbH & Co. Kommanditgesellschaft: *See—*
Sterzenbach, Horst W.; and Kleefeldt, Frank, 5,188,406, Cl. 292-216.000.

Kiernan, Charles E.: *See—*
Kivell, Larry; Milanese, Robert L.; Kiernan, Charles E.; and Tittel, Lorne, 5,188,231, Cl. 206-333.000.

Kihara, Yoshinori: *See—*
Sasaki, Akira; Hayakawa, Yoshikazu; Sakuma, Yuichi; Sakai, Tatsuo; and Kihara, Yoshinori, 5,189,266, Cl. 181-227.000.

Kikuchi, Makoto: *See—*
Terashima, Kanetsugu; Kikuchi, Makoto; and Murashiro, Katsuyuki, 5,188,761, Cl. 252-299.610.

Kilmer, Lauren G.; and Reynolds, Alvin E., to Keravision, Inc. Method for corneal curvature adjustment. 5,188,125, Cl. 128-898.000.

Kim, Byoung Y.: *See—*
Wysocki, Paul F.; Digonnet, Michel J. F.; and Kim, Byoung Y., 5,189,676, Cl. 372-6.000.

Kim, Hyung S.; and Kim, Kyoung H., to Samsung Electronics Co., Ltd. Cooling device for washing machine transmission. 5,187,954, Cl. 68-3.00R.

Kim, Kyoung H.: *See—*
Kim, Hyung S.; and Kim, Kyoung H., 5,187,954, Cl. 68-3.00R.

Kim, Whan G.; and Nam, Tai Y., to Cheil Industries, Inc. Imide epoxy resins for sealing semiconductor elements. 5,189,082, Cl. 523-443.000.

Kim, Won S.: *See—*
Kim, Yong Z.; and Kim, Won S., 5,189,202, Cl. 560-213.000.

Kim, Yong M.; and Oh, Jeh S., to Samsung Electronics Co., Ltd. Door hinge arrangement for opening the door at either side. 5,187,836, Cl. 16-231.000.

Kim, Yong Z.; and Kim, Won S., to Lucky, Ltd. Process for the preparation of 3,3-dimethyl-4-pentenoic acid. 5,189,202, Cl. 560-213.000.

Kimberly-Clark Corporation: *See—*
Timmons, Terry K.; Stopper, Steve R.; Fox, Norman K.; Everhart, Dennis S.; Conn, William; and Morell, Lori A., 5,188,885, Cl. 428-198.000.

Van Iten, Thomas P.; Whitehead, Howard A.; and Schindel, Julie A., 5,188,625, Cl. 604-383.000.

Kimizuka, Fusao: *See—*
Asada, Kiyozo; Uemori, Takashi; Endo, Masahiro; Kimizuka, Fusao; and Kato, Ikunoshin, 5,189,144, Cl. 530-324.000.

Kimura, Hiroyuki: *See—*
Amada, Nobutaka; Noguchi, Takaharu; Kimura, Hiroyuki; Kobayashi, Masaharu; Arai, Takao; Yumde, Yasufumi; and Miura, Kuniaki, 5,189,564, Cl. 360-32.000.

Kimura, Makiko: *See—*
Arashima, Teruo; Kimura, Makiko; Kashino, Toshio; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; and Orikasa, Tsuyoshi, 5,189,443, Cl. 346-140.00R.

Kimura, Masatoshi, to Mitsubishi Denki Kabushiki Kaisha. Portable semiconductor memory device. 5,189,638, Cl. 365-52.000.

Kimura, Suenori: *See—*
Ohishi, Keiichi; and Kimura, Suenori, 5,189,338, Cl. 315-11.000.

Kimura, Tatsuya, to Mitsubishi Denki Kabushiki Kaisha. Visible light laser diode. 5,189,680, Cl. 372-46.000.

King, Charles B.: *See—*
Stern, Joseph A.; Green, Stephen L.; King, Charles B.; and May, Sharon B., 5,187,815, Cl. 2-161.00R.

King, David C.; Lillis, Rupert M.; and White, George, to Du Pont Canada Inc. Process for the injection moulding of multi-layered articles. 5,188,787, Cl. 264-153.000.

King, Patrick D., to Flo-Con Systems, Inc. Plate, changer, plate and method. 5,188,743, Cl. 222-590.000.

King, Richard J. Disposable safety syringe. 5,188,601, Cl. 604-110.000.

Kinoshita, Satoshi: *See—*
Torii, Nobutoshi; Naito, Yasuo; and Kinoshita, Satoshi, 5,187,996, Cl. 74-479.000.

Kinoshita, Shin-ichi: *See—*
Takeda, Naohiro; Otani, Yuzo; Okajima, Nariaki; Ito, Yoshihiko; Kinoshita, Shin-ichi; Inagaki, Masashi; and Harada, Takashi, 5,188,891, Cl. 428-323.000.

Kinoshita, Tsukasa; Yamada, Masahiko; and Matsueda, Hirokazu, to Takemoto Yushi Kabushiki Kaisha. Cotton bales and method of producing same. 5,188,224, Cl. 206-83.500.

Kinstrey, Patricia M. Eyeglass holder. 5,188,322, Cl. 248-146.000.

Kirk, Kevin A.: *See—*
Chu, Shaw-Chang; and Kirk, Kevin A., 5,188,867, Cl. 427-173.000.

Kirsch, Reinhard: *See—*
Burdinski, Gerhard; Kirsch, Reinhard; and Kottmann, Hariolf, 5,189,165, Cl. 544-298.000.

Kirwan, Rory G.: *See—*
Bauer, Ted J.; Harmon, David M.; Treliving, Gordon, deceased; and Kirwan, Rory G., 5,188,785, Cl. 264-115.000.

Kishi, Noriyuki: *See—*
Akiyama, Eitetsu; and Kishi, Noriyuki, 5,187,935, Cl. 60-602.000.

Kishimoto, Hiroki: *See—*
Kaku, Takashi; Kishimoto, Hiroki; and Hirao, Kyoko, 5,189,684, Cl. 375-14.000.

Kishimoto, Yasushi: *See—*
Ikematu, Takeshi; Kishimoto, Yasushi; and Miyamoto, Koichi, 5,189,110, Cl. 525-314.000.

Kita, Masahiro: *See—*
Negoro, Ikuo; Yamaguchi, Hiroyuki; and Kita, Masahiro, 5,189,473, Cl. 355-215.000.

Kitada, Motohiro: *See—*
Taniguchi, Yousuke; Miyawaki, Tadayuki; Tanaka, Hisashi; and Kitada, Motohiro, 5,187,943, Cl. 62-180.000.

Kitagawa, Hiroshi, to Kabushiki Kaisha Komatsu Seisakusho. Turntable apparatus for universal machine tool. 5,188,004, Cl. 74-813.00R.

Kitagawa, Katsuyoshi: *See—*
Imamura, Makoto; Tanimoto, Kazushi; Tanaka, Yoichiro; Sonobe, Yoshiaki; and Kitagawa, Katsuyoshi, 5,189,574, Cl. 360-103.000.

Kitahara, Satoshi: *See—*
Sugimoto, Kazuaki; Kitahara, Satoshi; Yamamoto, Akio; and Sugiura, Ikuzo, 5,188,029, Cl. 101-288.000.

Kitami, Takayuki: *See—*
Ono, Katsuhiro; Anno, Hidero; Sugiura, Hiroyuki; Kitami, Takayuki; and Tazawa, Hiroaki, 5,189,688, Cl. 378-133.000.

Kitamori, Nobuyuki: *See—*
Akiyama, Yohko; Yoshioka, Minoru; and Kitamori, Nobuyuki, 5,189,148, Cl. 530-399.000.

Kitamoto, Masakazu: *See—*
Habaguchi, Masayuki; Nakajima, Toyohei; Hosoda, Fumio; Fujimoto, Sachito; Kitamoto, Masakazu; Moriwaki, Hideo; and Nakamura, Takefumi, 5,188,085, Cl. 123-520.000.

Kitamura, Fumio, to Kitamura Kiden Co., Ltd. Apparatus for cutting winding strips for use in a wound core. 5,188,305, Cl. 242-56.200.

Kitamura Kiden Co., Ltd.: *See—*
Kitamura, Fumio, 5,188,305, Cl. 242-56.200.

Kitamura, Koichiro; and Yamada, Shigeru, to Kitamura Machinery Co., Ltd. Pallet changer. 5,187,846, Cl. 29-33.00P.

Kitamura Machinery Co., Ltd.: *See—*
Kitamura, Koichiro; and Yamada, Shigeru, 5,187,846, Cl. 29-33.00P.

Kitamura, Motomi: *See—*
Hirata, Hisakazu; Okubo, Kazuyuki; and Kitamura, Motomi, 5,188,850, Cl. 425-589.000.

Kitazumo, Tomoya; Yamazaki, Takashi; and Iwatsubo, Hitoshi, to Showa Shell Sekiyu Kabushiki Kaisha. Optical active 3-(2-trifluoro-1-hydroxyethyl) propenyl benzyl ether, derivatives thereof, method for preparing the same and use thereof for liquid crystal compound. 5,189,204, Cl. 560-254.000.

Kittrell, James R.; and Quinlan, Charles W., to KSE Inc. Process for the preparation of copolymers of maleic anhydride and alkyl vinyl ether. 5,189,122, Cl. 526-77.000.

Kivell, Larry; Milanese, Robert L.; Kiernan, Charles E.; and Tittel, Lorne, to Duracell Inc. Battery package with removable voltage indicator means. 5,188,231, Cl. 206-333.000.

Kiwala, Jacob: *See—*
Farbood, Mohamad I.; Morris, James A.; Downey, Arthur E.; and Kiwala, Jacob, 5,188,129, Cl. 131-276.000.

Kiyohara, Masako: *See—*
Itoi, Shigeru, 5,188,338, Cl. 251-265.000.

Klausener, Alexander; Gayer, Herbert; Kramer, Wolfgang; Berg, Dieter; Brandes, Wilhelm; Hanssler, Gerd; and Wachendorff-Neumann, Ulrike, to Bayer Aktiengesellschaft. Pesticidal substituted acrylic esters. 5,189,063, Cl. 514-530.000.

Kleber, Carl J.; and Putt, Mark S., to Purdue Research Foundation. Manufacture of aluminum-based anticariogenic compositions. 5,188,819, Cl. 424-49.000.

Kleefeld, Gerd: *See—*
Heinemann, Ulrich; Kleefeld, Gerd; Dutzmann, Stefan; and Hanssler, Gerd, 5,189,175, Cl. 548-128.000.

Kleefeldt, Frank: *See—*
Sterzenbach, Horst W.; and Kleefeldt, Frank, 5,188,406, Cl. 292-216.000.

Klein, Levrette L., to Klein, Levrette Lee. Combination napkin and sleeve/forearm protector (cuff-nap). 5,187,813, Cl. 2-16.000.

Klein, Levrette Lee: *See—*
Klein, Levrette L., 5,187,813, Cl. 2-16.000.

Kleine-Altekamp, to Alcatel N.V. Transmission network having electronically switchable nodes for switching signal paths and a method of controlling said network. 5,189,662, Cl. 370-16.000.

Kleiner, Hans-Jerg: *See—*
Vaahs, Tilo; Gerdau, Thomas; Kleiner, Hans-Jerg; Peuckert, Marcellus; and Bruck, Martin, 5,189,132, Cl. 528-33.000.

Kleinschmit, Peter: *See—*
Kriechbaum, Gangolf; Kleinschmit, Peter; and Peuckert, Doris, 5,188,991, Cl. 501-103.000.

Klimisch, Helen M.; and Lane, Thomas H., to Dow Corning Corporation. Skin treatment with siliconates. 5,189,067, Cl. 514-772.000.

Kline, Daniel: *See—*
Lafferty, Michael; Kline, Daniel; and Slemon, Charles S., 5,188,093, Cl. 128-6.000.

Klinger, Gary, to ITT Corporation. O.D. - I.D. combination release tool. 5,187,851, Cl. 29-237.000.

Klockemann, Werner: *See—*
Humbert, Heiko; Klockemann, Werner; and Primeaux, Dudley J., II, 5,189,073, Cl. 521-110.000.

Kloeckner-Humboldt-Deutz AG: *See—*
Nolte, Albert; Altdorf, Joachim; and Scheffler, Paul, 5,188,072, Cl. 123-198.00C.

Kloimstein, Engelbert: *See—*
Farnleitner, Lorenz; Stuckler, Hubert; Kaiser, Herbert; and Kloimstein, Engelbert, 5,189,215, Cl. 562-577.000.

Klos-Hein, Karl; and Hermanni, Hans-Georg, to U.S. Philips Corporation. Magnetic tape cassette apparatus with a drive mechanism which serves for playing magnetic tape cassettes. 5,189,573, Cl. 360-85.000.

Klotz, James R.: *See—*
Leising, Maurice B.; Nogle, Thomas D.; Benford, Howard L.; Helbrook, Gerald L.; Klotz, James R.; Martin, Berthold; Mikel, Steven A.; and Nortman, William, 5,188,575, Cl. 475-280.000.

Kluesener, Bernard W.: *See—*
Stipp, Gordon K.; and Kluesener, Bernard W., 5,188,858, Cl. 426-531.000.

Klusener, Peter A. A.; Stil, Hans A.; Drent, Fit; and Arnoldy, Peter, to Shell Oil Company. Carbonylation catalyst system. 5,189,003, Cl. 502-167.000.

Knight, Richard S. Wire mesh lobster trap launch steadying device. 5,187,893, Cl. 43-100.000.

Knox, Dick L., to Baker Hughes Incorporated. Laminated motor bearing for electrical submersible pump. 5,189,328, Cl. 310-90.000.

Ko, Jeremy; and Levis, Steven H., to Morton Thiokol, Inc. Apparatus for producing high yield sodium hydrosulfite. 5,188,807, Cl. 422-224.000.

Kobayashi, Akira: *See—*
Saito, Shinji; and Kobayashi, Akira, 5,189,379, Cl. 331-1.00A.

Kobayashi, Atsuhiro: *See—*
Nagao, Yoshiaki; Kobayashi, Atsuhiro; and Sakuma, Mikio, 5,188,469, Cl. 400-615.200.

Kobayashi, Hiroo: *See—*
Takata, Yutaka; and Kobayashi, Hiroo, 5,189,545, Cl. 359-197.000.

Kobayashi, Jun, to Maeda Industries, Ltd. Multiple sprocket assembly for bicycle. 5,188,569, Cl. 474-160.000.

Kobayashi, Kazumitsu: *See—*
Komatsu, Syunji; Kuribara, Masaru; and Kobayashi, Kazumitsu, 5,187,942, Cl. 62-149.000.

Kobayashi, Masaharu: *See—*
Amada, Nobutaka; Noguchi, Takaharu; Kimura, Hiroyuki; Kobayashi, Masaharu; Arai, Takao; Yumde, Yasufumi; and Miura, Kuniaki, 5,189,564, Cl. 360-32.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Kobayashi, Mitsuru: *See*—
Kawahara, Hiroshi; Okunaka, Noriaki; Kobayashi, Mitsuru; Tokuno, Isao; and Ohara, Shuzo, 5,188,395, Cl. 283-113.000.

Kobayashi, Naofumi, to Nitto Kogyo Co., Ltd. Fixing roll for electrophotography having an outer fluoro-resin coating. 5,187,849, Cl. 29-132.000.

Kobayashi, Norihide: *See*—
Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, 5,188,520, Cl. 418-55.100.

Kobayashi, Satoshi; Asano, Yasushi; Yamazaki, Hiroshi; and Watanabe, Takumi, to Nissan Motor Co., 03, Ltd; Fuji Kiko Co., Ltd.; and Ohi Seisakusho Co., Ltd. Manually operable park lock releasing mechanism for automatic transmission shift control device. 5,187,999, Cl. 74-528.000.

Kobayashi, Takuo: *See*—
Miya, Shigeyuki; Shibata, Takenori; Komatsu, Yoshihiro; Miyoshi, Hiromichi; Hirata, Tadashi; Taniguchi, Yoshio; and Kobayashi, Takuo, 5,189,474, Cl. 355-245.000.

Kobayashi, Yo-ichi; Omori, Muneki; and Yamada, Chikako, to Sagami Chemical Research Center; Central Glass Company, Limited; Hodogaya Chemical Co., Ltd.; Nippon Soda Company, Limited; Nissan Chemical Industries, Limited; and Tosoh Corporation. Rapidly acting prourokinase. 5,188,829, Cl. 424-94.630.

Koboshi, Shigeharu: *See*—
Hagiwara, Moeko; and Koboshi, Shigeharu, 5,188,925, Cl. 430-372.000.

Kobza, David L.; and Katz, Victoria. Hanger recycler. 5,188,241, Cl. 211-59.100.

Koch, Carl C.: *See*—
Schilling, Jan C.; Tucker, James W.; and Koch, Carl C., 5,188,505, Cl. 415-9.000.

Koch, Max, to TTC Technology Trading Company. Apparatus for transporting cable lengths or sections. 5,188,213, Cl. 198-470.100.

Koch, Walter: *See*—
Christe, Marcel; Koch, Walter; and Grimm, Peter, 5,188,154, Cl. 139-28.000.

Kochi, Shuichi: *See*—
Makita, Hiroyuki; and Kochi, Shuichi, 5,188,444, Cl. 362-80.000.

Kodaira, Hiromichi: *See*—
Kamijo, Shinji; Imai, Jun; and Kodaira, Hiromichi, 5,188,833, Cl. 424-405.000.

Koehler, Gernot: *See*—
Muehlenbernd, Thomas; Hasenbein, Norbert; Koehler, Gernot; and Schlemmer, Lothar, 5,189,113, Cl. 525-329.500.

Koestner, Ken: *See*—
Posin, Jack; Valenta, Harry L., Jr.; Maas, Steven M.; and Koestner, Ken, 5,188,106, Cl. 128-419.0PG.

Koger, Robert D.: *See*—
Haun, Harold; Davis, Herschel W.; and Koger, Robert D., 5,188,445, Cl. 362-80.000.

Koguchi, Satoru, to Casio Computer Co., Ltd. Apparatus and method for performing auto-playing in synchronism with reproduction of audio data. 5,189,237, Cl. 84-609.000.

Kogure, Hideo; Murase, Heihachi; and Tamura, Koichi, to Kansai Paint Company, Limited. Anti-icing composition and method of preventing icing. 5,188,750, Cl. 252-70.000.

Kogure, Noboru: *See*—
Inukai, Takao; Tachibana, Kanichi; Tsukada, Kazuo; Fujikawa, Toshitaka; Iida, Keiichi; and Kogure, Noboru, 5,189,273, Cl. 219-10.55E.

Kohnen, Kirk K., to Hughes Aircraft Company. Method of logic gate reduction in a logic gate array. 5,189,629, Cl. 364-490.000.

Kohno, Akiomi: *See*—
Nakao, Takashi; Emoto, Yoshiaki; Sekiguchi, Koichiro; Iketani, Masayuki; Sahara, Kunizo; Yoshida, Ikuo; Kohno, Akiomi; Horino, Masaya; Kamohara, Hideaki; Irie, Shouichi; Akasaki, Hiroshi; and Otsuka, Kanji, 5,188,280, Cl. 228-123.000.

Kohno, Hiromi: *See*—
Otsuka, Masuhiro; and Kohno, Hiromi, 5,188,070, Cl. 123-179.230.

Koito Manufacturing Co., Ltd.: *See*—
Makita, Hiroyuki; and Kochi, Shuichi, 5,188,444, Cl. 362-80.000.

Koizumi, Hideaki: *See*—
Takane, Atsushi; Koizumi, Hideaki; and Sano, Koichi, 5,189,369, Cl. 324-306.000.

Koizumi, Seiichi: *See*—
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Fujii, Yasuo; Nakamura, Tetsuya; Fukuyama, Hirotaka; Arai, Seiji; Sato, Koichiro; Takagi, Toshio; Nishina, Shuji; Hukasawa, Jiro; Maruta, Masatoshi; and Koizumi, Seiichi, 5,188,057, Cl. 118-657.000.

Kojima, Masayuki; Nishihara, Shinji; and Kanai, Fumiyuki, to Hitachi, Ltd. Method of producing a connection hole for a DRAM having at least three conductor layers in a self alignment manner. 5,188,975, Cl. 437-48.000.

Kojima, Yoshinori: *See*—
Kawahara, Sadao; Yamamura, Michio; Yuda, Jiro; Kojima, Yoshinori; Yamamoto, Shuichi; Sakai, Manabu; Muramatsu, Shigeru; and Aiba, Osamu, 5,188,521, Cl. 418-55.300.

Kojima, Yoshio: *See*—
Takeda, Fumio; Kojima, Yoshio; Kaneko, Tsuneo; Ishibashi, Yutaka; Sasaki, Naoto; and Tsushima, Isako, 5,187,907, Cl. 52-221.000.

Kok, Cornelis J. M., deceased; and by Kornelis, Sietze L., executrix. Stomal stop with bag. 5,188,623, Cl. 604-328.000.

Kolem, Heinrich; and Sauter, Rolf, to Siemens Aktiengesellschaft. Chemical shift imaging. 5,189,370, Cl. 324-309.000.

Kolk, Erich: *See*—
Gropper, Hans; Funk, Guido; Kolk, Erich; and Oeder, Dieter, 5,189,123, Cl. 526-106.000.

Kolmar Laboratories, Inc.: *See*—
Baker, Christopher G.; and Zucker, Elliott S., 5,188,756, Cl. 252-174.150.

Komatsu, Syunji; Kuribara, Masaru; and Kobayashi, Kazumitsu, to Sanden Corporation; and Japan Electronic Control Systems Company, Ltd. Refrigerant overcharge prevention system. 5,187,942, Cl. 62-149.000.

Komatsu, Yoshihiro: *See*—
Miya, Shigeyuki; Shibata, Takenori; Komatsu, Yoshihiro; Miyoshi, Hiromichi; Hirata, Tadashi; Taniguchi, Yoshio; and Kobayashi, Takuo, 5,189,474, Cl. 355-245.000.

Komet Stahlhalter-und Werkzeugfabrik Robert Breuning GmbH: *See*—
Muendlein, Werner; and Scheer, Gerhard, 5,188,490, Cl. 408-146.000.

Komiyama, Takeo: *See*—
Yamamoto, Tetsuya; Endoh, Yukio; Segawa, Akio; Matsumoto, Kenji; and Komiyama, Takeo, 5,188,467, Cl. 400-157.200.

Komori, Kazuhiro; Meguro, Satoshi; Hagiwara, Takaaki; Kume, Hitoshi; Tsukada, Toshihisa; and Yamamoto, Hideaki, to Hitachi, Ltd. Semiconductor memory device. 5,189,497, Cl. 357-23.500.

Komuro, Kyoji; Hayakawa, Atsuya; and Shimizu, Hideaki, to Brother Kogyo Kabushiki Kaisha. Embroidery data processing apparatus. 5,189,623, Cl. 364-470.000.

Komuro, Kyoji: *See*—
Hayakawa, Atsuya; Komuro, Kyoji; and Shimizu, Hideaki, 5,189,622, Cl. 364-470.000.

Konaka, Shuzo: *See*—
Ueda, Takahisa; Konaka, Shuzo; and Miyoshi, Takeshi, 5,188,376, Cl. 277-227.000.

Kondo, Hirotaka, to Hitachi, Ltd. Touch panel input apparatus. 5,189,732, Cl. 395-155.000.

Kondo, Hisao: *See*—
Misawa, Yoshihisa; Kondo, Hisao; Tsutsumi, Tetsuya; Hayashi, Masahiro; Sugimori, Daisuke; Matsuba, Yorishige; Isozaki, Masashi; Nishigaki, Hiroharu; Yazawa, Kazunaga; and Kondo, Kiyosi, 5,189,189, Cl. 554-194.000.

Kondo, Katsuhiko, to Mitsubishi Denki Kabushiki Kaisha. Electronic control device for an internal combustion engine. 5,188,079, Cl. 123-414.000.

Kondo, Kiyosi: *See*—
Misawa, Yoshihisa; Kondo, Hisao; Tsutsumi, Tetsuya; Hayashi, Masahiro; Sugimori, Daisuke; Matsuba, Yorishige; Isozaki, Masashi; Nishigaki, Hiroharu; Yazawa, Kazunaga; and Kondo, Kiyosi, 5,189,189, Cl. 554-194.000.

Kondo, Toshiaki: *See*—
Sekine, Masayoshi; and Kondo, Toshiaki, 5,189,513, Cl. 358-105.000.

Kondoh, Masatoshi: *See*—
Yamaguchi, Katsuyoshi; Kondoh, Masatoshi; Hayashi, Shigeo; Sonokawa, Masayoshi; Matsuzawa, Shoichi; and Takahashi, Atsushi, 5,188,572, Cl. 475-168.000.

Konica Corporation: *See*—
Hagiwara, Moeko; and Koboshi, Shigeharu, 5,188,925, Cl. 430-372.000.
Haneda, Satoshi; Fukuchi, Masakazu; Matsuo, Shunji; and Morita, Shizuo, 5,189,472, Cl. 355-212.000.
Kawahara, Setsuko; Nakano, Yasushi; Shimizu, Yuji; and Yamauchi, Yasuhisa, 5,188,907, Cl. 428-694.000.

Konishi Chemical Ind. Co., Ltd.: *See*—
Ogata, Eiji; and Nate, Nobuyuki, 5,189,223, Cl. 568-33.000.

Konishi, Kuniyoshi, to Kabushiki Kaisha Toshiba. Method and apparatus for connecting branch networks with a trunk network in optical transmission system. 5,189,541, Cl. 359-118.000.

Konishi, Shinya, to Kabushiki Kaisha Kawai Gakki Seisakusho. Data selection apparatus for electronic musical instrument which utilizes use frequency values to select musical data. 5,189,239, Cl. 84-615.000.

Kono, Tetsuo: *See*—
Yoshida, Tadahiro; Tsumazawa, Hiroyuki; and Kono, Tetsuo, 5,189,524, Cl. 358-335.000.

Konrath, Karl: *See*—
Alvarez-Avila, Carlos; Ruesseler, Karl-Friedrich; Tschoeke, Helmut; and Konrath, Karl, 5,188,076, Cl. 123-357.000.
Reisser, Berni; Pflug, Hannes; Khosrawi, Mohammad-Ali; Scharf, Michael; Simon, Helmut; Taudt, Christian; Goll, Wolfgang; Wuetherich, Paul; Fortenbacher, Thomas; and Konrath, Karl, 5,188,083, Cl. 123-502.000.

Konuma, Hiroaki: *See*—
Nakane, Toshio; Konuma, Hiroaki; Shiwaku, Toshio; and Hijikata, Kenji, 5,189,140, Cl. 528-272.000.

Kopp, Frans; Esparza, Joe O.; and Long, Thomas E., to Shell Oil Company. Subsea pipeline recovery clamp. 5,188,483, Cl. 405-191.000.

Korber AG: *See*—
Heitmann, Uwe, 5,188,127, Cl. 131-108.000.
Studt, Stephan, 5,188,128, Cl. 131-110.000.

Korg/Fishpark Associates: *See*—
Fishman, Lawrence R.; and Parker, Kenneth, 5,189,235, Cl. 84-291.000.

Kornelis, Sietze L., executrix: *See*—
Kok, Cornelis J. M., deceased; and Kornelis, Sietze L., executrix, 5,188,623, Cl. 604-328.000.

Korte, Thomas: *See*—
Harris, Eugene; and Korte, Thomas, 5,189,185, Cl. 549-486.000.

Kortlang, Wolfgang; Temburg, Josef; and Zander, Johann, to Trutschler GmbH & Co. KG. Bale opener having dual sensors connected to a surface inclination control device. 5,189,308, Cl. 250-561.000.

Kosaka, Michio, to Taiyo Giken Kogyo Co., Ltd. Breather valve. 5,188,140, Cl. 137-12.000.

Koschmann, Eric C.; Taylor, Mark E.; and Lifer, Carroll D. Laser beam detector for grade elevation measurement. 5,189,484, Cl. 356-138.000.

Koschorek, Ralf; Kruger, Gerd; Rosendahl, Hartmut; and Rothen, Johann, to WABCO Westinghouse Fahrzeugbremsen GmbH. Device for recognition of driving on a grade. 5,187,977, Cl. 73-146.000.

Koslow, Evan E., to Koslow Technologies Corporation. Method and apparatus for the continuous extrusion of solid articles. 5,189,092, Cl. 524-495.000.

Koslow Technologies Corporation: *See*—
Koslow, Evan E., 5,189,092, Cl. 524-495.000.

Koss, Christopher R.: *See*—
Parimore, Thomas N., Jr.; and Koss, Christopher R., 5,188,398, Cl. 285-39.000.

Kost, Friedrich: *See*—
Ruf, Wolf-Dieter; Hartmann, Uwe; Kost, Friedrich; and Van Zanten, Anton, 5,188,434, Cl. 303-111.000.

Koster, Charles H. Pumping system. 5,188,517, Cl. 417-393.000.

Kosugi, Toru; Hashimoto, Yuichi; Tanaka, Masayuki; Ohara, Katsuichi; Furukawa, Takahiro; and Aoki, Makoto, to Fujitsu Limited. Digital cross connect system. 5,189,410, Cl. 340-825.140.

Kotani, Takashi, to Canon Kabushiki Kaisha. Facsimile apparatus. 5,189,525, Cl. 358-407.000.

Kottmann, Hariolf: *See*—
Burdinski, Gerhard; Kirsch, Reinhard; and Kottmann, Hariolf, 5,189,165, Cl. 544-298.000.

Kovacic, Theodore J.; Kaufman, Richard H.; Bostwick, Martin M.; Crescenzi, Donald C.; Valls, William H.; and Bucaccio, Thomas, to Kraft General Foods, Inc. Plastic beverage bottle with twist-off closure. 5,188,250, Cl. 215-32.000.

Kowalski, Wayne J.: *See*—
Coleman, Allan; and Kowalski, Wayne J., 5,189,719, Cl. 385-101.000.

Koyama, Masato: *See*—
Sashida, Nobuo; Sanada, Kazunori; and Koyama, Masato, 5,189,603, Cl. 363-160.000.

Koyama, Mitsutoshi: *See*—
Suguro, Kyoichi; Imai, Keitaro; Koyama, Mitsutoshi; and Yamabe, Kikuo, 5,189,503, Cl. 257-310.000.

Koyama, Takashi: *See*—
Nishiyama, Akio; Koyama, Takashi; Aikawa, Yasutaka; Ohshima, Hideo; Terao, Yuichiro; Kato, Munenori; and Sakai, Akio, 5,188,908, Cl. 428-698.000.

Kozubski & Denton: *See*—
Kozubski, Guy R., 5,188,549, Cl. 440-63.000.

Kozubski, Guy R., to Kozubski & Denton. Auxiliary trim system for fishing boats. 5,188,549, Cl. 440-63.000.

Kraemer, Manfred; and Schultheiss, Gerold, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 5,188,074, Cl. 123-357.000.

Kraft General Foods, Inc.: *See*—
Kovacic, Theodore J.; Kaufman, Richard H.; Bostwick, Martin M.; Crescenzi, Donald C.; Valls, William H.; and Bucaccio, Thomas, 5,188,250, Cl. 215-32.000.

Krall, Thomas J.; and Myers, Robert A., to Owens-Illinois Plastic Products Inc. Apparatus for making a multi-layer plastic bottle with a handle. 5,188,849, Cl. 425-525.000.

Kramer, Wolfgang: *See*—
Klausener, Alexander; Gayer, Herbert; Kramer, Wolfgang; Berg, Dieter; Brandes, Wilhelm; Hanssler, Gerd; and Wachendorff-Neumann, Ulrike, 5,189,063, Cl. 514-530.000.

Kranz, David M.: *See*—
Saito, Haruo; Kranz, David M.; Eisen, Herman N.; and Tonegawa, Susumu, 5,189,147, Cl. 530-387.900.

Kraselsky, Louis J.; and Massel, Kathryn L. Novelty scenic display item. 5,187,889, Cl. 40-407.000.

Kratzer, Michael; and Unsold, Eberhard. Device for selective destruction of cells. 5,188,633, Cl. 606-12.000.

Krause, Hans H.; and Krause, Ralph O., to Applied Mechanis, Inc. Automatic leveling system for recreational vehicles. 5,188,379, Cl. 280-6.120.

Krause, Jurgen; and Haarmann, Walter, to Dr. Karl Thomae GmbH. Method of determining the total fibrinolytic activity in the plasma. 5,188,940, Cl. 435-13.000.

Krause, Ralph O.: *See*—
Krause, Hans H.; and Krause, Ralph O., 5,188,379, Cl. 280-6.120.

Krauss, Gerhard, to Siemens Aktiengesellschaft. Hearing aid circuit having an output stage with a limiting means. 5,189,704, Cl. 381-68.400.

Krebs, Robert G. Water leakage detection device. 5,188,143, Cl. 137-312.000.

Kremer, Paul, to Ceodeau S.A. Device for neutralizing a residual-pressure valve of a gas bottle. 5,188,155, Cl. 147-65.000.

Kremer, Wolfgang: *See*—
Meixner, Jurgen; and Kremer, Wolfgang, 5,189,133, Cl. 528-49.000.

Kresge, Edward N.: *See*—
Manalastas, Pacifico V.; Drake, Evelyn N.; Thaler, Warren A.; Kresge, Edward N.; Elspass, Chester W.; Geiger, Albert J.; and Swarup, Vijay, 5,188,654, Cl. 71-28.000.

Kretchmer, Steven D. Metal compression-spring gemstone mountings. 5,188,679, Cl. 148-538.000.

Kretz, Patricia: *See*—
Short, Jay M.; and Kretz, Patricia, 5,188,957, Cl. 435-235.100.

Kriechbaum, Gangolf; Kleinschmit, Peter; and Peuckert, Doris, to Degussa Akteingesellschaft. Zirconium oxide powder, process for its preparation and use. 5,188,991, Cl. 501-103.000.

Kritchevsky, Gina: *See*—
Maw, Taishih; Kritchevsky, Gina; and Cheng, Frank, 5,189,128, Cl. 526-262.000.

Krofta, Milos, to Lenox Institute For Research, Inc. Sludge collection apparatus for a water clarifier. 5,188,729, Cl. 210-104.000.

Kroll, Mark W.: *See*—
Pommrehn, Mark R.; Brewer, James E.; and Kroll, Mark W., 5,188,116, Cl. 128-696.000.

Kronberg, James W. Solid state safety jumper cables. 5,189,359, Cl. 320-26.000.

Krones AG Hermann Kronseder Maschinenfabrik: *See*—
Meichel, Otto, 5,188,491, Cl. 409-66.000.

Kronwald, Klaus, to Kronwald Separationstechnik GmbH. Multipart chromatography column connection. 5,188,730, Cl. 210-198.200.

Kronwald Separationstechnik GmbH: *See*—
Kronwald, Klaus, 5,188,730, Cl. 210-198.200.

Kruger, Gerd: *See*—
Koschorek, Ralf; Kruger, Gerd; Rosendahl, Hartmut; and Rothen, Johann, 5,187,977, Cl. 73-146.000.

Kruse, Cornelis G.: *See*—
Brussee, Johannes; van der Gen, Arne; and Kruse, Cornelis G., 5,189,219, Cl. 564-356.000.

KSB Aktiengesellschaft: *See*—
Bartoschek, Manfred; and Lovisetto, Primo, 5,188,339, Cl. 251-367.000.
Heinrich, Hansjorg; and Rupprecht, Peter, 5,188,463, Cl. 384-441.000.

KSE Inc.: *See*—
Kittrell, James R.; and Quinlan, Charles W., 5,189,122, Cl. 526-77.000.

Kubach, Hans: *See*—
Graner, Juergen; and Kubach, Hans, 5,188,336, Cl. 251-129.160.

Kubo, Kunimichi: *See*—
Morimoto, Toshifumi; Hattori, Takaaki; Ikegami, Noboru; Nishibu, Hirofumi; Miyauchi, Toshiyuki; and Kubo, Kunimichi, 5,189,106, Cl. 525-240.000.

Kubo, Toyohide, to AWA Engineering Co., Ltd. Floppy disk with head slot in liner cut from liner material with preferred orientation. 5,189,585, Cl. 360-133.000.

Kudou, Yoshinobu: *See*—
Nishida, Hiroshi; Ishigaki, Tatsuya; Ito, Atsushi; Kudou, Yoshinobu; Katou, Hiroshi; and Fujii, Kousuke, 5,189,577, Cl. 360-106.000.

Kuehling, Guenter F.; and Carmain, Jeffrey L., to Daniels Manufacturing Corporation. Flush pin gauge. 5,187,875, Cl. 33-541.000.

Kuehner, Gerhard; Vogel, Karl; Rodriguez, Juan D.; and Clement, Charles D., to Degussa AG. Method and apparatus for producing carbon black. 5,188,806, Cl. 422-151.000.

Kuerston, Richard D.; and Brown, Ronald E., to Phillips Petroleum Company. Crude oil processing apparatus for heavy oil extraction. 5,188,709, Cl. 196-14.520.

Kugler, Donald W., Jr.; Coley, Christopher D.; and Walck, Jeffrey A., to Unisys Corporation. AX and EGA video display apparatus utilizing a VGA monitor. 5,189,401, Cl. 340-703.000.

Kuhnen, Fred: *See*—
Seckinger, Karl; and Kuhnen, Fred, 5,188,656, Cl. 504-246.000.

Kuhnle, Adolf: *See*—
Speikamp, Hans-Dieter; Kuhnle, Adolf; and Bretschneider, Jurgen, 5,189,069, Cl. 521-56.000.

Kukol, Peter: *See*—
Bennett, John G.; Hejlsberg, Anders; and Kukol, Peter, 5,189,733, Cl. 395-650.000.

Kumagai, Yoshio, to Tokyo Electron Limited. Cleaning device. 5,188,136, Cl. 134-066.000.

Kumazawa, Takashi; Ishibashi, Tetsuo; and Kanzawa, Mitsugu, to Idemitsu Petrochemical Co., Ltd. Process for preparing unsaturated dicarboxylic acid diesters. 5,189,198, Cl. 560-81.000.

Kume, Hitoshi; Adachi, Tetsuo; Ohji, Yuzuru; Kure, Tokuo; Ushiyama, Masahiro; and Kawakami, Hiroshi, to Hitachi, Ltd. Manufacturing method of non-volatile semiconductor memory device. 5,188,976, Cl. 435-52.000.

Kume, Hitoshi: *See*—
Komori, Kazuhiro; Meguro, Satoshi; Hagiwara, Takaaki; Kume, Hitoshi; Tsukada, Toshihisa; and Yamamoto, Hideaki, 5,189,497, Cl. 357-23.500.

Kummer, Rudolf; Schneider, Heinz-Walter; Bertleff, Werner; Fischer, Rolf; Vagt, Uwe; Naeumann, Fritz; Hoelderich, Wolfgang; and Schwarzmann, Matthias, to BASF Aktiengesellschaft. Preparation of 5-methylbutyrolactone. 5,189,182, Cl. 549-326.000.

Kunihiro, Ikari, deceased (by Miyamura, Masataka, legal representative); Niki, Hirokazu; Nakase, Makoto; and Shinozaki, Toshiaki, to Kabushiki Kaisha Toshiba. Pattern forming method utilizing material with photoresist film underlayer and contrast enhancement overlayer containing photosensitive diazonium salt. 5,188,924, Cl. 430-312.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Kunii, Yasuo: *See*—
Omura, Yasuhisa; Kunii, Yasuo; and Izumi, Katsutoshi, 5,188,973, Cl. 437-40.000.
Kunze, Hans-Jurgen; and Francuz, Josip, to Kunze, Silvia. Leak monitor for hydraulic drive systems. 5,187,973, Cl. 73-40.50R.
Kunze, Silvia: *See*—
Kunze, Hans-Jurgen; and Francuz, Josip, 5,187,973, Cl. 73-40.50R.
Kuramoto, Masahiko: *See*—
Ishihara, Nobuhide; Kuramoto, Masahiko; and Uoi, Michitake, 5,189,125, Cl. 526-160.000.
Kuramoto, Shinichi: *See*—
Tsubuko, Kazuo; Kuramoto, Shinichi; Umemura, Kazuhiko; Uematsu, Hidemi; and Okawara, Makoto, 5,189,102, Cl. 525-112.000.
Kure, Tokuo: *See*—
Kume, Hitoshi; Adachi, Tetsuo; Ohji, Yuzuru; Kure, Tokuo; Ushiyama, Masahiro; and Kawakami, Hiroshi, 5,188,976, Cl. 435-52.000.
Kuribara, Masaru: *See*—
Komatsu, Syunji; Kuribara, Masaru; and Kobayashi, Kazumitsu, 5,187,942, Cl. 62-149.000.
Kurihara, Hideshi: *See*—
Nitta, Shozo; Kurihara, Hideshi; Sanenobu, Kazuyuki; Ichihashi, Tetsuo; and Takagi, Norio, 5,188,774, Cl. 264-22.000.
Kurisu, Norio: *See*—
Aihara, Hideo; Kurisu, Norio; Takei, Kazuhiro; and Watanabe, Yasuhiko, 5,189,007, Cl. 503-207.000.
Kuroiwa, Mitsuyuki: *See*—
Yamaoka, Hideo; Kuroiwa, Mitsuyuki; Nanbu, Hirosi; and Todo, Akira, 5,188,875, Cl. 428-64.000.
Kurokawa, Hideki: *See*—
Kaitoh, Mitsumasa; Kurokawa, Hideki; and Ohnishi, Akiyoshi, 5,189,172, Cl. 546-208.000.
Kuroki, Kazuhiko: *See*—
Takahashi, Hisakazu; Baba, Yoko; Ezaki, Kenichi; Okamoto, Yasuhiko; Shibata, Kenichi; Kuroki, Kazuhiko; and Yasuyama, Shigeyuki, 5,188,993, Cl. 501-136.000.
Kurosawa, Yuichi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Head drive mechanism with pivoting mechanism. 5,189,569, Cl. 360-75.000.
Kurosawa, Yukio: *See*—
Matumoto, Morihisa; Suzuki, Kouji; Endo, Shunkichi; and Kurosawa, Yukio, 5,189,270, Cl. 200-144.00B.
Kurth, Mark; Alger, Andrew; and Blahuta, Lew, to Omni Corporation. Water filter unit. 5,188,727, Cl. 210-85.000.
Kurys, Barbara E.: *See*—
Glamkowski, Edward J.; and Kurys, Barbara E., 5,189,161, Cl. 540-555.000.
Kusunoki, Shigeru, to Mitsubishi Denki Kabushiki Kaisha. Multi-layer type semiconductor device with semiconductor element layers stacked in opposite directions and manufacturing method thereof. 5,189,500, Cl. 359-72.000.
Kusz, Maximillian, to Owens-Illinois Closure Inc. Child resistant reminder closure. 5,188,251, Cl. 215-220.000.
Kuttner, James P. Angular depth gauge. 5,187,878, Cl. 33-719.000.
Kuwabara, Masayuki, to Eastman Kodak Company. Light-emitting diode with current-blocking. 5,189,496, Cl. 257-79.000.
Kuzik, Larry J. Method and apparatus for installation of large conveyor belts. 5,188,218, Cl. 198-812.000.
Kwark, Young H., to International Business Machines Corporation. Optical receiver having a low capacitance integrated photodetector. 5,189,296, Cl. 250-208.200.
Kyorin Seiyaku Kabushiki Kaisha: *See*—
Kamijo, Shinji; Imai, Jun; and Kodaira, Hiromichi, 5,188,833, Cl. 424-405.000.
Kyowa Hakko Kogyo Co., Ltd.: *See*—
Nakano, Hirofumi; Kawada, Shozo; Uosaki, Yoichi; Saito, Yutaka; Gomi, Katsushige; and Iwazaki, Toshiaki, 5,189,187, Cl. 549-548.000.
La-Z-Boy Chair Company: *See*—
Losensky, Charles I., 5,187,908, Cl. 52-239.000.
Labbe, Mark K.: *See*—
Ballard, Kenneth D.; Bottino, Ronald E.; Labbe, Mark K.; Lopata, John E.; Malinski, Tom; Meier, Wilhelm; Morelli, Lou; Pacyga, Michael G.; Primorac, Mitch; Roodnat, Bernardus; and Simpson, Shawn, 5,188,546, Cl. 439-885.000.
Labelmatic, Inc.: *See*—
Baum, Morton S., 5,188,687, Cl. 156-64.000.
Labourt-Ibarre, Pierre: *See*—
Deleuil, Michel; Labourt-Ibarre, Pierre; Rona, Robert; and Statiotis, Eraclis, 5,188,838, Cl. 424-451.000.
Labrie, Fernand; and Raynaud, Jean-Pierre, to Roussel Uclaf. Method of treating precocious puberty. 5,189,021, Cl. 514-15.000.
Lackner, John R.: *See*—
Meyer, Robert B.; Lackner, John R.; and Matuschek, Hans J., 5,187,832, Cl. 15-329.000.
Lacroix, Denis: *See*—
Singh, Jogender; Jain, Sulekh C.; Lloyd, Thomas W.; Bates, Leroy A.; Lacroix, Denis; Cooper, Ernest B., Jr.; Mannava, Seetharamaiah; and Couture, Serge B., 5,187,967, Cl. 72-340.000.
Laczko, Frank: *See*—
Niehaus, Jeff A.; Li, Stephen; and Laczko, Frank, 5,189,665, Cl. 370-458.100.
Lafferty, Michael; Kline, Daniel; and Slemon, Charles S., to Citation Medical Corporation. Portable arthroscope with periscope optics. 5,188,093, Cl. 128-6.000.
LaFleur, Edward E.; Amici, Robert M.; and Work, William J., to Rohm and Haas Company. Polymeric blends. 5,189,097, Cl. 525-57.000.
Lai, John T.; and Son, Pyong-nae, to BFGoodrich Company, The. Alkylated polyalkylene polyamines and process for selective alkylation. 5,189,173, Cl. 546-244.000.
Lai, Ming C., to United Microelectronics Corporation. Inert gas purge for the multilayer poly gate etching improvement. 5,188,980, Cl. 437-193.000.
Laiquddin, Sahibzada S. R.; and Lenzel Franz J., to Ruhrgas Aktiengesellschaft. Method of and system for cleaning the surface of furnace rollers of a roller hearth furnace. 5,188,527, Cl. 432-3.000.
Laitar, Robert A.: *See*—
Geoffrey, Michael M.; and Laitar, Robert A., 5,189,079, Cl. 523-142.000.
Lalji, Amir: *See*—
Mazin, Jack G.; and Lalji, Amir, 5,188,861, Cl. 426-640.000.
Lam, Dominic M., to Baylor College of Medicine. High-affinity human serotonin uptake system. 5,188,954, Cl. 435-172.300.
Lam, Yiu-Kuen T.: *See*—
Freidinger, Roger M.; Bock, Mark G.; Lam, Yiu-Kuen T.; Chang, Raymond S.; Hensens, Otto D.; Schwartz, Cheryl D.; and Zink, Deborah L., 5,189,050, Cl. 514-375.000.
Lamb, Timothy J.: *See*—
Smisson, Robert P. M.; and Lamb, Timothy J., 5,188,238, Cl. 209-211.000.
Lampe, John W.: *See*—
Chou, Yuo-Ling; Erhardt, Paul W.; Hagedorn, Alfred A., III; Lampe, John W.; Lumma, Jr., William C.; Morgan, Thomas K.; and Wiggins, Jay R., 5,189,036, Cl. 514-252.000.
Lancaster, E. Peter: *See*—
Young, Richard H., Sr.; Hansen, Michael R.; Lancaster, E. Peter; Mehta, aresh R.; and Brunnenkant, Christel, 5,188,624, Cl. 604-378.000.
Lancerotto, Fabio: *See*—
Meroni, Roberto; Gerin, Umberto; Lancerotto, Fabio; and Colussi, Vittorio, 5,187,929, Cl. 57-80.000.
Landy, Keith. Filter, bag and method. 5,188,644, Cl. 55-17.000.
Lane, Thomas H.: *See*—
Klimisch, Helen M.; and Lane, Thomas H., 5,189,067, Cl. 514-772.000.
Langdon Enterprises, Inc.: *See*—
Langdon, Robert S., 5,188,539, Cl. 439-341.000.
Langdon, Robert S., to Langdon Enterprises, Inc. Quick attach/detach connector. 5,188,539, Cl. 439-341.000.
Lange, Frederick F.; and Velamakanni, Bhaskar V., to University of California, Regents of the. Method for preparation of dense ceramic products. 5,188,780, Cl. 264-63.000.
Lanxide Technology Company, LP: *See*—
Kantner, Robert C.; and Dwivedi, Ratnesh K., 5,188,164, Cl. 164-97.000.
Lapoint, John, Jr. Filter apparatus with a flexible collar. 5,188,731, Cl. 210-232.000.
LaPointe, Robert E.; Rosen, Robert K.; and Nickias, Peter N., to Dow Chemical Company, The. Process for preparing addition polymerization catalysts via metal center oxidation. 5,189,192, Cl. 556-11.000.
Larkin, John M.; Templeton, James H.; and Champion, Donald H., to Texaco Chemical Company. Process for the production of cyclohexane by liquid phase hydrogenation of benzene. 5,189,233, Cl. 585-265.000.
Larkins, David N.; Yoshida, Glenn T.; and Helmers, Thomas L., to Ampex Corporation. Interactive rotary controller system with tactile feedback. 5,189,355, Cl. 318-685.000.
Larsen, Thor A.: *See*—
Georgiou, Christos J.; Larsen, Thor A.; and Schenfeld, Eugen, 5,189,314, Cl. 307-271.000.
Larson, Donald K.; and Patterson, Richard A., to Minnesota Mining and Manufacturing Company. Optical fiber splice. 5,189,717, Cl. 385-95.000.
Laserscope: *See*—
Jacobi, Roger P., 5,188,595, Cl. 604-53.000.
Latham, Steven B. Convertible mast assembly. 5,188,050, Cl. 114-90.000.
Lattanzio, Maurizio: *See*—
Schumacher, J. Gunther; and Lattanzio, Maurizio, 5,188,333, Cl. 248-676.000.
Lau, John I.: *See*—
Tarng, Jawhorng; and Lau, John I., 5,188,499, Cl. 414-404.000.
Lauffer, John M.: *See*—
Alexander, Lawrence C.; Appelt, Bernd K.; Balkin, David K.; Hansen, James J.; Hromek, Joseph; Kaschak, Ronald A.; Lauffer, John M.; Memis, Irving; Patel, Magan S.; Seman, Andrew M.; and Susko, Robin A., 5,189,261, Cl. 174-263.000.
Laughner, Michael K., to Dow Chemical Company, The. Polycarbonate/aromatic polyester blends modified with a grafted olefin copolymer. 5,189,091, Cl. 524-445.000.
Laursen, Richard A.: *See*—
Wang, Zhengxin; and Laursen, Richard A., 5,188,733, Cl. 210-321.840.
Lauwers, Eddy J., to Praxair Technology, Inc. Fluid waste burner system. 5,188,042, Cl. 110-346.000.
Lavaud, Simon-Andre , to Deutsche Thomson-Brandt GmbH. Audio equipment. 5,189,705, Cl. 381-14.000.
Law, Simon W.: *See*—
Palladino, Linda O.; Silberklang, Melvin; Tung, Jwu-Sheng; Law, Simon W.; and Mark, George E., 5,189,019, Cl. 514-12.000.

Lawniczak, Joe: *See*—
Dixon, Daniel A.; Gierut, Frederick J.; Lawniczak, Joe; Patel, Arvind; and Primorac, Michael, 5,188,547, Cl. 439-886.000.
Lazar, Istvan: *See*—
Sherry, A. Dean; Lazar, Istvan; Brucher, Erno; and Ramasamy, Ravichandran, 5,188,816, Cl. 424-9.000.
Le Bozec et Gautier: *See*—
Traonvoez, Jean-Michel; Pottier, Philippe; and Tertre, Dominique, 5,188,728, Cl. 210-90.000.
Leach, Christopher B., to Cam Sales, Inc. System for curing concrete articles. 5,187,882, Cl. 34-46.000.
LeBegue, Maurice K.; and Hornyak, Julius N., to Tamrock World Corporation N. V. Twin scrubber and air diffuser for a continuous miner and method of ventilation. 5,188,427, Cl. 299-12.000.
Le Bihan, Denis, to Alcatel Cit. Device for regulating the throughput of virtual circuits on an asynchronous time-division multiplex transmission channel. 5,189,672, Cl. 370-94.100.
Lebret, Pierre, to Bendix Europe Services Techniques. Anti-skid system for a motor vehicle. 5,188,438, Cl. 303-116.200.
LeCompte, George W., to Hughes Aircraft Company. Filament dispenser. 5,189,253, Cl. 102-504.000.
Lecouve, Jean-Pierre: *See*—
Desmurs, Jean; and Lecouve, Jean-Pierre, 5,189,220, Cl. 564-404.000.
Ledermann, Peter G.: *See*—
Bregman, Mark F.; Hoffman, Paul R.; Ledermann, Peter G.; Moskowitz, Paul A.; Pollak, Roger A.; Reiley, Timothy C.; and Ritter, Mark B., 5,189,363, Cl. 324-158.00P.
Ledis, Stephen L.: *See*—
Leif, Robert C.; Ledis, Stephen L.; and Feinberg, Robert I., 5,188,935, Cl. 435-7.240.
Lee, Albert. Extensible oil cap. 5,188,157, Cl. 141-338.000.
Lee, Cheol-weon: *See*—
Sim, Myeong-bo; Park, Jeong-il; and Lee, Cheol-weon, 5,189,568, Cl. 360-73.130.
Lee, Chi-long; and Lutz, Michael A., to Dow Corning Corporation. Adhesion promoter for UV curable siloxane compositions and compositions containing same. 5,188,864, Cl. 427-515.000.
Lee, Chong-Ming: *See*—
Olsen, Glenn A.; Lee, Chong-Ming; Yeager, Michael T.; and Pickett, Scott K., 5,189,628, Cl. 364-489.000.
Lee, Helen T.; Picard, Joseph A.; and Sliskovic, Drago R., to Warner-Lambert Company. Iminodicarbonic, iminodicarbonodithioic, and thiocarbonylcarbamic acid esters useful as ACAT inhibitors. 5,189,058, Cl. 514-481.000.
Lee, Jae-Hong, to Samsung Electronics Co., Ltd. Circuit for writing and reproducing a modulation signal onto writable optical disk. 5,189,657, Cl. 369-59.000.
Lee, Linda G.: *See*—
Menchen, Steven M.; Lee, Linda G.; Connell, Charles R.; Hershey, N. Davis; Chakerian, Vergine; Woo, Sam; and Fung, Steven, 5,188,934, Cl. 435-6.000.
Lee, Mark; Solin, Stuart A.; and Wolff, Peter A., to NEC Research Institute, Inc. Magnetoresistor using a superlattice of GaAs and AlGaAs. 5,189,367, Cl. 324-252.000.
Lee, Sang U., to Dong Kwang Corporation. Door closer with rack and pinion, spring, and spring mounting plate. 5,187,835, Cl. 16-52.000.
Leenknegt, George A. L., to U.S. Philips Corporation. Optical scanning apparatus including beam focal point position control when out of focus range. 5,189,293, Cl. 250-201.500.
Le Floch, Daniel J., to Aerospatiale Societe Nationale Industrielle. System for checking tool breakages on a machining center. 5,189,625, Cl. 364-474.170.
Leicht, Jeffrey K., to Eclipse Manufacturing Co. Pulley construction. 5,188,573, Cl. 474-175.000.
Leif, Robert C.; Ledis, Stephen L.; and Feinberg, Robert I., to Coulter Electronics, Inc. Reagent system and method for identification, enumeration and examination of classes and subclasses of blood leukocytes. 5,188,935, Cl. 435-7.240.
Leising, Maurice B.; Nogle, Thomas D.; Benford, Howard L.; Helbrook, Gerald L.; Klotz, James R.; Martin, Berthold; Mikel, Steven A.; and Nortman, William. Automatic four-speed transmission with interconnected clutches. 5,188,575, Cl. 475-280.000.
Leland Stanford Junior University, The Board of Trustees of the: *See*—
Conolly, Steven M.; and Pauly, John M., 5,189,371, Cl. 324-309.000.
Wysocki, Paul F.; Digonnet, Michel J. F.; and Kim, Byoung Y., 5,189,676, Cl. 372-6.000.
Lemercier, Pierre; and Trystram, Philippe, to Protee Groupement D'Interet Economique. System and method of navigating the travel of an autonomous vehicle. 5,189,612, Cl. 364-424.020.
Lenox Institute For Research, Inc.: *See*—
Krofta, Milos, 5,188,729, Cl. 210-104.000.
Lenzel Franz J.: *See*—
Laiquddin, Sahibzada S. R.; and Lenzel Franz J., 5,188,527, Cl. 432-3.000.
Lenzing Aktiengesellschaft: *See*—
Hinterholzer, Peter; Zikell, Stefan; Firgo, Heinrich; Wolschnei, Bernd; Eichinger, Dieter; Manner, Johann; Astegger, Stephan; and Weinzierl, Karin, 5,189,152, Cl. 536-56.000.
Lepicard, Alain: *See*—
Deffayet, Jean; Lepicard, Alain; and Winaver, Andre , 5,189,248, Cl. 102-386.000.
Lermat, Yves: *See*—
Boutillier, Jacques; and Lermat, Yves, 5,189,096, Cl. 525-56.000.
Le Roux, Herve : *See*—
Henaff, Yves; and Le Roux, Herve , 5,189,510, Cl. 358-75.000.
L'Esperance, Francis A., Jr., to VISX, Incorporated. Method for opthalmological surgery. 5,188,631, Cl. 606-5.000.
Lesson, Kenneth G.: *See*—
Dorotinsky, Dennis R.; and Lesson, Kenneth G., 5,188,366, Cl. 273-188.00R.
Leung, Christopher C.: *See*—
Jackson, John E.; Levy, Joseph L.; Leung, Christopher C.; and Burkhart, Gordon H., 5,189,294, Cl. 250-201.900.
Leung, P. C.: *See*—
Mehta, Vinay; and Leung, P. C., 5,189,412, Cl. 340-825.220.
Leurent, Henri G., to Brelan S.A. Curved tubular profile. 5,187,914, Cl. 52-738.000.
Leveau, Jean-Claude. Insulating and fire-retardant partitioning panel. 5,187,913, Cl. 52-584.000.
Leventis, Nicholas; and Wrighton, Mark S., to Molecular Displays, Inc. Electrochromic, electroluminescent and electrochemiluminescent displays. 5,189,549, Cl. 359-271.000.
Levine, Myron M.: *See*—
Baudry, Bernadette; and Levine, Myron M., 5,189,151, Cl. 536-24.320.
Levis, Steven H.: *See*—
Ko, Jeremy; and Levis, Steven H., 5,188,807, Cl. 422-224.000.
Levy, Edward R.: *See*—
Newallis, Peter E.; Prasad, Vidyanatha A.; and Levy, Edward R., 5,189,195, Cl. 558-208.000.
Levy, Guy, to Endo Technic Corporation. Vaporizing tartar and calculus around a tooth root. 5,188,532, Cl. 433-216.000.
Levy, Joseph L.: *See*—
Jackson, John E.; Levy, Joseph L.; Leung, Christopher C.; and Burkhart, Gordon H., 5,189,294, Cl. 250-201.900.
Levy, Roger, to Tishken Products Co. Variable width roller forming machine. 5,187,964, Cl. 72-181.000.
Lewa Herbert Ott GmbH & Co.: *See*—
Horn, Waldemar, 5,188,515, Cl. 417-63.000.
Lewis, Larry N., to General Electric Company. Hydrosilylation method. 5,189,131, Cl. 528-15.000.
Lewis, Russell F.: *See*—
Anno, Julien; Lewis, Russell F.; and Cone, Dale A., 5,189,288, Cl. 235-386.000.
Lewis, Thomas E.; and Nowak, Michael T., to Presstek, Inc. Metal-based lithographic plate constructions and methods of making same. 5,188,032, Cl. 101-453.000.
Leys, Paul H.; Zwijsen, Jan A.; and Van Aken, Luc K., to AGFA-Gevaert N.V. Apparatus for the production of a colour image. 5,189,477, Cl. 355-271.000.
Li, Hung P.: *See*—
Sekhar, Jainagesh A.; Bhaduri, Sarit B.; Li, Hung P.; and Canarslan, Necip S., 5,188,678, Cl. 148-514.000.
Li, Liang-Kun. Can crusher. 5,188,024, Cl. 100-274.000.
Li, Stephen: *See*—
Niehaus, Jeff A.; Li, Stephen; and Laczko, Frank, 5,189,665, Cl. 370-458.100.
Liao, Zeng K.; and Bertram, James L., to Dow Chemical Company, The. Siloxane-containing glycidyl esters, curable compositions and cured products. 5,188,903, Cl. 428-447.000.
Libbey-Owens-Ford Co.: *See*—
Csehi, Dennis M., 5,188,651, Cl. 65-114.000.
Licentia Patent-Verwaltungs GmbH: *See*—
Malow, Siegmar, 5,188,210, Cl. 198-369.000.
Lieber, Winfried, to Siemens Aktiengesellschaft. Measuring instrument using two transmitters and two receivers for measuring light travelling in an optical medium. 5,189,298, Cl. 250-227.160.
Lieber, Winfried; and Ruegenberg, Gervin, to Siemens Aktiengesellschaft. Method and apparatus for measuring the attenuation of an optical medium. 5,189,300, Cl. 250-227.240.
Lieberman, Herbert A.: *See*—
Merianos, John J.; Garelick, Paul; and Lieberman, Herbert A., 5,188,818, Cl. 424-49.000.
Liebherr-Werk Bischofshofen Ges.m.b.H.: *See*—
Schroeder, Klaus, 5,188,193, Cl. 180-242.000.
Lietar, Loic: *See*—
Jaffard, Jean-Luc; Lietar, Loic; and Mouret, Michel, 5,189,685, Cl. 377-48.000.
Liethen, Thomas R., to Paccar Inc. Apparatus for providing interior light to a vehicle. 5,188,419, Cl. 296-190.000.
Lifer, Carroll D.: *See*—
Koschmann, Eric C.; Taylor, Mark E.; and Lifer, Carroll D., 5,189,484, Cl. 356-138.000.
Light Work Inc.: *See*—
Eide, Russel L.; Eide, Eric P.; and Eide, Russel L., II, 5,188,500, Cl. 414-412.000.
Lightolier, Inc.: *See*—
Carson, Steven R.; and Gandre, Jerry D., 5,189,259, Cl. 174-66.000.
Ligman, Gary A. Pneumatic tool muffler system. 5,189,267, Cl. 181-230.000.
Lilja, Launo L.; Makitalo, Valto J.; Hultholm, Stig-Erik; and Nyman, Bror G., to Outokumpu Oy. Method for mixing liquid, solids and gas and for simultaneously separating gas or gas and solids from the liquid. 5,188,808, Cl. 422-229.000.
Lilley, George L.: *See*—
Kauffman, William J.; Lilley, George L.; and Ruch, David E., 5,188,874, Cl. 428-47.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Lillis, Rupert M.: *See—*
King, David C.; Lillis, Rupert M.; and White, George, 5,188,787, Cl. 264-153.000.
Lim, Gui Y., to Samsung Electronics Co., Ltd. Heater-humidifier-dehumidifier unit. 5,188,169, Cl. 165-20.000.
Lin, Chhiu-Tsu, to Northern Illinois University. Production of PT/PZT/PLZT thin films, powders, and laser 'direct write' patterns. 5,188,902, Cl. 428-426.000.
Lin, F. S.: *See—*
Chen, S. C.; Chu, C. C.; Lin, F. S.; and Huang, F. J., 5,189,214, Cl. 562-519.000.
Lin, Lon-Tang W.: *See—*
Ching, Ta Y.; and Lin, Lon-Tang W., 5,189,190, Cl. 556-418.000.
Lin, Steve; Kao, Kent; and Hsue, Robert, to Acer Incorporated. Infrared wireless keyboard system. 5,189,543, Cl. 359-142.000.
Lind, John R.; and Swanson, Robert L., to Survival Engineering, Inc. Swivel valve. 5,188,142, Cl. 137-223.000.
Lindberg, Kjell M.: *See—*
Hook, Magnus; Lindberg, Kjell M.; and Wadstrom, Torkel M., 5,189,015, Cl. 514-2.000.
Linder, Lars, to Triple L. Laboratories AB. Apparatus and a method for taking samples from gum pockets. 5,188,617, Cl. 604-232.000.
Linderstrom-Lang, Steen: *See—*
Hellstrom, Pia; Dalin, Ivan; and Linderstrom-Lang, Steen, 5,188,814, Cl. 423-430.000.
Lindquist, John M.: *See—*
Swandon, Lynwood W.; and Lindquist, John M., 5,188,705, Cl. 156-643.000.
Lindskog, Inga M.; Sjogren, Bengt C. H.; and Andersson, Sven-Borje, to Kabi Pharmacia AB. Intravaginal devices. 5,188,835, Cl. 424-432.000.
Linge, Philip J.; and Nalepka, Raymond, to Guardian Industries Corp. Heat treatable sputter-coated glass. 5,188,887, Cl. 428-216.000.
Linnenbrink, Thomas E.; Wadsworth, Mark; and Gaalema, Stephen D. Charge-mold analog to digital converter. 5,189,423, Cl. 341-172.000.
Linz, Alfredo R.: *See—*
Asghar, Safdar M.; and Linz, Alfredo R., 5,189,381, Cl. 331-179.000.
Lion Apparel, Inc.: *See—*
Sargent, Dennis; Aldridge, Donald; and McKenney, Bill, 5,188,267, Cl. 224-215.000.
Liposome Company, Inc., The: *See—*
Tremblay, Paul-Alain; Marziani, Frank; Tino, John A. F.; and Pilkiewicz, Frank G., 5,188,951, Cl. 435-131.000.
Litka, Anthony F.; and Cohen, Sidney M., to Gas Research Institute. Cement advanced furnace and process. 5,188,668, Cl. 106-739.000.
Litovitz, Theodore Aaron: *See—*
Macedo, Pedro B.; and Mohr, Robert K., 5,188,649, Cl. 65-21.300.
Little, Arthur W.: *See—*
Kass, Carl E.; and Little, Arthur W., 5,189,392, Cl. 340-521.000.
Little, D. Dawn: *See—*
Teherani, Towfik H.; and Little, D. Dawn, 5,188,988, Cl. 437-235.000.
Little, Kenneth R., Jr.: *See—*
Wyatt, W. Burk; Cundiff, Kevin B.; and Little, Kenneth R., Jr., 5,189,281, Cl. 219-386.000.
Little, Wendell L.: *See—*
Bolan, Michael L.; Little, Wendell L.; Jansen, Elaine; and Folkes, Don, 5,189,598, Cl. 361-397.000.
Littlepage, Mike. Waste oil recycling apparatus. 5,188,156, Cl. 141-98.000.
Litton Systems, Inc.: *See—*
Mark, John G.; Tazartes, Daniel A.; and Hahn, Tae W., 5,189,487, Cl. 356-350.000.
Mark, John G.; Pavlath, George A.; and Tazartes, Daniel A., 5,189,488, Cl. 356-350.000.
Liu, Wei-Jyh; Huang, Chih-Kung; and Chen, Chad-Yang, to United Microelectronics Corporation. Hydrogen peroxide in basic solution to clean polycrystalline silicon after phosphorous diffusion. 5,188,986, Cl. 437-225.000.
Lloyd, Thomas W.: *See—*
Singh, Jogender; Jain, Sulekh C.; Lloyd, Thomas W.; Bates, Leroy A.; Lacroix, Denis; Cooper, Ernest B., Jr.; Mannava, Seetharamaiah; and Couture, Serge B., 5,187,967, Cl. 72-340.000.
Lochner, Gunther; and Schwarz, Wolfgang, to Diehl GmbH & Co. Propellent medium for hybrid weapon. 5,188,682, Cl. 149-1.000.
Lockheed Sanders, Inc.: *See—*
Chase, Walter E., 5,189,368, Cl. 324-304.000.
Lockwood, Hanford N., Jr.: *See—*
Norris, Thomas R.; Lockwood, Hanford N., Jr.; and Watts, J. Alan, 5,188,510, Cl. 415-208.100.
Lodge, Richard W.; and Allen, Charles H., to Procter & Gamble Company, The. Low fat snack. 5,188,859, Cl. 426-560.000.
Loeb, Marvin: *See—*
Hussein, Hany M. G.; Loeb, Marvin; and Galt, Kenneth M., 5,188,634, Cl. 606-14.000.
Loewenton, Edward. Board-type game. 5,188,369, Cl. 273-258.000.
Loftis, Gerald: *See—*
Dressler, Jim; Johnston, Bill; Loftis, Gerald; Salierno, Mark; Solt, Gordon; Spira, Jeff; and Tarsha, Manual, 5,188,316, Cl. 244-234.000.
Lohfink, Gunter: *See—*
Kamal, Musa R.; Lohfink, Gunter; Arghyris, Laurent; and Hozhabr-Ghelichi, Sassan, 5,188,784, Cl. 264-108.000.
Loma Group Limited: *See—*
Mayo, Geoffrey, 5,189,366, Cl. 324-233.000.
Lombardi, Diane F. Pet and animal nurser. 5,188,061, Cl. 119-71.000.
Lombardi, Robert; Rassweiler, George; and Stern, Jon M., to Harris Corporation. Radiating antenna cable apparatus. 5,189,432, Cl. 343-739.000.
Long, Russell W.: *See—*
Milianowicz, Stanislaw A.; Long, Russell W.; and Donatelli, Alexander V., 5,189,384, Cl. 335-16.000.
Long, Thomas E.: *See—*
Kopp, Frans; Esparza, Joe O.; and Long, Thomas E., 5,188,483, Cl. 405-191.000.
Longridge, Jethro L.: *See—*
Brittain, David R.; Brown, Steven P.; Cooper, Anthony L.; Longridge, Jethro L.; Morris, Jeffrey J.; Preston, John; and Slater, Linda, 5,189,031, Cl. 514-155.000.
Lonza, Ltd.: *See—*
Griffiths, Gareth; Warm, Aleksander; Previdoli, Felix; and Ryan, Gary, 5,189,217, Cl. 564-040.000.
Look S.A.: *See—*
van Raemdonck, Joris, 5,188,384, Cl. 280-281.100.
Lopata, John E.: *See—*
Ballard, Kenneth D.; Bottino, Ronald E.; Labbe, Mark K.; Lopata, John E.; Malinski, Tom; Meier, Wilhelm; Morelli, Lou; Pacyga, Michael G.; Primorac, Mitch; Roodnat, Bernardus; and Simpson, Shawn, 5,188,546, Cl. 439-885.000.
Loprest, Frank J.: *See—*
Prencipe, Michael; McCandlish, Elizabeth F.; and Loprest, Frank J., 5,188,752, Cl. 252-96.000.
Losee, Donald B.: *See—*
Hajaligol, Mohammad R.; Deevi, Seetharama C.; Ariprala, Sarojini D.; Losee, Donald B.; Waymack, Bruce E.; and Watkins, Michael L., 5,188,130, Cl. 131-359.000.
Losensky, Charles I., to La-Z-Boy Chair Company. Modular wall panel interconnection apparatus and method. 5,187,908, Cl. 52-239.000.
Loulias, Kris P. Portable beverage container. 5,188,266, Cl. 224-148.000.
Louvard, Daniel; Dudouet, Brigitte; Robine, Sylvie; Arpin, Monique; Pringault, Eric; and Garcia, Alphonse, to Institut Pasteur; Centre National de la Recherche Scientifique; and Institut National de la Sante et de la Recherche Medicale. Agents for the in vitro diagnosis of malignant cells originating in the digestive tract. 5,188,967, Cl. 436-501.000.
Lovisetto, Primo: *See—*
Bartoschek, Manfred; and Lovisetto, Primo, 5,188,339, Cl. 251-367.000.
Lovrenich, Rodger T., to El Paso Technologies Company. Distributed logic control system and method. 5,189,604, Cl. 364-136.000.
Lowel-Light Manufacturing, Inc.: *See—*
Lowell, Ross; and Pronputhsri, Apiruk, 5,188,443, Cl. 362-18.000.
Lowell, Kenneth W.; Synnett, Karen P.; and Janatka, Karel J., to Pitney Bowes Inc. Apparatus for conveying sheets from landscape to portrait arrangement. 5,188,355, Cl. 271-225.000.
Lowell, Ross; and Pronputhsri, Apiruk, to Lowel-Light Manufacturing, Inc. Shadow control system. 5,188,443, Cl. 362-18.000.
Lowery, Richard E.: *See—*
Maholland, Michael K.; Fu, Chia-Min; and Lowery, Richard E., 5,188,995, Cl. 502-28.000.
Lozier, Philip J.: *See—*
Ward, N. Robert, Jr.; and Lozier, Philip J., 5,188,946, Cl. 435-91.000.
Lu, Anthony Y. H.: *See—*
Balani, Suresh K.; Ramjit, Harri G.; Pitzenberger, Steven M.; Schwartz, Michael S.; and Lu, Anthony Y. H., 5,188,950, Cl. 435-120.000.
Lu, Richard M. T.: *See—*
Steinhaus, Bruce M.; and Lu, Richard M. T., 5,188,117, Cl. 128-708.000.
Lucas Industries public limited company: *See—*
Schmitt, Hubert; and Kampemann, Wolfgang, 5,188,432, Cl. 303-96.000.
LucasArts Entertainment Company: *See—*
Holman, Tomlinson, 5,189,703, Cl. 381-61.000.
Luciani, Luciano; Pondrelli, Maddalena; Invernizzi, Renzo; and Borghi, Italo, to ECP Enichem Polimeri s.r.l. Solid component of catalyst for the (co)polymerization of ethylene. 5,188,997, Cl. 502-107.000.
Lucky, Ltd.: *See—*
Kim, Yong Z.; and Kim, Won S., 5,189,202, Cl. 560-213.000.
Lueghamer, Albert, to agru Alois Gruber GmbH. Process and device for welding of tubular plastic parts. 5,188,697, Cl. 156-499.000.
Lui, Sik K.: *See—*
Shum, Ying K.; and Lui, Sik K., 5,188,972, Cl. 437-31.000.
Lukas, Bohumir; and Schmidt-Ruppin, Karl H., to Ciba-Geigy Corporation. Use of sugar derivatives for the prophylaxis and treatment of virus infections. 5,189,017, Cl. 514-8.000.
Lumma, Jr., William C.: *See—*
Chou, Yuo-Ling; Erhardt, Paul W.; Hagedorn, Alfred A., III; Lampe, John W.; Lumma, Jr., William C.; Morgan, Thomas K.; and Wiggins, Jay R., 5,189,036, Cl. 514-252.000.
Lunkenheimer, Winfried; Brandes, Wilhelm; and Hanssler, Gerd, to Bayer Aktiengesellschaft. (2-cyano-2-oximinoacetyl)-amino acid derivatives. 5,189,061, Cl. 514-519.000.
Lush, Craig L. Wedge. 5,188,159, Cl. 144-193.00D.
Luth, Stefan, to Girrbach Dental GmbH. Device for static fixation of the jaw relation. 5,188,529, Cl. 433-68.000.

Luttmer, Joseph D.: *See—*
York, Rudy L.; Luttmer, Joseph D.; Wan, Chang F.; Orent, Thomas W.; Hutchins, Larry D.; and Simmons, Art, 5,188,970, Cl. 437-3.000.
Lutz, Michael A.: *See—*
Lee, Chi-long; and Lutz, Michael A., 5,188,864, Cl. 427-515.000.
Lyden, Colin, to University College Cork. Single shot sigma-delta analog to digital converter. 5,189,419, Cl. 341-143.000.
Lyle, Robert L., Jr.: *See—*
Keck, Gregory W.; and Lyle, Robert L., Jr., 5,189,600, Cl. 363-212.000.
Lyna, Pauline R.: *See—*
White, Susanne T.; Lyna, Pauline R.; and Fay, W. Joy, 5,188,120, Cl. 128-778.000.
Lynch, James P. Releasable fastener assembly. 5,187,843, Cl. 24-576.000.
Lyndhurst, Richard; and Drake, John D. Water pump. 5,188,065, Cl. 123-41.440.
Lynt, Harold N., Jr.: *See—*
Ahn, Kie Y.; Lynt, Harold N., Jr.; and Jipson, Victor B., 5,188,923, Cl. 430-273.000.
Lyon, Russell R.: *See—*
Bayless, Brian; and Lyon, Russell R., 5,188,609, Cl. 604-180.000.
Lyons, Richard J.; Nolan, Kevin F.; and Chu, Wah C., to IMRS Operations, Inc. Method and apparatus for storing and generating financial information employing user specified input and output formats. 5,189,608, Cl. 364-408.000.
M-I Drilling Fluids Company: *See—*
Patel, Arvind D.; McGlothlin, Raymond E.; Bleier, Roger D.; and Brinkley, H. N., 5,189,012, Cl. 507-103.000.
Maas, Steven M.: *See—*
Posin, Jack; Valenta, Harry L., Jr.; Maas, Steven M.; and Koestner, Ken, 5,188,106, Cl. 128-419.0PG.
Maassen, Nevil Q.: *See—*
Skertic, Matthew M.; Hlava, Joseph L.; Eneim, Arthur A.; and Maassen, Nevil Q., 5,187,939, Cl. 62-51.200.
Mabrey, Gerald B., to White Consolidated Industries, Inc. Full height carrier for horizontal carousel. 5,188,245, Cl. 211-122.000.
Maccaferri, Marco, to Rev-A-Shelf, Inc. Locking device for a latch. 5,188,405, Cl. 292-204.000.
Macedo, Pedro B.; and Mohr, Robert K., to Macedo, Pedro Buarque de; and Litovitz, Theodore Aaron. Process for vitrifying asbestos containing waste, infectious waste, toxic materials and radioactive waste. 5,188,649, Cl. 65-21.300.
Macedo, Pedro Buarque de: *See—*
Macedo, Pedro B.; and Mohr, Robert K., 5,188,649, Cl. 65-21.300.
Mackenzie, Patricia D.: *See—*
Howson, Paul E.; and Mackenzie, Patricia D., 5,189,137, Cl. 528-171.000.
Macri, Joseph A.: *See—*
Cook, Donald R.; and Macri, Joseph A., 5,188,661, Cl. 75-387.000.
Mactronix: *See—*
Tarng, Jawhorng; and Lau, John I., 5,188,499, Cl. 414-404.000.
Madsen, David C.; and Rowe, W. Bruce, to Clintec Nutrition Co. Nutrient compositions containing peptides and method for administering the same. 5,189,016, Cl. 514-2.000.
Maeda Industries, Ltd.: *See—*
Kobayashi, Jun, 5,188,569, Cl. 474-160.000.
Maeda, Kenji; Hayashi, Kenichiro; Masuda, Mitsuyoshi; Nishikawa, Hirofumi; and Suzuki, Katsuhiro, to Aisin Seiki Kabushiki Kaisha. Guide rail device of sun-roof. 5,188,420, Cl. 296-223.000.
Maeda, Yutaka; Kaneko, Kiyotaka; Miyake, Izumi; Nakane, Yoshio; and Shimaya, Hiroshi, to Fuji Photo Film Co, Ltd. Bistable magnetic head advancing/retracting device for rotating magnetic recording medium. 5,189,570, Cl. 360-75.000.
Maei, Yoshihiro, to Fuji Xerox Co., Ltd. Communication terminal unit for connection to an ISDN. 5,189,695, Cl. 379-199.000.
Maekawa, Takaaki: *See—*
Shimada, Takashi; Inoue, Satoru; Maekawa, Takaaki; and Jitsumori, Akio, 5,189,415, Cl. 340-854.600.
Magara, Takuji, to Mitsubishi Denki K.K. Method and apparatus for treating the dielectric used in electrical discharge machining. 5,189,276, Cl. 219-69.140.
Magaro, Steven B. Thermal device. 5,188,877, Cl. 428-80.000.
Magnant, Gary P., to Owl Scientific Plastics, Inc. Casting method for forming a gel matrix. 5,188,790, Cl. 264-219.000.
Magnavox Electronic Systems Company: *See—*
Downing, Robert W.; and Conte, Donald V., 5,188,911, Cl. 429-70.000.
Magneco/Metrel, Inc.: *See—*
Soofi, Madjid, 5,188,796, Cl. 266-275.000.
Magnusser, Jr. Haakon T.; Ruskewicz, Stephen J.; Smith, Gary L.; and Wingo, Anthony K., to Rainin Instrument Co., Inc. Method for dispensing liquids with a pipette with compensation for air pressure and surface tension. 5,187,990, Cl. 73-864.180.
Maguire, Joel M.; and Hall, Arlis, to General Motors Corporation. Self-piloting thrust washers. 5,188,576, Cl. 475-348.000.
Maher, Robert J.: *See—*
Cox, Kenneth A.; and Maher, Robert J., 5,189,708, Cl. 382-8.000.
Maholland, Michael K.; Fu, Chia-Min; and Lowery, Richard E., to Phillips Petroleum Company. Reactivation and passivation of spent cracking catalysts. 5,188,995, Cl. 502-28.000.
Maidment, Robert A. M., to Courier Products Limited. Swing doors. 5,187,897, Cl. 49-236.000.
Maier, Friedrich. Modular recycling container. 5,188,412, Cl. 294-68.240.
Maier, Ludwig, to Ciba-Geigy Corporation. 1-amino-2-phenylethanephosphonic acids as microbiocides. 5,189,030, Cl. 514-114.000.
Maineult, Jean: *See—*
Joveux-Bouillon, Bernard; and Maineult, Jean, 5,188,538, Cl. 439-271.000.
Mainster, Martin A.: *See—*
Crossman, Janet L.; Erickson, Phillip J.; Heacock, Gregory L.; and Mainster, Martin A., 5,189,450, Cl. 351-219.000.
Maki, Naoki: *See—*
Tada, Naofumi; Iida, Fumio; Takahashi, Ryukichi; Maki, Naoki; Sakai, Shuji; and Hotta, Yoshiji, 5,189,386, Cl. 335-216.000.
Maki, Toshimichi; and Matsuo, Takato, to NKK Corporation. Method for increasing the efficiency of a direct current electric arc furnace. 5,189,682, Cl. 373-64.000.
Maki, Yasuhito: *See—*
Izumi, Akio; Maki, Yasuhito; Narabu, Tadakuni; Sato, Maki; Otsu, Takaji; and Saito, Katsuyuki, 5,189,499, Cl. 257-215.000.
Makita, Hiroyuki; and Kochi, Shuichi, to Koito Manufacturing Co., Ltd. Vehicular headlamp. 5,188,444, Cl. 362-80.000.
Makita, Toshio: *See—*
Matsubara, Takahiro; Makita, Toshio; and Iwao, Koichiro, 5,189,716, Cl. 385-93.000.
Makitalo, Valto J.: *See—*
Lilja, Launo L.; Makitalo, Valto J.; Hultholm, Stig-Erik; and Nyman, Bror G., 5,188,808, Cl. 422-229.000.
Malamas, Michael S., to American Home Products Corporation. Isoquinoline-1,3-dione acetyl carbamates useful as aldose reductase inhibitors. 5,189,044, Cl. 514-309.000.
Malamas, Michael S., to American Home Products Corporation. Alkylidene analogs of 1'-amino-2-[(benzothiazolyl)-methyl]spiro [isoquinoline-4(1H),3'-pyrrolidine]-1,2',3,5'(2H)-tetrones useful as aldose reductase inhibitors. 5,189,167, Cl. 546-18.000.
Malamas, Michael S., to American Home Products Corporation. 1'-amino-2[(benzothiazolyl)methyl]spiro-[isoquinoline-4(1H),3'-pyrrolidine]-1,2'3,5'(2H)-tetrones and analogs thereof useful as aldose reductase inhibitors. 5,189,168, Cl. 546-18.000.
Malinge, Jean: *See—*
Duranel, Laurent; Malinge, Jean; and Bousque, Marie-Laure, 5,188,999, Cl. 502-111.000.
Malinski, Tom: *See—*
Ballard, Kenneth D.; Bottino, Ronald E.; Labbe, Mark K.; Lopata, John E.; Malinski, Tom; Meier, Wilhelm; Morelli, Lou; Pacyga, Michael G.; Primorac, Mitch; Roodnat, Bernardus; and Simpson, Shawn, 5,188,546, Cl. 439-885.000.
Mallett, Dudley C., to J. H. Fenner & Co., Ltd. Monitoring system. 5,189,350, Cl. 318-434.000.
Maloney, Bernard A.: *See—*
Dilmore, Colonel R.; and Maloney, Bernard A., 5,188,712, Cl. 204-98.000.
Maloney, Thomas J.; and Champeau, Eugene J., to Medamicus, Inc. Multiple size introducer slitter. 5,188,606, Cl. 604-161.000.
Malow, Siegmar, to Licentia Patent-Verwaltungs GmbH. Modular conveyor. 5,188,210, Cl. 198-369.000.
Mamoto, Katsuhiro; Nakamura, Yasuyuki; Kawaoka, Akiyoshi; and Tabata, Masahiko, to Sanyo-Kokusaku Pulp Co., Ltd. Feed composition for fish breeding including mononucleotides. 5,188,851, Cl. 426-2.000.
Man Roland Druckmaschinen Ag: *See—*
Reichel, Klaus T., 5,188,028, Cl. 101-228.000.
Manalastas, Pacifico V.; Drake, Evelyn N.; Thaler, Warren A.; Kresge, Edward N.; Elspass, Chester W.; Geiger, Albert J.; and Swarup, Vijay, to Exxon Research and Engineering Company. Coatings with ionically and covalently crosslinked neutralized carboxylated polymers. 5,188,654, Cl. 71-28.000.
Mancusi, Anthony W., III; and Washington, Samuel J., to Dow Chemical Company, The. Neutralization of polyakylene carbonate polyols for polyurethane prepolymer synthesis. 5,189,196, Cl. 558-261.000.
Mangold, Dieter; and Schlipfenbacher, Reiner, to Boehringer Mannheim GmbH. Displacement immunoassay utilizing an oligavalent labelled antibody. 5,188,939, Cl. 435-7.920.
Manitowoc Company, Inc., The: *See—*
Zuehlke, Arthur; and Pech, David, 5,189,605, Cl. 364-140.000.
Mannato, Pietro, to Finduck S.r.L. Connector for handles and shoulder belts of bags, ladies handbags, suitcases or other traveling containers. 5,188,475, Cl. 403-58.000.
Mannava, Seetharamaiah: *See—*
Singh, Jogender; Jain, Sulekh C.; Lloyd, Thomas W.; Bates, Leroy A.; Lacroix, Denis; Cooper, Ernest B., Jr.; Mannava, Seetharamaiah; and Couture, Serge B., 5,187,967, Cl. 72-340.000.
Manner, Johann: *See—*
Hinterholzer, Peter; Zikell, Stefan; Firgo, Heinrich; Wolschner, Bernd; Eichinger, Dieter; Manner, Johann; Astegger, Stephan; and Weinzierl, Karin, 5,189,152, Cl. 536-56.000.
Mannesmann Aktiengesellschaft: *See—*
Bitsch, Harald; and Schmidt, Heinz, 5,188,478, Cl. 403-267.000.
Figge, Dieter; and Fink, Peter, 5,187,965, Cl. 72-190.000.
Kasper, Horst M., 5,188,466, Cl. 400-124.000.
Swars, Helmut; and Maus, Wolfgang, 5,187,855, Cl. 29-523.000.
Mannesmann Rexroth GmbH: *See—*
Nikolaus, Heinrich, 5,187,933, Cl. 60-452.000.
Mano, Hiroyuki; Takashi, Terumi; Futami, Toshio; and Fujii, Tatsuhisa, to Hitachi, Ltd. Multi-color display system. 5,189,407, Cl. 340-793.000.
Mansfield, Peter W.; and Dupps, Frank N., to Dupps Company, The. Cast formed bi-metallic worm assembly and method. 5,188,023, Cl. 100-145.000.

VOL
1147
ISS
4
FE
23
1993
UMI

Mao, Mark H.: *See—*
Connor, Daniel S.; Scheibel, Jeffrey J.; Murch, Bruce P.; Mao, Mark H.; Gosselink, Eugene P.; and Severson, Roland G., Jr., 5,188,769, Cl. 252-548.000.

Mapes, James P.: *See—*
Schulte, Thomas H.; Jurgensen, Stewart R.; and Mapes, James P., 5,188,937, Cl. 435-7.360.

Marchandeau, Christian: *See—*
Czech, Jorg; Sedlacek, Hans H.; Nedelec, Lucien; Guillaume, Jacques; and Marchandeau, Christian, 5,189,065, Cl. 514-656.000.

Marchewka, Werner: *See—*
Dettmer, Hans J.; Herwig, Jorg; Hagemann, Joachim; Marchewka, Werner; and Utzfeld, Michael, 5,187,988, Cl. 73-861.530.

Marco Seattle, Inc.: *See—*
Cook, Harold T., Jr.; Furlong, Donn B.; Svendsen, Robert A.; and Rustad, Allan P., 5,188,146, Cl. 137-580.000.

Marek, Daniel: *See—*
Mraz, Beat; Notzli, Christoph; Ungricht, Ernst; and Marek, Daniel, 5,187,938, Cl. 62-51.100.

Marinelli, Domenico; and Furlan, Fulvio, to Minnesota Mining and Manufacturing Company. Process of simultaneously applying multiple layers of hydrophilic colloidal aqueous compositions to a hydrophobic support and multilayer photographic material. 5,188,931, Cl. 430-539.000.

Marinelli, Robert A., to Motorola, Inc. Removable antenna coupling on a wrist watch pager. 5,189,431, Cl. 343-718.000.

Marino, Joseph C.: *See—*
Marino, Peter C.; Hanson, Robert K.; and Marino, Joseph C., 5,188,240, Cl. 211-41.000.

Marino, Peter C.; Hanson, Robert K.; and Marino, Joseph C., to Hanson, Robert K. Storage unit for recording-media boxes. 5,188,240, Cl. 211-41.000.

Mariol, James F.: *See—*
Mariol, John V., 5,187,826, Cl. 5-655.000.

Mariol, John V., to Mariol, James F. Convertible cradle. 5,187,826, Cl. 5-655.000.

Mark, George E.: *See—*
Palladino, Linda O.; Silberklang, Melvin; Tung, Jwu-Sheng; Law, Simon W.; and Mark, George E., 5,189,019, Cl. 514-12.000.

Mark, John G.; Tazartes, Daniel A.; and Hahn, Tae W., to Litton Systems, Inc. Multioscillator ring laser gyroscope local oscillator-based output optics detection system. 5,189,487, Cl. 356-350.000.

Mark, John G.; Pavlath, George A.; and Tazartes, Daniel A., to Litton Systems, Inc. Fiber optical gyroscope utilizing orthogonal sequences. 5,189,488, Cl. 356-350.000.

Marnell, Anthony A., II; Sevigny, Jayme D.; and Rehm, Cary A., to Rio Properties, Inc. Wheel of fortune poker game apparatus and method. 5,188,363, Cl. 273-85.0CP.

Marpole International Inc.: *See—*
Chiang, Lee; and Ratcliffe, William R., 5,188,447, Cl. 362-103.000.

Marrelli, John C.: *See—*
Rutledge, Gary L.; and Pitcher, Edgar R., 5,188,580, Cl. 493-225.000.

Mars, Suzanne P. Lightweight power tools. 5,188,188, Cl. 173-171.000.

Marschall, Klaus W., to Bodenseewerk Geratetechnik GmbH. Power controller. 5,189,589, Cl. 361-93.000.

Marsh, Michael J. C.; Atkins, Raymond C.; and Hodson, Trevor M., to CSIR. Timing apparatus. 5,189,246, Cl. 102-217.000.

Marshall, Robert L. Saddle. 5,187,924, Cl. 54-44.500.

Marsland, Robert A., Jr.: *See—*
Day, Timothy; and Marsland, Robert A., Jr., 5,189,547, Cl. 359-245.000.

Martin, Berthold: *See—*
Leising, Maurice B.; Nogle, Thomas D.; Benford, Howard L.; Helbrook, Gerald L.; Klotz, James R.; Martin, Berthold; Mikel, Steven A.; and Nortman, William, 5,188,575, Cl. 475-280.000.

Martin, Geoffrey S., to Vas-Cath Incorporated. Dual lumen catheter. 5,188,593, Cl. 604-43.000.

Martin Marietta Energy Systems, Inc.: *See—*
Feenstra, Roeland; and Boatner, Lynn A., 5,188,906, Cl. 428-688.000.

Martin, Stephen J.: *See—*
Blair, Dianna S.; Freye, Gregory C.; Hughes, Robert C.; Martin, Stephen J.; and Ricco, Antonio J., 5,187,980, Cl. 73-599.000.

Martin, Trevor I.: *See—*
Mayo, James D.; Bluhm, Terry L.; Hsiao, Cheng K.; Martin, Trevor I.; and Hor, Ah-Mee, 5,189,155, Cl. 540-141.000.

Martincic, Paul W.: *See—*
Girgis, Ramsis S.; and Martincic, Paul W., 5,188,277, Cl. 228-111.000.

Maruichi, Takanori: *See—*
Okayasu, Yoshisada; Yamauchi, Toshiyuki; Mori, Akinari; Kamaya, Naoki; Okayama, Naoki; Maruichi, Takanori; Iwasawa, Junichi; Yamada, Yukio; and Okano, Renjiro, 5,189,520, Cl. 358-229.000.

Maruta, Masatoshi: *See—*
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Fujii, Yasuo; Nakamura, Tetsuya; Fukuyama, Hirotaka; Arai, Seiji; Sato, Koichiro; Takagi, Toshio; Nishina, Shuji; Hukasawa, Jiro; Maruta, Masatoshi; and Koizumi, Seiichi, 5,188,057, Cl. 118-657.000.

Marvalaud, Inc.: *See—*
Pond, Robert B., 5,188,168, Cl. 164-479.000.

Marziani, Frank: *See—*
Tremblay, Paul-Alain; Marziani, Frank; Tino, John A. F.; and Pilkiewicz, Frank G., 5,188,951, Cl. 435-131.000.

Marzio, Marco: *See—*
Inserra, Dario; Marzio, Marco; and Pellizzari, Paolo, 5,188,514, Cl. 416-223.00A.

Masai, Kentaro: *See—*
Ohmura, Keiji; Okuno, Sumio; Masai, Kentaro; Ooba, Hideshi; Hida, Senzoo; and Okamoto, Seiichi, 5,188,039, Cl. 105-423.000.

Masaki, Naoki; Hira, Osamu; and Shimada, Naoki, to Pioneer Electronic Corporation. Control system for a compact disk player. 5,189,656, Cl. 369-47.000.

Maschinenfabrik Goebel GmbH: *See—*
Emich, Georg, 5,188,012, Cl. 83-496.000.

Masi, Francesco; Invernizzi, Renzo; Carbonaro, Antonio; Costa, Lorenzo; and Moalli, Angelo, to Montedipe S.r.l.; and Enichem S.p.A. Supported catalyst for the polymerization and copolymerization of olefinically unsaturated compounds, and a (co)polymerization process which uses it. 5,189,000, Cl. 502-113.000.

Masimo, Tamon; Kanazawa, Hiroshi; Masuzaki, Hidefumi; and Ito, Satoshi, to Hitachi, Ltd.; and Hitachi Software Engineering Co., Ltd. Display apparatus with rotatable display screen. 5,189,404, Cl. 340-720.000.

Massachusetts Institute of Technology: *See—*
Roberge, James K.; and Gray, Martha L., 5,189,376, Cl. 324-662.000.
Saito, Haruo; Kranz, David M.; Eisen, Herman N.; and Tonegawa, Susumu, 5,189,147, Cl. 530-387.900.
Yurek, Gregory J.; and VanderSande, John B., 5,189,009, Cl. 505-1.000.

Massel, Kathryn L.: *See—*
Kraselsky, Louis J.; and Massel, Kathryn L., 5,187,889, Cl. 40-407.000.

Mast, Monte N., to Quad/Tech, Inc. Apparatus and method for transferring signatures to a wrapping machine. 5,187,922, Cl. 53-466.000.

Masuda, Kazuaki: *See—*
Arashima, Teruo; Kimura, Makiko; Kashino, Toshio; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; and Orikasa, Tsuyoshi, 5,189,443, Cl. 346-140.00R.

Masuda, Mitsuyoshi: *See—*
Maeda, Kenji; Hayashi, Kenichiro; Masuda, Mitsuyoshi; Nishikawa, Hirofumi; and Suzuki, Katsuhiro, 5,188,420, Cl. 296-223.000.

Masuya, Hirotomo: *See—*
Kato, Koichi; Masuya, Hirotomo; and Norihiko, Moriya, 5,189,057, Cl. 514-473.000.

Masuzaki, Hidefumi: *See—*
Masimo, Tamon; Kanazawa, Hiroshi; Masuzaki, Hidefumi; and Ito, Satoshi, 5,189,404, Cl. 340-720.000.

Mathieu, Luc, to Alcatel Cit. Valve. 5,188,145, Cl. 137-340.000.

Mathre, David J.: *See—*
Blacklock, Thomas J.; Jones, Todd K.; Mathre, David J.; and Xavier, Lyndon C., 5,189,177, Cl. 548-405.000.

Matra Sep Imagerie et Informatique: *See—*
Henaff, Yves; and Le Roux, Herve , 5,189,510, Cl. 358-75.000.

Matrix Technologies, Inc.: *See—*
Blum, Kenneth; and Trachtenberg, Michael C., 5,189,064, Cl. 514-561.000.

Matsuba, Yorishige: *See—*
Misawa, Yoshihisa; Kondo, Hisao; Tsutsumi, Tetsuya; Hayashi, Masahiro; Sugimori, Daisuke; Matsuba, Yorishige; Isozaki, Masashi; Nishigaki, Hiroharu; Yazawa, Kazunaga; and Kondo, Kiyosi, 5,189,189, Cl. 554-194.000.

Matsubara, Motoki; Sasabe, Setsuo; Hongo, Takayasu; and Fujii, Kenichi, to Kanzaki Paper Manufacturing Co., Ltd. Printer control system for a sheet cutter. 5,188,470, Cl. 400-621.000.

Matsubara, Takahiro; Makita, Toshio; and Iwao, Koichiro, to Nippon Sheet Glass Co., Ltd. Photosemiconductor and optical fiber welded module. 5,189,716, Cl. 385-93.000.

Matsuda, Akira: *See—*
Miyashita, Takanori; Abiru, Toichi; Watanabe, Yohko; Yamaguchi, Toyofumi; and Matsuda, Akira, 5,189,027, Cl. 514-46.000.

Matsuda, Itaru; and Ohkaji, Hiroyuki, to Ricoh Company, Ltd. Image transferring device for a color image recorder. 5,189,479, Cl. 355-274.000.

Matsuda, Masaoki: *See—*
Furusaki, Shinichi; Matsuda, Masaoki; Saito, Muneki; Shiomi, Yasushi; Nakamura, Yasuo; and Tobita, Michio, 5,189,225, Cl. 568-649.000.

Matsuda, Ryouichi: *See—*
Imai, Ryuusuke; Nashiwa, Michio; Oomura, Yasuhiro; Matsuda, Ryouichi; Satou, Michio; and Takeuchi, Tamayuki, 5,188,698, Cl. 156-500.000.

Matsuda, Toshihiro; and Moriya, Daisuke, to Sharp Kabushiki Kaisha. Facsimile communication device. 5,189,527, Cl. 358-440.000.

Matsuda, Yasuhiko; and Karuishi, Kazuhiro, to Kabushiki Kaisha Sato. Xerographic apparatus for label printer. 5,189,470, Cl. 355-208.000.

Matsueda, Hirokazu: *See—*
Kinoshita, Tsukasa; Yamada, Masahiko; and Matsueda, Hirokazu, 5,188,224, Cl. 206-83.500.

Matsui, Hiroshi: *See—*
Yamazaki, Schoichi; and Matsui, Hiroshi, 5,189,454, Cl. 354-200.000.

Matsumoto, Kenichi: *See—*
Shigemitsu, Mineo; Miyasaka, Toshikazu; and Matsumoto, Kenichi, 5,189,699, Cl. 380-9.000.

Matsumoto, Kenji: *See—*
Yamamoto, Tetsuya; Endoh, Yukio; Segawa, Akio; Matsumoto, Kenji; and Komiyama, Takeo, 5,188,467, Cl. 400-157.200.

Matsumoto, Makoto; and Watanabe, Junichiro, to Toshiba Silicone Co., Ltd. Silica-core silicone-shell particles, emulsion containing the same dispersed therein, and process for producing the emulsion. 5,188,899, Cl. 428-405.000.

Matsumoto, Masakazu: *See—*
Takahashi, Keizo; and Matsumoto, Masakazu, 5,187,874, Cl. 33-502.000.

Matsumoto, Michio: *See—*
Momochi, Takeshi; Sasaki, Tadashi; Matsumoto, Michio; Hayashi, Tomoo; and Shiozaki, Masahito, 5,189,627, Cl. 364-474.310.

Matsumoto, Yoshihiro: *See—*
Tomura, Masashi; Takagi, Hisamitsu; and Matsumoto, Yoshihiro, 5,189,358, Cl. 320-2.000.

Matsumura, Paul M.: *See—*
Burton, Larry W.; Sutherland, Joseph E.; Matsumura, Paul M.; Ball, Karen V.; and Czerwiec, Richard M., 5,189,673, Cl. 370-110.100.

Matsumura, Shunichi: *See—*
Umetani, Hiroyuki; Inata, Hiroo; Matsumura, Shunichi; and Mera, Hiroshi, 5,189,094, Cl. 525-27.000.

Matsuo, Sanshiro: *See—*
Saito, Kenji; Matsuo, Sanshiro; and Oda, Yoshiaki, 5,189,186, Cl. 549-497.000.

Matsuo, Shunji: *See—*
Haneda, Satoshi; Fukuchi, Masakazu; Matsuo, Shunji; and Morita, Shizuo, 5,189,472, Cl. 355-212.000.

Matsuo, Takato: *See—*
Maki, Toshimichi; and Matsuo, Takato, 5,189,682, Cl. 373-64.000.

Matsuoka, Toshio, to Sumitomo Heavy Industries, Ltd. Metallic vapor condenser capable of circulating a liquid metal. 5,188,795, Cl. 266-202.000.

Matsura Kenkyusho Kabushiki Kaisha: *See—*
Matsuura, Takasi, 5,188,498, Cl. 414-331.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Kai, Yoshiaki; and Suzuki, Takashi, 5,188,747, Cl. 252-54.000.
Kawahara, Sadao; Yamamura, Michio; Yuda, Jiro; Kojima, Yoshinori; Yamamoto, Shuichi; Sakai, Manabu; Muramatsu, Shigeru; and Aiba, Osamu, 5,188,521, Cl. 418-55.300.
Miya, Shigeyuki; Shibata, Takenori; Komatsu, Yoshihiro; Miyoshi, Hiromichi; Hirata, Tadashi; Taniguchi, Yoshio; and Kobayashi, Takuo, 5,189,474, Cl. 355-245.000.
Murakoshi, Toshiichi; Kawazoe, Hiroshi; Takahata, Toshihiro; Nishimura, Shigeki; and Haruta, Yoshiyuki, 5,187,858, Cl. 29-596.000.
Nakamura, Shoji; Inoue, Takasi; Sunohara, Masaaki; and Shioyama, Tadao, 5,188,652, Cl. 65-319.000.
Ootsuka, Shigeru; Nakada, Naoki; and Tsukada, Takehito, 5,189,327, Cl. 310-71.000.
Sekihara, Toshinobu; and Yokomakura, Mitsunori, 5,189,335, Cl. 313-422.000.
Sogabe, Yasushi; Matsuura, Kenji; and Murata, Shigeki, 5,189,491, Cl. 356-372.000.
Sotomura, Tadashi, 5,188,768, Cl. 252-518.000.
Yamaguchi, Hideki; Nitta, Masahiro; and Furukawa, Katsunori, 5,189,274, Cl. 219-10.55M.
Yano, Shigeru; and Takiguchi, Masao, 5,189,588, Cl. 361-56.000.

Matsushita Graphic Communication Systems, Inc.: *See—*
Yamada, Masao; Ikeda, Yoshihiro; and Yamamoto, Hiraku, 5,189,444, Cl. 346-157.000.

Matsushita Seiko Co., Ltd.: *See—*
Murakoshi, Toshiichi; Kawazoe, Hiroshi; Takahata, Toshihiro; Nishimura, Shigeki; and Haruta, Yoshiyuki, 5,187,858, Cl. 29-596.000.

Matsuura, Kenji: *See—*
Sogabe, Yasushi; Matsuura, Kenji; and Murata, Shigeki, 5,189,491, Cl. 356-372.000.

Matsuura, Takasi, to Matsura Kenkyusho Kabushiki Kaisha. Cargo docking device. 5,188,498, Cl. 414-331.000.

Matsuzaki, Kinimitsu: *See—*
Akutagawa, Ichiro; Yamaguchi, Tsutomu; and Matsuzaki, Kinimitsu, 5,189,081, Cl. 523-428.000.

Matsuzawa, Shoichi: *See—*
Yamaguchi, Katsuyoshi; Kondoh, Masatoshi; Hayashi, Shigeo; Sonokawa, Masayoshi; Matsuzawa, Shoichi; and Takahashi, Atsushi, 5,188,572, Cl. 475-168.000.

Matthews, Donald P.; McCarthy, James R.; Whitten, Jeffrey P.; and Broersma, Robert J., Jr., to Merrell Dow Pharmaceuticals Inc. Thione dopamine beta hydroxylase inhibitors. 5,189,052, Cl. 514-392.000.

Matthews, John D.: *See—*
McKenna, Frank J.; Horst, Richard K.; Horst, James F.; Wright, Charles S.; and Matthews, John D., 5,187,928, Cl. 56-328.100.

Matthews, Veronique M.: *See—*
Gay, Richard J.; Gay, Charles C.; Matthews, Veronique M.; Gay, Francoise E. M.; and Chase, Valerie, 5,188,179, Cl. 166-310.000.

Mattila, Reijo, to ICL Personal Systems Oy. Printer having document transfer device with plate-shaped stop means. 5,188,471, Cl. 400-630.000.

Matumoto, Morihisa; Suzuki, Kouji; Endo, Shunkichi; and Kurosawa, Yukio, to Hitachi, Ltd. Contact structure for vacuum circuit breaker. 5,189,270, Cl. 200-144.00B.

Matuschek, Hans J.: *See—*
Meyer, Robert B.; Lackner, John R.; and Matuschek, Hans J., 5,187,832, Cl. 15-329.000.

Matushita, Tetunori: *See—*
Karino, Yukio; and Matushita, Tetunori, 5,188,928, Cl. 430-513.000.

Maus, Wolfgang: *See—*
Swars, Helmut; and Maus, Wolfgang, 5,187,855, Cl. 29-523.000.

Maw, Taishih; Kritchevsky, Gina; and Cheng, Frank, to Ciba-Geigy Corporation. Solution stable polyimide resin systems. 5,189,128, Cl. 526-262.000.

Maxworthy, John, to International Visual Corporation. Shelf. 5,188,246, Cl. 211-153.000.

May, Sharon B.: *See—*
Stern, Joseph A.; Green, Stephen L.; King, Charles B.; and May, Sharon B., 5,187,815, Cl. 2-161.00R.

Mayer, Hartwig; Hofmann, Manfred; and Riedinger, Hans-Peter, to Abb Ceag Licht- und Stromversorgungstechnik GmbH. Electric control box, in particular for low-voltage systems. 5,189,597, Cl. 361-391.000.

Mayer, Horst: *See—*
Hamprecht, Gerhard; Mayer, Horst; Westphalen, Karl-Otto; Walter, Helmut; Gerber, Matthias; Grossmann, Klaus; and Rademacher, Wilhelm, 5,188,657, Cl. 504-212.000.

Mayfield, John E.: *See—*
Tabatabi, Louisa B.; Mayfield, John E.; and Beck, Bonnie L., 5,188,936, Cl. 435-7.320.

Maynard, Jean-Pierre: *See—*
Callier, Bernard; and Maynard, Jean-Pierre, 5,189,602, Cl. 363-28.000.

Mayo, Geoffrey, to Loma Group Limited. Method and apparatus using a varying electromagnetic field for determining the nature, or a property of a non-metallic material. 5,189,366, Cl. 324-233.000.

Mayo, James D.; Bluhm, Terry L.; Hsiao, Cheng K.; Martin, Trevor I.; and Hor, Ah-Mee, to Xerox Corporation. Titanyl phthalocyanine Type I processes. 5,189,155, Cl. 540-141.000.

Mayo, James D.; and Gardner, Sandra J., to Xerox Corporation. Processes for the preparation of titanium-phthalocyanine Type X. 5,189,156, Cl. 540-141.000.

Mazda Motor Corporation: *See—*
Echigo, Mitsuji; Moriyama, Naomune; Akahoshi, Hideaki; Kameda, Osamu; and Akutagawa, Hitoshi, 5,188,574, Cl. 475-206.000.
Yano, Haruto; Hirasa, Yoshiaki; Tokunaga, Toshimichi; Hayami, Katsuro; Naito, Norihiro; Akamatsu, Teruki; Goto, Hirofumi; and Yokouchi, Kazuhiro, 5,189,430, Cl. 342-457.000.

Mazer, Jean-Pierre: *See—*
Andre, Michel; Mazer, Jean-Pierre; and Nouguez, Bruno, 5,189,247, Cl. 102-291.000.

Mazin, Jack G.; and Lalji, Amir, to Royal Domaine Inc. Process for preparing a dried fruit product. 5,188,861, Cl. 426-640.000.

McCammon, John W.; and Moffet, Trever L. Needle disposal system. 5,187,850, Cl. 29-235.000.

McCandlish, Elizabeth F.: *See—*
Prencipe, Michael; McCandlish, Elizabeth F.; and Loprest, Frank J., 5,188,752, Cl. 252-96.000.

McCarthy, James R.: *See—*
Matthews, Donald P.; McCarthy, James R.; Whitten, Jeffrey P.; and Broersma, Robert J., Jr., 5,189,052, Cl. 514-392.000.

McClement, Arthur: *See—*
Johnson, Gerald E.; Rivera, James A.; and McClement, Arthur, 5,188,209, Cl. 198-336.000.

McCorkle, Gary: *See—*
Dunworth, Bruce; and McCorkle, Gary, 5,188,689, Cl. 156-89.000.

McCourt, Michael A.: *See—*
Kaplan, Ronald M.; McCourt, Michael A.; and Henderson, Kenneth J., 5,189,610, Cl. 364-419.000.

McCoy, William C.: *See—*
Yates, David C.; and McCoy, William C., 5,188,111, Cl. 128-657.000.

McCracken, Robert E., to Ryobi Motor Products Corporation. Split ring clamping arrangement. 5,188,492, Cl. 409-182.000.

McCullough, Francis P.: *See—*
Suh, Kyung W.; Stobby, William G.; and McCullough, Francis P., 5,188,893, Cl. 428-362.000.
Suh, Kyung W.; Brubaker, Burton D.; Stobby, William G.; McCullough, Francis P.; and Snelgrove, R. Vernon, 5,188,896, Cl. 428-397.000.

McDermott, Damien. Underwater navigation device. 5,187,871, Cl. 33-354.000.

McDonald, Duane L.; and Morrissette, Barbara E., to General Mills, Inc. Bag utilizing a microwave susceptor and non-heated flaps. 5,189,272, Cl. 219-10.55E.

McDonald, Ian A.; Bernotas, Ronald C.; Dudley, Mark W.; and Sprouse, Jeffrey S., to Merrell Dow Pharmaceuticals Inc. Serotonin $5HT_{1A}$ agonists. 5,189,179, Cl. 548-495.000.

McDonnell, Damien G.; Raynes, Edward P.; and Daley, Robert, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Liquid crystal color displays which cool from isotropic to twisted nematic to smectic. 5,189,534, Cl. 359-45.000.

McDonnell Douglas Corporation: *See—*
Yasui, Ken K., 5,187,961, Cl. 72-60.000.

McElroy, Lucian G. Non-contacting automotive dryer releasable connection. 5,187,881, Cl. 34-22.000.

McEwan, Thomas D.: *See—*
O'Brien, Robert N.; and McEwan, Thomas D., 5,188,713, Cl. 204-106.000.

McGhee, William D.; and Waldman, Thomas E., to Monsanto Company. Process for preparing isocyanates. 5,189,205, Cl. 560-345.000.

VOL 1147 ISS 4 FEB 23 1993 UMI

McGlothlin, Raymond E.: *See*—
Patel, Arvind D.; McGlothlin, Raymond E.; Bleier, Roger D.; and Brinkley, H. N., 5,189,012, Cl. 507-103.000.
McGuckin, Hugh G.; and Badger, John S., to Eastman Kodak Company. Silver recovery process. 5,188,662, Cl. 75-713.000.
McGuire, Robert R.; and Weber, James. Active shoulder brace. 5,188,587, Cl. 602-20.000.
McGuire, William L.; Tandon, Atul K.; Clark, Gary M.; and Chamness, Gary C., to Board of Regents, The University of Texas System. Method and kit for the prognostication of breast cancer patient via heat shock/stress protein determination. 5,188,964, Cl. 436-64.000.
McInerney, Elizabeth: *See*—
Parulski, Kenneth A.; Bellis, Donald C., Jr.; Hibbard, Robert H.; Giorgianni, Edward J.; and McInerney, Elizabeth, 5,189,511, Cl. 358-80.000.
McKann, H. Smith, to General Products Company, Inc. Adjustable door frame. 5,187,898, Cl. 49-505.000.
McKelvy, Robert: *See*—
Chen, Gilbert K.; McKelvy, Robert; Bonilla, Jorge A.; Glaspie, Don; and De Bruyn, George, 5,188,773, Cl. 261-112.200.
McKenna, Frank J.; Horst, Richard K.; Horst, James F.; Wright, Charles S.; and Matthews, John D., to McKenna, Kathleen. Harvesting apparatus and method. 5,187,928, Cl. 56-328.100.
McKenna, Frank J., Jr., to McKenna, Frank J., Jr. Tray for fruit harvesting system. 5,187,927, Cl. 56-328.100.
McKenna, Kathleen: *See*—
McKenna, Frank J.; Horst, Richard K.; Horst, James F.; Wright, Charles S.; and Matthews, John D., 5,187,928, Cl. 56-328.100.
McKenney, Bill: *See*—
Sargent, Dennis; Aldridge, Donald; and McKenney, Bill, 5,188,267, Cl. 224-215.000.
McLaughlin, Timothy P.: *See*—
Richardson, David L.; Grubba, Robert A.; McLaughlin, Timothy P.; and Parran, David B., 5,188,173, Cl. 166-77.000.
McNamara, Paddy: *See*—
Bertho, Dominique; Roche, Peter; and McNamara, Paddy, 5,188,534, Cl. 439-79.000.
McReynolds, Kent B., to Dow Chemical Company, The. Composite paper reinforced thermoplastic article. 5,188,888, Cl. 428-220.000.
Mead Corporation, The: *See*—
Johnson, Mark A.; Pokora, Alexander R.; and Cyrus, William L., Jr., 5,188,953, Cl. 435-156.000.
Mears, James W., to Grinnell Corporation. Dry sprinkler. 5,188,185, Cl. 169-37.000.
Meco Australia Pty Limited: *See*—
Hall, Kevin, 5,188,208, Cl. 198-312.000.
Med-Design, Inc.: *See*—
Botich, Michael J.; and Halseth, Thor, 5,188,599, Cl. 604-110.000.
Med-Pass, Incorporated: *See*—
Hanauer, Lisa E., 5,188,563, Cl. 462-56.000.
Medamicus, Inc.: *See*—
Maloney, Thomas J.; and Champeau, Eugene J., 5,188,606, Cl. 604-161.000.
Medeiros, Manuel, III; and Greenspan, Jay S., to Aegis, Inc. Surface mount device with high thermal conductivity. 5,188,985, Cl. 437-218.000.
Medendorp, Nicholas W.: *See*—
Caldwell, David W.; and Medendorp, Nicholas W., 5,189,417, Cl. 341-26.000.
Medev Corporation: *See*—
Stern, Joseph A.; Green, Stephen L.; King, Charles B.; and May, Sharon B., 5,187,815, Cl. 2-161.00R.
Medite Corporation: *See*—
Bauer, Ted J.; Harmon, David M.; Treliving, Gordon, deceased; and Kirwan, Rory G., 5,188,785, Cl. 264-115.000.
Medtronic, Inc.: *See*—
Keimel, John G., 5,188,105, Cl. 128-419.00D.
Meguro, Satoshi: *See*—
Komori, Kazuhiro; Meguro, Satoshi; Hagiwara, Takaaki; Kume, Hitoshi; Tsukada, Toshihisa; and Yamamoto, Hideaki, 5,189,497, Cl. 357-23.500.
Mehlhorn, Heinz; Taraschewski, Horst; Schmahl, Gunter; Raether, Wolfgang; and Rosner, Manfred, to Hoechst Aktiengesellschaft. Agents directed against parasites of fishes and insects. 5,188,832, Cl. 424-405.000.
Mehta, aresh R.: *See*—
Young, Richard H., Sr.; Hansen, Michael R.; Lancaster, E. Peter; Mehta, aresh R.; and Brunnenkant, Christel, 5,188,624, Cl. 604-378.000.
Mehta, Vinay; and Leung, P. C., to Hunter Fan Company. Remote control for a ceiling fan. 5,189,412, Cl. 340-825.220.
Meichel, Otto, to Krones AG Hermann Kronseder Maschinenfabrik. Method for cutting the flanks of an infeed worm and worm milling machine. 5,188,491, Cl. 409-66.000.
Meier, Werner A. High voltage DC power generation circuit powered from the alternator of a motor vehicle. 5,189,361, Cl. 322-90.000.
Meier, Wilhelm: *See*—
Ballard, Kenneth D.; Bottino, Ronald E.; Labbe, Mark K.; Lopata, John E.; Malinski, Tom; Meier, Wilhelm; Morelli, Lou; Pacyga, Michael G.; Primorac, Mitch; Roodnat, Bernardus; and Simpson, Shawn, 5,188,546, Cl. 439-885.000.
Tivig, Gerhard; Meier, Wilhelm; and Pfeil, Egon, 5,189,609, Cl. 364-413.010.
Meiji Milk Products Co., Ltd.: *See*—
Chiba, Yuho; and Tomita, Takao, 5,187,975, Cl. 73-54.010.
Meiller, Hermann; and Mertel, Walter, to Grammer AG. Armrest arrangement for a seat. 5,188,423, Cl. 297-412.000.
Meixner, Jurgen; and Kremer, Wolfgang, to Bayer Aktiengesellschaft. Hydrophylic, olefinically unsaturated polyurethanes and their use as reactive emulsifiers. 5,189,133, Cl. 528-49.000.
Melco Wire Products Co.: *See*—
David, Henry B., 5,188,323, Cl. 248-158.000.
Mellits, Kirk E.; Braun, Robert D.; and Wollert, Gary S., to Snap-on Tools Corporation. Vehicular pressure-testing apparatus. 5,187,974, Cl. 73-49.700.
Melquist, John L., to Amoco Corporation. Polyetherimide copolymers. 5,189,115, Cl. 525-420.000.
Melton, Michael D.: *See*—
Burke, Richard A.; Goodall, James R.; Melton, Michael D.; Osborne, Roy S.; and Patterson, Carl D., 5,188,456, Cl. 374-50.000.
Memeger, Wesley, Jr., to Du Pont de Nemours, E. I., and Company. Cyclic aromatic amide oligomers. 5,189,160, Cl. 540-460.000.
Memis, Irving: *See*—
Alexander, Lawrence C.; Appelt, Bernd K.; Balkin, David K.; Hansen, James J.; Hromek, Joseph; Kaschak, Ronald A.; Lauffer, John M.; Memis, Irving; Patel, Magan S.; Seman, Andrew M.; and Susko, Robin A., 5,189,261, Cl. 174-263.000.
Memtec America Corporation: *See*—
Zepf, Robert F., 5,188,734, Cl. 210-490.000.
Menchen, Steven M.; Lee, Linda G.; Connell, Charles R.; Hershey, N. Davis; Chakerian, Vergine; Woo, Sam; and Fung, Steven, to Applied Biosystems, Inc. 4,7-dichlorofluorescein dyes as molecular probes. 5,188,934, Cl. 435-6.000.
Mendes, Louis: *See*—
Berdan, Karl; and Mendes, Louis, 5,188,408, Cl. 293-155.000.
Mentor Corporation: *See*—
Condon, Dennis E.; Bley, Robert S.; and Purkait, Bobby K., 5,188,596, Cl. 604-101.000.
Mera, Hiroshi: *See*—
Umetani, Hiroyuki; Inata, Hiroo; Matsumura, Shunichi; and Mera, Hiroshi, 5,189,094, Cl. 525-27.000.
Mercedes-Benz AG: *See*—
Muller, Armin; Zimmer, Richard; and Faulhaber, Andreas, 5,188,440, Cl. 303-116.200.
Merck & Co., Inc.: *See*—
Atkinson, Joseph G.; Claremon, David A.; Baldwin, John J.; Friedman, Paul A.; Remy, David C.; and Stern, Andrew M., 5,188,830, Cl. 424-94.630.
Balani, Suresh K.; Ramjit, Harri G.; Pitzenberger, Steven M.; Schwartz, Michael S.; and Lu, Anthony Y. H., 5,188,950, Cl. 435-120.000.
Blacklock, Thomas J.; Jones, Todd K.; Mathre, David J.; and Xavier, Lyndon C., 5,189,177, Cl. 548-405.000.
Freidinger, Roger M.; Bock, Mark G.; Lam, Yiu-Kuen T.; Chang, Raymond S.; Hensens, Otto D.; Schwartz, Cheryl D.; and Zink, Deborah L., 5,189,050, Cl. 514-375.000.
Goulet, Mark; Beattie, Thomas R.; and Wyvratt, Matthew J., 5,189,042, Cl. 514-291.000.
Omstead, Mary N.; Schulman, Marvin D.; and Young, Noel M., 5,188,944, Cl. 435-76.000.
Palladino, Linda O.; Silberklang, Melvin; Tung, Jwu-Sheng; Law, Simon W.; and Mark, George E., 5,189,019, Cl. 514-12.000.
Wilkening, Robert R., 5,189,159, Cl. 540-456.000.
Merck Patent Gesellschaft mit beschraenkter Haftung: *See*—
Baur, Gunter; Scheuble, Bernhard; and Fehrenbach, Waltraud, 5,188,758, Cl. 252-299.010.
Merck Patent Gesellschaft mit Beschrankter Haftung: *See*—
Bartmann, Ekkehard; Hittich, Reinhard; Plach, Herbert; and Finkenzeller, Ulrich, 5,188,759, Cl. 252-299.010.
Coates, David; Sage, Ian C.; and Jenner, John A., 5,188,815, Cl. 424-7.100.
Merianos, John J.; Garelick, Paul; and Lieberman, Herbert A., to ISP Investments Inc. Toothpaste composition containing strontium salt of maleic anhydride-methyl vinyl ether copolymer. 5,188,818, Cl. 424-49.000.
Merkel, Paul B.: *See*—
Schofield, Edward; Merkel, Paul B.; and Chen, Tienteh, 5,188,926, Cl. 430-377.000.
Meroni, Roberto; Gerin, Umberto; Lancerotto, Fabio; and Colussi, Vittorio, to Savio S.p.A. Automatic device for resetting a mechanical yarn feeler in a textile machine. 5,187,929, Cl. 57-80.000.
Merrell Dow Pharmaceuticals Inc.: *See*—
Matthews, Donald P.; McCarthy, James R.; Whitten, Jeffrey P.; and Broersma, Robert J., Jr., 5,189,052, Cl. 514-392.000.
McDonald, Ian A.; Bernotas, Ronald C.; Dudley, Mark W.; and Sprouse, Jeffrey S., 5,189,179, Cl. 548-495.000.
Salituro, Francesco G.; and Baron, Bruce M., 5,189,054, Cl. 514-419.000.
Weintraub, Philip M., 5,189,032, Cl. 514-173.000.
Merry, Donald D., to Anodyne Corporation. Portable patient crane. 5,187,822, Cl. 5-86.100.
Mertel, Walter: *See*—
Meiller, Hermann; and Mertel, Walter, 5,188,423, Cl. 297-412.000.
Mertens, Klaus; and Sausner, Andreas, to Freudenberg, Carl. Control valve with pressure equalization. 5,188,337, Cl. 251-129.170.
Messman, Bruce E., to Zenith Electronics Corporation. High voltage regulator for an integrated horizontal sweep system. 5,189,599, Cl. 363-21.000.
Metcal, Inc.: *See*—
Derbyshire, Rodney L., 5,189,271, Cl. 219-10.530.

Metwalli, Sayed M. Incidence angle light attenuator for light transmissive panels. 5,189,552, Cl. 359-489.000.
Meuer, Johannes; Todtenhaupt, Dieter; and Schonherr, Dieter, to Willy Vogel AG. Central-lubrication assembly. 5,188,197, Cl. 184-7.400.
Meul, Hans-Willi: *See*—
Stengl, Reinhard; Meul, Hans-Willi; and Hoenlein, Wolfgang, 5,188,977, Cl. 437-89.000.
Meyer, Robert B.; Lackner, John R.; and Matuschek, Hans J., to Scott Fetzer Company, The. Convertible self-proprelled vacuum cleaner. 5,187,832, Cl. 15-329.000.
Meyrueix, Remi: *See*—
Mignani, Gerard; Barthelemy, Pascal; and Meyrueix, Remi, 5,189,134, Cl. 528-68.000.
Mezzedimi, Vasco, to Nuovopignone-Industrie Meccaniche e Fonderia SpA. System for recovering the lubricating oil for the bearings of a centrifugal compressor with labyrinth seals. 5,188,196, Cl. 184-6.160.
Michaelis, A. John; Paton, Anthony D.; and Temple, Stephen, to XAAR Limited. Manufacture of nozzles for ink jet printers. 5,189,437, Cl. 346-1.100.
MICOM Communications Corp.: *See*—
Jain, Jaswant R., 5,189,701, Cl. 381-41.000.
Microgenics Corporation: *See*—
Khanna, Pyare L.; and Choate, Glenda L., 5,188,938, Cl. 435-7.700.
Microlytics, Inc.: *See*—
Kaplan, Ronald M.; McCourt, Michael A.; and Henderson, Kenneth J., 5,189,610, Cl. 364-419.000.
Micron Technology, Inc.: *See*—
Yu, Chris C.; Sandhu, Gurtej S.; and Gilton, Terry, 5,188,723, Cl. 205-125.000.
Migdal, Cyril A.; and Nalesnik, Theodore E., to Texaco Inc. Viton seal compatible dispersant and lubricating oil composition containing same. 5,188,745, Cl. 252-47.000.
Mignani, Gerard; Barthelemy, Pascal; and Meyrueix, Remi, to Rhone-Poulenc Chimie. Nonlinearly optically active polymers. 5,189,134, Cl. 528-68.000.
Mihara, Shinichi: *See*—
Ishii, Atsujiro; Uzawa, Tsutomu; and Mihara, Shinichi, 5,189,558, Cl. 359-687.000.
Mikel, Steven A.: *See*—
Leising, Maurice B.; Nogle, Thomas D.; Benford, Howard L.; Helbrook, Gerald L.; Klotz, James R.; Martin, Berthold; Mikel, Steven A.; and Nortman, William, 5,188,575, Cl. 475-280.000.
Milanese, Robert L.: *See*—
Kivell, Larry; Milanese, Robert L.; Kiernan, Charles E.; and Tittel, Lorne, 5,188,231, Cl. 206-333.000.
Miles Inc.: *See*—
Brunsting, Albert; and Sonnenburg, Roger D., 5,189,495, Cl. 356-402.000.
Herrington, Eldridge P., Jr.; and Spielberg, Richard, 5,188,612, Cl. 604-192.000.
Newallis, Peter E.; Prasad, Vidyanatha A., and Levy, Edward R., 5,189,195, Cl. 558-208.000.
Miles, Richard; and Rothstein, Stephen G., to New York University. Apparatus for facilitating tracheostomy tube replacement. 5,188,100, Cl. 128-207.140.
Milianowicz, Stanislaw A.; Long, Russell W.; and Donatelli, Alexander V., to Westinghouse Electric Corp. Circuit breaker having improved contact structure. 5,189,384, Cl. 335-16.000.
Miljanich, George P.; Bitner, Robert S.; Bowersox, Stephen S.; Fox, James A.; Valentino, Karen L.; Yamashiro, Donald H.; and Tsubokawa, Makoto, to Neurex Corporation. Method of reducing neuronal damage using omega conoloxin peptides. 5,189,020, Cl. 514-12.000.
Millard, Christine: *See*—
Gregory, Peter; Kenyon, Ronald W.; and Millard, Christine, 5,189,154, Cl. 540-126.000.
Miller, Brian D., to Cobra Fire Corporation. Tool for coiling fire hoses and a method of use therefor. 5,188,307, Cl. 242-86.000.
Miller, Douglas C., to Plasta Fiber Industries Corp. Circuit assembly for illuminated visor. 5,188,446, Cl. 362-83.100.
Miller, John L.: *See*—
Ball, Don G.; and Miller, John L., 5,189,678, Cl. 372-28.000.
Miller, Kenneth C.: *See*—
Broadbent, Eliot K.; and Miller, Kenneth C., 5,188,717, Cl. 204-192.120.
Miller, Theodore A.: *See*—
Finnemore, Douglas K.; Miller, Theodore A.; Ostenson, Jerome E.; Schwartzkopf, Louis A.; and Sanders, Steven C., 5,189,260, Cl. 174-125.100.
Millipore Corporation: *See*—
Garrison, Brevard S., 5,188,148, Cl. 137-606.000.
Mimaki Engineering Co., Ltd.: *See*—
Sunohara, Ichiro; and Ikeda, Tatsuji, 5,188,009, Cl. 83-13.000.
Minakawa, Kuninori: *See*—
Fukai, Hideaki; Suenaga, Hiroyoshi; and Minakawa, Kuninori, 5,188,677, Cl. 148-501.000.
Minakuchi, Tadashi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic gain control apparatus for use in optical disc recording and playback system. 5,189,654, Cl. 369-44.360.
Minick, Chris A.: *See*—
Johnson, Eric J.; Boyer, Charles E., III; Nielsen, Edmond J.; and Minick, Chris A., 5,189,078, Cl. 523-137.000.
Minnesota Mining & MAanufacturing Company: *See*—
Schmidt, Diane G.; Buttery, Howard J.; and Norbury, Robert J., 5,188,753, Cl. 252-132.000.
Minnesota Mining and Manufacturing Company: *See*—
Boardman, James R.; and Ofstead, Ronald F., 5,188,688, Cl. 156-69.000.
Hanson, Robert L.; and Bailey, John A., 5,189,582, Cl. 360-132.000.
Johnson, Eric J.; Boyer, Charles E., III; Nielsen, Edmond J.; and Minick, Chris A., 5,189,078, Cl. 523-137.000.
Larson, Donald K.; and Patterson, Richard A., 5,189,717, Cl. 385-95.000.
Marinelli, Domenico; and Furlan, Fulvio, 5,188,931, Cl. 430-539.000.
Rumpza, Paul D.; and Wulfing, James J., 5,189,586, Cl. 360-133.000.
Smith, Kenneth L., 5,189,553, Cl. 359-530.000.
Weeks, Jerrold K., 5,188,309, Cl. 242-199.000.
Minnier, Henry B.: *See*—
Chenot, Charles F.; and Minnier, Henry B., 5,188,763, Cl. 252-301.500.
Mino, Kazuo; Nomura, Toshiyuki; and Tsujioka, Yuiji, to Horiba, Ltd.; and Tasco Japan Co., Ltd. Protective shield accessory for measurement instrument. 5,188,459, Cl. 374-158.000.
Minolta Camera Kabushiki Kaisha: *See*—
Anno, Masahiro; Mizuno, Hiroshi; Etou, Kouichi; and Sano, Eiichi, 5,189,476, Cl. 355-259.000.
Emori, Kiyoshi, 5,188,354, Cl. 271-217.000.
Fukui, Kazuyuki; and Yamada, Takanobu, 5,189,441, Cl. 346-160.000.
Hara, Yoshinobu; Yuge, Shizuo; and Hara, Kazuyoshi, 5,189,478, Cl. 355-271.000.
Yoshida, Tadahiro; Tsumazawa, Hiroyuki; and Kono, Tetsuo, 5,189,524, Cl. 358-335.000.
Mir, Jose M.: *See*—
Strom, Laurie A.; Carnall, Edward, r.; Ferranti, Steven A.; and Mir, Jose M., 5,189,010, Cl. 505-1.000.
Mirgain, William E.: *See*—
Sayers, Herbert M.; and Mirgain, William E., 5,188,236, Cl. 206-527.000.
Misawa, Hidenobu: *See*—
Ishihara, Takeshi; and Misawa, Hidenobu, 5,188,910, Cl. 429-31.000.
Misawa, Yoshihisa; Kondo, Hisao; Tsutsumi, Tetsuya; Hayashi, Masahiro; Sugimori, Daisuke; Matsuba, Yorishige; Isozaki, Masashi; Nishigaki, Hiroharu; Yazawa, Kazunaga; and Kondo, Kiyosi, to Harima Chemicals, Inc.; and Sagami Chemical Research Center. Method of purifying polyunsaturated aliphatic compounds. 5,189,189, Cl. 554-194.000.
Mishima, Seiji: *See*—
Kobayashi, Koichi; Mishima, Seiji; Kamio, Kenji; Miyata, Etsuhisa; Fukuda, Katsuhiko; and Oi, Junichi, 5,188,847, Cl. 425-135.000.
Missirini, Marino: *See*—
Errani, Franca; and Missirini, Marino, 5,187,916, Cl. 53-389.200.
Mitchell, Michael S., to BI, Inc. Electronic house arrest system having officer safety reporting feature. 5,189,395, Cl. 340-539.000.
Mitre Corporation, The: *See*—
Eddy, F. Neal; and Schoen, Joel M., 5,189,420, Cl. 341-157.000.
Mitsubishi Chemical Industries Limited: *See*—
Miyazawa, Chihiro; Orita, Souichi; and Tsuboi, Akio, 5,189,105, Cl. 252-182.120.
Mitsubishi Denki K.K.: *See*—
Kajiwara, Yasuya; and Tsutsumi, Kazumichi, 5,189,712, Cl. 382-42.000.
Magara, Takuji, 5,189,276, Cl. 219-69.140.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Endo, Yuji, 5,189,469, Cl. 355-200.000.
Horibata, Shinji; Odoi, Yuzo; and Futami, Syoji, 5,187,860, Cl. 29-603.000.
Kimura, Masatoshi, 5,189,638, Cl. 365-52.000.
Kimura, Tatsuya, 5,189,680, Cl. 372-46.000.
Kondo, Katsuhiko, 5,188,079, Cl. 123-414.000.
Kusunoki, Shigeru, 5,189,500, Cl. 359-72.000.
Miyatake, Hideshi, 5,189,639, Cl. 365-149.000.
Murakami, Shuji; and Fujishima, Kazuyasu, 5,189,316, Cl. 307-296.100.
Murata, Shigemi; and Ikeuchi, Masayuki, 5,189,373, Cl. 324-399.000.
Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, 5,188,520, Cl. 418-55.100.
Nishida, Yoshihiro, 5,189,518, Cl. 358-222.000.
Onooka, Yasushi; Kawada, Junji; and Yamamoto, Tetsu, 5,189,575, Cl. 360-105.000.
Sakakibara, Kiyohiko, 5,189,498, Cl. 257-216.000.
Sashida, Nobuo; Sanada, Kazunori; and Koyama, Masato, 5,189,603, Cl. 363-160.000.
Satoh, Katsumi; and Tokunoh, Futoshi, 5,189,509, Cl. 257-718.000.
Takakuwa, Kiyoshi; and Oda, Keisuke, 5,189,440, Cl. 346-76.0PH.
Takata, Yutaka; and Kobayashi, Hiroo, 5,189,545, Cl. 359-197.000.
Tominaga, Tsutomu; and Watanabe, Akira, 5,189,354, Cl. 318-671.000.
Yano, Haruto; Hirasa, Yoshiaki; Tokunaga, Toshimichi; Hayami, Katsuro; Naito, Norihiro; Akamatsu, Teruki; Goto, Hirofumi; and Yokouchi, Kazuhiro, 5,189,430, Cl. 342-457.000.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Ohta, Tazuo; Tanaka, Kazuo; Ohgoshi, Fumio; Yoshida, Terumasa; and Motoyama, Ichihei, 5,189,209, Cl. 562-414.000.

VOL 1147 ISS 4 FEB 23 1993 UMI

Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Fujiwara, Chikara; Onda, Takashi; and Fukushima, Akira, 5,188,281, Cl. 228-189.000.

Mitsubishi Kasei Corporation: *See*—
Murata, Yukichi; Nakamura, Mio; and Morishima, Takashi, 5,189,008, Cl. 503-227.000.
Nishimura, Tetsuhiko; Choda, Takahiro; Chida, Yukio; and Oguri, Yasuo, 5,188,992, Cl. 501-136.000.

Mitsubishi Materials Corporation: *See*—
Inukai, Takao; Tachibana, Kanichi; Tsukada, Kazuo; Fujikawa, Toshitaka; Iida, Keiichi; and Kogure, Noboru, 5,189,273, Cl. 219-10.55E.
Nakayama, Masaaki; Okawa, Masayuki; and Nishiyama, Keiichi, 5,188,488, Cl. 407-54.000.
Nishiyama, Akio; Koyama, Takashi; Aikawa, Yasutaka; Ohshima, Hideo; Terao, Yuichiro; Kato, Munenori; and Sakai, Akio, 5,188,908, Cl. 428-698.000.
Okawa, Masayuki; and Murakami, Yasunori, 5,188,487, Cl. 407-34.000.

Mitsubishi Nuclear Fuel Co.: *See*—
Okuyama, Shinobu; and Wakana, Kojiro, 5,188,798, Cl. 376-442.000.

Mitsubishi Petrochemical Company Limited: *See*—
Kaitoh, Mitsumasa; Kurokawa, Hideki; and Ohnishi, Akiyoshi, 5,189,172, Cl. 546-208.000.

Mitsui Petrochemical Industries, Ltd.: *See*—
Fukuoka, Daisuke; Takahashi, Katsuya; and Hashimoto, Isao, 5,189,183, Cl. 549-345.000.
Nishino, Kazunari; Sasagawa, Shuzo; Katsurayama, Hirofumi; Igaue, Takamitsu; and Kido, Tsutomu, 5,188,895, Cl. 428-373.000.
Uchiyama, Akira; Jimbo, Naoaki; and Shimizu, Shizuo, 5,188,882, Cl. 428-159.000.
Yamaoka, Hideo; Kuroiwa, Mitsuyuki; Nanbu, Hirosi; and Todo, Akira, 5,188,875, Cl. 428-64.000.

Mitsui Toatsu Chemicals, Incorporated: *See*—
Tagawa, Kimiteru; Takahashi, Seiichi; Utsuno, Noritoshi; Umehara, Hideki; Hayashi, Fujio; Kiba, Shigeo; and Suda, Satoru, 5,188,898, Cl. 428-403.000.

Mitsumoto, Takayasu. Horizontal rotary transfer apparatus. 5,188,219, Cl. 198-834.000.

Mitsuoka, Hiroshi; and Hirao, Kouji, to Aisin Seiki K.K. Vehicle shock absorbing system. 5,189,614, Cl. 364-424.050.

Mitutoyo Corporation: *See*—
Takahashi, Keizo; and Matsumoto, Masakazu, 5,187,874, Cl. 33-502.000.

Miura, Kiyokatsu: *See*—
Sugiki, Akio; Ishikawa, Masanobu; Yoshida, Nobuhiro; Tanahashi, Haruhiko; and Miura, Kiyokatsu, 5,188,392, Cl. 280-775.000.

Miura, Kuniaki: *See*—
Amada, Nobutaka; Noguchi, Takaharu; Kimura, Hiroyuki; Kobayashi, Masaharu; Arai, Takao; Yumde, Yasufumi; and Miura, Kuniaki, 5,189,564, Cl. 360-32.000.

Miura, Mituru: *See*—
Mukohjima, Hitoshi; Hirano, Takayuki; Seki, Yoshihiro; and Miura, Mituru, 5,189,331, Cl. 310-323.000.

Miwa, Yuji, to Brother Kogyo Kabushiki Kaisha. Auxiliary device for a machine tool. 5,187,900, Cl. 51-95.0WH.

Miya, Shigeyuki; Shibata, Takenori; Komatsu, Yoshihiro; Miyoshi, Hiromichi; Hirata, Tadashi; Taniguchi, Yoshio; and Kobayashi, Takuo, to Matsushita Electric Industrial Co., Ltd. Agitating member for a developing apparatus. 5,189,474, Cl. 355-245.000.

Miyahara, Kuniaki: *See*—
Sano, Kenichi; Nishiyama, Masaaki; Suzuki, Toshiro; Wakabayashi, Shoichiro; and Miyahara, Kuniaki, 5,189,201, Cl. 560-205.000.

Miyajima, Goh: *See*—
Igarashi, Yoshiki; and Miyajima, Goh, 5,189,372, Cl. 324-318.000.

Miyake, Izumi: *See*—
Maeda, Yutaka; Kaneko, Kiyotaka; Miyake, Izumi; Nakane, Yoshio; and Shimaya, Hiroshi, 5,189,570, Cl. 360-75.000.

Miyakoshi, Hironori: *See*—
Adachi, Kunihiko; Endo, Norikazu; and Miyakoshi, Hironori, 5,189,619, Cl. 364-426.040.

Miyamoto, Hidenori; Daitoku, Koichi; Kazami, Kazuyuki; Nakamura, Toshiyuki; and Katano, Yuji, to Nikon Corporation. Electric zooming camera. 5,189,458, Cl. 354-400.000.

Miyamoto, Koichi: *See*—
Ikematu, Takeshi; Kishimoto, Yasushi; and Miyamoto, Koichi, 5,189,110, Cl. 525-314.000.

Miyamoto, Kunihiro: *See*—
Shirasaki, Takashi; Nishii, Toshifumi; Oka, Yukihiko; and Miyamoto, Kunihiro, 5,189,607, Cl. 364-405.000.

Miyamoto, Mamoru: *See*—
Satoh, Katsuhiko; Muto, Itsuo; Takeda, Shigeki; and Miyamoto, Mamoru, 5,188,134, Cl. 134-57.00R.

Miyamoto, Ryosuke; Sekita, Makoto; and Takeda, Shohei, to Canon Kabushiki Kaisha. Electronic camera with exposure control. 5,189,519, Cl. 358-228.000.

Miyamoto, Yasuo: *See*—
Yamazaki, Mitsuo; Ichimura, Nobuo; Miyamoto, Yasuo; Fujita, Koei; and Kawasumi, Masao, 5,188,767, Cl. 252-512.000.

Miyamura, Masataka, legal representative: *See*—
Kunihiro, Ikari, deceased; Niki, Hirokazu; Nakase, Makoto; and Shinozaki, Toshiaki, 5,188,924, Cl. 430-312.000.

Miyao, Makiji: *See*—
Takezawa, Makoto; Miyao, Makiji; Murakami, Shinkichi; and Atsumi, Akihiro, 5,188,878, Cl. 428-114.000.

Miyasaka, Toshikazu: *See*—
Shigemitsu, Mineo; Miyasaka, Toshikazu; and Matsumoto, Kenichi, 5,189,699, Cl. 380-9.000.

Miyashita, Takanori; Abiru, Toichi; Watanabe, Yohko; Yamaguchi, Toyofumi; and Matsuda, Akira, to Yamasa Shoyu Kabushiki Kaisha. 2-substituted adenosine derivatives and pharmaceutical compositions for circulatory diseases. 5,189,027, Cl. 514-46.000.

Miyata, Etsuhisa: *See*—
Kobayashi, Koichi; Mishima, Seiji; Kamio, Kenji; Miyata, Etsuhisa; Fukuda, Katsuhiko; and Oi, Junichi, 5,188,847, Cl. 425-135.000.

Miyata, Hideo: *See*—
Mori, Katsuhisa; Sonoda, Keiji; Miyata, Hideo; and Okazaki, Yukinobu, 5,187,887, Cl. 40-316.000.

Miyatake, Hideshi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor memory device having bit lines capable of partial operation. 5,189,639, Cl. 365-149.000.

Miyauchi, Toshiyuki: *See*—
Morimoto, Toshifumi; Hattori, Takaaki; Ikegami, Noboru; Nishibu, Hirofumi; Miyauchi, Toshiyuki; and Kubo, Kunimichi, 5,189,106, Cl. 525-240.000.

Miyawaki, Tadayuki: *See*—
Taniguchi, Yousuke; Miyawaki, Tadayuki; Tanaka, Hisashi; and Kitada, Motohiro, 5,187,943, Cl. 62-180.000.

Miyazawa, Chihiro; Orita, Souichi; and Tsuboi, Akio, to Mitsubishi Chemical Industries Limited. Alcohol mixture for plasticizer. 5,189,105, Cl. 252-182.120.

Miyoshi, Hiromichi: *See*—
Miya, Shigeyuki; Shibata, Takenori; Komatsu, Yoshihiro; Miyoshi, Hiromichi; Hirata, Tadashi; Taniguchi, Yoshio; and Kobayashi, Takuo, 5,189,474, Cl. 355-245.000.

Miyoshi, Takeshi: *See*—
Ueda, Takahisa; Konaka, Shuzo; and Miyoshi, Takeshi, 5,188,376, Cl. 277-227.000.

Mizuno, Hiroshi: *See*—
Anno, Masahiro; Mizuno, Hiroshi; Etou, Kouichi; and Sano, Eiichi, 5,189,476, Cl. 355-259.000.

Mizuno, Kazunori: *See*—
Kataoka, Hideaki; Okutsu, Kazuo; Takahashi, Koichi; and Mizuno, Kazunori, 5,188,306, Cl. 242-71.100.

Mizuno, Masato; and Oishi, Kengo, to Fuji Photo Film Co., Ltd. Magnetic tape cassette. 5,189,584, Cl. 360-132.000.

Mizunuma, Kooji: *See*—
Sasaki, Toshio; Ebara, Takeshi; Jyohoji, Hirofumi; Mizunuma, Kooji; and Kawai, Kiyoshi, 5,189,124, Cl. 526-119.000.

Mizutani, Noboru, to Tokyo Parts Industrial Co., Ltd. Flame detecting and alarming system with ultraviolet sensor. 5,189,398, Cl. 340-578.000.

MM Systems Corporation: *See*—
Nicholas, John D.; and Hensley, Randy L., 5,187,910, Cl. 52-317.000.

Moalli, Angelo: *See*—
Masi, Francesco; Invernizzi, Renzo; Carbonaro, Antonio; Costa, Lorenzo; and Moalli, Angelo, 5,189,000, Cl. 502-113.000.

Mobil Oil Corporation: *See*—
Chu, Shaw-Chang; and Kirk, Kevin A., 5,188,867, Cl. 427-173.000.
Davis, Robert H., 5,188,746, Cl. 252-47.500.
Harandi, Mohsen N., 5,188,725, Cl. 208-67.000.
Huang, Tracy J.; and Tsao, Ying-Yen P., 5,188,996, Cl. 502-37.000.
Joesten, Burdette L.; and Su, Tien-Kuei, 5,188,777, Cl. 264-41.000.

Mochizuki, Akihiro; Onda, Fumiyo; Yoshihara, Toshiaki; Iwasaki, Masayuki; and Yamagishi, Yasuo, to Fujitsu Limited. Liquid crystal display element and method for driving same. 5,189,535, Cl. 359-55.000.

Mochizuki, Amane: *See*—
Takayama, Yoshinari; Mochizuki, Amane; Hino, Atsushi; Ouchi, Kazuo; and Sugimoto, Masakazu, 5,188,702, Cl. 156-630.000.

Mochizuki, Chiori, to Canon Kabushiki Kaisha. Method of manufacturing semiconductor device. 5,188,974, Cl. 437-40.000.

Modolo, Domenico, to Modolo Technologie Avanzate S.R.L. Device for obtaining the operating symmetry of a bicycle brake. 5,188,200, Cl. 188-24.110.

Modolo Technologie Avanzate S.R.L.: *See*—
Modolo, Domenico, 5,188,200, Cl. 188-24.110.

Mody, Hemant K., to Eastman Kodak Company. High speed switching circuit for controlling current flow in a bridge circuit coil for use in a magneto-optic direct overwrite system. 5,189,567, Cl. 360-59.000.

Modzelewski, Edward: *See*—
Johnson, Kirk E.; and Modzelewski, Edward, 5,188,282, Cl. 228-242.000.

Moeinzadeh, Manssour H.; Kaplan, Lawrence M.; and Gurosh, Jeffrey A. Semi-disposable surgical stapler. 5,188,274, Cl. 227-180.000.

Moffet, Trever L.: *See*—
McCammon, John W.; and Moffet, Trever L., 5,187,850, Cl. 29-235.000.

Moffitt, Willard B.: *See*—
Schroder, Robert L.; and Moffitt, Willard B., 5,189,581, Cl. 360-128.000.

Mohr, Robert K.: *See*—
Macedo, Pedro B.; and Mohr, Robert K., 5,188,649, Cl. 65-21.300.

Moiron: *See*—
Sutton, Fredrick E., Jr.; and Winegar, Robert N., 5,187,963, Cl. 72-159.000.

Molecular Displays, Inc.: *See*—
Leventis, Nicholas; and Wrighton, Mark S., 5,189,549, Cl. 359-271.000.

Molex Incorporated: *See*—
Ballard, Kenneth D.; Bottino, Ronald E.; Labbe, Mark K.; Lopata, John E.; Malinski, Tom; Meier, Wilhelm; Morelli, Lou; Pacyga, Michael G.; Primorac, Mitch; Roodnat, Bernardus; and Simpson, Shawn, 5,188,546, Cl. 439-885.000.
Bertho, Dominique; Roche, Peter; and McNamara, Paddy, 5,188,534, Cl. 439-79.000.
Bertho, Dominique; Kachlic, Jerry D.; and Teck, Yap Y., 5,188,535, Cl. 439-83.000.
Comerci, Joseph D.; DeRoss, Robert; O'Connell, Michael J.; and Templeton, John E., Jr., 5,188,541, Cl. 439-596.000.
Dixon, Daniel A.; Gierut, Frederick J.; Lawniczak, Joe; Patel, Arvind; and Primorac, Michael, 5,188,547, Cl. 439-886.000.

Molnar, Aniko D. nee: *See*—
Szego, Andras; Pap, Laszlo ; Nagy, Lajos; Somfai, Eva; Szucsany, Gyorgy; Szekely, Istvan; Molnar, Aniko D. nee; and Hegedus, Agnes, 5,189,062, Cl. 514-521.000.

Moloney, Maurice M.; and Radke, Sharon, to Calgene, Inc. Transformation and foreign gene expression in brassica species. 5,188,958, Cl. 435-240.400.

Momochi, Takeshi; Sasaki, Tadashi; Matsumoto, Michio; Hayashi, Tomoo; and Shiozaki, Masahito, to Toshiba Kikai Kabushiki Kaisha. Ellipse interpolation control method by an NC-device. 5,189,627, Cl. 364-474.310.

Monsanto Compamy: *See*—
McGhee, William D.; and Waldman, Thomas E., 5,189,205, Cl. 560-345.000.

Monsanto Company: *See*—
Rostek, Charles J., Jr., 5,189,174, Cl. 546-255.000.
Shah, Dilip M.; Rogers, Stephen G.; Horsch, Robert B.; and Fraley, Robert T., 5,188,642, Cl. 47-58.000.
Udipi, Kishore, 5,189,098, Cl. 525-66.000.
Woodard, Floyd E., 5,189,551, Cl. 359-360.000.

Montech AG: *See*—
Trenner, Albrecht, 5,188,018, Cl. 92-5.00R.

Montedipe S.r.l.: *See*—
Masi, Francesco; Invernizzi, Renzo; Carbonaro, Antonio; Costa, Lorenzo; and Moalli, Angelo, 5,189,000, Cl. 502-113.000.

Monteillet, Jean-Claude, to Bendix Europe Services Techniques. Disc brake. 5,188,201, Cl. 188-71.900.

Montgomery, John A.: *See*—
Niwas, Shri; Secrist, John A., III; Montgomery, John A.; Erion, Mark D.; Guida, Wayne C.; and Ealick, Steve E., 5,189,039, Cl. 514-258.000.

Montgomery, Roger L. Field seat. 5,188,422, Cl. 297-195.000.

Moore, H. Dean, Jr., to ARCO Chemical Technology, L.P. Tertiary ethers as blowing agents for polyurethane foams. 5,189,074, Cl. 521-114.000.

Morehead, Marilyn: *See*—
Goldman, Harold; Murphy, Sharon; and Morehead, Marilyn, 5,189,018, Cl. 514-10.000.

Morehouse, James H.; Dunckley, James A.; and Furay, David M., to Integral Peripherals, Inc. Rotary inertial latch for disk drive actuator. 5,189,576, Cl. 360-105.000.

Morel, Bertrand: *See*—
Goldner, Ronald B.; Arntz, Floyd O.; Morel, Bertrand; Haas, Terry E.; and Wong, Kwok-Keung, 5,189,550, Cl. 359-273.000.

Morell, Lori A.: *See*—
Timmons, Terry K.; Stopper, Steve R.; Fox, Norman K.; Everhart, Dennis S.; Conn, William; and Morell, Lori A., 5,188,885, Cl. 428-198.000.

Morelli, Lou: *See*—
Ballard, Kenneth D.; Bottino, Ronald E.; Labbe, Mark K.; Lopata, John E.; Malinski, Tom; Meier, Wilhelm; Morelli, Lou; Pacyga, Michael G.; Primorac, Mitch; Roodnat, Bernardus; and Simpson, Shawn, 5,188,546, Cl. 439-885.000.

Mores, Maryanne: *See*—
Brownscombe, Thomas F.; Gergen, William P.; Bass, Ronald M.; Mores, Maryanne; and Wong, Pui K., 5,189,070, Cl. 521-64.000.

Morgan, Lee R.: *See*—
Boyer, Joseph H.; and Morgan, Lee R., 5,189,029, Cl. 514-64.000.

Morgan, Thomas K.: *See*—
Chou, Yuo-Ling; Erhardt, Paul W.; Hagedorn, Alfred A., III; Lampe, John W.; Lumma, Jr., William C.; Morgan, Thomas K.; and Wiggins, Jay R., 5,189,036, Cl. 514-252.000.

Mori, Akinari: *See*—
Okayasu, Yoshisada; Yamauchi, Toshiyuki; Mori, Akinari; Kamaya, Naoki; Okayama, Naoki; Maruichi, Takanori; Iwasawa, Junichi; Yamada, Yukio; and Okano, Renjiro, 5,189,520, Cl. 358-229.000.

Mori, Hiroto: *See*—
Takaki, Akira; Iguchi, Hirokazu; Suzuki, Satoshi; Mori, Hiroto; and Hosoi, Hideki, 5,188,751, Cl. 525-70.000.

Mori, ideo: *See*—
Yokota, Masahiro; Mori, ideo; and Oyama, Kiyoshi, 5,189,348, Cl. 315-399.000.

Mori, Izuru, to TRW Steering & Industrial Products (Japan) Co., Ltd. Ball joint. 5,188,476, Cl. 403-133.000.

Mori, Katsuhisa; Sonoda, Keiji; Miyata, Hideo; and Okazaki, Yukinobu, to Nichifu Terminal Manufacture Co., Ltd. Electric wire identifying tab and a band thereof. 5,187,887, Cl. 40-316.000.

Mori, Kazuhiko; Kawasaki, Minoru; Yoshida, Shin; Murase, Hiroyuki; Saito, Takashi; Tanaka, Kouji; and Shimura, Yoshio, to Toyota Jidosha Kabushiki Kaisha; and Kabushiki Kaisha Toyota Chuo Kenkyusho. Wear-resistant copper-base alloy. 5,188,799, Cl. 420-469.000.

Mori, Kenji; Hirai, Hiromu; Otsuki, Haruaki; Takahashi, Tsuyoshi; Naruse, Jun; Nishimura, Yuji; and Kawamoto, Muneo, to Hitachi, Ltd. Disk system with sub-actuators for fine head displacement. 5,189,578, Cl. 360-106.000.

Mori, Kohei, to Jidosha Kiki Co., Ltd. Tandem type master cylinder. 5,187,934, Cl. 60-562.000.

Morimoto, Toshifumi; Hattori, Takaaki; Ikegami, Noboru; Nishibu, Hirofumi; Miyauchi, Toshiyuki; and Kubo, Kunimichi, to Nippon Petrochemicals Company, Limited. Polyethylene composition. 5,189,106, Cl. 525-240.000.

Morin, Jean-Xavier: *See*—
Duez, Christian; Semedard, Jean-Claude; and Morin, Jean-Xavier, 5,188,296, Cl. 239-403.000.

Morishima, Takashi: *See*—
Murata, Yukichi; Nakamura, Mio; and Morishima, Takashi, 5,189,008, Cl. 503-227.000.

Morita and Company Co. Ltd.: *See*—
Morita, Motoo, 5,187,969, Cl. 72-413.000.

Morita, Koichi: *See*—
Shirai, Kiyoshi; Uehara, Kazuo; Morita, Koichi; Takiguchi, Takahide; and Ishizaki, Naoki, 5,188,147, Cl. 137-596.000.

Morita, Motoo, to Morita and Company Co. Ltd. Leaf spring cambering method and apparatus. 5,187,969, Cl. 72-413.000.

Morita, Shizuo: *See*—
Haneda, Satoshi; Fukuchi, Masakazu; Matsuo, Shunji; and Morita, Shizuo, 5,189,472, Cl. 355-212.000.

Moriuma, Hiroshi; Osaki, Haruyoshi; Hioki, Takeshi; and Uetani, Yasunori, to Sumitomo Chemical Company, Limited. Positive resist composition containing 1,2-quinone diazide compound, alkali-soluble resin and polyhydroxy phenol additive compound. 5,188,920, Cl. 430-191.000.

Moriwaki, Hideo: *See*—
Habaguchi, Masayuki; Nakajima, Toyohei; Hosoda, Fumio; Fujimoto, Sachito; Kitamoto, Masakazu; Moriwaki, Hideo; and Nakamura, Takefumi, 5,188,085, Cl. 123-520.000.

Moriya, Daisuke: *See*—
Matsuda, Toshihiro; and Moriya, Daisuke, 5,189,527, Cl. 358-440.000.

Moriyama, Hiroshi; Sada, Hiroyuki; and Shiozawa, Takeo, to Sensor Technology Co., Ltd. Crash sensor. 5,189,311, Cl. 307-10.100.

Moriyama, Naomune: *See*—
Echigo, Mitsuji; Moriyama, Naomune; Akahoshi, Hideaki; Kameda, Osamu; and Akutagawa, Hitoshi, 5,188,574, Cl. 475-206.000.

Morris, Christopher J.: *See*—
Humphries, Brian J.; Waters, Colin M.; Bull, Steven D.; and Morris, Christopher J., 5,189,406, Cl. 340-793.000.

Morris, Daniel L.: *See*—
Bartman, David A.; Morris, Daniel L.; and Andrews, Albert E., 5,188,352, Cl. 271-175.000.

Morris, James A.: *See*—
Farbood, Mohamad I.; Morris, James A.; Downey, Arthur E.; and Kiwala, Jacob, 5,188,129, Cl. 131-276.000.

Morris, Jeffrey J.: *See*—
Brittain, David R.; Brown, Steven P.; Cooper, Anthony L.; Longridge, Jethro L.; Morris, Jeffrey J.; Preston, John; and Slater, Linda, 5,189,031, Cl. 514-155.000.

Morrissette, Barbara E.: *See*—
McDonald, Duane L.; and Morrissette, Barbara E., 5,189,272, Cl. 219-10.55E.

Morton Thiokol, Inc.: *See*—
Ko, Jeremy; and Levis, Steven H., 5,188,807, Cl. 422-224.000.

Moses, Klaus M. Device for recording information on an optical data carrier. 5,189,658, Cl. 369-100.000.

Moskowitz, Paul A.: *See*—
Bregman, Mark F.; Hoffman, Paul R.; Ledermann, Peter G.; Moskowitz, Paul A.; Pollak, Roger A.; Reiley, Timothy C.; and Ritter, Mark B., 5,189,363, Cl. 324-158.00P.

Mosley, Judy A.; and Ballard, Othal. Oil well pump start-up alarm. 5,189,388, Cl. 340-309.150.

Mosser, James J.: *See*—
Christensen, Thomas C.; Hanson, Weldon M.; Mosser, James J.; and Vosberg, Donald E., 5,189,566, Cl. 360-53.000.

Mosser, Vincent; Robert, Jean-Louis; and Contreras, Sylvie, to Schlumberger Industries. Hydrostatic pressure transducer. 5,187,984, Cl. 73-708.000.

Motev, Phil: *See*—
Fuqua, Rick L.; and Motev, Phil, 5,188,026, Cl. 101-129.000.
Iaccino, Alex; Motev, Phil; and Fuqua, Rick L., 5,188,034, Cl. 101-474.000.

Motoda, Shosaku: *See*—
Arai, Kazuhiko; Fujiwara, Akira; Motoda, Shosaku; and Suzuki, Hiroyasu, 5,188,969, Cl. 436-548.000.

Motorola, Imc.: *See*—
Marinelli, Robert A., 5,189,431, Cl. 343-718.000.

Motorola, Inc.: *See*—
DeLuca, Joan S.; and DeLuca, Michael J., 5,189,389, Cl. 340-311.100.
Filipiak, Stanley M., 5,188,979, Cl. 437-192.000.
Ooi, Leng H., 5,189,593, Cl. 455-195.100.
Schultz, Charles P., 5,189,400, Cl. 340-636.000.

Motoyama, Ichihei: *See*—
Ohta, Tazuo; Tanaka, Kazuo; Ohgoshi, Fumio; Yoshida, Terumasa; and Motoyama, Ichihei, 5,189,209, Cl. 562-414.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Mount, Gordon L. Fail-safe apparatus for purge system. 5,187,953, Cl. 62-195.000.

Mouret, Michel: *See—*
Jaffard, Jean-Luc; Lietar, Loic; and Mouret, Michel, 5,189,685, Cl. 377-48.000.

Mozzi, Giovanni: *See—*
Bruzzese, Tiberio; and Mozzi, Giovanni, 5,189,149, Cl. 514-58.000.

Mraz, Beat; Notzli, Christoph; Ungricht, Ernst; and Marek, Daniel, to Spectrospin AG. Method and a device for precooling the helium tank of a cryostat. 5,187,938, Cl. 62-51.100.

Muehlenbernd, Thomas; Hasenbein, Norbert; Koehler, Gernot; and Schlemmer, Lothar, to BASF Aktiengesellschaft. Preparation of homogeneous ionically crosslinked ethylene copolymer in twin screw extruder. 5,189,113, Cl. 525-329.500.

Mueller, Jochen: *See—*
Haertl, Christof; and Mueller, Jochen, 5,188,540, Cl. 439-500.000.

Mueller, Richard A.; Nakao, Akira; and Partis, Richard A., to G. D. Searle and Co. Method of stimulating superoxide generation. 5,189,038, Cl. 514-255.000.

Muendlein, Werner; and Scheer, Gerhard, to Komet Stahlhalter-und Werkzeugfabrik Robert Breuning GmbH. Tool with adjustable interchangeable cartridge. 5,188,490, Cl. 408-146.000.

Mugnier, Jean-Francois, to Pomagalski S.A. Chairlift or gondola-lift having a friction-based driving device for chairs or cars. 5,188,037, Cl. 104-168.000.

Muhammad, Nouman; Boisvert, Wayne; Harris, Michael; and Weiss, Jay, to Warner-Lambert Company. Sustained release formulations. 5,188,836, Cl. 424-431.000.

Mukai, Tsuyoshi. Electrical conductor terminal apparatus and method. 5,188,544, Cl. 439-777.000.

Mukohjima, Hitoshi; Hirano, Takayuki; Seki, Yoshihiro; and Miura, Mituru, to Canon Kabushiki Kaisha. Vibration wave driven motor. 5,189,331, Cl. 310-323.000.

Muller, Armin; Zimmer, Richard; and Faulhaber, Andreas, to Mercedes-Benz AG. Control stage for actuation of recirculating pump unit drive motor of an antilock braking system (ABS). 5,188,440, Cl. 303-116.200.

Muller, Mathias M.: *See—*
Grimm, Michael; Eybl, Elisabeth; Griesmacher, Andrea; Grabenwoger, Martin; Muller, Mathias M.; and Wolner, Ernst, 5,188,834, Cl. 424-422.000.

Muller, Walter; Nutzi, Silvan; and Born, Alessandro, to Genossenschaft Vebo, Solothurnische Eingliederungsstatte fur Behinderte. Vacuum bottle for collection of body fluids. 5,188,622, Cl. 604-319.000.

Muma, Gordon: *See—*
Villaveces, James W.; and Muma, Gordon, 5,188,407, Cl. 293-128.000.

Mumper, James O., to E & J Demark, Inc. Electrical grounding rod driving bit. 5,188,187, Cl. 173-128.000.

Munsch, Klaus, to Winkler & Dunnebier Maschinenfabrik und Eisengiesserei KG. Rotating transport apparatus. 5,188,212, Cl. 198-457.000.

Munscher, Dieter: *See—*
Foitzik, Roland; Doherr, Karl-Friedrich; Munscher, Dieter; and Saliaris, Christos, 5,188,315, Cl. 244-152.000.

Murai, Teruyuki; and Yamamoto, Susumu, to Sumitomo Electric Industries, Ltd. Method for manufacturing steel wire material for reinforcing optical fiber. 5,189,720, Cl. 385-103.000.

Murakami, Shinkichi: *See—*
Takezawa, Makoto; Miyao, Makiji; Murakami, Shinkichi; and Atsumi, Akihiro, 5,188,878, Cl. 428-114.000.

Murakami, Shuji; and Fujishima, Kazuyasu, to Mitsubishi Denki Kabushiki Kaisha. Stepdown voltage generator having active mode and standby mode. 5,189,316, Cl. 307-296.100.

Murakami, Yasuhide; and Ito, Kohei, to Hitachi Metals, Ltd. Circuit element utilizing magnetostatic wave. 5,189,383, Cl. 333-201.000.

Murakami, Yasunori: *See—*
Okawa, Masayuki; and Murakami, Yasunori, 5,188,487, Cl. 407-34.000.

Muraki, Masato. Position detecting method and apparatus. 5,189,494, Cl. 356-401.000.

Murakoshi, Toshiichi; Kawazoe, Hiroshi; Takahata, Toshihiro; Nishimura, Shigeki; and Haruta, Yoshiyuki, to Matsushita Electric Industrial Co., Ltd.; and Matsushita Seiko Co., Ltd. Method of producing a stator for a rotary machine. 5,187,858, Cl. 29-596.000.

Muramatsu, Kenji; and Iwashita, Hiroyuki, to K.K. Sankyo Seiki Seisakusho. Power spring drive apparatus. 5,188,198, Cl. 185-39.000.

Muramatsu, Shigeru: *See—*
Kawahara, Sadao; Yamamura, Michio; Yuda, Jiro; Kojima, Yoshinori; Yamamoto, Shuichi; Sakai, Manabu; Muramatsu, Shigeru; and Aiba, Osamu, 5,188,521, Cl. 418-55.300.

Murase, Heihachi: *See—*
Kogure, Hideo; Murase, Heihachi; and Tamura, Koichi, 5,188,750, Cl. 252-70.000.

Murase, Hiroyuki: *See—*
Mori, Kazuhiko; Kawasaki, Minoru; Yoshida, Shin; Murase, Hiroyuki; Saito, Takashi; Tanaka, Kouji; and Shimura, Yoshio, 5,188,799, Cl. 420-469.000.

Murase, Masaaki: *See—*
Kagawa, Junichi; Murase, Masaaki; and Nakamura, Shinichi, 5,189,333, Cl. 313-140.000.

Murase, Masanori: *See—*
Hodumi, Masahiko; Bando, Koji; Suzuki, Takahiro; Hashiba, Shigeto; Ono, Yoshiyuki; Okano, Sadao; Ashiya, Seiji; and Murase, Masanori, 5,188,916, Cl. 430-65.000.

Murashiro, Katsuyuki: *See—*
Terashima, Kanetsugu; Kikuchi, Makoto; and Murashiro, Katsuyuki, 5,188,761, Cl. 252-299.610.

Murata, Shigeki: *See—*
Sogabe, Yasushi; Matsuura, Kenji; and Murata, Shigeki, 5,189,491, Cl. 356-372.000.

Murata, Shigemi; and Ikeuchi, Masayuki, to Mitsubishi Denki Kabushiki Kaisha. Ignition apparatus for an internal combustion engine with engine cylinder misfiring detector having an ionization current noise filter. 5,189,373, Cl. 324-399.000.

Murata, Yukichi; Nakamura, Mio; and Morishima, Takashi, to Mitsubishi Kasei Corporation. Thermal transfer recording sheet and ink composition for producing the same. 5,189,008, Cl. 503-227.000.

Murayama, Katsuo: *See—*
Sato, Yoshio; Murayama, Katsuo; and Nakai, Toshihiro, 5,188,737, Cl. 210-638.000.

Murch, Bruce P.: *See—*
Connor, Daniel S.; Scheibel, Jeffrey J.; Murch, Bruce P.; Mao, Mark H.; Gosselink, Eugene P.; and Severson, Roland G., Jr., 5,188,769, Cl. 252-548.000.

Murphy, Charles F., III; Salancy, William A.; Silverberg, Morton; and Supron, Steven A., to Pitney Bowes Inc. Apparatus for cleaning postage meter printing indicia. 5,188,025, Cl. 101-91.000.

Murphy, John T. Golf shoe insert. 5,187,885, Cl. 36-127.000.

Murphy, Kent A.: *See—*
Zimmermann, Bernd D.; Claus, Richard O.; Murphy, Kent A.; and Kapp, David A., 5,189,299, Cl. 250-227.160.

Murphy, Robert D.; and Genheimer, Stephen R., to Seagate Technology, Inc. Adaptive settle time minimization for a hard disk drive. 5,189,571, Cl. 360-75.000.

Murphy, Sharon: *See—*
Goldman, Harold; Murphy, Sharon; and Morehead, Marilyn, 5,189,018, Cl. 514-10.000.

Musolf, Douglas J.: *See—*
Dupon, Ryan W.; Thompson, Mark S.; Wiseman, Gary H.; Musolf, Douglas J.; and Tanous, Adam S., 5,188,886, Cl. 428-209.000.

Muto, Itsuo: *See—*
Satoh, Katsuhiko; Muto, Itsuo; Takeda, Shigeki; and Miyamoto, Mamoru, 5,188,134, Cl. 134-57.00R.

Mycke, Jacques: *See—*
Donges, William E.; and Mycke, Jacques, 5,188,669, Cl. 118-503.000.

Mycogen Corporation: *See—*
Payne, Jewel; and Sick, August J., 5,188,960, Cl. 435-252.300.

Myers, Gene E., to Gene E. Myers Enterprises, Inc. Internal thoracic artery catheter. 5,188,619, Cl. 604-280.000.

Myers, Harold D.: *See—*
Tuinstra, Hendrik E.; and Myers, Harold D., 5,189,139, Cl. 528-196.000.

Myers, Robert A.: *See—*
Krall, Thomas J.; and Myers, Robert A., 5,188,849, Cl. 425-525.000.

Myers, William J., Jr.: *See—*
Kast, Kevin H.; and Myers, William J., Jr., 5,187,936, Cl. 60-734.000.

Mykleby, Laurie G., to CVP Systems, Inc. Automatic packaging apparatus and method and flexible pouch therefor. 5,187,917, Cl. 53-434.000.

Nabi, Nuran: *See—*
Gaffar, Abdul; Nabi, Nuran; Afflitto, John; and Stringer, Orum, 5,188,821, Cl. 424-52.000.

Nachi, Tsuyoshi: *See—*
Hirai, Masanori; Takenaka, Hiroyuki; Yokoi, Hidekazu; Nachi, Tsuyoshi; and Ando, Kiyoshi, 5,187,994, Cl. 74-120.000.

Nadal, Guy, to Celsa L.G. (Societe Anomyne). Syringe with double plunger. 5,188,616, Cl. 604-218.000.

Naeumann, Fritz: *See—*
Kummer, Rudolf; Schneider, Heinz-Walter; Bertleff, Werner; Fischer, Rolf; Vagt, Uwe; Naeumann, Fritz; Hoelderich, Wolfgang; and Schwarzmann, Matthias, 5,189,182, Cl. 549-326.000.

Nagaishi, Hatsuo: *See—*
Udo, Hiroshi; Nagaishi, Hatsuo; Takasaki, Tadaoki; and Ido, Kou, 5,188,082, Cl. 123-491.000.

Nagao, Yoshiaki; Kobayashi, Atsuhiro; and Sakuma, Mikio, to Brother Kogyo Kabushiki Kaisha. Tape feed cassette with tape cutter and guide. 5,188,469, Cl. 400-615.200.

Nagaoka, Kenji: *See—*
Abe, Hiroomi; Nagaoka, Kenji; and Sanada, Takashi, 5,189,103, Cl. 525-133.000.

Nagashima, Nao: *See—*
Sugiura, Takashi; Nagashima, Nao; and Abe, Shunichi, 5,189,523, Cl. 358-300.000.

Nagata, Nobuyuki; Tsutsui, Itsuro; Ota, Koji; Hashimoto, Hirofumi; and Shibata, Haruji, to Aishin Kakou K.K.; and Toyota Jidosha K.K. Process for applying polyvinyl chloride sealing material having low thixotropic index. 5,188,693, Cl. 156-244.110.

Nagatomi, Wakatsu; and Takai, Kazuhiko, to Nichiha Corporation. Inorganic board and method of manufacture thereof. 5,188,889, Cl. 428-304.400.

Nagy, Lajos: *See—*
Szego, Andras; Pap, Laszlo ; Nagy, Lajos; Somfai, Eva; Szucsany, Gyorgy; Szekely, Istvan; Molnar, Aniko D. nee; and Hegedus, Agnes, 5,189,062, Cl. 514-521.000.

Nagy, Michael: *See—*
Sweeney, Niall; Nagy, Michael; and Eisenring, Richard, 5,188,597, Cl. 604-110.000.

Naimark, Michael; and Carson, Kenneth M., to Advanced Interaction, Inc. Content addressable video system for image display. 5,189,402, Cl. 340-709.000.

Naito, Norihiro: *See—*
Yano, Haruto; Hirasa, Yoshiaki; Tokunaga, Toshimichi; Hayami, Katsuro; Naito, Norihiro; Akamatsu, Teruki; Goto, Hirofumi; and Yokouchi, Kazuhiro, 5,189,430, Cl. 342-457.000.

Naito, Yasuo: *See—*
Torii, Nobutoshi; Naito, Yasuo; and Kinoshita, Satoshi, 5,187,996, Cl. 74-479.000.

Nakada, Naoki: *See—*
Ootsuka, Shigeru; Nakada, Naoki; and Tsukada, Takehito, 5,189,327, Cl. 310-71.000.

Nakai, Satoshi, to Fujitsu Limited. Uniform gas flow CVD apparatus. 5,188,058, Cl. 118-719.000.

Nakai, Toshihiro: *See—*
Sato, Yoshio; Murayama, Katsuo; and Nakai, Toshihiro, 5,188,737, Cl. 210-638.000.

Nakai, Yoshitomo: *See—*
Shimanuki, Shizuo; Nakai, Yoshitomo; and Itakura, Masamichi, 5,188,509, Cl. 415-208.100.

Nakajima, Masato, to Ricoh Company, Ltd. Remote control facsimile apparatus with remotely set operation mode. 5,189,693, Cl. 379-100.000.

Nakajima, Toyohei: *See—*
Habaguchi, Masayuki; Nakajima, Toyohei; Hosoda, Fumio; Fujimoto, Sachito; Kitamoto, Masakazu; Moriwaki, Hideo; and Nakamura, Takefumi, 5,188,085, Cl. 123-520.000.

Nakajima, Yuji, to Seikosha Co., Ltd. Range meter for camera. 5,189,462, Cl. 354-403.000.

Nakamura, Kazuhisa, to Casio Computer Co., Ltd. Pickup apparatus for detecting string vibration free from external inductive noise. 5,189,241, Cl. 84-728.000.

Nakamura, Kimiaki; Yoshida, Hidefumi; and Hanaoka, Kazutaka, to Fujitsu Limited. Liquid crystal display device having a material for disturbing the orientation of the liquid crystal molecules. 5,189,540, Cl. 359-102.000.

Nakamura, Mio: *See—*
Murata, Yukichi; Nakamura, Mio; and Morishima, Takashi, 5,189,008, Cl. 503-227.000.

Nakamura, Shinichi: *See—*
Iwaki, Takashi; Takiguchi, Takao; Togano, Takeshi; Yamada, Yoko; and Nakamura, Shinichi, 5,188,762, Cl. 252-299.620.
Kagawa, Junichi; Murase, Masaaki; and Nakamura, Shinichi, 5,189,333, Cl. 313-140.000.

Nakamura, Shoji; Inoue, Takasi; Sunohara, Masaaki; and Shioyama, Tadao, to Matsushita Electric Industrial Co., Ltd. Machine for molding optical element. 5,188,652, Cl. 65-319.000.

Nakamura, Takefumi: *See—*
Habaguchi, Masayuki; Nakajima, Toyohei; Hosoda, Fumio; Fujimoto, Sachito; Kitamoto, Masakazu; Moriwaki, Hideo; and Nakamura, Takefumi, 5,188,085, Cl. 123-520.000.

Nakamura, Tetsuya: *See—*
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Fujii, Yasuo; Nakamura, Tetsuya; Fukuyama, Hirotaka; Arai, Seiji; Sato, Koichiro; Takagi, Toshio; Nishina, Shuji; Hukasawa, Jiro; Maruta, Masatoshi; and Koizumi, Seiichi, 5,188,057, Cl. 118-657.000.

Nakamura, Toshihide: *See—*
Watanabe, Masahiro; Stonehart, Paul; Tsurumi, Kazunori; Yamamoto, Nobuo; Hara, Noriaki; and Nakamura, Toshihide, 5,189,005, Cl. 502-326.000.

Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, to Mitsubishi Denki Kabushiki Kaisha. Scroll type compressor with frames supporting the crankshaft. 5,188,520, Cl. 418-55.100.

Nakamura, Toshiyuki: *See—*
Miyamoto, Hidenori; Daitoku, Koichi; Kazami, Kazuyuki; Nakamura, Toshiyuki; and Katano, Yuji, 5,189,458, Cl. 354-400.000.

Nakamura, Yasuo: *See—*
Furusaki, Shinichi; Matsuda, Masaoki; Saito, Muneki; Shiomi, Yasushi; Nakamura, Yasuo; and Tobita, Michio, 5,189,225, Cl. 568-649.000.

Nakamura, Yasuyuki: *See—*
Mamoto, Katsuhiro; Nakamura, Yasuyuki; Kawaoka, Akiyoshi; and Tabata, Masahiko, 5,188,851, Cl. 426-2.000.

Nakane, Toshio; Konuma, Hiroaki; Shiwaku, Toshio; and Hijikata, Kenji, to Polyplastics Co., Ltd. Heat-resistant injection-moldable copolyester resins and resin blends of the same. 5,189,140, Cl. 528-272.000.

Nakane, Yoshio: *See—*
Maeda, Yutaka; Kaneko, Kiyotaka; Miyake, Izumi; Nakane, Yoshio; and Shimaya, Hiroshi, 5,189,570, Cl. 360-75.000.

Nakano, Hirofumi; Kawada, Shozo; Uosaki, Yoichi; Saito, Yutaka; Gomi, Katsushige; and Iwazaki, Toshiaki, to Kyowa Hakko Kogyo Co., Ltd. Diterpene compound and process for producing the same. 5,189,187, Cl. 549-548.000.

Nakano, Masaki, to Nissan Motor Co., Ltd. Shift control system for continuously variable traction roller transmission. 5,187,995, Cl. 476-10.000.

Nakano, Norihito, to Tokai Kogyo Kabushiki Kaisha. Sheet feeding device having a paper presser plate to which a variable bending moment is applied. 5,188,269, Cl. 226-74.000.

Nakano, Yasushi: *See—*
Kawahara, Setsuko; Nakano, Yasushi; Shimizu, Yuji; and Yamauchi, Yasuhisa, 5,188,907, Cl. 428-694.000.

Nakano, Yukio: *See—*
Takatori, Masahiro; Nakano, Yukio; Ashi, Yoshihiro; and Kanno, Tadayuki, 5,189,668, Cl. 370-60.000.

Nakao, Akira; Endo, Toyofusa; and Ikeda, Takeshi, to Hitachi Zosen Corporation; and Takeshi Ikeda. Apparatus for manufacturing electronic parts wrapped with conductive foil. 5,187,857, Cl. 29-564.700.

Nakao, Akira: *See—*
Mueller, Richard A.; Nakao, Akira; and Partis, Richard A., 5,189,038, Cl. 514-255.000.

Nakao, Takashi; Emoto, Yoshiaki; Sekiguchi, Koichiro; Iketani, Masayuki; Sahara, Kunizo; Yoshida, Ikuo; Kohno, Akiomi; Horino, Masaya; Kamohara, Hideaki; Irie, Shouichi; Akasaki, Hiroshi; and Otsuka, Kanji, to Hitachi Ltd.; and Hitachi VLSI Engineering Corp. Method of bonding metals, and method and apparatus for producing semiconductor integrated circuit device using said method of bonding metals. 5,188,280, Cl. 228-123.000.

Nakase, Makoto: *See—*
Kunihiro, Ikari, deceased; Niki, Hirokazu; Nakase, Makoto; and Shinozaki, Toshiaki, 5,188,924, Cl. 430-312.000.

Nakata, Hisashi: *See—*
Itoh, Shigeo; Watanabe, Teruo; Nakata, Hisashi; and Takagi, Toshinori, 5,189,341, Cl. 315-169.100.

Nakaya, Hiroaki: *See—*
Yamashita, Takuo; Ogura, Takashi; Nakaya, Hiroaki; and Yoshida, Masaru, 5,189,405, Cl. 340-781.000.

Nakayama, Masaaki; Okawa, Masayuki; and Nishiyama, Keiichi, to Mitsubishi Materials Corporation. End mill. 5,188,488, Cl. 407-54.000.

Nakayama, Satoshi; and Sakai, Tetsushi, to Nippon Telegraph and Telephone Corporation. Semiconductor device of MOS structure having p-type gate electrode. 5,189,504, Cl. 257-422.000.

Nakazato, Hiroshi: *See—*
Tanjyo, Masayasu; and Nakazato, Hiroshi, 5,189,303, Cl. 250-296.000.

Nalco Chemical Company: *See—*
Chen, Tzu-Yu; and Godfrey, Martin R., 5,188,715, Cl. 204-153.110.

Nalepka, Raymond: *See—*
Linge, Philip J.; and Nalepka, Raymond, 5,188,887, Cl. 428-216.000.

Nalesnik, Theodore E.: *See—*
Migdal, Cyril A.; and Nalesnik, Theodore E., 5,188,745, Cl. 252-47.000.

Nam, Tai Y.: *See—*
Kim, Whan G.; and Nam, Tai Y., 5,189,082, Cl. 523-443.000.

Nanbu, Hirosi: *See—*
Yamaoka, Hideo; Kuroiwa, Mitsuyuki; Nanbu, Hirosi; and Todo, Akira, 5,188,875, Cl. 428-64.000.

Nanmori, Takashi; and Shinke, Ryu, to Showa Denka K.K. Thermostable amylase. 5,188,956, Cl. 435-200.000.

Napoleon Spring Works, Inc.: *See—*
Schwartzengraber, Donald; and Schram, Robert G., 5,188,163, Cl. 160-229.100.

Narabu, Tadakuni: *See—*
Izumi, Akio; Maki, Yasuhito; Narabu, Tadakuni; Sato, Maki; Otsu, Takaji; and Saito, Katsuyuki, 5,189,499, Cl. 257-215.000.

Nardi, John C.: *See—*
Getz, Dale R.; and Nardi, John C., 5,188,869, Cl. 427-242.000.

Narula, Chaitanya K.: *See—*
Paine, Robert T., Jr.; Narula, Chaitanya K.; and Schaeffer, Riley O., 5,188,757, Cl. 252-183.110.

Naruse, Jun: *See—*
Mori, Kenji; Hirai, Hiromu; Otsuki, Haruaki; Takahashi, Tsuyoshi; Naruse, Jun; Nishimura, Yuji; and Kawamoto, Muneo, 5,189,578, Cl. 360-106.000.

Nash, Dale K. Barricade for isolating open areas from spreading fire or smoke. 5,188,186, Cl. 169-48.000.

Nashiwa, Michio: *See—*
Imai, Ryuusuke; Nashiwa, Michio; Oomura, Yasuhiro; Matsuda, Ryouichi; Satou, Michio; and Takeuchi, Tamayuki, 5,188,698, Cl. 156-500.000.

Nasman, Ronald W.: *See—*
Joseph, Michael L.; Boulay, Steven G.; and Nasman, Ronald W., 5,188,324, Cl. 248-222.300.

Nate, Nobuyuki: *See—*
Ogata, Eiji; and Nate, Nobuyuki, 5,189,223, Cl. 568-33.000.

Nathan, Walter, to RTC Industries, Inc. Bottle carrier assembly. 5,188,413, Cl. 294-87.200.

National Semiconductor Corporation: *See—*
Daugherty, Kevin M., 5,189,421, Cl. 341-157.000.
Huard, Jeff M., 5,189,640, Cl. 365-154.000.
Olsen, Glenn A.; Lee, Chong-Ming; Yeager, Michael T.; and Pickett, Scott K., 5,189,628, Cl. 364-489.000.

National Starch and Chemical Investment Holding Corporation: *See—*
Kasica, James J.; and Eden, James L., 5,188,674, Cl. 127-65.000.

Natori, Yuji: *See—*
Sugiyama, Shoichi; Arai, Fumiaki; Nonogaki, Masayasu; Natori, Yuji; Yamaguchi, Hideyuki; Ueda, Hitoshi; Tomita, Hiroshi; and Kato, Kotaro, 5,188,881, Cl. 428-143.000.

Natsugari, Hideaki; and Ikeda, Hitoshi, to Takeda Chemical Industries, Ltd. Isoquinolone derivatives, their production and use. 5,189,043, Cl. 514-309.000.

Natsume, Tsutomu: *See—*
Tsujii, Masao; Takeuchi, Hitoshi; Oda, Kyoji; Ohba, Masahiro; Ninoyu, Yutaka; and Natsume, Tsutomu, 5,189,618, Cl. 364-426.040.

VOL 1147 ISS 4 FE 23 1993 UMI

Navistar International Transportation Corp.: *See*—
Hawash, Suheal N.; and Hively, Terry E., 5,188,319, Cl. 248-68.100.

Neault, Henry: *See*—
Shetty, Devdas; and Neault, Henry, 5,189,490, Cl. 356-371.000.

NEC Corp.: *See*—
Akata, Masao, 5,189,315, Cl. 307-272.200.
Arai, Masanobu, 5,189,378, Cl. 328-138.000.
Gomi, Hideki, 5,189,502, Cl. 257-759.000.
Hamaya, Yasuhiko, 5,189,352, Cl. 318-569.000.
Kagawa, Manabu, 5,189,666, Cl. 370-60.000.
Shimizu, Hiroshi, 5,189,674, Cl. 371-20.100.

NEC Research Institute, Inc.: *See*—
Lee, Mark; Solin, Stuart A.; and Wolff, Peter A., 5,189,367, Cl. 324-252.000.

Nedelec, Lucien: *See*—
Czech, Jorg; Sedlacek, Hans H.; Nedelec, Lucien; Guillaume, Jacques; and Marchandeau, Christian, 5,189,065, Cl. 514-656.000.

Negoro, Ikuo; Yamaguchi, Hiroyuki; and Kita, Masahiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Inside contamination prevention structure for a device utilizing toner particles. 5,189,473, Cl. 355-215.000.

Nehls, Charles O., to Unistrut International Corp. Tubular framing system. 5,188,479, Cl. 403-306.000.

Nelson, Bruce: *See*—
Vespoli, Michael; Nelson, Bruce; and Scragg, Carl, 5,188,048, Cl. 114-56.000.

Nelson, Larry L., to Systems Mailing Research, Inc. Envelope opener and load separator. 5,188,504, Cl. 414-786.000.

Nelson, Richard W., to Honeywell Inc. Amplified pressure transducer. 5,187,985, Cl. 73-708.000.

Neuhalfen, Mark, to Wilson Sporting Goods Co. Football shoulder pad with outer pads. 5,187,812, Cl. 2-2.000.

Neukermans, Armand P.: *See*—
Jann, Peter C.; Gross, Kenneth P.; and Neukermans, Armand P., 5,189,481, Cl. 356-73.000.

Neumann Industries, Inc.: *See*—
Neumann, John W.; and Neumann, J. Scott, 5,188,135, Cl. 134-64.00R.

Neumann, J. Scott: *See*—
Neumann, John W.; and Neumann, J. Scott, 5,188,135, Cl. 134-64.00R.

Neumann, John W.; and Neumann, J. Scott, to Neumann Industries, Inc. Method and apparatus for processing sheet metal blanks and continuous strip. 5,188,135, Cl. 134-64.00R.

Neurex Corporation: *See*—
Miljanich, George P.; Bitner, Robert S.; Bowersox, Stephen S.; Fox, James A.; Valentino, Karen L.; Yamashiro, Donald H.; and Tsubokawa, Makoto, 5,189,020, Cl. 514-12.000.

New Focus, Inc.: *See*—
Day, Timothy; and Marsland, Robert A., Jr., 5,189,547, Cl. 359-245.000.

New York University: *See*—
Miles, Richard; and Rothstein, Stephen G., 5,188,100, Cl. 128-207.140.

Newallis, Peter E.; Prasad, Vidyanatha A.; and Levy, Edward R., to Miles Inc. Process for producing stable, low odor S,S,S-tributylphosphorotrithioate. 5,189,195, Cl. 558-208.000.

Newcomer, Charles H.; Galedrige, Alan K.; and Saylor, Richard N. Stud engaging electrical wiring clip. 5,188,318, Cl. 248-68.100.

Newell Operating Company: *See*—
Simon, Terry L.; and Erickson, Gordon R., 5,188,162, Cl. 160-166.100.

Newton, John F.: *See*—
Hall, Ralph F.; Newton, John F.; Phipps, Kathleen A.; and Smallheer, Joanne, 5,189,226, Cl. 568-425.000.

NGK Insulators, Ltd.: *See*—
Horikawa, Osamu; and Hijikata, Toshihiko, 5,188,779, Cl. 264-62.000.
Ichikawa, Shuichi; and Takahashi, Tomonori, 5,188,994, Cl. 501-153.000.
Ishihara, Takeshi; and Misawa, Hidenobu, 5,188,910, Cl. 429-31.000.

NGK Spark Plug Co., Ltd.: *See*—
Kagawa, Junichi; Murase, Masaaki; and Nakamura, Shinichi, 5,189,333, Cl. 313-140.000.

Nguyen, Bang C.: *See*—
Babie, Wayne T.; Devries, Kenneth L.; Nguyen, Bang C.; and Yang, Chau-Hwa J., 5,188,704, Cl. 156-643.000.

Nguyen, Binh T., to Dow Corning Corporation. Process for preparation of hydrido organooxysilanes. 5,189,194, Cl. 556-471.000.

NHK Spring Co., Ltd.: *See*—
Kazama, Toshio, 5,189,364, Cl. 324-158.00P.

Nichidai Industrial Co. Ltd.: *See*—
Hideyuki, Sakai, 5,188,035, Cl. 104-89.000.

Nichifu Terminal Manufacture Co., Ltd.: *See*—
Mori, Katsuhisa; Sonoda, Keiji; Miyata, Hideo; and Okazaki, Yukinobu, 5,187,887, Cl. 40-316.000.

Nichiha Corporation: *See*—
Nagatomi, Wakatsu; and Takai, Kazuhiko, 5,188,889, Cl. 428-304.400.

Nicholas, John D.; and Hensley, Randy L., to MM Systems Corporation. Fire barrier system. 5,187,910, Cl. 52-317.000.

Nichols, Colin J., to Interventional Thermodynamics, Inc. Method and device for delivering heat to hollow body organs. 5,188,602, Cl. 604-113.000.

Nicholson, John P.; and Nicholson, Timothy J., to ADDCO Manufacturing, Inc. Actuator for remote control. 5,187,993, Cl. 74-89.150.

Nicholson, Timothy J.: *See*—
Nicholson, John P.; and Nicholson, Timothy J., 5,187,993, Cl. 74-89.150.

Nickias, Peter N.: *See*—
LaPointe, Robert E.; Rosen, Robert K.; and Nickias, Peter N., 5,189,192, Cl. 556-11.000.

Nicoll, Gregg A.; Ojo-Osagie, Ann C.; and Scott, Ian R., to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Sunscreens containing both water and oil dispersible titanium dioxide particles. 5,188,831, Cl. 424-401.000.

Niehaus, Jeff A.; Li, Stephen; and Laczko, Frank, to Texas Instruments Incorporated. Programmable configurable digital crossbar switch. 5,189,665, Cl. 370-458.100.

Nielsen, Edmond J.: *See*—
Johnson, Eric J.; Boyer, Charles E., III; Nielsen, Edmond J.; and Minick, Chris A., 5,189,078, Cl. 523-137.000.

Nieminen, Matti O.; and Olkkonen, Kari, to A. Ahlstrom Corporation. Hospital bed. 5,187,821, Cl. 5-83.100.

Nihei, Ryo: *See*—
Torii, Nobutoshi; Nihei, Ryo; and Yasumura, Mitsuhiro, 5,189,351, Cl. 318-568.190.

Niida, Chiaki: *See*—
Ejiri, Yuki; Okazaki, Tsutomu; Yamada, Koichiro; Niida, Chiaki; Saeki, Hiroaki; and Honma, Hideki, 5,188,073, Cl. 123-339.000.

Niimura, Toshinobu: *See*—
Kano, Tokio; Niimura, Toshinobu; and Yonekawa, Hiroyuki, 5,188,968, Cl. 436-501.000.

Niitsuma, Teruo, to Clarion Co., Ltd. Surface acoustic wave device. 5,189,330, Cl. 310-313.00B.

Niki, Hirokazu: *See*—
Kunihiro, Ikari, deceased; Niki, Hirokazu; Nakase, Makoto; and Shinozaki, Toshiaki, 5,188,924, Cl. 430-312.000.

Nikl, Libor H.; and Allbright, Lawrence J., to Taito Co., Ltd. Composition and method to enhance the efficacy of a fish vaccine and to stimulate the immune system of fish. 5,189,028, Cl. 514-54.000.

Nikolaus, Heinrich, to Mannesmann Rexroth GmbH. Variable displacement pump with hydraulic adjustment for controlling the delivery rate and/or the pressure with respect to at least two consumers. 5,187,933, Cl. 60-452.000.

Nikon Corporation: *See*—
Miyamoto, Hidenori; Daitoku, Koichi; Kazami, Kazuyuki; Nakamura, Toshiyuki; and Katano, Yuji, 5,189,458, Cl. 354-400.000.
Watanabe, Toshimi; and Ogasawara, Akira, 5,189,459, Cl. 354-402.000.
Yasukawa, Seiichi; and Saegusa, Takashi, 5,189,466, Cl. 354-412.000.

Nilssen, Ole K. Parallel-tuned electronic ballast. 5,189,342, Cl. 315-209.00R.

Nilsson, Bo; Ottocan, Doriano; and Sponholtz, Per, to Tetra Alfa Holdings S.A. Opening device for packaging containers. 5,188,285, Cl. 229-242.000.

Ninoyu, Yutaka: *See*—
Tsujii, Masao; Takeuchi, Hitoshi; Oda, Kyoji; Ohba, Masahiro; Ninoyu, Yutaka; and Natsume, Tsutomu, 5,189,618, Cl. 364-426.040.

Nippe, Waldemar: *See*—
Birkle, Siegfried; Gehring, Johann; and Nippe, Waldemar, 5,188,718, Cl. 204-201.000.

Nippon Chemi-Con Corporation: *See*—
Kanbe, Hiroyuki; and Okamura, Kazunori, 5,188,272, Cl. 226-190.000.

Nippon Petrochemicals Company, Limited: *See*—
Morimoto, Toshifumi; Hattori, Takaaki; Ikegami, Noboru; Nishibu, Hirofumi; Miyauchi, Toshiyuki; and Kubo, Kunimichi, 5,189,106, Cl. 525-240.000.

Nippon Pillar Packing Co., Ltd.: *See*—
Ueda, Takahisa; Konaka, Shuzo; and Miyoshi, Takeshi, 5,188,376, Cl. 277-227.000.

Nippon Seiko Kabushiki Kaisha: *See*—
Ezuka, Yasuhiro, 5,189,353, Cl. 318-605.000.
Ohkubo, Kiyoshi; and Sekine, Hiroshi, 5,188,474, Cl. 403-57.000.

Nippon Sheet Glass Co., Ltd.: *See*—
Matsubara, Takahiro; Makita, Toshio; and Iwao, Koichiro, 5,189,716, Cl. 385-93.000.

Nippon Soda Company, Limited: *See*—
Kobayashi, Yo-ichi; Omori, Muneki; and Yamada, Chikako, 5,188,829, Cl. 424-94.630.

Nippon Soken, Inc.: *See*—
Taguchi, Masahiro; Hashikawa, Atsushi; and Goto, Katsunori, 5,189,533, Cl. 359-18.000.

Nippon Steel Corporation: *See*—
Imai, Ryuusuke; Nashiwa, Michio; Oomura, Yasuhiro; Matsuda, Ryouichi; Satou, Michio; and Takeuchi, Tamayuki, 5,188,698, Cl. 156-500.000.
Shindou, Yoshio; and Yamazaki, Fumio, 5,188,905, Cl. 428-626.000.
Tachimori, Masaharu; Ishizaka, Kazunori; and Araki, Hideo, 5,189,508, Cl. 257-49.000.
Teraoka, Shinichi; Ueda, Masanori; and Suehiro, Toshiyuki, 5,188,681, Cl. 148-603.000.

Nippon Suisan Kaisha, Ltd.: *See*—
Sato, Masakazu; Kawashima, Yutaka; Goto, Jun; Chiba, Yoshiyuki; Satake, Mikio; Iwata, Chuzo; and Imanishi, Takeshi, 5,189,211, Cl. 562-430.000.

Nippon Telegraph and Telephone Corporation: *See*—
Nakayama, Satoshi; and Sakai, Tetsushi, 5,189,504, Cl. 257-422.000.
Omura, Yasuhisa; Kunii, Yasuo; and Izumi, Katsutoshi, 5,188,973, Cl. 437-40.000.

Nippondenso Co., Ltd.: *See*—
Sakakibara, Koji; and Kamabora, Koichi, 5,188,080, Cl. 123-425.000.
Taguchi, Masahiro; Hashikawa, Atsushi; and Goto, Katsunori, 5,189,533, Cl. 359-18.000.
Taniguchi, Yousuke; Miyawaki, Tadayuki; Tanaka, Hisashi; and Kitada, Motohiro, 5,187,943, Cl. 62-180.000.
Tsujii, Masao; Takeuchi, Hitoshi; Oda, Kyoji; Ohba, Masahiro; Ninoyu, Yutaka; and Natsume, Tsutomu, 5,189,618, Cl. 364-426.040.

Nishibu, Hirofumi: *See*—
Morimoto, Toshifumi; Hattori, Takaaki; Ikegami, Noboru; Nishibu, Hirofumi; Miyauchi, Toshiyuki; and Kubo, Kunimichi, 5,189,106, Cl. 525-240.000.

Nishida, Hiroshi; Ishigaki, Tatsuya; Ito, Atsushi; Kudou, Yoshinobu; Katou, Hiroshi; and Fujii, Kousuke, to Hitachi, Ltd. A magnetic disk apparatus and a motor securement therefor. 5,189,577, Cl. 360-106.000.

Nishida, Reiziro; and Tominaga, Akira, to Kansai Paint Co., Ltd. Article coated with cationic and hydroxyl group-containing resin and epoxy resin. 5,189,119, Cl. 525-526.000.

Nishida, Yoshien: *See*—
Suzuki, Kenji; Hata, Seiji; Nishida, Yoshien; Kawasaki, Kyoichi; Fujii, Kenjiro; Shimura, Yasunori; and Takeyoshi, Shigenori, 5,189,707, Cl. 382-8.000.

Nishida, Yoshihiro, to Mitsubishi Denki Kabushiki Kaisha. Image blur correcting apparatus. 5,189,518, Cl. 358-222.000.

Nishigaki, Hiroharu: *See*—
Misawa, Yoshihisa; Kondo, Hisao; Tsutsumi, Tetsuya; Hayashi, Masahiro; Sugimori, Daisuke; Matsuba, Yorishige; Isozaki, Masashi; Nishigaki, Hiroharu; Yazawa, Kazunaga; and Kondo, Kiyosi, 5,189,189, Cl. 554-194.000.

Nishiguchi, Masanori, to Sumitomo Electric Industries, Ltd. Semiconductor device and production method thereof. 5,188,984, Cl. 437-211.000.

Nishihara, Shinji: *See*—
Kojima, Masayuki; Nishihara, Shinji; and Kanai, Fumiyuki, 5,188,975, Cl. 437-48.000.

Nishii, Toshifumi: *See*—
Shirasaki, Takashi; Nishii, Toshifumi; Oka, Yukihiko; and Miyamoto, Kunihiro, 5,189,607, Cl. 364-405.000.

Nishikawa, Hirofumi: *See*—
Maeda, Kenji; Hayashi, Kenichiro; Masuda, Mitsuyoshi; Nishikawa, Hirofumi; and Suzuki, Katsuhiro, 5,188,420, Cl. 296-223.000.

Nishimoto, Yoshitaka: *See*—
Tsuchida, Takayasu; Uchibori, Haruo; and Nishimoto, Yoshitaka, 5,188,947, Cl. 435-114.000.

Nishimura, Akira: *See*—
Nozuyama, Yasuyuki; and Nishimura, Akira, 5,189,675, Cl. 371-22.300.

Nishimura, Shigeki: *See*—
Murakoshi, Toshiichi; Kawazoe, Hiroshi; Takahata, Toshihiro; Nishimura, Shigeki; and Haruta, Yoshiyuki, 5,187,858, Cl. 29-596.000.

Nishimura, Tetsuhiko; Choda, Takahiro; Chida, Yukio; and Oguri, Yasuo, to Mitsubishi Kasei Corporation. Piezoelectric ceramic composition for actuators. 5,188,992, Cl. 501-136.000.

Nishimura, Yuji: *See*—
Mori, Kenji; Hirai, Hiromu; Otsuki, Haruaki; Takahashi, Tsuyoshi; Naruse, Jun; Nishimura, Yuji; and Kawamoto, Muneo, 5,189,578, Cl. 360-106.000.

Nishina, Shuji: *See*—
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Fujii, Yasuo; Nakamura, Tetsuya; Fukuyama, Hirotaka; Arai, Seiji; Sato, Koichiro; Takagi, Toshio; Nishina, Shuji; Hukasawa, Jiro; Maruta, Masatoshi; and Koizumi, Seiichi, 5,188,057, Cl. 118-657.000.

Nishino, Kazunari; Sasagawa, Shuzo; Katsurayama, Hirofumi; Igaue, Takamitsu; and Kido, Tsutomu, to Mitsui Petrochemical Industries, Ltd.; and Uni Charm Corporation. Split fibers, integrated split fiber articles and method for preparing the same. 5,188,895, Cl. 428-373.000.

Nishio, Hiroaki, to NKK Corporation. Dewaxing method of metal or ceramic molded body. 5,188,793, Cl. 264-344.000.

Nishioka, Kenji: *See*—
Ajani, Jaffer; Grossie, Bruce, Jr.; Nishioka, Kenji; and Ota, David M., 5,189,025, Cl. 514-23.000.

Nishiuchi, Ryuji: *See*—
Fukabori, Mitsuhiko; Iwasaki, Hiroshi; Shinto, Hiroaki; Iwai, Yasunori; Nishiuchi, Ryuji; Gotoh, Yuzo; Hiramatsu, Satoru; Hirata, Norimasa; and Tokuda, Masakazu, 5,189,255, Cl. 102-531.000.

Nishiura, Yosuke, to Fuji Photo Film Co., Ltd. Producing a photographic support. 5,188,789, Cl. 264-171.000.

Nishiyama, Akio; Koyama, Takashi; Aikawa, Yasutaka; Ohshima, Hideo; Terao, Yuichiro; Kato, Munenori; and Sakai, Akio, to Mitsubishi Materials Corporation. Al_2O_3 Based ceramics. 5,188,908, Cl. 428-698.000.

Nishiyama, Keiichi: *See*—
Nakayama, Masaaki; Okawa, Masayuki; and Nishiyama, Keiichi, 5,188,488, Cl. 407-54.000.

Nishiyama, Masaaki: *See*—
Sano, Kenichi; Nishiyama, Masaaki; Suzuki, Toshiro; Wakabayashi, Shoichiro; and Miyahara, Kuniaki, 5,189,201, Cl. 560-205.000.

Nissan Chemical Industries Ltd.: *See*—
Baba, Masatoshi; and Oya, Eiichi, 5,189,224, Cl. 568-35.000.
Kobayashi, Yo-ichi; Omori, Muneki; and Yamada, Chikako, 5,188,829, Cl. 424-94.630.
Watanabe, Yoshitane; and Suzuki, Keitaro, 5,188,667, Cl. 106-286.400.

Nissan Motor Co., 03, Ltd: *See*—
Kobayashi, Satoshi; Asano, Yasushi; Yamazaki, Hiroshi; and Watanabe, Takumi, 5,187,999, Cl. 74-528.000.

Nissan Motor Co., Ltd.: *See*—
Nakano, Masaki, 5,187,995, Cl. 476-10.000.
Sasaki, Akira; Hayakawa, Yoshikazu; Sakuma, Yuichi; Sakai, Tatsuo; and Kihara, Yoshinori, 5,189,266, Cl. 181-227.000.
Sukeshita, Kazumi; Tomikawa, Takayuki; and Ikegami, Yasuyuki, 5,188,001, Cl. 74-560.000.
Udo, Hiroshi; Nagaishi, Hatsuo; Takasaki, Tadaoki; and Ido, Kou, 5,188,082, Cl. 123-491.000.
Wakahara, Tatsuo, 5,188,570, Cl. 475-143.000.

Nissho Corporation: *See*—
Shimoda, Keitaro, 5,188,629, Cl. 604-412.000.

Nissie Jushi Kogyo K.K.: *See*—
Hirata, Hisakazu; Okubo, Kazuyuki; and Kitamura, Motomi, 5,188,850, Cl. 425-589.000.

Nissimoff, Jacob: *See*—
Nissimoff, Nissim; and Nissimoff, Jacob, 5,188,561, Cl. 454-256.000.

Nissimoff, Nissim; and Nissimoff, Jacob. Air conditioning grill. 5,188,561, Cl. 454-256.000.

Nissin Electric Co., Ltd.: *See*—
Tanjyo, Masayasu; and Nakazato, Hiroshi, 5,189,303, Cl. 250-296.000.

Nissin Kogyo Kabushiki Kaisha: *See*—
Terashima, Hideyuki, 5,188,202, Cl. 188-73.450.

Nitta, Masahiro: *See*—
Yamaguchi, Hideki; Nitta, Masahiro; and Furukawa, Katsunori, 5,189,274, Cl. 219-10.55M.

Nitta, Shozo; Kurihara, Hideshi; Sanenobu, Kazuyuki; Ichihashi, Tetsuo; and Takagi, Norio, to Teijin Limited. Aromatic polyester film and process for producing the same. 5,188,774, Cl. 264-22.000.

Nittan Company, Limited: *See*—
Suzuki, Takashi, 5,189,631, Cl. 364-550.000.

Nitto Denko Corporation: *See*—
Takayama, Yoshinari; Mochizuki, Amane; Hino, Atsushi; Ouchi, Kazuo; and Sugimoto, Masakazu, 5,188,702, Cl. 156-630.000.

Nitto Kogyo Co., Ltd.: *See*—
Kobayashi, Naofumi, 5,187,849, Cl. 29-132.000.

Niwas, Shri; Secrist, John A., III; Montgomery, John A.; Erion, Mark D.; Guida, Wayne C.; and Ealick, Steve E., to BioCryst, Inc. 7-disubstituted-methyl-4-oxo-3H,5H-pyrrolo[3,2d]pyrimidine and pharmaceutical uses and compositions containing the same. 5,189,039, Cl. 514-258.000.

NKK Corporation: *See*—
Fukai, Hideaki; Suenaga, Hiroyoshi; and Minakawa, Kuninori, 5,188,677, Cl. 148-501.000.
Maki, Toshimichi; and Matsuo, Takato, 5,189,682, Cl. 373-64.000.
Nishio, Hiroaki, 5,188,793, Cl. 264-344.000.

Nobileau, Philippe C.: *See*—
Brammer, Norman; and Nobileau, Philippe C., 5,188,181, Cl. 166-344.000.

Nogle, Thomas D.: *See*—
Leising, Maurice B.; Nogle, Thomas D.; Benford, Howard L.; Helbrook, Gerald L.; Klotz, James R.; Martin, Berthold; Mikel, Steven A.; and Nortman, William, 5,188,575, Cl. 475-280.000.

Noguchi, Takaharu: *See*—
Amada, Nobutaka; Noguchi, Takaharu; Kimura, Hiroyuki; Kobayashi, Masaharu; Arai, Takao; Yumde, Yasufumi; and Miura, Kuniaki, 5,189,564, Cl. 360-32.000.

Noguchi, Yasuo: *See*—
Idemoto, Morito; and Noguchi, Yasuo, 5,188,102, Cl. 128-24.0AA.

Nokia (Deutschland) GmbH: *See*—
Brosig, Stefan, 5,188,870, Cl. 428-1.000.

Nokia Mobile Phones Ltd.: *See*—
Hakanen, Pekka, 5,189,698, Cl. 379-455.000.

Nolan, Andrew W.: *See*—
Pace, Darr C.; Bayer, Craig E.; Casagrande, Mark T.; Johnson, Craig R.; Hall, Danny K.; and Nolan, Andrew W., 5,188,804, Cl. 422-111.000.

Nolan, Kevin F.: *See*—
Lyons, Richard J.; Nolan, Kevin F.; and Chu, Wah C., 5,189,608, Cl. 364-408.000.

Noland, John; and Cosmos, Michael, to Roy F. Weston, Inc. Apparatus and method for low temperature thermal stripping of volatile organic compounds from soil and waste materials with non-oxidative co-current gases. 5,188,041, Cl. 110-246.000.

Nolen, Edward F., Jr., to Air Kontrol, Inc. Adjustable air filter. 5,188,646, Cl. 55-155.000.

Nolte, Albert; Altdorf, Joachim; and Scheffler, Paul, to Kloeckner-Humboldt-Deutz AG. Fuel pump designed as rotor pump. 5,188,072, Cl. 123-198.00C.

Nomoto, Katsunori: *See*—
Yamamoto, Yuzo; Nomoto, Katsunori; and Isobe, Tsutomu, 5,188,866, Cl. 427-132.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Nomura, Hironori: *See*—
Igaue, Takamitsu; Nomura, Hironori; Shimakawa, Taiji; and Sasaki, Tohru, 5,188,627, Cl. 604-385.200.
Nomura, Takeshi, to Canon Kabushiki Kaisha. Press molding method for an optical element and apparatus therefor. 5,188,650, Cl. 65-64.000.
Nomura, Toshiyuki: *See*—
Mino, Kazuo; Nomura, Toshiyuki; and Tsujioka, Yuiji, 5,188,459, Cl. 374-158.000.
Nonaga, Ikuo: *See*—
Tsurumiya, Osamu; Izawa, Masataka; Abe, Masaru; and Nonaga, Ikuo, 5,189,616, Cl. 364-424.050.
Nonogaki, Masayasu: *See*—
Sugiyama, Shoichi; Arai, Fumiaki; Nonogaki, Masayasu; Natori, Yuji; Yamaguchi, Hideyuki; Ueda, Hitoshi; Tomita, Hiroshi; and Kato, Kotaro, 5,188,881, Cl. 428-143.000.
Norbury, Robert J.: *See*—
Schmidt, Diane G.; Buttery, Howard J.; and Norbury, Robert J., 5,188,753, Cl. 252-132.000.
Nordica S.p.A.: *See*—
Baggio, Giorgio; and Zorzi, Claudio, 5,187,884, Cl. 36-50.000.
Nordson Corporation: *See*—
Donges, William E.; and Mycke, Jacques, 5,188,669, Cl. 118-503.000.
Norian Corporation: *See*—
Constantz, Brent, 5,188,670, Cl. 118-667.000.
Norihiko, Moriya: *See*—
Kato, Koichi; Masuya, Hirotomo; and Norihiko, Moriya, 5,189,057, Cl. 514-473.000.
Norris, Thomas R.; Lockwood, Hanford N., Jr.; and Watts, J. Alan, to Norris, Thomas R., a part interest. Method and apparatus for enhancing gas turbo machinery flow. 5,188,510, Cl. 415-208.100.
North American Philips Corporation: *See*—
Keck, Gregory W.; and Lyle, Robert L., Jr., 5,189,600, Cl. 363-212.000.
Northern Illinois University: *See*—
Lin, Chhiu-Tsu, 5,188,902, Cl. 428-426.000.
Northern Telecom Limited: *See*—
Das, Tapan K.; Ozkan, Oguz; and Fung, George S., 5,189,697, Cl. 379-413.000.
Eberle, Gernot; and Chaput, Guy J., 5,189,634, Cl. 364-724.090.
Rawlyk, Michael G., 5,188,883, Cl. 428-189.000.
Northill, Barry W., to Northill, Noelene M., a part interest. Fire suppression systems. 5,188,184, Cl. 169-22.000.
Northill, Noelene M.: *See*—
Northill, Barry W., 5,188,184, Cl. 169-22.000.
Nortman, William: *See*—
Leising, Maurice B.; Nogle, Thomas D.; Benford, Howard L.; Helbrook, Gerald L.; Klotz, James R.; Martin, Berthold; Mikel, Steven A.; and Nortman, William, 5,188,575, Cl. 475-280.000.
Norz, Wolfgang: *See*—
Rohr, Gunter; and Norz, Wolfgang, 5,188,047, Cl. 112-262.200.
Nottingham, John R.; Spirk, John; Saunders, Craig M.; and Brokaw, Paul E., to Nottingham-Spirk Design Associates, Inc. Method of heating and dispensing hot melt materials that employs microwave energy. 5,188,256, Cl. 222-1.000.
Nottingham-Spirk Design Associates, Inc.: *See*—
Nottingham, John R.; Spirk, John; Saunders, Craig M.; and Brokaw, Paul E., 5,188,256, Cl. 222-1.000.
Notzli, Christoph: *See*—
Mraz, Beat; Notzli, Christoph; Ungricht, Ernst; and Marek, Daniel, 5,187,938, Cl. 62-51.100.
Nouguez, Bruno: *See*—
Andre, Michel; Mazer, Jean-Pierre; and Nouguez, Bruno, 5,189,247, Cl. 102-291.000.
Nova Pharmaceutical Corporation: *See*—
Burch, Ronald M.; Patch, Raymond J.; Shearer, Barry G.; and Perumattam, John J., 5,189,046, Cl. 514-330.000.
Domb, Abraham J., 5,188,837, Cl. 424-450.000.
Novellus Systems, Inc.: *See*—
Broadbent, Eliot K.; and Miller, Kenneth C., 5,188,717, Cl. 204-192.120.
Nowak, Michael T.: *See*—
Lewis, Thomas E.; and Nowak, Michael T., 5,188,032, Cl. 101-453.000.
Noyes, Jonathan C., to Texaco Inc. Method and apparatus for automatic well stimulation. 5,188,178, Cl. 166-310.000.
Nozuyama, Yasuyuki; and Nishimura, Akira, to Kabushiki Kaisha Toshiba. Self-diagnostic circuit for logic circuit block. 5,189,675, Cl. 371-22.300.
NSC Electron Corp.: *See*—
Tachimori, Masaharu; Ishizaka, Kazunori; and Araki, Hideo, 5,189,508, Cl. 257-49.000.
Nunokawa, Masakatsu, to Kabushiki Kaisha Toshiba. Cell transfer apparatus and method using a variable rate codec. 5,189,669, Cl. 370-84.000.
Nuovopignone-Industrie Meccaniche e Fonderia SpA: *See*—
Mezzedimi, Vasco, 5,188,196, Cl. 184-6.160.
Nuraseal Company, Limited: *See*—
Drumm, Kevin R., 5,188,377, Cl. 277-81.00S.
Nutzi, Silvan: *See*—
Muller, Walter; Nutzi, Silvan; and Born, Alessandro, 5,188,622, Cl. 604-319.000.
Nyman, Bror G.: *See*—
Lilja, Launo L.; Makitalo, Valto J.; Hultholm, Stig-Erik; and Nyman, Bror G., 5,188,808, Cl. 422-229.000.
O.A.M S.p.A: *See*—
Bruno, Righi, 5,188,217, Cl. 198-803.900.
Oblad, Alex G.: *See*—
Shabtai, Joseph S.; Oblad, Alex G.; and Tsai, Chi H., 5,189,232, Cl. 585-14.000.
O'Brien, Karen M.; and Carlson, Lee A., to Dennison Manufacturing Company. Index tabs for hanging file folders having pressure sensitive adhesive and lugs for insertion in folder slots. 5,187,888, Cl. 40-359.000.
O'Brien, Patrick J.; and Friedman, Herbert, to Ivy Hill Corporation. Compact disc storage pack. 5,188,230, Cl. 206-312.000.
O'Brien, Robert N.; and McEwan, Thomas D., to Envirochip Technologies Ltd. Process for recovery of metal. 5,188,713, Cl. 204-106.000.
O'Brien, William J. Asphalt heating unit. 5,188,481, Cl. 404-95.000.
OCG Microelectronic Materials, Inc.: *See*—
Jeffries, Alfred T., III; Honda, Kenji; Blakeney, Andrew J.; and Tadros, Sobhy, 5,188,921, Cl. 430-192.000.
O'Connell, Michael J.: *See*—
Comerci, Joseph D.; DeRoss, Robert; O'Connell, Michael J.; and Templeton, John E., Jr., 5,188,541, Cl. 439-596.000.
Ocular Instruments, Inc.: *See*—
Crossman, Janet L.; Erickson, Phillip J.; Heacock, Gregory L.; and Mainster, Martin A., 5,189,450, Cl. 351-219.000.
Oda, Keisuke: *See*—
Takakuwa, Kiyoshi; and Oda, Keisuke, 5,189,440, Cl. 346-76.0PH.
Oda, Kyoji: *See*—
Tsujii, Masao; Takeuchi, Hitoshi; Oda, Kyoji; Ohba, Masahiro; Ninoyu, Yutaka; and Natsume, Tsutomu, 5,189,618, Cl. 364-426.040.
Oda, Yoshiaki: *See*—
Saito, Kenji; Matsuo, Sanshiro; and Oda, Yoshiaki, 5,189,186, Cl. 549-497.000.
O'Dea, Dennis J.: *See*—
Hoover, Linn C.; and O'Dea, Dennis J., 5,189,480, Cl. 355-282.000.
Odoi, Yuzo: *See*—
Horibata, Shinji; Odoi, Yuzo; and Futami, Syoji, 5,187,860, Cl. 29-603.000.
Oeder, Dieter: *See*—
Gropper, Hans; Funk, Guido; Kolk, Erich; and Oeder, Dieter, 5,189,123, Cl. 526-106.000.
O'Farrell, Desmond J., to Donnelly Corporation. Indicia display for electro-optic devices wherein the indicia comprises a dielectric material extending at least partially into the electro-optic medium. 5,189,537, Cl. 359-71.000.
Office Meccaniche G. Cerutti S.p.A.: *See*—
Fantoni, Giuseppe, 5,188,027, Cl. 101-216.000.
Ofstead, Ronald F.: *See*—
Boardman, James R.; and Ofstead, Ronald F., 5,188,688, Cl. 156-69.000.
Ogasawara, Akira: *See*—
Watanabe, Toshimi; and Ogasawara, Akira, 5,189,459, Cl. 354-402.000.
Ogata, Eiji; and Nate, Nobuyuki, to Konishi Chemical Ind. Co., Ltd. Process for preparation of 4,4'-dihydroxydiphenylsulfone. 5,189,223, Cl. 568-33.000.
Ogata, Nobuo; Ueyama, Tetsuo; Sekimoto, Yoshihiro; Tanaka, Toshiyuki; and Sato, Hideaki, to Sharp Kabushiki Kaisha. Optical head for optical disk recording/reproducing apparatus including modified Wollaston prism. 5,189,655, Cl. 369-44.230.
Ogawa, Hiroshi: *See*—
Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, 5,188,520, Cl. 418-55.100.
Ogawa, Kazunobu, to Ryobi Ltd. Tubular structures for fishing rods or the like. 5,188,152, Cl. 138-129.000.
Ogino, Masanobu, to Kabushiki Kaisha Toshiba. Method of manufacturing a semiconductor device using a polishing step prior to a selective vapor growth step. 5,188,987, Cl. 437-228.000.
Ogino, Masanori; Yamada, Takeo; Ikeda, Miyuki; Fujikura, Tsueno; and Fujiwara, Takahiko, to Hitachi, Ltd. Video circuit for driving a cathode ray tube. 5,189,347, Cl. 315-383.000.
Ogura, Takashi: *See*—
Yamashita, Takuo; Ogura, Takashi; Nakaya, Hiroaki; and Yoshida, Masaru, 5,189,405, Cl. 340-781.000.
Oguri, Yasuo: *See*—
Nishimura, Tetsuhiko; Choda, Takahiro; Chida, Yukio; and Oguri, Yasuo, 5,188,992, Cl. 501-136.000.
Oh, Jeh S.: *See*—
Kim, Yong M.; and Oh, Jeh S., 5,187,836, Cl. 16-231.000.
Ohara, John. Remote unit for controlling the operation of a television receiver. 5,189,517, Cl. 358-194.100.
Ohara, Katsuichi: *See*—
Kosugi, Toru; Hashimoto, Yuichi; Tanaka, Masayuki; Ohara, Katsuichi; Furukawa, Takahiro; and Aoki, Makoto, 5,189,410, Cl. 340-825.140.
O'Hara, Kevin S., to General Electric Company. Measurement of the maximum temperature attained by an article. 5,188,457, Cl. 374-104.000.
Ohara, Shuzo: *See*—
Kawahara, Hiroshi; Okunaka, Noriaki; Kobayashi, Mitsuru; Tokuno, Isao; and Ohara, Shuzo, 5,188,395, Cl. 283-113.000.
Ohashi, Kazuhiko; Kato, Hiroshi; and Wani, Takayuki, to Japan Gore-Tex, Inc. Metallized porous flourinated resin and process therefor. 5,188,890, Cl. 428-306.600.

Ohba, Masahiro: *See*—
Tsujii, Masao; Takeuchi, Hitoshi; Oda, Kyoji; Ohba, Masahiro; Ninoyu, Yutaka; and Natsume, Tsutomu, 5,189,618, Cl. 364-426.040.
Ohgoshi, Fumio: *See*—
Ohta, Tazuo; Tanaka, Kazuo; Ohgoshi, Fumio; Yoshida, Terumasa; and Motoyama, Ichihei, 5,189,209, Cl. 562-414.000.
Ohi Seisakusho Co., Ltd.: *See*—
Kobayashi, Satoshi; Asano, Yasushi; Yamazaki, Hiroshi; and Watanabe, Takumi, 5,187,999, Cl. 74-528.000.
Ohio State University, The: *See*—
Kerby, Ronald E., 5,189,077, Cl. 523-116.000.
Ohishi, Keiichi; and Kimura, Suenori, to Hamamatsu Photonics K.K. Photomultiplier tube having reduced tube length. 5,189,338, Cl. 315-11.000.
Ohji, Yuzuru: *See*—
Kume, Hitoshi; Adachi, Tetsuo; Ohji, Yuzuru; Kure, Tokuo; Ushiyama, Masahiro; and Kawakami, Hiroshi, 5,188,976, Cl. 435-52.000.
Ohkaji, Hiroyuki: *See*—
Matsuda, Itaru; and Ohkaji, Hiroyuki, 5,189,479, Cl. 355-274.000.
Ohki, Mitsuharu, to Sony Corporation. Digital data processing circuit. 5,189,635, Cl. 364-784.000.
Ohki, Yuichi: *See*—
Funaki, Keisuke; and Ohki, Yuichi, 5,188,930, Cl. 430-536.000.
Ohkubo, Kiyoshi; and Sekine, Hiroshi, to Nippon Seiko Kabushiki Kaisha. Yoke for universal joint. 5,188,474, Cl. 403-57.000.
Ohlinger, Rainer: *See*—
Hasenbein, Norbert; Bauer, Peter; Schlemmer, Lothar; Hauss, Alfred F.; Gropper, Hans; and Ohlinger, Rainer, 5,189,120, Cl. 525-285.000.
Ohmura, Keiji; Okuno, Sumio; Masai, Kentaro; Ooba, Hideshi; Hida, Senzoo; and Okamoto, Seiichi, to Hitachi, Ltd. Method of fixing inside panel of car and structure for fixing the same. 5,188,039, Cl. 105-423.000.
Ohnishi, Akiyoshi: *See*—
Kaitoh, Mitsumasa; Kurokawa, Hideki; and Ohnishi, Akiyoshi, 5,189,172, Cl. 546-208.000.
Ohshima, Hideo: *See*—
Nishiyama, Akio; Koyama, Takashi; Aikawa, Yasutaka; Ohshima, Hideo; Terao, Yuichiro; Kato, Munenori; and Sakai, Akio, 5,188,908, Cl. 428-698.000.
Ohsumi, Hideki, to Yazaki Corporation. Disengaging tool for terminal and wire connector. 5,187,862, Cl. 29-764.000.
Ohsumi, Tadashi; Fujimura, Makoto; and Hayashi, Miki, to Sumitomo Chemical Company, Limited. Pyrazole derivatives, method for producing the same and agricultural and/or horticultural fungicides containing the same as active ingredient. 5,189,040, Cl. 514-269.000.
Ohta, Sayuri: *See*—
Sako, Yukitoshi; Kamikawa, Fumitoshi; and Ohta, Sayuri, 5,189,646, Cl. 368-10.000.
Ohta, Shinichi, to Canon Kabushiki Kaisha. Method and apparatus for recording and reproducing information by intermittent light emission from laser light source. 5,189,659, Cl. 369-109.000.
Ohta, Tazuo; Tanaka, Kazuo; Ohgoshi, Fumio; Yoshida, Terumasa; and Motoyama, Ichihei, to Mitsubishi Gas Chemical Company, Inc. Process for producing highly pure isophthalic acid. 5,189,209, Cl. 562-414.000.
Ohtaki, Keizaburo: *See*—
Furuya, Hiroyuki; and Ohtaki, Keizaburo, 5,188,276, Cl. 228-6.100.
Ohtsubo, Toshihiko; Shouno, Seita; Suzuki, Akio; Sugishima, Kiyohisa; Takagi, Eiichi; and Takada, Yoshihiro, to Canon Kabushiki Kaisha. Image forming apparatus and method for correction image density non-uniformity by reading a test pattern recorded by the apparatus. 5,189,521, Cl. 358-296.000.
Ohtsuka, Hiroyuki, to Kabushiki Kaisha Topcon. Color photography optical system. 5,189,556, Cl. 359-634.000.
Ohtsuka, Noboru: *See*—
Tsuchida, Takayasu; Katsurada, Naoki; Ohtsuka, Noboru; Uchibori, Haruo; and Suzuki, Takeshi, 5,188,949, Cl. 435-115.000.
Oi, Junichi: *See*—
Kobayashi, Koichi; Mishima, Seiji; Kamio, Kenji; Miyata, Etsuhisa; Fukuda, Katsuhiko; and Oi, Junichi, 5,188,847, Cl. 425-135.000.
Oide, Masahiko: *See*—
Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, 5,188,520, Cl. 418-55.100.
Oishi, Kengo: *See*—
Mizuno, Masato; and Oishi, Kengo, 5,189,584, Cl. 360-132.000.
Ojo-Osagie, Ann C.: *See*—
Nicoll, Gregg A.; Ojo-Osagie, Ann C.; and Scott, Ian R., 5,188,831, Cl. 424-401.000.
Oka, Yukihiko: *See*—
Shirasaki, Takashi; Nishii, Toshifumi; Oka, Yukihiko; and Miyamoto, Kunihiro, 5,189,607, Cl. 364-405.000.
Okada, Hisashi; and Hiroyuki, Seki, to Fuji Photo Film Co., Ltd. Composition and process for the processing of silver halide color photographic material. 5,188,927, Cl. 430-393.000.
Okajima, Nariaki: *See*—
Takeda, Naohiro; Otani, Yuzo; Okajima, Nariaki; Ito, Yoshihiko; Kinoshita, Shin-ichi; Inagaki, Masashi; and Harada, Takashi, 5,188,891, Cl. 428-323.000.
Okamoto, Seiichi: *See*—
Ohmura, Keiji; Okuno, Sumio; Masai, Kentaro; Ooba, Hideshi; Hida, Senzoo; and Okamoto, Seiichi, 5,188,039, Cl. 105-423.000.
Okamoto, Yasuhiko: *See*—
Takahashi, Hisakazu; Baba, Yoko; Ezaki, Kenichi; Okamoto, Yasuhiko; Shibata, Kenichi; Kuroki, Kazuhiko; and Yasuyama, Shigeyuki, 5,188,993, Cl. 501-136.000.
Okamura, Kazunori: *See*—
Kanbe, Hiroyuki; and Okamura, Kazunori, 5,188,272, Cl. 226-190.000.
Okamura, Masatoshi; and Kaneda, Hiroshi, to TDK Corporation. Magnetic tape cassette having ribs in reel areas. 5,189,583, Cl. 360-132.000.
Okano, Renjiro: *See*—
Okayasu, Yoshisada; Yamauchi, Toshiyuki; Mori, Akinari; Kamaya, Naoki; Okayama, Naoki; Maruichi, Takanori; Iwasawa, Junichi; Yamada, Yukio; and Okano, Renjiro, 5,189,520, Cl. 358-229.000.
Okano, Sadao: *See*—
Hodumi, Masahiko; Bando, Koji; Suzuki, Takahiro; Hashiba, Shigeto; Ono, Yoshiyuki; Okano, Sadao; Ashiya, Seiji; and Murase, Masanori, 5,188,916, Cl. 430-65.000.
Okawa, Masayuki; and Murakami, Yasunori, to Mitsubishi Materials Corporation. Ball end mill. 5,188,487, Cl. 407-34.000.
Okawa, Masayuki: *See*—
Nakayama, Masaaki; Okawa, Masayuki; and Nishiyama, Keiichi, 5,188,488, Cl. 407-54.000.
Okawara, Makoto: *See*—
Tsubuko, Kazuo; Kuramoto, Shinichi; Umemura, Kazuhiko; Uematsu, Hidemi; and Okawara, Makoto, 5,189,102, Cl. 525-112.000.
Okayama, Hideaki; and Ushikubo, Takashi, to Oki Electric Industry Co., Ltd. Optical wavelength filter device. 5,189,714, Cl. 385-27.000.
Okayama, Naoki: *See*—
Okayasu, Yoshisada; Yamauchi, Toshiyuki; Mori, Akinari; Kamaya, Naoki; Okayama, Naoki; Maruichi, Takanori; Iwasawa, Junichi; Yamada, Yukio; and Okano, Renjiro, 5,189,520, Cl. 358-229.000.
Okayasu, Yoshisada; Yamauchi, Toshiyuki; Mori, Akinari; Kamaya, Naoki; Okayama, Naoki; Maruichi, Takanori; Iwasawa, Junichi; Yamada, Yukio; and Okano, Renjiro, to Sony Corporation. Video camera modular accessory apparatus. 5,189,520, Cl. 358-229.000.
Okazaki, Seiji; Yokoyama, Shigeki; Imaizumi, Makoto; Hatanaka, Koji; and Aota, Takashi, to Hitachi Metals, Ltd.; and Jidoshakiki Co. Ltd. Glow plug for diesel engines. 5,189,280, Cl. 219-270.000.
Okazaki, Tsutomu: *See*—
Ejiri, Yuki; Okazaki, Tsutomu; Yamada, Koichiro; Niida, Chiaki; Saeki, Hiroaki; and Honma, Hideki, 5,188,073, Cl. 123-339.000.
Okazaki, Yukinobu: *See*—
Mori, Katsuhisa; Sonoda, Keiji; Miyata, Hideo; and Okazaki, Yukinobu, 5,187,887, Cl. 40-316.000.
Oki Electric Industry Co., Ltd.: *See*—
Okayama, Hideaki; and Ushikubo, Takashi, 5,189,714, Cl. 385-27.000.
Oku, Narihiro: *See*—
Yoshii, Takao; Oku, Narihiro; Horii, Yoshio; and Terada, Kunio, 5,188,334, Cl. 251-7.000.
Okubo, Kazuyuki: *See*—
Hirata, Hisakazu; Okubo, Kazuyuki; and Kitamura, Motomi, 5,188,850, Cl. 425-589.000.
Okunaka, Noriaki: *See*—
Kawahara, Hiroshi; Okunaka, Noriaki; Kobayashi, Mitsuru; Tokuno, Isao; and Ohara, Shuzo, 5,188,395, Cl. 283-113.000.
Okuno, Sumio: *See*—
Ohmura, Keiji; Okuno, Sumio; Masai, Kentaro; Ooba, Hideshi; Hida, Senzoo; and Okamoto, Seiichi, 5,188,039, Cl. 105-423.000.
Okuno, Toshikazu. Coupling fixture. 5,188,480, Cl. 403-369.000.
Okuno, Yasuo, to Sharp Kabushiki Kaisha. System for controlling terminal equipment. 5,189,409, Cl. 340-825.060.
Okutsu, Kazuo: *See*—
Kataoka, Hideaki; Okutsu, Kazuo; Takahashi, Koichi; and Mizuno, Kazunori, 5,188,306, Cl. 242-71.100.
Okuyama, Shinobu; and Wakana, Kojiro, to Mitsubishi Nuclear Fuel Co. Grid for nuclear fuel assembly. 5,188,798, Cl. 376-442.000.
Oleson, Richard A., to Gentex Corporation. Integrated field eyewear system. 5,189,447, Cl. 351-121.000.
Oliver, Wynn W. Apparatus and method for creating a floatable thermal and evaporation barrier. 5,188,550, Cl. 441-1.000.
Olkkonen, Kari: *See*—
Nieminen, Matti O.; and Olkkonen, Kari, 5,187,821, Cl. 5-83.100.
Olsen, Glenn A.; Lee, Chong-Ming; Yeager, Michael T.; and Pickett, Scott K., to National Semiconductor Corporation. System and method for partitioning PLA product terms into distinct logical groups. 5,189,628, Cl. 364-489.000.
Olson, Ronald H., to Glashaus Incorporated. Glass block window system. 5,187,909, Cl. 52-308.000.
Olympus Optical Co., Ltd.: *See*—
Ishii, Atsujiro; Uzawa, Tsutomu; and Mihara, Shinichi, 5,189,558, Cl. 359-687.000.
Kano, Tokio; Niimura, Toshinobu; and Yonekawa, Hiroyuki, 5,188,968, Cl. 436-501.000.
O'Mahony, Mary J.: *See*—
Willis, Robert J.; O'Mahony, Mary J.; and Roberts, Bryan G., 5,189,053, Cl. 514-397.000.
Omni Corporation: *See*—
Kurth, Mark; Alger, Andrew; and Blahuta, Lew, 5,188,727, Cl. 210-85.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Omnigene, Inc.: *See—*
Overbye, Karen M.; Pero, Janice; and Robbins, Phillips W., 5,188,961, Cl. 435-252.310.
Omniplanar, Inc.: *See—*
Batterman, Eric P.; and Chandler, Donald G., 5,189,292, Cl. 235-494.000.
Omori, Muneki: *See—*
Kobayashi, Yo-ichi; Omori, Muneki; and Yamada, Chikako, 5,188,829, Cl. 424-94.630.
Omron Corporation: *See—*
Otani, Haruhide, 5,188,115, Cl. 128-677.000.
Tsutsui, Keiichi, 5,189,290, Cl. 235-454.000.
Omron Tateisi Electronics Co.: *See—*
Yamakawa, Takeshi; and Ishida, Tsutomu, 5,189,728, Cl. 395-51.000.
Omstead, Mary N.; Schulman, Marvin D.; and Young, Noel M., to Merck & Co., Inc. Process for the glycosylation of avermectin agylcones. 5,188,944, Cl. 435-76.000.
Omura, Yasuhisa; Kunii, Yasuo; and Izumi, Katsutoshi, to Nippon Telegraph & Telephone Corporation. Method of manufacturing SOI semiconductor element. 5,188,973, Cl. 437-40.000.
Omura, Yoshiaki. Bi-digital O-ring test for imaging and diagnosis of internal organs of a patient. 5,188,107, Cl. 128-630.000.
Onari, Mikihiko; Funabashi, Motohisa; Sekozawa, Teruji; and Shioya, Makoto, to Hitachi, Ltd. Electronic engine control apparatus. 5,189,621, Cl. 364-431.040.
Onda, Fumiyo: *See—*
Mochizuki, Akihiro; Onda, Fumiyo; Yoshihara, Toshiaki; Iwasaki, Masayuki; and Yamagishi, Yasuo, 5,189,535, Cl. 359-55.000.
Onda, Takashi: *See—*
Fujiwara, Chikara; Onda, Takashi; and Fukushima, Akira, 5,188,281, Cl. 228-189.000.
Ono, Katsuhiro; Anno, Hidero; Sugiura, Hiroyuki; Kitami, Takayuki; and Tazawa, Hiroaki, to Kabushiki Kaisha Toshiba. Rotary-anode type X-ray tube. 5,189,688, Cl. 378-133.000.
Ono, Masahiko: *See—*
Endo, Yoshishige; Araya, Takeshi; Ono, Masahiko; Kawamura, Takao; and Kawamura, Hiromitsu, 5,189,337, Cl. 313-479.000.
Ono, Yoshiyuki: *See—*
Hodumi, Masahiko; Bando, Koji; Suzuki, Takahiro; Hashiba, Shigeto; Ono, Yoshiyuki; Okano, Sadao; Ashiya, Seiji; and Murase, Masanori, 5,188,916, Cl. 430-65.000.
Onooka, Yasushi; Kawada, Junji; and Yamamoto, Tetsu, to Mitsubishi Denki Kabushiki Kaisha. Read/write head retract mechanism. 5,189,575, Cl. 360-105.000.
Ooba, Hideshi: *See—*
Ohmura, Keiji; Okuno, Sumio; Masai, Kentaro; Ooba, Hideshi; Hida, Senzoo; and Okamoto, Seiichi, 5,188,039, Cl. 105-423.000.
Ooi, Leng H., to Motorola, Inc. Integrated distributed resistive-capacitive network. 5,189,593, Cl. 455-195.100.
Oomura, Yasuhiro: *See—*
Imai, Ryuusuke; Nashiwa, Michio; Oomura, Yasuhiro; Matsuda, Ryouichi; Satou, Michio; and Takeuchi, Tamayuki, 5,188,698, Cl. 156-500.000.
Ootsuka, Shigeru; Nakada, Naoki; and Tsukada, Takehito, to Matsushita Electric Industrial Co., Ltd. Axial-flow fan motor with modular connector. 5,189,327, Cl. 310-71.000.
Opila, Jerome E.: *See—*
Riley, John J.; and Opila, Jerome E., 5,188,400, Cl. 285-233.000.
Optical Measurement Technology Development Co., Ltd.: *See—*
Wada, Morio; Seko, Masahito; Sekiguchi, Youichi; and Iwaoka, Hideto, 5,189,309, Cl. 257-21.000.
Optima Chemicals, Inc.: *See—*
Ashby, Eugene C.; Earnhart, Laurence L.; Tedder, Daniel W.; and Singh, Jagvir, 5,189,222, Cl. 568-1.000.
Orendorff, Gary R., to W.S.A., Inc. Lock bolt with a warped contact surface. 5,188,404, Cl. 292-194.000.
Orent, Thomas W.: *See—*
York, Rudy L.; Luttmer, Joseph D.; Wan, Chang F.; Orent, Thomas W.; Hutchins, Larry D.; and Simmons, Art, 5,188,970, Cl. 437-3.000.
Orgain, Peter A. Safety sheath for needles, sharp instruments and tools. 5,188,611, Cl. 604-192.000.
Oriental Yeast Co., Ltd.: *See—*
Origane, Akira; and Sato, Takasi, 5,188,852, Cl. 426-60.000.
Origane, Akira; and Sato, Takasi, to Oriental Yeast Co., Ltd. Process for producing yeast extract. 5,188,852, Cl. 426-60.000.
Orikasa, Tsuyoshi: *See—*
Arashima, Teruo; Kimura, Makiko; Kashino, Toshio; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; and Orikasa, Tsuyoshi, 5,189,443, Cl. 346-140.00R.
Orita, Souichi: *See—*
Miyazawa, Chihiro; Orita, Souichi; and Tsuboi, Akio, 5,189,105, Cl. 252-182.120.
Orlando, Roy C.; and Tobey, Nelia A., to University of North Carolina at Chapel Hill. Protection of moist stratified squamous epithelia against damage from noxious luminal agents. 5,189,056, Cl. 514-439.000.
Orth, Jeffrey L., to Rocky Mountain Research, Inc. Extra corporeal support system. 5,188,604, Cl. 604-153.000.
Orvik, Jon A.: *See—*
Wright, Terry L.; and Orvik, Jon A., 5,189,210, Cl. 562-418.000.
Osaki, Haruyoshi: *See—*
Moriuma, Hiroshi; Osaki, Haruyoshi; Hioki, Takeshi; and Uetani, Yasunori, 5,188,920, Cl. 430-191.000.
Osborne, Roy S.: *See—*
Burke, Richard A.; Goodall, James R.; Melton, Michael D.; Osborne, Roy S.; and Patterson, Carl D., 5,188,456, Cl. 374-50.000.
Osinski, Grzegorz: *See—*
Hertig, Daniel M.; and Osinski, Grzegorz, 5,187,955, Cl. 68-58.000.
Ostenson, Jerome E.: *See—*
Finnemore, Douglas K.; Miller, Theodore A.; Ostenson, Jerome E.; Schwartzkopf, Louis A.; and Sanders, Steven C., 5,189,260, Cl. 174-125.100.
Ostrowski, Susan: *See—*
Chen, James N. C.; and Ostrowski, Susan, 5,187,981, Cl. 73-642.000.
Ota, David M.: *See—*
Ajani, Jaffer; Grossie, Bruce, Jr.; Nishioka, Kenji; and Ota, David M., 5,189,025, Cl. 514-23.000.
Ota, Koji: *See—*
Nagata, Nobuyuki; Tsutsui, Itsuro; Ota, Koji; Hashimoto, Hirofumi; and Shibata, Haruji, 5,188,693, Cl. 156-244.110.
Otani, Haruhide, to Omron Corporation. Ratcheting mechanism for tightening cuff or blood pressure monitor. 5,188,115, Cl. 128-677.000.
Otani, Yuzo: *See—*
Takeda, Naohiro; Otani, Yuzo; Okajima, Nariaki; Ito, Yoshihiko; Kinoshita, Shin-ichi; Inagaki, Masashi; and Harada, Takashi, 5,188,891, Cl. 428-323.000.
Otis Elevator Company: *See—*
Johnson, Gerald E.; Rivera, James A.; and McClement, Arthur, 5,188,209, Cl. 198-336.000.
Pavoz, Marcel; and Gagnon, Ernest P., 5,189,268, Cl. 187-112.000.
Otis Engineering Corporation: *See—*
Echols, Ralph H., III; Pearce, Joseph L.; and Patterson, Daniel L., 5,188,182, Cl. 166-376.000.
Otsu, Takaji: *See—*
Izumi, Akio; Maki, Yasuhito; Narabu, Tadakuni; Sato, Maki; Otsu, Takaji; and Saito, Katsuyuki, 5,189,499, Cl. 257-215.000.
Otsuka, Kanji: *See—*
Nakao, Takashi; Emoto, Yoshiaki; Sekiguchi, Koichiro; Iketani, Masayuki; Sahara, Kunizo; Yoshida, Ikuo; Kohno, Akiomi; Horino, Masaya; Kamohara, Hideaki; Irie, Shouichi; Akasaki, Hiroshi; and Otsuka, Kanji, 5,188,280, Cl. 228-123.000.
Otsuka, Masuhiro; and Kohno, Hiromi, to Zexel Corporation. System for starting an internal combustion engine for powering vehicles. 5,188,070, Cl. 123-179.230.
Otsuki, Haruaki: *See—*
Mori, Kenji; Hirai, Hiromu; Otsuki, Haruaki; Takahashi, Tsuyoshi; Naruse, Jun; Nishimura, Yuji; and Kawamoto, Muneo, 5,189,578, Cl. 360-106.000.
Ott Maschinentechnik GmbH: *See—*
Heel, Helmut; and Kettel, Hans, 5,188,493, Cl. 409-230.000.
Ottocan, Doriano: *See—*
Nilsson, Bo; Ottocan, Doriano; and Sponholtz, Per, 5,188,285, Cl. 229-242.000.
Ouchi, Kazuo: *See—*
Takayama, Yoshinari; Mochizuki, Amane; Hino, Atsushi; Ouchi, Kazuo; and Sugimoto, Masakazu, 5,188,702, Cl. 156-630.000.
Oudar, Jean-Louis, to France Telecom Etablissement Autonome de Droit Public (Centre National d'Etudes des Telecommunications). System for the optical switching of frequency multiplexed signals. 5,189,542, Cl. 359-128.000.
Ouellette, Kevin D.; and Rexroad, John, to SINCO Incorporated. Portable safety rail system. 5,188,342, Cl. 256-65.000.
Outboard Marine Corporation: *See—*
Ferguson, Arthur R.; and Rose, Edgar, 5,188,548, Cl. 440-61.000.
Prince, Anthony P., 5,188,206, Cl. 192-0.098.
Outokumpu Oy: *See—*
Lilja, Launo L.; Makitalo, Valto J.; Hultholm, Stig-Erik; and Nyman, Bror G., 5,188,808, Cl. 422-229.000.
Overbye, Karen M.; Pero, Janice; and Robbins, Phillips W., to Omnigene, Inc. DNA encoding a Streptomyces endochitinase 56 signal peptide. 5,188,961, Cl. 435-252.310.
Owens-Illinois Closure Inc.: *See—*
Kusz, Maximillian, 5,188,251, Cl. 215-220.000.
Owens-Illinois Plastic Products Inc.: *See—*
Hornback, Roger W.; and Burtch, John E., 5,188,775, Cl. 264-25.000.
Owens-Illinois Plastic Products Inc.: *See—*
Krall, Thomas J.; and Myers, Robert A., 5,188,849, Cl. 425-525.000.
Owl Scientific Plastics, Inc.: *See—*
Magnant, Gary P., 5,188,790, Cl. 264-219.000.
Oy Nokia Ab: *See—*
Paajanen, Reijo; Terho, Mikko; and Hoglund, Tom, 5,189,632, Cl. 364-705.050.
Oya, Eiichi: *See—*
Baba, Masatoshi; and Oya, Eiichi, 5,189,224, Cl. 568-35.000.
Oyama, Kiyoshi: *See—*
Yokota, Masahiro; Mori, ideo; and Oyama, Kiyoshi, 5,189,348, Cl. 315-399.000.
Ozick, Julius. Method of treatment for periodontitis. 5,188,817, Cl. 424-49.000.
Ozkan, Oguz: *See—*
Das, Tapan K.; Ozkan, Oguz; and Fung, George S., 5,189,697, Cl. 379-413.000.
P.D.Q. Manufacturing Inc.: *See—*
Burton, Forrest R., 5,188,293, Cl. 239-227.000.
Paajanen, Reijo; Terho, Mikko; and Hoglund, Tom, to Oy Nokia Ab. Portable personal computer and mobile telephone device. 5,189,632, Cl. 364-705.050.

Paccar Inc.: *See—*
Liethen, Thomas R., 5,188,419, Cl. 296-190.000.
Pace, Darr C.; Bayer, Craig E.; Casagrande, Mark T.; Johnson, Craig R.; Hall, Danny K.; and Nolan, Andrew W., to Air Preheater Company, Inc., The. Regenerative bed incinerator and method of operating same. 5,188,804, Cl. 422-111.000.
Pacholok, David, to Everbrite, Inc. High frequency luminous tube power supply having neon-bubble and mercury-migration suppression. 5,189,343, Cl. 315-219.000.
Paciei, Richard: *See—*
Davidson, Jeffrey; Sherman, Robert; and Paciei, Richard, 5,188,714, Cl. 204-129.350.
Packaging House, Inc., The: *See—*
Platt, Ronald, 5,188,226, Cl. 206-153.000.
Pacyga, Michael G.: *See—*
Ballard, Kenneth D.; Bottino, Ronald E.; Labbe, Mark K.; Lopata, John E.; Malinski, Tom; Meier, Wilhelm; Morelli, Lou; Pacyga, Michael G.; Primorac, Mitch; Roodnat, Bernardus; and Simpson, Shawn, 5,188,546, Cl. 439-885.000.
Page, Edward C.: *See—*
Burns, Thomas J.; Page, Edward C.; Gregory, Rita A.; and Pryor, George M., 5,189,606, Cl. 364-401.000.
Paine, Robert T., Jr.; Narula, Chaitanya K.; and Schaeffer, Riley O., to University of New Mexico. Precursor compositions for conversion to boron nitride. 5,188,757, Cl. 252-183.110.
Pakon, Inc.: *See—*
Gerrans, Wilbur, 5,187,918, Cl. 53-435.000.
Gerrans, Wilbur, 5,187,923, Cl. 53-520.000.
Palara, Sergio; Paparo, Mario; and Pellicano, Roberto, to SGS-Thomson Microelectronics. Circuit for limiting the output voltage of a monolithic semiconductor power device which drives a resonant load connected to a power supply. 5,189,317, Cl. 307-350.000.
Palladino, Linda O.; Silberklang, Melvin; Tung, Jwu-Sheng; Law, Simon W.; and Mark, George E., to Merck & Co., Inc. Antistasin derived anticoagulant protein. 5,189,019, Cl. 514-12.000.
Palliser, Martin: *See—*
Foster, Howard J.; Gordon, Ian A.; and Palliser, Martin, 5,188,425, Cl. 297-473.000.
Palmer, Charles E.; Taylor, Barry J.; and DeFazio, August, to DeFazio, August. Hologram production. 5,189,531, Cl. 359-3.000.
Pan, Costanzo, to CTS Costruzioni Techniche Sanmarinesi. Steam producing apparatus for home use with low cold water reservoir level steam output stoppage. 5,189,726, Cl. 392-401.000.
Panduit Corp.: *See—*
Hillegonds, Larry A.; Jue, George H.; and Bulanda, John J., 5,187,861, Cl. 29-751.000.
Panthel, Guenter: *See—*
Blasey, Gerhard; Breucker, Christoph; Gutsche, Bernhard; Jeromin, Lutz; Panthel, Guenter; Peukert, Eberhard; and Schmidt, Wolfgang, 5,189,207, Cl. 562-97.000.
Panther, Michael: *See—*
Rubel, Erich; Haegele, Karl-Heinz; Panther, Michael; and Gatter, Klaus, 5,189,615, Cl. 364-424.050.
Pap, Laszlo : *See—*
Szego, Andras; Pap, Laszlo ; Nagy, Lajos; Somfai, Eva; Szucsany, Gyorgy; Szekely, Istvan; Molnar, Aniko D. nee; and Hegedus, Agnes, 5,189,062, Cl. 514-521.000.
Paparo, Mario: *See—*
Palara, Sergio; Paparo, Mario; and Pellicano, Roberto, 5,189,317, Cl. 307-350.000.
Parienti, Raoul. System for inputting, processing and transmitting information and data. 5,189,287, Cl. 235-375.000.
Parimore, Thomas N., Jr.; and Koss, Christopher R., to General Electric Company. Redundantly locked fluid coupling. 5,188,398, Cl. 285-39.000.
Paris, Robert D.: *See—*
Hackel, Richard P.; Paris, Robert D.; and Feldman, Mark, 5,189,485, Cl. 356-320.000.
Parish, George K.: *See—*
Johnson, William M.; and Parish, George K., 5,188,465, Cl. 400-121.000.
Parisi, Jean-Pierre: *See—*
Beziers, Daniel; Boutevin, Bernard; Parisi, Jean-Pierre; Thomas, Yannig; and Chataignier, Evelyne, 5,189,093, Cl. 524-847.000.
Park, Daniel J.: *See—*
Collar, James K.; Gaskill, Garold B.; Park, Daniel J.; Shanks, Carl D.; and Wells, Rick T., 5,189,411, Cl. 340-825.140.
Gaskill, Garold B.; and Park, Daniel J., 5,189,413, Cl. 340-825.440.
Park, Hae-kyun, to Samsung Electronic Devices Co., Ltd. Cathode ray tube having shadow mask. 5,189,334, Cl. 313-402.000.
Park, Jeong-il: *See—*
Sim, Myeong-bo; Park, Jeong-il; and Lee, Cheol-weon, 5,189,568, Cl. 360-73.130.
Parker, Kenneth: *See—*
Fishman, Lawrence R.; and Parker, Kenneth, 5,189,235, Cl. 84-291.000.
Parkow, James C.; and Seitz, Robert F., to Gen-Tech, Inc. Railroad hopper car discharge gate valve. 5,188,264, Cl. 222-554.000.
Parks, Bruce, to Xerox Corporation. Disk stacker including tamping mechanism capable of cross-direction offsetting. 5,188,353, Cl. 271-184.000.
Parran, David B.: *See—*
Richardson, David L.; Grubba, Robert A.; McLaughlin, Timothy P.; and Parran, David B., 5,188,173, Cl. 166-77.000.
Parrini, Paolo: *See—*
Cozzi, Ennio; Federici, Franco; and Parrini, Paolo, 5,189,135, Cl. 528-70.000.
Parsons, Bill J.: *See—*
Harty, Douglas E.; and Parsons, Bill J., 5,188,442, Cl. 312-235.800.
Parsons, David: *See—*
Arrowsmith, David R.; Parsons, David; and Young, Alastair J., 5,188,204, Cl. 192-3.580.
Parsons, Douglas A.; Johnston, Mark A.; Games, John E.; and DePardo, Gerald L., to United Technologies Corporation. Control system for gas turbine helicopter engines and the like. 5,189,620, Cl. 364-431.020.
Partis, Richard A.: *See—*
Mueller, Richard A.; Nakao, Akira; and Partis, Richard A., 5,189,038, Cl. 514-255.000.
Parton, Brian, to Imperial Chemical Industries PLC. Colored polymers from azo dye monomers containing olefinic groups. 5,188,641, Cl. 8-647.000.
Parulski, Kenneth A.; Bellis, Donald C., Jr.; Hibbard, Robert H.; Giorgianni, Edward J.; and McInerney, Elizabeth, to Eastman Kodak Company. Method and apparatus for improving the color rendition of hardcopy images from electronic cameras. 5,189,511, Cl. 358-80.000.
Passelaigue, Elisabeth: *See—*
Brunet, Jean-Jacques; and Passelaigue, Elisabeth, 5,189,213, Cl. 562-517.000.
Patch, Raymond J.: *See—*
Burch, Ronald M.; Patch, Raymond J.; Shearer, Barry G.; and Perumattam, John J., 5,189,046, Cl. 514-330.000.
Patel, Arvind: *See—*
Dixon, Daniel A.; Gierut, Frederick J.; Lawniczak, Joe; Patel, Arvind; and Primorac, Michael, 5,188,547, Cl. 439-886.000.
Patel, Arvind D.; McGlothlin, Raymond E.; Bleier, Roger D.; and Brinkley, H. N., to M-I Drilling Fluids Company. Oil based synthetic hydrocarbon drilling fluid. 5,189,012, Cl. 507-103.000.
Patel, Jitendra: *See—*
Schultz, Thomas M.; Patel, Jitendra; and Wong, Stephanie, 5,188,639, Cl. 8-405.000.
Patel, Magan S.: *See—*
Alexander, Lawrence C.; Appelt, Bernd K.; Balkin, David K.; Hansen, James J.; Hromek, Joseph; Kaschak, Ronald A.; Lauffer, John M.; Memis, Irving; Patel, Magan S.; Seman, Andrew M.; and Susko, Robin A., 5,189,261, Cl. 174-263.000.
Patel, Prakash: *See—*
Gregory, Peter; and Patel, Prakash, 5,189,153, Cl. 540-122.000.
Hall, Nigel; Hughes, Nigel; and Patel, Prakash, 5,189,181, Cl. 549-299.000.
Paterson, Stephen E.: *See—*
Ferguson, Michael J.; and Paterson, Stephen E., 5,187,823, Cl. 5-417.000.
Paton, Anthony D.: *See—*
Michaelis, A. John; Paton, Anthony D.; and Temple, Stephen, 5,189,437, Cl. 346-1.100.
Patterson, Carl D.: *See—*
Burke, Richard A.; Goodall, James R.; Melton, Michael D.; Osborne, Roy S.; and Patterson, Carl D., 5,188,456, Cl. 374-50.000.
Patterson, Daniel L.: *See—*
Echols, Ralph H., III; Pearce, Joseph L.; and Patterson, Daniel L., 5,188,182, Cl. 166-376.000.
Patterson, Jon M.; Teal, Richard D.; Weitz, James H.; and Wasson, Steven C., to Deere & Company. Mower deck lift handle mechanism. 5,187,925, Cl. 56-17.100.
Patterson, Richard A.: *See—*
Larson, Donald K.; and Patterson, Richard A., 5,189,717, Cl. 385-95.000.
Patti, Michael F.; Fedele, Nicola J.; Harney, Kevin; and Simon, Allen H., to Intel Corporation. Dual mode combining circuitry. 5,189,636, Cl. 364-786.000.
Paul, Michael A.: *See—*
Gossler, E. Thomas; and Paul, Michael A., 5,187,976, Cl. 73-65.010.
Pauly, John M.: *See—*
Conolly, Steven M.; and Pauly, John M., 5,189,371, Cl. 324-309.000.
Pavlath, George A.: *See—*
Mark, John G.; Pavlath, George A.; and Tazartes, Daniel A., 5,189,488, Cl. 356-350.000.
Pavoz, Marcel; and Gagnon, Ernest P., to Otis Elevator Company. Elevator with linear motor drive assembly. 5,189,268, Cl. 187-112.000.
Paxton, Russell, to Standard Motor Products, Inc. Refrigerant recovery and purification system. 5,187,940, Cl. 62-77.000.
Payne, Jewel; and Sick, August J., to Mycogen Corporation. *Bacillus thuringiensis* isolate active against lepidopteran pests, and genes encoding novel lepidopteran-active toxins. 5,188,960, Cl. 435-252.300.
Payne, LeRoy. Multiaxis rotational molding apparatus. 5,188,845, Cl. 425-4.00R.
Pear Tree Mfg., A Corporation of Pennsylvania: *See—*
Gipe, Thomas A.; and Yoder, Steve R., 5,188,367, Cl. 273-191.00R.
Pearce, Joseph L.: *See—*
Echols, Ralph H., III; Pearce, Joseph L.; and Patterson, Daniel L., 5,188,182, Cl. 166-376.000.
Pearmain, Kevin E., to Smith Kline & French Laboratories Ltd. Pharmaceutical compositions of cimetidine. 5,188,839, Cl. 424-464.000.
Peart, Edward L., to Welch Allyn, Inc. Binaural stethoscope spring. 5,189,264, Cl. 181-131.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Pech, David: *See—*
Zuehlke, Arthur; and Pech, David, 5,189,605, Cl. 364-140.000.
Pedain, Josef: *See—*
Blum, Harald; Pedain, Josef; and Hentschel, Karl-Heinz, 5,189,176, Cl. 548-215.000.
Pedersen, Thor: *See—*
Aune, Jan A.; Eikeland, Inger J.; and Pedersen, Thor, 5,188,658, Cl. 75-10.310.
Pedicini, Christopher S., to Eveready Battery Co., Inc. Electrochemical cell with circuit disconnect device. 5,188,909, Cl. 429-7.000.
Peglion, Jean-Louis; and Colpaert, Francis, to Adir et Compagnie. Aminopiperidine indanyl and benzocyclobutene compounds. 5,189,045, Cl. 514-319.000.
Pellicano, Roberto: *See—*
Palara, Sergio; Paparo, Mario; and Pellicano, Roberto, 5,189,317, Cl. 307-350.000.
Pellizzari, Paolo: *See—*
Inserra, Dario; Marzio, Marco; and Pellizzari, Paolo, 5,188,514, Cl. 416-223.00A.
Pen, Ben-Li; Wang, Dah-Ping; Hoh, Ying-Chu; and Tsao, Kuo-Hao, to Institute of Nuclear Energy Research. Process for the separation and recovery of extractant from spent solvent. 5,188,736, Cl. 210-634.000.
Pence, William E., IV, to International Business Machines Corporation. Thermoelectric piezoelectric temperature control. 5,188,286, Cl. 236-1.00F.
Peng, Han-Min: *See—*
Breslau, Steven M.; Peng, Han-Min; and Kang, Chieh-Chi, 5,189,563, Cl. 360-14.100.
Penglase, Kim E.; and Dutkiewicz, Jacek, to Redback Electronics Pty, Ltd. Timing apparatus particularly for racing vehicles. 5,189,305, Cl. 250-338.100.
Pennewiss, Horst, to Rphm GmbH. Viscosity index improver having detergent properties. 5,188,770, Cl. 252-56.00S.
Penney, Richard. Internal footwear construction with a replaceable heel cushion element. 5,187,883, Cl. 36-35.00R.
Pennsylvania Research Corporation, The: *See—*
Anderson, David A.; Witzel, John G.; Christensen, Don; and Bahia, Hussain, 5,187,987, Cl. 73-852.000.
Hammerstedt, Roy H., 5,188,455, Cl. 366-150.000.
Pennzoil Products Company: *See—*
Heilman, William J.; and Wilburn, Bruce E., 5,188,724, Cl. 208-18.000.
Perkins, David G., to Welch Allyn, Inc. Retinoscope with external control sleeve. 5,189,449, Cl. 351-211.000.
Pero, Janice: *See—*
Overbye, Karen M.; Pero, Janice; and Robbins, Phillips W., 5,188,961, Cl. 435-252.310.
Perry, Robert M., to Davy (Distington) Limited. Rotary strip caster edge containment. 5,188,166, Cl. 164-416.000.
Perry, Robert M.; and Reynolds, Timothy, to Davy (Distington) Limited. Continuous casting mould. 5,188,167, Cl. 164-418.000.
Perumattam, John J.: *See—*
Burch, Ronald M.; Patch, Raymond J.; Shearer, Barry G.; and Perumattam, John J., 5,189,046, Cl. 514-330.000.
Peshak, Gayle R., to Applied Lumens, Ltd. Fluorescent lamp assemblies. 5,189,339, Cl. 315-58.000.
Pesho, Stephen W., to Euclid Spiral Paper Tube Co. Dripless, splashless nozzle. 5,188,289, Cl. 239-1.000.
Peters, Helena, to Camp International, Inc. Lumbo-sacral orthopedic support. 5,188,585, Cl. 602-19.000.
Peters, Leland J.: *See—*
Green, Ralph E., Jr.; Jones, Ronald H.; Peters, Leland J.; and Withol, Peter J., 5,188,800, Cl. 422-23.000.
Peters, William H. Balloon holding device. 5,188,314, Cl. 244-31.000.
Petersen, Erwin: *See—*
Feldmann, Joachim; Petersen, Erwin; and Schult, Manfred, 5,189,391, Cl. 340-453.000.
Peterson, John R.: *See—*
Crocker, William A.; Haygarth, John C.; Riesen, Jon A.; and Peterson, John R., 5,188,809, Cl. 423-2.000.
Peterson, Mitchell F.: *See—*
Donoho, Paul L.; Peterson, Mitchell F.; Ryder, Hughie; and Keeling, William H., 5,189,642, Cl. 367-15.000.
Petit, Jeffrey D. Caulking gun with belt worn cartridge. 5,188,259, Cl. 222-63.000.
Petrofsky, Jerrold S.; Piotrowski, Wes; and Petrovska, Jannike, to Petrofsky Research, Inc. Orthosis for assistance in walking. 5,188,584, Cl. 602-16.000.
Petrofsky Research, Inc.: *See—*
Petrofsky, Jerrold S.; Piotrowski, Wes; and Petrovska, Jannike, 5,188,584, Cl. 602-16.000.
Petrovska, Jannike: *See—*
Petrofsky, Jerrold S.; Piotrowski, Wes; and Petrovska, Jannike, 5,188,584, Cl. 602-16.000.
Pettinaroli, Giuseppe, to Fratelli Pettinaroli S.p.A. Ball valve with lockable security device. 5,188,335, Cl. 251-95.000.
Petzold, Werner P.; and Umlauf, William P., to Borg-Warner Automotive, Inc. Temperature compensation technique for a continuously variable transmission control system. 5,189,611, Cl. 364-424.100.
Peuckert, Doris: *See—*
Kriechbaum, Gangolf; Kleinschmit, Peter; and Peuckert, Doris, 5,188,991, Cl. 501-103.000.
Peuckert, Marcellus, to Hoechst Aktiengesellschaft. Silicon nitride ceramic and a process for its preparation. 5,188,781, Cl. 264-65.000.
Peuckert, Marcellus: *See—*
Vaahs, Tilo; Gerdau, Thomas; Kleiner, Hans-Jerg; Peuckert, Marcellus; and Bruck, Martin, 5,189,132, Cl. 528-33.000.
Peukert, Eberhard: *See—*
Blasey, Gerhard; Breucker, Christoph; Gutsche, Bernhard; Jeromin, Lutz; Panthel, Guenter; Peukert, Eberhard; and Schmidt, Wolfgang, 5,189,207, Cl. 562-97.000.
Pfander, Werner: *See—*
Heyke, Klaus; Spitz, Richard; Seidel, Hans-Joachim; Jennrich, Irene; Pfander, Werner; and Vohr, Armin, 5,189,080, Cl. 523-212.000.
Pfeil, Egon: *See—*
Tivig, Gerhard; Meier, Wilhelm; and Pfeil, Egon, 5,189,609, Cl. 364-413.010.
Pfizer Inc: *See—*
Seymour, Patricia A., 5,189,037, Cl. 514-252.000.
Pfleiderer Verkehrstechnik GmbH: *See—*
Forster, Richard F.; and Rudersdorf, Friedemann A., 5,188,485, Cl. 405-232.000.
Pfleiderer, Wolfgang: *See—*
Suhadolnik, Robert J.; and Pfleiderer, Wolfgang, 5,188,897, Cl. 428-402.200.
Pflug, Hannes: *See—*
Reisser, Berni; Pflug, Hannes; Khosrawi, Mohammad-Ali; Scharf, Michael; Simon, Helmut; Taudt, Christian; Goll, Wolfgang; Wuetherich, Paul; Fortenbacher, Thomas; and Konrath, Karl, 5,188,083, Cl. 123-502.000.
Pham, Chuong N.: *See—*
Stefanov, Michael E.; Biggers, Rand R.; Rish, Jeff W., III; Henderson, Girardeau L.; and Pham, Chuong N., 5,188,171, Cl. 165-96.000.
Philip Morris Incorporated: *See—*
Augustine, Robert L.; and Tanielyan, Setrak K., 5,189,006, Cl. 502-339.000.
Cox, Kenneth A.; and Maher, Robert J., 5,189,708, Cl. 382-8.000.
Hajaligol, Mohammad R.; Deevi, Seetharama C.; Ariprala, Sarojini D.; Losee, Donald B.; Waymack, Bruce E.; and Watkins, Michael L., 5,188,130, Cl. 131-359.000.
Philip Morris Products Inc.: *See—*
Augustine, Robert L.; and Tanielyan, Setrak K., 5,189,006, Cl. 502-339.000.
Philipps, Siegrid: *See—*
Zeeck, Axel; Philipps, Siegrid; Grabley, Susanne; Granzer, Ernold; Hutter, Klaus; Thiericke, Ralf; and Wink, Joachim, 5,189,150, Cl. 536-6.500.
Phillips, Joseph R.; Warloff, Peter E. T.; Hefele, John; Bilodeau, Victor L.; Bain, Ronald G.; and Barrett, Mark, to Kamyr, Inc. Preventing clogging in pressure diffusers. 5,187,956, Cl. 68-181.00R.
Phillips Petroleum Company: *See—*
Kuerston, Richard D.; and Brown, Ronald E., 5,188,709, Cl. 196-14.520.
Maholland, Michael K.; Fu, Chia-Min; and Lowery, Richard E., 5,188,995, Cl. 502-28.000.
Wright, Roy F.; and Yu, Michael C., 5,189,121, Cl. 525-537.000.
Phillips, Tony L.: *See—*
Weltman, Henry J.; and Phillips, Tony L., 5,188,754, Cl. 252-162.000.
Phipps, Jeffrey H.; and Field, Stanley B., to Rocket of London Limited. Electromagnetic energy generation method. 5,188,122, Cl. 128-788.000.
Phipps, Kathleen A.: *See—*
Hall, Ralph F.; Newton, John F.; Phipps, Kathleen A.; and Smallheer, Joanne, 5,189,226, Cl. 568-425.000.
Piasecki Aircraft Corporation: *See—*
Piasecki, Frank N., 5,188,313, Cl. 244-3.000.
Piasecki, Frank N., to Piasecki Aircraft Corporation. Glider aircraft tow control system. 5,188,313, Cl. 244-3.000.
Picard, Joseph A.: *See—*
Lee, Helen T.; Picard, Joseph A.; and Sliskovic, Drago R., 5,189,058, Cl. 514-481.000.
Picard, Richard, to Rachel-Mae Industries Inc. Golf swing training harness. 5,188,365, Cl. 273-189.00R.
Pickelman, Dale M.: *See—*
Wessling, Ritchie A.; Pickelman, Dale M.; and Wujek, Dennis G., 5,188,824, Cl. 424-78.100.
Pickett, Scott K.: *See—*
Olsen, Glenn A.; Lee, Chong-Ming; Yeager, Michael T.; and Pickett, Scott K., 5,189,628, Cl. 364-489.000.
Picozza, Augusto A.: *See—*
Fukuda, Takeshi; and Picozza, Augusto A., 5,188,234, Cl. 206-541.000.
Pierce, Brian M., to Hughes Aircraft Company. Method of making articles containing an ion-conductive polymer. 5,188,783, Cl. 264-104.000.
Pierce, Harold D., to Sounds Fun, Inc. Anti-theft display package for animated talking time pieces. 5,188,222, Cl. 206-45.340.
Pierce, Larry W.; Zeigler, Steve F.; and Bazbaz, Jacobo, to Superbag Corp. Bag pack. 5,188,235, Cl. 206-554.000.
Pikulin, Michael A.: *See—*
Griggs, Bruce F.; Gandek, Thomas P.; Pikulin, Michael A.; and Rosen, Allen, 5,188,708, Cl. 162-40.000.
Pilkiewicz, Frank G.: *See—*
Tremblay, Paul-Alain; Marziani, Frank; Tino, John A. F.; and Pilkiewicz, Frank G., 5,188,951, Cl. 435-131.000.

Pilkington P.E. Limited: *See—*
Ramsbottom, Andrew P.; and Christie, Alan W., 5,189,532, Cl. 359-15.000.
Pinho, Fernando: *See—*
Carter, Guy T.; Williams, David R.; and Pinho, Fernando, 5,188,945, Cl. 435-77.000.
Pioneer Electronic Corporation: *See—*
Chikuma, Kiyofumi, 5,189,722, Cl. 385-122.000.
Masaki, Naoki; Hira, Osamu; and Shimada, Naoki, 5,189,656, Cl. 369-47.000.
Utsumi, Yoshihiro, 5,189,651, Cl. 369-13.000.
Piotrowski, Wes: *See—*
Petrofsky, Jerrold S.; Piotrowski, Wes; and Petrovska, Jannike, 5,188,584, Cl. 602-16.000.
Pisharody, Raghavan; and Gooch, Beverley R., to Ampex Corporation. Ultra small track width thin film magnetic transducer. 5,189,580, Cl. 360-126.000.
Pitcher, Edgar R.: *See—*
Rutledge, Gary L.; and Pitcher, Edgar R., 5,188,580, Cl. 493-225.000.
Pitney Bowes Inc.: *See—*
Dannatt, Hugh St. L., 5,188,271, Cl. 226-102.000.
Lowell, Kenneth W.; Synnett, Karen P.; and Janatka, Karel J., 5,188,355, Cl. 271-225.000.
Murphy, Charles F., III; Salancy, William A.; Silverberg, Morton; and Supron, Steven A., 5,188,025, Cl. 101-91.000.
Pitzenberger, Steven M.: *See—*
Balani, Suresh K.; Ramjit, Harri G.; Pitzenberger, Steven M.; Schwartz, Michael S.; and Lu, Anthony Y. H., 5,188,950, Cl. 435-120.000.
Plach, Herbert: *See—*
Bartmann, Ekkehard; Hittich, Reinhard; Plach, Herbert; and Finkenzeller, Ulrich, 5,188,759, Cl. 252-299.010.
Plasta Fiber Industries Corp.: *See—*
Miller, Douglas C., 5,188,446, Cl. 362-83.100.
Plastic Innovation, Inc.: *See—*
Harty, Douglas E.; and Parsons, Bill J., 5,188,442, Cl. 312-235.800.
Platt, Ronald, to Packaging House, Inc., The. Multiple product container carton. 5,188,226, Cl. 206-153.000.
Plaza, Joseph J.: *See—*
Heck, Thomas E.; and Plaza, Joseph J., 5,188,429, Cl. 301-63.100.
Plester, George, to Coca-Cola Company, The. Supply of controlled, medium-pressure carbon dioxide gas in simple, convenient disposable packaging. 5,188,257, Cl. 222-1.000.
Pletsch, Hubert: *See—*
Wolf, Franz J.; and Pletsch, Hubert, 5,188,002, Cl. 74-574.000.
Pohle, William A.: *See—*
Gaterman, William C., III; and Pohle, William A., 5,188,068, Cl. 123-90.350.
Pohto, Gerald R.; and Gestaut, Llawrence J., to Eltech Systems Corporation. Plate anode having bias cut edges. 5,188,721, Cl. 204-280.000.
Pokora, Alexander R.: *See—*
Johnson, Mark A.; Pokora, Alexander R.; and Cyrus, William L., Jr., 5,188,953, Cl. 435-156.000.
Polaroid Corporation: *See—*
Farrington, David L.; Staller, Norman D.; and Van Tassell, Jon E., 5,189,464, Cl. 354-403.000.
Polka, John G. Nursing bottle holder. 5,188,320, Cl. 248-103.000.
Pollak, Roger A.: *See—*
Bregman, Mark F.; Hoffman, Paul R.; Ledermann, Peter G.; Moskowitz, Paul A.; Pollak, Roger A.; Reiley, Timothy C.; and Ritter, Mark B., 5,189,363, Cl. 324-158.00P.
Pollock, Larry J.; and Bayman, Atiye, to Synergy Semiconductor Corporation. Process for making a self-aligned bipolar sinker structure. 5,188,971, Cl. 437-31.000.
Polyplastics Co., Ltd.: *See—*
Nakane, Toshio; Konuma, Hiroaki; Shiwaku, Toshio; and Hijikata, Kenji, 5,189,140, Cl. 528-272.000.
Pomagalski S.A.: *See—*
Mugnier, Jean-Francois, 5,188,037, Cl. 104-168.000.
Pommrehn, Mark R.; Brewer, James E.; and Kroll, Mark W., to Vital Heart Systems, Inc. Electrocardiographic method and device. 5,188,116, Cl. 128-696.000.
Pond, Robert B., to Marvalaud, Inc. Chill block melt spinning apparatus. 5,188,168, Cl. 164-479.000.
Pondrelli, Maddalena: *See—*
Luciani, Luciano; Pondrelli, Maddalena; Invernizzi, Renzo; and Borghi, Italo, 5,188,997, Cl. 502-107.000.
Poore, Cyril; and Sams, Bernard, to Duma AB. Container and method of manufacturing the same. 5,188,253, Cl. 220-212.000.
Pope, Adam N.; and Bobo, Melvin, to General Electric Company. Squeeze film damper piston ring seal. 5,188,375, Cl. 277-58.000.
Porter, Marvin, to Texas Trunk Company, Inc. Fuel converter for gasoline powered lanterns. 5,188,525, Cl. 431-107.000.
Posin, Jack; Valenta, Harry L., Jr.; Maas, Steven M.; and Koestner, Ken, to Telectronics Pacing Systems, Inc. Method and apparatus for chronically monitoring the hemodynamic state of a patient using doppler ultrasound. 5,188,106, Cl. 128-419.0PG.
Post Medical, Inc.: *See—*
Thead, William H.; and Evans, John C., 5,188,598, Cl. 604-110.000.
Potier, Pierre: *See—*
Thal, Claude; Boye, Olivier; Guenard, Daniel; and Potier, Pierre, 5,189,055, Cl. 514-422.000.
Potter, Jerry F.: *See—*
Duffy, Joseph J.; Potter, Jerry F.; Roth, Elwood A.; Samant, Kalika R.; and Todd, Maurice C., 5,187,845, Cl. 28-267.000.
Pottier, Philippe: *See—*
Traonvoez, Jean-Michel; Pottier, Philippe; and Tertre, Dominique, 5,188,728, Cl. 210-90.000.
Pourtau, Jean-Jacques; and Pourtau, Thierry E., to Tomecanic. Complex sound-insulating material and flooring. 5,187,905, Cl. 52-144.000.
Pourtau, Thierry E.: *See—*
Pourtau, Jean-Jacques; and Pourtau, Thierry E., 5,187,905, Cl. 52-144.000.
Powerbloc IBC Canada Inc.: *See—*
Gourdon, Eric, 5,188,568, Cl. 474-13.000.
PPG Industries, Inc.: *See—*
Dilmore, Colonel R.; and Maloney, Bernard A., 5,188,712, Cl. 204-98.000.
Prac-Tech-Cal: *See—*
Hart, Charles, 5,188,614, Cl. 604-197.000.
Prasad, Vidyanatha A.: *See—*
Newallis, Peter E.; Prasad, Vidyanatha A.; and Levy, Edward R., 5,189,195, Cl. 558-208.000.
Pratesi, Edward E., to Bridgeport Fittings, Inc. Apparatus for directly attaching a strain relief connector to an electrical enclosure. 5,189,258, Cl. 174-65.00R.
Praxair Technology, Inc.: *See—*
Lauwers, Eddy J., 5,188,042, Cl. 110-346.000.
Pregenzer, Bruno: *See—*
Trawoger, Werner; and Pregenzer, Bruno, 5,188,530, Cl. 433-92.000.
Prencipe, Michael; McCandlish, Elizabeth F.; and Loprest, Frank J., to Colgate-Palmolive Company. Linear viscoelastic automatic dishwasher compositions containing a crosslinked methyl vinyl ether/-maleic anhydride copolymer. 5,188,752, Cl. 252-96.000.
Presstek, Inc.: *See—*
Lewis, Thomas E.; and Nowak, Michael T., 5,188,032, Cl. 101-453.000.
Preston, John: *See—*
Brittain, David R.; Brown, Steven P.; Cooper, Anthony L.; Longridge, Jethro L.; Morris, Jeffrey J.; Preston, John; and Slater, Linda, 5,189,031, Cl. 514-155.000.
Previdoli, Felix: *See—*
Griffiths, Gareth; Warm, Aleksander; Previdoli, Felix; and Ryan, Gary, 5,189,217, Cl. 564-040.000.
Primeaux, Dudley J.: *See—*
Zimmerman, Robert L.; and Primeaux, Dudley J., 5,189,075, Cl. 521-159.000.
Primeaux, Dudley J., II: *See—*
Humbert, Heiko; Klockemann, Werner; and Primeaux, Dudley J., II, 5,189,073, Cl. 521-110.000.
Primorac, Michael: *See—*
Dixon, Daniel A.; Gierut, Frederick J.; Lawniczak, Joe; Patel, Arvind; and Primorac, Michael, 5,188,547, Cl. 439-886.000.
Primorac, Mitch: *See—*
Ballard, Kenneth D.; Bottino, Ronald E.; Labbe, Mark K.; Lopata, John E.; Malinski, Tom; Meier, Wilhelm; Morelli, Lou; Pacyga, Michael G.; Primorac, Mitch; Roodnat, Bernardus; and Simpson, Shawn, 5,188,546, Cl. 439-885.000.
Prince, Anthony P., to Outboard Marine Corporation. Single lever control. 5,188,206, Cl. 192-0.098.
Prince, Paul R.: *See—*
Schoendorfer, Donald W.; and Prince, Paul R., 5,188,588, Cl. 604-6.000.
Princeton University, The Trustees of: *See—*
Carr, Willian N.; Yu, Hong; and Dong-Il, Dan C., 5,189,323, Cl. 310-40.0MM.
Pringault, Eric: *See—*
Louvard, Daniel; Dudouet, Brigitte; Robine, Sylvie; Arpin, Monique; Pringault, Eric; and Garcia, Alphonse, 5,188,967, Cl. 436-501.000.
Procedes Vernet: *See—*
Chamot, Jean-Pierre, 5,188,287, Cl. 236-34.500.
Procter & Gamble Company, The: *See—*
Connor, Daniel S.; Scheibel, Jeffrey J.; Murch, Bruce P.; Mao, Mark H.; Gosselink, Eugene P.; and Severson, Roland G., Jr., 5,188,769, Cl. 252-548.000.
Kelm, Gary R.; and Bruns, Alan E., 5,189,066, Cl. 514-678.000.
Lodge, Richard W.; and Allen, Charles H., 5,188,859, Cl. 426-560.000.
Schmidt, Diane G.; Buttery, Howard J.; and Norbury, Robert J., 5,188,753, Cl. 252-132.000.
Stipp, Gordon K.; and Kluesener, Bernard W., 5,188,858, Cl. 426-531.000.
Promau S.r.l.: *See—*
Davi, Orazio M., 5,187,959, Cl. 72-9.000.
Pronputhsri, Apiruk: *See—*
Lowell, Ross; and Pronputhsri, Apiruk, 5,188,443, Cl. 362-18.000.
Protee Groupement D'Interet Economique: *See—*
Lemercier, Pierre; and Trystram, Philippe, 5,189,612, Cl. 364-424.020.
Prunotto, Gianpaolo; and Sartorio, Franco, to Amada Company, Limited. Method of positioning a metal sheet for a sheetmetal working machine. 5,187,958, Cl. 72-9.000.
Pryor, George M.: *See—*
Burns, Thomas J.; Page, Edward C.; Gregory, Rita A.; and Pryor, George M., 5,189,606, Cl. 364-401.000.
Public Safety Equipment, Inc.: *See—*
Rose, Steven A., 5,189,344, Cl. 315-293.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Puckett, David E.: *See*—
Freeburne, Steven K.; and Puckett, David E., 5,189,193, Cl. 556-451.000.

Puckett, Lawrence J., to United States of America, Army. Sabot for high dispersion shot shell. 5,189,251, Cl. 102-457.000.

Pullman Industries, Inc.: *See*—
Walworth, Tom M., Jr.; Jurica, Joseph J.; Weilemann, Donald E.; and Turner, Joseph, 5,188,418, Cl. 296-183.000.

Purdue Research Foundation: *See*—
Kleber, Carl J.; and Putt, Mark S., 5,188,819, Cl. 424-49.000.

Puritan-Bennett Corporation: *See*—
Ahmad, Jamil; and Riccitelli, Samuel D., 5,187,970, Cl. 73-1.00G.
Ahmad, Jamil; and Riccitelli, Samuel D., 5,187,971, Cl. 73-1.00G.

Purkait, Bobby K.: *See*—
Condon, Dennis E.; Bley, Robert S.; and Purkait, Bobby K., 5,188,596, Cl. 604-101.000.

Purnell, Charles G., to Brico Engineering Limited. Sintered materials and method thereof. 5,188,659, Cl. 75-246.000.

Puschnerat, Helmut; Reutter, Walter; and Unverzagt, Walter, to Albert-Frankenthal Aktiengesellschaft. Inking roller for a lithographic printing machine. 5,188,030, Cl. 101-348.000.

Putt, Mark S.: *See*—
Kleber, Carl J.; and Putt, Mark S., 5,188,819, Cl. 424-49.000.

Quad/Tech, Inc.: *See*—
Mast, Monte N., 5,187,922, Cl. 53-466.000.

Quant, Wilton E.: *See*—
Tonsor, Andrew J.; Quant, Wilton E.; Hosseini, Javad; Hopkins, Michael F.; and Allen, William E., 5,188,502, Cl. 414-700.000.

Queille, Laurent: *See*—
Berville, Marc; and Queille, Laurent, 5,189,254, Cl. 102-521.000.

Quigley, Peter A., to Fiberspar, Inc. Composite structural member with high bending strength. 5,188,872, Cl. 428-36.200.

Quinlan, Charles W.: *See*—
Kittrell, James R.; and Quinlan, Charles W., 5,189,122, Cl. 526-77.000.

Quintanilla, Alberto: *See*—
Quintanilla, Roberto; and Quintanilla, Alberto, 5,188,454, Cl. 362-399.000.

Quintanilla, Roberto; and Quintanilla, Alberto, to Transmedical Corporation. Lamp handle cover system for surgical lamps. 5,188,454, Cl. 362-399.000.

Rachel-Mae Industries Inc.: *See*—
Picard, Richard, 5,188,365, Cl. 273-189.00R.

Racing Strollers Inc.: *See*—
Baechler, Philip A.; and Armstrong, Timothy O., 5,188,389, Cl. 280-650.000.

Rademacher, Wilhelm: *See*—
Hamprecht, Gerhard; Mayer, Horst; Westphalen, Karl-Otto; Walter, Helmut; Gerber, Matthias; Grossmann, Klaus; and Rademacher, Wilhelm, 5,188,657, Cl. 504-212.000.

Radio Frequency Systems, Inc.: *See*—
Yarsunas, George D.; Brennan, Michael L.; and Duggan, Frank, 5,189,435, Cl. 343-903.000.

Radisson, Joel: *See*—
Bouisset, Michel; and Radisson, Joel, 5,189,170, Cl. 546-114.000.

Radke, Sharon: *See*—
Moloney, Maurice M.; and Radke, Sharon, 5,188,958, Cl. 435-240.400.

Radossi, Sergio, to Hoke Incorporated. Plug valve. 5,188,144, Cl. 137-315.000.

Radtke, Wolfgang. Catheter for percutaneous surgery of blood vessels and organs using radiant energy. 5,188,635, Cl. 606-14.000.

Raether, Wolfgang: *See*—
Mehlhorn, Heinz; Taraschewski, Horst; Schmahl, Gunter; Raether, Wolfgang; and Rosner, Manfred, 5,188,832, Cl. 424-405.000.

Raid, Larry J.: *See*—
Hilty, Calvin A.; Raid, Larry J.; and Grigel, George G., 5,188,325, Cl. 248-224.400.

Rainin Instrument Co., Inc.: *See*—
Magnussen, Jr. Haakon T.; Ruskewicz, Stephen J.; Smith, Gary L.; and Wingo, Anthony K., 5,187,990, Cl. 73-864.180.

Rains, John R., to Vetrisystems, Inc. Fluid dispensing apparatus. 5,188,610, Cl. 604-183.000.

Ralston Purina Company: *See*—
Hemann, Donald R.; and Hamilton, Arthur C., Sr., 5,188,860, Cl. 426-560.000.

Ramasamy, Ravichandran: *See*—
Sherry, A. Dean; Lazar, Istvan; Brucher, Erno; and Ramasamy, Ravichandran, 5,188,816, Cl. 424-9.000.

Ramjit, Harri G.: *See*—
Balani, Suresh K.; Ramjit, Harri G.; Pitzenberger, Steven M.; Schwartz, Michael S.; and Lu, Anthony Y. H., 5,188,950, Cl. 435-120.000.

Ramsbottom, Andrew P.; and Christie, Alan W., to Pilkington P.E. Limited. Edge-illuminated narrow bandwidth holographic filter. 5,189,532, Cl. 359-15.000.

Randleman, Randy: *See*—
Hartelius, Mark; and Randleman, Randy, 5,188,556, Cl. 446-172.000.

Rani, Robert G.; and Hahn, Douglas E., to Sandoz Ltd. Closure device for enteral fluid containers. 5,188,628, Cl. 604-405.000.

Ranpak Corp.: *See*—
Baldacci, Bruno H., 5,188,581, Cl. 493-381.000.

Rap Process Machinery Corp.: *See*—
Hendrickson, Arthur N.; Hanlon, Lawrence C.; and Anderson, Russell W., 5,188,299, Cl. 241-23.000.

Rasser, Bernard: *See*—
De Chambost, Emmanuel; and Rasser, Bernard, 5,189,304, Cl. 250-296.000.

Rassweiler, George: *See*—
Lombardi, Robert; Rassweiler, George; and Stern, Jon M., 5,189,432, Cl. 343-739.000.

Rast, James P. Method and apparatus for lining the interior surface of a high temperature chamber with heat insulation material. 5,188,528, Cl. 432-248.000.

Ratcliffe, William R.: *See*—
Chiang, Lee; and Ratcliffe, William R., 5,188,447, Cl. 362-103.000.

Ratton, Serge: *See*—
Desmurs, Jean-Roger; Kempf, Hubert; Ratton, Serge; and Stephan, Dominique, 5,189,218, Cl. 564-272.000.

Rawlings, David E., to Azon Systems, Inc. Manufacture of thermal break frame sections. 5,187,867, Cl. 29-897.312.

Rawlyk, Michael G., to Northern Telecom Limited. Composite tape structures. 5,188,883, Cl. 428-189.000.

Ray, Leonard N., Jr.: *See*—
Hensel, Robert D.; Ray, Leonard N., Jr.; Reuwer, Joseph F., Jr.; Ross, Jeffrey S.; and Wisnosky, Jerome D., 5,188,876, Cl. 428-76.000.

Raychem Corporation: *See*—
Carlomagno, William D.; Cummings, Dennis E.; and Gliga, Alexandru S., 5,189,507, Cl. 257-777.000.
Dupon, Ryan W.; Thompson, Mark S.; Wiseman, Gary H.; Musolf, Douglas J.; and Tanous, Adam S., 5,188,886, Cl. 428-209.000.

Raynaud, Jean-Pierre: *See*—
Labrie, Fernand; and Raynaud, Jean-Pierre, 5,189,021, Cl. 514-15.000.

Raynes, Edward P.: *See*—
McDonnell, Damien G.; Raynes, Edward P.; and Daley, Robert, 5,189,534, Cl. 359-45.000.

Raynet Corporation: *See*—
Cheng, Eric M., 5,189,671, Cl. 370-94.100.

Redback Electronics Pty, Ltd.: *See*—
Penglase, Kim E.; and Dutkiewicz, Jacek, 5,189,305, Cl. 250-338.100.

Reddington, Ginger M.: *See*—
Reddington, John J.; and Reddington, Ginger M., 5,188,942, Cl. 435-28.000.

Reddington, John J.; and Reddington, Ginger M., to Consultants for Applied Biosciences, Inc. Method for determining bluetongue virus antibodies in serum. 5,188,942, Cl. 435-28.000.

Reefco Manufacturing Corporation: *See*—
Dixon, David A., 5,187,945, Cl. 62-234.000.

Reents, Margaret J.: *See*—
Chandrasekaran, Santosh K.; Reents, Margaret J.; Babcock, John C.; Bowman, Lyle M.; Archibald, Roy D.; and Robinson, Joseph R., 5,188,826, Cl. 424-78.040.

Rehm, Cary A.: *See*—
Marnell, Anthony A., II; Sevigny, Jayme D.; and Rehm, Cary A., 5,188,363, Cl. 273-85.0CP.

Reichel, Klaus T., to Man Roland Druckmaschinen Ag. Printing machine damage control system, and damage control method. 5,188,028, Cl. 101-228.000.

Reiley, Timothy C.: *See*—
Bregman, Mark F.; Hoffman, Paul R.; Ledermann, Peter G.; Moskowitz, Paul A.; Pollak, Roger A.; Reiley, Timothy C.; and Ritter, Mark B., 5,189,363, Cl. 324-158.00P.

Reinartz, Hans; Steffes, Helmut; Volz, Peter; and Beck, Erhard, to Alfred Teves GmbH. Anti-lock hydraulic brake system. 5,188,433, Cl. 303-100.000.

Reisser, Berni; Pflug, Hannes; Khosrawi, Mohammad-Ali; Scharf, Michael; Simon, Helmut; Taudt, Christian; Goll, Wolfgang; Wuetherich, Paul; Fortenbacher, Thomas; and Konrath, Karl, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 5,188,083, Cl. 123-502.000.

Remy, David C.: *See*—
Atkinson, Joseph G.; Claremon, David A.; Baldwin, John J.; Friedman, Paul A.; Remy, David C.; and Stern, Andrew M., 5,188,830, Cl. 424-94.630.

Renault Vehicules Industriels: *See*—
Seiler, Christian, 5,188,382, Cl. 280-96.100.

Repecka, Linas N.: *See*—
Boyd, Jack D.; and Repecka, Linas N., 5,189,116, Cl. 525-423.000.

Reslinger, Michel: *See*—
Hakoun, Roland; Reslinger, Michel; and Galopin, Joan, 5,188,268, Cl. 225-96.500.

Resnick, Ralph L.: *See*—
Rhoades, Lawrence J.; Resnick, Ralph L.; and Rose, John R., 5,189,377, Cl. 324-662.000.

Reutemann, Werner: *See*—
Kiefer, Hans; and Reutemann, Werner, 5,189,216, Cl. 562-600.000.

Reutter, Walter: *See*—
Puschnerat, Helmut; Reutter, Walter; and Unverzagt, Walter, 5,188,030, Cl. 101-348.000.

Reuwer, Joseph F., Jr.: *See*—
Hensel, Robert D.; Ray, Leonard N., Jr.; Reuwer, Joseph F., Jr.; Ross, Jeffrey S.; and Wisnosky, Jerome D., 5,188,876, Cl. 428-76.000.

Rev-A-Shelf, Inc.: *See*—
Maccaferri, Marco, 5,188,405, Cl. 292-204.000.

Revis, Anthony; and Cottington, Levi J., to Dow Corning Corporation. Substrates having an abrasion-resistant coating formed thereon. 5,188,900, Cl. 428-412.000.

Rexnord Corporation: *See*—
Uttke, Russell H. C.; and Carney, Edward J., 5,188,214, Cl. 198-501.000.

Rexroad, John: *See*—
Ouellette, Kevin D.; and Rexroad, John, 5,188,342, Cl. 256-65.000.

Reynolds, Alvin E.: *See*—
Kilmer, Lauren G.; and Reynolds, Alvin E., 5,188,125, Cl. 128-898.000.

Reynolds, Timothy: *See*—
Perry, Robert M.; and Reynolds, Timothy, 5,188,167, Cl. 164-418.000.

Rhein, Thomas: *See*—
Fischer, Jens-Dieter; Rhein, Thomas; and Stickler, Manfred, 5,189,100, Cl. 525-74.000.

Rheinmetall GmbH: *See*—
Foitzik, Roland; Doherr, Karl-Friedrich; Munscher, Dieter; and Saliaris, Christos, 5,188,315, Cl. 244-152.000.

Rhoades, John P., to Copperweld Corporation. Method of making a cam shaft. 5,187,866, Cl. 29-888.100.

Rhoades, Lawrence J., to Extrude Hone Corporation. High frequency vibrational polishing. 5,187,899, Cl. 51-59.0SS.

Rhoades, Lawrence J.; Resnick, Ralph L.; and Rose, John R., to Extrude Hone Corporation. Method and apparatus for co-ordinate measuring using a capacitance probe. 5,189,377, Cl. 324-662.000.

Rhoads, James F. Grass line mowing apparatus. 5,187,926, Cl. 56-16.700.

Rhoads, Timothy W.; Suh, Kyung W.; Kadota, Takao; and Stobby, William G., to Dow Chemical Company, The. Polymeric composition comprising transient foam control agent. 5,189,071, Cl. 521-79.000.

Rhoads, Timothy W.; Kadota, Takao; Suh, Kyung W.; and Stobby, William G., to Dow Chemical Company, The. Polymeric composition comprising transient foam control agent. 5,189,072, Cl. 521-88.000.

Rhodes, Wayne A.; and Johnson, James W. Quik-loc end arrangement for pneumatic outlet gates. 5,188,486, Cl. 406-145.000.

Rhone-Poulenc Chimie: *See*—
Brunet, Jean-Jacques; and Passelaigue, Elisabeth, 5,189,213, Cl. 562-517.000.
Desmurs, Jean; and Lecouve, Jean-Pierre, 5,189,220, Cl. 564-404.000.
Desmurs, Jean-Roger; Kempf, Hubert; Ratton, Serge; and Stephan, Dominique, 5,189,218, Cl. 564-272.000.
Mignani, Gerard; Barthelemy, Pascal; and Meyrueix, Remi, 5,189,134, Cl. 528-68.000.

Rhone-Poulenc Sante: *See*—
Deleuil, Michel; Labourt-Ibarre, Pierre; Rona, Robert; and Statiotis, Eraclis, 5,188,838, Cl. 424-451.000.
Simpkin, Gordon T.; and Husson, Isabelle, 5,188,841, Cl. 424-495.000.

Rhone-Poulence Chimie: *See*—
Delloye, Thierry; and Sabot, Jean-Louis, 5,188,735, Cl. 210-634.000.

Riccitelli, Samuel D.: *See*—
Ahmad, Jamil; and Riccitelli, Samuel D., 5,187,970, Cl. 73-1.00G.
Ahmad, Jamil; and Riccitelli, Samuel D., 5,187,971, Cl. 73-1.00G.

Ricco, Antonio J.: *See*—
Blair, Dianna S.; Freye, Gregory C.; Hughes, Robert C.; Martin, Stephen J.; and Ricco, Antonio J., 5,187,980, Cl. 73-599.000.

Rice, Gillian S. Amusement device and bed for cats. 5,188,059, Cl. 119-28.500.

Richardson, David L.; Grubba, Robert A.; McLaughlin, Timothy P.; and Parran, David B., to Schlumberger Technology Corporation. Pressure control system and cable guiding device for use in drilling wells. 5,188,173, Cl. 166-77.000.

Richter, Hans J.; Hibst, Hartmut; and Fischer, Gerd, to BASF Magnetics GmbH. Production of a magnetic recording medium. 5,188,865, Cl. 427-128.000.

Ricoh Company, Ltd.: *See*—
Aihara, Hideo; Kurisu, Norio; Takei, Kazuhiro; and Watanabe, Yasuhiko, 5,189,007, Cl. 503-207.000.
Matsuda, Itaru; and Ohkaji, Hiroyuki, 5,189,479, Cl. 355-274.000.
Nakajima, Masato, 5,189,693, Cl. 379-100.000.
Sugiyama, Shoichi; Arai, Fumiaki; Nonogaki, Masayasu; Natori, Yuji; Yamaguchi, Hideyuki; Ueda, Hitoshi; Tomita, Hiroshi; and Kato, Kotaro, 5,188,881, Cl. 428-143.000.
Tsubuko, Kazuo; Kuramoto, Shinichi; Umemura, Kazuhiko; Uematsu, Hidemi; and Okawara, Makoto, 5,189,102, Cl. 525-112.000.

Riedinger, Hans-Peter: *See*—
Mayer, Hartwig; Hofmann, Manfred; and Riedinger, Hans-Peter, 5,189,597, Cl. 361-391.000.

Riehl, Fred, to Robertshaw Controls Company. Jet burner construction, heating apparatus utilizing the jet burner construction and method of making the same. 5,188,526, Cl. 431-286.000.

Riesen, Jon A.: *See*—
Crocker, William A.; Haygarth, John C.; Riesen, Jon A.; and Peterson, John R., 5,188,809, Cl. 423-2.000.

Riezler, Wendelin, to Grob Werke GmbH & Co. KG. Apparatus for the transportation of goods to be conveyed. 5,188,215, Cl. 198-781.000.

Riley, John J.; and Opila, Jerome E., to Stanley Aviation Corporation. Spring loaded coupling with positive spring latch. 5,188,400, Cl. 285-233.000.

Ringot, Jean-Marc; and Sauvaige, Henri, to Cartonneries de la Lys-Ondulys. Apparatus for orientating load on a linear conveyor. 5,188,211, Cl. 198-411.000.

Rinnovatore, James V., to Applied Materials, Inc. Reduction of particulate contaminants in chemical-vapor-deposition apparatus. 5,188,672, Cl. 118-715.000.

Rio Properties, Inc.: *See*—
Marnell, Anthony A., II; Sevigny, Jayme D.; and Rehm, Cary A., 5,188,363, Cl. 273-85.0CP.

Ripley, Thomas L., Sr.; and Indyk, Henry, to Greenway Services, Inc., The. Turfing systems for stadia. 5,187,894, Cl. 47-86.000.

Rish, Jeff W., III: *See*—
Stefanov, Michael E.; Biggers, Rand R.; Rish, Jeff W., III; Henderson, Girardeau L.; and Pham, Chuong N., 5,188,171, Cl. 165-96.000.

Riso Kagaku Corporation: *See*—
Hasegawa, Takanori, 5,188,301, Cl. 241-33.000.

Ritter, Mark B.: *See*—
Bregman, Mark F.; Hoffman, Paul R.; Ledermann, Peter G.; Moskowitz, Paul A.; Pollak, Roger A.; Reiley, Timothy C.; and Ritter, Mark B., 5,189,363, Cl. 324-158.00P.

Ritter, William J.: *See*—
Borgmeyer, Virgil L.; Trice, Chester F.; Tempco, Dale A.; Clark, Thomas F.; Ritter, William J.; and Huests, Leo H., 5,189,257, Cl. 174-50.000.

Ritvik Group Inc., The: *See*—
Bertrand, Victor J., 5,188,221, Cl. 206-44.00R.

Rivera, James A.: *See*—
Johnson, Gerald E.; Rivera, James A.; and McClement, Arthur, 5,188,209, Cl. 198-336.000.

Robbins, Phillips W.: *See*—
Overbye, Karen M.; Pero, Janice; and Robbins, Phillips W., 5,188,961, Cl. 435-252.310.

Roberge, James K.; and Gray, Martha L., to Massachusetts Institute of Technology. Method for the measurment of capacitance, with application to linear measurement of distance. 5,189,376, Cl. 324-662.000.

Roberson, David L.: *See*—
Watkins, Harry E.; and Roberson, David L., 5,189,397, Cl. 340-572.000.

Robert Bosch GmbH: *See*—
Alvarez-Avila, Carlos; Ruesseler, Karl-Friedrich; Tschoeke, Helmut; and Konrath, Karl, 5,188,076, Cl. 123-357.000.
Birk, Manfred; Engel, Gerhard; Eyberg, Wilhelm; Henze, Thomas; and Schmitt, Alfred, 5,188,081, Cl. 123-479.000.
Graner, Juergen; and Kubach, Hans, 5,188,336, Cl. 251-129.160.
Heyke, Klaus; Spitz, Richard; Seidel, Hans-Joachim; Jennrich, Irene; Pfander, Werner; and Vohr, Armin, 5,189,080, Cl. 523-212.000.
Karnopp, Dean, 5,189,613, Cl. 364-424.050.
Kraemer, Manfred; and Schultheiss, Gerold, 5,188,074, Cl. 123-357.000.
Reisser, Berni; Pflug, Hannes; Khosrawi, Mohammad-Ali; Scharf, Michael; Simon, Helmut; Taudt, Christian; Goll, Wolfgang; Wuetherich, Paul; Fortenbacher, Thomas; and Konrath, Karl, 5,188,083, Cl. 123-502.000.
Rubel, Erich; Haegele, Karl-Heinz; Panther, Michael; and Gatter, Klaus, 5,189,615, Cl. 364-424.050.
Ruf, Wolf-Dieter; Hartmann, Uwe; Kost, Friedrich; and Van Zanten, Anton, 5,188,434, Cl. 303-111.000.
Straubel, Max; and Kellermann, Karl, 5,188,075, Cl. 123-357.000.
Willmann, Karl-Heinz, 5,188,435, Cl. 303-113.200.
Willmann, Karl-Heinz, 5,188,437, Cl. 303-113.200.

Robert, Jean-Louis: *See*—
Mosser, Vincent; Robert, Jean-Louis; and Contreras, Sylvie, 5,187,984, Cl. 73-708.000.

Roberts, Brian W.: *See*—
Stanley, Johnny T.; and Roberts, Brian W., 5,187,852, Cl. 29-243.570.

Roberts, Bryan G.: *See*—
Willis, Robert J.; O'Mahony, Mary J.; and Roberts, Bryan G., 5,189,053, Cl. 514-397.000.

Roberts, Mark L.; and Davis, Jay C., to United States of America, Energy. Small system for tritium accelerator mass spectrometry. 5,189,302, Cl. 250-288.000.

Robertshaw Controls Company: *See*—
Riehl, Fred, 5,188,526, Cl. 431-286.000.

Robine, Sylvie: *See*—
Louvard, Daniel; Dudouet, Brigitte; Robine, Sylvie; Arpin, Monique; Pringault, Eric; and Garcia, Alphonse, 5,188,967, Cl. 436-501.000.

Robinson, John M., to Glaxo Group Limited. Debrominating dibromofluoromethane with tributyltin hydride. 5,189,229, Cl. 570-176.000.

Robinson, Joseph R.: *See*—
Chandrasekaran, Santosh K.; Reents, Margaret J.; Babcock, John C.; Bowman, Lyle M.; Archibald, Roy D.; and Robinson, Joseph R., 5,188,826, Cl. 424-78.040.

Rocha, Octavio; and Espinoza, Serafin C. Thermal pads for heatable turntable. 5,189,282, Cl. 219-467.000.

Roche, Mortimer P.; and Scarpelli, Ademar. Positionable tire scraper for dual tires. 5,188,394, Cl. 280-856.000.

Roche, Peter: *See*—
Bertho, Dominique; Roche, Peter; and McNamara, Paddy, 5,188,534, Cl. 439-79.000.

Rocket of London Limited: *See*—
Phipps, Jeffrey H.; and Field, Stanley B., 5,188,122, Cl. 128-788.000.

Rockwell International Corporation: *See*—
Depa, Louis S.; and Fisher, Robert L., 5,188,031, Cl. 101-415.100.
Fadner, Thomas A., 5,188,033, Cl. 101-467.000.

Rocky Mountain Research, Inc.: *See—*
Orth, Jeffrey L., 5,188,604, Cl. 604-153.000.

Roden, William A., to General Dynamics Corporation Convair Division. Guidance system for automatic riveters. 5,189,514, Cl. 358-125.000.

Rodriguez, Juan D.: *See—*
Kuehner, Gerhard; Vogel, Karl; Rodriguez, Juan D.; and Clement, Charles D., 5,188,806, Cl. 422-151.000.

Rody, Jean: *See—*
Birbaum, Jean-Luc; Rody, Jean; Slongo, Mario; and Valet, Andreas, 5,189,084, Cl. 524-100.000.

Rogers, Fred A.: *See—*
Boisvert, John A.; Rogers, Fred A.; Solley, Dennis J.; Tatham, David A.; and Wilkins, Raymond G., 5,189,277, Cl. 219-121.540.

Rogers, Stephen G.: *See—*
Shah, Dilip M.; Rogers, Stephen G.; Horsch, Robert B.; and Fraley, Robert T., 5,188,642, Cl. 47-58.000.

Rohm Co., Ltd.: *See—*
Hoshiba, Kazuhiro, 5,189,594, Cl. 257-295.000.

Rohm GmbH Chemische Fabrik: *See—*
Fischer, Jens-Dieter; Rhein, Thomas; and Stickler, Manfred, 5,189,100, Cl. 525-74.000.

Rohm and Haas Company: *See—*
Ikari, Hirotake; and Takahashi, Teruyoshi, 5,188,663, Cl. 106-18.330.
LaFleur, Edward E.; Amici, Robert M.; and Work, William J., 5,189,097, Cl. 525-57.000.

Rohr, Gunter; and Norz, Wolfgang, to Union Special GmbH. Production of circular seams on a workpiece. 5,188,047, Cl. 112-262.200.

Rohrmoser, Alois, to Varpat Patentverwertungs AG. Ski binding with a holding mechanism for the front and heel jaws. 5,188,388, Cl. 280-633.000.

Rolls-Royce plc: *See—*
Daines, John W., 5,188,275, Cl. 228-2.000.

Romanus, Thomas W. Dental flossing tool. 5,188,133, Cl. 132-325.000.

Rona, Robert: *See—*
Deleuil, Michel; Labourt-Ibarre, Pierre; Rona, Robert; and Statiotis, Eraclis, 5,188,838, Cl. 424-451.000.

Roodnat, Bernardus: *See—*
Ballard, Kenneth D.; Bottino, Ronald E.; Labbe, Mark K.; Lopata, John E.; Malinski, Tom; Meier, Wilhelm; Morelli, Lou; Pacyga, Michael G.; Primorac, Mitch; Roodnat, Bernardus; and Simpson, Shawn, 5,188,546, Cl. 439-885.000.

Rose, Edgar: *See—*
Ferguson, Arthur R.; and Rose, Edgar, 5,188,548, Cl. 440-61.000.

Rose, John R.: *See—*
Rhoades, Lawrence J.; Resnick, Ralph L.; and Rose, John R., 5,189,377, Cl. 324-662.000.

Rose, Steven A., to Public Safety Equipment, Inc. Solid state strobe tube control circuit with programmable flash pattern. 5,189,344, Cl. 315-293.000.

Rosen, Allen: *See—*
Griggs, Bruce F.; Gandek, Thomas P.; Pikulin, Michael A.; and Rosen, Allen, 5,188,708, Cl. 162-40.000.

Rosen, Robert K.: *See—*
LaPointe, Robert E.; Rosen, Robert K.; and Nickias, Peter N., 5,189,192, Cl. 556-11.000.

Rosendahl, Hartmut: *See—*
Koschorek, Ralf; Kruger, Gerd; Rosendahl, Hartmut; and Rothen, Johann, 5,187,977, Cl. 73-146.000.

Rosenfeld, Azriel: *See—*
Weiss, Isaac; and Rosenfeld, Azriel, 5,189,711, Cl. 382-25.000.

Rosner, Manfred: *See—*
Mehlhorn, Heinz; Taraschewski, Horst; Schmahl, Gunter; Raether, Wolfgang; and Rosner, Manfred, 5,188,832, Cl. 424-405.000.

Ross, Alan, to Dominion Plastics Inc. Pivot rod connector for moveable shutters. 5,187,896, Cl. 49-74.00L.

Ross, Jeffrey S.: *See—*
Hensel, Robert D.; Ray, Leonard N., Jr.; Reuwer, Joseph F., Jr.; Ross, Jeffrey S.; and Wisnosky, Jerome D., 5,188,876, Cl. 428-76.000.

Rostek, Charles J., Jr., to Monsanto Company. Heterocyclic thiol-based sulfenimide compounds. 5,189,174, Cl. 546-255.000.

Rotenberg, Yefim; and Wolfe, Mitchel T. Apparatus & Method for indirect evaporative cooling of a fluid. 5,187,946, Cl. 62-314.000.

Roth, Elwood A.: *See—*
Duffy, Joseph J.; Potter, Jerry F.; Roth, Elwood A.; Samant, Kalika R.; and Todd, Maurice C., 5,187,845, Cl. 28-267.000.

Roth, Steven A. Seismic connector with retaining clip. 5,188,317, Cl. 248-59.000.

Rothe, Anselm: *See—*
Eikmeier, Heino; and Rothe, Anselm, 5,188,966, Cl. 436-170.000.

Rothen, Johann: *See—*
Koschorek, Ralf; Kruger, Gerd; Rosendahl, Hartmut; and Rothen, Johann, 5,187,977, Cl. 73-146.000.

Rothstein, Stephen G.: *See—*
Miles, Richard; and Rothstein, Stephen G., 5,188,100, Cl. 128-207.140.

Rotter, Gerhard, to Athana Incorporated. Unidirectional tape tension element and method of use thereof. 5,188,310, Cl. 242-199.000.

Roussel Uclaf: *See—*
Czech, Jorg; Sedlacek, Hans H.; Nedelec, Lucien; Guillaume, Jacques; and Marchandeau, Christian, 5,189,065, Cl. 514-656.000.
Labrie, Fernand; and Raynaud, Jean-Pierre, 5,189,021, Cl. 514-15.000.

Rovner, Michael S., to Symbol Technologies, Inc. Voltage drive amplifier with voltage feedback. 5,189,356, Cl. 318-685.000.

Rowe, W. Bruce: *See—*
Madsen, David C.; and Rowe, W. Bruce, 5,189,016, Cl. 514-2.000.

Roy F. Weston, Inc.: *See—*
Noland, John; and Cosmos, Michael, 5,188,041, Cl. 110-246.000.

Royal Domaine Inc.: *See—*
Mazin, Jack G.; and Lalji, Amir, 5,188,861, Cl. 426-640.000.

Royal Institution for the Advancement of Learning (McGill University), The: *See—*
Kamal, Musa R.; Lohfink, Gunter; Arghyris, Laurent; and Hozhabr-Ghelichi, Sassan, 5,188,784, Cl. 264-108.000.

Rphm GmbH: *See—*
Pennewiss, Horst, 5,188,770, Cl. 252-56.00S.

RTC Industries, Inc.: *See—*
Nathan, Walter, 5,188,413, Cl. 294-87.200.

Rubel, Edward R. Directional fastener assembly. 5,188,441, Cl. 305-54.000.

Rubel, Erich; Haegele, Karl-Heinz; Panther, Michael; and Gatter, Klaus, to Robert Bosch GmbH. Semi-active suspension control. 5,189,615, Cl. 364-424.050.

Ruch, David E.: *See—*
Kauffman, William J.; Lilley, George L.; and Ruch, David E., 5,188,874, Cl. 428-47.000.

Rudersdorf, Friedemann A.: *See—*
Forster, Richard F.; and Rudersdorf, Friedemann A., 5,188,485, Cl. 405-232.000.

Rudolph, Joachim, to Werner & Pfleiderer GmbH. Centrifugal dryer for separation of surface water from plastic granules. 5,187,880, Cl. 34-8.000.

Ruegenberg, Gervin: *See—*
Lieber, Winfried; and Ruegenberg, Gervin, 5,189,300, Cl. 250-227.240.

Ruenitz, Peter C., to University of Georgia Research Foundation, Inc. Triarylethylene carboxylic acids with estrogenic activity. 5,189,212, Cl. 562-468.000.

Ruesseler, Karl-Friedrich: *See—*
Alvarez-Avila, Carlos; Ruesseler, Karl-Friedrich; Tschoeke, Helmut; and Konrath, Karl, 5,188,076, Cl. 123-357.000.

Ruf, Wolf-Dieter; Hartmann, Uwe; Kost, Friedrich; and Van Zanten, Anton, to Robert Bosch GmbH. Process for increasing the controllability of a vehicle. 5,188,434, Cl. 303-111.000.

Ruffinengo, Piero G. Ski binding incorporating both electronic and mechanical release systems. 5,188,387, Cl. 280-612.000.

Ruhrgas Aktiengesellschaft: *See—*
Laiquddin, Sahibzada S. R.; and Lenzel Franz J., 5,188,527, Cl. 432-3.000.

Ruiz, Carlos D. Golf club holder. 5,188,243, Cl. 211-70.200.

Rumpza, Paul D.; and Wulfing, James J., to Minnesota Mining and Manufacturing Company. Lanced shutter tab for disk cartridges. 5,189,586, Cl. 360-133.000.

Runge, Louis L., to Westinghouse Electric Corp. Transition for electrical apparatus. 5,189,596, Cl. 361-355.000.

Rupprecht, Peter: *See—*
Heinrich, Hansjorg; and Rupprecht, Peter, 5,188,463, Cl. 384-441.000.

Ruschle, Eugen; and Haninger, Rudolf, to Chiron-Werke GmbH & Co. KG. Machine tool and method for opening and closing a gripper. 5,188,579, Cl. 483-1.000.

Rushe, Eugene T.: *See—*
Winkelbauer, Howard M.; and Rushe, Eugene T., 5,188,989, Cl. 501-17.000.

Ruskewicz, Stephen J.: *See—*
Magnussen, Jr. Haakon T.; Ruskewicz, Stephen J.; Smith, Gary L.; and Wingo, Anthony K., 5,187,990, Cl. 73-864.180.

Rustad, Allan P.: *See—*
Cook, Harold T., Jr.; Furlong, Donn B.; Svendsen, Robert A.; and Rustad, Allan P., 5,188,146, Cl. 137-580.000.

Rutledge, Gary L.; and Pitcher, Edgar R., to Marrelli, John C. Plastic film bag manufacturing apparatus and associated methods, and plastic film bags produced thereby. 5,188,580, Cl. 493-225.000.

Ryan, Gary: *See—*
Griffiths, Gareth; Warm, Aleksander; Previdoli, Felix; and Ryan, Gary, 5,189,217, Cl. 564-040.000.

Ryan, John T., to Altman Stage Lighting Co., Inc. Color mixing lighting assembly. 5,188,452, Cl. 362-293.000.

Ryan, Paul T., to Saitek Limited. Electronic game apparatus. 5,188,368, Cl. 273-237.000.

Ryder, Hughie: *See—*
Donoho, Paul L.; Peterson, Mitchell F.; Ryder, Hughie; and Keeling, William H., 5,189,642, Cl. 367-15.000.

Ryobi Ltd.: *See—*
Ogawa, Kazunobu, 5,188,152, Cl. 138-129.000.

Ryobi Motor Products Corporation: *See—*
McCracken, Robert E., 5,188,492, Cl. 409-182.000.

Sabot, Jean-Louis: *See—*
Delloye, Thierry; and Sabot, Jean-Louis, 5,188,735, Cl. 210-634.000.

Sabottke, Craig Y., to Exxon Research and Engineering Company. Controlling temperature in a fluid hydrocarbon conversion and cracking apparatus and process comprising a novel feed injection system. 5,188,805, Cl. 422-111.000.

Sada, Hiroyuki: *See—*
Moriyama, Hiroshi; Sada, Hiroyuki; and Shiozawa, Takeo, 5,189,311, Cl. 307-10.100.

Sadana, Devendra K.: *See—*
deSouza, Joel; P.; Greiner, James H.; and Sadana, Devendra K., 5,188,978, Cl. 437-160.000.

Saegusa, Takashi: *See—*
Yasukawa, Seiichi; and Saegusa, Takashi, 5,189,466, Cl. 354-412.000.

Saeki, Hiroaki: *See—*
Ejiri, Yuki; Okazaki, Tsutomu; Yamada, Koichiro; Niida, Chiaki; Saeki, Hiroaki; and Honma, Hideki, 5,188,073, Cl. 123-339.000.

Saeki, Tatsuo, to Yamaha Corporation. Acoustic apparatus. 5,189,706, Cl. 381-159.000.

Safety Shot Limited Partnership: *See—*
Huffman, John; and Shannon, John, 5,189,252, Cl. 102-459.000.

Sagami Chemical Research Center: *See—*
Kobayashi, Yo-ichi; Omori, Muneki; and Yamada, Chikako, 5,188,829, Cl. 424-94.630.
Misawa, Yoshihisa; Kondo, Hisao; Tsutsumi, Tetsuya; Hayashi, Masahiro; Sugimori, Daisuke; Matsuba, Yorishige; Isozaki, Masashi; Nishigaki, Hiroharu; Yazawa, Kazunaga; and Kondo, Kiyosi, 5,189,189, Cl. 554-194.000.

Sage, Ian C.: *See—*
Coates, David; Sage, Ian C.; and Jenner, John A., 5,188,815, Cl. 424-7.100.

Sahara, Kunizo: *See—*
Nakao, Takashi; Emoto, Yoshiaki; Sekiguchi, Koichiro; Iketani, Masayuki; Sahara, Kunizo; Yoshida, Ikuo; Kohno, Akiomi; Horino, Masaya; Kamohara, Hideaki; Irie, Shouichi; Akasaki, Hiroshi; and Otsuka, Kanji, 5,188,280, Cl. 228-123.000.

Sailer, Heinrich, to Siemens Aktiengesellschaft. Bidirectional light waveguide telecommunication system. 5,189,544, Cl. 359-153.000.

St. Clair, Terry L.: *See—*
Gerber, Margaret K.; and St. Clair, Terry L., 5,189,127, Cl. 526-262.000.
Gerber, Margaret K.; and St. Clair, Terry L., 5,189,129, Cl. 526-262.000.

Saita, Seiji, to Kabushiki Kaisha Yamada Corp. Pumping device driven by a fluid driven reciprocating actuator. 5,188,518, Cl. 417-403.000.

Saitek Limited: *See—*
Ryan, Paul T., 5,188,368, Cl. 273-237.000.

Saito, Akio: *See—*
Arashima, Teruo; Kimura, Makiko; Kashino, Toshio; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; and Orikasa, Tsuyoshi, 5,189,443, Cl. 346-140.00R.

Saito, Asao: *See—*
Arashima, Teruo; Kimura, Makiko; Kashino, Toshio; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; and Orikasa, Tsuyoshi, 5,189,443, Cl. 346-140.00R.

Saito, Haruo; Kranz, David M.; Eisen, Herman N.; and Tonegawa, Susumu, to Massachusetts Institute of Technology. Meterodimeric T lymphocyte receptor antibody. 5,189,147, Cl. 530-387.900.

Saito, Katsuyuki: *See—*
Izumi, Akio; Maki, Yasuhito; Narabu, Tadakuni; Sato, Maki; Otsu, Takaji; and Saito, Katsuyuki, 5,189,499, Cl. 257-215.000.

Saito, Kenji; Matsuo, Sanshiro; and Oda, Yoshiaki, to Sumitomo Chemical Company, Limited. Process for producing furylpropargylcarbinol and a derivative thereof. 5,189,186, Cl. 549-497.000.

Saito, Muneki: *See—*
Furusaki, Shinichi; Matsuda, Masaoki; Saito, Muneki; Shiomi, Yasushi; Nakamura, Yasuo; and Tobita, Michio, 5,189,225, Cl. 568-649.000.

Saito, Shigeru. Artificial dental root. 5,188,109, Cl. 128-635.000.

Saito, Shinji; and Kobayashi, Akira, to Fujitsu Limited. Pulse width detecting circuit and PLL synthesizer circuit using the same. 5,189,379, Cl. 331-1.00A.

Saito, Sumiko: *See—*
Sato, Takeshi; and Saito, Sumiko, 5,188,113, Cl. 128-661.090.

Saito, Takashi: *See—*
Mori, Kazuhiko; Kawasaki, Minoru; Yoshida, Shin; Murase, Hiroyuki; Saito, Takashi; Tanaka, Kouji; and Shimura, Yoshio, 5,188,799, Cl. 420-469.000.

Saito, Yoichi, to Fuji Jukogyo Kabushiki Kaisha. Method for controlling an exhaust gas recirculation system of a flexible fuel vehicle engine. 5,188,087, Cl. 123-571.000.

Saito, Yutaka: *See—*
Nakano, Hirofumi; Kawada, Shozo; Uosaki, Yoichi; Saito, Yutaka; Gomi, Katsushige; and Iwazaki, Toshiaki, 5,189,187, Cl. 549-548.000.

Saive, Roland: *See—*
Bueschges, Ulrich; and Saive, Roland, 5,188,998, Cl. 502-107.000.

Sajic, Branko: *See—*
Shapiro, Irene; and Sajic, Branko, 5,188,823, Cl. 424-65.000.

Sakai, Akio: *See—*
Nishiyama, Akio; Koyama, Takashi; Aikawa, Yasutaka; Ohshima, Hideo; Terao, Yuichiro; Kato, Munenori; and Sakai, Akio, 5,188,908, Cl. 428-698.000.

Sakai, Manabu: *See—*
Kawahara, Sadao; Yamamura, Michio; Yuda, Jiro; Kojima, Yoshinori; Yamamoto, Shuichi; Sakai, Manabu; Muramatsu, Shigeru; and Aiba, Osamu, 5,188,521, Cl. 418-55.300.

Sakai, Shuji: *See—*
Tada, Naofumi; Iida, Fumio; Takahashi, Ryukichi; Maki, Naoki; Sakai, Shuji; and Hotta, Yoshiji, 5,189,386, Cl. 335-216.000.

Sakai, Tatsuo: *See—*
Sasaki, Akira; Hayakawa, Yoshikazu; Sakuma, Yuichi; Sakai, Tatsuo; and Kihara, Yoshinori, 5,189,266, Cl. 181-227.000.

Sakai, Tetsushi: *See—*
Nakayama, Satoshi; and Sakai, Tetsushi, 5,189,504, Cl. 257-422.000.

Sakai, Yoshio: *See—*
Abe, Atsushi; and Sakai, Yoshio, 5,187,870, Cl. 33-324.000.

Sakakibara, Kiyohiko, to Mitsubishi Denki Kabushiki Kaisha. Charge coupled device. 5,189,498, Cl. 257-216.000.

Sakakibara, Koji; and Kamabora, Koichi, to Nippondenso Co., Ltd. Knocking control system for internal combustion engine. 5,188,080, Cl. 123-425.000.

Sakamoto, Koichiro; and Yoshida, Hiroichi, to Sharp Kabushiki Kaisha. Character processing system having editing function. 5,189,731, Cl. 395-146.000.

Sako, Yukitoshi; Kamikawa, Fumitoshi; and Ohta, Sayuri, to Seiko Epson Corporation. Small-sized electronic device with depth gauge. 5,189,646, Cl. 368-10.000.

Sakuma, Mikio: *See—*
Nagao, Yoshiaki; Kobayashi, Atsuhiro; and Sakuma, Mikio, 5,188,469, Cl. 400-615.200.

Sakuma, Yuichi: *See—*
Sasaki, Akira; Hayakawa, Yoshikazu; Sakuma, Yuichi; Sakai, Tatsuo; and Kihara, Yoshinori, 5,189,266, Cl. 181-227.000.

Sakurai, Atsushi; and Tamura, Junichi, to Canon Kabushiki Kaisha. Voice processing apparatus for varying the speed with which a voice signal is reproduced. 5,189,702, Cl. 381-51.000.

Sakurai, Fujio: *See—*
Kasai, Kiyoshi; Sakurai, Fujio; and Tadenuma, Hiroshi, 5,189,107, Cl. 525-244.000.

Salancy, William A.: *See—*
Murphy, Charles F., III; Salancy, William A.; Silverberg, Morton; and Supron, Steven A., 5,188,025, Cl. 101-91.000.

Saliaris, Christos: *See—*
Foitzik, Roland; Doherr, Karl-Friedrich; Munscher, Dieter; and Saliaris, Christos, 5,188,315, Cl. 244-152.000.

Salierno, Mark: *See—*
Dressler, Jim; Johnston, Bill; Loftis, Gerald; Salierno, Mark; Solt, Gordon; Spira, Jeff; and Tarsha, Manual, 5,188,316, Cl. 244-234.000.

Salituro, Francesco G.; and Baron, Bruce M., to Merrell Dow Pharmaceuticals Inc. 3-amidoindolyl derivatives and pharmaceutical compositions thereof. 5,189,054, Cl. 514-419.000.

Samant, Kalika R.: *See—*
Duffy, Joseph J.; Potter, Jerry F.; Roth, Elwood A.; Samant, Kalika R.; and Todd, Maurice C., 5,187,845, Cl. 28-267.000.

Sams, Bernard: *See—*
Poore, Cyril; and Sams, Bernard, 5,188,253, Cl. 220-212.000.

Samson, Gene, to Target Therapeutics Inc. Extendable guidewire assembly. 5,188,621, Cl. 604-283.000.

Samsung Electronic Devices Co., Ltd.: *See—*
Park, Hae-kyun, 5,189,334, Cl. 313-402.000.

Samsung Electronics Co., Ltd.: *See—*
Choi, Hwan Y., 5,188,311, Cl. 242-204.000.
Jung-Il, Seo; and Han-Oh, Kewon, 5,187,949, Cl. 62-411.000.
Kim, Hyung S.; and Kim, Kyoung H., 5,187,954, Cl. 68-3.00R.
Kim, Yong M.; and Oh, Jeh S., 5,187,836, Cl. 16-231.000.
Lee, Jae-Hong, 5,189,657, Cl. 369-59.000.
Lim, Gui Y., 5,188,169, Cl. 165-20.000.
Sim, Myeong-bo; Park, Jeong-il; and Lee, Cheol-weon, 5,189,568, Cl. 360-73.130.

Samuel, Ronald. Fluoroscopy orientation device. 5,189,690, Cl. 378-162.000.

Sanada, Kazunori: *See—*
Sashida, Nobuo; Sanada, Kazunori; and Koyama, Masato, 5,189,603, Cl. 363-160.000.

Sanada, Takashi: *See—*
Abe, Hiroomi; Nagaoka, Kenji; and Sanada, Takashi, 5,189,103, Cl. 525-133.000.
Imai, Akio; Tsuji, Mitsuji; Sanada, Takashi; and Yamamoto, Keisaku, 5,189,108, Cl. 525-285.000.

Sanden Corporation: *See—*
Komatsu, Syunji; Kuribara, Masaru; and Kobayashi, Kazumitsu, 5,187,942, Cl. 62-149.000.

Sanders, Steven C.: *See—*
Finnemore, Douglas K.; Miller, Theodore A.; Ostenson, Jerome E.; Schwartzkopf, Louis A.; and Sanders, Steven C., 5,189,260, Cl. 174-125.100.

Sandhu, Gurtej S.: *See—*
Yu, Chris C.; Sandhu, Gurtej S.; and Gilton, Terry, 5,188,723, Cl. 205-125.000.

Sandoz Ltd.: *See—*
Danner, Bernard, 5,189,111, Cl. 525-328.200.
Kapa, Prasad K.; and Chen, Kau-Ming, 5,189,164, Cl. 544-297.000.
Rani, Robert G.; and Hahn, Douglas E., 5,188,628, Cl. 604-405.000.
Seckinger, Karl; and Kuhnen, Fred, 5,188,656, Cl. 504-246.000.
von Tobel, Hans, 5,188,640, Cl. 8-549.000.

Sanenobu, Kazuyuki: *See—*
Nitta, Shozo; Kurihara, Hideshi; Sanenobu, Kazuyuki; Ichihashi, Tetsuo; and Takagi, Norio, 5,188,774, Cl. 264-22.000.

Sankpal, Bak G.; and Carnago, John F., to Ford Motor Company. Method and system for improving smoothness of shifts in an automatic transmission. 5,188,005, Cl. 74-866.000.

Sano, Eiichi: *See—*
Anno, Masahiro; Mizuno, Hiroshi; Etou, Kouichi; and Sano, Eiichi, 5,189,476, Cl. 355-259.000.

VOL 1147 ISS 4 FE 23 1993 UMI

VOL 1147 ISS 4 FE 23 1993 UMI

Sano, Fumiaki: *See—*
Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, 5,188,520, Cl. 418-55.100.

Sano, Kenichi; Nishiyama, Masaaki; Suzuki, Toshiro; Wakabayashi, Shoichiro; and Miyahara, Kuniaki, to Showa Denko K.K. Process for preparation of lower fatty acid ester. 5,189,201, Cl. 560-205.000.

Sano, Koichi: *See—*
Takane, Atsushi; Koizumi, Hideaki; and Sano, Koichi, 5,189,369, Cl. 324-306.000.

Sanofi: *See—*
Bouisset, Michel; and Radisson, Joel, 5,189,170, Cl. 546-114.000.
Frehel, Daniel; Gully, Danielle; Valette, Gerard; and Bras, Jean-Pierre, 5,189,049, Cl. 514-371.000.

Santa Barbara Research Center: *See—*
Ahlgren, William L., 5,189,297, Cl. 250-214.100.

Santhanam, Anakkavur T.; and Godse, Rajendra V., to Kennametal Inc. Coated cutting insert. 5,188,489, Cl. 407-119.000.

Santoro, Ettore: *See—*
Canova, Luciano; Santoro, Ettore; Bonoli, Luciano; and Falchi, Paolo, 5,189,231, Cl. 585-4.000.

Sanyo Electric Co., Ltd.: *See—*
Takahashi, Hisakazu; Baba, Yoko; Ezaki, Kenichi; Okamoto, Yasuhiko; Shibata, Kenichi; Kuroki, Kazuhiko; and Yasuyama, Shigeyuki, 5,188,993, Cl. 501-136.000.

Sanyo-Kokusaku Pulp Co., Ltd.: *See—*
Mamoto, Katsuhiro; Nakamura, Yasuyuki; Kawaoka, Akiyoshi; and Tabata, Masahiko, 5,188,851, Cl. 426-2.000.

Sargent, Dennis; Aldridge, Donald; and McKenney, Bill, to Lion Apparel, Inc. Support arrangements for firefigher's self-contained breathing apparatus. 5,188,267, Cl. 224-215.000.

Sarracco, Luigi, to Videocolor S.p.A. Device for electron beam control in a cathode ray tube. 5,189,336, Cl. 313-440.000.

Sartorio, Franco: *See—*
Prunotto, Gianpaolo; and Sartorio, Franco, 5,187,958, Cl. 72-9.000.

Sasabe, Setsuo: *See—*
Matsubara, Motoki; Sasabe, Setsuo; Hongo, Takayasu; and Fujii, Kenichi, 5,188,470, Cl. 400-621.000.

Sasagawa, Shuzo: *See—*
Nishino, Kazunari; Sasagawa, Shuzo; Katsurayama, Hirofumi; Igaue, Takamitsu; and Kido, Tsutomu, 5,188,895, Cl. 428-373.000.

Sasaki, Akira; Hayakawa, Yoshikazu; Sakuma, Yuichi; Sakai, Tatsuo; and Kihara, Yoshinori, to Nissan Motor Co., Ltd. Vehicular exhaust resonance suppression system and sensing means therefore. 5,189,266, Cl. 181-227.000.

Sasaki, Naoto: *See—*
Takeda, Fumio; Kojima, Yoshio; Kaneko, Tsuneo; Ishibashi, Yutaka; Sasaki, Naoto; and Tsushima, Isako, 5,187,907, Cl. 52-221.000.

Sasaki, Tadashi: *See—*
Momochi, Takeshi; Sasaki, Tadashi; Matsumoto, Michio; Hayashi, Tomoo; and Shiozaki, Masahito, 5,189,627, Cl. 364-474.310.

Sasaki, Tohru: *See—*
Igaue, Takamitsu; Nomura, Hironori; Shimakawa, Taiji; and Sasaki, Tohru, 5,188,627, Cl. 604-385.200.

Sasaki, Toshio; Ebara, Takeshi; Jyohoji, Hirofumi; Mizunuma, Kooji; and Kawai, Kiyoshi, to Sumitomo Chemical Company, Limited. Process for producing α-olefin polymers. 5,189,124, Cl. 526-119.000.

Sashida, Nobuo; Sanada, Kazunori; and Koyama, Masato, to Mitsubishi Denki Kabushiki Kaisha. DC to AC electric power converting apparatus. 5,189,603, Cl. 363-160.000.

Sasson, Steven J., to Eastman Kodak Company. Method and apparatus for performing image compression using discrete cosine transform. 5,189,526, Cl. 358-432.000.

Satake, Mikio: *See—*
Sato, Masakazu; Kawashima, Yutaka; Goto, Jun; Chiba, Yoshiyuki; Satake, Mikio; Iwata, Chuzo; and Imanishi, Takeshi, 5,189,211, Cl. 562-430.000.

Sato, Hideaki: *See—*
Ogata, Nobuo; Ueyama, Tetsuo; Sekimoto, Yoshihiro; Tanaka, Toshiyuki; and Sato, Hideaki, 5,189,655, Cl. 369-44.230.

Sato, Ichitaro, to Sony Corporation. Slew rate converter for a video signal recording apparatus. 5,189,565, Cl. 360-33.100.

Sato, Jun, to Shimano, Inc. Fishing reel with rear positioned thumb rest and clutch control member. 5,188,312, Cl. 242-261.000.

Sato, Koichiro: *See—*
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Fujii, Yasuo; Nakamura, Tetsuya; Fukuyama, Hirotaka; Arai, Seiji; Sato, Koichiro; Takagi, Toshio; Nishina, Shuji; Hukasawa, Jiro; Maruta, Masatoshi; and Koizumi, Seiichi, 5,188,057, Cl. 118-657.000.

Sato, Maki: *See—*
Izumi, Akio; Maki, Yasuhito; Narabu, Tadakuni; Sato, Maki; Otsu, Takaji; and Saito, Katsuyuki, 5,189,499, Cl. 257-215.000.

Sato, Masakazu; Kawashima, Yutaka; Goto, Jun; Chiba, Yoshiyuki; Satake, Mikio; Iwata, Chuzo; and Imanishi, Takeshi, to Taisho Pharmaceutical Co., Ltd.; and Nippon Suisan Kaisha, Ltd. Sulfonamide derivatives. 5,189,211, Cl. 562-430.000.

Sato, Masamichi; and Yamaguchi, Jun, to Fuji Photo Film Co., Ltd. Hard copy generating method and device using a liquid crystal panel. 5,189,468, Cl. 355-88.000.

Sato, Takasi: *See—*
Origane, Akira; and Sato, Takasi, 5,188,852, Cl. 426-60.000.

Sato, Takeshi; and Saito, Sumiko, to Kabushiki Kaisha Toshiba. Ultrasonic diagnosis apparatus. 5,188,113, Cl. 128-661.090.

Sato, Yoshio; Murayama, Katsuo; and Nakai, Toshihiro, to Agency of Industrial Science and Technology. Method of removing nitrate ion from a solution containing nitrate and other anions. 5,188,737, Cl. 210-638.000.

Satoh, Katsuhiko; Muto, Itsuo; Takeda, Shigeki; and Miyamoto, Mamoru, to Kabushiki Kaisha POWREX; and Kabushiki Kaisha Arikawa Seisakusho. Automatic inner pipeline surface washing apparatus. 5,188,134, Cl. 134-57.00R.

Satoh, Katsumi; and Tokunoh, Futoshi, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor device and electrode block for the same. 5,189,509, Cl. 257-718.000.

Satou, Michio: *See—*
Imai, Ryuusuke; Nashiwa, Michio; Oomura, Yasuhiro; Matsuda, Ryouichi; Satou, Michio; and Takeuchi, Tamayuki, 5,188,698, Cl. 156-500.000.

Saunders, Craig M.: *See—*
Nottingham, John R.; Spirk, John; Saunders, Craig M.; and Brokaw, Paul E., 5,188,256, Cl. 222-1.000.

Sausner, Andreas: *See—*
Mertens, Klaus; and Sausner, Andreas, 5,188,337, Cl. 251-129.170.

Sauter Feinmechanik GmbH: *See—*
Thumm, Helmut; and Handel, Friedrich, 5,187,847, Cl. 29-48.50A.

Sauter, Rolf: *See—*
Kolem, Heinrich; and Sauter, Rolf, 5,189,370, Cl. 324-309.000.

Sauvaige, Henri: *See—*
Ringot, Jean-Marc; and Sauvaige, Henri, 5,188,211, Cl. 198-411.000.

Savio S.p.A.: *See—*
Colli, Luigi; and Badiali, Roberto, 5,188,304, Cl. 242-35.60R.
Meroni, Roberto; Gerin, Umberto; Lancerotto, Fabio; and Colussi, Vittorio, 5,187,929, Cl. 57-80.000.

Savoie Refractaires: *See—*
Thiery, Jacques; and Schoennahl, Jacques, 5,188,791, Cl. 264-226.000.

Sawada, Kazuhide: *See—*
Honda, Norimasa; Sawada, Kazuhide; Idemori, Kenjiro; and Yukawa, Hirokazu, 5,189,143, Cl. 528-498.000.

Sawazaki, Hiroaki: *See—*
Horii, Kiyoshi; and Sawazaki, Hiroaki, 5,188,868, Cl. 427-212.000.

Sayegh, Emile G.; and Cedrone, Alfredo L., to W. L. Gore & Associates, Inc. Optical fiber ribbon cable. 5,189,721, Cl. 385-114.000.

Sayers, Herbert M.; and Mirgain, William E., to Sayers, Herbert M. Scent sampler construction. 5,188,236, Cl. 206-527.000.

Saylor, Richard N.: *See—*
Newcomer, Charles H.; Galedrige, Alan K.; and Saylor, Richard N., 5,188,318, Cl. 248-68.100.

Sbarro, Franco, to SM Sbarro Mottas Engineering S.A. Mechanism for varying an inclination angle of the steering wheel relative of the vehicle. 5,188,192, Cl. 180-219.000.

Scarpelli, Ademar: *See—*
Roche, Mortimer P.; and Scarpelli, Ademar, 5,188,394, Cl. 280-856.000.

Schaefer, Dietmar; Weier, Andreas; Weitemeyer, Christian; and Wewers, Dietmar, to Th. Goldschmidt AG. 2-(3'-butenyl)-3,4-dihydro-2H-pyrans, their synthesis and use. 5,189,184, Cl. 549-427.000.

Schaeffer, James R.; Engebrecht, Ronald H.; Winterkorn, Robert F.; Warren, Harold C., III; and Welter, Thomas R., to Eastman Kodak Company. Dry analytical element for lithium assay. 5,188,802, Cl. 422-56.000.

Schaeffer, Riley O.: *See—*
Paine, Robert T., Jr.; Narula, Chaitanya K.; and Schaeffer, Riley O., 5,188,757, Cl. 252-183.110.

Scharf, Michael: *See—*
Reisser, Berni; Pflug, Hannes; Khosrawi, Mohammad-Ali; Scharf, Michael; Simon, Helmut; Taudt, Christian; Goll, Wolfgang; Wuetherich, Paul; Fortenbacher, Thomas; and Konrath, Karl, 5,188,083, Cl. 123-502.000.

Scheer, Gerhard: *See—*
Muendlein, Werner; and Scheer, Gerhard, 5,188,490, Cl. 408-146.000.

Scheffler, Paul: *See—*
Nolte, Albert; Altdorf, Joachim; and Scheffler, Paul, 5,188,072, Cl. 123-198.00C.

Scheibel, Jeffrey J.: *See—*
Connor, Daniel S.; Scheibel, Jeffrey J.; Murch, Bruce P.; Mao, Mark H.; Gosselink, Eugene P.; and Severson, Roland G., Jr., 5,188,769, Cl. 252-548.000.

Scheider, Alfred F.: *See—*
Tyler, James B.; Scheider, Alfred F.; and Warner, R. Brown, 5,187,904, Cl. 51-330.000.

Schenfeld, Eugen: *See—*
Georgiou, Christos J.; Larsen, Thor A.; and Schenfeld, Eugen, 5,189,314, Cl. 307-271.000.

Scherer, Noreen T.: *See—*
Stack, Gary P.; Andree, Terrance H.; and Scherer, Noreen T., 5,189,171, Cl. 546-157.000.

Schering AG: *See—*
Chou, Yuo-Ling; Erhardt, Paul W.; Hagedorn, Alfred A., III; Lampe, John W.; Lumma, Jr., William C.; Morgan, Thomas K.; and Wiggins, Jay R., 5,189,036, Cl. 514-252.000.

Schering Agrochemicals Limited: *See—*
Willis, Robert J.; O'Mahony, Mary J.; and Roberts, Bryan G., 5,189,053, Cl. 514-397.000.

Schering Corporation: *See—*
Black, Hugh E., 5,188,827, Cl. 424-85.200.

Scheuble, Bernhard: *See—*
Baur, Gunter; Scheuble, Bernhard; and Fehrenbach, Waltraud, 5,188,758, Cl. 252-299.010.

Schilling, Jan C.; Tucker, James W.; and Koch, Carl C., to General Electric Company. Structural ring mechanism for containment housing of turbofan. 5,188,505, Cl. 415-9.000.

Schilling, Peter, to Westvaco Corporation. Lignin amine salt-based binders for water-based black ink formulations. 5,188,665, Cl. 106-26.00R.

Schindel, Julie A.: *See—*
Van Iten, Thomas P.; Whitehead, Howard A.; and Schindel, Julie A., 5,188,625, Cl. 604-383.000.

Schlee, Ronald P.; and Hall, Jeffrey L., to Eastman Kodak Company. Sheet processing apparatus and method. 5,189,457, Cl. 354-328.000.

Schlemmer, Lothar: *See—*
Hasenbein, Norbert; Bauer, Peter; Schlemmer, Lothar; Hauss, Alfred F.; Gropper, Hans; and Ohlinger, Rainer, 5,189,120, Cl. 525-285.000.
Muehlenbernd, Thomas; Hasenbein, Norbert; Koehler, Gernot; and Schlemmer, Lothar, 5,189,113, Cl. 525-329.500.

Schlipfenbacher, Reiner: *See—*
Mangold, Dieter; and Schlipfenbacher, Reiner, 5,188,939, Cl. 435-7.920.

Schlumberger Industries: *See—*
Bulteau, Serge, 5,187,989, Cl. 73-861.780.
Mosser, Vincent; Robert, Jean-Louis; and Contreras, Sylvie, 5,187,984, Cl. 73-708.000.

Schlumberger Technology Corporation: *See—*
Richardson, David L.; Grubba, Robert A.; McLaughlin, Timothy P.; and Parran, David B., 5,188,173, Cl. 166-77.000.

Schmahl, Gunter: *See—*
Mehlhorn, Heinz; Taraschewski, Horst; Schmahl, Gunter; Raether, Wolfgang; and Rosner, Manfred, 5,188,832, Cl. 424-405.000.

Schmalbach-Lubeca AG: *See—*
Hantelmann, Rolf; and Schwark, Hartmut, 5,188,497, Cl. 413-45.000.

Schmidt, Diane G.; Buttery, Howard J.; and Norbury, Robert J., to Procter & Gamble Company, The; and Minnesota Mining & MAanufacturing Company. Detergent composition containing coated perfume particles. 5,188,753, Cl. 252-132.000.

Schmidt, Heinz: *See—*
Bitsch, Harald; and Schmidt, Heinz, 5,188,478, Cl. 403-267.000.

Schmidt-Ruppin, Karl H.: *See—*
Lukas, Bohumir; and Schmidt-Ruppin, Karl H., 5,189,017, Cl. 514-8.000.

Schmidt, Wolfgang: *See—*
Blasey, Gerhard; Breucker, Christoph; Gutsche, Bernhard; Jeromin, Lutz; Panthel, Guenter; Peukert, Eberhard; and Schmidt, Wolfgang, 5,189,207, Cl. 562-97.000.

Schmitt, Alfred: *See—*
Birk, Manfred; Engel, Gerhard; Eyberg, Wilhelm; Henze, Thomas; and Schmitt, Alfred, 5,188,081, Cl. 123-479.000.

Schmitt, Hubert; and Kampemann, Wolfgang, to Lucas Industries public limited company. Method of regulating the braking pressure in an antilock vehicle brake system. 5,188,432, Cl. 303-96.000.

Schmitt-Walter, Stefan. Illuminated push-button switch. 5,188,220, Cl. 200-313.000.

Schmoock, Helmuth. Expander roller for webs of paper and the like. 5,188,273, Cl. 226-190.000.

Schneider, Carl S., to United States of America, Navy. Closed-loop multi-sensor control system and method. 5,189,590, Cl. 361-149.000.

Schneider, Heinz-Walter: *See—*
Kummer, Rudolf; Schneider, Heinz-Walter; Bertleff, Werner; Fischer, Rolf; Vagt, Uwe; Naeumann, Fritz; Hoelderich, Wolfgang; and Schwarzmann, Matthias, 5,189,182, Cl. 549-326.000.

Schoen, Joel M.: *See—*
Eddy, F. Neal; and Schoen, Joel M., 5,189,420, Cl. 341-157.000.

Schoendorfer, Donald W.; and Prince, Paul R., to Baxter Internatonal Inc. Single needle continuous hemapheresis apparatus and methods. 5,188,588, Cl. 604-6.000.

Schoennahl, Jacques: *See—*
Thiery, Jacques; and Schoennahl, Jacques, 5,188,791, Cl. 264-226.000.

Schoenzart, Paul F.: *See—*
Hill, Francis U.; Schoenzart, Paul F.; and Frank, Werner P., 5,188,879, Cl. 428-117.000.

Schofield, Edward; Merkel, Paul B.; and Chen, Tienteh, to Eastman Kodak Company. Photographic elements having carbonamide coupler solvents and addenda to reduce sensitizing dye stain. 5,188,926, Cl. 430-377.000.

Schonherr, Dieter: *See—*
Meuer, Johannes; Todtenhaupt, Dieter; and Schonherr, Dieter, 5,188,197, Cl. 184-7.400.

Schrag, Grant M.: *See—*
Colgate, Samuel O.; and Schrag, Grant M., 5,188,402, Cl. 285-332.000.

Schram, Robert G.: *See—*
Schwartzengraber, Donald; and Schram, Robert G., 5,188,163, Cl. 160-229.100.

Schroder, Robert L.; and Moffitt, Willard B. Drying mechanisms and methods for removing excess moisture from electronic equipment. 5,189,581, Cl. 360-128.000.

Schroeder, Klaus, to Liebherr-Werk Bischofshofen Ges.m.b.H. Drive arrangement for earth moving machines. 5,188,193, Cl. 180-242.000.

Schulman, Marvin D.: *See—*
Omstead, Mary N.; Schulman, Marvin D.; and Young, Noel M., 5,188,944, Cl. 435-76.000.

Schult, Manfred: *See—*
Feldmann, Joachim; Petersen, Erwin; and Schult, Manfred, 5,189,391, Cl. 340-453.000.

Schulte, Thomas H.; Jurgensen, Stewart R.; and Mapes, James P., to Becton, Dickinson and Company. Layered sandwich assay method for chlamydia and materials therefor. 5,188,937, Cl. 435-7.360.

Schultheiss, Gerold: *See—*
Kraemer, Manfred; and Schultheiss, Gerold, 5,188,074, Cl. 123-357.000.

Schultz, Charles P., to Motorola, Inc. Communication device capable of preventing energy source removal. 5,189,400, Cl. 340-636.000.

Schultz, Thomas M.; Patel, Jitendra; and Wong, Stephanie, to Shiseido Co., Ltd. Product for improved permanent waving of hair and simultaneously coloring and permanently waving hair and method therefor. 5,188,639, Cl. 8-405.000.

Schumacher, J Gunther; and Lattanzio, Maurizio, to Spinnaker Industries Inc. Support for air conditioning unit. 5,188,333, Cl. 248-676.000.

Schupp, Hans: *See—*
Schwerzel, Thomas; Schupp, Hans; Huemke, Klaus; Faul, Dieter; and Heimann, Ulrich, 5,188,716, Cl. 204-181.700.

Schurpack, Inc.: *See—*
Sorensen, Leif B., 5,188,461, Cl. 383-63.000.

Schwamborn, K. H., to Hosokawa Mikropul Gesellschaft fur Mahlund Staubtechnik mbH. Device for the separation of powders into coarse and fine components. 5,188,237, Cl. 209-23.000.

Schwark, Hartmut: *See—*
Hantelmann, Rolf; and Schwark, Hartmut, 5,188,497, Cl. 413-45.000.

Schwartz, Cheryl D.: *See—*
Freidinger, Roger M.; Bock, Mark G.; Lam, Yiu-Kuen T.; Chang, Raymond S.; Hensens, Otto D.; Schwartz, Cheryl D.; and Zink, Deborah L., 5,189,050, Cl. 514-375.000.

Schwartz, Michael S.: *See—*
Balani, Suresh K.; Ramjit, Harri G.; Pitzenberger, Steven M.; Schwartz, Michael S.; and Lu, Anthony Y. H., 5,188,950, Cl. 435-120.000.

Schwartz, Rodney E.; and Clauter, Steven T., to Integrated Technology Corporation. Method and apparatus for providing controlled mechanical braking torque. 5,189,360, Cl. 322-25.000.

Schwartzengraber, Donald; and Schram, Robert G., to Napoleon Spring Works, Inc. Bracket assembly for an overhead door. 5,188,163, Cl. 160-229.100.

Schwartzkopf, Louis A.: *See—*
Finnemore, Douglas K.; Miller, Theodore A.; Ostenson, Jerome E.; Schwartzkopf, Louis A.; and Sanders, Steven C., 5,189,260, Cl. 174-125.100.

Schwarz, Wolfgang: *See—*
Lochner, Gunther; and Schwarz, Wolfgang, 5,188,682, Cl. 149-1.000.

Schwarzmann, Matthias: *See—*
Kummer, Rudolf; Schneider, Heinz-Walter; Bertleff, Werner; Fischer, Rolf; Vagt, Uwe; Naeumann, Fritz; Hoelderich, Wolfgang; and Schwarzmann, Matthias, 5,189,182, Cl. 549-326.000.

Schweizer, Russell J. Binding mounting apparatus. 5,188,386, Cl. 280-607.000.

Schwerzel, Thomas; Schupp, Hans; Huemke, Klaus; Faul, Dieter; and Heimann, Ulrich, to BASF Lack + Farben Aktiengesellschaft. Heat-curable coating composition for cathodic electrocoating. 5,188,716, Cl. 204-181.700.

Schwolsky, Peter M.: *See—*
Kaali, Steven; and Schwolsky, Peter M., 5,188,738, Cl. 210-748.000.

Scott Fetzer Company, The: *See—*
Meyer, Robert B.; Lackner, John R.; and Matuschek, Hans J., 5,187,832, Cl. 15-329.000.

Scott, Ian R.: *See—*
Nicoll, Gregg A.; Ojo-Osagie, Ann C.; and Scott, Ian R., 5,188,831, Cl. 424-401.000.

Scott, Peter D.; and Bushnell, Peter, to Comair Rotron, Inc. Compact fan and impeller. 5,188,508, Cl. 415-206.000.

Scragg, Carl: *See—*
Vespoli, Michael; Nelson, Bruce; and Scragg, Carl, 5,188,048, Cl. 114-56.000.

Seagate Technology, Inc.: *See—*
Murphy, Robert D.; and Genheimer, Stephen R., 5,189,571, Cl. 360-75.000.

Sealy, J. Michael; and Sharlow, Roger C. Apparatus for dispensing/applying a material. 5,188,294, Cl. 239-310.000.

Secker, Herbert, to Hewlett-Packard Company. Sensor, apparatus and method for non-invasive measurement of oxygen saturation. 5,188,108, Cl. 128-633.000.

Secom Co., Ltd.: *See—*
Shigemitsu, Minęo; Miyasaka, Toshikazu; and Matsumoto, Kenichi, 5,189,699, Cl. 380-9.000.

Seconde, Jean-Francois; and Heurteboust, Gerard, to Sollac. Method and device for drawing containers of frustoconical shape and a container drawn thereby. 5,187,966, Cl. 72-329.000.

Secrist, John A., III: *See—*
Niwas, Shri; Secrist, John A., III; Montgomery, John A.; Erion, Mark D.; Guida, Wayne C.; and Ealick, Steve E., 5,189,039, Cl. 514-258.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Sedlacek, Hans H.: *See—*
Czech, Jorg; Sedlacek, Hans H.; Nedelec, Lucien; Guillaume, Jacques; and Marchandeau, Christian, 5,189,065, Cl. 514-656.000.

Seevinck, Evert, to U.S. Philips Corporation. Companding current-mode transconductor-C integrator. 5,189,321, Cl. 307-490.000.

Segawa, Akio: *See—*
Yamamoto, Tetsuya; Endoh, Yukio; Segawa, Akio; Matsumoto, Kenji; and Komiyama, Takeo, 5,188,467, Cl. 400-157.200.

Seidel, Hans-Georg: *See—*
Bogert, Hermann; and Seidel, Hans-Georg, 5,188,653, Cl. 65-334.000.

Seidel, Hans-Joachim: *See—*
Heyke, Klaus; Spitz, Richard; Seidel, Hans-Joachim; Jennrich, Irene; Pfander, Werner; and Vohr, Armin, 5,189,080, Cl. 523-212.000.

Seiko Corp.: *See—*
Collar, James K.; Gaskill, Garold B.; Park, Daniel J.; Shanks, Carl D.; and Wells, Rick T., 5,189,411, Cl. 340-825.140.
Gaskill, Garold B.; and Park, Daniel J., 5,189,413, Cl. 340-825.440.

Seiko Epson Corp.: *See—*
Collar, James K.; Gaskill, Garold B.; Park, Daniel J.; Shanks, Carl D.; and Wells, Rick T., 5,189,411, Cl. 340-825.140.
Gaskill, Garold B.; and Park, Daniel J., 5,189,413, Cl. 340-825.440.
Kajimoto, Kazuhiro, 5,189,730, Cl. 395-142.000.
Sako, Yukitoshi; Kamikawa, Fumitoshi; and Ohta, Sayuri, 5,189,646, Cl. 368-10.000.

Seikosha Co., Ltd.: *See—*
Kobayashi, Koichi; Mishima, Seiji; Kamio, Kenji; Miyata, Etsuhisa; Fukuda, Katsuhiko; and Oi, Junichi, 5,188,847, Cl. 425-135.000.
Nakajima, Yuji, 5,189,462, Cl. 354-403.000.

Seiler, Christian, to Renault Vehicules Industriels. Motor vehicle steering knuckle. 5,188,382, Cl. 280-96.100.

Seim, April M., to Eastman Kodak Company. Processor having means for indicating an error in an operating condition. 5,189,455, Cl. 354-297.000.

Seim, April M.: *See—*
Sherburne, David G.; Seim, April M.; and Howe, Michael G., 5,189,456, Cl. 354-298.000.

Seitz, Robert F.: *See—*
Parkow, James C.; and Seitz, Robert F., 5,188,264, Cl. 222-554.000.

Sekhar, Jainagesh A.; Bhaduri, Sarit B.; Li, Hung P.; and Canarslan, Necip S., to University of Cincinnati. Manufacture of net shaped metal ceramic composite engineering components by self-propagating synthesis. 5,188,678, Cl. 148-514.000.

Seki, Tomoaki: *See—*
Imai, Akio; and Seki, Tomoaki, 5,189,109, Cl. 525-296.000.

Seki, Yoshihiro: *See—*
Mukohjima, Hitoshi; Hirano, Takayuki; Seki, Yoshihiro; and Miura, Mituru, 5,189,331, Cl. 310-323.000.

Sekiguchi, Akira, to Zexel Corporation. Apparatus for controlling fuel injection timing in a fuel injection pump. 5,188,084, Cl. 123-502.000.

Sekiguchi, Koichiro: *See—*
Nakao, Takashi; Emoto, Yoshiaki; Sekiguchi, Koichiro; Iketani, Masayuki; Sahara, Kunizo; Yoshida, Ikuo; Kohno, Akiomi; Horino, Masaya; Kamohara, Hideaki; Irie, Shouichi; Akasaki, Hiroshi; and Otsuka, Kanji, 5,188,280, Cl. 228-123.000.

Sekiguchi, Youichi: *See—*
Wada, Morio; Seko, Masahito; Sekiguchi, Youichi; and Iwaoka, Hideto, 5,189,309, Cl. 257-21.000.

Sekihara, Toshinobu; and Yokomakura, Mitsunori, to Matsushita Electric Industrial Co., Ltd. Method of controlling electron beams in an image display apparatus. 5,189,335, Cl. 313-422.000.

Sekimoto, Yoshihiro: *See—*
Ogata, Nobuo; Ueyama, Tetsuo; Sekimoto, Yoshihiro; Tanaka, Toshiyuki; and Sato, Hideaki, 5,189,655, Cl. 369-44.230.

Sekine, Hiroshi: *See—*
Ohkubo, Kiyoshi; and Sekine, Hiroshi, 5,188,474, Cl. 403-57.000.

Sekine, Masayoshi; and Kondo, Toshiaki, to Canon Kabushiki Kaisha. Image processing device. 5,189,513, Cl. 358-105.000.

Sekita, Makoto: *See—*
Miyamoto, Ryosuke; Sekita, Makoto; and Takeda, Shohei, 5,189,519, Cl. 358-228.000.

Seko, Masahito: *See—*
Wada, Morio; Seko, Masahito; Sekiguchi, Youichi; and Iwaoka, Hideto, 5,189,309, Cl. 257-21.000.

Sekozawa, Teruji: *See—*
Onari, Mikihiko; Funabashi, Motohisa; Sekozawa, Teruji; and Shioya, Makoto, 5,189,621, Cl. 364-431.040.

Self Installing Platforms, Inc.: *See—*
White, George T., 5,188,484, Cl. 405-198.000.

Sellers, Jeff C., to ENI Div. of Astec America, Inc. Half bridge converter with current mode controller. 5,189,601, Cl. 363-21.000.

Seman, Andrew M.: *See—*
Alexander, Lawrence C.; Appelt, Bernd K.; Balkin, David K.; Hansen, James J.; Hromek, Joseph; Kaschak, Ronald A.; Lauffer, John M.; Memis, Irving; Patel, Magan S.; Seman, Andrew M.; and Susko, Robin A., 5,189,261, Cl. 174-263.000.

Semedard, Jean-Claude: *See—*
Duez, Christian; Semedard, Jean-Claude; and Morin, Jean-Xavier, 5,188,296, Cl. 239-403.000.

Senda, Syouzi, to Somar Corporation. Thin film adhering apparatus. 5,188,699, Cl. 156-521.000.

Senoo, Masamichi: *See—*
Toyoda, Harumitsu; Senoo, Masamichi; and Abe, Keiji, 5,188,626, Cl. 604-385.100.

Sensor Technology Co., Ltd.: *See—*
Moriyama, Hiroshi; Sada, Hiroyuki; and Shiozawa, Takeo, 5,189,311, Cl. 307-10.100.

Sensormatic Electronics Corporation: *See—*
Watkins, Harry E.; and Roberson, David L., 5,189,397, Cl. 340-572.000.

Sepracor, Inc.: *See—*
Gao, Yun, 5,189,200, Cl. 560-180.000.

Severson, Roland G., Jr.: *See—*
Connor, Daniel S.; Scheibel, Jeffrey J.; Murch, Bruce P.; Mao, Mark H.; Gosselink, Eugene P.; and Severson, Roland G., Jr., 5,188,769, Cl. 252-548.000.

Sevigny, Jayme D.: *See—*
Marnell, Anthony A., II; Sevigny, Jayme D.; and Rehm, Cary A., 5,188,363, Cl. 273-85.0CP.

Sextant Avionique: *See—*
Fagard, Pierre, 5,189,390, Cl. 340-407.000.

Seymour, Patricia A., to Pfizer Inc. Synergistic combinations in the treatment of anxiety. 5,189,037, Cl. 514-252.000.

Sgro, Albert J. Shoe polish application kit. 5,188,472, Cl. 401-124.000.

SGS-Thomson Microelectronics: *See—*
Palara, Sergio; Paparo, Mario; and Pellicano, Roberto, 5,189,317, Cl. 307-350.000.

SGS-Thomson Microelectronics, S.A.: *See—*
Jaffard, Jean-Luc; Lietar, Loic; and Mouret, Michel, 5,189,685, Cl. 377-48.000.

Shabtai, Joseph S.; Oblad, Alex G.; and Tsai, Chi H., to University of Utah. Method of making jet fuel compositions via a dehydrocondensation reaction process. 5,189,232, Cl. 585-14.000.

Shah, Dilip M.; Rogers, Stephen G.; Horsch, Robert B.; and Fraley, Robert T., to Monsanto Company. Glyphosate-resistant plants. 5,188,642, Cl. 47-58.000.

Shang, Ping P.: *See—*
Wang, Richard H. S.; Shang, Ping P.; and Jervis, Daniel A., 5,189,088, Cl. 524-222.000.

Shanks, Bruce E., to General Electric Company. One-piece spacer end cap for an elongated jacketed discharge lamp. 5,188,451, Cl. 362-223.000.

Shanks, Carl D.: *See—*
Collar, James K.; Gaskill, Garold B.; Park, Daniel J.; Shanks, Carl D.; and Wells, Rick T., 5,189,411, Cl. 340-825.140.

Shanley, Thomas E. Railroad car derailment safety device. 5,188,038, Cl. 105-216.000.

Shannon, John: *See—*
Huffman, John; and Shannon, John, 5,189,252, Cl. 102-459.000.

Shantz, Steven M.: *See—*
DeCastro, Aurora F.; Gupta, Surendra K.; and Shantz, Steven M., 5,188,955, Cl. 435-188.000.

Shaphyr, Shalom, to Frag, Ltd. Projectile for smooth bore weapon. 5,189,250, Cl. 102-439.000.

Shapiro, Irene; and Sajic, Branko, to Stepan Company. Antiperspirant formulations. 5,188,823, Cl. 424-65.000.

Sharlow, Roger C.: *See—*
Sealy, J. Michael; and Sharlow, Roger C., 5,188,294, Cl. 239-310.000.

Sharp Kabushiki Kaisha: *See—*
Irihara, Kouichi; Andou, Yukinori; and Yui, Yuhi, 5,189,471, Cl. 355-210.000.
Kawamura, Akio; Iguchi, Katsuji; and Urai, Masahiko, 5,189,501, Cl. 257-647.000.
Matsuda, Toshihiro; and Moriya, Daisuke, 5,189,527, Cl. 358-440.000.
Ogata, Nobuo; Ueyama, Tetsuo; Sekimoto, Yoshihiro; Tanaka, Toshiyuki; and Sato, Hideaki, 5,189,655, Cl. 369-44.230.
Okuno, Yasuo, 5,189,409, Cl. 340-825.060.
Sakamoto, Koichiro; and Yoshida, Hiroichi, 5,189,731, Cl. 395-146.000.
Shirasaki, Takashi; Nishii, Toshifumi; Oka, Yukihiko; and Miyamoto, Kunihiro, 5,189,607, Cl. 364-405.000.
Tanaka, Junji, 5,189,318, Cl. 307-352.000.
Yamashita, Takuo; Ogura, Takashi; Nakaya, Hiroaki; and Yoshida, Masaru, 5,189,405, Cl. 340-781.000.

Sharpe-Geisler, Brad: *See—*
Chan, Melvin D.; and Sharpe-Geisler, Brad, 5,189,322, Cl. 307-530.000.

Shaw, Robert N., to BT&D Technologies Limited. Electro-optic device. 5,189,713, Cl. 385-2.000.

Shaw, Thomas J. Nonreusable syringe with safety indicator. 5,188,613, Cl. 604-195.000.

Shearer, Barry G.: *See—*
Burch, Ronald M.; Patch, Raymond J.; Shearer, Barry G.; and Perumattam, John J., 5,189,046, Cl. 514-330.000.

Shekleton, Jack R., to Sundstrand Corporation. Stored energy combustor. 5,187,932, Cl. 60-39.230.

Shell Internationale Research Maatschappij B.V.: *See—*
Verbrugge, Pieter A.; and De Waal, Jannetje, 5,189,197, Cl. 560-24.000.

Shell Oil Company: *See—*
Brownscombe, Thomas F.; Gergen, William P.; Bass, Ronald M.; Mores, Maryanne; and Wong, Pui K., 5,189,070, Cl. 521-64.000.
Carl, Frederick G., Jr.; and de Rouffignac, Eric P., 5,189,283, Cl. 219-497.000.
Gelles, Richard; and DuBois, Donn A., 5,189,083, Cl. 524-68.000.
Klusener, Peter A. A.; Stil, Hans A.; Drent, Fit; and Arnoldy, Peter, 5,189,003, Cl. 502-167.000.

Kopp, Frans; Esparza, Joe O.; and Long, Thomas E., 5,188,483, Cl. 405-191.000.

Shell Research Limited: *See—*
Curtze, Jurgen; and Albert, Guido, 5,189,035, Cl. 514-231.200.

Sherburne, David G.; Seim, April M.; and Howe, Michael G., to Eastman Kodak Company. Method and apparatus for adjusting the volume of replenishment fluid provided to a chamber of a film processor. 5,189,456, Cl. 354-298.000.

Sherman, Robert: *See—*
Davidson, Jeffrey; Sherman, Robert; and Paciei, Richard, 5,188,714, Cl. 204-129.350.

Sherry, A. Dean; Lazar, Istvan; Brucher, Erno; and Ramasamy, Ravichandran, to Board of Regents, The University of Texas System. Using polyazamacrocyclic compounds for intracellular measurement of metal ions using MRS. 5,188,816, Cl. 424-9.000.

Sherwood Medical Company: *See—*
Sunderland, Richard A., 5,188,119, Cl. 128-763.000.

Shetty, Devdas; and Neault, Henry, to University of Hartford. Method and apparatus for surface roughness measurement using laser diffraction pattern. 5,189,490, Cl. 356-371.000.

Shiah, Thomas Y. J.: *See—*
Hollis, Samuel D.; and Shiah, Thomas Y. J., 5,189,089, Cl. 524-272.000.

Shibata, Haruji: *See—*
Nagata, Nobuyuki; Tsutsui, Itsuro; Ota, Koji; Hashimoto, Hirofumi; and Shibata, Haruji, 5,188,693, Cl. 156-244.110.

Shibata, Kenichi: *See—*
Takahashi, Hisakazu; Baba, Yoko; Ezaki, Kenichi; Okamoto, Yasuhiko; Shibata, Kenichi; Kuroki, Kazuhiko; and Yasuyama, Shigeyuki, 5,188,993, Cl. 501-136.000.

Shibata, Takenori: *See—*
Miya, Shigeyuki; Shibata, Takenori; Komatsu, Yoshihiro; Miyoshi, Hiromichi; Hirata, Tadashi; Taniguchi, Yoshio; and Kobayashi, Takuo, 5,189,474, Cl. 355-245.000.

Shimada, Naoki: *See—*
Masaki, Naoki; Hira, Osamu; and Shimada, Naoki, 5,189,656, Cl. 369-47.000.

Shimada, Takashi; Inoue, Satoru; Maekawa, Takaaki; and Jitsumori, Akio, to Japan National Oil Corporation. Receiving apparatus. 5,189,415, Cl. 340-854.600.

Shimakawa, Taiji: *See—*
Igaue, Takamitsu; Nomura, Hironori; Shimakawa, Taiji; and Sasaki, Tohru, 5,188,627, Cl. 604-385.200.

Shimano, Inc.: *See—*
Sato, Jun, 5,188,312, Cl. 242-261.000.

Shimanuki, Shizuo; Nakai, Yoshitomo; and Itakura, Masamichi, to Aisin Seiki Kabushiki Kaisha; and Toyota Jidosha Kabushiki Kaisha. Water pump for internal combustion engine. 5,188,509, Cl. 415-208.100.

Shimaya, Hiroshi: *See—*
Maeda, Yutaka; Kaneko, Kiyotaka; Miyake, Izumi; Nakane, Yoshio; and Shimaya, Hiroshi, 5,189,570, Cl. 360-75.000.

Shimei, Masato: *See—*
Goto, Shigeki; and Shimei, Masato, 5,188,006, Cl. 74-867.000.

Shimizu, Hideaki: *See—*
Hayakawa, Atsuya; Komuro, Kyoji; and Shimizu, Hideaki, 5,189,622, Cl. 364-470.000.
Komuro, Kyoji; Hayakawa, Atsuya; and Shimizu, Hideaki, 5,189,623, Cl. 364-470.000.

Shimizu, Hiroshi, to NEC Corporation. Fault locating system capable of quickly locating a fault in a hierarchical communication network. 5,189,674, Cl. 371-20.100.

Shimizu, Katsuya; and Ito, Tomoaki, to Fujitsu Limited; and Fujitsu VLSI Limited. Multiplexer circuit having a simplified construction and reduced number of parts. 5,189,312, Cl. 307-243.000.

Shimizu, Mitsuo: *See—*
Takashima, Izumi; Imoto, Yoshiya; Taga, Shinichiro; and Shimizu, Mitsuo, 5,189,528, Cl. 358-448.000.

Shimizu, Shizuo: *See—*
Uchiyama, Akira; Jimbo, Naoaki; and Shimizu, Shizuo, 5,188,882, Cl. 428-159.000.

Shimizu, Susumu: *See—*
Yamada, Yasuhiro; Honda, Hidemasa; Yamasaki, Haruki; and Shimizu, Susumu, 5,188,894, Cl. 428-370.000.

Shimizu, Tetsuo; and Yamaguchi, Seitaro, to Daikin Industries Ltd. Organosol of fluorine-containing polymer. 5,188,764, Cl. 252-308.000.

Shimizu, Yasumoto, to Hoya Corporation. Electroluminescent panel having a fluoroesin layer. 5,188,901, Cl. 428-421.000.

Shimizu, Yuji: *See—*
Kawahara, Setsuko; Nakano, Yasushi; Shimizu, Yuji; and Yamauchi, Yasuhisa, 5,188,907, Cl. 428-694.000.

Shimoda, Keitaro, to Nissho Corporation. Closing appliance used in flexible tube. 5,188,629, Cl. 604-412.000.

Shimura, Yasunori: *See—*
Suzuki, Kenji; Hata, Seiji; Nishida, Yoshien; Kawasaki, Kyoichi; Fujii, Kenjiro; Shimura, Yasunori; and Takeyoshi, Shigenori, 5,189,707, Cl. 382-8.000.

Shimura, Yoshio: *See—*
Mori, Kazuhiko; Kawasaki, Minoru; Yoshida, Shin; Murase, Hiroyuki; Saito, Takashi; Tanaka, Kouji; and Shimura, Yoshio, 5,188,799, Cl. 420-469.000.

Shin-Etsu Handotai Co., Ltd.: *See—*
Tomita, Munenori; and Takei, Junichiro, 5,188,501, Cl. 414-416.000.

Shindengen Electric Manufacturing Co., Ltd.: *See—*
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Fujii, Yasuo; Nakamura, Tetsuya; Fukuyama, Hirotaka; Arai, Seiji; Sato, Koichiro; Takagi, Toshio; Nishina, Shuji; Hukasawa, Jiro; Maruta, Masatoshi; and Koizumi, Seiichi, 5,188,057, Cl. 118-657.000.

Shindou, Yoshio; and Yamazaki, Fumio, to Nippon Steel Corporation. Coated steel sheets. 5,188,905, Cl. 428-626.000.

Shinjo, Kenji: *See—*
Hanyu, Yukio; Inaba, Yutaka; Asaoka, Masanobu; Taniguchi, Osamu; Shinjo, Kenji; and Uchimi, Toshiharu, 5,189,536, Cl. 359-56.000.

Shinke, Ryu: *See—*
Nanmori, Takashi; and Shinke, Ryu, 5,188,956, Cl. 435-200.000.

Shinozaki, Toshiaki: *See—*
Kunihiro, Ikari, deceased; Niki, Hirokazu; Nakase, Makoto; and Shinozaki, Toshiaki, 5,188,924, Cl. 430-312.000.

Shinto, Hiroaki: *See—*
Fukabori, Mitsuhiko; Iwasaki, Hiroshi; Shinto, Hiroaki; Iwai, Yasunori; Nishiuchi, Ryuji; Gotoh, Yuzo; Hiramatsu, Satoru; Hirata, Norimasa; and Tokuda, Masakazu, 5,189,255, Cl. 102-531.000.

Shiomi, Yasushi: *See—*
Furusaki, Shinichi; Matsuda, Masaoki; Saito, Muneki; Shiomi, Yasushi; Nakamura, Yasuo; and Tobita, Michio, 5,189,225, Cl. 568-649.000.

Shioya, Makoto: *See—*
Onari, Mikihiko; Funabashi, Motohisa; Sekozawa, Teruji; and Shioya, Makoto, 5,189,621, Cl. 364-431.040.

Shioyama, Tadao: *See—*
Nakamura, Shoji; Inoue, Takasi; Sunohara, Masaaki; and Shioyama, Tadao, 5,188,652, Cl. 65-319.000.

Shiozaki, Masahito: *See—*
Momochi, Takeshi; Sasaki, Tadashi; Matsumoto, Michio; Hayashi, Tomoo; and Shiozaki, Masahito, 5,189,627, Cl. 364-474.310.

Shiozawa, Takeo: *See—*
Moriyama, Hiroshi; Sada, Hiroyuki; and Shiozawa, Takeo, 5,189,311, Cl. 307-10.100.

Shirai, Kiyoshi; Uehara, Kazuo; Morita, Koichi; Takiguchi, Takahide; and Ishizaki, Naoki, to Kabushiki Kaisha Komatsu Seisakusho. Pressure compensating type hydraulic valve. 5,188,147, Cl. 137-596.000.

Shirai, Yoji, to Daifuku Co., Ltd. Warehousing traveling crane. 5,188,199, Cl. 187-95.000.

Shiraishi, Takashi, to Hitachi, Ltd. Motor vehicle control system and control unit therefor. 5,189,617, Cl. 364-424.050.

Shirasaki, Takashi; Nishii, Toshifumi; Oka, Yukihiko; and Miyamoto, Kunihiro, to Sharp Kabushiki Kaisha. Method for sending selected data from electronic cash registers to a host unit. 5,189,607, Cl. 364-405.000.

Shiratsuki, Yoshiyuki: *See—*
Takahashi, Kumiko; Baba, Kazuo; and Shiratsuki, Yoshiyuki, 5,189,284, Cl. 219-543.000.

Shiseido Co., Ltd.: *See—*
Schultz, Thomas M.; Patel, Jitendra; and Wong, Stephanie, 5,188,639, Cl. 8-405.000.

Shiwaku, Toshio: *See—*
Nakane, Toshio; Konuma, Hiroaki; Shiwaku, Toshio; and Hijikata, Kenji, 5,189,140, Cl. 528-272.000.

Shoji, Tsuyoshi: *See—*
Yumoto, Toshiharu; and Shoji, Tsuyoshi, 5,189,439, Cl. 346-76.0PH.

Short, Jay M.; and Kretz, Patricia, to Stratagene. Lambda packaging extract lacking beta-galactosidase activity. 5,188,957, Cl. 435-235.100.

Shouno, Seita: *See—*
Ohtsubo, Toshihiko; Shouno, Seita; Suzuki, Akio; Sugishima, Kiyohisa; Takagi, Eiichi; and Takada, Yoshihiro, 5,189,521, Cl. 358-296.000.

Showa Denka K.K.: *See—*
Nanmori, Takashi; and Shinke, Ryu, 5,188,956, Cl. 435-200.000.

Showa Denko K.K.: *See—*
Sano, Kenichi; Nishiyama, Masaaki; Suzuki, Toshiro; Wakabayashi, Shoichiro; and Miyahara, Kuniaki, 5,189,201, Cl. 560-205.000.

Showa Shell Sekiyu Kabushiki Kaisha: *See—*
Kitazumo, Tomoya; Yamazaki, Takashi; and Iwatsubo, Hitoshi, 5,189,204, Cl. 560-254.000.

Shum, Ying K.; and Lui, Sik K., to Sierra Semiconductor Corporation. Method for making bipolar transistor by self-aligning the emitter to the base contact diffusion. 5,188,972, Cl. 437-31.000.

Shurtleff, Edward C. Apparatus and method for removing contaminants from water. 5,188,742, Cl. 210-774.000.

Sick, August J.: *See—*
Payne, Jewel; and Sick, August J., 5,188,960, Cl. 435-252.300.

Siecor Corporation: *See—*
Barrett, Michael J.; and Dodd, Andrew S., 5,189,718, Cl. 385-101.000.

Siegel, Guenter: *See—*
Hass, Jurgen; Hotea, Gheorghe; and Siegel, Guenter, 5,188,545, Cl. 439-851.000.

Siegenthaler, Karl J., to Bridgestone/Firestone, Inc. Tire innerstitching mold. 5,188,846, Cl. 425-11.000.

Siegner, Helge; Stadelmann, Ludwig; and Wolf, Herbert, to Suspa Compart Aktiengesellschaft. Lockable elevating mechanism for the continuous adjustment of chair seats. 5,188,345, Cl. 267-131.000.

Siemens Aktiengesellschaft: *See*—
Birkle, Siegfried; Gehring, Johann; and Nippe, Waldemar, 5,188,718, Cl. 204-201.000.
Branston, David-Walter; and Stroh, Jan, 5,189,345, Cl. 315-326.000.
Branston, David-Walter; and Stroh, Jan, 5,189,346, Cl. 315-326.000.
Gnahn, Gunter, 5,189,385, Cl. 335-132.000.
Haertl, Christof; and Mueller, Jochen, 5,188,540, Cl. 439-500.000.
Kolem, Heinrich; and Sauter, Rolf, 5,189,370, Cl. 324-309.000.
Krauss, Gerhard, 5,189,704, Cl. 381-68.400.
Lieber, Winfried, 5,189,298, Cl. 250-227.160.
Lieber, Winfried; and Ruegenberg, Gervin, 5,189,300, Cl. 250-227.240.
Sailer, Heinrich, 5,189,544, Cl. 359-153.000.
Stengl, Reinhard; Meul, Hans-Willi; and Hoenlein, Wolfgang, 5,188,977, Cl. 437-89.000.

Siemens Automotive Limited: *See*—
Cook, John E.; Busato, Murray F.; and Gillier, William C., 5,188,141, Cl. 137-112.000.

Siemiatkowski, Bish, to Symbol Technologies, Inc. Bar code reader operable as remote scanner or with fixed terminal. 5,189,291, Cl. 235-472.000.

Sierra Semiconductor Corporation: *See*—
Shum, Ying K.; and Lui, Sik K., 5,188,972, Cl. 437-31.000.

Silberklang, Melvin: *See*—
Palladino, Linda O.; Silberklang, Melvin; Tung, Jwu-Sheng; Law, Simon W.; and Mark, George E., 5,189,019, Cl. 514-12.000.

Silicon Systems, Inc.: *See*—
Cheng, King Y., 5,189,664, Cl. 370-32.100.
Dunkley, James, 5,189,595, Cl. 361-313.000.

Silverberg, Morton: *See*—
Murphy, Charles F., III; Salancy, William A.; Silverberg, Morton; and Supron, Steven A., 5,188,025, Cl. 101-91.000.

Silverman, Ethan E. Ice cube dispenser tray. 5,188,744, Cl. 249-121.000.

Sim, Myeong-bo; Park, Jeong-il; and Lee, Cheol-weon, to Samsung Electronics Co., Ltd. Method and apparatus for generating frame control signals in a multihead videotape recorder using multiple video signal tracks for each video frame. 5,189,568, Cl. 360-73.130.

Sima Products Corporation: *See*—
Breslau, Steven M.; Peng, Han-Min; and Kang, Chieh-Chi, 5,189,563, Cl. 360-14.100.

Simmons, Art: *See*—
York, Rudy L.; Luttmer, Joseph D.; Wan, Chang F.; Orent, Thomas W.; Hutchins, Larry D.; and Simmons, Art, 5,188,970, Cl. 437-3.000.

Simmons, Howard E., III: *See*—
de Graaf, Martinus J. M.; Fickes, Michael G.; Johnson, George H.; and Simmons, Howard E., III, 5,188,863, Cl. 427-512.000.

Simon, Allen H.: *See*—
Patti, Michael F.; Fedele, Nicola J.; Harney, Kevin; and Simon, Allen H., 5,189,636, Cl. 364-786.000.

Simon, Helmut: *See*—
Reisser, Berni; Pflug, Hannes; Khosrawi, Mohammad-Ali; Scharf, Michael; Simon, Helmut; Taudt, Christian; Goll, Wolfgang; Wuetherich, Paul; Fortenbacher, Thomas; and Konrath, Karl, 5,188,083, Cl. 123-502.000.

Simon, Terry L.; and Erickson, Gordon R., to Newell Operating Company. Mini blind system and valance assembly therefor. 5,188,162, Cl. 160-166.100.

Simond, Ludger, to Etablissements Ludger Simond, Societe Anonyme. Self-locking snap-hook. 5,187,844, Cl. 24-599.500.

Simonelli, Anthony F. Umbrella. 5,188,137, Cl. 135-19.500.

Simpkin, Gordon T.; and Husson, Isabelle, to Rhone-Poulenc Sante. Sustained release pharmaceutical formulations. 5,188,841, Cl. 424-495.000.

Simpson, Shawn: *See*—
Ballard, Kenneth D.; Bottino, Ronald E.; Labbe, Mark K.; Lopata, John E.; Malinski, Tom; Meier, Wilhelm; Morelli, Lou; Pacyga, Michael G.; Primorac, Mitch; Roodnat, Bernardus; and Simpson, Shawn, 5,188,546, Cl. 439-885.000.

Simson, Dionizy. Hydraulic cylinder with pressure transmission. 5,188,014, Cl. 91-10.000.

SINCO Incorporated: *See*—
Ouellette, Kevin D.; and Rexroad, John, 5,188,342, Cl. 256-65.000.

Singh, Jagvir: *See*—
Ashby, Eugene C.; Earnhart, Laurence L.; Tedder, Daniel W.; and Singh, Jagvir, 5,189,222, Cl. 568-1.000.

Singh, Jogender; Jain, Sulekh C.; Lloyd, Thomas W.; Bates, Leroy A.; Lacroix, Denis; Cooper, Ernest B., Jr.; Mannava, Seetharamaiah; and Couture, Serge B., to General Electric Company. Laser trimming of forgings. 5,187,967, Cl. 72-340.000.

Sinopoli, Italo M.: *See*—
Cherveny, Mark V.; Trares, Keith C.; Waibel, Terry J.; Hopkins, William M.; Sinopoli, Italo M.; and Young, Ray A., 5,188,685, Cl. 152-451.000.

Siriani, Anita; and Spector, George. TV, VCR, Stereo, CD night light. 5,188,448, Cl. 362-109.000.

Sjogren, Bengt C. H.: *See*—
Lindskog, Inga M.; Sjogren, Bengt C. H.; and Andersson, Sven-Borje, 5,188,835, Cl. 424-432.000.

Skaalure, Eric W., to Atlantic Richfield Company. Method for obtaining cores from a producing well. 5,188,190, Cl. 175-58.000.

Skarblacka Bil & Motor AB: *See*—
Gustavsson, Alvar, 5,188,066, Cl. 123-48.00A.

Skertic, Matthew M.; Hlava, Joseph L.; Eneim, Arthur A.; and Maassen, Nevil Q., to Hughes Aircraft Company. Rapid cooldown dewar. 5,187,939, Cl. 62-51.200.

Sklar-Peppler Furniture Corporation: *See*—
Galea, Joseph M., 5,188,343, Cl. 267-103.000.

Slater, Linda: *See*—
Brittain, David R.; Brown, Steven P.; Cooper, Anthony L.; Longridge, Jethro L.; Morris, Jeffrey J.; Preston, John; and Slater, Linda, 5,189,031, Cl. 514-155.000.

Slautterback Corporation: *See*—
Colton, Douglas E., 5,188,695, Cl. 156-356.000.

Sleefe, Gerard E.: *See*—
Engler, Bruce P.; Sleefe, Gerard E.; and Striker, Richard P., 5,189,262, Cl. 181-102.000.

Sleep, Richard F., to Cordis Corporation. Separable insertion tool. 5,188,605, Cl. 604-158.000.

Slemon, Charles S.: *See*—
Lafferty, Michael; Kline, Daniel; and Slemon, Charles S., 5,188,093, Cl. 128-6.000.

Sliskovic, Drago R.: *See*—
Lee, Helen T.; Picard, Joseph A.; and Sliskovic, Drago R., 5,189,058, Cl. 514-481.000.

Slongo, Mario: *See*—
Birbaum, Jean-Luc; Rody, Jean; Slongo, Mario; and Valet, Andreas, 5,189,084, Cl. 524-100.000.

SM Sbarro Mottas Engineering S.A.: *See*—
Sbarro, Franco, 5,188,192, Cl. 180-219.000.

Smallheer, Joanne: *See*—
Hall, Ralph F.; Newton, John F.; Phipps, Kathleen A.; and Smallheer, Joanne, 5,189,226, Cl. 568-425.000.

Smedley, William H.: *See*—
Haber, Terry M.; Foster, Clark B.; and Smedley, William H., 5,188,615, Cl. 604-203.000.

Smisson, Robert P. M.; and Lamb, Timothy J., to Hydro International Limited. Separator for separating solids components of liquid mixtures and method of using the same. 5,188,238, Cl. 209-211.000.

Smith, David J. Self-adhesive bit holder. 5,188,242, Cl. 211-69.000.

Smith, Gary L.: *See*—
Magnussen, Jr. Haakon T.; Ruskewicz, Stephen J.; Smith, Gary L.; and Wingo, Anthony K., 5,187,990, Cl. 73-864.180.

Smith International Inc.: *See*—
Hooper, Michael E.; and Wilcock, Donald F., 5,188,462, Cl. 384-93.000.

Smith, Kenneth L., to Minnesota Mining and Manufacturing Company. Optimized construction of retroreflective articles for curved applications. 5,189,553, Cl. 359-530.000.

Smith Kline & French Laboratories Ltd.: *See*—
Pearmain, Kevin E., 5,188,839, Cl. 424-464.000.

Smith, Peter, to Imperial Chemical Industries PLC. Unsymmetrical triphenodixoazine reactive dyes. 5,189,162, Cl. 544-75.000.

Smith, Richard B.: *See*—
Thiele, Karl E.; Hasegawa, Tomohiro; and Smith, Richard B., 5,188,114, Cl. 128-661.090.

Smith, Richard W., to Wangner Systems Corporation. Woven papermaking fabric having low profile seam. 5,188,884, Cl. 428-193.000.

Smith, Ronald D., to Du Pont de Nemours, E. I., and Company. Treatment of glaucoma and ocular hypertension with pyrrole angiotensin-II receptor antagonists. 5,189,051, Cl. 514-381.000.

Smith, Stephen R.; and Walker, Geri G. Magnetic grid. 5,188,216, Cl. 198-803.600.

Smith Truss Company, The: *See*—
Castel, John C.; Castel, Dawn S.; and Hall, Michael R., 5,188,586, Cl. 602-19.000.

Smith, Veronica C. Facial bandage with thermal treatment pouch. 5,188,103, Cl. 128-380.000.

SmithKline Beecham Corporation: *See*—
Hall, Ralph F.; Newton, John F.; Phipps, Kathleen A.; and Smallheer, Joanne, 5,189,226, Cl. 568-425.000.

Snap-on Tools Corporation: *See*—
Mellits, Kirk E.; Braun, Robert D.; and Wollert, Gary S., 5,187,974, Cl. 73-49.700.

Snelgrove, R. Vernon: *See*—
Suh, Kyung W.; Brubaker, Burton D.; Stobby, William G.; McCullough, Francis P.; and Snelgrove, R. Vernon, 5,188,896, Cl. 428-397.000.

Snellgrove, Richard A.; and Wyner, Elliot F., to GTE Products Corporation. Method for isolating arc lamp lead-in from frit seal. 5,188,554, Cl. 445-26.000.

Sniegowski, Jeffry: *See*—
Guckel, Henry; and Sniegowski, Jeffry, 5,188,983, Cl. 437-209.000.

SNPE Inc.: *See*—
Andre, Michel; Mazer, Jean-Pierre; and Nouguez, Bruno, 5,189,247, Cl. 102-291.000.

Societa' Italiana Additivi Per Carburanti s.r.l.: *See*—
Canova, Luciano; Santoro, Ettore; Bonoli, Luciano; and Falchi, Paolo, 5,189,231, Cl. 585-4.000.

Societe Atochem: *See*—
Arnaud, Didier; and Tanguy, Jean-Claude, 5,188,748, Cl. 252-67.000.

Soga, Yoshinobu: *See*—
Hattori, Yuji; Soga, Yoshinobu; Sugaya, Masami; and Kato, Nobuyuki, 5,188,007, Cl. 74-867.000.

Sogabe, Yasushi; Matsuura, Kenji; and Murata, Shigeki, to Matsushita Electric Industrial Co., Ltd. Method of measuring track displacement on a magnetic tape. 5,189,491, Cl. 356-372.000.

Soles, Dennis C.: *See*—
Adkins, Delbert L.; Brauckmiller, Raymond R.; and Soles, Dennis C., 5,188,086, Cl. 123-568.000.

Solin, Stuart A.: *See*—
Lee, Mark; Solin, Stuart A.; and Wolff, Peter A., 5,189,367, Cl. 324-252.000.

Sollac: *See*—
Colin, Gerard; and Keller, Jacques, 5,188,720, Cl. 204-206.000.
Seconde, Jean-Francois; and Heurteboust, Gerard, 5,187,966, Cl. 72-329.000.

Solley, Dennis J.: *See*—
Boisvert, John A.; Rogers, Fred A.; Solley, Dennis J.; Tatham, David A.; and Wilkins, Raymond G., 5,189,277, Cl. 219-121.540.

Sollich GmbH: *See*—
Sollich, Helmut, 5,188,853, Cl. 426-231.000.

Sollich, Helmut, to Sollich GmbH. Method for continuously tempering a mass containing cocoa butter or similar fats. 5,188,853, Cl. 426-231.000.

Sollinger, Hans-Peter; and Hennig, Johannes, to J.M. Voith GmbH. Device for measuring the deflection of elongate components. 5,189,492, Cl. 356-373.000.

Solt, Gordon: *See*—
Dressler, Jim; Johnston, Bill; Loftis, Gerald; Salierno, Mark; Solt, Gordon; Spira, Jeff; and Tarsha, Manual, 5,188,316, Cl. 244-234.000.

Solvay: *See*—
Delannoy, Vincent, 5,188,873, Cl. 428-36.920.

Somal, Hardev S.; and Keehn, Daniel, to Berkel Incorporated. Temporary cover for the slicing knife of a slicing machine. 5,188,011, Cl. 83-478.000.

Somar Corporation: *See*—
Akutagawa, Ichiro; Yamaguchi, Tsutomu; and Matsuzaki, Kinimitsu, 5,189,081, Cl. 523-428.000.
Senda, Syouzi, 5,188,699, Cl. 156-521.000.

Somfai, Eva: *See*—
Szego, Andras; Pap, Laszlo ; Nagy, Lajos; Somfai, Eva; Szucsany, Gyorgy; Szekely, Istvan; Molnar, Aniko D. nee; and Hegedus, Agnes, 5,189,062, Cl. 514-521.000.

Sommer, Andreas: *See*—
Florkiewicz, Robert Z.; and Sommer, Andreas, 5,188,943, Cl. 435-69.400.

Sommers, James A., to Teledyne Industries, Inc. Process for making niobium oxide. 5,188,810, Cl. 423-62.000.

Son, Pyong-nae: *See*—
Lai, John T.; and Son, Pyong-nae, 5,189,173, Cl. 546-244.000.

Sonnenburg, Roger D.: *See*—
Brunsting, Albert; and Sonnenburg, Roger D., 5,189,495, Cl. 356-402.000.

Sonobe, Yoshiaki: *See*—
Imamura, Makoto; Tanimoto, Kazushi; Tanaka, Yoichiro; Sonobe, Yoshiaki; and Kitagawa, Katsuyoshi, 5,189,574, Cl. 360-103.000.

Sonoda, Keiji: *See*—
Mori, Katsuhisa; Sonoda, Keiji; Miyata, Hideo; and Okazaki, Yukinobu, 5,187,887, Cl. 40-316.000.

Sonokawa, Masayoshi: *See*—
Yamaguchi, Katsuyoshi; Kondoh, Masatoshi; Hayashi, Shigeo; Sonokawa, Masayoshi; Matsuzawa, Shoichi; and Takahashi, Atsushi, 5,188,572, Cl. 475-168.000.

Sony Corporation: *See*—
Izumi, Akio; Maki, Yasuhito; Narabu, Tadakuni; Sato, Maki; Otsu, Takaji; and Saito, Katsuyuki, 5,189,499, Cl. 257-215.000.
Katoh, Tokoyuki; and Ebine, Nobuhito, 5,188,912, Cl. 429-96.000.
Ohki, Mitsuharu, 5,189,635, Cl. 364-784.000.
Okayasu, Yoshisada; Yamauchi, Toshiyuki; Mori, Akinari; Kamaya, Naoki; Okayama, Naoki; Maruichi, Takanori; Iwasawa, Junichi; Yamada, Yukio; and Okano, Renjiro, 5,189,520, Cl. 358-229.000.
Sato, Ichitaro, 5,189,565, Cl. 360-33.100.
Watanabe, Tetsu; Yamagami, Tamotsu; and Kawashima, Tetsuji, 5,189,650, Cl. 369-13.000.

Soofi, Madjid, to Magneco/Metrel, Inc. Tundish impact pad. 5,188,796, Cl. 266-275.000.

Sorbotten, Oyvind: *See*—
Gjestrum, Einar; Hjelle, Oddbjorn; Hogsnes, Oyvind; Valle, Gunnar F.; and Sorbotten, Oyvind, 5,188,053, Cl. 114-242.000.

Sorensen, Leif B., to Schurpack, Inc. Packing, method of manufacturing same, and strip material therefor. 5,188,461, Cl. 383-63.000.

Sorin Biomedica S.p.A.: *See*—
Grimm, Michael; Eybl, Elisabeth; Griesmacher, Andrea; Grabenwoger, Martin; Muller, Mathias M.; and Wolner, Ernst, 5,188,834, Cl. 424-422.000.

Sorrento Engineering Corporation: *See*—
Hill, Francis U.; Schoenzart, Paul F.; and Frank, Werner P., 5,188,879, Cl. 428-117.000.

Sotomura, Tadashi, to Matsushita Electric Industrial Co., Ltd. Solid form electrolyte composites. 5,188,768, Cl. 252-518.000.

Sounds Fun, Inc.: *See*—
Pierce, Harold D., 5,188,222, Cl. 206-45.340.

Sparks, Lawrence D.: *See*—
Foster, Walter H., III; Sparks, Lawrence D.; Earvolino, Louis P.; and DeSaw, Fred, 5,189,279, Cl. 219-137.00R.

Special Education Rehab Agency, Inc.: *See*—
Stagner, Harold W., 5,189,445, Cl. 351-46.000.

Spector, George: *See*—
Siriani, Anita; and Spector, George, 5,188,448, Cl. 362-109.000.

Spectra, Inc.: *See*—
Hine, Nathan P.; Hoisington, Paul A.; Spehrley, Charles W., Jr; Biggs, Melvin L.; and Carden, Richard, 5,189,438, Cl. 346-1.100.

Spectrospin AG: *See*—
Mraz, Beat; Notzli, Christoph; Ungricht, Ernst; and Marek, Daniel, 5,187,938, Cl. 62-51.100.

Speedfam Corporation: *See*—
Karlsrud, Chris E., 5,187,901, Cl. 51-132.000.

Spehrley, Charles W., Jr: *See*—
Hine, Nathan P.; Hoisington, Paul A.; Spehrley, Charles W., Jr; Biggs, Melvin L.; and Carden, Richard, 5,189,438, Cl. 346-1.100.

Speikamp, Hans-Dieter; Kuhnle, Adolf; and Bretschneider, Jurgen, to Huels Aktiengesellschaft. Process for controlling the particle size in the preparation of expandable styrene polymers by suspension polymerization. 5,189,069, Cl. 521-56.000.

Spence, Wesley F.: *See*—
Burkhardt, William C.; Diehl, Michael W.; and Spence, Wesley F., 5,189,249, Cl. 102-430.000.

Speranza, George P.: *See*—
Waddill, Harold G.; Su, Wei-Yang; and Speranza, George P., 5,189,118, Cl. 525-504.000.

Spielberg, Richard: *See*—
Herrington, Eldridge P., Jr.; and Spielberg, Richard, 5,188,612, Cl. 604-192.000.

Spinnaker Industries Inc.: *See*—
Schumacher, J. Gunther; and Lattanzio, Maurizio, 5,188,333, Cl. 248-676.000.

Spira, Jeff: *See*—
Dressler, Jim; Johnston, Bill; Loftis, Gerald; Salierno, Mark; Solt, Gordon; Spira, Jeff; and Tarsha, Manual, 5,188,316, Cl. 244-234.000.

Spirex Corporation: *See*—
Durina, Michael F., 5,188,399, Cl. 285-91.000.

Spirk, John: *See*—
Nottingham, John R.; Spirk, John; Saunders, Craig M.; and Brokaw, Paul E., 5,188,256, Cl. 222-1.000.

Spitz, Richard: *See*—
Heyke, Klaus; Spitz, Richard; Seidel, Hans-Joachim; Jennrich, Irene; Pfander, Werner; and Vohr, Armin, 5,189,080, Cl. 523-212.000.

Sponge Fishing Co., Inc.: *See*—
Giallourakis, Michael A., 5,187,830, Cl. 15-244.300.

Sponholtz, Per: *See*—
Nilsson, Bo; Ottocan, Doriano; and Sponholtz, Per, 5,188,285, Cl. 229-242.000.

Sprouse, Jeffrey S.: *See*—
McDonald, Ian A.; Bernotas, Ronald C.; Dudley, Mark W.; and Sprouse, Jeffrey S., 5,189,179, Cl. 548-495.000.

Spulgis, Ivars S., to CVI Incorporated. Saturated fluid pumping apparatus. 5,188,519, Cl. 417-511.000.

Square D Company: *See*—
Haun, Andy A.; and Tessmer, Earl J., 5,189,587, Cl. 361-56.000.

Srdanov, Gordana: *See*—
Wudl, Fred; and Srdanov, Gordana, 5,189,136, Cl. 528-86.000.

Stack, Gary P.; Andree, Terrance H.; and Scherer, Noreen T., to American Home Products Corporation. Antipsychotic benzodioxan derivatives. 5,189,171, Cl. 546-157.000.

Stadelmann, Ludwig: *See*—
Siegner, Helge; Stadelmann, Ludwig; and Wolf, Herbert, 5,188,345, Cl. 267-131.000.

Stagner, Harold W., to Special Education Rehab Agency, Inc. Reading assistance device and method. 5,189,445, Cl. 351-46.000.

Stahlecker, Fritz, to Stahlecker, Hans. Arrangement for spinning staple fibers into a yarn. 5,187,930, Cl. 57-400.000.

Stahlecker, Hans: *See*—
Stahlecker, Fritz, 5,187,930, Cl. 57-400.000.

Stahly, Daniel C., to Eaton Corporation. Fluid pressure switch having a Belleville washer. 5,189,269, Cl. 200-83.00P.

Stahly, G. Patrick, to Ethyl Corporation. Ibuprofen resolution. 5,189,708, Cl. 562-402.000.

Staller, Norman D.: *See*—
Farrington, David L.; Staller, Norman D.; and Van Tassell, Jon E., 5,189,464, Cl. 354-403.000.

Stamm, Klaus; and Graf vom Hagen, Siegbert, to Volkswagen AG. Electronic ignition system for an internal combustion engine. 5,188,088, Cl. 123-620.000.

Standard Motor Products, Inc.: *See*—
Paxton, Russell, 5,187,940, Cl. 62-77.000.

Staniforth, Graeme, to WASK-RMF Ltd. Pipe coupling with interlocked and segmented grip ring. 5,188,401, Cl. 285-322.000.

Stanishewski, Joseph F. Still fishing rod stand and easy release latch and stop plate. 5,187,891, Cl. 43-21.200.

Stanley Aviation Corporation: *See*—
Riley, John J.; and Opila, Jerome E., 5,188,400, Cl. 285-233.000.

Stanley, Johnny T.; and Roberts, Brian W., to Delaware Capital Formation, Inc. Apparatus for attaching a bungee cord to a fastener. 5,187,852, Cl. 29-243.570.

Stapleton, Marilyn J., to Gene Tec Corporation. Device for processing biological specimens for analysis of nucleic acids. 5,188,963, Cl. 435-299.000.

Stark, Arthur E. Vacuum cleaner apparatus. 5,187,834, Cl. 15-398.000.

Staroil Limited: *See*—
Bruzzese, Tiberio; and Mozzi, Giovanni, 5,189,149, Cl. 514-58.000.

States, Ronald. Cluster nut tool. 5,188,008, Cl. 81-13.000.

Statiotis, Eraclis: *See*—
Deleuil, Michel; Labourt-Ibarre, Pierre; Rona, Robert; and Statiotis, Eraclis, 5,188,838, Cl. 424-451.000.

Stefanov, Michael E.; Biggers, Rand R.; Rish, Jeff W., III; Henderson, Girardeau L.; and Pham, Chuong N., to United States of America,

VOL 1147 ISS 4 FEB 23 1993 UMI

Navy. Liquid-crystal heat valve controlled with multiple electrode pairs. 5,188,171, Cl. 165-96.000.

Steffes, Helmut: *See—*
Burgdorf, Jochen; Steffes, Helmut; Volz, Peter; Beck, Erhard; and Zaviska, Dalibor, 5,188,439, Cl. 303-116.100.
Reinartz, Hans; Steffes, Helmut; Volz, Peter; and Beck, Erhard, 5,188,433, Cl. 303-100.000.

Stein Industrie: *See—*
Duez, Christian; Semedard, Jean-Claude; and Morin, Jean-Xavier, 5,188,296, Cl. 239-403.000.

Steinhaus, Bruce M.; and Lu, Richard M. T., to Telectronics Pacing Systems, Inc. Notch filter noise rejection system in a cardiac control device. 5,188,117, Cl. 128-708.000.

Stengl, Reinhard; Meul, Hans-Willi; and Hoenlein, Wolfgang, to Siemens Aktiengesellschaft. Method for manufacturing an electrically conductive tip composed of a doped semiconductor material. 5,188,977, Cl. 437-89.000.

Stepan Company: *See—*
Shapiro, Irene; and Sajic, Branko, 5,188,823, Cl. 424-65.000.

Stephan, Dominique: *See—*
Desmurs, Jean-Roger; Kempf, Hubert; Ratton, Serge; and Stephan, Dominique, 5,189,218, Cl. 564-272.000.

Stephenson, Stanley W., III, to Eastman Kodak Company. Synchronized thermal printing. 5,189,522, Cl. 358-296.000.

Stern, Andrew M.: *See—*
Atkinson, Joseph G.; Claremon, David A.; Baldwin, John J.; Friedman, Paul A.; Remy, David C.; and Stern, Andrew M., 5,188,830, Cl. 424-94.630.

Stero, Donald J.; Heaton, Jeff S.; Tryon, James A.; and Bartholmey, Brett A., to DJS & T Limited Partnership. Manually adjustable spray applicator. 5,188,295, Cl. 239-320.000.

Stern, Jon M.: *See—*
Lombardi, Robert; Rassweiler, George; and Stern, Jon M., 5,189,432, Cl. 343-739.000.

Stern, Joseph A.; Green, Stephen L.; King, Charles B.; and May, Sharon B., to Medev Corporation. Needlestick protective glove. 5,187,815, Cl. 2-161.00R.

Stern, Richard A.; and Babbitt, Richard W., to United States of America, Army. Slotted microstrip electronic scan antenna. 5,189,433, Cl. 343-770.000.

Sterzel, Hans-Josef: *See—*
Bittler, Knut; Ter Maat, Johan H. H.; and Sterzel, Hans-Josef, 5,188,782, Cl. 264-82.000.

Sterzenbach, Horst W.; and Kleefeldt, Frank, to Kiekert GmbH & Co. Kommanditgesellschaft. Motor-vehicle door latch. 5,188,406, Cl. 292-216.000.

Stevens, Leigh H. Tunable resonator plug. 5,189,236, Cl. 84-410.000.

Stevens, Stanley J.; and Carrotte, Jonathan F., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Gas turbine engine combustors. 5,187,937, Cl. 60-752.000.

Stewart & Stevenson Services, Inc.: *See—*
Anderson, William L., Jr., 5,188,174, Cl. 166-77.000.

Stickler, Manfred: *See—*
Fischer, Jens-Dieter; Rhein, Thomas; and Stickler, Manfred, 5,189,100, Cl. 525-74.000.

Stil, Hans A.: *See—*
Klusener, Peter A. A.; Stil, Hans A.; Drent, Fit; and Arnoldy, Peter, 5,189,003, Cl. 502-167.000.

Stiles, Ernest D.; Wlosinski, Ronald K.; and Houston, Daniel Q., to Ford Motor Company. Molded article with integral heat shield. 5,188,981, Cl. 428-195.000.

Stipp, Gordon K.; and Kluesener, Bernard W., to Procter & Gamble Company, The. Propylene glycol diesters of medium chain and long chain saturated fatty acids useful as reduced calorie cocoa butter substitutes and hard butters. 5,188,858, Cl. 426-531.000.

Stobbe, Anatoli. Electronic seal. 5,189,396, Cl. 340-541.000.

Stobby, William G.: *See—*
Rhoads, Timothy W.; Suh, Kyung W.; Kadota, Takao; and Stobby, William G., 5,189,071, Cl. 521-79.000.
Rhoads, Timothy W.; Kadota, Takao; Suh, Kyung W.; and Stobby, William G., 5,189,072, Cl. 521-88.000.
Suh, Kyung W.; Stobby, William G.; and McCullough, Francis P., 5,188,893, Cl. 428-362.000.
Suh, Kyung W.; Brubaker, Burton D.; Stobby, William G.; McCullough, Francis P.; and Snelgrove, R. Vernon, 5,188,896, Cl. 428-397.000.

Stolar, Inc.: *See—*
Stolarczyk, Larry G.; Stolarczyk, Gerald L.; and Baldridge, David L., 5,188,426, Cl. 299-1.200.

Stolarczyk, Gerald L.: *See—*
Stolarczyk, Larry G.; Stolarczyk, Gerald L.; and Baldridge, David L., 5,188,426, Cl. 299-1.200.

Stolarczyk, Larry G.; Stolarczyk, Gerald L.; and Baldridge, David L., to Stolar, Inc. Method for controlling the thickness of a layer of material in a seam. 5,188,426, Cl. 299-1.200.

Stonehart Associates, Inc.: *See—*
Watanabe, Masahiro; Stonehart, Paul; Tsurumi, Kazunori; Yamamoto, Nobuo; Hara, Noriaki; and Nakamura, Toshihide, 5,189,005, Cl. 502-326.000.

Stonehart, Paul: *See—*
Watanabe, Masahiro; Stonehart, Paul; Tsurumi, Kazunori; Yamamoto, Nobuo; Hara, Noriaki; and Nakamura, Toshihide, 5,189,005, Cl. 502-326.000.

Stopper, Steve R.: *See—*
Timmons, Terry K.; Stopper, Steve R.; Fox, Norman K.; Everhart, Dennis S.; Conn, William; and Morell, Lori A., 5,188,885, Cl. 428-198.000.

Storck Einkauf + Service GmbH: *See—*
Brose, Werner; and Augustin, Martin, 5,188,223, Cl. 206-45.150.

Stove, Andrew G.; and Williams, Michael B., to U.S. Philips Corporation. FMCW radar linearizer. 5,189,427, Cl. 342-128.000.

Stowe, Michael W., to Industrial Magnetics, Inc. Tramp metal separation device. 5,188,239, Cl. 209-223.100.

Straayer, David H.: *See—*
Franz, Patrick J.; and Straayer, David H., 5,189,403, Cl. 340-711.000.

Stratagene: *See—*
Short, Jay M.; and Kretz, Patricia, 5,188,957, Cl. 435-235.100.

Straubel, Max; and Kellermann, Karl, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 5,188,075, Cl. 123-357.000.

Striker, Richard P.: *See—*
Engler, Bruce P.; Sleefe, Gerard E.; and Striker, Richard P., 5,189,262, Cl. 181-102.000.

Stringer, Orum: *See—*
Gaffar, Abdul; Nabi, Nuran; Afflitto, John; and Stringer, Orum, 5,188,821, Cl. 424-52.000.

Strobl, Georg, to Johnson Electric S.A. Assembled commutator. 5,189,329, Cl. 310-233.000.

Stroh, Jan: *See—*
Branston, David-Walter; and Stroh, Jan, 5,189,345, Cl. 315-326.000.
Branston, David-Walter; and Stroh, Jan, 5,189,346, Cl. 315-326.000.

Strom, Laurie A.; Carnall, Edward, r.; Ferranti, Steven A.; and Mir, Jose M., to Eastman Kodak Company. Process for preparing superconductive thick films. 5,189,010, Cl. 505-1.000.

Stroud, Edward C.; and Griffith, John D., to Bentley Group Limited. Circular knitting machines. 5,187,951, Cl. 66-14.000.

Strutz, William F.: *See—*
Weber, Thomas J.; Garrison, Dale L.; Forrest, Richard E.; and Strutz, William F., 5,188,710, Cl. 202-185.300.

Stryker Corporation: *See—*
Stryker, Martin W., 5,187,824, Cl. 5-430.000.

Stryker, Martin W., to Stryker Corporation. Zero clearance support mechanism for hospital bed siderail, IV pole holder, and the like. 5,187,824, Cl. 5-430.000.

Stuckler, Hubert: *See—*
Farnleitner, Lorenz; Stuckler, Hubert; Kaiser, Herbert; and Kloimstein, Engelbert, 5,189,215, Cl. 562-577.000.

Studt, Stephan, to Korber AG. Apparatus for classifying particles of tobacco and the like. 5,188,128, Cl. 131-110.000.

Sturgill, Michael R.; and Herres, Bradley K., to Acoustic Imaging Technologies Corporation. Ultrasonic Doppler imaging systems with improved flow sensitivity. 5,188,112, Cl. 128-661.090.

Su, Tien-Kuei: *See—*
Joesten, Burdette L.; and Su, Tien-Kuei, 5,188,777, Cl. 264-41.000.

Su, Wei-Yang: *See—*
Waddill, Harold G.; Su, Wei-Yang; and Speranza, George P., 5,189,118, Cl. 525-504.000.

Subisak, Gregory J.; and Hammond, Douglas S., to Holophane Company, Inc. Internally illuminated sign. 5,188,453, Cl. 362-329.000.

Suda, Satoru: *See—*
Tagawa, Kimiteru; Takahashi, Seiichi; Utsuno, Noritoshi; Umehara, Hideki; Hayashi, Fujio; Kiba, Shigeo; and Suda, Satoru, 5,188,898, Cl. 428-403.000.

Suehiro, Toshiyuki: *See—*
Teraoka, Shinichi; Ueda, Masanori; and Suehiro, Toshiyuki, 5,188,681, Cl. 148-603.000.

Suenaga, Hiroyoshi: *See—*
Fukai, Hideaki; Suenaga, Hiroyoshi; and Minakawa, Kuninori, 5,188,677, Cl. 148-501.000.

Sugaya, Masami: *See—*
Hattori, Yuji; Soga, Yoshinobu; Sugaya, Masami; and Kato, Nobuyuki, 5,188,007, Cl. 74-867.000.

Sugiki, Akio; Ishikawa, Masanobu; Yoshida, Nobuhiro; Tanahashi, Haruhiko; and Miura, Kiyokatsu, to Aisin Seiki Kabushiki Kaisha. Steering system. 5,188,392, Cl. 280-775.000.

Sugimori, Daisuke: *See—*
Misawa, Yoshihisa; Kondo, Hisao; Tsutsumi, Tetsuya; Hayashi, Masahiro; Sugimori, Daisuke; Matsuba, Yorishige; Isozaki, Masashi; Nishigaki, Hiroharu; Yazawa, Kazunaga; and Kondo, Kiyosi, 5,189,189, Cl. 554-194.000.

Sugimoto, Hiroshi, to Kabushiki Kaisha Toshiba. Method and apparatus for setting multi-slice imaging conditions in computed tomographic imaging systems. 5,188,110, Cl. 128-653.100.

Sugimoto, Kazuaki; Kitahara, Satoshi; Yamamoto, Akio; and Sugiura, Ikuzo, to Tokyo Electric Co., Ltd. Label printer. 5,188,029, Cl. 101-288.000.

Sugimoto, Masakazu: *See—*
Takayama, Yoshinari; Mochizuki, Amane; Hino, Atsushi; Ouchi, Kazuo; and Sugimoto, Masakazu, 5,188,702, Cl. 156-630.000.

Sugishima, Kiyohisa: *See—*
Ohtsubo, Toshihiko; Shouno, Seita; Suzuki, Akio; Sugishima, Kiyohisa; Takagi, Eiichi; and Takada, Yoshihiro, 5,189,521, Cl. 358-296.000.

Sugitani, Hiroshi: *See—*
Arashima, Teruo; Kimura, Makiko; Kashino, Toshio; Sugitani, Hiroshi; Hattori, Yoshifumi; Ikeda, Masami; Saito, Asao; Masuda, Kazuaki; Saito, Akio; and Orikasa, Tsuyoshi, 5,189,443, Cl. 346-140.00R.

Sugiura, Hiroyuki: *See—*
Ono, Katsuhiro; Anno, Hidero; Sugiura, Hiroyuki; Kitami, Takayuki; and Tazawa, Hiroaki, 5,189,688, Cl. 378-133.000.

Sugiura, Ikuzo: *See—*
Sugimoto, Kazuaki; Kitahara, Satoshi; Yamamoto, Akio; and Sugiura, Ikuzo, 5,188,029, Cl. 101-288.000.

Sugiura, Takashi; Nagashima, Nao; and Abe, Shunichi, to Canon Kabushiki Kaisha. Image processing apparatus. 5,189,523, Cl. 358-300.000.

Sugiyama, Shoichi; Arai, Fumiaki; Nonogaki, Masayasu; Natori, Yuji; Yamaguchi, Hideyuki; Ueda, Hitoshi; Tomita, Hiroshi; and Kato, Kotaro, to Ricoh Company, Ltd.; and Teijin Ltd. Thermosensitive stencil paper. 5,188,881, Cl. 428-143.000.

Suguro, Kyoichi; Imai, Keitaro; Koyama, Mitsutoshi; and Yamabe, Kikuo, to Kabushiki Kaisha Toshiba. High dielectric capacitor having low current leakage. 5,189,503, Cl. 257-310.000.

Suh, Kyung W.; Stobby, William G.; and McCullough, Francis P., to Dow Chemical Company, The. Stabilized and carbonaceous expanded fibers. 5,188,893, Cl. 428-362.000.

Suh, Kyung W.; Brubaker, Burton D.; Stobby, William G.; McCullough, Francis P.; and Snelgrove, R. Vernon, to Dow Chemical Company, The. Batting thermal insulation with fire resistant properties. 5,188,896, Cl. 428-397.000.

Suh, Kyung W.: *See—*
Rhoads, Timothy W.; Suh, Kyung W.; Kadota, Takao; and Stobby, William G., 5,189,071, Cl. 521-79.000.
Rhoads, Timothy W.; Kadota, Takao; Suh, Kyung W.; and Stobby, William G., 5,189,072, Cl. 521-88.000.

Suhadolnik, Robert J.; and Pfleiderer, Wolfgang, to Temple University of the Commonwealth System of Higher Education. Encapsulated 2',5'-phosphorothioate oligoadenylates. 5,188,897, Cl. 428-402.200.

Sukeshita, Kazumi; Tomikawa, Takayuki; and Ikegami, Yasuyuki, to Nissan Motor Co., Ltd.; and Fuji Kiko Co., Ltd. Accelerator pedal device. 5,188,001, Cl. 74-560.000.

Sulzer Brothers Limited: *See—*
Christe, Marcel; Koch, Walter; and Grimm, Peter, 5,188,154, Cl. 139-28.000.

Sum, Fuk-Wah: *See—*
Albright, Jay D.; and Sum, Fuk-Wah, 5,189,023, Cl. 514-19.000.

Sumida, Shuji: *See—*
Iida, Yoshimitsu; and Sumida, Shuji, 5,188,840, Cl. 424-468.000.

Sumitomo Bakelite Company Limited: *See—*
Idemoto, Morito; and Noguchi, Yasuo, 5,188,102, Cl. 128-24.0AA.

Sumitomo Chemical Company, Limited: *See—*
Abe, Hiroomi; Nagaoka, Kenji; and Sanada, Takashi, 5,189,103, Cl. 525-133.000.
Imai, Akio; Tsuji, Mitsuji; Sanada, Takashi; and Yamamoto, Keisaku, 5,189,108, Cl. 525-285.000.
Imai, Akio; and Seki, Tomoaki, 5,189,109, Cl. 525-296.000.
Moriuma, Hiroshi; Osaki, Haruyoshi; Hioki, Takeshi; and Uetani, Yasunori, 5,188,920, Cl. 430-191.000.
Ohsumi, Tadashi; Fujimura, Makoto; and Hayashi, Miki, 5,189,040, Cl. 514-269.000.
Saito, Kenji; Matsuo, Sanshiro; and Oda, Yoshiaki, 5,189,186, Cl. 549-497.000.
Sasaki, Toshio; Ebara, Takeshi; Jyohoji, Hirofumi; Mizunuma, Kooji; and Kawai, Kiyoshi, 5,189,124, Cl. 526-119.000.

Sumitomo Electric Industries, Ltd.: *See—*
Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, 5,189,011, Cl. 505-1.000.
Murai, Teruyuki; and Yamamoto, Susumu, 5,189,720, Cl. 385-103.000.
Nishiguchi, Masanori, 5,188,984, Cl. 437-211.000.

Sumitomo Heavy Industries, Ltd.: *See—*
Matsuoka, Toshio, 5,188,795, Cl. 266-202.000.
Yamaguchi, Katsuyoshi; Kondoh, Masatoshi; Hayashi, Shigeo; Sonokawa, Masayoshi; Matsuzawa, Shoichi; and Takahashi, Atsushi, 5,188,572, Cl. 475-168.000.

Sumitomo Rubber Industries, Ltd.: *See—*
Ueyoko, Kiyoshi; Yoshikawa, Hideaki; and Takatsu, Mikio, 5,188,686, Cl. 152-454.000.

Sumitomo Wiring Systems, Ltd.: *See—*
Itoh, Hiroyuki, deceased; and Kawai, Yuji, 5,188,537, Cl. 439-127.000.

Summers, Michael E. Deformable ball retrieving, retaining and dispensing device. 5,188,410, Cl. 294-19.200.

Sun Seiki Co., Ltd.: *See—*
Hashida, Yoshisuke; Takaoka, Hideo; and Kamei, Yoshiharu, 5,188,694, Cl. 156-353.000.

Sunderland, Richard A., to Sherwood Medical Company. Blood collection tube holder safety guard. 5,188,119, Cl. 128-763.000.

Sundstrand Corporation: *See—*
Shekleton, Jack R., 5,187,932, Cl. 60-39.230.

Sunohara, Ichiro; and Ikeda, Tatsuji, to Mimaki Engineering Co., Ltd. Method for changing the direction of a cutter edge of a cutting plotter. 5,188,009, Cl. 83-13.000.

Sunohara, Masaaki: *See—*
Nakamura, Shoji; Inoue, Takasi; Sunohara, Masaaki; and Shioyama, Tadao, 5,188,652, Cl. 65-319.000.

Sunshon Molding Co., Ltd.: *See—*
Chiu, Hsiu-Hui, 5,188,430, Cl. 301-111.000.

Superbag Corp.: *See—*
Pierce, Larry W.; Zeigler, Steve F.; and Bazbaz, Jacobo, 5,188,235, Cl. 206-554.000.

Supron, Steven A.: *See—*
Murphy, Charles F., III; Salancy, William A.; Silverberg, Morton; and Supron, Steven A., 5,188,025, Cl. 101-91.000.

Sure Trak: *See—*
Ferguson, Michael D.; and Capson, Ronnie R., 5,188,373, Cl. 273-421.000.

Survival Engineering, Inc.: *See—*
Lind, John R.; and Swanson, Robert L., 5,188,142, Cl. 137-223.000.

Susko, Robin A.: *See—*
Alexander, Lawrence C.; Appelt, Bernd K.; Balkin, David K.; Hansen, James J.; Hromek, Joseph; Kaschak, Ronald A.; Lauffer, John M.; Memis, Irving; Patel, Magan S.; Seman, Andrew M.; and Susko, Robin A., 5,189,261, Cl. 174-263.000.

Suspa Compart Aktiengesellschaft: *See—*
Siegner, Helge; Stadelmann, Ludwig; and Wolf, Herbert, 5,188,345, Cl. 267-131.000.

Suspended Animation, Inc.: *See—*
Collins, Walter, 5,187,839, Cl. 24-170.000.

Sutherland, Joseph E.: *See—*
Burton, Larry W.; Sutherland, Joseph E.; Matsumura, Paul M.; Ball, Karen V.; and Czerwiec, Richard M., 5,189,673, Cl. 370-110.100.

Sutton, Fredrick E., Jr.; and Winegar, Robert N., to Moiron. Tube bending die. 5,187,963, Cl. 72-159.000.

Suzuki, Akio: *See—*
Ohtsubo, Toshihiko; Shouno, Seita; Suzuki, Akio; Sugishima, Kiyohisa; Takagi, Eiichi; and Takada, Yoshihiro, 5,189,521, Cl. 358-296.000.

Suzuki, Hidenori: *See—*
Honda, Tetsuya; and Suzuki, Hidenori, 5,189,661, Cl. 369-258.000.

Suzuki, Hiroshi, to International Business Machines Corporation. Drive line wiring for liquid crystal display. 5,189,539, Cl. 359-87.000.

Suzuki, Hiroyasu: *See—*
Arai, Kazuhiko; Fujiwara, Akira; Motoda, Shosaku; and Suzuki, Hiroyasu, 5,188,969, Cl. 436-548.000.

Suzuki, Katsuhiro: *See—*
Maeda, Kenji; Hayashi, Kenichiro; Masuda, Mitsuyoshi; Nishikawa, Hirofumi; and Suzuki, Katsuhiro, 5,188,420, Cl. 296-223.000.

Suzuki, Keitaro: *See—*
Watanabe, Yoshitane; and Suzuki, Keitaro, 5,188,667, Cl. 106-286.400.

Suzuki, Kenji; Hata, Seiji; Nishida, Yoshien; Kawasaki, Kyoichi; Fujii, Kenjiro; Shimura, Yasunori; and Takeyoshi, Shigenori, to Hitachi, Ltd. Method of loading surface mounted device and an apparatus therefor. 5,189,707, Cl. 382-8.000.

Suzuki, Kouji: *See—*
Matumoto, Morihisa; Suzuki, Kouji; Endo, Shunkichi; and Kurosawa, Yukio, 5,189,270, Cl. 200-144.00B.

Suzuki, Naoshi; and Uno, Shunya, to International Business Machines Corp. Information processing system having power saving control of the processor clock. 5,189,647, Cl. 368-10.000.

Suzuki, Satoshi: *See—*
Takaki, Akira; Iguchi, Hirokazu; Suzuki, Satoshi; Mori, Hiroto; and Hosoi, Hideki, 5,188,751, Cl. 525-70.000.

Suzuki, Takahiro: *See—*
Hodumi, Masahiko; Bando, Koji; Suzuki, Takahiro; Hashiba, Shigeto; Ono, Yoshiyuki; Okano, Sadao; Ashiya, Seiji; and Murase, Masanori, 5,188,916, Cl. 430-65.000.

Suzuki, Takashi, to Nittan Company, Limited. Smoke density monitor system. 5,189,631, Cl. 364-550.000.

Suzuki, Takashi: *See—*
Kai, Yoshiaki; and Suzuki, Takashi, 5,188,747, Cl. 252-54.000.

Suzuki, Takeshi: *See—*
Tsuchida, Takayasu; Katsurada, Naoki; Ohtsuka, Noboru; Uchibori, Haruo; and Suzuki, Takeshi, 5,188,949, Cl. 435-115.000.

Suzuki, Toshiro: *See—*
Sano, Kenichi; Nishiyama, Masaaki; Suzuki, Toshiro; Wakabayashi, Shoichiro; and Miyahara, Kuniaki, 5,189,201, Cl. 560-205.000.

Suzuki, Yuji; and Yamazaki, Takeshi, to Fuji Photo Film Co., Ltd. Process for producing cellulose triacetate films. 5,188,788, Cl. 264-169.000.

Svendsen, Robert A.: *See—*
Cook, Harold T., Jr.; Furlong, Donn B.; Svendsen, Robert A.; and Rustad, Allan P., 5,188,146, Cl. 137-580.000.

Swag Zschokke Wartmann AG: *See—*
Hinz, Wolfgang; and Gass, Ernst, 5,188,856, Cl. 426-465.000.

Swandon, Lynwood W.; and Lindquist, John M., to FEI Company. Method of semiconductor device manufacture. 5,188,705, Cl. 156-643.000.

Swanson, David T.: *See—*
Avellino, Frank J.; Case, Richard A.; and Swanson, David T., 5,189,275, Cl. 219-56.220.

Swanson, Robert L.: *See—*
Lind, John R.; and Swanson, Robert L., 5,188,142, Cl. 137-223.000.

Swars, Helmut; and Maus, Wolfgang, to Mannesmann Aktiengesellschaft. Expansion method by applying plural pressure systems. 5,187,855, Cl. 29-523.000.

Swarup, Vijay: *See—*
Manalastas, Pacifico V.; Drake, Evelyn N.; Thaler, Warren A.; Kresge, Edward N.; Elspass, Chester W.; Geiger, Albert J.; and Swarup, Vijay, 5,188,654, Cl. 71-28.000.

Sweeney, Derek J., to General Electric Company. Low-pressure turbine shroud. 5,188,507, Cl. 415-173.100.

Sweeney, Niall; Nagy, Michael; and Eisenring, Richard, to Becton, Dickinson and Company. Safety needle syringe. 5,188,597, Cl. 604-110.000.

VOL
1147
ISS
4
FE
23
1993
UMI

Sweet, Larrie, to Carbo Ceramics Inc. Method of fracturing a subterranean formation with a lightweight propping agent. 5,188,175, Cl. 166-280.000.

Swift, Peter R., to Amphenol Corporation. Electrical connector including a removable circuit component. 5,188,543, Cl. 439-620.000.

Symbol Technologies, Inc.: *See—*
Rovner, Michael S., 5,189,356, Cl. 318-685.000.
Siemiatkowski, Bish, 5,189,291, Cl. 235-472.000.

Synergen, Inc.: *See—*
Florkiewicz, Robert Z.; and Sommer, Andreas, 5,188,943, Cl. 435-69.400.

Synergy Semiconductor Corporation: *See—*
Pollock, Larry J.; and Bayman, Atiye, 5,188,971, Cl. 437-31.000.

Synnett, Karen P.: *See—*
Lowell, Kenneth W.; Synnett, Karen P.; and Janatka, Karel J., 5,188,355, Cl. 271-225.000.

Syntex (U.S.A.) Inc.: *See—*
Berger, Jacob; and Clark, Robin D., 5,189,041, Cl. 514-288.000.

Syremont S.p.A.: *See—*
Cozzi, Ennio; Federici, Franco; and Parrini, Paolo, 5,189,135, Cl. 528-70.000.

Systems Mailing Research, Inc.: *See—*
Nelson, Larry L., 5,188,504, Cl. 414-786.000.

Systems Technology Associates: *See—*
Guerreri, Stephen J., 5,189,727, Cl. 395-2.000.

Szego, Andras; Pap, Laszlo ; Nagy, Lajos; Somfai, Eva; Szucsany, Gyorgy; Szekely, Istvan; Molnar, Aniko D. nee; and Hegedus, Agnes, to Chinoin Gyogyszer -ES Vegyeszeti Termekek Gyara R.T. Plant protecting agent. 5,189,062, Cl. 514-521.000.

Szekely, Istvan: *See—*
Szego, Andras; Pap, Laszlo ; Nagy, Lajos; Somfai, Eva; Szucsany, Gyorgy; Szekely, Istvan; Molnar, Aniko D. nee; and Hegedus, Agnes, 5,189,062, Cl. 514-521.000.

Szucsany, Gyorgy: *See—*
Szego, Andras; Pap, Laszlo ; Nagy, Lajos; Somfai, Eva; Szucsany, Gyorgy; Szekely, Istvan; Molnar, Aniko D. nee; and Hegedus, Agnes, 5,189,062, Cl. 514-521.000.

Tabata, Masahiko: *See—*
Mamoto, Katsuhiro; Nakamura, Yasuyuki; Kawaoka, Akiyoshi; and Tabata, Masahiko, 5,188,851, Cl. 426-2.000.

Tabatabi, Louisa B.; Mayfield, John E.; and Beck, Bonnie L., to United States of America, Agriculture. *Brucella abortus* antibody detection methods. 5,188,936, Cl. 435-7.320.

Tachi S. Co. Ltd.: *See—*
Kato, Takashi, 5,188,416, Cl. 296-65.100.
Takahara, Masatoshi, 5,188,329, Cl. 248-430.000.
Yokota, Masaaki, 5,187,848, Cl. 29-91.100.

Tachibana, Kanichi: *See—*
Inukai, Takao; Tachibana, Kanichi; Tsukada, Kazuo; Fujikawa, Toshitaka; Iida, Keiichi; and Kogure, Noboru, 5,189,273, Cl. 219-10.55E.

Tachimori, Masaharu; Ishizaka, Kazunori; and Araki, Hideo, to Nippon Steel Corporation; and NSC Electron Corp. Silicon wafer excelling in gettering ability and method for production thereof. 5,189,508, Cl. 257-49.000.

Tada, Naofumi; Iida, Fumio; Takahashi, Ryukichi; Maki, Naoki; Sakai, Shuji; and Hotta, Yoshiji, to Hitachi, Ltd.; and Hitachi Cable Ltd. Aluminum-stabilized superconductor and superconducting coil, and method of manufacturing the superconductor. 5,189,386, Cl. 335-216.000.

Taddei, Virgile S. Device for making earthen blocks. 5,188,848, Cl. 425-147.000.

Tadej, John. Dart board wire. 5,188,372, Cl. 273-408.000.

Tadenuma, Hiroshi: *See—*
Kasai, Kiyoshi; Sakurai, Fujio; and Tadenuma, Hiroshi, 5,189,107, Cl. 525-244.000.

Tadros, Sobhy: *See—*
Jeffries, Alfred T., III; Honda, Kenji; Blakeney, Andrew J.; and Tadros, Sobhy, 5,188,921, Cl. 430-192.000.

Taga, Shinichiro: *See—*
Takashima, Izumi; Imoto, Yoshiya; Taga, Shinichiro; and Shimizu, Mitsuo, 5,189,528, Cl. 358-448.000.

Tagawa, Kimiteru; Takahashi, Seiichi; Utsuno, Noritoshi; Umehara, Hideki; Hayashi, Fujio; Kiba, Shigeo; and Suda, Satoru, to Mitsui Toatsu Chemicals, Incorporated. Ferromagnetic metal particles and preparation process thereof. 5,188,898, Cl. 428-403.000.

Taguchi, Ichizo, to Hitachi Zosen Corporation. Apparatus for supporting reduction rolls in a rolling mill. 5,187,960, Cl. 72-19.000.

Taguchi, Masahiro; Hashikawa, Atsushi; and Goto, Katsunori, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Apparatus for optically reading information. 5,189,533, Cl. 359-18.000.

Tai, Seiji: *See—*
Hayashida, Shigeru; and Tai, Seiji, 5,188,922, Cl. 430-270.000.

Taisho Pharmaceutical Co., Ltd.: *See—*
Sato, Masakazu; Kawashima, Yutaka; Goto, Jun; Chiba, Yoshiyuki; Satake, Mikio; Iwata, Chuzo; and Imanishi, Takeshi, 5,189,211, Cl. 562-430.000.

Taito Co., Ltd.: *See—*
Nikl, Libor H.; and Allbright, Lawrence J., 5,189,028, Cl. 514-54.000.

Taiyo Giken Kogyo Co., Ltd.: *See—*
Kosaka, Michio, 5,188,140, Cl. 137-12.000.

Takada, Yoshihiro: *See—*
Ohtsubo, Toshihiko; Shouno, Seita; Suzuki, Akio; Sugishima, Kiyohisa; Takagi, Eiichi; and Takada, Yoshihiro, 5,189,521, Cl. 358-296.000.

Takagi, Eiichi: *See—*
Ohtsubo, Toshihiko; Shouno, Seita; Suzuki, Akio; Sugishima, Kiyohisa; Takagi, Eiichi; and Takada, Yoshihiro, 5,189,521, Cl. 358-296.000.

Takagi, Hisamitsu: *See—*
Tomura, Masashi; Takagi, Hisamitsu; and Matsumoto, Yoshihiro, 5,189,358, Cl. 320-2.000.

Takagi, Norio: *See—*
Nitta, Shozo; Kurihara, Hideshi; Sanenobu, Kazuyuki; Ichihashi, Tetsuo; and Takagi, Norio, 5,188,774, Cl. 264-22.000.

Takagi, Toshinori: *See—*
Itoh, Shigeo; Watanabe, Teruo; Nakata, Hisashi; and Takagi, Toshinori, 5,189,341, Cl. 315-169.100.

Takagi, Toshio: *See—*
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Fujii, Yasuo; Nakamura, Tetsuya; Fukuyama, Hirotaka; Arai, Seiji; Sato, Koichiro; Takagi, Toshio; Nishina, Shuji; Hukasawa, Jiro; Maruta, Masatoshi; and Koizumi, Seiichi, 5,188,057, Cl. 118-657.000.

Takahara, Masatoshi, to Tachi-S Co. Ltd. Structure for covering slide railing seat adjuster. 5,188,329, Cl. 248-430.000.

Takahashi, Atsushi: *See—*
Yamaguchi, Katsuyoshi; Kondoh, Masatoshi; Hayashi, Shigeo; Sonokawa, Masayoshi; Matsuzawa, Shoichi; and Takahashi, Atsushi, 5,188,572, Cl. 475-168.000.

Takahashi, Hisakazu; Baba, Yoko; Ezaki, Kenichi; Okamoto, Yasuhiko; Shibata, Kenichi; Kuroki, Kazuhiko; and Yasuyama, Shigeyuki, to Sanyo Electric Co., Ltd. Microwave dielectric ceramic composition. 5,188,993, Cl. 501-136.000.

Takahashi, Katsuya: *See—*
Fukuoka, Daisuke; Takahashi, Katsuya; and Hashimoto, Isao, 5,189,183, Cl. 549-345.000.

Takahashi, Keizo; and Matsumoto, Masakazu, to Mitutoyo Corporation. Coordinate measuring machine with protected origin point blocks. 5,187,874, Cl. 33-502.000.

Takahashi, Koichi: *See—*
Kataoka, Hideaki; Okutsu, Kazuo; Takahashi, Koichi; and Mizuno, Kazunori, 5,188,306, Cl. 242-71.100.

Takahashi, Kumiko; Baba, Kazuo; and Shiratsuki, Yoshiyuki, to Fuji Xerox Co., Ltd. Resistor, process for producing the same, and thermal head using the same. 5,189,284, Cl. 219-543.000.

Takahashi, Ryukichi: *See—*
Tada, Naofumi; Iida, Fumio; Takahashi, Ryukichi; Maki, Naoki; Sakai, Shuji; and Hotta, Yoshiji, 5,189,386, Cl. 335-216.000.

Takahashi, Seiichi: *See—*
Tagawa, Kimiteru; Takahashi, Seiichi; Utsuno, Noritoshi; Umehara, Hideki; Hayashi, Fujio; Kiba, Shigeo; and Suda, Satoru, 5,188,898, Cl. 428-403.000.

Takahashi, Teruyoshi: *See—*
Ikari, Hirotake; and Takahashi, Teruyoshi, 5,188,663, Cl. 106-18.330.

Takahashi, Tomonori: *See—*
Ichikawa, Shuichi; and Takahashi, Tomonori, 5,188,994, Cl. 501-153.000.

Takahashi, Tsuyoshi: *See—*
Mori, Kenji; Hirai, Hiromu; Otsuki, Haruaki; Takahashi, Tsuyoshi; Naruse, Jun; Nishimura, Yuji; and Kawamoto, Muneo, 5,189,578, Cl. 360-106.000.

Takahata, Toshihiro: *See—*
Murakoshi, Toshiichi; Kawazoe, Hiroshi; Takahata, Toshihiro; Nishimura, Shigeki; and Haruta, Yoshiyuki, 5,187,858, Cl. 29-596.000.

Takai, Kazuhiko: *See—*
Nagatomi, Wakatsu; and Takai, Kazuhiko, 5,188,889, Cl. 428-304.400.

Takaki, Akira; Iguchi, Hirokazu; Suzuki, Satoshi; Mori, Hiroto; and Hosoi, Hideki, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Vinyl chloride resin composition. 5,188,751, Cl. 525-70.000.

Takakuwa, Kiyoshi; and Oda, Keisuke, to Mitsubishi Denki Kabushiki Kaisha. Printer with dual color density regulation. 5,189,440, Cl. 346-76.0PH.

Takane, Atsushi; Koizumi, Hideaki; and Sano, Koichi, to Hitachi, Ltd. NMR imaging method of low flow rate fluid. 5,189,369, Cl. 324-306.000.

Takaoka, Hideo: *See—*
Hashida, Yoshisuke; Takaoka, Hideo; and Kamei, Yoshiharu, 5,188,694, Cl. 156-353.000.

Takara Shuzo Co., Ltd.: *See—*
Asada, Kiyozo; Uemori, Takashi; Endo, Masahiro; Kimizuka, Fusao; and Kato, Ikunoshin, 5,189,144, Cl. 530-324.000.

Takasaki, Tadaoki: *See—*
Udo, Hiroshi; Nagaishi, Hatsuo; Takasaki, Tadaoki; and Ido, Kou, 5,188,082, Cl. 123-491.000.

Takashi, Terumi: *See—*
Mano, Hiroyuki; Takashi, Terumi; Futami, Toshio; and Fujii, Tatsuhisa, 5,189,407, Cl. 340-793.000.

Takashima, Izumi; Imoto, Yoshiya; Taga, Shinichiro; and Shimizu, Mitsuo, to Fuji Xerox Co., Ltd. Image reading apparatus. 5,189,528, Cl. 358-448.000.

Takata, Yutaka; and Kobayashi, Hiroo, to Mitsubishi Denki Kabushiki Kaisha. Optical deflector and display unit using the same. 5,189,545, Cl. 359-197.000.

Takatori, Masahiro; Nakano, Yukio; Ashi, Yoshihiro; and Kanno, Tadayuki, to Hitachi, Ltd. ATM switch and ATM multiplexer. 5,189,668, Cl. 370-60.000.

Takatsu, Mikio: *See—*
Ueyoko, Kiyoshi; Yoshikawa, Hideaki; and Takatsu, Mikio, 5,188,686, Cl. 152-454.000.

Takayama, Masao: *See—*
Idosako, Hidetaka; and Takayama, Masao, 5,188,477, Cl. 403-133.000.

Takayama, Yoshinari; Mochizuki, Amane; Hino, Atsushi; Ouchi, Kazuo; and Sugimoto, Masakazu, to Nitto Denko Corporation. Process for producing an anisotropic conductive film. 5,188,702, Cl. 156-630.000.

Takeba, Go, to Ajinomoto Co., Inc.; and Takeba, Go. Flower-inducing substances and a method for production thereof. 5,189,145, Cl. 530-326.000.

Takebe, Katsuhiko; and Hiyama, Satoshi, to Honda Giken Kogyo Kabushiki Kaisha. Semiconductor sensor. 5,187,986, Cl. 73-766.000.

Takeda Chemical Industries, Inc.: *See—*
Akiyama, Yohko; Yoshioka, Minoru; and Kitamori, Nobuyuki, 5,189,148, Cl. 530-399.000.

Takeda Chemical Industries, Ltd.: *See—*
Kato, Koichi; Masuya, Hirotomo; and Norihiko, Moriya, 5,189,057, Cl. 514-473.000.
Natsugari, Hideaki; and Ikeda, Hitoshi, 5,189,043, Cl. 514-309.000.

Takeda, Fumio; Kojima, Yoshio; Kaneko, Tsuneo; Ishibashi, Yutaka; Sasaki, Naoto; and Tsushima, Isako, to Kabushiki Kaisha Toshiba. Interior panel unit for permitting arrangement of cables and devices on room floor. 5,187,907, Cl. 52-221.000.

Takeda, Naohiro; Otani, Yuzo; Okajima, Nariaki; Ito, Yoshihiko; Kinoshita, Shin-ichi; Inagaki, Masashi; and Harada, Takashi, to Diafoil Company, Limited. Magnetic recording medium comprising a polyester film substrate, a magnetic coating and a specified back coat layer. 5,188,891, Cl. 428-323.000.

Takeda, Shigeki: *See—*
Satoh, Katsuhiko; Muto, Itsuo; Takeda, Shigeki; and Miyamoto, Mamoru, 5,188,134, Cl. 134-57.00R.

Takeda, Shohei: *See—*
Miyamoto, Ryosuke; Sekita, Makoto; and Takeda, Shohei, 5,189,519, Cl. 358-228.000.

Takei, Junichiro: *See—*
Tomita, Munenori; and Takei, Junichiro, 5,188,501, Cl. 414-416.000.

Takei, Kazuhiro: *See—*
Aihara, Hideo; Kurisu, Norio; Takei, Kazuhiro; and Watanabe, Yasuhiko, 5,189,007, Cl. 503-207.000.

Takemoto Yushi Kabushiki Kaisha: *See—*
Kinoshita, Tsukasa; Yamada, Masahiko; and Matsueda, Hirokazu, 5,188,224, Cl. 206-83.500.

Takemura, Chiharu; and Horita, Yoshiyuki, to Yoshida Kogyo K. K. Pull tab for slide fastener. 5,187,841, Cl. 24-429.000.

Takenaka, Hiroyuki: *See—*
Hirai, Masanori; Takenaka, Hiroyuki; Yokoi, Hidekazu; Nachi, Tsuyoshi; and Ando, Kiyoshi, 5,187,994, Cl. 74-120.000.

Takeshi Ikeda: *See—*
Nakao, Akira; Endo, Toyofusa; and Ikeda, Takeshi, 5,187,857, Cl. 29-564.700.

Takeuchi, Hitoshi: *See—*
Tsujii, Masao; Takeuchi, Hitoshi; Oda, Kyoji; Ohba, Masahiro; Ninoyu, Yutaka; and Natsume, Tsutomu, 5,189,618, Cl. 364-426.040.

Takeuchi, Tamayuki: *See—*
Imai, Ryuusuke; Nashiwa, Michio; Oomura, Yasuhiro; Matsuda, Ryouichi; Satou, Michio; and Takeuchi, Tamayuki, 5,188,698, Cl. 156-500.000.

Takeyoshi, Shigenori: *See—*
Suzuki, Kenji; Hata, Seiji; Nishida, Yoshien; Kawasaki, Kyoichi; Fujii, Kenjiro; Shimura, Yasunori; and Takeyoshi, Shigenori, 5,189,707, Cl. 382-8.000.

Takezawa, Makoto; Miyao, Makiji; Murakami, Shinkichi; and Atsumi, Akihiro, to Tonen Corporation. Unidirectional thin glass prepreg. 5,188,878, Cl. 428-114.000.

Takiguchi, Masao: *See—*
Yano, Shigeru; and Takiguchi, Masao, 5,189,588, Cl. 361-56.000.

Takiguchi, Takahide: *See—*
Shirai, Kiyoshi; Uehara, Kazuo; Morita, Koichi; Takiguchi, Takahide; and Ishizaki, Naoki, 5,188,147, Cl. 137-596.000.

Takiguchi, Takao: *See—*
Iwaki, Takashi; Takiguchi, Takao; Togano, Takeshi; Yamada, Yoko; and Nakamura, Shinichi, 5,188,762, Cl. 252-299.620.

Talleres Daumar S.A.: *See—*
Guardiola, Agustin D., 5,187,919, Cl. 53-443.000.

Tamaki, Shigeo, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Throttle valve assembly. 5,188,078, Cl. 123-403.000.

Tamrock World Corporation N. V.: *See—*
LeBegue, Maurice K.; and Hornyak, Julius N., 5,188,427, Cl. 299-12.000.

Tamura, Junichi: *See—*
Sakurai, Atsushi; and Tamura, Junichi, 5,189,702, Cl. 381-51.000.

Tamura, Koichi: *See—*
Kogure, Hideo; Murase, Heihachi; and Tamura, Koichi, 5,188,750, Cl. 252-70.000.

Tanahashi, Haruhiko: *See—*
Sugiki, Akio; Ishikawa, Masanobu; Yoshida, Nobuhiro; Tanahashi, Haruhiko; and Miura, Kiyokatsu, 5,188,392, Cl. 280-775.000.

Tanaka, Hisashi: *See—*
Taniguchi, Yousuke; Miyawaki, Tadayuki; Tanaka, Hisashi; and Kitada, Motohiro, 5,187,943, Cl. 62-180.000.

Tanaka, Junji, to Sharp Kabushiki Kaisha. Analog signal extracting circuit. 5,189,318, Cl. 307-352.000.

Tanaka, Kazuo: *See—*
Ohta, Tazuo; Tanaka, Kazuo; Ohgoshi, Fumio; Yoshida, Terumasa; and Motoyama, Ichihei, 5,189,209, Cl. 562-414.000.

Tanaka Kikinzoku Kogyo K.K.: *See—*
Watanabe, Masahiro; Stonehart, Paul; Tsurumi, Kazunori; Yamamoto, Nobuo; Hara, Noriaki; and Nakamura, Toshihide, 5,189,005, Cl. 502-326.000.
Yamada, Yasuhiro; Honda, Hidemasa; Yamasaki, Haruki; and Shimizu, Susumu, 5,188,894, Cl. 428-370.000.

Tanaka, Kouji: *See—*
Mori, Kazuhiko; Kawasaki, Minoru; Yoshida, Shin; Murase, Hiroyuki; Saito, Takashi; Tanaka, Kouji; and Shimura, Yoshio, 5,188,799, Cl. 420-469.000.

Tanaka, Masayuki: *See—*
Kosugi, Toru; Hashimoto, Yuichi; Tanaka, Masayuki; Ohara, Katsuichi; Furukawa, Takahiro; and Aoki, Makoto, 5,189,410, Cl. 340-825.140.

Tanaka, Saburo: *See—*
Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, 5,189,011, Cl. 505-1.000.

Tanaka, Toshiyuki: *See—*
Ogata, Nobuo; Ueyama, Tetsuo; Sekimoto, Yoshihiro; Tanaka, Toshiyuki; and Sato, Hideaki, 5,189,655, Cl. 369-44.230.

Tanaka, Yoichiro: *See—*
Imamura, Makoto; Tanimoto, Kazushi; Tanaka, Yoichiro; Sonobe, Yoshiaki; and Kitagawa, Katsuyoshi, 5,189,574, Cl. 360-103.000.

Tandon, Atul K.: *See—*
McGuire, William L.; Tandon, Atul K.; Clark, Gary M.; and Chamness, Gary C., 5,188,964, Cl. 436-64.000.

Tandy Corporation: *See—*
Caldwell, Marcus L., 5,189,660, Cl. 369-215.000.

Tanguy, Jean-Claude: *See—*
Arnaud, Didier; and Tanguy, Jean-Claude, 5,188,748, Cl. 252-67.000.

Tanielyan, Setrak K.: *See—*
Augustine, Robert L.; and Tanielyan, Setrak K., 5,189,006, Cl. 502-339.000.

Taniguchi, Osamu: *See—*
Hanyu, Yukio; Inaba, Yutaka; Asaoka, Masanobu; Taniguchi, Osamu; Shinjo, Kenji; and Uchimi, Toshiharu, 5,189,536, Cl. 359-56.000.

Taniguchi, Yoshio: *See—*
Miya, Shigeyuki; Shibata, Takenori; Komatsu, Yoshihiro; Miyoshi, Hiromichi; Hirata, Tadashi; Taniguchi, Yoshio; and Kobayashi, Takuo, 5,189,474, Cl. 355-245.000.

Taniguchi, Yousuke; Miyawaki, Tadayuki; Tanaka, Hisashi; and Kitada, Motohiro, to Kabushiki Kaisha Toyota Chuo Kenkyosho; and Nippondenso Co., Ltd. Control apparatus for air-conditioner. 5,187,943, Cl. 62-180.000.

Tanimoto, Kazushi: *See—*
Imamura, Makoto; Tanimoto, Kazushi; Tanaka, Yoichiro; Sonobe, Yoshiaki; and Kitagawa, Katsuyoshi, 5,189,574, Cl. 360-103.000.

Tanjyo, Masayasu; and Nakazato, Hiroshi, to Nissin Electric Co., Ltd. Ion source having a mass separation device. 5,189,303, Cl. 250-296.000.

Tanous, Adam S.: *See—*
Dupon, Ryan W.; Thompson, Mark S.; Wiseman, Gary H.; Musolf, Douglas J.; and Tanous, Adam S., 5,188,886, Cl. 428-209.000.

Taraschewski, Horst: *See—*
Mehlhorn, Heinz; Taraschewski, Horst; Schmahl, Gunter; Raether, Wolfgang; and Rosner, Manfred, 5,188,832, Cl. 424-405.000.

Target Therapeutics Inc.: *See—*
Samson, Gene, 5,188,621, Cl. 604-283.000.

Tarng, Jawhorng; and Lau, John I., to Mactronix. Method and apparatus for varying wafer spacing. 5,188,499, Cl. 414-404.000.

Tarsha, Manual: *See—*
Dressler, Jim; Johnston, Bill; Loftis, Gerald; Salierno, Mark; Solt, Gordon; Spira, Jeff; and Tarsha, Manual, 5,188,316, Cl. 244-234.000.

Tartakovsky, Alla: *See—*
Viccaro, John P.; Bajor, John S.; and Tartakovsky, Alla, 5,188,822, Cl. 424-52.000.

Tasco Japan Co., Ltd.: *See—*
Mino, Kazuo; Nomura, Toshiyuki; and Tsujioka, Yuiji, 5,188,459, Cl. 374-158.000.

Tatham, David A.: *See—*
Boisvert, John A.; Rogers, Fred A.; Solley, Dennis J.; Tatham, David A.; and Wilkins, Raymond G., 5,189,277, Cl. 219-121.540.

Taudt, Christian: *See—*
Reisser, Berni; Pflug, Hannes; Khosrawi, Mohammad-Ali; Scharf, Michael; Simon, Helmut; Taudt, Christian; Goll, Wolfgang; Wuetherich, Paul; Fortenbacher, Thomas; and Konrath, Karl, 5,188,083, Cl. 123-502.000.

Tavernier, Serge M.: *See—*
Dewanckele, Jean-Marie O.; Tavernier, Serge M.; and Ghekiere, Jean-Pierre A., 5,188,919, Cl. 430-106.000.

Tavis Corporation: *See—*
Tavis, John R., 5,189,380, Cl. 331-109.000.

Tavis, John R., to Tavis Corporation. Integrated circuit for transducers. 5,189,380, Cl. 331-109.000.

Tawara, Kiyoshi, to Kabushiki Kaisha Toshiba. Network system for simultaneously coupling pairs of nodes. 5,189,414, Cl. 340-825.500.

VOL 1147 ISS 4 FE 23 1993 UMI

Taylor, Barry J.: *See—*
Palmer, Charles E.; Taylor, Barry J.; and DeFazio, August, 5,189,531, Cl. 359-3.000.
Taylor, Daie F., to General Electric Company. Method for annealing zircaloy to improve nodular corrosion resistance. 5,188,676, Cl. 148-217.000.
Taylor, Jack R., to General Electric Company. Combustor inner passage with forward bleed openings. 5,187,931, Cl. 60-39.070.
Taylor, Mark E.: *See—*
Koschmann, Eric C.; Taylor, Mark E.; and Lifer, Carroll D., 5,189,484, Cl. 356-138.000.
Tazartes, Daniel A.: *See—*
Mark, John G.; Tazartes, Daniel A.; and Hahn, Tae W., 5,189,487, Cl. 356-350.000.
Mark, John G.; Pavlath, George A.; and Tazartes, Daniel A., 5,189,488, Cl. 356-350.000.
Tazawa, Hiroaki: *See—*
Ono, Katsuhiro; Anno, Hidero; Sugiura, Hiroyuki; Kitami, Takayuki; and Tazawa, Hiroaki, 5,189,688, Cl. 378-133.000.
TDK Corporation: *See—*
Okamura, Masatoshi; and Kaneda, Hiroshi, 5,189,583, Cl. 360-132.000.
Teal, Richard D.: *See—*
Patterson, Jon M.; Teal, Richard D.; Weitz, James H.; and Wasson, Steven C., 5,187,925, Cl. 56-17.100.
Teck, Yap Y.: *See—*
Bertho, Dominique; Kachlic, Jerry D.; and Teck, Yap Y., 5,188,535, Cl. 439-83.000.
Tedder, Daniel W.: *See—*
Ashby, Eugene C.; Earnhart, Laurence L.; Tedder, Daniel W.; and Singh, Jagvir, 5,189,222, Cl. 568-1.000.
Teherani, Towfik H.; and Little, D. Dawn, to Texas Instruments Incorporated. Passivation oxide conversion wherein an anodically grown oxide is converted to the sulfide. 5,188,988, Cl. 437-235.000.
Teicher, Mordechai. Orientation-sensitive display system. 5,189,408, Cl. 340-815.010.
Teijin Limited: *See—*
Nitta, Shozo; Kurihara, Hideshi; Sanenobu, Kazuyuki; Ichihashi, Tetsuo; and Takagi, Norio, 5,188,774, Cl. 264-22.000.
Sugiyama, Shoichi; Arai, Fumiaki; Nonogaki, Masayasu; Natori, Yuji; Yamaguchi, Hideyuki; Ueda, Hitoshi; Tomita, Hiroshi; and Kato, Kotaro, 5,188,881, Cl. 428-143.000.
Umetani, Hiroyuki; Inata, Hiroo; Matsumura, Shunichi; and Mera, Hiroshi, 5,189,094, Cl. 525-27.000.
Teijin Seiki Co., Ltd.: *See—*
Hirai, Masanori; Takenaka, Hiroyuki; Yokoi, Hidekazu; Nachi, Tsuyoshi; and Ando, Kiyoshi, 5,187,994, Cl. 74-120.000.
Teknekron Communications Systems, Inc.: *See—*
Holt, Kenneth C., 5,189,710, Cl. 382-22.000.
Tektronix, Inc.: *See—*
Garuts, Valdis E., 5,189,313, Cl. 307-263.000.
Telectronics Pacing Systems, Inc.: *See—*
Posin, Jack; Valenta, Harry L., Jr.; Maas, Steven M.; and Koestner, Ken, 5,188,106, Cl. 128-419.0PG.
Steinhaus, Bruce M.; and Lu, Richard M. T., 5,188,117, Cl. 128-708.000.
Teledyne Industries, Inc.: *See—*
Crocker, William A.; Haygarth, John C.; Riesen, Jon A.; and Peterson, John R., 5,188,809, Cl. 423-2.000.
Sommers, James A., 5,188,810, Cl. 423-62.000.
Telefonaktiebolaget L M Ericsson: *See—*
Eriksson, Erik A., 5,189,637, Cl. 364-825.000.
Temburg, Josef: *See—*
Kortlang, Wolfgang; Temburg, Josef; and Zander, Johann, 5,189,308, Cl. 250-561.000.
Tempco, Dale A.: *See—*
Borgmeyer, Virgil L.; Trice, Chester F.; Tempco, Dale A.; Clark, Thomas F.; Ritter, William J.; and Huests, Leo H., 5,189,257, Cl. 174-50.000.
Temple, Stephen: *See—*
Michaelis, A. John; Paton, Anthony D.; and Temple, Stephen, 5,189,437, Cl. 346-1.100.
Temple University of the Commonwealth System of Higher Education: *See—*
Suhadolnik, Robert J.; and Pfleiderer, Wolfgang, 5,188,897, Cl. 428-402.200.
Templeton, James H.: *See—*
Larkin, John M.; Templeton, James H.; and Champion, Donald H., 5,189,233, Cl. 585-265.000.
Templeton, John E., Jr.: *See—*
Comerci, Joseph D.; DeRoss, Robert; O'Connell, Michael J.; and Templeton, John E., Jr., 5,188,541, Cl. 439-596.000.
Tencor Instruments: *See—*
Jann, Peter C.; Gross, Kenneth P.; and Neukermans, Armand P., 5,189,481, Cl. 356-73.000.
Tendler, Robert K. Knotmeter impeller eliminator system. 5,187,978, Cl. 73-187.000.
Terada, Kunio: *See—*
Yoshii, Takao; Oku, Narihiro; Horii, Yoshio; and Terada, Kunio, 5,188,334, Cl. 251-7.000.
Terao, Yuichiro: *See—*
Nishiyama, Akio; Koyama, Takashi; Aikawa, Yasutaka; Ohshima, Hideo; Terao, Yuichiro; Kato, Munenori; and Sakai, Akio, 5,188,908, Cl. 428-698.000.
Teraoka, Shinichi; Ueda, Masanori; and Suehiro, Toshiyuki, to Nippon Steel Corporation. Process for manufacturing thin strip or sheet of Cr-Ni-base stainless steel having excellent surface quality and material quality. 5,188,681, Cl. 148-603.000.
Terashima, Hideyuki, to Nissin Kogyo Kabushiki Kaisha. Reaction force type disk brake. 5,188,202, Cl. 188-73.450.
Terashima, Kanetsugu; Kikuchi, Makoto; and Murashiro, Katsuyuki, to Chisso Corporation. Ferroelectric liquid crystal composition and light switching element comprising the same. 5,188,761, Cl. 252-299.610.
Terho, Mikko: *See—*
Paajanen, Reijo; Terho, Mikko; and Hoglund, Tom, 5,189,632, Cl. 364-705.050.
Ter Maat, Johan H. H.: *See—*
Bittler, Knut; Ter Maat, Johan H. H.; and Sterzel, Hans-Josef, 5,188,782, Cl. 264-82.000.
Terry, Reese S., Jr.: *See—*
Wernicke, Joachim F.; Terry, Reese S., Jr.; and Baker, Ross G., Jr., 5,188,104, Cl. 128-419.00R.
Tershak, Andrew T.; Fellwock, Charles G.; and Thieneman, Michael D., to Whirlpool Corporation. Method for controlling a refrigerator in low ambient temperature conditions. 5,187,941, Cl. 62-89.000.
Tertre, Dominique: *See—*
Traonvoez, Jean-Michel; Pottier, Philippe; and Tertre, Dominique, 5,188,728, Cl. 210-90.000.
Terwilliger, Richard A. Automatic biopsy instrument with independently actuated stylet and cannula. 5,188,118, Cl. 128-753.000.
Tesch, Gunter. Quilted bed blanket. 5,187,825, Cl. 5-502.000.
Tessmer, Earl J.: *See—*
Haun, Andy A.; and Tessmer, Earl J., 5,189,587, Cl. 361-56.000.
Tether, Russell W. Void fill material. 5,188,880, Cl. 428-120.000.
Tetra Alfa Holdings S.A.: *See—*
Nilsson, Bo; Ottocan, Doriano; and Sponholtz, Per, 5,188,285, Cl. 229-242.000.
Texaco Chemical Company: *See—*
Duranleau, Roger G.; and Zimmerman, Robert L., 5,189,221, Cl. 564-499.000.
Humbert, Heiko; Klockemann, Werner; and Primeaux, Dudley J., II, 5,189,073, Cl. 521-110.000.
Larkin, John M.; Ten.pleton, James H.; and Champion, Donald H., 5,189,233, Cl. 585-265.000.
Waddill, Harold G.; Su, Wei-Yang; and Speranza, George P., 5,189,118, Cl. 525-504.000.
Zimmerman, Robert L.; and Primeaux, Dudley J., 5,189,075, Cl. 521-159.000.
Texaco Inc.: *See—*
Khan, Motasimur R.; Zang, Richard B.; and Albert, Christine C., 5,188,739, Cl. 210-770.000.
Khan, Motasimur R., 5,188,740, Cl. 210-770.000.
Migdal, Cyril A.; and Nalesnik, Theodore E., 5,188,745, Cl. 252-47.000.
Noyes, Jonathan C., 5,188,178, Cl. 166-310.000.
Zang, Richard B.; and Khan, Motasimur R., 5,188,741, Cl. 210-774.000.
Texas Instruments Incorporated: *See—*
Anno, Julien; Lewis, Russell F.; and Cone, Dale A., 5,189,288, Cl. 235-386.000.
Niehaus, Jeff A.; Li, Stephen; and Laczko, Frank, 5,189,665, Cl. 370-458.100.
Teherani, Towfik H.; and Little, D. Dawn, 5,188,988, Cl. 437-235.000.
York, Rudy L.; Luttmer, Joseph D.; Wan, Chang F.; Orent, Thomas W.; Hutchins, Larry D.; and Simmons, Art, 5,188,970, Cl. 437-3.000.
Texas Trunk Company, Inc.: *See—*
Porter, Marvin, 5,188,525, Cl. 431-107.000.
Th. Goldschmidt AG: *See—*
Schaefer, Dietmar; Weier, Andreas; Weitemeyer, Christian; and Wewers, Dietmar, 5,189,184, Cl. 549-427.000.
Thal, Claude; Boye, Olivier; Guenard, Daniel; and Potier, Pierre, to Centre National de la Recherche Scientifique (CNRS). Phenylpyrrolic compounds used as drugs, their preparation and application. 5,189,055, Cl. 514-422.000.
Thaler, Warren A.: *See—*
Manalastas, Pacifico V.; Drake, Evelyn N.; Thaler, Warren A.; Kresge, Edward N.; Elspass, Chester W.; Geiger, Albert J.; and Swarup, Vijay, 5,188,654, Cl. 71-28.000.
Thead, William H.; and Evans, John C., to Post Medical, Inc. Apparatus and method for safely disposing contaminated needles. 5,188,598, Cl. 604-110.000.
Thekkadath, Govindanunny, to CPAD Holdings, Ltd. Simple compact ion mobility spectrometer having a focusing electrode which defines a non-uniform field for the drift region. 5,189,301, Cl. 250-287.000.
Thermal Dynamics Corporation: *See—*
Boisvert, John A.; Rogers, Fred A.; Solley, Dennis J.; Tatham, David A.; and Wilkins, Raymond G., 5,189,277, Cl. 219-121.540.
Thiele, Karl E.; Hasegawa, Tomohiro; and Smith, Richard B., to Hewlett-Packard Company. Method and apparatus for elimination of mirroring in signal processing system. 5,188,114, Cl. 128-661.090.
Thieneman, Michael D.: *See—*
Tershak, Andrew T.; Fellwock, Charles G.; and Thieneman, Michael D., 5,187,941, Cl. 62-89.000.
Thiericke, Ralf: *See—*
Zeeck, Axel; Philipps, Siegrid; Grabley, Susanne; Granzer, Ernold; Hutter, Klaus; Thiericke, Ralf; and Wink, Joachim, 5,189,150, Cl. 536-6.500.

Thiery, Jacques; and Schoennahl, Jacques, to Savoie Refractaires. Concrete composition for the manufacture of moulds, mould and process for the manufacture of a mould. 5,188,791, Cl. 264-226.000.
Thomas, Bruce W. Thrombus-mobilizing thoracostomy tube. 5,188,618, Cl. 604-267.000.
Thomas, Yannig: *See—*
Beziers, Daniel; Boutevin, Bernard; Parisi, Jean-Pierre; Thomas, Yannig; and Chataignier, Evelyne, 5,189,093, Cl. 524-847.000.
Thompson, Josephine M. User-collapsible wheelchair. 5,188,383, Cl. 280-250.100.
Thompson, Mark S.: *See—*
Dupon, Ryan W.; Thompson, Mark S.; Wiseman, Gary H.; Musolf, Douglas J.; and Tanous, Adam S., 5,188,886, Cl. 428-209.000.
Thompson, Thomas E.; and Westerberg, Eugene R., to A G Processing Technologies, Inc. Pyrometer apparatus and method. 5,188,458, Cl. 374-121.000.
Thompson, Thomas O. Undercounter revolver support. 5,188,328, Cl. 248-309.200.
Thomson-Brandt Armements: *See—*
Deffayet, Jean; Lepicard, Alain; and Winaver, Andre , 5,189,248, Cl. 102-386.000.
Thomson-CSF: *See—*
Bouvet, Jacky; and Chapelet, Anne, 5,189,428, Cl. 342-132.000.
Colineau, Joseph, 5,189,379, Cl. 360-121.000.
Thorn EMI Electronics Limited: *See—*
Dykes, Norman A., 5,188,468, Cl. 400-579.000.
Thorn EMI plc: *See—*
Humphries, Brian J.; Waters, Colin M.; Bull, Steven D.; and Morris, Christopher J., 5,189,406, Cl. 340-793.000.
Thorntou, William S. Helicopter blade pitch control system. 5,188,512, Cl. 416-112.000.
Thorsen, Daniel M.: *See—*
Barrett, John P., Sr.; Thorsen, Daniel M.; and Johnson, John H., 5,187,818, Cl. 4-313.000.
Thumm, Helmut; and Handel, Friedrich, to Sauter Feinmechanik GmbH. Tool turret with pneumatic locking system. 5,187,847, Cl. 29-48.50A.
Tilkens, Mark P. Cap with hearing enhancing structure. 5,189,265, Cl. 181-133.000.
Timmons, Terry K.; Stopper, Steve R.; Fox, Norman K.; Everhart, Dennis S.; Conn, William; and Morell, Lori A., to Kimberly-Clark Corporation. Nonwoven fabric laminates. 5,188,885, Cl. 428-198.000.
Tino, John A. F.: *See—*
Tremblay, Paul-Alain; Marziani, Frank; Tino, John A. F.; and Pilkiewicz, Frank G., 5,188,951, Cl. 435-131.000.
Tishken Products Co.: *See—*
Levy, Roger, 5,187,964, Cl. 72-181.000.
Titan Corporation, The: *See—*
Curry, Randy D., 5,188,177, Cl. 166-297.000.
Tittel, Lorne: *See—*
Kivell, Larry; Milanese, Robert L.; Kiernan, Charles E.; and Tittel, Lorne, 5,188,231, Cl. 206-333.000.
Tivig, Gerhard; Meier, Wilhelm; and Pfeil, Egon, to Hewlett-Packard Company. Medical monitoring system with softkey control. 5,189,609, Cl. 364-413.010.
Tobey, Nelia A.: *See—*
Orlando, Roy C.; and Tobey, Nelia A., 5,189,056, Cl. 514-439.000.
Tobita, Michio: *See—*
Furusaki, Shinichi; Matsuda, Masaoki; Saito, Muneki; Shiomi, Yasushi; Nakamura, Yasuo; and Tobita, Michio, 5,189,225, Cl. 568-649 000.
Todd, Maurice C.: *See—*
Duffy, Joseph J.; Potter, Jerry F.; Roth, Elwood A.; Samant, Kalika R.; and Todd, Maurice C., 5,187,845, Cl. 28-267.000.
Todeschini, Carlo; and Togni, Gabriella. Therapeutic exercise chamber with controlled ozonated environment. 5,188,099, Cl. 128-205.260.
Todo, Akira: *See—*
Yamaoka, Hideo; Kuroiwa, Mitsuyuki; Nanbu, Hirosi; and Todo, Akira, 5,188,875, Cl. 428-64.000.
Todtenhaupt, Dieter: *See—*
Meuer, Johannes; Todtenhaupt, Dieter; and Schonherr, Dieter, 5,188,197, Cl. 184-7.400.
Togano, Norio: *See—*
Asano, Yasushi; and Togano, Norio, 5,187,998, Cl. 74-523.000.
Togano, Takeshi: *See—*
Iwaki, Takashi; Takiguchi, Takao; Togano, Takeshi; Yamada, Yoko; and Nakamura, Shinichi, 5,188,762, Cl. 252-299.620.
Togni, Gabriella: *See—*
Todeschini, Carlo; and Togni, Gabriella, 5,188,099, Cl. 128-205.260.
Tokai Kogyo Kabushiki Kaisha: *See—*
Nakano, Norihito, 5,188,269, Cl. 226-74.000.
Tokai Rubber Industries, Ltd.: *See—*
Hamada, Masaaki; and Yoshida, Takashi, 5,188,346, Cl. 267-140.120.
Tokuda, Masakazu: *See—*
Fukabori, Mitsuhiko; Iwasaki, Hiroshi; Shinto, Hiroaki; Iwai, Yasunori; Nishiuchi, Ryuji; Gotoh, Yuzo; Hiramatsu, Satoru; Hirata, Norimasa; and Tokuda, Masakazu, 5,189,255, Cl. 102-531.000.
Tokunaga, Toshimichi: *See—*
Yano, Haruto; Hirasa, Yoshiaki; Tokunaga, Toshimichi; Hayami, Katsuro; Naito, Norihiro; Akamatsu, Teruki; Goto, Hirofumi; and Yokouchi, Kazuhiro, 5,189,430, Cl. 342-457.000.
Tokuno, Isao: *See—*
Kawahara, Hiroshi; Okunaka, Noriaki; Kobayashi, Mitsuru; Tokuno, Isao; and Ohara, Shuzo, 5,188,395, Cl. 283-113.000.
Tokunoh, Futoshi: *See—*
Satoh, Katsumi; and Tokunoh, Futoshi, 5,189,509, Cl. 257-718.000.
Tokyo Electric Co., Ltd.: *See—*
Sugimoto, Kazuaki; Kitahara, Satoshi; Yamamoto, Akio; and Sugiura, Ikuzo, 5,188,029, Cl. 101-288.000.
Tokyo Electron Limited: *See—*
Kumagai, Yoshio, 5,188,136, Cl. 134-066.000.
Tokyo Parts Industrial Co., Ltd.: *See—*
Mizutani, Noboru, 5,189,398, Cl. 340-578.000.
Toll, Charlotte. Eyelash mascara case and applicator. 5,188,131, Cl. 132-218.000.
Tomecanic: *See—*
Pourtau, Jean-Jacques; and Pourtau, Thierry E., 5,187,905, Cl. 52-144.000.
Tomek, Martin L., to Halliburton Logging Services, Inc. Shock isolation sub for use with downhole explosive actuated tools. 5,188,191, Cl. 175-321.000.
Tomikawa, Takayuki: *See—*
Sukeshita, Kazumi; Tomikawa, Takayuki; and Ikegami, Yasuyuki, 5,188,001, Cl. 74-560.000.
Tominaga, Akira: *See—*
Nishida, Reiziro; and Tominaga, Akira, 5,189,119, Cl. 525-526.000.
Tominaga, Tsutomu; and Watanabe, Akira, to Mitsubishi Denki Kabushiki Kaisha. Angular position selecting apparatus. 5,189,354, Cl. 318-671.000.
Tomita, Hiroshi: *See—*
Sugiyama, Shoichi; Arai, Fumiaki; Nonogaki, Masayasu; Natori, Yuji; Yamaguchi, Hideyuki; Ueda, Hitoshi; Tomita, Hiroshi; and Kato, Kotaro, 5,188,881, Cl. 428-143.000.
Tomita, Munenori; and Takei, Junichiro, to Shin-Etsu Handotai Co., Ltd. Wafer transfer system. 5,188,501, Cl. 414-416.000.
Tomita, Takao: *See—*
Chiba, Yuho; and Tomita, Takao, 5,187,975, Cl. 73-54.010.
Tomura, Masashi; Takagi, Hisamitsu; and Matsumoto, Yoshihiro, to Fujitsu Limited. Adaptor for mounting portable radio apparatus to moving body and charger for portable radio apparatus. 5,189,358, Cl. 320-2.000.
Tonegawa, Susumu: *See—*
Saito, Haruo; Kranz, David M.; Eisen, Herman N.; and Tonegawa, Susumu, 5,189,147, Cl. 530-387.900.
Tonen Corporation: *See—*
Takezawa, Makoto; Miyao, Makiji; Murakami, Shinkichi; and Atsumi, Akihiro, 5,188,878, Cl. 428-114.000.
Tonsor, Andrew J.; Quant, Wilton E.; Hosseini, Javad; Hopkins, Michael F.; and Allen, William E., to Caterpillar, Inc. Linkage arrangement for a multi-purpose vehicle. 5,188,502, Cl. 414-700.000.
Topsoe, Haldor F. A.: *See—*
Hansen, John B.; Joensen, Finn H.; and Topsoe, Haldor F. A., 5,189,203, Cl. 560-232.000.
Torii, Nobutoshi; Naito, Yasuo; and Kinoshita, Satoshi, to Fanuc, Ltd. Industrial articulated robot provided with a driving linkage. 5,187,996, Cl. 74-479.000.
Torii, Nobutoshi; Nihei, Ryo; and Yasumura, Mitsuhiro, to Fanuc Ltd. Corrective positioning method in a robot. 5,189,351, Cl. 318-568.190.
Torrington Company, The: *See—*
Henry-Moore, Nicholas, 5,187,997, Cl. 74-493.000.
Toshiba Kikai Kabushiki Kaisha: *See—*
Momochi, Takeshi; Sasaki, Tadashi; Matsumoto, Michio; Hayashi, Tomoo; and Shiozaki, Masahito, 5,189,627, Cl. 364-474.310.
Toshiba Silicone Co., Ltd.: *See—*
Matsumoto, Makoto; and Watanabe, Junichiro, 5,188,899, Cl. 428-405.000.
Tosoh Corporation: *See—*
Kobayashi, Yo-ichi; Omori, Muneki; and Yamada, Chikako, 5,188,829, Cl. 424-94.630.
Tosun, Guray; and Glicksman, Howard D., to Du Pont de Nemours, E. I., and Company. Process for making finely divided particles of silver metals. 5,188,660, Cl. 75-370.000.
Tour & Andersson AB: *See—*
Ivansson, Hans, 5,188,165, Cl. 164-113.000.
Toyoda Gosei Co., Ltd.: *See—*
Kaga, Kouichi, 5,188,000, Cl. 74-552.000.
Toyoda, Harumitsu; Senoo, Masamichi; and Abe, Keiji, to Kao Corporation. Disposable diapers. 5,188,626, Cl. 604-385.100.
Toyota Jidosha K.K.: *See—*
Nagata, Nobuyuki; Tsutsui, Itsuro; Ota, Koji; Hashimoto, Hirofumi; and Shibata, Haruji, 5,188,693, Cl. 156-244.110.
Toyota Jidosha Kabushiki Kaisha: *See—*
Adachi, Kunihiko; Endo, Norikazu; and Miyakoshi, Hironori, 5,189,619, Cl. 364-426.040.
Hattori, Yuji; Soga, Yoshinobu; Sugaya, Masami; and Kato, Nobuyuki, 5,188,007, Cl. 74-867.000.
Mori, Kazuhiko; Kawasaki, Minoru; Yoshida, Shin; Murase, Hiroyuki; Saito, Takashi; Tanaka, Kouji; and Shimura, Yoshio, 5,188,799, Cl. 420-469.000.
Shimanuki, Shizuo; Nakai, Yoshitomo; and Itakura, Masamichi, 5,188,509, Cl. 415-208.100.
Trachtenberg, Michael C.: *See—*
Blum, Kenneth; and Trachtenberg, Michael C., 5,189,064, Cl. 514-561.000.
Trammell, Earl M., Jr., to Equi-Cycle Corporation. Power assist device for a drive mechanism. 5,188,003, Cl. 74-594.300.
Transmedical Corporation: *See—*
Quintanilla, Roberto; and Quintanilla, Alberto, 5,188,454, Cl. 362-399.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Traonvoez, Jean-Michel; Pottier, Philippe; and Tertre, Dominique, to Le Bozec et Gautier. Clogging display with shape memory alloy spring actuator. 5,188,728, Cl. 210-90.000.

Trares, Keith C.: *See—*
Cherveny, Mark V.; Trares, Keith C.; Waibel, Terry J.; Hopkins, William M.; Sinopoli, Italo M.; and Young, Ray A., 5,188,685, Cl. 152-451.000.

Trawoger, Werner; and Pregenzer, Bruno. Process and device for preventing malfunction of a dental evacuation system. 5,188,530, Cl. 433-92.000.

Treliving, Gordon, deceased: *See—*
Bauer, Ted J.; Harmon, David M.; Treliving, Gordon, deceased; and Kirwan, Rory G., 5,188,785, Cl. 264-115.000.

Treliving, Roberta, legal representative: *See—*
Bauer, Ted J.; Harmon, David M.; Treliving, Gordon, deceased; and Kirwan, Rory G., 5,188,785, Cl. 264-115.000.

Tremblay, Paul-Alain; Marziani, Frank; Tino, John A. F.; and Pilkiewicz, Frank G., to Liposome Company, Inc., The. Enzymatic synthesis of soluble phosphatides from phospholipids. 5,188,951, Cl. 435-131.000.

Trenner, Albrecht, to Montech AG. Linear unit with displaceable ball bearing assembly. 5,188,018, Cl. 92-5.00R.

Trepaud, Pierre, to Trepaud S.A. Process and apparatus for incinerating waste. 5,188,043, Cl. 110-346.000.

Trepaud S.A.: *See—*
Trepaud, Pierre, 5,188,043, Cl. 110-346.000.

Treymayne, Michael A.: *See—*
Grant, Michael D.; and Treymayne, Michael A., 5,188,017, Cl. 91-459.000.

Triangle Biomedical Sciences, Inc.: *See—*
Hunnell, Jack E.; and Hunnell, John E., 5,188,347, Cl. 269-258.000.

Trice, Chester F.: *See—*
Borgmeyer, Virgil L.; Trice, Chester F.; Tempco, Dale A.; Clark, Thomas F.; Ritter, William J.; and Huests, Leo H., 5,189,257, Cl. 174-50.000.

Trimedyne, Inc.: *See—*
Hussein, Hany M. G.; Loeb, Marvin; and Galt, Kenneth M., 5,188,634, Cl. 606-14.000.

Trinity American Corp.: *See—*
Drye, Jerry L.; and Cavenaugh, Glen C., 5,188,792, Cl. 264-232.000.

Triple L. Laboratories AB: *See—*
Linder, Lars, 5,188,617, Cl. 604-232.000.

Trofimenko, Swiatoslaw; and Auman, Brian C., to Du Pont de Nemours, E. I., and Company. Compounds, monomers, and polymers based on perfluoroalkyl and perfluoroalkyl-aryl dioxapentacene. 5,189,138, Cl. 528-183.000.

Tromeur, Robert L. Odometer wheel with frangible spokes. 5,189,286, Cl. 235-95.00R.

Trutschler GmbH & Co. KG: *See—*
Kortlang, Wolfgang; Temburg, Josef; and Zander, Johann, 5,189,308, Cl. 250-561.000.

TRW Repa GmbH: *See—*
Fohl, Artur, 5,188,393, Cl. 280-806.000.

TRW Steering & Industrial Products (Japan) Co., Ltd.: *See—*
Mori, Izuru, 5,188,476, Cl. 403-133.000.

Tryon, James A.: *See—*
Stern, Donald J.; Heaton, Jeff S.; Tryon, James A.; and Bartholmey, Brett A., 5,188,295, Cl. 239-320.000.

Trystram, Philippe: *See—*
Lemercier, Pierre; and Trystram, Philippe, 5,189,612, Cl. 364-424.020.

Tsai, Chi H.: *See—*
Shabtai, Joseph S.; Oblad, Alex G.; and Tsai, Chi H., 5,189,232, Cl. 585-14.000.

Tsao, Kuo-Hao: *See—*
Pen, Ben-Li; Wang, Dah-Ping; Hoh, Ying-Chu; and Tsao, Kuo-Hao, 5,188,736, Cl. 210-634.000.

Tsao, Ying-Yen P.: *See—*
Huang, Tracy J.; and Tsao, Ying-Yen P., 5,188,996, Cl. 502-37.000.

Tschoeke, Helmut: *See—*
Alvarez-Avila, Carlos; Ruesseler, Karl-Friedrich; Tschoeke, Helmut; and Konrath, Karl, 5,188,076, Cl. 123-357.000.

Tsuboi, Akio: *See—*
Miyazawa, Chihiro; Orita, Souichi; and Tsuboi, Akio, 5,189,105, Cl. 252-182.120.

Tsubokawa, Makoto: *See—*
Miljanich, George P.; Bitner, Robert S.; Bowersox, Stephen S.; Fox, James A.; Valentino, Karen L.; Yamashiro, Donald H.; and Tsubokawa, Makoto, 5,189,020, Cl. 514-12.000.

Tsubuko, Kazuo; Kuramoto, Shinichi; Umemura, Kazuhiko; Uematsu, Hidemi; and Okawara, Makoto, to Ricoh Company, Ltd. Method for producing a vinyl resin using a silicon oil solvent. 5,189,102, Cl. 525-112.000.

Tsuchida, Takayasu; Uchibori, Haruo; and Nishimoto, Yoshitaka, to Ajinomoto Co., Inc. Process and microorganism for producing L-ornithine by Corynebacterium, Brevibacterium, or Athrobacter. 5,188,947, Cl. 435-114.000.

Tsuchida, Takayasu; Katsurada, Naoki; Ohtsuka, Noboru; Uchibori, Haruo; and Suzuki, Takeshi, to Ajinomoto Co., Inc. Method for producing L-threonine by fermentation. 5,188,949, Cl. 435-115.000.

Tsuchida, Takayasu: *See—*
Katsurada, Naoki; Uchibori, Haruo; and Tsuchida, Takayasu, 5,188,948, Cl. 435-115.000.

Tsuchiya, Noriaki: *See—*
Ishiwata, Masahiro; Tsuchiya, Noriaki; Aoyama, Teruyuki; and Fusatani, Akihiko, 5,189,529, Cl. 358-451.000.

Tsuji, Mitsuji: *See—*
Imai, Akio; Tsuji, Mitsuji; Sanada, Takashi; and Yamamoto, Keisaku, 5,189,108, Cl. 525-285.000.

Tsujii, Masao; Takeuchi, Hitoshi; Oda, Kyoji; Ohba, Masahiro; Ninoyu, Yutaka; and Natsume, Tsutomu, to Nippondenso Co., Ltd. Automotive cruise control system for controlling vehicle to run at constant speed. 5,189,618, Cl. 364-426.040.

Tsujioka, Yuiji: *See—*
Mino, Kazuo; Nomura, Toshiyuki; and Tsujioka, Yuiji, 5,188,459, Cl. 374-158.000.

Tsukada, Kazuo: *See—*
Inukai, Takao; Tachibana, Kanichi; Tsukada, Kazuo; Fujikawa, Toshitaka; Iida, Keiichi; and Kogure, Noboru, 5,189,273, Cl. 219-10.55E.

Tsukada, Takehito: *See—*
Ootsuka, Shigeru; Nakada, Naoki; and Tsukada, Takehito, 5,189,327, Cl. 310-71.000.

Tsukada, Toshihisa: *See—*
Komori, Kazuhiro; Meguro, Satoshi; Hagiwara, Takaaki; Kume, Hitoshi; Tsukada, Toshihisa; and Yamamoto, Hideaki, 5,189,497, Cl. 357-23.500.

Tsumazawa, Hiroyuki: *See—*
Yoshida, Tadahiro; Tsumazawa, Hiroyuki; and Kono, Tetsuo, 5,189,524, Cl. 358-335.000.

Tsurumi, Kazunori: *See—*
Watanabe, Masahiro; Stonehart, Paul; Tsurumi, Kazunori; Yamamoto, Nobuo; Hara, Noriaki; and Nakamura, Toshihide, 5,189,005, Cl. 502-326.000.

Tsurumiya, Osamu; Izawa, Masataka; Abe, Masaru; and Nonaga, Ikuo, to Honda Giken Kogyo Kabushiki Kaisha. Four-wheel steering system for motor vehicle. 5,189,616, Cl. 364-424.050.

Tsushima, Isako: *See—*
Takeda, Fumio; Kojima, Yoshio; Kaneko, Tsuneo; Ishibashi, Yutaka; Sasaki, Naoto; and Tsushima, Isako, 5,187,907, Cl. 52-221.000.

Tsutsui, Itsuro: *See—*
Nagata, Nobuyuki; Tsutsui, Itsuro; Ota, Koji; Hashimoto, Hirofumi; and Shibata, Haruji, 5,188,693, Cl. 156-244.110.

Tsutsui, Keiichi, to Omron Corporation. Optical card processing apparatus using tracking error signals to determine proper card orientation. 5,189,290, Cl. 235-454.000.

Tsutsumi, Kazumichi: *See—*
Kajiwara, Yasuya; and Tsutsumi, Kazumichi, 5,189,712, Cl. 382-42.000.

Tsutsumi, Tetsuya: *See—*
Misawa, Yoshihisa; Kondo, Hisao; Tsutsumi, Tetsuya; Hayashi, Masahiro; Sugimori, Daisuke; Matsuba, Yorishige; Isozaki, Masashi; Nishigaki, Hiroharu; Yazawa, Kazunaga; and Kondo, Kiyosi, 5,189,189, Cl. 554-194.000.

TTC Technology Trading Company: *See—*
Koch, Max, 5,188,213, Cl. 198-470.100.

Tucek, Kevin B. General utility child seat apparatus. 5,188,380, Cl. 280-30.000.

Tucker, Howard, to Imperial Chemical Industries PLC. Tricyclic heterocycles. 5,189,033, Cl. 514-211.000.

Tucker, James W.: *See—*
Schilling, Jan C.; Tucker, James W.; and Koch, Carl C., 5,188,505, Cl. 415-9.000.

Tufts College, Trustees of: *See—*
Haberman, Allan B., 5,188,959, Cl. 435-240.243.

Tufts University: *See—*
Goldner, Ronald B.; Arntz, Floyd O.; Morel, Bertrand; Haas, Terry E.; and Wong, Kwok-Keung, 5,189,550, Cl. 359-273.000.

Tuinstra, Hendrik E.; and Myers, Harold D., to Dow Chemical Company, The. Preparation of polycarbonates comprising separating bisphenol, converting bisphenol to diaryl carbonate and recycling. 5,189,139, Cl. 528-196.000.

Tumolo, Jean S. Premature baby headband for supporting nasal cannulas and oxygen feed tubes. 5,188,101, Cl. 128-207.180.

Tung, Fung-Eng. Cylinder structure for a pneumatically operated tool. 5,188,016, Cl. 91-408.000.

Tung, Jwu-Sheng: *See—*
Palladino, Linda O.; Silberklang, Melvin; Tung, Jwu-Sheng; Law, Simon W.; and Mark, George E., 5,189,019, Cl. 514-12.000.

Turner, Joseph: *See—*
Walworth, Tom M., Jr.; Jurica, Joseph J.; Weilemann, Donald E.; and Turner, Joseph, 5,188,418, Cl. 296-183.000.

Tussing, Norman P. Wire cart for optional use as a conduit cart. 5,188,308, Cl. 242-86.5OR.

Tuttle, John E. B., to United States of America, Army. Inductive cable resistance tester. 5,189,375, Cl. 324-537.000.

Tyler, James B.; Scheider, Alfred F.; and Warner, R. Brown, to Jason, Inc. Abrasive finishing elements, tools made from such elements, and methods of making such tools. 5,187,904, Cl. 51-330.000.

Tyson Holding Company: *See—*
Hartman, William J.; and Delahunt, Robert F., 5,188,854, Cl. 426-272.000.

Tzakis, Andreas G. Apparatus and method for preforming anastomosis fastener securement of hollow organs. 5,188,638, Cl. 606-153.000.

Ube Industries, Ltd.: *See—*
Furusaki, Shinichi; Matsuda, Masaoki; Saito, Muneki; Shiomi, Yasushi; Nakamura, Yasuo; and Tobita, Michio, 5,189,225, Cl. 568-649.000.

Uchibori, Haruo: *See—*
Katsurada, Naoki; Uchibori, Haruo; and Tsuchida, Takayasu, 5,188,948, Cl. 435-115.000.
Tsuchida, Takayasu; Uchibori, Haruo; and Nishimoto, Yoshitaka, 5,188,947, Cl. 435-114.000.
Tsuchida, Takayasu; Katsurada, Naoki; Ohtsuka, Noboru; Uchibori, Haruo; and Suzuki, Takeshi, 5,188,949, Cl. 435-115.000.

Uchimi, Toshiharu: *See—*
Hanyu, Yukio; Inaba, Yutaka; Asaoka, Masanobu; Taniguchi, Osamu; Shinjo, Kenji; and Uchimi, Toshiharu, 5,189,536, Cl. 359-56.000.

Uchiyama, Akira; Jimbo, Naoaki; and Shimizu, Shizuo, to Mitsui Petrochemical Industries, Ltd. Multilayered molding. 5,188,882, Cl. 428-159.000.

Udipi, Kishore, to Monsanto Company. Rubber modified reaction moldable nylon-6 compositions. 5,189,098, Cl. 525-66.000.

Udo, Hiroshi; Nagaishi, Hatsuo; Takasaki, Tadaoki; and Ido, Kou, to Nissan Motor Co., Ltd. Fuel injection control system for internal combustion engine. 5,188,082, Cl. 123-491.000.

Ueda, Hitoshi: *See—*
Sugiyama, Shoichi; Arai, Fumiaki; Nonogaki, Masayasu; Natori, Yuji; Yamaguchi, Hideyuki; Ueda, Hitoshi; Tomita, Hiroshi; and Kato, Kotaro, 5,188,881, Cl. 428-143.000.

Ueda, Masanori: *See—*
Teraoka, Shinichi; Ueda, Masanori; and Suehiro, Toshiyuki, 5,188,681, Cl. 148-603.000.

Ueda, Takahisa; Konaka, Shuzo; and Miyoshi, Takeshi, to Nippon Pillar Packing Co., Ltd. Gland packing and method of producing same. 5,188,376, Cl. 277-227.000.

Uehara, Kazuo: *See—*
Shirai, Kiyoshi; Uehara, Kazuo; Morita, Koichi; Takiguchi, Takahide; and Ishizaki, Naoki, 5,188,147, Cl. 137-596.000.

Uematsu, Hidemi: *See—*
Tsubuko, Kazuo; Kuramoto, Shinichi; Umemura, Kazuhiko; Uematsu, Hidemi; and Okawara, Makoto, 5,189,102, Cl. 525-112.000.

Uemori, Takashi: *See—*
Asada, Kiyozo; Uemori, Takashi; Endo, Masahiro; Kimizuka, Fusao; and Kato, Ikunoshin, 5,189,144, Cl. 530-324.000.

Uetani, Yasunori: *See—*
Moriuma, Hiroshi; Osaki, Haruyoshi; Hioki, Takeshi; and Uetani, Yasunori, 5,188,920, Cl. 430-191.000.

Ueyama, Tetsuo: *See—*
Ogata, Nobuo; Ueyama, Tetsuo; Sekimoto, Yoshihiro; Tanaka, Toshiyuki; and Sato, Hideaki, 5,189,655, Cl. 369-44.230.

Ueyoko, Kiyoshi; Yoshikawa, Hideaki; and Takatsu, Mikio, to Sumitomo Rubber Industries, Ltd. High speed tire for heavy duty vehicles including bead part with side packing rubber. 5,188,686, Cl. 152-454.000.

Ulery, Kirk D.: *See—*
Ganthier, James J.; and Ulery, Kirk D., 5,188,536, Cl. 439-83.000.

Ullman, Myron, to Boardman Molded Products, Inc. Apparatus for forming tear tab lining material. 5,188,582, Cl. 493-440.000.

Ulven, Andrew H.: *See—*
Hahn, Frederick C.; Ulven, Andrew H.; and Huiras, James W., 5,188,680, Cl. 148-593.000.

Umehara, Hideki: *See—*
Tagawa, Kimiteru; Takahashi, Seiichi; Utsuno, Noritoshi; Umehara, Hideki; Hayashi, Fujio; Kiba, Shigeo; and Suda, Satoru, 5,188,898, Cl. 428-403.000.

Umemura, Kazuhiko: *See—*
Tsubuko, Kazuo; Kuramoto, Shinichi; Umemura, Kazuhiko; Uematsu, Hidemi; and Okawara, Makoto, 5,189,102, Cl. 525-112.000.

Umetani, Hiroyuki; Inata, Hiroo; Matsumura, Shunichi; and Mera, Hiroshi, to Teijin Limited. Process for producing thermoset resin. 5,189,094, Cl. 525-27.000.

Umlauf, William P.: *See—*
Petzold, Werner P.; and Umlauf, William P., 5,189,611, Cl. 364-424.100.

Ungricht, Ernst: *See—*
Mraz, Beat; Notzli, Christoph; Ungricht, Ernst; and Marek, Daniel, 5,187,938, Cl. 62-51.100.

Uni-Charm Corporation: *See—*
Igaue, Takamitsu; Nomura, Hironori; Shimakawa, Taiji; and Sasaki, Tohru, 5,188,627, Cl. 604-385.200.
Nishino, Kazunari; Sasagawa, Shuzo; Katsurayama, Hirofumi; Igaue, Takamitsu; and Kido, Tsutomu, 5,188,895, Cl. 428-373.000.

Union Camp Corporation: *See—*
Hollis, Samuel D.; and Shiah, Thomas Y. J., 5,189,089, Cl. 524-272.000.

Union Camp Patent Holding, Inc.: *See—*
Griggs, Bruce F.; Gandek, Thomas P.; Pikulin, Michael A.; and Rosen, Allen, 5,188,708, Cl. 162-40.000.

Union Carbide Chemicals & Plastics Technology Corporation: *See—*
Bartley, William J., 5,189,004, Cl. 502-170.000.

Union Special GmbH: *See—*
Rohr, Gunter; and Norz, Wolfgang, 5,188,047, Cl. 112-262.200.

Unistrut International Corp.: *See—*
Nehls, Charles O., 5,188,479, Cl. 403-306.000.

Unisys Corporation: *See—*
Kugler, Donald W., Jr.; Coley, Christopher D.; and Walck, Jeffrey A., 5,189,401, Cl. 340-703.000.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
McDonnell, Damien G.; Raynes, Edward P.; and Daley, Robert, 5,189,534, Cl. 359-45.000.
Stevens, Stanley J.; and Carrotte, Jonathan F., 5,187,937, Cl. 60-752.000.

United Microelectronics Corporation: *See—*
Lai, Ming C., 5,188,980, Cl. 437-193.000.
Liu, Wei-Jyh; Huang, Chih-Kung; and Chen, Chad-Yang, 5,188,986, Cl. 437-225.000.

United States of America
Agriculture: *See—*
Tabatabi, Louisa B.; Mayfield, John E.; and Beck, Bonnie L., 5,188,936, Cl. 435-7.320.
Air Force: *See—*
Burns, Thomas J.; Page, Edward C.; Gregory, Rita A.; and Pryor, George M., 5,189,606, Cl. 364-401.000.
Frey, Luther R.; and DeTolla, Francis L., 5,188,292, Cl. 239-127.300.
Jackson, John E.; Levy, Joseph L.; Leung, Christopher C.; and Burkhart, Gordon H., 5,189,294, Cl. 250-201.900.
Vanasse, George A.; and Huppi, Ernest R., 5,189,554, Cl. 359-601.000.
Army: *See—*
Bundy, Mark L., 5,189,245, Cl. 89-14.100.
Puckett, Lawrence J., 5,189,251, Cl. 102-457.000.
Stern, Richard A.; and Babbitt, Richard W., 5,189,433, Cl. 343-770.000.
Tuttle, John E. B., 5,189,375, Cl. 324-537.000.
Zajac, Walter W., Jr., 5,189,228, Cl. 568-941.000.
Energy: *See—*
Ball, Don G.; and Miller, John L., 5,189,678, Cl. 372-28.000.
Blair, Dianna S.; Freye, Gregory C.; Hughes, Robert C.; Martin, Stephen J.; and Ricco, Antonio J., 5,187,980, Cl. 73-599.000.
Engler, Bruce P.; Sleefe, Gerard E.; and Striker, Richard P., 5,189,262, Cl. 181-102.000.
Hackel, Richard P.; Paris, Robert D.; and Feldman, Mark, 5,189,485, Cl. 356-320.000.
Heim, Joseph R., 5,187,859, Cl. 29-599.000.
Roberts, Mark L.; and Davis, Jay C., 5,189,302, Cl. 250-288.000.
Health and Human Services: *See—*
Bridge, Thomas P.; and Goodwin, Frederick K., 5,189,022, Cl. 514-16.000.
National Aeronautics and Space Administration: *See—*
Farley, Gary L., 5,188,153, Cl. 139-11.000.
Gerber, Margaret K.; and St. Clair, Terry L., 5,189,127, Cl. 526-262.000.
Gerber, Margaret K.; and St. Clair, Terry L., 5,189,129, Cl. 526-262.000.
Wang, Lui; and Johnson, Gordon G., 5,189,709, Cl. 382-10.000.
Navy: *See—*
Schneider, Carl S., 5,189,590, Cl. 361-149.000.
Stefanov, Michael E.; Biggers, Rand R.; Rish, Jeff W., III; Henderson, Girardeau L.; and Pham, Chuong N., 5,188,171, Cl. 165-96.000.

U.S. Philips Corporation: *See—*
Bailey, Alister J.; and Vadgama, Sunil K., 5,189,734, Cl. 455-33.200.
Eutin, Wolfgang; and Groll, Bernhard, 5,189,715, Cl. 385-72.000.
Geittner, Peter E. E.; Hagemann, Hans-Jurgen; and Warnier, Jacques P. M., 5,188,648, Cl. 65-3.120.
Hikmet, Rifat A. M.; and Broer, Dirk J., 5,188,760, Cl. 252-299.010.
Inglis, Andrew, 5,189,670, Cl. 370-94.100.
Klos-Hein, Karl; and Hermanni, Hans-Georg, 5,189,573, Cl. 360-85.000.
Leenknegt, George A. L., 5,189,293, Cl. 250-201.500.
Seevinck, Evert, 5,189,321, Cl. 307-490.000.
Stove, Andrew G.; and Williams, Michael B., 5,189,427, Cl. 342-128.000.
van de Plassche, Rudy J.; and Baltus, Petrus G. M., 5,189,422, Cl. 341-159.000.

United States Surgical Corporation: *See—*
White, Jeffrey S., 5,188,092, Cl. 128-4.000.

United Technologies Corporation: *See—*
Blaszuk, Paul R., 5,189,681, Cl. 372-95.000.
Byrnes, Francis E., 5,188,513, Cl. 416-134.00A.
Ebert, Frederick J., 5,188,511, Cl. 416-25.000.
Joyce, Michael J.; Boley, Warren M.; and Deal, James L., 5,188,279, Cl. 228-113.000.
Parsons, Douglas A.; Johnston, Mark A.; Games, John E.; and DePardo, Gerald L., 5,189,620, Cl. 364-431.020.

Universite du Quebec a Hull: *See—*
Bock, Wojtek J.; Wolinski, Tomasz R.; and Wisniewski, Roland, 5,187,983, Cl. 73-705.000.

University College Cork: *See—*
Lyden, Colin, 5,189,419, Cl. 341-143.000.

University of California, Regents of the: *See—*
Lange, Frederick F.; and Velamakanni, Bhaskar V., 5,188,780, Cl. 264-63.000.
Wudl, Fred; and Srdanov, Gordana, 5,189,136, Cl. 528-86.000.

University of Cincinnati: *See—*
Sekhar, Jainagesh A.; Bhaduri, Sarit B.; Li, Hung P.; and Canarslan, Necip S., 5,188,678, Cl. 148-514.000.

University of Florida: *See—*
Colgate, Samuel O.; and Schrag, Grant M., 5,188,402, Cl. 285-332.000.

VOL 1147 ISS 4 FEB 23 1993 UMI

University of Florida Research Foundation, Inc.: *See*—
Bova, Frank J.; and Friedman, William A., 5,189,687, Cl. 378-65.000.
University of Georgia Research Foundation, Inc.: *See*—
Ruenitz, Peter C., 5,189,212, Cl. 562-468.000.
University of Hartford: *See*—
Shetty, Devdas; and Neault, Henry, 5,189,490, Cl. 356-371.000.
University of New Mexico: *See*—
Paine, Robert T., Jr.; Narula, Chaitanya K.; and Schaeffer, Riley O., 5,188,757, Cl. 252-183.110.
University of Newcastle Research Associates Ltd.: *See*—
Jameson, Graeme J., 5,188,726, Cl. 209-164.000.
University of North Carolina at Chapel Hill: *See*—
Orlando, Roy C.; and Tobey, Nelia A., 5,189,056, Cl. 514-439.000.
University of Pennsylvania, The Trustees of the: *See*—
Hoffman, Eric A.; and Hanson, C. William, III, 5,188,098, Cl. 128-204.230.
University of Utah: *See*—
Shabtai, Joseph S.; Oblad, Alex G.; and Tsai, Chi H., 5,189,232, Cl. 585-14.000.
Uno, Shunya: *See*—
Suzuki, Naoshi; and Uno, Shunya, 5,189,647, Cl. 368-10.000.
Unsold, Eberhard: *See*—
Kratzer, Michael; and Unsold, Eberhard, 5,188,633, Cl. 606-12.000.
Unverzagt, Walter: *See*—
Puschnerat, Helmut; Reutter, Walter; and Unverzagt, Walter, 5,188,030, Cl. 101-348.000.
Uoi, Michitake: *See*—
Ishihara, Nobuhide; Kuramoto, Masahiko; and Uoi, Michitake, 5,189,125, Cl. 526-160.000.
Uosaki, Yoichi: *See*—
Nakano, Hirofumi; Kawada, Shozo; Uosaki, Yoichi; Saito, Yutaka; Gomi, Katsushige; and Iwazaki, Toshiaki, 5,189,187, Cl. 549-548.000.
Urai, Masahiko: *See*—
Kawamura, Akio; Iguchi, Katsuji; and Urai, Masahiko, 5,189,501, Cl. 257-647.000.
Uryase, Jan W.: *See*—
Davis, Scott A.; and Uryase, Jan W., 5,188,449, Cl. 362-148.000.
Usa, Satoshi, to Yamaha Corporation. Electronic musical instrument. 5,189,242, Cl. 84-743.000.
Ushikubo, Takashi: *See*—
Okayama, Hideaki; and Ushikubo, Takashi, 5,189,714, Cl. 385-27.000.
Ushiyama, Masahiro: *See*—
Kume, Hitoshi; Adachi, Tetsuo; Ohji, Yuzuru; Kure, Tokuo; Ushiyama, Masahiro; and Kawakami, Hiroshi, 5,188,976, Cl. 435-52.000.
Utsumi, Yoshihiro, to Pioneer Electronic Corporation. Optical system in magneto-optical recording and reproducing device. 5,189,651, Cl. 369-13.000.
Utsuno, Noritoshi: *See*—
Tagawa, Kimiteru; Takahashi, Seiichi; Utsuno, Noritoshi; Umehara, Hideki; Hayashi, Fujio; Kiba, Shigeo; and Suda, Satoru, 5,188,898, Cl. 428-403.000.
Uttke, Russell H. C.; and Carney, Edward J., to Rexnord Corporation. End seal for idler roller. 5,188,214, Cl. 198-501.000.
Utzfeld, Michael: *See*—
Dettmer, Hans J.; Herwig, Jorg; Hagemann, Joachim; Marchewka, Werner; and Utzfeld, Michael, 5,187,988, Cl. 73-861.530.
Uzawa, Tsutomu: *See*—
Ishii, Atsujiro; Uzawa, Tsutomu; and Mihara, Shinichi, 5,189,558, Cl. 359-687.000.
Vaahs, Tilo; Gerdau, Thomas; Kleiner, Hans-Jerg; Peuckert, Marcellus; and Bruck, Martin, to Hoechst Aktiengesellschaft. Polymeric hydridochlorosilazanes, process for their preparation, ceramic materials containing silicon nitride which can be manufactured therefrom, and their manufacture. 5,189,132, Cl. 528-33.000.
Vackier, Leo N.: *See*—
De Niel, Marc A.; de Ruijter, Dirk F.; Vackier, Leo N.; and Verlinden, Bart J., 5,188,732, Cl. 210-285.000.
Vadgama, Sunil K.: *See*—
Bailey, Alister J.; and Vadgama, Sunil K., 5,189,734, Cl. 455-33.200.
Vagt, Uwe: *See*—
Kummer, Rudolf; Schneider, Heinz-Walter; Bertleff, Werner; Fischer, Rolf; Vagt, Uwe; Naeumann, Fritz; Hoelderich, Wolfgang; and Schwarzmann, Matthias, 5,189,182, Cl. 549-326.000.
Vahabpour, Abdolvahab K. Automatic tea maker. 5,188,019, Cl. 99-285.000.
Vaillancourt, Vincent L. Fluid infusion delivery system. 5,188,603, Cl. 604-131.000.
Valenta, Harry L., Jr.: *See*—
Posin, Jack; Valenta, Harry L., Jr.; Maas, Steven M.; and Koestner, Ken, 5,188,106, Cl. 128-419.0PG.
Valentino, Karen L.: *See*—
Miljanich, George P.; Bitner, Robert S.; Bowersox, Stephen S.; Fox, James A.; Valentino, Karen L.; Yamashiro, Donald H.; and Tsubokawa, Makoto, 5,189,020, Cl. 514-12.000.
Valet, Andreas: *See*—
Birbaum, Jean-Luc; Rody, Jean; Slongo, Mario; and Valet, Andreas, 5,189,084, Cl. 524-100.000.
Valette, Gerard: *See*—
Frehel, Daniel; Gully, Danielle; Valette, Gerard; and Bras, Jean-Pierre, 5,189,049, Cl. 514-371.000.
Valle, Gunnar F.: *See*—
Gjestrum, Einar; Hjelle, Oddbjorn; Hogsnes, Oyvind; Valle, Gunnar F.; and Sorbotten, Oyvind, 5,188,053, Cl. 114-242.000.
Valls, William H.: *See*—
Kovacic, Theodore J.; Kaufman, Richard H.; Bostwick, Martin M.; Crescenzi, Donald C.; Valls, William H.; and Bucaccio, Thomas, 5,188,250, Cl. 215-32.000.
Van den Bergh Foods Co., Division of Conopco, Inc.: *See*—
Visser, Johannes; and Bakker, Marinus, 5,188,842, Cl. 424-535.000.
Van Aken, Luc K.: *See*—
Leys, Paul H.; Zwijsen, Jan A.; and Van Aken, Luc K., 5,189,477, Cl. 355-271.000.
Vanasse, George A.; and Huppi, Ernest R., to United States of America, Air Force. Telescope baffle system. 5,189,554, Cl. 359-601.000.
van de Plassche, Rudy J.; and Baltus, Petrus G. M., to U.S. Philips Corporation. Analog-to-digital converter with delay correction. 5,189,422, Cl. 341-159.000.
van der Gen, Arne: *See*—
Brussee, Johannes; van der Gen, Arne; and Kruse, Cornelis G., 5,189,219, Cl. 564-356.000.
Van der Male, John: *See*—
Hoffmann, Gerald W.; and Van der Male, John, 5,187,828, Cl. 15-82.000.
van der Ouderaa, Franciscus J.: *See*—
Cummins, Diane; and van der Ouderaa, Franciscus J., 5,188,820, Cl. 424-49.000.
VanderSande, John B.: *See*—
Yurek, Gregory J.; and VanderSande, John B., 5,189,009, Cl. 505-1.000.
Van Iten, Thomas P.; Whitehead, Howard A.; and Schindel, Julie A., to Kimberly-Clark Corporation. Sanitary napkin having a cover formed from a nonwoven web. 5,188,625, Cl. 604-383.000.
van Raemdonck, Joris, to Look S.A. Bicycle frame. 5,188,384, Cl. 280-281.100.
Van Tassell, Jon E.: *See*—
Farrington, David L.; Staller, Norman D.; and Van Tassell, Jon E., 5,189,464, Cl. 354-403.000.
Van Zanten, Anton: *See*—
Ruf, Wolf-Dieter; Hartmann, Uwe; Kost, Friedrich; and Van Zanten, Anton, 5,188,434, Cl. 303-111.000.
Varian Associates, Inc.: *See*—
Inserra, Dario; Marzio, Marco; and Pellizzari, Paolo, 5,188,514, Cl. 416-223.00A.
Varpat Patentverwertungs AG: *See*—
Rohrmoser, Alois, 5,188,388, Cl. 280-633.000.
Vas-Cath Incorporated: *See*—
Martin, Geoffrey S., 5,188,593, Cl. 604-43.000.
Velamakanni, Bhaskar V.: *See*—
Lange, Frederick F.; and Velamakanni, Bhaskar V., 5,188,780, Cl. 264-63.000.
Venture Innovations, Inc.: *See*—
House, Roy F., 5,188,064, Cl. 119-172.000.
Verbrugge, Pieter A.; and De Waal, Jannetje, to Shell Internationale Research Maatschappij B.V. Process for preparing carbamates, and intermediates therein. 5,189,197, Cl. 560-24.000.
Verlinden, Bart J.: *See*—
De Niel, Marc A.; de Ruijter, Dirk F.; Vackier, Leo N.; and Verlinden, Bart J., 5,188,732, Cl. 210-285.000.
Verosol USA Inc.: *See*—
Jelic, Ralph, 5,188,160, Cl. 160-84.100.
Vespoli, Michael; Nelson, Bruce; and Scragg, Carl. Four man rowing shell. 5,188,048, Cl. 114-56.000.
Vetrisystems, Inc.: *See*—
Rains, John R., 5,188,610, Cl. 604-183.000.
Viccaro, John P.; Bajor, John S.; and Tartakovsky, Alla, to Chesebrough-Pond's USA Co., Division of Conopco Inc. Oral compositions containing an aminosilicone and a lipophilic compound. 5,188,822, Cl. 424-52.000.
Videocolor S.p.A.: *See*—
Sarracco, Luigi, 5,189,336, Cl. 313-440.000.
Villaveces, James: *See*—
Villaveces, James W.; and Muma, Gordon, 5,188,407, Cl. 293-128.000.
Villaveces, James W.; and Muma, Gordon, to Villaveces, James. Magnetic-strip door protector for automobiles. 5,188,407, Cl. 293-128.000.
Virginia Polytechnic Institute & State University: *See*—
Zimmermann, Bernd D.; Claus, Richard O.; Murphy, Kent A.; and Kapp, David A., 5,189,299, Cl. 250-227.160.
Virginia Tech Intellectual Properties, Inc.: *See*—
Zimmermann, Bernd D.; Claus, Richard O.; Murphy, Kent A.; and Kapp, David A., 5,189,299, Cl. 250-227.160.
Viscodrive GmbH: *See*—
Gasch, Christian, 5,188,194, Cl. 180-248.000.
Visser, Johannes; and Bakker, Marinus, to Van den Bergh Foods Co., Division of Conopco, Inc. Edible plastic compositions. 5,188,842, Cl. 424-535.000.
VISX, Incorporated: *See*—
L'Esperance, Francis A., Jr., 5,188,631, Cl. 606-5.000.
Vital Heart Systems, Inc.: *See*—
Pommrehn, Mark R.; Brewer, James E.; and Kroll, Mark W., 5,188,116, Cl. 128-696.000.
Vlahos, Mary E. Game cards in multiple form and a container/dispenser device. 5,188,370, Cl. 273-269.000.
VLSI Packaging Materials: *See*—
Dumesnil, Maurice E.; and Finkelstein, Leo, 5,188,990, Cl. 501-19.000.

VLSI Technology, Inc.: *See*—
Brasen, Daniel R.; and Wong, Dale M., 5,187,864, Cl. 29-846.000.
Huang, Chin-Ching, 5,188,982, Cl. 437-209.000.
Vogel, Karl: *See*—
Kuehner, Gerhard; Vogel, Karl; Rodriguez, Juan D.; and Clement, Charles D., 5,188,806, Cl. 422-151.000.
Vohr, Armin: *See*—
Heyke, Klaus; Spitz, Richard; Seidel, Hans-Joachim; Jennrich, Irene; Pfander, Werner; and Vohr, Armin, 5,189,080, Cl. 523-212.000.
Voigt, Bruce S. Skiiing simulator and training device. 5,188,578, Cl. 482-71.000.
Volkert, Otto: *See*—
Boehme, Ralf; and Volkert, Otto, 5,189,068, Cl. 521-51.000.
Volkov, Eduard. Racetrack. 5,188,567, Cl. 472-85.000.
Volkswagen AG: *See*—
Stamm, Klaus; and Graf vom Hagen, Siegbert, 5,188,088, Cl. 123-620.000.
Volz, Peter: *See*—
Burgdorf, Jochen; Steffes, Helmut; Volz, Peter; Beck, Erhard; and Zaviska, Dalibor, 5,188,439, Cl. 303-116.100.
Reinartz, Hans; Steffes, Helmut; Volz, Peter; and Beck, Erhard, 5,188,433, Cl. 303-100.000.
Von Sutfin, Lloyd. Method and equipment for treatment of periodontal disease. 5,188,531, Cl. 433-188.000.
von Tobel, Hans, to Sandoz Ltd. Use of 1-amino-2,7-di-[5'-((2''-chloro-4''-substituted amino-1,3,5-triazin-6-ylamino)-2'-sulfophenylazo]-8-hydroxynaphthalene-3,6-disulfonic acids for dyeing and printing. 5,188,640, Cl. 8-549.000.
Vosberg, Donald E.: *See*—
Christensen, Thomas C.; Hanson, Weldon M.; Mosser, James J.; and Vosberg, Donald E., 5,189,566, Cl. 360-53.000.
W. L. Gore & Associates, Inc.: *See*—
Sayegh, Emile G.; and Cedrone, Alfredo L., 5,189,721, Cl. 385-114.000.
W.S.A., Inc.: *See*—
Orendorff, Gary R., 5,188,404, Cl. 292-194.000.
WABCO Westinghouse Fahrzeugbremsen GmbH: *See*—
Koschorek, Ralf; Kruger, Gerd; Rosendahl, Hartmut; and Rothen, Johann, 5,187,977, Cl. 73-146.000.
WABCO Westinghouse Fahrzugbremsen GmbH: *See*—
Feldmann, Joachim; Petersen, Erwin; and Schult, Manfred, 5,189,391, Cl. 340-453.000.
Wachendorff-Neumann, Ulrike: *See*—
Klausener, Alexander; Gayer, Herbert; Kramer, Wolfgang; Berg, Dieter; Brandes, Wilhelm; Hanssler, Gerd; and Wachendorff-Neumann, Ulrike, 5,189,063, Cl. 514-530.000.
Wada, Katsuyoshi: *See*—
Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, 5,188,520, Cl. 418-55.100.
Wada, Morio; Seko, Masahito; Sekiguchi, Youichi; and Iwaoka, Hideto, to Optical Measurement Technology Development Co., Ltd. Avalanche photodiode with AlINAsP cap layer. 5,189,309, Cl. 257-21.000.
Waddill, Harold G.; Su, Wei-Yang; and Speranza, George P., to Texaco Chemical Company. Mixtures of 1-isopropyl-2-aryl imidazole and 1-isopropyl-2-aryl imidazoline as epoxy resin curatives. 5,189,118, Cl. 525-504.000.
Wadstrom, Torkel M.: *See*—
Hook, Magnus; Lindberg, Kjell M.; and Wadstrom, Torkel M., 5,189,015, Cl. 514-2.000.
Wadsworth, Legrand D. Clip for elastomeric ligation tubing. 5,188,637, Cl. 606-151.000.
Wadsworth, Mark: *See*—
Linnenbrink, Thomas E.; Wadsworth, Mark; and Gaalema, Stephen D., 5,189,423, Cl. 341-172.000.
Wagner, Mark E. Pivotable tailgate connector. 5,188,415, Cl. 296-57.100.
Waibel, Terry J.: *See*—
Cherveny, Mark V.; Trares, Keith C.; Waibel, Terry J.; Hopkins, William M.; Sinopoli, Italo M.; and Young, Ray A., 5,188,685, Cl. 152-451.000.
Wakabayashi, Shoichiro: *See*—
Sano, Kenichi; Nishiyama, Masaaki; Suzuki, Toshiro; Wakabayashi, Shoichiro; and Miyahara, Kuniaki, 5,189,201, Cl. 560-205.000.
Wakahara, Tatsuo, to Nissan Motor Co., Ltd. Automatic transmission having hydraulic servo device for band brake. 5,188,570, Cl. 475-143.000.
Wakana, Kojiro: *See*—
Okuyama, Shinobu; and Wakana, Kojiro, 5,188,798, Cl. 376-442.000.
Walck, Jeffrey A.: *See*—
Kugler, Donald W., Jr.; Coley, Christopher D.; and Walck, Jeffrey A., 5,189,401, Cl. 340-703.000.
Waldman, Thomas E.: *See*—
McGhee, William D.; and Waldman, Thomas E., 5,189,205, Cl. 560-345.000.
Walker-Estes Corporation: *See*—
Estes, Mark D., 5,189,416, Cl. 341-26.000.
Walker, Geri G.: *See*—
Smith, Stephen R.; and Walker, Geri G., 5,188,216, Cl. 198-803.600.
Wallace, Peter L.; and Jeffs, David G., to Wiggins Teape Group Limited, The. Process for the surafce enhancement of articles of fibre reinforced plastics material. 5,188,778, Cl. 264-45.100.
Walle, Leonard I.: *See*—
Brookfield, Richard A.; and Walle, Leonard I., 5,188,647, Cl. 55-462.000.
Walter, Helmut: *See*—
Hamprecht, Gerhard; Mayer, Horst; Westphalen, Karl-Otto; Walter, Helmut; Gerber, Matthias; Grossmann, Klaus; and Rademacher, Wilhelm, 5,188,657, Cl. 504-212.000.
Walter, Ronald; and Chadwick, Brian A., to Grinell Asia Pacific Pty. Limited. Fire alarm display. 5,189,394, Cl. 340-525.000.
Walworth, Tom M., Jr.; Jurica, Joseph J.; Weilemann, Donald E.; and Turner, Joseph, to Pullman Industries, Inc. Truck bed and method of manufacture. 5,188,418, Cl. 296-183.000.
Wan, Chang F.: *See*—
York, Rudy L.; Luttmer, Joseph D.; Wan, Chang F.; Orent, Thomas W.; Hutchins, Larry D.; and Simmons, Art, 5,188,970, Cl. 437-3.000.
Wang, Dah-Ping: *See*—
Pen, Ben-Li; Wang, Dah-Ping; Hoh, Ying-Chu; and Tsao, Kuo-Hao, 5,188,736, Cl. 210-634.000.
Wang, Der-Shing: *See*—
Wu, Chii-Chong; and Wang, Der-Shing, 5,187,886, Cl. 40-152.100.
Wang, Lui; and Johnson, Gordon G., to United States of America, National Aeronautics and Space Administration. Dynamic pattern matcher using incomplete data. 5,189,709, Cl. 382-10.000.
Wang, Richard H. S.; Shang, Ping P.; and Jervis, Daniel A., to Eastman Kodak Company. Bis(phenolic-amine)quinone compounds and polyolefin compositions stabilized therewith. 5,189,088, Cl. 524-222.000.
Wang, Shein S.; and Bell, David W., to Conoco Inc. Method of accurate fault location using common reflection point gathers. 5,189,643, Cl. 367-38.000.
Wang, Zhengxin; and Laursen, Richard A., to Boston University, Trustees of. Apparatus and process for effecting sequential peptide syntheses. 5,188,733, Cl. 210-321.840.
Wangner Systems Corporation: *See*—
Smith, Richard W., 5,188,884, Cl. 428-193.000.
Wani, Takayuki: *See*—
Ohashi, Kazuhiko; Kato, Hiroshi; and Wani, Takayuki, 5,188,890, Cl. 428-306.600.
Wannlund, Jon C., to Difco Laboratories. Reagent source for chemiluminescent reactions, test kit, and method for use. 5,188,965, Cl. 436-165.000.
Ward, N. Robert, Jr.; and Lozier, Philip J., to BioControl Systems Incorporated. Process and device for sequential microbial enrichment in a single apparatus. 5,188,946, Cl. 435-91.000.
Warloff, Peter E. T.: *See*—
Phillips, Joseph R.; Warloff, Peter E. T.; Hefele, John; Bilodeau, Victor L.; Bain, Ronald G.; and Barrett, Mark, 5,187,956, Cl. 68-181.00R.
Warm, Aleksander: *See*—
Griffiths, Gareth; Warm, Aleksander; Previdoli, Felix; and Ryan, Gary, 5,189,217, Cl. 564-040.000.
Warner-Lambert Company: *See*—
Lee, Helen T.; Picard, Joseph A.; and Sliskovic, Drago R., 5,189,058, Cl. 514-481.000.
Muhammad, Nouman; Boisvert, Wayne; Harris, Michael; and Weiss, Jay, 5,188,836, Cl. 424-431.000.
Warner, R. Brown: *See*—
Tyler, James B.; Scheider, Alfred F.; and Warner, R. Brown, 5,187,904, Cl. 51-330.000.
Warnier, Jacques P. M.: *See*—
Geittner, Peter E. E.; Hagemann, Hans-Jurgen; and Warnier, Jacques P. M., 5,188,648, Cl. 65-3.120.
Warren, Harold C., III: *See*—
Schaeffer, James R.; Engebrecht, Ronald H.; Winterkorn, Robert F.; Warren, Harold C., III; and Welter, Thomas R., 5,188,802, Cl. 422-56.000.
Washington, Samuel J.: *See*—
Mancusi, Anthony W., III; and Washington, Samuel J., 5,189,196, Cl. 558-261.000.
WASK-RMF Ltd.: *See*—
Staniforth, Graeme, 5,188,401, Cl. 285-322.000.
Wasson, Steven C.: *See*—
Patterson, Jon M.; Teal, Richard D.; Weitz, James H.; and Wasson, Steven C., 5,187,925, Cl. 56-17.100.
Watanabe, Akira: *See*—
Tominaga, Tsutomu; and Watanabe, Akira, 5,189,354, Cl. 318-671.000.
Watanabe, Junichiro: *See*—
Matsumoto, Makoto; and Watanabe, Junichiro, 5,188,899, Cl. 428-405.000.
Watanabe, Masahiro; Stonehart, Paul; Tsurumi, Kazunori; Yamamoto, Nobuo; Hara, Noriaki; and Nakamura, Toshihide, to Tanaka Kikinzoku Kogyo K.K.; and Stonehart Associates, Inc. Electrocatalyst and process of preparing same. 5,189,005, Cl. 502-326.000.
Watanabe, Mitsuo, to Fujitsu Limited. Distinguishing bar code types by comparing bar block sizes. 5,189,289, Cl. 235-437.000.
Watanabe, Takumi: *See*—
Kobayashi, Satoshi; Asano, Yasushi; Yamazaki, Hiroshi; and Watanabe, Takumi, 5,187,999, Cl. 74-528.000.
Watanabe, Teruo: *See*—
Itoh, Shigeo; Watanabe, Teruo; Nakata, Hisashi; and Takagi, Toshinori, 5,189,341, Cl. 315-169.100.
Watanabe, Tetsu; Yamagami, Tamotsu; and Kawashima, Tetsuji, to Sony Corporation. Magneto-optical signal reproducing apparatus in which reproduced magneto-optical signal level is compared with

reference signal level varied in accordance with in-phase signal. 5,189,650, Cl. 369-13.000.
Watanabe, Toshimi; and Ogasawara, Akira, to Nikon Corporation. Automatic focusing apparatus. 5,189,459, Cl. 354-402.000.
Watanabe, Yasuhiko: *See—*
Aihara, Hideo; Kurisu, Norio; Takei, Kazuhiro; and Watanabe, Yasuhiko, 5,189,007, Cl. 503-207.000.
Watanabe, Yasushi: *See—*
Akashi, Shunji; and Watanabe, Yasushi, 5,187,842, Cl. 24-431.000.
Watanabe, Yohko: *See—*
Miyashita, Takanori; Abiru, Toichi; Watanabe, Yohko; Yamaguchi, Toyofumi; and Matsuda, Akira, 5,189,027, Cl. 514-46.000.
Watanabe, Yoshitane; and Suzuki, Keitaro, to Nissan Chemical Industries, Ltd. Tungstic oxide-stannic oxide composite sol and method of preparing the same. 5,188,667, Cl. 106-286.400.
Waters, Colin M.: *See—*
Humphries, Brian J.; Waters, Colin M.; Bull, Steven D.; and Morris, Christopher J., 5,189,406, Cl. 340-793.000.
Watkins, Harry E.; and Roberson, David L., to Sensormatic Electronics Corporation. Method and apparatus for determining the magnitude of a field in the presence of an interfering field in an EAS system. 5,189,397, Cl. 340-572.000.
Watkins, Michael L.: *See—*
Hajaligol, Mohammad R.; Deevi, Seetharama C.; Ariprala, Sarojini D.; Losee, Donald B.; Waymack, Bruce E.; and Watkins, Michael L., 5,188,130, Cl. 131-359.000.
Watt Stopper Inc., The: *See—*
Hu, Charles C., 5,189,393, Cl. 340-522.000.
Watts, J. Alan: *See—*
Norris, Thomas R.; Lockwood, Hanford N., Jr.; and Watts, J. Alan, 5,188,510, Cl. 415-208.100.
Waymack, Bruce E.: *See—*
Hajaligol, Mohammad R.; Deevi, Seetharama C.; Ariprala, Sarojini D.; Losee, Donald B.; Waymack, Bruce E.; and Watkins, Michael L., 5,188,130, Cl. 131-359.000.
Wayne State University: *See—*
Goldman, Harold; Murphy, Sharon; and Morehead, Marilyn, 5,189,018, Cl. 514-10.000.
Weber, James: *See—*
McGuire, Robert R.; and Weber, James, 5,188,587, Cl. 602-20.000.
Weber, Thomas J.; Garrison, Dale L.; Forrest, Richard E.; and Strutz, William F., to Emerson Electric Co. Continuous water distillation system. 5,188,710, Cl. 202-185.300.
Weeks, Jerrold K., to Minnesota Mining and Manufacturing Company. Tether keeper for videotape cartridge adaptor. 5,188,309, Cl. 242-199.000.
Wei, Chih-Yen. Multipurpose cleaning device. 5,187,827, Cl. 15-22.100.
Weier, Andreas: *See—*
Schaefer, Dietmar; Weier, Andreas; Weitemeyer, Christian; and Wewers, Dietmar, 5,189,184, Cl. 549-427.000.
Weilemann, Donald E.: *See—*
Walworth, Tom M., Jr.; Jurica, Joseph J.; Weilemann, Donald E.; and Turner, Joseph, 5,188,418, Cl. 296-183.000.
Weintraub, Philip M., to Merrell Dow Pharmaceuticals Inc. 4-amino-$\Delta^{4,6}$-steroids and their use as 5α-reductase inhibitors. 5,189,032, Cl. 514-173.000.
Weinzierl, Karin: *See—*
Hinterholzer, Peter; Zikell, Stefan; Firgo, Heinrich; Wolschner, Bernd; Eichinger, Dieter; Manner, Johann; Astegger, Stephan; and Weinzierl, Karin, 5,189,152, Cl. 536-56.000.
Weiss, Isaac; and Rosenfeld, Azriel. Automatic detection of elliptical shapes. 5,189,711, Cl. 382-25.000.
Weiss, Jay: *See—*
Muhammad, Nouman; Boisvert, Wayne; Harris, Michael; and Weiss, Jay, 5,188,836, Cl. 424-431.000.
Weitemeyer, Christian: *See—*
Schaefer, Dietmar; Weier, Andreas; Weitemeyer, Christian; and Wewers, Dietmar, 5,189,184, Cl. 549-427.000.
Weitz, James H.: *See—*
Patterson, Jon M.; Teal, Richard D.; Weitz, James H.; and Wasson, Steven C., 5,187,925, Cl. 56-17.100.
Welch Allyn, Inc.: *See—*
Peart, Edward L., 5,189,264, Cl. 181-131.000.
Perkins, David G., 5,189,449, Cl. 351-211.000.
Weldon, Mark P. Door mounted cooling apparatus. 5,187,950, Cl. 62-449.000.
Weldon, William F., to Board of Regents, The University of Texas System. Method and apparatus for spinning projectiles fired from a rail gun. 5,189,244, Cl. 89-8.000.
Wells, Greogry J.: *See—*
Carini, David J.; Duncia, John Jonas V.; and Wells, Greogry J., 5,189,048, Cl. 514-359.000.
Wells, Rick T.: *See—*
Collar, James K.; Gaskill, Garold B.; Park, Daniel J.; Shanks, Carl D.; and Wells, Rick T., 5,189,411, Cl. 340-825.140.
Welter, Thomas R.: *See—*
Schaeffer, James R.; Engebrecht, Ronald H.; Winterkorn, Robert F.; Warren, Harold C., III; and Welter, Thomas R., 5,188,802, Cl. 422-56.000.
Weltman, Henry J.; and Phillips, Tony L., to General Dynamics Corporation. Cleaning formulation and method that alleviates current problems. 5,188,754, Cl. 252-162.000.
Wera Werk Hermann Werner GmbH & Co.: *See—*
Erlenkeuser, Gerd, 5,188,378, Cl. 279-22.000.
Werner & Pfleiderer GmbH: *See—*
Rudolph, Joachim, 5,187,880, Cl. 34-8.000.
Wernicke, Joachim F.; Terry, Reese S., Jr.; and Baker, Ross G., Jr., to Cyberonics, Inc. Treatment of eating disorders by nerve stimulation. 5,188,104, Cl. 128-419.00R.
Wessling, Ritchie A.; Pickelman, Dale M.; and Wujek, Dennis G., to DowElanco. Stable concentrates and emulsions of water-insoluble organic pesticides. 5,188,824, Cl. 424-78.100.
West, Kevin F.: *See—*
Chung-Chen, Wei; and West, Kevin F., 5,189,157, Cl. 540-222.000.
Westerberg, Eugene R.: *See—*
Thompson, Thomas E.; and Westerberg, Eugene R., 5,188,458, Cl. 374-121.000.
Westinghouse Electric Corp.: *See—*
Guard, Glenn B., 5,189,429, Cl. 342-424.000.
Milianowicz, Stanislaw A.; Long, Russell W.; and Donatelli, Alexander V., 5,189,384, Cl. 335-16.000.
Runge, Louis L., 5,189,596, Cl. 361-355.000.
Westphalen, Karl-Otto: *See—*
Hamprecht, Gerhard; Mayer, Horst; Westphalen, Karl-Otto; Walter, Helmut; Gerber, Matthias; Grossmann, Klaus; and Rademacher, Wilhelm, 5,188,657, Cl. 504-212.000.
Westvaco Corporation: *See—*
Hutter, G. Frederick; and Zuraw, Paul J., 5,189,090, Cl. 524-272.000.
Schilling, Peter, 5,188,665, Cl. 106-26.00R.
Wewers, Dietmar: *See—*
Schaefer, Dietmar; Weier, Andreas; Weitemeyer, Christian; and Wewers, Dietmar, 5,189,184, Cl. 549-427.000.
Weyerhaeuser Company: *See—*
Young, Richard H., Sr.; Hansen, Michael R.; Lancaster, E. Peter; Mehta, aresh R.; and Brunnenkant, Christel, 5,188,624, Cl. 604-378.000.
WEZAG GmbH Werkzeugfabrik: *See—*
Beetz, Horst; and Battenfeld, Kurt, 5,187,968, Cl. 72-410.000.
Wheeled Coach Corporation: *See—*
Haun, Harold; Davis, Herschel W.; and Koger, Robert D., 5,188,445, Cl. 362-80.000.
Wheeler, Alton D. Method of combining graphics and photography to provide a program to create self-esteem in children. 5,189,467, Cl. 354-110.000.
Whirlpool Corporation: *See—*
Frohbieter, Edwin H., 5,187,948, Cl. 62-351.000.
Tershak, Andrew T.; Fellwock, Charles G.; and Thieneman, Michael D., 5,187,941, Cl. 62-89.000.
White Consolidated Industries, Inc.: *See—*
Gunderson, Rick L.; and Donaghy, David J., 5,187,837, Cl. 16-375.000.
Mabrey, Gerald B., 5,188,245, Cl. 211-122.000.
White, George: *See—*
King, David C.; Lillis, Rupert M.; and White, George, 5,188,787, Cl. 264-153.000.
White, George T., to Self Installing Platforms, Inc. Jack-up type offshore oil and gas production platform and method. 5,188,484, Cl. 405-198.000.
White, Jeffrey S., to United States Surgical Corporation. Disposable rigid endoscope. 5,188,092, Cl. 128-4.000.
White, Marlin S. Holder for attendant signalling device. 5,188,327, Cl. 248-231.800.
White, Susanne T.; Lyna, Pauline R.; and Fay, W. Joy, to Child Sexual Abuse Team, Wake AHEC. Measuring device for measuring the diameter of the hymenal orifice. 5,188,120, Cl. 128-778.000.
Whitehead, Howard A.: *See—*
Van Iten, Thomas P.; Whitehead, Howard A.; and Schindel, Julie A., 5,188,625, Cl. 604-383.000.
Whitten, Jeffrey P.: *See—*
Matthews, Donald P.; McCarthy, James R.; Whitten, Jeffrey P.; and Broersma, Robert J., Jr., 5,189,052, Cl. 514-392.000.
Wiemer, Frank: *See—*
Wilms, Elmar; and Wiemer, Frank, 5,188,786, Cl. 264-117.000.
Wiggins, Jay R.: *See—*
Chou, Yuo-Ling; Erhardt, Paul W.; Hagedorn, Alfred A., III; Lampe, John W.; Lumma, Jr., William C.; Morgan, Thomas K.; and Wiggins, Jay R., 5,189,036, Cl. 514-252.000.
Wiggins Teape Group Limited, The: *See—*
Collings, Peter, 5,188,871, Cl. 428-29.000.
Wallace, Peter L.; and Jeffs, David G., 5,188,778, Cl. 264-45.100.
Wilburn, Bruce E.: *See—*
Heilman, William J.; and Wilburn, Bruce E., 5,188,724, Cl. 208-18.000.
Wilcock, Donald F.: *See—*
Hooper, Michael E.; and Wilcock, Donald F., 5,188,462, Cl. 384-93.000.
Wild, John J. Flexible energy coupling and associated mounting for piezo electric crystals. 5,189,332, Cl. 310-345.000.
Wildenau, Artur, to J. H. Benecke GmbH. Plastic materials for the production of deep-drawn films. 5,189,087, Cl. 524-151.000.
Wilkening, Robert R., to Merck & Co., Inc. 8a-AZA-8a-homoerythromycin cyclic iminoethers. 5,189,159, Cl. 540-456.000.
Wilkins, Raymond G.: *See—*
Boisvert. John A.; Rogers, Fred A.; Solley, Dennis J.; Tatham, David A.; and Wilkins, Raymond G., 5,189,277, Cl. 219-121.540.
Williams, Clifton B., to C & P of Virginia. Method of and system for remote testing and reporting of ISDN line conditions. 5,189,663, Cl. 370-17.000.
Williams, David R.: *See—*
Carter, Guy T.; Williams, David R.; and Pinho, Fernando, 5,188,945, Cl. 435-77.000.

Williams, Michael B.: *See—*
Stove, Andrew G.; and Williams, Michael B., 5,189,427, Cl. 342-128.000.
Williams, Richard T. Diverter valve. 5,188,149, Cl. 137-625.470.
Willis, Robert J.; O'Mahony, Mary J.; and Roberts, Bryan G., to Schering Agrochemicals Limited. Imidazol(in)e substituted haloarylpyrazole pesticides. 5,189,053, Cl. 514-397.000.
Willmann, Karl-Heinz, to Robert Bosch GmbH. Hydraulic anti-lock multicircuit brake system, for motor vehicles. 5,188,435, Cl. 303-113.200.
Willmann, Karl-Heinz, to Robert Bosch GmbH. Brake pressure control apparatus for an all wheel drive vehicle having ABS and ASR. 5,188,437, Cl. 303-113.200.
Willy Vogel AG: *See—*
Meuer, Johannes; Todtenhaupt, Dieter; and Schonherr, Dieter, 5,188,197, Cl. 184-7.400.
Wilms, Elmar; and Wiemer, Frank, to Henkel Kommanditgesellschaft auf Aktien. Continuous granulation process. 5,188,786, Cl. 264-117.000.
Wilson, Alan A.; Brand, Peter J.; Judd, David R.; and Bonney, Stanley G., to Glaxo Group Limited. Method and apparatus for filling cavities. 5,187,921, Cl. 53-453.000.
Wilson, Edla C., III: *See—*
Joy, Gerald T.; and Wilson, Edla C., III, 5,188,062, Cl. 119-164.000.
Wilson, Harold L. Automatic locking proximity trailer hitch. 5,188,385, Cl. 280-477.000.
Wilson Sporting Goods Co.: *See—*
Neuhalfen, Mark, 5,187,812, Cl. 2-2.000.
Wimmer, Alois: *See—*
Gstettner, Manfred; and Wimmer, Alois, 5,188,158, Cl. 144-162.00R.
Winaver, Andre : *See—*
Deffayet, Jean; Lepicard, Alain; and Winaver, Andre , 5,189,248, Cl. 102-386.000.
Winegar, Robert N.: *See—*
Sutton, Fredrick E., Jr.; and Winegar, Robert N., 5,187,963, Cl. 72-159.000.
Wingo, Anthony K.: *See—*
Magnussen, Jr. Haakon T.; Ruskewicz, Stephen J.; Smith, Gary L.; and Wingo, Anthony K., 5,187,990, Cl. 73-864.180.
Wink, Joachim: *See—*
Zeeck, Axel; Philipps, Siegrid; Grabley, Susanne; Granzer, Ernold; Hutter, Klaus; Thiericke, Ralf; and Wink, Joachim, 5,189,150, Cl. 536-6.500.
Winkelbauer, Howard M.; and Rushe, Eugene T., to Dresser Industries. Coating mix to prevent oxidation of carbon substrates. 5,188,989, Cl. 501-17.000.
Winkler & Dunnebier Maschinenfabrik und Eisengiesserei KG: *See—*
Munsch, Klaus, 5,188,212, Cl. 198-457.000.
Winter, Klaus, to ITT Corporation. Weight reduced brake rotor. 5,188,203, Cl. 188-218.0XL.
Winterkorn, Robert F.: *See—*
Schaeffer, James R.; Engebrecht, Ronald H.; Winterkorn, Robert F.; Warren, Harold C., III; and Welter, Thomas R., 5,188,802, Cl. 422-56.000.
Wisconsin Alumni Research Foundation: *See—*
Guckel, Henry; and Sniegowski, Jeffry, 5,188,983, Cl. 437-209.000.
Wiseman, Gary H.: *See—*
Dupon, Ryan W.; Thompson, Mark S.; Wiseman, Gary H.; Musolf, Douglas J.; and Tanous, Adam S., 5,188,886, Cl. 428-209.000.
Wisniewski, Roland: *See—*
Bock, Wojtek J.; Wolinski, Tomasz R.; and Wisniewski, Roland, 5,187,983, Cl. 73-705.000.
Wisnosky, Jerome D.: *See—*
Hensel, Robert D.; Ray, Leonard N., Jr.; Reuwer, Joseph F., Jr.; Ross, Jeffrey S.; and Wisnosky, Jerome D., 5,188,876, Cl. 428-76.000.
Withol, Peter J.: *See—*
Green, Ralph E., Jr.; Jones, Ronald H.; Peters, Leland J.; and Withol, Peter J., 5,188,800, Cl. 422-23.000.
Wittens, Henricus L., to Du Pont de Nemours, E. I., and Company. Method and device for connecting a connector to a board. 5,187,863, Cl. 29-845.000.
Wittig, Werner: *See—*
Boltze, Wolfgang; and Wittig, Werner, 5,188,571, Cl. 475-162.000.
Witzel, John G.: *See—*
Anderson, David A.; Witzel, John G.; Christensen, Don; and Bahia, Hussain, 5,187,987, Cl. 73-852.000.
Witzke, Horst; and Kear, Bernard H., to Exxon Research and Engineering Company. Ceramic microtubular materials and method of making same. 5,188,776, Cl. 264-29.200.
Wlosinski, Ronald K.: *See—*
Stiles, Ernest D.; Wlosinski, Ronald K.; and Houston, Daniel Q., 5,188,981, Cl. 428-195.000.
WOCO Franz-Josef Wolf & Co.: *See—*
Wolf, Franz J.; and Pletsch, Hubert, 5,188,002, Cl. 74-574.000.
Wolf, Franz J.; and Pletsch, Hubert, to WOCO Franz-Josef Wolf & Co. Torsional vibration damper. 5,188,002, Cl. 74-574.000.
Wolf, Herbert: *See—*
Siegner, Helge; Stadelmann, Ludwig; and Wolf, Herbert, 5,188,345, Cl. 267-131.000.
Wolf, Joachim. Method for disposing of filter cartridges. 5,188,300, Cl. 241-23.000.
Wolfe, Mitchel T.: *See—*
Rotenberg, Yefim; and Wolfe, Mitchel T., 5,187,946, Cl. 62-314.000.
Wolff, Peter A.: *See—*
Lee, Mark; Solin, Stuart A.; and Wolff, Peter A., 5,189,367, Cl. 324-252.000.
Wolinski, Tomasz R.: *See—*
Bock, Wojtek J.; Wolinski, Tomasz R.; and Wisniewski, Roland, 5,187,983, Cl. 73-705.000.
Wollert, Gary S.: *See—*
Mellits, Kirk E.; Braun, Robert D.; and Wollert, Gary S., 5,187,974, Cl. 73-49.700.
Wolner, Ernst: *See—*
Grimm, Michael; Eybl, Elisabeth; Griesmacher, Andrea; Grabenwoger, Martin; Muller, Mathias M.; and Wolner, Ernst, 5,188,834, Cl. 424-422.000.
Wolschner, Bernd: *See—*
Hinterholzer, Peter; Zikell, Stefan; Firgo, Heinrich; Wolschner, Bernd; Eichinger, Dieter; Manner, Johann; Astegger, Stephan; and Weinzierl, Karin, 5,189,152, Cl. 536-56.000.
Wong, Dale M.: *See—*
Brasen, Daniel R.; and Wong, Dale M., 5,187,864, Cl. 29-846.000.
Wong, Kwok-Keung: *See—*
Goldner, Ronald B.; Arntz, Floyd O.; Morel, Bertrand; Haas, Terry E.; and Wong, Kwok-Keung, 5,189,550, Cl. 359-273.000.
Wong, Pui K.: *See—*
Brownscombe, Thomas F.; Gergen, William P.; Bass, Ronald M.; Mores, Maryanne; and Wong, Pui K., 5,189,070, Cl. 521-64.000.
Wong, Stephanie: *See—*
Schultz, Thomas M.; Patel, Jitendra; and Wong, Stephanie, 5,188,639, Cl. 8-405.000.
Woo, Sam: *See—*
Menchen, Steven M.; Lee, Linda G.; Connell, Charles R.; Hershey, N. Davis; Chakerian, Vergine; Woo, Sam; and Fung, Steven, 5,188,934, Cl. 435-6.000.
Wood, Lawrence C. Removal of amplitude aliasing effect from seismic data. 5,189,644, Cl. 367-38.000.
Wood, Michael C. Speech synthesizing indicia for interactive learning. 5,188,533, Cl. 434-169.000.
Woodard, Floyd E., to Monsanto Company. Solar screening film for a vehicle windshield. 5,189,551, Cl. 359-360.000.
Woods, John R., to Woods, John R. Spray-on wall surface texture dispenser. 5,188,263, Cl. 222-394.000.
Woodson, Herbert H.; and Hsu, John S., to Board of Regents, The University of Texas System. Method and apparatus for improving performance of AC machines. 5,189,357, Cl. 318-737.000.
Work, William J.: *See—*
LaFleur, Edward E.; Amici, Robert M.; and Work, William J., 5,189,097, Cl. 525-57.000.
Wright, Charles S.: *See—*
McKenna, Frank J.; Horst, Richard K.; Horst, James F.; Wright, Charles S.; and Matthews, John D., 5,187,928, Cl. 56-328.100.
Wright, Roy F.; and Yu, Michael C., to Phillips Petroleum Company. Arylene sulfide copolymer coating compositions and processes. 5,189,121, Cl. 525-537.000.
Wright, Terry L.; and Orvik, Jon A., to DowElanco. Process for the preparation of 3- and/or 5-substituted anthranilic acids. 5,189,210, Cl. 562-418.000.
Wrighton, Mark S.: *See—*
Leventis, Nicholas; and Wrighton, Mark S., 5,189,549, Cl. 359-271.000.
Wu, Chii-Chong; and Wang, Der-Shing. Picture frame. 5,187,886, Cl. 40-152.100.
Wu, Chui-Li. Drum beat sounding racket. 5,188,359, Cl. 273-67.00R.
Wu, Thomas. Valve catheter connector assembly. 5,188,607, Cl. 604-167.000.
Wudl, Fred; and Srdanov, Gordana, to University of California, The Regents Of The. Conducting polymer formed of poly(2-methoxy,5-(2'-ethyl-hexyloxy)-p-phenylenevinylene). 5,189,136, Cl. 528-86.000.
Wuetherich, Paul: *See—*
Reisser, Berni; Pflug, Hannes; Khosrawi, Mohammad-Ali; Scharf, Michael; Simon, Helmut; Taudt, Christian; Goll, Wolfgang; Wuetherich, Paul; Fortenbacher, Thomas; and Konrath, Karl, 5,188,083, Cl. 123-502.000.
Wujek, Dennis G.: *See—*
Wessling, Ritchie A.; Pickelman, Dale M.; and Wujek, Dennis G., 5,188,824, Cl. 424-78.100.
Wulfing, James J.: *See—*
Rumpza, Paul D.; and Wulfing, James J., 5,189,586, Cl. 360-133.000.
Wyatt, W. Burk; Cundiff, Kevin B.; and Little, Kenneth R., Jr., to Aladdin Synergetics, Inc. Rethermalization cart indicator system. 5,189,281, Cl. 219-386.000.
Wyner, Elliot F.: *See—*
Snellgrove, Richard A.; and Wyner, Elliot F., 5,188,554, Cl. 445-26.000.
Wypych, Peter; and Haines, Stephen W., to Alcon Surgical, Inc. Textured irrigating sleeve. 5,188,589, Cl. 604-22.000.
Wysocki, Paul F.; Digonnet, Michel J. F.; and Kim, Byoung Y., to Leland Stanford Junior University, The Board of Trustees of the. Broadband laser source. 5,189,676, Cl. 372-6.000.
Wyvratt, Matthew J.: *See—*
Goulet, Mark; Beattie, Thomas R.; and Wyvratt, Matthew J., 5,189,042, Cl. 514-291.000.

VOL 1147 ISS 4 FE 23 1993 UMI

XAAR Limited: *See—*
Michaelis, A. John; Paton, Anthony D.; and Temple, Stephen, 5,189,437, Cl. 346-1.100.
Xavier, Lyndon C.: *See—*
Blacklock, Thomas J.; Jones, Todd K.; Mathre, David J.; and Xavier, Lyndon C., 5,189,177, Cl. 548-405.000.
Xerox Corporation: *See—*
Bartman, David A.; Morris, Daniel L.; and Andrews, Albert E., 5,188,352, Cl. 271-175.000.
Fournia, Peter G.; and Cipolla, Stephen D., 5,189,475, Cl. 355-246.000.
Hecht, David L., 5,189,548, Cl. 359-263.000.
Kaplan, Ronald M.; McCourt, Michael A.; and Henderson, Kenneth J., 5,189,610, Cl. 364-419.000.
Mayo, James D.; Bluhm, Terry L.; Hsiao, Cheng K.; Martin, Trevor I.; and Hor, Ah-Mee, 5,189,155, Cl. 540-141.000.
Mayo, James D.; and Gardner, Sandra J., 5,189,156, Cl. 540-141.000.
Parks, Bruce, 5,188,353, Cl. 271-184.000.
Ziolo, Ronald F., 5,188,918, Cl. 430-106.000.
Yaguchi, Katsumi. Unit for searching for a lost contact lens. 5,189,448, Cl. 351-162.000.
Yamabe, Kikuo: *See—*
Suguro, Kyoichi; Imai, Keitaro; Koyama, Mitsutoshi; and Yamabe, Kikuo, 5,189,503, Cl. 257-310.000.
Yamada, Chikako: *See—*
Kobayashi, Yo-ichi; Omori, Muneki; and Yamada, Chikako, 5,188,829, Cl. 424-94.630.
Yamada, Koichiro: *See—*
Ejiri, Yuki; Okazaki, Tsutomu; Yamada, Koichiro; Niida, Chiaki; Saeki, Hiroaki; and Honma, Hideki, 5,188,073, Cl. 123-339.000.
Yamada, Masahiko: *See—*
Kinoshita, Tsukasa; Yamada, Masahiko; and Matsueda, Hirokazu, 5,188,224, Cl. 206-83.500.
Yamada, Masao; Ikeda, Yoshihiro; and Yamamoto, Hiraku, to Matsushita Graphic Communication Systems, Inc. Automatic roll-in take-up reel and multi-color image recording apparatus using the same. 5,189,444, Cl. 346-157.000.
Yamada, Shigeru: *See—*
Kitamura, Koichiro; and Yamada, Shigeru, 5,187,846, Cl. 29-33.00P.
Yamada, Takanobu: *See—*
Fukui, Kazuyuki; and Yamada, Takanobu, 5,189,441, Cl. 346-160.000.
Yamada, Takeo: *See—*
Ogino, Masanori; Yamada, Takeo; Ikeda, Miyuki; Fujikura, Tsueno; and Fujiwara, Takahiko, 5,189,347, Cl. 315-383.000.
Yamada, Yasuhiro; Honda, Hidemasa; Yamasaki, Haruki; and Shimizu, Susumu, to Tanaka Kikinzoku Kogyo K.K.; and Agency of Industrial Science and Technology, The. Composite carbon fiber and process for preparing same. 5,188,894, Cl. 428-370.000.
Yamada, Yoko: *See—*
Iwaki, Takashi; Takiguchi, Takao; Togano, Takeshi; Yamada, Yoko; and Nakamura, Shinichi, 5,188,762, Cl. 252-299.620.
Yamada, Yukio: *See—*
Okayasu, Yoshisada; Yamauchi, Toshiyuki; Mori, Akinari; Kamaya, Naoki; Okayama, Naoki; Maruichi, Takanori; Iwasawa, Junichi; Yamada, Yukio; and Okano, Renjiro, 5,189,520, Cl. 358-229.000.
Yamagami, Tamotsu: *See—*
Watanabe, Tetsu; Yamagami, Tamotsu; and Kawashima, Tetsuji, 5,189,650, Cl. 369-13.000.
Yamagishi, Yasuo: *See—*
Mochizuki, Akihiro; Onda, Fumiyo; Yoshihara, Toshiaki; Iwasaki, Masayuki; and Yamagishi, Yasuo, 5,189,535, Cl. 359-55.000.
Yamaguchi, Hideki; Nitta, Masahiro; and Furukawa, Katsunori, to Matsushita Electric Industrial Co., Ltd. Heating method for microwave oven having heat element. 5,189,274, Cl. 219-10.55M.
Yamaguchi, Hideyuki: *See—*
Sugiyama, Shoichi; Arai, Fumiaki; Nonogaki, Masayasu; Natori, Yuji; Yamaguchi, Hideyuki; Ueda, Hitoshi; Tomita, Hiroshi; and Kato, Kotaro, 5,188,881, Cl. 428-143.000.
Yamaguchi, Hiroyuki: *See—*
Negoro, Ikuo; Yamaguchi, Hiroyuki; and Kita, Masahiro, 5,189,473, Cl. 355-215.000.
Yamaguchi, Jun: *See—*
Sato, Masamichi; and Yamaguchi, Jun, 5,189,468, Cl. 355-88.000.
Yamaguchi, Katsuyoshi; Kondoh, Masatoshi; Hayashi, Shigeo; Sonokawa, Masayoshi; Matsuzawa, Shoichi; and Takahashi, Atsushi, to Sumitomo Heavy Industries, Ltd. Internally meshing planetary gear structure. 5,188,572, Cl. 475-168.000.
Yamaguchi, Seitaro: *See—*
Shimizu, Tetsuo; and Yamaguchi, Seitaro, 5,188,764, Cl. 252-308.000.
Yamaguchi, Toyofumi: *See—*
Miyashita, Takanori; Abiru, Toichi; Watanabe, Yohko; Yamaguchi, Toyofumi; and Matsuda, Akira, 5,189,027, Cl. 514-46.000.
Yamaguchi, Tsutomu: *See—*
Akutagawa, Ichiro; Yamaguchi, Tsutomu; and Matsuzaki, Kinimitsu, 5,189,081, Cl. 523-428.000.
Yamaha Corporation: *See—*
Hayakawa, Tokuji, 5,189,238, Cl. 84-609.000.
Kageyama, Norihiko, 5,189,130, Cl. 526-352.000.
Kawashima, Susumu, 5,189,240, Cl. 84-724.000.
Saeki, Tatsuo, 5,189,706, Cl. 381-159.000.
Usa, Satoshi, 5,189,242, Cl. 84-743.000.
Yamakawa, Takeshi; and Ishida, Tsutomu, to Omron Tateisi Electronics Co. Rule generating and verifying apparatus for fuzzy control. 5,189,728, Cl. 395-51.000.
Yamamoto, Akio: *See—*
Sugimoto, Kazuaki; Kitahara, Satoshi; Yamamoto, Akio; and Sugiura, Ikuzo, 5,188,029, Cl. 101-288.000.
Yamamoto, Hideaki: *See—*
Komori, Kazuhiro; Meguro, Satoshi; Hagiwara, Takaaki; Kume, Hitoshi; Tsukada, Toshihisa; and Yamamoto, Hideaki, 5,189,497, Cl. 357-23.500.
Yamamoto, Hiraku: *See—*
Yamada, Masao; Ikeda, Yoshihiro; and Yamamoto, Hiraku, 5,189,444, Cl. 346-157.000.
Yamamoto, Keisaku: *See—*
Imai, Akio; Tsuji, Mitsuji; Sanada, Takashi; and Yamamoto, Keisaku, 5,189,108, Cl. 525-285.000.
Yamamoto, Nobuo: *See—*
Watanabe, Masahiro; Stonehart, Paul; Tsurumi, Kazunori; Yamamoto, Nobuo; Hara, Noriaki; and Nakamura, Toshihide, 5,189,005, Cl. 502-326.000.
Yamamoto, Shuichi: *See—*
Kawahara, Sadao; Yamamura, Michio; Yuda, Jiro; Kojima, Yoshinori; Yamamoto, Shuichi; Sakai, Manabu; Muramatsu, Shigeru; and Aiba, Osamu, 5,188,521, Cl. 418-55.300.
Yamamoto, Susumu: *See—*
Murai, Teruyuki; and Yamamoto, Susumu, 5,189,720, Cl. 385-103.000.
Yamamoto, Takashi: *See—*
Nakamura, Toshiyuki; Yamamoto, Takashi; Ogawa, Hiroshi; Kobayashi, Norihide; Sano, Fumiaki; Oide, Masahiko; Wada, Katsuyoshi; and Ishii, Minoru, 5,188,520, Cl. 418-55.100.
Yamamoto, Tetsu: *See—*
Onooka, Yasushi; Kawada, Junji; and Yamamoto, Tetsu, 5,189,575, Cl. 360-105.000.
Yamamoto, Tetsuya; Endoh, Yukio; Segawa, Akio; Matsumoto, Kenji; and Komiyama, Takeo, to Citizen Watch Co., Ltd. Print head with energizing and return leaf springs. 5,188,467, Cl. 400-157.200.
Yamamoto, Yuzo; Nomoto, Katsunori; and Isobe, Tsutomu, to Kao Corporation. Process of making a magnetic recording medium. 5,188,866, Cl. 427-132.000.
Yamamura, Michio: *See—*
Kawahara, Sadao; Yamamura, Michio; Yuda, Jiro; Kojima, Yoshinori; Yamamoto, Shuichi; Sakai, Manabu; Muramatsu, Shigeru; and Aiba, Osamu, 5,188,521, Cl. 418-55.300.
Yamanashi Electronics Co., Ltd.: *See—*
Ishikawa, Masaaki; Iguchi, Michihisa; Hashizume, Hiroshi; Fujii, Yasuo; Nakamura, Tetsuya; Fukuyama, Hirotaka; Arai, Seiji; Sato, Koichiro; Takagi, Toshio; Nishina, Shuji; Hukasawa, Jiro; Maruta, Masatoshi; and Koizumi, Seiichi, 5,188,057, Cl. 118-657.000.
Yamaoka, Hideo; Kuroiwa, Mitsuyuki; Nanbu, Hirosi; and Todo, Akira, to Mitsui Petrochemical Industries, Ltd. Information recording medium and adhesive composition therefor. 5,188,875, Cl. 428-64.000.
Yamasa Shoyu Kabushiki Kaisha: *See—*
Miyashita, Takanori; Abiru, Toichi; Watanabe, Yohko; Yamaguchi, Toyofumi; and Matsuda, Akira, 5,189,027, Cl. 514-46.000.
Yamasaki, Haruki: *See—*
Yamada, Yasuhiro; Honda, Hidemasa; Yamasaki, Haruki; and Shimizu, Susumu, 5,188,894, Cl. 428-370.000.
Yamasaki, Yoshikiyo; and Fujimoto, Shinichiro, to Kabushiki Kaisha Japan Health; and Kabushiki Kaisha Fuji Iryoki. Walking stick with wheels. 5,188,138, Cl. 135-65.000.
Yamashiro, Donald H.: *See—*
Miljanich, George P.; Bitner, Robert S.; Bowersox, Stephen S.; Fox, James A.; Valentino, Karen L.; Yamashiro, Donald H.; and Tsubokawa, Makoto, 5,189,020, Cl. 514-12.000.
Yamashita, Takuo; Ogura, Takashi; Nakaya, Hiroaki; and Yoshida, Masaru, to Sharp Kabushiki Kaisha. Thin film electroluminescent panel. 5,189,405, Cl. 340-781.000.
Yamauchi, Toshiyuki: *See—*
Okayasu, Yoshisada; Yamauchi, Toshiyuki; Mori, Akinari; Kamaya, Naoki; Okayama, Naoki; Maruichi, Takanori; Iwasawa, Junichi; Yamada, Yukio; and Okano, Renjiro, 5,189,520, Cl. 358-229.000.
Yamauchi, Yasuhisa: *See—*
Kawahara, Setsuko; Nakano, Yasushi; Shimizu, Yuji; and Yamauchi, Yasuhisa, 5,188,907, Cl. 428-694.000.
Yamazaki, Fumio: *See—*
Shindou, Yoshio; and Yamazaki, Fumio, 5,188,905, Cl. 428-626.000.
Yamazaki, Hiroshi: *See—*
Kobayashi, Satoshi; Asano, Yasushi; Yamazaki, Hiroshi; and Watanabe, Takumi, 5,187,999, Cl. 74-528.000.
Yamazaki, Mitsuo; Ichimura, Nobuo; Miyamoto, Yasuo; Fujita, Koei; and Kawasumi, Masao, to Hitachi Chemical Co., Ltd. Electroconductive resin paste containing mixed epoxy resin and electroconductive metal powder. 5,188,767, Cl. 252-512.000.
Yamazaki, Schoichi; and Matsui, Hiroshi, to Canon Kabushiki Kaisha. Phase-type focusing screen and process for manufacturing the same. 5,189,454, Cl. 354-200.000.
Yamazaki, Takashi: *See—*
Kitazumo, Tomoya; Yamazaki, Takashi; and Iwatsubo, Hitoshi, 5,189,204, Cl. 560-254.000.
Yamazaki, Takeshi: *See—*
Suzuki, Yuji; and Yamazaki, Takeshi, 5,188,788, Cl. 264-169.000.

Yanagi, Shigenori, to Fujitsu Limited. Optical disk device eliminating offset of actuator and offset eliminating method used thereby. 5,189,653, Cl. 369-44.320.
Yang, Chau-Hwa J.: *See—*
Babie, Wayne T.; Devries, Kenneth L.; Nguyen, Bang C.; and Yang, Chau-Hwa J., 5,188,704, Cl. 156-643.000.
Yang, Cherng-Lin. Pin tumbler locking mechanism. 5,187,957, Cl. 70-493.000.
Yang, Kenn Y., to Goldstar Co., Ltd. Optical apparatus for fingerprint recognition system. 5,189,482, Cl. 356-73.000.
Yano, Haruto; Hirasa, Yoshiaki; Tokunaga, Toshimichi; Hayami, Katsuro; Naito, Norihiro; Akamatsu, Teruki; Goto, Hirofumi; and Yokouchi, Kazuhiro, to Mitsubishi Denki Kabushiki Kaisha; and Mazda Motor Corporation. Navigation system for movable body. 5,189,430, Cl. 342-457.000.
Yano, Shigeru; and Takiguchi, Masao, to Matsushita Electric Industrial Co., Ltd. Surge protection apparatus. 5,189,588, Cl. 361-56.000.
Yarsunas, George D.; Brennan, Michael L.; and Duggan, Frank, to Radio Frequency Systems, Inc. Retractable motorized multiband antenna. 5,189,435, Cl. 343-903.000.
Yasukawa, Seiichi; and Saegusa, Takashi, to Nikon Corporation. Information setting apparatus in a camera. 5,189,466, Cl. 354-412.000.
Yasumura, Mitsuhiro: *See—*
Torii, Nobutoshi; Nihei, Ryo; and Yasumura, Mitsuhiro, 5,189,351, Cl. 318-568.190.
Yasuyama, Shigeyuki: *See—*
Takahashi, Hisakazu; Baba, Yoko; Ezaki, Kenichi; Okamoto, Yasuhiko; Shibata, Kenichi; Kuroki, Kazuhiko; and Yasuyama, Shigeyuki, 5,188,993, Cl. 501-136.000.
Yates, David C.; and McCoy, William C., to Catheter Research, Inc. Device for seeking an area of interest within a body. 5,188,111, Cl. 128-657.000.
Yazaki Corporation: *See—*
Ohsumi, Hideki, 5,187,862, Cl. 29-764.000.
Yazawa, Kazunaga: *See—*
Misawa, Yoshihisa; Kondo, Hisao; Tsutsumi, Tetsuya; Hayashi, Masahiro; Sugimori, Daisuke; Matsuba, Yorishige; Isozaki, Masashi; Nishigaki, Hiroharu; Yazawa, Kazunaga; and Kondo, Kiyosi, 5,189,189, Cl. 554-194.000.
Yazu, Shuji: *See—*
Itozaki, Hideo; Tanaka, Saburo; Fujita, Nobuhiko; Yazu, Shuji; and Jodai, Tetsuji, 5,189,011, Cl. 505-1.000.
Yeager, Gary W.; and Crivello, James V., to General Electric Company. Free-radical generating aromatic diols, polycarbonates containing thermal labile groups and their conversion to polycarbonate block copolymers. 5,189,191, Cl. 556-443.000.
Yeager, Michael T.: *See—*
Olsen, Glenn A.; Lee, Chong-Ming; Yeager, Michael T.; and Pickett, Scott K., 5,189,628, Cl. 364-489.000.
Yellamilli, Krishna M.: *See—*
Fung, Wingcho; and Yellamilli, Krishna M., 5,189,319, Cl. 307-452.000.
Yoder, Steve R.: *See—*
Gipe, Thomas A.; and Yoder, Steve R., 5,188,367, Cl. 273-191.00R.
Yokoi, Hidekazu: *See—*
Hirai, Masanori; Takenaka, Hiroyuki; Yokoi, Hidekazu; Nachi, Tsuyoshi; and Ando, Kiyoshi, 5,187,994, Cl. 74-120.000.
Yokomakura, Mitsunori: *See—*
Sekihara, Toshinobu; and Yokomakura, Mitsunori, 5,189,335, Cl. 313-422.000.
Yokota, Masaaki, to Tachi-S Co. Ltd. Method of assembling a seat back. 5,187,848, Cl. 29-91.100.
Yokota, Masahiro; Mori, ideo; and Oyama, Kiyoshi, to Kabushiki Kaisha Toshiba. Cathode ray tube apparatus intended to reduce magnetic fluxes leaked outside the apparatus. 5,189,348, Cl. 315-399.000.
Yokouchi, Kazuhiro: *See—*
Yano, Haruto; Hirasa, Yoshiaki; Tokunaga, Toshimichi; Hayami, Katsuro; Naito, Norihiro; Akamatsu, Teruki; Goto, Hirofumi; and Yokouchi, Kazuhiro, 5,189,430, Cl. 342-457.000.
Yokoyama, Shigeki: *See—*
Okazaki, Seiji; Yokoyama, Shigeki; Imaizumi, Makoto; Hatanaka, Koji; and Aota, Takashi, 5,189,280, Cl. 219-270.000.
Yonekawa, Hiroyuki: *See—*
Kano, Tokio; Niimura, Toshinobu; and Yonekawa, Hiroyuki, 5,188,968, Cl. 436-501.000.
Yoo, Young-Yoon. Massage apparatus. 5,188,096, Cl. 128-33.000.
York, Rudy L.; Luttmer, Joseph D.; Wan, Chang F.; Orent, Thomas W.; Hutchins, Larry D.; and Simmons, Art, to Texas Instruments Incorporated. Method for forming an infrared detector having a refractory metal. 5,188,970, Cl. 437-3.000.
Yoshida, Glenn T.: *See—*
Larkins, David N.; Yoshida, Glenn T.; and Helmers, Thomas L., 5,189,355, Cl. 318-685.000.
Yoshida, Hidefumi: *See—*
Nakamura, Kimiaki; Yoshida, Hidefumi; and Hanaoka, Kazutaka, 5,189,540, Cl. 359-102.000.
Yoshida, Hiroichi: *See—*
Sakamoto, Koichiro; and Yoshida, Hiroichi, 5,189,731, Cl. 395-146.000.
Yoshida, Ikuo: *See—*
Nakao, Takashi; Emoto, Yoshiaki; Sekiguchi, Koichiro; Iketani, Masayuki; Sahara, Kunizo; Yoshida, Ikuo; Kohno, Akiomi; Horino, Masaya; Kamohara, Hideaki; Irie, Shouichi; Akasaki, Hiroshi; and Otsuka, Kanji, 5,188,280, Cl. 228-123.000.
Yoshida Kogyo K. K.: *See—*
Akanuma, Masaaki; and Hasegawa, Akira, 5,188,719, Cl. 204-206.000.
Akashi, Shunji; and Watanabe, Yasushi, 5,187,842, Cl. 24-431.000.
Takemura, Chiharu; and Horita, Yoshiyuki, 5,187,841, Cl. 24-429.000.
Yoshida, Masaru: *See—*
Yamashita, Takuo; Ogura, Takashi; Nakaya, Hiroaki; and Yoshida, Masaru, 5,189,405, Cl. 340-781.000.
Yoshida, Nobuhiro: *See—*
Sugiki, Akio; Ishikawa, Masanobu; Yoshida, Nobuhiro; Tanahashi, Haruhiko; and Miura, Kiyokatsu, 5,188,392, Cl. 280-775.000.
Yoshida, Shin: *See—*
Mori, Kazuhiko; Kawasaki, Minoru; Yoshida, Shin; Murase, Hiroyuki; Saito, Takashi; Tanaka, Kouji; and Shimura, Yoshio, 5,188,799, Cl. 420-469.000.
Yoshida, Tadahiro; Tsumazawa, Hiroyuki; and Kono, Tetsuo, to Minolta Camera Kabushiki Kaisha. Video camera having an indicator for warning of the occurrence of matters which interrupt recording. 5,189,524, Cl. 358-335.000.
Yoshida, Takashi: *See—*
Hamada, Masaaki; and Yoshida, Takashi, 5,188,346, Cl. 267-140.120.
Yoshida, Takehiro, to Canon Kabushiki Kaisha. Data communication apparatus. 5,189,696, Cl. 379-355.000.
Yoshida, Terumasa: *See—*
Ohta, Tazuo; Tanaka, Kazuo; Ohgoshi, Fumio; Yoshida, Terumasa; and Motoyama, Ichihei, 5,189,209, Cl. 562-414.000.
Yoshihara, Toshiaki: *See—*
Mochizuki, Akihiro; Onda, Fumiyo; Yoshihara, Toshiaki; Iwasaki, Masayuki; and Yamagishi, Yasuo, 5,189,535, Cl. 359-55.000.
Yoshii, Takao; Oku, Narihiro; Horii, Yoshio; and Terada, Kunio, to Horiba, Ltd. Pinch valve assembly with a storage mode. 5,188,334, Cl. 251-7.000.
Yoshikawa, Hideaki: *See—*
Ueyoko, Kiyoshi; Yoshikawa, Hideaki; and Takatsu, Mikio, 5,188,686, Cl. 152-454.000.
Yoshikawa, Junichi, to Canon Kabushiki Kaisha. Recording method that selects a movement velocity in conformity with a recognized recording width to accomplish recording and recording apparatus using the same method. 5,189,436, Cl. 346-1.100.
Yoshioka, Minoru: *See—*
Akiyama, Yohko; Yoshioka, Minoru; and Kitamori, Nobuyuki, 5,189,148, Cl. 530-399.000.
Young, Alastair J.: *See—*
Arrowsmith, David R.; Parsons, David; and Young, Alastair J., 5,188,204, Cl. 192-3.580.
Young, Fletcher D., Jr. Calendar date finder. 5,189,285, Cl. 235-88.00R.
Young, Franklin E.: *See—*
Young, Gary B.; Young, Jack N.; Young, Steven R.; and Young, Franklin E., 5,188,577, Cl. 482-53.000.
Young, Frederick C.; and Garbutt, D. Lee, Jr., to Cold Jet, Inc. Flow diverter valve. 5,188,151, Cl. 137-874.000.
Young, Gary B.; Young, Jack N.; Young, Steven R.; and Young, Franklin E. Apparatus for total body exercise. 5,188,577, Cl. 482-53.000.
Young, Jack N.: *See—*
Young, Gary B.; Young, Jack N.; Young, Steven R.; and Young, Franklin E., 5,188,577, Cl. 482-53.000.
Young, Noel M.: *See—*
Omstead, Mary N.; Schulman, Marvin D.; and Young, Noel M., 5,188,944, Cl. 435-76.000.
Young, Ray A.: *See—*
Cherveny, Mark V.; Trares, Keith C.; Waibel, Terry J.; Hopkins, William M.; Sinopoli, Italo M.; and Young, Ray A., 5,188,685, Cl. 152-451.000.
Young, Richard H., Sr.; Hansen, Michael R.; Lancaster, E. Peter; Mehta, aresh R.; and Brunnenkant, Christel, to Weyerhaeuser Company. Absorbent article with superabsorbent particle containing insert pad and liquid dispersion pad. 5,188,624, Cl. 604-378.000.
Young, Steven R.: *See—*
Young, Gary B.; Young, Jack N.; Young, Steven R.; and Young, Franklin E., 5,188,577, Cl. 482-53.000.
Yry, Uwe, to Carl-Zeiss-Stiftung. Arrangement having two laser diodes for generating light having two wavelengths. 5,189,677, Cl. 372-23.000.
Yu, Chris C.; Sandhu, Gurtej S.; and Gilton, Terry, to Micron Technology, Inc. Selective electro-deposition and circuit patterning technique. 5,188,723, Cl. 205-125.000.
Yu, Hong: *See—*
Carr, Willian N.; Yu, Hong; and Dong-Il, Dan C., 5,189,323, Cl. 310-40.0MM.
Yu, Kaung M. Vapor-liquid contactor. 5,188,772, Cl. 261-94.000.
Yu, Michael C.: *See—*
Wright, Roy F.; and Yu, Michael C., 5,189,121, Cl. 525-537.000.
Yuda, Jiro: *See—*
Kawahara, Sadao; Yamamura, Michio; Yuda, Jiro; Kojima, Yoshinori; Yamamoto, Shuichi; Sakai, Manabu; Muramatsu, Shigeru; and Aiba, Osamu, 5,188,521, Cl. 418-55.300.
Yuge, Shizuo: *See—*
Hara, Yoshinobu; Yuge, Shizuo; and Hara, Kazuyoshi, 5,189,478, Cl. 355-271.000.
Yui, Yuhi: *See—*
Irihara, Kouichi; Andou, Yukinori; and Yui, Yuhi, 5,189,471, Cl. 355-210.000.

VOL 1147 ISS 4 FE 23 1993 UMI

VOL 1147 ISS 4 FEB 23 1993 UMI

Yukawa, Hirokazu: *See—*
Honda, Norimasa; Sawada, Kazuhide; Idemori, Kenjiro; and Yukawa, Hirokazu, 5,189,143, Cl. 528-498.000.
Yuknis, Carol A.: *See—*
Bernacchi, Donald B.; Immel, Donna L.; and Yuknis, Carol A., 5,188,855, Cl. 426-273.000.
Yumde, Yasufumi: *See—*
Amada, Nobutaka; Noguchi, Takaharu; Kimura, Hiroyuki; Kobayashi, Masaharu; Arai, Takao; Yumde, Yasufumi; and Miura, Kuniaki, 5,189,564, Cl. 360-32.000.
Yumoto, Toshiharu; and Shoji, Tsuyoshi, to Fuji Photo Film Co., Ltd. Image recording device for recording a predetermined number of images on a single recording medium. 5,189,439, Cl. 346-76.0PH.
Yurek, Gregory J.; and VanderSande, John B., to Massachusetts Institute of Technology. Preparation of superconducting oxides and oxide-metal composites. 5,189,009, Cl. 505-1.000.
Zafiroglu, Dimitri P., to Du Pont de Nemours, E. I., and Company. Stretchable stitchbonded fabric. 5,187,952, Cl. 66-192.000.
Zajac, Walter W., Jr., to United States of America, Army. Tetranitronoradamantane. 5,189,228, Cl. 568-941.000.
Zander, Johann: *See—*
Kortlang, Wolfgang; Temburg, Josef; and Zander, Johann, 5,189,308, Cl. 250-561.000.
Zang, Richard B.; and Khan, Motasimur R., to Texaco Inc. Treatment of sewage sludge. 5,188,741, Cl. 210-774.000.
Zang, Richard B.: *See—*
Khan, Motasimur R.; Zang, Richard B.; and Albert, Christine C., 5,188,739, Cl. 210-770.000.
Zatrieb, Jacek; and Dorflinger, Clemens, to Bucher GmbH, Maschinenfabrik. Internal gear machine having a filler piece with pivot pins and a separating gap. 5,188,523, Cl. 418-126.000.
Zaviska, Dalibor: *See—*
Burgdorf, Jochen; Steffes, Helmut; Volz, Peter; Beck, Erhard; and Zaviska, Dalibor, 5,188,439, Cl. 303-116.100.
ZB New Products Limited: *See—*
Bieganski, Zdzislaw, 5,187,833, Cl. 15-341.000.
Zbegner, Joseph H. Magnetic novelty. 5,188,555, Cl. 446-133.000.
Zeeck, Axel; Philipps, Siegrid; Grabley, Susanne; Granzer, Ernold; Hutter, Klaus; Thiericke, Ralf; and Wink, Joachim, to Hoechst Aktiengesellschaft. Oasomycins. 5,189,150, Cl. 536-6.500.
Zeigler, Steve F.: *See—*
Pierce, Larry W.; Zeigler, Steve F.; and Bazbaz, Jacobo, 5,188,235, Cl. 206-554.000.
Zenith Electronics Corporation: *See—*
Dougherty, Lawrence W., 5,188,553, Cl. 445-8.000.
Messman, Bruce E., 5,189,599, Cl. 363-21.000.
Zentralinstitut fur Optik und Spektroskopie: *See—*
Florek, Stefan; and Becker-Ross, Helmut, 5,189,486, Cl. 356-328.000.
Zepf, Robert F., to Memtec America Corporation. Ultraporous and microporous integral membranes. 5,188,734, Cl. 210-490.000.
Zexel Corporation: *See—*
Otsuka, Masuhiro; and Kohno, Hiromi, 5,188,070, Cl. 123-179.230.
Sekiguchi, Akira, 5,188,084, Cl. 123-502.000.
Zich, Jerrold R., to Colony, Incorporated. Adjustable adapter bracket. 5,188,326, Cl. 248-225.200.
Ziegler, Carl B.: *See—*
Feigelson, Gregg B.; Curran, William V.; and Ziegler, Carl B., 5,189,158, Cl. 540-302.000.
Zikell, Stefan: *See—*
Hinterholzer, Peter; Zikell, Stefan; Firgo, Heinrich; Wolschner, Bernd; Eichinger, Dieter; Manner, Johann; Astegger, Stephan; and Weinzierl, Karin, 5,189,152, Cl. 536-56.000.
Zilberstein, Michael. Method of administering medication into epidural space. 5,188,594, Cl. 604-51.000.
Zimmer, Richard: *See—*
Muller, Armin; Zimmer, Richard; and Faulhaber, Andreas, 5,188,440, Cl. 303-116.200.
Zimmerman, Robert L.; and Primeaux, Dudley J., to Texaco Chemical Co. Polyurea elastomers made using polyoxyalkylene tetra-or higher functional amine chain extenders. 5,189,075, Cl. 521-159.000.
Zimmerman, Robert L.: *See—*
Duranleau, Roger G.; and Zimmerman, Robert L., 5,189,221, Cl. 564-499.000.
Zimmermann, Bernd D.; Claus, Richard O.; Murphy, Kent A.; and Kapp, David A., to Virginia Polytechnic Institute & State University; Virginia Tech Intellectual Properties, Inc.; and Center for Innovative Technology. Method and apparatus for sensing strain in a waveguide. 5,189,299, Cl. 250-227.160.
Zinck, Jennifer J.; and Baukus, James P., to Hughes Aircraft Company. Multichannel plate assembly for gas source molecular beam epitaxy. 5,188,671, Cl. 118-715.000.
Zink, Deborah L.: *See—*
Freidinger, Roger M.; Bock, Mark G.; Lam, Yiu-Kuen T.; Chang, Raymond S.; Hensens, Otto D.; Schwartz, Cheryl D.; and Zink, Deborah L., 5,189,050, Cl. 514-375.000.
Ziolo, Ronald F., to Xerox Corporation. Toner and developer compositions comprising fullerene. 5,188,918, Cl. 430-106.000.
Zolner, Bernard P. Detachable waistband for a garment. 5,187,817, Cl. 2-400.000.
Zorzi, Claudio: *See—*
Baggio, Giorgio; and Zorzi, Claudio, 5,187,884, Cl. 36-50.000.
Zucker, Elliott S.: *See—*
Baker, Christopher G.; and Zucker, Elliott S., 5,188,756, Cl. 252-174.150.
Zuehlke, Arthur; and Pech, David, to Manitowoc Company, Inc., The. Control and hydraulic system for a liftcrane. 5,189,605, Cl. 364-140.000.
Zuraw, Paul J.: *See—*
Hutter, G. Frederick; and Zuraw, Paul J., 5,189,090, Cl. 524-272.000.
Zwijsen, Jan A.: *See—*
Leys, Paul H.; Zwijsen, Jan A.; and Van Aken, Luc K., 5,189,477, Cl. 355-271.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF FEBRUARY, 1993

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Amick, David R., to Rohm and Haas Company. Stabilization of non-aqueous solutions of 3-isothiazolones. Re. 34,185, Cl. 548-213.000.
Baird, Billy C.; and Baird, William R., to Saturn Machine & Welding Co. Inc. Retrofit coke oven door seal. Re. 34,184, Cl. 202-248.000.
Baird, William R.: *See—*
Baird, Billy C.; and Baird, William R., Re. 34,184, Cl. 202-248.000.
Electromotive Inc.: *See—*
Wilens, David I.; and Long, Alexander, III, Re. 34,183, Cl. 123-414.000.
Hayasaka, Sigeki; and Takahashi, Mamoru, to NEC Corporation. Radio pager. Re. 34,182, Cl. D14-191.000.
Long, Alexander, III: *See—*
Wilens, David I.; and Long, Alexander, III, Re. 34,183, Cl. 123-414.000.
NEC Corporation: *See—*
Hayasaka, Sigeki; and Takahashi, Mamoru, Re. 34,182, Cl. D14-191.000.
Rohm and Haas Company: *See—*
Amick, David R., Re. 34,185, Cl. 548-213.000.
Saturn Machine & Welding Co. Inc.: *See—*
Baird, Billy C.; and Baird, William R., Re. 34,184, Cl. 202-248.000.
Takahashi, Mamoru: *See—*
Hayasaka, Sigeki; and Takahashi, Mamoru, Re. 34,182, Cl. D14-191.000.
Wilens, David I.; and Long, Alexander, III, to Electromotive Inc. Ignition control system for internal combustion engines with simplified crankshaft sensing and improved coil charging. Re. 34,183, Cl. 123-414.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

AB Volvo Penta: *See—*
Brandt, Lennart, B1 4,619,584, Cl. 416-129.000.
Anderson, Mark: *See—*
Ennis, James F., III; and Anderson, Mark, B1 4,981,472, Cl. 604-117.000.
Brandt, Lennart, to AB Volvo Penta. Double propeller drive for boats. B1 4,619,584, 2-23-93, Cl. 416-129.000.
Cinedco, Inc.: *See—*
Ettlinger, Adrian B., B1 4,746,994, Cl. 360-13.000.
Ennis, James F., III; and Anderson, Mark, to Anderson, Mark. Cannula assembly for syringe. B1 4,981,472, 2-23-93, Cl. 604-117.000.
Ettlinger, Adrian B., to Cinedco, Inc. Computer-based video editing system. B1 4,746,994, 2-23-93, Cl. 360-13.000.
Hamamoto, Masato: *See—*
Kobayashi, Tohru; Hamamoto, Masato; and Yamada, Toshio, B1 4,940,905, Cl. 307-278.000.
Hitachi, Ltd.: *See—*
Kobayashi, Tohru; Hamamoto, Masato; and Yamada, Toshio, B1 4,940,905, Cl. 307-278.000.
Iyengar, Narasimhan, to Texas Instruments Incorporated. Integrate circuit with improved on-chip power supply control. B1 5,063,304, 2-23-93, Cl. 307-296.600.
Kabushiki Kaisha Toshiba: *See—*
Morimoto, Toshiki; and Watanabe, Seiji, B1 4,883,980, Cl. 307-465.100.
Kobayashi, Tohru; Hamamoto, Masato; and Yamada, Toshio, to Hitachi, Ltd. ECL flip-flop with improved X-ray resistant properties. B1 4,940,905, 2-23-93, Cl. 307-278.000.
Morimoto, Toshiki; and Watanabe, Seiji, to Kabushiki Kaisha Toshiba. Semiconductor IC (integrated circuits) device. B1 4,883,980, 2-23-93, Cl. 307-465.100.
Texas Instruments Incorporated: *See—*
Iyengar, Narasimhan, B1 5,063,304, Cl. 307-296.600.
United States of America
Energy: *See—*
Ziolkowski, Richard W., B1 4,959,559, Cl. 307-425.000.
Watanabe, Seiji: *See—*
Morimoto, Toshiki; and Watanabe, Seiji, B1 4,883,980, Cl. 307-465.100.
Yamada, Toshio: *See—*
Kobayashi, Tohru; Hamamoto, Masato; and Yamada, Toshio, B1 4,940,905, Cl. 307-278.000.
Ziolkowski, Richard W., to United States of America, Energy. Electromagnetic or other directed energy pulse launcher. B1 4,959,559, 2-23-93, Cl. 307-425.000.

LIST OF DESIGN PATENTEES

Adam, Jerry D. Brake lever. 333,458, 2-23-93, Cl. D12-179.000.
Aizawa, Akira, to SMC Corporation. Air cylinder. 333,472, 2-23-93, Cl. D15-7.000.
Aizawa, Akira, to SMC Corporation. Air cylinder. 333,473, 2-23-93, Cl. D15-7.000.
Aizawa, Akira, to SMC Corporation. Air cylinder. 333,474, 2-23-93, Cl. D15-7.000.
Alcorn, Dennis R.; and Delk, Robert E., to Struckmeyer Corporation. Support for a fluid collection pouch. 333,517, 2-23-93, Cl. D24-117.000.
Allen, Donovan J., to Lasso L.P. Closure for bags. 333,431, 2-23-93, Cl. D9-435.000.
Alpha Enterprises, Inc.: *See—*
Sankey, James K.; Weisburn, James T.; and Moock, Andrew W., 333,381, Cl. D3-35.000.
Alway, Inc.: *See—*
Perrone, Donald J., 333,403, Cl. D6-601.000.
American Standard Inc.: *See—*
Levien, Robin H., 333,513, Cl. D23-277.000.
Levien, Robin H., 333,514, Cl. D23-277.000.
Levien, Robin H., 333,515, Cl. D23-277.000.
Ancona, Bruce; and Ancona, Jane, to M. Kamenstein, Inc. Storage unit for electrical hardware items. 333,402, 2-23-93, Cl. D6-559.000.
Ancona, Jane: *See—*
Ancona, Bruce; and Ancona, Jane, 333,402, Cl. D6-559.000.
Anthony, Cheri M. Doll. 333,498, 2-23-93, Cl. D21-171.000.
Arsenault, Steven E. Electric guitar. 333,480, 2-23-93, Cl. D17-19.000.
Aubuchon, David B.; Riebel, Karen J.; and Schaefer, William L., to Figgie International Inc. Warn-up suit. 333,374, 2-23-93, Cl. D2-29.000.
Avnet, Inc.: *See—*
Stagl, Peter M., 333,525, Cl. D25-124.000.
Aylward, James M. Cable lubricating tool. 333,414, 2-23-93, Cl. D8-14.100.
Baker, Scott W.: *See—*
Brauner, Arne H.; O'Grady, Shawn P.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,427, Cl. D9-311.000.
Bales, Randy J.; Gilbert, Klay E.; and Bell, Steven R., to Weber Aircraft, Inc. Track fitting for vehicle seats. 333,420, 2-23-93, Cl. D8-349.000.

VOL
1147
ISS
4
FE
23
1993
UMI

Barrett, Bruce G. Plant holder. 333,397, 2-23-93, Cl. D6-513.000.
Battaglia, Salvatore. Portable electronic map display. 333,463, 2-23-93, Cl. D14-113.000.
Baxter International Inc.: *See—*
Thompson, Joseph F., 333,404, Cl. D6-602.000.
Bell, Steven R.: *See—*
Bales, Randy J.; Gilbert, Klay E.; and Bell, Steven R., 333,420, Cl. D8-349.000.
Ben Clements & Sons, Inc.: *See—*
Furutsu, Akira, 333,415, Cl. D8-51.000.
Beretta U.S.A. Corp.: *See—*
Loveless, Robert W., 333,501, Cl. D22-118.000.
Berger, David J.; and Berger, Richard E. Football kicking tee. 333,500, 2-23-93, Cl. D21-209.000.
Berger, Richard E.: *See—*
Berger, David J.; and Berger, Richard E., 333,500, Cl. D21-209.000.
Bernstein, Philip: *See—*
Kamen, Melvin E.; and Bernstein, Philip, 333,535, Cl. D28-78.000.
Blair, Graham J., to Lever Brothers Company, Division of Conopco, Inc. Combined bottle and cap. 333,435, 2-23-93, Cl. D9-542.000.
Blet, Thierry, to Societe Elixir. Adjustable lamp. 333,528, 2-23-93, Cl. D26-62.000.
Bohn, Judy L. Angel figurine. 333,448, 2-23-93, Cl. D11-128.000.
Boundy, Bruce K., to Westinghouse Electric Corp. Under-shelf task light. 333,530, 2-23-93, Cl. D26-74.000.
Boussiquet, Charles, to Lancome Parfums et Beaute & Cie. Combined cologne atomizer and cap. 333,425, 2-23-93, Cl. D9-300.000.
Boussiquet, Charles, to Lancome Parfums Et Beaute & Cie. Cologne bottle. 333,436, 2-23-93, Cl. D9-546.000.
Brauner, Arne H.; O'Grady, Shawn P.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., to General Mills, Inc. Simulative bottle. 333,427, 2-23-93, Cl. D9-311.000.
Bridgestone Corporation: *See—*
Himuro, Yasuo; and Kato, Yuji, 333,455, Cl. D12-147.000.
Kawabata, Misao; and Ushikubo, Hisao, 333,454, Cl. D12-147.000.
Brogdon, Gary L., to Brogdon, Gary L. Portfolio folder. 333,384, 2-23-93, Cl. D3-76.000.
Bromley, Roberi: *See—*
Sedighzadeh, Marty; and Bromley, Robert, 333,398, Cl. D6-513.000.
Brooklyn Products, Inc.: *See—*
Cole, Marc A., 333,459, Cl. D12-203.000.
Brooks, Christine. Compartmented cosmetic case. 333,383, 2-23-93, Cl. D3-39.000.
Brown, Charles R., Jr., to Du Pont de Nemours, E. I., and Company. Safety scissors. 333,416, 2-23-93, Cl. D8-57.000.
Brown, David L., to United States Surgical Corporation. Suture package. 333,400, 2-23-93, Cl. D6-515.000.
Brown, David L.; and Malinowski, Stanley J., to United States Surgical Corporation. Suture dispenser. 333,401, 2-23-93, Cl. D6-515.000.
Butler, George T., to Textron Inc. Expansion bracelet. 333,446, 2-23-93, Cl. D11-19.000.
Butler, George T., Jr., to Textron Inc. Photo identification locket. 333,447, 2-23-93, Cl. D11-80.000.
Cabot Safety Corporation: *See—*
Metcalfe, Richard T.; and Seager, Richard H., 333,478, Cl. D16-102.000.
Camillieri, Edward J., to Camillieri, Edward J. Dump truck body. 333,449, 2-23-93, Cl. D12-15.000.
Campbell, Christopher J., to Fabriques de Tabac Reunies, S.A. Cigarette pack. 333,532, 2-23-93, Cl. D27-189.000.
Cardillo, J. Dolores. Doll seat. 333,496, 2-23-93, Cl. D21-123.000.
Cheng, Billy. Disc storage container. 333,382, 2-23-93, Cl. D3-35.000.
Chun-Mao, Lee. Tripod for a camera. 333,479, 2-23-93, Cl. D16-244.000.
Chung, Wu S. Telephone set. 333,466, 2-23-93, Cl. D14-151.000.
Close, Judith R., to Reebok International Ltd. Element of a shoe upper. 333,378, 2-23-93, Cl. D2-314.000.
Cloverline, Inc., The: *See—*
Reiseneder, Ingeborg, 333,430, Cl. D9-418.000.
Cole, Marc A., to Brooklyn Products, Inc. Segment of edging for a car mat. 333,459, 2-23-93, Cl. D12-203.000.
Colgate-Palmolive Company: *See—*
Segati, Umberto D. I., 333,433, Cl. D9-531.000.
Colo'n, Arthur D. Lawn sprinkler head protector. 333,507, 2-23-93, Cl. D23-213.000.
Combi Corporation: *See—*
Saito, Hideo; Ishii, Yoshiyasu; and Matsumoto, Susumu, 333,389, Cl. D6-356.000.
Cook, Michael W.; Duncan, Eathel L.; Guzi, James S.; and Lobb, Jolan F., to Goodyear Tire & Rubber Company, The. Tire. 333,453, 2-23-93, Cl. D12-147.000.
Crano, Richard N.; Neidhart, Douglas A.; Slingluff, Mark D.; and Zolton, Gary P., to General Tire, Inc. Vehicle tire. 333,452, 2-23-93, Cl. D12-146.000.
Cugley, Derwyn, to VSI Fasteners, Inc. Display cabinet. 333,392, 2-23-93, Cl. D6-476.000.
Czerlanis, John A.: *See—*
Denison, John F.; Czerlanis, John A.; and Giese, Robert D., 333,529, Cl. D26-68.000.
Dart Manufacturing Company: *See—*
Kogutt, Randy A., 333,485, Cl. D19-32.000.
Del Buono, John J. Alarm for drowsy drivers. 333,442, 2-23-93, Cl. D10-106.000.
Delk, Robert E.: *See—*
Alcorn, Dennis R.; and Delk, Robert E., 333,517, Cl. D24-117.000.
Denison, John F.; Czerlanis, John A.; and Giese, Robert D., to Intermatic Incorporated. Outdoor floodlight. 333,529, 2-23-93, Cl. D26-68.000.
Dietzmann, Cary V. Combined mug and megaphone. 333,409, 2-23-93, Cl. D7-507.000.
Dizon, Nicomedes. Toothpick. 333,534, 2-23-93, Cl. D28-64.000.
D'Mannco, Inc.: *See—*
Mann, Donaerl B., 333,520, Cl. D24-190.000.
Don Evans, Inc.: *See—*
Nowotny, Robert C.; and Hannah, Gene, 333,422, Cl. D8-358.000.
Dooley, Timothy J. Catcher's mask visor. 333,536, 2-23-93, Cl. D29-16.000.
Duncan, Eathel L.: *See—*
Cook, Michael W.; Duncan, Eathel L.; Guzi, James S.; and Lobb, Jolan F., 333,453, Cl. D12-147.000.
Du Pont de Nemours, E. I., and Company: *See—*
Brown, Charles R., Jr., 333,416, Cl. D8-57.000.
Engelberts, John E. Vehicle identification tag. 333,490, 2-23-93, Cl. D20-13.000.
Ernst Stadelmann Gesellschaft M.B.H.: *See—*
Kirchner, Balthasar, 333,488, Cl. D19-78.000.
Fabriques de Tabac Reunies, S.A.: *See—*
Campbell, Christopher J., 333,532, Cl. D27-189.000.
Fagan, Benjamin. Jigsaw puzzle. 333,494, 2-23-93, Cl. D21-104.000.
Ficks Reed Company: *See—*
Wisner, John B., 333,393, Cl. D6-480.000.
Figgie International Inc.: *See—*
Aubuchon, David B.; Riebel, Karen J.; and Schaefer, William L., 333,374, Cl. D2-29.000.
Fleisher, Nathaniel. Taco holder. 333,408, 2-23-93, Cl. D7-504.000.
Flowers, Allan L., to Nissan Motor Co., Ltd. Automobile. 333,451, 2-23-93, Cl. D12-92.000.
Follett Corporation: *See—*
Moyer, Edmund A., Jr.; and Kitts, Keith D., 333,405, Cl. D7-308.000.
Forerunner Corporation: *See—*
Hayes, Robert J.; Haley, Vincent L.; and Mervar, Robert W., 333,465, Cl. D14-142.000.
Foster, David W.: *See—*
Tonkel, Raymond F.; and Foster, David W., 333,379, Cl. D2-314.000.
Foster Industries Co., Ltd.: *See—*
Leung, Chung S., 333,527, Cl. D26-49.000.
Furutsu, Akira, to Japan Bano'k Co., Ltd.; and Ben Clements & Sons, Inc. Tag attacher. 333,415, 2-23-93, Cl. D8-51.000.
General Mills, Inc.: *See—*
Brauner, Arne H.; O'Grady, Shawn P.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,427, Cl. D9-311.000.
General Tire, Inc.: *See—*
Crano, Richard N.; Neidhart, Douglas A.; Slingluff, Mark D.; and Zolton, Gary P., 333,452, Cl. D12-146.000.
Georgian Art Lighting Designs, Inc.: *See—*
Rottner, Mark W., 333,531, Cl. D26-87.000.
Gianino, F. Thomas, to P B Diagnostic Systems, Inc. Sample tube holder. 333,522, 2-23-93, Cl. D24-229.000.
Gianino, F. Thomas, to P B Diagnostic Systems, Inc. Sample cup holder. 333,523, 2-23-93, Cl. D24-229.000.
Giese, Robert D.: *See—*
Denison, John F.; Czerlanis, John A.; and Giese, Robert D., 333,529, Cl. D26-68.000.
Gilbert, Klay E.: *See—*
Bales, Randy J.; Gilbert, Klay E.; and Bell, Steven R., 333,420, Cl. D8-349.000.
Gillette, Garry F. Intravenous roller clamp guard. 333,518, 2-23-93, Cl. D24-127.000.
Gingrich, Ross. Agricultural sprayer. 333,476, 2-23-93, Cl. D15-13.000.
Gobe, Marc, to Victoria's Secret Stores, Inc. Bottle. 333,428, 2-23-93, Cl. D9-315.000.
Gonda, Frank E.; and Hoyt, Earl, to Lever Brothers Company, Division of Conopco, Inc. Bottle with handle. 333,432, 2-23-93, Cl. D9-528.000.
Goodyear Tire & Rubber Company, The: *See—*
Cook, Michael W.; Duncan, Eathel L.; Guzi, James S.; and Lobb, Jolan F., 333,453, Cl. D12-147.000.
Greene, Frank. Sobriety tester. 333,441, 2-23-93, Cl. D10-81.000.
Guay, Nancy A., to Herman Miller, Inc. Fabric. 333,387, 2-23-93, Cl. D5-56.000.
Guzi, James S.: *See—*
Cook, Michael W.; Duncan, Eathel L.; Guzi, James S.; and Lobb, Jolan F., 333,453, Cl. D12-147.000.
Haley, Vincent L.: *See—*
Hayes, Robert J.; Haley, Vincent L.; and Mervar, Robert W., 333,465, Cl. D14-142.000.
Handi-Pac, Inc.: *See—*
Taylor, Beverly W., 333,526, Cl. D25-131.000.
Hankook Tire Mfg. Co., Ltd.: *See—*
Woo, Byung I., 333,456, Cl. D12-147.000.
Hannah, Gene: *See—*
Nowotny, Robert C.; and Hannah, Gene, 333,422, Cl. D8-358.000.
Hans Grohe GmbH & Co. KG: *See—*
Haug, Andreas; and Schoenherr, Thomas, 333,509, Cl. D23-250.000.
Haug, Andreas; and Schoenherr, Thomas, 333,510, Cl. D23-252.000.

Hansen, Kaj B., to Kirk Acoustics A/S. Transducer. 333,468, 2-23-93, Cl. D14-222.000.
Harada Industry Co., Ltd.: *See—*
Tezuka, Kiyoshi, 333,469, Cl. D14-230.000.
Hatfield, Tinker L., to Nike, Inc. Heel element of a shoe upper. 333,377, 2-23-93, Cl. D2-314.000.
Haug, Andreas; and Schoenherr, Thomas, to Hans Grohe GmbH & Co. KG. Faucet handle. 333,509, 2-23-93, Cl. D23-250.000.
Haug, Andreas; and Schoenherr, Thomas, to Hans Grohe GmbH & Co. KG. Faucet handle. 333,510, 2-23-93, Cl. D23-252.000.
Hayes, Robert J.; Haley, Vincent L.; and Mervar, Robert W., to Forerunner Corporation. Telephone set. 333,465, 2-23-93, Cl. D14-142.000.
Hendrickson, Pennie. Head rest. 333,396, 2-23-93, Cl. D6-501.000.
Herman Miller, Inc.: *See—*
Guay, Nancy A., 333,387, Cl. D5-56.000.
Himuro, Yasuo; and Kato, Yuji, to Bridgestone Corporation. Automobile tire. 333,455, 2-23-93, Cl. D12-147.000.
Hirschhorn, Martin, to Time In Motion, Inc. Watch face. 333,437, 2-23-93, Cl. D10-12.000.
Holson, Karen A. Picture frame. 333,388, 2-23-93, Cl. D6-309.000.
Hoyt, Earl: *See—*
Gonda, Frank E.; and Hoyt, Earl, 333,432, Cl. D9-528.000.
Huang, George Y. Electrical connector. 333,460, 2-23-93, Cl. D13-147.000.
Hudson Soft Co., Ltd.: *See—*
Sato, Masanori, 333,493, Cl. D21-13.000.
Hyde, Nick A., Sr. Passenger vehicle attachment for a motorcycle. 333,450, 2-23-93, Cl. D12-107.000.
I.E.R.: *See—*
Laurent, Jean-Marie G., 333,481, Cl. D18-12.000.
Laurent, Jean-Marie G., 333,482, Cl. D18-12.000.
Illesy, Otto: *See—*
Kramer, Wilfried; Riehl, Kalus-Dieter; and Illesy, Otto, 333,539, Cl. D32-32.000.
Intermatic Incorporated: *See—*
Denison, John F.; Czerlanis, John A.; and Giese, Robert D., 333,529, Cl. D26-68.000.
Irie, Yoichiro: *See—*
Nishimura, Yutaka; and Irie, Yoichiro, 333,483, Cl. D18-48.000.
Ishii, Yoshiyasu: *See—*
Saito, Hideo; Ishii, Yoshiyasu; and Matsumoto, Susumu, 333,389, Cl. D6-356.000.
Jamerson, Isaac D.: *See—*
Jamerson, James E.; and Jamerson, Isaac D., 333,521, Cl. D24-199.000.
Jamerson, James E.; and Jamerson, Isaac D. Baby bottle keeper. 333,521, 2-23-93, Cl. D24-199.000.
Jane, Rod B.: *See—*
Brauner, Arne H.; O'Grady, Shawn P.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,427, Cl. D9-311.000.
Japan Bano'k Co., Ltd.: *See—*
Furutsu, Akira, 333,415, Cl. D8-51.000.
Jaworski, Michele M., to Syracuse China Corporation. Decalcomania for china dinnerware or similar article. 333,406, 2-23-93, Cl. D7-396.500.
Kahl, W. Henry, to Rubbermaid Incorporated. Picnic basket. 333,386, 2-23-93, Cl. D3-79.000.
Kamen, Melvin E.; and Bernstein, Philip, to Revlon Consumer Products Corporation. Cosmetic compact. 333,535, 2-23-93, Cl. D28-78.000.
Kashinn, Anthony J.: *See—*
Kohler, Herbert V., Jr.; Kashinn, Anthony J.; and Rauwerdink, Glen D., 333,512, Cl. D23-275.000.
Kato, Yuji: *See—*
Himuro, Yasuo; and Kato, Yuji, 333,455, Cl. D12-147.000.
Kawabata, Misao; and Ushikubo, Hisao, to Bridgestone Corporation. Automobile tire. 333,454, 2-23-93, Cl. D12-147.000.
Kiddicraft Limited: *See—*
Revell, Ian T., 333,497, Cl. D21-128.000.
Kingsley, Gerald E. Ant stopper for use with a hummingbird feeder. 333,538, 2-23-93, Cl. D30-199.000.
Kirchner, Balthasar, to Ernst Stadelmann Gesellschaft M.B.H. Combined note paper and writing instrument holder. 333,488, 2-23-93, Cl. D19-78.000.
Kirk Acoustics A/S: *See—*
Hansen, Kaj B., 333,468, Cl. D14-222.000.
Kistner, David. Meat holder. 333,413, 2-23-93, Cl. D7-683.000.
Kitts, Keith D.: *See—*
Moyer, Edmund A., Jr.; and Kitts, Keith D., 333,405, Cl. D7-308.000.
Klaus, Kathy. Toy. 333,495, 2-23-93, Cl. D21-106.000.
Kogutt, Randy A., to Dart Manufacturing Company. Accessory pocket for portfolio. 333,485, 2-23-93, Cl. D19-32.000.
Kohler Co.: *See—*
Kohler, Herbert V., Jr.; Kashinn, Anthony J.; and Rauwerdink, Glen D., 333,512, Cl. D23-275.000.
Kohler, Herbert V., Jr.; Kashinn, Anthony J.; and Rauwerdink, Glen D., to Kohler Co. Combined bathtub and shower enclosure. 333,512, 2-23-93, Cl. D23-275.000.
Koyo Electronics Industries Co., Ltd.: *See—*
Shimizu, Norio; and Watanabe, Yuichi, 333,461, Cl. D13-162.000.
Koytuk, Bernard, to Ralph Lauren Trust, The. Bottle. 333,429, 2-23-93, Cl. D9-333.000.
Krajewski, Donald P. Funnel. 333,506, 2-23-93, Cl. D23-200.000.
Kramer, Scott R. Stop for sliding doors or windows. 333,424, 2-23-93, Cl. D8-402.000.
Kramer, Wilfried; Riehl, Kalus-Dieter; and Illesy, Otto, to Wessel-Werk GmbH. Suction cleaner nozzle. 333,539, 2-23-93, Cl. D32-32.000.
Kropf, Omer G., to Supreme Corporation. Recycling station. 333,541, 2-23-93, Cl. D34-1.000.
Ku, Yun-Yu. Holder for preparation utensils. 333,411, 2-23-93, Cl. D7-641.000.
Kuwada, Hisashi; and Takaie, Hajime, to Mitsubishi Denki Kabushiki Kaisha. Fuel pump for automobile. 333,475, 2-23-93, Cl. D15-9.100.
La Foe, Donna: *See—*
La Foe, Paul W.; and La Foe, Donna, 333,457, Cl. D12-171.000.
La Foe, Paul W.; and La Foe, Donna. Vehicle bumper guard. 333,457, 2-23-93, Cl. D12-171.000.
Lancome Parfums et Beaute & Cie: *See—*
Boussiquet, Charles, 333,425, Cl. D9-300.000.
Boussiquet, Charles, 333,436, Cl. D9-546.000.
Lande, Michael J. B. Container simulating a space ship. 333,426, 2-23-93, Cl. D9-307.000.
Lasso L.P.: *See—*
Allen, Donovan J., 333,431, Cl. D9-435.000.
Laurent, Jean-Marie G., to I.E.R. Ink ribbon cartridge. 333,481, 2-23-93, Cl. D18-12.000.
Laurent, Jean-Marie G., to I.E.R. Ink ribbon cartridge. 333,482, 2-23-93, Cl. D18-12.000.
Lee, Kwok W. Mirror with convertible handle and stand. 333,533, 2-23-93, Cl. D28-64.100.
Lemaire, Denis: *See—*
Thompson, Lynn C.; and Lemaire, Denis, 333,418, Cl. D8-99.000.
Leung, Chung S., to Foster Industries Co., Ltd. Rechargeable flashlight. 333,527, 2-23-93, Cl. D26-49.000.
Lever Brothers Company, Division of Conopco, Inc.: *See—*
Blair, Graham J., 333,435, Cl. D9-542.000.
Gonda, Frank E.; and Hoyt, Earl, 333,432, Cl. D9-528.000.
Levien, Robin H., to American Standard Inc. Bathtub. 333,513, 2-23-93, Cl. D23-277.000.
Levien, Robin H., to American Standard Inc. Bathtub. 333,514, 2-23-93, Cl. D23-277.000.
Levien, Robin H., to American Standard Inc. Bathtub. 333,515, 2-23-93, Cl. D23-277.000.
Levin, Monte. Juice extractor. 333,412, 2-23-93, Cl. D7-665.000.
Lippert, Lorin L. Combined heat shield and blower for dispersing heat from a wood burning stove. 333,516, 2-23-93, Cl. D23-403.000.
Lobb, Jolan F.: *See—*
Cook, Michael W.; Duncan, Eathel L.; Guzi, James S.; and Lobb, Jolan F., 333,453, Cl. D12-147.000.
Loveless, Robert W., to Beretta U.S.A. Corp. Knife blade. 333,501, 2-23-93, Cl. D22-118.000.
Loznikov, Mikhail. Table base. 333,395, 2-23-93, Cl. D6-495.000.
M. Kamenstein, Inc.: *See—*
Ancona, Bruce; and Ancona, Jane, 333,402, Cl. D6-559.000.
Makishima, Reichi: *See—*
Mikiya, Toshio; and Makishima, Reichi, 333,511, Cl. D23-262.000.
Malinowski, Stanley J.: *See—*
Brown, David L.; and Malinowski, Stanley J., 333,401, Cl. D6-515.000.
Mann, Donaerl B., to D'Mannco, Inc. Hand splint. 333,520, 2-23-93, Cl. D24-190.000.
Matheson-Thomas, David. Cribbage board. 333,440, 2-23-93, Cl. D10-46.100.
Matsumoto, Susumu: *See—*
Saito, Hideo; Ishii, Yoshiyasu; and Matsumoto, Susumu, 333,389, Cl. D6-356.000.
Matsumura, Yoshio. Apparatus for producing electrolyzed water. 333,505, 2-23-93, Cl. D23-200.000.
McCauley, Stephanie S. Folding table. 333,390, 2-23-93, Cl. D6-429.000.
McKenzie, Rosemarie. Waste container for recycle materials. 333,542, 2-23-93, Cl. D34-9.000.
McLeod, Andrew. Bar lock for protection of a truck cab window. 333,419, 2-23-93, Cl. D8-341.000.
Mervar, Robert W.: *See—*
Hayes, Robert J.; Haley, Vincent L.; and Mervar, Robert W., 333,465, Cl. D14-142.000.
Metcalfe, Richard T.; and Seager, Richard H., to Cabot Safety Corporation. Eyeglass safety frame. 333,478, 2-23-93, Cl. D16-102.000.
Mikiya, Toshio; and Makishima, Reichi, to Nitto Kohki Co., Ltd. Pipe coupler. 333,511, 2-23-93, Cl. D23-262.000.
Mita Industrial Co., Ltd.: *See—*
Nishimura, Yutaka; and Irie, Yoichiro, 333,483, Cl. D18-48.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Kuwada, Hisashi; and Takaie, Hajime, 333,475, Cl. D15-9.100.
Miyata, Hideo: *See—*
Mori, Katsuhisa; Sonoda, Keiji; and Miyata, Hideo, 333,491, Cl. D20-22.000.
Moock, Andrew W.: *See—*
Sankey, James K.; Weisburn, James T.; and Moock, Andrew W., 333,381, Cl. D3-35.000.
Mori, Katsuhisa; Sonoda, Keiji; and Miyata, Hideo, to Nichifu Terminal Manufacture Co., Ltd. Set of identification tags for electrical wire ends. 333,491, 2-23-93, Cl. D20-22.000.
Moyer, Edmund A., Jr.; and Kitts, Keith D., to Follett Corporation. Combined beverage and ice dispenser. 333,405, 2-23-93, Cl. D7-308.000.
Muse, Walter C., Jr. Transportable pet shelter for the bed of a pickup truck. 333,537, 2-23-93, Cl. D30-114.000.

VOL 1147 ISS 4 FE 23 1993 UMI

Myojo, Seiji, to Shimano, Inc. Fishing reel. 333,503, 2-23-93, Cl. D22-141.000.
Myojo, Seiji, to Shimano Inc. Fishing reel. 333,504, 2-23-93, Cl. D22-141.000.
Neidhart, Douglas A.: *See—*
Crano, Richard N.; Neidhart, Douglas A.; Slingluff, Mark D.; and Zolton, Gary P., 333,452, Cl. D12-146.000.
Neumeister, Alexander. Portable printer. 333,484, 2-23-93, Cl. D18-52.000.
Nichifu Terminal Manufacture Co., Ltd.: *See—*
Mori, Katsuhisa; Sonoda, Keiji; and Miyata, Hideo, 333,491, Cl. D20-22.000.
Niedfeld, Matthew. Pool cover. 333,524, 2-23-93, Cl. D25-2.000.
Nike, Inc.: *See—*
Hatfield, Tinker L., 333,377, Cl. D2-314.000.
Nishimura, Yutaka; and Irie, Yoichiro, to Mita Industrial Co., Ltd. Sorter for an image forming apparatus. 333,483, 2-23-93, Cl. D18-48.000.
Nissan Motor Co., Ltd.: *See—*
Flowers, Allan L., 333,451, Cl. D12-92.000.
Nitto Kohki Co., Ltd.: *See—*
Mikiya, Toshio; and Makishima, Reichi, 333,511, Cl. D23-262.000.
Nowotny, Robert C.; and Hannah, Gene, to Don Evans, Inc. Plug for a carpet core roll. 333,422, 2-23-93, Cl. D8-358.000.
O'Grady, Shawn P.: *See—*
Brauner, Arne H.; O'Grady, Shawn P.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,427, Cl. D9-311.000.
Onishi, Kenji, to Shimano Industrial Co., Ltd. Fishing rod. 333,502, 2-23-93, Cl. D22-142.000.
Ouellette, David. Combined cap and back pocket. 333,375, 2-23-93, Cl. D2-244.000.
P B Diagnostic Systems, Inc.: *See—*
Gianino, F. Thomas, 333,522, Cl. D24-229.000.
Gianino, F. Thomas, 333,523, Cl. D24-229.000.
Panzarello, Patsy F. Birthday sani-cake cover. 333,410, 2-23-93, Cl. D7-610.000.
Papp, Paul A. Compartmented storage box for pastels. 333,487, 2-23-93, Cl. D19-75.000.
Paredes, Robert. Game table. 333,492, 2-23-93, Cl. D21-5.000.
Parsec Delaware, Ltd.: *See—*
Vong, Andy S., 333,470, Cl. D14-230.000.
Vong, Andy S., 333,471, Cl. D14-230.000.
Patti, Anthony J. Air hose bracket for dual wheeled trucks. 333,421, 2-23-93, Cl. D8-356.000.
Perrone, Donald J., to Alway, Inc. Orthopedic pillow to be placed between knees. 333,403, 2-23-93, Cl. D6-601.000.
Perrone, Jack F. Warm-up ball. 333,499, 2-23-93, Cl. D21-205.000.
Pflager, Alden H.: *See—*
Brauner, Arne H.; O'Grady, Shawn P.; Jane, Rod B.; Pflager, Alden H.; and Baker, Scott W., 333,427, Cl. D9-311.000.
Quinn, Larry V., Sr. Watch. 333,439, 2-23-93, Cl. D10-34.000.
Raffe, Bonnie. Shoe upper. 333,376, 2-23-93, Cl. D2-314.000.
Ragsdale, Gregory J. Combined screwdriver and wire bender. 333,417, 2-23-93, Cl. D8-87.000.
Ralph Lauren Trust, The: *See—*
Koytuk, Bernard, 333,429, Cl. D9-333.000.
Rauwerdink, Glen D.: *See—*
Kohler, Herbert V., Jr.; Kashinn, Anthony J.; and Rauwerdink, Glen D., 333,512, Cl. D23-275.000.
Reebok International Ltd.: *See—*
Close, Judith R., 333,378, Cl. D2-314.000.
Reiseneder, Ingeborg, to Cloverline, Inc., The. Pill box with vibrator timer. 333,430, 2-23-93, Cl. D9-418.000.
Rentz, Ceilon H. Combined mail and newspaper box with support. 333,545, 2-23-93, Cl. D99-29.000.
Revell, Ian T., to Kiddicraft Limited. Toy emergency vehicle. 333,497, 2-23-93, Cl. D21-128.000.
Revlon Consumer Products Corporation: *See—*
Kamen, Melvin E.; and Bernstein, Philip, 333,535, Cl. D28-78.000.
Riebel, Karen J.: *See—*
Aubuchon, David B.; Riebel, Karen J.; and Schaefer, William L., 333,374, Cl. D2-29.000.
Riehl, Kalus-Dieter: *See—*
Kramer, Wilfried; Riehl, Kalus-Dieter; and Illesy, Otto, 333,539, Cl. D32-32.000.
Rockport Company, Inc., The: *See—*
Tonkel, Raymond F.; and Foster, David W., 333,379, Cl. D2-314.000.
Rodriguez, Daniel W. Hand truck. 333,543, 2-23-93, Cl. D34-26.000.
Rottner, Mark W., to Georgian Art Lighting Designs, Inc. Wall-mounted lantern. 333,531, 2-23-93, Cl. D26-87.000.
Rousseau, Xavier, to S.T. DuPont Societe Anonyme. Ball point pen. 333,486, 2-23-93, Cl. D19-49.000.
Rubbermaid Incorporated: *See—*
Kahl, W. Henry, 333,386, Cl. D3-79.000.
S.T. DuPont Societe Anonyme: *See—*
Rousseau, Xavier, 333,486, Cl. D19-49.000.
Saito, Hideo; Ishii, Yoshiyasu; and Matsumoto, Susumu, to Combi Corporation. Car baby bed. 333,389, 2-23-93, Cl. D6-356.000.
Sankey, James K.; Weisburn, James T.; and Moock, Andrew W., to Alpha Enterprises, Inc. Hub for cassette storage container. 333,381, 2-23-93, Cl. D3-35.000.
Sato, Masanori, to Seiko Epson Corporation; and Hudson Soft Co., Ltd. Electronic game housing. 333,493, 2-23-93, Cl. D21-13.000.
Schaefer, William L.: *See—*
Aubuchon, David B.; Riebel, Karen J.; and Schaefer, William L., 333,374, Cl. D2-29.000.
Scheer, Todd. Manometer for measuring intrathoracic pressure of an infant. 333,519, 2-23-93, Cl. D24-186.000.
Schmid, Guenther W., to Solar Aid Corporation. Storage case for solar powered hearing aids. 333,385, 2-23-93, Cl. D3-78.000.
Schoenherr, Thomas: *See—*
Haug, Andreas; and Schoenherr, Thomas, 333,509, Cl. D23-250.000.
Haug, Andreas; and Schoenherr, Thomas, 333,510, Cl. D23-252.000.
Seager, Richard H.: *See—*
Metcalfe, Richard T.; and Seager, Richard H., 333,478, Cl. D16-102.000.
Sedighzadeh, Marty; and Bromley, Robert, to Sedighzadeh, Marty. Ceiling or wall-mounted TV monitor support. 333,398, 2-23-93, Cl. D6-513.000.
Segati, Umberto D. I., to Colgate-Palmolive Company. Combined bottle and cap. 333,433, 2-23-93, Cl. D9-531.000.
Seiko Epson Corporation: *See—*
Sato, Masanori, 333,493, Cl. D21-13.000.
Tsuji, Keisuke, 333,438, Cl. D10-31.000.
Shimano, Inc.: *See—*
Myojo, Seiji, 333,503, Cl. D22-141.000.
Myojo, Seiji, 333,504, Cl. D22-141.000.
Shimano Industrial Co., Ltd.: *See—*
Onishi, Kenji, 333,502, Cl. D22-142.000.
Shimizu, Norio; and Watanabe, Yuichi, to Koyo Electronics Industries Co., Ltd. Remote control unit for programmable controller. 333,461, 2-23-93, Cl. D13-162.000.
Shyan, Huang C. Bell. 333,443, 2-23-93, Cl. D10-116.000.
Shyan, Huang C. Bell. 333,444, 2-23-93, Cl. D10-116.000.
Shyan, Huang C. Bell. 333,445, 2-23-93, Cl. D10-116.000.
Siebert, Paul B.: *See—*
Stern, Timothy R.; and Siebert, Paul B., 333,489, Cl. D19-90.000.
Sigle, Arris A. Clip for attaching a wire strand to a fence post. 333,423, 2-23-93, Cl. D8-394.000.
Slingluff, Mark D.: *See—*
Crano, Richard N.; Neidhart, Douglas A.; Slingluff, Mark D.; and Zolton, Gary P., 333,452, Cl. D12-146.000.
SMC Corporation: *See—*
Aizawa, Akira, 333,472, Cl. D15-7.000.
Aizawa, Akira, 333,473, Cl. D15-7.000.
Aizawa, Akira, 333,474, Cl. D15-7.000.
Societe Elixir: *See—*
Blet, Thierry, 333,528, Cl. D26-62.000.
Solar Aid Corporation: *See—*
Schmid, Guenther W., 333,385, Cl. D3-78.000.
Sonoda, Keiji: *See—*
Mori, Katsuhisa; Sonoda, Keiji; and Miyata, Hideo, 333,491, Cl. D20-22.000.
Sosenko, Ron. Bottle. 333,434, 2-23-93, Cl. D9-539.000.
Stagl, Peter M., to Avnet, Inc. Decorative extrusion. 333,525, 2-23-93, Cl. D25-124.000.
Steelcase Inc.: *See—*
Stern, Timothy R.; and Siebert, Paul B., 333,489, Cl. D19-90.000.
Stein, Linda C. Display holder for flat materials. 333,391, 2-23-93, Cl. D6-457.000.
Stern, Timothy R.; and Siebert, Paul B., to Steelcase Inc. Diagonal paper sorter. 333,489, 2-23-93, Cl. D19-90.000.
Stralow, Cecil J. Can crusher. 333,477, 2-23-93, Cl. D15-123.000.
Struckmeyer Corporation: *See—*
Alcorn, Dennis R.; and Delk, Robert E., 333,517, Cl. D24-117.000.
Supreme Corporation: *See—*
Kropf, Omer G., 333,541, Cl. D34-1.000.
Swift, Barbara. Child safety seat belt. 333,380, 2-23-93, Cl. D2-639.000.
Syracuse China Corporation: *See—*
Jaworski, Michele M., 333,406, Cl. D7-396.500.
Takaie, Hajime: *See—*
Kuwada, Hisashi; and Takaie, Hajime, 333,475, Cl. D15-9.100.
Taylor, Beverly W., to Handi-Pac, Inc. Stake for supporting an outdoor Christmas light. 333,526, 2-23-93, Cl. D25-131.000.
TEAC Corporation: *See—*
Yoshida, Koubun, 333,464, Cl. D14-114.000.
Textron Inc.: *See—*
Butler, George T., 333,446, Cl. D11-19.000.
Butler, George T., Jr., 333,447, Cl. D11-80.000.
Tezuka, Kiyoshi, to Harada Industry Co., Ltd. Antenna for automobiles. 333,469, 2-23-93, Cl. D14-230.000.
Thomas, Grady, Jr. Grease gun cartridge dispenser. 333,399, 2-23-93, Cl. D6-515.000.
Thompson, Joseph F., to Baxter International Inc. Surgical drape. 333,404, 2-23-93, Cl. D6-602.000.
Thompson, Lynn C.; and Lemaire, Denis. Retractable blade knife. 333,418, 2-23-93, Cl. D8-99.000.
Time In Motion, Inc.: *See—*
Hirschhorn, Martin, 333,437, Cl. D10-12.000.
Tonkel, Raymond F.; and Foster, David W., to Rockport Company, Inc., The. Shoe upper. 333,379, 2-23-93, Cl. D2-314.000.
Tsuji, Keisuke, to Seiko Epson Corporation. Combined watch and depth gauge for divers. 333,438, 2-23-93, Cl. D10-31.000.
Tyson, Kenneth A. Portable electronic map display. 333,462, 2-23-93, Cl. D14-113.000.
Uehara, Akira. Conveyor belt. 333,544, 2-23-93, Cl. D34-29.000.

United States Surgical Corporation: *See—*
Brown, David L., 333,400, Cl. D6-515.000.
Brown, David L.; and Malinowski, Stanley J., 333,401, Cl. D6-515.000.
Ushikubo, Hisao: *See—*
Kawabata, Misao; and Ushikubo, Hisao, 333,454, Cl. D12-147.000.
Victoria's Secret Stores, Inc.: *See—*
Gobe, Marc, 333,428, Cl. D9-315.000.
Vong, Andy S., to Parsec Delaware, Ltd. Foldable antenna. 333,470, 2-23-93, Cl. D14-230.000.
Vong, Andy S., to Parsec Delaware, Ltd. Antenna. 333,471, 2-23-93, Cl. D14-230.000.
VSI Fasteners, Inc.: *See—*
Cugley, Derwyn, 333,392, Cl. D6-476.000.
Wallace, Dewey K. Escutcheon for a whirlpool jet nozzle. 333,508, 2-23-93, Cl. D23-249.000.
Warrington, Blake, to Warrington and Watters. Carrier caddy for T.V. and VCR remote control units. 333,394, 2-23-93, Cl. D6-485.000.
Warrington and Watters: *See—*
Warrington, Blake, 333,394, Cl. D6-485.000.
Watanabe, Yuichi: *See—*
Shimizu, Norio; and Watanabe, Yuichi, 333,461, Cl. D13-162.000.
Weber Aircraft, Inc.: *See—*
Bales, Randy J.; Gilbert, Klay E.; and Bell, Steven R., 333,420, Cl. D8-349.000.
Weisburn, James T.: *See—*
Sankey, James K.; Weisburn, James T.; and Moock, Andrew W., 333,381, Cl. D3-35.000.
Wessel-Werk GmbH: *See—*
Kramer, Wilfried; Riehl, Kalus-Dieter; and Illesy, Otto, 333,539, Cl. D32-32.000.
Westinghouse Electric Corp.: *See—*
Boundy, Bruce K., 333,530, Cl. D26-74.000.
Whitten, John L. Combined dispenser and mixer attachment. 333,407, 2-23-93, Cl. D7-397.000.
Wisner, John B., to Ficks Reed Company. Table. 333,393, 2-23-93, Cl. D6-480.000.
Woo, Byung I., to Hankook Tire Mfg. Co., Ltd. Tire. 333,456, 2-23-93, Cl. D12-147.000.
Yamaha Corporation: *See—*
Yamamoto, Kentaro, 333,467, Cl. D14-214.000.
Yamamoto, Kentaro, to Yamaha Corporation. Speaker box. 333,467, 2-23-93, Cl. D14-214.000.
Yoshida, Koubun, to TEAC Corporation. Disk magazine for disk unit. 333,464, 2-23-93, Cl. D14-114.000.
Ziegler, Marion V. Combination cutting and ironing board. 333,540, 2-23-93, Cl. D32-66.000.
Zolton, Gary P.: *See—*
Crano, Richard N.; Neidhart, Douglas A.; Slingluff, Mark D.; and Zolton, Gary P., 333,452, Cl. D12-146.000.

VOL 1147 ISS 4 FE 23 1993

LIST OF PLANT PATENTEES

Austin, David C. H., to David Austin Roses. Rose Plant — 'Ausleap'. 8,153, 2-23-93, Cl. 1.000.
Austin, David C. H., to David Austin Roses. Rose plant—'Auscrim'. 8,154, 2-23-93, Cl. 1.000.
Austin, David C. H., to David Austin Roses. Rose plant — 'Ausren'. 8,155, 2-23-93, Cl. 1.000.
Austin, David C. H., to David Austin Roses. Rose plant—'Ausram'. 8,156, 2-23-93, Cl. 1.000.
Austin, David C. H., to David Austin Roses. Rose plant—'Ausmit' . 8,157, 2-23-93, Cl. 1.000.
Danziger - "Dan" Flower Farm: *See*—
Dehan, Klara, 8,158, Cl. 68.100.
Dehan, Klara, 8,159, Cl. 68.100.
Dehan, Klara, 8,160, Cl. 68.100.
David Austin Roses: *See*—
Austin, David C. H., 8,153, Cl. 1.000.
Austin, David C. H., 8,154, Cl. 1.000.
Austin, David C. H., 8,155, Cl. 1.000.
Austin, David C. H., 8,156, Cl. 1.000.
Austin, David C. H., 8,157, Cl. 1.000.
Dehan, Klara, to Danziger - "Dan" Flower Farm. Aster plant named Sunshir. 8,158, 2-23-93, Cl. 68.100.
Dehan, Klara, to Danziger - "Dan" Flower Farm. Aster plant named Suntop. 8,159, 2-23-93, Cl. 68.100.
Dehan, Klara, to Danziger - "Dan" Flower Farm. Aster plant named Sunjoy. 8,160, 2-23-93, Cl. 68.100.
Egger, Janet N., to Mitsuwa Nursery, Inc. Gazania plant called "Moorpark Yellow". 8,161, 2-23-93, Cl. 87.140.
Kansas State University Research Foundation: *See*—
Keen, Ray A., 8,162, Cl. 90.000.
Keen, Ray A., to Kansas State University Research Foundation. Midlawn Bermudagrass. 8,162, 2-23-93, Cl. 90.000.
Mitsuwa Nursery, Inc.: *See*—
Egger, Janet N., 8,161, Cl. 87.140.

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CLASSIFICATION OF PATENTS

ISSUED FEBRUARY 23, 1993

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
2 5,187,812
16 5,187,813
160 5,187,814
161 R 5,187,815
400 5,187,817

CLASS 4
313 5,187,816
5,187,818
483 5,187,819

CLASS 5
37.1 5,187,820
83.1 5,187,821
86.1 5,187,822
417 5,187,823
430 5,187,824
502 5,187,825
655 5,187,826

CLASS 8
405 5,188,639
549 5,188,640
647 5,188,641

CLASS 15
22.1 5,187,827
82 5,187,828
167.1 5,187,829
244.3 5,187,830
302 5,187,831
329 5,187,832
341 5,187,833
398 5,187,834

CLASS 16
52 5,187,835
231 5,187,836
375 5,187,837

CLASS 24
71 J 5,187,838
170 5,187,839
273 5,187,840
429 5,187,841
431 5,187,842
576 5,187,843
599.5 5,187,844

CLASS 28
267 5,187,845

CLASS 29
33 P 5,187,846
48.5 A 5,187,847
91.1 5,187,848
132 5,187,849
235 5,187,850
237 5,187,851
243.57 5,187,852
407 5,187,853
451 5,187,854
523 5,187,855
564.6 5,187,856
564.7 5,187,857
596 5,187,858
599 5,187,859
603 5,187,860
751 5,187,861
764 5,187,862
845 5,187,863
846 5,187,864
868 5,187,865
888.1 5,187,866
897.312 5,187,867

CLASS 30
134 5,187,868
189 5,187,869

CLASS 33
324 5,187,870
354 5,187,871
356 5,187,872
435 5,187,873
502 5,187,874
541 5,187,875
568 5,187,876
640 5,187,877
719 5,187,878

CLASS 34
1 DD 5,187,879
8 5,187,880
22 5,187,881
46 5,187,882

CLASS 36
35 R 5,187,883
50 5,187,884
127 5,187,885

CLASS 40
152.1 5,187,886
316 5,187,887
359 5,187,888
407 5,187,889

CLASS 43
4 5,187,890
21.2 5,187,891
5,187,892
100 5,187,893

CLASS 47
58 5,188,642
86 5,187,894

CLASS 49
42 5,187,895
74 L 5,187,896
236 5,187,897
505 5,187,898

CLASS 51
59 SS 5,187,899
95 WH 5,187,900
132 5,187,901
205 R 5,187,902
293 5,188,643
320 5,187,903
330 5,187,904

CLASS 52
144 5,187,905
221 5,187,907
238.1 5,187,906
239 5,187,908
308 5,187,909
317 5,187,910
469 5,187,911
584 5,187,912
5,187,913
738 5,187,914
742 5,187,915

CLASS 53
389.2 5,187,916
434 5,187,917
435 5,187,918
443 5,187,919
447 5,187,920
453 5,187,921
466 5,187,922
520 5,187,923

CLASS 54
44.5 5,187,924

CLASS 55
17 5,188,644
20 5,188,645
155 5,188,646
462 5,188,647

CLASS 56
16.7 5,187,926
17.1 5,187,925
328.1 5,187,927
5,187,928

CLASS 57
80 5,187,929
400 5,187,930

CLASS 60
39.07 5,187,931
39.23 5,187,932
452 5,187,933
562 5,187,934
602 5,187,935
734 5,187,936
752 5,187,937

CLASS 62
51.1 5,187,938
51.2 5,187,939
77 5,187,940
89 5,187,941
149 5,187,942
180 5,187,943
195 5,187,953
225 5,187,944
234 5,187,945
314 5,187,946
346 5,187,947
351 5,187,948
411 5,187,949
449 5,187,950

CLASS 65
3.12 5,188,648
21.3 5,188,649
64 5,188,650
114 5,188,651
319 5,188,652
334 5,188,653

CLASS 66
14 5,187,951
192 5,187,952

CLASS 68
3 R 5,187,954
58 5,187,955
181 R 5,187,956

CLASS 70
493 5,187,957

CLASS 71
28 5,188,654

CLASS 72
9 5,187,958
5,187,959
19 5,187,960
60 5,187,961
62 5,187,962
159 5,187,963
181 5,187,964
190 5,187,965
329 5,187,966
340 5,187,967
410 5,187,968
413 5,187,969

CLASS 73
1 G 5,187,970
5,187,971
23.2 5,187,972
40.5 R 5,187,973
49.7 5,187,974
54.01 5,187,975
65.01 5,187,976
146 5,187,977
187 5,187,978
304 C 5,187,979
599 5,187,980
642 5,187,981
666 5,187,982
705 5,187,983
708 5,187,984
5,187,985
766 5,187,986
852 5,187,987
861.53 5,187,988
861.78 5,187,989
864.18 5,187,990
864.56 5,187,991

CLASS 74
89.15 5,187,992
5,187,993
120 5,187,994
479 5,187,996
493 5,187,997
523 5,187,998
528 5,187,999
552 5,188,000
560 5,188,001
574 5,188,002
594.3 5,188,003
813 R 5,188,004
866 5,188,005
867 5,188,006
5,188,007

CLASS 75
10.31 5,188,658
246 5,188,659
370 5,188,660
387 5,188,661
713 5,188,662

CLASS 81
13 5,188,008

CLASS 83
5,188,009
175 5,188,010
478 5,188,011
496 5,188,012
879 5,188,013

CLASS 84
291 5,189,235
410 5,189,236
609 5,189,237
5,189,238
615 5,189,239
724 5,189,240
728 5,189,241
743 5,189,242

CLASS 89
1.13 5,189,243
8 5,189,244
14.1 5,189,245

CLASS 91
10 5,188,014
321 5,188,015
408 5,188,016
459 5,188,017

CLASS 92
5 R 5,188,018

CLASS 99
285 5,188,019
468 5,188,020
502 5,188,021

CLASS D14
191 Re.34,182

CLASS 100
52 5,188,022
145 5,188,023
274 5,188,024

CLASS 101
91 5,188,025
129 5,188,026
216 5,188,027
228 5,188,028
288 5,188,029
348 5,188,030
415.1 5,188,031
453 5,188,032
467 5,188,033
474 5,188,034

CLASS 102
217 5,189,246
291 5,189,247
386 5,189,248
430 5,189,249
439 5,189,250
457 5,189,251
459 5,189,252
504 5,189,253
521 5,189,254
531 5,189,255

CLASS 104
89 5,188,035
111 5,188,036
168 5,188,037

CLASS 105
216 5,188,038
423 5,188,039

CLASS 106
18.33 5,188,663
22 R 5,188,664
26 R 5,188,665
190 5,188,666
286.4 5,188,667
739 5,188,668

CLASS 109
49.5 5,188,040

CLASS 110
246 5,188,041
346 5,188,042
5,188,043

CLASS 112
121.15 5,188,044
121.26 5,188,045
231 5,188,046
262.2 5,188,047

CLASS 114
56 5,188,048
61 5,188,049
90 5,188,050
150 5,188,051
204 5,188,052
242 5,188,053
250 5,188,054
299 5,188,055
355 5,188,056

CLASS 118
503 5,188,669
657 5,188,057
667 5,188,670
715 5,188,671
5,188,672
719 5,188,058

CLASS 119
28.5 5,188,059
58 5,188,060
71 5,188,061
164 5,188,062
165 5,188,063
172 5,188,064

CLASS 123
41.44 5,188,065
48 A 5,188,066
90.18 5,188,067
90.35 5,188,068
146.50 B 5,188,069
179.23 5,188,070
195 R 5,188,071
198 C 5,188,072
339 5,188,073
357 5,188,074
5,188,075
5,188,076
359 5,188,077
403 5,188,078
414 Re.34,183
5,188,079
425 5,188,080
479 5,188,081
491 5,188,082
502 5,188,083
5,188,084
520 5,188,085
568 5,188,086
571 5,188,087
620 5,188,088

CLASS 126
30 5,188,089
247 5,188,090
548 5,188,091

CLASS 127
37 5,188,673
65 5,188,674

CLASS 128
4 5,188,092
6 5,188,093
5,188,094
24 AA 5,188,102
32 5,188,095
33 5,188,096
36 5,188,097
204.23 5,188,098
205.26 5,188,099
207.14 5,188,100
207.18 5,188,101
380 5,188,103
419 D 5,188,105
419 PG 5,188,106
419 R 5,188,104
630 5,188,107
633 5,188,108
635 5,188,109
653.1 5,188,110
657 5,188,111
661.09 5,188,112
5,188,113
5,188,114
677 5,188,115
696 5,188,116
708 5,188,117
753 5,188,118
763 5,188,119
778 5,188,120
781 5,188,121
/88 5,188,122
864 5,188,123
889 5,188,124
898 5,188,125
899 5,188,126

CLASS 131
108 5,188,127
110 5,188,128
276 5,188,129
359 5,188,130

CLASS 132
218 5,188,131
219 5,188,132
325 5,188,133

CLASS 134
4 5,188,675
57 R 5,188,134
64 R 5,188,135
066 5,188,136

CLASS 135
19.5 5,188,137
65 5,188,138
67 5,188,139

CLASS 137
12 5,188,140
112 5,188,141
223 5,188,142
312 5,188,143
315 5,188,144
340 5,188,145
580 5,188,146
596 5,188,147
606 5,188,148
625.47 5,188,149
630.14 5,188,150
874 5,188,151

CLASS 138
129 5,188,152

CLASS 139
11 5,188,153
28 5,188,154

CLASS 141
98 5,188,156
338 5,188,157

CLASS 144
162 R 5,188,158
193 D 5,188,159

CLASS 147
65 5,188,155

CLASS 148
217 5,188,676
501 5,188,677
514 5,188,678
538 5,188,679
593 5,188,680
603 5,188,681

CLASS 149
1 5,188,682

CLASS 152
209 B 5,188,683
209 R 5,188,684
451 5,188,685
454 5,188,686

CLASS 156
64 5,188,687
69 5,188,688
89 5,188,689
91 5,188,690
145 5,188,691
212 5,188,692
244.11 5,188,693

VOL 1147 ISS 4 FE 23 1993 UMI

353 5,188,694
356 5,188,695
361 5,188,696
499 5,188,697
500 5,188,698
521 5,188,699
575 5,188,700
626 5,188,701
630 5,188,702
642 5,188,703
643 5,188,704
5,188,705
5,188,706

CLASS 160

84.1 5,188,160
133 5,188,161
166.1 5,188,162
229.1 5,188,163

CLASS 162

11 5,188,707
40 5,188,708

CLASS 164

97 5,188,164
113 5,188,165
416 5,188,166
418 5,188,167
479 5,188,168

CLASS 165

20 5,188,169
67 5,188,170
96 5,188,171

CLASS 166

64 5,188,172
77 5,188,173
5,188,174
280 5,188,175
285 5,188,176
297 5,188,177
310 5,188,178
5,188,179
338 5,188,180
344 5,188,181
376 5,188,182
387 5,188,183

CLASS 169

22 5,188,184
37 5,188,185
48 5,188,186

CLASS 173

128 5,188,187
171 5,188,188
213 5,188,189

CLASS 174

30 5,189,256
5,189,257
65 R 5,189,258
66 5,189,259
125.1 5,189,260
263 5,189,261

CLASS 175

58 5,188,190
321 5,188,191

CLASS 180

219 5,188,192
242 5,188,193
248 5,188,194
353 5,188,195

CLASS 181

102 5,189,262
113 5,189,263
131 5,189,264
133 5,189,265
227 5,189,266
230 5,189,267

CLASS 184

6.16 5,188,196
7.4 5,188,197

CLASS 185

39 5,188,198

CLASS 187

95 5,188,199
112 5,189,268

CLASS 188

24.11 5,188,200
71.9 5,188,201
73.45 5,188,202
218 XL 5,188,203

CLASS 192

0.098 5,188,206
3.58 5,188,204
46 5,188,205

CLASS 194

236 5,188,207

CLASS 196

14.52 5,188,709

CLASS 198

312 5,188,208
336 5,188,209
369 5,188,210
411 5,188,211
457 5,188,212
470.1 5,188,213
501 5,188,214
781 5,188,215
803.6 5,188,216
803.9 5,188,217
812 5,188,218
834 5,188,219

CLASS 200

83 P 5,189,269
144 B 5,189,270
313 5,188,220

CLASS 202

185.3 5,188,710
248 Re.34,184

CLASS 204

71 5,188,711
98 5,188,712
106 5,188,713
129.35 5,188,714
153.11 5,188,715
181.7 5,188,716
192.12 5,188,717
201 5,188,718
206 5,188,719
5,188,720
280 5,188,721

CLASS 205

125 5,188,723

CLASS 206

44 R 5,188,221
45.130 5,188,223
45.34 5,188,222
83.5 5,188,224
145 5,188,225
153 5,188,226
214 5,188,227
310 5,188,228
312 5,188,229
5,188,230
333 5,188,231
426 5,188,232
427 5,188,233
527 5,188,236
541 5,188,234
554 5,188,235

CLASS 208

18 5,188,724
67 5,188,725

CLASS 209

23 5,188,237
164 5,188,726
211 5,188,238
223.1 5,188,239

CLASS 210

85 5,188,727
90 5,188,728
104 5,188,729
198.2 5,188,730
232 5,188,731
285 5,188,732
321.84 5,188,733
490 5,188,734
634 5,188,735
5,188,736
638 5,188,737
748 5,188,738
770 5,188,739
5,188,740
774 5,188,741
5,188,742

CLASS 211

41 5,188,240
59.1 5,188,241
69 5,188,242
70.2 5,188,243
71 5,188,244
122 5,188,245
153 5,188,246

CLASS 212

140 5,188,247
189 5,188,248

CLASS 215

31 5,188,249
32 5,188,250
220 5,188,251

CLASS 219

10.53 5,189,271
10.55 E 5,189,272
5,189,273
10.55 M 5,189,274
56.22 5,189,275
69.14 5,189,276
121.54 5,189,277
121.66 5,189,278
137 R 5,189,279
270 5,189,280
386 5,189,281
467 5,189,282
497 5,189,283
543 5,189,284

CLASS 220

1.5 5,188,252
212 5,188,253
404 5,188,254

CLASS 222

1 5,188,255
5,188,256
5,188,257
61 5,188,258
63 5,188,259
95 5,188,260
107 5,188,261
185 5,188,262
394 5,188,263
554 5,188,264
590 5,188,743

CLASS 223

32 5,188,265

CLASS 224

148 5,188,266
215 5,188,267

CLASS 225

96.5 5,188,268

CLASS 226

74 5,188,269
76 5,188,270
102 5,188,271
190 5,188,272
5,188,273

CLASS 227

180 5,188,274

CLASS 228

2 5,188,275
6.1 5,188,276
111 5,188,277
112 5,188,278
113 5,188,279
123 5,188,280
189 5,188,281
242 5,188,282

CLASS 229

103.1 5,188,283
110 5,188,284
242 5,188,285

CLASS 235

88 R 5,189,285
95 R 5,189,286
375 5,189,287
386 5,189,288
437 5,189,289
454 5,189,290
472 5,189,291
494 5,189,292

CLASS 236

1 F 5,188,286
34.5 5,188,287

CLASS 237

70 5,188,288

CLASS 239

1 5,188,289
3 5,188,290
5,188,291
5,188,292
127.3 5,188,293
227 5,188,294
310 5,188,295
320 5,188,296
403 5,188,297
585.3

CLASS 241

5 5,188,298
23 5,188,299
5,188,300
33 5,188,301
189.1 5,188,302
194 5,188,303

CLASS 242

35.6 R 5,188,304
56.2 5,188,305
71.1 5,188,306
86 5,188,307
86.5 OR 5,188,308
199 5,188,309
5,188,310
204 5,188,311
261 5,188,312

CLASS 244

3 5,188,313
31 5,188,314
152 5,188,315
234 5,188,316

CLASS 248

59 5,188,317
68.1 5,188,318
5,188,319
103 5,188,320
118 5,188,321
146 5,188,322
158 5,188,323
222.3 5,188,324
224.4 5,188,325
225.2 5,188,326
231.8 5,188,327
309.2 5,188,328
430 5,188,329
519 5,188,330
538 5,188,331
544 5,188,332
676 5,188,333

CLASS 249

121 5,188,744

CLASS 250

201.5 5,189,293
201.9 5,189,294
206.2 5,189,295
208.2 5,189,296
214.1 5,189,297
227.16 5,189,298
5,189,299
227.24 5,189,300
287 5,189,301
288 5,189,302
296 5,189,303
5,189,304
338.1 5,189,305
492.2 5,189,306
551 5,189,307
561 5,189,308

CLASS 251

7 5,188,334
95 5,188,335
129.16 5,188,336
129.17 5,188,337
265 5,188,338
367 5,188,339

CLASS 252

47 5,188,745
47.5 5,188,746
54 5,188,747
56 S 5,188,770
67 5,188,748
5,188,749
70 5,188,750
96 5,188,752
132 5,188,753
162 5,188,754
174 5,188,755
174.15 5,188,756
182.12 5,189,105
183.11 5,188,757
299.01 5,188,758
5,188,759
5,188,760
299.61 5,188,761
299.62 5,188,762
301.5 5,188,763
308 5,188,764
363.5 5,188,765
500 5,188,766
512 5,188,767
518 5,188,768
548 5,188,769

CLASS 254

132 5,188,340
323 5,188,341

CLASS 256

65 5,188,342

CLASS 257

21 5,189,309
49 5,189,508
79 5,189,496
215 5,189,499
216 5,189,498
295 5,189,594
310 5,189,503
392 5,189,310
419 5,189,505
422 5,189,504
647 5,189,501
718 5,189,509
752 5,189,506
759 5,189,502
777 5,189,507

CLASS 261

25 5,188,771
94 5,188,772
112.2 5,188,773

CLASS 264

22 5,188,774
25 5,188,775
29.2 5,188,776
41 5,188,777
45.1 5,188,778
62 5,188,779
63 5,188,780
65 5,188,781
82 5,188,782
104 5,188,783
108 5,188,784
115 5,188,785
117 5,188,786
153 5,188,787
169 5,188,788
171 5,188,789
219 5,188,790
226 5,188,791
232 5,188,792
344 5,188,793

CLASS 266

44 5,188,794
202 5,188,795
275 5,188,796

CLASS 267

103 5,188,343
5,188,344
131 5,188,345
140.12 5,188,346

CLASS 269

258 5,188,347

CLASS 270

45 5,188,348
55 5,188,349

CLASS 271

114 5,188,350
171 5,188,351
175 5,188,352
184 5,188,353
217 5,188,354
225 5,188,355

CLASS 273

1.5 A 5,188,356
25 5,188,357
67 R 5,188,358
5,188,359
73 R 5,188,360
81.3 5,188,361
84 R 5,188,362
85 CP 5,188,363
126 R 5,188,364
188 R 5,188,366
189 R 5,188,365
191 R 5,188,367
237 5,188,368
258 5,188,369
269 5,188,370
378 5,188,371
408 5,188,372
421 5,188,373

CLASS 277

35 5,188,374
58 5,188,375
81 S 5,188,377
227 5,188,376

CLASS 279

22 5,188,378

CLASS 280

6.12 5,188,379
30 5,188,380
37 5,188,381
96.1 5,188,382
250.1 5,188,383
281.1 5,188,384
477 5,188,385
607 5,188,386
612 5,188,387
633 5,188,388
650 5,188,389
707 5,188,390
775 5,188,392
806 5,188,393
856 5,188,394

CLASS 283

113 5,188,395

CLASS 285

16 5,188,396
24 5,188,397
39 5,188,398
91 5,188,399
233 5,188,400
322 5,188,401
332 5,188,402

CLASS 292

17 5,188,403
194 5,188,404
204 5,188,405
216 5,188,406

CLASS 293

128 5,188,407
155 5,188,408

CLASS 294

19.2 5,188,409
5,188,410
64.2 5,188,411
68.24 5,188,412
87.2 5,188,413

CLASS 296

37.6 5,188,414
57.1 5,188,415
65.1 5,188,416
136 5,188,417
183 5,188,418
190 5,188,419
223 5,188,420

CLASS 297

182 5,188,421
195 5,188,422
412 5,188,423
440 5,188,424
473 5,188,425

CLASS 299

1.2 5,188,426
12 5,188,427

CLASS 301

37.1 5,188,428
63.1 5,188,429
111 5,188,430

CLASS 303

4 5,188,431
96 5,188,432
100 5,188,433
111 5,188,434
113.2 5,188,435
5,188,436
5,188,437
116.1 5,188,439
116.2 5,188,438
5,188,440

CLASS 305

54 5,188,441

CLASS 307

10.1 5,189,311
243 5,189,312
263 5,189,313
271 5,189,314
272.2 5,189,315
278 B1 4,940,905
296.1 5,189,316
296.6 B1 5,063,304
350 5,189,317
352 5,189,318
425 B1 4,959,559
452 5,189,319
465 5,189,320
465.1 B1 4,883,980
490 5,189,321
530 5,189,322

CLASS 310

40 MM 5,189,323
51 5,189,324
54 5,189,325
71 5,189,327
90 5,189,328
233 5,189,329
313 B 5,189,330
323 5,189,331
345 5,189,332

CLASS 312

235.8 5,188,442

CLASS 313

140 5,189,333
402 5,189,334
422 5,189,335
440 5,189,336
479 5,189,337

CLASS 315

11 5,189,338
58 5,189,339
111.41 5,189,446
116 5,189,340
169.1 5,189,341
209 R 5,189,342
219 5,189,343
293 5,189,344
326 5,189,345
5,189,346
383 5,189,347
399 5,189,348

CLASS 318

254 5,189,349
434 5,189,350
568.19 5,189,351
569 5,189,352
605 5,189,353
671 5,189,354
685 5,189,355
5,189,356
737 5,189,357

CLASS 320

2 5,189,358
26 5,189,359

CLASS 322

25 5,189,360
90 5,189,361

CLASS 324

106 5,189,362
158 P 5,189,363
5,189,364
158 R 5,189,365
233 5,189,366
252 5,189,367
304 5,189,368
306 5,189,369
309 5,189,370
5,189,371
318 5,189,372
399 5,189,373
534 5,189,374
537 5,189,375
662 5,189,376
5,189,377

CLASS 328

138 5,189,378

CLASS 331

1 A 5,189,379
109 5,189,380
179 5,189,381

CLASS 333

169 5,189,382
201 5,189,383

CLASS 335

16 5,189,384
132 5,189,385
216 5,189,386

CLASS 338

20 5,189,387

CLASS 340

309.15 5,189,388
311.1 5,189,389
407 5,189,390
453 5,189,391
521 5,189,392
522 5,189,393
525 5,189,394
539 5,189,395
541 5,189,396
572 5,189,397
578 5,189,398
629 5,189,399
636 5,189,400
703 5,189,401
709 5,189,402
711 5,189,403
720 5,189,404
781 5,189,405
793 5,189,406
5,189,407
815.01 5,189,408
825.06 5,189,409
825.14 5,189,410
5,189,411
825.22 5,189,412
825.44 5,189,413
825.5 5,189,414
854.6 5,189,415

CLASS 341

26 5,189,416
5,189,417
131 5,189,418
143 5,189,419
157 5,189,420
159 5,189,421
172 5,189,422
5,189,423

CLASS 342

25 5,189,424
52 5,189,425
70 5,189,426
128 5,189,427
132 5,189,428
424 5,189,429
457 5,189,430

CLASS 343

718 5,189,431
739 5,189,432
770 5,189,433
853 5,189,434
903 5,189,435

CLASS 346

1.1 5,189,436
5,189,437
5,189,438
76 PH 5,189,439
5,189,440
140 R 5,189,442
5,189,443
157 5,189,444
160 5,189,441

CLASS 351

46 5,189,445
121 5,189,447
162 5,189,448
211 5,189,449
219 5,189,450

CLASS 352

128 5,189,451

CLASS 353

94 5,189,452

CLASS 354

110 5,189,467
122 5,189,453
200 5,189,454
297 5,189,455
298 5,189,456
328 5,189,457
400 5,189,458
402 5,189,459
5,189,460
5,189,461
403 5,189,462
5,189,463
5,189,464
5,189,465
5,189,466

CLASS 355

88 5,189,468
200 5,189,469
208 5,189,470
210 5,189,471
212 5,189,472
215 5,189,473
245 5,189,474
246 5,189,475
259 5,189,476
271 5,189,477
5,189,478
274 5,189,479
282 5,189,480

CLASS 356

73 5,189,481
5,189,482
73.1 5,189,483
138 5,189,484
320 5,189,485
328 5,189,486
350 5,189,487
5,189,488
358 5,189,489
371 5,189,490
372 5,189,491
373 5,189,492
376 5,189,493
401 5,189,494
402 5,189,495

CLASS 357

23.5 5,189,497

CLASS 358

75 5,189,510
80 5,189,511
93 5,189,512
105 5,189,513
125 5,189,514
157 5,189,515
181 5,189,516
194.1 5,189,517
222 5,189,518
228 5,189,519
229 5,189,520
296 5,189,521
5,189,522
300 5,189,523
335 5,189,524
407 5,189,525
432 5,189,526
440 5,189,527
448 5,189,528
451 5,189,529
458 5,189,530

CLASS 359

3 5,189,531
15 5,189,532
18 5,189,533
45 5,189,534
55 5,189,535
56 5,189,536
71 5,189,537
72 5,189,500
73 5,189,538
87 5,189,539
102 5,189,540
118 5,189,541
128 5,189,542
142 5,189,543
153 5,189,544
197 5,189,545
217 5,189,546
245 5,189,547
263 5,189,548
271 5,189,549
273 5,189,550
360 5,189,551
489 5,189,552
530 5,189,553
601 5,189,554
618 5,189,555
634 5,189,556
683 5,189,557
687 5,189,558
697 5,189,559
744 5,189,560
843 5,189,561

CLASS 360

13 5,189,562
B1 4,746,994
14.1 5,189,563
32 5,189,564
33.1 5,189,565
53 5,189,566
59 5,189,567
63 5,189,326
73.13 5,189,568
75 5,189,569
5,189,570
5,189,571
77.12 5,189,572
85 5,189,573
103 5,189,574
105 5,189,575
5,189,576
106 5,189,577
5,189,578
121 5,189,579
126 5,189,580
128 5,189,581
132 5,189,582
5,189,583
5,189,584
133 5,189,585
5,189,586

CLASS 361

56 5,189,587
5,189,588
93 5,189,589
149 5,189,590
283 5,189,591
301 5,189,592
313 5,189,595
355 5,189,596
391 5,189,597
397 5,189,598

CLASS 362

18 5,188,443
80 5,188,444
5,188,445
83.1 5,188,446
103 5,188,447
109 5,188,448
148 5,188,449
194 5,188,450
223 5,188,451
293 5,188,452
329 5,188,453
399 5,188,454

CLASS 363

21 5,189,599
5,189,601
28 5,189,602
160 5,189,603
212 5,189,600

CLASS 364

136 5,189,604
140 5,189,605
401 5,189,606
405 5,189,607
408 5,189,608
413.01 5,189,609
419 5,189,610
424.02 5,189,612
424.05 5,189,613
5,189,614
5,189,615
5,189,616
5,189,617
424.1 5,189,611
426.04 5,189,618
5,189,619
431.02 5,189,620
431.04 5,189,621
470 5,189,622
5,189,623
474.11 5,189,624
474.17 5,189,625
474.24 5,189,626
474.31 5,189,627
489 5,189,628
490 5,189,629
514 5,189,630
550 5,189,631
705.05 5,189,632
709.12 5,189,633
724.09 5,189,634
784 5,189,635
786 5,189,636
825 5,189,637

CLASS 365

52 5,189,638
149 5,189,639
154 5,189,640
228 5,189,641

CLASS 366

150 5,188,455

CLASS 367

15 5,189,642
38 5,189,643
5,189,644
84 5,189,645

CLASS 368

10 5,189,646
5,189,647
73 5,189,648

CLASS 369

13 5,189,649
5,189,650
5,189,651
36 5,189,652
44.23 5,189,655
44.32 5,189,653
44.36 5,189,654
47 5,189,656
59 5,189,657
100 5,189,658
109 5,189,659
215 5,189,660
258 5,189,661

CLASS 370

16 5,189,662
17 5,189,663
32.1 5,189,664
60 5,189,666
5,189,667
5,189,668
84 5,189,669
94.1 5,189,670
5,189,671
5,189,672
110.1 5,189,673
458.1 5,189,665

CLASS 371

20.1 5,189,674
22.3 5,189,675

CLASS 372

6 5,189,676
23 5,189,677
28 5,189,678
45 5,189,679
46 5,189,680
95 5,189,681

CLASS 373

64 5,189,682

CLASS 374

30 5,188,456
104 5,188,457
121 5,188,458
158 5,188,459

CLASS 375

1 5,189,683
14 5,189,684

CLASS 376

438 5,188,797
442 5,188,798

CLASS 377

48 5,189,685

CLASS 378

37 5,189,686
65 5,189,687
133 5,189,688
162 5,189,689
5,189,690

CLASS 379

8.8 5,189,692
70 5,189,691
100 5,189,693
106 5,189,694
199 5,189,695
355 5,189,696
413 5,189,697
455 5,189,698

CLASS 380

9 5,189,699
23 5,189,700

CLASS 381

41 5,189,701
51 5,189,702
61 5,189,703
68.4 5,189,704
104 5,189,705
159 5,189,706

CLASS 382

8 5,189,707
5,189,708
5,189,709
22 5,189,710
25 5,189,711
42 5,189,712

CLASS 383

18 5,188,460
63 5,188,461

CLASS 384

93 5,188,462
441 5,188,463

CLASS 385

2 5,189,713
27 5,189,714
72 5,189,715
93 5,189,716
95 5,189,717
101 5,189,718
5,189,719
103 5,189,720
114 5,189,721
122 5,189,722
134 5,189,723
135 5,189,724
5,189,725

CLASS 392

401 5,189,726

CLASS 395

2 5,189,727
51 5,189,728
135 5,189,729
142 5,189,730
146 5,189,731
155 5,189,732
650 5,189,733

CLASS 400

103 5,188,464
121 5,188,465
124 5,188,466
157.2 5,188,467
579 5,188,468
615.2 5,188,469
621 5,188,470
630 5,188,471

CLASS 401

124 5,188,472

CLASS 403

27 5,188,473
57 5,188,474
58 5,188,475
133 5,188,476
5,188,477
5,188,478
306 5,188,479
369 5,188,480

CLASS 404

95 5,188,481

CLASS 405

70 5,188,482
191 5,188,483
198 5,188,484
232 5,188,485

CLASS 406

145 5,188,486

CLASS 407

34 5,188,487
54 5,188,488
119 5,188,489

CLASS 408

146 5,188,490

CLASS 409

66 5,188,491
182 5,188,492
230 5,188,493

CLASS 411

10 5,188,494
369 5,188,495
386 5,188,496

CLASS 413

45 5,188,497

CLASS 414

331 5,188,498
404 5,188,499
412 5,188,500
416 5,188,501
700 5,188,502
745.1 5,188,503
786 5,188,504

CLASS 415

9 5,188,505
115 5,188,506
173.1 5,188,507
206 5,188,508
208.1 5,188,509
5,188,510

CLASS 416

25 5,188,511
112 5,188,512
129 B1 4,619,584
134 A 5,188,513
223 A 5,188,514

CLASS 417

63 5,188,515
199.1 5,188,516
393 5,188,517
403 5,188,518
511 5,188,519

CLASS 418

55.1 5,188,520
55.3 5,188,521
77 5,188,522
126 5,188,523
152 5,188,524

CLASS 420

469 5,188,799

CLASS 422

23 5,188,800
48 5,188,801
56 5,188,802
99 5,188,803
111 5,188,804
5,188,805
151 5,188,806
224 5,188,807
229 5,188,808

CLASS 423

2 5,188,809
62 5,188,810
230 5,188,811
320 5,188,812
403 5,188,813
430 5,188,814

CLASS 424

7.1 5,188,815
9 5,188,816
49 5,188,817
5,188,818
5,188,819
5,188,820
52 5,188,821
5,188,822
65 5,188,823
78.04 5,188,826
78.1 5,188,824
5,188,825
85.2 5,188,827
5,188,828
94.63 5,188,829
5,188,830
401 5,188,831
405 5,188,832

VOL 1147 ISS 4 FE 23 1993 UMI

	5,188,833
422	5,188,834
431	5,188,836
432	5,188,835
450	5,188,837
451	5,188,838
464	5,188,839
468	5,188,840
495	5,188,841
535	5,188,842
574	5,188,844
CLASS 425	
4 R	5,188,845
11	5,188,846
135	5,188,847
147	5,188,848
525	5,188,849
589	5,188,850
CLASS 426	
2	5,188,851
60	5,188,852
231	5,188,853
272	5,188,854
273	5,188,855
465	5,188,856
519	5,188,857
531	5,188,858
560	5,188,859
	5,188,860
640	5,188,861
CLASS 427	
128	5,188,865
132	5,188,866
173	5,188,867
212	5,188,868
242	5,188,869
512	5,188,863
515	5,188,864
570	5,188,862
CLASS 428	
1	5,188,870
29	5,188,871
36.2	5,188,872
36.92	5,188,873
47	5,188,874
59	5,188,892
64	5,188,875
76	5,188,876
80	5,188,877
114	5,188,878
117	5,188,879
120	5,188,880
143	5,188,881
159	5,188,882
189	5,188,883
193	5,188,884
195	5,188,981
198	5,188,885
209	5,188,886
216	5,188,887
220	5,188,888
304.4	5,188,889
306.6	5,188,890
323	5,188,891
362	5,188,893
370	5,188,894
373	5,188,895
397	5,188,896
402.2	5,188,897
403	5,188,898
405	5,188,899
412	5,188,900
421	5,188,901
426	5,188,902
447	5,188,903
	5,188,904
626	5,188,905
688	5,188,906
694	5,188,907
698	5,188,908
CLASS 429	
7	5,188,909
31	5,188,910
70	5,188,911
96	5,188,912
101	5,188,913
112	5,188,914
199	5,188,915
CLASS 430	
65	5,188,916
96	5,188,917
106	5,188,918
	5,188,919
110	5,188,929
191	5,188,920
192	5,188,921
270	5,188,922
273	5,188,923
312	5,188,924
372	5,188,925
377	5,188,926
393	5,188,927
513	5,188,928
536	5,188,930
539	5,188,931
CLASS 431	
107	5,188,525
286	5,188,526
CLASS 432	
3	5,188,527
248	5,188,528
CLASS 433	
68	5,188,529
92	5,188,530
188	5,188,531
216	5,188,532
CLASS 434	
169	5,188,533
CLASS 435	
6	5,188,933
	5,188,934
7.24	5,188,935
7.32	5,188,936
7.36	5,188,937
7.7	5,188,938
7.92	5,188,939
13	5,188,940
19	5,188,941
28	5,188,942
52	5,188,976
69.4	5,188,943
76	5,188,944
77	5,188,945
91	5,188,946
114	5,188,947
115	5,188,948
	5,188,949
120	5,188,950
131	5,188,951
146	5,188,952
156	5,188,953
172.3	5,188,954
188	5,188,955
200	5,188,956
235.1	5,188,957
240.243	5,188,959
240.4	5,188,958
252.3	5,188,960
252.31	5,188,961
285	5,188,962
299	5,188,963
CLASS 436	
64	5,188,964
165	5,188,965
170	5,188,966
501	5,188,967
	5,188,968
548	5,188,969
CLASS 437	
3	5,188,970
31	5,188,971
	5,188,972
40	5,188,973
	5,188,974
48	5,188,975
89	5,188,977
160	5,188,978
192	5,188,979
193	5,188,980
209	5,188,982
	5,188,983
211	5,188,984
218	5,188,985
225	5,188,986
228	5,188,987
235	5,188,988
CLASS 439	
79	5,188,534
83	5,188,535
	5,188,536
127	5,188,537
271	5,188,538
341	5,188,539
500	5,188,540
596	5,188,541
620	5,188,542
	5,188,543
777	5,188,544
851	5,188,545
885	5,188,546
886	5,188,547
CLASS 440	
61	5,188,548
63	5,188,549
CLASS 441	
1	5,188,550
6	5,188,551
116	5,188,552
CLASS 445	
8	5,188,553
26	5,188,554
CLASS 446	
133	5,188,555
172	5,188,556
212	5,188,557
224	5,188,558
CLASS 452	
167	5,188,559
169	5,188,560
CLASS 454	
256	5,188,561
CLASS 485	
33.2	5,189,734
195.1	5,189,593
CLASS 462	
54	5,188,562
56	5,188,563
CLASS 464	
14	5,188,564
CLASS 472	
45	5,188,566
51	5,188,565
85	5,188,567
CLASS 474	
13	5,188,568
160	5,188,569
175	5,188,573
CLASS 475	
143	5,188,570
162	5,188,571
168	5,188,572
206	5,188,574
280	5,188,575
348	5,188,576
CLASS 476	
10	5,187,995
CLASS 482	
53	5,188,577
71	5,188,578
CLASS 483	
1	5,188,579
CLASS 493	
225	5,188,580
381	5,188,581
440	5,188,582
CLASS 494	
43	5,188,583
CLASS 501	
17	5,188,989
19	5,188,990
103	5,188,991
136	5,188,992
	5,188,993
153	5,188,994
CLASS 502	
28	5,188,995
37	5,188,996
107	5,188,997
	5,188,998
111	5,188,999
113	5,189,000
159	5,189,001
167	5,189,003
170	5,189,004
326	5,189,005
339	5,189,006
CLASS 503	
207	5,189,007
227	5,189,008
CLASS 504	
136	5,188,655
212	5,188,657
246	5,188,656
CLASS 505	
1	5,189,009
	5,189,010
	5,189,011
CLASS 507	
103	5,189,012
CLASS 512	
23	5,189,013
CLASS 514	
2	5,189,014
	5,189,015
	5,189,016
8	5,189,017
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12	5,189,019
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54	5,189,028
58	5,189,149
64	5,189,029
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258	5,189,039
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291	5,189,042
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319	5,189,045
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337	5,189,047
359	5,189,048
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375	5,189,050
381	5,189,051
392	5,189,052
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439	5,189,056
473	5,189,057
481	5,189,058
508	5,189,060
519	5,189,061
521	5,189,062
530	5,189,063
561	5,189,064
656	5,189,065
678	5,189,066
772	5,189,067
CLASS 521	
51	5,189,068
56	5,189,069
64	5,189,070
79	5,189,071
88	5,189,072
110	5,189,073
114	5,189,074
159	5,189,075
180	5,189,076
CLASS 523	
116	5,189,077
137	5,189,078
142	5,189,079
212	5,189,080
428	5,189,081
443	5,189,082
CLASS 524	
68	5,189,083
100	5,189,084
101	5,189,085
103	5,189,086
151	5,189,087
222	5,189,088
272	5,189,089
	5,189,090
445	5,189,091
495	5,189,092
847	5,189,093
CLASS 525	
27	5,189,094
53	5,189,095
56	5,189,096
57	5,189,097
66	5,189,098
68	5,189,099
70	5,188,751
74	5,189,100
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112	5,189,102
133	5,189,103
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296	5,189,109
314	5,189,110
328.2	5,189,111
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329.5	5,189,113
394	5,189,114
420	5,189,115
423	5,189,116
460	5,189,117
504	5,189,118
526	5,189,119
537	5,189,121
CLASS 526	
77	5,189,122
106	5,189,123
119	5,189,124
160	5,189,125
261	5,189,126
262	5,189,127
	5,189,128
	5,189,129
352	5,189,130
CLASS 528	
15	5,189,131
33	5,189,132
49	5,189,133
68	5,189,134
70	5,189,135
86	5,189,136
171	5,189,137
183	5,189,138
196	5,189,139
272	5,189,140
331	5,189,141
339.3	5,189,142
498	5,189,143
CLASS 530	
324	5,189,144
326	5,189,145
385	5,189,146
387.9	5,189,147
399	5,189,148
CLASS 536	
6.5	5,189,150
24.32	5,189,151
36	5,189,152
CLASS 540	
122	5,189,153
126	5,189,154
141	5,189,155
	5,189,156
222	5,189,157
302	5,189,158
456	5,189,159
460	5,189,160
555	5,189,161
CLASS 544	
75	5,189,162
239	5,189,163
297	5,189,164
298	5,189,165
	5,189,166
CLASS 546	
18	5,189,167
	5,189,168
22	5,189,169
114	5,189,170
157	5,189,171
208	5,189,172
244	5,189,173
255	5,189,174
CLASS 548	
128	5,189,175
213	Re.34,185
215	5,189,176
405	5,189,177
495	5,189,178
	5,189,179
CLASS 549	
214	5,189,180
299	5,189,181
326	5,189,182
345	5,189,183
427	5,189,184
486	5,189,185
497	5,189,186
548	5,189,187
CLASS 552	
104	5,189,188
CLASS 554	
194	5,189,189
CLASS 556	
11	5,189,192
418	5,189,190
443	5,189,191
451	5,189,193
471	5,189,194
CLASS 558	
208	5,189,195
261	5,189,196
CLASS 560	
24	5,189,197
81	5,189,198
93	5,189,199
180	5,189,200
205	5,189,201
213	5,189,202
232	5,189,203
254	5,189,204
345	5,189,205
CLASS 562	
58	5,189,206
97	5,189,207
402	5,189,208
414	5,189,209
418	5,189,210
430	5,189,211
468	5,189,212
517	5,189,213
519	5,189,214
577	5,189,215
600	5,189,216
CLASS 564	
040	5,189,217
272	5,189,218
356	5,189,219
404	5,189,220
499	5,189,221
CLASS 568	
1	5,189,222
33	5,189,223
35	5,189,224
425	5,189,226
649	5,189,225
681	5,189,227
941	5,189,228
CLASS 570	
176	5,189,229
177	5,189,230
CLASS 585	
4	5,189,231
14	5,189,232
265	5,189,233
320	5,189,234
CLASS 602	
16	5,188,584
19	5,188,585
	5,188,586
20	5,188,587
CLASS 604	
6	5,188,588
22	5,188,589
	5,188,590
33	5,188,591
35	5,188,592
43	5,188,593
51	5,188,594
53	5,188,595
101	5,188,596
110	5,188,597
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	5,188,601
113	5,188,602
117	B1 4,981,472
131	5,188,603
153	5,188,604
158	5,188,605
161	5,188,606
167	5,188,607
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183	5,188,610
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195	5,188,613
197	5,188,614
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232	5,188,617
267	5,188,618
280	5,188,619
283	5,188,620
	5,188,621
319	5,188,622
328	5,188,623
378	5,188,624
383	5,188,625
385.1	5,188,626
385.2	5,188,627
405	5,188,628
412	5,188,629
CLASS 606	
1	5,188,630
5	5,188,631
7	5,188,632
12	5,188,633
14	5,188,634
	5,188,635
144	5,188,636
151	5,188,637
152	5,188,638

D2—	29	333,374		601	333,403		528	333,432		162	333,461	D20—	13	333,490		127	333,518
	244	333,375		602	333,404		531	333,433	D14—	113	333,462		22	333,491		186	333,519
	314	333,376	D7—	308	333,405		539	333,434			333,463	D21—	5	333,492		190	333,520
		333,377		396.5	333,406		542	333,435		114	333,464		13	333,493		199	333,521
		333,378		397	333,407		546	333,436		142	333,465		104	333,494		229	333,522
		333,379		504	333,408	D10—	12	333,437		151	333,466		106	333,495			333,523
	639	333,380		507	333,409		31	333,438		214	333,467		123	333,496	D25—	2	333,524
D3—	35	333,381		610	333,410		34	333,439		222	333,468		128	333,497		124	333,525
		333,382		641	333,411		46.1	333,440		230	333,469		171	333,498		131	333,526
	39	333,383		665	333,412		81	333,441			333,470		205	333,499	D26—	49	333,527
	76	333,384		683	333,413		106	333,442			333,471		209	333,500		62	333,528
	78	333,385	D8—	14.1	333,414		116	333,443	D15—	7	333,472	D22—	118	333,501		68	333,529
	79	333,386		51	333,415			333,444			333,473		141	333,503		74	333,530
D5—	56	333,387		57	333,416			333,445			333,474			333,504		87	333,531
D6—	309	333,388		87	333,417	D11—	19	333,446		9.1	333,475		142	333,502	D27—	189	333,532
	356	333,389		99	333,418		80	333,447		13	333,476	D23—	200	333,505	D28—	64	333,534
	429	333,390		341	333,419		128	333,448		123	333,477			333,506		64.1	333,533
	457	333,391		349	333,420	D12—	15	333,449	D16—	102	333,478		213	333,507		78	333,535
	476	333,392		356	333,421		92	333,451		244	333,479		249	333,508	D29—	16	333,536
	480	333,393		358	333,422		107	333,450	D17—	19	333,480		250	333,509	D30—	114	333,537
	485	333,394		394	333,423		146	333,452	D18—	12	333,481		252	333,510		199	333,538
	495	333,395		402	333,424		147	333,453			333,482		262	333,511	D32—	32	333,539
	501	333,396	D9—	300	333,425			333,454		48	333,483		275	333,512		66	333,540
	513	333,397		307	333,426			333,455		52	333,484		277	333,513	D34—	1	333,541
		333,398		311	333,427			333,456	D19—	32	333,485			333,514		9	333,542
	515	333,399		315	333,428		171	333,457		49	333,486			333,515		26	333,543
		333,400		333	333,429		179	333,458		75	333,487		403	333,516		29	333,544
		333,401		418	333,430		203	333,459		78	333,488	D24—	117	333,517	D99—		333,545
	559	333,402		435	333,431	D13—	147	333,460		90	333,489						

CLASSIFICATION OF PLANTS

P.—	1	8,153		8,155		8,157		8,159			
		8,154		8,156	68.1	8,158		8,160	87.14	8,161	90	8,162

VOL
1147
ISS
4
FE
23
1993
UMI

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01	:	5,189,015	5,188,325	5,188,982	5,189,678	5,188,164	5,188,259
		5,189,039	5,188,327	5,188,990	5,189,683	5,188,660	5,188,330
02	:	5,188,172	5,188,364	5,189,020	5,189,701	5,189,048	5,188,598
		5,188,190	5,188,381	5,189,041	5,189,703	5,189,138	5,188,857
04	:	5,187,901	5,188,403	5,189,060	5,189,710	5,189,141	5,188,885
		5,187,979	5,188,407	5,189,116	5,189,724	5,189,160	5,188,909
		5,188,112	5,188,417	5,189,126	5,189,733	11 : 5,189,022	5,189,071
		5,189,253	5,188,447	5,189,136	4,959,559	12 : 5,187,818	5,189,089
		5,189,360	5,188,458	5,189,169	08 : 5,187,843	5,187,830	5,189,212
		5,189,395	5,188,504	5,189,190	5,187,878	5,187,885	5,189,222
		5,189,591	5,188,510	5,189,210	5,187,892	5,187,889	5,189,725
		5,189,691	5,188,532	5,189,267	5,187,926	5,188,023	16 : 5,188,351
		5,189,692	5,188,533	5,189,271	5,188,046	5,188,055	5,188,373
		5,189,729	5,188,550	5,189,291	5,188,059	5,188,068	5,188,557
05	:	5,188,549	5,188,552	5,189,297	5,188,094	5,188,126	5,188,723
		5,188,673	5,188,565	5,189,302	5,188,106	5,188,171	17 : 5,187,812
06	:	5,187,839	5,188,578	5,189,310	5,188,117	5,188,195	5,187,861
		5,187,859	5,188,584	5,189,319	5,188,240	5,188,233	5,187,875
		5,187,864	5,188,587	5,189,320	5,188,380	5,188,243	5,187,909
		5,187,865	5,188,588	5,189,322	5,188,400	5,188,302	5,187,915
		5,187,876	5,188,589	5,189,355	5,188,409	5,188,371	5,187,917
		5,187,877	5,188,595	5,189,356	5,188,555	5,188,402	5,187,944
		5,187,932	5,188,596	5,189,371	5,189,423	5,188,410	5,187,985
		5,187,939	5,188,599	5,189,380	5,189,576	5,188,445	5,188,026
		5,187,945	5,188,602	5,189,387	5,189,628	5,188,464	5,188,031
		5,187,961	5,188,609	5,189,393	5,189,660	5,188,524	5,188,033
		5,187,970	5,188,612	5,189,402	09 : 5,188,025	5,188,542	5,188,034
		5,187,971	5,188,614	5,189,426	5,188,048	5,188,591	5,188,206
		5,187,972	5,188,615	5,189,463	5,188,091	5,188,592	5,188,226
		5,187,990	5,188,621	5,189,481	5,188,092	5,188,601	5,188,228
		5,188,019	5,188,632	5,189,485	5,188,209	5,188,605	5,188,245
		5,188,021	5,188,634	5,189,487	5,188,271	5,188,619	5,188,264
		5,188,052	5,188,670	5,189,488	5,188,279	5,188,644	5,188,274
		5,188,063	5,188,671	5,189,505	5,188,342	5,188,647	5,188,320
		5,188,065	5,188,679	5,189,507	5,188,355	5,188,687	5,188,326
		5,188,093	5,188,695	5,189,512	5,188,496	5,188,812	5,188,357
		5,188,095	5,188,717	5,189,514	5,188,511	5,188,935	5,188,386
		5,188,103	5,188,734	5,189,516	5,188,639	5,189,389	5,188,413
		5,188,118	5,188,780	5,189,517	5,188,741	5,189,397	5,188,502
		5,188,131	5,188,783	5,189,547	5,188,797	5,189,400	5,188,541
		5,188,133	5,188,824	5,189,548	5,188,942	5,189,431	5,188,546
		5,188,143	5,188,826	5,189,561	5,189,037	5,189,432	5,188,547
		5,188,156	5,188,844	5,189,572	5,189,092	5,189,484	5,188,548
		5,188,177	5,188,879	5,189,580	5,189,178	5,189,552	5,188,553
		5,188,222	5,188,886	5,189,595	5,189,258	5,189,593	5,188,620
		5,188,247	5,188,934	5,189,610	5,189,295	5,189,606	5,188,715
		5,188,255	5,188,938	5,189,613	5,189,363	5,189,687	5,188,727
		5,188,263	5,188,943	5,189,629	5,189,490	5,189,689	5,188,743
		5,188,282	5,188,957	5,189,633	5,189,620	13 : 5,187,868	5,188,796
		5,188,310	5,188,960	5,189,649	5,189,681	5,187,910	5,188,823
		5,188,316	5,188,965	5,189,664	4,981,472	5,188,050	5,188,855
		5,188,317	5,188,971	5,189,671	10 : 5,187,845	5,188,090	5,188,902
		5,188,323	5,188,972	5,189,676	5,187,952	5,188,216	5,189,016

5,189,026
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5,189,115
5,189,234
5,189,269
5,189,339
5,189,342
5,189,343
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5,189,626
5,189,694
5,189,719
18 : 5,187,820
5,187,941
5,188,011
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5,188,277
5,188,298
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5,188,911
5,189,445
5,189,495
19 : 5,188,765
5,188,936
5,189,260
5,189,587
20 : 5,187,947
5,188,292
5,188,586
5,189,195
21 : Re.34,184
5,187,924
5,188,344
5,188,405
5,188,465
5,188,775
5,189,193
5,189,447
22 : 5,187,813
5,187,829
5,188,120
5,188,173
5,188,175
5,188,484
5,188,512
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23 : 5,187,893
5,187,911
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24 : 5,187,871
5,188,157
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5,188,361
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5,189,014
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25 : 5,187,888
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5,188,008
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26 : 5,189,382
5,189,420
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27 : 5,189,549
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26 : 5,187,822
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27 : 5,187,993
5,188,022
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29 : 5,188,003
5,188,119
5,188,236

5,188,385
5,188,461
5,188,642
5,188,860
5,189,205
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5,189,551
30 : 5,188,450
5,188,637
5,188,845
32 : 5,188,363
33 : 5,188,032
5,188,114
5,188,324
5,188,370
5,188,539
5,189,277
5,189,279
5,189,368
34 : 5,188,101
5,188,124
5,188,129
5,188,144
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5,188,230
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35 : 5,187,980
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36 : 5,187,840
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4,746,994
37 : 5,187,852
5,188,331
5,188,347
5,188,415
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5,188,792
5,188,937
5,188,963
5,189,056
5,189,264
5,189,673
5,189,718
5,189,727
39 : 5,187,826
5,187,832
5,187,856
5,187,866
5,187,904
5,187,927
5,187,928
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5,187,936
5,187,967
5,188,089
5,188,151
5,188,163
5,188,187
5,188,188
5,188,207
5,188,232
5,188,251
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5,189,066
5,189,072
5,189,077
5,189,101
5,189,127
5,189,129
5,189,173
5,189,174
5,189,179
5,189,185
40 : 5,188,125
5,188,709
5,188,995
5,189,121
5,189,324
5,189,328
5,189,388
5,189,571
5,189,643
5,189,648
41 : 5,187,879
5,188,308
5,188,318
5,188,404
5,188,664
5,188,680
5,188,705
5,188,785
5,188,809
5,188,810
5,189,313
5,189,403
5,189,411
5,189,413
42 : Re.34,185
5,187,891
5,187,894
5,187,899
5,187,987
5,188,041
5,188,098
5,188,149
5,188,160
5,188,170
5,188,249
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5,189,044
5,189,050
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5,189,097
5,189,142
5,189,167
5,189,168
5,189,171
5,189,226
5,189,228
5,189,275
5,189,377
5,189,384
5,189,690
44 : 5,188,137
5,188,185
5,188,449
5,188,921
45 : 5,188,492

5,188,665
5,188,708
5,188,884
5,189,090
5,189,359
46 : 5,188,248
47 : 5,188,020
5,188,328
5,188,486
5,188,528
5,188,646
5,188,655
5,188,906
5,189,088
5,189,252
5,189,281
5,189,412
5,189,425
5,189,600
5,189,686
48 : 5,187,834
5,187,903
5,187,940
5,188,064
5,188,104
5,188,174
5,188,176
5,188,178
5,188,179
5,188,180
5,188,182
5,188,183
5,188,191
5,188,235
5,188,294
5,188,356
5,188,396
5,188,397
5,188,428
5,188,454
5,188,462
5,188,483
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5,188,517
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5,188,979
5,188,988
5,189,001
5,189,012
5,189,025
5,189,064
5,189,070
5,189,075
5,189,083
5,189,091
5,189,117
5,189,118
5,189,221
5,189,233
5,189,244
5,189,283
5,189,357
5,189,381
5,189,416
5,189,434
5,189,467
5,189,598
5,189,630
5,189,642
5,189,644
5,189,665
5,189,709
5,189,717
5,189,721
5,063,304
49 : 5,188,060
5,188,186
5,188,261
5,188,266
5,188,267
5,188,340
5,188,387
5,188,577
5,188,604
5,189,232
5,189,326
50 : 5,188,369
5,188,531
5,188,611
5,189,438

51 : 5,189,506
Re.34,183
5,187,815
5,187,890
5,187,898
5,187,976
5,188,130
5,188,153
5,188,159
53 : 5,187,918

5,188,600
5,189,243
5,189,299
5,189,375
5,189,560
5,189,663
5,189,700
5,189,708

5,187,923
5,188,049
5,188,146
5,188,242
5,188,295
5,188,389
5,188,419
5,188,624
5,188,803

5,188,946
5,189,374
5,189,418
5,189,450
5,189,581
5,189,640
5,189,679
54 : 5,188,427
5,188,892

55 : 5,189,004
5,187,828
5,187,922
5,187,925
5,187,974
5,188,015
5,188,069
5,188,214
5,188,293

5,188,309
5,188,379
5,188,573
5,188,625
5,188,710
5,188,983
5,189,265
5,189,605

VOL 1147 ISS 4 FE 23 1993 UMI

VOL
1147
ISS
4
FE
23
1993
UMI

DESIGN PATENTS

06 :	333,380		333,540	17 :	333,404		333,489		333,442	44 :	333,446
	333,392		333,543		333,430		333,530		333,463		333,447
	333,394	08 :	333,398		333,476	27 :	333,427		333,492	45 :	333,431
	333,395	09 :	333,400		333,529	28 :	333,498		333,499	46 :	333,516
	333,410		333,401	18 :	333,457	29 :	333,374		333,524	48 :	333,391
	333,418		333,403		333,541		333,417	39 :	333,381		333,409
	333,421		333,432	20 :	333,423		333,526		333,386		333,420
	333,424	12 :	333,390	22 :	333,450	30 :	333,441		333,413		333,485
	333,426		333,408	23 :	333,480	34 :	333,506		333,452		333,507
	333,439		333,437	25 :	333,375		333,525		333,453		333,508
	333,440		333,462		333,378		333,535		333,465		333,517
	333,448		333,487		333,379	36 :	333,376		333,500		333,537
	333,449		333,519		333,387		333,383	40 :	333,490	49 :	333,407
	333,451		333,520		333,478		333,385	41 :	333,377	50 :	333,397
	333,470		333,545		333,496		333,393		333,396	51 :	333,388
	333,471	13 :	333,384		333,518		333,402		333,538		333,416
	333,477		333,422		333,522		333,412	42 :	333,405		333,542
	333,501		333,521		333,523		333,428		333,406	55 :	333,494
	333,534		333,531	26 :	333,414		333,429		333,419		333,512
	333,536	16 :	333,399		333,459		333,434				

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20 :	8,162	41 :	8,161								

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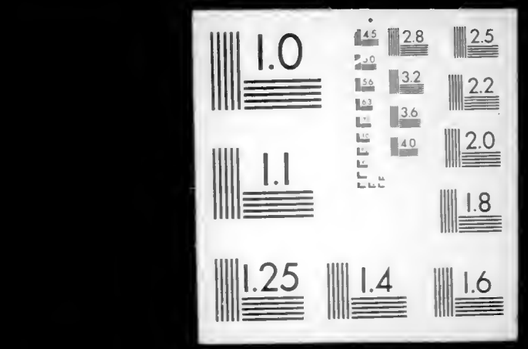
1993

UMI

VOL
1147

ISS
4

FE
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